

**EMT****ELECTRO MAGNETIC TEST, INC.**

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

*FCC PART 15, SUBPART B CLASS B  
and  
FCC PART 15, SUBPART C  
TEST REPORT*

*for**the*

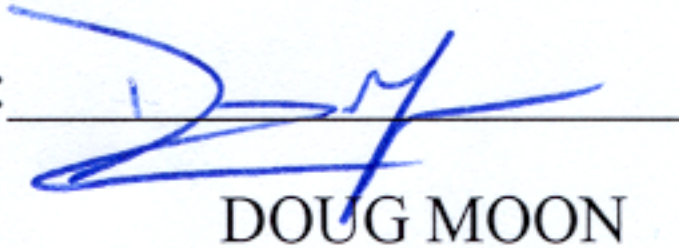
SONICBOX iM REMOTE TUNER

MODEL: 433B

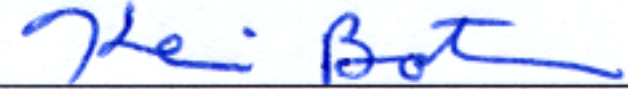
Prepared for

SONICBOX, INC.  
241 POLARIS AVENUE  
MOUNTAIN VIEW, CALIFORNIA 94041

Prepared by:

  
DOUG MOON

Approved by:



KEVIN BOTHMANN

ELECTRO MAGNETIC TEST, INC.  
1547 PLYMOUTH STREET  
MOUNTAIN VIEW, CALIFORNIA 94043  
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DATE: MAY 17, 2000

	REPORT BODY	APPENDICES			TOTAL
		A	B	C	
PAGES	15	18	4	5	42

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**GENERAL REPORT SUMMARY**

This electromagnetic emission test report is generated by Electro Magnetic Test Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Electro Magnetic Test personnel according to the measurement procedure described in the test specification given below and in the "Test Procedures" section of this report.

Associated with the data in this report is a  $\pm 2$ dB measurement uncertainty.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced in any form unless done so in full.

This report must not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Device Tested:            Sonicbox iM Remote Tuner  
                                  Model: 433B  
                                  S/N: N/A

Product Description:    The EUT is a personal computer peripheral device consisting of a base unit and a hand held remote unit. The base unit is connected to the USB port and stereo output port of a PC. It works in conjunction with the Sonicbox iM Software Tuner to locate and broadcast the audio from the internet sites of internet radio stations. The hand held remote communicates with the base unit and is used to change stations, save stations, and control the PC volume.

Modifications:            The EUT was not modified during the testing.

Manufacturer:            Sonicbox, Inc.  
                                  241 Polaris Avenue  
                                  Mountain View, California, 94041

Test Date(s):            May 15, 2000

Test Specifications:      EMI requirements  
                                  FCC Title 47, Part 15 Subpart B, Class B  
                                  FCC Title 47, Part 15 Subpart C  
                                  Test Procedure: ANSI C63.4: 1992.

Test Deviations:        The test procedure was not deviated from during the testing.

**SUMMARY OF TEST RESULTS**

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 450 kHz - 30 MHz.	Complies with the <b>Class B</b> limits of FCC Title 47, Part 15 Subpart B.
2	Radiated RF Emissions, 30 MHz - 1000 MHz.	Complies with the <b>Class B</b> limits of FCC Title 47, Part 15 Subpart B.
3	Radiated RF Emissions, 433 MHz - 4340 MHz.	Complies with the limits of FCC Title 47, Part 15 Subpart C. (Section 15.231)

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1.            **PURPOSE**

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Sonicbox iM Remote Tuner Model: 433B. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 1992. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the **Class B** specification limits defined in FCC Title 47, Part 15, Subpart B. The EUT was also tested to determine if the electromagnetic emissions were within the limits defined in FCC Title 47, Subpart C, section 15.231.

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**2. ADMINISTRATIVE DATA****2.1 Location of Testing**

The EMI tests described herein were performed at the test facility of Electro Magnetic Test, 1547 Plymouth Street, Mountain View, California 94043.

**2.2 Traceability Statement**

The calibration certificates of all test equipment used during the test are on file at the location of the test. The measurement results in this report and the calibration of the test equipment are traceable to the National Institute of Standards and Technology (NIST).

**2.3 Cognizant Personnel**Sonicbox, Inc.

Sara Fisher                      Product Manager

Electro Magnetic Test, Inc.

Doug Moon                      Test Technician  
Neelesh Raj                      Test Technician  
Kevin Bothmann                      Lab Manager

**2.4 Date Test Sample was Received**

The test sample was received on May 15, 2000.

**2.5 Disposition of the Test Sample**

The test sample was returned to Sonicbox, Inc. on May 17, 2000.

**2.6 Abbreviations and Acronyms**

The following abbreviations and acronyms may be used in this document.

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
HP	Hewlett Packard
ITE	Information Technology Equipment
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network
CISPR	International Special Committee On Radio Interference
FCC	Federal Communications Commission

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**3.            APPLICABLE DOCUMENTS**

The following documents are referenced or used in the preparation of this EMI Test Report.

<b>SPEC</b>	<b>TITLE</b>
FCC Title 47, Part 15, Subpart B.	FCC Rules - Radio frequency devices (including digital devices).
FCC Title 47, Part 15, Subpart C.	FCC Rules – Radio frequency devices (intentional radiators) (Section 15.231)
ANSI C63.4 1992	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz.

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**4. DESCRIPTION OF TEST CONFIGURATION****4.1 Description of Test Configuration - EMI**

The EUT (receiver) was connected to the computer and speakers via its USB, audio input and audio output ports, respectively. The EUT (transmitter) was located across the table from the receiver. The EUT (transmitter) is battery powered. The computer was connected to the keyboard, mouse, monitor, and printer via its keyboard, mouse, video, and parallel ports, respectively. During the testing process, the EUT was transmitting and receiving signals between the transmitter and receiver.

The transmitter portion was tested in all three orthogonal positions (X, Y and Z). The final data was taken in the "X" position, found to be worst case. Data for all three positions can be found in Appendix A. Appendix A also contains a plot showing the bandwidth of the fundamental frequency.

The transmitter and receiver were tested together for all emissions tests. The radiated emission data for both units is located in Appendix A. The conducted emissions test was done only on the receiver because the transmitter is a battery powered device.

It was determined that the emissions were at their highest level when the EUT was operating in the above configuration. The cables were moved to maximize the emissions. The final conducted as well as radiated data was taken in this mode of operation. All initial investigations were performed with the EMI receiver in manual mode scanning the frequency range continuously. The cables were bundled and routed as shown in the photographs in Appendix A.



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**4.1.1      Cable Construction and Termination****Cable #1**

This is a 6 foot foil shielded cable connecting the EUT (receiver) to the computer. It has a metallic USB connector at both ends of the cable. The cable was bundled to a length of 4 feet. The shield of the cable was grounded to the chassis via the connectors.

**Cable #2**

This is a 6 foot unshielded cable connecting the EUT (receiver) to the computer. It has a metallic 1/8 inch stereo jack connector at both ends of the cable. The cable was bundled to a length of 3 feet. The shield of the cable was grounded to the chassis via the connectors.

**Cable #3**

This is a 3 foot unshielded cable connecting the EUT (receiver) to speaker A. It has a metallic 1/8 inch stereo jack connector at the EUT end, and is hardwired into the speaker.

**Cable #4**

This is a 6 1/2 foot unshielded cable connecting speaker A to speaker B. It is hardwired at both ends of the cable. The cable was bundled to a length of 3 feet.

**Cable #5**

This is a 6 foot foil shielded cable connecting the computer to the mouse. It has a metallic 6 pin mini DIN connector at the computer end, and is hardwired into the mouse. The shield of the cable was grounded to the chassis via the connector.

**Cable #6**

This is a 6 foot foil shielded cable connecting the computer to the keyboard. It has a metallic 6 pin mini DIN connector at the computer end, and is hardwired into the keyboard. The shield of the cable was grounded to the chassis via the connector.

**Cable #7**

This is a 5 foot braid and foil shielded cable connecting the computer to the monitor. It has a metallic high density DB-15 pin connector with a factory installed ferrite bead at the computer end, and is hardwired into the monitor. The cable was bundled to a length of 4 feet. The shield of the cable was grounded to the chassis via the connector.

**Cable #8**

This is a 9 foot foil shielded cable connecting the computer to the printer. It has a metallic DB-25 pin connector at the computer end, and a metallic 36 pin Centronics connector at the printer end. The cable was bundled to a length of 5 feet. The shield of the cable was grounded to the chassis via the connectors.

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**5.                LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT****5.1              EUT and Accessory List**

<b>EQUIPMENT TYPE</b>	<b>MANU-FACTURER</b>	<b>MODEL</b>	<b>SERIAL NUMBER</b>	<b>FCC ID</b>
SONICBOX iM REMOTE TUNER (EUT)	SONICBOX, INC.	433B	N/A	OT7-433B
COMPUTER	DELL	MMP	CTZYF	DoC
MONITOR	DELL	D1025TM	7018745	DoC
KEYBOARD	DELL	SK-1000REW	12710-7B7-009078	GYUR433K
MOUSE	MICROSOFT	INTELLIMOUSE	00613298	C3KKMP5
SPEAKERS (A & B)	JUSTER	AC-69IN	N/A	N/A
PRINTER	EPSON	P930A	3HR0116695	BKMFBP930A


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**5.2 EMI Test Equipment**

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. CYCLE
Spectrum Analyzer	Hewlett Packard	8566B	3013A07296	July 6, 1999	1 Year
RF Preselector	Hewlett Packard	85685A	3010A01157	October 29, 1999	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650	2521A00584	July 20, 1999	1 Year
Preamplifier	Com Power	PA-102	1482	March 1, 2000	1 Year
Preamplifier	Com Power	PA-122	2113	October 7, 1999	1 Year
RF Attenuator	Mini-Circuits	CAT-10	Asset #1000	December 7, 1999	1 Year
LISN	Com Power	LI-200	12012	April 27, 2000	1 Year
LISN	Com Power	LI-200	12214	April 27, 2000	1 Year
LISN	Com Power	LI-200	1767	April 27, 2000	1 Year
LISN	Com Power	LI-200	1768	April 27, 2000	1 Year
Biconical Antenna	Com Power	AB-100	01557	November 13, 1999	1 Year
Log Periodic Antenna	Com Power	AL-100	16037	November 13, 1999	1 Year
Horn Antenna	Com Power	AH-118	10062	N/A	N/A
Antenna Mast	Com Power	AM-400	N/A	N/A	N/A
Turntable	Com Power	TT-100	N/A	N/A	N/A
Computer	Compaq	Series 3284	X637BBS20212	N/A	N/A
Printer	Epson	P930A	3HR1398903	N/A	N/A
Plotter	Hewlett Packard	7470A	2308A96499	N/A	N/A

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## 6.            **TEST SITE DESCRIPTION**

### 6.1            **Test Facility Description**

Please refer to section 7.1.1 and 7.1.2 of this report for EMI test location.

