



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

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

Formal Name: SLX Wireless BodyPack Transmitter

Kind of Equipment: Wireless microphone transmitter

Test Configuration: Connects to lavalier microphone or guitar as audio input

Model Number(s): SLX1

Model(s) Tested: SLX1

Serial Number(s): NA

Date of Tests: October 31 and November 3, & 4, 2003

Test Conducted For: Shure Inc.
222 Hartrey Ave.
Evanston, Illinois 60202

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SIGNATURE PAGE

Report By:

Arnom C. Rowe
Test Engineer
EMC-001375-NE

Reviewed By:

William Stumpf
OATS Manager

Approved By:

Brian Mattson
General Manager

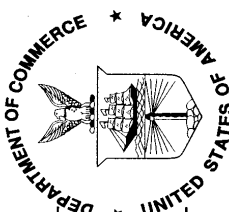
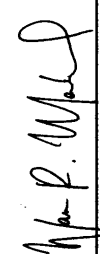
Company Official:

Shure Inc.



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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		
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: ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS		
September 30, 2004 Effective through		For the National Institute of Standards and Technology NVLAP Lab Code: 100276-0

NVLAP-01C (06-01)



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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:

12/160D21	RTCA/DO-160D (1997): Environmental Conditions and Test Procedures for Airborne Equipment - Section 21 - Emission of Radio Frequency Energy
12/300220a	EN 300 220-1 V1.3.1 (2000-09): Electromagnetic compatibility and Radio spectrum Matters; Short Range Devices; Radio equipment to be used in the 25 MHz to 1000 MHz frequency range with power levels ranging up to 500 mW; Part 1: Technical characteristics and test methods
12/300386a	EN 300 386 V.1.2.1: Electromagnetic compatibility and radio spectrum matter (ERM); Telecommunication network equipment; Electromagnetic compatibility (EMC) requirements
12/C63.17	ANSI C63.17-1998: American National Standard for Methods of Measurement of the Electromagnetic and Operational Compatibility of Unlicensed Personal Communications Services (UPCS) Devices

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<i>NVLAP Code</i>	<i>Designation / Description</i>
12/C6317a	ANSI C63.17-1998: American National Standard for Methods of Measurement of the Electromagnetic and Operational Compatibility of Unlicensed Personal Communications Services (UPCS) Devices
12/CIS11	IEC/CISPR 11 + A1 (1997), EN 55011 (1998), AS/NZS 2064 (1997), and CNS 137803 (1997): Limits and Methods of Measurement of Electromagnetic Disturbance Characteristics of Industrial, Scientific, and Medical Radio-Frequency Equipment
12/CIS13	IEC/CISPR 13 (2001-04), EN 55013 (2001), AS/NZS 1053 (2001), and CNS 13439 (2001): Sound and television broadcast receivers and associated equipment - Radio disturbance characteristics - Limits and methods of measurement
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/CIS14d	IEC/CISPR 14-1 (2001) and A1 (2001): Electromagnetic Compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emissions
12/CIS14e	EN 55014-1 (2001) and A1 (2001): Electromagnetic Compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission

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12/CIS14f	AS/NZS 1044 (2001) and A1 (2001): Electromagnetic Compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission
12/CIS14g	CNS 13783-1 (2001) and A1 (2001): Electromagnetic Compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission
12/CIS15	IEC/CISPR 15 (2000) + A1 (2001): Limits and methods of measurements of radio disturbance characteristics of electrical lighting and similar equipment
12/CIS15a	AS/NZS CISPR (2002): Limits and methods of measurements of radio disturbance characteristics of electrical lighting and similar equipment
12/CIS15b	CNS 13439 (2000) + A1 (2001): Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
12/CIS15c	EN 55015 (2000) + A1 (2001): Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
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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<i>NVLAP Code</i>	<i>Designation / Description</i>
12/CIS22b	CNS 13438 (1997): Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
12/EM02a	IEC 61000-3-2, Edition 2.1 (2001-10), EN 61000-3-2 (2000), and AS/NZS 2279.1 (2000): Electromagnetic compatibility (EMC) Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A)
12/EM03	EN 61000-3-3 (1995), IEC 61000-3-3 (1995), and AS/NZS 2279.3 (1995): EMC - Part 3: Limits - Section 3. Limitation of voltage fluctuations and flicker in low-voltage supply systems for equipment with rated current up to 16A
12/F18	FCC OST/MP-5 (1986): FCC Methods of Measurement of Radio Noise Emissions for ISM Equipment (cited in FCC Method 47 CFR Part 18 - Industrial, Scientific, and Medical Equipment)
12/FCC15b	ANSI C63.4 (2001) with FCC Method - 47 CFR Part 15, Subpart B: Unintentional Radiators
12/FCC15c	ANSI C63.4 (2001) with FCC Method - 47 CFR Part 15, Subpart C: Intentional Radiators
12/FCC15d	ANSI C63.4 (2001) with FCC Method - 47 CFR Part 15, Subpart D: Unlicensed Personal Communications Service Devices

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- | | |
|-----------|---|
| 12/FCC15e | ANSI C63.4 (2001) with FCC Method - CFR Part 15, Subpart E: Unlicensed National Information Infrastructure Service Devices |
| 12/T51 | AS/NZS CISPR 22 (2002) and AS/NZS 3548 (1997): Electromagnetic Interference - Limits and Methods of Measurement of Information Technology Equipment |
| 12/VCCIa | Agreement of Voluntary Control Council for Interference by Information Technology Equipment - Technical Requirements: V-3/02.04 |

Immunity Test Methods:

- | | |
|-----------|---|
| 12/1089a | GR-1089-CORE, Issue 3, October 2002: Electromagnetic Compatibility and Electrical Safety - Generic Criteria for Network Telecommunications Equipment (sections 2, 3.3, and 3.5) |
| 12/160D16 | RTCA/DO-160D (1997): Environmental Conditions and Test Procedures for Airborne Equipment - Section 16 - Power Input |
| 12/160D17 | RTCA/DO-160D (1997): Environmental Conditions and Test Procedures for Airborne Equipment - Section 17 - Voltage Spike |
| 12/160D18 | RTCA/DO-160D (1997): Environmental Conditions and Test Procedures for Airborne Equipment - Section 18 - Audio Frequency Conducted Susceptibility - Power Inputs |

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12/160D19	RTCA/DO-160D (1997): Environmental Conditions and Test Procedures for Airborne Equipment - Section 19 - Induced Signal Susceptibility
12/160D20	RTCA/DO-160D (1997): Environmental Conditions and Test Procedures for Airborne Equipment - Section 20 - Radio Frequency Susceptibility (Radiated and Conducted)
12/160D22	RTCA/DO-160D (1997): Environmental Conditions and Test Procedures for Airborne Equipment - Section 22 - Lightning Induced Transient Susceptibility
12/160D25	RTCA/DO-160D (1997): Environmental Conditions and Test Procedures for Airborne Equipment - Section 25 - Electrostatic Discharge (ESD)
12/I01	IEC 61000-4-2 (1995) and Amendment 1 (1998) and EN 61000-4-2: Electrostatic Discharge Immunity Test
12/I02	IEC 61000-4-3 (1995) and Amendment 1 (1998) and EN 61000-4-3: Radiated, Radio-Frequency Electromagnetic Field Immunity Test
12/I03	IEC 61000-4-4 (1995) and EN 61000-4-4: Electrical Fast Transient/Burst Immunity Test
12/I04	IEC 61000-4-5 (1995) and EN 61000-4-5: Surge Immunity Test

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12/I05	IEC 61000-4-6 (1996) and EN 61000-4-6: Immunity to Conducted Disturbances, Induced Radio-Frequency Fields
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
12/J111324	SAE J1113/24: Immunity to radiated electromagnetic fields; 10 kHz to 200 MHz - Crawford TEM cell and 10 kHz to 5 GHz - Wideband TEM cell
12/J111341	SAE J1113/41 (1995-07): Limits and methods of measurement of radio disturbance characteristics of components and modules for the protection of receivers used on board vehicles

Radio Test Methods

12/RSS119	RSS-119, Issue 6 (March 25, 2000): Land Mobile and Fixed Radio Transmitters and Receivers, 27.41 to 960 MHz
12/RSS123	RSS-123, Issue 1, Rev. 2 (November 6, 1999): Low Power Licensed Radiocommunication Devices
12/RSS137	RSS-137, Issue 1, Rev. 1 (September 25, 1999): Location and Monitoring Service (902 - 928 MHz)

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12/RSS139	RSS-139, Issue 1 (February 5, 2000): Licensed Radiocommunications Devices in the Band 2400 - 2483.5 MHz
12/CIS15c	EN 55015 (2000) + A1 (2001): Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment

MIL-STD-462 : Conducted Emissions:

12/A18	MIL-STD-461 Version E Method CE106
--------	------------------------------------

MIL-STD-462 : Conducted Susceptibility:

12/B12	MIL-STD-462 Version D Method CS101
12/B13	MIL-STD-462 Version D Method CS103
12/B25	MIL-STD-461 Version E Method CS114
12/B26	MIL-STD-461 Version E Method CS115
12/B27	MIL-STD-461 Version E Method CS116

MIL-STD-462 : Radiated Emissions:

12/D04	MIL-STD-462 Version D Method RE101
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<i>NVLAP Code</i>	<i>Designation / Description</i>
12/D05	MIL-STD-462 Version D Method RE102
12/D06	MIL-STD-462 Version D Method RE103

MIL-STD-462 : Radiated Susceptibility:

12/E08	MIL-STD-462 Version D Method RS101
12/E09	MIL-STD-462 Version D Method RS103

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1.0 SUMMARY OF TEST REPORT

It was found that the SLX Wireless BodyPack Transmitter, Model Number(s) SLX1, the radio interference radiated emission requirements of the FCC "Rules and Regulations", Part 74, Subpart H, Section 74.861, for low power auxiliary stations.

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

Text: 219

Charts: 24

2.0 INTRODUCTION

On October 31 and November 3, & 4, 2003, a series of radio frequency interference measurements was performed on SLX Wireless BodyPack Transmitter, Model Number(s) SLX1, 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, Section 74.861, 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 Average Detector on the ESI 26/ESI 40 Fixed Tuned Receiver.

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

AC power line conducted emissions are not required for low power auxiliary stations.



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7.0 RADIATED EMISSION MEASUREMENTS

Preliminary radiation measurements were performed at a three 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 three 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.

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 72°F at 51% relative humidity.



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

8.1 Description:

The Shure Model SLX1 is a uP (microprocessor) controlled frequency agile UHF bodypack transmitter operating over the frequency range of 518 to 865 MHz (in eight different 24 MHz frequency bands). The products are identical, with the exception of the frequency components needed for each range. The User interface includes "mode" and "set" buttons, and an LCD that displays battery status, group/channel, and transmitter/receiver frequency synchronization.



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8.0 DESCRIPTION OF TEST SAMPLE: (CON'T)

8.2 PHYSICAL DIMENSIONS OF EQUIPMENT UNDER TEST

Length: 105.95mm Width: 63.50mm Height: 19.05mm

8.3 LINE FILTER USED:

NA

8.4 INTERNAL CLOCK FREQUENCIES:

Switching Power Supply Frequencies:

NA

Clock Frequencies:

16 MHz, 2.4576 MHz & 0.32768 MHz



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8.0 DESCRIPTION OF TEST SAMPLE: (CON'T)

8.5 DESCRIPTION OF ALL CIRCUIT BOARDS:

1. Populated Circuit Board

PN: 190-053 Rev. 2



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

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

1: There were no changes made at D.L.S. Electronic Systems, Inc.

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

By: _____
Signature Title

For: _____
Company Date



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

10.0 PHOTO INFORMATION AND TEST SET-UP

Item 0 SLX Wireless BodyPack Transmitter

Model Number: SLX1 Serial Number: NA

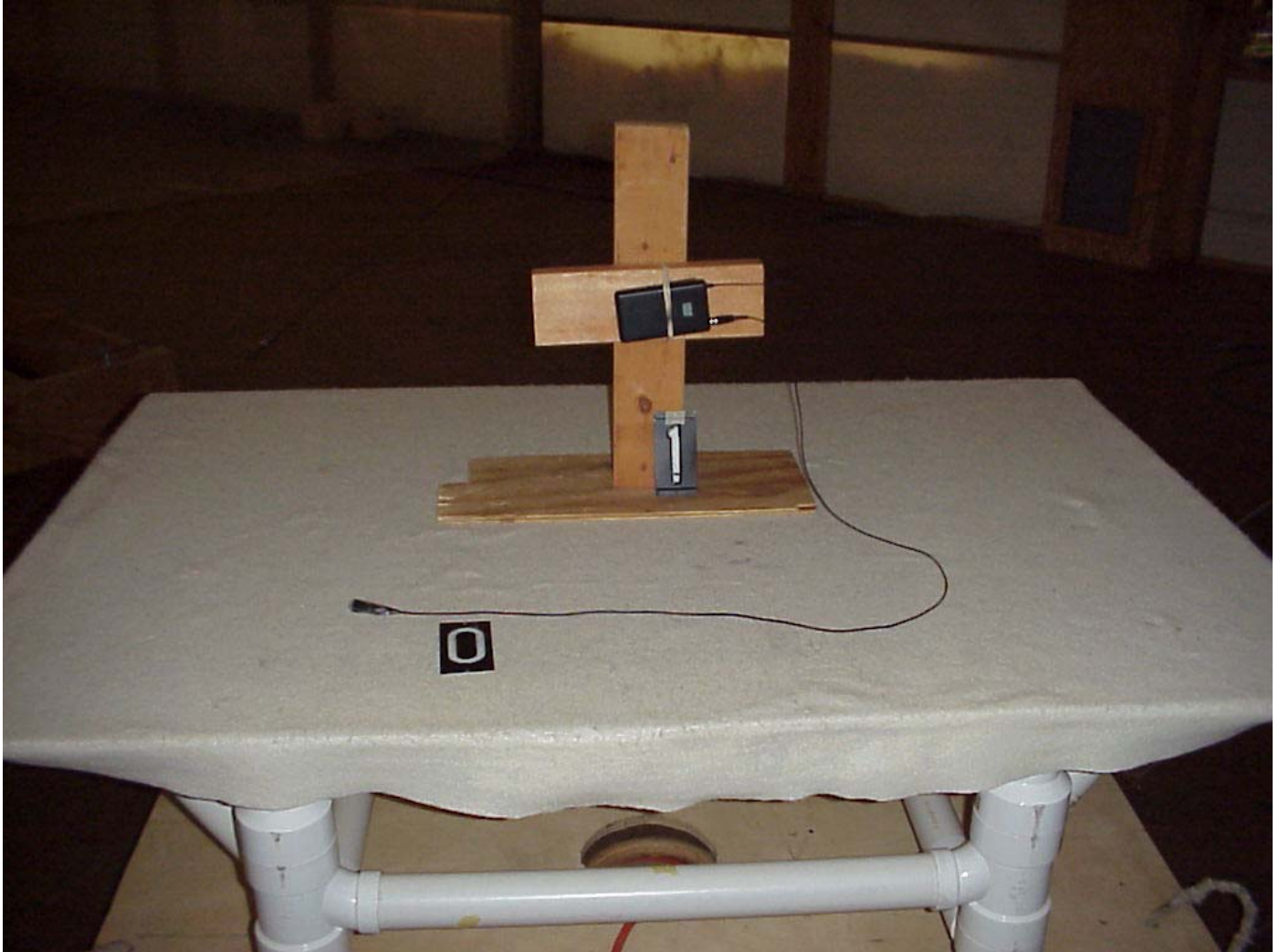
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11.0 RADIATED PHOTOS TAKEN DURING TESTING



1250 Peterson Dr., Wheeling, IL 60090

11.0 RADIATED PHOTOS TAKEN DURING TESTING





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

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 SLX Wireless BodyPack Transmitter, Model Number(s) SLX1 **"meets"** the radio interference radiated emission requirements of the FCC "Rules and Regulations", Part 74, Subpart H, Section 74.861, for low power auxiliary stations.



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

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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	10/04
Quasi-Peak Adapter	Hewlett/ Packard	85650A	2043A00121	10 kHz – 1 GHz	10/04
Spectrum Analyzer	Hewlett/ Packard	8566B	2421A00452	100 Hz – 22 GHz	2/04
Quasi-Peak Adapter	Hewlett/ Packard	85650A	2043A00450	10 kHz – 1 GHz	2/04
Spectrum Analyzer	Hewlett/ Packard	8591A	3009A00700	9 kHz – 1.8 GHz	3/04
Receiver	Electrometrics	EMC-30	44168	10 kHz – 1 GHz	9/04
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	2/04
Antenna	Electrometrics	LPA-25	1114	200 MHz – 1 GHz	3/04
Antenna	EMCO	3104C	00054892	20 MHz – 200 MHz	3/04

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

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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	3/04
Antenna	EMCO	3104C	97014785	20 MHz – 200 MHz	2/04
Antenna	EMCO	3146	97024895	200 MHz – 1 GHz	3/04
Antenna	EMCO	3115	2479	1 GHz – 18 GHz	8/04
Antenna	EMCO	3115	99035731	1 GHz – 18 GHz	4/04
Antenna	Rohde & Schwarz	HUF-Z1	829381001	20 MHz – 1 GHz	2/04
Antenna	Rohde & Schwarz	HUF-Z1	829381005	20 MHz – 1 GHz	8/04
LISN	Solar	8012-50-R-24-BNC	8305116	10 MHz – 30 MHz	8/04
LISN	Solar	8012-50-R-24-BNC	814548	10 MHz – 30 MHz	8/04
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	10/04
LISN	Solar	9252-50-R-24-BNC	92710620	10 MHz – 30 MHz	7/04

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

SLX1-H5 - 518 MHz to 542 MHz

Group 1 Channel 8 & Group 1 Channel 16



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

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

As stated in PART 74.861 (e)(1)(ii), the RF output power should not exceed .25 watts. The RF output of the SLX Wireless BodyPack Transmitter was connected to a Spectrum Analyzer through suitable attenuation. All cables, connectors, and attenuators were calibrated prior to testing. The RF output power was measured using the following test method:

Actual Measurements Taken:

122.48 dBuV Measured output of the transmitter
+0 dB includes measured pads & cable loss
122.48 dBuV equals 0.0354 watts

LIMIT:

Manufacturer's rated output power = 0.035 watts

MARGIN:

$.25 - 0.035 = .215$ watts



Company: Shure Inc.
Model Tested: SLX1
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APPENDIX A

GRAPH(S) TAKEN OF THE RF POWER

OUTPUT MEASUREMENT

PART 2.1046



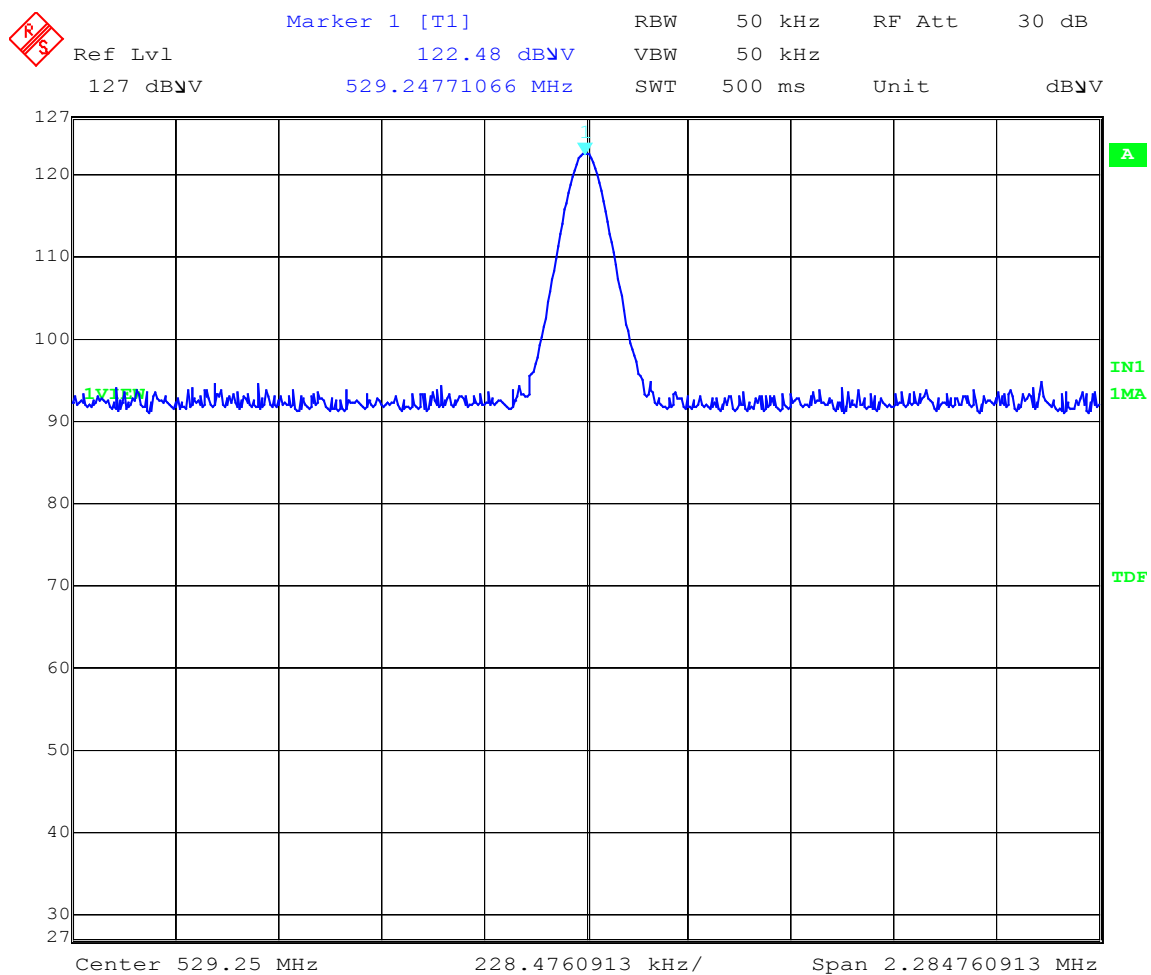
Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

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APPENDIX A

Test Date: 10-31-03
EUT: SLX1 518 – 542 MHz
Test: Output Power - Conducted
Operator: Craig Brandt
Comment: GRP 1 CH 8 529.25 MHz
Output Power = 35.4 mW

529.25 MHz



Date: 31.OCT.2003 14:54:00



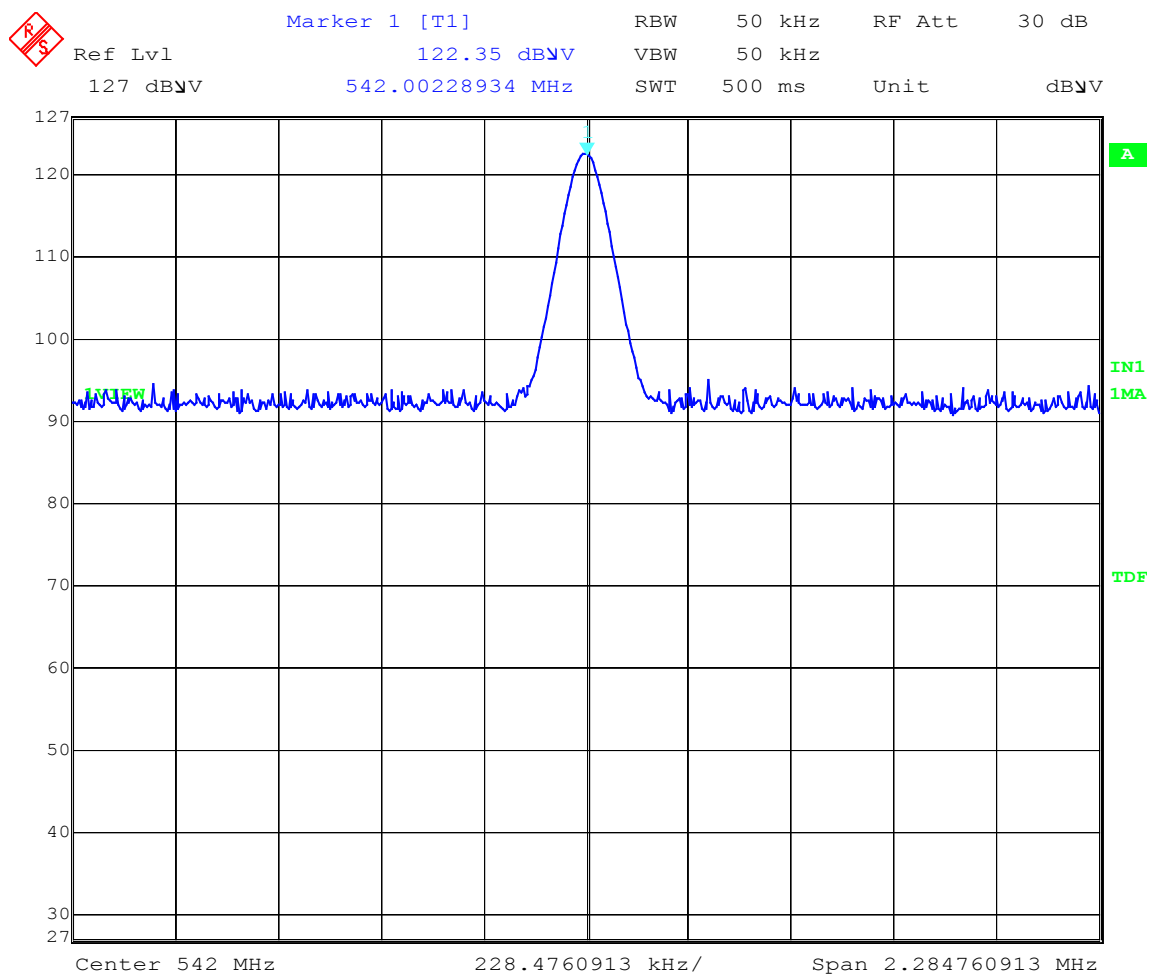
Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

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APPENDIX A

Test Date: 10-31-03
EUT: SLX1 518 – 542 MHz
Test: Output Power - Conducted
Operator: Craig Brandt
Comment: GRP 1 CH 816 542.00 MHz
Output Power = 34.4 mW

542.00 MHz



Date: 31.OCT.2003 14:55:27



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

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APPENDIX A

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 20 Hz to 20 kHz is submitted with this report.

- b. Equipment which employs modulation limiting

A family of curves showing the percentage of modulation versus the modulation input voltage with sufficient information showing the modulation limiting capability throughout the range of modulating frequencies and input modulating signal levels employed.



Company: Shure Inc.
Model Tested: SLX1
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APPENDIX A

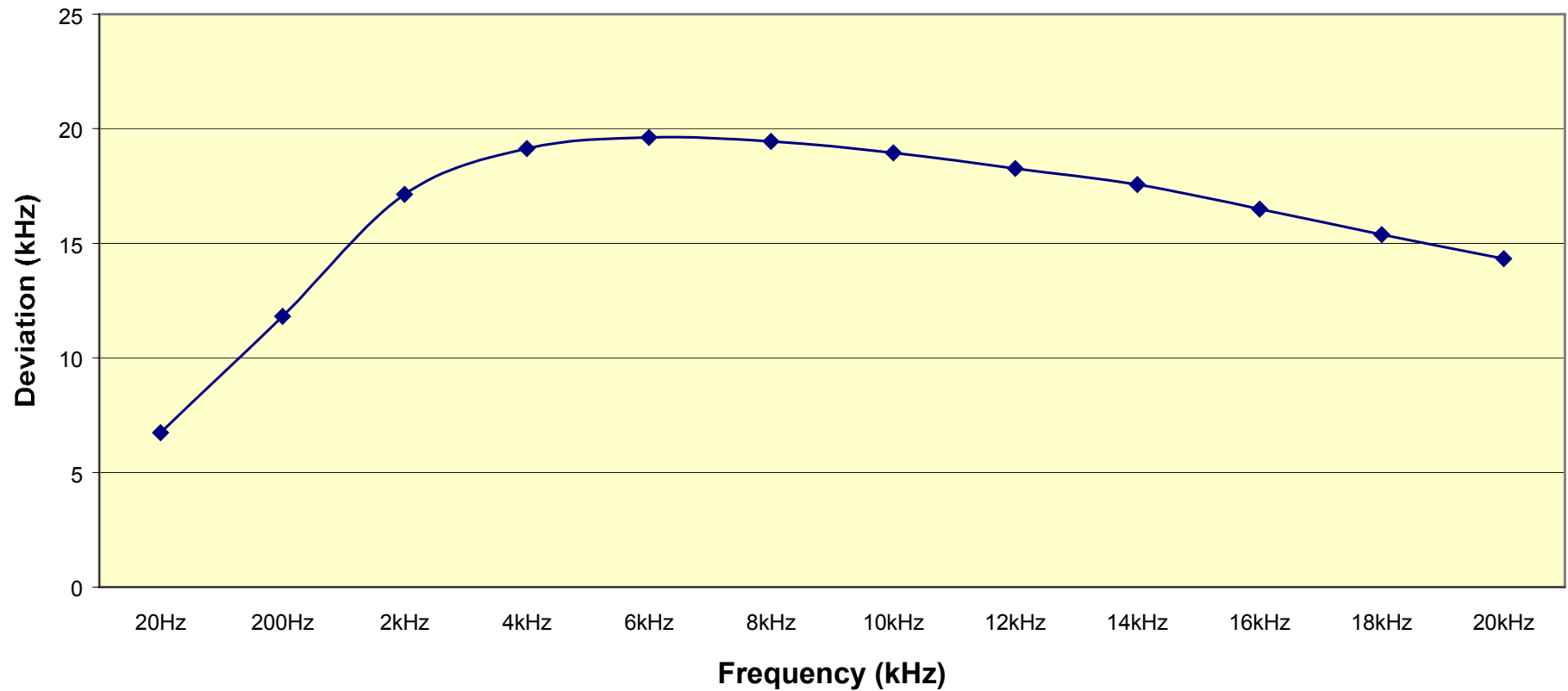
GRAPH(S) TAKEN SHOWING THE FREQUENCY

RESPONSE OF THE

AUDIO MODULATING CIRCUIT

PART 2.1047

SLX1 (638.000MHz) Frequency vs Deviation for -45dBV RMS Input

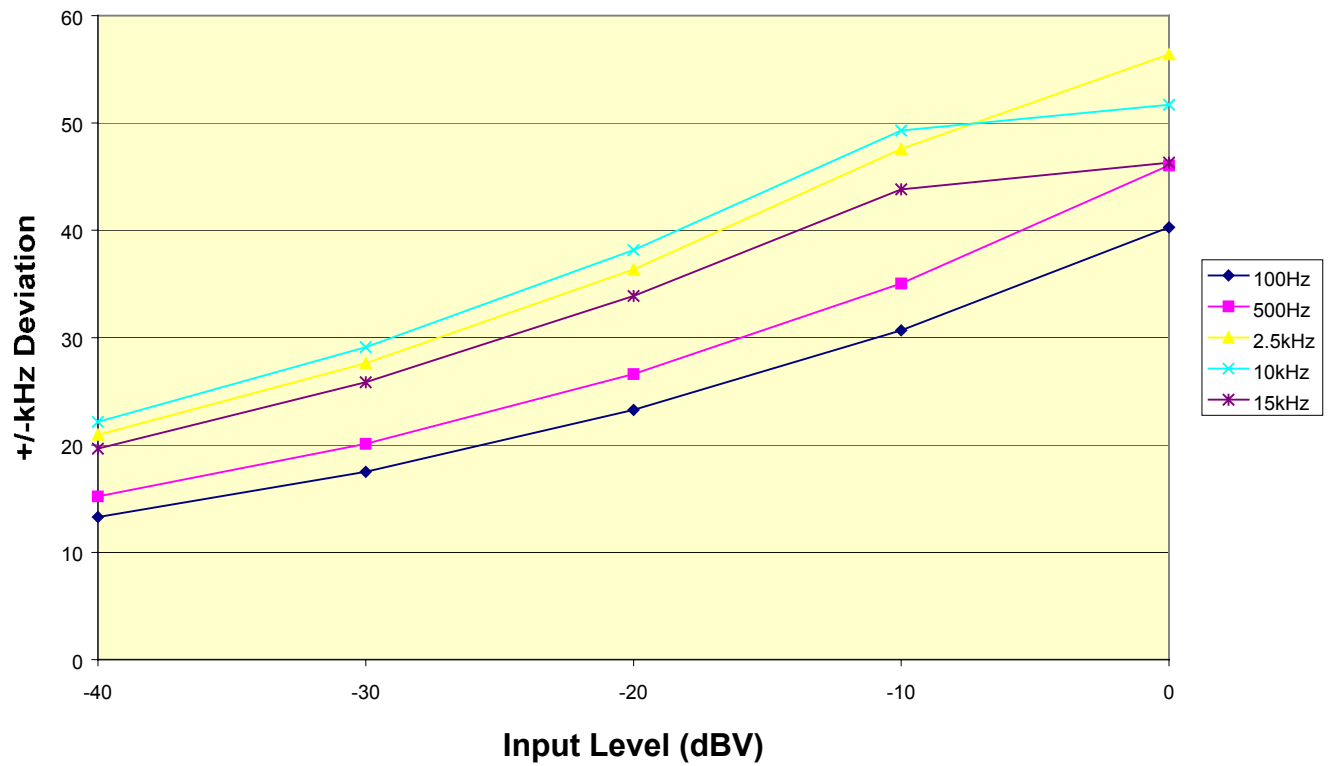




Company: Shure Inc.
Model Tested: SLX1
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SLX1 (638.000 MHz) Input Level vs Deviation





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

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APPENDIX A

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:

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)

$$B_n = 2M + 2DK, \quad K=1$$

B_n = Bandwidth

$$M = 15 \text{ kHz},$$

M = Maximum Modulating Frequency

$$D = 45 \text{ kHz},$$

D = Peak Deviation

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



Company: Shure Inc.
Model Tested: SLX1
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APPENDIX A

GRAPH(S) TAKEN OF THE OCCUPIED BANDWIDTH

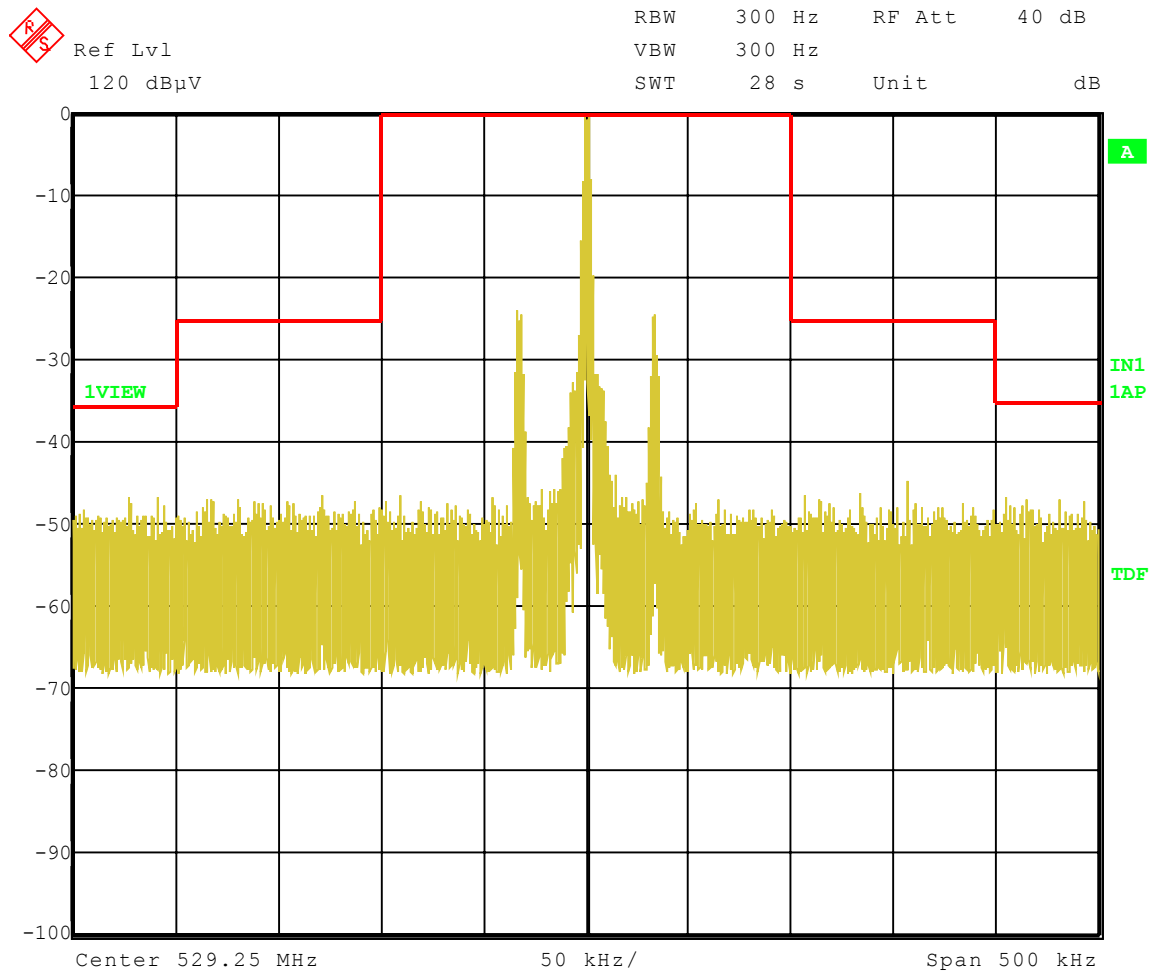
PART 2.1049

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APPENDIX A

Test Date: 10-31-03
EUT: SLX1 518 – 542 MHz
Test: Occupied Bandwidth / Band Edges
Operator: Craig Brandt
Comment: GRP 1 CH 8 529.25 MHz

Unmodulated Carrier:



Date: 31.OCT.2003 14:04:21



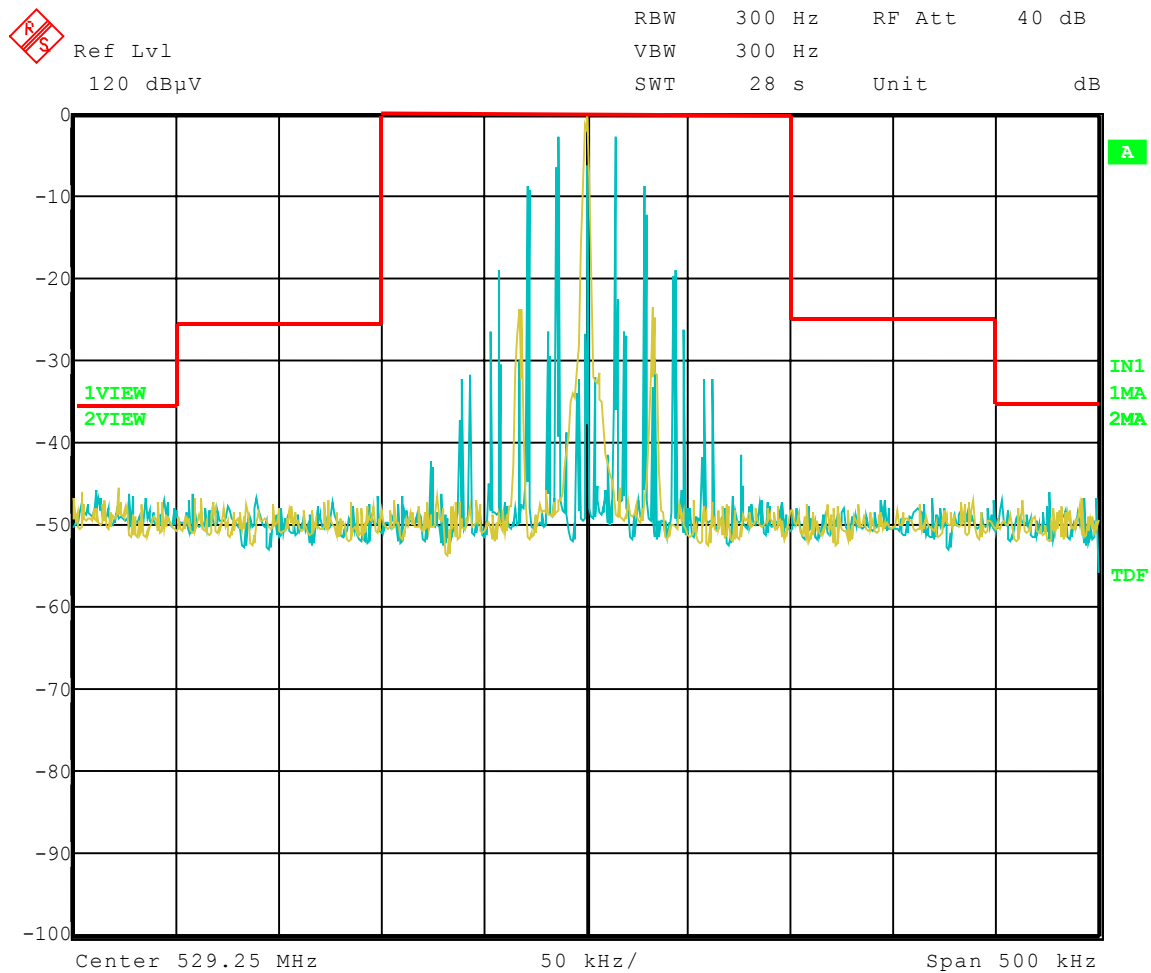
Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

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APPENDIX A

Test Date: 10-31-03
EUT: SLX1 518 – 542 MHz
Test: Occupied Bandwidth / Band Edges
Operator: Craig Brandt
Comment: GRP 1 CH 8 529.25 MHz

Yellow: Unmodulated Carrier
Blue: 15 kHz 85% modulated



Date: 31.OCT.2003 14:19:17



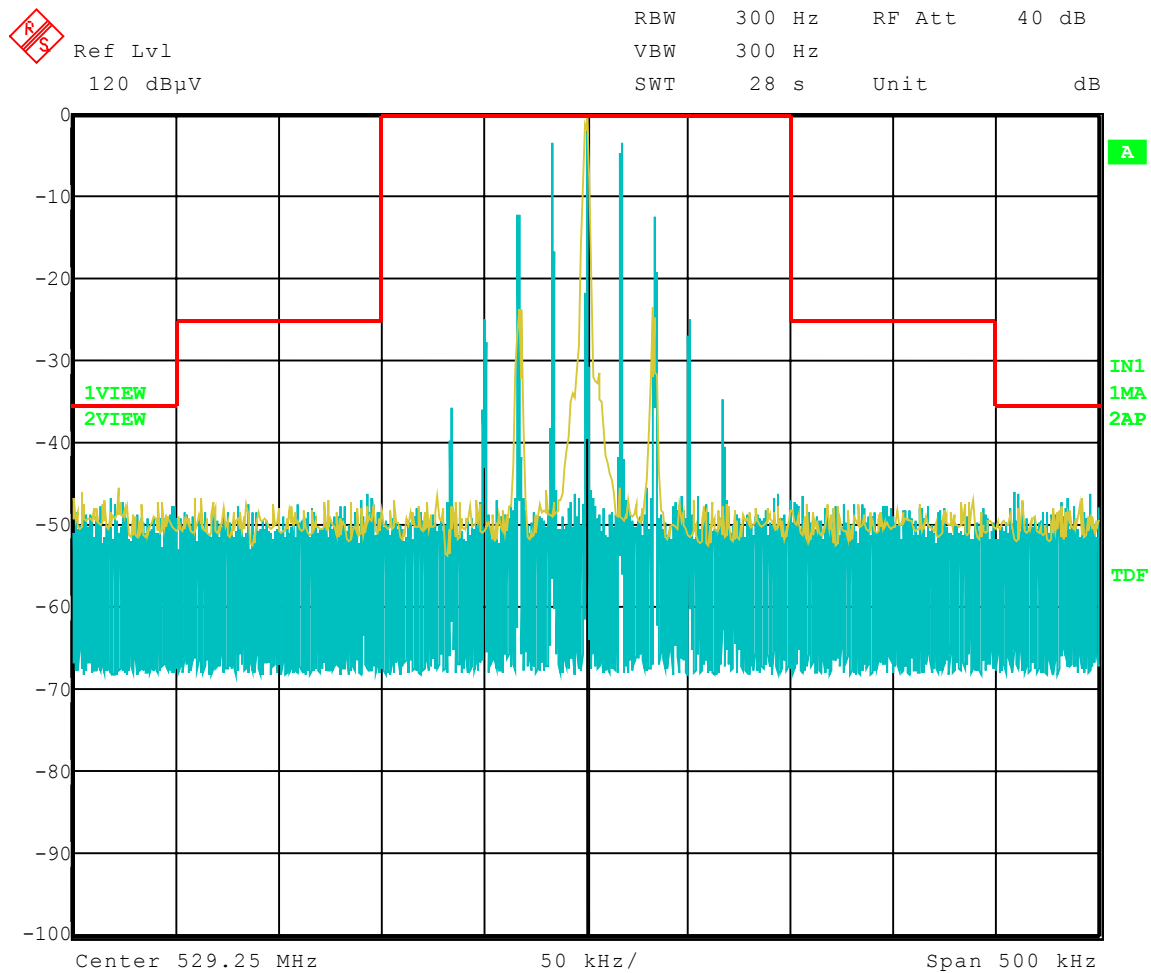
Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

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APPENDIX A

Test Date: 10-31-03
EUT: SLX1 518 – 542 MHz
Test: Occupied Bandwidth / Band Edges
Operator: Craig Brandt
Comment: GRP 1 CH 8 529.25 MHz

Yellow: Unmodulated Carrier
Blue: 10 kHz 50% modulated



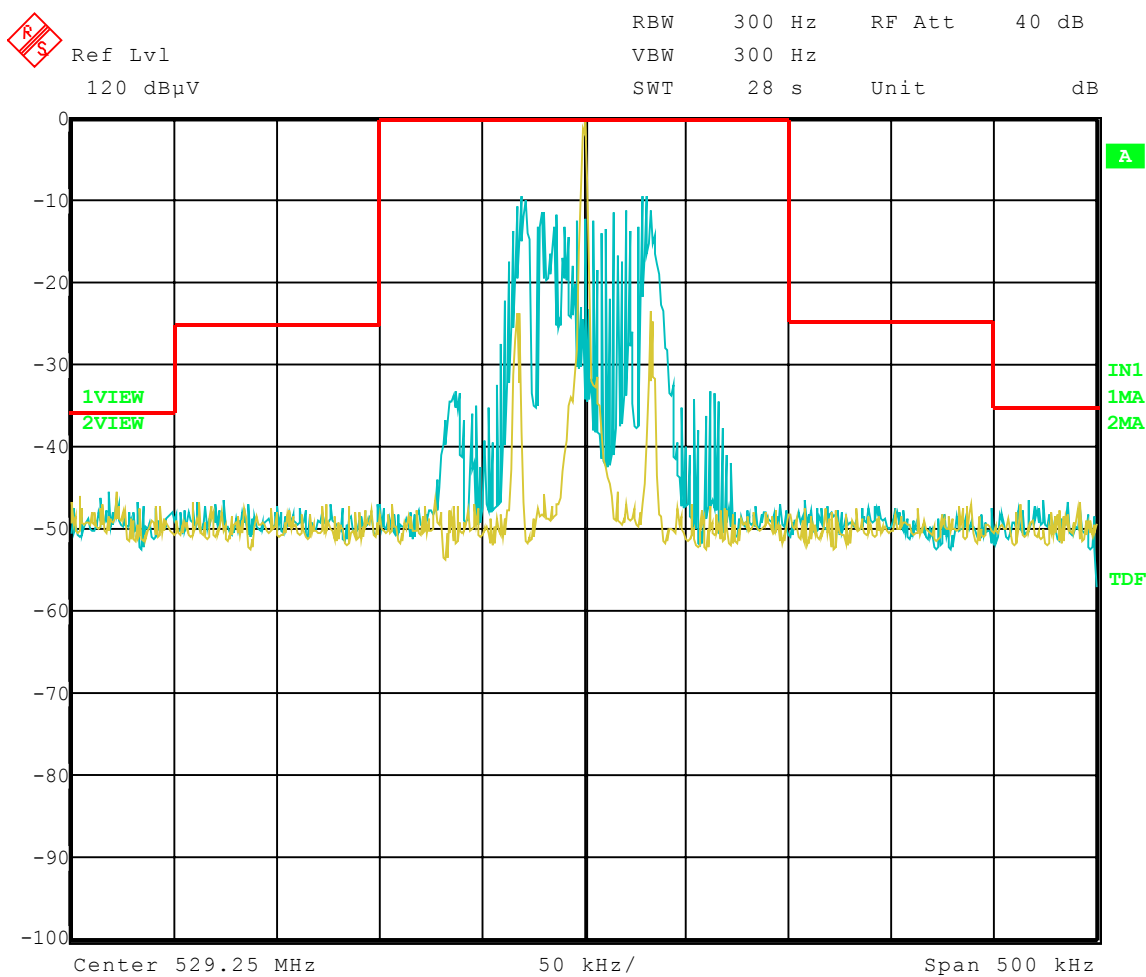
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APPENDIX A

Test Date: 10-31-03
EUT: SLX1 518 – 542 MHz
Test: Occupied Bandwidth / Band Edges
Operator: Craig Brandt
Comment: GRP 1 CH 8 529.25 MHz

Yellow: Unmodulated Carrier
Blue: 2 kHz 16 dB > 50% modulated



Date: 31.OCT.2003 14:40:14

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APPENDIX A

5.0 OCCUPIED BANDWIDTH PHOTOS TAKEN DURING TESTING





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

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APPENDIX A

6.0 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 518 MHz to 542 MHz.

