EMI Test Report

Tested in accordance with
Federal Communications Commission (FCC)
Personal Communications Services
CFR 47 Parts 2, 22, 24 and 27
&
Industry Canada (IC) RSS-132 and 133

A division of Research In Motion Limited

REPORT NO: RTS-1689-0909-27_Rev1

PRODUCT MODEL NO:	RCN71UW
TYPE NAME:	BlackBerry® smartphone
FCC ID:	L6ARCN70UW
IC:	2503A – RCN70UW
EMISSION DESIGNATOR (GSM):	245KG7W
EMISSION DESIGNATOR (EDGE):	242KGXW
EMISSION DESIGNATOR (WCDMA):	4M17F9W

The following test report supersedes the test report dated 14 September, 2009.

DATE: 29 September, 2009

Statement of Performance:

The BlackBerry® smartphone, model RCN71UW, part number CER-25287-001 Rev 3 and accessories performs within the requirements of the test standards when configured and operated per RIM's instructions.

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: 14 September, 2009

Reviewed by:

Masud S. Attayi, P.Eng.
Manager, Regulatory Compliance
Date: 15 September, 2009

Approved by:

Paul G. Cardinal, Ph.D.
Director
Date: 16 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
- FCC CFR 47 Part 27 Subpart C, Technical Standards, 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-139 Issue 2, February 2009, Advanced Wireless Services Equipment Operating in the Bands 1710 – 1755 and 2110 – 2155 MHz

B) Associated Documents

1. Cetecom Test Report Number 1-1505-01-02B/09
2. Cetecom Test Report Number 1-1505-01-04/09
3. HW_Declaration_CER-25287-001-Rev 3

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

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

The testing was performed from July 23 to August 28, 2009.

The sample EUT included:

SAMPLE	MODEL	CER NUMBER	PIN
1	RCN71UW	CER-25287-001 Rev 2	2108867B
2	RCN71UW	CER-25287-001 Rev 3	21088684

RF Conducted Emissions testing was performed on samples 1 and 2.

To view the differences between CER-25287-001 Rev 2 and CER-25287-001 Rev 3, see document number HW_Declaration_CER-25287-001-Rev 3.

Only the measurements that may have been impacted by the changes from Rev 2 to Rev 3 were re-measured.

D) Support Equipment Used for the Testing of the EUT

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

E) Test Voltage

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

F) Summary of Results

SPECIFICATION		TEST TYPE	RESULT	TEST DATA APPENDIX
FCC CFR 47	IC			
Part 2.1051 Part 22.917 Part 22.901	RSS-GEN, 4.9	GSM 850 Conducted Spurious Emissions	Pass	1A
Part 2.1051 Part 24.238(a)	RSS-GEN, 4.9	GSM PCS Conducted Spurious Emissions	Pass	1A
Part 2.202 Part 22.917	RSS-GEN, 4.6	GSM 850 Occupied Bandwidth and Channel Mask	Pass	1A
Part 2.202 Part 24.238	RSS-GEN, 4.6	GSM PCS Occupied Bandwidth and Channel Mask	Pass	1A
Part 2.1046(a)	RSS-133, 6.4 RSS-132, 4.4	GSM Conducted RF Output Power	Pass	2A
Part 2.1055(a)(d) Part 22.917	RSS-132, 4.3	GSM 850 Frequency Stability vs. Temperature and Voltage	Pass	3A
Part 2.1055(a)(d) Part 24.235	RSS-132, 4.3	GSM PCS Frequency Stability vs. Temperature and Voltage	Pass	3A
Part 22, Subpart H, Part 24, Subpart E	RSS-GEN, 4.9	GSM ERP, EIRP	See Cetecom Test Report Number 1-1505-01-02B/09	-
Part 22, Subpart H Part 24, Subpart E	RSS-GEN, 4.9	GSM Radiated Spurious/Harmonic Emissions	See Cetecom Test Report Number 1-1505-01-02B/09	-
Part 27.53	RSS-139, 6.5	WCDMA UMTS1700 Conducted Spurious Emissions	Pass	1B
Part 2.202 Part 27.53	RSS-GEN, 2.3	WCDMA UMTS1700 Occupied Bandwidth and Channel Mask	Pass	1B
Part 2.1046(a)	RSS-139, 6.4	WCDMA Conducted RF Output Power	Pass	2B
Part 2.1055(a)(d) Part 27.54	RSS-139, 6.3	WCDMA UMTS1700 Frequency Stability vs. Temperature and Voltage	Pass	3B
Part 27.53	RSS-139, 6.5	WCDMA UMTS1700 Radiated Spurious/Harmonic Emissions	See Cetecom Test Report Number 1-1505-01-02A/09	-
Part 27.50	RSS-139, 6.4	WCDMA EIRP	See Cetecom Test Report Number 1-1505-01-02A/09	-

Summary of Results cont'd

1) The BlackBerry® smartphone met the requirements of the Tx Conducted Spurious Emissions requirements in the GSM850 as per 47 CFR 2.1051, CFR 22.917, CFR 22.901(d) and RSS-GEN, 4.9. The EUT was measured on the low, middle and high channels. The frequency range investigated was from 10 MHz to 10 GHz.
See APPENDIX 1A for test data.

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

3) The BlackBerry® smartphone met the requirements of the Occupied Bandwidth and channel mask requirements in the GSM850 as per 47 CFR 2.202, CFR 22.917 and RSS-GEN, 4.6. The EUT was measured in GSM and EDGE mode on the low, middle and high channels.
See APPENDIX 1A for test data.

4) The BlackBerry® smartphone met the requirements of the Occupied Bandwidth and channel mask requirements in the PCS1900 as per 47 CFR 2.202, CFR 24.238 and RSS-GEN, 4.6. The EUT was measured in GSM and EDGE mode on the low, middle and high channels.
See APPENDIX 1A for test data.

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

6) The BlackBerry® smartphone met the requirements of the Frequency Stability vs. Temperature and Voltage requirements for the PCS1900 band as per 47 CFR 2.1055(a), 2.1055(d), 24.235 and RSS-132, 4.3. The temperature range was from -30°C to +60°C in 10° temperature steps. The EUT was measured on low, middle and high channels at each temperature step. The EUT was measured at low (3.6 volts), nominal (3.7 volts) and high (4.2 volts) dc input voltage at each temperature step and channel at maximum output power.
See APPENDIX 3A for the test data.

7) The BlackBerry® smartphone met the requirements of the Conducted Spurious Emissions in the UMTS1700 band as per 47 CFR 27.53 and RSS-139, 6.5. The

EUT was measured on the low, middle and high channels. The frequency range investigated was from 10 MHz to 20 GHz.
See APPENDIX 1B for the test data.

8) The BlackBerry® smartphone met the requirements of the Occupied Bandwidth in the UMTS1700 band as per 47 CFR 2.202, CFR 27.53 and RSS-139, 2.3. The low, middle and high channels were measured.
See APPENDIX 1B for the test data.

9) The BlackBerry® smartphone met the requirements of the Conducted RF Output Power for the UMTS1700 band as per 47 CFR 2.1046(a), RSS-139, 6.4 and RSS-132, 4.4. The low, middle and high channels were measured.
See APPENDIX 2B for the test data.

10) The BlackBerry® smartphone met the requirements of the Frequency Stability vs. Temperature and Voltage for UMTS1700 band as per 47 CFR 2.1055(a)(d), CFR 27.54 and RSS-139, 6.3. The maximum frequency error measured was less than 0.1 ppm. The temperature range was from -30°C to +60°C in 10° temperature steps. The BlackBerry® smartphone was measured on low, middle and high channels at each temperature step. The BlackBerry® smartphone was measured at low (3.6 volts), nominal (3.7 volts) and high (4.2 volts) dc input voltage at each temperature step and channel at maximum output power.
See APPENDIX 3B for the test data.

Co-Location Measurements

See Cetecom Test Report Number 1-1505-01-04/09.

G) Compliance Test Equipment Used

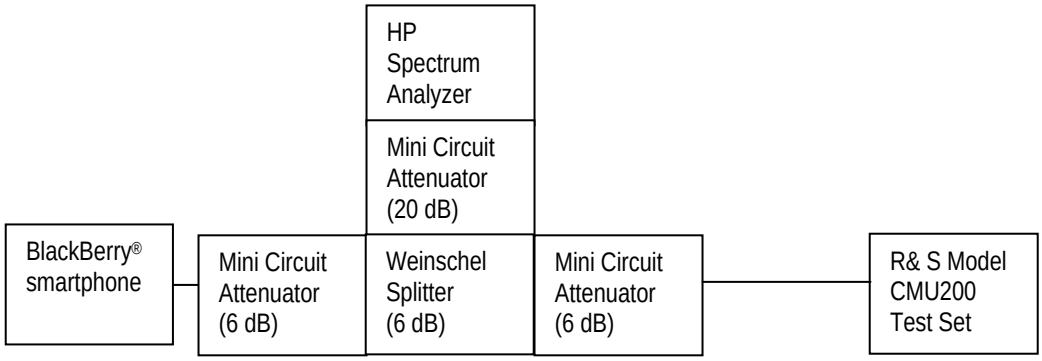
UNIT	MANUFACTURER	MODEL	SERIAL NUMBER	CAL DUE DATE (YY MM DD)	USE
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	102204	09-12-06	RF Conducted Emissions
Universal Radio Communication Tester	Agilent	8960	MY47510358	11-03-06	Frequency Stability, RF Conducted Emissions
Spectrum Analyzer	HP	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	230355189	10-02-12	RF Conducted Emissions
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
Power Meter	Agilent	N1911A	MY45100905	11-01-05	Frequency Stability
Power Sensor	Agilent	N1921A	SG45240281	10-05-08	Frequency Stability

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

GSM Conducted RF Emission Test Data

This appendix contains measurement data pertaining to conducted spurious emissions, –26 dBc bandwidth, 99% power bandwidth and the channel mask on BlackBerry® smartphone PIN 2108867B.

Test Setup Diagram



Date of Test: July 24, 2009

The environmental test conditions were:

Temperature: 22 ºC
Pressure: 1009 mb
Relative Humidity: 32 %

The following measurements were performed by Maurice Battler.

GSM Conducted RF Emission Test Data cont'd

The conducted spurious emissions – As per 47 CFR 2.1051, CFR 24.238(a), RSS-GEN, 4.9, CFR 22 Subpart H and RSS-132 were measured from 10 MHz to 20 GHz. The EUT emissions were in the noise floor.
See figures 1-1a to 1-12a for the plots of the conducted spurious emissions.

–26 dBc Bandwidth and Occupied Bandwidth (99%)

For each carrier frequency of low, middle and high, the modulation spectrum was measured by both methods of 99% power bandwidth and –26 dBc bandwidth.
The resolution bandwidth required for out-of-band emissions in the 1 MHz bands immediately outside and adjacent to the frequency block, was determined to be at least 1% of the emission bandwidth.
The worst case –26dBc bandwidth for the GSM850 band was measured to be 270 kHz, and for the PCS1900 band was measured to be 272 kHz as shown below. This results in a 3.0 kHz resolution bandwidth.
On any frequency outside the frequency block and outside the adjacent 1 MHz bands, a resolution bandwidth of at least 1 MHz was employed.

Test Data for 850 band and 1900 band selected Frequencies in GSM mode.

850 band Frequency (MHz)	-26dBc Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
824.2	270	240.0
837.6	263	241.7
848.8	268	240.0

1900 band Frequency (MHz)	-26dBc Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
1850.2	272	240.0
1880.0	267	240.0
1909.8	265	245.0

Measurement Plots for 850 and 1900 in GSM mode
Refer to the following measurement plots for more detail.
See Figures 1-13a to 1-24a for the plots of the –26dBc Bandwidth and 99% Occupied Bandwidth.
See Figures 1-25a to 1-28a for plots of the channel mask results.

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

GSM Conducted RF Emission Test Data cont'd

Test Data for 850 and 1900 bands selected Frequencies in EDGE mode.

850 band Frequency (MHz)	99% Occupied Bandwidth (kHz)
824.2	240.0
837.6	241.7
848.8	241.7

1900 band Frequency (MHz)	99% Occupied Bandwidth (kHz)
1850.2	238.0
1880.0	240.0
1909.8	241.7

Measurement Plots for 850 and 1900 bands in EDGE mode
Refer to the following measurement plots for more detail.

See Figures 1-29a to 1-34a for the plots of the 99% Occupied Bandwidth.
See Figures 1-35a to 1-38a for the plots of channel mask EDGE results.

