# TEST REPORT NO. RSI-2678E

# ELECTROMAGNETIC EMISSIONS EVALUATION TESTS

# PER FCC PART 15, CLASS B

# OF THE

# PERIMETER TECHNOLOGIES, INC.

# INDOOR WIRELESS TRANSMITTER

# PRODUCT # 10000037

# 10 FEBRUARY 2005

**PREPARED FOR:**

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# ADMINISTRATIVE DATA

**TEST PERFORMED:**

Measurement of Radiated and Conducted ElectroMagnetic Emissions.

**PURPOSE OF TEST:**

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

**EQUIPMENT UNDER TEST (EUT):**

**Model**: Indoor Wireless Transmitter

**Product #**: 10000037

**CONTRACT:**

Purchase Order Number: 6820

**TEST PERIOD:**

12 December 2004 through 4 January 2005

**TEST FACILITY:**

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

**TEST PERSONNEL AND COORDINATORS:**

| **Radiation Sciences Inc.** | **Perimeter Technologies, Inc.** |
|---|---|
| Ron Smith | Maria Touchton |
| John Kavalusky | |

## SUMMARY OF TEST RESULTS

The **Indoor Wireless Transmitter**, Product # **10000037**, manufactured by **Perimeter Technologies, Inc.** of Cincinnati, Ohio, configured as described within, **FULLY COMPLIES WITH THE REQUIREMENTS SET FORTH IN SUBPART B OF PART 15 OF THE FEDERAL COMMUNICATIONS COMMISSION RULES FOR CLASS B EQUIPMENT.**

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

## 1.0 INTRODUCTION

This document is a report of tests to determine the ElectroMagnetic Interference (EMI) characteristics of the **Indoor Wireless Transmitter**, Product # **10000037**, 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, diagrams, and photographs and the final results of testing are presented herein.

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 **Indoor Wireless Tx** manufactured by **Perimeter Technologies, Inc.** of Cincinnati, Ohio is a Pet Boundary Control Electronic Fencing Device operating at 14.7 kHz. The device Product # is **10000037**. The EUT was tested in the wired and wireless modes of operation. Note: the wire is 10 meters in length.

Hereinafter, the **Indoor Wireless Tx** will be referred to as the **EUT** (Equipment Under Test).

## 3.0 TEST INSTRUMENTATION

| RSI INV NO. | DESCRIPTION | MANUFACTURER | MODEL | SERIAL | CAL DUE DATE |
|---|---|---|---|---|---|
| 02 | PRE_AMPLIFIER | C.M.T. | LF51104N | 114 | 9/30/2005 |
| 32.1 | SPEC. ANALY. | H.P. | 8566B | 3638A08767 | 8/13/2005 |
| 33.1 | SPEC. ANALY. DISPLY | H.P. | | 3701A22258 | 8/13/2005 |
| 47 | ANTENNA | ANT.RES.Assoc. | BBH-500B | 275 | 12/13/2005 |
| 75 | ANTENNA | TENSOR | 4108 | 204 | 6/11/2005 |
| 80 | ANTENNA | AMP.RES.Assoc. | AT1000 | 4094-025 | 6/14/2005 |
| 229 | LISN | SOLAR | 8028-50-TS-24-BNC | 009347 | 8/12/2005 |
| 230 | LISN | SOLAR | 8028-50-TS-24-BNC | 009348 | 8/12/2005 |
| 390 | RECEIVER | R & S | ESH 3 | 861742/012 | 4/18/2005 |
| 391 | RECEIVER | R & S | ESVP | 861744/015 | 6/15/2005 |
| 501 | MINI MAST | EMCO | 2075-2 | 0002-2278 | |
| 502 | TURNTABLE | EMCO | 2065-1.21 | 0001-2156 | |
| 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 diagrams and photographs, and procedures used for 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 rules at the Radiation Sciences Inc. (RSI) Open Area Test Site (OATS), located at 3131 Detwiler Road in Harleysville, Pennsylvania.

The **EUT** was tested for Radiated Emissions in both the wired and wireless modes of operation.

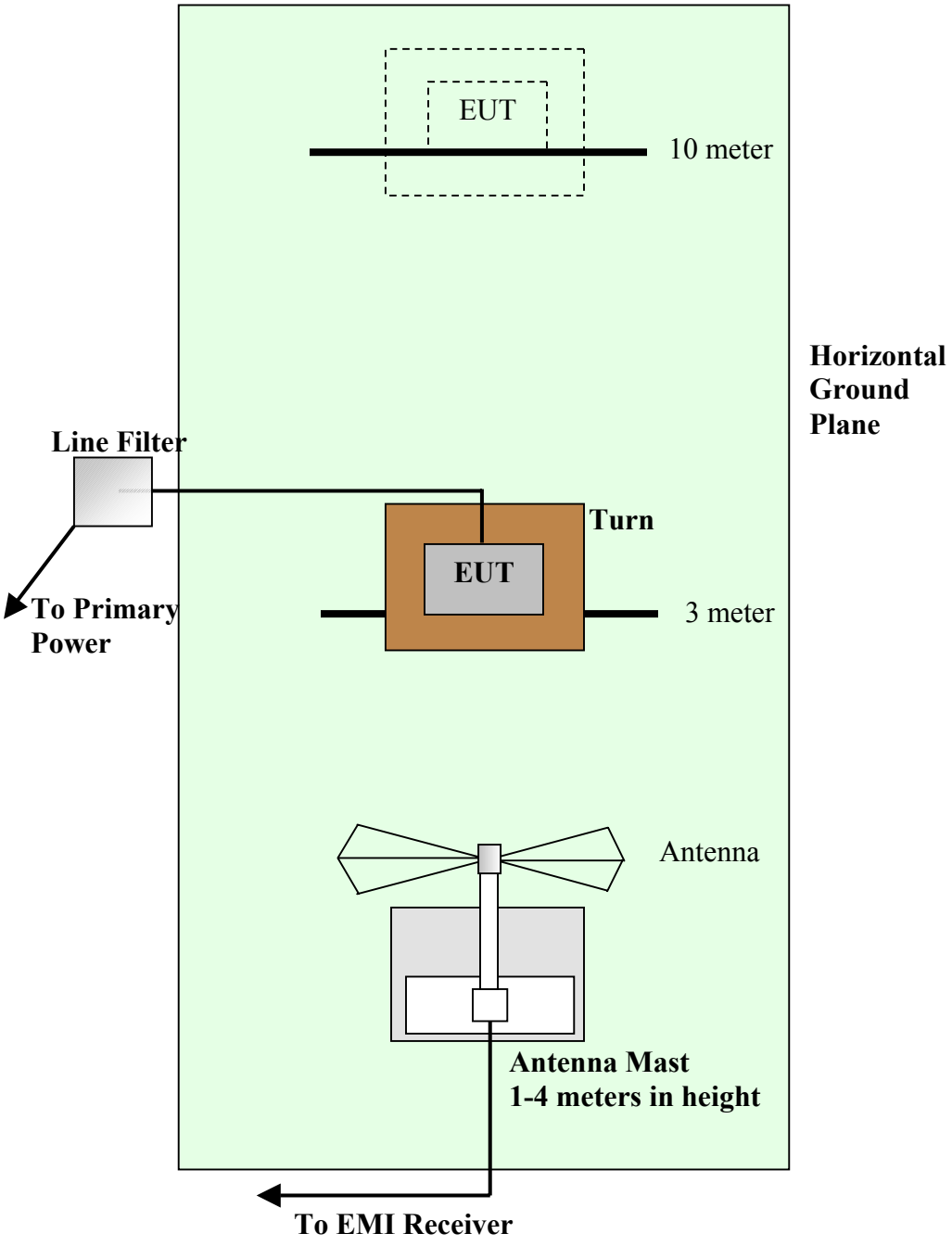
Prior to testing, the **EUT** was pre-scanned with a near field probe and spectrum analyzer. The probe was moved over the entire surface and cables of the **EUT** and all emitting frequencies were recorded.

The **EUT** was then placed on a non-conductive turntable 80cm above the ground plane. Power was supplied via a filtered power source. The appropriate receiving antenna was placed on an antenna mast at a 3 meter distance from the **EUT**. The complete frequency range of 30MHz to 1000MHz was scanned with a Rohde and 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 specification limits.

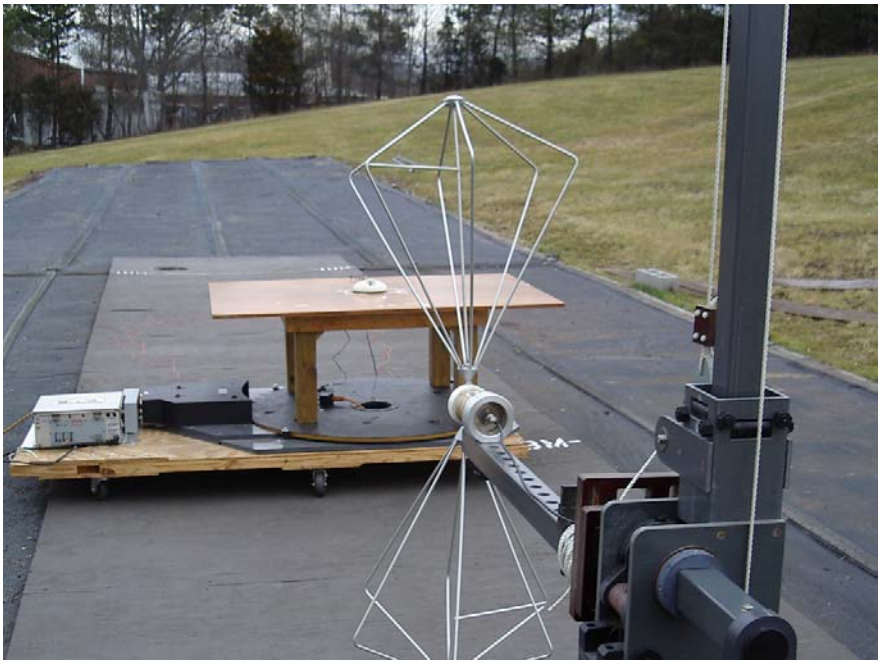
The test setup diagram is shown in Figure 1 and photographs of the test setup are shown in Figure 2.

The results of Radiated Emissions testing are shown in Figures 3 through 6.

