TABLE OF CONTENTS LIST FOR PART 90 WIRELESS MICROPHONE

APPLICANT: AZDEN CORPORATION

FCC ID: BZB AAVTL

TEST REPORT:

EXHIBITS CONTAINING:

GENERAL INFORMATION REQUIRED FOR TYPE ACCEPTANCE

2.1033 (c)(1)(2) AZDEN CORPORATION will sell the FCC ID: BZB AAVTL VHF microphone in quantity, for use under FCC RULES PART 90 Subpart K.

2.1033 (c) TECHNICAL DESCRIPTION
2.1033 (3) User Manual See Exhibit 6

2.1033 (4) Type of Emission: 25K5F3E

Bn = 2M + 2DK
M = 7.5 kHz
D = 5.25 kHz(Peak Deviation)
K = 1
Bn = 2(7.5k) + 2(5.25k)(1) = 25.5k

ALLOWED AUTHORIZED BANDWIDTH = 54.00 kHz.

90.209(b)(5)

2.1033 (5) Frequency Range: 169.445, 169.505, 170.245, 170.305 171.045, 171.105, 171.845, and 171.905 MHz

(6) Power Range and Controls: There are NO user Power controls.

(7) Maximum Output Power Allowed:
0.5 Watts,
into a 50 ohm resistive load.

(8) DC Voltages and Current into Final Amplifier:

POWER INPUT
FINAL AMPLIFIER ONLY
Vce = 8.9 Volts
IC = 0.09 A

INPUT POWER - (8.9V)(0.09A) = 0.80 watts

(9) Tune-up procedure. The tune-up procedure is given in EXHIBIT 7.

2.1033 (10) Complete Circuit Diagrams: The circuit diagram is included as EXHIBIT 4A-4B. The block diagram is included as EXHIBIT 3A-3B.

(11) Function of each electron tube or semiconductor device or other active circuit device:
-SEE EXHIBIT 5

(8) Instruction book. The instruction manual is included as EXHIBIT 6A-6N.

(10) Description of all circuitry and devices provided for determining and stabilizing frequency is included in the circuit description in EXHIBIT 8.

2.1033(c)(11) A photograph or drawing of the equipment identification label is shown in Exhibit 1.

2.1033(c)(12) Photographs of the equipment of sufficient clarity to reveal equipment construction and layout and label location are shown in Exhibit 2A-2E.

2.1033(c)(13) For equipment employing digital modulation, a detail description of the modulation technique. This UUT uses voice to modulate the transmitter.

2.1033(c)(14) data required for 2.1046 to 2.1057 See below

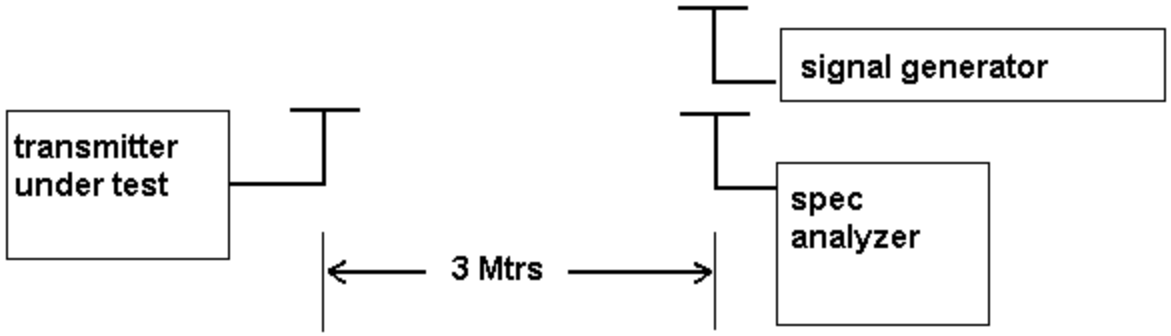
2.1046(a) RF power output.
RF power is measured as ERP as the antenna is permanently attached. The substitution method was used. With a nominal battery voltage of 9.0 VDC, and the transmitter properly adjusted the RF output measures:

OUTPUT POWER: .005 Watts

2.1033 Measurement Procedures for Type Acceptance:

Measurement techniques performed in accordance with TIA/EIA STD 603-1992.

METHOD OF MEASURING RF POWER OUTPUT



2.1047(a) Voice modulation characteristics:
Audio frequency responses are on pages 5.

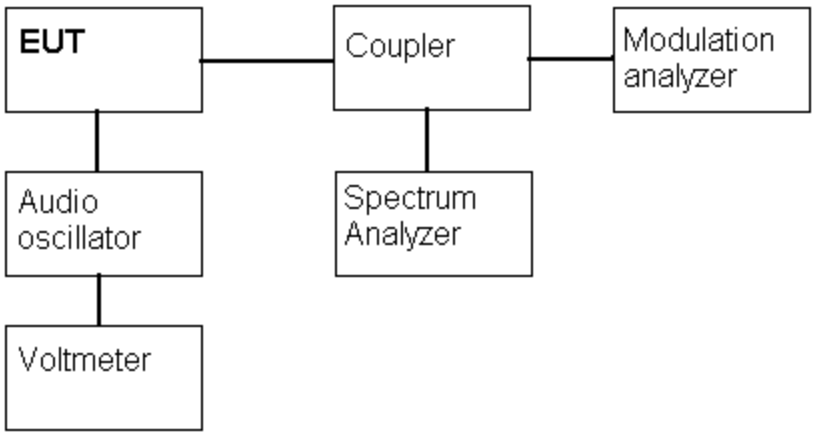
2.1049 Audio Low Pass Filter
This UUT does not have a low pass filter.

