

## **Test Report for Unlicensed Low Power Transmitter**

**FCC Applicable Rule Parts:** 15.205, 15.207, 15.209

**Applicant:** Farpointe Data Inc.  
2177 Leghorn Street  
Mountain View, CA 94043

**FCC ID: T8I-PYRAMID**

Model Nos.: P-300, P-400, Kprox, P-500, P-530, P-640, P-700

**Description of device:**

The Pyramid Series Proximity line of OEM proximity readers, cards, and tags are low frequency, non-contact, identification solutions based upon the latest techniques in radio frequency identification (RFID).

The proximity reader has a receiver circuit, a microprocessor, and a 125kHz exciter circuit that includes a magnetic coil. The tags and cards that are read by the reader have a highly reliable radio frequency integrated circuit (RFIC), attached to a magnetic coil inside a durable, environmentally secure plastic housing.

The referenced models all use the same RF transmit and receive circuits, the differences among models consist of coil size, non-RF features such as keypads, and form factors. Model P700 has the largest coil and the highest output power and is worst-case representative for both radiated and line conducted emissions.

### **TEST REQUIREMENTS**

The referenced device is subject to certification under Part 2 of FCC Rules. The specific emissions limits and test requirements are found in Part 15 of FCC Rules. In addition to the device specific requirements listed in 15.249 (re-printed below), the following Part 15 requirements are universal to all unlicensed transmitters and would also apply:

- 15.19 Labeling requirements
- 15.20 Accessories
- 15.21 Information to user
- 15.31 Measurement standards
- 15.33 Frequency range of measurements
- 15.35 Measurement detector functions and bandwidths
- 15.109 Radiated Emissions (unintentional radiators)
- 15.203 Antenna requirement
- 15.204 External radio frequency power amplifiers and antenna modifications.
- 15.205 Restricted bands of operation.
- 15.207 Conducted limits
- 15.209 Radiated emission limits, general requirements.

**REVISION INFORMATION AND ATTESTATION OF RESULTS**

Report No: 06PR043FCC

| <b>REV No.</b> | <b>Description</b> | <b>Revised By:</b> | <b>Date</b> |
|----------------|--------------------|--------------------|-------------|
| -              | Original Issue     | T. Cokenias        | 7/19/06     |

FCC ID: T8I-PYRAMID meets all FCC requirements for a device of this type.

THOMAS N. COKENIAS

19 July 2006

A handwritten signature in blue ink, appearing to read "T. N. Cokenias", is written over a light yellow rectangular background.

EMC and Radio Regulatory Consultant  
Agent for Farpointe Data Inc.

### 15.205 Restricted bands of operation.

Only spurious emissions are permitted in any of the frequency bands listed below: The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209.

| MHz                 | MHz                   | MHz             | GHz           |
|---------------------|-----------------------|-----------------|---------------|
| 0.090 - 0.110       | 16.42 - 16.423        | 399.9 - 410     | 4.5 - 5.15    |
| 10.495 - 0.505      | 16.69475 - 16.69525   | 608 - 614       | 5.35 - 5.46   |
| 2.1735 - 2.1905     | 16.80425 - 16.80475   | 960 - 1240      | 7.25 - 7.75   |
| 4.125 - 4.128       | 25.5 - 25.67          | 1300 - 1427     | 8.025 - 8.5   |
| 4.17725 - 4.17775   | 37.5 - 38.25          | 1435 - 1626.5   | 9.0 - 9.2     |
| 4.20725 - 4.20775   | 73 - 74.6             | 1645.5 - 1646.5 | 9.3 - 9.5     |
| 6.215 - 6.218       | 74.8 - 75.2           | 1660 - 1710     | 10.6 - 12.7   |
| 6.26775 - 6.26825   | 108 - 121.94          | 1718.8 - 1722.2 | 13.25 - 13.4  |
| 6.31175 - 6.31225   | 123 - 138             | 2200 - 2300     | 14.47 - 14.5  |
| 8.291 - 8.294       | 149.9 - 150.05        | 2310 - 2390     | 15.35 - 16.2  |
| 8.362 - 8.366       | 156.52475 - 156.52525 | 2483.5 - 2500   | 17.7 - 21.4   |
| 8.37625 - 8.38675   | 156.7 - 156.9         | 2655 - 2900     | 22.01 - 23.12 |
| 8.41425 - 8.41475   | 162.0125 - 167.17     | 3260 - 3267     | 23.6 - 24.0   |
| 12.29 - 12.293      | 167.72 - 173.2        | 3332 - 3339     | 31.2 - 31.8   |
| 12.51975 - 12.52025 | 240 - 285             | 3345.8 - 3358   | 36.43 - 36.5  |
| 12.57675 - 12.57725 | 322 - 335.4           | 3600 - 4400     |               |
| 13.36 - 13.41       |                       |                 |               |

