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-P900
Model Nos.: P900

Description of device:

The Farpointe Data proximity readers, cards, and tags are low frequency, non-contact, identification solutions based upon the latest techniques in radio frequency identification (RFID).

The P900 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.

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: 08PR006FCCIC

REV No.	Description	Revised By:	Date
-	Original Issue	T. Cokenias	4/02/2008
1	Remove peak reading ref. Correct spectrum analyzer cal date Add AC line conducted emission test equip.	T. Cokenias	4/12/2008

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

THOMAS N. COKENIAS 4/14/2008

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			

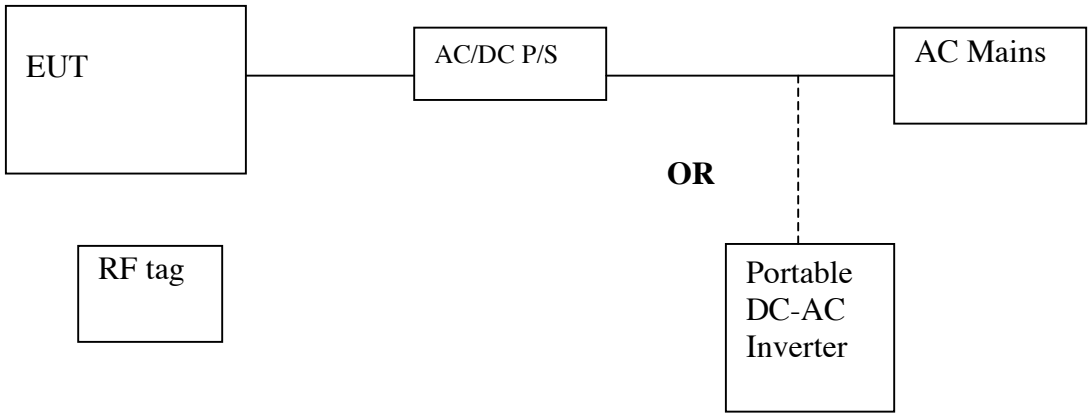
15.209 Radiated emission limits, general requirements.

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.

