EMI Test Report

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

RIM Testing Services (RTS)

A division of Research In Motion Limited

REPORT NO.: RTS-1364-0812-10

PRODUCT MODEL NO.: RCE21CW
TYPE NAME: BlackBerry® smartphone
FCC ID: L6ARCE20CW
IC: 2503A-RCE20CW
EMISSION DESIGNATOR: 1M27F9W

DATE: 04 January, 2009

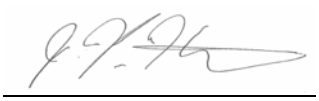
Statement of Performance:

The BlackBerry® smartphone, model RCE21CW, part number CER-21463-001 Rev. 1, and accessories when configured and operated per RIM's operation instructions, performs within the requirements of the test standards.

Declaration:

We hereby certify that:
The test data reported herein is an accurate record of the performance of the sample(s) tested.
The test results are valid for the tested unit (s) only.
The test equipment used was suitable for the tests performed and within manufacturer's published specifications and operating parameters.
The test methods were consistent with the methods described in the relevant standards.

Documented by:



Jean-Paul Hacquoil
Compliance Specialist
Date: 17 December, 2008

Reviewed by:

Maurice Battler
Compliance Specialist
Date:18 December, 2008

Reviewed by:

Masud S. Attayi, P.Eng.
Team Lead, Regulatory Compliance
Date: 04 January, 2009

Approved by:

Paul G. Cardinal, Ph.D.
Director
Date: 06 January, 2009

Table of Contents

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.
- Industry Canada, RSS-GEN Issue 2, June 2007, General Requirements and Information for the Certification of Radiocommunication Equipment

B. Associated Documents

No associated documents.

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 RIM Testing Services (RTS) EMI test facilities, located at:

305 Phillip Street
Waterloo, Ontario
Canada, N2L 3W8
Phone: 519 888 7465
Fax: 519 888 6906

440 Phillip Street
Waterloo, Ontario
Canada, N2L 5R9
Phone: 519 888 7465
Fax: 519 888 6906

The testing was performed from November 27 to December 17, 2008.

The sample BlackBerry® smartphones tested were:

SAMPLE NO.	MODEL	CER NUMBER	PIN
1	RCE21CW	CER-21463-001 Rev. 1	3048F431
2	RCE21CW	CER-21463-001 Rev 1	3048F4CB
3	RCE21CW	CER-21463-001 Rev 1	3048F42E
4	RCE21CW	CER-21463-001 Rev 1	304C16E9
5	RCE21CW	CER-21463-001 Rev 1	3048F478
6	RCE21CW	CER-21463-001 Rev 1	3048F4CD
7	RCE21CW	CER-21463-001 Rev 1	304C20F4

Conducted RF measurements were performed on BlackBerry® smartphone Sample 1. Radiated Emission measurements were performed on BlackBerry® smartphone Samples 2 to 7.

D. Support Equipment Used for the Testing of the EUT

No support equipment required; for list of equipment refer to section H, Compliance Test Equipment Used.

E. Modifications to EUT

No modifications were required on the EUT.

F. Summary of Results

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

1) The EUT met the requirements of the Conducted Spurious Emissions in the Cellular band as per 47 CFR 22.917, CFR 22.901(d) and RSS-132. 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 10 GHz.
See APPENDIX 1 for the test data.

2) 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-133. 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 1 for the test data.

3) The EUT met the requirements of the Occupied Bandwidth in the Cellular band as per 47 CFR 2.202, CFR 22.917 and RSS-132. The channels were measured in CDMA2000 and 1xEVDO mode on the low, middle and high channels.
See APPENDIX 1 for the test data.

4) 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-133. The channels were measured in CDMA2000 and 1xEVDO mode on the low, middle and high channels.
See APPENDIX 1 for the test data.

5) The EUT met the requirements of the Conducted RF Output Power for both the Cellular and PCS bands. The channels were measured in CDMA2000 and 1xEVDO mode on the low, middle and high channels.
See APPENDIX 2 for the test data.

6) The EUT met the requirements of the Frequency Stability vs. Temperature and Voltage for Cellular band as per 22.917 and RSS-132.
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 3 for the test data.

7) The EUT met the requirements of the Frequency Stability vs. Temperature and Voltage requirements for the PCS band as per 24.235 and RSS-133. 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 3 for the test data.

8) The radiated spurious emissions/harmonics and ERP/EIRP were measured for both 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 remote controlled turntable. The test distance used between the EUT and the receiving antenna was three metres. Then the emissions were maximized by elevating the antenna in the range of 1 to 4 metres. The turntable was rotated to determine the azimuth of the peak emissions. The maximum emissions level was recorded.

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 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 Cellular band, loopback service mode was measured on the BlackBerry® smartphone, PIN 3048F4CB. The highest ERP measured was 26.64 dBm (0.46 W) at 848.32 MHz (channel 777).
The ERP in the Cellular band, 1xEVDO mode was measured on BlackBerry® smartphone, PIN 3048F42E. The highest ERP measured was 26.44 dBm (0.44 W) at 836.52 MHz (channel 384).

The EIRP in the PCS band, loopback service mode was measured on BlackBerry® smartphone, PIN 3048F4CB. The highest EIRP measured was 22.70 dBm (0.19 W) at 1880.00 MHz (channel 600).
The EIRP in the PCS band, 1xEVDO mode was measured on BlackBerry® smartphone, PIN 304C16E9. The highest EIRP measured was 24.20 dBm (0.26 W) at 1908.75 MHz (channel 1175).

The radiated spurious and 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 Samples used were PIN 3048F42E, PIN 3048F478, PIN 3048F4CD, and PIN 304C20F4.

The lowest test margin for the cellular band was 14.39 dB below the limit at 1672.70 MHz.
The lowest test margin for the PCS band was 12.25 dB below the limit at 1959.92 MHz

Sample Calculation:

Field Strength (dBµV/M) is calculated as follows:
FS = Measured Level (dBµV) + A.F. (dB/m) + Cable Loss (dB) - Preamp (dB) + Filter Loss (dB)
Measurement Uncertainty ±4.6 dB

To view the test data see APPENDIX 4.

H. Compliance Test Equipment Used

UNIT	MANUFACTURER	MODEL	SERIAL NUMBER	CAL DUE DATE (YY MM DD)	USE
Preamplifier	Sonoma	310N/11909A	185831	09-11-07	Radiated Emissions
Preamplifier system	TDK RF Solutions	PA-02	080010	09-11-07	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	017401	10-09-26	Radiated Emissions
Horn Antenna	TDK	HRN-0118	030101	10-07-22	Radiated Emissions
Horn Antenna	TDK	HRN-0118	030201	09-01-17	Radiated Emissions
Dipole Antenna	Schwarzbeck	UHAP	974	10-10-16	Radiated Emissions
Dipole Antenna	Schwarzbeck	UHAP	1018	09-02-19	Radiated Emissions
EMC Analyzer	Aglient	E7405A	US40240226	09-11-17	Radiated Emissions
EMI Test Receiver	Rohde & Schwarz	ESIB 40	100255	09-12-02	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	837493/073	09-12-07	Radiated Emissions
Spectrum Analyzer	HP	8563E	3745A08112	09-09-22	RF Conducted Emissions
DC Power Supply	HP	6632B	US37472178	09-09-24	RF Conducted Emissions
Environment Monitor	Control Company	1870	80117164	10-01-08	Radiated Emissions
Universal Radio Communication Tester	Agilent	8960	MY47510358	09-04-04	Frequency Stability, RF Conducted Emissions
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
Power Meter	Agilent	N1911A	MY45100905	09-04-22	Frequency Stability
Power Sensor	Agilent	N1921A	MY45100905	09-05-09	Frequency Stability
Signal Generator	Agilent	83630B	3844A00927	10-10-31	Radiated Emissions

APPENDIX 1 - CONDUCTED RF EMISSIONS TEST DATA/PLOTS

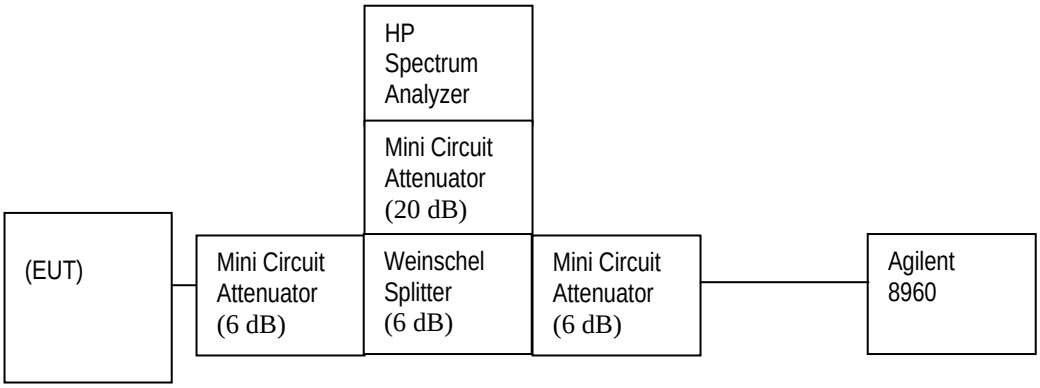
Conducted RF Emission Test Data

This appendix contains measurement data pertaining to conducted spurious emissions, 99% power bandwidth and the channel mask on BlackBerry® smartphone 3048F431.

The measurements were performed by Maurice Battler.

Date of Test: December 02 to 05, 2008

Test Setup Diagram



The environmental test conditions were:

Temperature	23ºC
Pressure	1010 mb
Relative Humidity	24%

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

Test Data for Cellular and PCS selected Frequencies in CDMA2000 mode

Cellular Frequency (MHz)	99% Occupied Bandwidth (MHz)
824.700	1.267
836.520	1.267
848.310	1.273

PCS Frequency (MHz)	99% Occupied Bandwidth (MHz)
1851.200	1.273
1880.000	1.267
1908.750	1.267

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

See Figures 13 to 18 for the plots of the 99% Occupied Bandwidth.
See Figures 19 to 22 for plots of the channel mask results.

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

Conducted Emission Test Results cont'd

Figure 1: Cellular, Spurious Conducted Emissions, Low channel

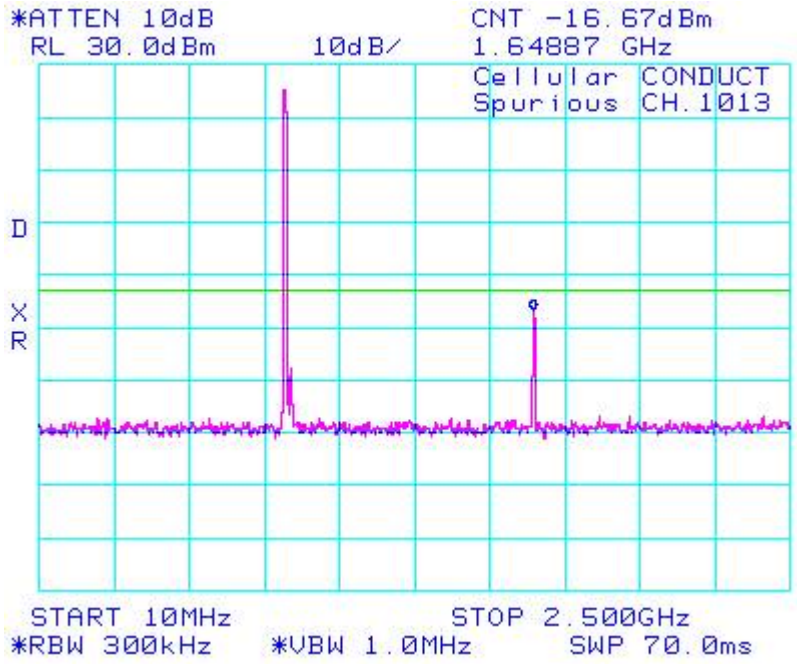
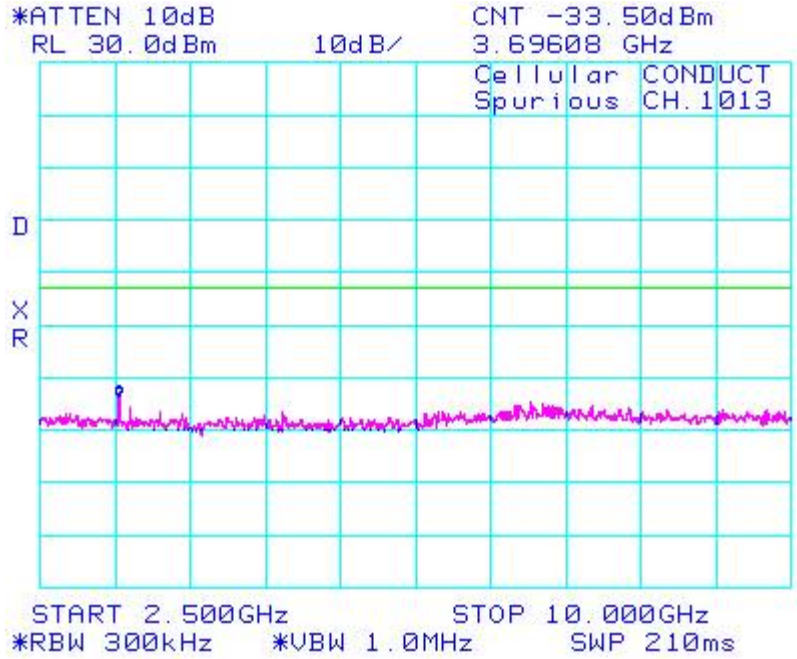


Figure 2: Cellular, Spurious Conducted Emissions, Low channel



Conducted Emission Test Results cont'd

Figure 3: Cellular, Spurious Conducted Emissions, Middle Channel

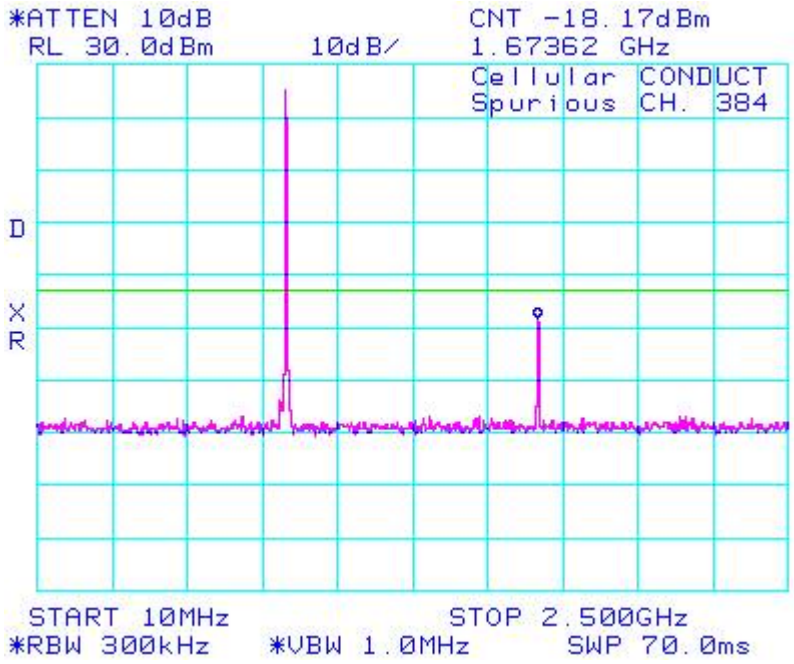
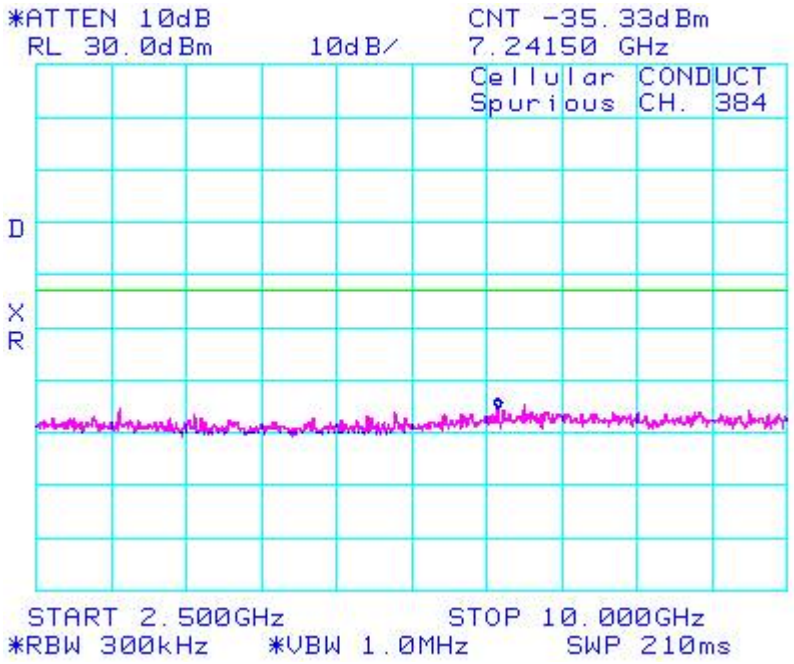


