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 and 133

RIM Testing Services (RTS)

A division of Research In Motion Limited

REPORT NO: RTS-1191-0808-08

PRODUCT MODEL NO:	RBW71CW
TYPE NAME:	BlackBerry® smartphone
FCC ID:	L6ARBW70CW
IC:	2503A-RBW70CW
EMISSION DESIGNATOR (GSM):	247KG7W
EMISSION DESIGNATOR (EDGE):	247KGXW
EMISSION DESIGNATOR (CDMA):	1M29F9W

DATE: 23 September 2008

Statement of Performance:

The BlackBerry® smartphone, model RBW71CW, part number CER-17673-001 Rev. 4 and accessories when configured and operated per RIM's operation instructions, perform within the requirements of the test standards.

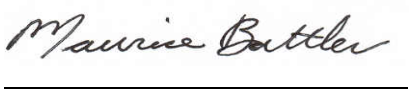
Declaration:

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:

Gurjeev Singh
Compliance Specialist
Date: 23 September 2008

Reviewed by:



Maurice Battler
Compliance Specialist
Date:23 September 2008

Reviewed by:

Masud S. Attayi, P.Eng.
Team Lead, Regulatory Compliance
Date: 24 September 2008

Approved by:

Paul G. Cardinal, Ph.D.
Director
Date: 26 September 2008

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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 4, February 2008, 2 GHz Personal Communications Services.

B Associated Documents

1. Document number RTS-1191-RBW71CW-01
2. Document number RTS-1191-RBW71CW-02
3. Cetecom test report 4-3120-01-04/08

C Product Identification

Manufactured by Research In Motion Limited whose headquarters is 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 following locations:

RIM Testing Services (RTS) EMI test facility
305 Phillip Street
Waterloo, Ontario
Canada, N2L 3W8
Phone: 519 888 7465
Fax: 519 888 6906

CETECOM ICT Services GmbH
Untertürkheimer Str. 6 – 10
D-66117 Saarbrücken
Germany
Phone: +49 (0) 681 5 98 84 55
Fax: +49 (0) 681 5 98 84 75

RIM Testing Services (RTS) EMI test facility
440 Phillip Street
Waterloo, Ontario,
Canada , N2L 5R9
Phone: 519 888 7465
Fax: 519 888 6906

The testing was performed from August 13 to September 11, 2008.

The sample EUT included:

SAMPLE	MODEL	CER NUMBER	PIN
1	RBW71CW	CER-17673-001 Rev. 2	30479FB5
2	RBW71CW	CER-17673-001 Rev. 2	302B7634
3	RBW71CW	CER-17673-001 Rev. 2	302C08F6
4	RBW71CW	CER-17673-001 Rev. 2	3047A3BE

To view the differences between CER-17673-001 Rev. 2 to CER-17673-001 Rev. 3, see document number RTS-1191-RBW71CW-01.
To view the differences between CER-17673-001 Rev. 3 to CER-17673-001 Rev. 4, see document number RTS-1191-RBW71CW-02.

The changes from Rev 2 to Rev 4 had no effect on the measurement results in this report.

Conducted RF measurements were performed on BlackBerry® smartphone sample 1. Radiated Emission measurements were performed on BlackBerry® smartphone samples 2, 3 and 4.

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) Communication Tester, Rohde & Schwarz, model CMU 200, serial number 112394
4) Communication Tester, Aglient, model 8960, Serial number MY47510358
5) DC Power Supply, HP, model 6632B, serial number US37472178

E Test Voltage

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

F. Modifications to EUT

No modifications were required on the EUT.

G Summary of Results

SPECIFICATION		TEST TYPE	RESULT	TEST DATA APPENDIX
FCC CFR 47	IC			
Part 2.1051 Part 22.917 Part 22.901	RSS-GEN, 4.9	GSM 850 Conducted Spurious Emissions	Pass	1A
Part 2.1051 Part 24.238(a)	RSS-GEN, 4.9	GSM PCS Conducted Spurious Emissions	Pass	1A
Part 2.202 Part 22.917	RSS-GEN, 4.6	GSM 850 Occupied Bandwidth and Channel Mask	Pass	1A
Part 2.202 Part 24.238	RSS-GEN, 4.6	GSM PCS Occupied Bandwidth and Channel Mask	Pass	1A
Part 2.1046(a)	RSS-133, 6.4 RSS-132, 4.4	GSM Conducted RF Output Power	Pass	2A
Part 2.1055(a)(d) Part 22.917	RSS-132, 4.3	GSM 850 Frequency Stability vs. Temperature and Voltage	Pass	3A
Part 2.1055(a)(d) Part 24.235	RSS-132, 4.3	GSM PCS Frequency Stability vs. Temperature and Voltage	Pass	3A
Part 22, Subpart H, Part 24, Subpart E	RSS-GEN, 4.9	GSM ERP, EIRP	Pass	4A
Part 22, Subpart H Part 24, Subpart E	RSS-GEN, 4.9	GSM Radiated Spurious/Harmonic Emissions	See test report 4-3120-01-04/08	-
Part 2.1051 Part 22.917 Part 22.901(d)	RSS-GEN, 4.9	CDMA Cell Conducted Spurious Emissions	Pass	1B
Part 2.1051 Part 24.238(a)	RSS-GEN, 4.9	CDMA PCS Conducted Spurious Emissions	Pass	1B
Part 2.202 Part 22.917	RSS-GEN, 4.6	CDMA Cell Occupied Bandwidth and Channel Mask	Pass	1B
Part 2.202 Part 24.238	RSS-GEN, 4.6	CDMA PCS Occupied Bandwidth and Channel Mask	Pass	1B

Summary of Results cont'd

Part 2.1046(a)	RSS-133, 6.4 RSS-132, 4.4	CDMA Conducted RF Output Power	Pass	2B
Part 2.1055(a)(d) Part 22.917	RSS-132, 4.3	CDMA Cell Frequency Stability vs. Temperature and Voltage	Pass	3B
Part 2.1055(a)(d) Part 24.235	RSS-GEN, 4.7	CDMA PCS Frequency Stability vs. Temperature and Voltage	Pass	3B
Part 22, Subpart H	RSS-GEN, 4.9	CDMA Cell Radiated Spurious/Harmonic Emissions, ERP	Pass	4B
Part 24, Subpart E	RSS-GEN, 4.9	CDMA PCS Radiated Spurious/Harmonic Emissions, EIRP	Pass	4B

1) The EUT met the requirements of the Tx Conducted Spurious Emissions requirements in the GSM850 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 1A for test data.

2) The EUT met the requirements of the Tx Conducted Spurious Emissions requirements in the PCS1900 as per 47 CFR 2.1051, CFR 24.238(a) and RSS-GEN, 4.9. The EUT was on the low, middle and high channels. The frequency range investigated was from 10 MHz to 20 GHz.
   See APPENDIX 1A for test data

3) The EUT met the requirements of the Occupied Bandwidth and channel mask requirements in the GSM850 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 1A for test data.

4) The EUT met the requirements of the Occupied Bandwidth and channel mask requirements in the PCS1900 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 1A for test data.

5) The EUT met the requirements of the Conducted RF Output Power requirements for the GSM850 and PCS1900 as per 47 CFR 2.1046(a), RSS 133, 6.4 and RSS 132, 4.4. The EUT was measured in GSM and EDGE mode on the low, middle and high channels.
   See APPENDIX 2A for the test data.

6) The EUT met the requirements of the Frequency Stability vs. Temperature and Voltage requirements for GSM850 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 (3.7 volts) and high (4.2 volts) dc input voltage at each temperature step and channel at maximum output power.
See APPENDIX 3A for the test data.

7) The EUT met the requirements of the Frequency Stability vs. Temperature and Voltage requirements for the PCS1900 as per 47 CFR 2.1055(a), 2.1055(d), 24.235 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 (3.7 volts) and high (4.2 volts) dc input voltage at each temperature step and channel at maximum output power.
See APPENDIX 3A for the test data.

8) The EUT met the requirements of the Conducted Spurious Emissions in the Cellular band as per 47 CFR 1057, CFR 22.917, CFR 22.901(d) and RSS-GEN, 4.9. The EUT was measured in CDMA2000 and 1xEVDO mode on the low, middle and high channels. The frequency range investigated was from 10 MHz to 20 GHz.
See APPENDIX 1B for the test data.

9) The EUT met the requirements of the Conducted Spurious Emissions in the PCS band as per 47 CFR 2.1057, CFR 24.238 and RSS-GEN, 4.9. The EUT was measured in CDMA2000 and 1xEVDO mode on the low, middle and high channels. The frequency range investigated was from 10 MHz to 26 GHz.
See APPENDIX 1B for the test data.

10) The EUT met the requirements of the Occupied Bandwidth in the Cellular band as per 47 CFR 2.202, CFR 22.917 and RSS-GEN, 4.6. The channels were measured in CDMA2000 and 1xEVDO mode on the low, middle and high channels.
See APPENDIX 1B for the test data.

11) The EUT met the requirements of the Occupied Bandwidth and channel mask in the PCS band as per 47 CFR 2.202, CFR 24.238 and RSS-GEN, 4.6. The channels were measured in CDMA2000 and 1xEVDO mode on the low, middle and high channels.
See APPENDIX 1B for the test data.

12) The EUT met the requirements of the Conducted RF Output Power for both the Cellular and PCS bands as per 47 CFR 2.1046(a), RSS-133, 6.4 and RSS-132, 4.4. The channels were measured in CDMA2000 and 1xEVDO mode on the low, middle and high channels.
See APPENDIX 2B for the test data.

13) The EUT met the requirements of the Frequency Stability vs. Temperature and Voltage for Cellular band as per 47 CFR 2.1055(a)(d), CFR 22.917 and RSS-132, 4.3. The maximum frequency error measured was less than 0.1 ppm.
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 (3.7 volts) and high (4.2 volts) dc input voltage at each temperature step and channel at maximum output power.
See APPENDIX 3B for the test data.

14) The EUT met the requirements of the Frequency Stability vs. Temperature and Voltage requirements for the PCS band as per 47 CFR 2.1055(a)(d), CFR 24.235 and RSS-GEN, 4.7. The maximum frequency error measured was less than 0.1 ppm.
The temperature range was from -30°C to +60°C in 10 degree 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 (3.7 volts) and high (4.2 volts) dc input voltage at each temperature step and channel at maximum output power. See APPENDIX 3B for the test data.

15) The radiated spurious emissions/harmonics and ERP/EIRP were measured for CDMA Cellular 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. Both the horizontal and vertical polarizations 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 polarizations of the emissions were measured.

The measurements were done in a semi-anechoic chamber (SAC) below 1 GHz and a fully-anechoic room (FAR) above 1 GHz. The SAC's FCC registration number is **778487** and the Industry Canada (IC) file number is **2503B-1**. The FAR's FCC registration number is **959115** and the IC file number is **2503C-1**. The EUT was measured on the low, middle and high channels.

The ERP in the GSM 850 band, GSM mode was measured on BlackBerry® smartphone, PIN 302B7634. The highest ERP measured was 30.23 dBm (1.054 W) at 824.20 MHz (channel 128).

The ERP in the GSM 850 band, EDGE mode was measured on BlackBerry® smartphone, PIN 302B7634. The highest ERP measured was 26.67 dBm (0.465 W) at 837.60 MHz (channel 195).

The ERP in the GSM PCS band, GSM mode was measured on BlackBerry® smartphone, PIN 302B7634. The highest ERP measured was 29.15 dBm (0.822 W) at 1909.80 MHz (channel 810).

The ERP in the GSM PCS band, EDGE mode was measured on BlackBerry® smartphone, PIN 302B7634. The highest ERP measured was 29.04 dBm (0.802 W) at 1909.80 MHz (channel 810).

For radiated carrier harmonics for GSM 850 and PCS in GSM and EDGE modes, please refer to the report 4-3120-01-04_08.

The ERP in the Cellular band, loopback service mode was measured on BlackBerry® smartphone, PIN 302B7634. The highest ERP measured was 21.55 dBm (0.143 W) at 824.70 MHz (channel 1013).

The ERP in the Cellular band, 1xEVDO mode was measured on BlackBerry® smartphone, PIN 302B7634. The highest ERP measured was 24.37 dBm (0.274 W) at 824.70 MHz (channel 1013).

The EIRP in the PCS band, loopback Service mode was measured on BlackBerry® smartphone, PIN 302B7634. The highest EIRP measured was 24.8 dBm (0.302 W) at 1880.00 MHz (channel 600).

The EIRP in the PCS band, 1xEVDO mode was measured on BlackBerry® smartphone, PIN 302B7634. The highest EIRP measured was 26.4 dBm (0.437 W) at 1880.00 MHz (channel 600).

The radiated carrier harmonics were measured up to the 10th harmonic for low, middle and high channels in the Cellular and PCS bands. Each band was measured in Loopback, Testdata, and 1xEVDO modes. Both the horizontal and vertical polarizations were measured.

The worst test margin in the Cellular band harmonic emissions measured was 14.99 dB below the limit at 6692.91 MHz.

The worst test margin in the PCS band harmonic emissions measured was 6.85 dB below the limit at 3817.59 MHz.

Sample Calculation:

Field Strength (dBµV/M) is calculated as follows:
FS = Measured Level (dBµV) + A.F. (dB/m) + Cable Loss (dB) - Preamp (dB) + Filter Loss (dB)

To view the test data see APPENDIX 4.

Measurement Uncertainty ±4.6 dB

H) Compliance Test Equipment Used

UNIT	MANUFACTURER	MODEL	SERIAL NUMBER	CAL DUE DATE (YY MM DD)	USE
Preamplifier	Sonoma	310N/11909A	185831	08-11-21	Radiated Emissions
Preamplifier system	TDK RF Solutions	PA-02	080010	08-11-16	Radiated Emissions
Preamplifier	Rohde & Schwarz	TS-ANA4-SP	001	09-06-03	Radiated Emissions
Preamplifier	Rohde & Schwarz	TS-ANA-SP	001	09-02-29	Radiated Emissions
Hybrid Log Antenna	TDK	HLP-3003C	017301	08-12-15	Radiated Emissions
Horn Antenna	TDK	HRN-0118	030101	10-07-22	Radiated Emissions
Horn Antenna	TDK	HRN-0118	030201	09-01-17	Radiated Emissions
Horn Antenna	Emco	3117	47653	09-07-03	Radiated Emissions
Horn Antenna	CMT	LHA 0180	R52734-001	09-12-17	Radiated Emissions
Preamplifier	TDK	18-26	030002	08-11-20	Radiated Emissions
Dipole Antenna	Schwarzbeck	UHAP	973	08-12-18	Radiated Emissions
Dipole Antenna	Schwarzbeck	UHAP	974	08-09-28	Radiated Emissions
EMC Analyzer	Aglient	E7405A	US40240226	08-10-01	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	837493/073	08-12-06	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	112394	08-12-10	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	102204	09-12-06	RF Conducted Emissions
Universal Radio Communication Tester	Agilent	8960	MY47510358	09-04-04	Frequency Stability, RF Conducted Emissions
EMI Receiver	Rohde & Schwarz	ESIB-40	100255	08-12-24	Radiated Emissions
Spectrum Analyzer	HP	8563E	3745A08112	09-09-22	RF Conducted Emissions
DC Power Supply	HP	6632B	US37472178	08-09-24	RF Conducted Emissions
Environment Monitor	Control Company	1870	230355190	08-12-11	Radiated Emissions
Environment Monitor	Control Company	1870	230355189	08-12-11	RF Conducted Emissions

Compliance Test Equipment Used cont'd

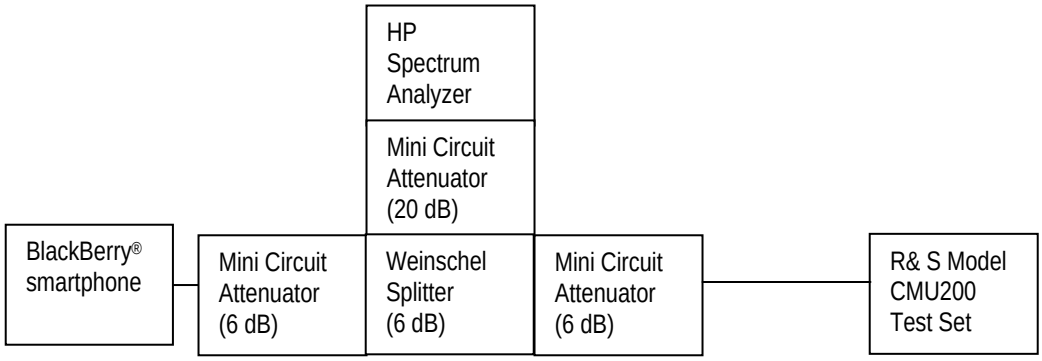
UNIT	MANUFACTURER	MODEL	SERIAL NUMBER	CAL DUE DATE (YY MM DD)	USE
Temperature Probe	Control Company	15-077-21	51129471	09-05-12	Frequency Stability
Environmental Chamber	ESPEC Corp.	SH-240S1	91007118	N/R	Frequency Stability
Signal Generator	Agilent	8648C	4037U03155	09-09-20	Frequency Stability
Signal Generator	Agilent	E8257D	MY45140527	08-09-19	Radiated Emissions
Power Meter	Agilent	E4419B	GB40202821	08-09-19	Frequency Stability
Power Sensor	Agilent	8481A	MY41095417	08-09-19	Frequency Stability

APPENDIX 1A – GSM CONDUCTED RF EMISSIONS TEST DATA/PLOTS

GSM Conducted RF Emission Test Data

This appendix contains measurement data pertaining to conducted spurious emissions, –26 dBc bandwidth, 99% power bandwidth and the channel mask on BlackBerry® smartphone PIN 30479FB5.

Test Setup Diagram



The environmental test conditions were:

Temperature	22ºC
Pressure	1009 mb
Relative Humidity	34%

The measurements were performed by Maurice Battler.

GSM 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 1-1a to 1-12a for the plots of the conducted spurious emissions.

Date of Test: August 08, 2008

–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 275 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	283	245.0
837.6	273	246.7
848.8	273	243.3

1900 band Frequency (MHz)	-26dBc Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
1850.2	263	243.3
1880.0	268	245.0
1909.8	272	246.7

Measurement Plots for GSM850 and PCS1900 in GSM mode
Refer to the following measurement plots for more detail.
See Figures 1-13a to 1-24a for the plots of the –26dBc Bandwidth and 99% Occupied Bandwidth.
See Figures 1-25a to 1-28a for plots of the channel mask results.

The RF power output was at maximum for all the recorded measurements shown below.
Date of Test: August 08, 2008

GSM 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	246.7
837.6	245.0
848.8	243.3

1900 band Frequency (MHz)	99% Occupied Bandwidth (kHz)
1850.2	245.0
1880.0	246.7
1909.8	246.7

Measurement Plots for GSM850 band and PCS1900 band in EDGE mode
Refer to the following measurement plots for more detail.

See Figures 1-29a to 1-34a for the plots of the 99% Occupied Bandwidth.

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

Date of Test: August 08, 2008

GSM Conducted RF Emission Test Data cont'd

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

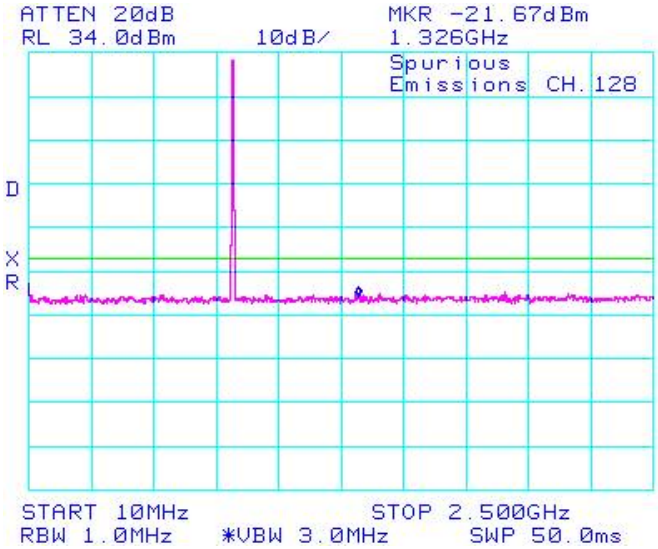


Figure 1-2a: GSM850 band, Spurious Conducted Emissions, Low channel

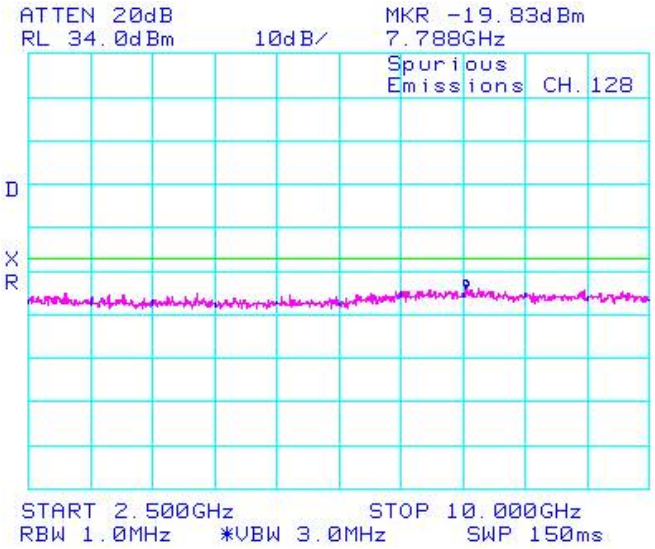


Figure 1-3a: GSM850 band, Spurious Conducted Emissions, Middle Channel

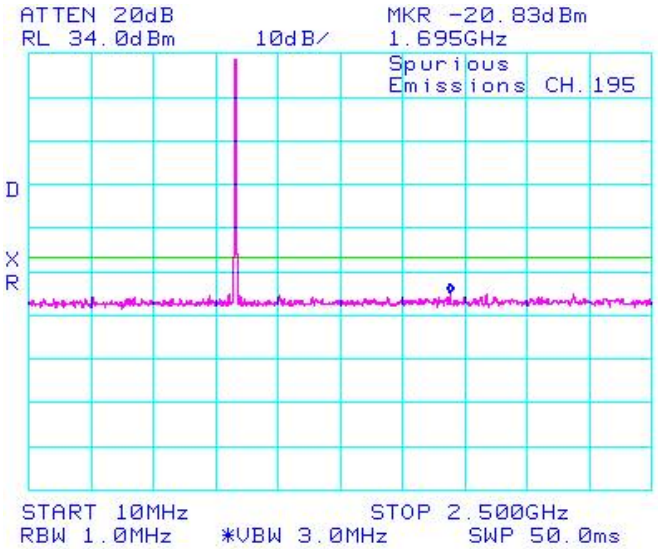
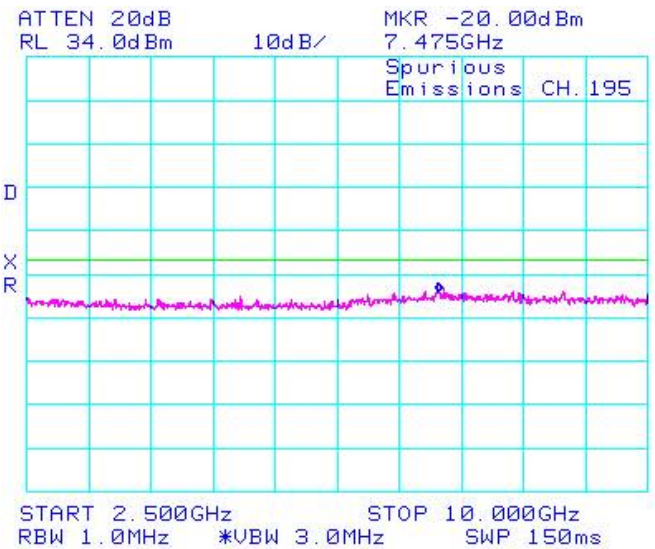