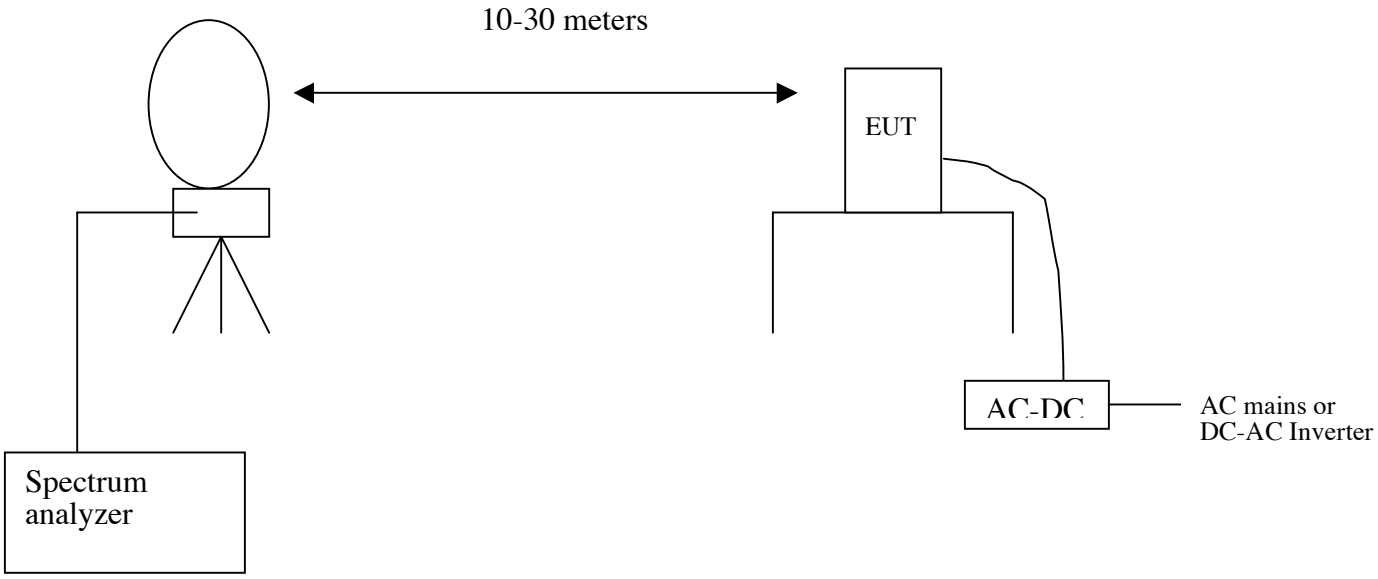
Test Set-up Diagram



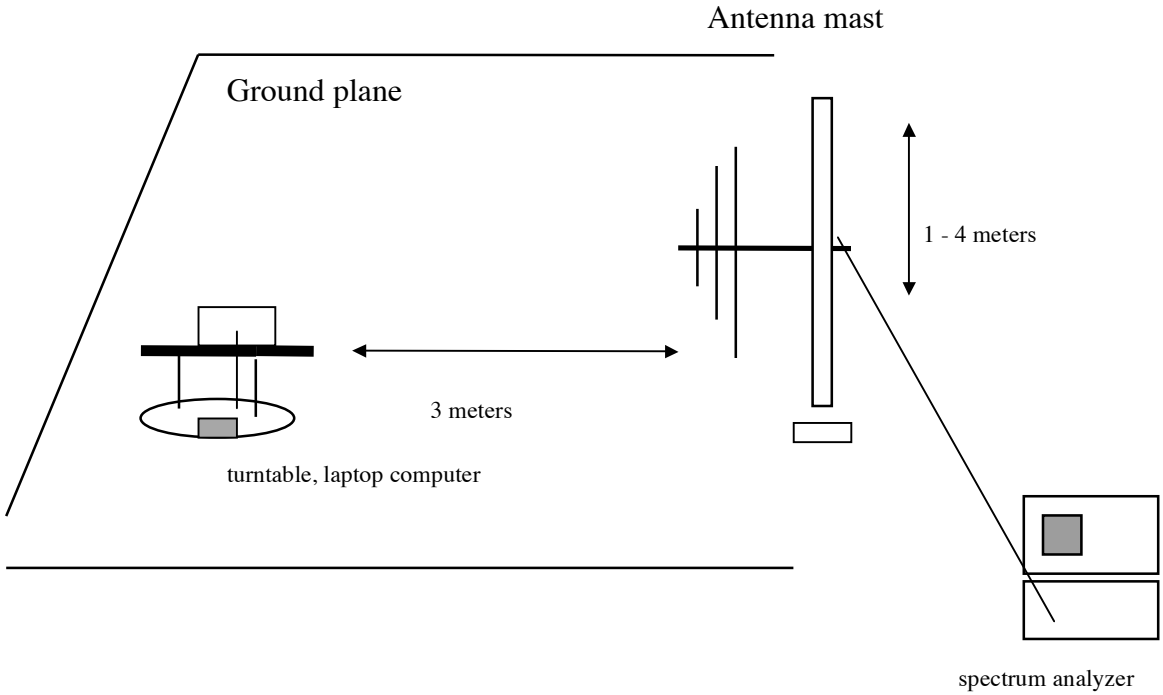
Test Equipment List

Description	Manufacturer	Model	Asset #	Cal Due
EMI Test Receiver 30 MHz	R & S	ESHS 20	N02396	8/6/2009
LISN, 30 MHz	FCC	LISN-50/250-25-2N	02625	10/25/2008
LISN, 30 MHz	Solar	8012-50-R-24-BNC	N02481	10/25/2008
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	10/8/2009
Antenna, Loop, 30 MHz	EMCO	6502	C00593	10/24/2008

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.

Average limits only apply in the 100-490 kHz as the EUT operation is CW. EUT peak detector measurements meet average and quasi-peak emissions limit for the product.

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& 30 Meter Distance Measurement At Open Field**

Company: Farpointe
Project #: 08U11662
Model #: P-900
Tester: Doug Anderson
Date: 03/21/08