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

GSM Conducted RF Emission Test Data cont'd

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

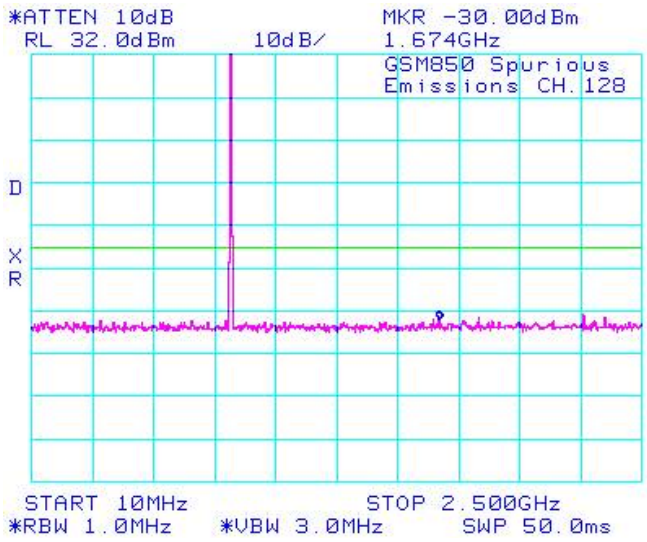


Figure 1-2a: GSM850 band, Spurious Conducted Emissions, Low channel

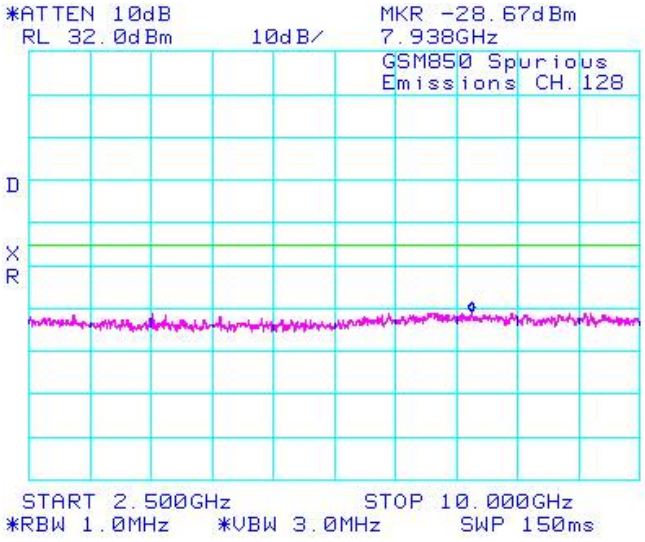


Figure 1-3a: GSM850 band, Spurious Conducted Emissions, Middle Channel

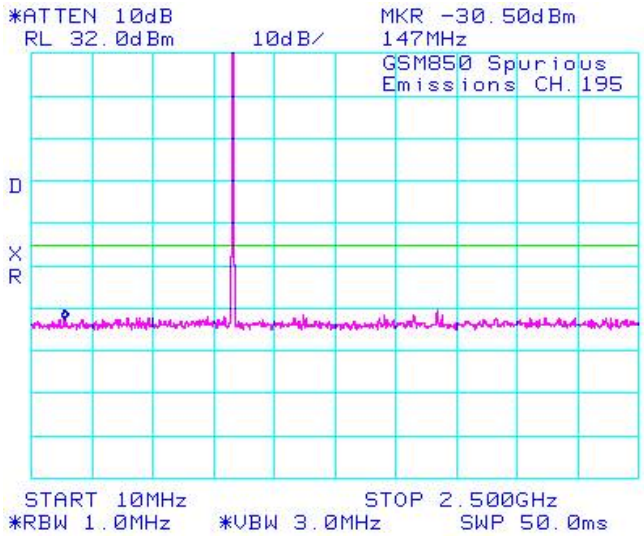
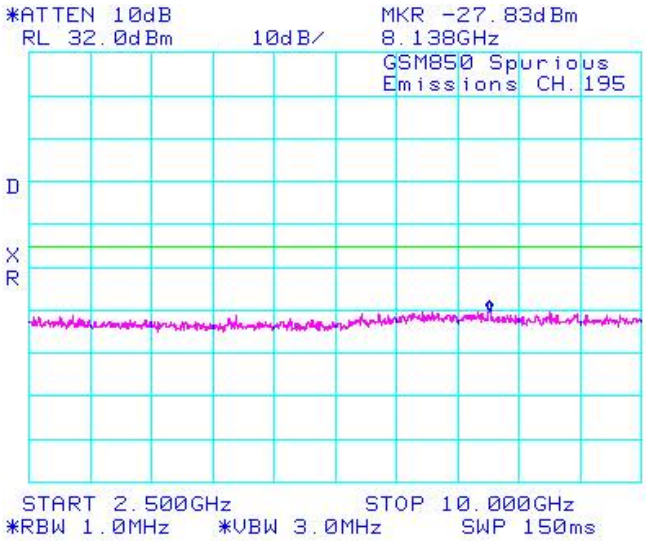


Figure 1-4a: GSM850 band, Spurious Conducted Emissions, Middle Channel



GSM Conducted RF Emission Test Data cont'd

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

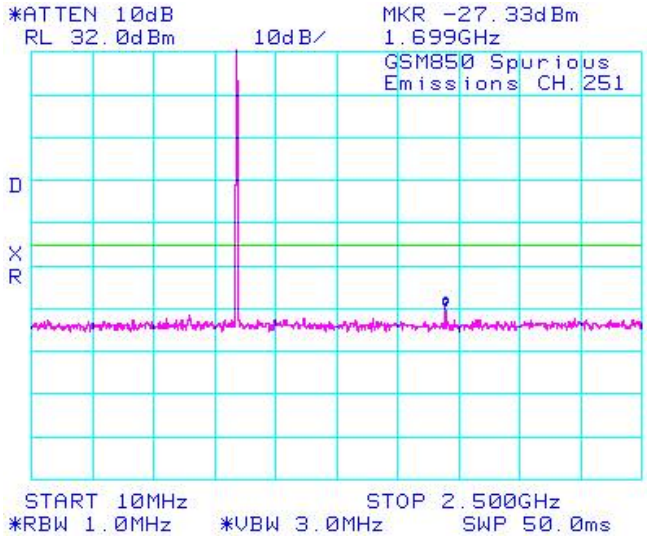


Figure 1-6a: GSM850 band, Spurious Conducted Emissions, High Channel

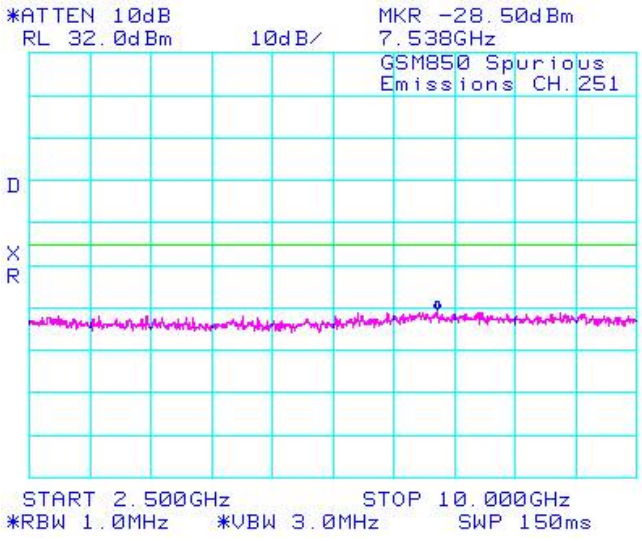


Figure 1-7a: PCS1900 band, Spurious Conducted Emissions, Low Channel

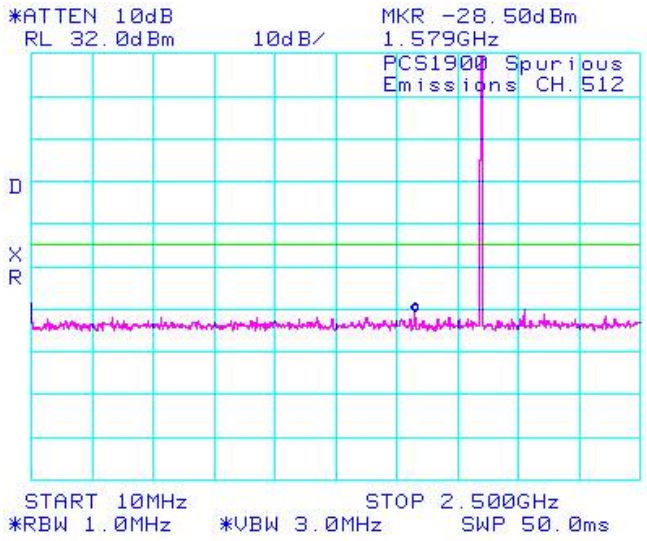
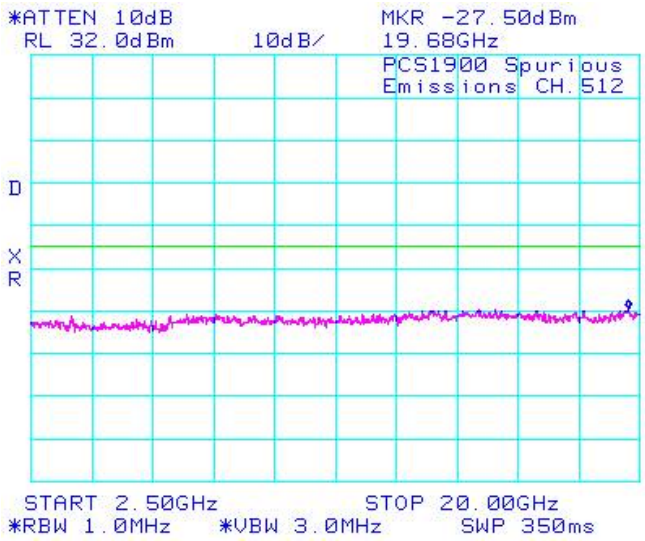


Figure 1-8a: PCS1900 band, Spurious Conducted Emissions, Low Channel



GSM Conducted RF Emission Test Data cont'd

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

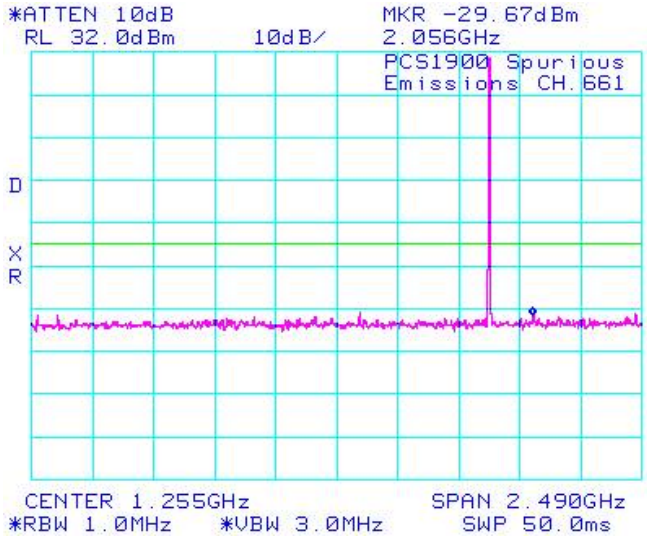


Figure 1-10a: PCS1900 band, Spurious Conducted Emissions, Middle Channel

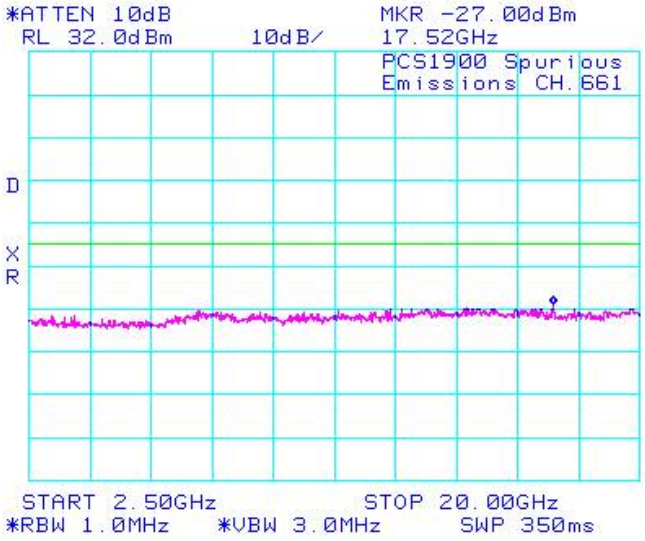


Figure 1-11a: PCS1900 band, Spurious Conducted Emissions, High Channel

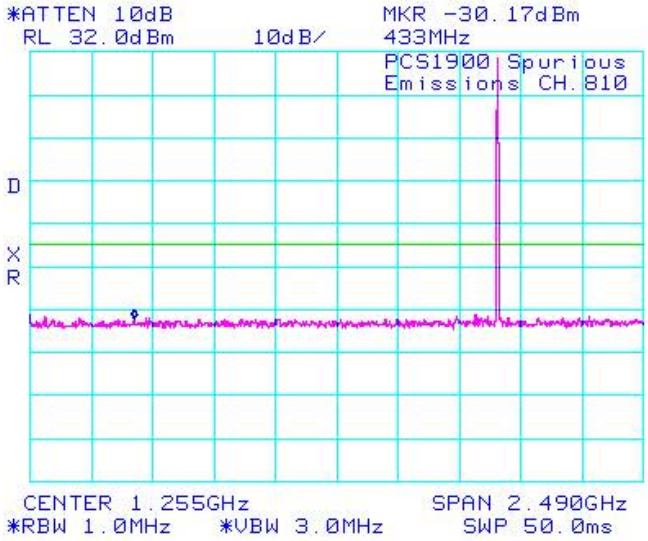
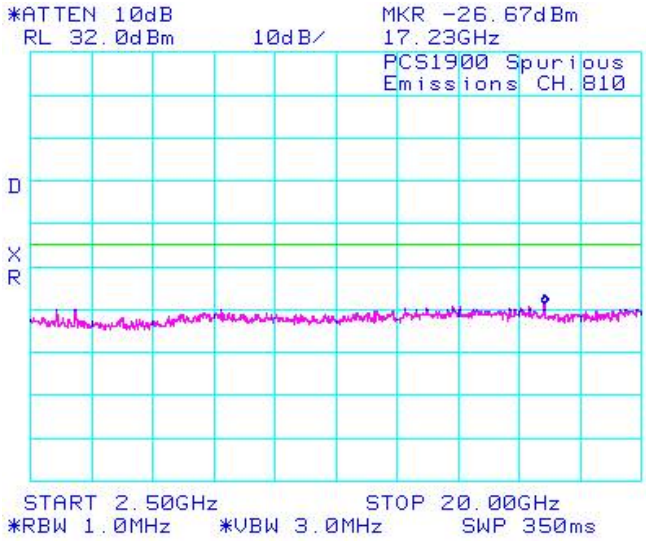