Figure 1-4a: GSM850 band, Spurious Conducted Emissions, Middle Channel



GSM Conducted RF Emission Test Data cont'd

Figure 1-5a: GSM850 band, Spurious Conducted Emissions, High Channel

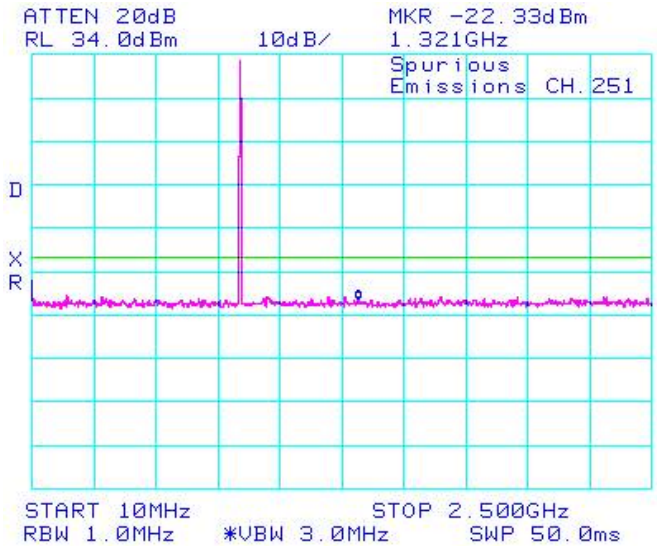


Figure 1-6a: GSM850 band, Spurious Conducted Emissions, High Channel

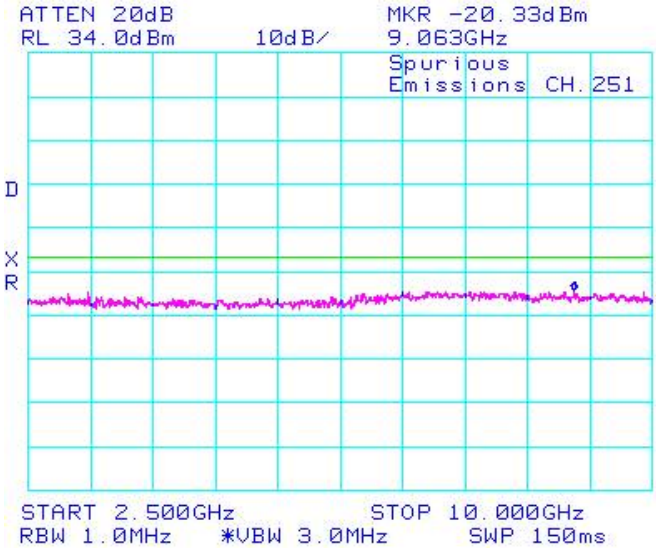


Figure 1-7a: PCS1900 band, Spurious Conducted Emissions, Low Channel

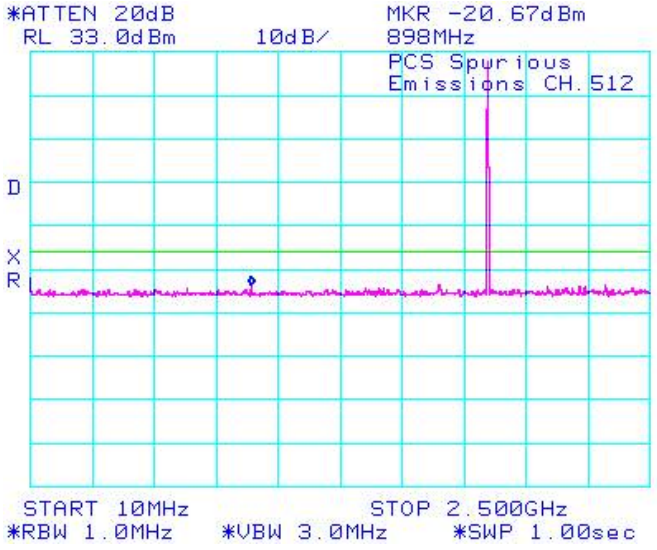
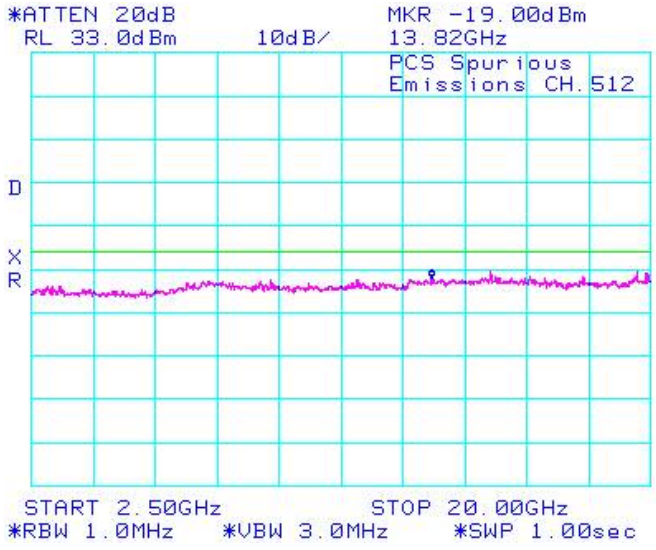


Figure 1-8a: PCS1900 band, Spurious Conducted Emissions, Low Channel



GSM Conducted RF Emission Test Data cont'd

Figure 1-9a: PCS1900 band, Spurious Conducted Emissions, Middle Channel

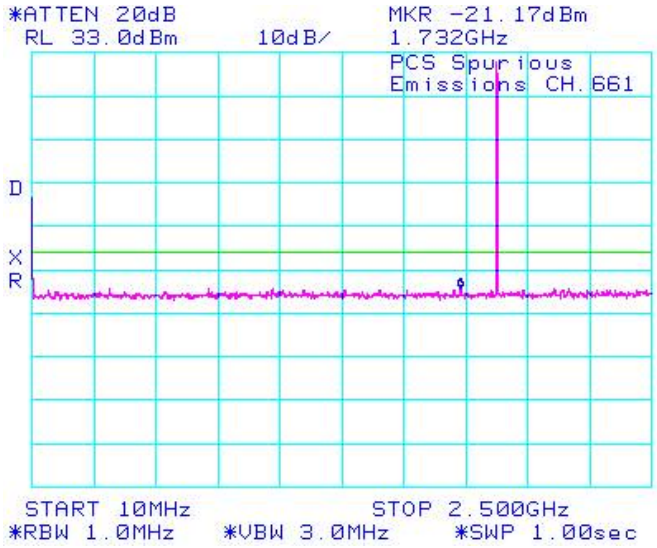


Figure 1-10a: PCS1900 band, Spurious Conducted Emissions, Middle Channel

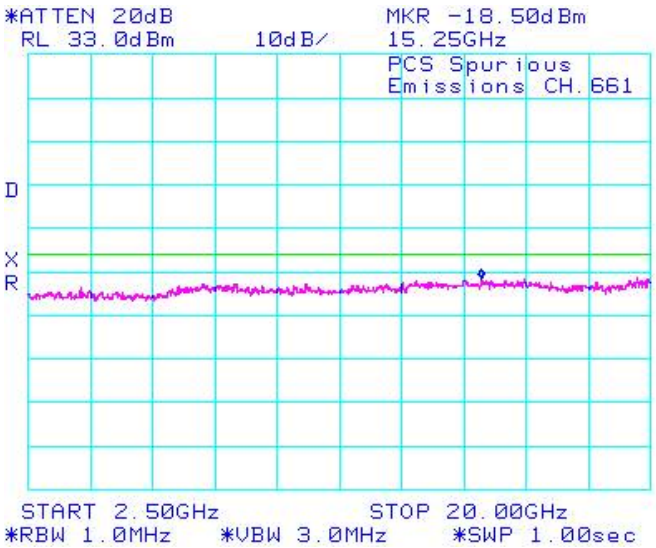


Figure 1-11a: PCS1900 band, Spurious Conducted Emissions, High Channel

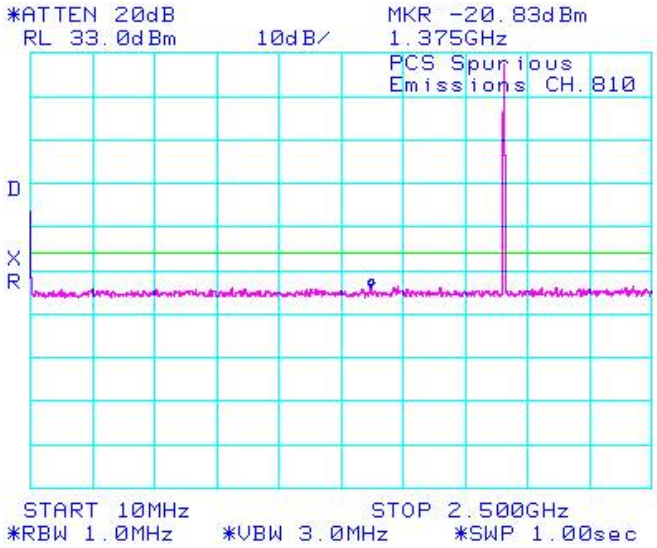
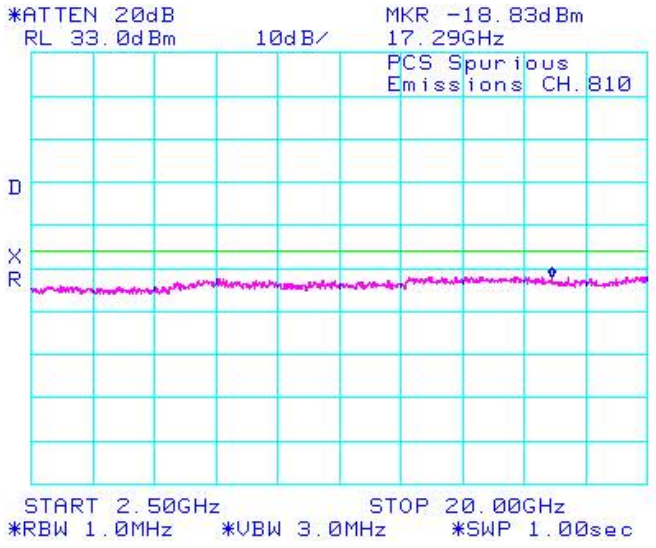


Figure 1-12a: PCS1900 band, Spurious Conducted Emissions, High Channel



GSM Conducted RF Emission Test Data cont'd

Figure 1-13a: -26dBc bandwidth, GSM850 band Low Channel in GSM mode

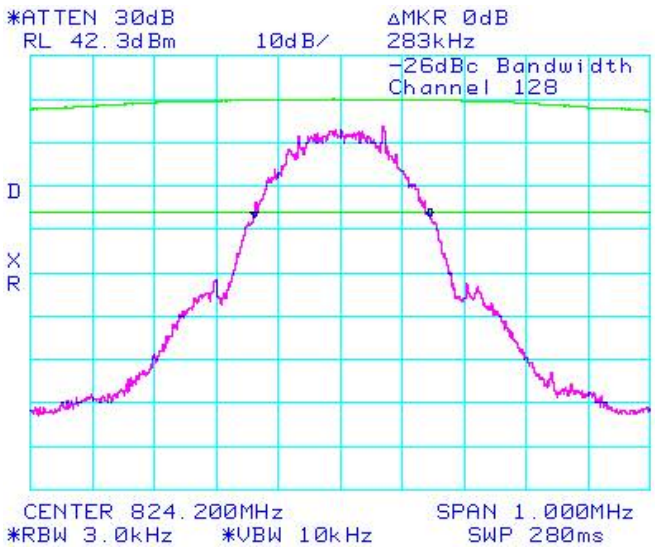


Figure 1-14a: Occupied Bandwidth, GSM850 band Low Channel in GSM mode

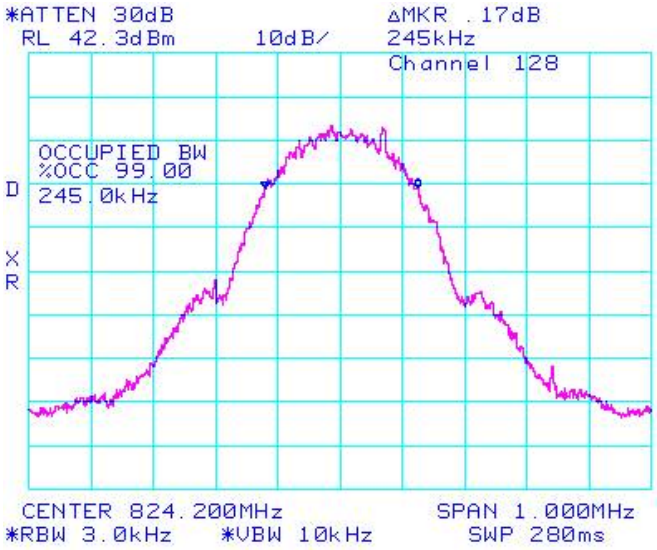


Figure 1-15a: -26dBc bandwidth, GSM850 band Middle Channel in GSM mode

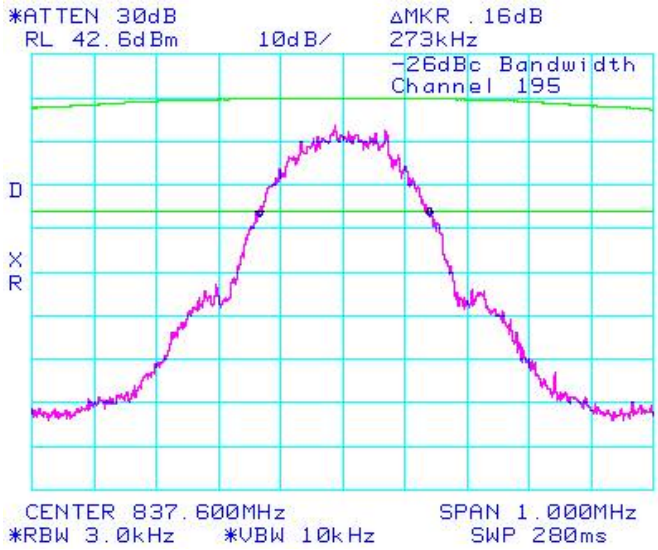
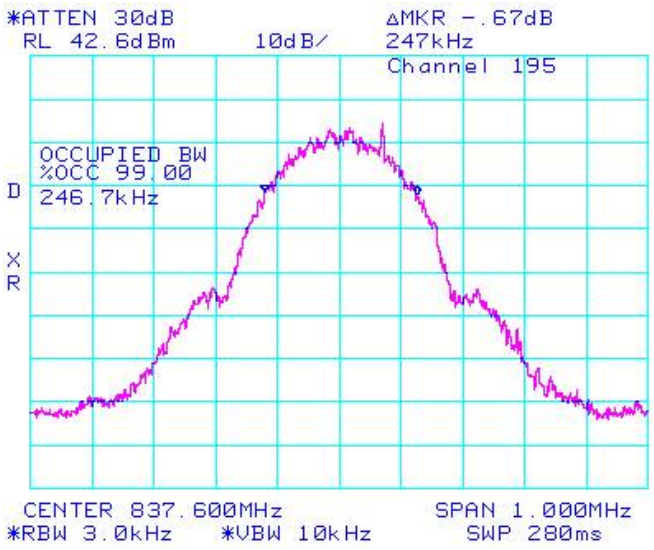


Figure 1-16a: Occupied Bandwidth, GSM850 band Middle Channel in GSM mode



GSM Conducted RF Emission Test Data cont'd

Figure 1-17a: -26dBc bandwidth, GSM850 band High Channel in GSM mode

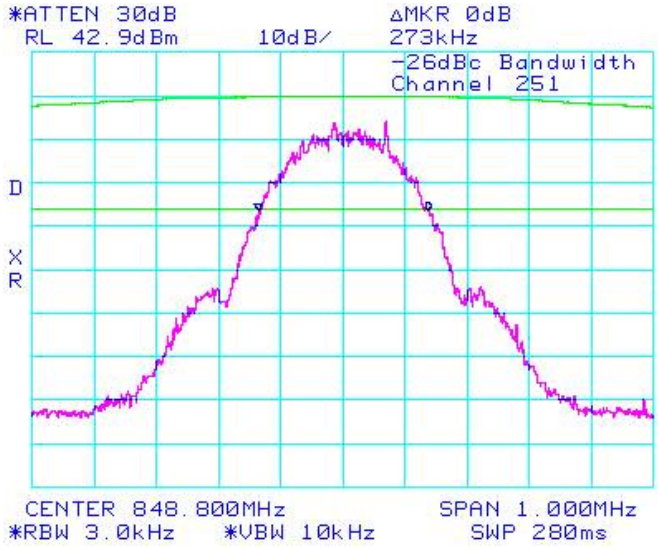


Figure 1-18a: Occupied Bandwidth, GSM850 band High Channel in GSM mode

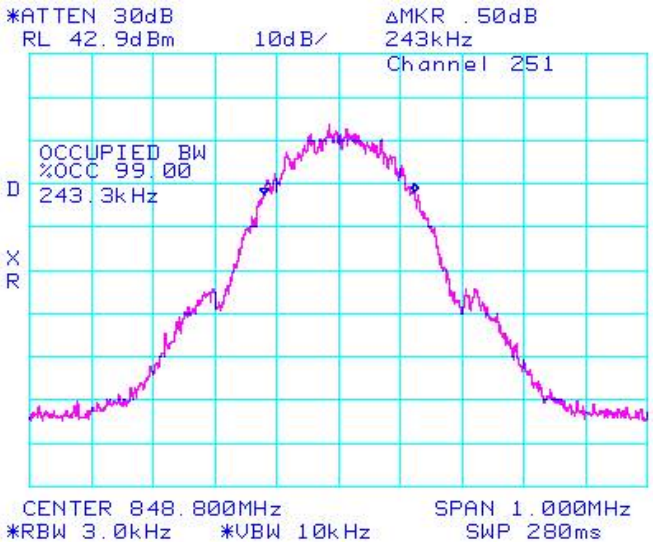


Figure 1-19a: -26dBc bandwidth, PCS1900 Low Channel in GSM mode

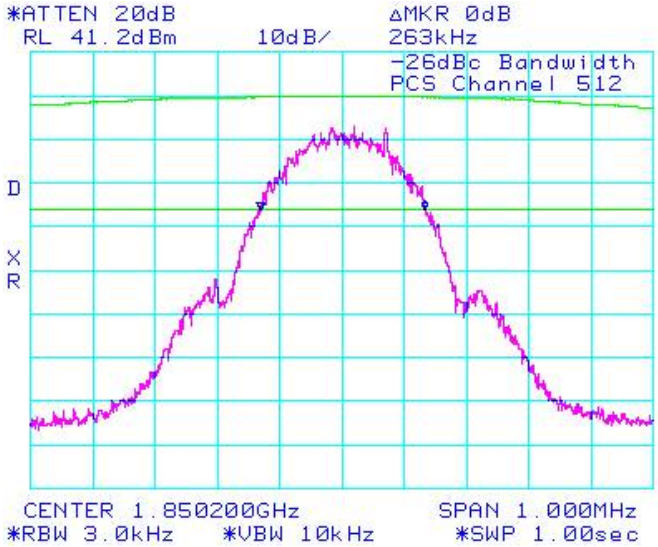
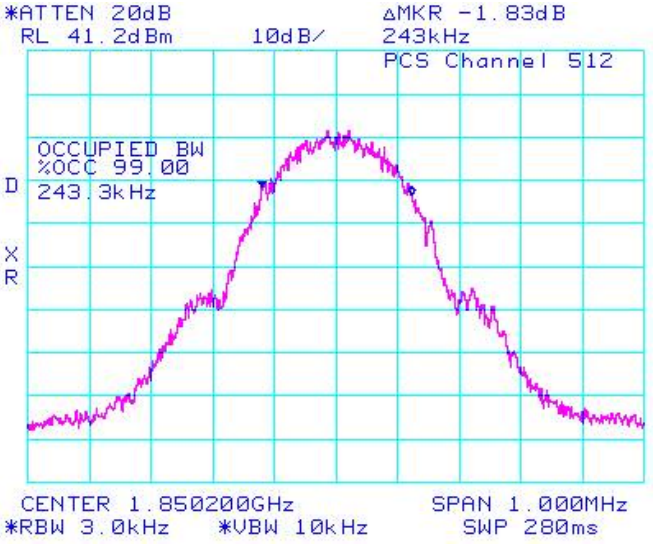


Figure 1-20a: Occupied Bandwidth, PCS1900 Low Channel in GSM mode



GSM Conducted RF Emission Test Data cont'd

Figure 1-21a: -26dBc bandwidth, PCS1900 Middle Channel in GSM mode

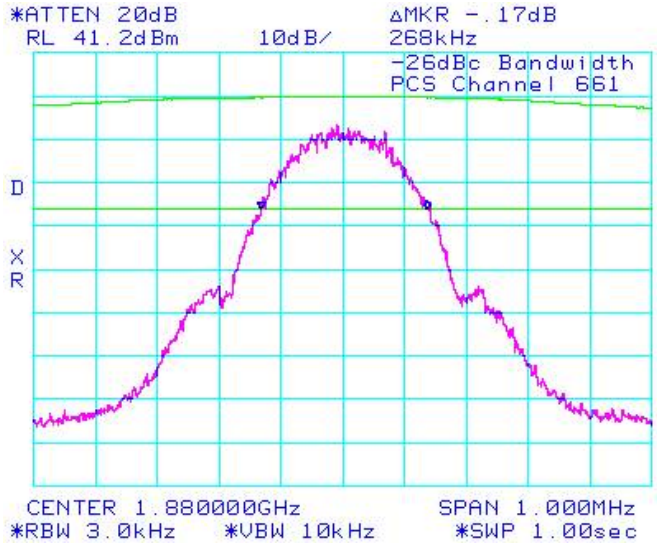


Figure 1-22a: Occupied Bandwidth, PCS1900 Middle Channel in GSM mode

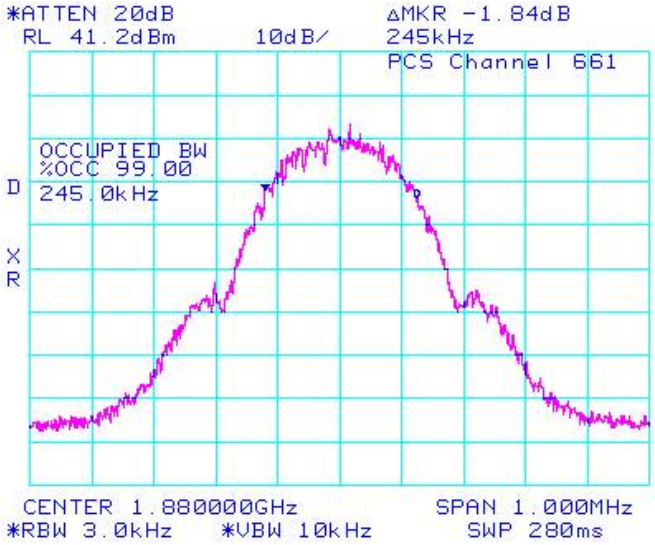


Figure 1-23a: -26dBc bandwidth, PCS1900 High Channel in GSM mode

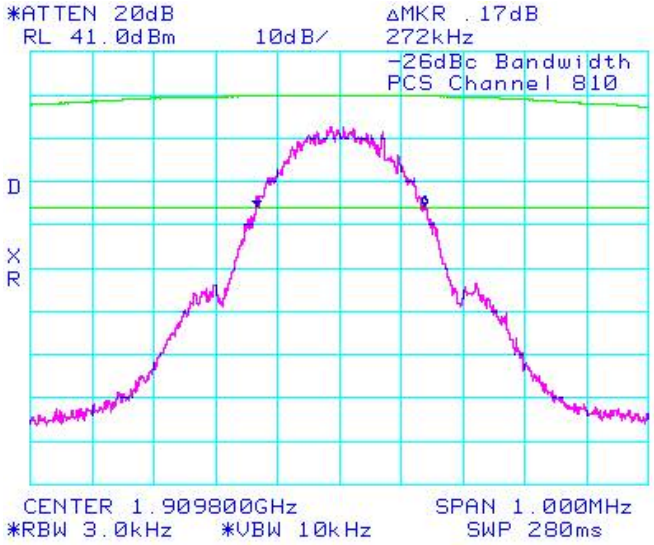
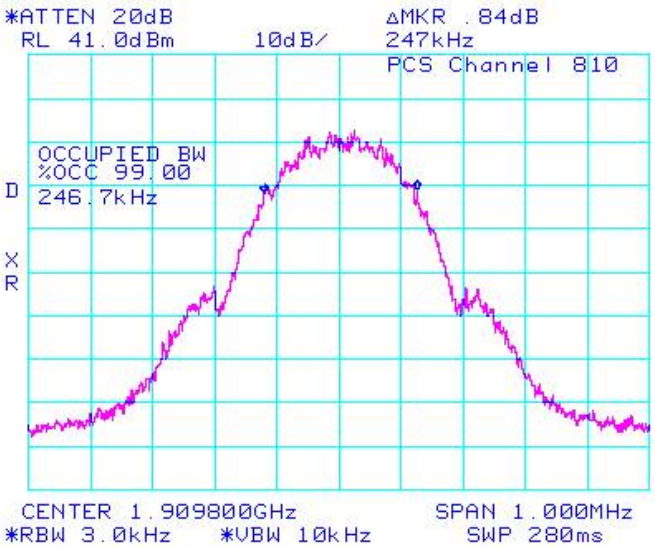


