

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*

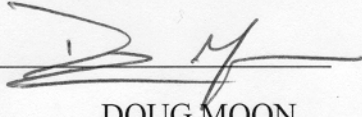
*for**the*

SONICBOX REMOTE TUNER

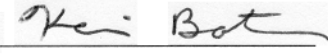
MODEL: 433

Prepared for

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

Prepared by: 

DOUG MOON

Approved by: 

KEVIN BOTHMANN

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1547 PLYMOUTH STREET
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DATE: APRIL 21, 2000

	REPORT BODY	APPENDICES			TOTAL
		A	B	C	
PAGES	15	16	4	5	40

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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 ± 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 Remote Tuner
Model: 433
S/N: B

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 out port of a PC. It works in conjunction with the Sonicbox imBand software to locate and broadcast the audio from the WebPages 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): April 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 Class B limits of FCC Title 47, Part 15 Subpart B.
2	Radiated RF Emissions, 30 MHz - 1000 MHz.	Complies with the Class B limits of FCC Title 47, Part 15 Subpart B.
3	Radiated RF Emissions, 433 MHz - 4330 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 Remote Tuner Model: 433. 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 PersonnelSonicbox, 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 April 14, 2000.

2.5 Disposition of the Test Sample

The test sample was returned to Sonicbox, Inc. on April 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.

SPEC	TITLE
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. The printer was connected to its AC adapter via its power input port. During the testing process, the EUT was transmitting and receiving signals.

The transmitter portion was tested in all three orthogonal positions (X, Y and Z). The final data was taken in the "Z" 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 TerminationCable #1

This is a 6 1/2 foot braid and 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 foil shielded 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 2 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 foot unshielded cable connecting speaker A to speaker B. The cable 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 6 foot braid and foil shielded cable connecting the computer to the monitor. It has a metallic DB-15 pin high density connector with a factory installed ferrite bead at the computer end, and is hardwired into the monitor. The shield of the cable was grounded to the chassis via the connectors.

Cable #8

This is a 9 foot braid shielded cable connecting the computer to the printer. It has a metallic DB-25 pin connector at the computer end, and a metallic DB-15 pin 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.

Cable #9

This is a 6 foot unshielded cable connecting the printer to its AC adapter. It has a metallic 1/4 inch round power connector at the printer end, and is hardwired into the AC adapter. The cable was bundled to a length of 3 feet.


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

EQUIPMENT TYPE	MANU-FACTURER	MODEL	SERIAL NUMBER	FCC ID
SONICBOX REMOTE TUNER (EUT)	SONICBOX, INC.	433	B	OT7-433
COMPUTER	DELL	MMP	CTZYF	DoC
MONITOR	DELL	D1025TM	761845	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	HEWLETT PACKARD	C4582A	CN798120C2	B94C2164X
PRINTER POWER PACK	HEWLETT PACKARD	C2175A	9100-5124	N/A


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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, 1999	1 Year
LISN	Com Power	LI-200	12214	April 27, 1999	1 Year
LISN	Com Power	LI-200	1767	April 27, 1999	1 Year
LISN	Com Power	LI-200	1768	April 27, 1999	1 Year
Biconical Antenna	Com Power	AB-100	01557	November 13, 1999	1 Year
Log Periodic Antenna	Com Power	AL-100	16004	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 Remote Turner Model: 433 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.
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

Radiated Emissions Test Data

Purpose of Test: ☒ QUALIFICATION ☐ ENGINEERING ☐ MANUFACTURING AUDIT
FCC Class B Test Date: 04-15-00
Company Name: SONICBOX, INC.
EUT Model Number: 433
EUT Serial Number: B
EUT Description: SONICBOX REMOTE TUNER

Test Setup Configuration

EUT Clock Speeds: 433MHz

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

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FCC Class B Test Date: 04-15-00
 Company Name: SONICBOX, INC.
 EUT Model Number: 433
 EUT Description: SONICBOX REMOTE TUNER

RADIATED EMISSION TEST RESULTS

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

THE FOLLOWING READINGS ARE FOR THE RECEIVER

FCC PART 15.109 (30-1000MHz)

Comment: THE FOLLOWING IS FOR POSTION "Z", FOUND TO BE THE WORST CASE MODE.

-VERTICAL POLARIZATION

36.000	34.2	P	V	B	1.0	3.0	0	21.8	11.8	1.0	0.0	25.2	40.0	-14.8	-----
42.003	34.8	P	V	B	1.0	3.0	0	21.8	10.7	1.0	0.0	24.7	40.0	-15.3	-----
72.004	37.2	P	V	B	1.0	3.0	90	21.5	9.8	1.3	0.0	26.8	40.0	-13.2	-----
84.003	35.0	P	V	B	1.0	3.0	90	21.7	8.8	1.3	0.0	23.4	40.0	-16.6	-----
137.753	27.5	P	V	B	1.0	3.0	90	21.8	11.6	1.8	0.0	19.1	43.5	-24.4	-----
168.033	30.5	P	V	B	1.0	3.0	90	21.8	13.5	1.9	0.0	24.1	43.5	-19.4	-----
291.137	29.2	P	V	B	1.0	3.0	0	21.6	20.5	2.6	0.0	30.7	46.0	-15.3	-----
303.130	27.2	P	V	L	1.0	3.0	0	21.6	15.6	2.7	0.0	23.9	46.0	-22.1	-----
311.310	27.6	P	V	L	1.0	3.0	315	21.6	15.5	2.7	0.0	24.2	46.0	-21.8	-----
419.999	24.7	P	V	L	1.0	3.0	0	21.4	16.4	3.1	0.0	22.8	46.0	-23.2	-----
636.029	23.0	P	V	L	1.0	3.0	0	21.1	20.9	3.8	0.0	26.6	46.0	-19.4	-----
996.033	23.2	P	V	L	1.0	3.0	0	19.8	23.2	4.9	0.0	31.5	54.0	-22.5	-----

-HORIZONTAL POLARIZAION

36.040	37.0	P	H	B	1.0	3.0	0	21.8	11.8	1.0	0.0	28.0	40.0	-12.0	-----
42.001	30.6	P	H	B	1.0	3.0	0	21.8	10.7	1.0	0.0	20.5	40.0	-19.5	-----
72.002	32.4	P	H	B	1.0	3.0	0	21.5	9.8	1.3	0.0	22.0	40.0	-18.0	-----
84.002	27.2	P	H	B	1.0	3.0	0	21.7	8.8	1.3	0.0	15.6	40.0	-24.4	-----
137.734	35.7	P	H	B	2.0	3.0	135	21.8	11.6	1.8	0.0	27.3	43.5	-16.2	-----
167.981	27.8	P	H	B	2.0	3.0	0	21.8	13.5	1.9	0.0	21.4	43.5	-22.1	-----
291.141	25.1	P	H	B	1.0	3.0	0	21.6	20.5	2.6	0.0	26.6	46.0	-19.4	-----
303.313	29.2	P	H	L	1.0	3.0	0	21.6	15.6	2.7	0.0	25.9	46.0	-20.1	-----
311.313	28.7	P	H	L	1.0	3.0	0	21.6	15.5	2.7	0.0	25.3	46.0	-20.7	-----
420.006	25.8	P	H	L	1.0	3.0	315	21.4	16.4	3.1	0.0	23.9	46.0	-22.1	-----
636.006	23.0	P	H	L	1.0	3.0	0	21.1	20.9	3.8	0.0	26.6	46.0	-19.4	-----
996.006	22.1	P	H	L	1.0	3.0	0	19.8	23.2	4.9	0.0	30.4	54.0	-23.6	-----

THE FOLLOWING READINGS ARE FOR THE TRANSMITTER FCC PART 15.231(b)
 (FIELD STRENGTH OF FUNDAMENTAL AND HARMONICS, AND SPURIOUS EMISSIONS)

Comment: THE FOLLOWING ARE FOR POSTIONS "Z", "Y" AND "X", POSTION "Z" WAS FOUND TO
 BE THE WORST CASE MODE.