**THE EUT COMPLIES WITH THE CLASS B LIMITS OF FCC PART 15 FOR RADIATED EMISSIONS (PARA. 15.109)**.




**Radiated Emissions Test Setup Diagram**
**Figure 1**



**Radiated Emissions Test Setup Photographs**
**Figure 2**

## Electromagnetic Emission Test

| EUT | | | |
|---|---|---|---|
| | **Manufacturer:** Perimeter Technologies<br>**Model #:** Indoor Wireless Tx<br>**Serial #:** N/A<br>**Mode:** On **(Wired & Wireless)** | **Date:** 1/11/05<br>**Test Instruments:** RSI # 75, 80, 391, 501,502,503,708<br>**Frequency Range:** 30-1000MHz | Test Code **RE**<br>Technician<br>Test Engineer |

| | | |
|---|---|---|
| **Temperature:** 41.0°F<br>**Humidity:** 63% | **Additional Info: Warm-up time 30 minutes** | **Test Spec:** FCC Part 15<br>Unintentional Radiator Class B |
| **Radiated**<br>Distance: 3 m<br>Antenna: Biconical | [x] HORIZ. [ ] BB [ ] NB<br>[ ] VERT. [ ] H [ ] E | **Conducted**<br>Line:<br>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.** | |
| **WIRED UNIT** | | | | | | | | | |
| **30.0** | 5.0 | | 14.0 | 1.0 | | **20.0** | 100 | 0.0 | Horizontal |
| **41.6** | 2.0 | | 12.0 | 1.0 | | **15.0** | | | |
| **45.0** | 2.0 | | 11.5 | 1.0 | | **14.5** | | | |
| **60.1** | 2.0 | | 10.0 | 1.0 | | **13.0** | | | |
| **80.0** | 7.0 | | 8.0 | 2.0 | | **17.0** | | | |
| **120.0** | 6.0 | | 11.0 | 2.0 | | **19.0** | | | |
| **200.0** | 6.0 | | 14.0 | 2.0 | | **22.0** | | | |
| **500.0** | -1.1 | | 18.0 | 4.0 | | **20.9** | | | |
| **700.0** | 0.2 | | 22.0 | 5.0 | | **27.2** | | | |
| **1000.0** | 0.2 | | 24.0 | 6.0 | | **30.2** | | | |
| **WIRELESS UNIT** | | | | | | | | | |
| **30.0** | 3.0 | | 14.0 | 1.0 | | **18.0** | 100 | 0.0 | Horizontal |
| **41.3** | 1.5 | | 12.0 | 1.0 | | **14.5** | | | |
| **60.1** | 1.5 | | 1.7 | 1.0 | | **13.7** | | | |
| **80.0** | 7.0 | | 8.0 | 2.0 | | **17.0** | | | |
| **120.0** | 1.5 | | 11.0 | 2.0 | | **14.5** | | | |
| **200.0** | 6.0 | | 14.0 | 2.0 | | **22.0** | | | |
| **500.0** | -1.1 | | 18.0 | 4.0 | | **20.9** | | | |
| **700.0** | 0.2 | | 22.0 | 5.0 | | **27.2** | | | |
| **1000.0** | 0.2 | | 24.0 | 6.0 | | **30.2** | | | |

**Figure 3**

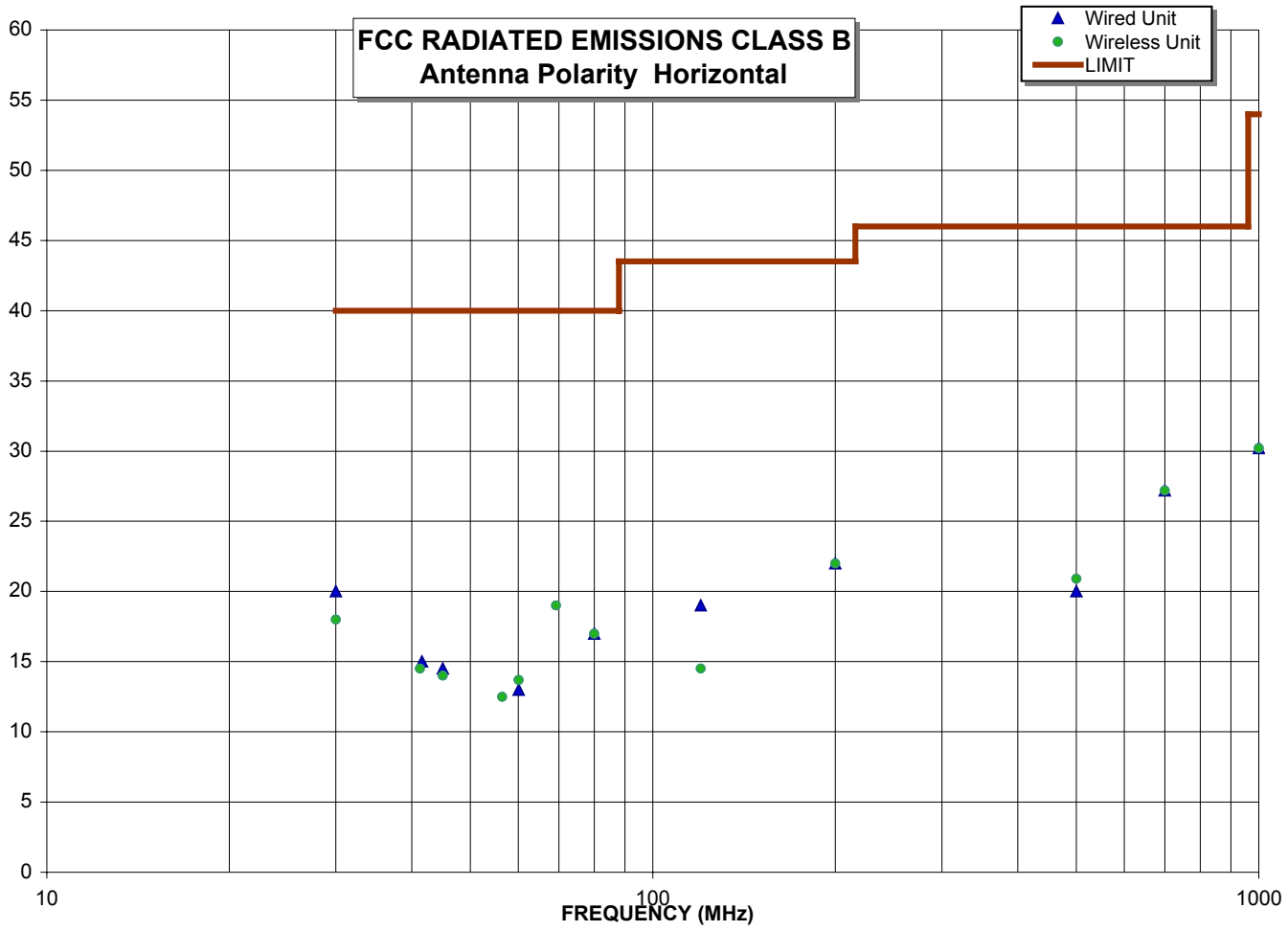

FCC RADIATED EMISSIONS CLASS B
Antenna Polarity Horizontal
Wired Unit
Wireless Unit
LIMIT
60
55
50
45
40
35
30
25
20
15
10
5
0
10
100
1000
FREQUENCY (MHz)

**Figure 4**

## Electromagnetic Emission Test

| EUT | | | |
|---|---|---|---|
| | **Manufacturer:** Perimeter Technologies<br>**Model #:** Indoor Wireless Tx<br>**Serial #:** N/A<br>**Mode:** On **(Wired & Wireless)** | **Date:** 1/11/05<br>**Test Instruments:** RSI # 75, 80, 391, 503 | Test Code **RE**<br>Technician |
| | | **Frequency Range:** 30-1000MHz | Test Engineer |

| | | |
|---|---|---|
| **Temperature:** 41.0°F<br>**Humidity:** 63% | **Additional Info: Warm-up time 30 minutes** | **Test Spec:** FCC Part 15<br>Unintentional Radiator Class B |

| | | | |
|---|---|---|---|
| **Radiated**<br>Distance: 3 m<br>Antenna: Biconical /Log.P | ☐ HORIZ. ☐ BB ☐ NB<br>☒ VERT. ☐ H ☐ E | **Conducted**<br>Line:<br>Function: | ☐ BB<br>☐ 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. | |
| **WIRED UNIT** | | | | | | | | | |
| **39.3** | 20.4 | | 11.0 | 1.0 | | **32.4** | 100 | 120 | Vertical |
| **39.5** | 22.0 | | 11.0 | 1.0 | | **34.0** | | 120 | |
| **41.3** | 20.5 | | 11.0 | 1.0 | | **32.5** | | 1.60 | |
| **69.2** | 15.0 | | 8.0 | 1.0 | | **24.0** | | 100 | |
| **120.0** | 10.0 | | 8.0 | 1.0 | | **19.0** | | 100 | |
| **200.0** | 3.0 | | 14.0 | 2.0 | | **19.0** | | 0.0 | |
| **500.0** | 2.0 | | 18.5 | 2.0 | | **22.5** | | | |
| **700.0** | 0.2 | | 22.0 | 5.0 | | **21.4** | | | |
| **1000.0** | 0.2 | | 24.0 | 6.0 | | **30.2** | | | |
| | | | | | | | | | |
| **WIRELESS UNIT** | | | | | | | | | |
| **36.0** | 12.0 | | 11.0 | 1.0 | | **24.0** | 100 | 0.0 | Vertical |
| **41.3** | 17.6 | | 11.0 | 1.0 | | **29.6** | | 249 | |
| **45.4** | 20.5 | | 11.0 | 1.0 | | **32.5** | | 246 | |
| **47.6** | 17.9 | | 11.0 | 1.0 | | **29.9** | | 183 | |
| **56.4** | 10.0 | | 10.0 | 1.0 | | **21.0** | | 183 | |
| **69.2** | 10.0 | | 8.0 | 1.0 | | **19.0** | | 183 | |
| **120.0** | 4.0 | | 11.0 | 2.0 | | **17.0** | | 0.0 | |
| **200.0** | 2.0 | | 14.0 | 2.0 | | **18.0** | | | |
| **500.0** | -1.4 | | 18.5 | 4.0 | | **21.1** | | | |
| **700.0** | 0.2 | | 22.0 | 5.0 | | **22.2** | | | |
| **1000.0** | 0.2 | | 24.0 | 6.0 | | **30.2** | | | |
| | | | | | | | | | |