2.1049 Occupied bandwidth:
90.210(c,)
For transmitters that are not equipped with an audio low pass filter pursuant to 90.211(b), the power of any emission must be attenuated below the unmodulated carrier output power as follows; (1) On any frequency removed from the center of the authorized bandwidth by a displacement frequency(fd in kHz) of more than 5 kHz but not more than10 kHz: At least 83 log(fd/5)dB; (2)ON any frequency removed from the center of the authorized bandwidth by a displacement frequency(fd in kHz) of more than 10 kHz, but not more than 250% of the authorized bandwidth: At least 29 log(fd2/11)dB or 50 dB, whichever is the lesser attenuation; (3) On any frequency removed from the center of the authorized bandwidth by more than 250% of the authorized bandwidth: At least 43+10 log(Po)dB.

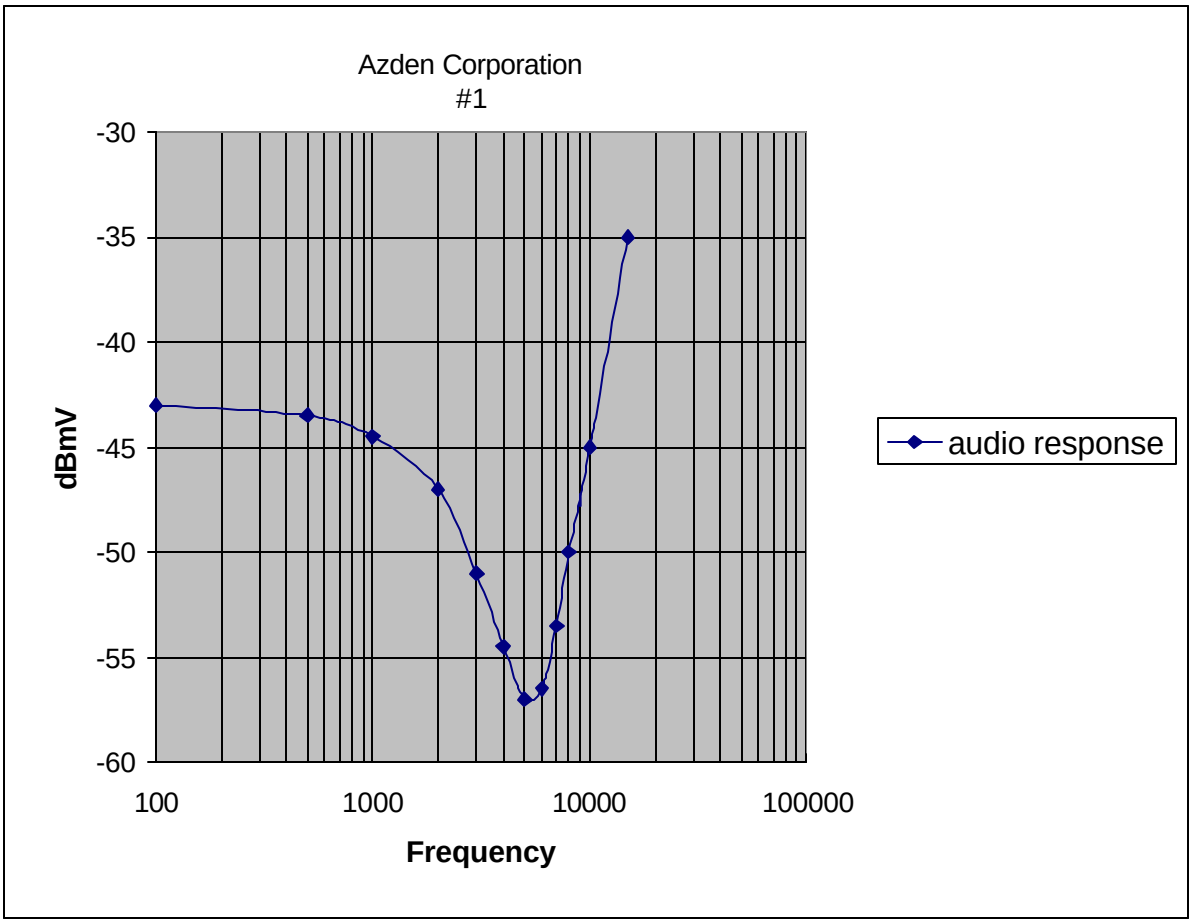
Test procedure: TIA/EIA-603 para 2.2.11 , with the exception that various tones were used.

