

APPLICANT: AZDEN CORPORATION  
FCC ID: BZB1000XT

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GENERAL INFORMATION REQUIRED  
FOR TYPE ACCEPTANCE

2.1033 AZDEN CORPORATION will manufacture the BZB1000XT in quantity, for use under FCC RULES PART 74.801, LOW POWER AUXILIARY STATIONS.

2.1033 (c4) TECHNICAL DESCRIPTION

(1) Type of Emission: 110KF3E

Bn = 2M + 2DK

M = 20000

D = 45kHz(Peak Deviation)

K = 1

Bn = 2(20k) + 2(45k)(1) = 110k

ALLOWED AUTHORIZED BANDWIDTH = 200kHz.

74.861(e)(5)

(2) Frequency Range: Part 74: 723-735 MHz  
TEST FREQ = 729.00 MHz.

(3) Power Range and Controls: UNIT has no controls.

(4) Maximum Output Power Rating: .013 Watts into 50 ohms resistive load.

(5) DC Voltages and Current into Final Amplifier:

FINAL AMPLIFIER ONLY

9.0V BATTERY

Vce = 9.0 Volts

Ice = 28 mA.

2.1033(c.10)(7) Complete Circuit Diagrams: The circuit diagram is included as EXHIBIT # 3A-3C. The block diagram is included as EXHIBIT #2.

(8) Instruction book. The instruction manual is included as Exhibit 6A-6F.

(9) Tune-up procedure. The tune-up procedure is given in page 4A-4B.

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(10) Description of all circuitry and devices provided for determining and stabilizing frequency.

(11) Description of any circuits or devices employed for suppression of spurious radiation, for limiting modulation, and for limiting power.

This circuitry is described on page 5.

Limiting Modulation:

The transmitter audio circuitry is contained in IC101, IC102 and IC103.

Limiting Power:

There is no provision for limiting power.

(12) Digital modulation: This unit does not use digital modulation.

2.983(e) The data required by 2.1046 through 2.1057 is submitted below.

2.1046 RF power output.

RF power is measured by effective radiated power.

OUTPUT POWER: .013 WATTS ERP

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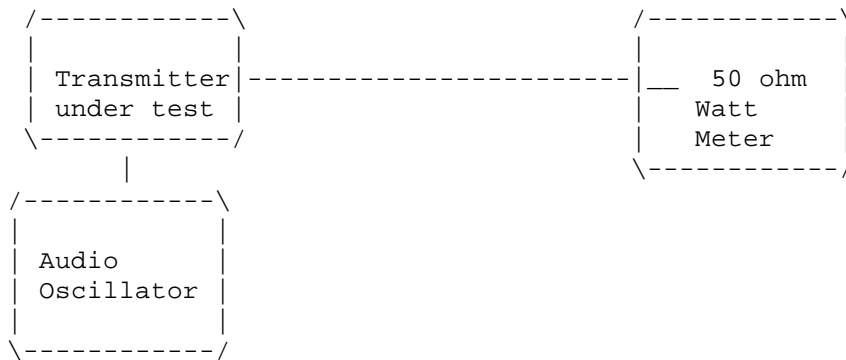
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R.F. POWER OUTPUT TEST PROCEDURE



2.1047(a)(b) Modulation Characteristics:

AUDIO FREQUENCY RESPONSE

The audio frequency response was measured in accordance with TIA/EIA Specification 603. The audio frequency response curve is shown on the next page.

AUDIO LOW PASS FILTER

The audio low pass filter is not required in this unit.

