

# **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-0628-0702-11

**PRODUCT MODEL NO.:** RBP41GW  
**TYPE NAME:** BlackBerry  
**FCC ID:** L6ARBP40GW  
**IC:** 2503A-RBP40GW

**DATE:** 08 March 2007

<b>RTS</b> RIM Testing Services	EMI Test Report for the BlackBerry Handheld Model RBP41GW	
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**Statement of Performance:**

The BlackBerry Handheld, model RBP41GW, part number CER-14402-001 Rev 3, 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:



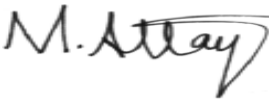
Kevin Chow  
Compliance Specialist  
Date: 08 Mar 2007

Reviewed by:



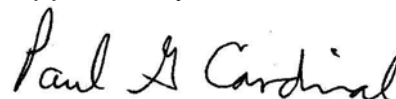
Maurice Battler  
Compliance Specialist  
Date: 08 Mar 2007

Tested and reviewed by:



Masud S. Attayi, P.Eng.  
Team Lead, Regulatory Compliance  
Date: 08 Mar 2007

Approved by:



Paul G. Cardinal, Ph.D.  
Director  
Date: 12 Mar 2007

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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, August 14 2006, Class B Digital Devices, Unintentional Radiators
- IC ICES-003 Issue 4, February 2004, Class B Digital Devices, Unintentional Radiators
- EN55022: 1998 A1:2000/A2:2003 Conducted/Radiated Emissions Class B

## B. Associated Document

1. Document number RTS-0628-RBP41GW-01

## C. Product Identification

Manufactured by Research In Motion Limited 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 February 08 to 14, 2007.

The sample EUT included:

1. BlackBerry model RBP41GW, part number CER-14402-001 Rev 2, PIN 20583A5A

To view the differences between CER-14402-001 Rev 2 and CER-14402-001 Rev 3, see document number RTS-0628-RBP41GW-01.

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### BlackBerry Wireless Handheld Accessories Tested

- 1) Folding Blade Charger, part number ASY-07040-001 with an output voltage of 5.0 volts dc, 0.75 amps and attached USB cable with a lead length of 1.80 metres.
- 2) Captive Cable Charger, part number ASY-07559-001 with an output voltage of 5.0 volts dc, 0.5 amps and attached USB cable with a lead length of 1.80 metres.
- 3) Alternative Folding Blade Charger, part number ASY-12709-001 with an output voltage of 5.0 volts dc, 0.75 amps with an attached USB cable with a length of 1.80 metres.
- 4) USB data cable, part number HDW-06610-001, 1.45 metres long.
- 5) Stereo Headset, part number HDW-14322-001, 1.3 metres long.

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

- 1) PC System, Myraid, model EN-P3B-7, serial number CCC0004078
- 2) Monitor, ViewSonic, model number VCDTS23103-2M, serial number 4B022952648
- 3) Printer, H/P, model number C5884A, serial number US8251W0VQ

### **E. Test Voltage**

The ac input voltage was 120/230 volts, 60/50 Hz where applicable. This configuration was per RIM's specifications.

### **F. Test Results Chart**

SPECIFICATION	Test Type	MEETS REQUIREMENTS	Performed By
FCC CFR 47 Part 15, Subpart B IC ICES-003 Radiated Unintentional Spurious Emissions	Class B	Yes	Masud Attayi
FCC CFR 47 Part 15, Subpart B IC ICES-003 Conducted AC Line Emission	Class B	Yes	Masud Attayi

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## G. Modifications to EUT

No modifications were required on the EUT.

## H. Summary of Results

SPECIFICATION		TEST TYPE	RESULT	TEST DATA APPENDIX
FCC CFR 47	IC			
Part 15, Subpart B	ICES-003	Conducted AC Line Emission	Pass	1
Part 15, Subpart B	ICES-003	Radiated Unintentional Spurious Emissions	Pass	2

### a) 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 following test configurations were measured. The Handheld was in idle and battery charging mode. The ac input voltage was 120/230 volts, 60/50 Hz where applicable for the below:

1. The Handheld was connected to the Folding Blade Charger and to the Stereo Headset.
2. The Handheld was connected to the Alternative Folding Blade Charger.
3. The Handheld was connected to the Captive Cable Charger and to the Stereo Headset.