Figure 4: Cellular, Spurious Conducted Emissions, Middle Channel



Conducted Emission Test Results cont'd

Figure 5: Cellular, Spurious Conducted Emissions, High Channel

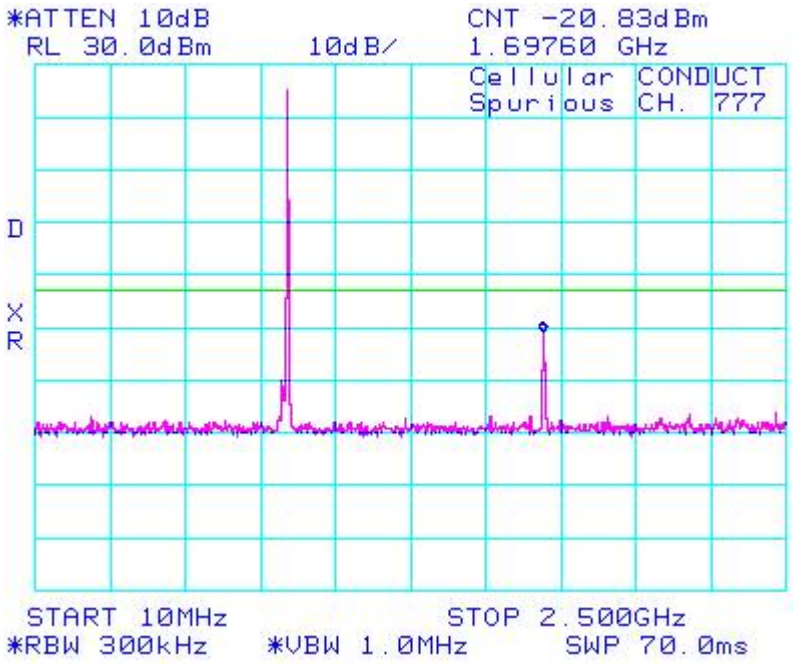
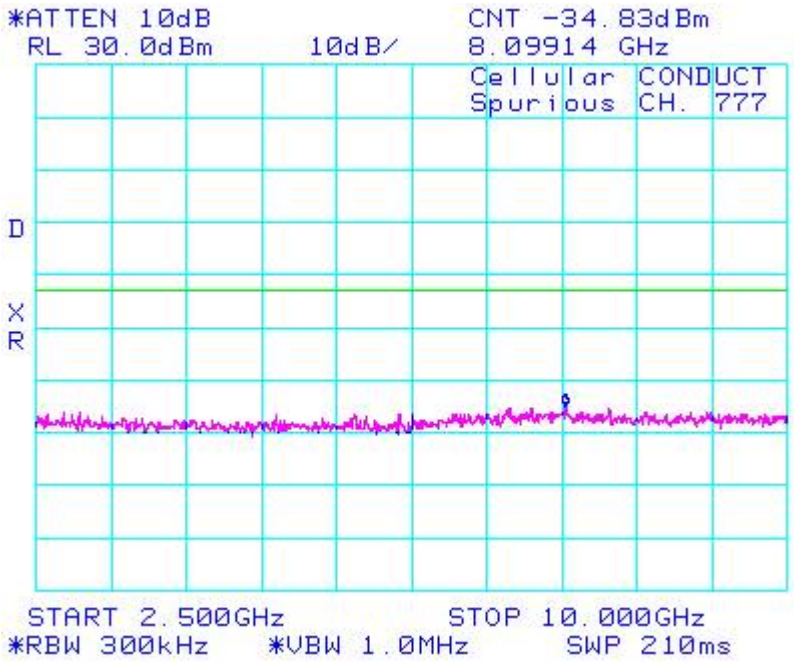


Figure 6: Cellular, Spurious Conducted Emissions, High Channel



Conducted Emission Test Results cont'd

Figure 7: PCS, Spurious Conducted Emissions, Low Channel

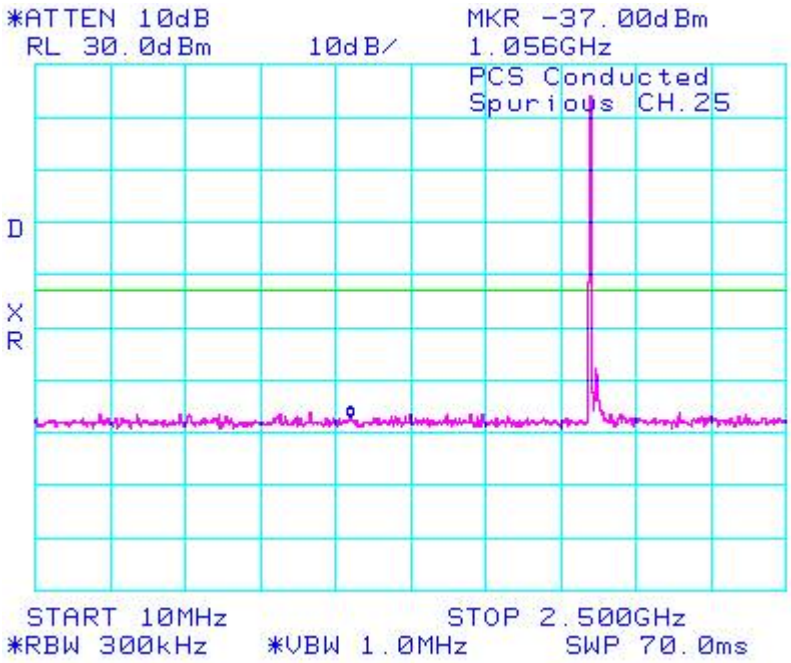
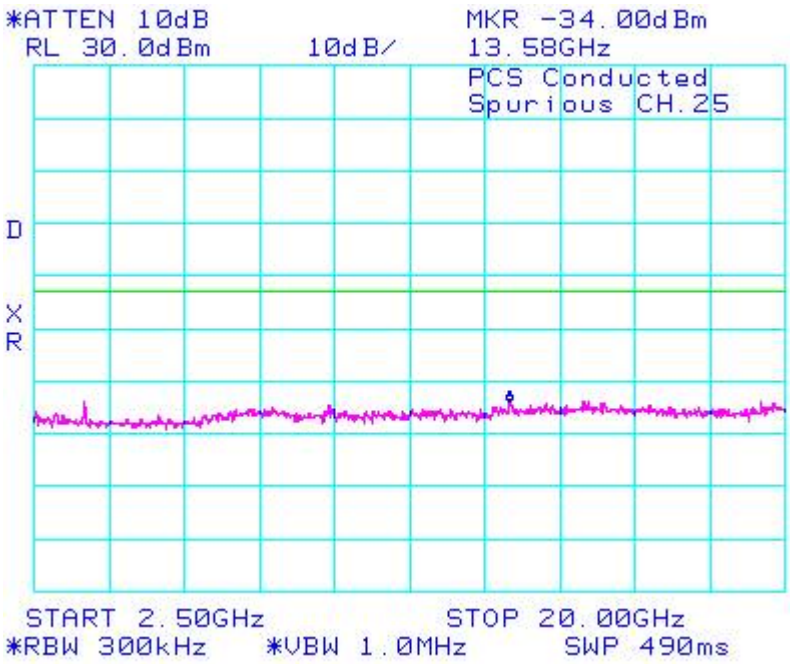


Figure 8: PCS, Spurious Conducted Emissions, Low Channel



Conducted Emission Test Results cont'd

Figure 9: PCS, Spurious Conducted Emissions, Middle Channel

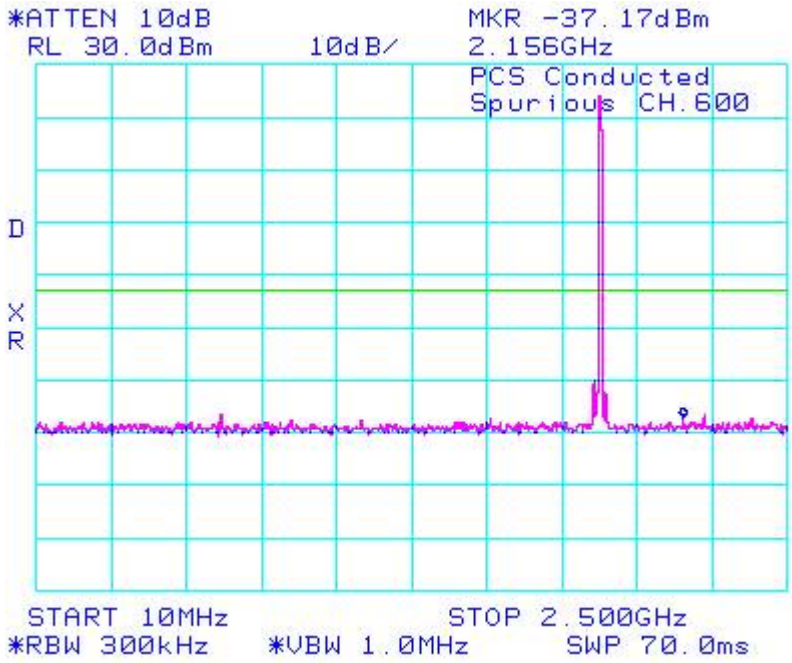
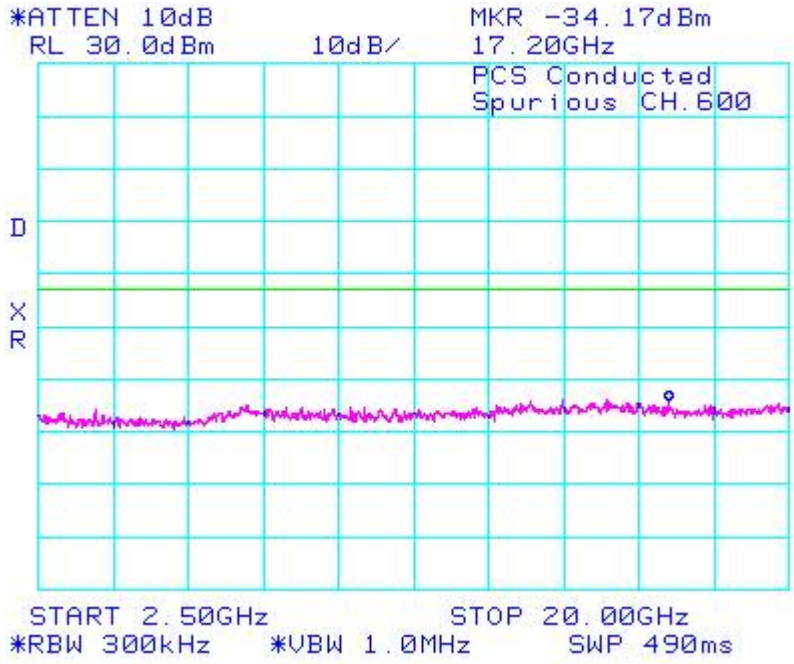


Figure 10: PCS, Spurious Conducted Emissions, Middle Channel



Conducted Emission Test Results cont'd

Figure 11: PCS, Spurious Conducted Emissions, High Channel

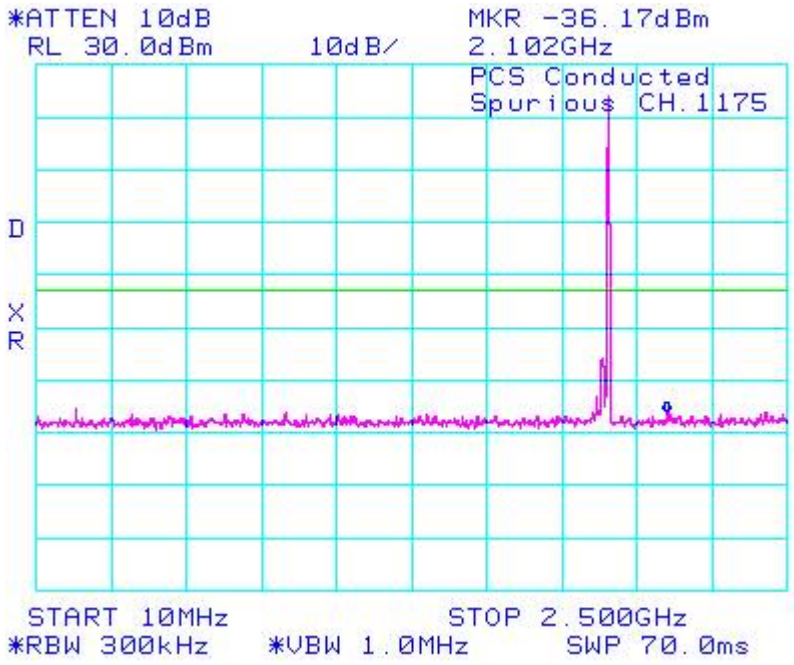
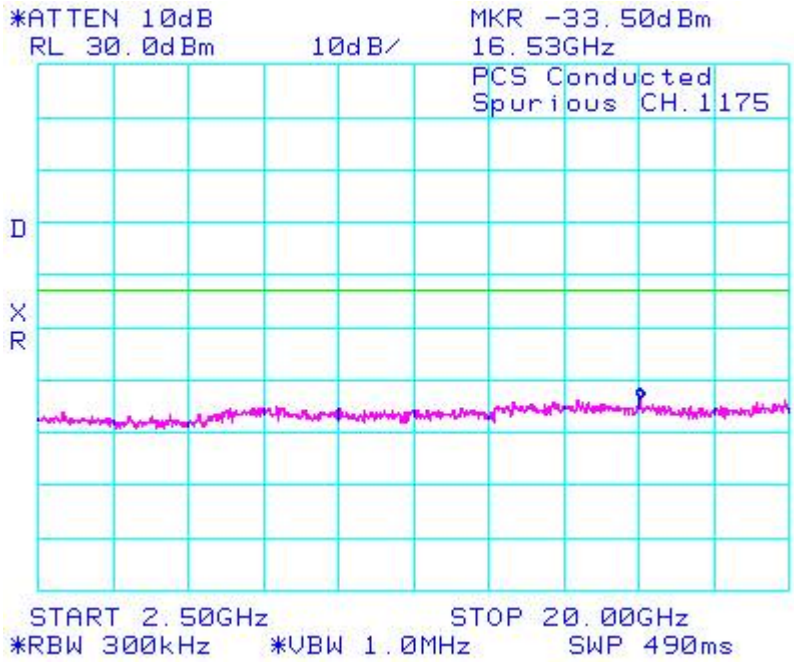


