

EMI Test Report

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




A division of Research In Motion Limited

REPORT NO: RTS-5993-1202-23

PRODUCT MODEL NO:	REX41GW
TYPE NAME:	BlackBerry® smartphone
FCC ID:	L6AREX40GW
IC:	2503A-REX40GW
EMISSION DESIGNATOR (GSM):	247KGXW
EMISSION DESIGNATOR (EDGE):	247KG7W

DATE: February 24, 2012

	EMI Test Report for the BlackBerry® smartphone Model REX41GW	
Test Report No.: RTS-5993-1202-23	Dates of Test: January 23 - February 14, 2012	FCC ID: L6AREX40GW IC ID: 2503A-REX40GW

Statement of Performance:

The BlackBerry® smartphone, model REX41GW, part number CER-48922-001 Rev1 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:

Reviewed by:

Shuo Wang
Regulatory Compliance Specialist
Date: February 22, 2012

Heng Lin
Regulatory Compliance Specialist
Date: February 23, 2012

Reviewed and Approved by:

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Manager, Regulatory Compliance
Date: February 24, 2012



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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, 2011
- FCC CFR 47 Part 22, Subpart H, Cellular Radiotelephone Services, Oct., 2011
- FCC CFR 47 Part 24 Subpart E, Broadband PCS, Oct., 2011
- Industry Canada, RSS-132 Issue 2, September 2005, Cellular Telephones Employing New Technologies Operating in the Bands 824-849 MHz and 869-894 MHz.
- Industry Canada, RSS-133 Issue 5, February 2009, 2 GHz Personal Communications Services.
- Industry Canada, RSS-GEN Issue 3, December 2010, General Requirements and Information for the Certification of Radio communication Equipment

B) Associated Documents

None

C) Product Identification

Manufactured by Research In Motion Limited whose headquarters is located at:

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


The equipment under test (EUT) was tested at the following locations:

RIM Testing Services EMI test facilities

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

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

The testing was performed from January 23 - February 14, 2012.

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The sample EUT included:

Sample	Model	CER NUMBER	PIN	Software Information
1	REX41GW	CER-48922-001 Rev1	27DD79E2	v7.1.0.215 Plat. 9.0.0.405 Bundle 696
2	REX41GW	CER-48922-001 Rev1	293A70F8	v7.1.0.215 Plat. 9.0.0.405 Bundle 696
3	REX41GW	CER-48922-001 Rev1	282482BC	v7.1.0.215 Plat. 9.0.0.405 Bundle 696


RF Conducted Emissions testing was performed on samples 1.
 RF Radiated Emissions testing was performed on samples 2 and 3.

BlackBerry® smartphone Accessories Tested

- 1) Bat. JS1, part number BAT-44582-001.
- 2) Alt. Bat. JS1, part number BAT-44582-002.

D) Support Equipment Used for the Testing of the EUT

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

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E) Test Results Chart


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	1
Part 2.1051 Part 24.238(a)	RSS-GEN, 4.9	PCS 1900 Conducted Spurious Emissions	Pass	1
Part 2.202 Part 22.917	RSS-GEN, 4.6	GSM 850 Occupied Bandwidth and Channel Mask	Pass	1
Part 2.202 Part 24.238	RSS-GEN, 4.6	PCS 1900 Occupied Bandwidth and Channel Mask	Pass	1
Part 2.1046(a)	RSS-133, 6.4 RSS-132, 4.4	GSM Conducted RF Output Power	Pass	2
Part 2.1055(a)(d) Part 22.917	RSS-132, 4.3	GSM 850 Frequency Stability vs. Temperature and Voltage	Pass	3
Part 2.1055(a)(d) Part 24.235	RSS-132, 4.3	PCS 1900 Frequency Stability vs. Temperature and Voltage	Pass	3
Part 22, Subpart H, Part 24, Subpart E	RSS-GEN, 4.9	GSM ERP, EIRP	Pass	4
Part 22, Subpart H Part 24, Subpart E	RSS-GEN, 4.9	GSM Radiated Spurious/Harmonic Emissions	Pass	4

F) Summary of Results

1) Conducted Emission Measurements

a) 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 1 for test data.

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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 1 for test data

b) 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. The worst case occupied bandwidth was 247.0 kHz on all three channels in GSM mode, and 243.0 kHz on middle channel in EDGE mode.
See APPENDIX 1 for test data.


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. The worst case occupied bandwidth was 245.0 kHz on low channel in GSM, and 245.0 kHz on middle and high channels in EDGE mode.
See APPENDIX 1 for test data.

c) The BlackBerry® smartphone met the requirements of the Tx Conducted RF output Power requirements in the GSM850 as per 47 CFR 2.1046, and RSS-GEN, 4.4. The EUT was measured on the low, middle and high channels. The frequency range investigated was from 10 MHz to 10 GHz.
See APPENDIX 2 for test data.

The BlackBerry® smartphone met the requirements of the Tx Conducted RF output Power requirements in the PCS1900 as per 47 CFR 2.1046, and RSS-GEN, 6.4. The EUT was on the low, middle and high channels. The frequency range investigated was from 10 MHz to 20 GHz.
See APPENDIX 2 for test data

d) The BlackBerry® smartphone met the requirements of the Frequency Stability requirements in the GSM850 as per 47 CFR 2.1055, CFR 22.917 and RSS-GEN, 4.3. The EUT was measured in GSM850 mode on the low, middle and high channels.
See APPENDIX 3 for test data.

The BlackBerry® smartphone met the requirements of the Frequency Stability requirements in the PCS1900 as per 47 CFR 2.1055, CFR 24.235 and RSS-GEN,

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4.7. The EUT was measured in PCS1900 mode on the low, middle and high channels.

See APPENDIX 3 for test data.

2) Radiated Emission Measurements

The radiated spurious emissions/harmonics and ERP/EIRP were measured for GSM 850 and PCS 1900. The results are within the limits. The BlackBerry® smartphone was placed on a nonconductive styrofoam table, 100 cm high that was positioned on a remotely controlled turntable. The test distance used between the BlackBerry® smartphone 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. Both the horizontal and vertical polarizations of the emissions were measured. The maximum emissions level was recorded. The BlackBerry® smartphone was then substituted with an antenna placed in the same location as the BlackBerry® smartphone. A Dipole antenna was used for the ERP measurements and a Horn antenna was used for EIRP measurements. 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 BlackBerry® smartphone output reading. The signal generator output was recorded. Both the horizontal and vertical polarizations of the emissions were measured.

The following measurements were done in a semi-anechoic chamber (SAC) below 1 GHz and a Semi-anechoic Chamber ((SAC) with floor absorber) above 1 GHz. The SAC's FCC registration number is **778487** and the Industry Canada (IC) file number is **2503B-1**. The SAC with floor absorber's FCC registration number is **959115** and the IC file number is **2503C-1**. The BlackBerry® smartphone was measured on the low, middle and high channels.

The highest ERP in the 850 band Call mode measured was 29.82 dBm (0.96 W) at 848.80 MHz (channel 251)

The highest ERP in the 850 band EDGE mode measured was 27.98 dBm (0.63 W) at 848.80 MHz (channel 251).

The highest EIRP in the PCS band Call mode measured was 32.73 dBm (1.87 W) at 1880.00 MHz (channel 661).

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The highest EIRP in the PCS band EDGE mode measured was 30.26 dBm (1.06 W) at 1880.00 MHz (channel 661).

The radiated spurious emission and carrier harmonics were measured up to the 10th harmonic for low, middle, and high channels in the GSM850 and PCS 1900 bands. Each band was measured in GSM and EDGE mode, with both the horizontal and vertical polarizations.

The worst test margin in the 850 band for GSM mode harmonic emissions was 13.53 dB below the limit at 2472.44 MHz.

The worst test margin in the 850 band for EDGE mode harmonic emissions was 18.00 dB below the limit at 2472.72 MHz.

The worst test margin in the 1900 band for GSM mode harmonic emissions was 20.41 dB below the limit at 7520.29 MHz.

The worst test margin in the 1900 band for EDGE mode harmonic emissions was 21.00 dB below the limit at 7519.75 MHz.

b) Co-Location Measurements

The radiated emissions were measured up to 18 GHz for middle channels for simultaneous transmission in the following test configuration combinations:

GSM 850/Bluetooth/802.11b and PCS 1900/Bluetooth/802.11b.

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


Sample Calculation:

Corrected Signal level (CSL) is calculated as follows:

CSL (dBm) = Measured Level (dBμV) – Antenna Gain (dBi) + Free Space loss (dB) – 107(dB) + Cable Loss (dB) - Preamp (dB) + Filter Loss (dB) -2.15(dB)


To view the test data see APPENDIX 4A and 4B.

Measurement Uncertainty ±4.6 dB

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H) Compliance Test Equipment Used


<u>UNIT</u>	<u>MANUFACTURER</u>	<u>MODEL</u>	<u>SERIAL NUMBER</u>	<u>CAL DUE DATE</u> (YY MM DD)	<u>USE</u>
Preamplifier	Sonoma	310N/11909A	185831	12-10-17	Radiated Emissions
Preamplifier system	TDK RF Solutions	PA-02	080010	12-10-17	Radiated Emissions
Preamplifier	Rohde & Schwarz	TS-ANA4-SP	001	12-09-01	Radiated Emissions
Preamplifier	Rohde & Schwarz	TS-ANA-SP	001	12-09-01	Radiated Emissions
Hybrid Log Antenna	EMC Automation	HLP-3003C	017301	13-08-23	Radiated Emissions
Horn Antenna	EMC Automation	HRN-0118	030101	12-07-20	Radiated Emissions
Horn Antenna	EMC Automation	HRN-0118	030201	12-09-22	Radiated Emissions
Horn Antenna	Emco	3117	47563	13-08-04	Radiated Emissions
Horn Antenna	ETS	3116	2538	12-09-24	Radiated Emissions
Dipole Antenna	Schwarzbeck	UHAP	973	12-02-21	Radiated Emissions
Dipole Antenna	Schwarzbeck	UHAP	974	12-11-08	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	837493/073	12-11-30	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	112394	12-11-21	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	109747	12-11-20	RF Conducted Emissions
EMI Receiver	Rohde & Schwarz	ESIB-40	100255	12-12-08	Radiated Emissions
EMI Receiver	Rohde & Schwarz	ESU-40	100162	12-12-07	Radiated Emissions
Spectrum Analyzer	HP	8563E	3745A08112	13-10-05	RF Conducted Emissions
DC Power Supply	HP	6632B	US37472178	12-09-27	RF Conducted Emissions
Environment Monitor	Omega	iTHX-SD	0380561	12-10-20	Radiated Emissions

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Compliance Test Equipment Used cont'd

<u>UNIT</u>	<u>MANUFACTURER</u>	<u>MODEL</u>	<u>SERIAL NUMBER</u>	<u>CAL DUE DATE</u> (YY MM DD)	<u>USE</u>
Environment Monitor	Omega	iTHX-SD	0340060	12-10-20	RF Conducted Emissions
Environment Monitor	Omega	iTHX-SD	0380567	12-10-20	Radiated Emissions
Signal Generator	Agilent	E8257D	MY45140527	12-11-18	Radiated Emissions
Signal Generator	Agilent	83630B	3844A00927	12-10-28	Radiated Emissions

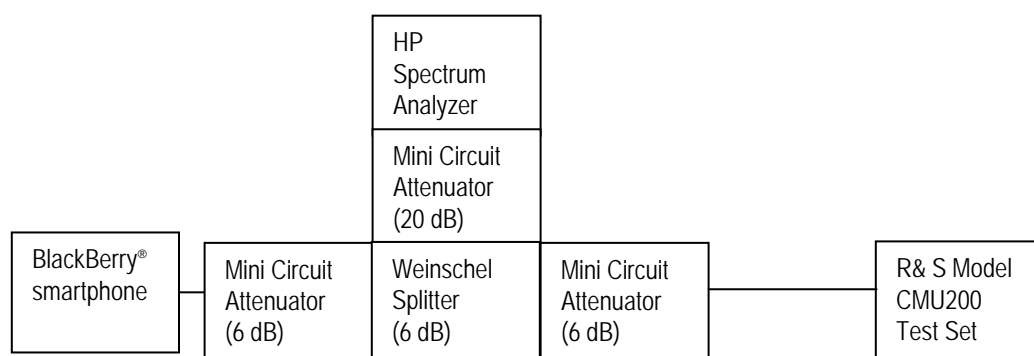
APPENDIX 1 – GSM CONDUCTED RF EMISSIONS TEST DATA/PLOTS

 EMI Test Report for the BlackBerry® smartphone Model REX41GW APPENDIX 1		
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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.

Test Setup Diagram




Date of Test: January 23, 2012

The environmental test conditions were:

Temperature: 24.0 °C

Relative Humidity: 37.0 %

The following measurements were performed by Kevin Guo.

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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 277 kHz, and for the PCS1900 band was measured to be 273 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 applied.

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	247.0
837.6	272	247.0
848.8	277	247.0

1900 band Frequency (MHz)	-26dBc Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
1850.2	273	245.0
1880.0	272	247.0
1909.8	270	247.0


Measurement Plots for 850 and 1900 bands in EDGE mode

Refer to the following measurement plots for more detail.

See Figures 1-1a to 1-12a for the plots of the conducted spurious emissions.

See Figures 1-13a to 1-24a for the plots of 26dBc/99% Occupied Bandwidth.

See Figures 1-25a to 1-28a for the plots of the Channel mask.

