

EMI Test Report

Tested in accordance with
Federal Communications Commission (FCC)
Personal Communications Services
CFR 47, Parts 15, Subpart B
and
Industry Canada (IC), ICES-003



Research In Motion Limited

REPORT NO.: RIM-0111-0409-02

PRODUCT MODEL NO.: RAS10WW

TYPE NAME: BlackBerry Wireless Handheld

FCC ID: L6ARAS10WW

IC: 2503A-RAS10WW

Date: _____28 September 2004_____

**Statement of Performance:**

The BlackBerry Wireless Handheld, model RAS10WW 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 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.

Tested by and Reviewed by:

Masud S. Attayi, P.Eng.
Senior Compliance Engineer

Date: September 29, 2004

Reviewed by:

Paul Lock
Senior Compliance Specialist

Date: September 29, 2004

Approved by:

Paul G. Cardinal, Ph.D.
Manager, Compliance and Certification

Date: September 30, 2004



Table of Contents

A) Scope	Pg. 3
B) Associated Document	Pg. 3
C) Product Identification	Pg. 3
D) Support Equipment Used for Testing of the EUT	Pg. 4
E) Test Voltage	Pg. 4
F) Test Results Chart	Pg. 4
G) Modifications to EUT	Pg. 4
H) Summary of Results	Pg. 5
I) Compliance Test Equipment Used	Pg. 7

Appendix 1 Radiated Emissions Test Data

A) Scope

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

FCC CFR 47 Part 15, Subpart B, Oct. 1, 2000, Class B Digital Devices, Unintentional Radiators
IC ICES-003 Issue 3, Class B Digital Devices, Unintentional Radiators

B) Associated Document

1. Test report number RIM-0111-0409-01

C) Product Identification

The equipment under test (EUT) was tested at the Research In Motion (RIM) EMI test facility, located at:

305 Phillip Street
Waterloo, Ontario
Canada, N2L 3W8
Phone: 519 888 7465
Fax: 519 888 6906
Web Site: www.rim.com

The testing began on August 31, 2004 and was completed on September 23, 2004. The sample EUT included:

- 1a. BlackBerry Wireless Handheld, model number RAS10WW, ASY-07434-001 Rev. 002, serial number 1004231791, FCC ID L6ARAS10WW, IC: 2503A-RAS10WW.
- 1b. BlackBerry Wireless Handheld, model number RAS10WW, ASY-07434-001 Rev. 002, serial number 1004230997, FCC ID L6ARAS10WW, IC: 2503A-RAS10WW.
2. Travel Charger, model number PSM05R-050CH, part number ASY-03746-003 with an output voltage of 5.0 volts dc, 0.5 amps and attached USB cable with a lead length of 0.71 metres.
3. External Battery Charger model number BCM6710A, part number ASY-06630-001 with a dc output of 4.2 volts, 0.75 amps for charging the internal battery and 5.1 volts, 0.75 amps for charging an external battery.
4. North American Travel Charger, model number PSM04A-050RIM, part number ASY-07040-001 with an output voltage of 5.0 volts dc, 0.85 amps and attached USB cable with a lead length of 0.73 metres.
5. Travel Charger, model number PSM05R-050Q, part number ASY-04078-001 with an output of 5.0 volts dc, 0.5 amps.

6. Rapid Battery Travel Charger, model number PSM08R-050RIM, part number ASY-07041-001 with an output voltage of 5.0 volts dc, 1.6 amps and attached USB cable with a lead length of 0.85 metres.
7. USB data cable, model number HDW-06610-001, 1.45 metres long.
8. Headset, model number HDW-03458-001. The lead length was 1.25 metres long.

The BlackBerry Wireless Handheld has 802.11b functionality operating in the frequency range of 2412 to 2462 MHz.

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 24B022952648
- 3) Printer, H/P, model number C5884A, serial number US8251W0VQ

E) Test Voltage

The ac input voltage was 120 volts, 60 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	AC Conducted Emissions	See test report RIM-0111-0409-01	
FCC CFR 47 Part 15, Subpart B IC ICES-003	Radiated Emissions	Yes	Masud Attayi

G) Modifications to EUT

No modifications were required on the EUT.

H) Summary of Results

1) AC CONDUCTED EMISSIONS

The conducted emissions were measured while using the test procedure outlined in CISPR Recommendation 22. To view the test results, see test report number RIM-0086-0407-01.

2) 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 wooden table, 80 cm high that was positioned on a remotely rotatable 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. At this point 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 following test configurations were measured:

1. The Handheld in battery charging mode was connected to the Travel Charger, part number ASY-03746-003.
2. The Handheld in battery charging mode was connected to the External Battery Charger, part number ASY-06630-001 via the detachable USB cable model number HDW-06610-001.
3. The Handheld in battery charging mode was connected to the North American Travel Charger, part number ASY-07040-001.
4. The Handheld in battery charging mode was connected to the Travel Charger, part number ASY-04078-001 via the detachable USB cable model number HDW-06610-001.
5. The Handheld in battery charging mode was connected to the Rapid Battery Travel Charger, part number ASY-07041-001.
6. The Handheld was connected to the support PC via the USB data cable for charging and data link.

