

EMI Test Report

Tested in accordance with
Federal Communications Commission (FCC)
Personal Communications Services
CFR 47 Parts 2, 22 and 24
&
Industry Canada (IC) RSS-132, 133 and RSS-GEN

RIM Testing Services (RTS)

A division of Research In Motion Limited

REPORT NO: RTS-0655-0707-31

PRODUCT MODEL NO: RBR41GW
TYPE NAME: BlackBerry® smartphone
FCC ID: L6ARBR40GW
IC: 2503A-RBR40GW
EMISSION DESIGNATOR: 248KG7W

DATE: 03 August 2007

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Statement of Performance:

The BlackBerry® smartphone, model RBR41GW, part number CER-16231-001 Rev. 3, 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.

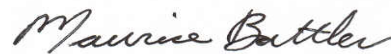
The test methods were consistent with the methods described in the relevant standards.

Documented by:



Caitlin O'Neill
Compliance Specialist
Date: 03 Aug 2007

Tested and reviewed by:



Maurice Battler
Compliance Specialist
Date: 07 Aug 2007

Reviewed by:



Masud S. Attayi, P.Eng.
Team Lead, Regulatory Compliance
Date: 07 Aug 2007

Approved by:



Paul G. Cardinal, Ph.D.
Director
Date: 08 Aug 2007

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|--|--|----------------------------------|
| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Table of Contents

| | | |
|----|---|----|
| A. | Scope | 4 |
| B. | Associated Document..... | 4 |
| C. | Product Identification | 4 |
| D. | Support Equipment Used for the Testing of the EUT | 5 |
| E. | Test Results Chart..... | 6 |
| F. | Modifications to EUT | 6 |
| G. | Summary of Results | 7 |
| H. | Compliance Test Equipment Used | 11 |
| | APPENDIX 1 - CONDUCTED RF EMISSIONS TEST DATA/PLOTS | 12 |
| | APPENDIX 2 – CONDUCTED RF OUTPUT POWER TEST DATA | 33 |
| | APPENDIX 3 – FREQUENCY STABILITY TEST DATA | 35 |
| | APPENDIX 4 – RADIATED EMISSIONS TEST DATA..... | 47 |

| | | |
|--|--|----------------------------------|
| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

A. Scope

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

- FCC CFR 47 Part 2, Oct. 1, 2006
- FCC CFR 47 Part 22, Subpart H, Cellular Radiotelephone Services, Oct. 1, 2006
- FCC CFR 47 Part 24 Subpart E, Broadband PCS, Oct 1. 2006
- Industry Canada, RSS-132 Issue 2, September 2005, Cellular Telephones Employing New Technologies Operating in the Bands 824-849 MHz and 869-894 MHz.
- Industry Canada, RSS-133 Issue 3, June 2005, 2 GHz Personal Communications Services.
- Industry Canada, RSS-GEN Issue 3, June 2007, General Requirements and Information for the Certification of Radiocommunication Equipment

B. Associated Document

1. Document number CER-16231-REV3-Hardware-Change Notification.doc

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 July 13 to 26, 2007.

| | | |
|--|--|----------------------------------|
| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

The sample EUT included:

| SAMPLE | MODEL | CER NUMBER | PIN |
|--------|---------|----------------------|----------|
| 1 | RBR41GW | CER-16231-001 Rev. 2 | 20610AF1 |
| 2 | RBR41GW | CER-16231-001 Rev. 3 | 2061F66C |
| 3 | RBR41GW | CER-16231-001 Rev. 3 | 2061F989 |

Conducted RF measurements were performed on BlackBerry® smartphone PIN 2061F989. Radiated Emission measurements were performed on BlackBerry® smartphones PIN 20610AF1 and 2061F66C.

To view the differences between CER-16231-001 Rev 2 and CER-16231-001 Rev 3, see document number CER-16231-REV3-Hardware-Change Notification.doc

Only the characteristics that maybe impacted by the changes were re-measured.

D. Support Equipment Used for the Testing of the EUT

- 1) Communication Tester, Rohde & Schwarz, model CMU 200, serial number 837493/073
- 2) Communication Tester, Rohde & Schwarz, model CMU 200, serial number 102204
- 3) DC Power Supply, HP, model 6632B, serial number US37472178

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|--|--|----------------------------------|
| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

E. Test Results Chart

| SPECIFICATION | TEST TYPE | MEETS REQUIREMENTS | PERFORMED BY |
|---|--|--------------------|----------------------------------|
| FCC CFR 47 Part 22, Subpart H IC RSS-132 | Radiated Spurious/harmonic Emissions, ERP, LO | Yes | Anas Hawari Vimal Olaganathan |
| FCC CFR 47 Part 2, Subpart J, Part 22, Subpart H IC RSS-132, RSS-GEN | Conducted Output Power, Conducted Emissions, Occupied Bandwidth, Frequency Stability | Yes | Maurice Battler |
| FCC CFR 47 Part 24, Subpart E IC RSS-133 | Radiated Spurious/harmonic Emissions, EIRP, LO | Yes | Anas Hawari Vimal Olaganathan |
| FCC CFR 47 Part 24, Subpart E IC RSS-133, RSS-GEN | Conducted Emissions, Occupied Bandwidth, Frequency Stability | Yes | Maurice Battler |

F. Modifications to EUT

No modifications were required on the EUT.

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|--|--|----------------------------------|
| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

G. Summary of Results

| SPECIFICATION | | TEST TYPE | RESULT | TEST DATA APPENDIX |
|--|------------------------------|---|--------|--------------------|
| FCC CFR 47 | IC | | | |
| Part 2.1051 Part 22.917 Part 22.901(d) | RSS-GEN, 4.9 | Conducted Spurious Emissions | Pass | 1 |
| Part 2.1051 Part 24.238(a) | RSS-GEN, 4.9 | Conducted Spurious Emissions | Pass | 1 |
| Part 2.202 Part 22.917 | RSS-GEN, 4.6 | Occupied Bandwidth and Channel Mask | Pass | 1 |
| Part 2.202 Part 24.238 | RSS-GEN, 4.6 | Occupied Bandwidth and Channel Mask | Pass | 1 |
| Part 2.1046(a) | RSS-133, 4.3 RSS-132, 4.4 | Conducted RF Output Power | Pass | 2 |
| Part 2.1055(a)(d) Part 22.917 | RSS-132, 4.3 | Frequency Stability vs. Temperature and Voltage | Pass | 3 |
| Part 2.1055(a)(d) Part 24.235 | RSS-133, 4.2 | Frequency Stability vs. Temperature and Voltage | Pass | 3 |
| Part 22, Subpart H | RSS-132, 4.5 | Radiated Spurious/Harmonic Emissions, ERP, LO | Pass | 4 |
| Part 24, Subpart E | RSS-133, 4.4 | Radiated Spurious/Harmonic Emissions, EIRP, LO | Pass | 4 |

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|--|--|----------------------------------|
| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

- 1) The EUT met the requirements of the Tx Conducted Spurious Emissions requirements in the GSM850 band as per 47 CFR 2.1051, CFR 22.917, CFR 22.901(d) and RSS-GEN, 4.9. The EUT was measured on the low, middle and high channels. The frequency range investigated was from 10 MHz to 10 GHz.
See APPENDIX 1 for test data.
- 2) The EUT met the requirements of the Tx Conducted Spurious Emissions requirements in the PCS1900 band as per 47 CFR 2.1051, CFR 24.238(a) and RSS-GEN, 4.9. The EUT was measured on the low, middle and high channels. The frequency range investigated was from 10 MHz to 20 GHz.
See APPENDIX 1 for test data
- 3) The EUT met the requirements of the Occupied Bandwidth and channel mask requirements in the GSM850 band as per 47 CFR 2.202, CFR 22.917 and RSS-GEN, 4.6. The EUT was measured in GSM and EDGE mode on the low, middle and high channels.
See APPENDIX 1 for test data.
- 4) The EUT met the requirements of the Occupied Bandwidth and channel mask requirements in the PCS1900 band as per 47 CFR 2.202, CFR 24.238 and RSS-GEN, 4.6. The EUT was measured in GSM and EDGE mode on the low, middle and high channels.
See APPENDIX 1 for test data.
- 5) The EUT met the requirements of the Conducted RF Output Power requirements for both the GSM850 and PCS1900 bands as per 47 CFR 2.1046(a), RSS-133, 4.3 and RSS-132, 4.4. The EUT was measured in GSM and EDGE mode on the low, middle and high channels.
See APPENDIX 2 for the test data.
- 6) The EUT met the requirements of the Frequency Stability vs. Temperature and Voltage requirements for GSM850 band as per 47 CFR 2.1055(a), 2.1055(d), CFR 22.917 and RSS-132, 4.3. The temperature range was from -30°C to +60°C in 10° temperature steps. The EUT was measured on low, middle and high channels at each temperature step. The EUT was measured at low (3.6 volts), nominal (3.8 volts) and high (4.2 volts) dc input voltage at each temperature step and channel at maximum output power.
See APPENDIX 3 for the test data.

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|--|--|----------------------------------|
| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

- 7) The EUT met the requirements of the Frequency Stability vs. Temperature and Voltage requirements for the PCS1900 band as per 47 CFR 2.1055(a), 2.1055(d), 24.235 and RSS-133, 4.2. The temperature range was from -30°C to +60°C in 10° temperature steps. The EUT was measured on low, middle and high channels at each temperature step. The EUT was measured at low (3.6 volts), nominal (3.8 volts) and high (4.2 volts) dc input voltage at each temperature step and channel at maximum output power.
See APPENDIX 3 for the test data.
- 8) The radiated spurious emissions/harmonics and ERP/EIRP were measured for both GSM850 and PCS bands. The results are within the limits. The EUT was placed on a nonconductive styrofoam table, 100 cm high that was positioned on a remotely controlled turntable. The test distance used between the EUT and the receiving antenna was three metres. Then the emissions were maximized by elevating the antenna in the range of 1 to 4 metres. The turntable was rotated to determine the azimuth of the peak emissions. The maximum emissions level was recorded. Both the horizontal and vertical polarisations of the emissions were measured. The maximum emissions level was recorded. The EUT was then substituted with an antenna placed in the same location as the EUT. A Dipole antenna was used for the ERP measurements and a Horn antenna was used for EIRP measurements. The substitution antenna was connected into a signal generator that was set to the test frequency. The emissions were maximized by elevating the antenna in the range of 1 to 4 metres. The signal generator output was then adjusted to match the BlackBerry® smartphone output reading. The signal generator output was recorded. Both the horizontal and vertical polarisations of the emissions were measured.

The measurements were performed 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 measured on the low, middle and high channels.

The highest ERP in the GSM850 band measured was 29.31 dBm (0.853 W) at 824.2 MHz (channel 128).

The highest EIRP in the PCS band measured was 27.62 dBm (0.578 W) at 1880.00 MHz (channel 661).

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|--|--|----------------------------------|
| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

The radiated carrier harmonics were measured up to the 10th harmonic for low, middle and high channels in the GSM850 and PCS bands. Each band was measured in GSM, GPRS, and EDGE mode, and also simultaneous GSM and Bluetooth transmit mode as well as GSM and 802.11b/g transmit mode. Both the horizontal and vertical polarizations were measured. The harmonic emissions above the 3rd harmonic were in the noise floor (NF) for the GSM850 band and above the 2nd harmonic for the PCS band.

The worst test margin in the GSM850 band for GSM mode harmonic emissions measured was 25.3 dB below the limit at 2512.80 MHz, for GPRS mode it was 24.4 dB below the limit at 2512.80 MHz, and for EDGE mode was 28.6 dB below the limit at 1648.40 MHz.

The worst test margin in the PCS band for GSM mode harmonic emissions measured was 26.08 dB below the limit at 3760.00 MHz, for GPRS mode it was 26.08 dB below the limit at 3760.00 MHz and in EDGE mode it was 26.88 dB below the limit at 3760.00 MHz.

The EUT's RF local oscillator (LO) emissions were measured in the GSM850 band and PCS band in the standalone configuration on the low and high channels. Both the horizontal and vertical polarizations were measured. The RF LO emissions were in the NF.

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)

To view the test data see APPENDIX 4.

Measurement Uncertainty ±4.0 dB

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|--|--|----------------------------------|
| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

H. 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 |
| Hybrid Log Antenna | TDK | HLP-3003C | 017401 | 08-08-04 | Radiated Emissions |
| Horn Antenna | TDK | HRN-0118 | 030101 | 08-07-26 | Radiated Emissions |
| Horn Antenna | TDK | HRN-0118 | 030201 | 09-01-17 | Radiated Emissions |
| Horn Antenna | Emco | 3116 | 2538 | 08-09-25 | Radiated Emissions |
| Preamplifier | TDK | 18-26 | 030002 | 07-11-23 | Radiated Emissions |
| Dipole Antenna | Schwarzbeck | UHAP | 973 | 08-12-18 | Radiated Emissions |
| Dipole Antenna | Schwarzbeck | UHAP | 974 | 08-09-28 | Radiated Emissions |
| EMC Analyzer | Agilent | E7405A | US40240226 | 07-10-20 | Radiated Emissions |
| Universal Radio Communication Tester | Rohde & Schwarz | CMU 200 | 837493/073 | 07-12-01 | Radiated Emissions |
| Universal Radio Communication Tester | Rohde & Schwarz | CMU 200 | 102204 | 08-04-22 | RF Conducted Emissions |
| Spectrum Analyzer | HP | 8563E | 3745A08112 | 07-09-20 | RF Conducted Emissions |
| DC Power Supply | HP | 6632B | US37472178 | 07-09-14 | RF Conducted Emissions |
| Environment Monitor | Control Company | 1870 | 230355190 | 07-12-28 | Radiated Emissions |
| Environment Monitor | Control Company | 1870 | 230199533 | 07-12-01 | RF Conducted Emissions |
| Temperature Probe | Hart Scientific | 61161-302 | 21352860 | 07-08-31 | Frequency Stability |
| Environmental Chamber | ESPEC Corp. | SH-240S1 | 91007118 | N/R | Frequency Stability |
| Signal Generator | Agilent | 8648C | 4037U03155 | 07-09-13 | Frequency Stability |
| Power Meter | Giga-tronics | 8541C | 1837762 | 07-12-15 | Frequency Stability |
| Power Sensor | Giga-tronics | 80401A | 1835838 | 07-12-15 | Frequency Stability |

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|--|--|----------------------------------|
| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

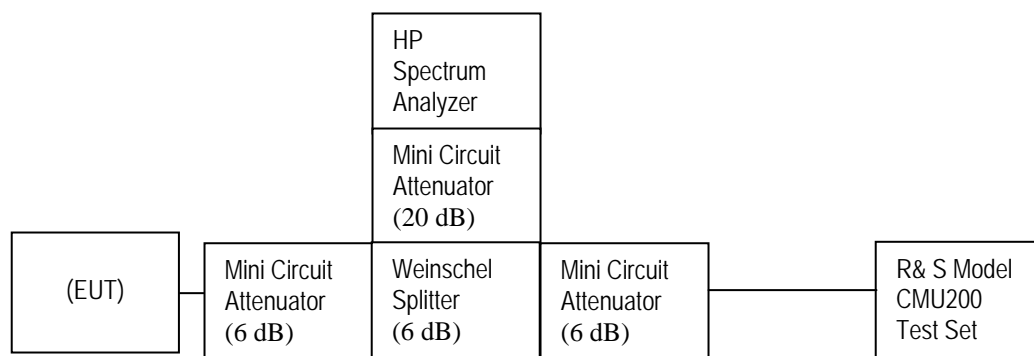
APPENDIX 1 - CONDUCTED RF EMISSIONS TEST DATA/PLOTS

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Conducted RF Emission Test Data cont'd

This appendix contains measurement data pertaining to conducted spurious emissions, –26 dBc bandwidth, 99% power bandwidth and the channel mask on BlackBerry® smartphone PIN 2061F989.

Test Setup Diagram



The environmental test conditions were:

Temperature 22°C
 Pressure 1017 mb
 Relative Humidity 33%

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|--|--|----------------------------------|
| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Conducted RF Emission Test Data cont'd

The conducted spurious emissions – As per 47 CFR 2.1051, CFR 24.238(a), RSS-GEN, 4.9, CFR 22 Subpart H and RSS-132 were measured from 10 MHz to 20 GHz. The EUT emissions were in the noise floor.

See figures 1 to 12 for the plots of the conducted spurious emissions.

Date of Test: July 26, 2007

–26 dBc Bandwidth and Occupied Bandwidth (99%)

For each carrier frequency of low, middle and high, the modulation spectrum was measured by both methods of 99% power bandwidth and –26 dBc bandwidth.

The resolution bandwidth required for out-of-band emissions in the 1 MHz bands immediately outside and adjacent to the frequency block, was determined to be at least 1% of the emission bandwidth.

