Company: Shure Inc.
Model Tested: MX692/C-UA
Report Number: 10101

1250 Peterson Dr., Wheeling, IL 60090

FCC Rules and Regulations / Intentional Radiators

Low Power Auxiliary Stations

Part 74, Subpart H, Sections 74.801 - 74.882

THE FOLLOWING **"MEETS"** THE ABOVE TEST SPECIFICATION

Formal Name:	UHF Table Top Wireless Microphone Transmitter
Kind of Equipment:	UHF FM low power transmitter (Frequency Range 782 MHz to 806 MHz)
Test Configuration:	The product is a standalone unit, with internal battery and a built in microphone. Tested at 9 vdc
Model Number(s):	MX692/C-UA
Model(s) Tested:	MX692/C-UA
Serial Number(s):	NA
Date of Tests:	February 14, 2003
Test Conducted For:	Shure Inc. 222 Hartley Avenue Evanston, Illinois 60202

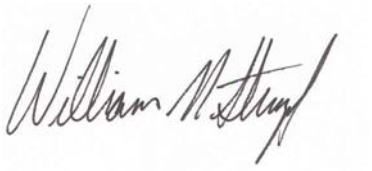
1250 Peterson Dr., Wheeling, IL 60090

SIGNATURE PAGE

Report By:

Arnom C. Rowe
Test Engineer
EMC-001375-NE

Reviewed By:



William Stumpf
OATS Manager

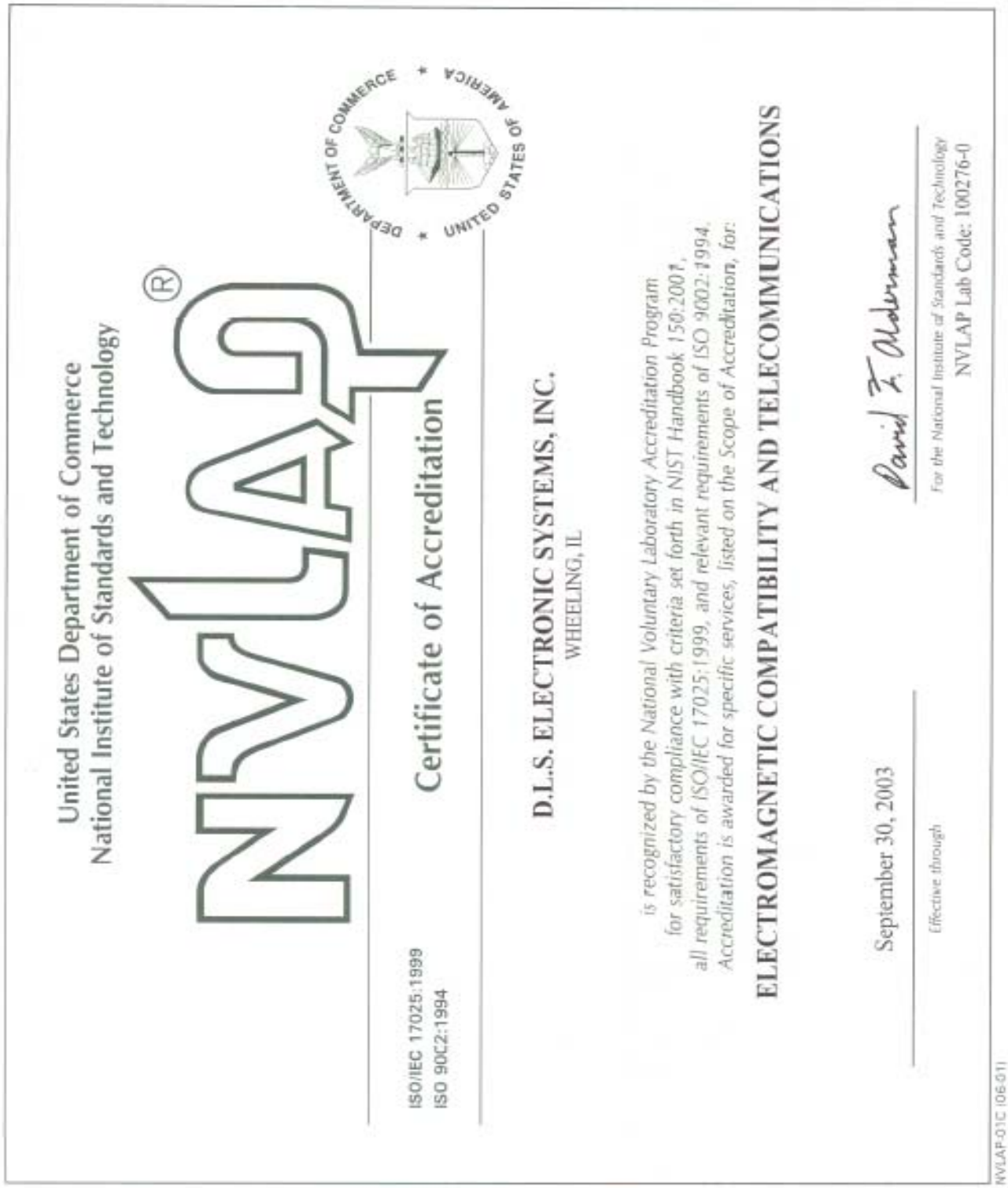
Approved By:

Brian Mattson
General Manager

Company Official:

Shure Inc.

1250 Peterson Dr., Wheeling, IL 60090



United States Department of Commerce
National Institute of Standards and Technology

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Certificate of Accreditation

ISO/IEC 17025:1999
ISO 9002:1994

D.L.S. ELECTRONIC SYSTEMS, INC.
WHEELING, IL

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ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

September 30, 2003
Effective through

David I. Alderman
For the National Institute of Standards and Technology
NVLAP Lab Code: 100276-0

NVLAP-01C (06-01)

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Scope of Accreditation

Page: 1 of 3

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS **NVLAP LAB CODE 100276-0**

D.L.S. ELECTRONIC SYSTEMS, INC.
1250 Peterson Drive
Wheeling, IL 60090-6454
Mr. Brian J. Mattson
Phone: 847-537-6400 Fax: 847-537-6488
E-Mail: bmattson@dlsemc.com
URL: http://www.dlsemc.com

NVLAP Code	*Designation / Description*
Emissions Test Methods:	
12/CIS14	CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions
12/CIS14a	EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)
12/CIS14b	AS/NZS 1044 (1995)
12/CIS14c	CNS 13783-1
12/CIS22	IEC/CISPR 22 (1997) and EN 55022 (1998): Limits and methods of measurement of radio disturbance characteristics of information technology equipment
12/CIS22a	IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.

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NVLAP Code	*Designation / Description*
12/CIS22b	CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
12/F01	ANSI C63.4 (2001) - cited in FCC Method - 47 CFR Part 15 - Digital Devices
12/F01a	Conducted Emissions, Power Lines, 150 KHz to 30 MHz
12/F01b	Radiated Emissions
12/T51	AS/NZS 3548: Electromagnetic Interference - Limits and Methods of Measurement of Information Technology Equipment
Immunity Test Methods:	
12/I01	IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test
12/I02	IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test
12/I03	IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test
12/I04	IEC 61000-4-5 (1995): Surge Immunity Test
12/I05	IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields

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ISO 9002:1994

Scope of Accreditation

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

NVLAP LAB CODE 100276-0

D.L.S. ELECTRONIC SYSTEMS, INC.

NVLAP Code	*Designation / Description*
12/I06	IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test
12/I07	IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

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David F. Alderman
For the National Institute of Standards and Technology

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TABLE OF CONTENTS

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1.0 SUMMARY OF TEST REPORT

It was found that the UHF Table Top Wireless Microphone Transmitter, Model Number(s) MX692/C-UA, **"meets"** the radio interference radiated emission requirements of the FCC "Rules and Regulations", Part 74, Subpart H, Sections 74.801 - 74.882, for low power auxiliary stations.The conducted emissions test was not required because the UHF Table Top Wireless Microphone Transmitter is powered from a D.C. power source. It does not have a line cord to plug into the A.C. power line.

This test report relates only to the items tested and contains the following number of pages.

Text:	116
Charts:	16

2.0 INTRODUCTION

On February 14, 2003, a series of radio frequency interference measurements was performed on UHF Table Top Wireless Microphone Transmitter, Model Number(s) MX692/C-UA, Serial Number: NA. The tests were performed according to the procedures of the FCC as stated in Part 2 - Frequency Allocations and Radio Treaty Matters: General Rules and Regulations, Subpart J, Equipment Authorization Procedures of the Code of Federal Regulations 47. Tests were performed by personnel of D.L.S. Electronic Systems, Inc. who are responsible to Donald L. Sweeney, Senior EMC Engineer.

3.0 OBJECT

The purpose of this series of tests was to determine if the test sample could meet the radio frequency interference requirements of the FCC "Rules and Regulations", Part 74, Subpart H, Sections 74.801 - 74.882, for low power auxiliary stations.

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4.0 TEST SET-UP

All tests were performed at D.L.S. Electronic Systems, Inc. and set up according to the American National Standards Institute, ANSI C63.4-1992, Section 7, (Figures 9a, 9b, 9c and 9d). The conducted tests if required were performed with the test item placed on a non-conductive table (table top equipment), located in the test room. Equipment normally operated on the floor was tested by placing it on the metal ground plane. The ground plane has an electrical isolation layer over its surface approximately 7mm thick. The power line supplied was connected to a dual line impedance stabilization network electrically bonded to the ground plane, located on the floor. The networks were constructed per the requirements of the American National Standards Institute, ANSI C63.4-1992, Section 4, (Figure 2).

All radiated emissions tests were performed with the test item placed on a 80 cm high rotating non-conductive table, located in the test room. Equipment normally operated on the floor was placed on a metal covered turntable, which is flush with the surrounding conducting ground plane. The ground plane has an electrical isolation layer over its surface approximately 7 mm thick. The EUT is separated from the turntable ground plane by a non-conductive layer. The equipment under test was set up according to ANSI C63.4-1992, Sections 6 and 8.

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5.0 TEST EQUIPMENT (Bandwidths and Detector Function)

All preliminary data below 1000 MHz was automatically plotted using the HP Spectrum Analyzer or ESI 26/ESI 40 Fixed Tuned Receiver. The data was taken using Peak, Quasi-Peak or the Average Detector Functions as required. This information was then used to determine the frequencies of maximum emissions. Above 1000 MHz, final data was taken using the Average Detector.

Below 1000 MHz, final data was taken using the HP Spectrum Analyzer and or ESI 26/ESI 40 fixed tuned receiver. These plots were made using the Peak or Quasi-Peak Detector functions, with manual measurements performed on the questionable frequencies using the Quasi-Peak or the Average Detector Function of the Analyzer or ESI 26/ESI 40 Receiver as required. Above 1000 MHz, final data was taken using the Peak Detector on the Spectrum Analyzer.

The bandwidths shown below are specified by ANSI C63.4-2000, Section 4.2.

Frequency Range	Bandwidth (-6 dB)
10 to 150 kHz	200 Hz
150 kHz to 30 MHz	9 kHz
30 MHz to 1 GHz	120 kHz
Above 1 GHz	1 MHz

A list of the equipment used can be found in Table 1. All primary equipment was calibrated against known reference standards with a verified traceable path to NIST.

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6.0 CONDUCTED EMISSION MEASUREMENTS

The UHF Table Top Wireless Microphone Transmitter is powered from a D.C. power source and will not at any time be directly plugged into the public utility lines, therefore the conducted emissions test was not performed.

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7.0 RADIATED EMISSION MEASUREMENTS

Preliminary radiation measurements were performed at a 3 meter test distance. The frequency range from 30 MHz to 1000 MHz was automatically scanned and plotted at various angles.

After preliminary measurements were taken, the EUT was taken to one of our 10 meter open field test site located at Genoa City, Wisconsin, FCC File No. 31040/SIT, where final radiated emissions measurements were made over the entire frequency range. When required, levels were extrapolated from 10 meters to 3 meters using a linear extrapolation.

For signals in the frequency range of 30 to 200 MHz were measured with a Biconical Antenna or Tuned Dipole as the pickup device. From 200 MHz, a Log Periodic Antenna or a Tuned Dipole was used and above 1000 MHz a Double Ridge Horn Antenna was used.

During the test for frequencies below 1000 MHz, the equipment was rotated and the antenna was raised and lowered from 1 meter to 4 meters to find the maximum level of emissions. For frequencies greater than 1000 MHz the Double Ridge Horn Antenna was set at 1 or 3 meters from the EUT with the antenna height varied from 1 to 4 meters above the ground plane. Tests were made in both horizontal and vertical planes of polarization. The EUT, peripheral equipment and cables were configured to meet the conditions in ANSI C63.4-1992, Sections 6 & 8.

NOTE:

All radiated emissions measurements were made at a test room temperature of **68°F** at **22%** relative humidity.

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8.0 DESCRIPTION OF TEST SAMPLE: (See also Paragraph 9.0)

8.1 Description:

The MX692 is a low power UHF FM wireless microphone transmitter operating in the frequency range 782.125 MHz to 805.875 mHz. It is designed for conference room use. The transmitter is design to be placed on a conference table, one for each person at the table. A matting Shure receiver will be used to receive each transmitter.

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8.0 DESCRIPTION OF TEST SAMPLE: (CON'T)

8.2 PHYSICAL DIMENSIONS OF EQUIPMENT UNDER TEST

5 1/8" long 3 1/2 " wide x 2" high

8.3 LINE FILTER USED:

NA

8.4 INTERNAL CLOCK FREQUENCIES:

Switching Power Supply Frequencies:

NA

Clock Frequencies:

4 MHz & 32.768 kHz

8.0 DESCRIPTION OF TEST SAMPLE: (CON'T)

8.5 DESCRIPTION OF ALL CIRCUIT BOARDS:

1. 90-8966A Populated PCB

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9.0 ADDITIONAL DESCRIPTION OF TEST SAMPLE:
(See also Paragraph 8.0)

1: There were no additional descriptions noted at the time of test.

I certify that the above, as described in paragraph 8.0, describes the equipment tested and will be manufactured as stated.

By: _____ _____
Signature Title

For: _____ _____
Company Date

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10.0 PHOTO INFORMATION AND TEST SET-UP

Item 0 UHF Table Top Wireless Microphone Transmitter
Model Number: MX692/C-UA Serial Number: NA

1250 Peterson Dr., Wheeling, IL 60090

11.0 RADIATED PHOTOS TAKEN DURING TESTING

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12.0 RESULTS OF TESTS

The radio interference emission charts results can be seen on the pages at the end of this report. Data sheets indicating the test measurements taken during testing can also be found at the end of this report. Those points on the emission charts shown with a yellow mark are background frequencies which were verified during testing.

13.0 CONCLUSION

It was found that the UHF Table Top Wireless Microphone Transmitter, Model Number(s) MX692/C-UA **"meets"** the radio interference radiated emission requirements of the FCC "Rules and Regulations", Part 74, Subpart H, Sections 74.801 - 74.882, for low power auxiliary stations. The conducted emissions test was not required because the UHF Table Top Wireless Microphone Transmitter is powered from a D.C. power source. It does not have a line cord to plug into the A.C. power line.

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

1.0 TEST SET-UP

All radiated emission tests were performed at D.L.S. Electronic Systems, Inc. The radiated tests were made with the test item placed on a non-conductive turntable located in the Test Room with the receive antenna placed three or one meter(s) from the device under test.

2.0 RF-POWER OUTPUT – PART 2.1046

The RF output power was measured with the transmitter unmodulated. The RF output power was measured using the substitution method because there is no antenna port for a direct connection.

Actual Measurements Taken:

104.40 dBuV/m field strength at 3 meters
66.20 dBuV out of signal generator to match EUT
+ 44.80 dB Amplifier Factor
111.00 dBuV into transmit dipole equals 2.52 milliwatts

LIMIT:

Manufacturer's rated output power = .003 watts

MARGIN:

.003 – .00252= .00048 watts

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

DATA TAKEN OF THE RF POWER

OUTPUT MEASUREMENT

PART 2.1046

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

DLS Electronic Systems, Inc.

Company: Shure Inc.
Operator: Craig Brandt
Date of test: 2-17-03

Output Power - Substitution Method
Model: **MX692-UA**

Frequency (MHz) & Polarization	Max. Field Strength of EUT @ 3 meters (dBuV/m)	Output of Signal Generator when field strength equals that of EUT (dBuV)	Correction factor for amplifier between Signal Gen. and dipole antenna (dB)	Total input to transmit dipole (dBuV)	Conversion from dBuV to mW (mW)
782.73 MHz vertical	94.5	59.1	44.8	103.9	0.49
782.73 MHz horizontal	104.4	66.2	44.8	111.0	**2.52**
805.7 MHz vertical	90.1	59.2	37.59	96.79	0.10
805.7 MHz horizontal	105.0	70.1	37.59	107.69	1.18

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

3.0 MODULATION CHARACTERISTICS – PART 2.1047

a. Voice modulated communication equipment:

A curve showing the frequency response of the audio modulating circuit over a range of 100 to 20000 Hz can be seen on page 26 of this test report.

b. Equipment which employs modulation limiting:

A family of curves showing the percentage of modulation versus the modulation input voltage with sufficient information can be seen on page 28 of this test report. These curves show the modulation limiting capability throughout the range of the modulating frequencies and input modulating signal levels that are employed.

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

GRAPHS TAKEN SHOWING THE FREQUENCY

RESPONSE OF THE

AUDIO MODULATING CIRCUIT

PART 2.987

ELECTRONIC SYSTEMS, INC.
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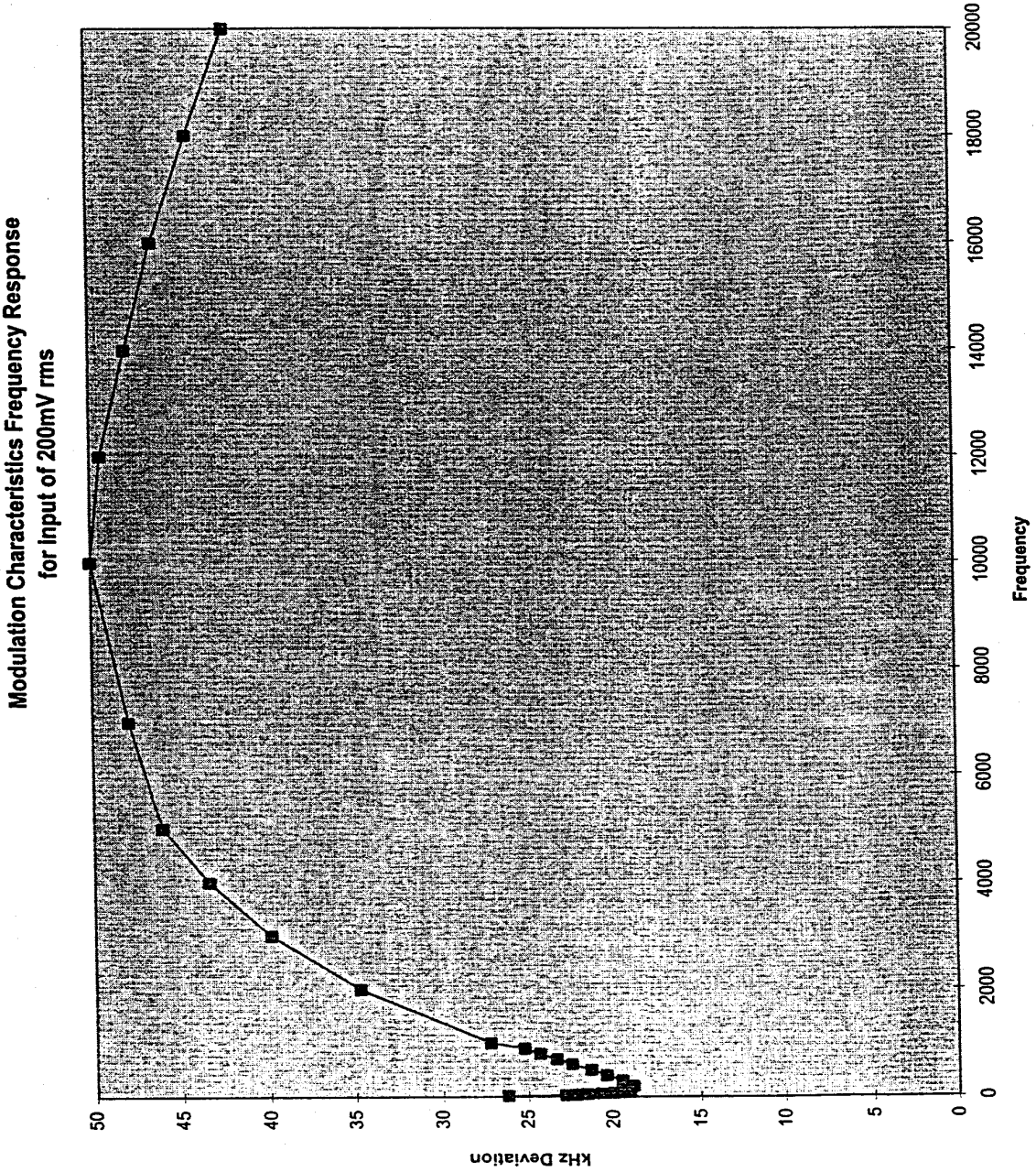
APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

GRAPHS TAKEN SHOWING THE

PERCENTAGE OF MODULATION

VERSUS

THE MODULATION INPUT VOLTAGE

PART 2.987

ELECTRONIC SYSTEMS, INC.
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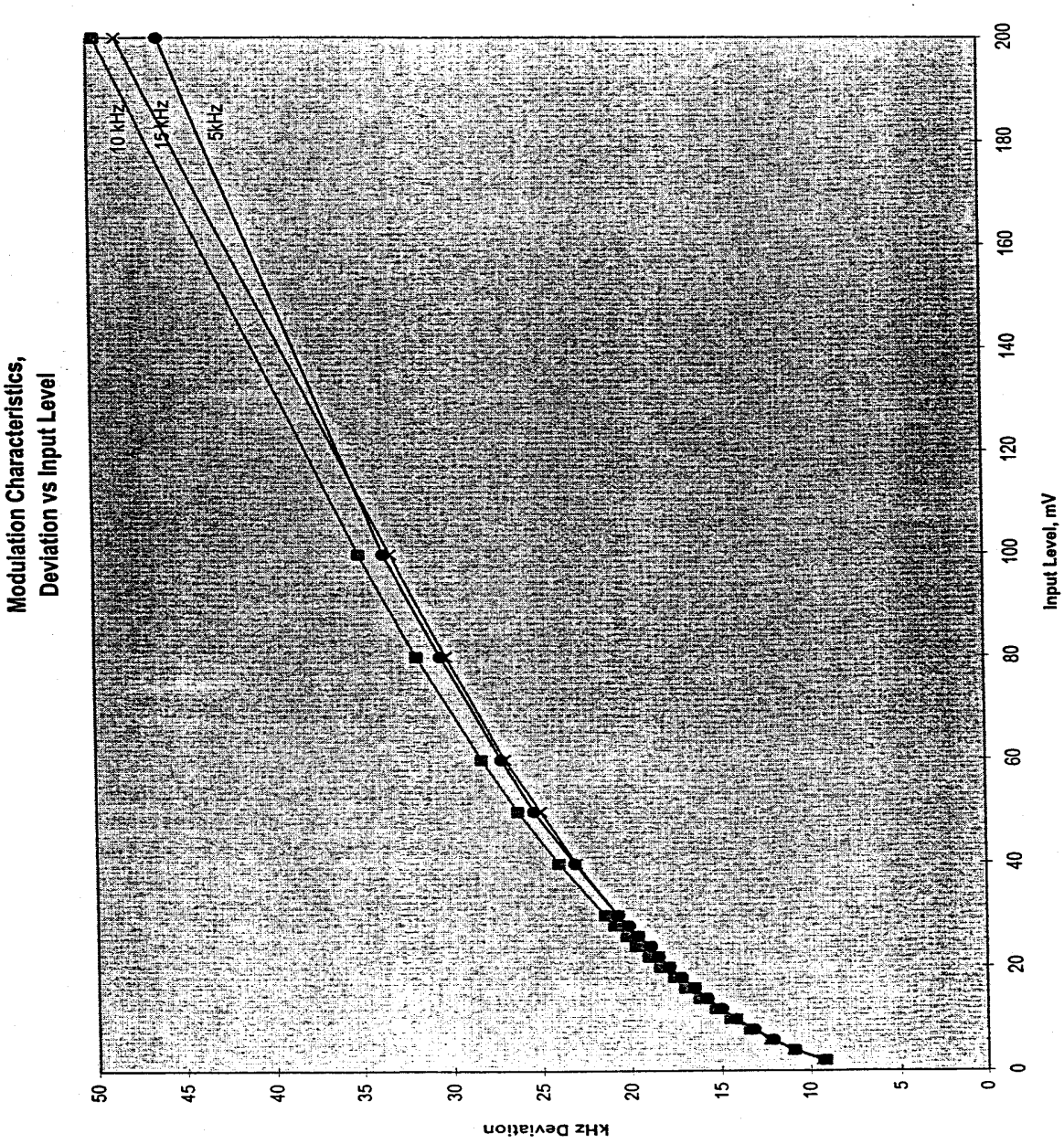
APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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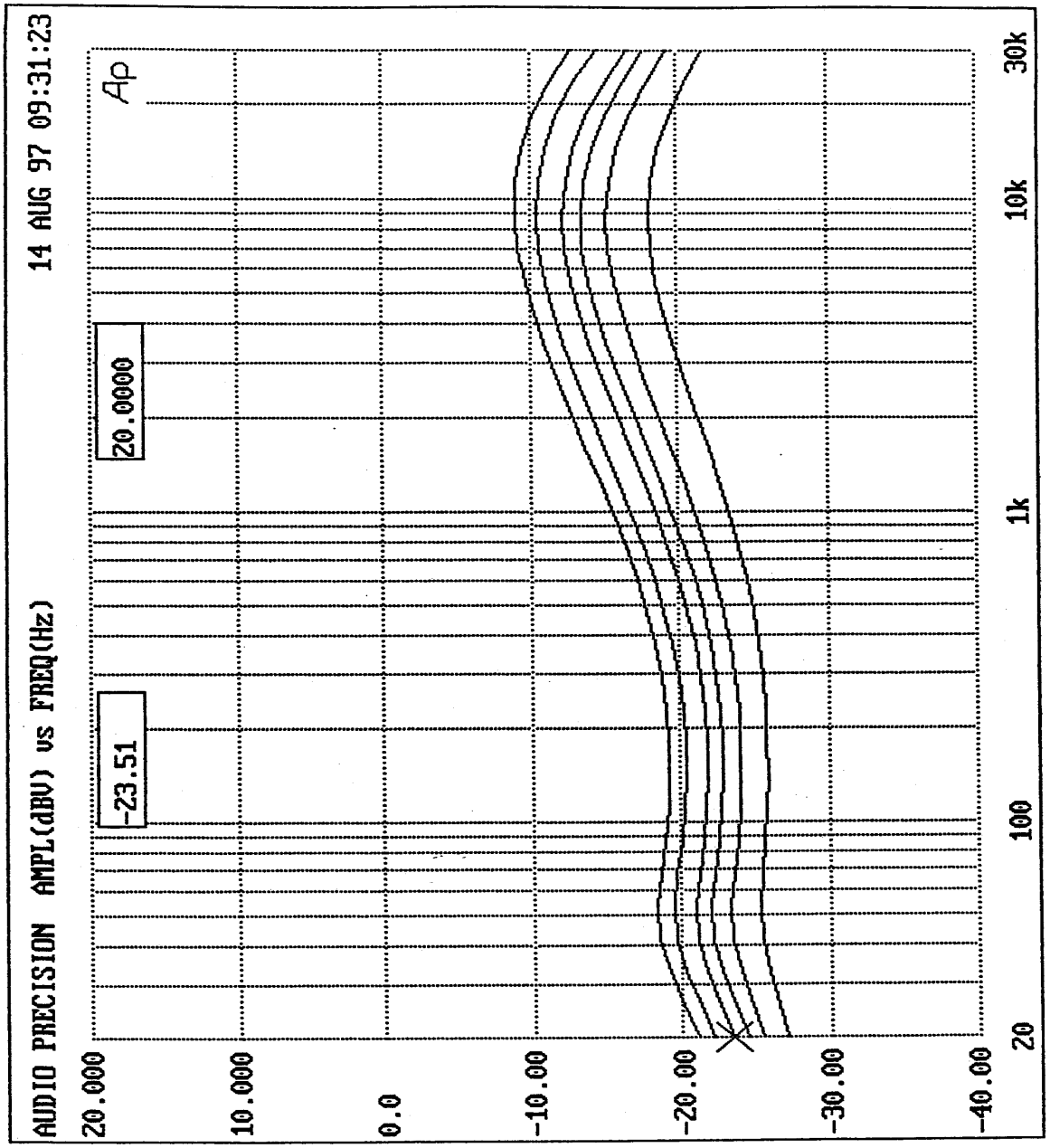
APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

4.0 OCCUPIED BANDWIDTH - PART 2.1049

The occupied bandwidth is that between the lower and upper limits of the signal where the mean power is 99.0% of the total mean power and measured under the following conditions:

As stated in Part 2.1049 c-1 the UHF Table Top Wireless Microphone Transmitter was modulated by a 2500 Hz tone at an input level 16 dB greater than that necessary to produce 50 percent modulation. This input level was established at the frequency of maximum response of the audio modulating circuit.

For low power auxiliary stations operating in the bands other than those allocated for TV broadcasting, the occupied bandwidth shall not be greater than that necessary for satisfactory transmission and emissions appearing on any discrete frequency outside the authorize band shall be attenuated $43+10 \log_{10}$ (mean output power, in watts) dB below the mean output power of the transmitting unit (device under test).

