EMI Test Report

Tested in accordance with
Federal Communications Commission (FCC)
Personal Communications Services
CFR 47, Parts 2 and 90
&
Industry Canada (IC), RSS-119

RIM Testing Services (RTS)

A division of Research In Motion Limited

REPORT NO.: RTS-1271-0810-24

PRODUCT MODEL NO.: RCD21IN
TYPE NAME: BlackBerry® smartphone
FCC ID: L6ARCD20IN
IC: 2503A-RCD20IN

DATE: 29 October, 2008

Statement of Performance:

The BlackBerry® smartphone, model RCD21IN, part number CER-21467-001 Rev. 2, and accessories when configured and operated per RIM's operation instructions, perform within the requirements of the test standards.

Declaration:

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

Documented by:

Shannon Muller
Compliance Specialist
Date: 29 October, 2008

Reviewed by:

Maurice Battler
Compliance Specialist
Date: 30 October, 2008

Reviewed by:

Masud S. Attayi, P.Eng.
Team Lead, Regulatory Compliance
Date: 5 November, 2008

Approved by:

Paul G. Cardinal, Ph.D.
Director
Date: 6 November, 2008

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A. Scope

This report details the results of compliance tests that were performed in accordance with the requirements of:

- FCC CFR 47 Part 2, Oct. 1, 2006, Subpart L, Marketing of Radio Frequency Devices
- FCC CFR 47 Part 90, Oct., 2005, Subpart I, General Technical Standards
- Industry Canada, RSS-119 Issue 9, June, 2007, Land Mobile and Fixed Radio Transmitters and Receivers, 27.41 to 960 MHz.

B. Associated Document

No associated documents.

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 (RTS) EMI test facilities

305 Phillip Street	440 Phillip Street
Waterloo, Ontario	Waterloo, Ontario,
Canada, N2L 3W8	Canada , N2L 5R9
Phone: 519 888 7465	Phone: 519 888 7465
Fax: 519 888 6906	Fax: 519 888 6906

The testing was performed on October 15 to 24, 2008.

The sample EUT included:

SAMPLE	MODEL	CER NUMBER	PIN
1	RCD21IN	CER-21467-001 Rev 2	40245A28
2	RCD21IN	CER-21467-001 Rev 2	40245B23
3	RCD21IN	CER-21467-001 Rev 2	40245A0E
4	RCD21IN	CER-21467-001 Rev 2	40245A3D

RF Conducted Emissions testing was performed on sample 1.
Frequency Stability testing was performed on sample 2.
Radiated Spurious/Harmonic Emissions and ERP testing was performed on samples 3 and 4.

D. Support Equipment Used for the Testing of the EUT

No support equipment tested. See section *G. Compliance Test Equipment Used.*

E. Modifications to EUT

No modifications were required on the EUT.

F. Summary of Results

SPECIFICATION		TEST TYPE	Meets Requirement	TEST DATA APPENDIX
FCC CFR 47	IC			
FCC CFR 47 Part 2, Subpart L, Part 90, Subpart I	IC RSS-119	Conducted Emissions, Occupied Bandwidth	Yes	1
FCC CFR 47 Part 2, Subpart L, Part 90, Subpart I	IC RSS-119	Conducted RF Output Power	Yes	2
FCC CFR 47, Part 2.947, 2.1055 and 90.213	IC RSS-119	Frequency Stability	Yes	3
FCC CFR 47 Part 2, Subpart L	IC RSS-119	Radiated Spurious/harmonic Emissions, ERP	Yes	4

1) The EUT met the requirements of the Conducted Spurious Emissions in the iDEN 800 and 900 bands as per 47 CFR 2.1051. The EUT was measured in 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 Occupied Bandwidth and channel mask as per 47 CFR 2.1049, 2.1053, 90.210 and 90.691. The EUT was measured in the 800 and 900 bands on the low, middle and high channels.
   See APPENDIX 1 for the test data.

3) The EUT met the requirements of the Conducted RF Output Power requirements for the iDEN 800 and 900 bands as per 47 CFR 2.1046 and 2.1033. The EUT was measured in the iDEN 800 and 900 bands on the low, middle and high channels.
   See APPENDIX 2 for the test data.

4) The EUT met the requirements of the Frequency Stability vs. Temperature and Voltage requirements for the iDEN 800 and 900 bands as per CFR 47 2.1055, 90.213 and RSS-119. The temperature range was from -30°C to +55°C in 10 degree steps. The EUT was measured on low, middle and high channels at each temperature step. The EUT was measured at low (3.6 volts), nominal (3.7 volts) and high (4.2 volts) dc input voltage at each temperature step and channel at maximum output power.
   See APPENDIX 3 for the test data.

5) The radiated spurious emissions/harmonics and ERP were measured for the iDEN 800 and 900 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 rotatable turntable. The test distance used between the EUT and the receiving antenna was three metres. Then the emissions were maximized by elevating the antenna in the range of 1 to 4 metres. The turntable was rotated to determine the azimuth of the peak emissions. The maximum emissions level was recorded. Both the horizontal and vertical polarizations of the emissions were measured. The maximum emissions level was recorded. The EUT was then substituted with a Dipole antenna placed in the same location as the EUT. 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 measurements were done in a semi-anechoic chamber (SAC) below 1 GHz and a fully-anechoic room (FAR) above 1 GHz. The SAC's FCC registration number is **778487** and the Industry Canada (IC) file number is **2503B-1**. The FAR's FCC registration number is **959115** and the IC file number is **2503C-1**. The EUT was measured on the low, middle and high channels.

The ERP in the iDEN 800 band was measured on BlackBerry® smartphone, PIN 40245A0E. The highest ERP measured was 32.47 dBm (1.766 W) at 806.0125 MHz, with QAM (Quad QPSK) and QAM 64 modulations.

The ERP in the iDEN 900 band was measured on BlackBerry® smartphone, PIN 40245A0E. The highest ERP measured was 32.59 dBm (1.816 W) at 899.0 MHz, with QAM (Quad QPSK) and QAM 64 modulations.

See APPENDIX 4 for the test data.

6) The radiated spurious harmonics were measured up to the 10th harmonic for low, middle and high channels with iDEN and Bluetooth transmitting simultaneously.

The worst test margin in the iDEN 800 band for harmonic emissions measured was 20.77 dB below the limit at 6683.978 MHz for 16 QAM.
To view the test data see APPENDIX 4.

7) The EUT's RF local oscillator (LO) emissions were measured in the iDEN 800 and 900 bands on the low and high channels. Both the horizontal and vertical polarizations were measured. The RF LO emissions were in the noise floor (NF).

<u>Sample Calculation:</u>

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 ±4.6 dB

G. Compliance Test Equipment Used

UNIT	MANUFACTURER	MODEL	SERIAL NUMBER	CAL DUE DATE (YY MM DD)	USE
EMC Analyzer	Aglient	E7405A	US40240226	09-01-01	Radiated Emissions
EMI Test Receiver	Rohde & Schwarz	ESIB-40	100255	08-12-24	Radiated Emissions
Environment Monitor	Control Company	1870	230355190	08-12-11	Radiated Emissions
Environment Monitor	Control Company	1870	80117164	10-01-08	Radiated Emissions
Environment Monitor	Control Company	1870	230355189	08-12-11	RF Conducted Emissions
Dipole Antenna	Schwarzbeck	UHAP	973	08-12-18	Radiated Emissions
Dipole Antenna	Schwarzbeck	UHAP	1018	09-02-19	Radiated Emissions
HLP	EMC Automation	3003C	017201	09-10-24	Radiated Emissions
Horn Antenna	TDK	HRN-0118	030101	10-07-22	Radiated Emissions
Horn Antenna	ETS	3117	00047563	09-07-03	Radiated Emissions
Hybrid Log Antenna	TDK	HLP-3003C	017301	08-12-15	Radiated Emissions
Signal Generator	Agilent	83630B	3844A00927	08-12-28	Radiated Emissions
Spectrum Analyzer	HP	8563E	3745A08112	09-09-22	RF Conducted Emissions
Preamplifier	Rohde & Schwarz	TS-ANA-SP	001	09-02-29	Radiated Emissions
Preamplifier	Sonoma	310N/11909A	185831	08-11-21	Radiated Emissions
Preamplifier	TDK RF Solutions	PA-02	080010	08-11-16	Radiated Emissions
Power Meter	Giga-Tronics	8541C	1837762	09-01-17	RF Conducted Emissions
Power Sensor	Giga-Tronics	80401A	1835838	09-01-17	RF Conducted Emissions

Compliance Test Equipment Used cont'd

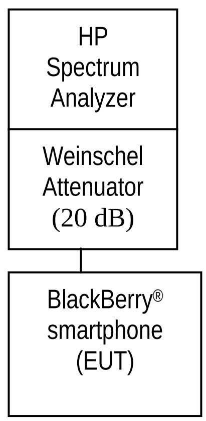
UNIT	MANUFACTURER	MODEL	SERIAL NUMBER	CAL DUE DATE (YY MM DD)	USE
Vector Signal Analyzer	HP	HP89441A with HP89450A	US39313988 and US39312360	09-09-22	Frequency Stability
DC Power Supply	Agilent	66321D	MY43000243	09-09-23	Frequency Stability
ESG Signal Generator	Agilent	E4438C	MY47271374	10-09-22	Frequency Stability
Environmental Chamber	Espec	SU-641	92008344	09-09-26	Frequency Stability
Power Meter	Agilent	E4419B	MY40511065	10-09-19	Frequency Stability
Power Sensor	Agilent	8482H	MY41090594	09-09-29	Frequency Stability

APPENDIX 1 – RF CONDUCTED EMISSIONS TEST DATA

Conducted Emission Test Data

This appendix contains measurement data pertaining to conducted spurious emissions, –26 dBc bandwidth, 99% power bandwidth and the channel mask on BlackBerry® smartphone PIN 40245A28.

Test Setup Diagram



The environmental test conditions were:

Temperature	23-24ºC
Pressure	1015-1017 mb
Relative Humidity	24-26%

Date of test: October 20-21, 2008

The measurements were performed by Maurice Battler.

Conducted Emission Test Data cont'd

The TDM Transmission Slot Multiplex Factor was set to 2 /6 with the RF power output at maximum for all the recorded measurements of the –26dBc and 99% occupied bandwidths.

Test Data for TDM selected Frequencies

TDM-MF 2/6 Frequency (MHz)	QPSK_4 Occupied Bandwidth (kHz)	QAM_16 Occupied Bandwidth (kHz)	QAM_64 Occupied Bandwidth (kHz)	QPSK_4 - 26dBc Bandwidth (kHz)	QAM_16 - 26dBc Bandwidth (kHz)	QAM_64 - 26dBc Bandwidth (kHz)
806.0125	21.17	21.25	21.00	25.08	25.17	25.08
815.5000	21.25	21.17	21.33	24.83	25.33	25.17
824.9880	21.17	21.25	21.33	24.67	25.25	25.42

TDM-MF 2/6 Frequency (MHz)	QPSK_4 Occupied Bandwidth (kHz)	QAM_16 Occupied Bandwidth (kHz)	QAM_64 Occupied Bandwidth (kHz)	QPSK_4 - 26dBc Bandwidth (kHz)	QAM_16 - 26dBc Bandwidth (kHz)	QAM_64 - 26dBc Bandwidth (kHz)
896.01875	21.17	21.08	21.17	24.92	25.33	25.17
898.51875	21.17	21.08	21.17	25.42	24.92	24.83
900.98125	21.08	21.17	21.17	25.00	25.00	25.25

Conducted Emission Test Data cont'd

The conducted spurious emissions – Pursuant to 47 CFR 2.1051 were measured from 10 MHz to 10 GHz. No emissions could be seen above the noise floor of the spectrum analyzer.

Measurement Plots for Quad QPSK, 16 QAM, 64 QAM.

Refer to the following figures for the measurement plots.

See Figures 1 to 18 for the plots of the 99% Occupied Bandwidth results.

See Figures 19 to 36 for the plots of the –26 dBc Bandwidth results.
Carrier Reference at 0.0 dB

See Figures 37 to 54 for plots of the EA Mask 47 CFR 90.691(a) measured data.

See Figures 55 to 72 for plots of the G Mask. 47 CFR 90.210(g) measured data.

See Figures 73 to 108 for plots of the Spurious Conducted Emission 47 CFR 2.1051 results.

Conducted Emission Test Data cont'd

Figure 1: Occupied Bandwidth (99%)

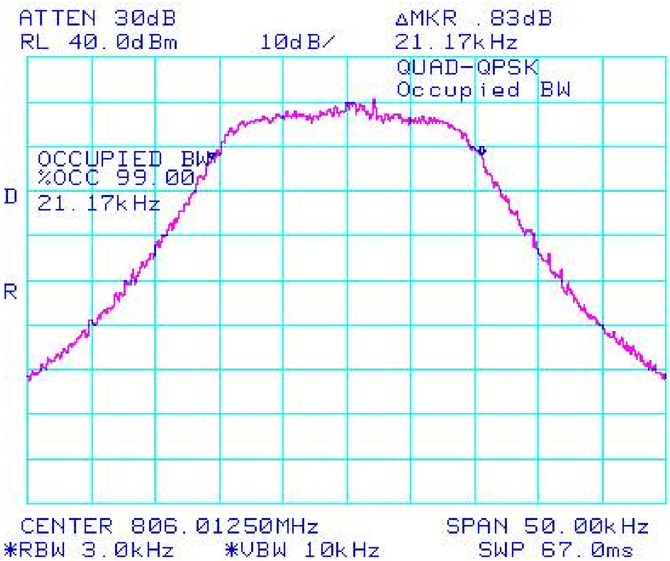


Figure 2: Occupied Bandwidth (99%)

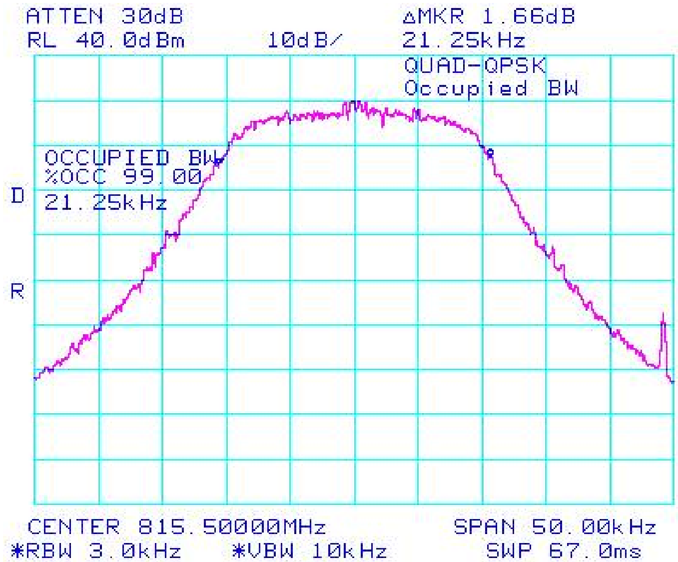


Figure 3: Occupied Bandwidth (99%)

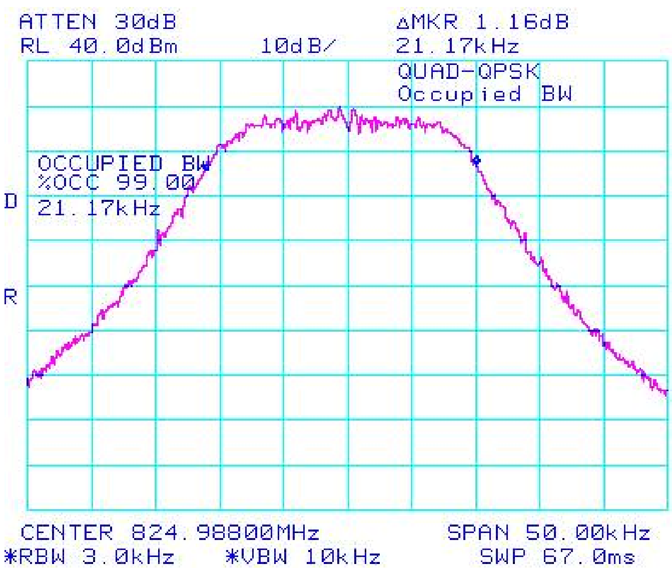
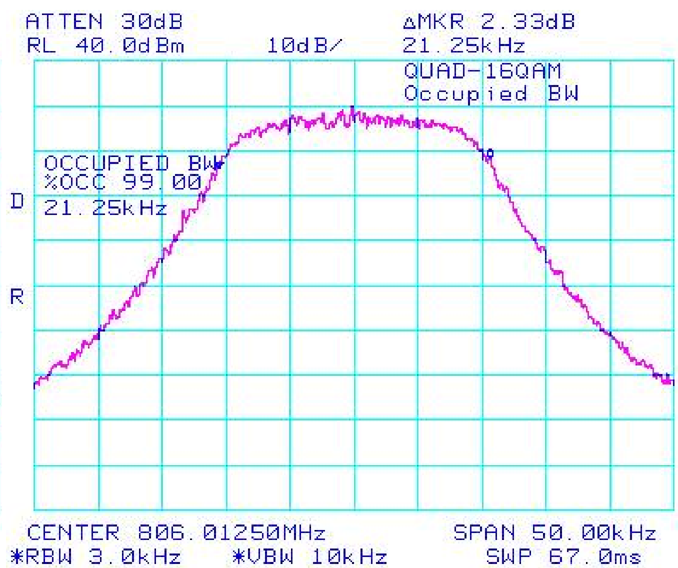


Figure 4: Occupied Bandwidth (99%)



Conducted Emission Test Data cont'd

Figure 5: Occupied Bandwidth (99%)

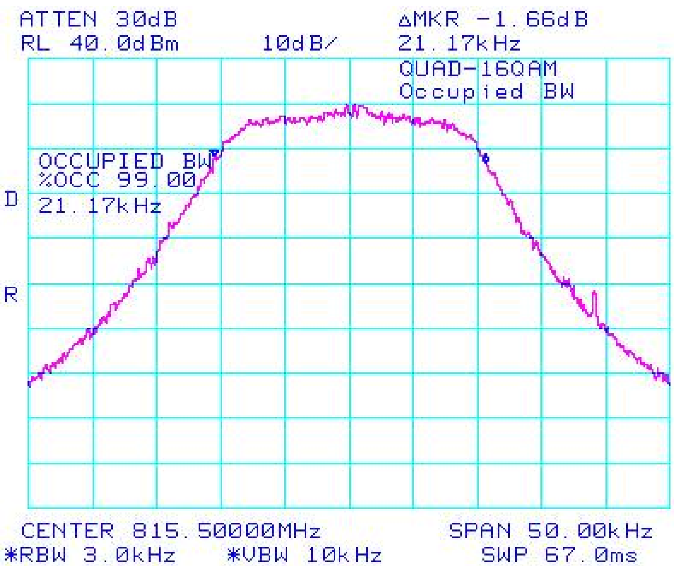


Figure 6: Occupied Bandwidth (99%)

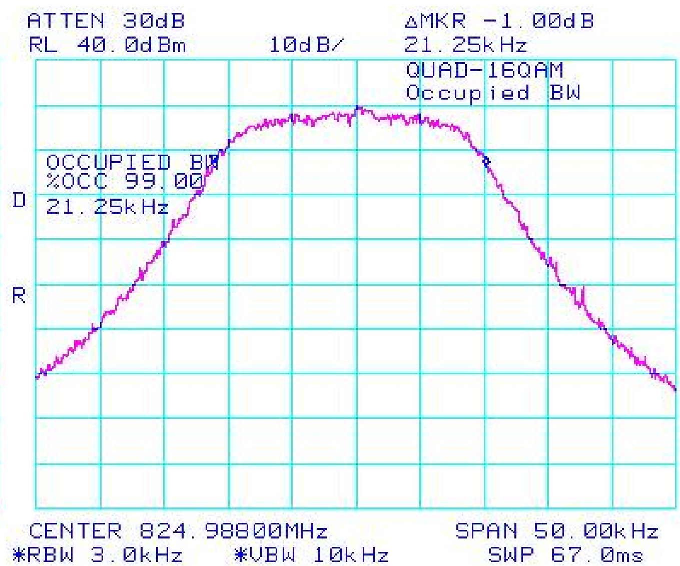


Figure 7: Occupied Bandwidth (99%)

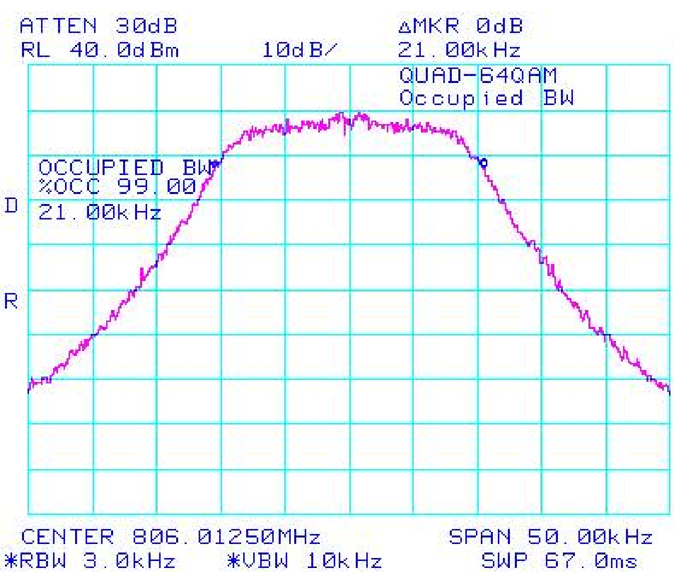
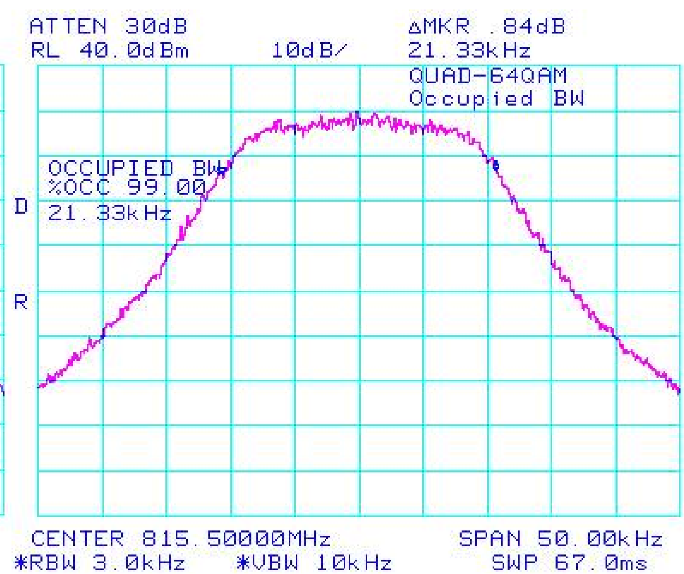


Figure 8: Occupied Bandwidth (99%)



Conducted Emission Test Data cont'd

Figure 9: Occupied Bandwidth (99%)

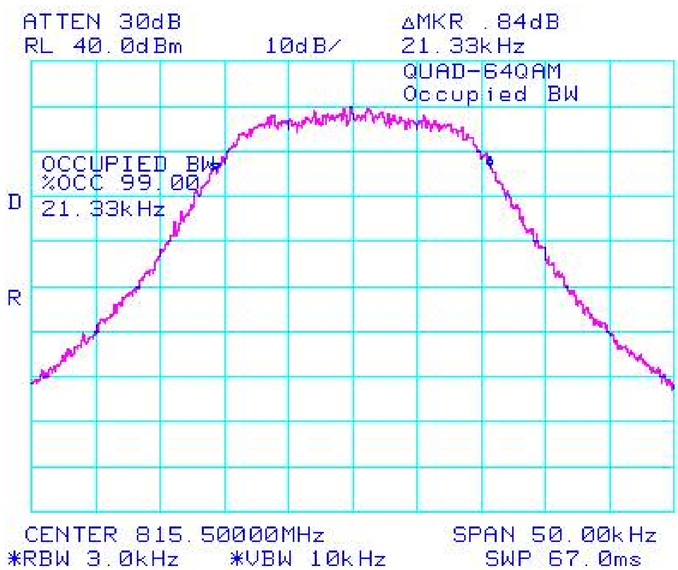


Figure 10: Occupied Bandwidth (99%)

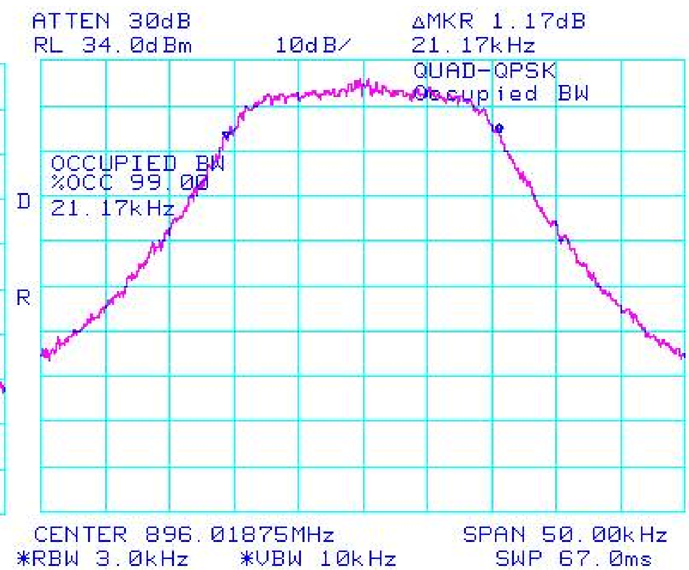


Figure 11: Occupied Bandwidth (99%)

