

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-COBRA

Model Nos.: EM-30, EM-50, EM-64

Description of device:

The Cobra 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 EM-50 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: 06PR047FCC

REV No.	Description	Revised By:	Date
-	Original Issue	T. Cokenias	10/30/06

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

THOMAS N. COKENIAS

30 October 2006



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			

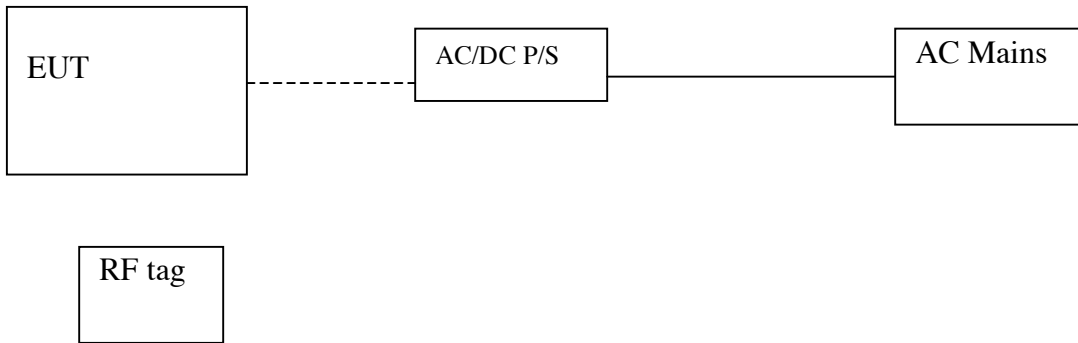
15.209 Radiated emission limits, general requirements.

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 (kHz)	30
1.705 - 30.0	30	30
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

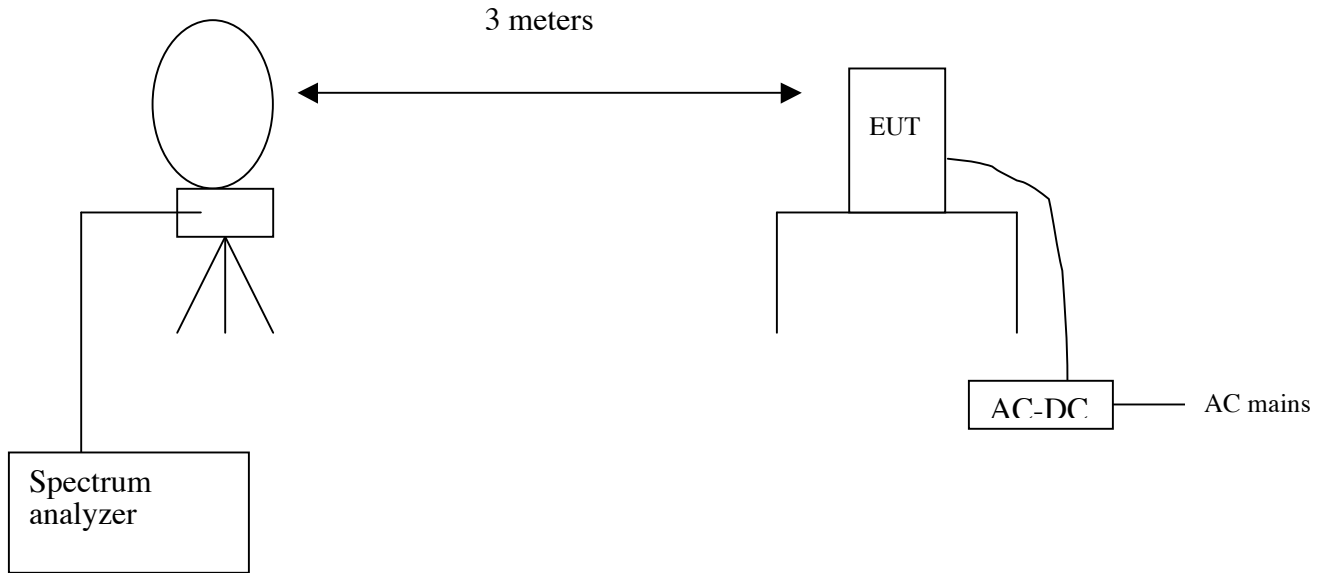
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz.

