Project Number: 08339-10

Prepared for:

Hilberling GmbH
RF LABORATORIES
Kieler Strasse 53
24768 Rendsburg
Germany

By
Professional Testing (EMI), Inc.
1601B A. W. Grimes Boulevard
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April 2008

CERTIFICATION
Electromagnetic Interference Test Report
Hilberling GmbH
Scanning Receiver
Model No. PT-8000 A, B
with
Model No. HN-8000A and HN-8000B Power Supplies

Table of Contents

Certificate Of Compliance

Applicant:	Hilberling GmbH RF LABORATORIES
Applicant's Address:	Kieler Strasse 53 24768 Rendsburg Germany
FCC ID:	
Project Number:	08339-10
Test Dates:	March 18-20, 2008 April 10, 2008

I, Jason Anderson, for Professional Testing (EMI), Inc., being familiar with the FCC and IC rules and test procedures have reviewed the test setup, measured data and this report. I believe them to be true and accurate.

The **Hilberling PT-8000A and PT-8000B, with power supplies HN-8000A and HN-8000B,** respectively, was tested and found to be in compliance with FCC Part 15 and RSS 210 as an unintentional radiator and as a generic receiver.

The highest emissions generated by the above equipment, using either power supply, are listed below:

	Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Conducted Emission	15.0072	46.1	50.0	-3.9
Radiated Emission	126.02	22.9	33	-10.1
	119.555	22.9	33	-10.1

This report has been reviewed and accepted by Hilberling GmbH RF Laboratories. The undersigned is responsible for ensuring that **PT-8000 A and B and associated HN-8000 A and B** will continue to comply with the FCC and IC rules.

Jason Anderson
Director of Testing Services

1.0 EUT Description

The PT-8000 is a radio transceiver designed for use by licensed amateur radio operators. It is capable of receiving radio signals in the range of 9 kHz to 54 MHz and 110 to 170 MHz. It includes two identical receivers, which can be configured to demodulate AM, independent-(double) sideband, single-sideband, FM, and CW signals.

The transceiver includes two identical and independent receivers. Each uses a direct-digital synthesis (DDS) system employing voltage-controlled oscillators (VCOs) operating between 1 and 2 GHz. (For this reason, radiated emissions measurements were taken through 10 GHz.)

The frequencies to which the receivers are tuned are shown on a liquid-crystal display on the front of the radio. The user may configure the radio to scan a list of discrete channels stored in memory. Any frequency from 9 kHz through 29.999.999 MHz may be placed in memory. Scanning at 30 MHz and above is allowed only within the 50 MHz and 144 MHz Amateur bands.

Four antenna connectors are located on the rear of the transceiver. These are labeled "HF Ant. 1," HF Ant. 2," "RX Ant.," and "VHF Ant." Both receiver inputs and the transmitter may be connected to either of the HF Ant. connectors using internal relays. Either receiver may also be connected to the RX Ant. port so that a different antenna may be used for receiving than is used for transmitting. When the transceiver is operated on the Amateur 2 meter (144-148 MHz) band, internal relays connect the receivers and transmitter to the VHF Ant. port.

The DB-9S, RS 232 connector on the rear panel of the transceiver is provided only for uploading firmware. Remote control by a PC or other system through this connector may be implemented at a later time. Other d-sub connectors and the PC keyboard connectors on the rear panel are currently not defined for amateur use.

The transmitter section of the PT-8000 is supplied in two configurations, which differ only in regard to which final amplifier is installed. The "A" version delivers up to 100 Watts to the HF antenna ports on the 1.8-54 MHz bands and 25 Watts on the 144 MHz band. The "B" version delivers up to 600 Watts to the HF antenna ports and 25 Watts on the 144 MHz band to the VHF antenna port. The "A" and "B" versions use the same "receiver and VHF amplifier" power supply. A second power supply inside the HN-8000 supports only the amplifier section in the HF transmitter portion of the radio.

The 100-Watt and 600-Watt supplies are designated the HN-8000A and the HN-8000B, respectively. To demonstrate that the system is compliant in either configuration, radiated and powerline conducted emissions measurements were taken on one transceiver using each of these power supplies.

The system tested consisted of the following:

Manufacturer & Model	FCC Number	IC Number	Description
Hilberling PT-8000A (S/N 08030002) with HN-8000A (S/N 08030005) and HN8000B (S/N 08030006) power supplies	V84PT8000		HF/VHF Receiver

1.1 Applicable Documents

Guidelines	FCC Rule Parts Part 15	IC Rule Parts RSS-Gen
Power line conducted emissions	15.107(a)	7.2.2
Receiver spurious radiated emissions	15.109(a)	7.2.3.2
Receiver antenna power conducted emissions	15.111(a)	7.2.3.1

ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (2003)

Note: ANSI C63.4 test procedures were utilized to determine if the EUT met the guidelines from the above table.

1.2 EUT Operation

The EUT receivers were operated in SSB mode and tuned to 14.1 MHz while the radiated and conducted emissions measurements below 1 GHz were taken. The test engineer elected to defer measurements at low, medium, and high frequencies in each band while taking radiated emissions measurements. Initially, the receiver switching power supply radiated spurs at several HF and VHF frequencies. Tracing the cause of these emissions involved turning the receiver on and off while leaving the power supply on. These tests revealed the power supplies to be the cause of the emissions and showed that the receiver produces no measurable radiated emissions. This observation made it apparent that testing at three frequencies in each band instead of one would have produced no additional information.

When the antenna power measurements at 1 GHz and above were taken, the receivers were tuned to 53 MHz and 146 MHz. As with the radiated emissions measurements, changing the frequency to which the receiver was tuned in each band did not alter the emissions spectra. No additional information would have been produced by measuring emissions while setting the receiver to three frequencies in each band.

2.0 Electromagnetic Emissions Testing

Professional Testing (EMI), Inc. (PTI), follows the guidelines of NIST for all uncertainty calculations, estimates, and expressions thereof for EMC testing.

2.2 Conducted Emissions Measurements

Conducted emissions measurements were made on the mains terminals of the EUT to determine the line-to-ground radio noise emitted from each power-input terminal. Conducted emissions measurements on the mains terminals were performed at Professional Testing, located in Austin, Texas.

2.1.1 Test Procedure

The EUT was configured and operated in a manner consistent with typical applications. The EUT power cord in excess of one meter was folded back and forth forming a bundle 30 to 40 cm long in the approximate center of the cable. Excess interface cable lengths were separately bundled in a non-inductive arrangement at the approximate center of the cable, with the bundle 30 to 40 centimeters in length. The conducted emissions were maximized by varying the operating states and configuration of the EUT. The tests were performed in a 12' x 16' RayProof modular shielded room. The EUT was placed on a non-metallic table 0.4 meters from a vertical metal reference plane and 0.8 meters from a horizontal metal reference plane.

The measurements were taken using a Line Impedance Stabilization Network (LISN). A Spectrum Analyzer with a measurement bandwidth of 9 kHz was used to perform the conducted emissions measurements. The configuration of the shielded room showing the location of the EUT and the measurement equipment is given as Figure 1.

2.1.2 Test Criteria

The table below shows FCC conducted limits for an unintentional radiator operating under the provisions of part 15.107.

Frequency MHz	Maximum RF Line Voltage (dBµV) Average	Quasi-Peak
0.15 to 0.5	66 to 56	56 to 46
0.5 to 5.0	56	46
5.0 to 30.0	60	50

2.1.3 Test Results

The conducted emission test data are included in Appendix A. The conducted emissions generated by the PT-8000 are below the FCC Part 15.107 limits.

2.2 Radiated Emissions Measurements

Radiated emission measurements were taken at frequencies from 30 MHz to 10 GHz. The facilities at the Professional Testing Site 45, located in Austin, Texas were used. A "Description of Measurement Facilities" has been submitted to the FCC and approved pursuant to Section 2.948 of CFR 47 of the FCC rules.

The tests included adjustments of the measurement antenna to match the polarization of the emissions from the DUT. Both horizontal and vertical polarization were used.

2.2.1 Test Procedure

The EUT was placed on a non-conductive table 0.8 meters above the ground plane. The table was centered on a motorized turntable, which allows 360-degree rotation. A 1-meter cable was attached to each antenna port, and each of these was terminated in 50-Ohm resistive load. For measurements above 1 GHz, a measurement antenna was positioned at a distance of 1 meter, as measured from the closest point of the EUT. For measurements below 1 GHz, vertically- and horizontally-polarized measurement antennas were located 10 meters from the EUT. The associated 3-meter limit was extrapolated to 10 meters. Radiated emissions were maximized by rotating the table on which the EUT was placed.

A Spectrum Analyzer with peak detection was used to find the maximum radiated emissions during the variability testing. A drawing showing the test setup is given as Figure 2.

As noted above, the EUT receivers were operated in SSB mode and tuned to 14.1 MHz while measurements were performed. The test engineer elected to defer measurements at low, medium, and high frequencies in each band. Initially, the receiver switching power supply radiated spurs at several HF and VHF frequencies. Tracing the cause of these emissions involved turning the receiver on and off while leaving the power supply on. These tests revealed the power supplies to be the cause of the emissions and showed that the receiver produces no measurable radiated emissions. This observation made it apparent that testing at three frequencies in each band instead of one would have produced no additional information for this report.

2.2.2 Test Criteria

The table below shows FCC radiated limits for an unintentional radiator operating under the provisions of part 15.109. The reference distance for each limit is also shown in this table.

Frequency MHz	Test Distance (Meters)	Field Strength (µV/m)@3m	(dBµV/m)@Test Distance
30 to 88	10	100	29.5
88 to 216	10	150	33.0
216 to 960	10	200	35.5
960 to 1000	10	500	43.5
1000 to 10000	3	500	54

Note: The spurious limits are expressed as Quasi-Peak values.

2.2.3 Test Results

The radiated emissions test data are shown in Appendix B. Peak and Quasi-Peak detection were used in spurious emissions measurements below 1 GHz. The unintentional radiated emissions of the PT-8000 are below the FCC Part 15.109 limits.

3.0 Receiver Antenna Power Conducted Emissions: Section 15.111

Measurements of the receiver antenna power conducted emissions were made at the Professional Testing Round Rock, Texas facility. All measurements were made in a controlled, indoor environment in a configuration which did not present measurement distortion or ambient interference.

3.1 Test Procedure

The EUT was placed on a non-conductive table 0.8 meters above the floor. A spectrum analyzer with an external, broadband preamplifier and 3dB attenuator was connected the HF-ANT 1 and the VHF-ANT ports for the 30 MHz to 10 GHz measurements. Readings were taken while the receiver was tuned to each of the frequencies listed below. A drawing showing the test setup is given as Figure 1.

1.9 MHz, 3.75 MHz, 7.15 MHz, 10.10 MHz, 14.20 MHz, 18.10 MHz, 21.25 MHz, 24.90 MHz, 29.0 MHz, 53.0 MHz, and 146.0 MHz

As noted above, when the antenna power measurements were taken, the receivers were tuned to a single frequency in each band. As with the radiated emissions measurements, changing the frequency to which the receiver was tuned in each band did not alter the emissions spectra. No additional information would have been produced by measuring emissions while setting the receiver to three frequencies in each band.

3.2 Test Criteria

Section 15.111 states that the voltage developed across a resistive termination equal to the impedance specified for an antenna, the power developed across the termination, at any frequency within the range, 30 MHz to 10 GHz, shall not exceed 2-nanowatts.

Frequency MHz	Power (nW)	Power (dBm)
30 to 1000	2	-57
1000 to 10000	2	-57

3.3 Test Results

The antenna conducted emissions test data are given in Appendix C. The data indicate that the receiver complies with FCC requirements.

4.0 Scanning Receiver Cellular Band Rejection

The PT-8000 is designed for operation by users of the licensed amateur radio service, and scanning will be allowed only below 30 MHz and within the 50-54 MHz and 144-148 MHz amateur bands. Section 15.3(v) indicates that, as such, this receiver is exempted from the requirement that it be evaluated as a scanning receiver. Nevertheless, an analysis of the PT-8000 scanning receiver was performed to ensure technical compliance with FCC Sections 15.121(a)(1) and 15.121(a)(2*ff*).

4.1 Evaluation Procedure

The design of the PT-8000 receiver was examined to determine whether the product could be made to receive cellular-band signals. We found that the receiver employs a conventional double-conversion design, with detection performed by DSP processors. The first mixer is preceded by a preselector, and each IF stage includes 16-pole crystal filtering to reject adjacent and out-of-band signals. The LO for each mixer is generated by a VCO operating between 1 and 2 GHz and locked to a precision 20 MHz clock. When the VCO outputs are divided to frequencies needed by the mixers, the signals contain very little spurious noise which might otherwise cause responses to out-of-band signals.

All receiver sub-systems, including the preselectors, mixers, IF amplifiers, DDS systems, and DSP-based detectors, are controlled by internal microprocessors. Thus, the operating parameters of the system can not be changed by a user to enable the receiver to operate at frequencies other than those shown in the Technical Specifications section of the user manual. New software could be uploaded by users through the RS-232 port, but Hilberling GmbH RF Laboratories has no plans to release the source code. Thus, the operation of the receivers could not be changed to permit operation outside of the specified HF or VHF bands.

By this analysis, we determine that the receiver cannot recover signals in any of the cellular bands. It is incapable of amplifying and delivering them to the detectors, and the software controlling the internal computer cannot be changed to allow the receiver to operate at frequencies other than those shown in the specifications.

4.2 Evaluation Criteria

The PT-8000 is designed for operation by users of the licensed, amateur radio service. Section 15.3(v) indicates that, as such, this receiver is exempted from the requirement that it be evaluated as a scanning receiver.

4.3 Evaluation Results

Although the PT-8000 is exempted from the requirements of Section 15.121, an analysis of the receiver design confirms that it is compliant in any case.

5.0 Modifications to Equipment

When the HM-8000A and HM-8000B power supplies were found to be sources of unacceptable radiated emissions, they were modified by Hilberling GmbH RF Laboratories to make them compliant. The modified power supplies are shown in the Photograph exhibit.

6.0 List of Test Equipment

A list of the test equipment utilized to perform the testing is given below. The date of calibration is given for each.