Figure 1-24a: Occupied Bandwidth, PCS1900 High Channel in GSM mode



GSM Conducted RF Emission Test Data cont'd

Figure 1-25a: GSM850 band, Low Channel Mask in GSM mode

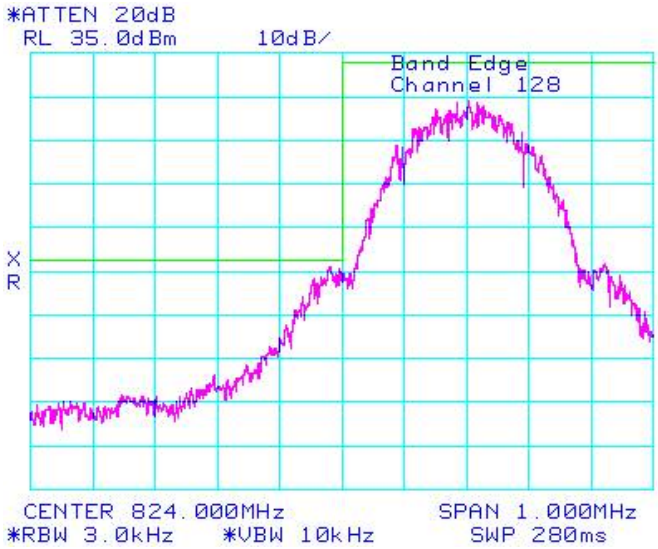


Figure 1-26a: GSM850 band High Channel Mask in GSM mode

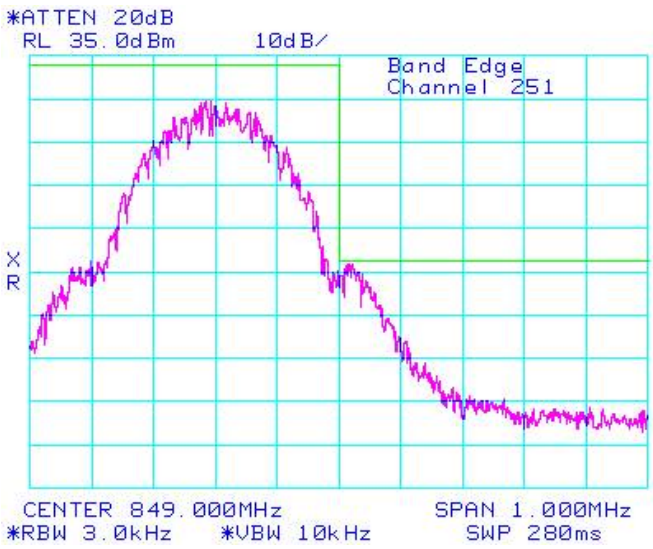


Figure 1-27a: PCS1900, Low Channel Mask in GSM mode

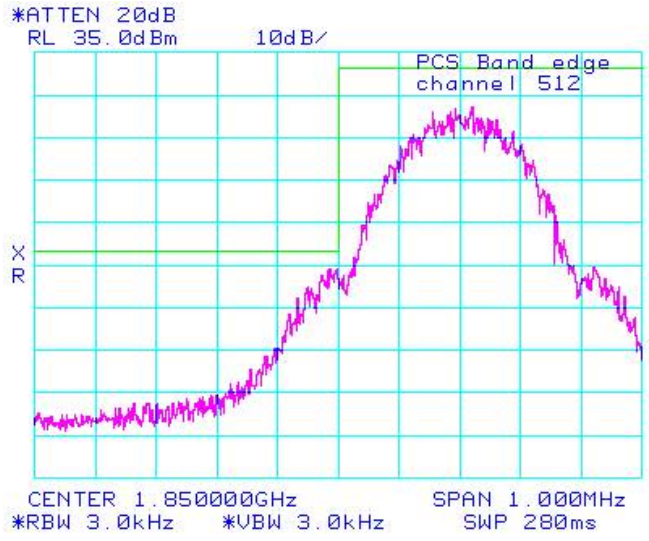
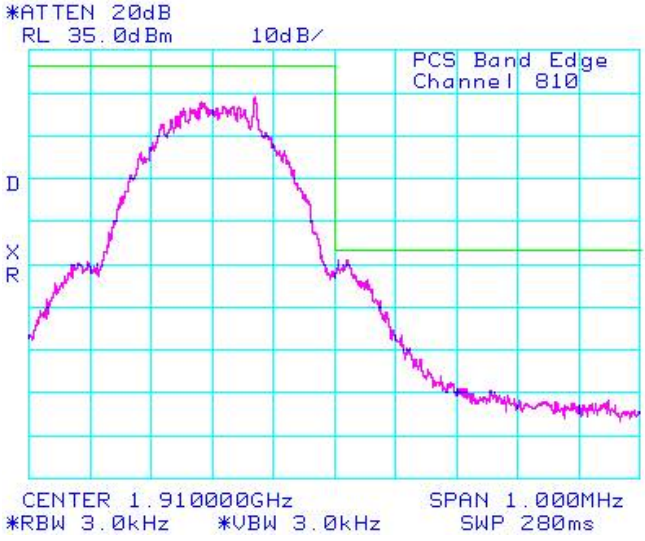


Figure 1-28a: PCS1900, High Channel Mask in GSM mode



GSM Conducted RF Emission Test Data cont'd

Figure 1-29a: Occupied Bandwidth, GSM850 Band, Low Channel in EDGE mode

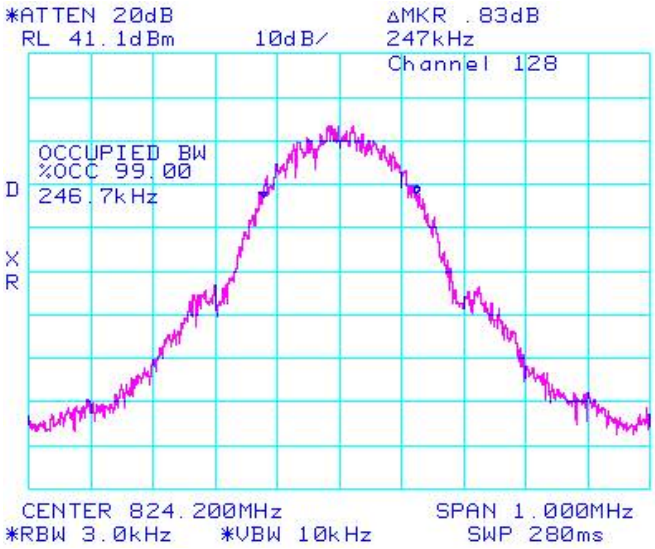


Figure 1-30a: Occupied Bandwidth, GSM850 Band, Middle Channel in EDGE mode

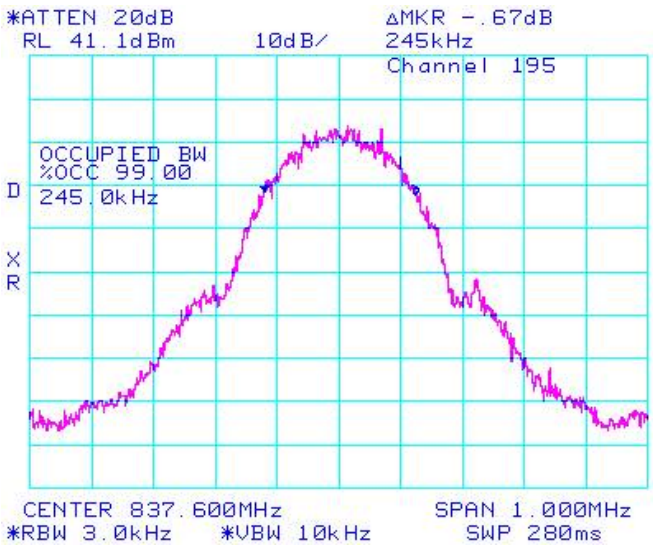


Figure 1-31a: Occupied Bandwidth, GSM850 band, High Channel in EDGE mode

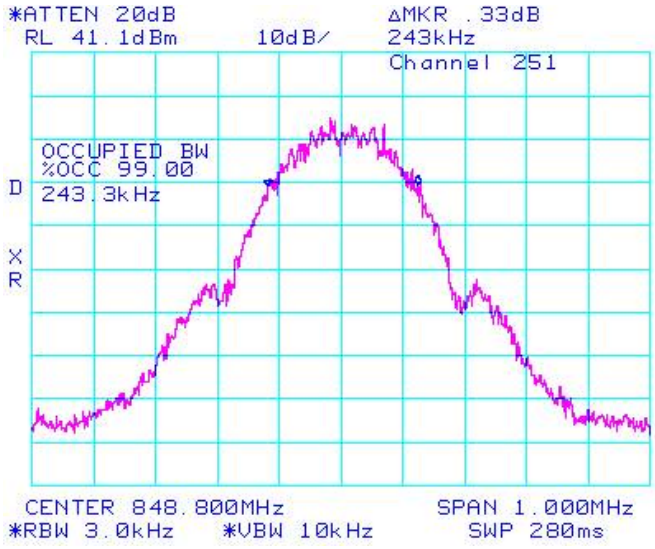
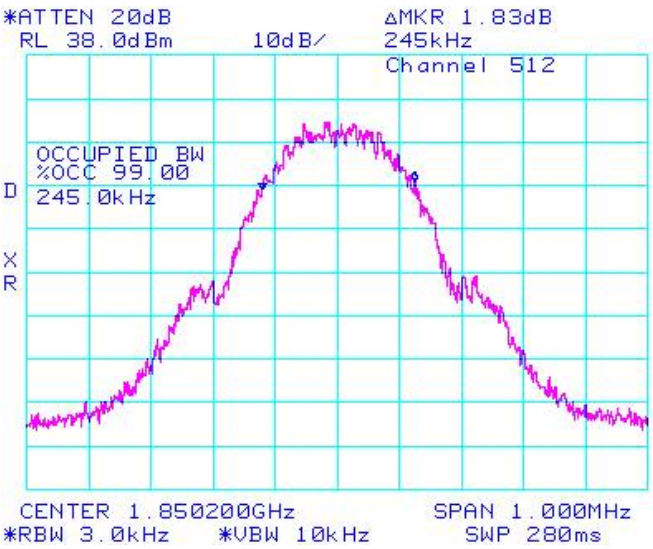


Figure 1-32a: Occupied Bandwidth, PCS1900 Band, Low Channel in EDGE mode



GSM Conducted RF Emission Test Data cont'd

Figure 1-33a: Occupied Bandwidth, PCS1900 Band, Middle Channel in EDGE mode

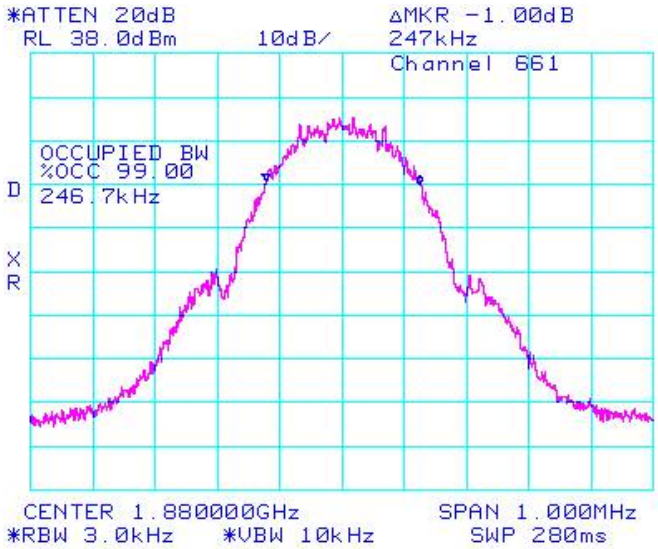
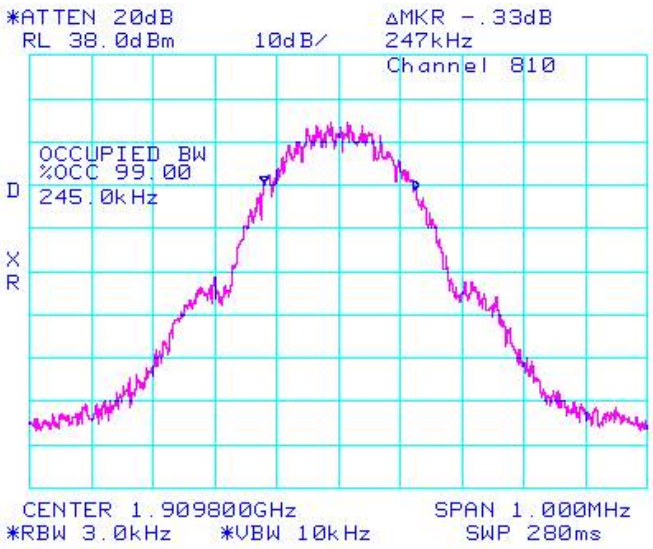


Figure 1-34a: Occupied Bandwidth, PCS1900 Band, High Channel in EDGE mode



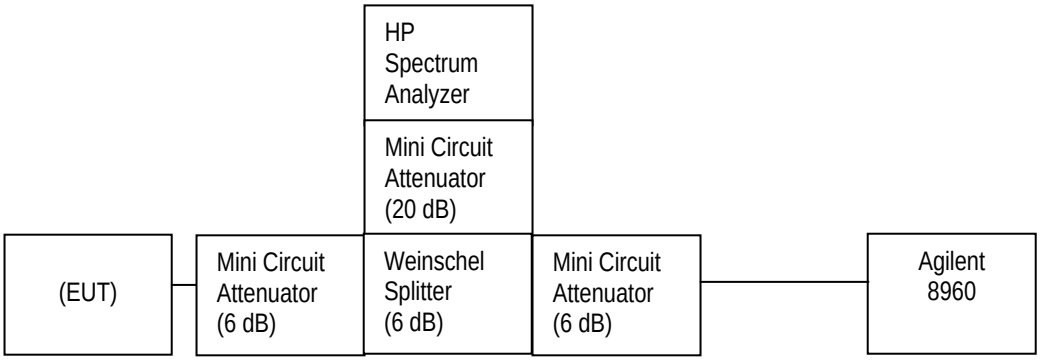
APPENDIX 1B – CDMA CONDUCTED RF EMISSIONS TEST DATA/PLOTS

CDMA Conducted RF Emission Test Data

This appendix contains measurement data pertaining to conducted spurious emissions, 99% power bandwidth and the channel mask on BlackBerry® smartphone PIN 30479FB5.

The measurements were performed by Maurice Battler.

Test Setup Diagram



The environmental test conditions were:

Temperature	24ºC
Pressure	1021 mb
Relative Humidity	30%

CDMA 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 NF.
See figures 1-1b to 1-12b for the plots of the conducted spurious emissions.

Date of Test: August 20, 2008

Test Data for Cellular and PCS selected Frequencies in CDMA2000 mode

Cellular Frequency (MHz)	99% Occupied Bandwidth (MHz)
824.700	1.280
836.520	1.287
848.310	1.280

PCS Frequency (MHz)	99% Occupied Bandwidth (MHz)
1851.200	1.287
1880.000	1.287
1908.750	1.287

Measurement Plots for Cellular and PCS in CDMA2000 mode
Refer to the following measurement plots for more detail.

See Figures 1-13b to 1-18b for the plots of the 99% Occupied Bandwidth.
See Figures 1-19b to 1-24b for plots of the channel mask results.

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

CDMA Conducted RF Emission Test Data cont'd

Figure 7-1b: Cellular, Spurious Conducted Emissions, Low channel

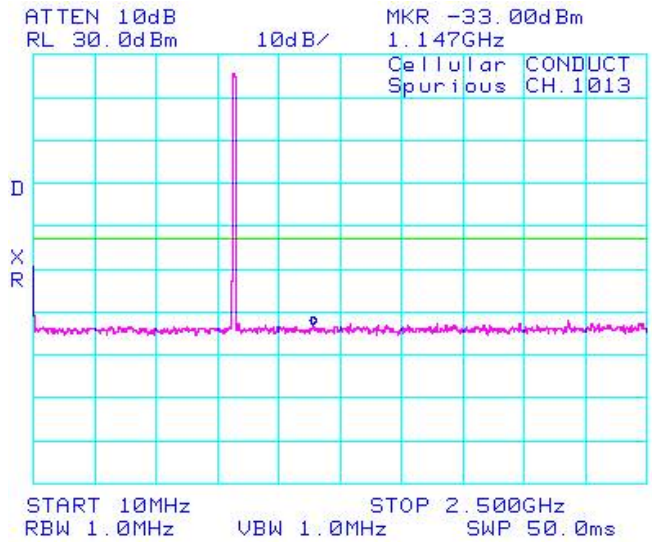


Figure 1-2b: Cellular, Spurious Conducted Emissions, Low channel

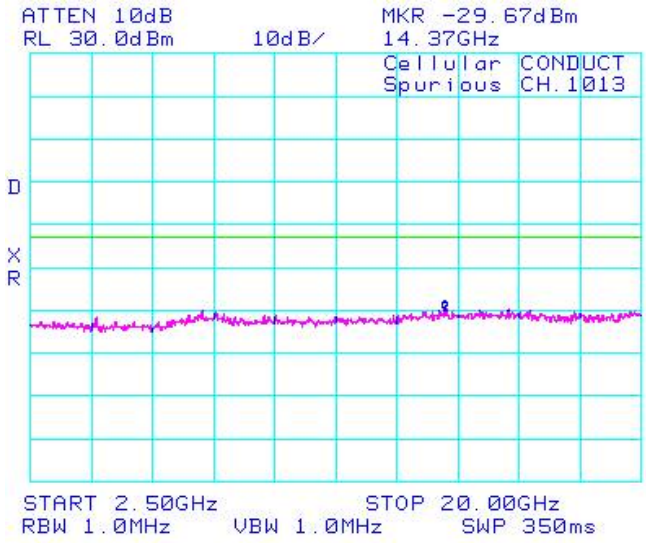


Figure 1-3b: Cellular, Spurious Conducted Emissions, Middle channel

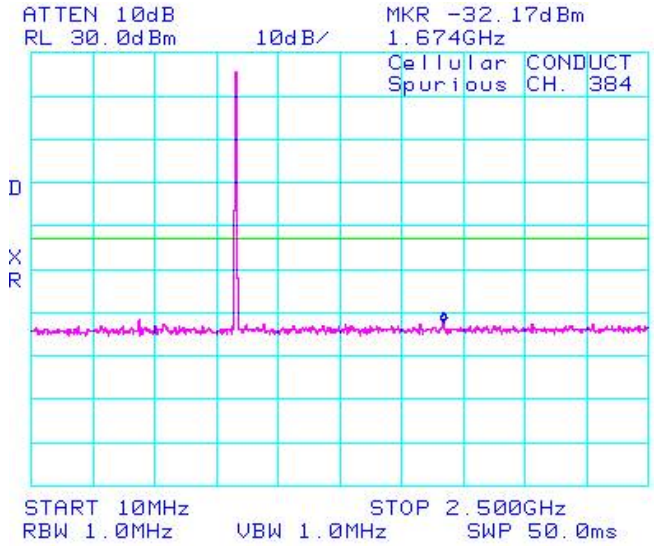
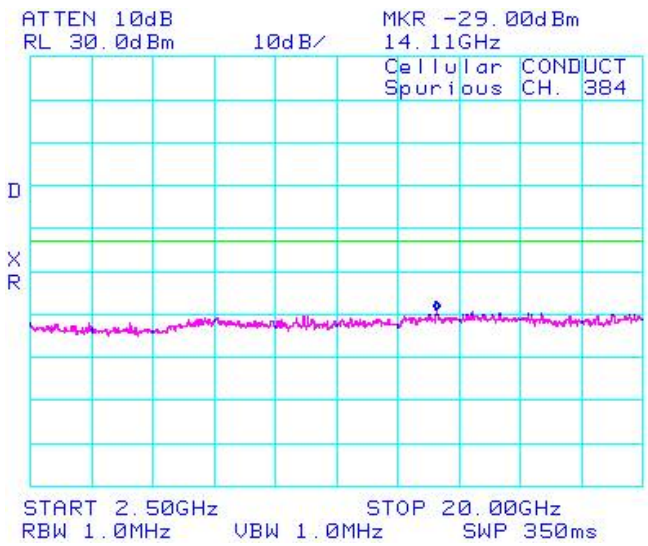