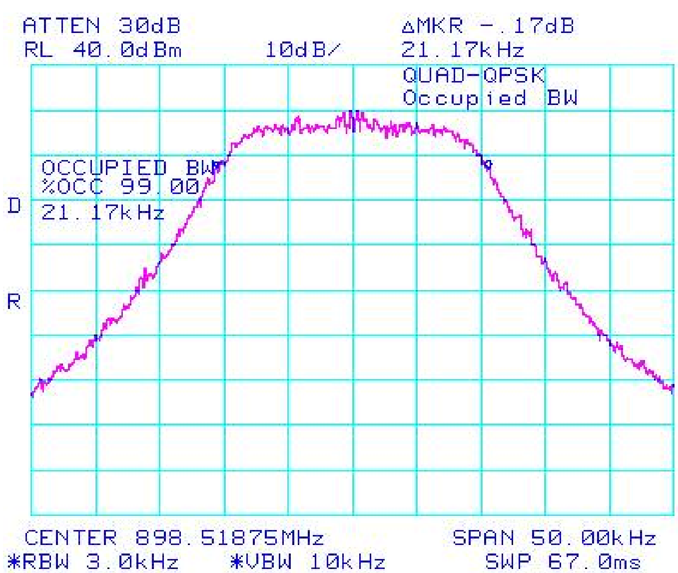
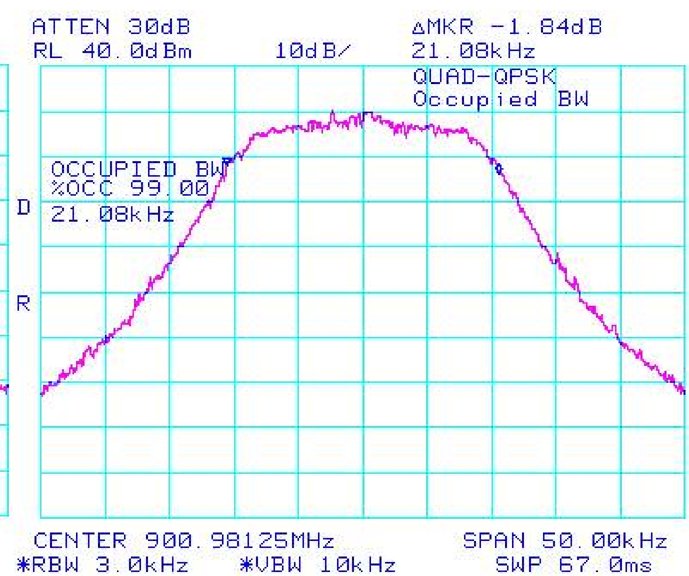


Figure 12: Occupied Bandwidth (99%)



Conducted Emission Test Data cont'd

Figure 13: Occupied Bandwidth (99%)

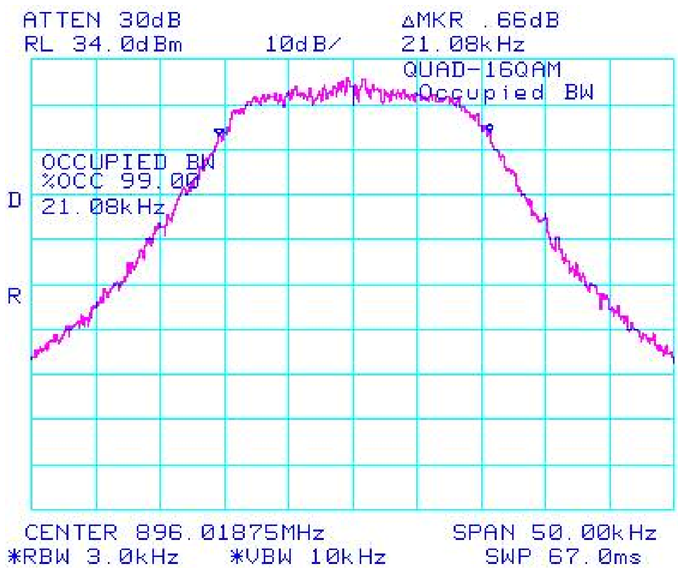


Figure 14: Occupied Bandwidth (99%)

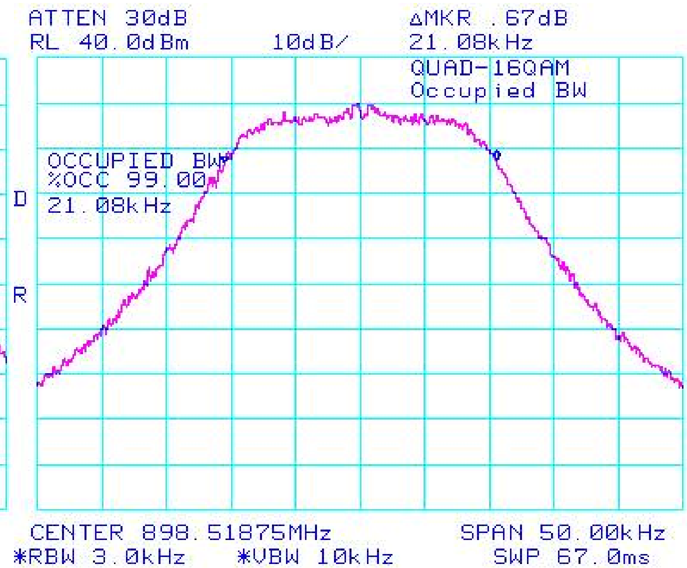


Figure 15: Occupied Bandwidth (99%)

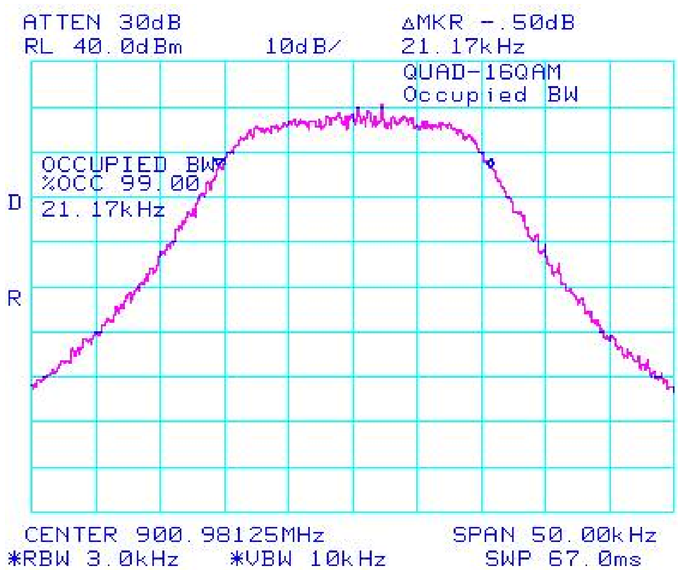
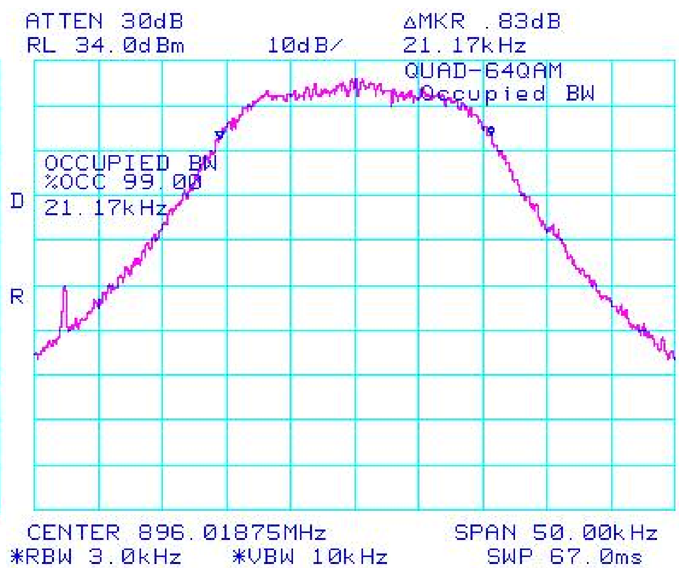


Figure 16: Occupied Bandwidth (99%)



Conducted Emission Test Data cont'd

Figure 17: Occupied Bandwidth (99%)

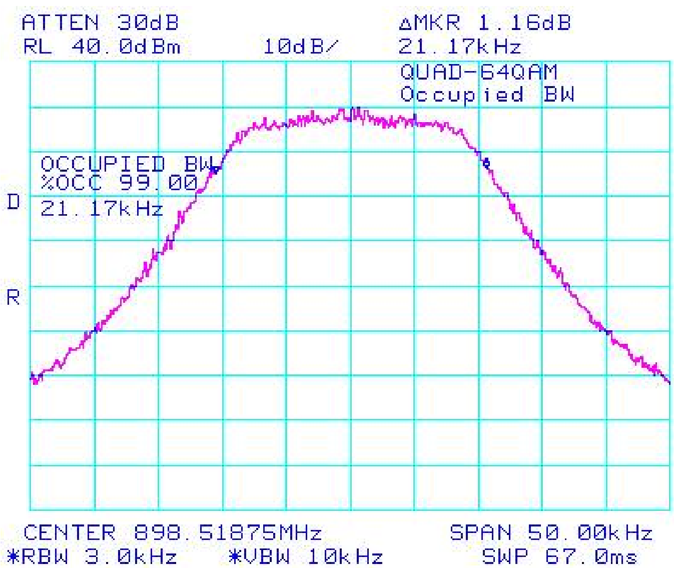


Figure 18: Occupied Bandwidth (99%)

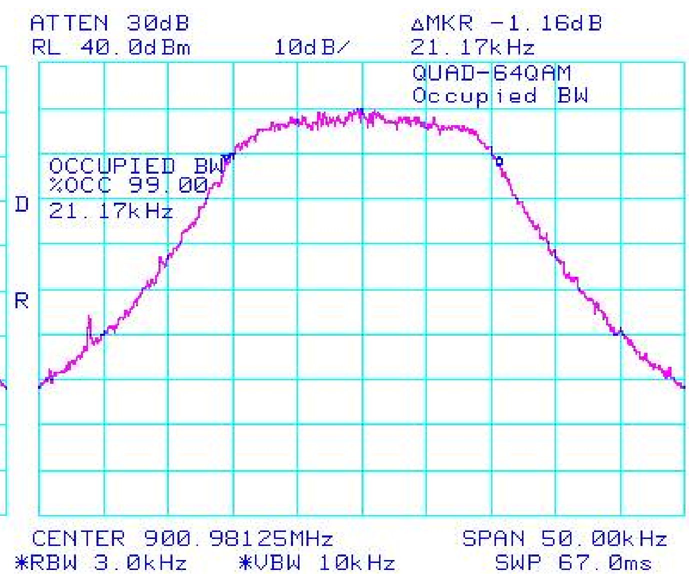


Figure 19: –26 dBc Bandwidth

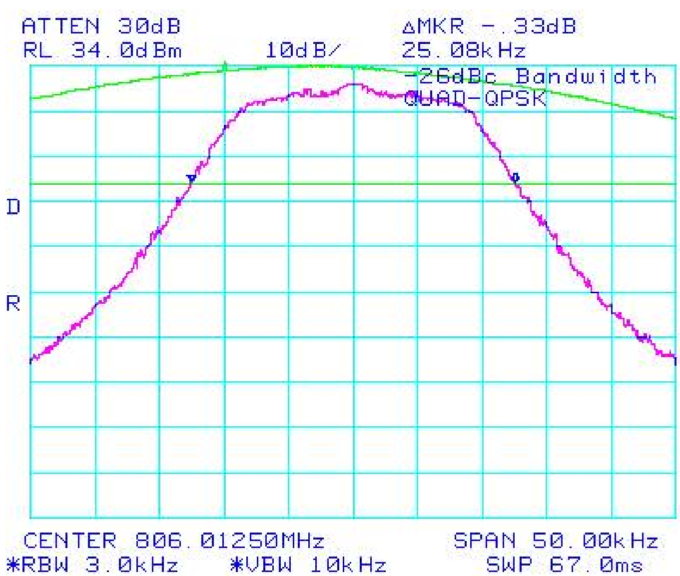
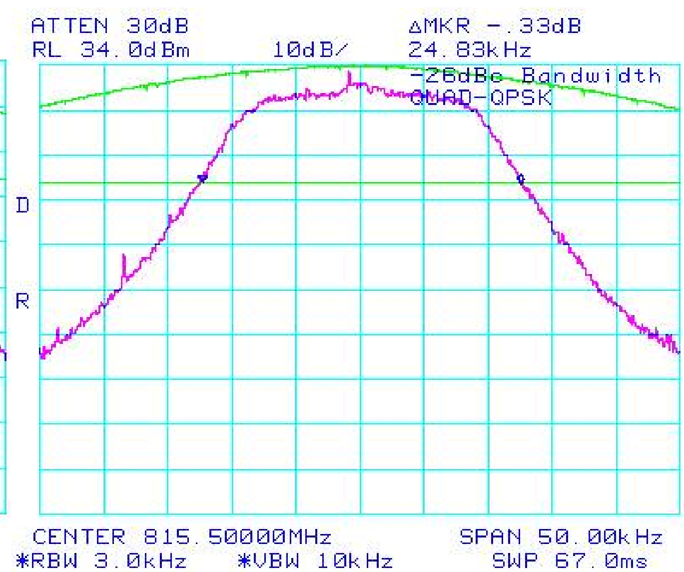


Figure 20: –26 dBc Bandwidth



Conducted Emission Test Data cont'd

Figure 21: –26 dBc Bandwidth

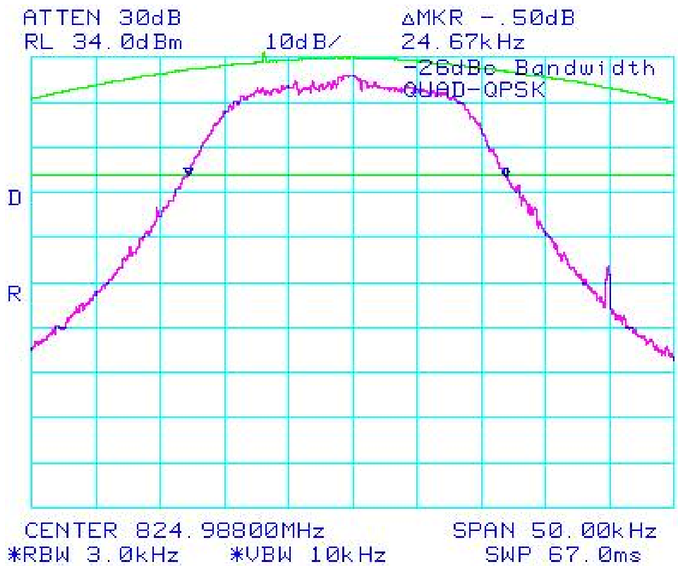


Figure 22: –26 dBc Bandwidth

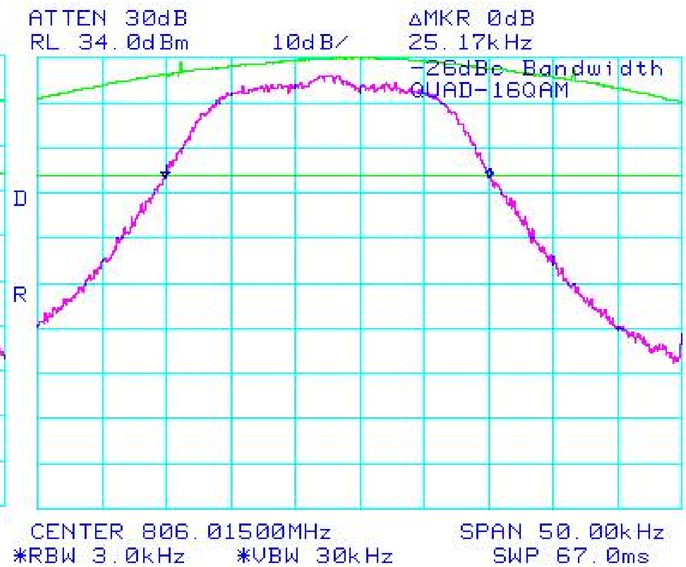


Figure 23: –26 dBc Bandwidth

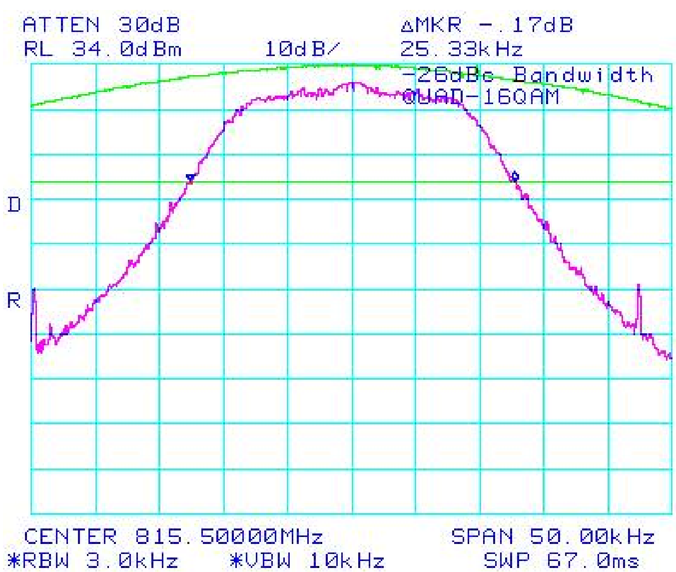
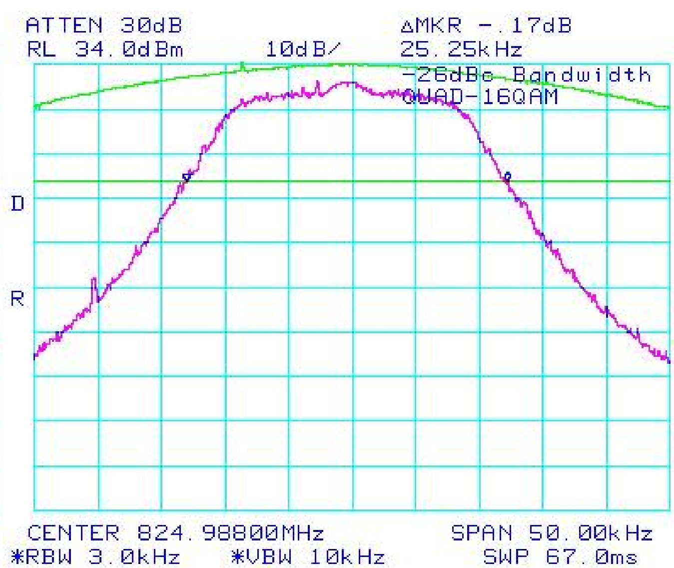


Figure 24: –26 dBc Bandwidth



Conducted Emission Test Data cont'd

Figure 25: **–26 dBc Bandwidth**

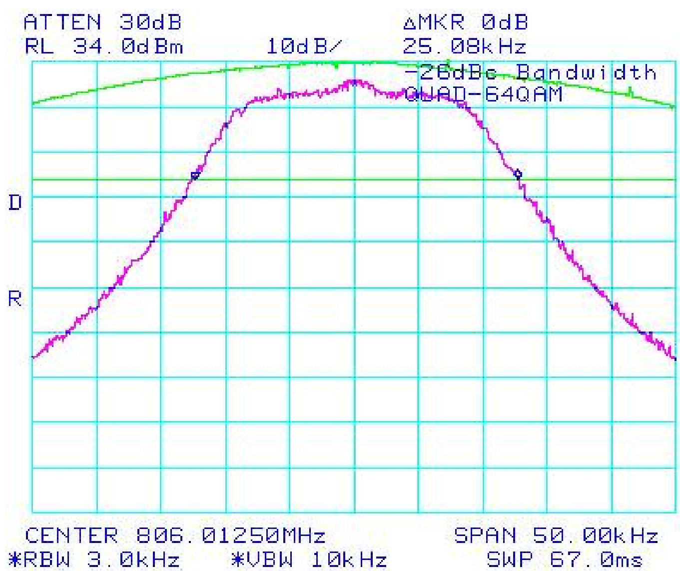


Figure 26: –26 dBc Bandwidth

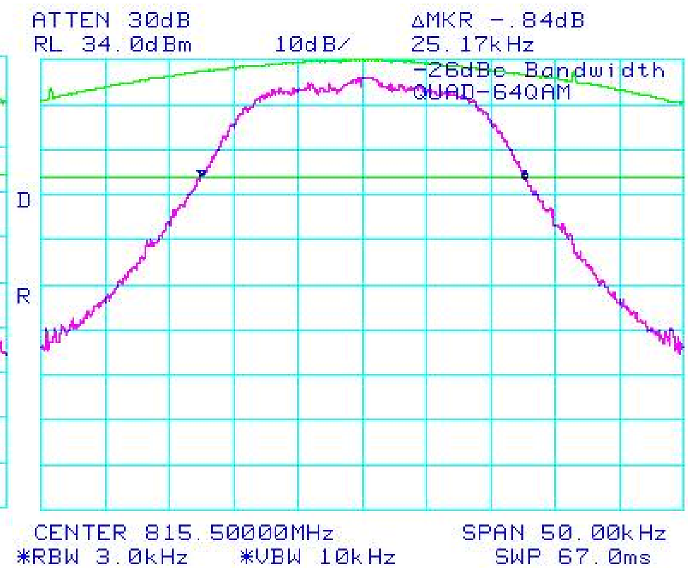


Figure 27: –26 dBc Bandwidth

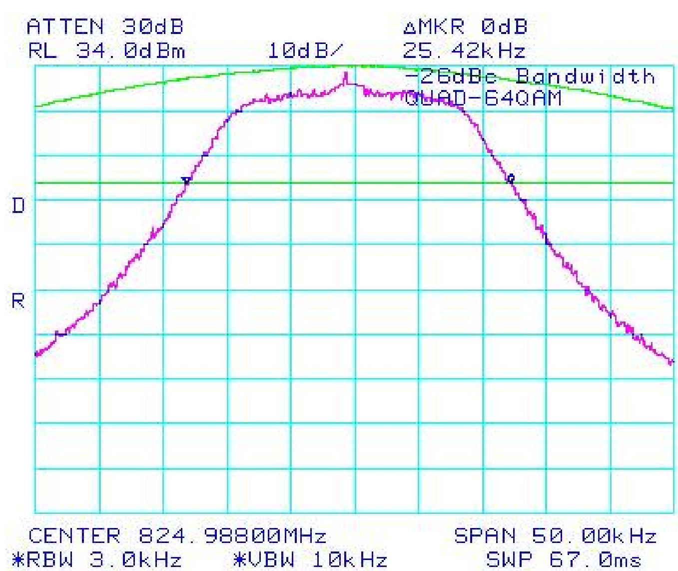
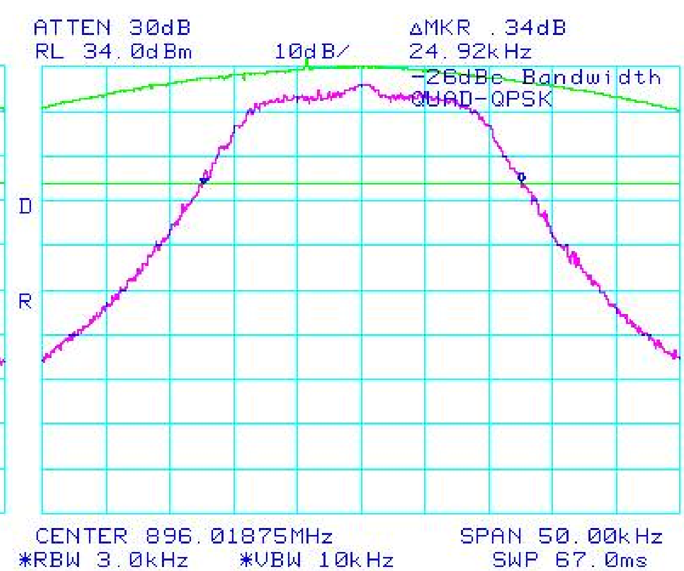


