RADIATION SCIENCES INC.

TEST REPORT NO. RSI-2394E
ELECTROMAGNETIC EMISSION EVALUATION TESTS
PER FCC PART 15-CLASS B
OF THE
PERIMETER TECHNOLOGIES, INC.
MODEL PET STOP DEVICE
6 DECEMBER 2002

PREPARED FOR:

Perimeter Technologies, Inc.
9933 Alliance Road
Cincinnati, OH 45252

SUBMITTED BY:

Radiation Sciences Inc.
3131 Detwiler Road
Harleysville, PA 19438

PREPARED BY:

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President
Radiation Sciences Inc.

REVIEWED BY:

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QA Administration
Radiation Sciences Inc.

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ADMINISTRATIVE DATA

TEST PERFORMED:

Measurement of Radiated and Power Line ElectroMagnetic Emissions.

PURPOSE OF TEST:

To evaluate the ElectroMagnetic Emissions (EME) characteristics of the Equipment Under Test **(EUT)** with respect to Subpart B of Part 15 of the Federal Communications Commission **(FCC)** Rules for Class b Unintentional Radiators.

EQUIPMENT UNDER TEST (EUT):

Model Number: **Pet Stop Device**
Serial Number: **N/A**

CONTRACT:

Purchase Order Number: 7011

TEST PERIOD:

21November 2002

TEST FACILITY:

Radiation Sciences Incorporated (RSI), EMC Test Laboratory located at: 3131 Detwiler Road, Harleysville, Pennsylvania 19438.

TEST PERSONNEL AND COORDINATORS:

Radiation Sciences Inc.

C. Kosiorek
D. Signore

Perimeter Technologies Inc.

Maria Touchton

SUMMARY OF TEST RESULTS

The **Model Pet Stop Device**, manufactured by **Perimeter Technologies, Inc.** of Cincinnati, Ohio, configured as described herein, **FULLY COMPLIES WITH THE REQUIREMENTS SET FORTH IN SUBPART B OF PART 15 OF THE FEDERAL COMMUNICATION COMMISSION (FCC) RULES FOR CLASS B INTENTIONAL RADIATORS**.

The test results contained in this report represent emission and/or immunity characteristics of only the product (model and serial no.) tested. Radiation Sciences Inc. makes no claim that the test results contained herein will be obtained for a same model/equipment.

1.0 INTRODUCTION

This document is a report of tests to determine the ElectroMagnetic Interference (EMI) characteristics of the **Model Pet Stop Device**, manufactured by **Perimeter Technologies Inc.** of Cincinnati, Ohio.

The purpose of the tests was to evaluate the EMI characteristics of the test sample with respect to Subpart B of Part 15 of the **FCC** Rules for Unintentional Radiators.

Detailed test setups and procedures are described in **RSI's Open Area Test Site RSI-2059E/2** (see Appendix A) and test results are contained herein on graphs.

All test procedures used meet the requirements of the American National Standards Institute Procedure C63-4: "**Methods of Measurement of Radio-Noise from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz**", dated 17 July 1992.

2.0 DESCRIPTION OF THE EQUIPMENT UNDER TEST (EUT)

The **Model, Pet Stop Device**, manufactured by **Perimeter Technologies** of **Cincinnati, Ohio** is a Pet Boundary Control Electronic Fencing Device operating at 14.7 kHz.

Hereinafter, the **Model, Pet Stop Device** will be referred to as the **EUT** (Equipment Under Test).

3.0 TEST INSTRUMENTATION

RSI INV #	DESCRIPTION	MANUFACTURER	MODEL #	SERIAL #	CAL DUE DATE
02	AMPLIFIER	C.M.T.	LF51104N	114	5/18/2003
32	SPEC. ANALY.	H.P.	8568B	2841A04457	3/28/2003
33	SPEC. ANALY.	H.P.	85662A	2848A17406	3/28/2003
47	ANTENNA	ANT.RES.ASSOC.	BBH-500B	275	
75	ANTENNA	TENSOR	4108	204	5/8/2003
80	ANTENNA	AMP.RES.ASSOC.	AT1000	4094-025	5/1/2003
245	LISN	SOLAR	8028-50-TS-24-BNC	830525	3/7/2003
246	LISN	SOLAR	8028-50-TS-24-BNC	830526	3/7/2003
390	RECEIVER	R & S	ESH 3	861742/012	3/6/2003
391	RECEIVER	R & S	ESVP	861744/015	1/2/2003
503	CONTROLLER	EMCO	2090	0001-1489	

IF CAL DUE DATE = BLANK FIELD
Calibration is not required. This equipment is not used to obtain a final reading.
EXAMPLE: Transmitting antenna

4.0 TEST RESULTS

This section contains the results, setup photographs and diagrams, and procedures of the testing performed on the **EUT**.

4.1 Radiated Emissions (Unintentional - Para. 15.109)) Test Results

Radiated Emissions testing was performed to the requirements of **FCC** Part 15 at the **Radiation Sciences Inc. (RSI)** Open Area Test Site (OATS) located at 3131 Detwiler Road in Harleysville, Pennsylvania.

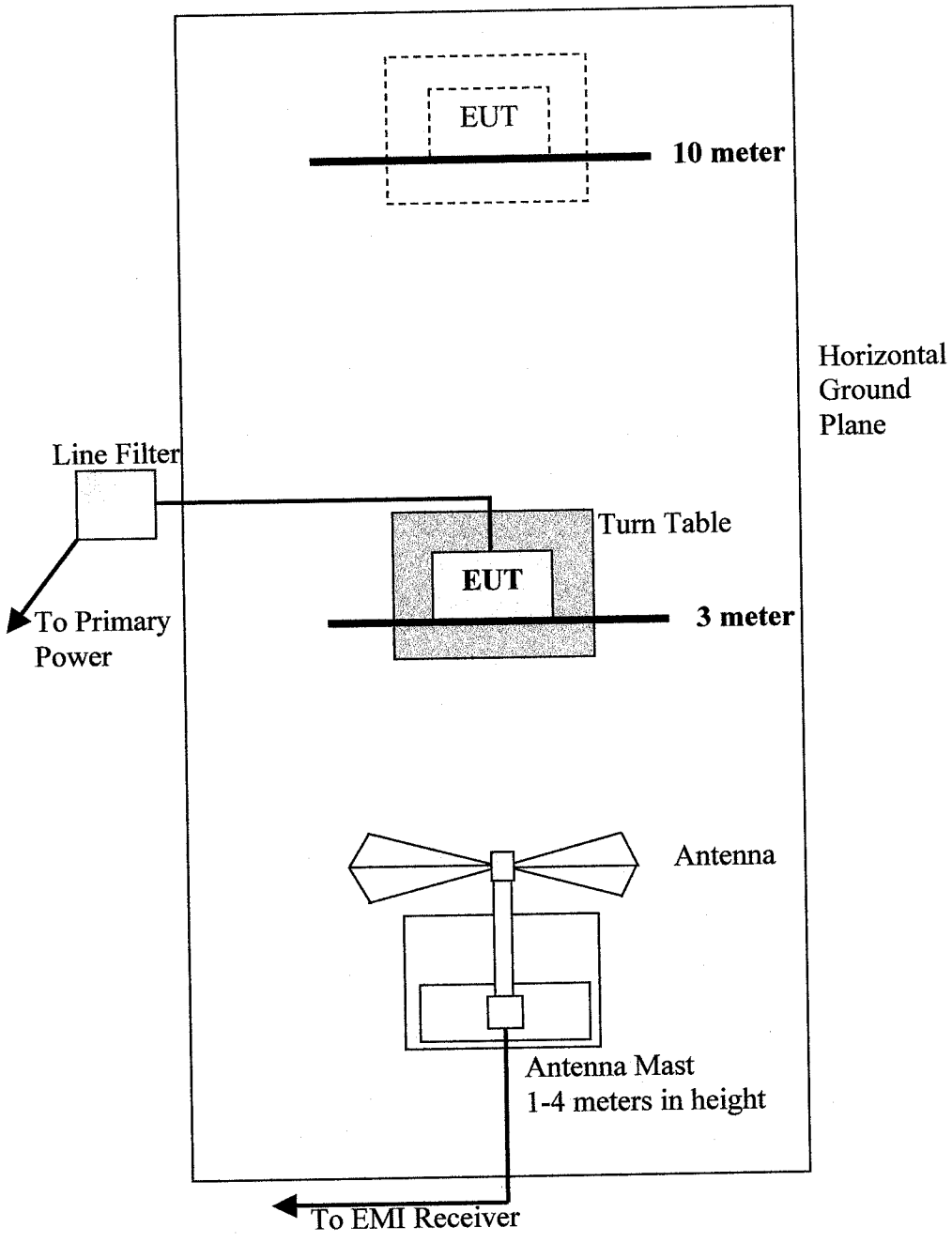
Prior to testing, the **EUT** was pre-scanned with a near field probe and spectrum analyzer. The probe was moved over the entire surface and cables of the **EUT** and all emitting frequencies were recorded.

The **EUT** was then placed on a non-conductive turntable 80cm above the ground plane. Power (120VAC Power Supply) was supplied to the **EUT** through a power filter. The appropriate receiving antenna was placed on an antenna mast. Radiated Emissions testing was performed at a 3-meter distance from the **EUT**. The complete frequency range of 30MHz to 1000MHz was scanned with a Rohde & Schwartz CISPR Compliant Receiver. All signals were maximized by rotating the **EUT** 360° and moving the antenna from 1 to 4 meters in height. The maximum Radiated Emissions were recorded and compared to the limits of **FCC** Class B.

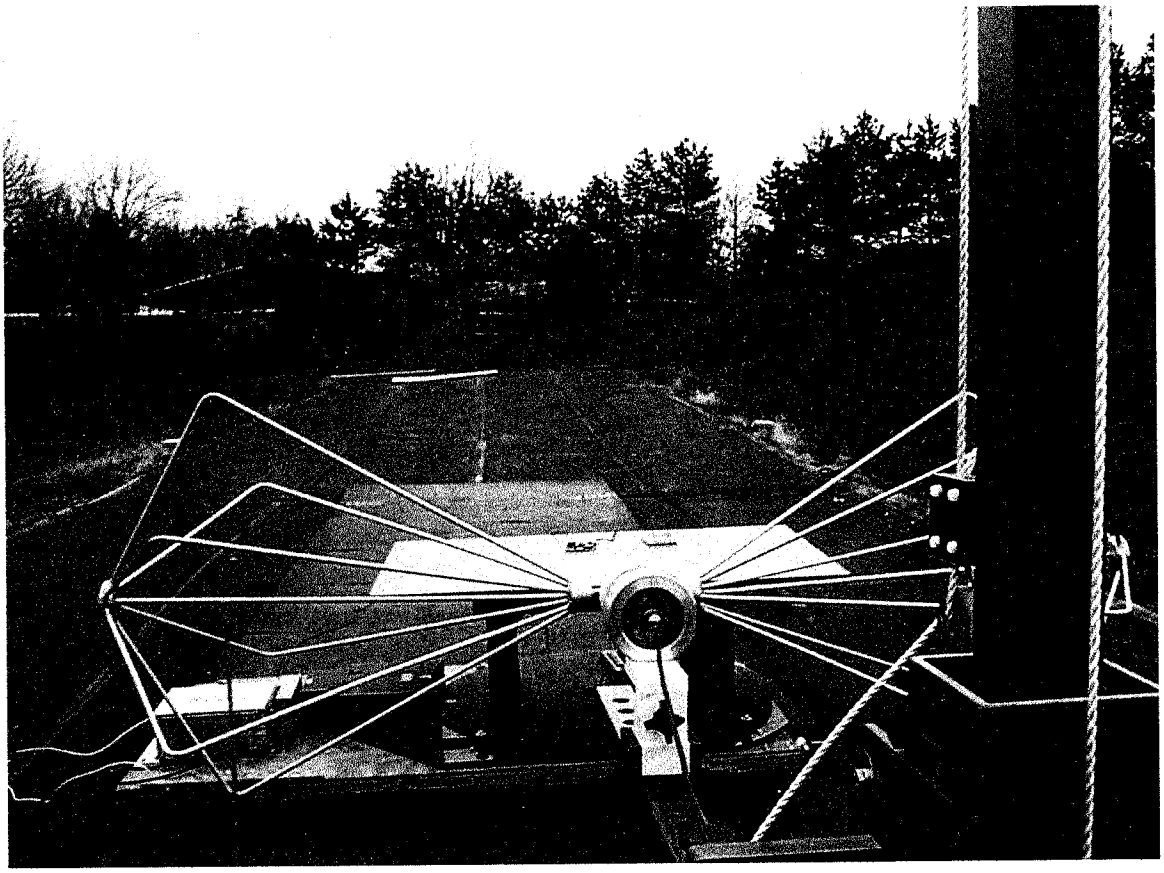
The test setup diagram is shown in Figure 1 and the test setup photograph is shown in Figure 2.

The results for Radiated Emissions testing are shown in Figure 3 (data sheet) and Figure 4 (graph).