For low power auxiliary stations operating in the bands allocated for TV broadcasting, any form of modulation may be used. A maximum of ±75 kHz is permitted when frequency modulation is used. The operating bandwidth shall not exceed 200 kHz.

Carson's Rule:

Section 2.202 (g)

B = 2M+2DK,
Where
B = Bandwidth
M = Maximum Modulating Frequency
D = Peak Frequency Deviation
K =1

Example:
M = 15 kHz and D = 45 kHz
B = 2(15) + 2(45)(1) = 120 kHz

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

GRAPH(S) TAKEN OF THE OCCUPIED BANDWIDTH

PART 2.1049

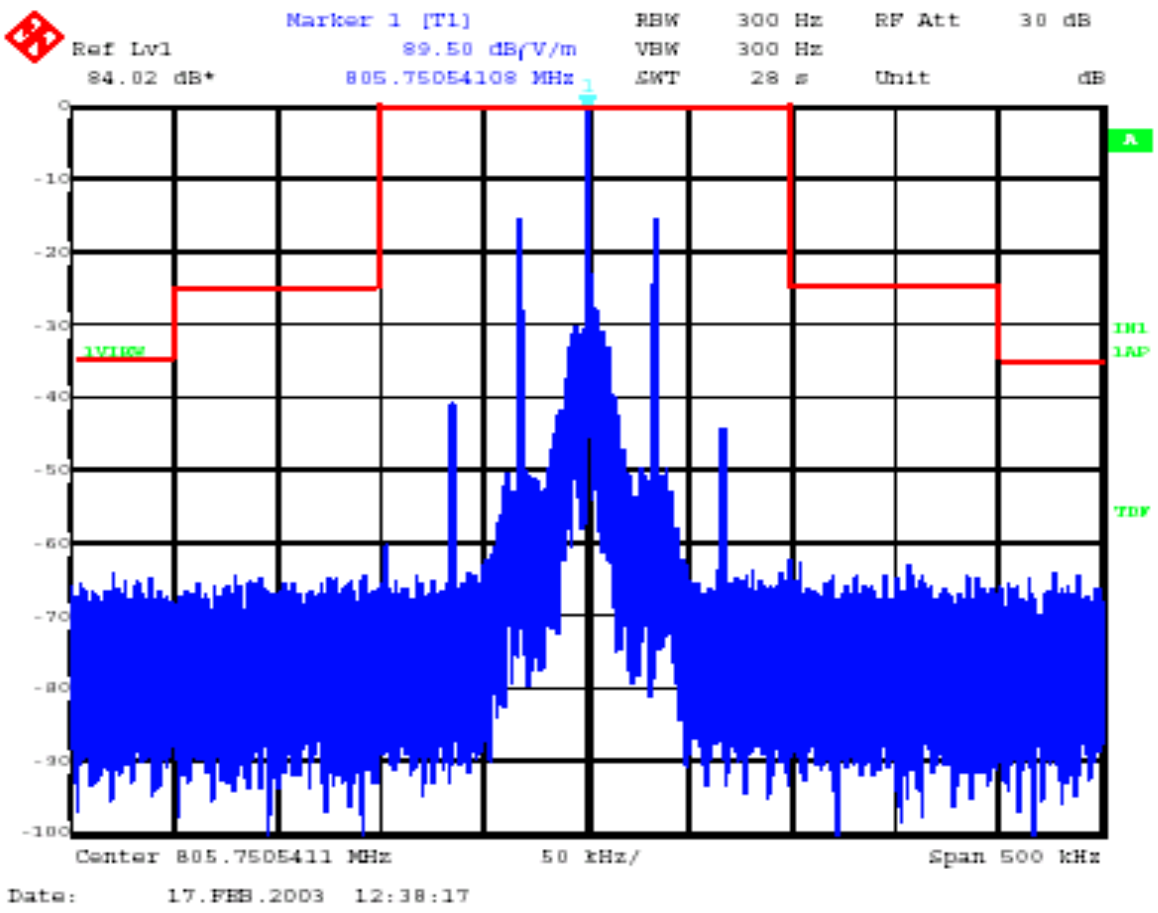
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

Unmodulated Crier:



Company: Shure Inc.
EUT: MX692-UA
Operator: Craig Brandt
Comment: CHL 0, GRP 1 805.7 MHz

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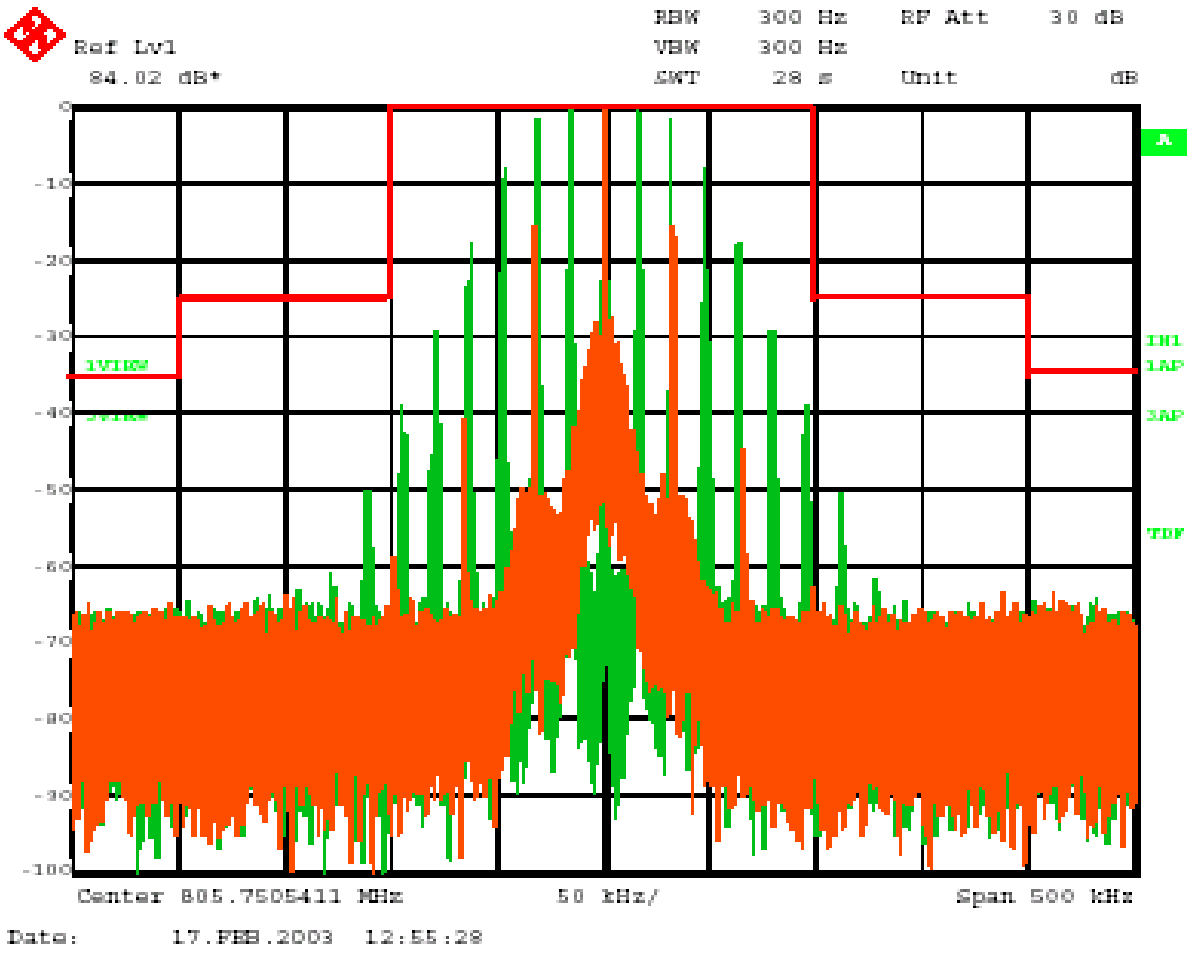
APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

Orange: Unmodulated
Green: 15 kHz 85% modulated



Company: Shure Inc.
EUT: MX692-UA
Operator: Craig Brandt
Comment: CHL 0, GRP 1 805.7 MHz

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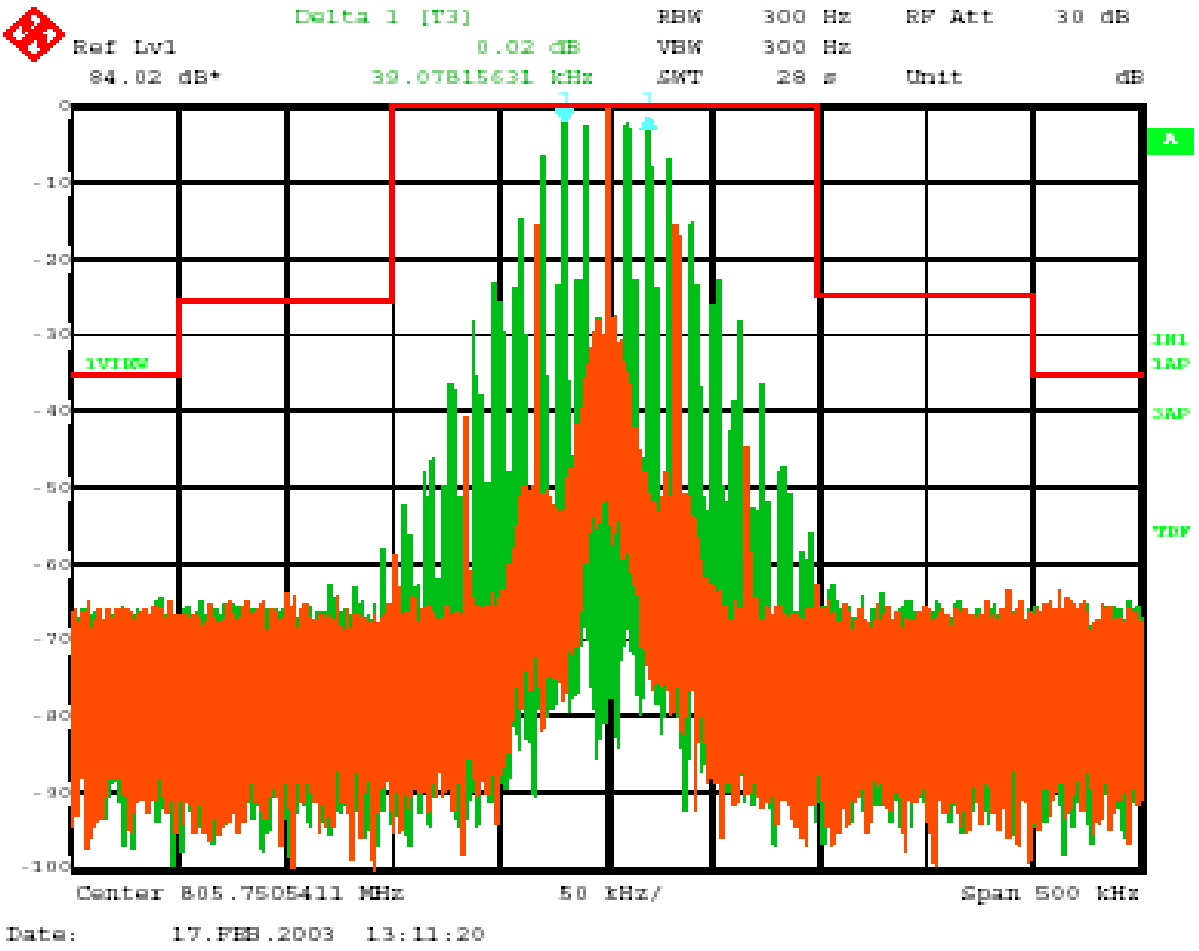
APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

Orange: Unmodulated
Green: 10 kHz 50% modulated



Company: Shure Inc.
EUT: MX692-UA
Operator: Craig Brandt
Comment: CHL 0, GRP 1 805.7 MHz

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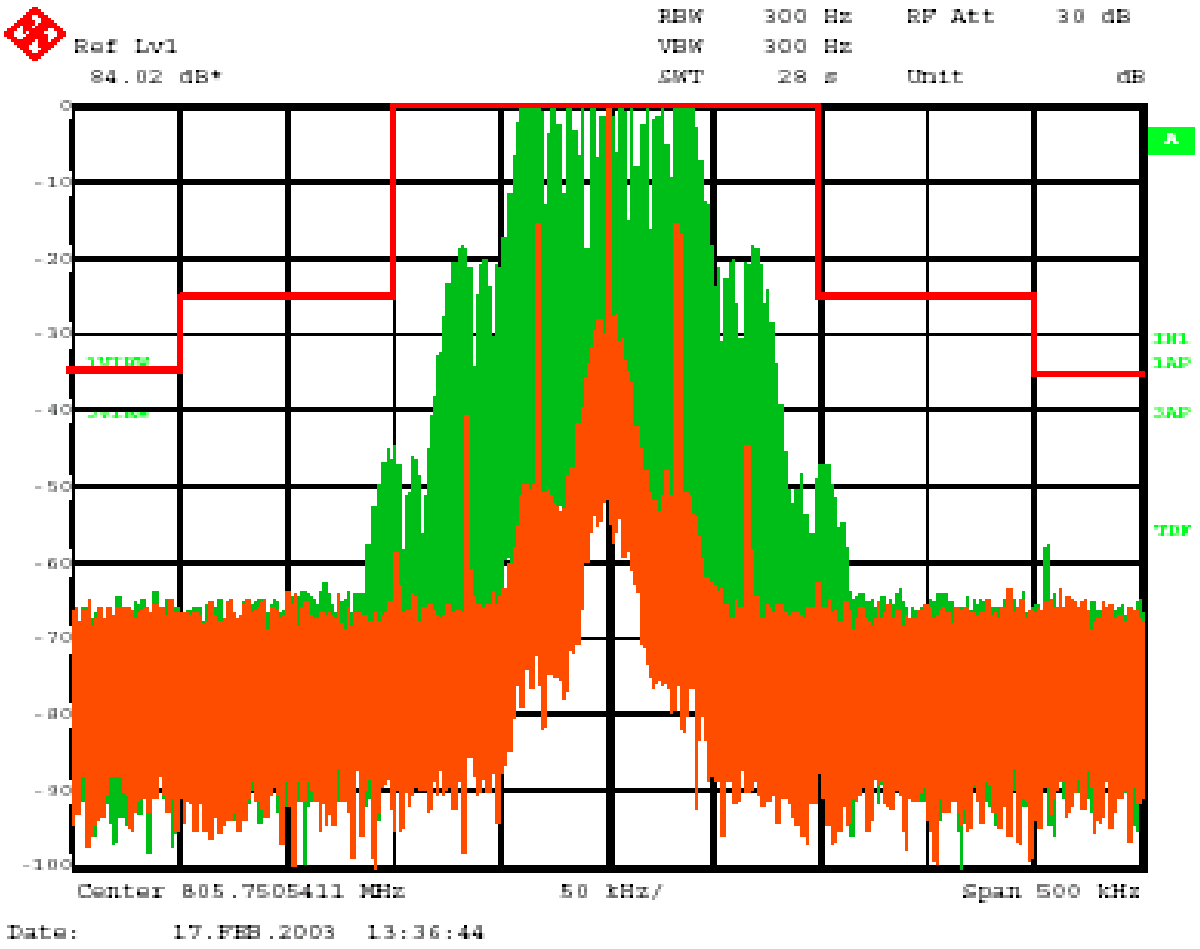
TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

Orange: Unmodulated
Green: 2.5 kHz 16 dB > 50% modulated



Company: Shure Inc.
EUT: MX692-UA
Operator: Craig Brandt
Comment: CHL 0, GRP 1 805.7 MHz

ELECTRONIC SYSTEMS, INC.
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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

5.0 FREQUENCY DEVIATION AND TOLERANCE - PART 74.861

Paragraph e-3 states that the **maximum authorized deviation shall be 75 kHz** for all frequency modulation emissions in the frequency bands 782 MHz to 806 MHz.

Paragraph e-4 states that the **frequency tolerance** of the transmitter shall be **.005 percent.**

NOTE:

The manufacturer is responsible for the measurements required for FCC Part 74.861.

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

GRAPHS TAKEN SHOWING FREQUENCY DEVIATION

WITH

15 kHz, 85% MODULATION

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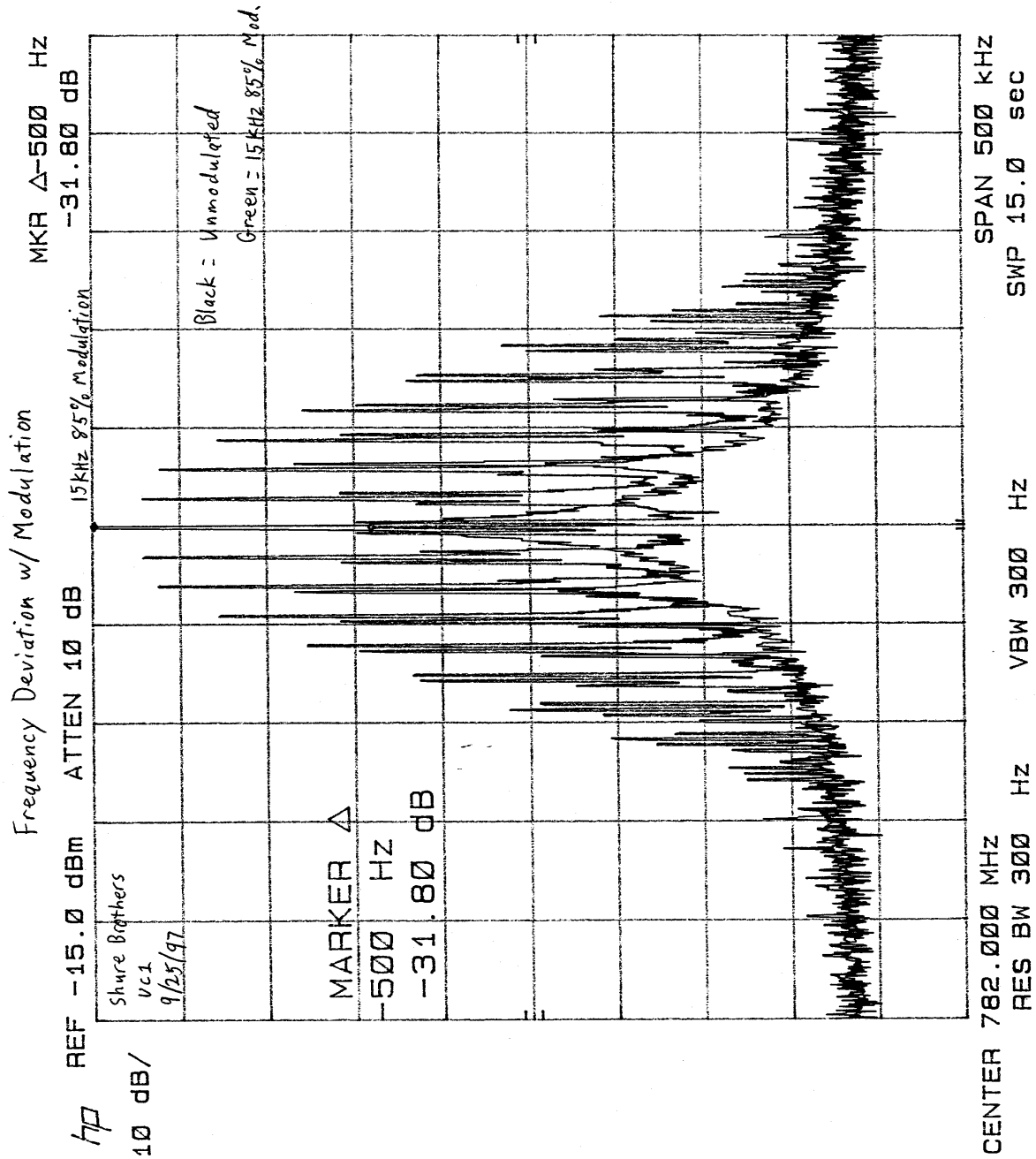
APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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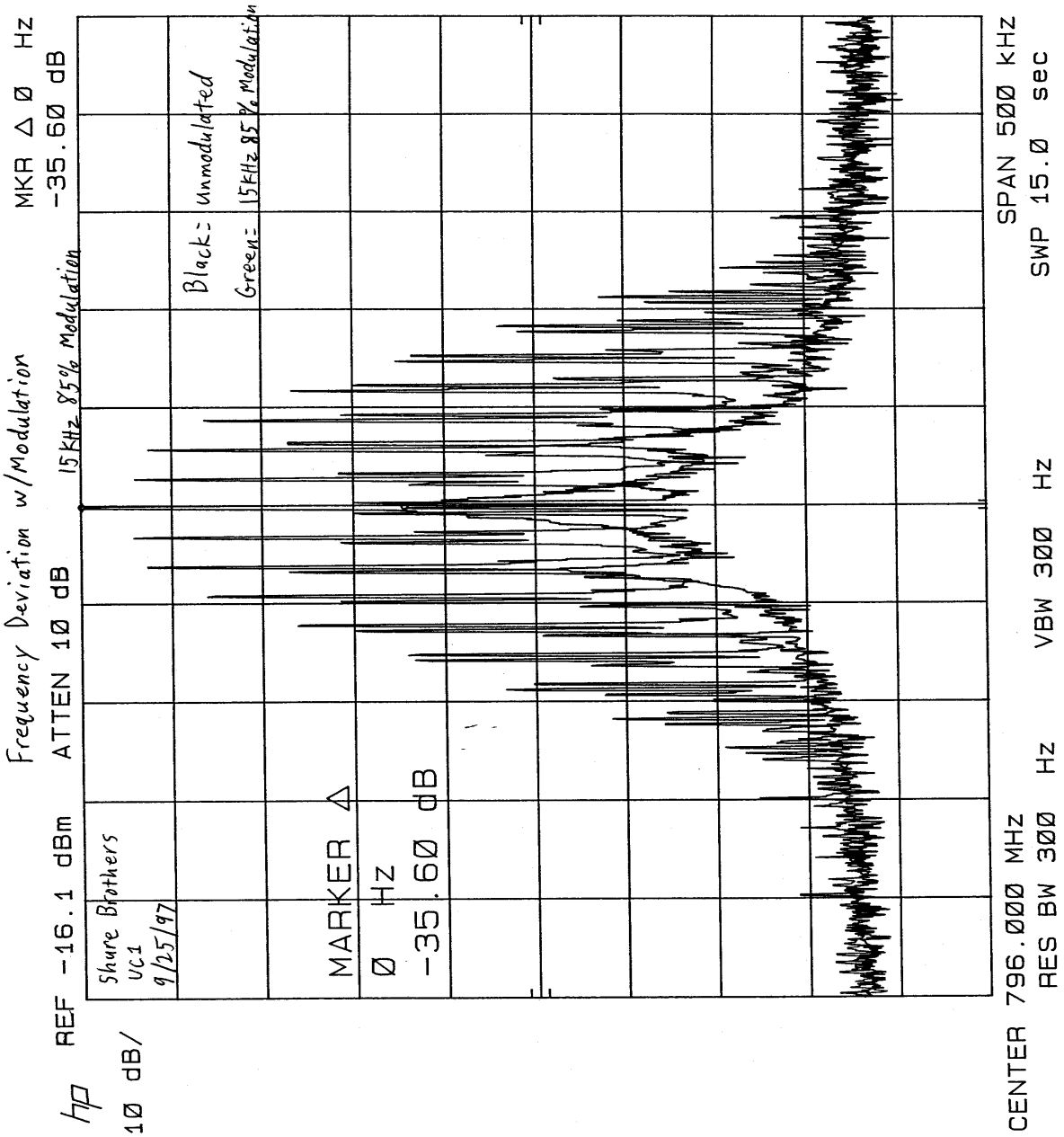
APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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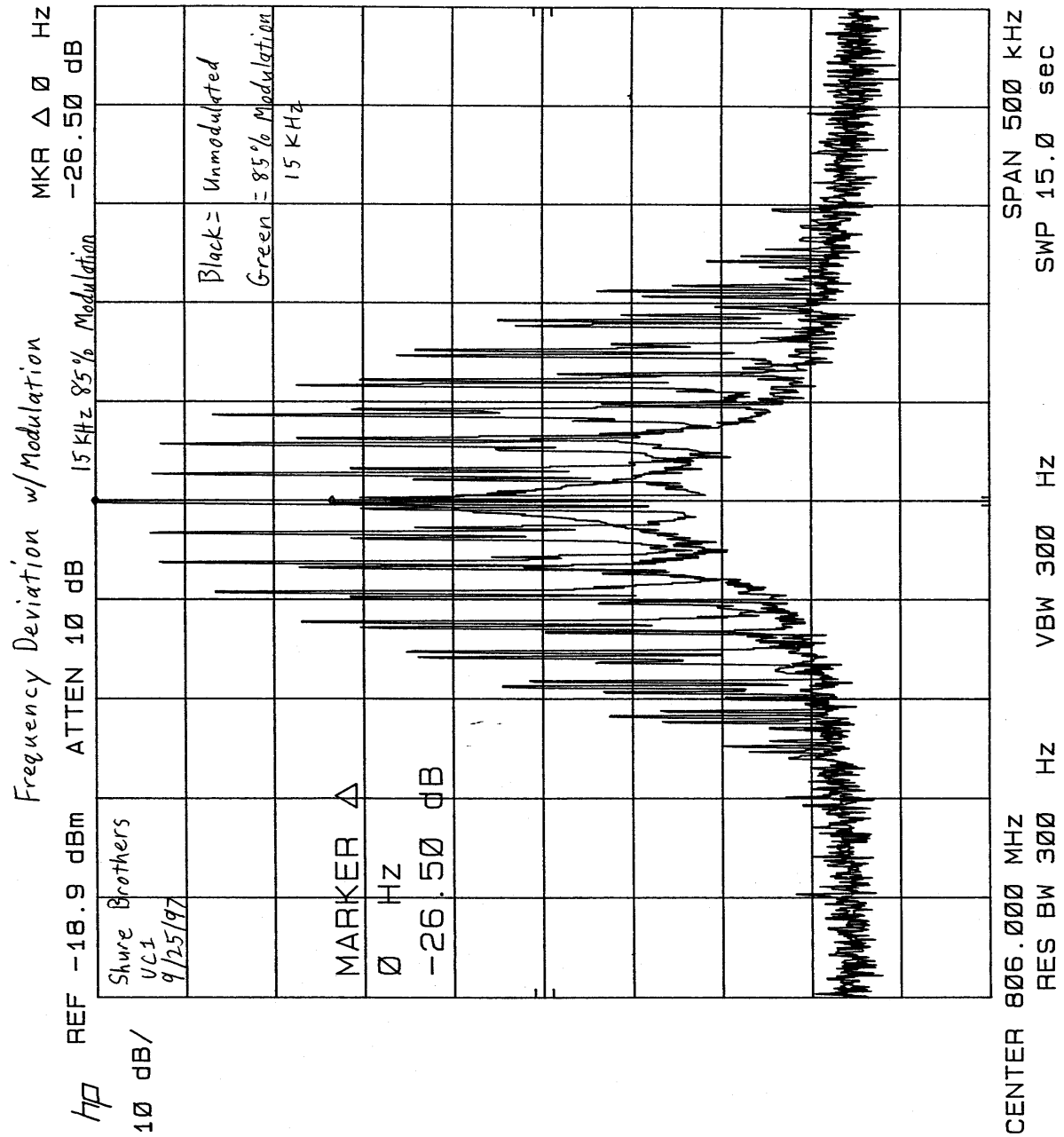
TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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APPENDIX A

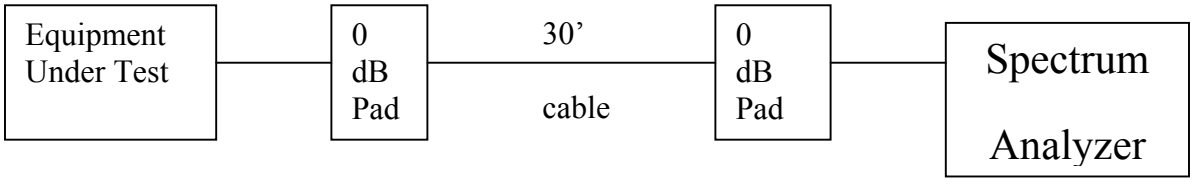
TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

6.0 SPURIOUS EMISSIONS AT ANTENNA TERMINALS – PART 2.1051

Spurious conducted emissions were measured at the antenna terminals using an artificial load. Plots were made showing the amplitude of each harmonic emission with the equipment operated as specified in 2.989. As shown by the radiated charts there was no reason to believe that there were any spurious emissions other than the harmonics that were than individually investigated when doing the conducted test at the antenna terminals. Measurements were made up to the 10^{th} harmonic of the fundamental. The following setup was used showing placement of the attenuators:

NOTE: This test was not run because there is no antenna port.



The allowed emissions for transmitters operating in the bands for UHF Table Top Wireless Microphone Transmitter equipment are found under Part 74, Section 74.861, Paragraph e-6 for Low Power Auxiliary Stations. This paragraph states the mean power of the emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

(1) On any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least 25 dB.

(2) On any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: at least 35 dB.

(3) On any frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth: at least 43+10Log10 (mean output power in watts) dB.

NOTE: See the following pages for the data ad graphs of the actual measurements made:

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

CONDUCTED EMISSION DATA TAKEN FOR

SPURIOUS EMISSION MEASUREMENTS MADE

AT THE ANTENNA TERMINALS

PART 2.1051

NOTE: This test was not run because there is no antenna port.

