MEASUREMENT/TECHNICAL REPORT

Company - Model: Ucentric Systems
Ucentric Home Server
FCC ID: POPFMTRANSMITTER
June 26, 2001

Description: This is a report to support a request for an original grant of equipment authorization.

Equipment Type: Low Power Communications Device Transmitter (DXX)

Report prepared for:

Ucentric Systems
2 Clock Tower Place
Maynard, MA 01754
Phone: (978) 897-6482
Fax: (978) 897-9980

Report prepared by:

Evan D. Gould
Curtis-Straus LLC
527 Great Road
Littleton, MA 01460 USA
Phone: 978-486-8880
FAX: 978-486-8828

Introduction

This report is an application for Certification of a Transmitter operating pursuant to Part 15.239 of the FCC Rules, Code of Federal Regulations 47. This report is designed to demonstrate the compliance of this device with the requirements outlined in Part 15 of CFR 47 using the methods outlined in Part 2 of CFR 47.

The confidential information and descriptions included in this application are detailed descriptions of the products, block diagrams, component specifications, and schematic diagrams. We hereby respectfully request under the provision of section 0.457d of the code that the documents listed below be held confidential.

Technical Descriptions and Block Diagrams

Schematics

Bill of Materials

Ucentric Systems is requesting that the Technical Descriptions, Block Diagrams, Schematics and Bill of Materials be kept confidential in the FCC application because of the proprietary design developed by Ucentric Systems that is unique to the industry.

Summary

The Ucentric Home Server System consists of a Base Unit (Model #'s: 1A0000-01, 1A0010-01, 1A0020-01, 1A0030-01, 1A0040-01, 1A0050-01, 1A0060-01, and 1A0070-01) and a Splitter (U.S. Model # UC60-00120-01, Canada Model # UC60-00121-01) which transmits to a TV and FM receiver via cables. Alternatively, the Splitter can utilize an antenna to transmit to the FM receiver. Testing was performed using the 1A0030-01 Base Unit. The different Base Unit model numbers indicate the LAN/WAN selection that is installed at the factory, which affects the choices between Ethernet, ADSL, or HPNA cards utilized for each network connection. These different network connection configurations have no bearing on the outcome of this testing. The unintentional emissions from the system utilizing the cables were measured by Integrity Design & Test Services, Inc. (NVLAP Lab Code: 200004-0, Report # 66397.e2). The measurements conducted at Curtis-Straus were to determine what additional emissions exist due to the added antenna, as generated in the base unit and splitter. The data from Curtis-Straus and Integrity was then analyzed to determine compliance as a Part 15 transmitter.

Statement of Conformity

The Ucentric Home Server has been found to conform with the following parts of the 47 CFR as detailed below:

Part 2	Part 15	Comments
	15.15(b)	The product contains no user accessible controls that increase transmission power above allowable levels.
2.925	15.19	The label is shown in the label exhibit.
	15.21	Information to the user is shown in the instruction manual exhibit.
	15.27	No special accessories are required for compliance.
	15.203	The antenna connector is not accessible to the user and therefore cannot be easily removed. (the antenna connector is inside the chassis underneath a soldered metal can)
	15.205 15.209	The fundamental is not in a Restricted band and the spurious and harmonic emissions in the Restricted bands comply with the general emission limits of 15.209.
	15.207	The unit complies with the line conducted emission requirements of 15.207.
	15.239(a)	The unit complies with the bandwidth requirement of 15.239(a) with maximum input signal. The unit is tuned with software and therefore cannot operate outside the range of 88-108MHz pursuant to the requirement in 15.239(a)
	15.239(b)&(c)	The unit complies with the field strength limits referred to in 15.239(b) & (c).

Test Methodology

Radiated emission testing was performed according to the procedures in ANSI C63.4 (1992). Radiated testing was performed at an antenna to EUT distance of 1 or 3 meters. The actual test distance used is noted in the test data sheets. The device's performance was investigated to 2GHz. Since the antenna can be operated in any orientation, the emissions were maximized in each of the three orthogonal axes and the maximum reading was recorded. The unit can be operated only at 200kHz increments from 91.1MHz to 95.9MHz. Three different operating frequencies were selected according to ambient conditions at the time. Harmonics of the fundamental were measured only for the unit operating at 91.7MHz due to the fact that emissions at those harmonic frequencies were below the noise floor.