Figure 28: –26 dBc Bandwidth



Conducted Emission Test Data cont'd

Figure 29: –26 dBc Bandwidth

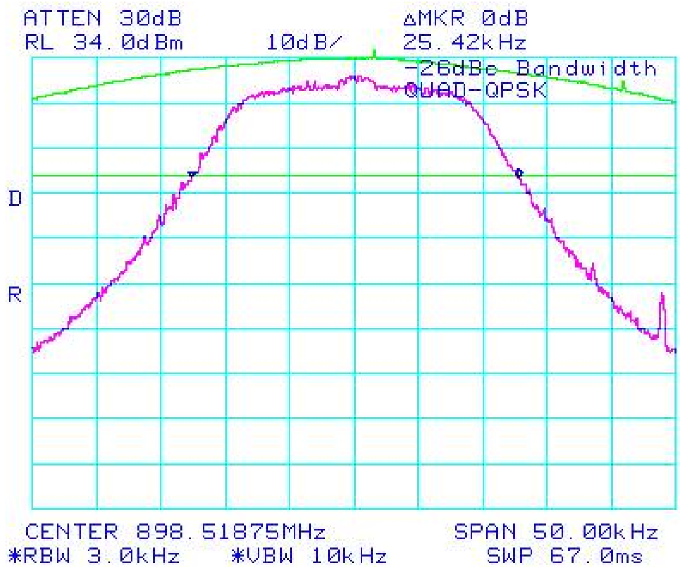


Figure 30: –26 dBc Bandwidth

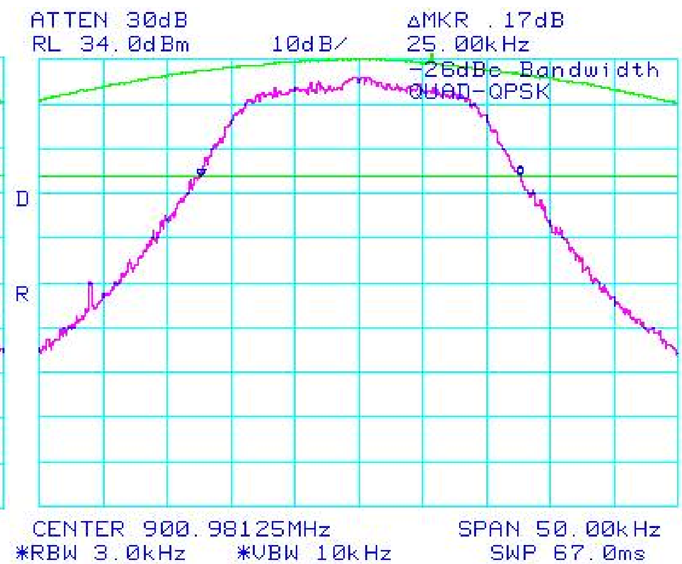


Figure 31: –26 dBc Bandwidth

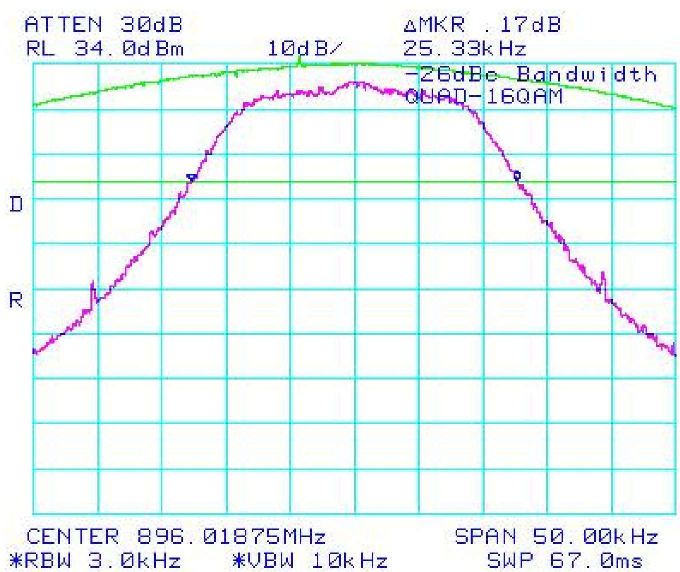
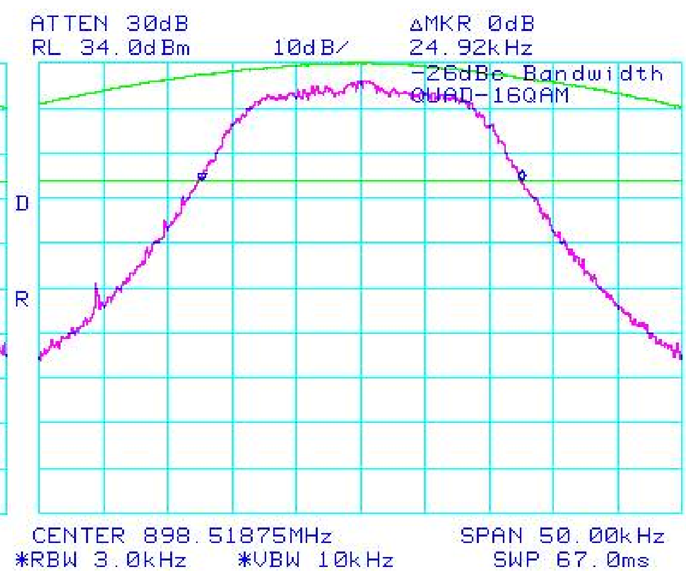


Figure 32: –26 dBc Bandwidth



Conducted Emission Test Data cont'd

Figure 33: –26 dBc Bandwidth

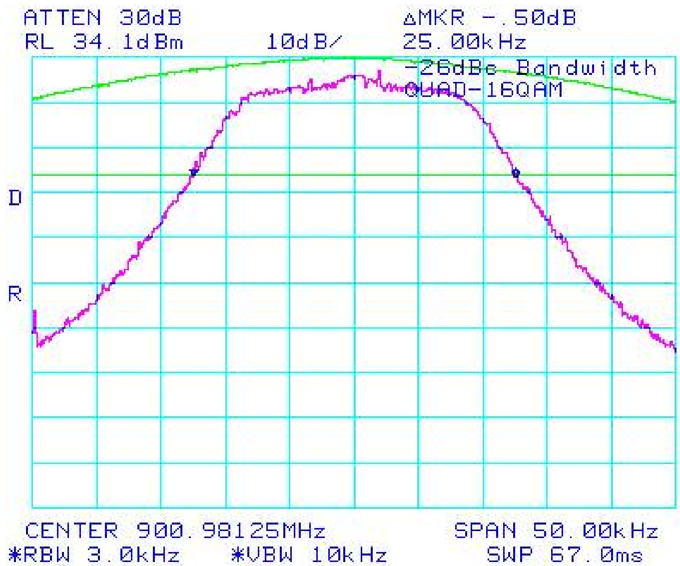


Figure 34: –26 dBc Bandwidth

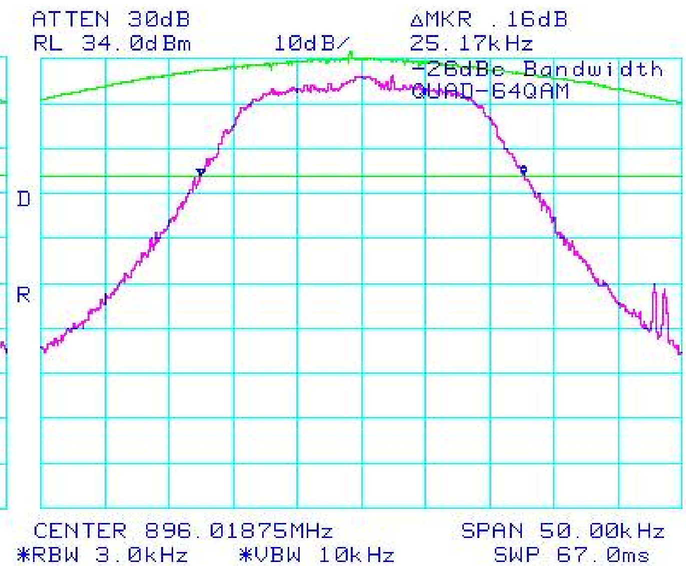


Figure 35: –26 dBc Bandwidth

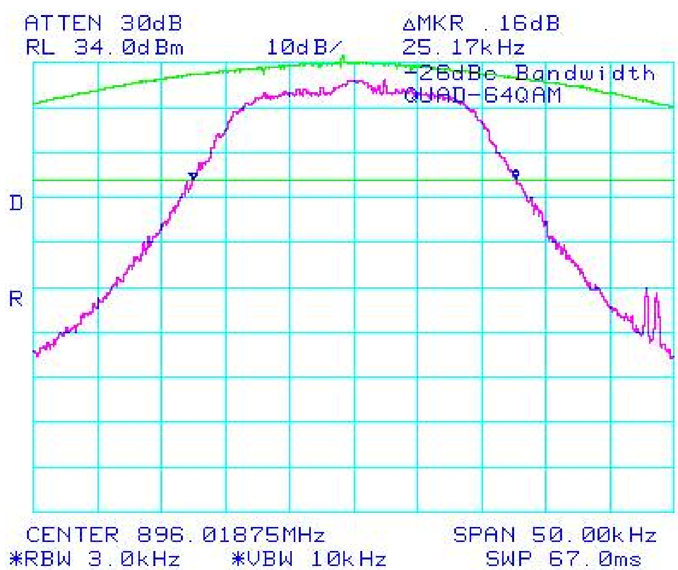
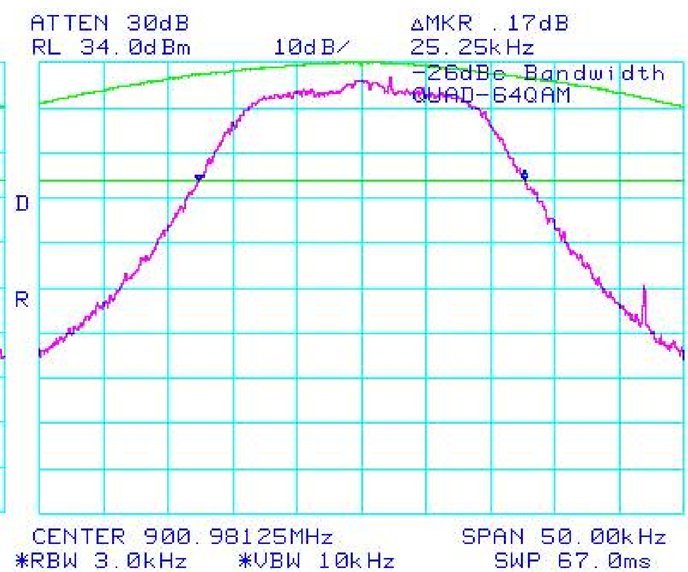


Figure 36: –26 dBc Bandwidth



Conducted Emission Test Data cont'd

Figure 37: QUAD_QPSK_EA Mask 90.691(a)

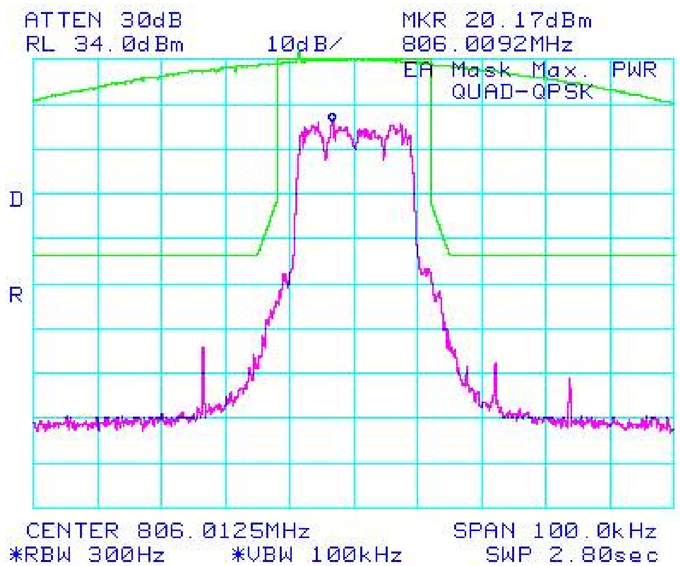


Figure 38: QUAD_QPSK_EA Mask 90.691(a)

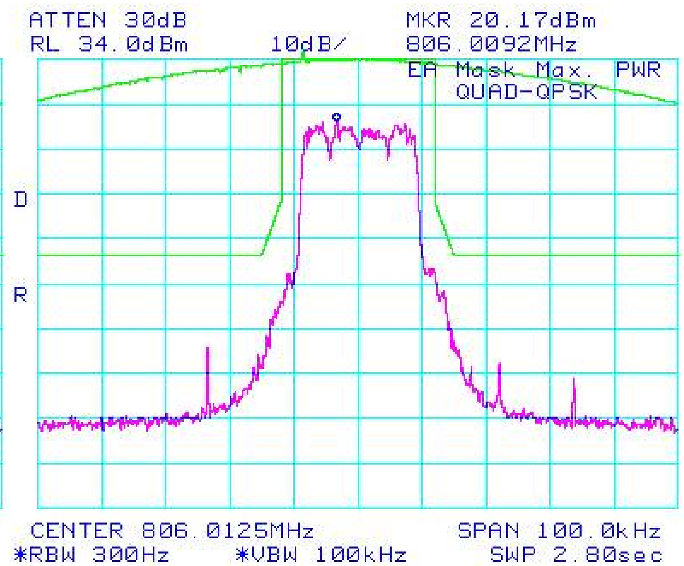


Figure 39: QUAD_QPSK _EA Mask 90.691(a)

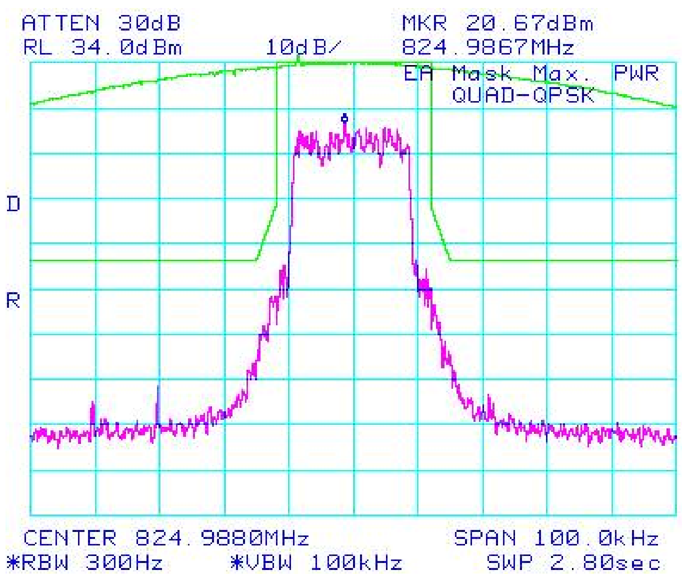
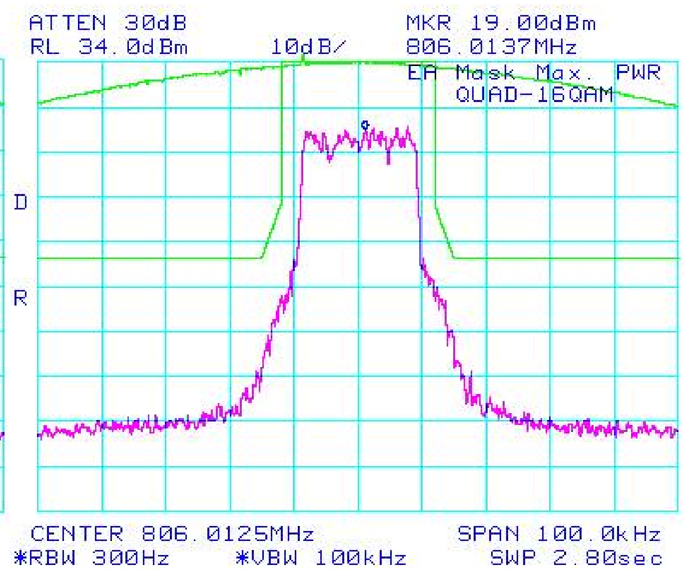


Figure 40: QUAD_16QAM_EA Mask 90.691(a)



Conducted Emission Test Data cont'd

Figure 41: QUAD_16QAM_EA Mask 90.691(a)

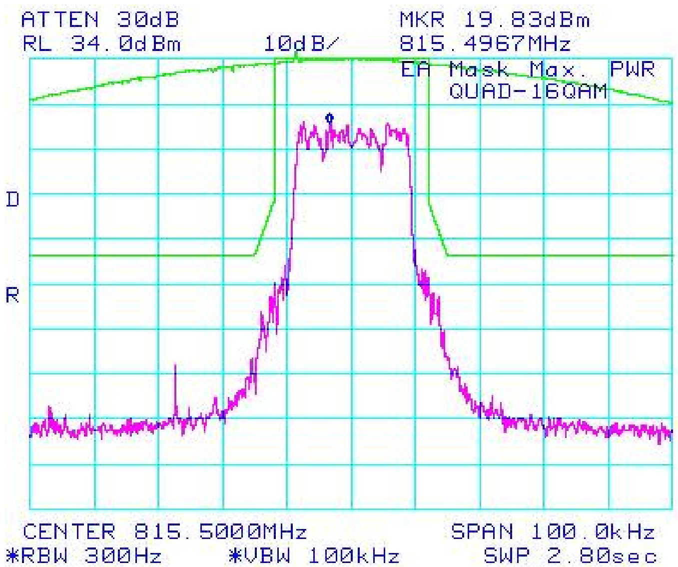


Figure 42: QUAD_16QAM_EA Mask 90.691(a)

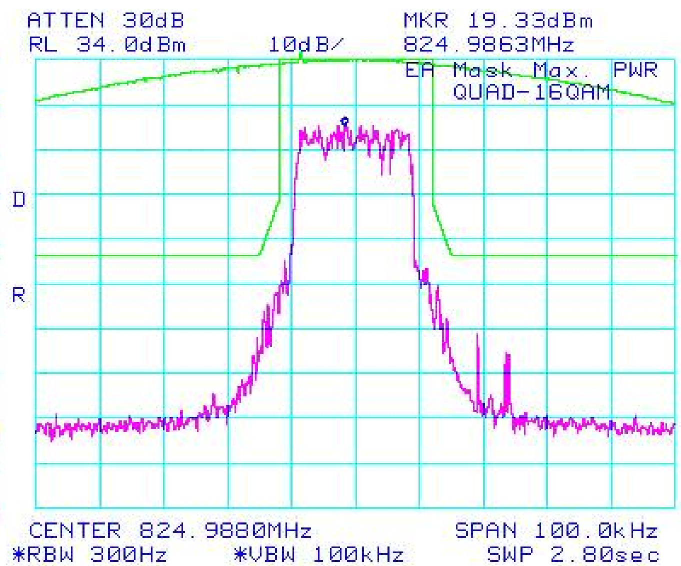


Figure 43: QUAD_64QAM_EA Mask 90.691(a)

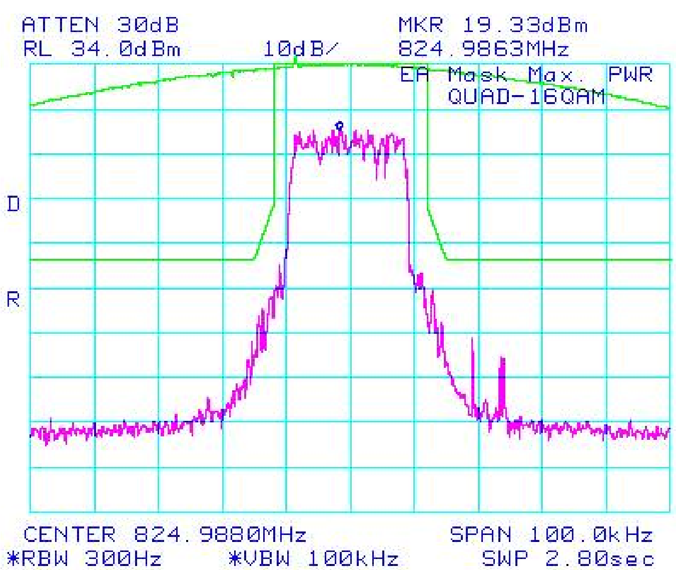
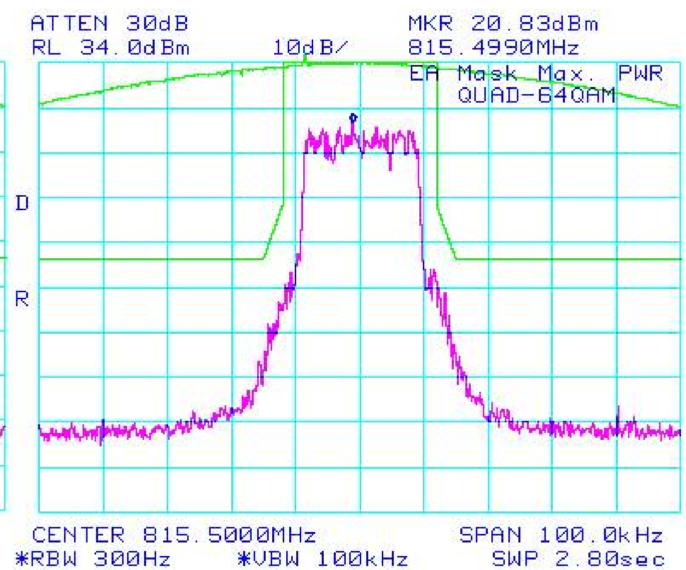


Figure 44: QUAD_64QAM_EA Mask 90.691(a)



Conducted Emission Test Data cont'd

Figure 45: QUAD_64QAM_EA Mask 90.691(a)

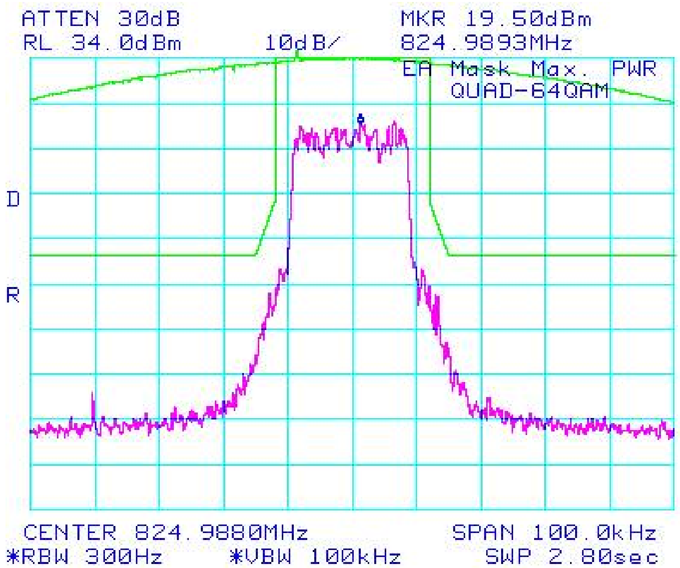


Figure 46: QUAD_QPSK _EA Mask 90.691(a)

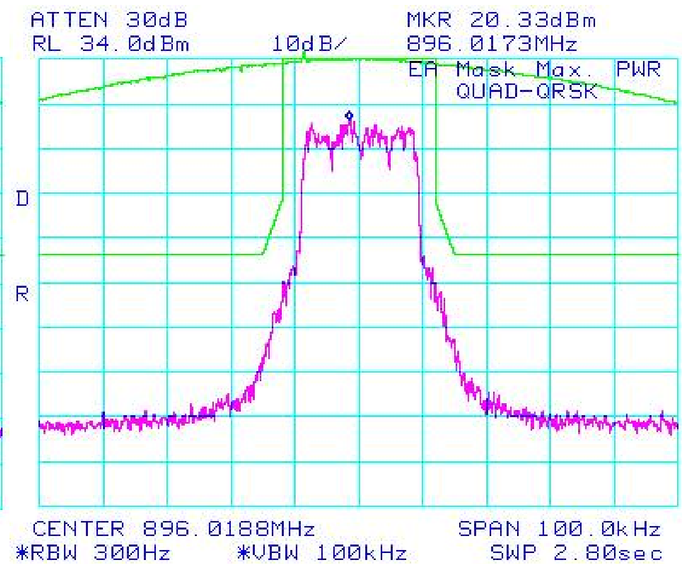


Figure 47: QUAD_QPSK _EA Mask 90.691(a)

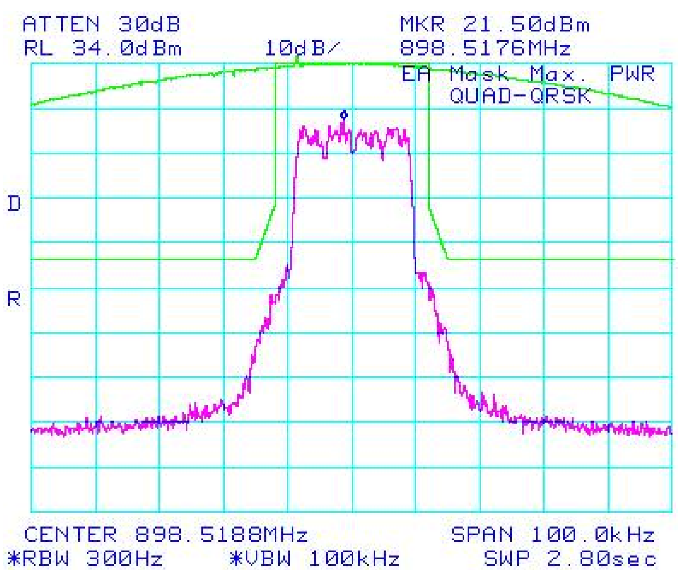
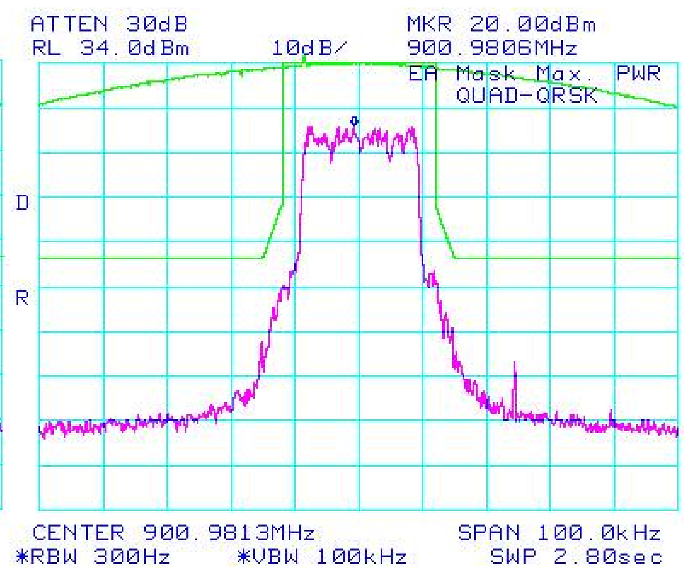


