



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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 692 MHz to 716 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-UB
Model(s) Tested:	MX692/C-UB
Serial Number(s):	NA
Date of Tests:	February 17 & 18, 2003
Test Conducted For:	Shure Inc. 222 Hartley Avenue Evanston, Illinois 60202

NOTICE: "This report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government". Please see the "Additional Description of Equipment Under Test" page listed inside of this report. This report must not be reproduced (except in full), without the approval of D.L.S. Electronic Systems.



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SIGNATURE PAGE

Report By:

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Test Engineer
EMC-001375-NE

Reviewed By:

William Stumpf
OATS Manager

Approved By:

Brian Mattson
General Manager

Company Official:

Shure Inc.



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United States Department of Commerce National Institute of Standards and Technology NVLAP[®] Certificate of Accreditation ISO/IEC 17025:1999 ISO 9002:1994 D.L.S. ELECTRONIC SYSTEMS, INC. WHEELING, IL <i>is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:</i> ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS September 30, 2003 Effective through _____ <i>David F. Alderman</i> For the National Institute of Standards and Technology NVLAP Lab Code: 100276-0 NVLAP-01C (06-01)	
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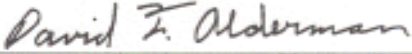
<i>National Institute of Standards and Technology</i>	NVLAP[®]	<i>National Voluntary Laboratory Accreditation Program</i>
ISO/IEC 17025:1999 ISO 9002:1994	Scope of Accreditation	 Page: 1 of 3
ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS	NVLAP LAB CODE 100276-0	
D.L.S. ELECTRONIC SYSTEMS, INC. 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		
<i>NVLAP Code Designation / Description</i>		
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.	
September 30, 2003	<i>David F. Alderman</i>	
<i>Effective through</i>	<i>For the National Institute of Standards and Technology</i>	

NVLAP-015 (06-01)



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ISO/IEC 17025:1999 ISO 9002:1994	Scope of Accreditation 
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NVLAP LAB CODE 100276-0	
D.L.S. ELECTRONIC SYSTEMS, INC.	
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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NVLAP-01S (06-01)



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D.L.S. ELECTRONIC SYSTEMS, INC.		
<i>NVLAP Code</i>	<i>Designation / Description</i>	
12/106	IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test	
12/107	IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests	
September 30, 2003 <i>Effective through</i>		<i>David F. Alderman</i> <i>For the National Institute of Standards and Technology</i>

NVLAP-01S (08-01)



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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-UB, **"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: 114

Charts: 16

2.0 INTRODUCTION

On February 17 & 18, 2003, a series of radio frequency interference measurements was performed on UHF Table Top Wireless Microphone Transmitter, Model Number(s) MX692/C-UB, 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 692 MHz to 716 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



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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-UB Serial Number: NA

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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-UB "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



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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:

103.70 dBuV/m field strength at 3 meters

67.80 dBuV out of signal generator to match EUT

+ 44.51 dB Amplifier Factor

112.31 dBuV into transmit dipole equals 3.41 milliwatts

LIMIT:

Manufacturer's rated output power = .0035 watts

MARGIN:

.0035 – .00341 = .00009 watts



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DATA TAKEN OF THE RF POWER

OUTPUT MEASUREMENT

PART 2.1046



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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-UB

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)
692.48 MHz vertical	95.1	63.5	39.99	103.49	0.45
692.48 MHz horizontal	104.2	69.7	39.99	109.69	1.86
715.5 MHz vertical	95.7	59.5	44.51	104.01	0.50
715.5 MHz horizontal	103.7	67.8	44.51	112.31	3.41



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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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ELECTRIC FIELD RADIATED EMISSIONS TEST

GRAPHS TAKEN SHOWING THE FREQUENCY

RESPONSE OF THE

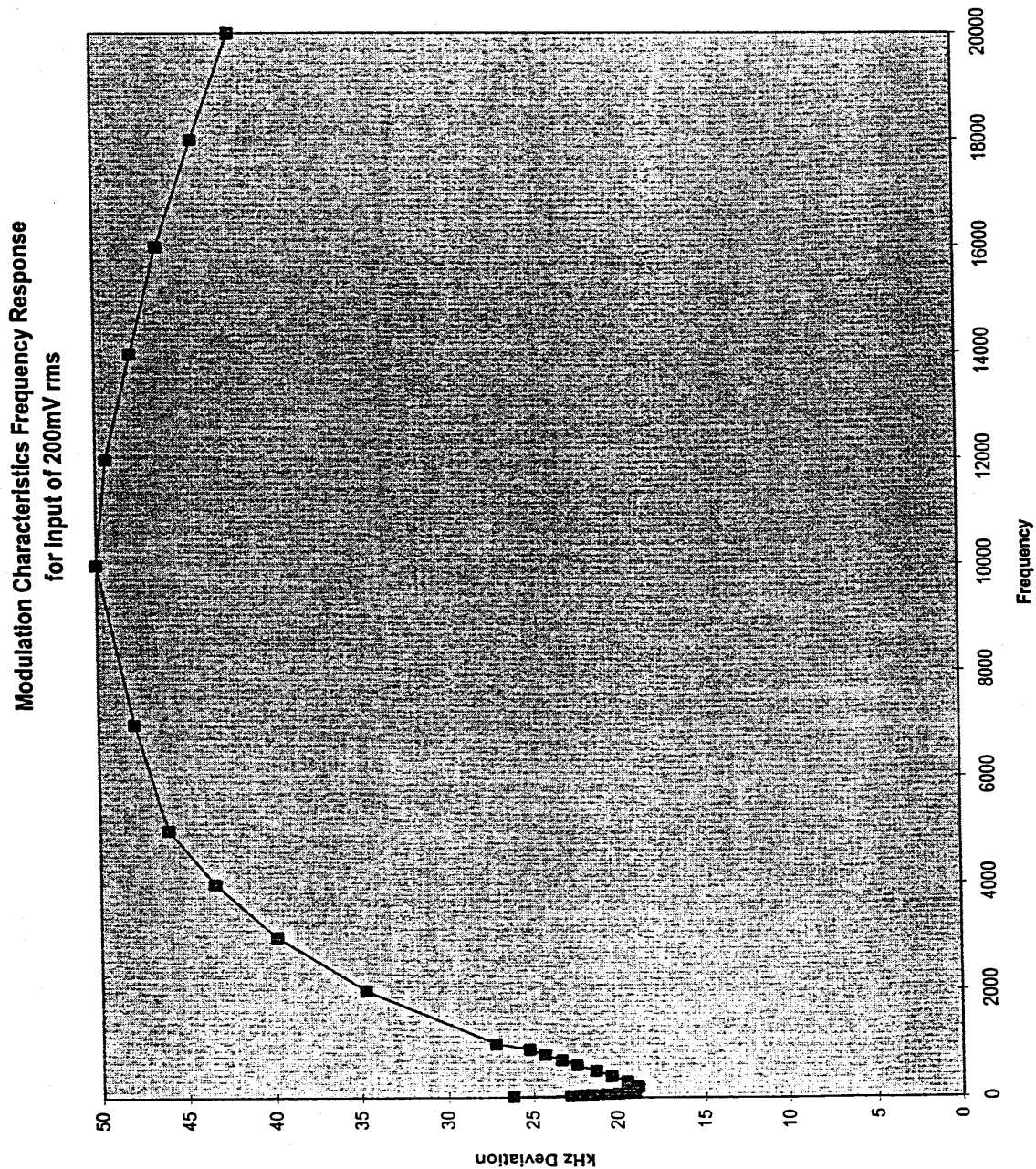
AUDIO MODULATING CIRCUIT

PART 2.987

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ELECTRIC FIELD RADIATED EMISSIONS TEST

GRAPHS TAKEN SHOWING THE

PERCENTAGE OF MODULATION

VERSUS

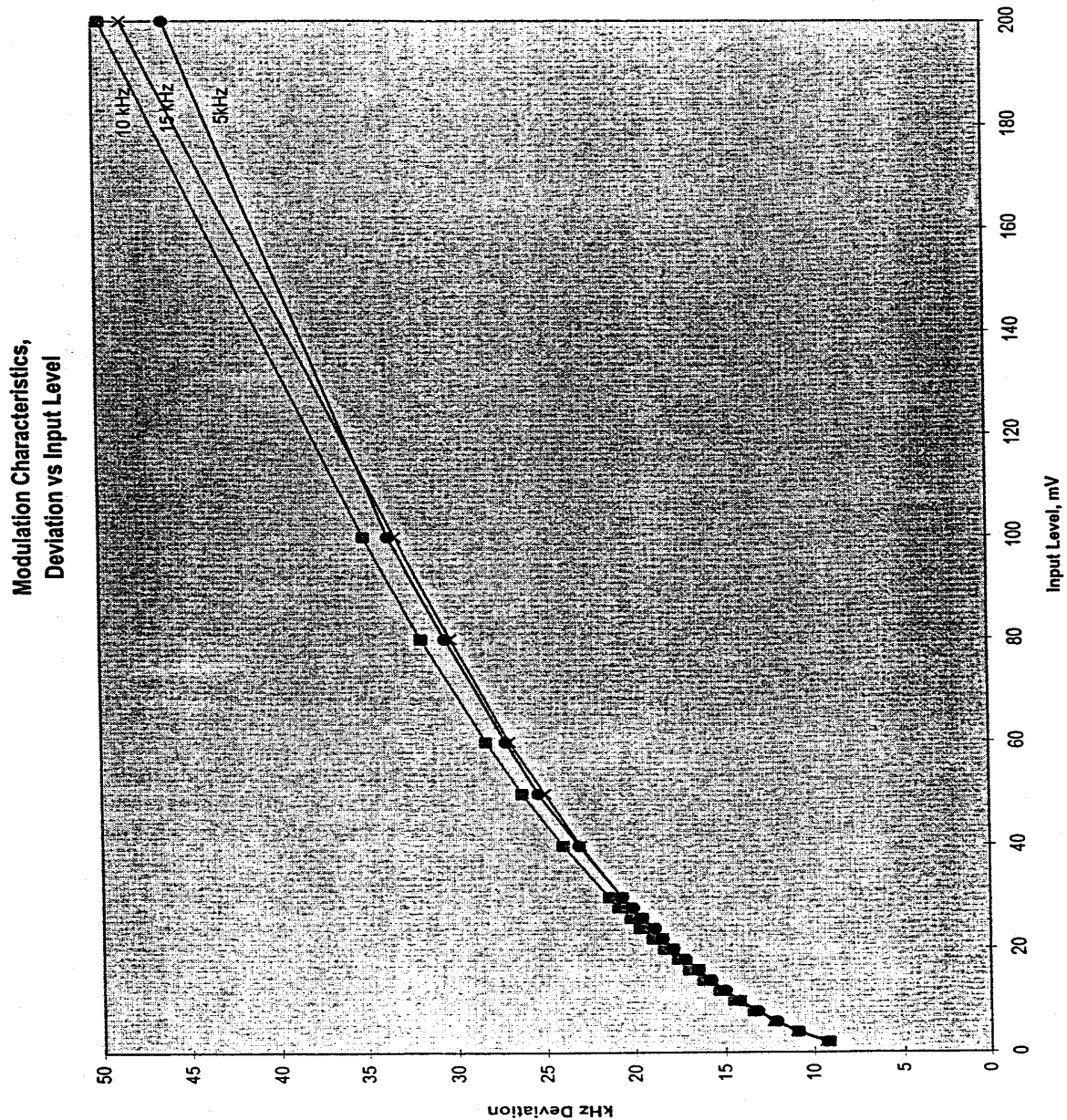
THE MODULATION INPUT VOLTAGE

PART 2.987

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST





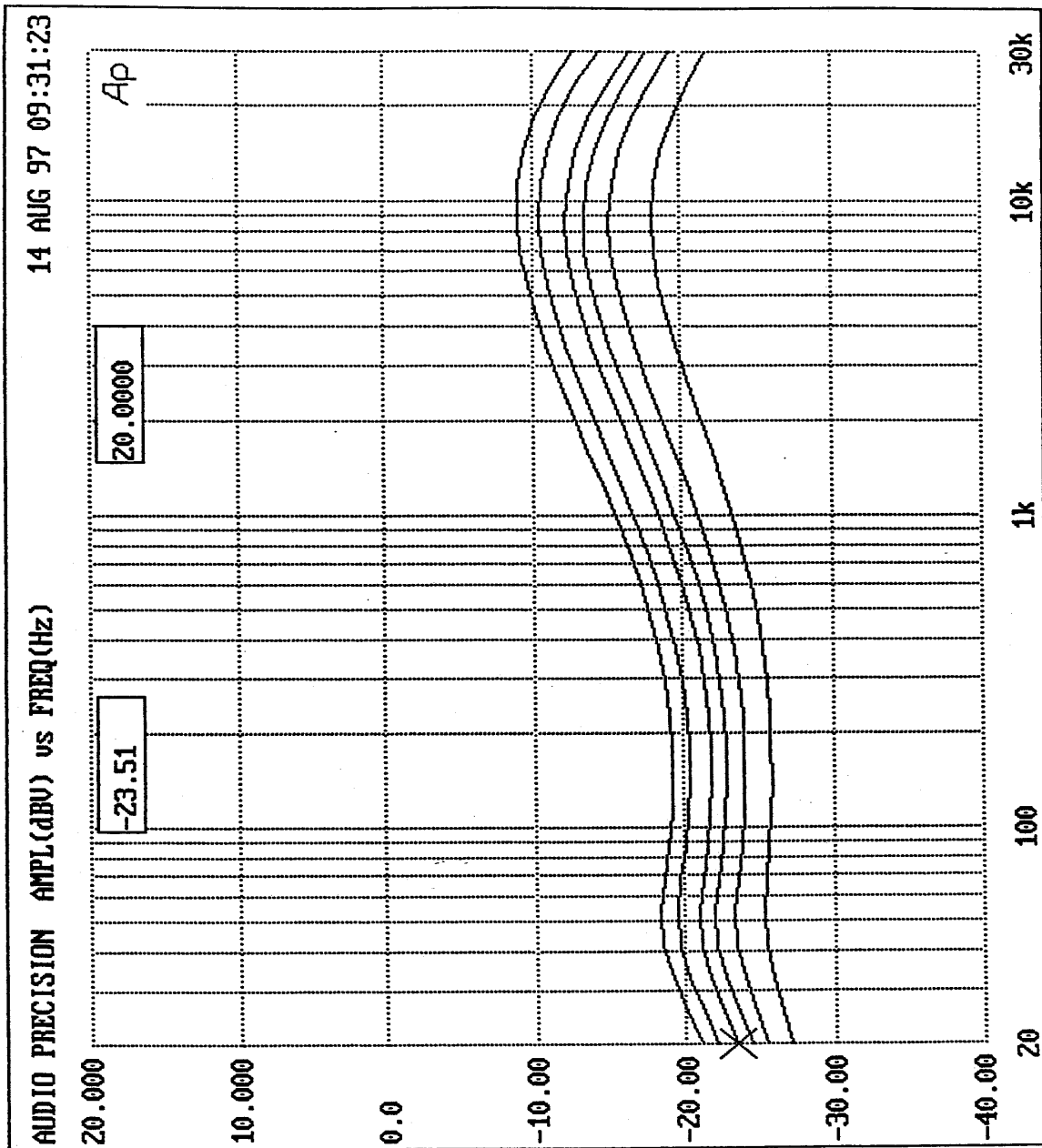
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4.0 OCCUPIED BANDWIDTH - PART 2.1049

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:

$$M = 15 \text{ kHz and } D = 45 \text{ kHz}$$

$$B = 2(15) + 2(45)(1) = 120 \text{ kHz}$$



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GRAPH(S) TAKEN OF THE OCCUPIED BANDWIDTH

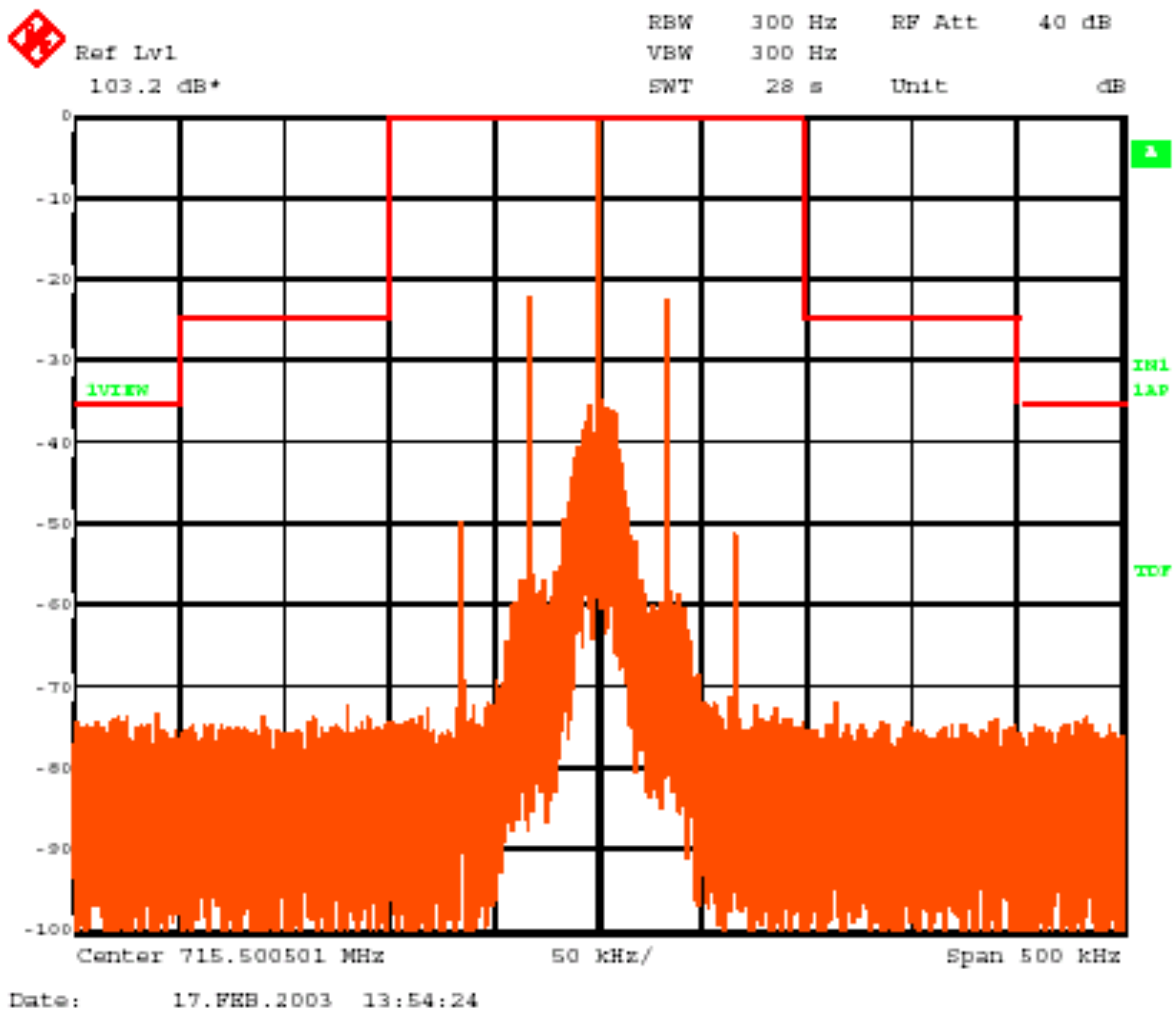
PART 2.1049

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Unmodulated Carrier:



Company: Shure Inc.
EUT: MX692-UB
Operator: Craig Brandt
Comment: CHL 0, GRP 1 715.5 MHz



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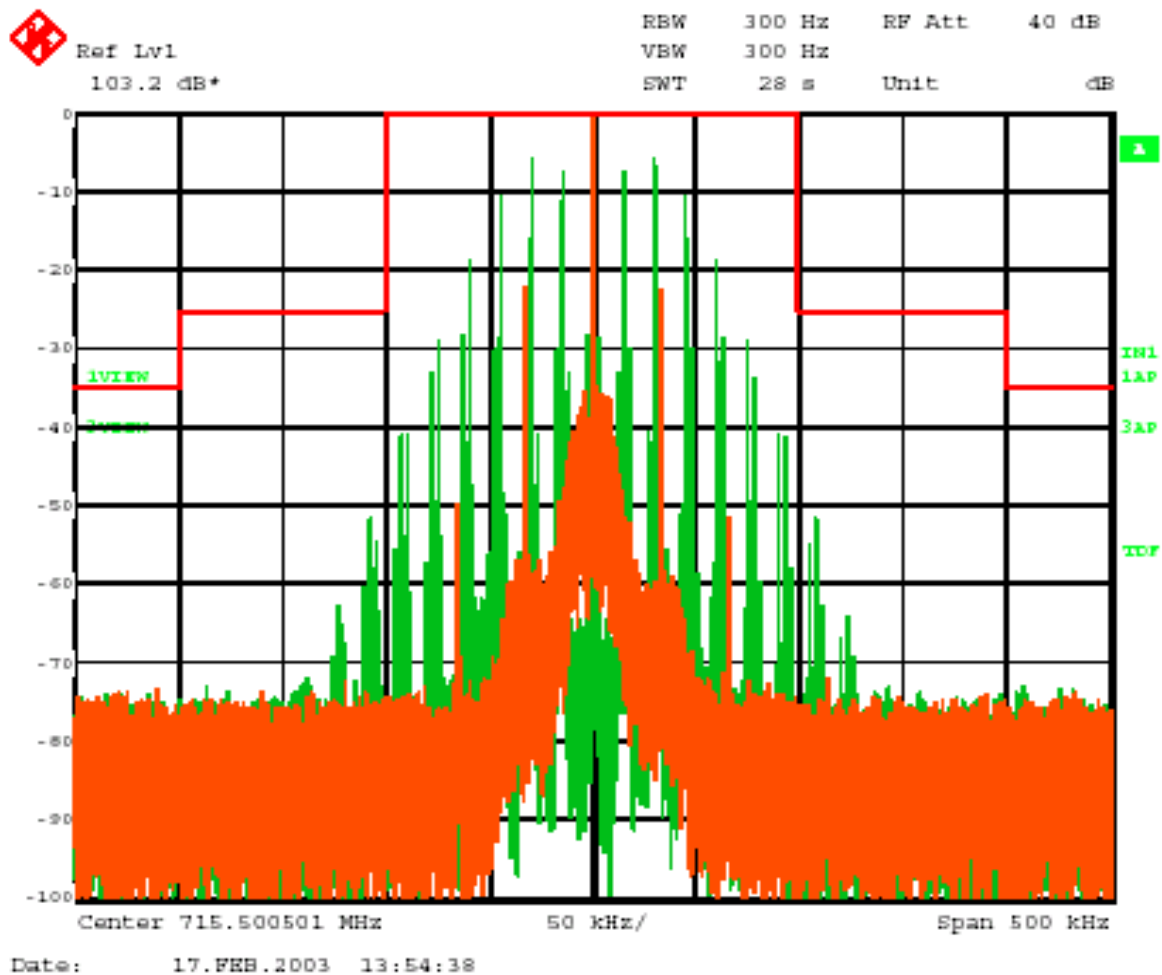
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Orange: Unmodulated Carrier
Green: 15 kHz 85% modulated