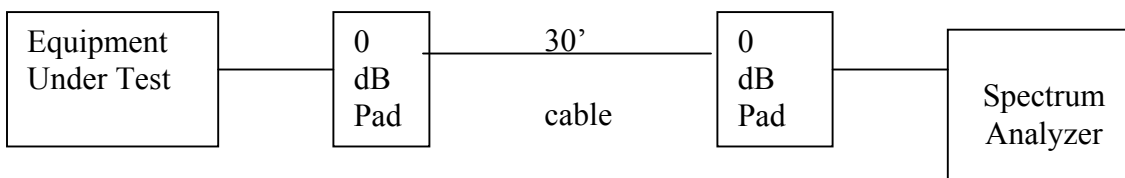
Paragraph e-4 states that the frequency tolerance of the transmitter shall be .005 percent.

APPENDIX A

7.0 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 518 MHz to 542 MHz bands for SLX Wireless BodyPack 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: SLX1
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APPENDIX A

CONDUCTED EMISSION DATA AND CHARTS 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: SLX1
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APPENDIX A

8.0 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 SLX Wireless BodyPack 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 518 MHz to 542 MHz bands for SLX Wireless BodyPack 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: SLX1
Report Number: 10422

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APPENDIX A

RADIATED EMISSION DATA AND CHARTS TAKEN

FOR SPURIOUS EMISSIONS

USING THE SUBSTITUTION METHOD

ANSI/TIA/EIA-603-1992 SECTION 2.2.12



Company: Shure Inc.
 Model Tested: SLX1
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APPENDIX A

Operator: Craig Brandt
 Date of test: 12-22-03

Field Strength of Spurious Radiation - Substitution Method

Limit = -13 dBm

Model: **SLX1-L4**

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)
5194.00 MHz vertical	66.3	-38.3	3.87	10.0	-34.27	21.27
5194.00 MHz horizontal	67.4	-34.4	3.87	10.0	-30.37	17.37
5296.00 MHz vertical	64.0	-37.9	3.92	10.2	-33.72	20.72
5843.25 MHz vertical	68.6	-34.1	4.34	11.0	-29.54	16.54
5843.25 MHz horizontal	65.8	-37.8	4.34	11.0	-33.24	20.24
5958.00 MHz vertical	64.4	-37.3	4.36	11.1	-32.66	19.66
5958.00 MHz horizontal	64.2	-39.1	4.36	11.1	-34.46	21.42

EIRP = Signal generator output - cable loss + antenna gain

ERP_(ref. to ½λ dipole) = Signal generator output - cable loss + antenna gain - 2.1



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

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APPENDIX A

8.0 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 470 MHz to 608 MHz.

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

Mean output power in watts:

Manufacturer's rated wattage = **0.035 Watts**
(See Paragraph 2.0, page 2 of this Appendix)

Free Space Formula

Convert to 3 meter test distance using the Free Space Formula

$$\frac{\sqrt{49.2 * \text{rated wattage}}}{\text{Distance}} = 0.5228129 \text{ volts/meter} = 522812.9 \text{ uV/m}$$

$$20 * \text{Log}(522812.9) = 114.3669 \text{ dBuV/m}$$

Therefore, the Fundamental at three meters equals 114.3669 dBuV,

The emissions must be reduced by:

$$43 + 10 * \text{LOG}100.035 \text{ watts} = 29.9897 \text{ dB}$$

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

114.3669 dBuV/m extrapolated level for 0.035 watts
-29.9897 dB required reduction below the unmodulated fundamental
84.37723 dBuV/M maximum spurious emissions allowed



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

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APPENDIX A

RADIATED EMISSION DATA AND GRAPH(S) TAKEN FOR SPURIOUS EMISSION MEASUREMENTS

PART 2.1053



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

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FCC Part 74

Electric Field Strength

EUT: SLX1 518 - 542 MHz
Manufacturer: Shure, Inc.
Operating Condition: 72 deg F; 51% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 1 CH 8 529.25 MHz
Test Date: 10/31/2003

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

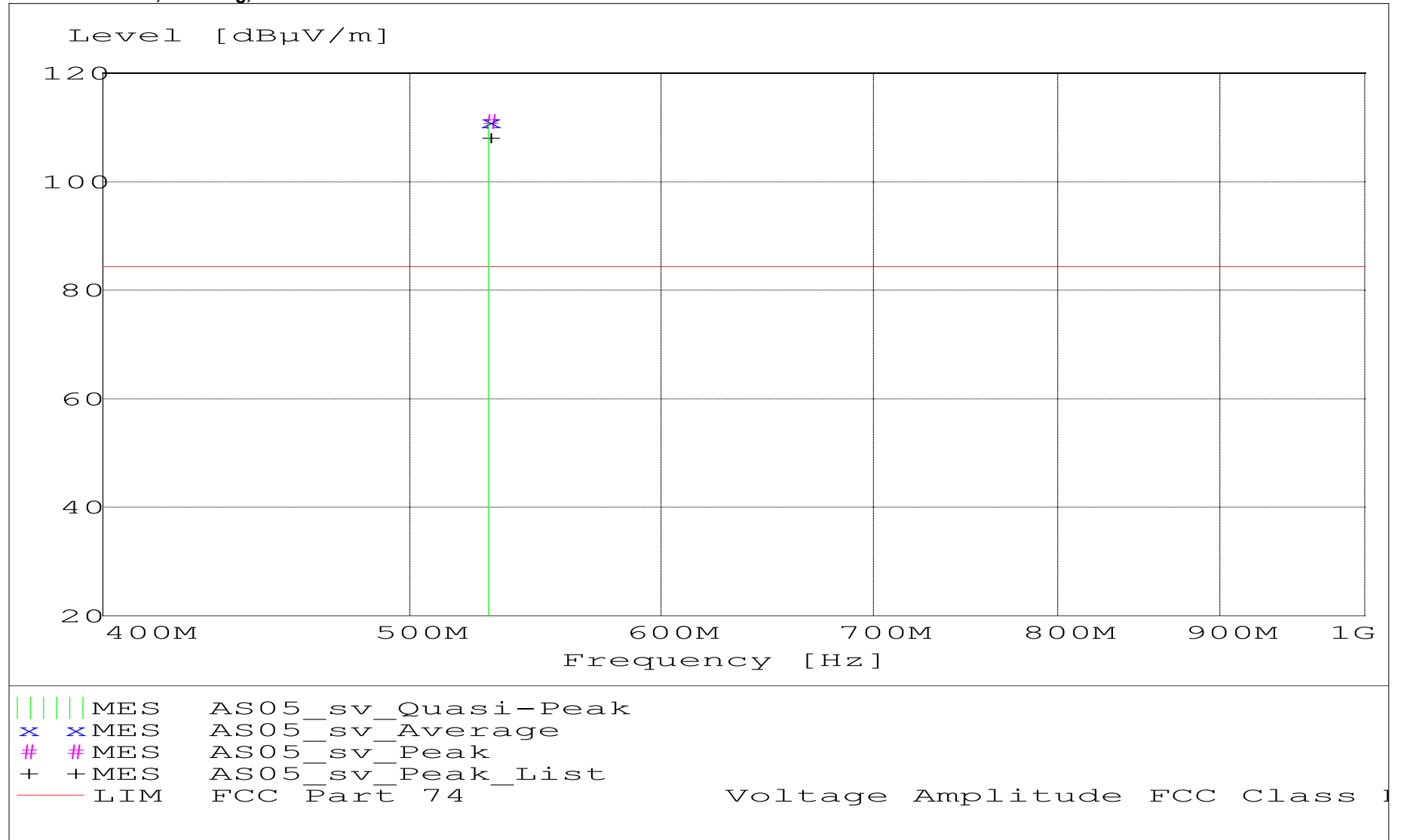
Pre-Amp --- Rohde & Schwarz TS-PR10 SN: 032001/005

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

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Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

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MEASUREMENT RESULT: "AS05_sv_Final"

10/31/2003 10:45AM

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
529.250000	68.36	17.81	24.9	111.1	84.4	-26.7	1.00	225	MAX PEAK	Fundamental
529.250000	68.28	17.81	24.9	111.0	84.4	-26.7	1.00	225	QUASI-PEAK	Fundamental
529.250000	68.27	17.81	24.9	111.0	84.4	-26.6	1.00	225	AVERAGE	Fundamental



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

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FCC Part 74

Electric Field Strength

EUT: SLX1 518 - 542 MHz
Manufacturer: Shure, Inc.
Operating Condition: 72 deg F; 51% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 1 CH 8 529.25 MHz
Test Date: 10/31/2003

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

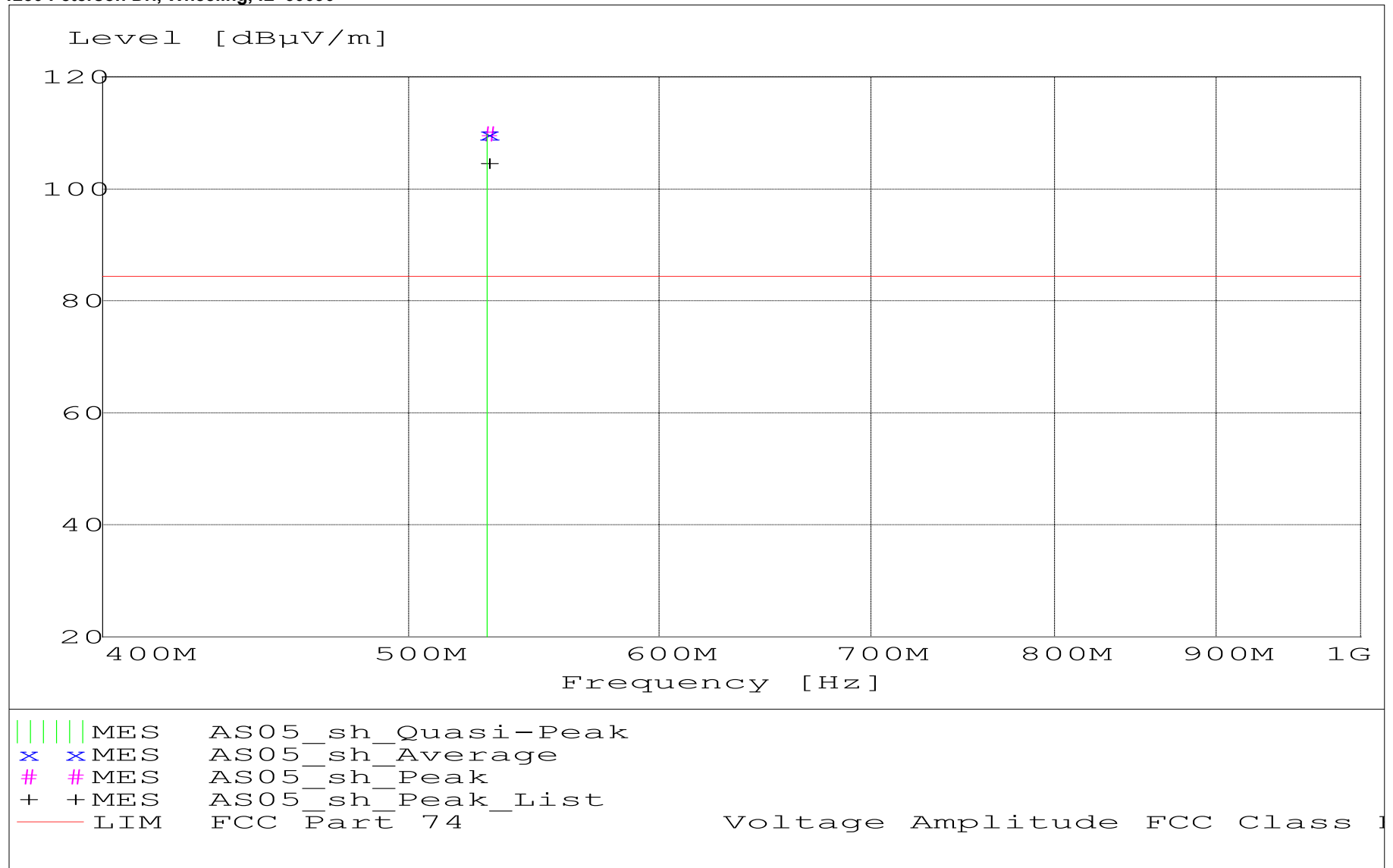
Pre-Amp --- Rohde & Schwarz TS-PR10 SN: 032001/005

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



Company: Shure Inc.
Model Tested: SLX1
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Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

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MEASUREMENT RESULT: "AS05_sh_Final"

10/31/2003 10:54AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EUT	Final	Comment
MHz	dBμV	Factor	Loss	Level	dBμV/m	dB	Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
529.250000	67.08	17.81	24.9	109.8	84.4	-25.5	1.20	180	MAX PEAK	Fundamental
529.250000	67.06	17.81	24.9	109.8	84.4	-25.4	1.20	180	QUASI-PEAK	Fundamental
529.250000	67.01	17.81	24.9	109.8	84.4	-25.4	1.20	180	AVERAGE	Fundamental



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

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FCC Part 74

Electric Field Strength

EUT: SLX1 518 - 542 MHz
Manufacturer: Shure, Inc.
Operating Condition: 72 deg F; 51% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 1 CH 8 529.25 MHz
Test Date: 10/31/2003

TEXT: "Site 3 6204&184 V3M"

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

Horn Antenna --- ETS 3115 SN: 6204

Pre-Amps ---

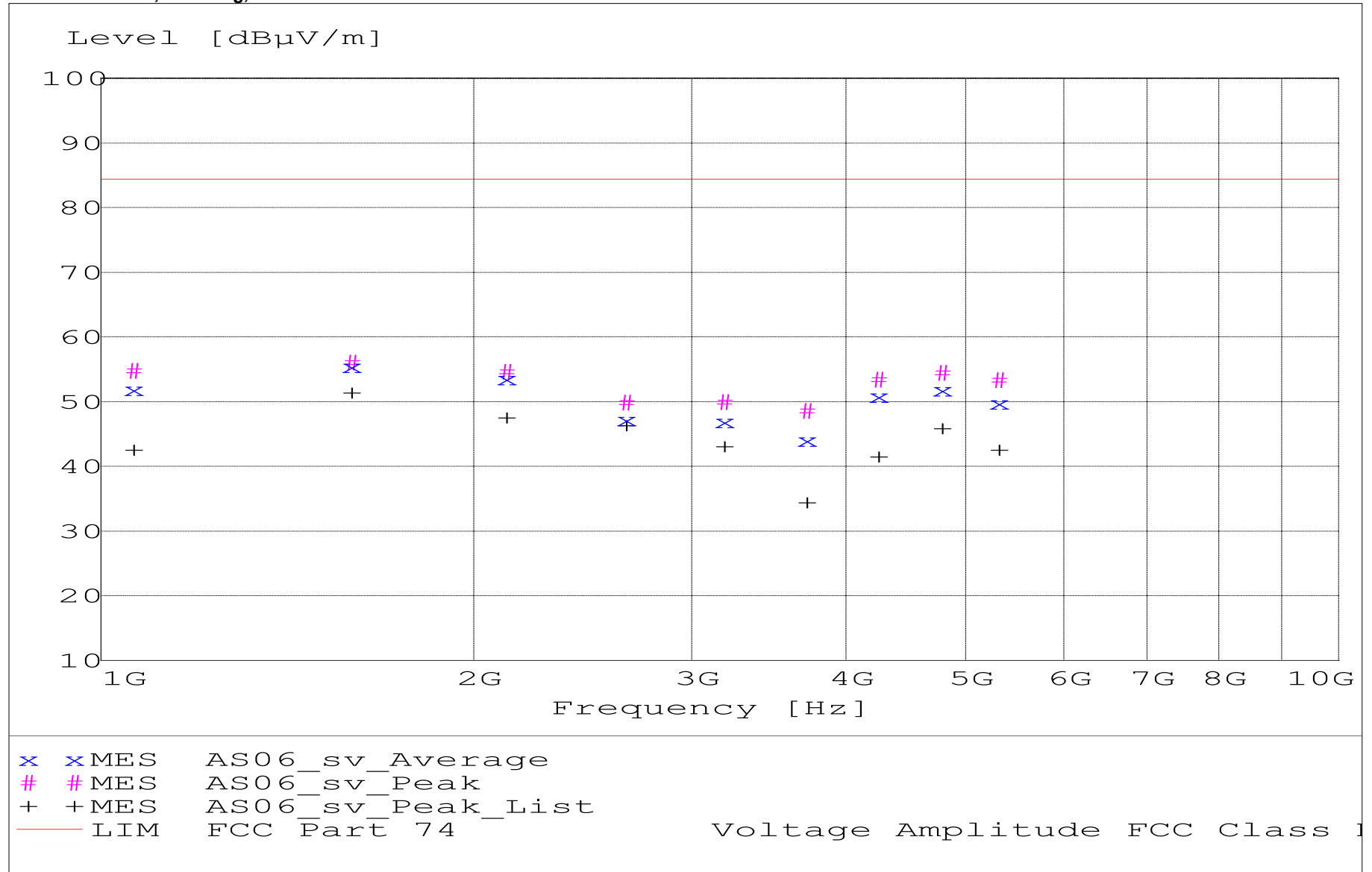
1 - 10 GHz -- Miteq AMF-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

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



Company: Shure Inc.
Model Tested: SLX1
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Company: Shure Inc.
 Model Tested: SLX1
 Report Number: 10422

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MEASUREMENT RESULT: "AS06_sv_Final"

10/31/2003 11:20AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EUT	Final	Comment
MHz	dBμV	Factor	Loss	Level	dBμV/m	dB	Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
1587.750000	69.05	27.36	-40.3	56.1	84.4	28.2	1.00	90	MAX PEAK	None
1587.750000	68.41	27.36	-40.3	55.5	84.4	28.9	1.00	90	AVERAGE	None
1058.500000	60.56	25.42	-31.2	54.8	84.4	29.6	2.10	90	MAX PEAK	None
2117.000000	65.31	28.74	-39.4	54.7	84.4	29.7	1.00	315	MAX PEAK	None
4763.250000	57.86	33.75	-37.1	54.5	84.4	29.8	1.00	0	MAX PEAK	None
2117.000000	64.23	28.74	-39.4	53.6	84.4	30.8	1.00	315	AVERAGE	None
4234.000000	57.98	32.85	-37.4	53.4	84.4	30.9	1.00	0	MAX PEAK	None
5292.500000	55.92	34.60	-37.1	53.4	84.4	31.0	1.20	0	MAX PEAK	None
1058.500000	57.70	25.42	-31.2	52.0	84.4	32.4	2.10	90	AVERAGE	None
4763.250000	55.19	33.75	-37.1	51.9	84.4	32.5	1.00	0	AVERAGE	None
4234.000000	55.44	32.85	-37.4	50.9	84.4	33.5	1.00	0	AVERAGE	None
3175.500000	58.53	30.72	-39.3	50.0	84.4	34.4	1.00	315	MAX PEAK	None
2646.250000	60.04	29.55	-39.7	49.9	84.4	34.4	1.00	0	MAX PEAK	None
5292.500000	52.38	34.60	-37.1	49.9	84.4	34.5	1.20	0	AVERAGE	None
3704.750000	54.98	31.96	-38.3	48.7	84.4	35.7	1.00	0	MAX PEAK	None
2646.250000	57.39	29.55	-39.7	47.3	84.4	37.1	1.00	0	AVERAGE	None
3175.500000	55.49	30.72	-39.3	46.9	84.4	37.4	1.00	315	AVERAGE	None
3704.750000	50.38	31.96	-38.3	44.1	84.4	40.3	1.00	0	AVERAGE	None



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

FCC Part 74

Electric Field Strength

EUT: SLX1 518 - 542 MHz
Manufacturer: Shure, Inc.
Operating Condition: 72 deg F; 51% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 1 CH 8 529.25 MHz
Test Date: 10/31/2003

TEXT: "Site 3 6204&184 H3M"

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

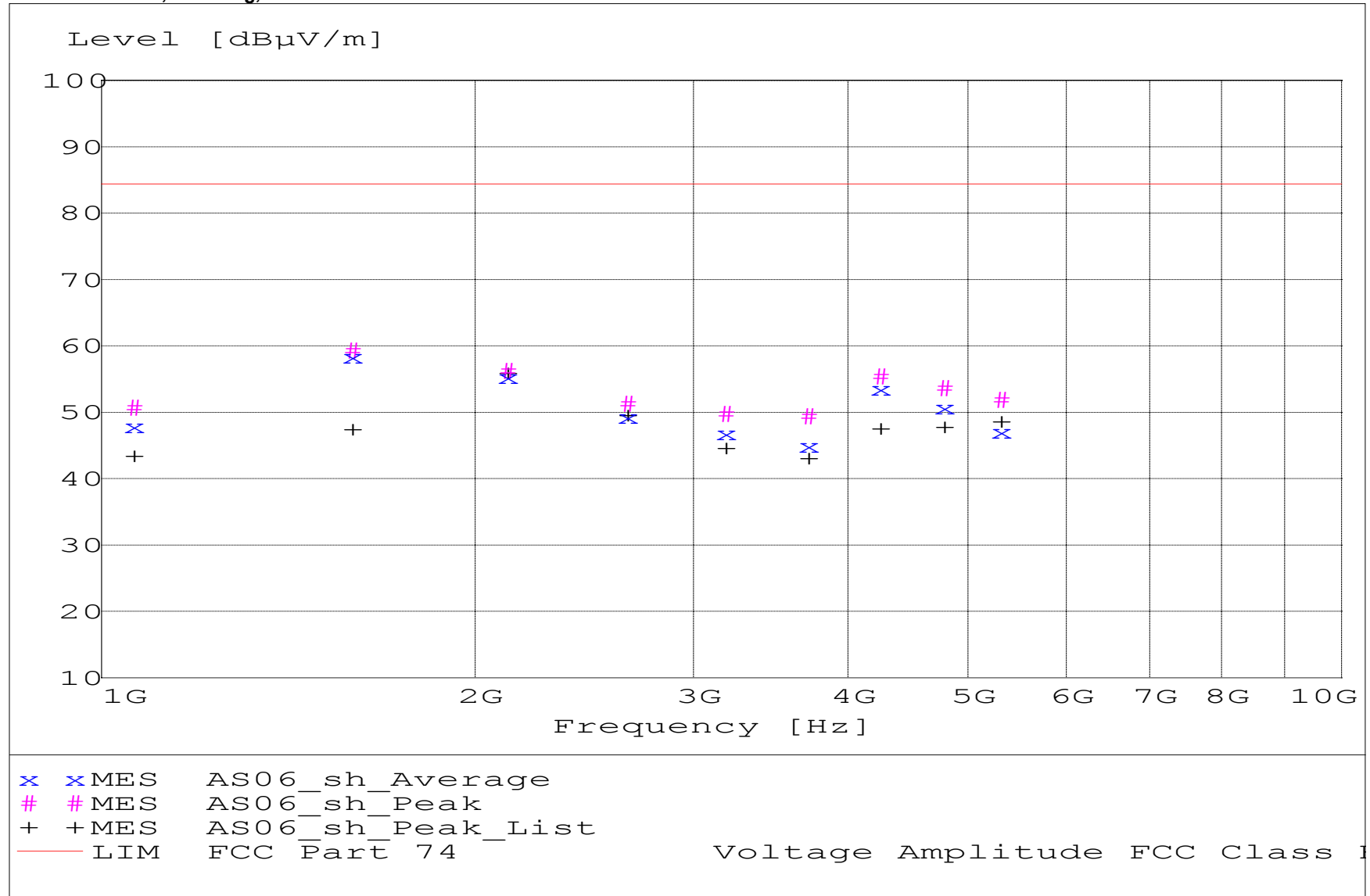
Horn Antenna --- ETS 3115 SN: 6204

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 Polarization

1250 Peterson Dr., Wheeling, IL 60090





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

MEASUREMENT RESULT: "AS06_sh_Final"

10/31/2003 11:41AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EUT	Final	Comment
MHz	dBμV	Factor dBμV/m	Loss dB	Level dBμV/m	dBμV/m	dB	Ant. m	Angle deg	Detector	
1587.750000	72.30	27.36	-40.3	59.4	84.4	25.0	2.00	90	MAX PEAK	None
1587.750000	71.38	27.36	-40.3	58.5	84.4	25.9	2.00	90	AVERAGE	None
2117.000000	66.96	28.74	-39.4	56.3	84.4	28.0	1.00	0	MAX PEAK	None
4234.000000	60.04	32.85	-37.4	55.5	84.4	28.9	1.00	315	MAX PEAK	None
2117.000000	65.95	28.74	-39.4	55.3	84.4	29.0	1.00	0	AVERAGE	None
4763.300000	56.98	33.75	-37.1	53.7	84.4	30.7	1.20	0	MAX PEAK	None
4234.000000	58.07	32.85	-37.4	53.5	84.4	30.8	1.00	315	AVERAGE	None
5292.500000	54.42	34.60	-37.1	51.9	84.4	32.5	1.20	0	MAX PEAK	None
2646.250000	61.34	29.55	-39.7	51.2	84.4	33.1	1.20	315	MAX PEAK	None
4763.300000	54.07	33.75	-37.1	50.8	84.4	33.6	1.20	0	AVERAGE	None
1058.500000	56.45	25.42	-31.2	50.7	84.4	33.7	2.00	45	MAX PEAK	None
3175.500000	58.39	30.72	-39.3	49.8	84.4	34.5	2.00	30	MAX PEAK	None
3704.750000	55.79	31.96	-38.3	49.5	84.4	34.9	1.00	30	MAX PEAK	None
2646.250000	59.38	29.55	-39.7	49.3	84.4	35.1	1.20	315	AVERAGE	None
1058.500000	53.67	25.42	-31.2	47.9	84.4	36.4	2.00	45	AVERAGE	None
5292.500000	49.56	34.60	-37.1	47.0	84.4	37.3	1.20	0	AVERAGE	None
3175.500000	55.46	30.72	-39.3	46.9	84.4	37.5	2.00	30	AVERAGE	None
3704.750000	51.34	31.96	-38.3	45.0	84.4	39.4	1.00	30	AVERAGE	None



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

FCC Part 74

Electric Field Strength

EUT: SLX1 518 - 542 MHz
Manufacturer: Shure, Inc.
Operating Condition: 72 deg F; 51% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 1 CH 16 542.00 MHz
Test Date: 10/31/2003

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

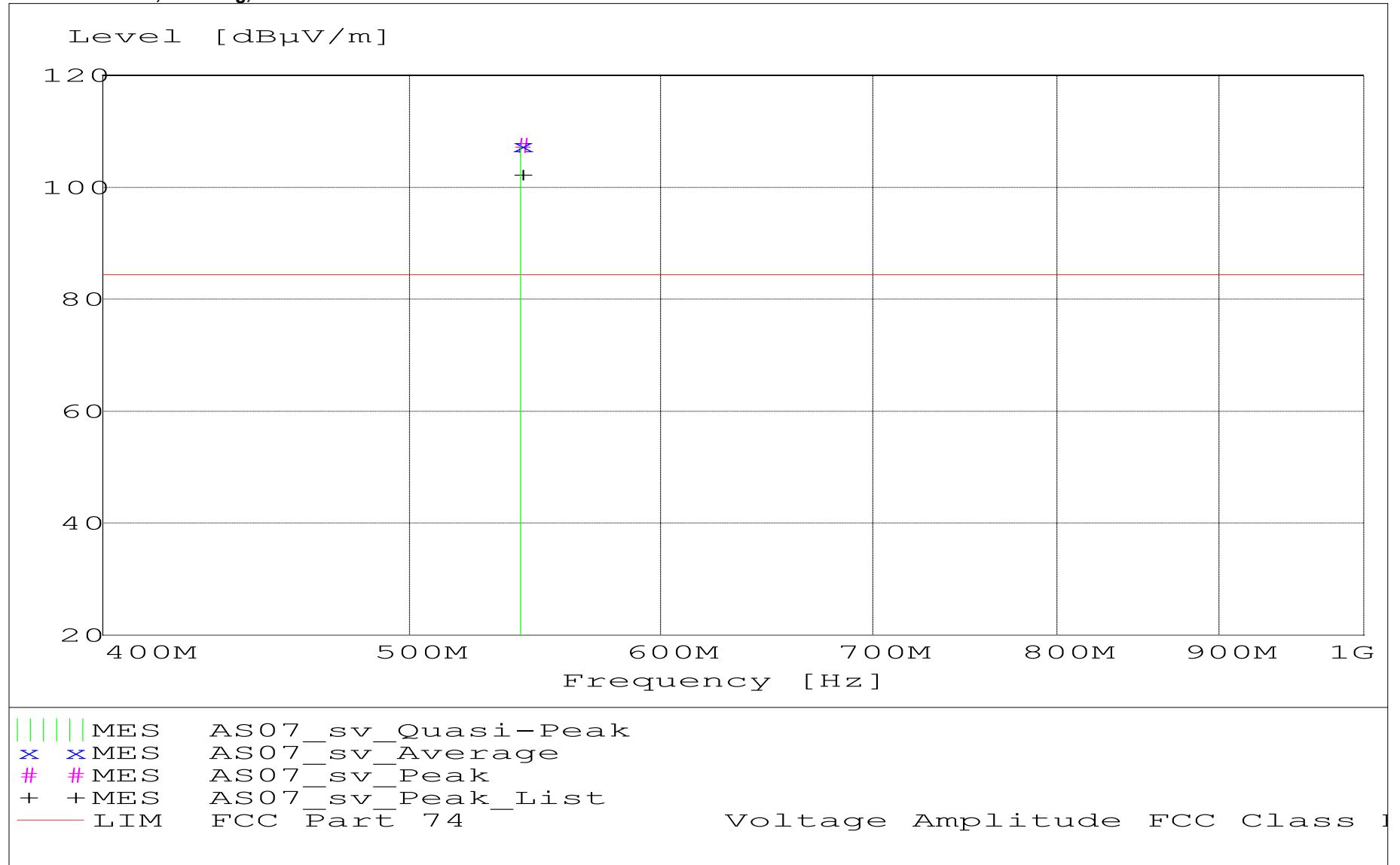
Pre-Amp --- Rohde & Schwarz TS-PR10 SN: 032001/005

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

MEASUREMENT RESULT: "AS07_sv_Final"

10/31/2003 12:30PM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EUT	Final	Comment
MHz	dBμV	Factor	Loss	Level	dBμV/m	dB	Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m			m	Deg		
542.000000	64.49	17.92	25.1	107.5	84.4	-23.1	1.00	225	MAX PEAK	Fundamental
542.000000	64.41	17.92	25.1	107.4	84.4	-23.1	1.00	225	QUASI-PEAK	Fundamental
542.000000	64.37	17.92	25.1	107.4	84.4	-23.0	1.00	225	AVERAGE	Fundamental



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

FCC Part 74

Electric Field Strength

EUT: SLX1 518 - 542 MHz
Manufacturer: Shure, Inc.
Operating Condition: 72 deg F; 51% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 1 CH 16 542.00 MHz
Test Date: 10/31/2003

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

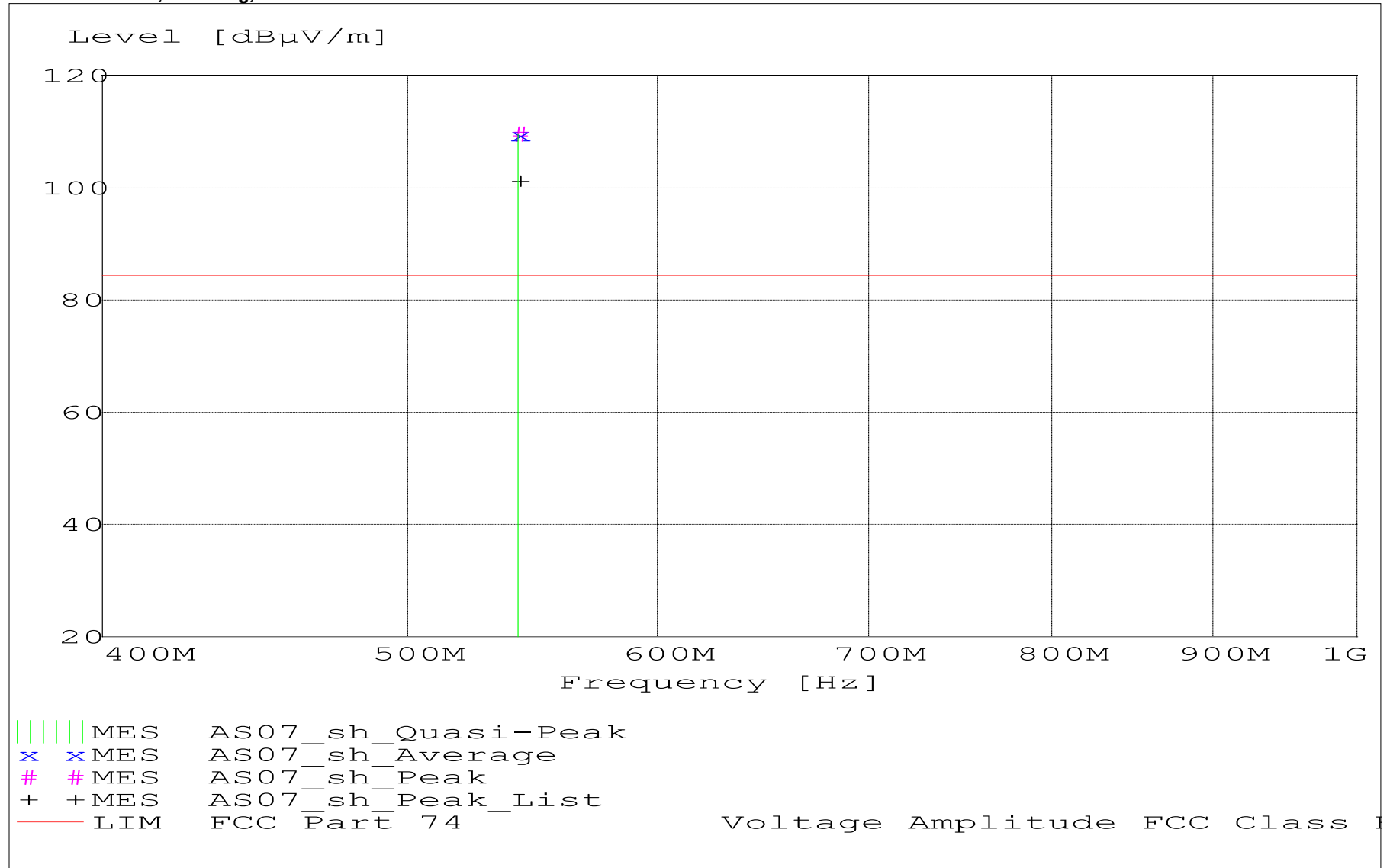
Pre-Amp --- Rohde & Schwarz TS-PR10 SN: 032001/005

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

MEASUREMENT RESULT: "AS07_sh_Final"

10/31/2003 12:35PM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EUT	Final	Comment
MHz	dBμV	Factor	Loss	Level	dBμV/m	dB	Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m			m	deg		
542.000000	66.56	17.92	25.1	109.6	84.4	-25.2	1.10	180	MAX PEAK	Fundamental
542.000000	66.52	17.92	25.1	109.5	84.4	-25.2	1.10	180	QUASI-PEAK	Fundamental
542.000000	66.46	17.92	25.1	109.5	84.4	-25.1	1.10	180	AVERAGE	Fundamental



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

FCC Part 74

Electric Field Strength

EUT: SLX1 518 - 542 MHz
Manufacturer: Shure, Inc.
Operating Condition: 72 deg F; 51% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 1 CH 16 542.00 MHz
Test Date: 10/31/2003

TEXT: "Site 3 6204&184 V3M"

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

Horn Antenna --- ETS 3115 SN: 6204

Pre-Amps ---

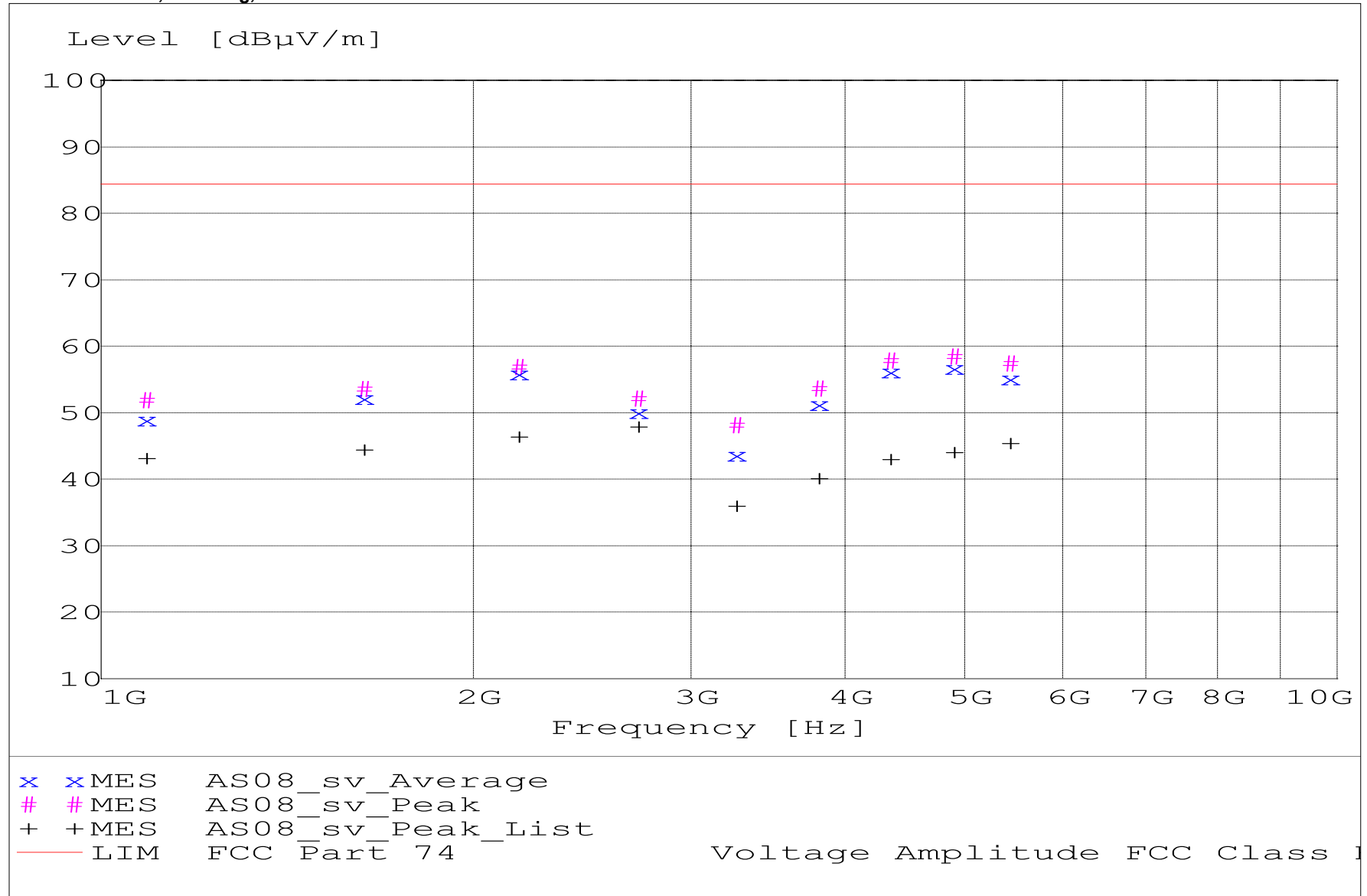
1 - 10 GHz -- Miteq AMF-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

MEASUREMENT RESULT: "AS08_sv_Final"