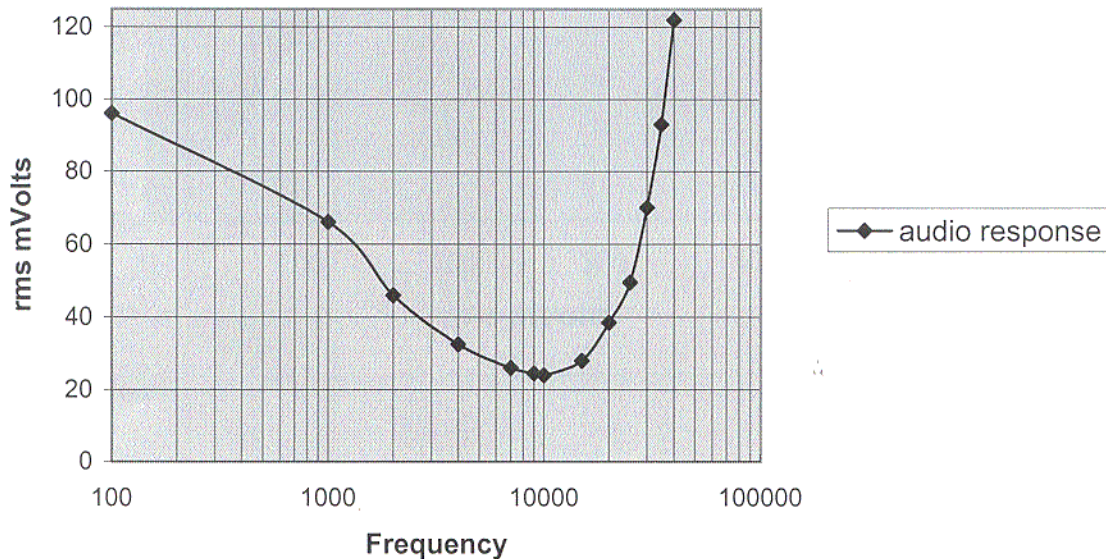
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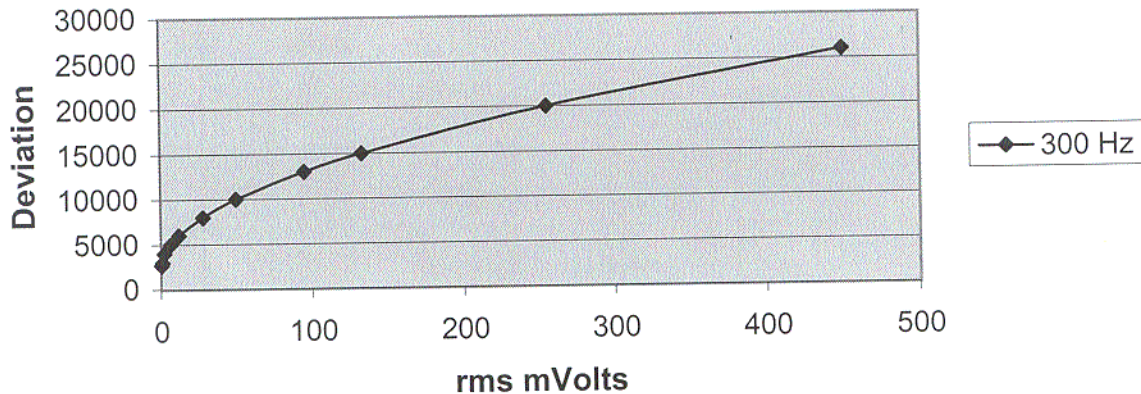
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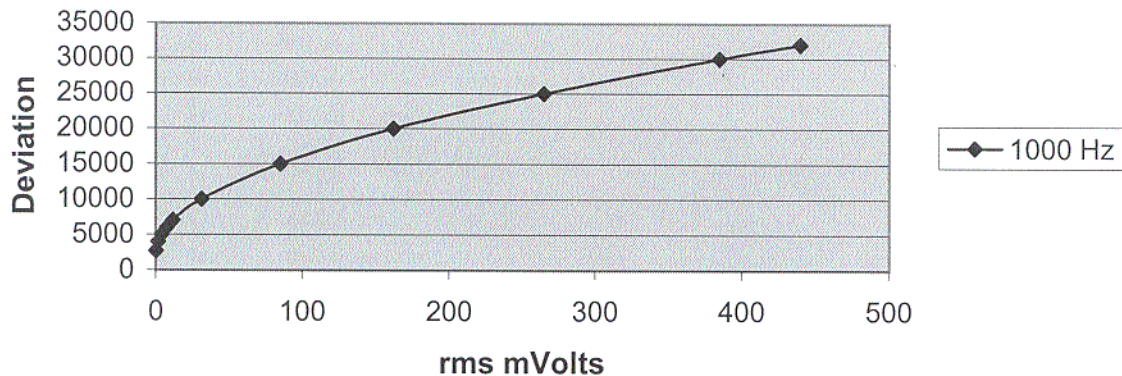
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Modulation Limiting  
