TABLE OF CONTENTS LIST FOR PART 90 VHF DEVICE

APPLICANT: AZDEN CORPORATION

FCC ID: BZB32BTL

TEST REPORT:

EXHIBITS CONTAINING:

GENERAL INFORMATION REQUIRED FOR TYPE ACCEPTANCE

2.1033 (c)(1)(2) AZDEN CORPORATION will sell the FCC ID: BZB32BTL 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 6A-6N

2.1033 (4) Type of Emission: 54K0F3E For 54 kHz

Bn = 2M + 2DK
M = 20 kHz
D = 7 kHz(Peak Deviation)
K = 1
Bn = 2(20k) + 2(7k)(1) = 54k

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) = 0.81 watts

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

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

(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-2D.

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

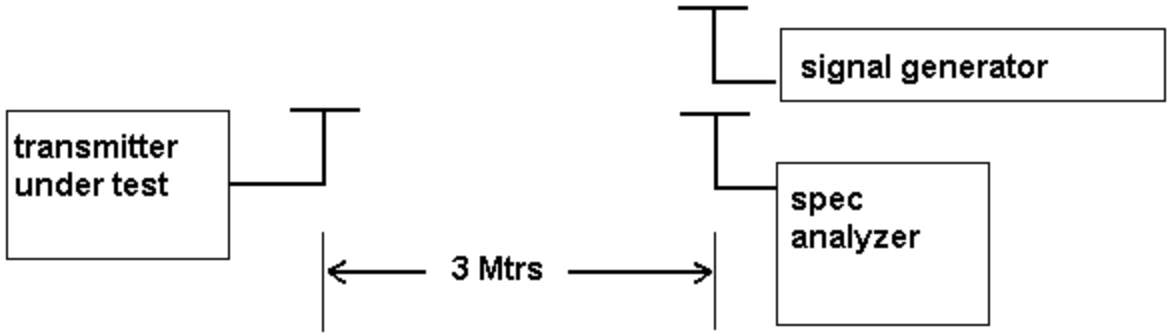
2.1046(a) RF power output.
RF power is measured as ERP as the antenna is permanently attached. The substitution meathod was used. With a nominal battery voltage of 9.0 VDC, and the transmitter properly adjusted the RF output measures:

OUTPUT POWER: .0023 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.

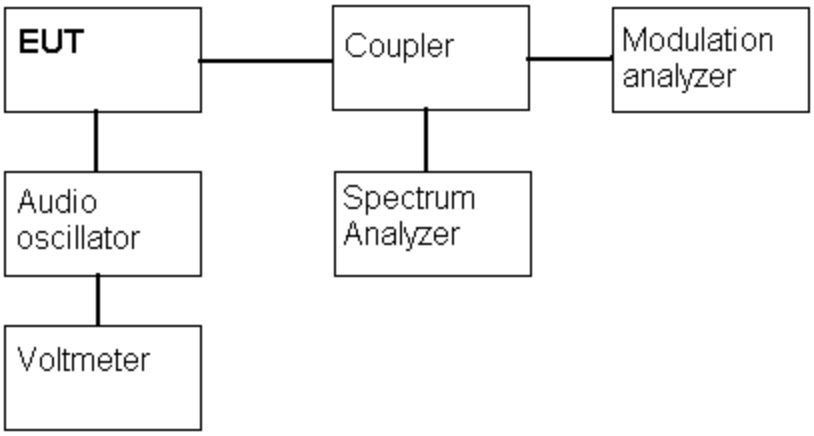
2.1049 Audio Low Pass Filter
This UUT does not have a low pass filter.