Figure 48: QUAD_QPSK _EA Mask 90.691(a)



Conducted Emission Test Data cont'd

Figure 49: QUAD_16QAM_EA Mask 90.691(a)

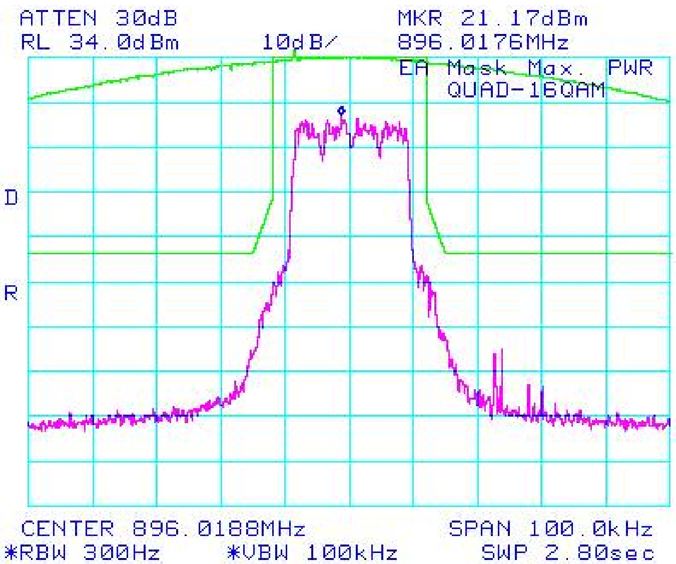


Figure 50: QUAD_16QAM_EA Mask 90.691(a)

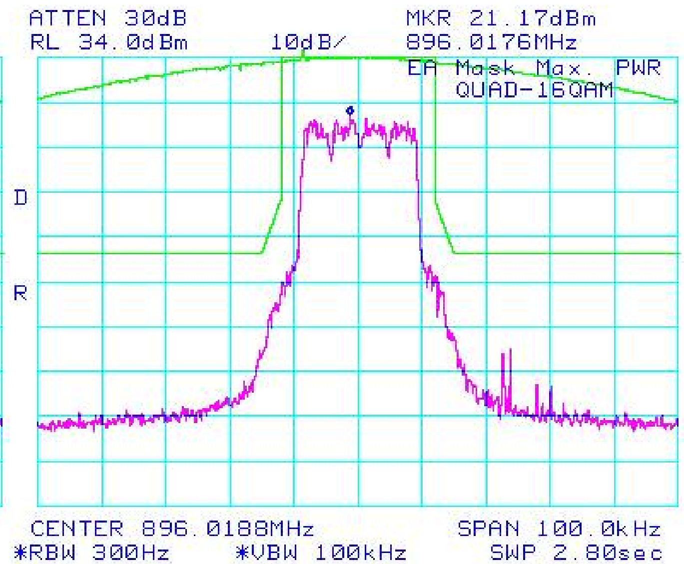


Figure 51: QUAD_16QAM_EA Mask 90.691(a)

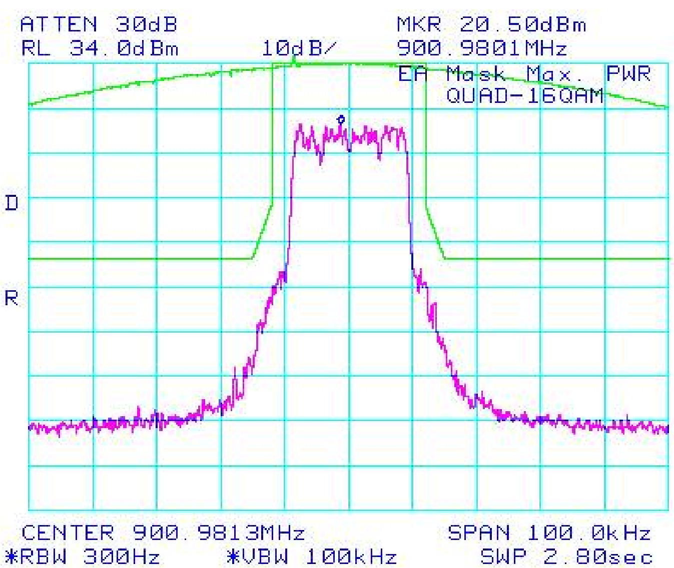
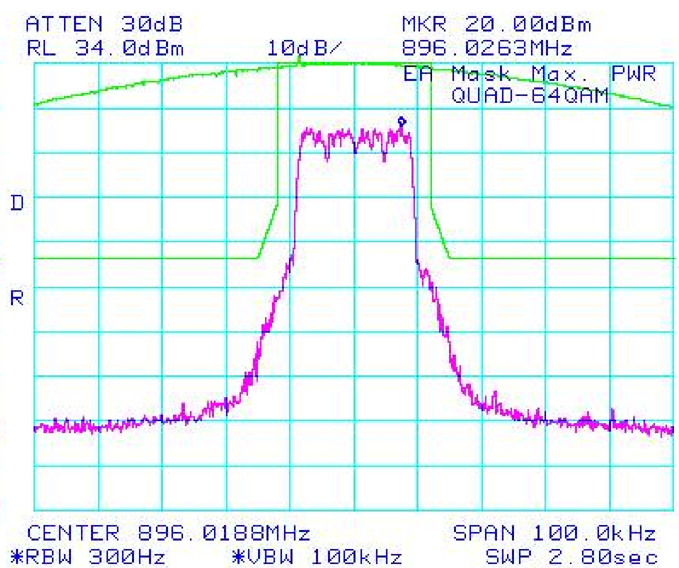


Figure 52: QUAD_64QAM_EA Mask 90.691(a)



Conducted Emission Test Data cont'd

Figure 53: QUAD_64QAM_EA Mask 90.691(a)

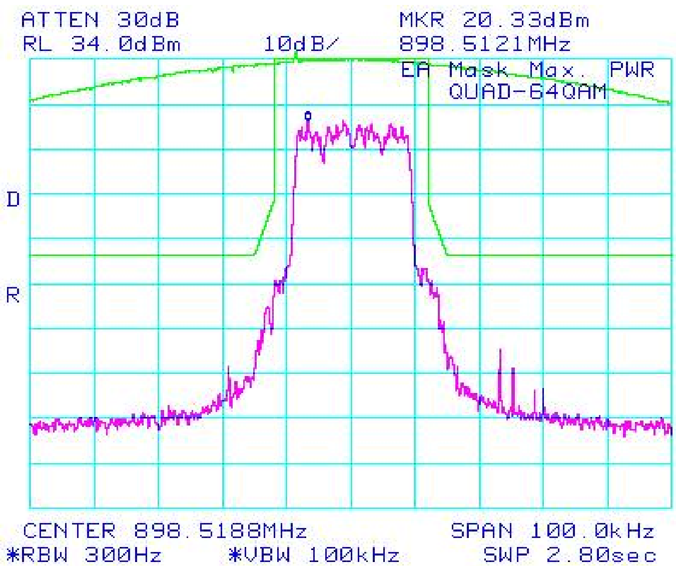


Figure 54: QUAD_64QAM_EA Mask 90.691(a)

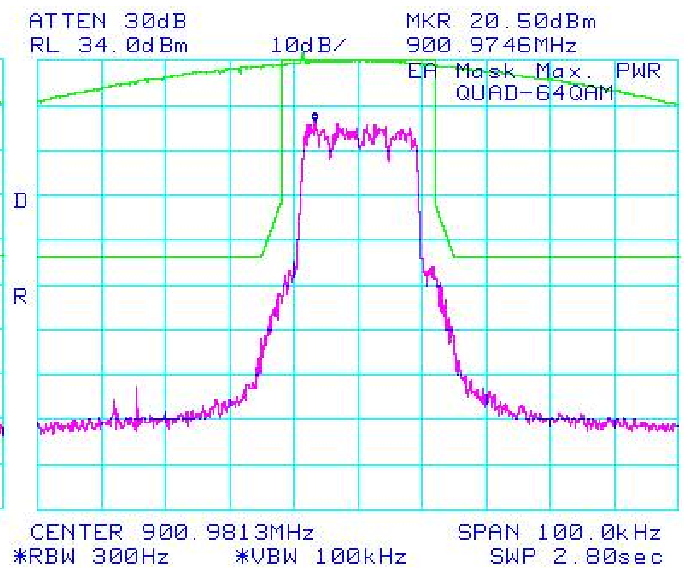


Figure 55: QUAD_QPSK_G Mask 90.210(g)

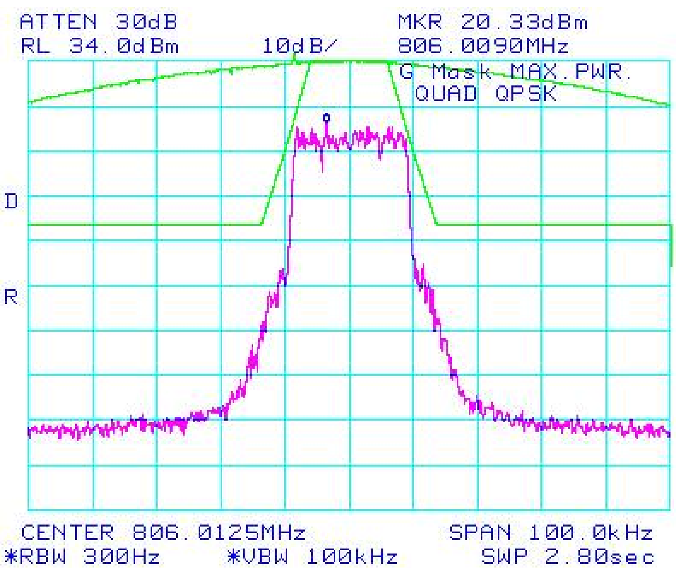
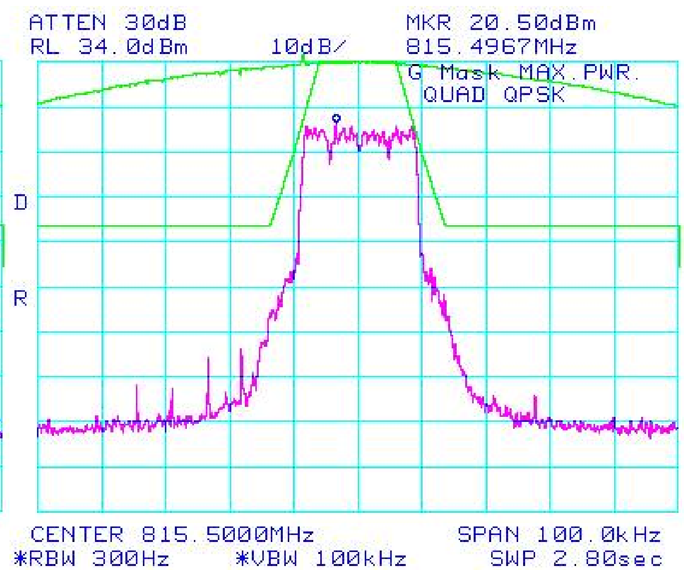


Figure 56: QUAD_QPSK_G Mask 90.210(g)



<u>Conducted Emission Test Data</u> cont'd

Figure 57: QUAD_QPSK_G Mask 90.210(g)

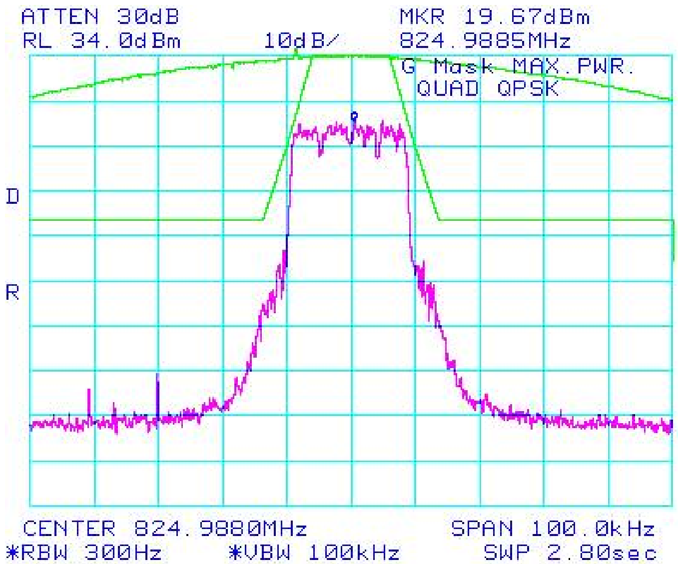


Figure 58: QUAD_16QAM _G Mask 90.210(g)

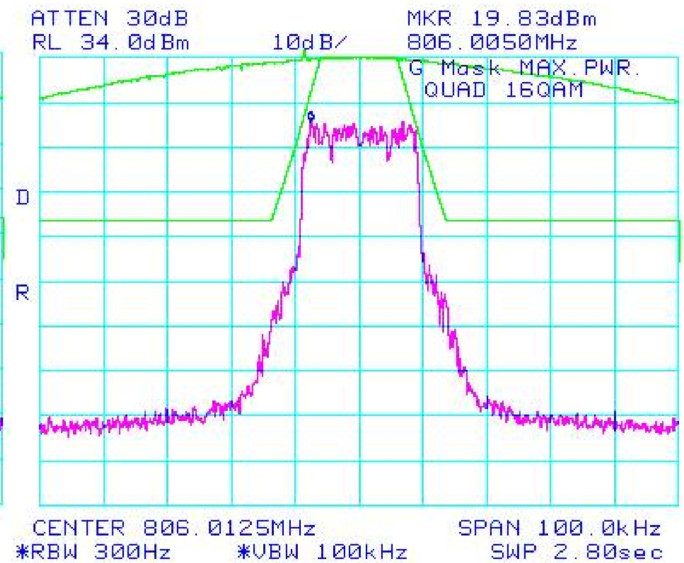


Figure 59: QUAD_16QAM_G Mask 90.210(g)

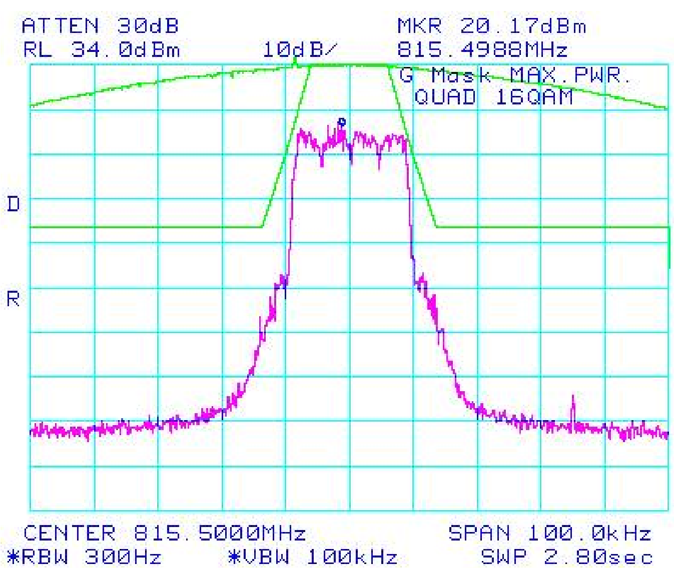
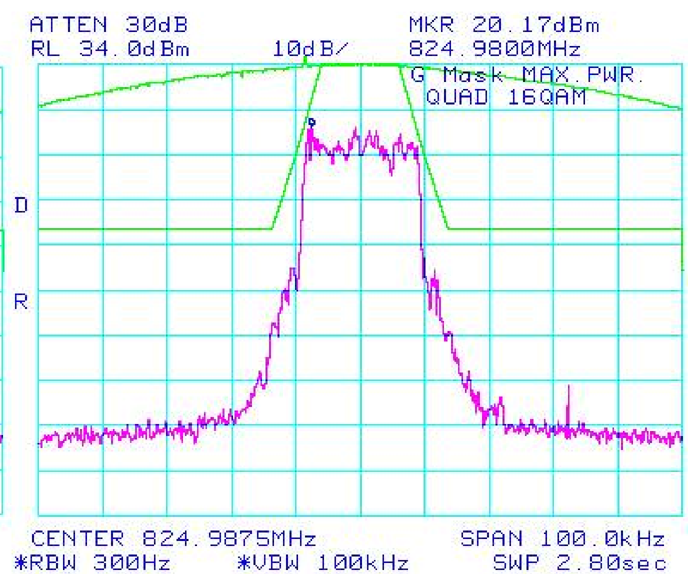


Figure 60: QUAD_16QAM_G Mask 90.210(g)



Conducted Emission Test Data cont'd

Figure 61: QUAD_64QAM_G Mask 90.210(g)

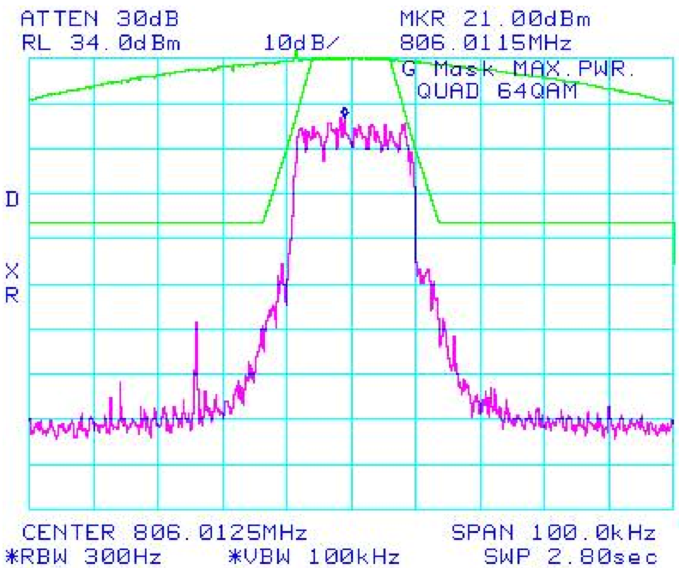


Figure 62: QUAD_64QAM_G Mask 90.210(g)

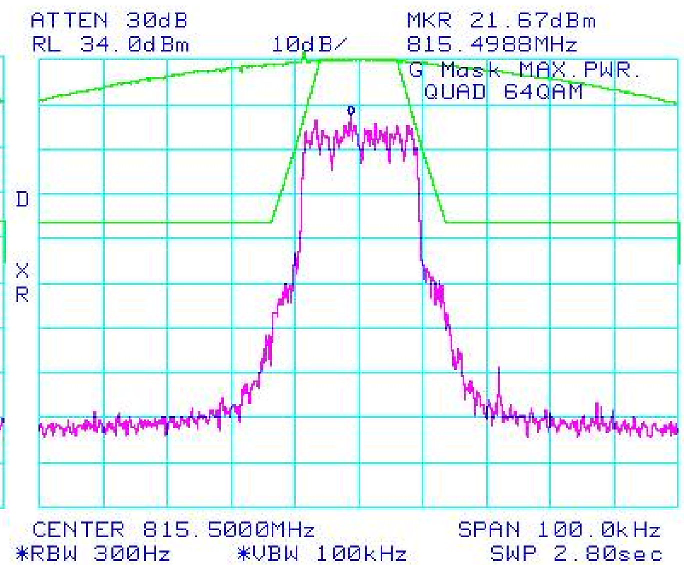


Figure 63: QUAD_64QAM_G Mask 90.210(g)

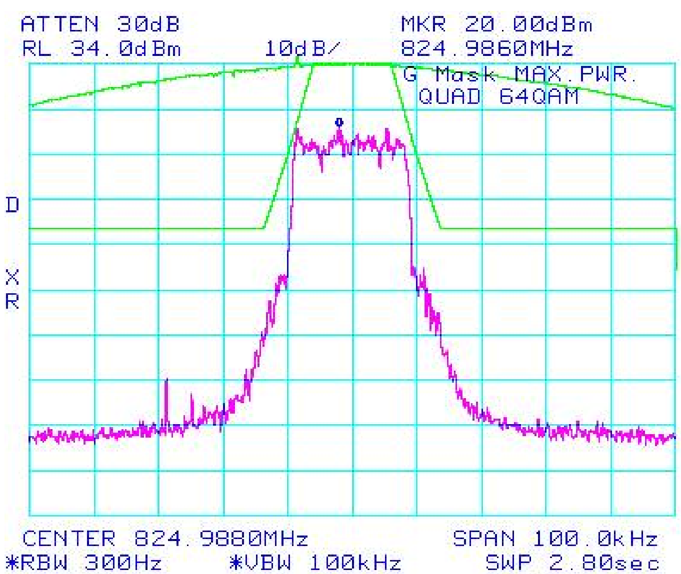
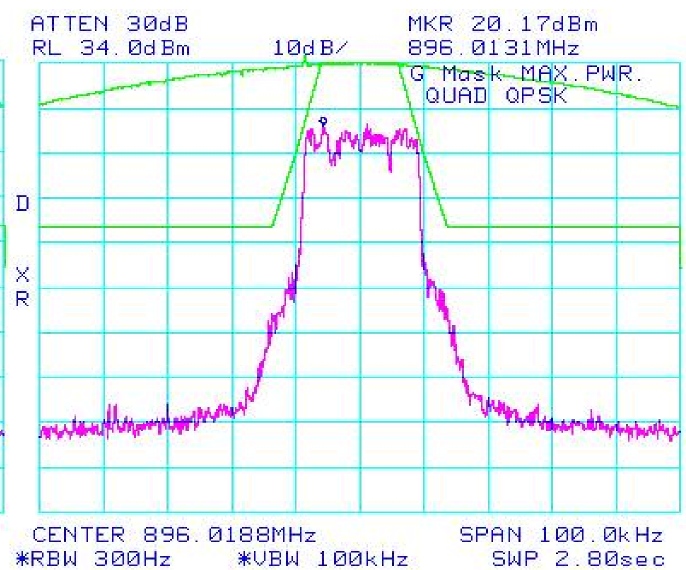


Figure 64: QUAD_QPSK_G Mask 90.210(g)



Conducted Emission Test Data cont'd

Figure 65: QUAD_QPSK_G Mask 90.210(g)

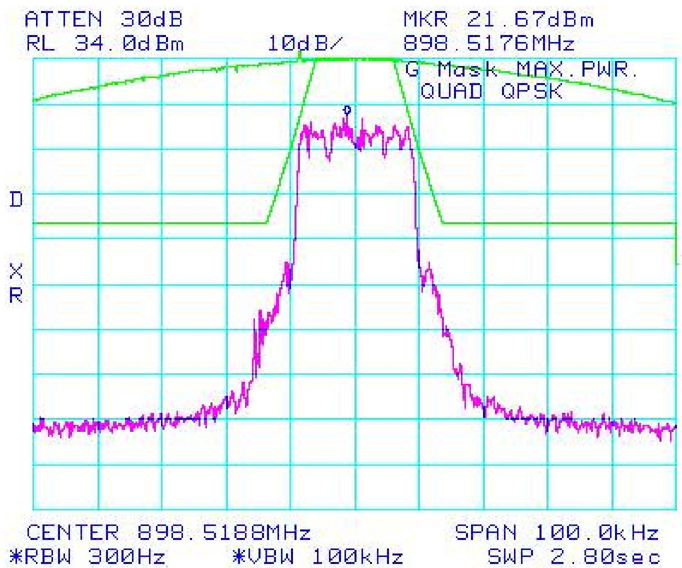


Figure 66: QUAD_QPSK_G Mask 90.210(g)

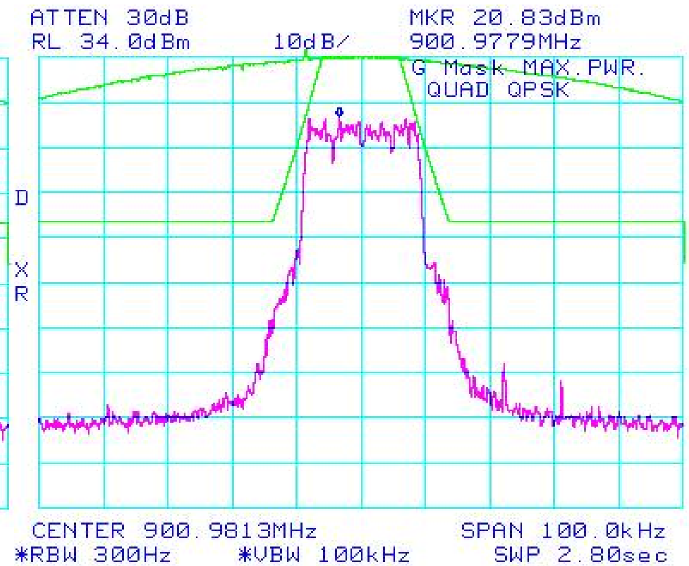


Figure 67: QUAD_16QAM_G Mask 90.210(g)