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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	247.0
837.6	243.0
848.8	245.0

1900 band Frequency (MHz)	99% Occupied Bandwidth (kHz)
1850.2	247.0
1880.0	245.0
1909.8	245.0

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 EDGE results.

See Figures 1-35a to 1-38a for the plots of channel mask EDGE results.

See Figures 1-39a to 1-50a for the plots of the conducted spurious emissions EDGE results

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

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GSM Conducted RF Emission Test Data cont'd

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

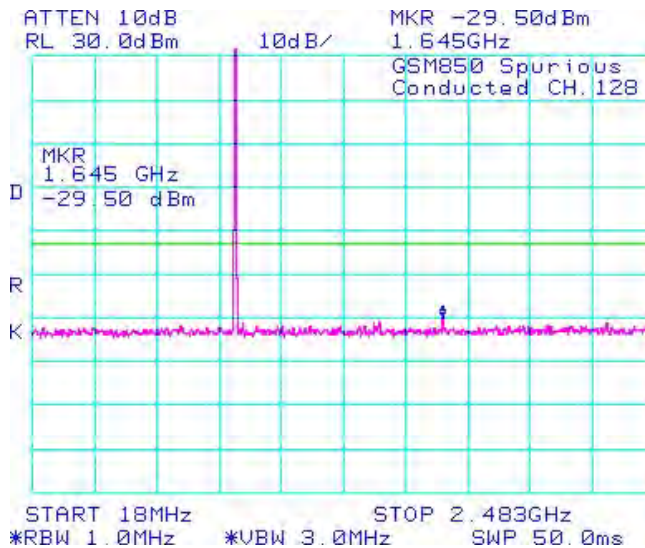


Figure 1-2a: GSM850 band, Spurious Conducted Emissions, Low channel

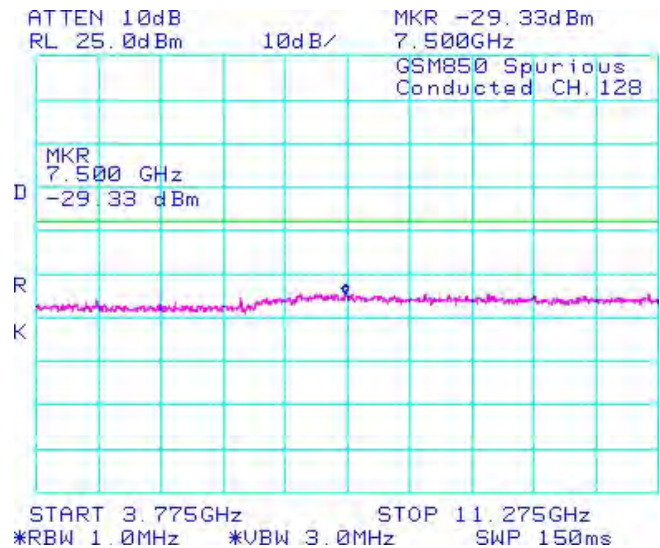


Figure 1-3a: GSM850 band, Spurious Conducted Emissions, Middle Channel

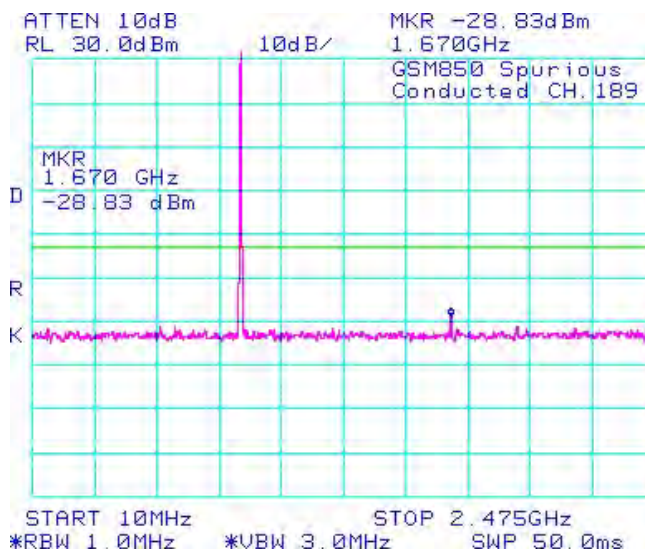
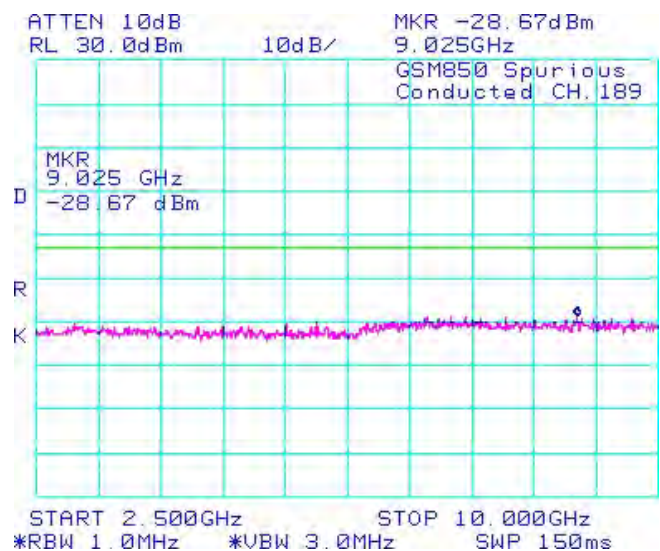


Figure 1-4a: GSM850 band, Spurious Conducted Emissions, Middle Channel



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GSM Conducted RF Emission Test Data cont'd

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

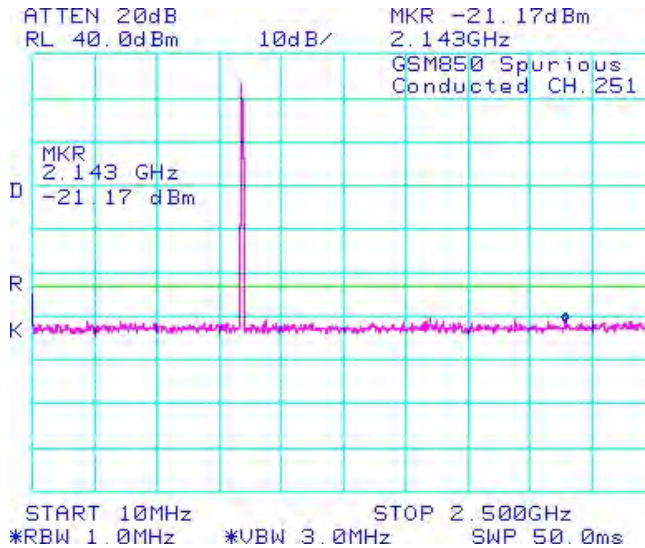


Figure 1-6a: GSM850 band, Spurious Conducted Emissions, High Channel

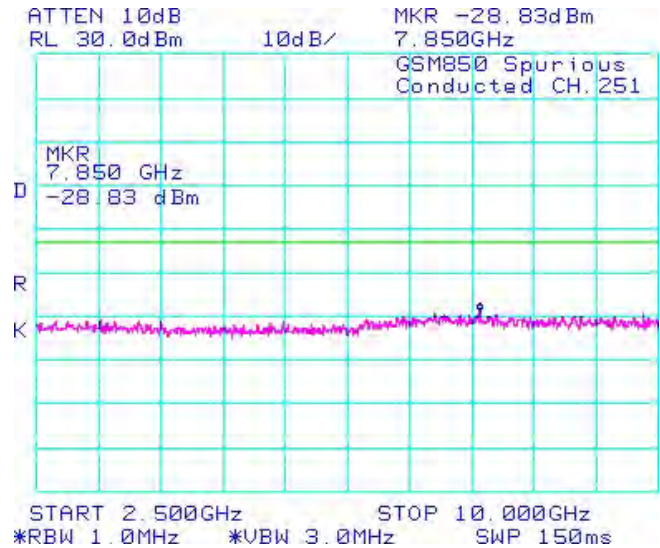


Figure 1-7a: PCS1900 band, Spurious Conducted Emissions, Low Channel

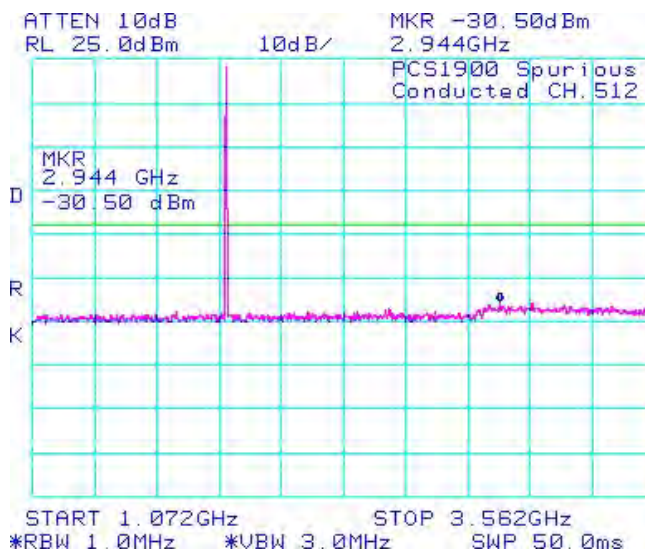
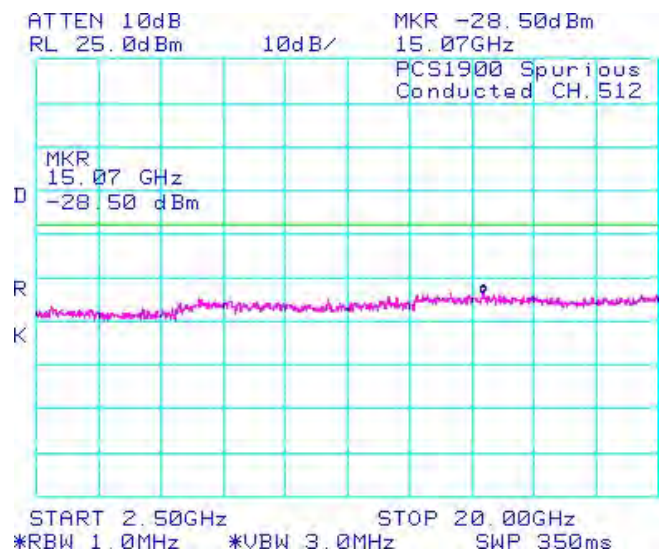


Figure 1-8a: PCS1900 band, Spurious Conducted Emissions, Low Channel



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GSM Conducted RF Emission Test Data cont'd