The worst case –26dBc bandwidth for the GSM850 band was measured to be 282 kHz, and for the PCS1900 band was measured to be 273 kHz as shown below. This results in a 3.0 kHz resolution bandwidth.

On any frequency outside the frequency block and outside the adjacent 1 MHz bands, a resolution bandwidth of at least 1 MHz was employed.

Test Data for GSM850 band and PCS1900 band selected Frequencies in GSM mode.

| 850 band Frequency (MHz) | -26dBc Bandwidth (kHz) | 99% Occupied Bandwidth (kHz) |
|---|-----------------------------------|---|
| 824.2 | 282 | 246.7 |
| 837.6 | 272 | 246.7 |
| 848.8 | 267 | 245.0 |

| 1900 band Frequency (MHz) | -26dBc Bandwidth (kHz) | 99% Occupied Bandwidth (kHz) |
|--|-----------------------------------|---|
| 1850.2 | 270 | 248.3 |
| 1880.0 | 273 | 245.0 |
| 1909.8 | 268 | 241.7 |

Measurement Plots for GSM850 and PCS1900 in GSM mode

Refer to the following measurement plots for more detail.

See Figures 13 to 24 for the plots of the –26dBc Bandwidth and 99% Occupied Bandwidth.

The RF power output was at maximum for all the recorded measurements shown below.

Date of Test: July 26, 2007

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|--|--|----------------------------------|
| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Conducted RF Emission Test Data cont'd

Test Data for GSM850 band and PCS1900 band selected Frequencies in EDGE mode.

| 850 band Frequency (MHz) | 99% Occupied Bandwidth (kHz) |
|---|---|
| 824.2 | 248.3 |
| 837.6 | 243.3 |
| 848.8 | 243.3 |

| 1900 band Frequency (MHz) | 99% Occupied Bandwidth (kHz) |
|--|---|
| 1850.2 | 247.0 |
| 1880.0 | 245.0 |
| 1909.8 | 245.0 |

Measurement Plots for GSM850 band and PCS1900 band in EDGE mode

Refer to the following measurement plots for more detail.

See Figures 13 to 30 for the plots of the 99% Occupied Bandwidth.

See Figures 31 to 34 for plots of the channel mask results.

The RF power output was at maximum for all the recorded measurements shown below.

Date of Test: July 26, 2007

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|--|--|----------------------------------|
| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Conducted RF Emission Test Data cont'd

Figure 1: GSM850 band, Spurious Conducted Emissions, Low channel

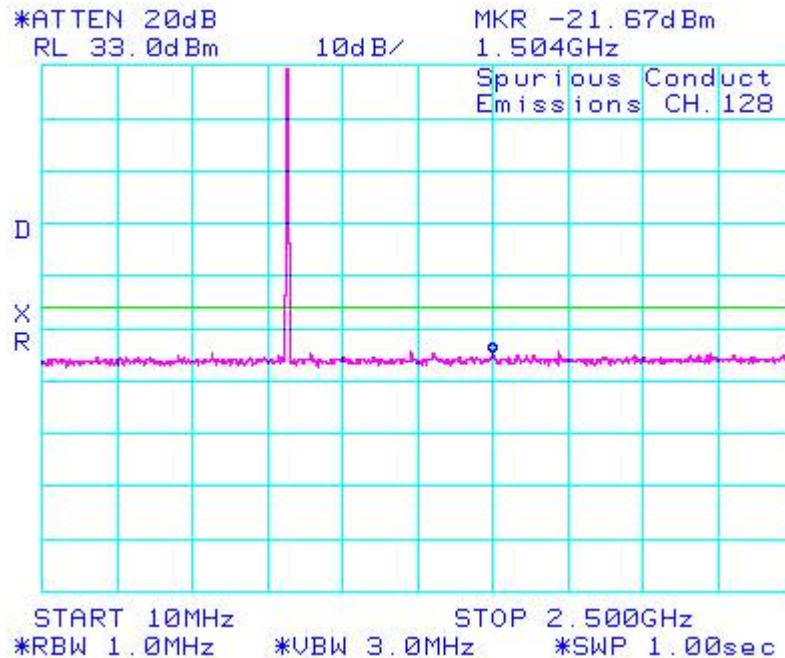
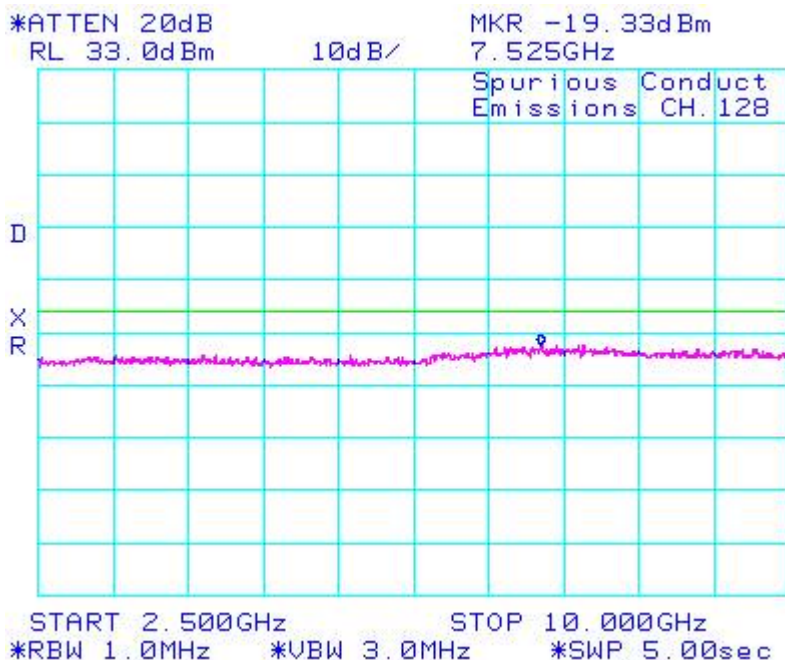


Figure 2: GSM850 band, Spurious Conducted Emissions, Low channel



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|--|--|----------------------------------|
| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Conducted RF Emission Test Data cont'd

Figure 3: GSM850 band, Spurious Conducted Emissions, Middle Channel

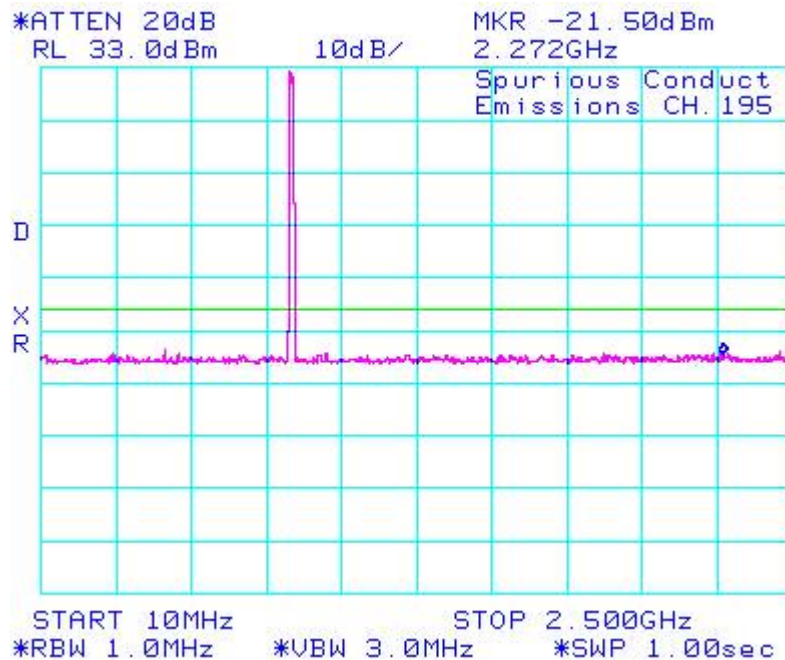
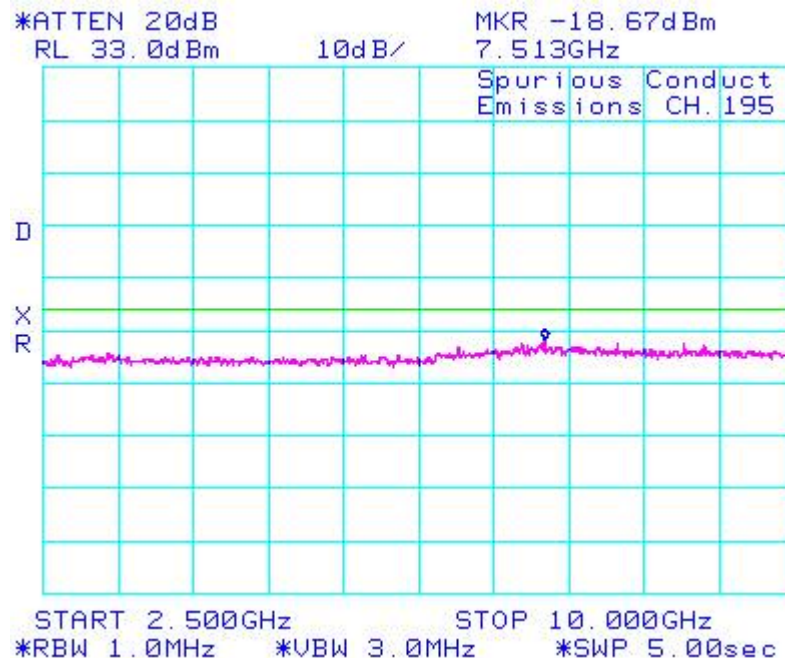


Figure 4: GSM850 band, Spurious Conducted Emissions, Middle Channel



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|--|--|----------------------------------|
| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Conducted RF Emission Test Data cont'd

Figure 5: GSM850 band, Spurious Conducted Emissions, High Channel

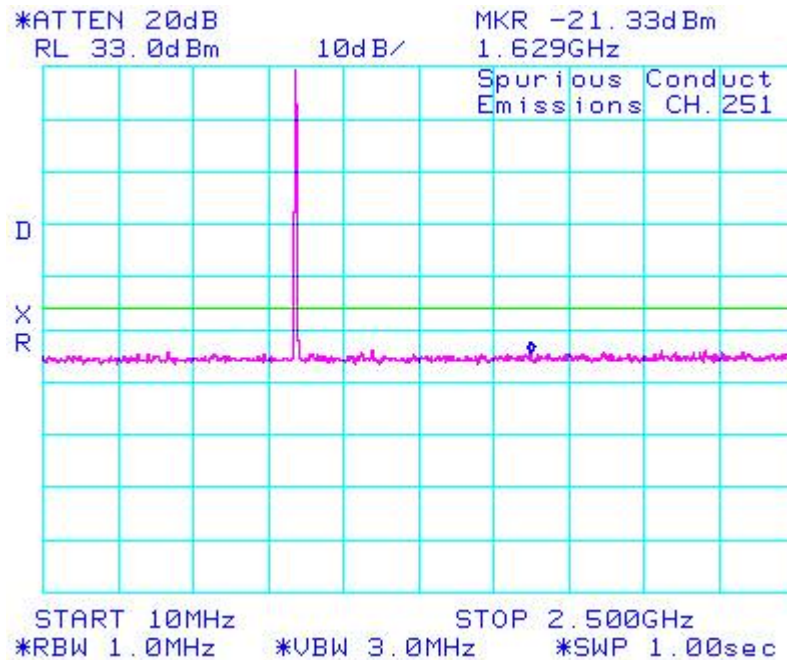
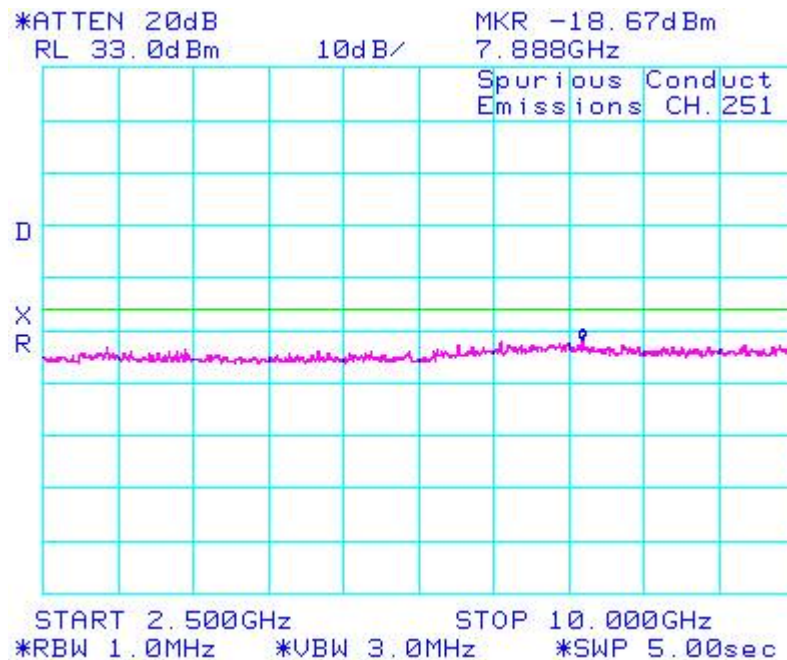


Figure 6: GSM850 band, Spurious Conducted Emissions, High Channel



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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Conducted RF Emission Test Data cont'd

Figure 7: PCS1900 band, Spurious Conducted Emissions, Low Channel

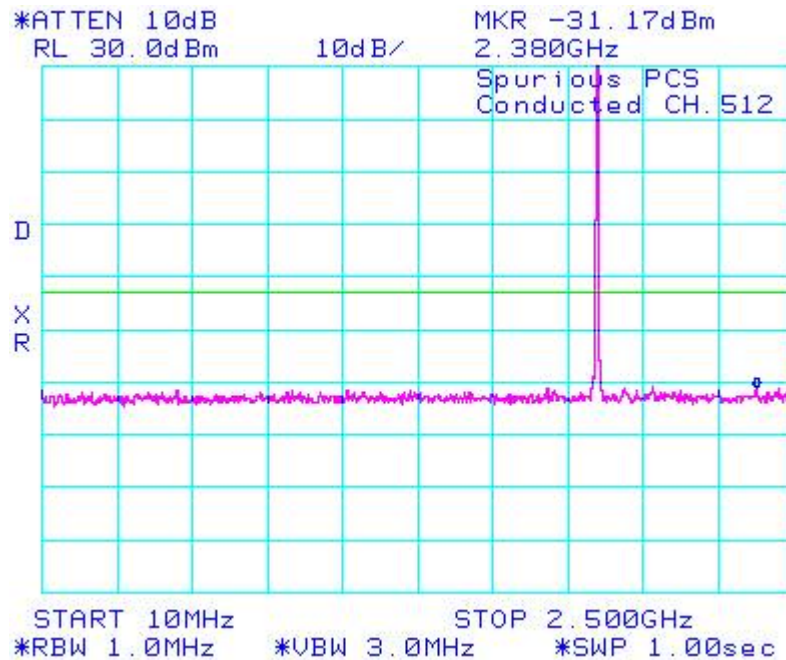
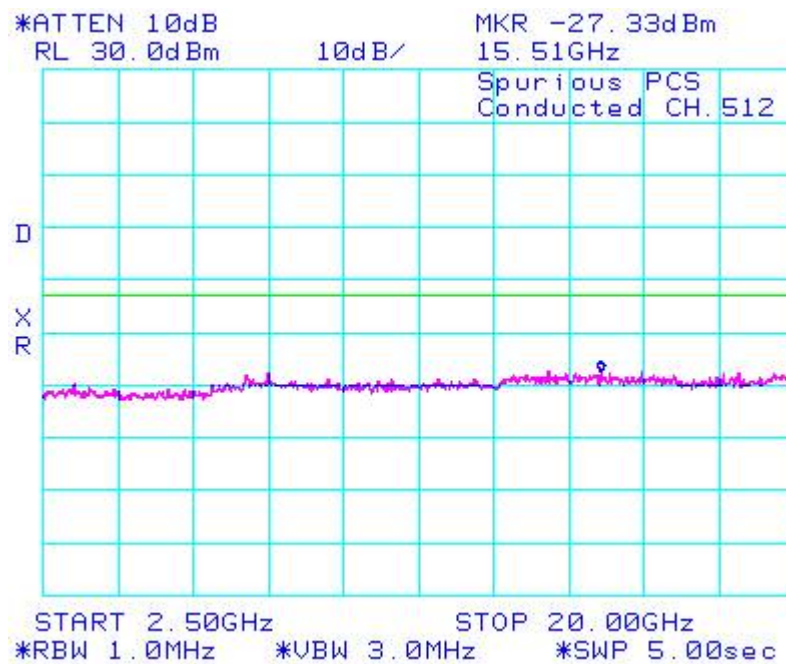


Figure 8: PCS1900 band, Spurious Conducted Emissions, Low Channel



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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Conducted RF Emission Test Data cont'd

