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

A division of Research In Motion Limited

REPORT NO.: RTS-2068-0909-25

PRODUCT MODEL NO.: RCL21CW
TYPE NAME: BlackBerry® smartphone
FCC ID: L6ARCL20CW
IC: 2503A-RCL20CW
EMISSION DESIGNATOR: 1M29F9W

DATE: September 18, 2009

Statement of Performance:

The BlackBerry® smartphone, model RCL21CW, part number CER-27171-001 Rev. 2, and accessories when configured and operated per RIM's operation instructions, performs within the requirements of the test standards.

Declaration:

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

Documented by:

Michael Cino
Regulatory Compliance Intern
Date: 18 September, 2009

Reviewed By:

Kevin Rose
Regulatory Compliance Specialist
Date: 18 September, 2009

Reviewed and Approved by:

Masud S. Attayi, P.Eng.
Manager, Regulatory Compliance
Date: 21 September, 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, 2008
- FCC CFR 47 Part 22, Subpart H, Cellular Radiotelephone Services, Oct. 1, 2008
- FCC CFR 47 Part 24 Subpart E, Broadband PCS, Oct 1. 2008
- 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 5, February 2009, 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

None

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 EMI test facilities

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 August 27 to September 11, 2009.

The sample BlackBerry® smartphones tested were:

SAMPLE	MODEL	CER NUMBER	PIN
1	RCL21CW	CER-27171-001 Rev 1	30D9ECAC
2	RCL21CW	CER-27171-001 Rev 1	30D9EABA
3	RCL21CW	CER-27171-001 Rev 1	30D9F068
4	RCL21CW	CER-27171-001 Rev 1	30D9EF53

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

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, Aglient, model 8960, Serial number US41070110
3) DC Power Supply, HP, model 6632B, serial number US37472178

E. Summary of Results

SPECIFICATION		TEST TYPE	RESULT	TEST DATA APPENDIX
FCC CFR 47	IC			
Part 2.1051 Part 22.917 Part 22.901(d)	RSS-GEN, 4.9	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
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 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 Loopback 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 Loopback 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 EUT was measured in Loopback 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 EUT was measured in Loopback 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 EUT was measured in Loopback 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 following 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 BlackBerry® smartphone was measured on the low, middle and high channels.

The following measurements were performed on BlackBerry® smartphone PIN 30D9ECAC.

The highest ERP measured in the Cellular band, Loopback Service mode, was 26.45 dBm (0.44 W) at 824.70 MHz (channel 1013).

The highest ERP measured in the Cellular band, 1xEVDO mode, was 28.18 dBm (0.66 W) at 836.52 MHz (channel 384).

The highest EIRP measured in the PCS band, Loopback Service mode, was 26.55 dBm (0.45 W) at 1851.25 MHz (channel 25).

The highest EIRP measured in the PCS band, 1xEVDO mode, was 26.36 dBm (0.43 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 21.79 dB below the limit at 2544.876 MHz.

The worst test margin in the PCS band harmonic emissions measured was 20.62 dB below the limit at 9257.490 MHz.

Co-Location Measurements

The radiated emissions were measured up to 18 GHz for middle channels for simultaneous transmission in the following test configuration combinations: Cellular/Bluetooth/802.11b and PCS/Bluetooth/802.11b.

Both the horizontal and vertical polarizations were measured. The emissions due to different simultaneous transmission did not increase the amplitude of any emissions nor did it produce any new inter-modulation products as a result of mixing.

Sample Calculation:

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

Measurement Uncertainty ±4.0 dB

To view the test data see APPENDIX 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	10-05-08	Radiated Emissions
Preamplifier	Rohde & Schwarz	TS-ANA-SP	001	10-03-31	Radiated Emissions
Hybrid Log Antenna	TDK	HLP-3003C	017301	09-10-24	Radiated Emissions
Horn Antenna	TDK	HRN-0118	030101	10-07-22	Radiated Emissions
Horn Antenna	TDK	HRN-0118	030201	11-03-17	Radiated Emissions
Horn Antenna	ETS-Lindgren	3117	47653	11-07-15	Radiated Emissions
Horn Antenna	CMT	LHA 0180	R52734-001	09-12-17	Radiated Emissions
Preamplifier	TDK	18-26	030002	09-11-07	Radiated Emissions
Dipole Antenna	Schwarzbeck	UHAP	1018	11-03-12	Radiated Emissions
Dipole Antenna	Schwarzbeck	UHAP	974	11-10-16	Radiated Emissions
EMC Analyzer	Agilent	E7405A	US40240226	09-10-01	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	837493/073	09-12-08	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	112394	09-12-07	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	102204	09-12-06	RF Conducted Emissions
Universal Radio Communication Tester	Agilent	8960	MY47510358	11-03-06	Frequency Stability, RF Conducted Emissions
EMI Receiver	Rohde & Schwarz	ESIB-40	100255	09-12-02	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	230355190	10-02-12	Radiated Emissions
Environment Monitor	Control Company	1870	230355189	10-02-12	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	10-05-01	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	09-10-10	Radiated Emissions
Power Meter	Agilent	N1911A	MY45100905	11-01-05	Frequency Stability
Power Sensor	Agilent	N1921A	SG45240281	10-05-08	Frequency Stability

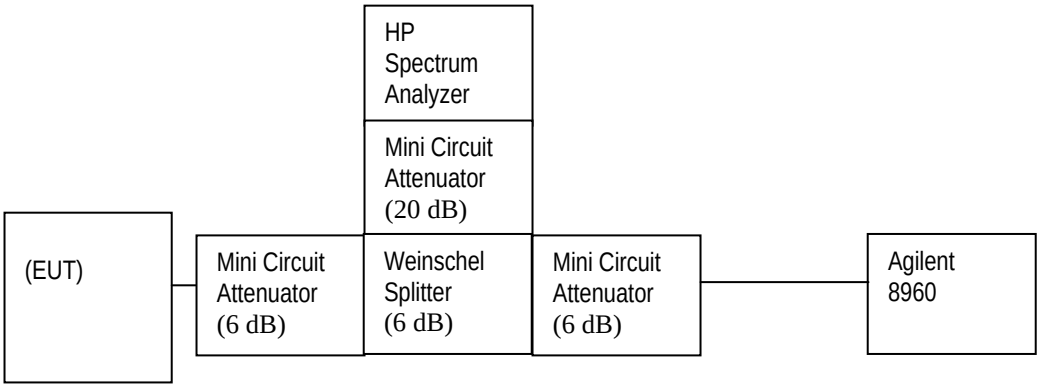
APPENDIX 1 - CONDUCTED RF EMISSIONS TEST DATA/PLOTS

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 PIN 30D9EF53.

The measurements were performed by Maurice Battler.

Test Setup Diagram



Date of Test: September 01, 2009

The environmental test conditions were:		
	Temperature	21 ºC
	Pressure	1025 mb
	Relative Humidity	32 %

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 to 12 for the plots of the conducted spurious emissions.

Test Data for Cellular and PCS selected Frequencies in Loopback mode

Cellular Frequency (MHz)	99% Occupied Bandwidth (MHz)
824.700	1.287
836.520	1.273
848.310	1.280

PCS Frequency (MHz)	99% Occupied Bandwidth (MHz)
1851.200	1.280
1880.000	1.280
1908.750	1.273

Measurement Plots for Cellular and PCS in Loopback 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

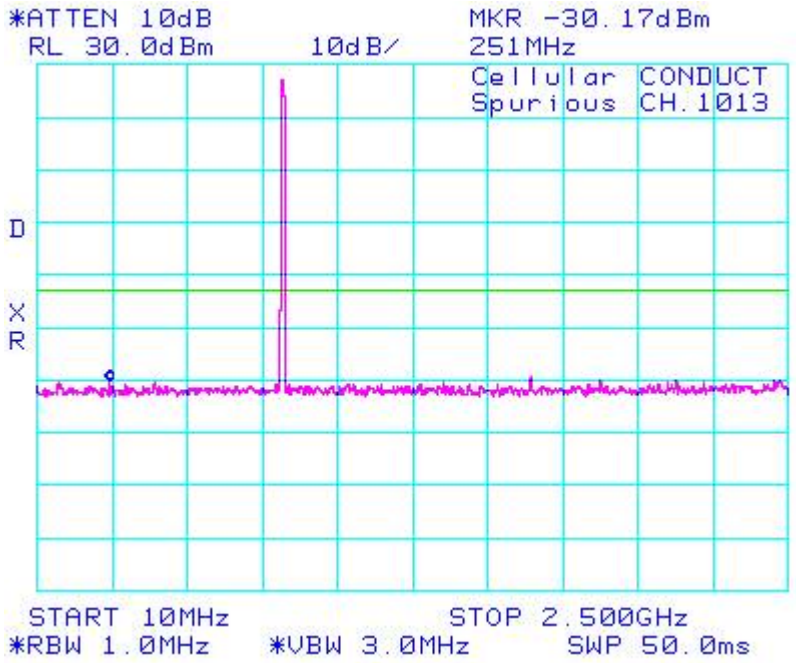
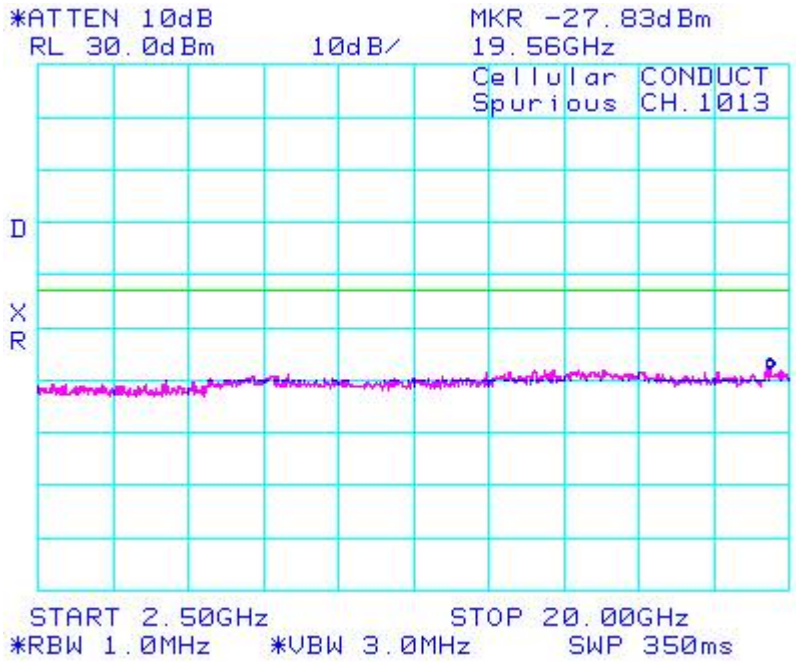


Figure 2: Cellular, Spurious Conducted Emissions, Low channel



Conducted Emission Test Results cont'd

Figure 3: Cellular, Spurious Conducted Emissions, Middle Channel

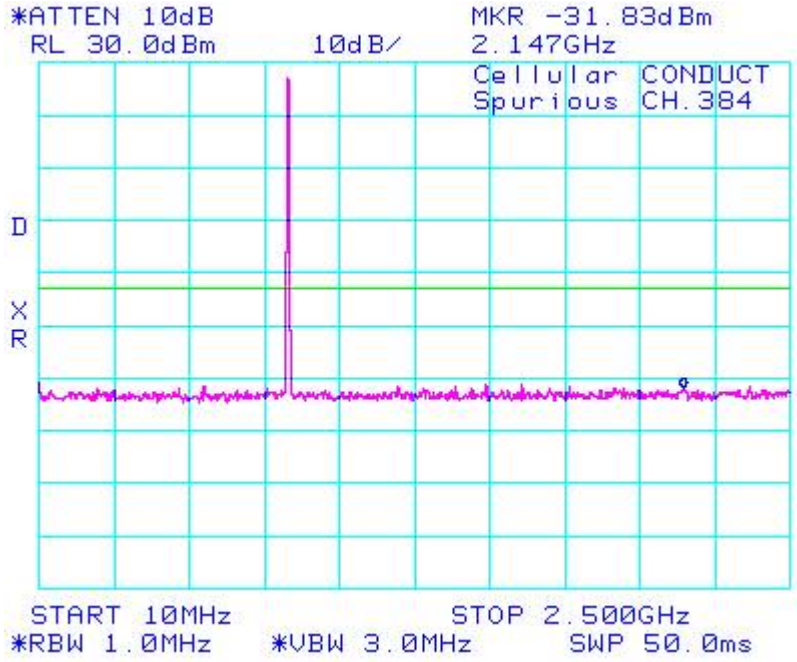
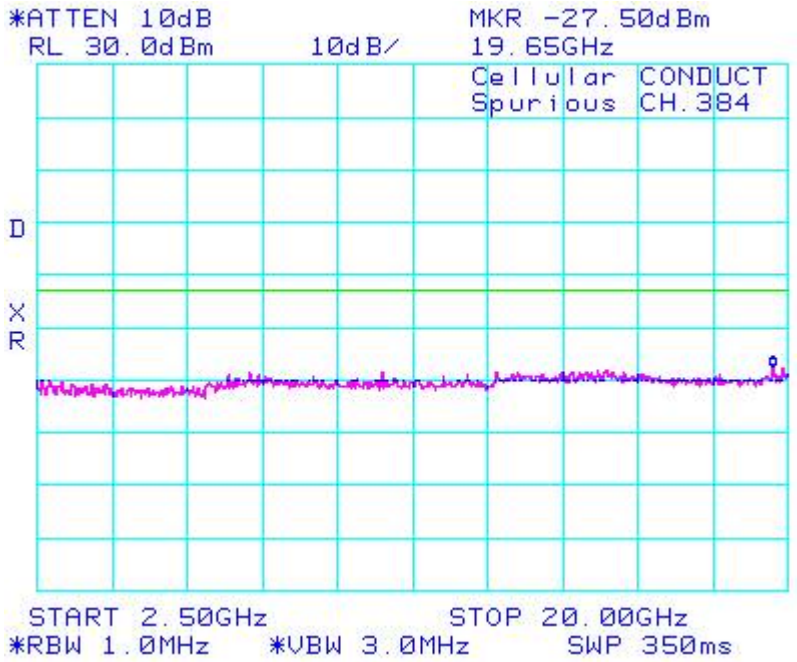