Test Facility

Curtis-Straus LLC
All transmitter requirements as well as spurious emissions emanating from the antenna port were tested at Curtis-Straus (A2LA Certificate Number 1627-01). The open area test site used to collect the radiated data is located at 527 Great Road, Littleton, MA 01460. Site “M” was used.

All emissions emanating directly from the base unit were tested at Integrity Design (NVLAP Lab Code: 200004-0). The open area test site used to collect the radiated data is located at 37-7 Ayer Road, Littleton, MA 01460.

Test Equipment Used

Spectrum Analyzers

x	Analyzer	Model No.	Company	Serial No.	Calibration Due
X	**WHITE** 9kHz-22GHz	8593E	HP	3547U01252	26-JAN-2002

OPEN AREA TEST SITES (OATS)

x	Site	FCC Code	IC Code	VCCI Code	Calibration Due
X	**"M"** Maine	93448	IC 2762-M	R-904/ C-480	22-JUN-2001

ANTENNAS

x	Antenna	Model No.	Company	Serial No.	Calibration Due
X	**GREEN-WHITE** Bilog: 30MHz-2GHz	CBL6112B	Chase	2574	11-JUN-2001

PREAMPLIFIERS

x	Preamplifier	Model No.	Company	Serial No.	Calibration Due
X	**BLACK** 0.01-2000MHz	ZFL-1000-LN	MiniCircuits/ C-S	n/a	24-MAR-2002

Unless otherwise noted the calibration interval is one year. All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.

Measurement Results

Operating Frequency

This device operates at 91.1MHz, 91.3MHz,…, 95.9MHz.
Fundamental and Band Edge readings were taken at 91.7, 93.5, and 94.7MHz.

Electric Field Strength Radiation Measurements

Radiated Emissions Table — *Curtis-Straus LLC*

Date: 09-May-01 **Company:** Ucentric **Table** 1
Engineer: Evan Gould **EUT Desc:** Ucentric Home Server **Work Order:** B0510

Frequency Range: 30-2000MHz **Measurement Distance:** 3 m

Notes: Operating Frequency: 91.7MHz **EUT Max Freq:** 600MHz
Fundamental and Band Edge readings

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	47 CFR 15.239 Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
FUNDAMENTAL			---	---	---	---		---	---
Vz(30kHz BW peak)	91.7	56.8	22.4	9.0	0.8	44.2	47.96	-3.8	Pass
UPPER BAND EDGE			---	---	---	---	---	---	---
Vz(30kHz BW peak)	91.8	30.8	22.4	9.0	0.8	18.2	43.5	-25.3	Pass
LOWER BAND EDGE			---	---	---	---	---	---	---
Vz(30kHz BW peak)	91.6	37.4	22.4	9.0	0.8	24.8	43.5	-18.7	Pass

Table Result: Pass by -3.8 dB ***Worst Freq:*** 91.7 MHz

Test Site: "M" **Pre-Amp:** Black **Cable:** 65 ft RG8A/U **Analyzer:** White **Antenna:** Grn-Wht

Radiated Emissions Table — *Curtis-Straus LLC*

Date: 09-May-01 **Company:** Ucentric **Table** 2
Engineer: Evan Gould **EUT Desc:** Ucentric Home Server **Work Order:** B0510

Frequency Range: 30-2000MHz **Measurement Distance:** 3 m

Notes: Operating Frequency: 93.5MHz **EUT Max Freq:** 600MHz
Fundamental and Band Edge readings

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	47 CFR 15.239 Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
FUNDAMENTAL							---	---	---
Vz(10kHz BW peak)	93.5	51.1	22.4	9.4	0.9	39.0	47.96	-9.0	Pass
UPPER BAND EDGE							---	---	---
Vz(10kHz BW peak)	93.6	50.6	22.4	9.5	0.9	38.6	43.5	-4.9	Pass
LOWER BAND EDGE							---	---	---
Vz(10kHz BW peak)	93.4	27.1	22.4	9.4	0.9	15.0	43.5	-28.5	Pass

Table Result: Pass by -4.9 dB ***Worst Freq:*** 93.6 MHz

Test Site: "M" **Pre-Amp:** Black **Cable:** 65 ft RG8A/U **Analyzer:** White **Antenna:** Grn-Wht

PLEASE NOTE: Emissions emanating directly from the base unit and not from the RF Splitter are covered in the Integrity report, which appears as accompanying documentation.

