

APPLICANT: AZDEN CORPORATION
FCC ID: BZB1000XT

TABLE OF CONTENTS LIST

TEST REPORT CONTAINING:

PAGE 1..... GENERAL INFORMATION
PAGE 2..... DESCRIPTIONS
PAGE 3-4..... RF POWER TEST PROCEDURE & AUDIO FREQUENCY RESPONSE GRAPH
PAGE 5-7..... AUDIO INPUT VERSUS MODULATION GRAPH
PAGE 8-10..... OCCUPIED BANDWIDTH
PAGE 11..... RADIATED EMISSIONS TEST DATA & TEST PROCEDURE
PAGE 12..... FREQUENCY STABILITY TEST DATA
PAGE 13..... EQUIPMENT LIST

EXHIBITS CONTAINING:

EXHIBIT 1..... FCC ID LABEL SAMPLE & ID LABEL LOCATION
EXHIBIT 2..... BLOCK DIAGRAM
EXHIBIT 3A-3C... SCHEMATICS
EXHIBIT 4A-4B... TUNING PROCEDURE
EXHIBIT 5..... CIRCUIT DESCRIPTION
EXHIBIT 6A-6F... USER'S MANUAL
EXHIBIT 7..... TEST SET UP PHOTOGRAPH
EXHIBIT 8A..... EXTERNAL FRONT VIEW PHOTOGRAPH
EXHIBIT 8B..... EXTERNAL REAR VIEW PHOTOGRAPH
EXHIBIT 8C..... EXTERNAL CONNECTOR SIDE PHOTOGRAPH
EXHIBIT 9A-9B... INTERNAL COMPONENT SIDE PHOTOGRAPH
EXHIBIT 10A-10B. INTERNAL COPPER SIDE PHOTOGRAPH

APPLICANT: AZDEN CORPORATION
FCCID: BZB1000XT
REPORT #: T:\CUS\A\AZDEN\168AU1\168AU1.RPT
TABLE OF CONTENTS LIST

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

$B_n = 2M + 2DK$

$M = 20000$

$D = 45\text{kHz}(\text{Peak Deviation})$

$K = 1$

$B_n = 2(20k) + 2(45k)(1) = 110k$

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.

APPLICANT: AZDEN CORPORATION

FCCID: BZB1000XT

REPORT #: T:\CUS\A\AZDEN\168AU1\168AU1.RPT

PAGE #: 1

APPLICANT: AZDEN CORPORATION

FCC ID: BZB1000XT

(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

APPLICANT: AZDEN CORPORATION

FCCID: BZB1000XT

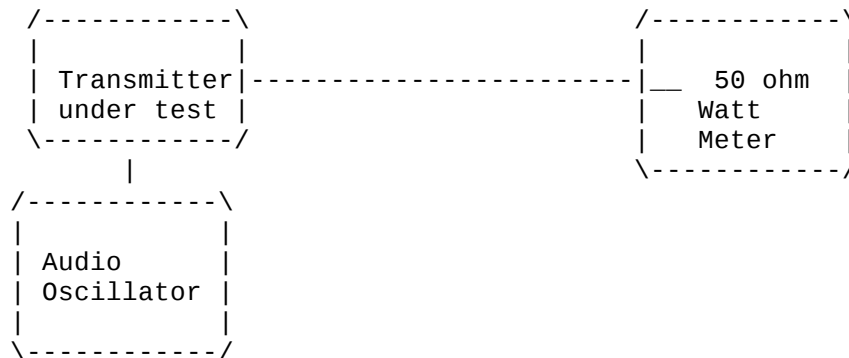
REPORT #: T:\CUS\A\AZDEN\168AU1\168AU1.RPT

PAGE #: 2

APPLICANT: AZDEN CORPORATION

FCC ID: BZB1000XT

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.

