

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

RIM Testing Services (RTS)

A division of Research In Motion Limited

REPORT NO.: RTS-1271-0810-31

PRODUCT MODEL NO.: RCD21IN
TYPE NAME: BlackBerry® smartphone
FCC ID: L6ARCD20IN
IC: 2503A-RCD20IN

DATE: 07 November 2008

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Statement of Performance:

The BlackBerry® smartphone, model RCD21IN, part number CER-21467-001 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.

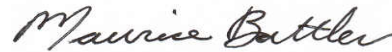
The test methods were consistent with the methods described in the relevant standards.

Documented by:



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Date: 07 November 2008

Reviewed by:



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Date: 07 November 2008

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Date: 07 November 2008

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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, July 10, 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. Test Report 115647-1TRFWL.

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 (RTS) EMI test facility
440 Phillip Street
Waterloo, Ontario
Canada, N2L 5R9
Phone: 519 888 7465
Fax: 519 888 6906

Nemko Canada, Inc.
303 River Road
Ottawa, Ontario
Canada, K1V1H2
Phone: 613 737 9680
Fax: 613 737 9691

The testing at RTS was performed on October 20 to November 07, 2008.

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The sample EUT included:

SAMPLE	MODEL	CER NUMBER	PIN
1	RCD21IN	CER-21467-001 Rev. 2	40245A3D
2	RCD21IN	CER-21467-001 Rev. 2	40245A62

BlackBerry® smartphone Accessories Tested

- 1) Folding Blade Charger, part number ASY-12709-001 with an output voltage of 5.0 volts dc, 750 mA with an attached USB cable with a length of 1.80 metres.
- 2) Captive Cable Charger part number HDW-14917-001 with an output voltage of 5.0 volts dc, 500 mA and attached USB cable with a lead length of 1.80 meters.
- 3) Alternative Captive Cable Charger part number HDW-14917-003 with an output voltage of 5.0 volts dc, 500 mA and attached USB cable with a lead length of 1.80 meters.
- 4) BlackBerry® Charging Pod, part number HDW-20444-001.
- 5) Mono Headset, 2.5 mm, part number HDW-12420-001, 1.3 metres long.
- 6) Alternative Stereo Headset, 2.5 mm, part number HDW-16907-001, 1.3 metres long.

D. Support Equipment Used for the Testing of the EUT

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

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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	Pass	1
Part 15.209 Part 15.247	RSS-210 RSS-GEN	Radiated Spurious Emissions and Radiated Band Edge Compliance	See test report 115647-1TRFWL	-
Part 15.247(a)	RSS-210	BT, 20 dB Bandwidth	See test report 115647-1TRFWL	-
Part 15.247(a)	RSS-210	BT, Carrier Frequency Separation	See test report 115647-1TRFWL	-
Part 15.247(a)	RSS-210	BT, Number of Hopping Frequencies	See test report 115647-1TRFWL	-
Part 15.247(a)	RSS-210	BT, Time of Occupancy (Dwell Time)	See test report 115647-1TRFWL	-
Part 15.247(b)	RSS-210	BT, Maximum Peak Conducted Output Power	See test report 115647-1TRFWL	-
Part 15.247(c)	RSS-210	BT, Band-Edge Compliance of RF Conducted Emissions	See test report 115647-1TRFWL	-
Part 15.247(c)	RSS-210	BT, Spurious RF Conducted Emissions	See test report 115647-1TRFWL	-
Part 15.247(b)	RSS-210	802.11b/g, 6 dB Bandwidth	See test report 115647-1TRFWL	-
Part 15.247(b)	RSS-210	802.11b/g, Maximum Conducted Output Power	See test report 115647-1TRFWL	-
Part 15.247(b)	RSS-210	802.11b/g, Band-Edge	See test report 115647-1TRFWL	-
Part 15.247(b)	RSS-210	802.11b/g, Peak Power Spectral Density	See test report 115647-1TRFWL	-
Part 15.247(b)	RSS-210	802.11b/g, Spurious RF Conducted Emissions	See test report 115647-1TRFWL	-

F. Modifications to EUT

No modifications were required on the EUT.

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G. Summary of Results

1) AC LINE 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.

The BlackBerry® smartphone was in battery charging mode. The input voltage was 120 V, 60 Hz.