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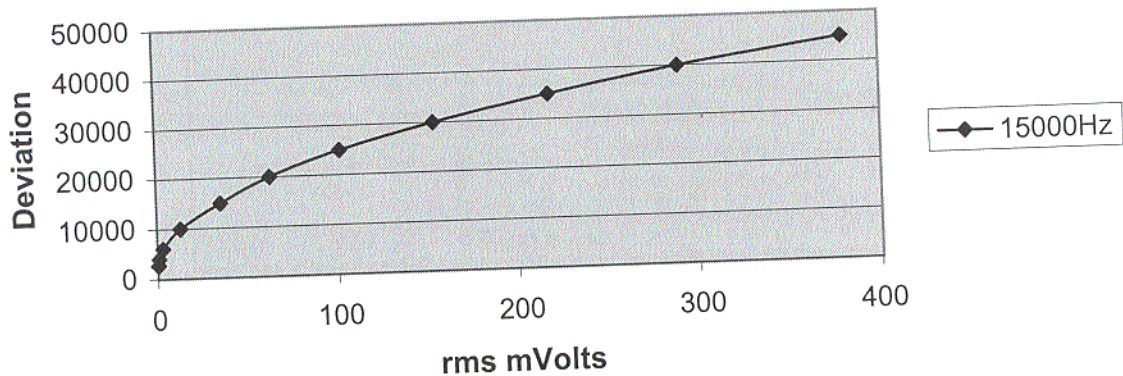
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Modulation Limiting  
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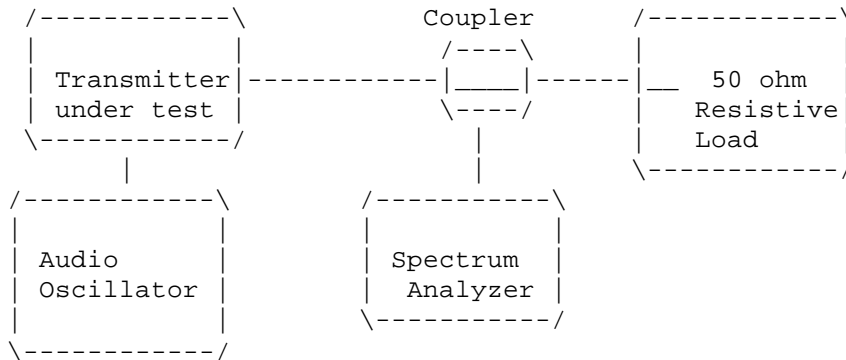
2.1049(c) Occupied bandwidth:  
74.861

