EMI Test Report

Tested in accordance with
Federal Communications Commission (FCC)
Personal Communications Services
CFR 47, Parts 2, 22 and 24
and
Industry Canada, RSS-133 and RSS-128

Research In Motion Limited

REPORT NO.: RIM-0054-0309-06

PRODUCT MODEL NO: R6030GN
TYPE NAME: BlackBerry Wireless Handheld
FCC ID: L6AR6030GN
IC: 2503A-R6030GN

Date: 30 September 2003

Declaration

Statement of Performance:

The BlackBerry Wireless Handheld, model R6030GN ASY-06048-001 revision H, PCB version 005 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 equipment used was suitable for the tests performed and within the manufacturers published specifications and operating parameters.
The test methods were consistent with the methods described in the relevant standards.

Tested by

Maurice Battler

Maurice Battler
Compliance Specialist Date: 30 September 2003

M. Attay

Masud S. Attayi, P.Eng.
Senior Compliance Engineer Date: 01 October 2003

Reviewed and Approved by:

Paul G Cardinal

Paul G. Cardinal, Ph.D.
Manager, Compliance and Certification Date: 02 October 2003

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, 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-128 Issue 2, Rev 1, Nov. 6/99, 800 MHz Dual-Mode TDMA Cellular Telephones
Industry Canada, RSS-133 Issue 2, Rev. 1 Nov. 6/1999, 2.0 GHz Personal Communications Services

B) Associated Documents

1) Test report number RIM-0054-0307-06
2) Document number RIM-0054-R6030-01

C) Product Identification

The equipment under test (EUT) was tested at the Research In Motion (RIM) EMI test facility, located at:

305 Phillip Street
Waterloo, Ontario
Canada, N2L 3W8
Phone: 519 888 7465
Fax: 519 888 6906
Web Site: www.rim.net

The testing began on September 22, 2003 and completed on September 30, 2003. The sample equipment under test (EUT) included:

1a BlackBerry Wireless Handheld, model number R6030GN, ASY-06048-001 revision H, PCB version 005, PIN 2006A1D7, IMEI 001020.00.053300.0, FCC ID L6AR6030GN, IC: 2503A-R6030GN.

1b BlackBerry Wireless Handheld, model number R6030GN, ASY-06048-001 revision H, PCB version 005, PIN 200691D9, IMEI 001020.00.053302.0, FCC ID L6AR6030GN, IC: 2503A-R6030GN.

The transmit frequency bands for the Handheld are: GSM850 824 to 849 MHz, DCS 1710 to 1785 MHz and PCS 1850 to 1910 MHz. Only the GSM band and PCS band emission results are presented here.

The Handheld that was measured in test report number RIM-0054-0307-06 was model number R6030GN, ASY-06030-001 PCB version 003.
To view the differences between ASY-06030-001 PCB version 003 and ASY-06048-001 revision H, PCB version 005, see document number RIM-0054-R6030-01.

Only the measurements that maybe impacted by the changes from PCB ASY-06030-001 version 003 to ASY-06048-001 revision H, PCB version 005 were remeasured.

D) Support Equipment Used for the Testing of the EUT

1) Rohde & Schwarz, Universal Radio Communication Tester, model number CMU 200, serial number 100249
2) Rohde & Schwarz, Universal Radio Communication Tester, model number CMU 200, serial number 837493/073
3) DC Power Supply, H/P, model 6632B, serial number US37472178

E) Test Voltage

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

F) Test Results Chart

SPECIFICATION	Test Type	MEETS REQUIREMENTS	Performed By
FCC CFR 47 Part 22, Subpart H IC RSS-128	Radiated Spurious/harmonic Emissions, ERP	Yes	Masud Attayi
FCC CFR 47 Part 22, Subpart H IC RSS-128	LO Emissions	See test report RIM-0054-0307-06	
FCC CFR 47 Part 22, Subpart H IC RSS-128	Conducted Emissions, Occupied Bandwidth,	Yes	Maurice Battler
FCC CFR 47 Part 22, Subpart H IC RSS-128	Frequency Stability	See test report RIM-0054-0307-06	
FCC CFR 47 Part 24, Subpart E IC RSS-133	Radiated Spurious/harmonic Emissions, EIRP	Yes	Masud Attayi
FCC CFR 47 Part 24, Subpart E IC RSS-133	LO Emissions	See test report RIM-0054-0307-06	
FCC CFR 47 Part 24, Subpart E IC RSS-133	Conducted Emissions, Occupied Bandwidth	Yes	Maurice Battler
FCC CFR 47 Part 24, Subpart E IC RSS-133	Frequency Stability	See test report RIM-0054-0307-06	

G) Modifications to EUT

No modifications were required on the EUT.

H) Summary of Results

1) The EUT passed the Conducted Spurious Emissions requirements in the GSM850 band as per 47 CFR 22.917, CFR 22.901(d). 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 passed the Conducted Spurious Emissions requirements in the PCS band as per 47 CFR 2.1057, CFR 24.238 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 passed the Occupied Bandwidth and channel mask requirements in the GSM850 band as per 47 CFR 2.202, CFR 22.917 and RSS-128. The channels measured were low, middle and high.
See APPENDIX 1 for the test data.

4) The EUT passed the Occupied Bandwidth and channel mask requirements in the PCS band as per 47 CFR 2.202, CFR 24.238 and RSS-133. The channels measured were low, middle and high.
See APPENDIX 1 for the test data.

5) The EUT passed the Conducted RF Output Power requirements for both the GSM850 and PCS bands. The channels measured were low, middle and high.
See APPENDIX 2 for the test data.

6) To view the Frequency Stability vs. Temperature and Voltage measurement results for GSM850 band as per 22.917 and RSS-128 see test report RIM-0054-0307-06.

7) To view the Frequency Stability vs. Temperature and Voltage measurement results for the PCS band as per 24.235 and RSS-133 see test report RIM-0054-0307-06.

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 wooden table, 80 cm high plus 20 cm high styrofoam on top of the table which was positioned on a remotely rotatable 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. At this point the emissions were maximized by elevating the antenna in the range of 1 to 4 metres. The turntable was rotated to determine the azimuth of the peak emissions. The maximum emissions level was recorded. The measurements were 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 28.5 dBm at 848.8 MHz (channel 251).
   The highest EIRP in the PCS band measured was 32.9 dBm at 1909.8 MHz (channel 810).
   To view the test data see APPENDIX 3.

The radiated carrier harmonics were measured up to the 10th harmonic for low, middle and high channels in the GSM850 and PCS bands.
The lowest emission test margin for GSM850 measured was –26.5 dB below the limit at 2546.4 MHz.
The lowest emission test margin for PCS measured was –30.2 dB below the limit at 3819.6 MHz.
To view the test data see APPENDIX 3.

To view the EUT's RF local oscillator (LO) 1, LO2 and IF LO emission measurements in the GSM850 and PCS bands see test report RIM-0054-0307-06.

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

I) Compliance Test Equipment Used

UNIT	MANUFACTURER	MODEL / SERIAL NUMBER	CAL DUE DATE (YY MM DD)	USE
Preamplifier system	TDK RF Solutions	PA-02 080010	03-10-02	Radiated Emissions
Preamplifier	Sonoma	310N/11909A 185831	03-10-02	Radiated Emissions
EMC Analyzer	Agilent	E7405A US40240226	04-07-31	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200 837493/073	04-04-05	Radiated Emissions
Horn Antenna	TDK	HRN-0118 130092	04-09-16	Radiated Emissions
Horn Antenna	TDK	HRN-0118 030201	03-12-11	Radiated Emissions
Hybrid Log Antenna	TDK	HLP-3003C 017301	03-12-11	Radiated Emissions
Dipole Antenna	Schwarzbeck	UHAP 1018	03-11-06	Radiated Emissions
Dipole Antenna	Schwarzbeck	UHAP 974	04-09-24	Radiated Emissions
Synthesized Sweeper	Agilent	83630B 3844A00927	04-04-30	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200 100249	04-04-05	Conducted Emissions
Spectrum Analyzer	HP	8563E 3745A081	04-07-31	Conducted Emissions
DC Power Supply	HP	6632B US37472178	04-08-01	Conducted Emissions
Temperature Probe	Hart Scientific	61161-302 21352860	04-09-15	Conducted Emissions
Power Meter	Giga-Tronics	8541C 1837762	03-10-30	Conducted RF Power
Power Sensor	Giga-Tronics	80401A 1835838	03-10-30	Conducted RF Power

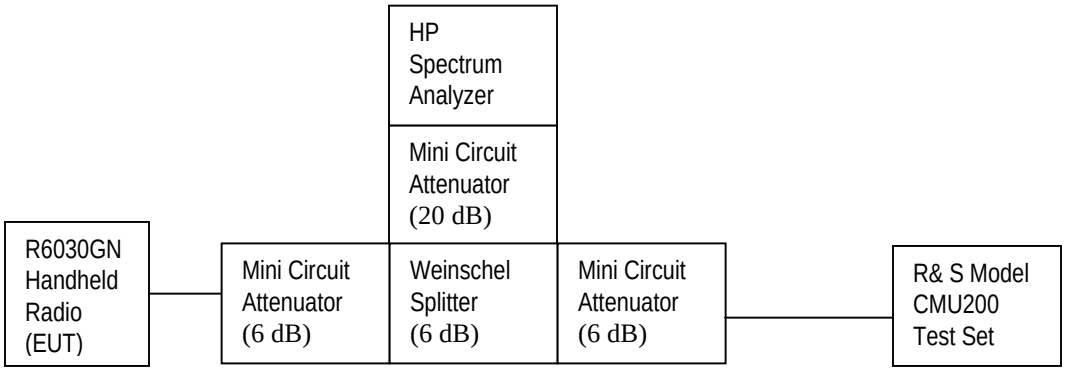
APPENDIX 1

CONDUCTED EMISSIONS TEST DATA/PLOTS

Conducted Emission Test Results

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	100249	--

Conducted Emission Test Data Con't

The conducted spurious emissions – As per 47 CFR 2.202, 47 CFR 2.1057, 47 CFR 24.238, RSS-133, CFR 22 Subpart H and RSS-128 were measured from 10 MHz to 20 GHz. The EUT has a test margin of greater than 20 dB.
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 were 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 emission bandwidth for the three GSM850 channels was measured to be 280.0 kHz, and for the three PCS channels was measured to be 270 kHz as shown below, which results in 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