The following test configurations were measured:

1. The BlackBerry® smartphone, PIN 40245A3D, in Bluetooth Tx mode with the 2.5 mm Mono Headset was positioned in the Charging Pod which was connected to the Folding Blade Charger.
2. The BlackBerry® smartphone, PIN 40245A62, in 802.11b/g Tx mode with the 2.5 mm Alternative Stereo Headset was positioned in the Charging Pod which was connected to the Captive Cable Charger.
3. The BlackBerry® smartphone PIN 40245A62 in 802.11b/g Tx mode with the 2.5 mm Alternative Stereo Headset connected was positioned in the Charging Pod which was connected to the Alternative Captive Cable Charger.

The sample EUT's conducted emissions were compared with respect to the FCC CFR 47 Part 15, Subpart C and IC RSS-210 limits.

The sample EUT had a worse case test margin of 14.11 dB below the limit at 0.650 MHz using the quasi peak detector with the Captive Cable Charger, test configuration 3.

See APPENDIX 1 for the test data

Measurement Uncertainty ± 3.0 dB

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2) RADIATED EMISSIONS

See Test Report 115647-1TRFWL.

3) BLUETOOTH RF CONDUCTED EMISSIONS

See Test Report 115647-1TRFWL.

4) WiFi 802.11b/g RF CONDUCTED EMISSIONS

See Test Report115647-1TRFWL.

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H. Compliance Test Equipment Used

<u>UNIT</u>	<u>MANUFACTURER</u>	<u>MODEL</u>	<u>SERIAL NUMBER</u>	<u>CAL DUE DATE (YY MM DD)</u>	<u>USE</u>
Bluetooth Tester	Rohde & Schwarz	CBT	100370	08-12-06	Conducted Emissions
Digital Multimeter	Hewlett Packard	34401A	US36042324	09-01-01	Conducted Emissions
EMI Test Receiver	Rohde & Schwarz	ESIB 40	100255	08-12-24	Conducted Emissions
Environment Monitor	Control Company	1870	80117164	10-01-08	Conducted Emissions
L.I.S.N.	Rohde & Schwarz	ENV216	100060	09-04-21	Conducted Emissions

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APPENDIX 1 – AC CONDUCTED EMISSIONS TEST DATA/PLOTS

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Bluetooth AC Conducted Emission Test Results

The measurements were performed by Andrew Fleming and Savtej Sandhu.

Test Configuration 1

AC Power Line Conducted Emissions

The EUT met the requirements of the AC Power Line Conducted Emissions as per FCC CFR 47 Part 15, Subpart C and IC RSS-210.

The environmental test conditions were:

Temperature	25°C
Pressure	1021 mb
Relative Humidity	22%

Date of test: October 20, 2008

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	L1	33.59	10.03	43.62	65.52	55.52	-21.90
0.159	N	34.29	9.96	44.25	65.52	55.52	-21.26
0.200	N	29.10	9.80	38.90	63.63	53.63	-24.73
0.267	L1	28.20	9.85	38.05	61.21	51.21	-23.16
0.267	N	28.29	9.81	38.10	61.21	51.21	-23.11
0.362	L1	26.37	9.78	36.15	58.69	48.69	-22.55
0.492	N	27.99	9.89	37.88	56.13	46.13	-18.25
0.978	L1	24.09	9.52	33.61	56.00	46.00	-22.39

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

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AC Conducted Emissions Test Graphs