Data in the plots show that all sidebands between 50 & 100% for the authorized bandwidth are attenuated by at least 25dB. From 100 to 250% of the authorized bandwidth they are attenuated by at least 35dB and beyond 250%  $43 \log(P_o)$  dB. The plot shows the transmitter modulated with 15000 Hz (the highest modulation frequency), adjusted for 50% modulation plus 16 dB. The spectrum analyzer was set with the unmodulated carrier at the top of the screen. The test procedure diagram and occupied bandwidth plots follow.

Microphone transmitter .

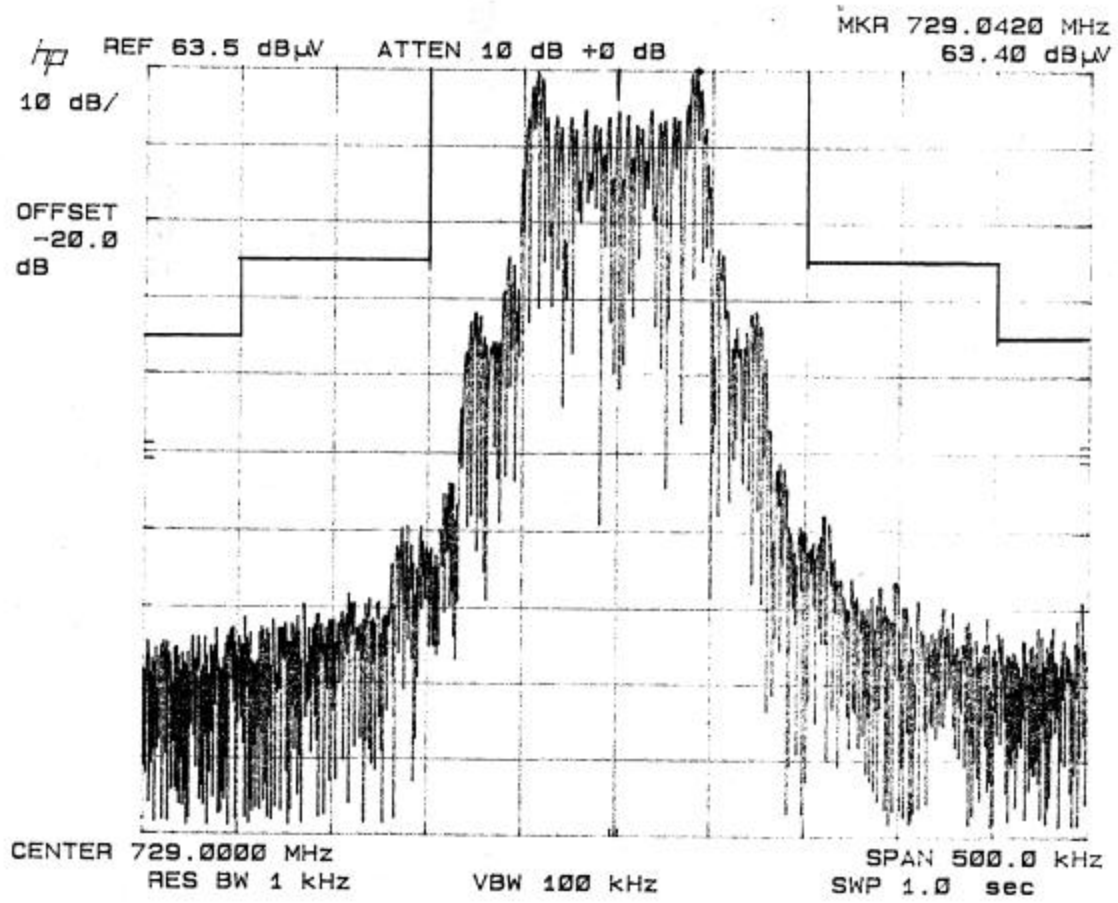