THE EUT COMPLIES WITH THE CLASS B LIMITS OF FCC PART 15 FOR RADIATED EMISSIONS.



Radiated Emissions Test Setup
Figure 1



Biconical Antenna at 3 Meters

Radiated Emissions Test Setup Photograph
Figure 2

Electromagnetic Emission Test

EUT			
	Manufacturer: Perimeter Technologies **Model #:** Pet Stop Device **Serial #:** N/A **Mode:** On	**Date:** 11/21/02 **Test Instruments:** RSI # 75, 80, 391, 503 **Frequency Range:** 30-1000MHz	Test Code **RE** Technician Engineer

Temperature: 55°F **Humidity:** 64%	**Additional Info:**	**Test Spec:** FCC Part 15 Class B
Radiated Distance: 3 m Antenna: BC / LP	[X] HORIZ. [ ] BB [ ] NB [X] VERT. [ ] H [ ] E	**Conducted** Line: Function: [ ] BB [ ] NB

FREQ.	IND. Level		Correction Factors ANT.	Correction Factors Cable		Final Level QP	Antenna Height	EUT Azimuth	Remarks
MHz	dBµV		dB	dB		dBµV	cm	Deg.	
30.0	2.1		14.3	1.0		17.4	100	0	Horizontal / BC
40.0	0.6		12.6	1.0		14.2	159	0	
70.0	3.6		8.8	1.0		13.4	100	45	
87.0	6.2		8.3	1.0		15.5		0	
150.0	2.1		12.6	2.0		16.7			
200.0	-2.0		14.1	2.0		14.1			
300.0	-1.6		13.7	2.0		14.1			LP
400.0	-1.0		15.8	3.0		17.8			
700.0	0.6		21.2	4.0		25.8			
900.0	0.2		24.3	4.0		28.5			
1000.0	0.4		23.8	4.0		28.2			
30.0	3.2		13.0	1.0		17.2	100	0	Vertical / BC
40.0	4.1		11.3	1.0		16.4			
70.0	3.1		8.0	1.0		12.1			
87.0	8.9		8.8	1.0		18.7			
150.0	0		12.8	2.0		14.8			
200.0	0		14.9	2.0		16.9			
300.0	-2.1		12.9	2.0		12.8			LP
400.0	-2.2		15.7	3.0		16.5			
700.0	0.2		21.4	4.0		25.6			
900.0	0.2		23.6	4.0		27.8			
1000.0	0.6		24.7	4.0		29.3			

Figure 3

RADIATION SCIENCES INC.

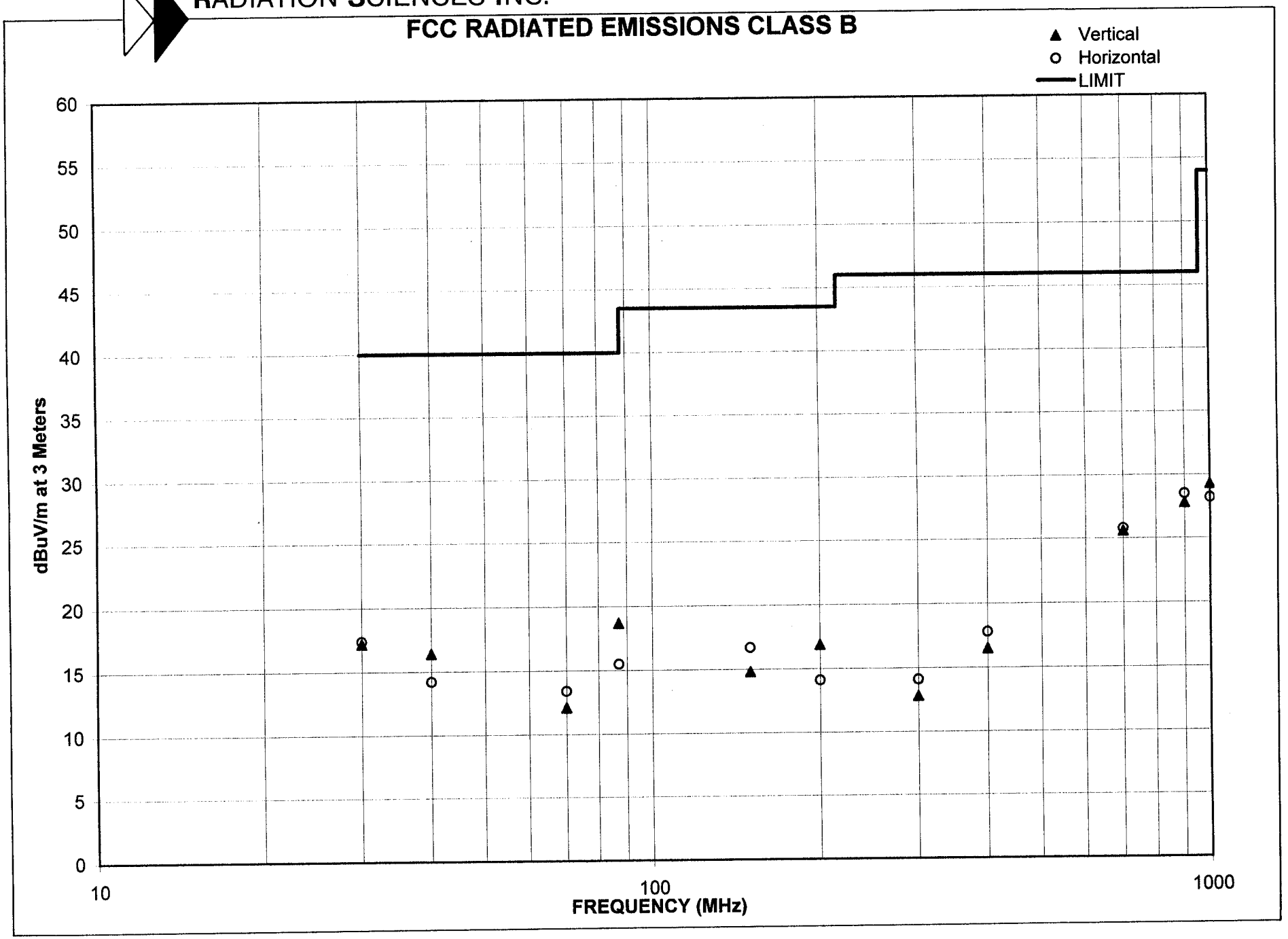


FIGURE 4

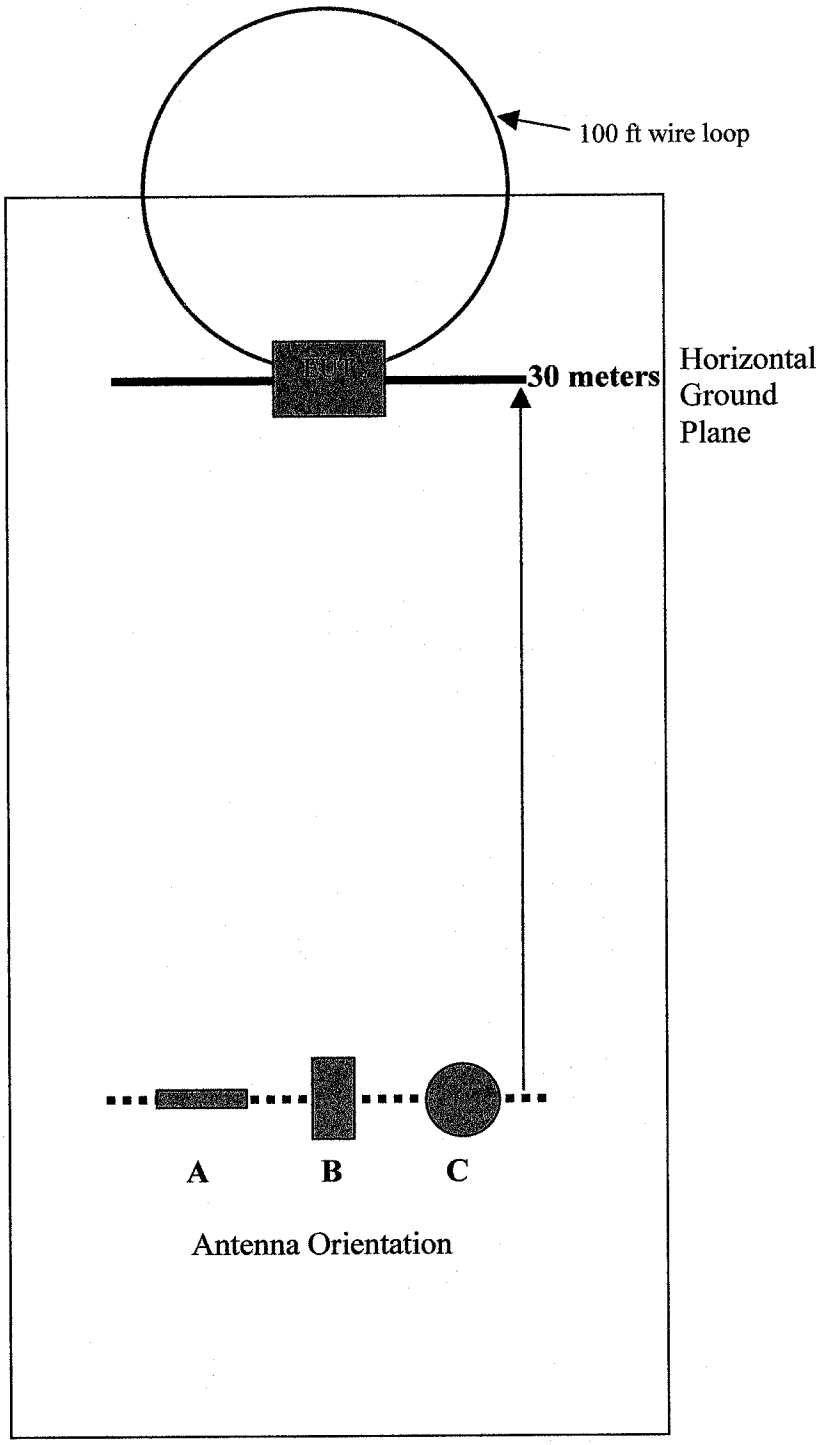
4.2 Radiated Emissions (Intentional - Para. 15.209) Test Results

This section contains the Radiated Emissions test results for the **EUT** with an intentional transmitted frequency of 14.7kHz.

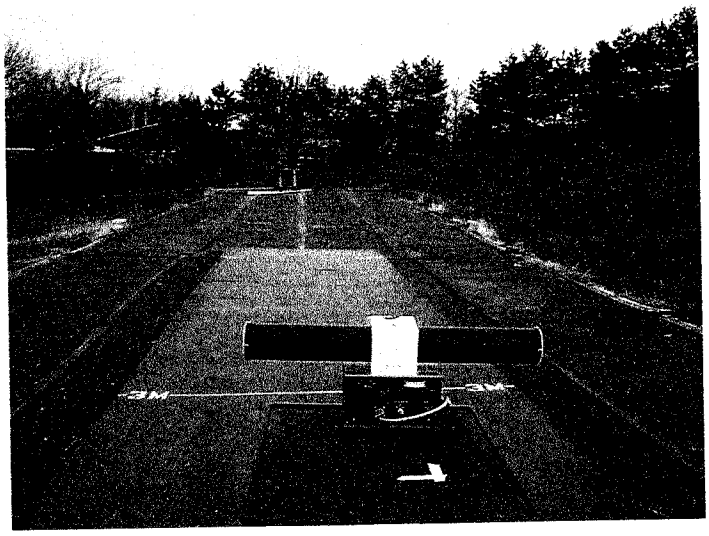
The **EUT** was set up at 30 meters as shown in Figure 5 with a 100 ft. loop of wire. Figure 6 presents the test setup with the loop antenna in its 3 planes.

Figure 7 shows the test results.

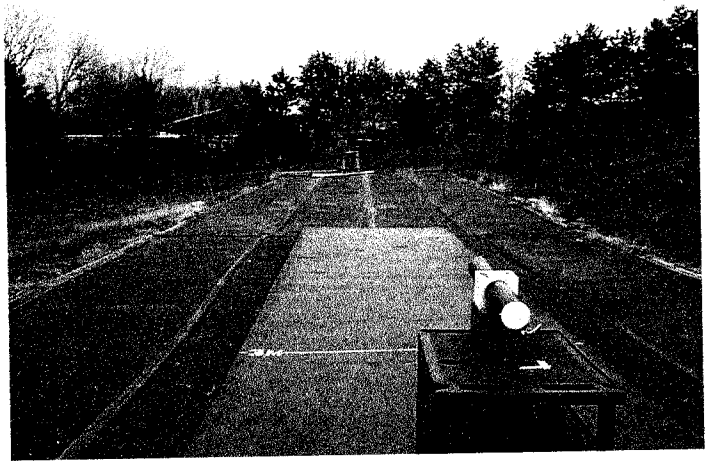
THE EUT COMPLIED WITH THE FCC REQUIREMENTS OF PARAGRAPH 15.209.



