EMI Test Report

Tested in accordance with
Federal Communications Commission (FCC)
Personal Communications Services
CFR 47, Parts 2, 22 and 24

RIM Testing Services (RTS)

REPORT NO.: RTS-0258-0601-02a

REPORT NO.: RBD50UW
TYPE NAME: BlackBerry Wireless Handheld
FCC ID: L6ARBD50UW
IC: 2503A-RBD50UW

Date: _____27 March 2006____

Declaration

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Statement of Performance:

The BlackBerry Wireless Handheld, model RBD50UW ASY-10384-xyz Rev. P_ASY-10613-001 Rev. M 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.

Tested by:

Maurice Battler.
Compliance Specialist

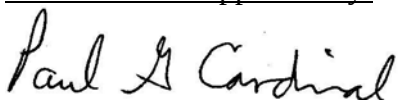
Date: March 27, 2006

Tested and Reviewed by:

Masud S Attayi, P.Eng.
Senior Compliance Engineer

Date: March 27, 2006

Reviewed and Approved by:



Paul G. Cardinal, Ph.D.
Manager

Date: April 03, 2006

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A) **Scope**

This report details the results of compliance tests which were performed in accordance to the requirements of:
FCC CFR 47 Part 2, Oct. 1, 2000
FCC CFR 47 Part 22, Subpart H, Cellular Radiotelephone Services, Oct. 1, 2000
FCC CFR 47 Part 24 Subpart E, Broadband PCS, Oct 1. 2000
Industry Canada, RSS-132 Issue 2, September 2005, Cellular Telephones Employing New Technologies Operating in the Bands 824-849 MHz and 869-894 MHz.
Industry Canada, RSS-133 Issue 3, June 2005, 2 GHz Personal Communications Services

B) **Product Identification**

The equipment under test (EUT) was tested at the RIM Testing Services (RTS) EMI test facility, located at:

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

The testing began on March 10, 2006 and completed on March 24, 2006. The sample equipment under test (EUT) included:

1a. BlackBerry Wireless Handheld, model number RBD50UW, ASY-10384-xyz Rev. P_ASY-10613-001 Rev. M, POP-10163-006 Rev. B, PIN 203F57CC, FCC ID L6ARBD50UW, IC: 2503A-RBD50UW.
1b. BlackBerry Wireless Handheld, model number RBD50UW, ASY-10384-xyz Rev. P_ASY-10613-001 Rev. M, POP-10163-006 Rev. B, PIN 203F5705, FCC ID L6ARBD50UW, IC: 2503A-RBD50UW.

The transmit frequency bands operating in North America for the Handheld are: GSM 824 to 849 MHz, PCS 1850 to 1910 MHz and Bluetooth 2402 to 2480 MHz.

C) **Support Equipment Used for the Testing of the EUT**

1) Communication Tester, Rohde & Schwarz, model CMU 200, serial number 100251
2) Communication Tester, Rohde & Schwarz, model CMU 200, serial number 102204
3) DC Power Supply, H/P, model 6632B, serial number US37472178

D) Test Voltage

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

E) Test Results Chart

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

F) Modifications to EUT

No modifications were required to the EUT.

G) **Summary of Results**

1) The EUT met the requirements of the Conducted Spurious Emissions requirements in the GSM850 band as per 47 CFR 2.1051, CFR 22.917, CFR 22.901(d) and RSS-132. The EUT was measured on the low, middle and high channels. The frequency range investigated was from 10 MHz to 10 GHz.
   See APPENDIX 1 for the test data.

2) The EUT met the requirements of the Conducted Spurious Emissions requirements in the PCS band as per 47 CFR 2.1051, CFR 24.238(a) and RSS-133. The EUT was measured on the low, middle and high channels. The frequency range investigated was from 10 MHz to 20 GHz.
   See APPENDIX 1 for the test data.

3) The EUT met the requirements of the Occupied Bandwidth and channel mask requirements in the GSM850 band as per 47 CFR 2.202, CFR 22.917 and RSS-132. The EUT was measured 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 requirements in the PCS band as per 47 CFR 2.202, CFR 24.238 and RSS-133. The EUT was measured 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 requirements for both the GSM850 and PCS bands as per 47 CFR 2.1046(a). The EUT was measured on the low, middle and high channels.
   See APPENDIX 2 for the test data.

6) The EUT met the requirements of the Frequency Stability vs. Temperature and Voltage requirements for GSM850 band as per 47 CFR 2.1055(a), 2.1055(d), CFR 22.917 and RSS-132.
   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 (3.5 volts), nominal (3.8 volts) and high (4.1 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 47 CFR 2.1055(a), 2.1055(d), 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 (3.5 volts), nominal (3.8 volts) and high (4.1 volts) dc input voltage at each temperature step and channel at maximum output power.
See APPENDIX 3 for the test data.

8) The radiated spurious emissions/harmonics and ERP/EIRP were measured for both GSM850 and PCS bands. The results are within the limits. The EUT was placed on a nonconductive styrofoam table, 100 cm high that was positioned on a remotely controlled turntable. The EUT height of one metre was set in order to align it with the lowest height of the receiving antenna. The test distance used between the EUT and the receiving antenna was three metres. Then the emissions were maximized by elevating the antenna in the range of 1 to 4 metres. The turntable was rotated to determine the azimuth of the peak emissions. The maximum emissions level was recorded. Both the horizontal and vertical polarisations of the emissions were measured.
The maximum emissions level was recorded. The EUT was then substituted with an antenna placed in the same location as the EUT. A Dipole antenna was used for the ERP measurements and a Horn antenna was used for EIRP measurements. After the final maximum reading was obtained the Handheld was substituted with a dipole or horn antenna, which was placed in the same location as the Handheld. The substitution antenna was connected into a signal generator that was set to the test frequency. The emissions were maximized by elevating the antenna in the range of 1 to 4 metres. The signal generator output was then adjusted to match the Handheld output reading. The signal generator output was recorded.
The measurements were performed in a semi-anechoic chamber. The semi-anechoic chamber FCC registration number is **778487** and the Industry Canada file number is **IC4240**. The EUT was measured on the low, middle and high channels.

The highest ERP in the GSM850 band measured was 29.35 dBm at 848.80 MHz (channel 251).
The highest EIRP in the PCS band measured was 28.5 dBm at 1909.80 MHz (channel 810).

The radiated carrier harmonics were measured up to the 10^{th} harmonic for low, middle and high channels in the GSM850 band and PCS band. Both the horizontal and vertical polarizations were measured. The harmonic emissions above the 3^{rd} harmonic were in the noise floor (NF) for the GSM850 band and above the 2^{nd} harmonic for the PCS band.
The worst test margin for GSM850 band harmonic emissions measured was 20.4 dB below the limit at 1697.6 MHz.
The worst test margin for PCS band harmonic emissions measured was 19.7 dB below the limit at 3819.6 MHz.

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

The radiated carrier harmonics were measured up to the 10th harmonic for low, middle and high channels for simultaneous transmission in GSM850/Bluetooth and in PCS/Bluetooth. Both the horizontal and vertical polarizations were measured. The harmonic emissions above the 6th harmonic were in the NF for the GSM850 band and above the 2nd harmonic for the PCS band.
The worst test margin for GSM850 band measured was 21.0 dB below the limit at 1648.40 MHz.
The worst test margin for PCS band measured was 20.9 dB below the limit at 3819.60 MHz.

Sample Calculation:

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

Measurement Uncertainty ±4.0 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	06-11-27	Radiated Emissions
Preamplifier system	TDK RF Solutions	PA-02	080010	06-11-25	Radiated Emissions
EMI Receiver	Rohde & Schwarz	ESIB-40	100255	06-04-27	Radiated Emissions
Hybrid Log Antenna	TDK	HLP-3003C	17401	06-07-21	Radiated Emissions
Horn Antenna	TDK	HRN-0118	130092	06-09-24	Radiated Emissions
Horn Antenna	TDK	HRN-0118	30101	06-07-21	Radiated Emissions
Dipole Antenna	Schwarzbeck	UHAP	973	06-12-13	Radiated Emissions
Dipole Antenna	Schwarzbeck	UHAP	974	06-09-21	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	102204	06-06-09	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	100251	06-05-19	Conducted Emissions
Spectrum Analyzer	HP	8563E	3745A08112	06-09-10	Conducted Emissions
DC Power Supply	HP	6632B	US37472178	07-09-14	Conducted Emissions
Power Sensor	Giga-tronics	80401A	1835838	06-11-29	Frequency Stability
Power Meter	Giga-tronics	8541C	1837762	06-11-29	Frequency Stability
Signal Generator	Agilent	8648C	4037U03155	07-09-13	Frequency Stability
Temperature Probe	Hart Scientific	61161-302	21352860	06-09-28	Frequency Stability
Environment monitor	Control Company	1870	230355189	06-12-23	Conducted Emissions
Environment monitor	Control Company	1870	230355190	06-12-23	Radiated Emissions
Environmental Chamber	ESPEC Corp.	SH-240S1	91007118	N/R	Frequency Stability

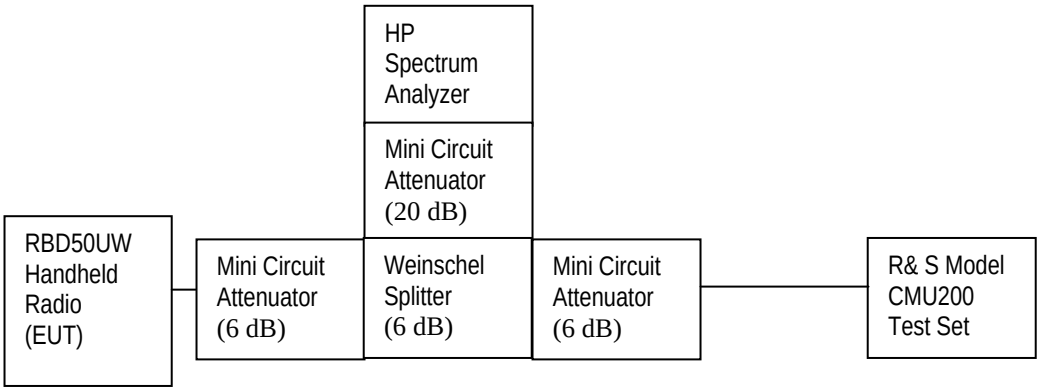
APPENDIX 1

CONDUCTED RF EMISSIONS TEST DATA/PLOTS

Conducted RF Emission Test Data

This appendix contains measurement data pertaining to conducted spurious emissions, –26 dBc bandwidth, 99% power bandwidth and the channel mask.

Test Setup Diagram



Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Spectrum Analyzer	HP	8563E	3745A08112	30 Hz – 26.5 GHz
Splitter	Weinschel	1515	ME092	DC – 18 GHz
Attenuator	Mini Circuit	MCL BW-S20W2	--	DC – 18 GHz
Attenuator	Mini Circuit	MCL BW-S6W2	--	DC – 18 GHz
Attenuator	Mini Circuit	MCL BW-S6W2	--	DC – 18 GHz
Universal Radio Communication Tester	Rohde & Schwarz	CMU200	100251	--

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

Conducted RF Emission Test Data cont'd

The conducted spurious emissions – As per 47 CFR 2.1051, CFR 24.238(a), RSS-133, CFR 22 Subpart H and RSS-132 were measured from 10 MHz to 20 GHz. The EUT emissions were in the noise floor.
See figures 1 to 12 for the plots of the conducted spurious emissions.

–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 three GSM850 channels was measured to be 282 kHz, and for the three PCS channels was measured to be 285 kHz as shown below. This results in a 3.0 kHz resolution bandwidth.
On any frequency outside the frequency block and outside the adjacent 1 MHz bands, a resolution bandwidth of at least 1 MHz was employed.

Test Data for GSM850 and PCS selected Frequencies

GSM850 Frequency (MHz)	-26dBc Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
824.2	282	246.7
837.6	270	248.3
848.8	272	248.3

PCS Frequency (MHz)	-26dBc Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
1850.2	273	243.3
1880.0	273	248.3
1909.8	270	250.0

Measurement Plots for GSM850 and PCS
Refer to the following measurement plots for more detail.

