

Exhibit 6 – Test Report
Val Avionics Ground Systems
VHF AWOS-2000 Transmitter

FCC ID: EZN5PRAWOS2000

Model No. AWOS-2000

Equipment Applicant: **Val Avionics LTD**
 PO Box 13025
 3280 25th ST SE
 Salem, Oregon 97309

6.0.3 Standard References

47 CFR 2 Code of Federal Regulations, Title 47, Part 2, "Frequency Allocations and Radio Treaty Matters; General Rules and Regulations"

47 CFR 87 Code of Federal Regulations, Title 47, Part 87, "Aviation Services"

C63.4-2003 American National Standards Institute (ANSI), "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz"

6.1 Test Requirements

The AWOS 2000 transmitter is capable of operating in one frequency band consisting of the allocation across the 117.975 MHz to 137 MHz. Operation within this VHF band is subject to the regulations of multiple CFR parts including Parts 2 and 87 for FCC Certification for units deployable in the United States. Table 6.1-1 illustrates the test requirements list, as specified in FCC CFR Part 2.

Table 6.1-1 FCC Certification Technical Requirement List

47 CFR Part 2 Requirements	Requirement Description	Compliance
2.1046	Power and Emissions	Yes
2.1047	Modulation Characteristics	Yes
2.1049	Occupied Bandwidth	Yes
2.1051	Spurious Emissions Antenna Terminal; Spectrum Mask	Yes
2.1053	Radiated Spurious Emissions	Yes
2.1055	Carrier Frequency Stability; Temperature and Voltage	Yes

6.1.1 Unit Description

The AWOS 2000 transceiver is a Voice Modulated communications equipment utilizing Amplitude modulation, with a maximum power of 5W, operating in the 6K00A3E emission designator, with 25kHz channel spacing.

6.1.2 Test Results

The test results presented in this report are for the certification testing performed on AWOS 2000, S/N UNIT 1. The majority of these tests were performed in partially shielded, low external RF, temperature and humidity controlled office, having the following ambient conditions:

Temperature 23 C

Humidity 33%

Barometric Pressure: May 24th – 101.41 kPa

May 25th – 101.10 kPa

May 26th – 101.15 kPa

May 28th – 102.27 kPa

6.2 Tests

All tests excluding 6.2.4 Radiated Spurious Emissions were taken at:

Val Avionics LTD

3280 25th ST SE

Salem, OR 97302

All tests in this document were performed over a multiple day period, as noted in each section below. All tests listed below were performed by James Mac Innes, a Design and Systems Engineer for Val Avionics.

6.2.1 Power and Emissions

With no modulation the unit power measurements were taken. The AWOS 2000 is designed to transmit 5Wrms maximum with 2.5Wrms nominal in the Aviation Communications Band of 117.975MHz to 137.000 MHz.

As part of the installation documentation, the AWOS is to be installed as a single channel transmitter at a location. As part of the installation, the unit is to be set to 2.5W. Table 6.2.1-1 shows the power response over frequency range when following these instructions.

Frequency	Output Power
118 MHz	2.48
119 MHz	2.50
120 MHz	2.50
121 MHz	2.49
122 MHz	2.50
123 MHz	2.52
124 MHz	2.49
125 MHz	2.52
126 MHz	2.50
127 MHz	2.49
128 MHz	2.52
129 MHz	2.52
130 MHz	2.52
131 MHz	2.49
132 MHz	2.48
133 MHz	2.51
134 MHz	2.52
135 MHz	2.49
136 MHz	2.49
137 MHz	2.49

Table 6.2.1-1: Frequency vs. Output Power

This test was performed May 24th, 2010

Test was performed by James A. Mac Innes


James A. Mac Innes – Design Engineer

6.2.2 Occupied Bandwidth

The occupied bandwidth measurements for the AWOS-2000 are illustrated in Figures 6.2.2-1 through 6.2.2-3. These measurements were performed via antenna terminal conducted scans. These carrier measurements were taken with modulation of 2500 Hz tone at an input level 16dB greater than that necessary to produce 50 percent modulation as defined in 47 CFR 2.1049. The 99% occupied bandwidth measurement is an automated measurement performed by the Hewlett Packard 8595E spectrum analyzer.

