

# EMI Test Report

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




**A division of Research In Motion Limited**

**REPORT NO.:** RTS-1765-0907-30

**PRODUCT MODEL NO.:** RCP51UW  
**TYPE NAME:** BlackBerry® smartphone  
**FCC ID:** L6ARCP50UW  
**IC:** 2503A-RCP50UW

**DATE:** August 21, 2009

	EMI Test Report for the BlackBerry® smartphone Model RCP51UW	
<b>Test Report No.</b> RTS-1765-0907-30	<b>Dates of Test</b> August 17 to 19, 2009	<b>Author Data</b> Michael Cino

**Statement of Performance:**

The BlackBerry® smartphone, model RCP51UW, part number CER-27169-001 Rev. 2, 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:



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Date: 26 August, 2009

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Date: 31 August, 2009

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Director  
Date: 01 September , 2009

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## Table of Contents

A.	Scope.....	4
B.	Associated Documents .....	4
C.	Product Identification .....	4
D.	Support Equipment Used for the Testing of the EUT.....	4
E.	Test Results Chart .....	5
F.	Modifications to EUT .....	5
G.	Summary of Results.....	6
H.	Compliance Test Equipment Used .....	7
	APPENDIX 1 – 802.11b/g RADIATED EMISSIONS TEST DATA .....	8

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Test Report No. RTS-1765-0907-30	Dates of Test August 17 to 19, 2009	Author Data Michael Cino

**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, 2008
- o Industry Canada, RSS-210, Issue 7, June 2007, Low Power Licence-Exempt Radiocommunication Devices
- o Industry Canada, RSS-GEN, Issue 2, June 2007, General Requirements and Information for the Certification of Radiocommunication Equipment

**B. Associated Documents**

- 1) RTS-1765-0907-20
- 2) Declaration\_of\_Test\_Applicability

**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 RIM Testing Services EMI test facilities, located at:

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 August 17 to 19, 2009.


The sample EUT included:

SAMPLE	MODEL	CER NUMBER	PIN
1	RCP51UW	CER-27169-001 Rev. 2	30D08AC1
2	RCP51UW	CER-27169-001 Rev. 2	30D08B05

Samples 1 and 2 were used for Radiated Emissions testing.

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

No support equipment used. See section *H. Compliance Test Equipment Used.*

		EMI Test Report for the BlackBerry® smartphone Model RCP51UW	
Test Report No. RTS-1765-0907-30	Dates of Test August 17 to 19, 2009	Author Data Michael Cino	


## E. Test Results Chart

SPECIFICATION		TEST TYPE	Meets Requirements	TEST DATA
FCC CFR 47	IC			APPENDIX
Part 15.207	RSS-210 RSS-GEN	Conducted AC Line Emission	See Test Report RTS-1765-0907-20	-
Part 15.209 Part 15.247	RSS-210 RSS-GEN	BT Radiated Spurious Emissions	See Test Report RTS-1765-0907-20	-
Part 15.209 Part 15.247	RSS-210 RSS-GEN	Radiated Band Edge Compliance	See Test Report RTS-1765-0907-20	-
Part 15.209 Part 15.247	RSS-210 RSS-GEN	802.11 b/g Radiated Spurious Emissions	Pass	1
Part 15.209 Part 15.247	RSS-210 RSS-GE	Radiated Band Edge Compliance	See Test Report RTS-1765-0907-20	-
Part 15.247(a)	RSS-210	BT, 20 dB Bandwidth	See Test Report RTS-1765-0907-20	-
Part 15.247(a)	RSS-210	BT, Carrier Frequency Separation	See Test Report RTS-1765-0907-20	-
Part 15.247(a)	RSS-210	BT, Number of Hopping Frequencies	See Test Report RTS-1765-0907-20	-
Part 15.247(a)	RSS-210	BT, Time of Occupancy (Dwell Time)	See Test Report RTS-1765-0907-20	-
Part 15.247(b)	RSS-210	BT, Maximum Peak Conducted Output Power	See Test Report RTS-1765-0907-20	-
Part 15.247(c)	RSS-210	BT, Band-Edge Compliance of RF Conducted Emissions	See Test Report RTS-1765-0907-20	-
Part 15.247(c)	RSS-210	BT, Spurious RF Conducted Emissions	See Test Report RTS-1765-0907-20	-
Part 15.247(b)	RSS-210	802.11b/g, 6 dB Bandwidth	See Test Report RTS-1765-0907-20	-
Part 15.247(b)	RSS-210	802.11b/g, Maximum Conducted Output Power	See Test Report RTS-1765-0907-20	-
Part 15.247(b)	RSS-210	802.11b/g, Band-Edge	See Test Report RTS-1765-0907-20	-
Part 15.247(b)	RSS-210	802.11b/g, Peak Power Spectral Density	See Test Report RTS-1765-0907-20	-
Part 15.247(b)	RSS-210	802.11b/g, Spurious RF Conducted Emissions	See Test Report RTS-1765-0907-20	-

Model RCP51UW is identical to RCK71CW except that the CDMA section is depopulated. Only the characteristics that may have been impacted by the changes from RCK71CW to RCP51UW were re-measured. For more details, refer to the Declaration\_of\_Test\_Applicability.