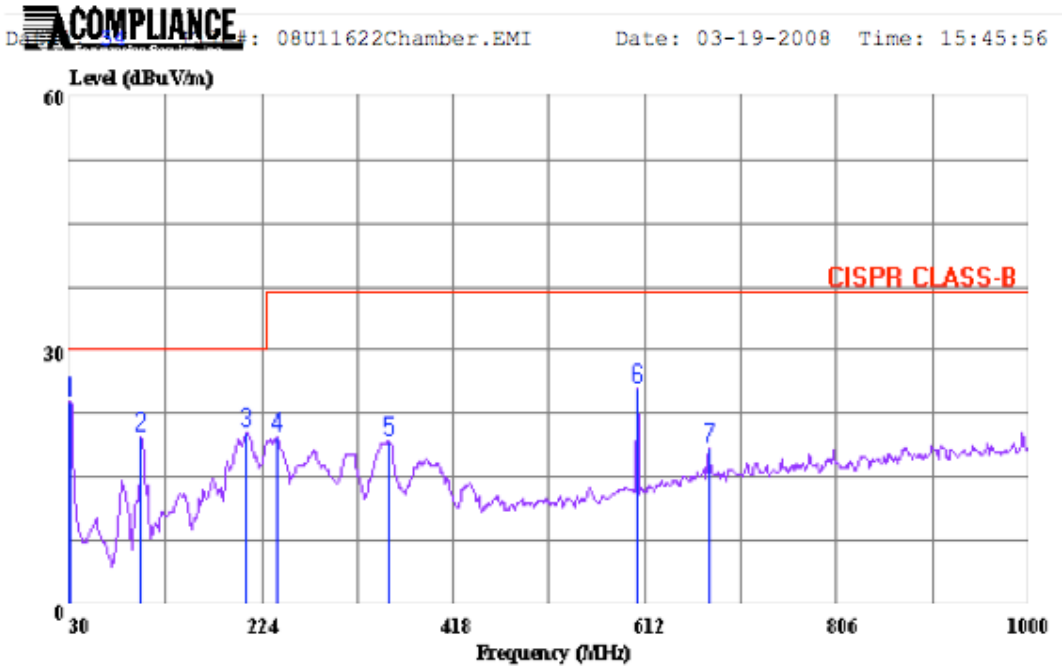
Frequency (MHz)	Pk (dBuV)	AF dB/m	Distance Correction (dB)	PK Corrected Reading (dBuV/m)	AV Limit (dBuV/m)	AV Margin (dB)	Notes
Loop Antenna Face On:							
0.125	54.95	10.481	-40.00	25.43	25.67	-0.2	30m distance
0.25	46.66	10.388	-40.00	17.05	19.65	-2.6	30m distance (Noise Floor)
0.375	44.53	10.294	-40.00	14.82	16.12	-1.3	30m distance (Noise Floor)
0.5	36.28	10.2	-19.98	26.50	33.62	-7.1	10m distance (Noise Floor)
0.625	35.52	10.225	-19.98	25.77	31.00	-5.2	10m distance (Noise Floor)
0.75	35.06	10.25	-19.98	25.33	31.69	-6.4	10m distance (Noise Floor)
0.875	33.02	10.275	-19.98	23.32	28.76	-5.4	10m distance (Noise Floor)
1	31.88	10.3	-19.98	22.20	27.60	-5.4	10m distance (Noise Floor)
1.125	30.68	10.294	-19.98	20.99	26.58	-5.6	10m distance (Noise Floor)
1.25	29.34	10.288	-19.98	19.65	25.70	-6.1	10m distance (Noise Floor)
Loop Antenna Face Off:							
0.125	47.73	10.481	-40.00	18.21	25.67	-7.5	30m distance
0.25	42.56	10.388	-40.00	12.95	19.65	-6.7	30m distance (Noise Floor)
0.375	39.85	10.294	-40.00	10.14	16.12	-6.0	30m distance (Noise Floor)
0.5	35.55	10.2	-19.98	25.77	33.62	-7.9	10m distance (Noise Floor)
0.625	36.35	10.225	-19.98	26.60	31.00	-4.4	10m distance (Noise Floor)
0.75	35.45	10.25	-19.98	25.72	31.69	-6.0	10m distance (Noise Floor)
0.875	32.58	10.275	-19.98	22.88	28.76	-5.9	10m distance (Noise Floor)
1	31.85	10.3	-19.98	22.17	27.60	-5.4	10m distance (Noise Floor)
1.125	30.49	10.294	-19.98	20.80	26.58	-5.8	10m distance (Noise Floor)
1.25	29.24	10.288	-19.98	19.55	25.70	-6.2	10m distance (Noise Floor)

* 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 kH 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 Below 150kHz => RBW=VBW=200 or 300Hz
A.F. = Antenna fact Above 150kHz =>RBW=VBW=9 or 10kHz (Average => VBW=10Hz)