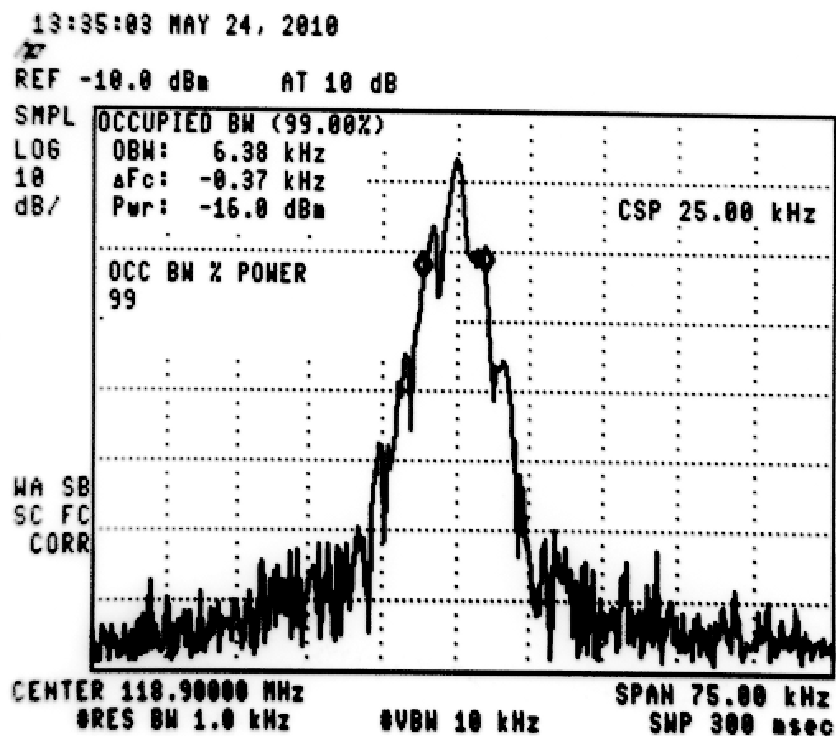


Figure 6.2.2-1 Occupied Bandwidth @ 118.9 MHz, AM

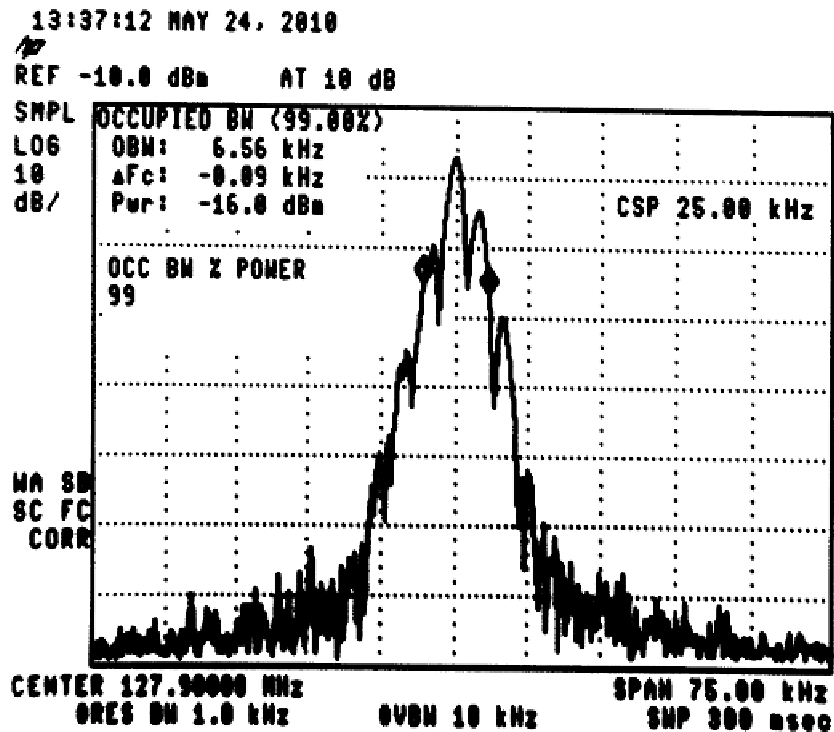


Figure 6.2.2-2 Occupied Bandwidth @ 127.9 MHz, AM

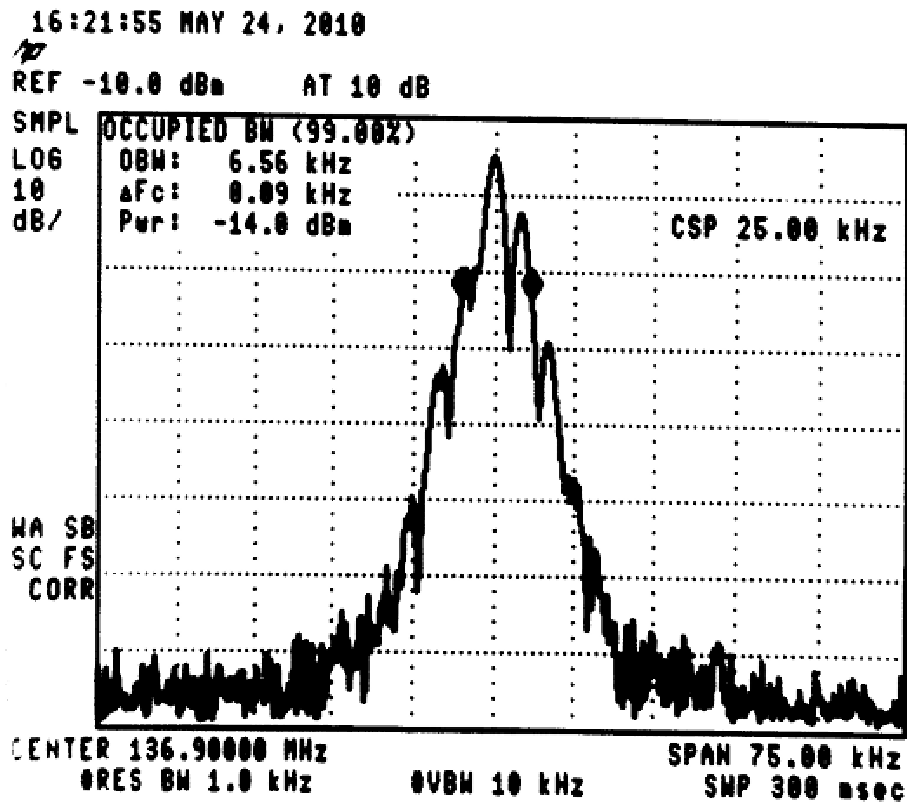


Figure 6.2.2-3 Occupied Bandwidth @ 136.9 MHz, AM

6.2.2.1 Additional Notes regarding testing

The HP 8595E has a variable attenuator internal to the unit. While the measurements show that there is an attenuator active, (in this case 10dB) the viewed signal measurements are calibrated to include this attenuation. The setup diagram is shown below in figure 6.2.2.1-1