Radiated Emissions Table

Curtis-Straus LLC

Date: 09-May-01 **Company:** Ucentric **Table** 3
Engineer: Evan Gould **EUT Desc:** Ucentric Home Server **Work Order:** B0510

Frequency Range: 30-2000MHz **Measurement Distance:** 3 m

Notes: Operating Frequency: 94.7MHz **EUT Max Freq:** 600MHz
Fundamental and Band Edge readings

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	47 CFR 15.239 Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
FUNDAMENTAL									
Vz(10kHz BW peak)	94.7	49.1	22.4	9.7	0.9	37.3	47.96	-10.7	Pass
UPPER BAND EDGE							---	---	---
Vz(10kHz BW peak)	94.8	25.9	22.4	9.8	0.9	14.2	43.5	-29.3	Pass
LOWER BAND EDGE							---	---	---
Vz(10kHz BW peak)	94.6	47.1	22.4	9.7	0.9	35.3	43.5	-8.2	Pass

Table Result: Pass by -8.2 dB ***Worst Freq:*** 94.6 MHz

Test Site: "M" **Pre-Amp:** Black **Cable:** 65 ft RG8A/U **Analyzer:** White **Antenna:** Grn-Wht

Radiated Emissions Table

Curtis-Straus LLC

Date: 09-May-01 **Company:** Ucentric **Table** 4
Engineer: Evan Gould **EUT Desc:** Ucentric Home Server **Work Order:** B0510

Frequency Range: 30-2000MHz **Measurement Distance:** 3 m

Notes: Operating Frequency: 91.7MHz **EUT Max Freq:** 600MHz
Harmonics and Spurious Emissions

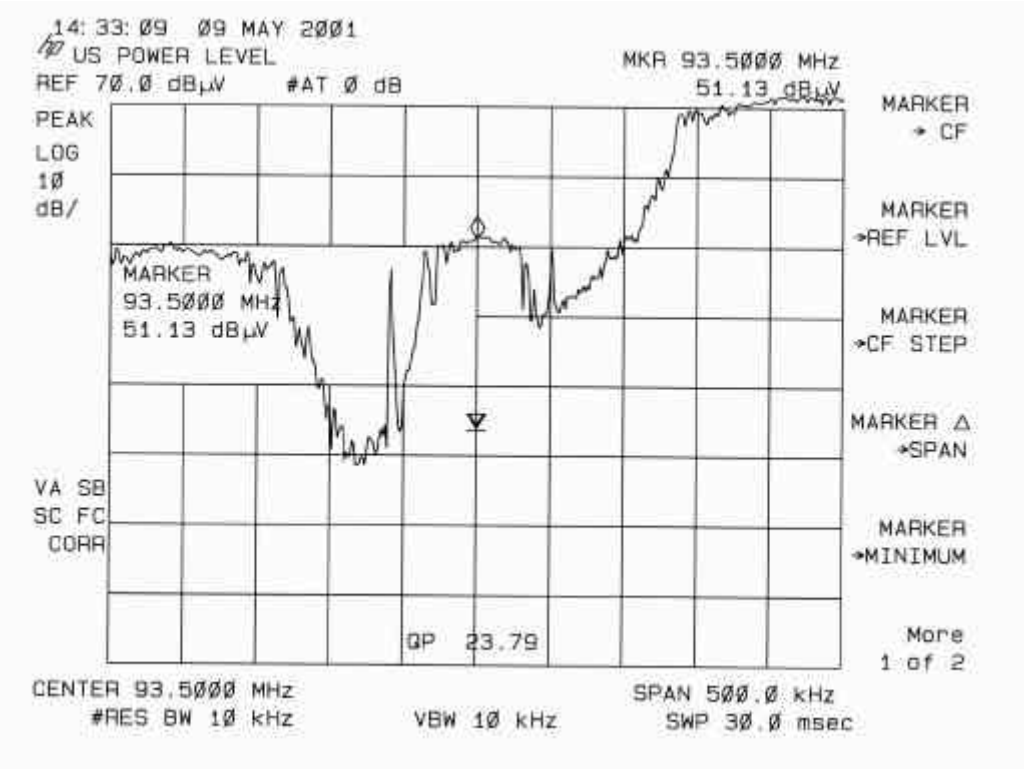
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	47 CFR 15.209 Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
noise floor	183.4	27.1	22.4	8.5	1.4	14.6	43.5	-28.9	Pass
noise floor	275.1	20.8	22.5	12.6	1.9	12.8	46.0	-33.2	Pass
noise floor	366.8	18.1	22.4	14.9	2.2	12.8	46.0	-33.2	Pass
noise floor	458.5	21.2	22.5	16.6	2.6	17.9	46.0	-28.1	Pass
noise floor	550.2	26.6	22.4	18.1	2.9	25.2	46.0	-20.8	Pass
noise floor (1m limit)	641.9	48.6	22.2	18.9	3.3	48.6	55.5	-6.9	Pass
noise floor	733.6	17.2	21.9	19.5	3.6	18.4	46.0	-27.6	Pass
noise floor	825.3	17.2	21.7	20.2	3.9	19.6	46.0	-26.4	Pass
noise floor	917.0	17.7	21.6	20.7	4.1	20.9	46.0	-25.1	Pass