**Figure 5**

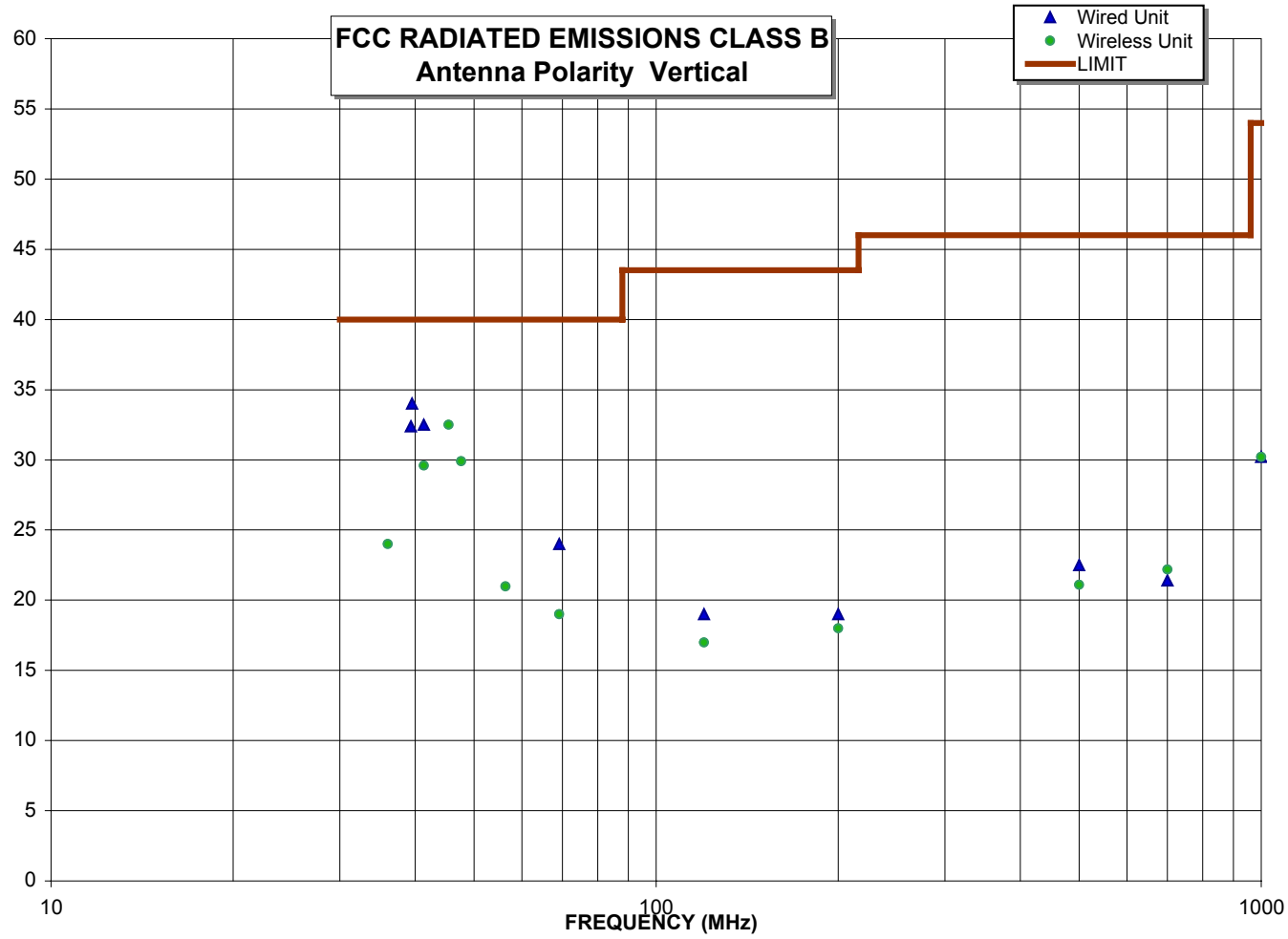

FCC RADIATED EMISSIONS CLASS B
Antenna Polarity Vertical
Wired Unit
Wireless Unit
LIMIT
60
55
50
45
40
35
30
25
20
15
10
5
0
10
100
1000
FREQUENCY (MHz)

**Figure 6**

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

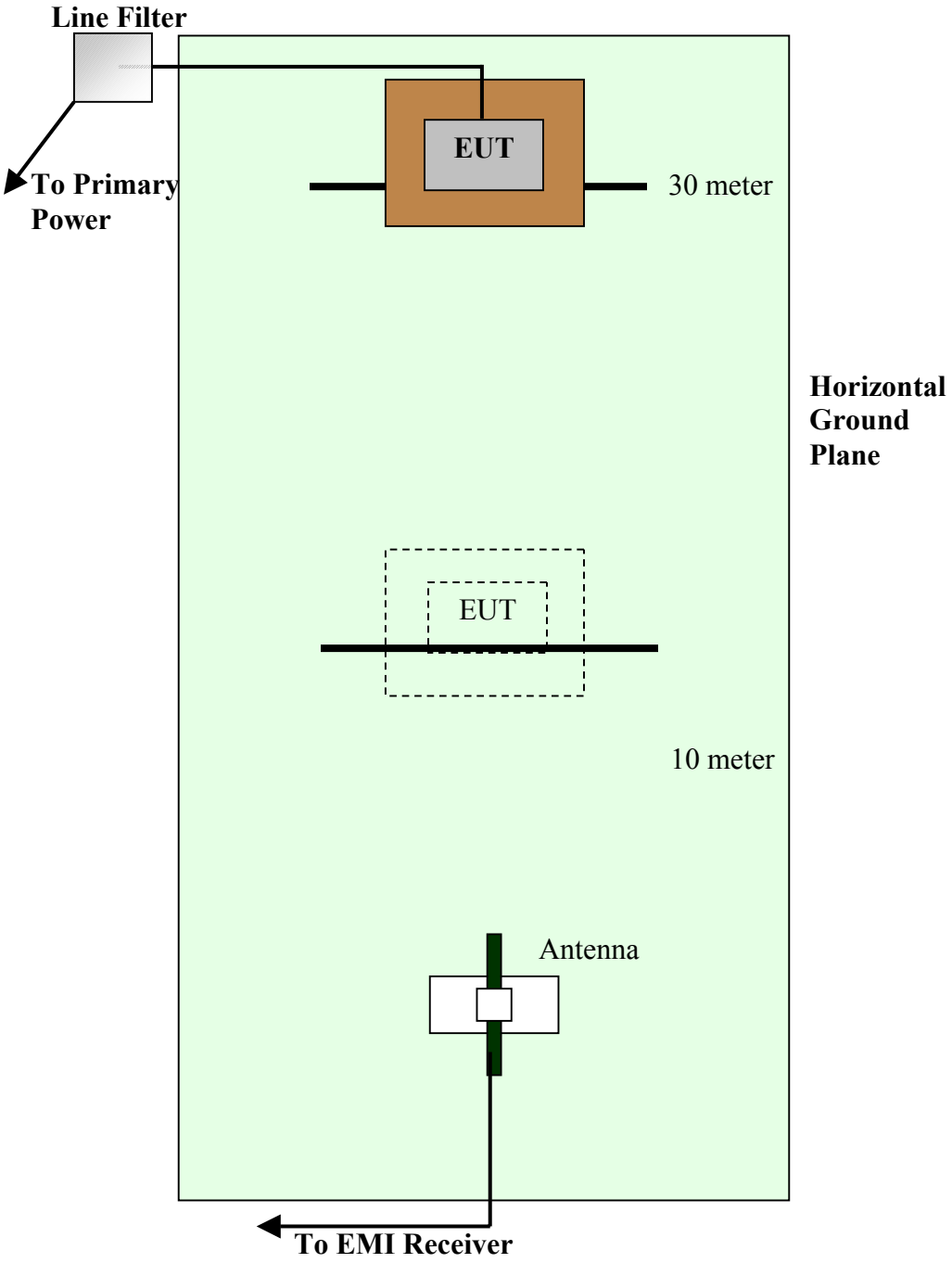
This section contains the Radiated Emissions test results for intentional transmitters.

The **EUT** was set up at a 30 meter distance from the antenna. The **EUT** wire was placed in a 10 meter loop. Testing was performed with the antenna in three planes.

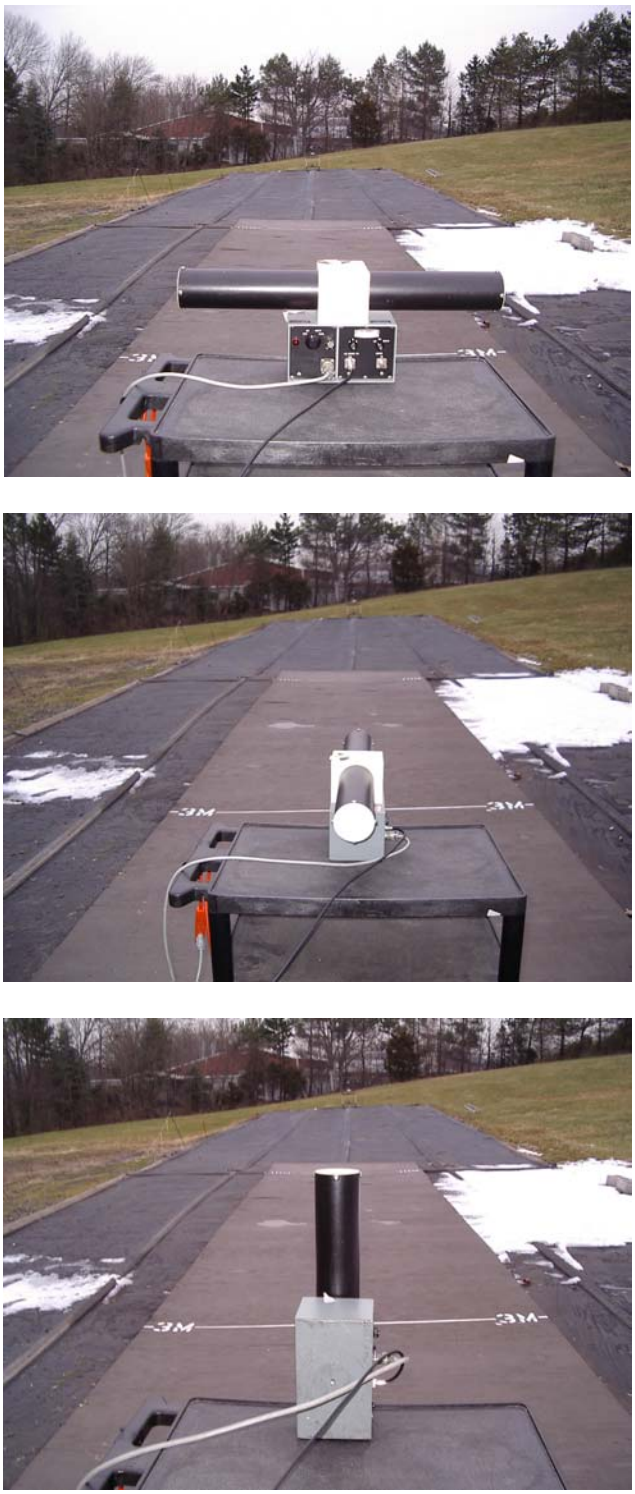
The test setup diagram is shown in Figure 7 and photographs of the test setup are shown in Figure 8.