Asset #	Manufacturer	Model #	Description	Calibration Due
275	HP	85650A	Quasi-peak Adapter (high band)	June 18, 2008
83	HP	85662A	Spectrum Analyzer Display (high band)	NCR
84	HP	8566B	Spectrum Analyzer (high band)	March 14, 2009
238	HP	85685A	RF Preselector (high band)	June 22, 2008
1277	HP	85650A	Quasi-peak Adapter (low band)	June 18, 2008
45	HP	85662A	Spectrum Analyzer Display (low band)	NCR
1148	HP	8568B	Spectrum Analyzer (low band)	June 18, 2008
990	HP	85685A	RF Preselector (low band)	January 21, 2009
1454	HP	8447D	RF Preamplifier	May 8, 2008
1389	Emco	3108	Biconical Antenna	April 18, 2008
1486	Emco	3147	Log Periodic Dipole Araay Antenna	April 19, 2008
C026	none	none	Coaxial Cable (low band)	June 28, 2008
C027	none	none	Coaxial Cable (high band)	June 28, 2008
0410	HP	8591E	Spectrum Analyzer	December 2, 2008

FIGURE 1: Conducted Emissions Test Setup

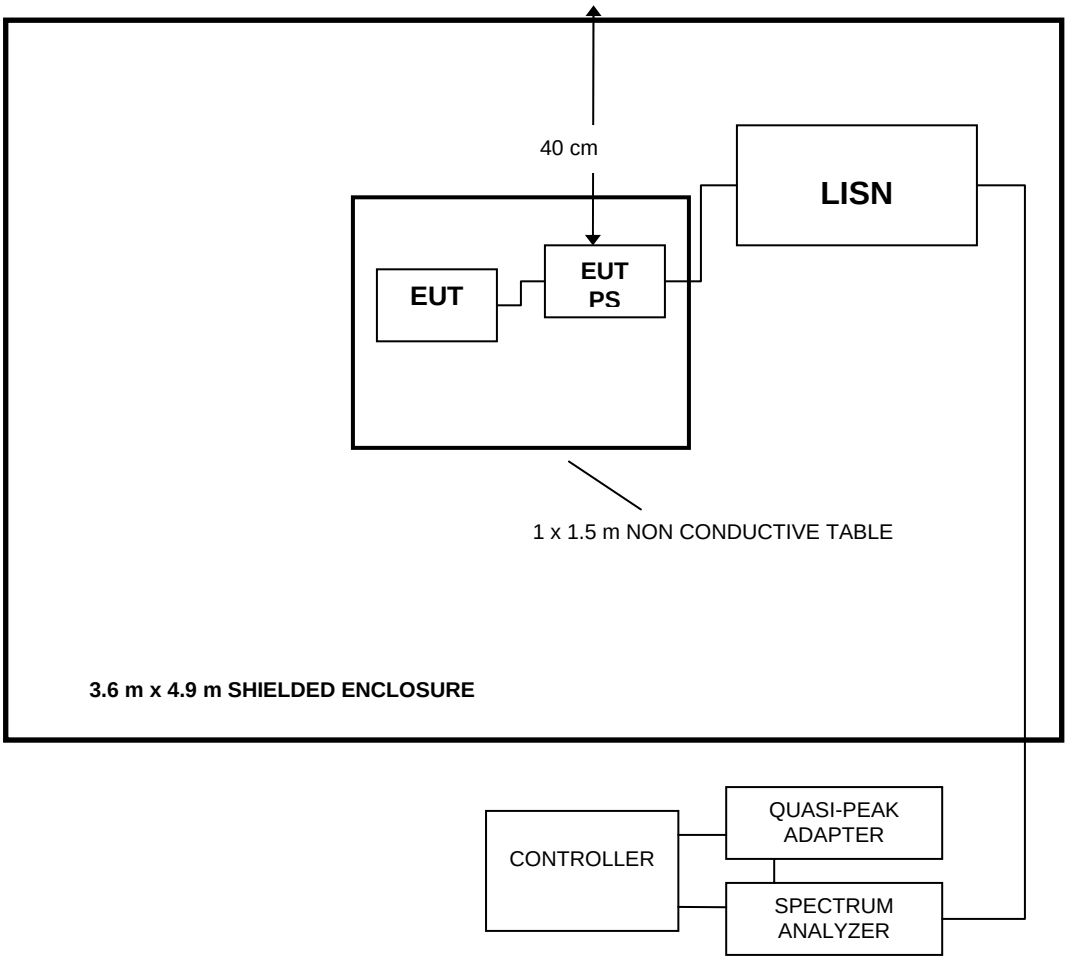
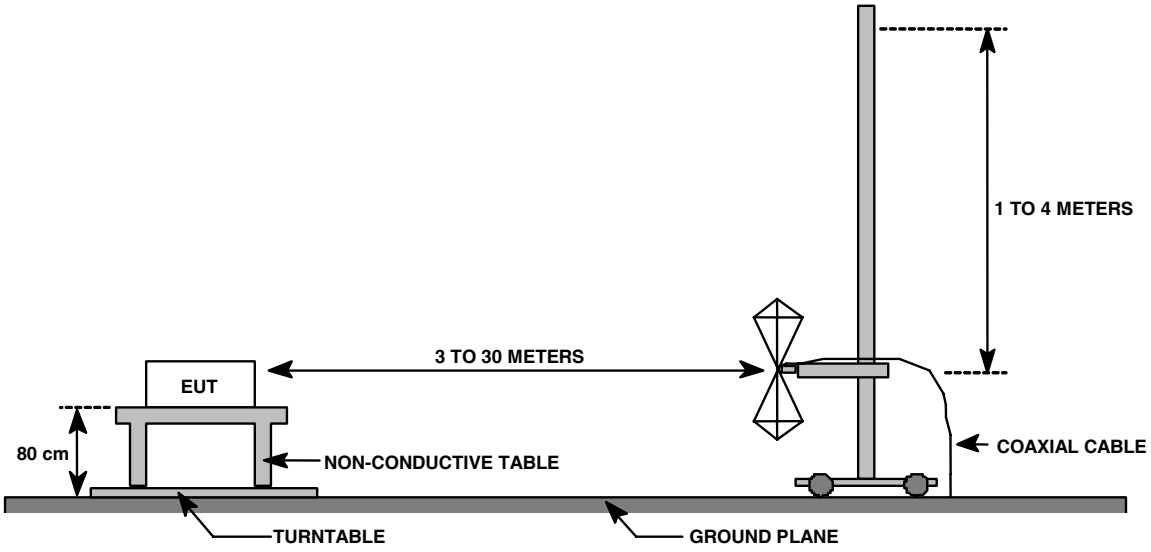


FIGURE 2: Radiated Emissions Test Setup

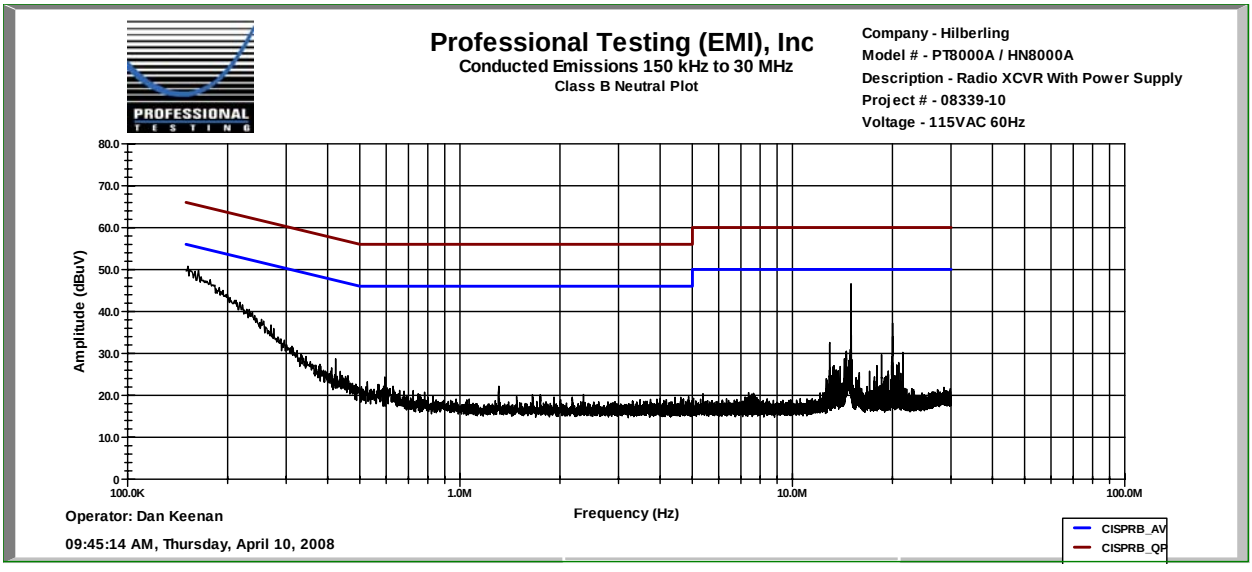


APPENDIX A CONDUCTED EMISSIONS DATA

Conducted Data Sheet
Neutral Line
Hilberling GmbH RF Laboratories
PT-8000A + HN-8000A
Quasi-Peak Detection RBW =9 kHz VBW = 100kHz
Average Detection RBW = 9kHz VBW = 10Hz

Test Date: April 10, 2008

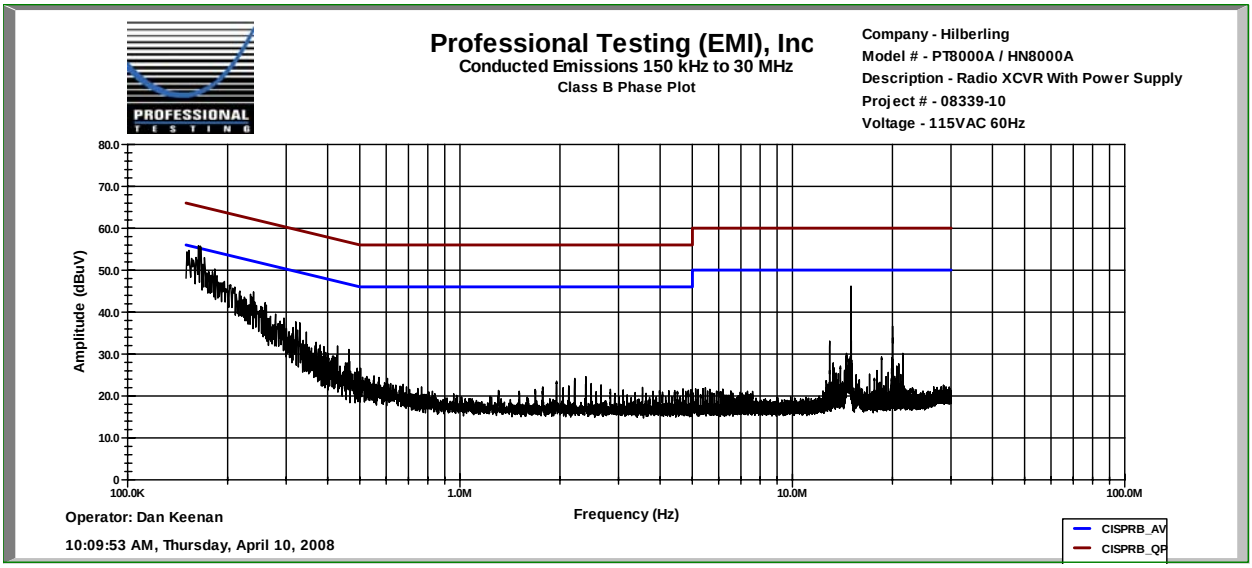
Frequency	Quasi-Peak Reading	Average Reading	Quasi-Peak Limit	Margin	Average Limit	Margin
(MHz)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dB)
0.16099	49	35.6	65.7	-16.7	55.7	-20.1
0.16139	47.7	35.4	65.7	-18	55.7	-20.3
0.16271	47.5	36	65.6	-18.1	55.6	-19.6
0.16377	48.5	35.4	65.6	-17.1	55.6	-20.2
0.16421	48	35.1	65.6	-17.6	55.6	-20.5
12.9489	31.1	30.6	60	-28.9	50	-19.4
15.0069	46	45.5	60	-14	50	-4.5
15.0076	45.9	45.5	60	-14.1	50	-4.5
20.0092	31	16.9	60	-29	50	-33.1
20.0103	30.8	17.6	60	-29.2	50	-32.4



Conducted Data Sheet
Phase Line
Hilberling GmbH RF Laboratories
PT-8000A + HN-8000A
Quasi-Peak Detection RBW =9 kHz VBW = 100kHz
Average Detection RBW = 9kHz VBW = 10Hz

Test Date: April 10, 2008

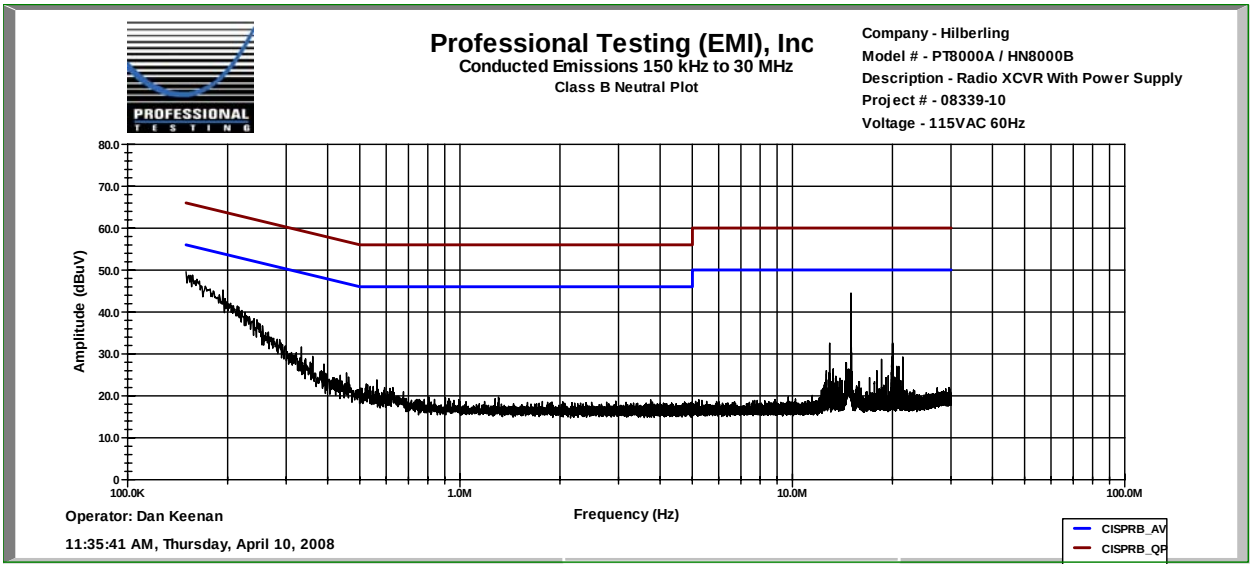
Frequency	Quasi-Peak Reading	Average Reading	Quasi-Peak Limit	Margin	Average Limit	Margin
(MHz)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dB)
0.16099	49	35.6	65.7	-16.7	55.7	-20.1
0.16139	47.7	35.4	65.7	-18	55.7	-20.3
0.16271	47.5	36	65.6	-18.1	55.6	-19.6
0.16377	48.5	35.4	65.6	-17.1	55.6	-20.2
0.16421	48	35.1	65.6	-17.6	55.6	-20.5
12.9489	31.1	30.6	60	-28.9	50	-19.4
15.0069	46	45.5	60	-14	50	-4.5
15.0076	45.9	45.5	60	-14.1	50	-4.5
20.0092	31	16.9	60	-29	50	-33.1
20.0103	30.8	17.6	60	-29.2	50	-32.4