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

The system **passed** with a worse case emission test margin of 1.0 dB at 73.117 MHz with the Travel Charger part number ASY-0741-001 test configuration.

Sample Calculation:

Field Strength (dB μ V/m) is calculated as follows:

$$FS = \text{Measured Level (dB}\mu\text{V)} + A.F. \text{ (dB/m)} + \text{Cable Loss (dB)} - \text{Preamp (dB)} + \text{Filter Loss (dB)}$$

Measurement Uncertainty ± 4.0 dB

To view the test data see APPENDIX 1.

l) 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>
Preamplifier	Sonoma	310N/11909A	185831	04-11-05	Radiated Emissions
Preamplifier system	TDK RF Solutions	PA-02	080010	04-11-05	Radiated Emissions
EMI Receiver	Agilent	85462A	3942A00517	05-08-30	Radiated Emissions
RF Filter Section	Agilent	85460A	3704A00481	05-08-30	Radiated Emissions
Environment Monitor	Control Company	1870	230355190	06-01-11	Radiated Emissions
Hybrid Log Antenna	TDK	HLP-3003C	17301	04-12-16	Radiated Emissions

APPENDIX 1

RADIATED EMISSIONS TEST DATA

Radiated Emissions Test Results

FCC CFR 47 Part 15, Subpart B, Class B

September 08, 2004

Operating Mode: The Handheld was connected to the Travel Charger, part number ASY-03746-003.

The ac input to the Travel Charger was 120 volts, 60 Hz. The Handheld was operating in battery charging mode. The Headset was connected to the Handheld.

Test distance was 3.0 metres.

Frequency (MHz)	Antenna		Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dBμV)	Correction Factors 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)							
33.555	H	2.03	111	Q.P.	42.94	-18.64	24.30	40.00	-15.70
33.741	V	1.57	170	Q.P.	51.30	-18.64	32.66	40.00	-7.34
35.981	H	2.86	105	Q.P.	42.38	-19.34	24.04	40.00	-15.96
46.151	V	1.87	152	Q.P.	48.33	-21.47	26.86	40.00	-13.14
52.956	V	2.38	177	Q.P.	41.07	-22.36	18.71	40.00	-21.29
73.392	V	2.43	8	Q.P.	45.07	-21.59	23.48	40.00	-16.52
102.438	H	1.92	302	Q.P.	43.43	-19.50	23.93	43.50	-19.57
107.298	H	1.99	296	Q.P.	38.24	-19.06	19.18	43.50	-24.32
175.681	H	1.81	334	Q.P.	44.10	-17.64	26.46	43.50	-17.04
936.436	H	2.34	358	Q.P.	21.58	0.51	22.09	46.00	-23.91

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

Radiated Emissions Test Results cont'd

FCC CFR 47 Part 15, Subpart B, Class B

September 09, 2004

Operating Mode: The Handheld was connected via the detachable USB cable model number HDW-06610-001 to the External Battery Charger, part number ASY-06630-001. The ac input to the External Battery Charger was 120 volts, 60 Hz. The Handheld was operating in battery charging mode. The Headset was connected to the Handheld.

Test Distance was 3.0 metres.

Frequency (MHz)	Antenna		Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dB μ V)	Correction Factors for preamp/antenna/cables/ filter (dB/m)	Field Strength Level (reading+corr.)	Limit @ 3.0 m	Test Margin
	Pol. (V/H)	Height (metres)					(dB μ V/m)	(dB μ V/m)	(dB)
124.655	V	1.67	329	Q.P.	37.22	-17.54	19.68	43.50	-23.82
135.117	V	1.50	291	Q.P.	36.52	-17.96	18.56	43.50	-24.94
145.178	H	2.23	180	Q.P.	40.71	-18.30	22.41	43.50	-21.09
155.977	H	2.81	130	Q.P.	37.84	-18.28	19.56	43.50	-23.94
904.709	H	2.47	172	Q.P.	21.86	-0.19	21.67	46.00	-24.33
923.047	H	3.46	171	Q.P.	21.78	0.08	21.86	46.00	-24.14

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

Radiated Emissions Test Results cont'd

FCC CFR 47 Part 15, Subpart B, Class B

September 08, 2004

Operating Mode: The Handheld was connected to the North American Travel Charger, part number ASY-07040-001. The ac input to the North American Travel Charger was 120 volts, 60 Hz. The Handheld was operating in battery charging mode. The Headset was connected to the Handheld.

Test Distance was 3.0 metres.