Test Configuration 1

Figure 1-1: L1 lines

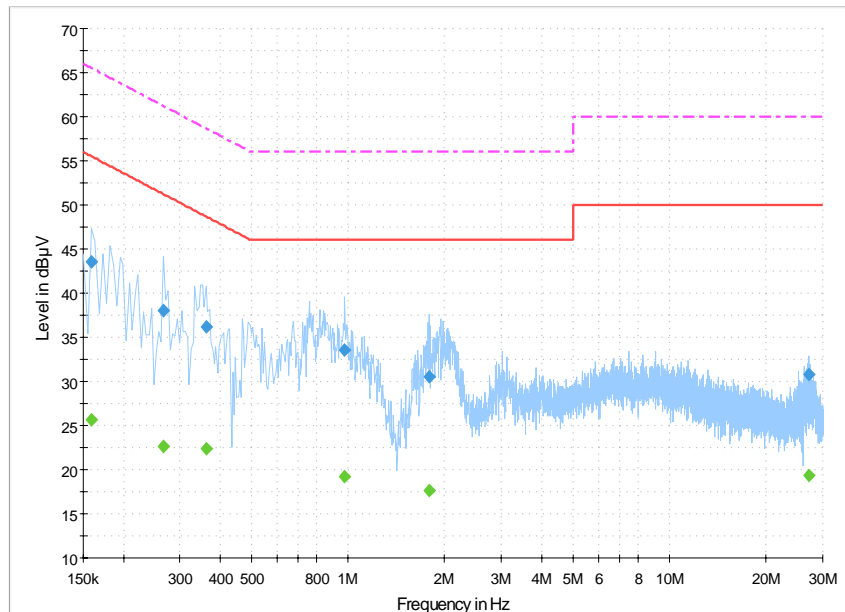
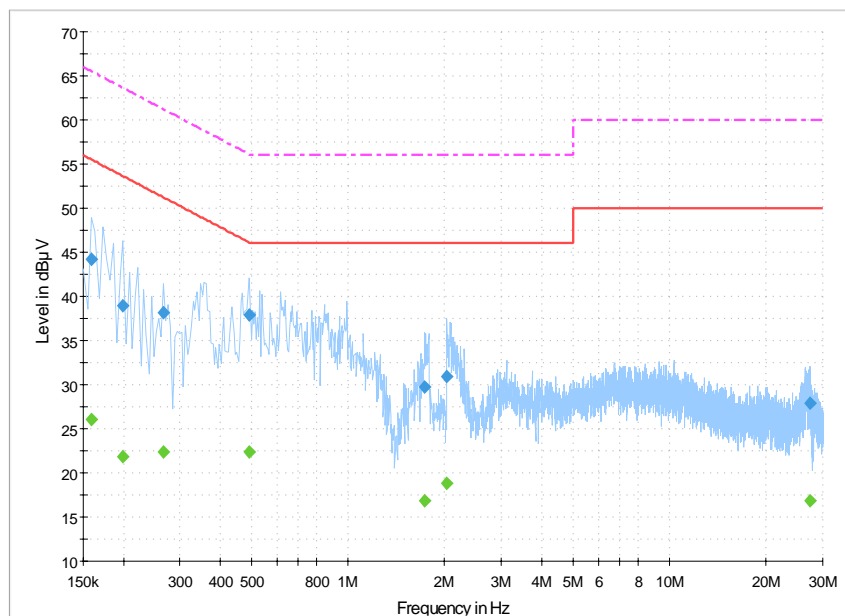


Figure 1-2: N Lines



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Bluetooth AC Conducted Emission Test Results

Test Configuration 2

AC Power Line Conducted Emissions

The EUT met the requirements of the AC Power Line Conducted Emissions as per FCC CFR 47 Part 15, Subpart C and IC RSS-210.

The environmental test conditions were:

Temperature	25°C
Pressure	1021 mb
Relative Humidity	22%

Date of test: October 20, 2008

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

Measurements were done with the quasi-peak detector.

See figure 1-3 and figure 1-4 for the measurement plot of the L1 and N lines of AC power line conducted emissions

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AC Conducted Emissions Test Graphs