Figure 1-4b: Cellular, Spurious Conducted Emissions, Middle channel



CDMA Conducted RF Emission Test Data cont'd

Figure 8-5b: Cellular, Spurious Conducted Emissions, High Channel

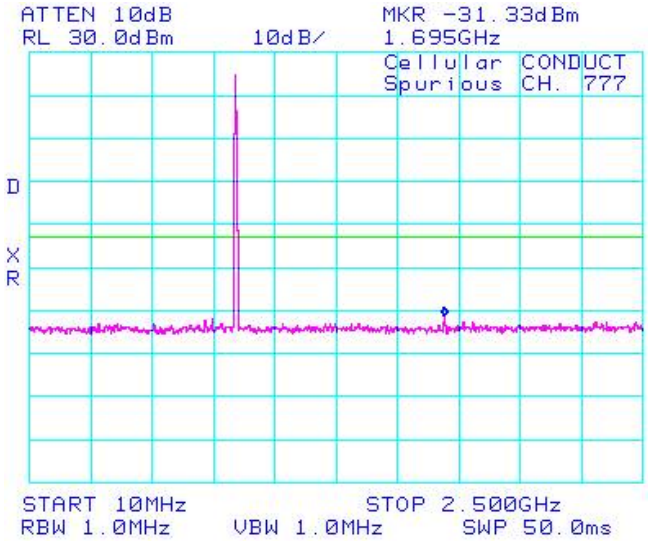


Figure 1-6b: Cellular, Spurious Conducted Emissions, High Channel

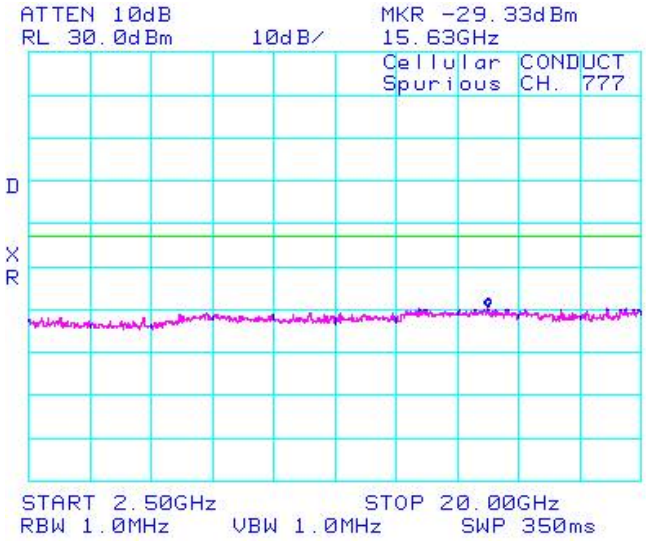


Figure 1-7b: PCS, Spurious Conducted Emissions, Low Channel

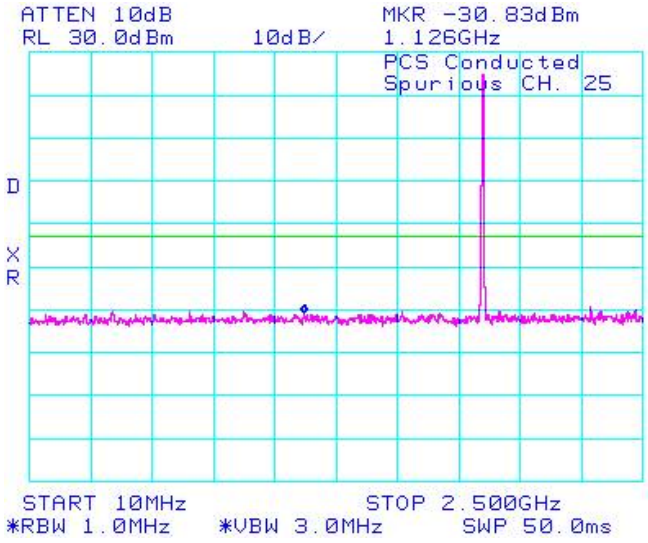
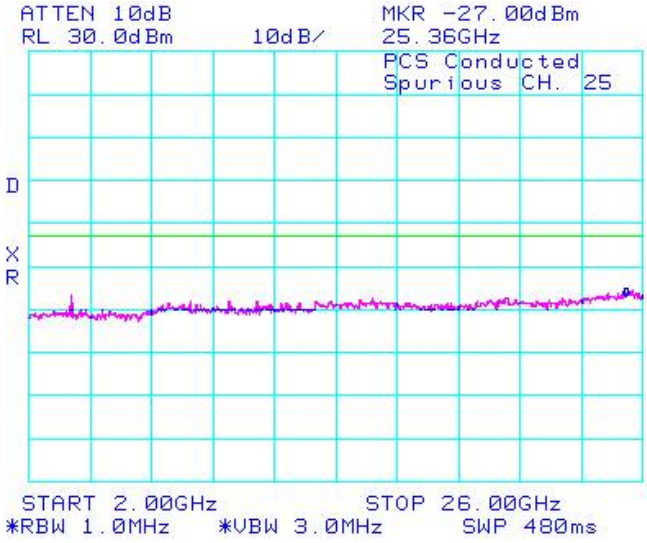


Figure 1-8b: PCS, Spurious Conducted Emissions, Low Channel



CDMA Conducted RF Emission Test Data cont'd

Figure 9-9b: PCS, Spurious Conducted Emissions, Middle Channel

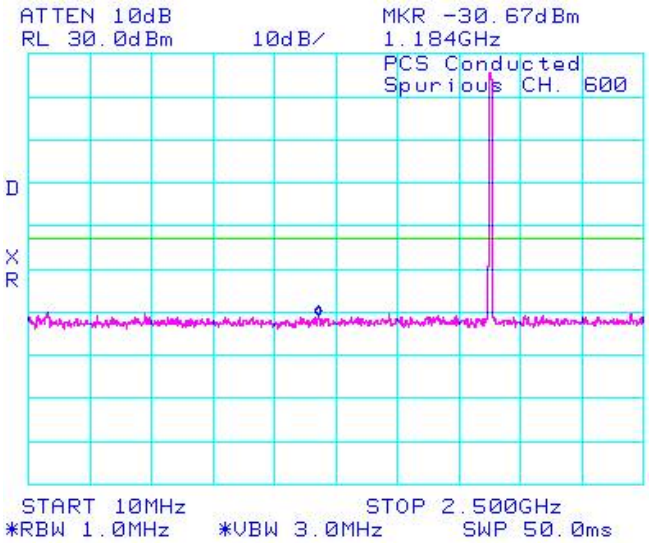


Figure 1-10b: PCS, Spurious Conducted Emissions, Middle Channel

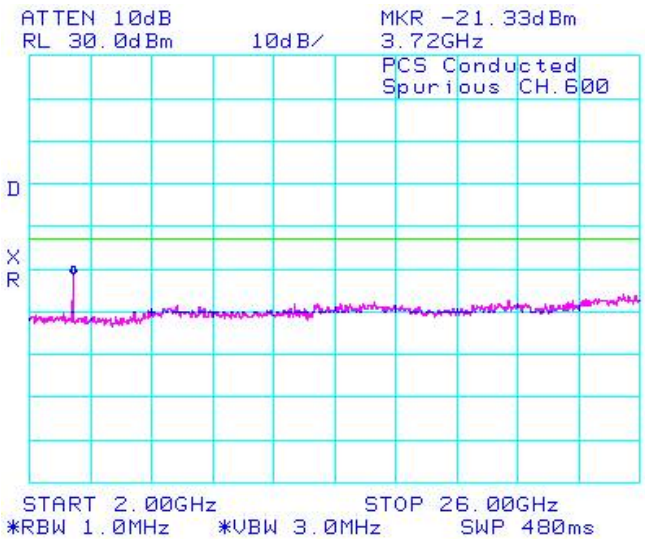


Figure 1-11b: PCS, Spurious Conducted Emissions, High Channel

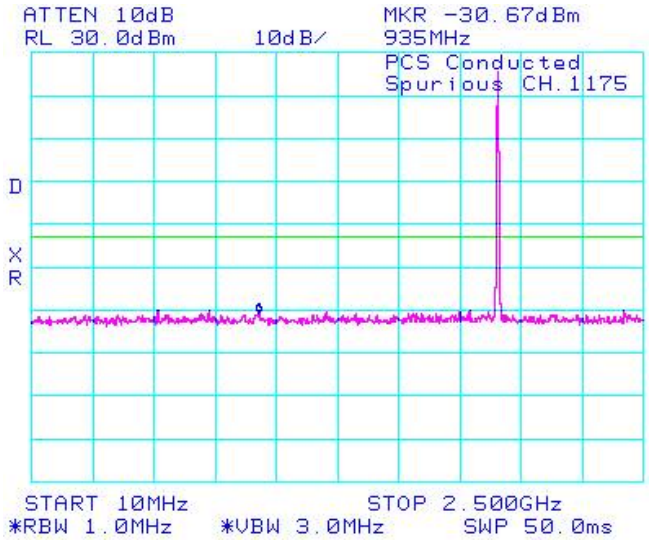
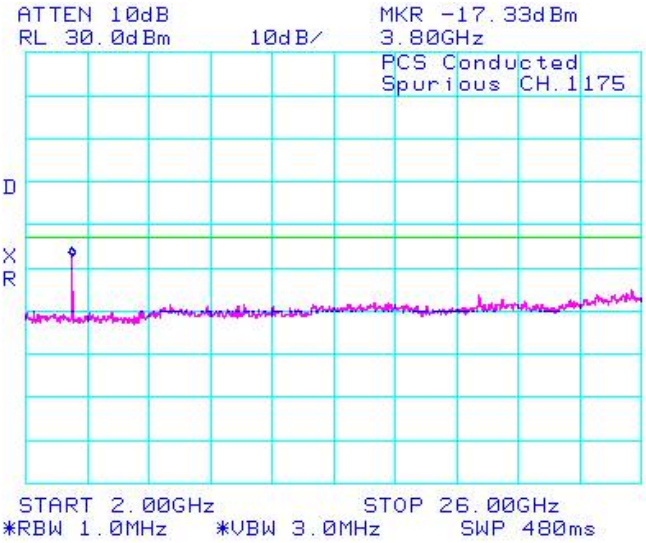


Figure 1-12b: PCS, Spurious Conducted Emissions, High Channel



CDMA Conducted RF Emission Test Data cont'd

Figure 1-13b: Occupied Bandwidth, Cellular Low Channel

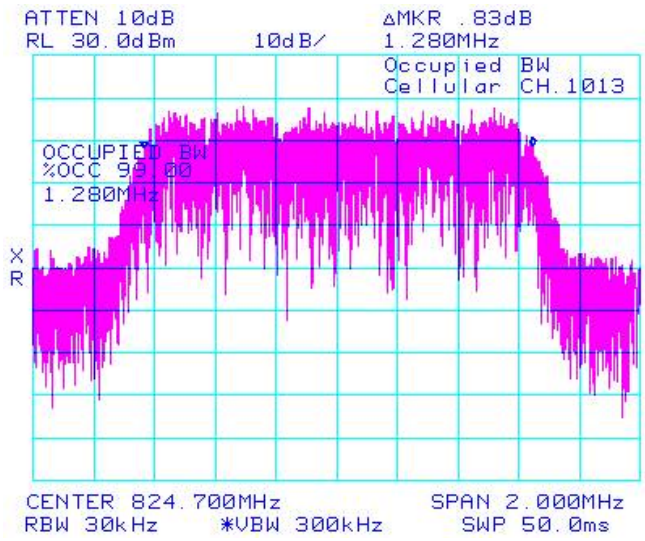


Figure 1-14b: Occupied Bandwidth, Cellular Middle Channel

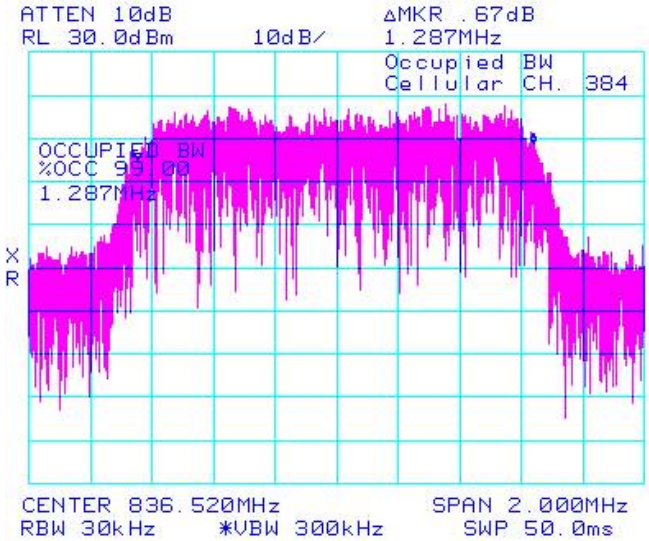


Figure 1-15b: Occupied Bandwidth, Cellular High Channel

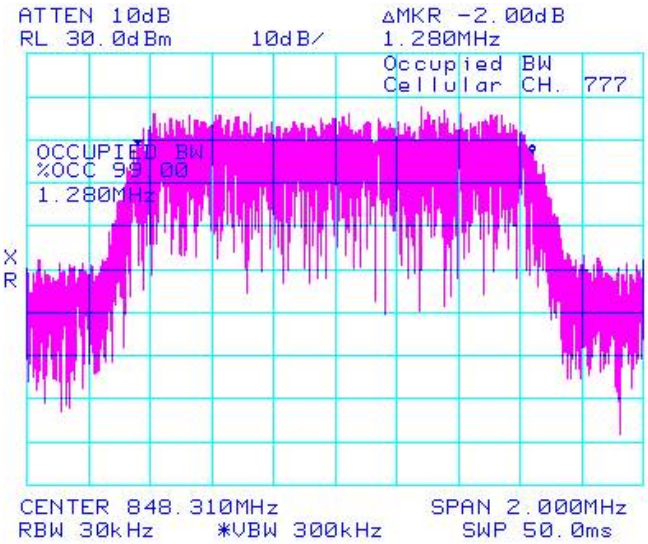
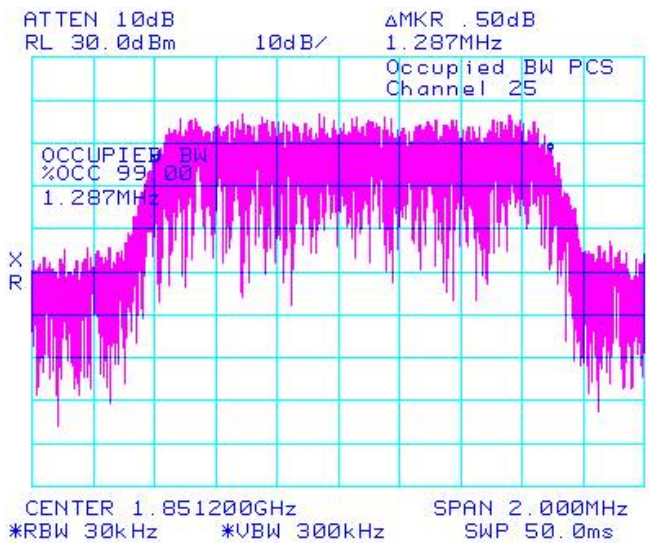


Figure 1-16b: Occupied Bandwidth, PCS Low Channel



CDMA Conducted RF Emission Test Data cont'd

Figure 10-17b: Occupied Bandwidth, PCS Middle Channel

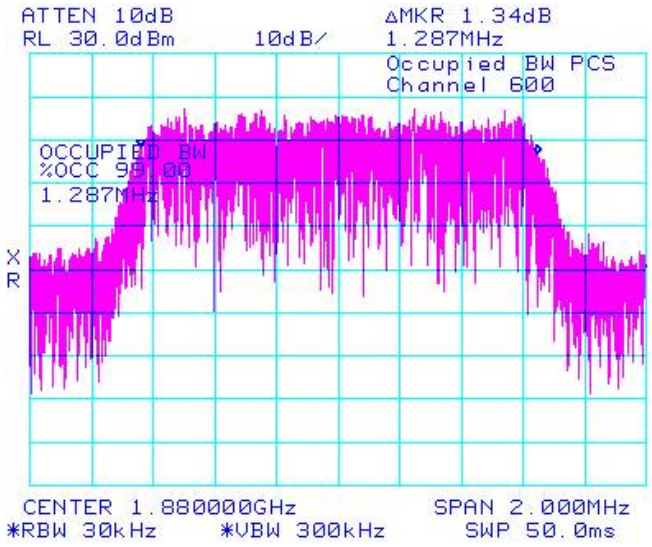


Figure 1-18b: Occupied Bandwidth, PCS High Channel

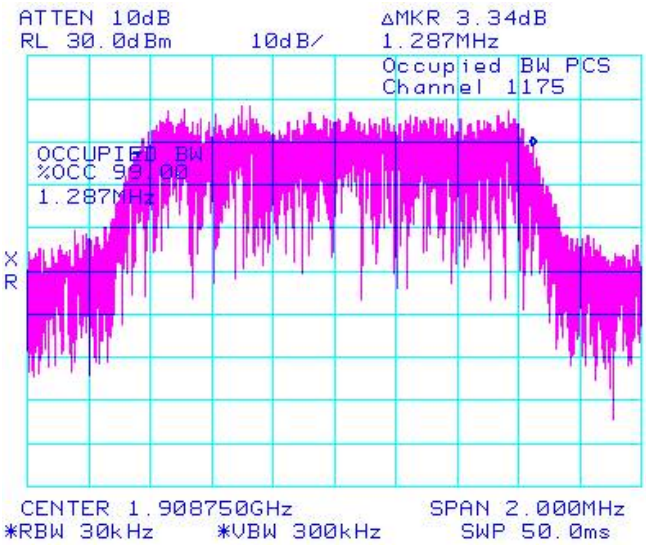


Figure 1-19b: Cellular CDMA2000, Low Channel Mask

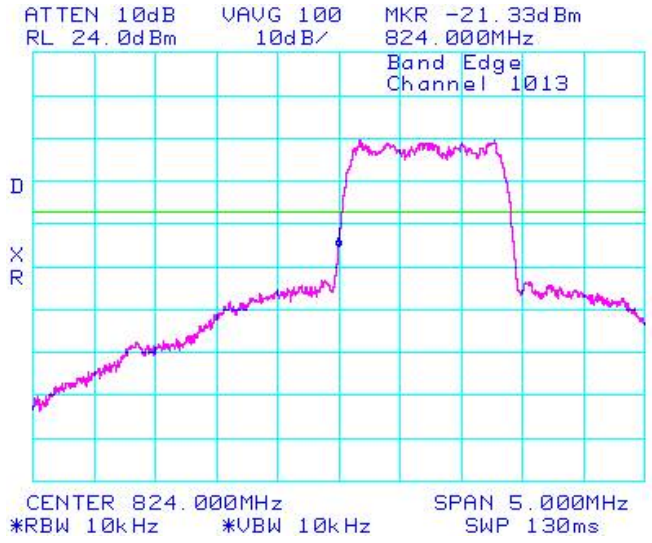
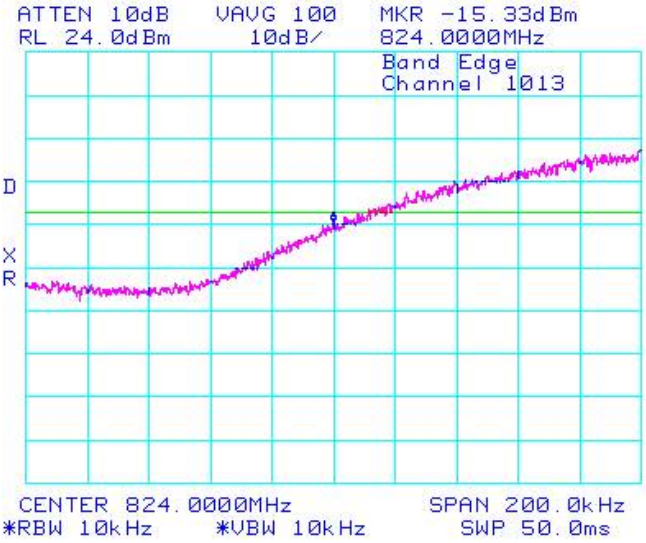


Figure 1-20b: Cellular CDMA2000, Low Channel Mask



CDMA Conducted RF Emission Test Data cont'd

Figure 11-21b: Cellular CDMA2000, High Channel Mask

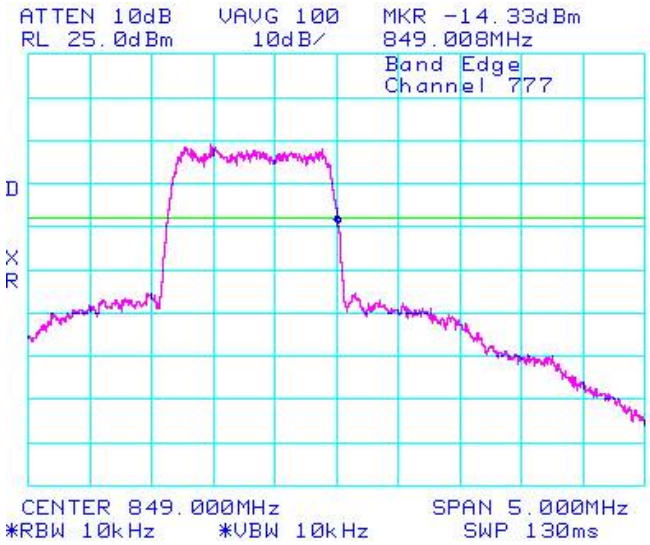


Figure 1-22b: Cellular CDMA2000, High Channel Mask

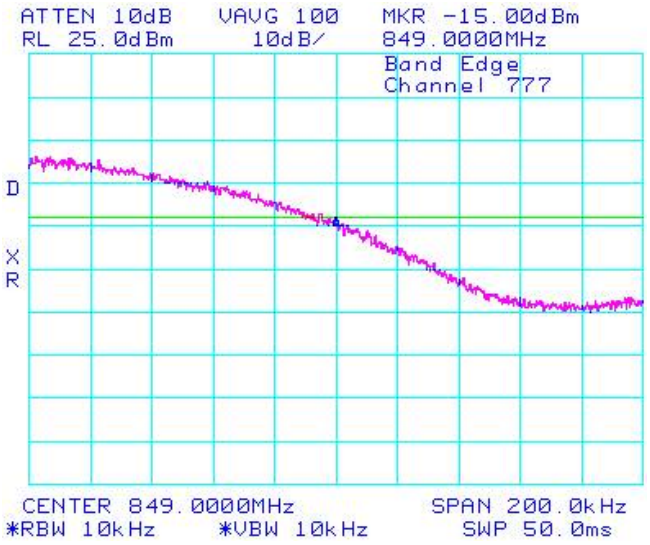


Figure 1-23b: PCS, Low Channel Mask

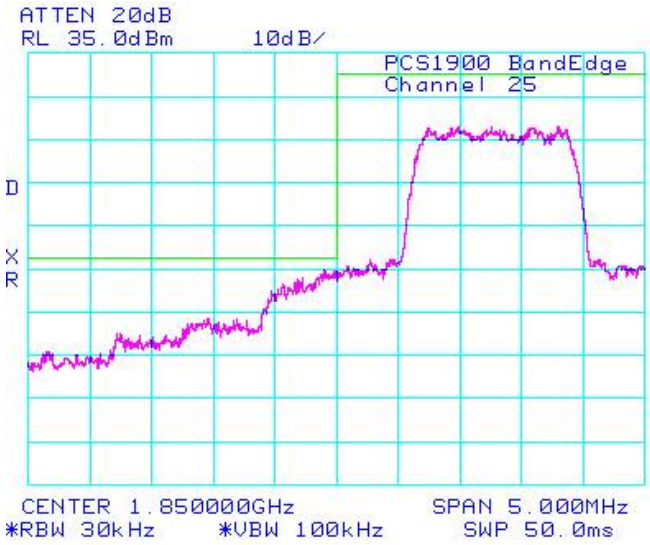
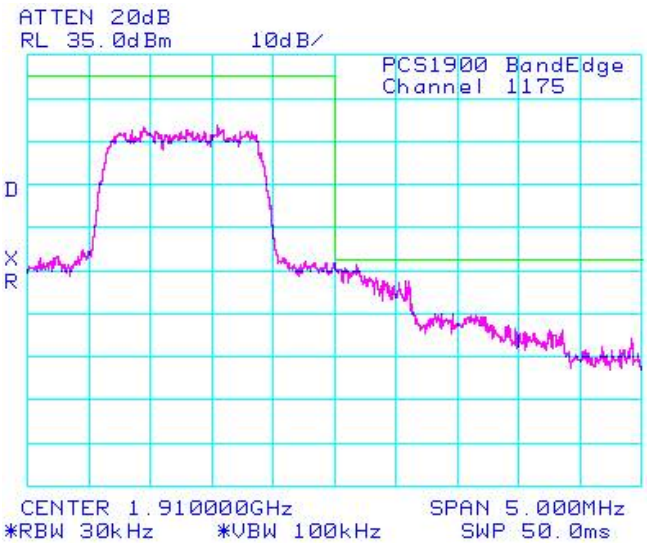


Figure 1-24b: PCS, High Channel Mask



CDMA 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 NF.
See figures 1-25b to 1-36b for the plots of the conducted spurious emissions.
Date of Test: August 21, 2008

The environmental test conditions were:

Temperature	22ºC
Pressure	1022 mb
Relative Humidity	32%

Test Data for Cellular and PCS selected Frequencies in 1xEVDO mode

Cellular Frequency (MHz)	99% Occupied Bandwidth (MHz)
824.700	1.287
836.520	1.280
848.310	1.287

PCS Frequency (MHz)	99% Occupied Bandwidth (MHz)
1851.200	1.300
1880.000	1.300
1908.750	1.280

Measurement Plots for Cellular and PCS in 1xEVDO mode
Refer to the following measurement plots for more detail.