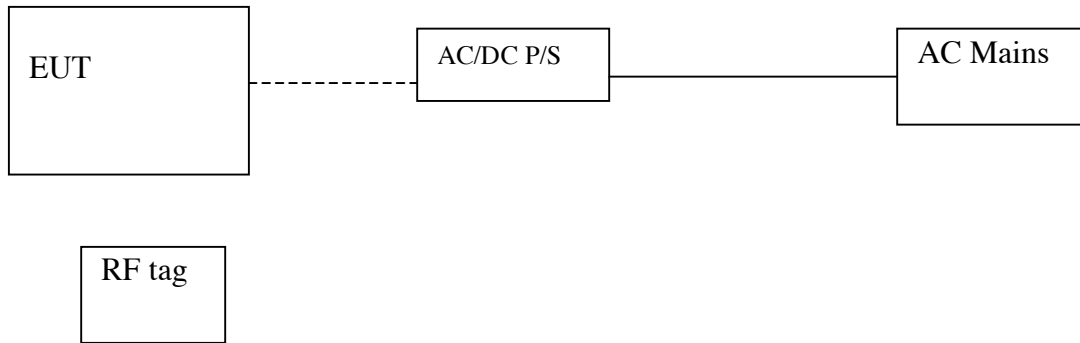
### 15.209 Radiated emission limits, general requirements.

Except as provided elsewhere in this paragraph the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency (MHz) | Field Strength uV/m | Measurement distance, m |
|-----------------|---------------------|-------------------------|
| 0.009 - 0.490   | 2400/F(kHz)         | 300                     |
| 0.490 - 1.705   | 24000/F(            | 30                      |
| 1.705 - 30.0    | 30                  | 30                      |
| 30 - 88         | 100 **              | 3                       |
| 88 - 216        | 150 **              | 3                       |
| 216 - 960       | 200 **              | 3                       |
| Above 960       | 500                 | 3                       |

\*\* Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz.