Figure 12: PCS, Spurious Conducted Emissions, High Channel



Conducted Emission Test Results cont'd

Figure 13: Occupied Bandwidth, Cellular Low Channel

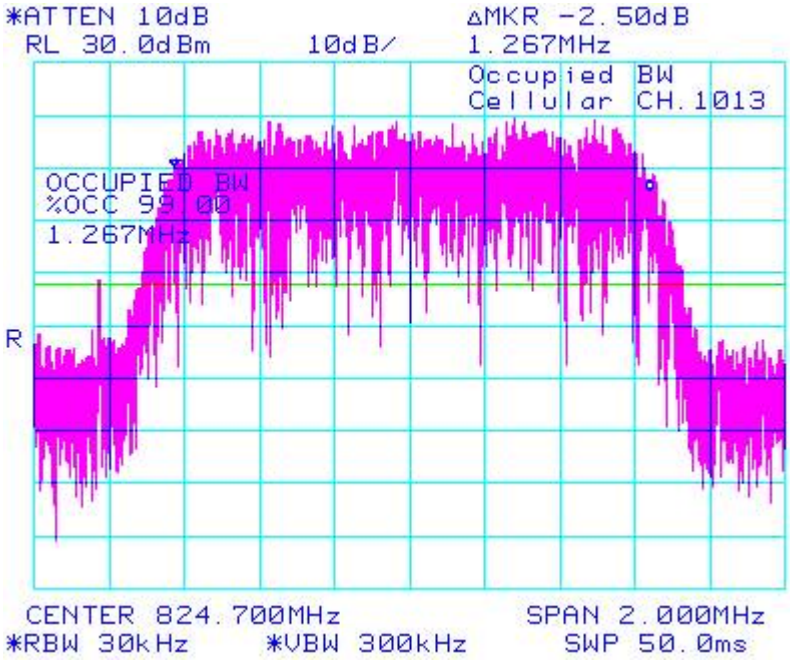
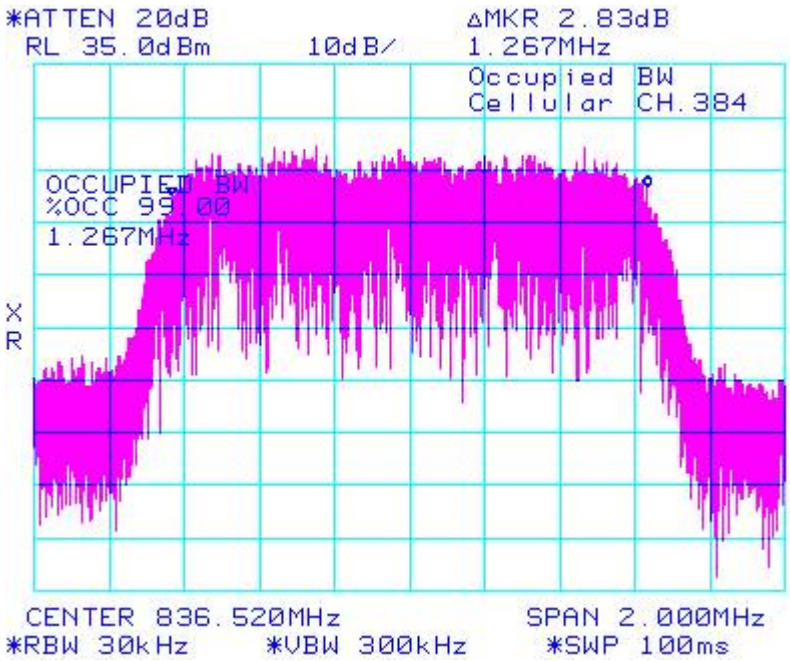


Figure 14: Occupied Bandwidth, Cellular Middle Channel



Conducted Emission Test Results cont'd

Figure 15: Occupied Bandwidth, Cellular High Channel

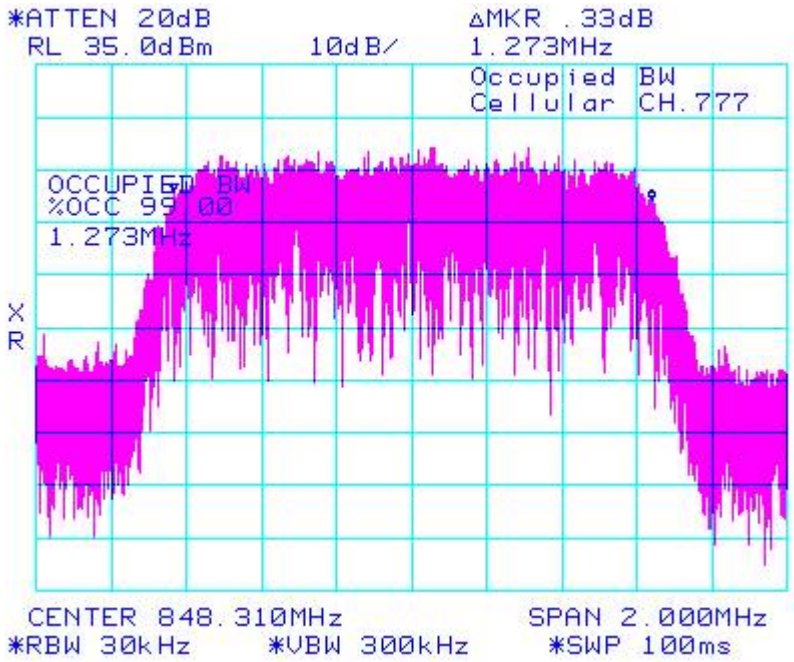
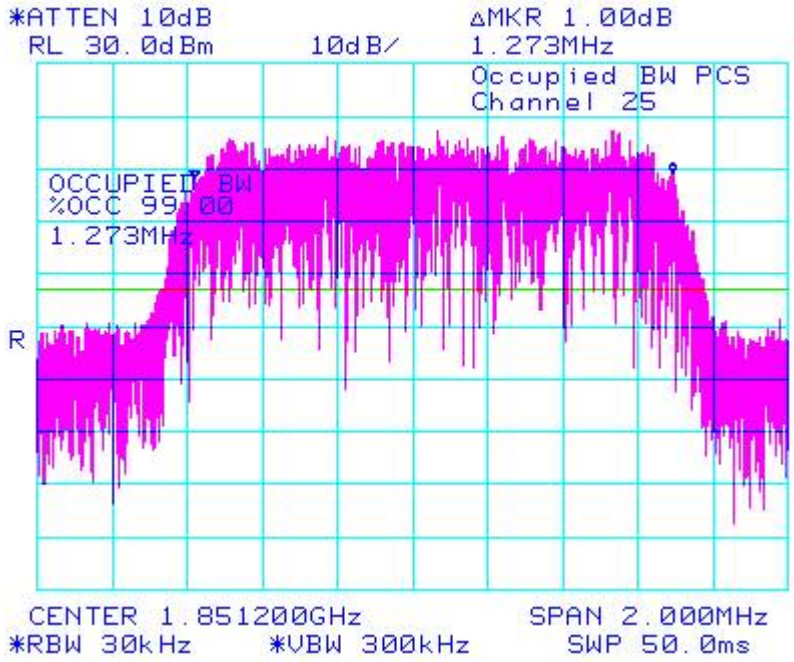


Figure 16: Occupied Bandwidth, PCS Low Channel



Conducted Emission Test Results cont'd

Figure 17: Occupied Bandwidth, PCS Middle Channel

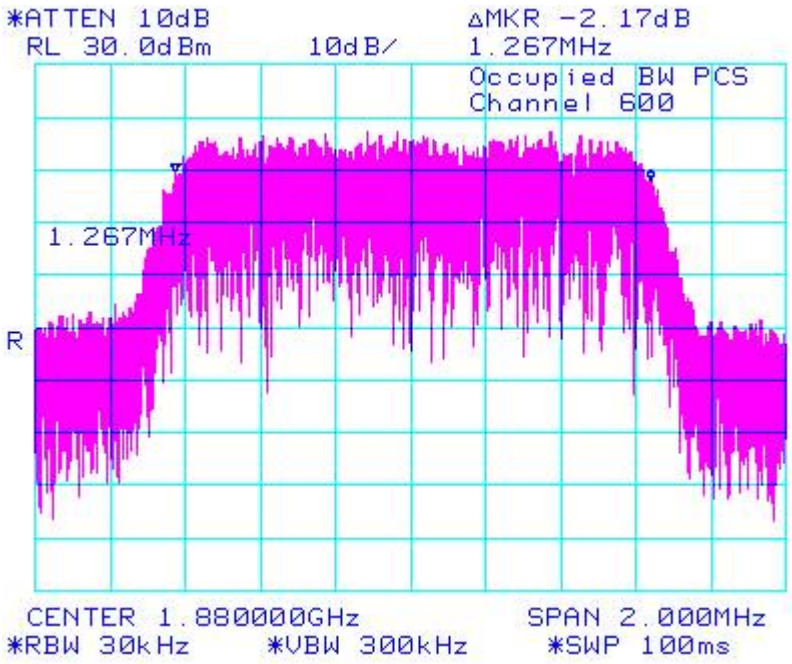
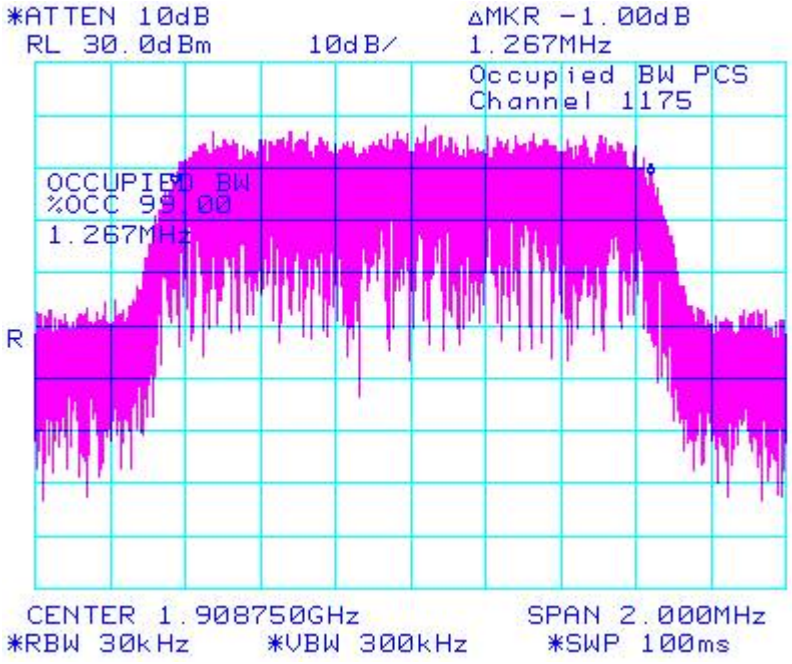


Figure 18: Occupied Bandwidth, PCS High Channel



Conducted Emission Test Results cont'd

Figure 19a: Cellular CDMA2000, Low Channel Mask

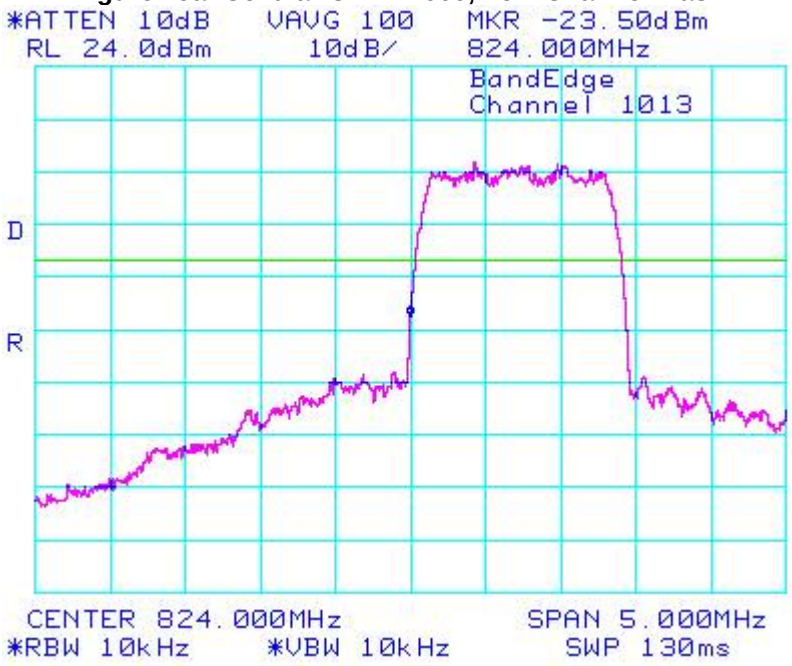
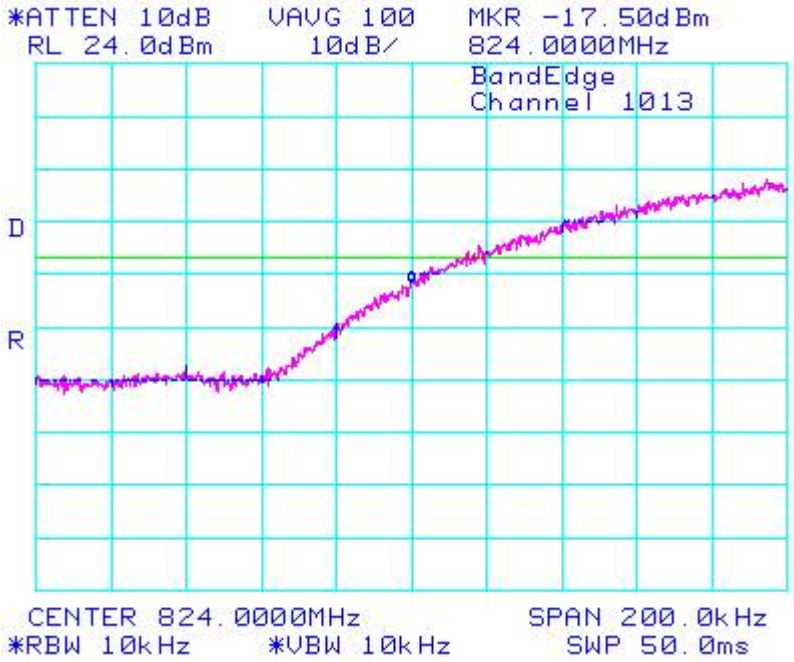


Figure 19b: Cellular CDMA2000, Low Channel Mask



Conducted Emission Test Results cont'd

Figure 20a: Cellular CDMA2000, High Channel Mask

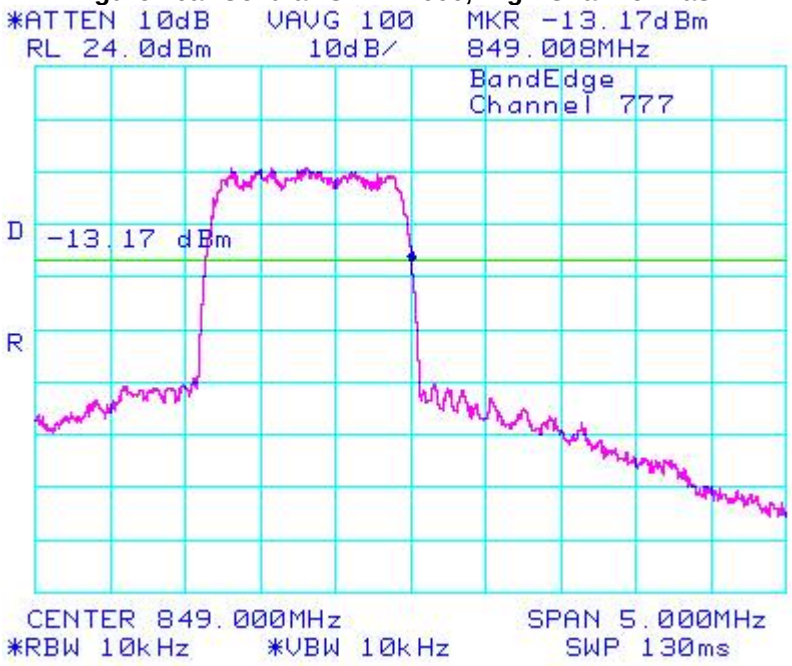
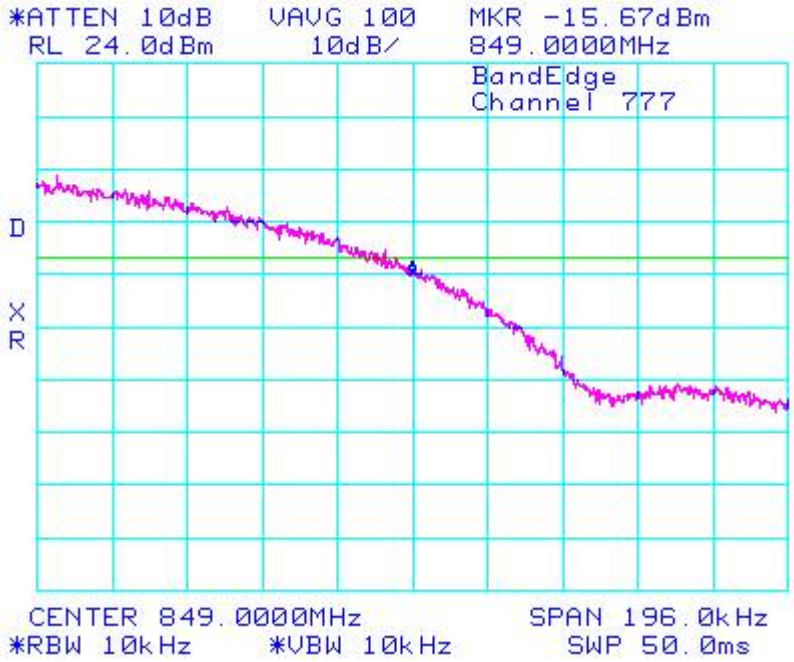