The sample EUT's conducted emissions were compared with respect to the FCC CFR 47 Part 15, Subpart B, IC ICES-003, and EN55022 Class B limit. The sample EUT had a worse case test margin of 1.42 dB below the average limit and 11.42 dB below the Quasi-Peak limit at 0.489 MHz using the QP detector for the Folding Blade Charger, test configuration 1.

### Measurement Uncertainty $\pm 2.0$ 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 1.0 GHz. Both the horizontal and vertical polarisations 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 file number is **IC4240**.

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

The Handheld was in idle and battery charging mode. The ac input voltage was 120 volts, 60 Hz where applicable for the below. The following test configurations were measured:

1. The Handheld was connected to the Folding Blade Charger.
2. The Handheld was connected to the Captive Cable Charger and to the Stereo Headset.
3. The Handheld was connected to the Captive Cable Charger.
4. The Handheld was connected to the PC and its support equipment.
5. The Handheld was connected to the Alternative Folding Blade Charger.

The system's radiated emission levels in idle mode were compared with respect to the FCC CFR 47 Part 15, Subpart B, IC ICES-003, and EN55022 Class B limit.

The system met the requirements with a worse case emission test margin of 5.24 dB at 58.66 MHz using test configuration 2.

### **Sample Calculation:**

Field Strength (dB $\mu$ V/m) is calculated as follows:

FS = Measured Level (dB $\mu$ 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 2.

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## I. 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	07-11-23	Radiated Emissions
Preamplifier system	TDK RF Solutions	PA-02	080010	07-11-22	Radiated Emissions
EMI Receiver	Agilent	8546A	3942A00517	07-09-21	Conducted/Radiated Emissions
RF Filter Section	Agilent	85460A	3704A00481	07-09-21	Conducted/Radiated Emissions
Digital Multimeter	Hewlett Packard	34401A	US36042324	07-09-19	Conducted/Radiated Emissions
Environment Monitor	Control Company	1870	230355190	07-12-28	Conducted/Radiated Emissions
L.I.S.N.	Emco	3816/2	1120	08-08-28	Conducted Emissions
Impulse Limiter	Rohde & Schwarz	ESHS-Z2	836248/052	07-11-20	Conducted Emissions
Hybrid Log Antenna	TDK	HLP-3003C	17401	08-08-04	Radiated Emissions
Universal Radio Communication Tester	R&S	CMU 200	837493/073	07-12-01	Radiated/Conducted Emission
EMI Test Receiver	R&S	ESIB 40	100255	07-05-11	Radiated Emission