THE FOLLOWING IS FOR POSTION "Z"

-VERTICAL POLARIZATION

Comment: FUNDAMENTAL

433.992	91.5	P	V	L	2.0	3.0	45	21.5	17.0	3.1	0.0	90.1	80.2	9.9	-----
433.992	76.5	A	V	L	2.0	3.0	45	21.5	17.0	3.1	0.0	75.1	80.2	-5.1	-----

Comment: 2ND HARMONIC

867.995	63.2	P	V	L	1.0	3.0	135	20.8	22.4	4.7	0.0	69.5	61.9	7.6	-----
867.995	48.1	A	V	L	1.0	3.0	135	20.8	22.4	4.7	0.0	54.4	61.9	-7.5	-----

Comment: THE FOLLOWING ARE SPURIOUS EMISSIONS

905.279	38.6	P V L 1.0	3.0	0	21.0	23.2	4.7	0.0	45.5	61.9	-16.4	-----
905.279	22.4	A V L 1.0	3.0	0	21.0	23.2	4.7	0.0	29.2	61.9	-32.7	-----
909.778	31.9	P V L 1.0	3.0	0	20.9	23.1	4.7	0.0	38.8	61.9	-23.1	-----
909.778	19.8	A V L 1.0	3.0	0	20.9	23.1	4.7	0.0	26.7	61.9	-35.2	-----
989.275	30.3	P V L 1.0	3.0	0	19.8	23.1	4.9	0.0	38.5	61.9	-23.4	-----
989.275	16.6	A V L 1.0	3.0	0	19.8	23.1	4.9	0.0	24.8	61.9	-37.1	-----

Comment: 3RD HARMONIC

1302.004	34.2	P V H 1.0	3.0	90	33.7	27.8	5.4	0.0	33.7	61.9	-28.2	-----
1302.004	21.0	A V H 1.0	3.0	90	33.7	27.8	5.4	0.0	20.5	61.9	-41.4	-----

Comment: 4TH HARMONIC

1736.028	31.6	P V H 1.0	3.0	90	33.6	29.0	6.4	0.0	33.4	61.9	-28.5	-----
1736.028	18.3	A V H 1.0	3.0	90	33.6	29.0	6.4	0.0	20.1	61.9	-41.8	-----

Comment: 5TH HARMONIC

2170.045	28.5	P V H 1.0	3.0	0	33.7	31.0	7.2	0.0	33.0	61.9	-28.9	-----
2170.045	23.5	A V H 1.0	3.0	0	33.7	31.0	7.2	0.0	28.0	61.9	-33.9	-----

Comment: 6TH HARMONIC

2604.030	25.6	P V H 1.0	3.0	0	33.3	30.3	7.5	0.0	30.1	61.9	-31.8	-----
2604.030	15.2	A V H 1.0	3.0	0	33.3	30.3	7.5	0.0	19.7	61.9	-42.2	-----

Comment: 7TH HARMONIC

3038.034	27.2	P V H 1.0	3.0	0	32.7	31.8	7.8	0.0	34.1	61.9	-27.8	-----
3038.034	15.0	A V H 1.0	3.0	0	32.7	31.8	7.8	0.0	21.9	61.9	-40.0	-----

Comment: 8TH HARMONIC

3472.123	23.1	P V H 1.0	3.0	0	32.2	32.2	9.0	0.0	32.1	61.9	-29.8	-----
3472.123	12.8	A V H 1.0	3.0	0	32.2	32.2	9.0	0.0	21.8	61.9	-40.1	-----

Comment: 9TH HARMONIC

3096.000	22.4	P V H 1.0	3.0	0	32.6	31.9	8.0	0.0	29.7	61.9	-32.2	-----
3096.000	13.3	A V H 1.0	3.0	0	32.6	31.9	8.0	0.0	20.6	61.9	-41.3	-----

Comment: 10TH HARMONIC

4340.000	22.2	P V H 1.0	3.0	0	30.8	33.2	10.4	0.0	35.0	61.9	-26.9	-----
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: FUNDAMENTAL

433.992	82.9	P H L 1.0	3.0	135	21.5	17.0	3.1	0.0	81.5	80.2	1.3	-----
433.992	67.5	A H L 1.0	3.0	135	21.5	17.0	3.1	0.0	66.1	80.2	-14.1	-----

Comment: 2ND HARMONIC

867.995	72.5	P H L 1.0	3.0	0	20.8	22.4	4.7	0.0	78.8	61.9	16.9	-----
867.996	54.3	A H L 1.0	3.0	0	20.8	22.4	4.7	0.0	60.6	61.9	-1.3	-----

Comment: THE FOLLOWING ARE SPURIOUS EMISSIONS

905.278	43.0	P H L 1.0	3.0	0	21.0	23.2	4.7	0.0	49.9	61.9	-12.0	-----
905.278	25.3	A H L 1.0	3.0	0	21.0	23.2	4.7	0.0	32.2	61.9	-29.7	-----
909.777	30.0	P H L 1.0	3.0	0	20.9	23.1	4.7	0.0	36.9	61.9	-25.0	-----
909.777	17.5	A H L 1.0	3.0	0	20.9	23.1	4.7	0.0	24.4	61.9	-37.5	-----
989.272	28.5	P H L 1.0	3.0	0	19.8	23.1	4.9	0.0	36.7	61.9	-25.2	-----
989.272	14.8	A H L 1.0	3.0	0	19.8	23.1	4.9	0.0	23.0	61.9	-38.9	-----

Comment: 3RD HARMONIC

1302.003	30.2	P H H 1.0	3.0	0	33.7	27.8	5.4	0.0	29.7	61.9	-32.2	-----
1302.003	18.2	A H H 1.0	3.0	0	33.7	27.8	5.4	0.0	17.7	61.9	-44.2	-----

Comment: 4TH HARMONIC

1736.000	30.0	P H H 2.0	3.0	0	33.6	29.0	6.4	0.0	31.8	61.9	-30.1	-----
1736.000	17.4	A H H 2.0	3.0	0	33.6	29.0	6.4	0.0	19.2	61.9	-42.7	-----