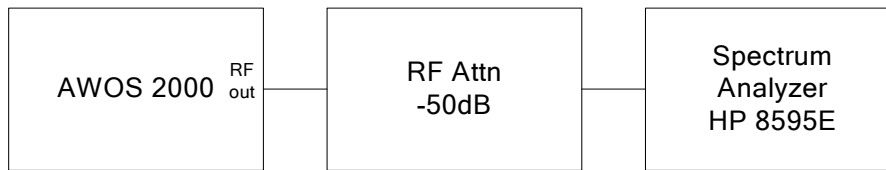


Figure 6.2.2.1-1: Bandwidth conducted emissions setup

This test was performed May 24th, 2010

Test was performed by James A. Mac Innes


James A. Mac Innes – Design Engineer

6.2.3 Spurious Emissions, Antenna Terminal

Conducted spurious emissions at the antenna port were measured over the frequency range of 30 MHz to 2 GHz. The first set of test data provided in Section 6.2.3.1 is for the spectral mask within + 250% frequency offset of the carrier fundamental frequency. The second set of test data, Section 6.2.3.2, is for all conducted spurious emissions at >250% frequency offset from the carrier frequency. All measurements are taken on the HP 8595E using a 40 dB attenuator to prevent damage to the test device.

Figure 6.2.3-1 shows the setup diagram.

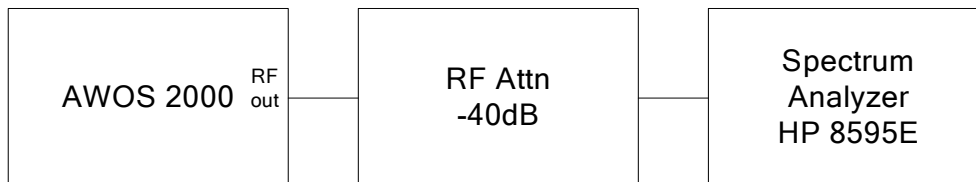


Figure 6.2.3-1: Spurious conducted emissions setup

6.2.3.1 Spectral Mask

The spectral mask was measured at frequencies $\pm 250\%$ of the allocated bandwidth centered at the mid-operating frequency of 127.5 MHz. The requirement limits are specified as -25 dBc @ 50-100% offset, -35 dBc @ 100-250% offset, and -53 dBc (43+10LogP) @ >250% offset. The same modulation schemes used for the Occupied Bandwidth were used for these measurements. Provided in this section are the unmodulated (CW) peak power levels measured at carrier frequency, which ranged from +33.6 dBm to +34.2 dBm for the 2.5W power output setting.

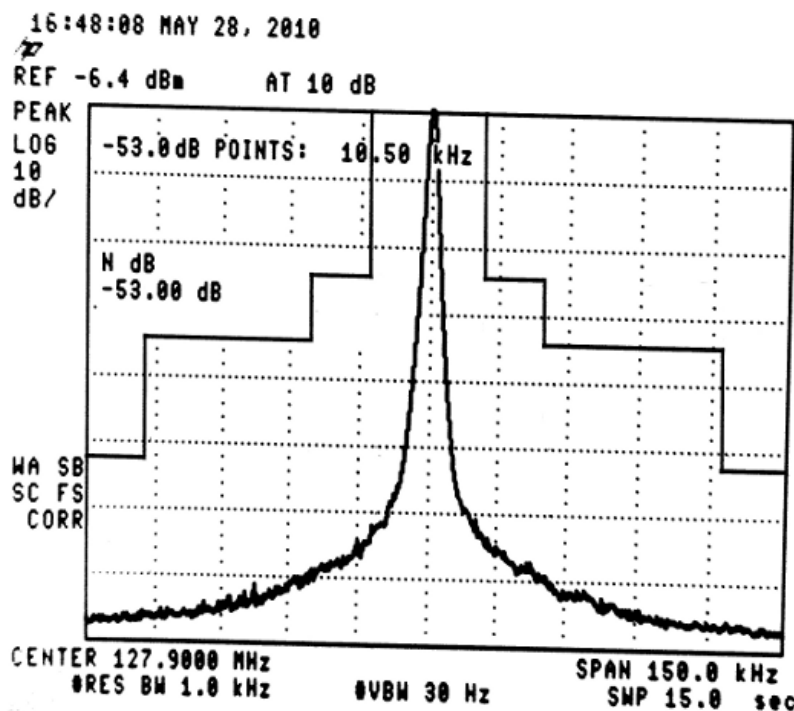


Figure 6.2.3.1-1 Spectrum Mask @ 127.9 MHz, CW

6.2.3.2 Conducted Spurious Emissions

This data illustrates the out-of-band conducted spurious emissions measured between 30 MHz and 2 GHz. The test requirement limit specified at >250% frequency offset from the carrier frequency is -53 dBc (43+10Log P) or, for 2.5 W maximum power output, approximately -19 dBm.