Figure 4: Cellular, Spurious Conducted Emissions, Middle Channel



Conducted Emission Test Results cont'd

Figure 5: Cellular, Spurious Conducted Emissions, High Channel

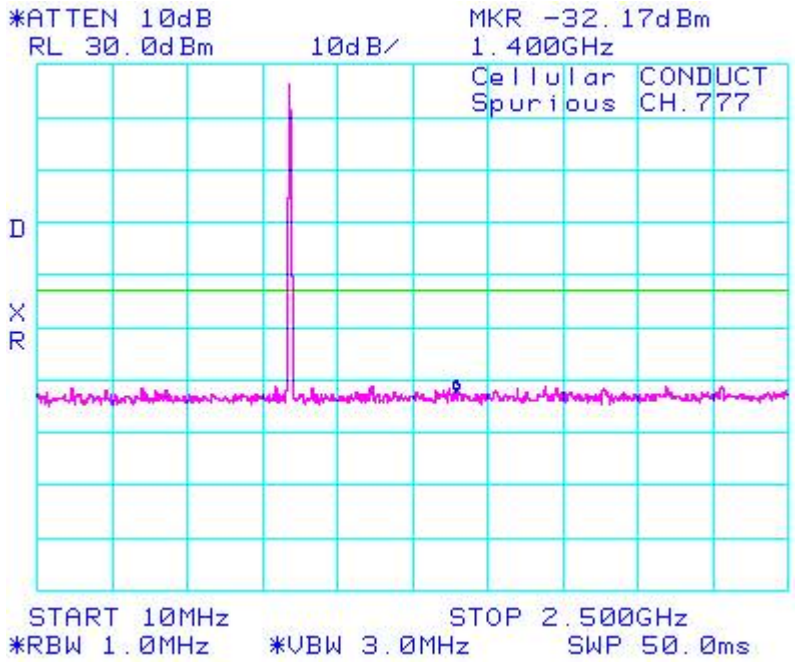
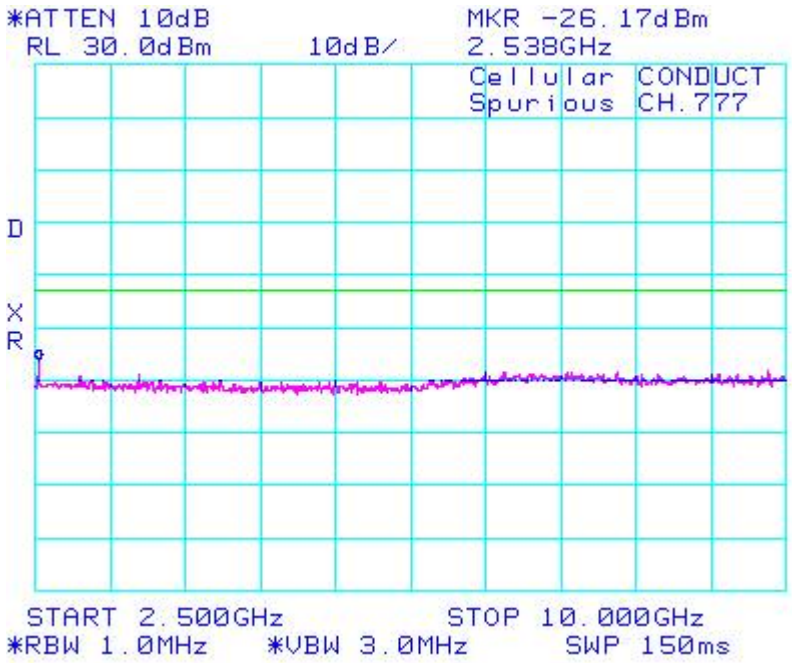


Figure 6: Cellular, Spurious Conducted Emissions, High Channel



Conducted Emission Test Results cont'd

Figure 7: PCS, Spurious Conducted Emissions, Low Channel

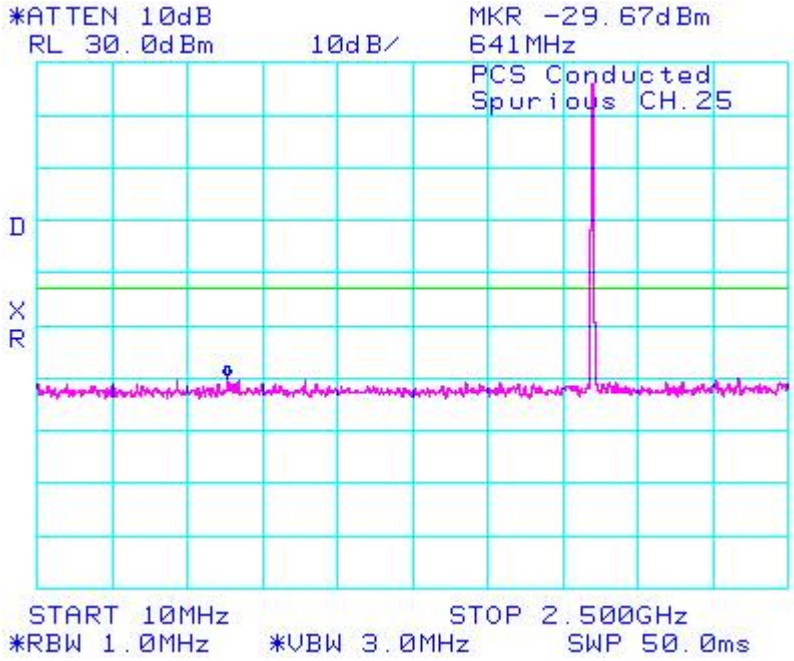
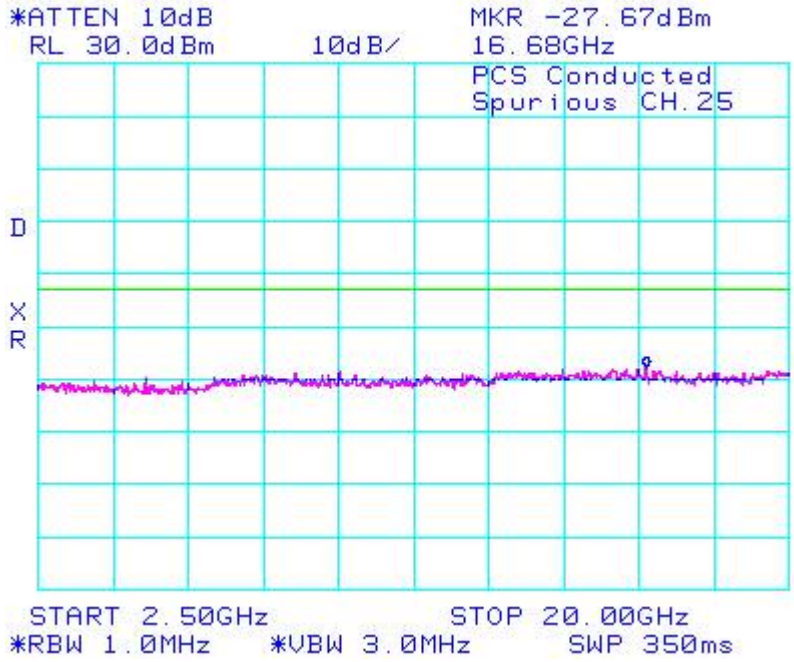


Figure 8: PCS, Spurious Conducted Emissions, Low Channel



Conducted Emission Test Results cont'd

Figure 9: PCS, Spurious Conducted Emissions, Middle Channel

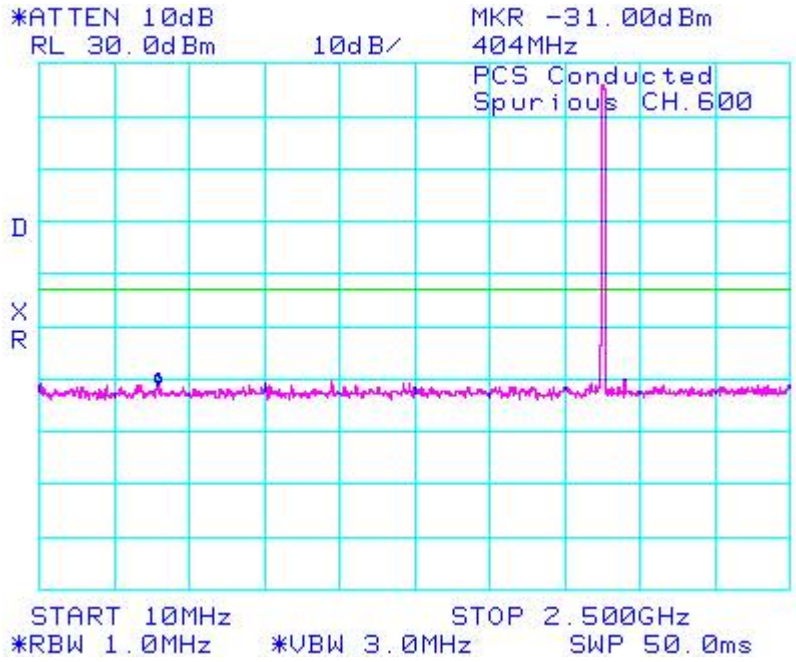
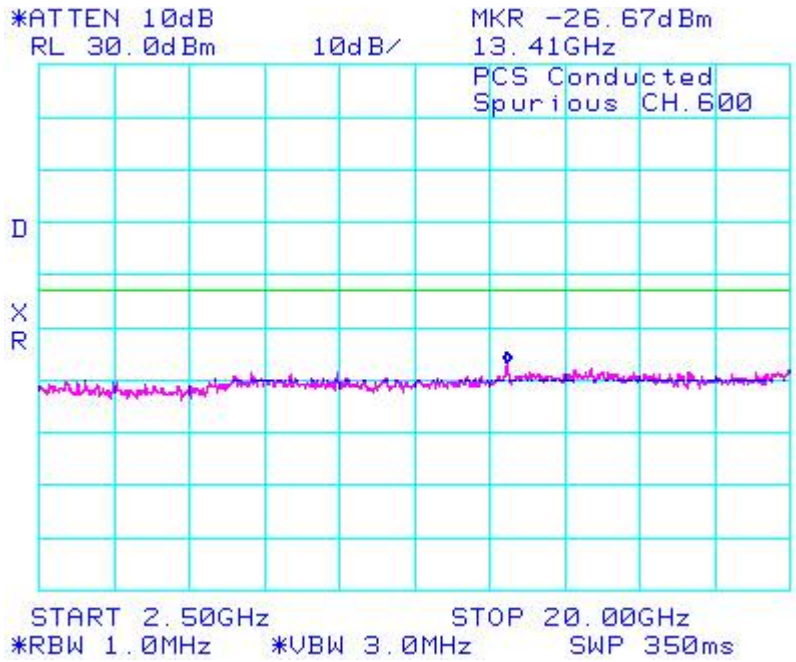


Figure 10: PCS, Spurious Conducted Emissions, Middle Channel



Conducted Emission Test Results cont'd

Figure 11: PCS, Spurious Conducted Emissions, High Channel

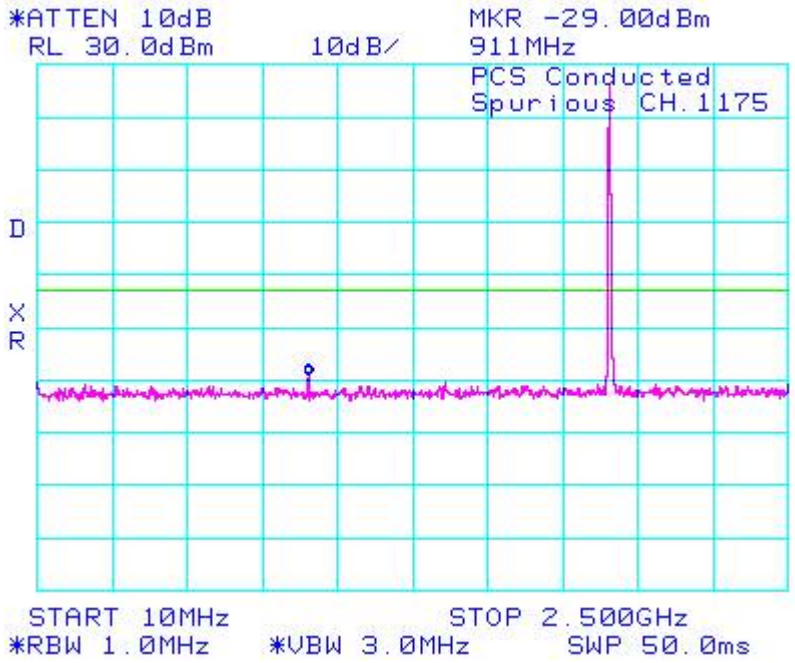
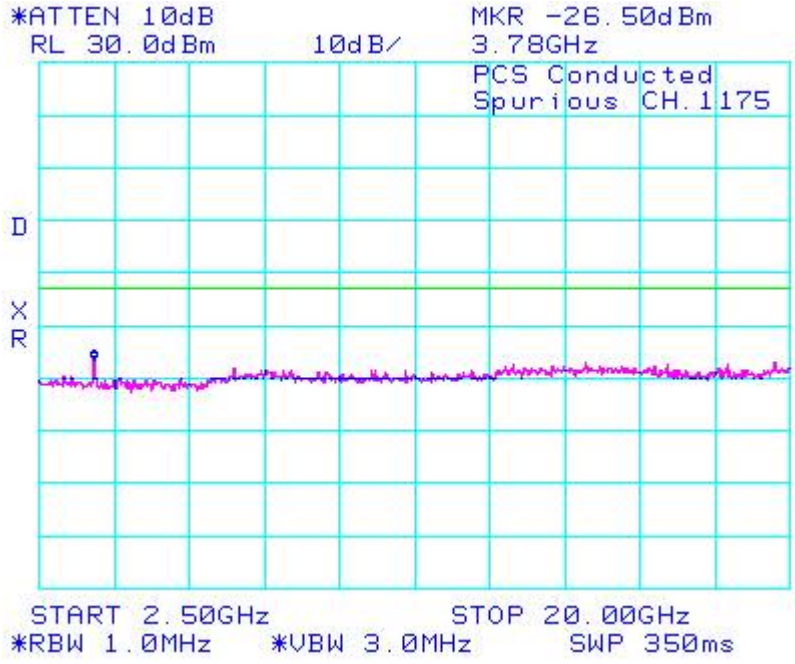