Test Set-up Diagram

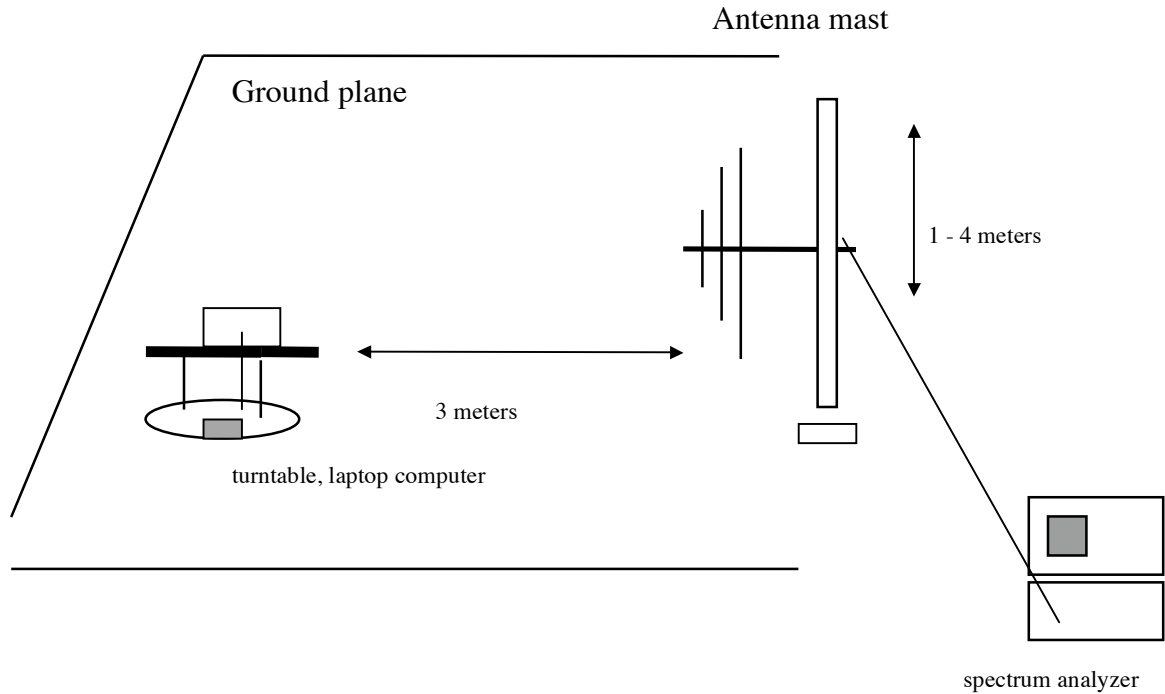


TEST EQUIPMENT LIST				
Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	8/30/06
EMI Test Receiver	R & S	ESHS 20	827129/006	11/3/06
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent / HP	E4446A	MY45300064	12/19/06
EMI Receiver, 9 kHz ~ 2.9 GHz	Agilent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