Comment: 5TH HARMONIC

2170.000	23.0	P H H 1.0	3.0	0	33.7	31.0	7.2	0.0	27.5	61.9	-34.4	-----
2170.000	13.7	A H H 1.0	3.0	0	33.7	31.0	7.2	0.0	18.2	61.9	-43.7	-----

Comment: 6TH HARMONIC

2604.040	25.6	P	H	H	1.0	3.0	0	33.3	30.3	7.5	0.0	30.1	61.9	-31.8	-----
2604.040	14.2	A	H	H	1.0	3.0	0	33.3	30.3	7.5	0.0	18.7	61.9	-43.2	-----

Comment: 7TH HARMONIC

3038.002	22.7	P	H	H	1.0	3.0	0	32.7	31.8	7.8	0.0	29.6	61.9	-32.3	-----
3038.002	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

3472.004	22.9	P	H	H	1.0	3.0	0	32.2	32.2	9.0	0.0	31.9	61.9	-30.0	-----
3472.004	12.9	A	H	H	1.0	3.0	0	32.2	32.2	9.0	0.0	21.9	61.9	-40.0	-----

Comment: 9TH HARMONIC

3906.003	22.1	P	H	H	1.0	3.0	0	31.1	34.3	9.8	0.0	35.1	61.9	-26.8	-----
3906.003	13.4	A	H	H	1.0	3.0	0	31.1	34.3	9.8	0.0	26.3	61.9	-35.6	-----

Comment: 10TH HARMONIC

4340.000	23.5	P	H	H	1.0	3.0	0	30.8	33.2	10.4	0.0	36.3	61.9	-25.6	-----
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	-----

THE FOLLOWING IS FOR POSTION "Y"

-VERTICAL POLARIZATION

Comment: FUNDAMENTAL

433.995	87.0	P	V	L	1.0	3.0	315	21.5	17.0	3.1	0.0	85.6	80.2	5.4	-----
433.995	71.9	A	V	L	1.0	3.0	315	21.5	17.0	3.1	0.0	70.5	80.2	-9.7	-----

Comment: 2ND HARMONIC

868.005	69.6	P	V	L	1.0	3.0	0	20.8	22.4	4.7	0.0	75.9	61.9	14.0	-----
868.005	54.2	A	V	L	1.0	3.0	0	20.8	22.4	4.7	0.0	60.5	61.9	-1.4	-----

Comment: 3RD HARMONIC

1302.012	30.5	P	V	H	1.0	3.0	45	33.7	27.8	5.4	0.0	30.0	61.9	-31.9	-----
1302.012	18.6	A	V	H	1.0	3.0	45	33.7	27.8	5.4	0.0	18.1	61.9	-43.8	-----

Comment: 4TH HARMONIC

1736.004	27.4	P	V	H	1.0	3.0	45	33.6	29.0	6.4	0.0	29.2	61.9	-32.7	-----
1736.004	16.6	A	V	H	1.0	3.0	45	33.6	29.0	6.4	0.0	18.4	61.9	-43.5	-----

Comment: 5TH HARMONIC

2170.000	23.2	P	V	H	1.0	3.0	0	33.7	31.0	7.2	0.0	27.7	61.9	-34.2	-----
2170.000	13.9	A	V	H	1.0	3.0	0	33.7	31.0	7.2	0.0	18.4	61.9	-43.5	-----

Comment: 6TH HARMONIC

2604.000	21.7	P	V	H	1.0	3.0	0	33.3	30.3	7.5	0.0	26.2	61.9	-35.7	-----
2604.000	13.2	A	V	H	1.0	3.0	0	33.3	30.3	7.5	0.0	17.7	61.9	-44.2	-----

Comment: 7TH HARMONIC

3038.000	22.3	P	V	H	1.0	3.0	0	32.7	31.8	7.8	0.0	29.2	61.9	-32.7	-----
3038.000	13.4	A	V	H	1.0	3.0	0	32.7	31.8	7.8	0.0	20.3	61.9	-41.6	-----

Comment: 8TH HARMONIC

3472.000	21.7	P	V	H	1.0	3.0	0	32.2	32.2	9.0	0.0	30.7	61.9	-31.2	-----
3472.000	12.9	A	V	H	1.0	3.0	0	32.2	32.2	9.0	0.0	21.9	61.9	-40.0	-----

Comment: 9TH HARMONIC

3906.003	23.3	P	V	H	1.0	3.0	0	31.1	34.3	9.8	0.0	36.3	61.9	-25.6	-----
3906.003	13.4	A	V	H	1.0	3.0	0	31.1	34.3	9.8	0.0	26.4	61.9	-35.5	-----

Comment: 10TH HARMONIC

4340.000	23.1	P	V	H	1.0	3.0	0	30.8	33.2	10.4	0.0	35.9	61.9	-26.0	-----
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: FUNDAMENTAL

433.992	92.7	P	H	L	1.0	3.0	0	21.5	17.0	3.1	0.0	91.3	80.2	11.1	-----
433.992	77.3	A	H	L	1.0	3.0	0	21.5	17.0	3.1	0.0	75.9	80.2	-4.3	-----

Comment: 2ND HARMONIC

867.991	61.8	P H L	1.0	3.0	0	20.8	22.4	4.7	0.0	68.1	61.9	6.2	-----
867.991	46.6	A H L	1.0	3.0	0	20.8	22.4	4.7	0.0	52.9	61.9	-9.0	-----

Comment: 3RD HARMONIC

1302.018	32.5	P H H	2.0	3.0	0	33.7	27.8	5.4	0.0	32.0	61.9	-29.9	-----
1302.018	20.1	A H H	2.0	3.0	0	33.7	27.8	5.4	0.0	19.6	61.9	-42.3	-----

Comment: 4TH HARMONIC

1736.003	28.0	P H H	1.0	3.0	0	33.6	29.0	6.4	0.0	29.8	61.9	-32.1	-----
1736.003	15.6	A H H	1.0	3.0	0	33.6	29.0	6.4	0.0	17.4	61.9	-44.5	-----

Comment: 5TH HARMONIC

2170.027	26.5	P H H	2.0	3.0	0	33.7	31.0	7.2	0.0	31.0	61.9	-30.9	-----
2170.027	15.6	A H H	2.0	3.0	0	33.7	31.0	7.2	0.0	20.1	61.9	-41.8	-----

Comment: 6TH HARMONIC

2604.030	26.9	P H H	1.0	3.0	0	33.3	30.3	7.5	0.0	31.4	61.9	-30.5	-----
2604.030	16.2	A H H	1.0	3.0	0	33.3	30.3	7.5	0.0	20.7	61.9	-41.2	-----

Comment: 7TH HARMONIC

3038.048	27.3	P H H	1.0	3.0	0	32.7	31.8	7.8	0.0	34.2	61.9	-27.7	-----
3038.048	16.0	A H H	1.0	3.0	0	32.7	31.8	7.8	0.0	22.9	61.9	-39.0	-----