The results of Radiated Emissions testing are shown in Figures 9 through .

**THE EUT COMPLIES WITH THE CLASS B LIMITS OF FCC PART 15 FOR RADIATED EMISSIONS (PARA. 15.209)**.




**Radiated Emissions Test Setup Diagram (Top View)**
**Figure 7**




**Radiated Emission Test Setup Photographs**
**Figure 8**

## Electromagnetic Emission Test

| EUT | | | |
|---|---|---|---|
| | **Manufacturer:** Perimeter Technologies<br>**Model #:** Indoor Wireless Tx Pet Stop Device<br>**Serial #:** N/A<br>**Mode:** On **(Wire attached)** | **Date:** 12/30/04<br>**Test Instruments:** RSI # 47, # 390<br>**Frequency Range:** 14.7kHz to 147 kHz | Test Code **RE**<br>Technician<br>Test Engineer |

| | | |
|---|---|---|
| **Temperature:** 70 °F<br>**Humidity:** 23 % | **Additional Info:** Limits = 47.5 dBμV at 10 kHz<br>Decreasing to 37.5 dBμV at 100 kHz | **Test Spec:** FCC Part 15 Intentional Radiator |

| | | | |
|---|---|---|---|
| **Radiated**<br>Distance:<br>Antenna: BBH 500 B | ☐ HORIZ. ☐ BB ☐ NB<br>☐ VERT. ☐ H ☐ E | **Conducted**<br>Line:<br>Function: | ☐ BB<br>☐ NB |

| FREQ. | IND. Level | Convert to | Correction Factors ANT. | Pre-Amp | Distance 30-300m | Final Level QP | Antenna Height | Antenna Orientation | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| kHz | dBμV | dBμV | dB | dB | dB | dBμV/m | meter | | Signal |
| **14.7** | 24.0 | +51.5 | -8.1 | -43 | -40 | **-15.6** | 1 | A | EUT |
| **29.4** | 15.0 | | -14.8 | | | **-46.9** | | | Ambient |
| **44.1** | 13.4 | | -10.1 | | | **-28.2** | | | EUT |
| **58.8** | 6.0 | | -10.1 | | | **-35.6** | | | Ambient |
| **73.5** | 8.0 | | -8.1 | | | **-31.6** | | | Ambient |
| **88.2** | -1.4 | | -6.1 | | | **-39.0** | | | Ambient |
| **102.9** | 13.0 | | -15.4 | | | **-33.9** | | | Ambient |
| **117.6** | 3.6 | | -13.4 | | | **-41.3** | | | Ambient |
| **132.3** | 5.0 | | -11.4 | | | **-37.9** | | | Ambient |
| **147.0** | -1.7 | | -9.4 | | | **-42.6** | | | Ambient |
| | | | | | | | | | |
| **14.7** | 24.0 | +51.5 | -8.1 | -43 | -40 | **-15.6** | 1 | B | EUT |
| **29.4** | 15.0 | | -14.8 | | | **-46.9** | | | Ambient |
| **44.1** | 15.0 | | -10.1 | | | **-26.2** | | | EUT |
| **58.8** | 6.0 | | -10.1 | | | **-35.6** | | | EUT |
| **73.5** | 6.0 | | -8.1 | | | **-33.6** | | | EUT |
| **88.2** | -1.4 | | -6.1 | | | **-39.0** | | | Ambient |
| **102.9** | 14.0 | | -15.4 | | | **-32.9** | | | Ambient |
| **117.6** | 2.6 | | -13.4 | | | **-42.3** | | | Ambient |
| **132.3** | .8 | | -11.4 | | | **-42.1** | | | Ambient |
| **147.0** | -2.0 | | -9.4 | | | **-42.9** | | | Ambient |
| | | | | | | | | | |
| | | | | | | | | | |

**Figure 9**

## Electromagnetic Emission Test

| EUT | | | |
|---|---|---|---|
| | **Manufacturer:** Perimeter Technologies<br>**Model #:** Indoor Wireless Tx Pet Stop Device<br>**Serial #:** N/A<br>**Mode:** On **(Wire attached)** | **Date:** 12/30/04<br>**Test Instruments:** RSI # 47, # 390<br>**Frequency Range:** 14.7kHz to 147kHz | Test Code **RE**<br>Technician<br>Test Engineer |

| | | |
|---|---|---|
| **Temperature:** 70 °F<br>**Humidity:** 23 % | **Additional Info:** Limits = 47.5 dBμV at 10 kHz<br>Decreasing to 37.5 dBμV at 100 kHz | **Test Spec:** FCC Part 15 Intentional Radiator |

| | | | |
|---|---|---|---|
| **Radiated**<br>Distance:<br>Antenna: BBH 500 B | ☐ HORIZ. ☐ BB ☐ NB<br>☐ VERT. ☐ H ☐ E | **Conducted**<br>Line:<br>Function: | ☐ BB<br>☐ 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** | 24.3 | +51.5 | -8.1 | -43 | -40 | **-15.3** | 1 | C | EUT |
| **29.4** | 15.1 | | -14.8 | | | **-46.8** | | | EUT |
| **44.1** | 14.1 | | -10.1 | | | **27.5** | | | EUT |
| **58.8** | 5.8 | | -10.1 | | | **-35.8** | | | EUT |
| **73.5** | 3.9 | | -8.1 | | | **-35.7** | | | EUT |
| **88.2** | -2.0 | | -6.1 | | | **-39.6** | | | Ambient |
| **102.9** | 7.4 | | -15.4 | | | **-39.5** | | | Ambient |
| **117.6** | 2.8 | | -13.4 | | | **-42.1** | | | Ambient |
| **132.3** | .3 | | -11.4 | | | **-42.6** | | | Ambient |
| **147.0** | -2.1 | | -9.4 | | | **-43.0** | | | Ambient |

**Figure 10**

## Electromagnetic Emission Test

| EUT | | | |
|---|---|---|---|
| | **Manufacturer:** Perimeter Technologies<br>**Model #:** Indoor Wireless Tx Pet Stop Device<br>**Serial #:** N/A<br>**Mode:** On **(Wireless)** | **Date:** 12/30/04<br>**Test Instruments:** RSI # 47, # 390<br>**Frequency Range:** 14.7kHz to 147 kHz | Test Code **RE**<br>Technician<br>Test Engineer |

| | | |
|---|---|---|
| **Temperature:** 70 °F<br>**Humidity:** 23 % | **Additional Info:** Limits = 47.5 dBμV at 10 kHz<br>Decreasing to 37.5 dBμV at 100 kHz | **Test Spec:** FCC Part 15<br>Intentional Radiator |

| | | | |
|---|---|---|---|
| **Radiated**<br>Distance:<br>Antenna: BBH 500 B | ☐ HORIZ. ☐ BB ☐ NB<br>☐ VERT. ☐ H ☐ E | **Conducted**<br>Line:<br>Function: | ☐ BB<br>☐ 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** | 18.0 | +51.5 | -8.1 | -43 | -40 | **-21.6** | 1 | A | Ambient |
| **29.4** | 15.0 | | -14.8 | | | **-31.3** | | | Ambient |
| **44.1** | 9.0 | | -10.1 | | | **-32.6** | | | Ambient |
| **58.8** | 5.0 | | -10.1 | | | **-36.6** | | | Ambient |
| **73.5** | 7.0 | | -8.1 | | | **-32.6** | | | Ambient |
| **88.2** | -1.2 | | -6.1 | | | **-38.8** | | | Ambient |
| **102.9** | 12.0 | | -15.4 | | | **-34.9** | | | Ambient |
| **117.6** | 4.0 | | -13.4 | | | **-40.9** | | | Ambient |
| **132.3** | 5.0 | | -11.4 | | | **-37.9** | | | Ambient |
| **147.0** | -1.7 | | -9.4 | | | **-42.6** | | | Ambient |
| | | | | | | | | | |
| **14.7** | 18.0 | +51.5 | -8.1 | -43 | -40 | **-21.6** | 1 | B | Ambient |
| **29.4** | 15.0 | | -14.8 | | | **-31.3** | | | Ambient |
| **44.1** | 9.0 | | -10.1 | | | **-32.6** | | | Ambient |
| **58.8** | 5.0 | | -10.1 | | | **-36.6** | | | Ambient |
| **73.5** | 3.0 | | -8.1 | | | **-36.6** | | | Ambient |
| **88.2** | -1.6 | | -6.1 | | | **-39.2** | | | Ambient |
| **102.9** | 13.0 | | -15.4 | | | **-33.9** | | | Ambient |
| **117.6** | 3.0 | | -13.4 | | | **-41.9** | | | Ambient |
| **132.3** | 1.0 | | -11.4 | | | **-41.9** | | | Ambient |
| **147.0** | -1.7 | | -9.4 | | | **-42.6** | | | Ambient |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Figure 11**

## Electromagnetic Emission Test

| EUT | | | |
|---|---|---|---|
| | **Manufacturer:** Perimeter Technologies<br>**Model #:** Indoor Wireless Tx Pet Stop Device<br>**Serial #:** N/A<br>**Mode:** On **(Wireless)** | **Date:** 12/30/04<br>**Test Instruments:** RSI # 47, # 390<br>**Frequency Range:** 14.7kHz to 147kHz | Test Code **RE**<br>Technician<br>Test Engineer |

| | | |
|---|---|---|
| **Temperature:** 70 °F<br>**Humidity:** 23 % | **Additional Info:** Limits = 47.5 dBμV at 10 kHz<br>Decreasing to 37.5 dBμV at 100 kHz | **Test Spec:** FCC Part 15 Class B |

| | | | |
|---|---|---|---|
| **Radiated**<br>Distance:<br>Antenna: BBH 500 B | ☐ HORIZ. ☐ BB ☐ NB<br>☐ VERT. ☐ H ☐ E | **Conducted**<br>Line:<br>Function: | ☐ BB<br>☐ 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** | 18.0 | +51.5 | -8.1 | -43 | -40 | **-21.6** | 1 | C | Ambient |
| **29.4** | 15.0 | | -14.8 | | | **-31.3** | | | Ambient |
| **44.1** | 9.0 | | -10.1 | | | **-32.6** | | | Ambient |
| **58.8** | 4.0 | | -10.1 | | | **-37.6** | | | Ambient |
| **73.5** | .7 | | -8.1 | | | **-38.9** | | | Ambient |
| **88.2** | -1.7 | | -6.1 | | | **-34.8** | | | Ambient |
| **102.9** | 8.0 | | -15.4 | | | **-38.9** | | | Ambient |
| **117.6** | 4.0 | | -13.4 | | | **-40.9** | | | Ambient |
| **132.3** | .7 | | -11.4 | | | **-42.2** | | | Ambient |
| **147.0** | -1.7 | | -9.4 | | | **-42.6** | | | Ambient |