**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

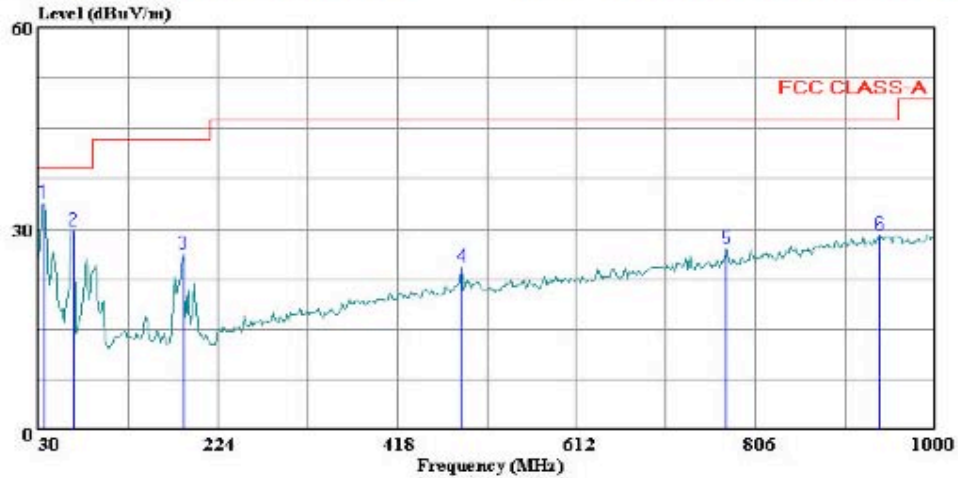
FCC Part 15, Subpart B & C 3 Meter Distance Measurement At Open Field												
Company: Farpointe												
Project #:												
Model #: EM-50												
Tester: Thanh												
Date: May 30,2006												
Frequency (MHz)	PK (dBu/V)	QP (dBu/V)	AV (dBuV)	AF (dB/m)	Distance Correction (dB)	PK Corrected Reading (dBuV/m)	AV Corrected Reading (dBuV/m)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	PK Margin (dB)	AV Margin (dB)	Notes
Loop Antenna Face On:												
0.122	85.8		85.8	10.484	-80.00	16.28	16.28	45.88	25.88	-29.6	-9.6	3m distance
0.244	36.1		36.1	10.392	-80.00	-33.51	-33.51	39.86	19.86	-73.4	-53.4	3m distance
0.366	48.5		48.5	10.301	-80.00	-21.20	-21.20	36.33	16.33	-57.5	-37.5	3m distance
Loop Antenna Face Off:												
0.122	65.1		65.1	10.484	-80.00	-4.42	-4.42	45.88	25.88	-50.3	-30.3	3m distance
0.244	28.5		28.5	10.392	-80.00	-41.11	-41.11	39.86	19.86	-81.0	-61.0	3m distance
0.366	29.6		29.6	10.301	-80.00	-40.10	-40.10	36.33	16.33	-76.4	-56.4	3m distance
* No more emissions were found up to 30MHz												
Note: 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												
Q.P. = Quasi Peak Readings Below 150kHz => RBW=VBW=200 or 300Hz												
A.F. = Antenna factor Above 150kHz =>RBW=VBW=9 or 10kHz (Average => VBW=10Hz)												

Out of Band emissions: 30-1000 MHz, Vertical



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Data#: 7 File#: 30-1000.EMI Date: 05-31-2006 Time: 14:35:10



(Audix ATC)

Trace: 6

Ref Trace:

Condition: FCC CLASS-A VERTICAL
 Test Operator: : Gordon Andrews
 Company: : Farpointe Data
 Project #: : 06U10316
 S/N: : Model EM50
 Configuration: : EUT and Power One P/S
 Mode of Operation: Normal