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

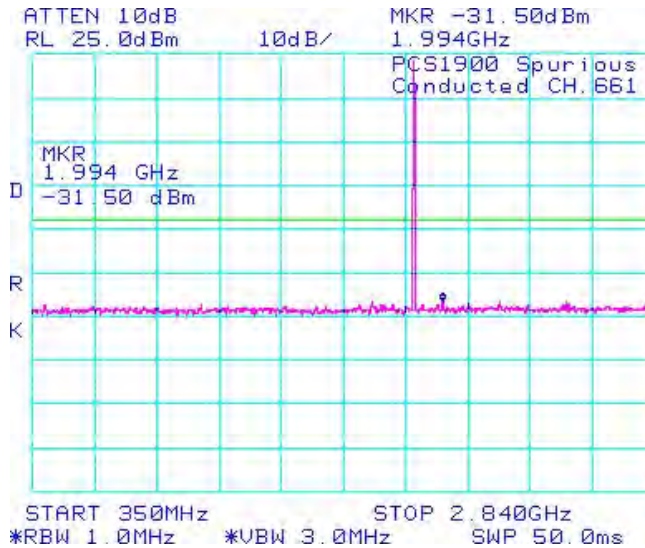


Figure 1-10a: PCS1900 band, Spurious Conducted Emissions, Middle Channel

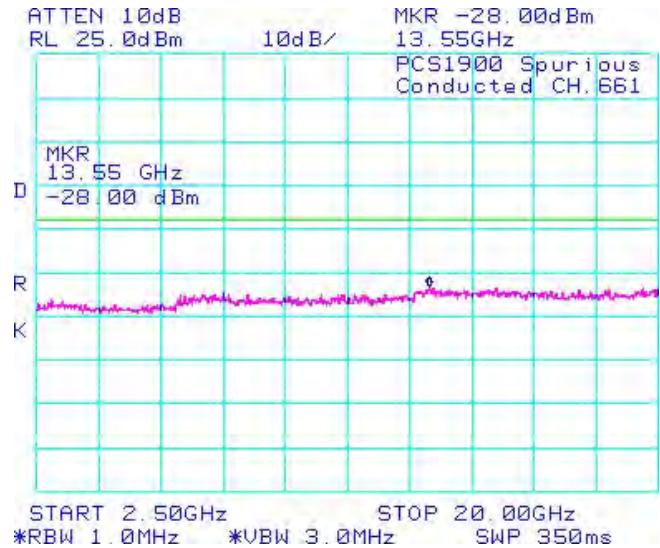


Figure 1-11a: PCS1900 band, Spurious Conducted Emissions, High Channel

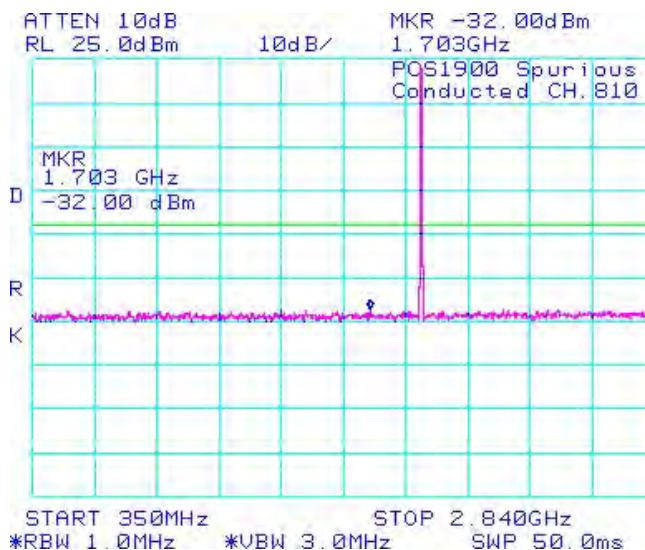
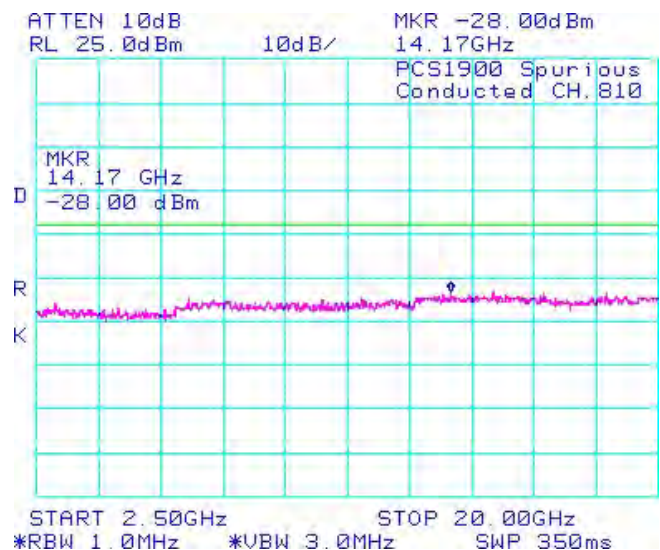


Figure 1-12a: PCS1900 band, Spurious Conducted Emissions, High Channel



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GSM Conducted RF Emission Test Data cont'd

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

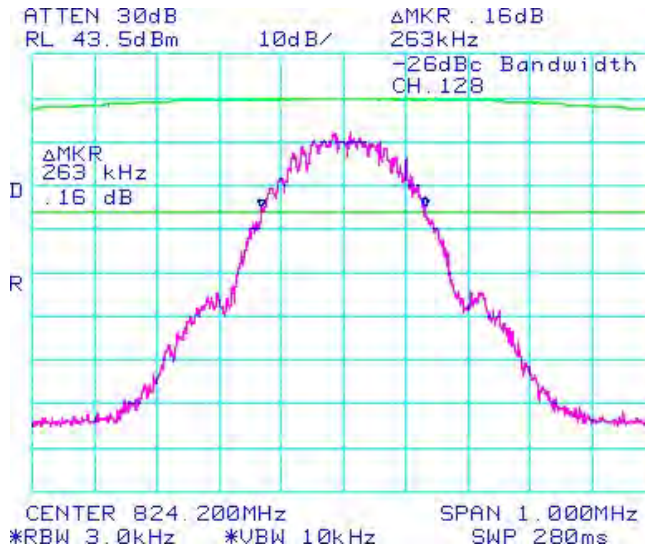


Figure 1-14a: Occupied Bandwidth, GSM850 band Low Channel in GSM mode

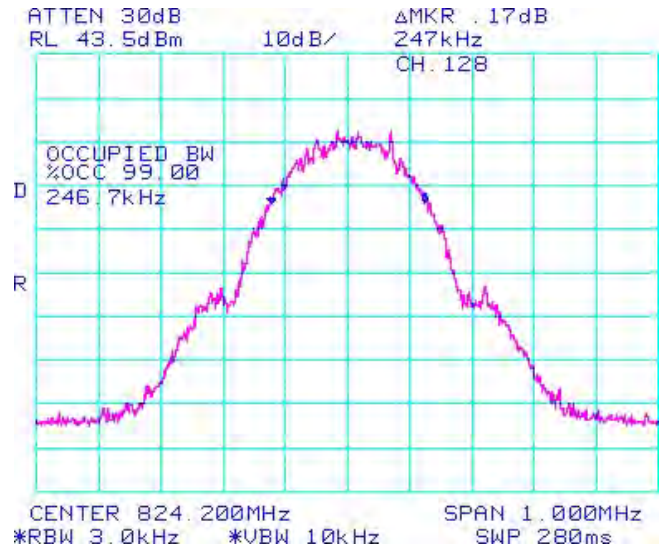


Figure 1-15a: -26dBc bandwidth, GSM850 band Middle Channel in GSM mode

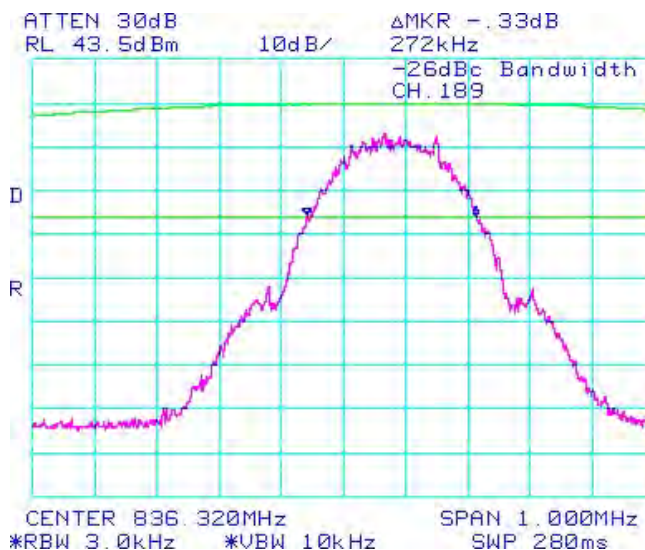
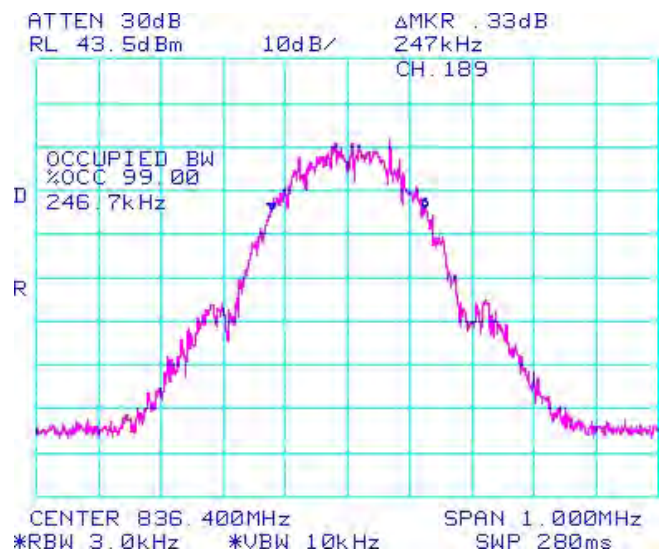


Figure 1-16a: Occupied Bandwidth, GSM850 band Middle Channel in GSM mode



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GSM Conducted RF Emission Test Data cont'd

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

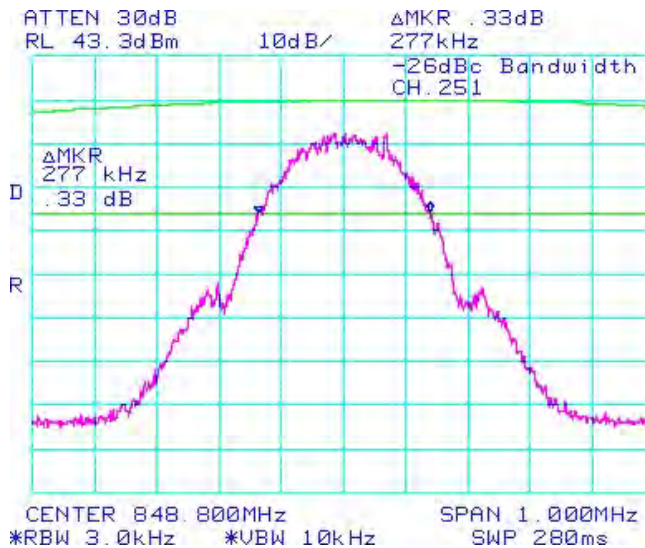


Figure 1-18a: Occupied Bandwidth, GSM850 band High Channel in GSM mode

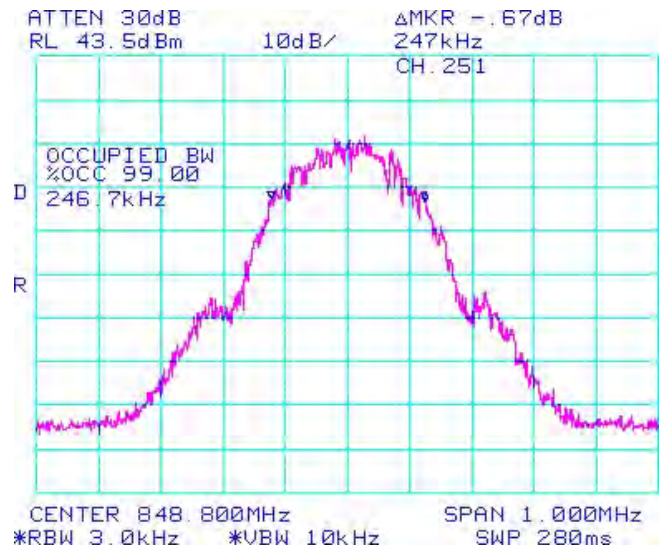


Figure 1-19a: -26dBc bandwidth, PCS1900 Low Channel in GSM mode

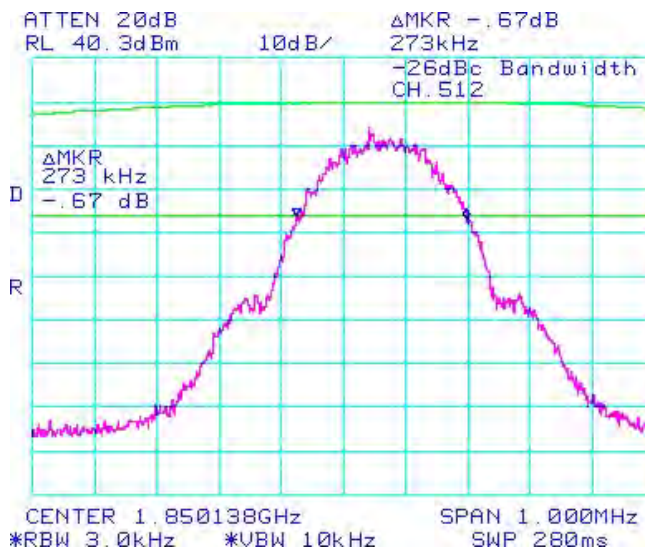
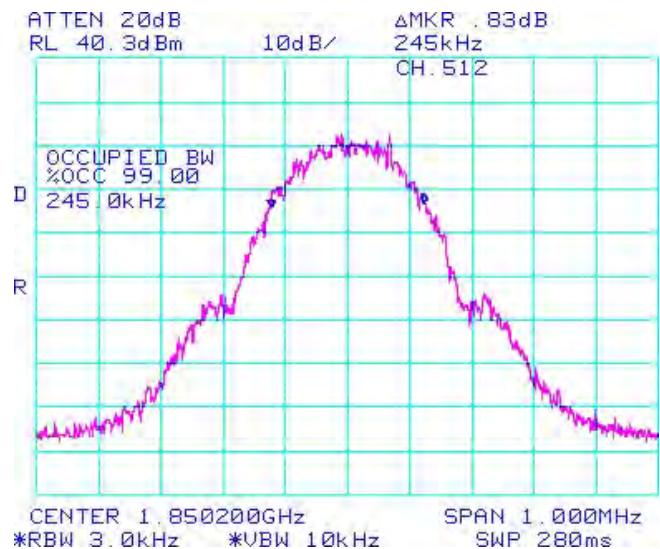


Figure 1-20a: Occupied Bandwidth, PCS1900 Low Channel in GSM mode



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GSM Conducted RF Emission Test Data cont'd