Out of Band emissions: 30-1000 MHz, Horizontal



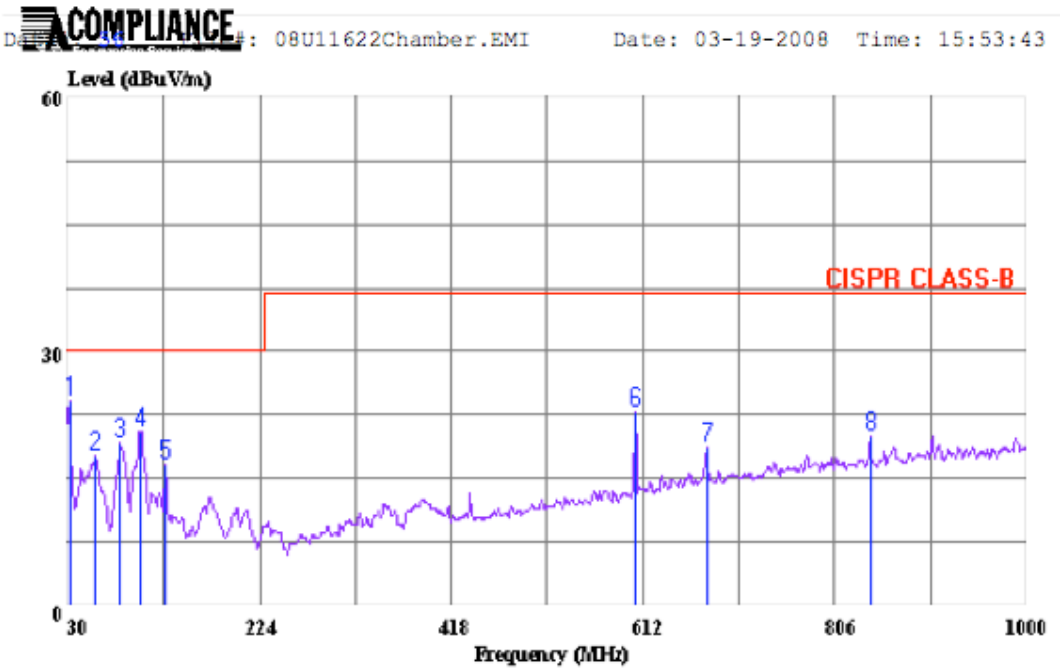
Trace: 53 Ref Trace:

Condition: CISPR CLASS-B HORIZONTAL
Engineer: : Yobi Zhou
Company: : Farpointe
Project #: : 08U11622
Test Configuration:: EUT Stand Alone
Mode of operation: : Continuous Tx at 125kHz (12VDC)
: Normal-All Fixes
Test Target: : CISPR Class B

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	30.970	29.55	-5.76	23.79	30.00	-6.21	Peak
2	101.780	36.62	-16.82	19.80	30.00	-10.20	Peak
3	208.480	35.12	-14.79	20.33	30.00	-9.67	Peak
4	240.490	34.17	-14.48	19.69	37.00	-17.31	Peak
5	352.040	30.11	-10.98	19.13	37.00	-17.87	Peak
6	604.240	30.75	-5.31	25.44	37.00	-11.56	Peak
7	676.990	22.34	-3.90	18.44	37.00	-18.56	Peak

Out of Band emissions: 30-1000 MHz, Vertical



Trace: 55 Ref Trace:

Condition: CISPR CLASS-B VERTICAL
Engineer: : Yobi Zhou
Company: : Farpointe
Project #: : 08U11622
Test Configuration:: EUT Stand Alone
Mode of operation: : Continuous Tx at 125kHz (12VDC)
: Normal-All Fixes
Test Target: : CISPR Class B

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	31.940	30.68	-6.60	24.08	30.00	-5.92	Peak
2	58.130	37.18	-19.59	17.59	30.00	-12.41	Peak
3	82.380	38.52	-19.35	19.17	30.00	-10.83	Peak
4	103.720	37.00	-16.36	20.64	30.00	-9.36	Peak
5	128.940	29.59	-13.06	16.54	30.00	-13.47	Peak
6	604.240	28.12	-5.31	22.81	37.00	-14.19	Peak
7	676.990	22.59	-3.90	18.69	37.00	-18.31	Peak
8	841.890	21.64	-1.69	19.95	37.00	-17.05	Peak