Table Result: Pass by -6.4 dB ***Worst Freq:*** 641.9 MHz

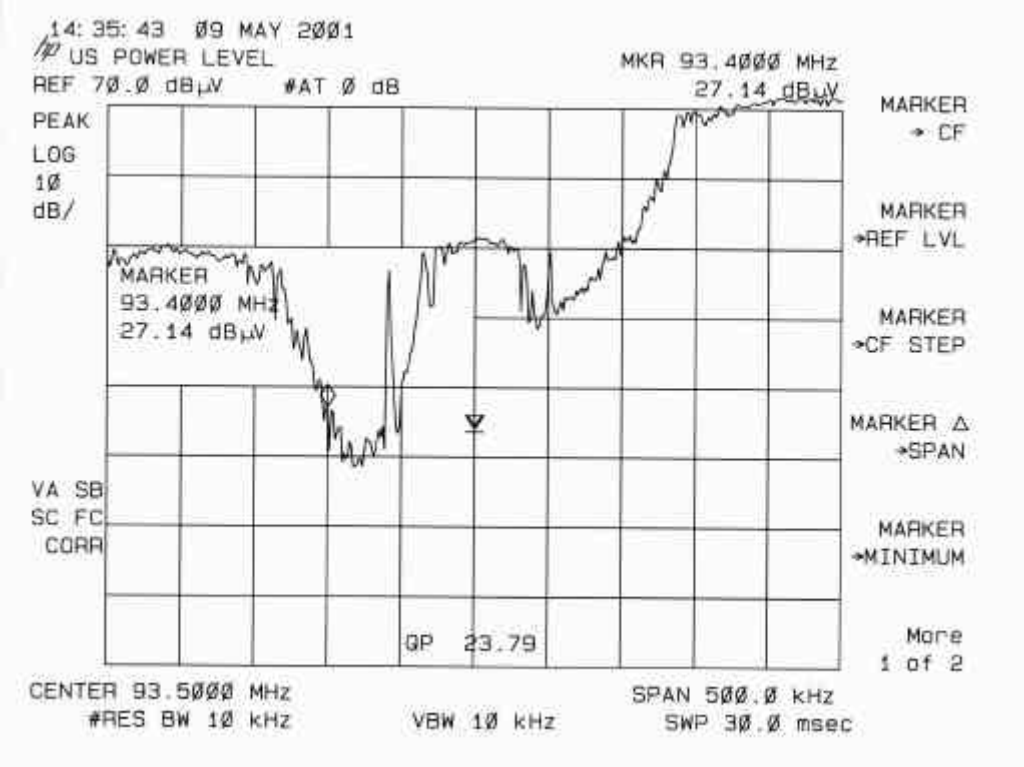
Test Site: "M" **Pre-Amp:** Black **Cable:** 65 ft RG8A/U **Analyzer:** White **Antenna:** Grn-Wht

