

EMI Test Report

Tested in accordance with
Federal Communications Commission (FCC)
Personal Communications Services
CFR 47, Parts 2, 22 and 24
&
Industry Canada (IC) RSS-132, 133 and RSS-GEN



A division of Research In Motion Limited

REPORT NO.: RTS-2068-1007-62

PRODUCT MODEL NO.: RCL22CW
TYPE NAME: BlackBerry® smartphone
FCC ID: L6ARCL20CW
IC: 2503A-RCL20CW

EMISSION DESIGNATOR:

DATE: July 19, 2010

RIM Testing Services™	EMI Test Report for the BlackBerry® smartphone Model RCL22CW	
Test Report No. RTS-2068-1007-62	Dates of Test July 06 to 13, 2010	FCC ID: L6ARCL20CW IC: 2503A-RCL20CW

Statement of Performance:

The BlackBerry® smartphone, model RCL22CW, part number CER-32267-001 Rev. 2, and accessories when configured and operated per RIM's operation instructions, 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:



Mahmood Ahmed
Regulatory Compliance Associate
Date: 20 July, 2010

Reviewed By:



Michael Cino
Regulatory Compliance Associate
Date: 21 July, 2010

Reviewed and Approved by:



Masud S. Attayi, P.Eng.
Manager, Regulatory Compliance
Date: 23 July, 2010

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A. Scope

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

- FCC CFR 47 Part 2, Oct. 1, 2008
- FCC CFR 47 Part 22, Subpart H, Cellular Radiotelephone Services, Oct. 1, 2008
- FCC CFR 47 Part 24 Subpart E, Broadband PCS, Oct 1. 2008
- Industry Canada, RSS-132 Issue 2, September 2005, Cellular Telephones Employing New Technologies Operating in the Bands 824-849 MHz and 869-894 MHz.
- Industry Canada, RSS-133 Issue 5, February 2009, 2 GHz Personal Communications Services.
- Industry Canada, RSS-GEN Issue 2, June 2007, General Requirements and Information for the Certification of Radiocommunication Equipment

B. Associated Documents

- 1) 9330_RCL22CW_HW_Declaration_CER-32267-001 Rev 2
- 2) 8530-9330_HW_Difference_Document

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 06 to 13, 2010.

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The sample BlackBerry® smartphones tested were:

SAMPLE	MODEL	CER NUMBER	PIN	Software
1	RCL22CW	CER-32267-001 Rev 2	322FE8F8	V5.0.0.782 (Platform 4.2.0.352) Bundle: 1320
2	RCL22CW	CER-32267-001 Rev 2	322FE88E	V5.0.0.782 (Platform 4.2.0.352) Bundle: 1320

Radiated Emission measurements were performed on BlackBerry® smartphones samples 1 and 2.

Only the characteristics that may have been affected by the changes from model RCL21CW to model RCL22CW were re-tested for more information, see 8530-9330_HD_Difference_Document.

D. Support Equipment Used for the Testing of the EUT

None. See section G. *Compliance Test equipment used*.

E. Test Voltage

The AC input voltage was 120 volts, 60 Hz where applicable. This configue was per RIM's specifications.

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F. Summary of Results

SPECIFICATION		TEST TYPE	RESULT	TEST DATA APPENDIX
FCC CFR 47	IC			
Part 2.1051 Part 22.917 Part 22.901(d)	RSS-GEN, 4.9	CDMA Cell Conducted Spurious Emissions	See test report RTS-2068-0909-25	-
Part 2.1051 Part 24.238(a)	RSS-GEN, 4.9	CDMA PCS Conducted Spurious Emissions	See test report RTS-2068-0909-25	-
Part 2.202 Part 22.917	RSS-GEN, 4.6	CDMA Cell Occupied Bandwidth and Channel Mask	See test report RTS-2068-0909-25	-
Part 2.202 Part 24.238	RSS-GEN, 4.6	CDMA PCS Occupied Bandwidth and Channel Mask	See test report RTS-2068-0909-25	-
Part 2.1046(a)	RSS-133, 6.4 RSS-132, 4.4	CDMA Conducted RF Output Power	See test report RTS-2068-0909-25	-
Part 2.1055(a)(d) Part 22.917	RSS-132, 4.3	CDMA Cell Frequency Stability vs. Temperature and Voltage	See test report RTS-2068-0909-25	-
Part 2.1055(a)(d) Part 24.235	RSS-GEN, 4.7	CDMA PCS Frequency Stability vs. Temperature and Voltage	See test report RTS-2068-0909-25	-
Part 22, Subpart H	RSS-GEN, 4.9	CDMA Cell Radiated Spurious/Harmonic Emissions	Pass	1
Part 22, Subpart H	RSS-GEN, 4.9	CDMA Cell Radiated ERP	See test report RTS-2068-0909-25	-
Part 24, Subpart E	RSS-GEN, 4.9	CDMA PCS Radiated Spurious/Harmonic Emissions	Pass	1
Part 24, Subpart E	RSS-GEN, 4.9	CDMA PCS Radiated EIRP	See test report RTS-2068-0909-25	-