Company: Shure Inc.
EUT: MX692-UB
Operator: Craig Brandt
Comment: CHL 0, GRP 1 715.5 MHz

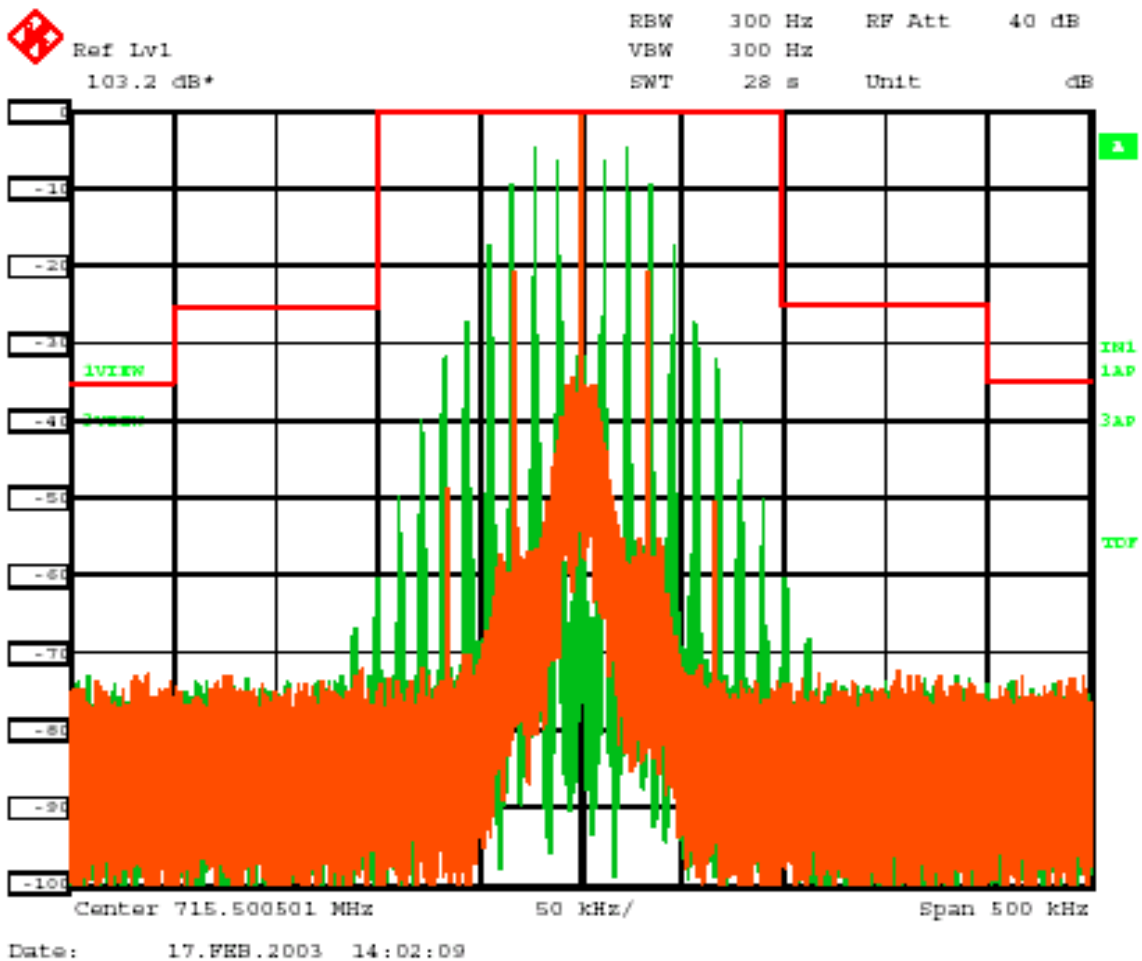
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TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

Orange: Unmodulated Carrier
Green: 10 kHz 50% modulated



Company: Shure Inc.
EUT: MX692-UB
Operator: Craig Brandt
Comment: CHL 0, GRP 1 715.5 MHz



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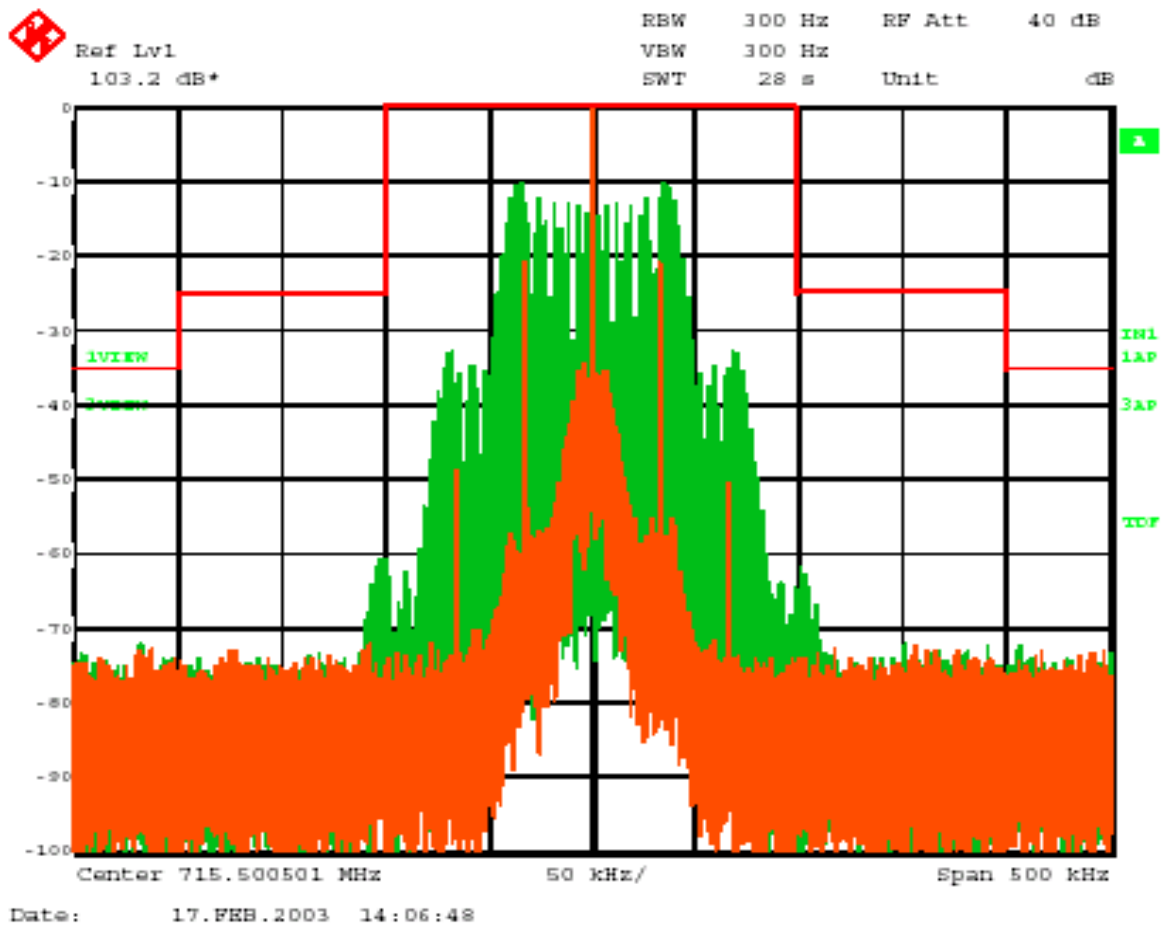
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Orange: Unmodulated Carrier
Green: 2 kHz 16 dB > 50% modulated



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EUT: MX692-UB
Operator: Craig Brandt
Comment: CHL 0, GRP 1 715.5 MHz



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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 692 MHz to 716 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.



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

FREQUENCY DEVIATION

WITH

15 kHz, 85% MODULATION



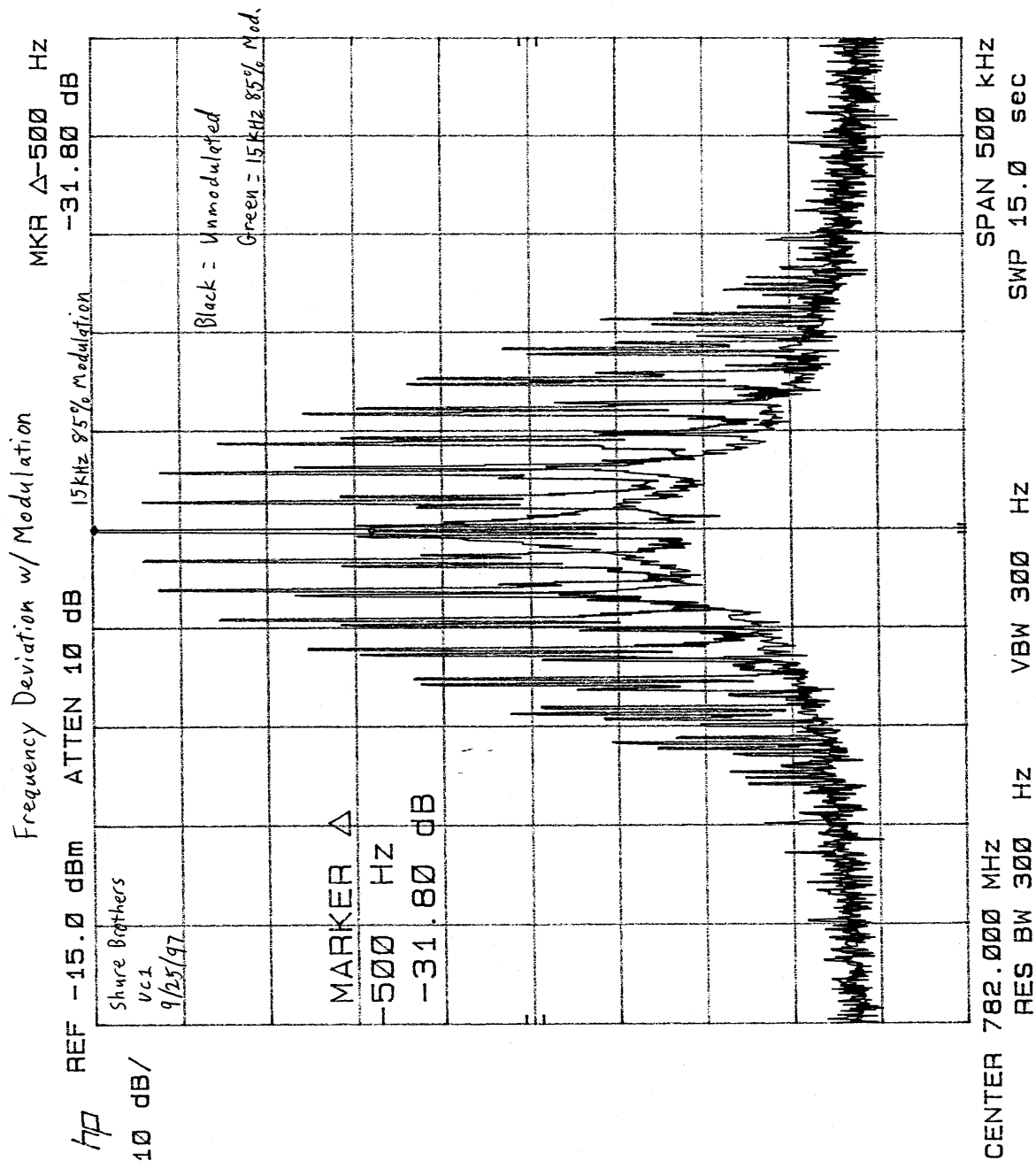
Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST





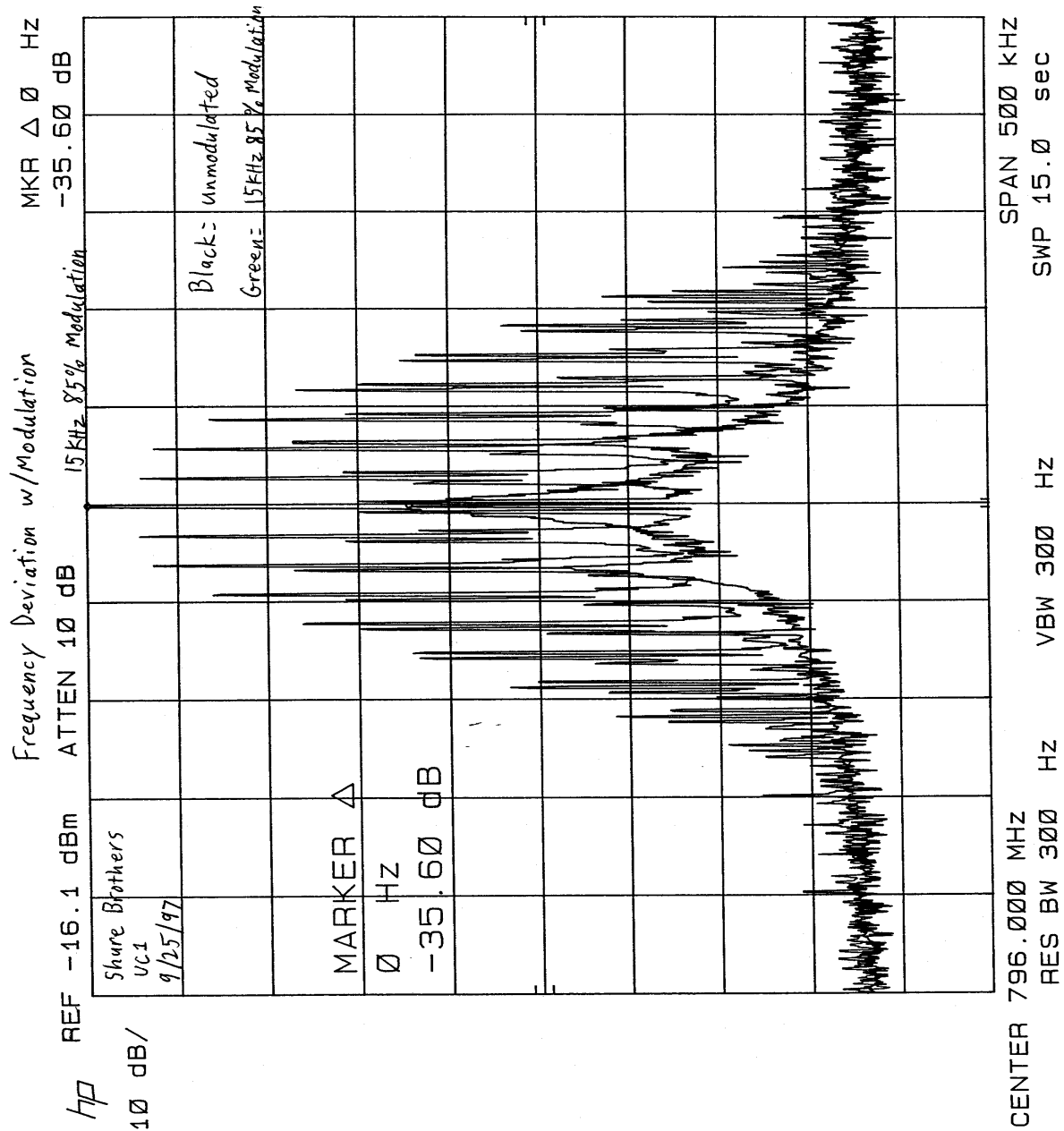
Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST





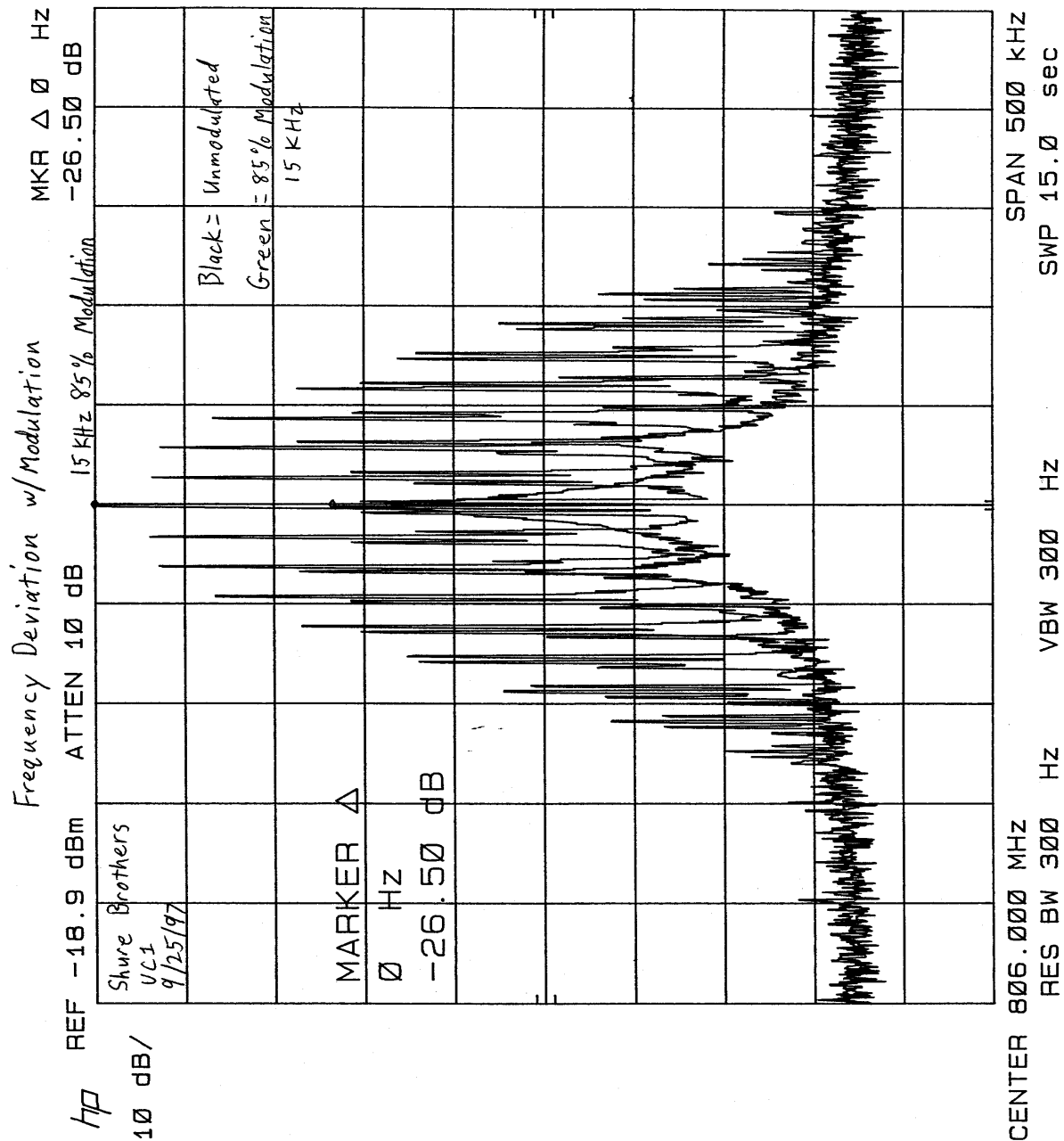
Company: Shure Inc.
 Model Tested: MX692/C-UB
 Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST





Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

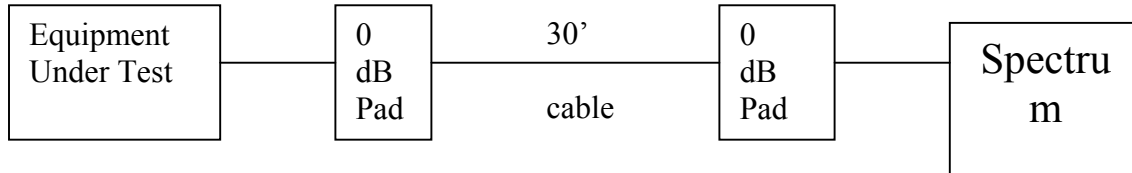
TEST PROCEDURE

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 10th 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 $43+10\log_{10}$ (mean output power in watts) dB.

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



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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.



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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.



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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 $43 + 10 \log_{10}$ (mean output power in watts) dB.