Figure 9: PCS1900 band, Spurious Conducted Emissions, Middle Channel

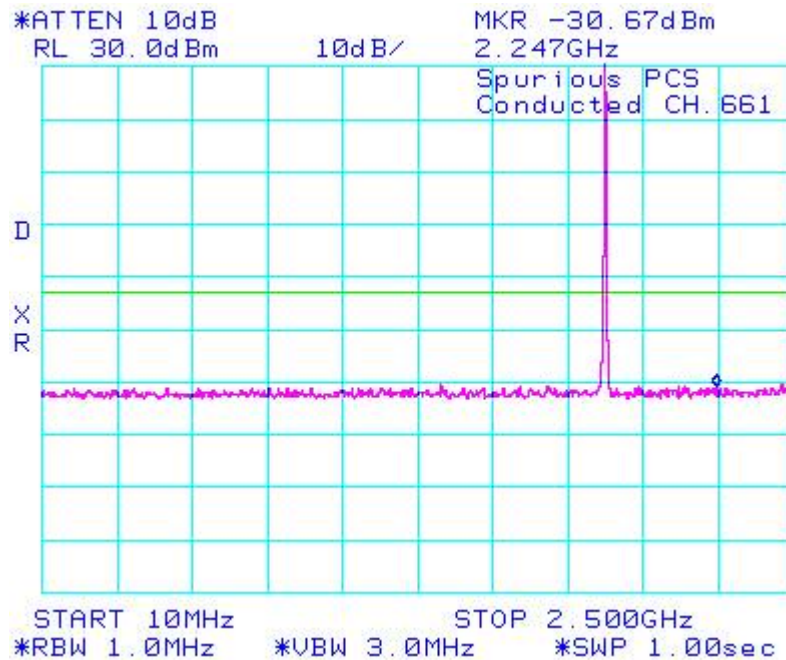
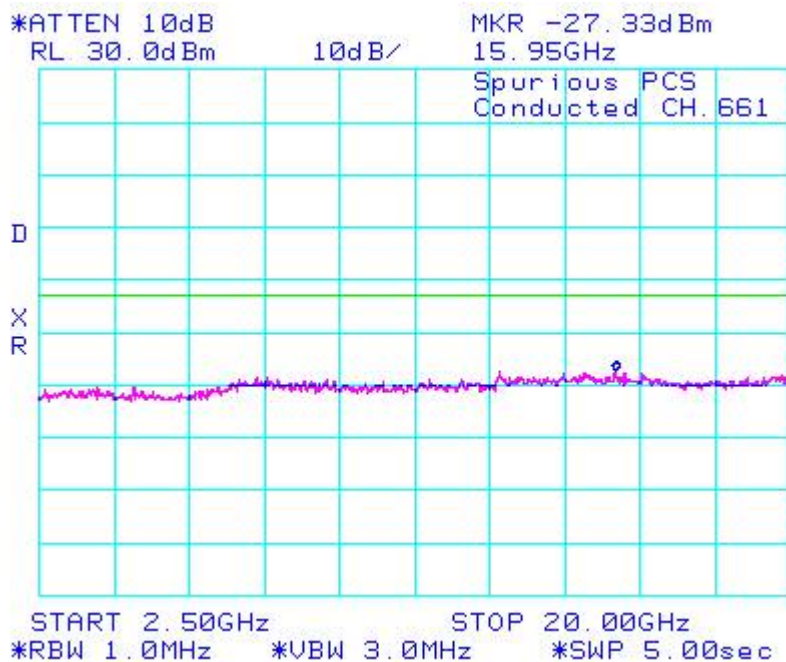


Figure 10: PCS1900 band, Spurious Conducted Emissions, Middle Channel



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|--|--|----------------------------------|
| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Conducted RF Emission Test Data cont'd

Figure 11: PCS1900 band, Spurious Conducted Emissions, High Channel

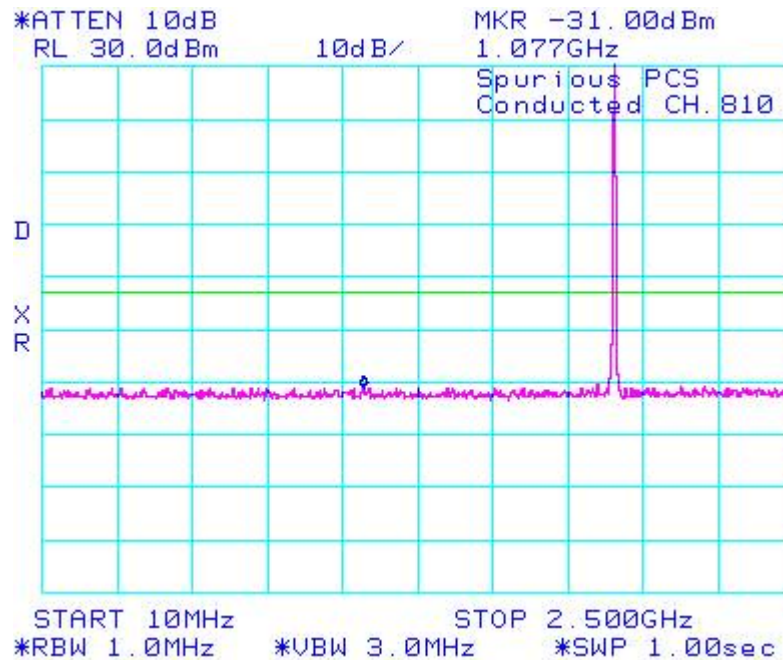
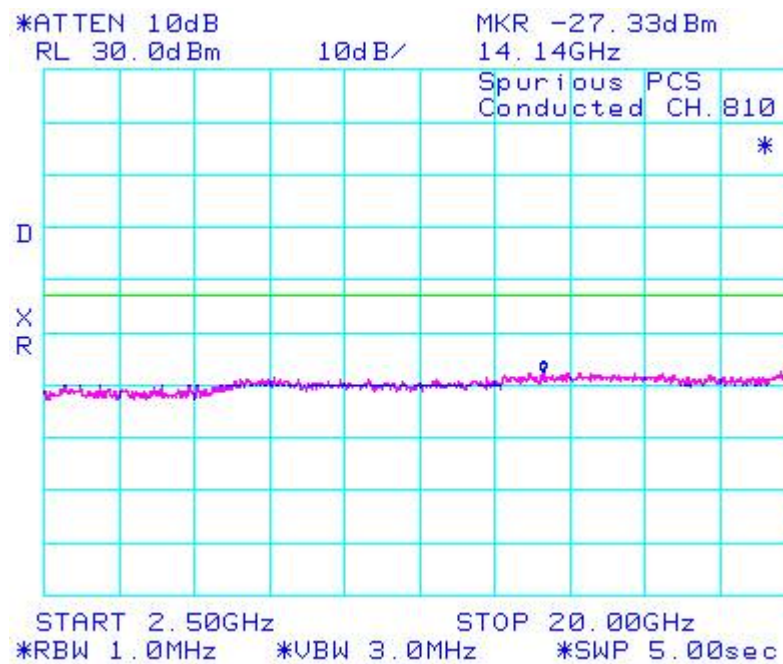


Figure 12: PCS1900 band, Spurious Conducted Emissions, High Channel



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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Conducted RF Emission Test Data cont'd

Figure 13: -26dBc bandwidth, GSM850 band Low Channel in GSM mode

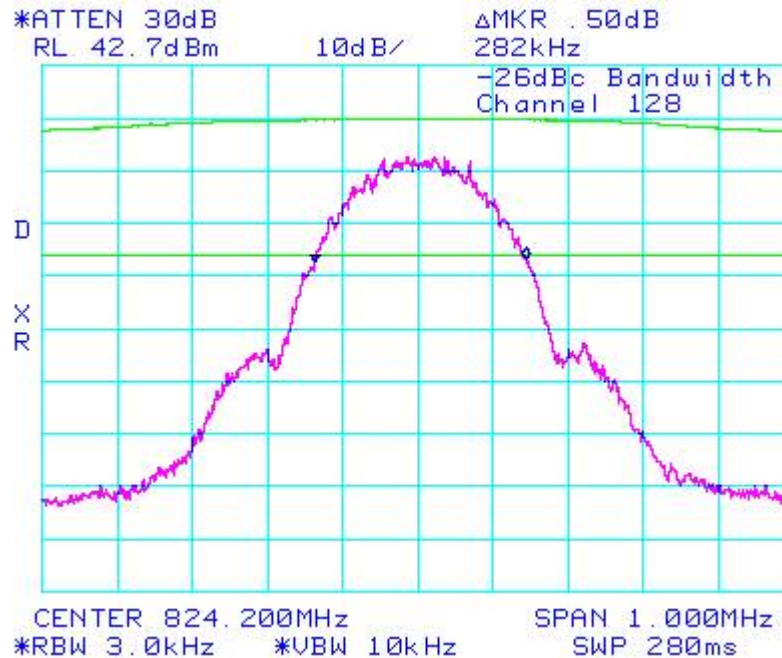
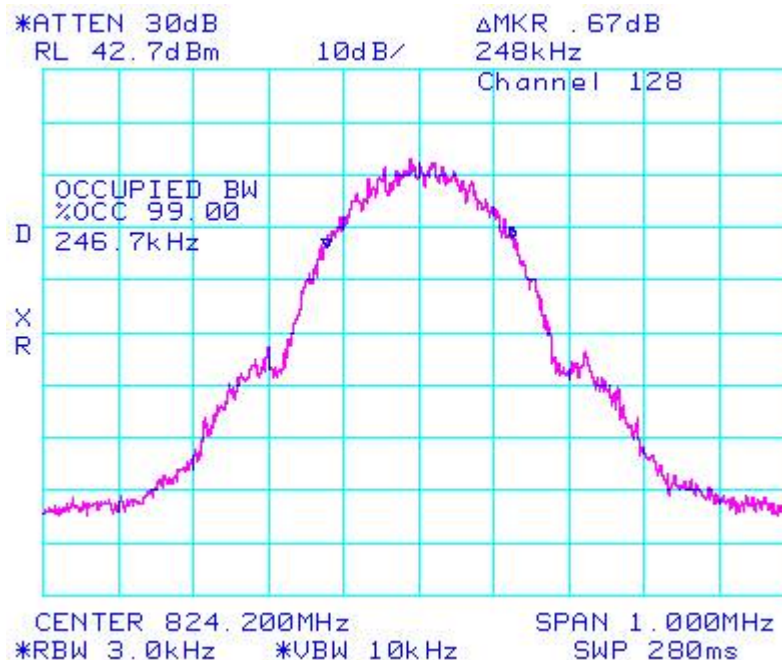


Figure 14: Occupied Bandwidth, GSM850 band Low Channel in GSM mode



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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Conducted RF Emission Test Data cont'd

Figure 15: -26dBc bandwidth, GSM850 band Middle Channel in GSM mode

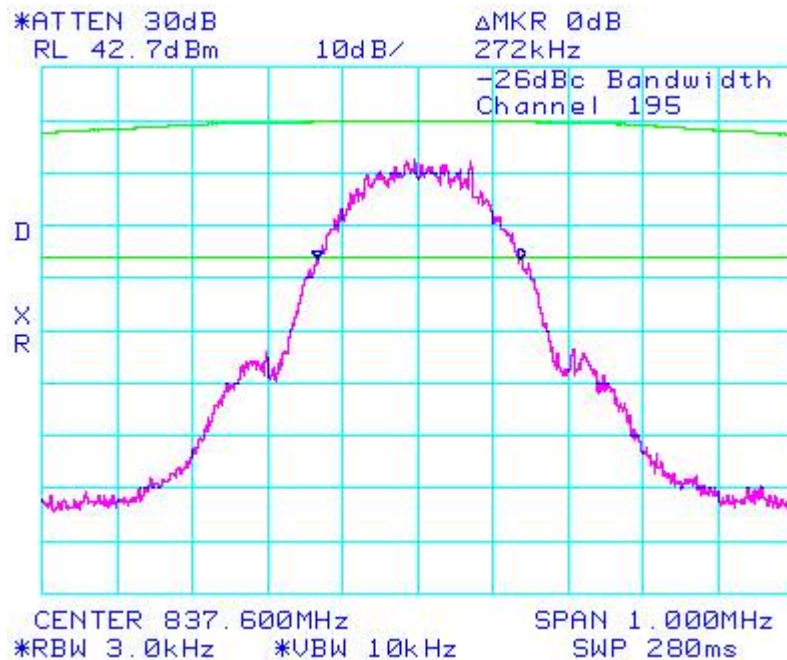
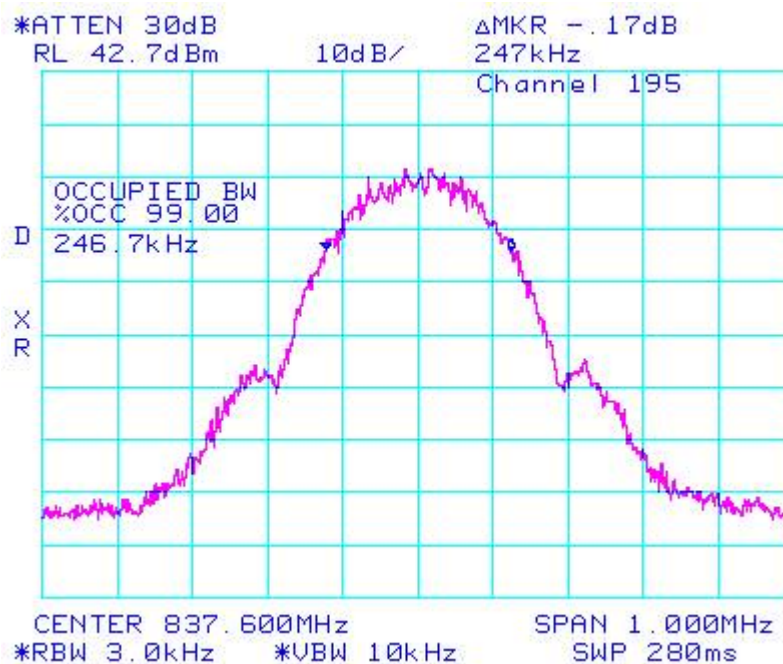


Figure 16: Occupied Bandwidth, GSM850 band Middle Channel in GSM mode



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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Conducted RF Emission Test Data cont'd

Figure 17: -26dBc bandwidth, GSM850 band High Channel in GSM mode

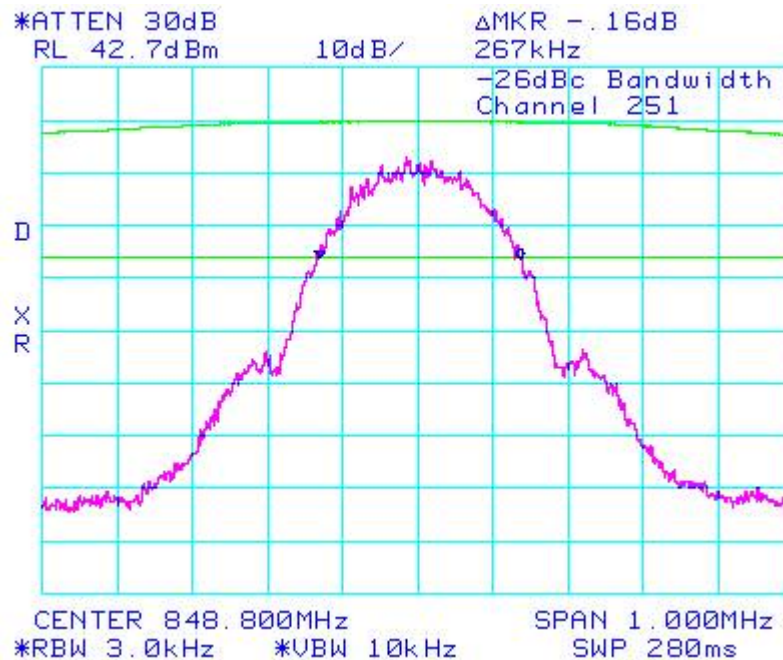
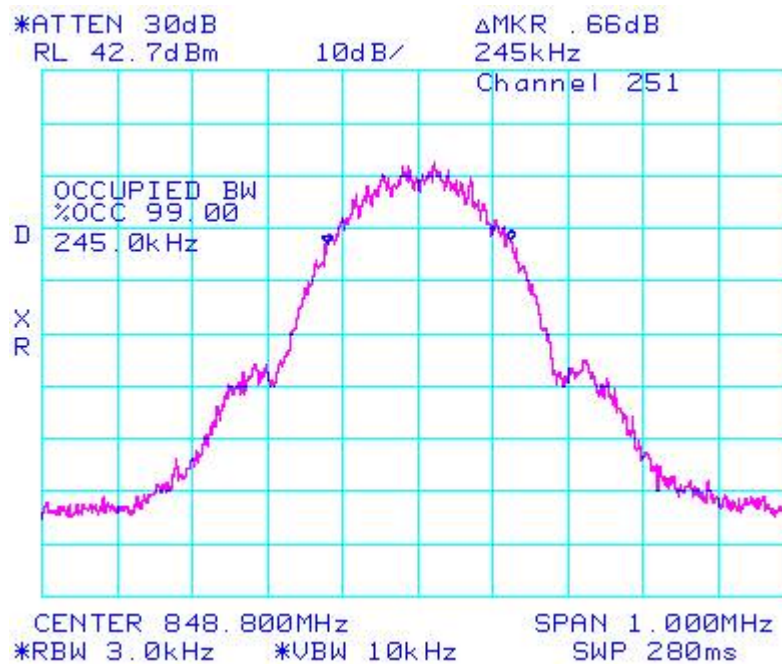