Figure 20b: Cellular CDMA2000, High Channel Mask



Conducted Emission Test Results cont'd

Figure 21: PCS CDMA 2000, Low Channel Mask

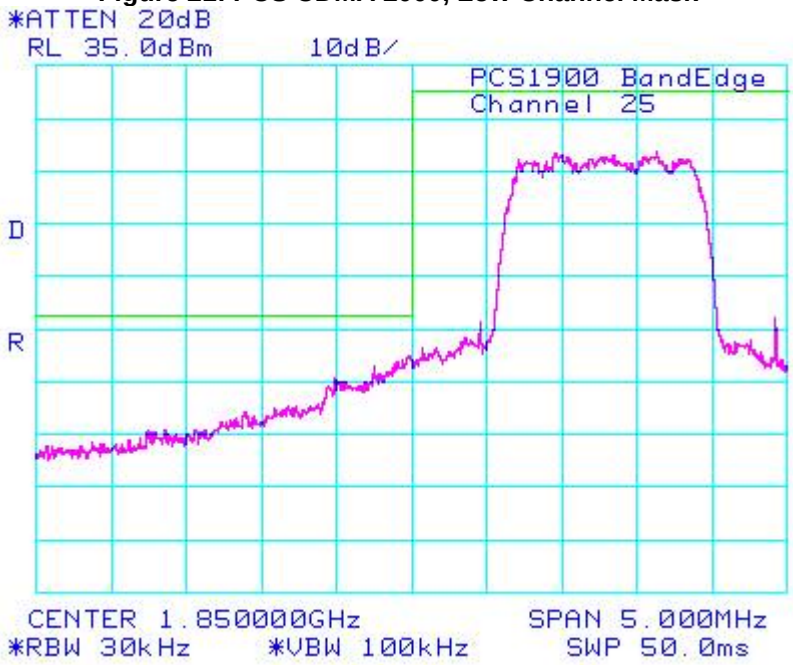
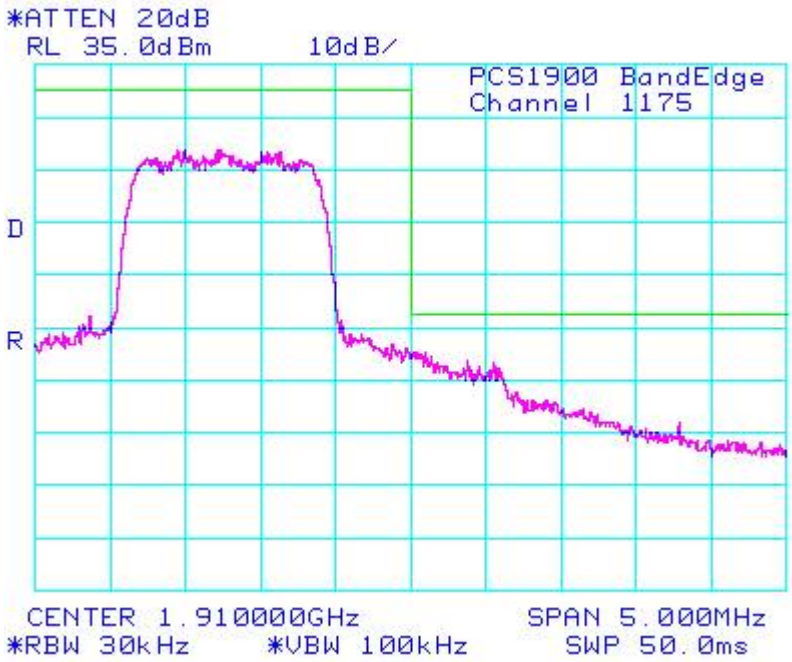


Figure 22: PCS CDMA 2000, High Channel Mask



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.
See figures 23 to 34 for the plots of the conducted spurious emissions in 1xEVDO mode.

Date of Test: December 02 to 05, 2008

The environmental test conditions were:

Temperature	23ºC
Pressure	1012 mb
Relative Humidity	23%

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

Cellular Frequency (MHz)	99% Occupied Bandwidth (MHz)
824.700	1.273
836.520	1.267
848.310	1.273

PCS Frequency (MHz)	99% Occupied Bandwidth (MHz)
1851.200	1.267
1880.000	1.273
1908.750	1.267

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

See Figures 35 to 40 for the plots of the 99% Occupied Bandwidth.
See Figures 41 to 44 for plots of the channel mask results.

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

Conducted Emission Test Results cont'd

Figure 23: Cellular, Spurious Conducted Emissions, Low channel

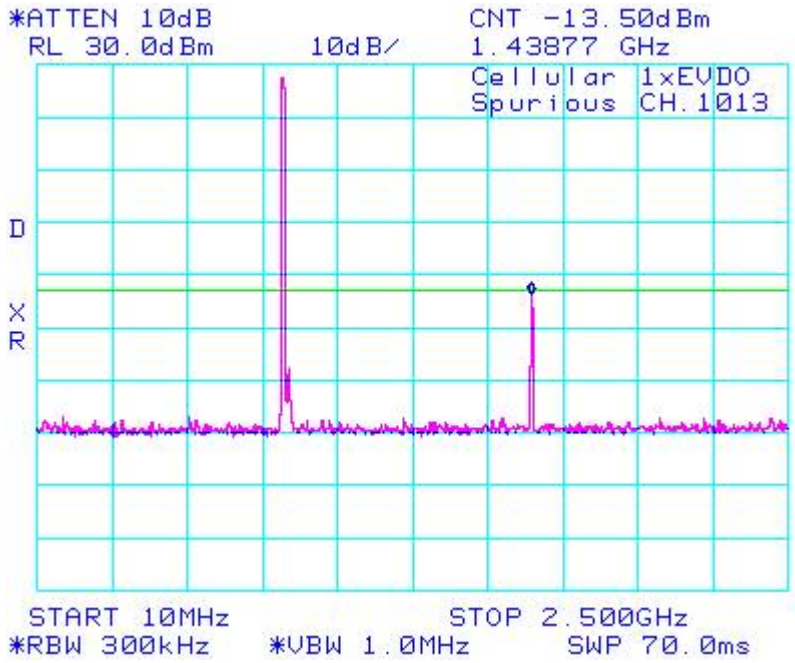
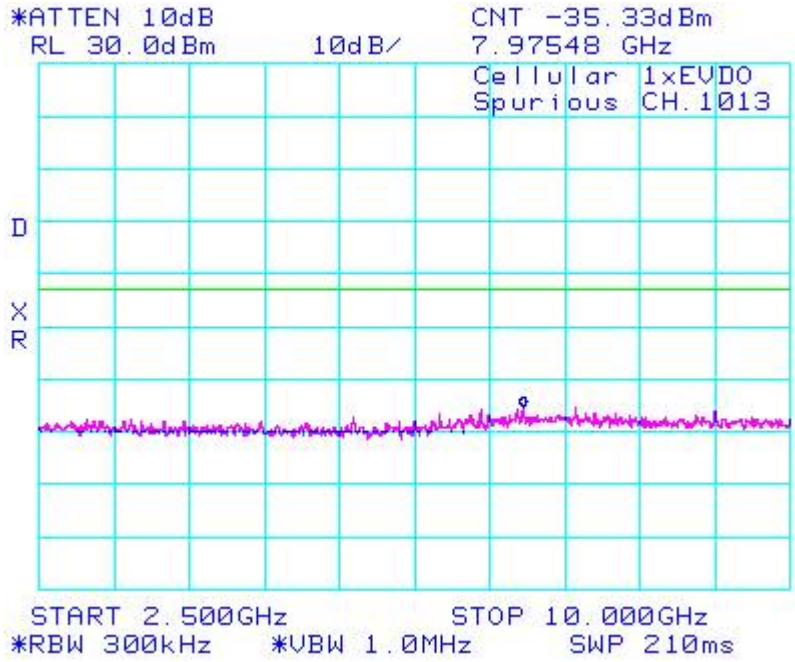


Figure 24: Cellular, Spurious Conducted Emissions, Low channel



Conducted Emission Test Results cont'd

Figure 25: Cellular, Spurious Conducted Emissions, Middle Channel

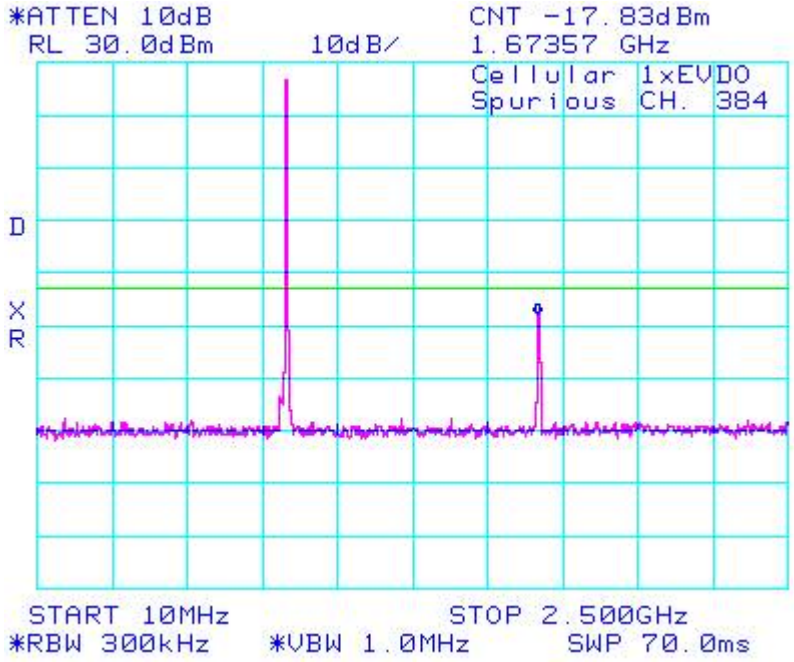
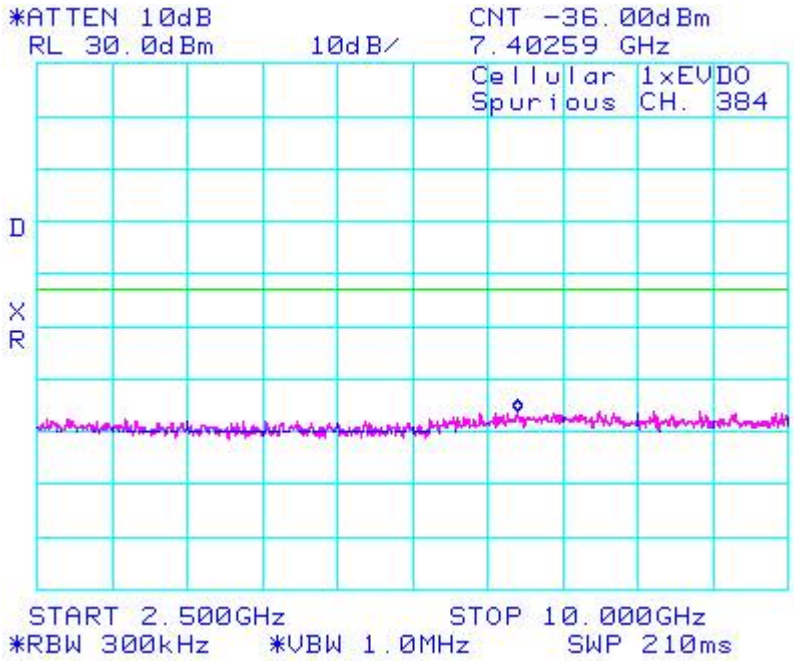


Figure 26: Cellular, Spurious Conducted Emissions, Middle Channel



Conducted Emission Test Results cont'd

Figure 27: Cellular, Spurious Conducted Emissions, High Channel

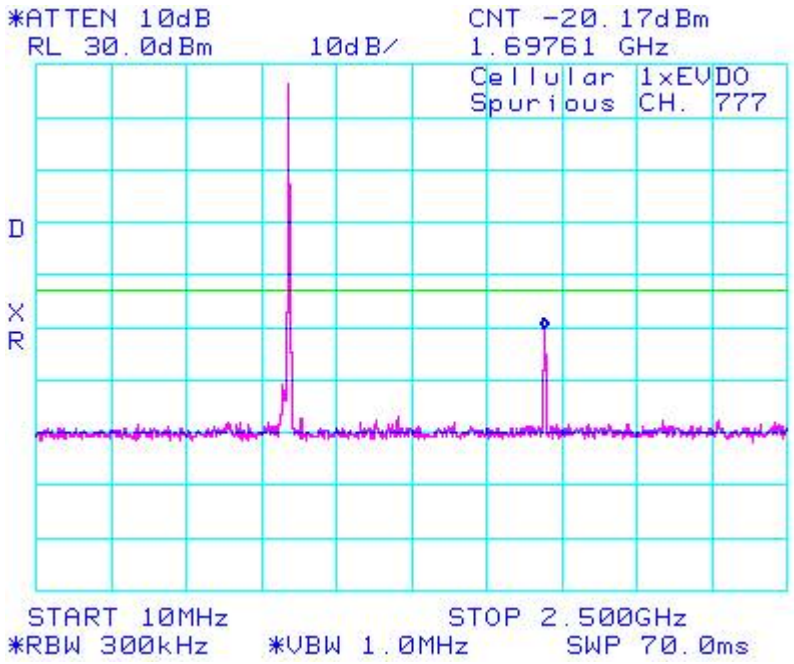
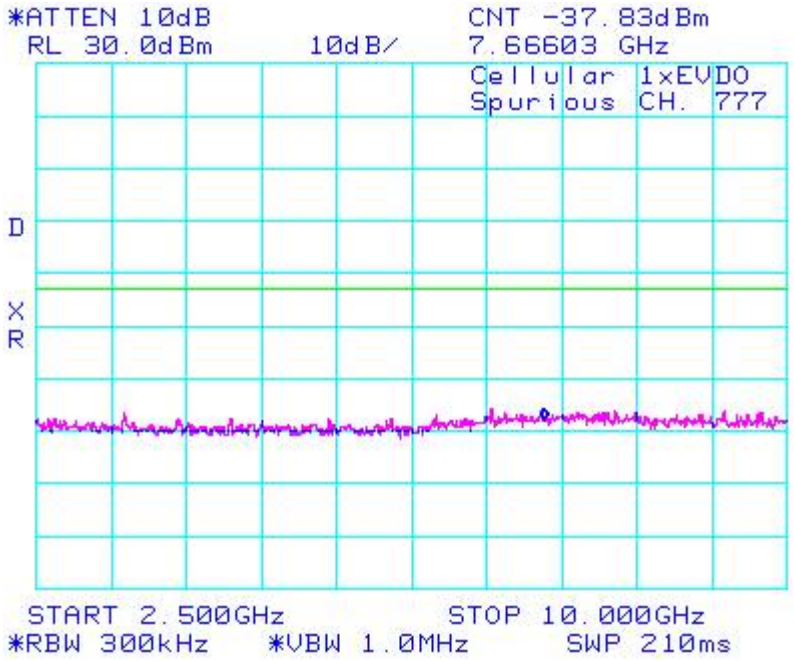


Figure 28: Cellular, Spurious Conducted Emissions, High Channel



Conducted Emission Test Results cont'd

Figure 29: PCS, Spurious Conducted Emissions, Low Channel

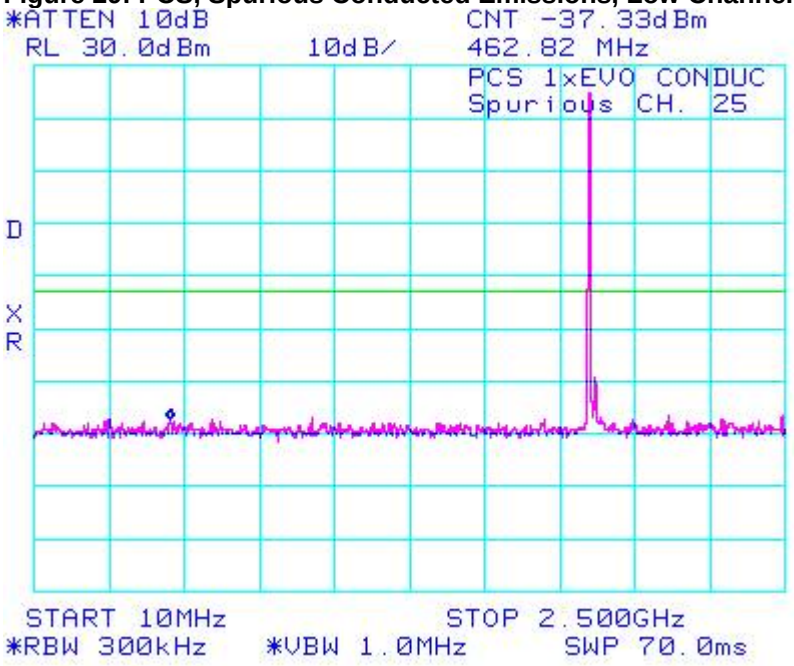
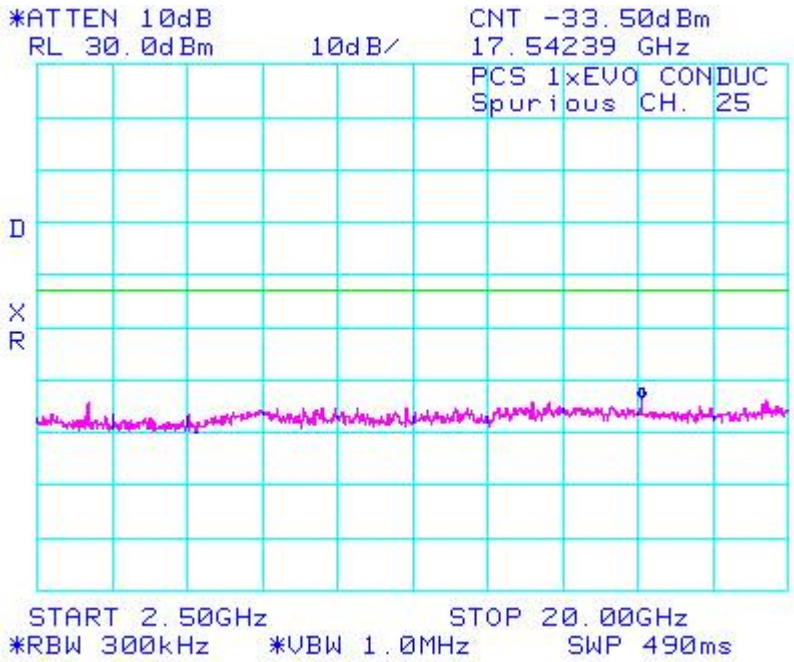


