Engineering and Testing for EMC and Safety Compliance

Class II Permissive Change Report

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MODEL: P7100^{IP}/P5100^{IP} 800 MHz Portable Radio
806-870 MHz

FCC ID: OWDTR-0023-E

January 17, 2006

Standards Referenced for this Report	
Part 2: 2003	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
Part 15: 2003	Radio Frequency Devices - §15.109: Radiated Emissions Limits
Part 90: 2003	Private Land Portable Radio Services
ANSI C63.4-2003	American National Standard for Methods of Measurement of Radio Noise Emissions from Low -Voltage Electrical and Electronic Equipment in the Range of 9 kHz – 40 GHz
ANSI/TIA/EIA603-2002	Land Portable FM or PM Communications Equipment - Measurement and Performance Standards
ANSI/TIA/EIA–102.CAAA; 2002	Digital C4FM/CQPSK Transceiver Measurement Methods
RSS-119; Issue 6; 2000	Land Portable and Fixed Radio Transmitters and Receivers 27.41 to 960.0 MHz

Frequency Range	Maximum Measured Output Power (W) Conducted	Measured Frequency Tolerance (ppm)	Emission Designator
806-824, 851-869 MHz	3.3	0.32	16K0F3E (WB Voice)
806-824, 851-869 MHz	3.3	0.32	12K8F3E (NPSPAC Voice)
806-824, 851-869 MHz	3.3	0.32	10K3F1D (2 level WB 9600)
806-824, 851-869 MHz	3.3	0.32	10K3F1E (2 level WB 9600)
806-824, 851-869 MHz	3.3	0.32	9K3F1D (2 level NPSPAC 9600)
806-824, 851-869 MHz	3.3	0.32	9K3F1E (2 level NPSPAC 9600)
806-824, 851-869 MHz	3.3	0.32	8K1F1D (4 Level)
806-824, 851-869 MHz	3.3	0.32	8K1F1E (4 Level)

REPORT PREPARED BY TEST ENGINEER: DAN BALTZELL

Document Number: 2006003/QRTL06-104

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1 General Information

This Class II Permissive Change report is prepared on behalf of **M/A-COM, Inc**. in accordance with the Federal Communications Commission and Industry Canada Rules and Regulations. The Equipment Under Test (EUT) was the **P7100IP 800 MHz Portable Radio; FCC ID: OWDTR-0023-E**. The test results reported in this document relate only to the item that was tested.

All measurements contained in this application were conducted in accordance with FCC Rules and Regulations CFR 47, Industry Canada RSS-119, and ANSI C63.4 Methods of Measurement of Radio Noise Emissions, 2003. The instrumentation utilized for the measurements conforms to the ANSI C63.4 standard for EMI and Field Strength Instrumentation. Calibration checks are performed regularly on the instruments, and all accessories including high pass filter, coaxial attenuator, preamplifier and cables.

1.1 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the parking lot of Rhein Tech Laboratories, Inc. 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170. This site has been fully described in a report dated March 3, 1994, submitted to and approved by the Federal Communications Commission to perform AC line conducted and radiated emissions testing (ANSI C63.4 2003).

1.2 Related Submittal(s)/Grant(s)

This is a Class II Permissive Change. The P5100IP is a keyless version of the P7100IP; aside from the absence of keys, all other hardware remains the same as the P7100IP. This change covers both models.

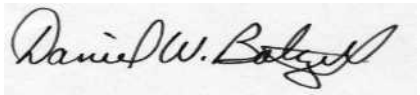
2 Conformance Statement

We, the undersigned, hereby declare that the equipment tested and referenced in this report conforms to the identified standard(s) as described in this attached test record. No modifications were made to the equipment during testing in order to achieve compliance with these standards. The test results relate only to the item that was tested.

Furthermore, there was no deviation from, additions to or exclusions from the above standards for Certification methodology.

Signature:  Date: January 17, 2006

Typed/Printed Name: Desmond A. Fraser Position: President

Signature:  Date: January 17, 2006

Typed/Printed Name: Daniel W. Baltzell Position: Test Engineer

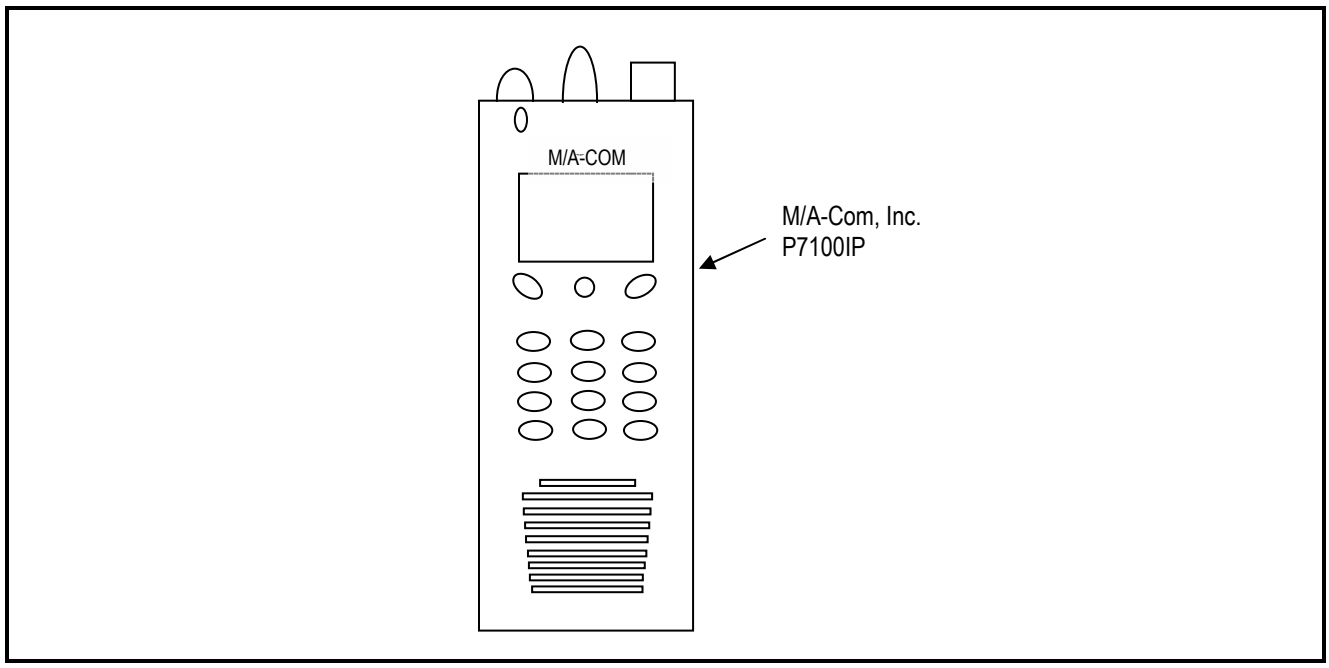
3 Tested System Details

Listed below are the identifiers and descriptions of all equipment, cables, and internal devices used with the EUT for this test, as applicable.

Table 3-1: Equipment Under Test (EUT)

Part	Manufacturer	Model	PN/SN	FCC ID	RTL Bar Code
P7100 800 MHz Portable Radio	M/A-COM, INC.	P7100IP	H1P3-01	OWDTR-0023-E	16984
P5100 800 MHz Portable Radio	M/A-COM, INC.	P5100IP	H1P3-02	OWDTR-0023-E	16983
7.5V Nickel Cadmium Battery	M/A COM, INC.	BKB 191 210/3 R2A	N/A	N/A	13931

Figure 3-1: Configuration of Tested System



4 FCC Rules and Regulations Part 2 §2.1033(C)(8) Voltages and Currents Through The Final Amplifying Stage

Nominal DC Voltage: 7.5 VDC
Current: 1.6 AMPS

5 FCC Rules and Regulations Part 2 §2.1046(a): RF Power Output: Conducted; RSS-119 §6.2: Output Power Test

5.1 Test Procedure

ANSI/TIA/EIA-603-2002, section 2.2.1

The EUT was connected to a coaxial attenuator having a 50 Ω load impedance.

5.2 Test Data

The following channels (in MHz) were tested: 806.0125, 815.5000, 823.9875, 851.0125, 863.0000, and 868.9875.

Table 5-1: RF Power Output (High Power): Carrier Output Power (Unmodulated)

Channel	Frequency (MHz)	RF Power Measured (Watt)*
1 (High Power)	806.0125	3.24
2 (Low Power)	806.0125	1.07
3 (High Power)	815.5000	3.24
4 (Low Power)	815.5000	1.07
5 (High Power)	823.9875	3.24
6 (Low Power)	823.9875	1.07
7 (High Power)	851.0125	3.16
8 (Low Power)	851.0125	1.05
9 (High Power)	863.0000	3.24
10 (Low Power)	863.0000	1.10
11(High Power)	868.9875	3.24
12 (Low Power)	868.9875	1.07

* Measurement accuracy: +/-.02 dB (logarithmic mode)

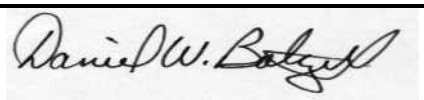
Table 5-2: RF Power Output (Rated Power)

Rated Power (W)
3

Table 5-3: Test Equipment Used For Testing RF Power Output - Conducted

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901184	Agilent Technologies	E4416A	EPM-P Power Meter, Single Channel	GB41050573	9/21/06
901356	Agilent Technologies	E9323A	Power Sensor	31764-264	9/21/06
900819	Weinschel Corporation	BF0830	Attenuator 10 db	N/A	12/2/08

TEST PERSONNEL:

Dan Baltzell		January 12, 2006
Test Engineer	Signature	Date Of Test

6 FCC Rules and Regulations Part 2 §2.1051: Spurious Emissions at Antenna Terminals; RSS-119 §6.3: Unwanted Emissions

6.1 Test Procedure

ANSI/TIA/EIA-603-2002, Section 2.2.13

The transmitter is terminated with a 50 Ω load and interfaced with a spectrum analyzer. The transmitter is modulated with a 2,500 Hz sine wave at an input level 16 dB greater than that necessary to produce 50% of the rated system deviation at 1,000 Hz.

Digital Modulation: Modulated to its maximum extent using a pseudo random data sequence – 9600-bps.

6.2 Test Data

Frequency range of measurement per Part 2.1057: 9 kHz to 10 x Fc

Limits: (43+10xLOG P(W))

The following channels (in MHz) were investigated: 806.0125, 851.5000, and 823.9875, 851.0125, 863.0000, and 868.9875 for both high and low powers. The worst case (unwanted emissions) channels are shown. The magnitude of emissions attenuated more than 20 dB below the FCC limit need not be recorded.

Table 6-1: Conducted Spurious Emissions Channel 1 – 806.0125 MHz – High Power

(806.0125 MHz); 25 kHz channel spacing; Conducted Power = 3.24 W

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin(dB)
1612.0250	70.3	48.1	-22.2
2418.0375	81.7	48.1	-33.6
3224.0500	98.3	48.1	-50.2
4030.0625	98.3	48.1	-50.2
4836.0750	122.6	48.1	-74.5
5642.0875	91.7	48.1	-43.6
6448.1000	106.2	48.1	-58.1
7254.1125	103.8	48.1	-55.7
8060.1250	119.9	48.1	-71.8

Table 6-2: Conducted Spurious Emissions Channel 1 – 806.0125 MHz – Low Power

(806.0125 MHz); 25 kHz channel spacing; Conducted Power = 1.07 W

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin(dB)
1612.0250	72.9	43.3	-29.6
2418.0375	78.2	43.3	-34.9
3224.0500	109.7	43.3	-66.4
4030.0625	108.3	43.3	-65.0
4836.0750	122.0	43.3	-78.7
5642.0875	98.7	43.3	-55.4
6448.1000	111.5	43.3	-68.2
7254.1125	112.6	43.3	-69.3
8060.1250	119.3	43.3	-76.0

Table 6-3: Conducted Spurious Emissions Channel 2 – 815.5000 MHz – High Power

(815.5000 MHz); 25 kHz channel spacing; Conducted Power = 3.24 W

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin(dB)
1631.0000	70.8	48.1	-22.7
2446.5000	80.3	48.1	-32.2
3262.0000	97.7	48.1	-49.6
4077.5000	97.4	48.1	-49.3
4893.0000	115.9	48.1	-67.8
5708.5000	98.9	48.1	-50.8
6524.0000	114.1	48.1	-66.0
7339.5000	106.6	48.1	-58.5
8155.0000	120.1	48.1	-72.0

Table 6-4: Conducted Spurious Emissions Channel 2 – 815.5000 MHz – Low Power

(815.5000 MHz); 25 kHz channel spacing; Conducted Power = 1.11 W

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin(dB)
1631.0000	72.8	43.3	-29.5
2446.5000	78.4	43.3	-35.1
3262.0000	112.0	43.3	-68.7
4077.5000	103.4	43.3	-60.1
4893.0000	117.3	43.3	-74.0
5708.5000	105.7	43.3	-62.4
6524.0000	114.8	43.3	-71.5
7339.5000	114.2	43.3	-70.9
8155.0000	118.3	43.3	-75.0

Table 6-5: Conducted Spurious Emissions Channel 3 – 823.9875 MHz – High Power

(823.9875 MHz); 25 kHz channel spacing; Conducted Power = 3.24 W

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin(dB)
1647.9750	72.0	48.1	-23.9
2471.9625	72.5	48.1	-24.4
3295.9500	104.7	48.1	-56.6
4119.9375	103.0	48.1	-54.9
4943.9250	118.9	48.1	-70.8
5767.9125	104.8	48.1	-56.7
6591.9000	115.6	48.1	-67.5
7415.8875	111.5	48.1	-63.4
8239.8750	117.2	48.1	-69.1

Table 6-6: Conducted Spurious Emissions Channel 3 – 823.9875 MHz – Low Power

(823.9875 MHz); 25 kHz channel spacing; Conducted Power = 1.07 W

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin(dB)
1647.9750	75.8	43.3	-32.5
2471.9625	80.4	43.3	-37.1
3295.9500	113.6	43.3	-70.3
4119.9375	108.0	43.3	-64.7
4943.9250	118.2	43.3	-74.9
5767.9125	110.7	43.3	-67.4
6591.9000	117.5	43.3	-74.2
7415.8875	116.3	43.3	-73.0
8239.8750	118.7	43.3	-75.4