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

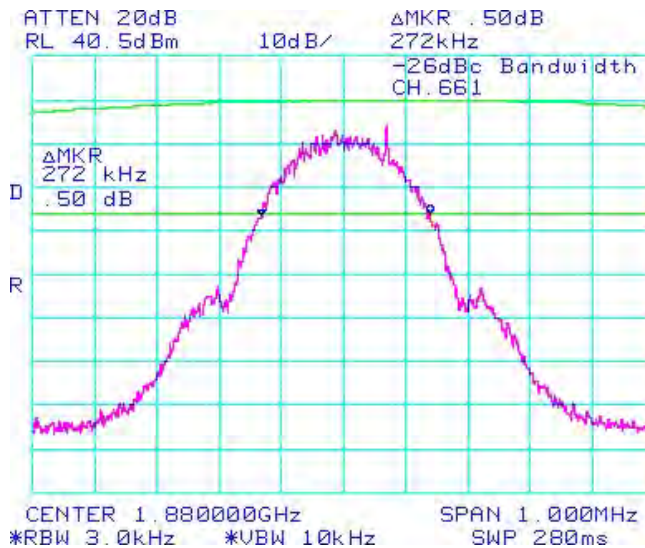


Figure 1-22a: Occupied Bandwidth, PCS1900 Middle Channel in GSM mode

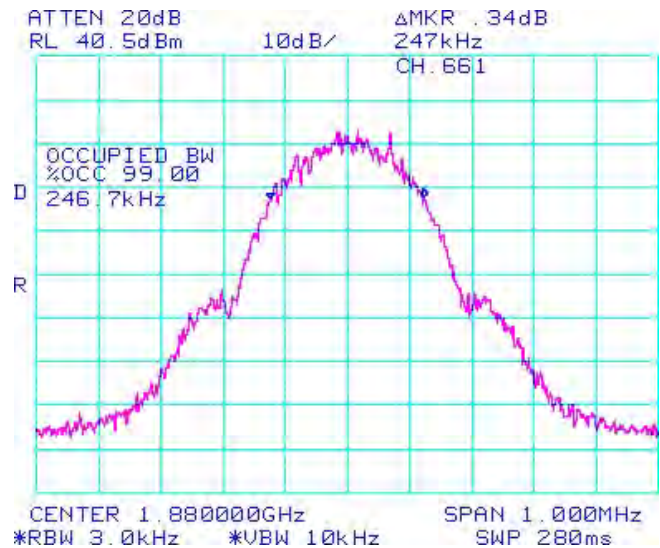


Figure 1-23a: -26dBc bandwidth, PCS1900 High Channel in GSM mode

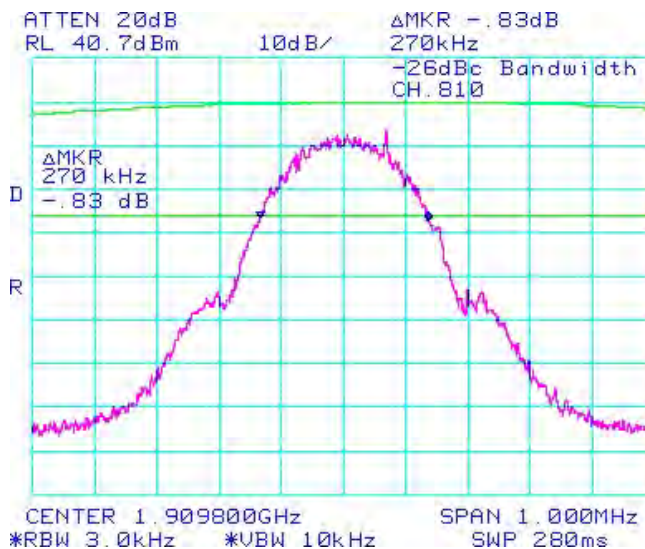
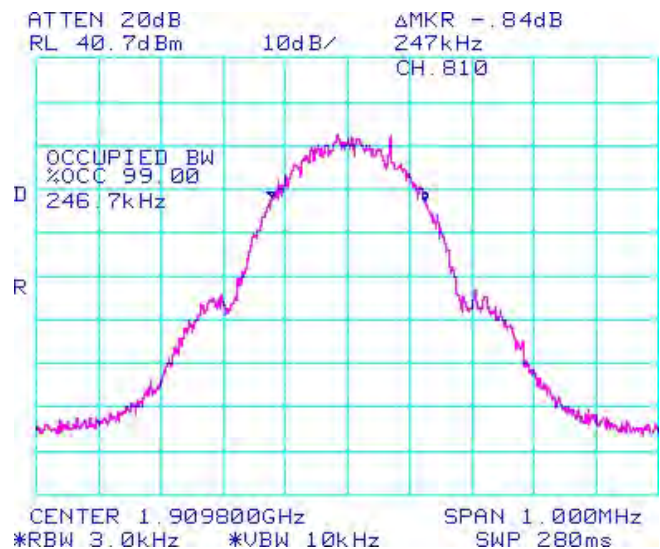


Figure 1-24a: Occupied Bandwidth, PCS1900 High Channel in GSM mode



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GSM Conducted RF Emission Test Data cont'd

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

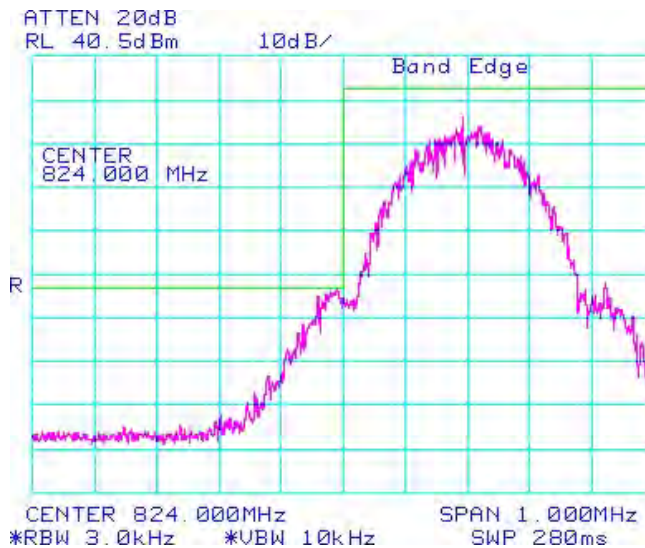


Figure 1-26a: GSM850 band High Channel Mask in GSM mode

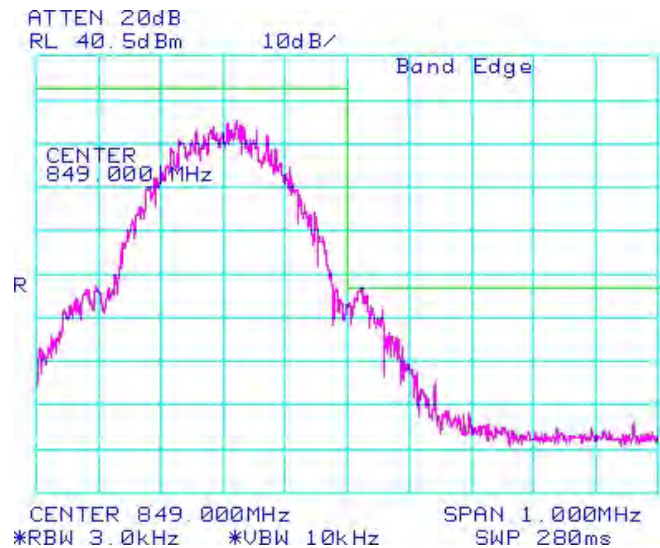


Figure 1-27a: PCS1900, Low Channel Mask in GSM mode

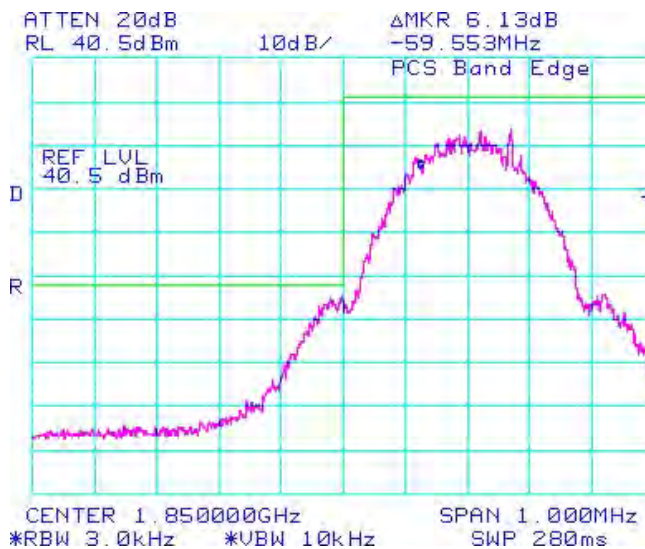
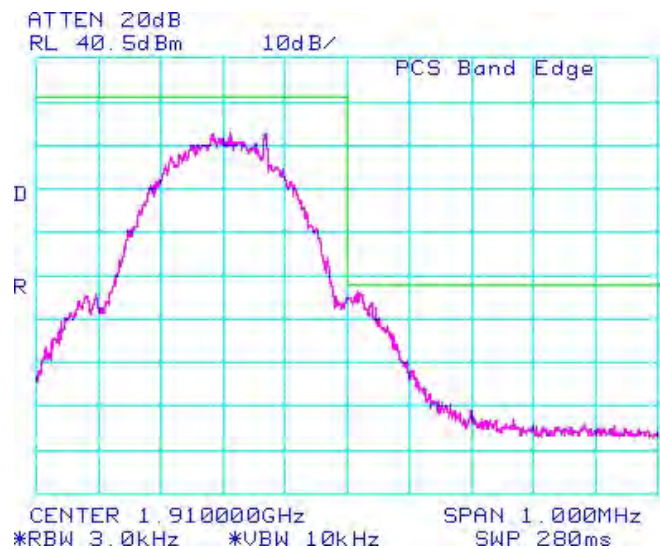


Figure 1-28a: PCS1900, High Channel Mask in GSM mode



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IC ID: 2503A-REX40GW

GSM Conducted RF Emission Test Data cont'd

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

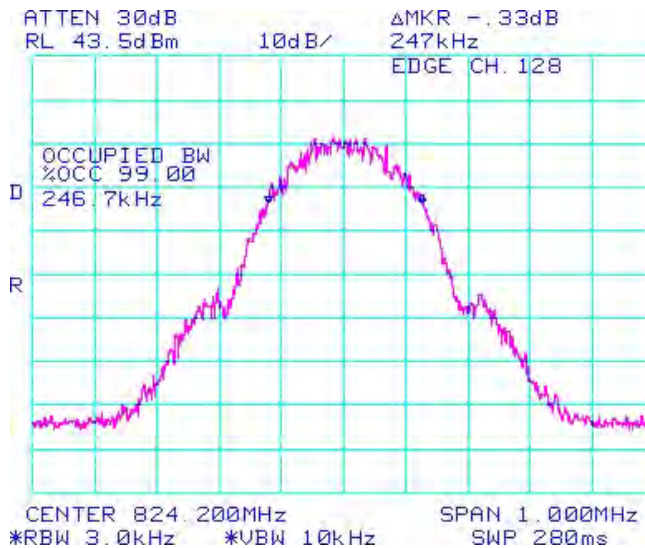


Figure 1-30a: Occupied Bandwidth, GSM850 Band, Middle Channel in EDGE mode

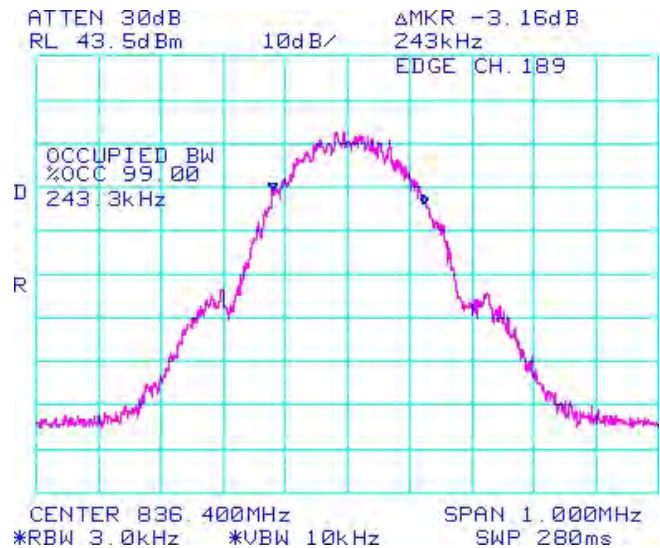


Figure 1-31a: Occupied Bandwidth, GSM850 band, High Channel in EDGE mode

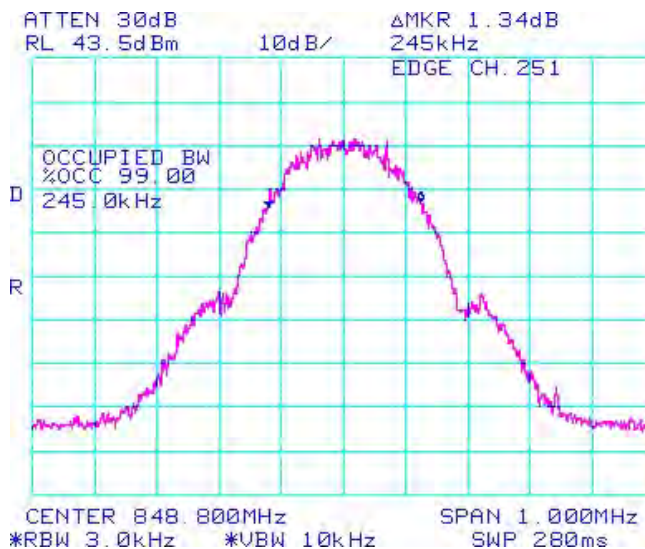
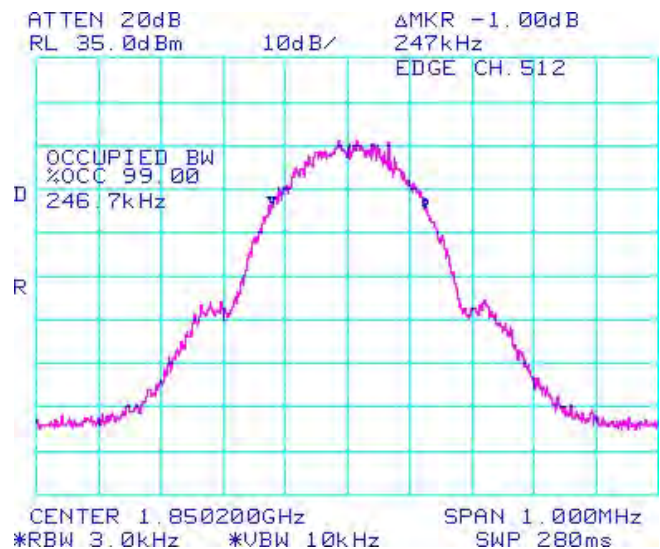