See Figures 1-37b to 1-42b for the plots of the 99% Occupied Bandwidth.
See Figures 1-43b to 1-48b for plots of the channel mask results.

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

CDMA Conducted RF Emission Test Data cont'd

Figure 12-25b: Cellular, Spurious Conducted Emissions, Low channel

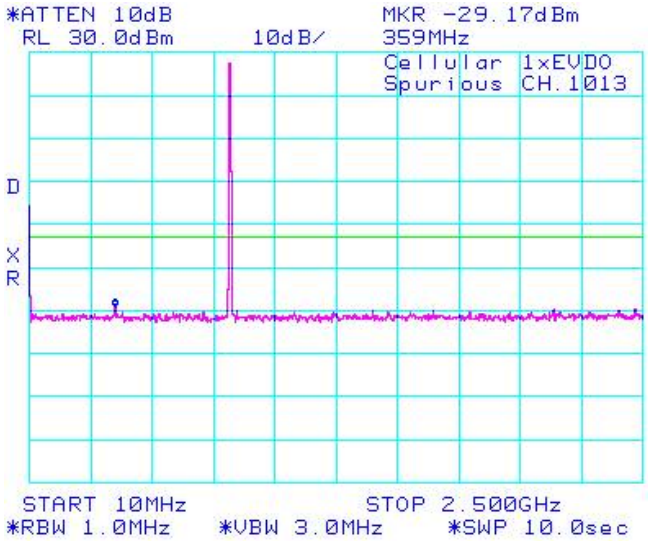


Figure 1-26b: Cellular, Spurious Conducted Emissions, Low channel

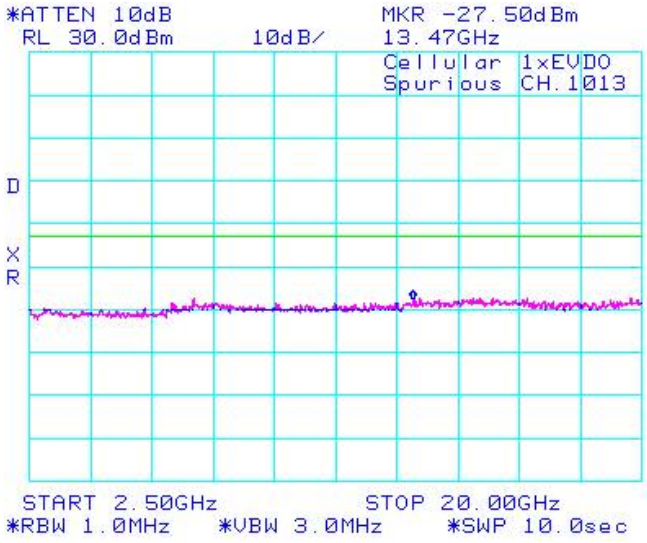


Figure 1-27b: Cellular, Spurious Conducted Emissions, Middle channel

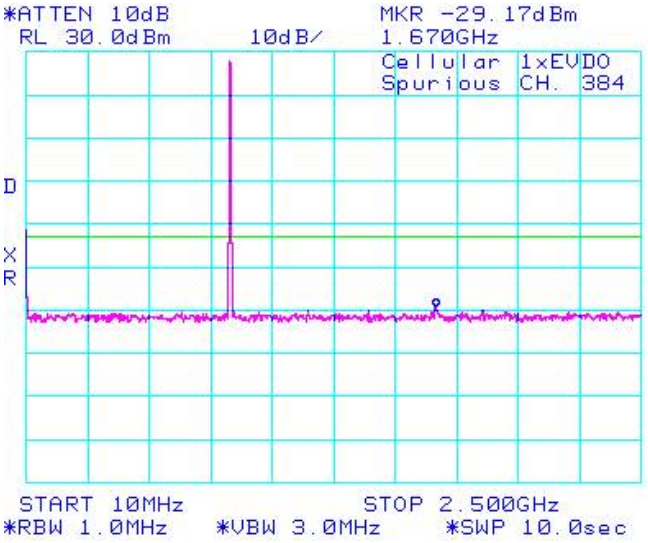
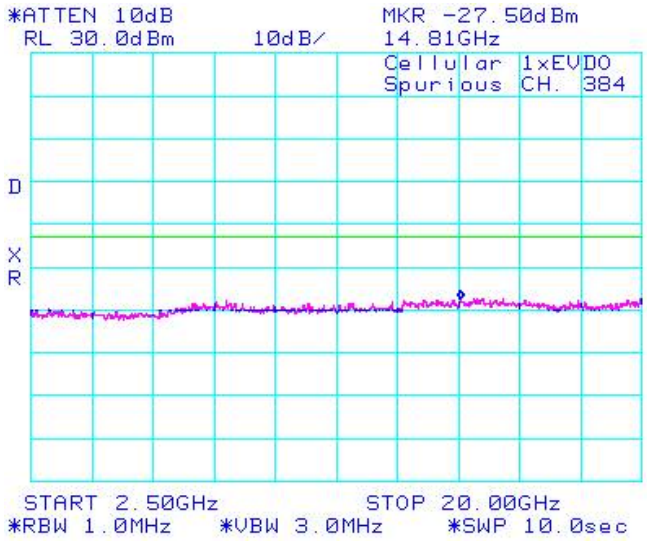


Figure 1-28b: Cellular, Spurious Conducted Emissions, Middle channel



CDMA Conducted RF Emission Test Data cont'd

Figure 13-29b: Cellular, Spurious Conducted Emissions, High Channel

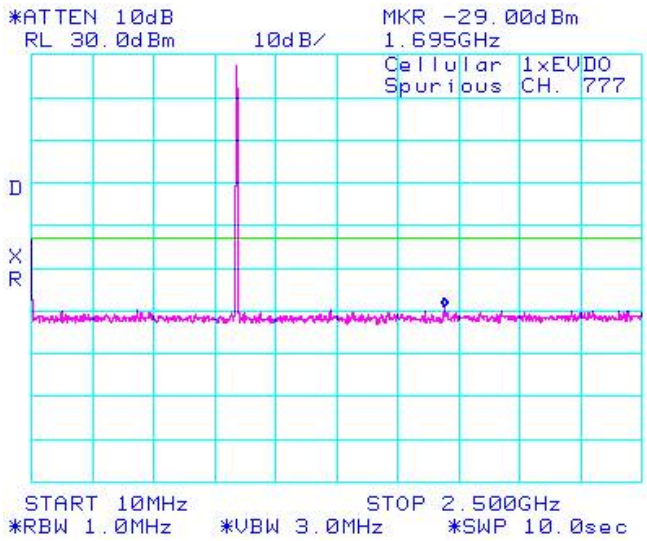


Figure 1-30b: Cellular, Spurious Conducted Emissions, High Channel

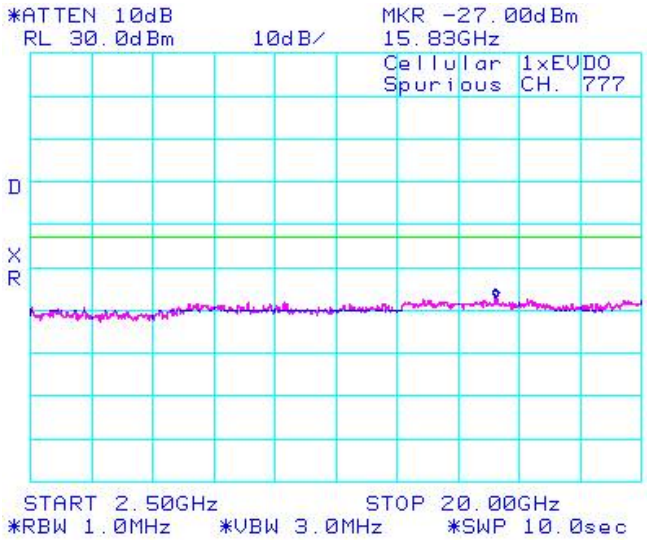


Figure 1-31b: PCS, Spurious Conducted Emissions, Low Channel

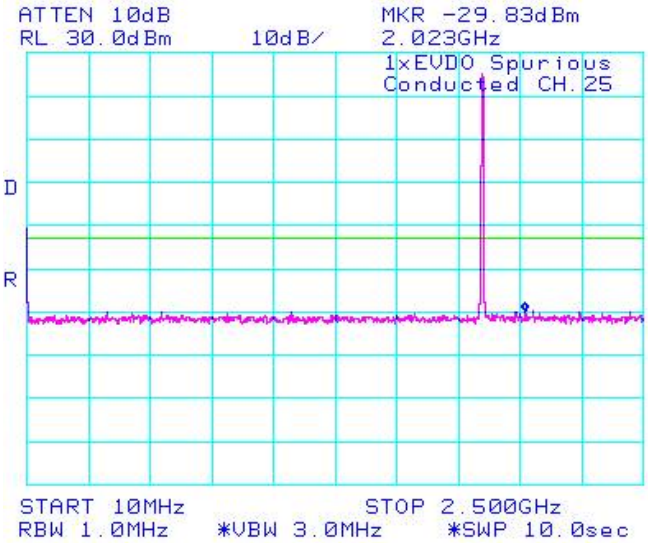
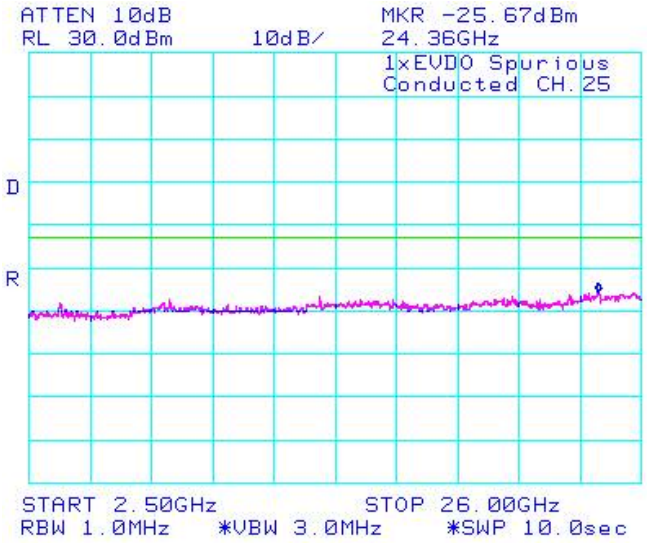


Figure 1-32b: PCS, Spurious Conducted Emissions, Low Channel



CDMA Conducted RF Emission Test Data cont'd

Figure 14-33b: PCS, Spurious Conducted Emissions, Middle Channel

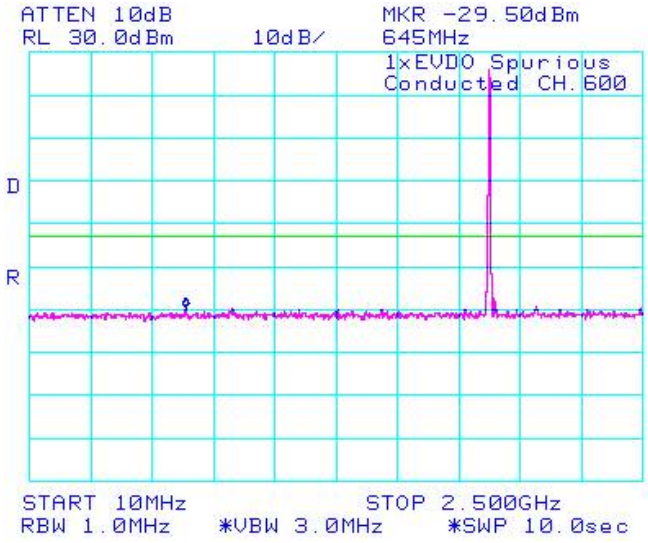


Figure 1-34b: PCS, Spurious Conducted Emissions, Middle Channel

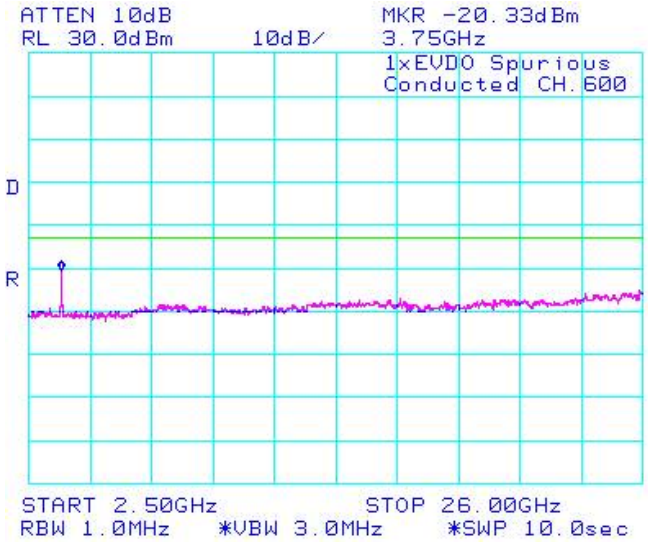


Figure 1-35b: PCS, Spurious Conducted Emissions, High Channel

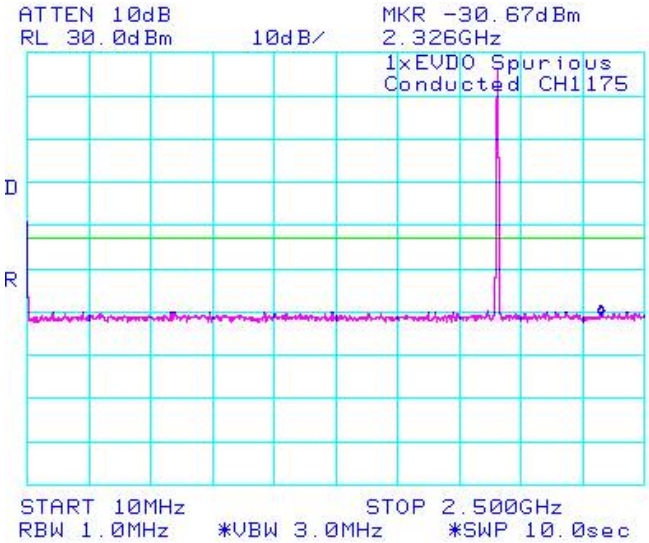
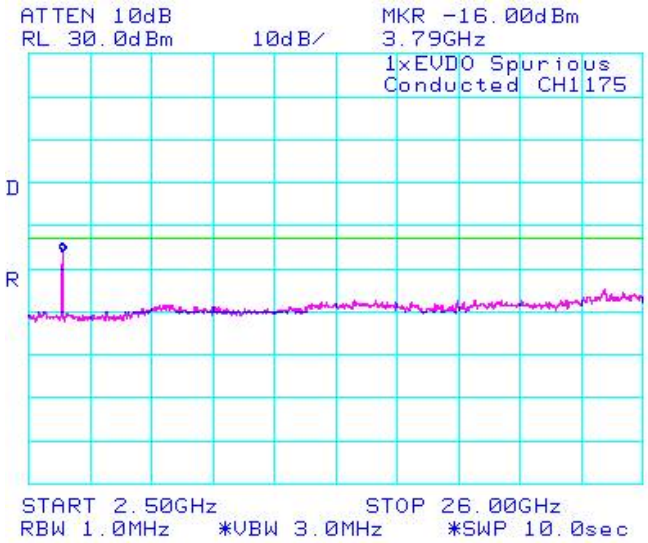


Figure 1-36b: PCS, Spurious Conducted Emissions, High Channel



CDMA Conducted RF Emission Test Data cont'd

Figure 15-37b: Occupied Bandwidth, Cellular Low Channel

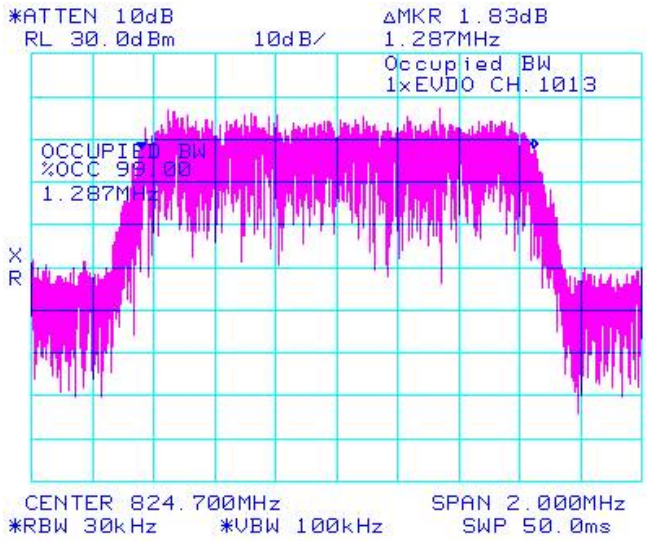


Figure 1-38b: Occupied Bandwidth, Cellular Middle Channel

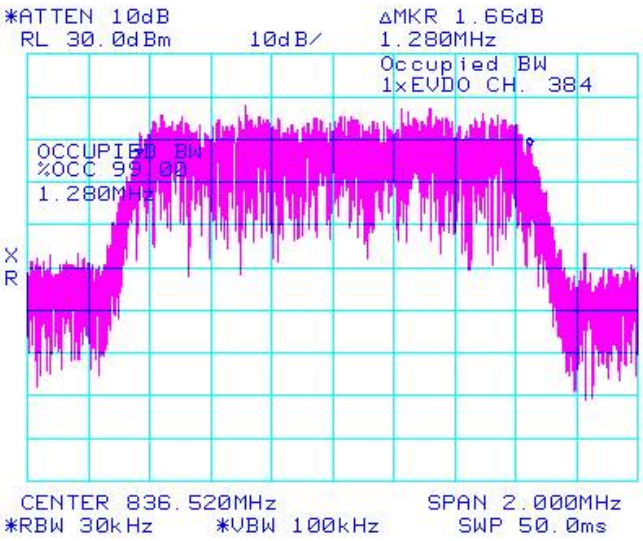


Figure 1-39b: Occupied Bandwidth, Cellular High Channel

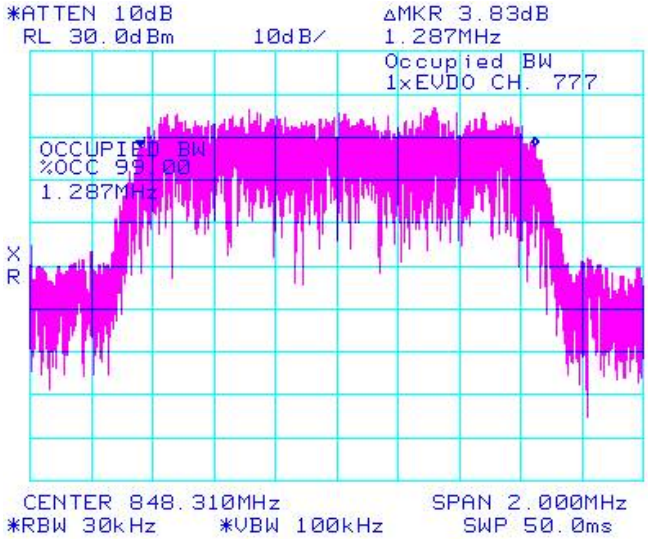
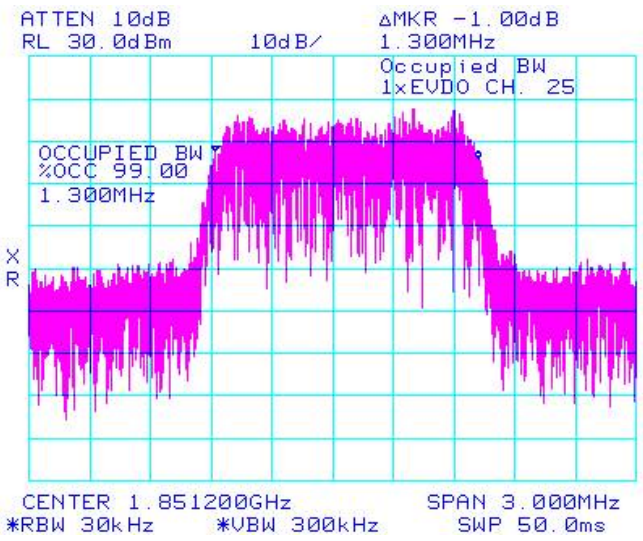