**Figure 12**

## 4.3 Conducted Emissions Test Results

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

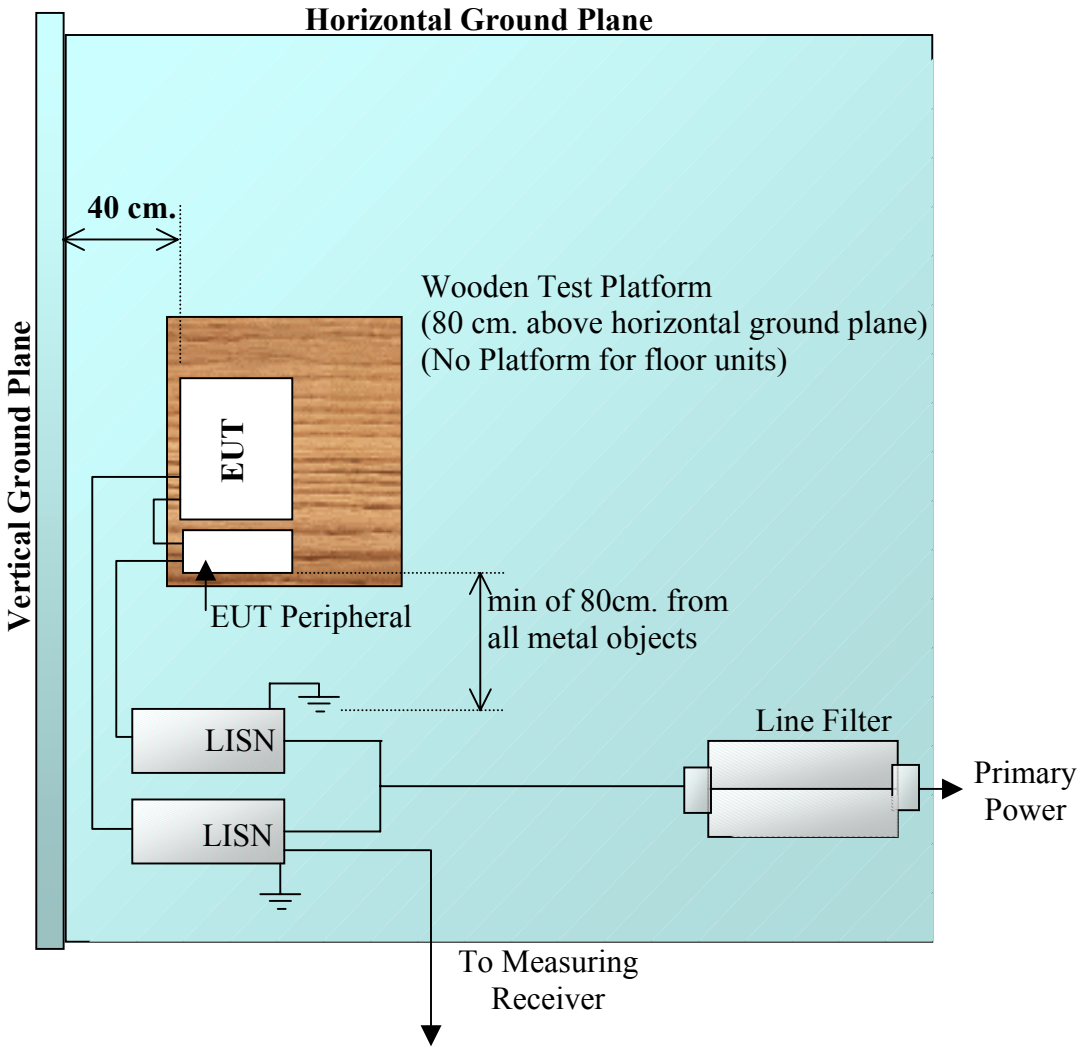
The **EUT** was placed on a table 80cm above the ground plane in a shielded chamber. The rear of the **EUT** was positioned at the edge of a 1m x 1.5m tabletop that was 40cm from the vertical ground plane. Filtered power was fed through 50µs LISN's to the **EUT**. An HP Spectrum Analyzer system was used to find the peak values of the Conducted Emissions.

Peak levels that were above the limit were retested manually using a Rohde and Schwartz receiver in a Quasi Peak and Average detector function.

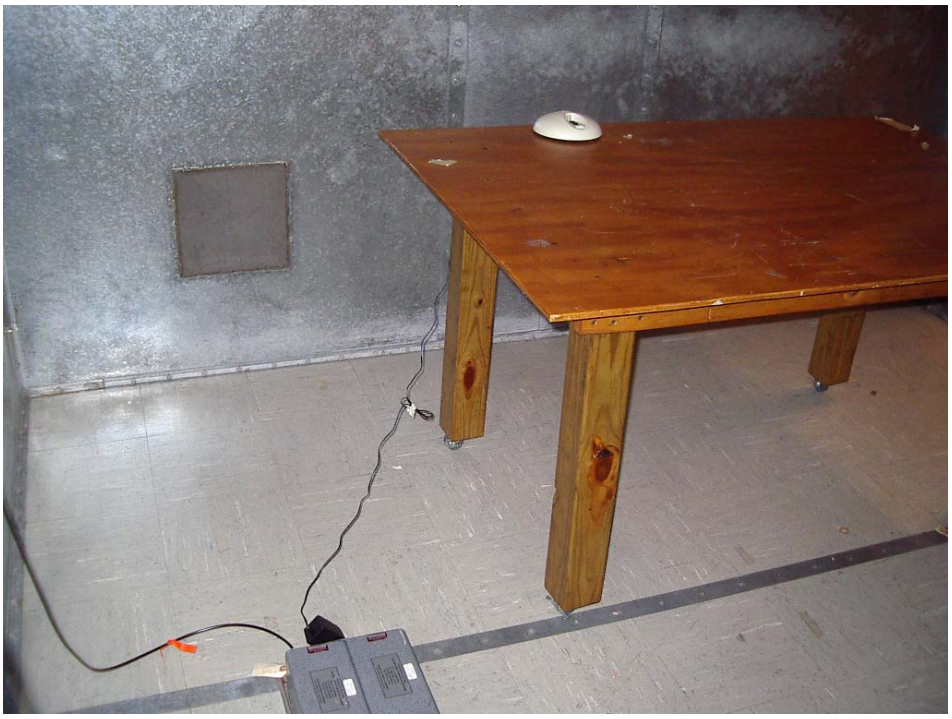
The test setup diagram is shown in Figure 13 and photographs of the test setup are shown in Figure 14.

The results of Conducted Emissions testing are shown in Figures 15 through .

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




**Conducted Emissions Test Setup Diagram (Top View)**
**Figure 13**



**Conducted Emissions Test Setup Photographs**
**Figure 14**

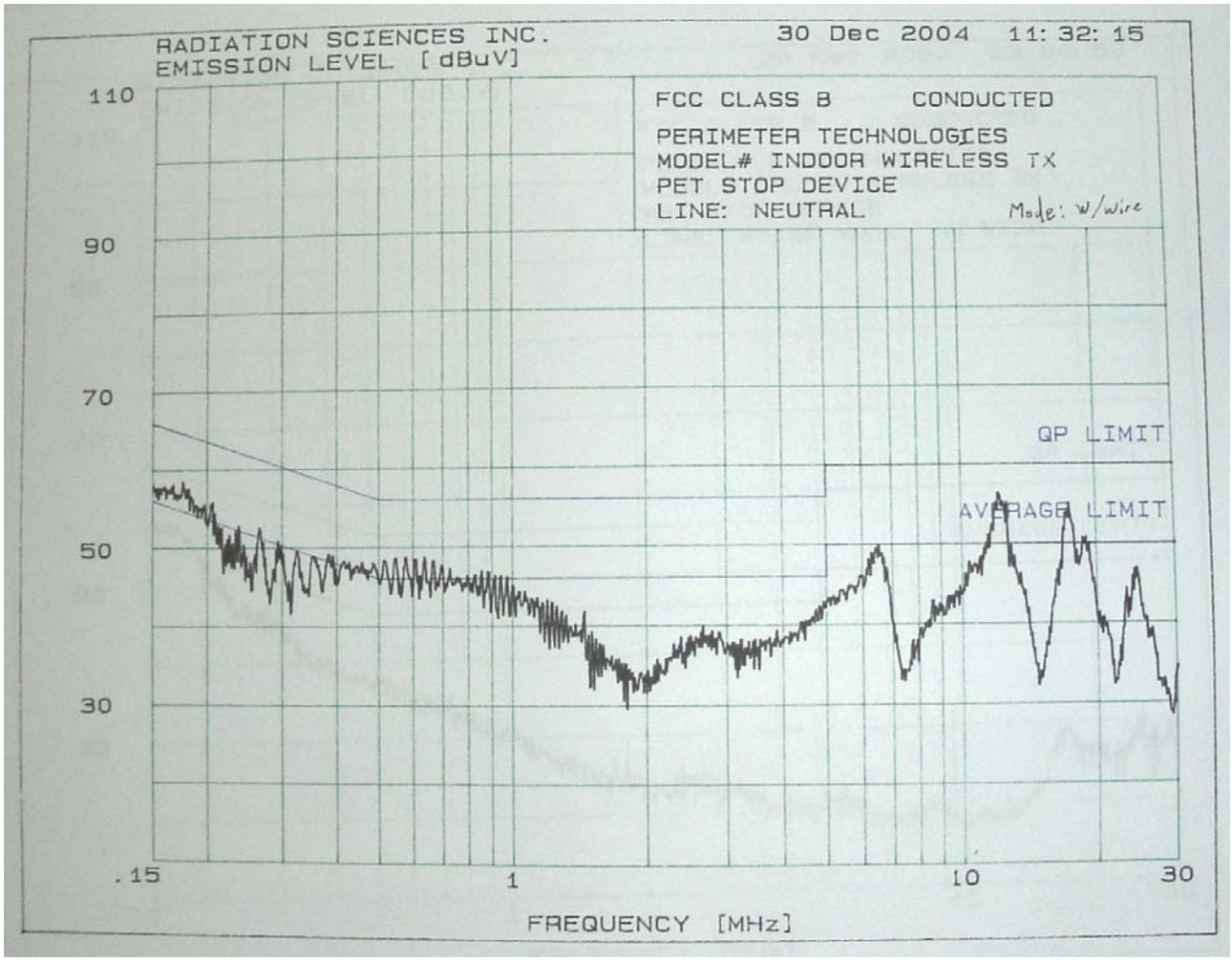

RADIATION SCIENCES INC.
EMISSION LEVEL [dBuV]
30 Dec 2004 11:32:15
FCC CLASS B CONDUCTED
PERIMETER TECHNOLOGIES
MODEL# INDOOR WIRELESS TX
PET STOP DEVICE
LINE: NEUTRAL
Mode: w/wire
QP LIMIT
AVERAGE LIMIT
110
90
70
50
30
.15
1
10
30
FREQUENCY [MHz]