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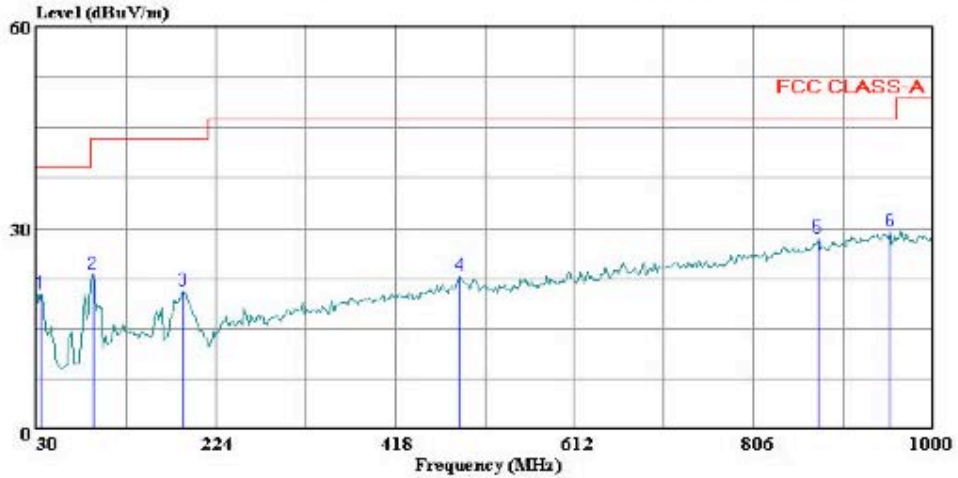
	Freq	Read		Limit	Over		
	MHz	Level	Factor	Line	Limit	Remark	
		dBuV	dB	dBuV/m	dBuV/m	dB	
1	35.820	15.35	18.58	33.93	39.00	-5.07	Peak
2	67.830	20.56	9.20	29.76	39.00	-9.24	Peak
3	187.140	13.25	12.87	26.12	43.50	-17.38	Peak
4	487.840	4.22	20.00	24.22	46.40	-22.18	Peak
5	773.990	2.85	24.21	27.06	46.40	-19.34	Peak
6	939.860	2.58	26.43	29.01	46.40	-17.39	Peak

Out of Band emissions: 30-1000 MHz, Horizontal



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Data#: 9 File#: 30-1000.EMI Date: 05-31-2006 Time: 14:41:35



(Auxin ATC)

Trace: 8

Ref Trace:

Condition: FCC CLASS-A HORIZONTAL
 Test Operator: : Gordon Andrews
 Company: : Farpoint Data
 Project #: : 06U10316
 S/N: : Model EM50
 Configuration: : EUT and Power One P/S
 Mode of Operation: Normal

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	Read Freq	Read Level	Factor	Level	Limit	Over	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	34.850	1.02	19.05	20.07	39.00	-18.93	Peak
2	91.110	13.96	9.05	23.01	43.50	-20.49	Peak
3	189.080	7.57	12.93	20.50	43.50	-23.00	Peak
4	487.840	2.91	20.00	22.91	46.40	-23.49	Peak
5	875.840	2.72	25.64	28.36	46.40	-18.04	Peak
6	953.440	3.02	26.50	29.52	46.40	-16.88	Peak

AC Line Conducted Emissions Test Requirement: 15.107, 15.207

Test Set-up

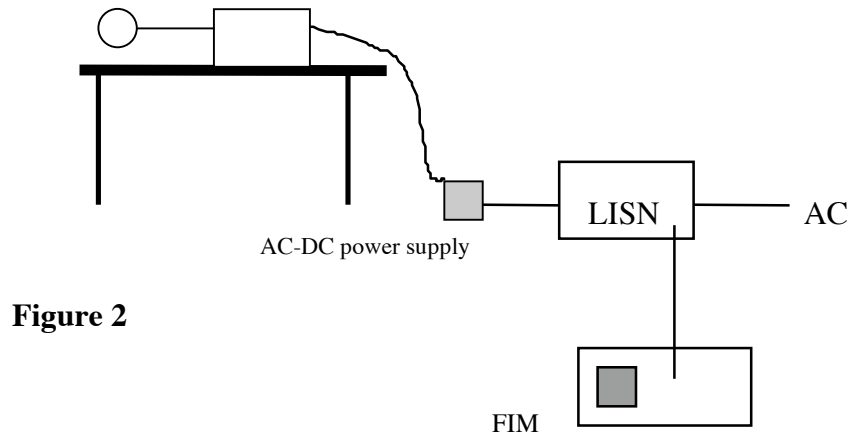


Figure 2

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.