GSM Frequency (MHz)	-26dBc Bandwidth (kHz)	-99% Occupied Bandwidth (kHz)
824.20	267	248.3
837.60	278	248.3
848.80	280	246.7

PCS Frequency (MHz)	-26dBc Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
1850.20	270	248.3
1880.00	265	248.3
1909.80	265	246.7

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

See Figures 1 to 12 for plots of the Spurious Emission results
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 Emission Test Results con't

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

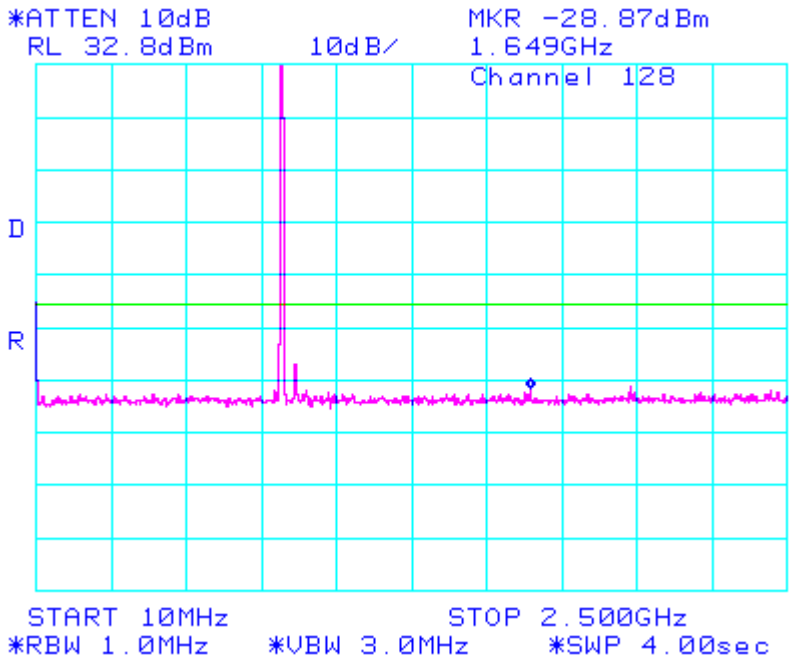
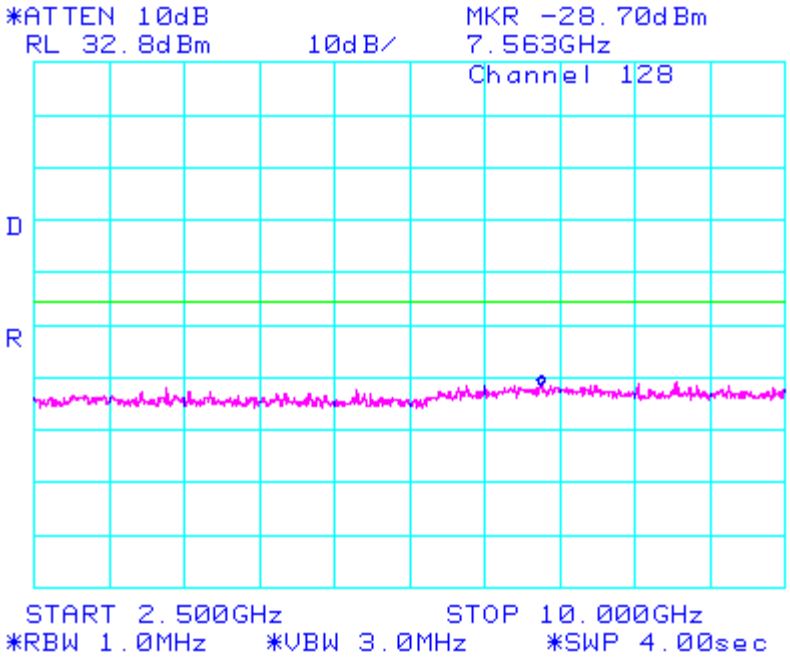


Figure 2: GSM 850, Spurious Conducted Emissions, Low channel



Conducted Emission Test Results Con't

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

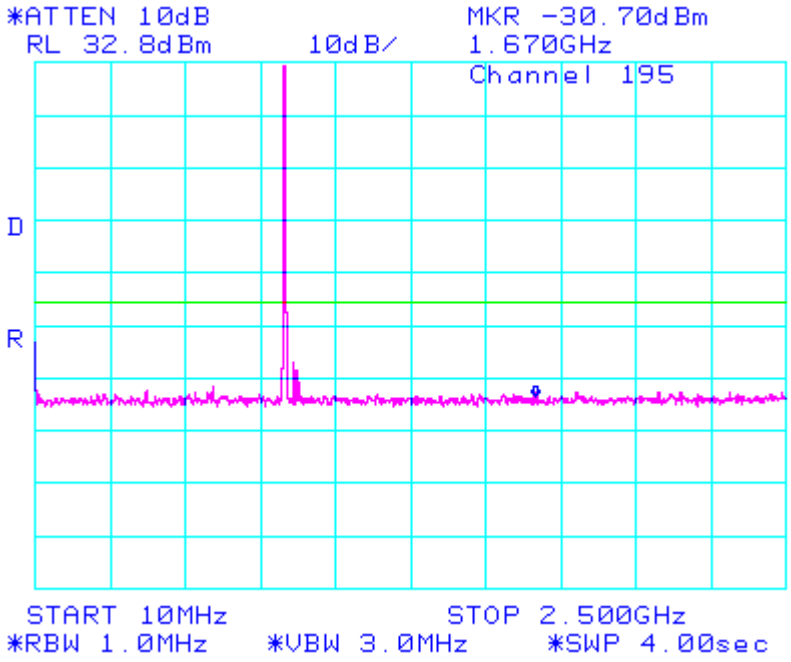
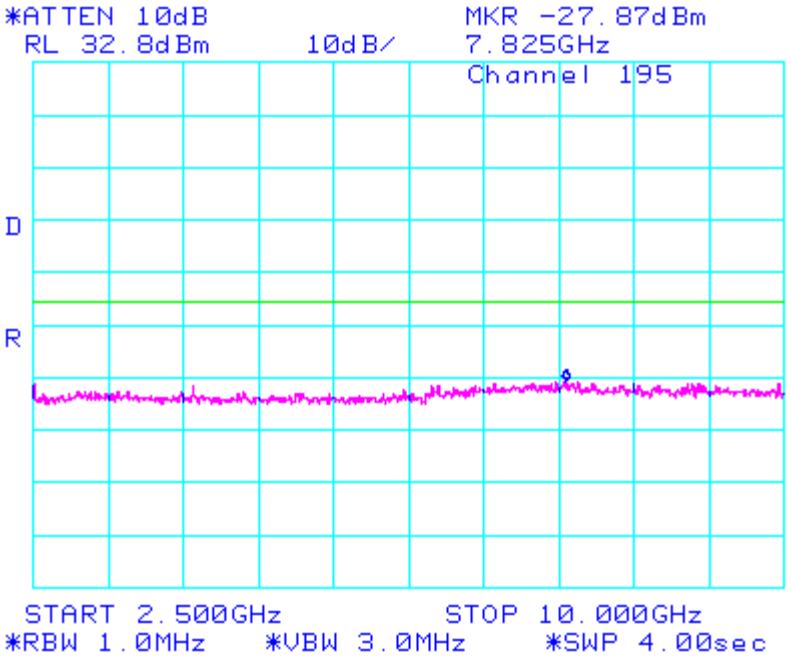