Conducted Data Sheet
Neutral Line
Hilberling GmbH RF Laboratories
PT-8000A + HN-8000B
Quasi-Peak Detection RBW =9 kHz VBW = 100kHz
Average Detection RBW = 9kHz VBW = 10Hz

Test Date: April 10, 2008

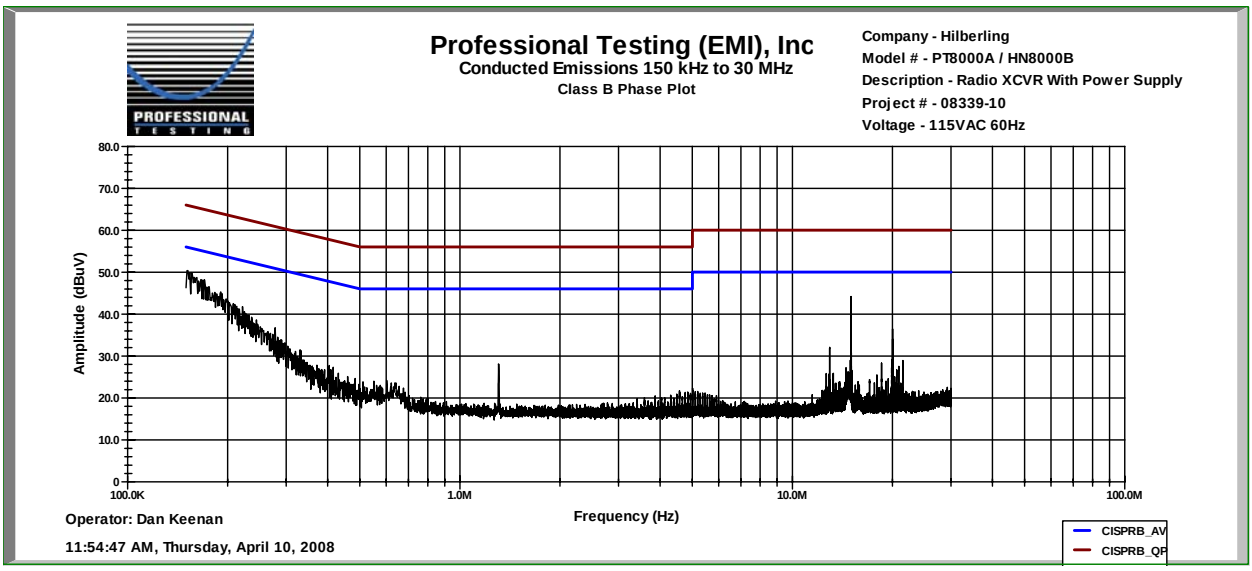
Frequency	Quasi-Peak Reading	Average Reading	Quasi-Peak Limit	Margin	Average Limit Limit	Margin
(MHz)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dB)
0.151299	42.7	34.5	66	-23.3	56	-21.5
0.4293	20.2	13	58	-37.8	48	-35.1
12.9493	31.6	31.2	60	-28.4	50	-18.8
15.008	44.4	44.3	60	-15.6	50	-5.7
15.0082	44.4	44.2	60	-15.6	50	-5.8
20.0068	30.4	18.1	60	-29.6	50	-31.9
20.0091	30.4	18.1	60	-29.6	50	-31.9



Conducted Data Sheet
Phase Line
Hilberling GmbH RF Laboratories
PT-8000A + HN-8000B
Quasi-Peak Detection RBW =9 kHz VBW = 100kHz
Average Detection RBW = 9kHz VBW = 10Hz

Test Date: April 10, 2008

Frequency	Quasi-Peak Reading	Average Reading	Quasi-Peak Limit	Margin	Average Limit Limit	Margin
(MHz)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dB)
0.150478	44.5	34.9	66	-21.4	56	-21.1
0.21224	36.4	27.1	64.2	-27.8	54.2	-27.1
0.38054	23.6	14.7	59.4	-35.8	49.4	-34.7
0.38593	21.7	13.5	59.3	-37.6	49.3	-35.8
1.30489	25.8	22.1	56	-30.2	46	-23.9
12.9502	31.1	30.3	60	-28.9	50	-19.7
15.0073	44	43.9	60	-16	50	-6.1
15.0077	43.9	43.9	60	-16.1	50	-6.1
20.0084	30	17.9	60	-30	50	-32.1
20.0101	30.1	18	60	-29.9	50	-32

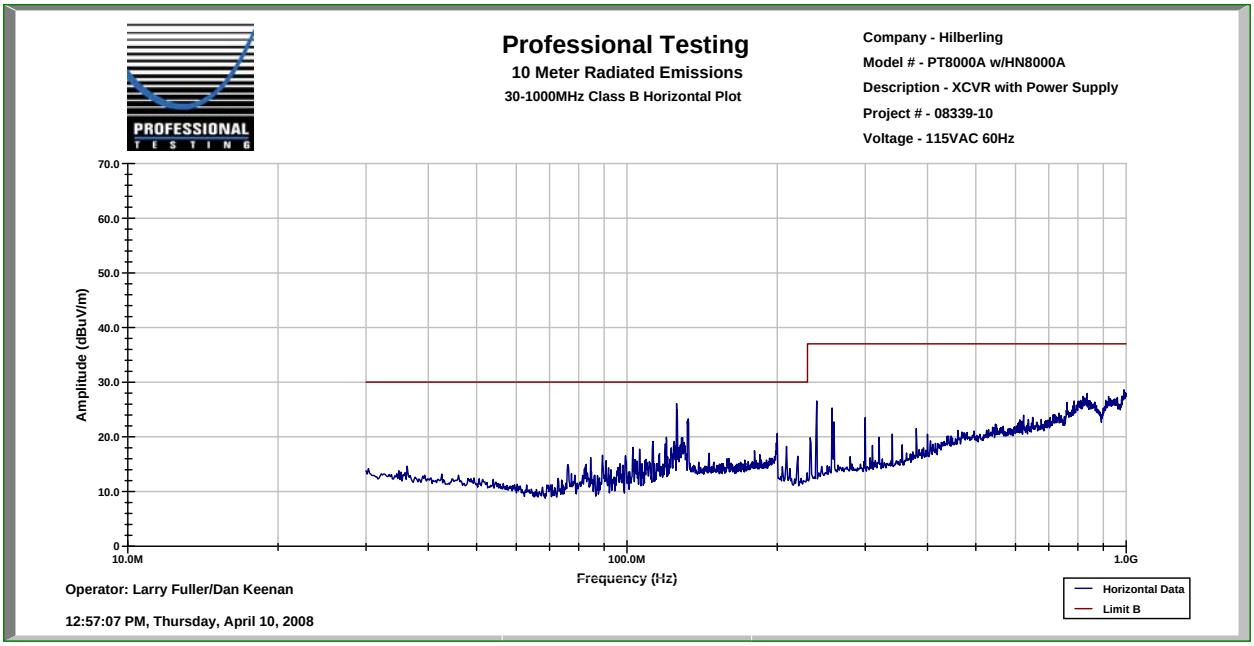


APPENDIX B RADIATED EMISSIONS DATA

Radiated Data Sheet
Hilberling GmbH RF Laboratories
PT-8000A + HN-8000A
Quasi-Peak Detection RBW =120 kHz
Horizontal Polarization
30 – 1000 MHz

Test Date: April 10, 2008

Frequency (MHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Function
119.555	291	4	30.6	25.7	11.0	1.1	17.0	33	-16.0	Quasi Peak
126.02	226	4	35.9	25.8	11.5	1.3	22.9	33	-10.1	Quasi Peak
240	59	3.8	45.9	36.2	12.0	2.1	23.8	35.5	-11.7	Quasi Peak
258.108	58	3.9	41.1	36.3	12.9	2.3	20.0	35.5	-15.5	Quasi Peak



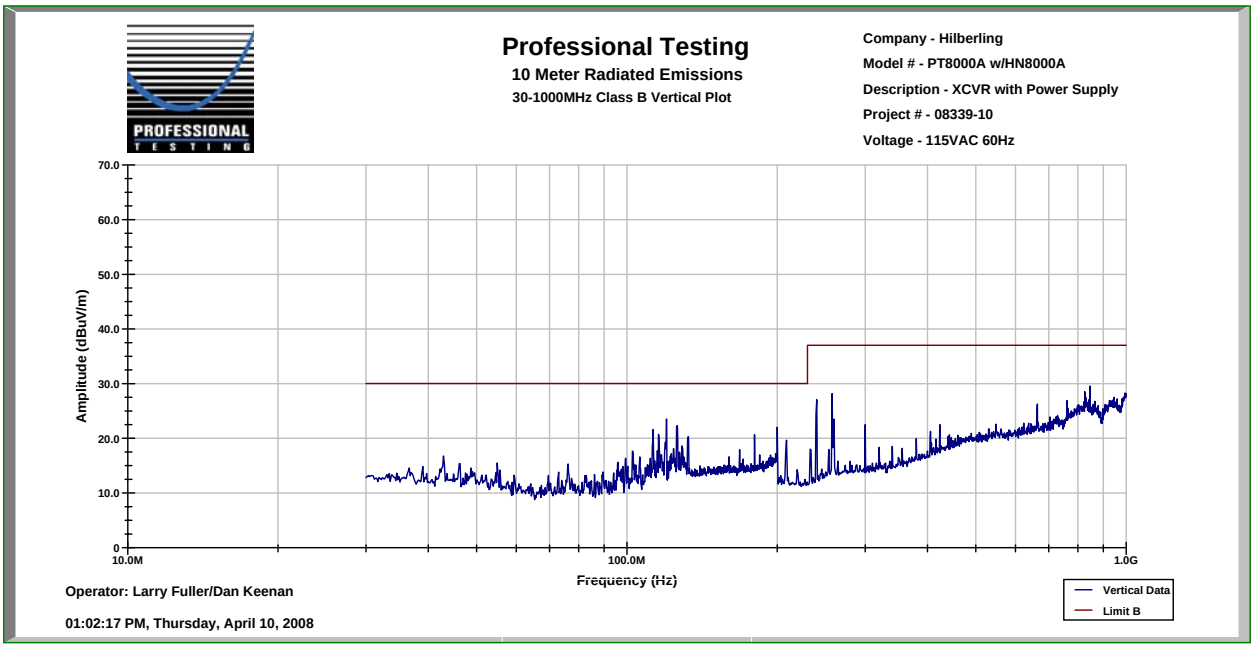
PT-8000 radiated emissions, 30 MHz to 1 GHz, in horizontal polarization, with the HN-8000A power supply.

Radiated Data Sheet

Hilberling GmbH RF Laboratories
PT-8000A + HN-8000A
Quasi-Peak Detection RBW =120 kHz
Vertical Polarization
30 – 1000 MHz

Test Date: April 10, 2008

Frequency (MHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Function
119.555	262	1	36.5	25.7	11.0	1.1	22.9	33	-10.1	Quasi Peak
126.02	308	1	32.6	25.8	11.5	1.3	19.6	33	-13.4	Quasi Peak
240	175	1	45.4	36.2	12.0	2.1	23.3	35.5	-12.2	Quasi Peak
258.108	140	1	46.4	36.3	12.9	2.3	25.3	35.5	-10.2	Quasi Peak

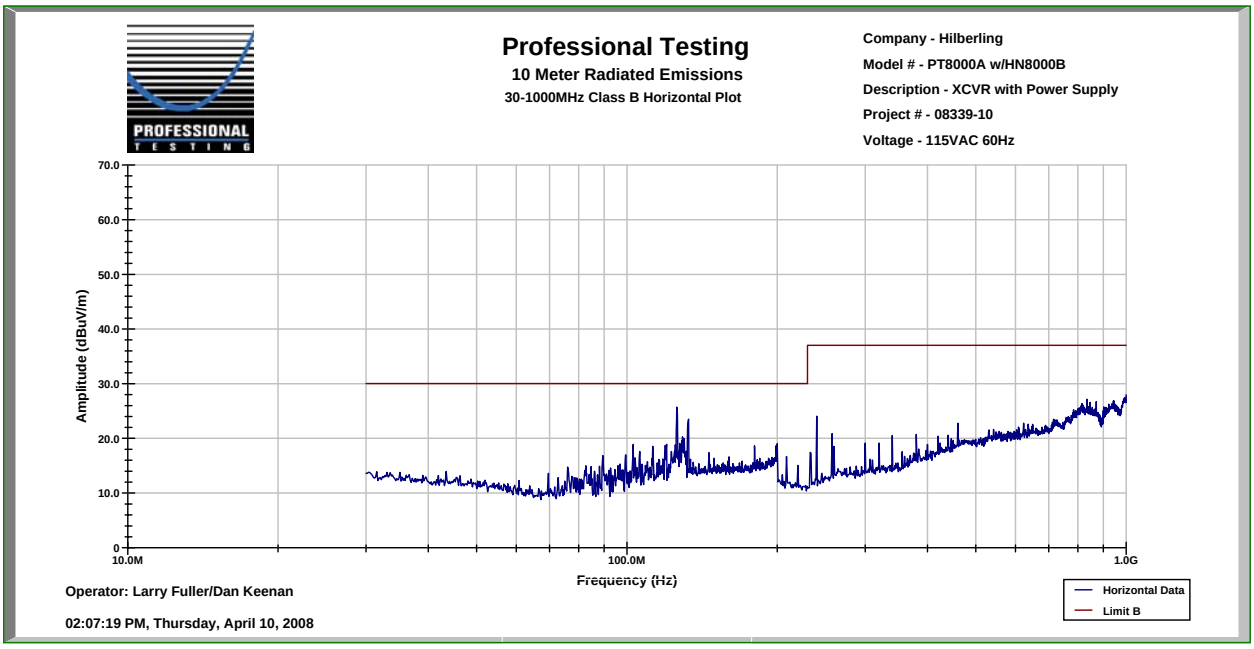


PT-8000 radiated emissions, 30 MHz to 1 GHz, in vertical polarization, with the HN-8000A power supply.