Figure 1-40b: Occupied Bandwidth, PCS Low Channel



CDMA Conducted RF Emission Test Data cont'd

Figure 16-41b: Occupied Bandwidth, PCS Middle Channel

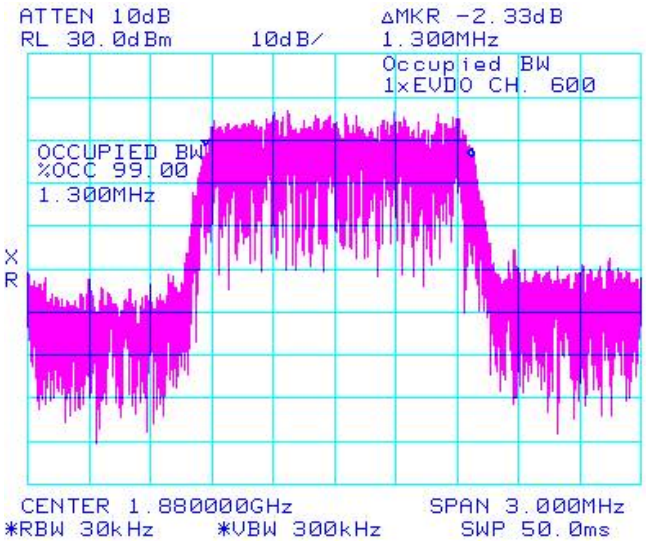


Figure 1-42b: Occupied Bandwidth, PCS High Channel

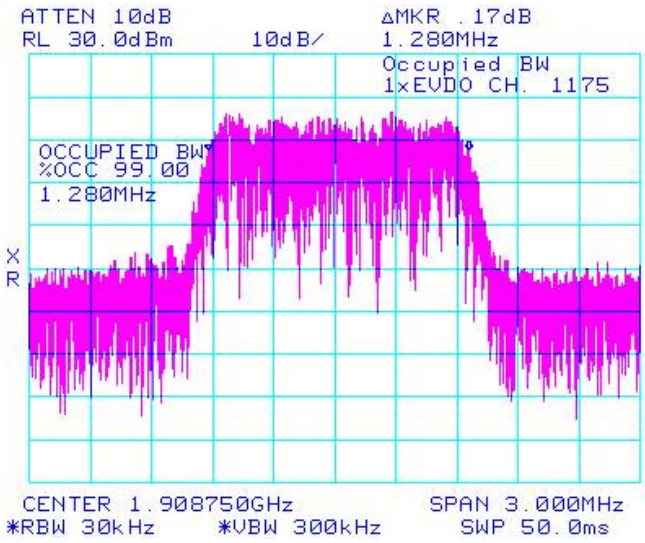


Figure 1-43b: Cellular CDMA2000, Low Channel Mask

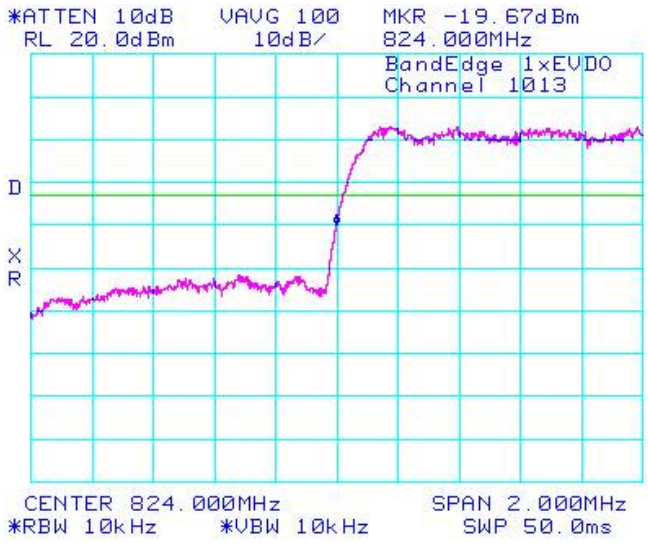
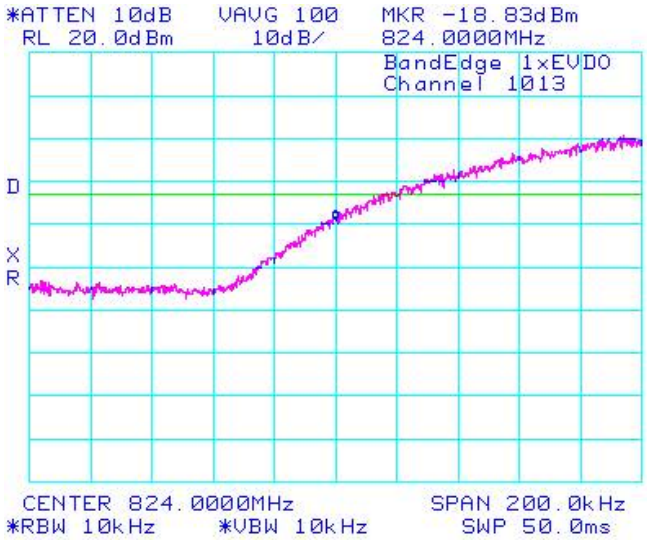


Figure 1-44b: Cellular CDMA2000, Low Channel Mask



CDMA Conducted RF Emission Test Data cont'd

Figure 17-45b: Cellular CDMA2000, High Channel Mask

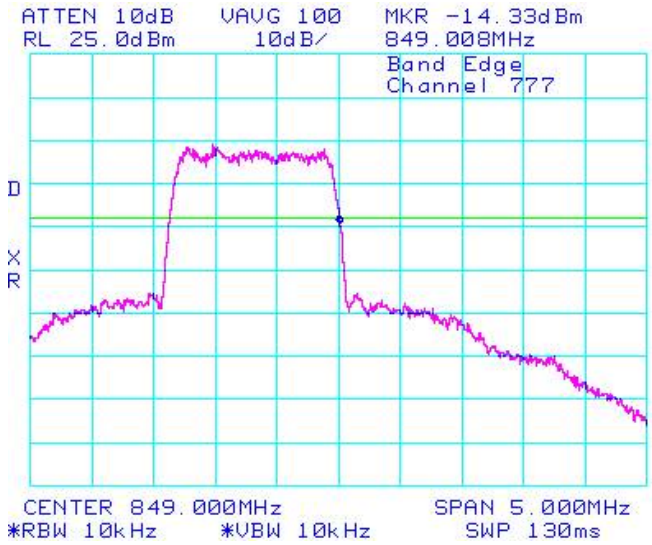


Figure 1-46b: Cellular CDMA2000, High Channel Mask

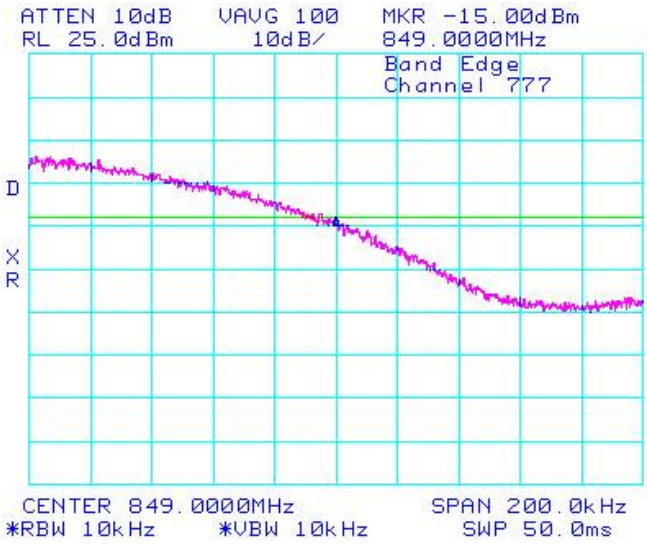


Figure 1-47b: PCS, Low Channel Mask

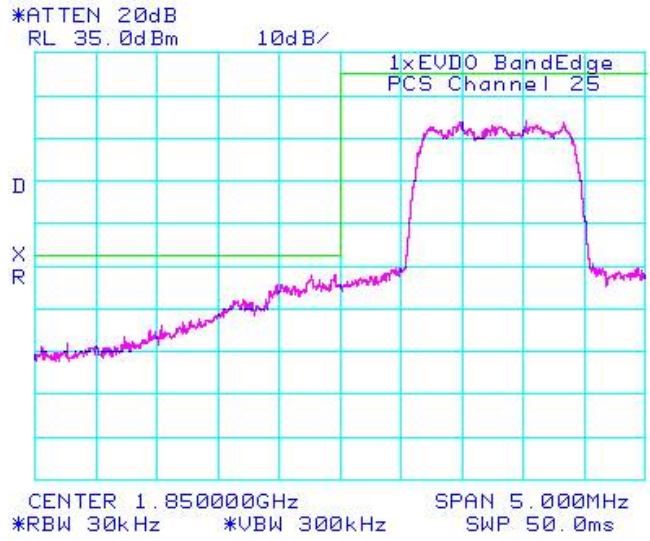
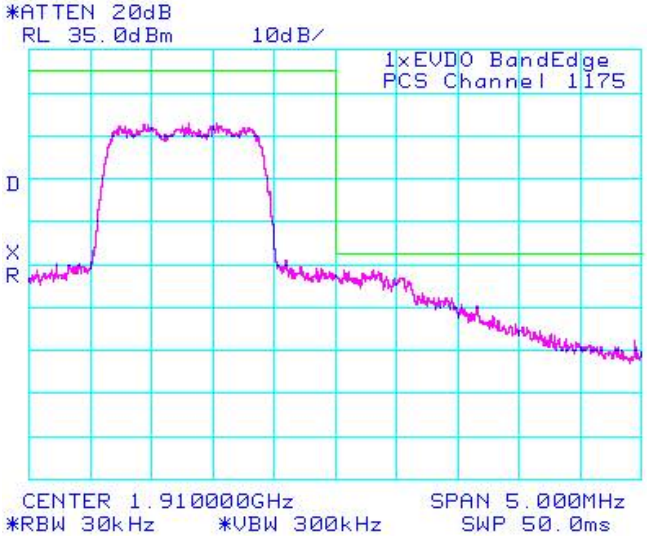


Figure 1-48b: PCS, High Channel Mask



APPENDIX 2A – GSM CONDUCTED RF OUTPUT POWER TEST DATA

GSM 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 33.5 dBm ±0.5 dB for GSM850 and 30.5 dBm ±0.5 dB for PCS.
Peak nominal output power is 31.5 dBm ±0.5 dB for Edge GSM850 and 30.5 dBm ±0.5 dB for Edge PCS.

Date of Test: August 14, 2008

The measurements were performed by Maurice Battler

Channel	Frequency (MHz)	Maximum Output Power (dBm)	Maximum Output Power (Watts)	Channel	Frequency (MHz)	Maximum Output Power (dBm)	Maximum Output Power (Watts)
GSM850				GSM850 EDGE/GPRS/GSM (2-timeslot)			
128	824.20	33.3	2.14	128	824.20	31.5	1.41
189	837.60	33.5	2.24	189	837.60	31.6	1.45
251	848.80	33.8	2.40	251	848.80	31.7	1.48
PCS				PCS EDGE/GPRS/GSM (2-timeslot)			
512	1850.2	30.8	1.20	512	1850.2	30.8	1.20
661	1880.0	30.9	1.23	661	1880.0	31.0	1.26
810	1909.8	30.8	1.20	810	1909.8	30.8	1.20

APPENDIX 2B – CDMA CONDUCTED RF OUTPUT POWER TEST DATA

CDMA Conducted RF Output Power Test Data

The measurements were performed by Maurice Battler.

The conducted RF output power was measured using the CDMA base station simulator. Low, middle and high channels were measured at maximum radio output power at different service options and modes.
Peak nominal output power is 23.50 dBm ±0.5 dB for Cellular and 23.50 dBm ±0.5 dB for PCS.

Date of Test: August 14, 2008

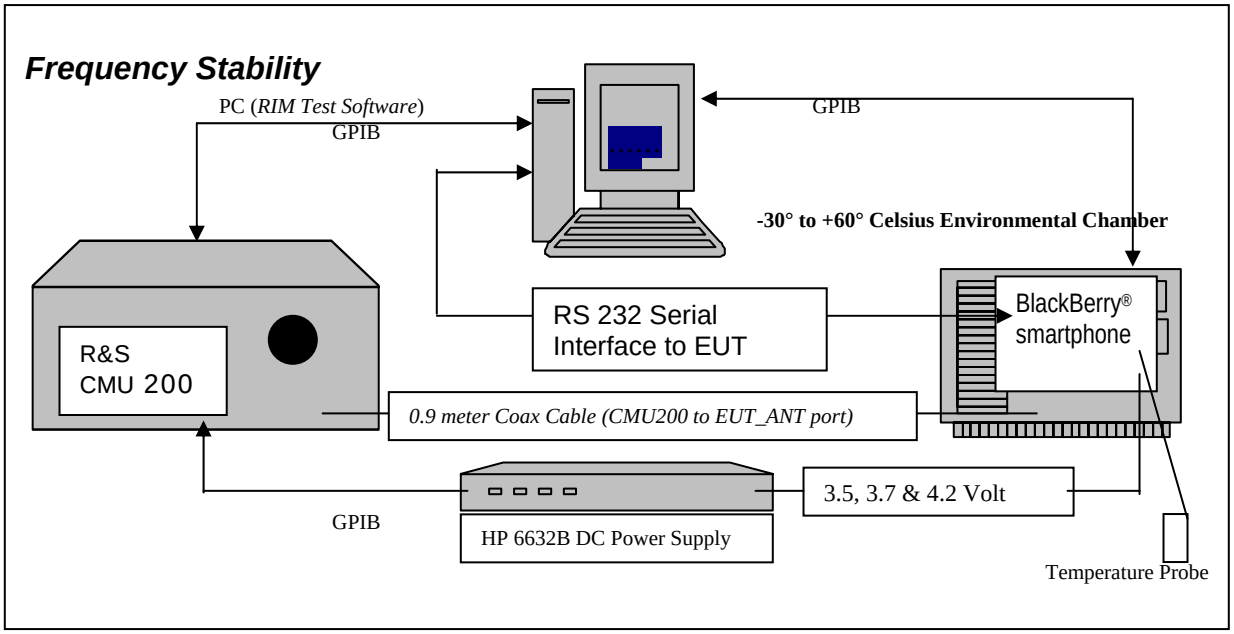
Test Results

Band	Channel	1x EvDO (153.6kbps)		CDMA2000 RC	SO2 Loopback		SO55 Loopback		TDSO SO32	
		(dBm)	(Watts)		(dBm)	(Watts)	(dBm)	(Watts)	(dBm)	(Watts)
CDMA 800	1013	23.50	0.224	RC1	23.80	0.240	23.75	0.237	-	-
				RC3	23.80	0.240	24.05	0.254	23.90	0.245
	384	23.50	0.224	RC1	24.00	0.251	24.02	0.252	-	-
				RC3	24.04	0.254	24.00	0.251	24.05	0.254
	777	23.50	0.224	RC1	23.77	0.238	23.70	0.234	-	-
				RC3	23.75	0.237	23.80	0.240	23.85	0.243

Band	Channel	1x EvDO (153.6kbps)		CDMA2000 RC	SO2 Loopback		SO55 Loopback		TDSO SO32	
		(dBm)	(Watts)		(dBm)	(Watts)	(dBm)	(Watts)	(dBm)	(Watts)
CDMA 1900	25	23.60	0.229	RC1	23.51	0.224	23.50	0.224	-	-
				RC3	23.50	0.224	23.60	0.229	23.50	0.224
	600	23.74	0.237	RC1	23.95	0.248	23.80	0.240	-	-
				RC3	23.90	0.245	23.90	0.245	23.80	0.240
	1175	23.50	0.224	RC1	24.00	0.251	23.90	0.245	-	-
				RC3	24.05	0.254	24.00	0.251	23.90	0.245

APPENDIX 3A – GSM FREQUENCY STABILITY TEST DATA

GSM Frequency Stability Test Data



The measurements were performed by Maurice Battler.

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, CFR 47 chapter 1, Section 22.917 and RSS-132, 4.3 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.

Calibration for the Cable Loss was performed in the RF Laboratory using the Agilent power meter and Agilent Signal Generator.
The cable assembly from the RF input to the RF output was measured at the following Frequencies:

PCS1900 Frequency (MHz)	Cable loss (dB)
1850.2	1.20
1880.0	1.20
1909.8	1.20

GSM850 Frequency (MHz)	Cable loss (dB)
824.2	0.90
836.4	0.90
848.6	0.90

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 3.7 volts to 4.2 volts maximum 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, 3.7 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, 1850.2, 1880.0 and 1909.8 MHz for the PCS1900 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.

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 and 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 3.7 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, 3.7 and 4.2 volts.

The maximum frequency error in the GSM850 band measured was **0.0552 PPM**.
The maximum frequency error in the PCS band measured was **0.0752 PPM**.

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

Date of Test: August 07, 2008

Traffic Channel Number	GSM850 Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
128	824.20	3.6	20	22.79	0.1901
189	836.40	3.6	20	25.70	0.3715
250	848.60	3.6	20	24.73	0.2972

Traffic Channel Number	GSM850 Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
128	824.20	3.7	20	25.38	0.3451
189	836.40	3.7	20	23.50	0.2239
250	848.60	3.7	20	28.02	0.6339

Traffic Channel Number	GSM850 Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
128	824.20	4.2	20	22.60	0.1820
189	836.40	4.2	20	26.93	0.4932
250	848.60	4.2	20	28.61	0.7261

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	38.36	0.0465
128	824.20	3.6	-20	40.74	0.0494
128	824.20	3.6	-10	36.48	0.0443
128	824.20	3.6	0	28.48	0.0346
128	824.20	3.6	10	30.61	0.0371
128	824.20	3.6	20	22.79	0.0277
128	824.20	3.6	30	17.95	0.0218
128	824.20	3.6	40	13.04	0.0158
128	824.20	3.6	50	9.43	0.0114
128	824.20	3.6	60	-18.98	-0.0230

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
128	824.20	3.7	-30	36.29	0.0440
128	824.20	3.7	-20	36.68	0.0445
128	824.20	3.7	-10	45.46	**0.0552**
128	824.20	3.7	0	32.87	0.0399
128	824.20	3.7	10	25.38	0.0308
128	824.20	3.7	20	25.38	0.0308
128	824.20	3.7	30	22.28	0.0270
128	824.20	3.7	40	20.47	0.0248
128	824.20	3.7	50	8.72	0.0106
128	824.20	3.7	60	-13.37	-0.0162

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
128	824.20	4.2	-30	41.91	0.0508
128	824.20	4.2	-20	43.72	0.0530
128	824.20	4.2	-10	41.07	0.0498
128	824.20	4.2	0	34.48	0.0418
128	824.20	4.2	10	27.70	0.0336
128	824.20	4.2	20	22.60	0.0274
128	824.20	4.2	30	15.76	0.0191
128	824.20	4.2	40	13.43	0.0163
128	824.20	4.2	50	-16.08	-0.0195
128	824.20	4.2	60	-18.34	-0.0223

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	36.29	0.0434
189	836.40	3.6	-20	41.33	0.0494
189	836.40	3.6	-10	38.42	0.0459
189	836.40	3.6	0	31.19	0.0373
189	836.40	3.6	10	20.79	0.0249
189	836.40	3.6	20	25.70	0.0307
189	836.40	3.6	30	22.99	0.0275
189	836.40	3.6	40	14.46	0.0173
189	836.40	3.6	50	6.59	0.0079
189	836.40	3.6	60	-14.59	-0.0174

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
189	836.40	3.7	-30	40.81	0.0488
189	836.40	3.7	-20	35.84	0.0429
189	836.40	3.7	-10	39.32	0.0470
189	836.40	3.7	0	30.15	0.0360
189	836.40	3.7	10	33.19	0.0397
189	836.40	3.7	20	23.50	0.0281
189	836.40	3.7	30	21.50	0.0257
189	836.40	3.7	40	21.50	0.0257
189	836.40	3.7	50	-6.91	-0.0083
189	836.40	3.7	60	-19.05	-0.0228

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
189	836.40	4.2	-30	31.06	0.0371
189	836.40	4.2	-20	42.10	0.0503
189	836.40	4.2	-10	41.33	0.0494
189	836.40	4.2	0	37.00	0.0442
189	836.40	4.2	10	28.86	0.0345
189	836.40	4.2	20	26.93	0.0322
189	836.40	4.2	30	18.14	0.0217
189	836.40	4.2	40	14.33	0.0171
189	836.40	4.2	50	-12.07	-0.0144
189	836.40	4.2	60	-15.63	-0.0187

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	39.13	0.0461
250	848.60	3.6	-20	43.97	0.0518
250	848.60	3.6	-10	38.61	0.0455
250	848.60	3.6	0	30.61	0.0361
250	848.60	3.6	10	30.93	0.0364
250	848.60	3.6	20	24.73	0.0291
250	848.60	3.6	30	22.92	0.0270
250	848.60	3.6	40	14.79	0.0174
250	848.60	3.6	50	-9.75	-0.0115
250	848.60	3.6	60	-17.18	-0.0202

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
250	848.60	3.7	-30	44.36	0.0523
250	848.60	3.7	-20	37.19	0.0438
250	848.60	3.7	-10	37.84	0.0446
250	848.60	3.7	0	29.77	0.0351
250	848.60	3.7	10	40.81	0.0481
250	848.60	3.7	20	28.02	0.0330
250	848.60	3.7	30	22.66	0.0267
250	848.60	3.7	40	12.07	0.0142
250	848.60	3.7	50	-10.91	-0.0129
250	848.60	3.7	60	12.46	0.0147

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
250	848.60	4.2	-30	36.68	0.0432
250	848.60	4.2	-20	44.23	0.0521
250	848.60	4.2	-10	32.87	0.0387
250	848.60	4.2	0	33.77	0.0398
250	848.60	4.2	10	38.42	0.0453
250	848.60	4.2	20	28.61	0.0337
250	848.60	4.2	30	19.05	0.0224
250	848.60	4.2	40	11.95	0.0141
250	848.60	4.2	50	-16.34	-0.0193
250	848.60	4.2	60	-12.79	-0.0151

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

Date of Test: August 07, 2008

Traffic Channel Number	PCS Frequency (MHz	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	*PPM*
512	1850.2	3.6	20	66.32	0.0358
661	1880.0	3.6	20	70.25	0.0374
810	1909.8	3.6	20	67.22	0.0352

Traffic Channel Number	PCS Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
512	1850.2	3.7	20	58.50	0.0316
661	1880.0	3.7	20	84.65	0.0450
810	1909.8	3.7	20	76.00	0.0398

Traffic Channel Number	PCS Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
512	1850.2	4.2	20	81.17	0.0439
661	1880.0	4.2	20	101.70	0.0541
810	1909.8	4.2	20	84.40	0.0442

PCS1900 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	90.79	0.0491
512	1850.2	3.6	-20	99.18	0.0536
512	1850.2	3.6	-10	97.31	0.0526
512	1850.2	3.6	0	95.63	0.0517
512	1850.2	3.6	10	72.00	0.0389
512	1850.2	3.6	20	66.32	0.0358
512	1850.2	3.6	30	68.77	0.0372
512	1850.2	3.6	40	37.65	0.0203
512	1850.2	3.6	50	20.86	0.0113
512	1850.2	3.6	60	-18.66	-0.0101

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
512	1850.2	3.7	-30	115.71	0.0625
512	1850.2	3.7	-20	97.05	0.0525
512	1850.2	3.7	-10	103.06	0.0557
512	1850.2	3.7	0	95.76	0.0518
512	1850.2	3.7	10	77.87	0.0421
512	1850.2	3.7	20	58.50	0.0316
512	1850.2	3.7	30	81.36	0.0440
512	1850.2	3.7	40	31.58	0.0171
512	1850.2	3.7	50	17.69	0.0096
512	1850.2	3.7	60	13.50	0.0073

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
512	1850.2	4.2	-30	111.26	0.0601
512	1850.2	4.2	-20	139.15	**0.0752**
512	1850.2	4.2	-10	117.65	0.0636
512	1850.2	4.2	0	113.90	0.0616
512	1850.2	4.2	10	89.63	0.0484
512	1850.2	4.2	20	81.17	0.0439
512	1850.2	4.2	30	49.91	0.0270
512	1850.2	4.2	40	50.62	0.0274
512	1850.2	4.2	50	19.44	0.0105
512	1850.2	4.2	60	20.53	0.0111

PCS1900 Results: channel 661 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
661	1880	3.6	-30	118.04	0.0628
661	1880	3.6	-20	100.93	0.0537
661	1880	3.6	-10	83.62	0.0445
661	1880	3.6	0	87.04	0.0463
661	1880	3.6	10	69.87	0.0372
661	1880	3.6	20	70.25	0.0374
661	1880	3.6	30	65.41	0.0348
661	1880	3.6	40	55.21	0.0294
661	1880	3.6	50	32.61	0.0173
661	1880	3.6	60	25.44	0.0135