Figure 4: GSM 850, Spurious Conducted Emissions, Middle Channel



Conducted Emission Test Results Con't

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

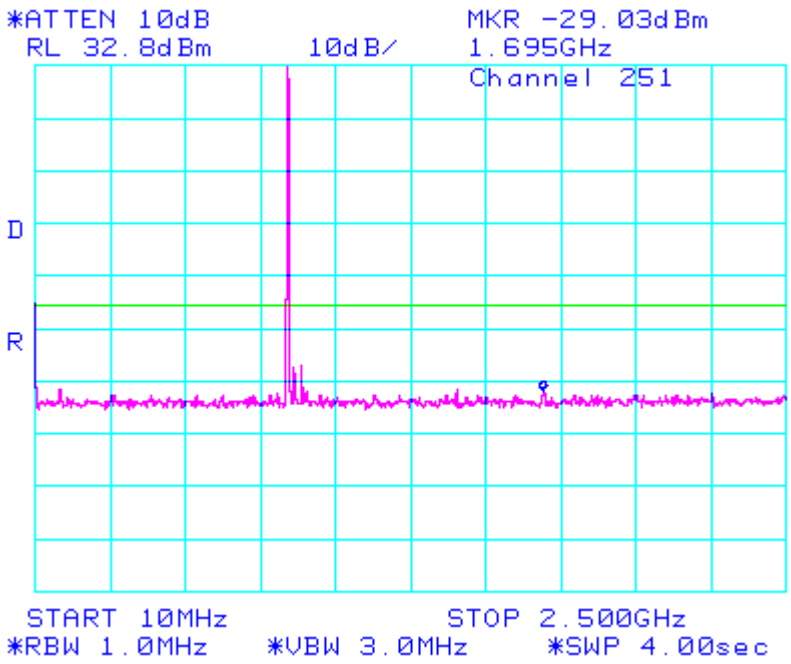
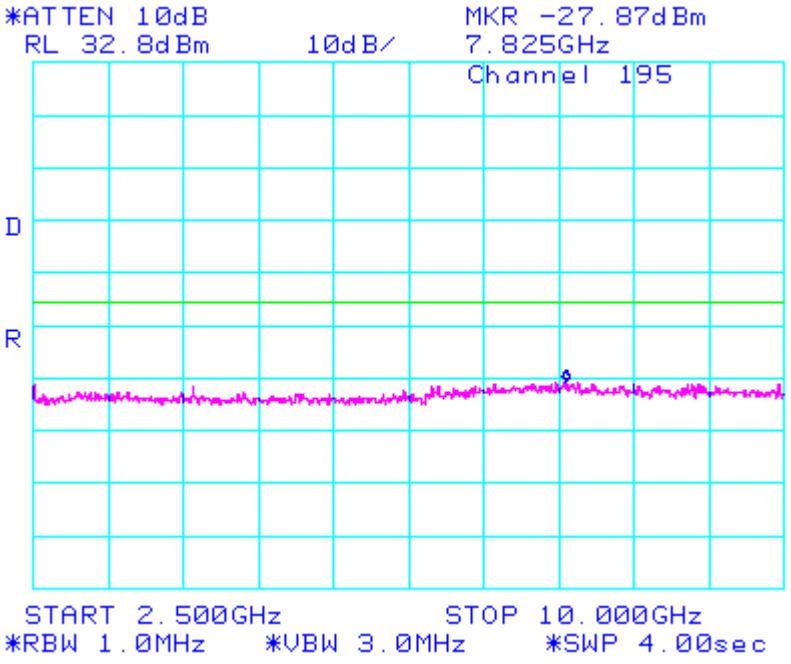


Figure 6: GSM 850, Spurious Conducted Emissions, High Channel



Conducted Emission Test Results Con't

Figure 7: PCS, Spurious Conducted Emissions, Low Channel

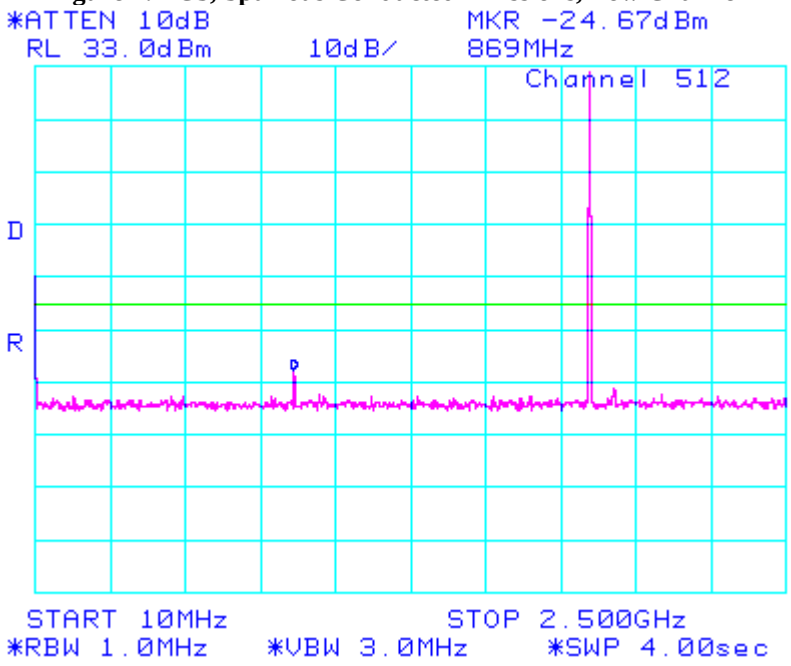
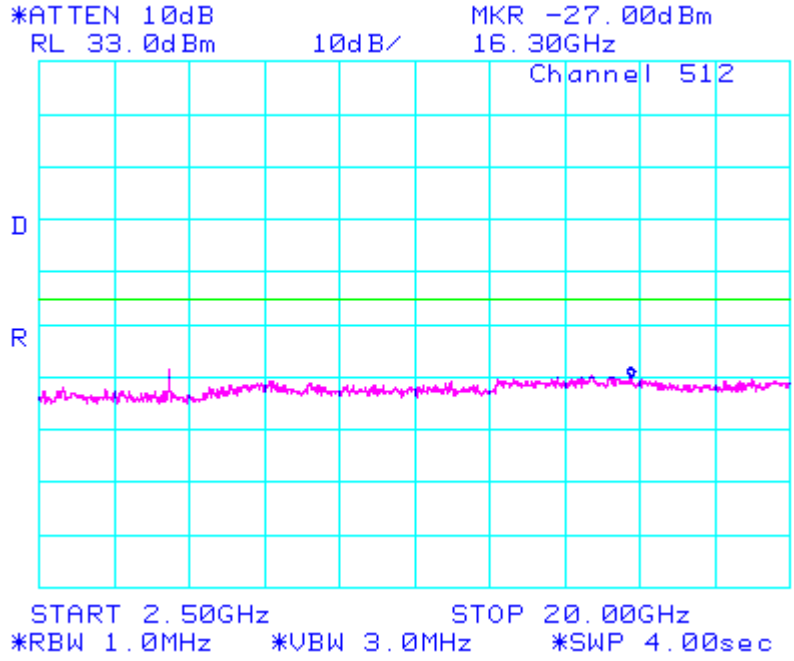


Figure 8: PCS, Spurious Conducted Emissions, Low Channel



Conducted Emission Test Results Con't

Figure 9: PCS, Spurious Conducted Emissions, Middle Channel

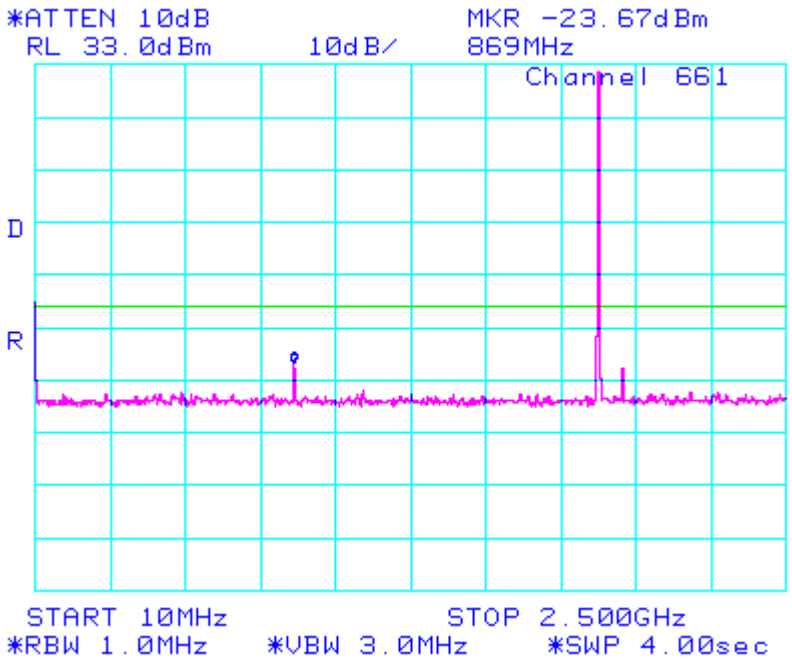
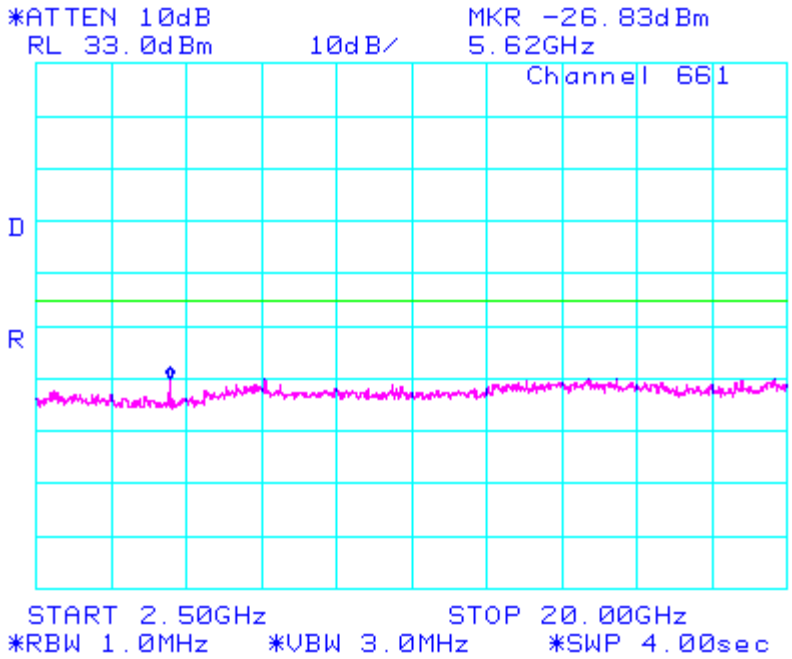