### 6.2            **EUT Mounting, Bonding and Grounding**

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The receiver was grounded through the computer's chassis.

The transmitter was not grounded.

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**7. TEST PROCEDURES**

The following sections describe the test methods and the specifications for the tests.

**7.1 RF Emissions****7.1.1 Conducted Emissions Test**

The HP 8566B spectrum analyzer was used as a measuring meter along with the HP 85650A quasi-peak adapter. The data was collected with the spectrum analyzer in the peak detect mode with the "Max Hold" feature activated. The quasi-peak detector was used only where indicated in the data sheets. A 10 dB attenuation pad was used for the protection of the spectrum analyzer input stage, and the spectrum analyzer offset was adjusted accordingly to read the actual data measured. The LISN output was read by the HP 8566B spectrum analyzer. The output of the second LISN was terminated by a 50 ohm termination. The effective measurement bandwidth used for the conducted emissions test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4: 1992. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The initial test data was taken in manual mode while scanning the frequency ranges of 0.45 MHz to 1.6 MHz, 1.6 MHz to 5 MHz and 5 MHz to 30 MHz. The conducted emissions from the EUT were maximized for operating mode as well as cable and peripheral placement. Once a predominant frequency (within 12 dB of the limit) was found, it was more closely examined with the spectrum analyzer span adjusted to 1 MHz.

The final data was collected under program control by the HP 85869PC software in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave.



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**7.1.2      Radiated Emissions Test**

The HP 8566B spectrum analyzer was used as a measuring meter along with the HP 85650A quasi-peak adapter. The Com Power Preamplifier PA-102 and Com Power Preamplifier PA-122 was used to increase the sensitivity of the instrument. The spectrum analyzer was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer records the highest measured reading over all the sweeps. The HP 85650A quasi-peak adapter was used only for those readings which are marked accordingly on the data sheets. The effective measurement bandwidth used for the radiated emissions test was 120 kHz from 30 MHz to 1 GHz and 1 MHz from 1 GHz to 5 GHz.

Broadband biconical, log periodic and horn antennas were used as transducers during the measurement. The biconical antenna was used from 30 MHz to 300 MHz, the log periodic antenna was used from 300 MHz to 1 GHz, and the horn antenna was used for 1 GHz to 5 GHz. The frequency spans were wide (30 MHz to 88 MHz, 88 MHz to 216 MHz, 216 to 300 MHz, 300 MHz to 1 GHz, and 1 GHz to 5 GHz) during preliminary investigations. The final data was taken with a frequency span of 1 MHz. Furthermore, the frequency span was reduced during the preliminary investigations as deemed necessary.

The open field test site of Electro Magnetic Test, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4: 1992. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength).

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a 3 meter test distance to obtain final test data.



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8.                    **CONCLUSIONS**

The Sonicbox iM Remote Tuner Model: 433B meets all of the **Class B** requirements of the FCC Title 47, Part 15, Subpart B and FCC Title 47, Subpart C, section 15.231.



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## **APPENDIX A**

# ***RADIATED AND CONDUCTED EMISSIONS DATA SHEETS***

Electro Magnetic Test, Inc.  
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## Radiated Emissions Test Data

Purpose of Test:    ☒ QUALIFICATION        ☐ ENGINEERING        ☐ MANUFACTURING AUDIT  
FCC Class B            Test Date:    05-15-00  
Company Name:        SONICBOX, INC.  
EUT Model Number:    433B  
EUT Serial Number:    N/A  
EUT Description:      SONICBOX iM REMOTE TUNER

## Test Setup Configuration

EUT Clock Speeds:    434MHz

EUT Power Cords:    ☐ SHIELDED                    ☐ NOT SHIELDED  
EUT tested at:        ☐ LOW SPEED                    ☐ HIGH SPEED  
EUT is:                ☒ IN COMPLIANCE        ☐ OUT OF COMPLIANCE with FCC Class B.

EUT Modifications during this test:  
                          ☐ MODIFIED                    ☐ NOT MODIFIED

Modifications: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

NOTE:    A formal report on passing data will be generated when required.  
Design, debug and consultation services are available at all times.

Test Engineer: NEELESH RAJ

Electro Magnetic Test, Inc.

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FCC Class B Test Date: 05-15-00  
 Company Name: SONICBOX, INC.  
 EUT Model Number: 433B  
 EUT Description: SONICBOX iM REMOTE TUNER

## RADIATED EMISSION TEST RESULTS

Freq	Ampl	M	P	A	Ht	Dist	Ori	Gain	ACor	CCor	DCor	CorAmp	Limit	Margin	Flags
MHz	dBuV	-	-	-	m	m	deg	dB	dBuV/m	dB	dB	dBuV/m	dBuV/m	dB	FH---
=====	=====	=	=	=	===	=====	==	=====	=====	=====	=====	=====	=====	=====	=====

THE FOLLOWING READINGS ARE FOR THE RECEIVER

FCC PART 15.109 (30-1000MHz)

THE FOLLOWING IS FOR POSITION "X", FOUND TO BE THE WORST CASE MODE

## -VERTICAL POLARIZATION

36.006	30.7	P	V	B	1.0	3.0	0	21.8	11.8	1.0	0.0	21.7	40.0	-18.3	-----
42.008	28.9	P	V	B	1.0	3.0	0	21.8	10.7	1.0	0.0	18.8	40.0	-21.2	-----
48.479	46.6	P	V	B	1.0	3.0	270	21.9	11.2	1.1	0.0	37.0	40.0	-3.0	-----
48.479	44.6	Q	V	B	1.0	3.0	270	21.9	11.2	1.1	0.0	35.0	40.0	-5.0	-----
50.015	38.1	P	V	B	1.0	3.0	270	21.9	11.3	1.1	0.0	28.6	40.0	-11.4	-----
58.085	36.8	P	V	B	1.0	3.0	270	21.7	10.3	1.1	0.0	26.5	40.0	-13.5	-----
67.640	39.0	P	V	B	1.5	3.0	45	21.4	10.1	1.3	0.0	29.0	40.0	-11.0	-----
68.286	35.7	P	V	B	1.0	3.0	315	21.4	10.1	1.3	0.0	25.7	40.0	-14.3	-----
72.002	32.4	P	V	B	1.5	3.0	0	21.5	9.8	1.3	0.0	22.0	40.0	-18.0	-----
82.308	35.1	P	V	B	1.5	3.0	45	21.7	8.8	1.3	0.0	23.5	40.0	-16.5	-----
109.109	35.7	P	V	B	1.0	3.0	0	21.7	10.3	1.6	0.0	25.9	43.5	-17.6	-----
128.245	33.4	P	V	B	1.0	3.0	0	21.8	11.1	1.7	0.0	24.4	43.5	-19.1	-----
138.460	38.9	P	V	B	1.0	3.0	45	21.8	11.7	1.8	0.0	30.6	43.5	-12.9	-----
164.622	35.9	P	V	B	1.0	3.0	0	21.8	13.2	1.9	0.0	29.2	43.5	-14.3	-----
168.005	32.8	P	V	B	1.0	3.0	0	21.8	13.5	1.9	0.0	26.4	43.5	-17.1	-----
272.005	25.4	P	V	B	1.0	3.0	0	21.5	18.7	2.4	0.0	25.0	46.0	-21.0	-----
366.001	24.3	P	V	L	1.0	3.0	0	21.6	14.4	2.9	0.0	20.0	46.0	-26.0	-----
420.001	23.9	P	V	L	1.0	3.0	0	21.4	15.8	3.1	0.0	21.4	46.0	-24.6	-----
636.001	23.5	P	V	L	1.0	3.0	0	21.1	20.7	3.8	0.0	26.9	46.0	-19.1	-----
996.001	22.9	P	V	L	1.0	3.0	0	19.8	22.8	4.9	0.0	30.8	54.0	-23.2	-----