See Figures 13 to 24 for the plots of the –26dBc Bandwidth and 99% Occupied Bandwidth.
See Figures 25 to 28 for plots of the channel mask results.

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

Conducted RF Emission Test Data cont'd

Figure 1: GSM 850, Spurious Conducted Emissions, Low channel

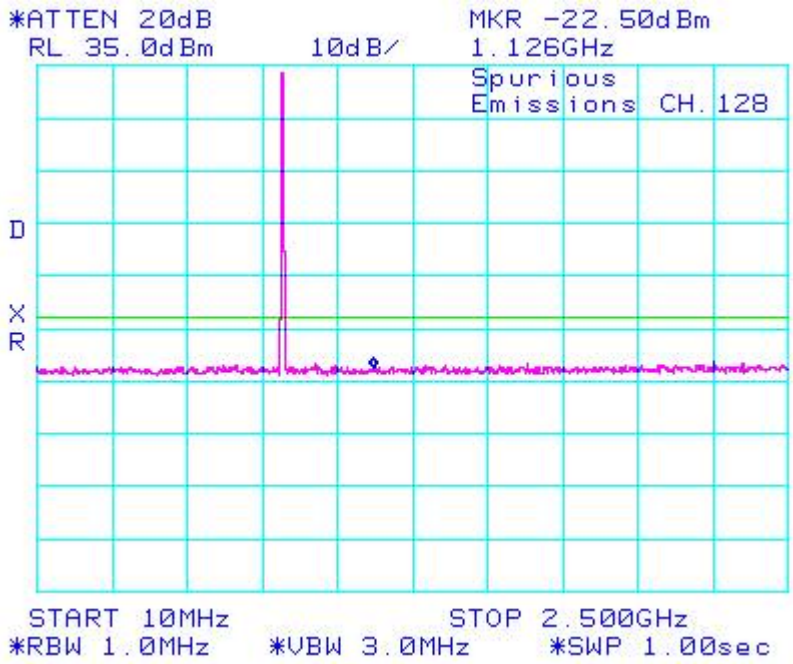
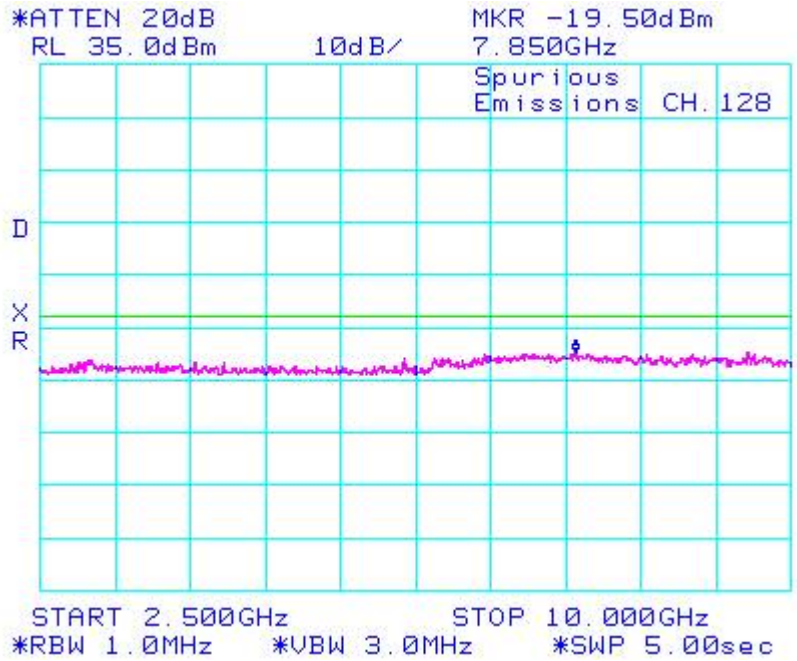


Figure 2: GSM 850, Spurious Conducted Emissions, Low channel



Conducted RF Emission Test Data cont'd

Figure 3: GSM 850, Spurious Conducted Emissions, Middle Channel

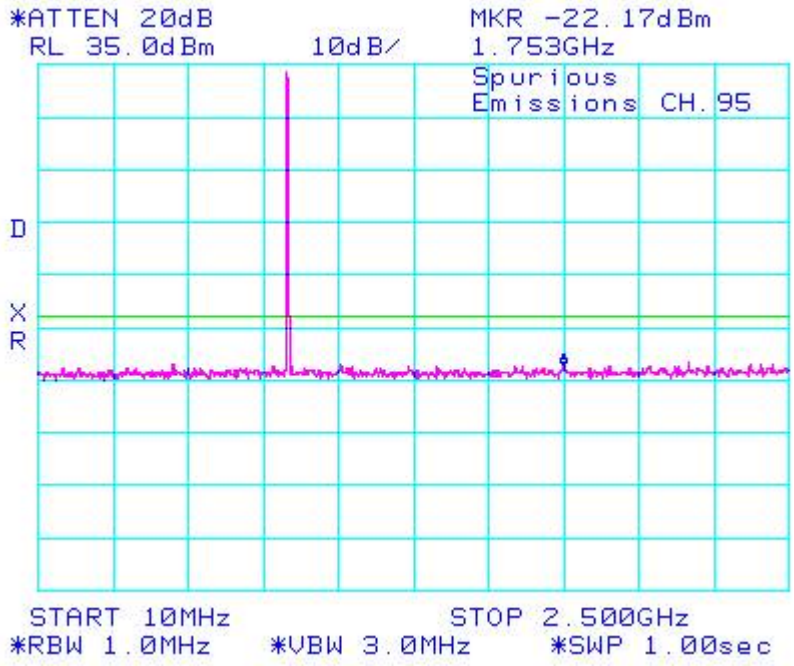
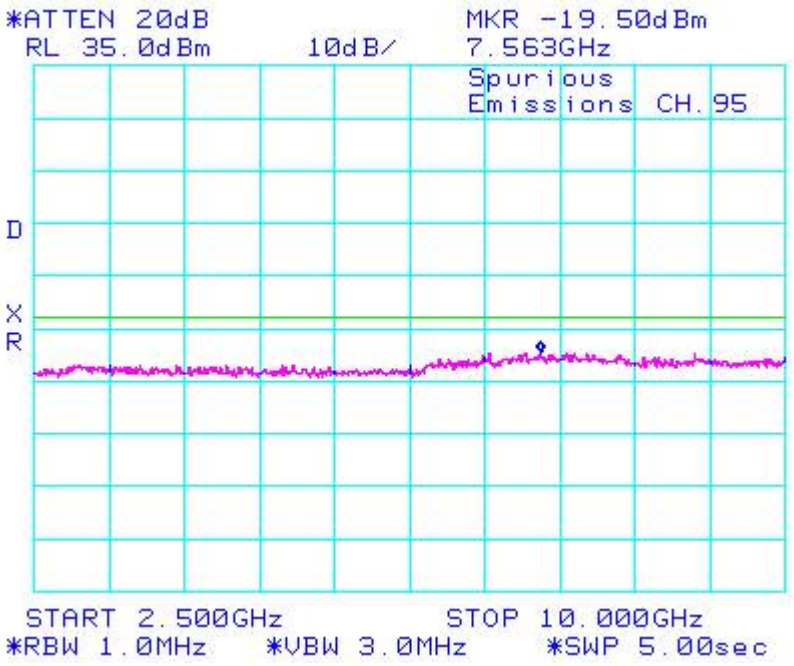


Figure 4: GSM 850, Spurious Conducted Emissions, Middle Channel



Conducted RF Emission Test Data cont'd

Figure 5: GSM 850, Spurious Conducted Emissions, High Channel

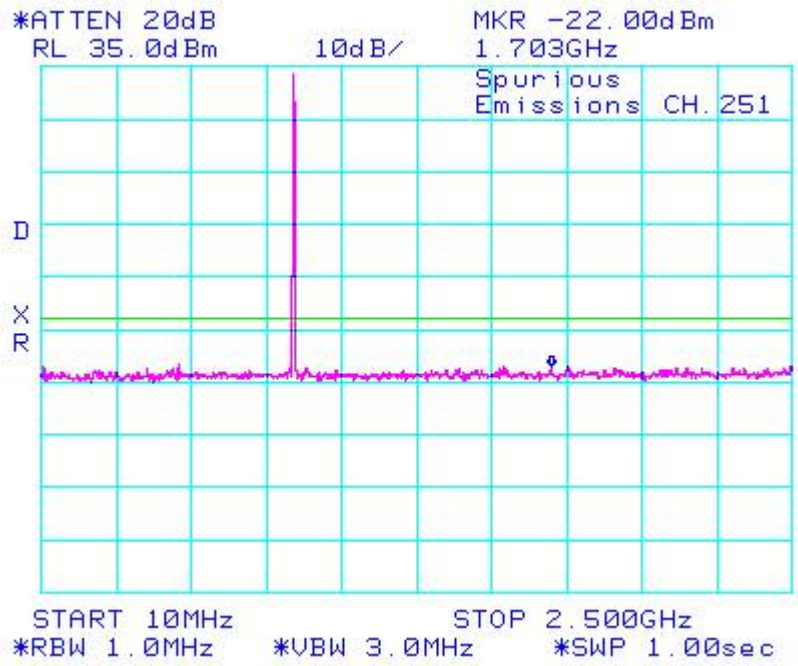
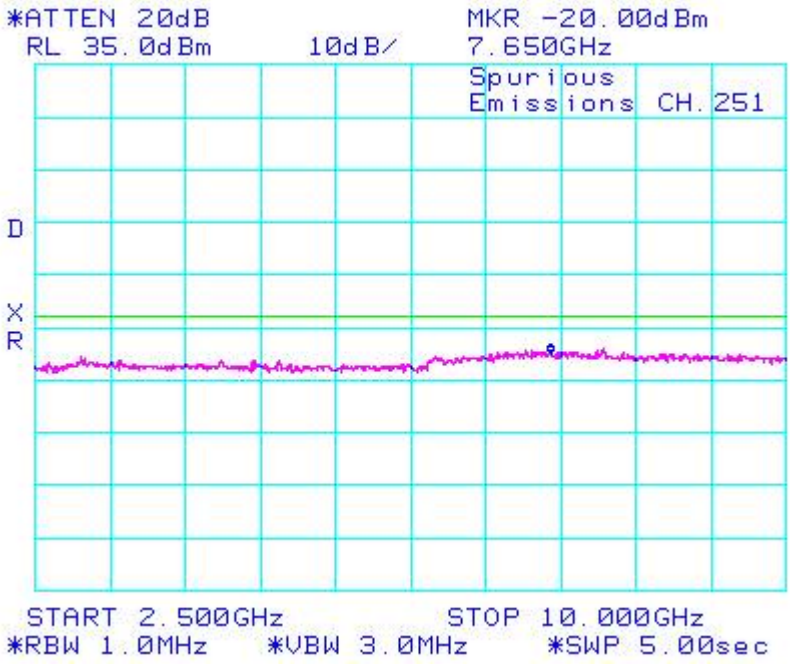