Figure 10: PCS, Spurious Conducted Emissions, Middle Channel



Conducted Emission Test Results Con't

Figure 11: PCS, Spurious Conducted Emissions, High Channel

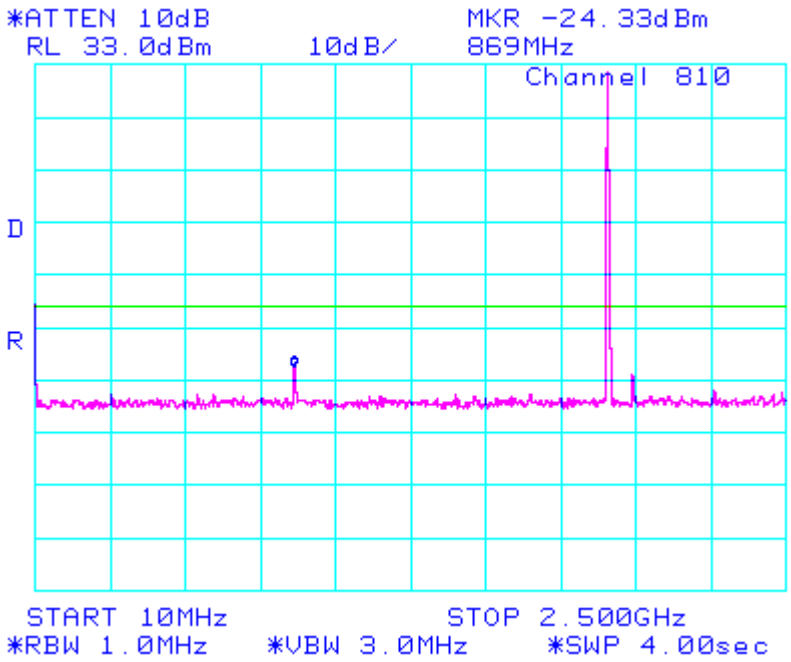
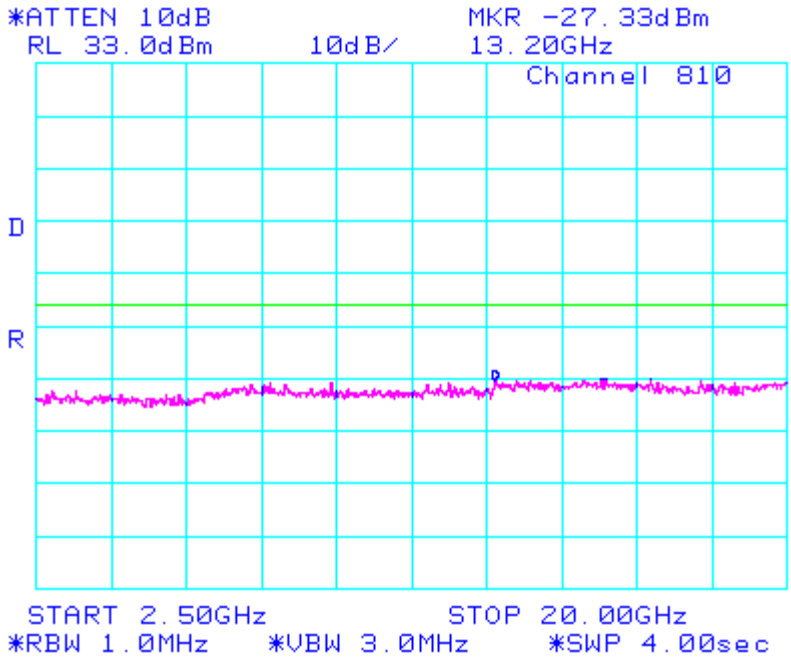


Figure 12: PCS, Spurious Conducted Emissions, High Channel



Conducted Emission Test Results Con't

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

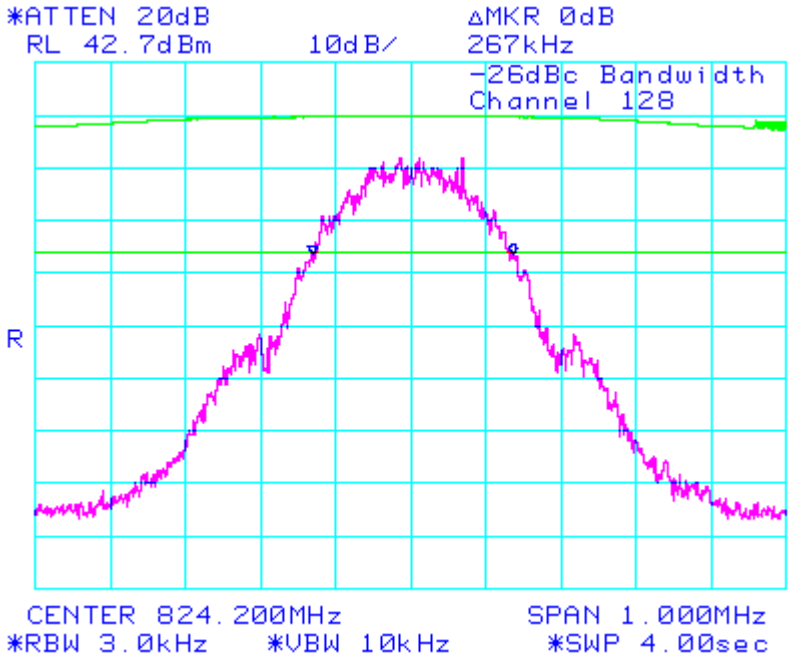
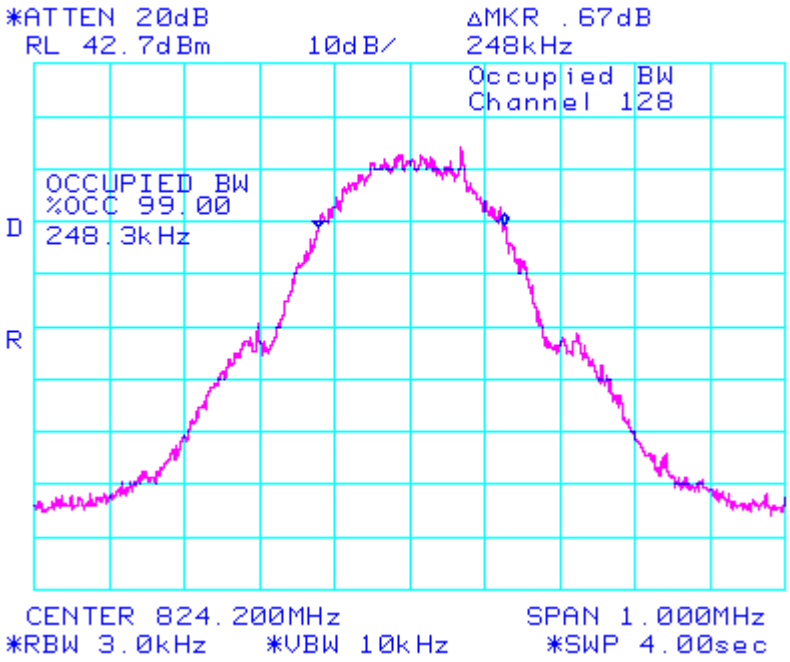


Figure 14: Occupied Bandwidth, GSM 850 Low Channel



Conducted Emission Test Results Con't

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

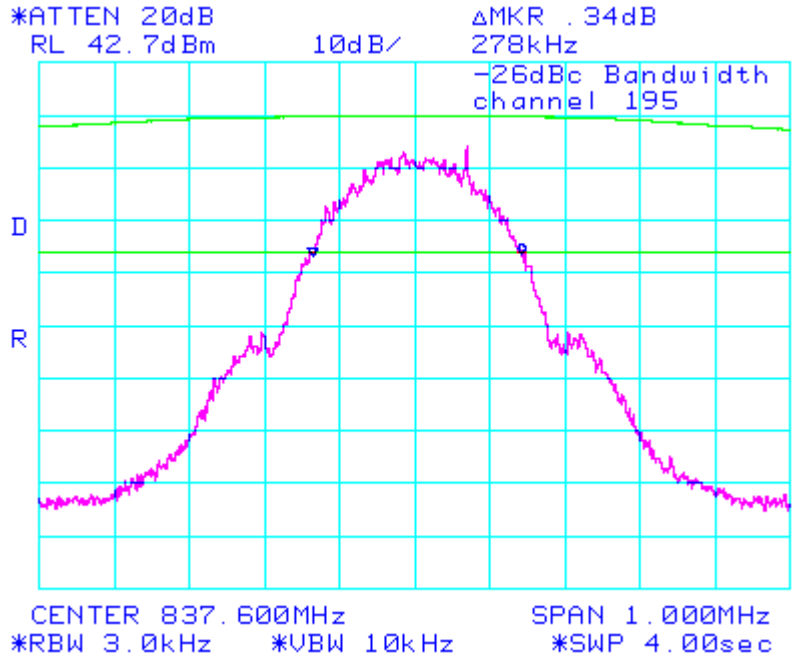
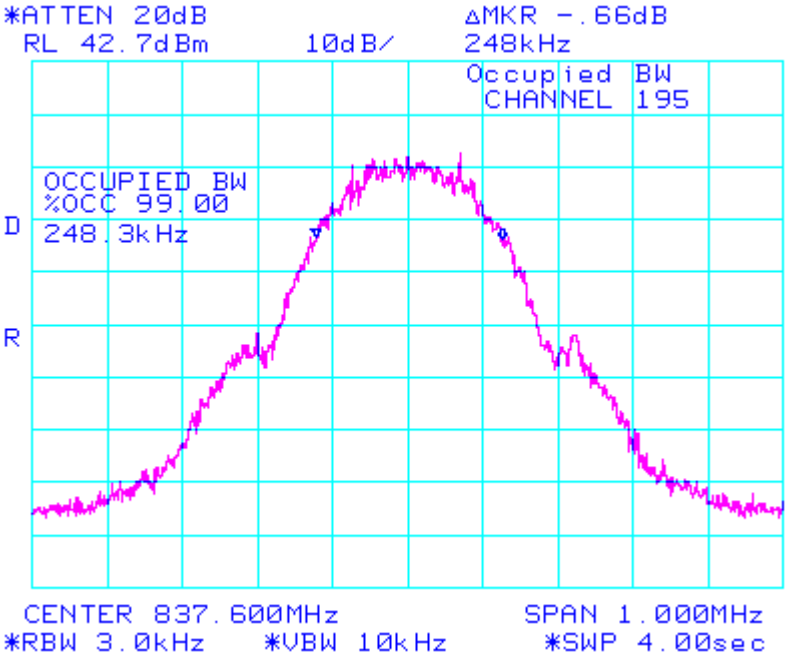