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

CONDUCTED EMISSION GRAPH(S) TAKEN FOR

SPURIOUS EMISSION MEASUREMENTS MADE

AT THE ANTENNA TERMINALS

PART 2.1051

NOTE: This test was not run because there is no antenna port.

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

7.0 FIELD STRENGTH OF SPURIOUS EMISSION MEASUREMENTS – PART 2.1053

Radiated measurements were performed at a 1 or 3 meter test distance automatically scanning the frequency range from 200 MHz to 10000 MHz, depending upon the fundamental frequency.

For the UHF Table Top Wireless Microphone Transmitter, the highest fundamental frequency is 704 MHz so the scans were made up to 10000 MHz, to cover the tenth harmonic.

All signals in the frequency range of 30 MHz to 200 MHz were measured with a Biconical Antenna and from 200 MHz to 1000 MHz a Log Periodic Antenna was used as the pickup devices. From 1000 MHz to 10000 MHz, a Double Ridge Horn Antenna was used. The cables and equipment were placed and moved within the range of positions likely to find their maximum emissions. Tests were made in both the horizontal and vertical planes of polarization.

The allowed emissions for transmitters operating in the bands for UHF Table Top Wireless Microphone Transmitter are found under Part 74, Section 74.861, Paragraph e-6 for Low Power Auxiliary Stations. This paragraph states the mean power of the emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

(1) On any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least 25 dB.

(2) On any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: at least 35 dB.

(3) On any frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth: at least 43+10Log10 (mean output power in watts) dB.

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

7.0 FIELD STRENGTH OF SPURIOUS EMISSION MEASUREMENTS (CON'T) – PART 2.1053

As stated in Part 74, Section 74.861 (e-1 iii) the limit is 250 mW in the frequency range .

To determine the **LIMIT** for Spurious Emissions the following method was used:

Mean output power in watts:

Manufacturer's rated wattage = **.003 Watts (See Paragraph 2.0, page 2 of this Appendix)**

Free Space Formula

Convert to 3 meter test distance using the Free Space Formula

$$\frac{\sqrt{49.2 * \textit{rated wattage}}}{\text{Distance}} = .1280625 \text{ volts/meter} = 128062.5 \text{ uV/m}$$

20*Log(128062.5) = 102.15 dBuV/m

Therefore, the Fundamental at three meters equals 102.15 dBuV,

The emissions must be reduced by:

43 + 10*LOG10(.003 watts) = 17.77dB

Therefore, the **LIMIT** at three meters equals:

102.15 dBuV/m extrapolated level for .003 watts
-17.77 dB required reduction below the unmodulated fundamental
84.38 dBuV/M maximum spurious emissions allowed

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

RADIATED EMISSION DATA TAKEN

FOR SPURIOUS EMISSIONS

USING THE SUBSTITUTION METHOD

ANSI/TIA/EIA-603-1992, SECTION 2.2.12

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

Company: Shure Inc.
Operator: Craig Brandt
Date of test: 4-15-03

Field Strength of Spurious Radiation - Substitution Method Limit = -13 dBm

Model: **MX692-UA**

Frequency (MHz) & Polarization	Max. Field Strength of EUT @ 3 meters (dBuV/m)	Output of Signal Generator when field strength equals that of EUT (dBm)	Correction factor for cable between Signal Gen. and horn antenna (dB)	Gain of horn antenna (dBi)	Strength of emission [ERP] (dBm)	Margin (dB)
1611.5 MHz vertical	54.8	-51.5	1.91	7.2	-48.3	35.3
1611.5 MHz horizontal	63.0	-40.9	1.91	7.2	-37.7	24.7
2417.3 MHz vertical	51.5	-51.4	2.3	7.5	-48.3	35.3
2417.3 MHz horizontal	62.4	-37.0	2.3	7.5	-33.9	20.9

EIRP = Signal generator output - cable loss + antenna gain

$ERP_{(\text{ref. to } \frac{1}{2}\lambda \text{ dipole})}$ = Signal generator output - cable loss + antenna gain - 2.1

ELECTRONIC SYSTEMS, INC.
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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

‘‘RADIATED DATA

AND

CHARTS TAKEN DURING TESTING’’

HIGH CHANNEL 805.7 MHz

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

FCC Part 74

Electric Field Strength

EUT: MX692-UA
Manufacturer: Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: CHL 0, GRP 1 805.7 MHz
Date: 2/14/2003

TEXT: "Site 3 MidV 3M"

Short Description: Test Set-up Vert30-1000MHz
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 26 SN: 837491/010

Antennas ---
Biconical -- EMCO 3104C SN: 9701-4785
Log Periodic -- EMCO 3146 SN: 9702-4895

Pre-Amp --- Rohde&Schwarz TS-PR10 SN: 032001/005

TEST SET-UP: EuT Measured at 3 Meters with VERTICAL Antenna Polarisation

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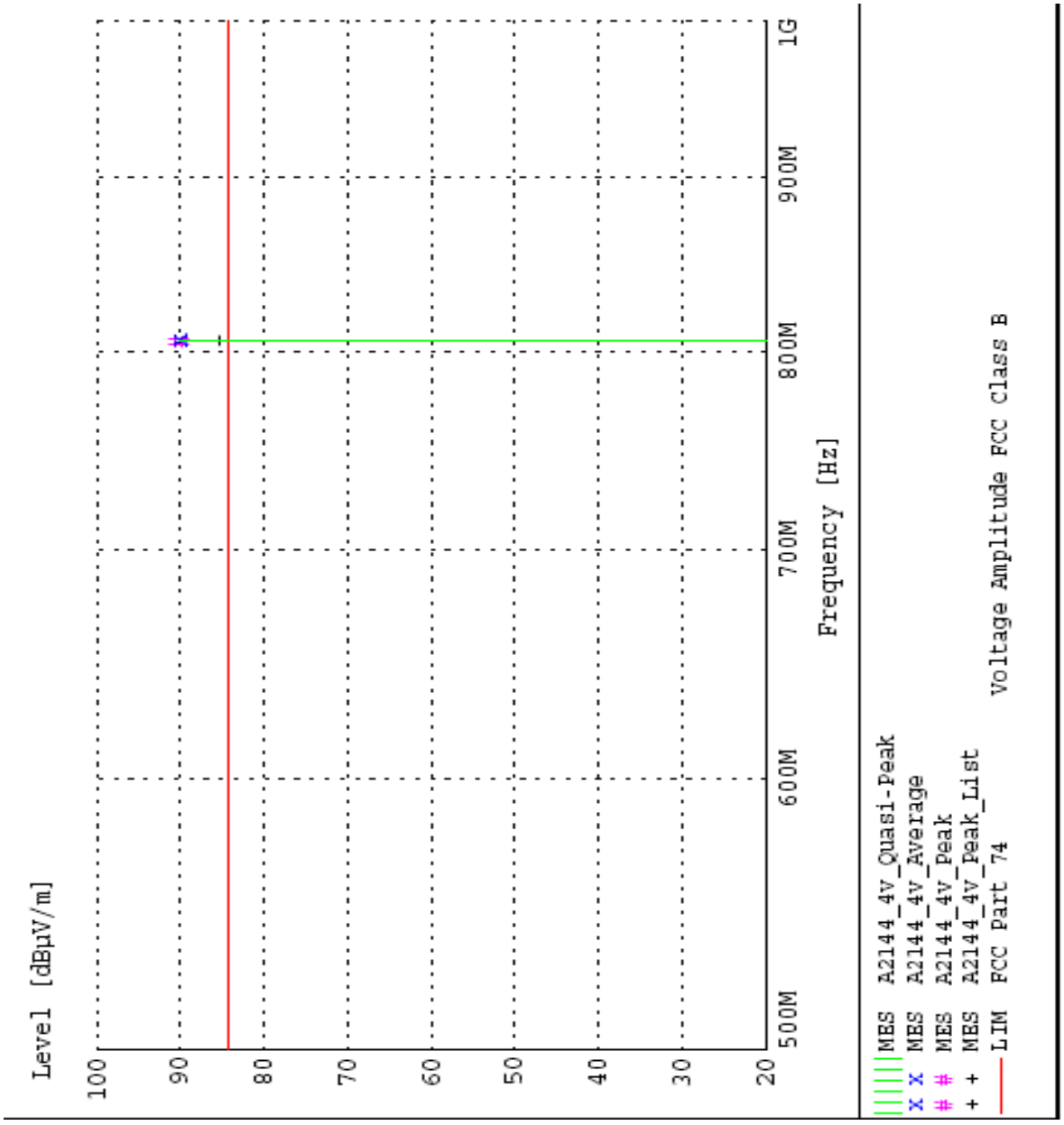
HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / VERTICAL

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



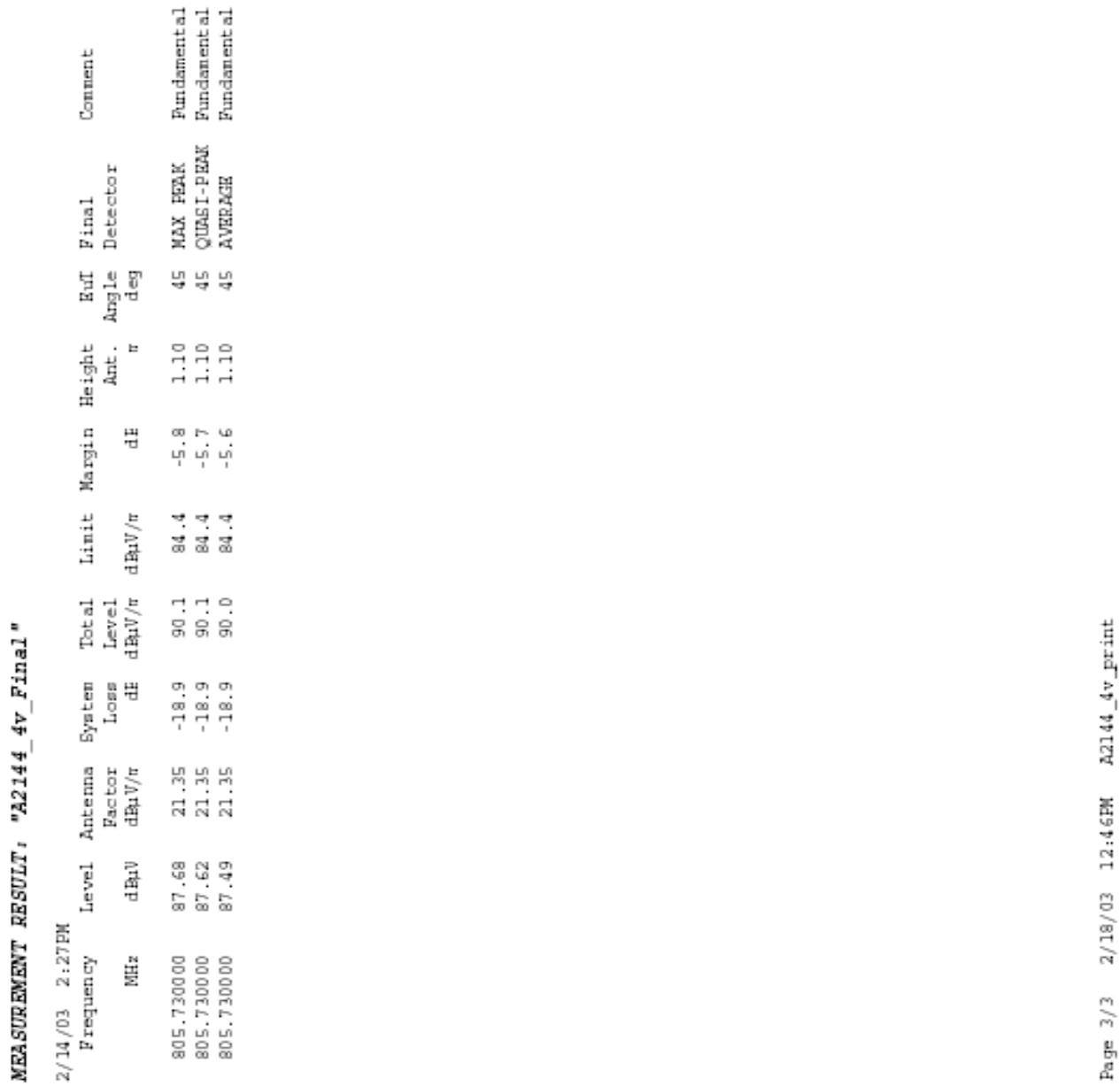
HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / VERTICAL

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



MEASUREMENT RESULT: "A2144_4v_Final"

2/14/03 2:27PM

Frequency MHz	Level dBµV	Antenna Factor dBµV/m	System Loss dB	Total Level dBµV/m	Limit dBµV/m	Margin dB	Height Ant. m	EuT Angle deg	Final Detector	Comment
805.730000	87.68	21.35	-18.9	90.1	84.4	-5.8	1.10	45	MAX PEAK	Fundamental
805.730000	87.62	21.35	-18.9	90.1	84.4	-5.7	1.10	45	QUASI-PEAK	Fundamental
805.730000	87.49	21.35	-18.9	90.0	84.4	-5.6	1.10	45	AVERAGE	Fundamental

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HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / VERTICAL

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

FCC Part 74

Electric Field Strength

EUT: MX692-UA
Manufacturer: Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: CHL 0, GRP 1 805.7 MHz
Date: 2/14/2003

TEXT: "Site 3 5731&184 V3M"

Short Description: Test Set-up Vert1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

Horn Antenna --- EMCO 3115 SN: 9903-5731

Pre-Amps ---
1 - 10 GHz -- Miteq AMF-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

TEST SET-UP: EuT Measured at 3 Meters with VERTICAL Antenna Polarisation

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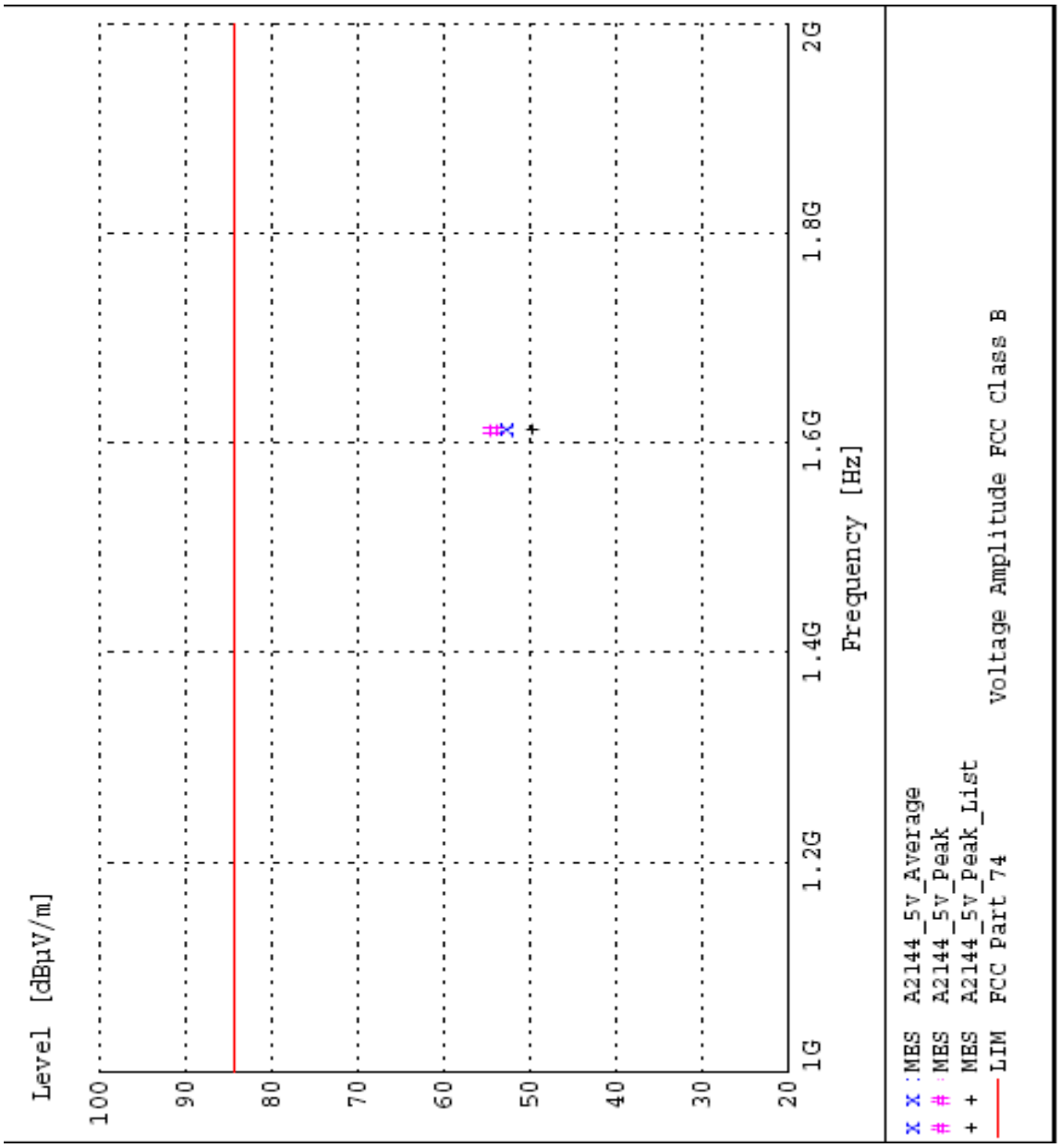
HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / VERTICAL

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / VERTICAL

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2144_5v_Final"

2/14/03 2:39PM

Frequency	Level	Antenna Factor	System Loss	Total Level	Limit	Margin	Height Ant.	EuT Angle	Final Detector	Comment
MHz	dBµV	dBµV/m	dB	dBµV/m	dBµV/m	dB	m	deg		
1611.490000	67.00	27.39	-40.2	54.2	84.4	30.2	1.00	0	MAX PEAK	None
1611.490000	65.63	27.39	-40.2	52.8	84.4	31.6	1.00	0	AVERAGE	None

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HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / VERTICAL

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

```
FCC Part 74

Electric Field Strength

EUT:                MX692-UA
Manufacturer:       Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site:          Site 3
Operator:           Craig Brandt
Test Specification:
Comment:            CHL 0, GRP 1     805.7 MHz
                    Date: 2/14/2003

TEXT: "Site 3 5731&184 V3M"

  Short Description:          Test Set-up Vert1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

                Horn Antenna --- EMCO 3115 SN: 9903-5731

                Pre-Amps ---
                                1 - 10 GHz  -- Miteq AMF-6D-010100-50 SN: 682425
                                10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

TEST SET-UP:    EuT Measured at 3 Meters with VERTICAL Antenna Polarisation

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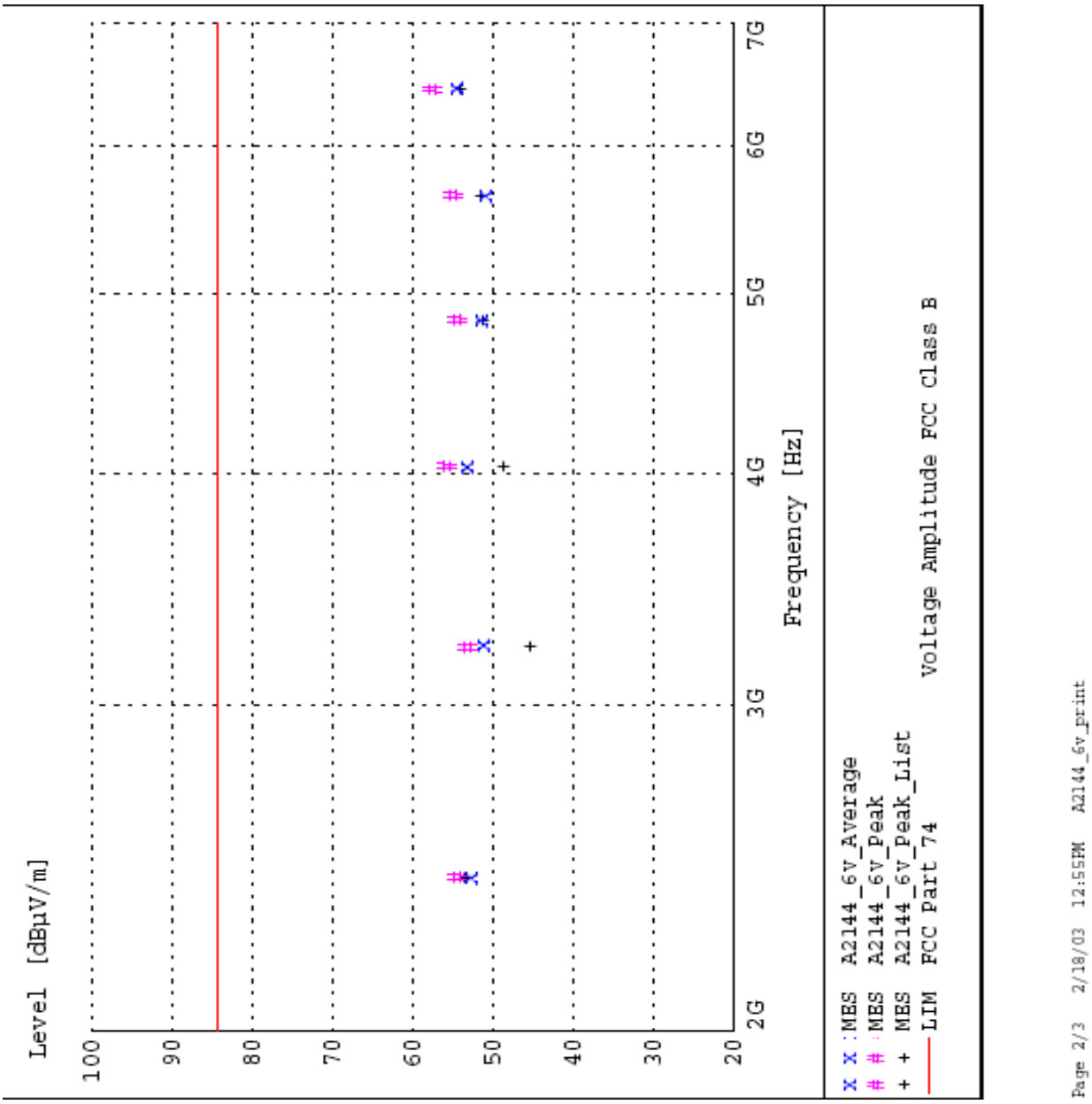
HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / VERTICAL

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / VERTICAL

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2144_6v_Final"

2/14/03 3:05PM

Frequency	Level	Antenna Factor	System Loss	Total Level	Limit	Margin	Height Ant.	EuT Angle	Final Detector	Comment
MHz	dBµV	dBµV/m	dB	dBµV/m	dBµV/m	dB	m	deg		
6446.000000	58.80	36.35	-37.7	57.5	84.4	26.9	1.10	0	MAX PEAK	None
4028.750000	59.55	34.37	-38.3	55.6	84.4	28.7	1.00	270	MAX PEAK	None
5640.250000	55.87	36.30	-37.4	54.7	84.4	29.6	1.00	350	MAX PEAK	None
6446.000000	55.91	36.35	-37.7	54.6	84.4	29.8	1.10	0	AVERAGE	None
2417.250000	63.82	30.44	-40.0	54.3	84.4	30.1	1.00	315	MAX PEAK	None
4834.500000	57.35	34.70	-37.8	54.3	84.4	30.1	1.00	45	MAX PEAK	None
4028.750000	57.37	34.37	-38.3	53.4	84.4	30.9	1.00	270	AVERAGE	None
3223.000000	60.72	32.08	-39.7	53.1	84.4	31.2	1.20	270	MAX PEAK	None
2417.250000	62.38	30.44	-40.0	52.9	84.4	31.5	1.00	315	AVERAGE	None
4834.500000	54.64	34.70	-37.8	51.6	84.4	32.8	1.00	45	AVERAGE	None
3223.000000	58.77	32.08	-39.7	51.2	84.4	33.2	1.20	270	AVERAGE	None
5640.250000	52.22	36.30	-37.4	51.1	84.4	33.3	1.00	350	AVERAGE	None

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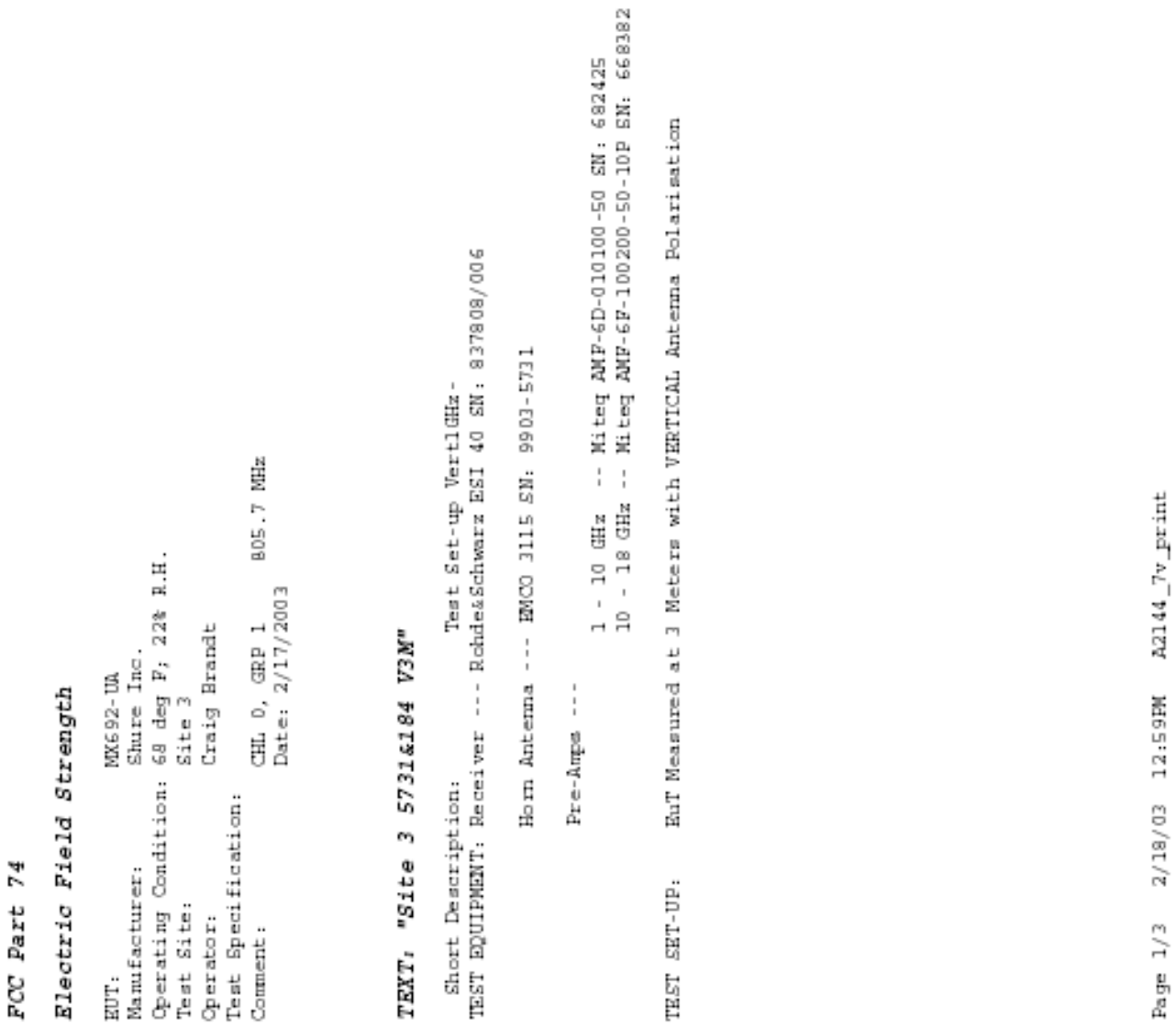
HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / VERTICAL

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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FCC Part 74

Electric Field Strength

EUT:                MX692-UA
Manufacturer:       Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site:          Site 3
Operator:           Craig Brandt
Test Specification:
Comment:            CHL 0, GRP 1    805.7 MHz
                    Date: 2/17/2003

TEXT: "Site 3 5731&184 V3M"

  Short Description:          Test Set-up Vert1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

        Horn Antenna --- EMCO 3115 SN: 9903-5731

        Pre-Amps ---
                1 - 10 GHz  -- Miteq AMF-6D-010100-50 SN: 682425
                10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

TEST SET-UP:    EuT Measured at 3 Meters with VERTICAL Antenna Polarisation

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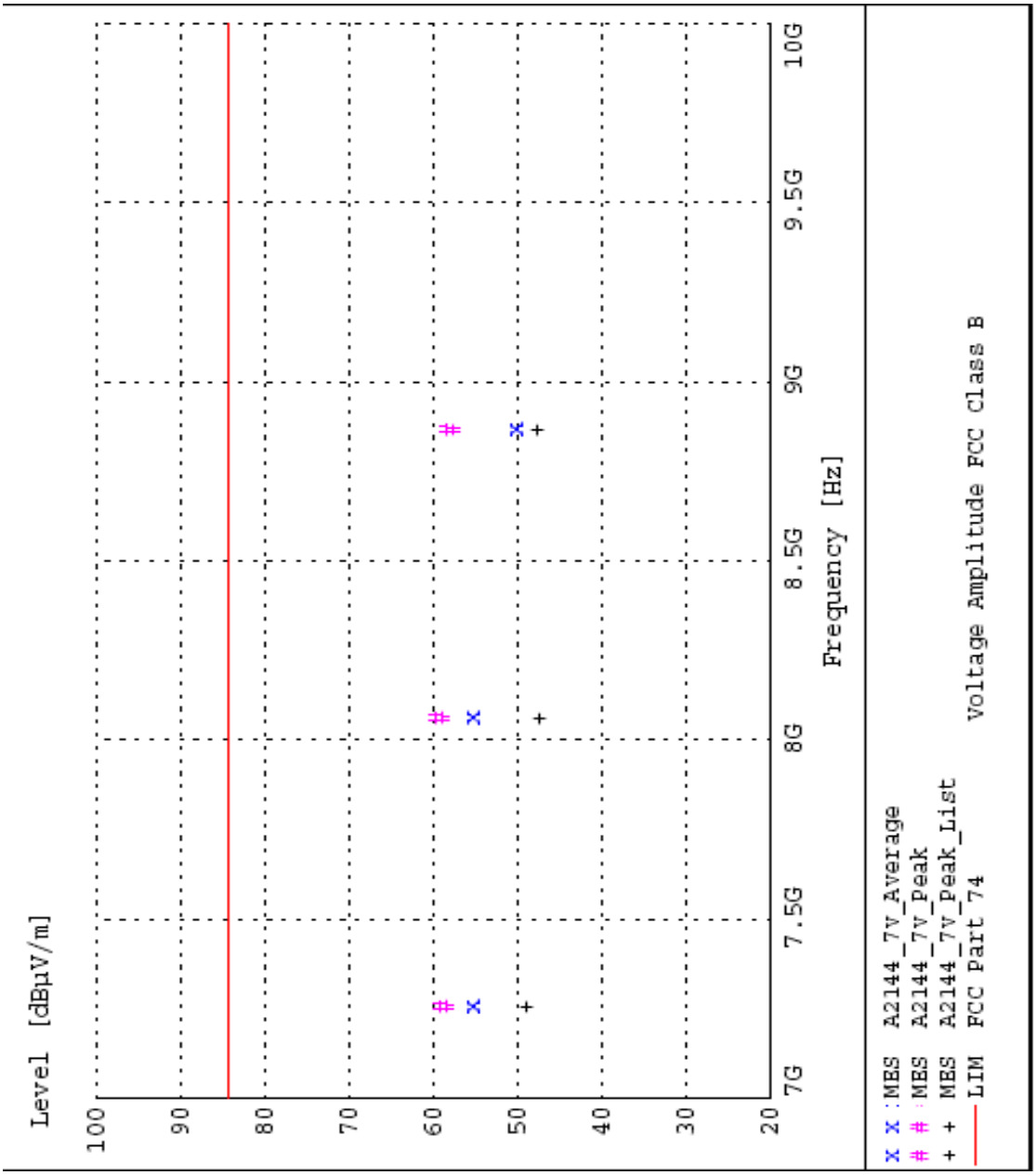
HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / VERTICAL

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / VERTICAL

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2144_7v_Final"

2/17/03 8:59AM

Frequency MHz	Level dBµV	Antenna Factor dBµV/m	System Loss dB	Total Level dBµV/m	Limit dBµV/m	Margin dB	Height Ant. m	Rdf Angle deg	Final Detector	Comment
8057.500000	56.03	37.53	-34.5	59.1	84.4	25.3	1.00	135	MAX PEAK	None
7251.800000	57.62	37.30	-36.3	58.6	84.4	25.8	1.00	180	MAX PEAK	None
8863.300000	54.55	39.33	-36.0	57.9	84.4	26.5	1.00	315	MAX PEAK	None
7251.800000	54.36	37.30	-36.3	55.3	84.4	29.0	1.00	180	AVERAGE	None
8057.500000	52.26	37.53	-34.5	55.3	84.4	29.0	1.00	135	AVERAGE	None
8863.300000	46.86	39.33	-36.0	50.2	84.4	34.2	1.00	315	AVERAGE	None

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HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / VERTICAL

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