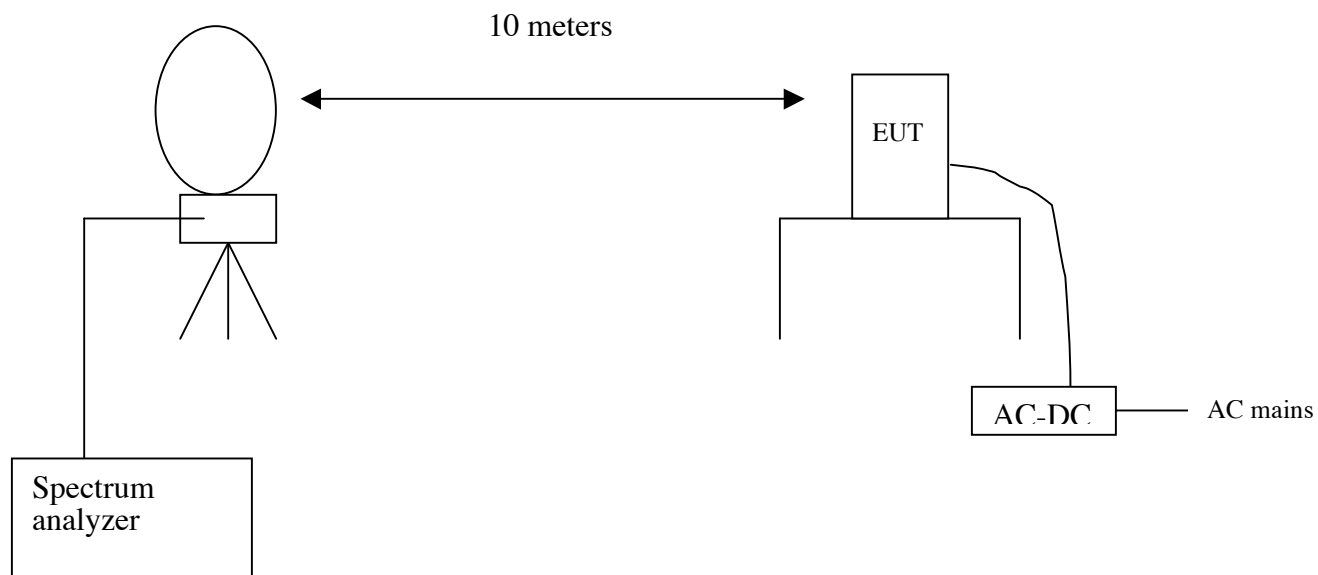
### Test Set-up Diagram



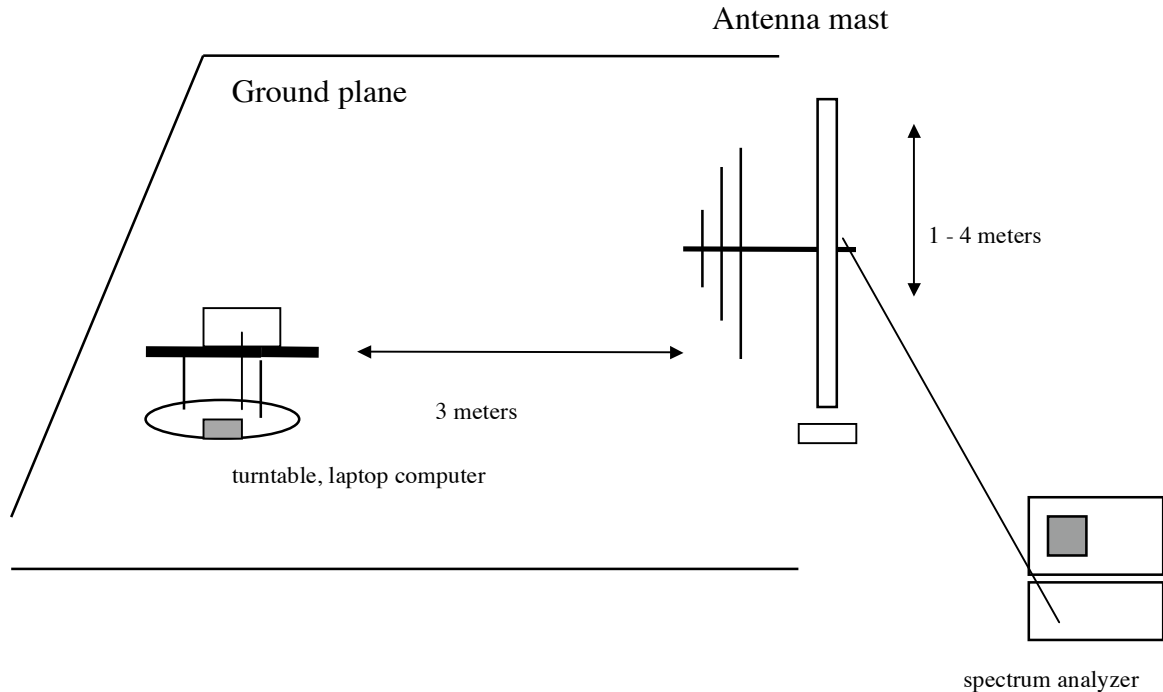
**Fffffff**

| <b>TEST EQUIPMENT LIST</b>             |                       |                         |                   |                 |
|----------------------------------------|-----------------------|-------------------------|-------------------|-----------------|
| <b>Name of Equipment</b>               | <b>Manufacturer</b>   | <b>Model No.</b>        | <b>Serial No.</b> | <b>Due Date</b> |
| <b>LISN, 10 kHz ~ 30 MHz</b>           | <b>FCC</b>            | <b>LISN-50/250-25-2</b> | <b>2023</b>       | <b>8/30/06</b>  |
| <b>EMI Test Receiver</b>               | <b>R &amp; S</b>      | <b>ESHS 20</b>          | <b>827129/006</b> | <b>11/3/06</b>  |
| <b>Spectrum Analyzer 3 Hz ~ 44 GHz</b> | <b>Agilent / HP</b>   | <b>E4446A</b>           | <b>MY45300064</b> | <b>12/19/06</b> |
| <b>EMI Receiver, 9 kHz ~ 2.9 GHz</b>   | <b>Agilent / HP</b>   | <b>8542E</b>            | <b>3942A00286</b> | <b>2/4/07</b>   |
| <b>RF Filter Section</b>               | <b>Agilent / HP</b>   | <b>85420E</b>           | <b>3705A00256</b> | <b>2/4/07</b>   |
| <b>Antenna, Bilog 30 MHz ~ 2 Ghz</b>   | <b>Sunol Sciences</b> | <b>JB1</b>              | <b>A121003</b>    | <b>9/3/06</b>   |
| <b>Antenna, Activer Loop</b>           | <b>EMCO</b>           | <b>6502</b>             | <b>9202-2722</b>  | <b>9/4/06</b>   |