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
661	1880	3.7	-30	134.70	0.0716
661	1880	3.7	-20	90.46	0.0481
661	1880	3.7	-10	89.56	0.0476
661	1880	3.7	0	81.68	0.0434
661	1880	3.7	10	96.73	0.0515
661	1880	3.7	20	84.65	0.0450
661	1880	3.7	30	54.18	0.0288
661	1880	3.7	40	54.43	0.0290
661	1880	3.7	50	28.41	0.0151
661	1880	3.7	60	30.93	0.0165

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
661	1880	4.2	-30	128.37	0.0683
661	1880	4.2	-20	104.03	0.0553
661	1880	4.2	-10	98.47	0.0524
661	1880	4.2	0	119.59	0.0636
661	1880	4.2	10	112.68	0.0599
661	1880	4.2	20	101.70	0.0541
661	1880	4.2	30	78.84	0.0419
661	1880	4.2	40	53.21	0.0283
661	1880	4.2	50	50.30	0.0268
661	1880	4.2	60	17.69	0.0094

PCS1900 Results: channel 810 @ maximum transmitted power

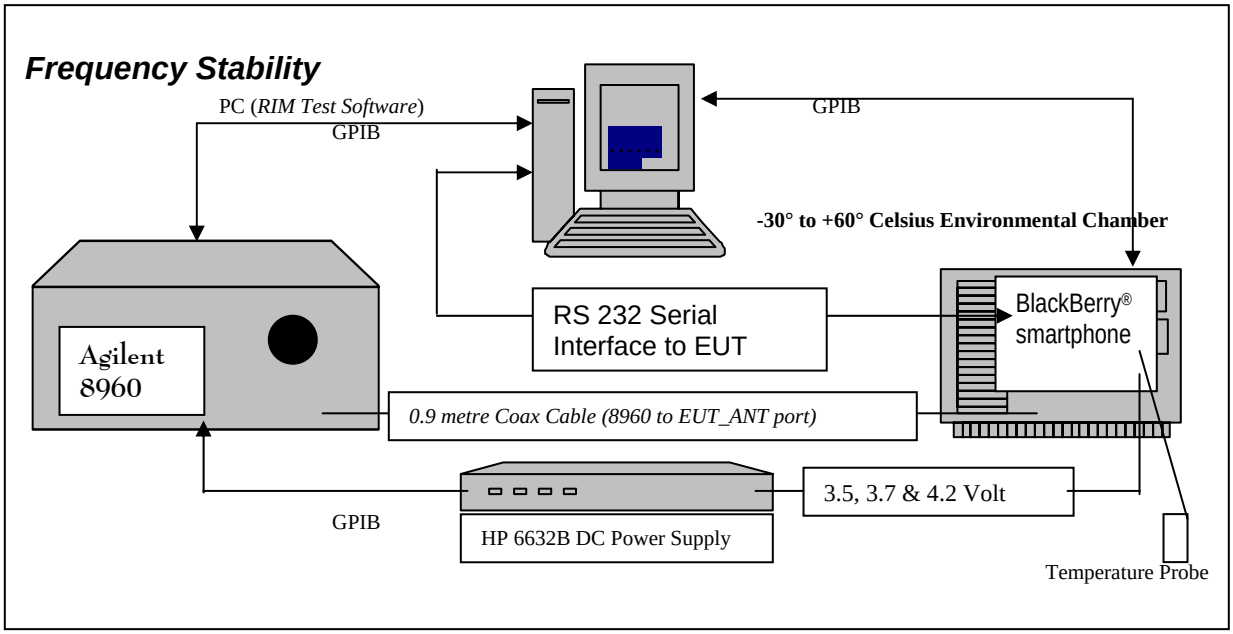
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
810	1909.8	3.6	-30	122.23	0.0640
810	1909.8	3.6	-20	72.19	0.0378
810	1909.8	3.6	-10	82.78	0.0433
810	1909.8	3.6	0	92.27	0.0483
810	1909.8	3.6	10	81.81	0.0428
810	1909.8	3.6	20	67.22	0.0352
810	1909.8	3.6	30	60.31	0.0316
810	1909.8	3.6	40	51.14	0.0268
810	1909.8	3.6	50	27.44	0.0144
810	1909.8	3.6	60	27.89	0.0146

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
810	1909.8	3.7	-30	125.79	0.0659
810	1909.8	3.7	-20	89.17	0.0467
810	1909.8	3.7	-10	92.85	0.0486
810	1909.8	3.7	0	82.97	0.0434
810	1909.8	3.7	10	98.99	0.0518
810	1909.8	3.7	20	76.00	0.0398
810	1909.8	3.7	30	76.58	0.0401
810	1909.8	3.7	40	29.70	0.0156
810	1909.8	3.7	50	34.74	0.0182
810	1909.8	3.7	60	22.79	0.0119

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
810	1909.8	4.2	-30	126.17	0.0661
810	1909.8	4.2	-20	102.35	0.0536
810	1909.8	4.2	-10	109.45	0.0573
810	1909.8	4.2	0	110.22	0.0577
810	1909.8	4.2	10	96.47	0.0505
810	1909.8	4.2	20	84.40	0.0442
810	1909.8	4.2	30	65.93	0.0345
810	1909.8	4.2	40	45.59	0.0239
810	1909.8	4.2	50	19.44	0.0102
810	1909.8	4.2	60	18.02	0.0094

APPENDIX 3B – CDMA FREQUENCY STABILITY TEST DATA

CDMA 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

24.236 *Frequency Stability*.

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

The RBW71CW BlackBerry® smartphone, (referred as EUT herein and after) transmitted frequencies are less than 0.1 ppm of the received frequency from the Agilent 8960 CDMA Base Station Simulator

The EUT meets the requirements as stated in CFR 47 chapter 1, Section 24.235, RSS-GEN, 4.7, CFR 47 chapter 1, Section 22.917 and RSS-132, 4.3 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 baste station simulator and the EUT antenna port; located inside the environmental chamber.

Calibration for the Cable Loss was performed in the RF Laboratory using the Giga-tronics power metre 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)
1851.20	1.20
1880.00	1.20
1908.75	1.20

Cellular Frequency (MHz)	Cable loss (dB)
824.70	0.90
836.52	0.90
848.31	0.90

Procedure:

The EUT was placed in the Temperature chamber and connected to the Agilent 8960 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 base station simulator 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 3.7 volts nominal voltage to 4.2 volts maximum 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, 3.7 volts and 4.2 volts. The transmit frequency was varied in 3 steps consisting of 824.70, 836.52, and 848.31 MHz for the cellular band and 1851.20, 1880.00 and 1908.75 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.

PROCEDURE:

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

15. Switch on the HP 6632B power supply; AGILENT 8960, and Environmental Chamber.
16. Start test program
17. Set the Temperature to –30°C and maintain a period of one- hour soak time, with the EUT supply voltage disabled.
18. Set power supply voltage to 3.6 volts.
19. Set up base station simulator.
20. Command the base station simulator to switch to the low channel.
21. Enable the voltage to the EUT, and connect a link to the base station simulator.
22. EUT is commanded to Transmit 100 Bursts.
23. Software logs the following data from the base station simulator, power supply and temperature chamber: Traffic Channel Number, Traffic Channel Frequency, Power Level, Chamber Temperature, Supply Voltage, Power, Frequency Error.
24. The base station simulator commands the EUT to change frequency to the middle channel and high channel and repeats steps 7 to 9.
25. Repeat steps 5 to 10 changing the supply voltage to 3.7 Volts
26. Increase temperature by 10°C and soak for 1/2 hour.
27. Repeat steps 4 - 12 for temperatures –30°C to 60°C.
28. 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, 3.7 and 4.2 volts.

The maximum frequency error in the Cellular band measured was **-0.0058 PPM.**
The maximum frequency error in the PCS band measured was **0.0050 PPM**.

Date of test, August 22, 2008.

The measurements were performed by Maurice Battler.

Cellular Channel results: channels 1013, 384 and 777 @ 20°C maximum transmitted power

Traffic Channel Number	Cellular Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	*PPM*
1013	824.700	3.6	20	-1.61	-0.0020
384	836.520	3.6	20	1.29	0.0015
777	848.310	3.6	20	1.33	0.0016

Traffic Channel Number	Cellular Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1013	824.700	3.7	20	0.03	0.0000
384	836.520	3.7	20	-0.05	-0.0001
777	848.310	3.7	20	-0.23	-0.0003

Traffic Channel Number	Cellular Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1013	824.700	4.2	20	0.43	0.0005
384	836.520	4.2	20	0.03	0.0000
777	848.310	4.2	20	0.07	0.0001

Cellular Results: channel 1013 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1013	824.700	3.6	-30	-0.17	-0.0002
1013	824.700	3.6	-20	-0.91	-0.0011
1013	824.700	3.6	-10	-1.98	-0.0024
1013	824.700	3.6	0	-1.54	-0.0019
1013	824.700	3.6	10	-1.55	-0.0019
1013	824.700	3.6	20	-1.61	-0.0020
1013	824.700	3.6	30	-1.12	-0.0014
1013	824.700	3.6	40	-1.34	-0.0016
1013	824.700	3.6	50	-1.52	-0.0018
1013	824.700	3.6	60	-1.21	-0.0015

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1013	824.700	3.7	-30	-0.18	-0.0002
1013	824.700	3.7	-20	4.79	**0.0058**
1013	824.700	3.7	-10	0.82	0.0010
1013	824.700	3.7	0	4.28	0.0052
1013	824.700	3.7	10	2.93	0.0035
1013	824.700	3.7	20	0.03	0.0000
1013	824.700	3.7	30	-0.30	-0.0004
1013	824.700	3.7	40	0.00	0.0000
1013	824.700	3.7	50	0.12	0.0001
1013	824.700	3.7	60	1.89	0.0023

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1013	824.700	4.2	-30	0.10	0.0001
1013	824.700	4.2	-20	0.37	0.0004
1013	824.700	4.2	-10	0.59	0.0007
1013	824.700	4.2	0	0.69	0.0008
1013	824.700	4.2	10	1.04	0.0013
1013	824.700	4.2	20	0.43	0.0005
1013	824.700	4.2	30	0.16	0.0002
1013	824.700	4.2	40	0.17	0.0002
1013	824.700	4.2	50	0.44	0.0005
1013	824.700	4.2	60	0.79	0.0010

Cellular Results: channel 384 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
384	836.520	3.6	-30	-0.10	-0.0001
384	836.520	3.6	-20	4.57	0.0055
384	836.520	3.6	-10	2.14	0.0026
384	836.520	3.6	0	4.24	0.0051
384	836.520	3.6	10	3.60	0.0043
384	836.520	3.6	20	1.29	0.0015
384	836.520	3.6	30	0.25	0.0003
384	836.520	3.6	40	0.93	0.0011
384	836.520	3.6	50	0.50	0.0006
384	836.520	3.6	60	2.30	0.0027

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
384	836.520	3.7	-30	0.03	0.0000
384	836.520	3.7	-20	2.79	0.0033
384	836.520	3.7	-10	-0.04	0.0000
384	836.520	3.7	0	2.60	0.0031
384	836.520	3.7	10	1.45	0.0017
384	836.520	3.7	20	-0.05	-0.0001
384	836.520	3.7	30	-0.80	-0.0010
384	836.520	3.7	40	-0.62	-0.0007
384	836.520	3.7	50	-0.27	-0.0003
384	836.520	3.7	60	1.70	0.0020

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
384	836.520	4.2	-30	0.43	0.0005
384	836.520	4.2	-20	0.57	0.0007
384	836.520	4.2	-10	0.62	0.0007
384	836.520	4.2	0	0.77	0.0009
384	836.520	4.2	10	0.71	0.0008
384	836.520	4.2	20	0.03	0.0000
384	836.520	4.2	30	0.26	0.0003
384	836.520	4.2	40	-0.13	-0.0002
384	836.520	4.2	50	-0.08	-0.0001
384	836.520	4.2	60	0.35	0.0004

Cellular Results: channel 777 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
777	848.310	3.6	-30	0.29	0.0003
777	848.310	3.6	-20	3.52	0.0042
777	848.310	3.6	-10	1.14	0.0013
777	848.310	3.6	0	3.97	0.0047
777	848.310	3.6	10	3.14	0.0037
777	848.310	3.6	20	1.33	0.0016
777	848.310	3.6	30	0.21	0.0003
777	848.310	3.6	40	-0.45	-0.0005
777	848.310	3.6	50	0.32	0.0004
777	848.310	3.6	60	2.58	0.0030

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
777	848.310	3.7	-30	-0.02	0.0000
777	848.310	3.7	-20	2.48	0.0029
777	848.310	3.7	-10	0.21	0.0002
777	848.310	3.7	0	2.11	0.0025
777	848.310	3.7	10	1.02	0.0012
777	848.310	3.7	20	-0.23	-0.0003
777	848.310	3.7	30	-0.81	-0.0010
777	848.310	3.7	40	0.48	0.0006
777	848.310	3.7	50	0.20	0.0002
777	848.310	3.7	60	1.30	0.0015

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
777	848.310	4.2	-30	0.54	0.0006
777	848.310	4.2	-20	0.36	0.0004
777	848.310	4.2	-10	0.71	0.0008
777	848.310	4.2	0	0.82	0.0010
777	848.310	4.2	10	0.45	0.0005
777	848.310	4.2	20	0.07	0.0001
777	848.310	4.2	30	0.27	0.0003
777	848.310	4.2	40	-0.15	-0.0002
777	848.310	4.2	50	0.66	0.0008
777	848.310	4.2	60	0.78	0.0009

PCS Channel results: channels 25, 600, & 1175 @ 20°C maximum transmitted power

Traffic Channel Number	PCS Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
25	1851.20	3.6	20	-1.01	-0.0005
600	1880.00	3.6	20	1.80	0.0010
1175	1908.75	3.6	20	1.13	0.0006

Traffic Channel Number	PCS Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
25	1851.20	3.7	20	0.72	0.0004
600	1880.00	3.7	20	-0.92	-0.0005
1175	1908.75	3.7	20	-0.58	-0.0003

Traffic Channel Number	PCS Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
25	1851.20	4.2	20	1.11	0.0006
600	1880.00	4.2	20	-0.41	-0.0002
1175	1908.75	4.2	20	1.15	0.0006

PCS Results: channel 25 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
25	1851.20	3.6	-30	-0.76	-0.0004
25	1851.20	3.6	-20	1.68	0.0009
25	1851.20	3.6	-10	-0.58	-0.0003
25	1851.20	3.6	0	1.36	0.0007
25	1851.20	3.6	10	1.09	0.0006
25	1851.20	3.6	20	-1.01	-0.0005
25	1851.20	3.6	30	-2.20	-0.0012
25	1851.20	3.6	40	-2.40	-0.0013
25	1851.20	3.6	50	-2.03	-0.0011
25	1851.20	3.6	60	-2.13	-0.0012

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
25	1851.20	3.7	-30	-1.61	-0.0009
25	1851.20	3.7	-20	7.57	0.0041
25	1851.20	3.7	-10	1.33	0.0007
25	1851.20	3.7	0	7.46	0.0040
25	1851.20	3.7	10	4.49	0.0024
25	1851.20	3.7	20	0.72	0.0004
25	1851.20	3.7	30	-0.90	-0.0005
25	1851.20	3.7	40	-0.64	-0.0003
25	1851.20	3.7	50	0.08	0.0000
25	1851.20	3.7	60	4.48	0.0024

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
25	1851.20	4.2	-30	1.17	0.0006
25	1851.20	4.2	-20	1.07	0.0006
25	1851.20	4.2	-10	1.19	0.0006
25	1851.20	4.2	0	2.27	0.0012
25	1851.20	4.2	10	1.85	0.0010
25	1851.20	4.2	20	1.11	0.0006
25	1851.20	4.2	30	0.37	0.0002
25	1851.20	4.2	40	1.03	0.0006
25	1851.20	4.2	50	1.11	0.0006
25	1851.20	4.2	60	0.17	0.0001

PCS Results: channel 600 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
600	1880.00	3.6	-30	-0.69	-0.0004
600	1880.00	3.6	-20	9.36	**0.0050**
600	1880.00	3.6	-10	2.97	0.0016
600	1880.00	3.6	0	8.91	0.0047
600	1880.00	3.6	10	7.74	0.0041
600	1880.00	3.6	20	1.80	0.0010
600	1880.00	3.6	30	0.55	0.0003
600	1880.00	3.6	40	-0.07	0.0000
600	1880.00	3.6	50	0.65	0.0003
600	1880.00	3.6	60	5.05	0.0027

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
600	1880.00	3.7	-30	-2.06	-0.0011
600	1880.00	3.7	-20	4.86	0.0026
600	1880.00	3.7	-10	0.60	0.0003
600	1880.00	3.7	0	4.17	0.0022
600	1880.00	3.7	10	2.93	0.0016
600	1880.00	3.7	20	-0.92	-0.0005
600	1880.00	3.7	30	-1.01	-0.0005
600	1880.00	3.7	40	-1.40	-0.0007
600	1880.00	3.7	50	-0.84	-0.0004
600	1880.00	3.7	60	2.89	0.0015

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
600	1880.00	4.2	-30	-1.22	-0.0006
600	1880.00	4.2	-20	0.37	0.0002
600	1880.00	4.2	-10	-0.62	-0.0003
600	1880.00	4.2	0	0.37	0.0002
600	1880.00	4.2	10	-0.32	-0.0002
600	1880.00	4.2	20	-0.41	-0.0002
600	1880.00	4.2	30	-0.98	-0.0005
600	1880.00	4.2	40	0.56	0.0003
600	1880.00	4.2	50	-1.15	-0.0006
600	1880.00	4.2	60	0.77	0.0004

PCS Results: channel 1175 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1175	1908.75	3.6	-30	-0.86	-0.0005
1175	1908.75	3.6	-20	8.95	0.0047
1175	1908.75	3.6	-10	2.33	0.0012
1175	1908.75	3.6	0	7.13	0.0037
1175	1908.75	3.6	10	6.05	0.0032
1175	1908.75	3.6	20	1.13	0.0006
1175	1908.75	3.6	30	-0.65	-0.0003
1175	1908.75	3.6	40	-0.03	0.0000
1175	1908.75	3.6	50	0.62	0.0003
1175	1908.75	3.6	60	4.23	0.0022

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1175	1908.75	3.7	-30	-1.00	-0.0005
1175	1908.75	3.7	-20	3.68	0.0019
1175	1908.75	3.7	-10	0.49	0.0003
1175	1908.75	3.7	0	3.75	0.0020
1175	1908.75	3.7	10	2.20	0.0012
1175	1908.75	3.7	20	-0.58	-0.0003
1175	1908.75	3.7	30	-1.18	-0.0006
1175	1908.75	3.7	40	-0.50	-0.0003
1175	1908.75	3.7	50	-0.83	-0.0004
1175	1908.75	3.7	60	2.77	0.0014

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1175	1908.75	4.2	-30	0.67	0.0004
1175	1908.75	4.2	-20	0.47	0.0002
1175	1908.75	4.2	-10	0.27	0.0001
1175	1908.75	4.2	0	-0.10	-0.0001
1175	1908.75	4.2	10	0.28	0.0001
1175	1908.75	4.2	20	1.15	0.0006
1175	1908.75	4.2	30	-0.55	-0.0003
1175	1908.75	4.2	40	-0.54	-0.0003
1175	1908.75	4.2	50	0.36	0.0002
1175	1908.75	4.2	60	0.30	0.0002

APPENDIX 4A – GSM ERP AND EIRP TEST DATA

Radiated Power Test Data Results

GSM850 Band

GSM Mode

The environmental tests conditions were: Temperature 23° C
Pressure 1013 mb
Relative Humidity 32%

Date of test: August 27, 2008 Test distance is 3.0 metres

The measurements were performed by Gurjeev Singh and Arjun Rai Bhatti.

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) (dBm)	(W)	Limit (dBm)	Diff. To Limit (dB)
GSM850 Band (ERP) BlackBerry® smartphone, PIN 302B7634 Standalone, USB down position													
F0	128	824.20	850	Dipole	V	77.43	87.59	V-V	14.55	**30.23**	1.054	38.50	-8.27
F0	128	824.20	850	Dipole	H	87.59		H-H	12.03				
F0	195	837.60	850	Dipole	V	73.12	86.22	V-V	13.40	29.08	0.809	38.50	-9.42
F0	195	837.60	850	Dipole	H	86.22		H-H	12.35				
F0	251	848.80	850	Dipole	V	75.36	86.26	V-V	13.50	28.99	0.793	38.50	-9.51
F0	251	848.80	850	Dipole	H	86.26		H-H	11.80				

Radiated Power Test Data Results, Cont'd

GSM850 Band

EDGE Mode

The environmental tests conditions were: Temperature 23° C
Pressure 1013 mb
Relative Humidity 32%

Date of test: August 27, 2008 Test distance is 3.0 meters

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) (dBm)	(W)	Limit (dBm)	Diff. To Limit (dB)
GSM850 Band (ERP) BlackBerry® smartphone Standalone, USB down position													
F0	128	824.20	850	Dipole	V	74.23	82.02	V-V	8.97	24.65	0.292	38.50	-13.85
F0	128	824.20	850	Dipole	H	82.02		H-H	6.40				
F0	195	837.60	850	Dipole	V	69.36	84.00	V-V	10.99	**26.67**	0.465	38.50	-11.83
F0	195	837.60	850	Dipole	H	84.00		H-H	9.93				
F0	251	848.80	850	Dipole	V	70.95	83.78	V-V	11.00	26.49	0.446	38.50	-12.01
F0	251	848.80	850	Dipole	H	83.78		H-H	9.29				

Radiated Power Test Data Results cont'd

PCS1900 Band

GSM Mode

The environmental test conditions were: Temperature 23ºC
Pressure 1013 mb
Relative Humidity 32%

Date of test: August 27, 2008 Test Distance was 3.0 metres.

								Substitution Method					
EUT				Receive Antenna		Spectrum Analyzer		Tracking Generator					
										Corrected Reading (relative to Isotropic Radiator)			
Type	Ch	Frequency (MHz)	Band	Type	Pol.	Reading (dBuV)	Max (V,H) dBuV	Pol. Tx-Rx	Reading (dBm)	(dBm)	(W)	Limit (dBm)	Diff to Limit (dB)
PCS BAND (EIRP) BlackBerry® smartphone Standalone, USB up position													
F0	512	1850.20	1900	Horn	V	89.89	89.89	V-V	-8.98	26.00	0.398	33	-7.00
F0	512	1850.20	1900	Horn	H	86.82		H-H	-8.89				
F0	661	1880.00	1900	Horn	V	90.63	90.63	V-V	-6.81	27.93	0.621	33	-5.07
F0	661	1880.00	1900	Horn	H	86.71		H-H	-7.15				
F0	810	1909.80	1900	Horn	V	91.27	91.27	V-V	-5.22	**29.15**	0.822	33	-3.85
F0	810	1909.80	1900	Horn	H	85.50		H-H	-6.06				

Radiated Power Test Data Results cont'd

PCS1900 Band

EDGE Mode

The environmental test conditions were: Temperature 23ºC
Pressure 1013 mb
Relative Humidity 32%

Date of test: August 27, 2008 Test Distance was 3.0 meters.