Figure 18: Occupied Bandwidth, GSM850 band High Channel in GSM mode



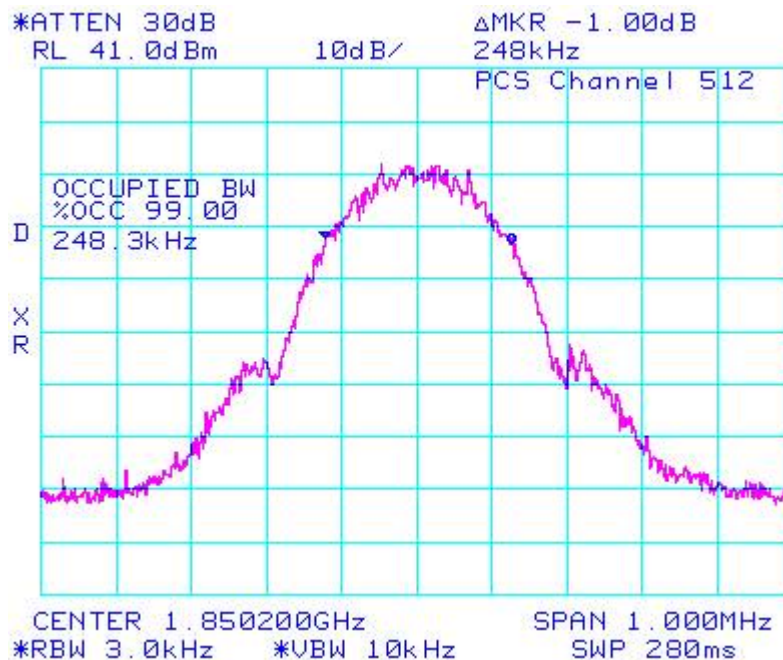
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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Conducted RF Emission Test Data cont'd

Figure 19: -26dBc bandwidth, PCS1900 Low Channel in GSM mode



Figure 20: Occupied Bandwidth, PCS1900 Low Channel in GSM mode



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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Conducted RF Emission Test Data cont'd

Figure 21: -26dBc bandwidth, PCS1900 Middle Channel in GSM mode

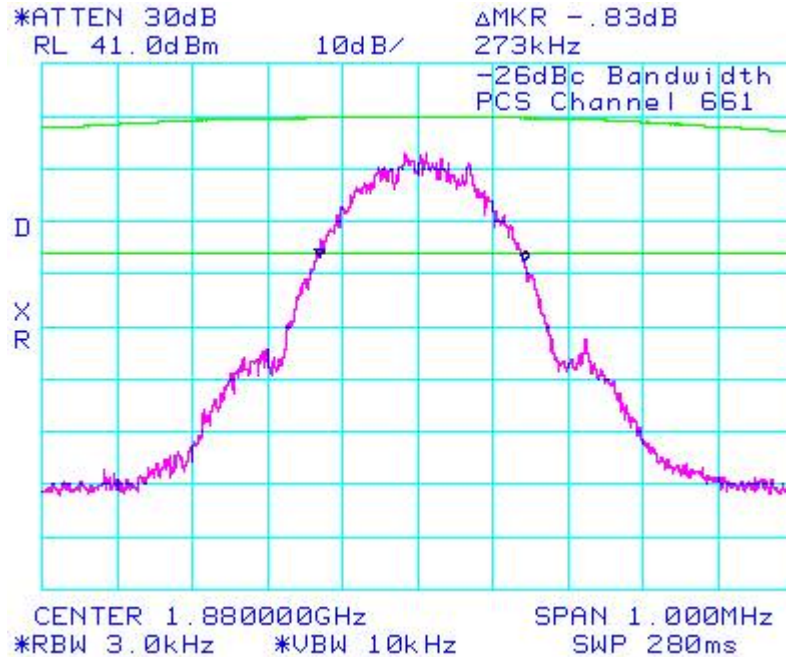
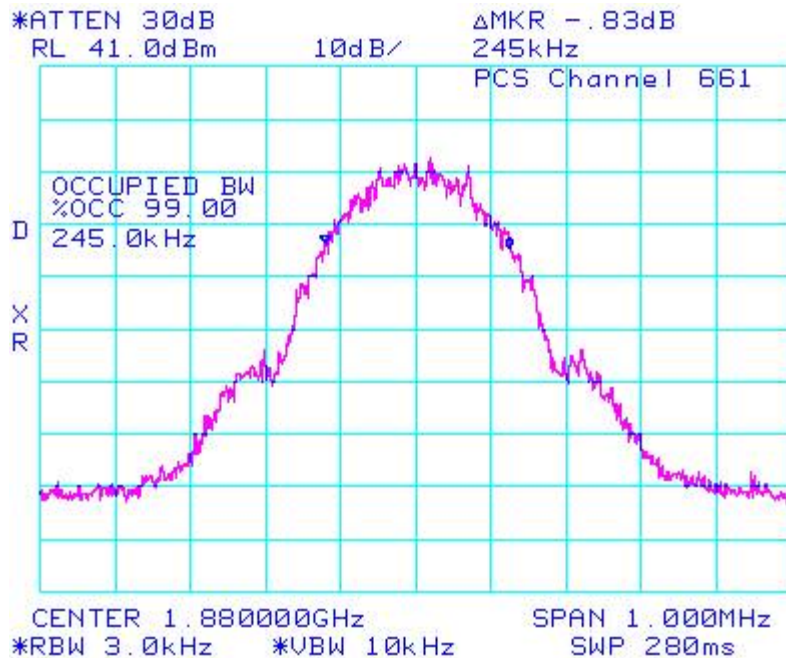


Figure 22: Occupied Bandwidth, PCS1900 Middle Channel in GSM mode



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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Conducted RF Emission Test Data cont'd

Figure 23: -26dBc bandwidth, PCS1900 High Channel in GSM mode

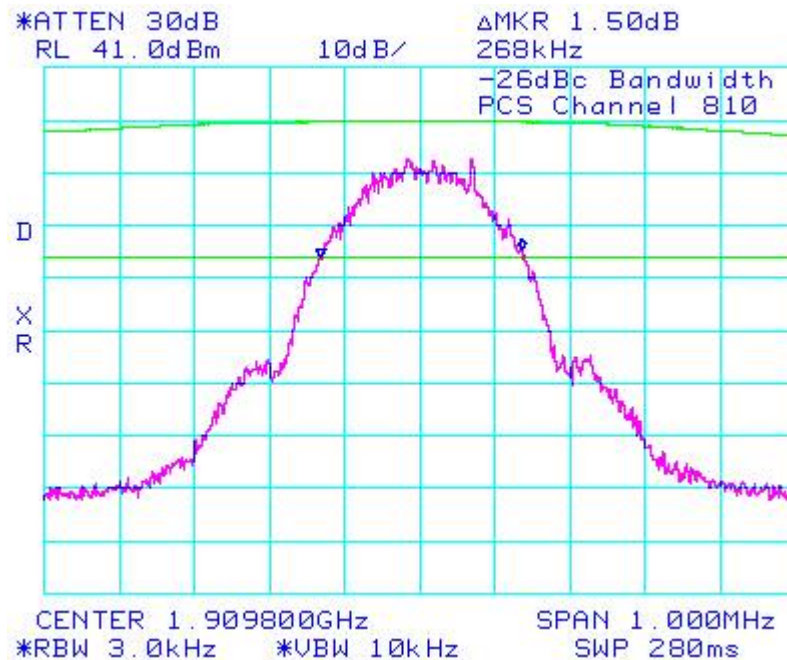
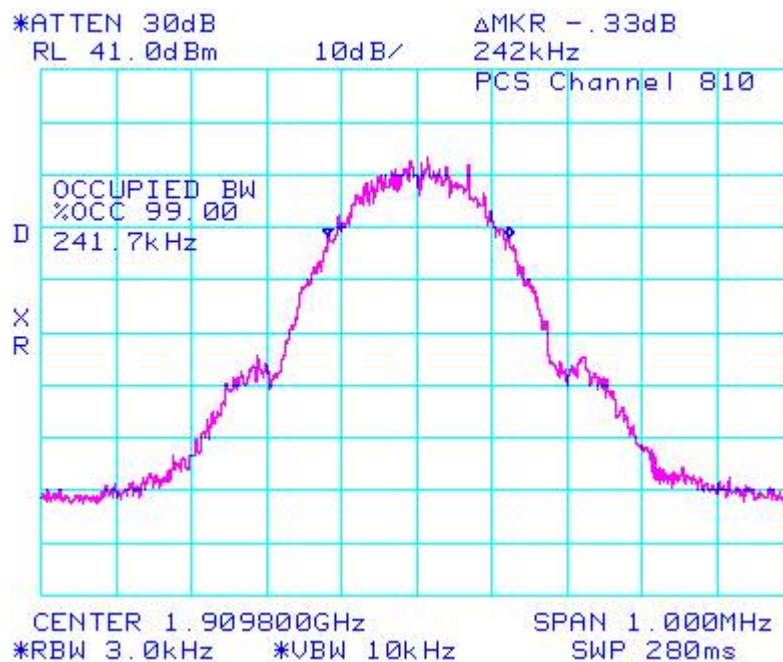


Figure 24: Occupied Bandwidth, PCS1900 High Channel in GSM mode



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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Conducted RF Emission Test Data cont'd

Figure 25: Occupied Bandwidth, GSM850 Band, Low Channel in EDGE mode

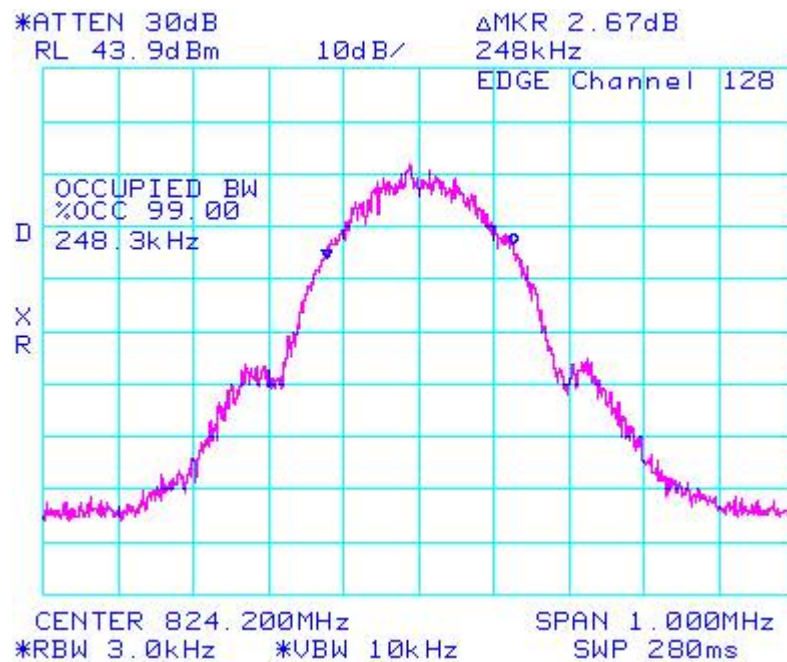
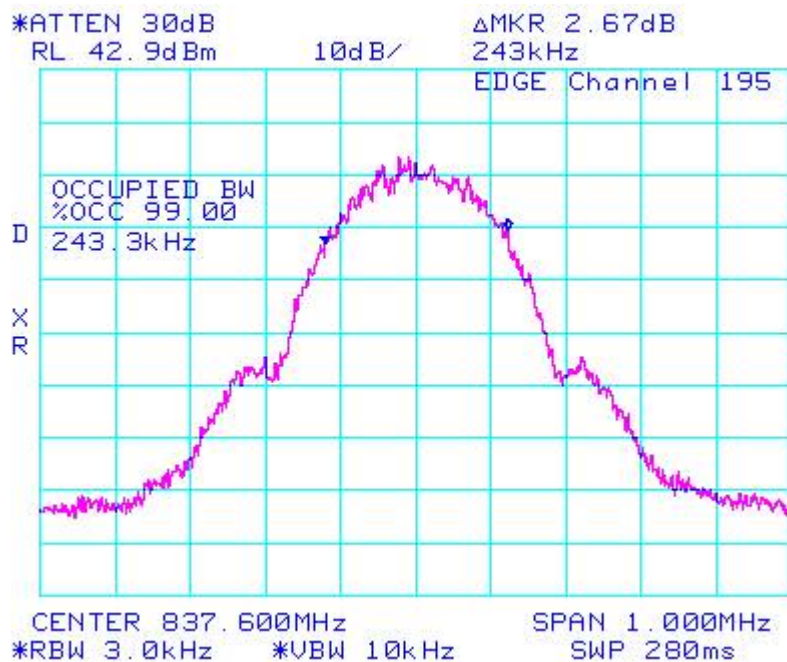


Figure 26: Occupied Bandwidth, GSM850 Band, Middle Channel in EDGE mode



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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Conducted RF Emission Test Data cont'd

Figure 27: Occupied Bandwidth, GSM850 band, High Channel in EDGE mode

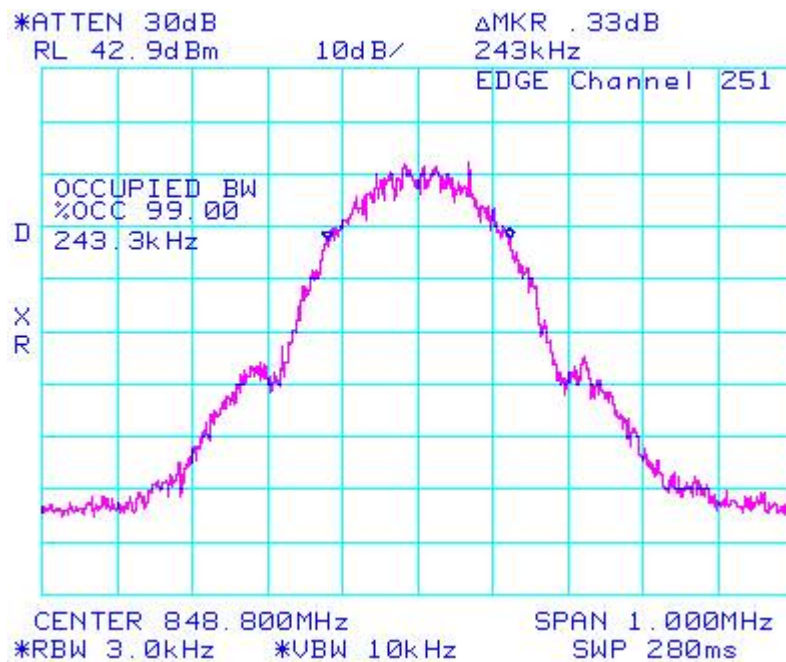
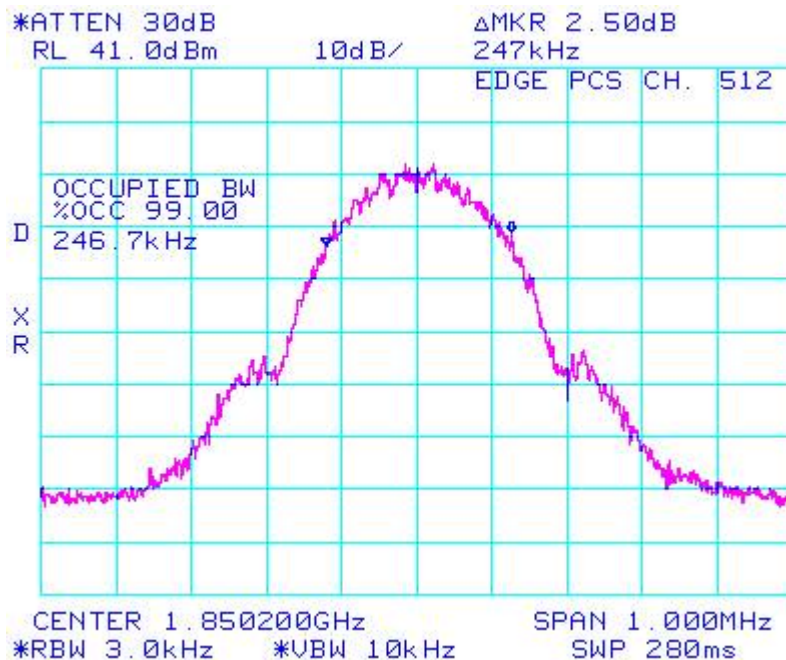


