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-0054-0307-05

PRODUCT MODEL NO.: R6030GN
TYPE NAME: BlackBerry Wireless Handheld
FCC ID: L6AR6030GN
IC: 2503A-R6030GN

Date: 15 July 2003

Report No. RIM-0054-0307-05 Test Date: July 08, 2003

Statement of Performance:

The BlackBerry Wireless Handheld, model R6030GN ASY-06030-001 version 003, tested with the following accessories: Travel Charger model number PSM05R-050Q part number ASY-04078-001, Audio Headset part number HDW-03458-001, Docking/Charging Cradle part number ASY-05821-001 and USB Data Cable part number ASY-06005-001 when configured and operated per RIM's operation instructions, performs within the requirements of the test standards.

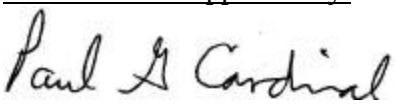
Declaration:

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:

Masud S. Attayi, P.Eng.
Senior Compliance Engineer Date: 15 July 2003

Reviewed and Approved by:



Paul G. Cardinal, Ph.D.
Manager, Compliance and Certification Date: 18 July 2003

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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, Nov. 22, 1997, Class B Digital Devices, Unintentional Radiators

B) 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.net

The testing began on July 08, 2003 and completed on July 08, 2003. The sample equipment under test (EUT) included:

1a BlackBerry Wireless Handheld, model number R6030GE, ASY-06048-001 version 003, PIN 20046AC5, IMEI 001020.00.032365.0, FCC ID L6AR6030GE, IC: 2503A-R6030GE.
1b BlackBerry Wireless Handheld, model number R6030GN, ASY-06030-001 version 003, PIN 2004A97F, IMEI 001020.00.053036.0, FCC ID L6AR6030GN, IC: 2503A-R6030GN.
2. Docking/Charging Cradle part number ASY-05821-001. The lead length was 1.9 metres.
3. Travel Charger, model number PSM05R-050Q, part number ASY-04078-001 with an output voltage of 5.0 volts dc. The output lead length was 1.94 metres long.
4. USB Data Cable part number ASY-06005-001. The lead length was 1.4 metres long.
5. Headset model number HDW-03458-001. The lead length was 1.25 metres long.

For the purpose of this report, items 1a and 1b are interchangeable. The difference between the two models is the transmitting frequency range and antenna, filter and matching components.
The transmit frequency bands for the BlackBerry Wireless Handheld model R6030GE are: GSM, 880 to 915 MHz, DCS 1710 to 1785 MHz and PCS 1850 to 1910 MHz.
The transmit frequency ranges for the BlackBerry Wireless Handheld model R6030GN are: GSM 824 to 849 MHz, DCS 1710 to 1785 MHz and PCS 1850 to 1910 MHz.

Only the GSM 850 band and PCS band emission results are presented here.

C) Support Equipment Used for the Testing of the EUT

1) Rohde & Schwarz, Universal Radio Communication Tester, model CMU200, serial number 837493/073
2) PC System, Myraid, model EN-P3B-7, serial number CCC0004078
3) Monitor, ViewSonic, model number VCDTS23103-2M, serial number 24B022952648
4) Printer, H/P, model number C5884A, serial number US8251W0VQ

D) Test Voltage

The ac input voltage was 120 volts, 60 Hz and 230 volts, 50 Hz. This configuration was per manufacturer's specifications.

E) Test Results Chart

SPECIFICATION	Test Type	MEETS REQUIREMENTS	Performed By
FCC CFR 47 Part 15, Subpart B IC ICES-003	Class B	Yes	Masud Attayi

F) Modifications to EUT

No modifications were required on the EUT.

G) Summary of Results

a) CONDUCTED EMISSIONS

The conducted emissions were measured while 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 a spectrum analyzer system with characteristics that duplicate those of the receiver specified in CISPR Publication 16.
The Travel Charger was connected to the Handheld in battery charge mode. The ac input to the Travel Charger was 120 volts, 60 Hz.

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 19.72 dB at 2.714 MHz.

Measurement Uncertainty ±2.0 dB

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

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 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 configuration was measured:

- The Handheld was connected to the Travel Charger.
- The Handheld was connected to the support PC via the Docking/Charging Cradle 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 4.19 dB at 42.759 MHz.

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 ±4.0 dB

To view the test data see APPENDIX 2.