Figure 12: PCS, Spurious Conducted Emissions, High Channel



Conducted Emission Test Results cont'd

Figure 13: Occupied Bandwidth, Cellular Low Channel

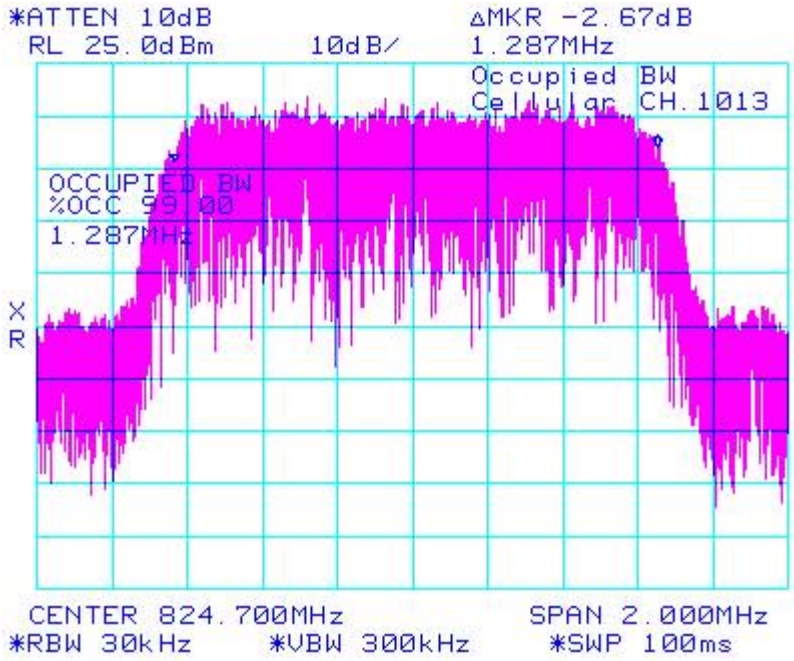
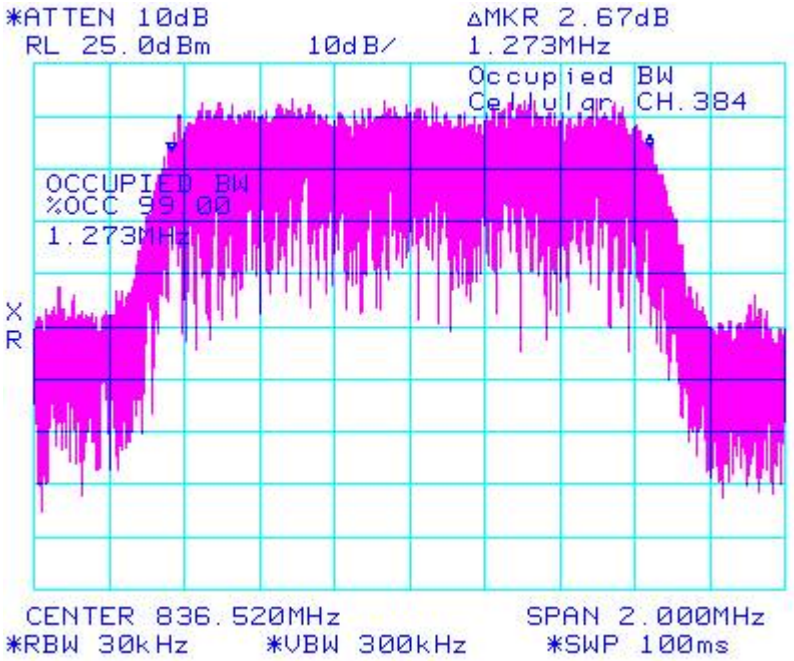


Figure 14: Occupied Bandwidth, Cellular Middle Channel



Conducted Emission Test Results cont'd

Figure 15: Occupied Bandwidth, Cellular High Channel

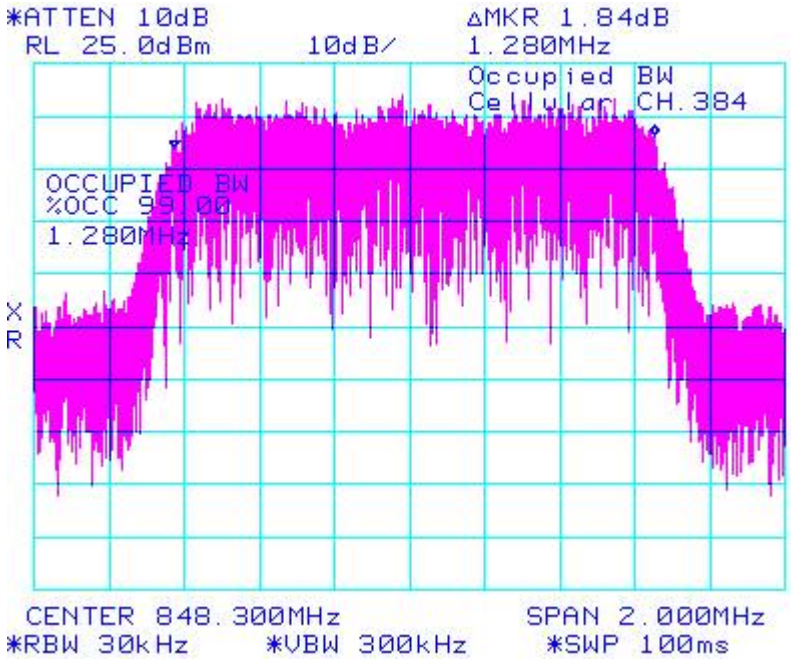
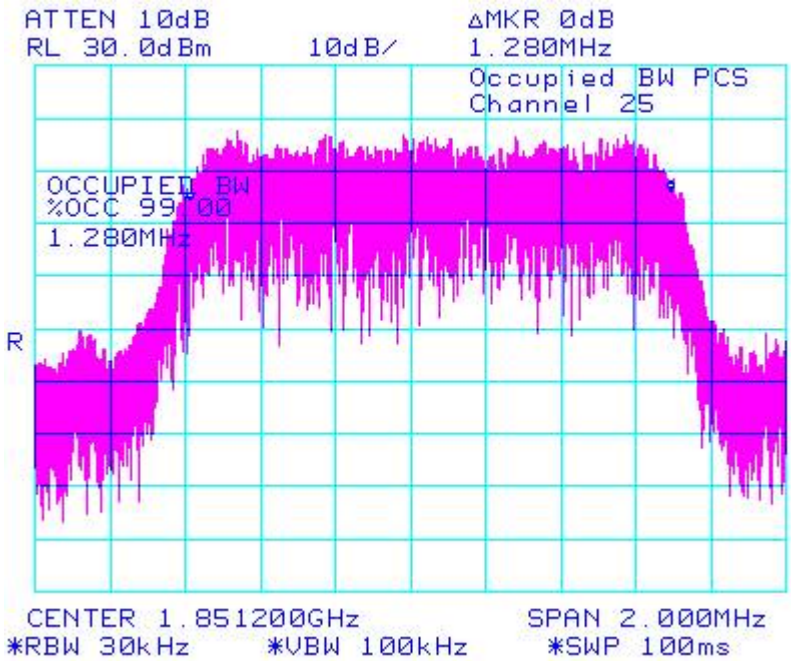


Figure 16: Occupied Bandwidth, PCS Low Channel



Conducted Emission Test Results cont'd

Figure 17: Occupied Bandwidth, PCS Middle Channel

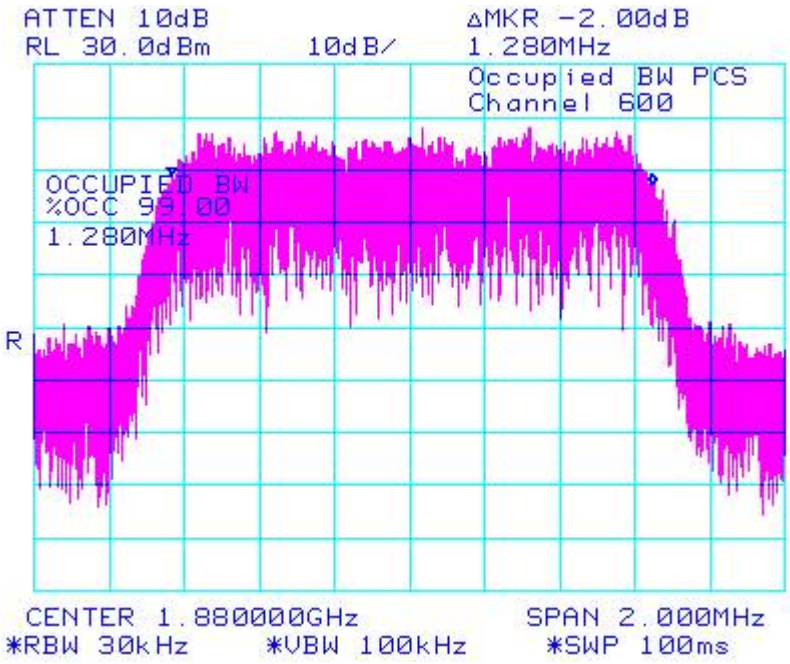
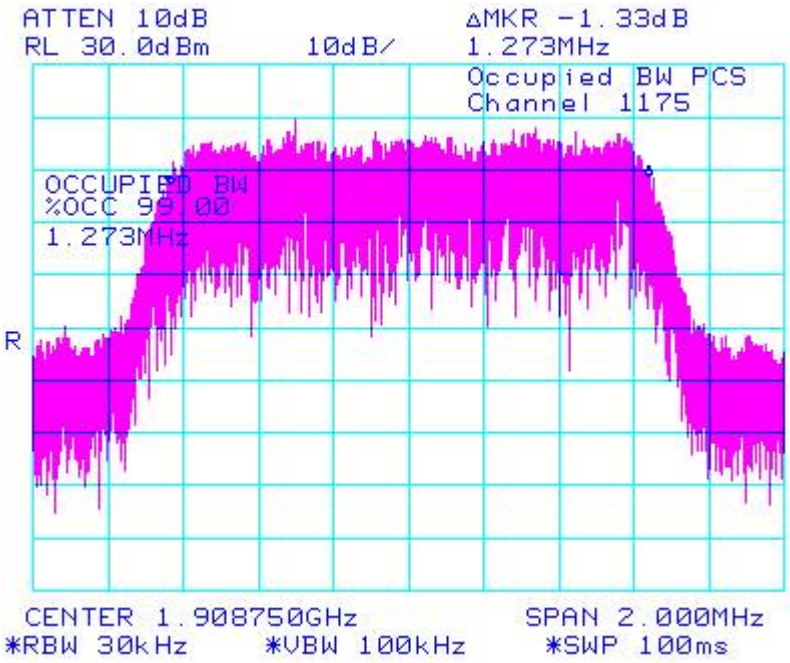


Figure 18: Occupied Bandwidth, PCS High Channel



Conducted Emission Test Results cont'd

Figure 19a: Cellular Loopback, Low Channel Mask

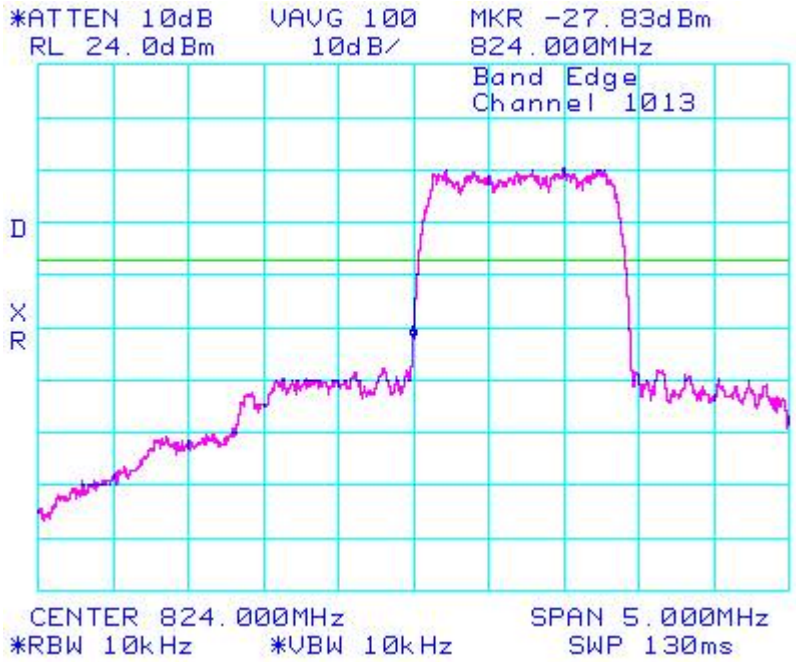
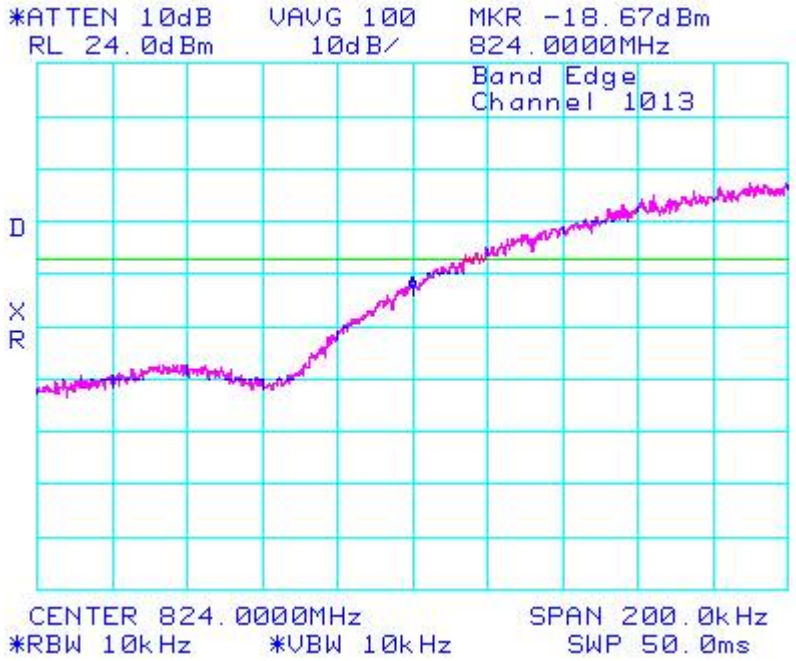