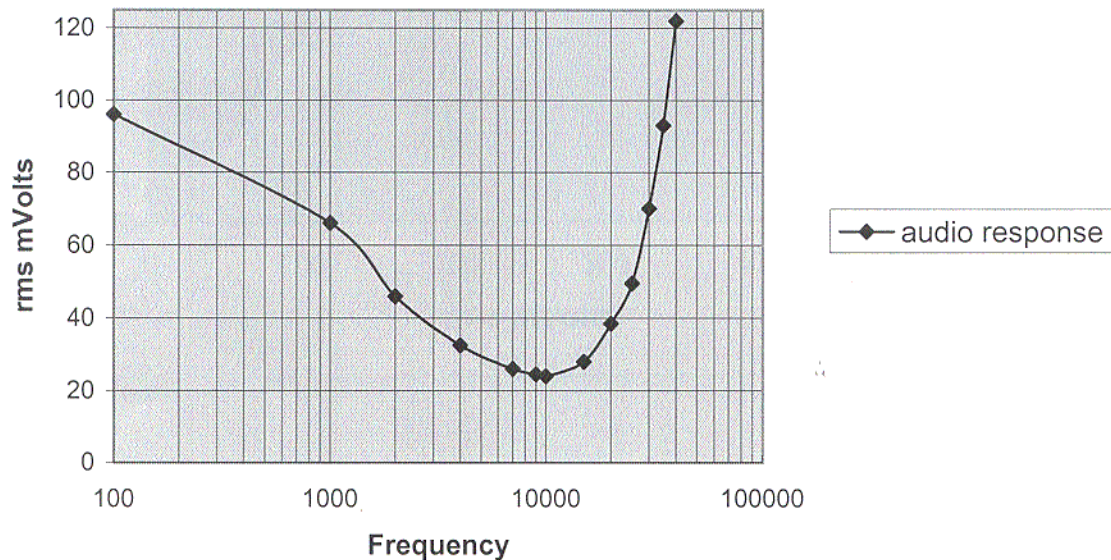
APPLICANT: AZDEN CORPORATION

FCCID: BZB1000XT

REPORT #: T:\CUS\A\AZDEN\168AU1\168AU1.RPT

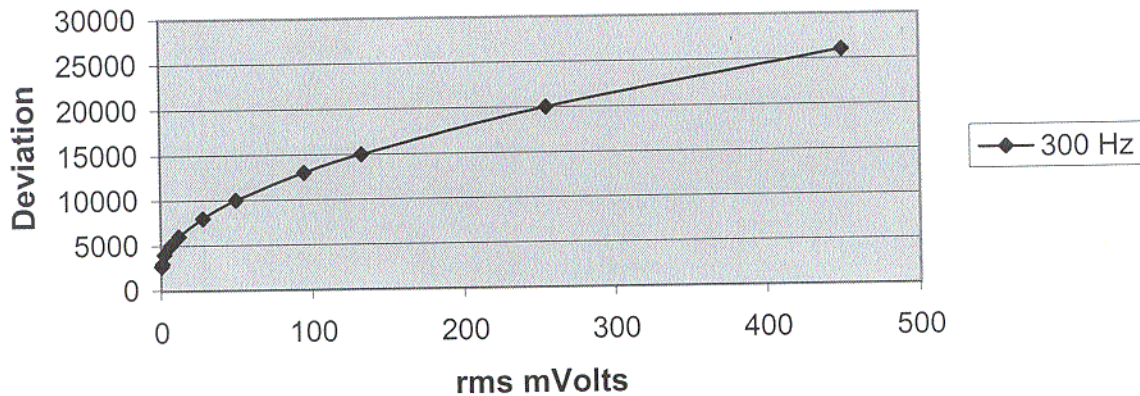
PAGE #: 3

Azden Corp.
BZB1000XT



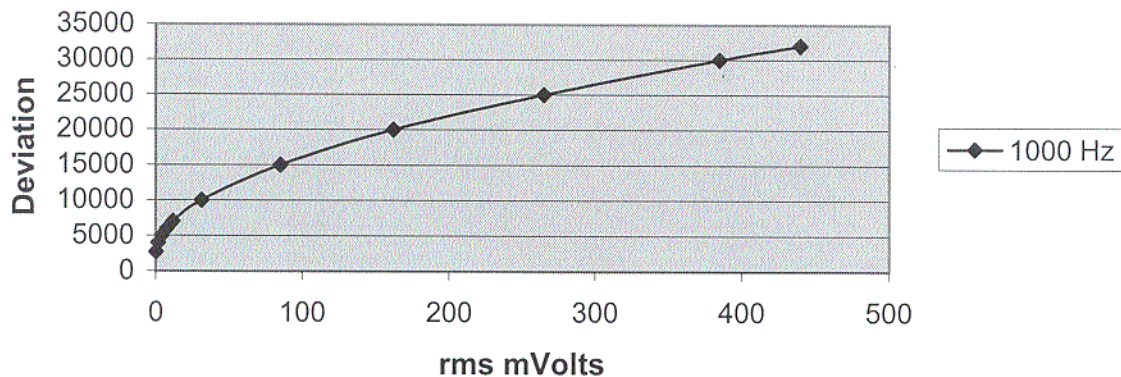
AZDEN CORPORATION
FCC ID: BZB1000XT
JOB #: 168AU1
PAGE #: 4