Figure 30: PCS, Spurious Conducted Emissions, Low Channel



Conducted Emission Test Results cont'd

Figure 31: PCS, Spurious Conducted Emissions, Middle Channel

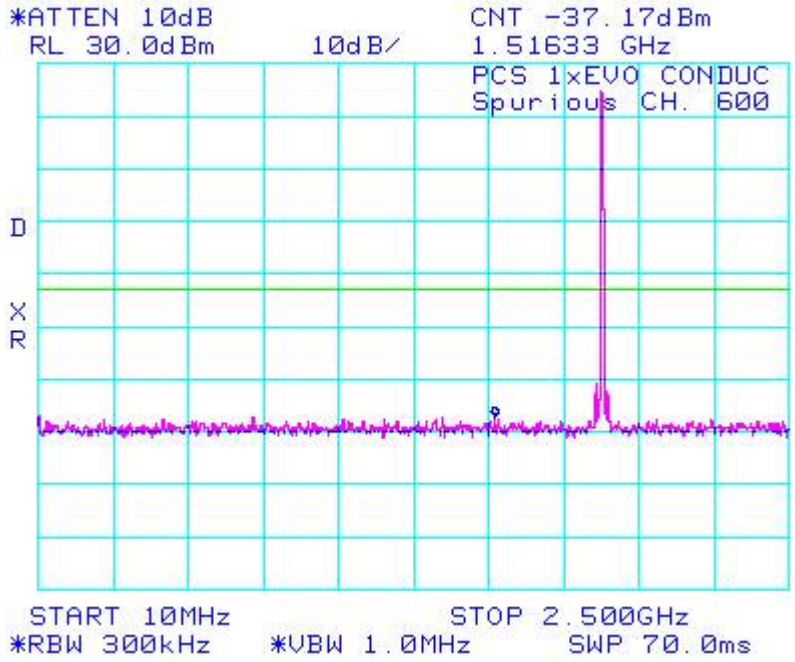
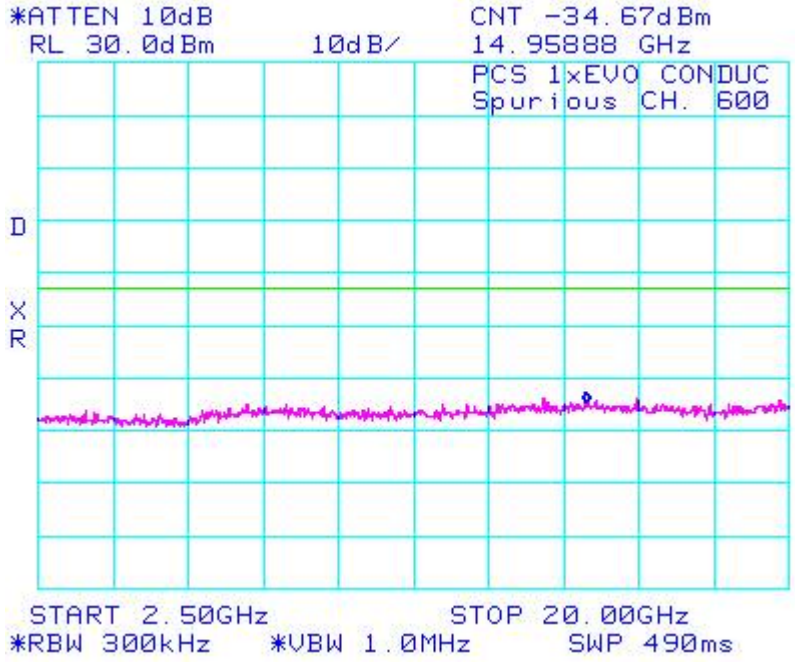


Figure 32: PCS, Spurious Conducted Emissions, Middle Channel



Conducted Emission Test Results cont'd

Figure 33: PCS, Spurious Conducted Emissions, High Channel

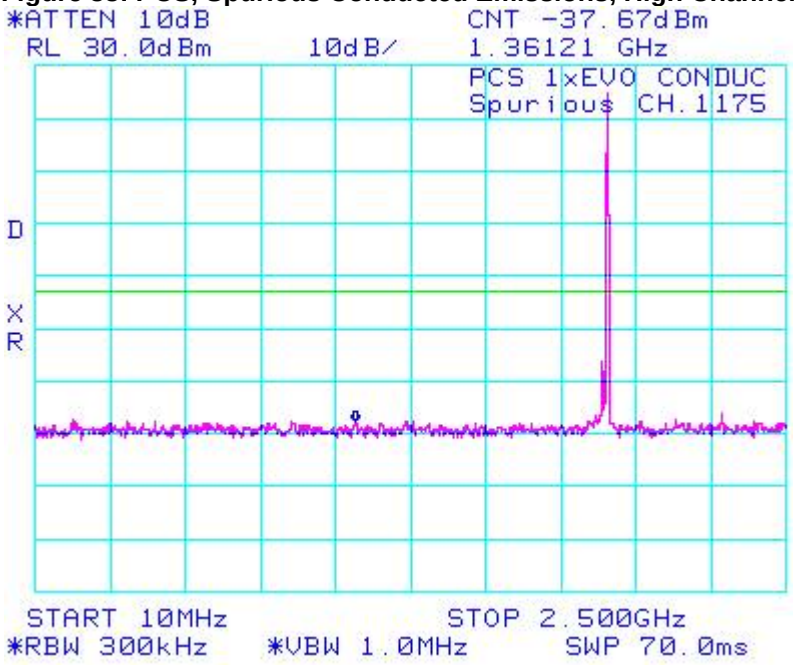
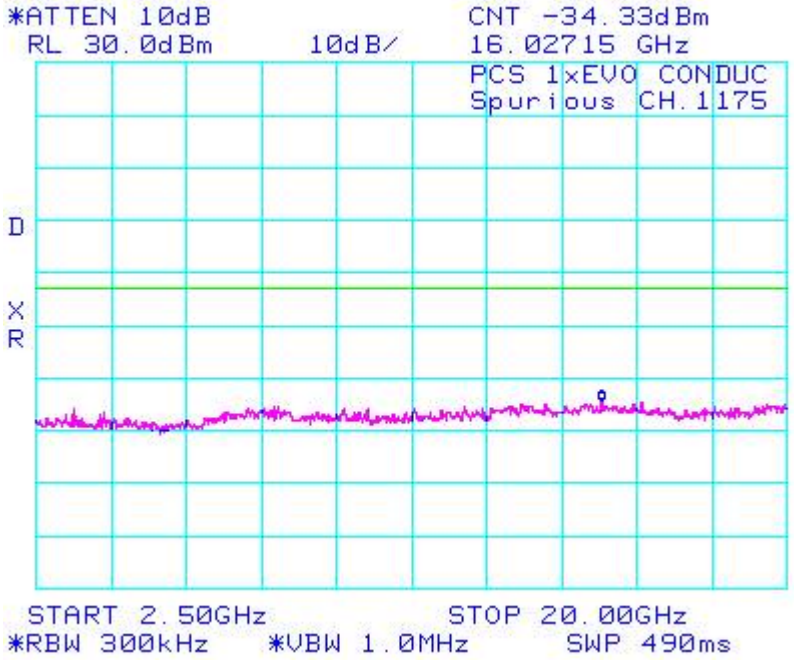


Figure 34: PCS, Spurious Conducted Emissions, High Channel



Conducted Emission Test Results cont'd

Figure 35: Occupied Bandwidth, Cellular Low Channel

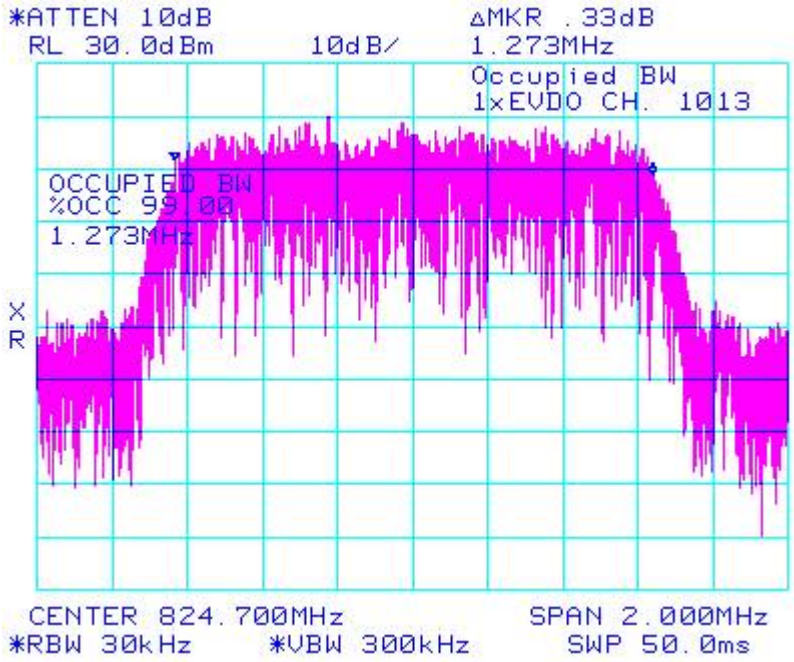
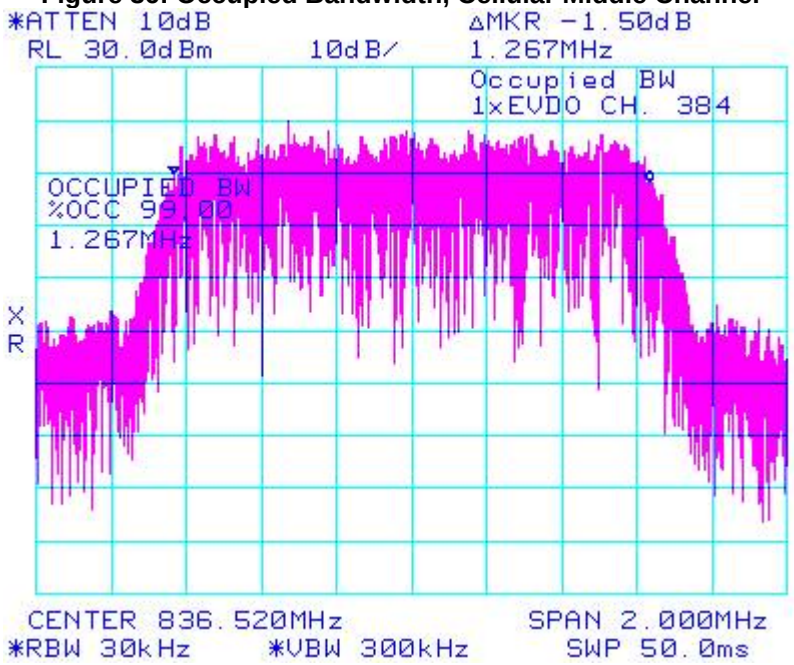


Figure 36: Occupied Bandwidth, Cellular Middle Channel



Conducted Emission Test Results cont'd

Figure 37: Occupied Bandwidth, Cellular High Channel

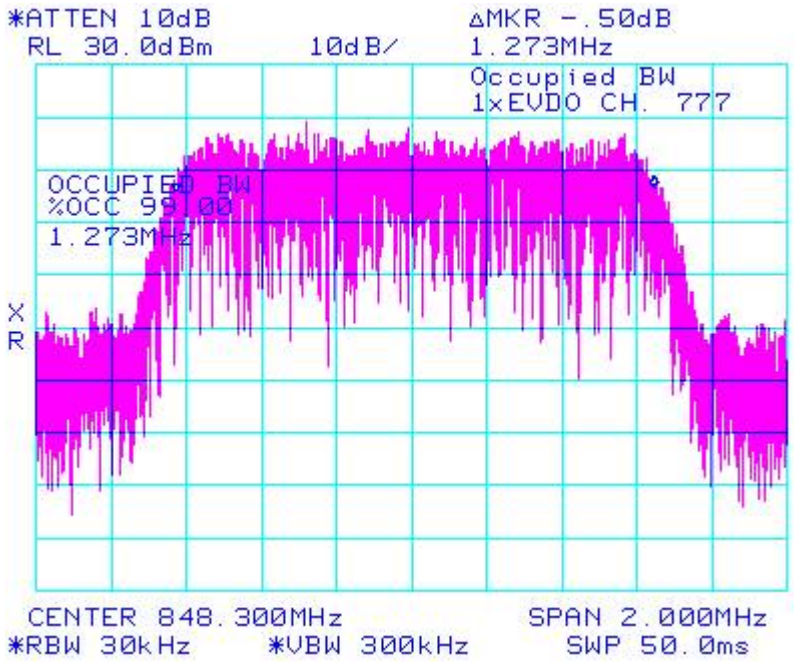
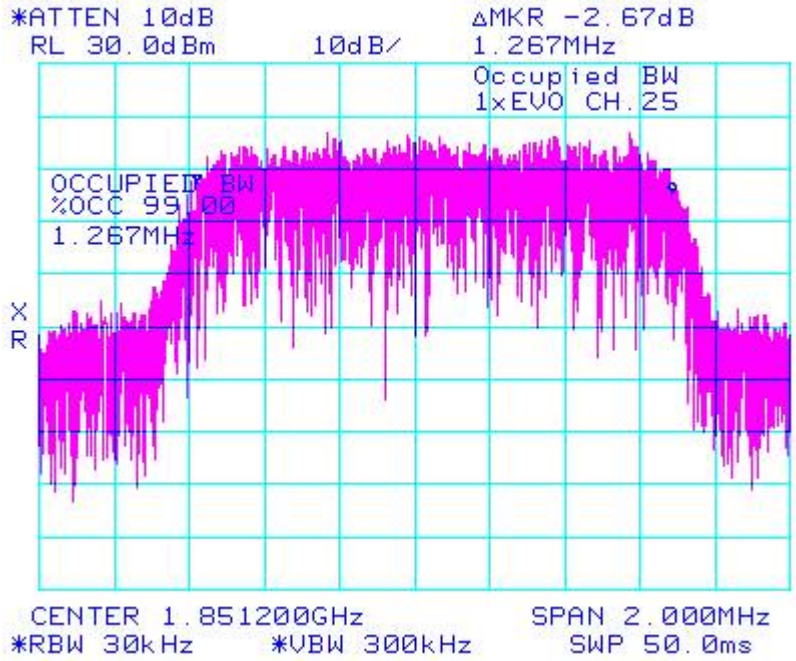