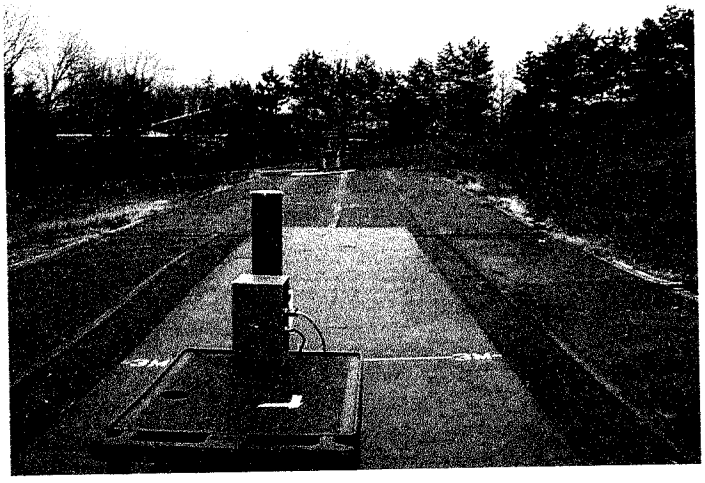
Radiated Emissions Test Setup Diagram (Top View)
Figure 5



Antenna orientation
A



Antenna Orientation
B



Antenna Orientation
C

Radiated Emission Photographs (30 meters)
Figure 6

Electromagnetic Emission Test

EUT			
	Manufacturer: Perimeter Technologies **Model #:** Pet Stop Device **Serial #:** N/A **Mode:** On	**Date:** 11/20/02 **Test Instruments:** RSI # 47, # 390 **Frequency Range:**	Test Code **RE** Technician Engineer

Temperature: 55 °F **Humidity:** 42 %	**Additional Info:** Limits = 47.5 dBµV at 10 kHz Decreasing to 37.5 dBµV at 100 kHz	**Test Spec:** FCC Part 15 Class B
Radiated Distance: Antenna: BBH 500 B	☐ HORIZ. ☐ BB ☐ NB ☐ VERT. ☐ H ☐ E	**Conducted** Line: Function: ☐ BB ☐ NB

FREQ.	IND. Level	Convert to	Correction Factors			Final Level QP	Antenna Height	Antenna Orientation	Remarks
			ANT.	Pre-Amp	Distance 30-300m				
kHz	dBµV	dBµV	dB	dB	dB	dBµV/m	meter		Signal
14.7	68.2	+51.5	-12	-43	-40	24.7	1	A	Ambient
29.5	61.5		-14			16			
44.3	54.3		-10			11.9			
58.9	49		-9.2			8.3			
73.7	45		-7.0			6.5			
88.4	42.5		-6.0			5			
103.1	45		-5.5			8			
14.7	65.2	+51.5	-12	-43	-40	21.7	1	B	Ambient
29.5	59.8		-14			14.3			
44.3	55.5		-10			13.1			
58.9	51		-9.2			10.3			
73.7	45.2		-7.0			6.7			
88.4	45.8		-6.0			8.3			
103.1	46.7		-5.5			9.7			EUT
14.7	66.8	+51.5	-12	-43	-40	23.3	1	C	Ambient
29.5	59.3		-14			13.8			
44.3	54.9		-10			12.5			
58.9	49.6		-9.2			8.9			
73.7	45.1		-7.0			6.6			
88.4	43.6		-6.0			6.1			
103.1	45.5		-5.5			8.5			

Figure 7

4.3 Conducted Emissions Test Results

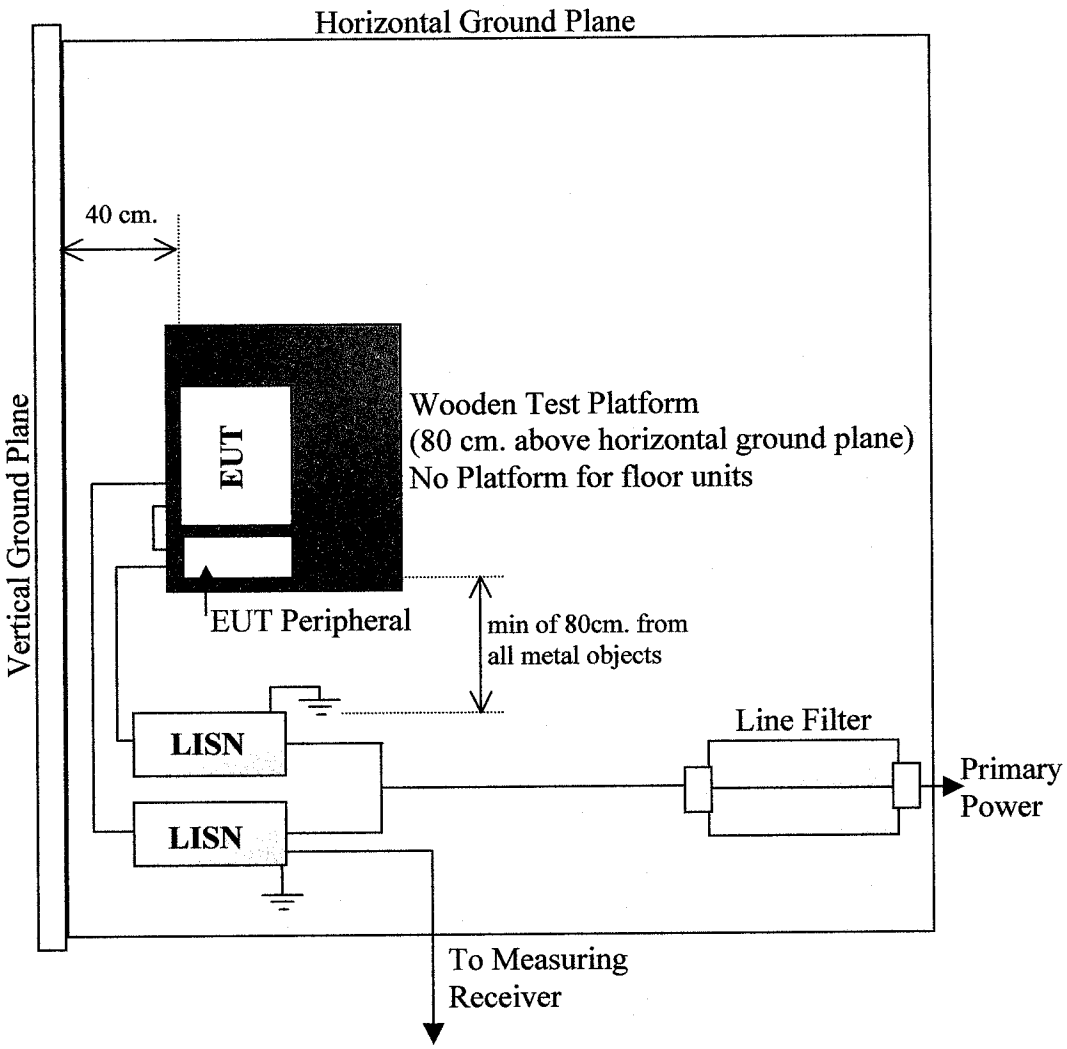
Conducted Emissions Testing was performed to the requirements of **FCC Part 15**.

The **EUT** was placed on a table 80cm above ground plane in a shield room. The rear of the **EUT** was positioned at the edge of a 1m x 1.5m tabletop that was 40cm from the vertical ground plane. The filtered power (110VAC, 60Hz) was fed through 50μs LISNs to the **EUT**. An HP Spectrum Analyzer System was used to find the peak values of the Conducted Emissions.

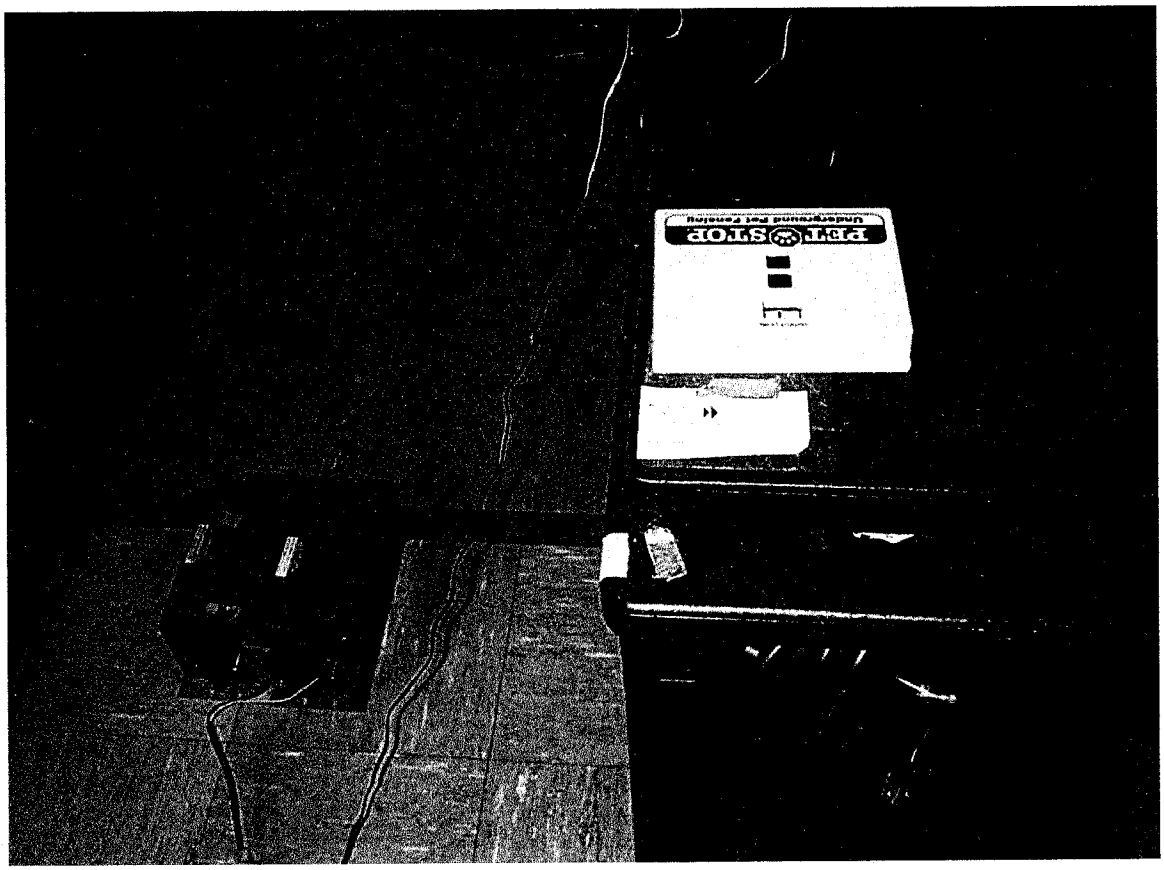
The test setup diagram is shown in Figure 8 and the test setup photograph is shown in Figure 9.

The results for Conducted Emissions testing are shown in Figures 10 and 11.

THE EUT COMPLIES WITH THE CLASS B LIMITS OF FCC PART 15 FOR CONDUCTED EMISSIONS.