Modulation Limiting
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BZB1000XT



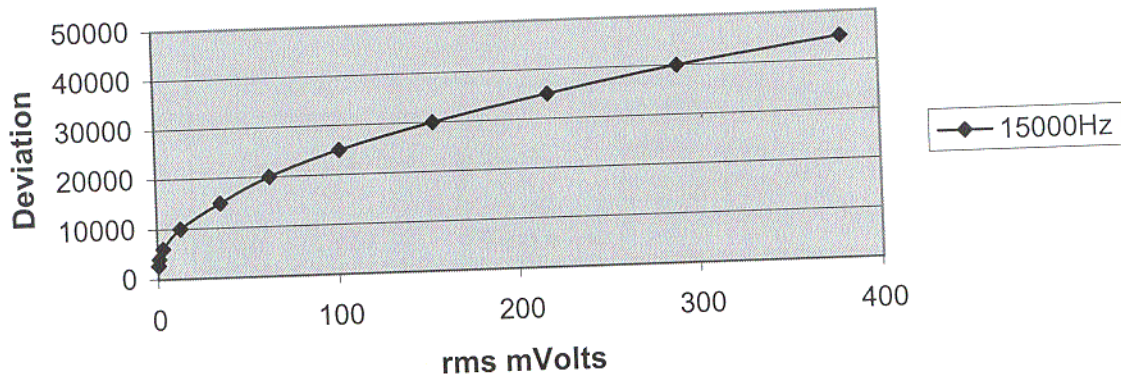
AZDEN CORPORATION
FCC ID: BZB1000XT
JOB #: 168AU1
PAGE #: 5

Modulation Limiting
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AZDEN CORPORATION
FCC ID: BZB1000XT
JOB #: 168AU1
PAGE #: 6

Modulation Limiting
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BZB1000XT



AZDEN CORPORATION
FCC ID: BZB1000XT
JOB #: 168AU1
PAGE #: 7

APPLICANT: AZDEN CORPORATION
FCC ID: BZB1000XT

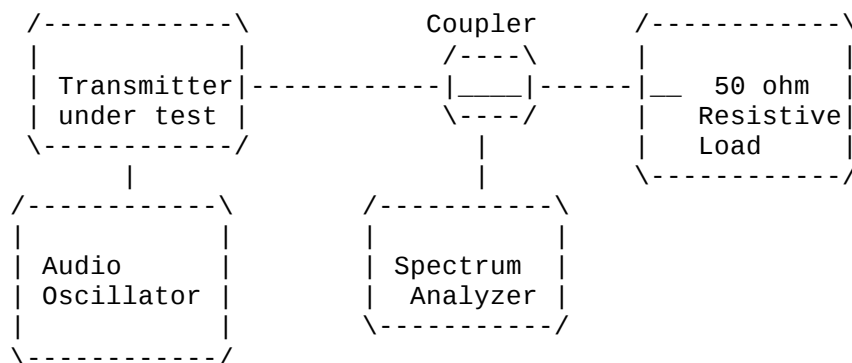
2.1049(c) Occupied bandwidth:
74.861

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 .