Figure 6: GSM 850, Spurious Conducted Emissions, High Channel



Conducted RF Emission Test Data cont'd

Figure 7: PCS, Spurious Conducted Emissions, Low Channel

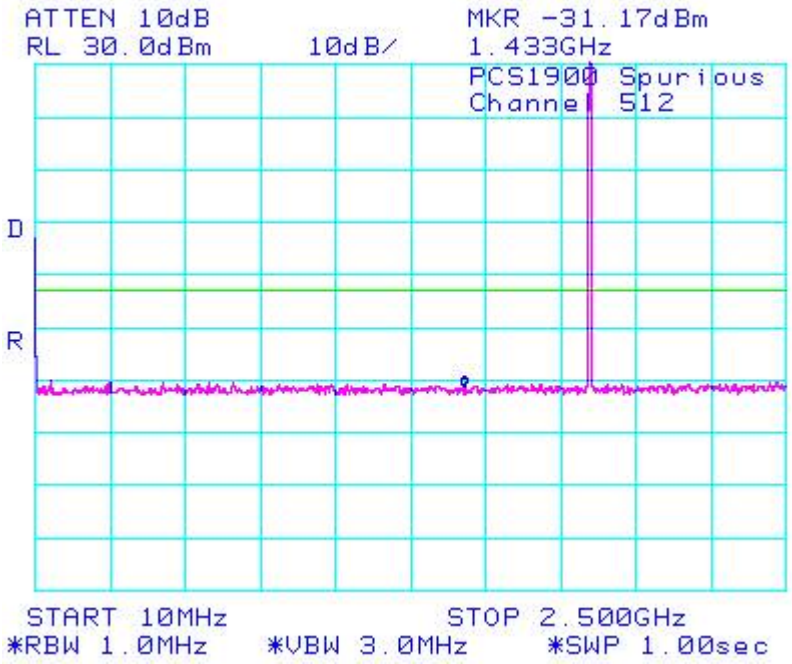
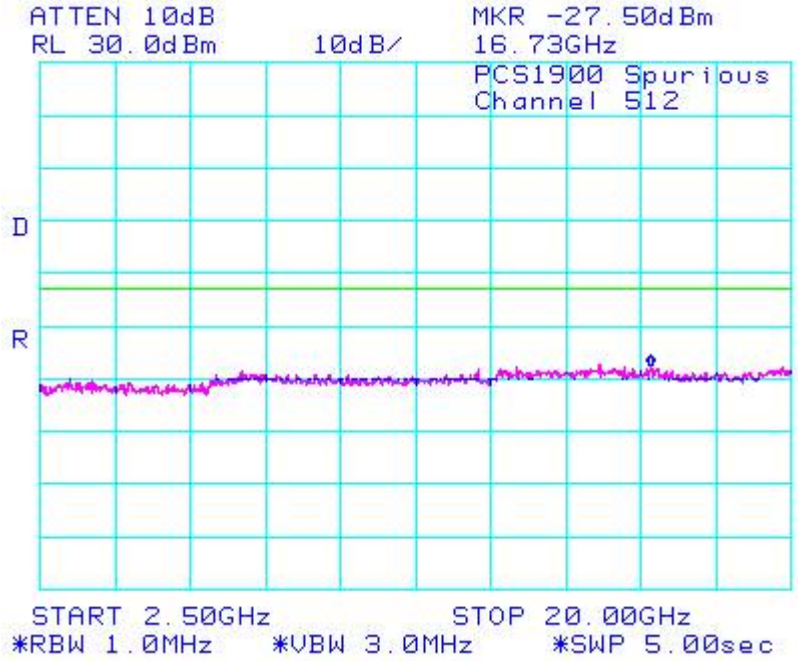


Figure 8: PCS, Spurious Conducted Emissions, Low Channel



Conducted RF Emission Test Data cont'd

Figure 9: PCS, Spurious Conducted Emissions, Middle Channel

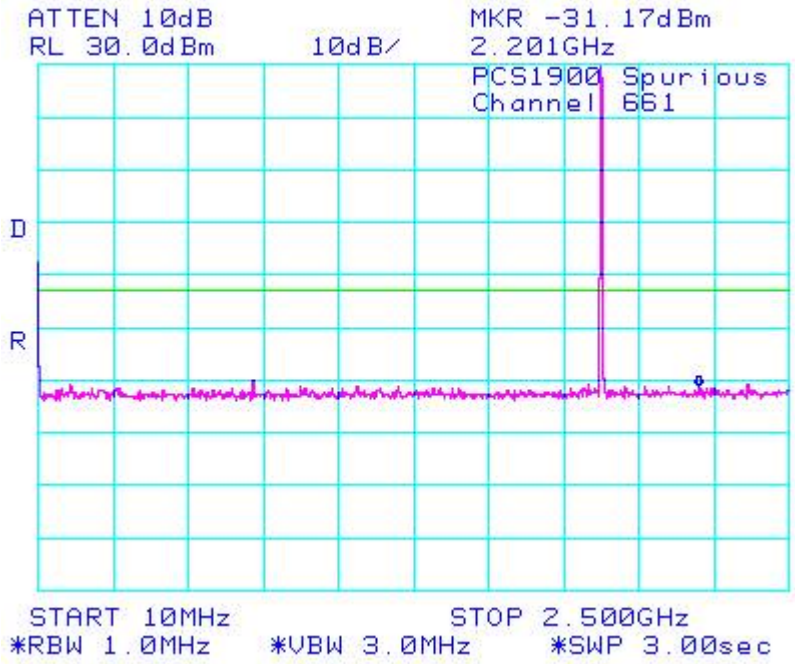
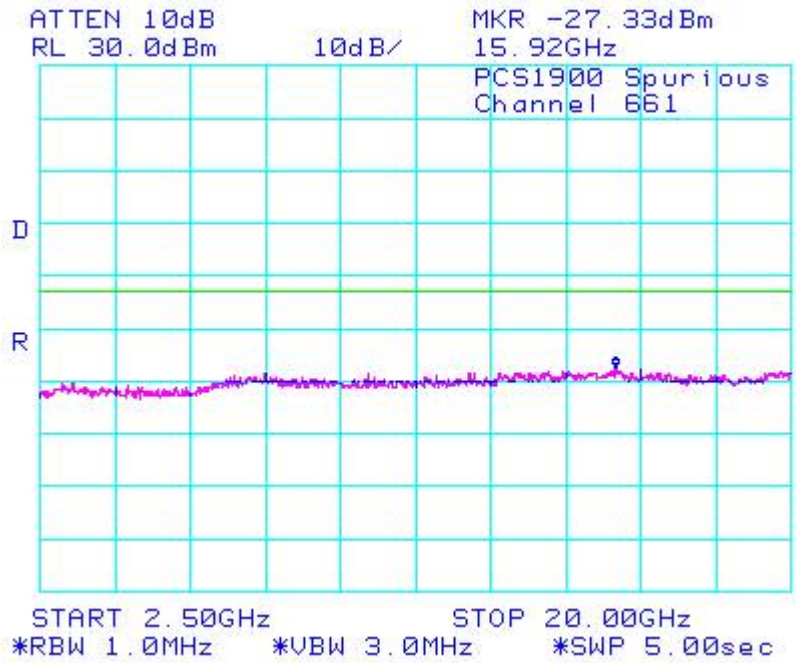


Figure 10: PCS, Spurious Conducted Emissions, Middle Channel



Conducted RF Emission Test Data cont'd

Figure 11: PCS, Spurious Conducted Emissions, High Channel

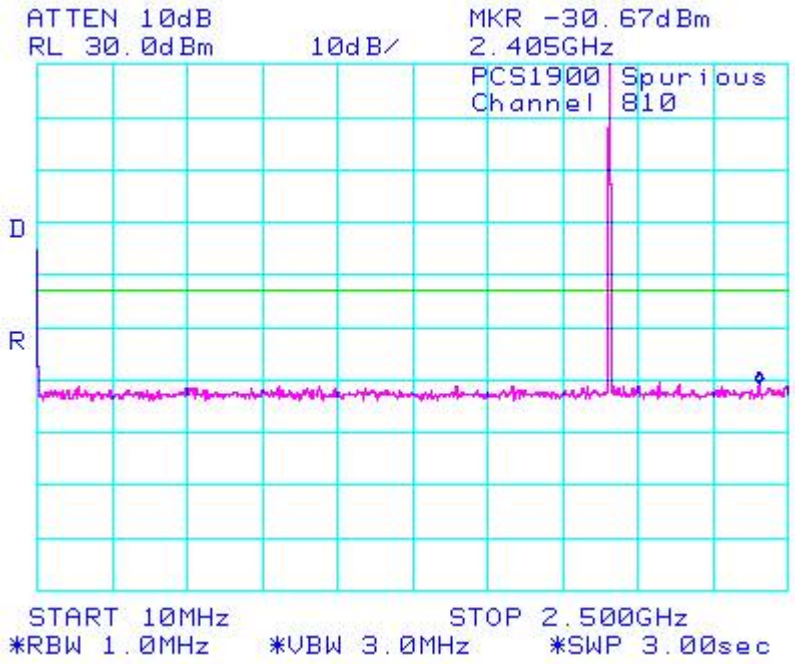
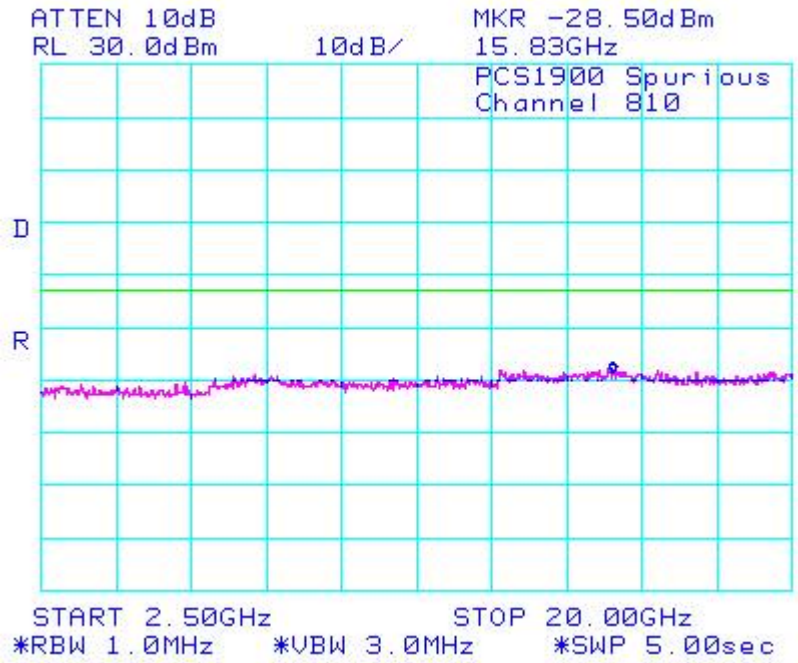


Figure 12: PCS, Spurious Conducted Emissions, High Channel



Conducted RF Emission Test Data cont'd

Figure 13: -26dBc bandwidth, GSM 850 Low Channel

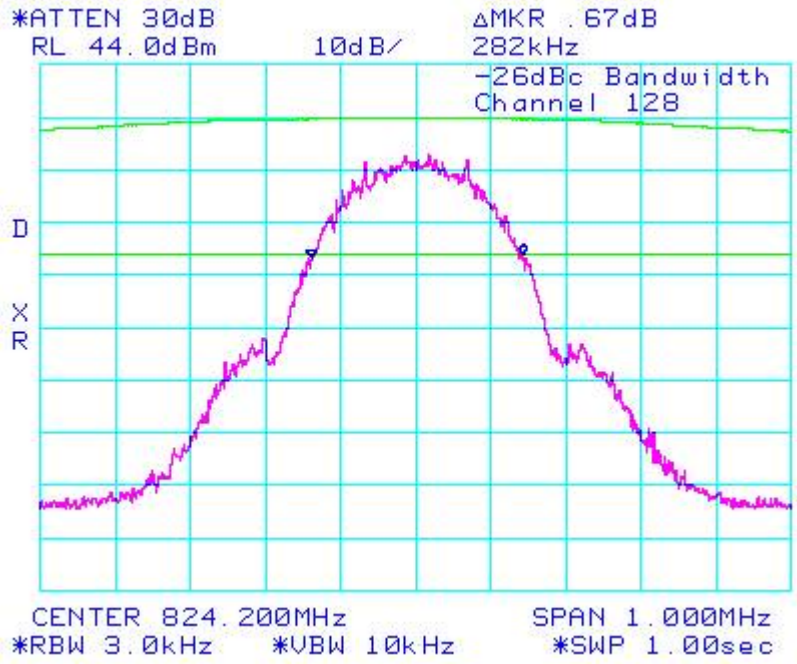
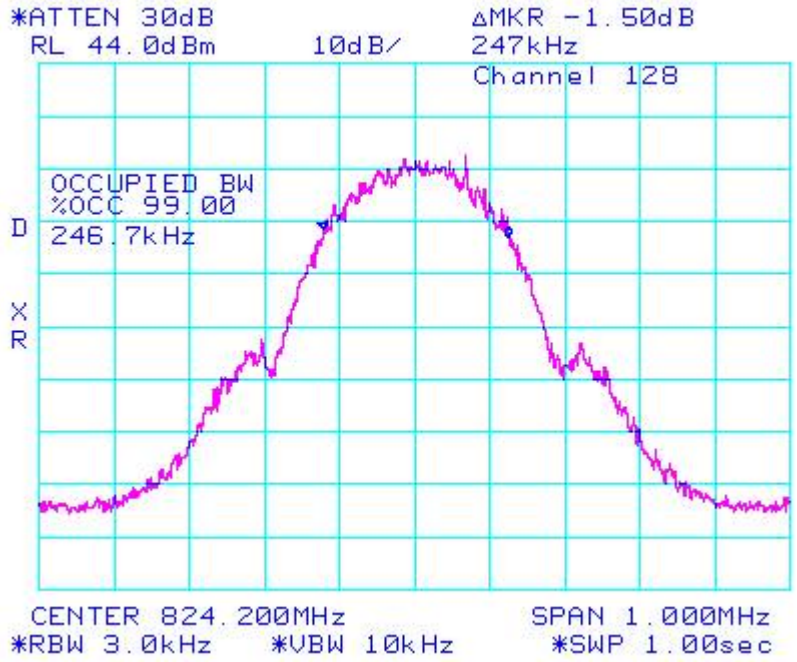