AC Line Conducted Emissions
Test Requirement: 15.107, 15.207

Test Set-up

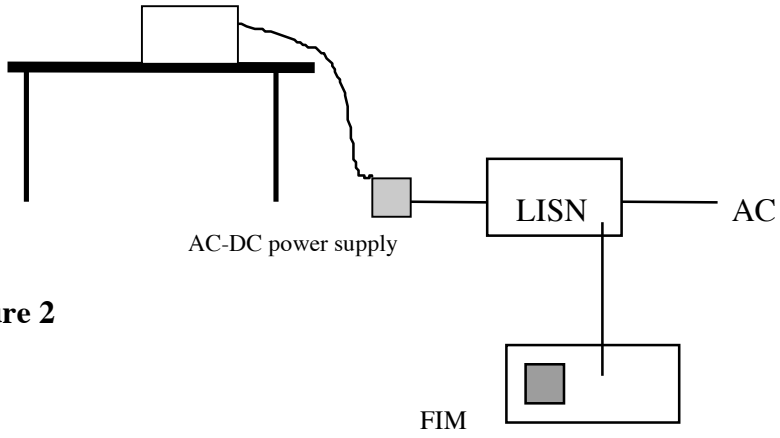


Figure 2

Test Procedure

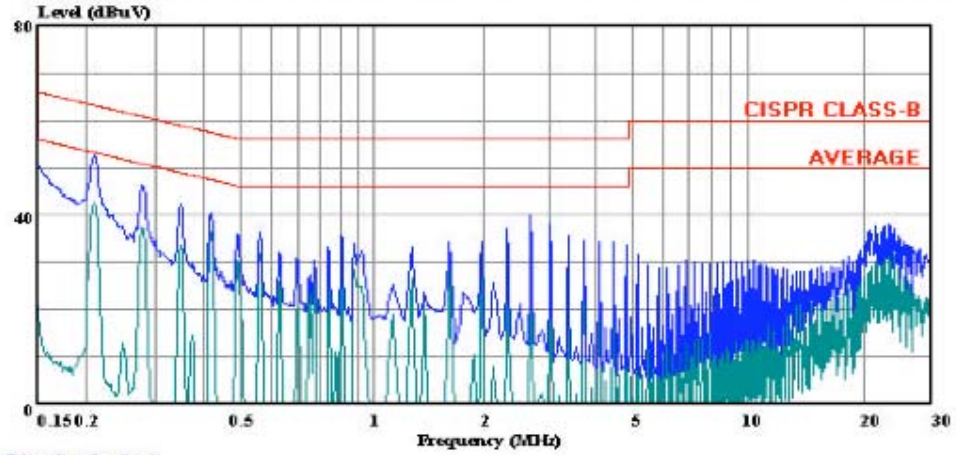
1. The EUT was placed on a wooden table 40 cm from a vertical ground plane and approximately 80 cm above the horizontal ground plane on the floor. The EUT was set to transmit in normally.
2. Line conducted data was recorded for both NEUTRAL and HOT lines.

Test Results

PASS. Refer to data plot below.

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 28 File#: 08U11625LC.EMI Date: 03-21-2008 Time: 08:21:34



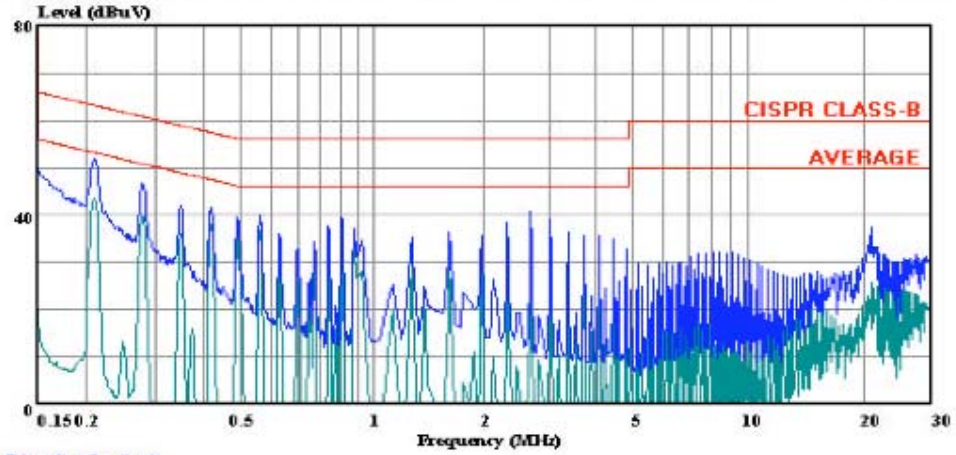
(Line Conduction)

