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

RIM Testing Services (RTS)

A division of Research In Motion Limited

REPORT NO.: RTS-0441-0611-10-Rev1

PRODUCT MODEL NO.: RBM41GW
TYPE NAME: BlackBerry
FCC ID: L6ARBM40GW
IC: 2503A-RBM40GW

DATE: 5 January 2007

Statement of Performance:

The BlackBerry Handheld, model RBM41GW, part number CER-13626-001 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.

Tested and Reviewed by:

Masud S. Attayi, P. Eng.
Team Lead, Regulatory Compliance
Date: January 5, 2007

Reviewed by:

Maurice Battler
Compliance Specialist
Date: January 5, 2007

Approved by:

Paul G. Cardinal, Ph.D.
Director
Date: January 5, 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

B. Associated Document

1. Document number RTS-0441-RBG41GW-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 sample EUT included:

1. BlackBerry model RBG41GW, part number CER-13626-001 Rev 1, PIN 20502F1C, LCD-11059-003.
2. BlackBerry model RBG41GW, part number CER-13626-001 Rev 1, PIN 20505679, LCD-11059-002.
3. BlackBerry model RBG41GW, part number CER-13626-001 Rev 2, PIN 2053032F, LCD-11059-001.

Sample numbers 1, 2 and 3 were used for radiated emission and radiated band edge testing. Sample number 1 was used for conducted tests.

To view the differences between CER-13626-001 Rev 1 and CER-13626-001 Rev 2 see document number RTS-0441-RBG41GW-01.

Only the measurements that may have been impacted by the changes from Rev 1 to Rev 2 were re-measured.

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) Mono Headset, part number HDW-12420-001, 1.25 metres long.
6) Stereo Headset, part number HDW-13019-001, 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

G. Modifications to EUT

No modifications were required on the EUT.

H. Summary of Results

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 to the charger was 230 volts, 50 Hz for the below:

1. The Handheld 1 was connected to the Folding Blade Charger and to the Stereo Headset.
2. The Handheld 1 was connected to the Captive Cable Charger and to the Mono 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 17.36 dB below the limit at 0.888 MHz using the AV detector, and a test margin of 5.36 dB below the limit at 0.944 MHz using the QP detector with the Folding Blade Charger, test configuration 1.

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

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

4. The Handheld 1 was connected to the PC via the USB cable and Mono Headset. The PC is connected to it's support equipment monitor, printer, keyboard, and mouse.
5. The Handheld 2 was connected to the Folding Blade Charger and to the Stereo Headset.
6. The Handheld 1 was connected to the Folding Blade Charger and to the Mono Headset.
7. The Handheld 1 was connected to the Captive Cable 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 7.47 dB at 51.23 MHz using test configuration 7.

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.

I. Compliance Test Equipment Used

UNIT	MANUFACTURER	MODEL	SERIAL NUMBER	CAL DUE DATE (YY MM DD)	USE
Preamplifier	Sonoma	310N/11909A	185831	06-11-27	Radiated Emissions
Preamplifier system	TDK RF Solutions	PA-02	080010	06-11-25	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	06-12-23	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	07-03-23	Radiated/Conducted Emission
EMI Test Receiver	R&S	ESIB 40	100255	07-05-11	Radiated Emission

APPENDIX 1 - AC LINE CONDUCTED EMISSIONS TEST DATA

AC Conducted Emissions Test Results

The environmental test conditions were:

Temperature	24ºC
Pressure	1087mb
Relative Humidity	22%

Test Configuration 1

Date of test: October 27, 2006

FCC CFR 47 Part 15, Subpart B, IC ICES-003 and EN 55022, Class B

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor for Impulse Limiter, LISN, Cable (dB)	Corrected Reading (QP) (dB)	Limit (QP) (dBµV)	Margin (QP) Limits (dB)
0.863	L1	31.06	8.94	40.00	56.00	-16.00
0.944	L1	41.59	9.05	50.64	56.00	**-5.36**
0.954	N	32.39	9.05	41.44	56.00	-14.56
1.053	N	40.51	9.08	49.59	56.00	-6.41
1.071	L1	34.70	9.32	44.02	56.00	-11.98
1.623	N	34.55	9.32	43.87	56.00	-12.13
1.632	N	37.19	9.37	46.56	56.00	-9.44
1.712	L1	35.75	9.52	45.27	56.00	-10.83
1.769	N	22.44	9.52	31.96	56.00	-24.14
2.244	L1	38.57	9.57	48.14	56.00	-7.96

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.