Figure 1-12a: PCS1900 band, Spurious Conducted Emissions, High Channel



GSM Conducted RF Emission Test Data cont'd

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

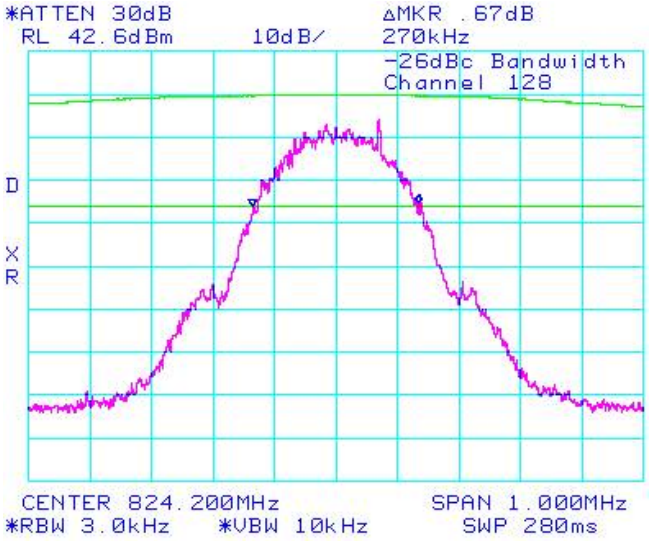


Figure 1-14a: Occupied Bandwidth, GSM850 band Low Channel in GSM mode

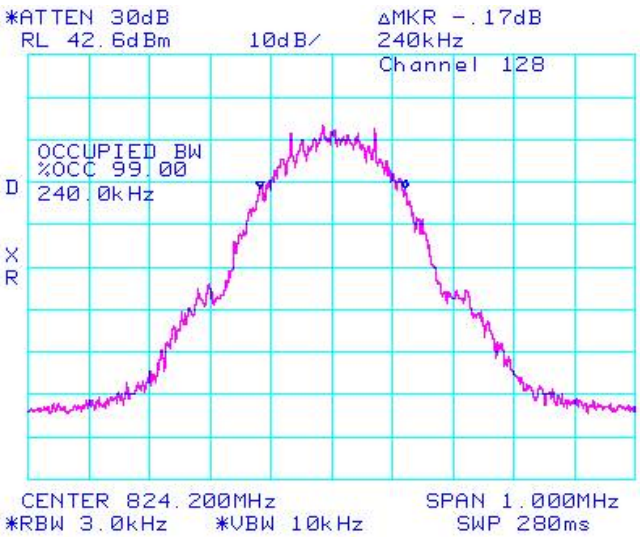


Figure 1-15a: -26dBc bandwidth, GSM850 band Middle Channel in GSM mode

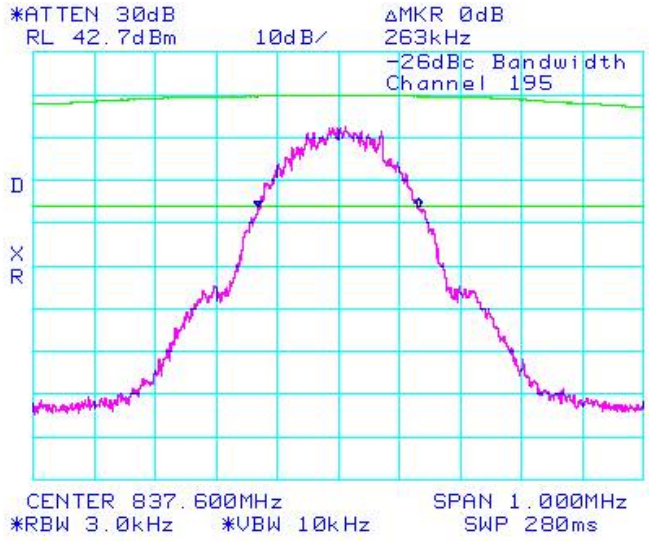
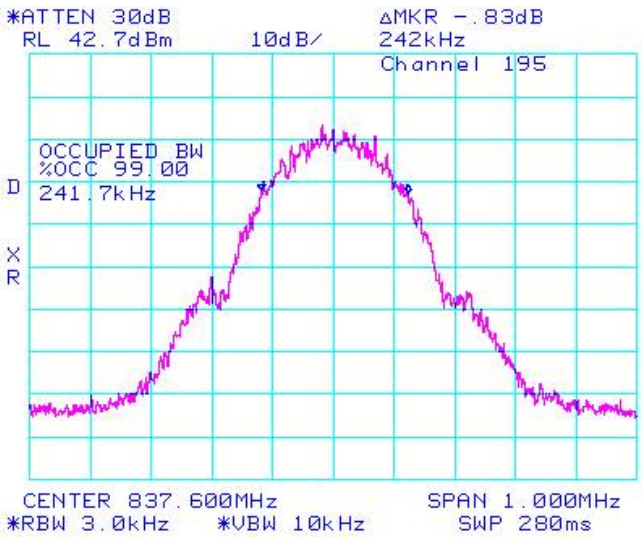


Figure 1-16a: Occupied Bandwidth, GSM850 band Middle Channel in GSM mode



GSM Conducted RF Emission Test Data cont'd

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

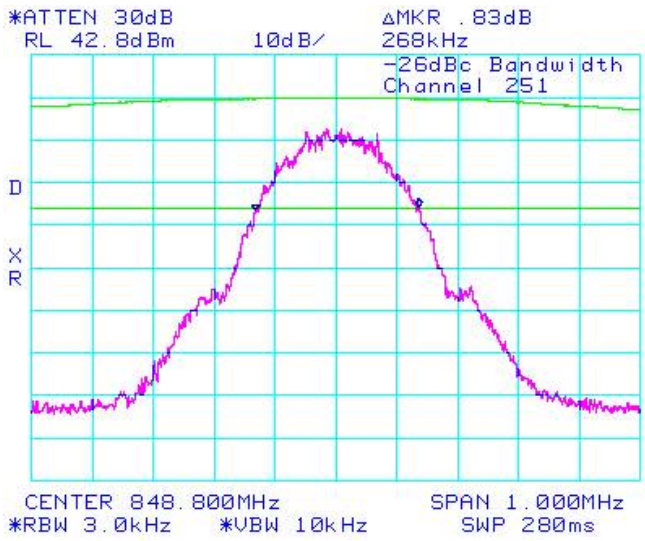


Figure 1-18a: Occupied Bandwidth, GSM850 band High Channel in GSM mode

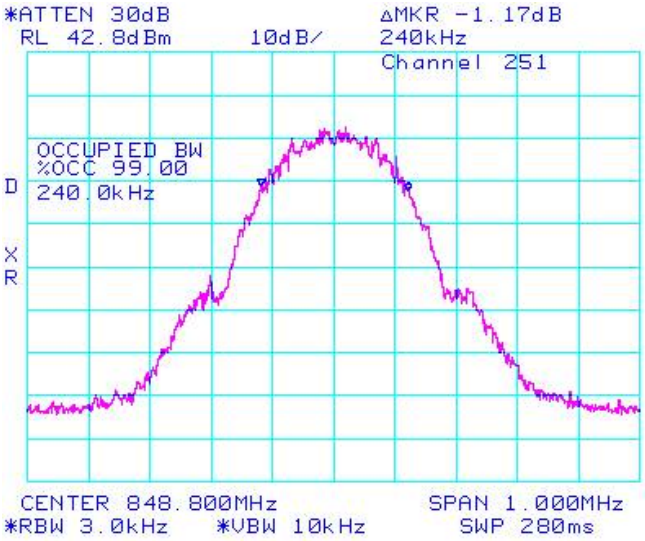


Figure 1-19a: -26dBc bandwidth, PCS1900 Low Channel in GSM mode

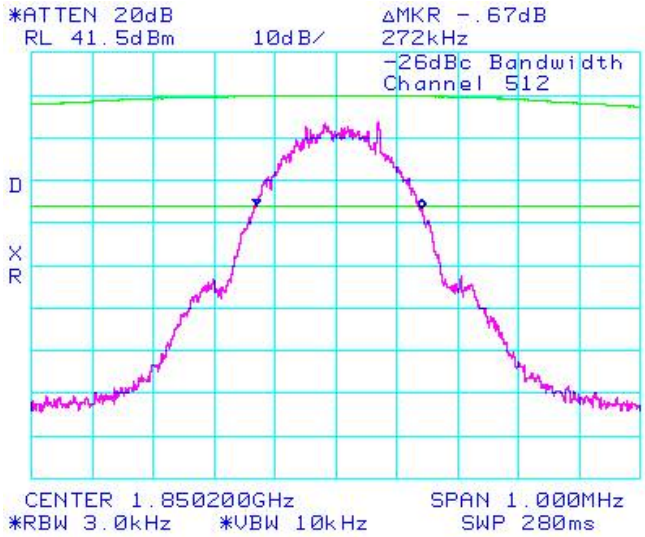
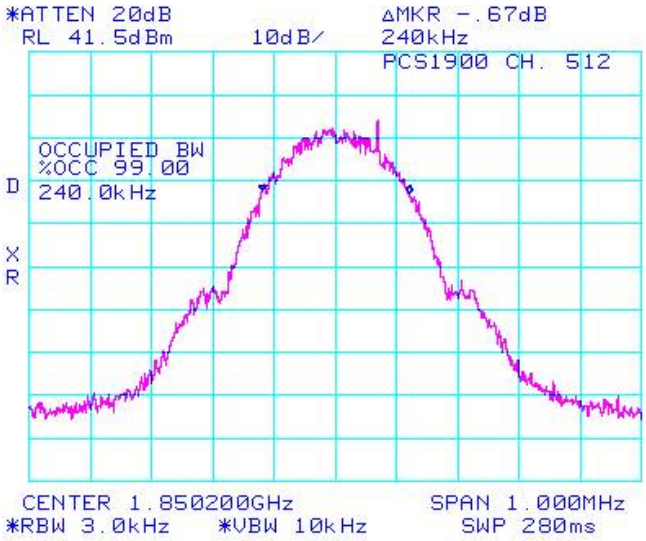


Figure 1-20a: Occupied Bandwidth, PCS1900 Low Channel in GSM mode



GSM Conducted RF Emission Test Data cont'd

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

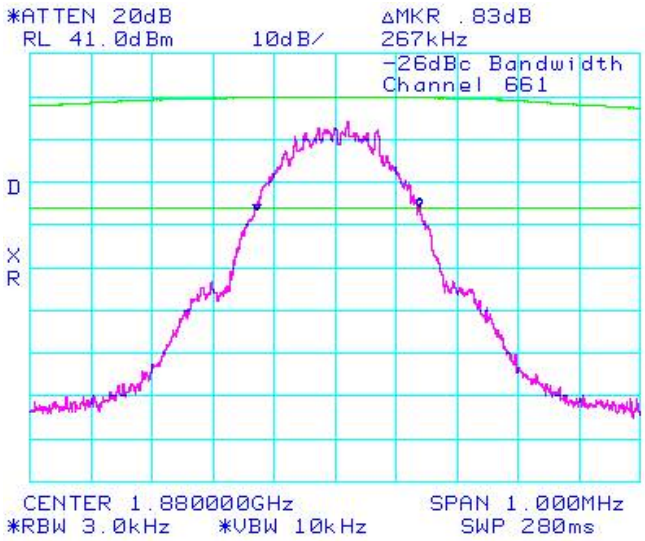


Figure 1-22a: Occupied Bandwidth, PCS1900 Middle Channel in GSM mode

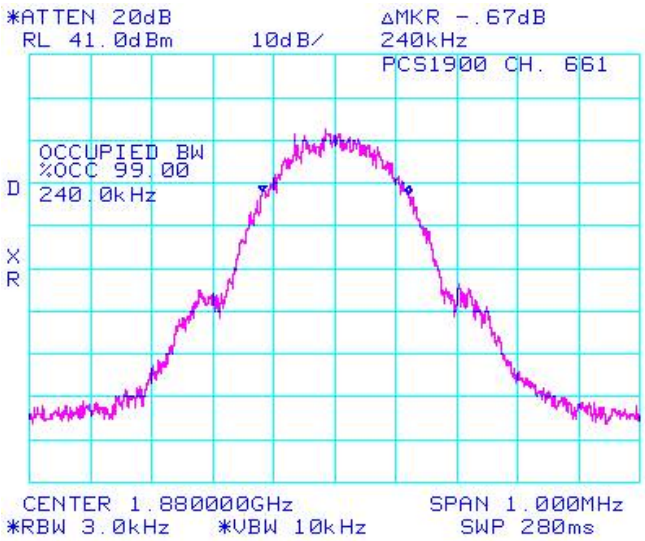


Figure 1-23a: -26dBc bandwidth, PCS1900 High Channel in GSM mode

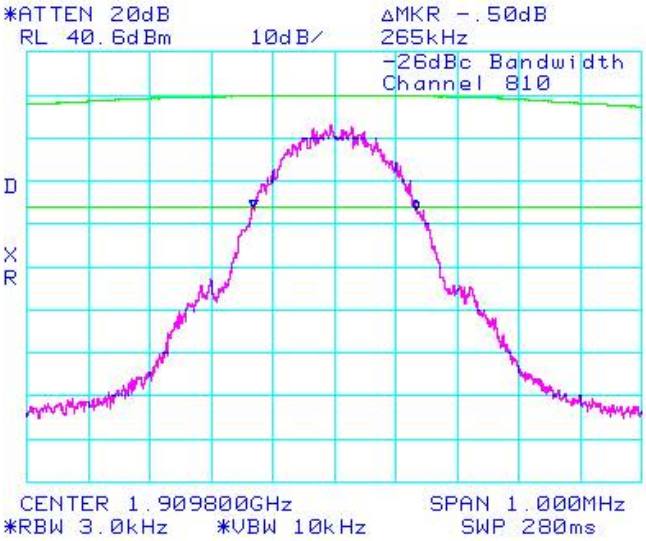
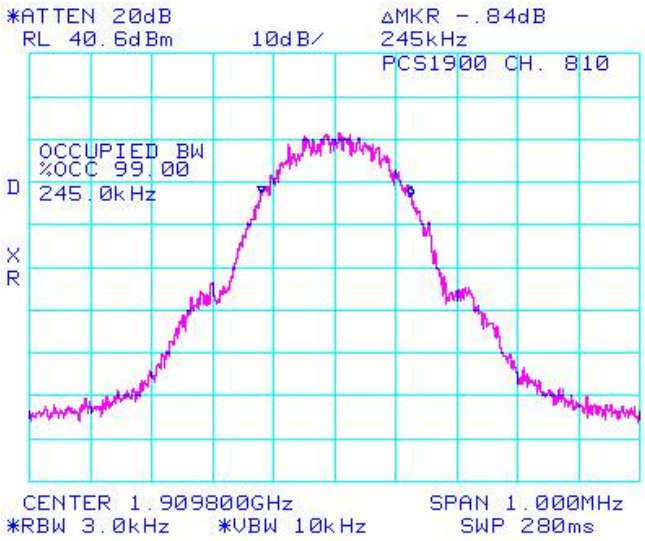