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1) RADIATED EMISSIONS

The radiated spurious emissions/harmonics were measured for both Cellular and PCS bands. The results are within the limits. The EUT was placed on a nonconductive styrofoam table, 100 cm high that was positioned on a remote controlled turntable. The test distance used between the EUT and the receiving antenna was three metres. Then the emissions were maximized by elevating the antenna in the range of 1 to 4 metres. The turntable was rotated to determine the azimuth of the peak emissions. The maximum emissions level was recorded. The following measurements were done in a semi-anechoic chamber (SAC) below 1 GHz and a fully-anechoic room (FAR) above 1 GHz. The SAC's FCC registration number is **778487** and the Industry Canada (IC) file number is **2503B-1**. The FAR's FCC registration number is **959115** and the IC file number is **2503C-1**. The BlackBerry® smartphone was measured on the low, middle and high channels.

The radiated carrier harmonics were measured up to the 10th harmonic for low, middle and high channels in the Cellular and PCS bands. Each band was measured in Loopback, Testdata, and 1xEVDO modes. Both the horizontal and vertical polarizations were measured.

Co-Location Measurements

The radiated emissions were measured up to 18 GHz for middle channels for simultaneous transmission in the following test configuration combinations: Cellular/Bluetooth/802.11b and PCS/Bluetooth/802.11b.

Both the horizontal and vertical polarizations were measured. The emissions due to different simultaneous transmission did not increase the amplitude of any emissions nor did it produce any new inter-modulation products as a result of mixing.

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 \pm 4.0 dB

To view the test data see APPENDIX 4.

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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>
Preamplifier	Sonoma	310N/11909A	185831	10-11-14	Radiated Emissions
Preamplifier system	TDK RF Solutions	PA-02	080010	10-11-06	Radiated Emissions
Preamplifier	Rohde & Schwarz	TS-ANA4-SP	001	11-02-17	Radiated Emissions
Preamplifier	Rohde & Schwarz	TS-ANA-SP	001	11-02-19	Radiated Emissions
Hybrid Log Antenna	EMC Automation	HLP-3003C	017301	11-02-02	Radiated Emissions
Hybrid Log Antenna	EMC Automation	HLP-3003C	017401	10-09-26	Radiated Emissions
Horn Antenna	EMC Automation	HRN-0118	030101	10-07-22	Radiated Emissions
Horn Antenna	EMC Automation	HRN-0118	030201	11-03-12	Radiated Emissions
Horn Antenna	Emco	3117	47563	11-07-15	Radiated Emissions
Horn Antenna	CMT	LHA 0180	R52734-001	12-01-21	Radiated Emissions
Preamplifier	TDK RF Solutions	18-26	030002	10-11-06	Radiated Emissions
Dipole Antenna	Schwarzbeck	UHAP	1018	11-03-12	Radiated Emissions
Dipole Antenna	Schwarzbeck	UHAP	974	10-10-16	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	837493/073	10-11-30	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	112394	10-11-30	Radiated Emissions
EMI Receiver	Rohde & Schwarz	ESIB-40	100255	10-11-30	Radiated Emissions
EMI Receiver	Rohde & Schwarz	ESU-40	100162	10-11-29	Radiated Emissions
Environment Monitor	Control Company	1870	230355190	11-01-08	Radiated Emissions
Environment Monitor	Control Company	1870	80117164	11-01-08	Radiated Emissions
Signal Generator	Agilent	E8257D	MY45140527	11-11-05	Radiated Emissions
Signal Generator	Agilent	83630B	3844A00927	10-10-31	Radiated Emissions

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APPENDIX 1- RADIATED EMISSIONS TEST DATA

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Radiated Emissions Test Data Results

Cellular Band

Loopback Service

Date of Test: July 13, 2010

The following measurements were performed by Fahd Faisal.

The environmental test conditions were: Temperature: 24 °C
Pressure: 1010 mb
Relative Humidity: 30 %

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.

The BlackBerry® smartphone was in standalone, vertical position.

The measurements were performed in Cellular Tx mode on channel 777.

All emissions had a test margin greater than 25.0 dB.

Date of Test: July 06, 2010

The following measurements were performed by Steven Wang.

The environmental test conditions were: Temperature: 23 °C
Pressure: 1021 mb
Relative Humidity: 26 %

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.