```
FCC Part 74

Electric Field Strength

EUT:                MX692-UA
Manufacturer:       Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site:          Site 3
Operator:           Craig Brandt
Test Specification:
Comment:            CHL 0, GRP 1    805.7 MHz
                    Date: 2/14/2003

TEXT: "Site 3 MidH 3M"

  Short Description:          Test Set-up Horz30-1000MHz
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

                Antennas ---
                Biconical    -- EMCO 3104C SN: 9701-4785
                Log Periodic -- EMCO 3146  SN: 9702-4895

                Pre-Amp  --- Rohde&Schwarz TS-PR10 SN: 032001/005

TEST SET-UP:    EuT Measured at 3 Meters with HORIZONTAL Antenna Polarisation

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HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / HORIZONTAL

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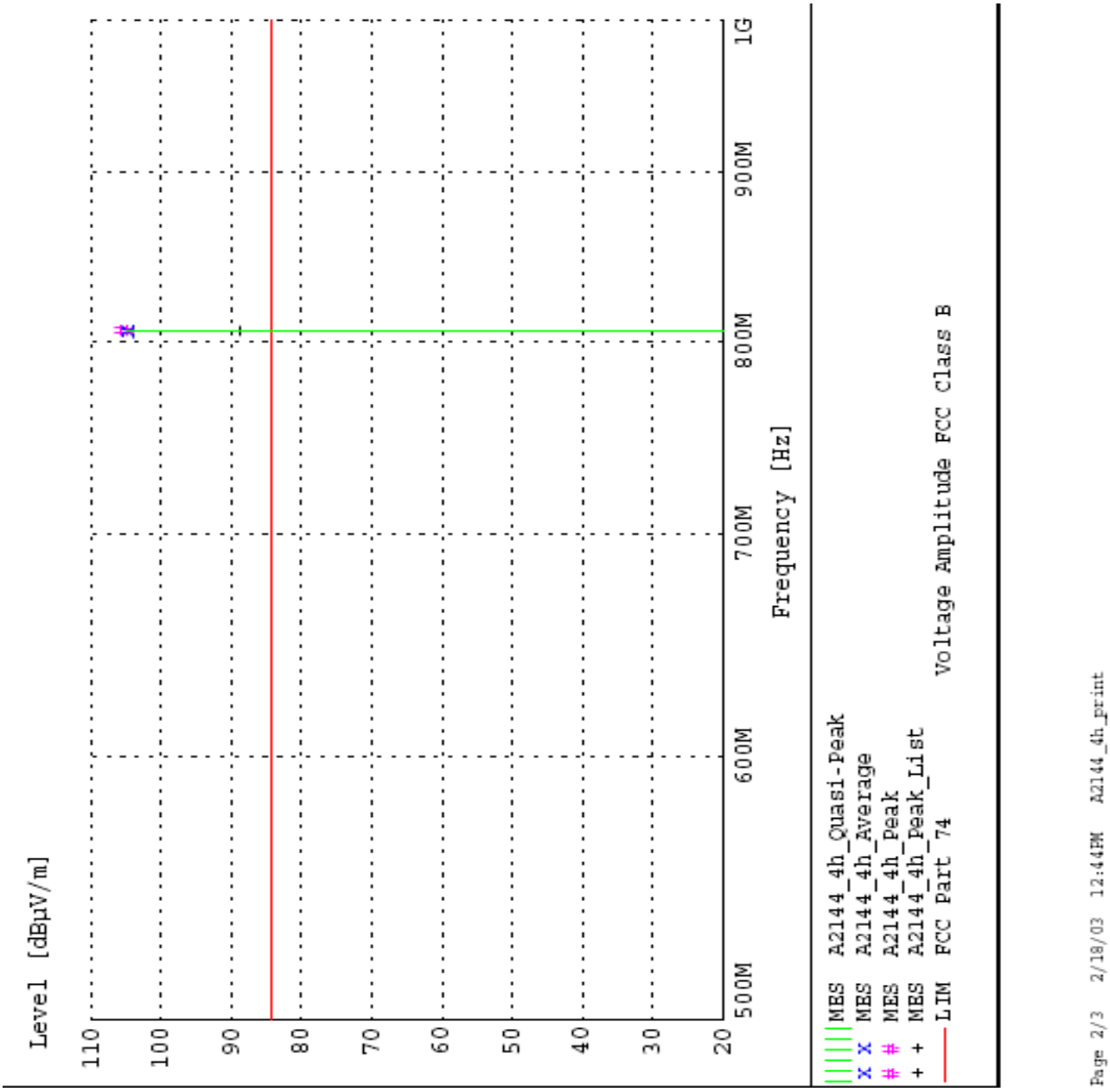
APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



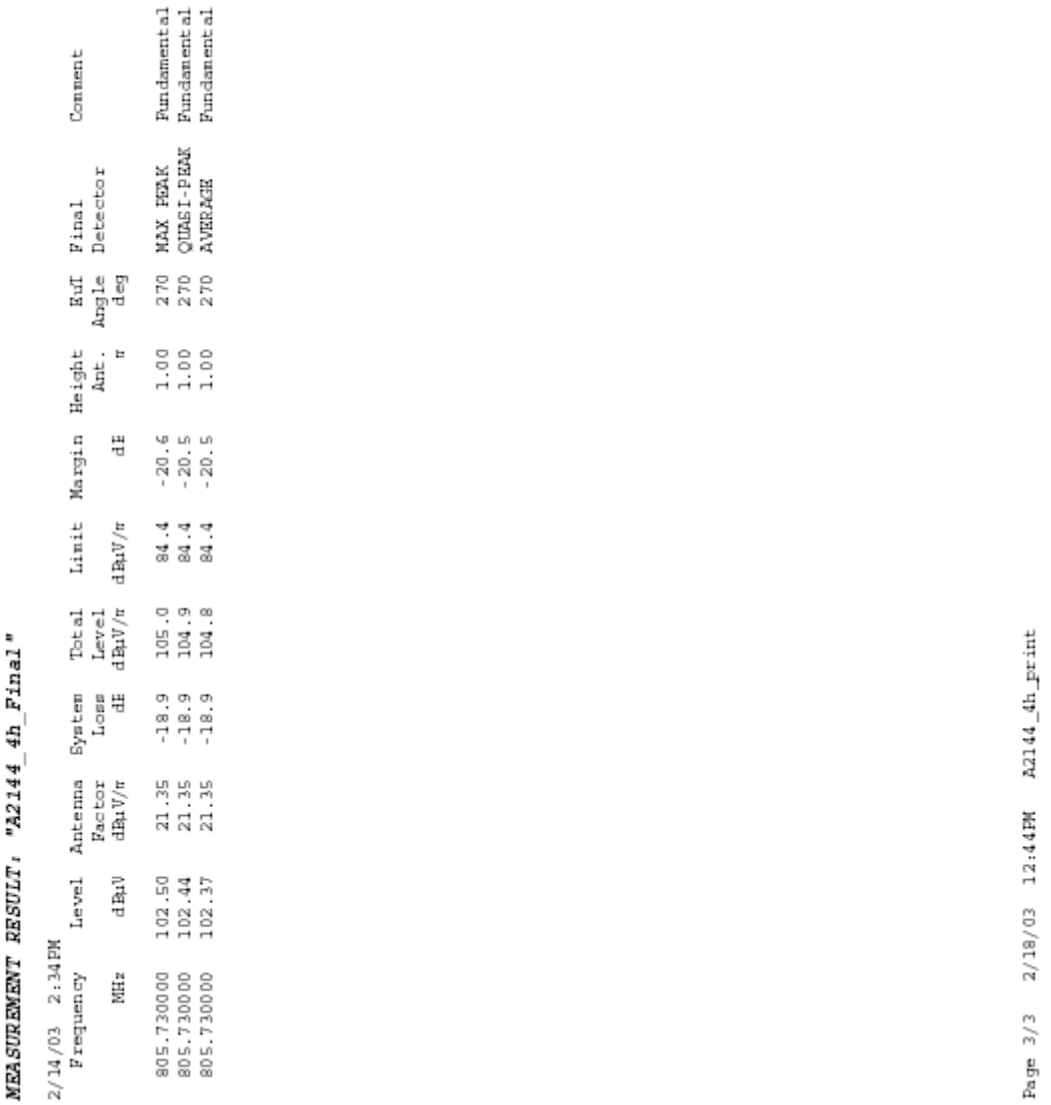
HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / HORIZONTAL

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



MEASUREMENT RESULT: "A2144_4h_Final"

2/14/03 2:34PM

Frequency	Level	Antenna Factor	System Loss	Total Level	Limit	Margin	Height Ant.	EuT Angle	Final Detector	Comment
MHz	dBuV	dBuV/m	dB	dBuV/m	dBuV/m	dB	m	deg		
805.730000	102.50	21.35	-18.9	105.0	84.4	-20.6	1.00	270	MAX PEAK	Fundamental
805.730000	102.44	21.35	-18.9	104.9	84.4	-20.5	1.00	270	QUASI-PEAK	Fundamental
805.730000	102.37	21.35	-18.9	104.8	84.4	-20.5	1.00	270	AVERAGE	Fundamental

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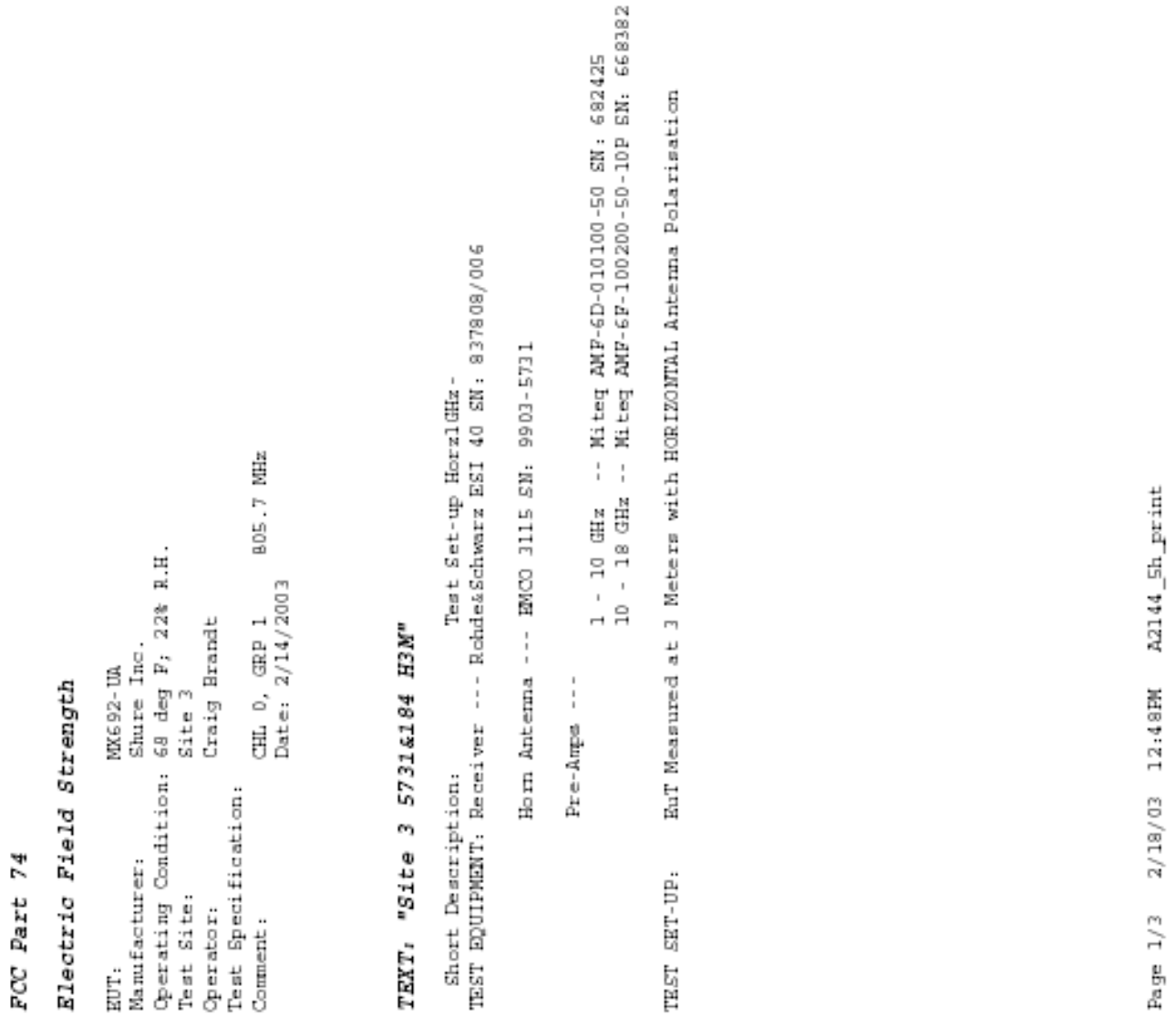
HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / HORIZONTAL

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



FCC Part 74

Electric Field Strength

EUT: MX692-UA
Manufacturer: Shure Inc.
Operating Condition: 60 deg F; 22% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: CHL 0, GRP 1 805.7 MHz
Date: 2/14/2003

TEXT: "Site 3 5731&184 H3M"

Short Description: Test Set-up Horz1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

Horn Antenna --- EMCO 3115 SN: 9903-5731

Pre-Amps ---
1 - 10 GHz -- Miteq AMF-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

TEST SET-UP: EuT Measured at 3 Meters with HORIZONTAL Antenna Polarisation

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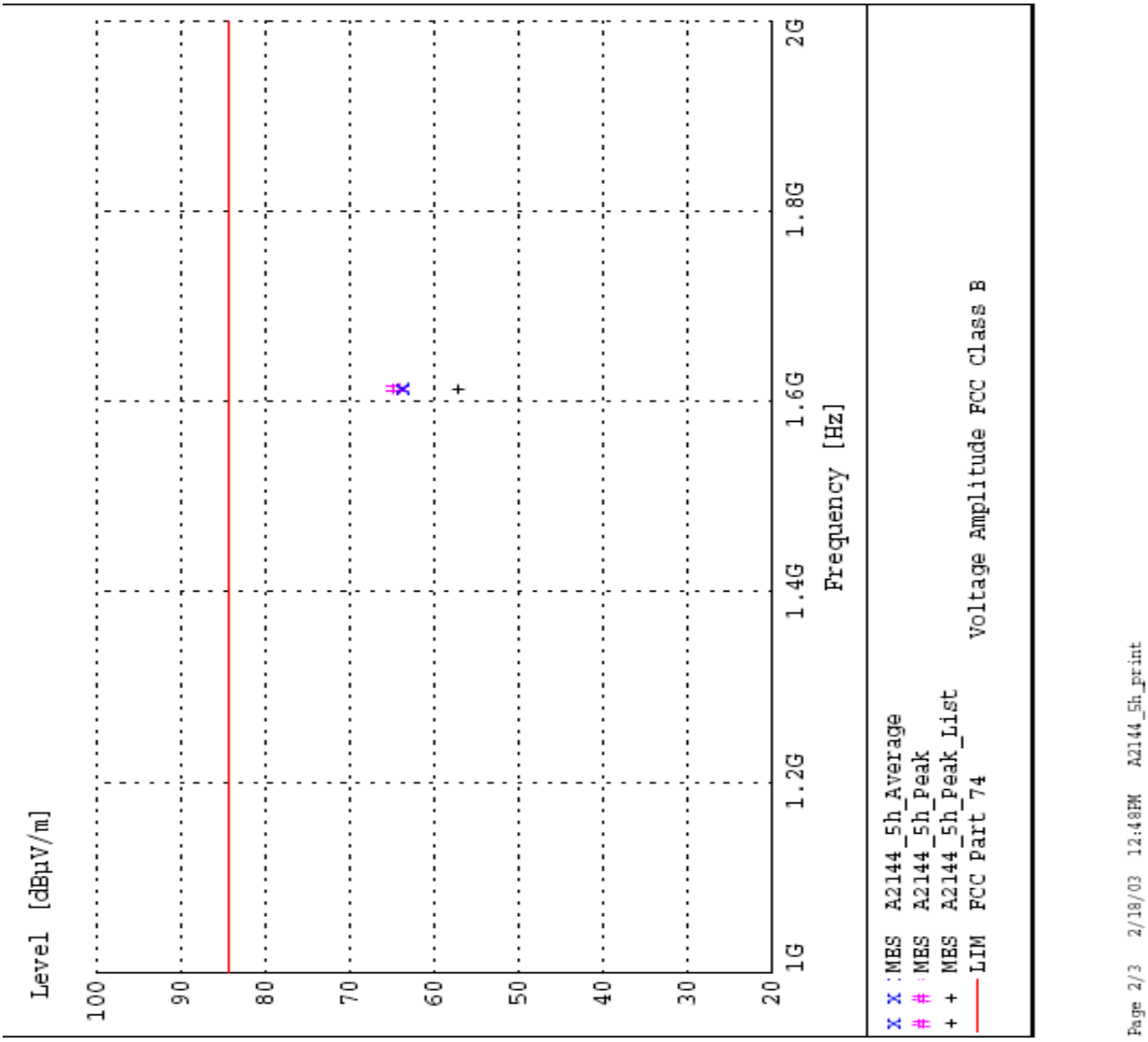
HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / HORIZONTAL

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / HORIZONTAL

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2144_5h_Final"

2/14/03 2:44PM

Frequency MHz	Level dBµV	Antenna Factor dBµV/m	System Loss dB	Total Level dBµV/m	Limit dBµV/m	Margin dB	Height Ant. m	EuT Angle deg	Final Detector	Comment
1611.490000	77.06	27.39	-40.2	64.3	84.4	20.1	1.00	45	MAX PEAK	None
1611.490000	76.61	27.39	-40.2	63.8	84.4	20.6	1.00	45	AVERAGE	None

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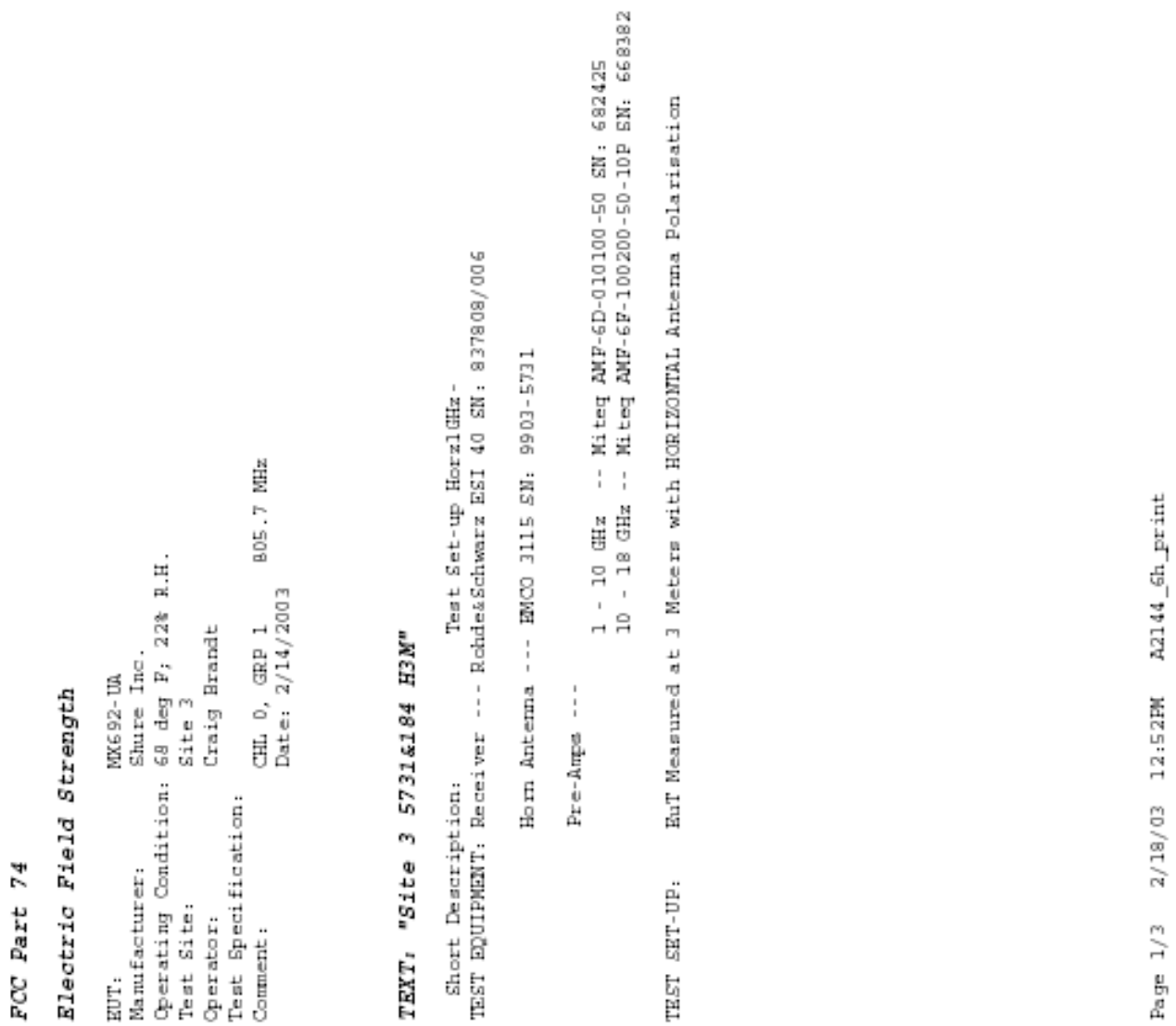
HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / HORIZONTAL

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



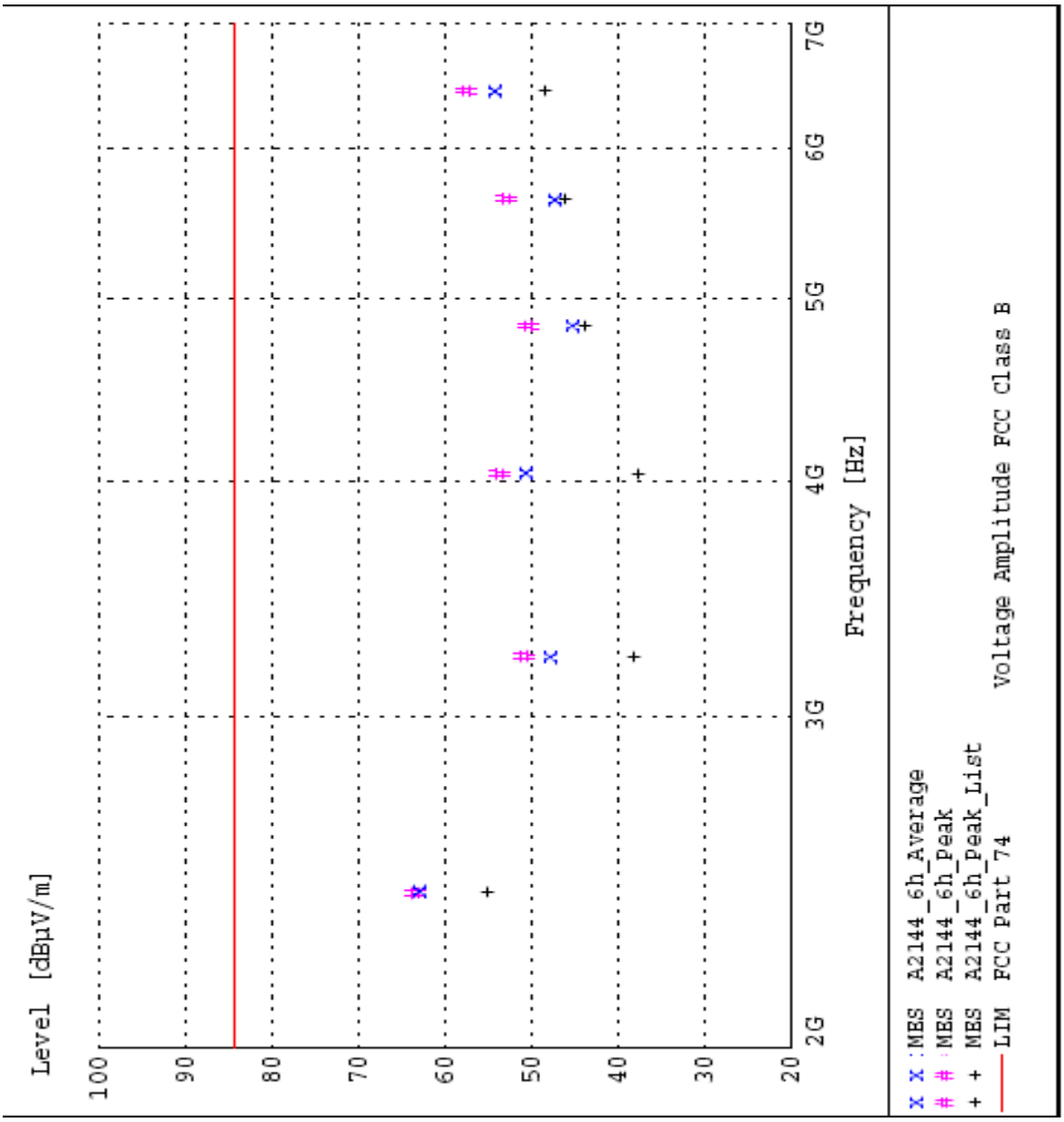
HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / HORIZONTAL

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / HORIZONTAL

ELECTRONIC SYSTEMS, INC.