Conducted Emissions Test Setup Diagram (Top View)
Figure 8



Conducted Emissions Test Setup Photograph
Figure 9

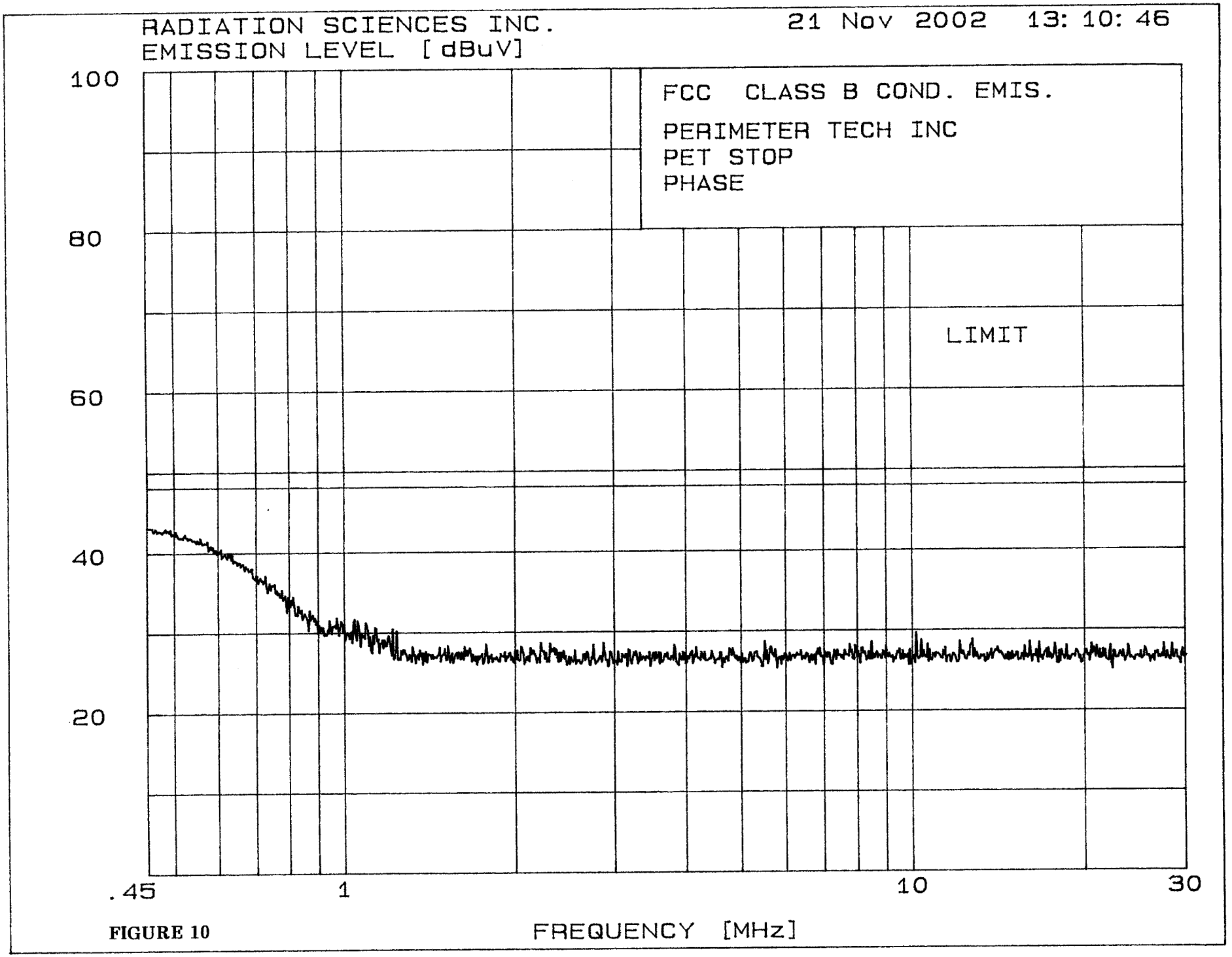

RADIATION SCIENCES INC.
EMISSION LEVEL [dBuV]
21 Nov 2002 13:10:46
FCC CLASS B COND. EMIS.
PERIMETER TECH INC
PET STOP
PHASE
LIMIT
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]

FIGURE 10

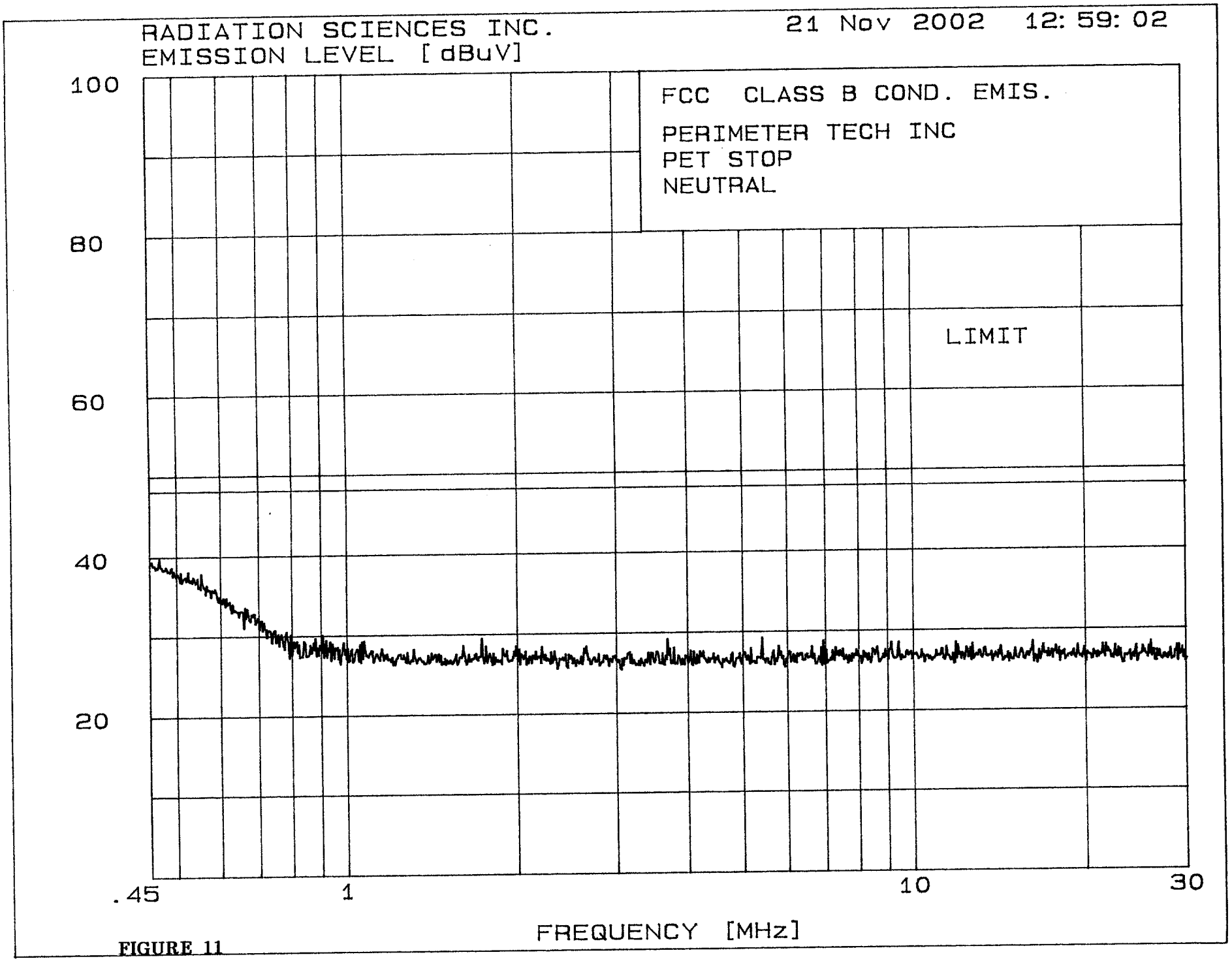

RADIATION SCIENCES INC.
EMISSION LEVEL [dBuV]
21 Nov 2002 12:59:02
FCC CLASS B COND. EMIS.
PERIMETER TECH INC
PET STOP
NEUTRAL
LIMIT
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]

FIGURE 11

APPENDIX A

RADIATION SCIENCES INC.

OPEN AREA TEST SITE (OATS)

FCC PART 15 AND 18

TEST REPORT NO. RSI-2059E/2

OPEN AREA TEST SITE (OATS)

FCC PARTS 15 AND 18

LOCATED AT

RADIATION SCIENCES INC.

3131 DETWILER ROAD

HARLEYSVILLE, PENNSYLVANIA 19438

24 JUNE 2000

Prepared by:

Jason Smith
EMI Engineer

Reviewed By:

Daniel J. Signore
President
Radiation Sciences Inc.

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LIST OF FIGURES/DATA SHEETS

1.0 RSI Test Facility and Equipment

Location: 3131 Detwiler Road
Harleysville, PA 19438

Description: Figures 1 and 2 present photographs of the OATS. It is located outdoors and away from large metal objects. The ground plane is a tight woven galvanized metal cloth with 1/2" openings. It is placed on top of crushed compacted stone and a plastic weed barrier. Joints of the ground plane are overlapped and held together with a board running under and metal staples placed about every 6 inches. There are a total of 10 grounding rods placed along the long sides of the plane. The dimensions are 35.5mX7m and are shown in Figure 3. The ground rod installation and ground plane joining are shown in Figure 4.

Test Equipment: Radiation Sciences Inc. has a full compliment of Electro-Magnetic Interference (EMI) test equipment required for FCC parts 15 and 18 testing. Listed below is a description of the test equipment. See Figure 5 for a more detailed listing of test equipment.

A. Receivers: Rhode & Schwarz ESH3
Rhode & Schwarz ESVP

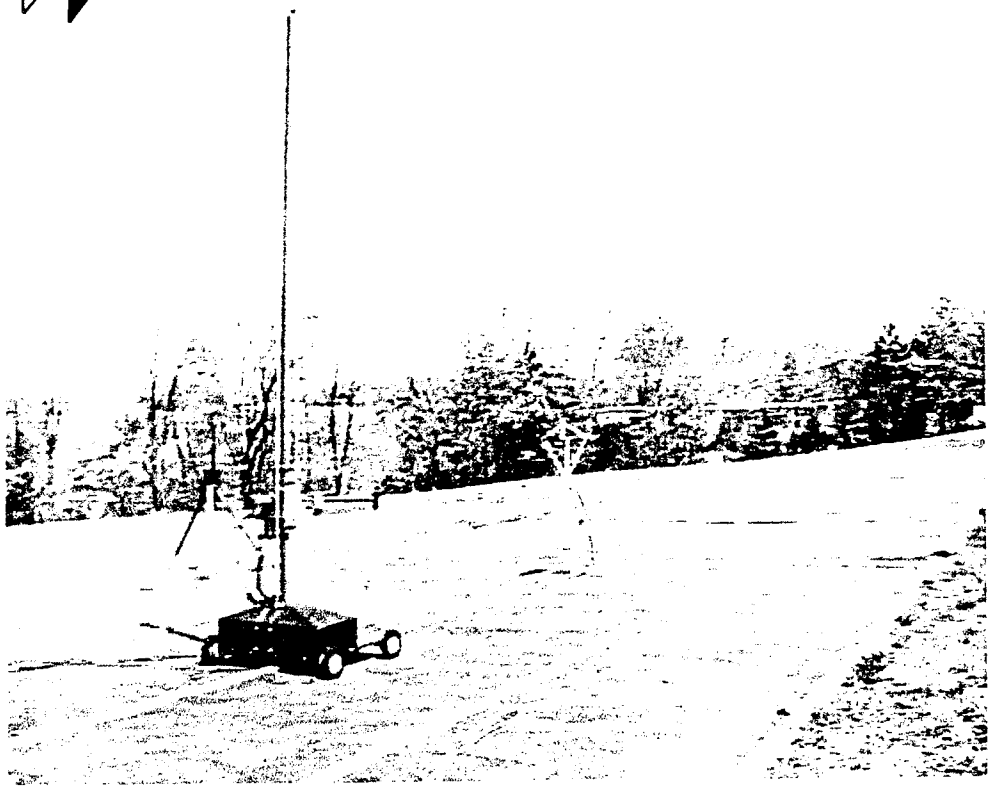
B. Spectrum Analyzer: Advantest R3271

C. Antennas: Stoddart 94455-1
Tensor 4108
Amplifier Reasearch AT1000
EMCO 3146

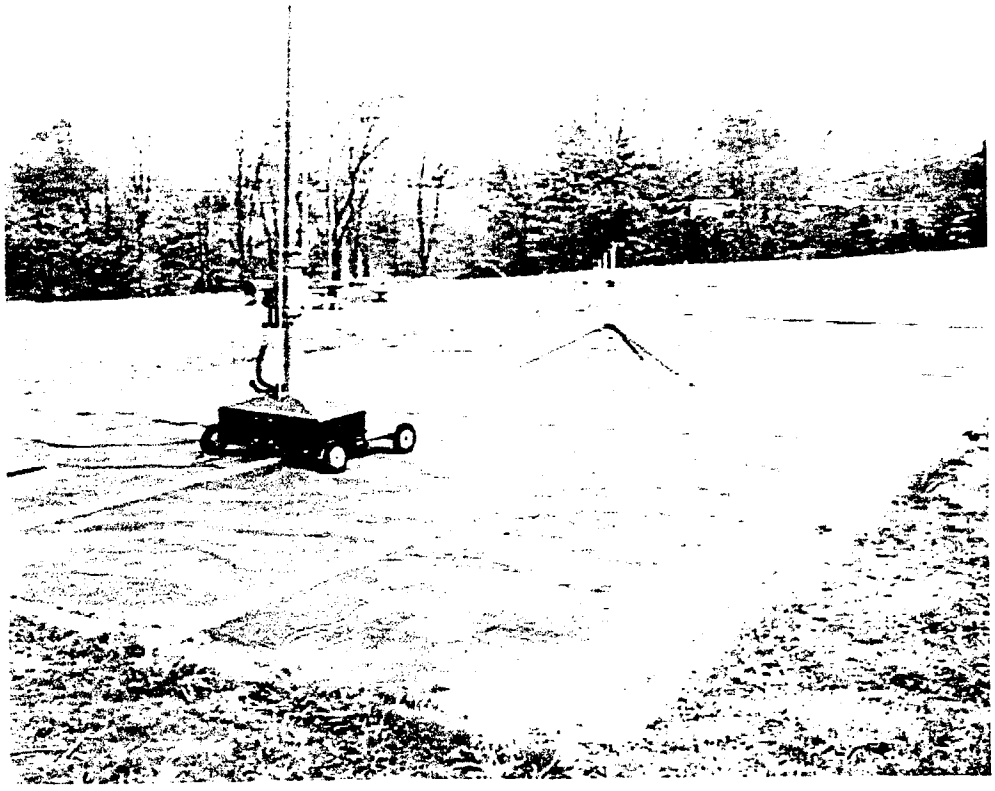
D. Line Impedance Stabilization Network:
Solar 8028-50-TS-24-BNC
Solar 8610-50-TS-100-N*
* Modified per ANSI C63.4-1992