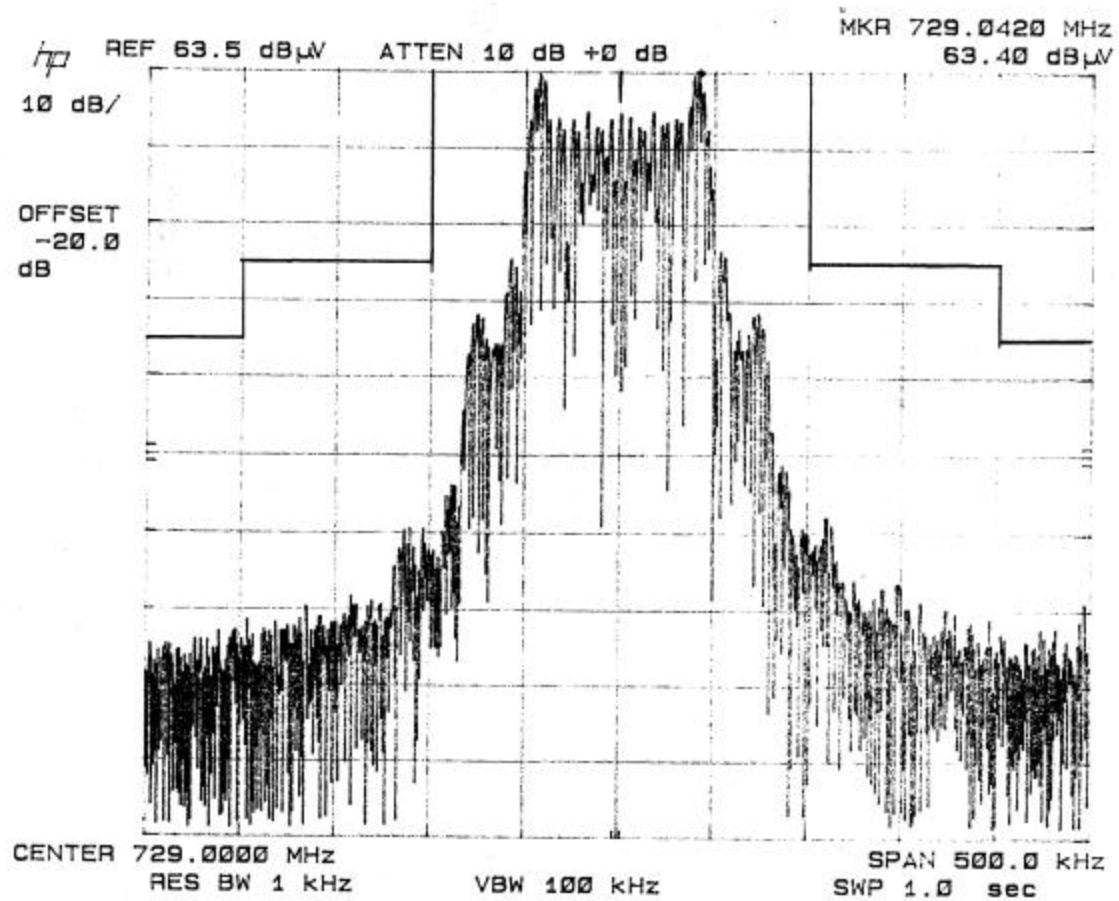
Test procedure diagram

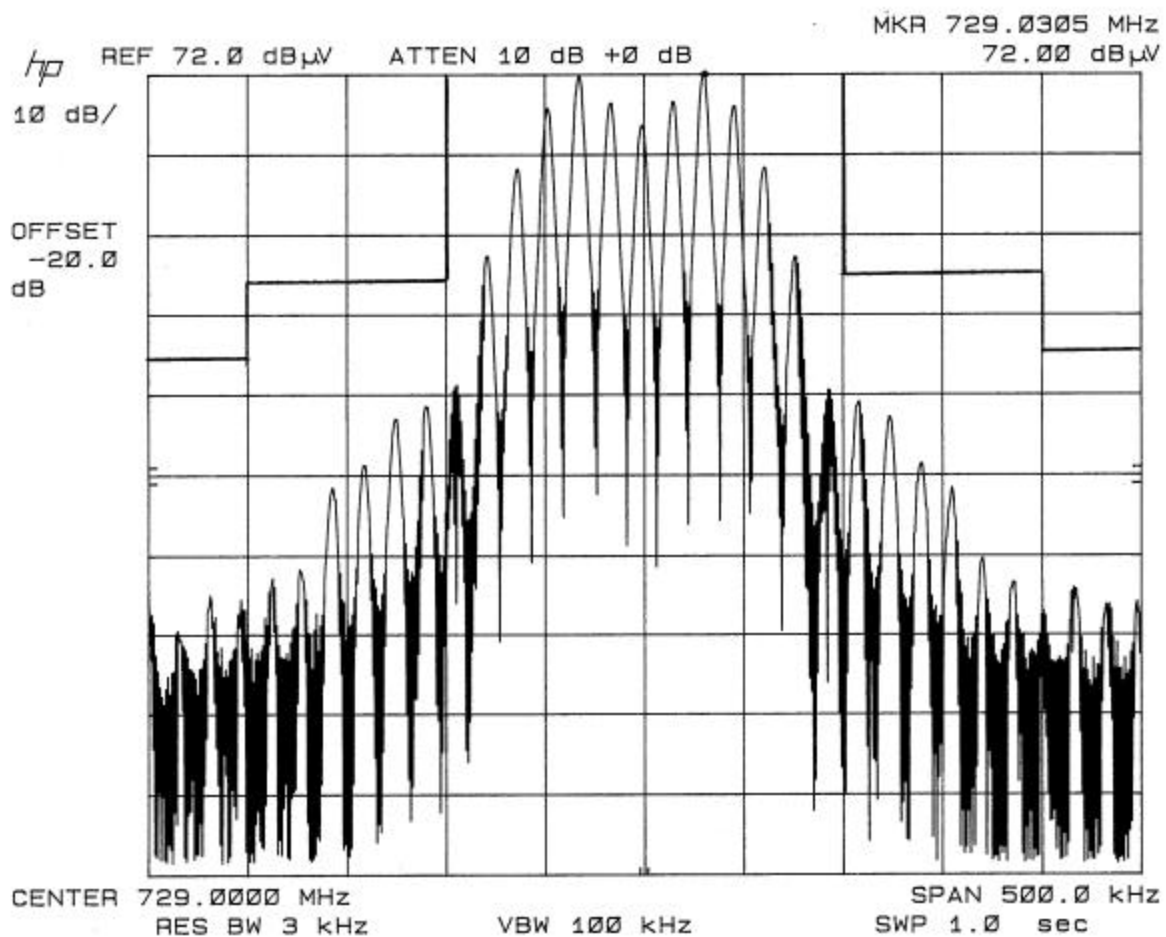
OCCUPIED BANDWIDTH MEASUREMENT



REQUIREMENT: PART 74: 200kHz EMISSION BANDWIDTH.

APPLICANT: AZDEN CORPORATION
FCCID: BZB1000XT
REPORT #: T:\CUS\A\AZDEN\168AU1\168AU1.RPT
PAGE #: 8





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.

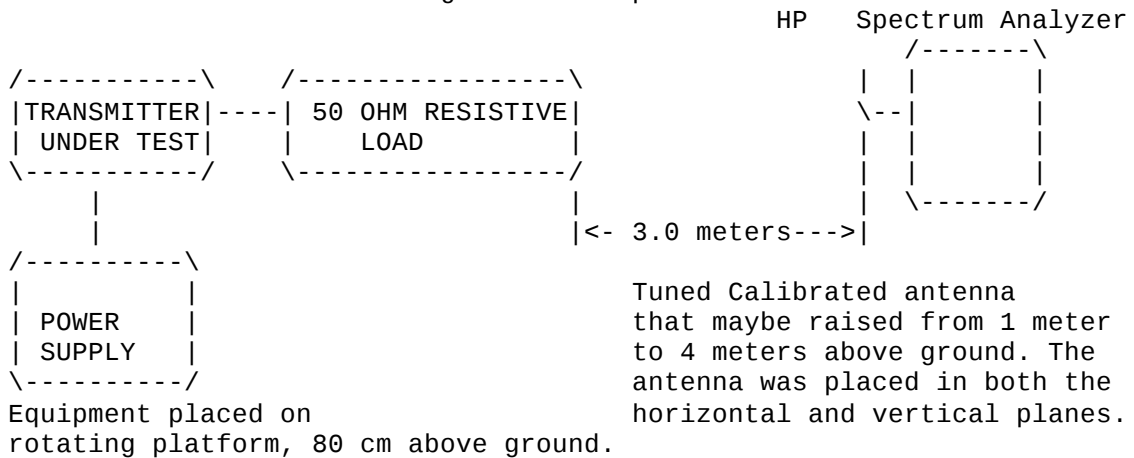
$$43 + 10 \log(0.013) = 24.14 \text{ dB}$$

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



APPLICANT: AZDEN CORPORATION

FCCID: BZB1000XT

REPORT #: T:\CUS\A\AZDEN\168AU1\168AU1.RPT

APPLICANT: AZDEN CORPORATION
FCC ID: BZB1000XT

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.

APPLICANT: AZDEN CORPORATION
FCC ID: BZB1000XT

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

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

APPLICANT: AZDEN CORPORATION
FCC ID: BZB1000XT

TEST EQUIPMENT LIST

- 1._X_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._X_Biconnical Antenna: Eaton Model 94455-1, S/N 1057
- 3.___Biconnical Antenna: Electro-Metrics Model BIA-25, S/N 1171
- 4._X_Log-Periodic Antenna: Electro-Metrics Model EM-6950, S/N 632
- 5.___Log-Periodic Antenna: Electro-Metrics Model LPA-30, S/N 409
- 6._X_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._X_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: EMC0 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

APPLICANT: AZDEN CORPORATION
FCCID: BZB1000XT
REPORT #: T:\CUS\A\AZDEN\168AU1\168AU1.RPT
PAGE #: 14