Test Configuration 2

Figure 1-3: L1 lines

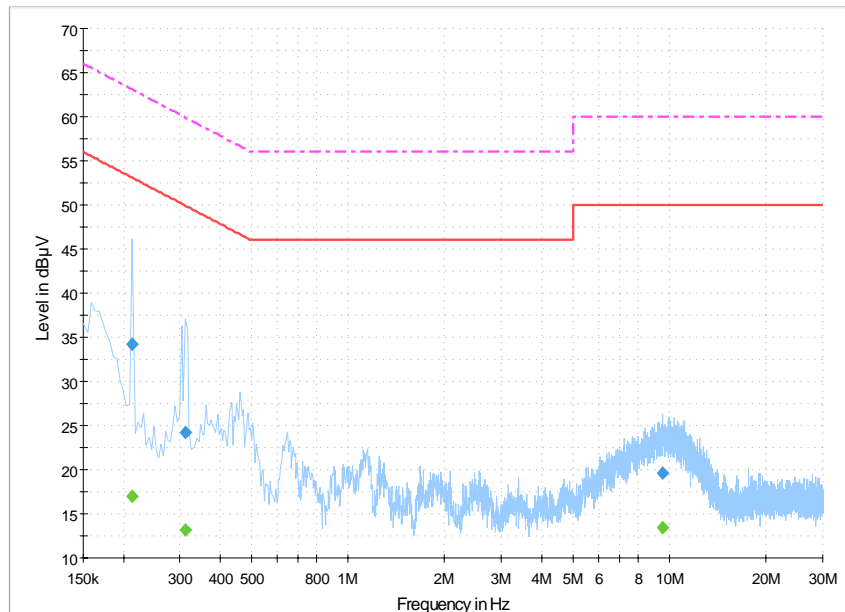
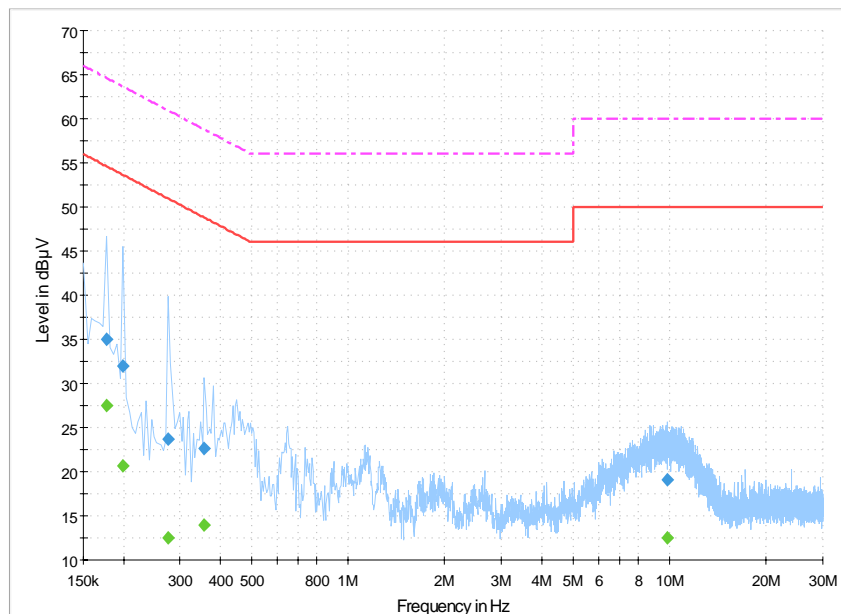


Figure 1-4: N Lines



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AC Conducted Emissions Test Results cont'd

Test Configuration 3

Frequency (MHz)	Line	Reading (QP) (dBμV)	Correction Factor (dB)	Corrected Reading (QP) (dB)	Limit (QP) (dBμV)	Limit (AV) (dBμV)	Margin (QP) Limits (dB)
4.997	N	30.94	9.60	40.54	56.00	46.00	-15.46
8.471	L1	34.15	9.76	43.92	60.00	50.00	-16.09

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

Measurements were done with the quasi-peak detector.

See figure 1-5 and figure 1-6 for the measurement plot of the L1 and N lines of AC power line conducted emissions.

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AC Conducted Emissions Test Graphs

Test Configuration 3

Figure 1-5: L1 lines

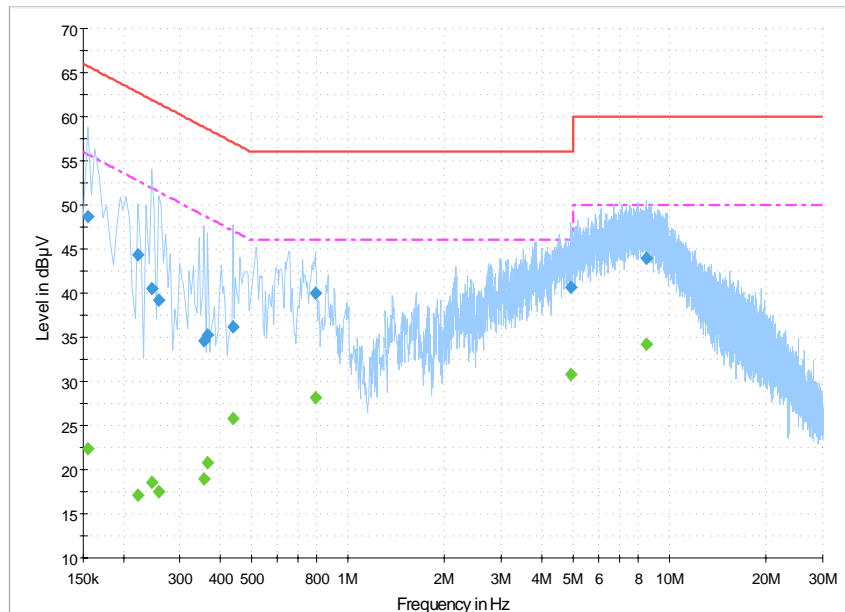


Figure 1-6: N Lines