**Figure 15**

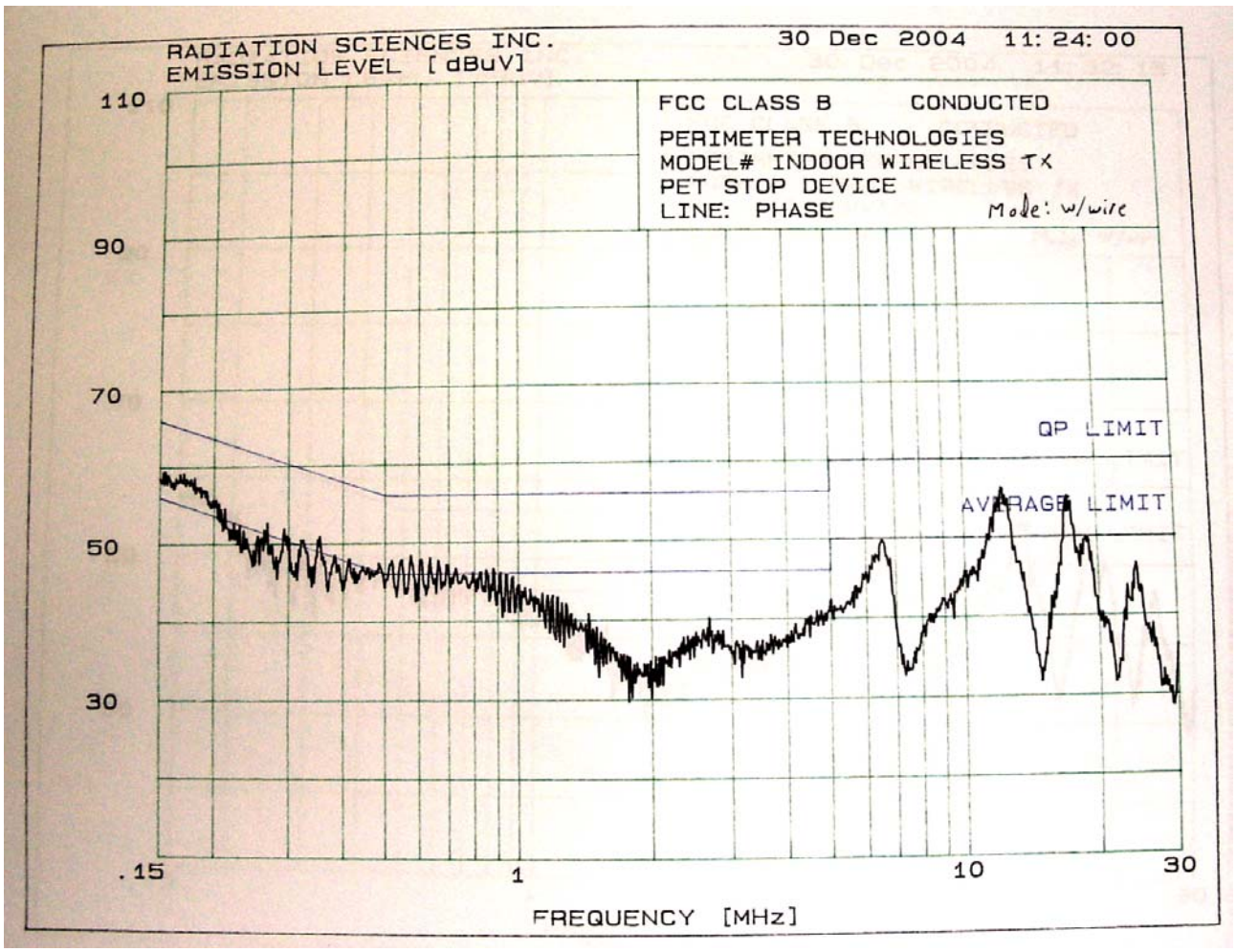

RADIATION SCIENCES INC.
EMISSION LEVEL [dBuV]
30 Dec 2004 11:24:00
FCC CLASS B CONDUCTED
PERIMETER TECHNOLOGIES
MODEL# INDOOR WIRELESS TX
PET STOP DEVICE
LINE: PHASE
Mode: w/wire
QP LIMIT
AVERAGE LIMIT
110
90
70
50
30
.15
1
10
30
FREQUENCY [MHz]

**Figure 16**

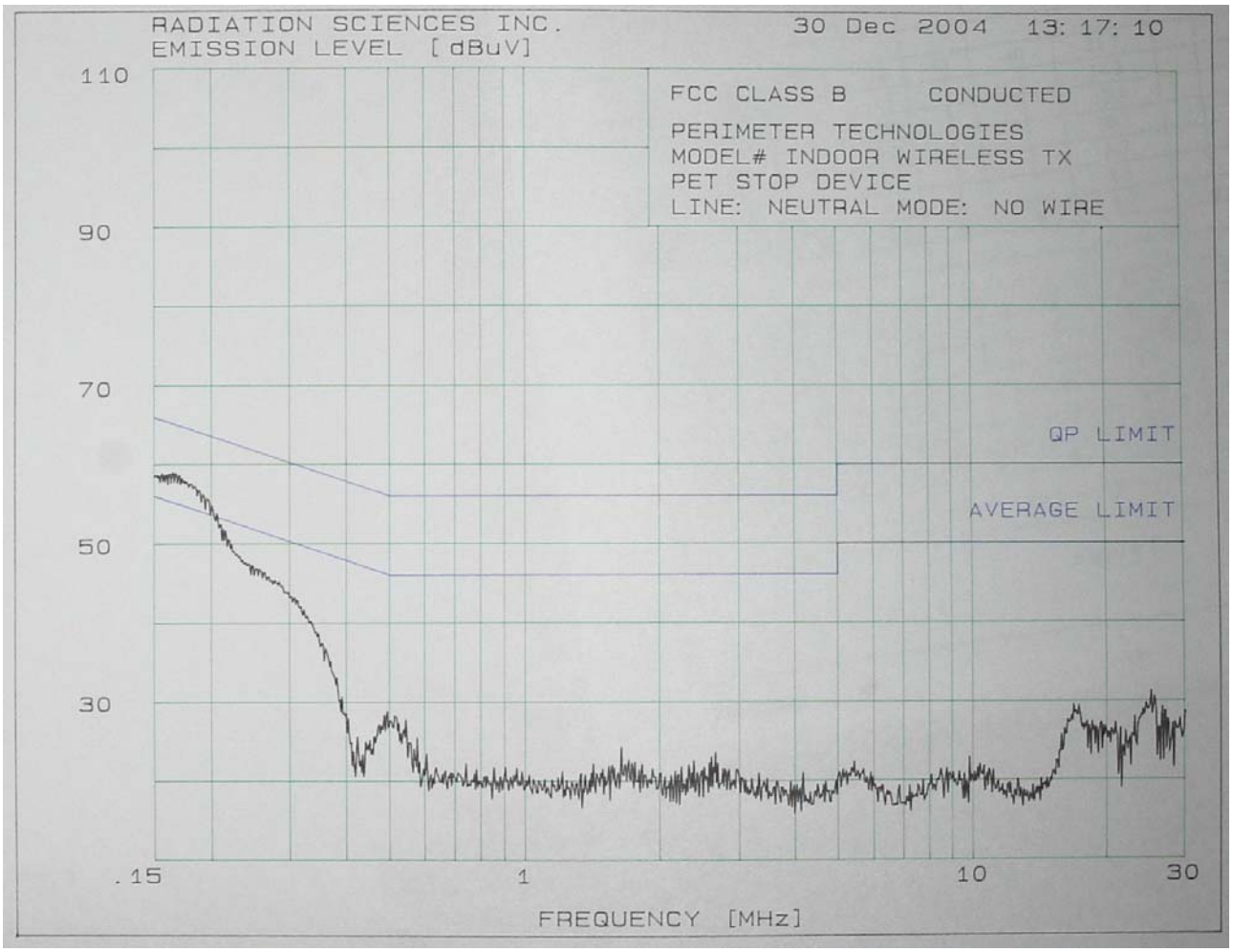

RADIATION SCIENCES INC.
30 Dec 2004 13: 17: 10
EMISSION LEVEL [dBuV]
FCC CLASS B CONDUCTED
PERIMETER TECHNOLOGIES
MODEL# INDOOR WIRELESS TX
PET STOP DEVICE
LINE: NEUTRAL MODE: NO WIRE
110
90
70
50
30
QP LIMIT
AVERAGE LIMIT
.15
1
10
30
FREQUENCY [MHz]

