



TEST REPORT NO. RSI-2084E
ELECTROMAGNETIC INTERFERENCE (EMI)
OF THE
INVISIBLE FENCE CO.
MODEL INVISIBLE SENTRY
FCC PART 15, SUBPART C, PARAGRAPH 249
18 JULY 2000

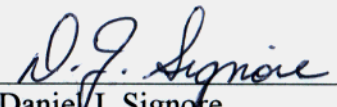
PREPARED FOR:

Invisible Fence Co.
355 Phoenixville Pike
Malvern, PA 19355

SUBMITTED BY:

Radiation Sciences Inc.
3131 Detwiler Road
Harleysville, PA 19438

PREPARED BY:


Daniel J. Signore
President
Radiation Sciences Inc.

REVIEWED BY:

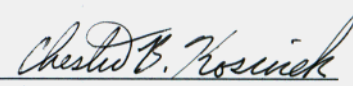

Chester B. Kosiorek
EMC Engineer
Radiation Sciences Inc.



TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
	Table of Contents	i
	List of Figures	i
	Administrative Data	ii
	Summary of Test Results	iii
1.0	INTRODUCTION	1
2.0	DESCRIPTION OF THE TEST SAMPLE	2
3.0	TEST INSTRUMENTATION	3
4.0	TEST RESULTS	4
4.1	Conducted Power Line Measurements, Paragraph 15.209	4
4.2	Radiated Emission Measurements, Paragraph 15.249	8
4.3	Emission Bandwidth, FCC Part 15, Paragraph 15.231c	11
5.0	CONCLUSIONS	14
APPENDIX A	RSI's Open Area Test Site RSI-4963E	----
APPENDIX B	RSI's CERTIFICATIONS	----

LIST OF FIGURES

FIGURE 1	Power Line Conducted Emissions Test Setup	5
FIGURE 2	Power Line Emissions Test Results - Phase	6
FIGURE 3	Power Line Emissions Test Results - Neutral	7
FIGURE 4	Radiated Emissions Test Results for Intentional Radiators	9
FIGURE 5	Radiated Emissions Test Setup Photograph	10
FIGURE 6	Bandwidth Plot	12
FIGURE 7	Bandwidth of Fundamental Frequency	13



ADMINISTRATIVE DATA

TEST PERFORMED:

Measurements of radiated RF and conducted emissions.

PURPOSE OF TEST:

To evaluate the ElectroMagnetic Interference (EMI) characteristics of the Equipment Under Test with respect to Subpart C of Part 15 of the Federal Communications Commission (FCC) Rules for intentional radiators.

EQUIPMENT UNDER TEST (EUT):

Model: **Invisible Sentry**

CONTRACT:

Purchase Order Number: 790338

TEST PERIOD:

17 July 2000

TEST FACILITY:

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

TEST PERSONNEL AND COORDINATORS:

Radiation Sciences Inc.

Chet Kosiorek

Tactical Technologies, Inc.

Jim Deery



SUMMARY OF TEST RESULTS

The Model Invisible Sentry, configured as described herein, COMPLIES WITH THE REQUIREMENTS SET FORTH IN SUBPART C OF PART 15, (Para. 249) OF THE FEDERAL COMMUNICATIONS COMMISSION (FCC) RULES FOR INTENTIONAL RADIATORS.



1.0 INTRODUCTION

This document is a report of tests to determine the ElectroMagnetic Interference (EMI) characteristics of the **Model Invisible Sentry**, presented by **Invisible Fence Co.** of Malvern, Pennsylvania.

The purpose of the testing was to evaluate the EMI characteristics of the test sample with respect to Subpart C, Para. 249 of Part 15 of the FCC Rules for intentional radiators.

Test setups and procedures are described in **RSI's Test Procedures 4963E** (see Appendix A) and test results are summarized 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 Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz", dated 17 July 1992.