Figure 38: Occupied Bandwidth, PCS Low Channel



Conducted Emission Test Results cont'd

Figure 39: Occupied Bandwidth, PCS Middle Channel

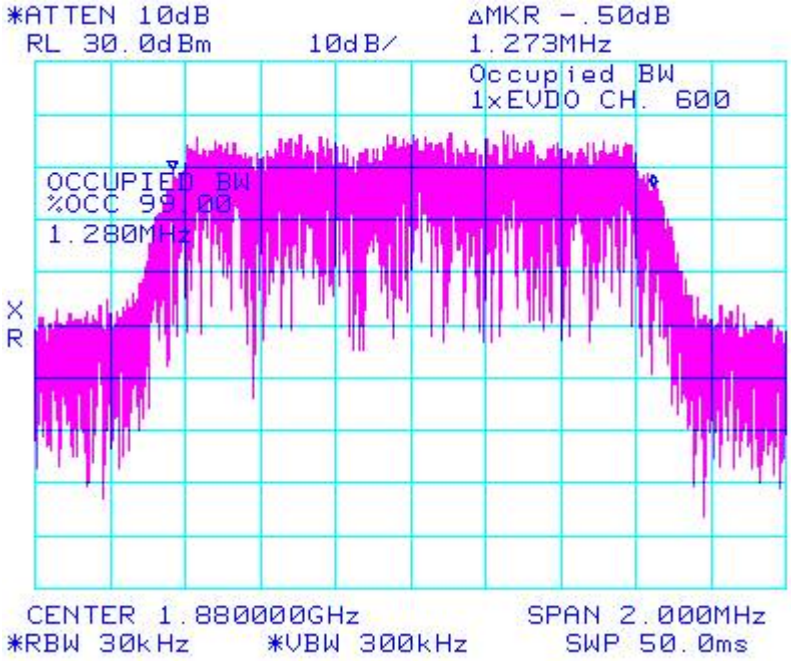
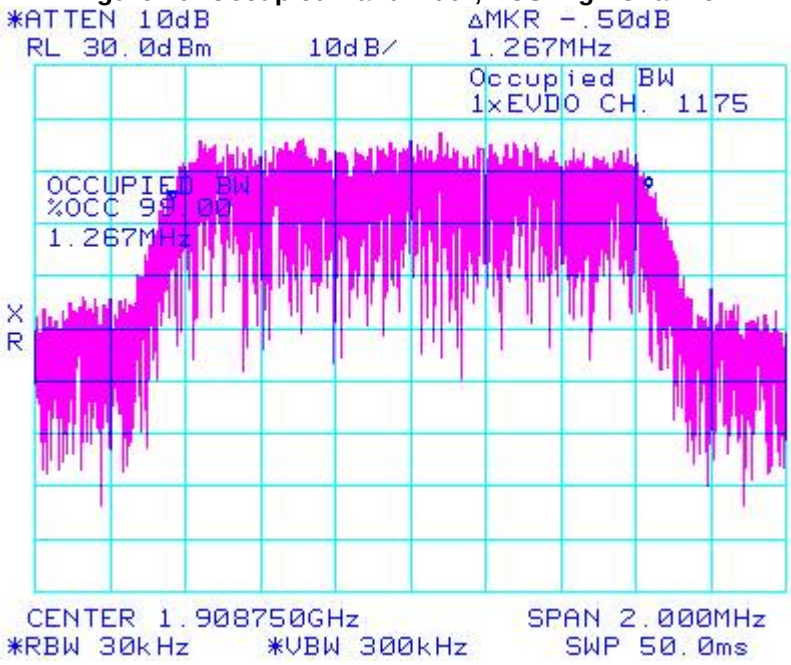


Figure 40: Occupied Bandwidth, PCS High Channel



Conducted Emission Test Results cont'd

Figure 41a: Cellular 1xEVDO, Low Channel Mask

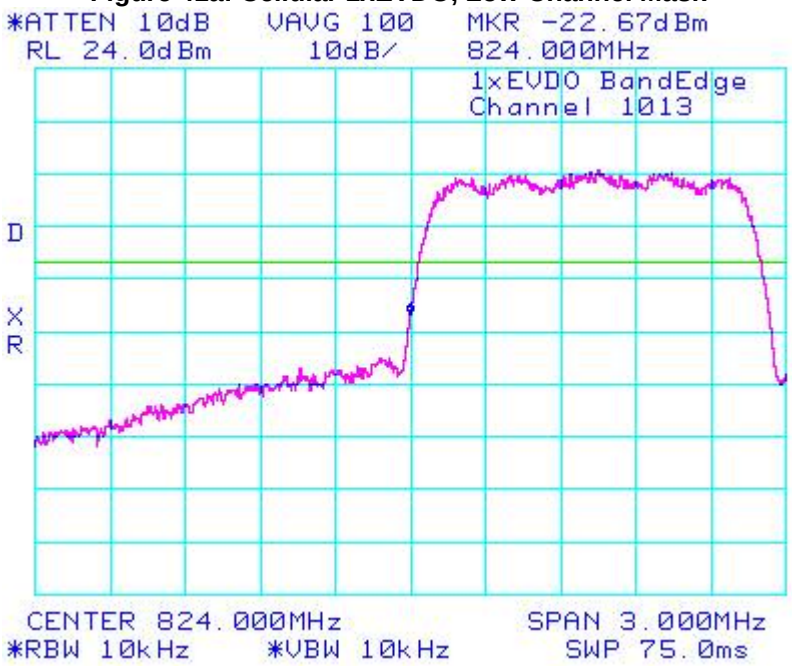
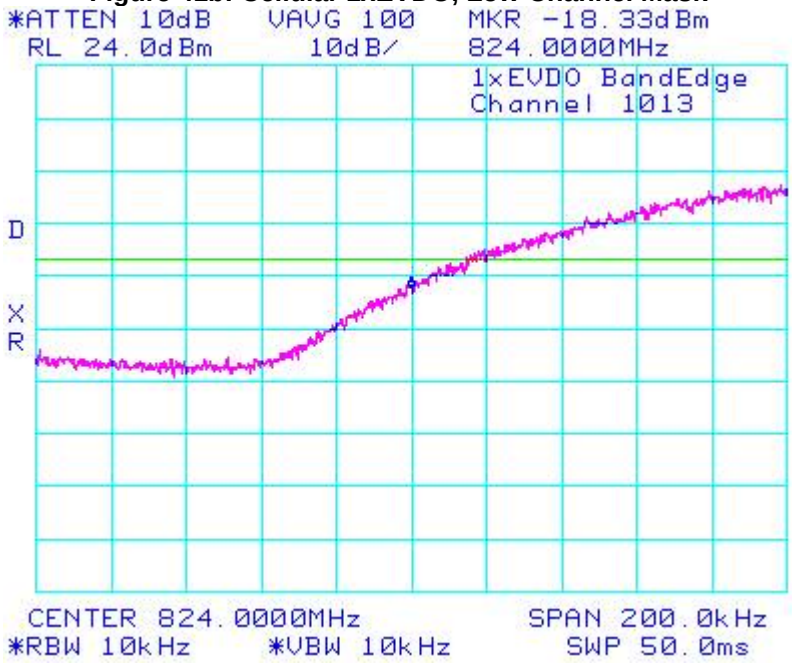


Figure 41b: Cellular 1xEVDO, Low Channel Mask



Conducted Emission Test Results cont'd

Figure 42a: Cellular 1xEVDO, High Channel Mask

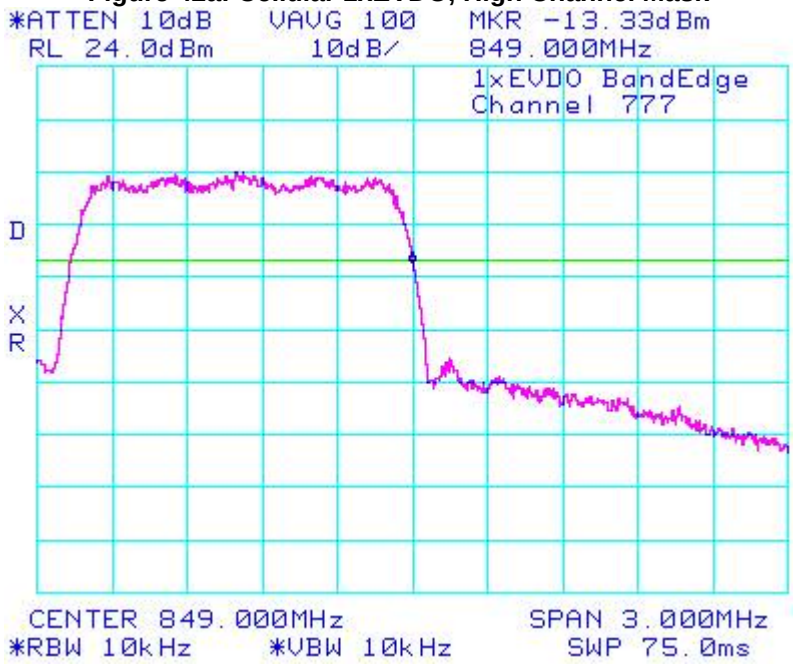
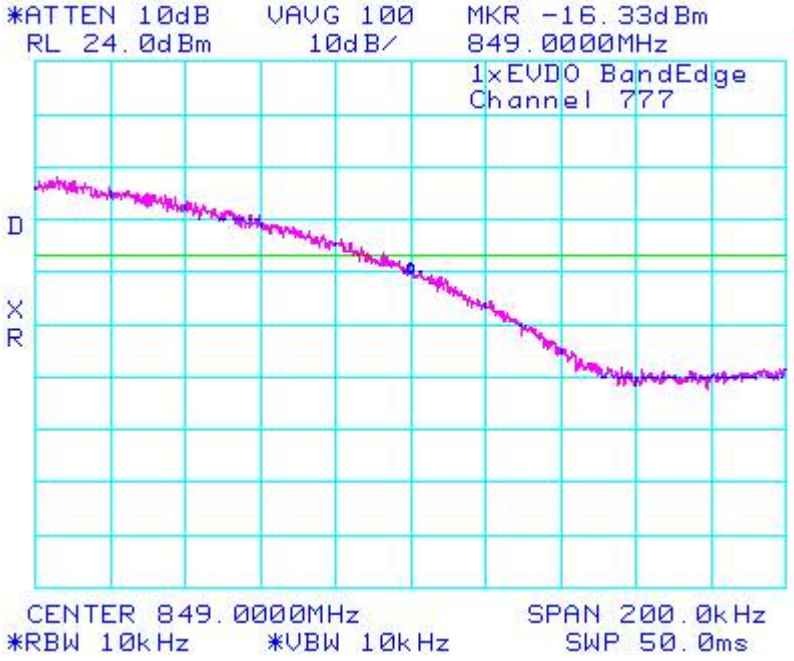


Figure 42b: Cellular 1xEVDO, High Channel Mask



Conducted Emission Test Results cont'd

Figure 43: PCS 1xEVDO, Low Channel Mask

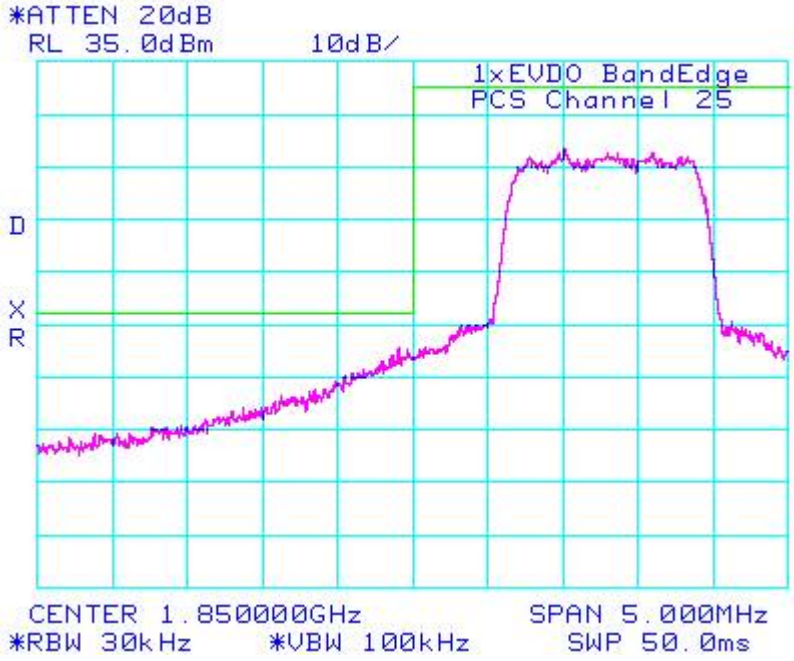
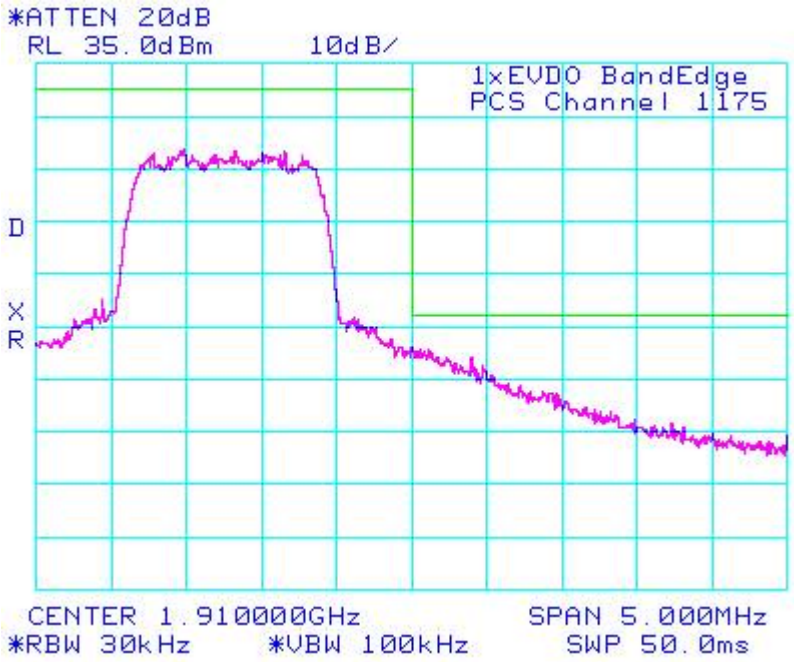


Figure 44: PCS 1xEVDO, High Channel Mask



APPENDIX 2 – CONDUCTED RF OUTPUT POWER TEST DATA

Conducted RF Output Power Test Data

The measurements were performed by Maurice Battler.
Date of Test: December 03, 2008

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 24.50 dBm ±0.5 dB for Cellular and 23.50 dBm ±0.5 dB for PCS.

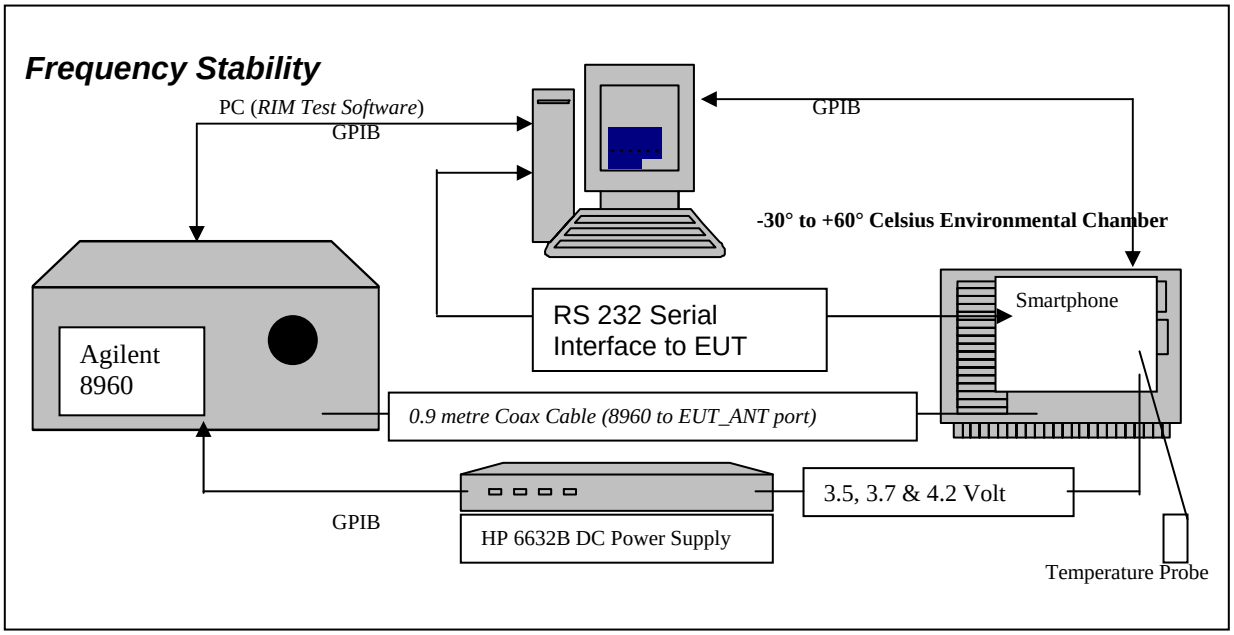
Test Results

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	24.7	0..295	RC1	24.9	0.309	24.9	0.309	-	-
				RC3	24.9	0.309	24.9	0.309	24.9	0.309
	384	24.5	0..282	RC1	24.8	0.302	24.8	0.302	-	-
				RC3	24.9	0.309	24.8	0.302	24.7	0.295
	777	24.4	0.275	RC1	24.8	0.302	24.8	0.302	-	-
				RC3	24.7	0.295	24.7	0.295	24.8	0.302

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	23.5	0.224	RC1	23.8	0.240	23.7	0.234	N/A	-
				RC3	23.9	0.245	23.9	0.245	23.8	0.240
	600	23.5	0.224	RC1	23.9	0.245	24.0	0.251	N/A	-
				RC3	24.0	0.251	24.0	0.251	24.0	0.251
	1175	23.4	0.219	RC1	23.8	0.240	23.9	0.245	N/A	-
				RC3	23.9	0.245	23.9	0.245	23.8	0.240

APPENDIX 3 – FREQUENCY STABILITY TEST DATA

Frequency Stability Test Data



CFR 47 Chapter 1 - Federal Communications Commission Rules

Part 2 Required Measurements
2.995 Frequency Stability - Procedures
(a,b) Frequency Stability - Temperature Variation
(d) Frequency Stability - Voltage Variation

24.235 *Frequency Stability*.