Comment: 8TH HARMONIC

3472.000	22.7	P H H	1.0	3.0	0	32.2	32.2	9.0	0.0	31.7	61.9	-30.2	-----
3472.000	12.9	A H H	1.0	3.0	0	32.2	32.2	9.0	0.0	21.9	61.9	-40.0	-----

Comment: 9TH HARMONIC

3906.000	21.3	P H H	1.0	3.0	0	31.1	34.3	9.8	0.0	34.3	61.9	-27.6	-----
3906.000	13.4	A H H	1.0	3.0	0	31.1	34.3	9.8	0.0	26.4	61.9	-35.5	-----

Comment: 10TH HARMONIC

4340.000	21.9	P H H	1.0	3.0	0	30.8	33.2	10.4	0.0	34.7	61.9	-27.2	-----
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	-----

THE FOLLOWING IS FOR POSTION "X"

-VERTICAL POLARIZATION

Comment: FUNDAMENTAL

433.998	80.1	P V L	3.0	3.0	45	21.5	17.0	3.1	0.0	78.7	80.2	-1.5	-----
433.998	64.9	A V L	3.0	3.0	45	21.5	17.0	3.1	0.0	63.5	80.2	-16.7	-----

Comment: 2ND HARMONIC

867.998	65.1	P V L	2.0	3.0	0	20.8	22.4	4.7	0.0	71.4	61.9	9.5	-----
867.998	49.9	A V L	2.0	3.0	0	20.8	22.4	4.7	0.0	56.2	61.9	-5.7	-----

Comment: 3RD HARMONIC

1302.000	27.1	P V H	2.0	3.0	0	33.7	27.8	5.4	0.0	26.6	61.9	-35.3	-----
1302.000	15.6	A V H	2.0	3.0	0	33.7	27.8	5.4	0.0	15.1	61.9	-46.8	-----

Comment: 4TH HARMONIC

1736.006	25.7	P V H	1.0	3.0	0	33.6	29.0	6.4	0.0	27.5	61.9	-34.4	-----
1736.006	15.9	A V H	1.0	3.0	0	33.6	29.0	6.4	0.0	17.7	61.9	-44.2	-----

Comment: 5TH HARMONIC

2170.000	23.5	P V H	1.0	3.0	0	33.7	31.0	7.2	0.0	28.0	61.9	-33.9	-----
2170.000	13.8	A V H	1.0	3.0	0	33.7	31.0	7.2	0.0	18.3	61.9	-43.6	-----

Comment: 6TH HARMONIC

2604.035	21.7	P V H	1.0	3.0	0	33.3	30.3	7.5	0.0	26.2	61.9	-35.7	-----
2604.035	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	21.9	P V H	1.0	3.0	0	32.7	31.8	7.8	0.0	28.8	61.9	-33.1	-----
3038.000	13.6	A V H	1.0	3.0	0	32.7	31.8	7.8	0.0	20.4	61.9	-41.5	-----

Comment: 8TH HARMONIC

3472.000	22.9	P V H	1.0	3.0	0	32.2	32.2	9.0	0.0	31.9	61.9	-30.0	-----
3472.000	12.9	A V H	1.0	3.0	0	32.2	32.2	9.0	0.0	21.9	61.9	-40.0	-----

Comment: 9TH HARMONIC

3906.000	21.6	P V H	1.0	3.0	0	31.1	34.3	9.8	0.0	34.6	61.9	-27.3	-----
3906.000	13.3	A V H	1.0	3.0	0	31.1	34.3	9.8	0.0	26.3	61.9	-35.6	-----

Comment: 10TH HARMONIC

4340.001	21.6	P V H	1.0	3.0	0	30.8	33.2	10.4	0.0	34.4	61.9	-27.5	-----
4340.001	13.8	A V H	1.0	3.0	0	30.8	33.2	10.4	0.0	26.6	61.9	-35.3	-----

-HORIZONTAL POLARIZATION

Comment: FUNDAMENTAL

433.992	93.4	P H L	1.0	3.0	180	21.5	17.0	3.1	0.0	92.0	80.2	11.8	-----
433.992	78.3	A H L	1.0	3.0	180	21.5	17.0	3.1	0.0	76.9	80.2	-3.3	-----

Comment: 2ND HARMONIC

867.996	68.1	P H L	2.0	3.0	90	20.8	22.4	4.7	0.0	74.4	61.9	12.5	-----
867.996	52.7	A H L	2.0	3.0	90	20.8	22.4	4.7	0.0	59.0	61.9	-2.9	-----

Comment: 3RD HARMONIC

1302.000	31.9	P H H	2.0	3.0	45	33.7	27.8	5.4	0.0	31.4	61.9	-30.5	-----
1302.000	19.7	A H H	2.0	3.0	45	33.7	27.8	5.4	0.0	19.2	61.9	-42.7	-----

Comment: 4TH HARMONIC

1736.008	28.6	P H H	2.0	3.0	45	33.6	29.0	6.4	0.0	30.4	61.9	-31.5	-----
1736.008	27.5	A H H	2.0	3.0	45	33.6	29.0	6.4	0.0	29.4	61.9	-32.5	-----

Comment: 5TH HARMONIC

2170.003	22.7	P H H	1.0	3.0	0	33.7	31.0	7.2	0.0	27.2	61.9	-34.7	-----
2170.003	14.2	A H H	1.0	3.0	0	33.7	31.0	7.2	0.0	18.8	61.9	-43.1	-----

Comment: 6TH HARMONIC

2603.997	22.1	P H H	1.0	3.0	0	33.3	30.3	7.5	0.0	26.6	61.9	-35.3	-----
2603.997	13.1	A H H	1.0	3.0	0	33.3	30.3	7.5	0.0	17.6	61.9	-44.3	-----

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	13.4	A H H	1.0	3.0	0	32.7	31.8	7.8	0.0	20.3	61.9	-41.6	-----

Comment: 8TH HARMONIC

3472.004	21.0	P H H	1.0	3.0	0	32.2	32.2	9.0	0.0	30.0	61.9	-31.9	-----
3472.004	12.9	A H H	1.0	3.0	0	32.2	32.2	9.0	0.0	21.9	61.9	-40.0	-----

Comment: 9TH HARMONIC

3906.005	22.1	P H H	1.0	3.0	0	31.1	34.3	9.8	0.0	35.1	61.9	-26.8	-----
3906.005	13.4	A H H	1.0	3.0	0	31.1	34.3	9.8	0.0	26.4	61.9	-35.5	-----

Comment: 10TH HARMONIC

4340.000	22.3	P H H	1.0	3.0	0	30.8	33.2	10.4	0.0	35.1	61.9	-26.8	-----
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	-----



PLOT SHOWING BANDWIDTH OF FUNDAMENTAL FREQUENCY

EMT

ELECTRO MAGNETIC TEST, INC.

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



FRONT VIEW

SONICBOX, INC.