**15.205 and 15.209 Radiated Emissions  
Radiated Test Set-up, 0.125 - 30MHz**



### 15.205 and 15.209 Radiated Emissions Radiated Test Set-up, 30 - 1000 MHz



### Test Procedures, 0.125 – 30 MHz

The EUT was placed on a non-conductive table located on a large open grassy area free of nearby metal obstructions. The loop antenna was placed at a location 10m from the EUT. Radiated emissions were measured with the loop antenna both parallel and perpendicular to the plane of the EUT loop antenna.

### Test Procedures, 30 -1000 MHz

The EUT was placed on a turntable in a 5m anechoic chamber. The EUT was set to normal operating conditions (constantly transmitting). Radiated emissions from the EUT were measured according to the dictates of ANSI C63.4. Because the EUT is DC operation only, the EUT was run off a 12V battery so that low frequency (30-100 MHz) emissions from an AC/DC converter would not contaminate test results.

### Test Results

EUT emissions are below noise floor or at least 6 dB below 15.209 limits.

## Radiated Emissions, 0.125 – 30 MHz

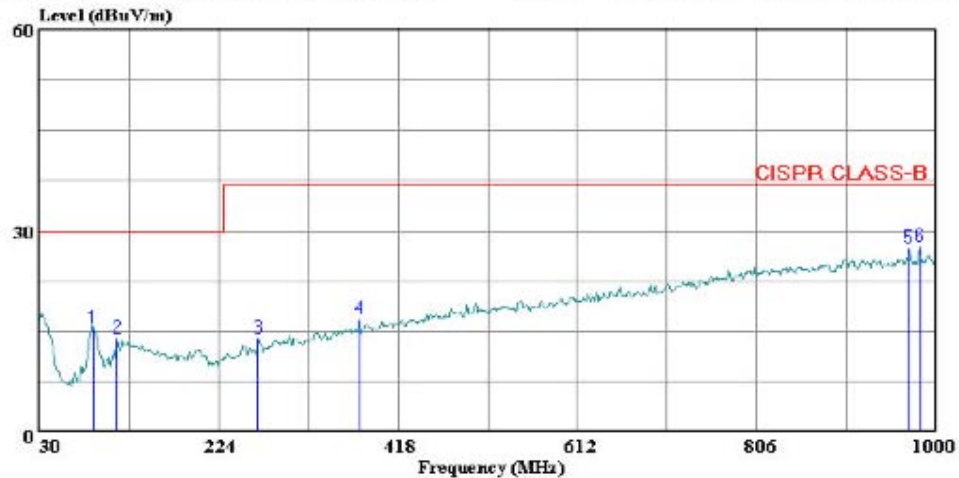
| FCC Part 15, Subpart B & C      10 Meter Distance Measurement At Open Field                                                                                                                                                                                                      |              |              |              |            |                             |                                  |                                  |                      |                      |                   |                   |            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|--------------|------------|-----------------------------|----------------------------------|----------------------------------|----------------------|----------------------|-------------------|-------------------|------------|
| <b>Company:</b> Farpointe Data<br><b>Project #:</b> 06U10316<br><b>Model #:</b> P700<br><b>Tester:</b> Than Nguyen<br><b>Date:</b> 30 May 2006                                                                                                                                   |              |              |              |            |                             |                                  |                                  |                      |                      |                   |                   |            |
| Frequency<br>(MHz)                                                                                                                                                                                                                                                               | PK<br>(dBuV) | QP<br>(dBuV) | AV<br>(dBuV) | AF<br>dB/m | Distance<br>Correction (dB) | PK Corrected<br>Reading (dBuV/m) | AV Corrected<br>Reading (dBuV/m) | PK Limit<br>(dBuV/m) | AV Limit<br>(dBuV/m) | PK Margin<br>(dB) | AV Margin<br>(dB) | Notes      |
| Loop Antenna Face On:                                                                                                                                                                                                                                                            |              |              |              |            |                             |                                  |                                  |                      |                      |                   |                   |            |
| 0.125                                                                                                                                                                                                                                                                            | 68.2         |              | 68.2         | 10.481     | -59.08                      | 19.60                            | 19.60                            | 45.67                | 25.67                | -26.1             | -6.1              | 300m limit |
| 0.25                                                                                                                                                                                                                                                                             | 44.3         |              | 44.3         | 10.388     | -59.08                      | -4.40                            | -4.40                            | 39.65                | 19.65                | -44.0             | -24.0             | 300m limit |
| 0.375                                                                                                                                                                                                                                                                            | 41.8         |              | 41.8         | 10.294     | -59.08                      | -6.99                            | -6.99                            | 36.12                | 16.12                | -43.1             | -23.1             | 300m limit |
| 0.5                                                                                                                                                                                                                                                                              | 34.1         | 34.1         |              | 10.2       | -19.08                      | 25.22                            |                                  | 33.62                |                      | -8.4              |                   | 30m limit  |
| Loop Antenna Face Off:                                                                                                                                                                                                                                                           |              |              |              |            |                             |                                  |                                  |                      |                      |                   |                   |            |
| 0.125                                                                                                                                                                                                                                                                            | 45.05        |              | 45.05        | 10.481     | -59.08                      | -3.55                            | -3.55                            | 45.67                | 25.67                | -49.2             | -29.2             | 300m limit |
| * No more emissions were found up to 30MHz                                                                                                                                                                                                                                       |              |              |              |            |                             |                                  |                                  |                      |                      |                   |                   |            |
| <u>Note:</u> The emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 10000Mhz. Radiated emission limits in these three bands are based on measurements employing an average detector. |              |              |              |            |                             |                                  |                                  |                      |                      |                   |                   |            |
| P.K. = Peak<br>Q.P. = Quasi Peak Readings      Below 150kHz => RBW=VBW=200 or 300Hz<br>A.F. = Antenna factor      Above 150kHz =>RBW=VBW=9 or 10kHz (Average => VBW=10Hz)                                                                                                        |              |              |              |            |                             |                                  |                                  |                      |                      |                   |                   |            |