Figure 19b: Cellular Loopback, Low Channel Mask



Conducted Emission Test Results cont'd

Figure 20a: Cellular Loopback, High Channel Mask

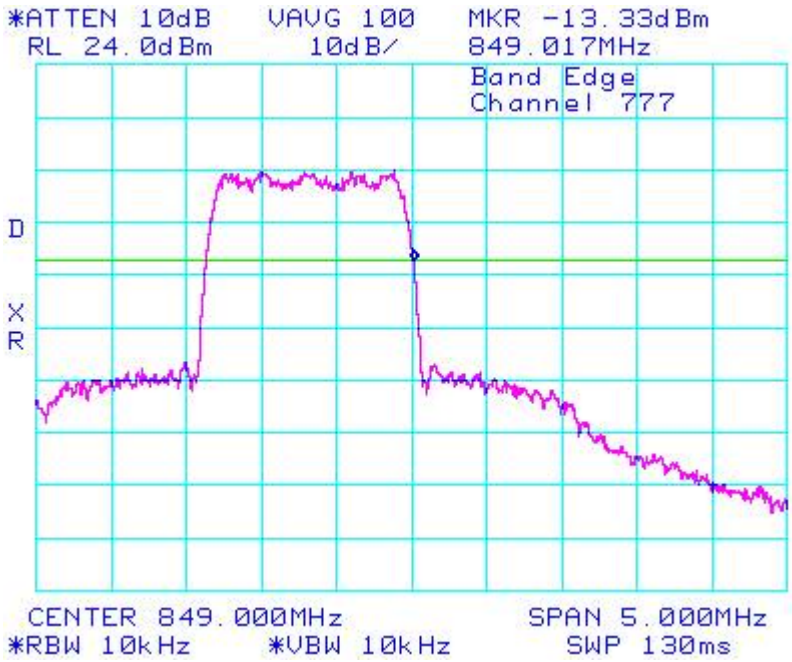
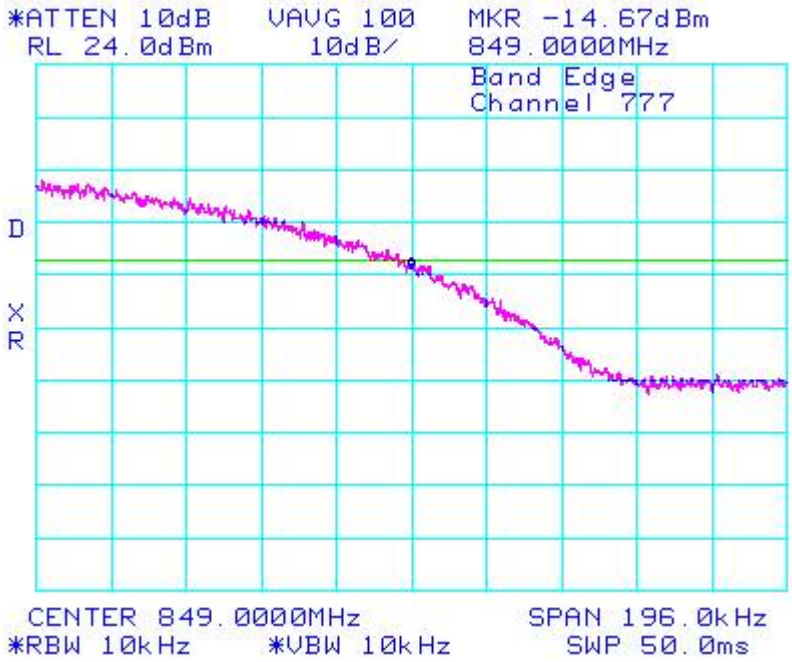


Figure 20b: Cellular Loopback, Low Channel Mask



Conducted Emission Test Results cont'd

Figure 21: PCS, Low Channel Mask

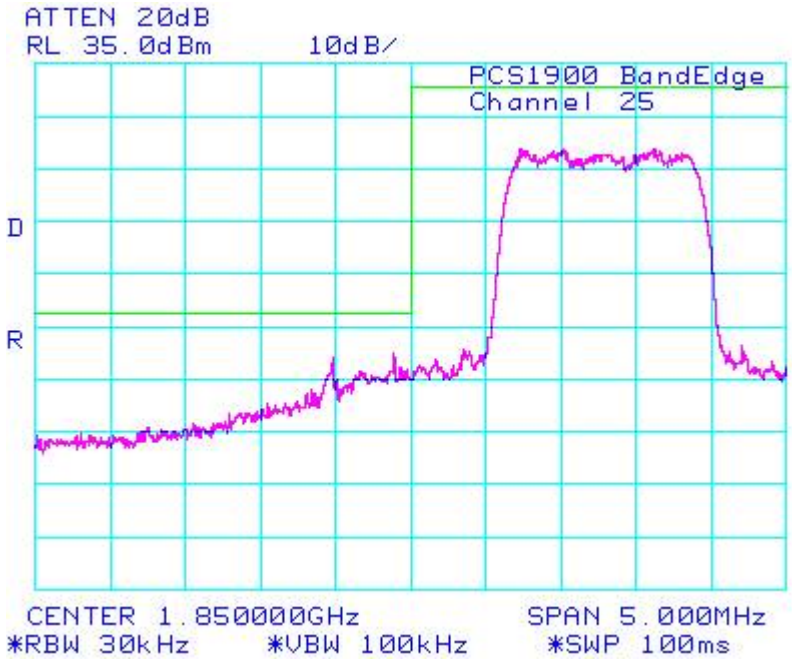
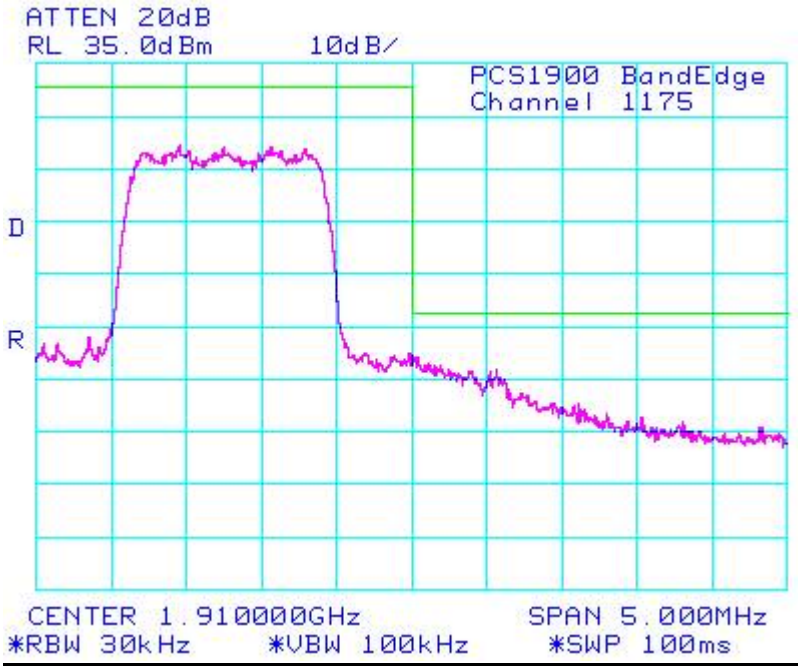


Figure 22: PCS, High Channel Mask



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. The EUT emissions were in the NF.
See figures 23 to 34 for the plots of the conducted spurious emissions.
Date of Test: September 02, 2009

The environmental test conditions were:

Temperature	22 ºC
Pressure	1024 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	1.280
1880.000	1.280
1908.750	1.280

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

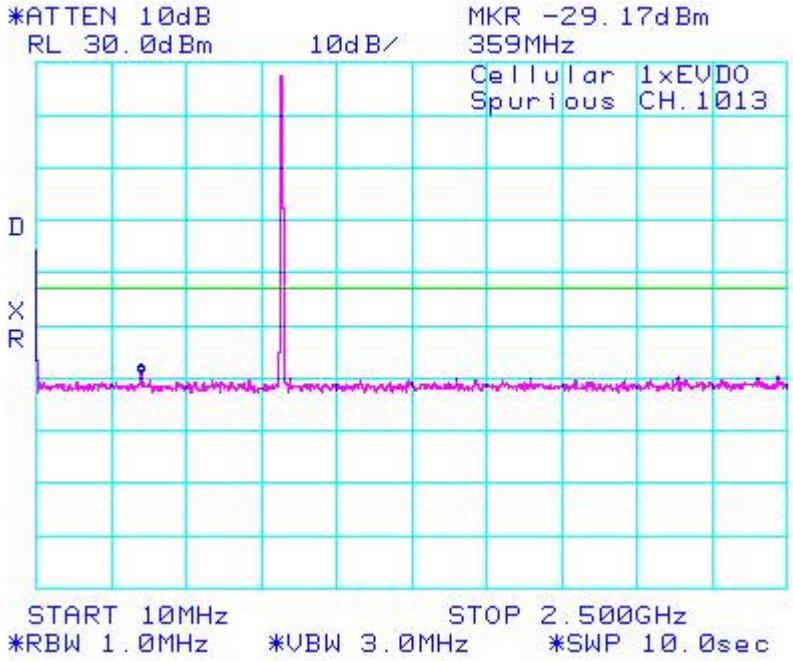
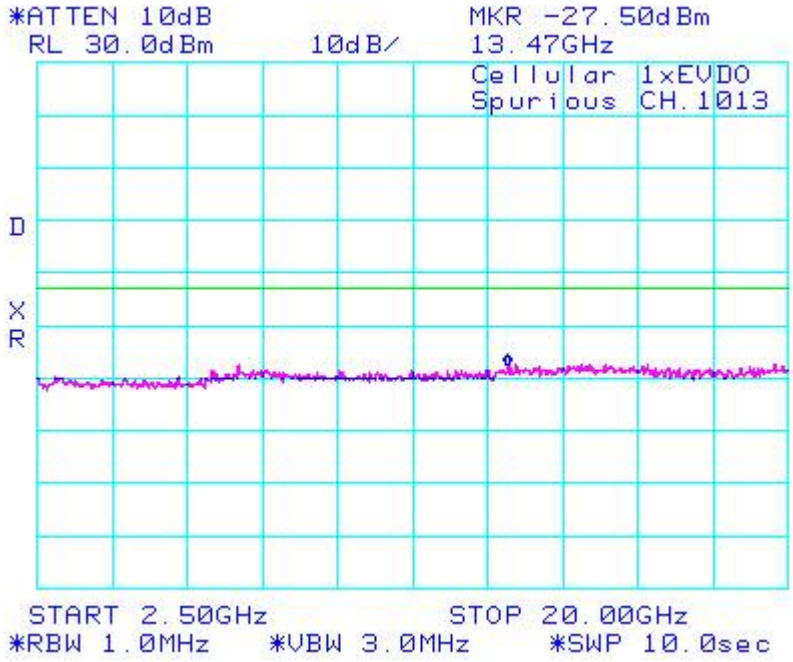


Figure 24: Cellular, Spurious Conducted Emissions, Low channel



Conducted Emission Test Results cont'd

Figure 25: Cellular, Spurious Conducted Emissions, Middle Channel

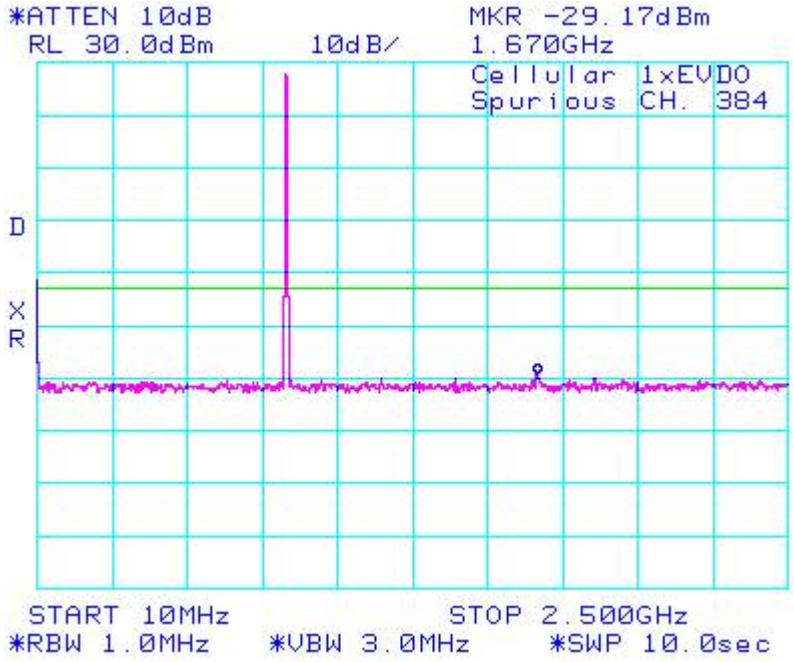
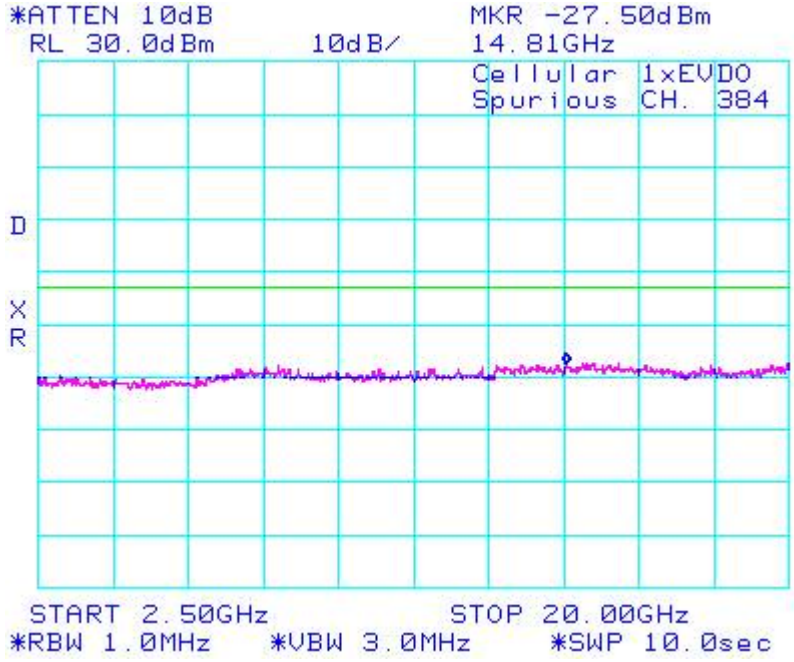


Figure 26: Cellular, Spurious Conducted Emissions, Middle Channel



Conducted Emission Test Results cont'd

Figure 27: Cellular, Spurious Conducted Emissions, High Channel

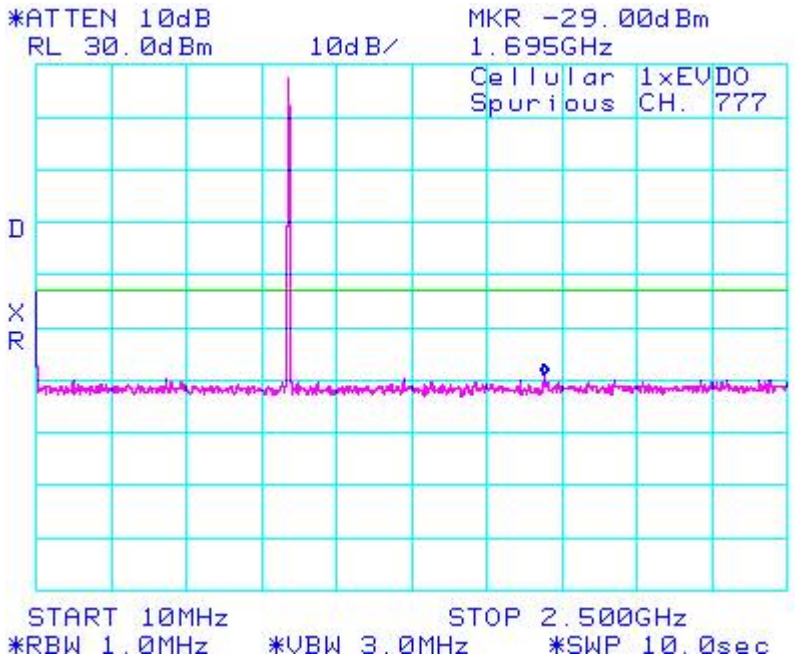
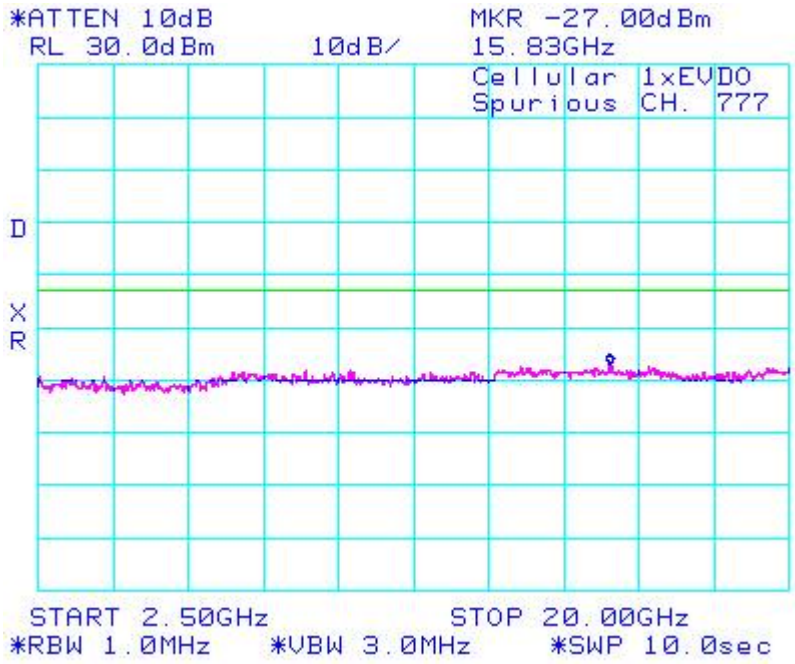