3.0 TEST INSTRUMENTATION

<u>RSI INV #</u>	<u>DESCRIPTION</u>	<u>MANUFACTURER</u>	<u>MODEL #</u>	<u>SERIAL #</u>	<u>LAST CAL DATE</u>	<u>CAL DUE DATE</u>	<u>C Y C L E</u>	<u>T Y P E</u>
31	SPEC ANALYZER	ADVANTEST	R3271	J003583	2/23/2000	2/23/2001	12	C
32	SPEC. ANALY.	H.P.	8568B	2841A04457	4/27/2000	4/27/2001	12	C
33	SPEC. ANALY.	H.P.	85662A	2848A17406	4/27/2000	4/27/2001	12	C
77	ANTENNA	TENSOR	4108	2011	5/25/1999	5/25/2000	12	UC
83	ANTENNA	EMCO	3146	1554	12/1/1999	12/1/2000	12	V
91	ANTENNA	EMCO	3115	2023	5/22/2000	5/22/2001	12	C
391	RECEIVER	R & S	ESVP	861744/015	4/18/2000	4/18/2001	12	C



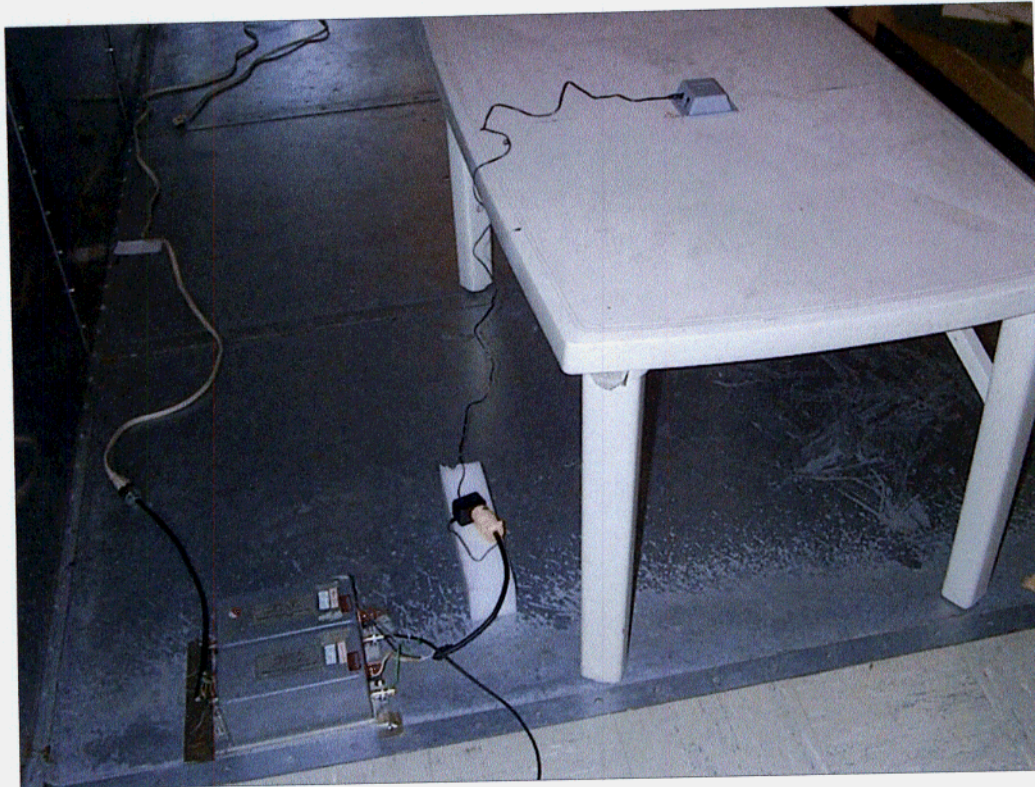
4.0 TEST RESULTS

4.1 Conducted Power Line Measurements, Paragraph 15.209

The **Invisible Sentry** was tested to the FCC Part 15 requirements of Para. 209.

Figure 1 is a photograph of the Power Line Emissions Test Setup. Figure 2 and 3 are the test results for the phase and neutral power line emission tests.

The Power Line Emissions were within the 15.209 conducted limits.