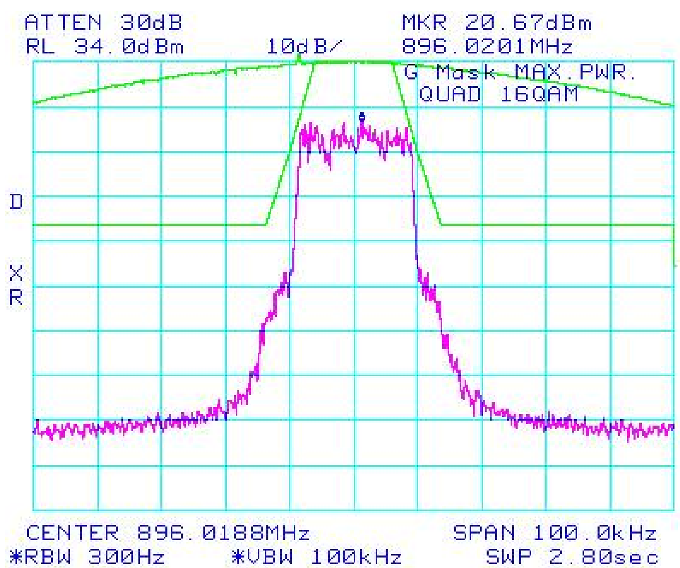
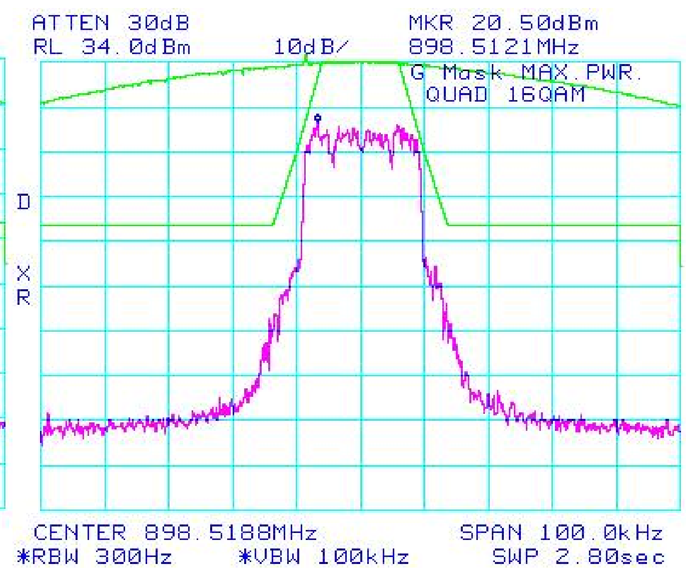


Figure 68: QUAD_16QAM_G Mask 90.210(g)



<u>Conducted Emission Test Data</u> cont'd

Figure 69: QUAD_16QAM_G Mask 90.210(g)

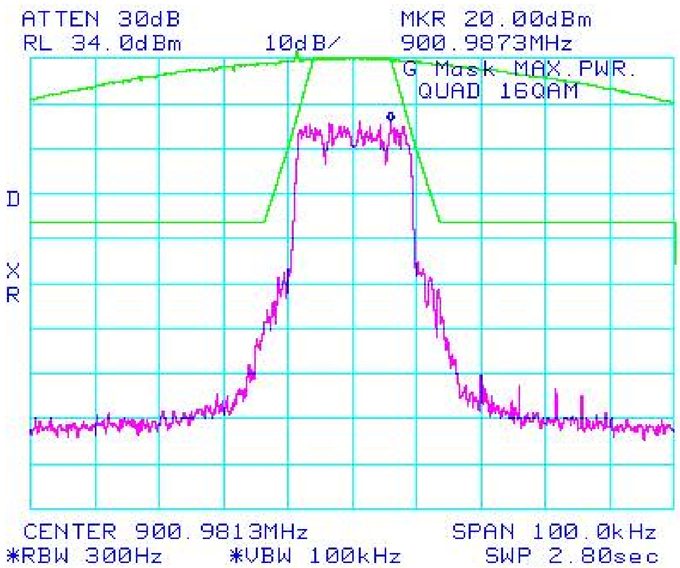


Figure 70: QUAD_64QAM_G Mask 90.210(g)

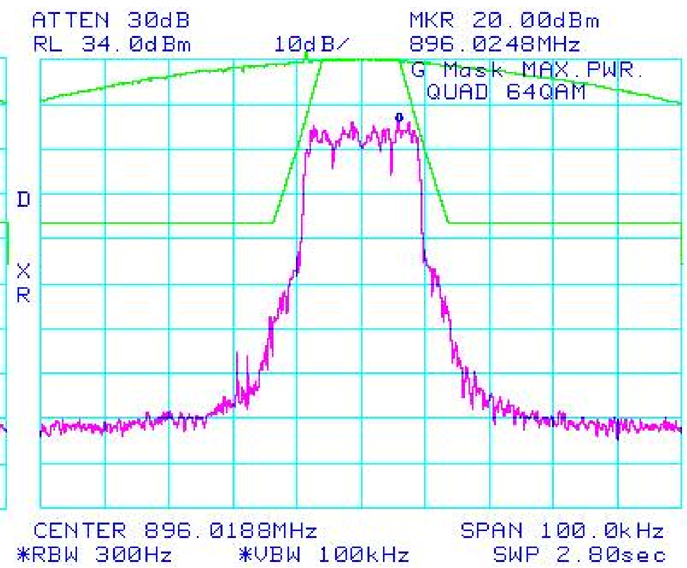


Figure 71: QUAD_64QAM_G Mask 90.210(g)

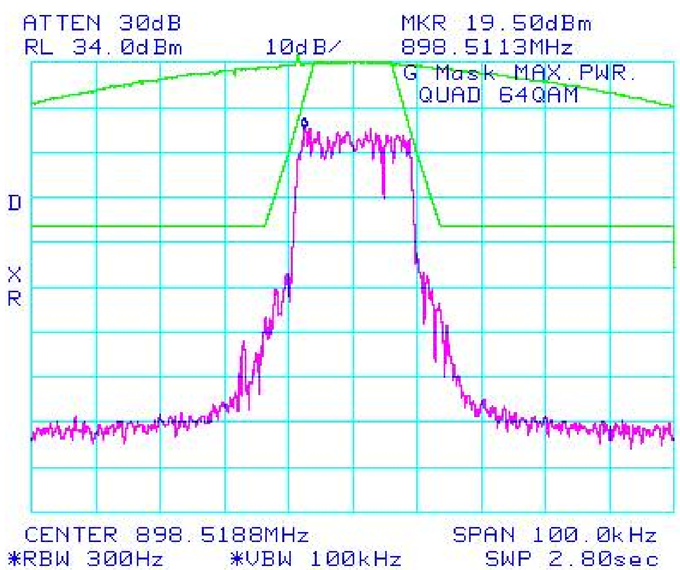
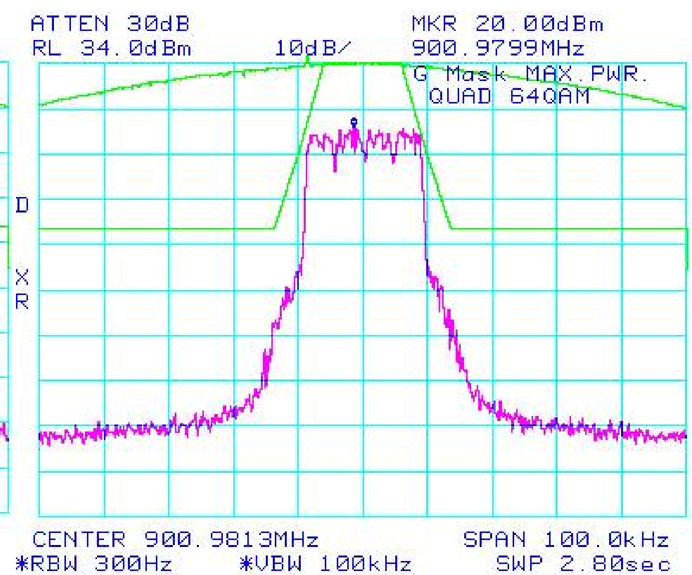


Figure 72: QUAD_64QAM_G Mask 90.210(g)



Conducted Emission Test Data cont'd

Figure 73: Spurious Conducted Emissions 2.1051

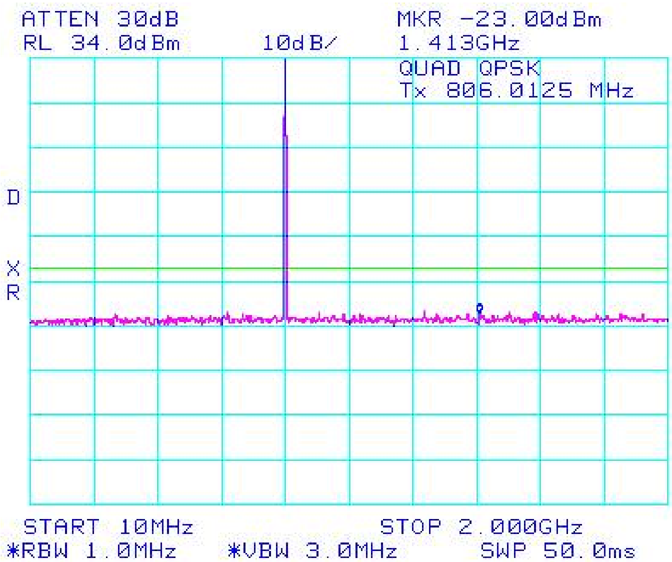


Figure 74: Spurious Conducted Emissions 2.1051

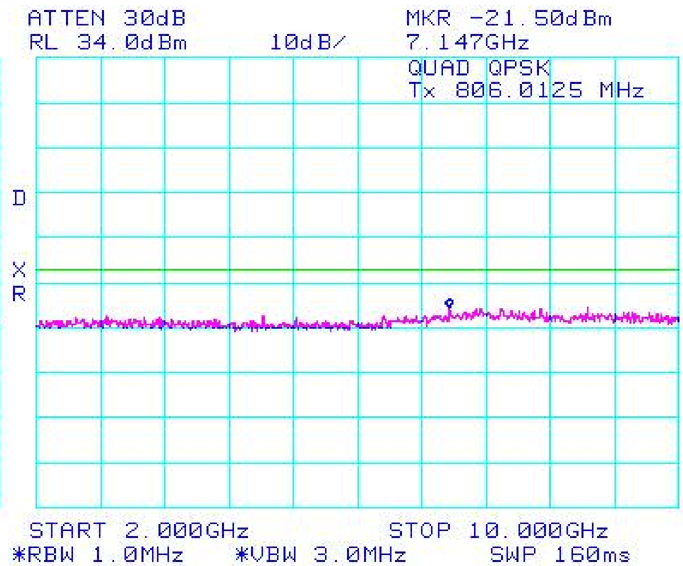


Figure 75: Spurious Conducted Emissions 2.1051

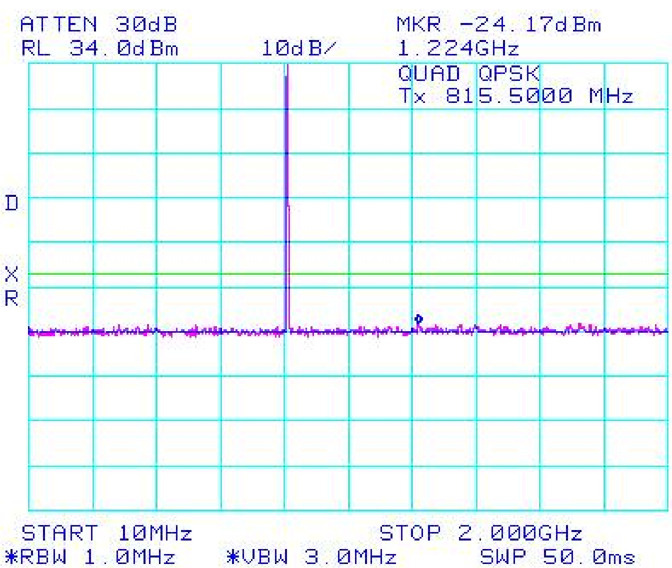
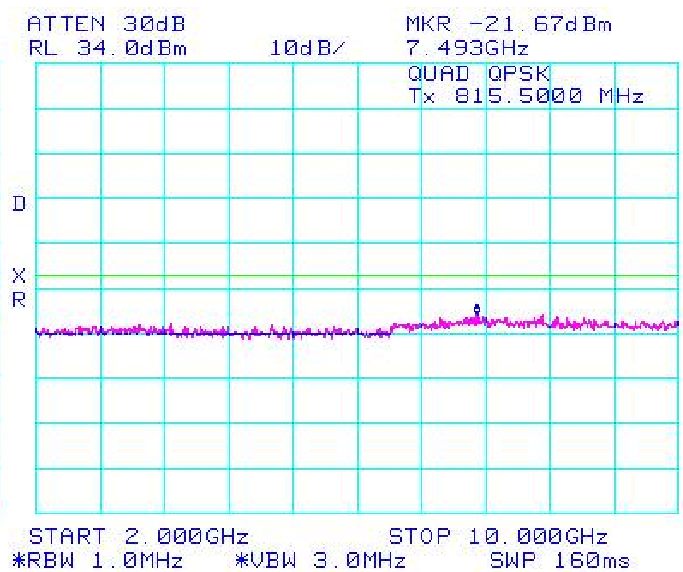


Figure 76: Spurious Conducted Emissions 2.1051



Conducted Emission Test Data cont'd

Figure 77: Spurious Conducted Emissions 2.1051

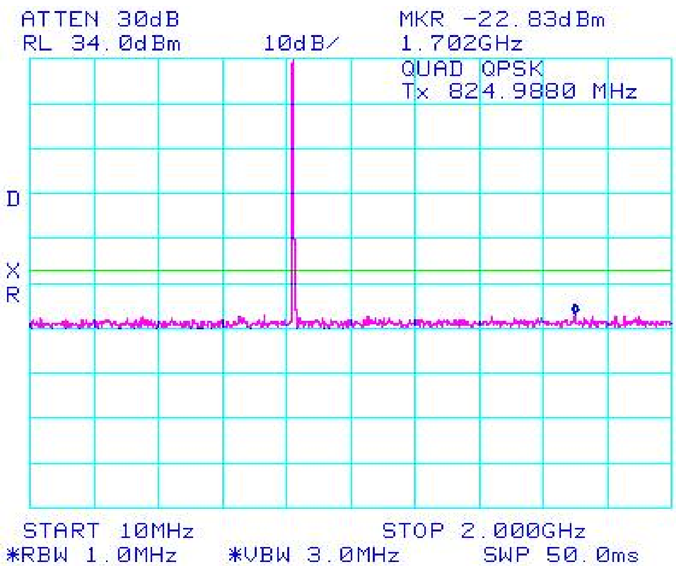


Figure 78: Spurious Conducted Emissions 2.1051

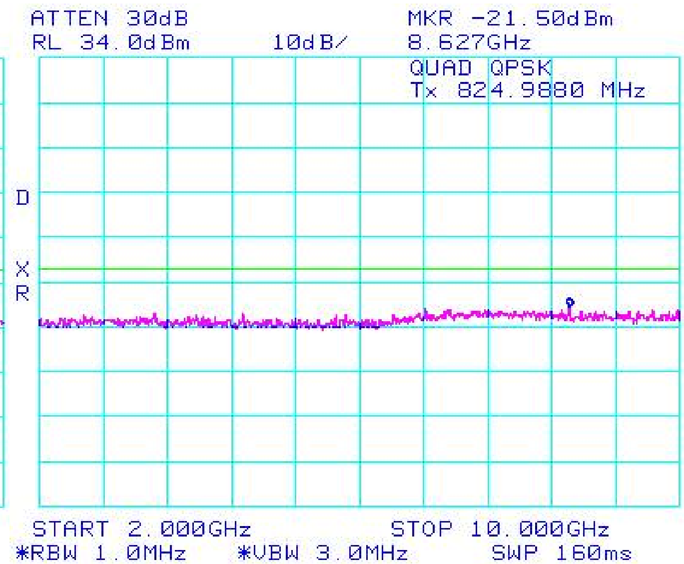


Figure 79: Spurious Conducted Emissions 2.1051

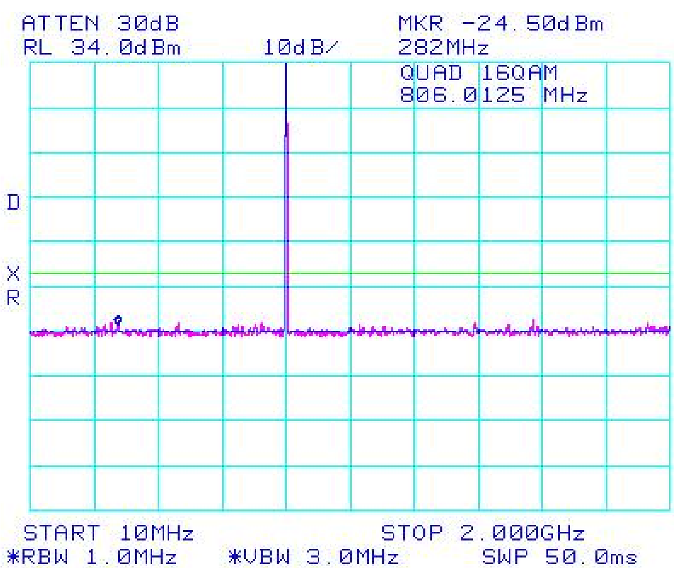
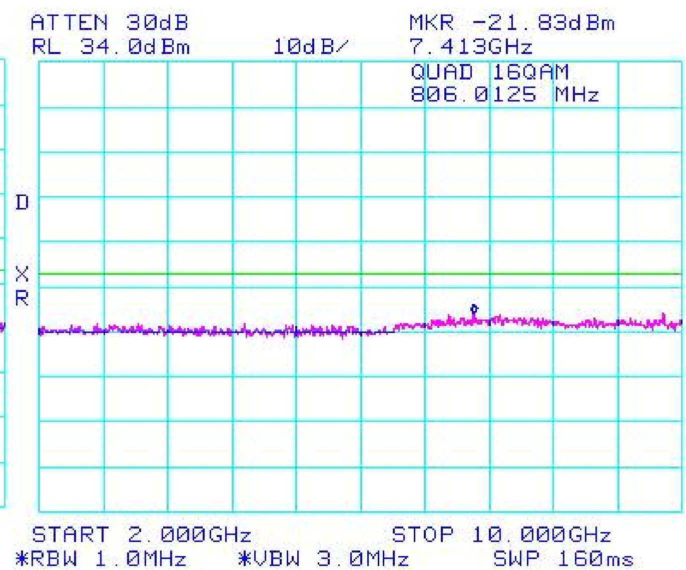


Figure 80: Spurious Conducted Emissions 2.1051



Conducted Emission Test Data cont'd

Figure 81: Spurious Conducted Emissions 2.1051

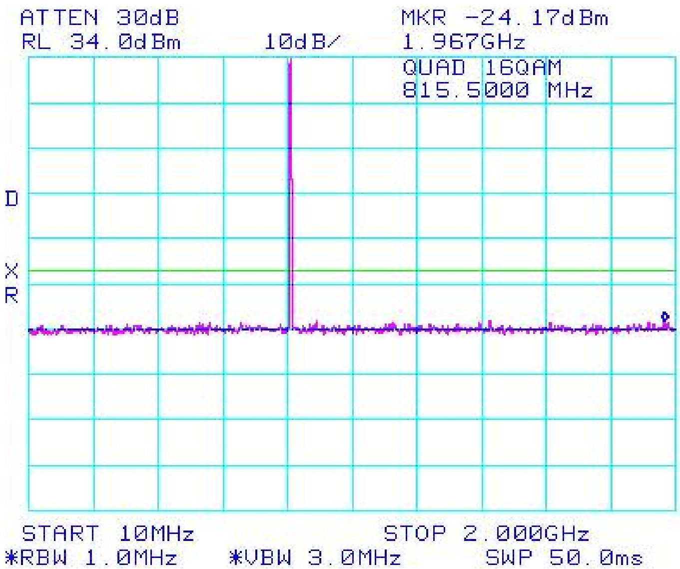


Figure 82: Spurious Conducted Emissions 2.1051

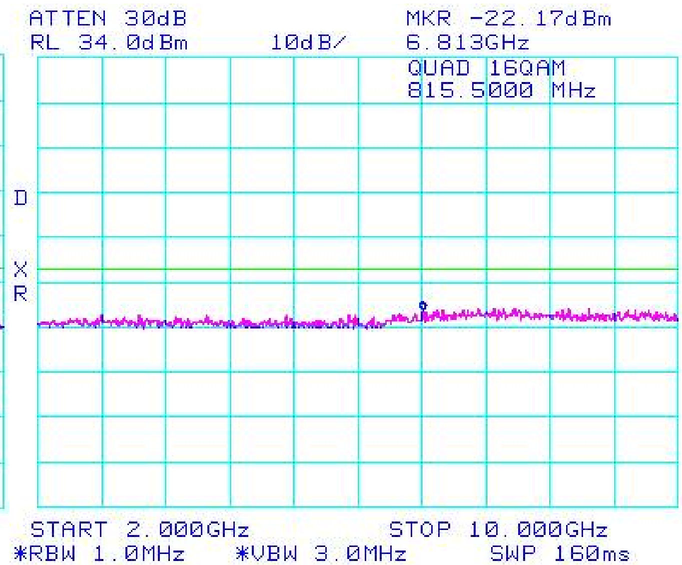


Figure 83: Spurious Conducted Emissions 2.1051

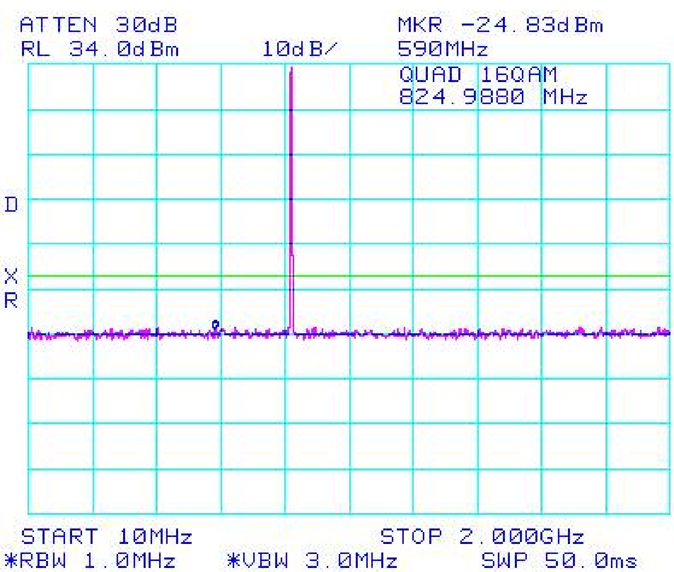
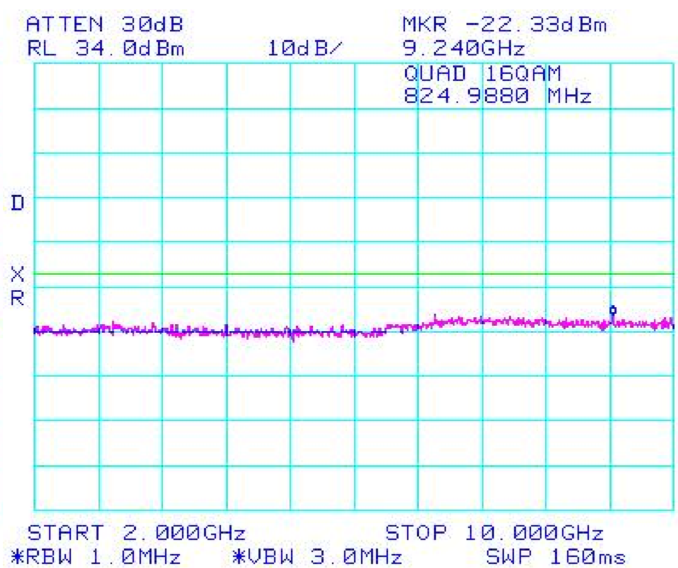


