

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

RIM Testing Services (RTS)

A division of Research In Motion Limited

REPORT NO.: RTS-1114-0807-02_Rev2

PRODUCT MODEL NO.: RBY41GW
TYPE NAME: BlackBerry® smartphone
FCC ID: L6ARBY40GW
IC: 2503A-RBY40GW

This Rev2 test report supersedes the previous version RTS-1114-0807-02_Rev1 dated 05 August, 2008

DATE: 11 August, 2008

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Statement of Performance:

The BlackBerry® smartphone, model RBY41GW, part number CER-18134-001 Rev. 6, and accessories when configured and operated per RIM's operation instructions, perform 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: 11 August, 2008

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Date: 11 August, 2008

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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, July 10, 2008 Class B Digital Devices, Unintentional Radiators
- IC ICES-003 Issue 4, February 2004, Class B Digital Devices, Unintentional Radiators

B. Associated Document

1. Document number RTS-1114-RBY41GW-03
2. Document number RTS-1114-RBY41GW-04

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 (RTS) EMI test facility, located at:

305 Phillip Street
 Waterloo, Ontario
 Canada, N2L 3W8
 Phone: 519 888 7465
 Fax: 519 888 6906

| The testing was performed on June 01 to August 11, 2008.

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The sample EUT included:

SAMPLE	MODEL	CER NUMBER	PIN
1	RBY41GW	CER-18134-001 Rev 4	20744F24
2	RBY41GW	CER-18134-001 Rev 5	20750FEA
3	RBY41GW	CER-18134-001 Rev 6	207461F5

To view the differences between CER-18134-001 Rev 4 to CER-18134-001 Rev. 5, see document number RTS-1114-RBY41GW-03. To view the differences between CER-18134-001 Rev 5 to CER-18134-001 Rev. 6, see document number RTS-1114-RBY41GW-04.

Only the measurements that may have been impacted by the changes from Rev 4 to Rev 5 or Rev 5 to Rev 6 were re-measured.

BlackBerry® smartphone Accessories Tested

- 1) Folding Blade Charger, part number HDW-19129-001 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-17957-001 with an output voltage of 5.0 volts dc, 500 mA and attached USB cable with a lead length of 1.80 meters.
- 3) USB Data Cable 1, part number HDW-06610-09 model 6191-10AL-0180, 1.00 metres long.
- 4) USB Data Cable 2, part number HDW-06610-09, model IP-USB1(M10)-R, 1.00 metres long.
- 5) Stereo Headset, 3.5 mm, part number HDW-14322-003, 1.3 metres long.
- 6) Premium Single Button Stereo Headset, 3.5 mm, part number HDW-15766-005, 1.3 meters long.
- 7) Premium Multi-Button Stereo Headset, 3.5 mm, part number HDW-15765-001, 1.3 meters long.
- 8) Premium black Mono Headset, 3.5 mm part number HDW-17906-001, 1.3 meters long
- 9) BlackBerry® Charging Pod, part number HDW-14389-001
- 10) BlackBerry® Remote Stereo Gateway, part number ASY-16007-001

D. Support Equipment Used for the Testing of the EUT

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

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E. Modifications to EUT

No modifications were required on the EUT.

F. 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
Part 15, Subpart B	ICES-003	Radiated Unintentional Spurious Emissions	Yes	2

a) CONDUCTED AC LINE 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:

1. The BlackBerry® smartphone PIN 20750FEA in PCS idle mode with the 3.5 mm Premium Single Button Headset connected was connected to the Folding Blade Charger.
2. The BlackBerry® smartphone PIN 20744F24 in GSM idle mode with the 3.5 mm Premium Mono Stereo Headset connected was connected to the Captive Cable Charger.

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 12.11 dB below the QP limit at 0.177 MHz using the quasi-peak detector for the Captive Cable charger, test configuration 2.

Measurement Uncertainty ± 3.0 dB

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

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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 semi-anechoic chamber FCC registration number is **778487** and the Industry Canada site 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:

1. The BlackBerry® smartphone, PIN 20750FEA in GSM idle mode with the 3.5 mm Premium Multi-Button Stereo Headset was connected to the Folding Blade Charger.
2. The BlackBerry® smartphone, PIN 20750FEA in PCS idle mode with the Bluetooth Stereo Gateway was connected to the laptop through the USB cable which was connected to the Folding Blade Charger.
3. The BlackBerry® smartphone, PIN 20744F24 in Bluetooth Tx mode with the 3.5 mm Stereo Headset attached was connected to the Captive Cable Charger.
4. The BlackBerry® smartphone, PIN 20744F24 in PCS idle mode with the 3.5 mm Stereo Headset attached was sitting in the Charging Pod which was connected to the Captive Cable Charger.
5. The BlackBerry® smartphone, PIN 20744F24 in 802.11b/g Tx mode with the 3.5 mm Premium Stereo Headset attached was connected to the Captive Cable Charger.
6. The BlackBerry® smartphone, PIN 20750FEA in GSM 850 idle mode with the 3.5 mm Premium Mono Headset was connected Charging Pod. The Charging Pod was connected to the laptop through the USB cable 1.
7. The BlackBerry® smartphone, PIN 207461F5 in Standalone mode was connected to the laptop through the USB cable 1.
8. The BlackBerry® smartphone, PIN 207461F5 in Standalone mode was connected to the laptop through the USB cable 2.