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2144_6h_Final"

2/14/03 3:28PM

Frequency	Level	Antenna Factor	System Loss	Total Level	Limit	Margin	Height Ant.	EuT Angle	Final Detector	Comment
MHz	dBµV	dBµV/m	dB	dBµV/m	dBµV/m	dB	m	deg		
2417.250000	72.91	30.44	-40.0	63.4	84.4	21.0	1.00	0	MAX PEAK	None
2417.250000	72.50	30.44	-40.0	63.0	84.4	21.4	1.00	0	AVERAGE	None
6446.000000	58.80	36.35	-37.7	57.5	84.4	26.9	1.20	340	MAX PEAK	None
6446.000000	55.80	36.35	-37.7	54.5	84.4	29.9	1.20	340	AVERAGE	None
4028.750000	57.48	34.37	-38.3	53.6	84.4	30.8	1.00	180	MAX PEAK	None
5640.250000	53.93	36.30	-37.4	52.8	84.4	31.6	1.00	45	MAX PEAK	None
3223.000000	58.27	32.08	-39.7	50.7	84.4	33.7	1.00	30	MAX PEAK	None
4028.750000	54.60	34.37	-38.3	50.7	84.4	33.7	1.00	180	AVERAGE	None
4834.500000	53.35	34.70	-37.8	50.3	84.4	34.1	1.00	45	MAX PEAK	None
3223.000000	55.58	32.08	-39.7	48.0	84.4	36.4	1.00	30	AVERAGE	None
5640.250000	48.65	36.30	-37.4	47.5	84.4	36.8	1.00	45	AVERAGE	None
4834.500000	48.51	34.70	-37.8	45.4	84.4	38.9	1.00	45	AVERAGE	None

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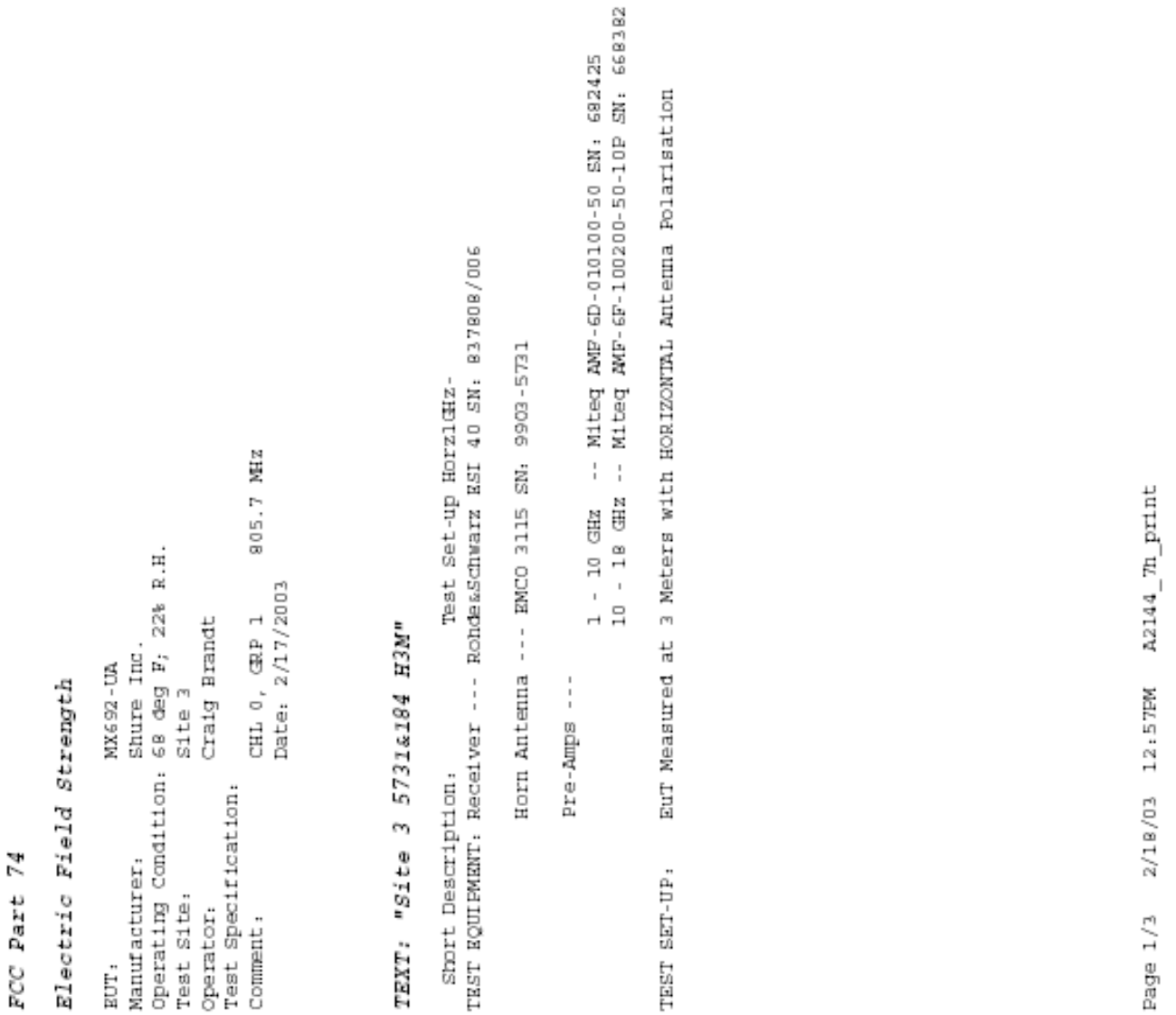
HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / HORIZONTAL

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



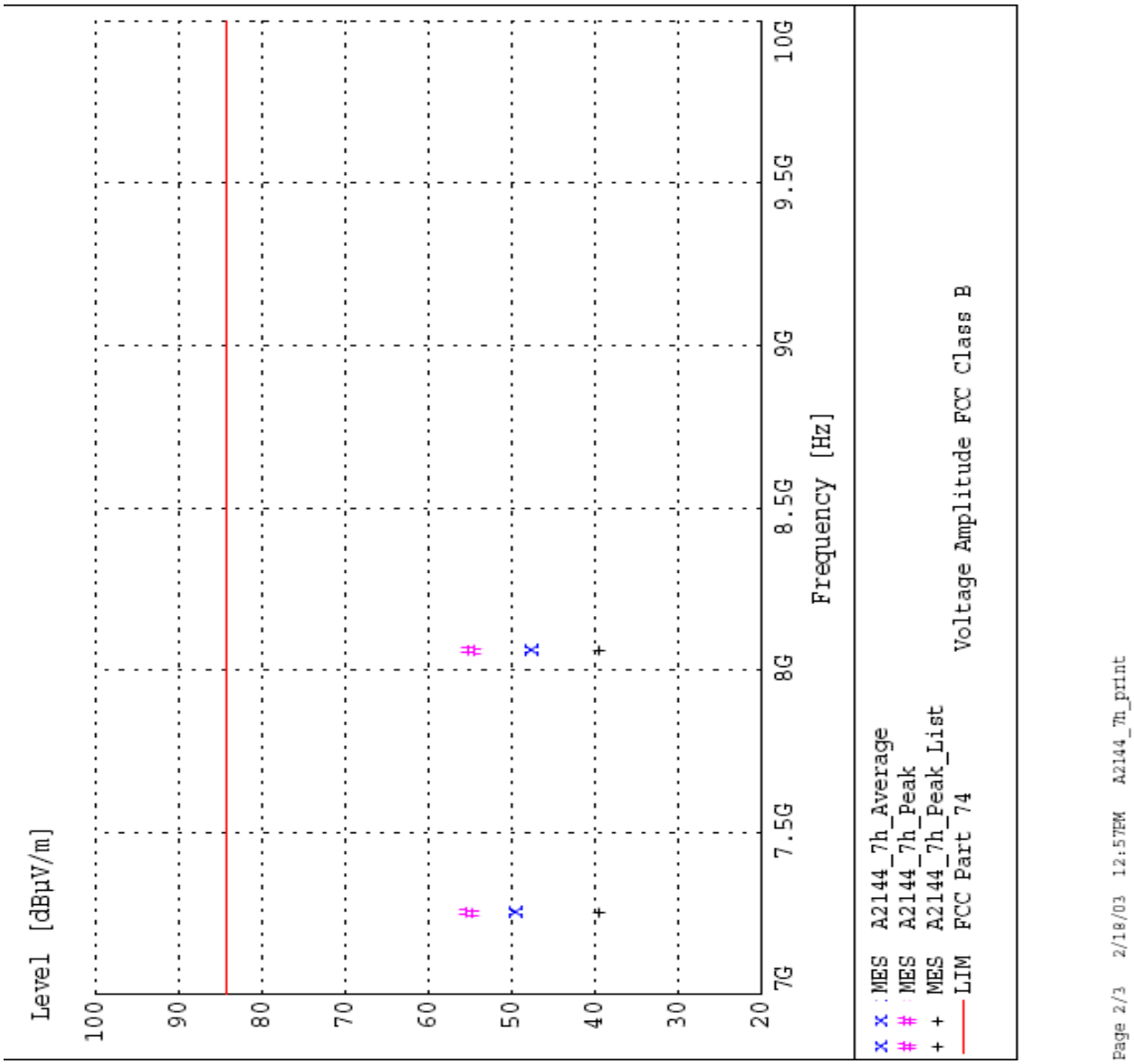
HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / HORIZONTAL

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / HORIZONTAL

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2144_7h_Final"

2/17/03 9:08AM

Frequency	Level	Antenna Factor	System Loss	Total Level	Limit	Margin	Height Ant.	EuT Angle	Final Detector	Comment
MHz	dBµV	dBµV/m	dB	dBµV/m	dBµV/m	dB	m	deg		
7251.800000	54.14	37.30	-36.3	55.1	84.4	29.2	2.00	315	MAX PEAK	None
8057.500000	51.75	37.53	-34.5	54.8	84.4	29.5	1.00	315	MAX PEAK	None
7251.800000	48.53	37.30	-36.3	49.5	84.4	34.5	2.00	315	AVERAGE	None
8057.500000	44.56	37.53	-34.5	47.6	84.4	36.7	1.00	315	AVERAGE	None

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HIGH CHANNEL / CHL 0, GRP 1 805.7 MHz / HORIZONTAL

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

‘‘RADIATED DATA

AND

CHARTS TAKEN DURING TESTING’’

LOW CHANNEL 782.75 MHz

ELECTRONIC SYSTEMS, INC.

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

```
FCC Part 74

Electric Field Strength

EUT:                MX692-UA
Manufacturer:       Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site:          Site 3
Operator:           Craig Brandt
Test Specification:
Comment:            CHL 1, GRP 1     782.75 MHz
                    Date: 2/14/2003

TEXT: "Site 3 MidV 3M"

  Short Description:                Test Set-up Vert30-1000MHz
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 26 SN: 837491/010

          Antennas ---
          Biconical    -- EMCO 3104C SN: 9701-4785
          Log Periodic -- EMCO 3146  SN: 9702-4895

          Pre-Amp  --- Rohde&Schwarz TS-PR10 SN: 032001/005

TEST SET-UP:   EuT Measured at 3 Meters with VERTICAL Antenna Polarisation

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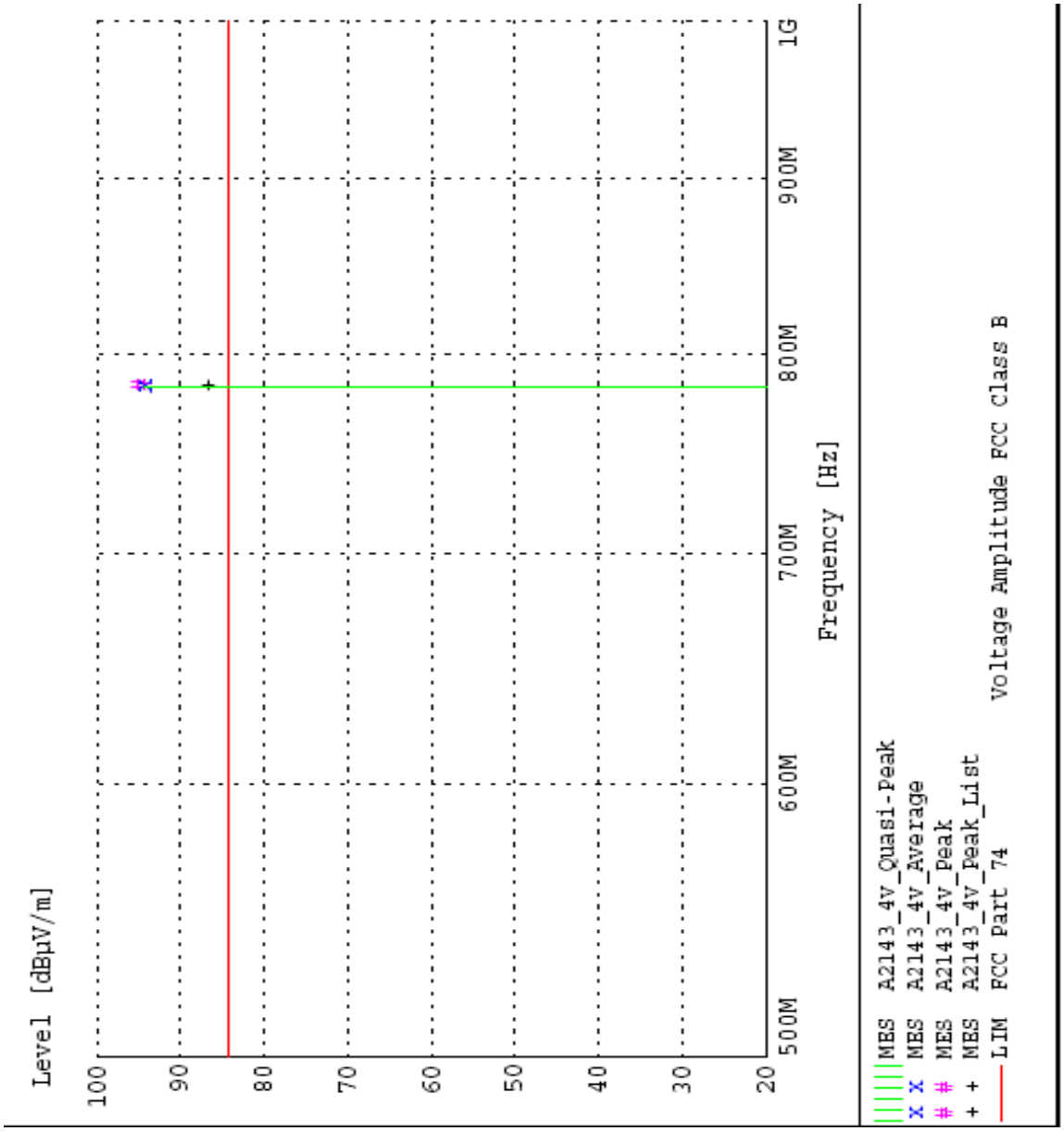
LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / VERTICAL

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / VERTICAL

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2143_4v_Final"

2/14/03 12:49PM

Frequency	Level	Antenna Factor	System Loss	Total Level	Limit	Margin	Height Ant.	EuT Angle	Final Detector	Comment
MHz	dBµV	dBµV/m	dB	dBµV/m	dBµV/m	dB	m	deg		
782.730000	92.50	21.11	-19.1	94.5	84.4	-10.1	1.20	45	MAX PEAK	Fundamental
782.730000	92.45	21.11	-19.1	94.5	84.4	-10.1	1.20	45	QUASI-PEAK	Fundamental
782.730000	92.36	21.11	-19.1	94.4	84.4	-10.0	1.20	45	AVERAGE	Fundamental

LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / VERTICAL

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

```
FCC Part 74
Electric Field Strength

EUT:                MX692-UA
Manufacturer:       Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site:          Site 3
Operator:           Craig Brandt
Test Specification:
Comment:            CHL 1, GRP 1     782.75 MHz
                    Date: 2/14/2003

TEXT: "Site 3 5731&184 V3M"

  Short Description:              Test Set-up Vert1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

          Horn Antenna --- EMCO 3115 SN: 9903-5731

             Pre-Amps ---
                          1 - 10 GHz  -- Miteq AMF-6D-010100-50 SN: 682425
                          10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

TEST SET-UP:   EuT Measured at 3 Meters with VERTICAL Antenna Polarisation

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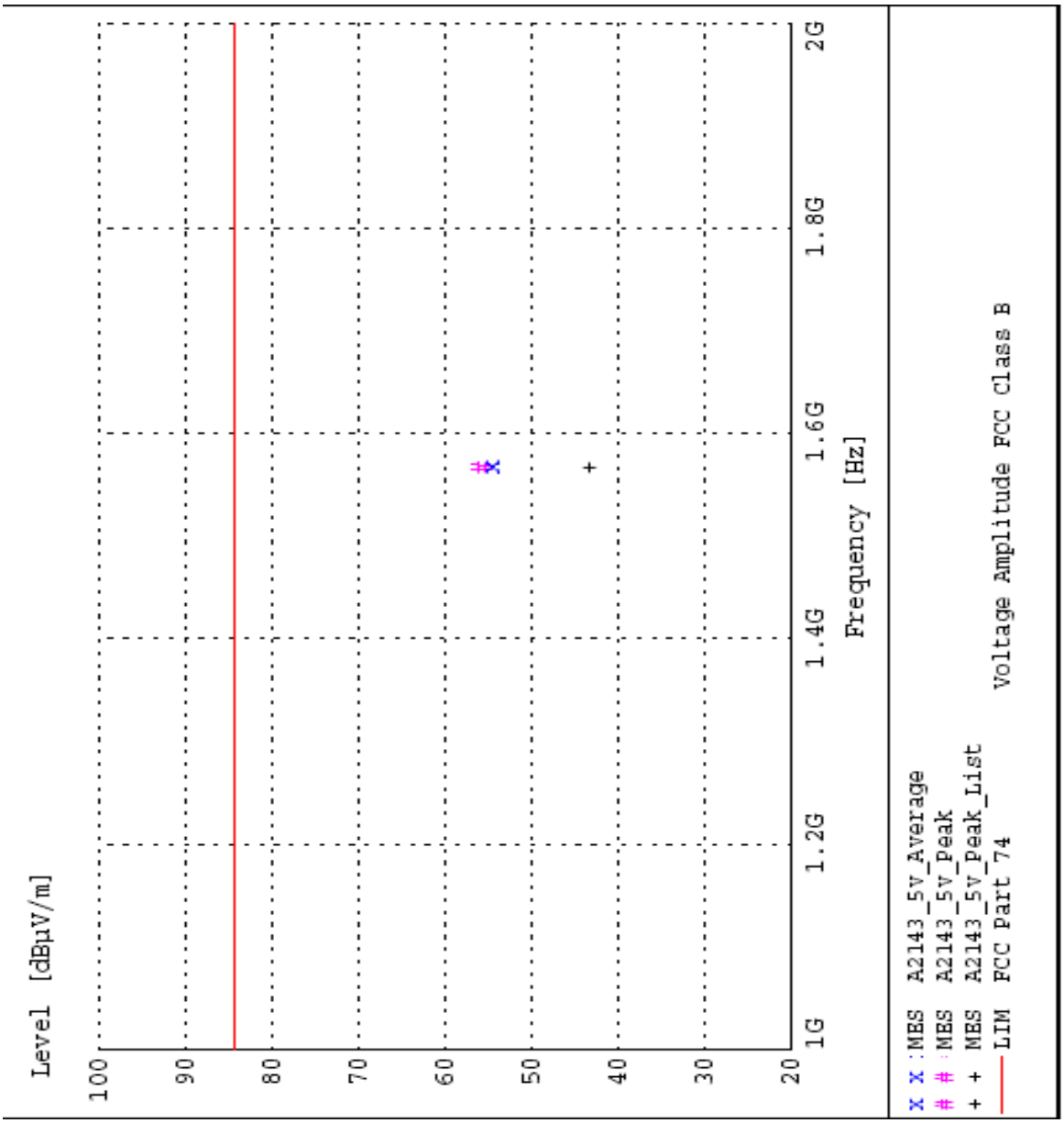
LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / VERTICAL

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / VERTICAL

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2143_5v_Final"

2/14/03 1:27PM

Frequency MHz	Level dBµV	Antenna Factor dBµV/m	System Loss dE	Total Level dBµV/m	Limit dBµV/m	Margin dE	Height Ant. m	EuT Angle deg	Final Detector	Comment
1565.510000	68.62	27.19	-40.2	55.7	84.4	28.7	1.20	225	MAX PEAK	None
1565.510000	67.46	27.19	-40.2	54.5	84.4	29.9	1.20	225	AVERAGE	None

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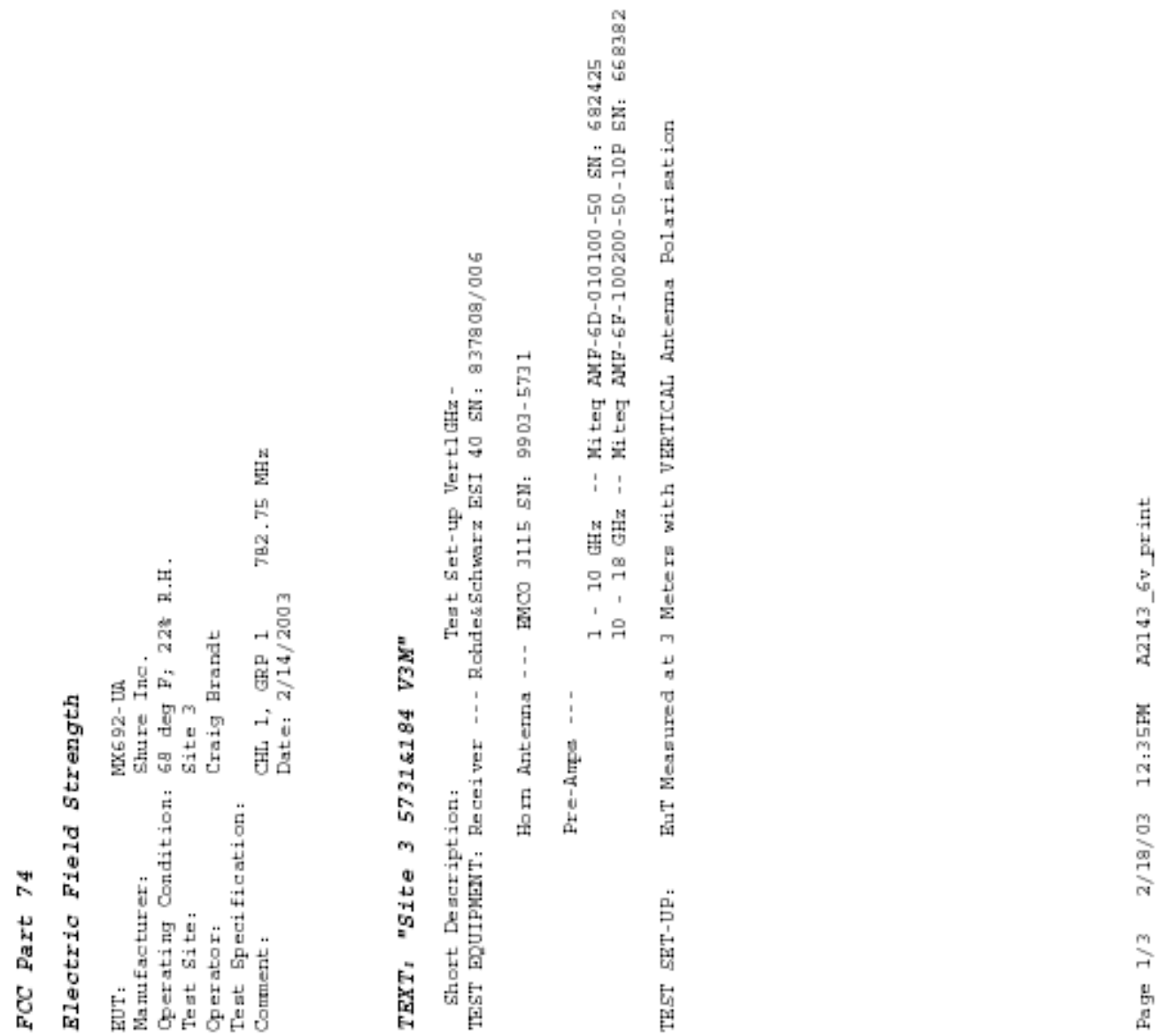
LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / VERTICAL

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



```
FCC Part 74

Electric Field Strength

EUT:                MX692-UA
Manufacturer:       Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site:          Site 3
Operator:           Craig Brandt
Test Specification:
Comment:            CHL 1, GRP 1    782.75 MHz
                    Date: 2/14/2003

TEXT: "Site 3 5731&184 V3M"

  Short Description:          Test Set-up Vert1GHz -
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

          Horn Antenna --- EMCO 3115 SN: 9903-5731

          Pre-Amps ---     1 - 10 GHz  -- Miteq AMF-6D-010100-50 SN: 682425
                           10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

TEST SET-UP:   EuT Measured at 3 Meters with VERTICAL Antenna Polarisation

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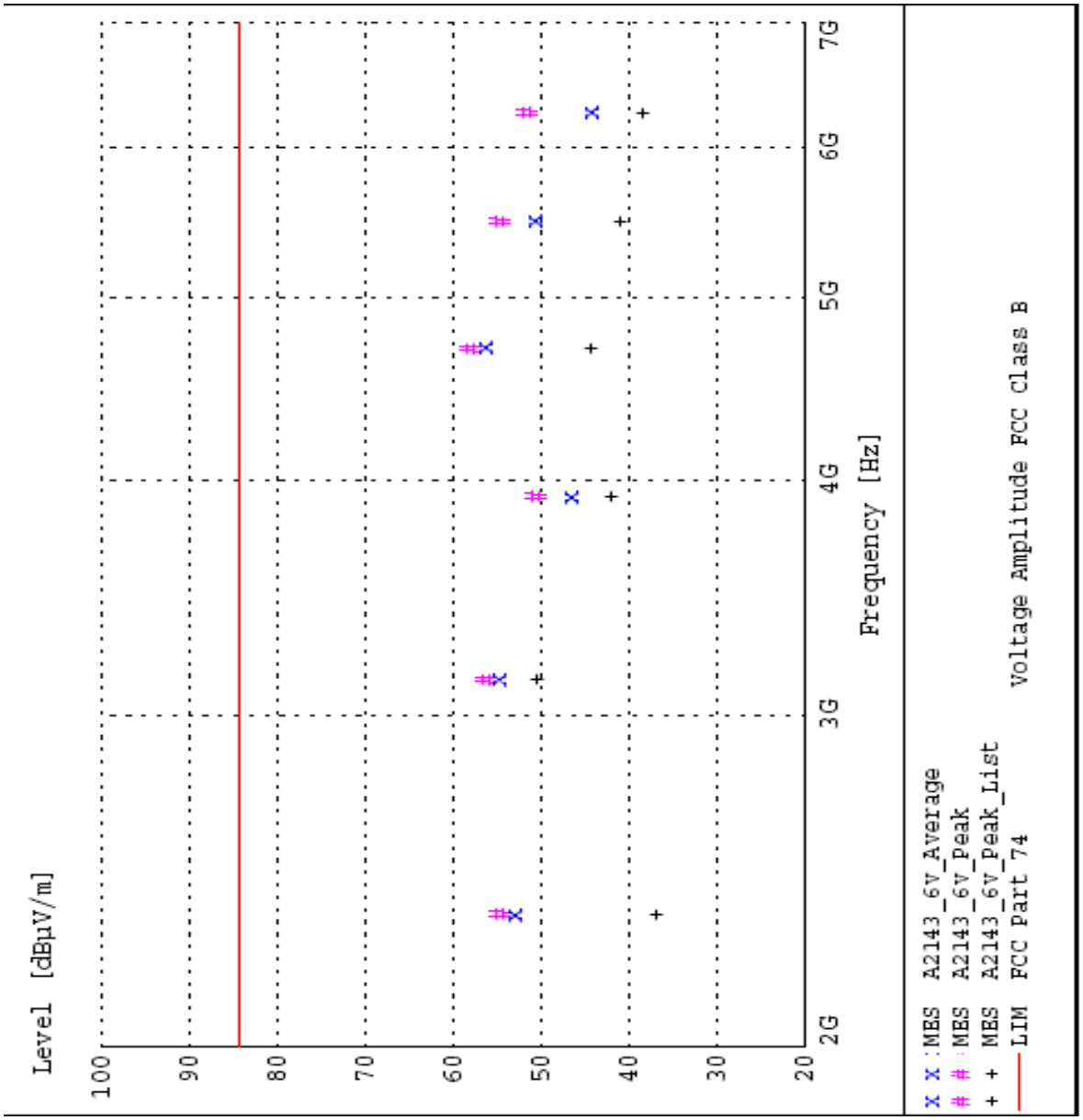
LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / VERTICAL

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / VERTICAL

ELECTRONIC SYSTEMS, INC.

1250 Peterson Dr., Wheeling, IL 60090

Company: Shure Inc.
Model Tested: MX692/C-UA
Report Number: 10101

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2143_6v_Final"

2/14/03 1:47PM

Frequency	Level	Antenna Factor	System Loss	Total Level	Limit	Margin	Height Ant.	EuT Angle	Final Detector	Comment
MHz	dBµV	dBµV/m	dB	dBµV/m	dBµV/m	dB	m	deg		
4696.500000	61.54	34.37	-38.0	57.9	84.4	26.4	1.00	0	MAX PEAK	None
4696.500000	59.94	34.37	-38.0	56.3	84.4	28.0	1.00	0	AVERAGE	None
3131.000000	64.11	31.84	-39.7	56.2	84.4	28.2	1.00	270	MAX PEAK	None
3131.000000	62.82	31.84	-39.7	54.9	84.4	29.5	1.00	270	AVERAGE	None
5479.300000	56.01	36.06	-37.5	54.6	84.4	29.8	1.10	340	MAX PEAK	None
2348.300000	64.24	30.21	-40.0	54.5	84.4	29.9	1.00	315	MAX PEAK	None
2348.300000	62.91	30.21	-40.0	53.1	84.4	31.2	1.00	315	AVERAGE	None
6262.050000	52.41	36.54	-37.5	51.5	84.4	32.9	1.00	0	MAX PEAK	None
5479.300000	52.15	36.06	-37.5	50.7	84.4	33.6	1.10	340	AVERAGE	None
3913.750000	54.90	34.12	-38.6	50.4	84.4	33.9	1.00	225	MAX PEAK	None
3913.750000	51.21	34.12	-38.6	46.8	84.4	37.6	1.00	225	AVERAGE	None
6262.050000	45.34	36.54	-37.5	44.4	84.4	40.0	1.00	0	AVERAGE	None

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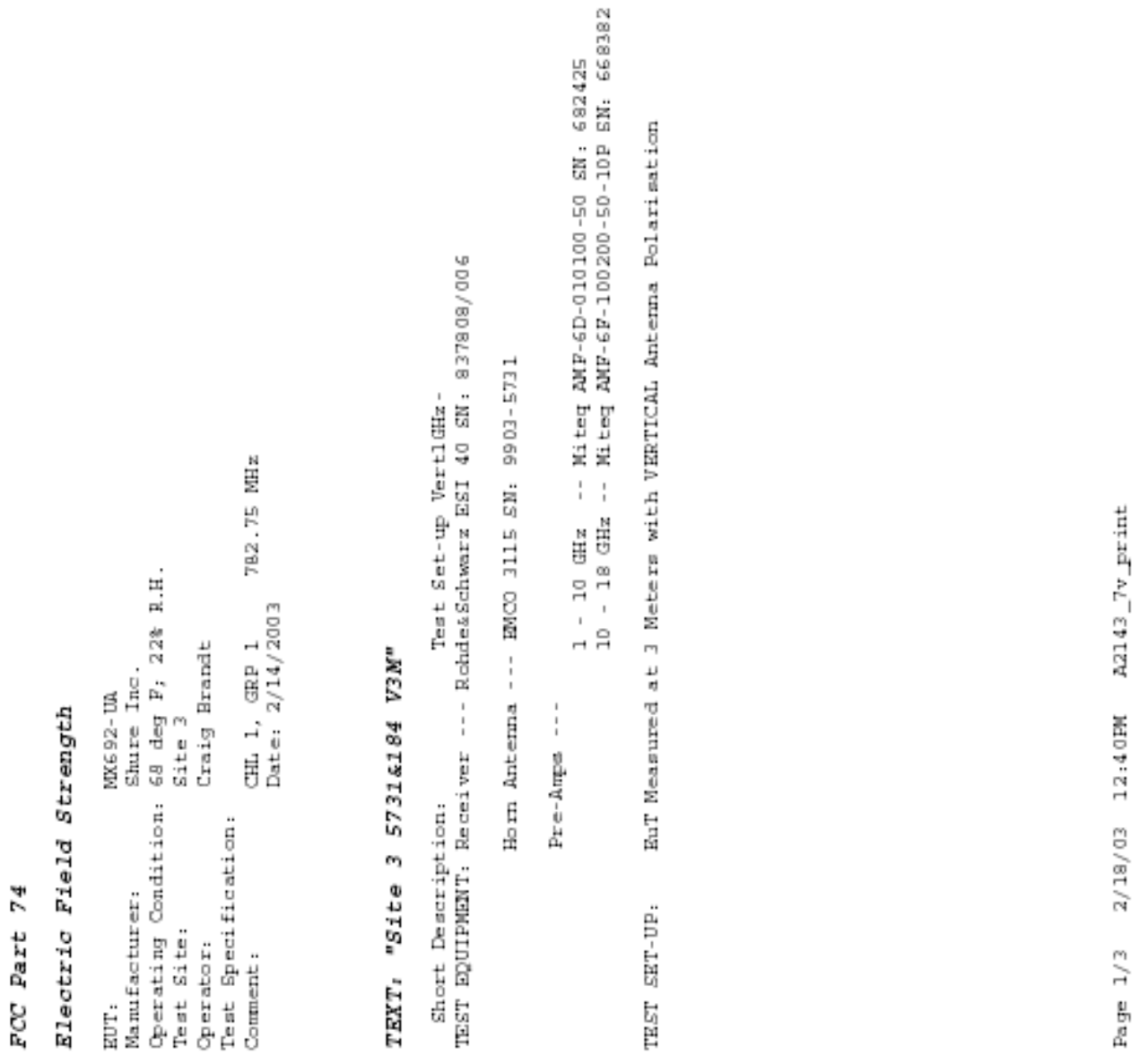
LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / VERTICAL

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