AC Conducted Emissions Test Results

The environmental test conditions were:

Temperature	24ºC
Pressure	1087mb
Relative Humidity	22%

Test Configuration 1

Date of test: October 27, 2006

FCC CFR 47 Part 15, Subpart B, IC ICES-003 and EN 55022, Class B

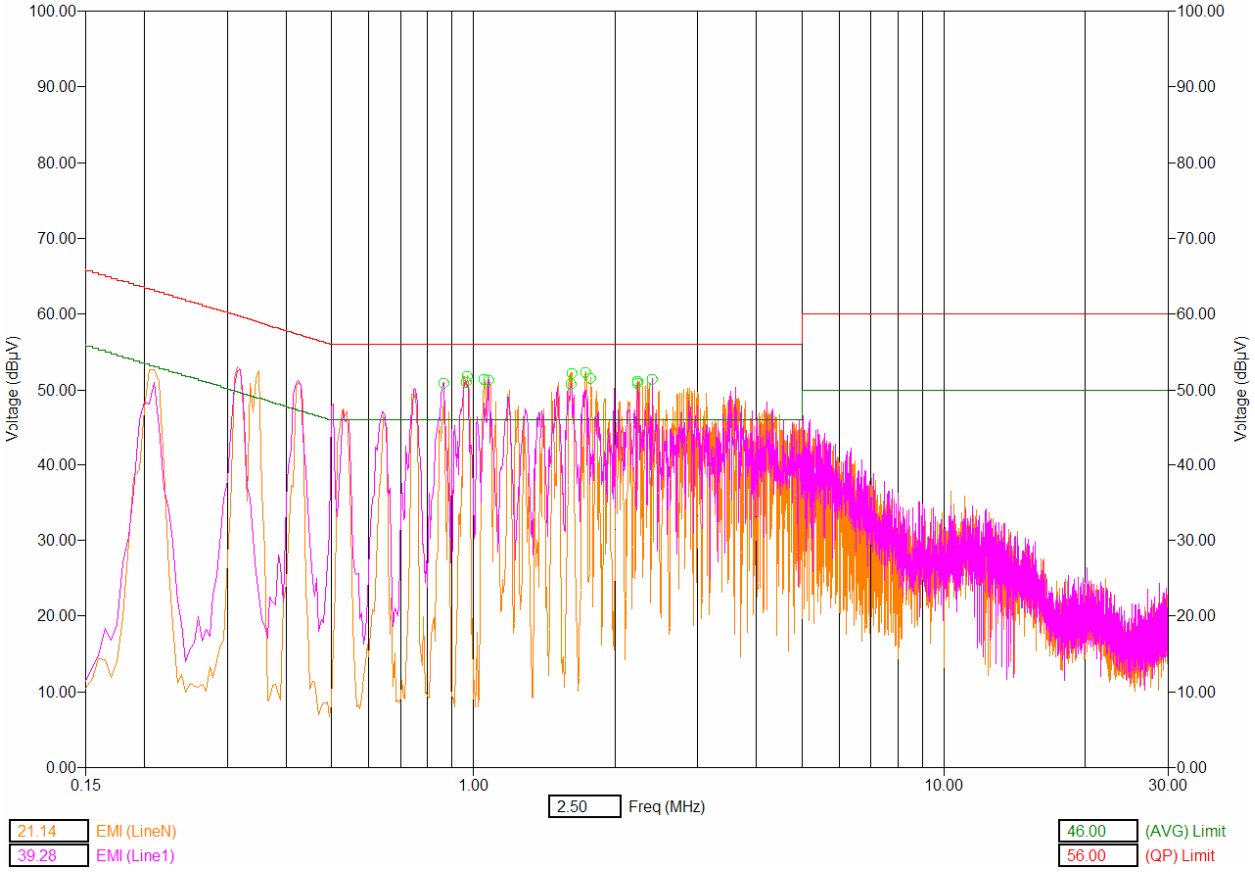
Frequency (MHz)	Line	Reading (AV) (dBµV)	Correction Factor for Impulse Limiter, LISN, Cable (dB)	Corrected Reading (AV) (dB)	Limit (AV) (dBµV)	Margin (AV) Limits (dB)
0.888	L1	19.70	8.94	28.64	46.00	**-17.36**
1.635	N	17.18	9.32	26.50	46.00	-19.50
1.792	N	15.34	9.37	24.71	46.00	-21.29
2.241	L1	17.60	9.42	27.02	46.00	-18.98
2.245	N	15.62	9.42	25.04	46.00	-20.96