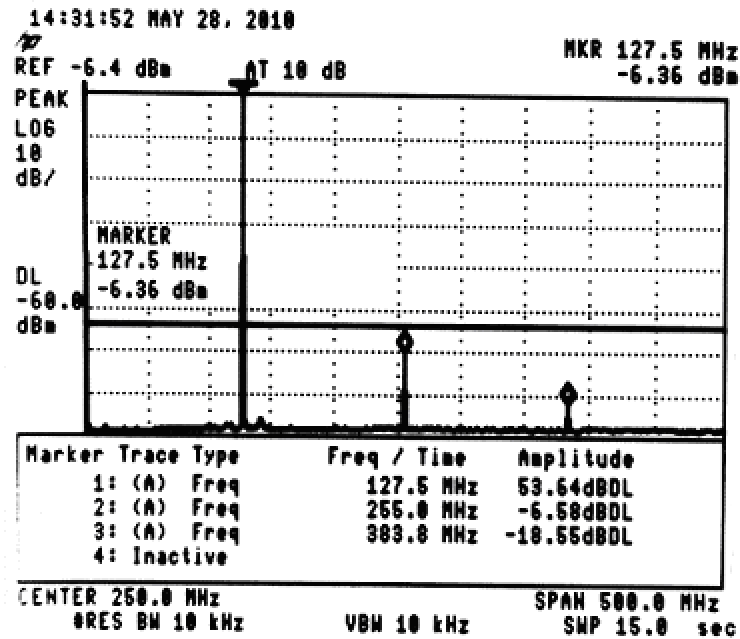


Figure 6.2.3.2-1: Conducted spurious emissions, 127.5 MHz (30 MHz – 500 MHz)

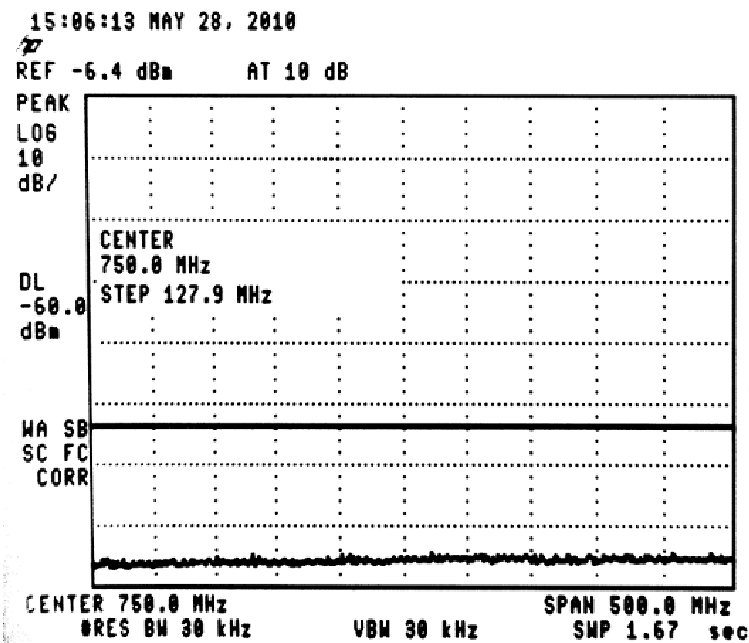


Figure 6.2.3.2-2: Conducted spurious emissions, 127.5 MHz (500 MHz – 1000 MHz)

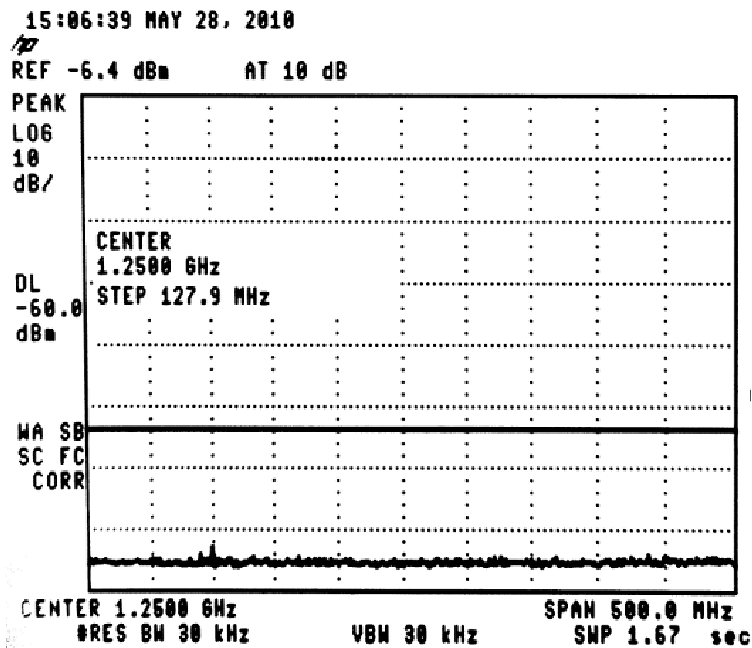
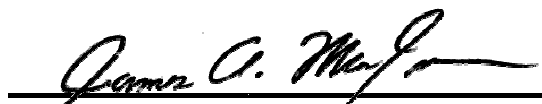


Figure 6.2.3.2-3 Conducted spurious emissions, 127.5 MHz (1 GHz – 1.5 GHz)

6.2.3.3 Additional Notes

All the conducted spurious emissions tests were performed on May 28, 2010.