Name: DCP01655.JPG
Dimensions: 1152 x 864 pixels

POWER LINE CONDUCTED EMISSIONS TEST SETUP

FIGURE 1

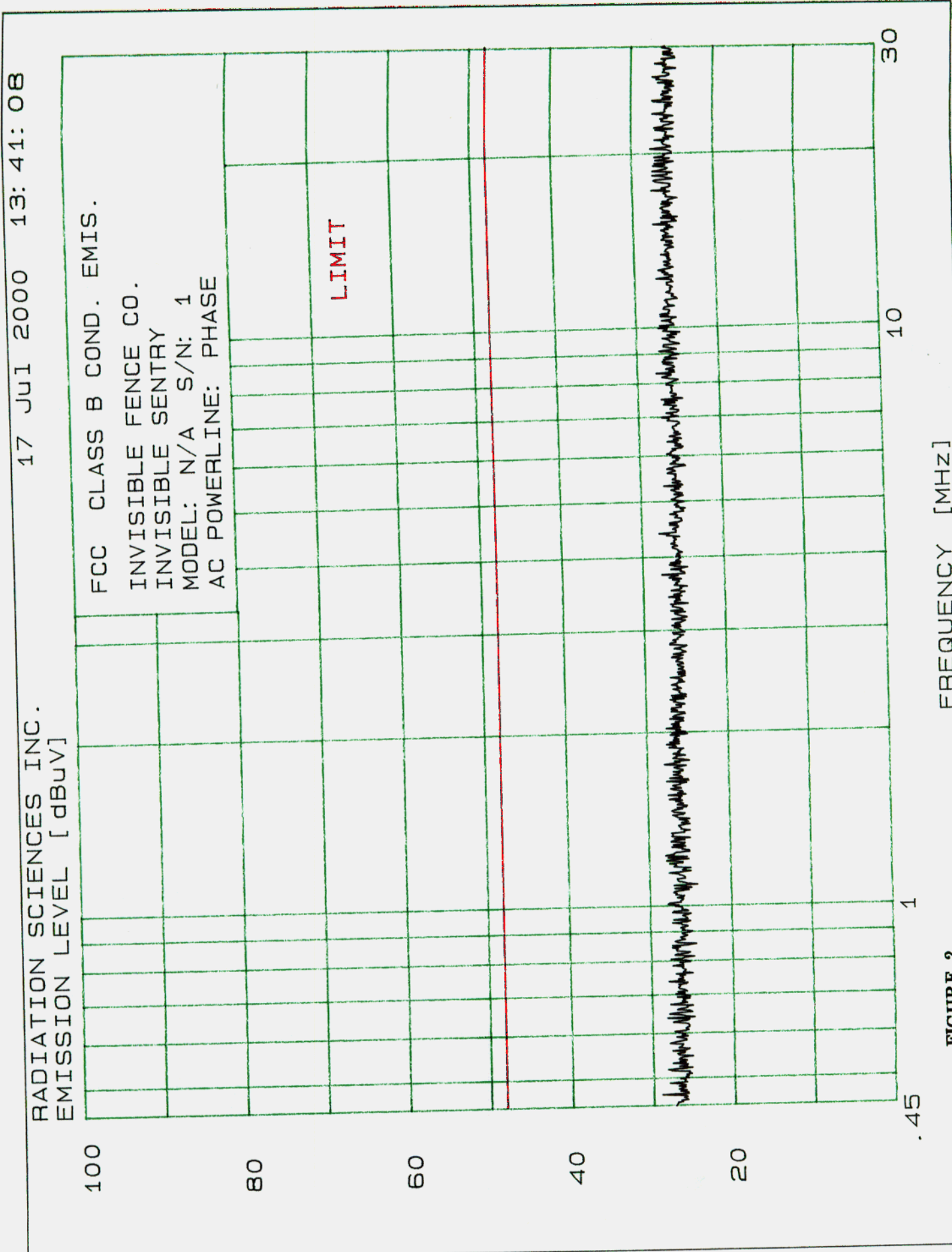


FIGURE 2

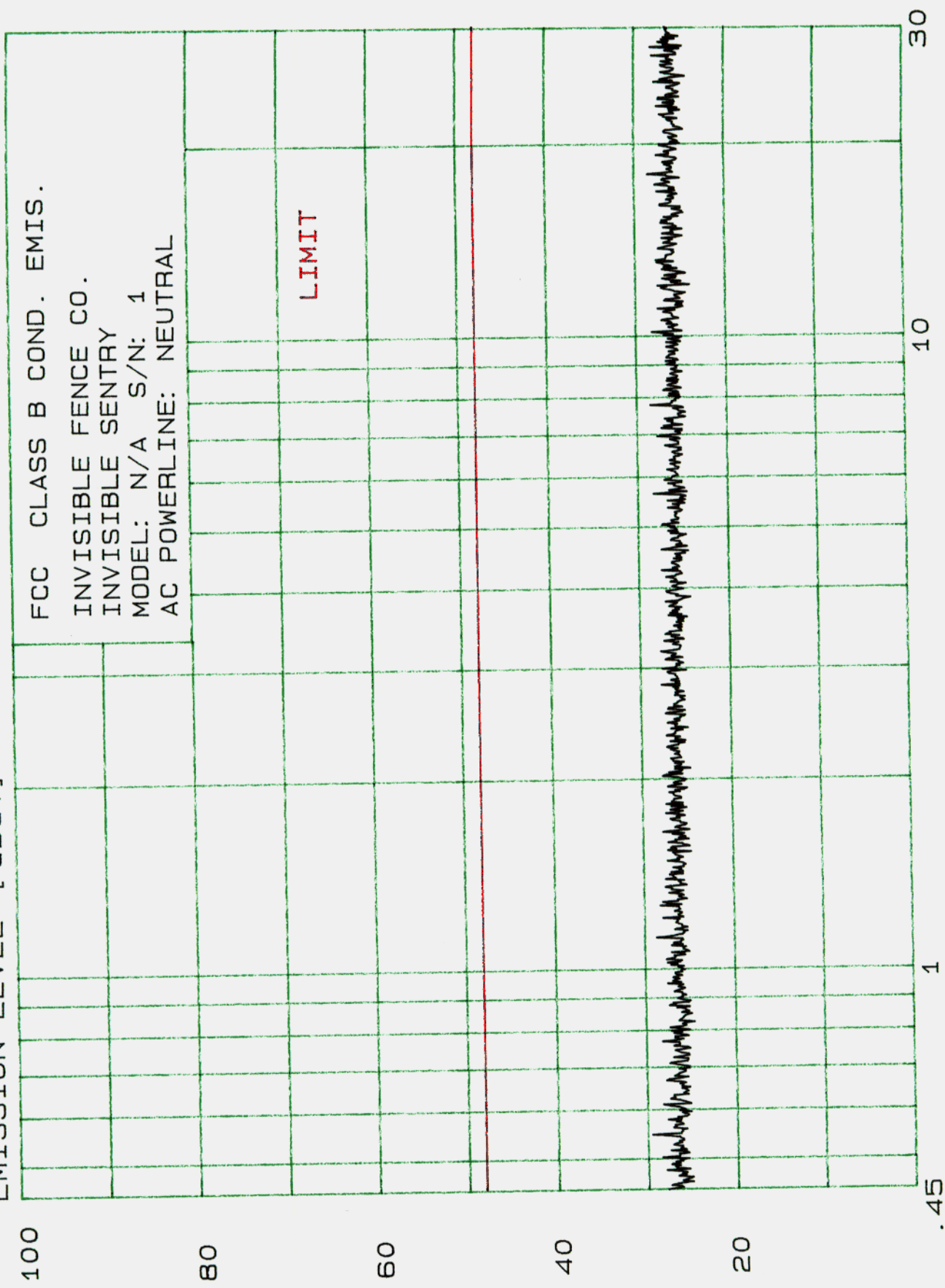


FIGURE 3 FREQUENCY [MHz]



4.2 Radiated Emission Measurements, Paragraph 15.249

Radiated emission measurements were recorded for the test sample at a distance of 3 meters. The results of field strength measurements are illustrated on Figure 4 for Intentional radiators. Figure 5 is a photograph of the test setup. Radiated emissions were measured with the antenna in both the horizontal and vertical polarizations. The antenna was raised 1 to 4 meters in height and the equipment under test (EUT) was rotated 360° to maximize the mission.

During radiated emissions testing the EUT was scanned from 30MHz to 9.165GHz (10 times the fundamental).

ALL LEVELS COMPLY WITH APPLICABLE LIMITS.

Radiated Emission for Intentional Radiators

[illegible]