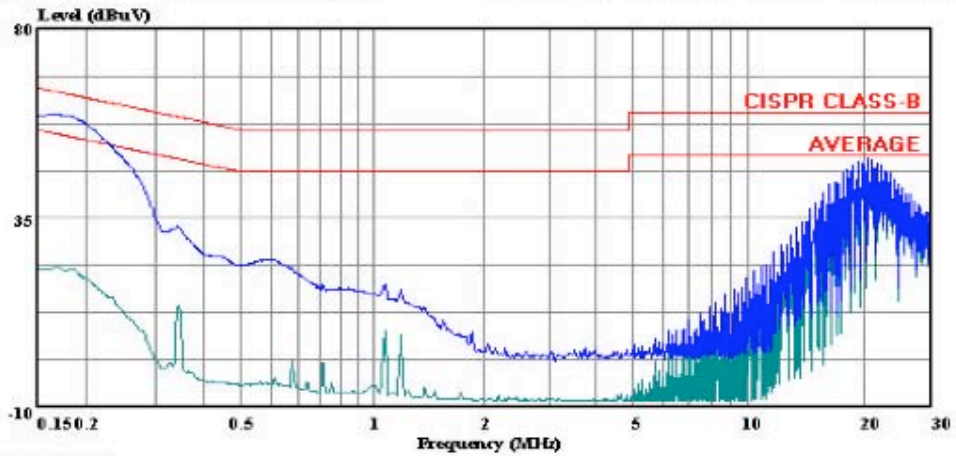
Test Results

PASS. Refer to data plot below.



Compliance Certification Services
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Morgan Hill, CA 95037
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Data#: 93 File#: 10316.emi Date: 05-31-2006 Time: 11:14:01



(Auxix ATC)

Trace: 91

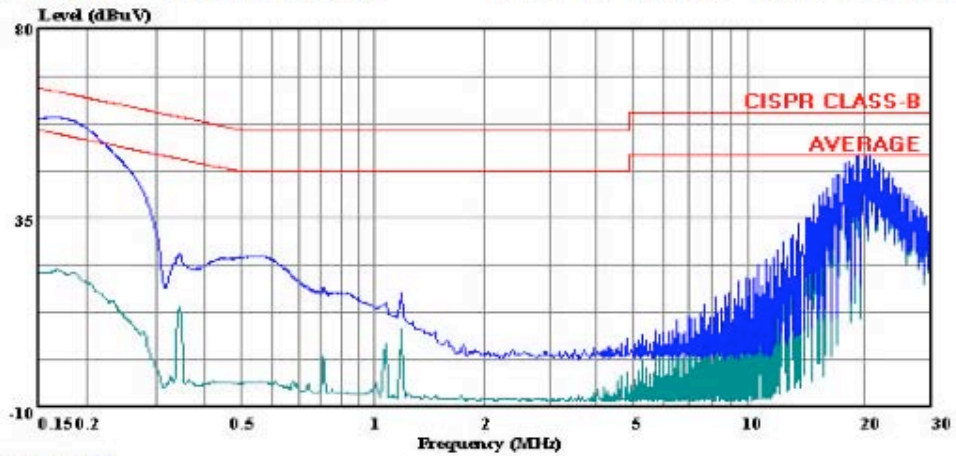
Ref Trace:

Condition: CISPR CLASS-B
Test Operator : Gordon Andrews
Project # : 06U10316
Company : Farpointe data
EUT configuration: EUT only, Model EM50
EUT mode : Normal
Power Source : 115 VAC, 60 Hz
: Line 1, Peak:(Blue), Average:(Green)
: "Power One" Power Supply



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Data#: 107 File#: 10316.emi Date: 05-31-2006 Time: 11:48:21



(Auxix ATC)

Trace: 105

Ref Trace:

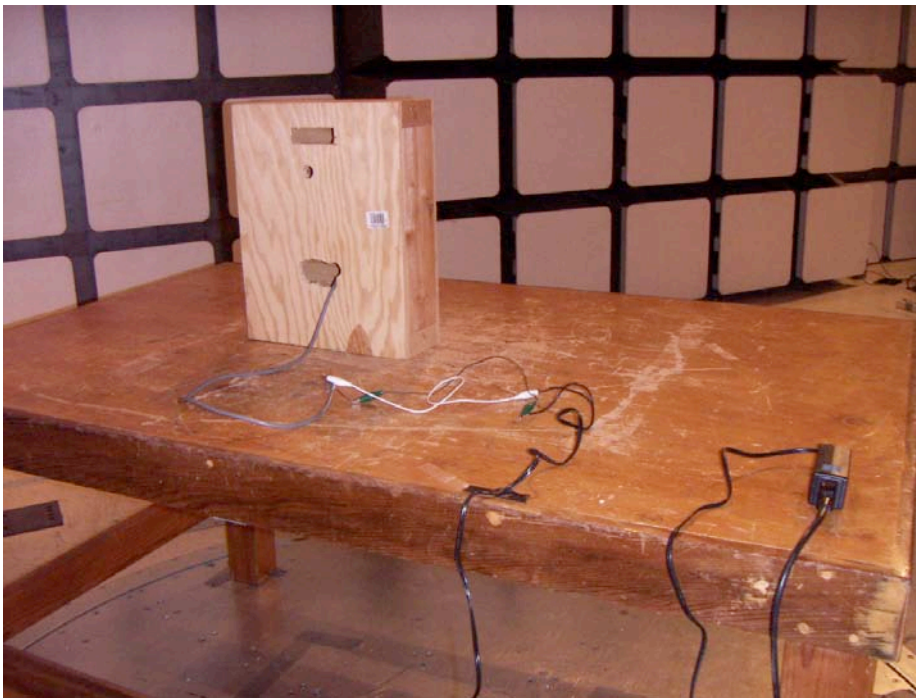
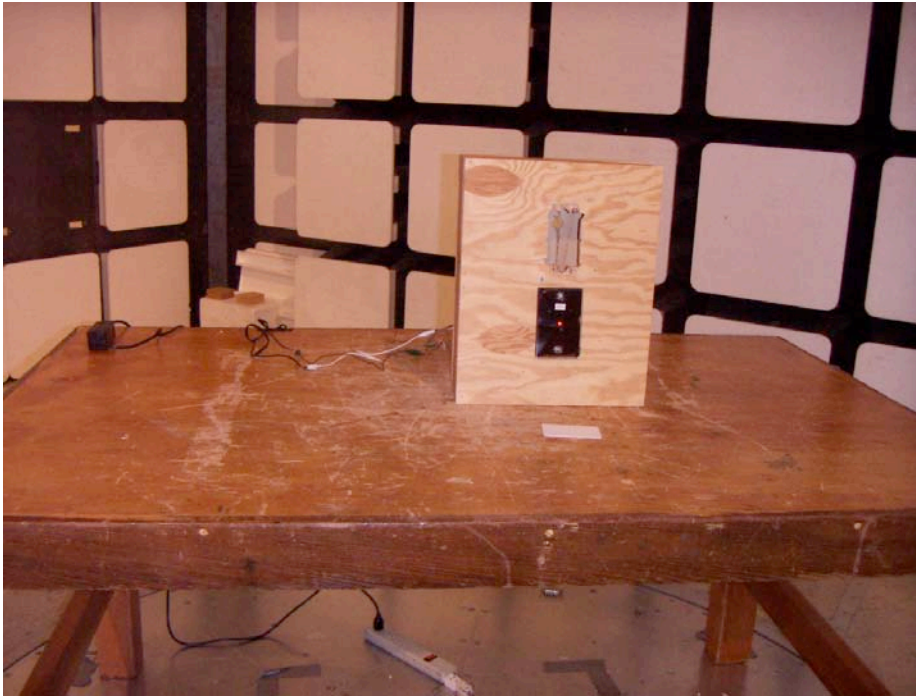
Condition: CISPR CLASS-B
Test Operator : Gordon Andrews
Project # : 06U10316
Company : Farpointe data
EUT configuration: EUT only, Model EM50
EUT mode : Normal
Power Source : 115 VAC, 60 Hz
: Line 2, Peak:(Blue), Average:(Green)
: "Power One" Power Supply

Test Set-Up Photographs

Radiated emissions below 30 MHz



Radiated Emissions, 30 – 1000 MHz



AC Line Conducted Emissions