Figure 14: Occupied Bandwidth, GSM 850 Low Channel



Conducted RF Emission Test Data cont'd

Figure 15: -26dBc bandwidth, GSM 850 Middle Channel

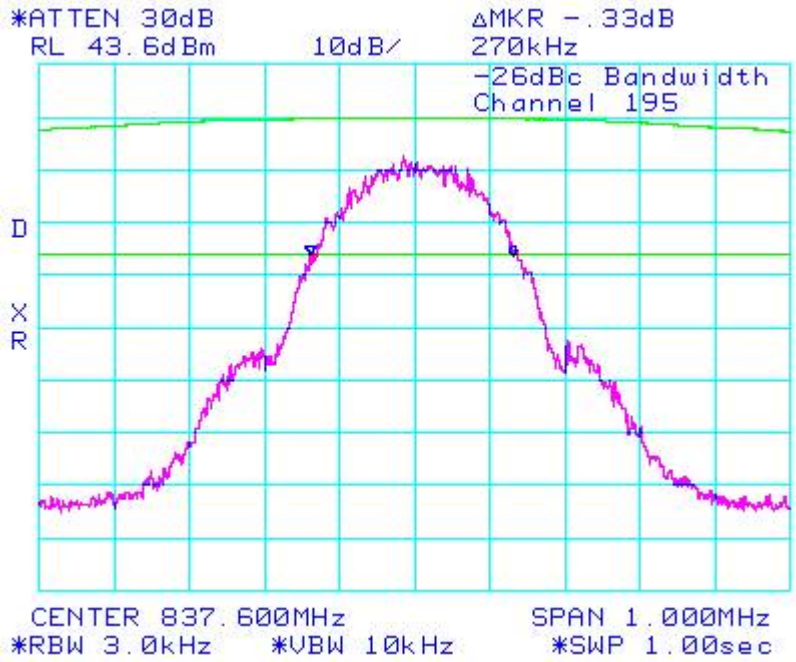
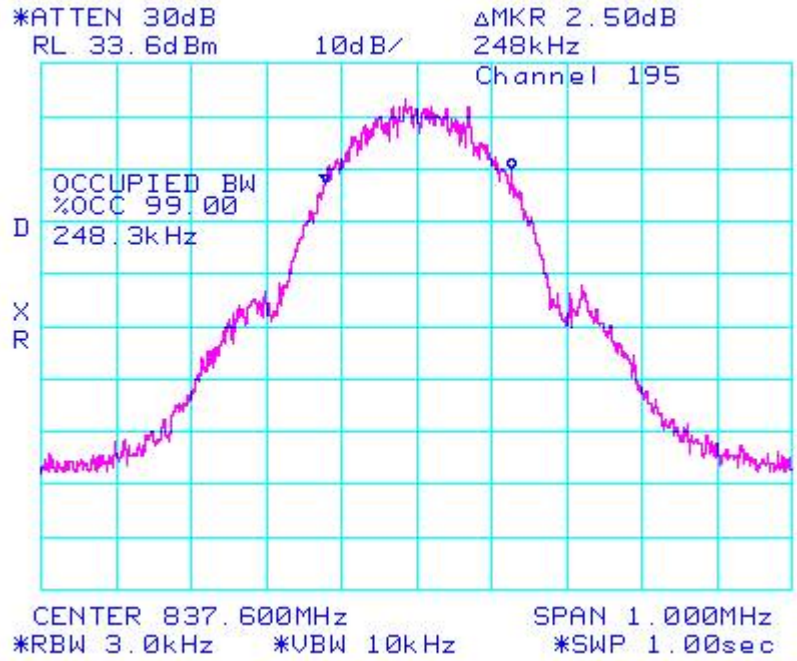


Figure 16: Occupied Bandwidth, GSM 850 Middle Channel



Conducted RF Emission Test Data cont'd

Figure 17: -26dBc bandwidth, GSM 850 High Channel

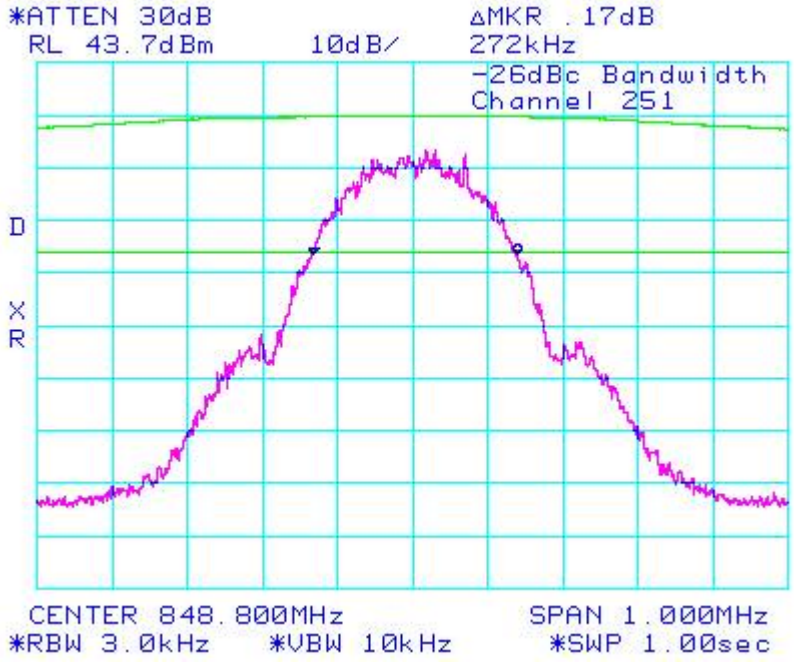
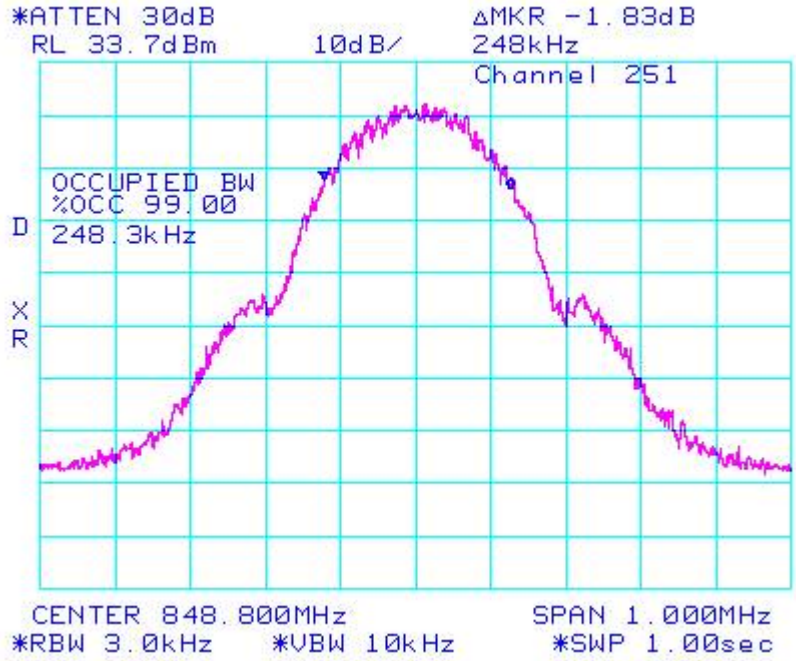


Figure 18: Occupied Bandwidth, GSM 850 High Channel



Conducted RF Emission Test Data cont'd

Figure 19: -26dBc bandwidth, PCS Low Channel

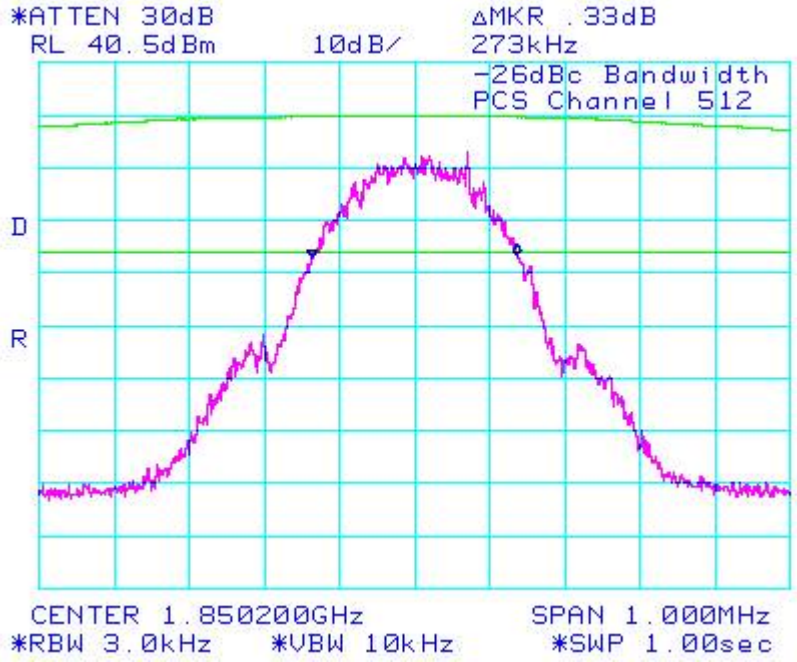
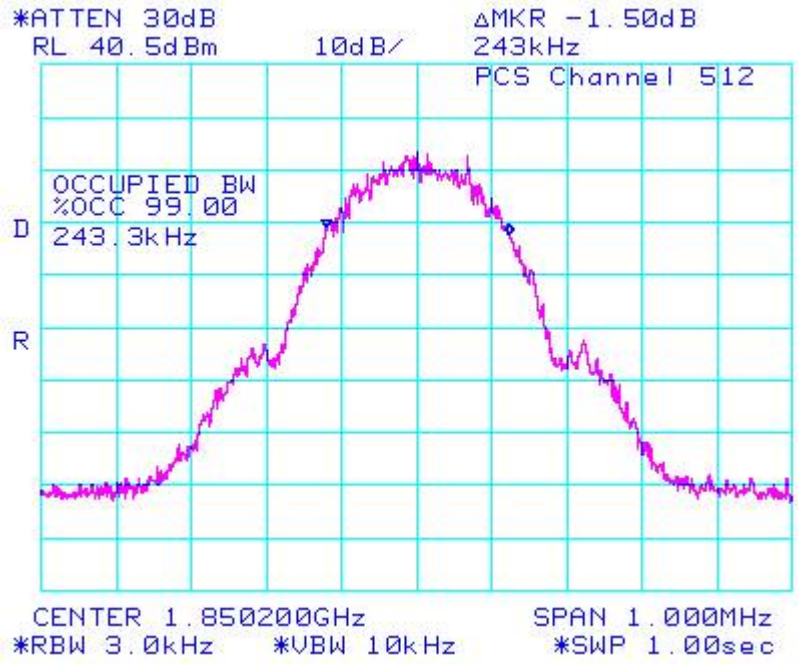