Table 6-7: Conducted Spurious Emissions Channel 4 – 851.0125 MHz – High Power

(851.0125 MHz); 25 kHz channel spacing; Conducted Power = 3.16 W

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin(dB)
1702.0250	72.7	48.0	-24.7
2553.0375	84.0	48.0	-36.0
3404.0500	103.4	48.0	-55.4
4255.0625	91.8	48.0	-43.8
5106.0750	114.6	48.0	-66.6
5957.0875	107.4	48.0	-59.4
6808.1000	107.5	48.0	-59.5
7659.1125	114.4	48.0	-66.4
8510.1250	117.4	48.0	-69.4

Table 6-8: Conducted Spurious Emissions Channel 4 – 851.0125 MHz – Low Power

(851.0125 MHz); 25 kHz channel spacing; Conducted Power = 1.05 W

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin(dB)
1702.0250	76.6	43.2	-33.4
2553.0375	87.4	43.2	-44.2
3404.0500	105.9	43.2	-62.7
4255.0625	104.8	43.2	-61.6
5106.0750	117.3	43.2	-74.1
5957.0875	110.0	43.2	-66.8
6808.1000	103.4	43.2	-60.2
7659.1125	117.9	43.2	-74.7
8510.1250	116.6	43.2	-73.4

Table 6-9: Conducted Spurious Emissions Channel 5 – 863.0000 MHz – High Power

(863.0000 MHz); 25 kHz channel spacing; Conducted Power = 3.24 W

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin(dB)
1726.0000	75.3	48.1	-27.2
2589.0000	83.3	48.1	-35.2
3452.0000	99.6	48.1	-51.5
4315.0000	86.0	48.1	-37.9
5178.0000	116.0	48.1	-67.9
6041.0000	110.9	48.1	-62.8
6904.0000	109.5	48.1	-61.4
7767.0000	111.5	48.1	-63.4
8630.0000	110.0	48.1	-61.9

Table 6-10: Conducted Spurious Emissions Channel 5 – 863.0000 MHz – Low Power

(863.0000 MHz); 25 kHz channel spacing; Conducted Power = 1.10 W

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin(dB)
1726.0000	79.8	43.4	-36.4
2589.0000	89.4	43.4	-46.0
3452.0000	105.3	43.4	-61.9
4315.0000	97.7	43.4	-54.3
5178.0000	117.5	43.4	-74.1
6041.0000	114.7	43.4	-71.3
6904.0000	110.1	43.4	-66.7
7767.0000	114.3	43.4	-70.9
8630.0000	110.3	43.4	-66.9

Table 6-11: Conducted Spurious Emissions Channel 6 – 868.9875 MHz – High Power

(868.9875 MHz); 25 kHz channel spacing; Conducted Power = 3.24 W

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin(dB)
1737.9750	77.5	48.1	-29.4
2606.9625	79.0	48.1	-30.9
3475.9500	100.7	48.1	-52.6
4344.9375	87.6	48.1	-39.5
5213.9250	115.5	48.1	-67.4
6082.9125	115.1	48.1	-67.0
6951.9000	112.1	48.1	-64.0
7820.8875	111.8	48.1	-63.7
8689.8750	107.6	48.1	-59.5

Table 6-12: Conducted Spurious Emissions Channel 6 – 868.9875 MHz – Low Power

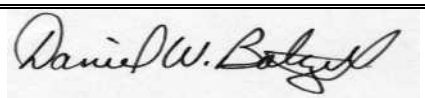
(868.9875 MHz); 25 kHz channel spacing; Conducted Power = 1.07 W

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin(dB)
1737.9750	76.4	43.3	-33.1
2606.9625	80.6	43.3	-37.3
3475.9500	101.3	43.3	-58.0
4344.9375	91.6	43.3	-48.3
5213.9250	113.6	43.3	-70.3
6082.9125	110.5	43.3	-67.2
6951.9000	106.5	43.3	-63.2
7820.8875	109.3	43.3	-66.0
8689.8750	103.6	43.3	-60.3

Table 6-13: Test Equipment Used For Testing Conducted Spurious Emissions

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Date
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz - 22 GHz)	3138A07771	8/3/06
901132	Par Electronics	806-902 (25W)	UHF Notch Filter	N/A	5/13/06
901424	Insulated Wire Inc.	KPS-1503-360-KPS	RF cable 36"	NA	12/12/06
900928	Hewlett Packard	83752A	Synthesized Sweeper (0.01 - 20 GHz)	3610A00866	11/10/06

TEST PERSONNEL:

Daniel Baltzell		January 12, 2006
Test Engineer	Signature	Date Of Test

7 FCC Rules and Regulations Part 2 §2.1053(a): Field Strength of Spurious Radiation; RSS-119 §6.3: Unwanted Emissions

7.1 Test Procedure

ANSI/TIA/EIA-603-2002, section 2.2.12

Analog Modulation: The transmitter is terminated with a 50 Ω load and is modulated with a 2,500 Hz sine wave at an input level 16 dB greater than that required to produce 50% of the rated system deviation at 1,000 Hz.

Digital Modulation: Modulated to its maximum extent using a pseudo random data sequence – 9600-bps.

The spurious emissions levels were measured and the device under test was replaced by a substitution antenna connected to a signal generator. This signal generator level was then corrected by subtracting the cable loss from the substitution antenna to the signal generator and the gain of the antenna was further corrected to a half wave dipole.

7.2 Test Data

7.2.1 CFR 47 Part 90.210 Requirements

The worst case emissions test data are shown. The magnitude of emissions attenuated more than 20 dB below the FCC limit need not be recorded.

Table 7-1: Field Strength of Spurious Radiation Channel 2 – 815.5000 MHz; Wide Band; High Power

Limit = 43 + 10 Log P = 48.1 dBc
Conducted Power = 35.1 dBm = 3.24 W

Frequency (MHz)	Spectrum Analyzer Level (dBuV)	Signal Generator Level (dBm)	Cable Loss* (dB)	Antenna Gain (dBd)	Corrected Signal Generator Level (dBc)	Margin (dB)
1631.0000	58.1	-53.6	4.4	4.8	88.3	-40.2
2446.5000	33.6	-55.0	4.8	6.6	88.3	-40.2
3262.0000	44.7	-45.4	5.6	7.4	78.7	-30.6
4077.5000	34.5	-49.1	5.9	7.2	82.9	-34.8
4893.0000	42.3	-41.2	5.6	7.6	74.3	-26.2
5708.5000	36.4	-46.2	7.6	8.4	80.5	-32.4
6524.0000	34.4	-48.7	8.4	8.9	83.3	-35.2
7339.5000	31.9	-48.5	8.8	8.5	83.3	-35.2
8155.0000	32.0	-44.7	8.9	7.6	80.7	-32.6

*This insertion loss corresponds to the cable connecting the RF Signal Generator to the ½ wave dipole antenna.

Table 7-2: Field Strength of Spurious Radiation Channel 5 – 863.0000 MHz; Wide Band; High Power

Limit = 43 + 10 Log P = 48.1 dBc
Conducted Power = 35.1 dBm = 3.24 W

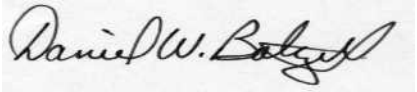
Frequency (MHz)	Spectrum Analyzer Level (dBuV)	Signal Generator Level (dBm)	Cable Loss* (dB)	Antenna Gain (dBd)	Corrected Signal Generator Level (dBc)	Margin (dB)
1726.0000	59.6	-51.8	4.6	5.0	86.5	-38.4
2589.0000	38.1	-50.0	5.0	7.0	83.1	-35.0
3452.0000	35.4	-54.5	5.7	7.6	87.7	-39.6
4315.0000	41.9	-44.6	6.1	7.6	78.2	-30.1
5178.0000	36.2	-46.3	6.5	7.8	80.1	-32.0
6041.0000	34.6	-47.9	7.7	8.7	82.0	-33.9
6904.0000	32.9	-49.9	8.1	8.2	84.9	-36.8
7767.0000	32.2	-47.0	9.1	8.0	83.2	-35.1
8630.0000	31.9	-43.6	9.5	8.5	79.7	-31.6

*This insertion loss corresponds to the cable connecting the RF Signal Generator to the ½ wave dipole antenna.

Table 7-3: Test Equipment Used For Testing Field Strength Of Spurious Radiation

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Date
901053	Schaffner-Chase	CBL6112	Antenna (25 MHz – 2 GHz)	2648	11/1/06
900932	Hewlett Packard	8449B OPT H02	Preamplifier (1 - 26.5 GHz)	3008A00505	8/3/06
901020	Hewlett Packard	8564E	Portable Spectrum Analyzer (9 kHz - 40 GHz)	3943A01719	9/14/06
901281	Rhein Tech Laboratories	PR-1040 (10-2000 MHz)	Amplifier	1004	12/8/06
900928	Hewlett Packard	HP 83752A	Synthesized Sweeper (.01 - 20 GHz)	3610A00866	11/10/06
901426	Insulated Wire Inc.	KPS-1503-3600-KPS	RF Cable, 30'	NA	12/12/06
901425	Insulated Wire, Inc.	KPS-1503-2400-KPS	RF Cable, 20'	NA	12/12/06
901424	Insulated Wire Inc.	KPS-1503-360-KPS	RF Cable 36"	NA	12/12/06
901132	Par Electronics	806-902 (25W)	UHF Notch Filter	N/A	5/13/06
900927	Tektronix	ASG 100	Audio Signal Generator	B03274 V2.3	N/A

TEST PERSONNEL:

Daniel Baltzell		January 12, 2006
Test Engineer	Signature	Date Of Test

8 FCC Rules and Regulations Part 2 §2.1049(c)(1): Occupied Bandwidth; RSS-119 §6.4: Emissions Masks

Occupied Bandwidth - Compliance with the Emission Masks

8.1 Test Procedure

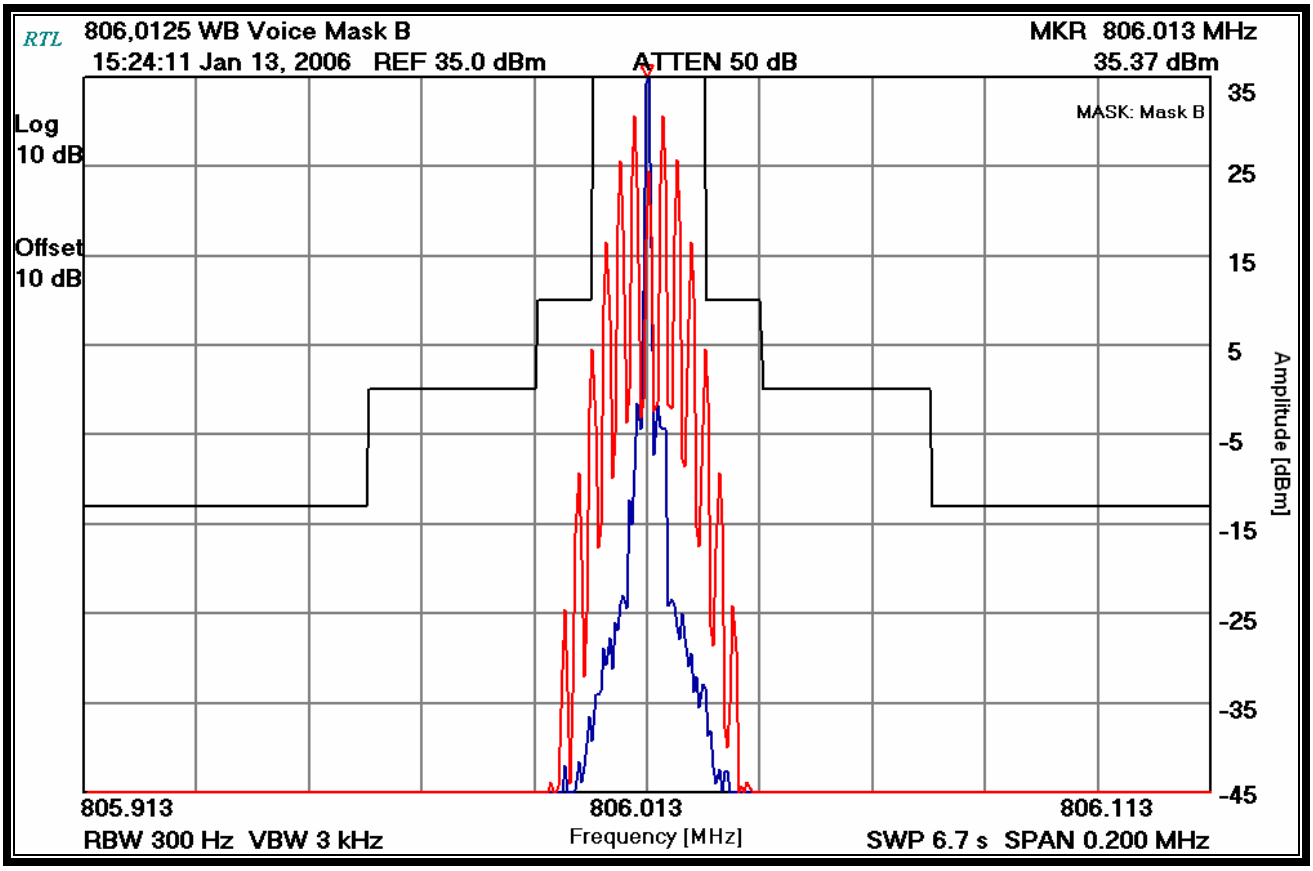
ANSI/TIA/EIA-603-2002, section 2.2.11 and TIA/EIA-102.CAAA-2002 section 2.2.5

Device with audio modulation: Transmitter was modulated with a 2,851 Hz sine wave at an input level of 16 dB greater than that required to produce 50% of rated system deviation at 1,000 Hz. (-26.51 dBm).