Figure 1-24a: Occupied Bandwidth, PCS1900 High Channel in GSM mode



GSM Conducted RF Emission Test Data cont'd

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

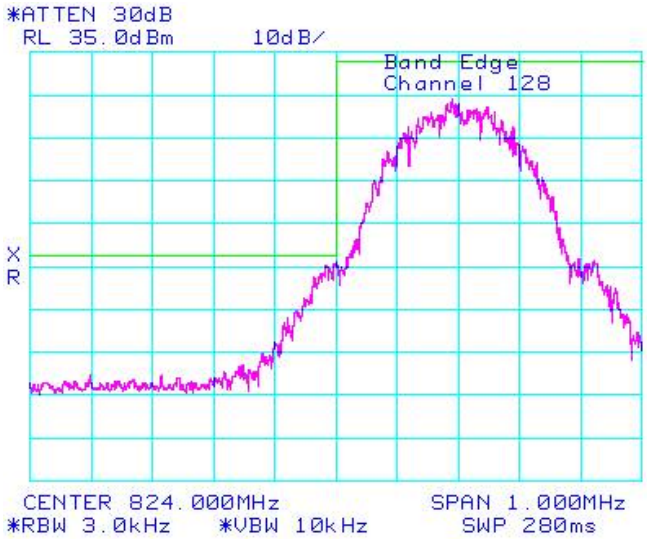


Figure 1-26a: GSM850 band High Channel Mask in GSM mode

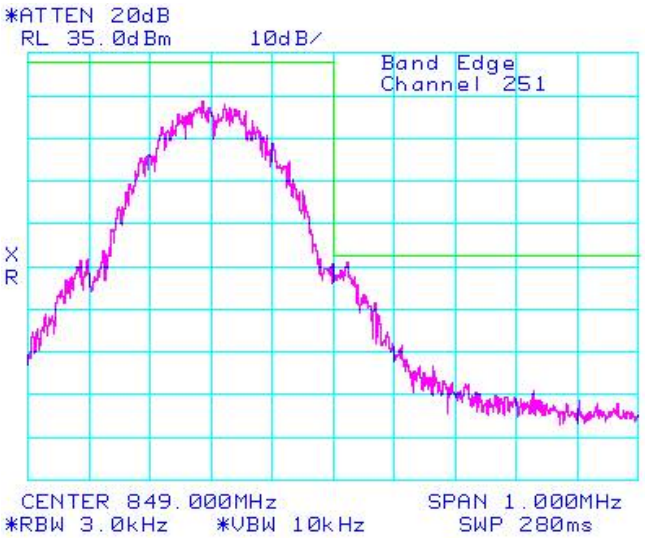


Figure 1-27a: PCS1900, Low Channel Mask in GSM mode

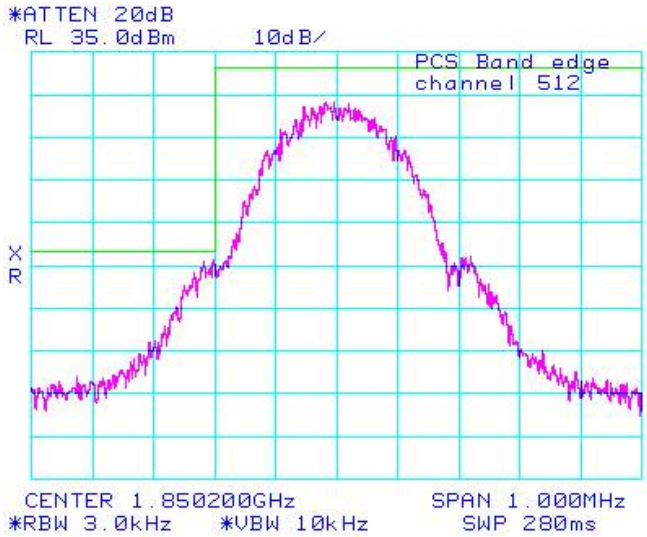
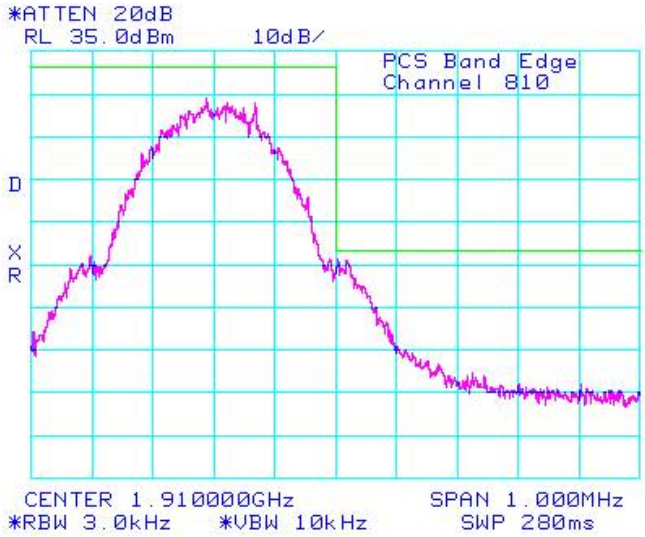


Figure 1-28a: PCS1900, High Channel Mask in GSM mode



GSM Conducted RF Emission Test Data cont'd

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

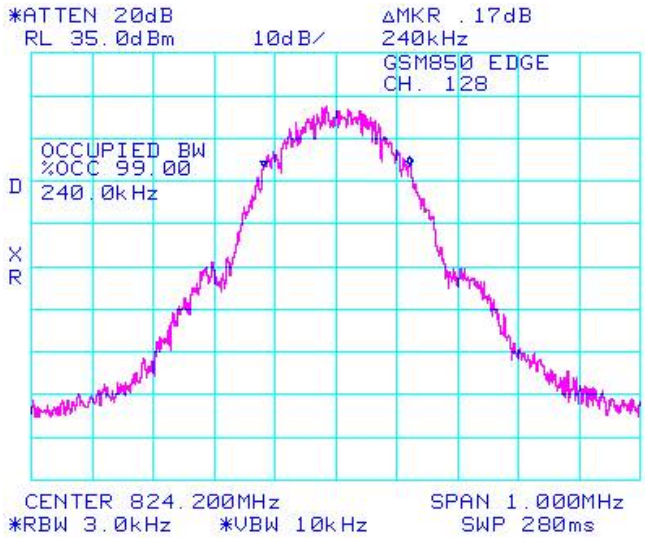


Figure 1-30a: Occupied Bandwidth, GSM850 Band, Middle Channel in EDGE mode

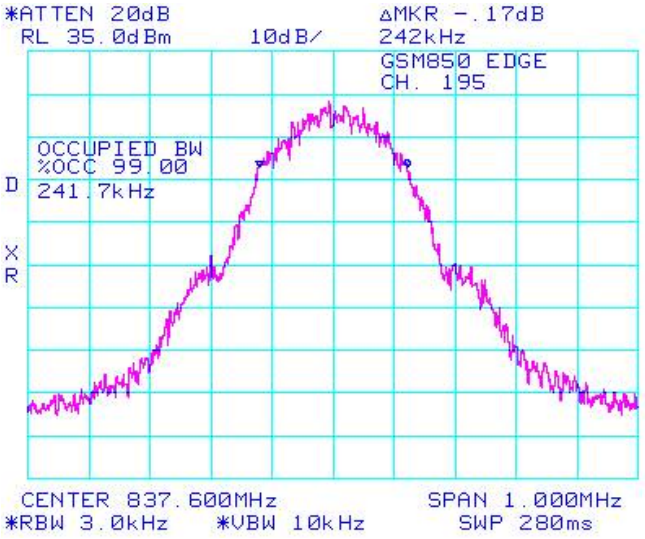


Figure 1-31a: Occupied Bandwidth, GSM850 band, High Channel in EDGE mode

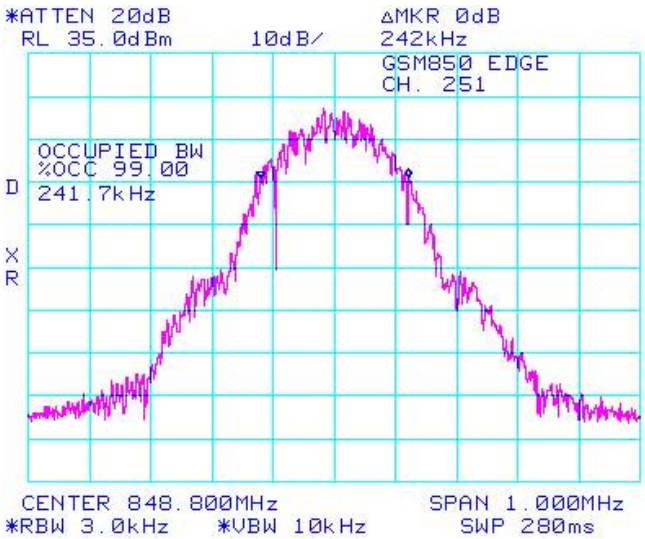
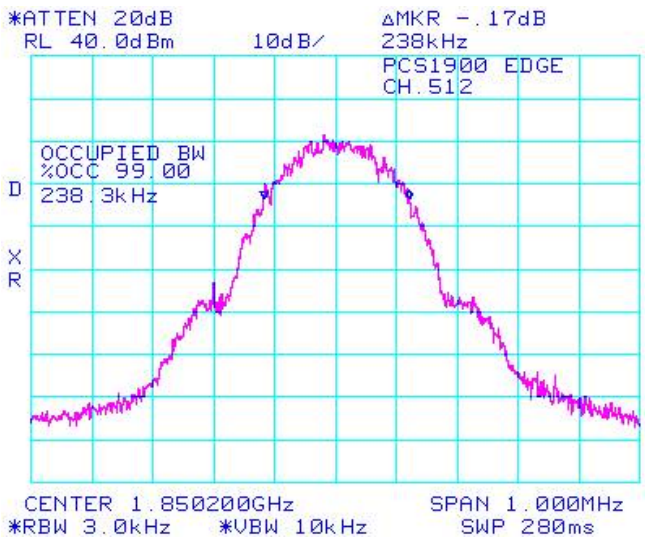


Figure 1-32a: Occupied Bandwidth, PCS1900 Band, Low Channel in EDGE mode



GSM Conducted RF Emission Test Data cont'd

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

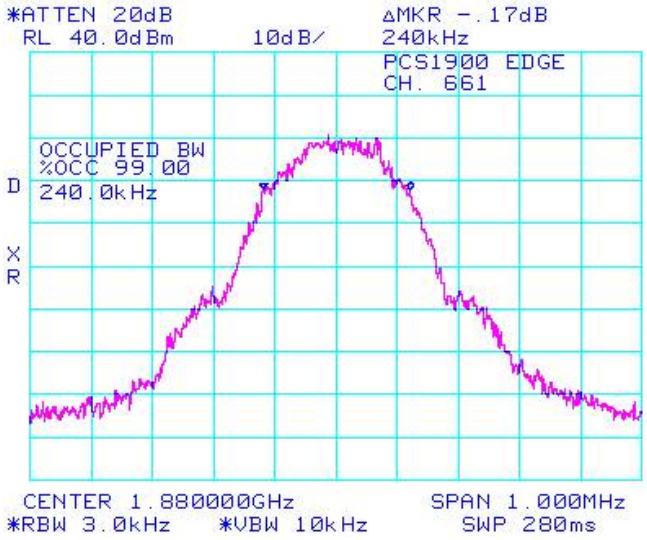


Figure 1-34a: Occupied Bandwidth, PCS1900 Band, High Channel in EDGE mode

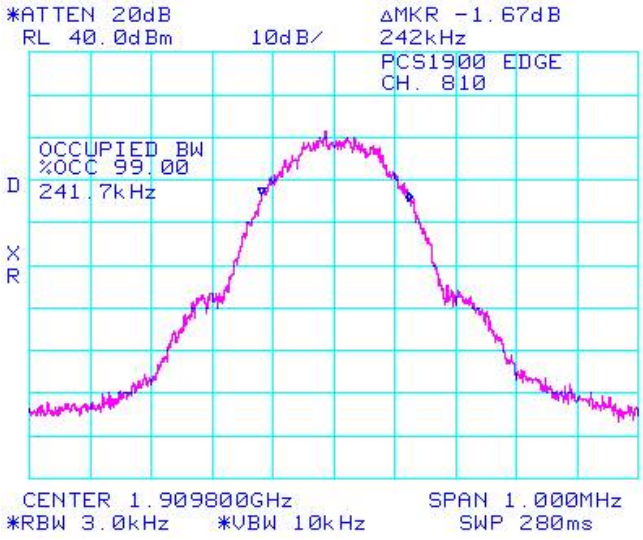


Figure 1-35a: GSM850 Band, Low Channel Mask in EDGE mode

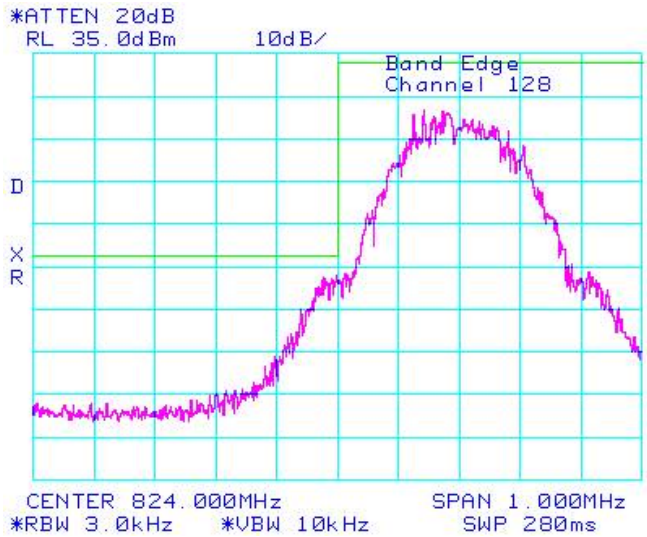
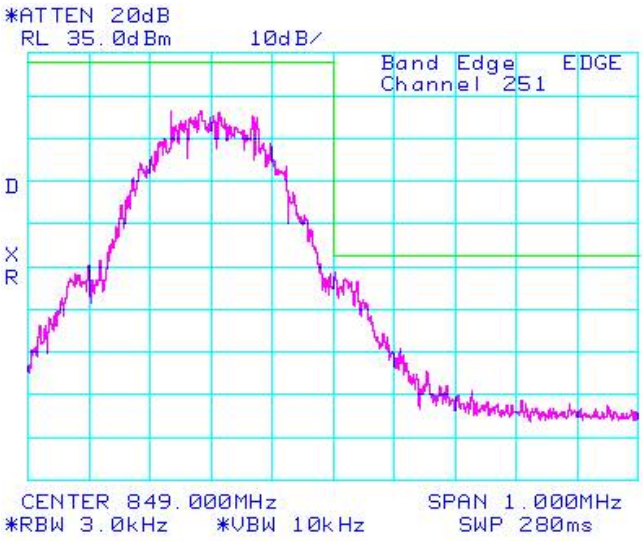