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

Measurements were done with the average detector.

See graph 1 for the measurement plot.

AC Conducted Emissions Test Graph 1



Test Configuration 1

AC Conducted Emissions Test Results

Test Configuration 2

FCC CFR 47 Part 15, Subpart B (CISPR 22), IC ICES-003, Class B

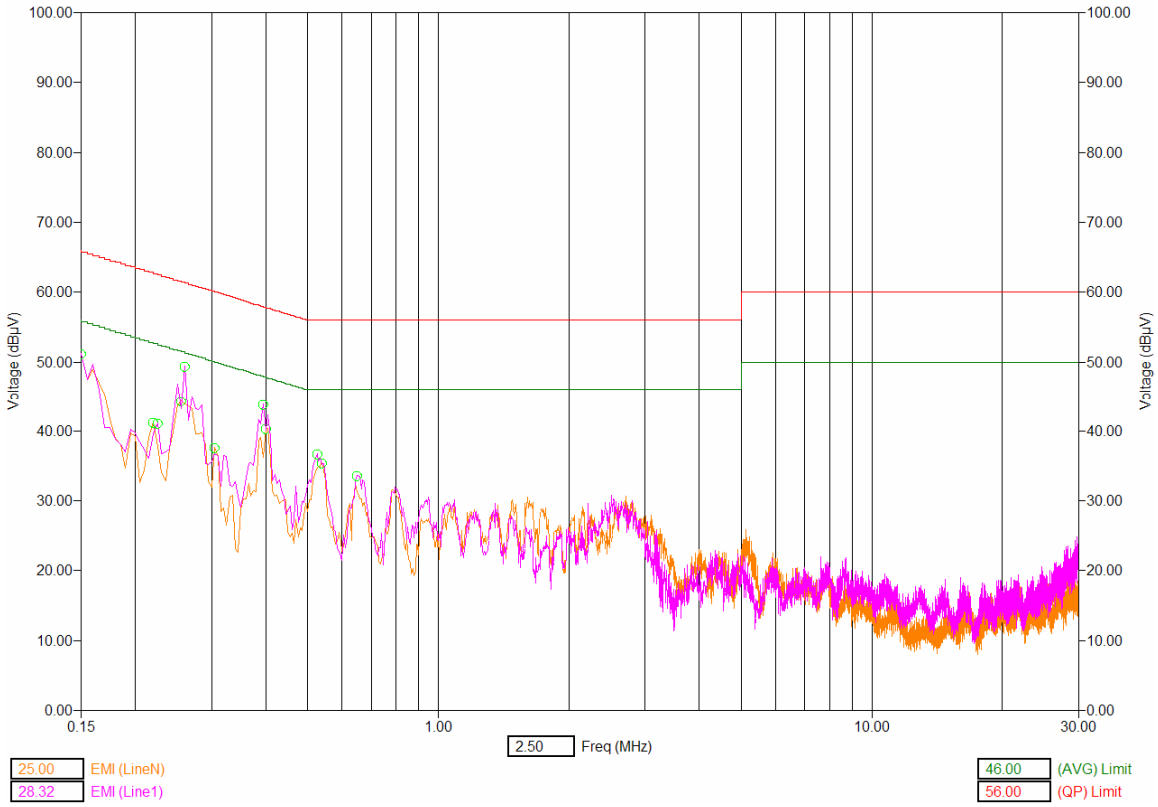
Date of test: October 27, 2006

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor (dB)	Corrected Reading (QP) (dB)	Limit (QP) (dBµV)	Limit (AV)	Margin (QP) Limits (dB)	Margin (AV) Limits (dB)
0.151	L1	38.38	8.92	47.30	66.00	56.00	-18.70	-8.70
0.152	N	36.86	8.92	45.78	66.00	56.00	-20.22	-10.22
0.218	N	20.56	8.88	29.44	62.82	52.82	-33.38	-23.38
0.238	L1	29.27	8.88	38.15	62.63	52.63	-24.48	-14.48
0.262	N	32.67	8.87	41.54	61.59	51.59	-20.05	-10.05
0.266	L1	36.02	8.87	44.89	61.43	51.43	-16.54	-6.54
0.285	N	24.17	8.85	33.02	60.11	50.11	-27.09	-17.09
0.389	L1	30.17	8.64	38.81	57.96	47.96	-19.15	-9.15
0.397	N	25.43	8.63	34.06	57.85	47.85	-23.79	-13.79
0.525	L1	25.80	8.15	33.95	56.00	46.00	-22.05	-12.05
0.540	N	24.73	8.21	32.94	56.00	46.00	-23.06	-13.06
0.645	L1	22.15	8.50	30.65	56.00	46.00	-25.35	-15.35

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

See graph 2 for the measurement plot.