Test was performed by James A. Mac Innes


James A. Mac Innes – Design Engineer

6.2.4 Radiated Spurious Emissions, Chassis/Cables

See attached documents from Northwest EMC labeled exhibit XXX.

6.2.5 Modulation Characteristics

Figure 6.2.5-2 illustrates the test setup used for measuring the audio response of the modulator and filter circuitry. Data was taken and recorded with the Fluke 87 multimeter. The IFR1200 S/A noise source output was adjusted such that the modulation percentage of the signal at 1000 Hz was 50%. This signal was then routed to the Audio-In port on the AWOS 2000. The frequency response data is presented in Figure 6.2.5-1.

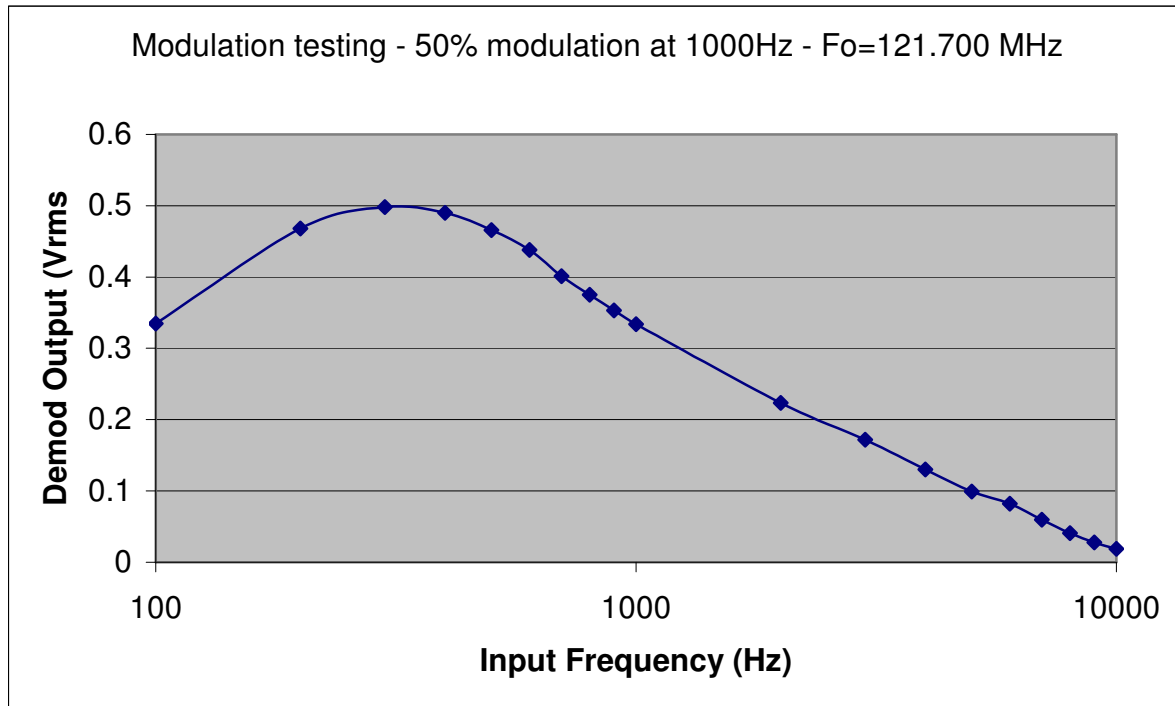


Figure 6.2.5-1: Modulation Characteristics

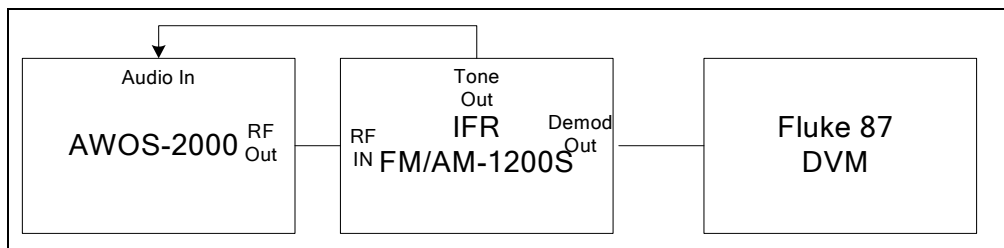
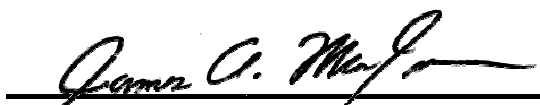


Figure 6.2.5-2: Modulation Characteristic testing setup

6.2.5.1 Additional Notes

All the conducted spurious emissions tests were performed on May 24, 2010.

Test was performed by James A. Mac Innes


James A. Mac Innes – Design Engineer

6.2.6 Frequency Stability

The COM 2000 was tested for frequency stability when operated in a CW mode at maximum rated power over the temperature range of -40°C to +55°C. This included testing at three (3) operating frequencies (118.0 MHz, 127 MHz, and 136.975 MHz). Frequency stability was also measured over an input power voltage range of 83% to 116% at DC voltage extremes for operation. The data is presented below in Tables 6.2.6-1 through 6.2.6-.