Figure 28: Occupied Bandwidth, PCS1900 Band, Low Channel in EDGE mode



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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Conducted RF Emission Test Data cont'd

Figure 29: Occupied Bandwidth, PCS1900 Band, Middle Channel in EDGE mode

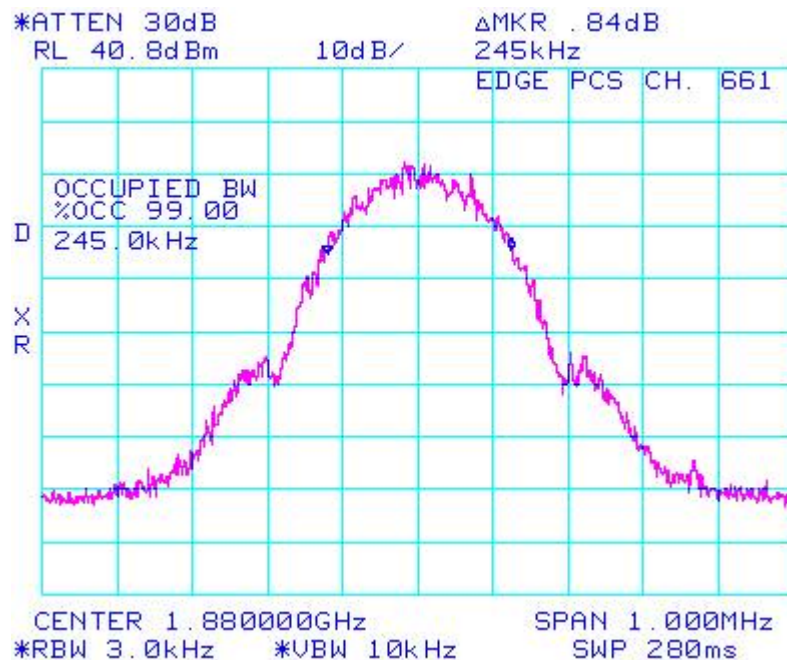
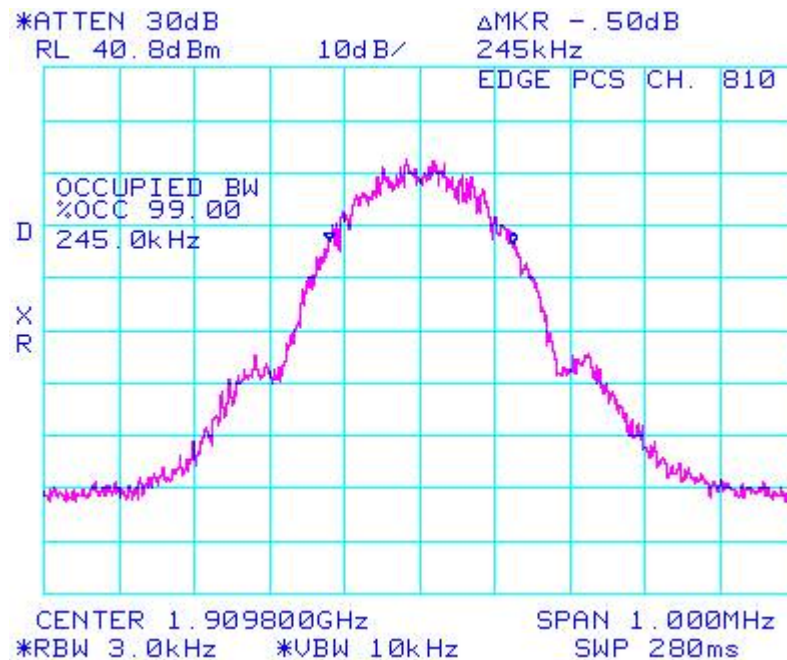


Figure 30: Occupied Bandwidth, PCS1900 Band, High Channel in EDGE mode



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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Conducted RF Emission Test Data cont'd

Figure 31: GSM850 band, Low Channel Mask

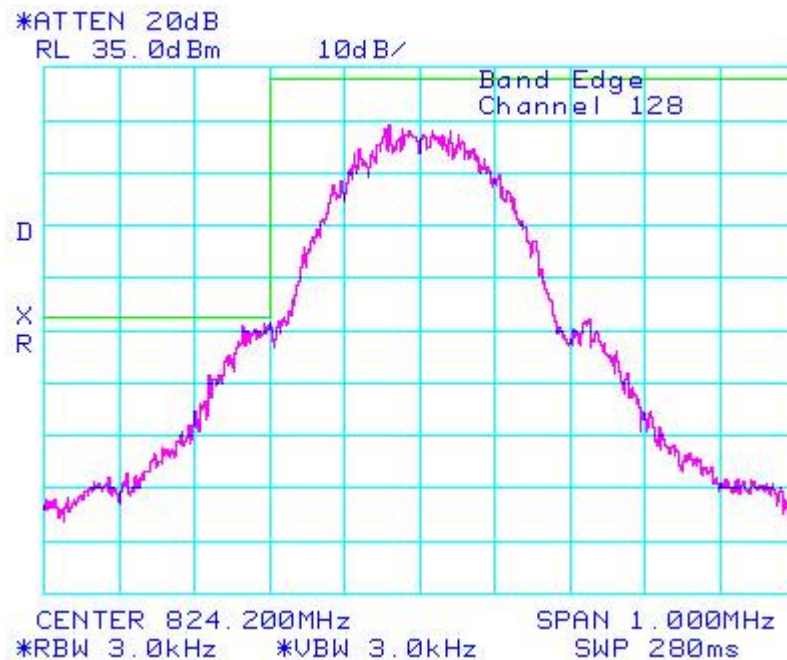
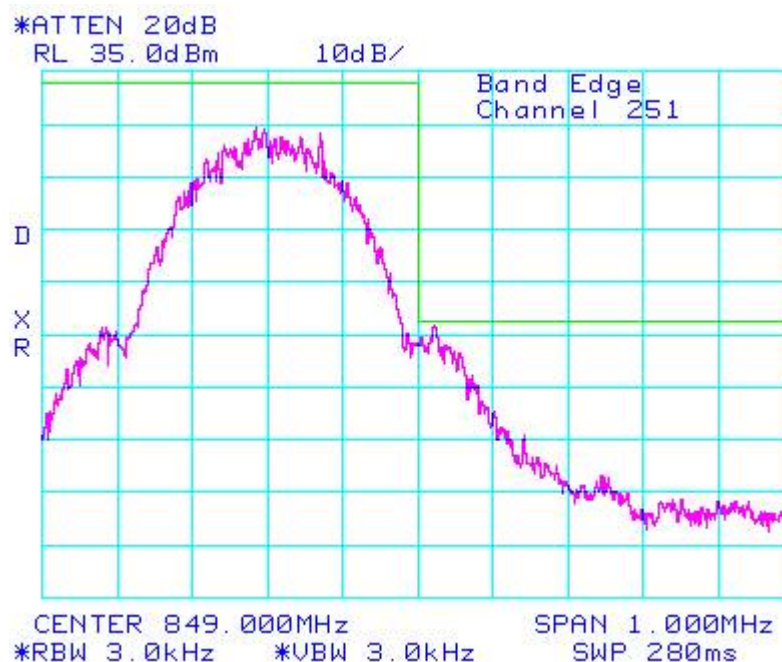


Figure 32: GSM850 band High Channel Mask



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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Conducted RF Emission Test Data cont'd

Figure 33: PCS1900, Low Channel Mask

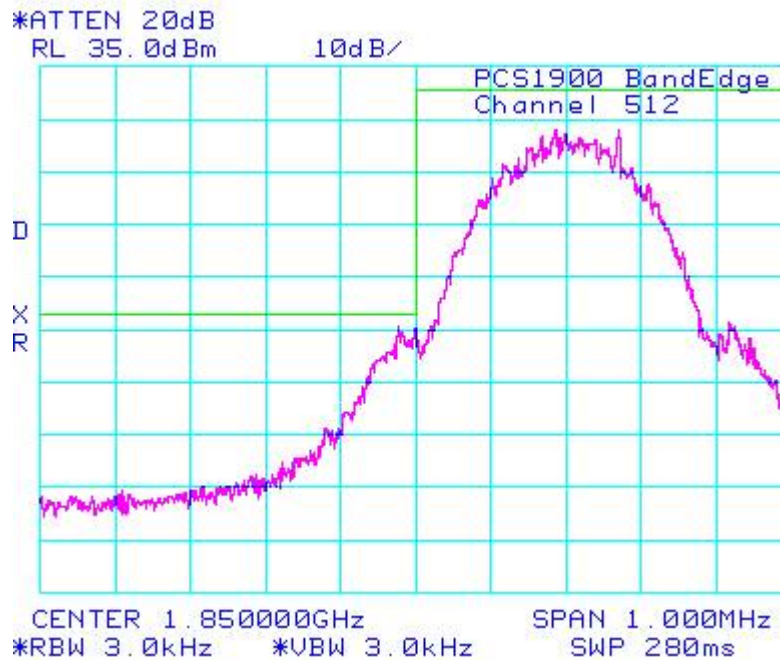
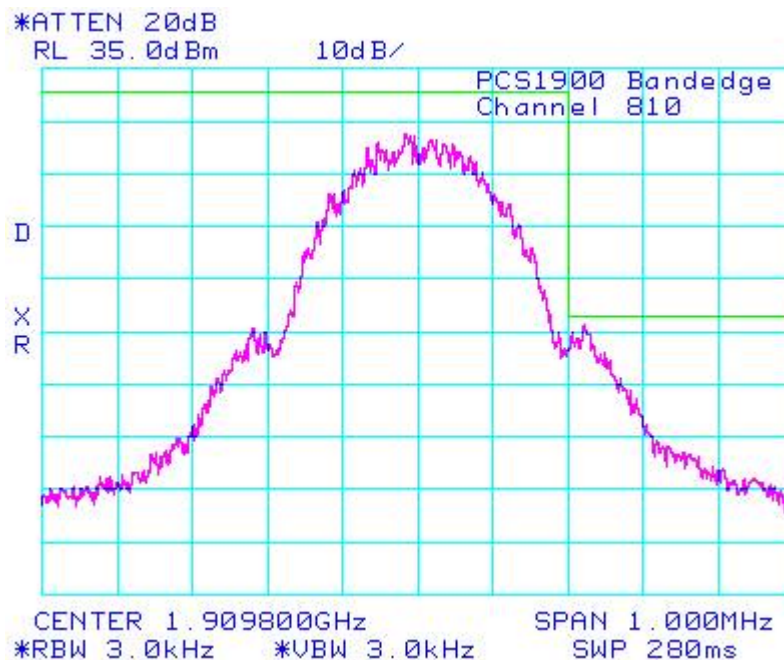


Figure 34: PCS1900, High Channel Mask



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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

APPENDIX 2 – CONDUCTED RF OUTPUT POWER TEST DATA

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|--|--|----------------------------------|
| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Conducted RF Output Power Test Data

The conducted RF output power was measured using the Communication Tester, Rohde & Schwarz, model CMU 200. The low, middle and high channels were measured at maximum radio output power. The insertion loss of the coaxial cable from the CMU 200 to the BlackBerry® smartphone was compensated for in the measurements. Peak nominal output power is 33.0 dBm \pm 0.5 dB for GSM850 and 30.5 dBm \pm 0.5 dB for PCS.

Date of Test: July 19, 2007

Test Results

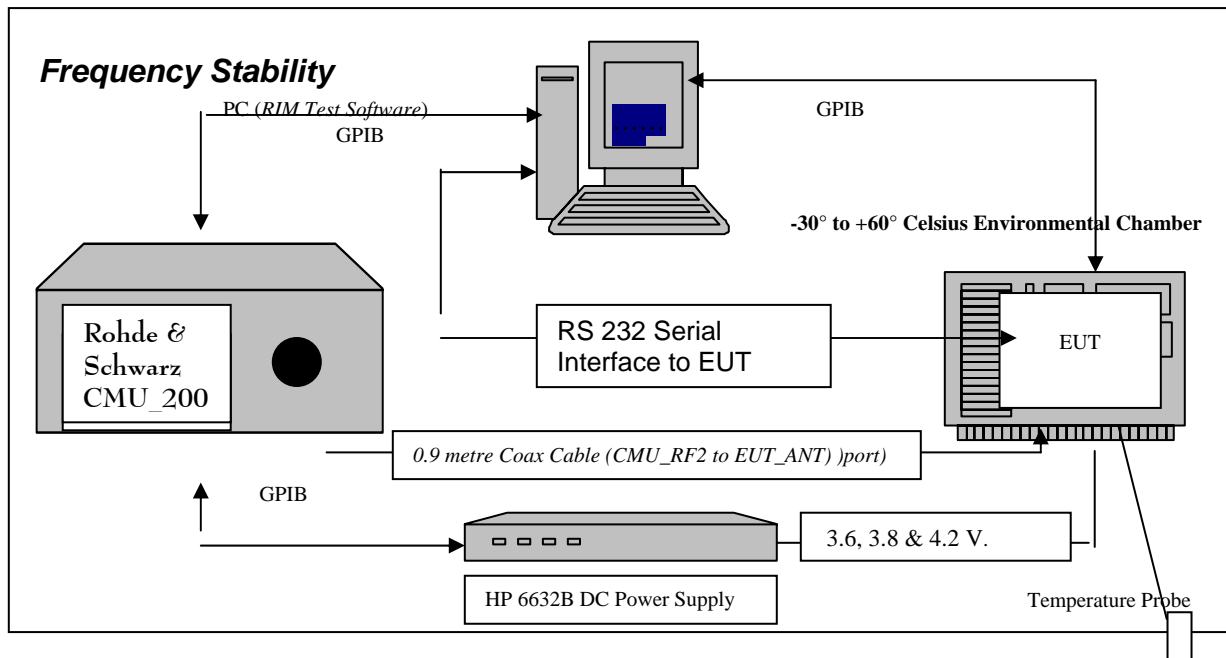
| Channel | Frequency (MHz) | Maximum Output Power (dBm) | Maximum Output Power (Watts) |
|--|-----------------|----------------------------|------------------------------|
| <u>GSM850</u> | | | |
| 128 | 824.20 | 32.6 | 1.82 |
| 189 | 836.60 | 32.7 | 1.86 |
| 251 | 848.80 | 32.6 | 1.82 |
| <u>GSM850 EDGE/GPRS/GSM (2-timeslot)</u> | | | |
| 128 | 824.20 | 30.5 | 1.12 |
| 189 | 836.60 | 30.5 | 1.12 |
| 251 | 848.80 | 30.5 | 1.12 |
| <u>PCS</u> | | | |
| 512 | 1850.2 | 30.8 | 1.20 |
| 661 | 1880.0 | 30.6 | 1.15 |
| 810 | 1909.8 | 30.5 | 1.12 |
| <u>PCS EDGE/GPRS/GSM (2-timeslot)</u> | | | |
| 512 | 1850.2 | 28.5 | 0.71 |
| 661 | 1880.0 | 28.3 | 0.68 |
| 810 | 1909.8 | 28.3 | 0.68 |

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

APPENDIX 3 – FREQUENCY STABILITY TEST DATA

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Frequency Stability Test Data



CFR 47 Chapter 1 - Federal Communications Commission Rules

Part 2 Required Measurements

2.995 Frequency Stability - Procedures

(a,b) Frequency Stability - Temperature Variation

(d) Frequency Stability - Voltage Variation

24.235 Frequency Stability.

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

The EUT meets the requirements as stated in CFR 47 chapter 1, Section 24.235, RSS-133, CFR 47 chapter 1, Section 22.917 and RSS-132 Frequency Stability.

Frequency Stability measurement devices were configured as presented in the block diagram recording frequency, power, data, temperatures, and stepped voltages controlled via a GPIB interface linked to the Environmental chamber, a DC power supply, and the Communications Test Set. A 0.9-metre coax cable was calibrated to characterize the insertion loss for the transmitted frequencies between the RF input/output of the CMU 200 and the EUT antenna port.

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Calibration for the Cable Loss was performed in the RF Laboratory using the Giga-tronics power meter and Agilent Signal Generator.

The cable assembly from the RF input to the RF output was measured at the following Frequencies:

| PCS Frequency (MHz) | Cable loss (dB) |
|---------------------------|--------------------|
| 1850.2 | 0.80 |
| 1880.0 | 0.80 |
| 1909.8 | 0.80 |

| GSM 850 Frequency (MHz) | Cable loss (dB) |
|-------------------------------|--------------------|
| 824.2 | 0.50 |
| 836.4 | 0.50 |
| 848.6 | 0.50 |

Procedure:

The EUT was placed in the Temperature chamber and connected to CMU 200 outside as shown in the figure above. Dry air was pumped inside the temperature chamber to maintain a backpressure during the test. The EUT was kept in the off condition at all times except when the measurements were to be made.