AC Conducted Emissions Test Graph 2



Test Configuration 2

APPENDIX 2 - RADIATED EMMISIONS TEST DATA

Radiated Emissions Test Results

The environmental test conditions were:

Temperature	23ºC
Pressure	1050 mb
Relative Humidity	25%

Test Configuration 1

FCC CFR 47 Part 15 Subpart B, IC ICES-003 and EN 55022, Class B

Date of test: October 18, 2006

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 Factor for preamp/antenna / cables/ filter (dB/m)	Field Strength Level (reading+corr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
41.22	V	140	360	QP	44.12	-21.49	22.63	40.00	-17.37
42.72	V	140	355	QP	46.93	-21.82	25.11	40.00	-14.89
44.18	V	140	168	QP	48.42	-22.03	26.39	40.00	-13.61
45.64	V	398	168	QP	48.26	-22.33	25.93	40.00	-14.07
59.44	V	140	360	QP	52.69	-22.84	29.85	40.00	-10.15
59.91	H	98	103	QP	43.02	-22.88	20.14	40.00	-19.86
114.84	H	98	243	QP	37.90	-18.91	18.99	43.50	-24.51

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

Radiated Emissions Test Results cont'd

Test Configuration 2

FCC CFR 47 Part 15, Subpart B, Class B

Date of test: October 18, 2006

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 Factor for preamp/antenna / cables/ filter (dB/m)	Field Strength Level (reading+corr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
-	-	-	-	-	-	-	-	-	-