Figure 28: Cellular, Spurious Conducted Emissions, High Channel



Conducted Emission Test Results cont'd

Figure 29: PCS, Spurious Conducted Emissions, Low Channel

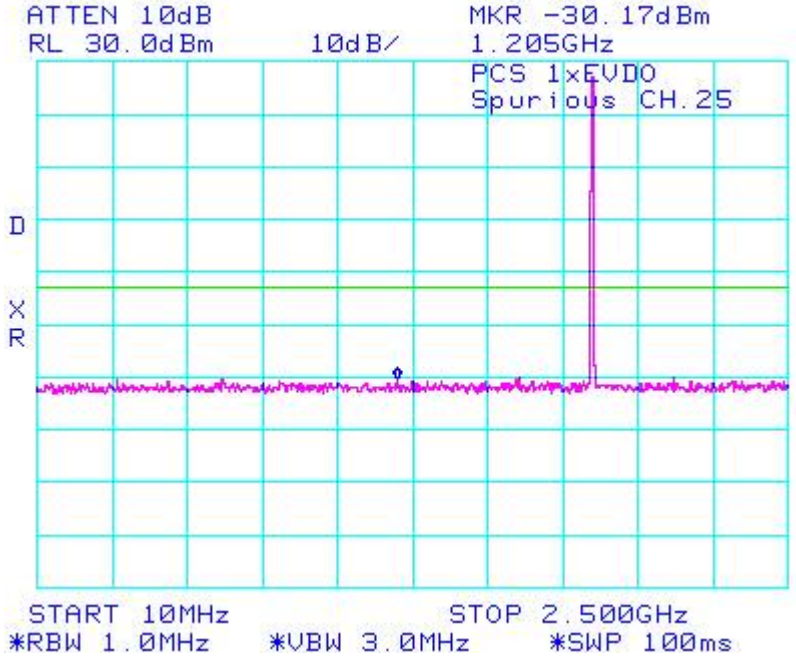
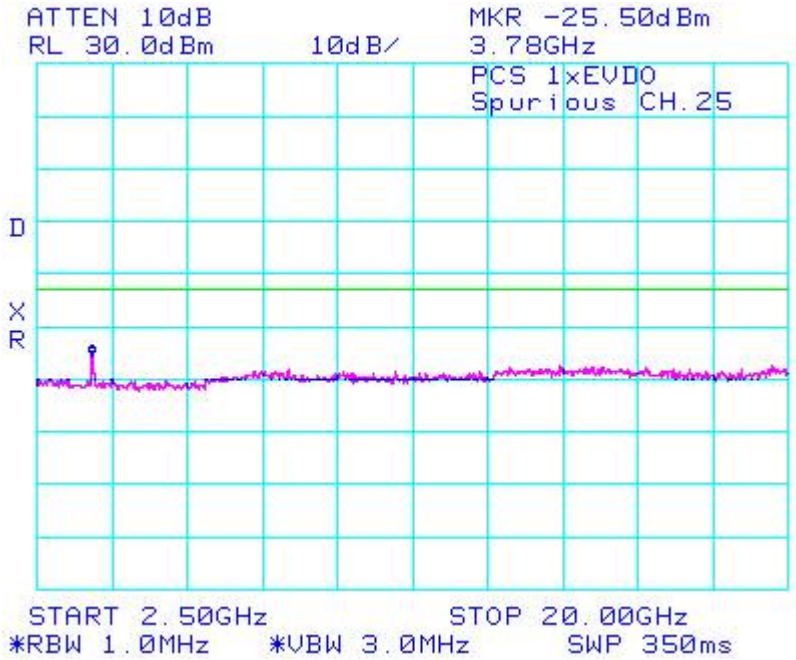


Figure 30: PCS, Spurious Conducted Emissions, Low Channel



Conducted Emission Test Results cont'd

Figure 31: PCS, Spurious Conducted Emissions, Middle Channel

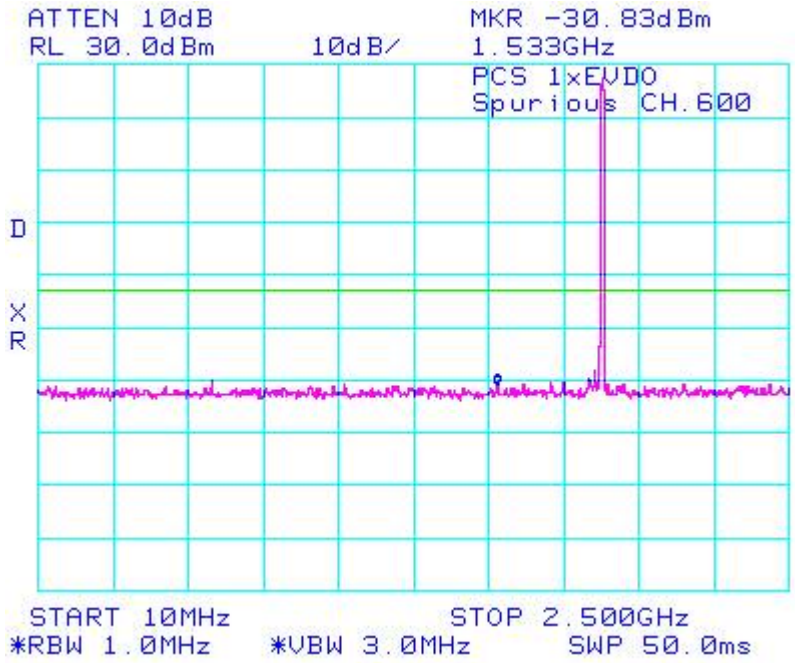
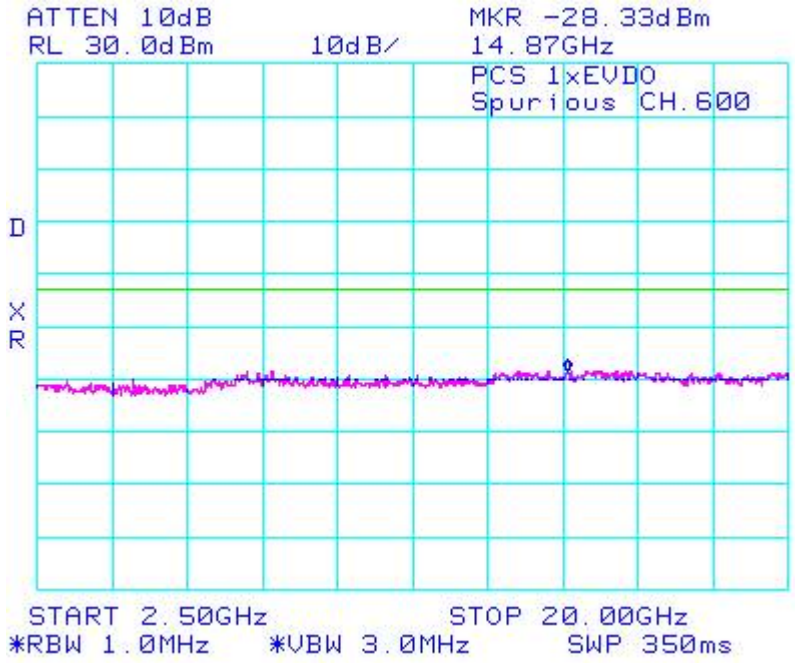


Figure 32: PCS, Spurious Conducted Emissions, Middle Channel



Conducted Emission Test Results cont'd

Figure 33: PCS, Spurious Conducted Emissions, High Channel

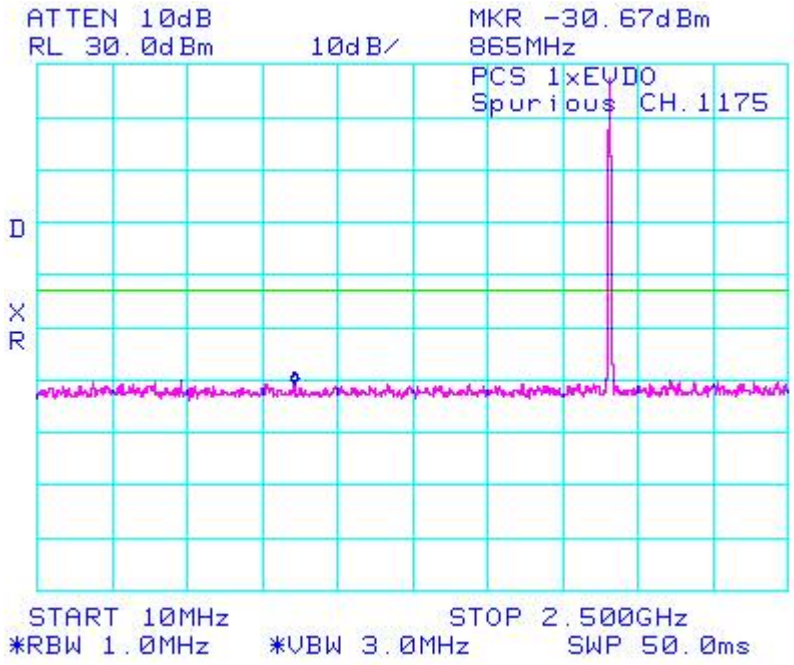
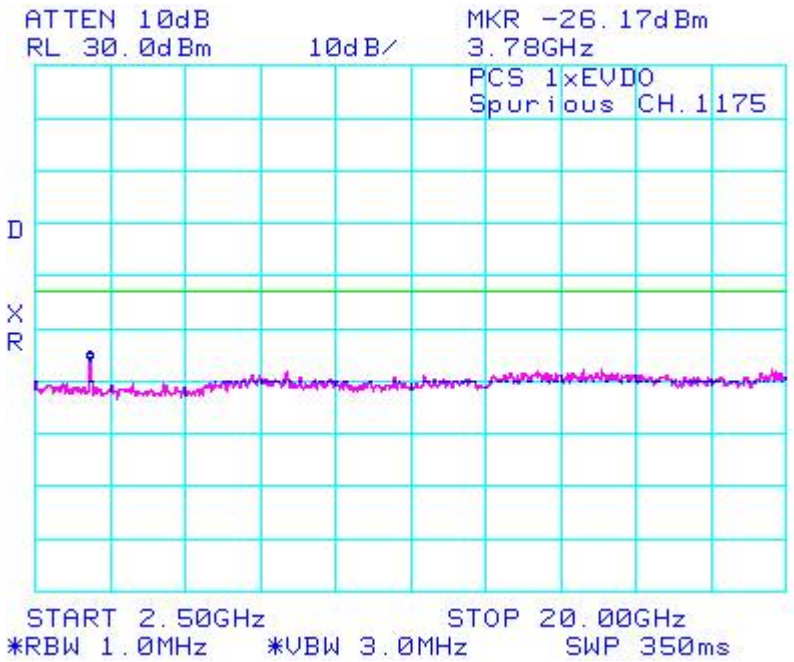


Figure 34: PCS, Spurious Conducted Emissions, High Channel



Conducted Emission Test Results cont'd

Figure 35: Occupied Bandwidth, Cellular Low Channel

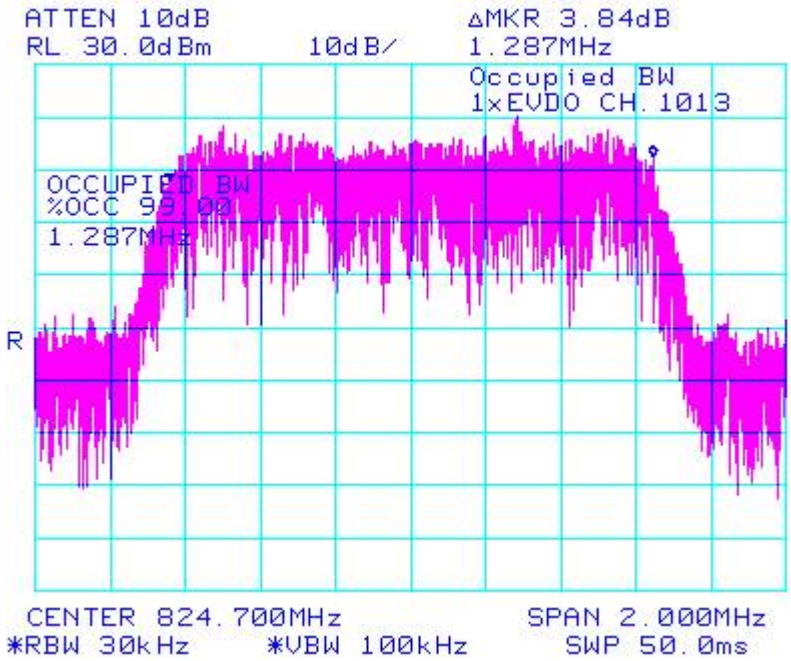
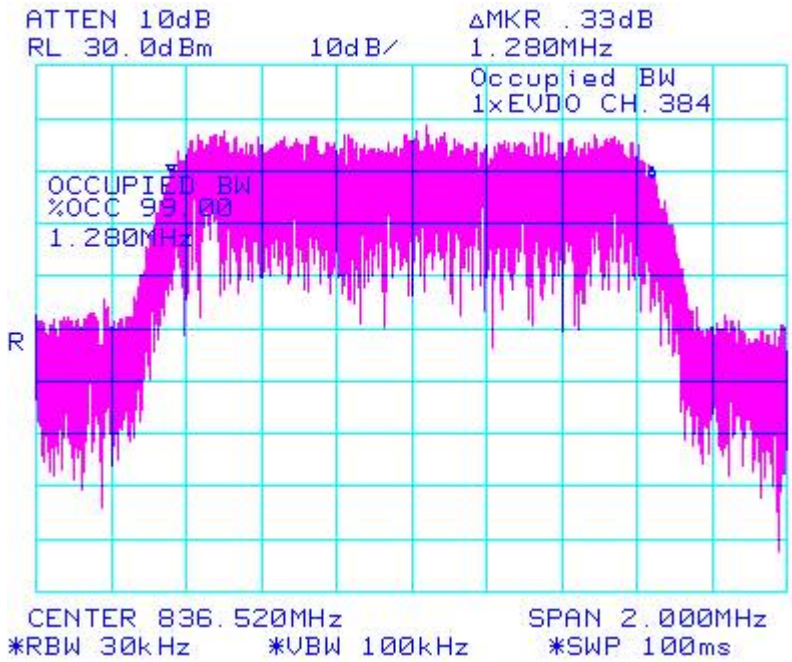