Figure 20: Occupied Bandwidth, PCS Low Channel



Conducted RF Emission Test Data cont'd

Figure 21: **-26dBc bandwidth, PCS Middle Channel**

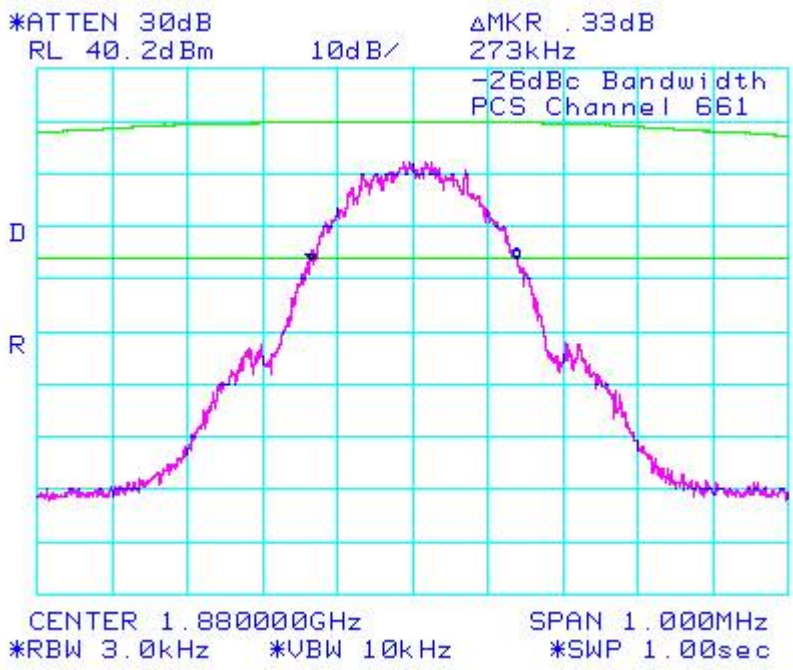
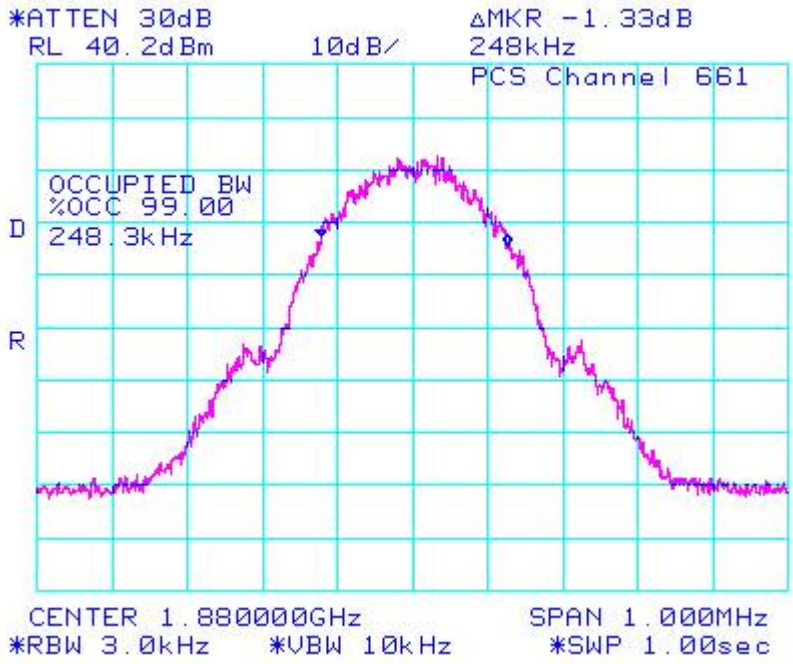


Figure 22: Occupied Bandwidth, PCS Middle Channel



Conducted RF Emission Test Data cont'd

Figure 23: -26dBc bandwidth, PCS High Channel

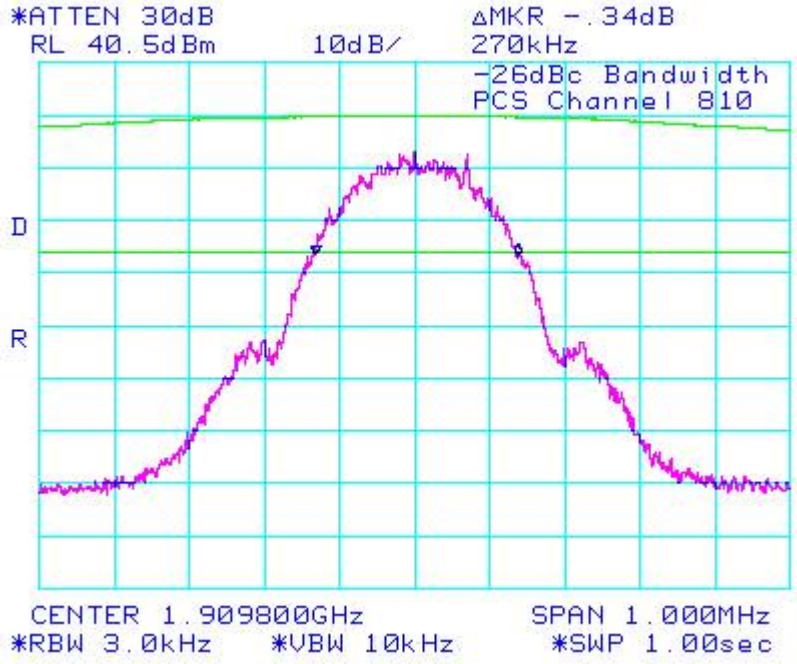
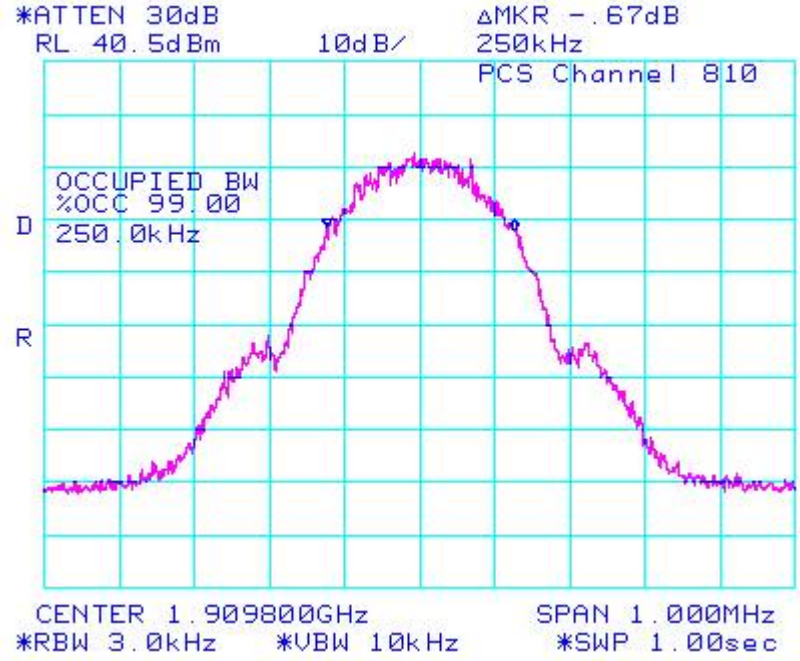


Figure 24: Occupied Bandwidth, PCS High Channel



Conducted RF Emission Test Data cont'd

Figure 25: GSM 850, Low Channel Mask

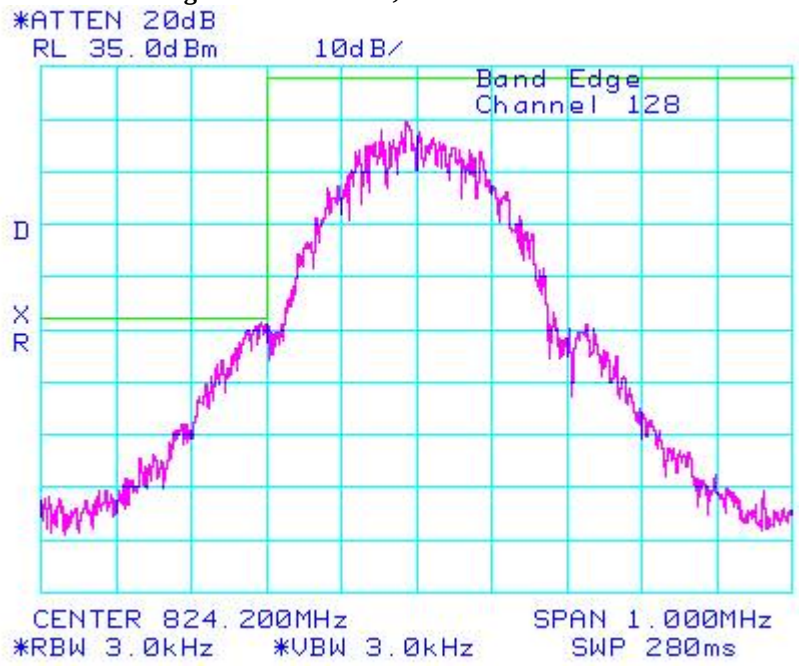


Figure 26: GSM 850 High Channel Mask

Conducted RF Emission Test Data cont'd

Figure27: PCS, Low Channel Mask

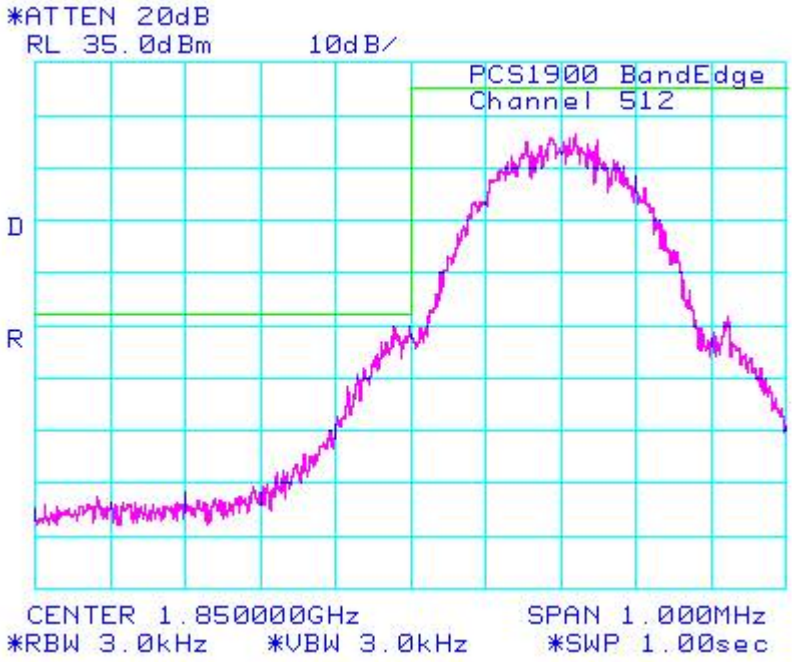
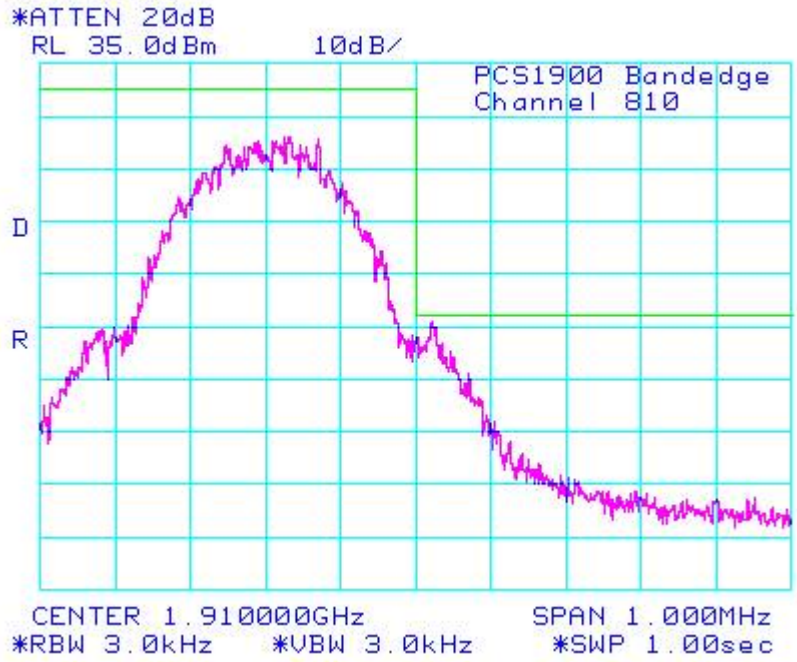


Figure28: PCS, High Channel Mask



APPENDIX 2

CONDUCTED RF OUTPUT POWER TEST DATA

Conducted RF Output Power Test Data

The conducted RF output power was measured using the Communication Tester, Rohde & Schwarz, model CMU 200. The low, middle and high channels were measured at maximum radio output power. The insertion loss of the coaxial cable from the CMU 200 to the Handheld PIN 203F57CC was compensated for in the measurements.
Peak nominal output power is 33.0 dBm ±0.3 dB for GSM850 and 30.0 dBm ±0.5 dB for PCS.