Table 6.2.6-1 Frequency Stability over Temperature – 118 MHz

Temp (C) Soak (min)					
-40	60	Set Freq (MHz)	118	118	118
	A3E	time	12:03	12:05	12:08
		t delta	0	2	5
		Freq (MHz)	117.999530	117.999532	117.999529
		offset (Hz)	-470	-468	-471
		PPM	-3.98	-3.97	-3.99
Temp (C) Soak (min)					
-30	60	Set Freq (MHz)	118	118	118
	A3E	time	13:35	13:37	13:40
		t delta	0	2	5
		Freq (MHz)	117.999605	117.999604	117.999601
		offset (Hz)	-395	-396	-399
		PPM	-3.35	-3.36	-3.38
Temp (C) Soak (min)					
-20	60	Set Freq (MHz)	118	118	118
	A3E	time	15:07	15:09	15:12
		t delta	0	2	5
		Freq (MHz)	118.00016	118.000163	118.000164
		offset (Hz)	160	163	164
		PPM	1.36	1.38	1.39
Temp (C) Soak (min)					
-10	60	Set Freq (MHz)	118	118	118
	A3E	time	16:39	16:41	16:44
		t delta	0	2	5
		Freq (MHz)	118.000508	118.000508	118.00051
		offset (Hz)	508	508	510
		PPM	4.31	4.31	4.32
Temp (C) Soak (min)					
0	60	Set Freq (MHz)	118	118	118
	A3E	time	10:58	11:00	11:03
		t delta	0	2	5
		Freq (MHz)	118.000263	118.000263	118.000273
		offset (Hz)	263	263	273
		PPM	2.23	2.23	2.31
Temp (C) Soak (min)					
10	60	Set Freq (MHz)	118	118	118
	A3E	time	12:30	12:32	12:35
		t delta	0	2	5
		Freq (MHz)	117.999993	117.999992	117.999997
		offset (Hz)	-7	-8	-10
		PPM	-0.06	-0.07	-0.08
Temp (C) Soak (min)					
20	60	Set Freq (MHz)	118	118	118
	A3E	time	14:02	14:04	14:07
		t delta	0	2	5
		Freq (MHz)	117.999644	117.999641	117.999633
		offset (Hz)	-356	-359	-366
		PPM	-3.02	-3.04	-3.10
Temp (C) Soak (min)					
30	60	Set Freq (MHz)	118	118	118
	A3E	time	15:34	15:36	15:39
		t delta	0	2	5
		Freq (MHz)	117.999335	117.999336	117.999324
		offset (Hz)	-665	-664	-670
		PPM	-5.64	-5.63	-5.68
Temp (C) Soak (min)					
40	60	Set Freq (MHz)	118	118	118
	A3E	time	17:06	17:08	17:11
		t delta	0	2	5
		Freq (MHz)	117.9991	117.999098	117.999094
		offset (Hz)	-900	-902	-905
		PPM	-7.63	-7.64	-7.67

Temp (C) Soak (min)					
50	60 A3E	Set Freq (MHz)	118	118	118
		time	12:48	12:50	12:58
		t delta	0	2	5
		Freq (MHz)	117.99905	117.999044	117.999042
		offset (Hz)	-950	-956	-958
		PPM	-8.05	-8.10	-8.12

Temp (C) Soak (min)					
55	60 A3E	Set Freq (MHz)	118	118	118
		time	14:20	14:22	14:25
		t delta	0	2	5
		Freq (MHz)	117.999095	117.999101	117.999095
		offset (Hz)	-905	-899	-905
		PPM	-7.67	-7.62	-7.67

Table 6.2.6-2 Frequency Stability over Temperature – 127 MHz

Temp (C) Soak (min)					
-40	1 A3E	Set Freq (MHz)	127	127	127
		time	12:14	12:16	12:19
		t delta	0	2	5
		Freq (MHz)	126.999545	126.999550	126.999548
		offset (Hz)	-455	-450	-452
		PPM	-3.58	-3.54	-3.56

Temp (C) Soak (min)					
-30	1 A3E	Set Freq (MHz)	127	127	127
		time	13:46	13:48	13:51
		t delta	0	2	5
		Freq (MHz)	126.999614	126.999642	126.999665
		offset (Hz)	-386	-358	-335
		PPM	-3.04	-2.82	-2.64

Temp (C) Soak (min)					
-20	1 A3E	Set Freq (MHz)	127	127	127
		time	15:18	15:20	15:23
		t delta	0	2	5
		Freq (MHz)	127.000182	127.000183	127.000165
		offset (Hz)	182	183	165
		PPM	1.43	1.44	1.30

Temp (C) Soak (min)					
-10	1 A3E	Set Freq (MHz)	127	127	127
		time	16:50	16:52	16:55
		t delta	0	2	5
		Freq (MHz)	127.000533	127.000532	127.00052
		offset (Hz)	533	532	520
		PPM	4.20	4.19	4.09