## -HORIZONTAL POLARIZATION

36.005	28.6	P	H	B	1.0	3.0	0	21.8	11.8	1.0	0.0	19.6	40.0	-20.4	-----
42.005	26.1	P	H	B	1.0	3.0	0	21.8	10.7	1.0	0.0	16.0	40.0	-24.0	-----
48.495	49.1	P	H	B	1.0	3.0	315	21.9	11.2	1.1	0.0	39.5	40.0	-0.5	-----
48.495	46.6	Q	H	B	1.0	3.0	315	21.9	11.2	1.1	0.0	37.0	40.0	-3.0	-----
50.001	39.4	P	H	B	1.0	3.0	315	21.9	11.3	1.1	0.0	29.9	40.0	-10.1	-----
58.001	35.8	P	H	B	1.0	3.0	45	21.7	10.3	1.1	0.0	25.5	40.0	-14.5	-----
67.641	38.1	P	H	B	2.0	3.0	315	21.4	10.1	1.3	0.0	28.1	40.0	-11.9	-----
68.287	35.6	P	H	B	1.0	3.0	315	21.4	10.1	1.3	0.0	25.6	40.0	-14.4	-----
72.001	32.0	P	H	B	1.0	3.0	0	21.5	9.8	1.3	0.0	21.6	40.0	-18.4	-----
82.309	33.8	P	H	B	1.5	3.0	270	21.7	8.8	1.3	0.0	22.2	40.0	-17.8	-----
109.134	39.1	P	H	B	1.0	3.0	270	21.7	10.3	1.6	0.0	29.3	43.5	-14.2	-----
128.270	32.9	P	H	B	1.0	3.0	0	21.8	11.1	1.7	0.0	23.9	43.5	-19.6	-----
138.449	39.6	P	H	B	1.0	3.0	45	21.8	11.7	1.8	0.0	31.3	43.5	-12.2	-----
164.619	36.0	P	H	B	1.0	3.0	45	21.8	13.2	1.9	0.0	29.3	43.5	-14.2	-----
167.997	29.7	P	H	B	1.0	3.0	0	21.8	13.5	1.9	0.0	23.3	43.5	-20.2	-----
271.997	25.7	P	H	B	1.0	3.0	0	21.5	18.7	2.4	0.0	25.3	46.0	-20.7	-----
366.001	26.7	P	H	L	1.0	3.0	0	21.6	14.4	2.9	0.0	22.4	46.0	-23.6	-----
419.998	23.3	P	H	L	1.0	3.0	0	21.4	15.8	3.1	0.0	20.8	46.0	-25.2	-----
635.998	21.8	P	H	L	1.0	3.0	0	21.1	20.7	3.8	0.0	25.2	46.0	-20.8	-----
995.998	23.4	P	H	L	1.0	3.0	0	19.8	22.8	4.9	0.0	31.3	54.0	-22.7	-----



THE FOLLOWING READINGS ARE FOR THE 434 MHZ TRANSMITTER FCC PART 15.231(b)  
 (FIELD STRENGTH OF FUNDAMENTAL AND HARMONICS, AND SPURIOUS EMISSIONS)  
 THE FOLLOWING IS FOR POSITION "X", "Y" & "Z"

## POSITION "X"

## -VERTICAL POLARIZATION

## Comment: 1ST HARMONIC

433.930	81.8	P V L	3.0	3.0	135	21.5	16.5	3.1	0.0	79.9	80.2	-0.3	-----
433.930	67.3	A V L	3.0	3.0	135	21.5	16.5	3.1	0.0	65.4	80.2	-14.8	-----

## Comment: 2ND HARMONIC

867.883	46.8	P V L	2.0	3.0	45	20.8	22.0	4.7	0.0	52.7	61.9	-9.2	-----
867.883	31.9	A V L	2.0	3.0	45	20.8	22.0	4.7	0.0	37.8	61.9	-24.1	-----

## Comment: 3RD HARMONIC

1301.840	22.1	P V H	1.0	3.0	0	33.7	27.8	5.4	0.0	21.6	61.9	-40.3	-----
1301.840	13.9	A V H	1.0	3.0	0	33.7	27.8	5.4	0.0	13.4	61.9	-48.5	-----

## Comment: 4TH HARMONIC

1736.000	21.7	P V H	1.0	3.0	0	33.6	29.0	6.4	0.0	23.5	61.9	-38.4	-----
1736.000	13.9	A V H	1.0	3.0	0	33.6	29.0	6.4	0.0	15.7	61.9	-46.2	-----

## Comment: 5TH HARMONIC

2170.015	24.5	P V H	1.0	3.0	45	33.7	31.0	7.2	0.0	29.0	61.9	-32.9	-----
2170.015	14.2	A V H	1.0	3.0	45	33.7	31.0	7.2	0.0	18.7	61.9	-43.2	-----

## Comment: 6TH HARMONIC

2604.000	21.2	P V H	1.0	3.0	0	33.3	30.3	7.5	0.0	25.7	61.9	-36.2	-----
2604.000	13.4	A V H	1.0	3.0	0	33.3	30.3	7.5	0.0	17.9	61.9	-44.0	-----

## Comment: 7TH HARMONIC

3038.000	20.4	P V H	1.0	3.0	0	32.7	31.8	7.8	0.0	27.3	61.9	-34.6	-----
3038.000	13.6	A V H	1.0	3.0	0	32.7	31.8	7.8	0.0	20.5	61.9	-41.4	-----

## Comment: 8TH HARMONIC

3472.000	22.2	P V H	1.0	3.0	0	32.2	32.2	9.0	0.0	31.2	61.9	-30.7	-----
3472.000	13.7	A V H	1.0	3.0	0	32.2	32.2	9.0	0.0	22.7	61.9	-39.2	-----

## Comment: 9TH HARMONIC

3906.010	21.9	P V H	1.0	3.0	0	31.1	34.3	9.8	0.0	34.9	61.9	-27.0	-----
3906.010	13.5	A V H	1.0	3.0	0	31.1	34.3	9.8	0.0	26.5	61.9	-35.4	-----

## Comment: 10TH HARMONIC

4339.990	22.1	P V H	1.0	3.0	0	30.8	33.2	10.4	0.0	34.9	61.9	-27.0	-----
4339.990	13.6	A V H	1.0	3.0	0	30.8	33.2	10.4	0.0	26.5	61.9	-35.4	-----

## -HORIZONTAL POLARIZATION

## Comment: 1ST HARMONIC

433.932	95.0	P H L	1.0	3.0	180	21.5	16.5	3.1	0.0	93.1	80.2	12.9	-----
433.932	80.6	A H L	1.0	3.0	180	21.5	16.5	3.1	0.0	78.7	80.2	-1.5	-----

## Comment: 2ND HARMONIC

867.877	50.3	P H L	1.0	3.0	135	20.8	22.0	4.7	0.0	56.2	61.9	-5.7	-----
867.877	36.0	A H L	1.0	3.0	135	20.8	22.0	4.7	0.0	41.9	61.9	-20.0	-----

## Comment: 3RD HARMONIC

1301.838	26.2	P H H	1.0	3.0	45	33.7	27.8	5.4	0.0	25.7	61.9	-36.2	-----
1301.838	15.5	A H H	1.0	3.0	45	33.7	27.8	5.4	0.0	15.0	61.9	-46.9	-----

## Comment: 4TH HARMONIC

1736.000	23.2	P H H	1.0	3.0	0	33.6	29.0	6.4	0.0	25.0	61.9	-36.9	-----
1736.000	13.9	A H H	1.0	3.0	0	33.6	29.0	6.4	0.0	15.7	61.9	-46.2	-----

## Comment: 5TH HARMONIC

2170.000	21.6	P H H	1.0	3.0	0	33.7	31.0	7.2	0.0	26.1	61.9	-35.8	-----
2170.000	14.1	A H H	1.0	3.0	0	33.7	31.0	7.2	0.0	18.6	61.9	-43.3	-----

## Comment: 6TH HARMONIC

2604.000	21.1	P H H	1.0	3.0	0	33.3	30.3	7.5	0.0	25.6	61.9	-36.3	-----
2604.000	13.4	Q H H	1.0	3.0	0	33.3	30.3	7.5	0.0	17.9	61.9	-44.0	-----

Comment: 7TH HARMONIC

3038.000	19.2	P H H	1.0	3.0	0	32.7	31.8	7.8	0.0	26.1	61.9	-35.8	-----
3038.000	13.6	A H H	1.0	3.0	0	32.7	31.8	7.8	0.0	20.5	61.9	-41.4	-----

Comment: 8TH HARMONIC

3471.990	21.9	P H H	1.0	3.0	0	32.2	32.2	9.0	0.0	30.9	61.9	-31.0	-----
3471.990	13.8	A H H	1.0	3.0	0	32.2	32.2	9.0	0.0	22.8	61.9	-39.1	-----

Comment: 9TH HARMONIC

3906.000	20.8	P H H	1.0	3.0	0	31.1	34.3	9.8	0.0	33.8	61.9	-28.1	-----
3906.000	13.6	A H H	1.0	3.0	0	31.1	34.3	9.8	0.0	26.6	61.9	-35.3	-----

Comment: 10TH HARMONIC

4340.000	20.0	P H H	1.0	3.0	0	30.8	33.2	10.4	0.0	32.8	61.9	-29.1	-----
4340.000	13.7	A H H	1.0	3.0	0	30.8	33.2	10.4	0.0	26.5	61.9	-35.4	-----

## SPURIOUS EMISSIONS

-VERTICAL POLARIZATION

905.235	28.5	P V L	1.0	3.0	0	21.0	22.6	4.7	0.0	34.8	61.9	-27.1	-----
905.235	15.3	A V L	1.0	3.0	0	21.0	22.6	4.7	0.0	21.6	61.9	-40.3	-----

-HORIZONTAL POLARIZATION

905.222	42.5	P H L	1.0	3.0	135	21.0	22.6	4.7	0.0	48.8	61.9	-13.1	-----
905.222	25.4	A H L	1.0	3.0	135	21.0	22.6	4.7	0.0	31.7	61.9	-30.2	-----

## POSITION "Y"

-VERTICAL POLARIZATION

Comment: 1ST HARMONIC

433.927	84.0	P V L	1.0	3.0	315	21.5	16.5	3.1	0.0	82.1	80.2	1.9	-----
433.927	69.6	A V L	1.0	3.0	315	21.5	16.5	3.1	0.0	67.7	80.2	-12.5	-----

Comment: 2ND HARMONIC

867.875	53.9	P V L	1.5	3.0	45	20.8	22.0	4.7	0.0	59.8	61.9	-2.1	-----
867.875	39.9	A V L	1.5	3.0	45	20.8	22.0	4.7	0.0	45.8	61.9	-16.1	-----

Comment: 3RD HARMONIC

1301.844	28.1	P V H	1.5	3.0	45	33.7	27.8	5.4	0.0	27.6	61.9	-34.3	-----
1301.844	17.2	A V H	1.5	3.0	45	33.7	27.8	5.4	0.0	16.7	61.9	-45.2	-----