H) **Compliance Test Equipment Used**

UNIT	MANUFACTURER	MODEL / SERIAL NUMBER	CAL DUE DATE (YY MO DD)	USE
Preamplifier	Sonoma	310N/11909A 185831	03-10-02	Radiated Emissions
Preamplifier system	TDK	PA-02 080010	03-10-02	Radiated Emissions
EMC Analyzer	Agilent	E7405A US40240226	03-09-21	Radiated Emissions
Hybrid Log Antenna	TDK	HLP-3003C 017301	03-12-11	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU200 837493/073	04-04-05	Radiated Emissions
L.I.S.N.	Emco	3816/2 1120	03-08-29	Conducted Emissions
L.I.S.N.	Emco	3816/2 1118	03-08-29	Conducted Emissions
Impulse Limiter	Rohde & Schwarz	ESHS-Z2 836248/052	03-10-04	Conducted Emissions
EMI Receiver	Agilent	85462A 3942A00517	03-10-04	Conducted Emissions
RF Filter Section	Agilent	85460A 3704A00481	03-10-04	Conducted Emissions

APPENDIX 1

CONDUCTED EMISSIONS TEST DATA/PLOTS

Conducted Emissions Test Results

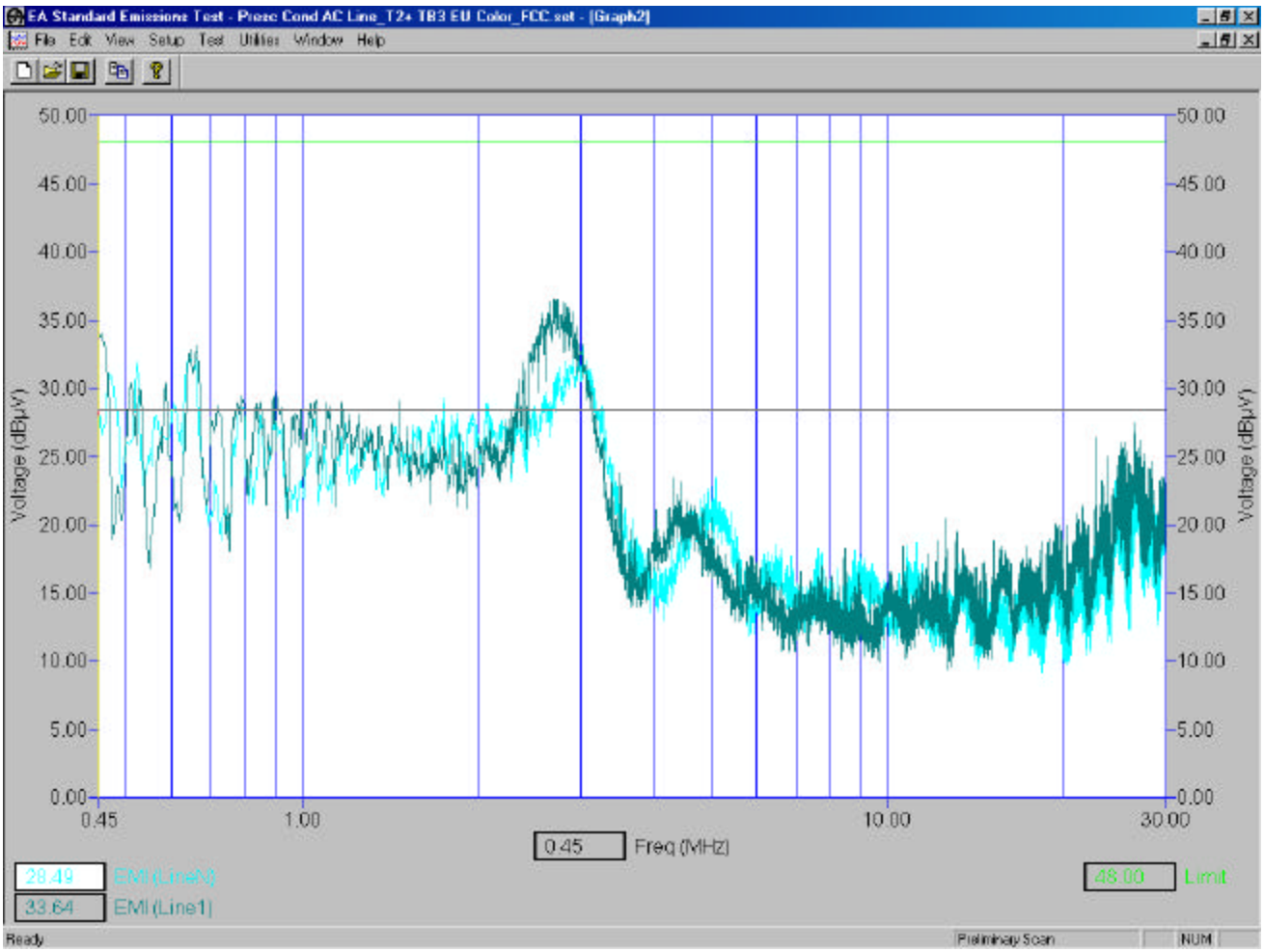
FCC CFR 47 Part 15, Subpart B, Class B June 02, 2003

Operating Mode: The Travel Charger was connected to the Handheld in battery charge mode. The ac input to the Travel Charger was 120 volts, 60 Hz.