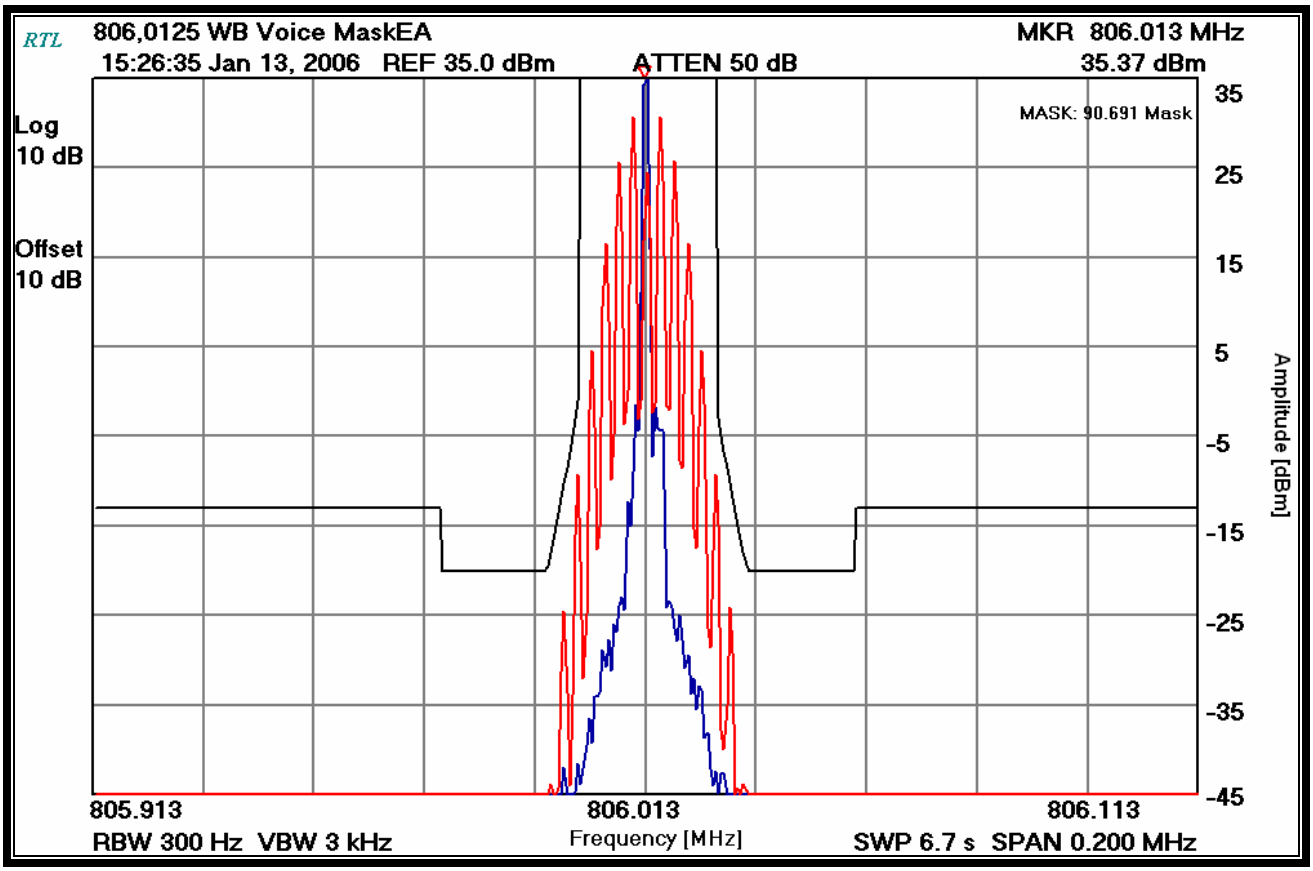
Device with digital modulation: Modulated to its maximum extent using a pseudo-random data sequence – 9600 bps.

8.2 Test Data

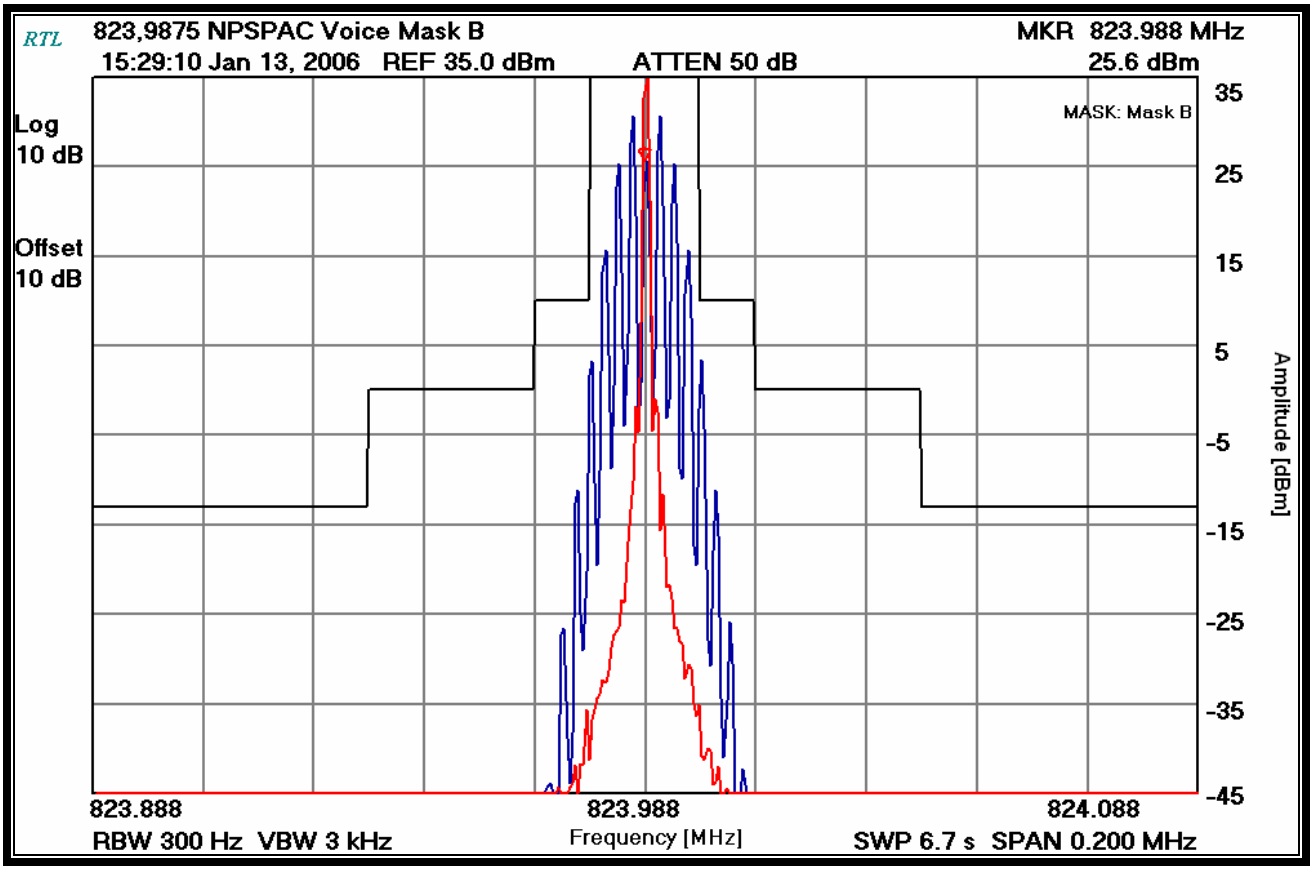
Plot 8-1: Occupied Bandwidth; Wide Band; Audio Modulation: 2,500 Hz (Mask B)



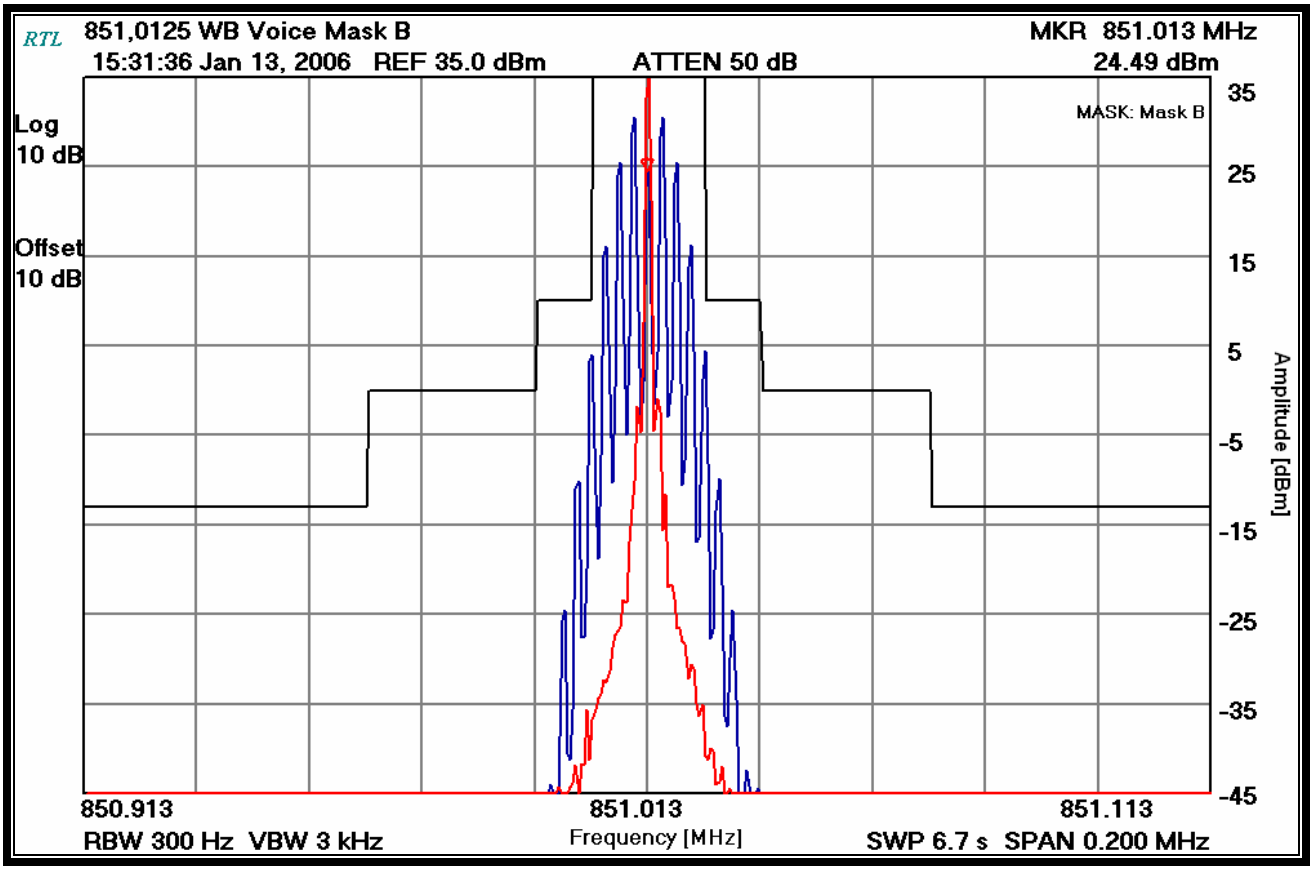
Plot 8-2: Occupied Bandwidth; Wide Band; Audio Modulation: 2,500 Hz (Mask EA)



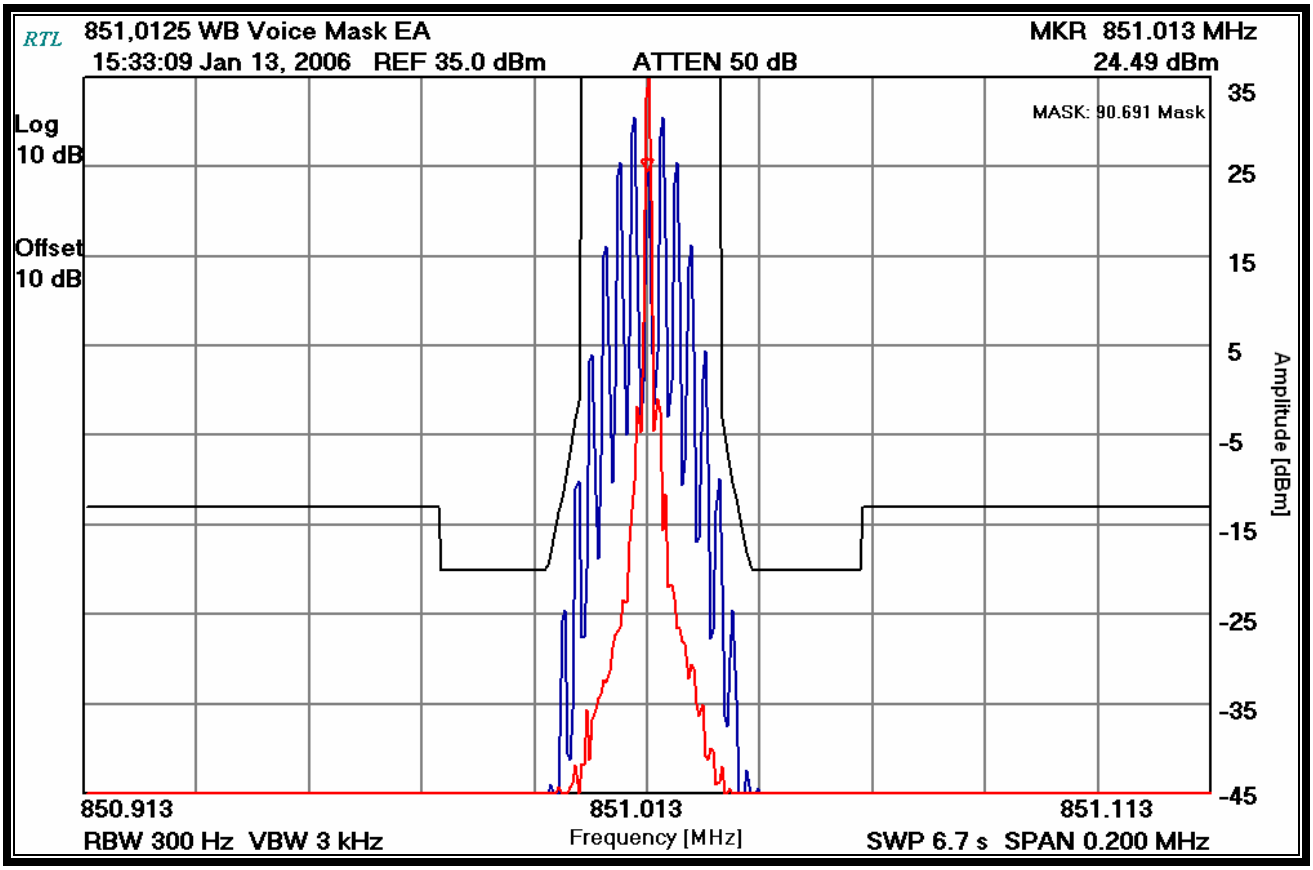
Plot 8-3: Occupied Bandwidth; NPSPAC; Audio Modulation: 2,500 Hz (Mask B)