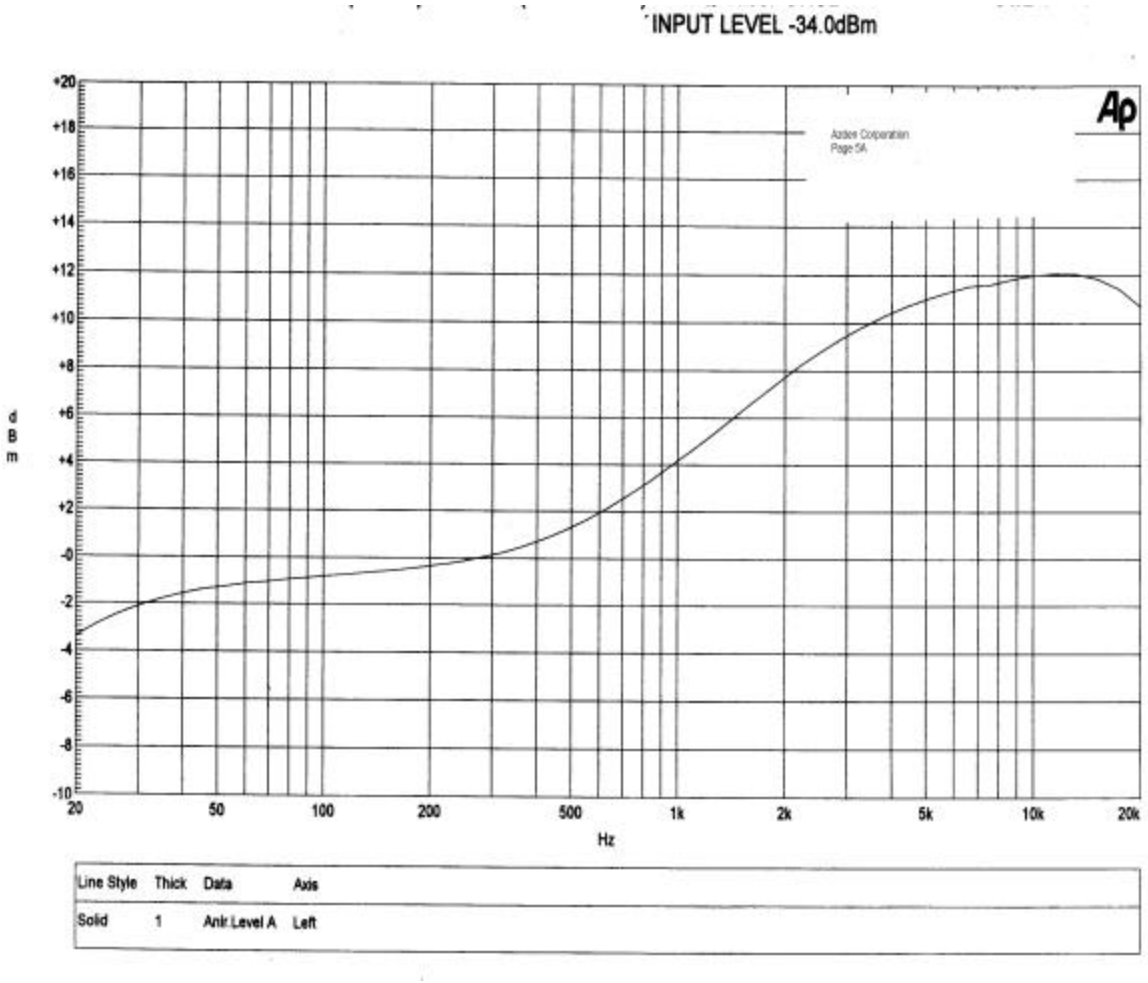
2.1049 Occupied bandwidth:
90.210(c,)
For transmitters that are not equipped with an audio low pass filter pursuant to 90.211(b), the power of any emission must be attenuated below the unmodulated carrier output power as follows; (1) On any frequency removed from the center of the authorized bandwidth 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.