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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 = **.0035 Watts (See Paragraph 2.0, page 2 of this Appendix)**

Free Space Formula

Convert to 3 meter test distance using the Free Space Formula

$$\frac{\sqrt{49.2 * \text{rated wattage}}}{\text{Distance}} = .1383233 \text{ volts/meter} = 138323.3 \text{ uV/m}$$

$$20 * \text{Log}(138323.3) = 102.82 \text{ dBuV/m}$$

Therefore, the Fundamental at three meters equals 102.82 dBuV,

The emissions must be reduced by:

$$43 + 10 * \text{LOG}_{10}(.0035 \text{ watts}) = 18.441 \text{ dB}$$

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

$$\begin{aligned} &102.82 \text{ dBuV/m extrapolated level for .0035 watts} \\ &\underline{-18.44 \text{ dB required reduction below the unmodulated fundamental}} \\ &\mathbf{84.37 \text{ dBuV/M}} \text{ maximum spurious emissions allowed} \end{aligned}$$



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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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



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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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-UB

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)
1385.0 MHz vertical	59.2	-40.0	1.8	6.8	-37.1	24.1
1385.0 MHz horizontal	68.2	-32.1	1.8	6.8	-29.2	16.2
2862.0 MHz vertical	65.0	-40.6	2.6	8.0	-37.3	24.3
2862.0 MHz horizontal	71.2	-34.7	2.6	8.0	-31.4	18.4

EIRP = Signal generator output - cable loss + antenna gain

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



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

“RADIATED DATA

AND

CHARTS TAKEN DURING TESTING”

HIGH CHANNEL 715.5 MHz



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

FCC Part 74

Electric Field Strength

EUT: MX692-UB
Manufacturer: Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: CHL 0, GRP 1 715.5 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 / 715.5 MHz / VERTICAL



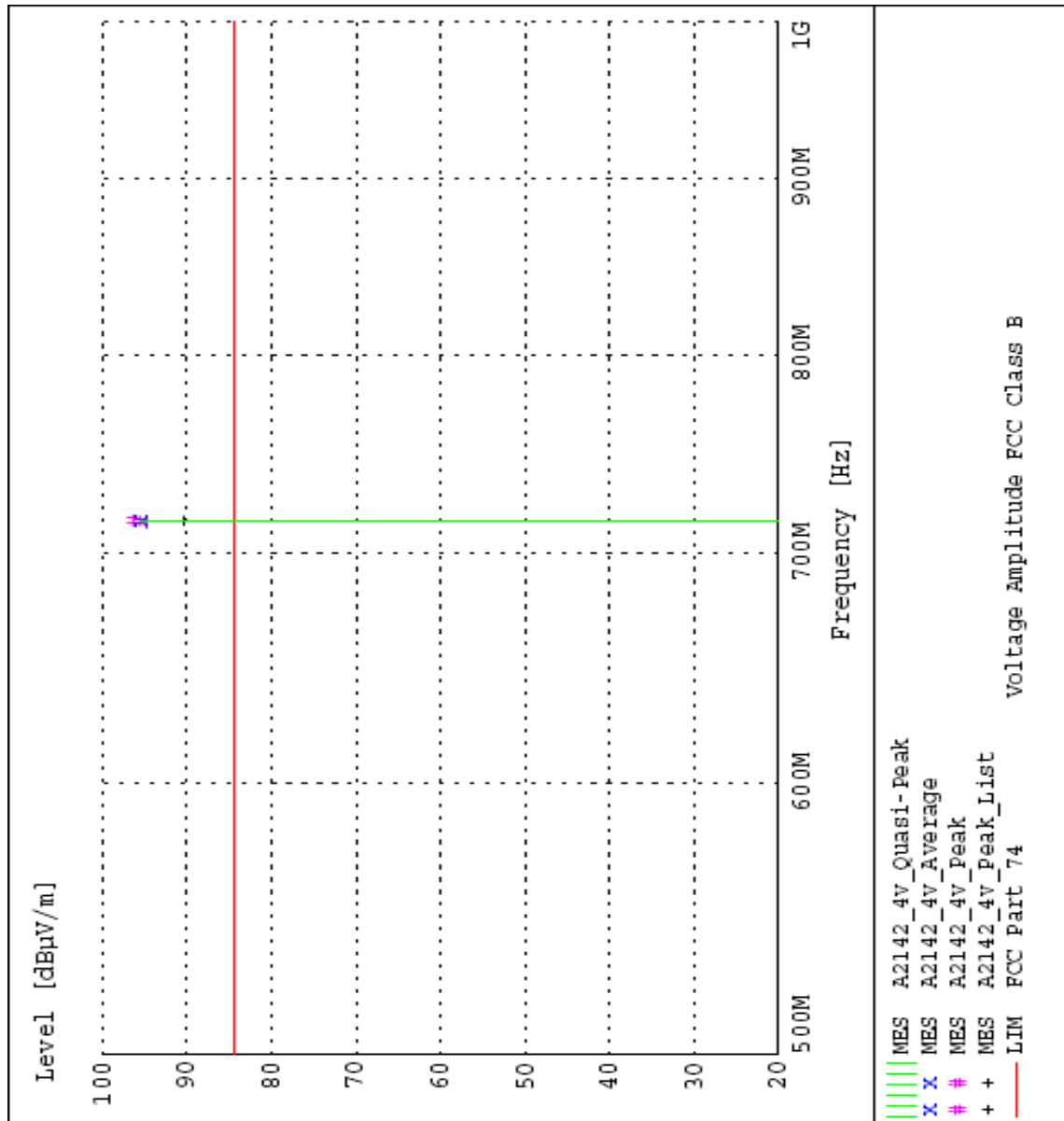
Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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HIGH CHANNEL / CHL 0, GRP 1 / 715.5 MHz / VERTICAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2142_4v_Final"

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuF	Final	Comment
MHz	dBμV	Factor	Loss	Level	dBμV/μ	dB	Ant.	Angle	Detector	
		dBμV/μ	dB	dBμV/μ	dBμV/μ	dB	μ	deg		
715.480000	93.40	21.17	-18.8	95.7	84.4	-11.4	1.20	45	MAX PEAK	Fundamental
715.480000	93.32	21.17	-18.8	95.7	84.4	-11.3	1.20	45	QUASI-PEAK	Fundamental
715.480000	93.24	21.17	-18.8	95.6	84.4	-11.2	1.20	45	AVERAGE	Fundamental

HIGH CHANNEL / CHL 0, GRP 1 / 715.5 MHz / VERTICAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

FCC Part 74

Electric Field Strength

EUT: MX692-UB
Manufacturer: Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification: CHL 0, GRP 1 715.5 MHz
Comment: 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 J115 SN: 9903-5731

Pre-Amps ---

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

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

HIGH CHANNEL / CHL 0, GRP 1 / 715.5 MHz / VERTICAL



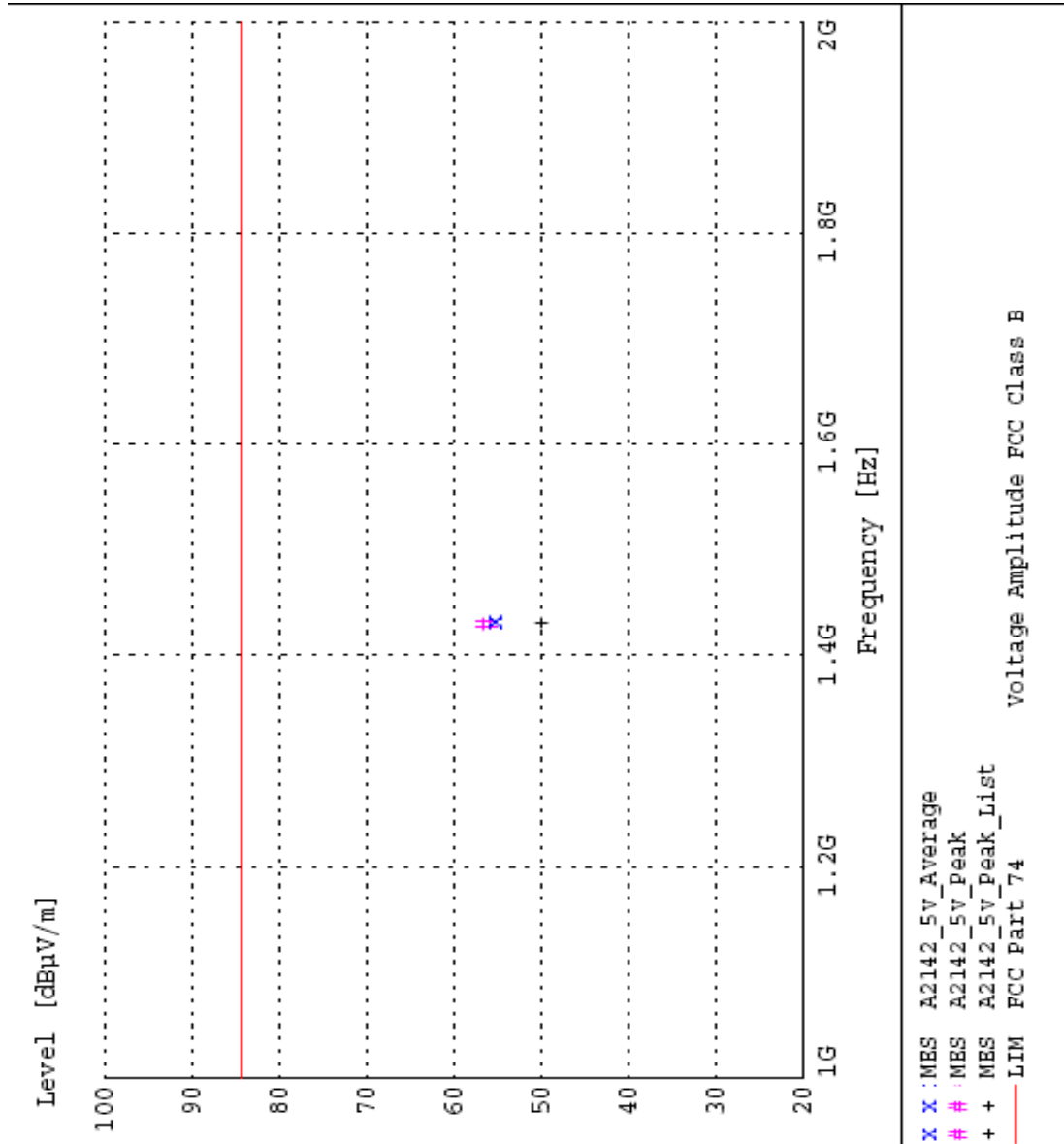
Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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HIGH CHANNEL / CHL 0, GRP 1 / 715.5 MHz / VERTICAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2142_5v_Final"

2/14/03 10:54AM									
Frequency	Level	Antenna	System	Total	Limit	Margin	Height	Ref	Comment
MHz	dBuV	Factor	Loss	Level	dBuV/r	dE	Ant.	Angle	
		dBuV/r	dE	dBuV/r			m	deg	
1430.980000	69.87	26.64	-40.3	56.3	84.4	28.1	1.80	270	MAX PEAK
1430.980000	68.89	26.64	-40.3	55.3	84.4	29.1	1.80	270	AVERAGE
									None
									None

HIGH CHANNEL / CHL 0, GRP 1 / 715.5 MHz / VERTICAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

FCC Part 74

Electric Field Strength

EUT: MX692-UB
Manufacturer: Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification: CHL 0, GRP 1 715.5 MHz
Comment: 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 AMP-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMP-6P-100200-50-10P SN: 668382
TEST SET-UP: EUT Measured at 3 Meters with VERTICAL Antenna Polarisation

HIGH CHANNEL / CHL 0, GRP 1 / 715.5 MHz / VERTICAL



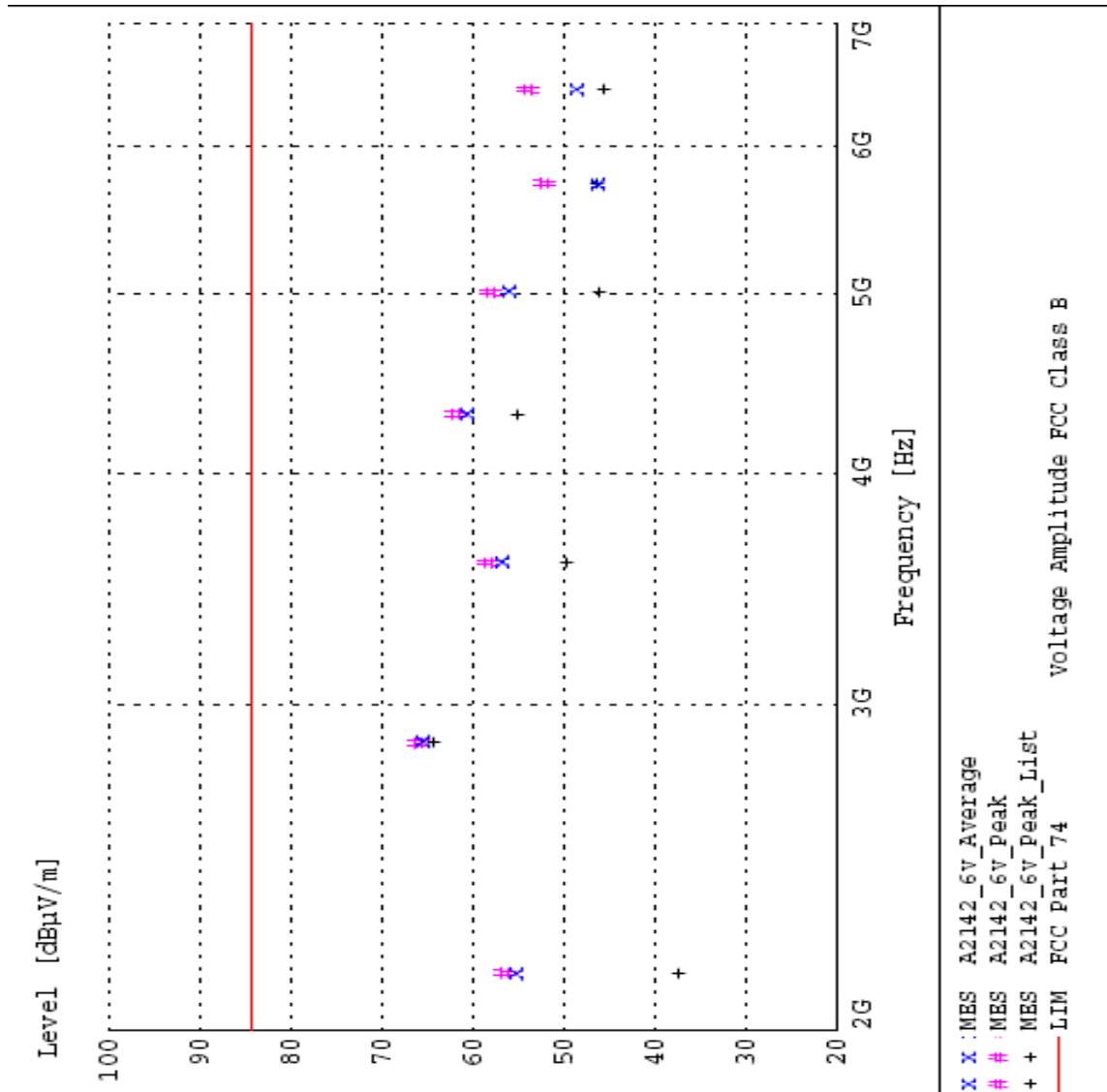
Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



HIGH CHANNEL / CHL 0, GRP 1 / 715.5 MHz / VERTICAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT, "A2142_6v_Final"

2/14/03 11:23AM	Frequency	Level	Antenna	System	Total	Limit	Margin	Height	Ant. Angle	Ref. Final	Comment
	MHz	dBuV	Factor	Loss	Level	dBuV/r	dB	r	deg	Detector	
	2862.000000	74.73	31.28	-40.0	66.0	84.4	18.4	1.00	45	MAX PEAK	None
	2862.000000	74.30	31.28	-40.0	65.5	84.4	18.8	1.00	45	AVERAGE	None
	4293.000000	65.81	34.11	-38.2	61.7	84.4	22.7	1.00	90	MAX PEAK	None
	4293.000000	64.75	34.11	-38.2	60.7	84.4	23.7	1.00	90	AVERAGE	None
	3577.500000	64.24	33.05	-39.1	58.2	84.4	26.1	1.00	90	MAX PEAK	None
	5008.500000	60.72	35.12	-37.8	58.0	84.4	26.4	1.10	0	MAX PEAK	None
	3577.500000	62.87	33.05	-39.1	56.9	84.4	27.5	1.00	90	AVERAGE	None
	2146.500000	66.73	29.57	-39.9	56.4	84.4	28.0	1.00	45	MAX PEAK	None
	5008.500000	58.75	35.12	-37.8	56.0	84.4	28.3	1.10	0	AVERAGE	None
	2146.500000	65.80	29.57	-39.9	55.4	84.4	28.9	1.00	45	AVERAGE	None
	6439.450000	55.18	36.36	-37.7	53.5	84.4	30.5	1.10	30	MAX PEAK	None
	5724.000000	53.07	36.41	-37.4	52.0	84.4	32.3	1.80	45	MAX PEAK	None
	6439.450000	50.05	36.36	-37.7	48.7	84.4	35.6	1.10	30	AVERAGE	None
	5724.000000	47.52	36.41	-37.4	46.5	84.4	37.9	1.80	45	AVERAGE	None

HIGH CHANNEL / CHL 0, GRP 1 / 715.5 MHz / VERTICAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

FCC Part 74

Electric Field Strength

EUT: MX692-UB
Manufacturer: Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification: CHL 0, GRP 1 715.5 MHz
Comment: 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 --- EMC0 3115 SN: 9903-5731

Pre-Amps ---

1 - 10 GHz -- Miteq AMP-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMP-6P-100200-50-10P SN: 668382

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

HIGH CHANNEL / CHL 0, GRP 1 / 715.5 MHz / VERTICAL



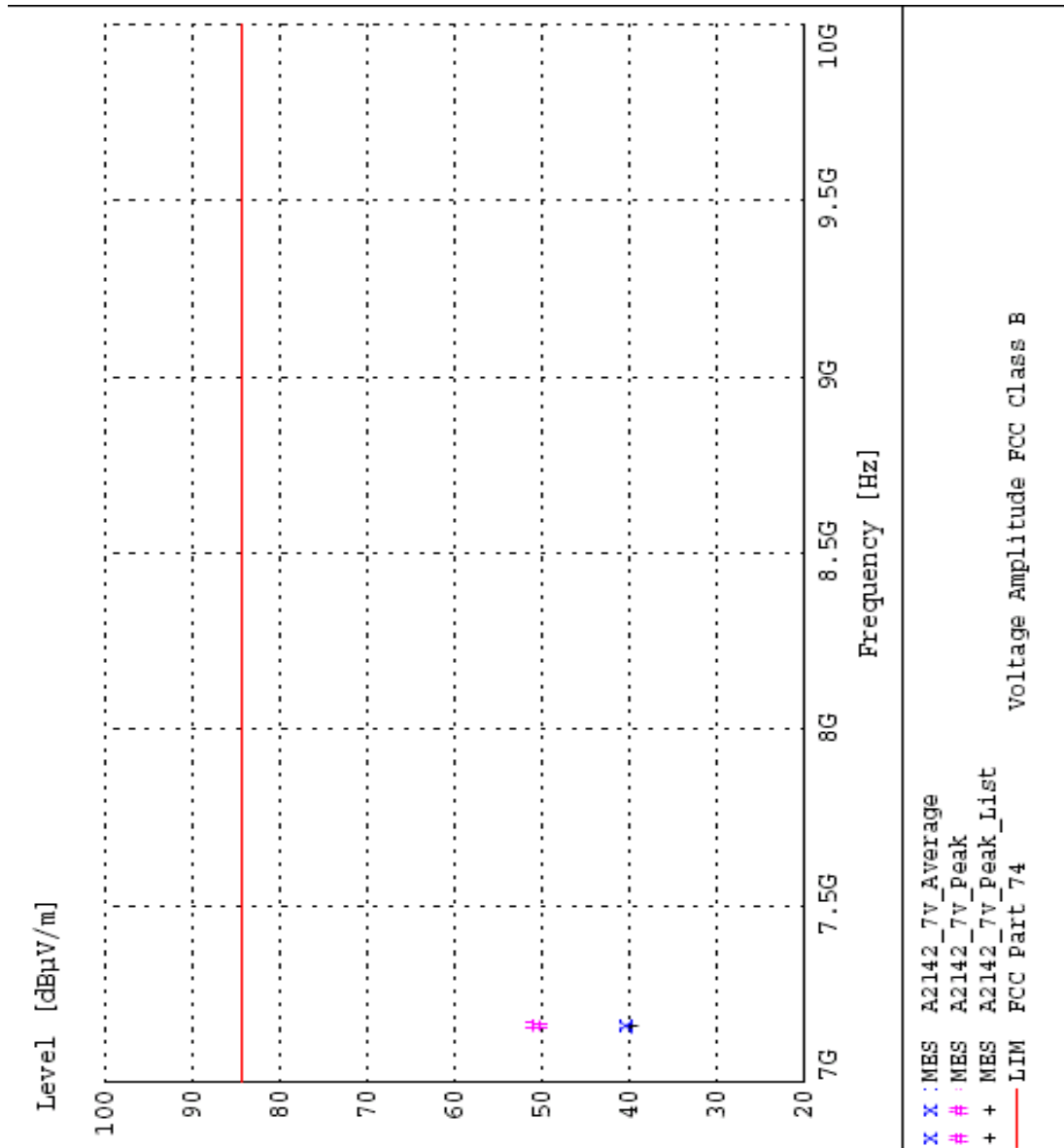
Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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HIGH CHANNEL / CHL 0, GRP 1 / 715.5 MHz / VERTICAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT, "A2142_7v_Final"

2/14/03 12:31PM									
Frequency	Level	Antenna	System	Total	Limit	Margin	Height	Angle	Final
MHz	dBuV	Factor	Loss	Level	dBuV/r	dE	Ant. r	deg	Detector
7155.000000	49.46	37.19	-36.1	50.5	84.4	33.8	1.10	30	MAX PEAK
7155.000000	39.48	37.19	-36.1	40.6	84.4	43.8	1.10	30	AVERAGE
									None
									None