Emission Plots

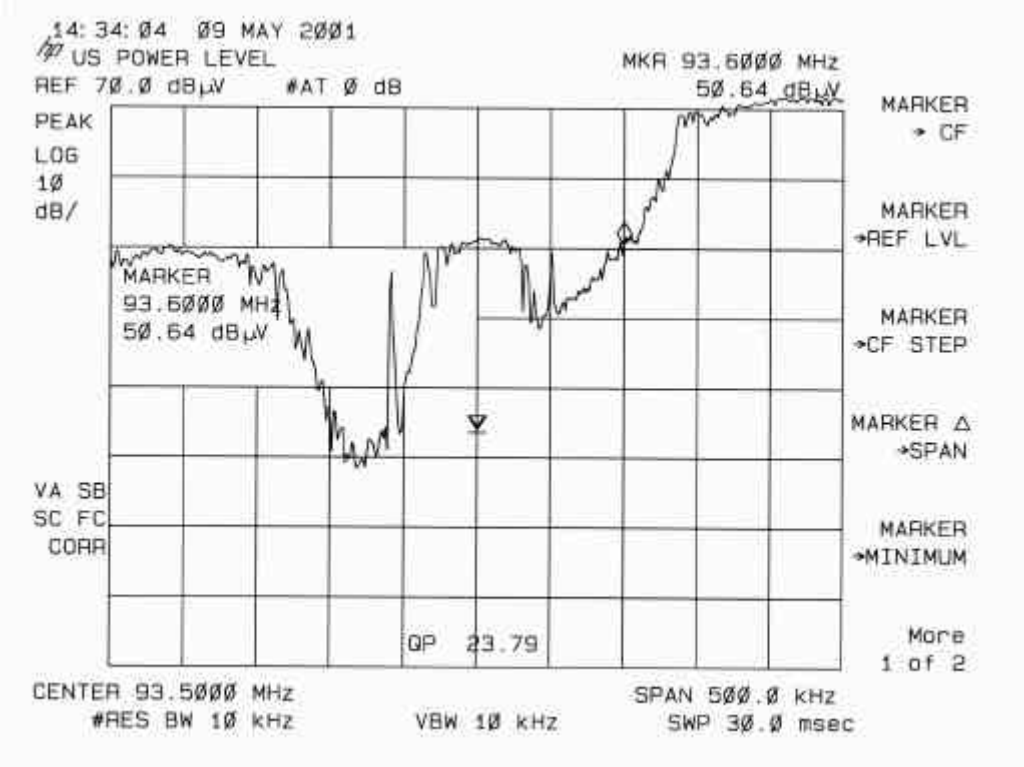
93.5MHz Fundamental



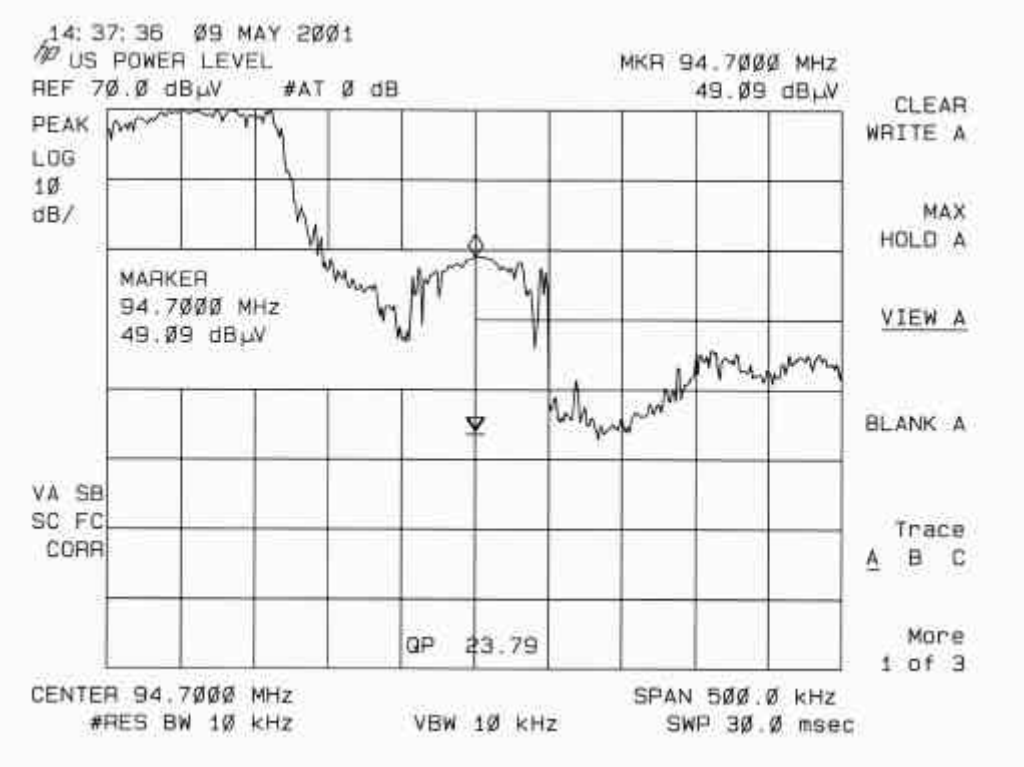