Figure 1-36a: GSM850 Band, High Channel Mask in EDGE mode



GSM Conducted RF Emission Test Data cont'd

Figure 1-37a: PCS1900 Band, Low Channel Mask in EDGE mode

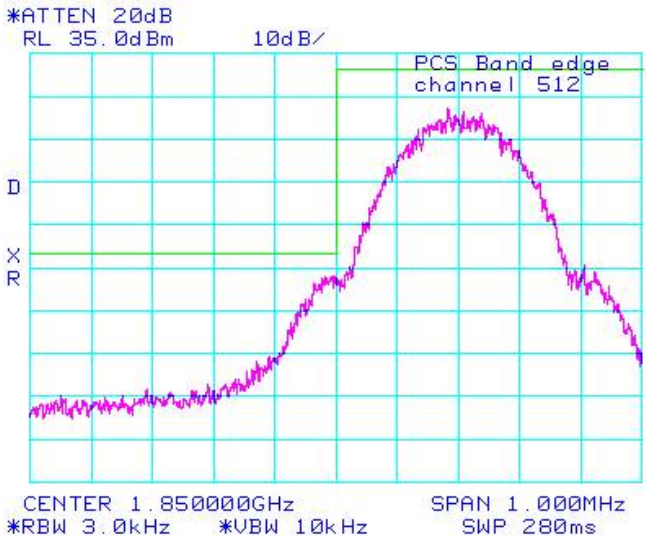
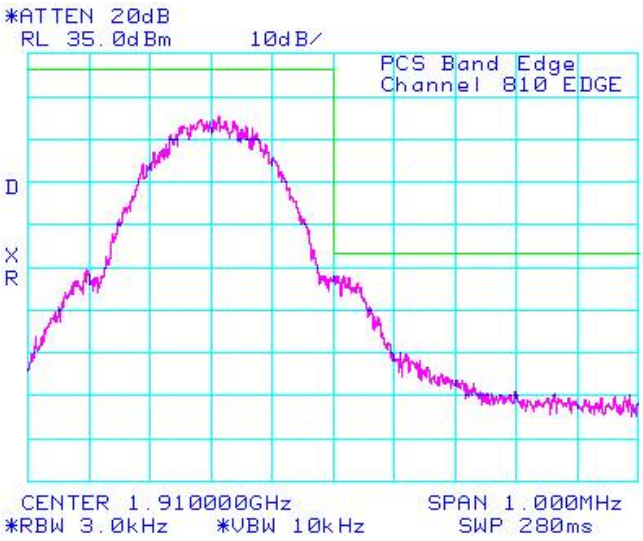


Figure 1-38a: PCS1900 Band, High Channel Mask in EDGE mode

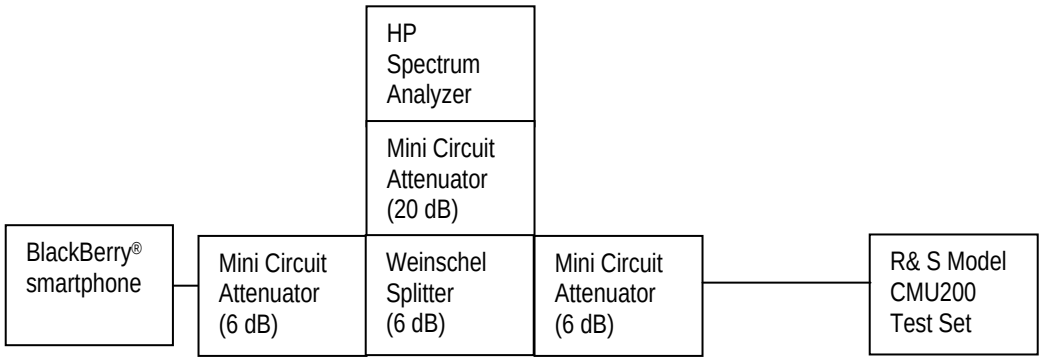


APPENDIX 1B – WCDMA CONDUCTED RF EMISSIONS TEST DATA/PLOTS

WCDMA 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 2108867B.

Test Setup Diagram



Date of Test: July 23, 2009

The environmental test conditions were:	Temperature:	23 ºC
	Pressure:	1008 mb
	Relative Humidity:	32 %

The following measurements were performed by Maurice Battler.

WCDMA Conducted RF Emission Test Data cont'd

The conducted spurious emissions – As per 47 CFR 27.53 and RSS-139, 6.5 were measured from 10 MHz to 20 GHz. The EUT emissions were in the noise floor.
See figures 1-1b to 1-6b for the plots of the conducted spurious emissions.

–26 dBc Bandwidth and Occupied Bandwidth (99%)

For each carrier frequency of low, middle and high, the modulation spectrum was measured by both methods of 99% power bandwidth and –26 dBc bandwidth.
The resolution bandwidth required for out-of-band emissions in the 1 MHz bands immediately outside and adjacent to the frequency block, was determined to be at least 1% of the emission bandwidth.
The worst case –26dBc bandwidth for the UMTS1700 band was measured to be 4.675 MHz as shown below. This results in a 3.0 kHz resolution bandwidth.
On any frequency outside the frequency block and outside the adjacent 1 MHz bands, a resolution bandwidth of at least 2 MHz was employed.

Test Data for 1700 band selected Frequencies in UMTS mode.

1700 band Frequency (MHz)	-26dBc Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
826.4	4.675	4.175
836.4	4.650	4.175
846.6	4.283	4.175

Measurement Plots for 1700 band in UMTS mode
Refer to the following measurement plots for more detail.
See Figures 1-7b to 1-12b for the plots of the –26dBc Bandwidth and 99% Occupied Bandwidth.
See Figures 1-13b to 1-14b for plots of the channel mask results.

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

WCDMA Conducted RF Emission Test Data cont'd

Figure 1-1b: UMTS1700 band, Spurious Conducted Emissions, Low channel

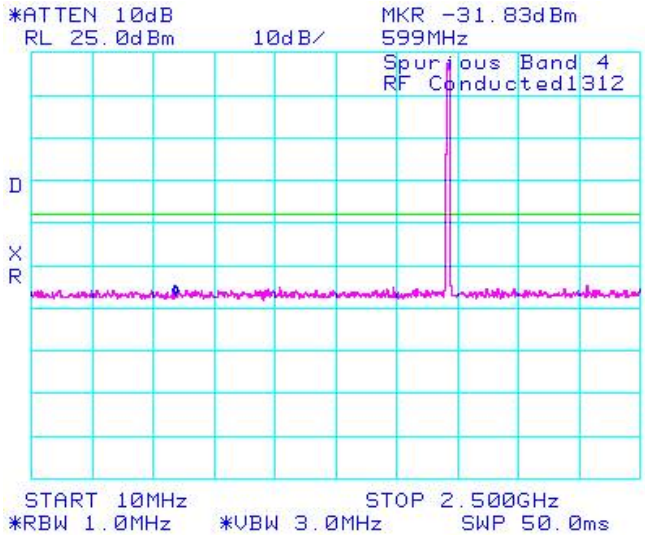


Figure 1-2b: UMTS1700 band, Spurious Conducted Emissions, Low channel

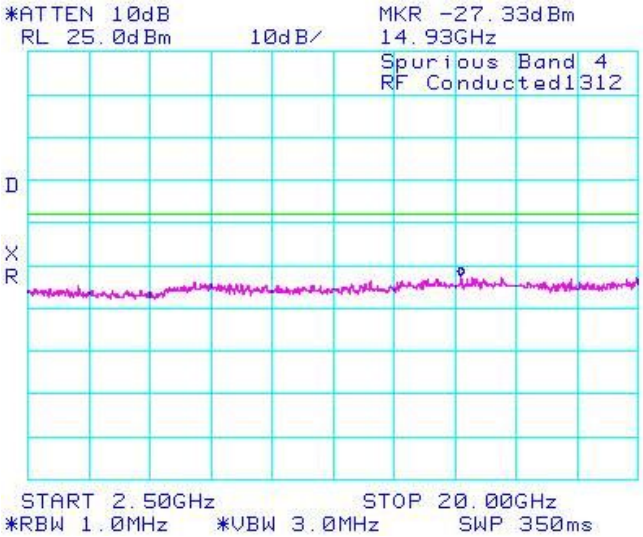


Figure 1-3b: UMTS1700 band, Spurious Conducted Emissions, Middle Channel

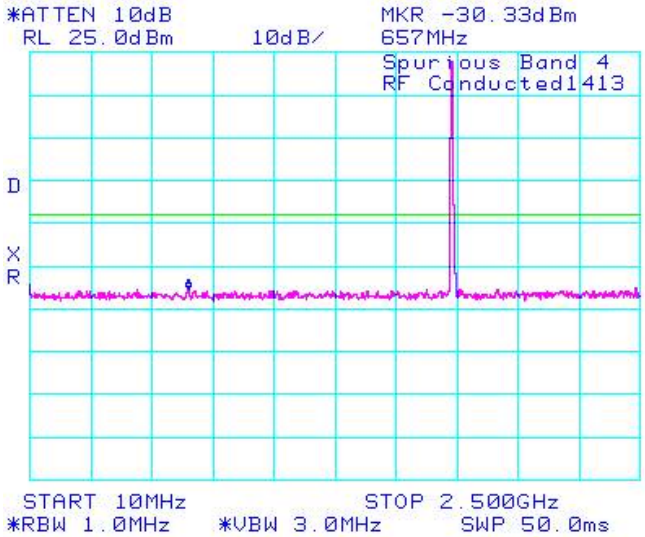
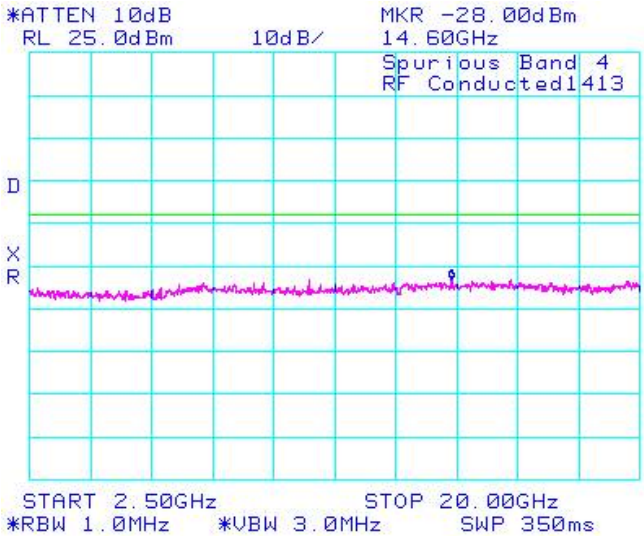