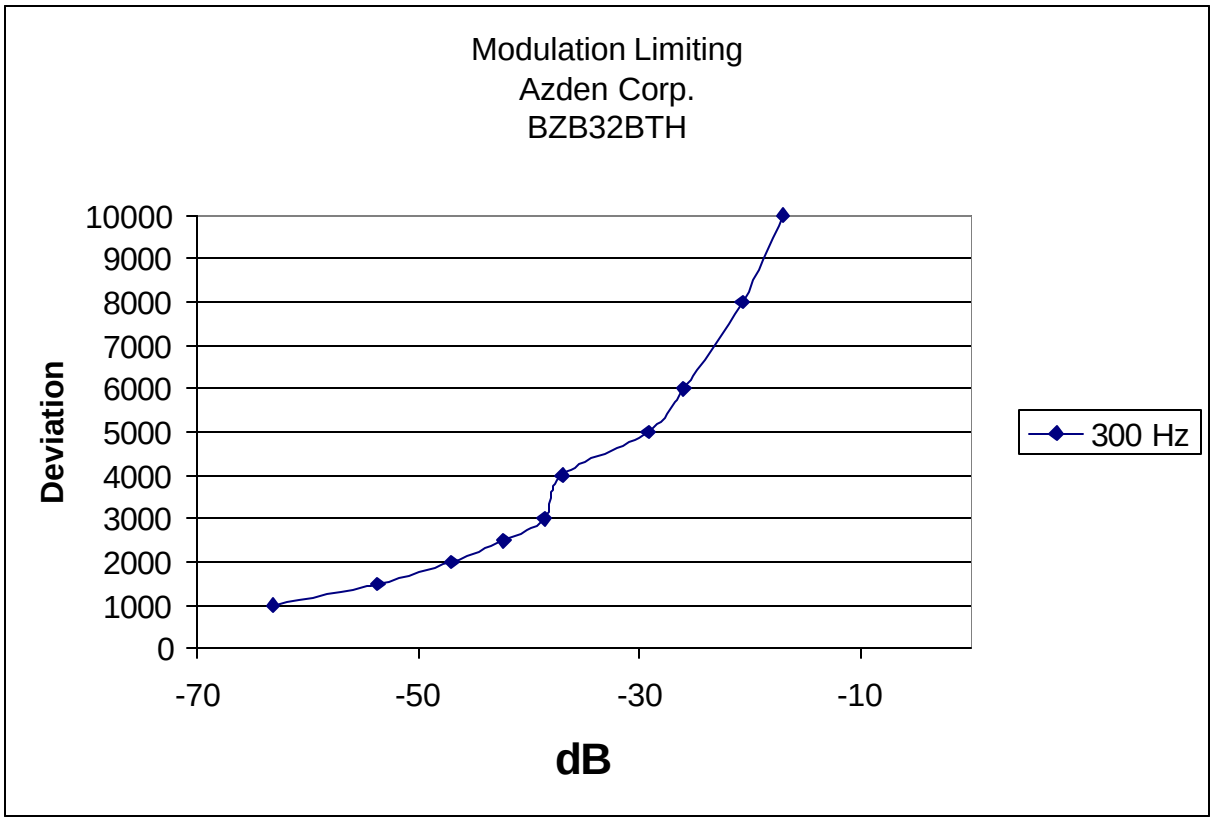
Test setup diagram

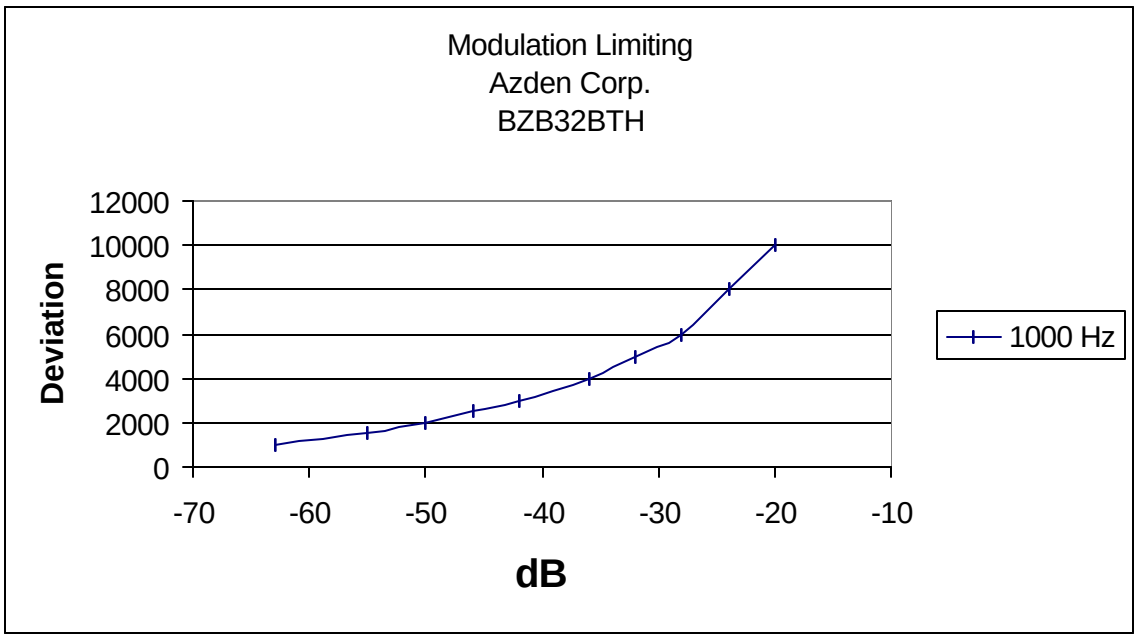
OCCUPIED BANDWIDTH MEASUREMENT