10/31/2003 12:58PM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EUT	Final	Comment
MHz	dBμV	Factor	Loss	Level	dBμV/m	dB	Ant. m	Angle deg	Detector	
4878.000000	61.60	34.16	-37.2	58.5	84.4	25.8	1.00	30	MAX PEAK	None
4336.000000	62.26	32.83	-37.2	57.9	84.4	26.4	1.00	30	MAX PEAK	None
5420.000000	59.92	34.60	-37.1	57.4	84.4	26.9	1.20	30	MAX PEAK	None
2168.000000	67.58	28.80	-39.4	57.0	84.4	27.4	1.00	0	MAX PEAK	None
4878.000000	59.84	34.16	-37.2	56.8	84.4	27.6	1.00	30	AVERAGE	None
4336.000000	60.60	32.83	-37.2	56.3	84.4	28.1	1.00	30	AVERAGE	None
2168.000000	66.57	28.80	-39.4	56.0	84.4	28.4	1.00	0	AVERAGE	None
5420.000000	57.70	34.60	-37.1	55.2	84.4	29.2	1.20	30	AVERAGE	None
3794.000000	59.31	32.24	-37.9	53.7	84.4	30.7	1.20	30	MAX PEAK	None
1626.000000	66.46	27.48	-40.4	53.6	84.4	30.8	1.10	0	MAX PEAK	None
1626.000000	65.14	27.48	-40.4	52.3	84.4	32.1	1.10	0	AVERAGE	None
2710.000000	61.99	29.70	-39.5	52.1	84.4	32.2	1.00	0	MAX PEAK	None
1084.000000	61.73	25.52	-35.3	51.9	84.4	32.5	1.40	180	MAX PEAK	None
3794.000000	56.96	32.24	-37.9	51.3	84.4	33.0	1.20	30	AVERAGE	None
2710.000000	59.95	29.70	-39.5	50.1	84.4	34.3	1.00	0	AVERAGE	None
1084.000000	58.79	25.52	-35.3	49.0	84.4	35.4	1.40	180	AVERAGE	None
3252.000000	56.45	30.85	-39.1	48.2	84.4	36.2	1.00	0	MAX PEAK	None
3252.000000	51.95	30.85	-39.1	43.7	84.4	40.7	1.00	0	AVERAGE	None



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

FCC Part 74

Electric Field Strength

EUT: SLX1 518 - 542 MHz
Manufacturer: Shure, Inc.
Operating Condition: 72 deg F; 51% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 1 CH 16 542.00 MHz
Test Date: 10/31/2003

TEXT: "Site 3 6204&184 H3M"

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

Horn Antenna --- ETS 3115 SN: 6204

Pre-Amps ---

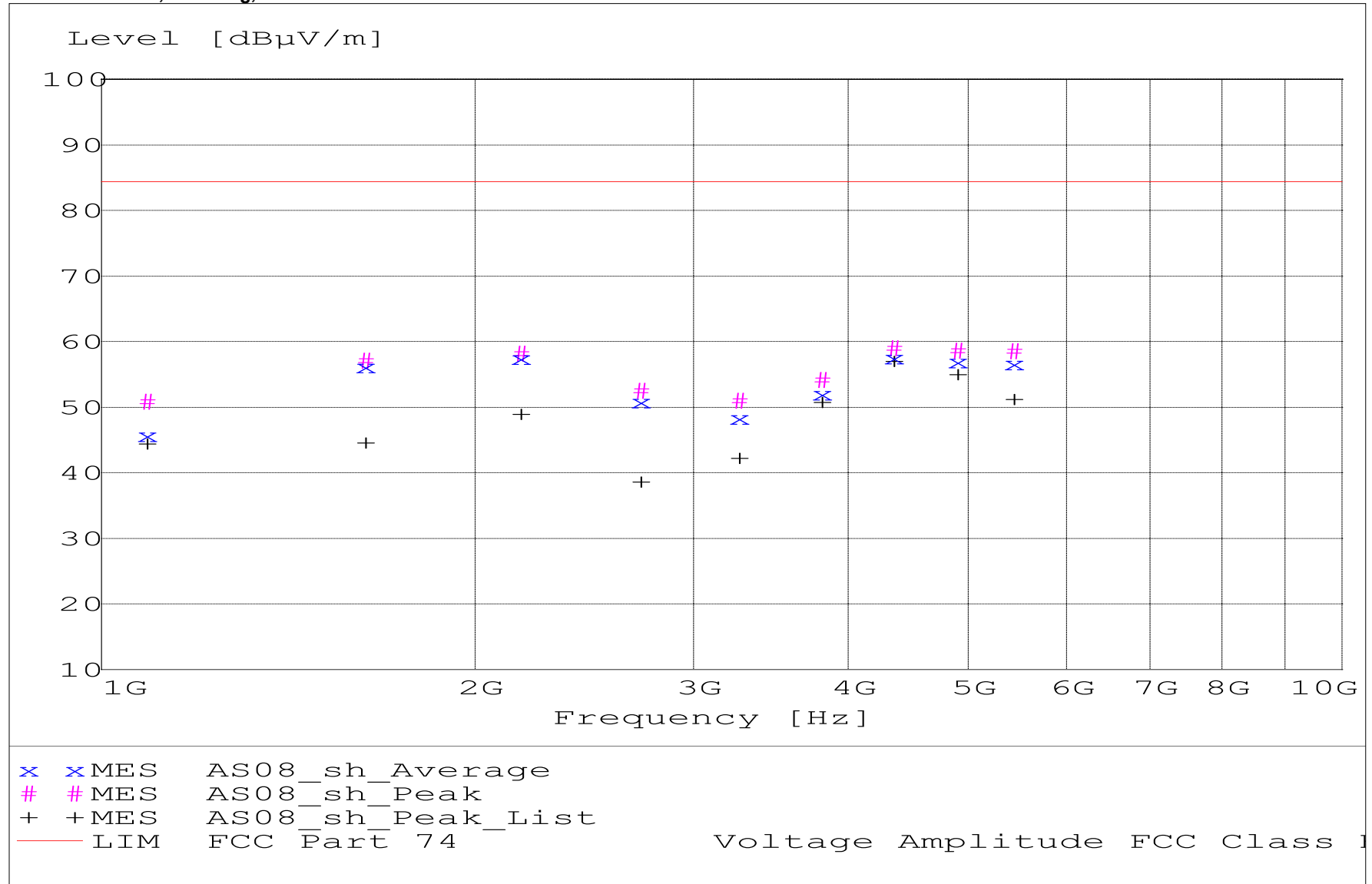
1 - 10 GHz -- Miteq AMF-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090





Company: Shure Inc.
 Model Tested: SLX1
 Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

MEASUREMENT RESULT: "AS08_sh_Final"

10/31/2003 1:19PM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EUT	Final	Comment
MHz	dBμV	Factor	Loss	Level	dBμV/m	dB	Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m		m	deg		
4336.000000	63.34	32.83	-37.2	59.0	84.4	25.4	1.00	0	MAX PEAK	None
4878.000000	61.73	34.16	-37.2	58.7	84.4	25.7	1.50	30	MAX PEAK	None
5420.000000	61.08	34.60	-37.1	58.6	84.4	25.8	1.50	90	MAX PEAK	None
2168.000000	68.80	28.80	-39.4	58.2	84.4	26.2	1.60	0	MAX PEAK	None
4336.000000	61.95	32.83	-37.2	57.6	84.4	26.7	1.00	0	AVERAGE	None
2168.000000	68.12	28.80	-39.4	57.5	84.4	26.9	1.60	0	AVERAGE	None
1626.000000	70.04	27.48	-40.4	57.2	84.4	27.2	1.60	270	MAX PEAK	None
4878.000000	60.10	34.16	-37.2	57.0	84.4	27.3	1.50	30	AVERAGE	None
5420.000000	59.21	34.60	-37.1	56.7	84.4	27.7	1.50	90	AVERAGE	None
1626.000000	69.13	27.48	-40.4	56.3	84.4	28.1	1.60	270	AVERAGE	None
3794.000000	59.80	32.24	-37.9	54.2	84.4	30.2	1.00	315	MAX PEAK	None
2710.000000	62.39	29.70	-39.5	52.6	84.4	31.8	1.10	30	MAX PEAK	None
3794.000000	57.69	32.24	-37.9	52.1	84.4	32.3	1.00	315	AVERAGE	None
3252.000000	59.31	30.85	-39.1	51.1	84.4	33.3	1.10	315	MAX PEAK	None
2710.000000	60.74	29.70	-39.5	50.9	84.4	33.5	1.10	30	AVERAGE	None
1084.000000	60.69	25.52	-35.3	50.9	84.4	33.5	1.60	180	MAX PEAK	None
3252.000000	56.67	30.85	-39.1	48.4	84.4	36.0	1.10	315	AVERAGE	None
1084.000000	55.55	25.52	-35.3	45.7	84.4	38.6	1.60	180	AVERAGE	None



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

9.0 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 SLX Wireless BodyPack Transmitter oscillator circuitry to stabilize. The following information was taken:

FREQUENCY STABILITY FOR TEMPERATURE VARIATION IN MHz:

-30°	EUT WILL NOT OPERATE
-20°	529.24902806
-10°	529.25067134
0°	529.2511523
+10°	529.251052
+20°	529.25049098
+30°	529.24960922
+40°	529.24908818
+50°	529.24902806

Worst Case Variance:

1150 Hz

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

Frequency Tolerance: = **0.00005**

Assigned Frequency: = **529250000 Hz**

Limit = $529250000 * 0.005\%$ = **26462.5 Hz**

NOTE: This is well inside the specified limits.



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

GRAPH(S) TAKEN FOR FREQUENCY

STABILITY WHEN VARYING THE TEMPERATURE

PART 2.1055a

NOTE: This is well inside the specified limits.

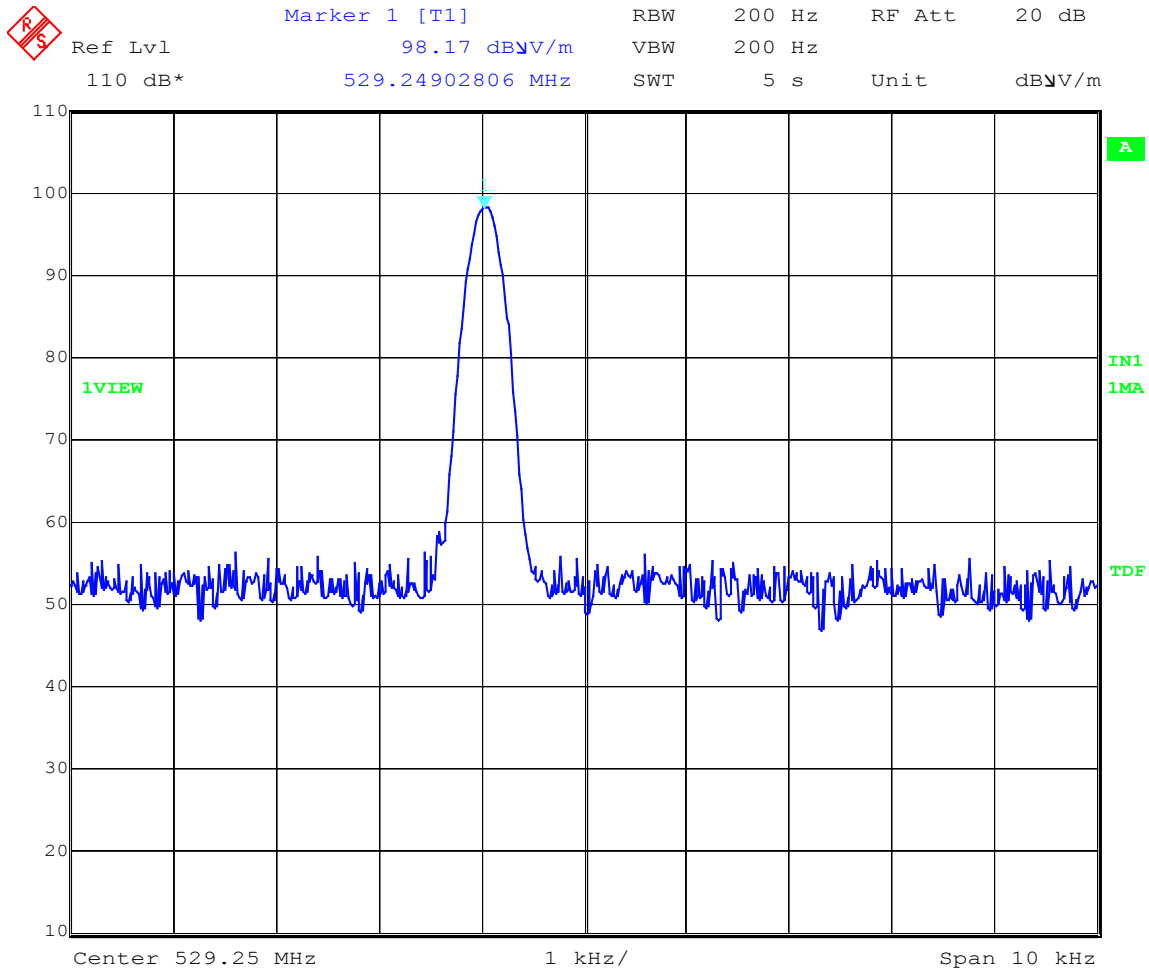


Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

-20 deg. C



Date: 4.NOV.2003 15:38:56

EUT: SLX1 518 – 542 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 1 CH 8 529.25 MHz
Date: 11-04-03

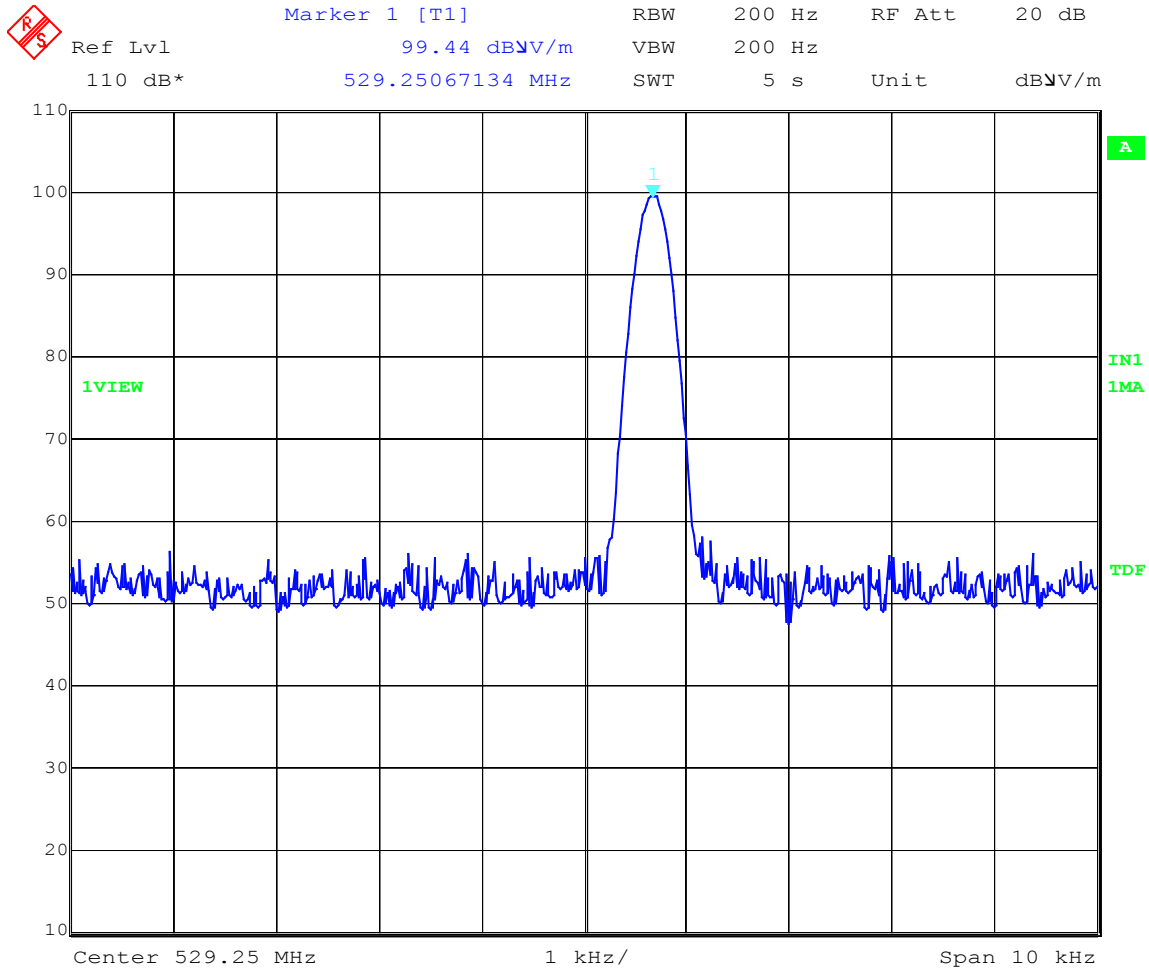


Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

-10 deg. C



Date: 4.NOV.2003 15:07:01

EUT: SLX1 518 – 542 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 1 CH 8 529.25 MHz
Date: 11-04-03

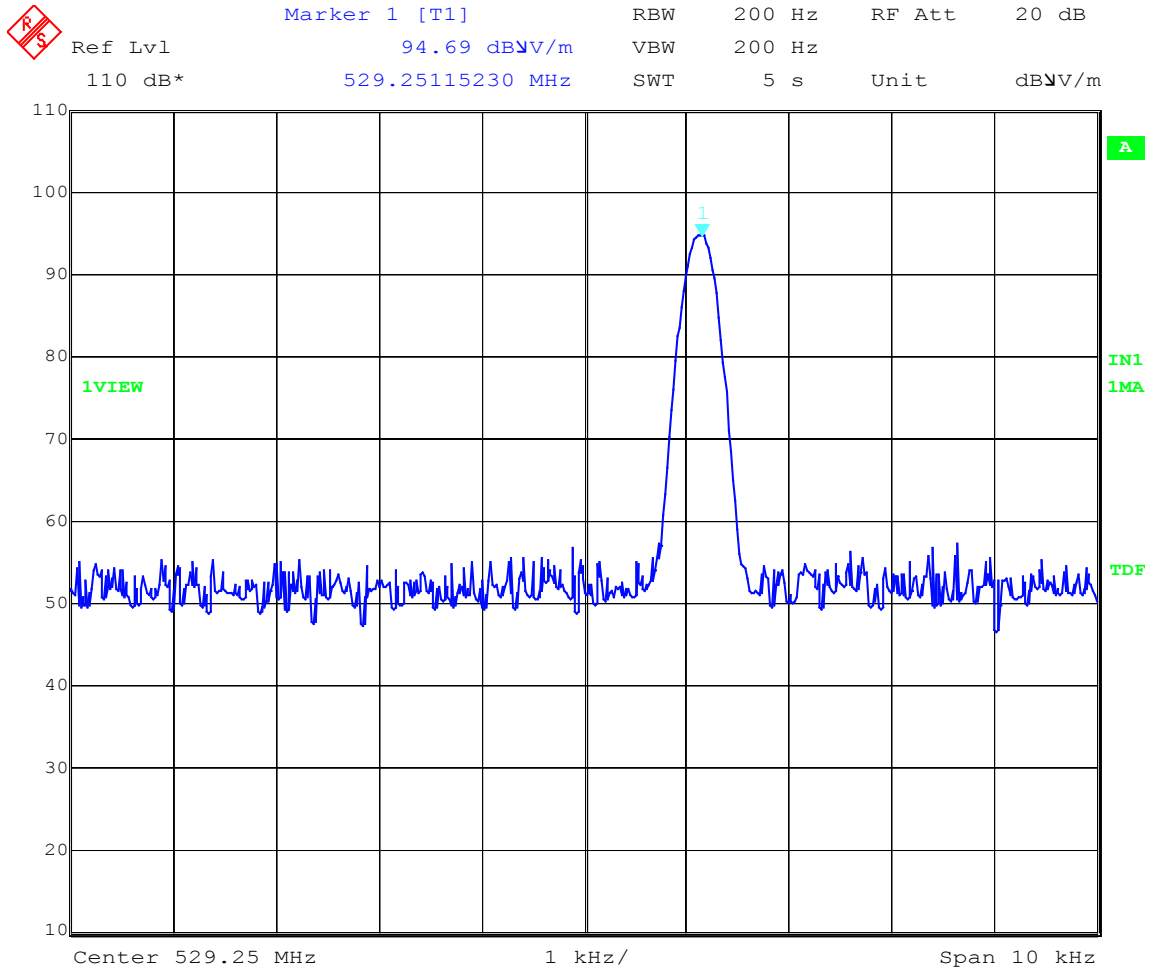


Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

0 deg. C



Date: 4.NOV.2003 13:06:08

EUT: SLX1 518 – 542 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 1 CH 8 529.25 MHz
Date: 11-04-03

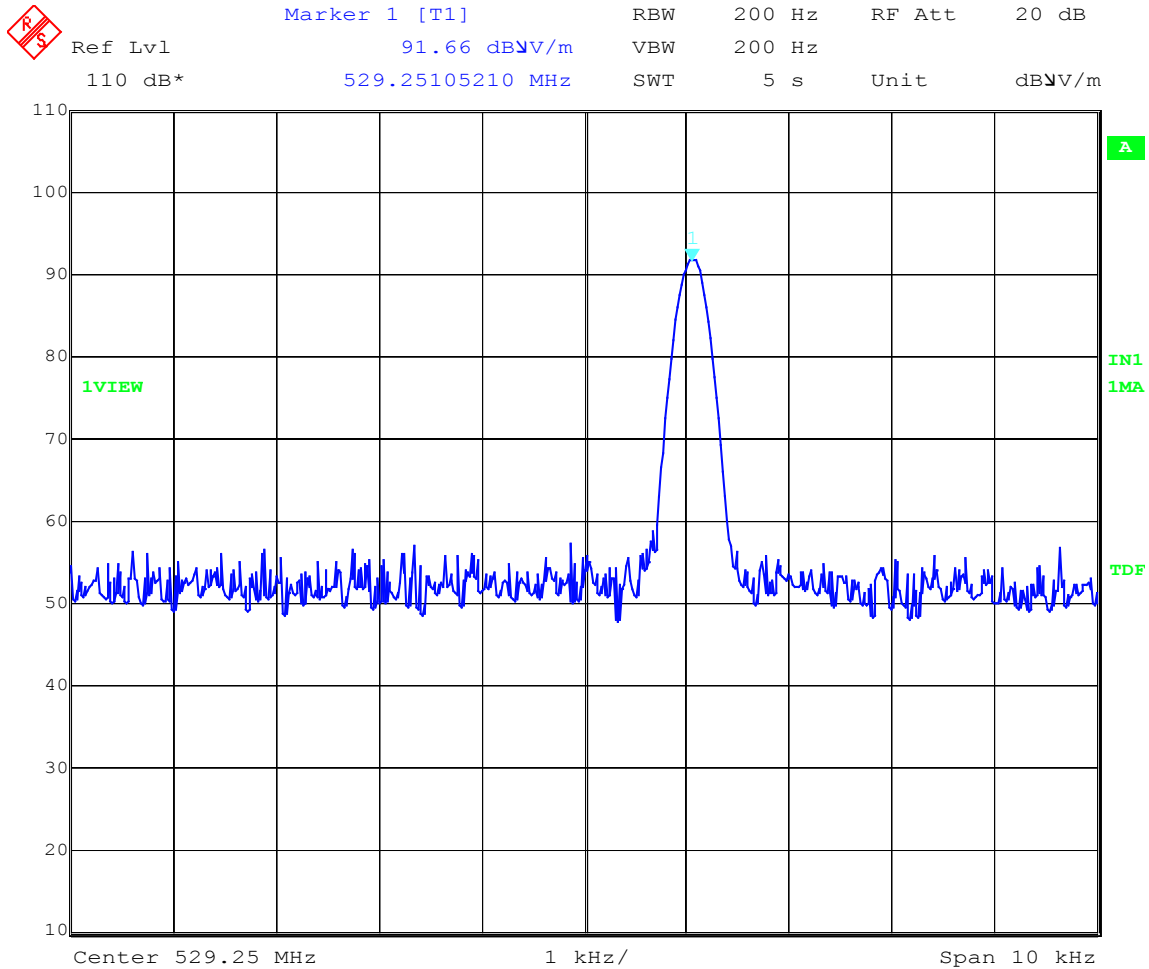


Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

+10 deg. C



Date: 4.NOV.2003 12:35:07

EUT: SLX1 518 – 542 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 1 CH 8 529.25 MHz
Date: 11-04-03

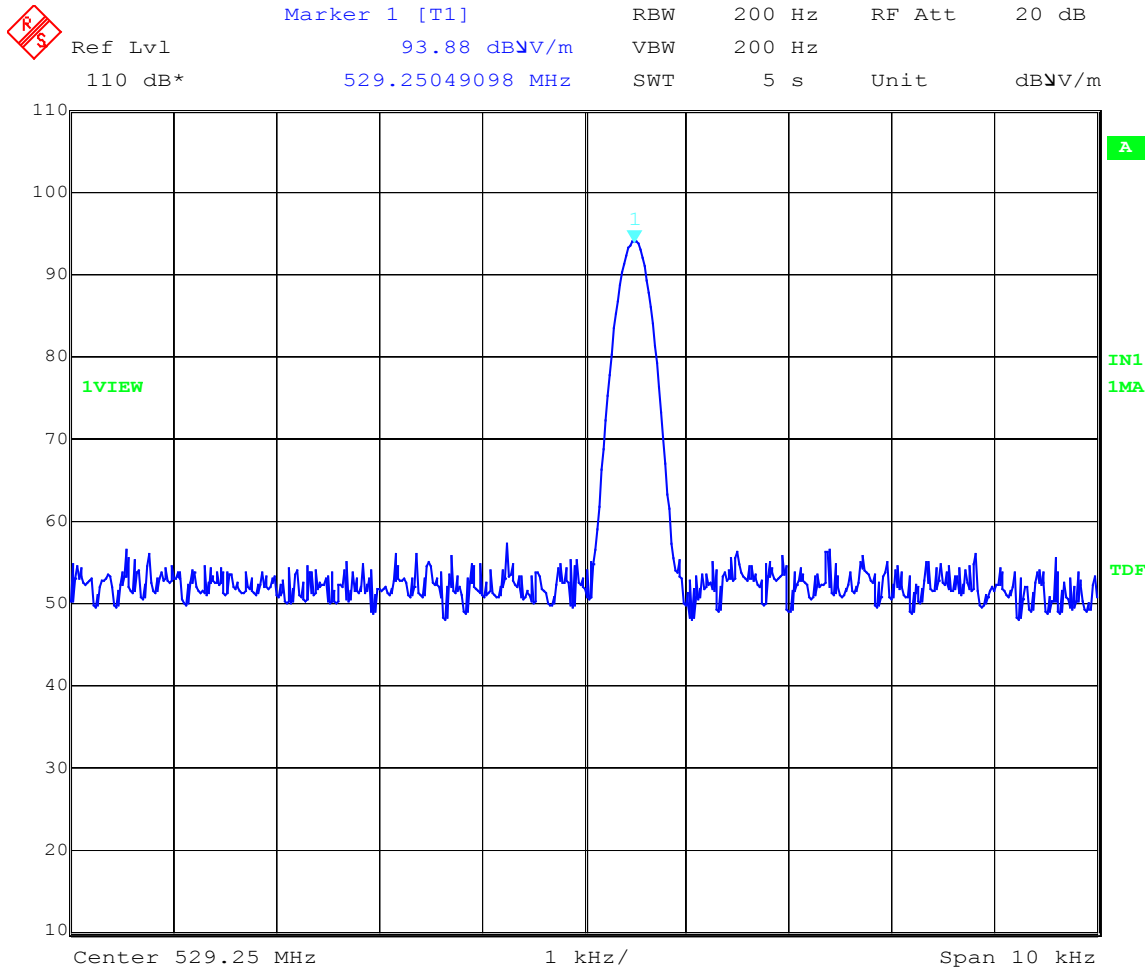


Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

+20 deg. C



Date: 4.NOV.2003 12:06:52

EUT: SLX1 518 – 542 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 1 CH 8 529.25 MHz
Date: 11-04-03

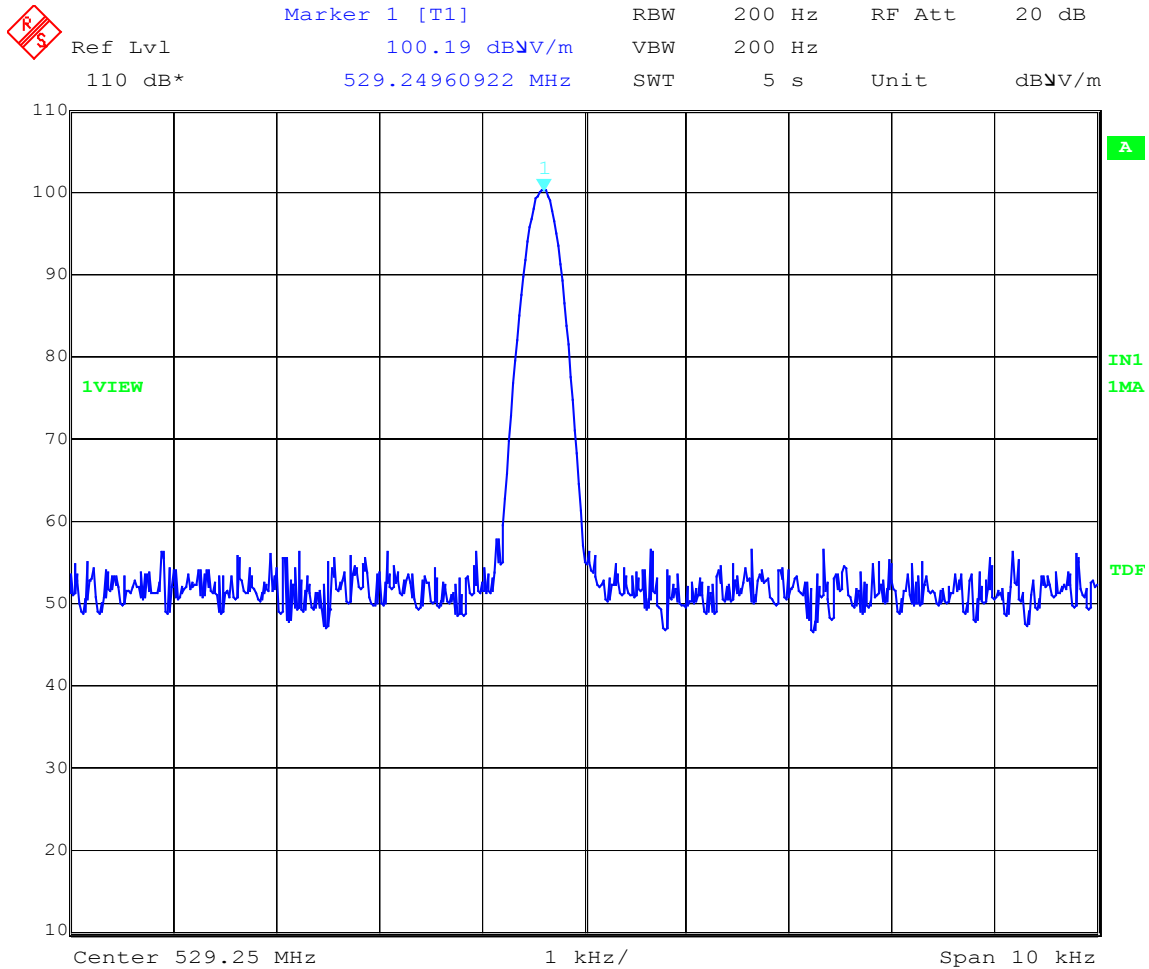


Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

+30 deg. C



Date: 4.NOV.2003 10:32:52

EUT: SLX1 518 – 542 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 1 CH 8 529.25 MHz
Date: 11-04-03

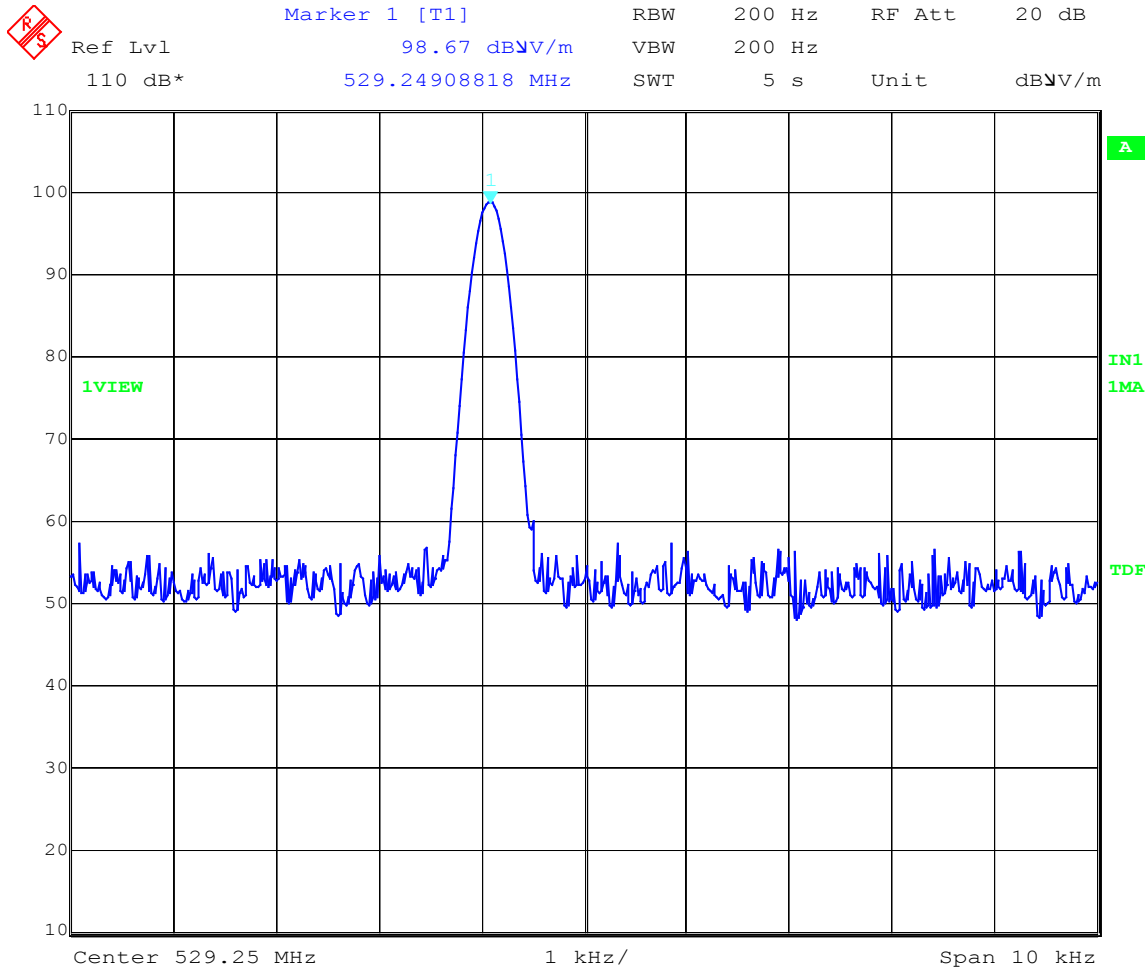


Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

+40 deg. C



Date: 4.NOV.2003 11:01:24

EUT: SLX1 518 – 542 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 1 CH 8 529.25 MHz
Date: 11-04-03

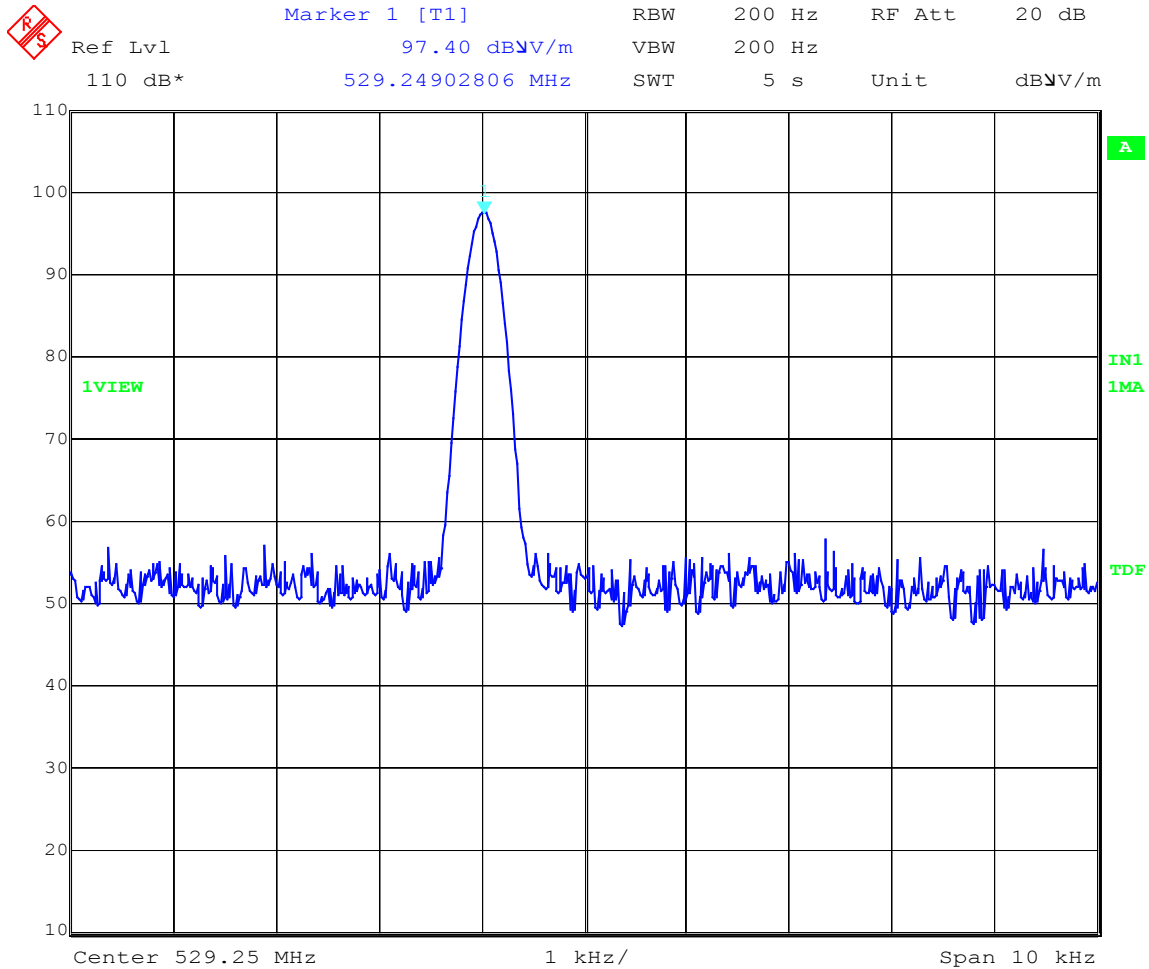


Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

+50 deg. C



Date: 4.NOV.2003 11:30:02

EUT: SLX1 518 – 542 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 1 CH 8 529.25 MHz
Date: 11-04-03

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

10.0 FREQUENCY STABILITY (TEMPERATURE) PHOTOS TAKEN DURING TESTING





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

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

The frequency stability of SLX Wireless BodyPack 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%	0
100%	0
115%	0

NOTE: This test was not run because the device is hand held.

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	529250417.82
Frequency #2	529250356.68
Frequency #3	0
Frequency #4	0
Frequency #5	0
Frequency #6	0

Worst Case Variance: = **61.14**

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: = **26462.5**

NOTE: This is well inside the specified limits.



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

GRAPH(S) TAKEN FOR FREQUENCY

STABILITY WHEN VARYING THE

PRIMARY SUPPLY VOLTAGE

PART 2.1055d

NOTE: This is well inside the specified limits.