Comment: 4TH HARMONIC

1735.772	24.8	P V H	1.0	3.0	0	33.6	29.0	6.4	0.0	26.6	61.9	-35.3	-----
1735.772	14.6	A V H	1.0	3.0	0	33.6	29.0	6.4	0.0	16.4	61.9	-45.5	-----

Comment: 5TH HARMONIC

2170.000	21.4	P V H	1.0	3.0	0	33.7	31.0	7.2	0.0	25.9	61.9	-36.0	-----
2170.000	14.2	A V H	1.0	3.0	0	33.7	31.0	7.2	0.0	18.7	61.9	-43.2	-----

Comment: 6TH HARMONIC

2604.000	20.0	P V H	1.0	3.0	0	33.3	30.3	7.5	0.0	24.5	61.9	-37.4	-----
2604.000	13.4	A V H	1.0	3.0	0	33.3	30.3	7.5	0.0	17.9	61.9	-44.0	-----

Comment: 7TH HARMONIC

3038.000	22.1	P V H	1.0	3.0	0	32.7	31.8	7.8	0.0	29.0	61.9	-32.9	-----
3038.000	13.6	A V H	1.0	3.0	0	32.7	31.8	7.8	0.0	20.5	61.9	-41.4	-----

Comment: 8TH HARMONIC

3472.010	22.9	P V H	1.0	3.0	0	32.2	32.2	9.0	0.0	31.9	61.9	-30.0	-----
3472.010	13.7	A V H	1.0	3.0	0	32.2	32.2	9.0	0.0	22.7	61.9	-39.2	-----

Comment: 9TH HARMONIC

3906.000	20.1	P V H	1.0	3.0	0	31.1	34.3	9.8	0.0	33.1	61.9	-28.8	-----
3906.000	13.5	A V H	1.0	3.0	0	31.1	34.3	9.8	0.0	26.5	61.9	-35.4	-----

Comment: 10TH HARMONIC

4340.000	22.4	P V H	1.0	3.0	0	30.8	33.2	10.4	0.0	35.2	61.9	-26.7	-----
4340.000	13.6	A V H	1.0	3.0	0	30.8	33.2	10.4	0.0	26.4	61.9	-35.5	-----

-HORIZONTAL POLARIZATION

Comment: 1ST HARMONIC

433.933	93.0	P H L	1.0	3.0	0	21.5	16.5	3.1	0.0	91.1	80.2	10.9	-----
433.933	78.7	A H L	1.0	3.0	0	21.5	16.5	3.1	0.0	76.8	80.2	-3.4	-----

Comment: 2ND HARMONIC

867.876	50.0	P H L	1.0	3.0	45	20.8	22.0	4.7	0.0	55.9	61.9	-6.0	-----
867.876	35.4	A H L	1.0	3.0	45	20.8	22.0	4.7	0.0	41.3	61.9	-20.6	-----

Comment: 3RD HARMONIC

1301.850	27.0	P H H	1.5	3.0	45	33.7	27.8	5.4	0.0	26.5	61.9	-35.4	-----
1301.850	16.1	A H H	1.5	3.0	45	33.7	27.8	5.4	0.0	15.6	61.9	-46.3	-----

Comment: 4TH HARMONIC

1735.781	24.5	P H H	1.0	3.0	45	33.6	29.0	6.4	0.0	26.3	61.9	-35.6	-----
1735.781	15.2	Q H H	1.0	3.0	45	33.6	29.0	6.4	0.0	17.0	61.9	-44.9	-----

Comment: 5TH HARMONIC

2170.000	21.2	P H H	1.0	3.0	0	33.7	31.0	7.2	0.0	25.7	61.9	-36.2	-----
2170.000	14.2	A H H	1.0	3.0	0	33.7	31.0	7.2	0.0	18.7	61.9	-43.2	-----

Comment: 6TH HARMONIC

2604.000	21.8	P H H	1.0	3.0	0	33.3	30.3	7.5	0.0	26.3	61.9	-35.6	-----
2604.000	13.5	A H H	1.0	3.0	0	33.3	30.3	7.5	0.0	18.0	61.9	-43.9	-----

Comment: 7TH HARMONIC

3038.000	22.1	P H H	1.0	3.0	0	32.7	31.8	7.8	0.0	29.0	61.9	-32.9	-----
3038.000	13.6	A H H	1.0	3.0	0	32.7	31.8	7.8	0.0	20.5	61.9	-41.4	-----

Comment: 8TH HARMONIC

3471.960	20.5	P H H	1.0	3.0	0	32.2	32.2	9.0	0.0	29.5	61.9	-32.4	-----
3471.960	13.6	A H H	1.0	3.0	0	32.2	32.2	9.0	0.0	22.6	61.9	-39.3	-----

Comment: 9TH HARMONIC

3906.015	20.3	P H H	1.0	3.0	0	31.1	34.3	9.8	0.0	33.3	61.9	-28.6	-----
3906.025	13.6	A H H	1.0	3.0	0	31.1	34.3	9.8	0.0	26.6	61.9	-35.3	-----

Comment: 10TH HARMONIC

4340.000	20.1	P H H	1.0	3.0	0	30.8	33.2	10.4	0.0	32.9	61.9	-29.0	-----
4340.000	13.7	A H H	1.0	3.0	0	30.8	33.2	10.4	0.0	26.5	61.9	-35.4	-----

## POSITION "Z"

-VERTICAL POLARIZATION

Comment: 1ST HARMONIC

433.931	91.8	P V L	2.0	3.0	270	21.5	16.5	3.1	0.0	89.9	80.2	9.7	-----
433.931	77.5	A V L	2.0	3.0	270	21.5	16.5	3.1	0.0	75.6	80.2	-4.6	-----

Comment: 2ND HARMONIC

867.874	49.1	P V L	1.0	3.0	45	20.8	22.0	4.7	0.0	55.0	61.9	-6.9	-----
867.874	37.1	A V L	1.0	3.0	45	20.8	22.0	4.7	0.0	43.0	61.9	-18.9	-----

Comment: 3RD HARMONIC

1301.850	24.2	P V H	1.5	3.0	315	33.7	27.8	5.4	0.0	23.7	61.9	-38.2	-----
1301.850	14.8	A V H	1.5	3.0	315	33.7	27.8	5.4	0.0	14.2	61.9	-47.7	-----

Comment: 4TH HARMONIC

1736.000	22.6	P V H	1.0	3.0	315	33.6	29.0	6.4	0.0	24.4	61.9	-37.5	-----
1736.000	13.8	Q V H	1.0	3.0	315	33.6	29.0	6.4	0.0	15.6	61.9	-46.3	-----

Comment: 5TH HARMONIC

2170.020	22.4	P V H	1.0	3.0	0	33.7	31.0	7.2	0.0	26.9	61.9	-35.0	-----
2170.020	14.2	A V H	1.0	3.0	0	33.7	31.0	7.2	0.0	18.7	61.9	-43.2	-----

Comment: 6TH HARMONIC

2603.970	21.8	P V H	1.0	3.0	0	33.3	30.3	7.5	0.0	26.3	61.9	-35.6	-----
2603.970	13.4	A V H	1.0	3.0	0	33.3	30.3	7.5	0.0	17.9	61.9	-44.0	-----

Comment: 7TH HARMONIC

3038.000	21.1	P V H	1.0	3.0	0	32.7	31.8	7.8	0.0	28.0	61.9	-33.9	-----
3038.000	13.6	A V H	1.0	3.0	0	32.7	31.8	7.8	0.0	20.5	61.9	-41.4	-----

Comment: 8TH HARMONIC

3472.000	21.0	P V H	1.0	3.0	0	32.2	32.2	9.0	0.0	30.0	61.9	-31.9	-----
3472.000	13.7	A V H	1.0	3.0	0	32.2	32.2	9.0	0.0	22.7	61.9	-39.2	-----

Comment: 9TH HARMONIC

3906.000	21.2	P V H	1.0	3.0	0	31.1	34.3	9.8	0.0	34.2	61.9	-27.7	-----
3906.000	13.5	A V H	1.0	3.0	0	31.1	34.3	9.8	0.0	26.5	61.9	-35.4	-----

Comment: 10TH HARMONIC

4340.000	21.5	P V H	1.0	3.0	0	30.8	33.2	10.4	0.0	34.3	61.9	-27.6	-----
4340.000	13.7	A V H	1.0	3.0	0	30.8	33.2	10.4	0.0	26.5	61.9	-35.4	-----

-HORIZONTAL POLARIZATION

Comment: 1ST HARMONIC

433.931	85.6	P H L	2.0	3.0	135	21.5	16.5	3.1	0.0	83.7	80.2	3.5	-----
433.932	70.5	A H L	2.0	3.0	135	21.5	16.5	3.1	0.0	68.6	80.2	-11.6	-----

Comment: 2ND HARMONIC

867.879	51.7	P H L	2.0	3.0	45	20.8	22.0	4.7	0.0	57.6	61.9	-4.3	-----
867.879	39.0	A H L	2.0	3.0	45	20.8	22.0	4.7	0.0	44.9	61.9	-17.0	-----

Comment: 3RD HARMONIC

1301.838	27.1	P H H	2.0	3.0	45	33.7	27.8	5.4	0.0	26.6	61.9	-35.3	-----
1301.838	16.5	A H H	2.0	3.0	45	33.7	27.8	5.4	0.0	16.0	61.9	-45.9	-----

Comment: 4TH HARMONIC

1736.015	22.3	P H H	1.0	3.0	0	33.6	29.0	6.4	0.0	24.1	61.9	-37.8	-----
1736.015	13.9	A H H	1.0	3.0	0	33.6	29.0	6.4	0.0	15.7	61.9	-46.2	-----