Radiated Data Sheet
Hilberling GmbH RF Laboratories
PT-8000A + HN-8000B
Quasi-Peak Detection RBW =120 kHz
Horizontal Polarization
30 – 1000 MHz

Test Date: April 10, 2008

Frequency (MHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Function
119.555	291	4	30.6	25.7	11.0	1.1	17.0	33	-16.0	Quasi Peak
126.02	226	4	35.9	25.8	11.5	1.3	22.9	33	-10.1	Quasi Peak
132.08	216	3.5	33.5	25.8	11.9	1.5	21.1	33	-11.9	Quasi Peak
240	59	3.8	45.9	36.2	12.0	2.1	23.8	35.5	-11.7	Quasi Peak
258.108	58	3.9	41.1	36.3	12.9	2.3	20.0	35.5	-15.5	Quasi Peak
840.4	1	1	28.8	36.7	22.9	4.8	19.8	35.5	-15.7	Quasi Peak

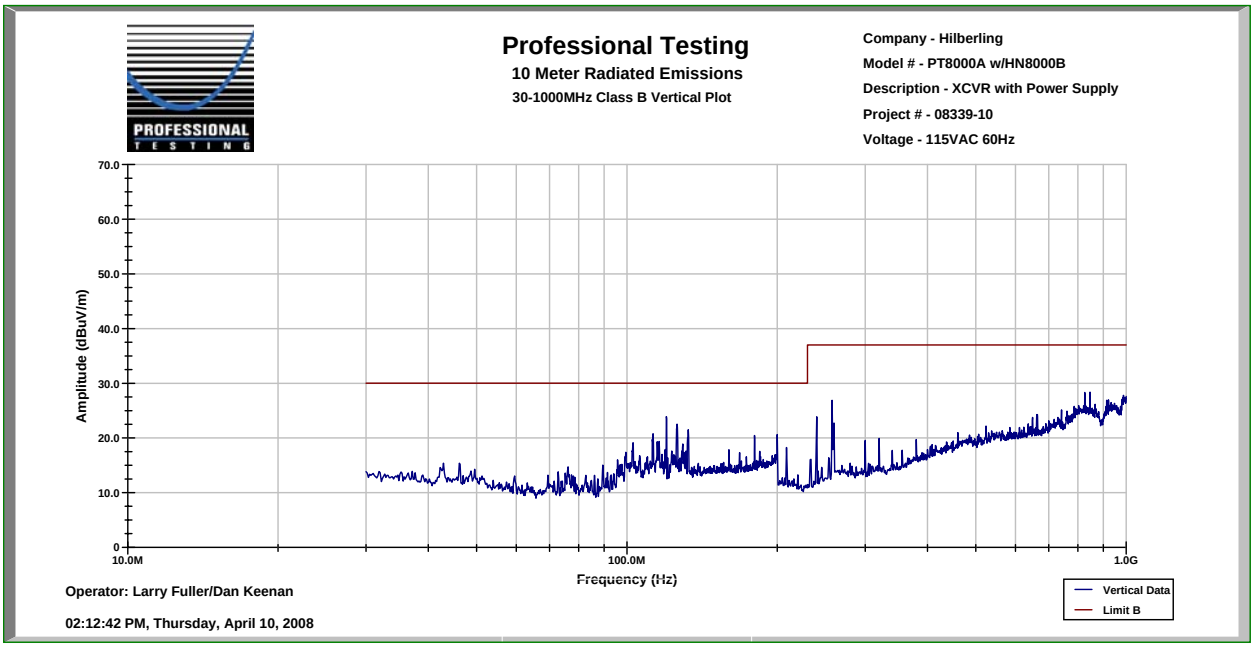


PT-8000 radiated emissions, 30 MHz to 1 GHz, in horizontal polarization, with the HN-8000B power supply.

Radiated Data Sheet
Hilberling GmbH RF Laboratories
PT-8000A + HN-8000B
Quasi-Peak Detection RBW =120 kHz
Vertical Polarization
30 – 1000 MHz

Test Date: April 10, 2008

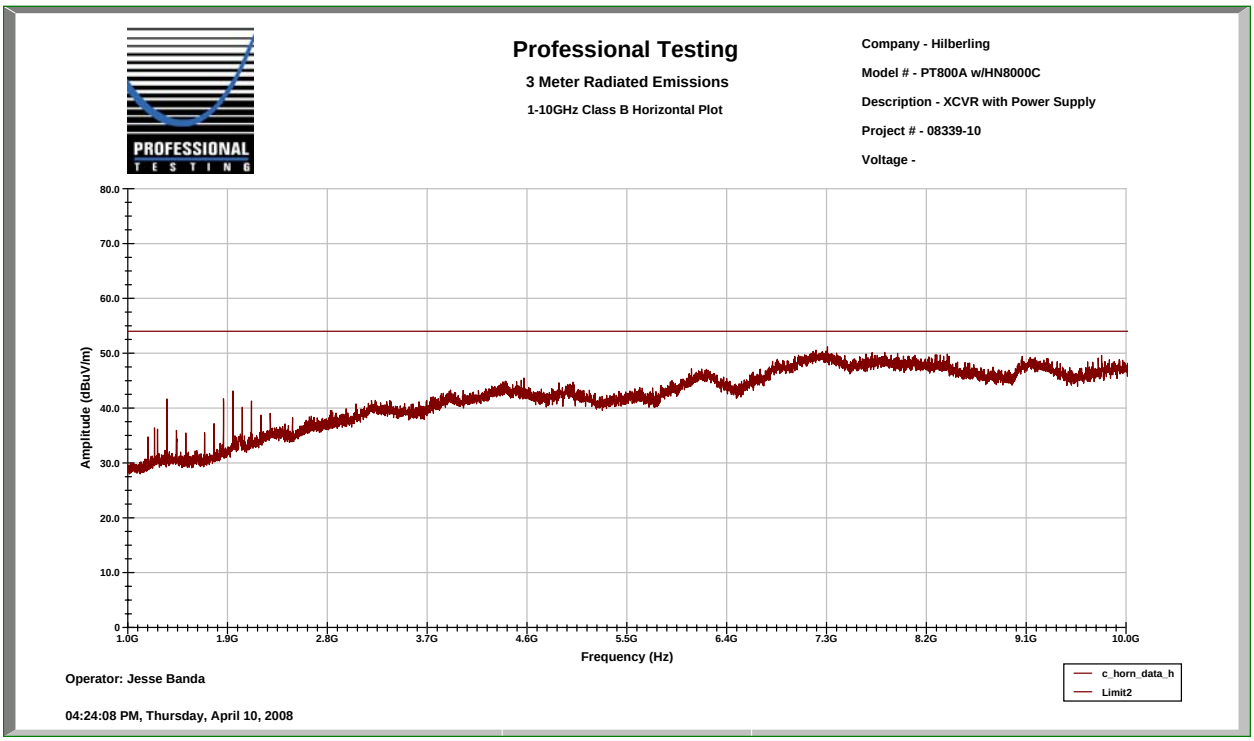
Frequency (MHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Function
119.555	262	1	36.5	25.7	11.0	1.1	22.9	33	-10.1	Quasi Peak
126.02	308	1	32.6	25.8	11.5	1.3	19.6	33	-13.4	Quasi Peak
132.08	327	1	30.5	25.8	11.9	1.5	18.1	33	-14.9	Quasi Peak
240	175	1	45.4	36.2	12.0	2.1	23.3	35.5	-12.2	Quasi Peak
258.108	140	1	46.4	36.3	12.9	2.3	25.3	35.5	-10.2	Quasi Peak
846.4	1	1	28.6	36.7	22.8	4.9	19.6	35.5	-15.9	Quasi Peak



PT-8000 radiated emissions, 30 MHz to 1 GHz, in vertical polarization, with the HN-8000B power supply.

Radiated Data Sheet
Hilberling GmbH RF Laboratories
PT-8000A + HN-8000B
Peak Detection RBW =1 MHz
Horizontal Polarization
1 - 10 GHz

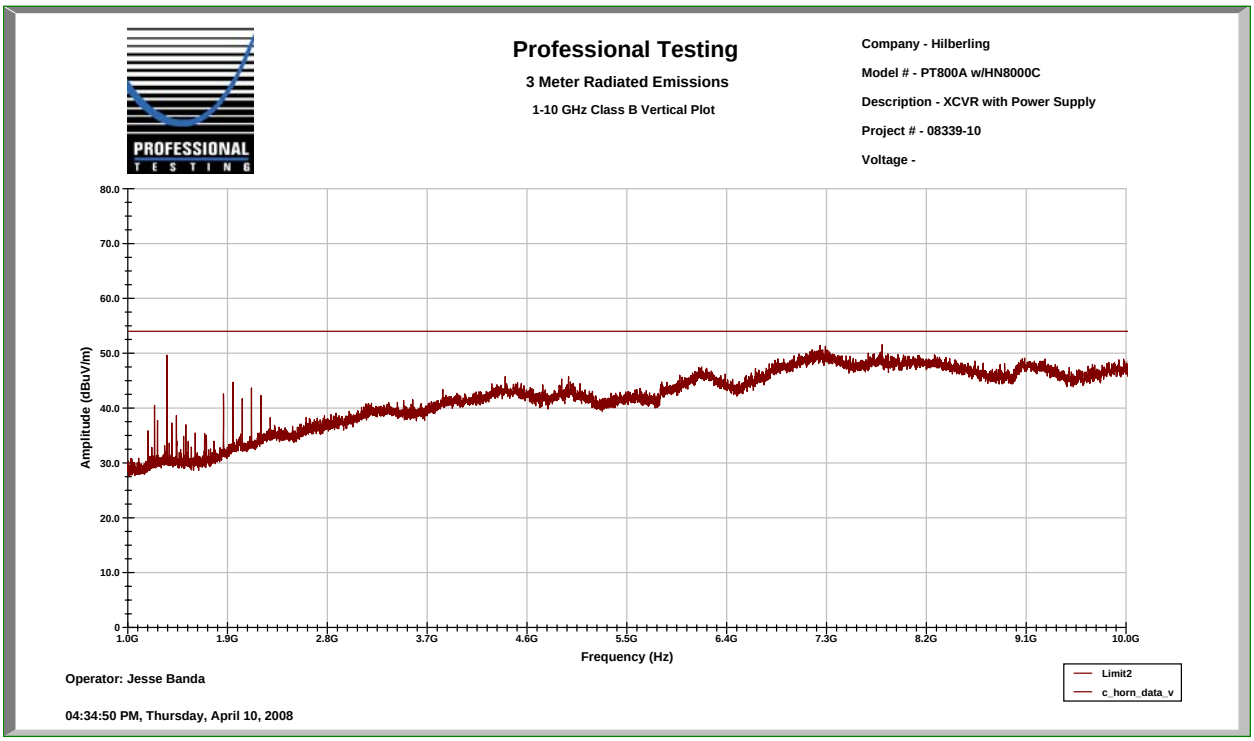
Test Date: April 10, 2008



Horizontally polarized PT-8000A radiated emissions from 1 to 10 GHz.

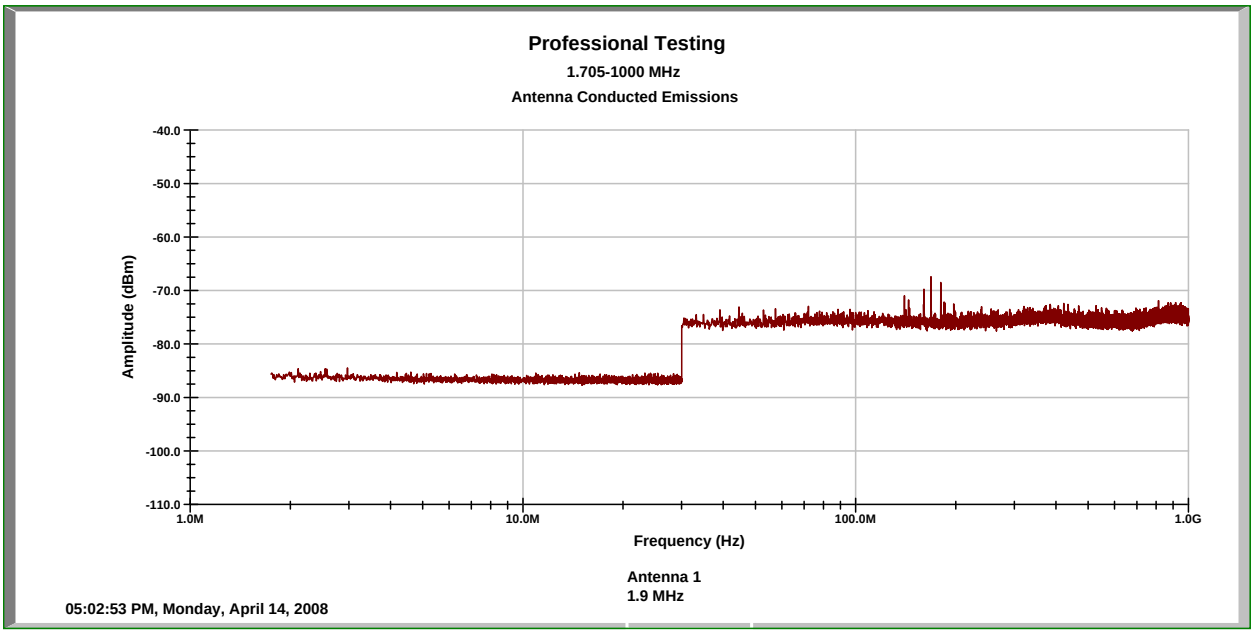
Radiated Data Sheet
Hilberling GmbH RF Laboratories
PT-8000A + HN-8000B
Peak Detection RBW =1 MHz
Vertical Polarization
1 - 10 GHz