Figure 36: Occupied Bandwidth, Cellular Middle Channel



Conducted Emission Test Results cont'd

Figure 37: Occupied Bandwidth, Cellular High Channel

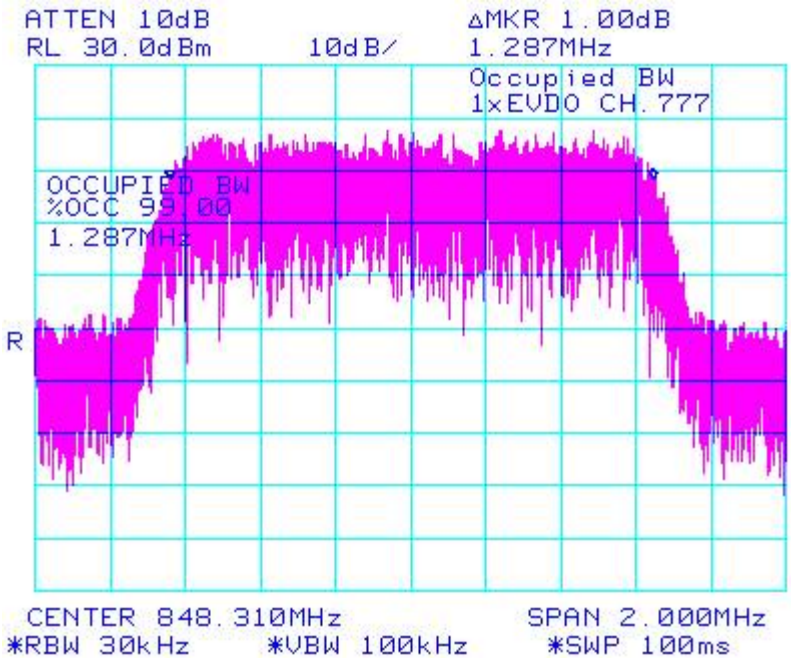
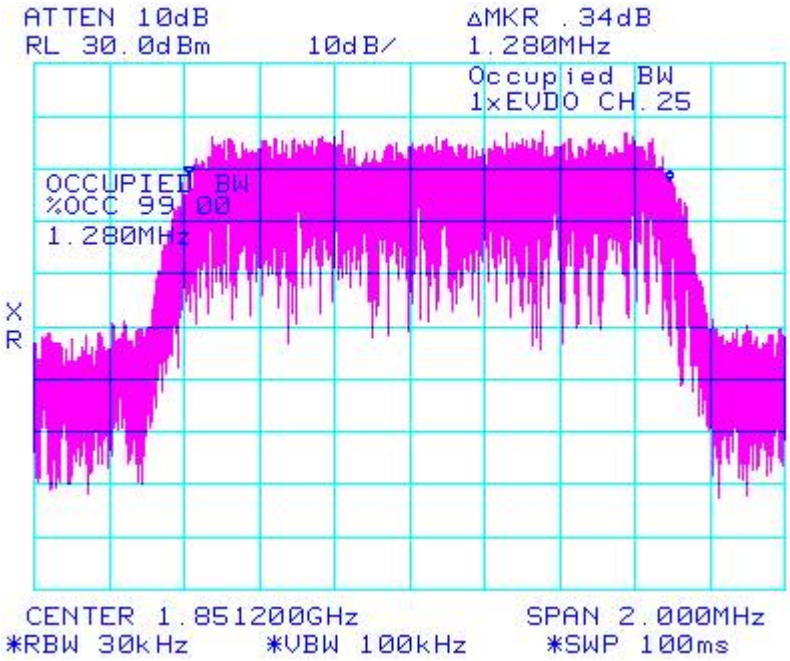


Figure 38: Occupied Bandwidth, PCS Low Channel



Conducted Emission Test Results cont'd

Figure 39: Occupied Bandwidth, PCS Middle Channel

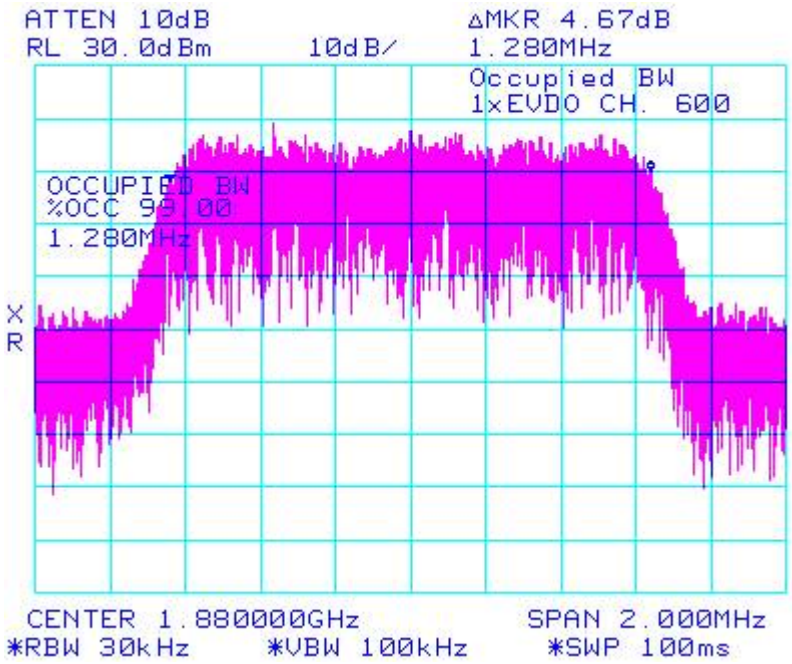
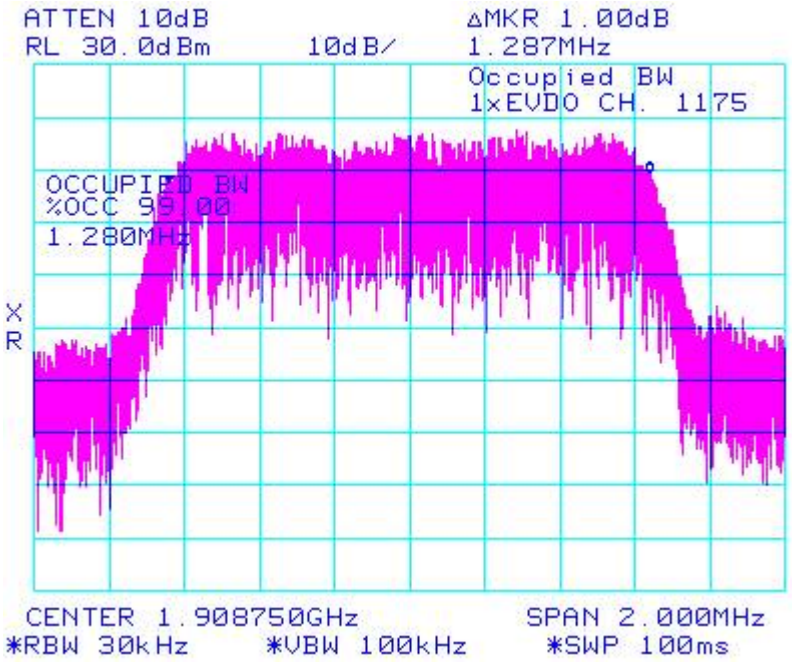


Figure 40: Occupied Bandwidth, PCS High Channel



Conducted Emission Test Results cont'd

Figure 41a: Cellular 1xEVDO, Low Channel Mask

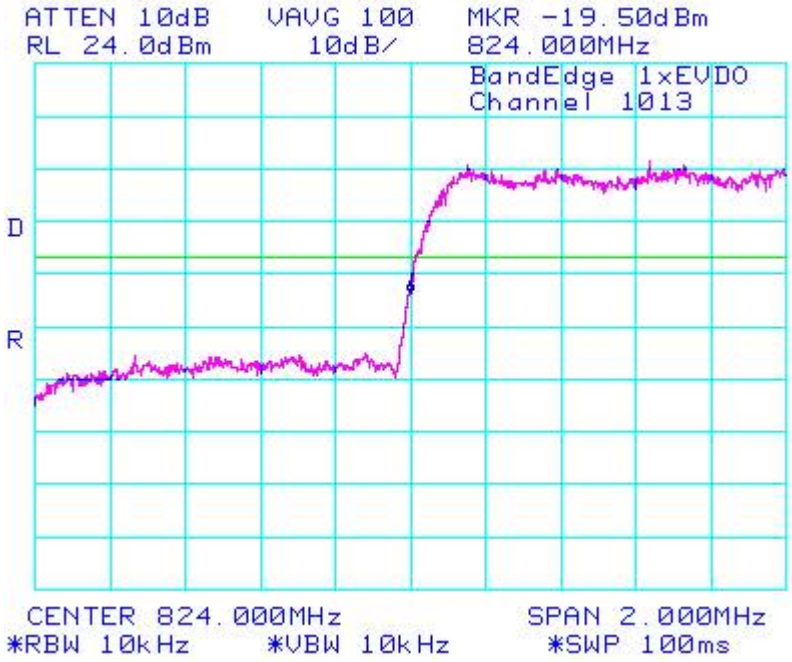
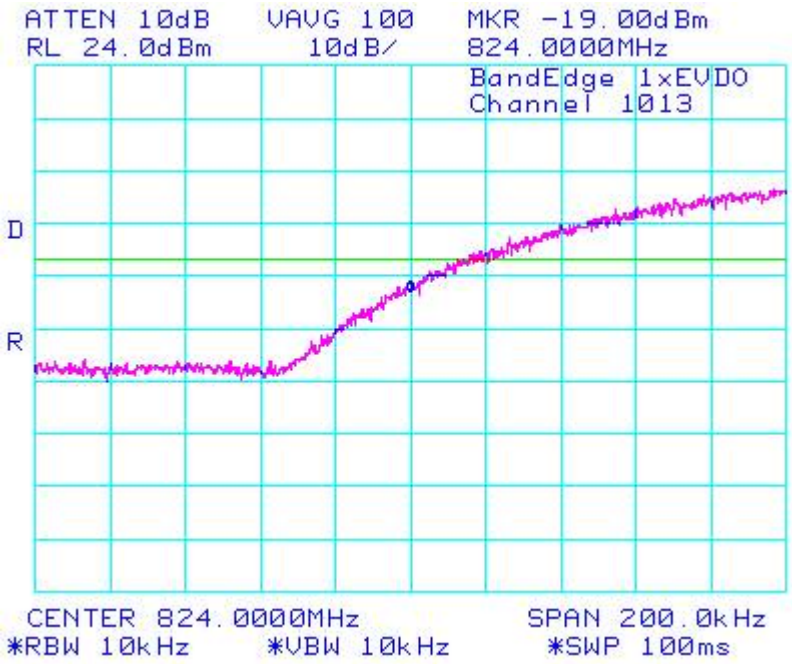


Figure 41b: Cellular 1xEVDO, Low Channel Mask



Conducted Emission Test Results cont'd

Figure 42a: Cellular 1xEVDO, High Channel Mask

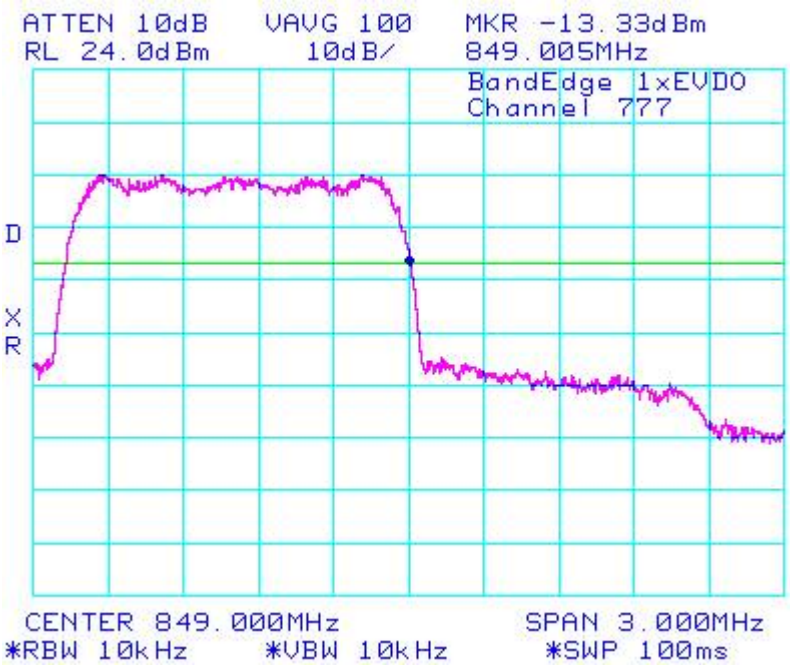
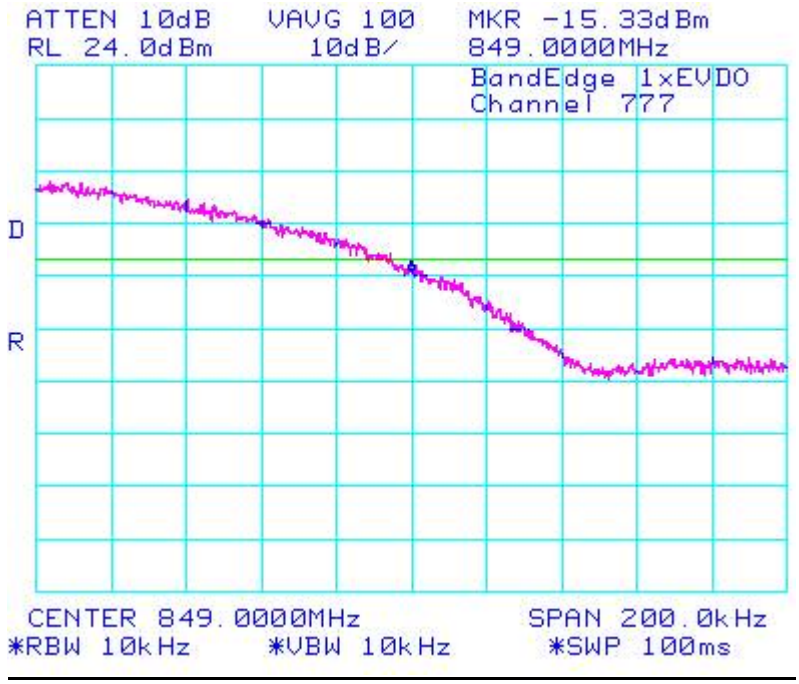