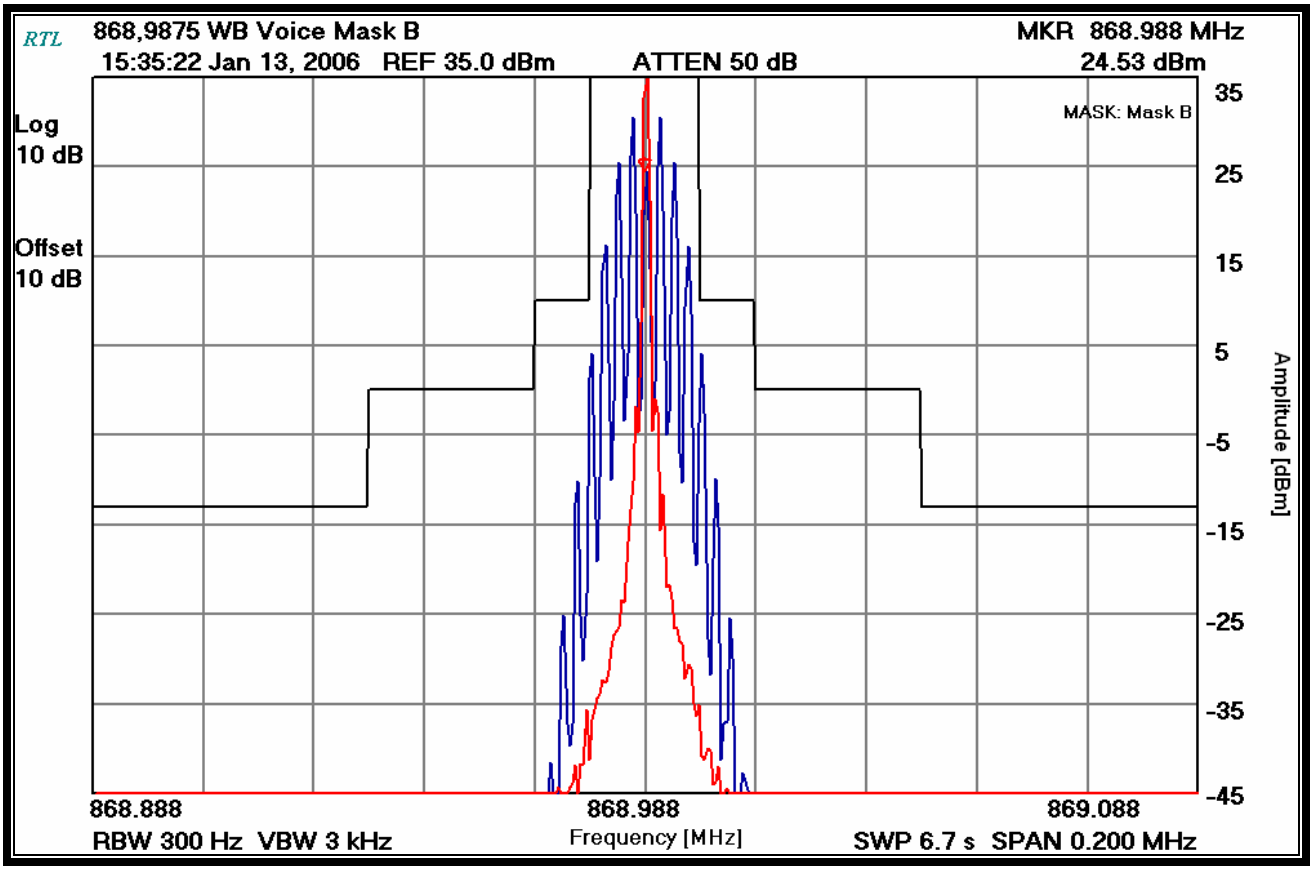
Plot 8-4: Occupied Bandwidth; Wide Band; Audio Modulation: 2,500 Hz (Mask B)



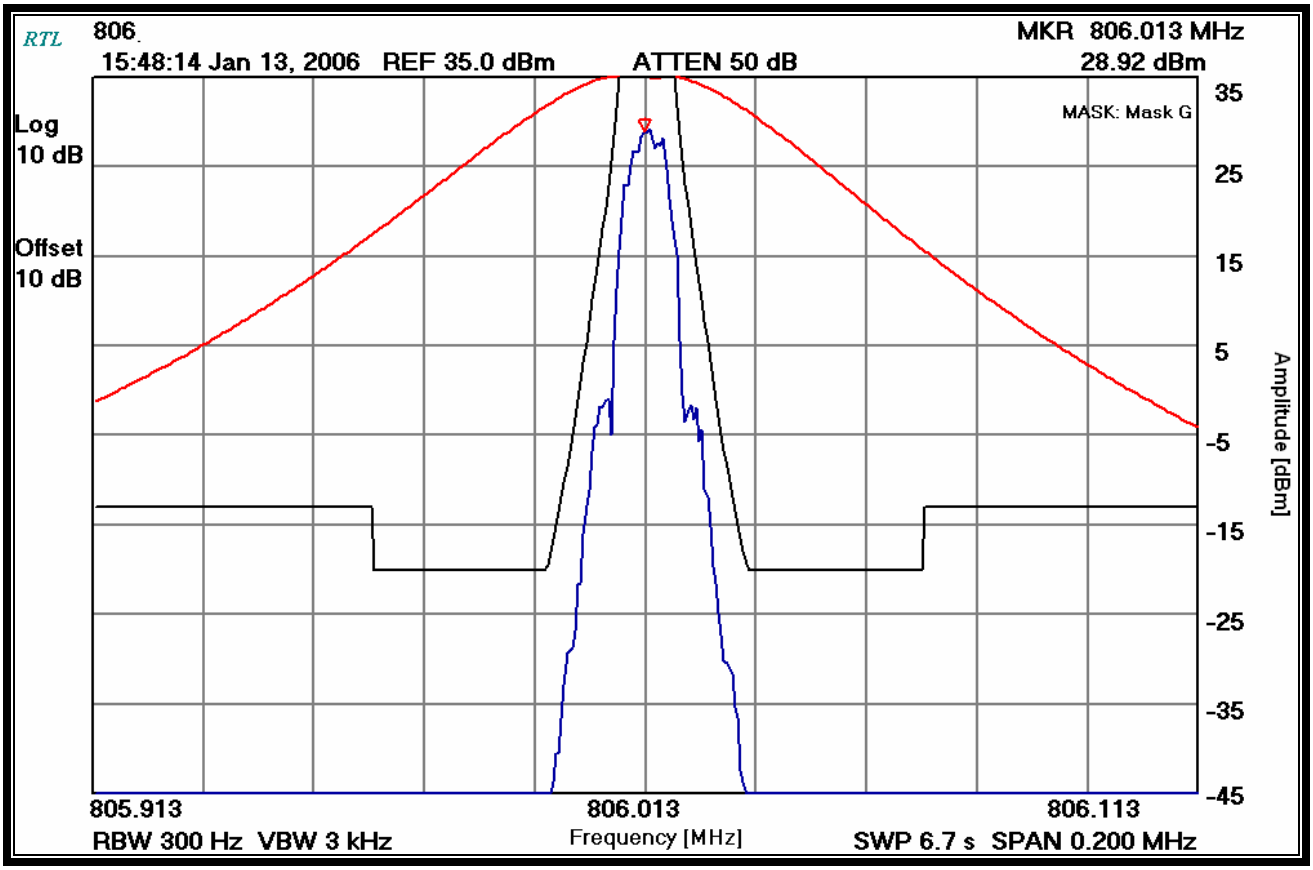
Plot 8-5: Occupied Bandwidth; Wide Band; Audio Modulation: 2,500 Hz (Mask EA)



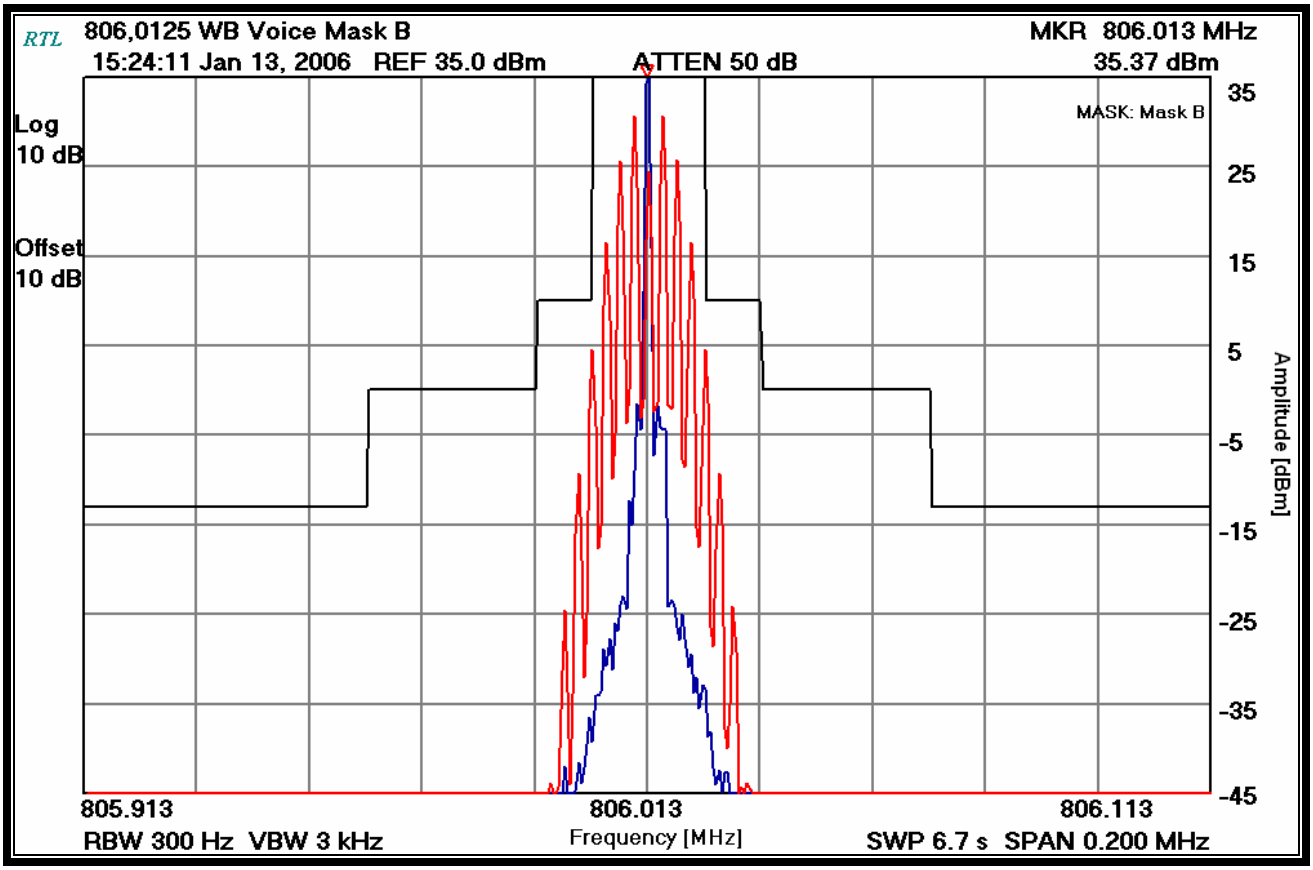
Plot 8-6: 99% Occupied Bandwidth - NPSPAC; Audio Modulation; (Mask B)