Figure 1-4b: UMTS1700 band, Spurious Conducted Emissions, Middle Channel



WCDMA Conducted RF Emission Test Data cont'd

Figure 1-5b: UMTS1700 band, Spurious Conducted Emissions, High Channel

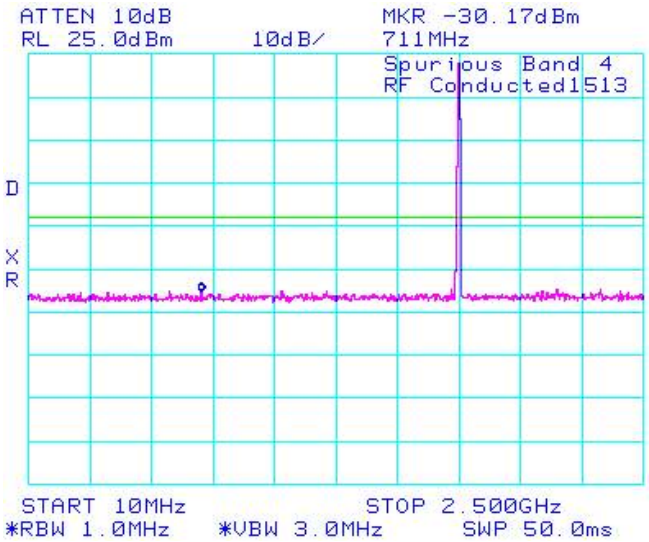


Figure 1-6b: UMTS1700 band, Spurious Conducted Emissions, High Channel

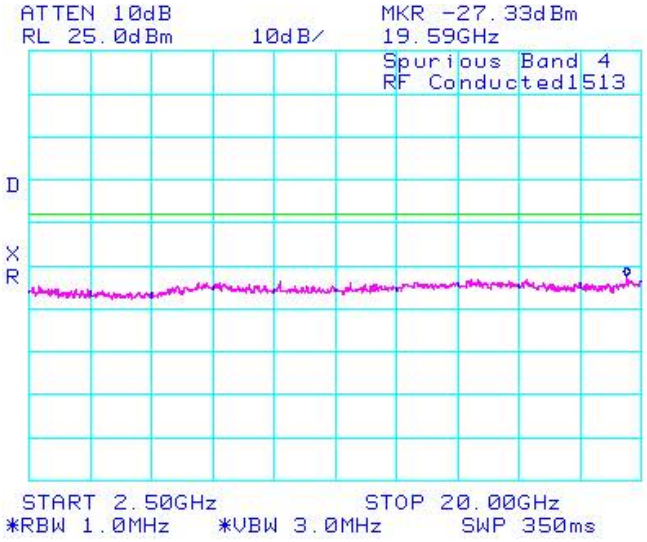


Figure 1-7b: -26dBc bandwidth, UMTS1700 band Low Channel

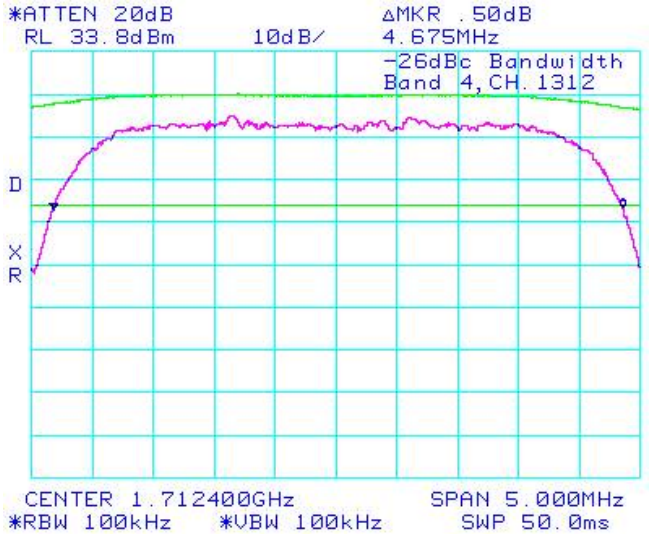
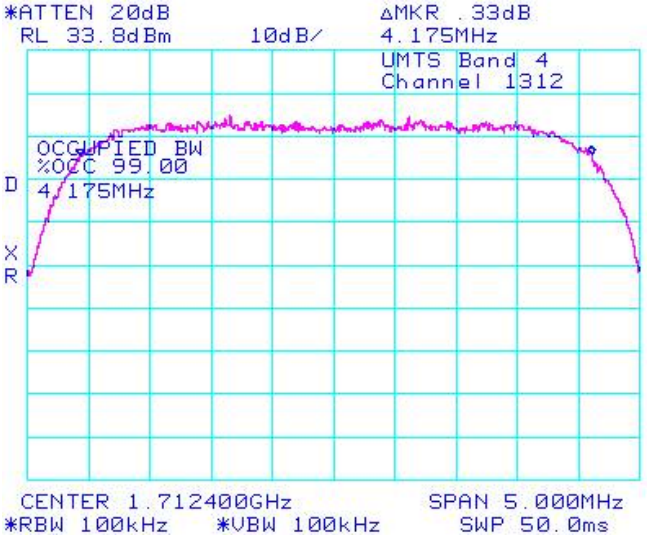


Figure 1-8b: Occupied Bandwidth, UMTS1700 band Low Channel



WCDMA Conducted RF Emission Test Data cont'd

Figure 1-9b: -26dBc bandwidth, UMTS1700 band Middle Channel

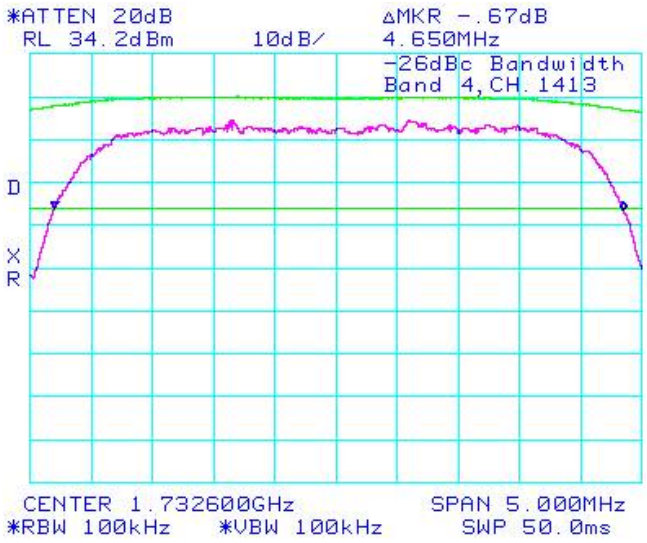


Figure 1-10b: Occupied Bandwidth, UMTS1700 band Middle Channel

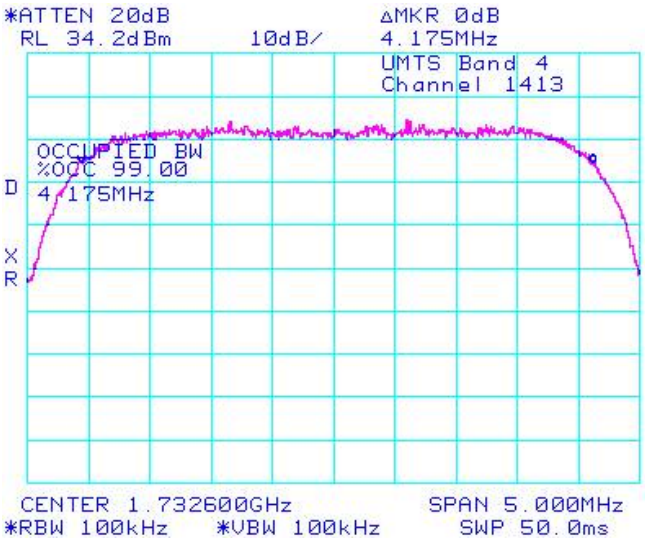


Figure 1-11b: -26dBc bandwidth, UMTS1700 band High Channel

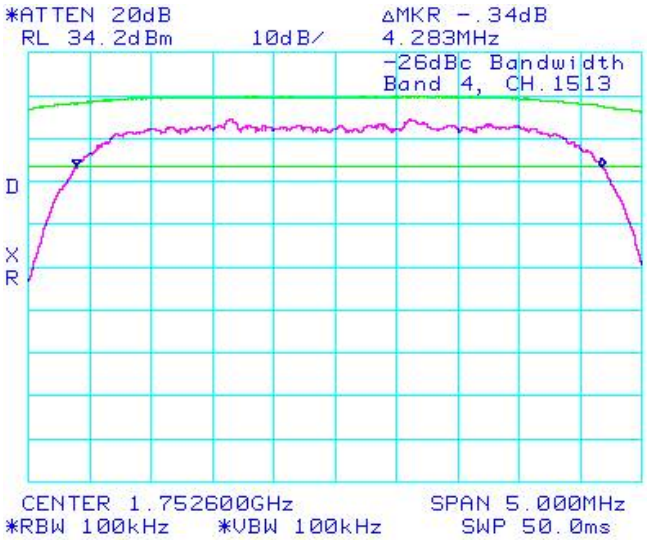
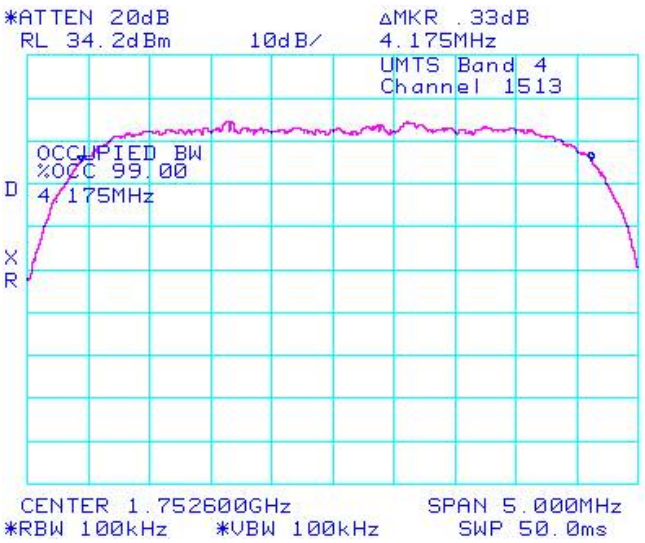


Figure 1-12b: Occupied Bandwidth, UMTS1700 band High Channel



WCDMA Conducted RF Emission Test Data cont'd

Figure 1-13b: UMTS1700 band, Low Channel Mask

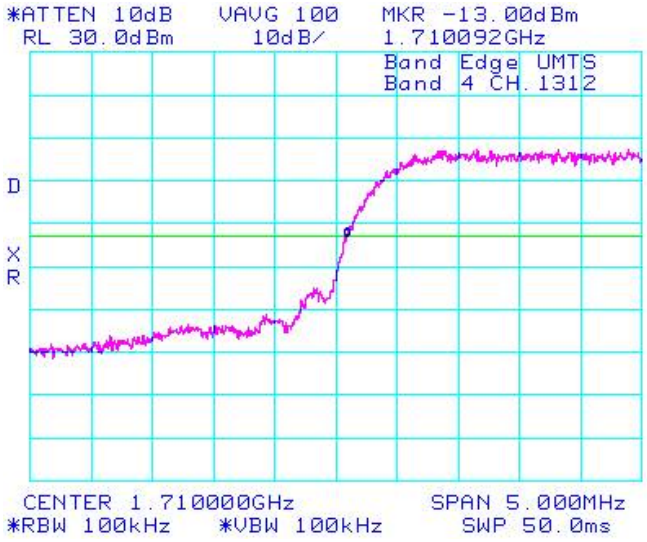
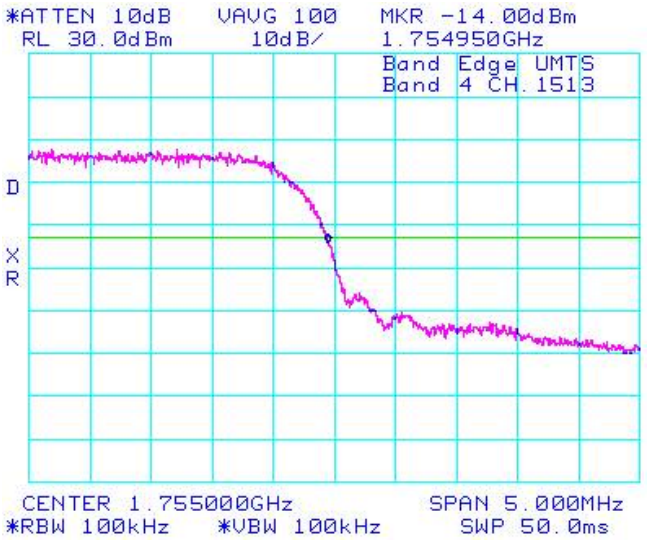


Figure 1-14b: UMTS1700 band High Channel Mask



APPENDIX 2A – GSM CONDUCTED RF OUTPUT POWER TEST DATA

GSM Conducted RF Output Power Test Data

The following measurements were performed by Daoud Attayi.

The conducted RF output power was measured on the BlackBerry® smartphone PIN 21088684 using the Communication Tester, Rohde & Schwarz, model CMU 200. The low, middle and high channels were measured at maximum radio output power. The insertion loss of the coaxial cable from the CMU 200 to the BlackBerry® smartphone was compensated for in the measurements.
Peak nominal output power is 32.0 dBm ±0.5 dB for GSM850 and 30.5 dBm ±0.5 dB for PCS. Peak nominal output power is 30.0 dBm ±0.5 dB for GSM850 EDGE Mode (2-timeslot uplink) and 28.0 dBm ±0.5 dB for PCS EDGE Mode (2-timeslot uplink).

Date of Test: August 28, 2009

The environmental test conditions were:

Temperature:	22 ºC
Pressure:	1009 mb
Relative Humidity:	32 %

Channel	Frequency (MHz)	Maximum Output Power (dBm)	Maximum Output Power (Watts)	Channel	Frequency (MHz)	Maximum Output Power (dBm)	Maximum Output Power (Watts)
GSM850				GSM850 EDGE/GPRS/GSM (2-timeslot)			
128	824.20	31.7	1.48	128	824.20	29.7	0.93
189	837.60	31.9	1.55	189	837.60	29.8	0.95
251	848.80	32.1	1.62	251	848.80	30.1	1.02
PCS				PCS EDGE/GPRS/GSM (2-timeslot)			
512	1850.2	30.7	1.17	512	1850.2	28.1	0.65
661	1880.0	30.6	1.15	661	1880.0	28.0	0.63
810	1909.8	30.3	1.07	810	1909.8	27.8	0.60

APPENDIX 2B – WCDMA CONDUCTED RF OUTPUT POWER TEST DATA

WCDMA Conducted RF Output Power Test Data

The following measurements were performed by Daoud Attayi.

The conducted RF output power was measured on the BlackBerry® smartphone PIN 21088684 using the Communication Tester, Rohde & Schwarz, model CMU 200. The low, middle and high channels were measured at maximum radio output power. The insertion loss of the coaxial cable from the CMU 200 to the BlackBerry® smartphone was compensated for in the measurements.
Peak nominal output power is 22.0 dBm ±0.5 dB for UMTS1700.