Figure 42b: Cellular 1xEVDO, High Channel Mask



Conducted Emission Test Results cont'd

Figure 43: PCS, Low Channel Mask

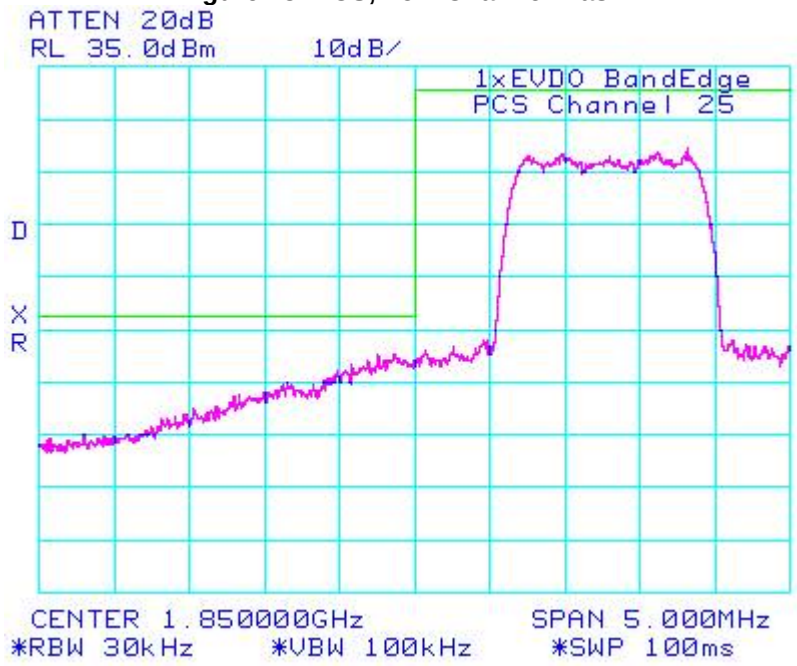
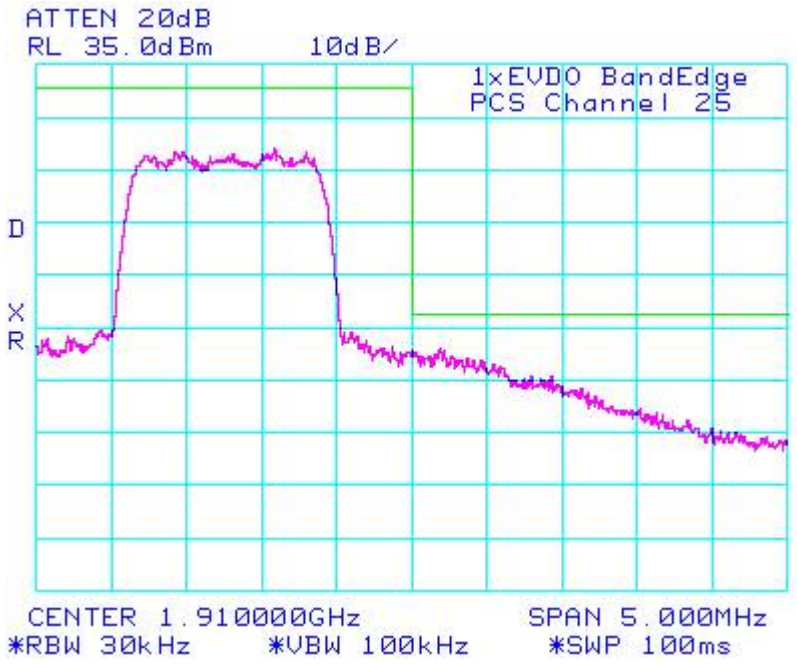


Figure 44: PCS, High Channel Mask



APPENDIX 2 – CONDUCTED RF OUTPUT POWER TEST DATA

Conducted RF Output Power Test Data

The measurements were performed by Daoud Attayi on BlackBerry® smartphone PIN 30D9F068.

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

Date of Test: September 11, 2009
The environmental test conditions were:

Temperature	24 ºC
Pressure	1024 mb
Relative Humidity	39 %

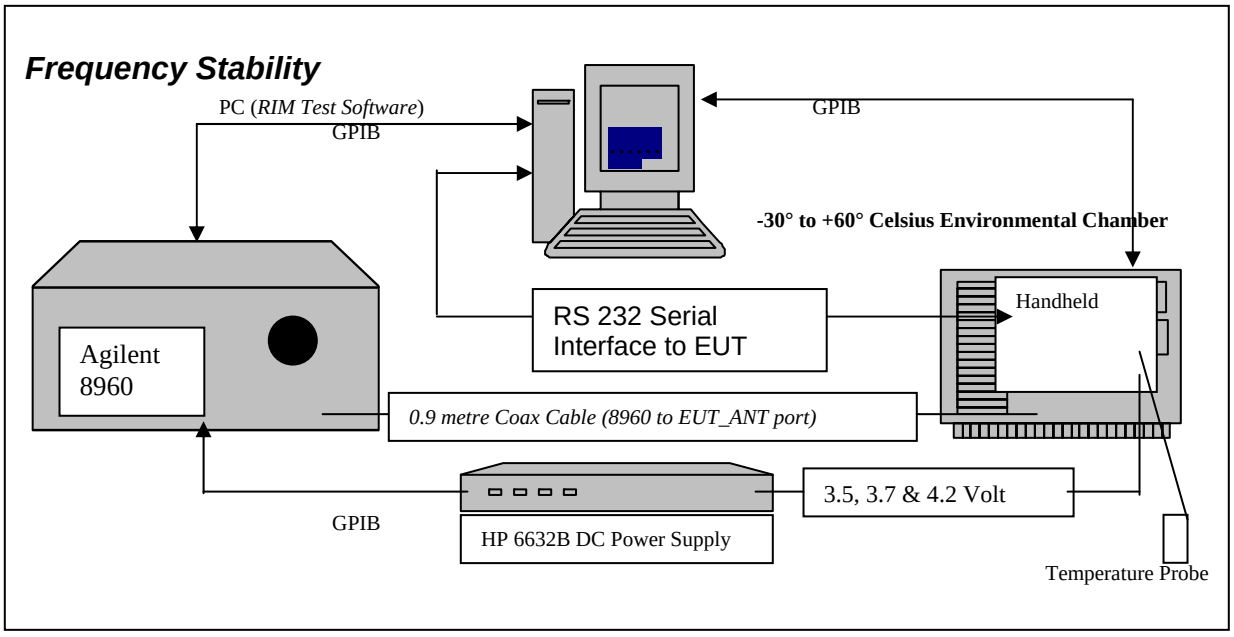
Test Results

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	24.0	0.25	RC1	24.2	0.26	24.2	0.26	-	-
				RC3	24.2	0.26	24.1	0.26	24.1	0.26
	384	23.5	0.22	RC1	23.8	0.24	23.8	0.24	-	-
				RC3	23.8	0.24	23.8	0.24	23.8	0.24
	777	23.6	0.23	RC1	23.9	0.25	23.8	0.24	-	-
				RC3	23.9	0.25	23.8	0.24	23.9	0.25

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	23.4	0.22	RC1	23.5	0.22	23.5	0.22	-	-
				RC3	23.5	0.22	23.4	0.22	23.4	0.22
	600	23.5	0.22	RC1	23.6	0.23	23.7	0.23	-	-
				RC3	23.6	0.23	23.7	0.23	23.6	0.23
	1175	23.3	0.21	RC1	23.6	0.23	23.5	0.22	-	-
				RC3	23.5	0.22	23.5	0.22	23.3	0.21

APPENDIX 3 – FREQUENCY STABILITY TEST DATA

Frequency Stability Test Data



CFR 47 Chapter 1 - Federal Communications Commission Rules

Part 2 Required Measurements
2.1055 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 RCL21CW 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-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 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	1.10
1880.00	1.10
1908.75	1.10

Cellular Frequency (MHz)	Cable loss (dB)
824.70	0.50
836.52	0.50
848.31	0.50

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 **0.0237 PPM.**
The maximum frequency error in the PCS band measured was **-0.0131 PPM**.

Date of test: September 03, 2009

The measurements were performed by Maurice Battler on BlackBerry® smartphone PIN 30D9EF53.

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	-0.83	-0.0010
384	836.520	3.6	20	3.51	0.0042
777	848.310	3.6	20	1.29	0.0015

Traffic Channel Number	Cellular Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1013	824.700	3.7	20	-1.27	-0.0015
384	836.520	3.7	20	-1.68	-0.0020
777	848.310	3.7	20	-0.76	-0.0009

Traffic Channel Number	Cellular Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1013	824.700	4.2	20	0.44	0.0005
384	836.520	4.2	20	-1.50	-0.0018
777	848.310	4.2	20	-1.79	-0.0021

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	-7.17	-0.0087
1013	824.700	3.6	-20	-2.06	-0.0025
1013	824.700	3.6	-10	-2.61	-0.0032
1013	824.700	3.6	0	-0.56	-0.0007
1013	824.700	3.6	10	0.23	0.0003
1013	824.700	3.6	20	-0.83	-0.0010
1013	824.700	3.6	30	0.41	0.0005
1013	824.700	3.6	40	-1.18	-0.0014
1013	824.700	3.6	50	-3.92	-0.0047
1013	824.700	3.6	60	0.35	0.0004

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1013	824.700	3.7	-30	-10.04	-0.0122
1013	824.700	3.7	-20	-1.77	-0.0021
1013	824.700	3.7	-10	-9.99	-0.0121
1013	824.700	3.7	0	3.11	0.0038
1013	824.700	3.7	10	7.67	0.0093
1013	824.700	3.7	20	-1.27	-0.0015
1013	824.700	3.7	30	-2.07	-0.0025
1013	824.700	3.7	40	-0.36	-0.0004
1013	824.700	3.7	50	-1.07	-0.0013
1013	824.700	3.7	60	4.54	0.0055

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1013	824.700	4.2	-30	0.42	0.0005
1013	824.700	4.2	-20	0.15	0.0002
1013	824.700	4.2	-10	-1.03	-0.0012
1013	824.700	4.2	0	-0.25	-0.0003
1013	824.700	4.2	10	0.55	0.0007
1013	824.700	4.2	20	0.44	0.0005
1013	824.700	4.2	30	-0.52	-0.0006
1013	824.700	4.2	40	-1.22	-0.0015
1013	824.700	4.2	50	-0.28	-0.0003
1013	824.700	4.2	60	0.12	0.0001

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	-19.81	**-0.0237**
384	836.520	3.6	-20	-3.12	-0.0037
384	836.520	3.6	-10	-5.67	-0.0068
384	836.520	3.6	0	6.23	0.0074
384	836.520	3.6	10	14.47	0.0173
384	836.520	3.6	20	3.51	0.0042
384	836.520	3.6	30	-0.81	-0.0010
384	836.520	3.6	40	-0.30	-0.0004
384	836.520	3.6	50	1.24	0.0015
384	836.520	3.6	60	8.18	0.0098

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
384	836.520	3.7	-30	-9.02	-0.0108
384	836.520	3.7	-20	-1.54	-0.0018
384	836.520	3.7	-10	-10.26	-0.0123
384	836.520	3.7	0	3.18	0.0038
384	836.520	3.7	10	6.70	0.0080
384	836.520	3.7	20	-1.68	-0.0020
384	836.520	3.7	30	-1.57	-0.0019
384	836.520	3.7	40	-1.92	-0.0023
384	836.520	3.7	50	-0.32	-0.0004
384	836.520	3.7	60	5.34	0.0064

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
384	836.520	4.2	-30	-0.66	-0.0008
384	836.520	4.2	-20	-0.56	-0.0007
384	836.520	4.2	-10	-1.73	-0.0021
384	836.520	4.2	0	0.74	0.0009
384	836.520	4.2	10	1.66	0.0020
384	836.520	4.2	20	-1.50	-0.0018
384	836.520	4.2	30	-1.18	-0.0014
384	836.520	4.2	40	-0.87	-0.0010
384	836.520	4.2	50	-0.02	0.0000
384	836.520	4.2	60	1.29	0.0015

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	-13.61	-0.0160
777	848.310	3.6	-20	-2.69	-0.0032
777	848.310	3.6	-10	-11.01	-0.0130
777	848.310	3.6	0	5.38	0.0063
777	848.310	3.6	10	12.63	0.0149
777	848.310	3.6	20	1.29	0.0015
777	848.310	3.6	30	-1.32	-0.0016
777	848.310	3.6	40	-0.36	-0.0004
777	848.310	3.6	50	0.10	0.0001
777	848.310	3.6	60	6.75	0.0080

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
777	848.310	3.7	-30	-5.92	-0.0070
777	848.310	3.7	-20	-1.43	-0.0017
777	848.310	3.7	-10	-8.26	-0.0097
777	848.310	3.7	0	3.17	0.0037
777	848.310	3.7	10	5.23	0.0062
777	848.310	3.7	20	-0.76	-0.0009
777	848.310	3.7	30	-1.08	-0.0013
777	848.310	3.7	40	-2.45	-0.0029
777	848.310	3.7	50	-0.79	-0.0009
777	848.310	3.7	60	4.51	0.0053

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
777	848.310	4.2	-30	-0.96	-0.0011
777	848.310	4.2	-20	-0.27	-0.0003
777	848.310	4.2	-10	-0.99	-0.0012
777	848.310	4.2	0	0.46	0.0005
777	848.310	4.2	10	1.04	0.0012
777	848.310	4.2	20	-1.79	-0.0021
777	848.310	4.2	30	-0.13	-0.0002
777	848.310	4.2	40	-1.30	-0.0015
777	848.310	4.2	50	0.31	0.0004
777	848.310	4.2	60	2.24	0.0026

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	-2.00	-0.0011
600	1880.00	3.6	20	3.48	0.0018
1175	1908.75	3.6	20	1.01	0.0005

Traffic Channel Number	PCS Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
25	1851.20	3.7	20	1.01	0.0005
600	1880.00	3.7	20	-0.17	-0.0001
1175	1908.75	3.7	20	-2.33	-0.0012

Traffic Channel Number	PCS Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
25	1851.20	4.2	20	-0.29	-0.0002
600	1880.00	4.2	20	-2.07	-0.0011
1175	1908.75	4.2	20	-1.27	-0.0007

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	-8.58	-0.0046
25	1851.20	3.6	-20	-4.09	-0.0022
25	1851.20	3.6	-10	-3.82	-0.0021
25	1851.20	3.6	0	-0.76	-0.0004
25	1851.20	3.6	10	0.29	0.0002
25	1851.20	3.6	20	-2.00	-0.0011
25	1851.20	3.6	30	-3.02	-0.0016
25	1851.20	3.6	40	-2.32	-0.0013
25	1851.20	3.6	50	-3.86	-0.0021
25	1851.20	3.6	60	-4.05	-0.0022