```
FCC Part 74
Electric Field Strength

EUT:                MX692-UA
Manufacturer:       Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site:          Site 3
Operator:           Craig Brandt
Test Specification:
Comment:            CHL 1, GRP 1    782.75 MHz
                    Date: 2/14/2003

TEXT, "Site 3 5731&184 V3M"

  Short Description:          Test Set-up Vert1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

          Horn Antenna --- EMCO 3115 SN: 9903-5731

          Pre-Amps ---
                    1 - 10 GHz  -- Miteq AMF-6D-010100-50 SN: 682425
                    10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

TEST SET-UP:   EuT Measured at 3 Meters with VERTICAL Antenna Polarisation

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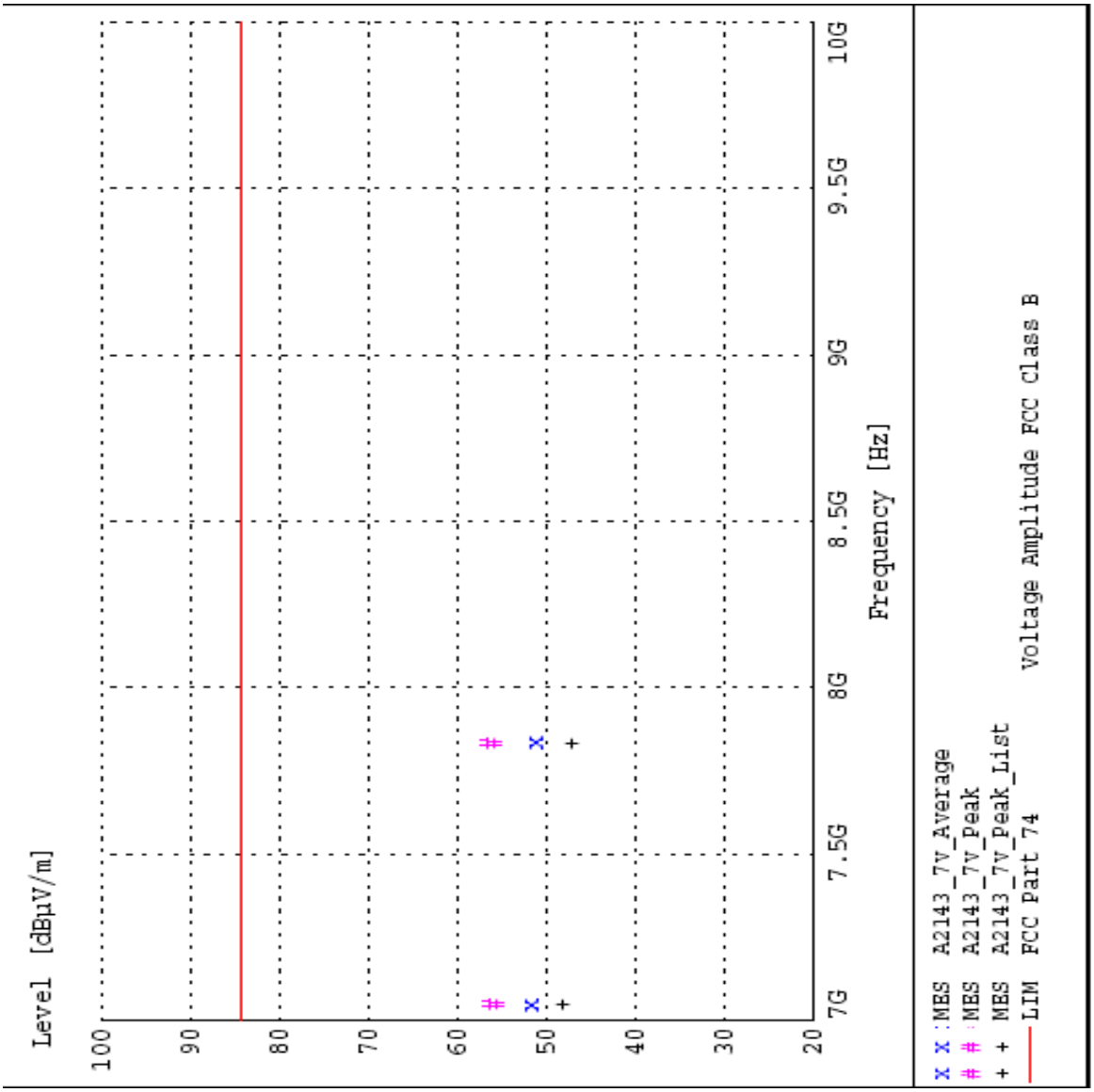
LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / VERTICAL

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / VERTICAL

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2143_7v_Final"

2/14/03 2:07PM

Frequency	Level	Antenna Factor	System Loss	Total Level	Limit	Margin	Height Ant.	EuT Angle	Final Detector	Comment
MHz	dBµV	dBµV/m	dB	dBµV/m	dBµV/m	dB	m	deg		
7827.500000	52.28	37.53	-33.7	56.1	84.4	28.2	1.00	0	MAX PEAK	None
7044.800000	55.18	37.05	-36.3	55.9	84.4	28.5	1.00	180	MAX PEAK	None
7044.800000	51.17	37.05	-36.3	51.9	84.4	32.5	1.00	180	AVERAGE	None
7827.500000	47.32	37.53	-33.7	51.2	84.4	33.2	1.00	0	AVERAGE	None

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LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / VERTICAL

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

FCC Part 74

Electric Field Strength

EUT: MX692-UA
Manufacturer: Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification: CHL 1, GRP 1 782.75 MHz
Comment: Date: 2/14/2003

TEXT: "Site 3 MidH 3M"

Short Description: Test Set-up Horz30-1000MHz
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

Antennas ---
Biconical -- EMCO 3104C SN: 9701-4785
Log Periodic -- EMCO 3146 SN: 9702-4895

Pre-Amp --- Rohde&Schwarz TS-PR10 SN: 032001/005

TEST SET-UP: EuT Measured at 3 Meters with HORIZONTAL Antenna Polarisation

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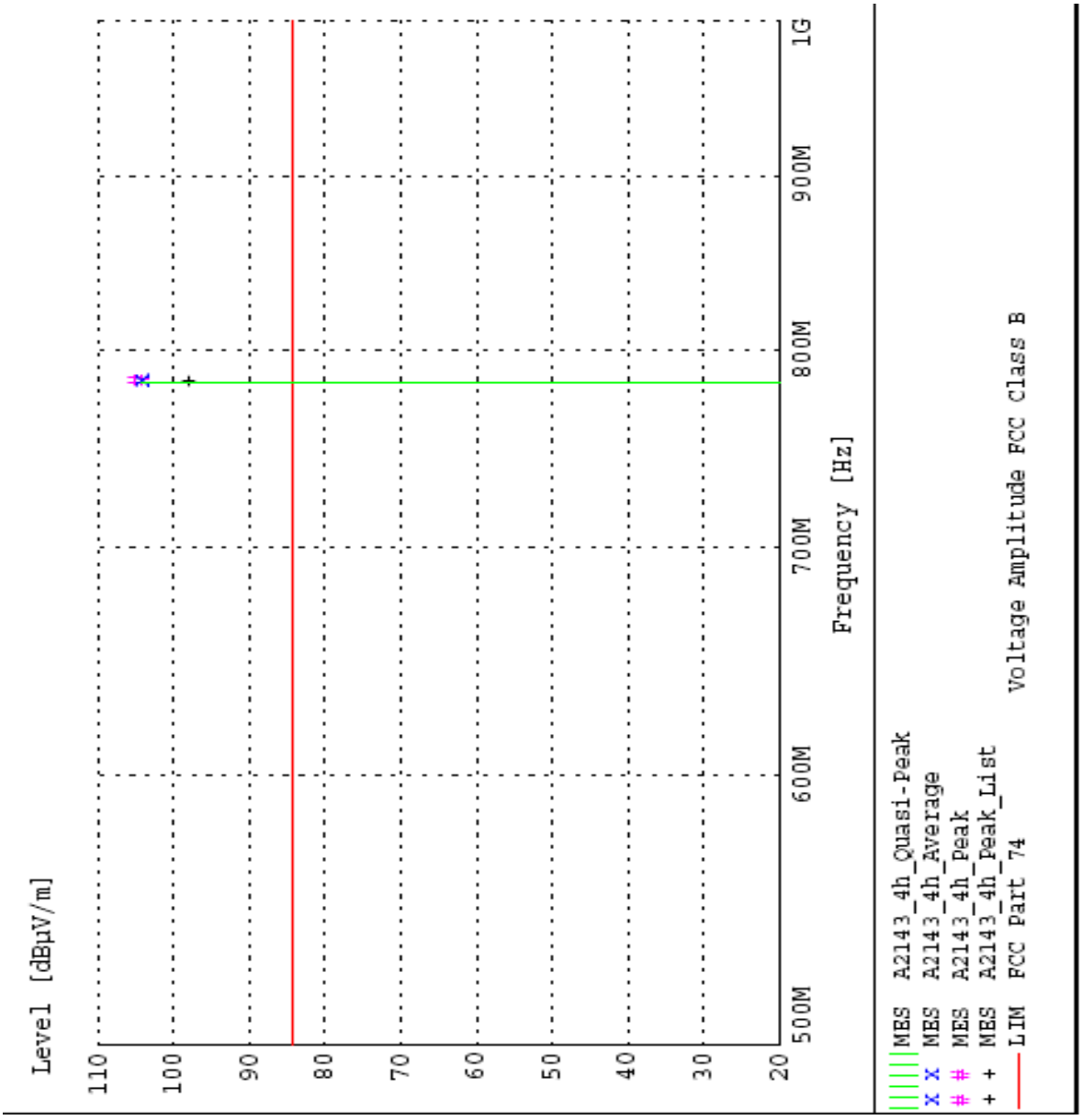
LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / HORIZONTAL

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / HORIZONTAL

ELECTRONIC SYSTEMS, INC.

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2143_4h_Final"

2/14/03 1:20PM

Frequency	Level	Antenna Factor	System Loss	Total Level	Limit	Margin	Height Ant.	EuT Angle	Final Detector	Comment
MHz	dBµV	dBµV/m	dB	dBµV/m	dBµV/m	dB	m	deg		
782.740000	102.37	21.11	-19.1	104.4	84.4	-20.0	1.00	315	MAX PEAK	Fundamental
782.740000	102.24	21.11	-19.1	104.2	84.4	-19.9	1.00	315	QUASI-PEAK	Fundamental
782.740000	102.08	21.11	-19.1	104.1	84.4	-19.7	1.00	315	AVERAGE	Fundamental

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LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / HORIZONTAL

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

FCC Part 74
Electric Field Strength

EUT: MX692-UA
Manufacturer: Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: CHL 1, GRP 1 782.75 MHz
Date: 2/14/2003

TEXT: "Site 3 5731&184 H3M"

Short Description: Test Set-up Horz1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

Horn Antenna --- EMCO 3115 SN: 9903-5731

Pre-Amps ---
1 - 10 GHz -- Miteq AMF-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

TEST SET-UP: EuT Measured at 3 Meters with HORIZONTAL Antenna Polarisation

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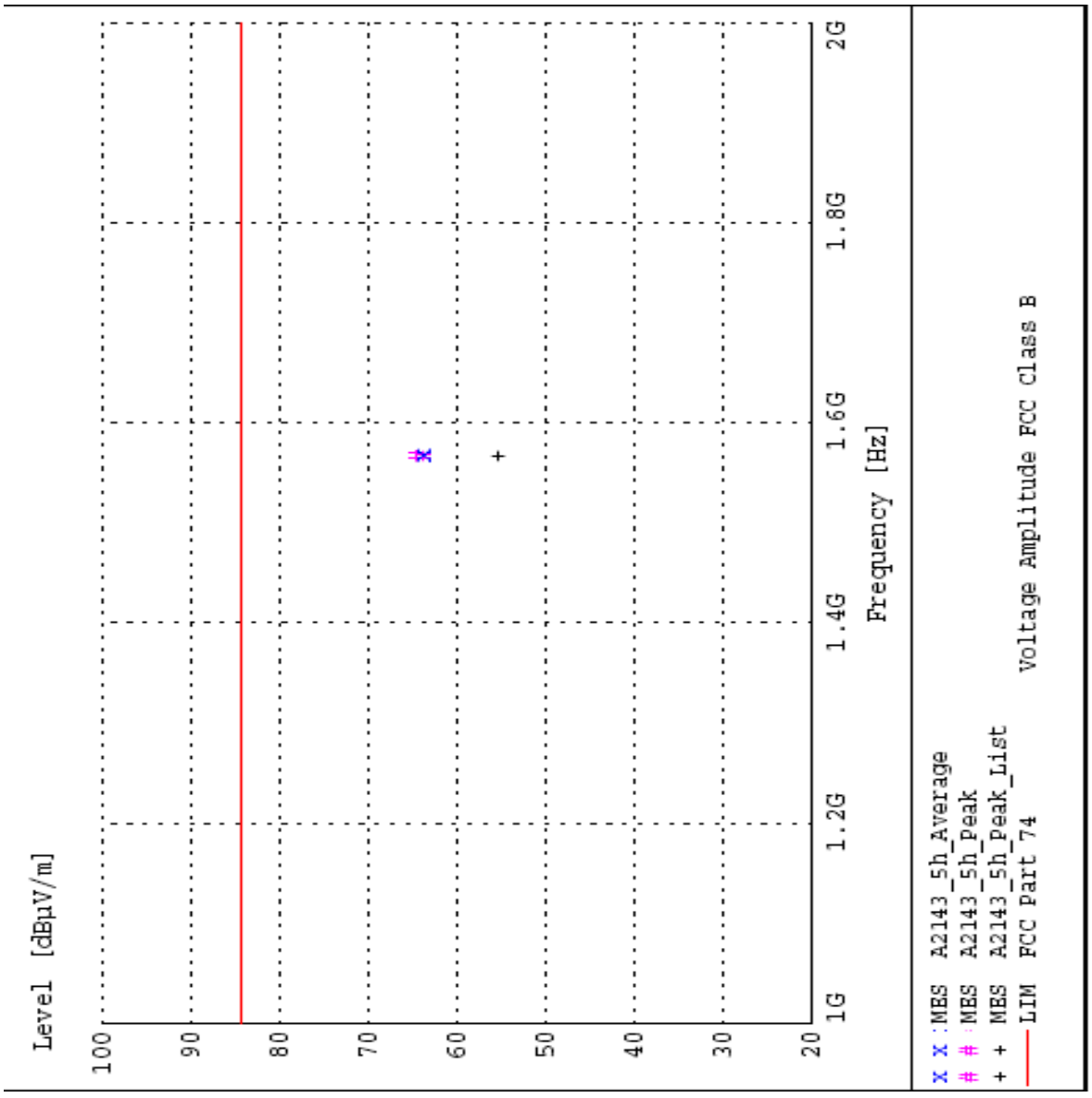
LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / HORIZONTAL

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / HORIZONTAL

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2143_5h_Final"

2/14/03 1:31PM

Frequency	Level	Antenna Factor	System Loss	Total Level	Limit	Margin	Height Ant.	EuT Angle	Final Detector	Comment
MHz	dBµV	dBµV/m	dB	dBµV/m	dBµV/m	dB	m	deg		
1565.480000	77.06	27.19	-40.2	64.1	84.4	20.3	1.00	45	MAX PEAK	None
1565.480000	76.70	27.19	-40.2	63.7	84.4	20.6	1.00	45	AVERAGE	None

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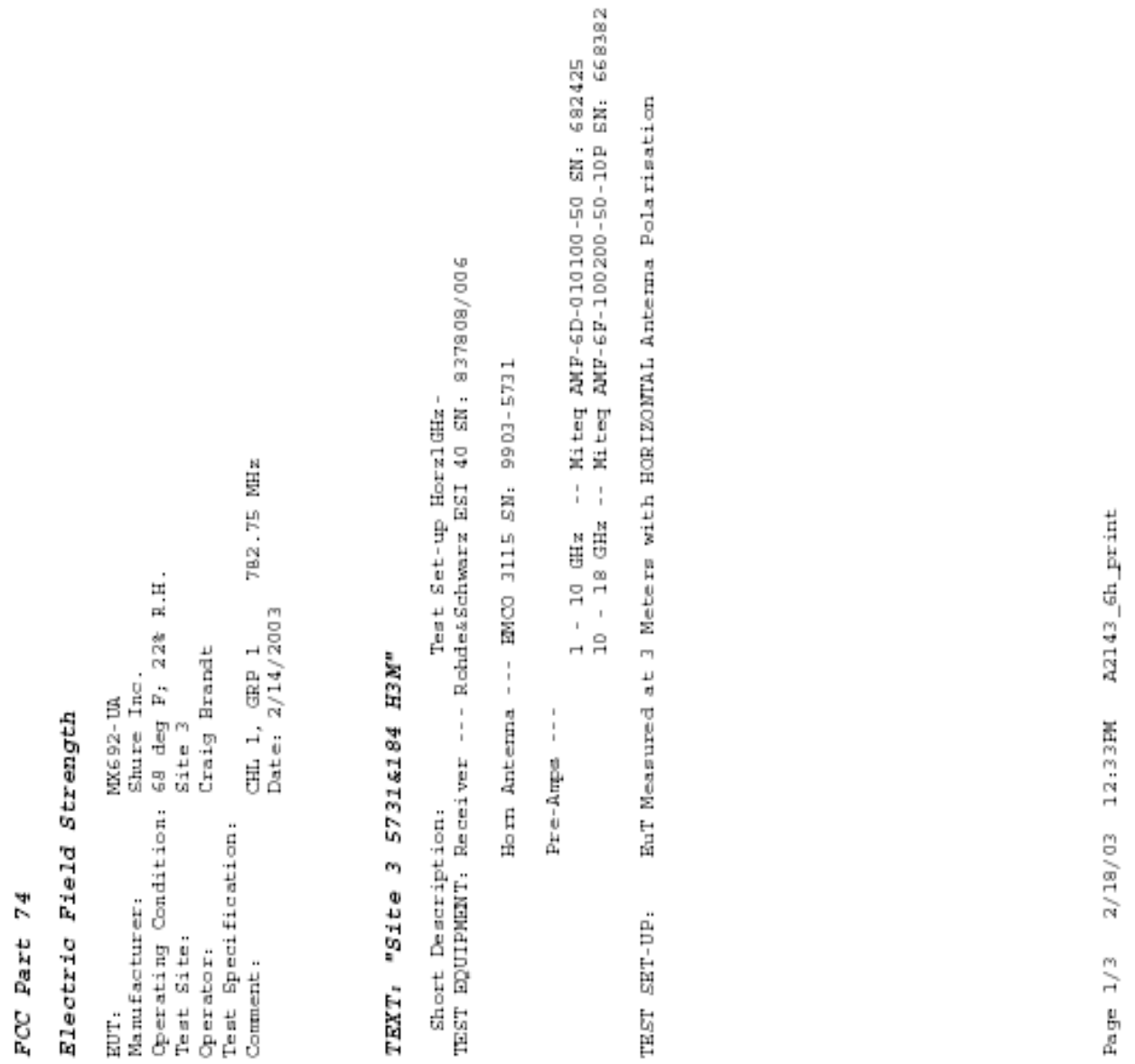
LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / HORIZONTAL

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



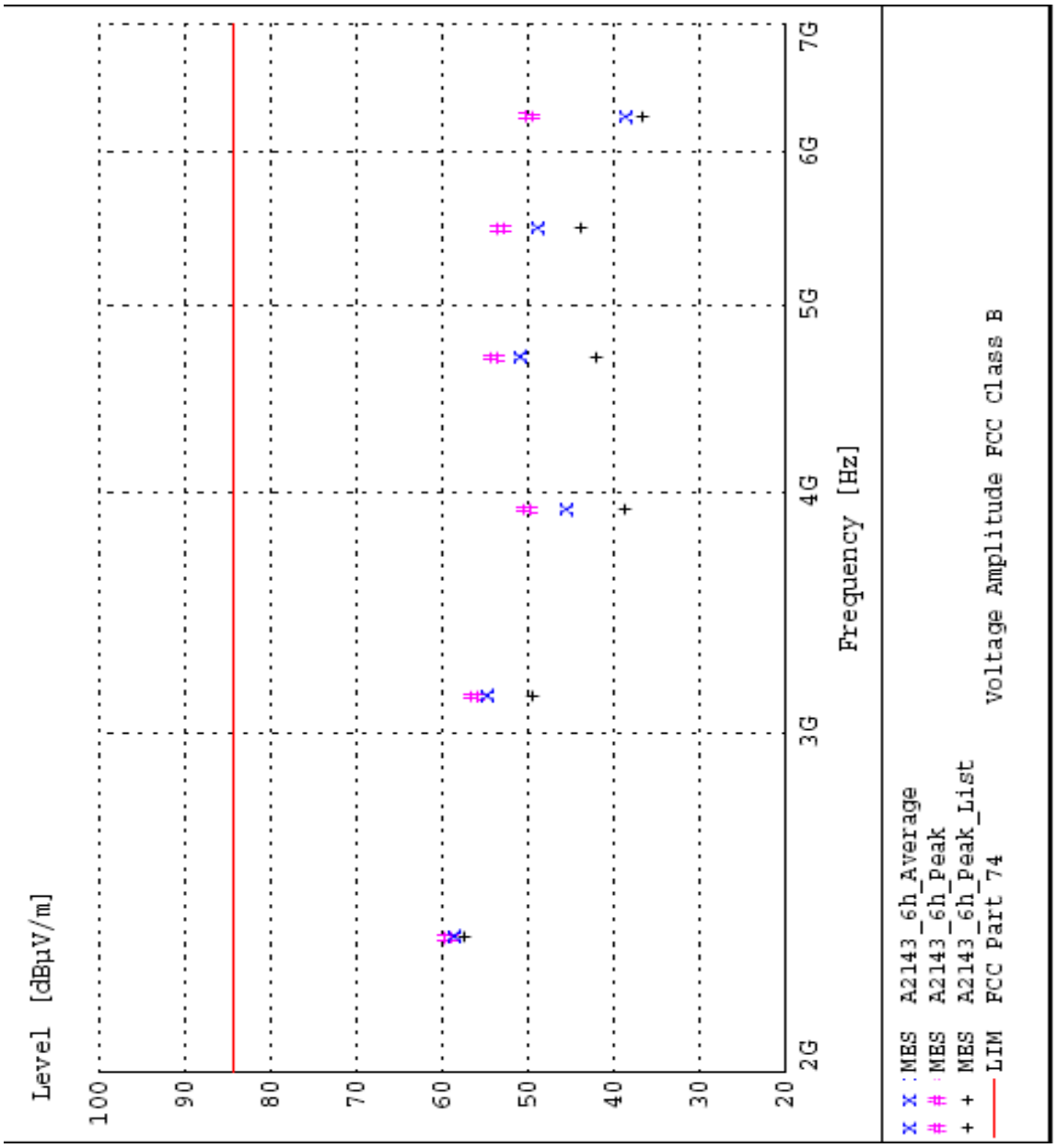
LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / HORIZONTAL

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



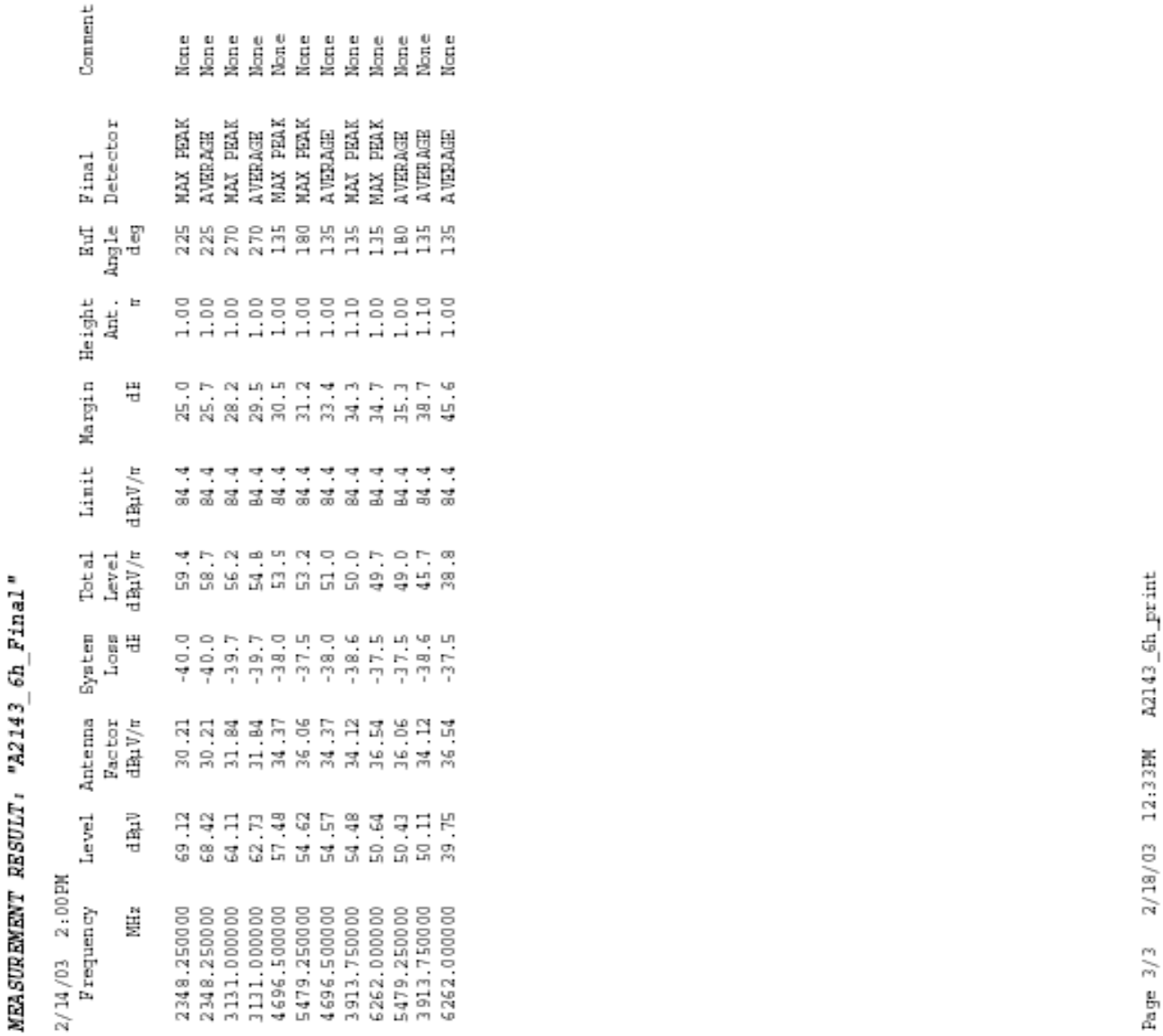
LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / HORIZONTAL