Figure 1-32a: Occupied Bandwidth, PCS1900 Band, Low Channel in EDGE mode



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GSM Conducted RF Emission Test Data cont'd

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

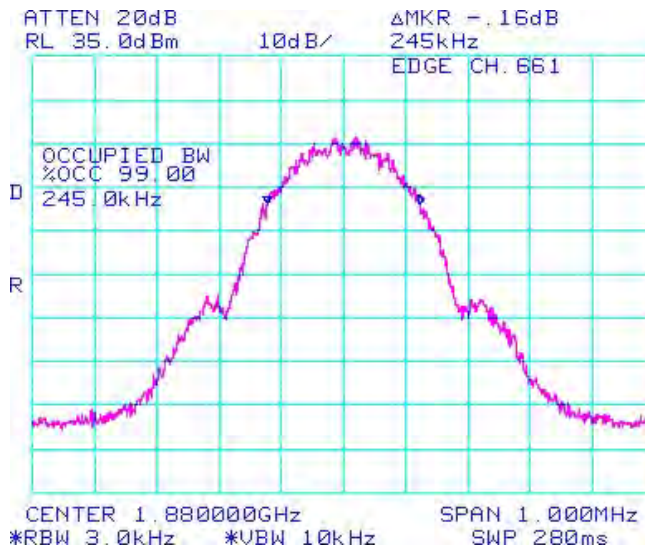


Figure 1-34a: Occupied Bandwidth, PCS1900 Band, High Channel in EDGE mode

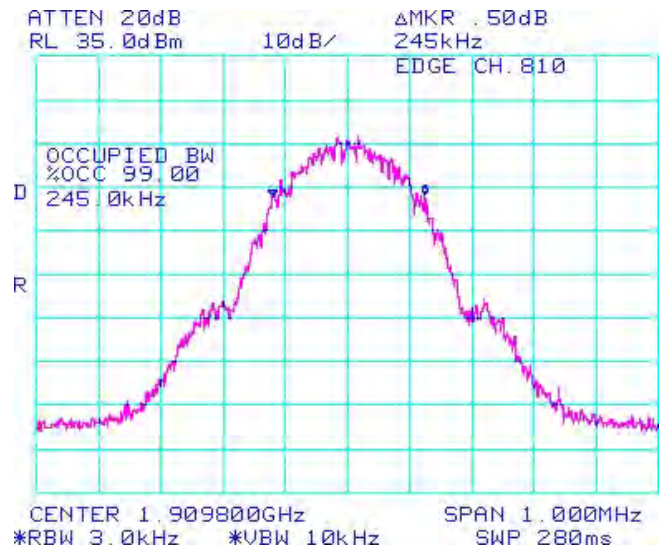


Figure 1-35a: GSM850 Band, Low Channel Mask in EDGE mode

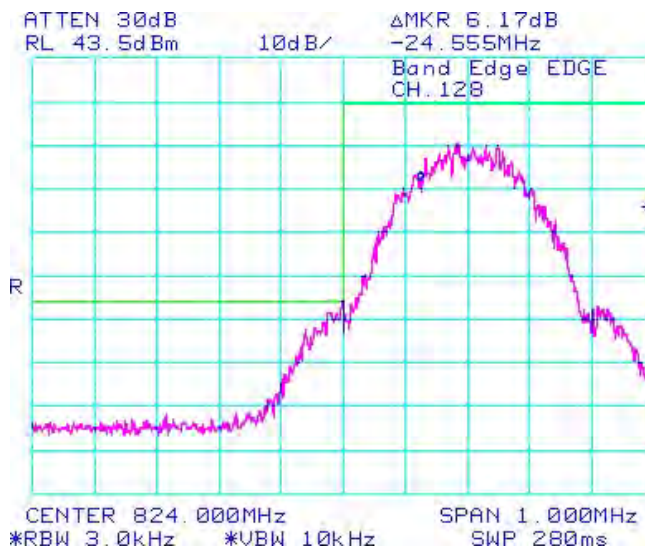
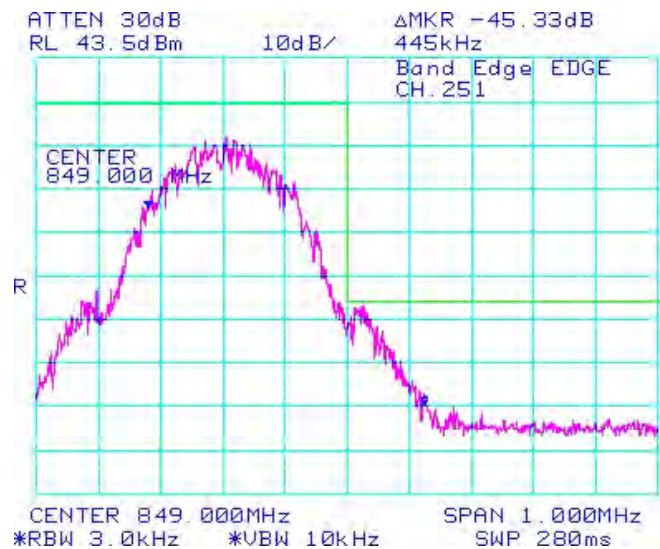


Figure 1-36a: GSM850 Band, High Channel Mask in EDGE mode



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FCC ID: L6AREX40GW
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GSM Conducted RF Emission Test Data cont'd

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

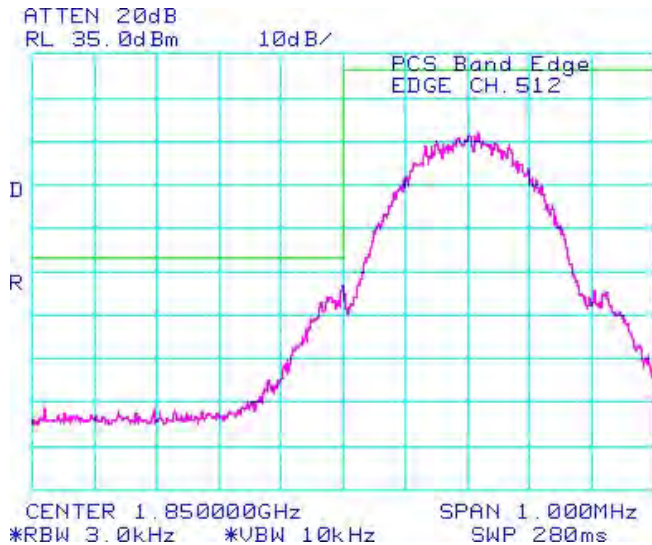
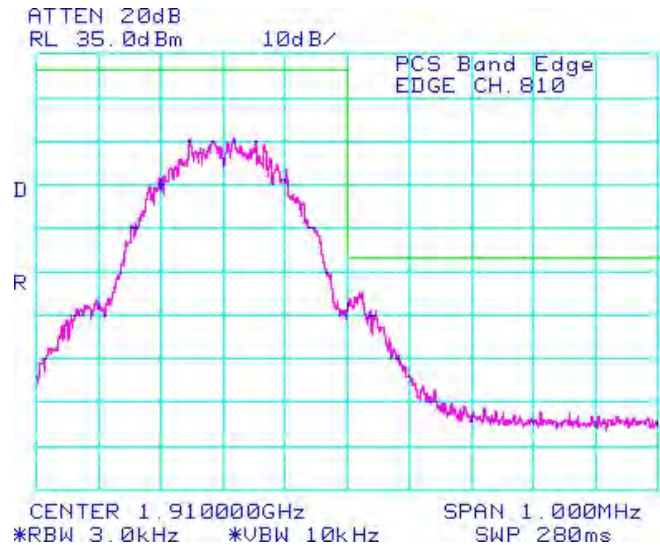


Figure 1-38a: PCS1900 Band, High Channel Mask in EDGE mode



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FCC ID: L6AREX40GW
IC ID: 2503A-REX40GW

GSM Conducted RF Emission Test Data cont'd

Figure 1-39a: GSM850 band, Spurious Conducted Emissions, Low channel in Edge Mode

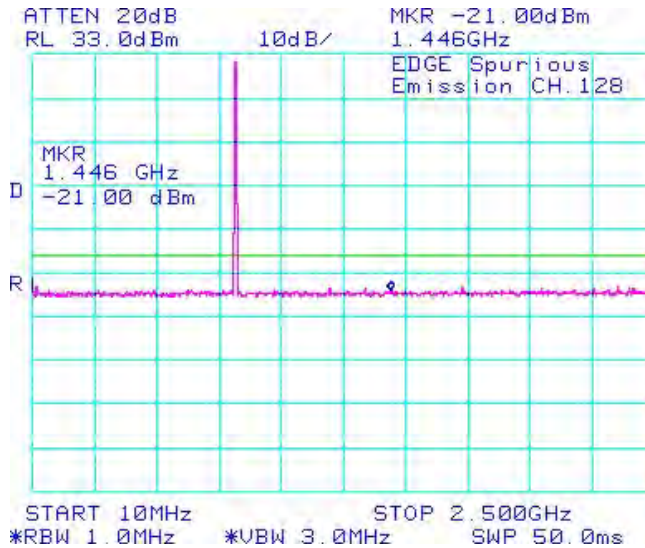


Figure 1-40a: GSM850 band, Spurious Conducted Emissions, Low channel in Edge Mode

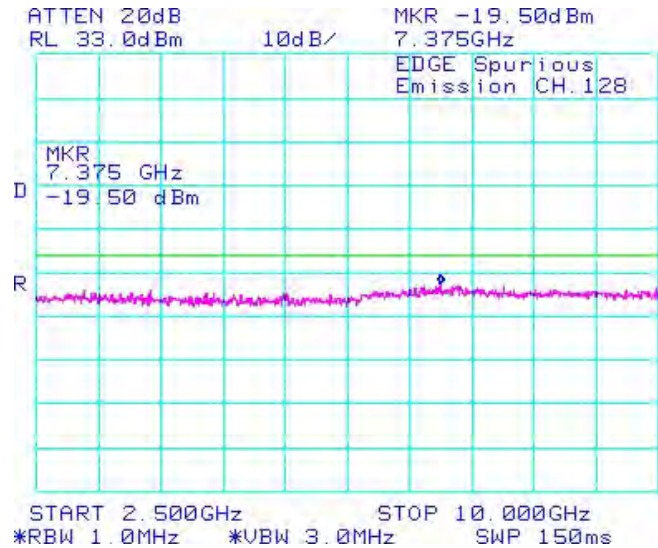


Figure 1-41a: GSM850 band, Spurious Conducted Emissions, Middle channel in Edge Mode

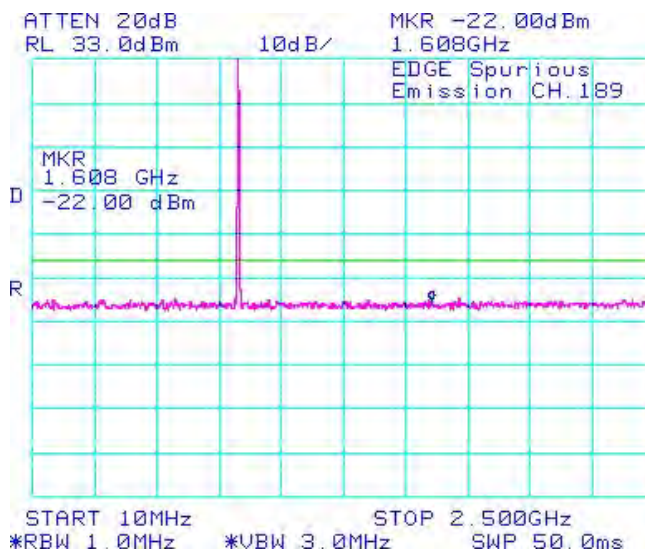
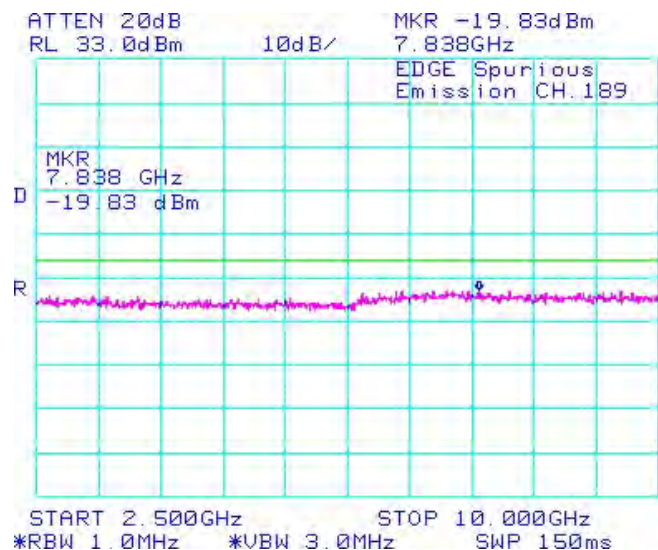