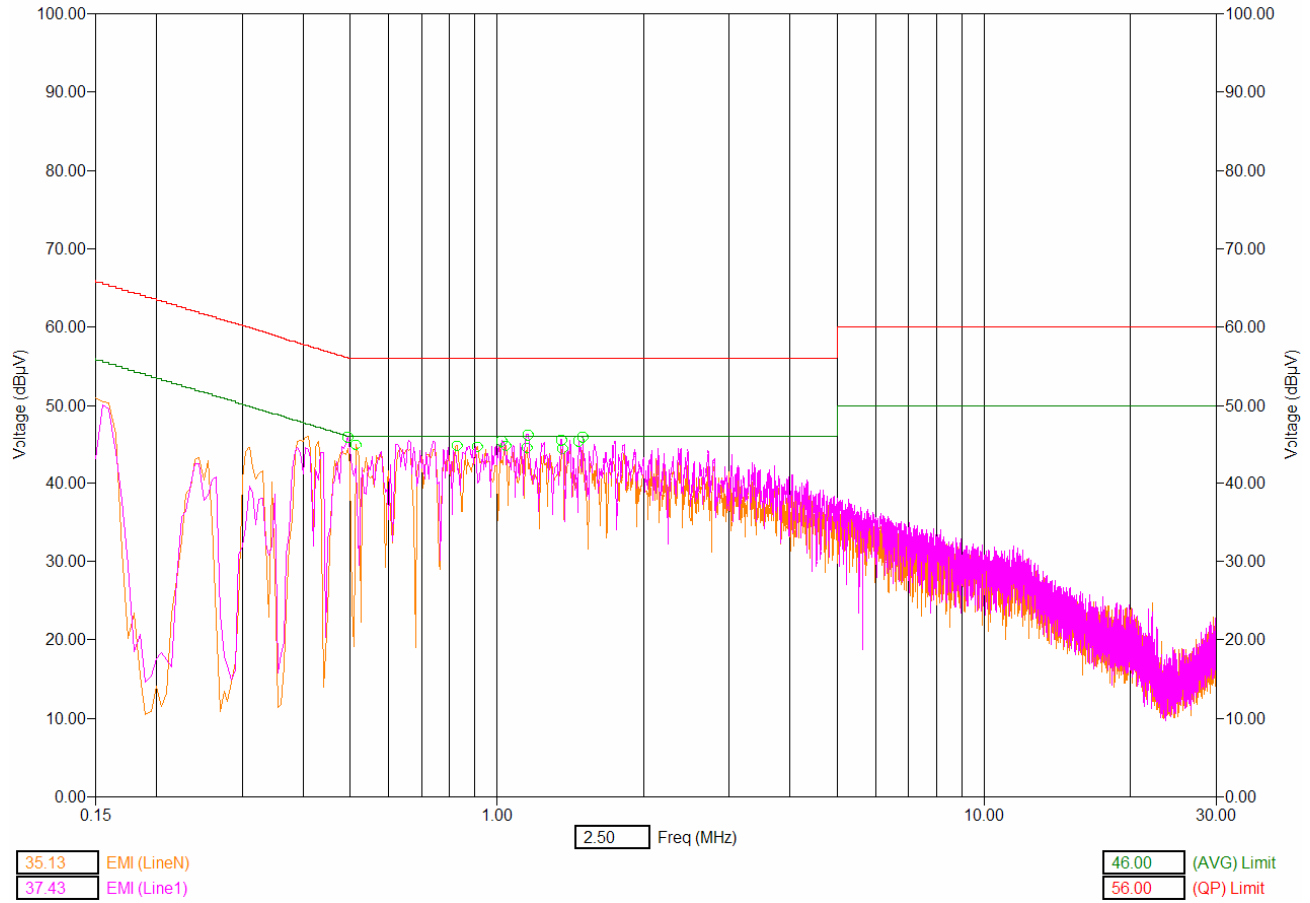
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## APPENDIX 1 - AC LINE CONDUCTED EMISSIONS TEST DATA



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### AC Conducted Emissions Test Graph 1