Test setup diagram

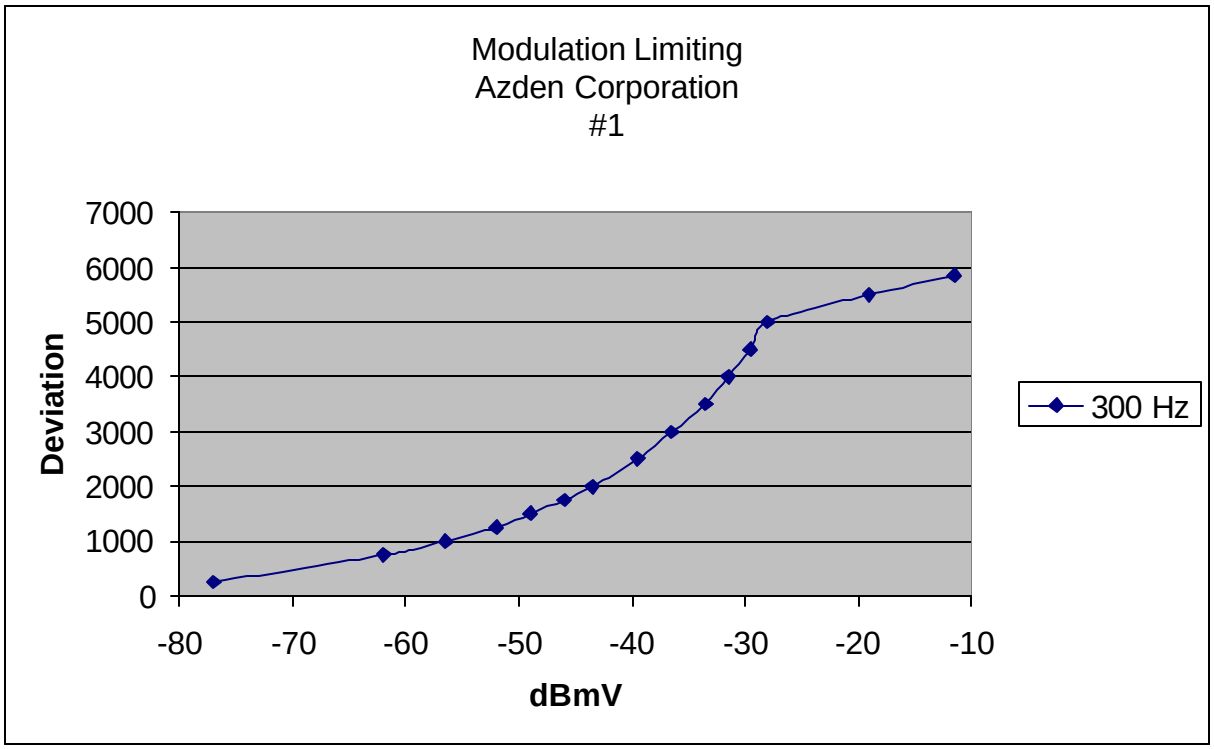
OCCUPIED BANDWIDTH MEASUREMENT



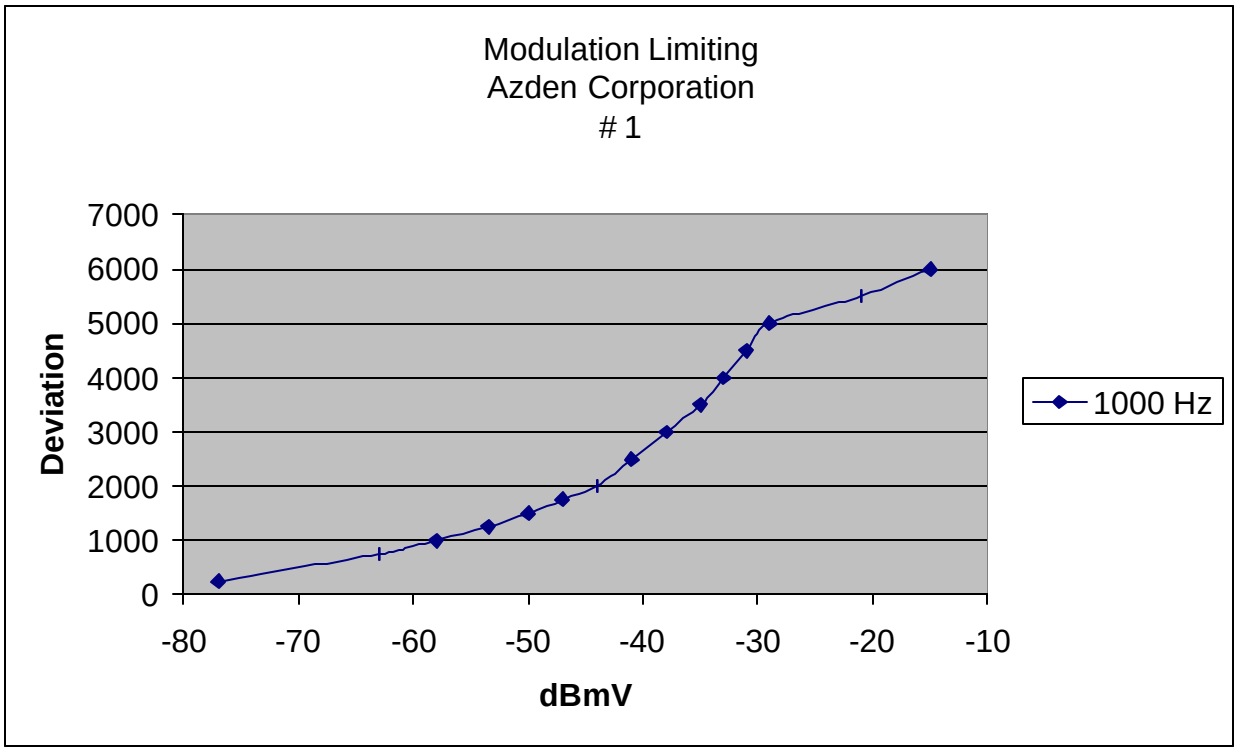
AUDIO FREQUENCY RESPONSE PLOT



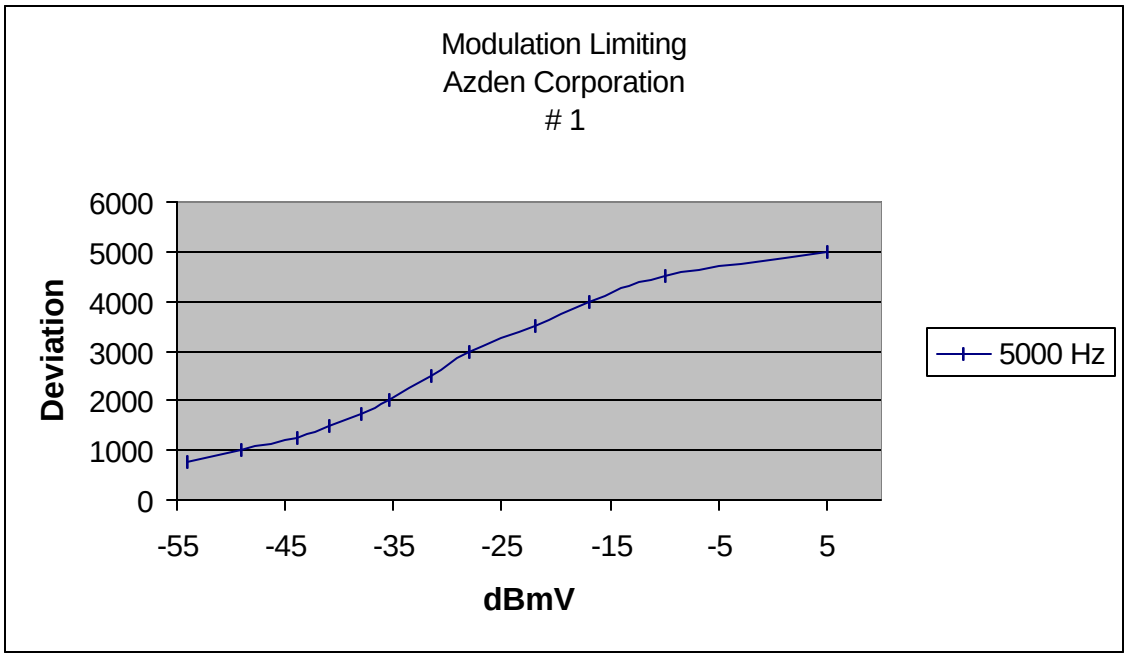
MODULATION LIMITING 300 Hz PLOT



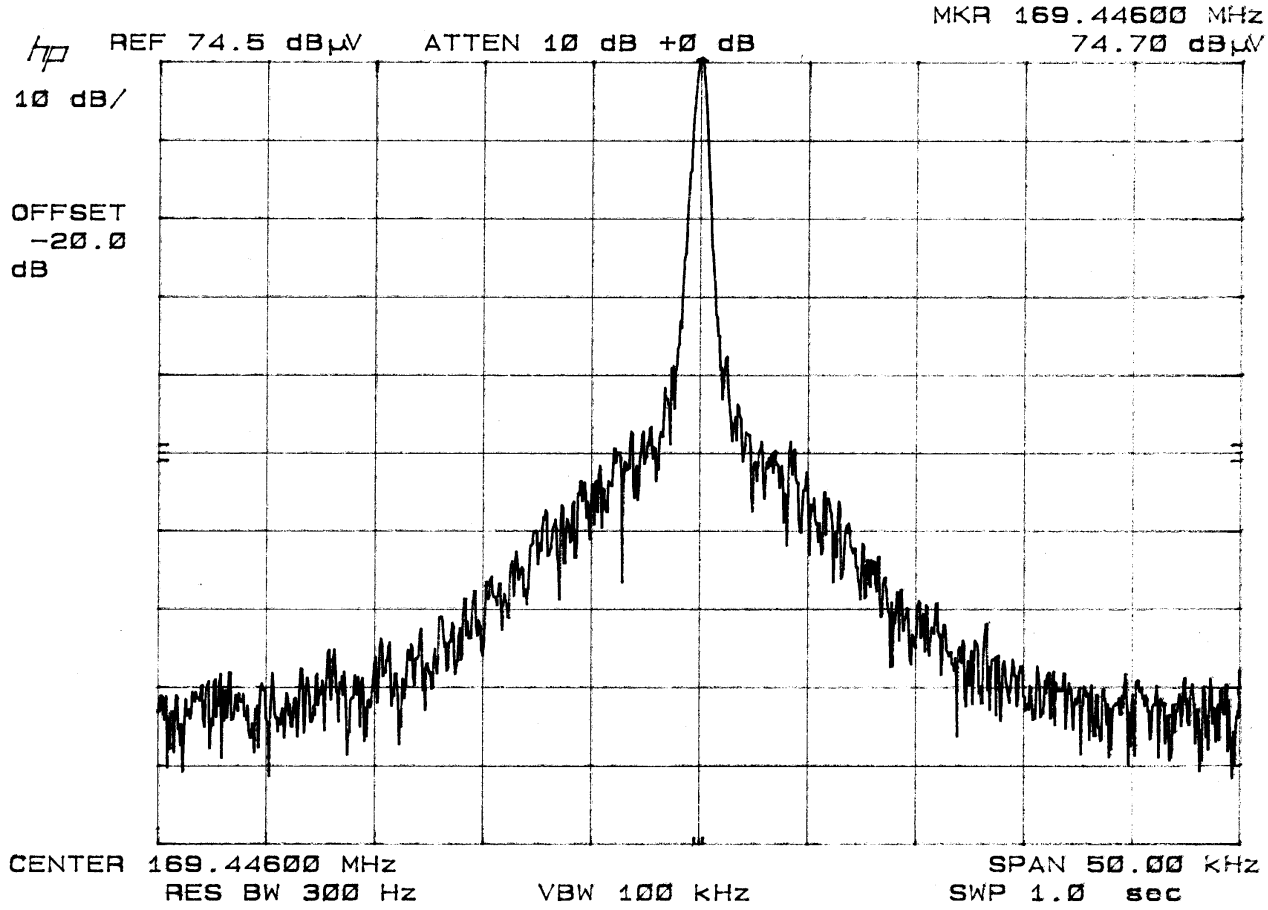
MODULATION LIMITING 1000 Hz PLOT



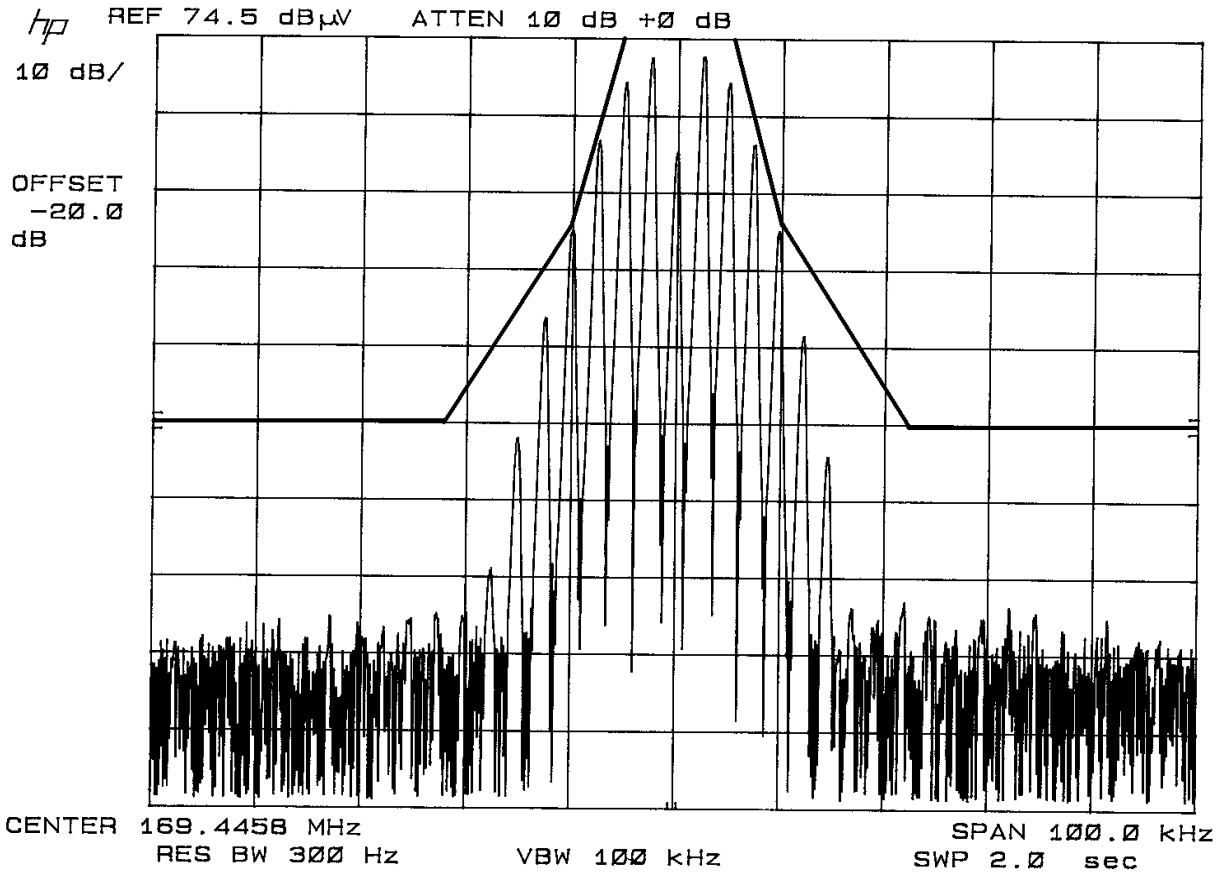
MODULATION LIMITING 5000 Hz PLOT