E. Turn Table: EMCO 2065 LoPro

F. Antenna Tower: EMCO 2075 Mini Mast



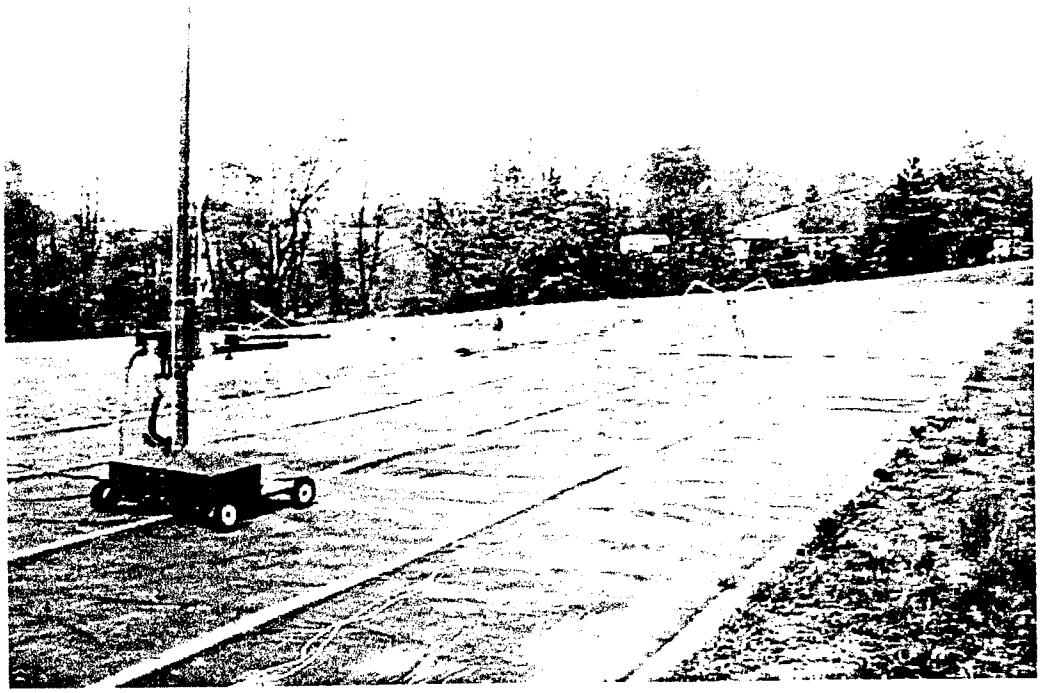
3 meter positioning for site attenuation test. With Biconical Antennas in vertical polarity.



3 meter positioning for site attenuation test. With Log Periodic Antennas in vertical polarity.

3 meter Site Attenuation Test Setup

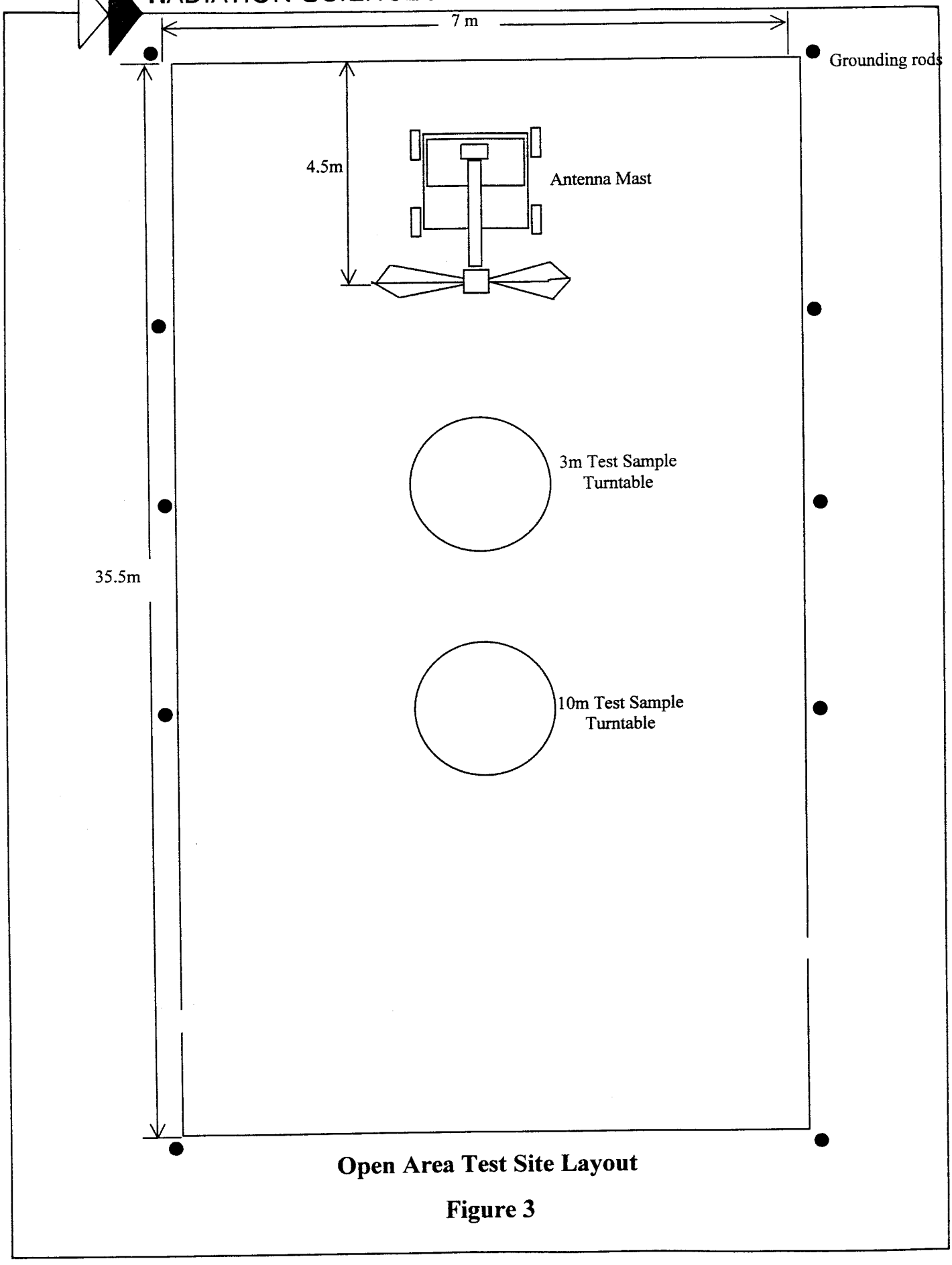
Figure 1



10 meter positioning for site attenuation test. With Biconical antennas in horizontal polarity

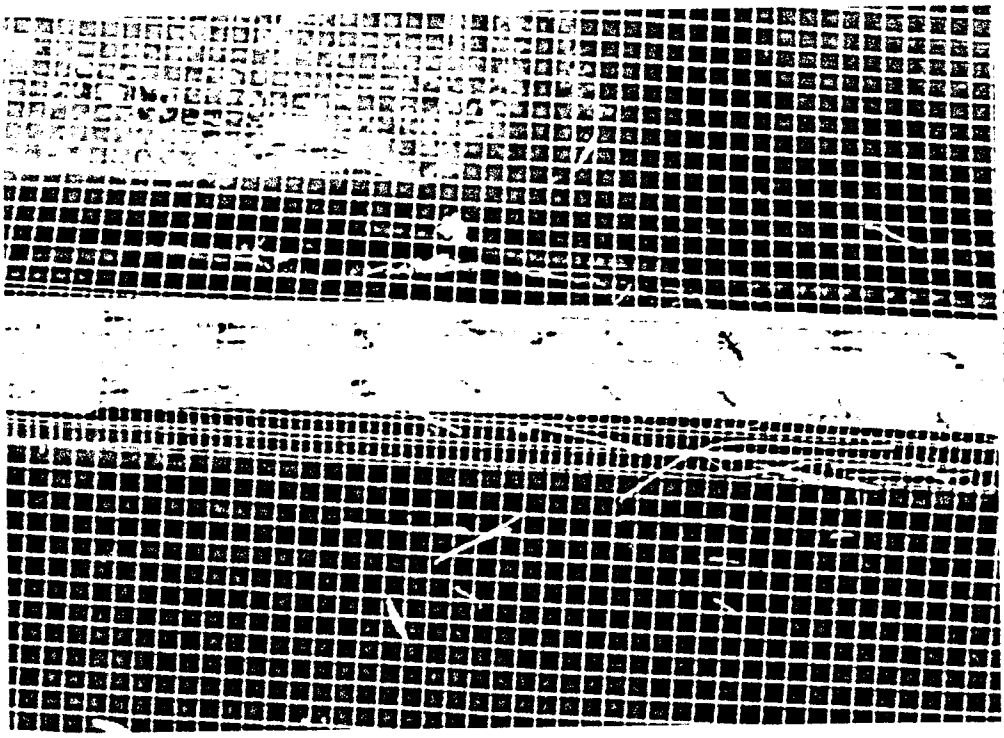
10 meter Site Attenuation Test Setup

Figure 2

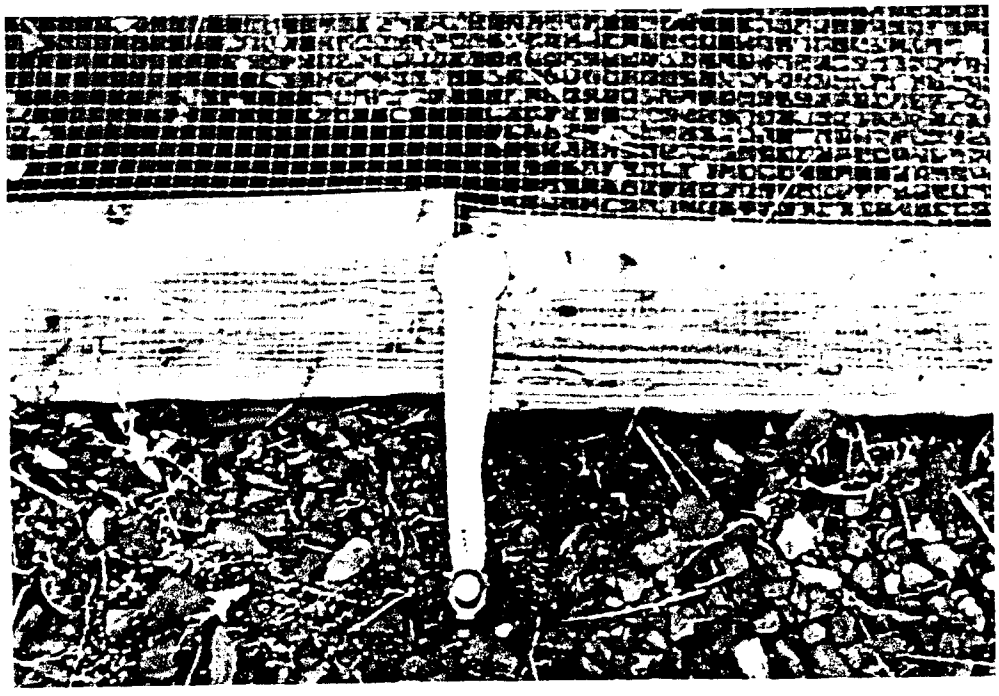


Open Area Test Site Layout

Figure 3



Joint of ground plane. Metal mesh overlapped and stapled together.



Ground rod instalation.

Ground Plane

Figure 4

TEST INSTUMENTATION

RSI INV No.	Description	Manufacturer	Model No.	Serial No.	Last Cal. Date	Cal. Due Date
31	SPEC ANALYZER	ADVANTEST	R3271	J003583	02/23/2000	02/23/2001
73	ANTENNA	STODDART	94455-1	6	11/30/1999	11/30/2000
75	ANTENNA	TENSOR	4108	204	03/29/2000	03/29/2001
80	ANTENNA	AMP.RES.Assoc.	AT1000	4094-025	04/10/2000	04/10/2001
83	ANTENNA	EMCO	3146	1554	12/01/1999	12/01/2000
200	GEN, SIGNAL	H.P.	8656B	2542A+03013	02/17/2000	02/17/2001
210	GEN. SIGNAL	FLUKE	6060B	4275204	01/03/2000	01/03/2001
243	LISN -MODIFIED	SOLAR	8610-50-TS-100-N	905839	10/14/1998	10/14/2000
244	LISN -MODIFIED	SOLAR	8610-50-TS-100-N	905838	12/06/1998	12/06/2000
260	LISN	SOLAR	8028-50-TS-24-BNC	974629	12/21/1999	12/21/2000
390	RECEIVER	R & S	ESH 3	861742/012	04/18/2000	04/18/2001
391	RECEIVER	R & S	ESVP	861744/015	04/18/2000	04/18/2001

Figure 5

2.0 Site Attenuation Measurements

Test Dates: 23-24 June 2000

Test Procedures: ANSI C63.4-1992

- The test antennas were positioned per Figures 6 and 7 of ANSI C63.4-1992
- Tests were performed using the equipment listed in Figure 5. All measuring instruments are calibrated at least annually in accordance with ISO-25
- The site requirements selected were those for biconical and logperiodic antennas.