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

Radiated Emissions Test Results cont'd

Test Configuration 3

FCC CFR 47 Part 15, Subpart B, Class B

Date of test: November 16, 2006

Frequency (MHz)	Antenna Pol. (V/H)	Antenna Height (metres)	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)
46.93	H	104	252	QP	41.99	-22.08	19.91	40.00	-20.09
47.31	H	278	225	QP	49.45	-22.13	27.32	40.00	-12.68
47.27	H	99	218	QP	40.92	-22.16	18.76	40.00	-21.24
47.85	H	239	226	QP	46.44	-22.22	24.22	40.00	-15.78
47.84	H	277	238	QP	50.21	-22.25	27.96	40.00	-12.04
50.04	V	150	335	QP	53.14	-22.41	30.73	40.00	-9.27
50.28	V	171	343	QP	53.88	-22.41	31.47	40.00	-8.53
54.91	V	147	28	QP	49.80	-22.47	27.33	40.00	-12.67
58.31	V	155	346	QP	47.57	-22.55	25.02	40.00	-14.98
70.27	V	188	253	QP	47.14	-21.62	25.52	40.00	-14.48
101.43	H	303	260	QP	43.46	-19.67	23.79	43.50	-19.71
120.94	H	286	86	QP	45.27	-18.04	27.23	43.50	-16.27
167.30	V	145	8	QP	42.00	-17.69	24.31	43.50	-19.19
208.08	V	233	12	QP	33.01	-14.26	18.75	43.50	-24.75

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

Radiated Emissions Test Results cont'd

Test Configuration 4

FCC CFR 47 Part 15, Subpart B, Class B

Date of test: October 25, 2006

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 Factor for preamp/antenna / cables/ filter (dB/m)	Field Strength Level (reading+corr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
36.76	V	164	359	QP	40.80	-20.41	20.39	40.00	-19.61
50.47	H	99	148	QP	38.03	-22.85	15.18	40.00	-24.82
68.52	V	150	243	QP	46.05	-22.17	23.88	40.00	-16.12
100.65	H	243	52	QP	46.31	-20.60	25.71	43.50	-17.79
172.90	H	131	75	QP	41.50	-18.08	23.42	43.50	-20.08
178.28	H	170	91	QP	44.08	-17.76	26.32	43.50	-17.18
704.24	V	184	19	QP	43.48	-5.43	38.05	46.00	-7.95
901.24	H	102	96	QP	29.22	-2.09	27.13	46.00	-18.87
905.65	H	144	96	QP	33.80	-2.02	31.78	46.00	-14.22
960.13	V	141	42	QP	38.70	-0.36	38.34	54.00	-15.66

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

Radiated Emissions Test Results cont'd

Test Configuration 5

FCC CFR 47 Part 15, Subpart B, Class B

Date of test: October 25, 2006

Test Distance was 3.0 metres.

Frequency	Antenna		Test Angle	Detector	Measured Level	Correction Factor for preamp/antenna / cables/ filter	Field Strength Level (reading+corr)	Limit @ 3.0 m	Test Margin
	Pol.	Height		(Q.P. or Peak)	(dBµV)	(dB/m)	(dBµV/m)	(dBµV/m)	(dB)
(MHz)	(V/H)	(metres)	(Deg.)						
-	-	-	-	-	-	-	-	-	-

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

Radiated Emissions Test Results cont'd

Test Configuration 6

FCC CFR 47 Part 15, Subpart B, Class B

Date of test: October 23, 2006

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 Factor for preamp/antenna / cables/ filter (dB/m)	Field Strength Level (reading+corr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
-	-	-	-	-	-	-	-	-	-

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

Radiated Emissions Test Results cont'd

Test Configuration 7

FCC CFR 47 Part 15, Subpart B, Class B

Date of test: October 24, 2006

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 Factor for preamp/antenna / cables/ filter (dB/m)	Field Strength Level (reading+corr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
37.88	V	140	142	QP	33.50	-20.63	12.87	40.00	-27.13
50.88	V	187	169	QP	50.05	-22.84	27.21	40.00	-12.79
51.23	V	140	120	QP	55.41	-22.88	32.53	40.00	**-7.47**
52.22	H	110	243	QP	42.38	-22.99	19.39	40.00	-20.61
52.34	V	140	360	QP	53.34	-22.97	30.37	40.00	-9.63
52.86	H	353	269	QP	48.05	-22.91	25.14	40.00	-14.86
53.43	H	394	289	QP	46.88	-22.99	23.89	40.00	-16.11
54.83	H	98	269	QP	39.19	-22.88	16.31	40.00	-23.69
55.72	H	314	241	QP	50.27	-23.05	27.22	40.00	-12.78
59.01	V	140	319	QP	51.18	-22.84	28.34	40.00	-11.66

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