Test Date: April 10, 2008

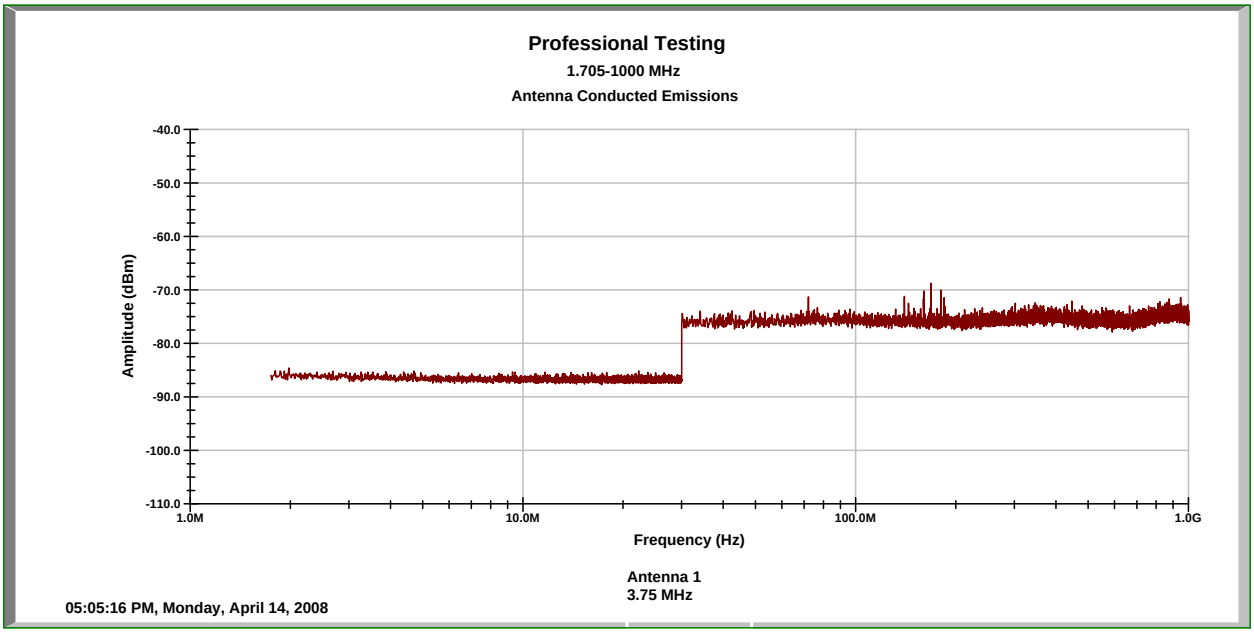


Vertically polarized PT-8000A radiated emissions from 1 to 10 GHz.

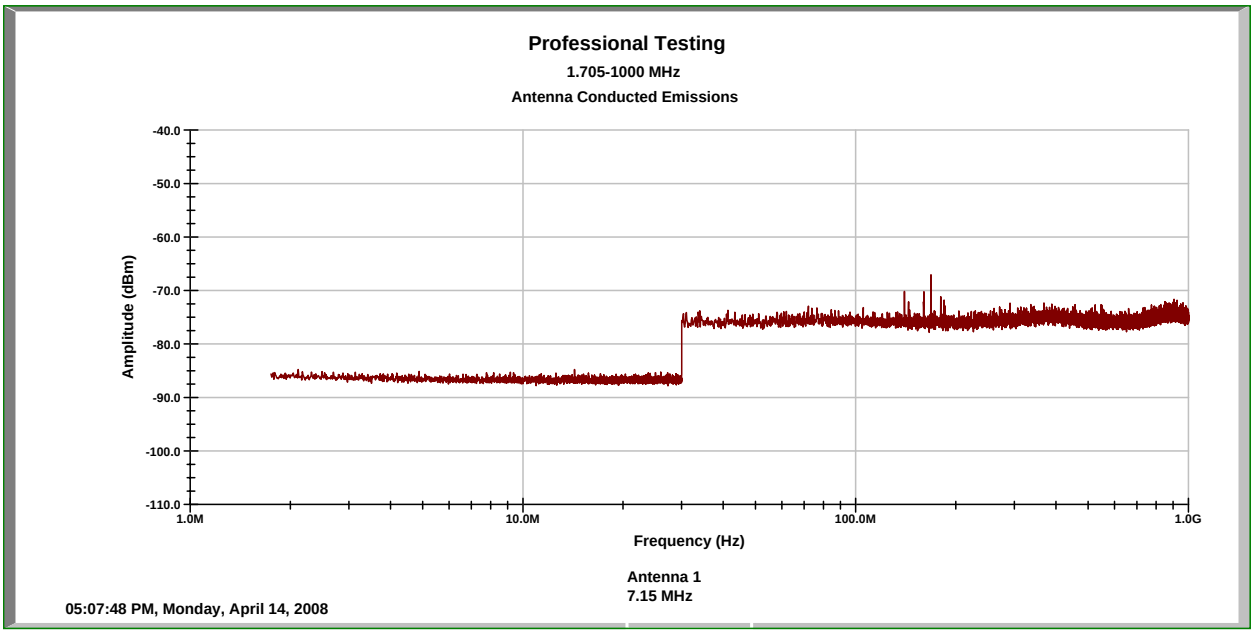
APPENDIX C ANTENNA-CONDUCTED EMISSIONS DATA



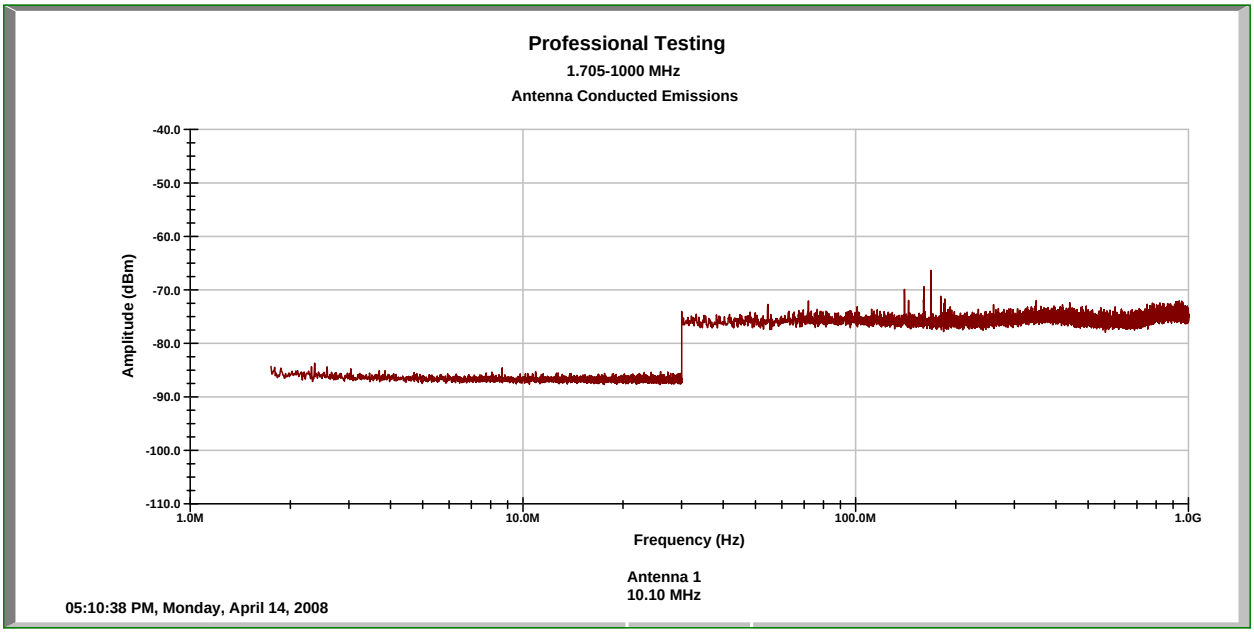
1.705 – 1000 MHz Antenna-Conducted Emissions: PT-8000 HF ANT. 1 with receiver tuned to 1.9 MHz.



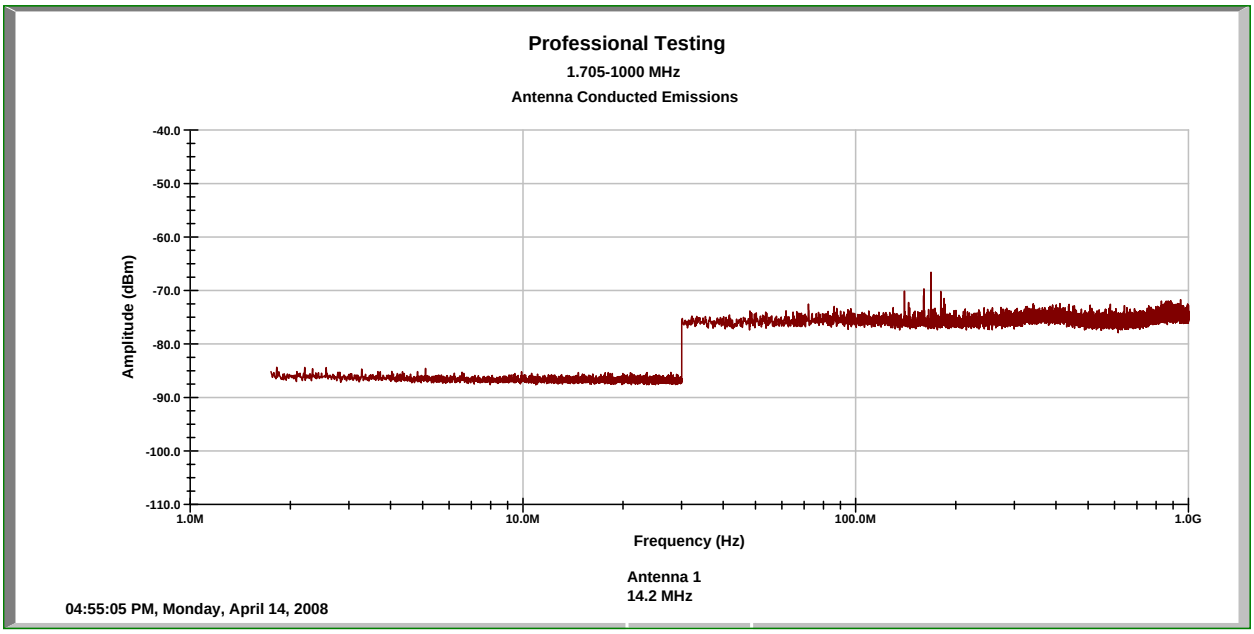
1.705 – 1000 MHz Antenna-Conducted Emissions: PT-8000 HF ANT. 1 with receiver tuned to 3.75 MHz.



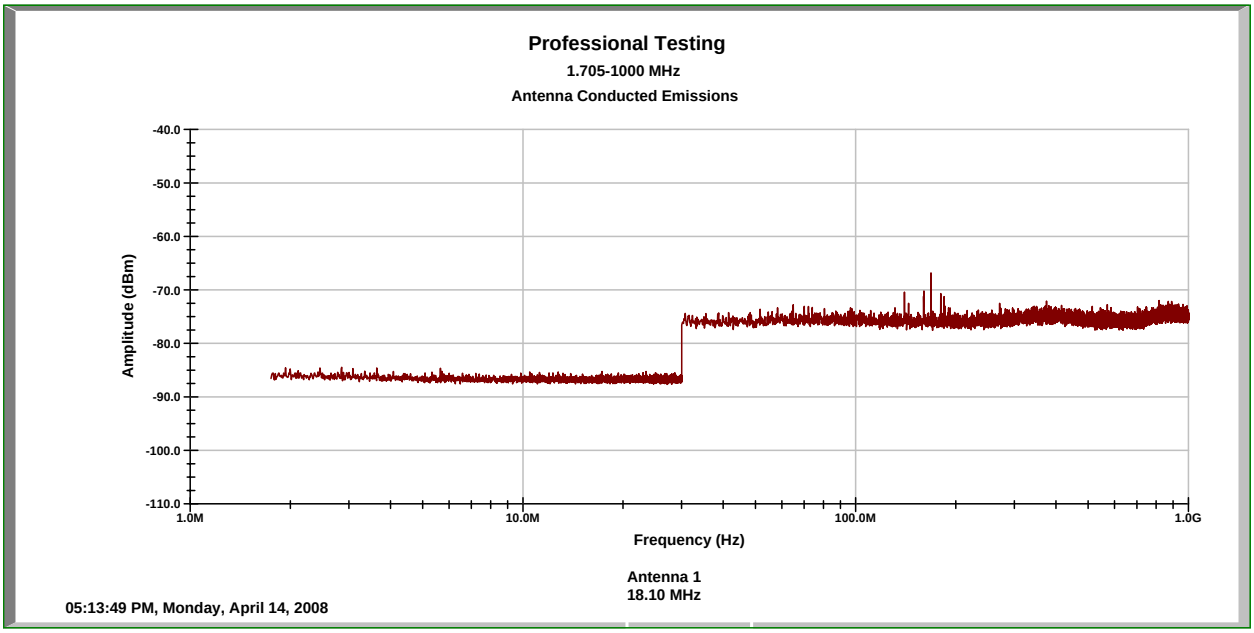
1.705 – 1000 MHz Antenna-Conducted Emissions: PT-8000 HF ANT. 1 with receiver tuned to 7.15 MHz.