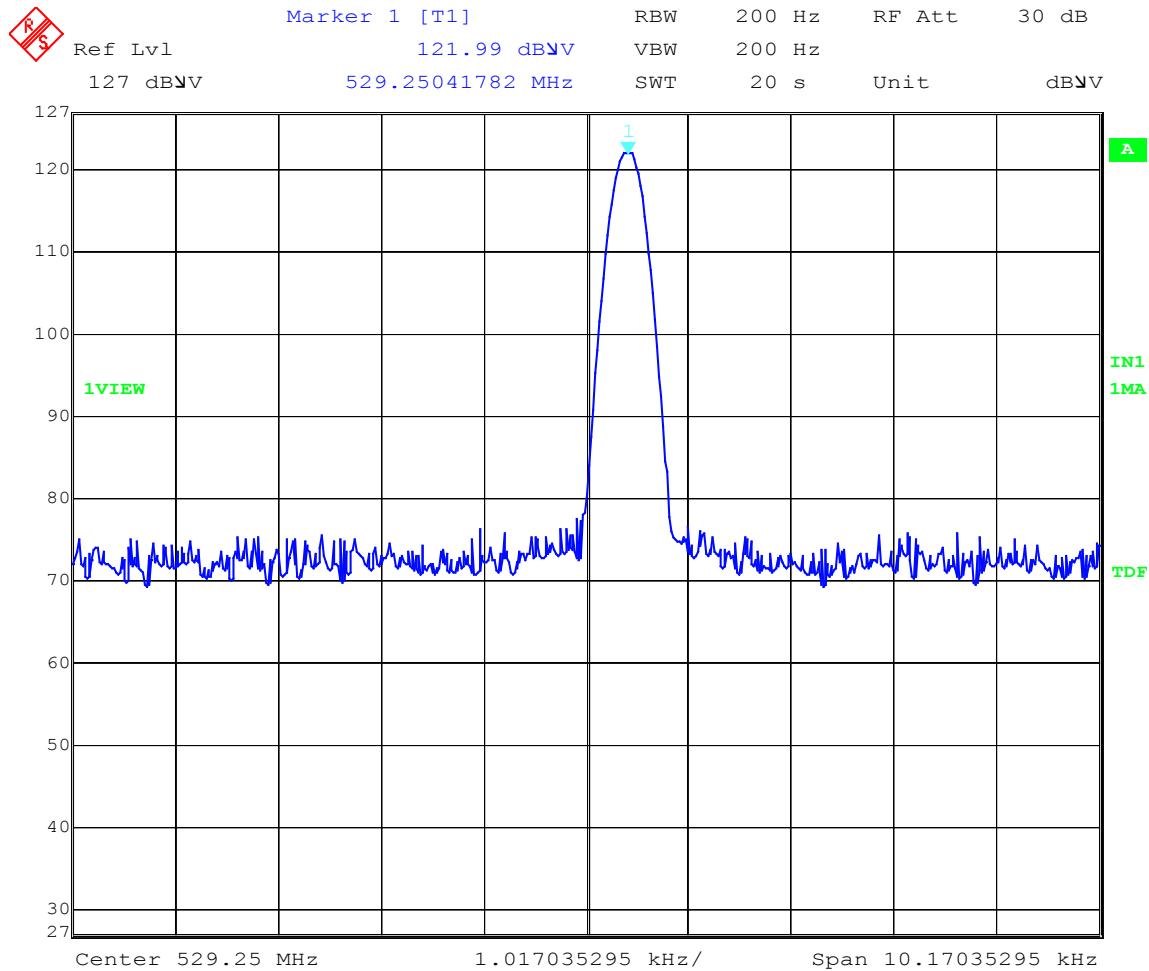


Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

3.0 Volt Supply



Date: 3.NOV.2003 13:41:28

EUT: SLX1 518 – 542 MHz
Test: Frequency Stability – Supply Voltage
Operator: Craig Brandt
Comment: GRP 1 CH 8 529.25 MHz
Date: 11-03-03

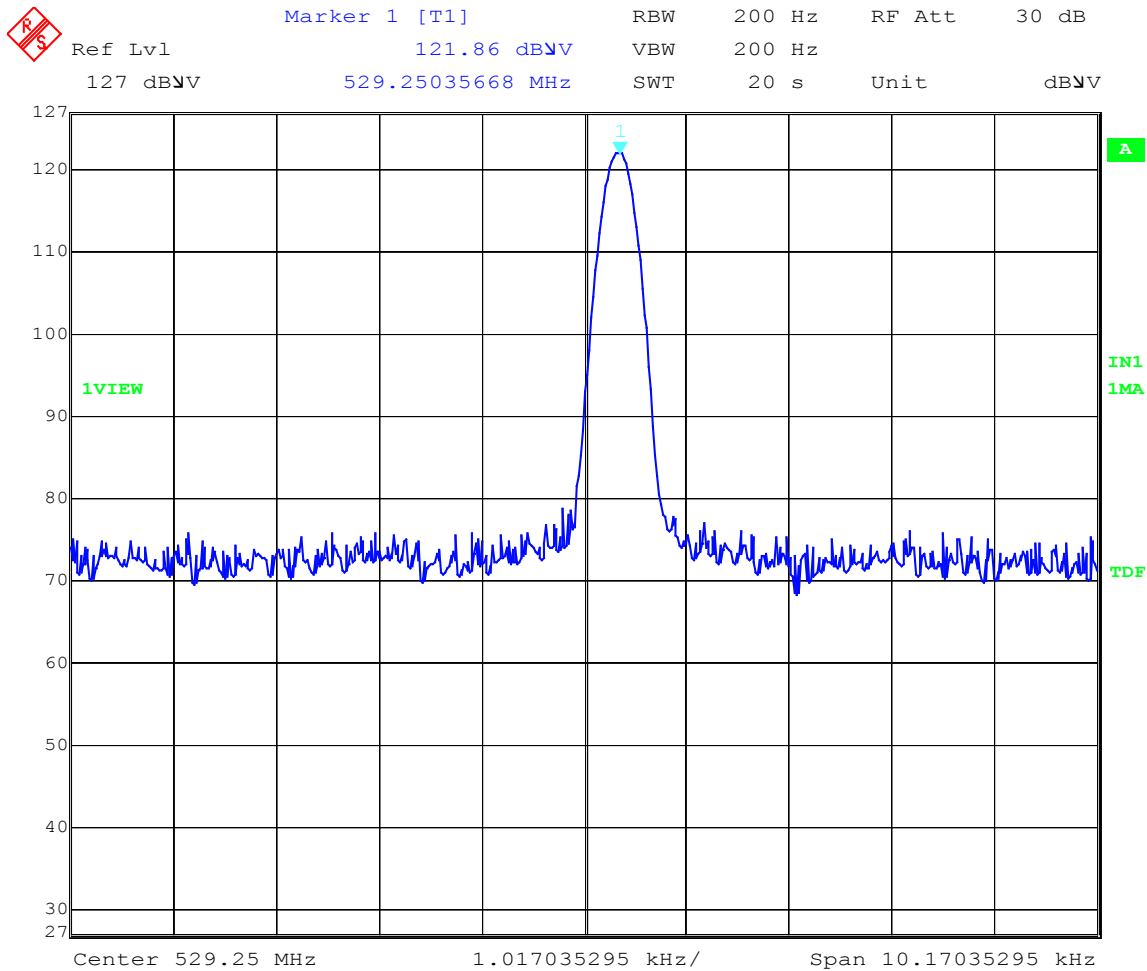


Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

2.4 Volt Supply



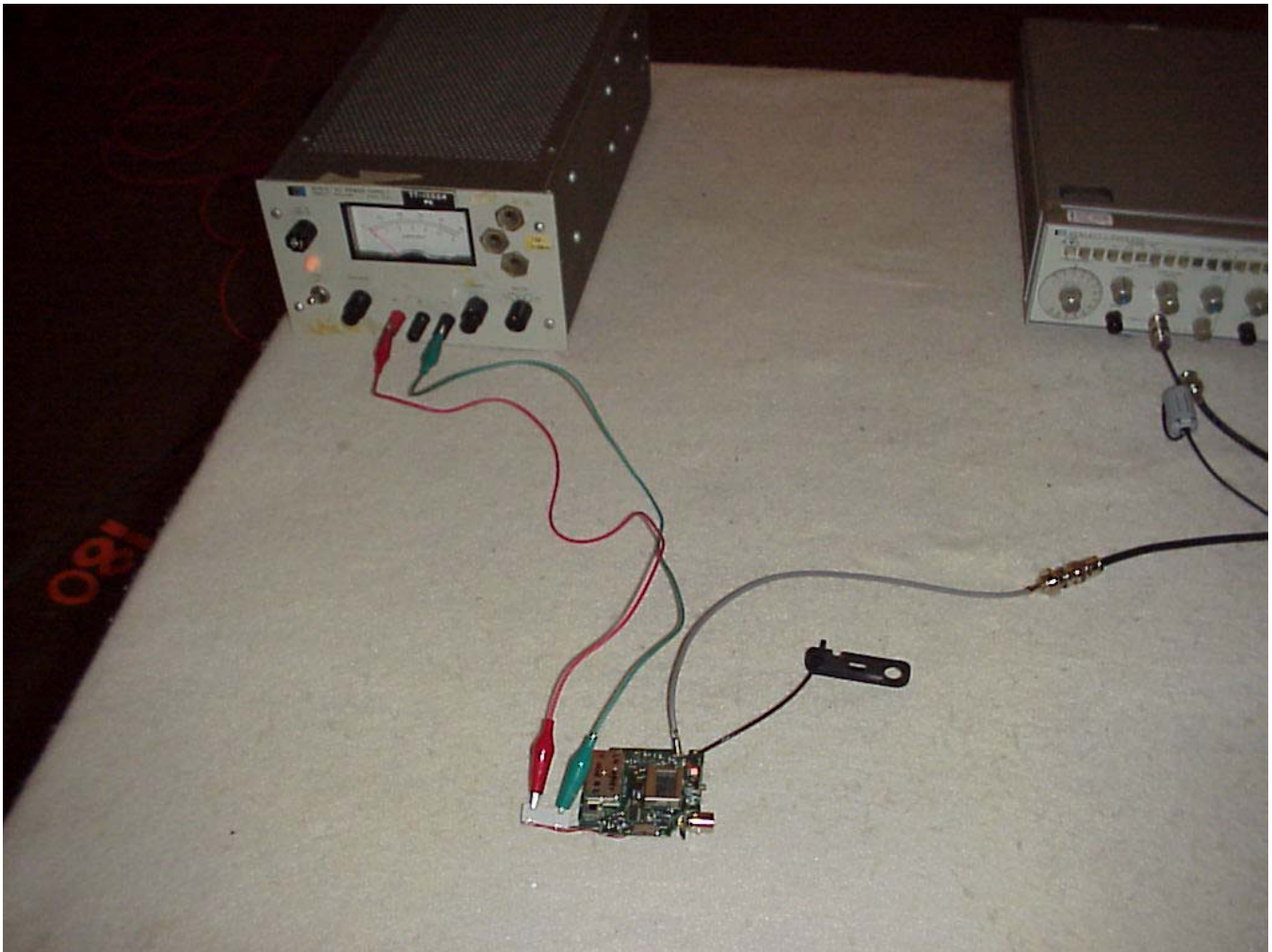
Date: 3.NOV.2003 13:43:22

EUT: SLX1 518 – 542 MHz
Test: Frequency Stability – Supply Voltage
Operator: Craig Brandt
Comment: GRP 1 CH 8 529.25 MHz
Date: 11-03-03

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

12.0 FREQUENCY STABILITY (VOLTAGE) PHOTOS TAKEN DURING TESTING





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

SLX1-J3 - 572 MHz to 596 MHz

Group 2 Channel 8 & Group 2 Channel 16



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

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

As stated in PART 74.861 (e)(1)(ii), the RF output power should not exceed .25 watts. The RF output of the SLX Wireless BodyPack Transmitter was connected to a Spectrum Analyzer through suitable attenuation. All cables, connectors, and attenuators were calibrated prior to testing. The RF output power was measured using the following test method:

Actual Measurements Taken:

122.04 dBuV Measured output of the transmitter
+0 dB includes measured pads & cable loss
122.04 dBuV equals 0.032 watts

LIMIT:

Manufacturer's rated output power = .035 watts

MARGIN:

$.25 - 0.032 = .2180$ watts



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

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GRAPH(S) TAKEN OF THE RF POWER

OUTPUT MEASUREMENT

PART 2.1046



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

Output Power = 32.0 mW

EUT: SLX1 572 – 596 MHz

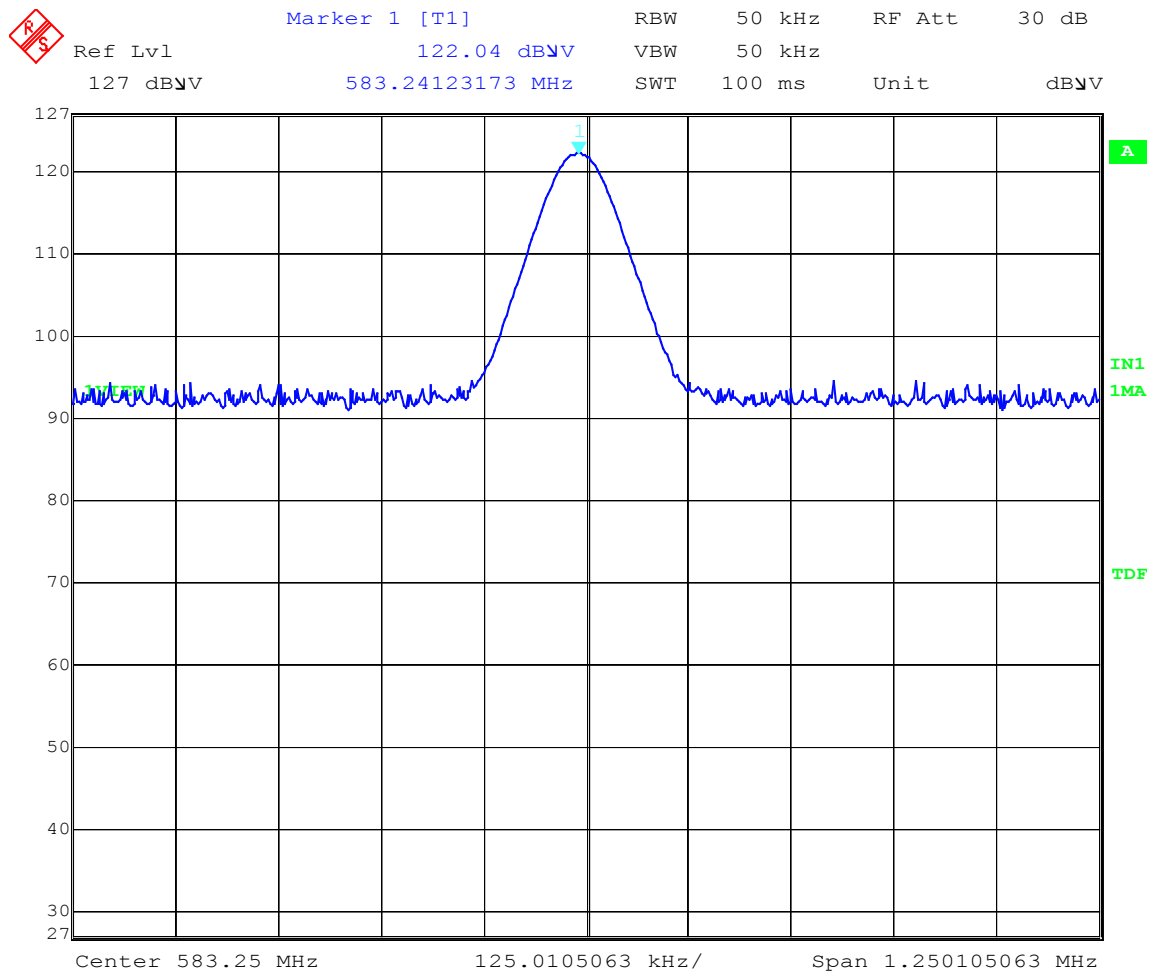
Test: Output Power - Conducted

Operator: Craig Brandt

Comment: GRP 2 CH 8 583.25 MHz

Date: 11-03-03

583.25 MHz



Date: 3.NOV.2003 12:50:08



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

Output Power = 28.8 mW

EUT: SLX1 572 – 596 MHz

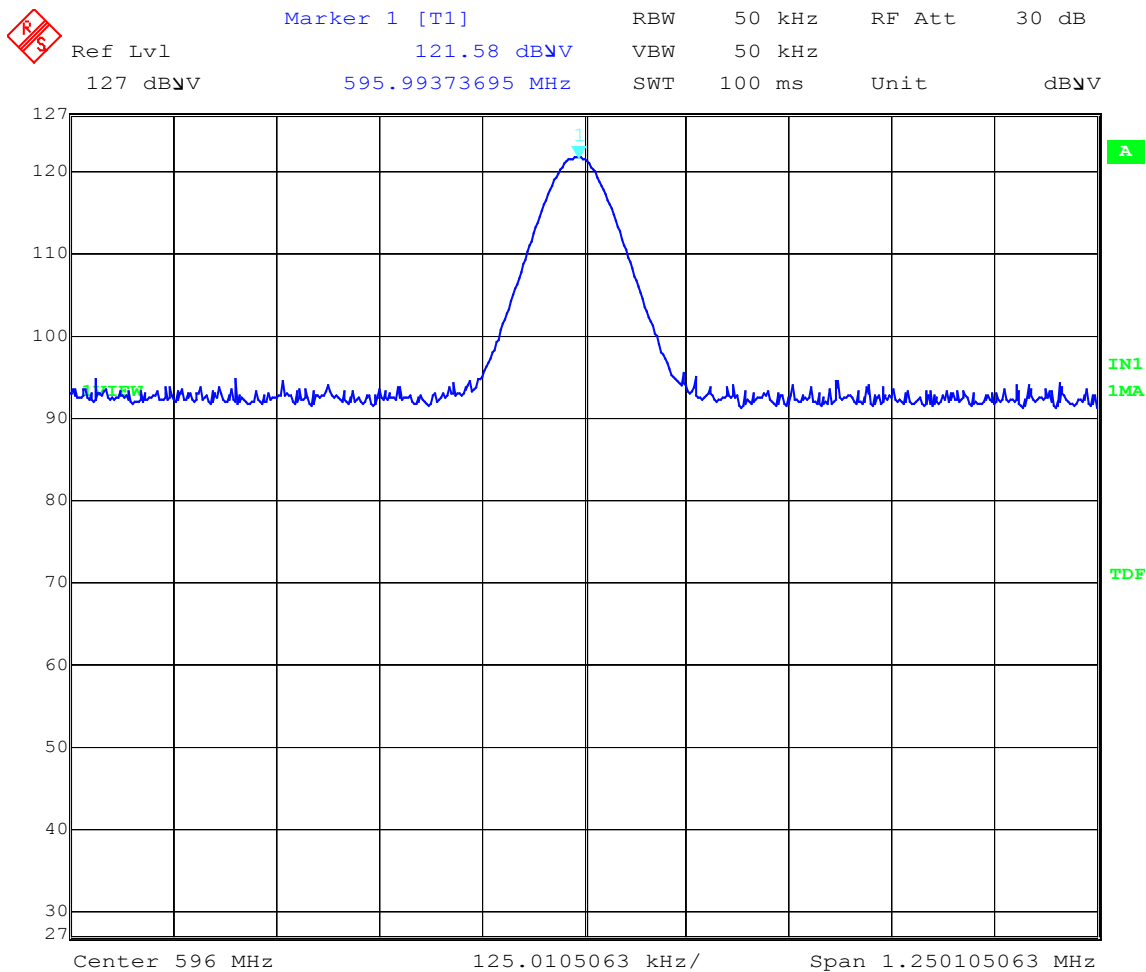
Test: Output Power - Conducted

Operator: Craig Brandt

Comment: GRP 2 CH 16 596.00 MHz

Date: 11-03-03

596.00 MHz



Date: 3.NOV.2003 12:51:34



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

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 20 Hz to 20 kHz is submitted with this report.

b. Equipment which employs modulation limiting

A family of curves showing the percentage of modulation versus the modulation input voltage with sufficient information showing the modulation limiting capability throughout the range of modulating frequencies and input modulating signal levels employed.



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

GRAPH(S) TAKEN SHOWING THE FREQUENCY RESPONSE OF THE AUDIO MODULATING CIRCUIT

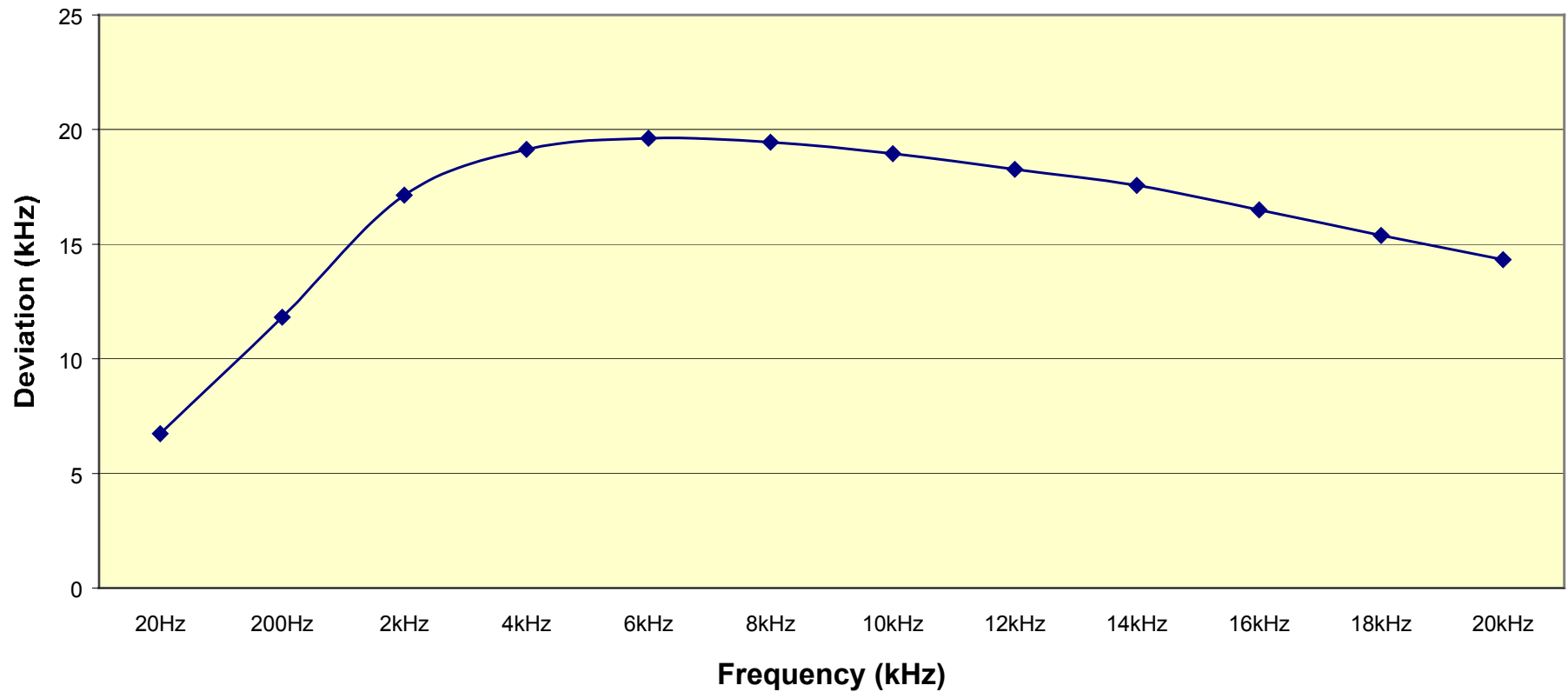
PART 2.1047



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

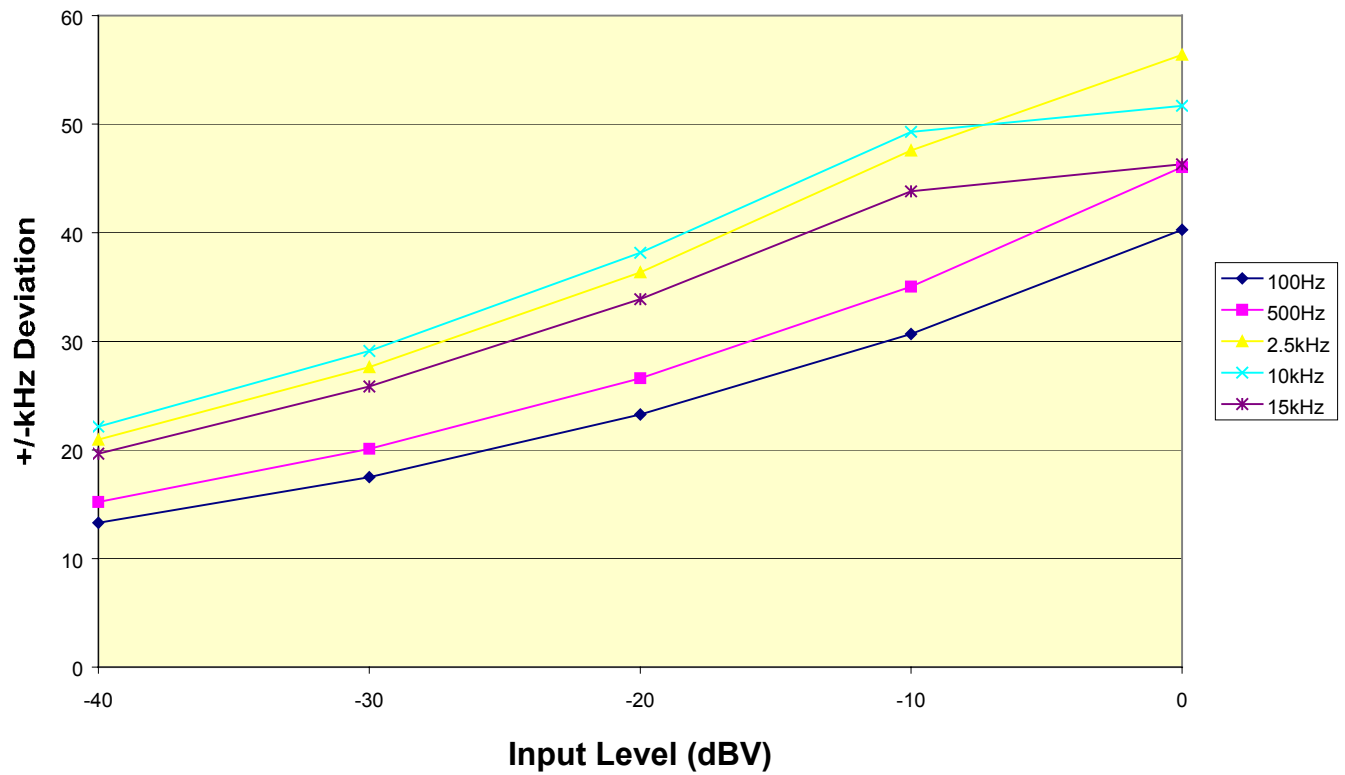
1250 Peterson Dr., Wheeling, IL 60090

SLX1 (638.000MHz) Frequency vs Deviation for -45dBV RMS Input



APPENDIX B

SLX1 (638.000 MHz) Input Level vs Deviation





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

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:

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)

$$B_n = 2M + 2DK, \quad K=1$$

B_n = Bandwidth

$$M = 15 \text{ kHz},$$

M = Maximum Modulating Frequency

$$D = 45 \text{ kHz},$$

D = Peak Deviation

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

GRAPH(S) TAKEN OF THE OCCUPIED BANDWIDTH

PART 2.1049



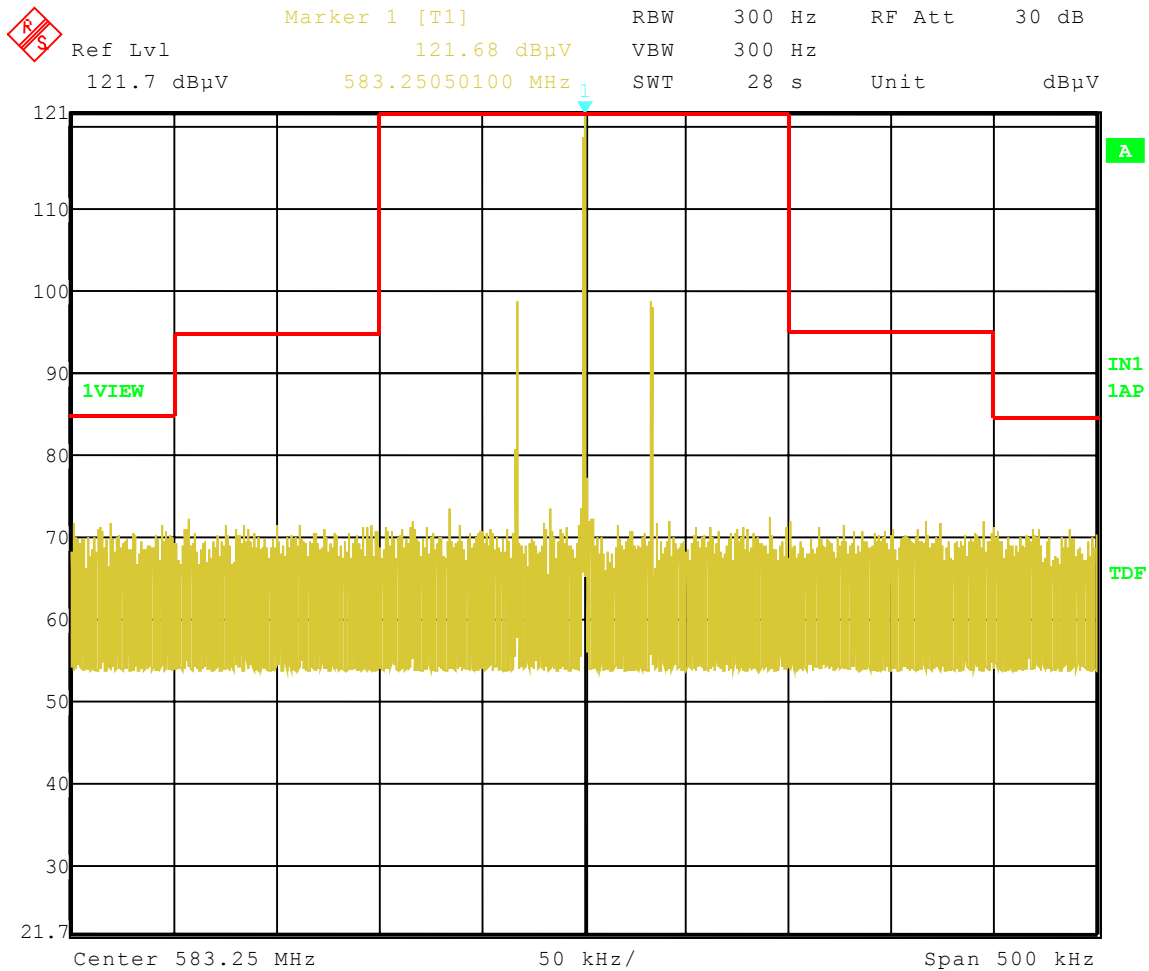
Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

EUT: SLX1 572 – 596 MHz
Test: Occupied Bandwidth / Band Edges
Operator: Craig Brandt
Comment: GRP 2 CH 8 583.25 MHz
Date: 11-03-03

Unmodulated Carrier:



Date: 3.NOV.2003 12:57:03



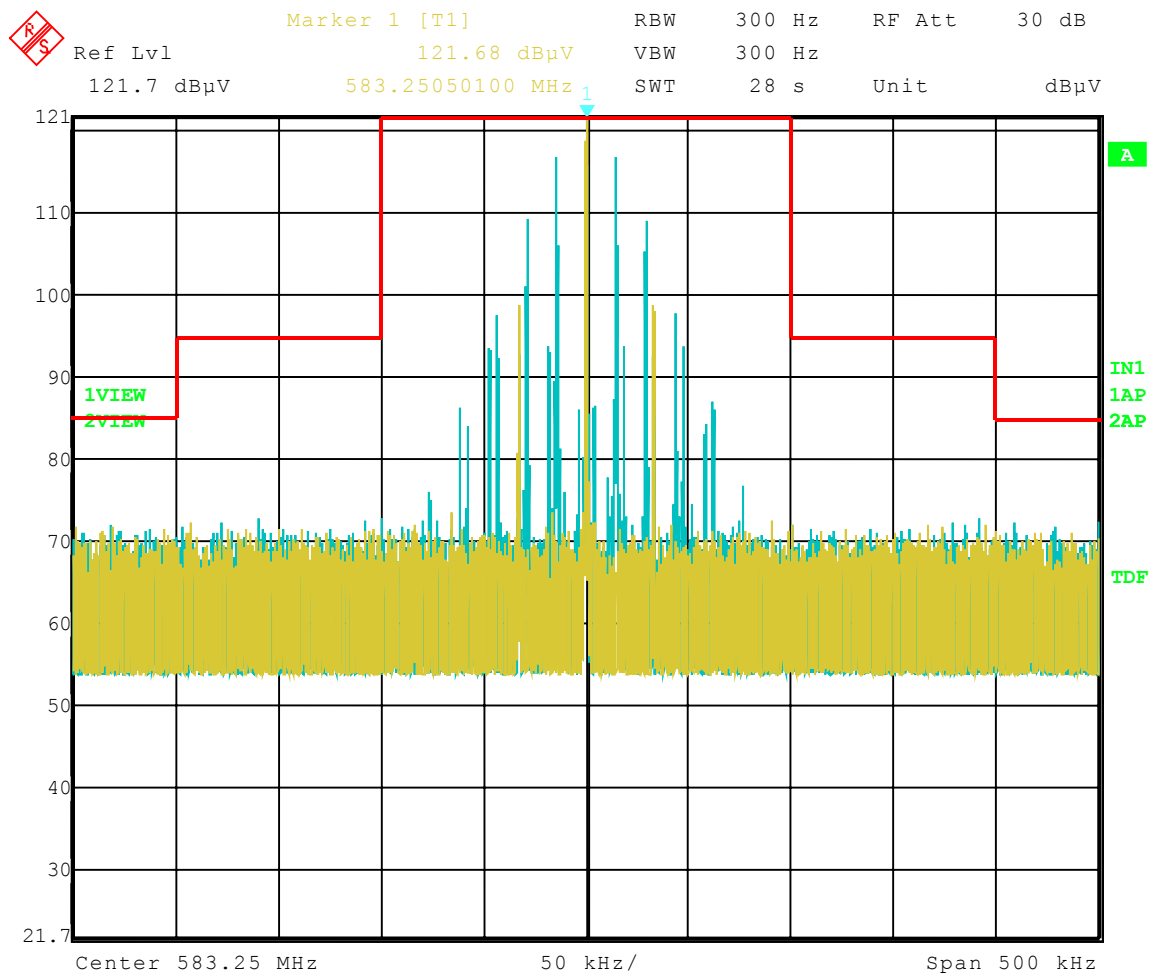
Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

EUT: SLX1 572 – 596 MHz
Test: Occupied Bandwidth / Band Edges
Operator: Craig Brandt
Comment: GRP 2 CH 8 583.25 MHz
Date: 11-03-03

Yellow: Unmodulated Carrier
Blue: 15 kHz 85% modulated



Date: 3.NOV.2003 13:01:34



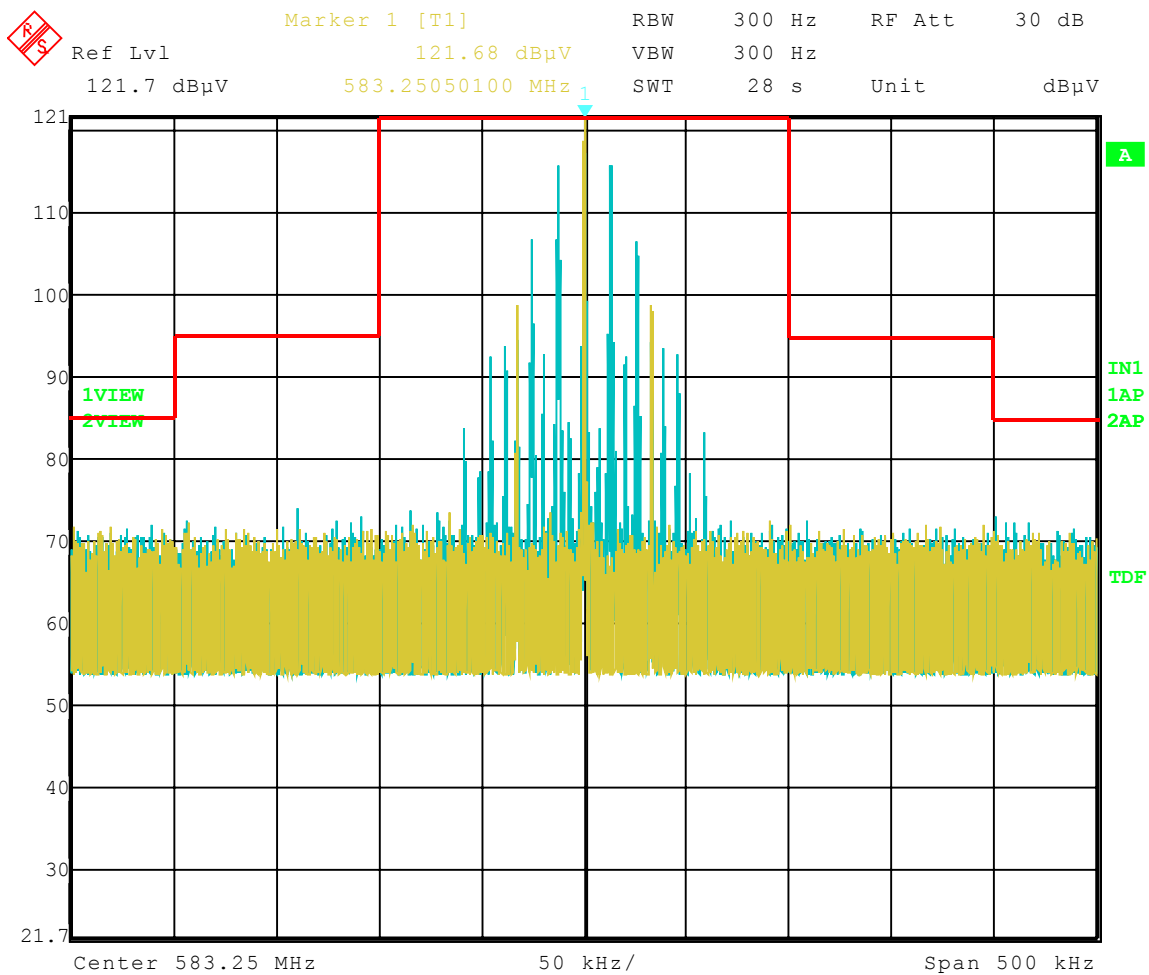
Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

EUT: SLX1 572 – 596 MHz
Test: Occupied Bandwidth / Band Edges
Operator: Craig Brandt
Comment: GRP 2 CH 8 583.25 MHz
Date: 11-03-03

Yellow: Unmodulated Carrier
Blue: 10 kHz 50% modulated



Date: 3.NOV.2003 13:03:58



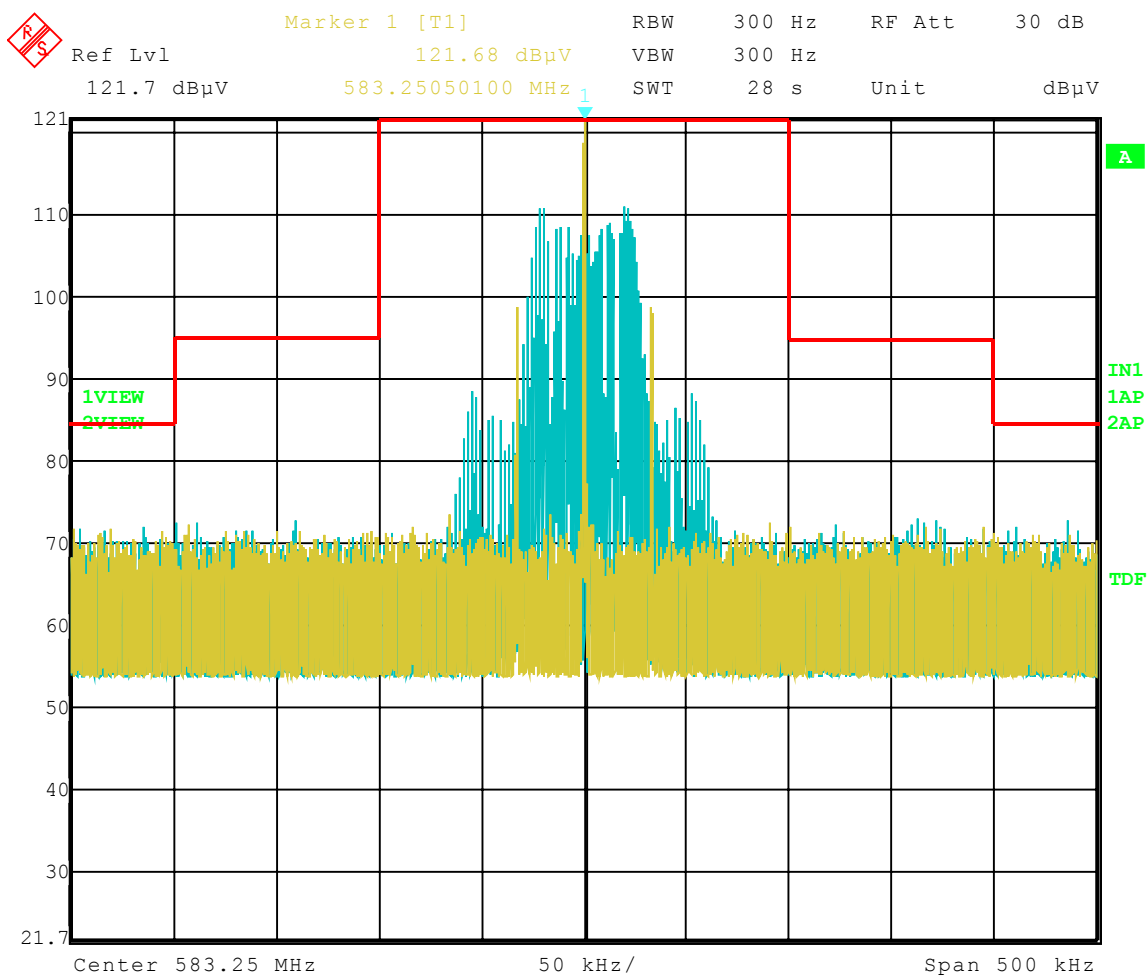
Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

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APPENDIX B

EUT: SLX1 572 – 596 MHz
Test: Occupied Bandwidth / Band Edges
Operator: Craig Brandt
Comment: GRP 2 CH 8 583.25 MHz
Date: 11-03-03

Yellow: Unmodulated Carrier
Blue: 2 kHz 16 dB > 50% modulated



Date: 3.NOV.2003 13:09:03

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

5.0 OCCUPIED BANDWIDTH PHOTOS TAKEN DURING TESTING





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

6.0 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 572 MHz to 596 MHz.

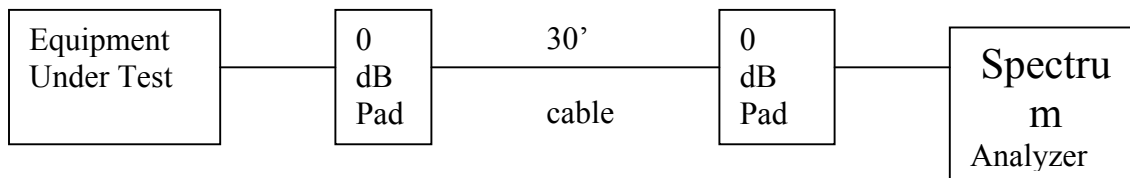
Paragraph e-4 states that the frequency tolerance of the transmitter shall be .005 percent.

APPENDIX B

7.0 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 572 MHz to 596 MHz bands for SLX Wireless BodyPack 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: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

CONDUCTED EMISSION DATA AND CHARTS 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: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

8.0 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 SLX Wireless BodyPack 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 572 MHz to 596 MHz bands for SLX Wireless BodyPack 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: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

8.0 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 572 MHz to 596 MHz.