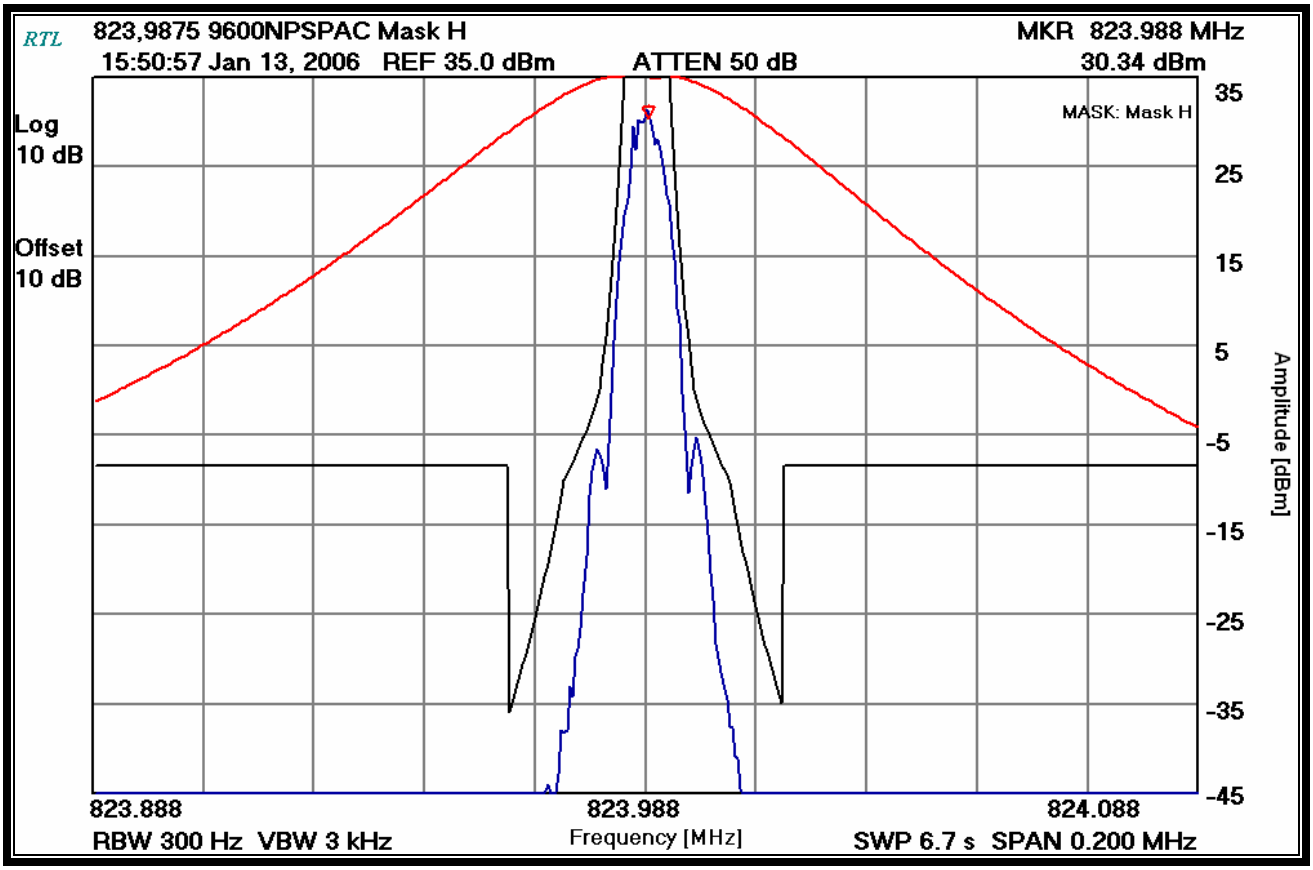
Plot 8-7: 99% Occupied Bandwidth – 2-level; Wide Band; 9600; (Mask G)



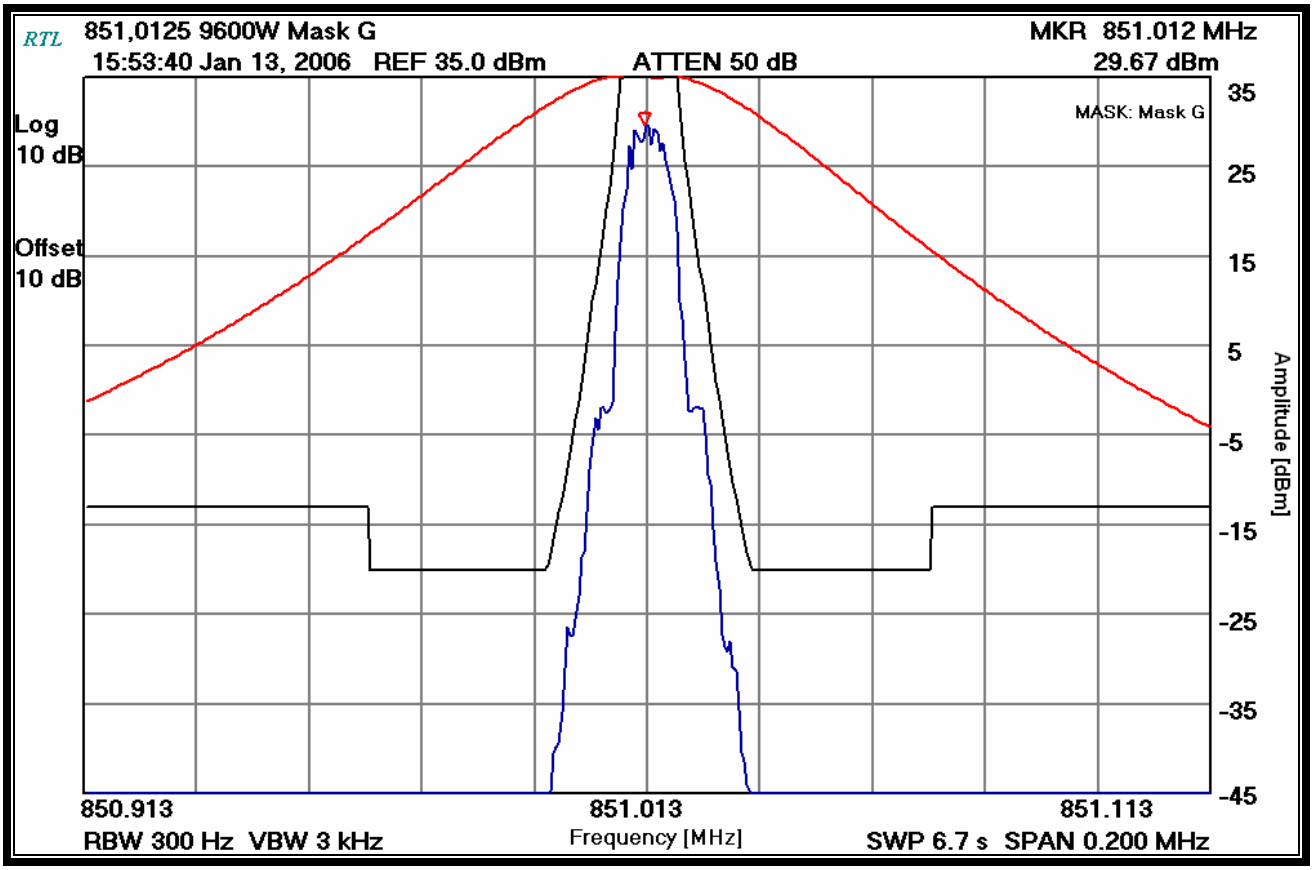
Plot 8-8: 99% Occupied Bandwidth – 2-level; Wide Band; 9600; (Mask B)



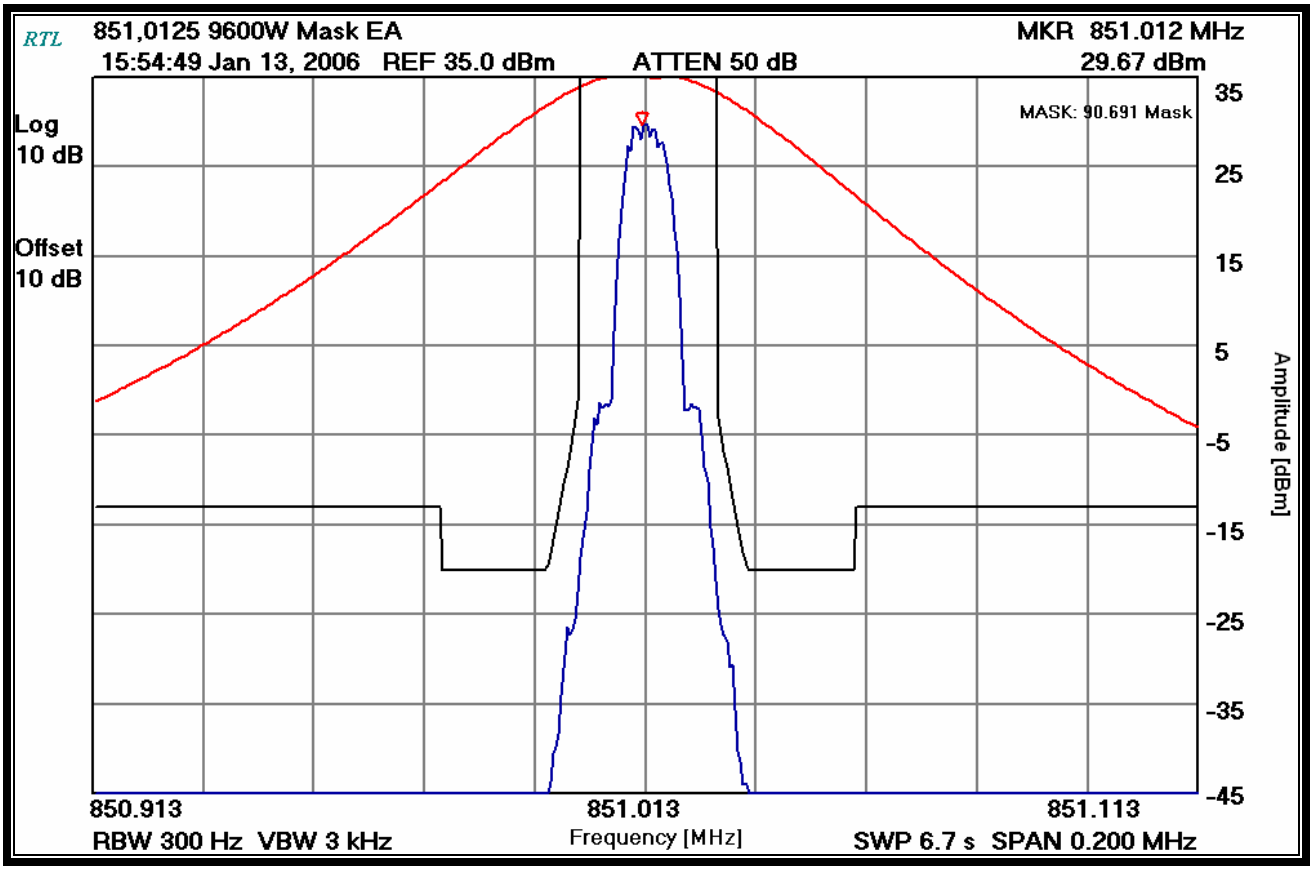
Plot 8-9: 99% Occupied Bandwidth – 2-level; NPSPAC; 9600; (Mask H)



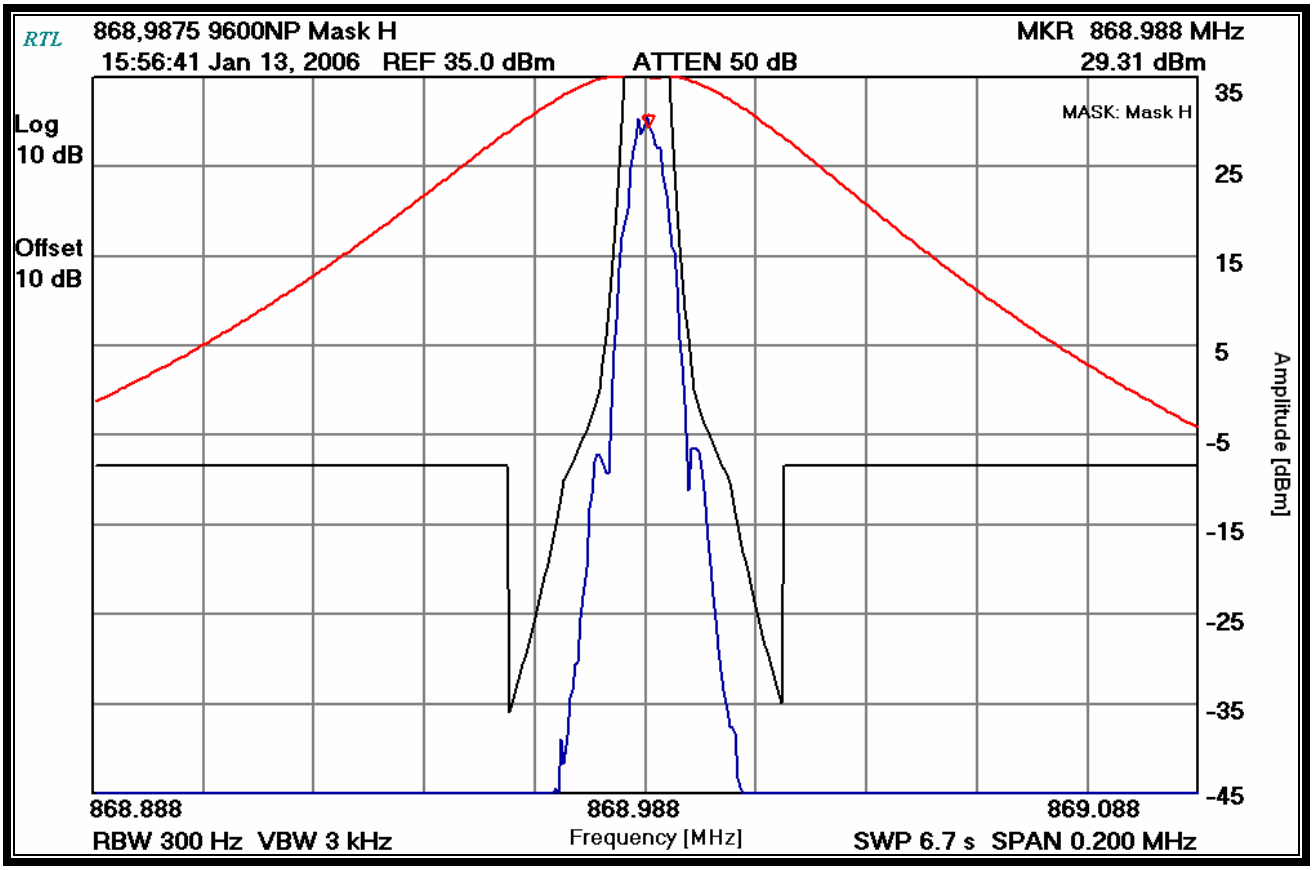
Plot 8-10: 99% Occupied Bandwidth – 2-level; Wide Band; 9600; (Mask G)