Trace: 26 Ref Trace:

Condition: CISPR CLASS-B
Company: : Farpointe
Project #: : 08U11622
Configuration:: P-900 Pro-X Long Range Reader
Configuration:: EUT Stand Alone
Mode: : Continuous Tx at 125kHz
Target: : FCC Class B
Voltage: : 115 VAC / 60Hz
: Line 1: Peak (Blue), Avg (Green)

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 35 File#: 08U11625LC.EMI Date: 03-21-2008 Time: 08:31:43



(Line Conduction)

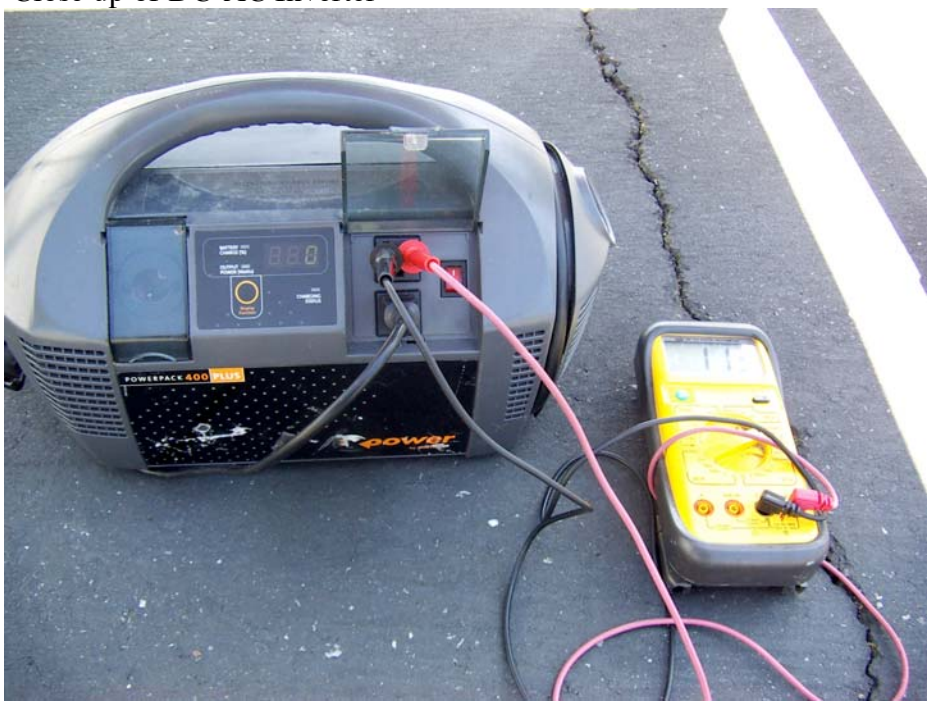
Trace: 33 Ref Trace:

Condition: CISPR CLASS-B
Company: : Farpointe
Project #: : 08U11622
Configuration:: P-900 Pro-X Long Range Reader
Configuration:: EUT Stand Alone
Mode: : Continuous Tx at 125kHz
Target: : FCC Class B
Voltage: : 115 VAC / 60Hz
: Line 2: Peak (Blue), Avg (Green)