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



MEASUREMENT RESULT: "A2143_6h_Final"

2/14/03 2:00PM

Frequency	Level	Antenna Factor	System Loss	Total Level	Limit	Margin	Height Ant.	EuT Angle	Final Detector	Comment
MHz	dBµV	dBµV/m	dB	dBµV/m	dBµV/m	dB	m	deg		
2348.250000	69.12	30.21	-40.0	59.4	84.4	25.0	1.00	225	MAX PEAK	None
2348.250000	68.42	30.21	-40.0	58.7	84.4	25.7	1.00	225	AVERAGE	None
3131.000000	64.11	31.84	-39.7	56.2	84.4	28.2	1.00	270	MAX PEAK	None
3131.000000	62.73	31.84	-39.7	54.8	84.4	29.5	1.00	270	AVERAGE	None
4696.500000	57.48	34.37	-38.0	53.5	84.4	30.5	1.00	135	MAX PEAK	None
5479.250000	54.62	36.06	-37.5	53.2	84.4	31.2	1.00	180	MAX PEAK	None
4696.500000	54.57	34.37	-38.0	51.0	84.4	33.4	1.00	135	AVERAGE	None
3913.750000	54.48	34.12	-38.6	50.0	84.4	34.3	1.10	135	MAX PEAK	None
6262.000000	50.64	36.54	-37.5	49.7	84.4	34.7	1.00	135	MAX PEAK	None
5479.250000	50.43	36.06	-37.5	49.0	84.4	35.3	1.00	180	AVERAGE	None
3913.750000	50.11	34.12	-38.6	45.7	84.4	38.7	1.10	135	AVERAGE	None
6262.000000	39.75	36.54	-37.5	38.8	84.4	45.6	1.00	135	AVERAGE	None

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LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / HORIZONTAL