HIGH CHANNEL / CHL 0, GRP 1 / 715.5 MHz / VERTICAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

FCC Part 74

Electric Field Strength

EUT: MX692-UB
Manufacturer: Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification: CHL 0, GRP 1 715.5 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

HIGH CHANNEL / CHL 0, GRP 1 / 715.5 MHz / HORIZONTAL



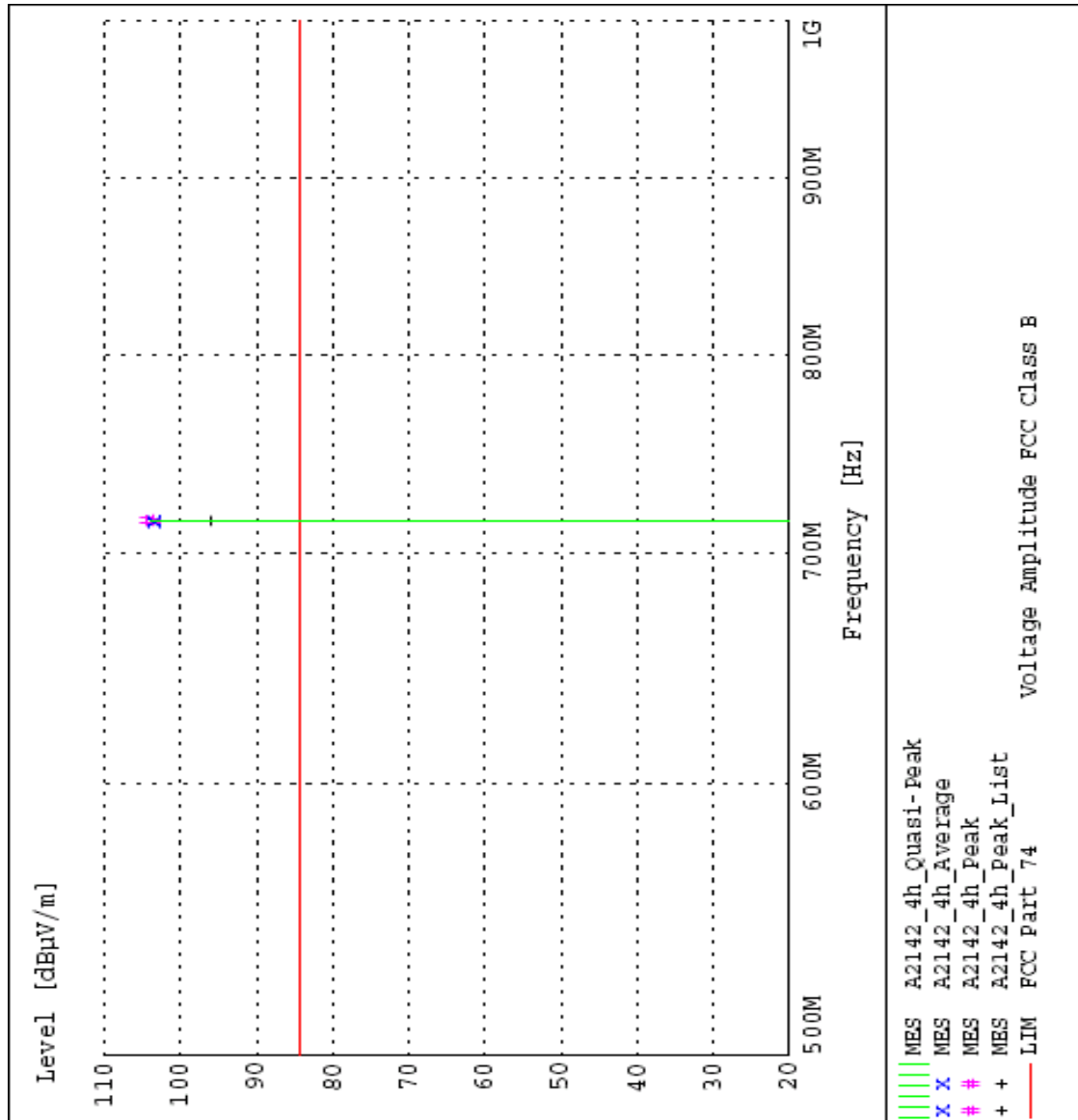
Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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HIGH CHANNEL / CHL 0, GRP 1 / 715.5 MHz / HORIZONTAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2142_4h_Final"

2/14/03	10:46AM	Frequency	Level	Antenna Factor	System Loss	Total Level	Limit	Margin	Height	Euf Angle	Final Detector	Comment
		MHz	dBμV	dBμV/μ	dB	dBμV/μ	dBμV/μ	dB	μ	deg		
		715.480000	101.37	21.17	-18.8	103.7	84.4	-19.4	1.10	315	MAX PEAK	Fundamental
		715.480000	101.36	21.17	-18.8	103.7	84.4	-19.3	1.10	315	QUASI-PEAK	Fundamental
		715.480000	101.28	21.17	-18.8	103.6	84.4	-19.3	1.10	315	AVERAGE	Fundamental

HIGH CHANNEL / CHL 0, GRP 1 / 715.5 MHz / HORIZONTAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

FCC Part 74

Electric Field Strength

EUT: MX692-UB
Manufacturer: Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification: CHL 0, GRP 1 715.5 MHz
Comment: 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 AMP-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMP-6P-100200-50-10P SN: 668382

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

HIGH CHANNEL / CHL 0, GRP 1 / 715.5 MHz / HORIZONTAL



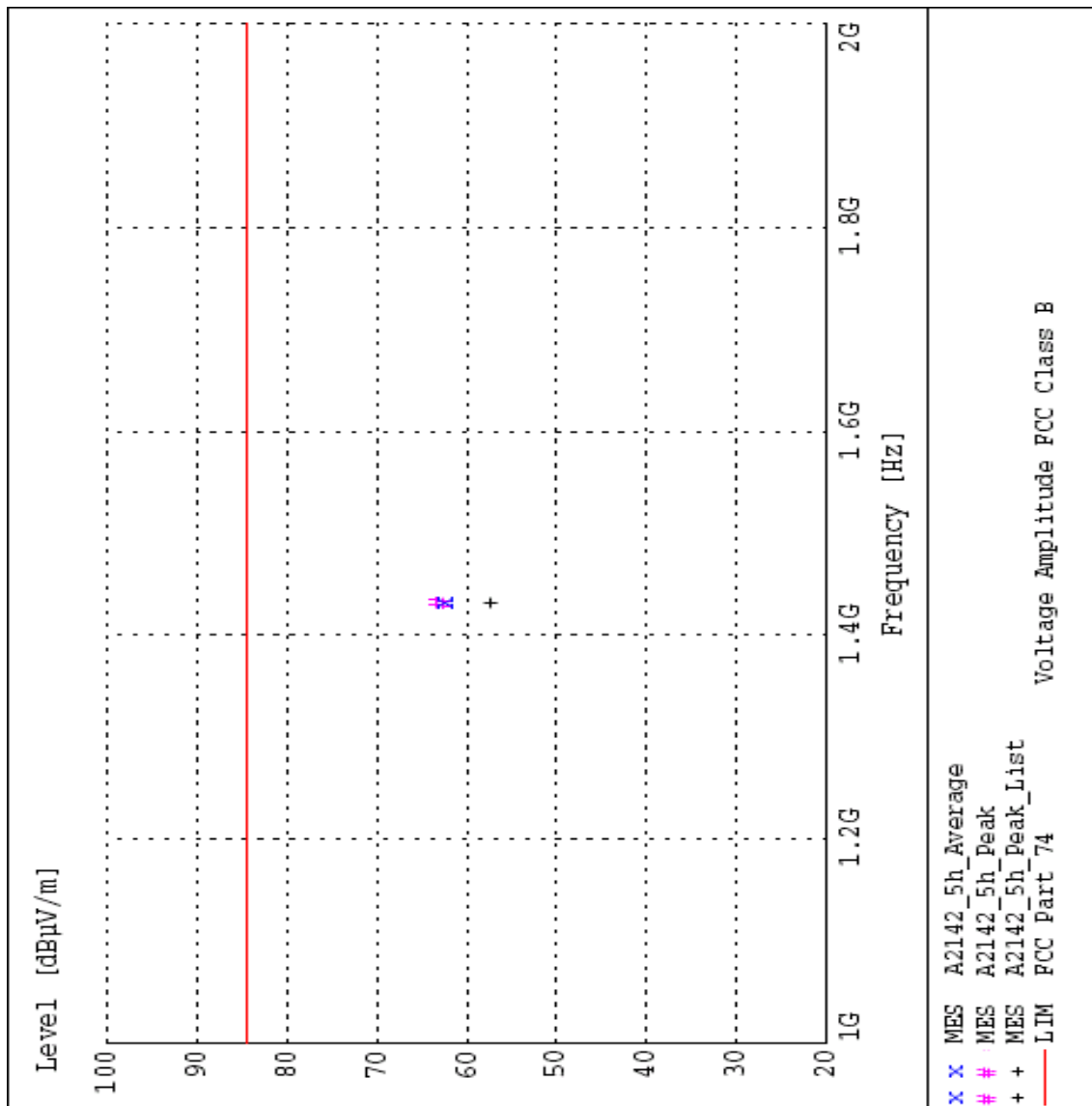
Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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HIGH CHANNEL / CHL 0, GRP 1 / 715.5 MHz / HORIZONTAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2142_5h_Final"

2/14/03 10:59AM									
Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Comment
MHz	dBμV	Factor	Loss	Level	dBμV/μ	dB	Ant.	Angle	
		dBμV/μ	dB	dBμV/μ	dBμV/μ		μ	deg	Detector
1431.000000	76.58	26.64	-40.3	63.0	84.4	21.4	1.10	270	MAX PEAK
1431.000000	76.05	26.64	-40.3	62.4	84.4	21.9	1.10	270	AVERAGE
									None
									None

HIGH CHANNEL / CHL 0, GRP 1 / 715.5 MHz / HORIZONTAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

FCC Part 74

Electric Field Strength

EUT: MX692-UB
Manufacturer: Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification: CHL 0, GRP 1 715.5 MHz
Comment: 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 --- EMC0 3115 SN: 9903-5731
Pre-Amps ---
1 - 10 GHz -- Miteq AMP-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMP-6P-100200-50-10P SN: 668382

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

HIGH CHANNEL / CHL 0, GRP 1 / 715.5 MHz / HORIZONTAL



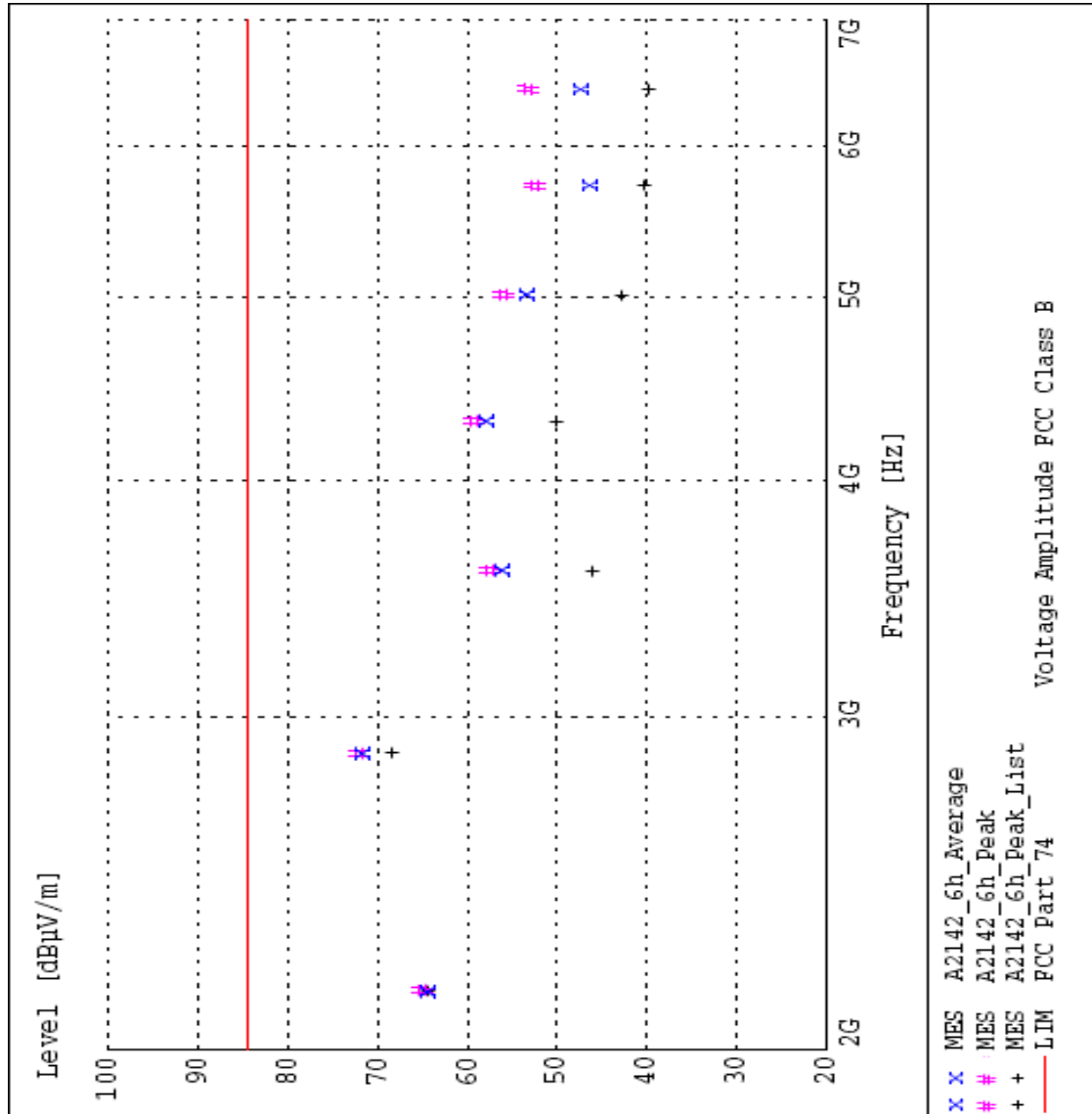
Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



HIGH CHANNEL / CHL 0, GRP 1 / 715.5 MHz / HORIZONTAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2142_6h_Final"

2/14/03 12:26PM	Frequency	Level	Antenna Factor	Systm Loss	Total Level	Limit	Margin	Height Ant.	EuT Angle	Final Detector	Comment
	MHz	dBuV	dBuV/u	dE	dBuV/u	dBuV/u	dE	m	deg		
	2862.000000	80.60	31.28	-40.0	71.8	84.4	12.5	1.00	0	MAX PEAK	None
	2862.000000	80.41	31.28	-40.0	71.6	84.4	12.7	1.00	0	AVERAGE	None
	2146.500000	75.25	29.57	-39.9	64.9	84.4	19.5	1.00	45	MAX PEAK	None
	2146.500000	74.87	29.57	-39.9	64.5	84.4	19.9	1.00	45	AVERAGE	None
	4293.000000	63.19	34.11	-38.2	59.1	84.4	25.3	1.00	315	MAX PEAK	None
	4293.000000	61.97	34.11	-38.2	57.9	84.4	26.5	1.00	315	AVERAGE	None
	3577.500000	63.35	33.05	-39.1	57.3	84.4	27.0	1.20	45	MAX PEAK	None
	3577.500000	62.02	33.05	-39.1	56.0	84.4	28.4	1.20	45	AVERAGE	None
	5008.500000	58.53	35.12	-37.8	55.8	84.4	28.6	1.00	0	MAX PEAK	None
	5008.500000	56.00	35.12	-37.8	53.3	84.4	31.1	1.00	0	AVERAGE	None
	6439.500000	54.48	36.36	-37.7	53.2	84.4	31.2	1.80	0	MAX PEAK	None
	5734.000000	53.49	36.41	-37.4	52.5	84.4	31.9	1.00	0	MAX PEAK	None
	6439.500000	48.71	36.36	-37.7	47.4	84.4	37.0	1.80	0	AVERAGE	None
	5734.000000	47.42	36.41	-37.4	46.4	84.4	38.0	1.00	0	AVERAGE	None

HIGH CHANNEL / CHL 0, GRP 1 / 715.5 MHz / HORIZONTAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

FCC Part 74

Electric Field Strength

EUT: MX692-UB
Manufacturer: Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification: CHL 0, GRP 1 715.5 MHz
Comment: 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 --- EMC0 3115 SN: 9903-5731

Pre-Amps ---

1 - 10 GHz -- Miteq AMP-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMP-6P-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 / 715.5 MHz / HORIZONTAL



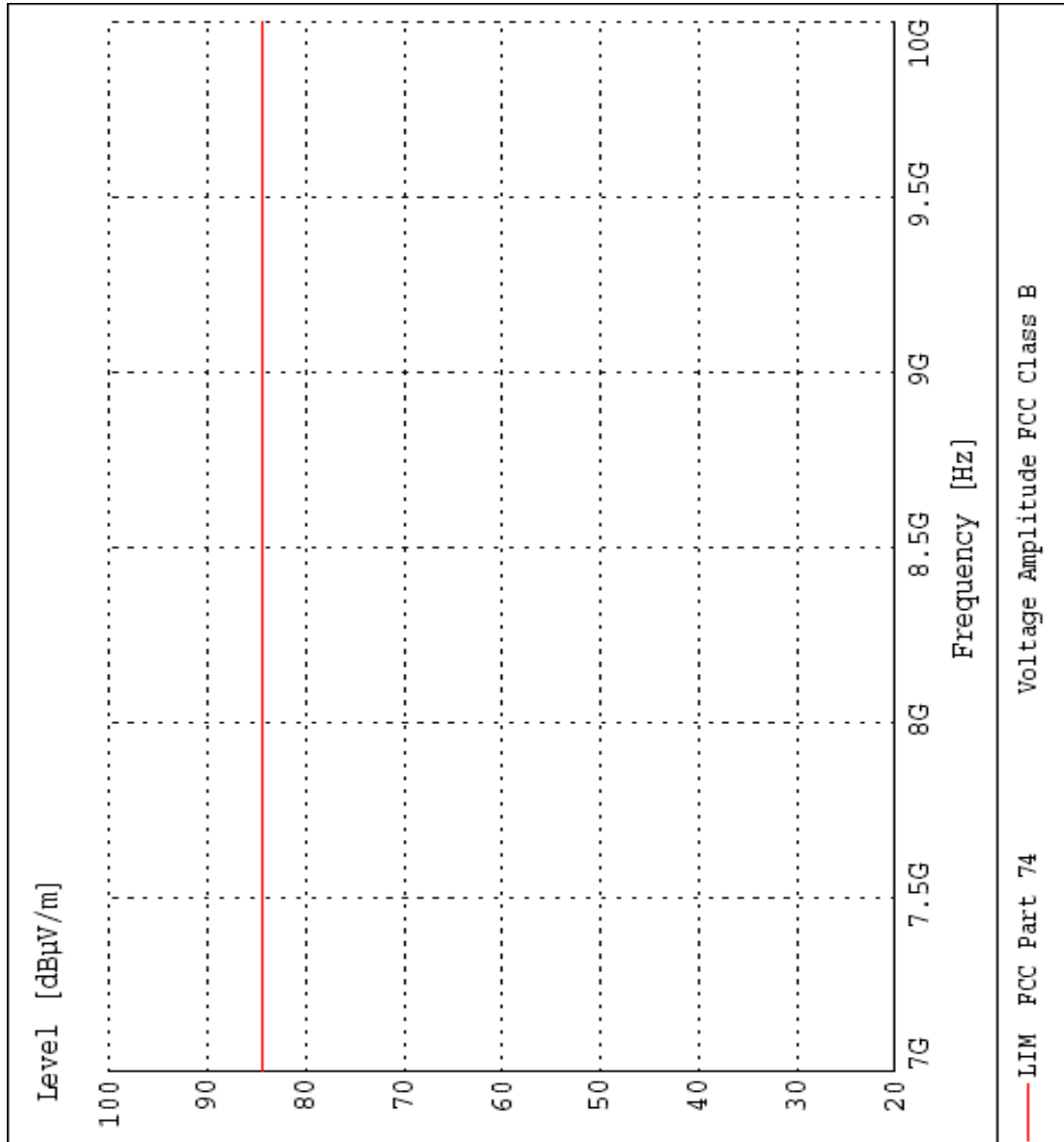
Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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HIGH CHANNEL / CHL 0, GRP 1 / 715.5 MHz / HORIZONTAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

“RADIATED DATA

AND

CHARTS TAKEN DURING TESTING”

LOW CHANNEL 692.5 MHz



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

FCC Part 74

Electric Field Strength

EUT: MX692-UB
Manufacturer: Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification: CHL 1, GRP 1 692.5 MHz
Comment: 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: Euf Measured at 3 Meters with VERTICAL Antenna Polarisation