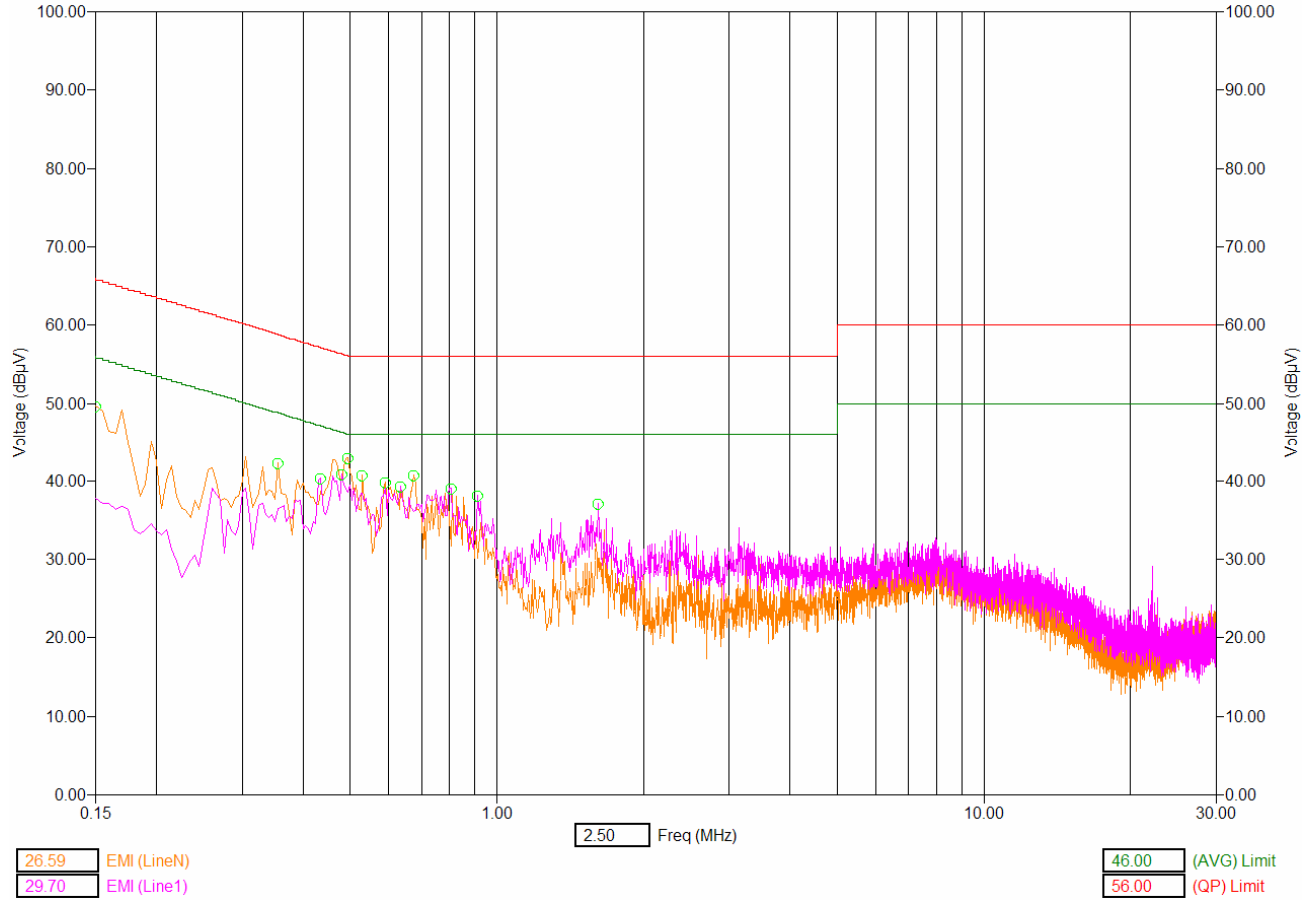


### Test Configuration 1



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### AC Conducted Emissions Test Graph 2