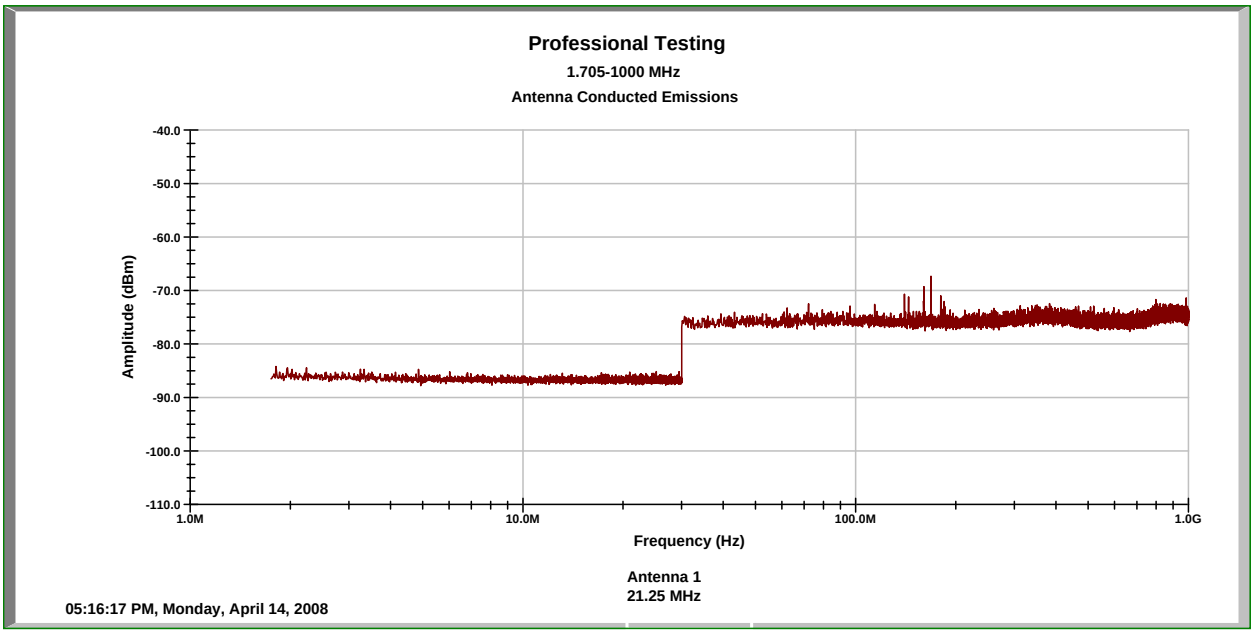
1.705 – 1000 MHz Antenna-Conducted Emissions: PT-8000 HF ANT. 1 with receiver tuned to 10.1 MHz.



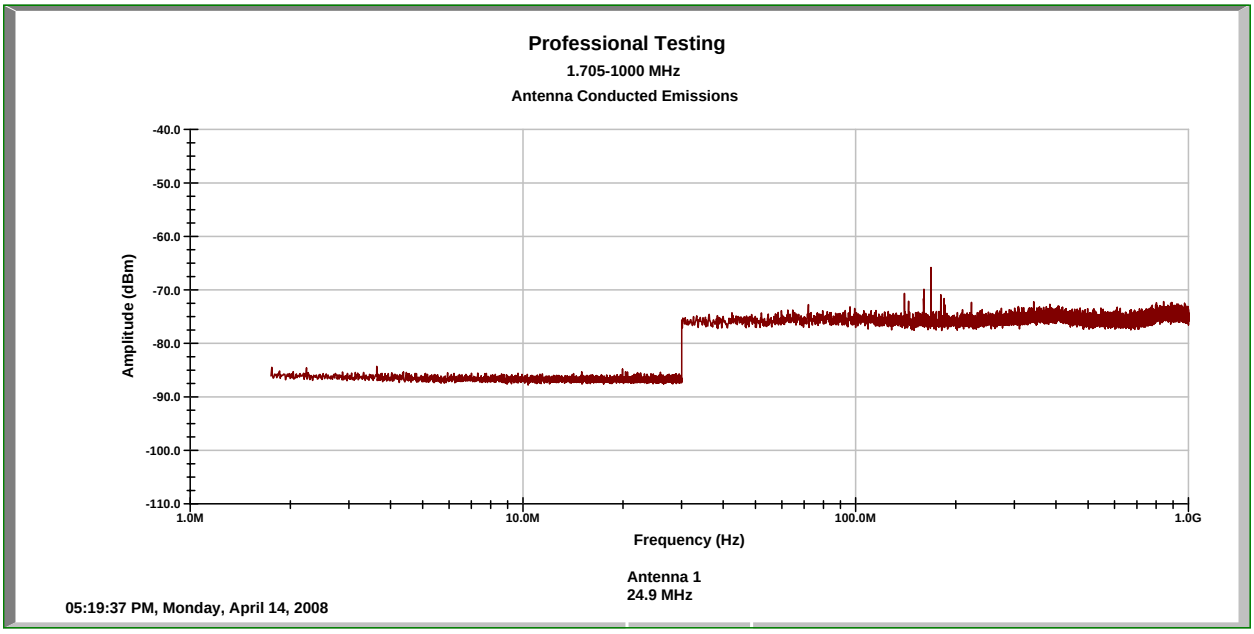
1.705 – 1000 MHz Antenna-Conducted Emissions: PT-8000 HF ANT. 1 with receiver tuned to 14.2 MHz.



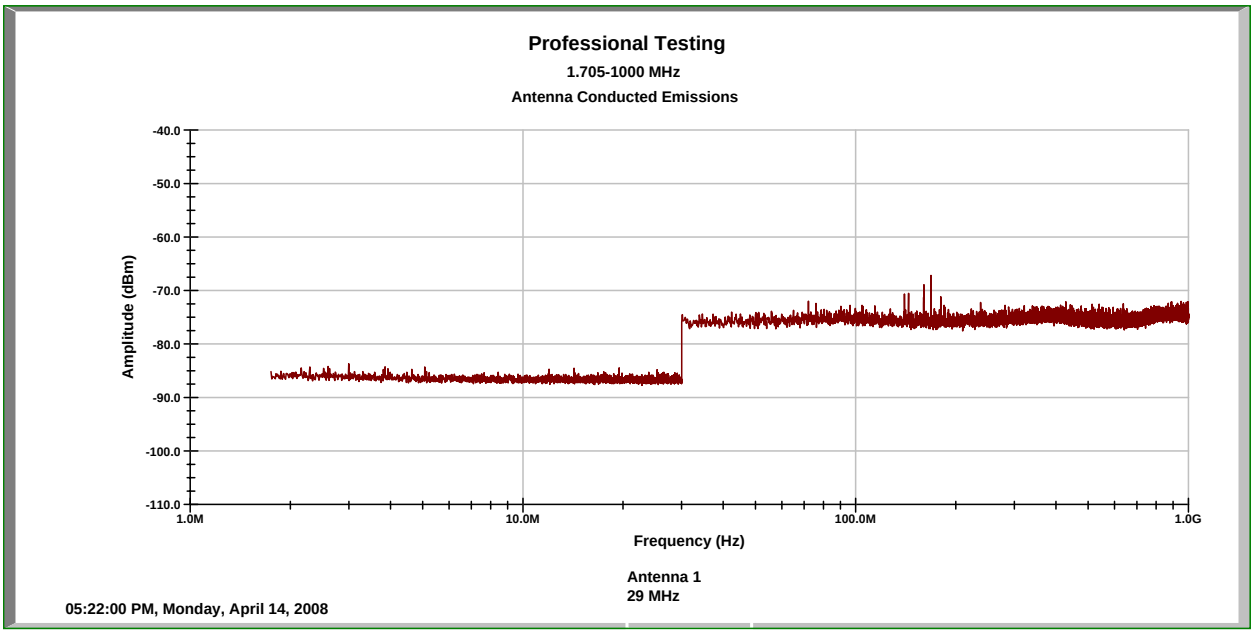
1.705 – 1000 MHz Antenna-Conducted Emissions: PT-8000 HF ANT. 1 with receiver tuned to 18.1 MHz.



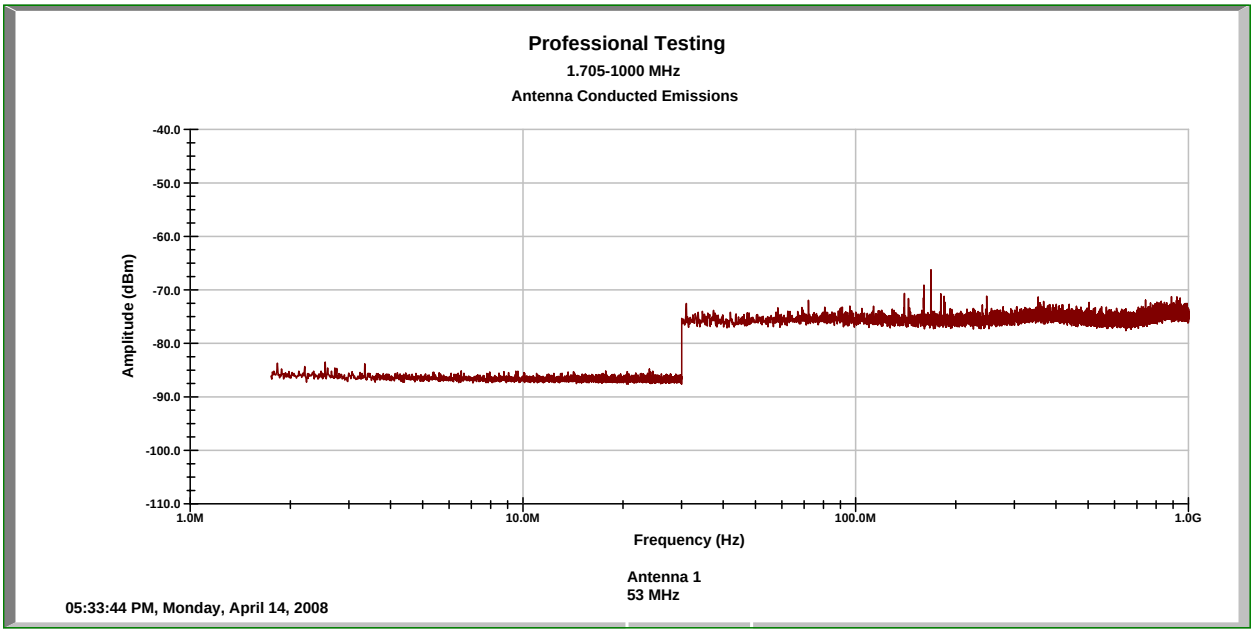
1.705 – 1000 MHz Antenna-Conducted Emissions: PT-8000 HF ANT. 1 with receiver tuned to 21.25 MHz.



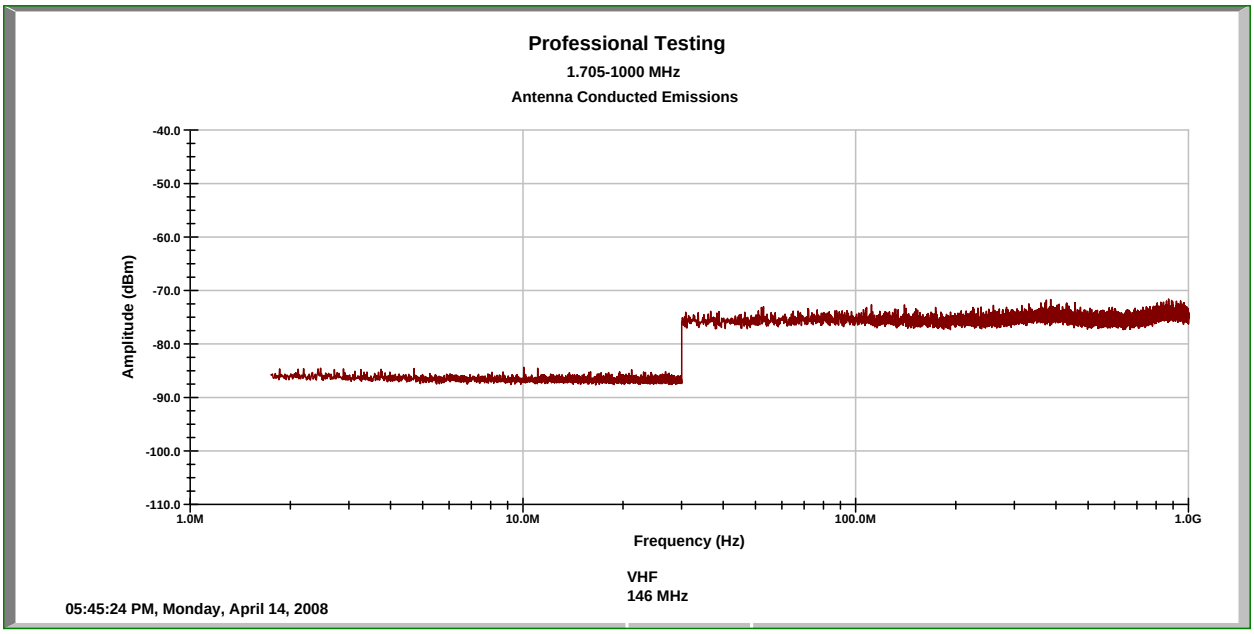
1.705 – 1000 MHz Antenna-Conducted Emissions: PT-8000 HF ANT. 1 with receiver tuned to 24.9 MHz.