LOW CHANNEL / CHL 1, GRP 1 / 692.5 MHz / VERTICAL



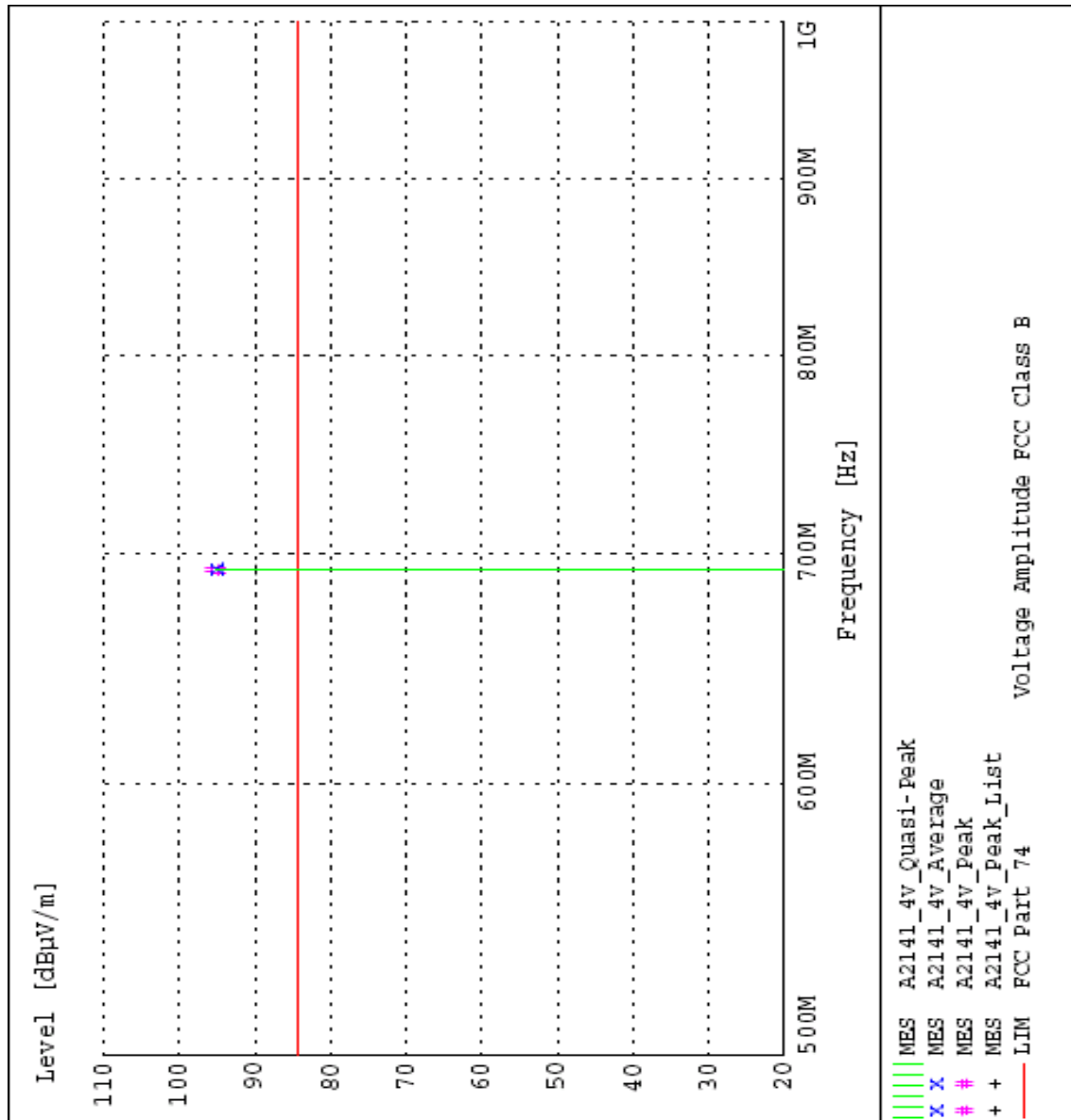
Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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LOW CHANNEL / CHL 1, GRP 1 / 692.5 MHz / VERTICAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2141_4v_Final"

2/14/03 8:55AM	Frequency	Level	Antenna	System	Total	Limit	Margin	Height	Buf	Final	Comment
	MHz	dBμV	Factor	Loss	Level	dBμV/μ	dE	Ant.	Angle	Detector	
			dBμV/μ	dE	dBμV/μ	dBμV/μ		μ	deg		
	692.480000	93.21	21.27	-19.3	95.1	84.4	-10.8	1.10	45	QUASI-PEAK	Fundamental
	692.480000	93.18	21.27	-19.3	95.1	84.4	-10.7	1.10	45	MAX PEAK	Fundamental
	692.480000	93.09	21.27	-19.3	95.0	84.4	-10.7	1.10	45	AVERAGE	Fundamental

LOW CHANNEL / CHL 1, GRP 1 / 692.5 MHz / VERTICAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

FCC Part 74

Electric Field Strength

EUT: MX692-UB
Manufacturer: Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: CHL 1, GRP 1 692.5 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 --- EMC0 3115 SN: 9903-5731

Pre-Amps ---

1 - 10 GHz -- Miteq AMP-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMP-6P-100200-50-10P SN: 668382

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

LOW CHANNEL / CHL 1, GRP 1 / 692.5 MHz / VERTICAL



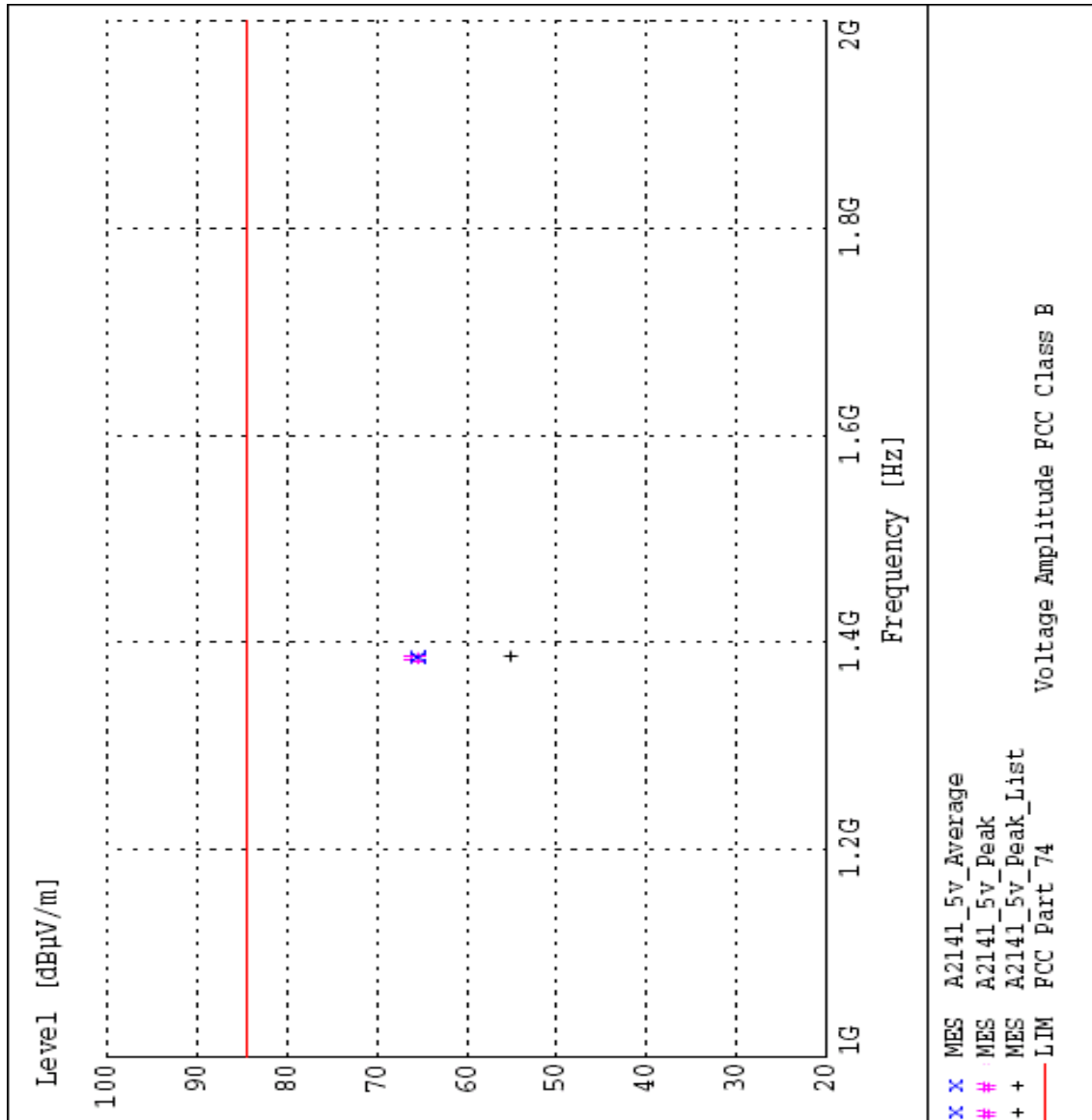
Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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LOW CHANNEL / CHL 1, GRP 1 / 692.5 MHz / VERTICAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2141_5v_Final"

2/14/03 9:18AM	Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
	MHz	dBμV	Factor	Loss	Level	dBμV/μ	dB	Ant.	Angle	Detector	
	1385.010000	79.68	26.46	-40.4	65.8	84.4	18.6	1.50	270	MAX PEAK	None
	1385.010000	79.22	26.46	-40.4	65.3	84.4	19.1	1.50	270	AVERAGE	None

LOW CHANNEL / CHL 1, GRP 1 / 692.5 MHz / VERTICAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

FCC Part 74

Electric Field Strength

EUT: MX692-UB
Manufacturer: Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification: CHL 1, GRP 1 692.5 MHz
Comment: 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 AMP-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMP-6P-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 / 692.5 MHz / VERTICAL



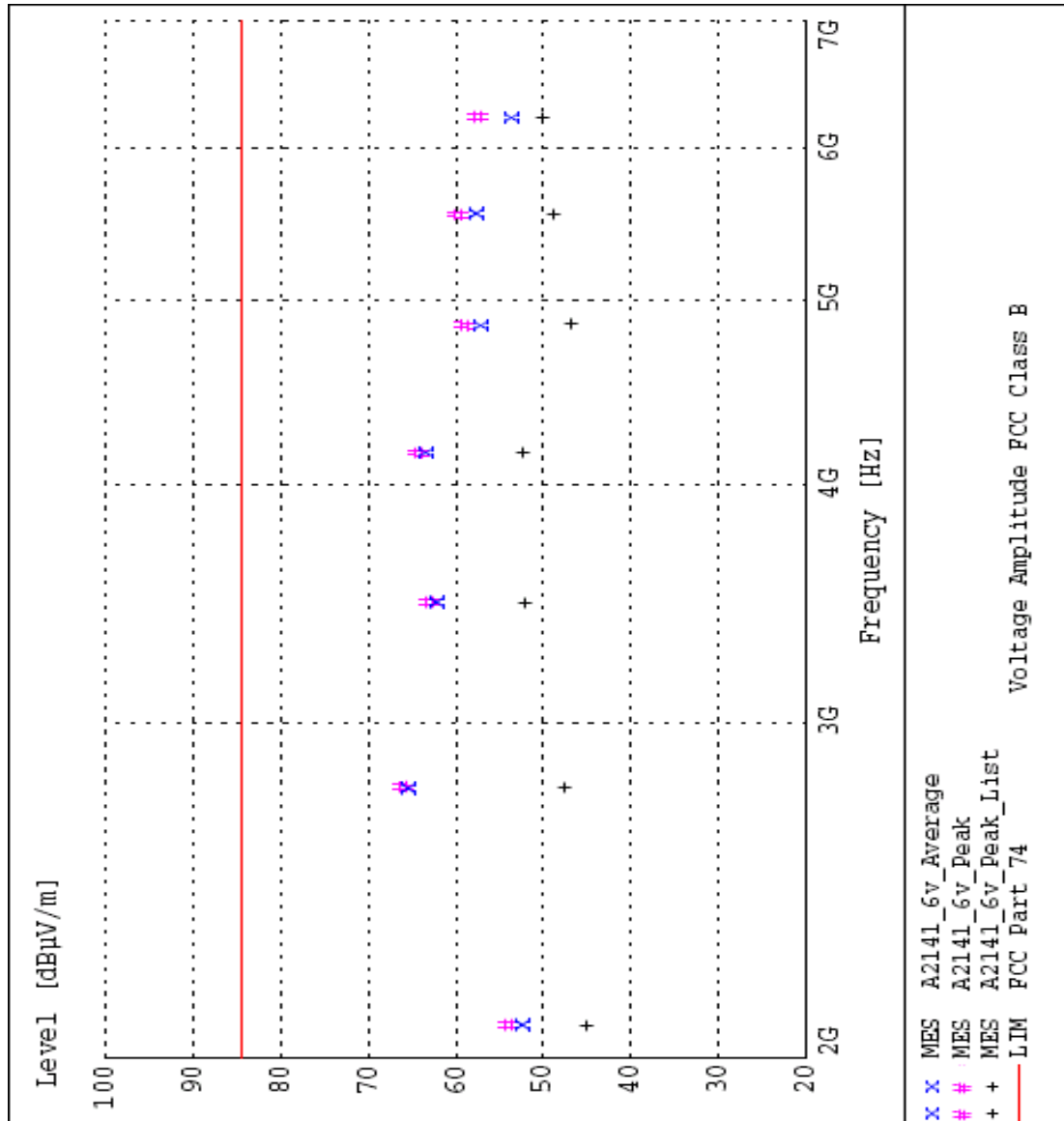
Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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LOW CHANNEL / CHL 1, GRP 1 / 692.5 MHz / VERTICAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2141_6v_Final"

Frequency MHz	Level dBμV	Antenna Factor dBμV/u	Systm Loss dB	Total Level dBμV/u	Limit dBμV/u	Margin dB	Height Ant. u	EuI Angle deg	Final Detector	Comment
2770.000000	74.73	31.13	-40.0	65.5	84.4	18.5	1.10	225	MAX PEAK	None
2770.000000	74.32	31.13	-40.0	65.5	84.4	18.5	1.10	225	AVERAGE	None
4155.000000	68.25	34.25	-38.3	64.2	84.4	20.2	1.00	0	MAX PEAK	None
4155.000000	67.46	34.25	-38.3	63.4	84.4	20.9	1.00	0	AVERAGE	None
3462.500000	69.24	32.70	-39.2	62.8	84.4	21.6	1.10	90	MAX PEAK	None
3462.500000	68.48	32.70	-39.2	62.0	84.4	22.3	1.10	90	AVERAGE	None
5540.000000	60.98	36.16	-37.4	59.7	84.4	24.7	1.00	315	MAX PEAK	None
4847.550000	61.95	34.73	-37.8	58.9	84.4	25.5	1.00	0	MAX PEAK	None
5540.000000	58.82	36.16	-37.4	57.5	84.4	26.8	1.00	315	AVERAGE	None
6232.500000	58.13	36.57	-37.4	57.3	84.4	27.1	1.00	270	MAX PEAK	None
4847.550000	60.23	34.73	-37.8	57.2	84.4	27.2	1.00	0	AVERAGE	None
2077.500000	64.24	29.35	-39.8	53.8	84.4	30.6	1.30	90	MAX PEAK	None
6232.500000	54.52	36.57	-37.4	53.7	84.4	30.7	1.00	270	AVERAGE	None
2077.500000	62.71	29.35	-39.8	52.3	84.4	32.1	1.30	90	AVERAGE	None

LOW CHANNEL / CHL 1, GRP 1 / 692.5 MHz / VERTICAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

FCC Part 74

Electric Field Strength

EUT: MX692-UB
Manufacturer: Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification: CHL 1, GRP 1 692.5 MHz
Comment: 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 AMP-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMP-6P-100200-50-10P SN: 668382

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

LOW CHANNEL / CHL 1, GRP 1 / 692.5 MHz / VERTICAL



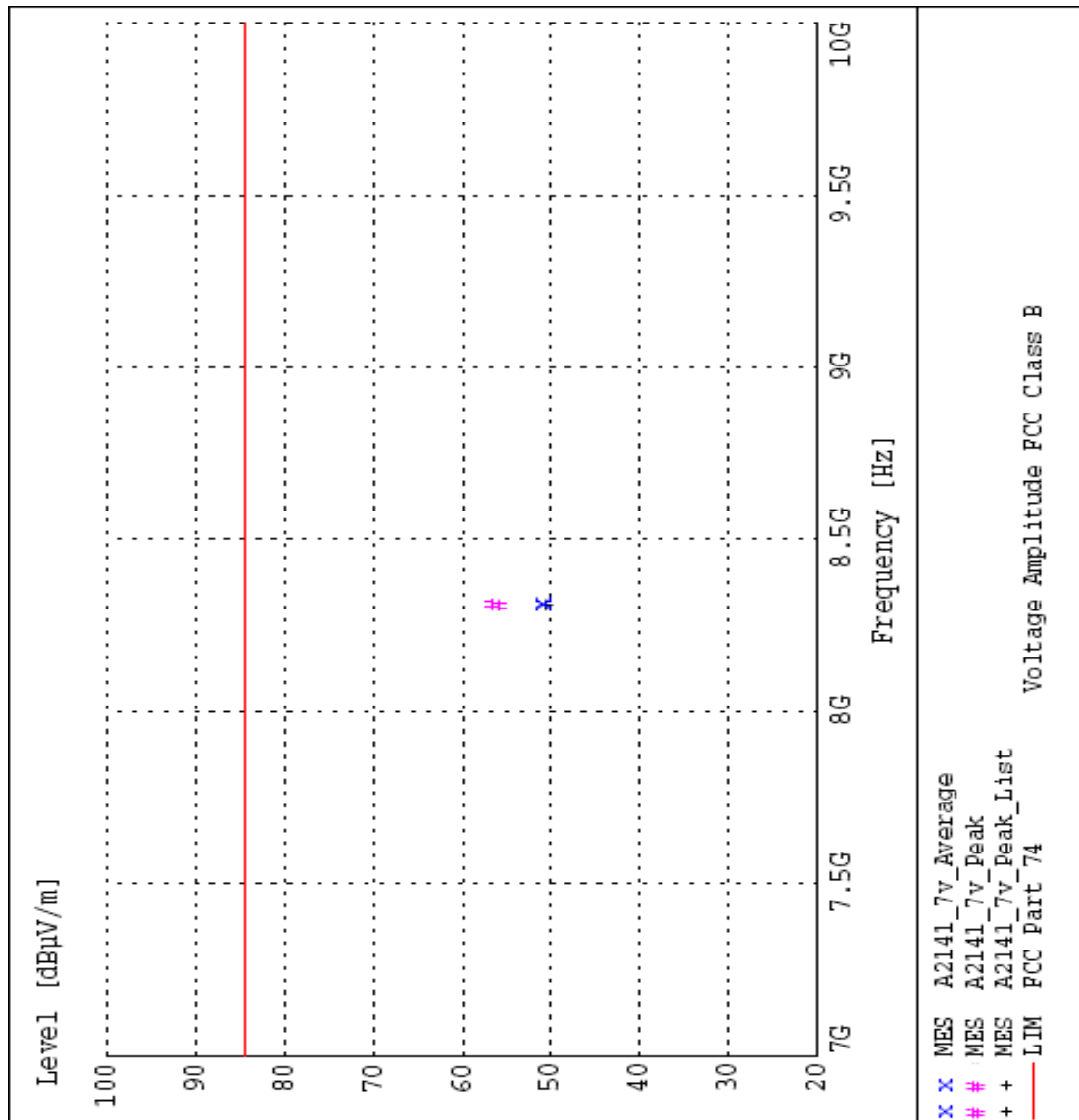
Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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LOW CHANNEL / CHL 1, GRP 1 / 692.5 MHz / VERTICAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2141_7v_Final"

2/14/03 10:14AM											
Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuF	Final	Comment	
MHz	dBμV	Factor	Loss	Level	dBμV/μ	dB	Ant.	Angle	Detector		
		dBμV/μ	dB	dBμV/μ	dBμV/μ		μ	deg			
8310.000000	52.93	37.65	-34.5	56.1	84.4	28.2	1.00	270	MAX PEAK	None	
8310.000000	47.67	37.65	-34.5	50.5	84.4	33.5	1.00	270	AVERAGE	None	

LOW CHANNEL / CHL 1, GRP 1 / 692.5 MHz / VERTICAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

FCC Part 74

Electric Field Strength

EUT: MX692-UB
Manufacturer: Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification: CHL 1, GRP 1 692.5 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 -- EMOD 3104C SN: 9701-4785
Log Periodic -- EMOD 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 / 692.5 MHz / HORIZONTAL