Figures 6 through 13 present the results of the site attenuation measurements. Figures 6 to 9 are the results for 3 meter readings and Figures 10 to 13 present the results for the 10 meter attenuation tests.

TEST RESULTS: ALL MEASUREMENTS COMPLY WITH THE ANSI C63.4-1992 REQUIREMENTS.

Site Attenuation Test

SITE			
	Company: Radiation Sciences Inc	**Date:** 6/23/00	Test Code **OATS**
	Site: Detwiler Rd Outdoor Site	**Test Instruments:** RSI # 83, 73, 75, 210, 200, 391	Technician
		Frequency Range: 30-1000MHz	Engineer

Temperature: 68°F **Humidity:** 28%	**Additional Info:** FCC Parts 15 and 18	**Test Spec:** ANSI C63.4-1992

Radiated
Distance: 3 Meter
Antenna: Biconocal (30-200MHz),Log Periodic(200-1000MHz)

☐ HORIZ.
☒ VERT.

FREQ.	V Direct	V Site	Correction Factors		3m Dipole	A_N Meas.	A_N Theor.	A_N Δ	Remarks
			AF_{TX}	AF_{RX}					
MHz	dB		dB	dB		dB(1/m)^2	dB(1/m)^2	dB	
30	99.1	66.3	12.9	12.1	0	7.8	8.2	**0.4**	PASS
35	99.1	67.8	11.8	12.3	0	7.2	6.9	**-0.3**	PASS
40	99.9	69.5	11.1	12.1	0	7.2	5.8	**-1.4**	PASS
45	99.9	72.6	10.7	11.4	0	5.2	4.9	**-0.3**	PASS
50	99.7	75.6	10.3	10.6	0	3.2	4.0	**0.8**	PASS
60	100.5	80.8	9.0	8.1	0	2.6	2.6	**0.0**	PASS
70	100.4	82.9	7.9	5.7	0	3.9	1.5	**-2.4**	PASS
80	100.0	80.0	8.1	8.0	0	3.9	0.6	**-3.3**	PASS
90	99.8	81.7	8.7	11.3	0	-1.9	-0.1	**1.8**	PASS
100	99.5	81.1	9.2	11.6	0	-2.4	-0.7	**1.7**	PASS
120	100.2	82.3	11.1	11.6	0	-4.8	-1.5	**3.3**	PASS
125	99.9	79.5	11.7	12.6	0	-3.9	-1.6	**2.3**	PASS
140	99.5	76.5	12.2	16.1	0	-5.3	-1.8	**3.5**	PASS
150	99.5	73.7	12.6	17.0	0	-3.8	-1.8	**2.0**	PASS
160	99.1	72.5	12.9	17.6	0	-3.9	-1.7	**2.2**	PASS
175	99.6	73.7	13.6	17.4	0	-5.1	-1.4	**3.7**	PASS
180	99.9	75.0	13.4	15.9	0	-4.4	-1.3	**3.1**	PASS
200	99.8	73.4	14.5	17.0	0	-5.1	-3.6	**1.5**	PASS
200	99.0	79.0	12.1	10.8	0	-2.9	-3.6	**-0.7**	PASS
250	99.3	78.5	12.5	12.2	0	-3.9	-7.7	**-3.8**	PASS
300	98.5	77.4	15.5	13.3	0	-7.7	-10.5	**-2.8**	PASS
400	99.2	74.0	20.4	15.5	0	-10.7	-14.0	**-3.3**	PASS
500	98.9	78.7	17.7	17.7	0	-15.2	-16.4	**-1.2**	PASS
600	98.7	77.8	19.4	19.2	0	-17.7	-16.3	**1.4**	PASS
700	98.7	73.1	20.9	20.6	0	-15.9	-18.4	**-2.5**	PASS
800	98.8	72.6	22.2	22.5	0	-18.5	-20.0	**-1.5**	PASS
900	98.2	72.0	23.9	23.6	0	-21.3	-21.3	**0.0**	PASS
1000	99.1	70.6	25.1	24.4	0	-21.0	-22.4	**-1.4**	PASS

FIGURE 6

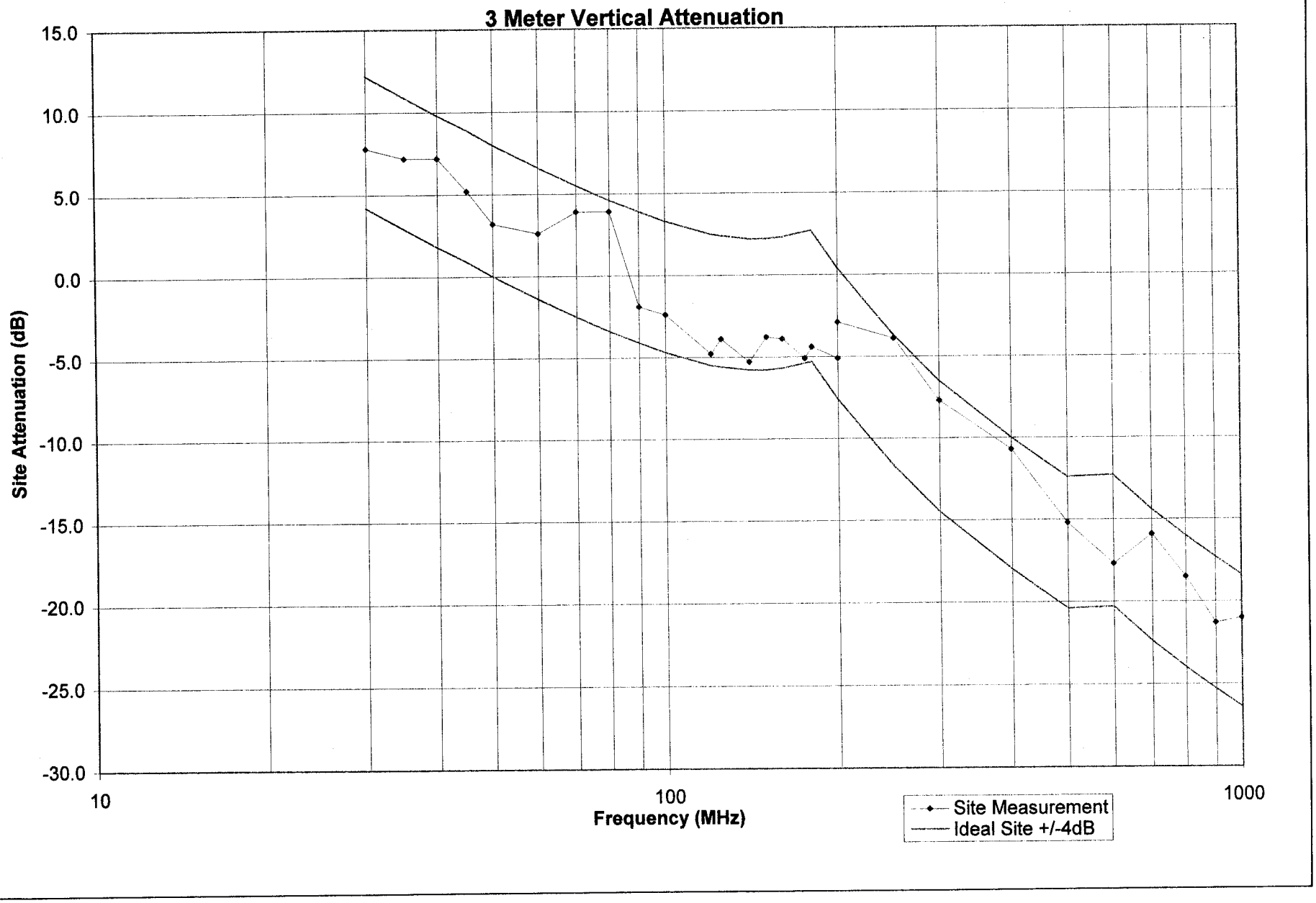

3 Meter Vertical Attenuation
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
Site Attenuation (dB)
10
100
1000
Frequency (MHz)
Site Measurement
Ideal Site +/-4dB

FIGURE 7

Site Attenuation Test

SITE	**Company:** Radiation Sciences Inc **Site:** Detwiler Rd Outdoor Site	**Date:** 6/23/00 **Test Instruments:** RSI # 83, 73, 75, 210, 200, 391 **Frequency Range:** 30-1000MHz	Test Code **OATS** Technician Engineer
Temperature: 68°F **Humidity:** 28%	**Additional Info:** FCC Parts 15 and 18		**Test Spec:** ANSI C63.4-1992
Radiated Distance: 3 Meter Antenna: Biconocal (30-200MHz),Log Periodic(200-1000MHz)			[X] HORIZ. [ ] VERT.

FREQ.	V Direct	V Site	Correction Factors		3m Dipole	A_N Meas.	A_N Theor.	A_N Δ	Remarks
			AF_{TX}	AF_{RX}					
MHz	dB		dB	dB		$dB(1/m)^2$	$dB(1/m)^2$	dB	
30	99.0	55.9	14.0	13.6	0	15.5	15.8	**0.3**	PASS
35	99.9	59.2	13.0	13.7	0	14.0	13.4	**-0.6**	PASS
40	99.7	61.9	12.1	13.4	0	12.3	11.3	**-1.0**	PASS
45	99.7	65.9	11.3	12.6	0	9.9	9.4	**-0.5**	PASS
50	99.5	69.8	10.6	11.4	0	7.7	7.8	**0.1**	PASS
60	99.1	78.5	9.3	7.8	0	3.5	5.0	**1.5**	PASS
70	100.2	83.1	8.4	5.5	0	3.2	2.8	**-0.4**	PASS
80	99.8	82.3	8.3	8.4	0	0.8	0.9	**0.1**	PASS
90	99.6	80.4	7.9	10.6	0	0.7	-0.7	**-1.4**	PASS
100	99.3	80.0	8.6	11.1	0	-0.4	-2.0	**-1.6**	PASS
120	100.1	82.2	10.8	10.6	0	-3.5	-4.2	**-0.7**	PASS
125	99.8	81.0	11.2	11.3	0	-3.7	-4.7	**-1.0**	PASS
140	99.4	78.6	12.0	14.8	0	-6.0	-6.0	**0.0**	PASS
150	100.5	78.4	12.1	16.2	0	-6.2	-6.7	**-0.5**	PASS
160	100.2	77.9	12.2	17.0	0	-6.9	-7.4	**-0.5**	PASS
175	100.0	79.8	12.2	15.9	0	-7.9	-8.3	**-0.4**	PASS
180	99.8	81.0	12.5	15.1	0	-8.8	-8.6	**0.2**	PASS
200	99.5	80.4	13.7	16.3	0	-10.9	-9.6	**1.3**	PASS
200	99.4	83.1	12.3	11.0	0	-7.0	-9.6	**-2.6**	PASS
250	99.9	84.4	12.6	12.0	0	-9.1	-11.7	**-2.6**	PASS
300	99.0	81.9	15.1	13.6	0	-11.6	-12.8	**-1.2**	PASS
400	99.8	75.3	22.1	15.5	0	-13.1	-14.8	**-1.7**	PASS
500	99.5	78.9	18.1	18.2	0	-15.7	-17.3	**-1.6**	PASS
600	99.3	78.6	19.5	19.1	0	-17.9	-19.1	**-1.2**	PASS
700	99.4	75.5	21.2	21.5	0	-18.8	-20.0	**-1.2**	PASS
800	99.6	75.5	22.4	22.9	0	-21.2	-21.3	**-0.1**	PASS
900	99.6	72.9	23.9	23.8	0	-21.0	-22.5	**-1.5**	PASS
1000	99.7	71.7	25.1	24.1	0	-21.2	-23.5	**-2.3**	PASS

FIGURE 8

RADIATION SCIENCES INC.