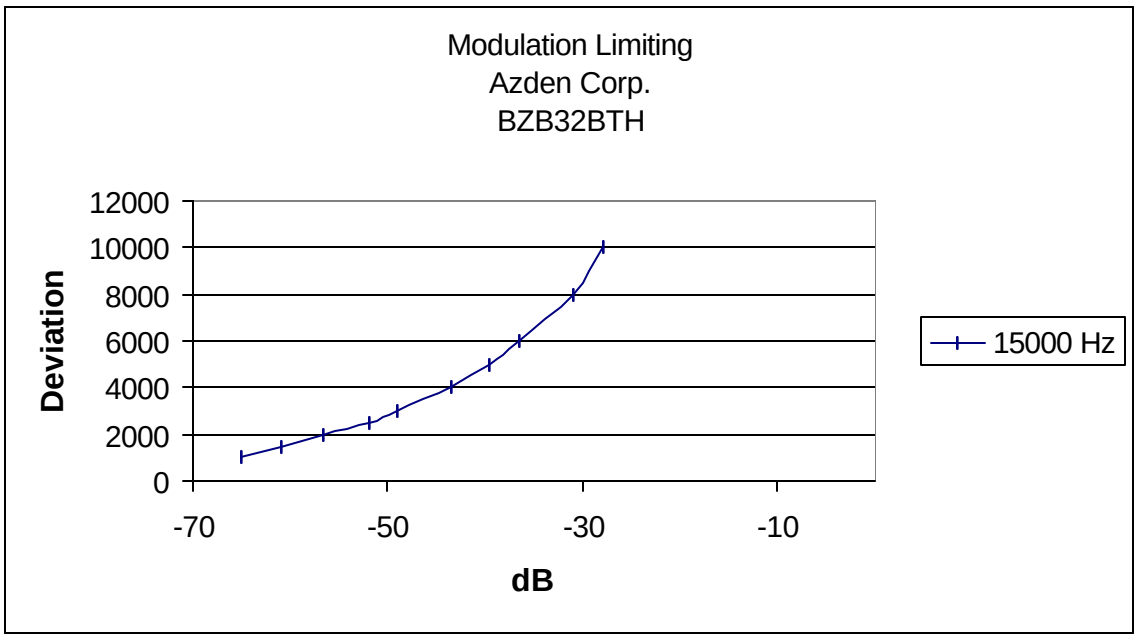


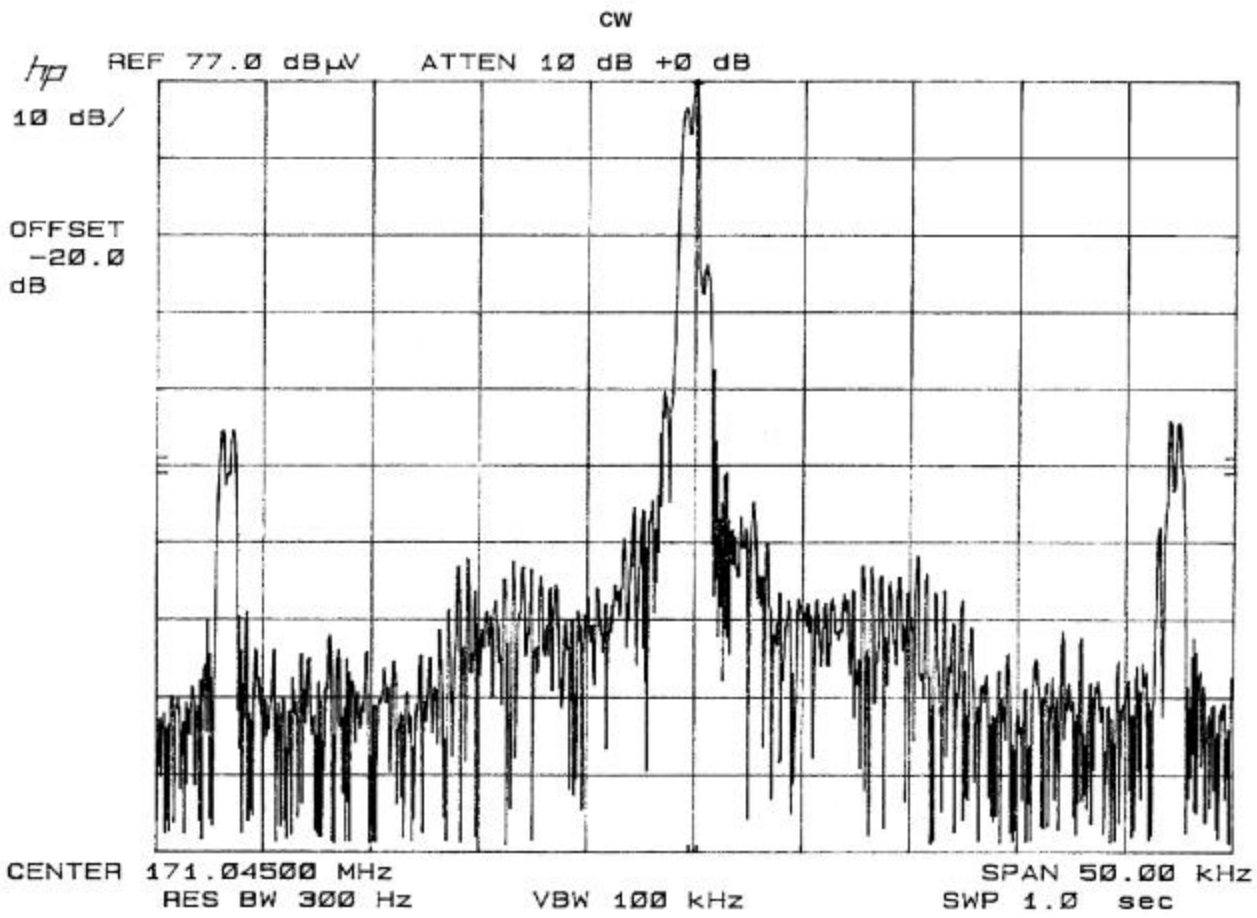


Audio Frequency Response

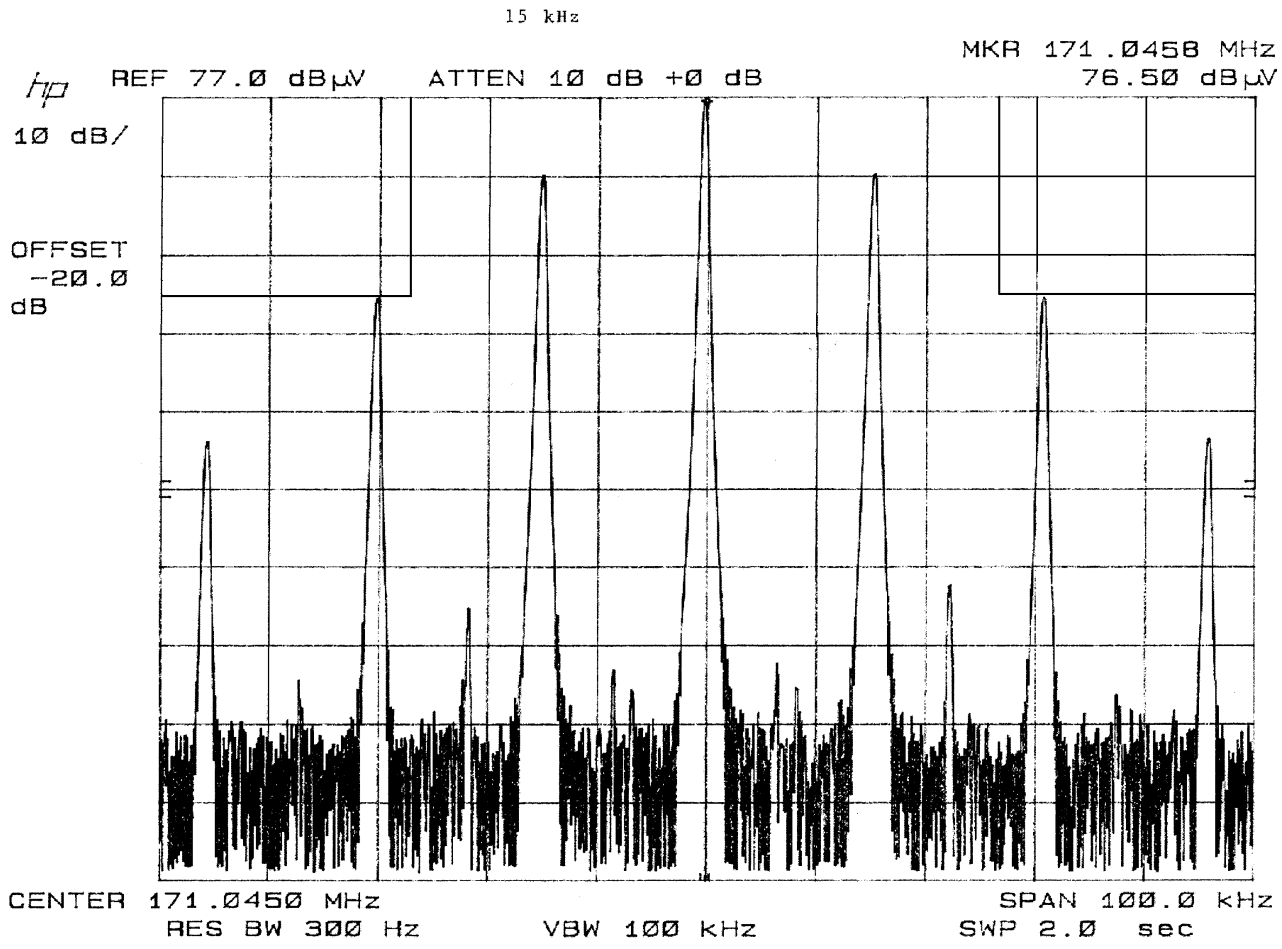

Modulation Limiting
Azden Corp.
BZB32BTH
Deviation
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
-70
-50
-30
-10
dB
300 Hz


Modulation Limiting
Azden Corp.
BZB32BTH
Deviation
12000
10000
8000
6000
4000
2000
0
-70
-60
-50
-40
-30
-20
-10
dB
1000 Hz