OCCUPIED BANDWIDTH CW PLOT



OCCUPIED BANDWIDTH



2.1053 Field strength of spurious emissions:

NAME OF TEST: RADIATED SPURIOUS EMISSIONS

REQUIREMENTS: Emissions must be 50 +10log(Po) dB below the mean power output of the transmitter.

50 + 10log(0.005) = 27 dB

TEST DATA:

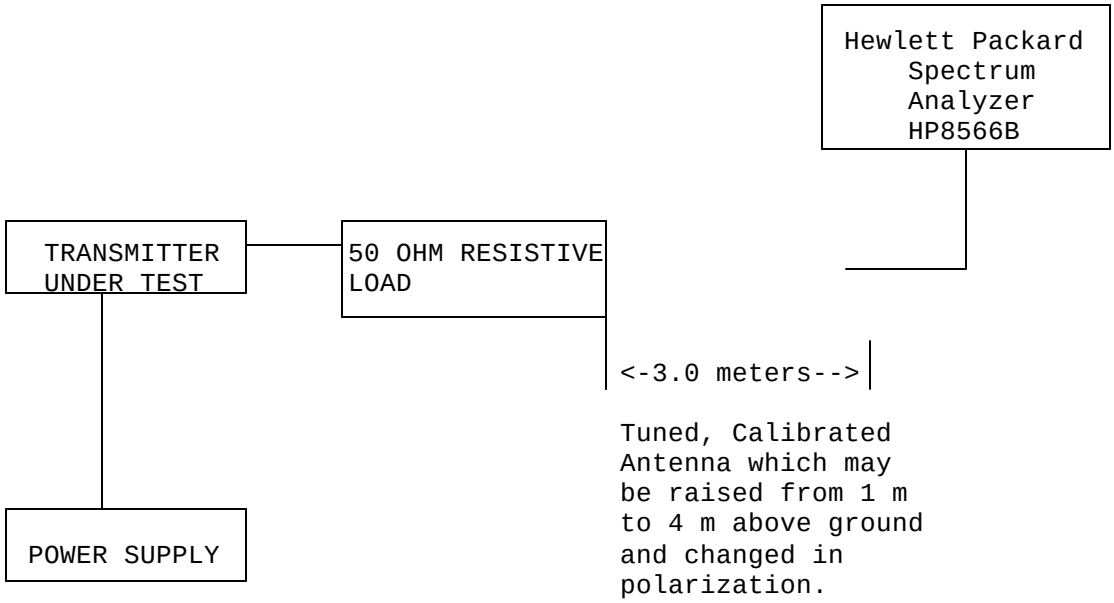
Emission Frequency MHz	dBc	Margin dB
169.40	0.0	0.0
338.80	*	
508.30	*	
677.70	*	
1,016.60	*	
1,186.00	51	24
1,355.50	*	
1,524.90	*	
1,694.40	*	
170.20	0.0	0.0
340.50	*	
681.00	*	
851.30	*	
1,021.50	*	
1,191.80	52	25
1,362.00	*	
1,702.60	*	

Worst case data presented.

NOTE:* emissions were below that of the data presented.

METHOD OF MEASUREMENTS: The tabulated data shows the results of the radiated field strength emissions test. The spectrum was scanned from 30 to at least the tenth harmonic of the fundamental. This test was conducted per TIA/EIA STANDARD 603 using the substitution method. Measurements were made at the open field test site of TIMCO ENGINEERING, INC. located at 849 NW State Road 45, Newberry, FL 32669.

Method of Measuring Radiated Spurious Emissions



Equipment placed 80 cm above ground
on a rotatable platform.