Test Results

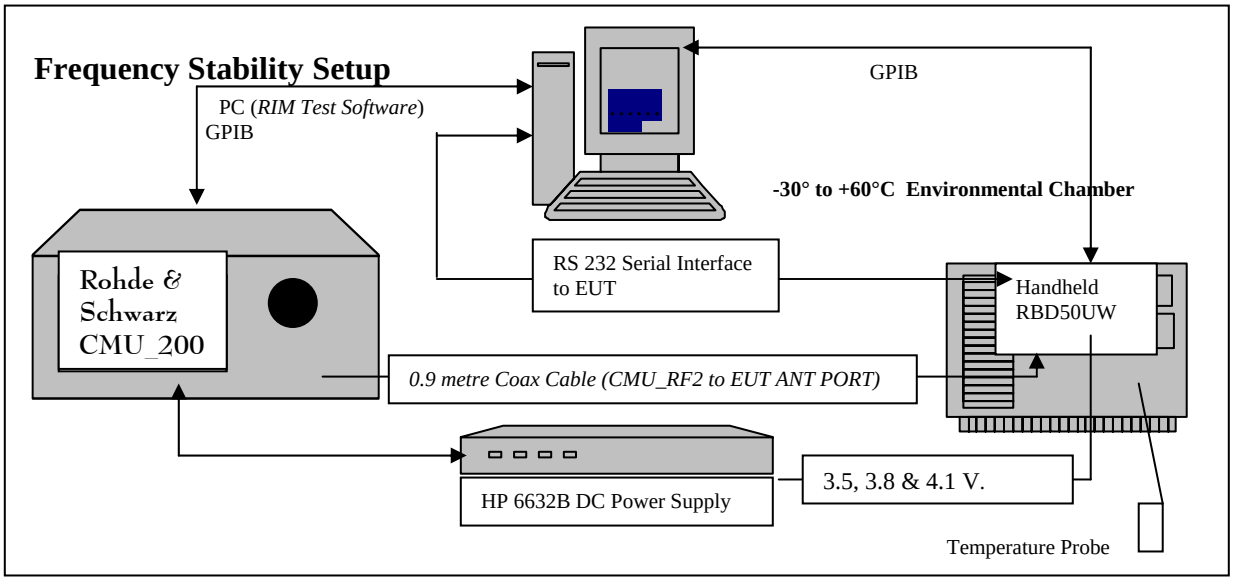
Channel	Frequency (MHz)	Maximum Output Power (dBm)
GSM850		
128	824.20	33.2
189	837.60	33.1
251	848.80	33.0
PCS		
512	1850.2	30.4
661	1880.0	30.2
810	1909.8	30.4

The environmental test conditions were: Temperature 24ºC
Pressure 998 mb
Relative Humidity 25%

APPENDIX 3

FREQUENCY STABILITY TEST DATA

Frequency Stability Test Data



SYSTEM	*Model*	*Serial Number*	*Calibration Due Date.*
R & S Universal Radio Communication Test Set	CMU200	100251	19-May-2006
HP System DC Power Supply	6632B	US37472178	14-Sept.-2007
Agilent Signal Generator	8648C	4037U03155	13-Sept.-2007
Giga-tronics Power Meter	8541C	1837762	29 Nov.-2006
Giga-tranics Power Sensor	80401A	1835838	29 Nov.-2006
Espec Environmental Chamber	SH240S1	91007118	N/A
Hart Scientific Temperature Probe	61161-302	21352860	28-Sept.-2006

CFR 47 Chapter 1 - Federal Communications Commission Rules

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

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

The RBD50UW handheld, (referred as EUT herein and after) transmitted frequencies are less than 0.1 ppm of the received frequency from the Rhode & Schwarz CMU 200 Universal Radio Communication Test Set.

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-meter 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; located inside the environmental chamber.

Calibration for the Cable Loss was performed in the RF Laboratory on 18 January 2006 using the Giga-tronics power meter and Agilent Signal Generator.
The cable assembly from the RF input to the RF output was measured at the following Frequencies:

PCS Frequency (MHz)	Cable loss (dB)
1850.2	1.10
1880.0	1.10
1909.8	1.10

GSM 850 Frequency (MHz)	Cable loss (dB)
824.2	0.71
836.4	0.71
848.6	0.71

Procedure:

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

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

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

The EUT repetitively transmitted 100 bursts for each set of programmed parameters recording temperature, voltage settings, and systematically selected frequencies. The power supply was cycled from minimum voltage 3.5 volts, to 3.8 volts to 4.1 volts nominal voltage.
The frequency error was measured at a maximum output power and recorded by the automated system test software.

The EUT output power and frequency was measured at 3.5 volts, 3.8 volts and 4.1 volts. The transmit frequency was varied in 3 steps consisting of 824.2, 836.4, and 848.6 MHz for the GSM850 band and 1850.2, 1880.0 and 1909.8 MHz for the PCS band. This frequency was recorded in MHz and deviation from nominal, in Parts Per Million.

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

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 3.5 Volts.
5. Set up CMU 200 Radio Communication Tester.
6. Command the CMU 200 to switch to the low channel.
7. Enable the voltage to the EUT, and connect a link to the CMU 200 test set.
8. EUT is commanded to Transmit 100 Bursts.
9. Software logs the following data from the CMU 200, power supply and temperature chamber: Traffic Channel Number, Traffic Channel Frequency, Power Level, Chamber Temperature, Supply Voltage, Power, Frequency Error.
10. The CMU 200 commands the EUT to change frequency to the middle channel and high channel and repeats steps 7 to 9.
11. Repeat steps 5 to 10 changing the supply voltage to 3.8 Volts
12. Increase temperature by 10°C and soak for 1/2 hour.
13. Repeat steps 4 - 12 for temperatures –30°C to 60°C.
14. Repeat steps 5 to 10 changing the supply voltage to 4.1 Volts

Procedure 5 to 10 was repeated at room temperature (20°C) with the power supply voltage set to 3.5, 3.8 and 4.1 Volts.

The maximum frequency error in the GSM850 band measured was -0.0590 PPM.

The maximum frequency error in the PCS band measured was -0.0258 PPM.

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

Traffic Channel Number	GSM850 Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
128	824.2	3.5	20	-33.96	-0.0412
189	836.4	3.5	20	-36.16	-0.0432
250	848.6	3.5	20	-33.51	-0.0395

Traffic Channel Number	GSM850 Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
128	824.2	3.8	20	-33.96	-0.0412
189	836.4	3.8	20	-36.16	-0.0432
250	848.6	3.8	20	-33.51	-0.0395

Traffic Channel Number	GSM850 Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
128	824.2	4.1	20	-23.18	-0.0281
189	836.4	4.1	20	-22.47	-0.0269
250	848.6	4.1	20	-21.11	-0.0249

GSM850 Results: channel 128 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
128	824.2	3.5	-30	34.09	0.0414
128	824.2	3.5	-20	24.41	0.0296
128	824.2	3.5	-10	12.46	0.0151
128	824.2	3.5	0	-14.14	-0.0172
128	824.2	3.5	10	-13.30	-0.0161
128	824.2	3.5	20	-33.96	-0.0412
128	824.2	3.5	30	-37.90	-0.0460
128	824.2	3.5	40	-27.40	-0.0332
128	824.2	3.5	50	-42.75	-0.0519
128	824.2	3.5	60	-27.77	-0.0337

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
128	824.2	3.8	-30	29.57	0.0359
128	824.2	3.8	-20	8.27	0.0100
128	824.2	3.8	-10	-9.88	-0.0120
128	824.2	3.8	0	-22.34	-0.0271
128	824.2	3.8	10	-15.24	-0.0185
128	824.2	3.8	20	-31.70	-0.0385
128	824.2	3.8	30	-33.25	-0.0403
128	824.2	3.8	40	-21.18	-0.0257
128	824.2	3.8	50	-38.87	-0.0472
128	824.2	3.8	60	-22.34	-0.0271

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
128	824.2	4.1	-30	29.57	0.0359
128	824.2	4.1	-20	8.27	0.0100
128	824.2	4.1	-10	-9.88	-0.0120
128	824.2	4.1	0	-22.34	-0.0271
128	824.2	4.1	10	-15.24	-0.0185
128	824.2	4.1	20	-31.70	-0.0385
128	824.2	4.1	30	-33.25	-0.0403
128	824.2	4.1	40	-21.18	-0.0257
128	824.2	4.1	50	-38.87	-0.0472
128	824.2	4.1	60	-22.34	-0.0271

GSM850 Results: channel 189 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
189	836.4	3.5	-30	37.97	0.0454
189	836.4	3.5	-20	19.95	0.0239
189	836.4	3.5	-10	7.94	0.0095
189	836.4	3.5	0	-16.47	-0.0197
189	836.4	3.5	10	-19.05	-0.0228
189	836.4	3.5	20	-36.16	-0.0432
189	836.4	3.5	30	-42.68	-0.0510
189	836.4	3.5	40	-26.93	-0.0322
189	836.4	3.5	50	-49.33	-0.0590
189	836.4	3.5	60	-32.35	-0.0387

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
189	836.4	3.8	-30	29.90	0.0357
189	836.4	3.8	-20	9.17	0.0110
189	836.4	3.8	-10	-6.97	-0.0083
189	836.4	3.8	0	-18.21	-0.0218
189	836.4	3.8	10	-15.11	-0.0181
189	836.4	3.8	20	-32.09	-0.0384
189	836.4	3.8	30	-35.13	-0.0420
189	836.4	3.8	40	-26.09	-0.0312
189	836.4	3.8	50	-41.00	-0.0490
189	836.4	3.8	60	-27.96	-0.0334

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
189	836.4	4.1	-30	27.83	0.0333
189	836.4	4.1	-20	15.30	0.0183
189	836.4	4.1	-10	8.91	0.0107
189	836.4	4.1	0	-10.14	-0.0121
189	836.4	4.1	10	-8.78	-0.0105
189	836.4	4.1	20	-22.47	-0.0269
189	836.4	4.1	30	-27.51	-0.0329
189	836.4	4.1	40	-17.69	-0.0212
189	836.4	4.1	50	-31.70	-0.0379
189	836.4	4.1	60	-17.37	-0.0208

GSM850 Results: channel 250 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
250	848.6	3.5	-30	32.80	0.0387
250	848.6	3.5	-20	12.20	0.0144
250	848.6	3.5	-10	-9.04	-0.0107
250	848.6	3.5	0	-19.69	-0.0232
250	848.6	3.5	10	-19.44	-0.0229
250	848.6	3.5	20	-33.51	-0.0395
250	848.6	3.5	30	-36.68	-0.0432
250	848.6	3.5	40	-22.66	-0.0267
250	848.6	3.5	50	-40.49	-0.0477
250	848.6	3.5	60	-28.15	-0.0332