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

The RCE21CW BlackBerry® smartphone PIN 3048F431, (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-133, CFR 47 chapter 1, Section 22.917 and RSS-132 Frequency Stability.

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

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

PCS Frequency (MHz)	Cable loss (dB)
1851.20	0.97
1880.00	0.97
1908.75	0.97

Cellular Frequency (MHz)	Cable loss (dB)
824.70	0.80
836.52	0.80
848.31	0.80

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.

1. Switch on the HP 6632B power supply; AGILENT 8960, 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 base station simulator.
6. Command the base station simulator to switch to the low channel.
7. Enable the voltage to the EUT, and connect a link to the base station simulator.
8. EUT is commanded to Transmit 100 Bursts.
9. 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.
10. The base station simulator 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 Cellular band measured was **0.0109 PPM.**
The maximum frequency error in the PCS band measured was **0.0129 PPM**.

Date of test, November 28 to December 01, 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	2.51	0.0030
384	836.520	3.6	20	0.07	0.0001
777	848.310	3.6	20	-2.39	-0.0028

Traffic Channel Number	Cellular Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1013	824.700	3.7	20	-2.98	-0.0036
384	836.520	3.7	20	-1.55	-0.0019
777	848.310	3.7	20	-2.41	-0.0028

Traffic Channel Number	Cellular Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1013	824.700	4.2	20	-1.53	-0.0019
384	836.520	4.2	20	-1.18	-0.0014
777	848.310	4.2	20	-0.61	-0.0007

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	-1.25	-0.0015
1013	824.700	3.6	-20	9.02	**0.0109**
1013	824.700	3.6	-10	0.33	0.0004
1013	824.700	3.6	0	4.24	0.0051
1013	824.700	3.6	10	6.89	0.0083
1013	824.700	3.6	20	2.51	0.0030
1013	824.700	3.6	30	-0.69	-0.0008
1013	824.700	3.6	40	-1.85	-0.0022
1013	824.700	3.6	50	-4.62	-0.0056
1013	824.700	3.6	60	-0.84	-0.0010

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1013	824.700	3.7	-30	-2.88	-0.0035
1013	824.700	3.7	-20	0.77	0.0009
1013	824.700	3.7	-10	-5.21	-0.0063
1013	824.700	3.7	0	-0.78	-0.0009
1013	824.700	3.7	10	-1.22	-0.0015
1013	824.700	3.7	20	-2.98	-0.0036
1013	824.700	3.7	30	-3.84	-0.0047
1013	824.700	3.7	40	-3.63	-0.0044
1013	824.700	3.7	50	-3.20	-0.0039
1013	824.700	3.7	60	-0.97	-0.0012

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1013	824.700	4.2	-30	-2.76	-0.0033
1013	824.700	4.2	-20	-1.73	-0.0021
1013	824.700	4.2	-10	-1.52	-0.0018
1013	824.700	4.2	0	-2.71	-0.0033
1013	824.700	4.2	10	-1.64	-0.0020
1013	824.700	4.2	20	-1.53	-0.0019
1013	824.700	4.2	30	-1.14	-0.0014
1013	824.700	4.2	40	-0.93	-0.0011
1013	824.700	4.2	50	-1.94	-0.0024
1013	824.700	4.2	60	-3.52	-0.0043

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	-4.88	-0.0058
384	836.520	3.6	-20	7.30	0.0087
384	836.520	3.6	-10	-5.24	-0.0063
384	836.520	3.6	0	3.50	0.0042
384	836.520	3.6	10	5.37	0.0064
384	836.520	3.6	20	0.07	0.0001
384	836.520	3.6	30	-3.30	-0.0039
384	836.520	3.6	40	-3.61	-0.0043
384	836.520	3.6	50	-6.14	-0.0073
384	836.520	3.6	60	2.11	0.0025

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
384	836.520	3.7	-30	-2.13	-0.0025
384	836.520	3.7	-20	0.19	0.0002
384	836.520	3.7	-10	-4.68	-0.0056
384	836.520	3.7	0	1.29	0.0015
384	836.520	3.7	10	-0.46	-0.0006
384	836.520	3.7	20	-1.55	-0.0019
384	836.520	3.7	30	-3.98	-0.0048
384	836.520	3.7	40	-3.77	-0.0045
384	836.520	3.7	50	-4.25	-0.0051
384	836.520	3.7	60	0.47	0.0006

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
384	836.520	4.2	-30	0.51	0.0006
384	836.520	4.2	-20	-0.56	-0.0007
384	836.520	4.2	-10	-0.50	-0.0006
384	836.520	4.2	0	1.04	0.0012
384	836.520	4.2	10	-0.30	-0.0004
384	836.520	4.2	20	-1.18	-0.0014
384	836.520	4.2	30	-0.31	-0.0004
384	836.520	4.2	40	-1.99	-0.0024
384	836.520	4.2	50	-0.36	-0.0004
384	836.520	4.2	60	-0.25	-0.0003

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	-4.99	-0.0059
777	848.310	3.6	-20	3.39	0.0040
777	848.310	3.6	-10	-6.58	-0.0078
777	848.310	3.6	0	0.60	0.0007
777	848.310	3.6	10	0.59	0.0007
777	848.310	3.6	20	-2.39	-0.0028
777	848.310	3.6	30	-3.52	-0.0041
777	848.310	3.6	40	-3.83	-0.0045
777	848.310	3.6	50	-4.30	-0.0051
777	848.310	3.6	60	0.36	0.0004

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
777	848.310	3.7	-30	-1.25	-0.0015
777	848.310	3.7	-20	-0.17	-0.0002
777	848.310	3.7	-10	-3.84	-0.0045
777	848.310	3.7	0	-0.32	-0.0004
777	848.310	3.7	10	-1.26	-0.0015
777	848.310	3.7	20	-2.41	-0.0028
777	848.310	3.7	30	-2.49	-0.0029
777	848.310	3.7	40	-3.25	-0.0038
777	848.310	3.7	50	-2.01	-0.0024
777	848.310	3.7	60	0.26	0.0003

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
777	848.310	4.2	-30	-0.64	-0.0008
777	848.310	4.2	-20	-0.98	-0.0012
777	848.310	4.2	-10	-0.56	-0.0007
777	848.310	4.2	0	-0.81	-0.0010
777	848.310	4.2	10	-1.17	-0.0014
777	848.310	4.2	20	-0.61	-0.0007
777	848.310	4.2	30	-0.81	-0.0010
777	848.310	4.2	40	-0.17	-0.0002
777	848.310	4.2	50	-0.86	-0.0010
777	848.310	4.2	60	-1.15	-0.0014

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	6.84	0.0037
600	1880.00	3.6	20	-5.64	-0.0030
1175	1908.75	3.6	20	-5.33	-0.0028

Traffic Channel Number	PCS Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
25	1851.20	3.7	20	-7.08	-0.0038
600	1880.00	3.7	20	-5.09	-0.0027
1175	1908.75	3.7	20	-5.45	-0.0029

Traffic Channel Number	PCS Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
25	1851.20	4.2	20	-3.79	-0.0020
600	1880.00	4.2	20	0.27	0.0010
1175	1908.75	4.2	20	-2.92	-0.0015

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	-6.07	-0.0033
25	1851.20	3.6	-20	23.84	**0.0129**
25	1851.20	3.6	-10	1.21	0.0007
25	1851.20	3.6	0	13.98	0.0076
25	1851.20	3.6	10	19.26	0.0104
25	1851.20	3.6	20	6.84	0.0037
25	1851.20	3.6	30	-2.37	-0.0013
25	1851.20	3.6	40	-5.87	-0.0032
25	1851.20	3.6	50	-14.26	-0.0077
25	1851.20	3.6	60	2.04	0.0011

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
25	1851.20	3.7	-30	-5.92	-0.0032
25	1851.20	3.7	-20	2.99	0.0016
25	1851.20	3.7	-10	-5.68	-0.0031
25	1851.20	3.7	0	3.71	0.0020
25	1851.20	3.7	10	-1.85	-0.0010
25	1851.20	3.7	20	-7.08	-0.0038
25	1851.20	3.7	30	-8.63	-0.0047
25	1851.20	3.7	40	-10.49	-0.0057
25	1851.20	3.7	50	-10.09	-0.0055
25	1851.20	3.7	60	-5.92	-0.0032

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
25	1851.20	4.2	-30	0.02	0.0000
25	1851.20	4.2	-20	-2.76	-0.0015
25	1851.20	4.2	-10	-2.27	-0.0012
25	1851.20	4.2	0	-2.43	-0.0013
25	1851.20	4.2	10	-3.22	-0.0017
25	1851.20	4.2	20	-3.79	-0.0020
25	1851.20	4.2	30	-4.56	-0.0025
25	1851.20	4.2	40	-5.53	-0.0030
25	1851.20	4.2	50	-5.03	-0.0027
25	1851.20	4.2	60	-5.97	-0.0032

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	-8.54	-0.0045
600	1880.00	3.6	-20	9.29	0.0049
600	1880.00	3.6	-10	-5.27	-0.0028
600	1880.00	3.6	0	6.81	0.0036
600	1880.00	3.6	10	5.78	0.0031
600	1880.00	3.6	20	-5.64	-0.0030
600	1880.00	3.6	30	-6.96	-0.0037
600	1880.00	3.6	40	-8.45	-0.0045
600	1880.00	3.6	50	-9.04	-0.0048
600	1880.00	3.6	60	2.95	0.0016

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
600	1880.00	3.7	-30	-4.57	-0.0024
600	1880.00	3.7	-20	-3.25	-0.0017
600	1880.00	3.7	-10	-4.42	-0.0024
600	1880.00	3.7	0	-0.01	0.0000
600	1880.00	3.7	10	-1.60	-0.0009
600	1880.00	3.7	20	-5.09	-0.0027
600	1880.00	3.7	30	-5.99	-0.0032
600	1880.00	3.7	40	-7.15	-0.0038
600	1880.00	3.7	50	-6.22	-0.0033
600	1880.00	3.7	60	-0.81	-0.0004

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
600	1880.00	4.2	-30	-5.63	-0.0030
600	1880.00	4.2	-20	-3.62	-0.0019
600	1880.00	4.2	-10	-4.71	-0.0025
600	1880.00	4.2	0	-5.91	-0.0031
600	1880.00	4.2	10	-4.42	-0.0024
600	1880.00	4.2	20	0.27	0.0001
600	1880.00	4.2	30	-2.96	-0.0016
600	1880.00	4.2	40	-2.46	-0.0013
600	1880.00	4.2	50	-4.38	-0.0023
600	1880.00	4.2	60	-2.10	-0.0011

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	-8.47	-0.0044
1175	1908.75	3.6	-20	9.17	0.0048
1175	1908.75	3.6	-10	-5.46	-0.0029
1175	1908.75	3.6	0	6.58	0.0034
1175	1908.75	3.6	10	4.80	0.0025
1175	1908.75	3.6	20	-5.33	-0.0028
1175	1908.75	3.6	30	-6.19	-0.0032
1175	1908.75	3.6	40	-11.69	-0.0061
1175	1908.75	3.6	50	-14.29	-0.0075
1175	1908.75	3.6	60	3.96	0.0021

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1175	1908.75	3.7	-30	-2.88	-0.0015
1175	1908.75	3.7	-20	2.45	0.0013
1175	1908.75	3.7	-10	-4.11	-0.0022
1175	1908.75	3.7	0	6.72	0.0035
1175	1908.75	3.7	10	1.89	0.0010
1175	1908.75	3.7	20	-5.45	-0.0029
1175	1908.75	3.7	30	-7.48	-0.0039
1175	1908.75	3.7	40	-7.47	-0.0039
1175	1908.75	3.7	50	-7.30	-0.0038
1175	1908.75	3.7	60	1.59	0.0008

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1175	1908.75	4.2	-30	0.69	0.0004
1175	1908.75	4.2	-20	-1.53	-0.0008
1175	1908.75	4.2	-10	3.12	0.0016
1175	1908.75	4.2	0	2.13	0.0011
1175	1908.75	4.2	10	-1.30	-0.0007
1175	1908.75	4.2	20	-2.92	-0.0015
1175	1908.75	4.2	30	-3.30	-0.0017
1175	1908.75	4.2	40	-6.53	-0.0034
1175	1908.75	4.2	50	-1.84	-0.0010
1175	1908.75	4.2	60	-2.68	-0.0014

APPENDIX 4 - RADIATED EMISSIONS TEST DATA

Radiated Power Test Data Results

Cellular Band Loopback Service

The measurements were performed by Heng Lin, and Gurjeev Singh.

The environmental test conditions were: Temperature 24ºC
Pressure 1005 mb
Relative Humidity 22%

Date of test: December 09, 2008

Test distance was 3.0 metres.

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)	(Watts)	Limit (dBm)	Diff to Limit (dBm)
Cellular Band (ERP), CDMA2000, (RC3, SO55) BlackBerry® smartphone Standalone, USB up position													
F0	1013	824.70	800	Dipole	V	70.10	79.45	V V	9.40	24.14	0.26	39.00	-14.86
F0	1013	824.70	800	Dipole	H	79.45		H H	8.40				
F0	384	836.52	800	Dipole	V	71.21	80.91	V V	11.10	25.84	0.38	39.00	-13.16
F0	384	836.52	800	Dipole	H	80.91		H H	10.20				
F0	777	848.32	800	Dipole	V	71.60	81.00	V V	11.90	**26.64**	0.46	39.00	-12.36
F0	777	848.32	800	Dipole	H	81.00		H H	9.70				

ERP = Tracking Generator Level + Antenna Gain – Cable Loss + Preamp

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: December 09, 2008

Test distance was 3.0 metres.

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)	(Watts)	Limit (dBm)	Diff to Limit (dBm)
Cellular Band (ERP), 1xEVDO BlackBerry® smartphone Standalone, USB up position													
F0	1013	824.70	800	Dipole	V	71.50	79.90	V V	9.00	23.74	0.24	39.00	-15.26
F0	1013	824.70	800	Dipole	H	79.90		H H	8.80				
F0	384	836.52	800	Dipole	V	71.42	81.21	V V	10.60	**26.44**	0.44	39.00	-12.56
F0	384	836.52	800	Dipole	H	81.21		H H	11.70				
F0	777	848.32	800	Dipole	V	71.28	80.34	V V	10.60	25.34	0.34	39.00	-13.26
F0	777	848.32	800	Dipole	H	80.34		H H	9.60				

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: December 12, 2008.

								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)	Corrected Reading (relative to Isotropic Radiator) (Watts)	Limit (dBm)	Diff to Limit (dBm)
PCS BAND (EIRP), CDMA2000, (RC3, SO55) BlackBerry® smartphone, Standalone, USB down position													
F0	25	1851.25	1900	Horn	V	90.53	90.53	V-V	-13.35	20.77	0.12	33.00	-12.23
F0	25	1851.25	1900	Horn	H	81.17		H-H	-12.52				
F0	600	1880.00	1900	Horn	V	90.03	90.03	V-V	-10.80	**22.70**	0.19	33.00	-10.30
F0	600	1880.00	1900	Horn	H	80.11		H-H	-10.29				
F0	1175	1908.75	1900	Horn	V	89.70	89.70	V-V	-10.30	22.66	0.18	33.00	-10.34
F0	1175	1908.75	1900	Horn	H	81.44		H-H	-10.24				

EIRP = Tracking Generator Level + Antenna Factor – Cable Loss + Preamp Gain

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: December 12, 2008.