2.1055 Frequency stability:
90.266(b)(3)

Temperature and voltage tests were performed to verify that the frequency remains within +-32.5 kHz of the assigned frequency. The test was conducted as follows:

The transmitter was placed in the temperature chamber at 25 degrees C and allowed to stabilize for one hour. The transmitter was keyed ON for one minute during which four frequency readings were recorded at 15 second intervals. The worse case number was taken for temperature plotting. The assigned channel frequency was considered to be the reference frequency. The temperature was then reduced to -30 degrees C after which the transmitter was again allowed to stabilize for one hour. The transmitter was keyed ON for one minute, and again frequency readings were noted at 15 second intervals. The worst case number was recorded for temperature plotting. This procedure was repeated in 10 degree increments up to + 50 degrees C.

Readings were also taken at minus 15% of the battery voltage of 9 VDC, which we estimate to be the battery endpoint.

MEASUREMENT DATA:

Assigned Frequency (Ref. Frequency): 169.444 449 MHz

TEMPERATURE_°C	FREQUENCY_MHz	PPM
REFERENCE	169.444 449	00.0
-30	169.447 365	15.59
-20	169.447 450	17.21
-10	169.447 435	17.71
0	169.447 187	17.62
+10	169.446 243	16.16
+20	169.445 059	10.59
+30	169.443 787	3.60
+40	169.442 326	- 3.91
+50	171.043 526	-12.53

BATT	**BATT. DATA**	**VOLTS**	**BATT. PPM**
-15%	169.444 447	7.65	-0.01
+15%	169.444 478	10.35	0.17

RESULTS OF MEASUREMENTS: The maximum frequency variation over the temperature range was –12.53 to +17.71 ppm. The maximum frequency variation with voltage was –0.01 to +0.17 ppm.

Equipment List

	DEVICE	MFGR	MODEL	SERNO	CAL/CHAR DATE	DUE DATE or STATUS
X	3-Meter OATS	TEI	N/A	N/A	Listed 12/22/99	12/22/02
	3/10-Meter OATS	TEI	N/A	N/A	Listed 3/26/01	3/26/04
X	Receiver, Beige Tower					
X	Spectrum Analyzer (Tan)	HP	8566B Opt 462	3138A07786 3144A20661	CAL 8/31/01	8/31/02
X	RF Preselector (Tan)	HP	85685A	3221A01400	CAL 8/31/01	8/31/02
X	Quasi-Peak Adapter (Tan)	HP	85650A	3303A01690	CAL 8/31/01	8/31/02
	Receiver, Blue Tower					
	Spectrum Analyzer (Blue)	HP	8568B	2928A04729 2848A18049	CHAR 10/22/01	10/22/02
	RF Preselector (Blue)	HP	85685A	2926A00983	CHAR 10/22/01	10/22/02
	Quasi-Peak Adapter (Blue)	HP	85650A	2811A01279	CHAR 10/22/01	10/22/02
	Biconnical Antenna	Electro-Metrics	BIA-25	1171	CAL 4/26/01	4/26/03
X	Biconnical Antenna	Eaton	94455-1	1096	CAL 10/1/01	10/1/02
	Biconnical Antenna	Eaton	94455-1	1057	CHAR 3/15/00	3/15/01
	Biconilog Antenna	EMCO	3143	9409-1043		
X	Log-Periodic Antenna	Electro-Metrics	LPA-25	1122	CAL 10/2/01	10/2/02
	Log-Periodic Antenna	Electro-Metrics	EM-6950	632	CHAR 10/15/01	10/15/02
	Log-Periodic Antenna	Electro-Metrics	LPA-30	409	CHAR 10/16/01	10/16/02
	Dipole Antenna Kit	Electro-Metrics	TDA-30/1-4	152	CAL 3/21/01	3/21/02
	Dipole Antenna Kit	Electro-Metrics	TDA-30/1-4	153	CHAR 11/24/00	11/24/01
	Double-Ridged Horn Antenna	Electro-Metrics	RGA-180	2319	CAL 12/19/01	12/19/02
X	Horn Antenna	Electro-Metrics	EM-6961	6246	CAL 3/21/01	3/21/02
	Horn Antenna	ATM	19-443-6R	None	No Cal Required	
	Passive Loop Antenna	EMC Test Systems	EMCO 6512	9706-1211	CHAR 7/10/01	7/10/02