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

Mean output power in watts:

Manufacturer's rated wattage = **.035 Watts**

(See Paragraph 2.0, page 2 of this Appendix)

Free Space Formula

Convert to 3 meter test distance using the Free Space Formula

$$\frac{\sqrt{49.2 * \text{rated wattage}}}{\text{Distance}} = 0.4374167 \text{ volts/meter} = 437416.7 \text{ uV/m}$$

$$20 * \text{Log}(437416.7) = 112.8179 \text{ dBuV/m}$$

Therefore, the Fundamental at three meters equals 112.8179 dBuV,

The emissions must be reduced by:

$$43 + 10 * \text{LOG}100.035 \text{ watts}) = 28.44068 \text{ dB}$$

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

$$\begin{aligned} &112.8179 \text{ dBuV/m extrapolated level for 0.035 watts} \\ &\underline{-28.44068 \text{ dB required reduction below the unmodulated fundamental}} \\ &\mathbf{84.37723 \text{ dBuV/M}} \text{ maximum spurious emissions allowed} \end{aligned}$$



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

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APPENDIX B

RADIATED EMISSION DATA AND CHARTS TAKEN

FOR SPURIOUS EMISSIONS

USING THE SUBSTITUTION METHOD

ANSI/TIA/EIA-603-1992 SECTION 2.2.12



Company: Shure Inc.
 Model Tested: SLX1
 Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

Operator: Craig Brandt

Date of test: 12-22-03

Field Strength of Spurious Radiation - Substitution Method

Limit = -13 dBm

Model: **SLX1-L4**

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)
5194.00 MHz vertical	66.3	-38.3	3.87	10.0	-34.27	21.27
5194.00 MHz horizontal	67.4	-34.4	3.87	10.0	-30.37	17.37
5296.00 MHz vertical	64.0	-37.9	3.92	10.2	-33.72	20.72
5843.25 MHz vertical	68.6	-34.1	4.34	11.0	-29.54	16.54
5843.25 MHz horizontal	65.8	-37.8	4.34	11.0	-33.24	20.24
5958.00 MHz vertical	64.4	-37.3	4.36	11.1	-32.66	19.66
5958.00 MHz horizontal	64.2	-39.1	4.36	11.1	-34.46	21.42

EIRP = Signal generator output - cable loss + antenna gain

ERP_(ref. to ½λ dipole) = Signal generator output - cable loss + antenna gain - 2.1



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

RADIATED EMISSION DATA AND GRAPH(S) TAKEN FOR SPURIOUS EMISSION MEASUREMENTS

PART 2.1053



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

FCC Part 74

Electric Field Strength

EUT: SLX1 572 - 596 MHz
Manufacturer: Shure, Inc.
Operating Condition: 72 deg F; 51% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 2 CH 8 583.25 MHz
Test Date: 10/31/2003

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

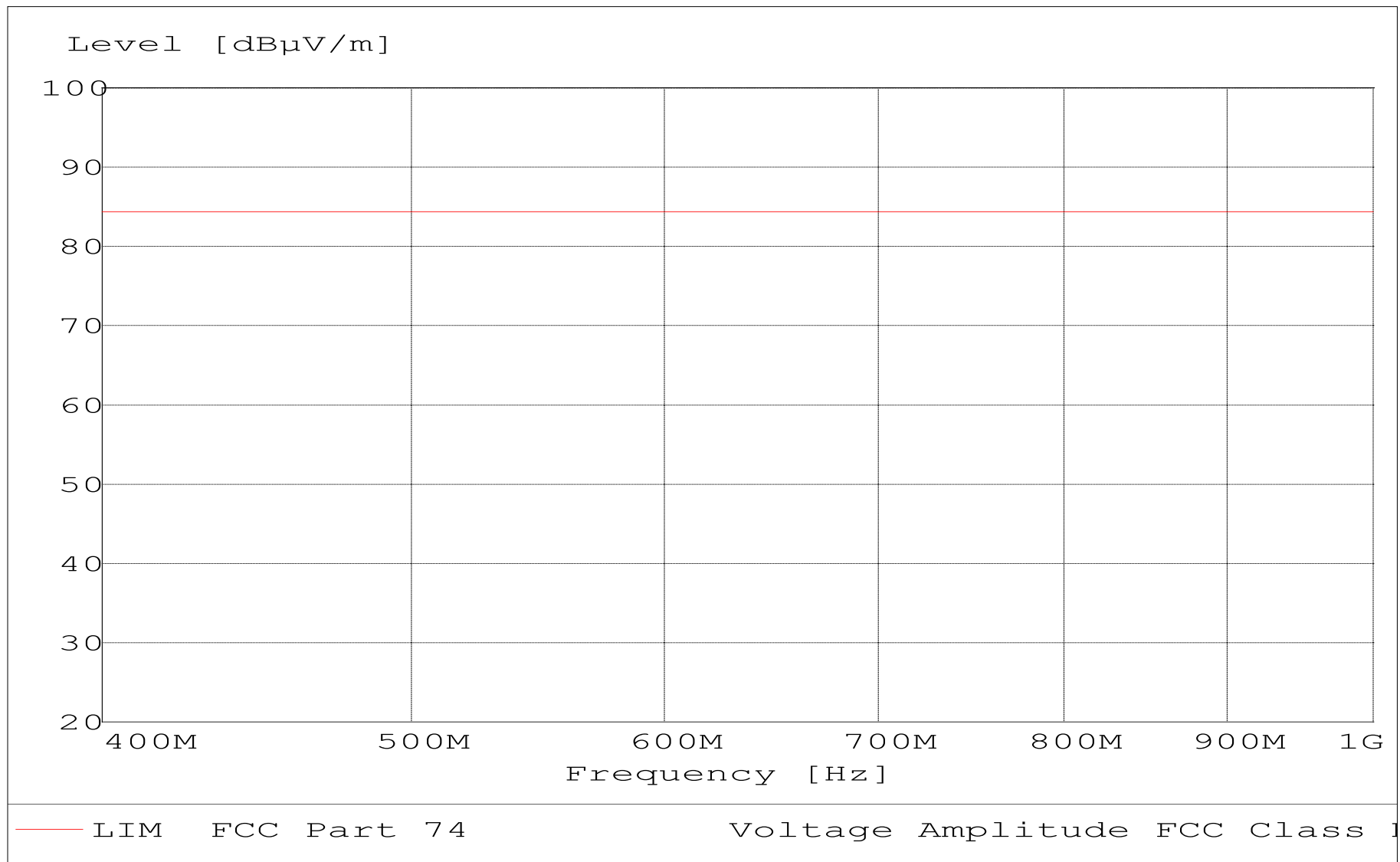
Pre-Amp --- Rohde & Schwarz TS-PR10 SN: 032001/005

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

FCC Part 74

Electric Field Strength

EUT: SLX1 572 - 596 MHz
Manufacturer: Shure, Inc.
Operating Condition: 72 deg F; 51% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 2 CH 8 583.25 MHz
Test Date: 10/31/2003

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

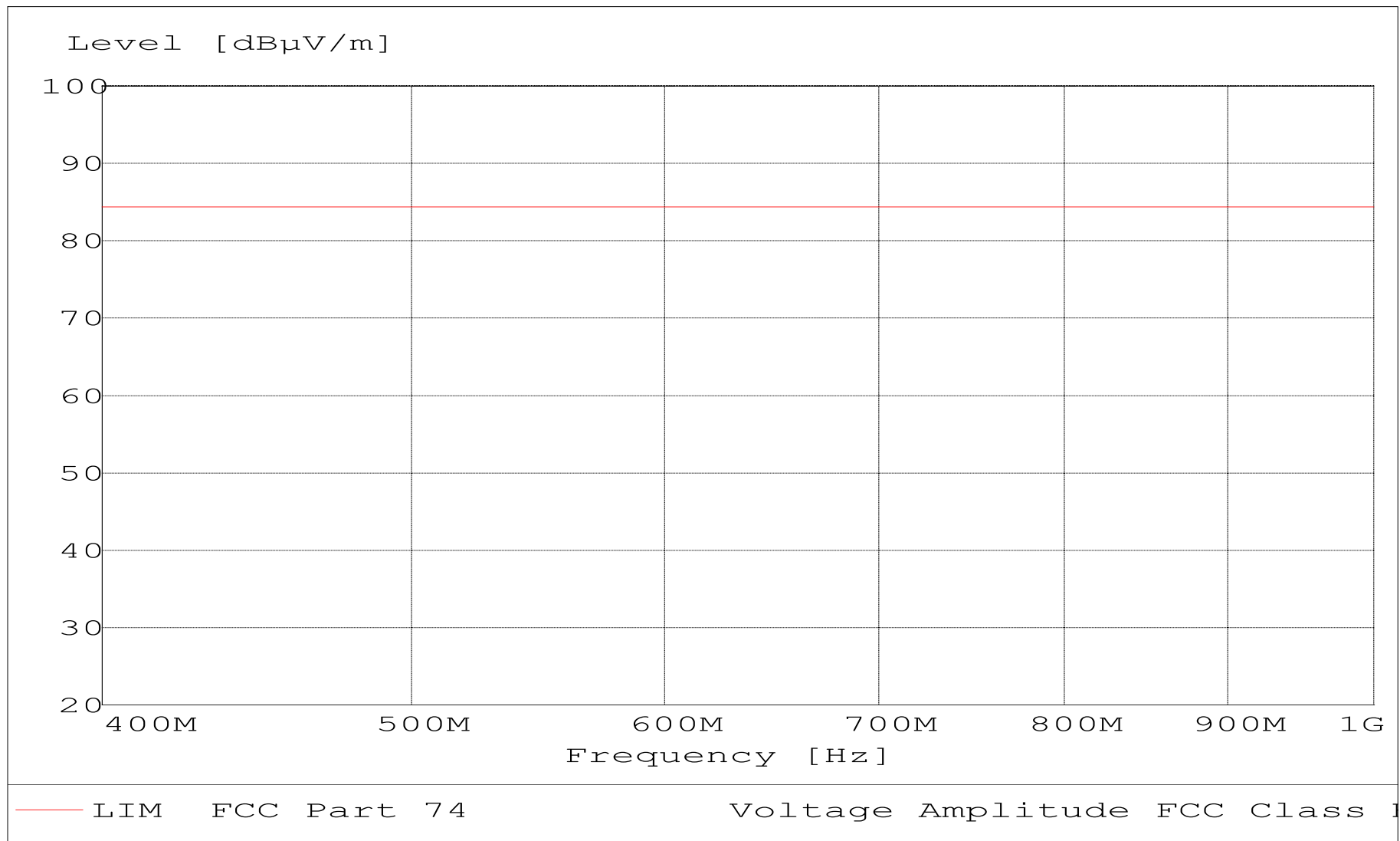
Pre-Amp --- Rohde & Schwarz TS-PR10 SN: 032001/005

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

FCC Part 74

Electric Field Strength

EUT: SLX1 572 - 596 MHz
Manufacturer: Shure, Inc.
Operating Condition: 72 deg F; 51% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 2 CH 8 583.25 MHz
Test Date: 10/31/2003

TEXT: "Site 3 6204&184 V3M"

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

Horn Antenna --- ETS 3115 SN: 6204

Pre-Amps ---

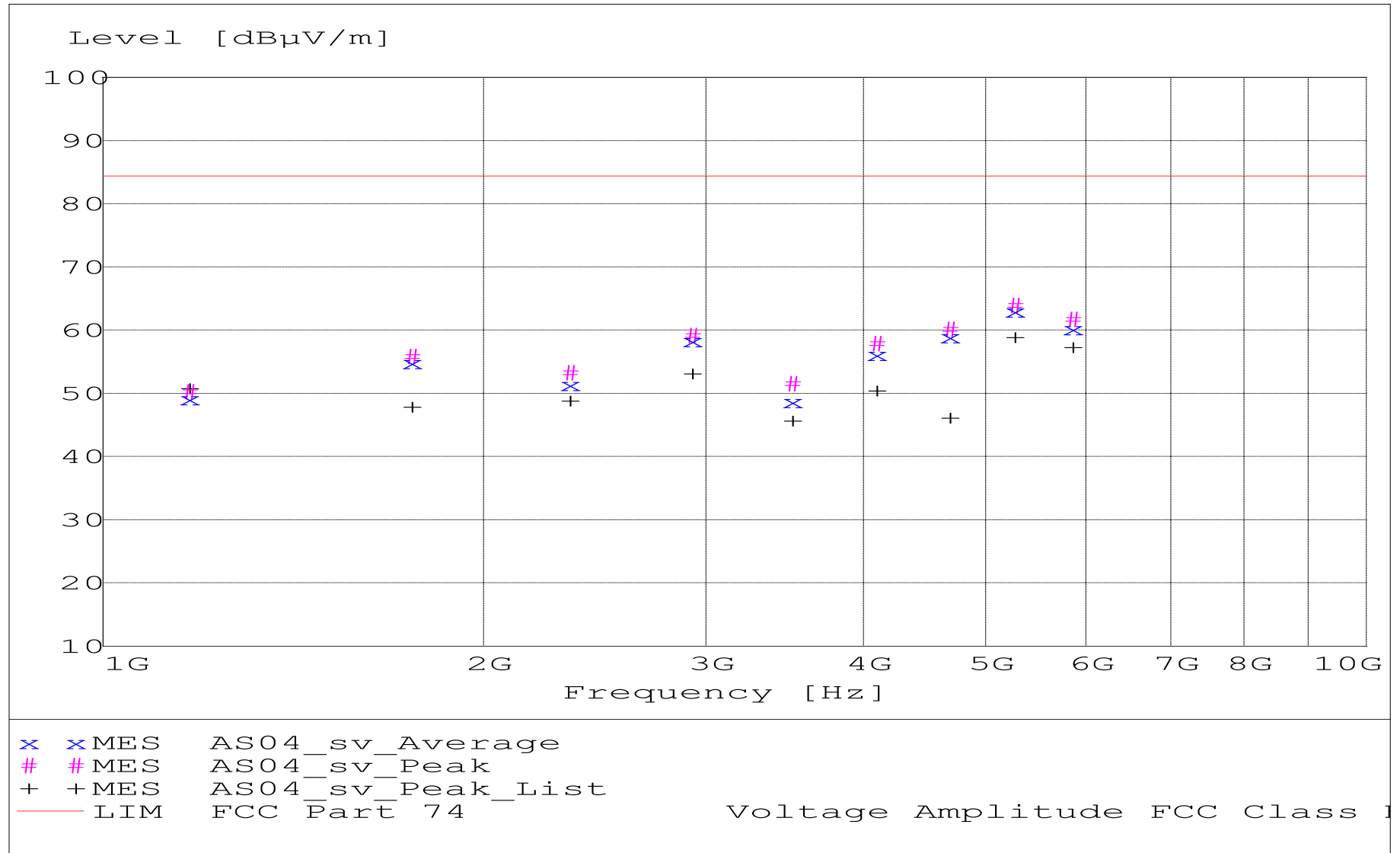
1 - 10 GHz -- Miteq AMF-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

MEASUREMENT RESULT: "AS04_sv_Final"

10/31/2003 10:08AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EUT	Final	Comment
MHz	dBμV	Factor	Loss	Level	dBμV/m	dB	Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m			m	deg		
5249.250000	66.46	34.60	-37.1	64.0	84.4	20.4	1.10	0	MAX PEAK	None
5249.250000	65.53	34.60	-37.1	63.0	84.4	21.3	1.10	0	AVERAGE	None
5832.500000	63.87	34.73	-36.9	61.7	84.4	22.6	1.10	315	MAX PEAK	None
5832.500000	62.38	34.73	-36.9	60.2	84.4	24.1	1.10	315	AVERAGE	None
4666.000000	63.74	33.40	-37.0	60.1	84.4	24.2	1.00	315	MAX PEAK	None
2916.250000	68.68	30.20	-39.7	59.2	84.4	25.2	1.30	0	MAX PEAK	None
4666.000000	62.55	33.40	-37.0	59.0	84.4	25.4	1.00	315	AVERAGE	None
2916.250000	67.86	30.20	-39.7	58.4	84.4	26.0	1.30	0	AVERAGE	None
4082.750000	62.39	32.88	-37.4	57.9	84.4	26.5	1.00	315	MAX PEAK	None
4082.750000	60.66	32.88	-37.4	56.2	84.4	28.2	1.00	315	AVERAGE	None
1749.800000	68.19	27.85	-40.2	55.9	84.4	28.5	1.00	30	MAX PEAK	None
1749.800000	67.23	27.85	-40.2	54.9	84.4	29.5	1.00	30	AVERAGE	None
2333.050000	63.87	29.00	-39.6	53.3	84.4	31.1	1.20	0	MAX PEAK	None
3499.500000	58.80	31.30	-38.5	51.6	84.4	32.8	1.10	0	MAX PEAK	None
2333.050000	61.97	29.00	-39.6	51.4	84.4	33.0	1.20	0	AVERAGE	None
1166.500000	64.66	25.83	-40.2	50.3	84.4	34.1	1.30	30	MAX PEAK	None
1166.500000	63.51	25.83	-40.2	49.1	84.4	35.2	1.30	30	AVERAGE	None
3499.500000	55.92	31.30	-38.5	48.7	84.4	35.7	1.10	0	AVERAGE	None



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

FCC Part 74

Electric Field Strength

EUT: SLX1 572 - 596 MHz
Manufacturer: Shure, Inc.
Operating Condition: 72 deg F; 51% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 2 CH 8 583.25 MHz
Test Date: 10/31/2003

TEXT: "Site 3 6204&184 H3M"

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

Horn Antenna --- ETS 3115 SN: 6204

Pre-Amps ---

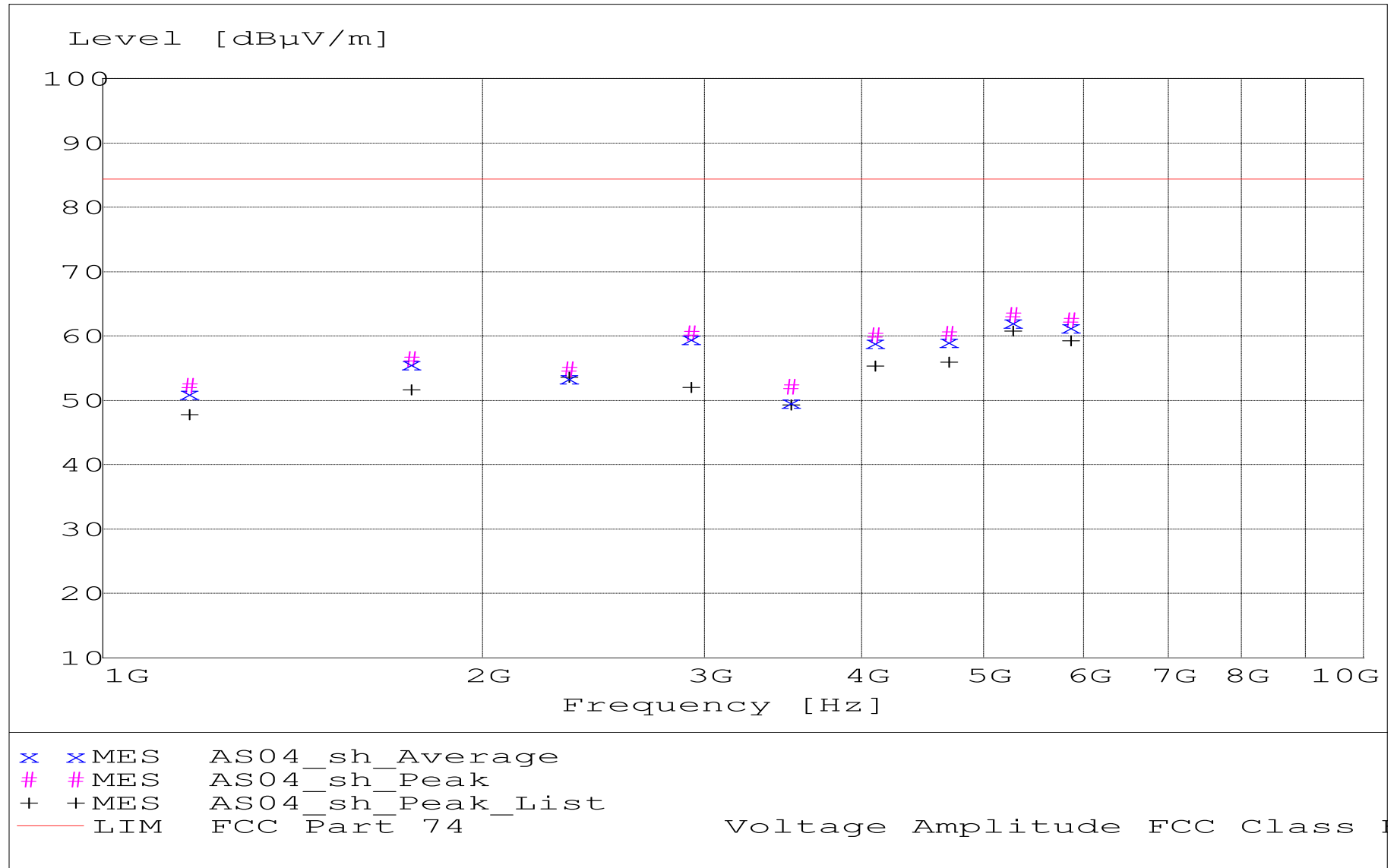
1 - 10 GHz -- Miteq AMF-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

MEASUREMENT RESULT: "AS04_sh_Final"

10/31/2003 10:29AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EUT	Final	Comment
MHz	dBμV	Factor	Loss	Level	dBμV/m	dB	Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m			m	deg		
5249.250000	65.82	34.60	-37.1	63.3	84.4	21.0	1.10	0	MAX PEAK	None
5832.500000	64.66	34.73	-36.9	62.5	84.4	21.8	1.10	0	MAX PEAK	None
5249.250000	64.72	34.60	-37.1	62.2	84.4	22.2	1.10	0	AVERAGE	None
5832.500000	63.58	34.73	-36.9	61.4	84.4	22.9	1.10	0	AVERAGE	None
2916.250000	69.92	30.20	-39.7	60.4	84.4	23.9	1.00	0	MAX PEAK	None
4666.050000	64.01	33.40	-37.0	60.4	84.4	24.0	1.00	0	MAX PEAK	None
4082.750000	64.66	32.88	-37.4	60.2	84.4	24.2	1.50	45	MAX PEAK	None
2916.250000	69.14	30.20	-39.7	59.7	84.4	24.7	1.00	0	AVERAGE	None
4666.050000	62.77	33.40	-37.0	59.2	84.4	25.2	1.00	0	AVERAGE	None
4082.750000	63.57	32.88	-37.4	59.1	84.4	25.3	1.50	45	AVERAGE	None
1749.750000	68.80	27.85	-40.2	56.5	84.4	27.9	1.40	0	MAX PEAK	None
1749.750000	68.06	27.85	-40.2	55.7	84.4	28.6	1.40	0	AVERAGE	None
2333.000000	65.44	29.00	-39.6	54.9	84.4	29.5	1.10	315	MAX PEAK	None
2333.000000	64.12	29.00	-39.6	53.5	84.4	30.8	1.10	315	AVERAGE	None
1166.500000	66.71	25.83	-40.2	52.3	84.4	32.0	1.00	180	MAX PEAK	None
3499.500000	59.43	31.30	-38.5	52.2	84.4	32.2	2.00	45	MAX PEAK	None
1166.500000	65.46	25.83	-40.2	51.1	84.4	33.3	1.00	180	AVERAGE	None
3499.500000	57.01	31.30	-38.5	49.8	84.4	34.6	2.00	45	AVERAGE	None



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

FCC Part 74

Electric Field Strength

EUT: SLX1 572 - 596 MHz
Manufacturer: Shure, Inc.
Operating Condition: 73 deg F; 44% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 2 CH 16 596.00 MHz
Test Date: 10/31/2003

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

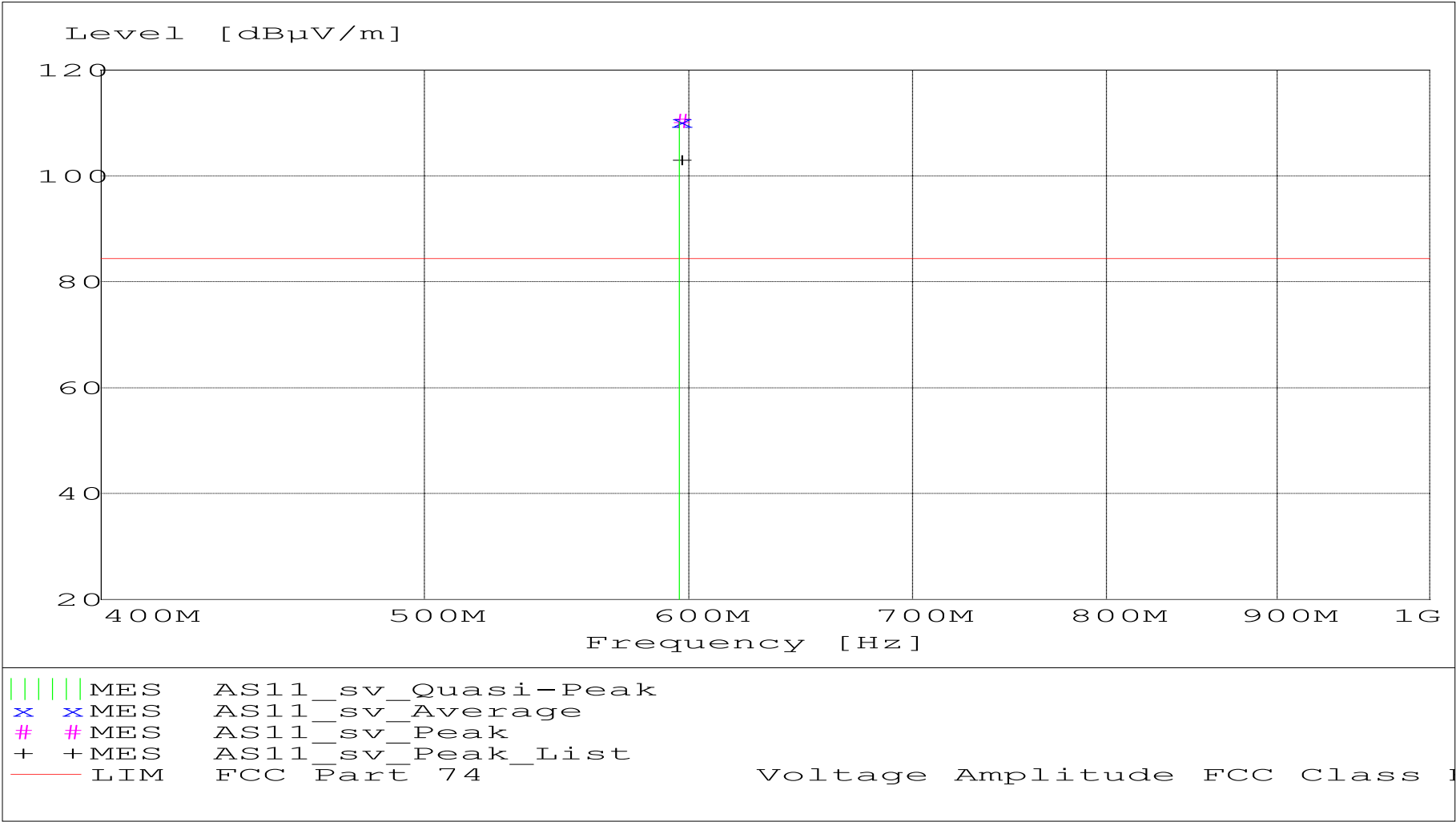
Pre-Amp --- Rohde & Schwarz TS-PR10 SN: 032001/005

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

MEASUREMENT RESULT: "AS11_sv_Final"

10/31/2003 3:12PM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EUT	Final	Comment
MHz	dBμV	Factor	Loss	Level				Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
596.000000	66.38	18.74	25.3	110.5	84.4	-26.1	1.20	135	MAX PEAK	Fundamental
596.000000	66.18	18.74	25.3	110.3	84.4	-25.9	1.20	135	QUASI-PEAK	Fundamental
596.000000	66.16	18.74	25.3	110.2	84.4	-25.9	1.20	135	AVERAGE	Fundamental



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

FCC Part 74

Electric Field Strength

EUT: SLX1 572 - 596 MHz
Manufacturer: Shure, Inc.
Operating Condition: 73 deg F; 44% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 2 CH 16 596.00 MHz
Test Date: 10/31/2003

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

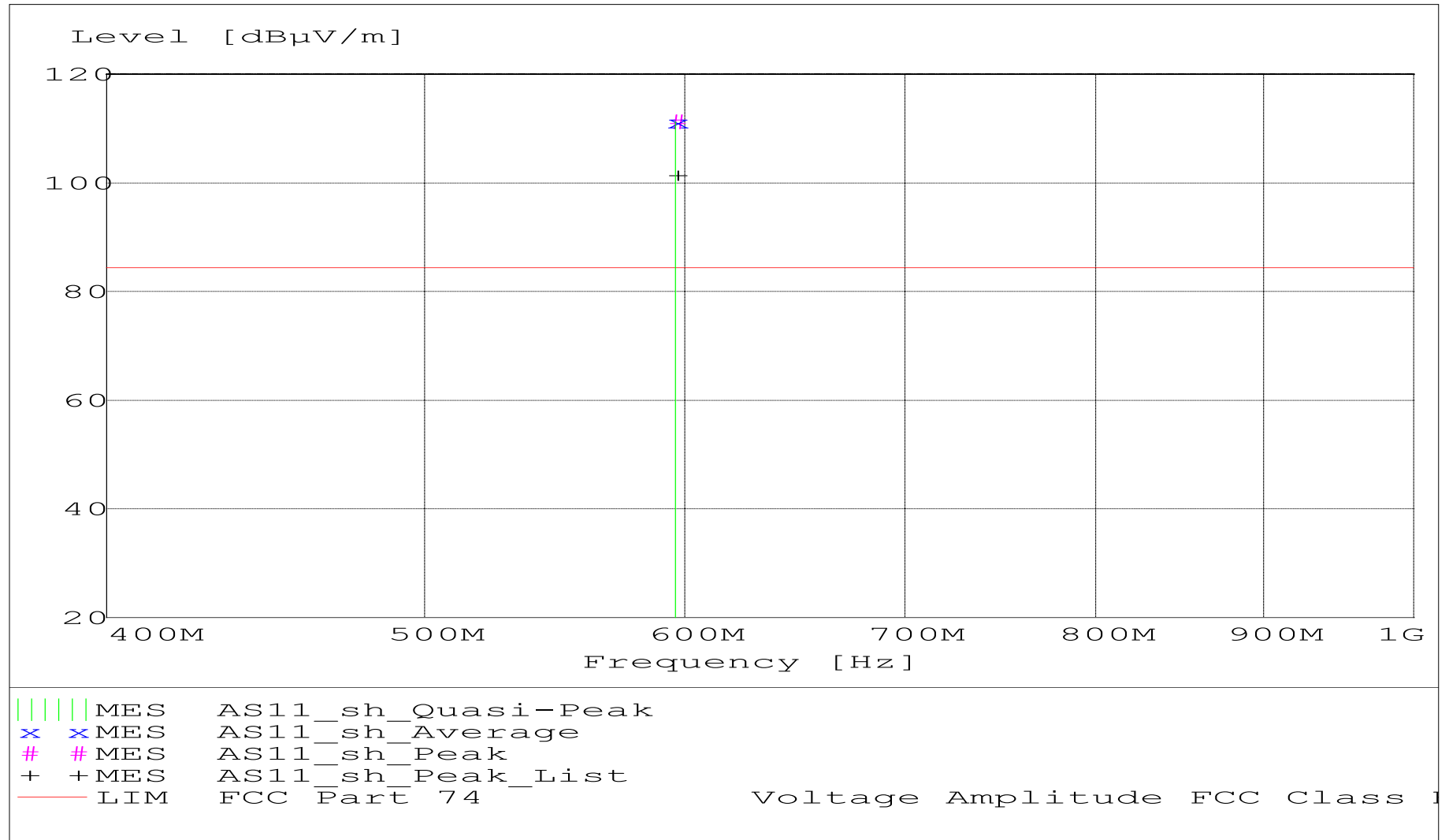
Pre-Amp --- Rohde & Schwarz TS-PR10 SN: 032001/005

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

MEASUREMENT RESULT: "AS11_sh_Final"

10/31/2003 3:17PM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EUT	Final	Comment
MHz	dB μ V	Factor	Loss	Level	dB μ V/m	dB	Ant. m	Angle deg	Detector	
596.000000	67.23	18.74	25.3	111.3	84.4	-26.9	1.00	180	MAX PEAK	Fundamental
596.000000	67.22	18.74	25.3	111.3	84.4	-26.9	1.00	180	QUASI-PEAK	Fundamental
596.000000	67.16	18.74	25.3	111.2	84.4	-26.9	1.00	180	AVERAGE	Fundamental



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

FCC Part 74

Electric Field Strength

EUT: SLX1 572 - 596 MHz
Manufacturer: Shure, Inc.
Operating Condition: 73 deg F; 44% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 2 CH 16 596.00 MHz
Test Date: 10/31/2003

TEXT: "Site 3 6204&184 V3M"

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

Horn Antenna: --- ETS 3115 SN: 6204

Pre-Amps ---

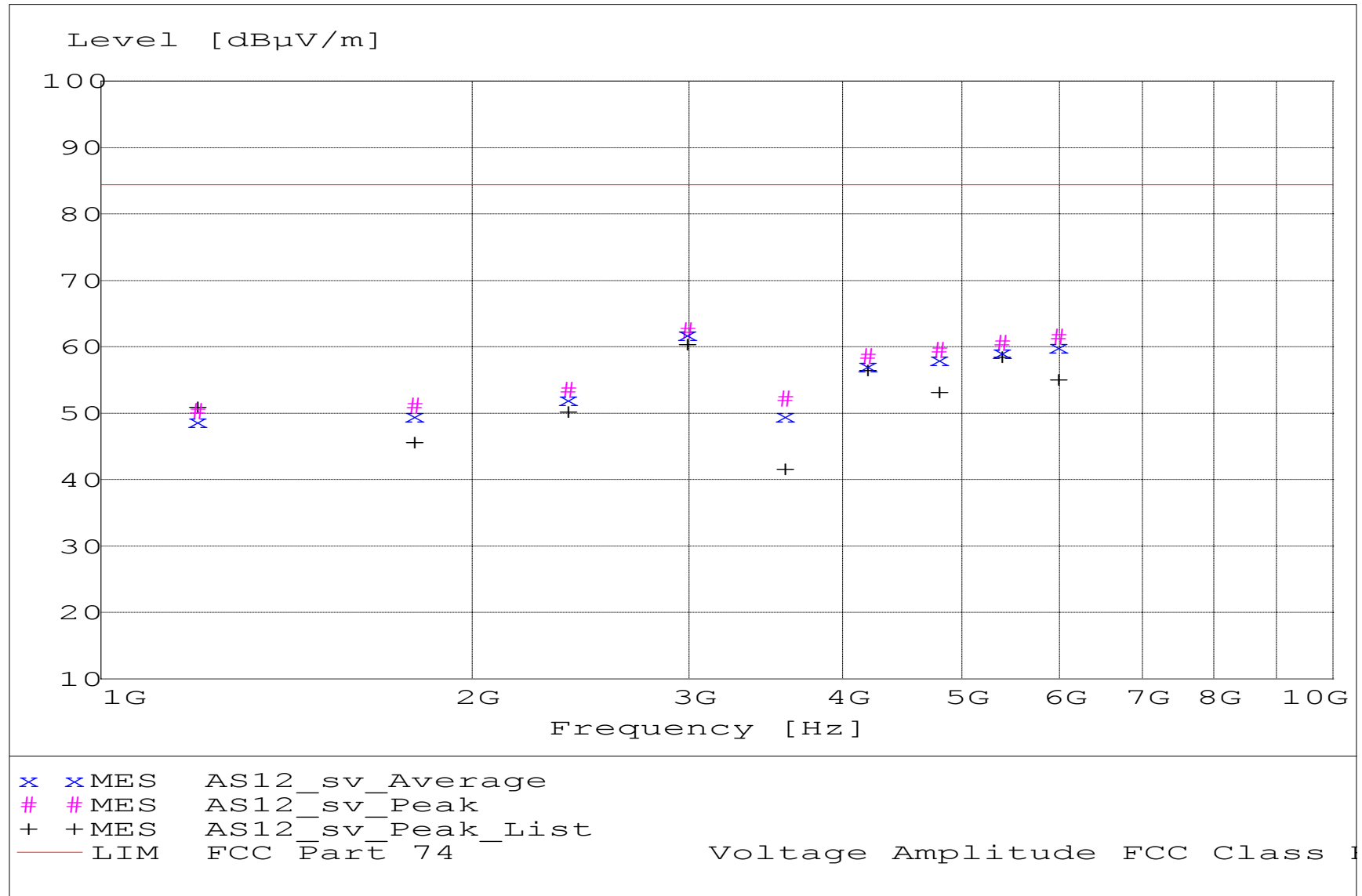
1 - 10 GHz -- Miteq AMF-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

MEASUREMENT RESULT: "AS12_sv_Final"

10/31/2003 3:50PM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EUT	Final	Comment
MHz	dBμV	Factor	Loss	Level	dBμV/m	dB	Ant. m	Angle deg	Detector	
2980.000000	71.67	30.35	-39.5	62.5	84.4	21.9	1.00	0	MAX PEAK	None
2980.000000	71.07	30.35	-39.5	61.9	84.4	22.5	1.00	0	AVERAGE	None
5960.000000	63.61	34.78	-36.8	61.6	84.4	22.8	1.00	30	MAX PEAK	None
5364.000000	63.20	34.60	-37.2	60.6	84.4	23.8	1.00	0	MAX PEAK	None
5960.000000	62.16	34.78	-36.8	60.1	84.4	24.2	1.00	30	AVERAGE	None
4768.000000	62.93	33.76	-37.1	59.6	84.4	24.8	1.00	315	MAX PEAK	None
5364.000000	61.84	34.60	-37.2	59.2	84.4	25.2	1.00	0	AVERAGE	None
4172.000000	63.34	32.87	-37.5	58.7	84.4	25.7	1.00	0	MAX PEAK	None
4768.000000	61.43	33.76	-37.1	58.1	84.4	26.3	1.00	315	AVERAGE	None
4172.000000	61.88	32.87	-37.5	57.2	84.4	27.2	1.00	0	AVERAGE	None
2384.000000	64.14	29.06	-39.6	53.6	84.4	30.8	1.20	315	MAX PEAK	None
3576.000000	59.19	31.54	-38.4	52.3	84.4	32.1	1.00	45	MAX PEAK	None
2384.000000	62.70	29.06	-39.6	52.1	84.4	32.3	1.20	315	AVERAGE	None
1788.000000	63.20	27.96	-40.0	51.2	84.4	33.2	1.60	180	MAX PEAK	None
1192.000000	64.92	25.93	-40.4	50.5	84.4	33.9	1.00	180	MAX PEAK	None
1788.000000	61.63	27.96	-40.0	49.6	84.4	34.7	1.60	180	AVERAGE	None
3576.000000	56.52	31.54	-38.4	49.6	84.4	34.8	1.00	45	AVERAGE	None
1192.000000	63.30	25.93	-40.4	48.8	84.4	35.5	1.00	180	AVERAGE	None



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

FCC Part 74

Electric Field Strength

EUT: SLX1 572 - 596 MHz
Manufacturer: Shure, Inc.
Operating Condition: 73 deg F; 44% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 2 CH 16 596.00 MHz
Test Date: 10/31/2003

TEXT: "Site 3 6204&184 H3M"

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

Horn Antenna --- ETS 3115 SN: 6204

Pre-Amps

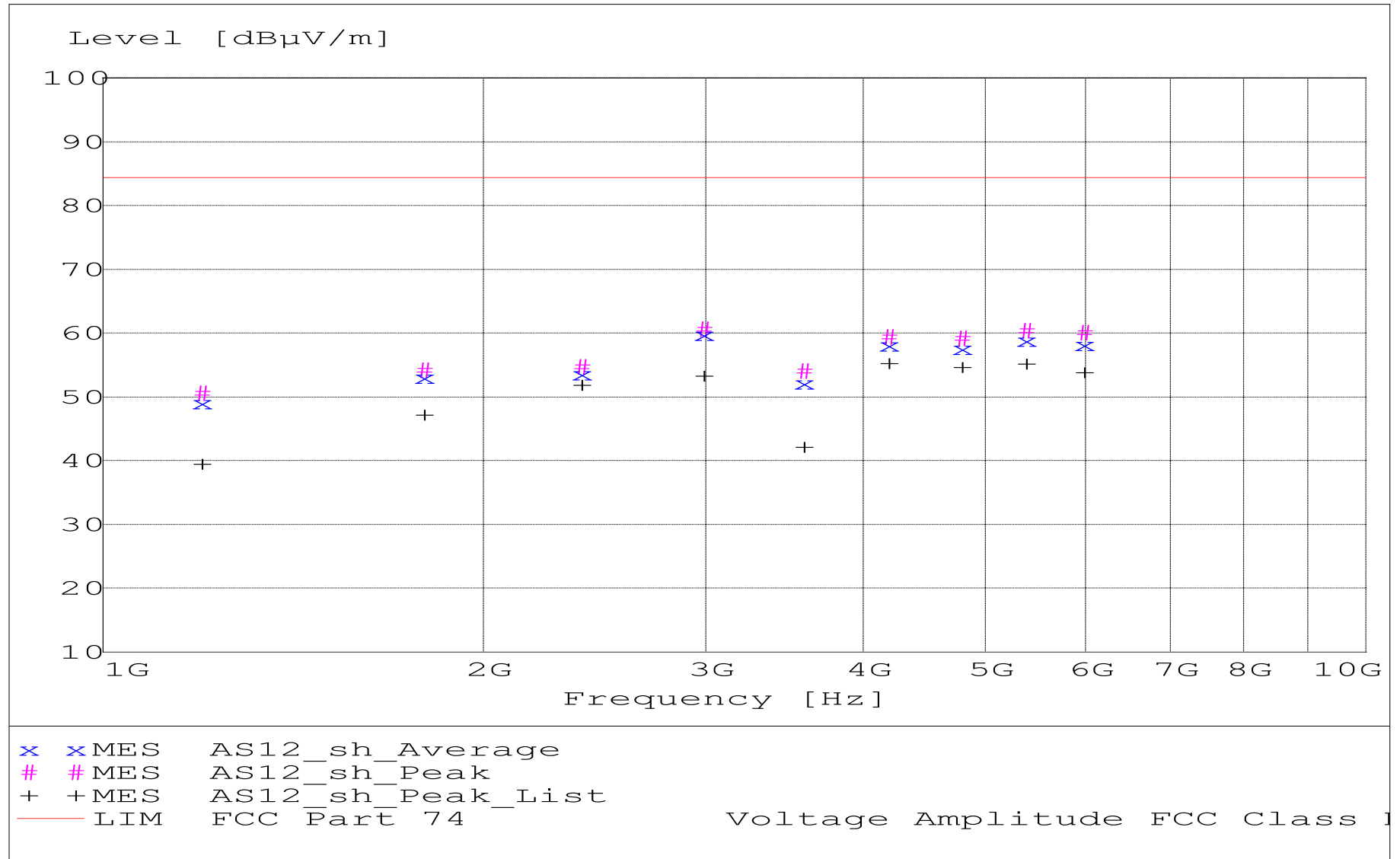
1 - 10 GHz -- Miteq AMF-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

MEASUREMENT RESULT: "AS12_sh_Final"

11/3/2003 9:08AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EUT	Final	Comment
MHz	dBμV	Factor	Loss	Level	dBμV/m	dB	Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
2980.000000	69.79	30.35	-39.5	60.6	84.4	23.8	1.00	0	MAX PEAK	None
5364.000000	63.04	34.60	-37.2	60.4	84.4	23.9	1.00	0	MAX PEAK	None
5960.000000	62.09	34.78	-36.8	60.1	84.4	24.3	1.30	315	MAX PEAK	None
2980.000000	68.99	30.35	-39.5	59.8	84.4	24.6	1.00	0	AVERAGE	None
4172.000000	64.13	32.87	-37.5	59.4	84.4	24.9	1.00	0	MAX PEAK	None
4768.000000	62.50	33.76	-37.1	59.2	84.4	25.2	1.20	0	MAX PEAK	None
5364.000000	61.54	34.60	-37.2	58.9	84.4	25.5	1.00	0	AVERAGE	None
5960.000000	60.27	34.78	-36.8	58.2	84.4	26.1	1.30	315	AVERAGE	None
4172.000000	62.84	32.87	-37.5	58.2	84.4	26.2	1.00	0	AVERAGE	None
4768.000000	60.97	33.76	-37.1	57.6	84.4	26.7	1.20	0	AVERAGE	None
2384.000000	65.29	29.06	-39.6	54.7	84.4	29.7	1.10	45	MAX PEAK	None
1788.000000	66.19	27.96	-40.0	54.2	84.4	30.2	2.00	315	MAX PEAK	None
3576.000000	60.92	31.54	-38.4	54.0	84.4	30.4	1.00	315	MAX PEAK	None
2384.000000	64.20	29.06	-39.6	53.6	84.4	30.8	1.10	45	AVERAGE	None
1788.000000	65.08	27.96	-40.0	53.1	84.4	31.3	2.00	315	AVERAGE	None
3576.000000	59.07	31.54	-38.4	52.2	84.4	32.2	1.00	315	AVERAGE	None
1192.000000	65.04	25.93	-40.4	50.6	84.4	33.8	1.00	180	MAX PEAK	None
1192.000000	63.52	25.93	-40.4	49.0	84.4	35.3	1.00	180	AVERAGE	None



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

9.0 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 SLX Wireless BodyPack Transmitter oscillator circuitry to stabilize. The following information was taken:

FREQUENCY STABILITY FOR TEMPERATURE VARIATION IN MHz:

-30°	NA
-20°	583.25103206
-10°	583.25103206
0°	583.25137275
+10°	583.25111222
+20°	583.25029058
+30°	583.24928858
+40°	583.24866733
+50°	583.24862725

Worst Case Variance:

1372.75 Hz

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

Frequency Tolerance: = **0.00005**

Assigned Frequency: = **583250000 Hz**

Limit = 583250000 * 0.005% = **29162.5 Hz**

NOTE: This is well inside the specified limits.



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

GRAPH(S) TAKEN FOR FREQUENCY

STABILITY WHEN VARYING THE TEMPERATURE

PART 2.1055a

NOTE: This is well inside the specified limits.