SONICBOX REMOTE TUNER

MODEL: 433

FCC CLASS B - RADIATED EMISSIONS - 4-14-00

**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

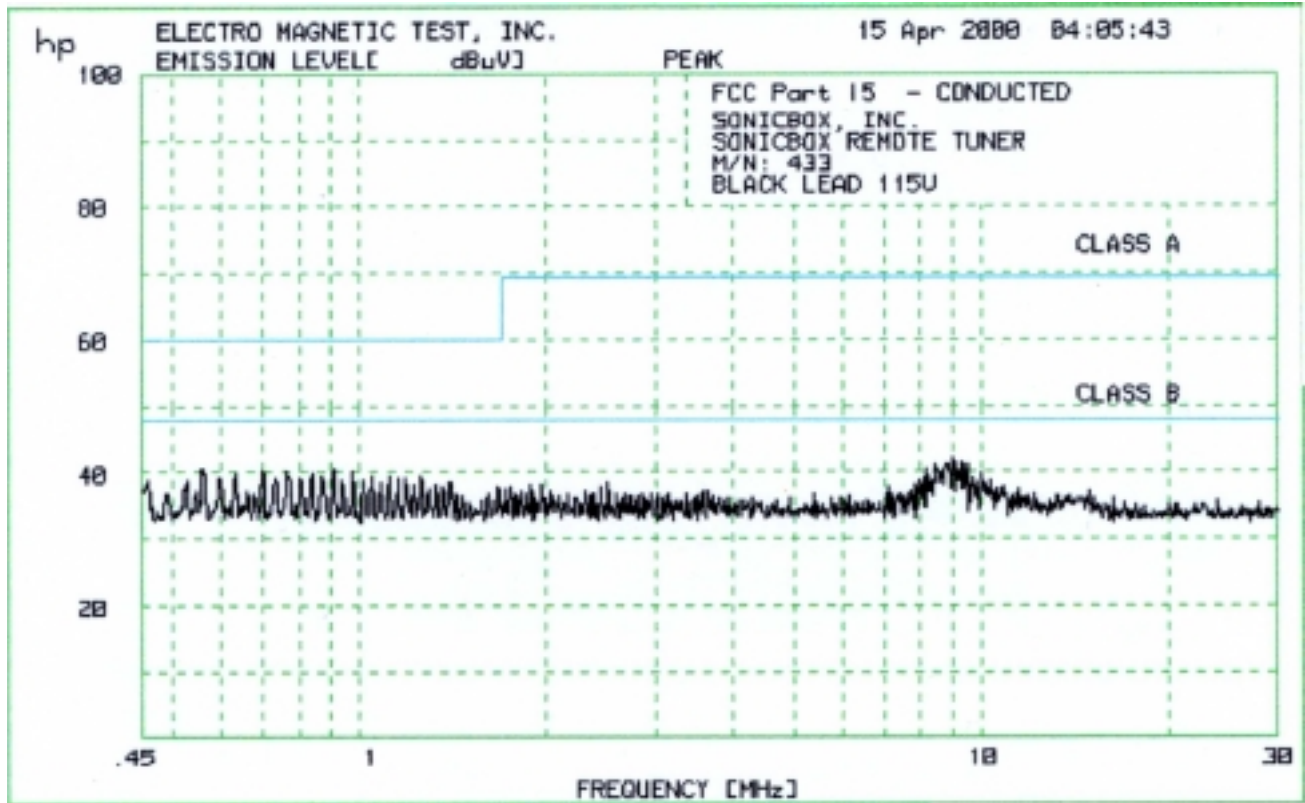
SONICBOX, INC.

SONICBOX REMOTE TUNER

MODEL: 433

FCC CLASS B - RADIATED EMISSIONS - 4-14-00

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



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ELECTRO MAGNETIC TEST, INC. 15 Apr 2000 04:05:43

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1. CONDUCTED WITH PRESELECTOR