Figure 16: Occupied Bandwidth, GSM 850 Middle Channel



Conducted Emission Test Results Con't

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

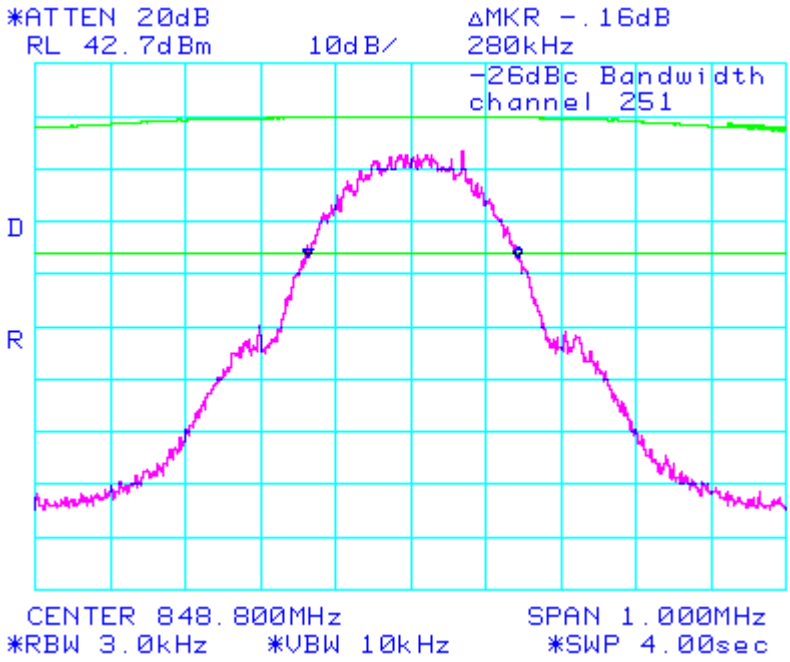
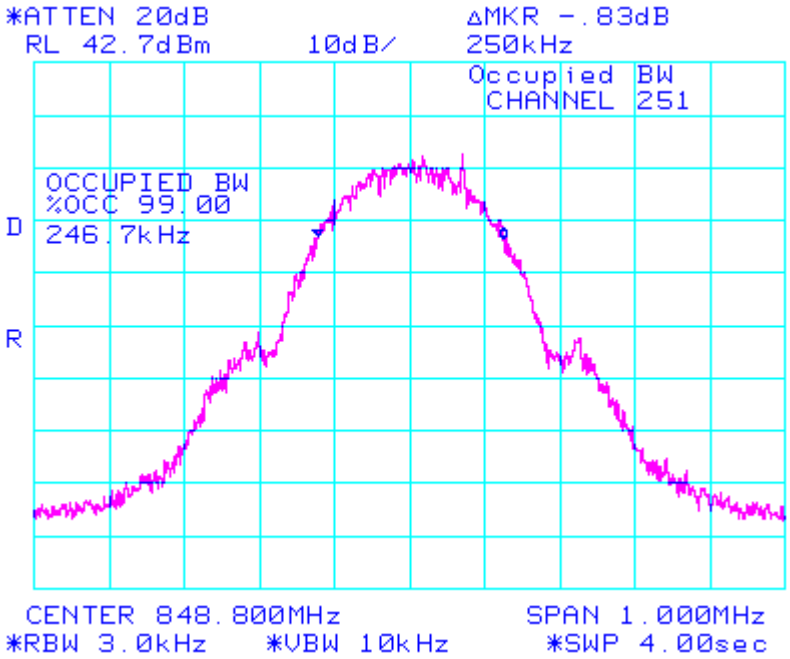


Figure 18: Occupied Bandwidth, GSM 850 High Channel



Conducted Emission Test Results Con't

Figure 19: **-26dBc bandwidth, PCS Low Channel**

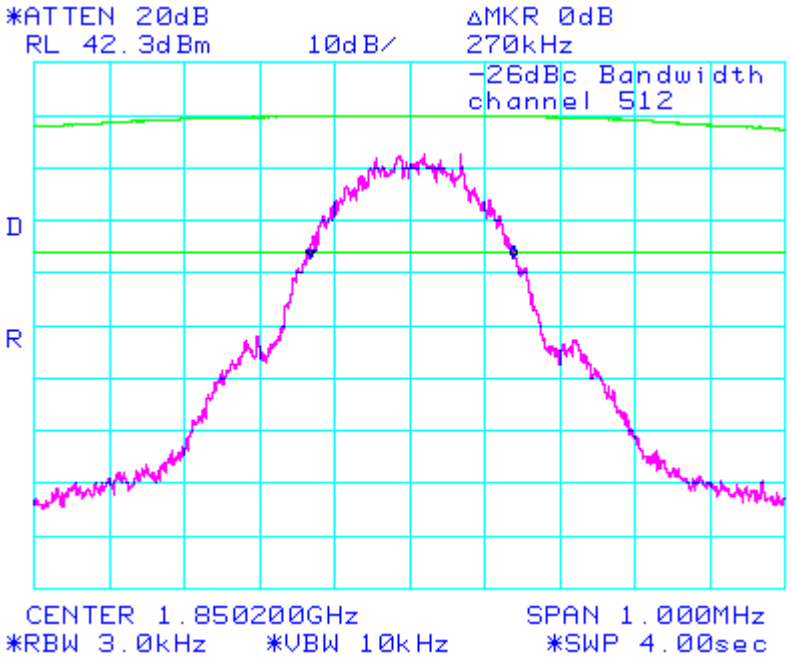
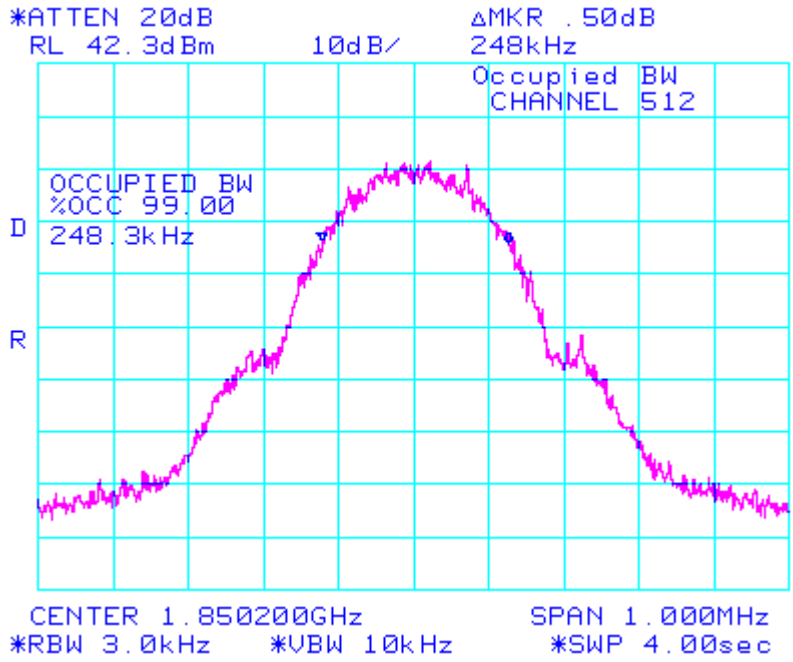