**Figure 17**

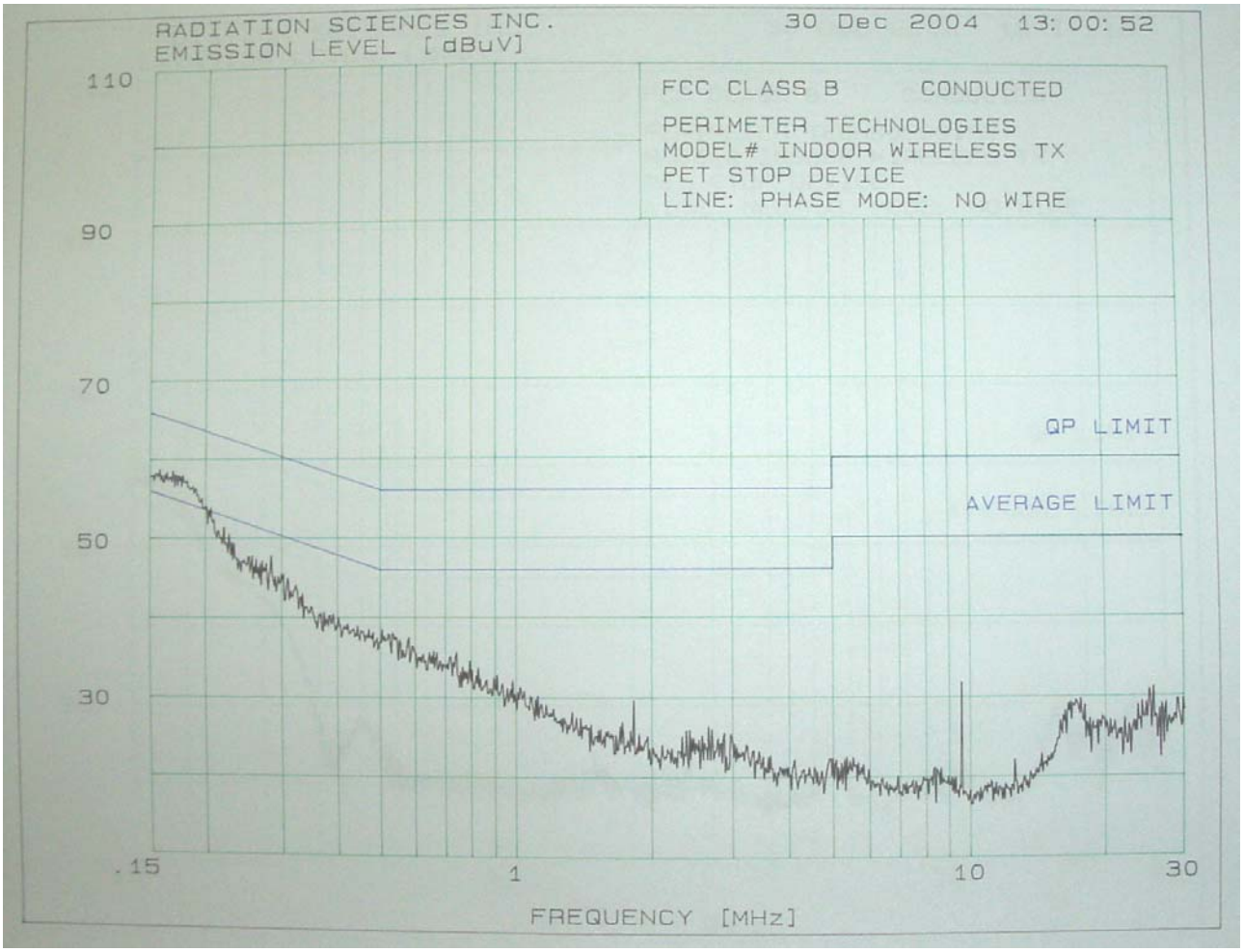

RADIATION SCIENCES INC.
EMISSION LEVEL [dBuV]
30 Dec 2004 13:00:52
FCC CLASS B CONDUCTED
PERIMETER TECHNOLOGIES
MODEL# INDOOR WIRELESS TX
PET STOP DEVICE
LINE: PHASE MODE: NO WIRE
110
90
70
50
30
QP LIMIT
AVERAGE LIMIT
.15
1
10
30
FREQUENCY [MHz]

**Figure 18**

## Electromagnetic Emission Test

| EUT | | | |
|---|---|---|---|
| | **Manufacturer:** Perimeter Technologies<br>**Model #:** Indoor Wireless Tx<br>**Serial #:** N/A<br>**Mode:** On (Wired & Wireless) | **Date:** 12/29/04<br>**Test Instruments:** RSI # 32.1, 33.1, 177, 229, 230, 390, 474<br>Cable 709<br>**Frequency Range:** .150-30 MHz | Test Code **CE**<br>Technician<br>Test Engineer |

| | | |
|---|---|---|
| **Temperature:** 70°F<br>**Humidity:** 23% | **Additional Info:** | **Test Spec:** FCC Part 15, Class B |

| | | | |
|---|---|---|---|
| **Radiated**<br>Distance:<br>Antenna: | ☐ HORIZ. ☐ BB ☐ NB<br>☐ VERT. ☐ H ☐ E | **Conducted**<br>Line: Phase/ Neutral<br>Function: | ☐ BB<br>☐ NB |

| FREQ. | QP IND. Level | AVG IND. Level | Correction Factors | | QP Final Level | AVG Final Level | Antenna Height | EUT Azimuth | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | | | ANT. | Cable loss | | | | | |
| MHz | dBµV | dB□V | | | dBµV | dBµV | | | |
| **Wired Unit** | | | | | | | | | |
| **0.163** | 47.6 | 25.9 | | 0 | 47.6 | 25.9 | | | Neutral |
| **0.295** | 47.6 | 27.5 | | 0 | 47.6 | 27.5 | | | |
| **0.604** | 47.3 | 37.8 | | 0 | 47.3 | 37.8 | | | |
| **12.20** | 55.2 | 33.8 | | 1 | 56.2 | 34.8 | | | |
| **18.96** | 49.2 | 39.0 | | 1 | 50.2 | 40.0 | | | |
| | | | | | | | | | |
| **0.162** | 49.1 | 27.0 | | 0 | **49.1** | **27** | | | Phase |
| **0.295** | 49.2 | 42.3 | | 0 | **49.2** | **42.3** | | | |
| **0.604** | 46.8 | 40.4 | | 0 | **46.8** | **40.4** | | | |
| **12.20** | 55.7 | 43.8 | | 1.0 | **56.7** | **44.8** | | | |
| **18.96** | 48.5 | 23.2 | | 1.0 | **49.5** | **24.2** | | | |
| | | | | | | | | | |
| **Wireless Unit** | | | | | | | | | |
| **.162** | 48.2 | 22.3 | | 0 | **48.2** | **22.3** | | | Neutral |
| | | | | | | | | | |
| **.162** | 48.3 | 22.5 | | 0 | **48.3** | **22.5** | | | Phase |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Figure 19**

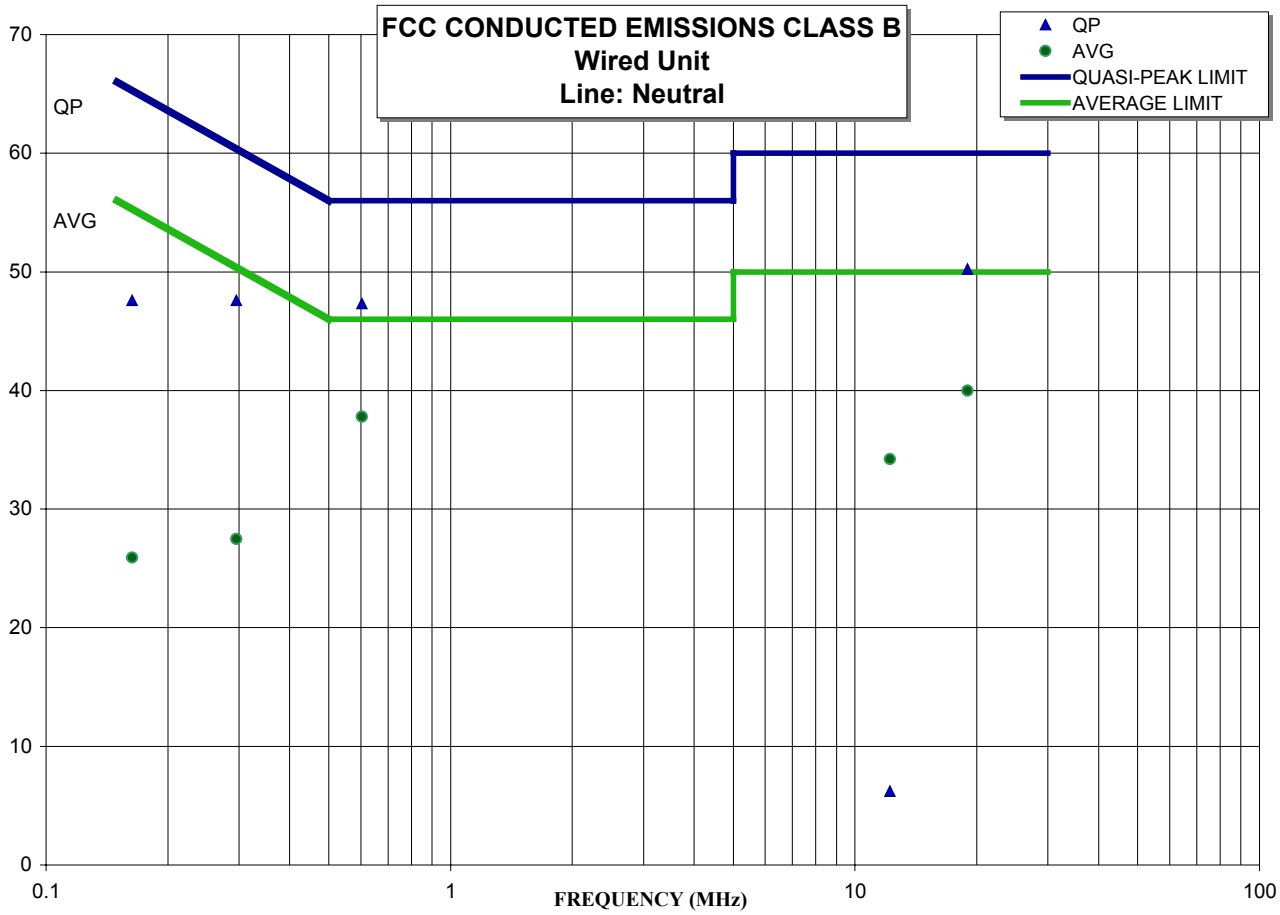

FCC CONDUCTED EMISSIONS CLASS B
Wired Unit
Line: Neutral
QP
AVG
QUASI-PEAK LIMIT
AVERAGE LIMIT
70
60
50
40
30
20
10
0
0.1
1
10
100
FREQUENCY (MHz)