Temp (C) Soak (min)					
0	1 A3E	Set Freq (MHz)	127	127	127
		time	11:09	11:11	11:14
		t delta	0	2	5
		Freq (MHz)	127.000306	127.000305	127.000313
		offset (Hz)	306	305	313
		PPM	2.41	2.40	2.46

Temp (C) Soak (min)					
10	1 A3E	Set Freq (MHz)	127	127	127
		time	12:41	12:43	12:46
		t delta	0	2	5
		Freq (MHz)	126.999977	126.999984	126.999991
		offset (Hz)	-23	-16	-9
		PPM	-0.18	-0.13	-0.07

Temp (C) Soak (min)					
20	1 A3E	Set Freq (MHz)	127	127	127
		time	14:13	14:15	14:18
		t delta	0	2	5
		Freq (MHz)	126.999599	126.999607	126.999614
		offset (Hz)	-401	-393	-386
		PPM	-3.16	-3.09	-3.04

Temp (C) Soak (min)					
30	1 A3E	Set Freq (MHz)	127	127	127
		time	15:45	15:47	15:50
		t delta	0	2	5
		Freq (MHz)	126.999265	126.999268	126.999273
		offset (Hz)	-735	-732	-727
		PPM	-5.79	-5.76	-5.72

Temp (C) Soak (min)					
40	I	Set Freq (MHz)	127	127	127
	A3E	time	17:17	17:19	17:22
		t delta	0	2	5
					10
		Freq (MHz)	126.999041	126.99904	126.999037
		offset (Hz)	-959	-960	-963
		PPM	-7.55	-7.56	-7.58

Temp (C) Soak (min)					
50	I	Set Freq (MHz)	127	127	127
	A3E	time	12:59	13:01	13:04
		t delta	0	2	5
					10
		Freq (MHz)	126.998955	126.998951	126.998953
		offset (Hz)	-1045	-1049	-1047
		PPM	-8.23	-8.26	-8.24

Temp (C) Soak (min)					
55	I	Set Freq (MHz)	127	127	127
	A3E	time	14:31	14:33	14:36
		t delta	0	2	5
					10
		Freq (MHz)	126.999017	126.999008	126.99899
		offset (Hz)	-983	-992	-1010
		PPM	-7.74	-7.81	-7.95

Table 6.2.6-3 Frequency Stability over Temperature – 136.975 MHz

Temp (C) Soak (min)					
-40	I	Set Freq (MHz)	136.975	136.975	136.975
	A3E	time	12:25	12:28	12:30
		t delta	0	2	5
					10
		Freq (MHz)	136.974715	136.974732	136.974729
		offset (Hz)	-285	-268	-271
		PPM	-2.08	-1.96	-1.98

Temp (C) Soak (min)					
-30	I	Set Freq (MHz)	136.975	136.975	136.975
	A3E	time	13:57	13:59	14:02
		t delta	0	2	5
					10
		Freq (MHz)	136.974708	136.974745	136.974779
		offset (Hz)	-292	-255	-221
		PPM	-2.13	-1.86	-1.61

Temp (C) Soak (min)					
-20	I	Set Freq (MHz)	136.975	136.975	136.975
	A3E	time	15:29	15:31	15:34
		t delta	0	2	5
					10
		Freq (MHz)	136.975172	136.97518	136.975182
		offset (Hz)	172	180	182
		PPM	1.26	1.31	1.33

Temp (C) Soak (min)					
-10	I	Set Freq (MHz)	136.975	136.975	136.975
	A3E	time	17:01	17:03	17:06
		t delta	0	2	5
					10
		Freq (MHz)	136.975578	136.975583	136.975584
		offset (Hz)	578	583	584
		PPM	4.22	4.26	4.26

Temp (C) Soak (min)					
0	I	Set Freq (MHz)	136.975	136.975	136.975
	A3E	time	11:20	11:22	11:25
		t delta	0	2	5
					10
		Freq (MHz)	136.975375	136.97537	136.975378
		offset (Hz)	375	370	378
		PPM	2.74	2.70	2.76

Temp (C) Soak (min)					
10	I	Set Freq (MHz)	136.975	136.975	136.975
	A3E	time	12:52	12:54	12:57
		t delta	0	2	5
					10
		Freq (MHz)	136.975019	136.97502	136.97502
		offset (Hz)	19	20	20
		PPM	0.14	0.15	0.15

Temp (C) Soak (min)					
20	I	Set Freq (MHz)	136.975	136.975	136.975
	A3E	time	14:24	14:26	14:29
		t delta	0	2	5
					10
		Freq (MHz)	136.974597	136.974597	136.974598
		offset (Hz)	-403	-403	-402
		PPM	-2.94	-2.94	-2.93

Temp (C) Soak (min)					
30	I A3E	Set Freq (MHz)	136.975	136.975	136.975
		time	15:56	15:58	16:01
		t delta	0	2	5
		Freq (MHz)	136.974225	136.974225	136.974227
		offset (Hz)	-775	-775	-773
		PPM	-5.66	-5.66	-5.64

Temp (C) Soak (min)					
40	I A3E	Set Freq (MHz)	136.975	136.975	136.975
		time	17:28	17:30	17:33
		t delta	0	2	5
		Freq (MHz)	136.973965	136.973967	136.97397
		offset (Hz)	-1035	-1033	-1030
		PPM	-7.56	-7.54	-7.52