Figure 84: Spurious Conducted Emissions 2.1051



Conducted Emission Test Data cont'd

Figure 85: Spurious Conducted Emissions 2.1051

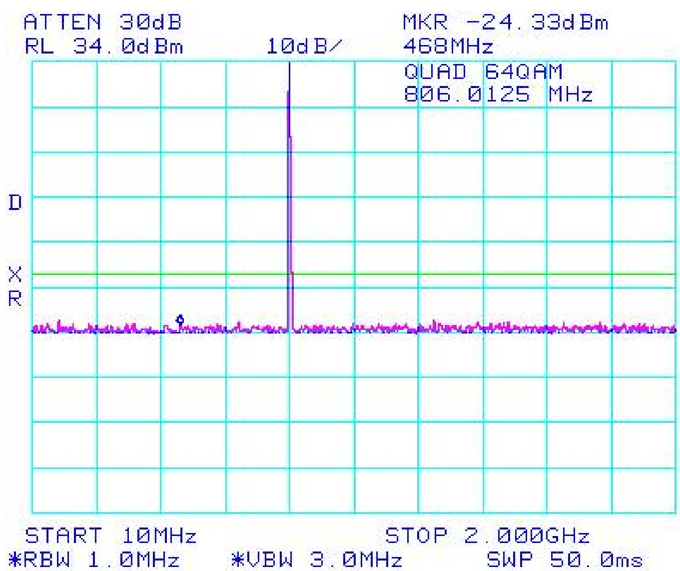


Figure 86: Spurious Conducted Emissions 2.1051

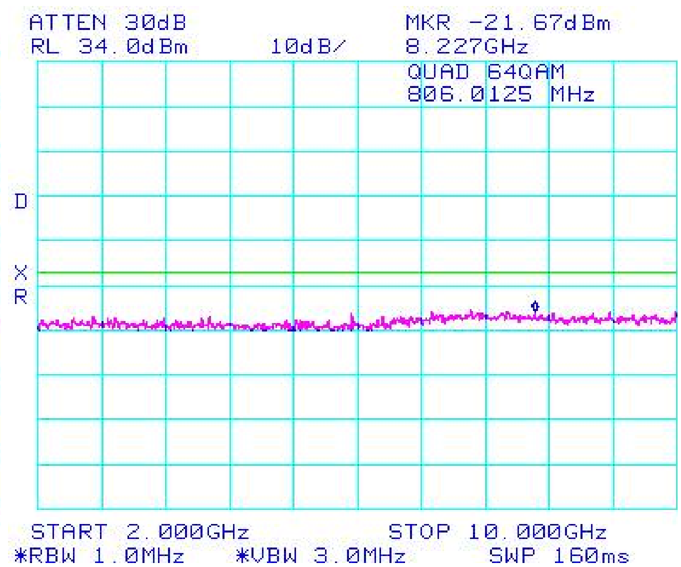


Figure 87: Spurious Conducted Emissions 2.1051

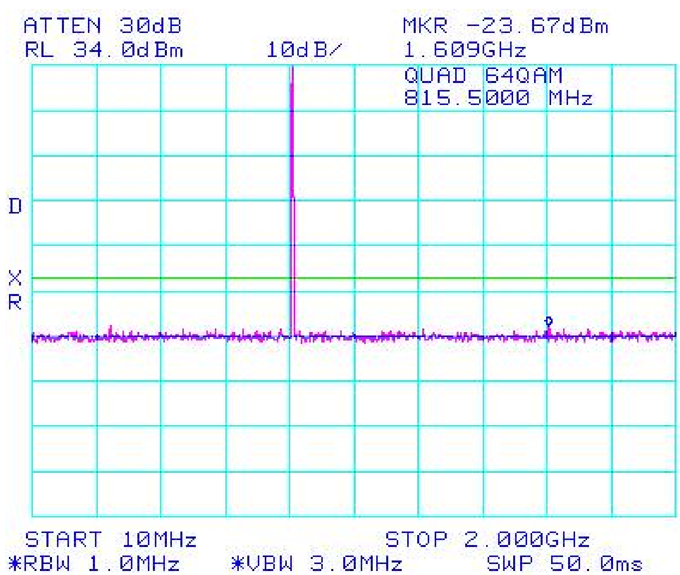
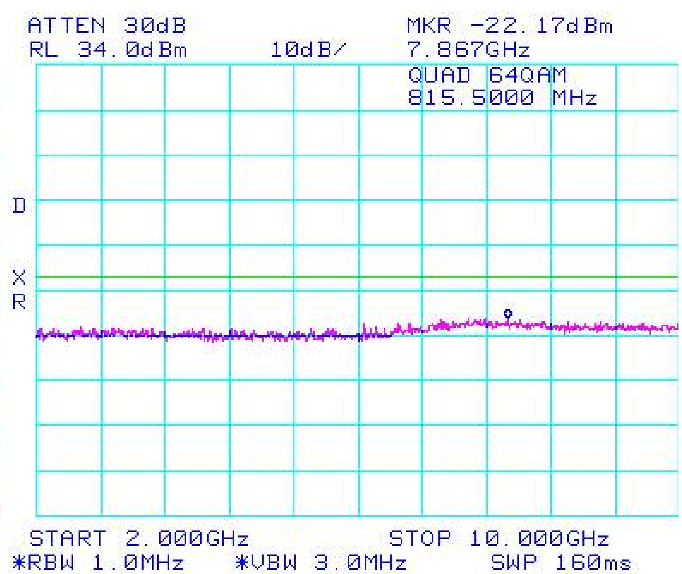


Figure 88: Spurious Conducted Emissions 2.1051



Conducted Emission Test Data cont'd

Figure 89: Spurious Conducted Emissions 2.1051

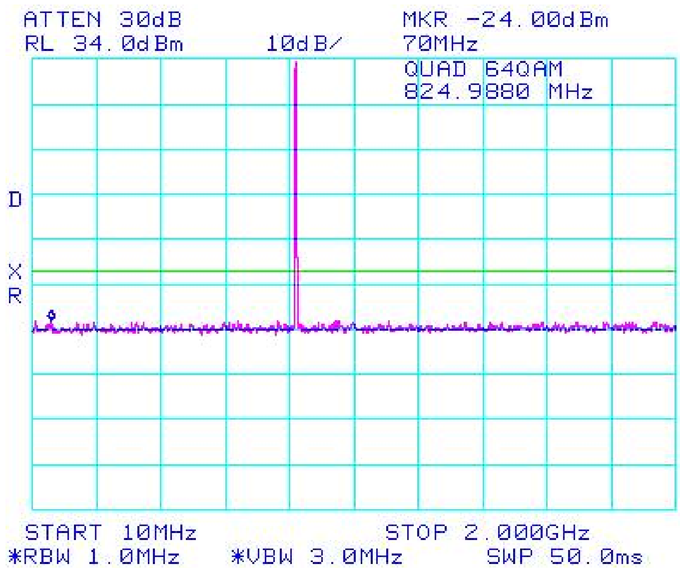


Figure 90: Spurious Conducted Emissions 2.1051

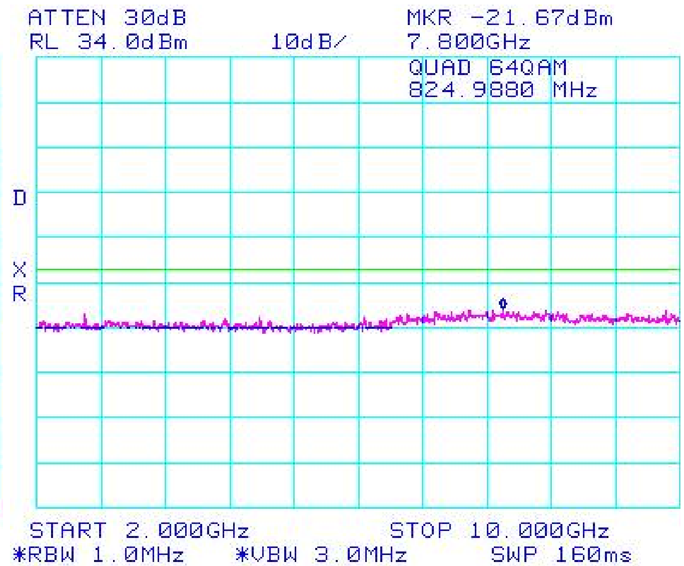


Figure 91: Spurious Conducted Emissions 2.1051

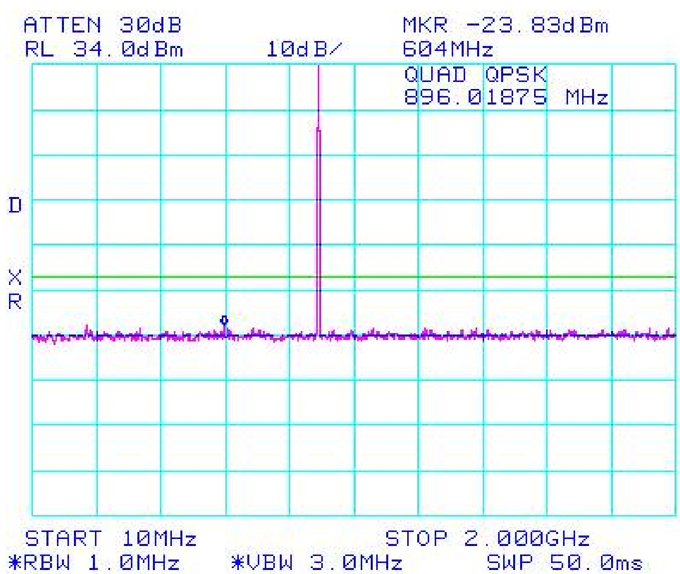
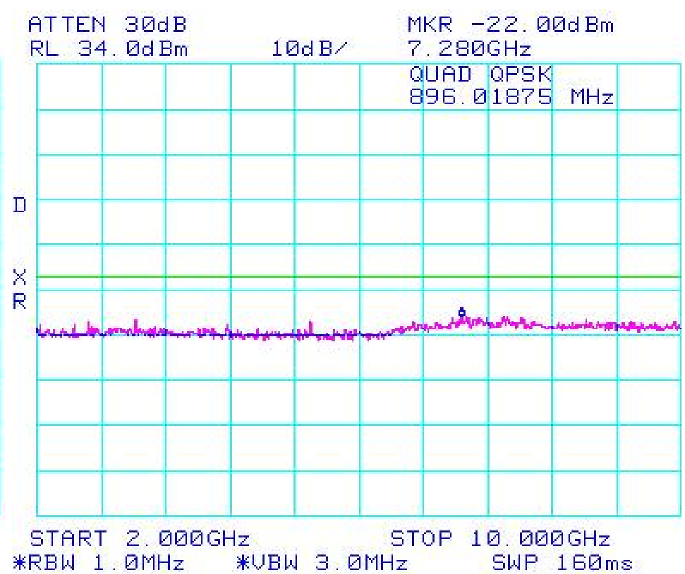


Figure92: Spurious Conducted Emissions 2.1051



Conducted Emission Test Data cont'd

Figure 93: Spurious Conducted Emissions 2.1051

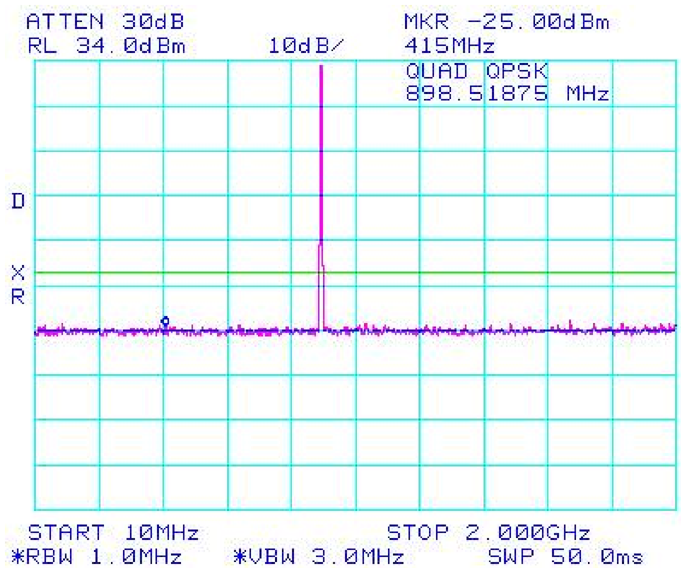


Figure 94: Spurious Conducted Emissions 2.1051

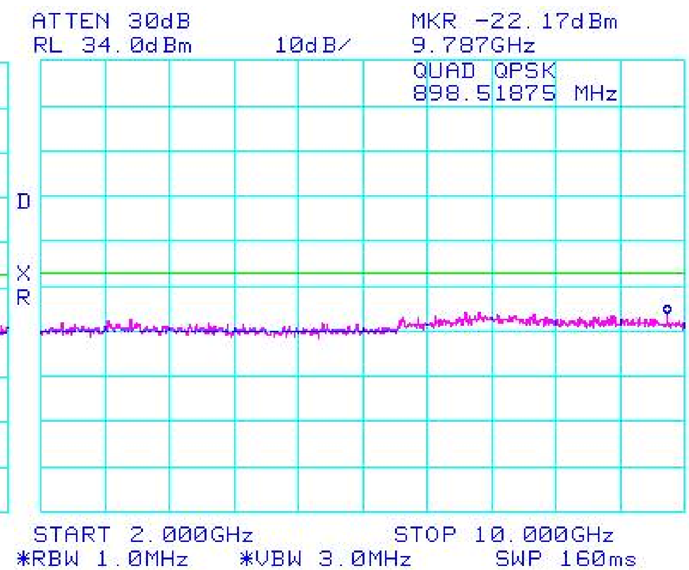


Figure 95: Spurious Conducted Emissions 2.1051

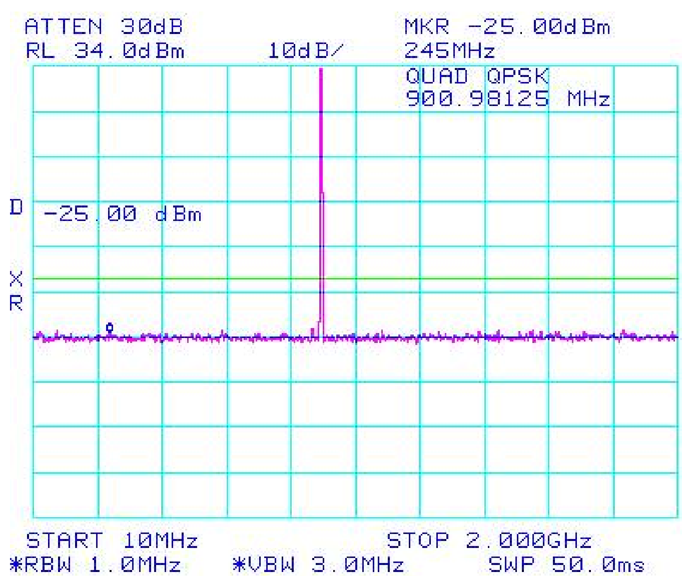
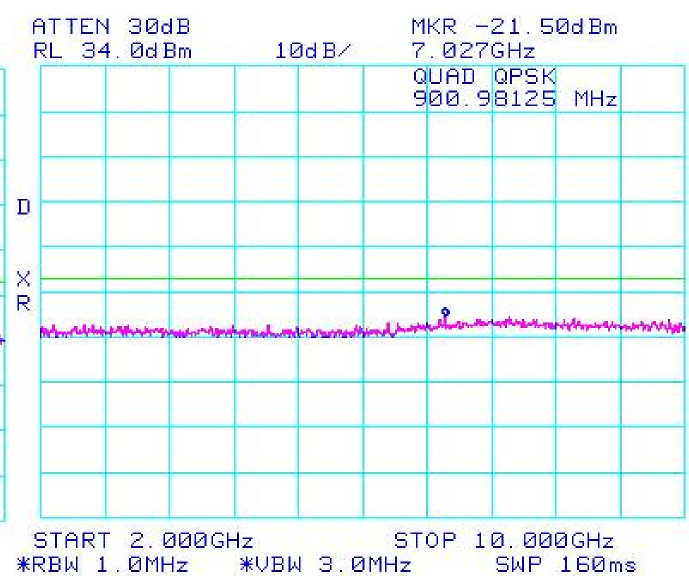


Figure 96: Spurious Conducted Emissions 2.1051



Conducted Emission Test Data cont'd

Figure 97: Spurious Conducted Emissions 2.1051

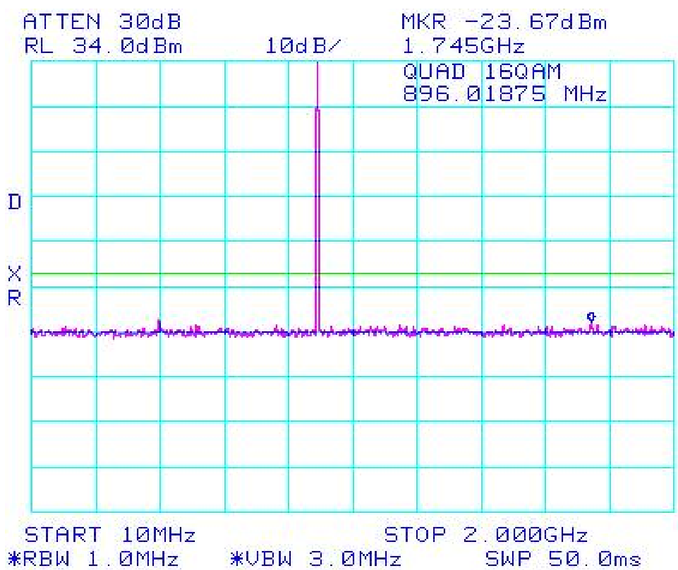


Figure 98: Spurious Conducted Emissions 2.1051

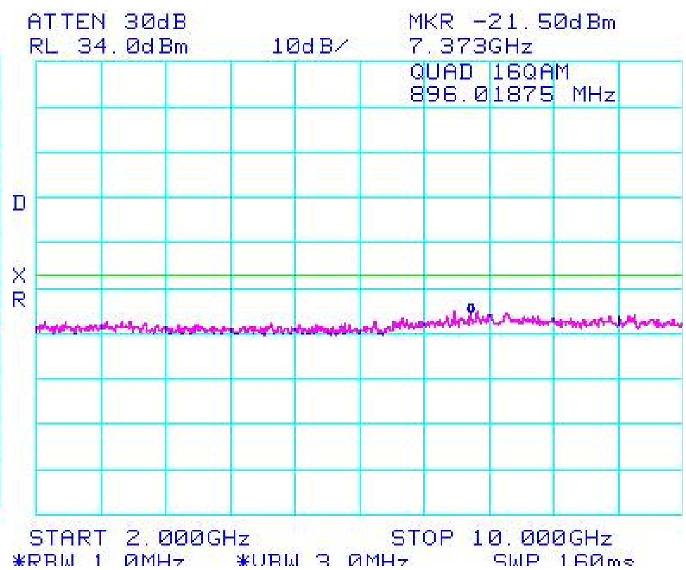


Figure 99: Spurious Conducted Emissions 2.1051

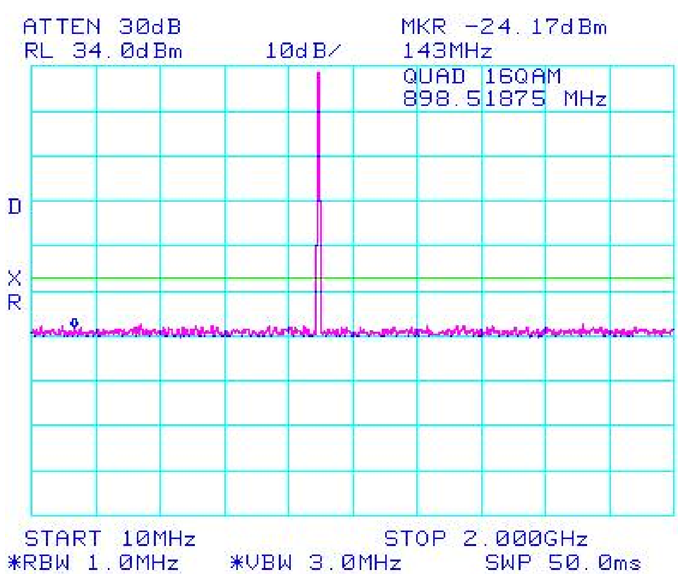
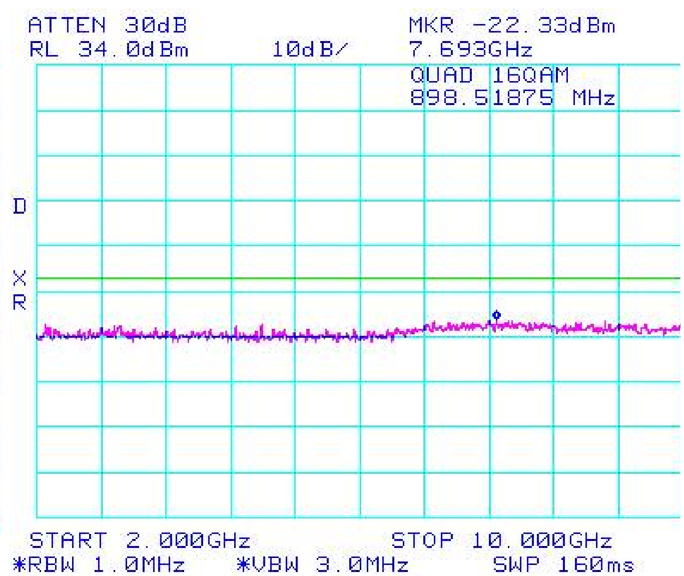


Figure 100: Spurious Conducted Emissions 2.1051



<u>Conducted Emission Test Data</u> cont'd

Figure 101: Spurious Conducted Emissions 2.1051

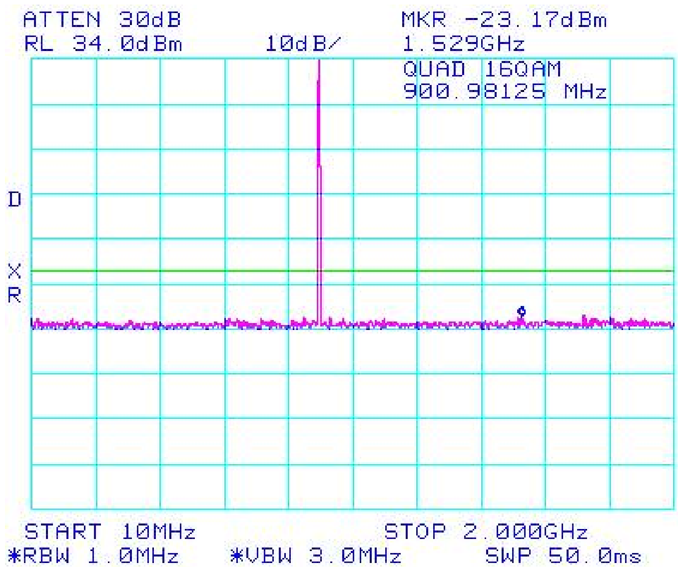


Figure 102: Spurious Conducted Emissions 2.1051

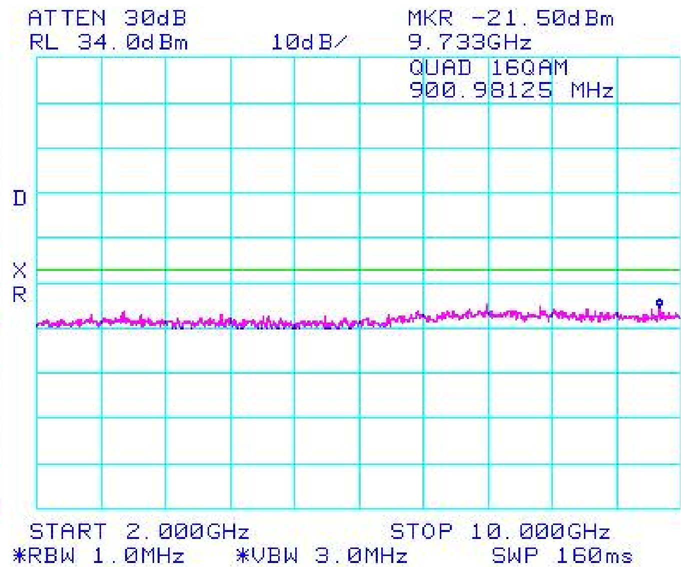


Figure 103: Spurious Conducted Emissions 2.1051

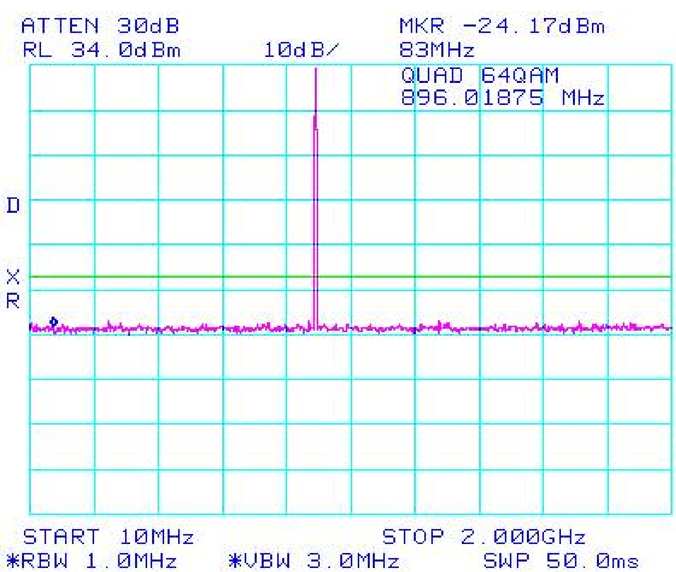
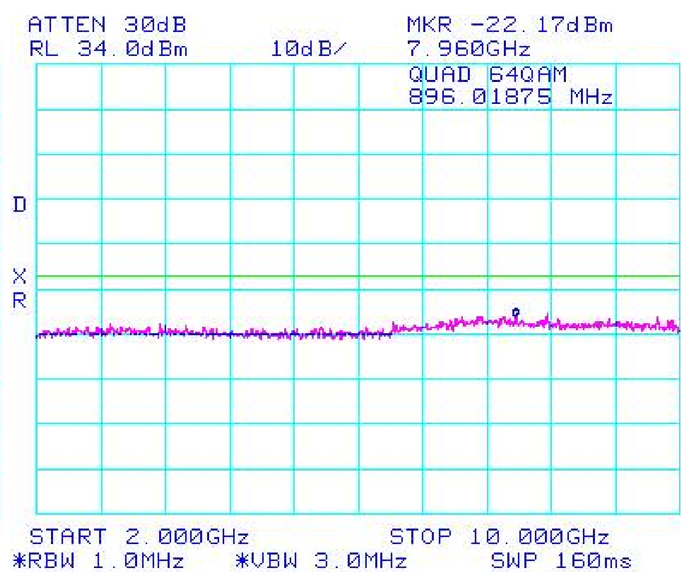