Comment: 5TH HARMONIC

2170.020	22.9	P H H	1.0	3.0	0	33.7	31.0	7.2	0.0	27.4	61.9	-34.2	-----
2170.000	14.2	A H H	1.0	3.0	0	33.7	31.0	7.2	0.0	18.7	61.9	-43.2	-----

Comment: 6TH HARMONIC

2604.000	21.9	P H H	1.0	3.0	0	33.3	30.3	7.5	0.0	26.4	61.9	-35.5	-----
2604.000	13.6	A H H	1.0	3.0	0	33.3	30.3	7.5	0.0	18.1	61.9	-43.8	-----

Comment: 7TH HARMONIC

3038.000	22.5	P H H	1.0	3.0	0	32.7	31.8	7.8	0.0	29.4	61.9	-32.5	-----
3038.000	13.7	A H H	1.0	3.0	0	32.7	31.8	7.8	0.0	20.6	61.9	-41.3	-----

Comment: 8TH HARMONIC

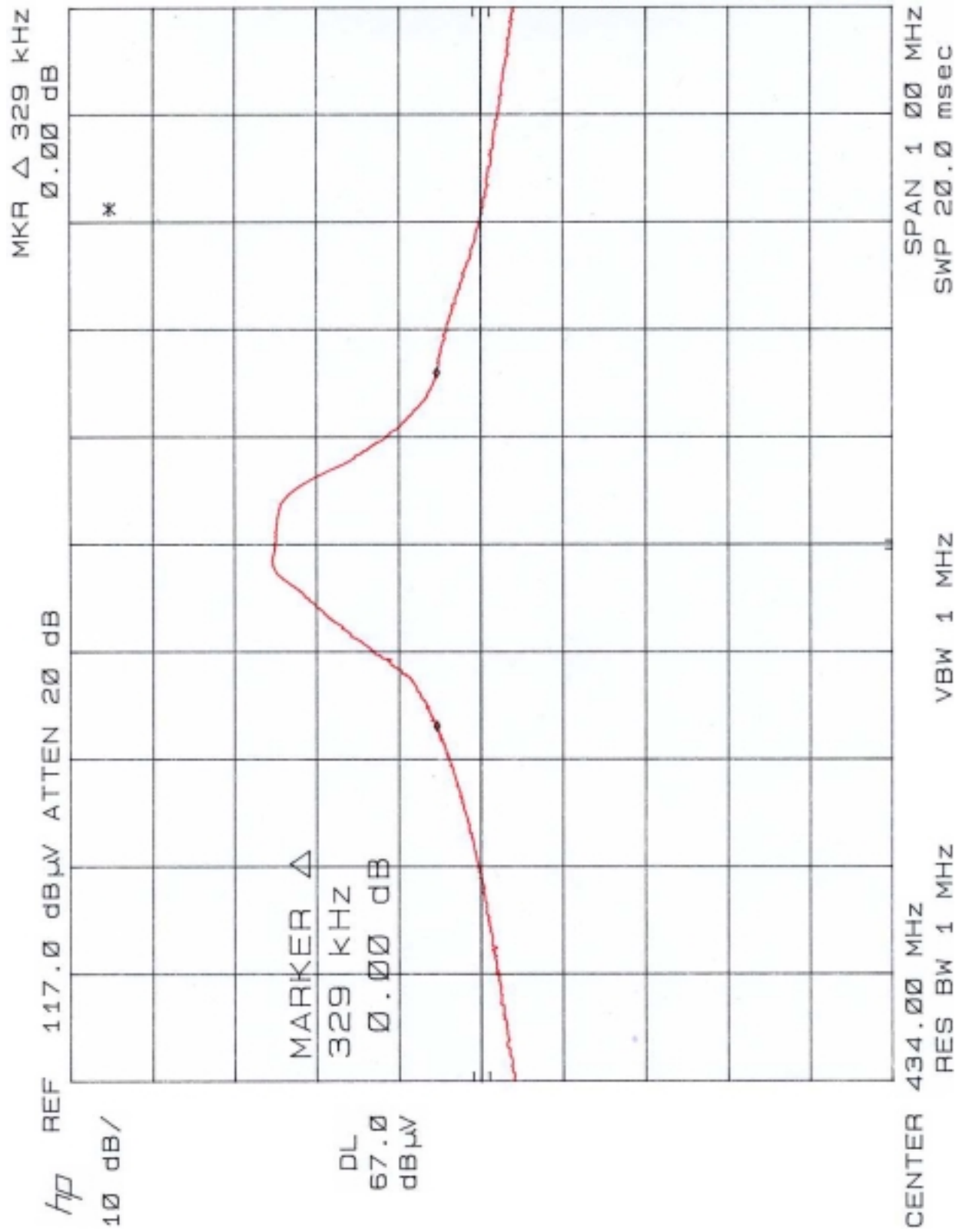
3472.000	21.5	P H H	1.0	3.0	0	32.2	32.2	9.0	0.0	30.5	61.9	-31.4	-----
3472.000	13.6	A H H	1.0	3.0	0	32.2	32.2	9.0	0.0	22.6	61.9	-39.3	-----

Comment: 9TH HARMONIC

3906.000	20.8	P H H	1.0	3.0	0	31.1	34.3	9.8	0.0	33.8	61.9	-28.1	-----
3906.000	13.7	A H H	1.0	3.0	0	31.1	34.3	9.8	0.0	26.7	61.9	-35.2	-----

Comment: 10TH HARMONIC

4339.999	20.9	P H H	1.0	3.0	0	30.8	33.2	10.4	0.0	33.7	61.9	-28.2	-----
4339.990	13.6	A H H	1.0	3.0	0	30.8	33.2	10.4	0.0	26.5	61.9	-35.4	-----

**PLOT SHOWING BANDWIDTH OF FUNDAMENTAL FREQUENCY**



**EMT**

***ELECTRO MAGNETIC TEST, INC.***

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**FRONT VIEW**

SONICBOX, INC.

SONICBOX iM REMOTE TUNER

MODEL: 433B

**FCC CLASS B - RADIATED EMISSIONS - 5-15-00**

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION  
FOR MAXIMUM EMISSIONS**

**EMT**

***ELECTRO MAGNETIC TEST, INC.***

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---



**REAR VIEW**

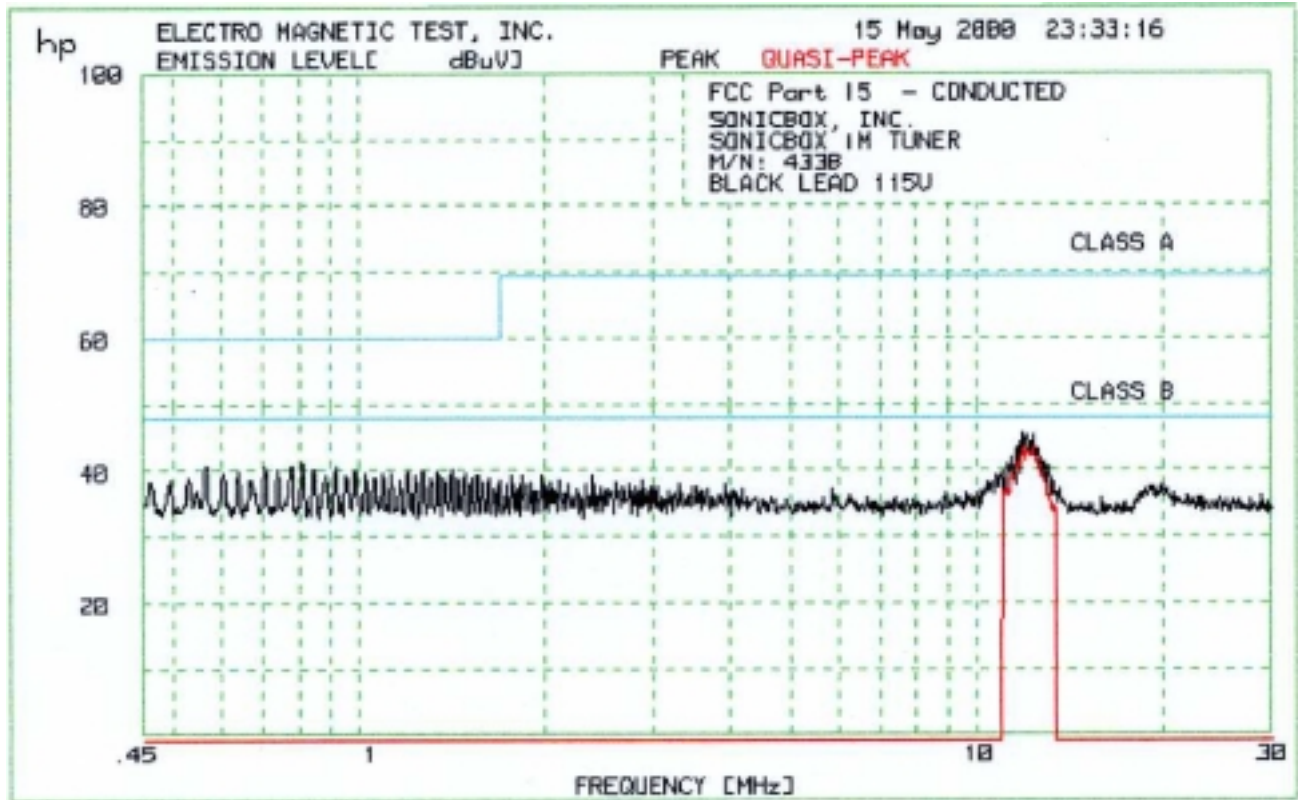
SONICBOX, INC.