Test procedure diagram

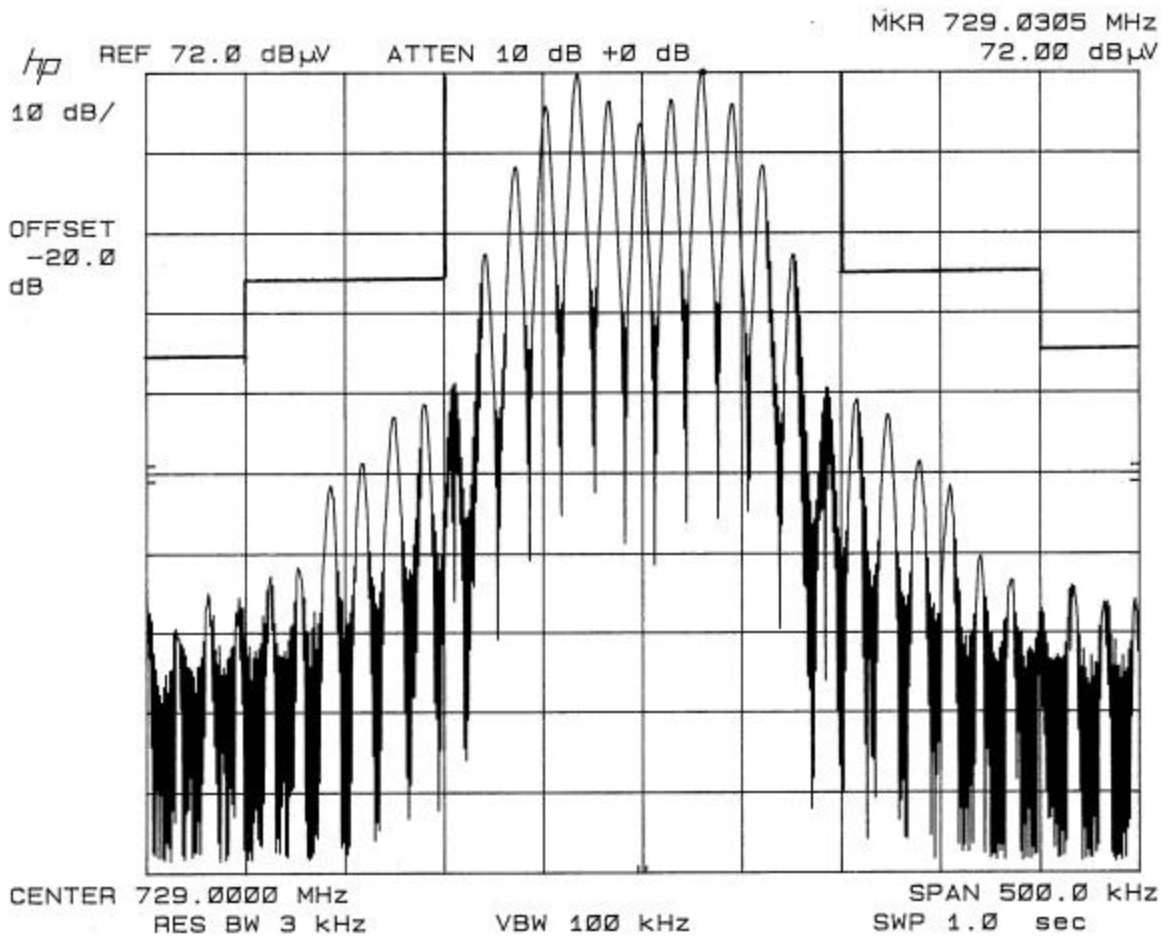
#### OCCUPIED BANDWIDTH MEASUREMENT



REQUIREMENT: PART 74: 200kHz EMISSION BANDWIDTH.

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2.1051 Spurious emissions at antenna terminals(conducted):  
Not Applicable no antenna connector.

2.1053(a)(b) Field strength of spurious emissions:

NAME OF TEST: RADIATED SPURIOUS EMISSIONS

REQUIREMENTS: Emissions must be 43 +10log(Po) dB below the mean power output of the transmitter.

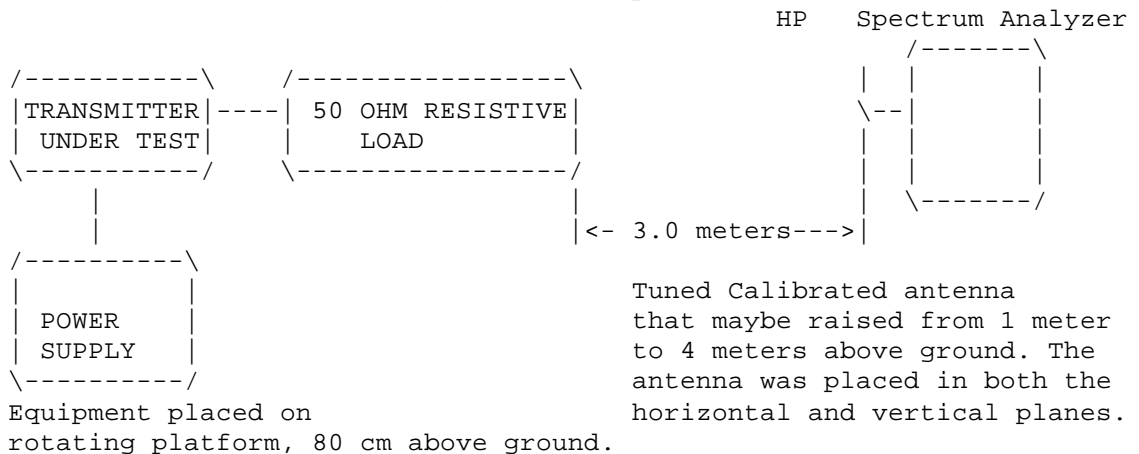
$$43 + 10 \log(0.013) = 24.14 \text{ dB}$$

TEST DATA:

EMISSION FREQUENCY MHz	MR @ 3m dBuV	COAX LOSS dB	ACF dB	FIELD STRENGTH dBuV/m	FCC LIMIT dB	ATTN dB	MARGIN Db	ANT. POL
729.00	84.70	2.00	21.73	108.43	0.00	0.00	0.00	V
1458.00	27.70	1.00	25.83	54.53	24.14	53.90	29.76	V
2187.00	35.00	1.06	28.47	64.53	24.14	43.91	19.77	V
2916.00	35.10	1.17	30.29	66.56	24.14	41.87	17.73	V
3645.00	27.40	1.28	32.11	60.79	24.14	47.64	23.50	V
4374.00	28.50	1.39	33.42	63.31	24.14	45.12	20.98	V
5103.00	21.10	1.50	34.24	56.84	24.14	51.60	27.46	V
5832.00	24.30	1.61	35.06	60.97	24.14	47.47	23.33	V
6561.00	19.90	1.71	35.88	57.50	24.14	50.94	26.80	V

METHOD OF MEASUREMENT: The procedure used was TIA/EIA STANDARD 603. The spectrum was scanned from 30 to at least the tenth harmonic of the fundamental using a HP model 8566B spectrum analyzer and an appropriate antenna. Measurements were made at the open field test site of TIMCO ENGINEERING INC. located at 849 NW SR 45 Newberry, Florida 32669.

Method of Measuring Radiated Spurious Emissions



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2.1055 Frequency stability:  
S74.861(e)(4)

Temperature and voltage tests were performed to verify that the frequency remains within the .0050%, (50 ppm)(74.861 e.4) specification limit.

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.

MEASUREMENT DATA:

Assigned Frequency (Ref. Frequency): 729.000 000

TEMPERATURE_C	FREQUENCY_MHz	PPM
-30	728.986 204	-18.92
-20	728.991 526	-11.62
-10	728.995 603	- 6.03
0	728.997 986	- 2.76
10	728.999 312	- 0.94
20	728.999 903	- 0.13
30	729.000 091	+ 0.12
40	729.000 308	+ 0.42
50	729.000 855	+ 1.17

25c END BATT. Volt(7.65)= 7.65VDC 729.000 117 + 0.16  
25c END BATT. Volt(10.35)= 10.35VDC 729.000 102 + 0.14

RESULTS OF MEASUREMENTS: The maximum frequency variation over the temperature range was -18.92 to +1.17 ppm. The maximum frequency variation over the voltage range was +0.16 ppm.

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2.1033(c.11) Photo or Drawing of Label:  
See EXHIBIT # 1.

2.1033(c.12) Photos of Equipment:  
See EXHIBIT #'S 8A-10B.

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TEST EQUIPMENT LIST

1.  Spectrum Analyzer: HP 8566B-Opt 462, S/N 3138A07786, w/  
preselector HP 85685A, S/N 3221A01400, Quasi-Peak Adapter  
HP 85650A, S/N 3303A01690 & Preamplifier HP 8449B-OPT H02,  
S/N 3008A00372
2.  Biconnical Antenna: Eaton Model 94455-1, S/N 1057
3.  Biconnical Antenna: Electro-Metrics Model BIA-25, S/N 1171
4.  Log-Periodic Antenna: Electro-Metrics Model EM-6950, S/N 632
5.  Log-Periodic Antenna: Electro-Metrics Model LPA-30, S/N 409
6.  Double-Ridged Horn Antenna: Electro-Metrics Model RGA-180,  
1-18 GHz, S/N 2319
7.  18-26.3GHz Systron Donner Standard Gain Horn #DBE-520-20
8.  Horn 40-60GHz: ATM Part #19-443-6R
9.  Line Impedance Stabilization Network: Electro-Metrics Model  
EM-7820, w/NEMA Adapter S/N 2682
10.  Temperature Chamber: Tenney Engineering Model TTRC, S/N 11717-7
11.  Frequency Counter: HP Model 5385A, S/N 3242A07460
12.  Peak Power Meter: HP Model 8900C, S/N 2131A00545
13.  Open Area Test Site #1-3meters
14.  Signal Generator: HP 8640B, S/N 2308A21464
15.  Signal Generator: HP 8614A, S/N 2015A07428
16.  Passive Loop Antenna: EMCO Model 6512, 9KHz to 30MHz, S/N  
9706-1211
17.  Dipole Antenna Kit: Electro-Metrics Model TDA-30/1-4, S/N 153
18.  AC Voltmeter: HP Model 400FL, S/N 2213A14499
19.  Digital Multimeter: Fluke Model 8012A, S/N 4810047
20.  Digital Multimeter: Fluke Model 77, S/N 43850817
21.  Oscilloscope: Tektronix Model 2230, S/N 300572

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