93.5MHz Lower Band Edge



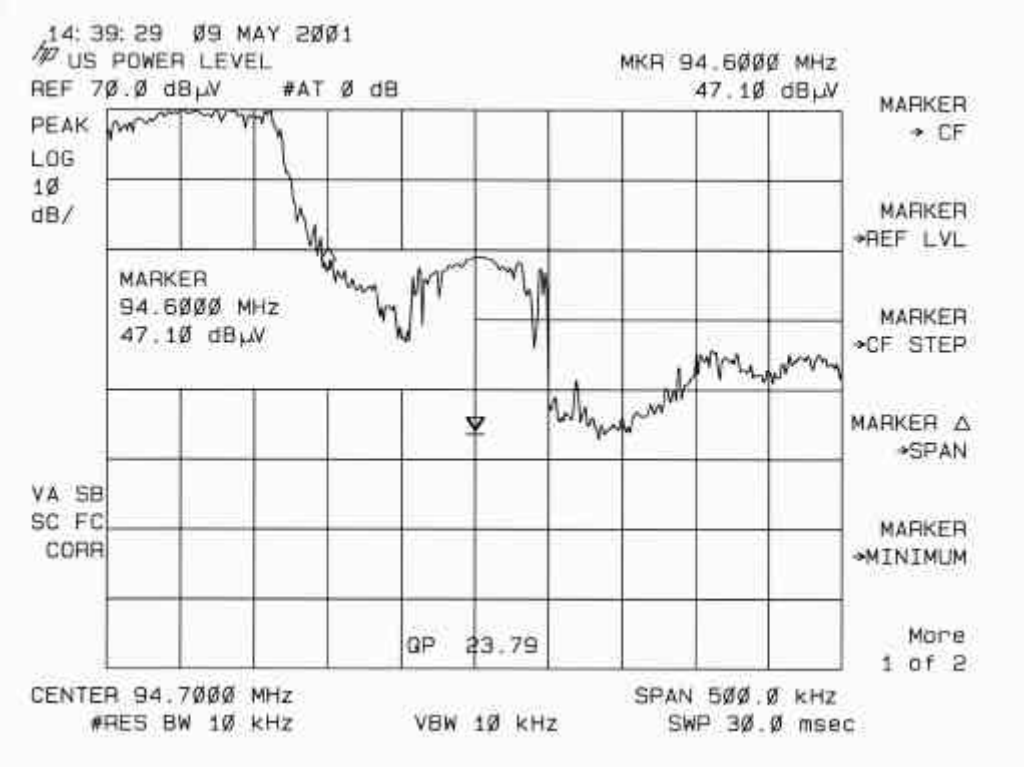
93.5MHz Upper Band Edge



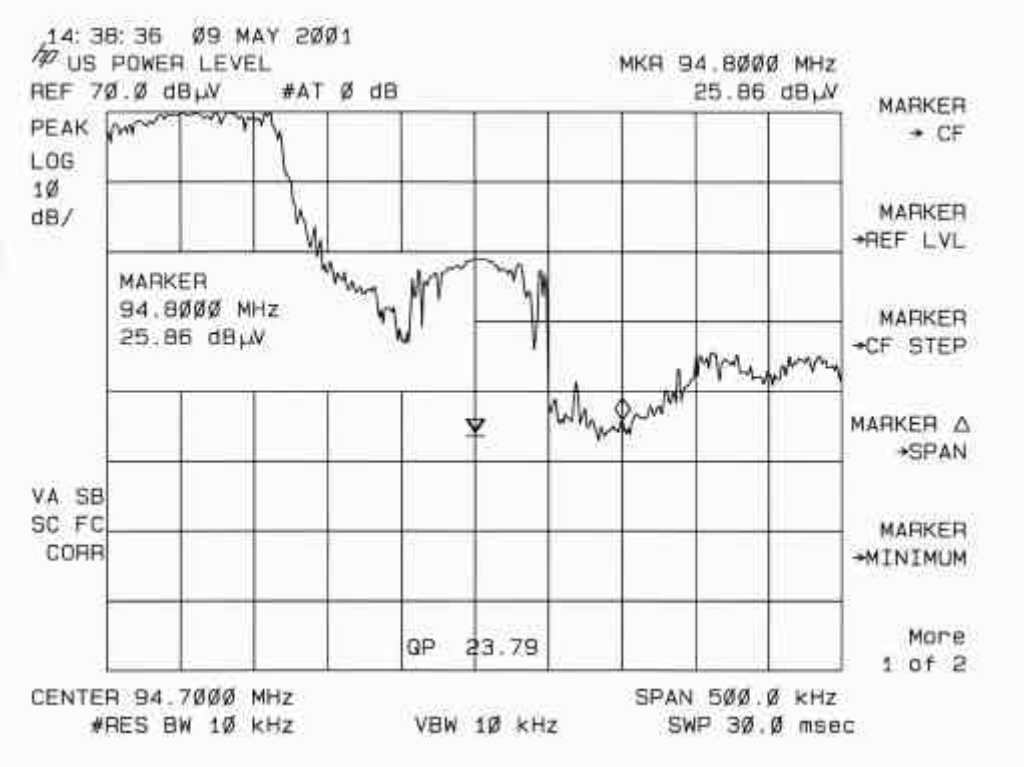