**Figure 20**

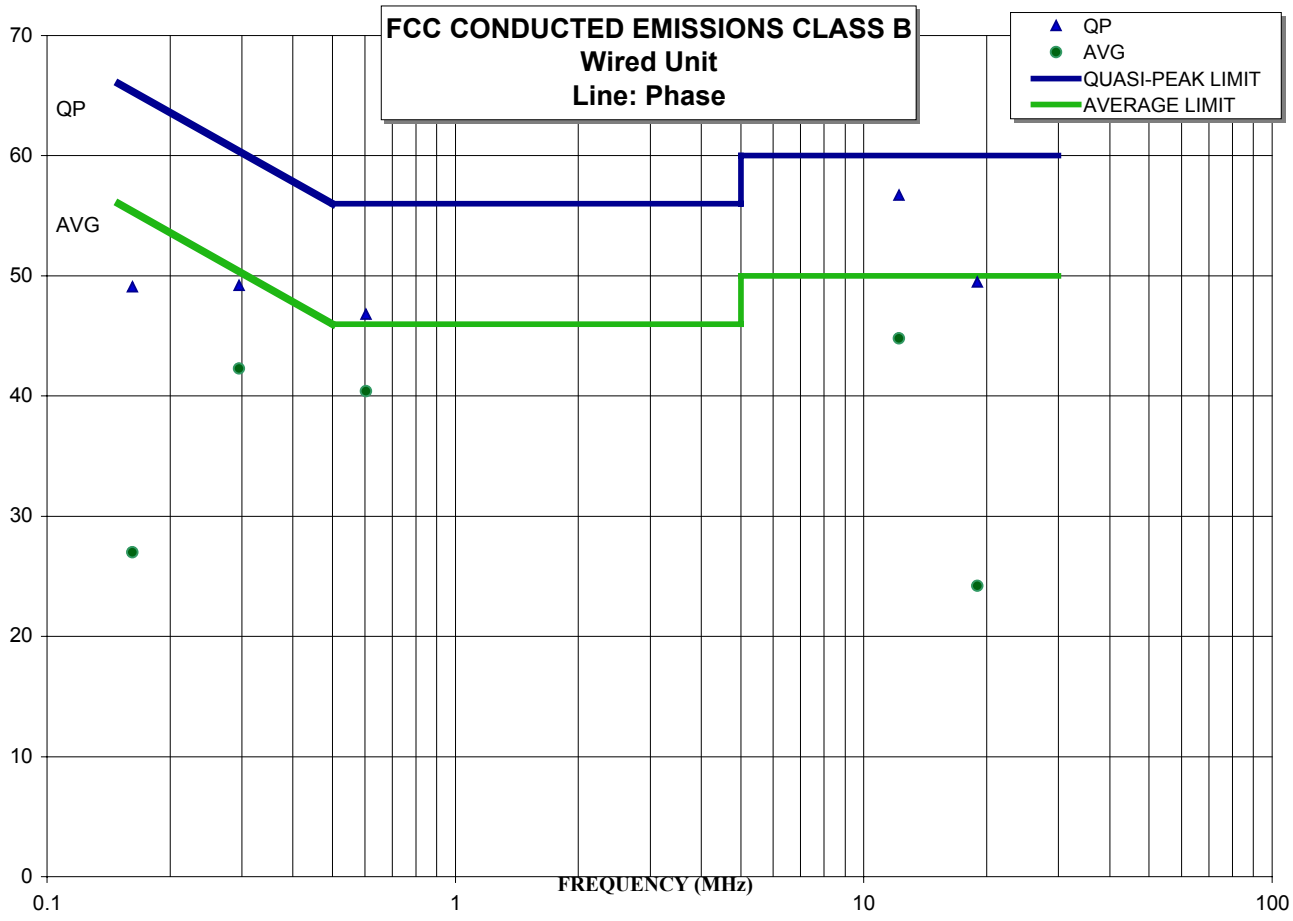

FCC CONDUCTED EMISSIONS CLASS B
Wired Unit
Line: Phase
QP
AVG
QUASI-PEAK LIMIT
AVERAGE LIMIT
70
60
50
40
30
20
10
0
0.1
1
10
100
FREQUENCY (MHz)

**Figure 21**

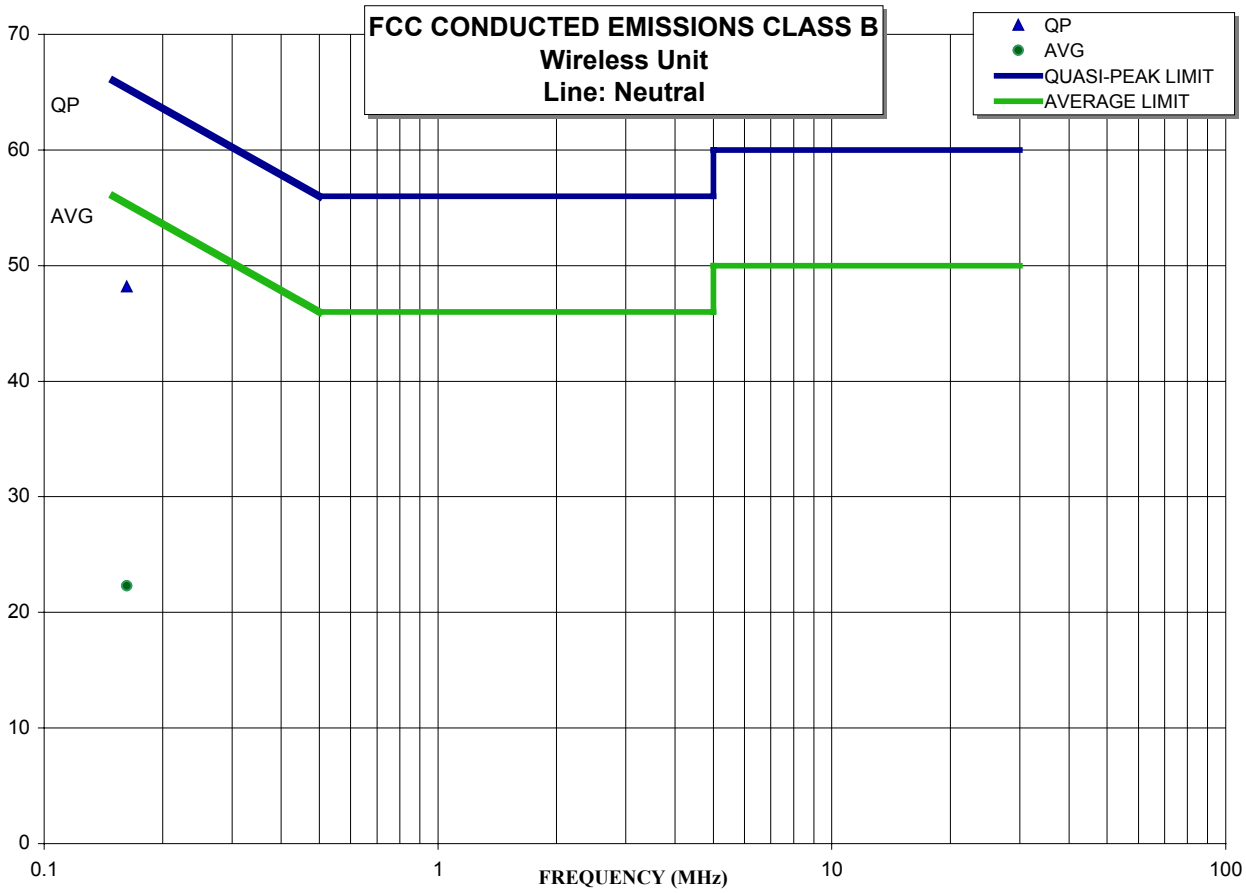

FCC CONDUCTED EMISSIONS CLASS B
Wireless Unit
Line: Neutral
QP
AVG
QUASI-PEAK LIMIT
AVERAGE LIMIT
70
60
50
40
30
20
10
0
0.1
1
10
100
FREQUENCY (MHz)

**Figure 22**

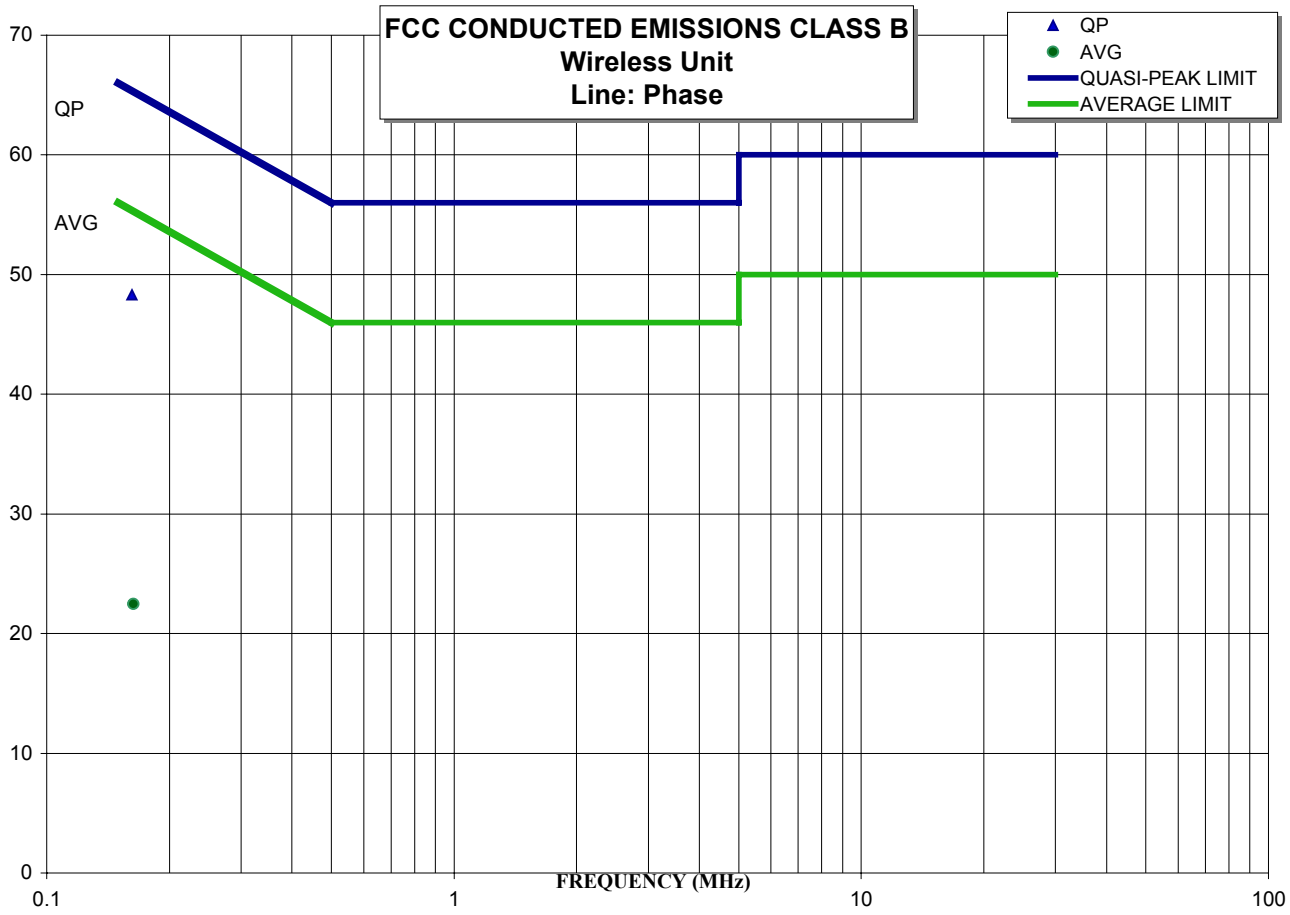

FCC CONDUCTED EMISSIONS CLASS B
Wireless Unit
Line: Phase
QP
AVG
QUASI-PEAK LIMIT
AVERAGE LIMIT
70
60
50
40
30
20
10
0
0.1
1
10
100
FREQUENCY (MHz)

**Figure 23**