Date of Test: August 28, 2009

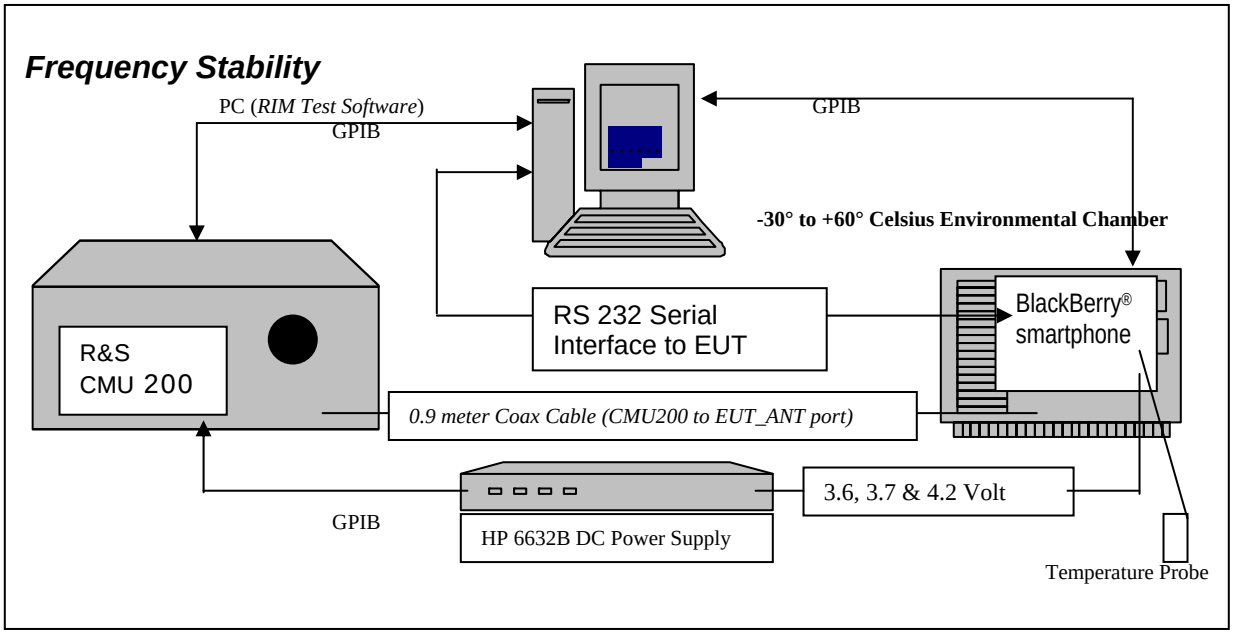
The environmental test conditions were:

Temperature:	22 ºC
Pressure:	1009 mb
Relative Humidity:	32 %

	Band	**FDD IV (1700)**		
	Channel	1312	1413	1513
	Freq (MHz)	1712.4	1732.6	1752.6
Mode	**Subtest**	**Conducted Transmit Power (dBm)**		
Rel99	12.2 kbps RMC	22.00	22.20	22.30
Rel99	12.2 kbps AMR, SRB 3.4 kbps	21.95	22.12	22.20
Rel5 HSDPA	1	21.90	22.09	22.10
Rel5 HSDPA	2	21.95	22.00	22.00
Rel5 HSDPA	3	21.89	22.00	22.10
Rel5 HSDPA	4	21.90	22.10	22.05

APPENDIX 3A – GSM FREQUENCY STABILITY TEST DATA

GSM Frequency Stability Test Data



The following measurements were performed by Maurice Battler.

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 EUT meets the requirements as stated in CFR 47 chapter 1, Section 24.235, CFR 47 chapter 1, Section 22.917 and RSS-132, 4.3 Frequency Stability.

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

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

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

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

Procedure:

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

The chamber was switched on and the temperature was set to -30°C.
After the chamber stabilized at -30 °C there was a soak period of one hour to alleviate moisture in the chamber, the EUT voltage was enabled.
The system software recorded the frequency, power, and associated measurements.

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

The EUT repetitively transmitted 100 bursts for each set of programmed parameters recording temperature, voltage settings, and systematically selected frequencies. The power supply was cycled from minimum voltage 3.6 volts, to 3.7 volts to 4.2 volts maximum voltage. The frequency error was measured at a maximum output power and recorded by the automated system test software.

The EUT output power and frequency was measured at 3.6 volts, 3.7 volts and 4.2 volts. The transmit frequency was varied in 3 steps consisting of 824.2, 836.4, and 848.6 MHz for the GSM850 band, 1850.2, 1880.0 and 1909.8 MHz for the PCS1900 band. This frequency was recorded in MHz and deviation from nominal, in Parts Per Million.
After the initial one-hour soak at the beginning of the tests, a period of thirty minutes soak was initialized between each ascending temperature step, before proceeding to the next measurement test cycle.

PROCEDURE:

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

1. Switch on the HP 6632B power supply; CMU 200 Communications test Set, and Environmental Chamber.
2. Start test program
3. Set the Temperature to –30°C and maintain a period of one- hour soak time, with the EUT supply voltage disabled.
4. Set power supply voltage to 3.6 volts.
5. Set up CMU 200 Radio Communication Tester.
6. Command the CMU 200 to switch to the low channel.
7. Enable the voltage to the EUT, and connect a link to the CMU 200 test set.
8. EUT is commanded to Transmit 100 Bursts.
9. Software logs the following data from the CMU 200, power supply and temperature chamber: Traffic Channel Number, Traffic Channel Frequency, Power Level, Chamber Temperature, Supply Voltage, Power and Frequency Error.
10. The CMU 200 commands the EUT to change frequency to the middle channel and high channel and repeats steps 7 to 9.
11. Repeat steps 5 to 10 changing the supply voltage to 3.7 Volts
12. Increase temperature by 10°C and soak for 1/2 hour.
13. Repeat steps 4 - 12 for temperatures –30°C to 60°C.
14. Repeat steps 5 to 10 changing the supply voltage to 4.2 volts

Procedure 5 to 10 was repeated at room temperature (20°C) with the power supply voltage set to 3.6, 3.7 and 4.2 volts.

The maximum frequency error in the GSM850 band measured was **0.0528 PPM**.
The maximum frequency error in the PCS1900 band measured was **-0.0347 PPM**.

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

The BlackBerry® smartphone PIN 2108867B was tested on August 17, 2009.

Traffic Channel Number	GSM850 Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
128	824.20	3.6	20	10.14	0.0123
189	836.40	3.6	20	10.72	0.0128
250	848.60	3.6	20	12.40	0.0146

Traffic Channel Number	GSM850 Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
128	824.20	3.7	20	13.62	0.0165
189	836.40	3.7	20	14.85	0.0178
250	848.60	3.7	20	17.31	0.0204

Traffic Channel Number	GSM850 Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
128	824.20	4.2	20	17.50	0.0212
189	836.40	4.2	20	16.72	0.0200
250	848.60	4.2	20	15.56	0.0183

GSM850 Results: channel 128 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
128	824.20	3.6	-30	29.77	0.0361
128	824.20	3.6	-20	27.06	0.0328
128	824.20	3.6	-10	-8.27	-0.0100
128	824.20	3.6	0	37.77	0.0458
128	824.20	3.6	10	13.30	0.0161
128	824.20	3.6	20	10.14	0.0123
128	824.20	3.6	30	-35.32	-0.0429
128	824.20	3.6	40	-20.99	-0.0255
128	824.20	3.6	50	36.22	0.0439
128	824.20	3.6	60	22.47	0.0273

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
128	824.20	3.7	-30	39.71	0.0482
128	824.20	3.7	-20	7.36	0.0089
128	824.20	3.7	-10	-18.14	-0.0220
128	824.20	3.7	0	28.28	0.0343
128	824.20	3.7	10	11.11	0.0135
128	824.20	3.7	20	13.62	0.0165
128	824.20	3.7	30	-27.18	-0.0330
128	824.20	3.7	40	-25.76	-0.0313
128	824.20	3.7	50	-36.48	-0.0443
128	824.20	3.7	60	6.59	0.0080

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
128	824.20	4.2	-30	31.19	0.0378
128	824.20	4.2	-20	15.50	0.0188
128	824.20	4.2	-10	-13.50	-0.0164
128	824.20	4.2	0	34.16	0.0414
128	824.20	4.2	10	10.98	0.0133
128	824.20	4.2	20	17.50	0.0212
128	824.20	4.2	30	-36.74	-0.0446
128	824.20	4.2	40	-40.81	-0.0495
128	824.20	4.2	50	36.81	0.0447
128	824.20	4.2	60	7.17	0.0087

GSM850 Results: channel 189 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
189	836.40	3.6	-30	31.77	0.0380
189	836.40	3.6	-20	14.66	0.0175
189	836.40	3.6	-10	-14.66	-0.0175
189	836.40	3.6	0	32.67	0.0391
189	836.40	3.6	10	11.30	0.0135
189	836.40	3.6	20	10.72	0.0128
189	836.40	3.6	30	-32.87	-0.0393
189	836.40	3.6	40	-21.57	-0.0258
189	836.40	3.6	50	-8.72	-0.0104
189	836.40	3.6	60	13.62	0.0163

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
189	836.40	3.7	-30	41.52	0.0496
189	836.40	3.7	-20	5.94	0.0071
189	836.40	3.7	-10	-16.72	-0.0200
189	836.40	3.7	0	28.86	0.0345
189	836.40	3.7	10	8.91	0.0107
189	836.40	3.7	20	14.85	0.0178
189	836.40	3.7	30	-26.86	-0.0321
189	836.40	3.7	40	-28.22	-0.0337
189	836.40	3.7	50	-37.84	-0.0452
189	836.40	3.7	60	7.43	0.0089

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
189	836.40	4.2	-30	26.86	0.0321
189	836.40	4.2	-20	22.73	0.0272
189	836.40	4.2	-10	-13.56	-0.0162
189	836.40	4.2	0	35.13	0.0420
189	836.40	4.2	10	10.27	0.0123
189	836.40	4.2	20	16.72	0.0200
189	836.40	4.2	30	-39.65	-0.0474
189	836.40	4.2	40	-41.20	-0.0493
189	836.40	4.2	50	-5.62	-0.0067
189	836.40	4.2	60	9.81	0.0117

GSM850 Results: channel 250 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
250	848.60	3.6	-30	36.55	0.0431
250	848.60	3.6	-20	11.62	0.0137
250	848.60	3.6	-10	-15.24	-0.0180
250	848.60	3.6	0	30.15	0.0355
250	848.60	3.6	10	8.46	0.0100
250	848.60	3.6	20	12.40	0.0146
250	848.60	3.6	30	-29.51	-0.0348
250	848.60	3.6	40	-23.70	-0.0279
250	848.60	3.6	50	-25.18	-0.0297
250	848.60	3.6	60	10.46	0.0123

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
250	848.60	3.7	-30	44.81	**0.0528**
250	848.60	3.7	-20	-6.26	-0.0074
250	848.60	3.7	-10	-17.43	-0.0205
250	848.60	3.7	0	29.64	0.0349
250	848.60	3.7	10	8.39	0.0099
250	848.60	3.7	20	17.31	0.0204
250	848.60	3.7	30	-27.70	-0.0326
250	848.60	3.7	40	-28.02	-0.0330
250	848.60	3.7	50	-40.10	-0.0473
250	848.60	3.7	60	4.84	0.0057

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
250	848.60	4.2	-30	23.31	0.0275
250	848.60	4.2	-20	22.79	0.0269
250	848.60	4.2	-10	-12.20	-0.0144
250	848.60	4.2	0	36.87	0.0434
250	848.60	4.2	10	9.81	0.0116
250	848.60	4.2	20	15.56	0.0183
250	848.60	4.2	30	-38.74	-0.0457
250	848.60	4.2	40	-44.75	-0.0527
250	848.60	4.2	50	8.46	0.0100
250	848.60	4.2	60	11.75	0.0138

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

Date of Test: August 05, 2009

Traffic Channel Number	PCS Frequency (MHz	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	*PPM*
512	1850.2	3.6	20	-37.19	-0.0201
661	1880.0	3.6	20	-37.97	-0.0202
810	1909.8	3.6	20	-40.29	-0.0211

Traffic Channel Number	PCS Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
512	1850.2	3.7	20	-38.23	-0.0207
661	1880.0	3.7	20	-40.36	-0.0215
810	1909.8	3.7	20	-43.20	-0.0226

Traffic Channel Number	PCS Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
512	1850.2	4.2	20	-52.43	-0.0283
661	1880.0	4.2	20	-55.14	-0.0293
810	1909.8	4.2	20	-56.50	-0.0296

PCS1900 Results: channel 512 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
512	1850.2	3.6	-30	60.50	0.0327
512	1850.2	3.6	-20	8.98	0.0049
512	1850.2	3.6	-10	34.48	0.0186
512	1850.2	3.6	0	-17.31	-0.0094
512	1850.2	3.6	10	38.42	0.0208
512	1850.2	3.6	20	-37.19	-0.0201
512	1850.2	3.6	30	51.85	0.0280
512	1850.2	3.6	40	-21.05	-0.0114
512	1850.2	3.6	50	-64.12	**-0.0347**
512	1850.2	3.6	60	-26.09	-0.0141

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
512	1850.2	3.7	-30	40.23	0.0214
512	1850.2	3.7	-20	12.85	0.0068
512	1850.2	3.7	-10	16.98	0.0090
512	1850.2	3.7	0	-23.12	-0.0123
512	1850.2	3.7	10	31.32	0.0167
512	1850.2	3.7	20	-37.97	-0.0202
512	1850.2	3.7	30	21.50	0.0114
512	1850.2	3.7	40	-26.02	-0.0138
512	1850.2	3.7	50	10.78	0.0057
512	1850.2	3.7	60	-27.06	-0.0144

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
512	1850.2	4.2	-30	30.03	0.0157
512	1850.2	4.2	-20	19.18	0.0100
512	1850.2	4.2	-10	13.37	0.0070
512	1850.2	4.2	0	-29.44	-0.0154
512	1850.2	4.2	10	28.28	0.0148
512	1850.2	4.2	20	-40.29	-0.0211
512	1850.2	4.2	30	-9.10	-0.0048
512	1850.2	4.2	40	-31.06	-0.0163
512	1850.2	4.2	50	10.59	0.0055
512	1850.2	4.2	60	-26.67	-0.0140

PCS1900 Results: channel 661 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
661	1880	3.6	-30	23.18	0.0125
661	1880	3.6	-20	22.34	0.0121
661	1880	3.6	-10	-14.40	-0.0078
661	1880	3.6	0	-30.03	-0.0162
661	1880	3.6	10	26.47	0.0143
661	1880	3.6	20	-38.23	-0.0207
661	1880	3.6	30	-20.53	-0.0111
661	1880	3.6	40	-27.83	-0.0150
661	1880	3.6	50	-10.20	-0.0055
661	1880	3.6	60	-26.15	-0.0141

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
661	1880	3.7	-30	23.83	0.0127
661	1880	3.7	-20	18.66	0.0099
661	1880	3.7	-10	-9.94	-0.0053
661	1880	3.7	0	-30.80	-0.0164
661	1880	3.7	10	25.05	0.0133
661	1880	3.7	20	-40.36	-0.0215
661	1880	3.7	30	-12.40	-0.0066
661	1880	3.7	40	-28.15	-0.0150
661	1880	3.7	50	12.07	0.0064
661	1880	3.7	60	-31.06	-0.0165