# Out of Band emissions: 30-1000 MHz, Vertical



561F Monterey Road  
Morgan Hill, CA 95037  
Tel: (408) 463-0888  
Fax: (408) 463-0885

Data#: 6 File#: below 1GHz.EMI Date: 07-19-2006 Time: 09:44:58



(Audix ATC)

Trace: 5

Ref Trace:

Condition: CISPR CLASS-B VERTICAL  
Test Operator: : Thanh Nguyen  
Company: : FARPOINTE  
Project #: : 06U10437  
Configuration: : EUT stand alone, with 12VDC battery  
Mode of Operation: Tx continuously

Page: 1

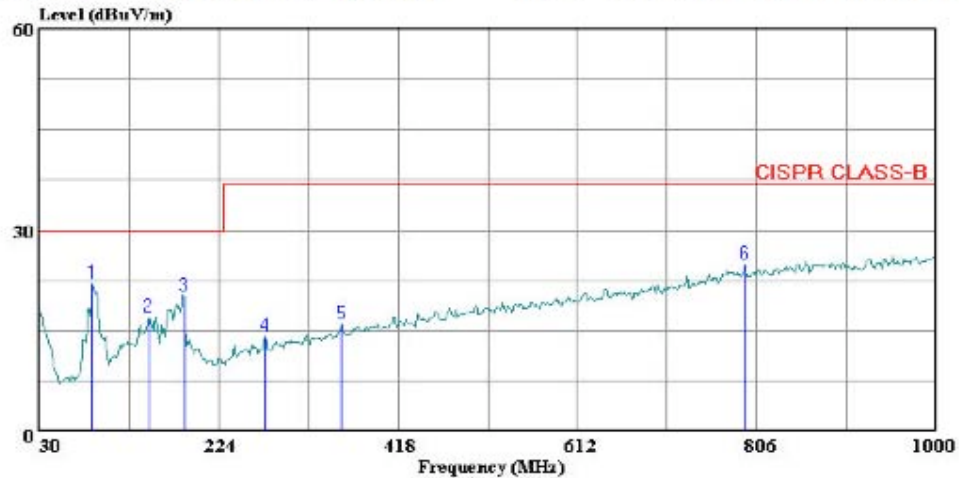
|   | Freq    | Read  |        | Limit  | Over   |              |
|---|---------|-------|--------|--------|--------|--------------|
|   | MHz     | Level | Factor | Level  | Line   | Limit Remark |
|   | MHz     | dBuV  | dB     | dBuV/m | dBuV/m | dB           |
| 1 | 88.200  | 6.89  | 8.56   | 15.46  | 30.00  | -14.54 Peak  |
| 2 | 114.390 | -0.62 | 14.46  | 13.84  | 30.00  | -16.16 Peak  |
| 3 | 266.680 | -0.53 | 14.45  | 13.92  | 37.00  | -23.08 Peak  |
| 4 | 376.290 | -0.72 | 17.53  | 16.81  | 37.00  | -20.19 Peak  |
| 5 | 969.930 | 0.73  | 26.66  | 27.39  | 37.00  | -9.61 Peak   |
| 6 | 982.540 | 0.81  | 26.74  | 27.55  | 37.00  | -9.45 Peak   |