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
250	848.6	3.8	-30	30.09	0.0355
250	848.6	3.8	-20	9.49	0.0112
250	848.6	3.8	-10	-9.23	-0.0109
250	848.6	3.8	0	-16.72	-0.0197
250	848.6	3.8	10	-11.11	-0.0131
250	848.6	3.8	20	-23.96	-0.0282
250	848.6	3.8	30	-37.97	-0.0447
250	848.6	3.8	40	-24.67	-0.0291
250	848.6	3.8	50	-30.67	-0.0361
250	848.6	3.8	60	-21.44	-0.0253

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
250	848.6	4.1	-30	31.06	0.0366
250	848.6	4.1	-20	16.72	0.0197
250	848.6	4.1	-10	11.17	0.0132
250	848.6	4.1	0	-7.55	-0.0089
250	848.6	4.1	10	6.84	0.0081
250	848.6	4.1	20	-21.11	-0.0249
250	848.6	4.1	30	-28.35	-0.0334
250	848.6	4.1	40	-18.79	-0.0221
250	848.6	4.1	50	-28.99	-0.0342
250	848.6	4.1	60	-13.24	-0.0156

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

Traffic Channel Number	PCS Frequency (MHz	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	*PPM*
512	1850.2	3.5	20	17.18	0.0093
661	1880.0	3.5	20	15.76	0.0084
810	1909.8	3.5	20	-19.18	-0.0100

Traffic Channel Number	PCS Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
512	1850.2	3.8	20	-13.37	-0.0072
661	1880.0	3.8	20	-18.66	-0.0099
810	1909.8	3.8	20	-21.63	-0.0113

Traffic Channel Number	PCS Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
512	1850.2	4.1	20	15.05	0.0081
661	1880.0	4.1	20	12.46	0.0066
810	1909.8	4.1	20	18.02	0.0094

PCS 1900 Results: channel 512 @ maximum transmitted power

Traffic Channel Number	*Frequency (MHz)*	*Voltage (Volts)*	*Temperature (Celsius)*	*Frequency Error (Hz)*	*PPM*
512	1850.2	3.5	-30	24.47	0.0132
512	1850.2	3.5	-20	15.69	0.0085
512	1850.2	3.5	-10	-13.62	-0.0074
512	1850.2	3.5	0	23.70	0.0128
512	1850.2	3.5	10	26.99	0.0146
512	1850.2	3.5	20	17.18	0.0093
512	1850.2	3.5	30	-39.97	-0.0216
512	1850.2	3.5	40	-47.65	**-0.0258**
512	1850.2	3.5	50	-35.00	-0.0189
512	1850.2	3.5	60	-30.74	-0.0166

Traffic Channel Number	*Frequency (MHz)*	*Voltage (Volts)*	*Temperature (Celsius)*	*Frequency Error (Hz)*	*PPM*
512	1850.2	3.8	-30	28.22	0.0153
512	1850.2	3.8	-20	-21.63	-0.0117
512	1850.2	3.8	-10	14.72	0.0080
512	1850.2	3.8	0	22.60	0.0122
512	1850.2	3.8	10	24.86	0.0134
512	1850.2	3.8	20	-13.37	-0.0072
512	1850.2	3.8	30	-37.52	-0.0203
512	1850.2	3.8	40	-38.16	-0.0206
512	1850.2	3.8	50	-28.15	-0.0152
512	1850.2	3.8	60	-29.12	-0.0157

Traffic Channel Number	*Frequency (MHz)*	*Voltage (Volts)*	*Temperature (Celsius)*	*Frequency Error (Hz)*	*PPM*
512	1850.2	4.1	-30	33.00	0.0178
512	1850.2	4.1	-20	-19.18	-0.0104
512	1850.2	4.1	-10	23.63	0.0128
512	1850.2	4.1	0	24.67	0.0133
512	1850.2	4.1	10	34.09	0.0184
512	1850.2	4.1	20	15.05	0.0081
512	1850.2	4.1	30	-39.26	-0.0212
512	1850.2	4.1	40	-28.99	-0.0157
512	1850.2	4.1	50	-31.06	-0.0168
512	1850.2	4.1	60	-27.44	-0.0148

PCS 1900 Results: channel 661 @ maximum transmitted power

Traffic Channel Number	*Frequency (MHz)*	*Voltage (Volts)*	*Temperature (Celsius)*	*Frequency Error (Hz)*	*PPM*
661	1880.0	3.5	-30	28.73	0.0153
661	1880.0	3.5	-20	-17.05	-0.0091
661	1880.0	3.5	-10	15.76	0.0084
661	1880.0	3.5	0	17.11	0.0091
661	1880.0	3.5	10	30.35	0.0161
661	1880.0	3.5	20	15.76	0.0084
661	1880.0	3.5	30	-34.80	-0.0185
661	1880.0	3.5	40	-39.65	-0.0211
661	1880.0	3.5	50	-30.41	-0.0162
661	1880.0	3.5	60	-28.99	-0.0154

Traffic Channel Number	*Frequency (MHz)*	*Voltage (Volts)*	*Temperature (Celsius)*	*Frequency Error (Hz)*	*PPM*
661	1880.0	3.8	-30	31.96	0.0170
661	1880.0	3.8	-20	-16.59	-0.0088
661	1880.0	3.8	-10	-20.40	-0.0109
661	1880.0	3.8	0	17.05	0.0091
661	1880.0	3.8	10	25.96	0.0138
661	1880.0	3.8	20	-18.66	-0.0099
661	1880.0	3.8	30	-41.78	-0.0222
661	1880.0	3.8	40	-43.84	-0.0233
661	1880.0	3.8	50	-32.29	-0.0172
661	1880.0	3.8	60	-33.77	-0.0180

Traffic Channel Number	*Frequency (MHz)*	*Voltage (Volts)*	*Temperature (Celsius)*	*Frequency Error (Hz)*	*PPM*
661	1880.0	4.1	-30	40.16	0.0214
661	1880.0	4.1	-20	15.30	0.0081
661	1880.0	4.1	-10	23.89	0.0127
661	1880.0	4.1	0	29.32	0.0156
661	1880.0	4.1	10	25.12	0.0134
661	1880.0	4.1	20	12.46	0.0066
661	1880.0	4.1	30	-38.03	-0.0202
661	1880.0	4.1	40	-26.35	-0.0140
661	1880.0	4.1	50	-32.03	-0.0170
661	1880.0	4.1	60	-23.05	-0.0123

PCS 1900 Results: channel 810 @ maximum transmitted power

Traffic Channel Number	*Frequency (MHz)*	*Voltage (Volts)*	*Temperature (Celsius)*	*Frequency Error (Hz)*	*PPM*
810	1909.8	3.5	-30	28.61	0.0150
810	1909.8	3.5	-20	-22.99	-0.0120
810	1909.8	3.5	-10	-21.31	-0.0112
810	1909.8	3.5	0	15.82	0.0083
810	1909.8	3.5	10	23.89	0.0125
810	1909.8	3.5	20	-19.18	-0.0100
810	1909.8	3.5	30	-37.58	-0.0197
810	1909.8	3.5	40	-40.23	-0.0211
810	1909.8	3.5	50	-25.63	-0.0134
810	1909.8	3.5	60	-32.16	-0.0168

Traffic Channel Number	*Frequency (MHz)*	*Voltage (Volts)*	*Temperature (Celsius)*	*Frequency Error (Hz)*	*PPM*
810	1909.8	3.8	-30	42.55	0.0223
810	1909.8	3.8	-20	-19.76	-0.0103
810	1909.8	3.8	-10	14.98	0.0078
810	1909.8	3.8	0	15.88	0.0083
810	1909.8	3.8	10	28.86	0.0151
810	1909.8	3.8	20	-21.63	-0.0113
810	1909.8	3.8	30	-37.84	-0.0198
810	1909.8	3.8	40	-27.83	-0.0146
810	1909.8	3.8	50	-34.48	-0.0181
810	1909.8	3.8	60	-26.54	-0.0139

Traffic Channel Number	*Frequency (MHz)*	*Voltage (Volts)*	*Temperature (Celsius)*	*Frequency Error (Hz)*	*PPM*
810	1909.8	4.1	-30	40.10	0.0210
810	1909.8	4.1	-20	20.86	0.0109
810	1909.8	4.1	-10	27.25	0.0143
810	1909.8	4.1	0	35.84	0.0188
810	1909.8	4.1	10	28.35	0.0148
810	1909.8	4.1	20	18.02	0.0094
810	1909.8	4.1	30	-41.26	-0.0216
810	1909.8	4.1	40	-35.90	-0.0188
810	1909.8	4.1	50	-33.84	-0.0177
810	1909.8	4.1	60	-22.99	-0.0120

APPENDIX 4

RADIATED EMISSIONS TEST DATA

Radiated Emissions Test Data Results

Test distance is 3.0 metres and the test height is 1.0 metre. March 10, 2006

EUT				Rx Antenna		Spectrum Analyzer		Substitution Method Tracking Generator			
Type	Ch	Frequency (MHz)	Band	Type	Pol.	Reading (dBuV)	Max (V,H) (dBuV)	Reading (dBm)	Corrected Reading (relative to Dipole)	Limit (dBm)	Diff. To Limit (dB)
GSM850 Band (ERP) Handheld Standalone, on its side											
F0	128	824.20	850	Dipole	V	77.5	86.7	11.5	26.65	38.50	-11.85
F0	128	824.20	850	Dipole	H	86.7					
F0	195	837.60	850	Dipole	V	77.8	86.4	13.1	28.25	38.50	-10.25
F0	195	837.60	850	Dipole	H	86.4					
F0	251	848.80	850	Dipole	V	78.9	88.4	14.2	**29.35**	38.50	-9.15
F0	251	848.80	850	Dipole	H	88.4					

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

Example: 824.20 MHz = 11.5 (Tracking Generator Level) – 7.8 (Antenna Loss) – 2.15 (Dipole Factor) – 4.6 (Cable Loss) + 29.7 (Preamp Gain) = 26.65 dBm (Reading Relative to Dipole)

Radiated Emissions Test Data Results cont'd

Test distance is 3.0 metres March 10, 2006

EUT				Rx Antenna		Spectrum Analyzer		Substitution Method Tracking Generator			
Type	Ch	Frequency (MHz)	Band	Type	Pol.	Reading (dBuV)	Max (V,H) (dBuV)	Reading (dBm)	Corrected Reading (relative to dipole)	Limit (dBm)	Diff to Limit (dB)
GSM850 Band (Harmonics)											
Handheld Standalone, horizontal position											
Low Channel – 824.2 MHz											
2nd	128	1648.40	850	Horn	V	52.8	57.6	-20.4	-43.0	-13	-30.0
2nd	128	1648.40	850	Horn	H	57.6					
3rd	128	2472.60	850	Horn	V	50.4	53.6	-9.0	-37.3	-13	-24.3
3rd	128	2472.60	850	Horn	H	53.6					
4th	128	3296.80	850	Horn	V	NF	NF		-	-13	-
4th	128	3296.80	850	Horn	H	NF					
The harmonics were investigated up to the 10th harmonic. Emissions above the 3rd harmonic were in the noise floor (NF)											
Middle Channel – 837.6 MHz											
2nd	195	1675.20	850	Horn	V	54.4	61.2	-15.9	-38.5	-13	-25.5
2nd	195	1675.20	850	Horn	H	61.2					
3rd	195	2512.80	850	Horn	V	49.4	51.1	-11.8	-40.1	-13	-27.1
3rd	195	2512.80	850	Horn	H	51.1					
4th	195	3350.40	850	Horn	V	NF	NF		-	-13	-
4th	195	3350.40	850	Horn	V	NF					
The harmonics were investigated up to the 10th harmonic. Emissions above the 3rd harmonic were in the noise floor (NF)											