ELECTRONIC SYSTEMS, INC.
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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

```
FCC Part 74

Electric Field Strength

EUT:                MX692-UA
Manufacturer:       Shure Inc.
Operating Condition: 60 deg F; 22% R.H.
Test Site:          Site 3
Operator:           Craig Brandt
Test Specification:
Comment:            CHL 1, GRP 1    782.75 MHz
                    Date: 2/14/2003

TEXT: "Site 3 5731&184 H3M"

  Short Description:          Test Set-up Horz1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

          Horn Antenna --- EMCO 3115 SN: 9903-5731

          Pre-Amps ---
                        1 - 10 GHz  -- Miteq AMF-6D-010100-50 SN: 682425
                        10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

TEST SET-UP:   EuT Measured at 3 Meters with HORIZONTAL Antenna Polarisation

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LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / HORIZONTAL

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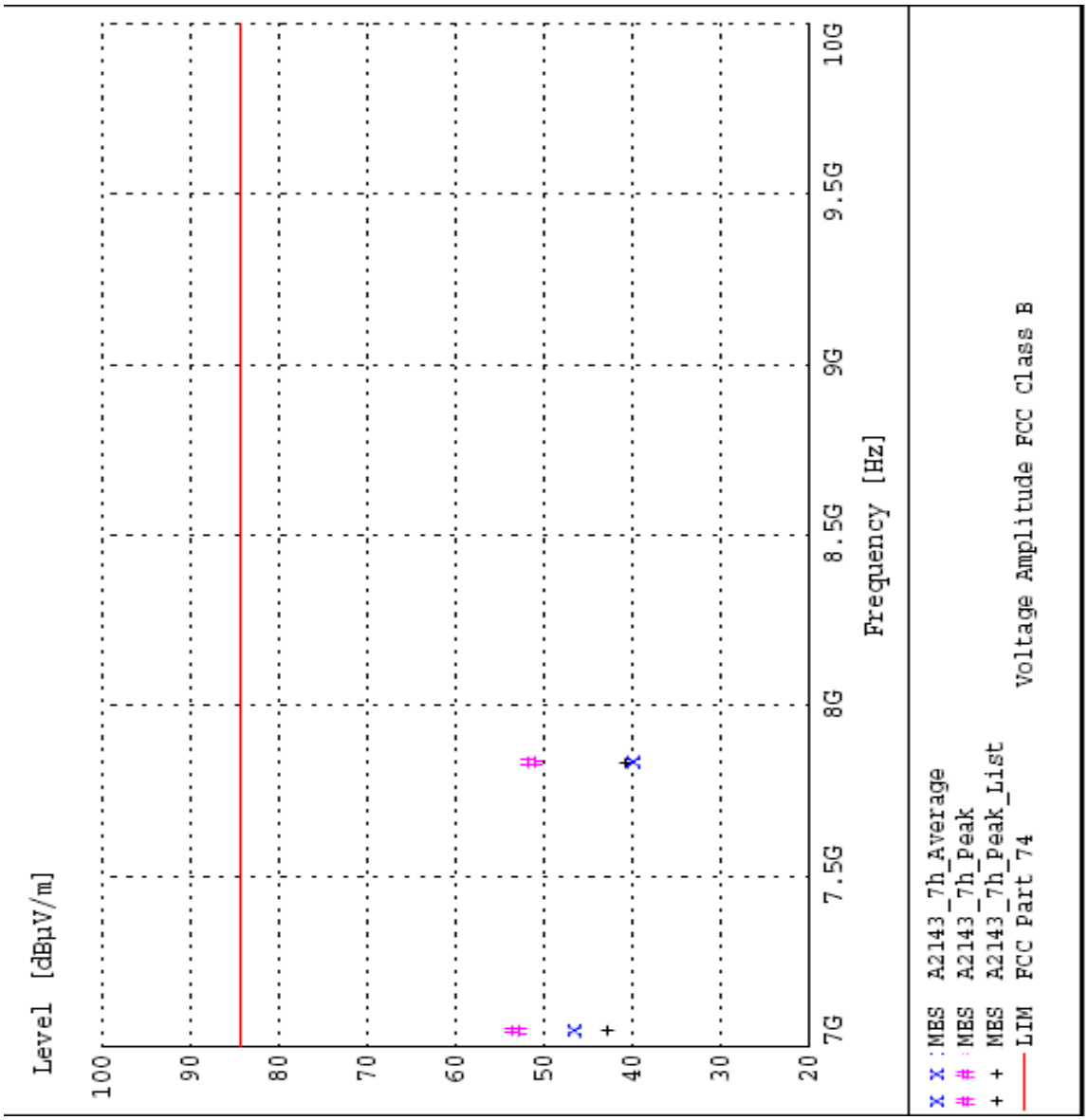
TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / HORIZONTAL

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2143_7h_Final"

2/14/03 2:14PM

Frequency	Level	Antenna Factor	System Loss	Total Level	Limit	Margin	Height Ant.	EuT Angle	Final Detector	Comment
MHz	dBuV	dBuV/m	dB	dBuV/m	dBuV/m	dB	m	deg		
7044.800000	52.41	37.05	-36.3	53.1	84.4	31.3	2.00	315	MAX PEAK	None
7827.500000	47.31	37.53	-33.7	51.2	84.4	33.2	1.00	270	MAX PEAK	None
7044.800000	46.01	37.05	-36.3	46.7	84.4	37.7	2.00	315	AVERAGE	None
7827.500000	36.09	37.53	-33.7	40.0	84.4	44.4	1.00	270	AVERAGE	None

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LOW CHANNEL / CHL 1, GRP 1 782.75 MHz / HORIZONTAL

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

8.0 FREQUENCY STABILITY (TEMPERATURE)– PART 2.1055(a1)

The frequency stability was measured from -30° to +50° centigrade at intervals of 10° centigrade throughout the range. Prior to each frequency measurement, the equipment was left alone for a sufficient period of time (approximately 30 minutes or more) to allow the components of the UHF Table Top Wireless Microphone Transmitter oscillator circuitry to stabilize. The following information was taken:

FREQUENCY STABILITY FOR TEMPERATURE VARIATION IN MHz:

-30°	799.99804
-20°	799.99840
-10°	800.00050
0°	800.00126
+10°	800.00102
+20°	800.00016
+30°	799.99932
+40°	799.99786
+50°	799.99770

Worst Case Variance:

3560 Hz

As stated in Part 74, Section 74.861 e-4 the Frequency Tolerance and Margin for this range are as follows:

Frequency Tolerance:	=	**.005%**
.005% * 799997700**:**	=	**39999.89 Hz**
Limit: 39999.89 - 3560	=	**36439.89 Hz**

NOTE: See the following page(s) for the graph(s) of the actual measurement made:

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

RADIATED CHARTS TAKEN FOR

FREQUENCY STABILITY

WHEN VARYING THE TEMPERATURE

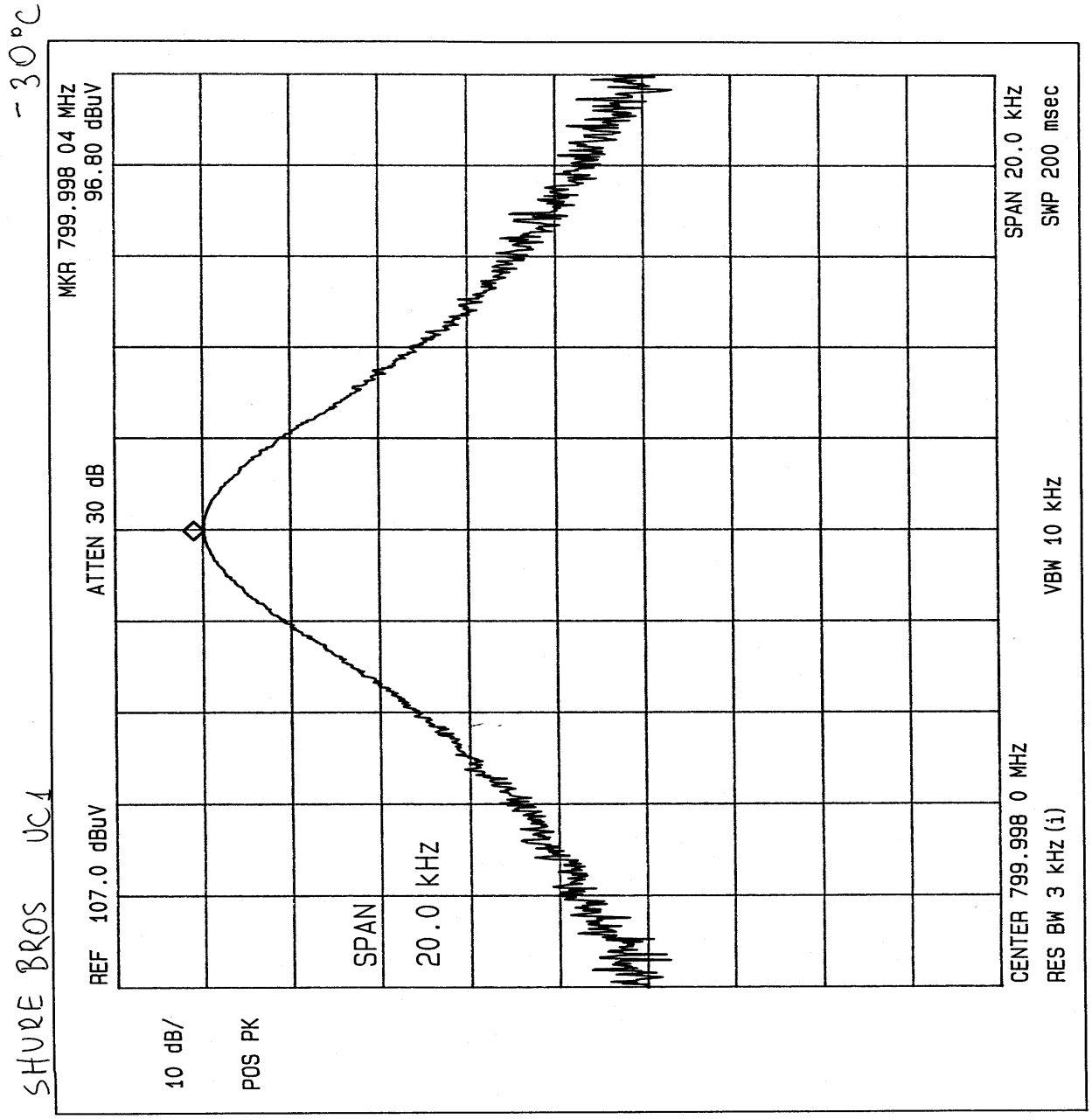
PART 2.995a

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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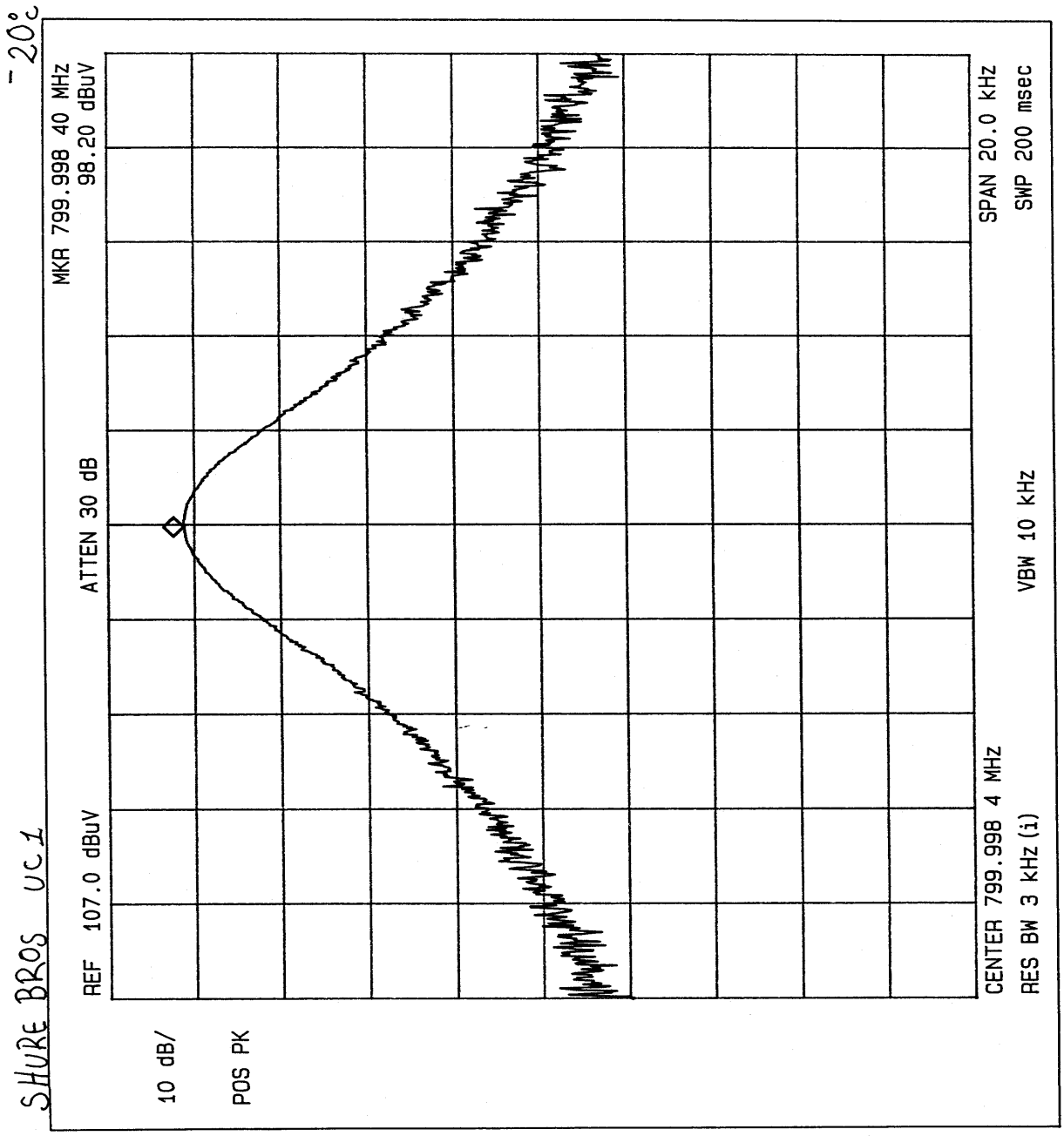
TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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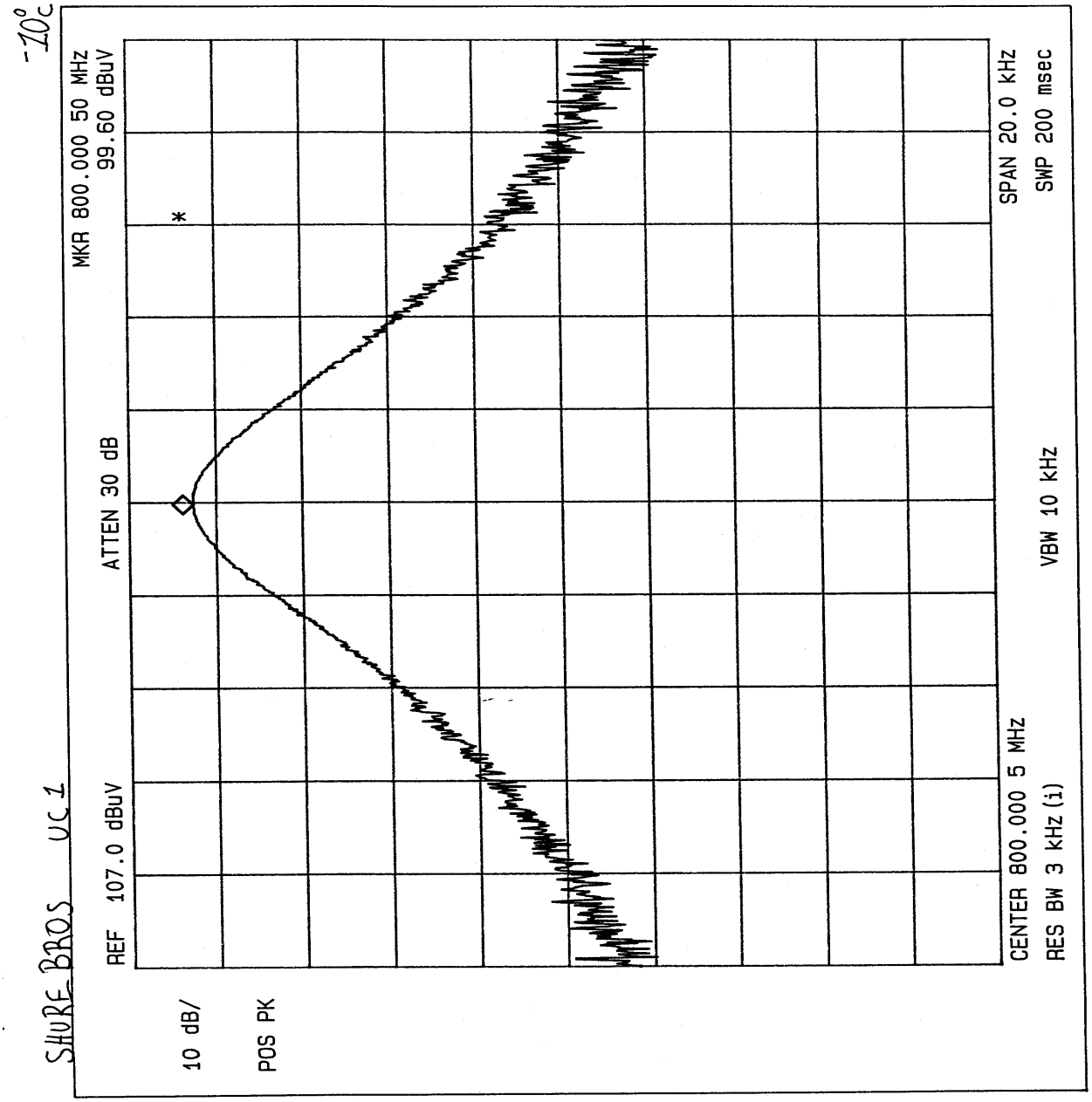
TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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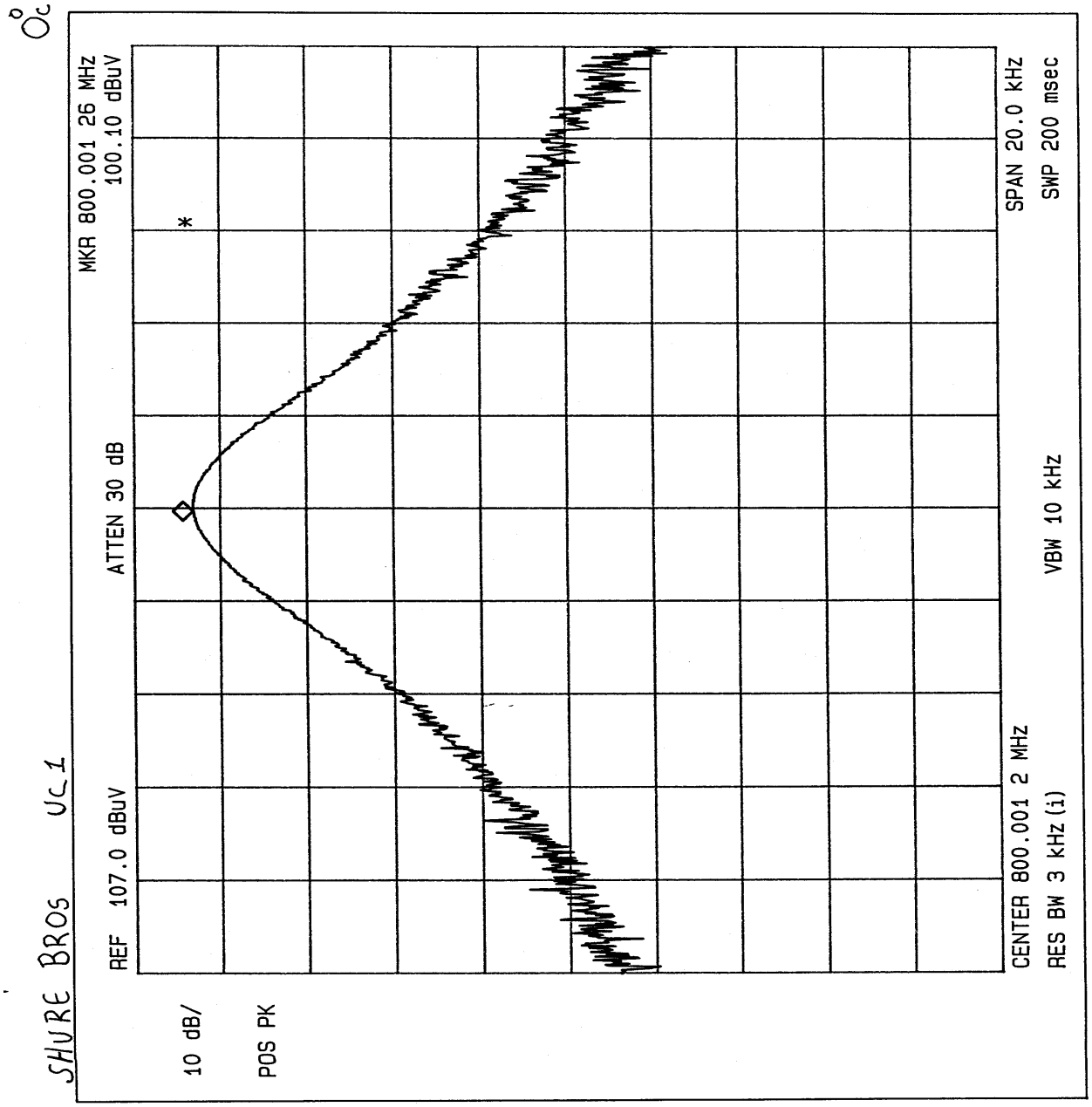
TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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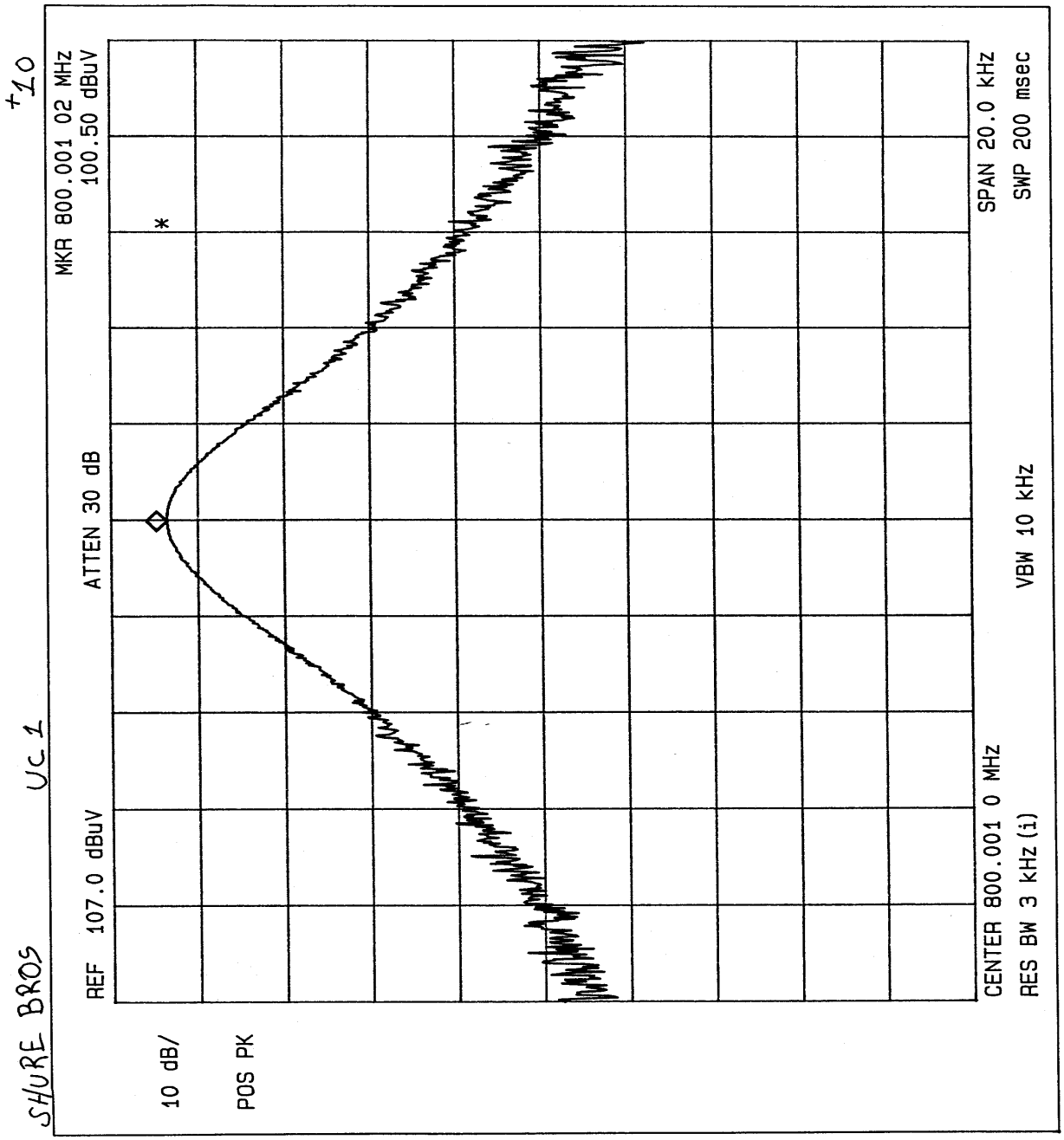
TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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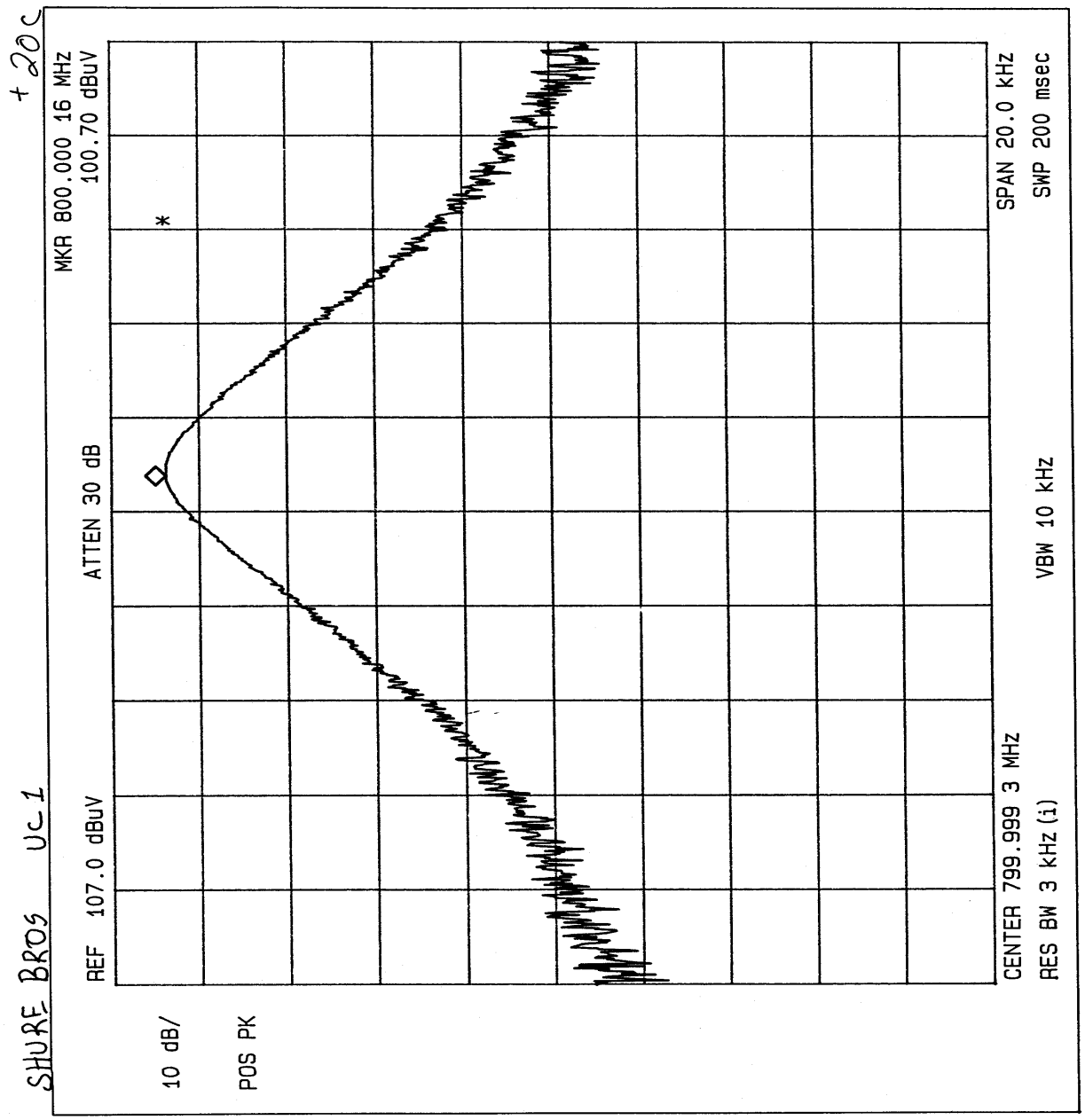
TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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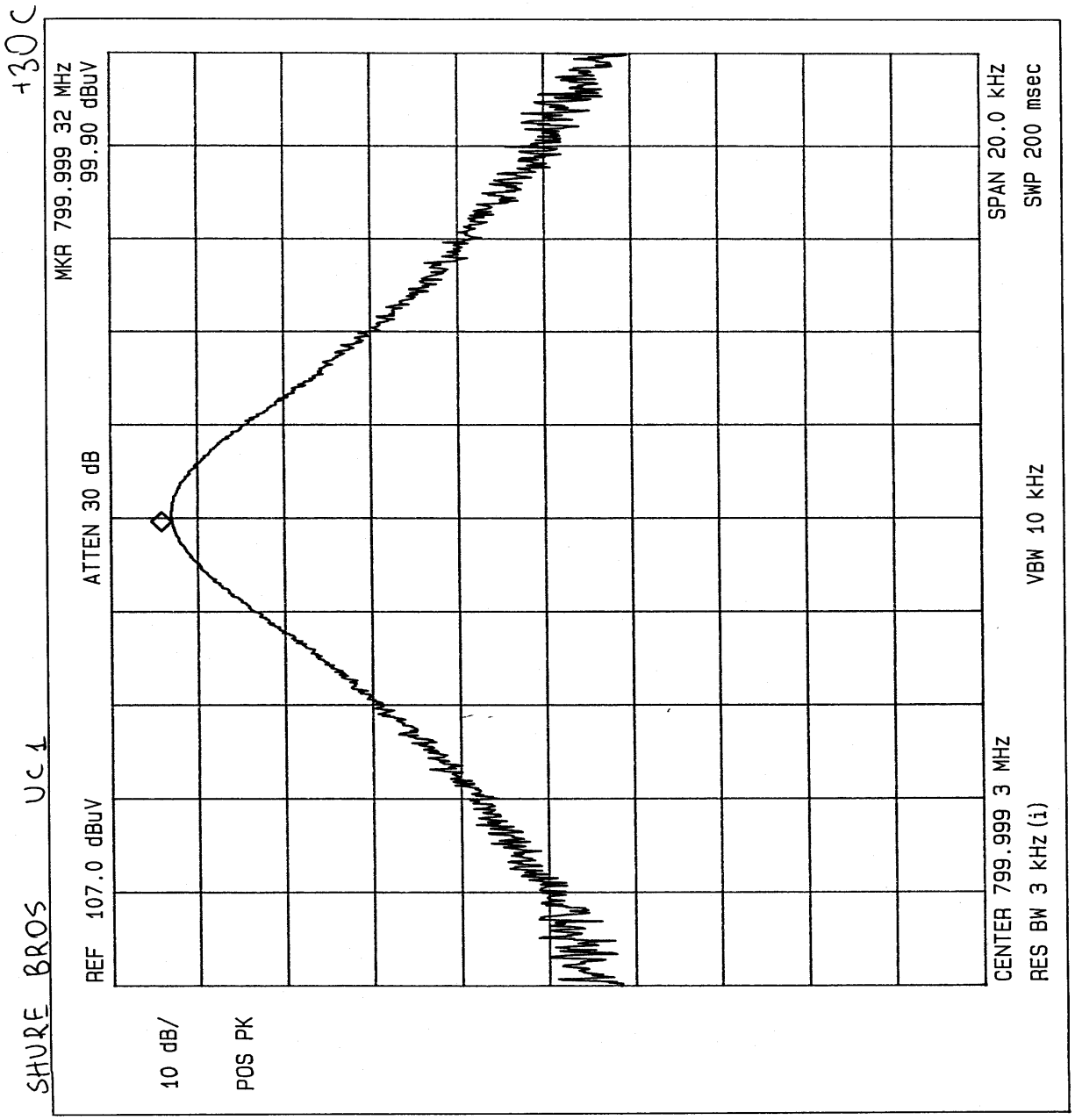
TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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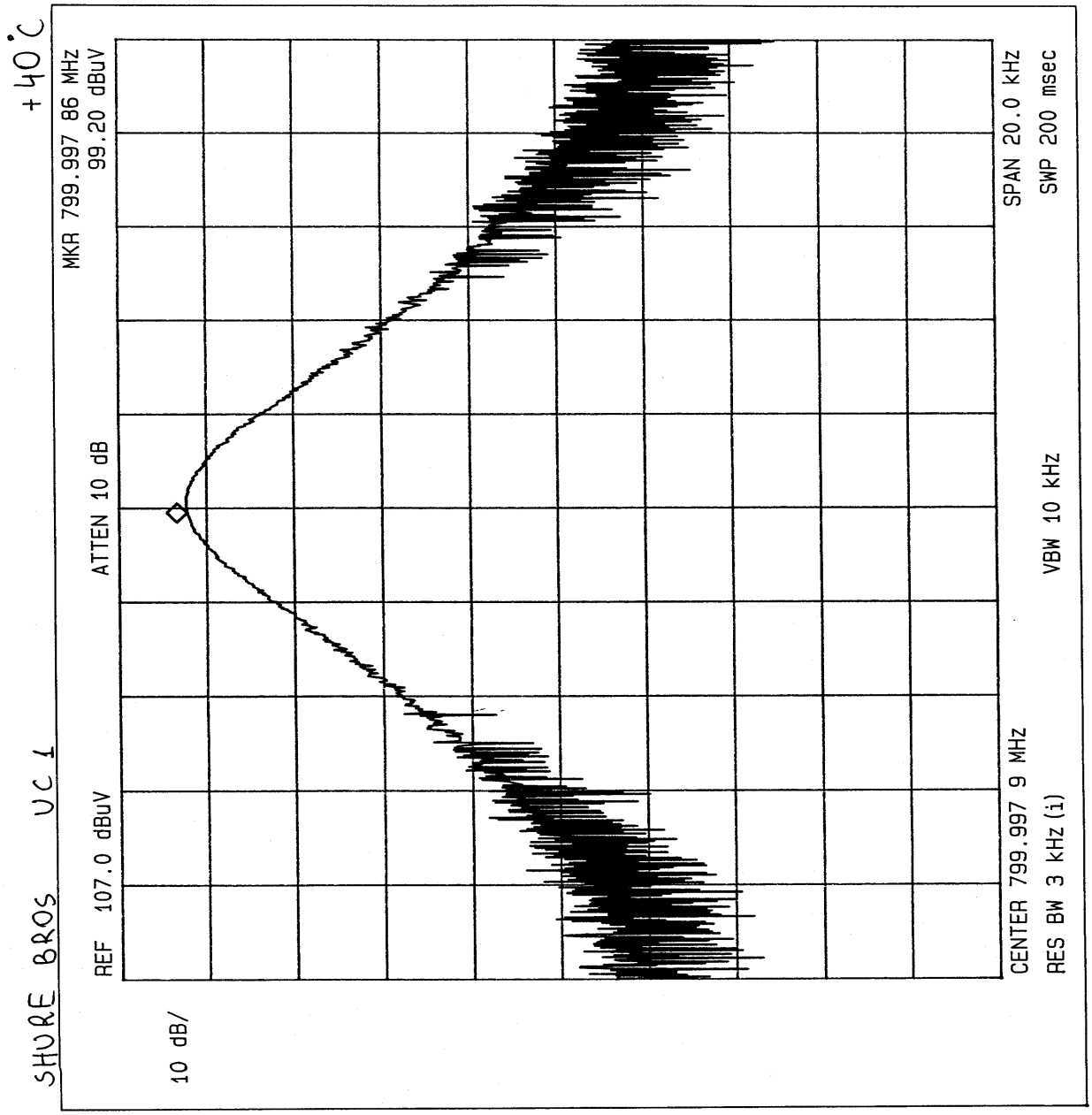
TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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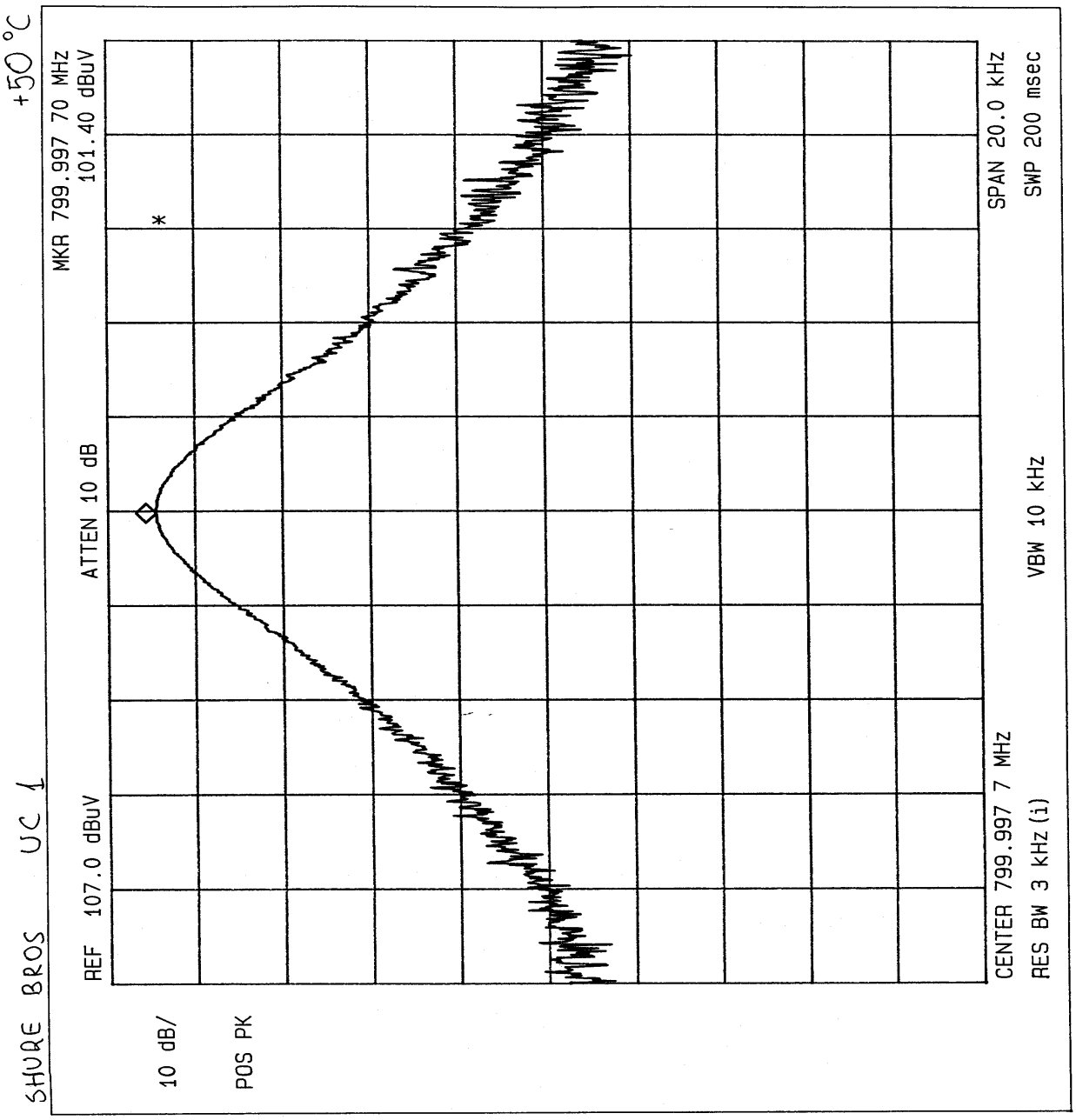
TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

9.0 FREQUENCY STABILITY (VOLTAGE VARIATION)– PART 2.1055(d1)

The frequency stability of UHF Table Top Wireless Microphone Transmitter was measured by varying the primary supply voltage from 85% to 115% of nominal value for all equipment **other than hand carried battery equipment.**

FREQUENCY STABILITY FOR VOLTAGE VARIATION:

85%	NA
100%	NA
115%	NA

FREQUENCY STABILITY FOR HAND HELD DEVICES:

For **hand carried, battery powered equipment**, the supply voltage was reduced to the battery operating end point specified by the manufacturer. Readings were taken at the reduced end point and with a fresh battery:

Fresh Battery verses Battery end point:

Frequency #1 1000 Hz

As stated in Part 74, Section 74.861 e-4 the Frequency Tolerance and Margin for this range are as follows:

Frequency Tolerance: = **0.005%**

Limit: = **39999.89 Hz**

NOTE: See the following page(s) for the graph(s) of the actual measurement made:

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

RADIATED CHARTS TAKEN FOR FREQUENCY

STABILITY WHEN VARYING THE

PRIMARY SUPPLY VOLTAGE

PART 2.995d

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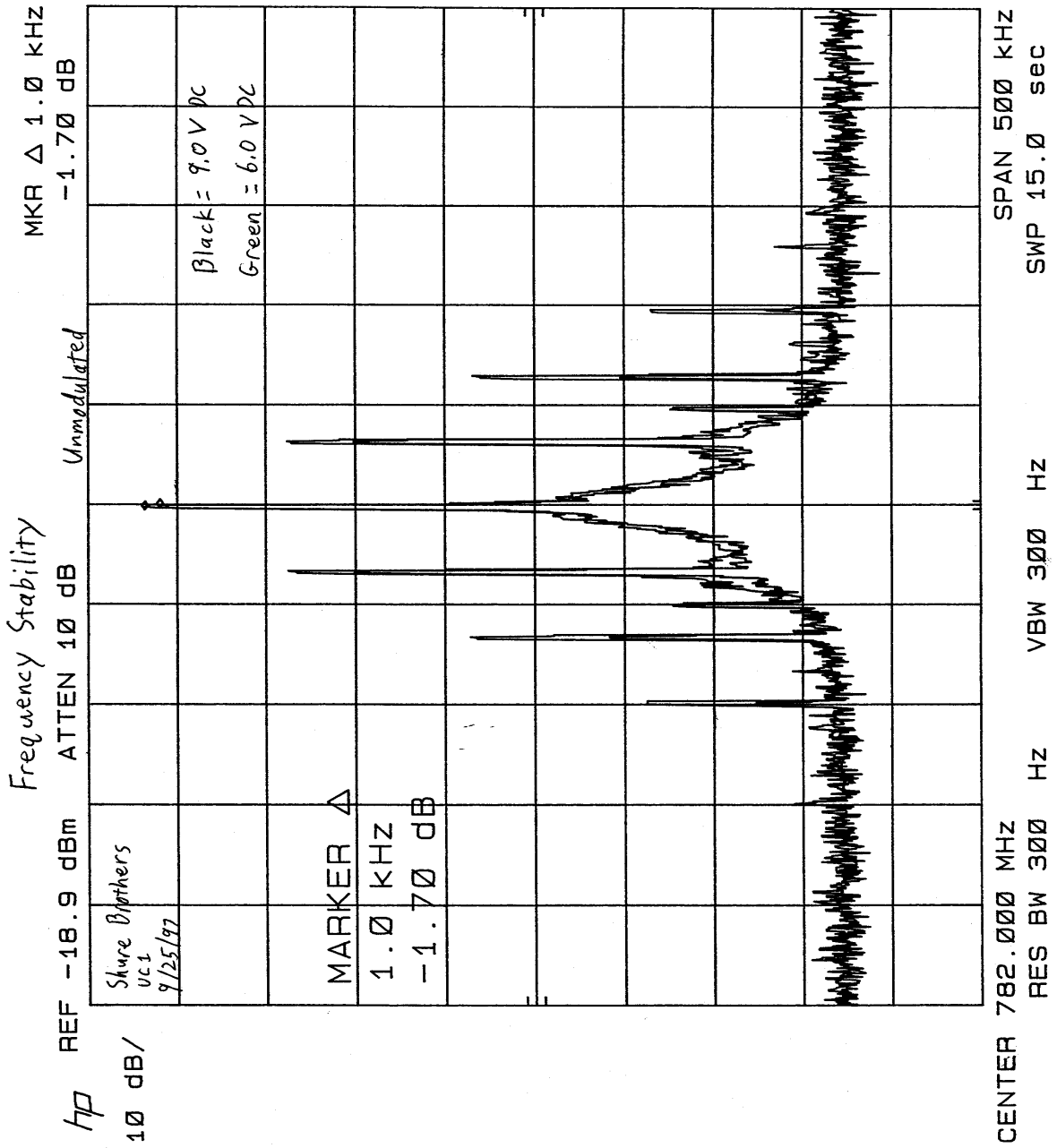
TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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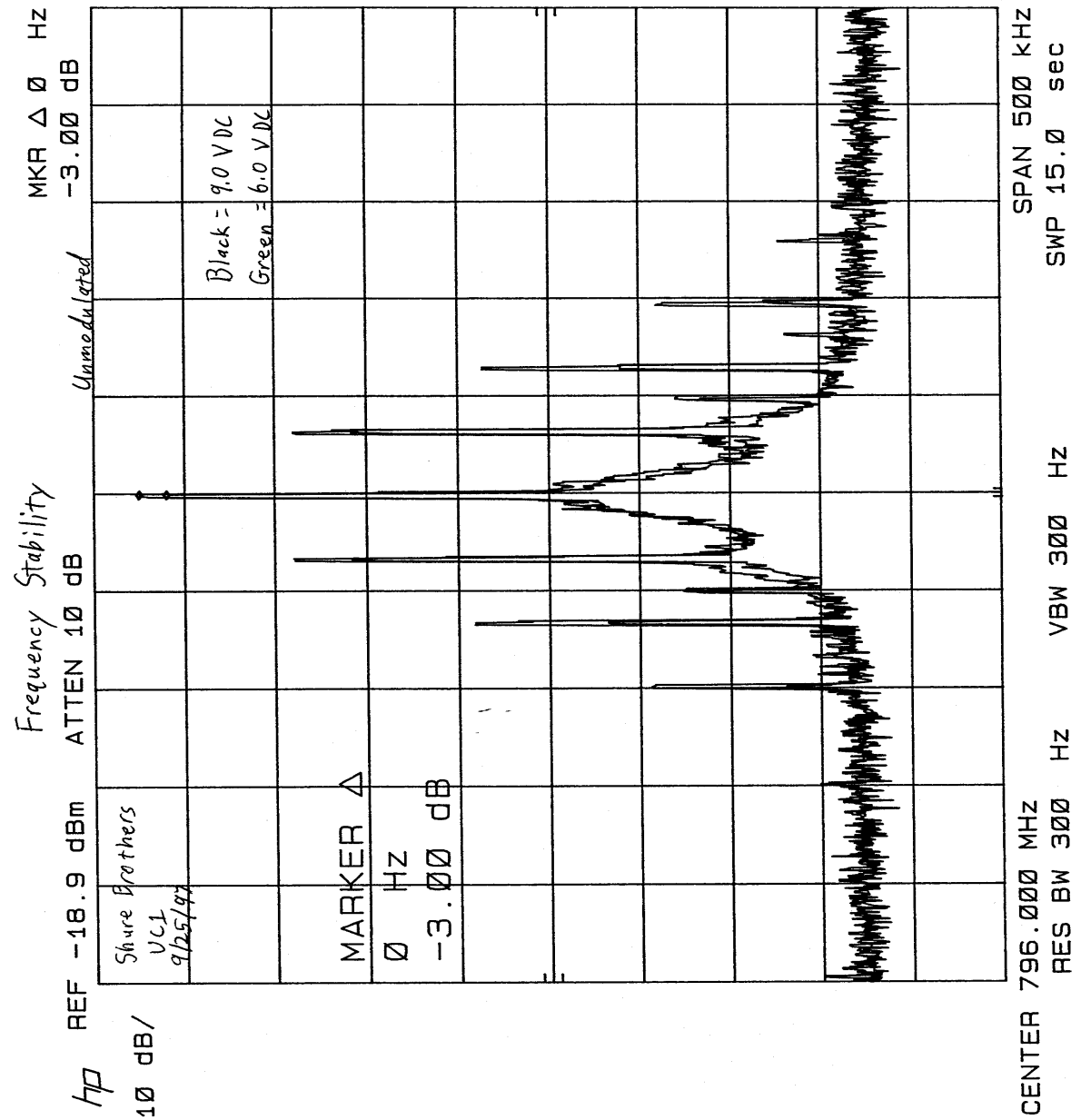
TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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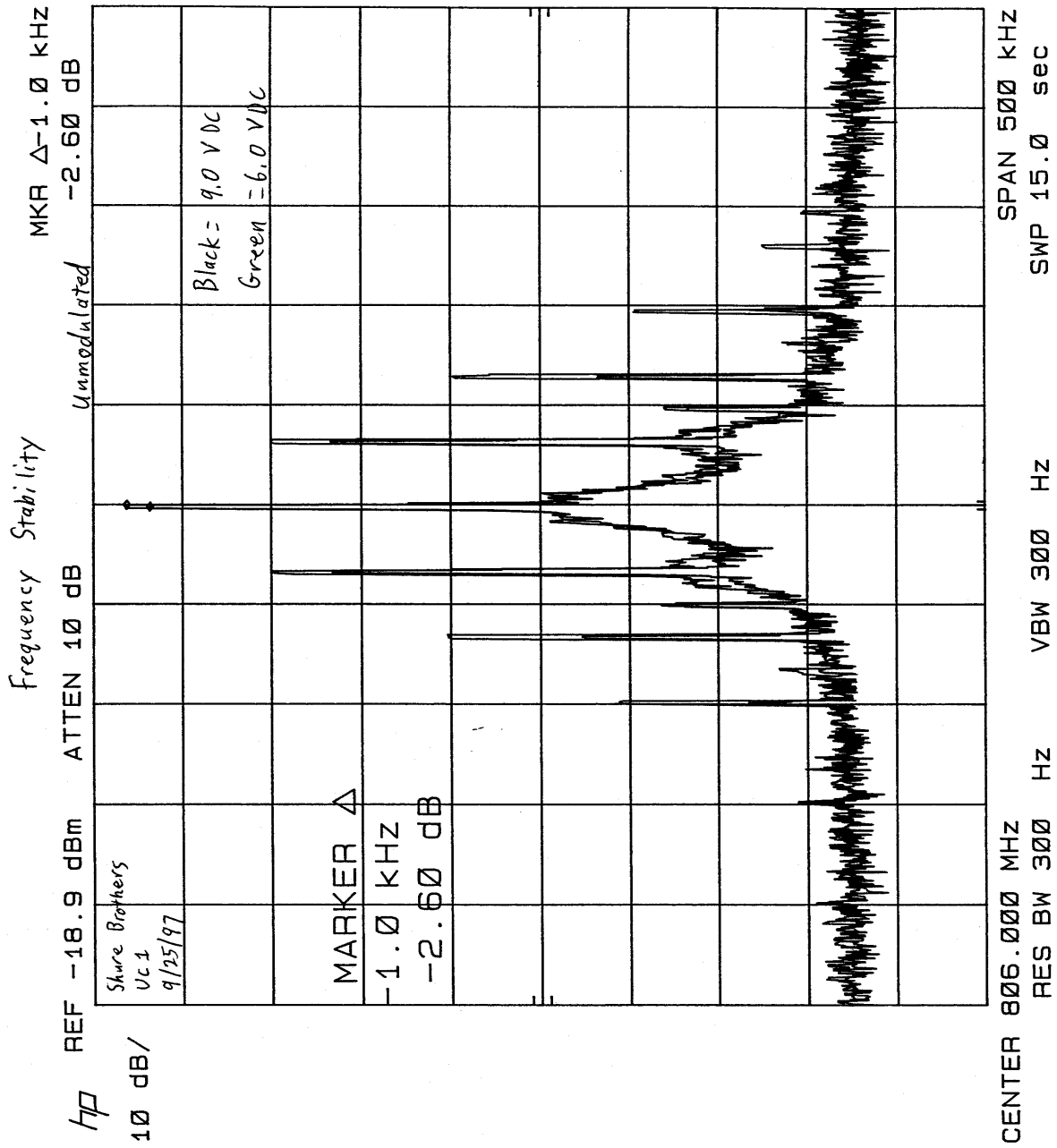
TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

TABLE 1 – EQUIPMENT LIST

Test Equipment	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Due Dates
Spectrum Analyzer	Hewlett/ Packard	8566B	2240A002041	100 Hz – 22 GHz	10/03
Quasi-Peak Adapter	Hewlett/ Packard	85650A	2043A00121	10 kHz – 1 GHz	10/03
Spectrum Analyzer	Hewlett/ Packard	8566B	2421A00452	100 Hz – 22 GHz	2/03
Quasi-Peak Adapter	Hewlett/ Packard	85650A	2043A00450	10 kHz – 1 GHz	2/03
Spectrum Analyzer	Hewlett/ Packard	8591A	3009A00700	9 kHz – 1.8 GHz	3/03
Receiver	Electrometrics	EMC-30	44168	10 kHz – 1 GHz	9/03
Receiver	Rohde & Schwarz	ESI 26	837491/010	20 Hz – 26 GHz	11/03
Receiver	Rohde & Schwarz	ESI 40	837808/006	20 Hz – 40 GHz	12/03
Receiver	Rohde & Schwarz	ESI 40	837808/005	20 Hz – 40 GHz	12/03
Antenna	EMCO	3104C	00054891	20 MHz – 200 MHz	2/03
Antenna	Electrometrics	LPA-25	1114	200 MHz – 1 GHz	3/03
Antenna	EMCO	3104C	00054892	20 MHz – 200 MHz	3/03

All primary equipment is calibrated against known reference standards with a verified traceable path to NIST.

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

TABLE 1 – EQUIPMENT LIST

Test Equipment	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Due Dates
Antenna	Electrometrics	3146	1205	200 MHz – 1 GHz	3/03
Antenna	EMCO	3104C	97014785	20 MHz – 200 MHz	2/03
Antenna	EMCO	3146	97024895	200 MHz – 1 GHz	3/03
Antenna	EMCO	3115	2479	1 GHz – 18 GHz	8/03
Antenna	EMCO	3115	99035731	1 GHz – 18 GHz	4/03
Antenna	Rohde & Schwarz	HUF-Z1	829381001	20 MHz – 1 GHz	2/03
Antenna	Rohde & Schwarz	HUF-Z1	829381005	20 MHz – 1 GHz	8/03
LISN	Solar	8012-50-R-24-BNC	8305116	10 MHz – 30 MHz	8/03
LISN	Solar	8012-50-R-24-BNC	814548	10 MHz – 30 MHz	8/03
LISN	Solar	9252-50-R-24-BNC	961019	10 MHz – 30 MHz	12/03
LISN	Solar	9252-50-R-24-BNC	971612	10 MHz – 30 MHz	10/03
LISN	Solar	9252-50-R-24-BNC	92710620	10 MHz – 30 MHz	7/03

All primary equipment is calibrated against known reference standards with a verified traceable path to NIST.