Figure 104: Spurious Conducted Emissions 2.1051



Conducted Emission Test Data cont'd

Figure 105: Spurious Conducted Emissions 2.1051

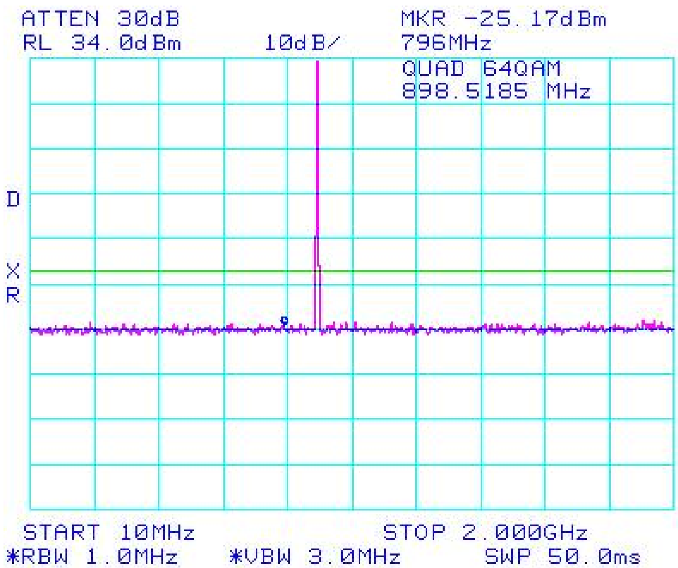


Figure 106: Spurious Conducted Emissions 2.1051

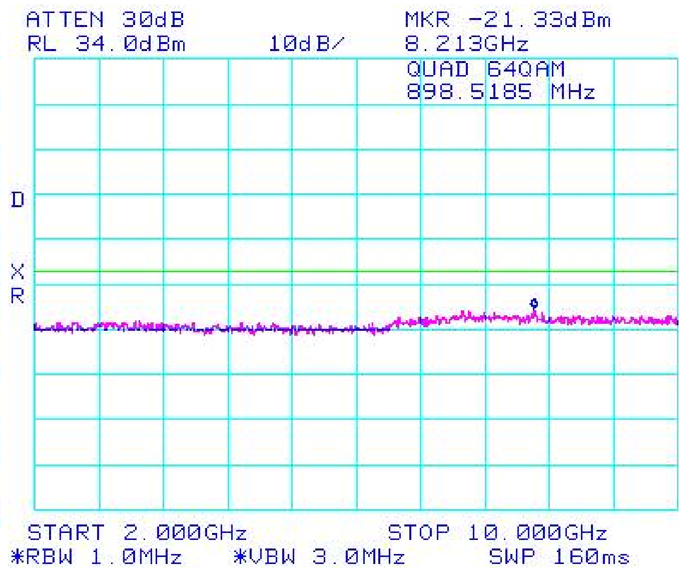


Figure 107: Spurious Conducted Emissions 2.1051

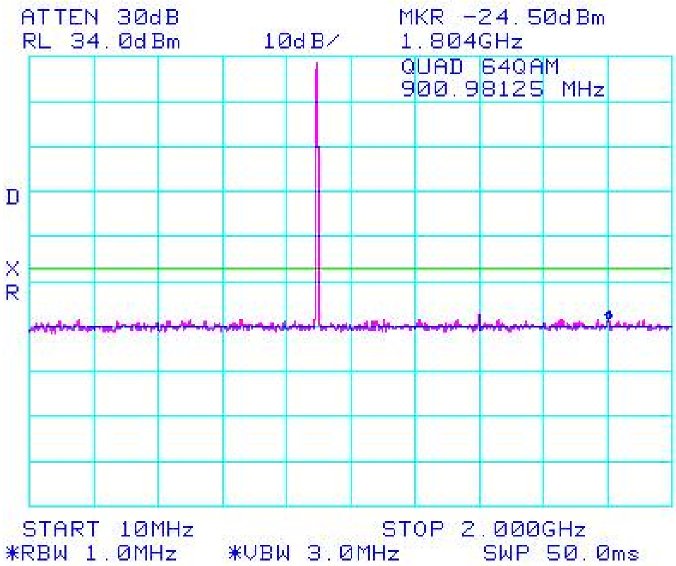
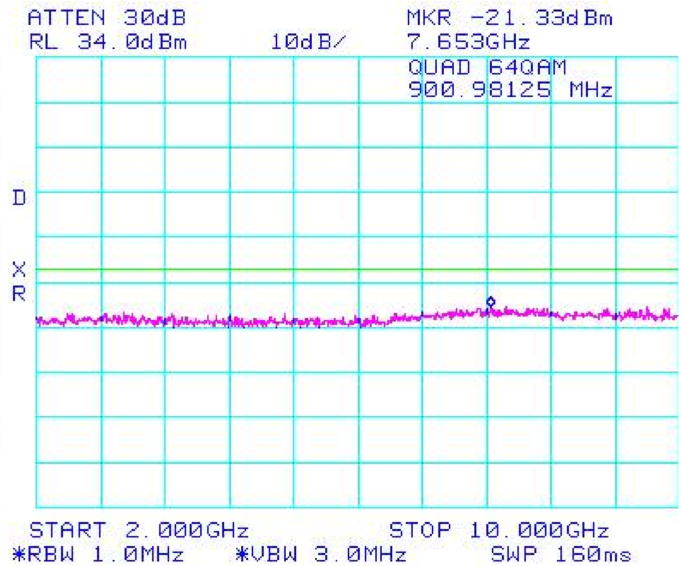
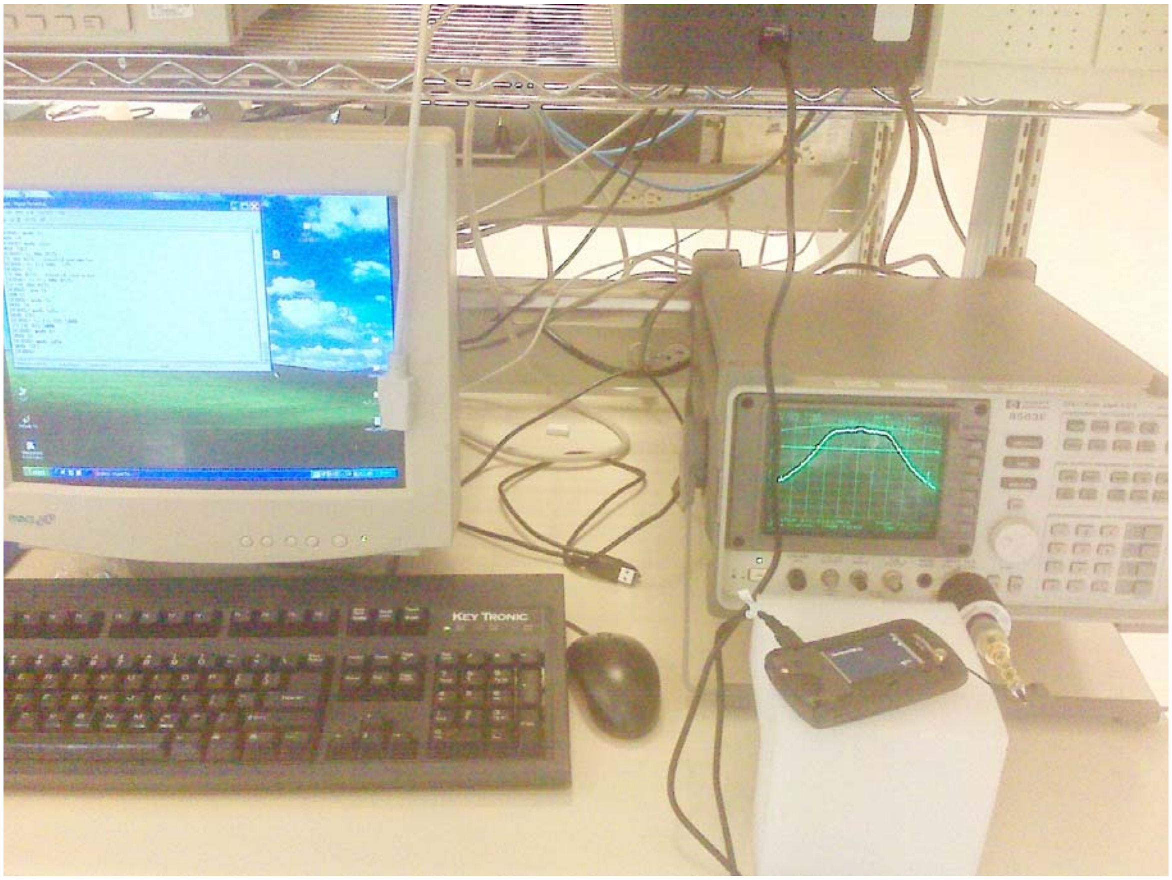


Figure 108: Spurious Conducted Emissions 2.1051



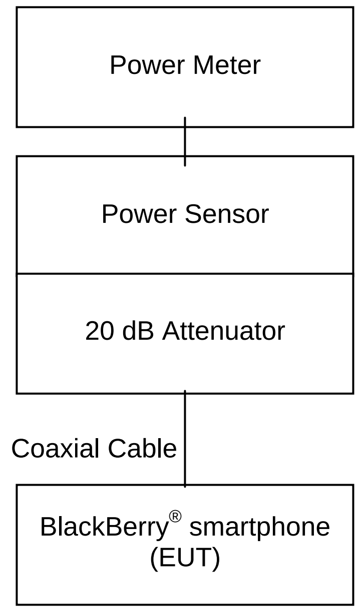
Test-Setup Photo



APPENDIX 2 – CONDUCTED RF OUTPUT POWER TEST DATA

Conducted RF Output Power Test Data

Test Setup Diagram



The environmental test conditions were:

Temperature	24ºC
Pressure	1029 mb
Relative Humidity	22%

Date of test: October 22, 2008

The measurements were performed by Maurice Battler.

RF Power Output at Maximum

At three transmit frequencies the maximum radio output power level with a duty cycle of 33% was measured using the power meter. The calibrated insertion loss measured for the attenuator and cable assembly was added to the power measurements that produced the following results.

Test Data

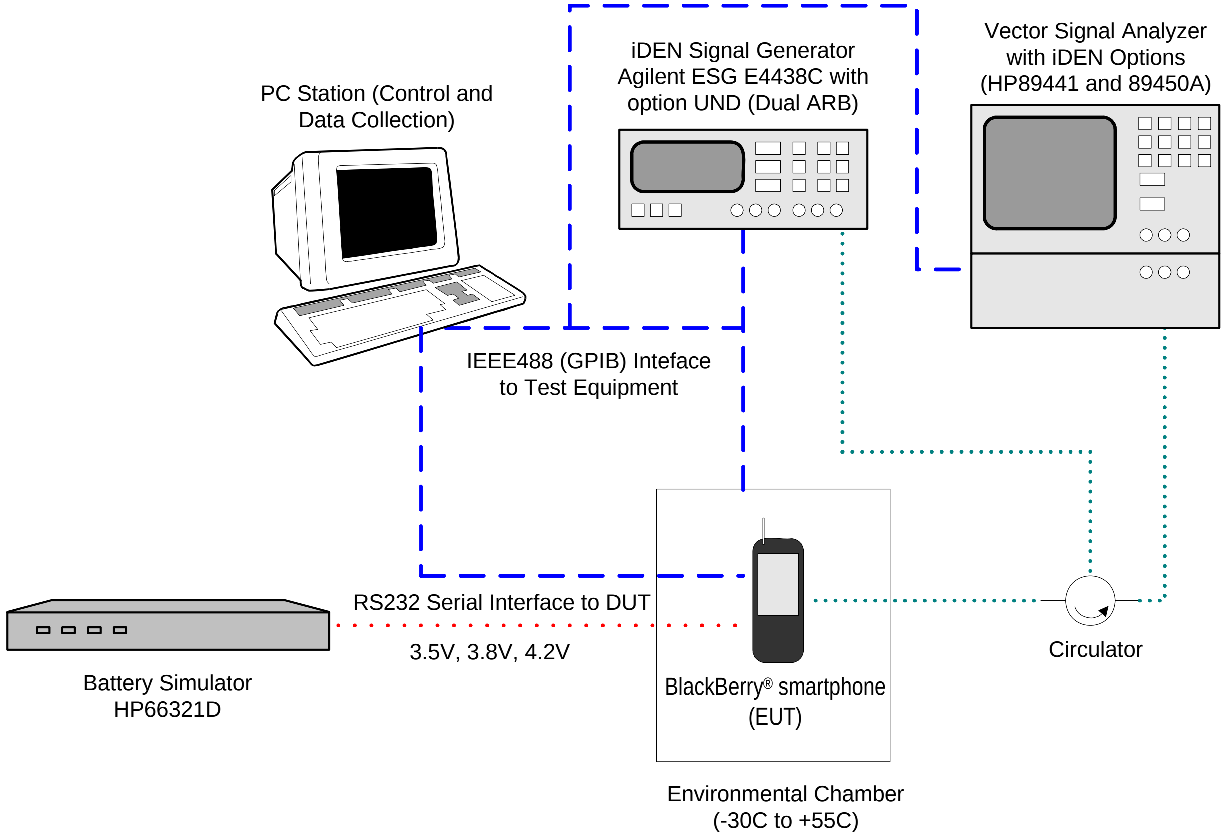
Frequency (MHz)	Measured Pulse Average Conducted Power (dBm)	Total Correction Factor (dB)	Corrected Pulse Average Conducted Power (dBm)
806.01250	7.07	20.65	27.72
815.50000	7.06	20.65	27.71
824.98750	7.05	20.65	27.70
896.01875	7.07	20.65	27.72
898.51875	7.06	20.65	27.71
900.98125	7.05	20.65	27.70

Conducted RF Output Power Test Data Photo

APPENDIX 3 – FREQUENCY STABILITY TEST DATA

Frequency Stability Test Data

The following document contains measurement data pertaining to Frequency Stability.



Test sample measured was model number RCD21IN, PIN 40245B23.

Date of test: October 15, 2008.

The measurements were performed by William Eccleshall.

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 EUT transmitted frequency stability is less than 0.1 ppm of the ideal transmit frequency. The frequency accuracy is measured by the HP89441 Vector Signal Analyzer.

The BlackBerry iDEN Handheld meets the requirements as stated in CFR 47 chapter 1, Section 2.947, 2.105, 24.235 and 90.213, Frequency Stability.

Frequency Stability measurement devices were configured as presented in the block diagram recording frequency, temperatures, and stepped voltages which were controlled via GPIB interfaces linked to the Environmental chamber, a Battery Simulator, a Signal Generator and the Vector Signal Analyzer. The test set was calibrated to characterize the insertion loss for the transmitted frequencies between the RF input of the Vector Signal Analyzer and the EUT antenna port. The EUT is located inside the environmental chamber. Calibration for the cable loss was performed in the Ottawa RF Laboratory on October 15, 2008.

Test Procedure:

The EUT was placed in the temperature chamber and connected to the test set. The EUT was kept in idle mode at all times except when the measurements were to be made.

The chamber was switched on, and the temperature was set to -30ºC

After the chamber stabilized at -30ºC there was a soak period of 30 minutes. A period of thirty minutes soak was maintained between each ascending temperature step prior to the start of the next measurement test cycle.

A computer system controlled the automated software. All the test equipment intrinsic to the temperature and voltage tests was controlled via the GPIB Bus. The EUT communication was passed through a RS232 serial connection.

The EUT was set to 1/6 duty cycle. The frequency accuracy was averaged over 16 transmit bursts for each combination temperature, voltage and frequency. Three test frequencies were selected for each band. For 800 MHz band operation the test frequencies are: 806.0125, 813.5125, and 824.9875 MHz. For 900 MHz band operation the test frequencies are: 896.01875, 898.51875, and 900.98125 MHz.

The power supply was cycled from minimum voltage of 3.6 volts to 3.7 volts nominal and 4.2 Volts maximum operating voltage under load. The frequency error and maximum output power are recorded by the automated system test software. The frequency error is recorded in Hz and deviation from nominal, in Parts Per Million.

Procedure:

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

1. Switch on the HP66321D battery simulator, The ESG4433BR signal generator, and the HP89441 Vector Signal Analyzer.
2. Start system test program
3. Set the Temperature to –30 degrees Celsius and maintain a period of thirty minutes soak time, with the EUT supply voltage disabled.
4. Set power supply voltage to 3.6 volts
5. Set up HP89441 Vector Signal Analyzer.
6. Set the VSA to 806.0125 MHz.
7. Enable the voltage to the EUT, and connect a link to the VSA.
8. Set the transmit frequency of the EUT to 806.0125MHz and put the EUT in RTR (receive/transmit) mode.
9. Capture 16 bursts with the VSA and record the average frequency error over the 16 bursts.
10. Put the EUT back into IDLE mode, change the frequency on the VSA and the EUT to the next test frequency (as detailed above) and repeat steps 7, to 9. Repeat again for the four remaining test frequencies.
11. Repeat steps 5, to 10 changing the supply voltage to 3.7 volts. Then repeat with the supply voltage at 4.2 volts.
12. Increase temperature by 10ºC and maintain a period of thirty minutes soak time, with the EUT supply voltage disabled.
13. Repeat steps 4 - 12 for temperatures –30ºC to 55ºC in 10ºC steps.

The maximum frequency error measured was 0.0496 PPM.

Channel results @ 20ºC and maximum transmitted power

Frequency (MHz)	*Voltage (Volts)*	*Temperature (Celsius)*	*Frequency Error (Hz)*	*PPM*
806.0125	3.6	20	-11	-0.0136
813.5125	3.6	20	-10	-0.0123
820.9875	3.6	20	-26	-0.0317
824.9875	3.6	20	-17	-0.0206
896.01875	3.6	20	-19	-0.0212
898.51875	3.6	20	-23	-0.0256
900.98125	3.6	20	-21	-0.0233

Frequency (MHz)	*Voltage (Volts)*	*Temperature (Celsius)*	*Frequency Error (Hz)*	*PPM*
806.0125	3.7	20	-20	-0.0248
813.5125	3.7	20	-19	-0.0234
820.9875	3.7	20	-23	-0.0280
824.9875	3.7	20	-22	-0.0267
896.01875	3.7	20	-28	-0.0312
898.51875	3.7	20	-10	-0.0111

Frequency (MHz)	*Voltage (Volts)*	*Temperature (Celsius)*	*Frequency Error (Hz)*	*PPM*
806.0125	4.2	20	-33	-0.0409
813.5125	4.2	20	-21	-0.0258
820.9875	4.2	20	-14	-0.0171
824.9875	4.2	20	-25	-0.0303
896.01875	4.2	20	-8	-0.0089
898.51875	4.2	20	-9	-0.0100

Channel Results: 806.0125 @ maximum transmitted power

Frequency (MHz)	***Voltage (Volts)***	***Temperature (Celsius)***	***Frequency Error (Hz)***	***PPM***
806.0125	3.6	-30	-35	-0.0434
806.0125	3.6	-20	-12	0.0149
806.0125	3.6	-10	-23	-0.0285
806.0125	3.6	0	-14	-0.0174
806.0125	3.6	10	-31	-0.0385
806.0125	3.6	20	-11	-0.0136
806.0125	3.6	30	-12	-0.0149
806.0125	3.6	40	-36	-0.0447
806.0125	3.6	50	-11	-0.0136
806.0125	3.6	55	-35	-0.0434

Frequency (MHz)	***Voltage (Volts)***	***Temperature (Celsius)***	***Frequency Error (Hz)***	***PPM***
806.0125	3.7	-30	-28	-0.0347
806.0125	3.7	-20	-34	0.0422
806.0125	3.7	-10	-14	-0.0174
806.0125	3.7	0	-35	-0.0434
806.0125	3.7	10	-31	-0.0385
806.0125	3.7	20	-20	-0.0248
806.0125	3.7	30	-38	-0.0471
806.0125	3.7	40	-30	-0.0372
806.0125	3.7	50	-33	-0.0409
806.0125	3.7	55	-30	-0.0372

Frequency (MHz)	***Voltage (Volts)***	***Temperature (Celsius)***	***Frequency Error (Hz)***	***PPM***
806.0125	4.2	-30	-40	**-0.0496**
806.0125	4.2	-20	-7	-0.0087
806.0125	4.2	-10	-14	-0.0174
806.0125	4.2	0	-30	-0.0372
806.0125	4.2	10	-29	-0.0359
806.0125	4.2	20	-33	-0.0409
806.0125	4.2	30	-15	-0.0186
806.0125	4.2	40	-12	-0.0148
806.0125	4.2	50	-27	-0.0335
806.0125	4.2	55	-36	-0.0447

Channel Results: 813.5125 @ maximum transmitted power

Frequency (MHz)	***Voltage (Volts)***	***Temperature (Celsius)***	***Frequency Error (Hz)***	***PPM***
813.5125	3.6	-30	-36	-0.0443
813.5125	3.6	-20	-27	-0.0332
813.5125	3.6	-10	-27	-0.0332
813.5125	3.6	0	-25	-0.0307
813.5125	3.6	10	-20	-0.0246
813.5125	3.6	20	-10	-0.0123
813.5125	3.6	30	-23	-0.0282
813.5125	3.6	40	-28	-0.0344
813.5125	3.6	50	-34	0.0418
813.5125	3.6	55	-31	-0.0381

Frequency (MHz)	***Voltage (Volts)***	***Temperature (Celsius)***	***Frequency Error (Hz)***	***PPM***
813.5125	3.7	-30	-25	-0.0307
813.5125	3.7	-20	-2	-0.0025
813.5125	3.7	-10	-21	-0.0258
813.5125	3.7	0	-21	-0.0258
813.5125	3.7	10	-27	-0.0332
813.5125	3.7	20	-19	-0.0234
813.5125	3.7	30	-24	-0.0295
813.5125	3.7	40	-20	-0.0246
813.5125	3.7	50	-20	-0.0246
813.5125	3.7	55	-35	-0.0430

Frequency (MHz)	***Voltage (Volts)***	***Temperature (Celsius)***	***Frequency Error (Hz)***	***PPM***
813.5125	4.2	-30	-20	-0.0246
813.5125	4.2	-20	-25	-0.0307
813.5125	4.2	-10	-21	-0.0258
813.5125	4.2	0	-16	-0.0197
813.5125	4.2	10	-25	-0.0307
813.5125	4.2	20	-21	-0.0258
813.5125	4.2	30	-20	-0.0246
813.5125	4.2	40	-26	-0.0320
813.5125	4.2	50	-24	-0.0295
813.5125	4.2	55	-3	-0.0037

Channel Results: 824.9875 @ maximum transmitted power

Frequency (MHz)	***Voltage (Volts)***	***Temperature (Celsius)***	***Frequency Error (Hz)***	***PPM***
824.9875	3.6	-30	-21	-0.0255
824.9875	3.6	-20	-21	-0.0255
824.9875	3.6	-10	-15	-0.0182
824.9875	3.6	0	-28	-0.0339
824.9875	3.6	10	-16	-0.0194
824.9875	3.6	20	-17	-0.0206
824.9875	3.6	30	-19	-0.0230
824.9875	3.6	40	-5	-0.0061
824.9875	3.6	50	-16	-0.0194
824.9875	3.6	55	-18	-0.0218

Frequency (MHz)	***Voltage (Volts)***	***Temperature (Celsius)***	***Frequency Error (Hz)***	***PPM***
824.9875	3.7	-30	-5	-0.0061
824.9875	3.7	-20	-10	-0.0121
824.9875	3.7	-10	-7	-0.0085
824.9875	3.7	0	-8	-0.0097
824.9875	3.7	10	-17	-0.0206
824.9875	3.7	20	-22	-0.0267
824.9875	3.7	30	-15	-0.0182
824.9875	3.7	40	-18	-0.0218
824.9875	3.7	50	-21	-0.0255
824.9875	3.7	55	-20	-0.0242

Frequency (MHz)	***Voltage (Volts)***	***Temperature (Celsius)***	***Frequency Error (Hz)***	***PPM***
824.9875	4.2	-30	-23	-0.0279
824.9875	4.2	-20	-20	-0.0242
824.9875	4.2	-10	-10	-0.0121
824.9875	4.2	0	-21	-0.0255
824.9875	4.2	10	-11	-0.0133
824.9875	4.2	20	-25	-0.0303
824.9875	4.2	30	-16	-0.0194
824.9875	4.2	40	-5	-0.0061
824.9875	4.2	50	-20	-0.0242
824.9875	4.2	55	-21	-0.0255