Radiated Emissions Test Data Results cont'd

Test distance is 3.0 metres March 10, 2006

EUT				Rx Antenna		Spectrum Analyzer		Substitution Method Tracking Generator			
Type	Ch	Frequency (MHz)	Band	Type	Pol.	Reading (dBuV)	Max (V,H) (dBuV)	Reading (dBm)	Corrected Reading (relative to dipole)	Limit (dBm)	Diff to Limit (dB)
High Channel – 848.8 MHz											
2nd	251	1697.60	850	Horn	V	57.3	65.6	-10.8	-33.4	-13	**-20.4**
2nd	251	1697.60	850	Horn	H	65.6					
3rd	251	2546.40	850	Horn	V	49.8	51.6	-11.3	-39.6	-13	-26.6
3rd	251	2546.40	850	Horn	H	51.6					
4th	251	3395.20	850	Horn	V	NF	NF		-	-13	-
4th	251	3395.20	850	Horn	H	NF					
The harmonics were investigated up to the 10th harmonic. Emissions above the 3rd harmonic were in the NF											

Radiated Emissions Test Data Results cont'd

Test distance is 3.0 metres March 10, 2006

EUT				Rx Antenna		Spectrum Analyzer			Substitution Method Tracking Generator			
Type	Ch	Frequency (MHz)	Band	Type	Pol.	Reading (dBuV)	Corrected Reading (dBuV)	Max (V,H) (dBuV)	Reading (dBm))	Corrected Reading (relative to dipole) (dBm))	Limit (dBm)	Diff to Limit (dB)
GSM850 BAND **RF Local Oscillator (LO_1)** **Low Channel (824.2 MHz)**												
F0	128	1648.40	850	Horn	V	NF	NF			-	-13	-
F0	128	1648.40	850	Horn	H	NF						
Emissions were in the NF.												
High Channel (848.8 MHz)												
F0	251	1697.60	850	Horn	V	NF	NF			-	-13	-
F0	251	1697.60	850	Horn	H	NF						
Emissions were in the NF.												
RF LO_2 **Low Channel (824.2 MHz)**												
F0	128	3476.80	850	Horn	V	NF	NF			-	-13	-
F0	128	3476.80	850	Horn	H	NF						
Emissions were in the NF.												
High Channel (848.8 MHz)												
F0	251	3575.20	850	Horn	V	NF	NF			-	-13	-
F0	251	3575.20	850	Horn	H	NF						
Emissions were in the NF.												

Radiated Emissions Test Data Results cont'd

Test distance is 3.0 metres March 10, 2006

EUT				Rx Antenna		Spectrum Analyzer			Substitution Method Tracking Generator			
Type	Ch	Frequency (MHz)	Band	Type	Pol.	Reading (dBuV)	Max (V,H) (dBuV)		Reading (dBm)	Corrected Reading (relative to dipole)	Limit (dBm)	Diff to Limit (dB)
GSM850 and Bluetooth transmitting in frequency hopping mode Handheld Standalone, vertical position **Low Channel –** 824.2 MHz												
2nd	128	1648.40	850	Horn	V	57.0	65.6		-11.5	-34.0	-13	**-21.0**
2nd	128	1648.40	850	Horn	H	65.6			-11.4			
3rd	128	2472.60	850	Horn	V	43.5	47.1		-16.5	-44.8	-13	-31.8
3rd	128	2472.60	850	Horn	H	47.1			-17.0			
4th	128	3296.80	850	Horn	V	NF	NF			-	-13	-
4th	128	3296.80	850	Horn	H	NF						
5th	128	4121.00	850	Horn	V	50.7	50.7		-3.7	-32.9	-13	-32.9
5th	128	4121.00	850	Horn	H	48.7			-4.2			
6th	128	4945.20	850	Horn	V	43.3	43.3		-10.7	-38.6	-13	-38.6
6th	128	4945.20	850	Horn	H	43.2			-8.4			
The harmonics were investigated up to the 10th harmonic. Emissions above the 6th harmonic were in the NF. **Middle Channel** – 837.6 MHz												
2nd	195	1675.20	850	Horn	V	53.5	64.8		-14.2	-36.8	-13	-23.8
2nd	195	1675.20	850	Horn	H	61.8			-15.2			
3rd	195	2512.80	850	Horn	V	43.1	45.2		-18.1	-46.4	-13	-33.4
3rd	195	2512.80	850	Horn	H	45.2			-18.3			
4th	195	3350.40	850	Horn	V	NF	NF			-	-13	-
4th	195	3350.40	850	Horn	H	NF						
5th	195	4188.00	850	Horn	V	49.0	49.0		-6.6	-35.8	-13	-22.8
5th	195	4188.00	850	Horn	H	48.1			-6.6			

Radiated Emissions Test Data Results cont'd

Test distance is 3.0 metres March 10, 2006

EUT				Rx Antenna		Spectrum Analyzer		Substitution Method Tracking Generator			
Type	Ch	Frequency (MHz)	Band	Type	Pol.	Reading (dBuV)	Max (V,H) (dBuV)	Reading (dBm)	Corrected Reading (relative to dipole)	Limit (dBm)	Diff to Limit (dB)
6th	195	5025.60	850	Horn	V	41.4	41.4	-12.8	-41.4	-13	-28.4
6th	195	5025.60	850	Horn	H	41.4		-11.2			
The harmonics were investigated up to the 10th harmonic Emissions above the 6th harmonic were in the NF											
High Channel (848.8 MHz)											
2nd	251	1697.60	850	Horn	V	53.6	61.5	-15.5	-37.8	-13	-24.8
2nd	251	1697.60	850	Horn	H	61.5		-15.2			
3rd	251	2546.40	850	Horn	V	41.1	43.3	-20.0	-48.3	-13	-35.3
3rd	251	2546.40	850	Horn	H	43.3		-20.4			
4th	251	3395.20	850	Horn	V	NF	NF		-	-13	-
4th	251	3395.20	850	Horn	H	NF					
5th	251	4244.00	850	Horn	V	47.9	47.9	-7.6	-36.6	-13	-23.6
5th	251	4244.00	850	Horn	H	46.8		-7.4			
6th	251	5092.80	850	Horn	V	40.3	40.9	-11.5	-41.7	-13	-28.7
6th	251	5092.80	850	Horn	H	40.9		-11.7			
The harmonics were investigated up to the 10th harmonic. Emissions above the 6th harmonic were in the NF											

The environmental test conditions were: Temperature 24ºC
Pressure 1008 mb
Relative Humidity 24%

Radiated Emissions Test Data Results cont'd

Test Distance was 3.0 metres. PCS Band March 22, 2006

								Substitution Method			
EUT				Receive Antenna		Spectrum Analyzer		Tracking Generator			
Type	Ch	Frequency (MHz)	Band	Type	Pol.	Reading (dBuV)	Max (V,H) dBuV	Reading (dBm)	Corrected Reading (relative to Isotropic Radiator) (dBm)	Limit (dBm)	Diff to Limit (dB)
PCS BAND (EIRP) Handheld Standalone, horizontal position											
F0	512	1850.20	1900	Horn	V	87.0	92.9	-7.4	28.2	33	-4.8
F0	512	1850.20	1900	Horn	H	92.9					
F0	661	1880.00	1900	Horn	V	85.4	92.0	-7.3	28.3	33	-4.7
F0	661	1880.00	1900	Horn	H	92.0					
F0	810	1909.80	1900	Horn	V	84.4	92.4	-7.1	**28.5**	33	-4.5
F0	810	1909.80	1900	Horn	H	92.4					

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

Example: 1850.20 MHz = -7.4 (Tracking Generator Level) + 8.2 (Antenna Factor) – 5.6 (Cable Loss) + 33.0 (Preamp Gain) = 28.2 dBm (Reading Relative to Isotropic Radiator)

Radiated Emissions Test Data Results cont'd

Test Distance was 3.0 metres. PCS Band March 22, 2006

								Substitution Method			
EUT				Receive Antenna		Spectrum Analyzer		Tracking Generator			
Type	Ch	Frequency (MHz)	Band	Pol. Type	Pol.	Reading (dBuV)	Max (V,H) (dBuV)	Reading (dBm)	Corrected Reading (relative to Isotropic Radiator) (dBm)	Limit (dBm)	Diff to Limit (dB)
PCS BAND (Harmonics) Handheld Standalone, on it's side **Low Channel** 1850.20 MHz											
2nd	512	3700.40	1900	Horn	V	42.9	46.6	-14.9	-37.5	-13	-24.5
2nd	512	3700.40	1900	Horn	H	46.6					
The harmonics were investigated up to the 10th harmonic. Emissions above the 2nd harmonic were in the NF **Middle Channel** 1880.00 MHz											
2nd	661	3760.00	1900	Horn	V	43.3	45.7	-13.4	-36.0	-13	-23.0
2nd	661	3760.00	1900	Horn	H	45.7					
The harmonics were investigated up to the 10th harmonic. Emissions above the 2nd harmonic were in the NF **High Channel** 1909.8 MHz											
2nd	810	3819.60	1900	Horn	V	43.2	47.5	-10.1	-32.7	-13	**-19.7**
2nd	810	3819.60	1900	Horn	H	47.5					
The harmonics were investigated up to the 10th harmonic. Emissions above the 2nd harmonic were in the NF											

Radiated Emissions Test Results cont'd

Test Distance was 3.0 metres. PCS Band March 22, 2006
The measurements were performed in transmit mode with the handheld in standalone vertical position.

EUT				Rx Antenna		Spectrum Analyzer			Substitution Method Tracking Generator			
Type	Ch	Frequency (MHz)	Band	Type	Pol.	Reading (dBuV)	Corrected Reading (dBuV)	Max (V,H) (dBuV)	Reading (dBm)	Corrected Reading (relative to Isotropic Radiator) (dBm)	Limit (dBm)	Diff to Limit (dB)
RF LO_1												
Low Channel												
F0	512	1423.20	1900	Horn	V	NF	NF			-	-13	-
F0	512	1423.20	1900	Horn	H	NF						
Emissions were in the NF.												
High Channel												
F0	810	1482.80	1900	Horn	V	NF	NF			-	-13	-
F0	810	1482.80	1900	Horn	H	NF						
Emissions were in the NF.												
RF LO_2												
Low Channel												
F0	512	1930.10	1900	Horn	V	NF	NF			-	-13	-
F0	512	1930.10	1900	Horn	H	NF						
Emissions were in the NF.												
High Channel												
F0	810	1989.70	1900	Horn	V	NF	NF			-	-13	-
F0	810	1989.70	1900	Horn	H	NF						
Emissions were in the NF.												

Radiated Emissions Test Results cont'd

Test Distance was 3.0 metres. March 22, 2006

								Substitution Method			
EUT				Receive Antenna		Spectrum Analyzer		Tracking Generator			
Type	Ch	Frequency (MHz)	Band	Pol. Type	Pol.	Reading (dBuV)	Max (V,H) (dBuV)	Reading (dBm)	Corrected Reading (relative to Isotropic Radiator) (dBm)	Limit (dBm)	Diff to Limit (dB)
PCS and Bluetooth transmitting in frequency hopping mode											
Handheld Standalone, on it's side											
Low Channel 1850.20 MHz											
2nd	512	3700.40	1900	Horn	V	42.3	45.2	-13.8	-36.4	-13	-23.4
2nd	512	3700.40	1900	Horn	H	45.2		-14.4			
The harmonics were investigated up to the 10th harmonic. Emissions above the 2nd harmonic were in the NF											
Middle Channel 1880.00 MHz											
2nd	661	3760.00	1900	Horn	V	42.3	46.2	-12.5	-35.1	-13	-22.1
2nd	661	3760.00	1900	Horn	H	46.2		-12.9			
The harmonics were investigated up to the 10th harmonic. Emissions above the 2nd harmonic were in the NF											
High Channel 1909.8 MHz											
2nd	810	3819.60	1900	Horn	V	42.8	47.5	-11.3	-33.9	-13	**-20.9**
2nd	810	3819.60	1900	Horn	H	47.5		-11.7			
The harmonics were investigated up to the 10th harmonic. Emissions above the 2nd harmonic were in the NF											

The environmental test conditions were: Temperature 24ºC
Pressure 1008 mb
Relative Humidity 24%