Figure 1-42a: GSM850 band, Spurious Conducted Emissions, Middle channel in Edge Mode



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FCC ID: L6AREX40GW
IC ID: 2503A-REX40GW

GSM Conducted RF Emission Test Data cont'd

Figure 1-43a: GSM850 band, Spurious Conducted Emissions, High channel in Edge Mode

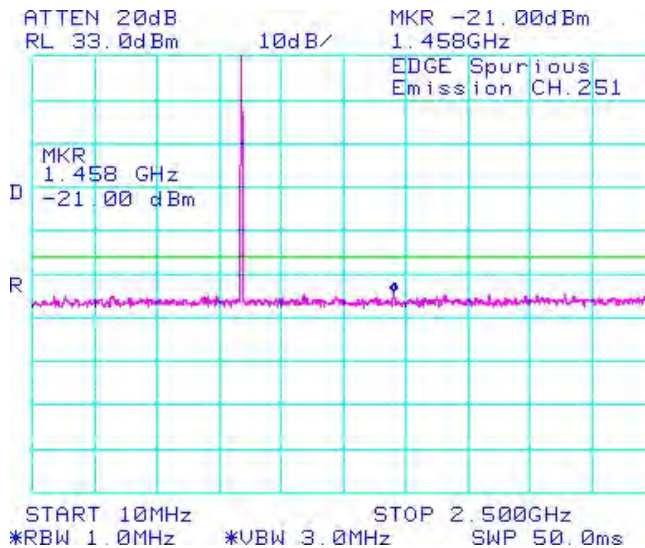


Figure 1-44a: GSM850 band, Spurious Conducted Emissions, High channel in Edge Mode

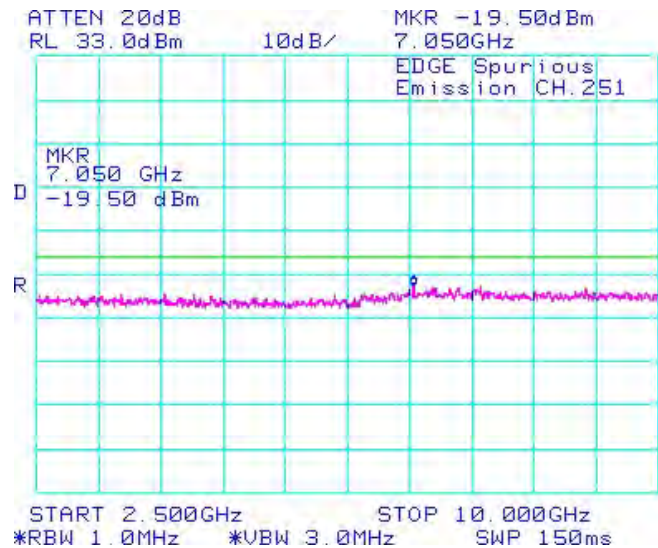


Figure 1-45a: PCS1900 band, Spurious Conducted Emissions, Low channel in Edge Mode

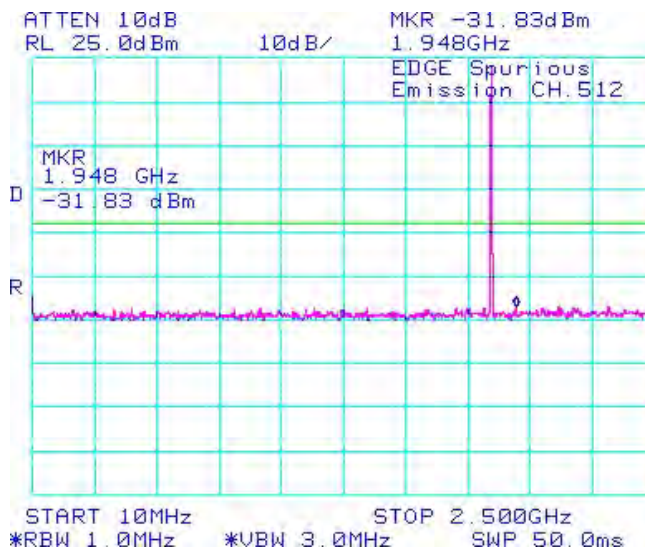
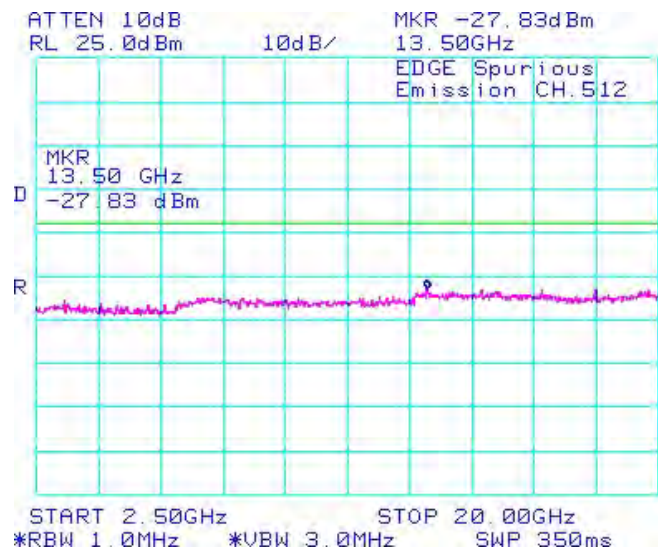


Figure 1-46a: PCS1900 band, Spurious Conducted Emissions, Low channel in Edge Mode



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FCC ID: L6AREX40GW
IC ID: 2503A-REX40GW

GSM Conducted RF Emission Test Data cont'd

Figure 1-47a: PCS1900 band, Spurious Conducted Emissions, middle channel in Edge Mode

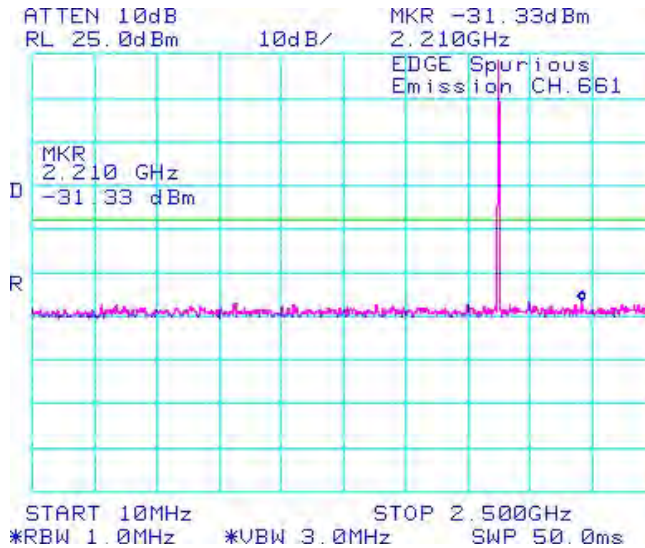


Figure 1-48a: PCS1900 band, Spurious Conducted Emissions, middle channel in Edge Mode

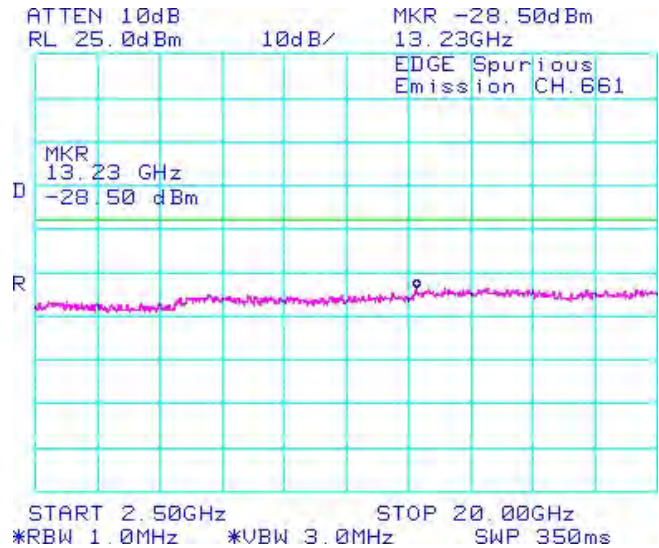


Figure 1-49a: PCS1900 band, Spurious Conducted Emissions, High channel in Edge Mode

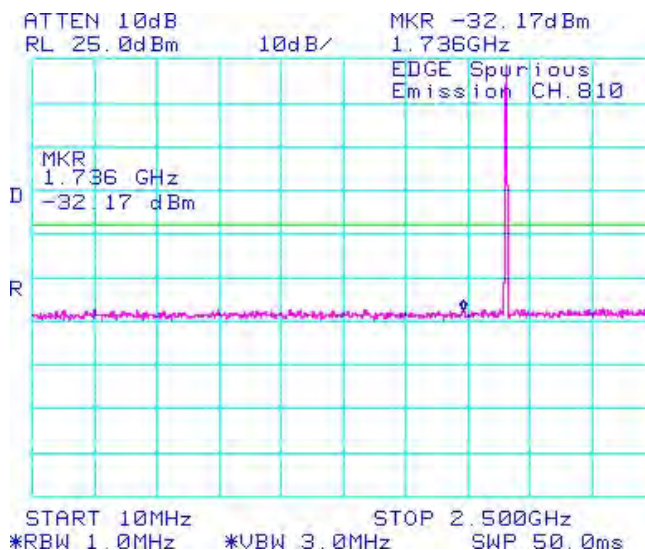
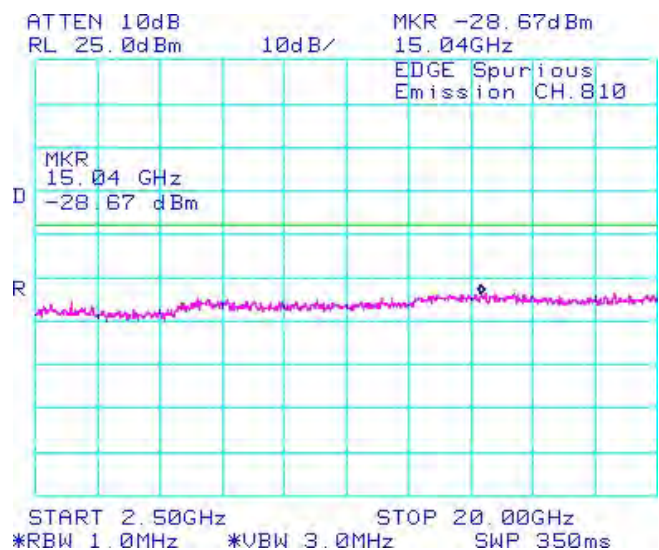



Figure 1-50a: PCS1900 band, Spurious Conducted Emissions, High channel in Edge Mode

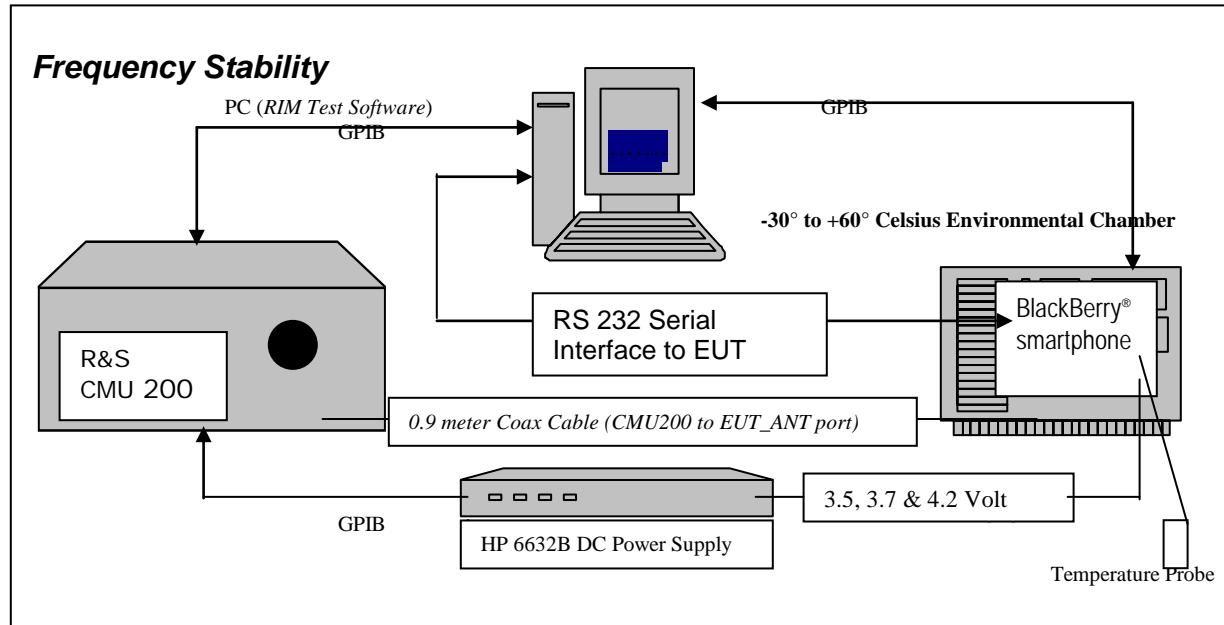


APPENDIX 2 – GSM CONDUCTED RF OUTPUT POWER TEST DATA

APPENDIX 3 – GSM FREQUENCY STABILITY TEST DATA

	EMI Test Report for the BlackBerry® smartphone Model REX41GW APPENDIX 3	
Test Report No.: RTS-5993-1202-23	Dates of Test: January 23 - February 14, 2012	FCC ID: L6AREX40GW IC ID: 2503A-REX40GW

GSM Frequency Stability Test Data



The measurements were performed by Kevin Guo.