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

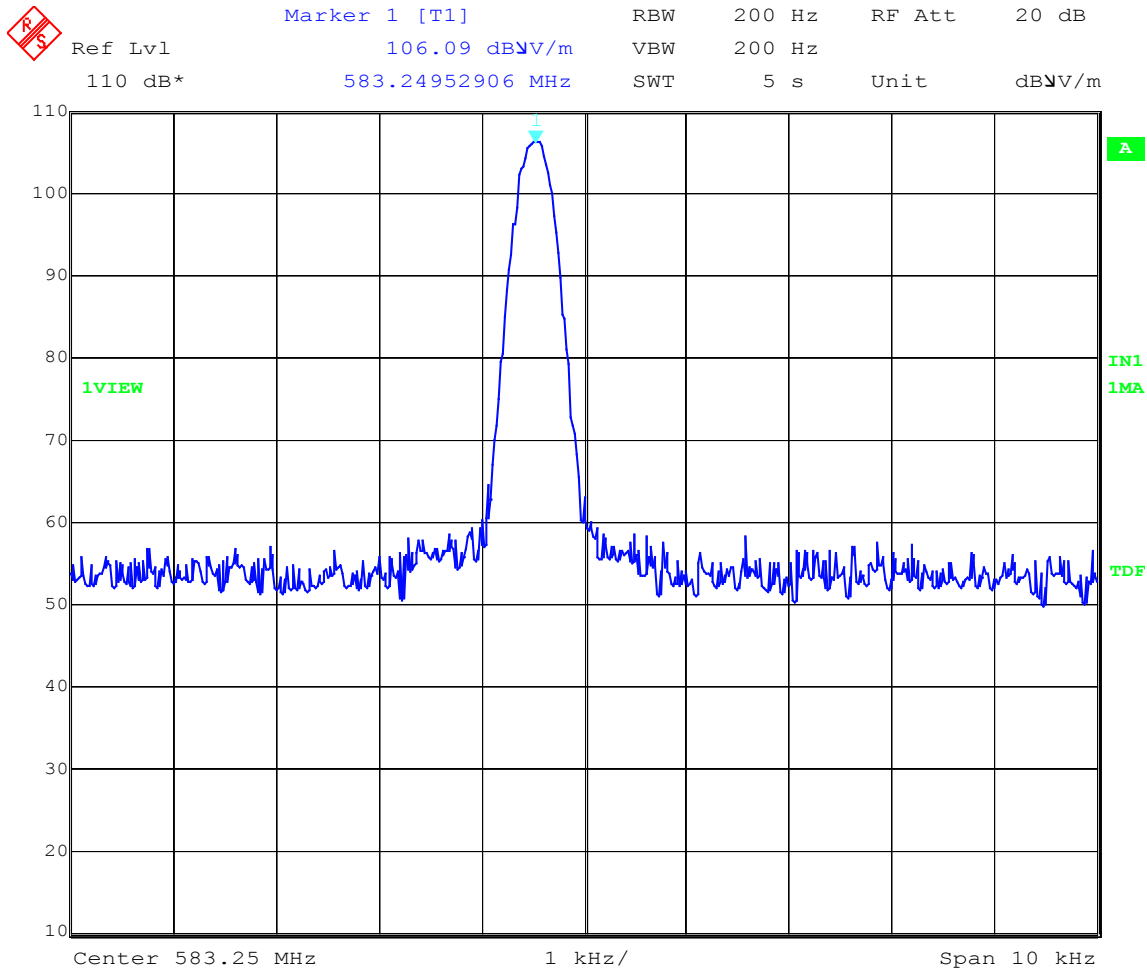
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

-20 deg. C



Date: 4.NOV.2003 15:39:51

EUT: SLX1 572 – 596 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 2 CH 8 583.25 MHz
Test Date: 11-04-03



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

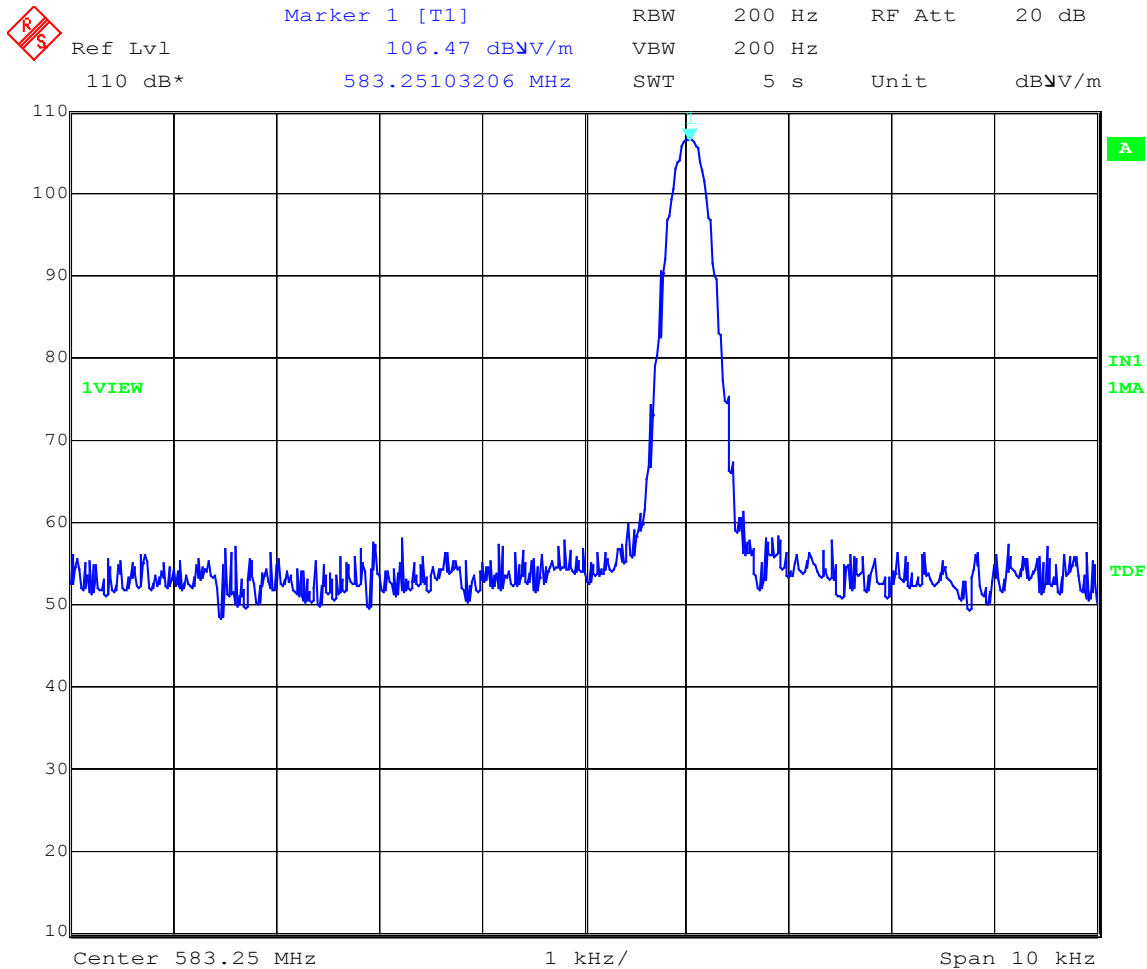
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

-10 deg. C



Date: 4.NOV.2003 15:08:02

Company: Shure Inc.
EUT: SLX1 572 – 596 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 2 CH 8 583.25 MHz
Test Date: 11-04-03



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

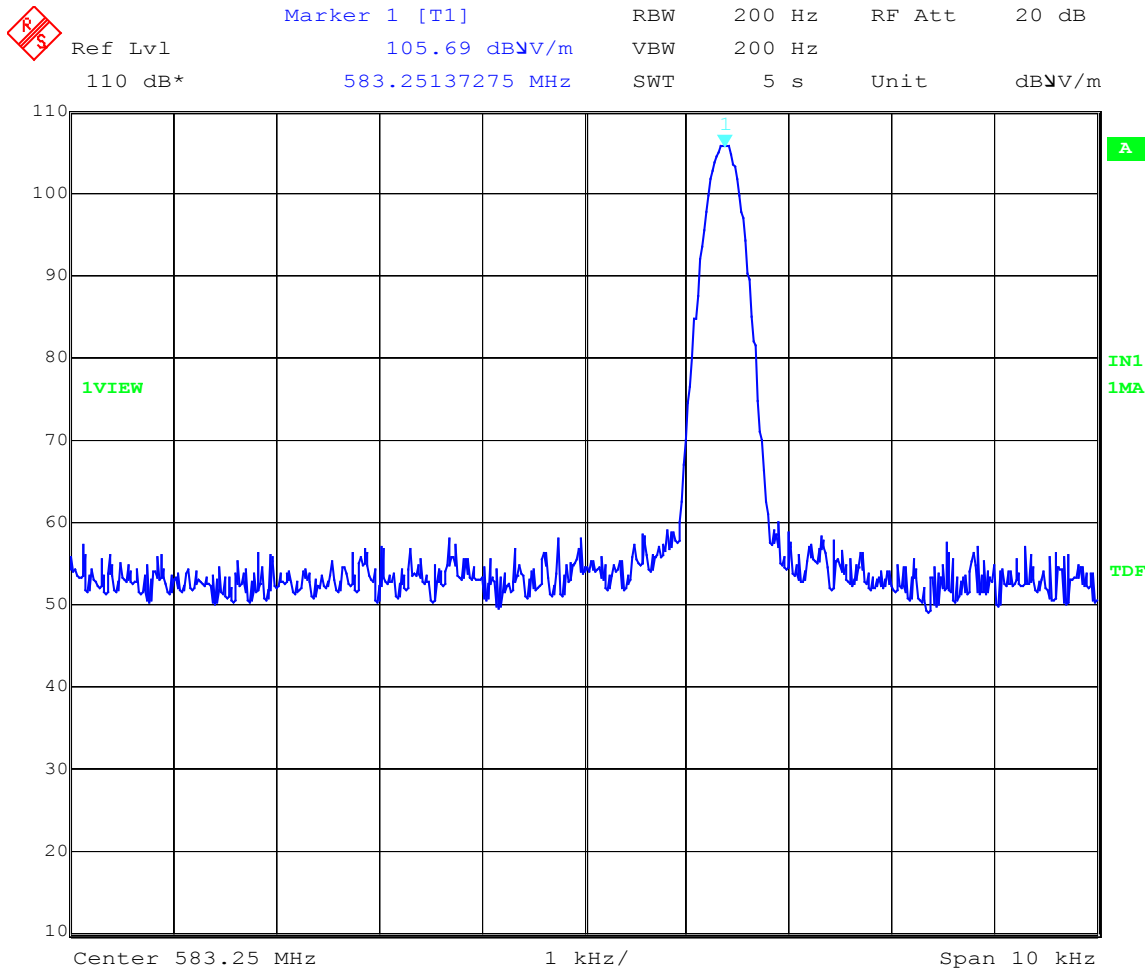
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

0 deg. C



Date: 4.NOV.2003 13:07:08

EUT: SLX1 572 – 596 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 2 CH 8 583.25 MHz
Test Date: 11-04-03



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

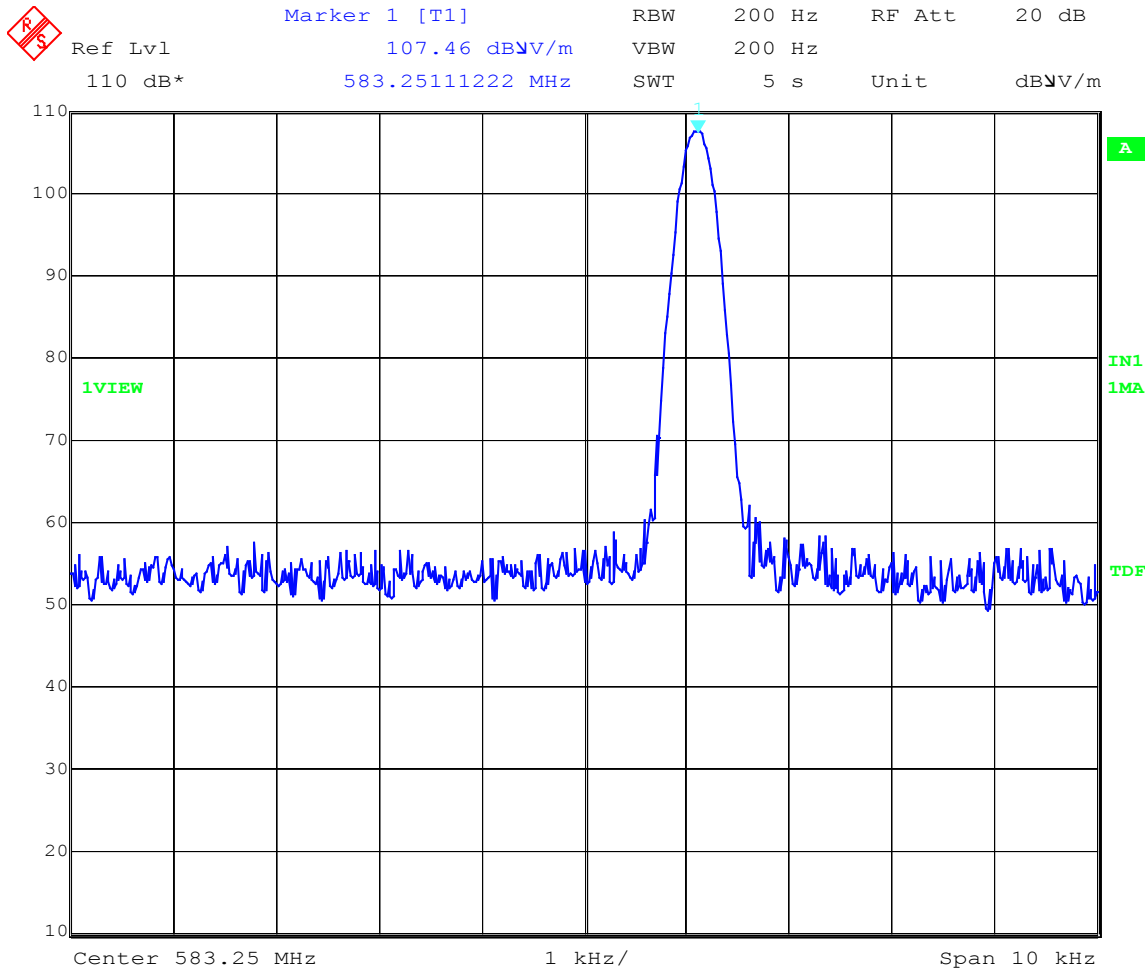
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

+10 deg. C



Date: 4.NOV.2003 12:36:06

EUT: SLX1 572 – 596 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 2 CH 8 583.25 MHz
Date: 11-04-03



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

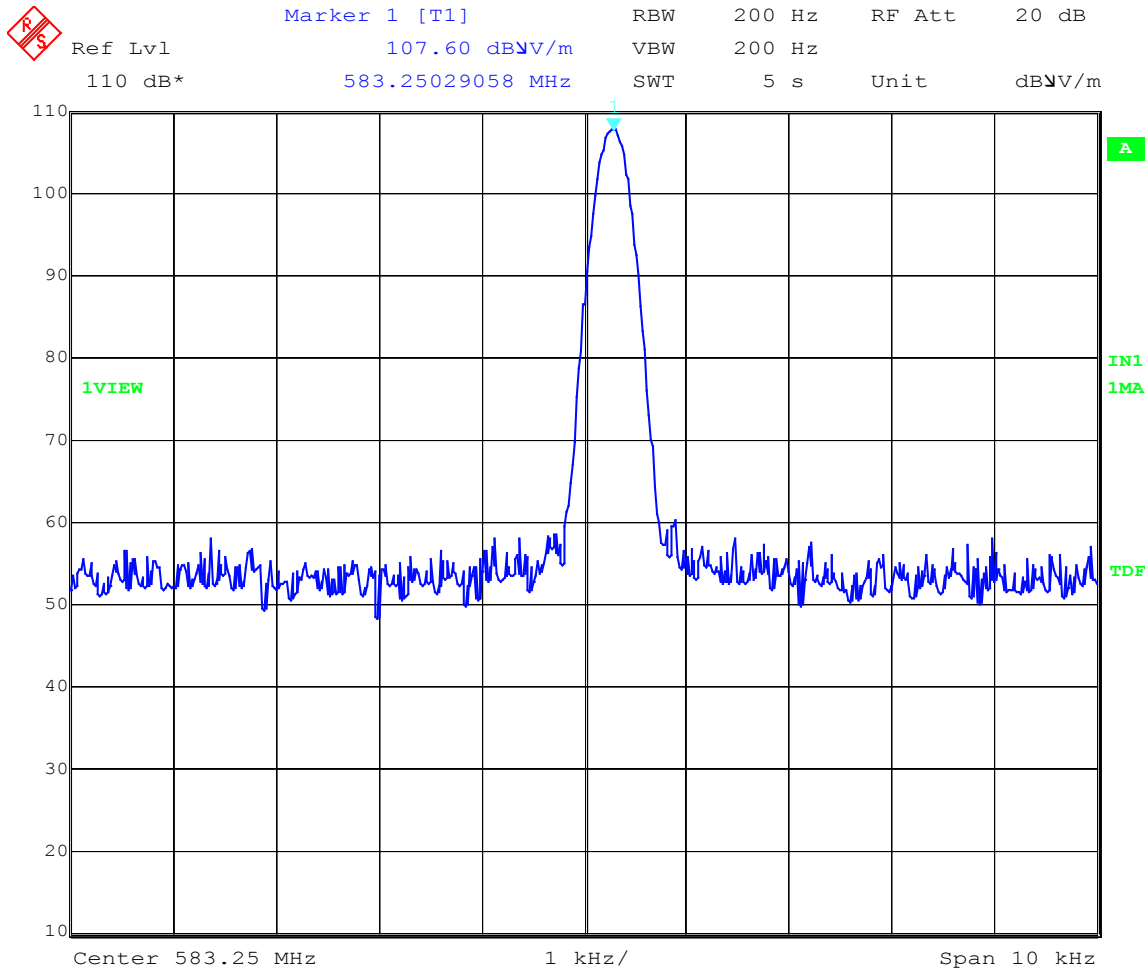
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

+20 deg. C



Date: 4.NOV.2003 12:07:49

EUT: SLX1 572 – 596 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 2 CH 8 583.25 MHz
Test Date: 11-04-03



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

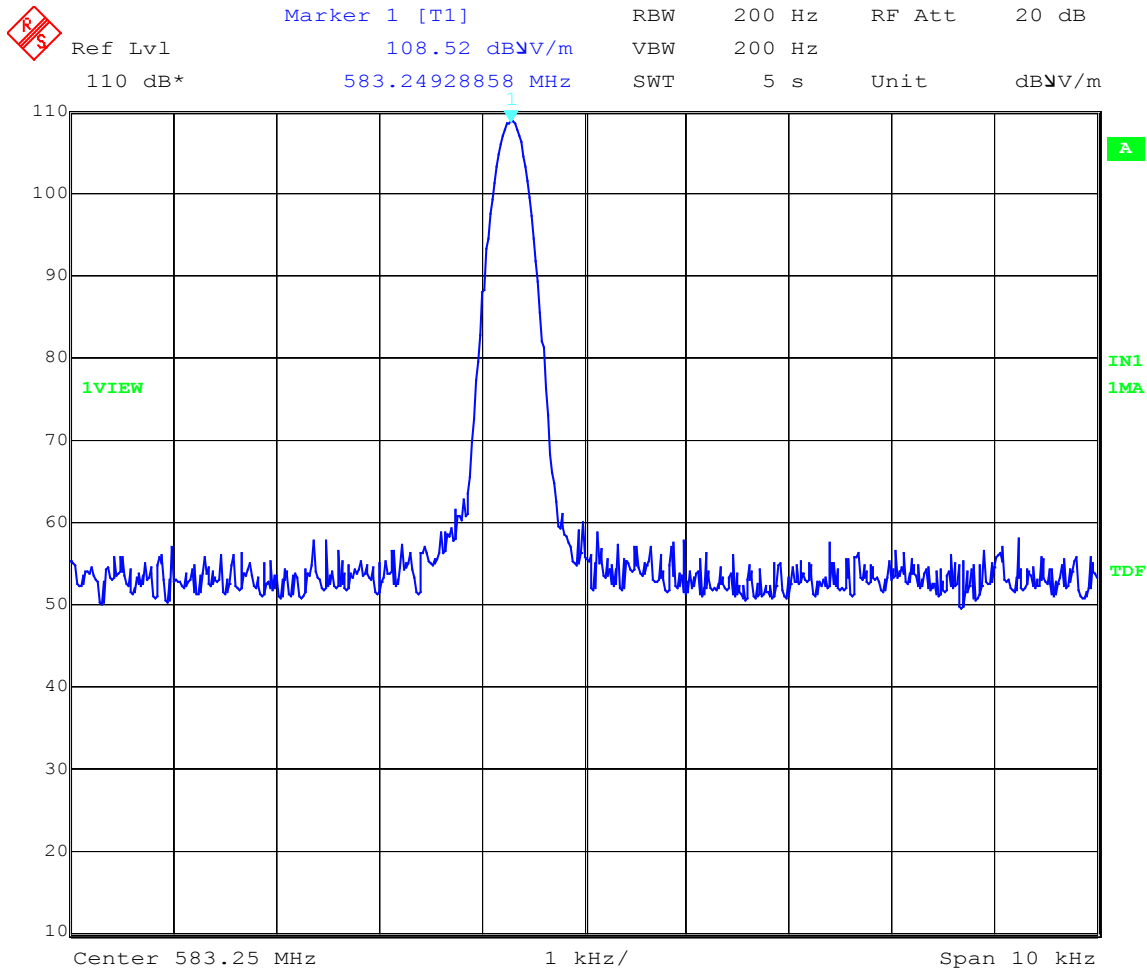
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

+30 deg. C



Date: 4.NOV.2003 10:34:04

EUT: SLX1 572 – 596 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 2 CH 8 583.25 MHz
Test Date: 11-04-03



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

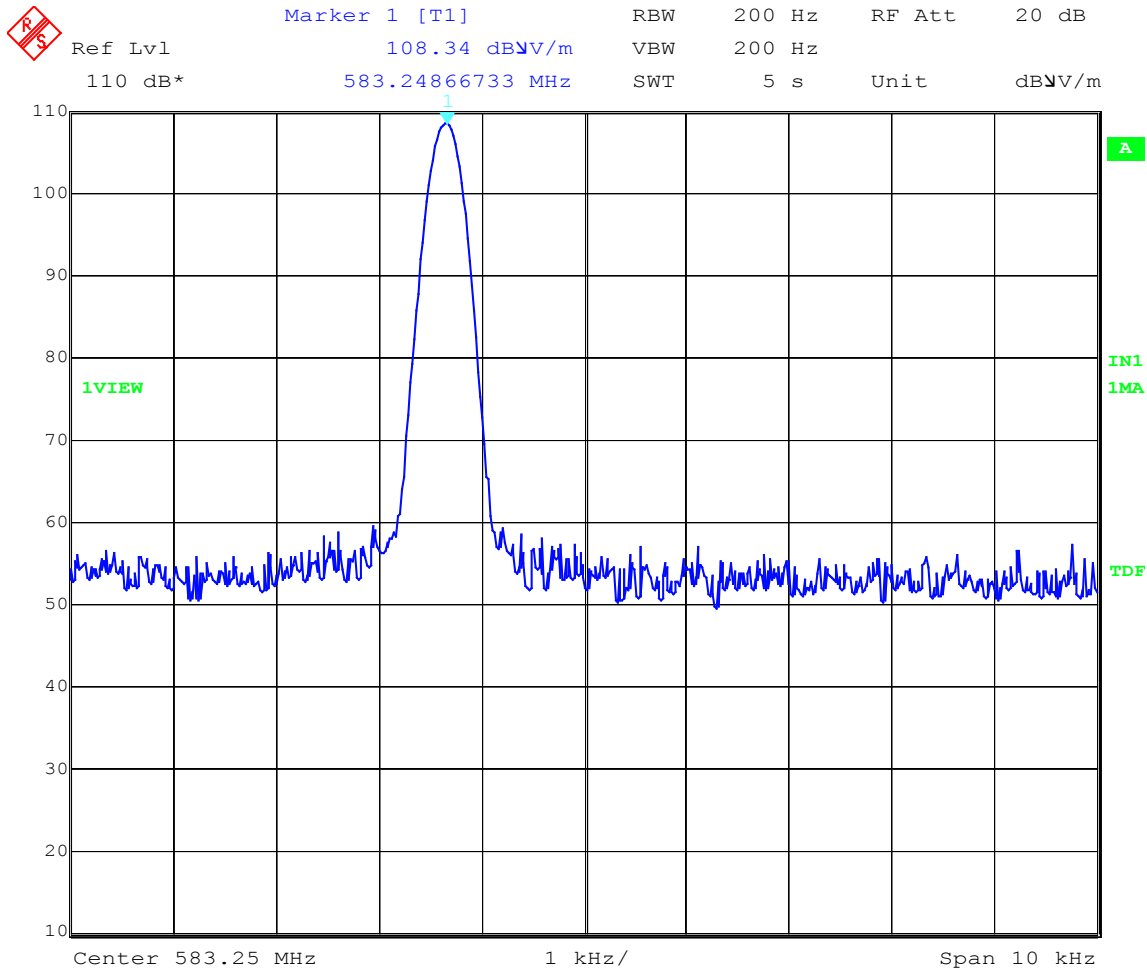
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

+40 deg. C



Date: 4.NOV.2003 11:02:23

EUT: SLX1 572 – 596 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 2 CH 8 583.25 MHz
Test Date: 11-04-03



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

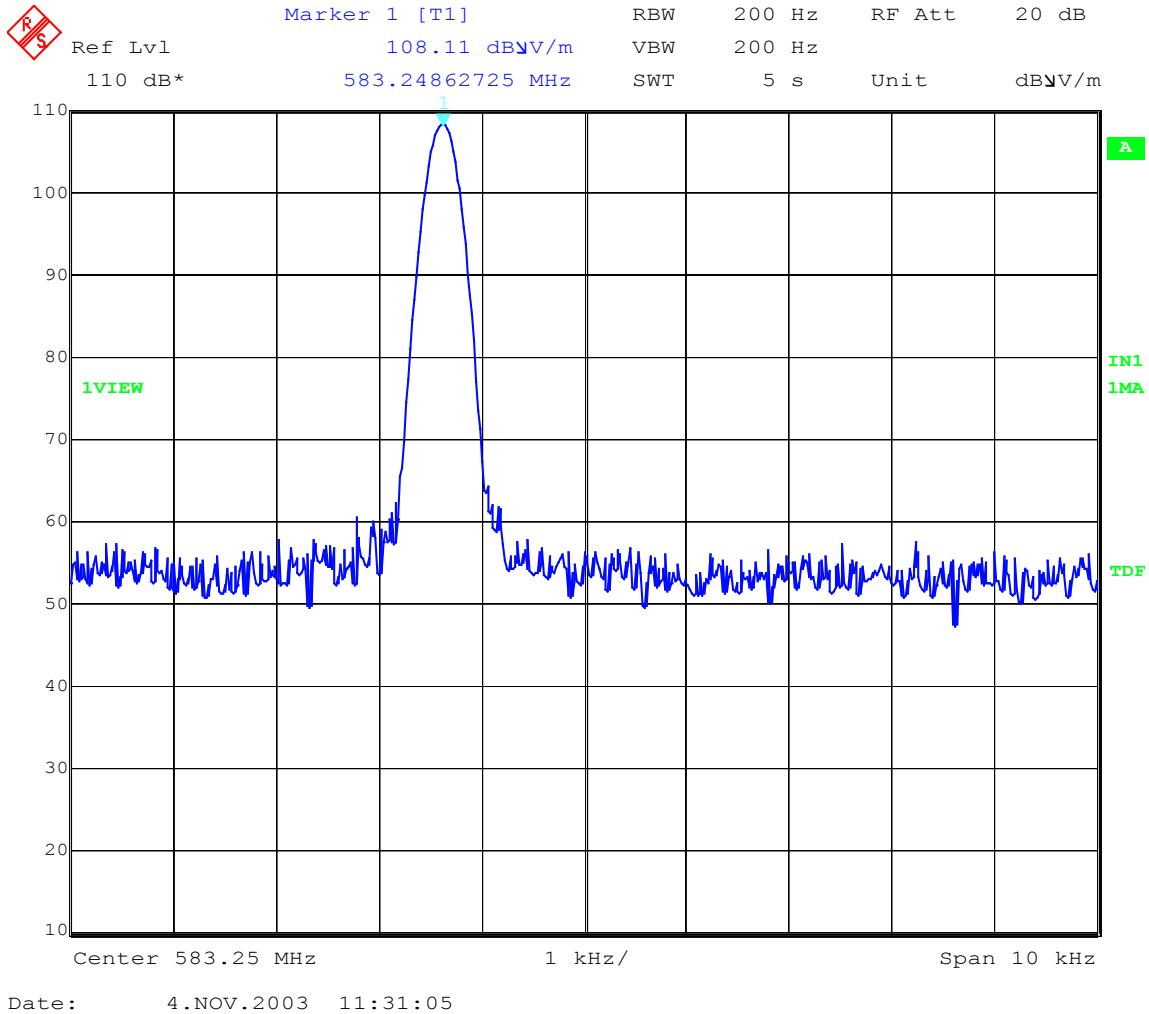
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

+50 deg. C



EUT: SLX1 572 – 596 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 2 CH 8 583.25 MHz
Test Date: 11-04-03

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

10.0 FREQUENCY STABILITY (TEMPERATURE) PHOTOS TAKEN DURING TESTING





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

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

The frequency stability of SLX Wireless BodyPack 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%	0
100%	0
115%	0

NOTE: This test was not run because the device is hand held.

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 583250071.34
Frequency #2 583249949.05
Frequency #3 0
Frequency #4 0
Frequency #5 0
Frequency #6 0

Worst Case Variance: = **122.29**

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: = **29162.5**

NOTE: This is well inside the specified limits.



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

GRAPH(S) TAKEN FOR FREQUENCY

STABILITY WHEN VARYING THE

PRIMARY SUPPLY VOLTAGE

PART 2.1055d

NOTE: This is well inside the specified limits.



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

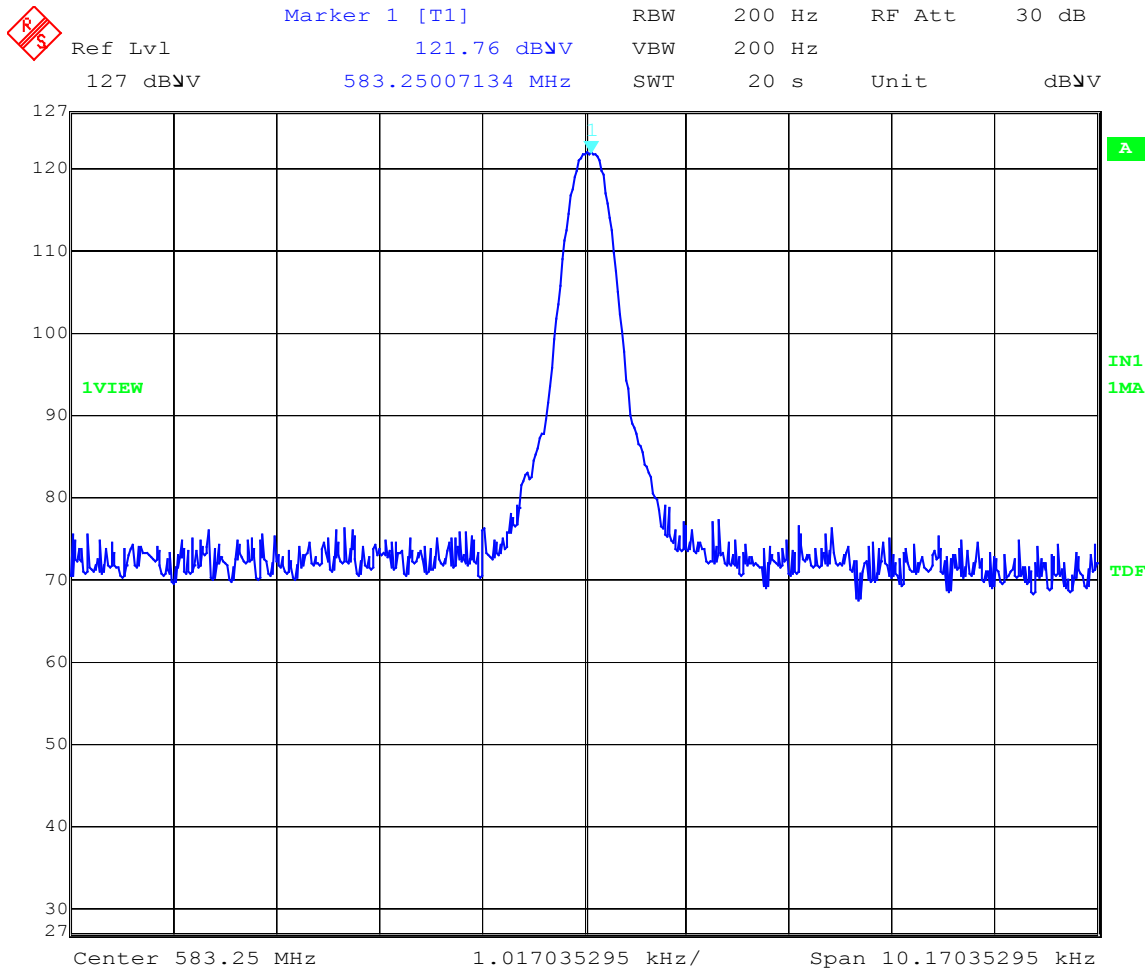
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

3.0 Volt Supply



Date: 3.NOV.2003 13:31:43

EUT: SLX1 572 – 596 MHz
Test: Frequency Stability – Supply Voltage
Operator: Craig Brandt
Comment: GRP 2 CH 8 583.25 MHz
Test Date: 11-03-03



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

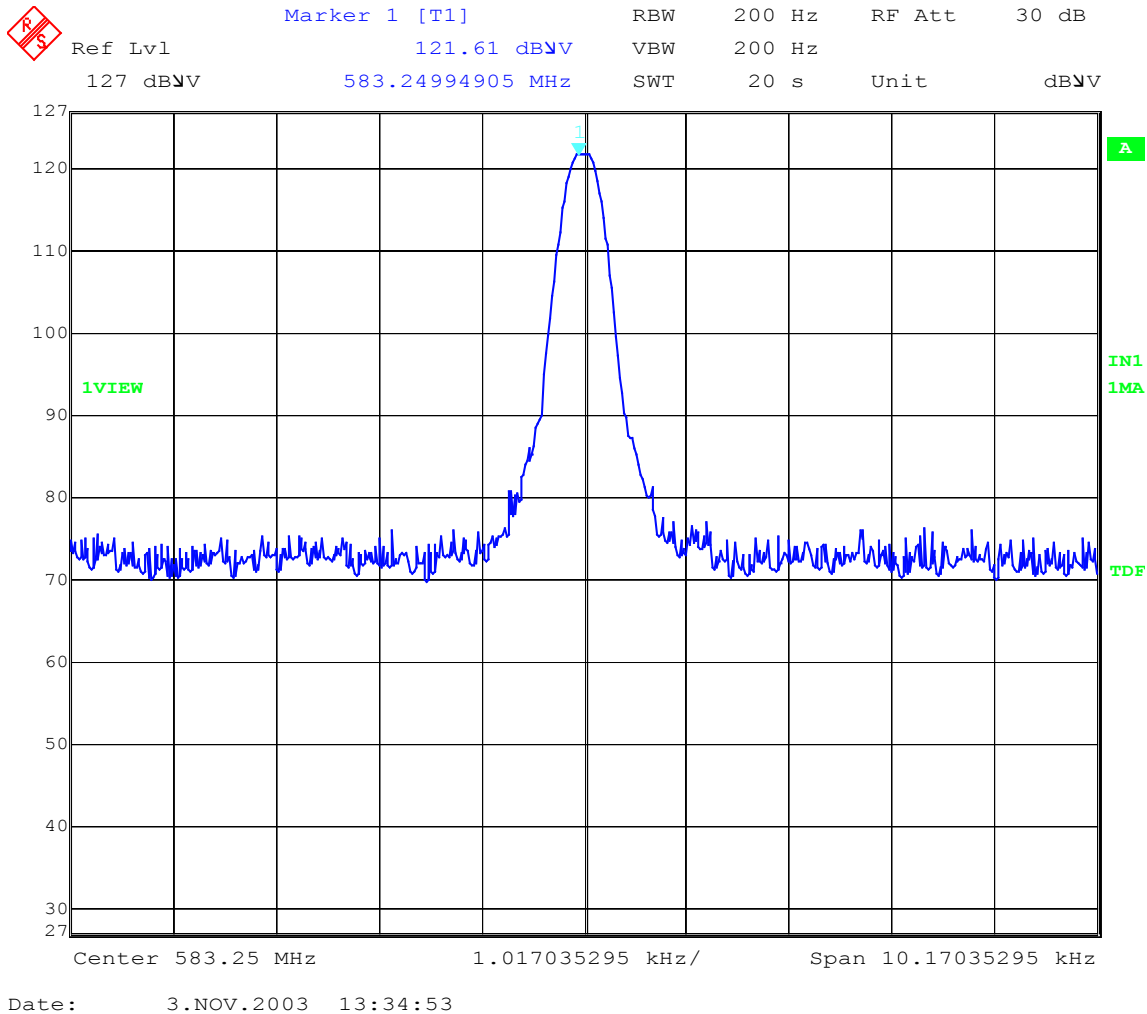
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

2.4 Volt Supply



EUT: SLX1 572 – 596 MHz
Test: Frequency Stability – Supply Voltage
Operator: Craig Brandt
Comment: GRP 2 CH 8 583.25 MHz
Date: 11-03-03

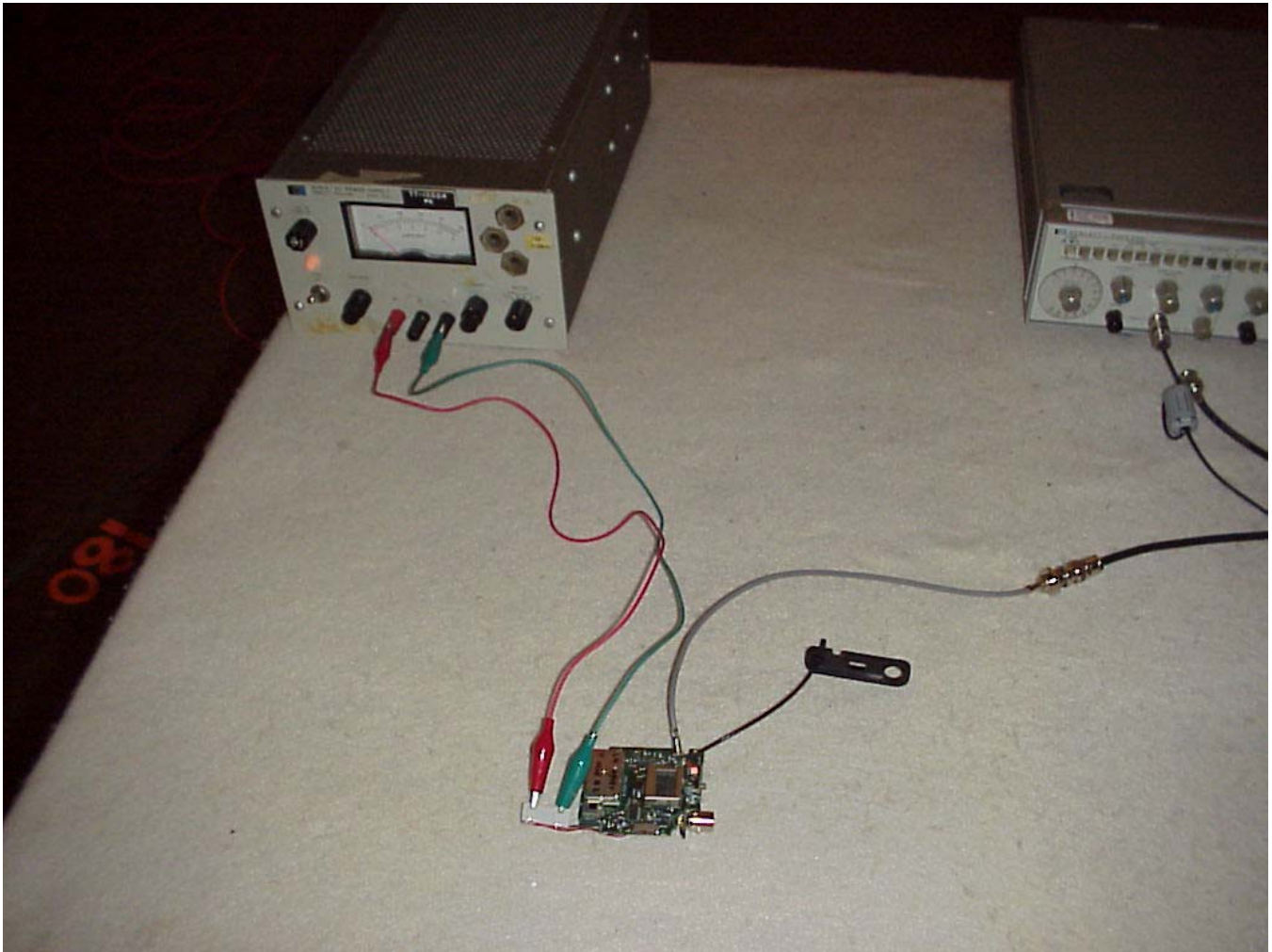
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX B

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

12.0 FREQUENCY STABILITY (VOLTAGE) PHOTOS TAKEN DURING TESTING





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

SLX1-L4 - 638 MHz to 662 MHz

Group 3 Channel 8 & Group 3 Channel 16



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

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

As stated in PART 74.861 (e)(1)(ii), the RF output power should not exceed .25 watts. The RF output of the SLX Wireless BodyPack Transmitter was connected to a Spectrum Analyzer through suitable attenuation. All cables, connectors, and attenuators were calibrated prior to testing. The RF output power was measured using the following test method:

Actual Measurements Taken:

121.33 dBuV Measured output of the transmitter
+ 0 dB includes measured pads & cable loss
121.33 dBuV equals 0.0272 watts

LIMIT:

Manufacturer's rated output power = .035 watts

MARGIN:

.25 - 0.0272 = .2228 watts



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

GRAPH(S) TAKEN OF THE RF POWER

OUTPUT MEASUREMENT

PART 2.1046



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

Output Power = 27.2 mW

EUT: SLX1 638 – 662 MHz

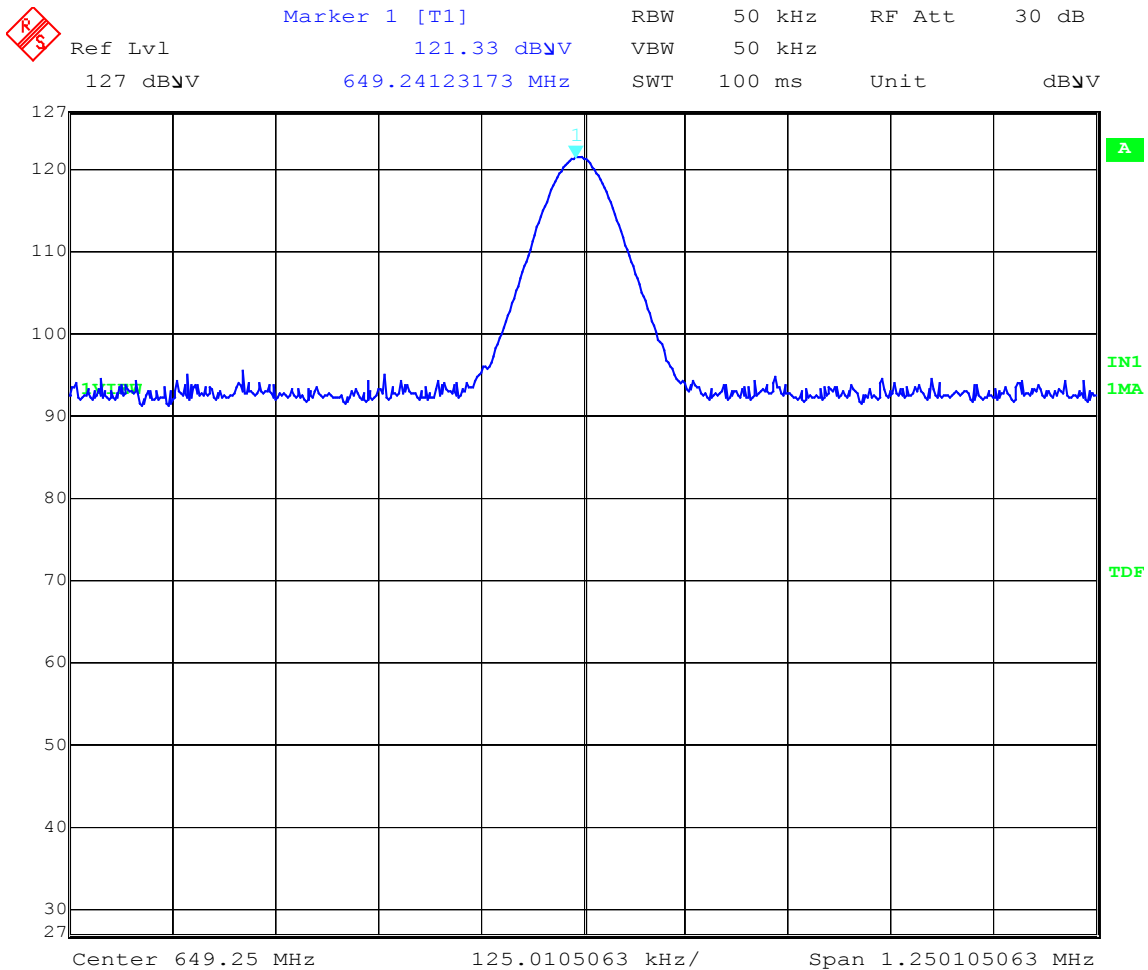
Test: Output Power - Conducted

Operator: Craig Brandt

Comment: GRP 3 CH 8 649.25 MHz

Date: 11-03-03

649.25 MHz



Date: 3.NOV.2003 12:12:17



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

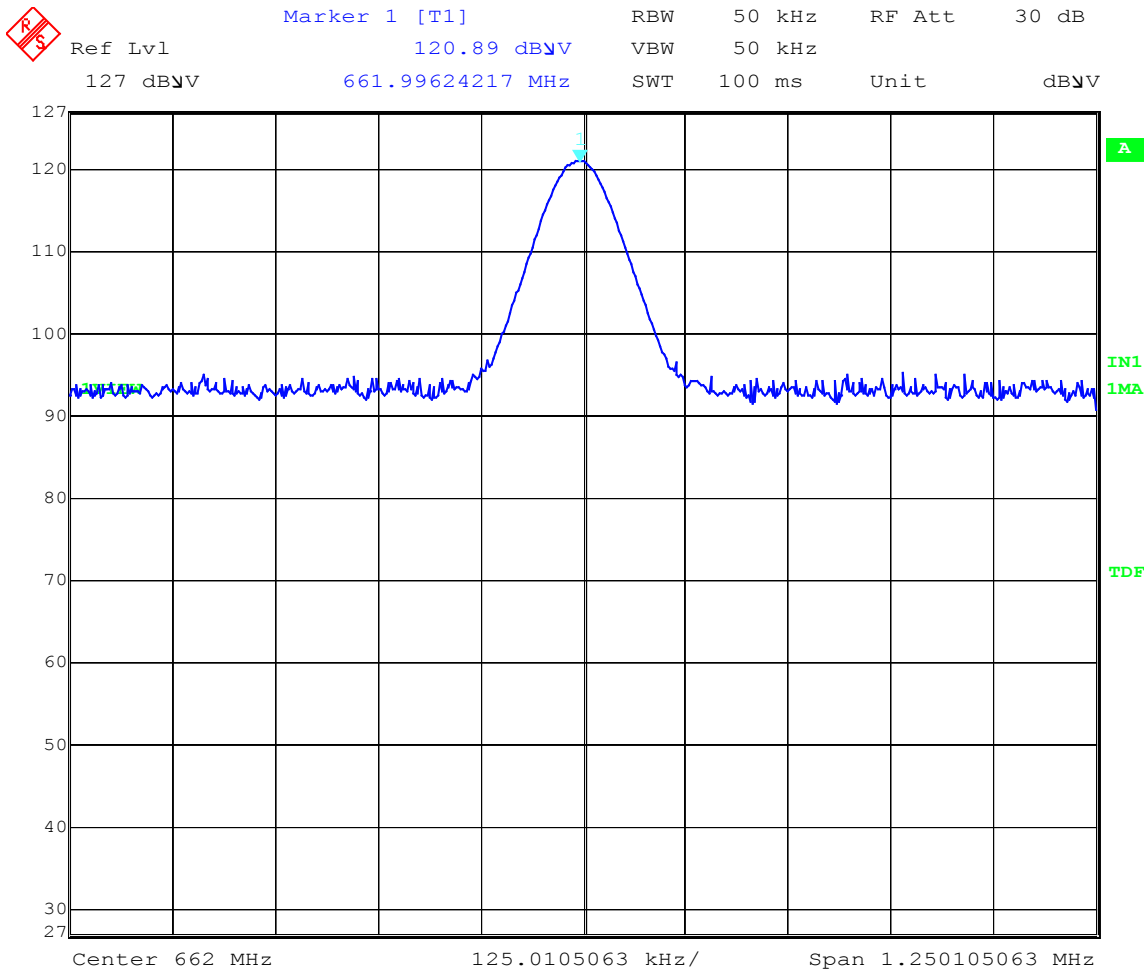
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

Output Power = 24.5 mW

EUT: SLX1 638 – 662 MHz
Test: Output Power - Conducted
Operator: Craig Brandt
Comment: GRP 3 CH 16 662.00 MHz
Date: 11-03-03

662.00 MHz



Date: 3.NOV.2003 12:13:41



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

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 20 Hz to 20 kHz is submitted with this report.

b. Equipment which employs modulation limiting

A family of curves showing the percentage of modulation versus the modulation input voltage with sufficient information showing the modulation limiting capability throughout the range of modulating frequencies and input modulating signal levels employed.