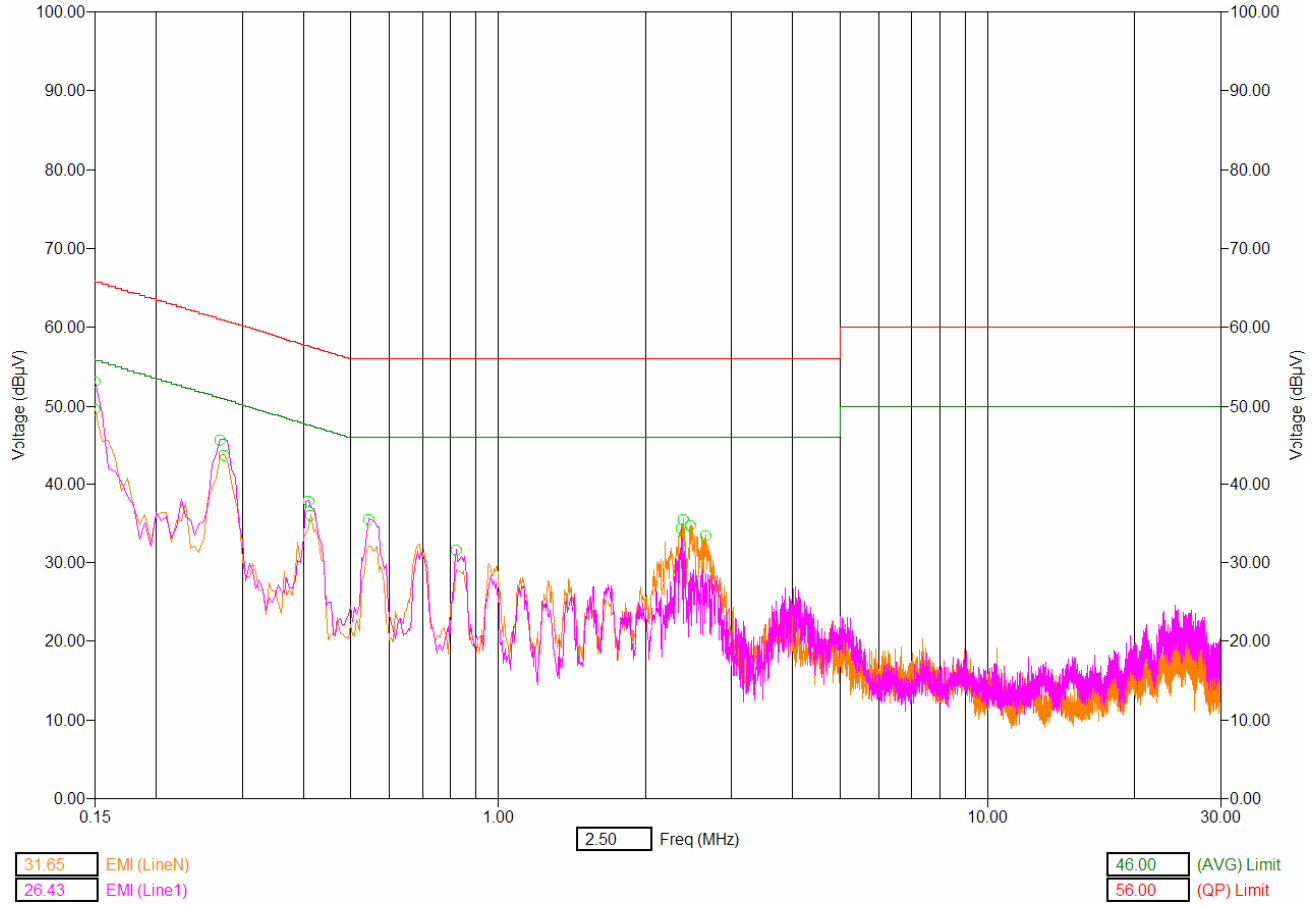


### Test Configuration 2



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### AC Conducted Emissions Test Graph 3



### Test Configuration 3

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## APPENDIX 2 - RADIATED EMMISIONS TEST DATA





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Radiated Emissions Test Results cont'd

The environmental test conditions were:    Temperature                  23°C  
     Pressure                              1008 mb  
     Relative Humidity              22%

Test Configuration 2

FCC CFR 47 Part 15, Subpart B, Class B

Date of test: February 14, 2007

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)							
40.65	V	2.28	140	QP	48.69	-21.06	27.63	40.00	-12.37
55.75	V	1.42	46	QP	54.99	-22.76	32.23	40.00	-7.77
58.05	V	1.75	352	QP	56.23	-22.79	33.44	40.00	-6.56
58.24	V	1.40	352	QP	57.09	-22.70	34.39	40.00	-5.61
58.66	V	1.44	352	QP	57.38	-22.62	34.76	40.00	<b>-5.24</b>
58.56	V	2.27	352	QP	54.02	-22.57	31.45	40.00	-8.55
59.00	H	3.75	284	QP	45.23	-22.49	22.74	40.00	-17.26
109.91	H	2.47	273	QP	44.14	-18.45	25.69	43.50	-17.81
110.33	H	2.93	263	QP	44.57	-18.42	26.15	43.50	-17.35
114.59	H	2.84	256	QP	46.57	-18.22	28.35	43.50	-15.15
115.09	H	2.79	276	QP	47.01	-18.20	28.81	43.50	-14.69
121.20	H	2.95	104	QP	47.10	-18.18	28.92	43.50	-14.58