## Out of Band emissions: 30-1000 MHz, Horizontal



561F Monterey Road  
Morgan Hill, CA 95037  
Tel: (408) 463-0888  
Fax: (408) 463-0885

Data#: 8 File#: below 1GHz.EMI Date: 07-19-2006 Time: 09:48:34



(Auxiliary ATC)

Trace: 7

Ref Trace:

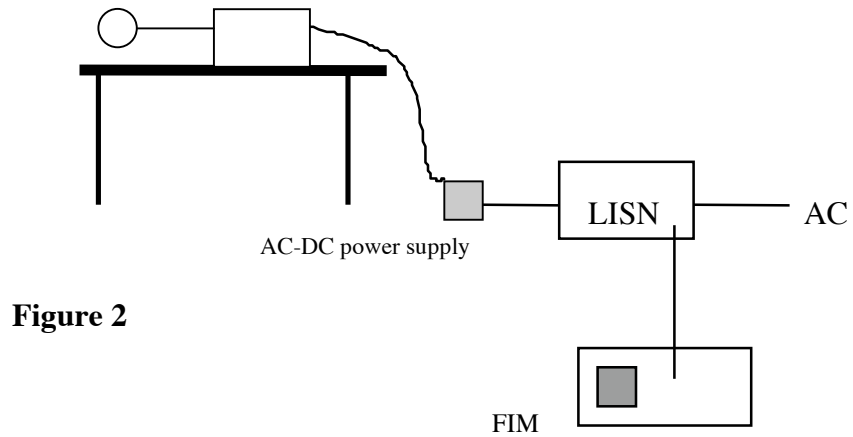
Condition: CISPR CLASS-B HORIZONTAL  
Test Operator: : Thanh Nguyen  
Company: : FARPOINTE  
Project #: : 06U10437  
Configuration: : EUT stand alone, with 12VDC battery  
Mode of Operation: Tx continuously

Page: 1

|   | Freq    | Read  |        | Limit  | Over   |              |
|---|---------|-------|--------|--------|--------|--------------|
|   | MHz     | Level | Factor | Level  | Line   | Limit Remark |
|   |         | dBuV  | dB     | dBuV/m | dBuV/m | dB           |
| 1 | 87.230  | 13.53 | 8.45   | 21.98  | 30.00  | -8.02 Peak   |
| 2 | 148.340 | 2.81  | 14.33  | 17.13  | 30.00  | -12.87 Peak  |
| 3 | 187.140 | 7.36  | 12.87  | 20.23  | 30.00  | -9.77 Peak   |
| 4 | 274.440 | -0.73 | 14.76  | 14.03  | 37.00  | -22.97 Peak  |
| 5 | 356.890 | -1.11 | 17.05  | 15.94  | 37.00  | -21.06 Peak  |
| 6 | 793.390 | 0.50  | 24.46  | 24.96  | 37.00  | -12.04 Peak  |

## AC Line Conducted Emissions Test Requirement: 15.107, 15.207

### Test Set-up



### Test Procedure

1. The EUT was placed on a wooden table 40 cm from a vertical ground plane and approximately 80 cm above the horizontal ground plane on the floor. The EUT was set to transmit in normally.
2. Line conducted data was recorded for both NEUTRAL and HOT lines.