94.7MHz Fundamental



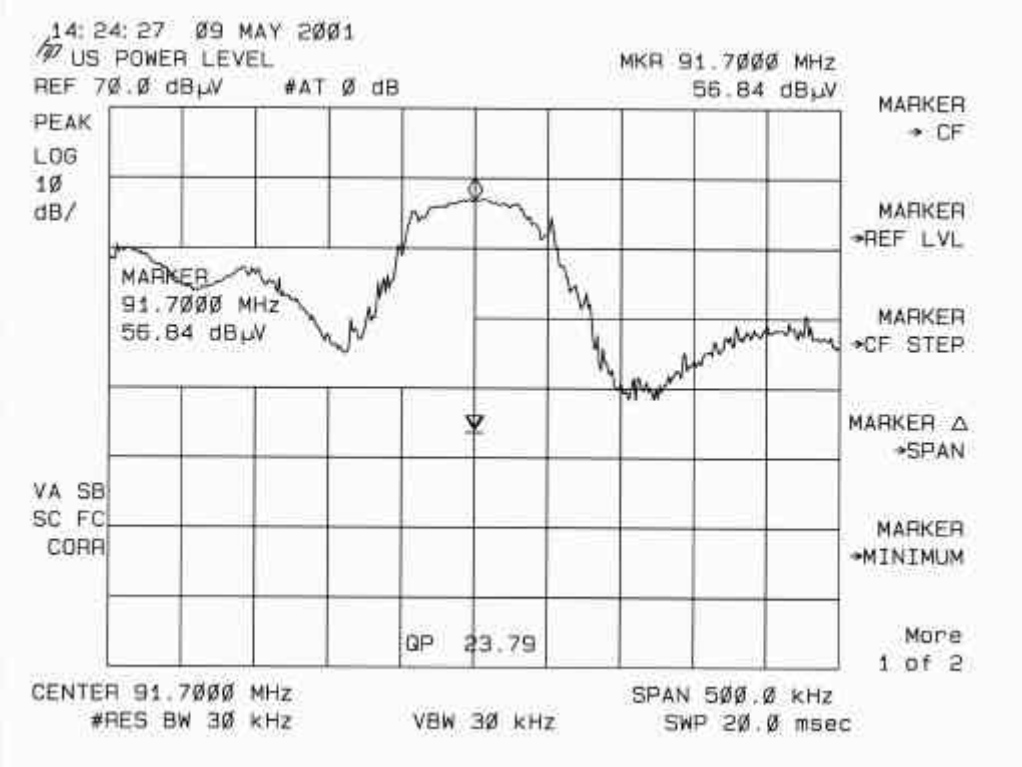
94.7MHz Lower Band Edge