The BlackBerry® smartphone was in standalone, vertical position.

The measurements were performed in CDMA Cellular Tx mode on channel 777.

All emissions, including harmonics, had a test margin greater than 25.0 dB.

	EMI Test Report for the BlackBerry® smartphone Model RCL22CW APPENDIX 1	
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Radiated Emissions Test Data Results cont'd

Cellular Band

Test Data

Date of Test: July 13, 2010

The following measurements were performed by Fahd Faisal.

The environmental test conditions were: Temperature: 24 °C

Pressure: 1010 mb

Relative Humidity: 30 %

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.

The BlackBerry® smartphone was in standalone, vertical position.

The measurements were performed in Cellular Tx mode on channel 777.

All emissions had a test margin greater than 25.0 dB.

Date of Test: July 06, 2010

The following measurements were performed by Steven Wang.

The environmental test conditions were: Temperature: 23 °C

Pressure: 1021 mb

Relative Humidity: 26 %

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.

The BlackBerry® smartphone was in standalone, vertical position.

The measurements were performed in CDMA Cellular Tx mode on channel 777.

All emissions, including harmonics, had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

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Cellular Band

1xEVDO

Date of Test: July 13, 2010

The following measurements were performed by Fahd Faisal.

The environmental test conditions were: Temperature: 24 °C
Pressure: 1010 mb
Relative Humidity: 30 %

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone was in standalone, vertical position.

The measurements were performed in Cellular EVDO Tx mode on channel 777.

All emissions had a test margin greater than 25.0 dB.

Date of Test: July 07, 2010

The following measurements were performed by Steven Wang.

The environmental test conditions were: Temperature: 24 °C
Pressure: 1024 mb
Relative Humidity: 30 %

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.

The BlackBerry® smartphone was in standalone, vertical position.

The measurements were performed in CDMA Cellular EVDO Tx mode on channel 384.

All emissions, including harmonics, had a test margin greater than 25.0 dB.

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Radiated Emissions Test Data Results cont'd

PCS Band

Loopback Service

Date of Test: July 13, 2010

The following measurements were performed by Fahd Faisal.

The environmental test conditions were: Temperature: 24 °C
Pressure: 1010 mb
Relative Humidity: 30 %

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.

The BlackBerry® smartphone was in standalone, vertical position.

The measurements were performed in PCS Tx mode on channel 600.

All emissions had a test margin greater than 25.0 dB.

Date of Test: July 06 and 09, 2010

The following measurements were performed by Steven Wang.

The environmental test conditions were: Temperature: 23 °C
Pressure: 1021 mb
Relative Humidity: 26 %

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 20 GHz.

The BlackBerry® smartphone was in standalone, vertical position.

The measurements were performed in PCS Tx mode on channel 600.

All emissions, including harmonics, had a test margin greater than 25.0 dB.

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Radiated Emissions Test Data Results cont'd

PCS Band

Test Data

Date of Test: July 13, 2010

The following measurements were performed by Fahd Faisal.

The environmental test conditions were: Temperature: 24 °C

Pressure: 1010 mb

Relative Humidity: 30 %

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.

The BlackBerry® smartphone was in standalone, vertical position.

The measurements were performed in PCS Tx mode on channel 600.

All emissions had a test margin greater than 25.0 dB.

Date of Test: July 06 and 09, 2010

The following measurements were performed by Steven Wang.

The environmental test conditions were: Temperature: 23 - 24 °C

Pressure: 1016 - 1021 mb

Relative Humidity: 26 - 30 %

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 20 GHz.

The BlackBerry® smartphone was in standalone, vertical position.

The measurements were performed in PCS Tx mode on channel 600.

All emissions, including harmonics, had a test margin greater than 25.0 dB.

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Radiated Emissions Test Data Results cont'd

PCS Band

1xEVDO

Date of Test: July 13, 2010

The following measurements were performed by Fahd Faisal.

The environmental test conditions were: Temperature: 24 °C

Pressure: 1010 mb

Relative Humidity: 30 – 32 %

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.

The BlackBerry® smartphone was in standalone, vertical position.

The measurements were performed in PCS Tx mode on channel 600.

All emissions had a test margin greater than 25.0 dB.

Date of Test: July 07 and 09, 2010

The following measurements were performed by Steven Wang.

The environmental test conditions were: Temperature: 23 - 24 °C

Pressure: 1016 – 1022 mb

Relative Humidity: 29 - 31 %

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 20 GHz.

The BlackBerry® smartphone was in standalone, vertical position.

The measurements were performed in PCS Tx mode on channel 25.

All other emissions, including harmonics, had a test margin greater than 25.0 dB.