Test Set-Up Photographs

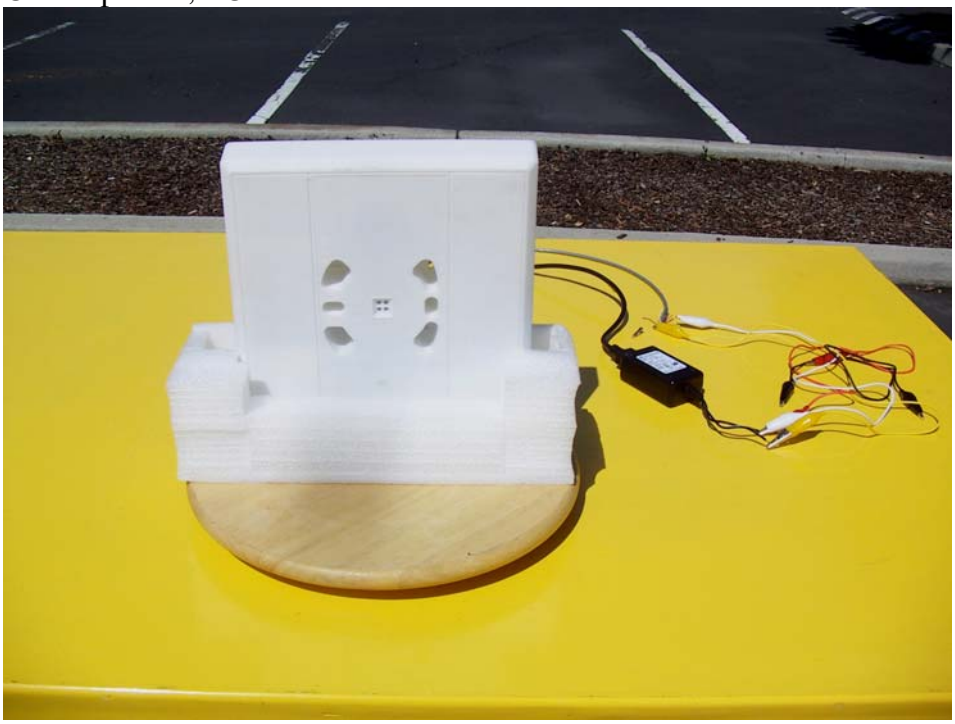
Radiated emissions below 30 MHz: 30 meter separation