## F. Modifications to EUT

No modifications were required on the EUT.

		EMI Test Report for the BlackBerry® smartphone Model RCP51UW
<b>Test Report No.</b> RTS-1765-0907-30	<b>Dates of Test</b> August 17 to 19, 2009	<b>Author Data</b> Michael Cino

## G. Summary of Results

### 1) RADIATED EMISSIONS

#### Radiated Spurious and Harmonic Emissions

The EUT was placed on a nonconductive styrofoam table, 80 cm high that was positioned on a remotely 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 25.0 GHz. Both the horizontal and vertical polarizations of the emissions were measured.

The 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 EUT was configured and operated to produce the maximum radiated emissions while still keeping within RIM's specifications.

The BlackBerry® smartphones PIN 30D08AC1 and PIN 30D08B05 were measured in standalone configuration transmitting at channels 1, 6 & 11 at 1 Mbps, and channel 6 at 6 Mbps for 802.11b/g modes. The system's radiated emission levels were compared with respect to the FCC CFR 47 Part 15 Subpart C, 15.247 and RSS-210.

The 802.11b/g harmonics were investigated up to the 10th harmonic. The sample EUT emissions were in the noise floor (NF).


#### **Measurement Uncertainty ±4.6 dB**

See APPENDIX 1 for the test data

		EMI Test Report for the BlackBerry® smartphone Model RCP51UW	
<b>Test Report No.</b> RTS-1765-0907-30	<b>Dates of Test</b> August 17 to 19, 2009	<b>Author Data</b> Michael Cino	


## H. 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>
EMI Test Receiver	Rohde & Schwarz	ESIB 40	100255	09-12-03	Radiated Emissions
EMI Test Receiver	Rohde & Schwarz	ESU 40	100162	10-04-22	Radiated Emissions
Hybrid Log Antenna	EMC Automation	HLP-3003C	017401	10-09-26	Radiated Emissions
Horn Antenna	CMT	LHA 0180	R52734-001	09-12-17	Radiated Emissions
Horn Antenna	ETS-Lindgren	3117	47563	11-07-15	Radiated Emissions
Preamplifier	Rohde & Schwarz	TS-ANA4-SP	001	10-05-08	Radiated Emissions
Preamplifier	Sonoma	310N/11909A	185831	09-11-07	Radiated Emissions
Preamplifier	Rohde & Schwarz	TS-ANA-SP	001	10-03-31	Radiated Emissions
Environment Monitor	Control Company	1870	230355190	10-01-30	Radiated Emissions
EMC Analyzer	Agilent	E7405A	US40240226	09-11-17	Radiated Emissions
Bluetooth Tester	Rohde & Schwarz	CBT35	100368	09-12-09	Radiated Emissions
Bluetooth Tester	Rohde & Schwarz	CBT35	100370	09-12-09	Radiated Emissions
Digital Multimeter	Hewlett Packard	34401A	US36042324	09-10-01	Radiated Emissions
Environment Monitor	Control Company	1870	230355159	10-01-30	Radiated Emissions

	EMI Test Report for the BlackBerry® smartphone Model RCP51UW <b>APPENDIX 1</b>	
<b>Test Report No.</b> RTS-1765-0907-30	<b>Dates of Test</b> August 17 to 19, 2009	<b>Author Data</b> Michael Cino

## APPENDIX 1 – 802.11b/g RADIATED EMISSIONS TEST DATA



	EMI Test Report for the BlackBerry® smartphone Model RCP51UW	
	<b>APPENDIX 1</b>	
<b>Test Report No.</b> RTS-1765-0907-30	<b>Dates of Test</b> August 17 to 19, 2009	<b>Author Data</b> Michael Cino

802.11b/g Band

Date of Test: August 17, 2009

Measurements were performed by Fahd Faisal.

The environmental test conditions were: Temperature: 25 °C  
Pressure: 1012 mb  
Relative Humidity: 32 %

The test distance was 3.0 metres with a height of 0.8 metres, 30 MHz to 1000 MHz.  
The BlackBerry® smartphone PIN 30D08AC1 was in standalone, vertical position.

The frequency sweep measurements were performed in Tx mode at 1 Mbps on channels 1, 6 and 11, and in Tx mode at 6 Mbps on channel 6.

All emissions had a test margin greater than 25.0 dB.

Date of Test: August 17 – 19, 2009.

Measurements were performed by Savtej Sandhu.

The environmental test conditions were: Temperature: 25 – 26 °C  
Pressure: 1013 – 1016 mb  
Relative Humidity: 29 – 32 %

The test distance was 1.0 metres with a height of 0.8 metres, 1GHz to 25GHz.  
The BlackBerry® smartphone PIN 30D08B05 was in standalone, horizontal position.

The frequency sweep measurements were performed in Tx mode at 1 Mbps on channels 1, 6 and 11, and in Tx mode at 6 Mbps on channel 6.

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