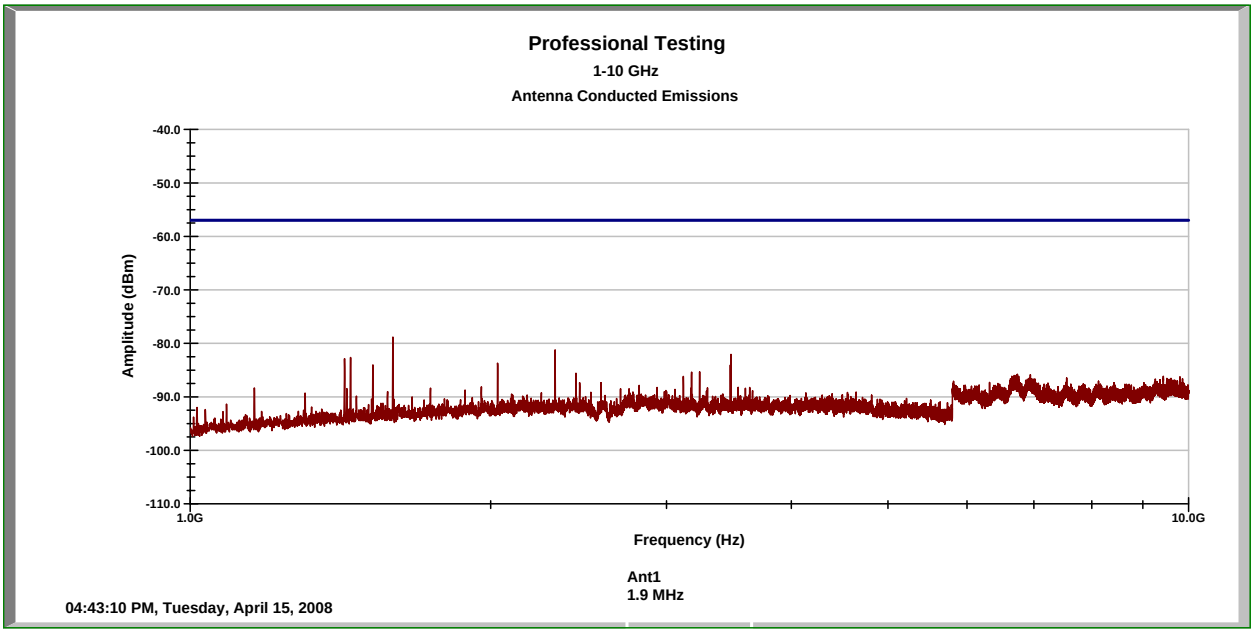
1.705 – 1000 MHz Antenna-Conducted Emissions: PT-8000 HF ANT. 1 with receiver tuned to 29.0 MHz.



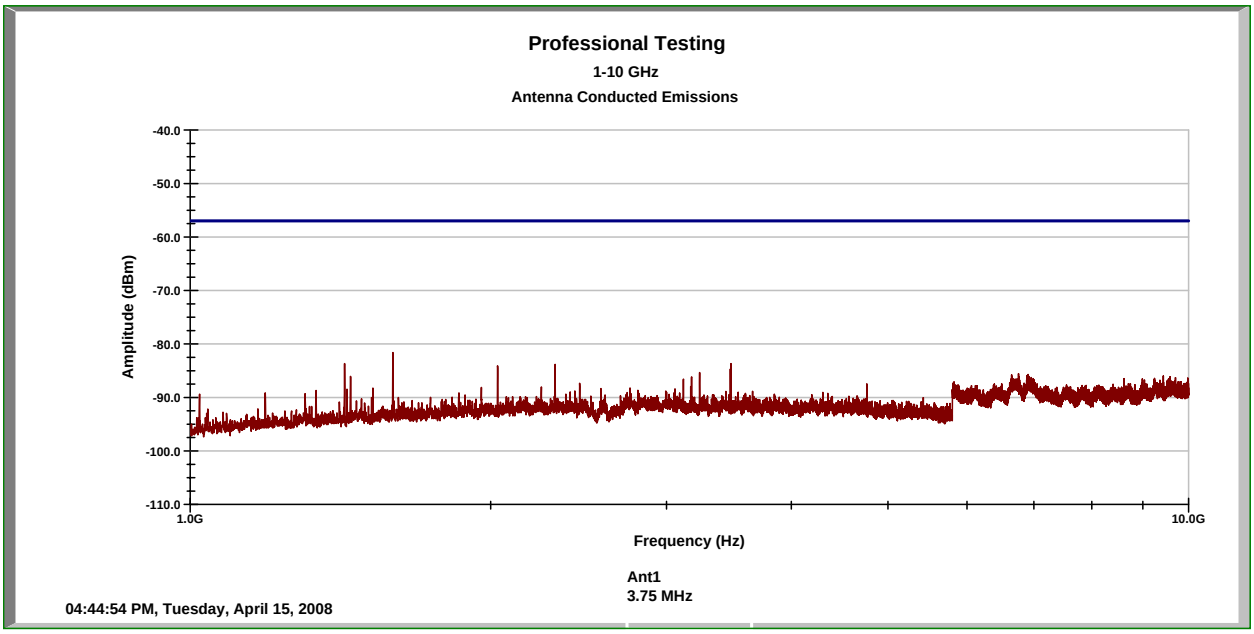
1.705 – 1000 MHz Antenna-Conducted Emissions: PT-8000 HF ANT. 1 with receiver tuned to 53.0 MHz.



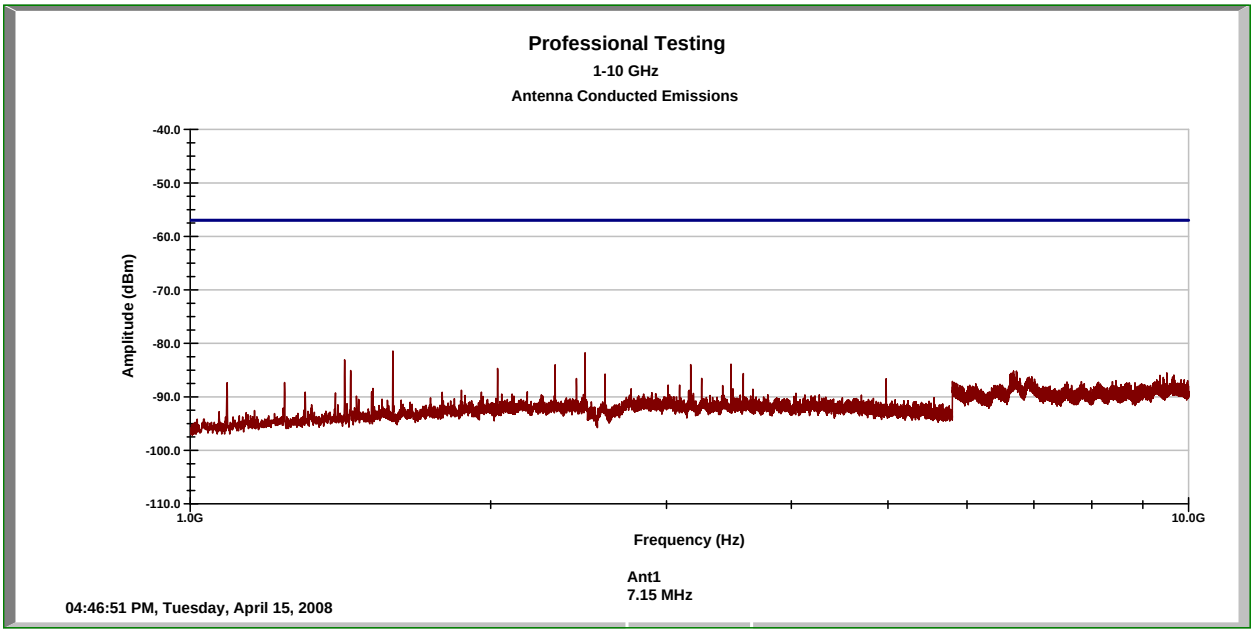
1.705 – 1000 MHz Antenna-Conducted Emissions: PT-8000 VHF ANT. with receiver tuned to 146.0 MHz.



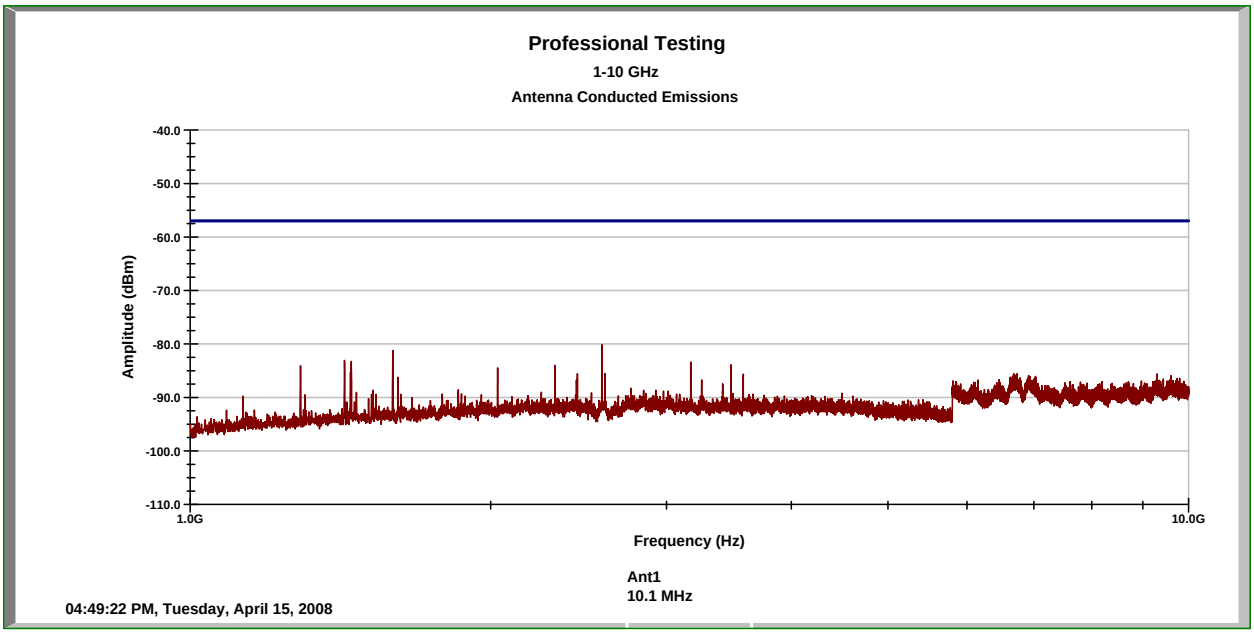
1-10 GHz Antenna-Conducted Emissions: PT-8000 HF ANT. 1 with receiver tuned to 1.9 MHz.



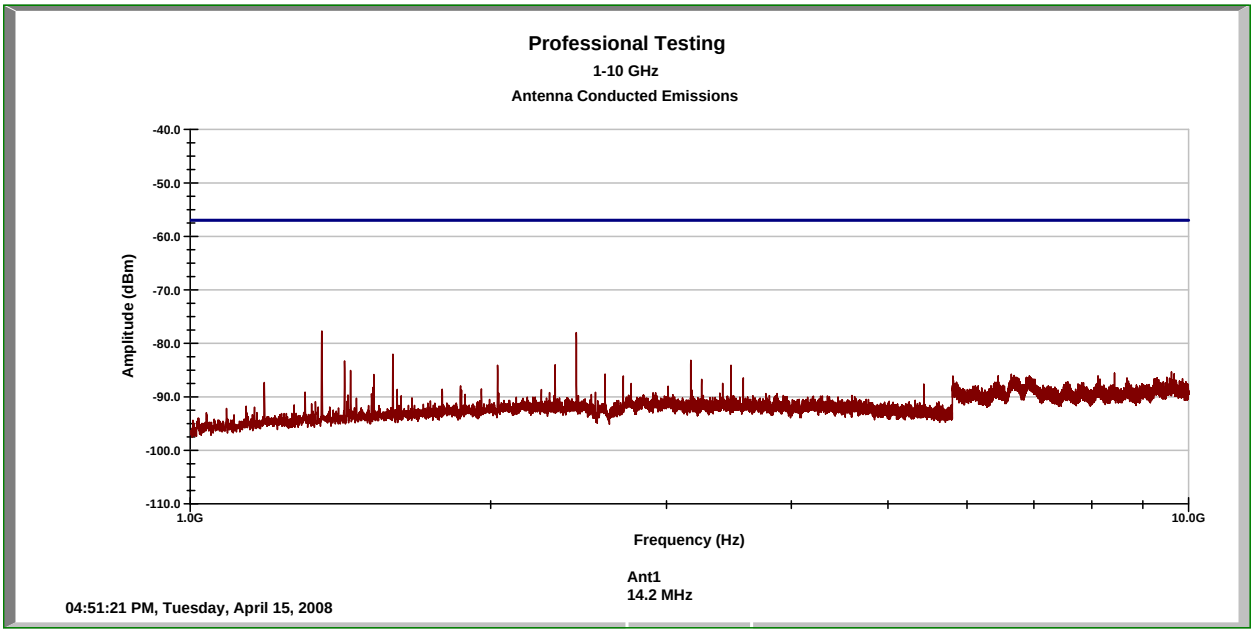
1-10 GHz Antenna-Conducted Emissions: PT-8000 HF ANT. 1 with receiver tuned to 3.75 MHz.



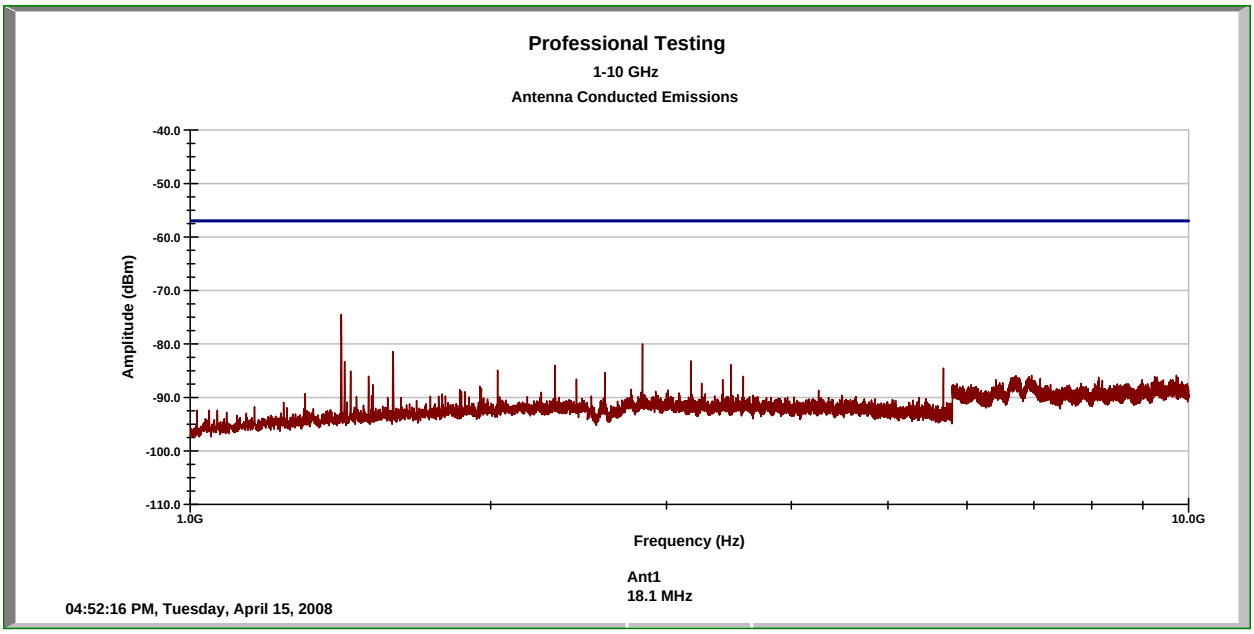
1-10 GHz Antenna-Conducted Emissions: PT-8000 HF ANT. 1 with receiver tuned to 7.15 MHz.