Frequency (MHz)	Antenna		Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dB μ V)	Correction Factors for preamp/antenna/cables/ filter (dB/m)	Field Strength Level (reading+corr.)	Limit @ 3.0 m	Test Margin
	Pol. (V/H)	Height (metres)					(dB μ V/m)	(dB μ V/m)	(dB)
33.488	H	1.87	352	Q.P.	40.15	-18.64	21.51	40.00	-18.49
33.641	V	1.75	187	Q.P.	48.59	-18.51	30.08	40.00	-9.92
71.942	V	2.30	37	Q.P.	38.86	-21.68	17.18	40.00	-22.82
145.386	H	2.41	360	Q.P.	39.95	-18.30	21.65	43.50	-21.85
155.933	H	2.25	148	Q.P.	40.99	-18.28	22.71	43.50	-20.79
165.961	H	1.59	180	Q.P.	40.76	-18.00	22.76	43.50	-20.74
166.721	H	1.72	348	Q.P.	43.32	-17.99	25.33	43.50	-18.17
167.067	H	1.73	3	Q.P.	39.96	-17.98	21.98	43.50	-21.52
903.662	V	3.50	246	Q.P.	21.48	-0.21	21.27	46.00	-24.73

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

Radiated Emissions Test Results cont'd

FCC CFR 47 Part 15, Subpart B, Class B

September 08, 2004

Operating Mode: The Handheld was connected via the detachable USB cable model number HDW-06610-001 to the Travel Charger, part number ASY-04078-001. The ac input to the Travel Charger was 120 volts, 60 Hz. The Handheld was operating in battery charging mode. The Headset was connected to the Handheld.

Test Distance was 3.0 metres.

Frequency (MHz)	Antenna		Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dBµV)	Correction Factors for preamp/antenna/cables/ filter (dB/m)	Field Strength Level (reading+corr.)	Limit @ 3.0 m	Test Margin
	Pol. (V/H)	Height (metres)					(dBµV/m)	(dBµV/m)	(dB)
37.023	H	3.68	252	Q.P.	36.97	-19.63	17.34	40.00	-22.66
40.769	H	3.69	278	Q.P.	42.68	-20.50	22.18	40.00	-17.82
41.849	V	1.65	193	Q.P.	56.29	-20.70	35.59	40.00	-4.41
75.660	V	1.51	240	Q.P.	44.04	-21.41	22.63	40.00	-17.37
81.312	V	1.42	45	Q.P.	45.39	-20.73	24.66	40.00	-15.34
87.184	V	1.68	222	Q.P.	38.98	-20.36	18.62	40.00	-21.38
124.975	H	1.67	144	Q.P.	47.15	-17.54	29.61	43.50	-13.89
137.452	V	1.43	241	Q.P.	38.71	-18.03	20.68	43.50	-22.82
145.660	H	2.10	348	Q.P.	43.60	-18.32	25.28	43.50	-18.22
155.986	H	2.23	333	Q.P.	50.66	-18.28	32.38	43.50	-11.12
893.099	V	2.50	297	Q.P.	21.68	-0.42	21.26	46.00	-24.74

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

Radiated Emissions Test Results cont'd

FCC CFR 47 Part 15, Subpart B, Class B

September 08, 2004

Operating Mode: The Handheld was connected to the Rapid Battery Travel Charger, part number ASY-07041-001. The ac input to the Rapid Battery Travel Charger was 120 volts, 60 Hz. The Handheld was operating in battery charging mode. The Headset was connected to the Handheld.

Test Distance was 3.0 metres.

Frequency (MHz)	Antenna		Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dBµV)	Correction Factors for preamp/antenna/cables/ filter (dB/m)	Field Strength Level (reading+corr.)	Limit @ 3.0 m	Test Margin
	Pol. (V/H)	Height (metres)					(dBµV/m)	(dBµV/m)	(dB)
34.583	V	1.43	182	Q.P.	46.11	-18.96	27.15	40.00	-12.85
72.243	H	2.24	31	Q.P.	57.75	-21.66	36.09	40.00	-3.91
73.117	V	2.33	18	Q.P.	60.56	-21.60	38.95	40.00	-1.05
100.835	H	2.77	128	Q.P.	46.63	-19.67	26.98	43.50	-16.52
104.826	V	2.45	194	Q.P.	43.16	-19.28	23.88	43.50	-19.62
110.992	H	2.75	115	Q.P.	46.21	-18.71	27.50	43.50	-16.00
142.219	V	1.40	246	Q.P.	42.29	-18.20	24.09	43.50	-19.41
145.383	H	2.30	134	Q.P.	40.05	-18.31	21.74	43.50	-21.76
156.036	H	2.24	306	Q.P.	46.16	-18.28	27.88	43.50	-15.62
166.837	H	1.20	199	Q.P.	41.73	-17.99	23.74	43.50	-19.76
198.741	V	1.40	190	Q.P.	38.83	-15.79	23.04	43.50	-20.46

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



Radiated Emissions Test Results cont'd

FCC CFR 47 Part 15, Subpart B, Class B

September 08, 2004

Operating Mode: The Handheld was connected to the support PC via the detachable USB cable model number HDW-06610-001 for charging and data link. The Headset was connected to the Handheld. The ac input to the support PC was 120 volts, 60 Hz.

Test Distance was 3.0 metres.

[illegible]

Radiated Emissions Test Photo