Close up of DC-AC Inverter

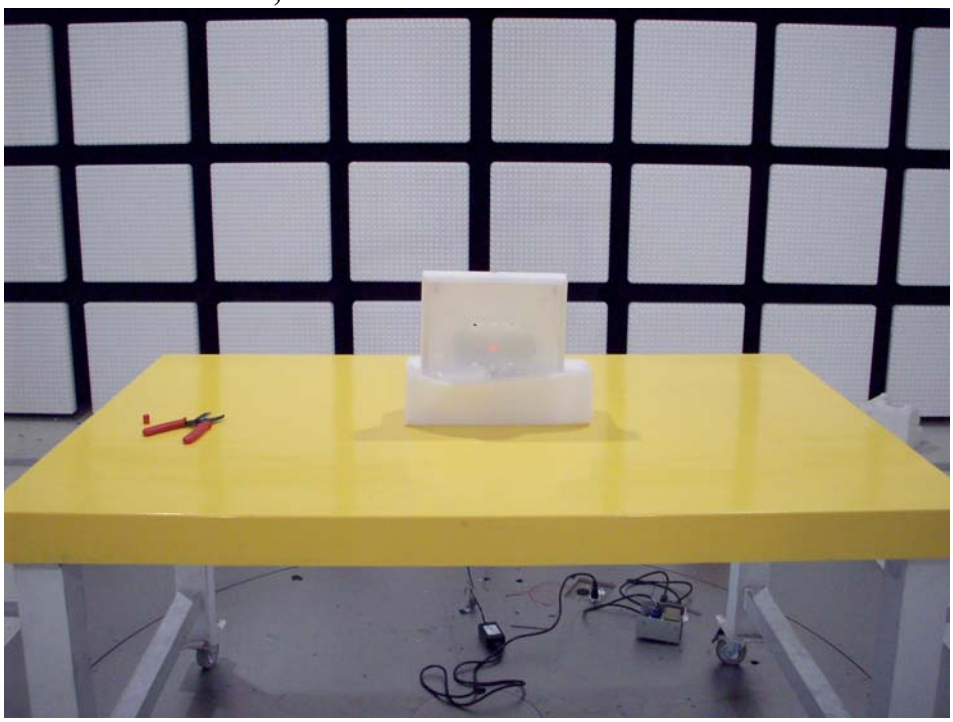


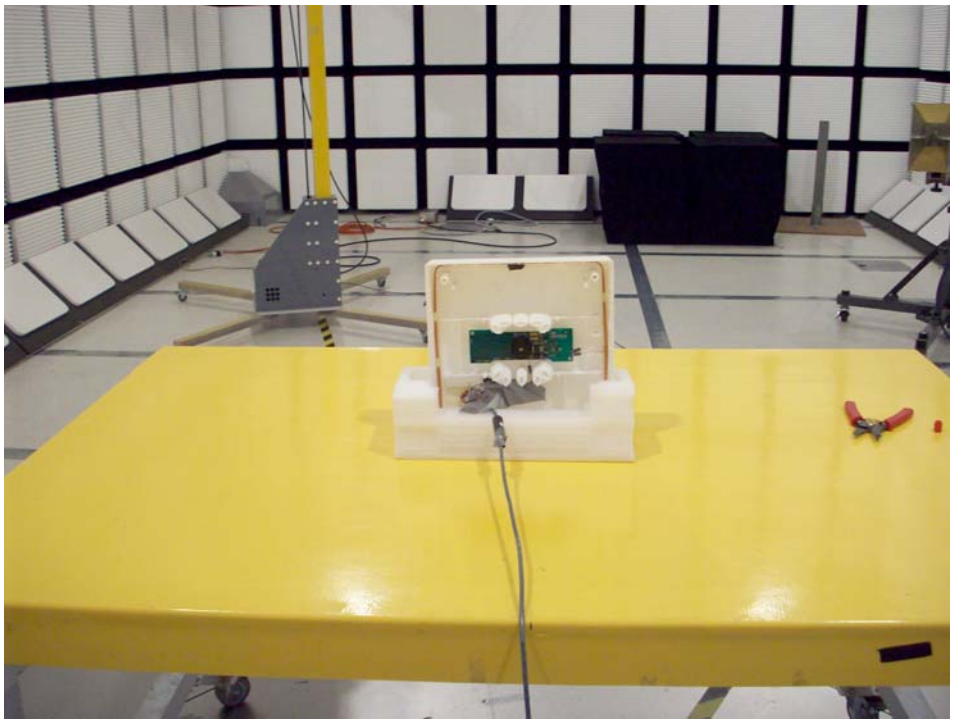
Radiated emissions below 30 MHz: 10 meter separation

Close up view, EUT on table

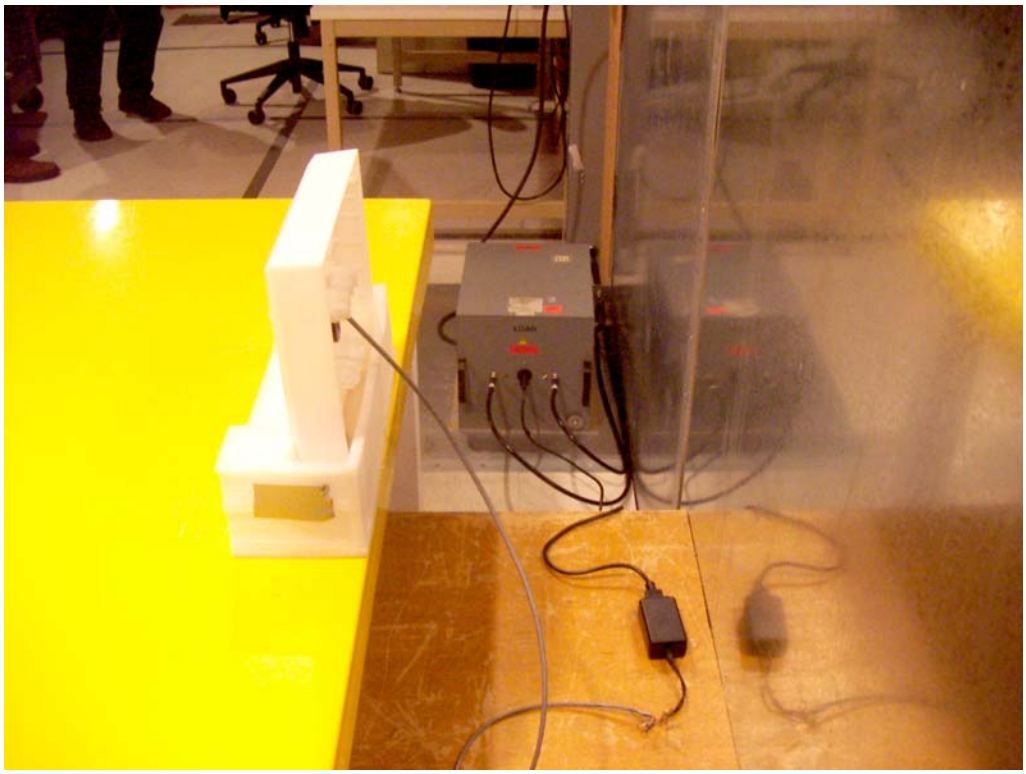


Radiated Emissions, 30 – 1000 MHz





AC Line Conducted Emissions



END OF REPORT