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
25	1851.20	3.7	-30	-17.62	-0.0095
25	1851.20	3.7	-20	-4.63	-0.0025
25	1851.20	3.7	-10	-6.09	-0.0033
25	1851.20	3.7	0	3.81	0.0021
25	1851.20	3.7	10	6.94	0.0038
25	1851.20	3.7	20	1.01	0.0005
25	1851.20	3.7	30	-4.46	-0.0024
25	1851.20	3.7	40	-3.38	-0.0018
25	1851.20	3.7	50	0.31	0.0002
25	1851.20	3.7	60	-0.36	-0.0002

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
25	1851.20	4.2	-30	-3.43	-0.0019
25	1851.20	4.2	-20	-1.26	-0.0007
25	1851.20	4.2	-10	-0.36	-0.0002
25	1851.20	4.2	0	2.18	0.0012
25	1851.20	4.2	10	1.29	0.0007
25	1851.20	4.2	20	-0.29	-0.0002
25	1851.20	4.2	30	-0.74	-0.0004
25	1851.20	4.2	40	-0.86	-0.0005
25	1851.20	4.2	50	-2.70	-0.0015
25	1851.20	4.2	60	1.56	0.0008

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	-24.54	**-0.0131**
600	1880.00	3.6	-20	-6.11	-0.0032
600	1880.00	3.6	-10	-5.99	-0.0032
600	1880.00	3.6	0	6.17	0.0033
600	1880.00	3.6	10	13.35	0.0071
600	1880.00	3.6	20	3.48	0.0018
600	1880.00	3.6	30	-4.01	-0.0021
600	1880.00	3.6	40	-2.38	-0.0013
600	1880.00	3.6	50	-0.17	-0.0001
600	1880.00	3.6	60	-3.14	-0.0017

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
600	1880.00	3.7	-30	-14.95	-0.0079
600	1880.00	3.7	-20	-4.25	-0.0023
600	1880.00	3.7	-10	-7.13	-0.0038
600	1880.00	3.7	0	1.25	0.0007
600	1880.00	3.7	10	4.55	0.0024
600	1880.00	3.7	20	-0.17	-0.0001
600	1880.00	3.7	30	-4.53	-0.0024
600	1880.00	3.7	40	-4.34	-0.0023
600	1880.00	3.7	50	-2.03	-0.0011
600	1880.00	3.7	60	-1.36	-0.0007

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
600	1880.00	4.2	-30	-3.24	-0.0017
600	1880.00	4.2	-20	-1.90	-0.0010
600	1880.00	4.2	-10	-2.76	-0.0015
600	1880.00	4.2	0	0.64	0.0003
600	1880.00	4.2	10	-0.21	-0.0001
600	1880.00	4.2	20	-2.07	-0.0011
600	1880.00	4.2	30	-2.72	-0.0014
600	1880.00	4.2	40	-3.17	-0.0017
600	1880.00	4.2	50	-3.93	-0.0021
600	1880.00	4.2	60	-1.86	-0.0010

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	-23.68	-0.0124
1175	1908.75	3.6	-20	-5.43	-0.0028
1175	1908.75	3.6	-10	-8.11	-0.0043
1175	1908.75	3.6	0	3.94	0.0021
1175	1908.75	3.6	10	8.09	0.0042
1175	1908.75	3.6	20	1.01	0.0005
1175	1908.75	3.6	30	-5.02	-0.0026
1175	1908.75	3.6	40	-2.75	-0.0014
1175	1908.75	3.6	50	0.70	0.0004
1175	1908.75	3.6	60	-2.70	-0.0014

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1175	1908.75	3.7	-30	-11.10	-0.0058
1175	1908.75	3.7	-20	-3.70	-0.0019
1175	1908.75	3.7	-10	-6.09	-0.0032
1175	1908.75	3.7	0	0.61	0.0003
1175	1908.75	3.7	10	2.55	0.0013
1175	1908.75	3.7	20	-2.33	-0.0012
1175	1908.75	3.7	30	-4.18	-0.0022
1175	1908.75	3.7	40	-5.19	-0.0027
1175	1908.75	3.7	50	-3.64	-0.0019
1175	1908.75	3.7	60	-1.43	-0.0007

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1175	1908.75	4.2	-30	-3.34	-0.0017
1175	1908.75	4.2	-20	0.75	0.0004
1175	1908.75	4.2	-10	-2.18	-0.0011
1175	1908.75	4.2	0	0.53	0.0003
1175	1908.75	4.2	10	0.88	0.0005
1175	1908.75	4.2	20	-1.27	-0.0007
1175	1908.75	4.2	30	-0.68	-0.0004
1175	1908.75	4.2	40	-2.03	-0.0011
1175	1908.75	4.2	50	-2.04	-0.0011
1175	1908.75	4.2	60	-2.23	-0.0012

APPENDIX 4 - RADIATED EMISSIONS TEST DATA

Radiated Power Test Data Results

The following measurements were performed by Kevin Rose.

Date of tests: September 02, 2009
The environmental tests conditions were: Temperature: 24 °C
Pressure: 1022 mb
Relative Humidity: 30 %

Cellular Band

Loopback Service

The BlackBerry® smartphone PIN 30D9ECAC was in standalone, USB down position.
Test distance is 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)	(W)	Limit (dBm)	Diff. To Limit (dB)
F0	1013	824.70	800	Dipole	V	65.67	83.86	V-V	11.31	**26.45**	0.44	39.00	-12.55
F0	1013	824.70	800	Dipole	H	83.86		H-H	8.60				
F0	384	836.52	800	Dipole	V	68.87	83.46	V-V	11.40	26.44	0.44	39.00	-12.56
F0	384	836.52	800	Dipole	H	83.46		H-H	8.99				
F0	777	848.31	800	Dipole	V	68.09	82.87	V-V	9.72	24.75	0.30	39.00	-14.25
F0	777	848.31	800	Dipole	H	82.87		H-H	7.82				

Radiated Power Test Data Results cont'd

Cellular Band

1xEVDO

The BlackBerry® smartphone PIN 30D9ECAC was in standalone, horizontal position.
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)	(W)	Limit (dBm)	Diff. To Limit (dB)
F0	1013	824.70	800	Dipole	V	74.63	84.43	V-V	12.62	27.76	0.60	39.00	-11.24
F0	1013	824.70	800	Dipole	H	84.43		H-H	9.26				
F0	384	836.52	800	Dipole	V	74.97	85.14	V-V	13.14	**28.18**	0.66	39.00	-10.82
F0	384	836.52	800	Dipole	H	85.14		H-H	10.28				
F0	777	848.31	800	Dipole	V	72.52	82.67	V-V	9.54	24.57	0.29	39.00	-14.43
F0	777	848.31	800	Dipole	H	82.67		H-H	7.70				

Radiated Power Test Data Results cont'd

PCS Band

Loopback Service

The BlackBerry® smartphone PIN 30D9ECAC was in standalone, USB down position.
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)
F0	25	1851.25	1900	Horn	V	86.49	88.17	V-V	-11.15	**26.55**	0.45	33.00	-6.45
F0	25	1851.25	1900	Horn	H	88.17		H-H	-9.83				
F0	600	1880.00	1900	Horn	V	82.9	86.03	V-V	-12.79	24.74	0.30	33.00	-8.26
F0	600	1880.00	1900	Horn	H	86.03		H-H	-11.54				
F0	1175	1908.75	1900	Horn	V	84.36	85.67	V-V	-12.82	24.26	0.27	33.00	-8.74
F0	1175	1908.75	1900	Horn	H	85.67		H-H	-12.06				

Radiated Power Test Data Results cont'd

PCS Band

1xEVDO

The BlackBerry® smartphone PIN 30D9ECAC was in standalone, vertical position.
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)
F0	25	1851.25	1900	Horn	V	87.83	87.83	V-V	-11.51	26.26	0.42	33.00	-6.74
F0	25	1851.25	1900	Horn	H	83.32		H-H	-10.12				
F0	600	1880.00	1900	Horn	V	87.69	87.69	V-V	-11.07	**26.36**	0.43	33.00	-6.64
F0	600	1880.00	1900	Horn	H	82.96		H-H	-9.92				
F0	1175	1908.75	1900	Horn	V	87.5	87.5	V-V	-11.00	26.07	0.40	33.00	-6.93
F0	1175	1908.75	1900	Horn	H	80.61		H-H	-10.25				

Radiated Emissions Test Data Results

Cellular Band

Loopback Service

Date of Test: August 27, 2009
The following measurements were performed by Andrew Fleming.

The environmental test conditions were: Temperature: 24 ºC
Pressure: 1017 mb
Relative Humidity: 30 %

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 30D9ECAC was in standalone, vertical position.

The following measurements were performed in Cellular Tx mode on channels 1013, 384 and 777.

All emissions had a test margin greater than 25.0 dB.

Date of Test: August 27 to 28, 2009
The following measurements were performed by Savtej Sandhu.

The environmental test conditions were: Temperature: 26 ºC
Pressure: 1019 – 1021 mb
Relative Humidity: 22 – 24 %

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 30D9EABA was in standalone, vertical position.
The following measurements were performed in CDMA Cellular Tx mode on channels 1013, 384 and 777.

Frequency (MHz)	Channel of Occurrence	Antenna Pol. (V/H)	Antenna Height (metres)	Test Angle (Deg.)	Detector (PK or QP)	Measured Level (dBµV)	Correction Factor for preamp/antenna/ cables/ filter (dB)	Field Strength Level (reading+corr) (dBm)	Limit @ 3.0 m (dBm)	Test Margin (dB)
2544.708	777	V	3.00	305.00	PK	51.14	-86.79	-35.66	-13.00	-22.66

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

Radiated Emissions Test Data Results cont'd

Cellular Band

Test Data

Date of Test: August 27, 2009
The following measurements were performed by Andrew Fleming.

The environmental test conditions were: Temperature: 24 ºC
Pressure: 1017 mb
Relative Humidity: 30 %

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 30D9ECAC was in standalone, vertical position.

The following measurements were performed in Cellular Tx mode on channels 1013, 384 and 777.

All emissions had a test margin greater than 25.0 dB.

Date of Test: August 28, 2009
The following measurements were performed by Heng Lin.

The environmental test conditions were: Temperature: 26 ºC
Pressure: 1019 mb
Relative Humidity: 22 %

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 30D9EABA was in standalone, vertical position.
The following measurements were performed in CDMA Cellular Tx mode on channels 1013, 384 and 777.

Frequency (MHz)	Channel of Occurrence	Antenna Pol. (V/H)	Antenna Height (metres)	Test Angle (Deg.)	Detector (PK or QP)	Measured Level (dBµV)	Correction Factor for preamp/antenna/ cables/ filter (dB)	Field Strength Level (reading+corr) (dBm)	Limit @ 3.0 m (dBm)	Test Margin (dB)
2544.876	777	H	1.00	0.00	PK	53.33	-88.12	-34.79	-13.00	**-21.79**

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

Radiated Emissions Test Data Results cont'd

Cellular Band

1xEVDO

Date of Test: August 28, 2009
The following measurements were performed by Andrew Fleming.

The environmental test conditions were: Temperature: 22 ºC
Pressure: 1015 mb
Relative Humidity: 31 %

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 30D9ECAC was in standalone, vertical position.

The following measurements were performed in Cellular EVDO Tx mode on channels 1013, 384 and 777.

All emissions had a test margin greater than 25.0 dB.

Date of Test: August 31 to September 01, 2009
The following measurements were performed by Steven Wang.

The environmental test conditions were: Temperature: 26 ºC
Pressure: 1019 – 1024 mb
Relative Humidity: 22 – 23 %

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 30D9EABA was in standalone, vertical position.

The following measurements were performed in CDMA Cellular EVDO Tx mode on channels 1013, 384 and 777.

All emissions, including harmonics, had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

PCS Band

Loopback Service

Date of Test: August 27, 2009
The following measurements were performed by Andrew Fleming.

The environmental test conditions were: Temperature: 24 ºC
Pressure: 1015 mb
Relative Humidity: 32 %

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 30D9ECAC was in standalone, USB up position.

The following measurements were performed in PCS Tx mode on channels 25, 600 and 1175.

All emissions had a test margin greater than 25.0 dB.

Date of Test: August 28, 2009
The following measurements were performed by Steven Wang.

The environmental test conditions were: Temperature: 26 ºC
Pressure: 1019 mb
Relative Humidity: 22 %

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 20 GHz.
The BlackBerry® smartphone PIN 30D9EABA was in standalone, USB up position.
The following measurements were performed in PCS Tx mode on channels 25, 600 and 1175.

All emissions, including harmonics, had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

PCS Band

Test Data

Date of Test: August 27 to 28, 2009
The following measurements were performed by Andrew Fleming.

The environmental test conditions were: Temperature: 23 ºC
Pressure: 1015 – 1017 mb
Relative Humidity: 30 – 32 %

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 30D9ECAC was in standalone, USB up position.

The following measurements were performed in PCS Tx mode on channels 25, 600 and 1175.

All emissions had a test margin greater than 25.0 dB.

Date of Test: August 28, 2009
The following measurements were performed by Savtej Sandhu.

The environmental test conditions were: Temperature: 26 ºC
Pressure: 1019 mb
Relative Humidity: 22 %

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 20 GHz.
The BlackBerry® smartphone PIN 30D9EABA was in standalone, USB up position.
The following measurements were performed in PCS Tx mode on channels 25, 600 and 1175.

All emissions, including harmonics, had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

PCS Band

1xEVDO

Date of Test: August 27 to 28, 2009
The following measurements were performed by Andrew Fleming.

The environmental test conditions were: Temperature: 24 ºC
Pressure: 1015 – 1017 mb
Relative Humidity: 30 – 32 %

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 30D9ECAC was in standalone, USB up position.

The following measurements were performed in PCS Tx mode on channels 25, 600 and 1175.

All emissions had a test margin greater than 25.0 dB.

Date of Test: August 31 to September 01, 2009
The following measurements were performed by Steven Wang.

The environmental test conditions were: Temperature: 26 ºC
Pressure: 1019 – 1026 mb
Relative Humidity: 22 %

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 20 GHz.
The BlackBerry® smartphone PIN 30D9EABA was in standalone, USB up position.
The following measurements were performed in PCS Tx mode on channels 25, 600 and 1175.

Frequency (MHz)	Channel of Occurrence	Antenna Pol. (V/H)	Antenna Height (metres)	Test Angle (Deg.)	Detector (PK or QP)	Measured Level (dBµV)	Correction Factor for preamp/antenna/ cables/ filter (dB)	Field Strength Level (reading+corr) (dBm)	Limit @ 3.0 m (dBm)	Test Margin (dB)
9257.490	25	V	3.95	0.00	PK	35.04	-68.66	-33.62	-13.00	**-20.62**

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