The chamber was switched on and the temperature was set to -30°C.

After the chamber stabilized at -30 °C there was a soak period of one hour to alleviate moisture in the chamber, the EUT voltage was enabled.

The system software recorded the frequency, power, and associated measurements.

A Computer system controlled the automated software. This application was given the command of activating all machines intrinsic to the temperature and voltage tests controlling the CMU 200 via the GPIB Bus. The Environmental Chamber was instructed through an RS-232 serial line. The EUT dialogue was passed through a serial connection.

The EUT repetitively transmitted 100 bursts for each set of programmed parameters recording temperature, voltage settings, and systematically selected frequencies. The power supply was cycled from minimum voltage 3.6 volts, to 3.8 volts to 4.2 volts nominal voltage. The frequency error was measured at a maximum output power and recorded by the automated system test software.

The EUT output power and frequency was measured at 3.6 volts, 3.8 volts and 4.2 volts. The transmit frequency was varied in 3 steps consisting of 824.2, 836.4, and 848.6 MHz for the GSM850 band and 1850.2, 1880.0 and 1909.8 MHz for the PCS band. This frequency was recorded in MHz and deviation from nominal, in Parts Per Million.

After the initial one-hour soak at the beginning of the tests, a period of thirty minutes soak was initialized between each ascending temperature step, before proceeding to the next measurement test cycle.

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

PROCEDURE:

The test system software for commencing the Frequency Stability Tests carried through the following cycle.

1. Switch on the HP 6632B power supply; CMU 200 Communications test Set, and Environmental Chamber.
2. Start test program
3. Set the Temperature to –30°C and maintain a period of one- hour soak time, with the EUT supply voltage disabled.
4. Set power supply voltage to 3.6 volts.
5. Set up CMU 200 Radio Communication Tester.
6. Command the CMU 200 to switch to the low channel.
7. Enable the voltage to the EUT, and connect a link to the CMU 200 test set.
8. EUT is commanded to Transmit 100 Bursts.
9. Software logs the following data from the CMU 200, power supply and temperature chamber: Traffic Channel Number, Traffic Channel Frequency, Power Level, Chamber Temperature, Supply Voltage, Power, Frequency Error.
10. The CMU 200 commands the EUT to change frequency to the middle channel and high channel and repeats steps 7 to 9.
11. Repeat steps 5 to 10 changing the supply voltage to 3.8 Volts
12. Increase temperature by 10°C and soak for 1/2 hour.
13. Repeat steps 4 - 12 for temperatures –30°C to 60°C.
14. Repeat steps 5 to 10 changing the supply voltage to 4.2 volts

Procedure 5 to 10 was repeated at room temperature (20°C) with the power supply voltage set to 3.6, 3.8 and 4.2 volts.

The maximum frequency error in the GSM850 band measured was **-0.0581 PPM**.

The maximum frequency error in the PCS band measured was **-0.0458 PPM**.

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

GSM850 Channel results: channels 128, 189 and 250 @ 20°C maximum transmitted power

Date of Test: July 25, 2007

| Traffic Channel Number | GSM850 Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|------------------------|-----------------|-----------------------|----------------------|---------|
| 128 | 824.20 | 3.6 | 20 | -17.89 | -0.0217 |
| 189 | 836.40 | 3.6 | 20 | -29.32 | -0.0351 |
| 250 | 848.60 | 3.6 | 20 | -35.77 | -0.0422 |

| Traffic Channel Number | GSM850 Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|------------------------|-----------------|-----------------------|----------------------|---------|
| 128 | 824.20 | 3.8 | 20 | -35.32 | -0.0429 |
| 189 | 836.40 | 3.8 | 20 | -32.16 | -0.0385 |
| 250 | 848.60 | 3.8 | 20 | -35.77 | -0.0422 |

| Traffic Channel Number | GSM850 Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|------------------------|-----------------|-----------------------|----------------------|---------|
| 128 | 824.20 | 4.2 | 20 | -20.79 | -0.0252 |
| 189 | 836.40 | 4.2 | 20 | -19.63 | -0.0235 |
| 250 | 848.60 | 4.2 | 20 | -19.18 | -0.0226 |

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

GSM850 Results: channel 128 @ maximum transmitted power

| Traffic Channel Number | Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|-----------------|-----------------|-----------------------|----------------------|----------------|
| 128 | 824.20 | 3.6 | -30 | 9.94 | 0.0121 |
| 128 | 824.20 | 3.6 | -20 | -15.17 | -0.0184 |
| 128 | 824.20 | 3.6 | -10 | -18.92 | -0.0230 |
| 128 | 824.20 | 3.6 | 0 | -23.83 | -0.0289 |
| 128 | 824.20 | 3.6 | 10 | -11.49 | -0.0139 |
| 128 | 824.20 | 3.6 | 20 | -17.89 | -0.0217 |
| 128 | 824.20 | 3.6 | 30 | -47.91 | -0.0581 |
| 128 | 824.20 | 3.6 | 40 | -39.26 | -0.0476 |
| 128 | 824.20 | 3.6 | 50 | -45.72 | -0.0555 |
| 128 | 824.20 | 3.6 | 60 | -37.58 | -0.0456 |

| Traffic Channel Number | Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|-----------------|-----------------|-----------------------|----------------------|---------|
| 128 | 824.20 | 3.8 | -30 | 14.08 | 0.0171 |
| 128 | 824.20 | 3.8 | -20 | -27.51 | -0.0334 |
| 128 | 824.20 | 3.8 | -10 | -43.33 | -0.0526 |
| 128 | 824.20 | 3.8 | 0 | -45.39 | -0.0551 |
| 128 | 824.20 | 3.8 | 10 | -29.77 | -0.0361 |
| 128 | 824.20 | 3.8 | 20 | -35.32 | -0.0429 |
| 128 | 824.20 | 3.8 | 30 | -37.06 | -0.0450 |
| 128 | 824.20 | 3.8 | 40 | -36.03 | -0.0437 |
| 128 | 824.20 | 3.8 | 50 | -42.81 | -0.0520 |
| 128 | 824.20 | 3.8 | 60 | -35.26 | -0.0428 |

| Traffic Channel Number | Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|-----------------|-----------------|-----------------------|----------------------|---------|
| 128 | 824.20 | 4.2 | -30 | -22.47 | -0.0273 |
| 128 | 824.20 | 4.2 | -20 | 19.57 | 0.0238 |
| 128 | 824.20 | 4.2 | -10 | -28.02 | -0.0340 |
| 128 | 824.20 | 4.2 | 0 | -18.85 | -0.0229 |
| 128 | 824.20 | 4.2 | 10 | 14.98 | 0.0182 |
| 128 | 824.20 | 4.2 | 20 | -20.79 | -0.0252 |
| 128 | 824.20 | 4.2 | 30 | -29.12 | -0.0353 |
| 128 | 824.20 | 4.2 | 40 | -24.41 | -0.0296 |
| 128 | 824.20 | 4.2 | 50 | -28.02 | -0.0340 |
| 128 | 824.20 | 4.2 | 60 | -19.11 | -0.0232 |

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|--|--|----------------------------------|
| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

GSM850 Results: channel 189 @ maximum transmitted power

| Traffic Channel Number | Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|-----------------|-----------------|-----------------------|----------------------|---------|
| 189 | 836.40 | 3.6 | -30 | 15.11 | 0.0178 |
| 189 | 836.40 | 3.6 | -20 | -47.14 | -0.0564 |
| 189 | 836.40 | 3.6 | -10 | -39.65 | -0.0474 |
| 189 | 836.40 | 3.6 | 0 | -28.73 | -0.0343 |
| 189 | 836.40 | 3.6 | 10 | -39.07 | -0.0467 |
| 189 | 836.40 | 3.6 | 20 | -29.32 | -0.0351 |
| 189 | 836.40 | 3.6 | 30 | -30.87 | -0.0369 |
| 189 | 836.40 | 3.6 | 40 | -26.86 | -0.0321 |
| 189 | 836.40 | 3.6 | 50 | -35.19 | -0.0421 |
| 189 | 836.40 | 3.6 | 60 | -26.54 | -0.0317 |

| Traffic Channel Number | Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|-----------------|-----------------|-----------------------|----------------------|---------|
| 189 | 836.40 | 3.8 | -30 | 25.96 | 0.0310 |
| 189 | 836.40 | 3.8 | -20 | -25.31 | -0.0303 |
| 189 | 836.40 | 3.8 | -10 | -38.61 | -0.0462 |
| 189 | 836.40 | 3.8 | 0 | -38.61 | -0.0462 |
| 189 | 836.40 | 3.8 | 10 | -20.79 | -0.0249 |
| 189 | 836.40 | 3.8 | 20 | -30.87 | -0.0369 |
| 189 | 836.40 | 3.8 | 30 | -32.74 | -0.0391 |
| 189 | 836.40 | 3.8 | 40 | -34.80 | -0.0416 |
| 189 | 836.40 | 3.8 | 50 | -35.45 | -0.0424 |
| 189 | 836.40 | 3.8 | 60 | -30.74 | -0.0368 |

| Traffic Channel Number | Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|-----------------|-----------------|-----------------------|----------------------|---------|
| 189 | 836.40 | 4.2 | -30 | -14.92 | -0.0178 |
| 189 | 836.40 | 4.2 | -20 | -19.37 | -0.0232 |
| 189 | 836.40 | 4.2 | -10 | -27.77 | -0.0332 |
| 189 | 836.40 | 4.2 | 0 | -14.27 | -0.0171 |
| 189 | 836.40 | 4.2 | 10 | 25.57 | 0.0306 |
| 189 | 836.40 | 4.2 | 20 | -19.63 | -0.0235 |
| 189 | 836.40 | 4.2 | 30 | -25.31 | -0.0303 |
| 189 | 836.40 | 4.2 | 40 | -15.43 | -0.0184 |
| 189 | 836.40 | 4.2 | 50 | -18.14 | -0.0217 |
| 189 | 836.40 | 4.2 | 60 | -7.94 | -0.0095 |

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

GSM850 Results: channel 250 @ maximum transmitted power

| Traffic Channel Number | Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|-----------------|-----------------|-----------------------|----------------------|---------|
| 250 | 848.60 | 3.6 | -30 | 15.11 | 0.0178 |
| 250 | 848.60 | 3.6 | -20 | -26.67 | -0.0314 |
| 250 | 848.60 | 3.6 | -10 | -43.13 | -0.0508 |
| 250 | 848.60 | 3.6 | 0 | -36.81 | -0.0434 |
| 250 | 848.60 | 3.6 | 10 | -48.36 | -0.0570 |
| 250 | 848.60 | 3.6 | 20 | -35.77 | -0.0422 |
| 250 | 848.60 | 3.6 | 30 | -34.93 | -0.0412 |
| 250 | 848.60 | 3.6 | 40 | -34.29 | -0.0404 |
| 250 | 848.60 | 3.6 | 50 | -38.16 | -0.0450 |
| 250 | 848.60 | 3.6 | 60 | -29.12 | -0.0343 |

| Traffic Channel Number | Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|-----------------|-----------------|-----------------------|----------------------|---------|
| 250 | 848.60 | 3.8 | -30 | -18.66 | -0.0220 |
| 250 | 848.60 | 3.8 | -20 | -26.73 | -0.0315 |
| 250 | 848.60 | 3.8 | -10 | -40.36 | -0.0476 |
| 250 | 848.60 | 3.8 | 0 | -37.71 | -0.0444 |
| 250 | 848.60 | 3.8 | 10 | -22.34 | -0.0263 |
| 250 | 848.60 | 3.8 | 20 | -35.77 | -0.0422 |
| 250 | 848.60 | 3.8 | 30 | -33.32 | -0.0391 |
| 250 | 848.60 | 3.8 | 40 | -34.42 | -0.0406 |
| 250 | 848.60 | 3.8 | 50 | -32.16 | -0.0379 |
| 250 | 848.60 | 3.8 | 60 | -32.09 | -0.0378 |

| Traffic Channel Number | Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|-----------------|-----------------|-----------------------|----------------------|---------|
| 250 | 848.60 | 4.2 | -30 | -9.56 | -0.0113 |
| 250 | 848.60 | 4.2 | -20 | -13.95 | -0.0164 |
| 250 | 848.60 | 4.2 | -10 | -24.28 | -0.0286 |
| 250 | 848.60 | 4.2 | 0 | 9.30 | 0.0110 |
| 250 | 848.60 | 4.2 | 10 | -19.95 | -0.0235 |
| 250 | 848.60 | 4.2 | 20 | -19.18 | -0.0226 |
| 250 | 848.60 | 4.2 | 30 | -23.25 | -0.0274 |
| 250 | 848.60 | 4.2 | 40 | -12.72 | -0.0150 |
| 250 | 848.60 | 4.2 | 50 | -9.94 | -0.0117 |
| 250 | 848.60 | 4.2 | 60 | 8.91 | 0.0105 |

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

PCS Channel results: channels 512, 661, & 810 @ 20°C maximum transmitted power

Date of Test: July 24, 2007

| Traffic Channel Number | PCS Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|---------------------|-----------------|-----------------------|----------------------|----------------|
| 512 | 1850.2 | 3.6 | 20 | -84.65 | -0.0458 |
| 661 | 1880.0 | 3.6 | 20 | -56.56 | -0.0301 |
| 810 | 1909.8 | 3.6 | 20 | -74.39 | -0.0390 |

| Traffic Channel Number | PCS Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|---------------------|-----------------|-----------------------|----------------------|---------|
| 512 | 1850.2 | 3.8 | 20 | -58.82 | -0.0318 |
| 661 | 1880.0 | 3.8 | 20 | -40.94 | -0.0218 |
| 810 | 1909.8 | 3.8 | 20 | -41.20 | -0.0216 |

| Traffic Channel Number | PCS Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|---------------------|-----------------|-----------------------|----------------------|---------|
| 512 | 1850.2 | 4.2 | 20 | -45.39 | -0.0245 |
| 661 | 1880.0 | 4.2 | 20 | -67.09 | -0.0357 |
| 810 | 1909.8 | 4.2 | 20 | -68.45 | -0.0358 |

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

PCS 1900 Results: channel 512 @ maximum transmitted power

| Traffic Channel Number | Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|-----------------|-----------------|-----------------------|----------------------|----------------|
| 512 | 1850.2 | 3.6 | -30 | -42.49 | -0.0230 |
| 512 | 1850.2 | 3.6 | -20 | -64.18 | -0.0347 |
| 512 | 1850.2 | 3.6 | -10 | -57.53 | -0.0311 |
| 512 | 1850.2 | 3.6 | 0 | -67.28 | -0.0364 |
| 512 | 1850.2 | 3.6 | 10 | -67.28 | -0.0364 |
| 512 | 1850.2 | 3.6 | 20 | -84.65 | -0.0458 |
| 512 | 1850.2 | 3.6 | 30 | -42.36 | -0.0229 |
| 512 | 1850.2 | 3.6 | 40 | -65.93 | -0.0356 |
| 512 | 1850.2 | 3.6 | 50 | -81.04 | -0.0438 |
| 512 | 1850.2 | 3.6 | 60 | -53.40 | -0.0289 |

| Traffic Channel Number | Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|-----------------|-----------------|-----------------------|----------------------|---------|
| 512 | 1850.2 | 3.8 | -30 | -36.42 | -0.0197 |
| 512 | 1850.2 | 3.8 | -20 | -22.73 | -0.0123 |
| 512 | 1850.2 | 3.8 | -10 | -43.59 | -0.0236 |
| 512 | 1850.2 | 3.8 | 0 | -59.79 | -0.0323 |
| 512 | 1850.2 | 3.8 | 10 | -49.66 | -0.0268 |
| 512 | 1850.2 | 3.8 | 20 | -58.82 | -0.0318 |
| 512 | 1850.2 | 3.8 | 30 | -75.42 | -0.0408 |
| 512 | 1850.2 | 3.8 | 40 | -73.93 | -0.0400 |
| 512 | 1850.2 | 3.8 | 50 | -52.50 | -0.0284 |
| 512 | 1850.2 | 3.8 | 60 | -69.48 | -0.0376 |

| Traffic Channel Number | Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|-----------------|-----------------|-----------------------|----------------------|---------|
| 512 | 1850.2 | 4.2 | -30 | -62.89 | -0.0340 |
| 512 | 1850.2 | 4.2 | -20 | -53.40 | -0.0289 |
| 512 | 1850.2 | 4.2 | -10 | -54.69 | -0.0296 |
| 512 | 1850.2 | 4.2 | 0 | -34.16 | -0.0185 |
| 512 | 1850.2 | 4.2 | 10 | -36.74 | -0.0199 |
| 512 | 1850.2 | 4.2 | 20 | -45.39 | -0.0245 |
| 512 | 1850.2 | 4.2 | 30 | -64.18 | -0.0347 |
| 512 | 1850.2 | 4.2 | 40 | -61.41 | -0.0332 |
| 512 | 1850.2 | 4.2 | 50 | -53.08 | -0.0287 |
| 512 | 1850.2 | 4.2 | 60 | -75.48 | -0.0408 |