Frequency (MHz)	Line	READING Quasi-Peak (dBµV)	Correction Factors for Impulse Limiter, LISN, Cable (dB)	QP Level (reading + Corr.Factor) (dB)	Limit (dBµV)	Margin (dB)
0.457	H	14.88	9.77	24.65	48.0	-23.35
0.459	N	14.47	9.77	24.24	48.0	-23.76
0.644	H	18.24	9.79	28.03	48.0	-19.97
0.646	N	18.04	9.79	27.83	48.0	-20.17
2.389	H	17.23	9.88	27.11	48.0	-20.90
2.534	H	17.52	9.89	27.41	48.0	-20.60
2.583	H	18.33	9.89	28.22	48.0	-19.78
2.714	H	18.38	9.90	28.28	48.0	-19.72

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

Conducted Emissions Test Graph



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

Conducted Emission Test-Setup Photo

FCC CFR 47 Part 15, Subpart B, Class B

APPENDIX 2

RADIATED EMISSIONS TEST DATA

Radiated Emissions Test Results

FCC CFR 47 Part 15, Subpart B, Class B July 08, 2003

Operating Mode: The Handheld was connected to the Travel Charger. The Handheld was operating in battery charging mode. The Headset was connected to the Handheld.

Test Distance was 3.0 metres.

Frequency (MHz)	Antenna Pol. (V/H)	Antenna Height (metres)	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)
42.759	V	1.47	161	Q.P.	56.99	-21.18	35.81	40.0	-4.19
43.366	H	2.99	119	Q.P.	49.60	-21.33	28.27	40.0	-11.73
74.133	V	1.76	99	Q.P.	40.59	-20.85	19.74	40.0	-20.26
83.883	V	1.44	163	Q.P.	50.19	-20.86	29.33	40.0	-10.67
128.205	V	1.44	82	Q.P.	40.14	-18.56	21.58	43.5	-21.92
156.031	H	2.13	266	Q.P.	49.61	-18.52	31.09	43.5	-12.41
324.993	H	1.02	168	Q.P.	47.67	-12.46	35.21	46.0	-10.79
333.932	H	1.00	135	Q.P.	43.50	-12.36	31.14	46.0	-14.86
337.989	V	2.63	115	Q.P.	40.26	-12.33	27.93	46.0	-18.07
350.987	V	2.21	139	Q.P.	38.16	-12.21	25.95	46.0	-20.05

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

Radiated Emissions Test Results con't

FCC CFR 47 Part 15, Subpart B, Class B July 08, 2003

Operating Mode: The Handheld was connected to the support PC via the Docking/Charging Cradle for charging and data link.

Test Distance was 3.0 metres.

Frequency (MHz)	Antenna Pol. (V/H)	Antenna Height (metres)	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)
62.117	H	3.20	229	Q.P.	48.79	-21.74	27.05	40.0	-12.95
63.312	V	2.28	161	Q.P.	48.82	-21.68	27.14	40.0	-12.86
63.415	H	3.45	253	Q.P.	52.66	-21.68	30.98	40.0	-9.02
67.032	H	3.66	229	Q.P.	46.59	-21.43	25.16	40.0	-14.84
68.697	V	2.06	296	Q.P.	46.55	-21.26	25.29	40.0	-14.71
72.035	H	2.30	69	Q.P.	54.03	-21.01	33.02	40.0	-6.98
72.095	V	2.14	321	Q.P.	56.30	-21.00	35.30	40.0	-4.70
73.323	V	2.67	272	Q.P.	44.52	-20.92	23.60	40.0	-16.40
108.200	V	1.89	115	Q.P.	38.04	-19.25	18.79	43.5	-24.71
600.477	H	1.00	210	Q.P.	42.41	-5.68	36.73	46.0	-9.27
604.145	H	1.00	206	Q.P.	45.23	-5.68	39.55	46.0	-6.45
960.112	V	1.81	278	Q.P.	38.23	-0.04	38.19	54.0	-15.81

Radiated Emissions Test Photos