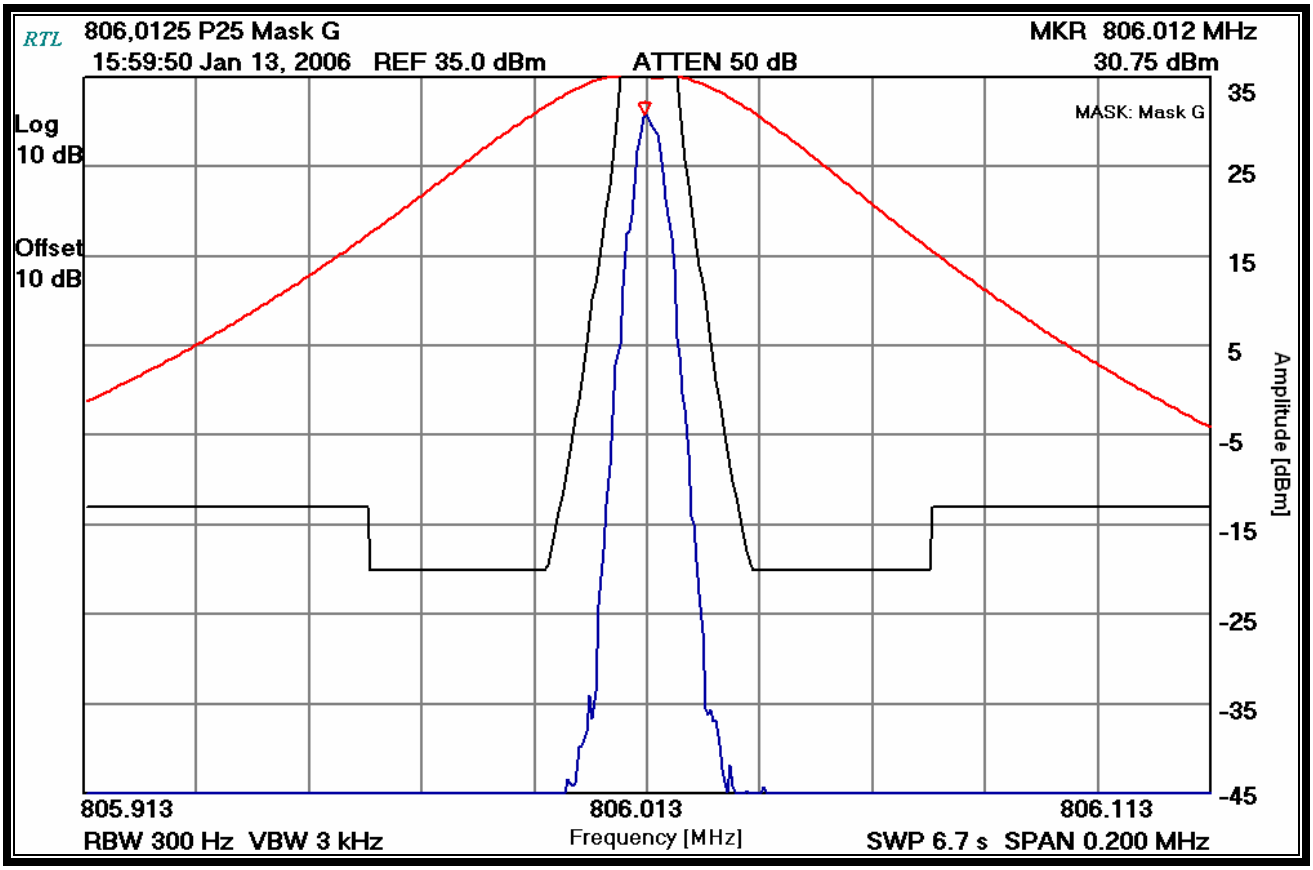
Plot 8-11: 99% Occupied Bandwidth – 2-level; Wide Band; 9600; (Mask EA)



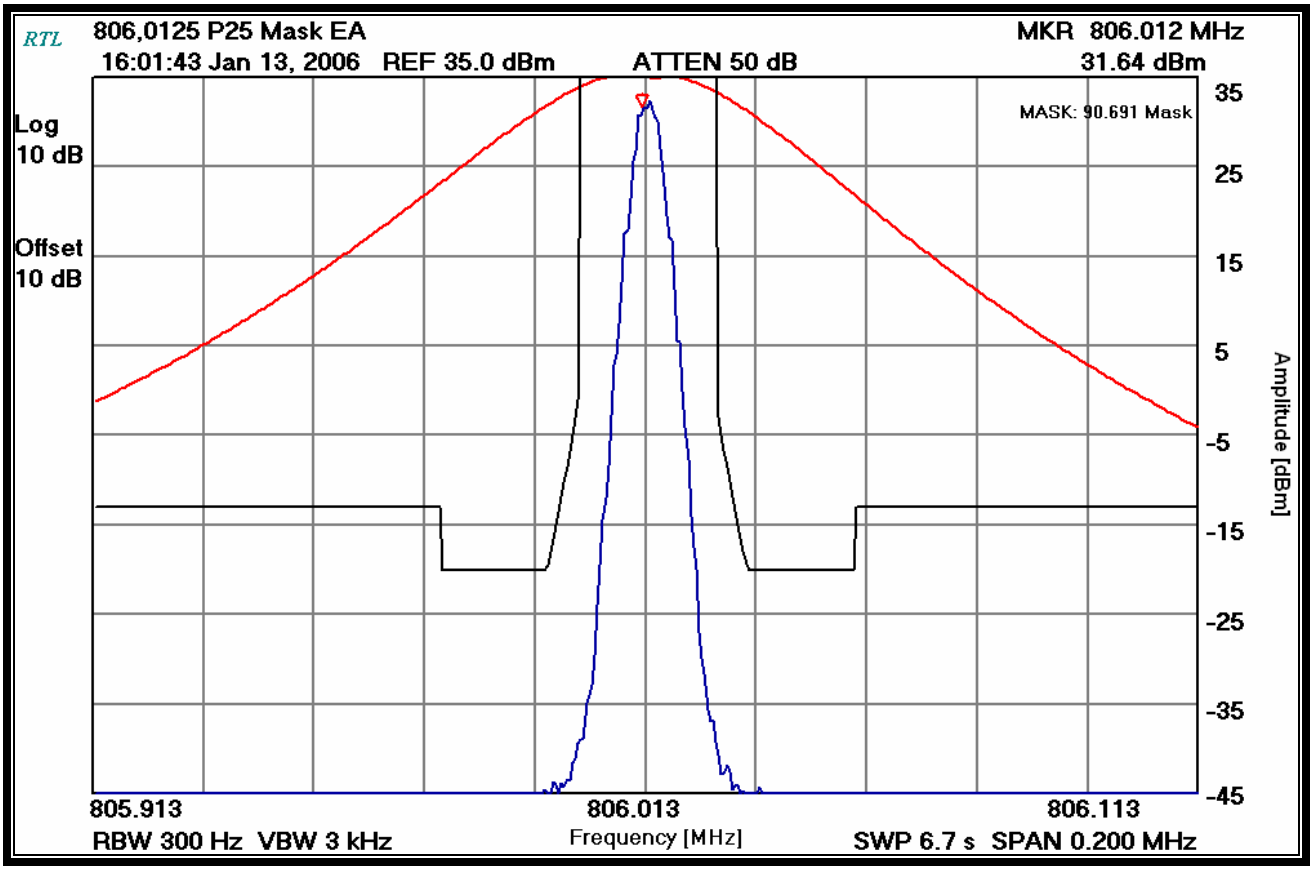
Plot 8-12: 99% Occupied Bandwidth – 2-level; NPSPAC; 9600; (Mask H)



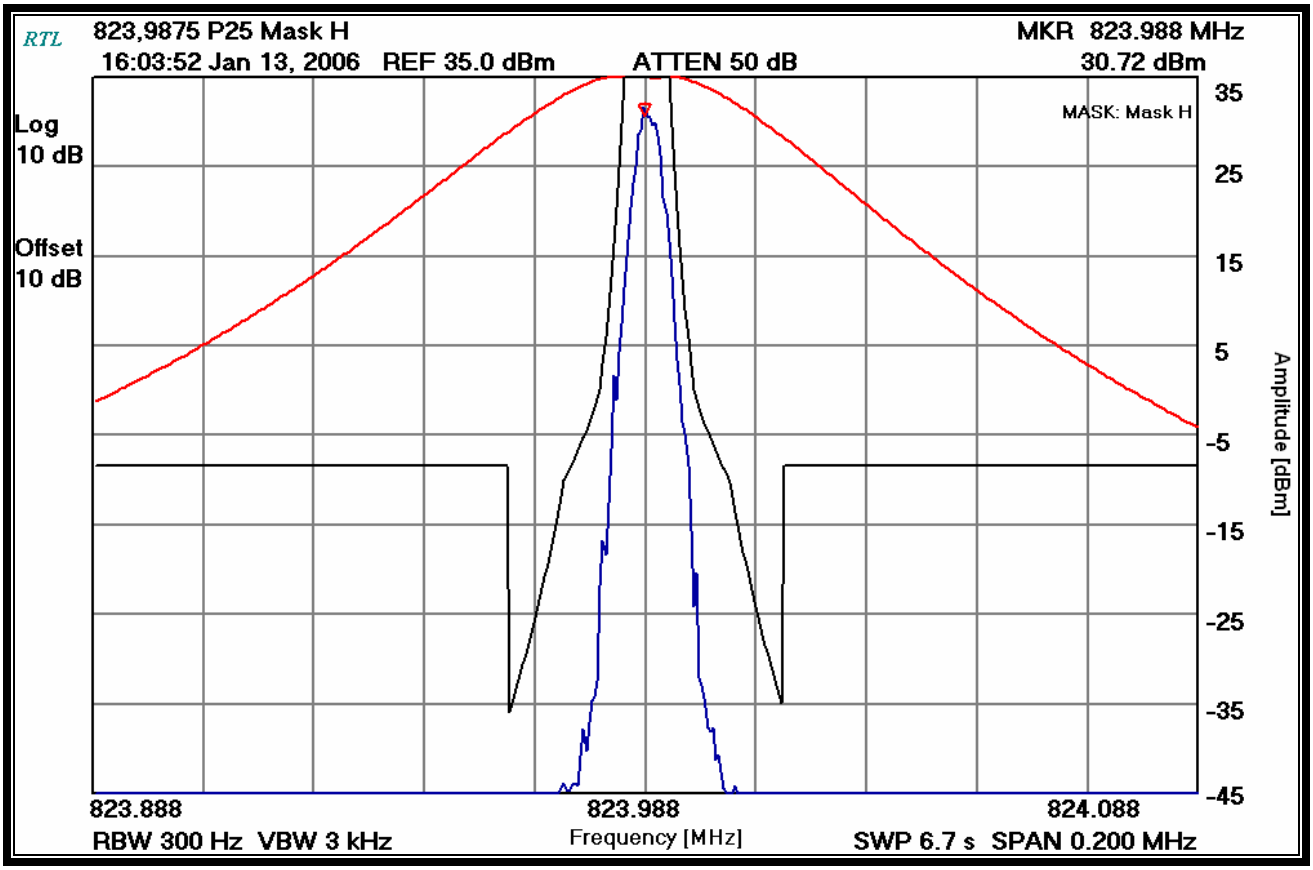
Plot 8-13: 99% Occupied Bandwidth – 4-level; (Mask G)



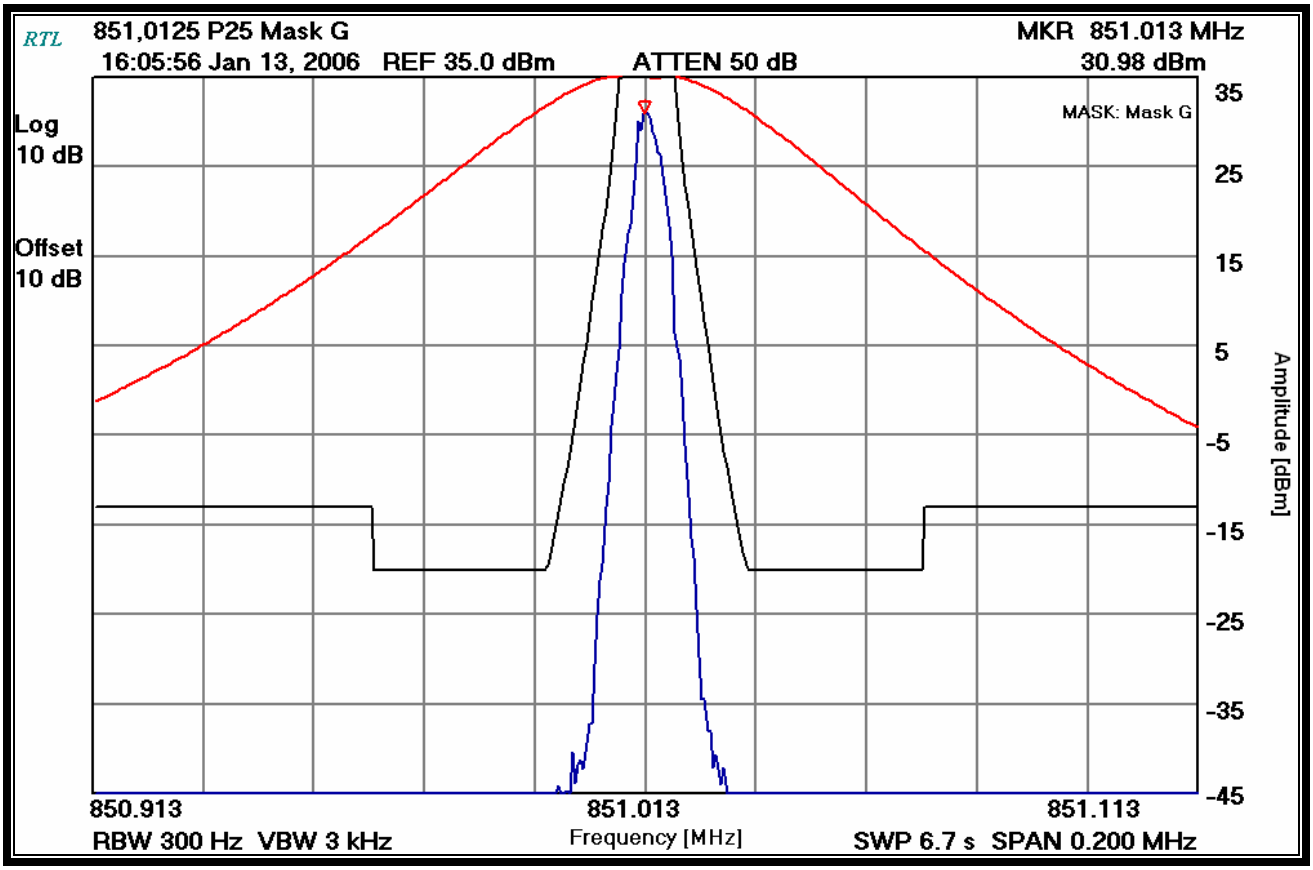
Plot 8-14: 99% Occupied Bandwidth – 4-level; (Mask EA)