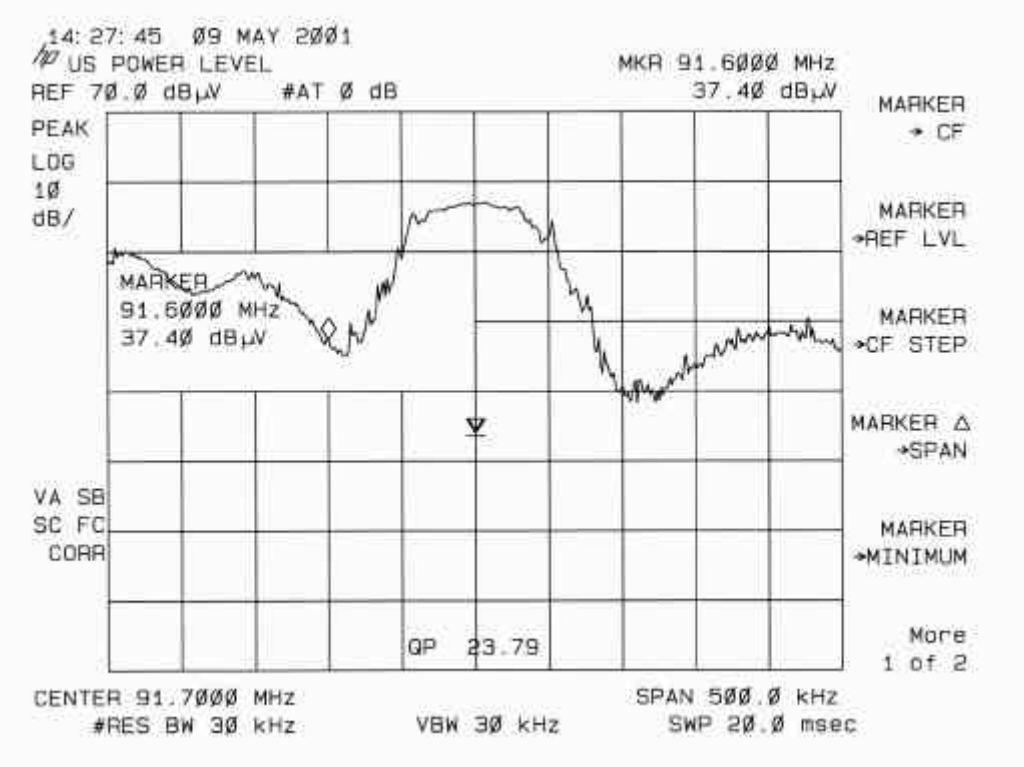
94.7MHz Upper Band Edge



91.7MHz Fundamental



91.7MHz Lower Band Edge



91.7MHz Upper Band Edge