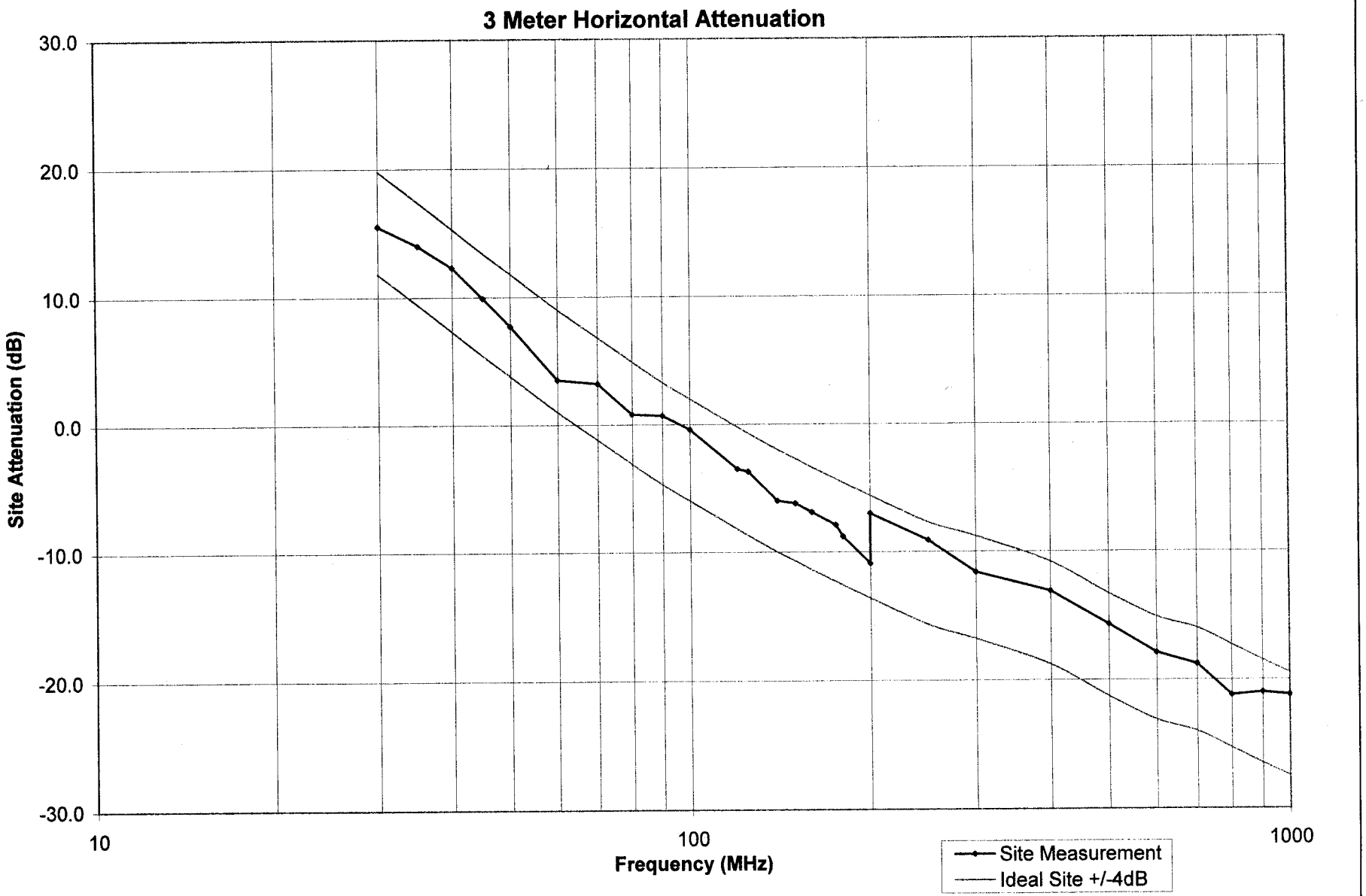


FIGURE 9

Site Attenuation Test

SITE			
	Company: Radiation Sciences Inc	**Date:** 6/23/00	Test Code **OATS**
	Site: Detwiler Rd Outdoor Site	**Test Instruments:** RSI # 83, 73, 75, 210, 200, 391	Technician
		Frequency Range: 30-1000MHz	Engineer

Temperature: 68°F **Humidity:** 28%	**Additional Info:** FCC Parts 15 and 18	**Test Spec:** ANSI C63.4-1992

Radiated
Distance: 10 Meter
Antenna: Biconocal (30-200MHz),Log Periodic(200-1000MHz)

☐ HORIZ.
☒ VERT.

FREQ.	V Direct	V Site	Correction Factors		3m Dipole	A_N Meas.	A_N Theor.	A_N Δ	Remarks
			AF_{TX}	AF_{RX}					
MHz	dB		dB	dB		dB(1/m)^2	dB(1/m)^2	dB	
30	101.4	59.5	12.8	12.2	0	16.9	16.7	**-0.2**	PASS
35	101.1	60.7	11.8	12.5	0	16.1	15.4	**-0.7**	PASS
40	101.0	63.7	11.2	12.2	0	13.9	14.2	**0.3**	PASS
45	100.9	65.7	11.0	11.3	0	12.9	13.2	**0.3**	PASS
50	100.5	66.4	9.9	10.4	0	13.8	12.3	**-1.5**	PASS
60	100.1	71.3	9.4	7.4	0	12.0	10.7	**-1.3**	PASS
70	99.7	76.8	8.3	6.8	0	7.8	9.4	**1.6**	PASS
80	99.3	72.9	8.4	8.8	0	9.2	8.3	**-0.9**	PASS
90	99.0	74.1	8.2	10.6	0	6.1	7.3	**1.2**	PASS
100	101.1	76.1	9.7	10.9	0	4.4	6.4	**2.0**	PASS
120	100.5	75.6	10.5	10.7	0	3.7	4.9	**1.2**	PASS
125	100.2	73.3	10.5	10.8	0	5.6	4.6	**-1.0**	PASS
140	99.7	71.0	10.8	13.5	0	4.4	3.7	**-0.7**	PASS
150	99.4	69.0	11.9	15.2	0	3.3	3.1	**-0.2**	PASS
160	99.0	68.4	13.4	17.6	0	-0.4	2.6	**3.0**	PASS
175	100.0	69.1	13.0	16.4	0	1.5	2.0	**0.5**	PASS
180	99.8	70.2	13.5	15.9	0	0.2	1.8	**1.6**	PASS
200	99.4	69.1	13.8	16.7	0	-0.2	1.0	**1.2**	PASS
200	101.5	77.2	11.5	10.6	0	2.2	1.0	**-1.2**	PASS
250	100.6	78.4	12.0	11.3	0	-1.1	-0.5	**0.6**	PASS
300	99.4	72.1	15.9	13.3	0	-1.9	-1.5	**0.4**	PASS
400	101.0	67.3	19.2	14.8	0	-0.3	-4.1	**-3.8**	PASS
500	99.1	69.8	17.6	17.1	0	-5.4	-6.7	**-1.3**	PASS
600	100.0	69.3	19.1	18.5	0	-6.9	-8.7	**-1.8**	PASS
700	100.9	68.3	21.0	20.5	0	-8.9	-10.2	**-1.3**	PASS
800	99.6	65.9	21.7	22.4	0	-10.4	-11.5	**-1.1**	PASS
900	100.0	65.9	22.9	22.6	0	-11.4	-12.6	**-1.2**	PASS
1000	100.7	65.1	24.9	24.2	0	-13.5	-13.6	**-0.1**	PASS

FIGURE 10

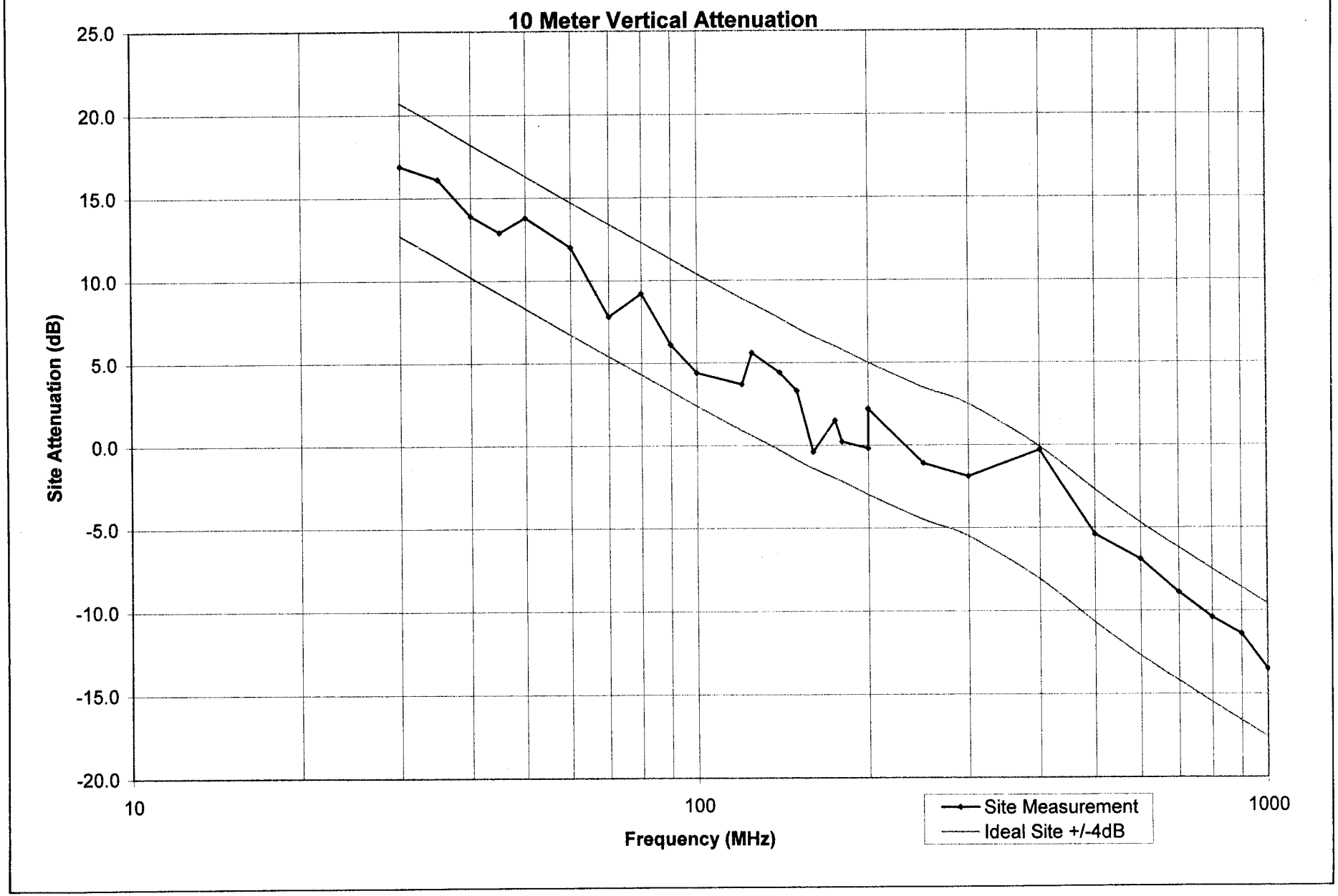

10 Meter Vertical Attenuation
Site Attenuation (dB)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
10
100
1000
Frequency (MHz)
Site Measurement
Ideal Site +/-4dB

FIGURE 11

Site Attenuation Test

SITE			
	Company: Radiation Sciences Inc	**Date:** 6/23/00	Test Code **OATS**
	Site: Detwiler Rd Outdoor Site	**Test Instruments:** RSI # 83, 73, 75, 210, 200, 391	Technician
		Frequency Range: 30-1000MHz	Engineer

Temperature: 68°F **Humidity:** 28%	**Additional Info:** FCC Parts 15 and 18	**Test Spec:** ANSI C63.4-1992

Radiated
Distance: 10 Meter
Antenna: Biconocal (30-200MHz),Log Periodic(200-1000MHz)

[X] HORIZ.
[ ] VERT.

FREQ.	V Direct	V Site	Correction Factors		3m Dipole	A_N Meas.	A_N Theor.	A_N Δ	Remarks
			AF_{TX}	AF_{RX}					
MHz	dB		dB	dB		dB(1/m)^2	dB(1/m)^2	dB	
30	101.2	45.4	13.3	12.7	0	29.8	29.8	**0.0**	PASS
35	100.9	48.8	12.5	13.1	0	26.5	27.1	**0.6**	PASS
40	100.8	50.2	11.8	12.9	0	25.9	24.9	**-1.0**	PASS
45	100.7	54.4	11.1	12.2	0	23.0	22.9	**-0.1**	PASS
50	100.3	57.7	10.4	10.9	0	21.3	21.1	**-0.2**	PASS
60	99.9	65.3	9.1	7.5	0	18.0	18.0	**0.0**	PASS
70	99.5	67.3	8.6	6.3	0	17.3	15.5	**-1.8**	PASS
80	99.1	67.7	8.4	8.6	0	14.4	13.3	**-1.1**	PASS
90	98.8	68.1	7.9	10.7	0	12.1	11.4	**-0.7**	PASS
100	100.9	69.0	8.7	11.1	0	12.1	9.7	**-2.4**	PASS
120	100.3	70.8	10.9	10.8	0	7.8	7.0	**-0.8**	PASS
125	100.0	70.5	11.3	11.5	0	6.7	6.4	**-0.3**	PASS
140	99.5	66.9	11.8	14.9	0	5.9	4.8	**-1.1**	PASS
150	99.2	65.5	12.1	16.6	0	5.0	3.9	**-1.1**	PASS
160	98.8	65.3	12.3	17.1	0	4.1	3.1	**-1.0**	PASS
175	99.8	69.9	12.6	15.9	0	1.4	2.0	**0.6**	PASS
180	99.6	70.3	12.9	15.1	0	1.3	1.7	**0.4**	PASS
200	99.2	69.4	12.4	15.8	0	1.6	0.6	**-1.0**	PASS
200	101.5	77.9	11.4	10.2	0	2.0	0.6	**-1.4**	PASS
250	100.6	78.0	11.7	11.4	0	-0.5	-1.6	**-1.1**	PASS
300	99.4	74.3	14.0	12.4	0	-1.3	-3.3	**-2.0**	PASS
400	101.0	69.7	21.1	14.8	0	-4.6	-5.9	**-1.3**	PASS
500	99.1	70.5	17.6	17.4	0	-6.4	-7.9	**-1.5**	PASS
600	100.0	71.0	18.3	18.8	0	-8.1	-9.5	**-1.4**	PASS
700	100.9	68.8	21.0	21.2	0	-10.1	-10.8	**-0.7**	PASS
800	99.6	67.1	21.2	22.1	0	-10.8	-12.0	**-1.2**	PASS
900	100.0	65.7	23.3	22.8	0	-11.8	-12.8	**-1.0**	PASS
1000	100.7	66.3	21.1	23.7	0	-10.4	-13.8	**-3.4**	PASS

FIGURE 12

RADIATION SCIENCES INC.