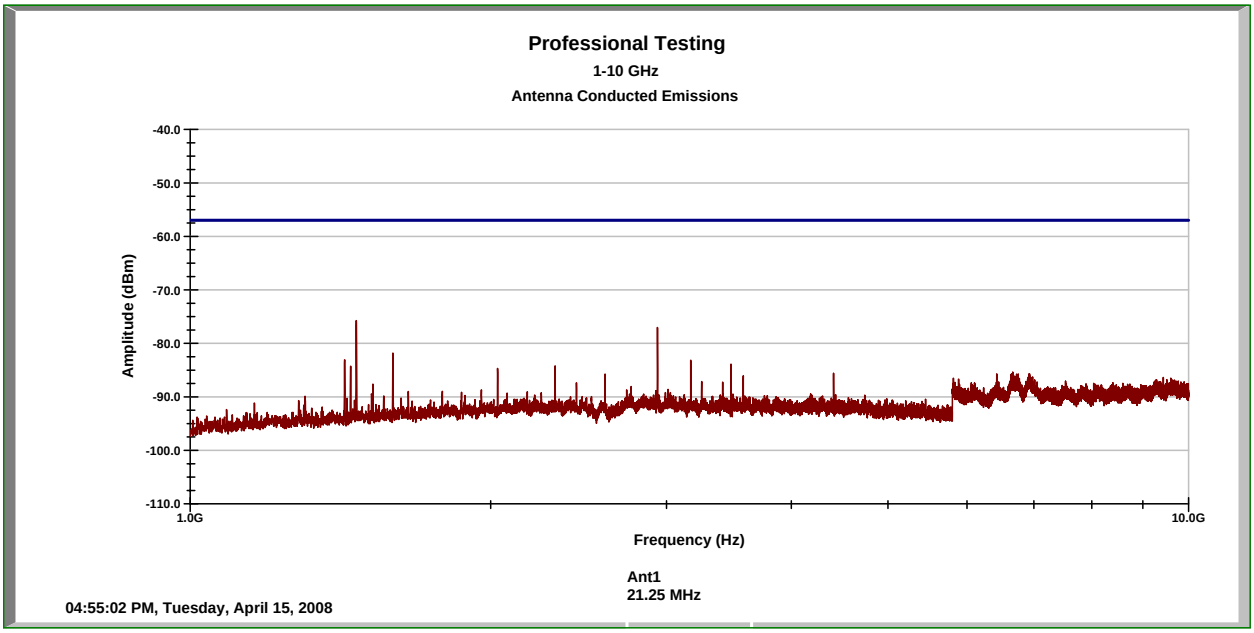
1-10 GHz Antenna-Conducted Emissions: PT-8000 HF ANT. 1 with receiver tuned to 10.1 MHz.



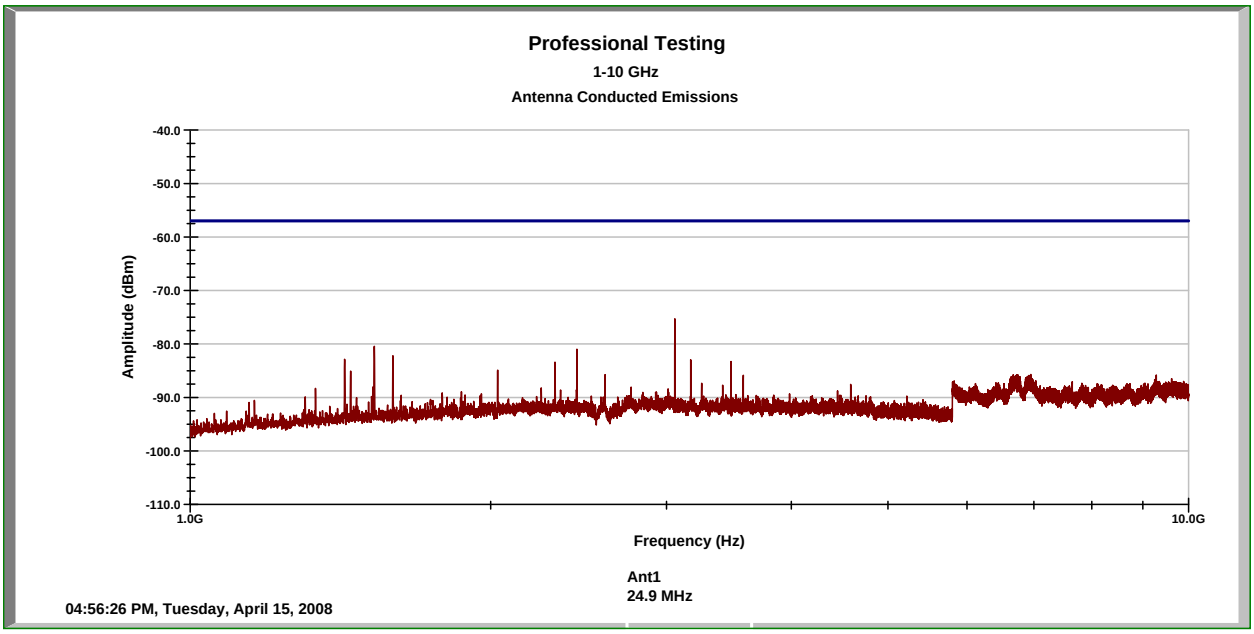
1-10 GHz Antenna-Conducted Emissions: PT-8000 HF ANT. 1 with receiver tuned to 14.2 MHz.



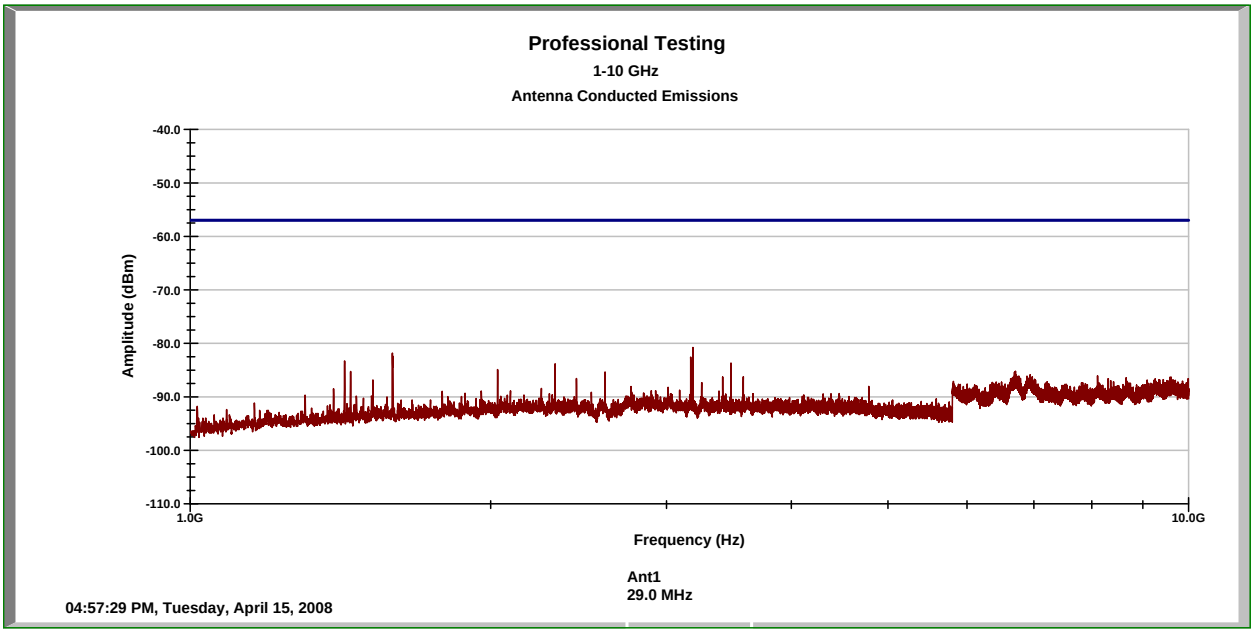
1-10 GHz Antenna-Conducted Emissions: PT-8000 HF ANT. 1 with receiver tuned to 18.1 MHz.



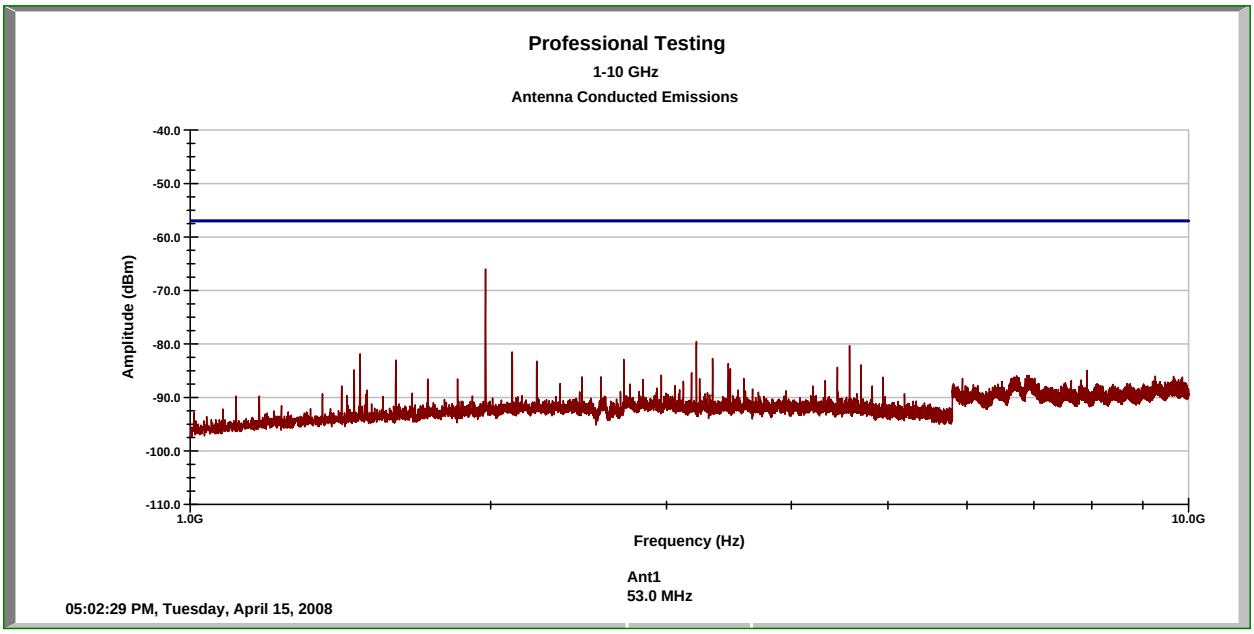
1-10 GHz Antenna-Conducted Emissions: PT-8000 HF ANT. 1 with receiver tuned to 21.25 MHz.



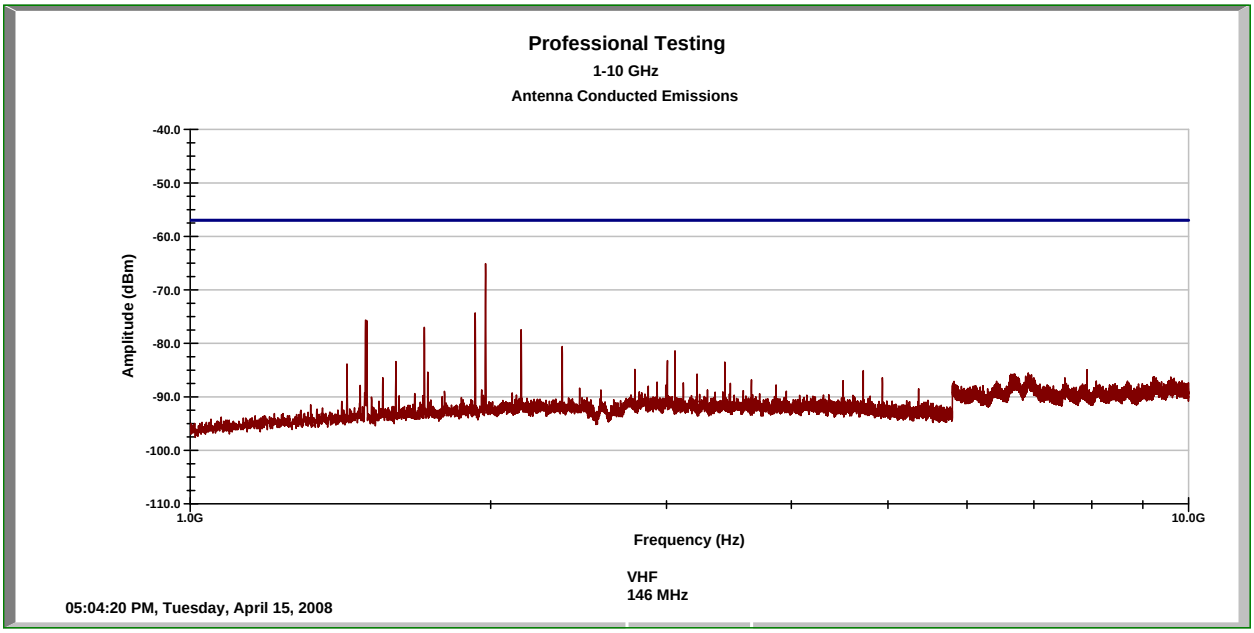
1-10 GHz Antenna-Conducted Emissions: PT-8000 HF ANT. 1 with receiver tuned to 24.9 MHz.



1-10 GHz Antenna-Conducted Emissions: PT-8000 HF ANT. 1 with receiver tuned to 29.0 MHz.



1-10 GHz Antenna-Conducted Emissions: PT-8000 HF ANT. 1 with receiver tuned to 53.0 MHz.



1-10 GHz Antenna-Conducted Emissions: PT-8000 VHF ANT. with receiver tuned to 146.0 MHz.