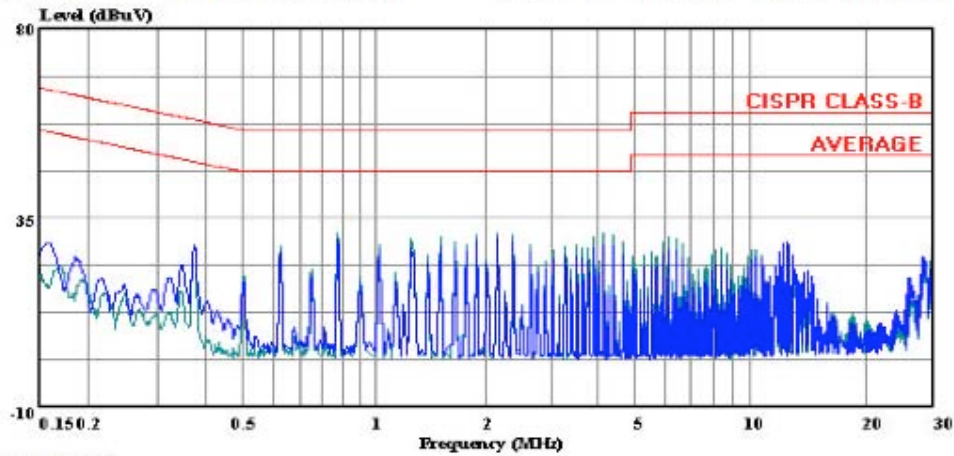
### Test Results

PASS. Refer to data plot below.



Compliance Certification Services  
561F Monterey Road  
Morgan Hill, CA 95037  
Tel: (408) 463-0885  
Fax: (408) 463-0888

Data#: 7 File#: 063006.emi Date: 06-30-2006 Time: 09:14:49



Trace: 3

Ref Trace:

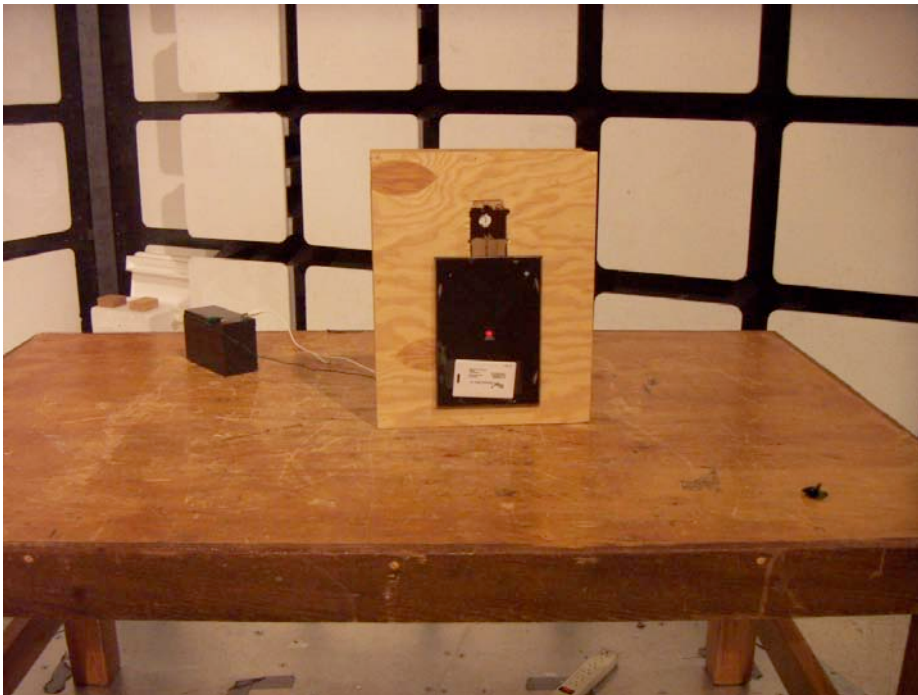
Condition: CISPR CLASS-B  
Test Operator : Gordon Andrews  
Project # : 06U10316  
Company : Farpointe  
EUT configuration: EUT/support Equipment  
EUT mode : Normal  
Power Source : 115 VAC, 60 Hz  
: Peak, Line 1:(Black), Line 2:(Green)  
: Model: P700

## Test Set-Up Photographs

Radiated emissions below 30 MHz



**Radiated Emissions, 30 – 1000 MHz**



## AC Line Conducted Emissions