SONICBOX iM REMOTE TUNER

MODEL: 433B

FCC CLASS B - RADIATED EMISSIONS - 5-15-00

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION  
FOR MAXIMUM EMISSIONS**



=====

ELECTRO MAGNETIC TEST, INC. 15 May 2000 23:33:16

=====

1. CONDUCTED WITH PRESELECTOR

1.1 FCC Part 15 - CONDUCTED

=====

45 highest Peaks above -50 dB of Limit Line #2

peak criteria = .1 dB

PEAK#	FREQ (MHz)	(dBuV)	DELTA
1	11.87	45.6	-2.4
2	12.07	45.3	-2.7
3	12.43	45	-3.0
4	12.33	44.1	-3.9
5	11.67	43.5	-4.5
6	12.54	43.2	-4.8
7	12.64	43	-5.0
8	11.43	41.8	-6.2
9	12.75	41.2	-6.8
10	.8131	41.1	-6.9
11	12.91	41	-7.0
12	11.19	40.9	-7.1
13	.5692	40.6	-7.4
14	.9221	40.6	-7.4
15	.7079	40.5	-7.5
16	13.07	40.5	-7.5
17	.7797	40.4	-7.6
18	11.33	40.3	-7.7
19	.7445	40.2	-7.8
20	.8515	40.2	-7.8
21	1.421	40.1	-7.9
22	1.274	39.8	-8.2
23	.9903	39.7	-8.3
24	1.345	39.7	-8.3
25	.6428	39.6	-8.4
26	1.206	39.6	-8.4
27	11.05	39.6	-8.4
28	.6062	39.5	-8.5
29	1.1	39.5	-8.5
30	1.028	39.4	-8.6
31	1.494	39.4	-8.6
32	1.137	39.3	-8.7
33	.9576	39.2	-8.8
34	1.237	39.2	-8.8
35	1.564	39.2	-8.8
36	1.774	39.2	-8.8
37	10.82	39.2	-8.8
38	1.843	39.1	-8.9
39	1.987	39.1	-8.9
40	.888	39	-9.0
41	2.4	39	-9.0
42	10.96	39	-9.0
43	1.526	38.9	-9.1
44	.53	38.8	-9.2
45	1.064	38.8	-9.2

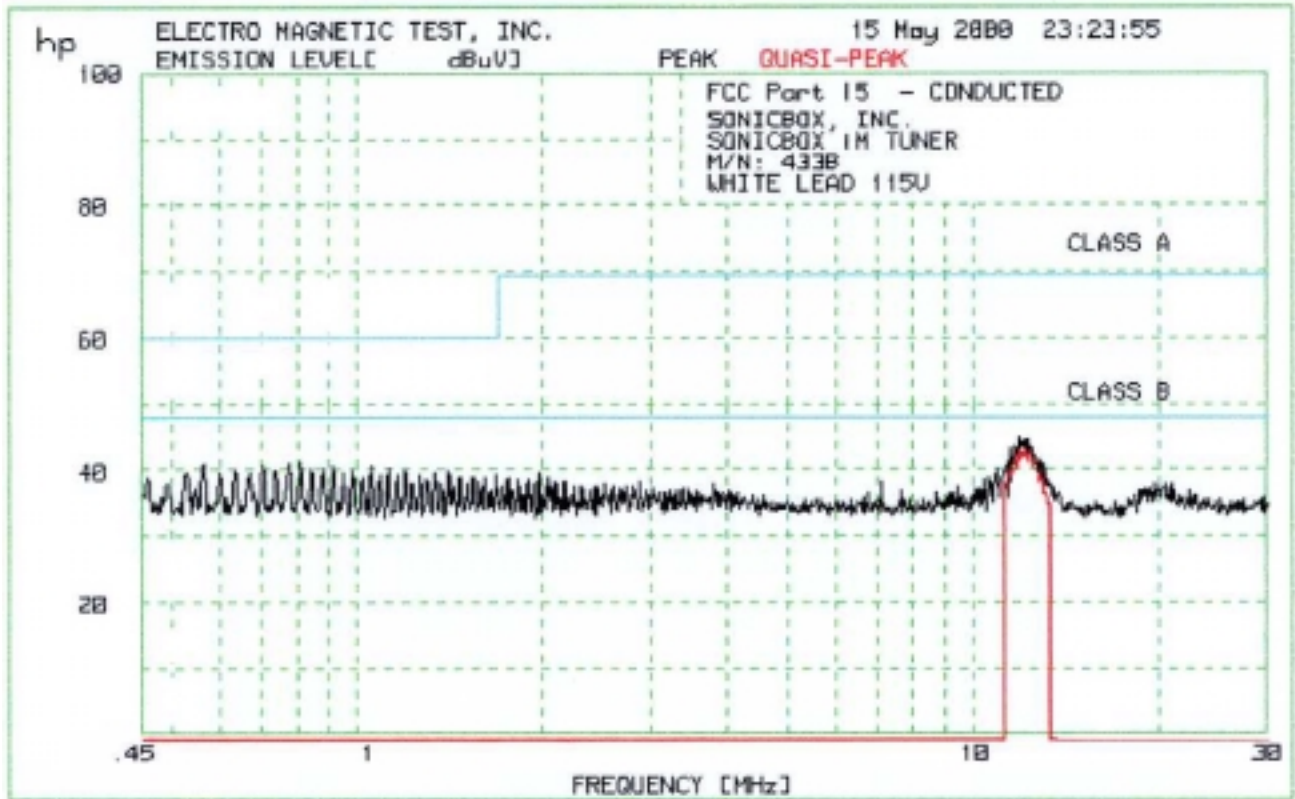
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ELECTRO MAGNETIC TEST, INC.      15 May 2000  23:33:16
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```
1. CONDUCTED WITH PRESELECTOR
   1.1  FCC Part 15  - CONDUCTED
```

```
=====
Quasi-Peaks above -50 dB of Limit Line #2
peak criteria = .1 dB
```

PEAK#	FREQ (MHz)	(dBuV)	DELTA
1	12.38	43.5	-4.5
2	11.87	43.2	-4.8
3	12.07	43	-5.0
4	12.59	41.6	-6.4
5	11.67	41.1	-6.9
6	12.8	39.1	-8.9
7	11.38	39	-9.0
8	11.15	36.9	-11.1
9	13.29	34.3	-13.7





=====

ELECTRO MAGNETIC TEST, INC. 15 May 2000 23:23:55

=====

1. CONDUCTED WITH PRESELECTOR

1.1 FCC Part 15 - CONDUCTED

=====

45 highest Peaks above -50 dB of Limit Line #2

peak criteria = .1 dB

PEAK#	FREQ (MHz)	(dBuV)	DELTA
1	11.92	44.7	-3.3
2	12.22	44.5	-3.5
3	12.02	44.2	-3.8
4	11.72	43.4	-4.6
5	12.43	43.4	-4.6
6	11.53	43.1	-4.9
7	12.75	41.5	-6.5
8	.8131	41.1	-6.9
9	12.91	41.1	-6.9
10	11.38	41	-7.0
11	.5668	40.9	-7.1
12	.7797	40.8	-7.2
13	.7079	40.5	-7.5
14	.9183	40.5	-7.5
15	1.059	40.5	-7.5
16	11.29	40.3	-7.7
17	13.13	40.2	-7.8
18	.8479	40.1	-7.9
19	1.133	40.1	-7.9
20	10.96	40.1	-7.9
21	.8842	40	-8.0
22	.6374	39.9	-8.1
23	.7383	39.9	-8.1
24	1.415	39.9	-8.1
25	.7445	39.6	-8.4
26	.9903	39.6	-8.4
27	1.201	39.6	-8.4
28	11.19	39.6	-8.4
29	.5322	39.5	-8.5
30	.6011	39.5	-8.5
31	.9576	39.5	-8.5
32	1.979	39.5	-8.5
33	1.34	39.4	-8.6
34	.6732	39.3	-8.7
35	1.1	39.2	-8.8
36	1.166	39	-9.0
37	1.274	39	-9.0
38	1.694	39	-9.0
39	1.475	38.8	-9.2
40	2.046	38.8	-9.2
41	.4595	38.7	-9.3
42	1.024	38.7	-9.3
43	1.551	38.7	-9.3
44	1.618	38.7	-9.3
45	1.767	38.7	-9.3