								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)	Corrected Reading (relative to Isotropic Radiator) (Watts)	Limit (dBm)	Diff to Limit (dBm)
PCS BAND (EIRP), 1xEVDO BlackBerry® smartphone, Standalone, USB down													
F0	25	1851.25	1900	Horn	V	78.20	90.03	V-V	-11.00	22.79	0.19	33.00	-10.21
F0	25	1851.25	1900	Horn	H	90.03		H-H	-10.50				
F0	600	1880.00	1900	Horn	V	78.13	89.99	V-V	-10.20	24.19	0.26	33.00	-8.81
F0	600	1880.00	1900	Horn	H	89.99		H-H	-8.80				
F0	1175	1908.75	1900	Horn	V	78.53	89.56	V-V	-9.20	**24.20**	0.26	33.00	-8.80
F0	1175	1908.75	1900	Horn	H	89.56		H-H	-8.70				

EIRP = Tracking Generator Level + Antenna Factor – Cable Loss + Preamp Gain

Radiated Emissions Test Data Results

Cellular Band Loopback Service

The environmental test conditions were: Temperature 23ºC
Pressure 998 mb
Relative Humidity 23%

Date of Test: November 28, 2008

Test Distance was 3.0 metres with a height of 1.0 metre, 30 MHz to 1000 MHz.
The BlackBerry® smartphone Sample 3 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (RC3, SO55) mode, channel 1013.

All emissions were in the NF.

The environmental test conditions were: Temperature 24ºC
Pressure 1017 mb
Relative Humidity 21%

Date of Test: December 05, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 1 GHz to 9 GHz
The BlackBerry® smartphone Sample 5 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (RC3, SO55) 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		(PK or AVE)	(dBµV)	(dB/m)	(dBµV/m)	(dB)	(dB)
(MHz)	(V/H)	(metres)	(Deg.)						
1649.37	V	1.00	0	PK	56.34	-90.37	-34.03	-13.00	-21.03

All other emissions were in the NF.

Radiated Emissions Test Data Results cont'd

Cellular Band Loopback Service

The environmental test conditions were: Temperature 24ºC
Pressure 1005 mb
Relative Humidity 22%

Date of Test: November 27, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 30 MHz to 1.0 GHz.
The BlackBerry® smartphone Sample 3 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (RC3, SO55) 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		(PK or AVE)		(dB/m)			
(MHz)	(V/H)	(metres)	(Deg.)		(dBµV)		(dBµV/m)	(dB)	(dB)
817.3	H	1.71	117	PK	61.90	-96.97	-35.07	-13.00	-22.07

All other emissions were in the NF.

The environmental test conditions were: Temperature 24ºC
Pressure 1015 mb
Relative Humidity 21%

Date of Test: December 04, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 1 GHz to 9 GHz
The BlackBerry® smartphone Sample 5 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (RC3, SO55) 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		(PK or AVE)		(dB/m)			
(MHz)	(V/H)	(metres)	(Deg.)		(dBµV)		(dBµV/m)	(dB)	(dB)
1672.74	V	1.00	0	PK	60.93	-89.88	-28.95	-13.00	-15.95
3346.42	V	1.26	355	PK	45.13	-82.79	-37.66	-13.00	-24.66

All other emissions were in the NF.

Radiated Emissions Test Data Results

Cellular Band Loopback Service

The environmental test conditions were: Temperature 24ºC
Pressure 1003 mb
Relative Humidity 22%

Date of Test: November 27, 2008

Test Distance was 3.0 metres with a height of 1.0 metre, 30 MHz to 1000 MHz.
The BlackBerry® smartphone Sample 3 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (RC3, SO55) mode, channel 777.

All emissions were in the NF.

The environmental test conditions were: Temperature 24ºC
Pressure 1017 mb
Relative Humidity 21%

Date of Test: December 05, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 1 GHz to 9 GHz
The BlackBerry® smartphone Sample 5 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (RC3, SO55) mode, channel 777.

All emissions were in the NF.

Radiated Emissions Test Data Results cont'd

Cellular Band Test Data Service

The environmental test conditions were: Temperature 24ºC
Pressure 1003 mb
Relative Humidity 22%

Date of Test: November 27, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 30 MHz to 1.0 GHz.
The BlackBerry® smartphone Sample 3 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (RC3; TDS S0 32) mode, channel 1013.

All emissions were in the NF.

The environmental test conditions were: Temperature 24ºC
Pressure 1020 mb
Relative Humidity 31%

Date of Test: December 08, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 1 GHz to 9 GHz
The BlackBerry® smartphone Sample 7 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (RC3; TDS S0 32) 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		(PK or AVE)	(dBµV)	(dB/m)	(dBµV/m)	(dB)	(dB)
(MHz)	(V/H)	(metres)	(Deg.)						
1649.65	V	1.00	164	PK	58.23	-90.37	-32.14	-13.00	-19.14
3300.35	V	1.00	144	PK	46.54	-82.48	-35.94	-13.00	-22.94

All other emissions were in the NF.

Radiated Emissions Test Data Results cont'd

Cellular Band Test Data Service

The environmental test conditions were: Temperature 24ºC
Pressure 1005 mb
Relative Humidity 22%

Date of Test: November 27, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 30 MHz to 1.0 GHz.
The BlackBerry® smartphone Sample 3 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (RC3; TDS S0 32) mode, channel 384.

All emissions were in the NF.

The environmental test conditions were: Temperature 24ºC
Pressure 1020 mb
Relative Humidity 31%

Date of Test: December 08, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 1 GHz to 9 GHz
The BlackBerry® smartphone Sample 5 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (RC3; TDS S0 32) 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		(PK or AVE)	(dBµV)	(dB/m)	(dBµV/m)	(dB)	(dB)
(MHz)	(V/H)	(metres)	(Deg.)						
1673.04	V	3.00	266	PK	52.23	-89.88	-37.65	-13.00	-24.65

All other emissions were in the NF.

Radiated Emissions Test Data Results cont'd

Cellular Band Test Data Service

The environmental test conditions were: Temperature 24ºC
Pressure 1003 mb
Relative Humidity 22%

Date of Test: November 27, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 30 MHz to 1.0 GHz.
The BlackBerry® smartphone Sample 3 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (RC3; TDS S0 32) mode, channel 777.

All emissions were in the NF.

The environmental test conditions were: Temperature 24ºC
Pressure 1020 mb
Relative Humidity 31%

Date of Test: December 08, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 1 GHz to 9 GHz
The BlackBerry® smartphone Sample 7 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (RC3; TDS S0 32) 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		(PK or AVE)	(dBµV)	(dB/m)	(dBµV/m)	(dB)	(dB)
(MHz)	(V/H)	(metres)	(Deg.)						
1696.58	V	1.00	268	PK	54.37	-90.04	-35.67	-13.00	-22.67

All other emissions were in the NF.

Radiated Emissions Test Data Results cont'd

Cellular Band 1xEVDO

The environmental test conditions were: Temperature 25ºC
Pressure 985 mb
Relative Humidity 23%

Date of Test: December 01, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 30 MHz to 1.0 GHz.
The BlackBerry® smartphone Sample 3 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in 1xEVDO mode, channel 1013.
All emissions were in the NF.

The environmental test conditions were: Temperature 24ºC
Pressure 1028 mb
Relative Humidity 31%

Date of Test: December 16, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 1 GHz to 9 GHz
The BlackBerry® smartphone Sample 5 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (RC3; TDS S0 32) 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		(PK or AVE)	(dBµV)	(dB/m)	(dBµV/m)	(dB)	(dB)
(MHz)	(V/H)	(metres)	(Deg.)						
1649.01	V	1.00	57	PK	62.25	-90.37	-28.12	-13.00	-15.12
3299.53	V	1.00	90	PK	46.80	-82.48	-35.68	-13.00	-22.68

All other emissions were in the NF.

Radiated Emissions Test Data Results cont'd

Cellular Band 1xEVDO

The environmental test conditions were: Temperature 24ºC
Pressure 984 mb
Relative Humidity 23%

Date of Test: December 01, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 30 MHz to 1.0 GHz.
The BlackBerry® smartphone Sample 3 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in 1xEVDO mode, channel 384.
All emissions were in the NF.

The environmental test conditions were: Temperature 24ºC
Pressure 1028 mb
Relative Humidity 31%

Date of Test: December 16, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 1 GHz to 9 GHz
The BlackBerry® smartphone Sample 5 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (RC3; TDS S0 32) 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		(PK or AVE)	(dBµV)	(dB/m)	(dBµV/m)	(dB)	(dB)
(MHz)	(V/H)	(metres)	(Deg.)						
1672.70	V	1.00	88	PK	62.49	-89.88	-27.39	-13.00	**-14.39**
3346.26	V	1.00	95	PK	46.04	-82.79	-36.75	-13.00	-23.75

All other emissions were in the NF.

Radiated Emissions Test Data Results cont'd

Cellular Band 1xEVDO

The environmental test conditions were: Temperature 25ºC
Pressure 985 mb
Relative Humidity 23%

Date of Test: December 01, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 30 MHz to 1.0 GHz.
The BlackBerry® smartphone Sample 3 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in 1xEVDO mode, channel 777.
All emissions were in the NF.

The environmental test conditions were: Temperature 24ºC
Pressure 1028 mb
Relative Humidity 31%

Date of Test: December 16, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 1 GHz to 9 GHz
The BlackBerry® smartphone Sample 5 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (RC3; TDS S0 32) 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		(PK or AVE)	(dBµV)	(dB/m)	(dBµV/m)	(dB)	(dB)
(MHz)	(V/H)	(metres)	(Deg.)						
1696.62	V	1.78	98	PK	57.04	-90.04	-33.00	-13.00	-20.00

All other emissions were in the NF.

Radiated Emissions Test Data Results cont'd

PCS Band Loopback Service

The environmental test conditions were: Temperature 23ºC
Pressure 983 mb
Relative Humidity 23%

Date of Test: December 01, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 30 MHz to 1.0 GHz.
The BlackBerry® smartphone Sample 3 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (RC3, SO55) mode, channel 25.

All emissions were in the NF.

The environmental test conditions were: Temperature 24ºC
Pressure 1015 mb
Relative Humidity 21%

Date of Test: December 04, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 1 GHz to 20 GHz
The BlackBerry® smartphone Sample 6 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (RC3, SO55) mode, channel 25.

All emissions were in the NF.

Radiated Emissions Test Data Results cont'd

PCS Band Loopback Service

The environmental test conditions were: Temperature 23ºC
Pressure 999 mb
Relative Humidity 23%

Date of Test: November 28, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 30 MHz to 1.0 GHz.
The BlackBerry® smartphone Sample 3 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (RC3, SO55) mode, channel 600.

All emissions were in the NF.

The environmental test conditions were: Temperature 24ºC
Pressure 988 mb
Relative Humidity 35%

Date of Test: December 01, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 1 GHz to 20 GHz
The BlackBerry® smartphone Sample 6 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (RC3, SO55) mode, channel 600.

Frequency (MHz)	Antenna Pol. (V/H)	Antenna Height (metres)	Test Angle (Deg.)	Detector (PK or AVE)	Measured Level (dBµV)	Correction Factor for preamp/antenna/ cables/ filter (dB/m)	Field Strength Level (reading+corr) (dBµV/m)	Limit @ 3.0 m (dB)	Test Margin (dB)
1880.26	H	1.00	0	PK	53.84	-87.79	-33.95	-13.00	-20.95
1959.92	V	3.00	90	PK	64.31	-89.56	-25.25	-13.00	**-12.25**

All other emissions were in the NF.

Radiated Emissions Test Data Results cont'd

PCS Band Loopback Service

The environmental test conditions were: Temperature 24ºC
Pressure 983 mb
Relative Humidity 23%

Date of Test: December 01, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 30 MHz to 1.0 GHz.
The BlackBerry® smartphone Sample 3 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (RC3, SO55) mode, channel 1175.

All emissions were in the NF.

The environmental test conditions were: Temperature 24ºC
Pressure 1015 mb
Relative Humidity 21%

Date of Test: December 04, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 1 GHz to 20 GHz
The BlackBerry® smartphone Sample 6 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (RC3, SO55) mode, channel 1175.

All emissions were in the NF.

Radiated Emissions Test Data Results cont'd

PCS Band Test Data Service

The environmental test conditions were: Temperature 24ºC
Pressure 983 mb
Relative Humidity 23%

Date of Test: December 01, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 30 MHz to 1000 MHz.
The BlackBerry® smartphone Sample 3 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (TDS, RC3, SO32) mode, channel 25.

All emissions were in the NF.

The environmental test conditions were: Temperature 24ºC
Pressure 988 mb
Relative Humidity 35%

Date of Test: December 01, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 1 GHz to 20 GHz
The BlackBerry® smartphone Sample 6 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (TDS, RC3, SO32) mode, channel 25.

All emissions were in the NF.

Radiated Emissions Test Data Results cont'd

PCS Band Test Data Service

The environmental test conditions were: Temperature 23ºC
Pressure 999 mb
Relative Humidity 23%

Date of Test: November 28, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 30 MHz to 1000 MHz.
The BlackBerry® smartphone Sample 3 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (TDS, RC3, SO32) mode, channel 600.

All emissions were in the NF.

The environmental test conditions were: Temperature 24ºC
Pressure 1017 mb
Relative Humidity 21%

Date of Test: December 05, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 1 GHz to 20 GHz
The BlackBerry® smartphone Sample 6 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (TDS, RC3, SO32) mode, channel 600.

Frequency (MHz)	Antenna Pol. (V/H)	Antenna Height (metres)	Test Angle (Deg.)	Detector (PK or AVE)	Measured Level (dBµV)	Correction Factor for preamp/antenna/ cables/ filter (dB/m)	Field Strength Level (reading+corr) (dBµV/m)	Limit @ 3.0 m (dB)	Test Margin (dB)
1660.82	V	2.00	180	PK	54.97	-90.68	-35.71	-13.00	-22.71

All other emissions were in the NF.

Radiated Emissions Test Data Results cont'd

PCS Band Test Data Service

The environmental test conditions were: Temperature 24ºC
Pressure 983 mb
Relative Humidity 23%

Date of Test: December 01, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 30 MHz to 1000 MHz.
The BlackBerry® smartphone Sample 3 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (TDS, RC3, SO32) mode, channel 1175.

All emissions were in the NF.

The environmental test conditions were: Temperature 25ºC
Pressure 1012 mb
Relative Humidity 22%

Date of Test: December 02, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 1 GHz to 20 GHz
The BlackBerry® smartphone Sample 6 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in CDMA2000 (TDS, RC3, SO32) mode, channel 1175.

All emissions were in the NF.

Radiated Emissions Test Data Results cont'd

PCS Band 1xEVDO

The environmental test conditions were: Temperature 24ºC
Pressure 987 mb
Relative Humidity 23%

Date of Test: December 01, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 30 MHz to 1000 MHz.
The BlackBerry® smartphone Sample 3 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in 1xEVDO mode, channel 25.
All emissions were in the NF.

The environmental test conditions were: Temperature 24ºC
Pressure 1010 mb
Relative Humidity 33%

Date of Test: December 15, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 1 GHz to 20 GHz
The BlackBerry® smartphone Sample 7 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in 1xEVDO mode, channel 25.

All emissions were in the NF.

Radiated Emissions Test Data Results cont'd

PCS Band 1xEVDO

The environmental test conditions were: Temperature 24ºC
Pressure 1007 mb
Relative Humidity 22%

Date of Test: December 01, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 30 MHz to 1000 MHz.
The BlackBerry® smartphone Sample 3 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in 1xEVDO mode, channel 600.
All emissions were in the NF.

The environmental test conditions were: Temperature 24ºC
Pressure 1010 mb
Relative Humidity 33%

Date of Test: December 15, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 1 GHz to 20 GHz
The BlackBerry® smartphone Sample 7 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in 1xEVDO mode, channel 1175.

All emissions were in the NF.

Radiated Emissions Test Data Results cont'd

PCS Band 1xEVDO

The environmental test conditions were: Temperature 23ºC
Pressure 1007 mb
Relative Humidity 23%

Date of Test: December 01, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 30 MHz to 1000 MHz.
The BlackBerry® smartphone Sample 3 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in 1xEVDO mode, channel 1175.
All emissions were in the NF.

The environmental test conditions were: Temperature 24ºC
Pressure 1010 mb
Relative Humidity 33%

Date of Test: December 15, 2008

Test Distance was 3.0 metres with a EUT height of 1.0 metre, sweep frequency of 1 GHz to 20 GHz
The BlackBerry® smartphone Sample 7 was in standalone, vertical position.

The frequency sweep spurious measurements were performed in 1xEVDO mode, channel 1175.

All emissions were in the NF.