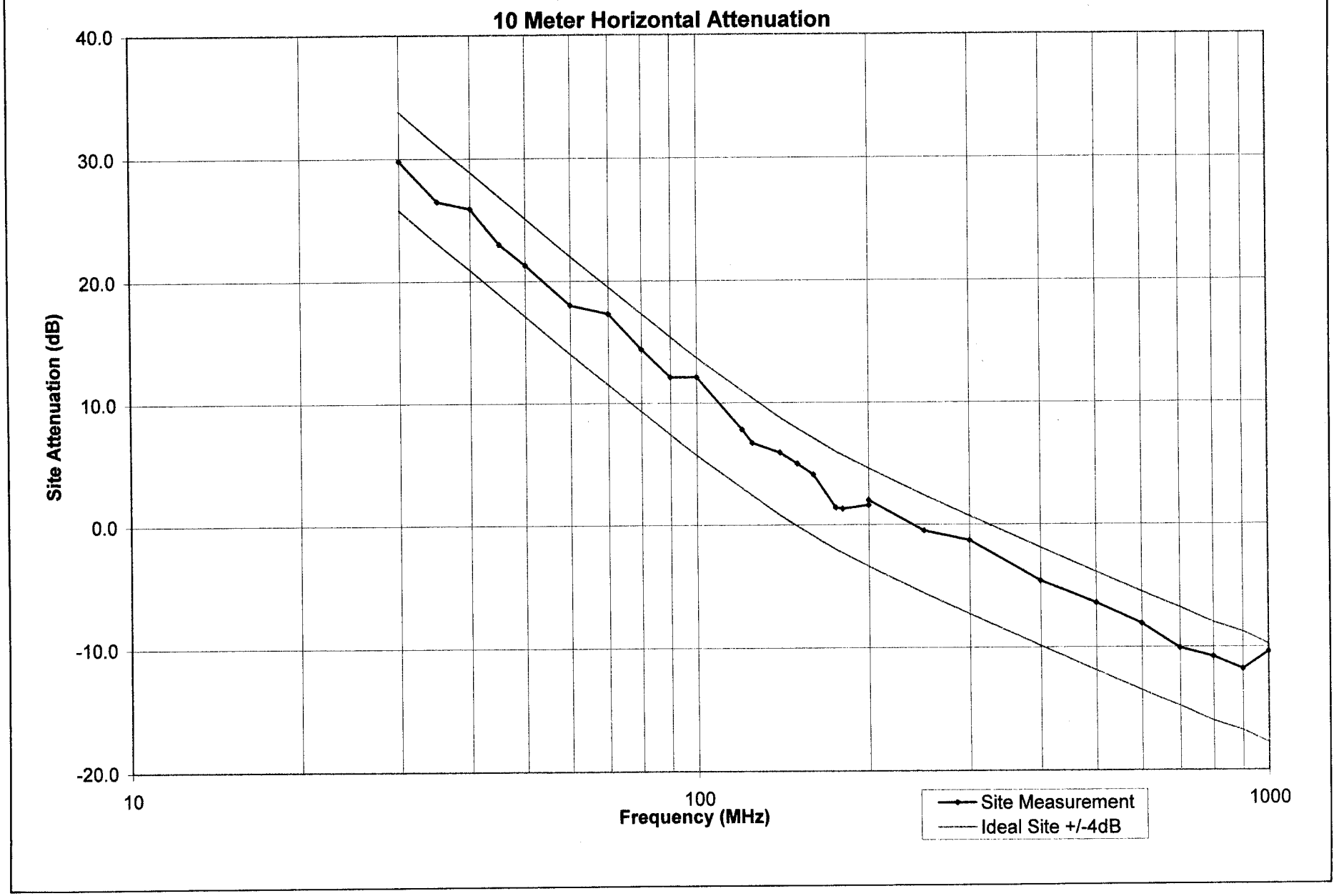
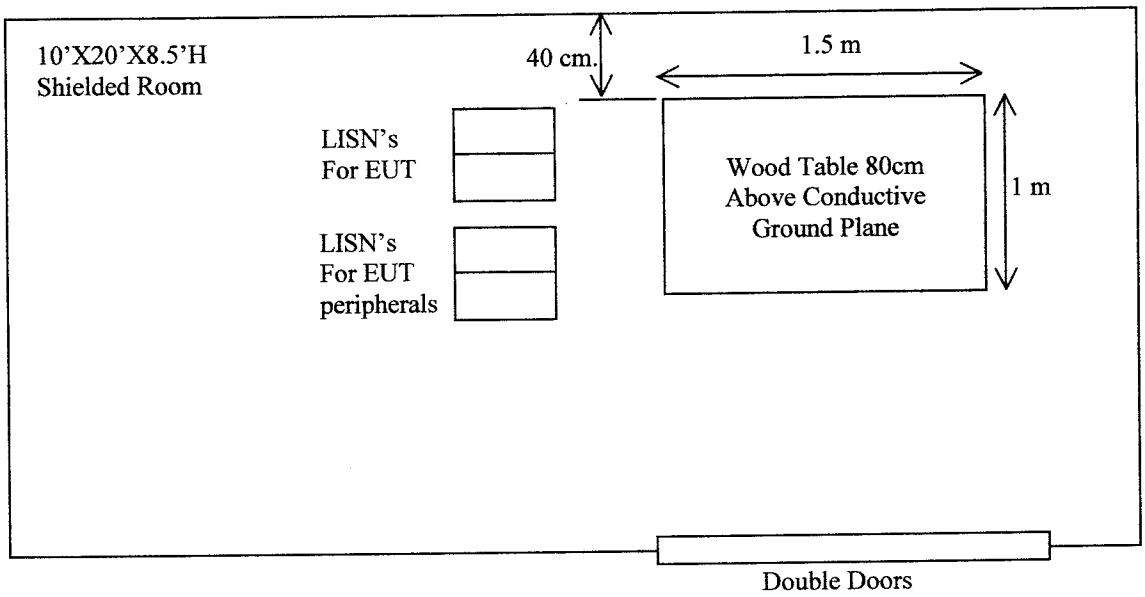


FIGURE 13

3.0 Conducted Emissions Test Site

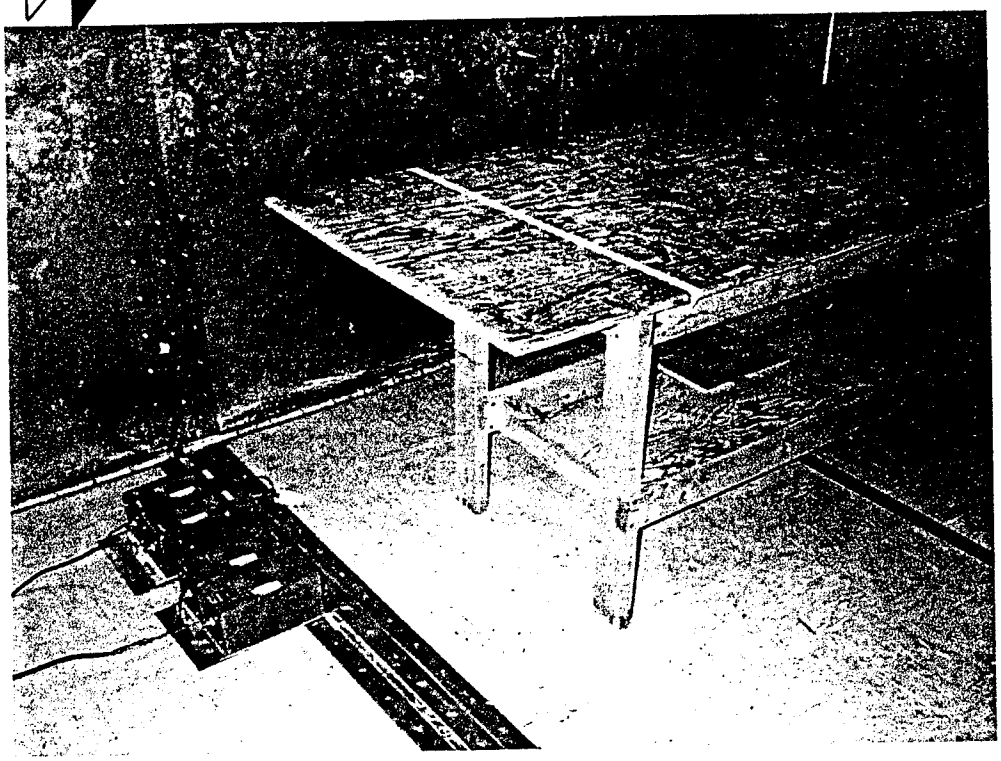
All conducted emission measurements will be performed in a shielded enclosure in accordance with ANSI C63.4-1992. Tabletop devices will be placed on a platform raised 80cm. above the conducting floor. One wall of the shielded room will be located 40cm. from the rear of the device. Floor standing devices will be placed either directly on the conducting floor or on insulating material as appropriate. All other surfaces of the devices will be at least 80cm. from any other conducting surface including the LISN's. Figure 14 illustrates the setup and Figure 15 are photographs of the setup.

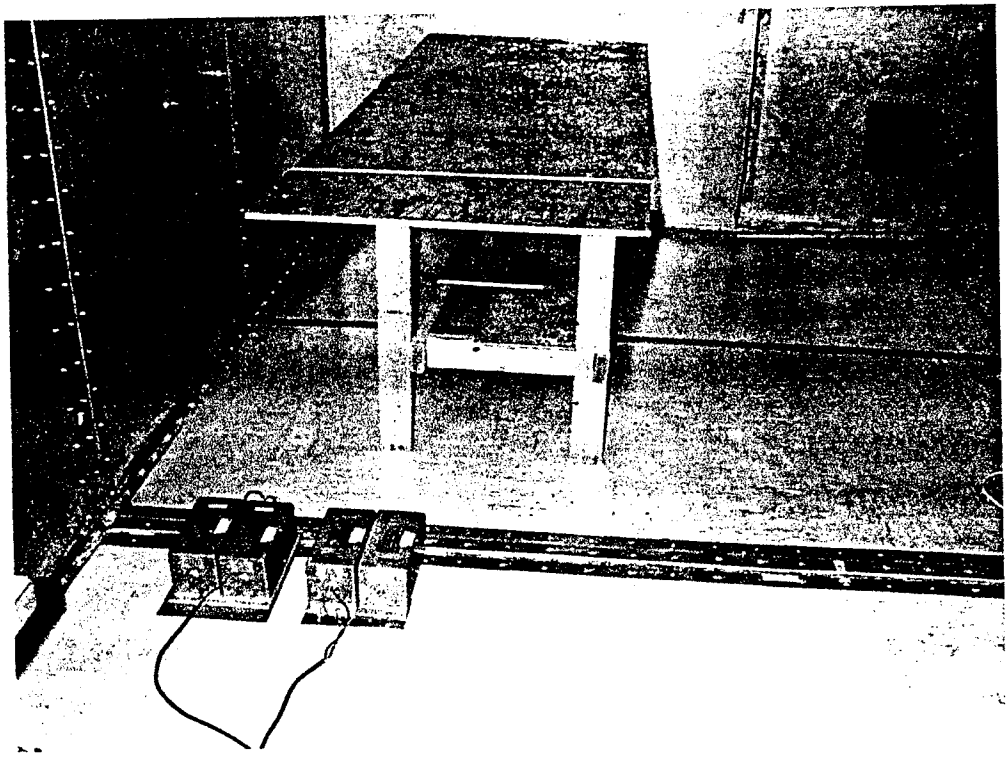
Top View



Conducted Emission Test Setup Diagram.

Figure 14





Conducted Emissions Test Setup

Figure 15