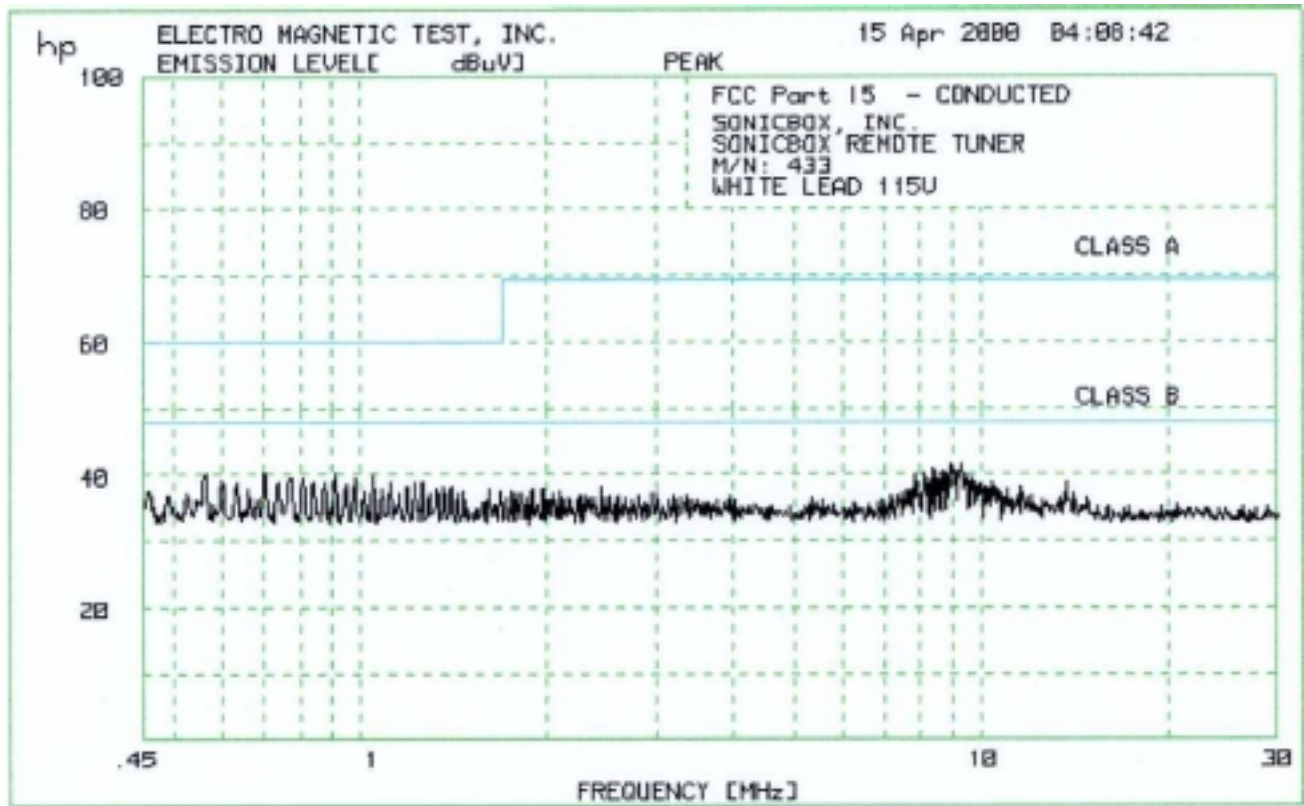
1.1 FCC Part 15 - CONDUCTED

=====

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

peak criteria = .1 dB

PEAK#	FREQ (MHz)	(dBUV)	DELTA
1	9.037	42	-6.0
2	9.113	41.5	-6.5
3	9.306	41.3	-6.7
4	8.485	41.2	-6.8
5	8.812	41.2	-6.8
6	9.384	41.2	-6.8
7	9.543	41.1	-6.9
8	8.171	40.6	-7.4
9	.5621	40.5	-7.5
10	.9144	40.4	-7.6
11	.6991	40.1	-7.9
12	.982	40.1	-7.9
13	.7699	40	-8.0
14	8.665	39.9	-8.1
15	.705	39.8	-8.2
16	.8444	39.7	-8.3
17	10.04	39.7	-8.3
18	.6348	39.6	-8.4
19	8.24	39.4	-8.6
20	.8768	39.3	-8.7
21	1.05	39.3	-8.7
22	1.123	39.3	-8.7
23	1.263	39.3	-8.7
24	1.191	39.2	-8.8
25	9.705	39.2	-8.8
26	.6011	39.1	-8.9
27	.7383	39.1	-8.9
28	.8063	39.1	-8.9
29	1.157	39.1	-8.9
30	.5961	39	-9.0
31	.4576	38.9	-9.1
32	.53	38.8	-9.2
33	.9417	38.7	-9.3
34	8.379	38.7	-9.3
35	1.016	38.6	-9.4
36	7.968	38.6	-9.4
37	10.34	38.6	-9.4
38	1.403	38.5	-9.5
39	9.828	38.5	-9.5
40	1.086	38.3	-9.7
41	2.524	38.3	-9.7
42	.4538	38.2	-9.8
43	1.232	38.2	-9.8
44	7.868	38.2	-9.8
45	8.069	38.2	-9.8



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ELECTRO MAGNETIC TEST, INC. 15 Apr 2000 04:08:42

=====

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	9.345	41.6	-6.4
2	8.961	41.5	-6.5
3	8.415	40.7	-7.3
4	8.702	40.6	-7.4
5	9.113	40.5	-7.5
6	9.228	40.5	-7.5
7	8.485	40.3	-7.7
8	.5668	40.2	-7.8
9	.705	40.2	-7.8
10	.9144	40.1	-7.9
11	8.103	40.1	-7.9
12	8.629	40.1	-7.9
13	8.812	40	-8.0
14	7.835	39.8	-8.2
15	9.543	39.7	-8.3
16	1.05	39.6	-8.4
17	.7764	39.5	-8.5
18	8.205	39.5	-8.5
19	.8131	39.4	-8.6
20	.9861	39.3	-8.7
21	9.705	39.3	-8.7
22	8.309	39.2	-8.8
23	.5986	39	-9.0
24	.7414	38.9	-9.1
25	1.268	38.9	-9.1
26	10.42	38.9	-9.1
27	.6374	38.8	-9.2
28	9.786	38.8	-9.2
29	13.75	38.8	-9.2
30	.8805	38.7	-9.3
31	.8479	38.6	-9.4
32	1.123	38.6	-9.4
33	1.227	38.6	-9.4
34	7.901	38.6	-9.4
35	.8408	38.4	-9.6
36	9.91	38.4	-9.6
37	10.04	38.4	-9.6
38	.9536	38.3	-9.7
39	1.191	38.2	-9.8
40	11.62	38.2	-9.8
41	1.368	38.1	-9.9
42	10.21	38.1	-9.9
43	10.51	38.1	-9.9
44	1.409	38	-10.0
45	2.461	38	-10.0

EMT

ELECTRO MAGNETIC TEST, INC.

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



FRONT VIEW

SONICBOX, INC.

SONICBOX REMOTE TUNER

MODEL: 433

FCC CLASS B - CONDUCTED EMISSIONS - 4-15-00

**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 REMOTE TUNER
MODEL: 433

FCC CLASS B - CONDUCTED EMISSIONS - 4-15-00

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

EMT

ELECTRO MAGNETIC TEST, INC.

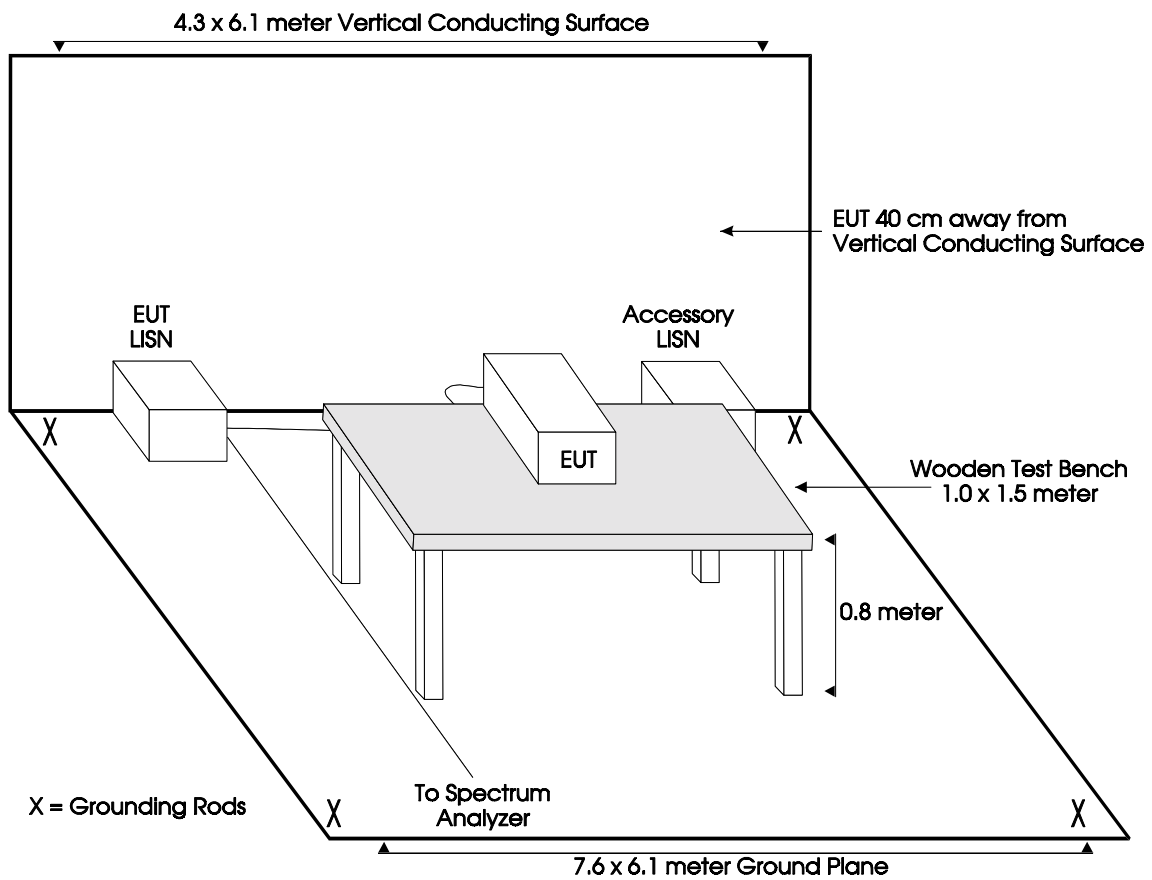
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APPENDIX B