```
=====
ELECTRO MAGNETIC TEST, INC.      15 May 2000  23:23:55
=====
```

```
1. CONDUCTED WITH PRESELECTOR
   1.1  FCC Part 15  - CONDUCTED
=====
```

```
Quasi-Peaks above -50 dB of Limit Line #2
peak criteria = .1 dB
```

PEAK#	FREQ (MHz)	(dBuV)	DELTA
1	12.17	42.9	-5.1
2	12.43	42.9	-5.1
3	11.92	42.7	-5.3
4	11.72	41.4	-6.6
5	12.59	41	-7.0
6	11.48	39.7	-8.3
7	12.91	39.2	-8.8
8	11.24	37.9	-10.1
9	13.13	36.5	-11.5

**EMT**

***ELECTRO MAGNETIC TEST, INC.***

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---



**FRONT VIEW**

SONICBOX, INC.

SONICBOX iM REMOTE TUNER

MODEL: 433B

FCC CLASS B - CONDUCTED EMISSIONS - 5-15-00

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION  
FOR MAXIMUM EMISSIONS**



***ELECTRO MAGNETIC TEST, INC.***

1547 Plymouth Street, Mountain View, CA 94043    Tel: (650) 965-4000 Fax: (650) 965-3000

---



**REAR VIEW**

SONICBOX, INC.

SONICBOX iM REMOTE TUNER

MODEL: 433B

FCC CLASS B - CONDUCTED EMISSIONS - 5-15-00

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION  
FOR MAXIMUM EMISSIONS**



***ELECTRO MAGNETIC TEST, INC.***

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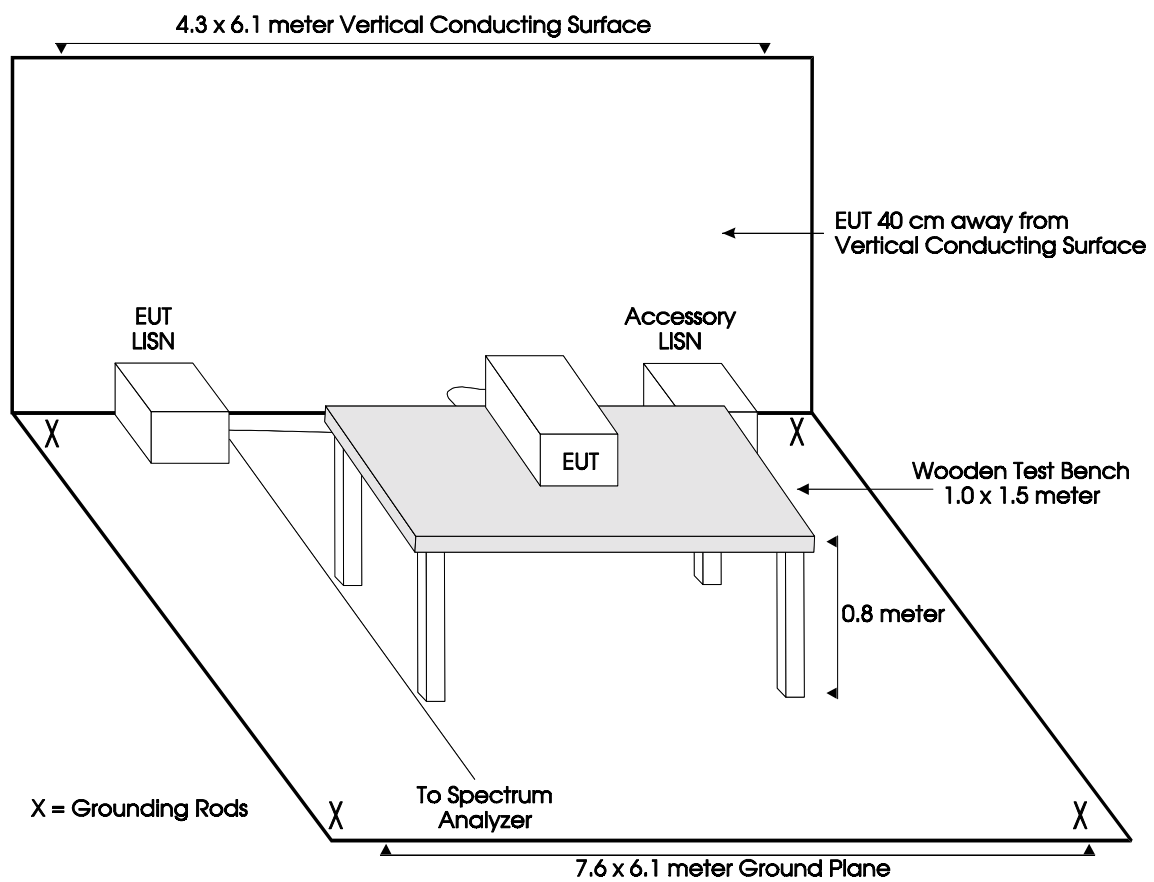
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## **APPENDIX B**

### ***TEST SETUP DIAGRAMS***

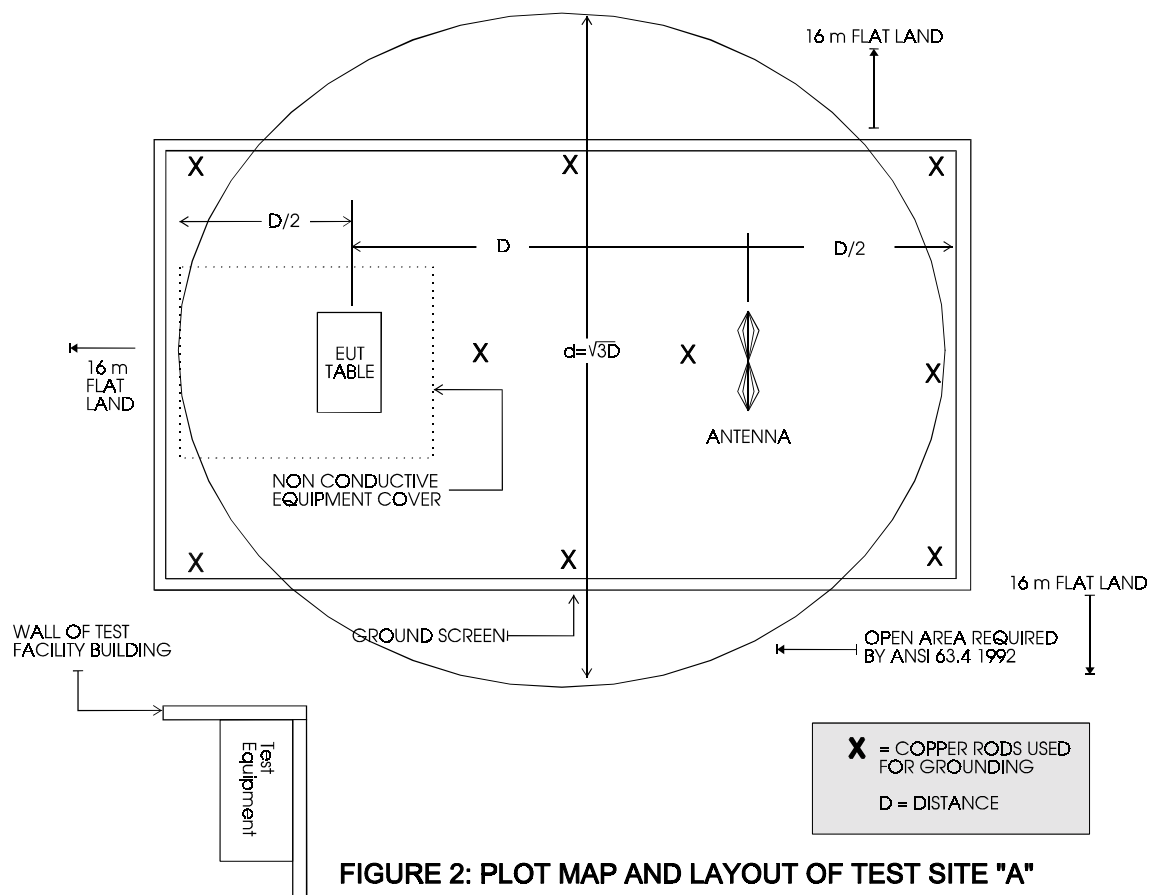
**EMT****ELECTRO MAGNETIC TEST, INC.**

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**FIGURE 1 - CONDUCTED EMISSIONS TEST SETUP SITE A**

**EMT****ELECTRO MAGNETIC TEST, INC.**

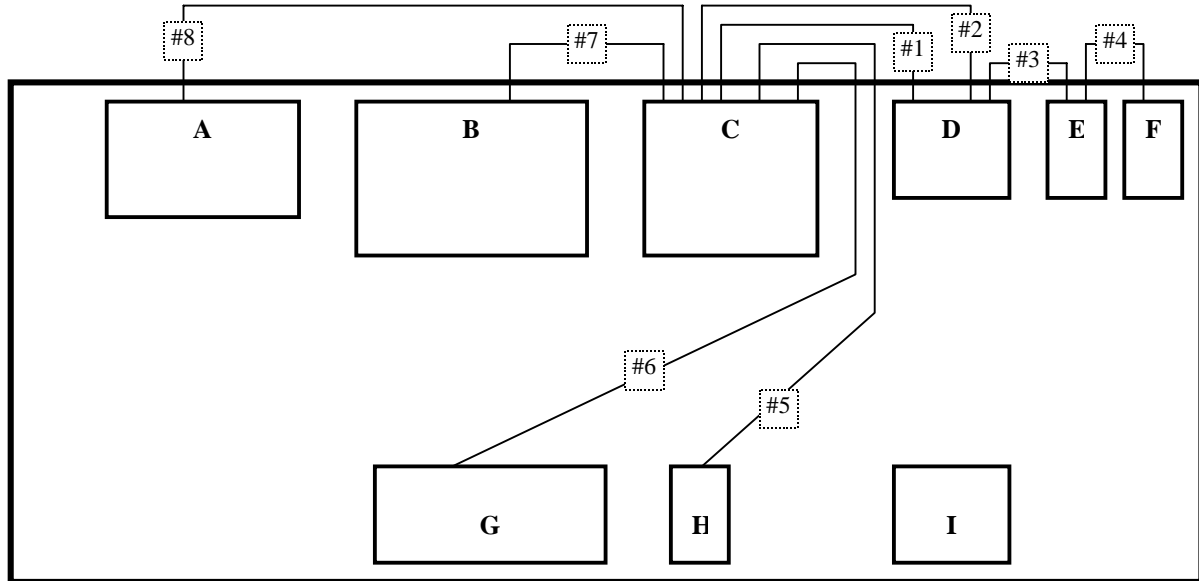
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**FIGURE 2: PLOT MAP AND LAYOUT OF TEST SITE "A"**



**EMT*****ELECTRO MAGNETIC TEST, INC.***

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Wooden Test Table ↗

<b>A. PRINTER</b>	<b>F. SPEAKER B</b>
<b>B. MONITOR</b>	<b>G. KEYBOARD</b>
<b>C. COMPUTER</b>	<b>H. MOUSE</b>
<b>D. RECEIVER (EUT)</b>	<b>I. TRANSMITTER (EUT)</b>
<b>E. SPEAKER A</b>	

**FIGURE 3: EQUIPMENT CONFIGURATION BLOCK DIAGRAM**

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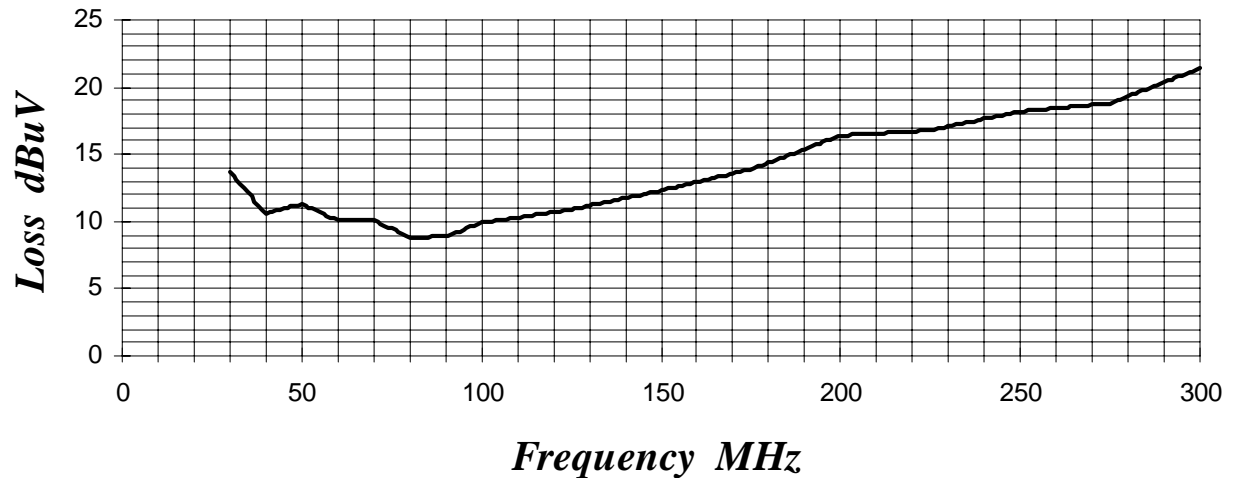