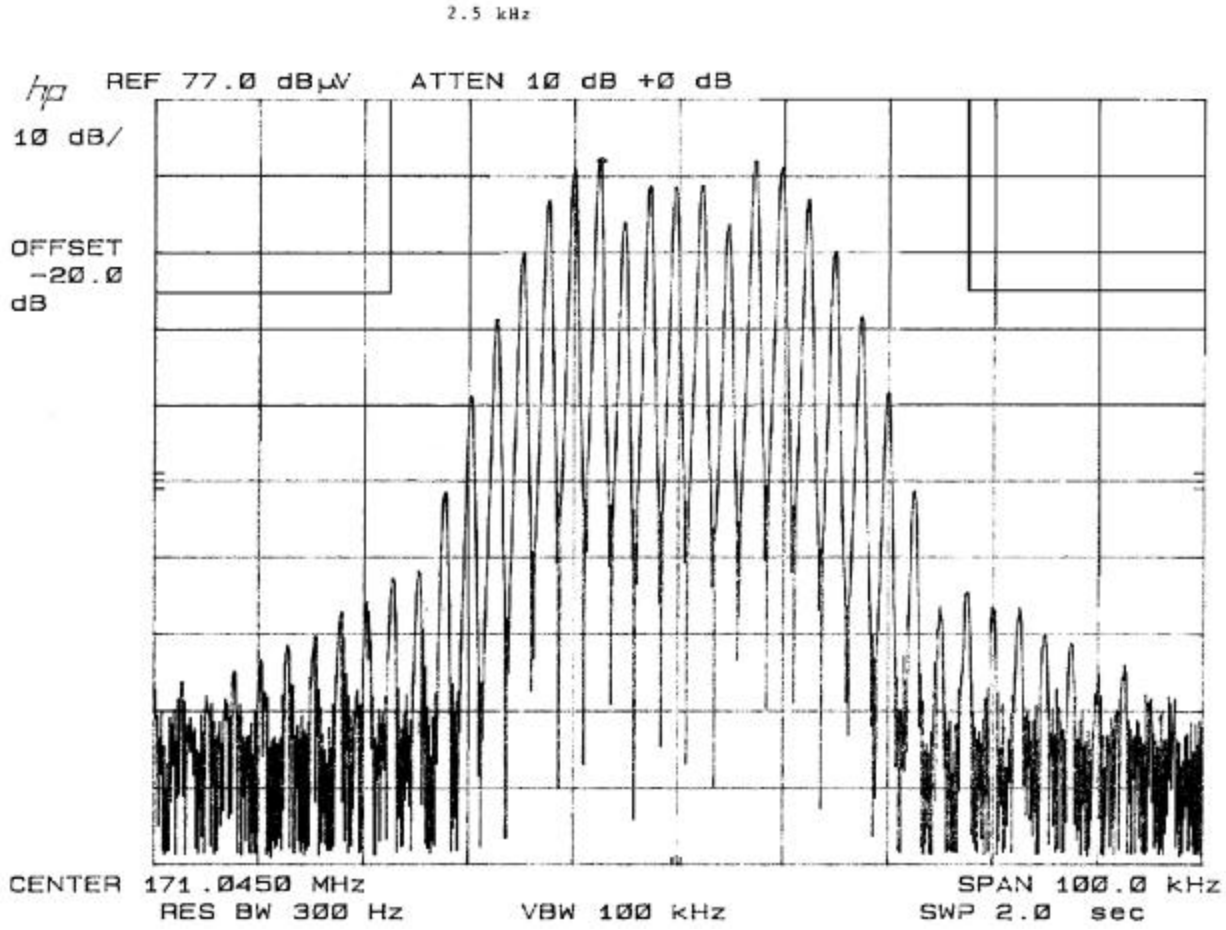

Modulation Limiting
Azden Corp.
BZB32BTH
12000
10000
8000
6000
4000
2000
0
Deviation
-70
-50
-30
-10
dB
15000 Hz



Occupied BW --CW


15 kHz
MKR 171.0458 MHz
REF 77.0 dBµV
ATTEN 10 dB +0 dB
76.50 dBµV
10 dB/
OFFSET
-20.0
dB
CENTER 171.0450 MHz
SPAN 100.0 kHz
RES BW 300 Hz
VBW 100 kHz
SWP 2.0 sec

Occupied BW


2.5 kHz
REF 77.0 dBµV
ATTEN 10 dB +0 dB
10 dB/
OFFSET
-20.0
dB
CENTER 171.0450 MHz
SPAN 100.0 kHz
RES BW 300 Hz
VBW 100 kHz
SWP 2.0 sec

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.

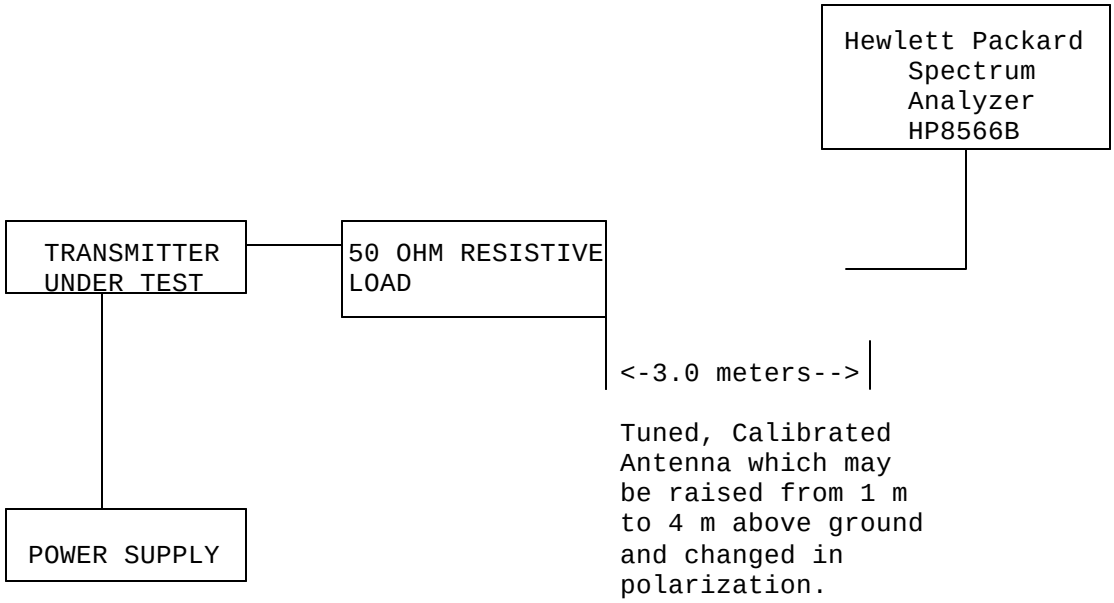
50 + 10log(0.0023) = 23.62 dB

TEST DATA:

Emission Frequency MHz	ATTN dBc	Margin dB
171.00	0.0	0.0
342.10	59.1	35.9
513.10	58.2	34.5
684.20	51.1	27.4
855.30	48.6	24.9
1,026.30	54.2	30.6
1,197.40	53.3	29.7
1,368.40	48.7	25.1
1,539.50	51.5	27.8
1,710.60	44.8	21.1

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): 171.045 000 MHz

TEMPERATURE_°C	FREQUENCY_MHz	kHz
REFERENCE	171.045 977	00.0
-30	171.049 839	+22.58
-20	171.049 430	+20.19
-10	171.048 783	+16.40
0	171.048 237	+13.21
+10	171.047 526	+ 9.06
+20	171.046 795	+ 4.78
+30	171.045 953	- 0.14
+40	171.044 747	- 7.19
+50	171.043 526	-14.33

BATT	**FREQUENCY MHz**	**VOLTS**	**kHz**
-15%	171.045 948	7.65	-0.17
+15%	171.046 048	10.35	+0.42

RESULTS OF MEASUREMENTS: The maximum frequency variation over the temperature range was –14.33 to +22.58 kHz. The maximum frequency variation with voltage was –0.17 to +0.42 kHz.

TEST EQUIPMENT LIST

1. Spectrum Analyzer: HP 8566B-Opt 462, S/N 3138A07786, w/ preselector HP 85685A, S/N 3221A01400, Quasi-Peak Adapter HP 8565OA, S/N 3303A01690 & Preamplifier HP 8449B-OPT H02, S/N 3008A00372 Cal. 8/31/01 Due 8/31/02
2. Biconnical Antenna: Eaton Model 94455-1, S/N 1057, Cal. 10/1/01 Due 10/1/02
3. Biconnical Antenna: Electro-Metrics Model BIA-25, S/N 1171 Cal. 4/26/01 Due 4/26/03
4. Log-Periodic Antenna: Electro-Metrics Model EM-6950, S/N 632 Char. 3/15/00 Due 3/15/01
5. Log-Periodic Antenna: Electro-Metrics Model LPA-30, S/N 409 Char. 3/15/00 Due 3/15/01
6. Double-Ridged Horn Antenna: Electro-Metrics Model RGA-180, 1-18 GHz, S/N 2319 Cal. 4/27/99 Due 4/27/00
7. 18-26.3GHz Systron Donner Standard Gain Horn #DBE-520-20 No Cal Required
8. Horn 40-60GHz: ATM Part #19-443-6R No Cal Required
9. Line Impedance Stabilization Network: Electro-Metrics Model EM-7820, w/NEMA Adapter S/N 2682 Cal. 3/16/01 Due 3/16/02
10. Temperature Chamber: Tenney Engineering Model TTRC, S/N 11717-7 Char. 1/27/01 Due 1/27/02
11. Frequency Counter: HP Model 5385A, S/N 3242A07460 Char. 11/20/01 Due 11/20/02
12. Peak Power Meter: HP Model 8900C, S/N 2131A00545 Char. 1/26/01 Due 1/26/02
13. Open Area Test Site #1-3meters Cal. 12/22/99
14. Signal Generator: HP 8640B, S/N 2308A21464 Cal. 11/15/01 Due 11/15/02
15. Passive Loop Antenna: EMCO Model 6512, 9KHz to 30MHz, S/N 9706-1211 Char. 6/10/01 Due 6/10/02
16. Dipole Antenna Kit: Electro-Metrics Model TDA-30/1-4, S/N 153 Due 11/24/02
17. AC Voltmeter: HP Model 400FL, S/N 2213A14499 Cal. 10/9/01 Due 10/09/02
18. Digital Multimeter: Fluke Model 77, S/N 43850817 Cal. 11/16/01 Due 11/16/02
19. Oscilloscope: Tektronix Model 2230, S/N 300572 Char. 2/1/01 Due 2/1/02