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

24.235/22.917 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 RSS-132, 4.3 Frequency Stability, and RSS-133, 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.

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Test Report No.: RTS-5993-1202-23	Dates of Test: January 23 - February 14, 2012	FCC ID: L6AREX40GW IC ID: 2503A-REX40GW

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 3.6 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 848.8 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.

	EMI Test Report for the BlackBerry® smartphone Model REX41GW APPENDIX 3	
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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 **-0.0607 PPM**.
The maximum frequency error in the PCS1900 band measured was **-0.0440PPM**.



EMI Test Report for the BlackBerry® smartphone Model REX41GW
APPENDIX 3

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Dates of Test:
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FCC ID: L6AREX40GW
IC ID: 2503A-REX40GW

Date of Test: January 24, 2012

GSM850 Channel results: channels 128, 189 and 251 @ 20°C maximum transmitted power

Traffic Channel Number	GSM850 Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
128	824.20	3.6	20	-33	-0.0400
189	836.40	3.6	20	-35	-0.0418
251	848.60	3.6	20	-12	-0.0141

Traffic Channel Number	GSM850 Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
128	824.20	3.7	20	-23	-0.0279
189	836.40	3.7	20	-26	-0.0311
251	848.60	3.7	20	-18	-0.0212

Traffic Channel Number	GSM850 Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
128	824.20	4.2	20	-28	-0.0340
189	836.40	4.2	20	-36	-0.0430
251	848.60	4.2	20	-35	-0.0412

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FCC ID: L6AREX40GW
IC ID: 2503A-REX40GW

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	22	0.0267
128	824.20	3.6	-20	19	0.0231
128	824.20	3.6	-10	-10	-0.0121
128	824.20	3.6	0	2	0.0024
128	824.20	3.6	10	35	0.0425
128	824.20	3.6	20	-33	-0.0400
128	824.20	3.6	30	-42	-0.0510
128	824.20	3.6	40	-3	-0.0036
128	824.20	3.6	50	-45	-0.0546
128	824.20	3.6	60	-14	-0.0170

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
128	824.20	3.7	-30	19	0.0231
128	824.20	3.7	-20	21	0.0255
128	824.20	3.7	-10	10	0.0121
128	824.20	3.7	0	-3	-0.0036
128	824.20	3.7	10	29	0.0352
128	824.20	3.7	20	-23	-0.0279
128	824.20	3.7	30	-39	-0.0473
128	824.20	3.7	40	-9	-0.0109
128	824.20	3.7	50	-46	-0.0558
128	824.20	3.7	60	-17	-0.0206

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
128	824.20	4.2	-30	13	0.0158
128	824.20	4.2	-20	22	0.0267
128	824.20	4.2	-10	20	0.0243
128	824.20	4.2	0	-8	-0.0097
128	824.20	4.2	10	18	0.0218
128	824.20	4.2	20	-28	-0.0340
128	824.20	4.2	30	-33	-0.0400
128	824.20	4.2	40	-17	-0.0206
128	824.20	4.2	50	-50	-0.0607
128	824.20	4.2	60	-22	-0.0267

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FCC ID: L6AREX40GW
IC ID: 2503A-REX40GW

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	27	0.0323
189	836.40	3.6	-20	-7	-0.0084
189	836.40	3.6	-10	7	0.0084
189	836.40	3.6	0	16	0.0191
189	836.40	3.6	10	43	0.0514
189	836.40	3.6	20	-35	-0.0418
189	836.40	3.6	30	-5	-0.0060
189	836.40	3.6	40	-13	-0.0155
189	836.40	3.6	50	4	0.0048
189	836.40	3.6	60	-7	-0.0084

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
189	836.40	3.7	-30	25	0.0299
189	836.40	3.7	-20	-16	-0.0191
189	836.40	3.7	-10	8	0.0096
189	836.40	3.7	0	20	0.0239
189	836.40	3.7	10	42	0.0502
189	836.40	3.7	20	-26	-0.0311
189	836.40	3.7	30	-10	-0.0120
189	836.40	3.7	40	-11	-0.0132
189	836.40	3.7	50	-4	-0.0048
189	836.40	3.7	60	-5	-0.0060

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
189	836.40	4.2	-30	19	0.0227
189	836.40	4.2	-20	-22	-0.0263
189	836.40	4.2	-10	12	0.0143
189	836.40	4.2	0	8	0.0096
189	836.40	4.2	10	39	0.0466
189	836.40	4.2	20	-36	-0.0430
189	836.40	4.2	30	-16	-0.0191
189	836.40	4.2	40	-12	-0.0143
189	836.40	4.2	50	-7	-0.0084
189	836.40	4.2	60	-12	-0.0143

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FCC ID: L6AREX40GW
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GSM850 Results: channel 251 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
251	848.8	3.6	-30	30	0.0353
251	848.8	3.6	-20	25	0.0295
251	848.8	3.6	-10	15	0.0177
251	848.8	3.6	0	16	0.0189
251	848.8	3.6	10	18	0.0212
251	848.8	3.6	20	-12	-0.0141
251	848.8	3.6	30	-13	-0.0153
251	848.8	3.6	40	-15	-0.0177
251	848.8	3.6	50	-5	-0.0059
251	848.8	3.6	60	-9	-0.0106

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
251	848.8	3.7	-30	31	0.0365
251	848.8	3.7	-20	30	0.0353
251	848.8	3.7	-10	14	0.0165
251	848.8	3.7	0	17	0.0200
251	848.8	3.7	10	18	0.0212
251	848.8	3.7	20	-18	-0.0212
251	848.8	3.7	30	-11	-0.0130
251	848.8	3.7	40	-16	-0.0189
251	848.8	3.7	50	-2	-0.0024
251	848.8	3.7	60	-6	-0.0071

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
251	848.8	4.2	-30	22	0.0259
251	848.8	4.2	-20	33	0.0389
251	848.8	4.2	-10	11	0.0130
251	848.8	4.2	0	11	0.0130
251	848.8	4.2	10	11	0.0130
251	848.8	4.2	20	-35	-0.0412
251	848.8	4.2	30	-17	-0.0200
251	848.8	4.2	40	-16	-0.0189
251	848.8	4.2	50	-11	-0.0130
251	848.8	4.2	60	-12	-0.0141

Test Report No.:
RTS-5993-1202-23

Dates of Test:
January 23 - February 14, 2012

FCC ID: L6AREX40GW
IC ID: 2503A-REX40GW

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	1850.20	3.6	20	20.00	0.0108
661	1880.00	3.6	20	22.00	0.0117
810	1909.80	3.6	20	22.00	0.0115

Traffic Channel Number	PCS Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
512	1850.20	3.7	20	31.00	0.0168
661	1880.00	3.7	20	27.00	0.0144
810	1909.80	3.7	20	21.00	0.0110

Traffic Channel Number	PCS Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
512	1850.20	4.2	20	21.00	0.0114
661	1880.00	4.2	20	26.00	0.0138
810	1909.80	4.2	20	20.00	0.0105

Test Report No.:
RTS-5993-1202-23

Dates of Test:
January 23 - February 14, 2012

FCC ID: L6AREX40GW
IC ID: 2503A-REX40GW

PCS1900 Results: channel 512 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
512	1850.20	3.6	-30	17.00	0.0092
512	1850.20	3.6	-20	-16.00	-0.0086
512	1850.20	3.6	-10	25.00	0.0135
512	1850.20	3.6	0	22.00	0.0119
512	1850.20	3.6	10	26.00	0.0141
512	1850.20	3.6	20	20.00	0.0108
512	1850.20	3.6	30	18.00	0.0097
512	1850.20	3.6	40	-27.00	-0.0146
512	1850.20	3.6	50	-44.00	-0.0238
512	1850.20	3.6	60	-55.00	-0.0297

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
512	1850.20	3.7	-30	-20.00	-0.0108
512	1850.20	3.7	-20	-27.00	-0.0146
512	1850.20	3.7	-10	21.00	0.0114
512	1850.20	3.7	0	26.00	0.0141
512	1850.20	3.7	10	29.00	0.0157
512	1850.20	3.7	20	31.00	0.0168
512	1850.20	3.7	30	21.00	0.0114
512	1850.20	3.7	40	36.00	0.0195
512	1850.20	3.7	50	-49.00	-0.0265
512	1850.20	3.7	60	-49.00	-0.0265

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
512	1850.20	4.2	-30	17.00	0.0092
512	1850.20	4.2	-20	-29.00	-0.0157
512	1850.20	4.2	-10	25.00	0.0135
512	1850.20	4.2	0	21.00	0.0114
512	1850.20	4.2	10	37.00	0.0200
512	1850.20	4.2	20	21.00	0.0114
512	1850.20	4.2	30	29.00	0.0157
512	1850.20	4.2	40	33.00	0.0178
512	1850.20	4.2	50	-50.00	-0.0270
512	1850.20	4.2	60	-49.00	-0.0265

Test Report No.:
 RTS-5993-1202-23

Dates of Test:
 January 23 - February 14, 2012

FCC ID: L6AREX40GW
IC ID: 2503A-REX40GW

PCS1900 Results: channel 661 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
661	1880.00	3.6	-30	-19.00	-0.0101
661	1880.00	3.6	-20	-26.00	-0.0138
661	1880.00	3.6	-10	23.00	0.0122
661	1880.00	3.6	0	33.00	0.0176
661	1880.00	3.6	10	20.00	0.0106
661	1880.00	3.6	20	22.00	0.0117
661	1880.00	3.6	30	28.00	0.0149
661	1880.00	3.6	40	29.00	0.0154
661	1880.00	3.6	50	-60.00	-0.0319
661	1880.00	3.6	60	-49.00	-0.0261

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
661	1880.00	3.7	-30	-22.00	-0.0117
661	1880.00	3.7	-20	-21.00	-0.0112
661	1880.00	3.7	-10	19.00	0.0101
661	1880.00	3.7	0	29.00	0.0154
661	1880.00	3.7	10	24.00	0.0128
661	1880.00	3.7	20	27.00	0.0144
661	1880.00	3.7	30	23.00	0.0122
661	1880.00	3.7	40	26.00	0.0138
661	1880.00	3.7	50	-46.00	-0.0245
661	1880.00	3.7	60	-79.00	-0.0420

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
661	1880.00	4.2	-30	-16.00	-0.0085
661	1880.00	4.2	-20	20.00	0.0106
661	1880.00	4.2	-10	31.00	0.0165
661	1880.00	4.2	0	22.00	0.0117
661	1880.00	4.2	10	27.00	0.0144
661	1880.00	4.2	20	26.00	0.0138
661	1880.00	4.2	30	19.00	0.0101
661	1880.00	4.2	40	-33.00	-0.0176
661	1880.00	4.2	50	-54.00	-0.0287
661	1880.00	4.2	60	-67.00	-0.0356

Test Report No.:
RTS-5993-1202-23

Dates of Test:
January 23 - February 14, 2012

FCC ID: L6AREX40GW
IC ID: 2503A-REX40GW


PCS1900 Results: channel 810 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	20BPPM
810	1909.80	3.6	-30	20.00	0.0105
810	1909.80	3.6	-20	18.00	0.0094
810	1909.80	3.6	-10	27.00	0.0141
810	1909.80	3.6	0	27.00	0.0141
810	1909.80	3.6	10	21.00	0.0110
810	1909.80	3.6	20	22.00	0.0115
810	1909.80	3.6	30	25.00	0.0131
810	1909.80	3.6	40	30.00	0.0157
810	1909.80	3.6	50	-49.00	-0.0257
810	1909.80	3.6	60	-84.00	-0.0440

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
810	1909.80	3.7	-30	-11.00	-0.0058
810	1909.80	3.7	-20	23.00	0.0120
810	1909.80	3.7	-10	23.00	0.0120
810	1909.80	3.7	0	20.00	0.0105
810	1909.80	3.7	10	25.00	0.0131
810	1909.80	3.7	20	21.00	0.0110
810	1909.80	3.7	30	24.00	0.0126
810	1909.80	3.7	40	27.00	0.0141
810	1909.80	3.7	50	-68.00	-0.0356
810	1909.80	3.7	60	-69.00	-0.0361

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
810	1909.80	4.2	-30	-17.00	-0.0089
810	1909.80	4.2	-20	22.00	0.0115
810	1909.80	4.2	-10	22.00	0.0115
810	1909.80	4.2	0	21.00	0.0110
810	1909.80	4.2	10	33.00	0.0173
810	1909.80	4.2	20	20.00	0.0105
810	1909.80	4.2	30	24.00	0.0126
810	1909.80	4.2	40	-26.00	-0.0136
810	1909.80	4.2	50	-44.00	-0.0230
810	1909.80	4.2	60	-76.00	-0.0398

APPENDIX 4 – GSM RADIATED EMISSIONS TEST DATA

	EMI Test Report for the BlackBerry® smartphone Model REX41GW APPENDIX 4	
Test Report No.: RTS-5993-1202-23	Dates of Test: January 23 - February 14, 2012	FCC ID: L6AREX40GW IC ID: 2503A-REX40GW

Radiated Power Test Data Results

Date of test: February 14, 2012

The following measurements were performed by Nielven Olis.

The environmental tests conditions were: Temperature: 25.9 °C
Relative Humidity: 13.3 %


The BlackBerry® smartphone was standalone, horizontal face up with head pointing to RX antenna when the turntable is at 0 degree position.
Test distance was 3.0 metres.