Figure 20: Occupied Bandwidth, PCS Low Channel



Conducted Emission Test Results Con't

Figure 21: -26dBc bandwidth, PCS Middle Channel

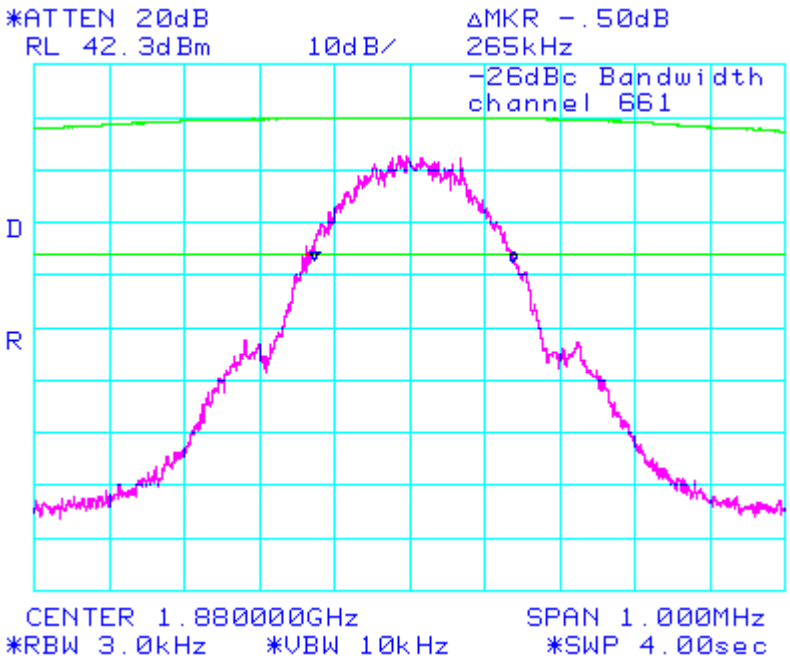
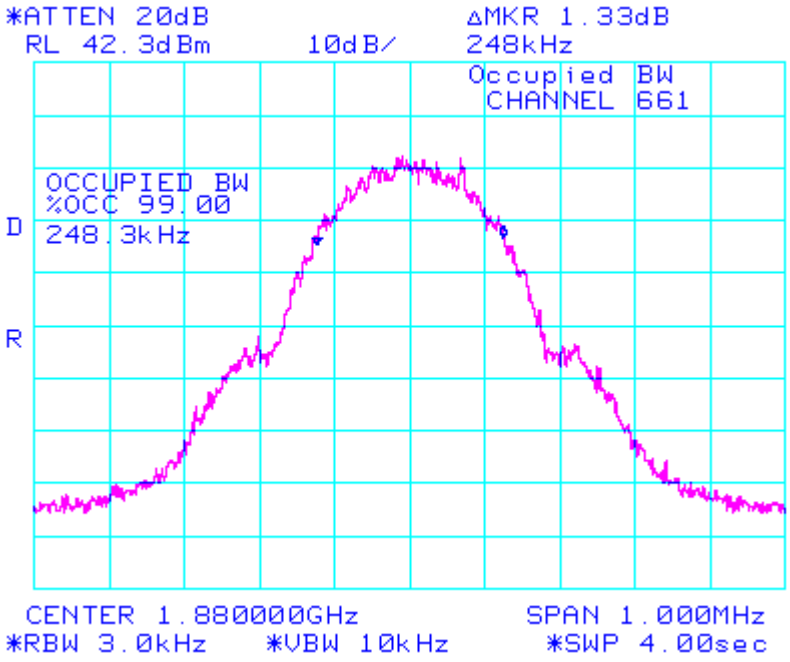


Figure 22: Occupied Bandwidth, PCS Middle Channel



Conducted Emission Test Results Con't

Figure 23: -26dBc bandwidth, PCS High Channel

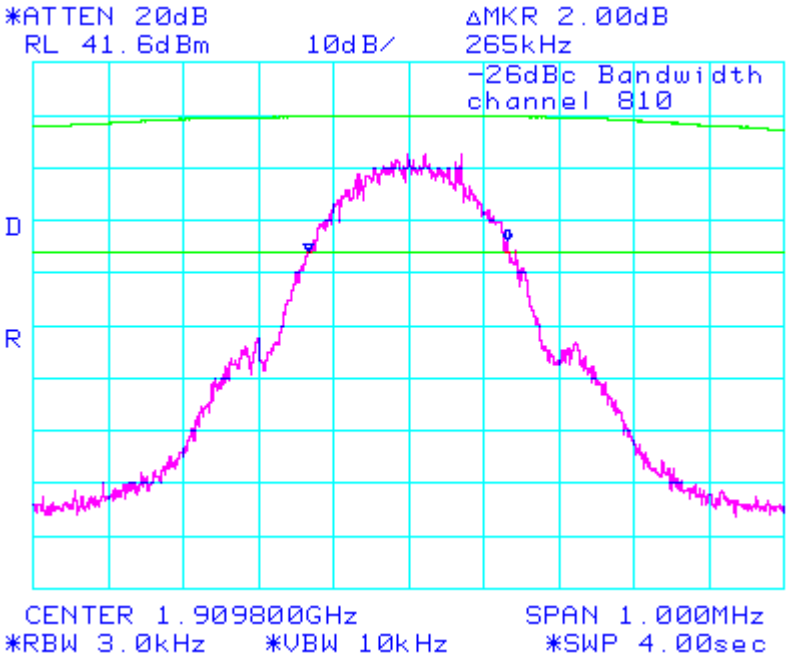
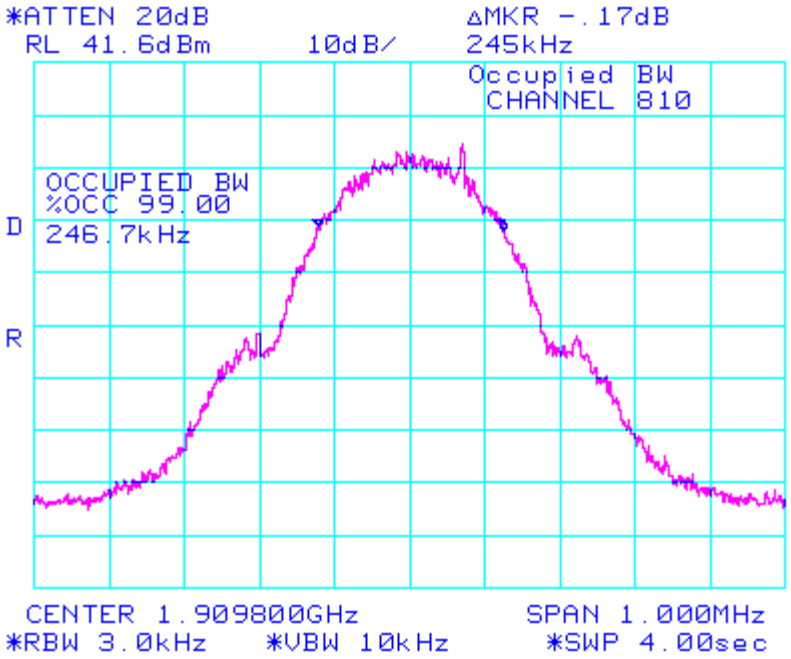


Figure 24: Occupied Bandwidth, PCS High Channel



Conducted Emission Test Results Con't

Figure 25: GSM 850, Low Channel Mask

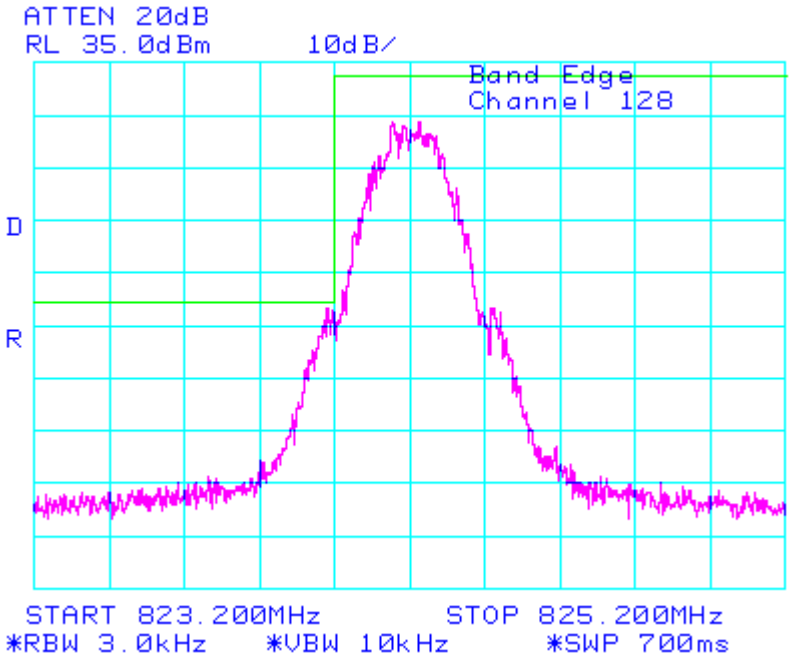
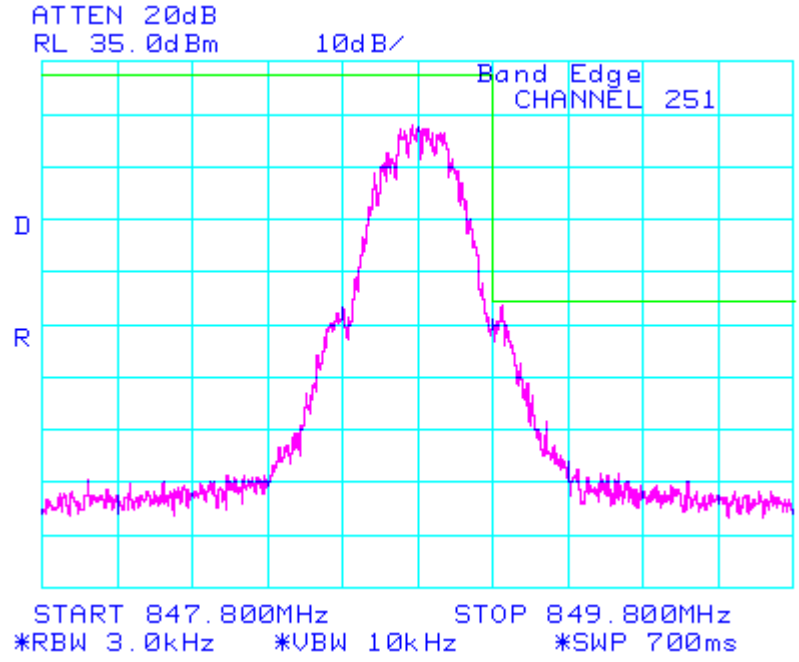