TEST SETUP DIAGRAMS

EMT**ELECTRO MAGNETIC TEST, INC.**

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



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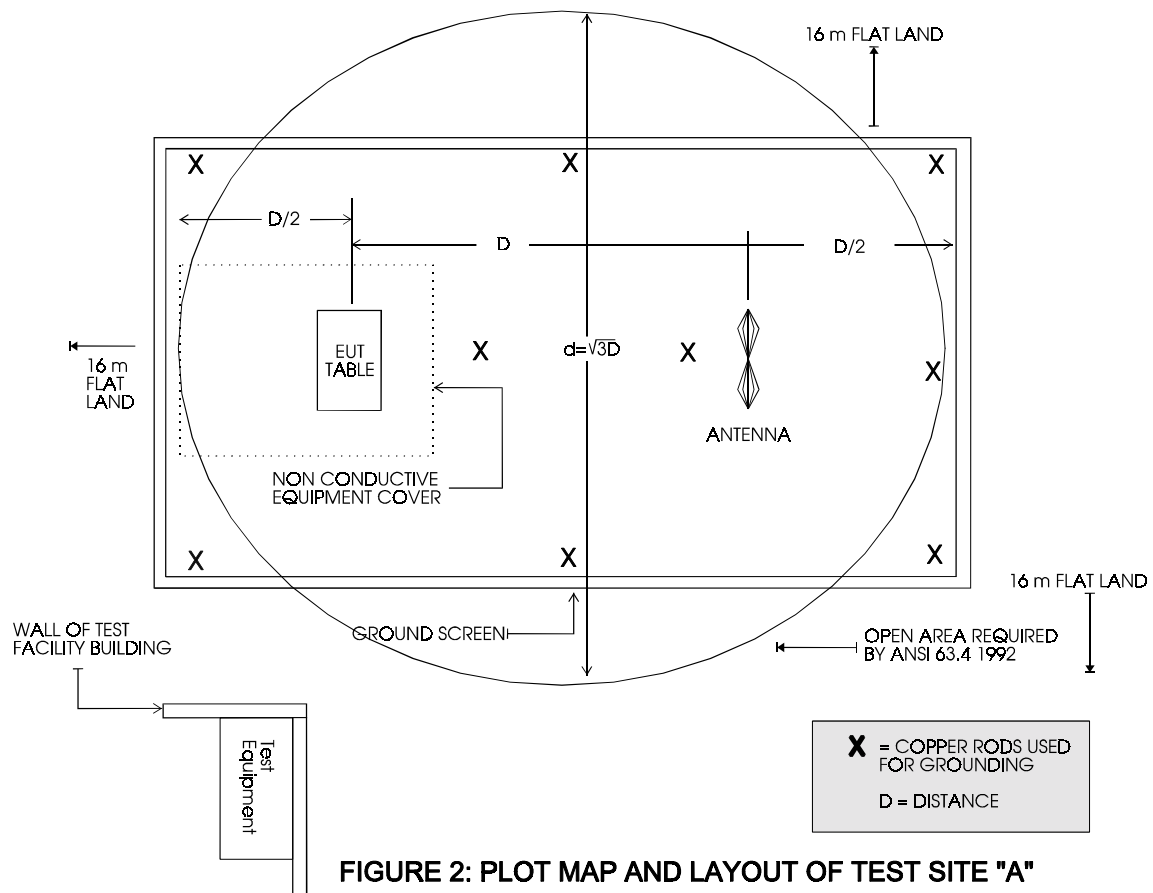
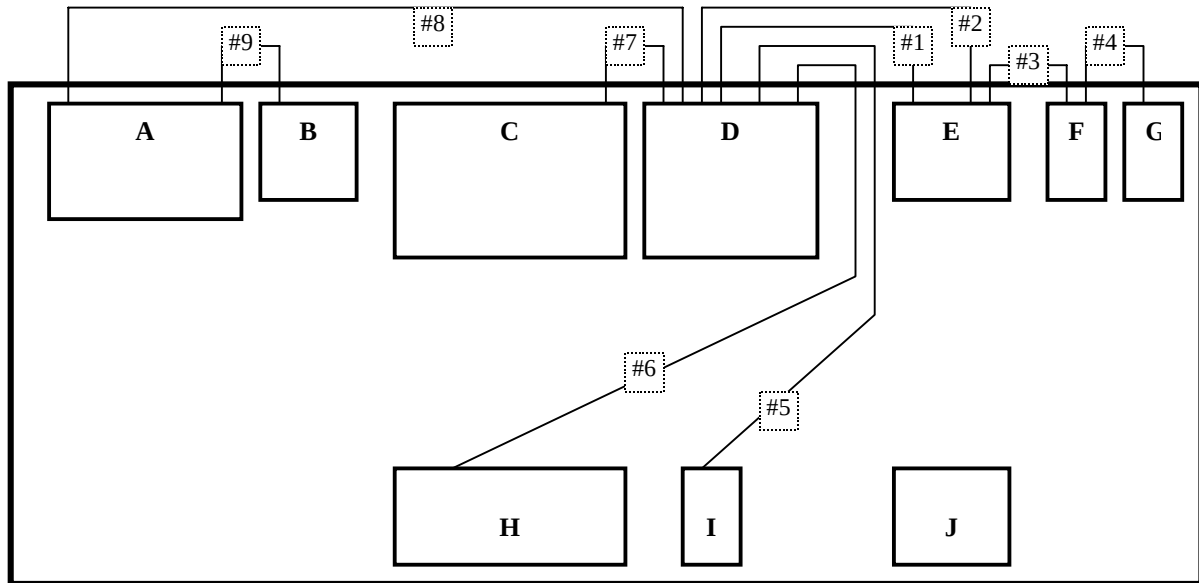


FIGURE 2: PLOT MAP AND LAYOUT OF TEST SITE "A"


ELECTRO MAGNETIC TEST, INC.

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Wooden Test Table ↗

A. PRINTER	F. SPEAKER A
B. PRINTER'S AC ADAPTER	G. SPEAKER B
C. MONITOR	H. KEYBOARD
D. COMPUTER	I. MOUSE
E. RECEIVER (EUT)	J. TRANSMITTER (EUT)

FIGURE 3: EQUIPMENT CONFIGURATION BLOCK DIAGRAM



ELECTRO MAGNETIC TEST, INC.