GSM850 Band Call Mode

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 (dBm)	Diff. To Limit (dB)
										(dBm)	(W)		
F0	128	824.20	850	Dipole	V	75.03	83.04	V-V	9.66	27.42	0.55	38.50	-11.08
F0	128	824.20	850	Dipole	H	83.04		H-H	8.32				
F0	190	836.60	850	Dipole	V	74.89	83.59	V-V	11.08	28.52	0.71	38.50	-9.98
F0	190	836.60	850	Dipole	H	83.59		H-H	10.01				
F0	251	848.80	850	Dipole	V	75.64	84.53	V-V	12.30	29.82	0.96	38.50	-8.68
F0	251	848.80	850	Dipole	H	84.53		H-H	10.65				

GSM850 Band EDGE Mode

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 (dBm)	Diff. To Limit (dB)
										(dBm)	(W)		
F0	128	824.20	850	Dipole	V	71.99	80.99	V-V	7.57	25.33	0.34	38.50	-13.17
F0	128	824.20	850	Dipole	H	80.99		H-H	6.99				
F0	190	836.60	850	Dipole	V	73.17	81.66	V-V	9.15	26.59	0.46	38.50	-11.91
F0	190	836.60	850	Dipole	H	81.66		H-H	8.08				
F0	251	848.80	850	Dipole	V	73.62	82.70	V-V	10.46	27.98	0.63	38.50	-10.52
F0	251	848.80	850	Dipole	H	82.70		H-H	8.73				

	EMI Test Report for the BlackBerry® smartphone Model REX41GW APPENDIX 4	
Test Report No.: RTS-5993-1202-23	Dates of Test: January 23 - February 14, 2012	FCC ID: L6AREX40GW IC ID: 2503A-REX40GW

Radiated Power Test Data Results cont'd

Date of test: February 07, 2012

The following measurements were performed by Shuo Wang.

The environmental tests conditions were: Temperature: 27.3 °C
Relative Humidity: 16.2%

The BlackBerry® smartphone was in standalone, horizontal face down position.
Test distance is 3.0 metres.

PCS1900 Band Call Mode

								Substitution Method					
EUT				Receive Antenna		Spectrum Analyzer		Tracking Generator					
		Frequency				Reading	Max (V,H)	Pol.	Reading	Corrected Reading (relative to Isotropic Radiator)		Limit	Diff to Limit
Type	Ch	(MHz)	Band	Type	Pol.	(dBuV)	dBuV	Tx-Rx	(dBm)	(dBm)	(W)	(dBm)	(dB)
F0	512	1850.20	1900	Horn	V	86.90	91.35	V-V	-7.39	32.13	1.63	33.00	-0.87
F0	512	1850.20	1900	Horn	H	91.35		H-H	-6.51				
F0	661	1880.00	1900	Horn	V	85.89	91.45	V-V	-6.43	32.73	1.87	33.00	-0.27
F0	661	1880.00	1900	Horn	H	91.45		H-H	-5.37				
F0	810	1909.80	1900	Horn	V	85.95	89.72	V-V	-7.71	31.47	1.40	33.00	-1.53
F0	810	1909.80	1900	Horn	H	89.72		H-H	-6.78				

PCS1900 Band EDGE Mode


								Substitution Method					
EUT				Receive Antenna		Spectrum Analyzer		Tracking Generator					
		Frequency				Reading	Max (V,H)	Pol.	Reading	Corrected Reading (relative to Isotropic Radiator)		Limit	Diff to Limit
Type	Ch	(MHz)	Band	Type	Pol.	(dBuV)	dBuV	Tx-Rx	(dBm)	(dBm)	(W)	(dBm)	(dB)
F0	512	1850.20	1900	Horn	V	84.32	88.88	V-V	-9.89	29.61	0.91	33.00	-3.39
F0	512	1850.20	1900	Horn	H	88.88		H-H	-9.03				
F0	661	1880.00	1900	Horn	V	83.87	88.99	V-V	-8.89	30.26	1.06	33.00	-2.74
F0	661	1880.00	1900	Horn	H	88.99		H-H	-7.84				
F0	810	1909.80	1900	Horn	V	83.43	87.13	V-V	-10.22	28.94	0.78	33.00	-4.06
F0	810	1909.80	1900	Horn	H	87.13		H-H	-9.31				

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	EMI Test Report for the BlackBerry® smartphone Model REX41GW APPENDIX 4	
Test Report No.: RTS-5993-1202-23	Dates of Test: January 23 - February 14, 2012	FCC ID: L6AREX40GW IC ID: 2503A-REX40GW

Radiated Emissions Test Data Results cont'd

GSM850 Call Mode

Date of Test: January 27, 2012

The following measurements were performed by Nielven Olis.

The environmental test conditions were: Temperature: 27.6 °C

Relative Humidity: 17.7 %

Test Distance was 3.0 metres with a height of 1.0 metres, and a frequency range of 30 MHz to 1000 MHz.

The BlackBerry® smartphone was standalone, vertically standing with LCD screen facing the RX antenna when the turntable is at 0 degree position.

The measurements were performed in GSM850 Call Tx mode, channels 128, 190, 251.

All emissions had test margins greater than 25.0 dB.

Date of Test: February 13, 2012

The following measurements were performed by Shuo Wang

The environmental test conditions were: Temperature: 25.4 °C

Relative Humidity: 41.7 %


Test Distance was 3.0 metres with a height of 1metre, and a frequency range of 1 GHz to 9 GHz.

The BlackBerry® smartphone was standalone, with LCD screen facing the RX antenna when the turntable is at 0 degree position, and with USB jack pointing up.

The measurements were performed in GSM850 Call Tx mode, channels 128, 190, 251.

BlackBerry® smartphone PIN 293A70F8										
Frequency (MHz)	Channel Of Occurrence	Antenna		Test Angle (Deg.)	Detector (PK or QP)	Measured Level (dBµV)	Correction Factor for preamp/antenna/ cables/ filter (dB)	Field Strength Level (reading+corr) (dBm)	Limit @ 3.0 m (dBm)	Test Margin (dB)
		Pol. (V/H)	Height (metres)							
1648.48	128	V	1.00	249.00	PK	56.26	-91.52	-35.26	-13.00	-22.26
2472.44	128	V	1.00	33.00	PK	59.15	-85.68	-26.53	-13.00	-13.53
1673.12	190	V	1.00	322.00	PK	58.67	-91.63	-32.96	-13.00	-19.96
2509.70	190	V	1.00	316.00	PK	55.86	-86.04	-30.18	-13.00	-17.18
1697.63	251	V	2.00	253.00	PK	54.73	-91.83	-37.09	-13.00	-24.09
2546.08	251	V	1.00	295.00	PK	52.72	-85.33	-32.61	-13.00	-19.61

All other emissions had test margins greater than 25.0 dB

	EMI Test Report for the BlackBerry® smartphone Model REX41GW APPENDIX 4	
Test Report No.: RTS-5993-1202-23	Dates of Test: January 23 - February 14, 2012	FCC ID: L6AREX40GW IC ID: 2503A-REX40GW

Radiated Emissions Test Data Results cont'd

GSM850 EDGE Mode

Date of Test: January 27, 2012

The following measurements were performed by Nielven Olis.

The environmental test conditions were: Temperature: 27.6 °C

Relative Humidity: 17.7 %

Test Distance was 3.0 metres with a height of 1.0 metres, and a frequency range of 30 MHz to 1000 MHz.

The BlackBerry® smartphone was standalone, vertically standing with LCD screen facing the RX antenna when the turntable is at 0 degree position.

The measurements were performed in GSM850 EDGE Tx mode, channels 128, 190, 251.

All emissions had a test margin greater than 25.0 dB.

Date of Test: February 13, 2012

The following measurements were performed by Shuo Wang

The environmental test conditions were: Temperature: 25.4 °C

Relative Humidity: 41.7 %


Test Distance was 3.0 metres with a height of 1metre, and a frequency range of 1 GHz to 9 GHz.

The BlackBerry® smartphone was standalone, with LCD screen facing the RX antenna when the turntable is at 0 degree position, and with USB jack pointing up.

The measurements were performed in GSM850 EDGE Tx mode, channels 128, 190, 251.

BlackBerry® smartphone PIN 293A70F8										
Frequency (MHz)	Channel Of Occurrence	Antenna		Test Angle (Deg.)	Detector (PK or QP)	Measured Level (dBμV)	Correction Factor for preamp/antenna/ cables/ filter (dB)	Field Strength Level (reading+corr) (dBm)	Limit @ 3.0 m (dBm)	Test Margin (dB)
		Pol. (V/H)	Height (metres)							
2472.72	128	V	1.00	208.00	PK	54.68	-85.67	-31.00	-13.00	-18.00
2509.62	190	V	1.00	1.00	PK	51.50	-86.04	-34.54	-13.00	-21.54
2546.41	251	V	1.00	75.00	PK	48.62	-85.34	-36.72	-13.00	-23.72

All other emissions had a test margin greater than 25.0 dB

	EMI Test Report for the BlackBerry® smartphone Model REX41GW APPENDIX 4	
Test Report No.: RTS-5993-1202-23	Dates of Test: January 23 - February 14, 2012	FCC ID: L6AREX40GW IC ID: 2503A-REX40GW

Radiated Emissions Test Data Results cont'd

PCS1900 GSM Mode

Date of Test: January 30, 2012

The following measurements were performed by Nielven Olis.

The environmental test conditions were: Temperature: 24.1 °C

Relative Humidity: 15.0 %

Test Distance was 3.0 metres with a height of 1.0 metres, and a frequency range of 30 MHz to 1000 MHz.

The BlackBerry® smartphone was standalone, laying horizontally on the 1.0m high turntable with head pointing the RX antenna when the turntable is at 0 degree position LCD screen facing up.

The measurements were performed in PCS1900 Call Tx mode, channels 512, 661, 810.

All emissions had a test margin greater than 25.0 dB.

Date of Test: February 10, 2012

The following measurements were performed by Shuo Wang.

The environmental test conditions were: Temperature: 25.1 °C

Relative Humidity: 37.7 %


Test Distance was 3.0 metres with a height of 1.0 metres, and a frequency range of 1 GHz to 20 GHz.

The BlackBerry® smartphone was standalone, laying horizontally on the 1.0m high turntable with head pointing the RX antenna when the turntable is at 0 degree position LCD screen facing up.

The measurements were performed in PCS1900, channels 512, 661, 810.

BlackBerry® smartphone PIN 293A70F8										
Frequency (MHz)	Channel Of Occurrence	Antenna		Test Angle (Deg.)	Detector (PK or QP)	Measured Level (dBµV)	Correction Factor for preamp/antenna/ cables/ filter (dB)	Field Strength Level (reading+corr) (dBm)	Limit @ 3.0 m (dBm)	Test Margin (dB)
		Pol. (V/H)	Height (metres)							
7400.66	512	V	4.00	71.00	PK	41.43	-77.51	-36.08	-13.00	-23.08
7520.29	661	H	1.00	203.00	PK	44.37	-77.78	-33.41	-13.00	-20.41
7638.98	810	H	1.00	201.00	PK	43.83	-77.58	-33.75	-13.00	-20.75

All emissions had a test margin greater than 25.0 dB.

	EMI Test Report for the BlackBerry® smartphone Model REX41GW APPENDIX 4	
Test Report No.: RTS-5993-1202-23	Dates of Test: January 23 - February 14, 2012	FCC ID: L6AREX40GW IC ID: 2503A-REX40GW

Radiated Emissions Test Data Results cont'd

PCS1900 EDGE Mode

Date of Test: January 30, 2012

The following measurements were performed by Nielven Olis.

The environmental test conditions were: Temperature: 24.1 °C

Relative Humidity: 15.0 %

Test Distance was 3.0 metres with a height of 1.0 metres, and a frequency range of 30 MHz to 1000 MHz.

The BlackBerry® smartphone was standalone, laying horizontally on the 1.0m high turntable with head pointing the RX antenna when the turntable is at 0 degree position LCD screen facing up.

The measurements were performed in PCS1900 Edge Tx mode, channels 512, 661, 810.

All emissions had a test margin greater than 25.0 dB.

Date of Test: February 10, 2012

The following measurements were performed by Shuo Wang.

The environmental test conditions were: Temperature: 25.1 °C

Relative Humidity: 37.7 %

Test Distance was 3.0 metres with a height of 1.0 metres, and a frequency range of 1 GHz to 20 GHz.

The BlackBerry® smartphone was standalone, laying horizontally on the 1.0m high turntable with head pointing the RX antenna when the turntable is at 0 degree position LCD screen facing up.

The measurements were performed in PCS1900 Edge Tx mode, channels 512, 661, 810.

BlackBerry® smartphone PIN 293A70F8										
Frequency (MHz)	Channel Of Occurrence	Antenna		Test Angle (Deg.)	Detector (PK or QP)	Measured Level (dBµV)	Correction Factor for preamp/antenna/ cables/ filter (dB)	Field Strength Level (reading+corr) (dBm)	Limit @ 3.0 m (dBm)	Test Margin (dB)
		Pol. (V/H)	Height (metres)							
7400.64	512	V	4.00	98.00	PK	41.11	-77.51	-36.40	-13.00	-23.40
7519.75	661	H	1.00	200.00	PK	43.78	-77.77	-34.00	-13.00	-21.00

All emissions had a test margin greater than 25.0 dB.