Channel Results: 896.01875 @ maximum transmitted power

Frequency (MHz)	*Voltage (Volts)*	*Temperature (Celsius)*	*Frequency Error (Hz)*	*PPM*
896.01875	3.6	-30	2	-0.0257
896.01875	3.6	-20	-16	-0.0078
896.01875	3.6	-10	-16	-0.0402
896.01875	3.6	0	-15	-0.0100
896.01875	3.6	10	-15	-0.0067
896.01875	3.6	20	-19	-0.0312
896.01875	3.6	30	-23	-0.0123
896.01875	3.6	40	-15	-0.0357
896.01875	3.6	50	-30	-0.0179
896.01875	3.6	55	-20	-0.0022

Frequency (MHz)	*Voltage (Volts)*	*Temperature (Celsius)*	*Frequency Error (Hz)*	*PPM*
896.01875	3.7	-30	-14	-0.0156
896.01875	3.7	-20	-16	-0.0179
896.01875	3.7	-10	2	0.0022
896.01875	3.7	0	-12	-0.0134
896.01875	3.7	10	-21	-0.0234
896.01875	3.7	20	-28	-0.0312
896.01875	3.7	30	-21	-0.0234
896.01875	3.7	40	-23	-0.0257
896.01875	3.7	50	-22	-0.0246
896.01875	3.7	55	-25	-0.0279

Frequency (MHz)	*Voltage (Volts)*	*Temperature (Celsius)*	*Frequency Error (Hz)*	*PPM*
896.01875	4.2	-30	-20	-0.0223
896.01875	4.2	-20	-18	-0.0201
896.01875	4.2	-10	-14	-0.0156
896.01875	4.2	0	-16	-0.0179
896.01875	4.2	10	-13	-0.0145
896.01875	4.2	20	-8	-0.0089
896.01875	4.2	30	-18	-0.0201
896.01875	4.2	40	-23	-0.0257
896.01875	4.2	50	-22	-0.0246
896.01875	4.2	55	-26	-0.0290

Channel Results: 898.51875 @ maximum transmitted power

Frequency (MHz)	***Voltage (Volts)***	***Temperature (Celsius)***	***Frequency Error (Hz)***	***PPM***
898.51875	3.6	-30	-19	-0.0211
898.51875	3.6	-20	-11	-0.0122
898.51875	3.6	-10	-9	-0.0100
898.51875	3.6	0	-15	-0.0167
898.51875	3.6	10	-20	-0.0223
898.51875	3.6	20	-23	-0.0256
898.51875	3.6	30	-19	-0.0211
898.51875	3.6	40	-23	-0.0256
898.51875	3.6	50	-5	-0.0056
898.51875	3.6	55	-35	-0.0390

Frequency (MHz)	***Voltage (Volts)***	***Temperature (Celsius)***	***Frequency Error (Hz)***	***PPM***
898.51875	3.7	-30	-4	-0.0045
898.51875	3.7	-20	-12	-0.0134
898.51875	3.7	-10	-12	-0.0134
898.51875	3.7	0	-8	-0.0089
898.51875	3.7	10	-2	-0.0022
898.51875	3.7	20	-10	-0.0111
898.51875	3.7	30	-18	-0.0200
898.51875	3.7	40	-25	-0.0278
898.51875	3.7	50	-22	-0.0245
898.51875	3.7	55	-26	-0.0289

Frequency (MHz)	***Voltage (Volts)***	***Temperature (Celsius)***	***Frequency Error (Hz)***	***PPM***
898.51875	4.2	-30	-14	-0.0156
898.51875	4.2	-20	-19	-0.0211
898.51875	4.2	-10	-6	-0.0067
898.51875	4.2	0	-3	-0.0033
898.51875	4.2	10	-15	-0.0167
898.51875	4.2	20	-9	-0.0100
898.51875	4.2	30	-3	-0.0033
898.51875	4.2	40	-22	-0.0245
898.51875	4.2	50	-26	-0.0289
898.51875	4.2	55	-38	-0.0423

Channel Results: 900.98125 @ maximum transmitted power

Frequency (MHz)	***Voltage (Volts)***	***Temperature (Celsius)***	***Frequency Error (Hz)***	***PPM***
900.98125	3.6	-30	-20	-0.0222
900.98125	3.6	-20	-14	-0.0155
900.98125	3.6	-10	-10	-0.0111
900.98125	3.6	0	-16	-0.0178
900.98125	3.6	10	-19	-0.0211
900.98125	3.6	20	-21	-0.0233
900.98125	3.6	30	-22	-0.0244
900.98125	3.6	40	-14	-0.0155
900.98125	3.6	50	-16	-0.0178
900.98125	3.6	55	-1	-0.0011

Frequency (MHz)	***Voltage (Volts)***	***Temperature (Celsius)***	***Frequency Error (Hz)***	***PPM***
900.98125	3.7	-30	-2	-0.0022
900.98125	3.7	-20	-22	-0.0244
900.98125	3.7	-10	-14	-0.0155
900.98125	3.7	0	-24	-0.0266
900.98125	3.7	10	5	0.0555
900.98125	3.7	20	-15	-0.0166
900.98125	3.7	30	-16	-0.0178
900.98125	3.7	40	-12	-0.0133
900.98125	3.7	50	-3	-0.0033
900.98125	3.7	55	-28	-0.0311

Frequency (MHz)	***Voltage (Volts)***	***Temperature (Celsius)***	***Frequency Error (Hz)***	***PPM***
900.98125	4.2	-30	-8	-0.0089
900.98125	4.2	-20	-17	-0.0189
900.98125	4.2	-10	-6	-0.0067
900.98125	4.2	0	1	0.0011
900.98125	4.2	10	1	0.0011
900.98125	4.2	20	-25	-0.0277
900.98125	4.2	30	-21	-0.0233
900.98125	4.2	40	-31	-0.0344
900.98125	4.2	50	-25	-0.0277
900.98125	4.2	55	-15	-0.0166

APPENDIX 4 – RADIATED EMISSIONS TEST DATA

Radiated Power Test Data Results

The measurements were performed by Arjun Rai Bhatti and Gurjeev Singh.

iDEN 800

The environmental tests conditions were: Temperature 24° C
Pressure 1014 mb
Relative Humidity 23%

Date of test: October 20, 2008 Test distance is 3.0 metres

EUT				Rx Antenna		Spectrum Analyzer		Substitution Method Tracking Generator					
Type	Ch	Frequency (MHz)	Band	Type	Pol.	Reading (dBuV)	Max (V,H) (dBuV)	Pol. Tx-Rx	Reading (dBm)	Corrected Reading (relative to Dipole) (dBm)	Corrected Reading (relative to Dipole) (W)	Limit (dBm)	Diff. To Limit (dB)
iDEN **800 (ERP)** BlackBerry® smartphone, PIN 40245A0E Standalone, Horizontal position Quad QPSK													
F0	Low	806.0125	800	Dipole	V	75.45	85.40	V-V	16.70	**32.47**	1.766	39.00	-6.53
F0	Low	806.0125	800	Dipole	H	85.40		H-H	14.50				
F0	Mid	815.5000	800	Dipole	V	75.38	85.52	V-V	16.40	32.17	1.648	39.00	-6.83
F0	Mid	815.5000	800	Dipole	H	85.52		H-H	14.20				
F0	High	824.9875	800	Dipole	V	73.87	85.10	V-V	15.90	31.58	1.439	39.00	-7.42
F0	High	824.9875	800	Dipole	H	85.10		H-H	14.00				

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

Example: 806.0125 MHz = 16.70 (Tracking Generator Level) – 8.10 (Antenna Loss) – 2.15 (Dipole Factor) – 3.75 (Cable Loss) + 29.77 (Preamp Gain) = 32.47 dBm (Reading Relative to Dipole)

Radiated Power Test Data Results cont'd

iDEN 800

The environmental tests conditions were: Temperature 24° C
Pressure 1014 mb
Relative Humidity 23%

Date of test: October 20, 2008 Test distance is 3.0 metres

EUT				Rx Antenna		Spectrum Analyzer		Substitution Method Tracking Generator					
Type	Ch	Frequency (MHz)	Band	Type	Pol.	Reading (dBuV)	Max (V,H) (dBuV)	Pol. Tx-Rx	Reading (dBm)	Corrected Reading (relative to Dipole) (dBm)	Corrected Reading (relative to Dipole) (W)	Limit (dBm)	Diff. To Limit (dB)
iDEN **800 (ERP)** BlackBerry® smartphone, PIN 40245A0E Standalone, Horizontal position 16 QAM													
F0	Low	806.0125	800	Dipole	V	75.06	84.86	V-V	16.00	31.77	1.503	39.00	-7.23
F0	Low	806.0125	800	Dipole	H	84.86		H-H	14.10				
F0	Mid	815.5000	800	Dipole	V	75.53	85.34	V-V	15.80	31.57	1.435	39.00	-7.43
F0	Mid	815.5000	800	Dipole	H	85.34		H-H	14.00				
F0	High	824.9875	800	Dipole	V	73.39	84.66	V-V	15.70	31.38	1.374	39.00	-7.62
F0	High	824.9875	800	Dipole	H	84.66		H-H	15.00				

Radiated Power Test Data Results cont'd

iDEN 800

The environmental tests conditions were: Temperature 24° C
Pressure 1014 mb
Relative Humidity 23%

Date of test: October 20, 2008 Test distance is 3.0 metres

EUT				Rx Antenna		Spectrum Analyzer		Substitution Method Tracking Generator					
Type	Ch	Frequency (MHz)	Band	Type	Pol.	Reading (dBuV)	Max (V,H) (dBuV)	Pol. Tx-Rx	Reading (dBm)	Corrected Reading (relative to Dipole) (dBm)	Corrected Reading (relative to Dipole) (W)	Limit (dBm)	Diff. To Limit (dB)
iDEN **800 (ERP)** BlackBerry® smartphone, PIN 40245A0E Standalone, Horizontal position 64 QAM													
F0	Low	806.0125	800	Dipole	V	74.98	85.48	V-V	16.70	**32.47**	1.766	39.00	-6.53
F0	Low	806.0125	800	Dipole	H	85.48		H-H	14.20				
F0	Mid	815.5000	800	Dipole	V	75.43	82.59	V-V	13.40	29.17	0.826	39.00	-9.83
F0	Mid	815.5000	800	Dipole	H	82.59		H-H	11.40				
F0	High	824.9875	800	Dipole	V	73.62	85.42	V-V	16.40	32.08	1.614	39.00	-6.92
F0	High	824.9875	800	Dipole	H	85.42		H-H	14.50				

Radiated Power Test Data Results cont'd

iDEN 900

The environmental tests conditions were: Temperature 24° C
Pressure 1014 mb
Relative Humidity 23%

Date of test: October 20, 2008

Test distance is 3.0 metres

EUT				Rx Antenna		Spectrum Analyzer		Substitution Method Tracking Generator					
Type	Ch	Frequency (MHz)	Band	Type	Pol.	Reading (dBuV)	Max (V,H) (dBuV)	Pol. Tx-Rx	Reading (dBm)	Corrected Reading (relative to Dipole) (dBm)	Corrected Reading (relative to Dipole) (W)	Limit (dBm)	Diff. To Limit (dB)
iDEN 900 (ERP) BlackBerry® smartphone, PIN 40245A0E Standalone, USB down position Quad QPSK													
F0	Low	896.01875	800	Dipole	V	78.01	86.26	V-V	17.20	32.39	1.734	33.00	-0.61
F0	Low	896.01875	800	Dipole	H	86.26		H-H	14.70				
F0	Mid	899.00000	800	Dipole	V	78.43	86.28	V-V	17.40	**32.59**	1.816	33.00	-0.41
F0	Mid	899.00000	800	Dipole	H	86.28		H-H	15.10				
F0	High	900.98125	800	Dipole	V	79.05	85.82	V-V	16.90	31.84	1.528	33.00	-1.16
F0	High	900.98125	800	Dipole	H	85.82		H-H	14.50				

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

Example: 896.01875 MHz = 17.20 (Tracking Generator Level) – 8.00 (Antenna Loss) – 2.15 (Dipole Factor) – 3.99 (Cable Loss) + 29.33 (Preamp Gain) = 32.39 dBm (Reading Relative to Dipole)

Radiated Power Test Data Results cont'd

iDEN 900

The environmental tests conditions were: Temperature 24° C
Pressure 1014 mb
Relative Humidity 23%

Date of test: October 20, 2008 Test distance is 3.0 metres

EUT				Rx Antenna		Spectrum Analyzer		Substitution Method Tracking Generator					
Type	Ch	Frequency (MHz)	Band	Type	Pol.	Reading (dBuV)	Max (V,H) (dBuV)	Pol. Tx-Rx	Reading (dBm)	Corrected Reading (relative to Dipole) (dBm)	Corrected Reading (relative to Dipole) (W)	Limit (dBm)	Diff. To Limit (dB)
iDEN 900 (ERP) BlackBerry® smartphone, PIN 40245A0E Standalone, USB down position 16 QAM													
F0	Low	896.01875	800	Dipole	V	78.84	86.03	V-V	15.10	30.29	1.069	33.00	-2.71
F0	Low	896.01875	800	Dipole	H	86.03		H-H	14.60				
F0	Mid	899.00000	800	Dipole	V	78.47	85.34	V-V	14.40	29.59	0.910	33.00	-3.41
F0	Mid	899.00000	800	Dipole	H	85.34		H-H	13.60				
F0	High	900.98125	800	Dipole	V	78.59	86.99	V-V	16.20	31.14	1.300	33.00	-1.86
F0	High	900.98125	800	Dipole	H	86.99		H-H	15.30				

Radiated Power Test Data Results cont'd

iDEN 900

The environmental tests conditions were: Temperature 24° C
Pressure 1014 mb
Relative Humidity 23%

Date of test: October 20, 2008

Test distance is 3.0 metres

EUT				Rx Antenna		Spectrum Analyzer		Substitution Method / Tracking Generator					
Type	Ch	Frequency (MHz)	Band	Type	Pol.	Reading (dBuV)	Max (V,H) (dBuV)	Pol. Tx-Rx	Reading (dBm)	Corrected Reading (relative to Dipole) (dBm)	Corrected Reading (relative to Dipole) (W)	Limit (dBm)	Diff. To Limit (dB)
iDEN 900 (ERP) BlackBerry® smartphone, PIN 40245A0E Standalone, USB down position 64 QAM													
F0	Low	896.01875	800	Dipole	V	77.77	85.73	V-V	16.50	31.69	1.476	33.00	-1.31
F0	Low	896.01875	800	Dipole	H	85.73		H-H	14.30				
F0	Mid	899.00000	800	Dipole	V	78.72	86.35	V-V	17.40	**32.59**	1.816	33.00	-0.41
F0	Mid	899.00000	800	Dipole	H	86.35		H-H	15.20				
F0	High	900.98125	800	Dipole	V	77.56	86.42	V-V	17.80	32.74	1.879	33.00	-0.26
F0	High	900.98125	800	Dipole	H	86.42		H-H	15.10				

Radiated Emissions Test Data Results

The measurements were performed by Arjun Rai Bhatti and Savtej Sandhu.

iDEN 800

Quad QPSK

The environmental tests conditions were:	Temperature	24° C
	Pressure	1029 mb
	Relative Humidity	22%

Date of Test: October 23, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 800 Tx mode, low channel (806.0125 MHz).

All emissions had a test margin greater than 25.0 dB.

The environmental tests conditions were:	Temperature	26° C
	Pressure	1022 mb
	Relative Humidity	21%

Date of Test: October 24, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 40245A3D was in standalone, USB down position.

The measurements were performed in iDEN 800 Tx mode, low channel (806.0125 MHz).

All emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

iDEN 800

Quad QPSK

The environmental tests conditions were: Temperature 23° C
Pressure 1027 mb
Relative Humidity 24%
Date of Test: October 23, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 800 Tx mode, middle channel (815.5000 MHz).

All emissions had a test margin greater than 25.0 dB.

The environmental tests conditions were: Temperature 26° C
Pressure 1022 mb
Relative Humidity 21%
Date of Test: October 24, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 40245A3D was in standalone, USB down position.

The measurements were performed in iDEN 800 Tx mode, middle channel (815.5000 MHz).

All emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

iDEN 800

Quad QPSK

The environmental tests conditions were:	Temperature	24° C
	Pressure	1027 mb
	Relative Humidity	23%

Date of Test: October 23, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 800 Tx mode, high channel (824.9875 MHz).

All emissions had a test margin greater than 25.0 dB.

The environmental tests conditions were:	Temperature	26° C
	Pressure	1022 mb
	Relative Humidity	21%

Date of Test: October 24, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 40245A3D was in standalone, USB down position.

The measurements were performed in iDEN 800 Tx mode, high channel (824.9875 MHz).

All emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results

iDEN 800

16 QAM

The environmental tests conditions were:	Temperature	24° C
	Pressure	1017 mb
	Relative Humidity	23%

Date of Test: October 17, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 800 Tx mode, low channel (806.0125 MHz).

All emissions had a test margin greater than 25.0 dB.

The environmental tests conditions were:	Temperature	25° C
	Pressure	1021 mb
	Relative Humidity	22%

Date of Test: October 20, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 40245A3D was in standalone, USB down position.

The measurements were performed in iDEN 800 Tx mode, low channel (806.0125 MHz).

All emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

iDEN 800

16 QAM

The environmental tests conditions were: Temperature 23° C
Pressure 1015 mb
Relative Humidity 24%
Date of Test: October 20, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 800 Tx mode, middle channel (815.5000 MHz).

All emissions had a test margin greater than 25.0 dB.

The environmental tests conditions were: Temperature 25° C
Pressure 1021 mb
Relative Humidity 22%
Date of Test: October 20, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 40245A3D was in standalone, USB down position.

The measurements were performed in iDEN 800 Tx mode, middle channel (815.5000 MHz).

Frequency (MHz)	Antenna Pol. (V/H)	Antenna Height (metres)	Test Angle (Deg.)	Detector (PK or QP)	Measured Level (dBµV)	Correction Factor for preamp/antenna/ cables/ filter (dB)	Field Strength Level (reading+corr) (dBm)	Limit @ 3.0 m (dBm)	Test Margin (dB)
6683.978	H	1.82	293	PK	38.12	-71.89	-33.77	-13.00	**-20.77**

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

Radiated Emissions Test Data Results cont'd

iDEN 800

16 QAM

The environmental tests conditions were: Temperature 24° C
Pressure 1014 mb
Relative Humidity 23%

Date of Test: October 20, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 800 Tx mode, high channel (824.9875 MHz).

All emissions had a test margin greater than 25.0 dB.

The environmental tests conditions were: Temperature 25° C
Pressure 1021 mb
Relative Humidity 22%

Date of Test: October 20, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 40245A3D was in standalone, USB down position.

The measurements were performed in iDEN 800 Tx mode, high channel (824.9875 MHz).

All emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results

iDEN 800

64 QAM

The environmental tests conditions were: Temperature 24° C
Pressure 1029 mb
Relative Humidity 22%
Date of Test: October 23, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 800 Tx mode, low channel (806.0125 MHz).

All emissions had a test margin greater than 25.0 dB.

The environmental tests conditions were: Temperature 26° C
Pressure 1022 mb
Relative Humidity 21%
Date of Test: October 24, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 40245A3D was in standalone, USB down position.

The measurements were performed in iDEN 800 Tx mode, low channel (806.0125 MHz).

All emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

iDEN 800

64 QAM

The environmental tests conditions were: Temperature 23° C
Pressure 1029 mb
Relative Humidity 23%
Date of Test: October 23, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 800 Tx mode, middle channel (815.5000 MHz).

All emissions had a test margin greater than 25.0 dB.

The environmental tests conditions were: Temperature 26° C
Pressure 1022 mb
Relative Humidity 21%
Date of Test: October 24, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 40245A3D was in standalone, USB down position.

The measurements were performed in iDEN 800 Tx mode, middle channel (815.5000 MHz).

All emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

iDEN 800

64 QAM

The environmental tests conditions were: Temperature 24° C
Pressure 1014 mb
Relative Humidity 23%
Date of Test: October 23, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 800 Tx mode, high channel (824.9875 MHz).

All emissions had a test margin greater than 25.0 dB.

The environmental tests conditions were: Temperature 26° C
Pressure 1022 mb
Relative Humidity 21%
Date of Test: October 24, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 40245A3D was in standalone, USB down position.

The measurements were performed in iDEN 800 Tx mode, high channel (824.9875 MHz).

All emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results

iDEN 900

Quad QPSK

The environmental tests conditions were: Temperature 24° C
Pressure 1025 mb
Relative Humidity 23%

Date of Test: October 23, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 900 Tx mode, low channel (896.0188 MHz).

All emissions had a test margin greater than 25.0 dB.

The environmental tests conditions were: Temperature 24° C
Pressure 1014 mb
Relative Humidity 24%

Date of Test: October 24, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 900 Tx mode, low channel (896.0188 MHz).

All emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

iDEN 900

Quad QPSK

The environmental tests conditions were: Temperature 23° C
Pressure 1025 mb
Relative Humidity 24%
Date of Test: October 23, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 900 Tx mode, middle channel (898.5190 MHz).

All emissions had a test margin greater than 25.0 dB.

The environmental tests conditions were: Temperature 24° C
Pressure 1017 mb
Relative Humidity 24%
Date of Test: October 24, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 900 Tx mode, middle channel (898.5190 MHz).

All emissions had a test margin greater than 25.0 dB.

Radiated Emissions Test Data Results cont'd

iDEN 900

Quad QPSK

The environmental tests conditions were: Temperature 23° C
Pressure 1025 mb
Relative Humidity 24%

Date of Test: October 23, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 900 Tx mode, high channel (900.9812 MHz).

All emissions had a test margin greater than 25.0 dB.

The environmental tests conditions were: Temperature 24° C
Pressure 1017 mb
Relative Humidity 24%

Date of Test: October 24, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 900 Tx mode, high channel (900.9812 MHz).

All emissions had a test margin greater than 25.0 dB

Radiated Emissions Test Data Results

iDEN 900

16 QAM

The environmental tests conditions were: Temperature 2° C
Pressure 1014 mb
Relative Humidity 26%

Date of Test: October 17, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 900 Tx mode, low channel (896.0188 MHz).

All emissions had a test margin greater than 25.0 dB.

The environmental tests conditions were: Temperature 24° C
Pressure 1008 mb
Relative Humidity 26%

Date of Test: October 20, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 900 Tx mode, low channel (896.0188 MHz).

All emissions had a test margin greater than 25.0 dB

Radiated Emissions Test Data Results cont'd

iDEN 900

16 QAM

The environmental tests conditions were:	Temperature	24° C
	Pressure	1014 mb
	Relative Humidity	26%

Date of Test: October 17, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 900 Tx mode, middle channel (898.5190 MHz).

All emissions had a test margin greater than 25.0 dB.

The environmental tests conditions were:	Temperature	24° C
	Pressure	1010 mb
	Relative Humidity	24%

Date of Test: October 20, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 900 Tx mode, middle channel (898.5190 MHz).

All emissions had a test margin greater than 25.0 dB

Radiated Emissions Test Data Results cont'd

iDEN 900

16 QAM

The environmental tests conditions were:	Temperature	24° C
	Pressure	1014 mb
	Relative Humidity	26%

Date of Test: October 17, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 900 Tx mode, high channel (900.9812 MHz).

All emissions had a test margin greater than 25.0 dB.

The environmental tests conditions were:	Temperature	24° C
	Pressure	1008 mb
	Relative Humidity	27%

Date of Test: October 20, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 900 Tx mode, high channel (900.9812 MHz).

All emissions had a test margin greater than 25.0 dB

Radiated Emissions Test Data Results

iDEN 900

64 QAM

The environmental tests conditions were:	Temperature	24° C
	Pressure	1027 mb
	Relative Humidity	23%

Date of Test: October 23, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 900 Tx mode, low channel (896.0188 MHz).

All emissions had a test margin greater than 25.0 dB.

The environmental tests conditions were:	Temperature	23° C
	Pressure	1024 mb
	Relative Humidity	24%

Date of Test: October 23, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 900 Tx mode, low channel (896.0188 MHz).

All emissions had a test margin greater than 25.0 dB

Radiated Emissions Test Data Results cont'd

iDEN 900

64 QAM

The environmental tests conditions were: Temperature 24° C
Pressure 1026 mb
Relative Humidity 23%
Date of Test: October 17, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 900 Tx mode, middle channel (898.5190 MHz).

All emissions had a test margin greater than 25.0 dB.

The environmental tests conditions were: Temperature 24° C
Pressure 1024 mb
Relative Humidity 24%
Date of Test: October 23, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 900 Tx mode, middle channel (898.5190 MHz).

All emissions had a test margin greater than 25.0 dB

Radiated Emissions Test Data Results cont'd

iDEN 900

64 QAM

The environmental tests conditions were: Temperature 24° C
Pressure 1014 mb
Relative Humidity 26%
Date of Test: October 23, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 30 MHz to 1000 MHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 900 Tx mode, high channel (900.9812 MHz).

All emissions had a test margin greater than 25.0 dB.

The environmental tests conditions were: Temperature 24° C
Pressure 1018 mb
Relative Humidity 23%
Date of Test: October 24, 2008

Test Distance was 3.0 metres with a height of 1.0 metres, 1 GHz to 9 GHz.
The BlackBerry® smartphone PIN 40245A0E was in standalone, vertical position.

The measurements were performed in iDEN 900 Tx mode, high channel (900.9812 MHz).

All emissions had a test margin greater than 25.0 dB