	DEVICE	MFGR	MODEL	SERNO	CAL/CHAR DATE	DUE DATE or STATUS
	Line Impedance Stabilization . . .	Electro-Metrics	ANS-25/2	2604	CAL 10/9/01	10/9/02
	Line Impedance Stabilization . . .	Electro-Metrics	EM-7820	2682	CAL 3/16/01	3/16/02
	Termaline Wattmeter	Bird Electronic Corporation	611	16405	CAL 5/25/99	(5/25/00)
	Termaline Wattmeter	Bird Electronic Corporation	6104	1926	CAL 12/12/01	12/12/02
	Oscilloscope	Tektronix	2230	300572	CHAR 2/1/01	2/1/02
X	Temperature Chamber	Tenney Engineering	TTRC	11717-7	CHAR 1/22/02	1/22/03
	AC Voltmeter	HP	400FL	2213A14499	CAL 10/9/01	10/9/02
	AC Voltmeter	HP	400FL	2213A14261	CHAR 10/15/01	10/15/02
	AC Voltmeter	HP	400FL	2213A14728	CHAR 10/15/01	10/15/02
X	Digital Multimeter	Fluke	77	35053830	CHAR 1/8/02	1/8/03
	Digital Multimeter	Fluke	77	43850817	CHAR 1/8/02	1/8/03
	Digital Multimeter	HP	E2377A	2927J05849	CHAR 1/8/02	1/8/03
	Multimeter	Fluke	FLUKE-77-3	79510405	CAL 9/26/01	9/26/02
X	Peak Power Meter	HP	8900C	2131A00545	CHAR 1/26/01	1/26/02
	Digital Thermometer	Fluke	2166A	42032	CAL 1/16/02	1/16/03
	Thermometer	Traulsen	SK-128		CHAR 1/22/02	1/22/03
X	Temp/Humidity gauge	EXTech	44577F	E000901	CHAR 1/22/02	1/22/03
	Frequency Counter	HP	5352B	2632A00165	CAL 11/28/01	11/28/02
	Power Sensor	Agilent Technologies	84811A	2551A02705	CAL 1/26/01	1/26/02
	Injection Probe	Fischer Custom Communications	F-120-9A	270	CAL 6/1/01	6/1/02
	Service Monitor	IFR	FM/AM 500A	5182	CAL 11/22/00	11/22/01
	Comm. Serv. Monitor	IFR	FM/AM 1200S	6593	CAL 11/12/99	11/12/00
X	Signal Generator	HP	8640B	2308A21464	CAL 11/15/01	11/15/02
	Modulation Analyzer	HP	8901A	3435A06868	CAL 9/5/01	9/5/02

	DEVICE	MFGR	MODEL	SERNO	CAL/CHAR DATE	DUE DATE or STATUS
	Power Line Coupling/ Decoupling Network	Fischer Custom Communications	FCC-801-M2-16A	01048	CAL 8/29/01	8/29/02
	Power Line Coupling/ Decoupling Network	Fischer Custom Communications	FCC-801-M3-16A	01060	CAL 8/29/01	8/29/02
	VHF/UHF Current Probe	Fischer Custom Communications	F-52	130	CAL 8/30/01	8/30/02
	Passive Impedance Adapter	Fischer Custom Communications	FCC-801-150-50-CDN	01117 & 01118	CAL 8/29/01	8/29/02
	Radiating Field Coil	Fischer Custom Communications	F-1000-4-8/9/10-L-1M	9859	CAL 10/15/98	10/15/99
	Near Field Probe	HP	HP11940A	2650A02748	CHAR 2/1/01	2/1/02
	BandReject Filter	Lorch Microwave	5BR4-2400/60-N	Z1	CHAR 3/2/01	3/2/02
	BandReject Filter	Lorch Microwave	6BR6-2442/300-N	Z1	CHAR 3/2/01	3/2/02
	BandReject Filter	Lorch Microwave	5BR4-10525/900-S	Z1	CHAR 3/2/01	3/2/02
	High Pas Filter	Microlab	HA-10N		CHAR 10/4/01	10/4/02
X	Audio Oscillator	HP	653A	832-00260	CHAR 3/1/01	3/1/02
	Frequency Counter	HP	5382A	1620A03535	CHAR 3/2/01	3/2/02
X	Frequency Counter	HP	5385A	3242A07460	CHAR 12/11/01	12/11/02
	Preamplifier	HP	8449B-H02	3008A00372	CHAR 3/4/01	3/4/02
	Amplifier	HP	11975A	2738A01969	CHAR 3/1/01	3/1/02
	Egg Timer	Unk			CHAR 2/28/01	2/28/02
	Measuring Tape, 20M	Kraftixx	0631-20		CHAR 2/28/01	2/28/02
	Measuring Tape, 7.5M	Kraftixx	7.5M PROFI		CHAR 2/28/01	2/28/02
	EMC Immunity Test System	Keytek	CEMASTER	9810210		
	AC Power Source	California Instruments	1251RP	L05865		
	AC Power Source	California Instruments	PACS-1	X71484		
	Isotropic Field Probe	Amplifier Research	FP5000	22839		
	Isotropic Field Probe	Amplifier Research	FP5000	300103		
	Capacitor Clamp	Keytek	CM-CCL	9811359	No Cal Required	

	DEVICE	MFGR	MODEL	SERNO	CAL/CHAR DATE	DUE DATE or STATUS
	Amplifier	Amplifier Research	10W1000B	23117	No Cal Required	
	Field Monitor	Amplifier Research	FM5004	22288	No Cal Required	
	ELF Meter	F. W. Bell	4060	Not serialized		
	Coaxial Cable #51	Insulated Wire Inc.	NPS 2251-2880	Timco #51	CHAR 1/23/02	1/23/03
	Coaxial Cable #64	Semflex Inc.	60637	Timco #64	CHAR 1/24/02	1/24/03
	Coaxial Cable #65	General Cable Co.	E9917 RG233/U	Timco #65	CHAR 1/23/02	1/23/03
	Coaxial Cable #106	Unknown	Unknown	Timco #106	CHAR 1/23/02	1/23/03