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

PCS 1900 Results: channel 661 @ maximum transmitted power

| Traffic Channel Number | Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|-----------------|-----------------|-----------------------|----------------------|---------|
| 661 | 1880 | 3.6 | -30 | -52.11 | -0.0277 |
| 661 | 1880 | 3.6 | -20 | -43.07 | -0.0229 |
| 661 | 1880 | 3.6 | -10 | -57.21 | -0.0304 |
| 661 | 1880 | 3.6 | 0 | -46.81 | -0.0249 |
| 661 | 1880 | 3.6 | 10 | -74.00 | -0.0394 |
| 661 | 1880 | 3.6 | 20 | -56.56 | -0.0301 |
| 661 | 1880 | 3.6 | 30 | -56.11 | -0.0298 |
| 661 | 1880 | 3.6 | 40 | -70.45 | -0.0375 |
| 661 | 1880 | 3.6 | 50 | -79.88 | -0.0425 |
| 661 | 1880 | 3.6 | 60 | -71.29 | -0.0379 |

| Traffic Channel Number | Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|-----------------|-----------------|-----------------------|----------------------|---------|
| 661 | 1880 | 3.8 | -30 | -28.15 | -0.0150 |
| 661 | 1880 | 3.8 | -20 | -25.76 | -0.0137 |
| 661 | 1880 | 3.8 | -10 | -60.63 | -0.0323 |
| 661 | 1880 | 3.8 | 0 | -28.28 | -0.0150 |
| 661 | 1880 | 3.8 | 10 | -54.50 | -0.0290 |
| 661 | 1880 | 3.8 | 20 | -40.94 | -0.0218 |
| 661 | 1880 | 3.8 | 30 | -61.80 | -0.0329 |
| 661 | 1880 | 3.8 | 40 | -52.17 | -0.0278 |
| 661 | 1880 | 3.8 | 50 | -64.31 | -0.0342 |
| 661 | 1880 | 3.8 | 60 | -37.84 | -0.0201 |

| Traffic Channel Number | Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|-----------------|-----------------|-----------------------|----------------------|---------|
| 661 | 1880 | 4.2 | -30 | -22.08 | -0.0117 |
| 661 | 1880 | 4.2 | -20 | -28.67 | -0.0153 |
| 661 | 1880 | 4.2 | -10 | -20.40 | -0.0109 |
| 661 | 1880 | 4.2 | 0 | -31.25 | -0.0166 |
| 661 | 1880 | 4.2 | 10 | -51.79 | -0.0275 |
| 661 | 1880 | 4.2 | 20 | -67.09 | -0.0357 |
| 661 | 1880 | 4.2 | 30 | -40.68 | -0.0216 |
| 661 | 1880 | 4.2 | 40 | -48.82 | -0.0260 |
| 661 | 1880 | 4.2 | 50 | -37.00 | -0.0197 |
| 661 | 1880 | 4.2 | 60 | -51.21 | -0.0272 |

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

PCS 1900 Results: channel 810 @ maximum transmitted power

| Traffic Channel Number | Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|-----------------|-----------------|-----------------------|----------------------|---------|
| 810 | 1909.8 | 3.6 | -30 | -41.78 | -0.0219 |
| 810 | 1909.8 | 3.6 | -20 | -55.27 | -0.0289 |
| 810 | 1909.8 | 3.6 | -10 | -34.87 | -0.0183 |
| 810 | 1909.8 | 3.6 | 0 | -66.19 | -0.0347 |
| 810 | 1909.8 | 3.6 | 10 | -73.55 | -0.0385 |
| 810 | 1909.8 | 3.6 | 20 | -74.39 | -0.0390 |
| 810 | 1909.8 | 3.6 | 30 | -59.86 | -0.0313 |
| 810 | 1909.8 | 3.6 | 40 | -64.64 | -0.0338 |
| 810 | 1909.8 | 3.6 | 50 | -78.71 | -0.0412 |
| 810 | 1909.8 | 3.6 | 60 | -52.95 | -0.0277 |

| Traffic Channel Number | Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|-----------------|-----------------|-----------------------|----------------------|---------|
| 810 | 1909.8 | 3.8 | -30 | -39.97 | -0.0209 |
| 810 | 1909.8 | 3.8 | -20 | -43.84 | -0.0230 |
| 810 | 1909.8 | 3.8 | -10 | -58.11 | -0.0304 |
| 810 | 1909.8 | 3.8 | 0 | -30.74 | -0.0161 |
| 810 | 1909.8 | 3.8 | 10 | -56.44 | -0.0296 |
| 810 | 1909.8 | 3.8 | 20 | -41.20 | -0.0216 |
| 810 | 1909.8 | 3.8 | 30 | -63.73 | -0.0334 |
| 810 | 1909.8 | 3.8 | 40 | -53.59 | -0.0281 |
| 810 | 1909.8 | 3.8 | 50 | -63.47 | -0.0332 |
| 810 | 1909.8 | 3.8 | 60 | -46.10 | -0.0241 |

| Traffic Channel Number | Frequency (MHz) | Voltage (Volts) | Temperature (Celsius) | Frequency Error (Hz) | PPM |
|------------------------|-----------------|-----------------|-----------------------|----------------------|---------|
| 810 | 1909.8 | 4.2 | -30 | -19.76 | -0.0103 |
| 810 | 1909.8 | 4.2 | -20 | -32.67 | -0.0171 |
| 810 | 1909.8 | 4.2 | -10 | -29.12 | -0.0152 |
| 810 | 1909.8 | 4.2 | 0 | -32.74 | -0.0171 |
| 810 | 1909.8 | 4.2 | 10 | -48.11 | -0.0252 |
| 810 | 1909.8 | 4.2 | 20 | -68.45 | -0.0358 |
| 810 | 1909.8 | 4.2 | 30 | -42.62 | -0.0223 |
| 810 | 1909.8 | 4.2 | 40 | -46.30 | -0.0242 |
| 810 | 1909.8 | 4.2 | 50 | -33.90 | -0.0178 |
| 810 | 1909.8 | 4.2 | 60 | -44.55 | -0.0233 |

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

APPENDIX 4 – RADIATED EMMISIONS TEST DATA

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Radiated Emissions Test Data Results cont'd

GSM Mode

The environmental test conditions were:

| | |
|-------------------|---------|
| Temperature | 25°C |
| Pressure | 1001 mb |
| Relative Humidity | 32% |

The Spurious Emission measurements were performed in GSM 850 Tx mode, channel 195, 837.6 MHz.

Date of Test: July 14, 2007

Test Distance was 3.0 metres with a EUT height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone was in standalone, vertical position.

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

All emissions had a test margin greater than 25.0 dB.

| | | | |
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| RTS RIM Testing Services | | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Radiated Emissions Test Data Results cont'd

Test distance is 3.0 metres. Harmonics were measured up to 9 GHz.

Date of test: July 13, 2007

| EUT | | | | Rx Antenna | | Spectrum Analyzer | | Substitution Method | | | | |
|--|-----|--------------------|------|------------|------|-------------------|---------------------|---------------------|------------------|---|----------------|--------------------------|
| | | | | | | | | Tracking Generator | | | | |
| Type | Ch | Frequency (MHz) | Band | Type | Pol. | Reading (dBuV) | Max (V,H) (dBuV) | Pol. Tx-Rx | Reading (dBm) | Corrected Reading (relative to dipole) | Limit (dBm) | Diff to Limit (dB) |
| GSM850 Band (Harmonics) BlackBerry® smartphone Standalone, Horizontal | | | | | | | | | | | | |
| Low Channel – 824.2 MHz | | | | | | | | | | | | |
| 2nd | 128 | 1648.40 | 850 | Horn | V | 51.15 | 56.79 | V-V | -6.14 | -42.81 | -13 | -29.8 |
| 2nd | 128 | 1648.40 | 850 | Horn | H | 56.79 | | H-H | -7.58 | | | |
| 3rd | 128 | 2472.60 | 850 | Horn | V | 44.14 | 48.38 | V-V | -4.04 | -41.54 | -13 | -28.5 |
| 3rd | 128 | 2472.60 | 850 | Horn | H | 48.38 | | H-H | -7.26 | | | |
| The emissions were investigated up to the 10 th harmonic. Emissions above the 3 rd harmonic were in the noise floor (NF). | | | | | | | | | | | | |
| Mid Channel – 837.6 MHz | | | | | | | | | | | | |
| 2nd | 195 | 1675.20 | 850 | Horn | V | 55.49 | 57.31 | V-V | -5.48 | -42.28 | -13 | -29.3 |
| 2nd | 195 | 1675.20 | 850 | Horn | H | 57.31 | | H-H | -6.80 | | | |
| 3rd | 195 | 2512.80 | 850 | Horn | V | 48.20 | 50.38 | V-V | -0.74 | -38.34 | -13 | -25.3 |
| 3rd | 195 | 2512.80 | 850 | Horn | H | 50.38 | | H-H | -3.76 | | | |
| The emissions were investigated up to the 10 th harmonic. Emissions above the 3 rd harmonic were in the NF. | | | | | | | | | | | | |
| High Channel – 848.8 MHz | | | | | | | | | | | | |
| 2nd | 251 | 1697.60 | 850 | Horn | V | 55.07 | 57.41 | V-V | -5.42 | -42.28 | -13 | -29.9 |
| 2nd | 251 | 1697.60 | 850 | Horn | H | 57.41 | | H-H | -6.54 | | | |
| 3rd | 251 | 2546.40 | 850 | Horn | V | 46.92 | 50.12 | V-V | -1.06 | -38.59 | -13 | -25.6 |
| 3rd | 251 | 2546.40 | 850 | Horn | H | 50.12 | | H-H | -4.42 | | | |
| The emissions were investigated up to the 10 th harmonic. Emissions above the 3 rd harmonic were in the NF. | | | | | | | | | | | | |

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill | |

Radiated Emissions Test Data Results cont'd

GPRS Mode

Test distance is 3.0 metres.

Date of test: July 13, 2007

| EUT | | | | Rx Antenna | | Spectrum Analyzer | | Substitution Method | | | | |
|--|-----|--------------------|------|------------|------|-------------------|---------------------|---------------------|------------------|---|----------------|--------------------------|
| | | | | | | | | Tracking Generator | | | | |
| Type | Ch | Frequency (MHz) | Band | Type | Pol. | Reading (dBuV) | Max (V,H) (dBuV) | Pol. Tx-Rx | Reading (dBm) | Corrected Reading (relative to dipole) | Limit (dBm) | Diff to Limit (dB) |
| GSM850 Band (Harmonics) BlackBerry® smartphone Standalone, Horizontal | | | | | | | | | | | | |
| Low Channel – 824.2 MHz | | | | | | | | | | | | |
| 2nd | 128 | 1648.40 | 850 | Horn | V | 52.94 | 58.49 | V-V | -4.18 | -40.85 | -13 | -27.9 |
| 2nd | 128 | 1648.40 | 850 | Horn | H | 58.49 | | H-H | -5.38 | | | |
| 3rd | 128 | 2472.60 | 850 | Horn | V | 47.49 | 50.45 | V-V | -1.68 | -39.18 | -13 | -26.2 |
| 3rd | 128 | 2472.60 | 850 | Horn | H | 50.45 | | H-H | -4.62 | | | |
| The emissions were investigated up to the 10 th harmonic. Emissions above the 3 rd harmonic were in the NF | | | | | | | | | | | | |
| Mid Channel – 837.6 MHz | | | | | | | | | | | | |
| 2nd | 195 | 1675.20 | 850 | Horn | V | 52.38 | 57.02 | V-V | -5.94 | -42.74 | -13 | -29.7 |
| 2nd | 195 | 1675.20 | 850 | Horn | H | 57.02 | | H-H | -6.86 | | | |
| 3rd | 195 | 2512.80 | 850 | Horn | V | 48.00 | 50.91 | V-V | 0.20 | -37.40 | -13 | -24.4 |
| 3rd | 195 | 2512.80 | 850 | Horn | H | 50.91 | | H-H | -2.98 | | | |
| The emissions were investigated up to the 10 th harmonic. Emissions above the 3 rd harmonic were in the NF. | | | | | | | | | | | | |
| High Channel – 848.8 MHz | | | | | | | | | | | | |
| 2nd | 251 | 1697.60 | 850 | Horn | V | 53.74 | 58.76 | V-V | -3.98 | -40.84 | -13 | -27.8 |
| 2nd | 251 | 1697.60 | 850 | Horn | H | 58.76 | | H-H | -4.90 | | | |
| 3rd | 251 | 2546.40 | 850 | Horn | V | 46.65 | 49.34 | V-V | -1.84 | -39.37 | -13 | -26.4 |
| 3rd | 251 | 2546.40 | 850 | Horn | H | 49.34 | | H-H | -5.44 | | | |
| The emissions were investigated up to the 10 th harmonic. Emissions above the 3 rd harmonic were in the NF. | | | | | | | | | | | | |

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Radiated Emissions Test Data Results cont'd

EDGE Mode

The environmental test conditions were:

| | |
|-------------------|---------|
| Temperature | 25°C |
| Pressure | 1001 mb |
| Relative Humidity | 32% |

The Spurious Emissions measurements were performed in GSM 850 EDGE Tx mode, channel 195, 837.6 MHz.

Date of Test: July 14, 2007

Test Distance was 3.0 metres with a EUT height of 1.0 metres, 30 MHz to 1000 MHz. The BlackBerry® smartphone was in standalone, vertical position.

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

All emissions had a test margin greater than 25.0 dB.

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| RTS RIM Testing Services | | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Radiated Emissions Test Data Results cont'd

Test distance is 3.0 metres.

Date of test: July 13, 2007

| EUT | | | | Rx Antenna | | Spectrum Analyzer | | Substitution Method | | | | |
|--|-----|--------------------|------|------------|------|-------------------|---------------------|---------------------|------------------|---|----------------|--------------------------|
| | | | | | | | | Tracking Generator | | | | |
| Type | Ch | Frequency (MHz) | Band | Type | Pol. | Reading (dBuV) | Max (V,H) (dBuV) | Pol. Tx-Rx | Reading (dBm) | Corrected Reading (relative to dipole) | Limit (dBm) | Diff to Limit (dB) |
| GSM850 Band (Harmonics) BlackBerry® smartphone Standalone, Horizontal | | | | | | | | | | | | |
| Low Channel – 824.2 MHz | | | | | | | | | | | | |
| 2nd | 128 | 1648.40 | 850 | Horn | V | 54.16 | 57.97 | V-V | -4.96 | -41.63 | -13 | -28.6 |
| 2nd | 128 | 1648.40 | 850 | Horn | H | 57.97 | | H-H | -5.84 | | | |
| 3rd | 128 | 2472.60 | 850 | Horn | V | 45.46 | 47.74 | V-V | -4.64 | -42.14 | -13 | -29.1 |
| 3rd | 128 | 2472.60 | 850 | Horn | H | 47.74 | | H-H | -8.16 | | | |
| The emissions were investigated up to the 10 th harmonic. Emissions above the 3 rd harmonic were in the NF | | | | | | | | | | | | |
| Mid Channel – 837.6 MHz | | | | | | | | | | | | |
| 2nd | 195 | 1675.20 | 850 | Horn | V | 51.20 | 53.91 | V-V | -9.04 | -45.84 | -13 | -32.8 |
| 2nd | 195 | 1675.20 | 850 | Horn | H | 53.91 | | H-H | -10.46 | | | |
| 3rd | 195 | 2512.80 | 850 | Horn | V | 43.65 | 46.34 | V-V | -4.88 | -42.48 | -13 | -29.5 |
| 3rd | 195 | 2512.80 | 850 | Horn | H | 46.34 | | H-H | -9.60 | | | |
| The emissions were investigated up to the 10 th harmonic. Emissions above the 3 rd harmonic were in the NF. | | | | | | | | | | | | |
| High Channel – 848.8 MHz | | | | | | | | | | | | |
| 2nd | 251 | 1697.60 | 850 | Horn | V | 52.05 | 55.51 | V-V | -7.20 | -43.73 | -13 | -30.7 |
| 2nd | 251 | 1697.60 | 850 | Horn | H | 55.51 | | H-H | -6.87 | | | |
| 3rd | 251 | 2546.40 | 850 | Horn | V | 42.11 | 46.17 | V-V | -5.50 | -43.03 | -13 | -30.0 |
| 3rd | 251 | 2546.40 | 850 | Horn | H | 46.17 | | H-H | -6.48 | | | |
| The emissions were investigated up to the 10 th harmonic. Emissions above the 3 rd harmonic were in the NF. | | | | | | | | | | | | |

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | | Author Data C. O'Neill |

Radiated Emissions Test Data Results cont'd

Test distance is 3.0 metres.