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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 worse case emission test margin of 3.56 dB at 216.00 MHz using test configuration 6

Sample Calculation:

Field Strength (dBµV/m) is calculated as follows:

FS = Measured Level (dBµV) + A.F. (dB/m) + Cable Loss (dB) - Preamp (dB) + Filter Loss (dB)

Measurement Uncertainty ±4.6 dB

To view the test data see APPENDIX 2.

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	08-11-21	Radiated Emissions
Preamplifier system	TDK RF Solutions	PA-02	080010	08-11-16	Radiated Emissions
EMC Analyzer	Agilent	E7405A	US40240226	08-10-01	Radiated Emissions
Digital Multimeter	Hewlett Packard	34401A	US36042324	08-09-28	Conducted/Radiated Emissions
Environment Monitor	Control Company	1870	230355190	08-12-11	Conducted/Radiated Emissions
L.I.S.N.	Emco	3816/2	1120	08-08-28	Conducted Emissions
Impulse Limiter	Rohde & Schwarz	ESHS-Z2	100786	08-09-11	Conducted Emissions
Hybrid Log Antenna	TDK	HLP-3003C	017301	08-12-15	Radiated Emissions
Horn Antenna	TDK	HRN-0118	130092	08-09-25	Radiated Emissions
Universal Radio Communication Tester	R&S	CMU 200	837493/073	08-12-06	Radiated/Conducted Emission
EMI Receiver	Agilent	8546A	3942A00517	08-11-19	Conducted/Radiated Emissions
RF Filter Section	Agilent	85460A	3704A00481	08-11-19	Conducted/Radiated Emissions

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APPENDIX 1 - AC LINE CONDUCTED EMISSIONS TEST DATA

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AC Conducted Emissions Test Results

The measurements were performed by Vimal Olaganathan and Gurjeev Singh.

Test Configuration 1

The environmental test conditions were:

Temperature	23°C
Pressure	1012 mb
Relative Humidity	33%

FCC CFR 47 Part 15, Subpart B and IC ICES-003, Class B

Date of test: July 15, 2008

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor (dB)	Corrected Reading (QP) (dB)	Limit (QP) (dBµV)	Limit (AV) (dBµV)	Margin (QP) Limits (dB)
0.158	L1	33.17	9.87	43.04	65.73	55.73	-22.69
0.169	N	37.11	9.87	46.98	64.72	54.72	-17.74
0.212	N	33.95	9.87	43.82	62.82	52.82	-19.00
0.350	N	28.88	9.89	38.77	58.96	48.96	-20.19
0.477	L1	26.78	9.91	36.69	56.34	46.34	-19.65
0.493	N	28.13	9.91	38.04	56.25	46.25	-18.22
0.567	L1	24.86	9.91	34.77	56.00	46.00	-21.23
0.579	N	23.93	9.91	33.84	56.00	46.00	-22.16
0.690	L1	26.21	9.94	36.15	56.00	46.00	-19.85
0.843	L1	26.26	9.93	36.19	56.00	46.00	-19.81
0.901	N	22.81	9.94	32.75	56.00	46.00	-23.25
2.289	L1	21.54	10.01	31.45	56.00	46.00	-24.55

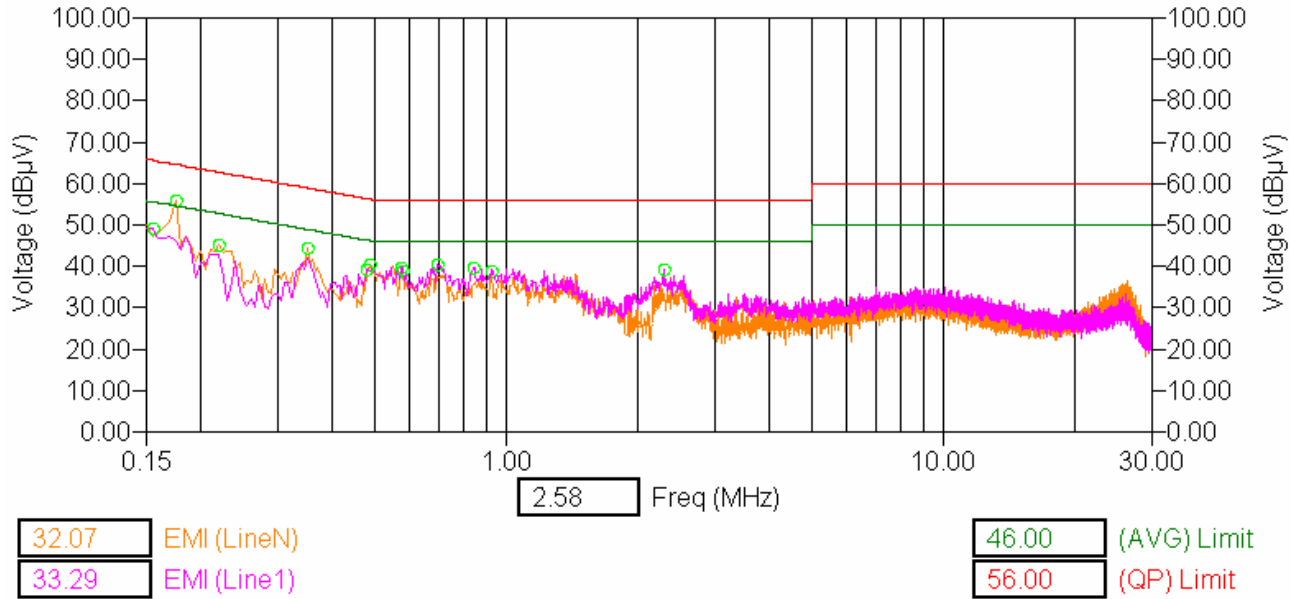
All other emission levels had a test margin of greater than 25 dB.