								Substitution Method					
EUT				Receive Antenna		Spectrum Analyzer		Tracking Generator					
										Corrected Reading (relative to Isotropic Radiator)			
Type	Ch	Frequency (MHz)	Band	Type	Pol.	Reading (dBuV)	Max (V,H) dBuV	Pol. Tx-Rx	Reading (dBm)	(dBm)	(W)	Limit (dBm)	Diff to Limit (dB)
PCS BAND (EIRP) BlackBerry® smartphone Standalone, USB up position													
F0	512	1850.20	1900	Horn	V	89.76	89.76	V-V	-8.90	26.35	0.432	33	-6.65
F0	512	1850.20	1900	Horn	H	86.92		H-H	-8.54				
F0	661	1880.00	1900	Horn	V	90.54	90.54	V-V	-7.21	27.53	0.566	33	-5.47
F0	661	1880.00	1900	Horn	H	86.59		H-H	-7.35				
F0	810	1909.80	1900	Horn	V	91.01	91.01	V-V	-5.33	**29.04**	0.802	33	-3.96
F0	810	1909.80	1900	Horn	H	86.36		H-H	-6.37				

APPENDIX 4B – CDMA RADIATED EMISSIONS TEST DATA

Radiated Power Test Data Results

Cellular Band

Loopback Service

The environmental tests conditions were: Temperature 23° C
Pressure 1010 mb
Relative Humidity 33%

Date of test: September 4, 2008 Test distance is 3.0 metres

The measurements were performed by Gurjeev Singh and Arjun Rai Bhatti.

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) (dBm)	(W)	Limit (dBm)	Diff. To Limit (dB)
Cellular Band (ERP) BlackBerry® smartphone, PIN 302B7634 Standalone, USB down position													
F0	1013	824.70	850	Dipole	V	67.20	78.96	V-V	5.87	**21.55**	0.143	39.00	-17.5
F0	1013	824.70	850	Dipole	V	78.96		H-H	3.93				
F0	384	836.52	850	Dipole	V	67.00	78.55	V-V	5.16	20.84	0.121	39.00	-18.2
F0	384	836.52	850	Dipole	V	78.55		H-H	5.03				
F0	777	848.32	850	Dipole	V	66.35	78.34	V-V	5.45	20.94	0.124	39.00	-18.1
F0	777	848.32	850	Dipole	V	78.34		H-H	4.08				

Radiated Power Test Data Results cont'd

Cellular Band

1xEVDO

The environmental test conditions were: Temperature 23ºC
Pressure 1013 mb
Relative Humidity 32%

Date of test: August 27, 2008 Test Distance was 3.0 meters.

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) (dBm)	(W)	Limit (dBm)	Diff. To Limit (dB)
Cellular Band (ERP) BlackBerry® smartphone Standalone, PIN 302B7634, USB down position													
F0	1013	824.70	850	Dipole	V	69.87	81.71	V-V	8.69	**24.37**	0.274	39.00	-14.6
F0	1013	824.70	850	Dipole	V	81.71		H-H	6.46				
F0	384	836.52	850	Dipole	V	69.08	81.45	V-V	8.29	23.97	0.249	39.00	-15.0
F0	384	836.52	850	Dipole	V	81.45		H-H	7.76				
F0	777	848.32	850	Dipole	V	68.68	80.68	V-V	7.82	23.31	0.214	39.00	-15.7
F0	777	848.32	850	Dipole	V	80.68		H-H	6.23				

Radiated Power Test Data Results cont'd

PCS Band

Loopback Service

The environmental test conditions were: Temperature 23ºC
Pressure 1010 mb
Relative Humidity 33%

Date of test: September 04, 2008 Test Distance was 3.0 metres.

								Substitution Method					
EUT				Receive Antenna		Spectrum Analyzer		Tracking Generator					
Type	Ch	Frequency (MHz)	Band	Type	Pol.	Reading (dBuV)	Max (V,H) dBuV	Pol. Tx-Rx	Reading (dBm)	Corrected Reading (relative to Isotropic Radiator) (dBm)	(W)	Limit (dBm)	Diff to Limit (dB)
PCS BAND (EIRP) BlackBerry® smartphone Standalone, PIN 302B7634, USB down position													
F0	25	1851.25	1900	Horn	V	85.43	85.43	V-V	-13.35	22.7	0.186	33	-10.3
F0	25	1851.25	1900	Horn	H	83.78		H-H	-12.52				
F0	600	1880.00	1900	Horn	V	86.84	86.84	V-V	-10.80	**24.8**	0.302	33	-8.2
F0	600	1880.00	1900	Horn	H	84.18		H-H	-10.29				
F0	1175	1908.75	1900	Horn	V	86.17	86.17	V-V	-10.30	24.5	0.282	33	-8.5
F0	1175	1908.75	1900	Horn	H	83.48		H-H	-10.24				

Radiated Power Test Data Results cont'd

PCS Band

1xEVDO

The environmental test conditions were: Temperature 23ºC
Pressure 1013 mb
Relative Humidity 32%

Date of test: August 27, 2008 Test Distance was 3.0 meters.

								Substitution Method					
EUT				Receive Antenna		Spectrum Analyzer		Tracking Generator					
Type	Ch	Frequency (MHz)	Band	Type	Pol.	Reading (dBuV)	Max (V,H) dBuV	Pol. Tx-Rx	Reading (dBm)	Corrected Reading (relative to Isotropic Radiator) (dBm)	(W)	Limit (dBm)	Diff to Limit (dB)
PCS BAND (EIRP) BlackBerry® smartphone Standalone, PIN 302B7634, USB down position													
F0	25	1851.25	1900	Horn	V	87.19	87.19	V-V	-11.41	24.4	0.275	33	-8.6
F0	25	1851.25	1900	Horn	H	84.73		H-H	-10.82				
F0	600	1880.00	1900	Horn	V	88.37	88.37	V-V	-9.18	**26.4**	0.437	33	-6.6
F0	600	1880.00	1900	Horn	H	86.07		H-H	-8.72				
F0	1175	1908.75	1900	Horn	V	87.55	87.55	V-V	-8.94	25.8	0.380	33	-7.2
F0	1175	1908.75	1900	Horn	H	84.85		H-H	-8.95				

Radiated Emissions Test Data Results

Cellular Band
Loopback

The environmental test conditions were: Temperature 24ºC
Relative Humidity 31%
Pressure 1010

Date of Test: August 22, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 302B7634 was in standalone, vertical position.

The measurements were performed in Cellular Tx mode, channel 1013.

All emissions had a test margin greater than 25.0 dB.

The environmental test conditions were: Temperature 23.5ºC
Relative Humidity 36%
Pressure 1016

Date of Test: August 15, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 302C08F6 was in standalone, vertical top-down position.
The measurements were performed in CDMA Cellular Tx mode, channel 1013.

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							
(MHz)	(V/H)	(metres)	(Deg.)	(PK or QP)	(dBµV)	(dB)	(dBm)	(dBm)	(dB)
2472.667	H	1.81	170	PK	49.77	-86.51	-36.75	-13.00	-23.75
2474.038	H	1.00	178	PK	55.83	-86.48	-30.65	-13.00	-17.65

All other emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

Cellular Band Loopback

The environmental test conditions were: Temperature 24ºC
Relative Humidity 31%
Pressure 1015

Date of Test: August 21, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 302B7634 was in standalone, vertical position.

The measurements were performed in Cellular Tx mode, channel 384.

All emissions had a test margin greater than 25.0 dB.

The environmental test conditions were: Temperature 24ºC
Relative Humidity 32%
Pressure 1016

Date of Test: August 14, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 302C08F6 was in standalone, vertical top-down position.

The measurements were performed in Cellular Tx mode, channel 384.

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							
(MHz)	(V/H)	(metres)	(Deg.)	(PK or QP)	(dBµV)	(dB)	(dBm)	(dBm)	(dB)
6694.475	H	1.17	131	PK	43.27	-71.68	-28.41	-13.00	-15.41
6691.609	V	1.93	309	PK	43.29	-71.77	-28.48	-13.00	-15.48

All other emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

Cellular Band
Loopback

The environmental test conditions were: Temperature 24ºC
Relative Humidity 31%
Pressure 1016

Date of Test: August 21, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 302B7634 was in standalone, vertical position.

The measurements were performed in Cellular Tx mode, channel 777.

All emissions had a test margin greater than 25.0 dB.

The environmental test conditions were: Temperature 23.5ºC
Relative Humidity 36%
Pressure 1016

Date of Test: August 15, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 302C08F6 was in standalone, vertical top-down position.

The measurements were performed in Cellular Tx mode, channel 777.

All emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

Cellular Band
Testdata

The environmental test conditions were: Temperature 24ºC
Relative Humidity 31%
Pressure 1016

Date of Test: August 21, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 302B7634 was in standalone, vertical position.

The measurements were performed in Cellular Tx mode, channel 1013.

All emissions had a test margin greater than 25.0 dB.

The environmental test conditions were: Temperature 23.5ºC
Relative Humidity 36%
Pressure 1016

Date of Test: August 15, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 302C08F6 was in standalone, vertical top-down position.

The measurements were performed in Cellular Testdata Tx mode, channel 1013.

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			(dBµV)	(dB)	(dBm)	(dBm)	(dB)
(MHz)	(V/H)	(metres)	(Deg.)	(PK or QP)					
2473.709	H	1.00	191	PK	50.49	-86.48	-35.98	-13.00	-22.98

All other emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

Cellular Band
Testdata

The environmental test conditions were: Temperature 24ºC
Relative Humidity 31%
Pressure 1015

Date of Test: August 21, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 302B7634 was in standalone, vertical position.

The measurements were performed in Cellular Tx mode, channel 384.

All emissions had a test margin greater than 25.0 dB.

The environmental test conditions were: Temperature 23.5ºC
Relative Humidity 36%
Pressure 1016

Date of Test: August 15, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 302C08F6 was in standalone, vertical top-down position.

The measurements were performed in Cellular Testdata Tx mode, channel 384.

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			(dBµV)	(dB)	(dBm)	(dBm)	(dB)
(MHz)	(V/H)	(metres)	(Deg.)	(PK or QP)					
2509.129	V	1.00	172	PK	49.59	-87.30	-37.71	-13.00	-24.71
6688.362	V	3.90	22	PK	42.49	-71.81	-29.32	-13.00	-16.32
6693.693	V	1.24	152	PK	42.33	-71.69	-29.36	-13.00	-16.36

All other emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

Cellular Band
Testdata

The environmental test conditions were: Temperature 24ºC
Relative Humidity 31%
Pressure 1016

Date of Test: August 21, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 302B7634 was in standalone, vertical position.

The measurements were performed in Cellular Tx mode, channel 777.

All emissions had a test margin greater than 25.0 dB.

The environmental test conditions were: Temperature 24ºC
Relative Humidity 40%
Pressure 1013

Date of Test: August 18, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 302C08F6 was in standalone, vertical top-down position.

The measurements were performed in Cellular Tx mode, channel 777.

All emissions had a test margin greater than 25.0 dB.

Cellular Band
1xEVDO

The environmental test conditions were: Temperature 23ºC
Relative Humidity 32%
Pressure 1012

Date of Test: August 25, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 302B7634 was in standalone, vertical position.

The measurements were performed in Cellular Tx mode, channel 1013.

All emissions had a test margin greater than 25.0 dB.

The environmental test conditions were: Temperature 23ºC
Relative Humidity 40%
Pressure 1010

Date of Test: August 21, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 3047A3BE was in standalone, vertical top-down position.

The measurements were performed in Cellular Tx mode, channel 1013.

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							
(MHz)	(V/H)	(metres)	(Deg.)	(PK or QP)	(dBµV)	(dB)	(dBm)	(dBm)	(dB)
2473.850	H	4.05	173	PK	49.54	-86.48	-36.93	-13.00	-23.93

All other emissions had a test margin greater than 25.0 dB.

Cellular Band
1xEVDO

The environmental test conditions were: Temperature 24ºC
Relative Humidity 32%
Pressure 1012

Date of Test: August 25, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 302B7634 was in standalone, vertical position.

The measurements were performed in Cellular Tx mode, channel 384.

All emissions had a test margin greater than 25.0 dB.

The environmental test conditions were: Temperature 23ºC
Relative Humidity 40%
Pressure 1010

Date of Test: August 21, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 3047A3BE was in standalone, vertical top-down position.

The measurements were performed in Cellular Tx mode, channel 384.

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							
(MHz)	(V/H)	(metres)	(Deg.)	(PK or QP)	(dBµV)	(dB)	(dBm)	(dBm)	(dB)
2509.129	H	1.00	171	PK	50.78	-87.30	-36.52	-13.00	-23.52
6690.406	H	2.40	328	PK	43.12	-71.76	-28.64	-13.00	-15.64
6692.912	V	4.00	279	PK	43.77	-71.76	-27.99	-13.00	**-14.99**

All other emissions had a test margin greater than 25.0 dB.

Cellular Band
1xEVDO

The environmental test conditions were: Temperature 23ºC
Relative Humidity 32%
Pressure 1012

Date of Test: August 25, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 302B7634 was in standalone, vertical position.

The measurements were performed in Cellular Tx mode, channel 777.

All emissions had a test margin greater than 25.0 dB.

The environmental test conditions were: Temperature 24ºC
Relative Humidity 38%
Pressure 1010

Date of Test: August 22, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 3047A3BE was in standalone, vertical top-down position.

The measurements were performed in Cellular Tx mode, channel 777.

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				(dB)			
(MHz)	(V/H)	(metres)	(Deg.)	(PK or QP)	(dBµV)		(dBm)	(dBm)	(dB)
1696.690	V	1.61	103	PK	53.59	-90.04	-36.44	-13.00	-23.44

All other emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

PCS Band
Loopback

The environmental test conditions were: Temperature 24ºC
Relative Humidity 41%
Pressure 1017

Date of Test: August 22, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 302B7634 was in standalone, vertical position.

The measurements were performed in PCS Tx mode, channel 25.

All emissions had a test margin greater than 25.0 dB.

The environmental test conditions were: Temperature 24.5ºC
Relative Humidity 34%
Pressure 1008

Date of Test: August 13, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 20 GHz.
The BlackBerry® smartphone PIN 302C08F6 was in standalone, horizontal face-down position.

The measurements were performed in PCS Tx mode, channel 25.

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							
(MHz)	(V/H)	(metres)	(Deg.)	(PK or QP)	(dBµV)	(dB)	(dBm)	(dBm)	(dB)
3702.189	H	1.26	132	PK	48.33	-76.79	-28.46	-13.00	-15.46
9256.300	V	3.86	15	PK	41.79	-76.70	-34.90	-13.00	-21.90
9257.340	H	3.46	22	PK	42.37	-77.17	-34.81	-13.00	-21.81

All other emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

PCS Band
Loopback

The environmental test conditions were: Temperature 24ºC
Relative Humidity 38%
Pressure 1017

Date of Test: August 22, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 302B7634 was in standalone, vertical position.

The measurements were performed in PCS Tx mode, channel 600.

All emissions had a test margin greater than 25.0 dB.

The environmental test conditions were: Temperature 24.5ºC
Relative Humidity 34%
Pressure 1008

Date of Test: August 13, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 20 GHz.
The BlackBerry® smartphone PIN 302C08F6 was in standalone, vertical position.

The measurements were performed in PCS Tx mode, channel 600.

Frequency	Antenna		Test Angle	Detector	Measured Level	Correction Factor for preamp/antenna/ cables/ filter (dB)	Field Strength Level (reading+corr)	Limit @ 3.0 m	Test Margin
	Pol.	Height			(dBµV)		(dBm)	(dBm)	(dB)
(MHz)	(V/H)	(metres)	(Deg.)	(PK or QP)					
3757.705	H	2.38	178	PK	42.55	-76.54	-33.99	-13.00	-20.99
7519.068	H	2.99	294	PK	42.74	-80.58	-37.84	-13.00	-24.84

All other emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

PCS Band
Loopback

The environmental test conditions were: Temperature 24ºC
Relative Humidity 39%
Pressure 1017

Date of Test: August 22, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 302B7634 was in standalone, vertical position.

The measurements were performed in PCS Tx mode, channel 1175.

All emissions had a test margin greater than 25.0 dB.

The environmental test conditions were: Temperature 24ºC
Relative Humidity 37%

Date of Test: August 20, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 20 GHz.
The BlackBerry® smartphone PIN 302C08F6 was in standalone, vertical position.

The measurements were performed in PCS Tx mode, channel 1175.

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				(dB)			
(MHz)	(V/H)	(metres)	(Deg.)	(PK or QP)	(dBµV)		(dBm)	(dBm)	(dB)
3817.906	V	1.55	185	PK	49.19	-75.97	-26.78	-13.00	-13.78
3818.051	V	4.05	35	PK	50.95	-75.97	-25.02	-13.00	-12.02
3818.171	H	1.00	123	PK	54.63	-76.04	-21.41	-13.00	-8.41
3818.347	H	1.00	123	PK	55.47	-76.04	-20.57	-13.00	-7.57
7636.433	H	3.00	285	PK	44.59	-80.20	-35.61	-13.00	-22.61

All emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

PCS Band
Testdata

The environmental test conditions were: Temperature 25ºC
Relative Humidity 41%
Pressure 1017

Date of Test: August 22, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 302B7634 was in standalone, vertical position.

The measurements were performed in PCS Tx mode, channel 25.

All emissions had a test margin greater than 25.0 dB.

The environmental test conditions were: Temperature 23ºC
Relative Humidity 41%
Pressure 1016

Date of Test: August 14, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 20 GHz.
The BlackBerry® smartphone PIN 302C08F6 was in standalone, vertical position.

The measurements were performed in PCS Tx mode, channel 25.

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				(dB)			
(MHz)	(V/H)	(metres)	(Deg.)	(PK or QP)	(dBµV)		(dBm)	(dBm)	(dB)
3701.067	H	1.00	144	PK	45.99	-76.79	-30.80	-13.00	-17.80
9254.557	H	3.37	161	PK	40.93	-77.18	-36.25	-13.00	-36.25

All emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

PCS Band
Testdata

The environmental test conditions were: Temperature 24ºC
Relative Humidity 39%
Pressure 1017

Date of Test: August 22, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 302B7634 was in standalone, vertical position.

The measurements were performed in PCS Tx mode, channel 600.

All emissions had a test margin greater than 25.0 dB.

The environmental test conditions were: Temperature 24.5ºC
Relative Humidity 34%
Pressure 1008

Date of Test: August 13, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 20 GHz.
The BlackBerry® smartphone PIN 302C08F6 was in standalone, vertical position.

The measurements were performed in PCS Tx mode, channel 600.

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							
(MHz)	(V/H)	(metres)	(Deg.)	(PK or QP)	(dBµV)	(dB)	(dBm)	(dBm)	(dB)
3759.589	H	1.00	130	PK	50.78	-76.52	-25.74	-13.00	-12.74
3760.391	V	3.88	216	PK	47.67	-76.43	-28.77	-13.00	-15.77
5641.593	V	1.85	321	PK	42.31	-71.47	-29.16	-13.00	-16.16
7518.206	H	2.44	298	PK	43.03	-80.59	-37.56	-13.00	-24.56

All emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

PCS Band
Testdata

The environmental test conditions were: Temperature 24ºC
Relative Humidity 39%
Pressure 1017

Date of Test: August 22, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 302B7634 was in standalone, vertical position.

The measurements were performed in PCS Tx mode, channel 1175.

All emissions had a test margin greater than 25.0 dB.

The environmental test conditions were: Temperature 23ºC
Relative Humidity 44%
Pressure 1010

Date of Test: August 14, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 20 GHz.
The BlackBerry® smartphone PIN 302C08F6 was in standalone, vertical position.

The measurements were performed in PCS Tx mode, channel 1175.

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							
(MHz)	(V/H)	(metres)	(Deg.)	(PK or QP)	(dBµV)	(dB)	(dBm)	(dBm)	(dB)
3818.352	H	1.00	131	PK	55.16	-76.04	-20.88	-13.00	-7.88
3818.512	V	1.00	354	PK	48.54	-75.96	-27.42	-13.00	-14.42
7635.912	H	2.89	299	PK	44.41	-80.19	-35.78	-13.00	-22.78

All emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

PCS Band
1xEVDO

The environmental test conditions were: Temperature 24ºC
Relative Humidity 31%
Pressure 1013

Date of Test: August 25, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 302B7634 was in standalone, vertical position.

The measurements were performed in PCS Tx mode, channel 25.

All emissions had a test margin greater than 25.0 dB.

The environmental test conditions were: Temperature 23.5ºC
Relative Humidity 40%
Pressure 1010

Date of Test: August 21, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 20 GHz.
The BlackBerry® smartphone PIN 3047A3BE was in standalone, vertical position.

The measurements were performed in PCS Tx mode, channel 25.

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							
(MHz)	(V/H)	(metres)	(Deg.)	(PK or QP)	(dBµV)	(dB)	(dBm)	(dBm)	(dB)
3702.390	V	4.00	211	PK	49.81	-76.48	-26.68	-13.00	-13.68
3702.069	H	1.00	197	PK	55.18	-76.79	-21.61	-13.00	-8.61
7403.938	H	3.03	291	PK	48.65	-80.73	-32.08	-13.00	-19.08
7405.651	H	3.00	292	PK	48.02	-80.72	-32.70	-13.00	-19.70

All emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

PCS Band
1xEVDO

The environmental test conditions were: Temperature 24ºC
Relative Humidity 32%
Pressure 1013

Date of Test: August 25, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 302B7634 was in standalone, vertical position.

The measurements were performed in PCS Tx mode, channel 600.

All emissions had a test margin greater than 25.0 dB.

The environmental test conditions were: Temperature 23.5ºC
Relative Humidity 40%
Pressure 1010

Date of Test: August 21, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 20 GHz.
The BlackBerry® smartphone PIN 3047A3BE was in standalone, vertical position.

The measurements were performed in PCS Tx mode, channel 600.

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							
(MHz)	(V/H)	(metres)	(Deg.)	(PK or QP)	(dBµV)	(dB)	(dBm)	(dBm)	(dB)
3759.830	H	1.00	140	PK	54.20	-76.52	-22.32	-13.00	-9.32
3759.509	V	3.61	209	PK	49.79	-76.44	-26.65	-13.00	-13.65
7520.291	V	1.26	0	PK	42.95	-80.31	-37.35	-13.00	-24.35
7521.413	H	3.00	297	PK	50.37	-80.56	-30.18	-13.00	-17.18

All emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

PCS Band
1xEVDO

The environmental test conditions were: Temperature 24ºC
Relative Humidity 32%
Pressure 1013

Date of Test: August 25, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 302B7634 was in standalone, vertical position.

The measurements were performed in PCS Tx mode, channel 1175.

All emissions had a test margin greater than 25.0 dB.

The environmental test conditions were: Temperature 23.5ºC
Relative Humidity 40%
Pressure 1010

Date of Test: August 21, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 20 GHz.
The BlackBerry® smartphone PIN 3047A3BE was in standalone, vertical position.

The measurements were performed in PCS Tx mode, channel 1175.

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			(dBµV)	(dB)	(dBm)	(dBm)	(dB)
(MHz)	(V/H)	(metres)	(Deg.)	(PK or QP)					
3817.590	H	1.00	131	PK	56.19	-76.04	-19.85	-13.00	**-6.85**
3818.372	V	1.00	353	PK	48.49	-75.96	-27.48	-13.00	-14.48
7633.818	V	3.79	238	PK	42.89	-79.90	-37.02	-13.00	-24.02
7634.729	H	2.95	293	PK	50.51	-80.19	-29.68	-13.00	-16.68

All emissions had a test margin greater than 25.0 dB.