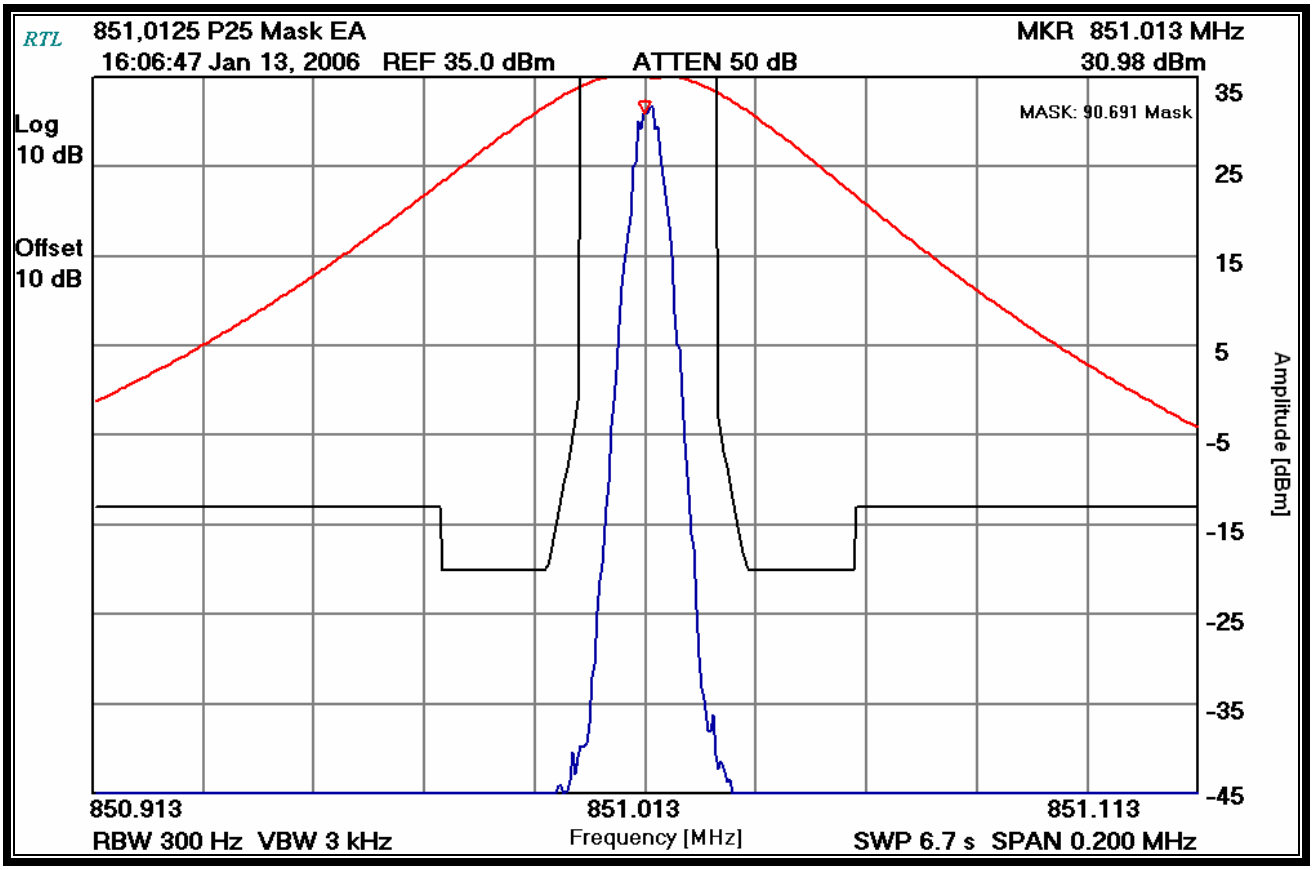
Plot 8-15: 99% Occupied Bandwidth – 4-level; (Mask H)



Plot 8-16: 99% Occupied Bandwidth – 4-level; (Mask g)



Plot 8-17: 99% Occupied Bandwidth – 4-level; (Mask EA)



Plot 8-18: 99% Occupied Bandwidth – 4-level; (Mask H)

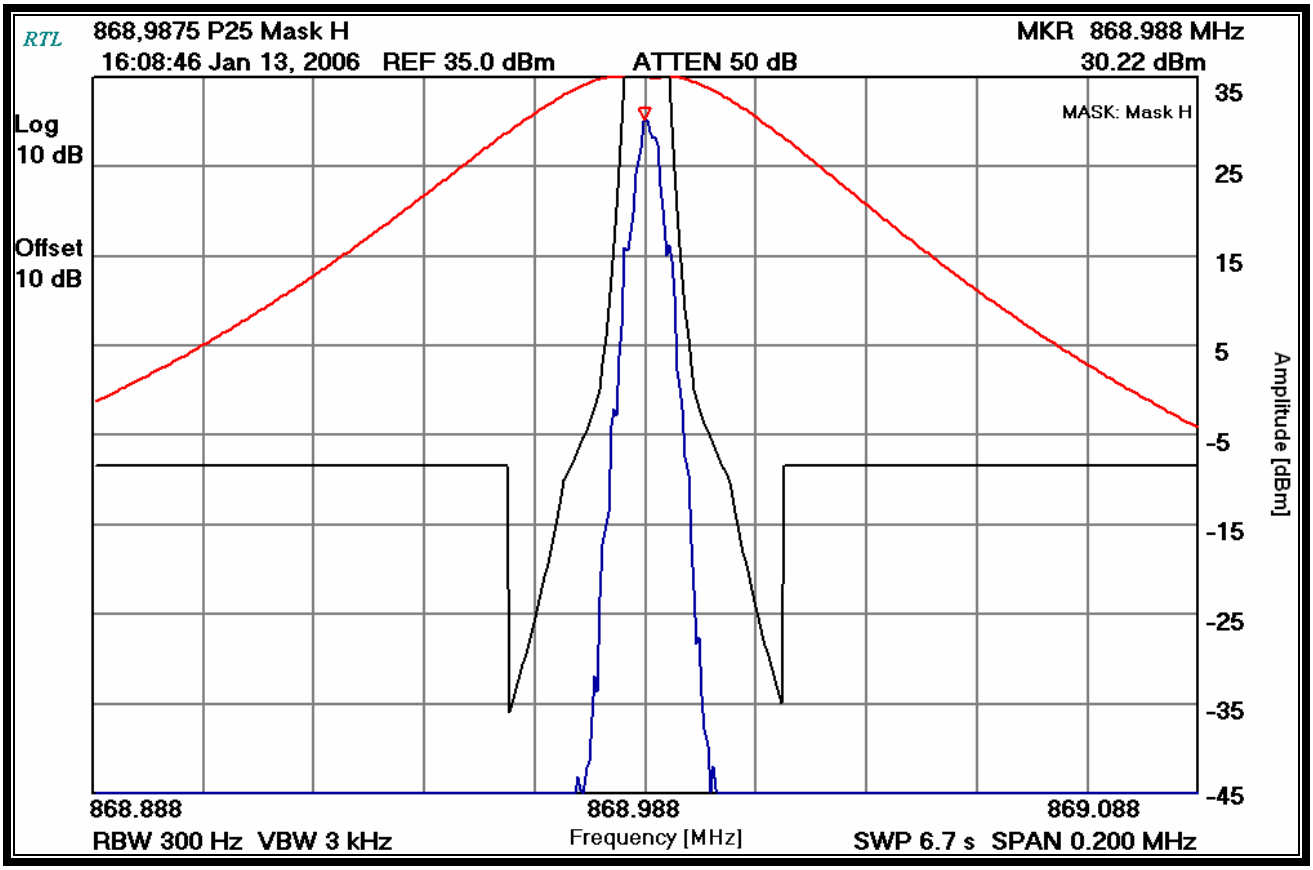


Table 8-1: Test Equipment Used For Testing Occupied Bandwidth

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Date
900913	Hewlett Packard	85462A	EMI Receiver RF Section (9 KHz – 6.5 GHz)	3325A00159	2/19/06
901057	Hewlett Packard	3336B	Synthesizer/Level Generator	2514A02585	9/14/06
900819	Weinschel Corporation	BF0830	Attenuator 10 db	N/A	12/2/08

TEST PERSONNEL:

Daniel Baltzell		January 13, 2006
Test Engineer	Signature	Date Of Test

9 FCC Part 2 §2.1047(a): Modulation Characteristics - Audio Frequency Response

9.1 Test Procedure

ANSI/TIA/EIA-603-2002, section 2.2.6

The audio frequency response is the degree of closeness to which the frequency deviation of the transmitter follows a prescribed characteristic.

The input audio level at 1000 Hz was set to produce 20% of the rated system deviation. This point is shown as the 0 dB reference level, noted DEVref. The audio signal generator was varied from 300 Hz to 5 kHz with the input level held constant. The deviation in kHz was recorded using a modulation analyzer as DEVfreq. The response in dB relative to 1 kHz was calculated as follows:

Audio Frequency Response = 20 LOG (DEVfreq/DEVref)

9.2 Test Data

Plot 9-1: Modulation Characteristics - Audio Frequency Response – (25 kHz Channel Bandwidth)

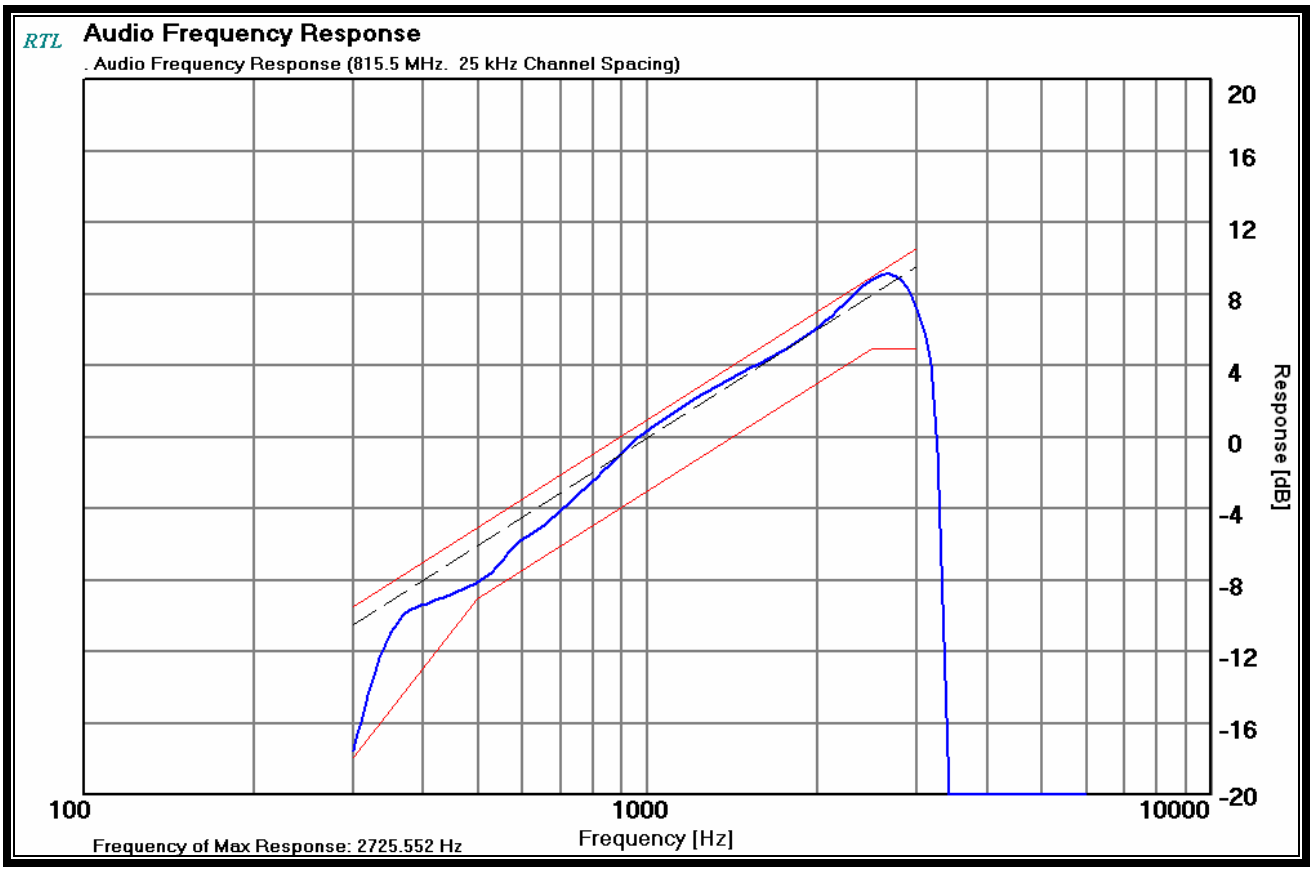
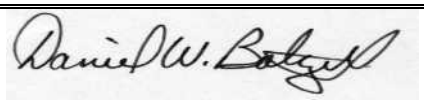


Table 9-1: Test Equipment Used For Testing Audio Frequency Response

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Date
901057	Hewlett Packard	3336B	Synthesizer/Level Generator	2514A02585	9/14/06
901118	Hewlett Packard	8901A Opt. 002-003	Modulation Analyzer	2406A00178	7/13/06
901054	Hewlett Packard	HP 3586B	Selective Level Meter	1928A01892	9/14/06
900773	Hewlett Packard	6291A	Power Supply	1928A05365	N/A
900819	Weinschel Corporation	BF0830	Attenuator 10 db	N/A	12/2/08
901350	Meterman	33XR	Multimeter	040402802	8/3/06

TEST PERSONNEL:

Daniel Baltzell		January 13, 2006
Test Engineer	Signature	Date Of Test

10 FCC Part 2 §2.1047(a): Modulation Characteristics – Audio Low Pass Filter

10.1 Test Procedure

ANSI/TIA/EIA-603-2002, 2.2.15

The Audio Low Pass Filter Response is the frequency response of the post limiter low pass filter circuit above 3000 Hz.