Figure 26: GSM 850 High Channel Mask



Conducted Emission Test Results Con't

Figure27: PCS, Low Channel Mask

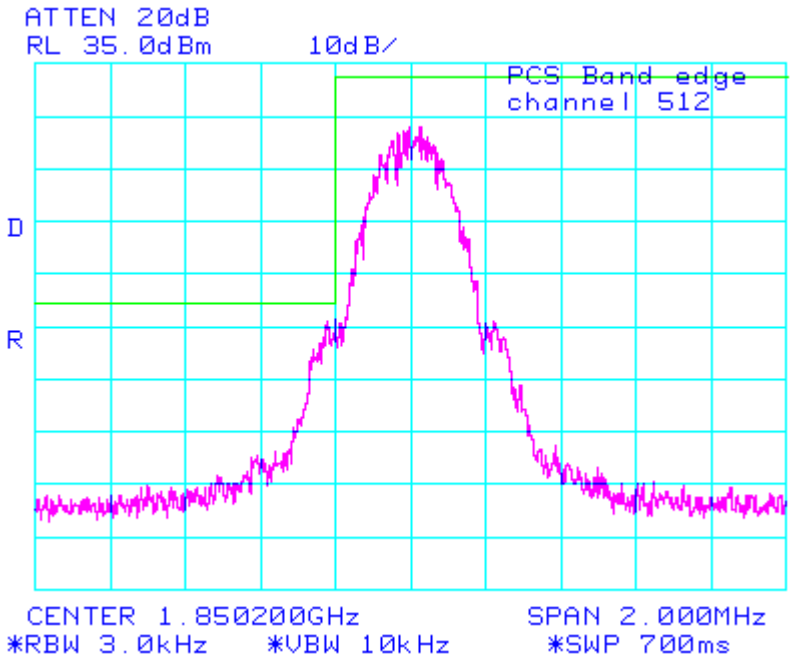
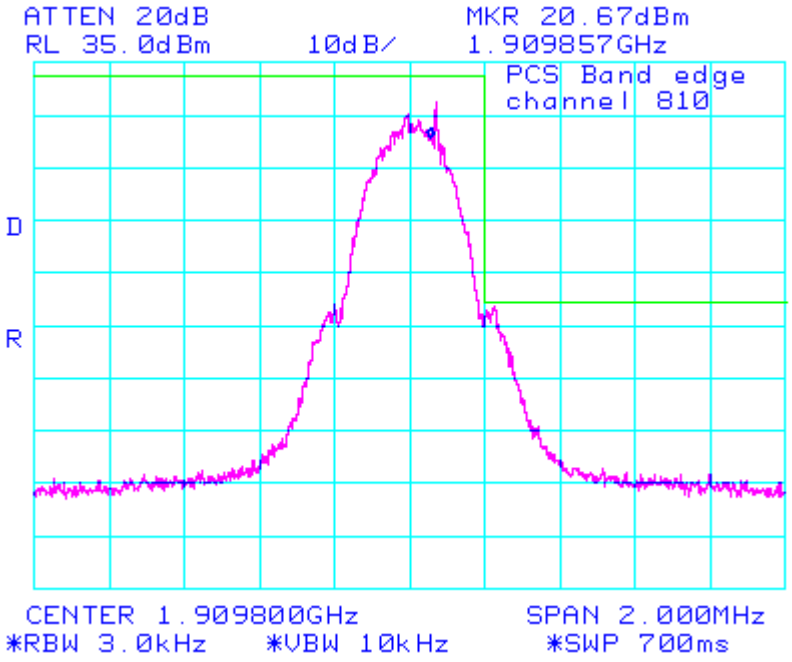
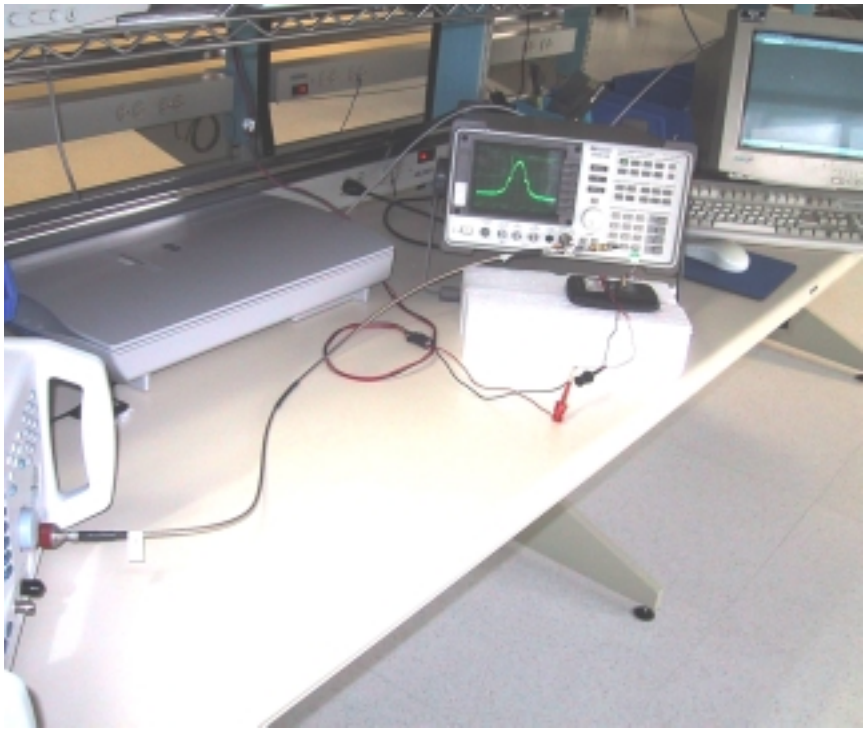


Figure28: PCS, High Channel Mask



Conducted Emission Test-Setup Photo

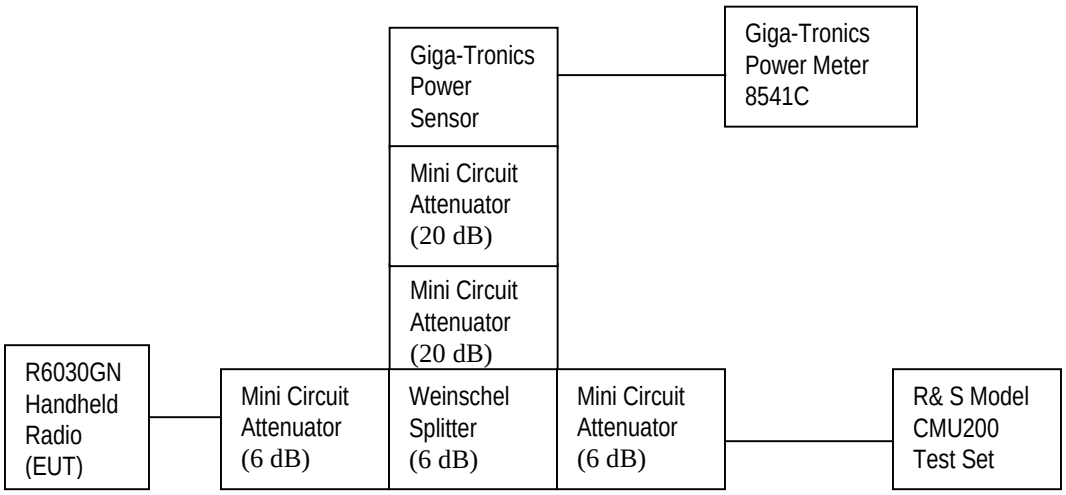
FCC CFR 47 Part 24, Subpart E, RSS-133



APPENDIX 2

CONDUCTED RF OUTPUT POWER TEST DATA

Conducted RF Output Power Test Data



Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Power Sensor	Giga-Tronics	80401A	1835838	.01 – 18 GHz
Power Meter	Giga-Tronics	8541C	1837762	.01 – 18 GHz
Splitter	Weinschel	1515	ME092	DC – 18 GHz
Attenuator	Mini Circuit	MCL BW-S20W2	--	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	100249	--

Power Output for GSM850 and PCS

At three transmit frequencies the maximum radio output power level was measured using the Power Meter. The calibrated insertion loss measured for the attenuator and cable assembly was added to the power measurements which produced the following results.

Test Data

Peak nominal output power is 32 dBm for GSM850 and 31 dBm for PCS.