RADIATED EMISSIONS TEST RESULTS

FIGURE 4



Name: DCP01651.JPG
Dimensions: 1152 x 864 pixels

RADIATED EMISSIONS TEST SETUP

FIGURE 5

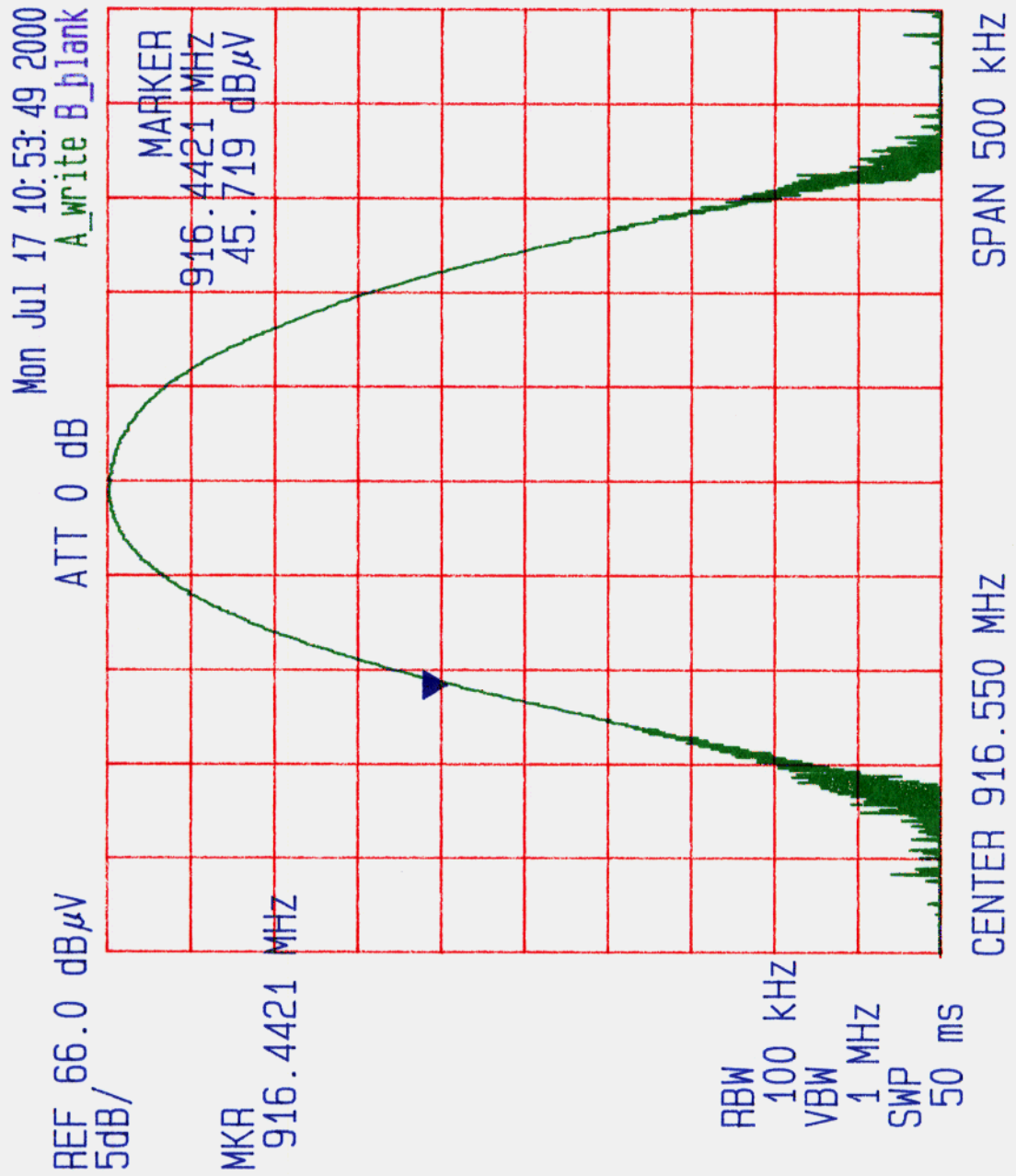


4.3 Emission Bandwidth, FCC Part 15, Paragraph 15.231c

The bandwidth requirement for intentional transmitters operating above 900MHz is that the bandwidth of the emission shall be no wider than 0.5% of the center frequency of the device measured at the 20dB points.

The center frequency of the **Model Invisible Sentry** is 916.546MHz.

The measured bandwidth of the **Invisible Sentry** is 225kHz as shown on the bandwidth data sheet, Figures 6 and 7.



BANDWIDTH PLOT

FIGURE 6



Company: **Invisible Fence Co.**

Model **Invisible Sentry**

Test Personnel: Chester Kosiorek

Date: 07/19/00

BANDWIDTH OF FUNDAMENTAL FREQUENCY

	Frequency (MHz)	Measurement (dBuV/m)
Center Frequency	916.550	66
20dB Down	916.442	46
20dB Down	916.667	46

20dB BANDWIDTH IS 225kHz

FIGURE 7