10.2 Test Data

Plot 10-1: Modulation Characteristics – Audio Low Pass Filter

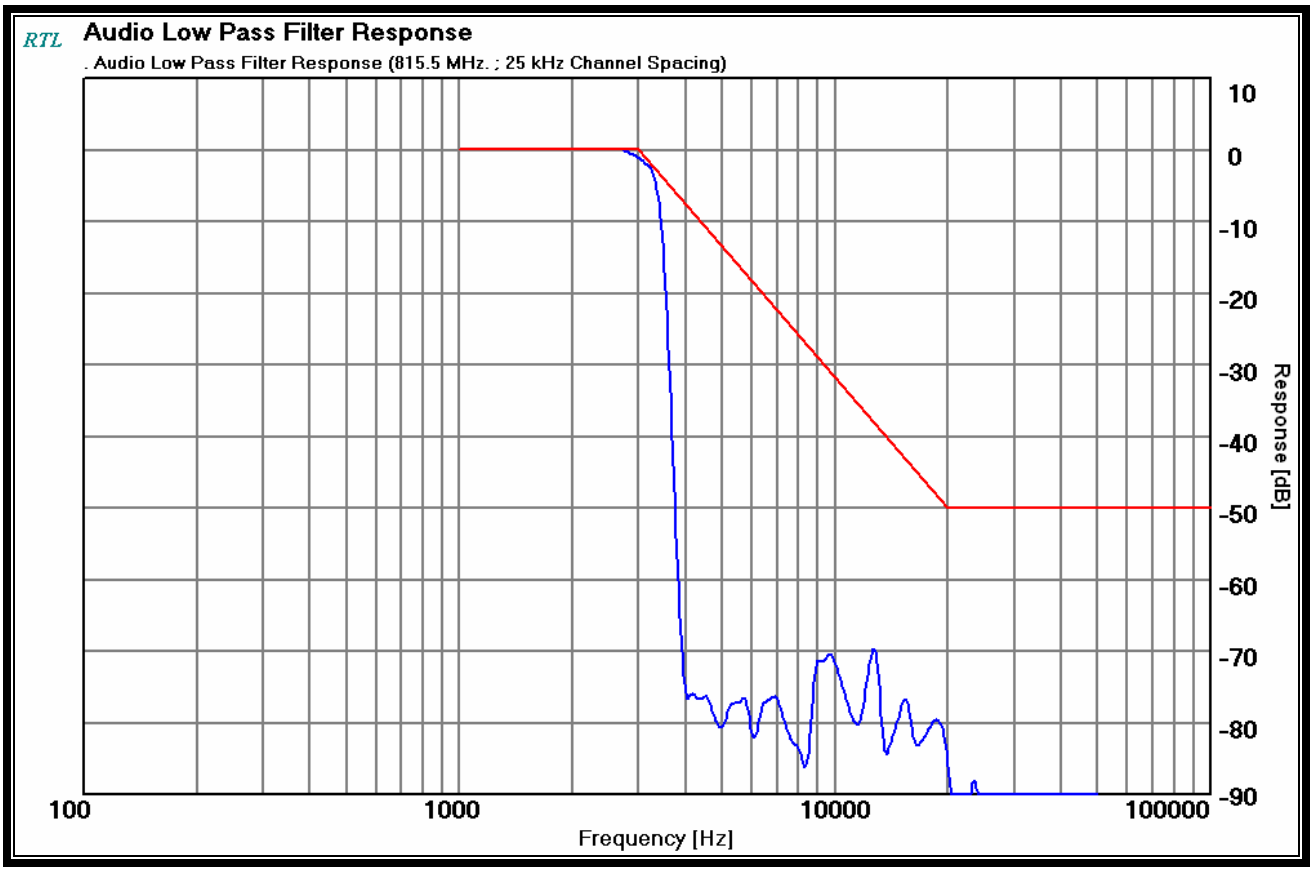
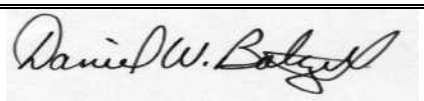


Table 10-1: Test Equipment Used For Testing Audio Low Pass Filter Response

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Date
901057	Hewlett Packard	3336B	Synthesizer/Level Generator	2514A02585	9/14/06
901118	Hewlett Packard	8901A Opt. 002-003	Modulation Analyzer	2406A00178	7/13/06
901054	Hewlett Packard	HP 3586B	Selective Level Meter	1928A01892	9/14/06
900819	Weinschel Corporation	BF0830	Attenuator 10 db	N/A	12/2/08

TEST PERSONNEL:

Daniel Baltzell		January 13, 2006
Test Engineer	Signature	Date Of Test

11 FCC Rules and Regulations Part 2 §2.1047(b): Modulation Characteristics - Modulation Limiting

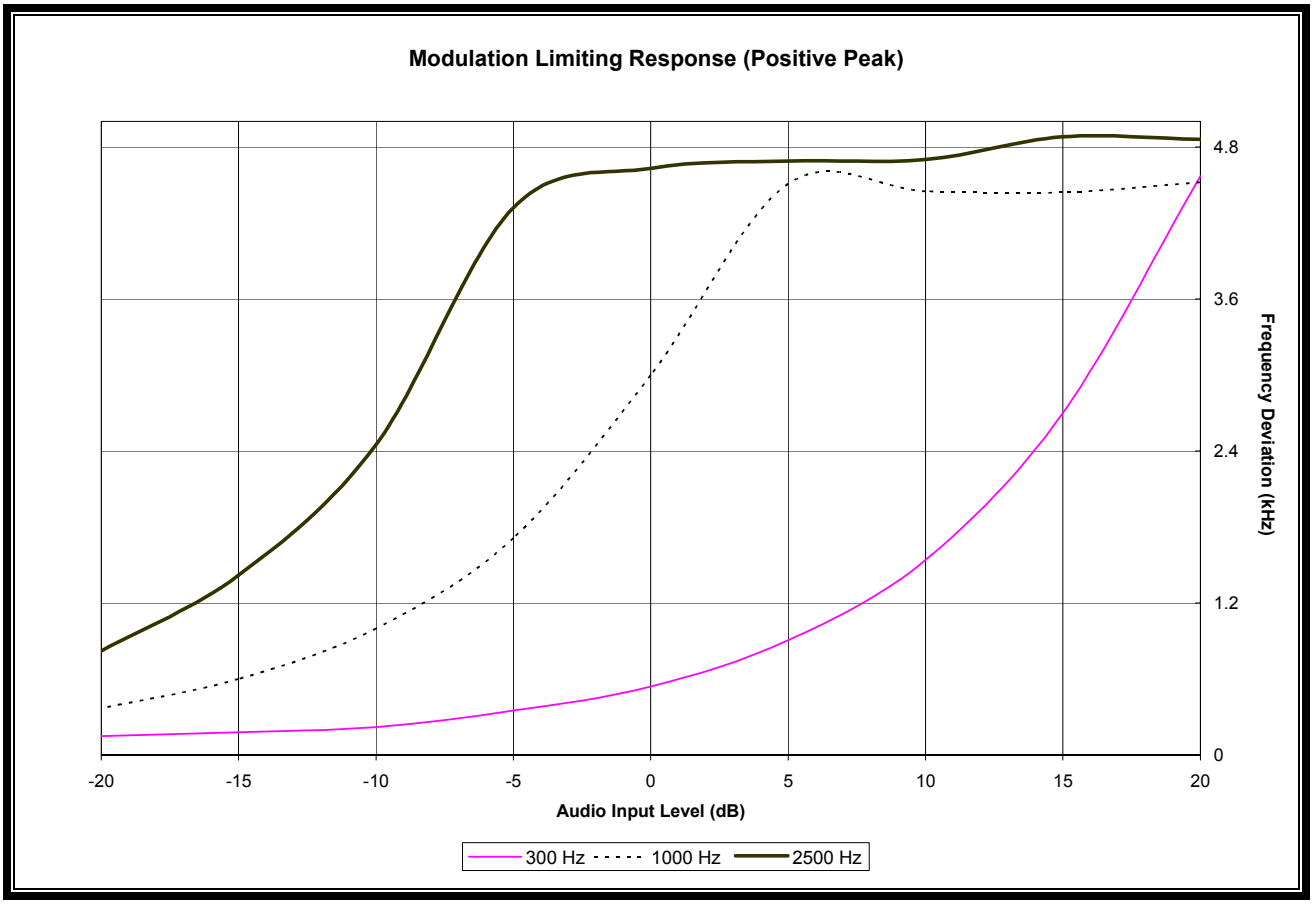
11.1 Test Procedure

ANSI/TIA/EIA-603-2002, section 2.2.3

The transmitter was adjusted for full rated system deviation. The audio input level was adjusted for 60% of rated system deviation at 1000 Hz. Using this level as a reference (0 dB), the audio input level was varied from the reference +/-20 dB for modulation frequencies of 300 Hz, 1,000 Hz, and 2,500 Hz. The system deviation obtained as a function of the input level was recorded. Both positive and negative peak deviations were recorded.

11.2 Test Data

Plot 11-1: Modulation Characteristics – Modulation Limiting: Wide Band; Positive Peak



Plot 11-2: Modulation Characteristics – Modulation Limiting: Wide Band; Negative Peak

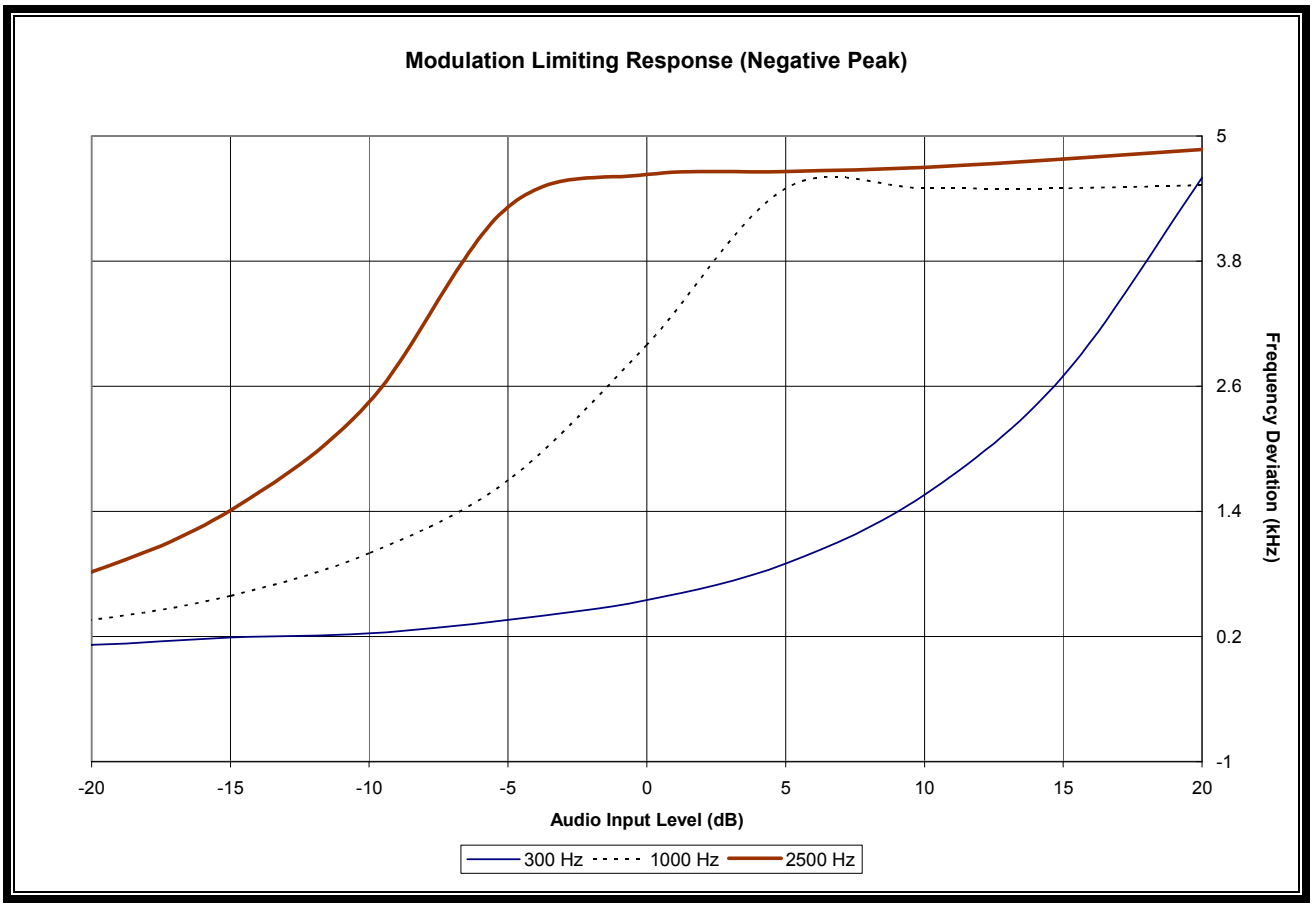
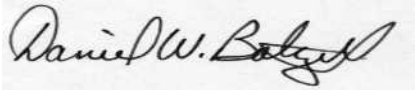


Table 11-1: Test Equipment Used For Testing Modulation Limiting

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Date
901057	Hewlett Packard	3336B	Synthesizer/Level Generator	2514A02585	9/14/06
901118	Hewlett Packard	8901A Opt. 002-003	Modulation Analyzer	2406A00178	7/13/06
900819	Weinschel Corporation	BF0830	Attenuator 10 db	N/A	12/2/08

TEST PERSONNEL:

Daniel Baltzell		January 13, 2006
Test Engineer	Signature	Date Of Test

12 Conclusion

The data in this measurement report shows that the **M/A-COM, Inc**. Model **P7100^{IP} 800 MHz Portable Radio,** and Model **P5100^{IP}; FCC ID: OWDTR-0023-E,** comply with all the requirements of Parts 90, 15 and 2 of the FCC Rules, and Industry Canada RSS-119, Issue 6, 2000.