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
661	1880	4.2	-30	25.05	0.0131
661	1880	4.2	-20	22.60	0.0118
661	1880	4.2	-10	-11.04	-0.0058
661	1880	4.2	0	-34.48	-0.0181
661	1880	4.2	10	29.25	0.0153
661	1880	4.2	20	-43.20	-0.0226
661	1880	4.2	30	-13.95	-0.0073
661	1880	4.2	40	-27.83	-0.0146
661	1880	4.2	50	-9.81	-0.0051
661	1880	4.2	60	-29.12	-0.0152

PCS1900 Results: channel 810 @ maximum transmitted power

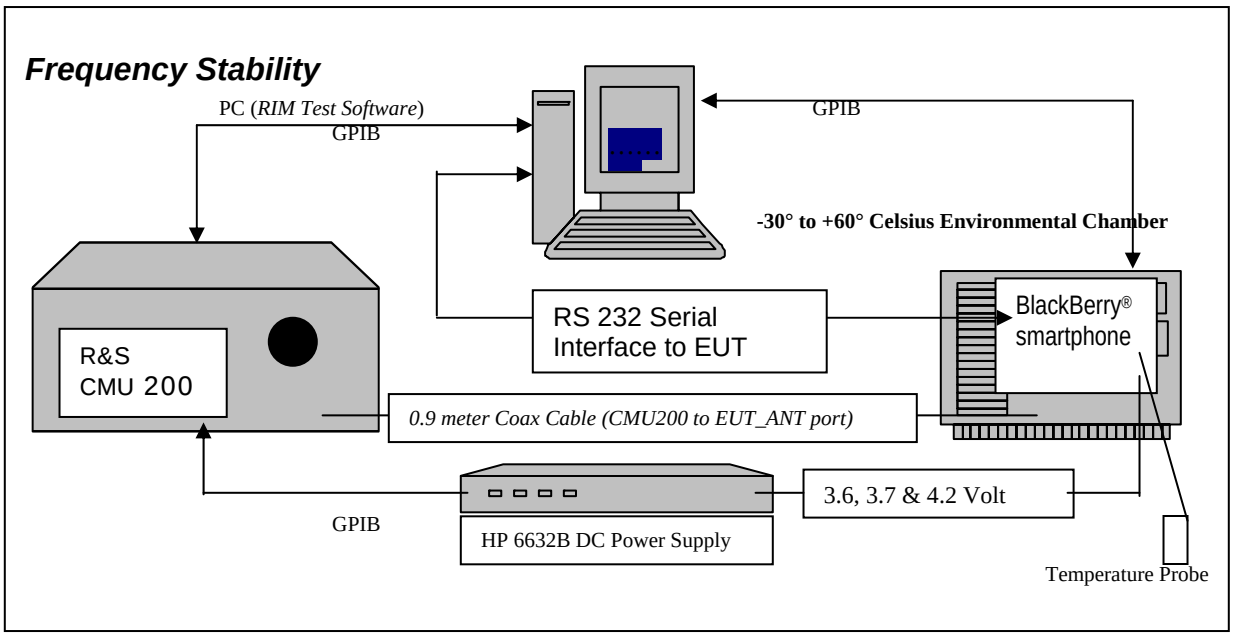
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
810	1909.8	3.6	-30	57.02	0.0308
810	1909.8	3.6	-20	20.60	0.0111
810	1909.8	3.6	-10	28.99	0.0157
810	1909.8	3.6	0	-22.47	-0.0121
810	1909.8	3.6	10	31.77	0.0172
810	1909.8	3.6	20	-52.43	-0.0283
810	1909.8	3.6	30	15.95	0.0086
810	1909.8	3.6	40	-16.34	-0.0088
810	1909.8	3.6	50	-20.34	-0.0110
810	1909.8	3.6	60	-58.76	-0.0318

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
810	1909.8	3.7	-30	60.31	0.0321
810	1909.8	3.7	-20	15.05	0.0080
810	1909.8	3.7	-10	33.58	0.0179
810	1909.8	3.7	0	-19.89	-0.0106
810	1909.8	3.7	10	37.65	0.0200
810	1909.8	3.7	20	-55.14	-0.0293
810	1909.8	3.7	30	38.68	0.0206
810	1909.8	3.7	40	-18.92	-0.0101
810	1909.8	3.7	50	-21.44	-0.0114
810	1909.8	3.7	60	-62.05	-0.0330

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
810	1909.8	4.2	-30	-8.27	-0.0043
810	1909.8	4.2	-20	19.63	0.0103
810	1909.8	4.2	-10	35.06	0.0184
810	1909.8	4.2	0	-19.82	-0.0104
810	1909.8	4.2	10	37.90	0.0198
810	1909.8	4.2	20	-56.50	-0.0296
810	1909.8	4.2	30	41.39	0.0217
810	1909.8	4.2	40	-17.50	-0.0092
810	1909.8	4.2	50	-22.73	-0.0119
810	1909.8	4.2	60	-64.44	-0.0337

APPENDIX 3B – WCDMA FREQUENCY STABILITY TEST DATA

WCDMA Frequency Stability Test Data



The following measurements were performed by Maurice Battler.

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 EUT meets the requirements as stated in CFR 47 chapter 1, Section 27.54, CFR 47 and RSS-139, 6.3 Frequency Stability.

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

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

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

UMTS1700 Frequency (MHz)	Cable loss (dB)
1712.4	0.90
1732.6	0.90
1752.6	0.90

Procedure:

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

The chamber was switched on and the temperature was set to -30°C.
After the chamber stabilized at -30 °C there was a soak period of one hour to alleviate moisture in the chamber, the EUT voltage was enabled.
The system software recorded the frequency, power, and associated measurements.

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

The EUT repetitively transmitted 100 bursts for each set of programmed parameters recording temperature, voltage settings, and systematically selected frequencies. The power supply was cycled from minimum voltage 3.6 volts, to 3.7 volts to 4.2 volts maximum voltage. The frequency error was measured at a maximum output power and recorded by the automated system test software.

The EUT output power and frequency was measured at 3.6 volts, 3.7 volts and 4.2 volts. The transmit frequency was varied in 3 steps consisting of 1712.4, 1732.6 and 1752.5 MHz for the UMTS1700 band. This frequency was recorded in MHz and deviation from nominal, in Parts Per Million.
After the initial one-hour soak at the beginning of the tests, a period of thirty minutes soak was initialized between each ascending temperature step, before proceeding to the next measurement test cycle.

PROCEDURE:

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

1. Switch on the HP 6632B power supply; CMU 200 Communications test Set, and Environmental Chamber.
2. Start test program
3. Set the Temperature to –30°C and maintain a period of one- hour soak time, with the EUT supply voltage disabled.
4. Set power supply voltage to 3.6 volts.
5. Set up CMU 200 Radio Communication Tester.
6. Command the CMU 200 to switch to the low channel.
7. Enable the voltage to the EUT, and connect a link to the CMU 200 test set.
8. EUT is commanded to Transmit 100 Bursts.
9. Software logs the following data from the CMU 200, power supply and temperature chamber: Traffic Channel Number, Traffic Channel Frequency, Power Level, Chamber Temperature, Supply Voltage, Power and Frequency Error.
10. The CMU 200 commands the EUT to change frequency to the middle channel and high channel and repeats steps 7 to 9.
11. Repeat steps 5 to 10 changing the supply voltage to 3.7 Volts
12. Increase temperature by 10°C and soak for 1/2 hour.
13. Repeat steps 4 - 12 for temperatures –30°C to 60°C.
14. Repeat steps 5 to 10 changing the supply voltage to 4.2 volts

Procedure 5 to 10 was repeated at room temperature (20°C) with the power supply voltage set to 3.6, 3.7 and 4.2 volts.

The maximum frequency error in the UMTS1700 band measured was **0.0183 PPM**.

UMTS1700 Channel results: channels 4132, 4182 and 4233 @ 20°C maximum transmitted power

The BlackBerry® smartphone PIN 2108867B was tested on August 19, 2009.

Traffic Channel Number	UMTS1700 Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1312	1712.4	3.6	20	9.69	0.0057
1413	1732.6	3.6	20	10.31	0.0060
1513	1752.6	3.6	20	26.82	0.0153

Traffic Channel Number	UMTS1700 Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1312	1712.4	3.7	20	11.81	0.0069
1413	1732.6	3.7	20	-9.66	-0.0056
1513	1752.6	3.7	20	19.94	0.0114

Traffic Channel Number	UMTS1700 Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1312	1712.4	4.2	20	15.69	0.0092
1413	1732.6	4.2	20	8.74	0.0050
1513	1752.6	4.2	20	18.95	0.0108

UMTS1700 Results: channel 4132 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1312	1712.4	3.6	-30	21.65	0.0126
1312	1712.4	3.6	-20	14.77	0.0086
1312	1712.4	3.6	-10	18.84	0.0110
1312	1712.4	3.6	0	29.17	0.0170
1312	1712.4	3.6	10	19.44	0.0114
1312	1712.4	3.6	20	9.69	0.0057
1312	1712.4	3.6	30	10.94	0.0064
1312	1712.4	3.6	40	9.19	0.0054
1312	1712.4	3.6	50	16.36	0.0096
1312	1712.4	3.6	60	13.53	0.0079

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1312	1712.4	3.7	-30	8.03	0.0046
1312	1712.4	3.7	-20	31.71	0.0183
1312	1712.4	3.7	-10	13.15	0.0076
1312	1712.4	3.7	0	8.74	0.0050
1312	1712.4	3.7	10	21.50	0.0124
1312	1712.4	3.7	20	10.31	0.0060
1312	1712.4	3.7	30	11.44	0.0066
1312	1712.4	3.7	40	4.15	0.0024
1312	1712.4	3.7	50	18.40	0.0106
1312	1712.4	3.7	60	23.18	0.0134

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1312	1712.4	4.2	-30	11.15	0.0064
1312	1712.4	4.2	-20	24.93	0.0142
1312	1712.4	4.2	-10	29.45	0.0168
1312	1712.4	4.2	0	11.31	0.0065
1312	1712.4	4.2	10	26.03	0.0149
1312	1712.4	4.2	20	26.82	0.0153
1312	1712.4	4.2	30	12.28	0.0070
1312	1712.4	4.2	40	4.64	0.0026
1312	1712.4	4.2	50	25.01	0.0143
1312	1712.4	4.2	60	31.49	0.0180

UMTS1700 Results: channel 4182 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1413	1732.6	3.6	-30	19.30	0.0113
1413	1732.6	3.6	-20	23.70	0.0138
1413	1732.6	3.6	-10	26.25	0.0153
1413	1732.6	3.6	0	9.86	0.0058
1413	1732.6	3.6	10	11.23	0.0066
1413	1732.6	3.6	20	11.81	0.0069
1413	1732.6	3.6	30	6.88	0.0040
1413	1732.6	3.6	40	8.39	0.0049
1413	1732.6	3.6	50	9.54	0.0056
1413	1732.6	3.6	60	31.31	0.0183

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1413	1732.6	3.7	-30	17.99	0.0104
1413	1732.6	3.7	-20	-4.65	-0.0027
1413	1732.6	3.7	-10	7.75	0.0045
1413	1732.6	3.7	0	4.65	0.0027
1413	1732.6	3.7	10	7.81	0.0045
1413	1732.6	3.7	20	-9.66	-0.0056
1413	1732.6	3.7	30	12.54	0.0072
1413	1732.6	3.7	40	10.82	0.0062
1413	1732.6	3.7	50	13.06	0.0075
1413	1732.6	3.7	60	25.86	0.0149

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1413	1732.6	4.2	-30	24.44	0.0139
1413	1732.6	4.2	-20	28.85	0.0165
1413	1732.6	4.2	-10	20.29	0.0116
1413	1732.6	4.2	0	15.69	0.0090
1413	1732.6	4.2	10	21.15	0.0121
1413	1732.6	4.2	20	19.94	0.0114
1413	1732.6	4.2	30	20.32	0.0116
1413	1732.6	4.2	40	17.43	0.0099
1413	1732.6	4.2	50	26.00	0.0148
1413	1732.6	4.2	60	31.65	0.0181

UMTS1700 Results: channel 4233 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1513	1752.6	3.6	-30	18.05	0.0105
1513	1752.6	3.6	-20	20.54	0.0120
1513	1752.6	3.6	-10	15.17	0.0089
1513	1752.6	3.6	0	16.88	0.0099
1513	1752.6	3.6	10	6.26	0.0037
1513	1752.6	3.6	20	15.69	0.0092
1513	1752.6	3.6	30	12.83	0.0075
1513	1752.6	3.6	40	6.85	0.0040
1513	1752.6	3.6	50	7.77	0.0045
1513	1752.6	3.6	60	6.48	0.0038

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1513	1752.6	3.7	-30	13.15	0.0076
1513	1752.6	3.7	-20	-6.44	-0.0037
1513	1752.6	3.7	-10	13.17	0.0076
1513	1752.6	3.7	0	12.73	0.0073
1513	1752.6	3.7	10	-7.25	-0.0042
1513	1752.6	3.7	20	8.74	0.0050
1513	1752.6	3.7	30	9.35	0.0054
1513	1752.6	3.7	40	9.67	0.0056
1513	1752.6	3.7	50	18.52	0.0107
1513	1752.6	3.7	60	21.50	0.0124

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
1513	1752.6	4.2	-30	25.83	0.0147
1513	1752.6	4.2	-20	30.06	0.0172
1513	1752.6	4.2	-10	18.20	0.0104
1513	1752.6	4.2	0	21.79	0.0124
1513	1752.6	4.2	10	11.49	0.0066
1513	1752.6	4.2	20	18.95	0.0108
1513	1752.6	4.2	30	21.24	0.0121
1513	1752.6	4.2	40	24.46	0.0140
1513	1752.6	4.2	50	32.07	**0.0183**
1513	1752.6	4.2	60	28.92	0.0165