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

GRAPH(S) TAKEN SHOWING THE FREQUENCY

RESPONSE OF THE

AUDIO MODULATING CIRCUIT

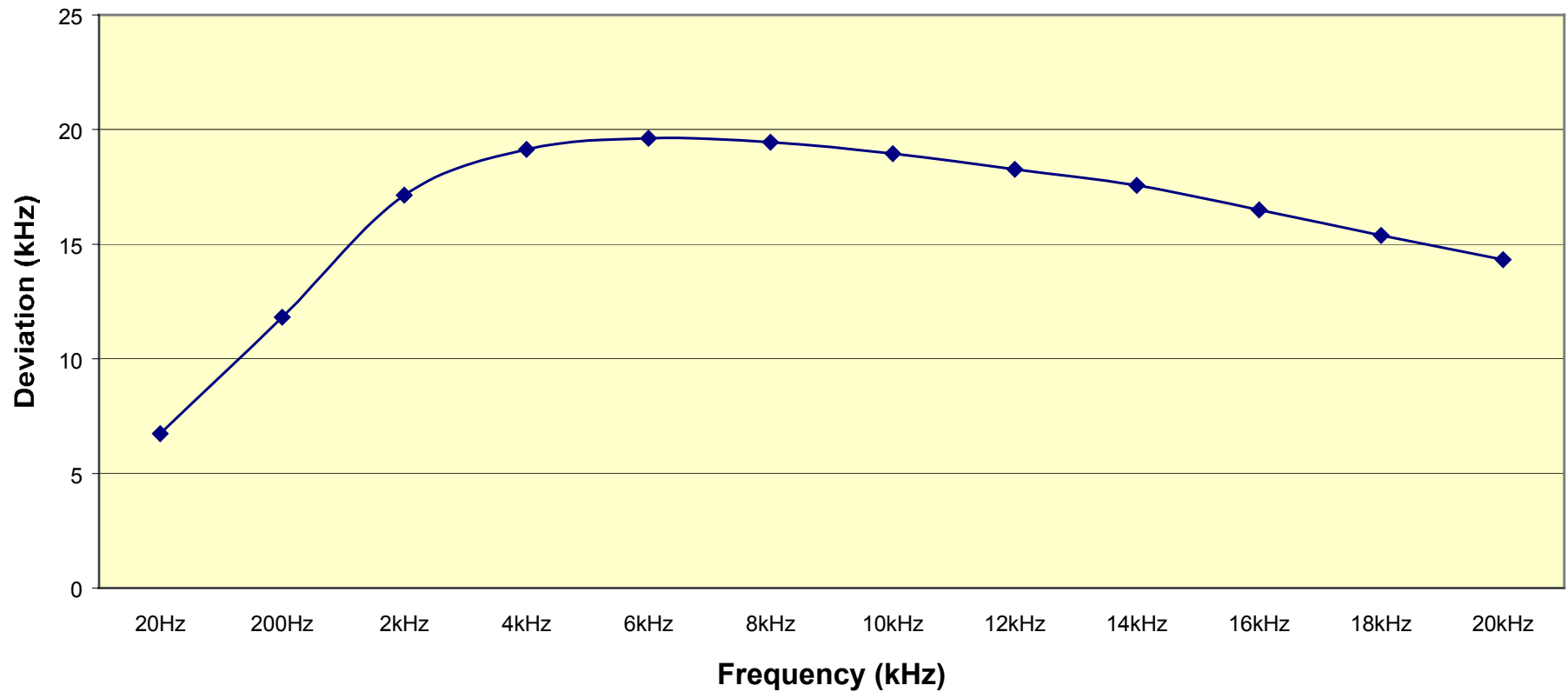
PART 2.1047



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

SLX1 (638.000MHz) Frequency vs Deviation for -45dBV RMS Input



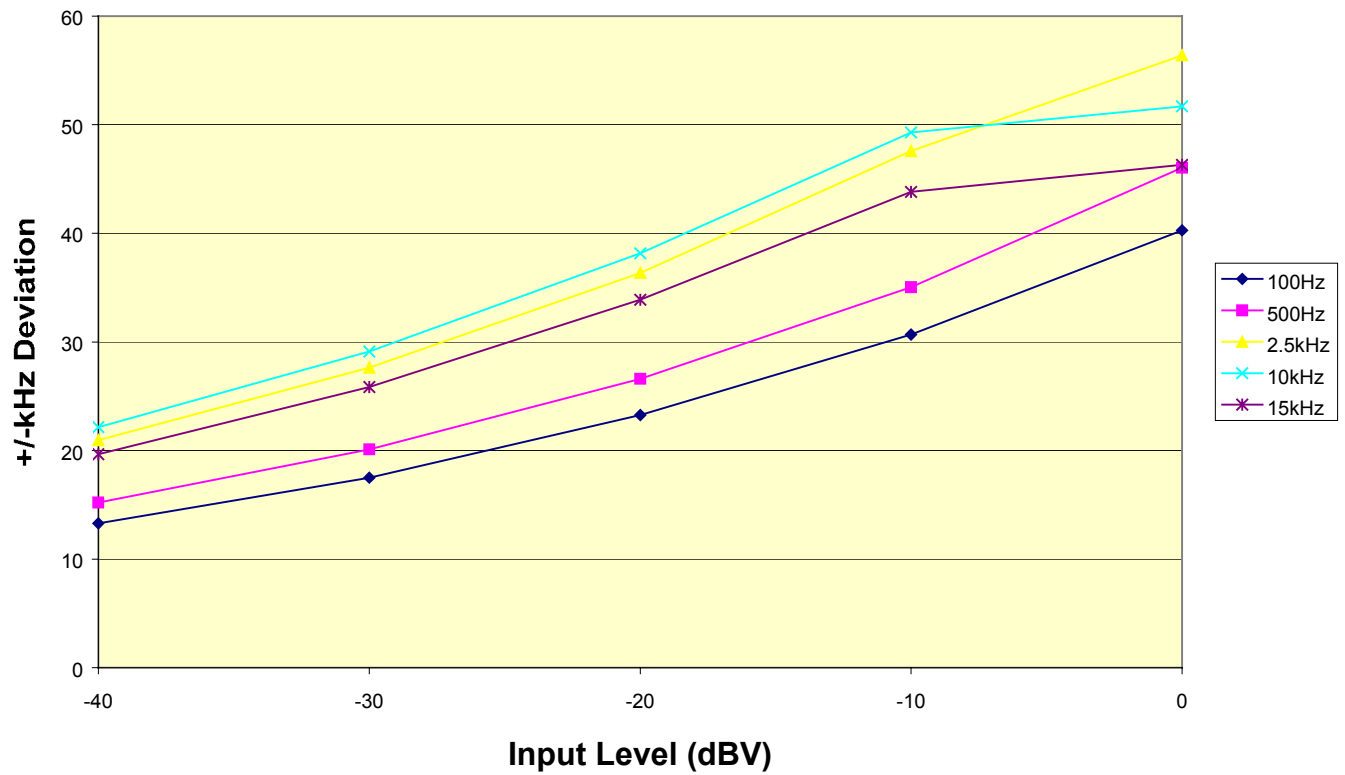


Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

SLX1 (638.000 MHz) Input Level vs Deviation





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

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:

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)

$$B_n = 2M + 2DK, \quad K=1$$

B_n = Bandwidth

$$M = 15 \text{ kHz},$$

M = Maximum Modulating Frequency

$$D = 45 \text{ kHz},$$

D = Peak Deviation

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

GRAPH(S) TAKEN OF THE OCCUPIED BANDWIDTH

PART 2.1049



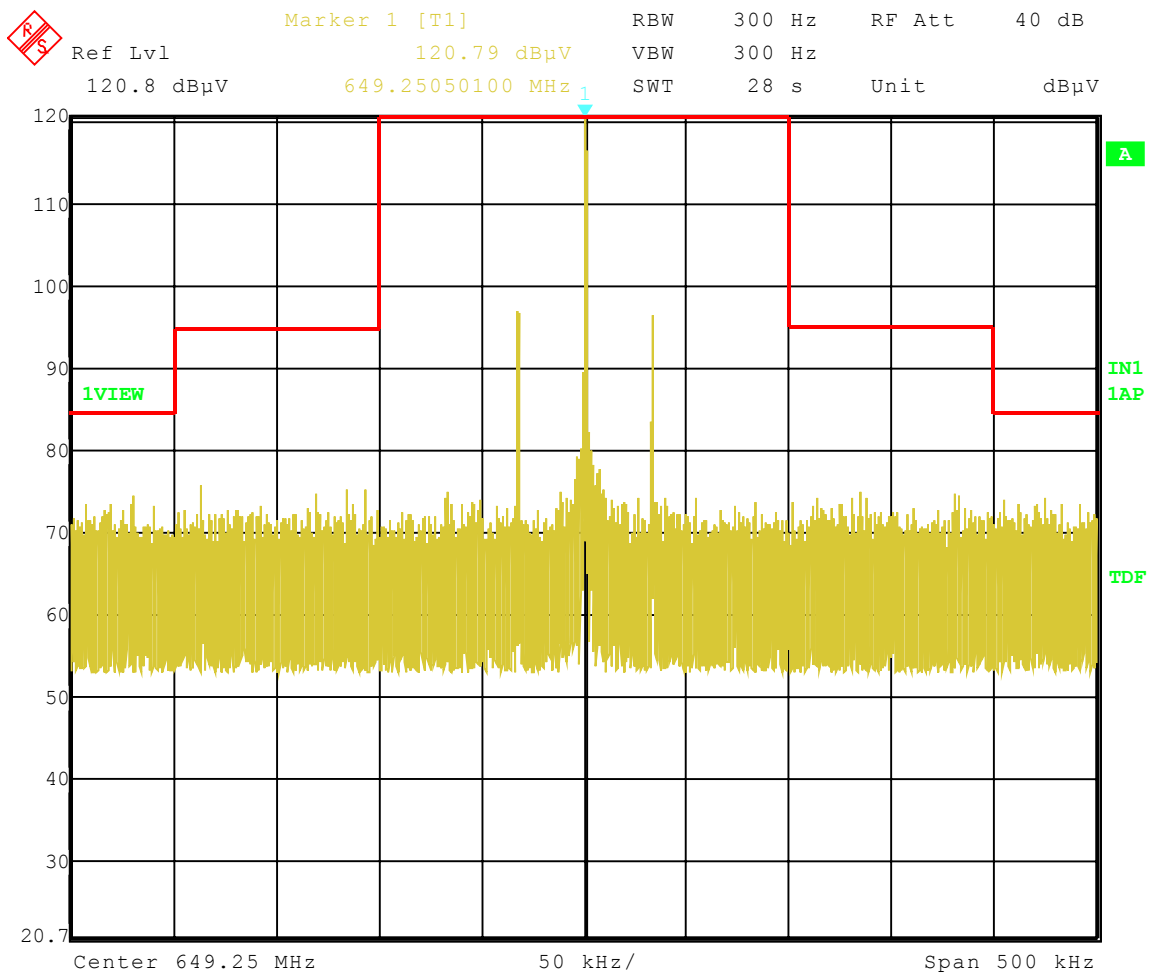
Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

EUT: SLX1 638 – 662 MHz
Test: Occupied Bandwidth / Band Edges
Operator: Craig Brandt
Comment: GRP 3 CH 8 649.25 MHz
Date: 11-03-03

Unmodulated Carrier:



Date: 3.NOV.2003 11:45:50



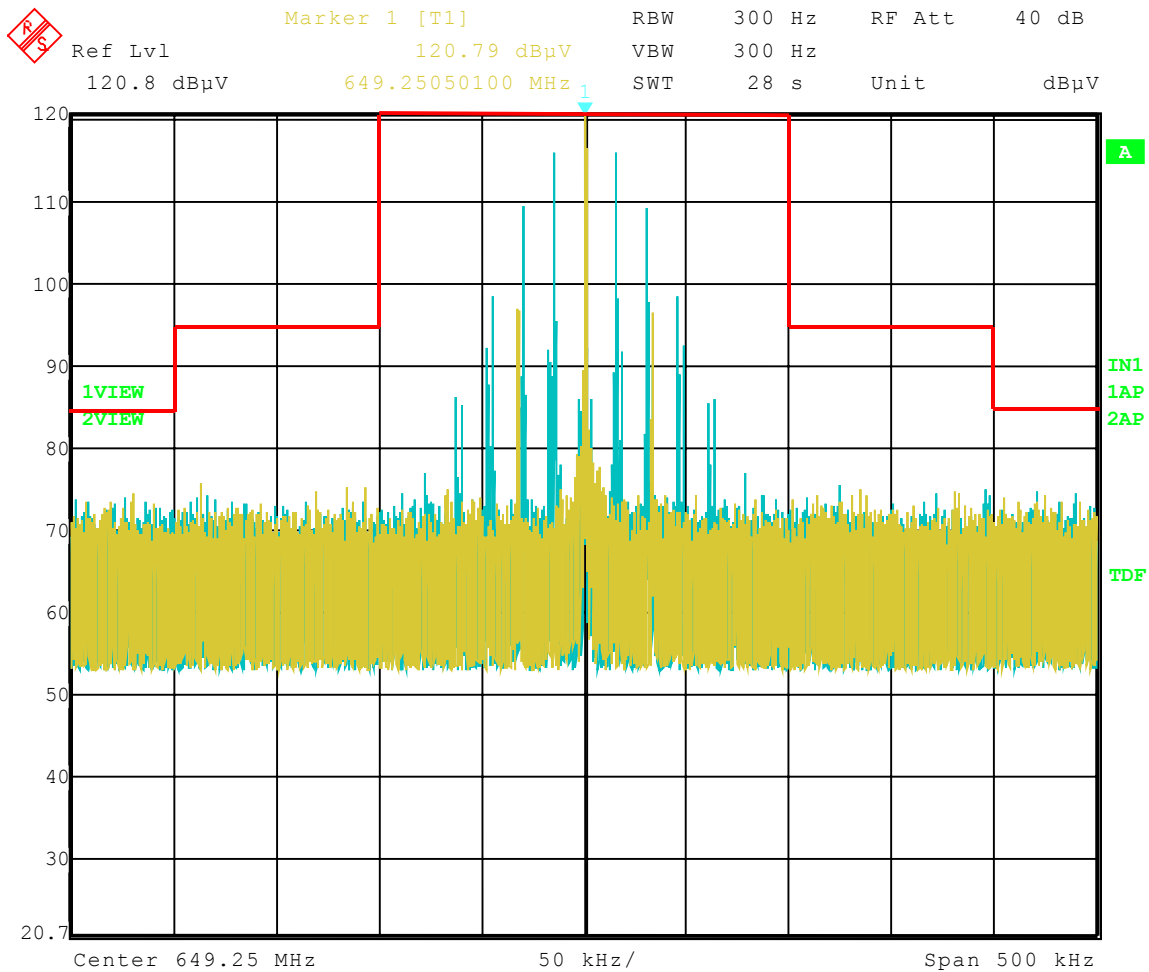
Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

EUT: SLX1 638 – 662 MHz
Test: Occupied Bandwidth / Band Edges
Operator: Craig Brandt
Comment: GRP 3 CH 8 649.25 MHz
Date: 11-03-03

Yellow: Unmodulated Carrier
Blue: 15 kHz 85% modulated



Date: 3.NOV.2003 11:47:05



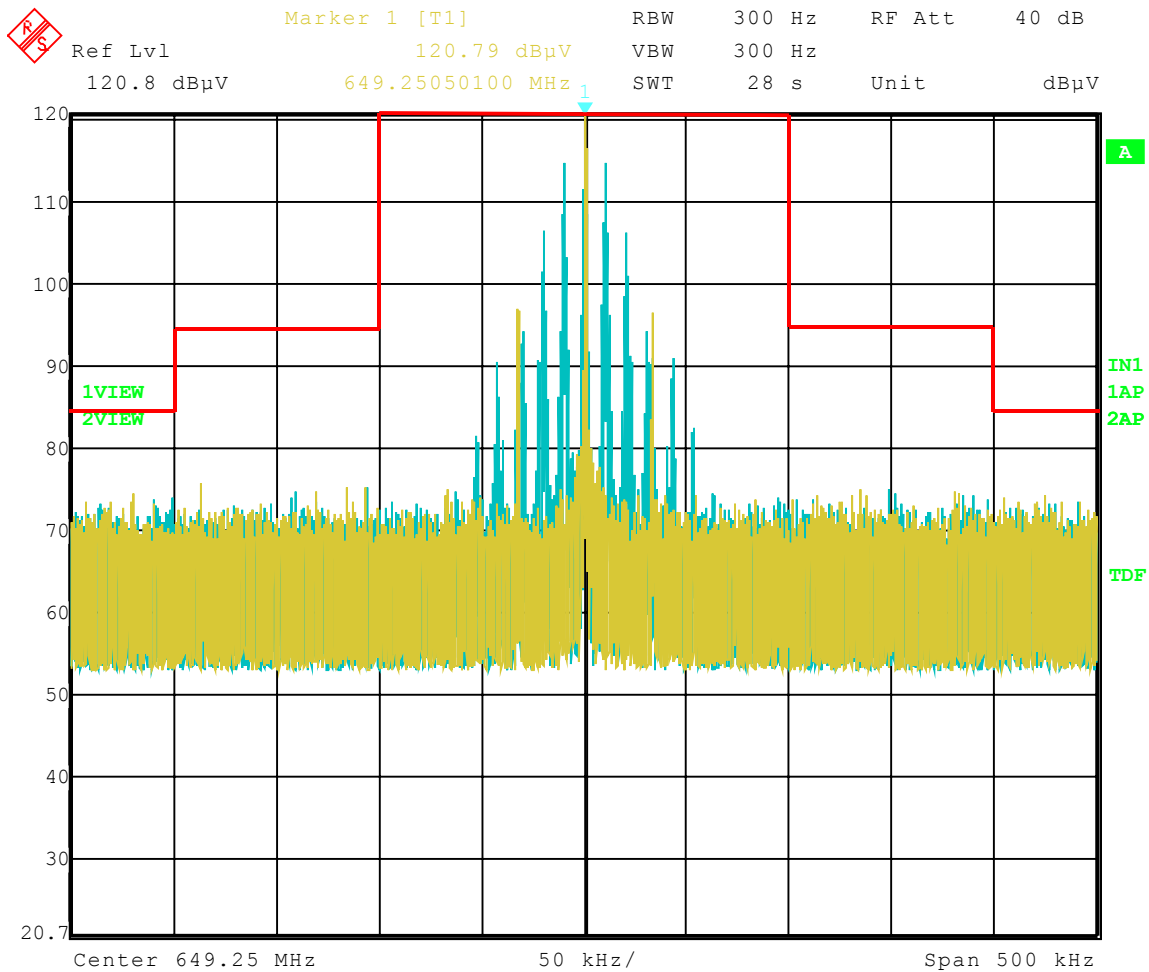
Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

EUT: SLX1 638 – 662 MHz
Test: Occupied Bandwidth / Band Edges
Operator: Craig Brandt
Comment: GRP 3 CH 8 649.25 MHz
Date: 11-03-03

Yellow: Unmodulated Carrier
Blue: 10 kHz 50% modulated



Date: 3.NOV.2003 11:59:20



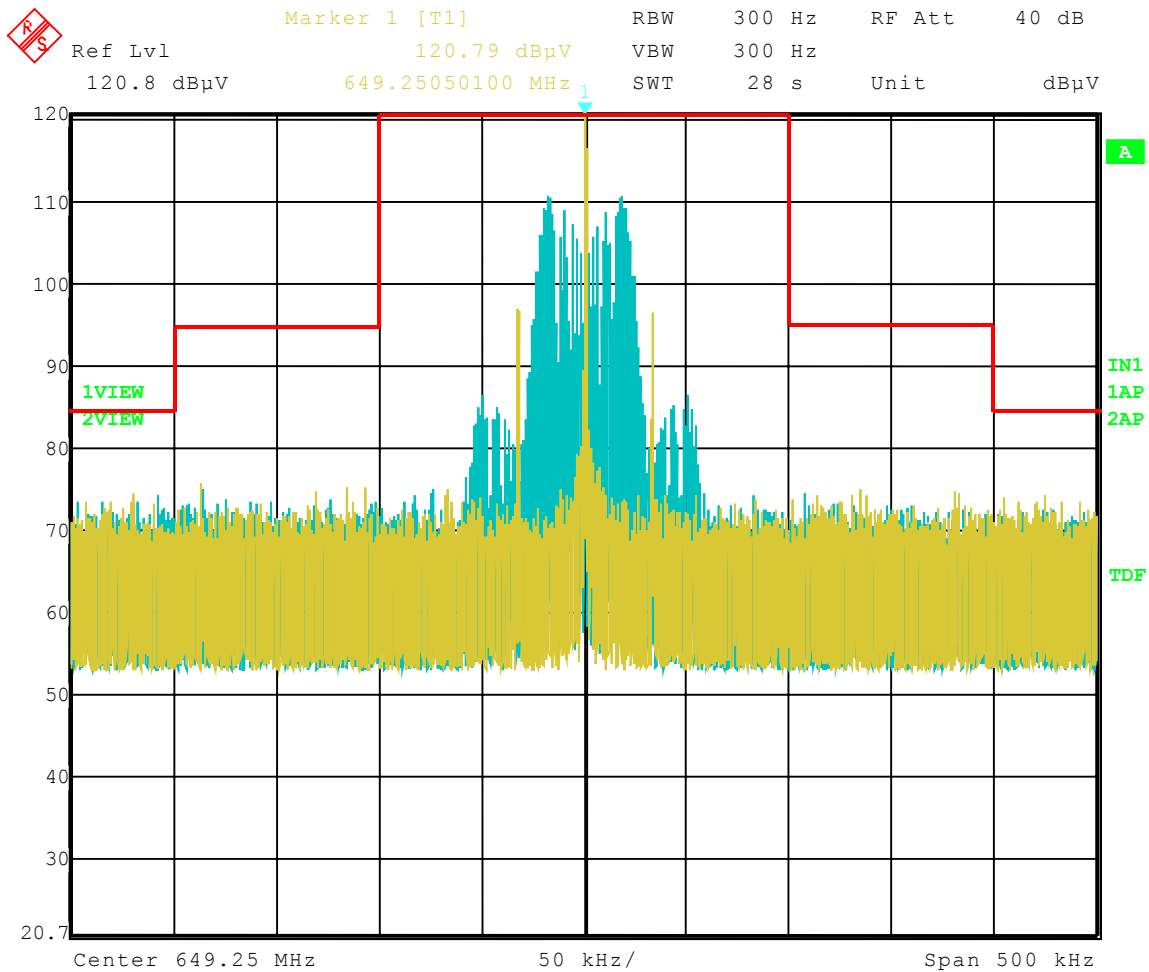
Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

EUT: SLX1 638 – 662 MHz
Test: Occupied Bandwidth / Band Edges
Operator: Craig Brandt
Comment: GRP 3 CH 8 649.25 MHz
Date: 11-03-03

Yellow: Unmodulated Carrier
Blue: 2 kHz 16 dB > 50% modulated



Date: 3.NOV.2003 12:05:34

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

5.0 OCCUPIED BANDWIDTH PHOTOS TAKEN DURING TESTING





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

6.0 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 638 MHz to 662MHz.

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



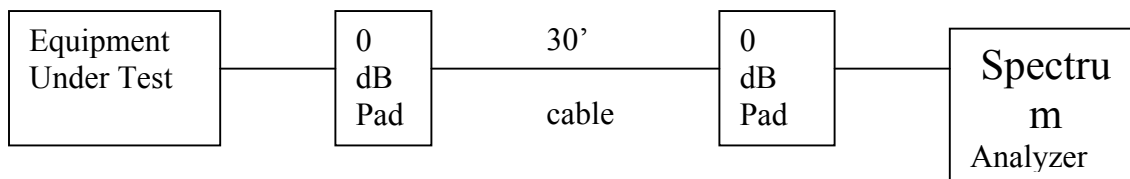
Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

7.0 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:



The allowed emissions for transmitters operating in the 638 MHz to 662MHz bands for SLX Wireless BodyPack 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: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

CONDUCTED EMISSION DATA AND CHARTS 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: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

8.0 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 SLX Wireless BodyPack 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 638 MHz to 662MHz bands for SLX Wireless BodyPack 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: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

8.0 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 638 MHz to 662MHz.

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

Mean output power in watts:

Manufacturer's rated wattage = **.035 Watts**

(See Paragraph 2.0, page 2 of this Appendix)

Free Space Formula

Convert to 3 meter test distance using the Free Space Formula

$$\frac{\sqrt{49.2 * \text{rated wattage}}}{\text{Distance}} = 0.4374167 \text{ volts/meter} = 437416.7 \text{ uV/m}$$

$$20 * \text{Log}(437416.7) = 112.8179 \text{ dBuV/m}$$

Therefore, the Fundamental at three meters equals 112.8179 dBuV,

The emissions must be reduced by:

$$43 + 10 * \text{LOG}100.035 \text{ watts}) = 28.44068 \text{ dB}$$

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

112.8179 dBuV/m extrapolated level for 0.035 watts

-28.44068 dB required reduction below the unmodulated fundamental

84.37723 dBuV/M maximum spurious emissions allowed



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

RADIATED EMISSION DATA AND CHARTS TAKEN FOR SPURIOUS EMISSIONS USING THE SUBSTITUTION METHOD

ANSI/TIA/EIA-603-1992 SECTION 2.2.12



Company: Shure Inc.
 Model Tested: SLX1
 Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

Operator: Craig Brandt

Date of test: 12-22-03

Field Strength of Spurious Radiation - Substitution Method

Limit = -13 dBm

Model: **SLX1-L4**

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)
5194.00 MHz vertical	66.3	-38.3	3.87	10.0	-34.27	21.27
5194.00 MHz horizontal	67.4	-34.4	3.87	10.0	-30.37	17.37
5296.00 MHz vertical	64.0	-37.9	3.92	10.2	-33.72	20.72
5843.25 MHz vertical	68.6	-34.1	4.34	11.0	-29.54	16.54
5843.25 MHz horizontal	65.8	-37.8	4.34	11.0	-33.24	20.24
5958.00 MHz vertical	64.4	-37.3	4.36	11.1	-32.66	19.66
5958.00 MHz horizontal	64.2	-39.1	4.36	11.1	-34.46	21.42

EIRP = Signal generator output - cable loss + antenna gain

ERP_(ref. to 1/2λ dipole) = Signal generator output - cable loss + antenna gain - 2.1



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

RADIATED EMISSION DATA AND GRAPH(S) TAKEN FOR SPURIOUS EMISSION MEASUREMENTS

PART 2.1053



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

FCC Part 74

Electric Field Strength

EUT: SLX1 638 - 662 MHz
Manufacturer: Shure, Inc.
Operating Condition: 72 deg F; 51% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 3 CH 8 649.25 MHz
Test Date: 10/31/2003

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

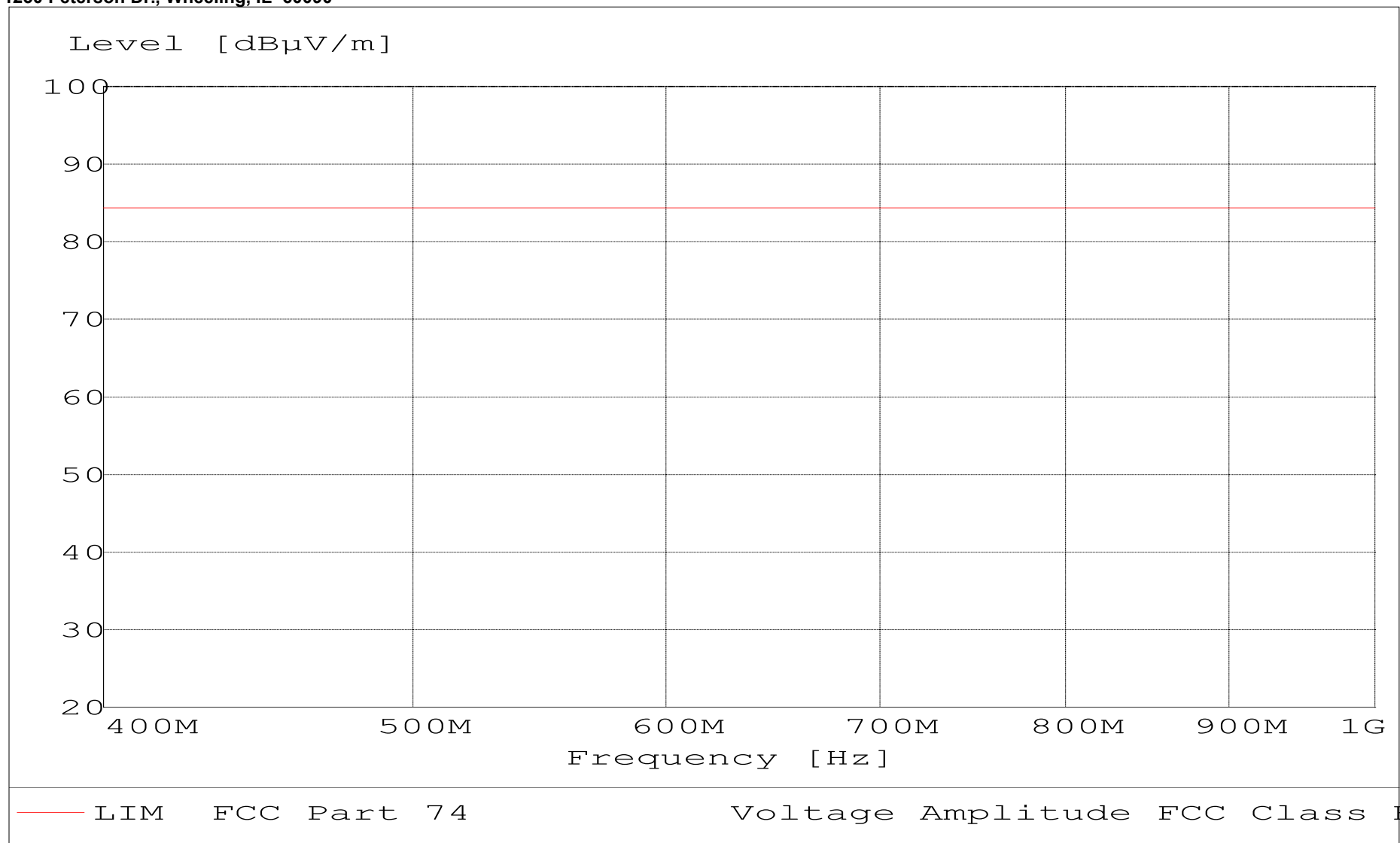
Pre-Amp --- Rohde & Schwarz TS-PR10 SN: 032001/005

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

FCC Part 74

Electric Field Strength

EUT: SLX1 638 - 662 MHz
Manufacturer: Shure, Inc.
Operating Condition: 72 deg F; 51% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 3 CH 8 649.25 MHz
Test Date: 10/31/2003

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

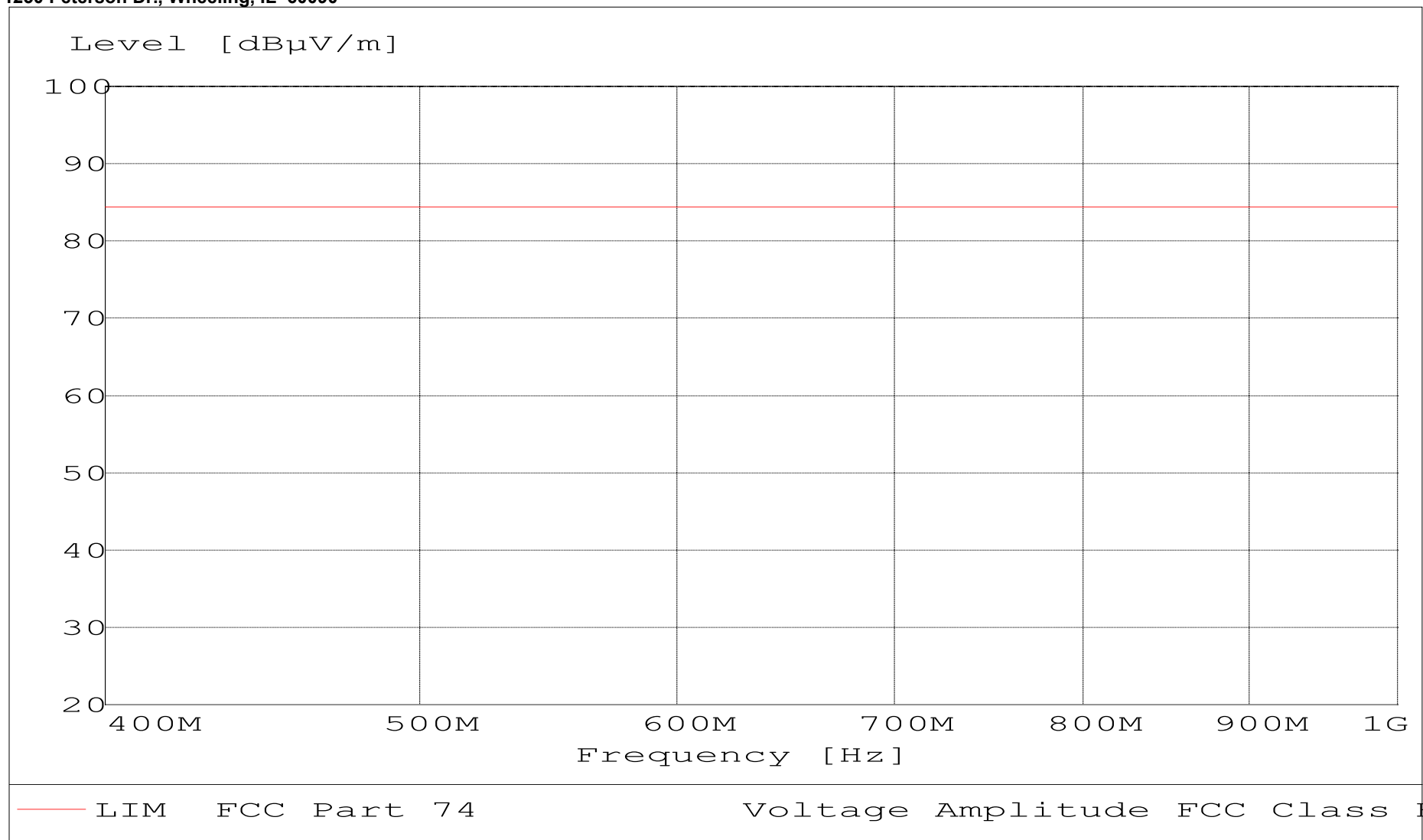
Pre-Amp --- Rohde & Schwarz TS-PR10 SN: 032001/005

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

FCC Part 74

Electric Field Strength

EUT: SLX1 638 - 662 MHz
Manufacturer: Shure, Inc.
Operating Condition: 72 deg F; 51% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 3 CH 8 649.25 MHz
Test Date: 10/31/2003

TEXT: "Site 3 6204&184 V3M"

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

Horn Antenna --- ETS 3115 SN: 6204

Pre-Amps ---

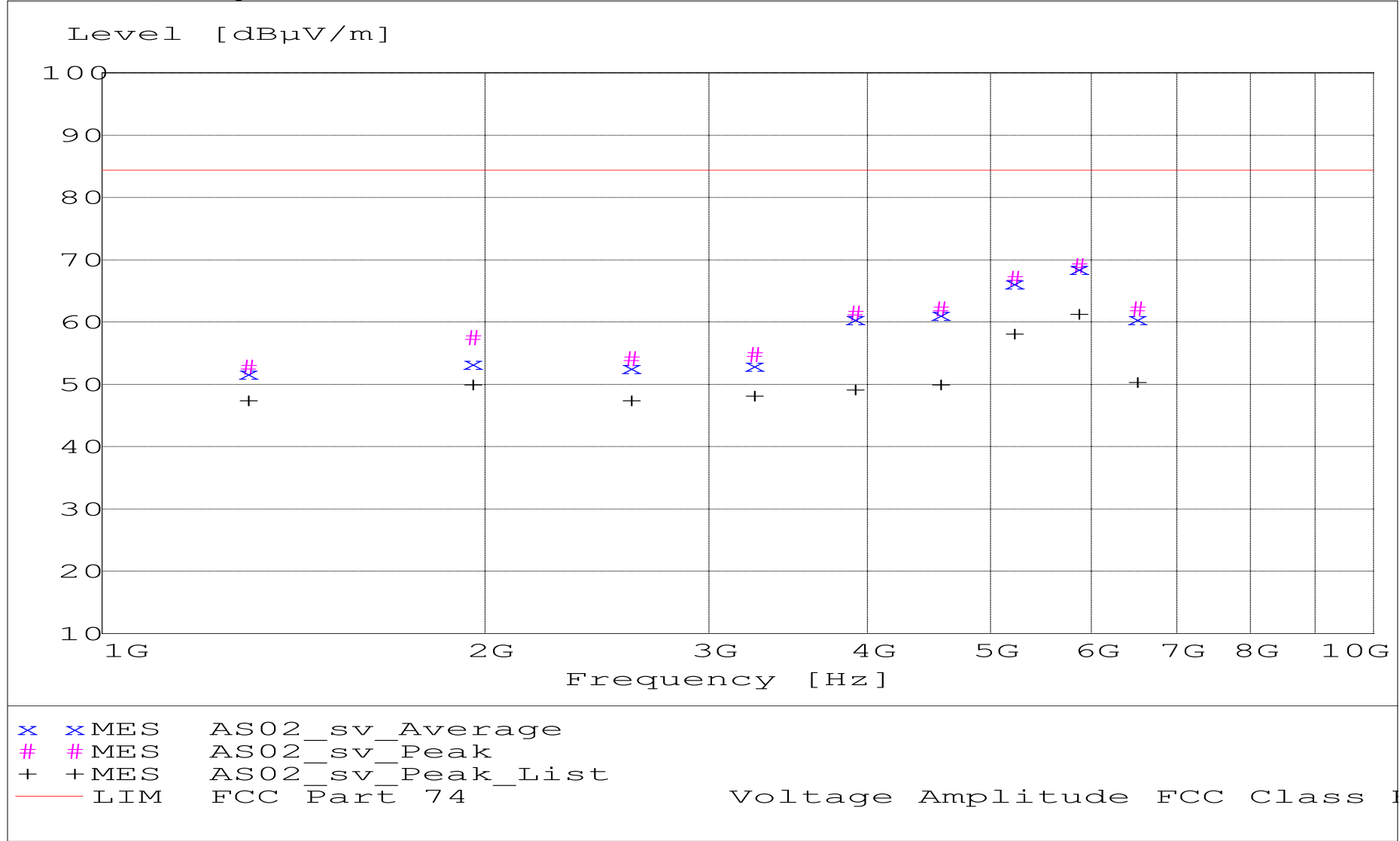
1 - 10 GHz -- Miteq AMF-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090





Company: Shure Inc.
 Model Tested: SLX1
 Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

MEASUREMENT RESULT: "AS02_sv_Final"

10/31/2003 8:58AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EUT	Final	Comment
MHz	dBμV	Factor	Loss	Level	dBμV/m	dB	Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
5843.250000	71.16	34.74	-36.8	69.1	84.4	15.3	1.20	0	MAX PEAK	None
5843.250000	70.64	34.74	-36.8	68.6	84.4	15.8	1.20	0	AVERAGE	None
5194.000000	69.67	34.60	-37.3	67.0	84.4	17.4	1.10	0	MAX PEAK	None
5194.000000	68.95	34.60	-37.3	66.3	84.4	18.1	1.10	0	AVERAGE	None
4544.750000	66.46	32.96	-37.3	62.1	84.4	22.2	2.00	0	MAX PEAK	None
6492.500000	63.87	35.19	-37.0	62.1	84.4	22.3	1.10	0	MAX PEAK	None
3895.500000	66.96	32.57	-38.0	61.5	84.4	22.9	1.10	0	MAX PEAK	None
4544.750000	65.55	32.96	-37.3	61.2	84.4	23.2	2.00	0	AVERAGE	None
3895.500000	66.03	32.57	-38.0	60.6	84.4	23.8	1.10	0	AVERAGE	None
6492.500000	62.31	35.19	-37.0	60.5	84.4	23.8	1.10	0	AVERAGE	None
1947.800000	68.93	28.44	-39.8	57.6	84.4	26.8	2.00	0	MAX PEAK	None
3246.250000	63.07	30.84	-39.1	54.8	84.4	29.6	1.20	315	MAX PEAK	None
2597.000000	64.27	29.43	-39.6	54.1	84.4	30.3	1.00	315	MAX PEAK	None
1947.800000	64.72	28.44	-39.8	53.3	84.4	31.0	2.00	0	AVERAGE	None
3246.250000	61.38	30.84	-39.1	53.1	84.4	31.3	1.20	315	AVERAGE	None
1298.500000	66.96	26.33	-40.5	52.7	84.4	31.6	1.00	0	MAX PEAK	None
2597.000000	62.84	29.43	-39.6	52.7	84.4	31.7	1.00	315	AVERAGE	None
1298.500000	65.97	26.33	-40.5	51.8	84.4	32.6	1.00	0	AVERAGE	None



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

FCC Part 74

Electric Field Strength

EUT: SLX1 638 - 662 MHz
Manufacturer: Shure, Inc.
Operating Condition: 72 deg F; 51% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 3 CH 8 649.25 MHz
Test Date: 10/31/2003

TEXT: "Site 3 6204&184 H3M"

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

Horn Antenna --- ETS 3115 SN: 6204

Pre-Amps ---

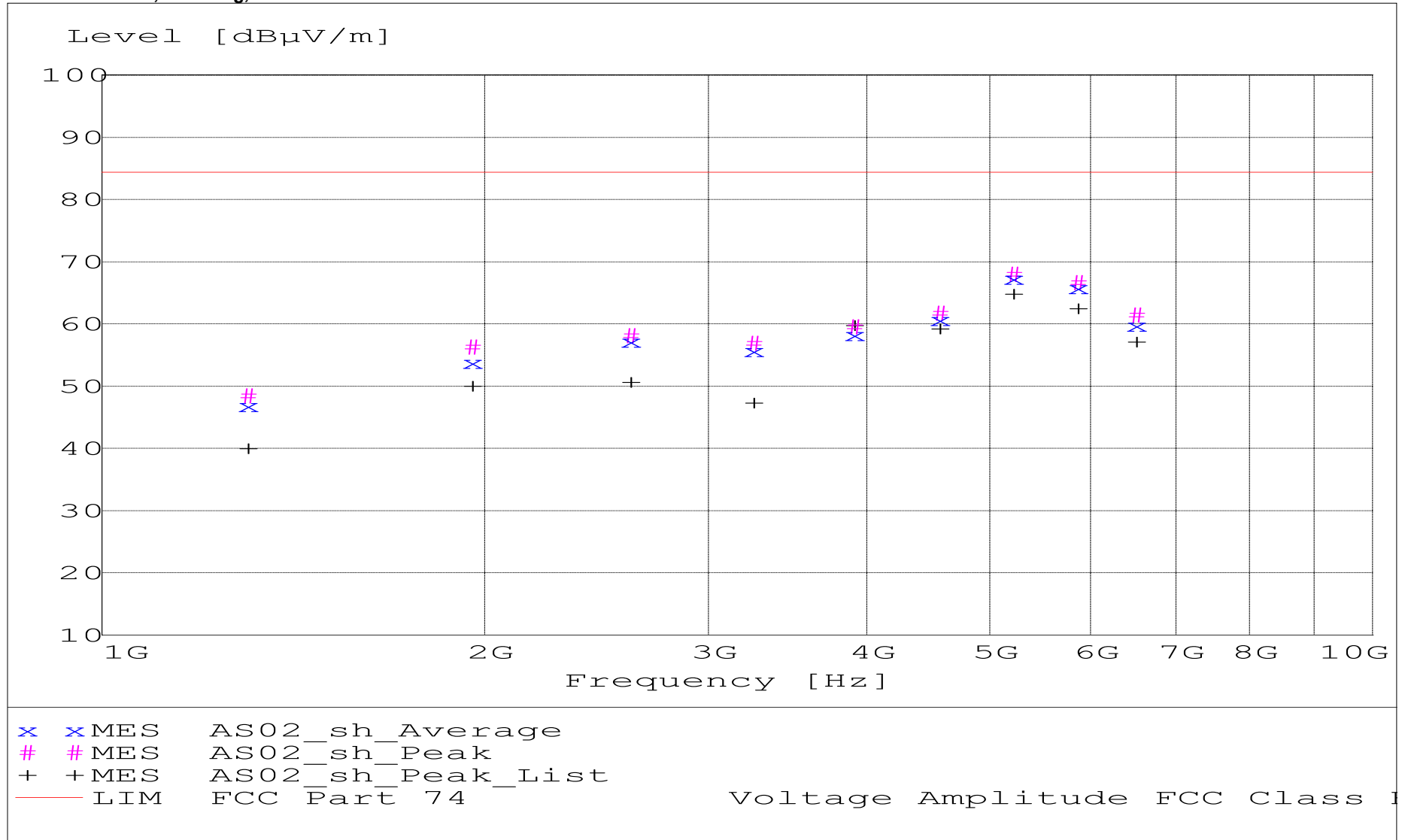
1 - 10 GHz -- Miteq AMF-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090