Date of test: July 13, 2007

| EUT | | | | Rx Antenna | | Spectrum Analyzer | | Substitution Method | | | | |
|--|-----|--------------------|------|------------|------|-------------------|---------------------|---------------------|------------------|---|----------------|--------------------------|
| | | | | | | | | Tracking Generator | | | | |
| Type | Ch | Frequency (MHz) | Band | Type | Pol. | Reading (dBuV) | Max (V,H) (dBuV) | Pol. Tx-Rx | Reading (dBm) | Corrected Reading (relative to dipole) | Limit (dBm) | Diff to Limit (dB) |
| GSM BAND | | | | | | | | | | | | |
| RF Local Oscillator (LO ₁) BlackBerry® smartphone Standalone, USB up | | | | | | | | | | | | |
| Low Channel (824.2 MHz) | | | | | | | | | | | | |
| F0 | 128 | 3296.8 | 850 | Horn | V | NF | N/A | V-V | N/A | N/A | - | N/A |
| F0 | 128 | 3296.8 | 850 | Horn | H | NF | | | | | | |
| Emissions were in the NF. | | | | | | | | | | | | |
| High Channel (848.8 MHz) | | | | | | | | | | | | |
| F0 | 251 | 3395.2 | 850 | Horn | V | NF | N/A | V-V | N/A | N/A | - | N/A |
| F0 | 251 | 3395.2 | 850 | Horn | H | NF | | | | | | |
| Emissions were in the NF. | | | | | | | | | | | | |
| RF LO ₂ | | | | | | | | | | | | |
| Low Channel (824.2 MHz) | | | | | | | | | | | | |
| F0 | 128 | 3476.80 | 850 | Horn | V | NF | N/A | V-V | N/A | N/A | - | N/A |
| F0 | 128 | 3476.80 | 850 | Horn | H | NF | | | | | | |
| Emissions were in the NF. | | | | | | | | | | | | |
| High Channel (848.8 MHz) | | | | | | | | | | | | |
| F0 | 251 | 3575.20 | 850 | Horn | V | NF | N/A | V-V | N/A | N/A | - | N/A |
| F0 | 251 | 3575.20 | 850 | Horn | H | NF | | | | | | |
| Emissions were in the NF. | | | | | | | | | | | | |

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| RTS RIM Testing Services | | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Radiated Emissions Test Data Results cont'd

PCS Band

Test Distance was 3.0 metres.

Date of test: July 24, 2007

| | | | | | | | | Substitution Method | | | | | |
|---|-----|-----------|------|-----------------|------|-------------------|-----------|---------------------|---------|---|-------|-------|---------------|
| EUT | | | | Receive Antenna | | Spectrum Analyzer | | Tracking Generator | | | | | |
| | | Frequency | | | | Reading | Max (V,H) | Pol. | Reading | Corrected Reading (relative to Isotropic Radiator) | | Limit | Diff to Limit |
| Type | Ch | (MHz) | Band | Type | Pol. | (dBuV) | dBuV | Tx-Rx | (dBm) | (dBm) | (W) | | |
| PCS BAND (EIRP) | | | | | | | | | | | | | |
| BlackBerry® smartphone Standalone, USB down | | | | | | | | | | | | | |
| F0 | 512 | 1850.20 | 1900 | Horn | V | 87.50 | 90.24 | V-V | -8.96 | 27.34 | 0.542 | 33 | -5.66 |
| F0 | 512 | 1850.20 | 1900 | Horn | H | 90.24 | | H-H | -7.56 | | | | |
| F0 | 661 | 1880.00 | 1900 | Horn | V | 87.14 | 89.75 | V-V | -8.24 | 27.62 | 0.578 | 33 | -5.38 |
| F0 | 661 | 1880.00 | 1900 | Horn | H | 89.75 | | H-H | -6.88 | | | | |
| F0 | 810 | 1909.80 | 1900 | Horn | V | 87.71 | 89.68 | V-V | -7.76 | 27.46 | 0.557 | 33 | -5.54 |
| F0 | 810 | 1909.80 | 1900 | Horn | H | 89.68 | | H-H | -6.74 | | | | |

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Radiated Emissions Test Data Results cont'd

GSM Mode

The environmental test conditions were:

| | |
|-------------------|---------|
| Temperature | 24°C |
| Pressure | 1001 mb |
| Relative Humidity | 33% |

The Spurious Emission measurements were performed in PCS Tx mode, channel 661, 1880.0 MHz.

Date of Test: July 14, 2007

Test Distance was 3.0 metres with a EUT height of 1.0 metres, 30 MHz to 1000 MHz. The BlackBerry® smartphone was in standalone, vertical position.

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

All emissions had a test margin greater than 25.0 dB.

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Radiated Emissions Test Data Results cont'd

Test Distance was 3.0 metres. Harmonics were measured up to 19 GHz.

Date of test: July 13, 2007

| | | | | | | | | Substitution Method | | | | |
|---|-----|------------------------|------|-----------------|------|-----------------------|-------------------------|---------------------|----------------------|---|--------------------|------------------------------|
| EUT | | | | Receive Antenna | | Spectrum Analyzer | | Tracking Generator | | | | |
| Type | Ch | Frequency (MHz) | Band | Pol. Type | Pol. | Reading (dBuV) | Max (V,H) (dBuV) | Pol. Tx-Rx | Reading (dBm) | Corrected Reading (relative to Isotropic Radiator) (dBm) | Limit (dBm) | Diff to Limit (dB) |
| PCS BAND (Harmonics) BlackBerry® smartphone Standalone, USB down | | | | | | | | | | | | |
| Low Channel 1850.2 MHz | | | | | | | | | | | | |
| 2 nd | 512 | 3700.40 | 1900 | Horn | V | 42.46 | 42.46 | V-V | -4.66 | -40.73 | -13 | -27.73 |
| 2 nd | 512 | 3700.40 | 1900 | Horn | H | 42.03 | | H-H | -4.68 | | | |
| 3 rd | 512 | 5550.60 | 1900 | Horn | V | NF | NF | V-V | - | - | - | - |
| 3 rd | 512 | 5550.60 | 1900 | Horn | H | NF | | H-H | - | | | |
| The emissions were investigated up to the 10th harmonic. Emissions above the 2 nd harmonic were in the NF | | | | | | | | | | | | |
| Middle Channel 1880.0 MHz | | | | | | | | | | | | |
| 2 nd | 661 | 3760.00 | 1900 | Horn | V | 40.85 | 40.87 | V-V | -2.98 | -39.08 | -13 | -26.08 |
| 2 nd | 661 | 3760.00 | 1900 | Horn | H | 40.87 | | H-H | -3.10 | | | |
| 3 rd | 661 | 5640.00 | 1900 | Horn | V | NF | NF | V-V | - | - | - | - |
| 3 rd | 661 | 5640.00 | 1900 | Horn | H | NF | | H-H | - | | | |
| The emissions were investigated up to the 10th harmonic. Emissions above the 2 nd harmonic were in the NF | | | | | | | | | | | | |
| High Channel 1909.8 MHz | | | | | | | | | | | | |
| 2 nd | 810 | 3819.60 | 1900 | Horn | V | 40.41 | 40.41 | V-V | -6.80 | -42.93 | -13 | -29.93 |
| 2 nd | 810 | 3819.60 | 1900 | Horn | H | 39.70 | | H-H | -7.32 | | | |
| 3 rd | 810 | 5729.40 | 1900 | Horn | V | NF | NF | V-V | - | - | - | - |
| 3 rd | 810 | 5729.40 | 1900 | Horn | H | NF | | H-H | - | | | |
| The emissions were investigated up to the 10th harmonic. Emissions above the 2 nd harmonic were in the NF | | | | | | | | | | | | |

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill | |

Radiated Emissions Test Data Results cont'd

GPRS Mode

Test Distance was 3.0 metres.

Date of test: July 13, 2007

| | | | | | | | | Substitution Method | | | | |
|---|-----|------------------------|------|-----------------|------|-----------------------|-------------------------|---------------------|----------------------|---|--------------------|------------------------------|
| EUT | | | | Receive Antenna | | Spectrum Analyzer | | Tracking Generator | | | | |
| Type | Ch | Frequency (MHz) | Band | Pol. Type | Pol. | Reading (dBuV) | Max (V,H) (dBuV) | Pol. Tx-Rx | Reading (dBm) | Corrected Reading (relative to Isotropic Radiator) (dBm) | Limit (dBm) | Diff to Limit (dB) |
| PCS BAND (Harmonics) BlackBerry® smartphone Standalone, USB up | | | | | | | | | | | | |
| Low Channel 1850.2 MHz | | | | | | | | | | | | |
| 2 nd | 512 | 3700.40 | 1900 | Horn | V | 42.37 | 42.37 | V-V | -4.94 | -40.83 | -13 | -27.83 |
| 2 nd | 512 | 3700.40 | 1900 | Horn | H | 41.48 | | H-H | -4.76 | | | |
| 3 rd | 512 | 5550.60 | 1900 | Horn | V | NF | NF | V-V | - | - | - | - |
| 3 rd | 512 | 5550.60 | 1900 | Horn | H | NF | | H-H | - | | | |
| The emissions were investigated up to the 10th harmonic. Emissions above the 2 nd harmonic were in the NF | | | | | | | | | | | | |
| Middle Channel 1880.0 MHz | | | | | | | | | | | | |
| 2 nd | 661 | 3760.00 | 1900 | Horn | V | 40.87 | 40.87 | V-V | -2.98 | -39.08 | -13 | -26.08 |
| 2 nd | 661 | 3760.00 | 1900 | Horn | H | 40.57 | | H-H | -3.44 | | | |
| 3 rd | 661 | 5640.00 | 1900 | Horn | V | NF | NF | V-V | - | - | - | - |
| 3 rd | 661 | 5640.00 | 1900 | Horn | H | NF | | H-H | - | | | |
| The emissions were investigated up to the 10th harmonic. Emissions above the 2 nd harmonic were in the NF | | | | | | | | | | | | |
| High Channel 1909.8 MHz | | | | | | | | | | | | |
| 2 nd | 810 | 3819.60 | 1900 | Horn | V | 40.67 | 40.67 | V-V | -6.60 | -42.73 | -13 | -29.73 |
| 2 nd | 810 | 3819.60 | 1900 | Horn | H | 40.17 | | H-H | -7.00 | | | |
| 3 rd | 810 | 5729.40 | 1900 | Horn | V | NF | NF | V-V | - | - | - | - |
| 3 rd | 810 | 5729.40 | 1900 | Horn | H | NF | | H-H | - | | | |
| The emissions were investigated up to the 10th harmonic. Emissions above the 2 nd harmonic were in the NF | | | | | | | | | | | | |

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Radiated Emissions Test Data Results cont'd

EDGE Mode

The environmental test conditions were:

| | |
|-------------------|---------|
| Temperature | 24°C |
| Pressure | 1001 mb |
| Relative Humidity | 32% |

The Spurious Emission measurements were performed in PCS EDGE Tx mode, channel 661, 1880.0 MHz.

Date of Test: July 14, 2007

Test Distance was 3.0 metres with a EUT height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone was in standalone, vertical position.

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

All emissions had a test margin greater than 25.0 dB.

| | | |
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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill |

Radiated Emissions Test Data Results cont'd

Test Distance was 3.0 metres.

Date of test: July 13, 2007

| | | | | | | | | Substitution Method | | | | |
|---|-----|------------------------|------|-----------------|------|-----------------------|-------------------------|---------------------|----------------------|---|--------------------|------------------------------|
| EUT | | | | Receive Antenna | | Spectrum Analyzer | | Tracking Generator | | | | |
| Type | Ch | Frequency (MHz) | Band | Pol. Type | Pol. | Reading (dBuV) | Max (V,H) (dBuV) | Pol. Tx-Rx | Reading (dBm) | Corrected Reading (relative to Isotropic Radiator) (dBm) | Limit (dBm) | Diff to Limit (dB) |
| PCS BAND (Harmonics) BlackBerry® smartphone Standalone, USB up | | | | | | | | | | | | |
| Low Channel 1850.2 MHz | | | | | | | | | | | | |
| 2 nd | 512 | 3700.40 | 1900 | Horn | V | 41.12 | 41.12 | V-V | -6.46 | -42.53 | -13 | -29.53 |
| 2 nd | 512 | 3700.40 | 1900 | Horn | H | 40.39 | | H-H | -6.58 | | | |
| 3 rd | 512 | 5550.60 | 1900 | Horn | V | NF | NF | V-V | - | - | - | - |
| 3 rd | 512 | 5550.60 | 1900 | Horn | H | NF | | H-H | - | | | |
| The emissions were investigated up to the 10th harmonic. Emissions above the 2 nd harmonic were in the NF | | | | | | | | | | | | |
| Middle Channel 1880.0 MHz | | | | | | | | | | | | |
| 2 nd | 661 | 3760.00 | 1900 | Horn | V | 40.55 | 40.55 | V-V | -3.78 | -39.88 | -13 | -26.88 |
| 2 nd | 661 | 3760.00 | 1900 | Horn | H | 40.19 | | H-H | -4.00 | | | |
| 3 rd | 661 | 5640.00 | 1900 | Horn | V | NF | NF | V-V | - | - | - | - |
| 3 rd | 661 | 5640.00 | 1900 | Horn | H | NF | | H-H | - | | | |
| The emissions were investigated up to the 10th harmonic. Emissions above the 2 nd harmonic were in the NF | | | | | | | | | | | | |
| High Channel 1909.8 MHz | | | | | | | | | | | | |
| 2 nd | 810 | 3819.60 | 1900 | Horn | V | 39.55 | 39.55 | V-V | -8.08 | -44.21 | -13 | -31.21 |
| 2 nd | 810 | 3819.60 | 1900 | Horn | H | 39.25 | | H-H | -8.70 | | | |
| 3 rd | 810 | 5729.40 | 1900 | Horn | V | NF | NF | V-V | - | - | - | - |
| 3 rd | 810 | 5729.40 | 1900 | Horn | H | NF | | H-H | - | | | |
| The emissions were investigated up to the 10th harmonic. Emissions above the 2 nd harmonic were in the NF | | | | | | | | | | | | |

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| RTS RIM Testing Services | EMI Test Report for the BlackBerry® smartphone Model RBR41GW | | |
| Test Report No. RTS-0655-0707-31 | Dates of Test July 13 to 26, 2007 | Author Data C. O'Neill | |

Radiated Emissions Test Data Results cont'd

Test Distance was 3.0 metres.

Date of test: July 13, 2007

The measurements were performed in transmit mode with the BlackBerry® smartphone in standalone position.

| EUT | | | | Rx Antenna | | Spectrum Analyzer | | | Substitution Method | | | | |
|--|-----|--------------------|------|------------|------|-------------------|--------------------------------|------------------------|---------------------|------------------|---|----------------|--------------------------|
| | | | | | | | Tracking Generator | | | | | | |
| Type | Ch | Frequency (MHz) | Band | Type | Pol. | Reading (dBuV) | Corrected Reading (dBuV) | Max (V,H) (dBuV) | Pol. Tx- Rx | Reading (dBm) | Corrected Reading (relative to Isotropic Radiator) (dBm) | Limit (dBm) | Diff to Limit (dB) |
| RF LO ₁ - BlackBerry® smartphone Standalone, Horizontal | | | | | | | | | | | | | |
| Low Channel | | | | | | | | | | | | | |
| F0 | 512 | 3700.4 | 1900 | Horn | V | NF | N/A | N/A | V-V | N/A | N/A | - | N/A |
| F0 | 512 | 3700.4 | 1900 | Horn | H | NF | | | | | | | |
| Emissions were in the NF. | | | | | | | | | | | | | |
| High Channel | | | | | | | | | | | | | |
| F0 | 810 | 3819.6 | 1900 | Horn | V | NF | N/A | N/A | V-V | N/A | N/A | - | N/A |
| F0 | 810 | 3819.6 | 1900 | Horn | H | NF | | | | | | | |
| Emissions were in the NF. | | | | | | | | | | | | | |
| RF LO ₂ | | | | | | | | | | | | | |
| Low Channel | | | | | | | | | | | | | |
| F0 | 512 | 3860.4 | 1900 | Horn | V | NF | NF | N/A | V-V | N/A | N/A | - | N/A |
| F0 | 512 | 3860.4 | 1900 | Horn | H | NF | | | | | | | |
| Emissions were in the NF. | | | | | | | | | | | | | |
| High Channel | | | | | | | | | | | | | |
| F0 | 810 | 3979.6 | 1900 | Horn | V | NF | NF | N/A | V-V | N/A | N/A | - | N/A |
| F0 | 810 | 3979.6 | 1900 | Horn | H | NF | | | | | | | |
| Emissions were in the NF. | | | | | | | | | | | | | |