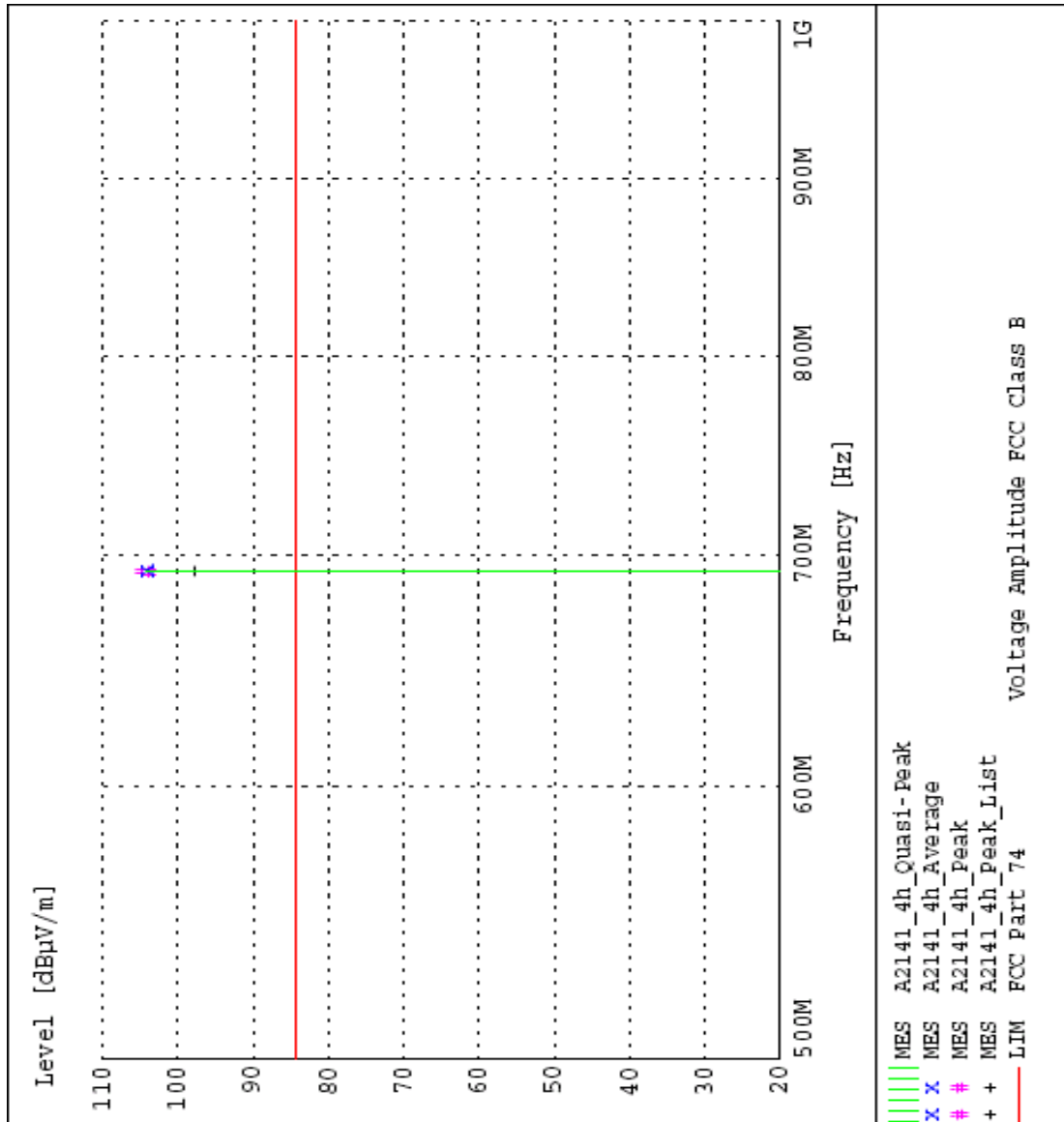
Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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LOW CHANNEL / CHL 1, GRP 1 / 692.5 MHz / HORIZONTAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2141_4h_Final"

Frequency MHz	Level dBμV	Antenna Factor dBμV/μ	System Loss dB	Total Level dBμV/μ	Limit dBμV/μ	Margin dB	Height Ant. m	Angle deg	Final Detector	Comment
692.480000	102.23	21.27	-19.3	104.2	84.4	-19.8	1.10	315	MAX PEAK	Fundamental
692.480000	102.20	21.27	-19.3	104.1	84.4	-19.8	1.10	315	QUASI-PEAK	Fundamental
692.480000	102.14	21.27	-19.3	104.1	84.4	-19.7	1.10	315	AVERAGE	Fundamental

LOW CHANNEL / CHL 1, GRP 1 / 692.5 MHz / HORIZONTAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

FCC Part 74

Electric Field Strength

EUT: MX692-UB
Manufacturer: Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification: CHL 1, GRP 1 692.5 MHz
Comment: 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 --- EMC0 3115 SN: 9903-5731

Pre-Amps ---

1 - 10 GHz -- Miteq AMP-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMP-6P-100200-50-10P SN: 668382

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

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LOW CHANNEL / CHL 1, GRP 1 / 692.5 MHz / HORIZONTAL



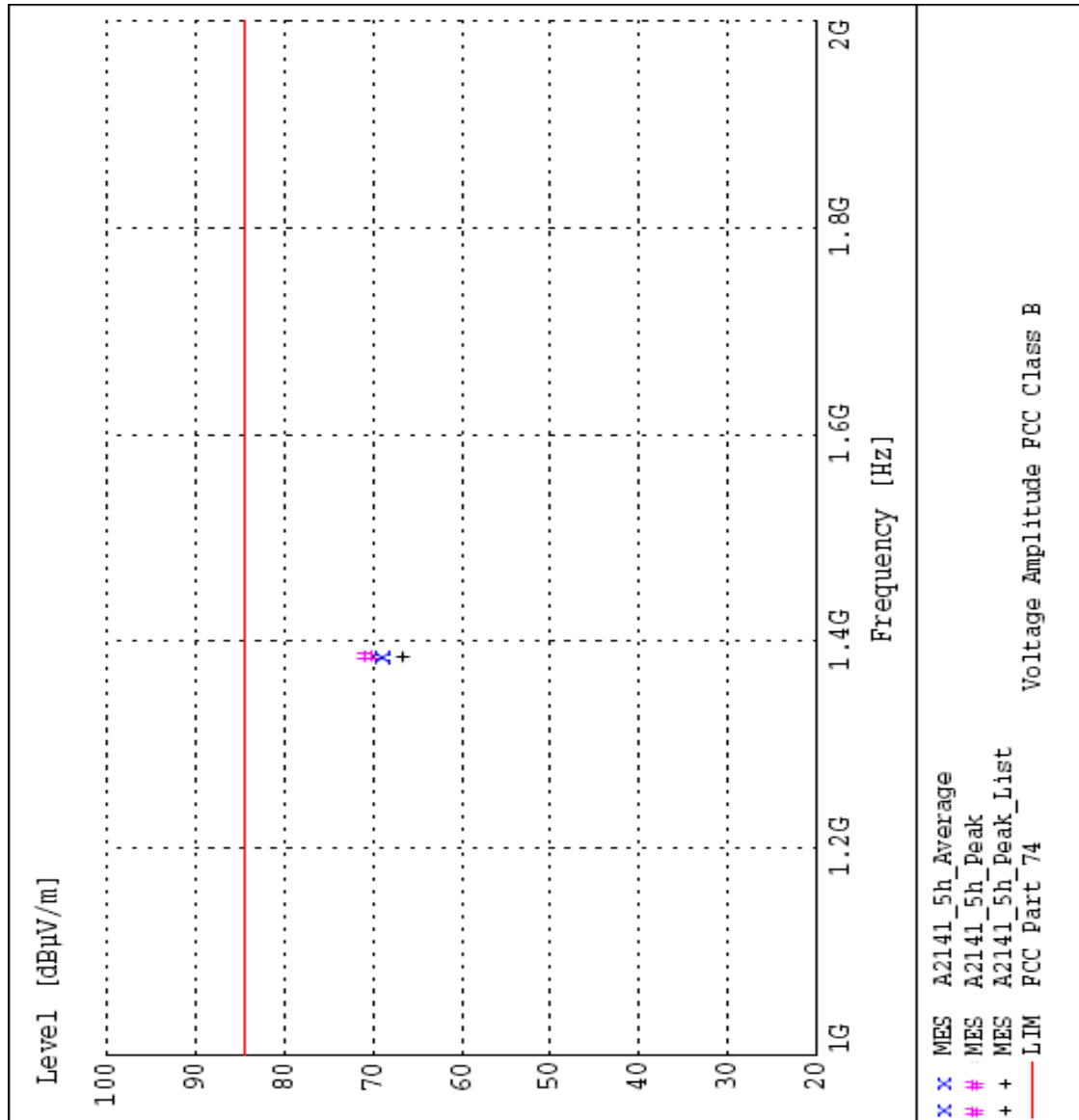
Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



Page 2/3 2/18/03 9:18AM A2141_5h_print

LOW CHANNEL / CHL 1, GRP 1 / 692.5 MHz / HORIZONTAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2141_5h_Final"

Frequency MHz	Level dBμV	Antenna Factor dBμV/μ	System Loss dB	Total Level dBμV/μ	Limit dBμV/μ	Margin dB	Height Ant. m	Angle deg	Final Detector	Comment
1384.990000	84.30	26.46	-40.4	70.4	84.4	14.0	1.30	270	MAX PEAK	None
1384.990000	82.92	26.46	-40.4	69.0	84.4	15.4	1.30	270	AVERAGE	None

LOW CHANNEL / CHL 1, GRP 1 / 692.5 MHz / HORIZONTAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

FCC Part 74

Electric Field Strength

EUT: MX692-UB
Manufacturer: Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification: CHL 1, GRP 1 692.5 MHz
Comment: Date: 2/14/2003

TEXT: "Site 3 5731&184 H3M"

Short Description: Test Set-up Horz1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837908/006

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

Pre-Amps ---

1 - 10 GHz -- Miteq AMP-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMP-6P-100200-50-10P SN: 668382

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

LOW CHANNEL / CHL 1, GRP 1 / 692.5 MHz / HORIZONTAL



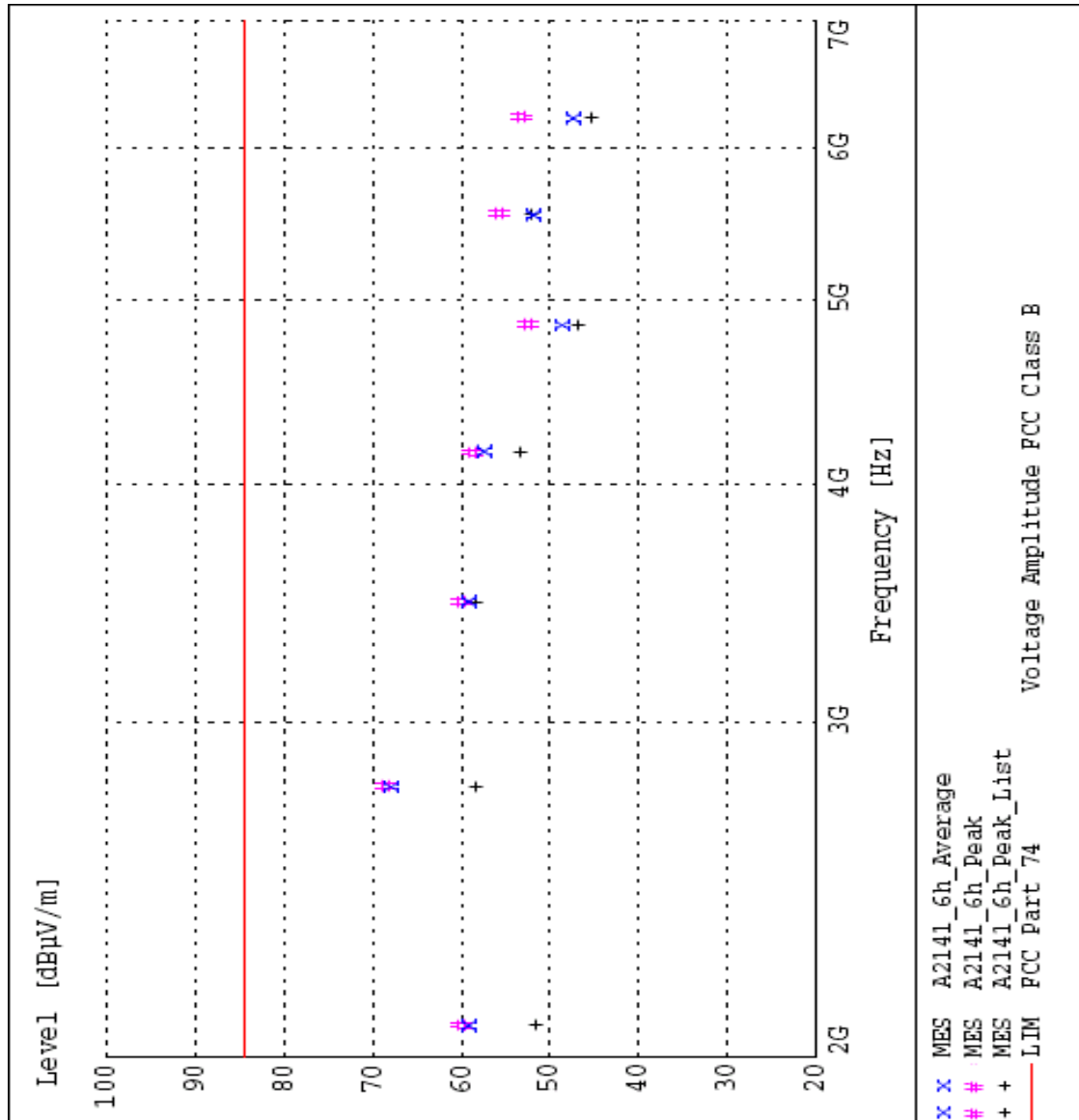
Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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LOW CHANNEL / CHL 1, GRP 1 / 692.5 MHz / HORIZONTAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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ELECTRIC FIELD RADIATED EMISSIONS TEST

MEASUREMENT RESULT: "A2141_6h_Final"

2/14/03 10:10AM	Frequency MHz	Level dBμV	Antenna Factor dBμV/m	System Loss dB	Total Level dBμV/m	Limit dBμV/m	Margin dB	Height Ant. m	EuI Angle deg	Final Detector	Comment
	2770.000000	77.17	31.13	-40.0	68.3	84.4	16.0	1.10	0	MAX PEAK	None
	2770.000000	76.80	31.13	-40.0	68.0	84.4	16.4	1.10	0	AVERAGE	None
	2077.500000	70.40	29.35	-39.8	60.0	84.4	24.4	1.00	270	MAX PEAK	None
	3462.500000	66.34	32.70	-39.2	59.9	84.4	24.5	1.10	350	MAX PEAK	None
	2077.500000	69.66	29.35	-39.8	59.2	84.4	25.1	1.00	270	AVERAGE	None
	3462.500000	65.47	32.70	-39.2	59.0	84.4	25.3	1.10	350	AVERAGE	None
	4155.000000	62.76	34.25	-38.3	58.7	84.4	25.6	1.60	270	MAX PEAK	None
	4155.000000	61.40	34.25	-38.3	57.4	84.4	27.0	1.60	270	AVERAGE	None
	5540.000000	56.81	36.16	-37.4	55.5	84.4	28.8	1.00	270	MAX PEAK	None
	6232.450000	53.93	36.57	-37.4	53.1	84.4	31.3	1.00	180	MAX PEAK	None
	4847.500000	55.32	34.73	-37.8	52.3	84.4	32.1	1.00	90	MAX PEAK	None
	5540.000000	53.27	36.16	-37.4	52.0	84.4	32.4	1.00	270	AVERAGE	None
	4847.500000	51.68	34.73	-37.8	48.6	84.4	35.7	1.00	90	AVERAGE	None
	6232.450000	48.26	36.57	-37.4	47.4	84.4	36.9	1.00	180	AVERAGE	None

LOW CHANNEL / CHL 1, GRP 1 / 692.5 MHz / HORIZONTAL



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FCC Part 74

Electric Field Strength

EUT: MX692-UB
Manufacturer: Shure Inc.
Operating Condition: 68 deg F; 22% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification: CHL 1, GRP 1 692.5 MHz
Comment: Date: 2/14/2003

TEXT: "Site 3 5731&184 H3M"

Short Description: Test Set-up Horiz1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

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

Pre-Amps ---

1 - 10 GHz -- Miteq AMP-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMP-6P-100200-50-10P SN: 668382

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

LOW CHANNEL / CHL 1, GRP 1 / 692.5 MHz / HORIZONTAL



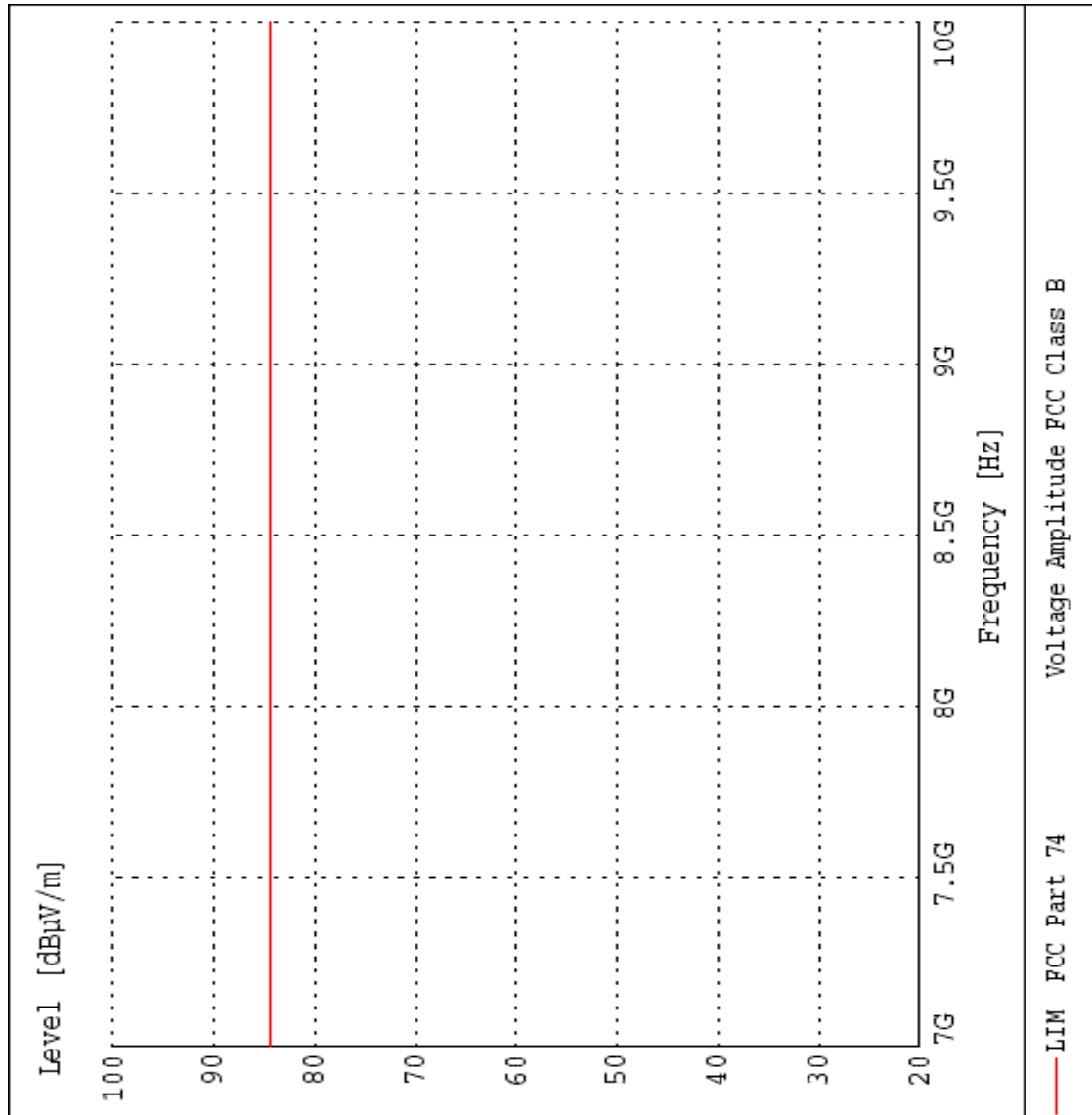
Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST



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LOW CHANNEL / CHL 1, GRP 1 / 692.5 MHz / HORIZONTAL



Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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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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TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

RADIATED CHARTS TAKEN FOR FREQUENCY STABILITY WHEN VARYING THE TEMPERATURE

PART 2.995a



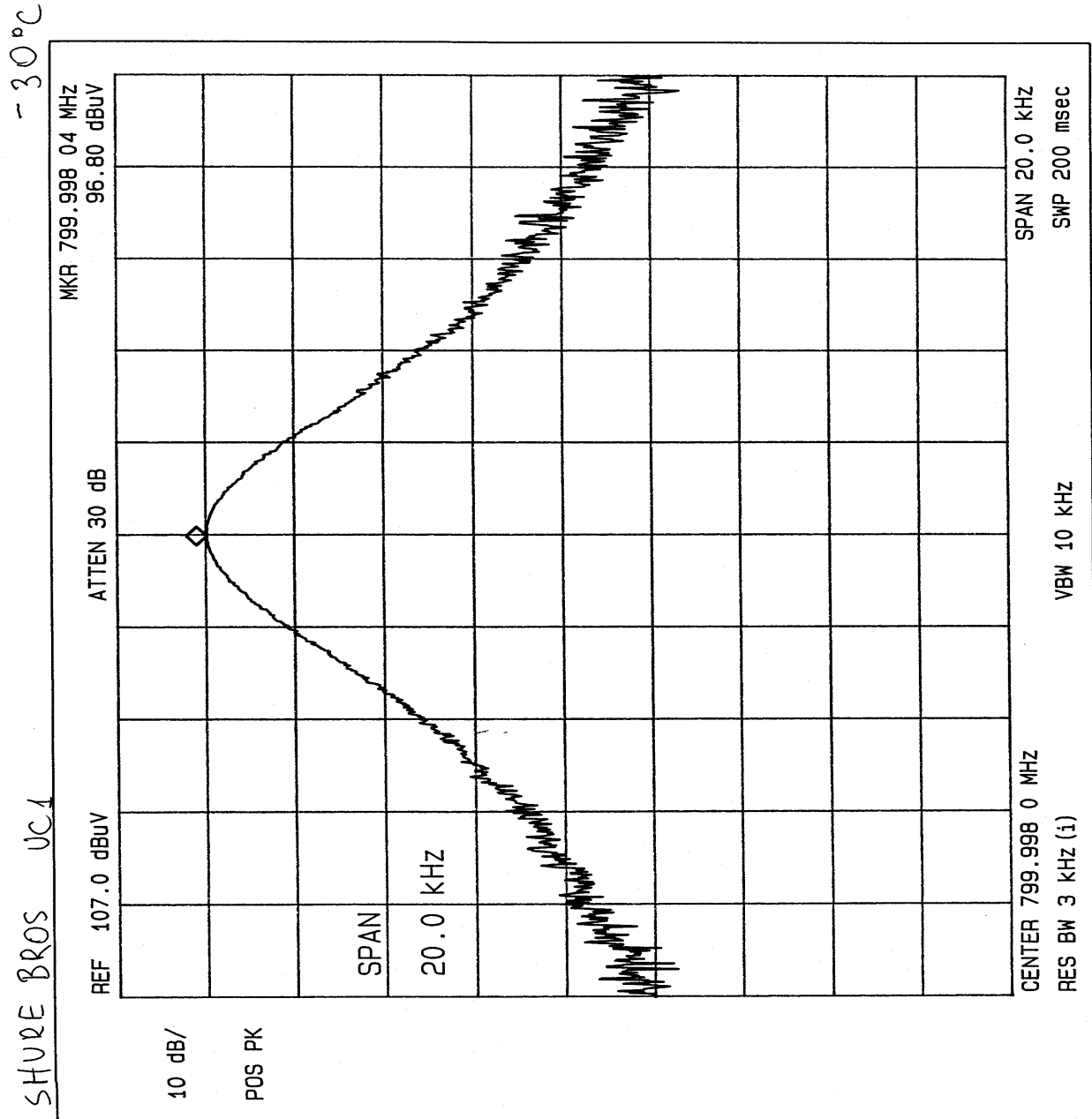
Company: Shure Inc.
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TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST





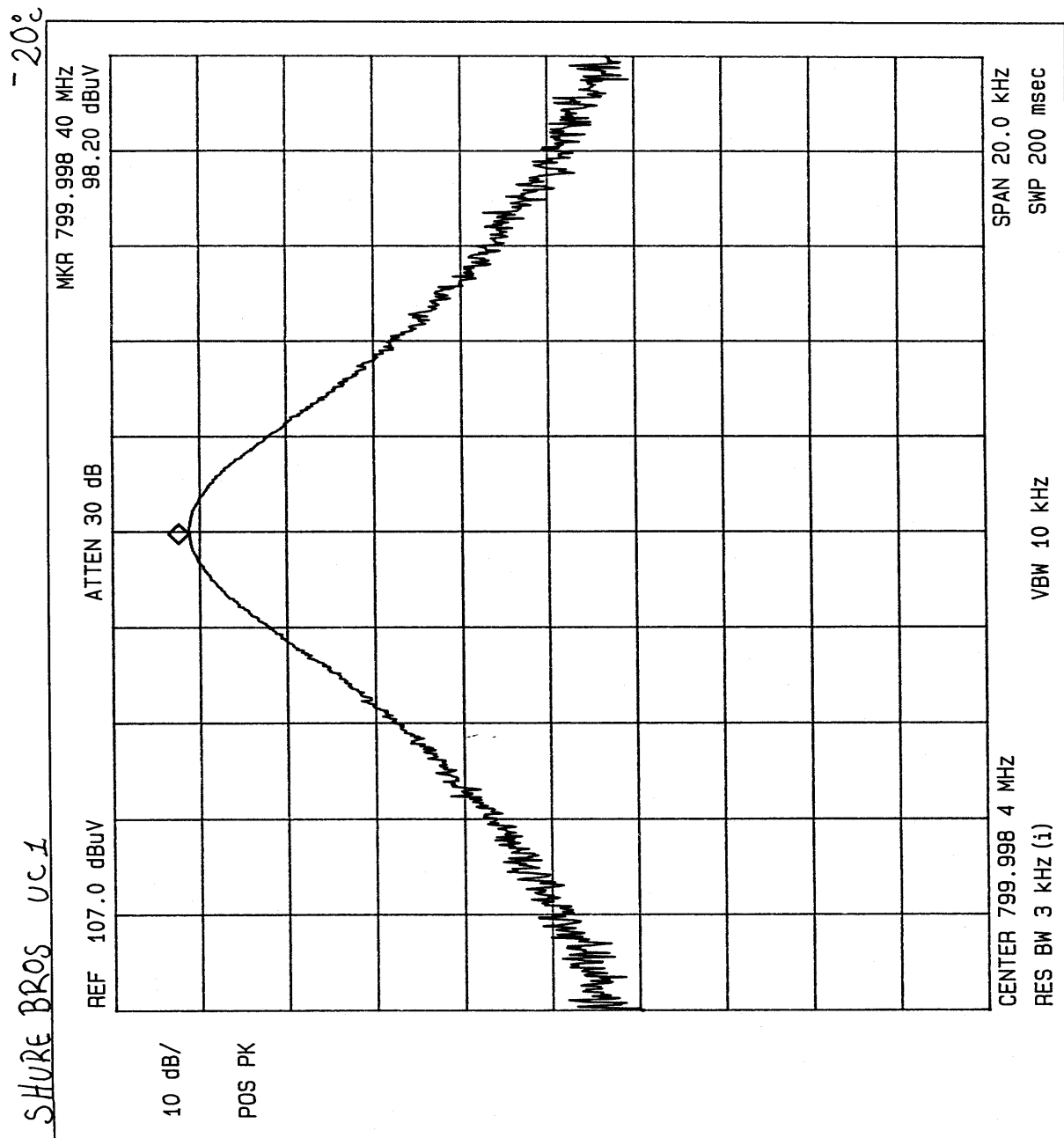
Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST





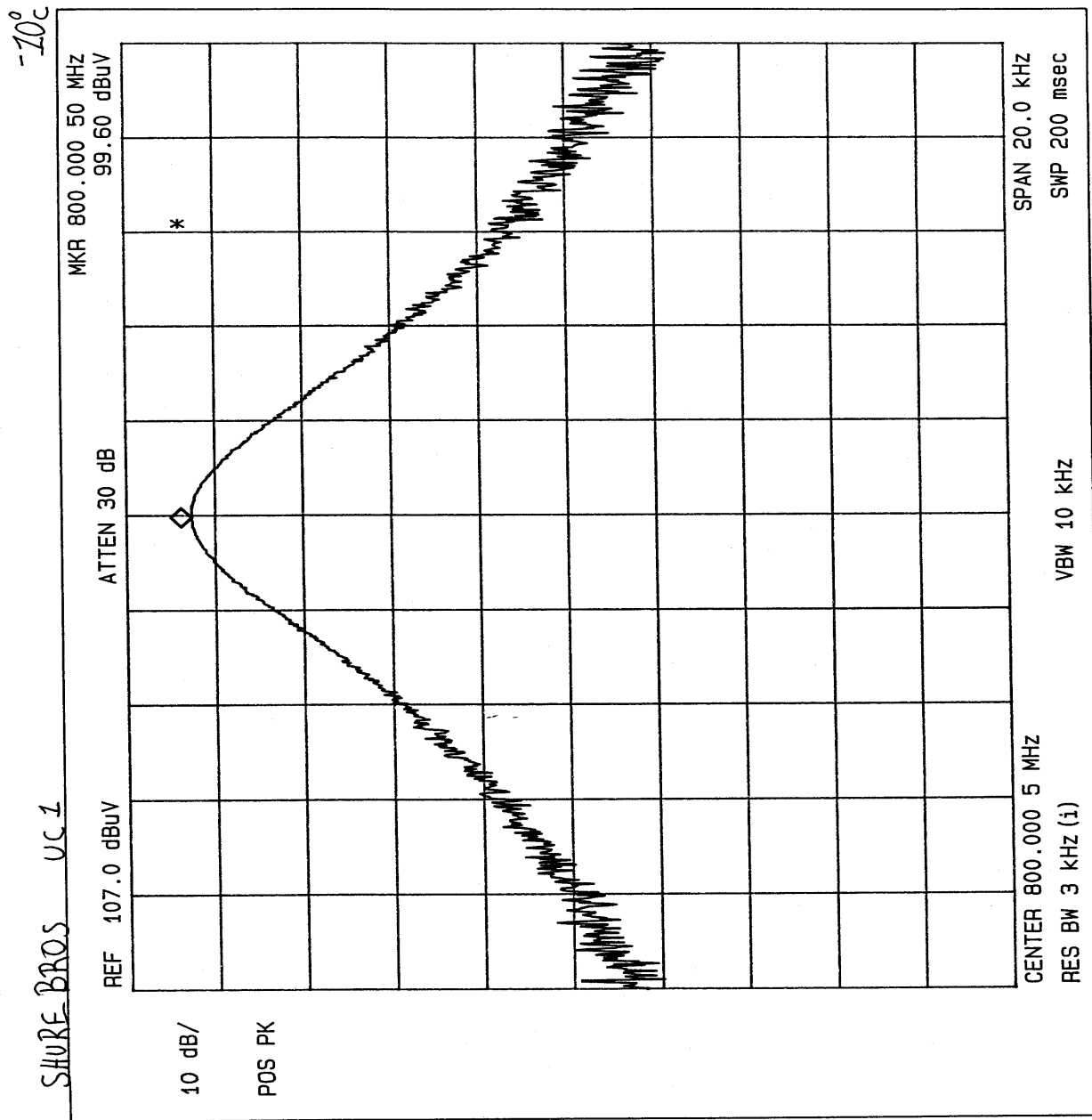
Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST





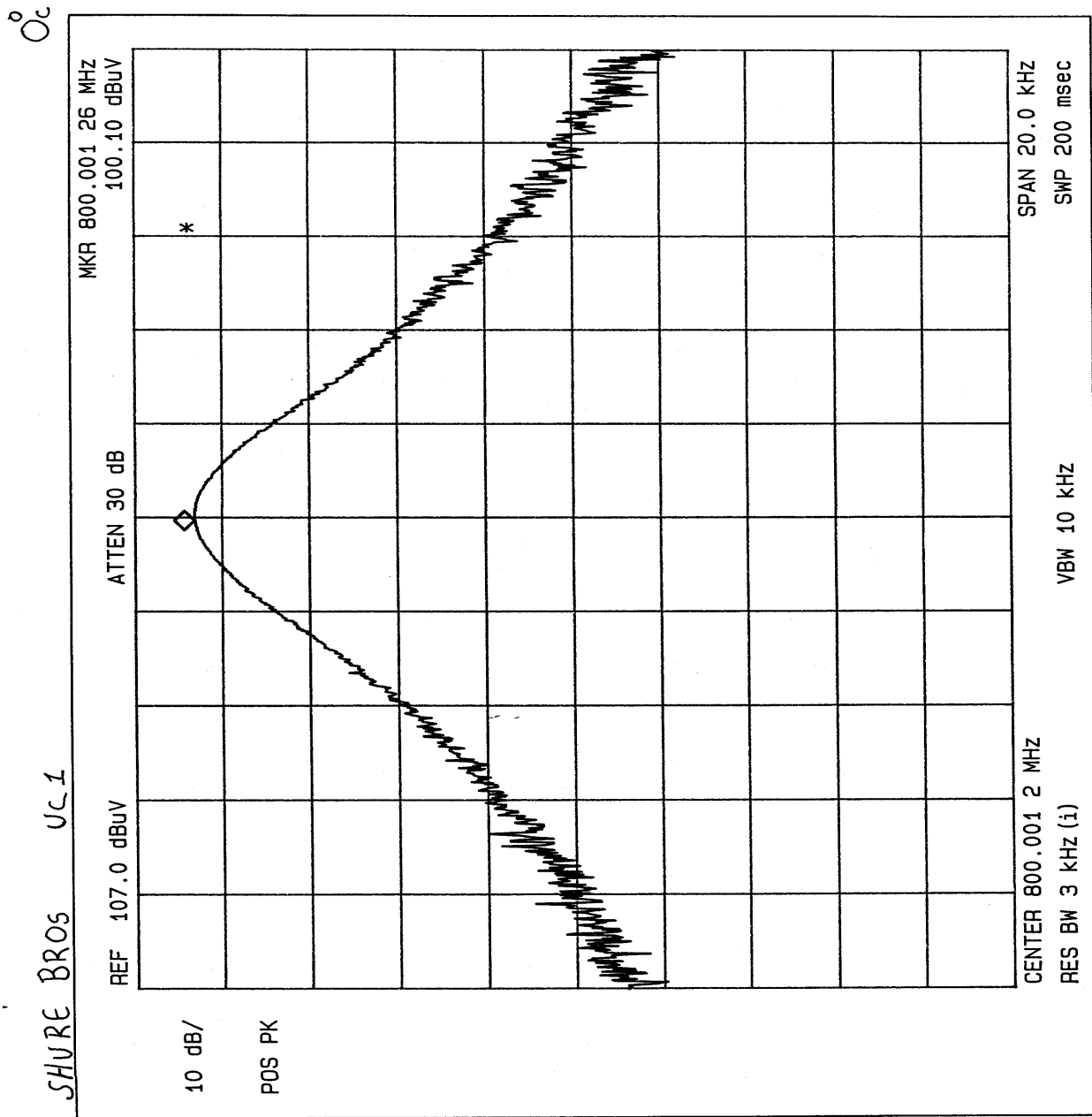
Company: Shure Inc.
Model Tested: MX692/C-UB
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TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST





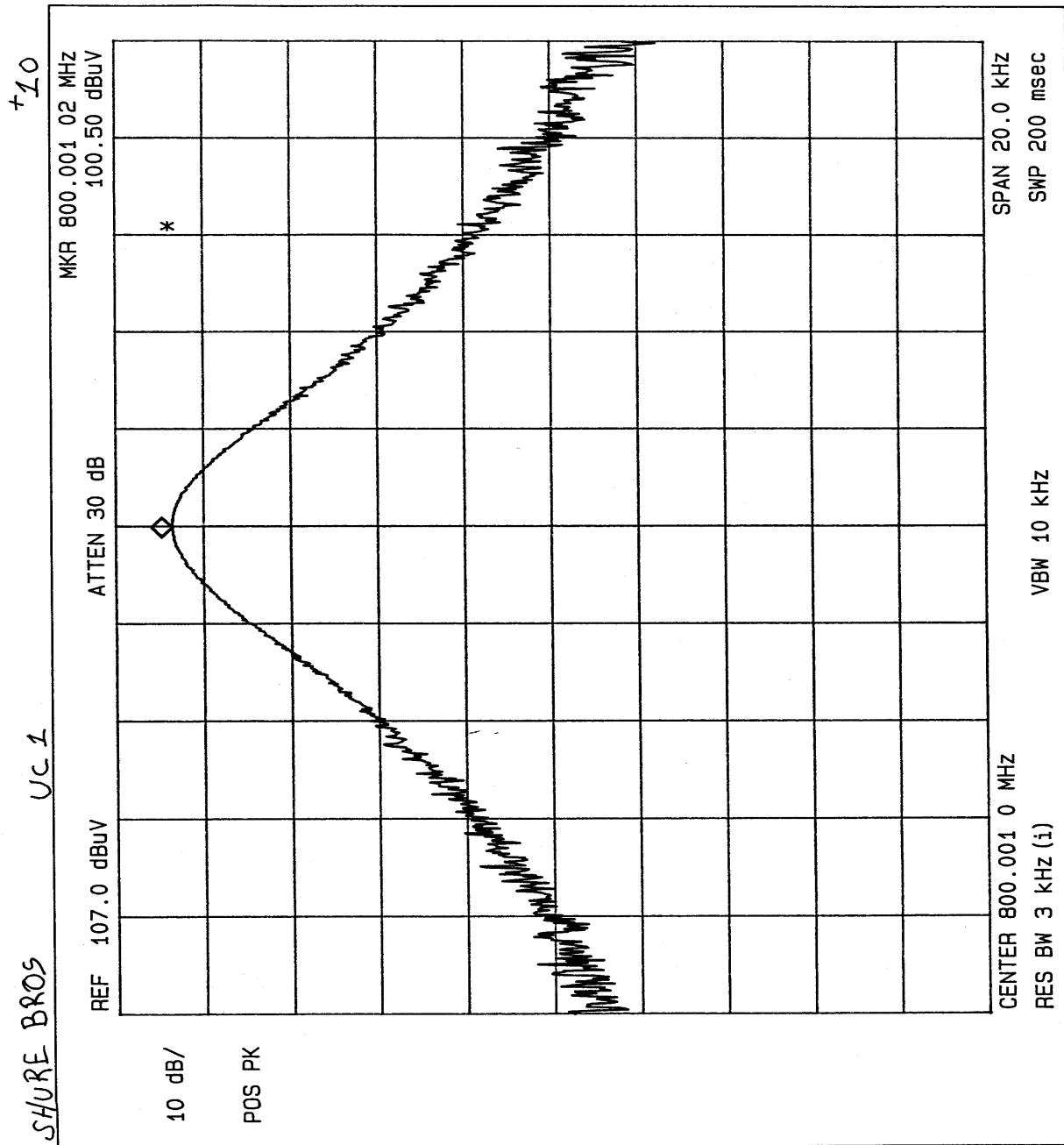
Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST





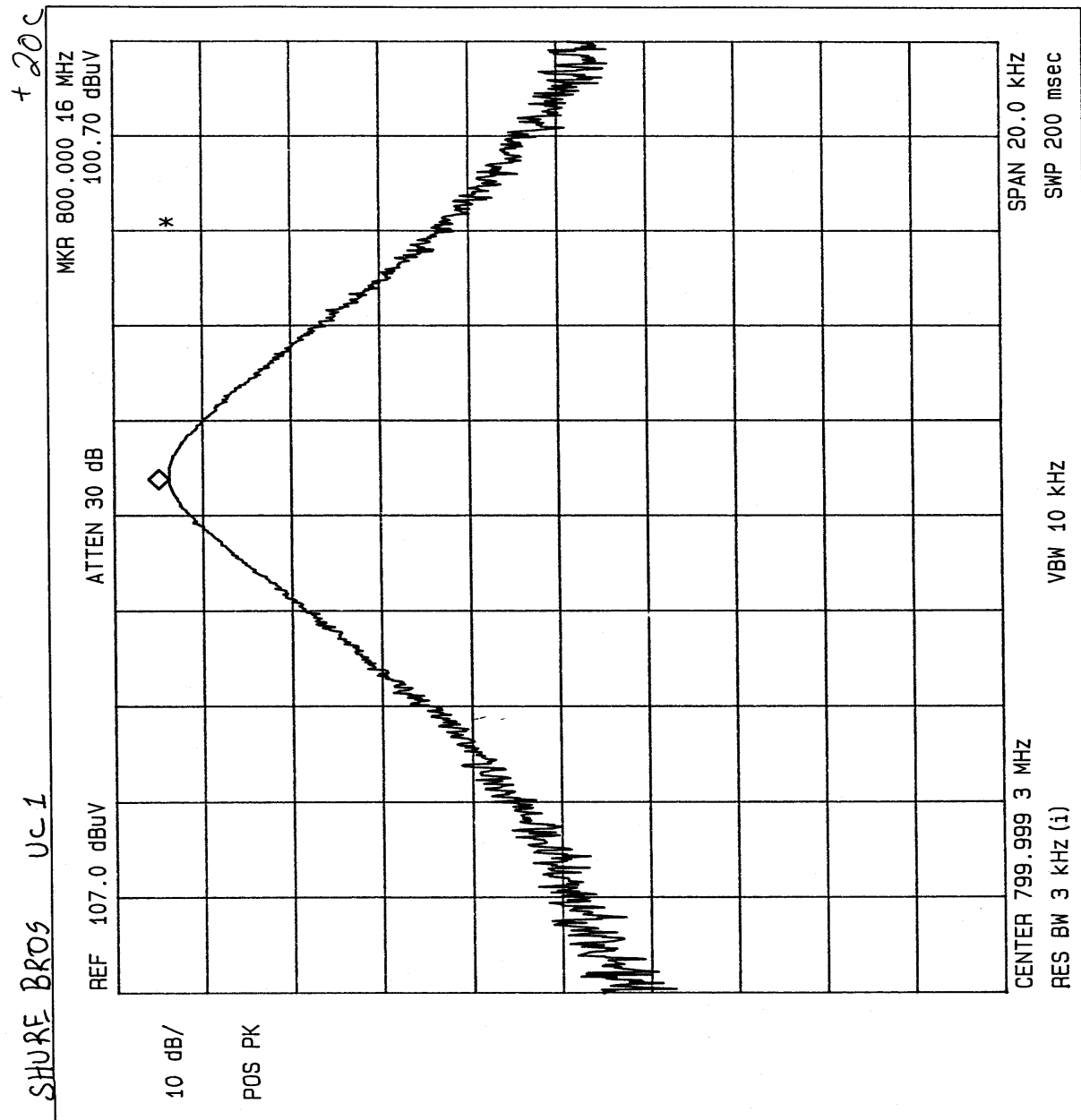
Company: Shure Inc.
Model Tested: MX692/C-UB
Report Number: 10102

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TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST





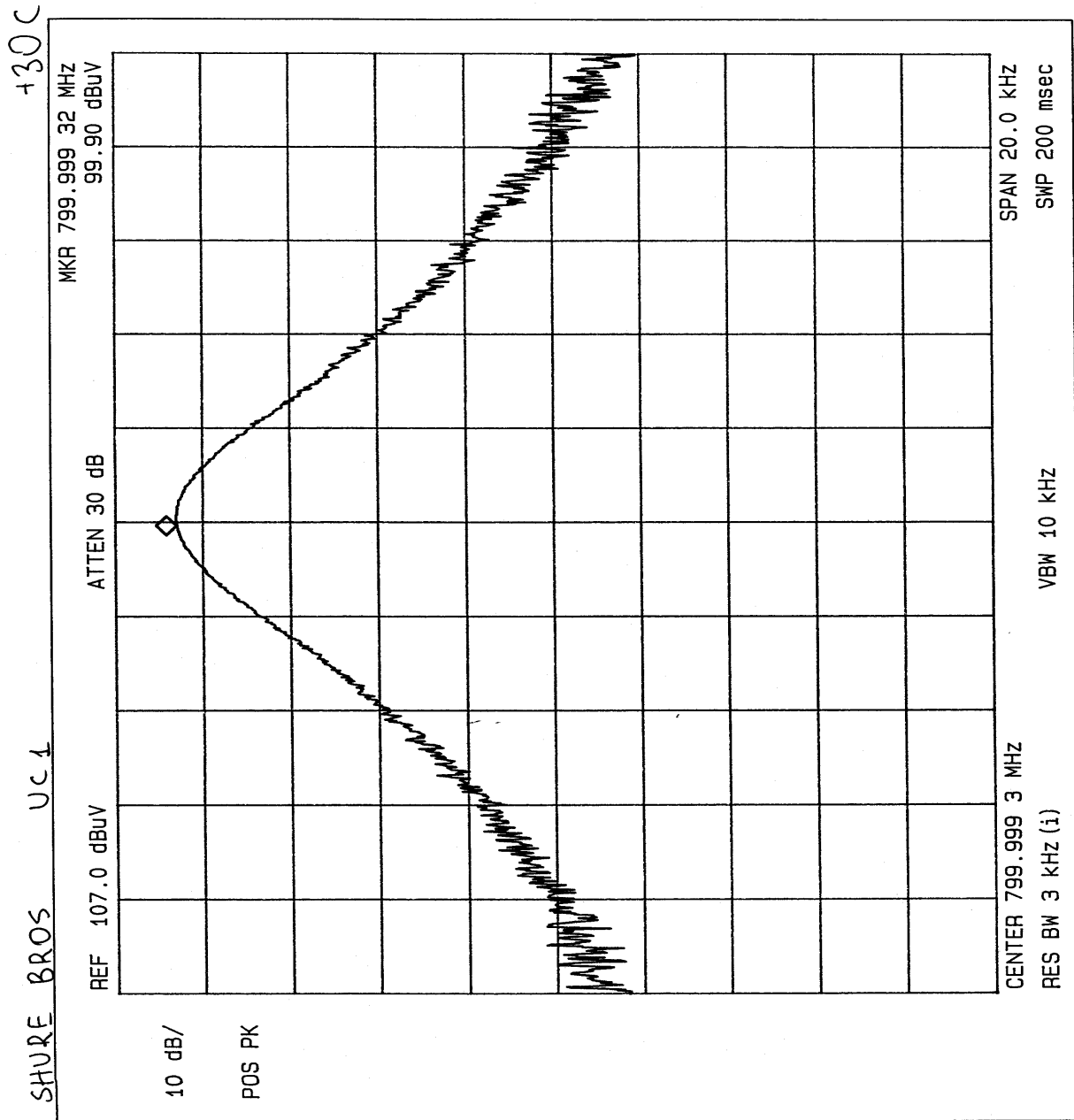
Company: Shure Inc.
Model Tested: MX692/C-UB
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TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST





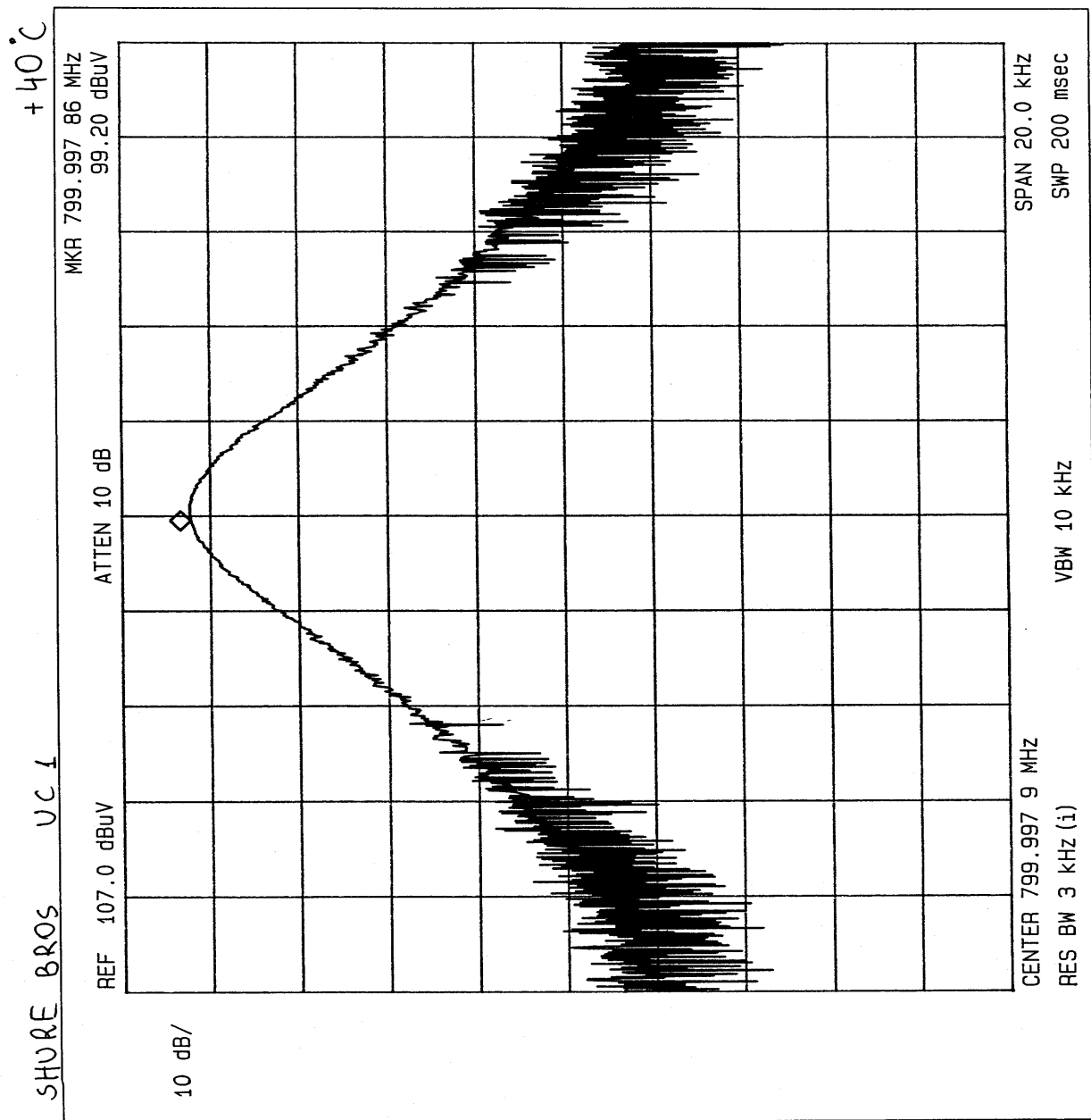
Company: Shure Inc.
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ELECTRIC FIELD RADIATED EMISSIONS TEST





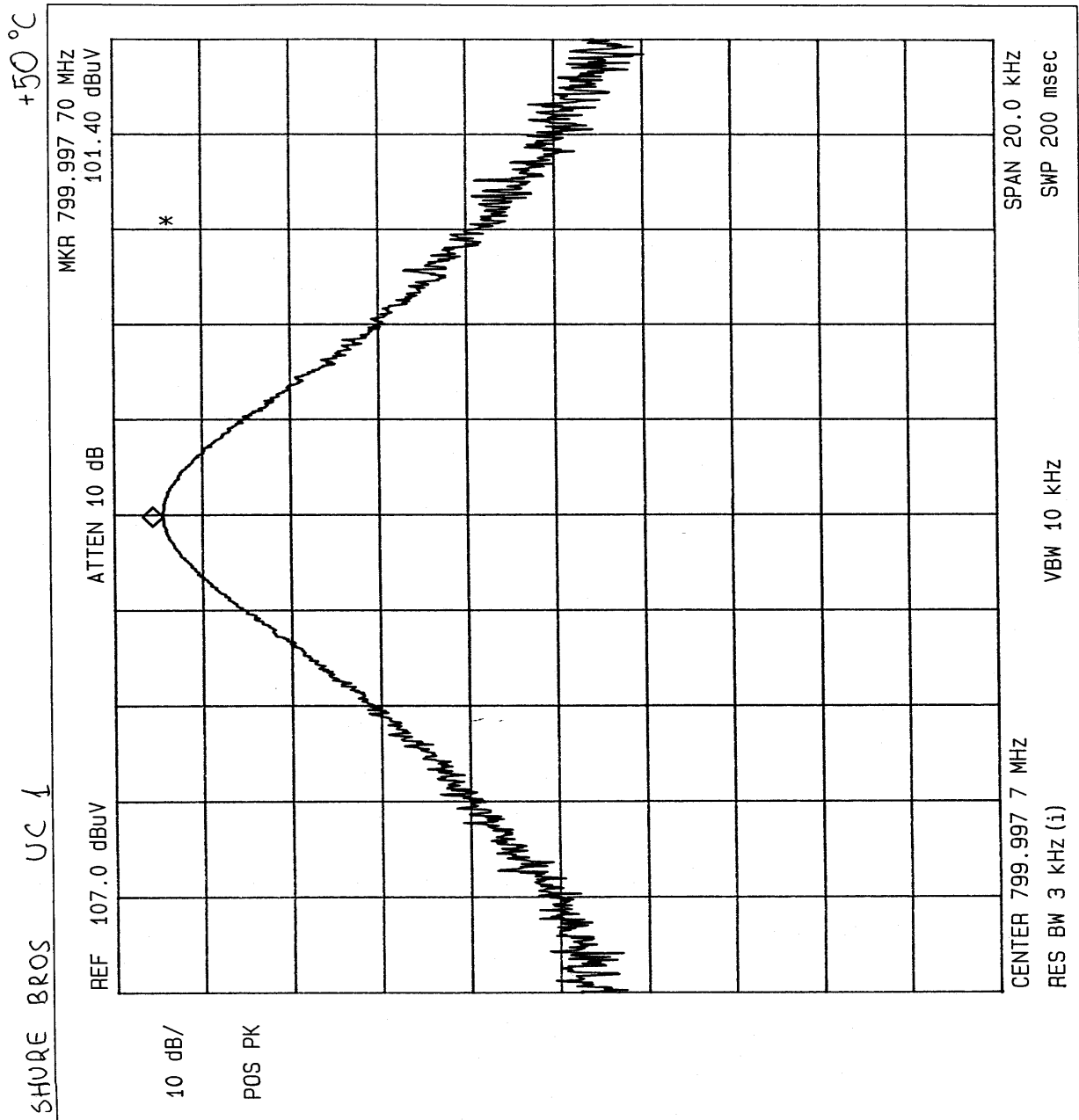
Company: Shure Inc.
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Company: Shure Inc.
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TEST PROCEDURE

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 versus 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:



Company: Shure Inc.
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ELECTRIC FIELD RADIATED EMISSIONS TEST

RADIATED CHARTS TAKEN FOR FREQUENCY

STABILITY WHEN VARYING THE

PRIMARY SUPPLY VOLTAGE

PART 2.995d



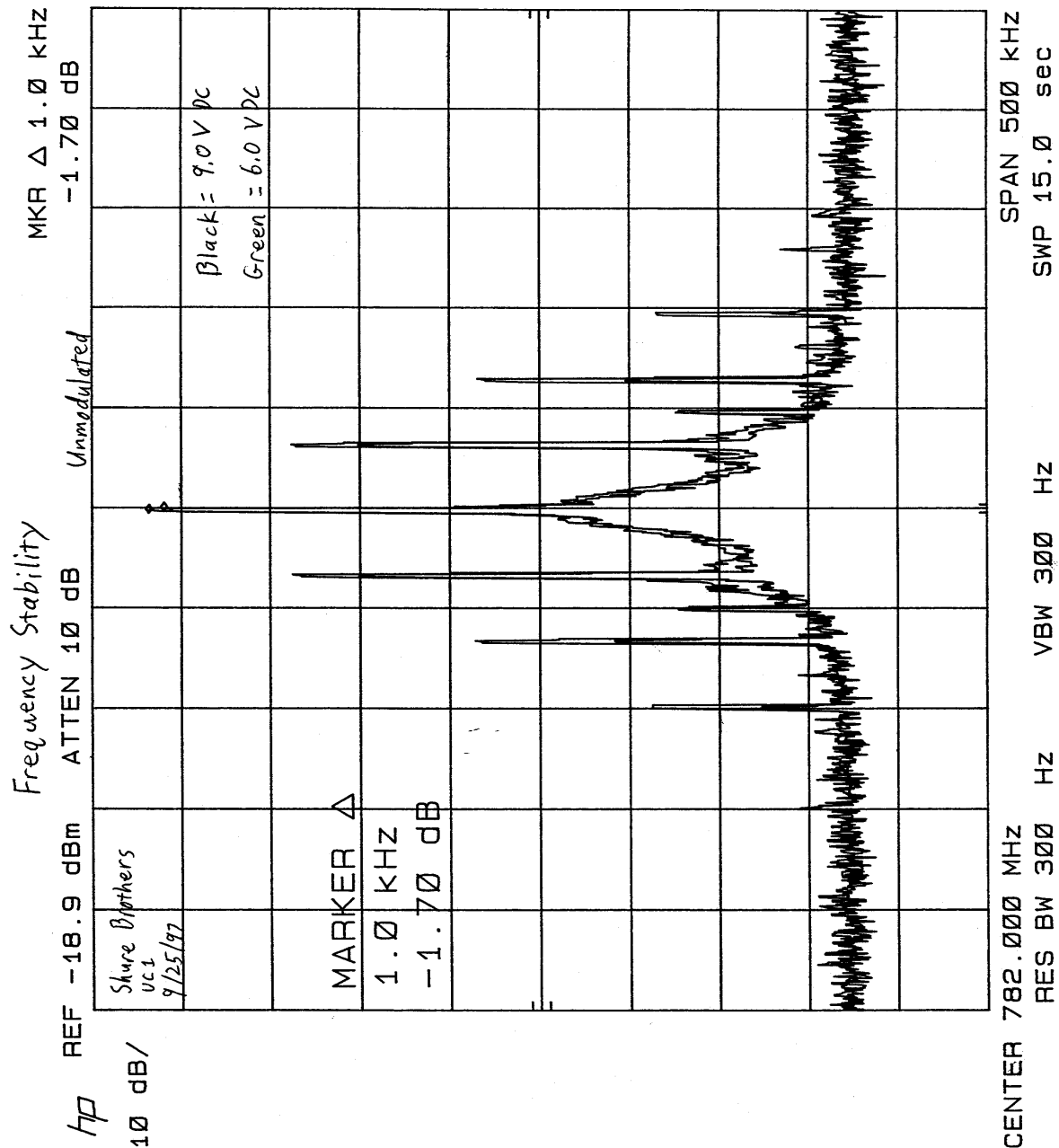
Company: Shure Inc.
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ELECTRIC FIELD RADIATED EMISSIONS TEST





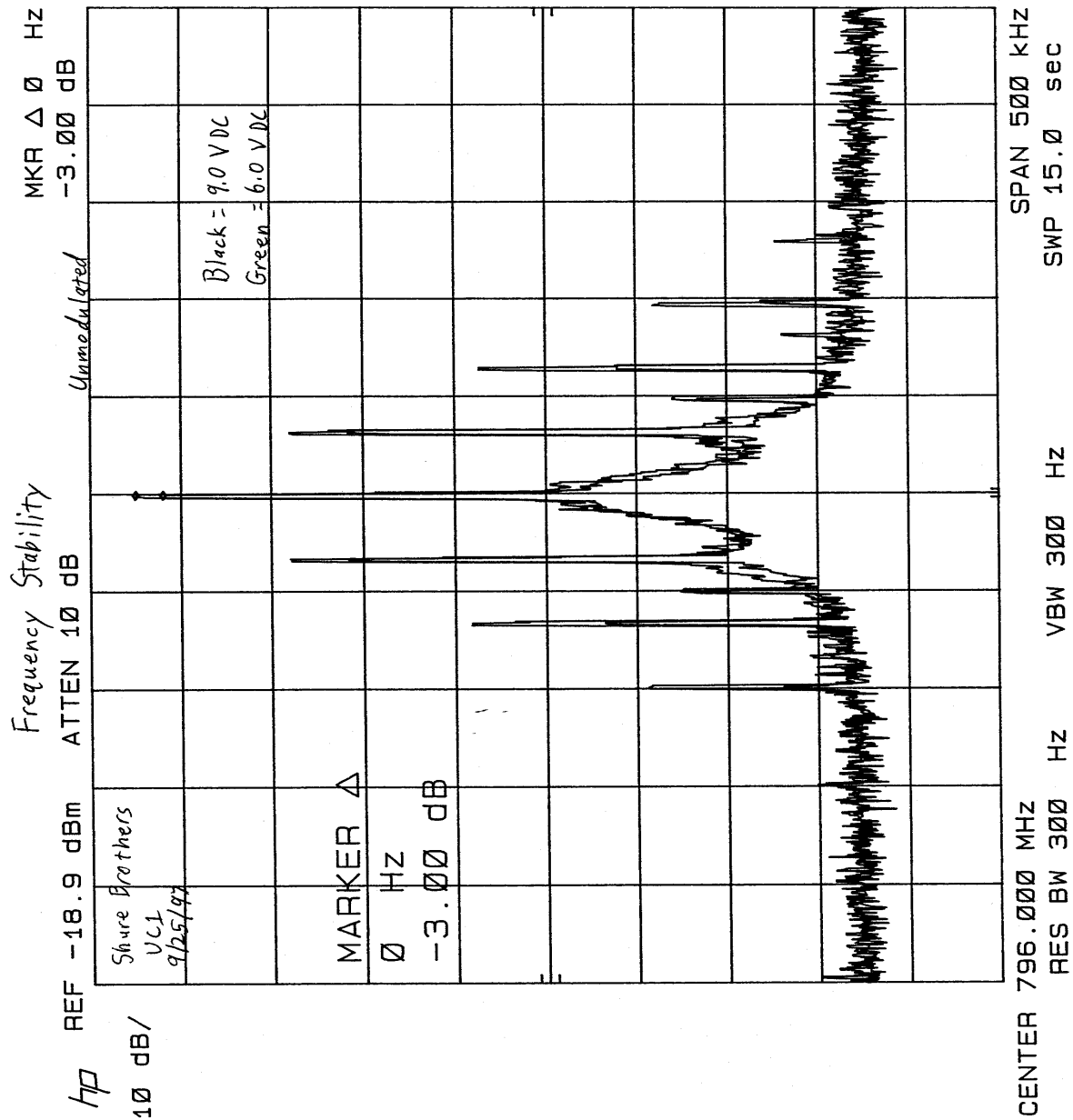
Company: Shure Inc.
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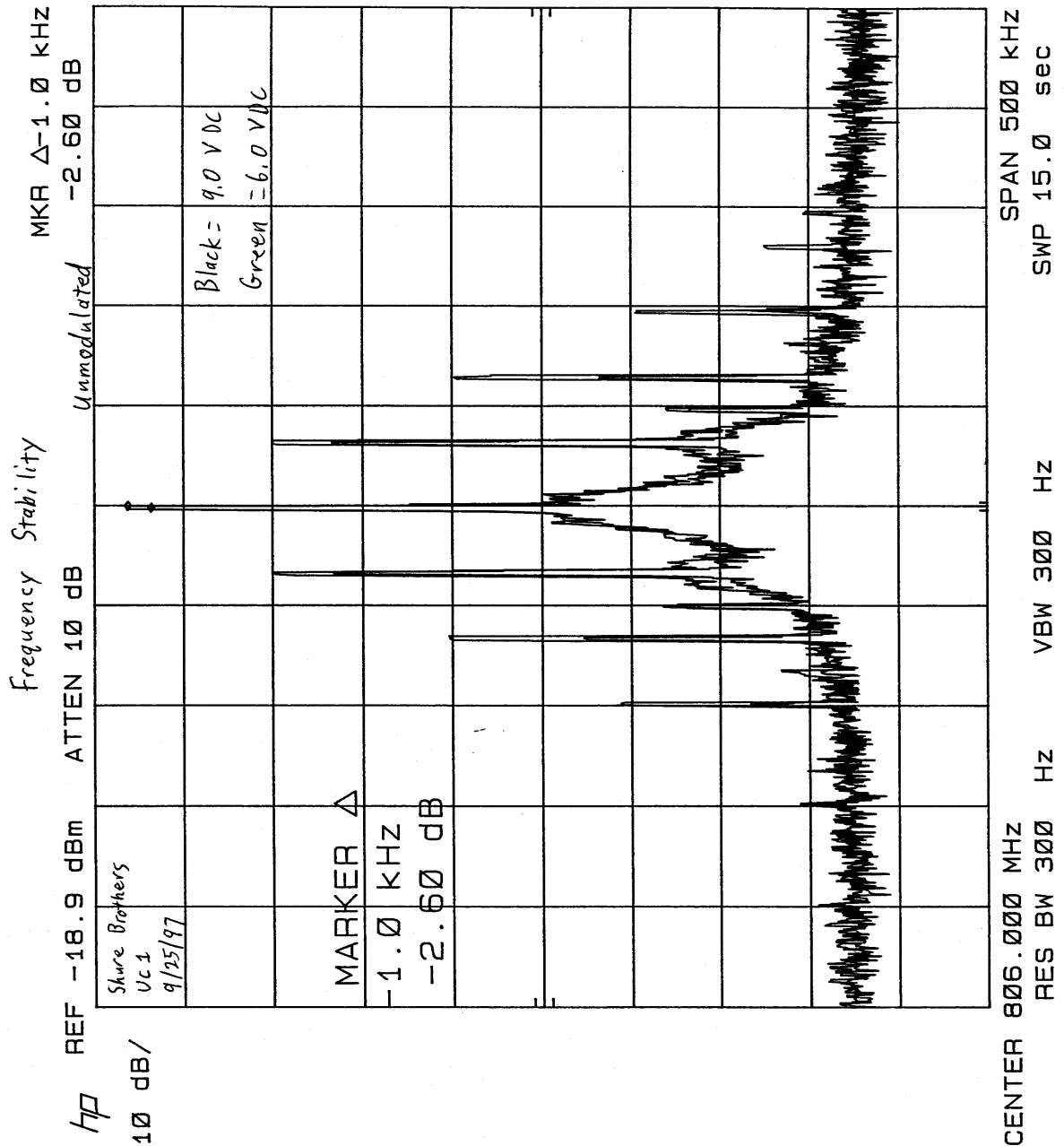
Company: Shure Inc.
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Company: Shure Inc.
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TEST PROCEDURE

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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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.