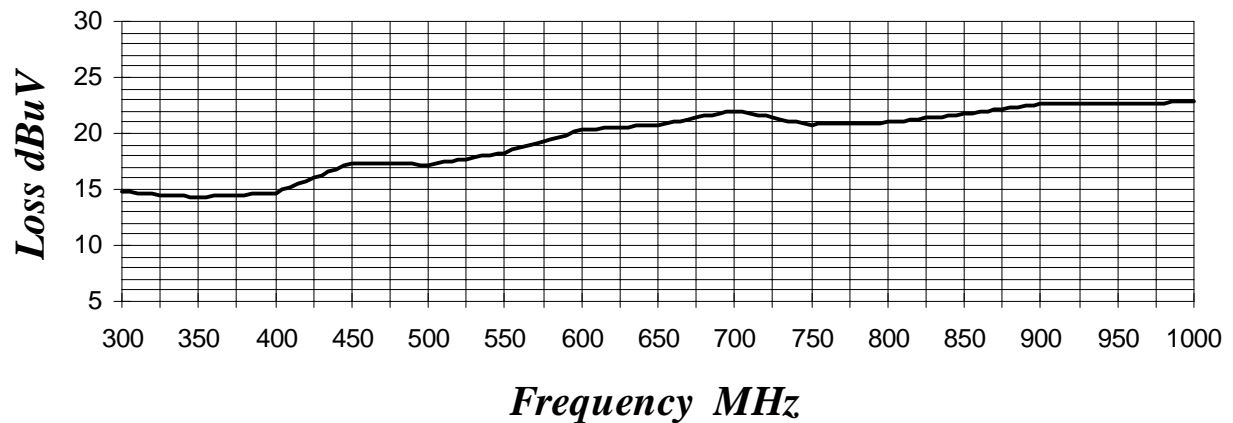
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## **APPENDIX C**

### ***ANTENNA FACTORS AND EFFECTIVE GAIN FACTORS***

**ELECTRO MAGNETIC TEST, INC.**

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

**EFFECTIVE 11-13-99****LAB "A" BICONICAL ANTENNA****AB-100 S/N: 1557****EFFECTIVE 5/8/00****LAB "A" LOG PERIODIC ANTENNA****AL-100 S/N: 16037**

***ELECTRO MAGNETIC TEST, INC.***

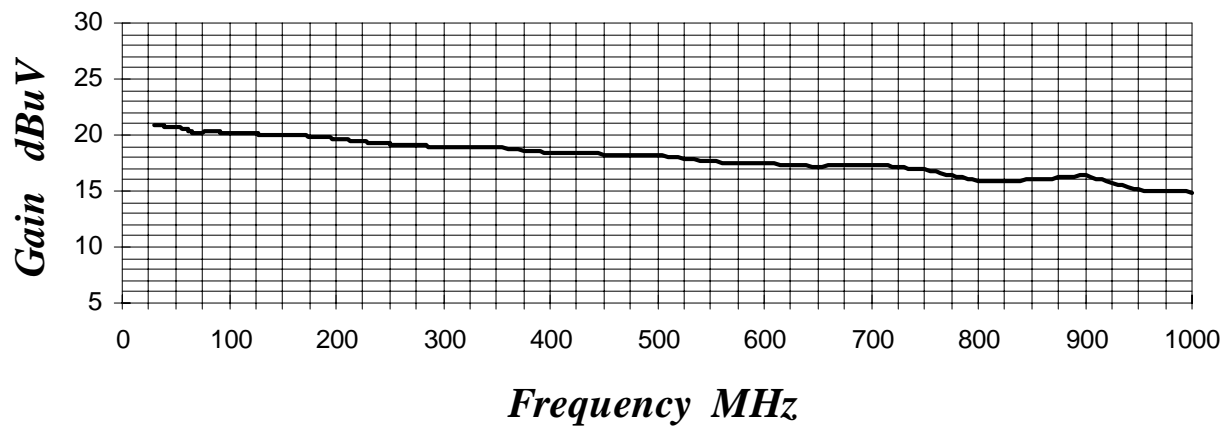
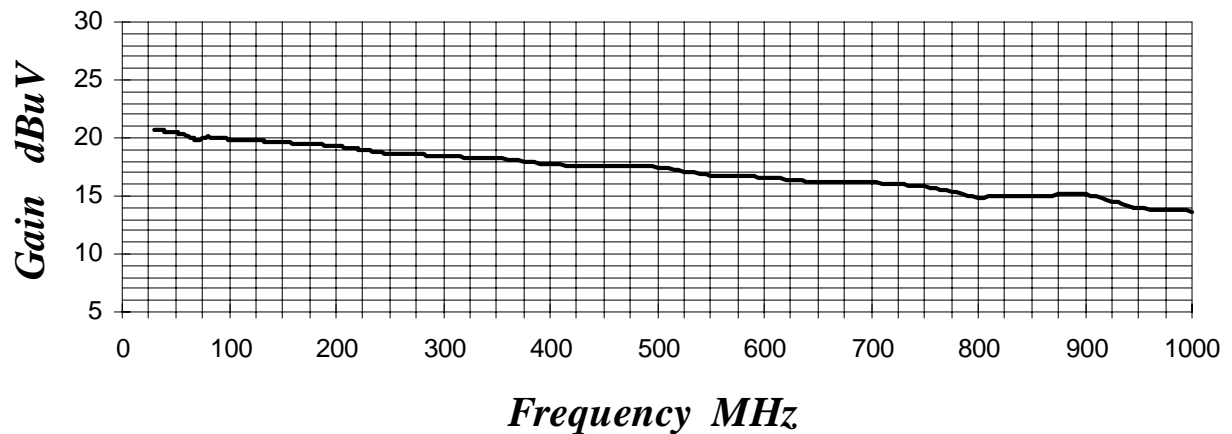
1547 Plymouth Street, Mountain View, CA 94043    Tel: (650) 965-4000 Fax: (650) 965-3000

***COM-POWER HORN ANTENNA MODEL: AH-118, S/N: 10062***

FREQUENCY MHz	GAIN dBi	FACTOR dB
1000	5.2	25.0
1250	4.6	27.5
1500	4.8	28.9
1750	6.1	29.0
2000	4.6	31.6
2500	8.3	29.9
3000	8.0	31.8
3500	8.9	32.2
4000	7.5	34.8
4500	10.9	32.4
5000	8.1	36.1
6000	9.1	36.7
7000	10.3	36.8
8000	10.9	37.4
9000	8.4	40.9
10000	11.4	38.8
11000	15.0	36.0
12000	13.2	38.6
13000	12.9	39.6
14000	10.5	42.6
15000	9.2	44.5
16000	9.2	45.1
17000	10.1	44.7
18000	10.8	44.5

**ELECTRO MAGNETIC TEST, INC.**

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

**LAB "A" EFFECTIVE 3-1-00****PREAMPLIFIER M/N: PA-102 S/N: 1482****EFFECTIVE GAIN AT 3 METERS****PREAMPLIFIER M/N: PA-102 S/N: 1482****EFFECTIVE GAIN AT 10 METERS**


**ELECTRO MAGNETIC TEST, INC.**

1547 Plymouth Street, Mountain View, CA 94043    Tel: (650) 965-4000 Fax: (650) 965-3000

**LAB "A" EFFECTIVE: 10/7/99**
**COM-POWER PREAMPLIFIER MODEL: PA-122, S/N: 2113**
**EFFECTIVE GAIN AT 3 METERS**
*Effective Gain = Preamplifier Gain - Cable Loss*

FREQUENCY MHz	PREAMPLIFIER GAIN dB	CABLE LOSS dB	EFFECTIVE GAIN dB
1000	34.3	4.8	29.5
1250	33.7	5.3	28.4
1500	33.5	5.7	27.8
1750	33.6	6.4	27.2
2000	33.8	7.1	26.7
2500	33.5	7.4	26.1
3000	32.7	7.7	25.0
3500	32.2	9.1	23.1
4000	30.8	10.0	20.8
4500	30.8	10.6	20.2
5000	31.1	10.7	20.4
6000	33.0	12.4	20.6
7000	33.5	13.7	19.8
8000	32.1	15.5	16.6
9000	30.8	15.8	15.0
10000	29.9	16.5	13.4
11000	32.3	17.8	14.5
12000	32.5	18.6	13.9
13000	33.7	19.8	13.9
14000	33.0	20.8	12.2
15000	30.5	21.2	9.3
16000	31.0	21.3	9.7
17000	33.4	22.3	11.1
18000	32.2	23.6	8.6