Channel	GSM850 Frequency (MHz)	Measured Peak Conducted Power (dBm)	Total Correction Factor (dB)	Corrected Peak Conducted Power (dBm)
128	824.2	-20.29	52.4	32.11
195	837.6	-20.62	52.4	31.78
251	848.8	-20.61	52.4	31.79

Channel	PCS Frequency (MHz)	Measured Peak Conducted Power (dBm)	Total Correction Factor (dB)	Corrected Peak Conducted Power (dBm)
512	1850.2	-21.35	52.6	31.25
661	1880.0	-21.58	52.6	31.02
810	1909.8	-21.61	52.6	30.99

APPENDIX 3

RADIATED EMISSIONS TEST DATA

Radiated Emissions Test Data Results

Test distance is 3.0 metres

EUT				Rx Antenna		Spectrum Analyzer		Substitution Method Tracking Generator		
Type	Ch	Frequency (MHz)	Band	Type	Pol.	Reading (dBuV)	Max (V,H) (dBuV)	Pol. Tx-Rx	Reading (dBm)	Corrected Reading (relative to dipole)
GSM850 Band (ERP)										
Handheld Standalone, upright position										
F0	128	824.20	850	Dipole	V	84.1	84.1	V-V	8.9	24.9
F0	128	824.20	850	Dipole	H	78.8		H-H	7.2	
F0	195	837.60	850	Dipole	V	84.6	84.6	V-V	10.5	26.5
F0	195	837.60	850	Dipole	H	76.1		H-H	8.1	
F0	251	848.80	850	Dipole	V	84.8	84.8	V-V	10.9	26.9
F0	251	848.80	850	Dipole	H	77.1		H-H	8.7	
Handheld standalone, on its side										
F0	128	824.20	850	Dipole	V	78.7	86.1	V-V	11.0	27.0
F0	128	824.20	850	Dipole	H	86.1		H-H	9.3	
F0	195	837.60	850	Dipole	V	79.9	85.3	V-V	11.3	27.3
F0	195	837.60	850	Dipole	H	85.3		H-H	8.8	
F0	251	848.80	850	Dipole	V	80.3	86.4	V-V	12.5	28.5
F0	251	848.80	850	Dipole	H	86.4		H-H	10.3	
Handheld standalone, on its back										
F0	128	824.20	850	Dipole	V	76.3	84.5	V-V	9.3	25.3
F0	128	824.20	850	Dipole	H	84.5		H-H	7.7	
F0	195	837.60	850	Dipole	V	76.8	85.6	V-V	11.6	27.6
F0	195	837.60	850	Dipole	H	85.6		H-H	9.1	
F0	251	848.80	850	Dipole	V	77.3	85.8	V-V	11.9	27.9
F0	251	848.80	850	Dipole	H	85.8		H-H	9.7	

Radiated Emissions Test Data Results con't

Test distance is 3.0 metres

EUT				Rx Antenna		Spectrum Analyzer		Substitution Method				
								Tracking Generator				
Type	Ch	Frequency (MHz)	Band	Type	Pol.	Reading (dBuV)	Max (V,H) (dBuV)	Pol. Tx-Rx	Reading (dBm)	Corrected Reading (relative to dipole)	Limit	Diff to Limit (dB)
GSM850 Band (Harmonics)												
Handheld Standalone, on its back												
Low Channel – 824.2 MHz												
2nd	128	1648.40	850	Horn	V	47.2	55.9	V-V	-48.6	-45.8	-13	-32.8
2nd	128	1648.40	850	Horn	H	55.9		H-H	-48.7			
3rd	128	2472.60	850	Horn	V	44.3	49.1	V-V	-45.0	--42.5	-13	-29.5
3rd	128	2472.60	850	Horn	H	49.1		H-H	-45.8			
The harmonics were investigated up to the 10th harmonic. Emissions above the 4th harmonic were in the noise floor (NF)												
Middle Channel – 837.6 MHz												
2nd	195	1675.2	850	Horn	V	48.9	58.1	V-V	-45.5	-42.7	-13	-29.7
2nd	195	1675.2	850	Horn	H	58.1		H-H	-45.6			
3rd	195	2512.80	850	Horn	V	44.0	50.1	V-V	-42.3	-39.8	-13	-26.8
3rd	195	2512.80	850	Horn	H	50.1		H-H	-43.4			
The harmonics were investigated up to the 10th harmonic. Emissions above the 4th harmonic were in the NF												
High Channel – 848.8 MHz												
2nd	251	1697.60	850	Horn	V	49.9	59.3	V-V	-44.1	-41.1	-13	-28.1
2nd	251	1697.60	850	Horn	H	59.3		H-H	-43.9			
3rd	251	2546.40	850	Horn	V	44.2	50.1	V-V	-42.0	-39.5	-13	-26.5
3rd	251	2546.40	850	Horn	H	50.1		H-H	-43.1			
The harmonics were investigated up to the 10th harmonic. Emissions above the 4th harmonic were in the NF												

Radiated Emissions Test Data Results con't

Test Distance is 3.0 metres

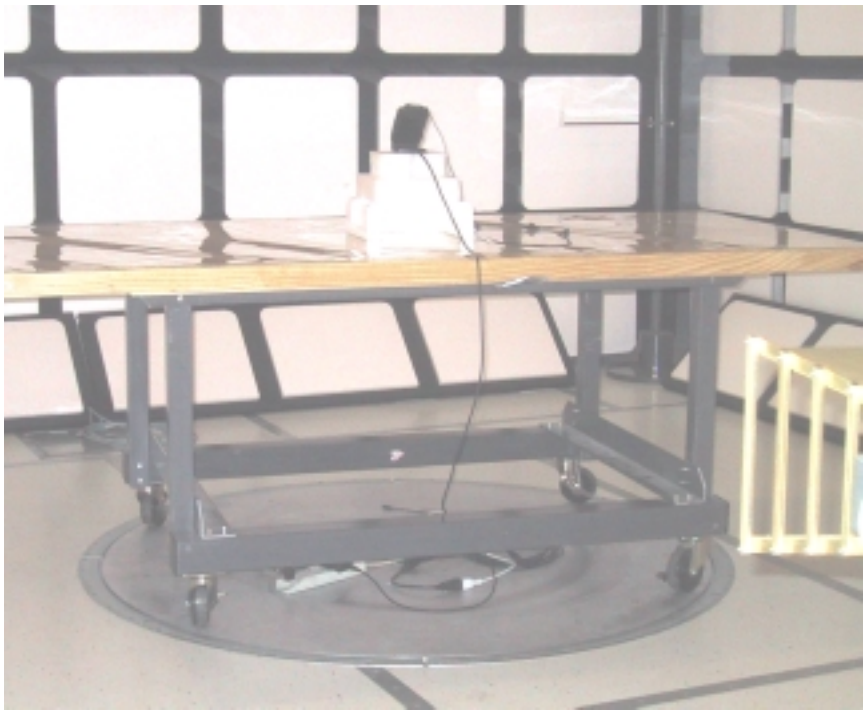
									Substitution Method		
EUT				Receive Antenna			Spectrum Analyzer		Tracking Generator		
Type	Ch	Freq (MHz)	Band	Pol.	Type	Pol.	Reading (dBuV)	Max (V,H) (dBuV)	Pol. Tx-Rx	Reading (dBm)	Corrected Reading (relative to Isotropic Radiator) (dBm)
PCS BAND (EIRP) - Handheld standalone, upright position											
F0	512	1850.2	1900	V	Horn	V	95.4	95.4	V-V	-4.7	32.0
F0	512	1850.2	1900	V	Horn	H	77.4		H-H	-3.2	
F0	661	1880.0	1900	V	Horn	V	94.4	94.4	V-V	-4.3	32.3
F0	661	1880.0	1900	V	Horn	H	77.7		H-H	-2.9	
F0	810	1909.8	1900	V	Horn	V	94.1	94.1	V-V	-4.3	32.0
F0	810	1909.8	1900	V	Horn	H	78.5		H-H	-3.2	
PCS BAND (EIRP) - Handheld standalone, on its side											
F0	512	1850.2	1900	V	Horn	V	78.5	88.6	V-V	-11.5	25.2
F0	512	1850.2	1900	V	Horn	H	88.6		H-H	-10.0	
F0	661	1880.0	1900	V	Horn	V	78.0	88.3	V-V	-10.4	26.1
F0	661	1880.0	1900	V	Horn	H	88.3		H-H	-9.1	
F0	810	1909.8	1900	V	Horn	V	81.7	89.1	V-V	-9.3	26.9
F0	810	1909.8	1900	V	Horn	H	89.1		H-H	-8.3	
PCS BAND (EIRP) - Handheld standalone, on its back											
F0	512	1850.2	1900	V	Horn	V	82.8	95.4	V-V	-4.7	32.0
F0	512	1850.2	1900	V	Horn	H	95.4		H-H	-3.2	
F0	661	1880.0	1900	V	Horn	V	83.4	94.9	V-V	-3.8	32.8
F0	661	1880.0	1900	V	Horn	H	94.9		H-H	-2.4	
F0	810	1909.8	1900	V	Horn	V	83.5	95.0	V-V	-3.4	32.9
F0	810	1909.8	1900	V	Horn	H	95.0		H-H	-2.3	

Radiated Emissions Test Data Results con't

Test distance is 3.0 metres.

									Substitution Method				
EUT				Receive Antenna			Spectrum Analyzer		Tracking Generator				
Type	Ch	Freq (MHz)	Band	Pol.	Type	Pol.	Reading (dBuV)	Max (V,H) (dBuV)	Pol. Tx-Rx	Reading (dBm)	Corrected Reading (relative to dipole) (dBm)	Limit dBm	Diff to Limit (dB)
PCS BAND (Harmonics) - handheld standalone, on its back													
Low Channel													
2nd	512	3700.4	1900	V	Horn	V	NF	41.4	V-V	-48.8	-45.9	-13	-32.9
2nd	512	3700.4	1900	V	Horn	H	41.4		H-H	-48.8			
The harmonics were investigated up to the 10th harmonic. Emissions above the 2th harmonic were in the NF													
Middle Channel													
2nd	661	3760.0	1900	V	Horn	V	NF	40.1	V-V	-48.8	-45.8	-13	-32.8
2nd	661	3760.0	1900	V	Horn	H	40.1		H-H	-48.7			
The harmonics were investigated up to the 10th harmonic. Emissions above the 2th harmonic were in the NF													
High Channel													
2nd	810	3819.6	1900	V	Horn	V	NF	NF	V-V	-46.1	-43.2	-13	-30.2
2nd	810	3819.6	1900	V	Horn	H	42.0		H-H	-47.0			
The harmonics were investigated up to the 10th harmonic. Emissions above the 2th harmonic were in the NF													

Radiated Emissions Test Photo con't



Radiated Emissions at 3.0 metres