Temp (C) Soak (min)					
50	I A3E	Set Freq (MHz)	136.975	136.975	136.975
		time	13:10	13:12	13:15
		t delta	0	2	5
		Freq (MHz)	136.973872	136.973873	136.973883
		offset (Hz)	-1128	-1127	-1117
		PPM	-8.24	-8.23	-8.15

Temp (C) Soak (min)					
55	I A3E	Set Freq (MHz)	136.975	136.975	136.975
		time	14:42	14:44	14:47
		t delta	0	2	5
		Freq (MHz)	136.973901	136.973894	136.973901
		offset (Hz)	-1099	-1106	-1099
		PPM	-8.02	-8.07	-8.02

Table 6.2.6-4 Frequency Stability at DC Voltage extremes – 118 MHz

VDC	Nom %				
10	83	Set Freq (MHz)	118	118	118
		time	11:25	11:27	11:30
		t delta	0	2	5
		Freq (MHz)	117.999335	117.999336	117.99933
		offset (Hz)	-665	-664	-670
		PPM	-5.64	-5.63	-5.68

VDC	Nom %				
12	100	Set Freq (MHz)	118	118	118
		time	11:15	11:17	11:20
		t delta	0	2	5
		Freq (MHz)	117.999333	117.999324	117.999336
		offset (Hz)	-670	-676	-670
		PPM	-5.68	-5.73	-5.68

VDC	Nom %				
14	116	Set Freq (MHz)	118	118	118
		time	11:35	11:37	11:40
		t delta	0	2	5
		Freq (MHz)	117.999335	117.999336	117.99933
		offset (Hz)	-665	-664	-670
		PPM	-5.64	-5.63	-5.68

Table 6.2.6-5 Frequency Stability at DC Voltage extremes – 127 MHz

VDC	Nom %				
10	83	Set Freq (MHz)	127	127	127
		time	12:00	12:02	12:05
		t delta	0	2	5
		Freq (MHz)	126.999265	126.999268	126.999273
		offset (Hz)	-735	-732	-727
		PPM	-5.79	-5.76	-5.72

VDC	Nom %				
12	100	Set Freq (MHz)	127	127	127
		time	11:50	11:52	11:55
		t delta	0	2	5
		Freq (MHz)	126.999265	126.999268	126.999273
		offset (Hz)	-735	-732	-727
		PPM	-5.79	-5.76	-5.72

VDC	Nom %				
14	116	Set Freq (MHz)	127	127	127
		time	12:10	12:02	12:05
		t delta	0	2	5
		Freq (MHz)	126.999265	126.999268	126.999273
		offset (Hz)	-735	-732	-727
		PPM	-5.79	-5.76	-5.72

Table 6.2.6-6 Frequency Stability at DC Voltage extremes – 136.975 MHz

VDC	Nom %				
10	83	Set Freq (MHz)	136.975	136.975	136.975
		time	12:25	12:27	12:30
		t delta	0	2	5
		Freq (MHz)	136.974225	136.974225	136.974227
		offset (Hz)	-775	-775	-773
		PPM	-5.66	-5.66	-5.64

VDC	Nom %				
12	100	Set Freq (MHz)	136.975	136.975	136.975
		time	12:15	12:17	12:20
		t delta	0	2	5
		Freq (MHz)	136.974225	136.974225	136.974227
		offset (Hz)	-775	-775	-773
		PPM	-5.66	-5.66	-5.64

VDC	Nom %				
14	116	Set Freq (MHz)	136.975	136.975	136.975
		time	12:36	12:38	12:41
		t delta	0	2	5
		Freq (MHz)	136.974225	136.974225	136.974227
		offset (Hz)	-775	-775	-773
		PPM	-5.66	-5.66	-5.64

6.2.6.1 Additional Notes

The temperature and frequency stability tests were performed on May 25th and 26th 2010.

Test was performed by James A. Mac Innes


James A. Mac Innes – Design Engineer

6.3.1 Equipment List

HP 8595E Spectrum Analyzer, SN 3512U00425, Calibration good thru Dec. 2012
IFR 1200S, SN 10542, Calibration dates 10/3/2009 – 10/3/2010
Fluke 87 Multimeter, SN 5504687, Calibration dates 10/3/2009 – 10/3/2010
Communication Instruments Power Pad 100 (this unit has both a 40dB and 50dB attenuated output)

6.3.2 Setup Diagrams

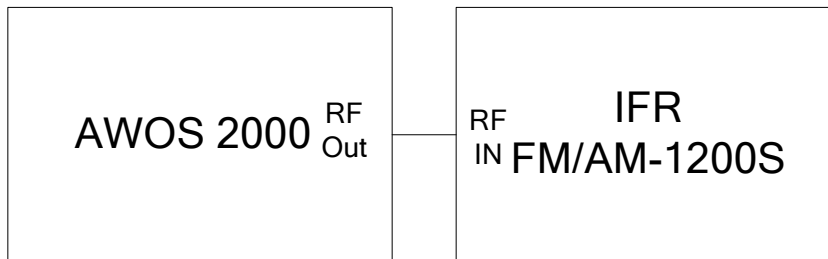


Figure 6.3.2-1: Power and Frequency measurement setup

6.3.3 Setup Notes

Communication Instruments Power Pad 100 was calibrated using the IFR 1200S and the HP 8595E Spectrum Analyzer.