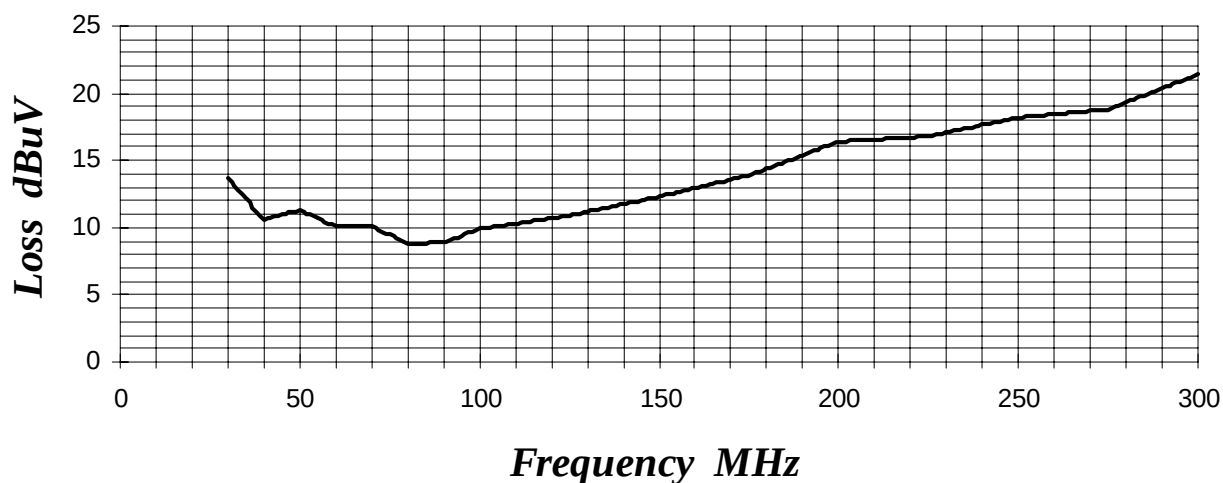
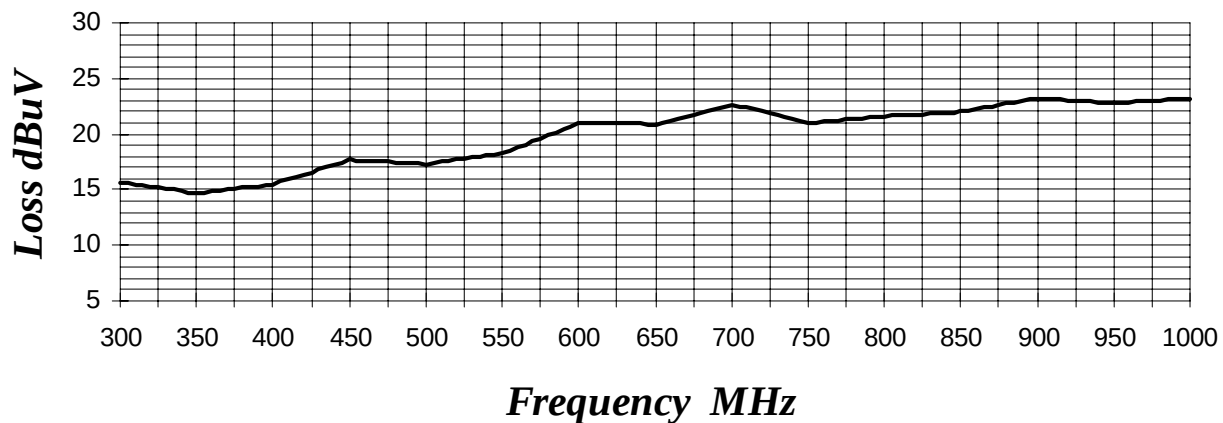
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APPENDIX C

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****LAB "A" LOG PERIODIC ANTENNA****AL-100 S/N: 16000**


ELECTRO MAGNETIC TEST, INC.

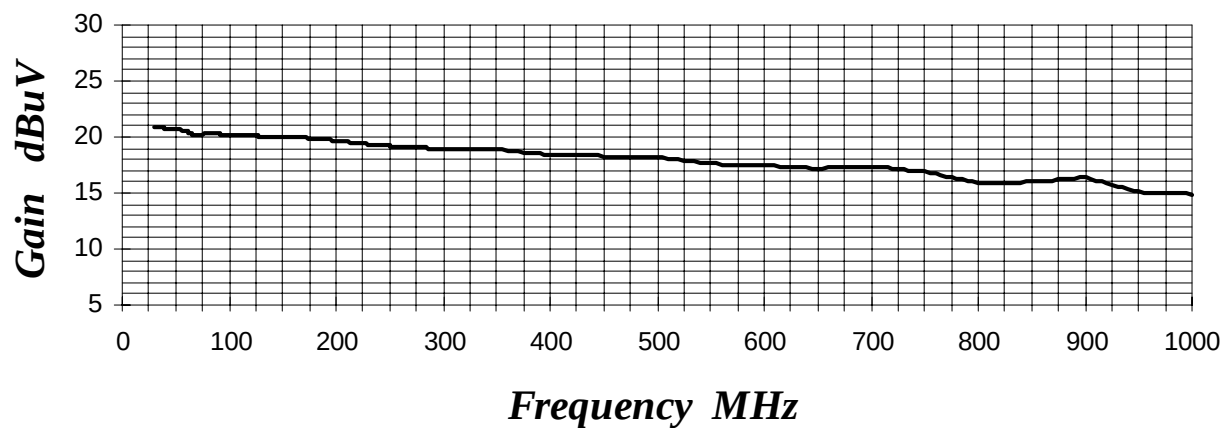
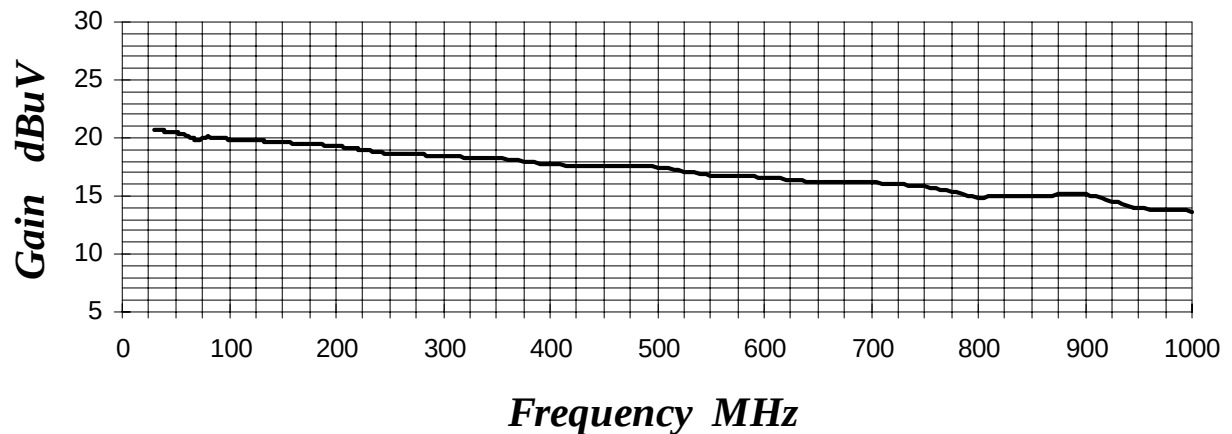
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

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