Measurements were done with the quasi-peak detector.

See graph 1 for the measurement plot.

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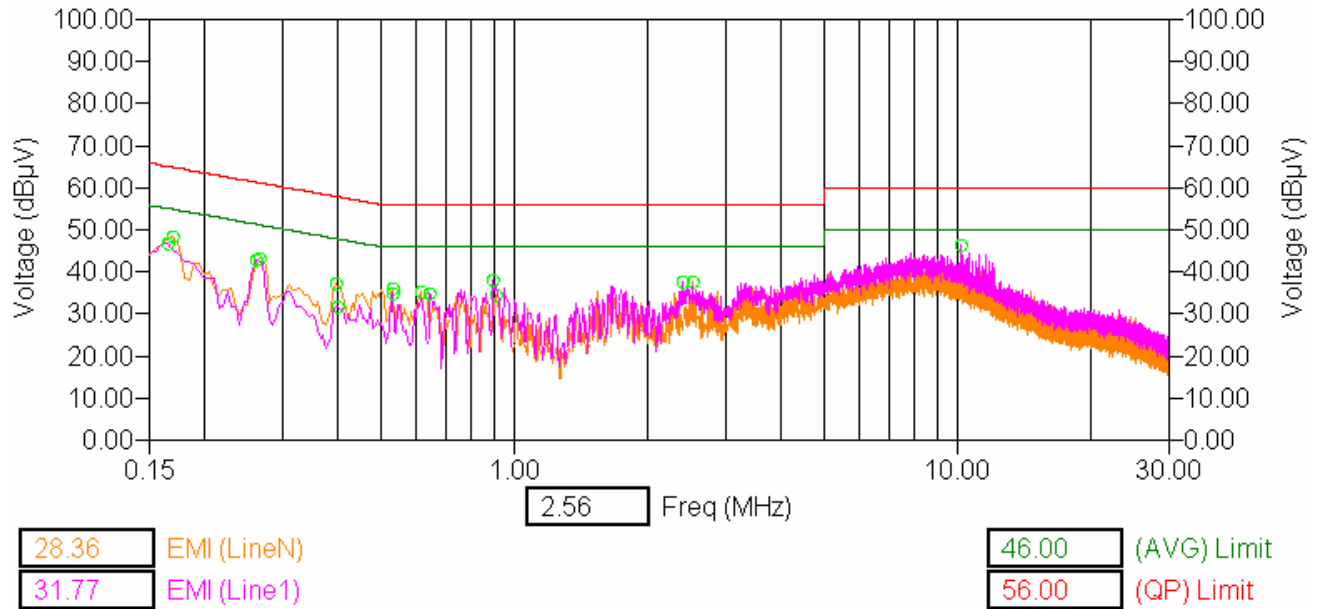
AC Conducted Emissions Test Graph 1



Test Configuration 1

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AC Conducted Emissions Test Graph 2



Test Configuration 2

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APPENDIX 2 - RADIATED EMISSIONS TEST DATA

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Radiated Emissions Test Results

The measurements were performed by Vimal Olaganathan and Arjun Rai Bhatti

Test Configuration 1

The environmental test conditions were:

Temperature	23°C
Pressure	1013 mb
Relative Humidity	34%

FCC CFR 47 Part 15, Subpart B and IC ICES-003, Class B

Date of test: July 16, 2008

Test Distance was 3.0 metres.

Frequency (MHz)	Antenna		Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dBµV)	Correction Factor for preamp/antenna / cables/ filter (dB/m)	Field Strength Level (reading+corr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
	Pol. (V/H)	Height (metres)							
30.830	H	1.02	116	Q.P.	42.90	-18.24	24.66	40.00	-15.34
32.823	V	1.40	117	Q.P.	34.94	-18.88	16.06	40.00	-23.94
76.757	V	1.46	246	Q.P.	40.98	-21.83	19.15	40.00	-20.85
86.687	H	2.34	113	Q.P.	36.86	-21.57	15.29	40.00	-24.71
86.689	V	1.42	192	Q.P.	43.69	-21.58	22.11	40.00	-17.89
118.719	V	1.47	221	Q.P.	37.36	-18.07	19.29	43.50	-24.21

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