Company: Shure Inc.
 Model Tested: SLX1
 Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

MEASUREMENT RESULT: "AS02_sh_Final"

10/31/2003 9:22AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EUT	Final	Comment
MHz	dBμV	Factor	Loss	Level	dBμV/m	dB	Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m			m	deg		
5194.000000	70.66	34.60	-37.3	68.0	84.4	16.4	1.10	0	MAX PEAK	None
5194.000000	70.04	34.60	-37.3	67.4	84.4	17.0	1.10	0	AVERAGE	None
5843.250000	68.68	34.74	-36.8	66.6	84.4	17.8	2.00	315	MAX PEAK	None
5843.250000	67.91	34.74	-36.8	65.8	84.4	18.5	2.00	315	AVERAGE	None
4544.750000	66.08	32.96	-37.3	61.7	84.4	22.6	1.80	0	MAX PEAK	None
6492.500000	63.20	35.19	-37.0	61.4	84.4	22.9	1.80	0	MAX PEAK	None
4544.750000	65.05	32.96	-37.3	60.7	84.4	23.7	1.80	0	AVERAGE	None
6492.500000	61.55	35.19	-37.0	59.8	84.4	24.6	1.80	0	AVERAGE	None
3895.500000	65.05	32.57	-38.0	59.6	84.4	24.8	2.00	45	MAX PEAK	None
3895.500000	63.77	32.57	-38.0	58.3	84.4	26.1	2.00	45	AVERAGE	None
2597.000000	68.32	29.43	-39.6	58.2	84.4	26.2	1.20	270	MAX PEAK	None
2597.000000	67.40	29.43	-39.6	57.2	84.4	27.1	1.20	270	AVERAGE	None
3246.250000	65.18	30.84	-39.1	56.9	84.4	27.5	1.20	270	MAX PEAK	None
1947.750000	67.70	28.44	-39.8	56.3	84.4	28.0	1.10	30	MAX PEAK	None
3246.250000	64.00	30.84	-39.1	55.7	84.4	28.7	1.20	270	AVERAGE	None
1947.750000	65.22	28.44	-39.8	53.8	84.4	30.5	1.10	30	AVERAGE	None
1298.500000	62.66	26.33	-40.5	48.4	84.4	35.9	2.30	135	MAX PEAK	None
1298.500000	61.10	26.33	-40.5	46.9	84.4	37.5	2.30	135	AVERAGE	None



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

FCC Part 74

Electric Field Strength

EUT: SLX1 638 - 662 MHz
Manufacturer: Shure, Inc.
Operating Condition: 70 deg F; 45% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 3 CH 16 662.00 MHz
Test Date: 11/03/2003

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

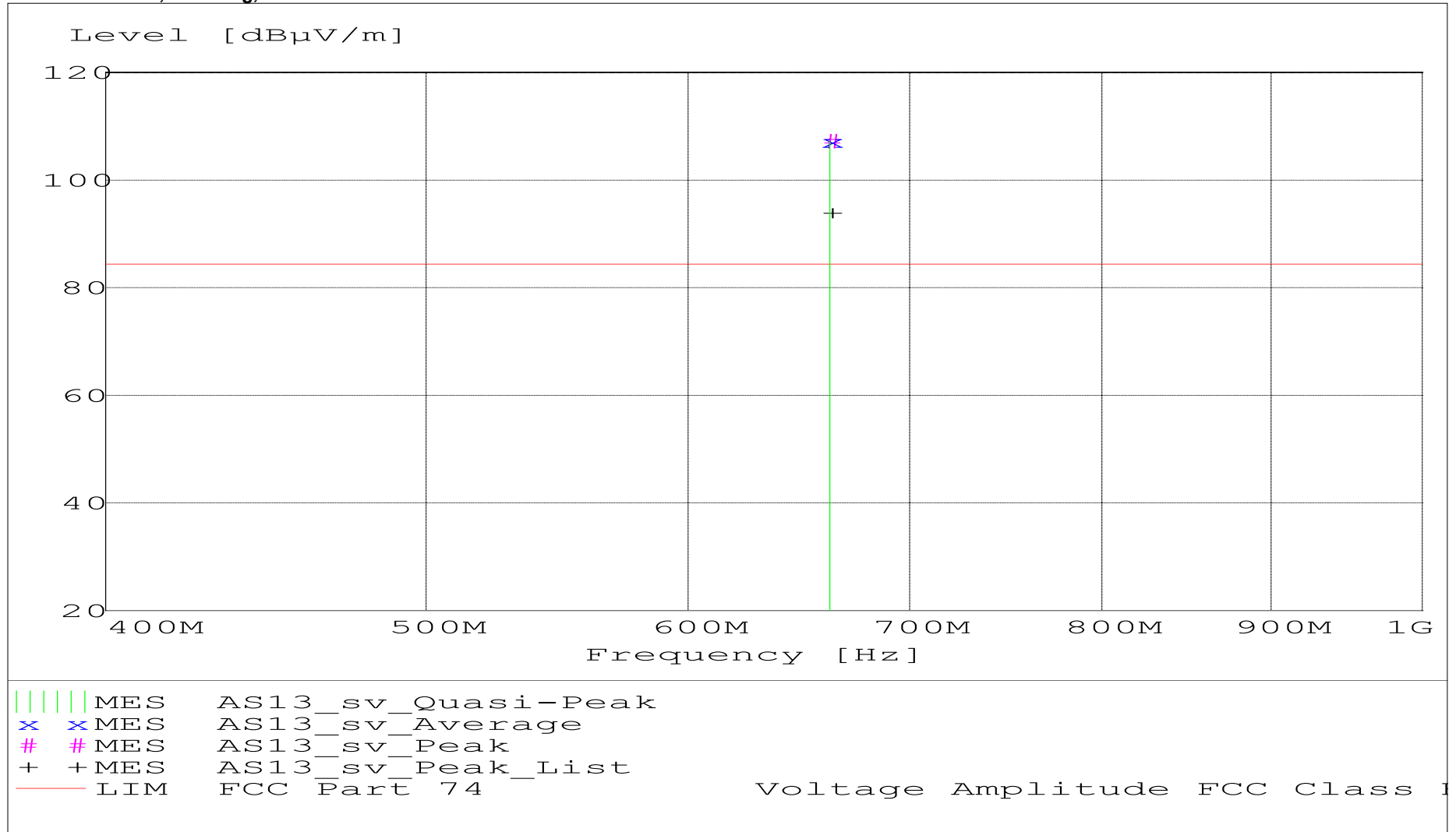
Pre-Amp --- Rohde & Schwarz TS-PR10 SN: 032001/005

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

MEASUREMENT RESULT: "AS13_sv_Final"

11/3/2003 9:25AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EUT	Final	Comment
MHz	dBμV	Factor	Loss	Level	dBμV/m	dB	Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m			m	deg		
662.000000	60.98	20.65	25.6	107.3	84.4	-22.9	1.20	180	MAX PEAK	Fundamental
662.000000	60.89	20.65	25.6	107.2	84.4	-22.8	1.20	180	QUASI-PEAK	Fundamental
662.000000	60.85	20.65	25.6	107.1	84.4	-22.8	1.20	180	AVERAGE	Fundamental



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

FCC Part 74

Electric Field Strength

EUT: SLX1 638 - 662 MHz
Manufacturer: Shure, Inc.
Operating Condition: 70 deg F; 45% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 3 CH 16 662.00 MHz
Test Date: 11/03/2003

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

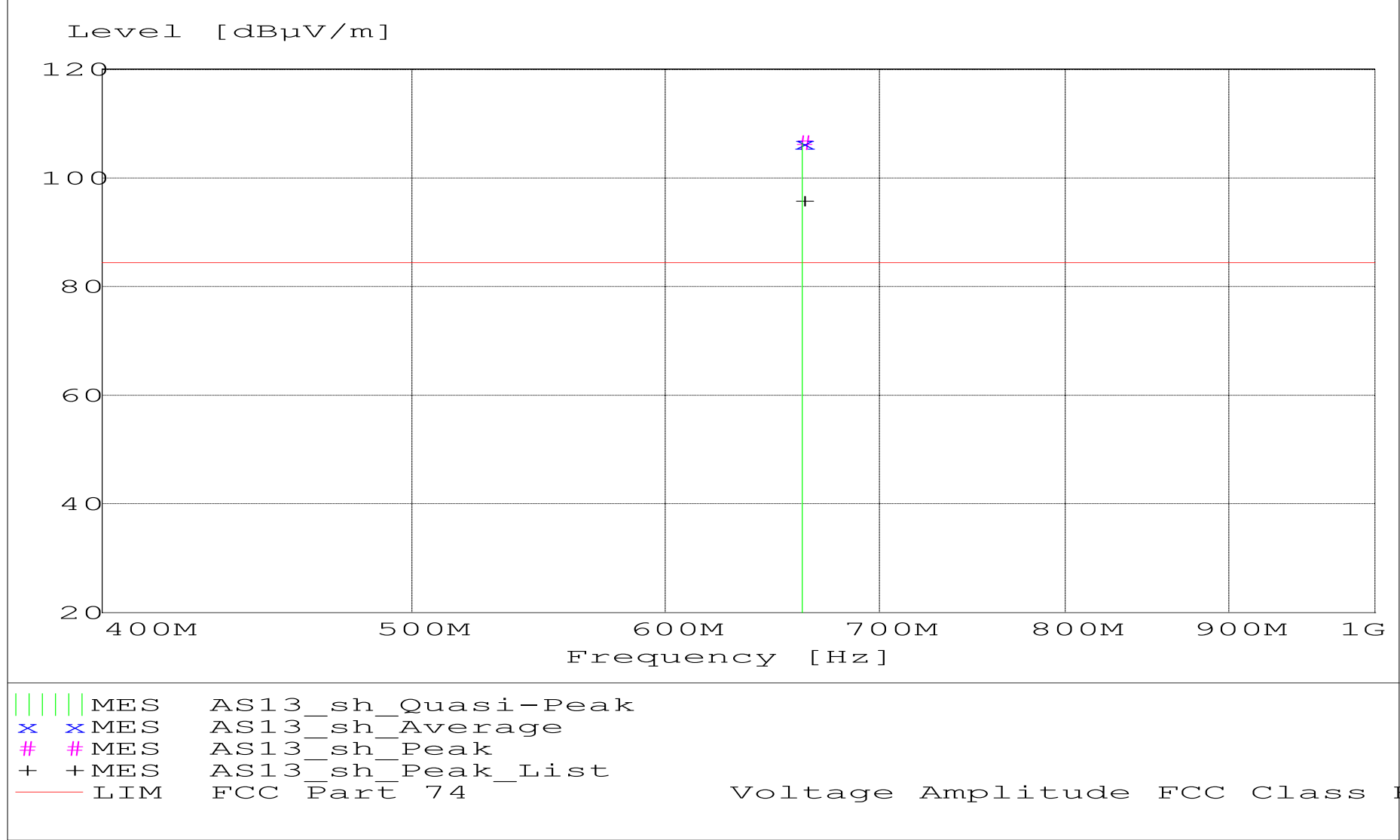
Pre-Amp --- Rohde & Schwarz TS-PR10 SN: 032001/005

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

MEASUREMENT RESULT: "AS13_sh_Final"

11/3/2003 9:34AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EUT	Final	Comment
MHz	dBμV	Factor	Loss	Level	dBμV/m	dB	Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
662.000000	60.19	20.65	25.6	106.5	84.4	-22.1	1.60	180	MAX PEAK	Fundamental
662.000000	60.11	20.65	25.6	106.4	84.4	-22.0	1.60	180	QUASI-PEAK	Fundamental
662.000000	60.05	20.65	25.6	106.3	84.4	-22.0	1.60	180	AVERAGE	Fundamental



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

FCC Part 74

Electric Field Strength

EUT: SLX1 638 - 662 MHz
Manufacturer: Shure, Inc.
Operating Condition: 70 deg F; 45% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 3 CH 16 662.00 MHz
Test Date: 11/03/2003

TEXT: "Site 3 6204&184 V3M"

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

Horn Antenna --- ETS 3115 SN: 6204

Pre-Amps ---

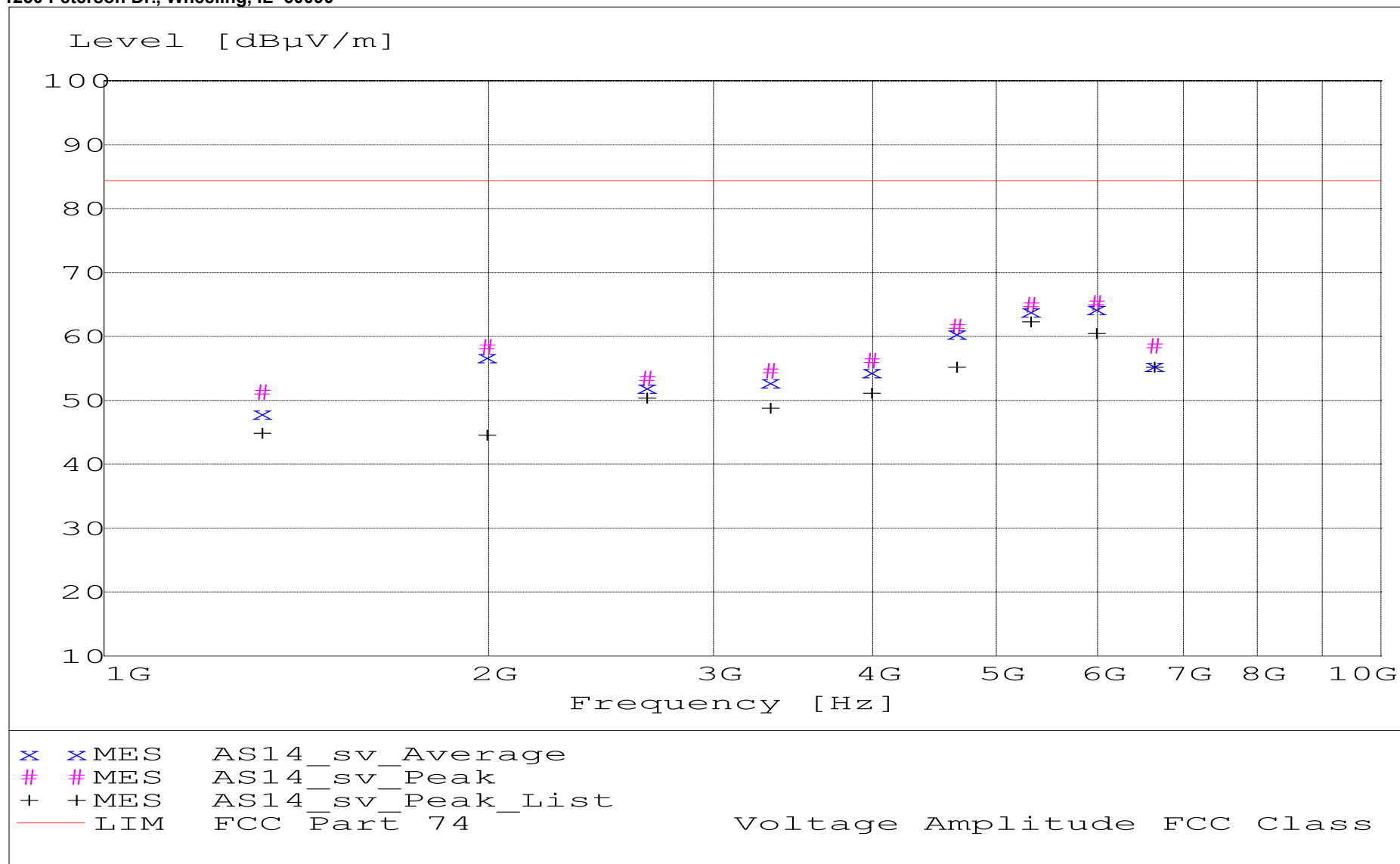
1 - 10 GHz -- Miteq AMF-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090





Company: Shure Inc.
 Model Tested: SLX1
 Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

MEASUREMENT RESULT: "AS14_sv_Final"

11/3/2003 10:04AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EUT	Final	Comment
MHz	dBμV	Factor	Loss	Level	dBμV/m	dB	Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
5958.000000	67.31	34.78	-36.8	65.3	84.4	19.1	1.10	315	MAX PEAK	None
5296.000000	67.56	34.60	-37.1	65.0	84.4	19.3	1.10	0	MAX PEAK	None
5958.000000	66.44	34.78	-36.8	64.4	84.4	20.0	1.10	315	AVERAGE	None
5296.000000	66.54	34.60	-37.1	64.0	84.4	20.4	1.10	0	AVERAGE	None
4634.000000	65.55	33.28	-37.2	61.6	84.4	22.7	1.00	0	MAX PEAK	None
4634.000000	64.49	33.28	-37.2	60.6	84.4	23.8	1.00	0	AVERAGE	None
6620.000000	60.01	35.54	-37.0	58.6	84.4	25.8	1.00	0	MAX PEAK	None
1986.000000	69.79	28.56	-39.9	58.5	84.4	25.9	1.20	315	MAX PEAK	None
1986.000000	68.17	28.56	-39.9	56.8	84.4	27.5	1.20	315	AVERAGE	None
3972.000000	61.31	32.81	-37.9	56.3	84.4	28.1	1.00	0	MAX PEAK	None
6620.000000	56.93	35.54	-37.0	55.5	84.4	28.9	1.00	0	AVERAGE	None
3310.000000	62.63	30.96	-39.0	54.6	84.4	29.7	1.70	0	MAX PEAK	None
3972.000000	59.58	32.81	-37.9	54.5	84.4	29.8	1.00	0	AVERAGE	None
2648.000000	63.59	29.56	-39.7	53.5	84.4	30.9	1.00	0	MAX PEAK	None
3310.000000	60.89	30.96	-39.0	52.9	84.4	31.5	1.70	0	AVERAGE	None
2648.000000	62.18	29.56	-39.7	52.1	84.4	32.3	1.00	0	AVERAGE	None
1324.000000	65.55	26.43	-40.7	51.3	84.4	33.1	1.70	0	MAX PEAK	None
1324.000000	62.28	26.43	-40.7	48.0	84.4	36.3	1.70	0	AVERAGE	None



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

FCC Part 74

Electric Field Strength

EUT: SLX1 638 - 662 MHz
Manufacturer: Shure, Inc.
Operating Condition: 70 deg F; 45% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification:
Comment: GRP 3 CH 16 662.00 MHz
Test Date: 11/03/2003

TEXT: "Site 3 6204&184 H3M"

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

Horn Antenna --- ETS 3115 SN: 6204

Pre-Amps ---

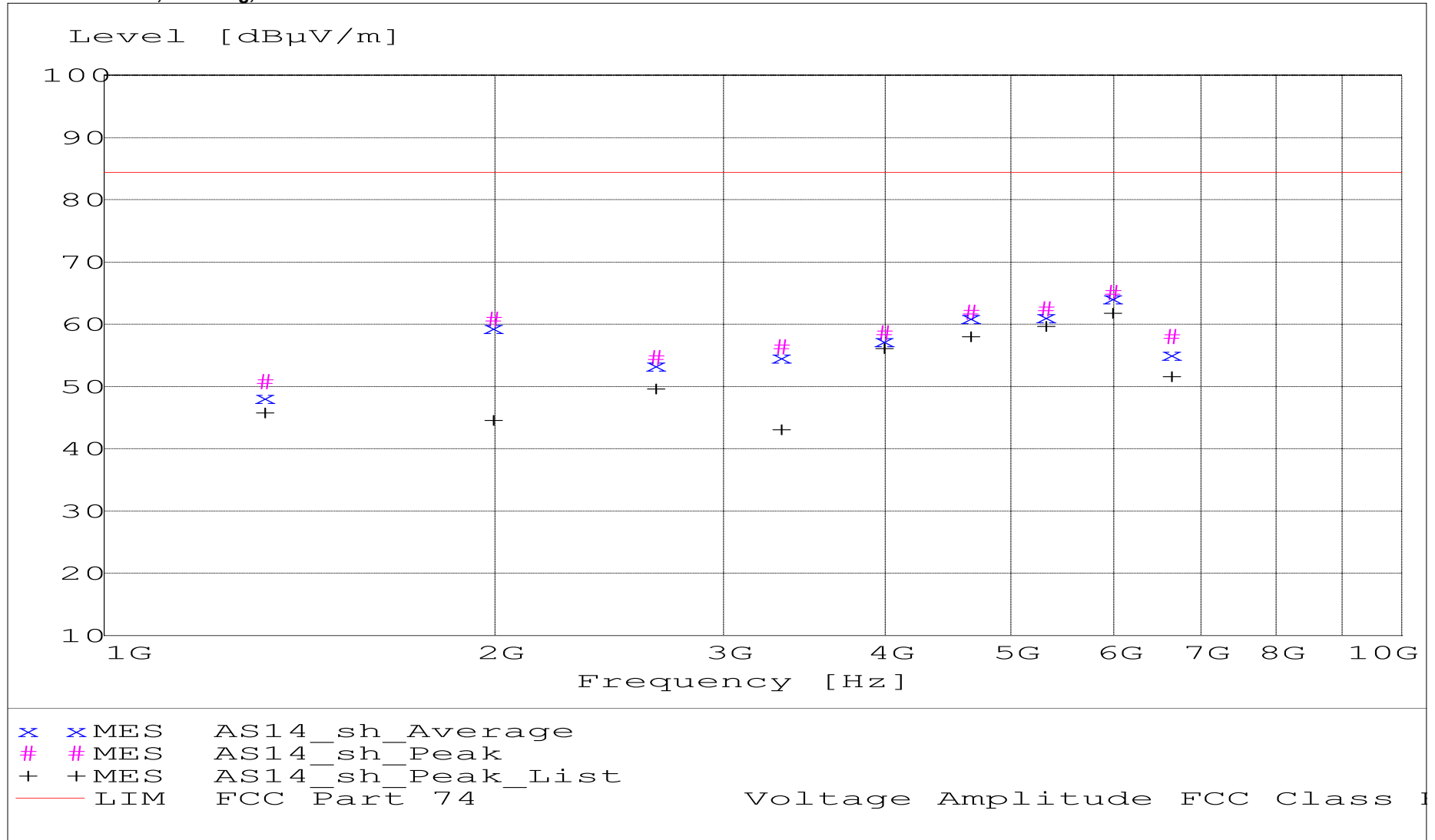
1 - 10 GHz -- Miteq AMF-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

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



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

MEASUREMENT RESULT: "AS14_sh_Final"

11/3/2003 10:30AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EUT	Final	Comment
MHz	dBμV	Factor	Loss	Level	dBμV/m	dB	Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
5958.000000	67.19	34.78	-36.8	65.2	84.4	19.2	1.00	0	MAX PEAK	None
5958.000000	66.27	34.78	-36.8	64.2	84.4	20.1	1.00	0	AVERAGE	None
5296.000000	65.04	34.60	-37.1	62.5	84.4	21.9	1.80	30	MAX PEAK	None
4634.000000	65.94	33.28	-37.2	62.0	84.4	22.4	1.60	0	MAX PEAK	None
5296.000000	63.77	34.60	-37.1	61.2	84.4	23.1	1.80	30	AVERAGE	None
4634.000000	64.99	33.28	-37.2	61.1	84.4	23.3	1.60	0	AVERAGE	None
1986.000000	72.17	28.56	-39.9	60.9	84.4	23.5	1.80	270	MAX PEAK	None
1986.000000	70.82	28.56	-39.9	59.5	84.4	24.9	1.80	270	AVERAGE	None
3972.000000	63.73	32.81	-37.9	58.7	84.4	25.7	1.00	0	MAX PEAK	None
6620.000000	59.52	35.54	-37.0	58.1	84.4	26.3	1.20	30	MAX PEAK	None
3972.000000	62.39	32.81	-37.9	57.3	84.4	27.0	1.00	0	AVERAGE	None
3310.000000	64.39	30.96	-39.0	56.4	84.4	28.0	1.00	30	MAX PEAK	None
6620.000000	56.60	35.54	-37.0	55.2	84.4	29.2	1.20	30	AVERAGE	None
3310.000000	62.76	30.96	-39.0	54.8	84.4	29.6	1.00	30	AVERAGE	None
2648.000000	64.78	29.56	-39.7	54.7	84.4	29.7	1.00	45	MAX PEAK	None
2648.000000	63.54	29.56	-39.7	53.4	84.4	30.9	1.00	45	AVERAGE	None
1324.000000	65.04	26.43	-40.7	50.8	84.4	33.6	1.50	180	MAX PEAK	None
1324.000000	62.47	26.43	-40.7	48.2	84.4	36.1	1.50	180	AVERAGE	None



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

9.0 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 SLX Wireless BodyPack Transmitter oscillator circuitry to stabilize. The following information was taken:

FREQUENCY STABILITY FOR TEMPERATURE VARIATION IN MHz:

-30°	0
-20°	649.25019038
-10°	649.25165331
0°	649.25191383
+10°	649.25157315
+20°	649.25057114
+30°	649.24926854
+40°	649.24838677
+50°	649.24814629

Worst Case Variance:

1913.03 Hz

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

Frequency Tolerance: = **0.00005**

Assigned Frequency: = **649250000 Hz**

Limit = $649250000 * 0.005\%$ = **32462.5 Hz**

NOTE: This is well inside the specified limits.



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

GRAPH(S) TAKEN FOR FREQUENCY

STABILITY WHEN VARYING THE TEMPERATURE

PART 2.1055a

NOTE: This is well inside the specified limits.

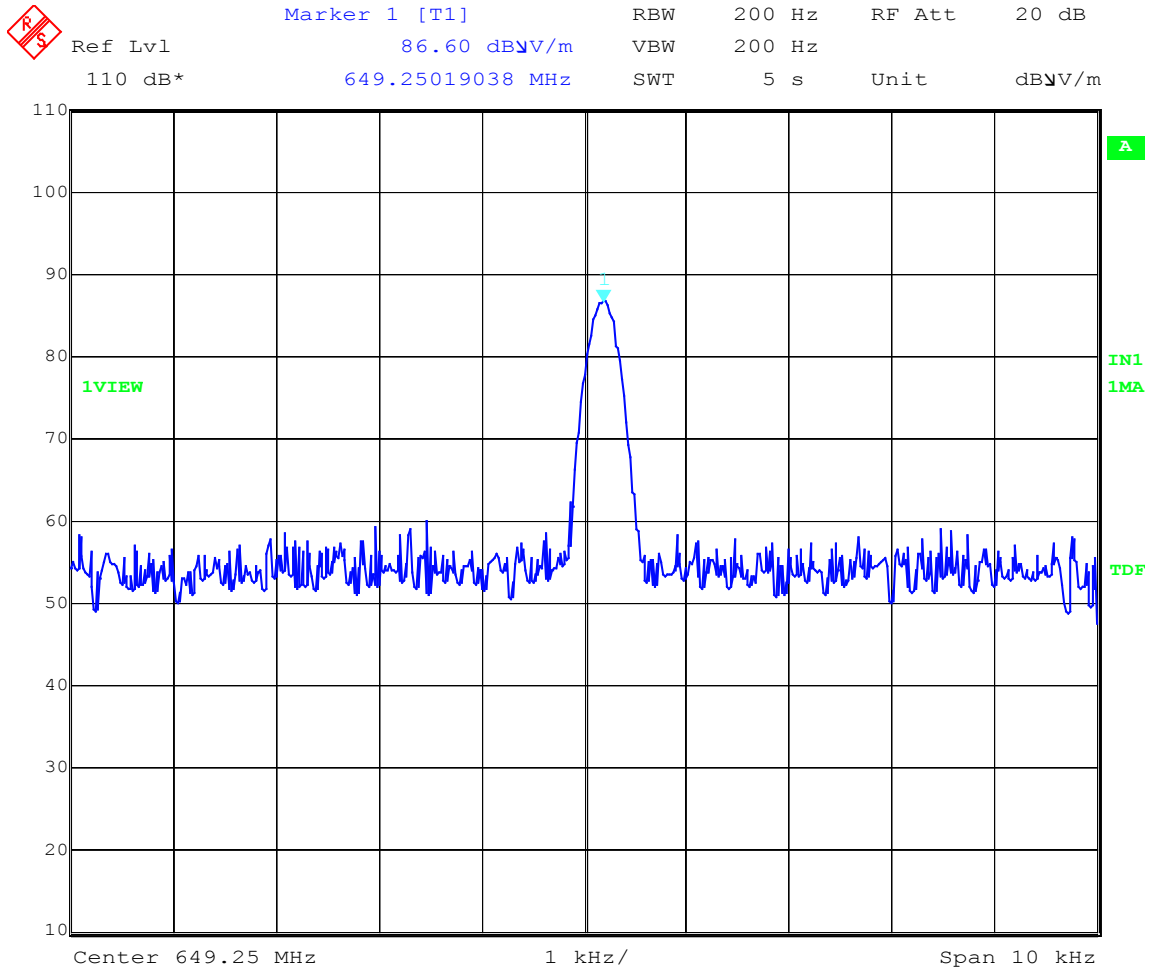


Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

-20 deg. C



Date: 4.NOV.2003 15:41:49

EUT: SLX1 638 – 662 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 3 CH 8 649.25 MHz
Date: 11-04-03

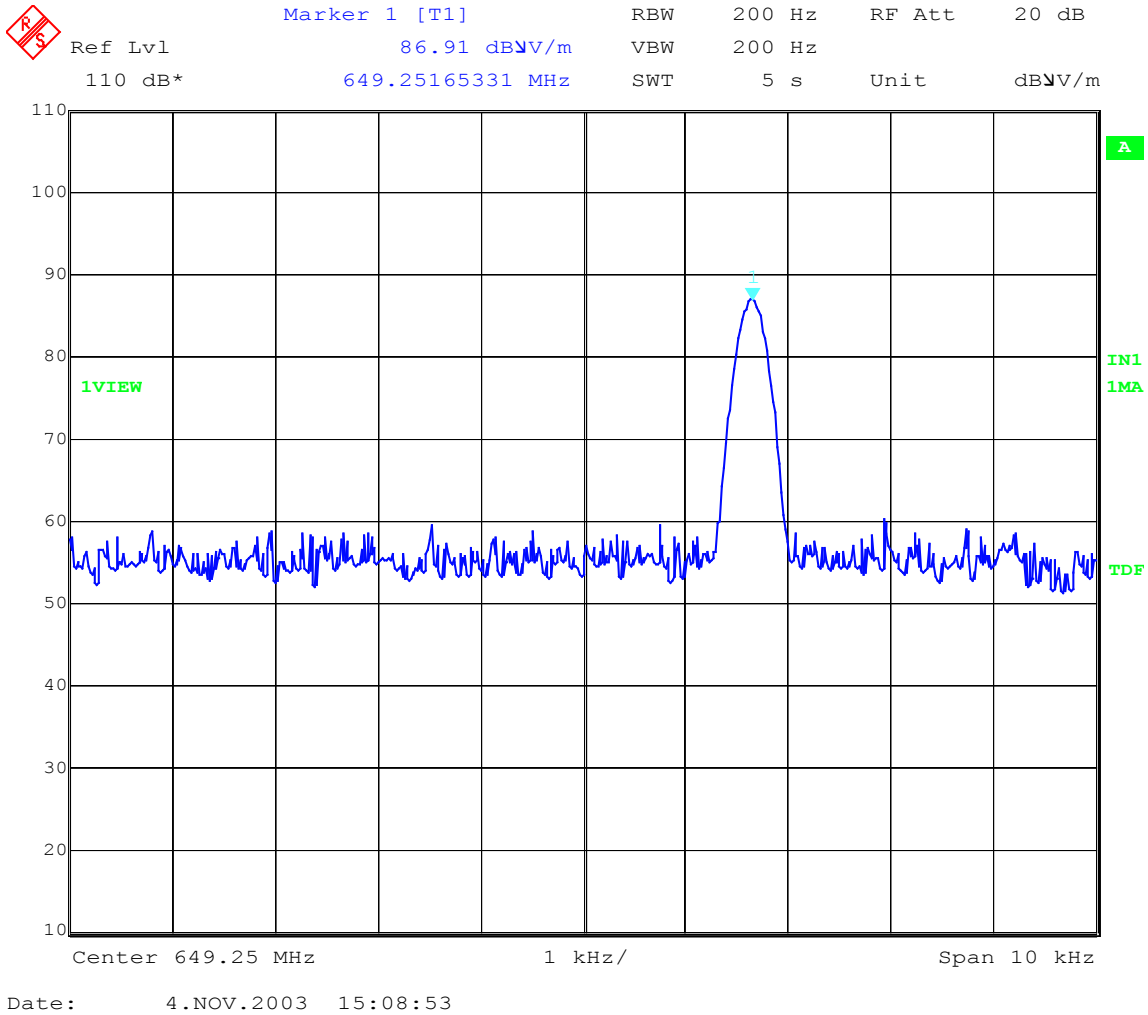


Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

-10 deg. C



EUT: SLX1 638 – 662 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 3 CH 8 649.25 MHz
Date: 11-04-03

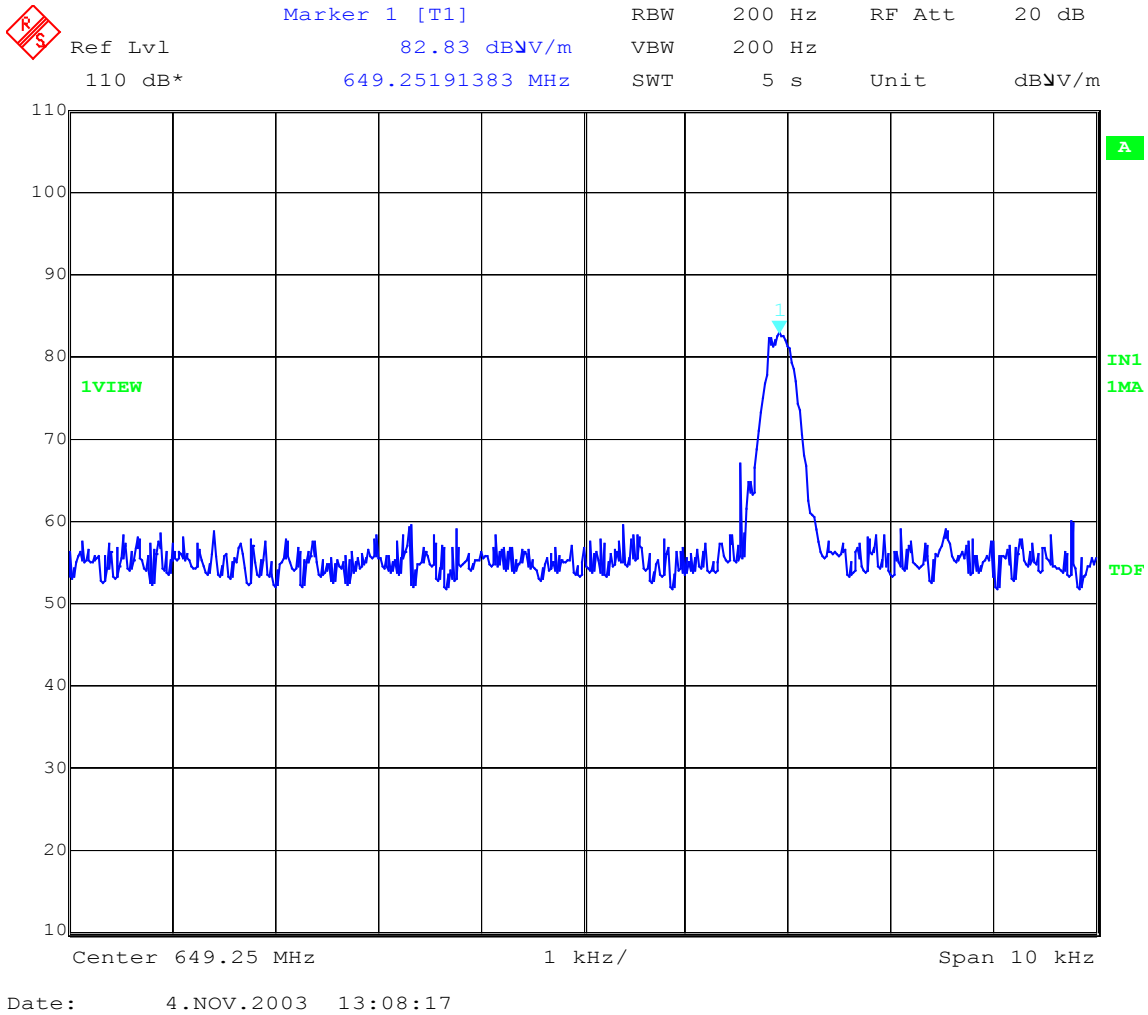


Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

0 deg. C



EUT: SLX1 638 – 662 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 3 CH 8 649.25 MHz
Date: 11-04-03

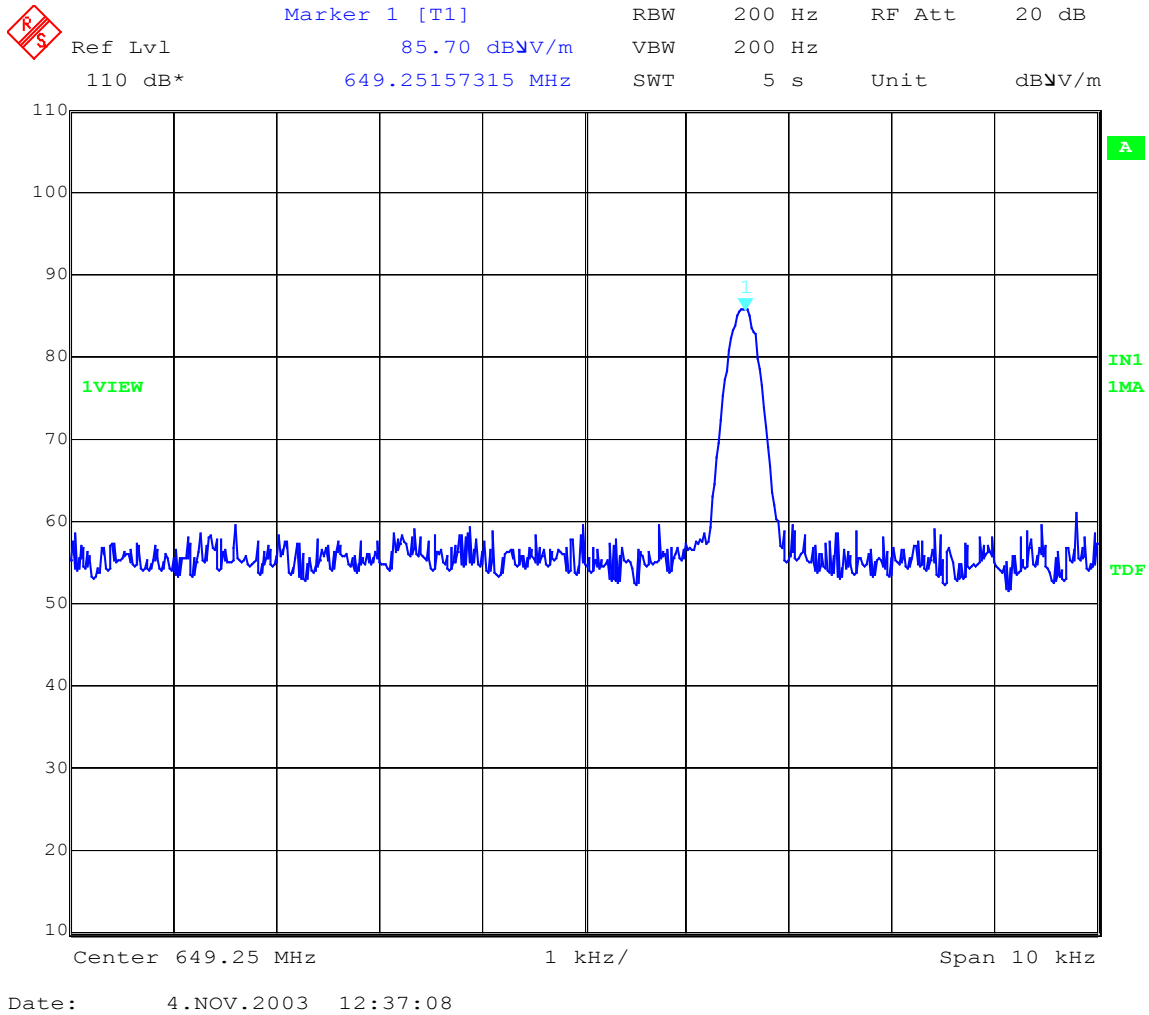


Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

+10 deg. C



EUT: SLX1 638 – 662 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 3 CH 8 649.25 MHz
Date: 11-04-03

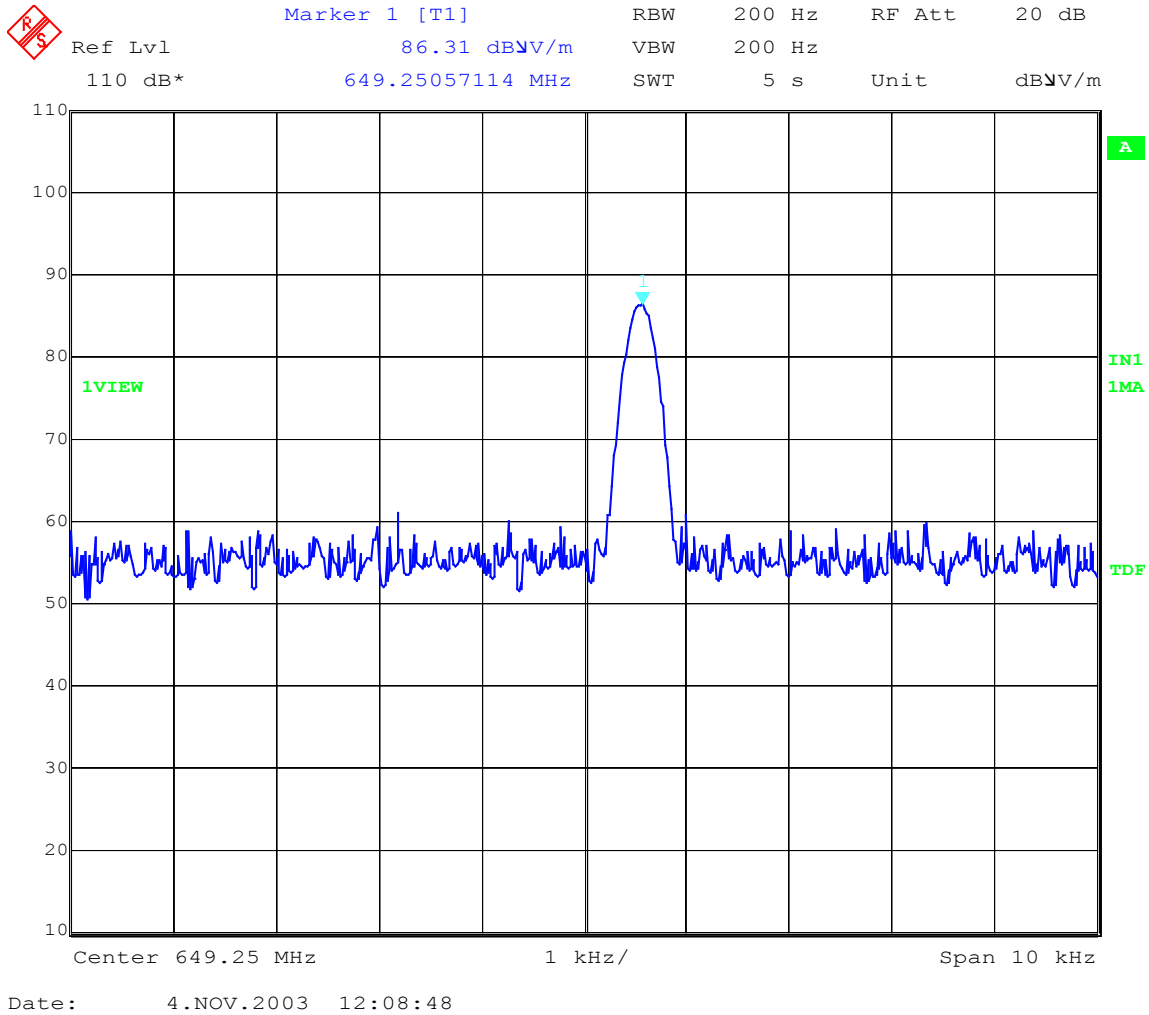


Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

+20 deg. C



EUT: SLX1 638 – 662 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 3 CH 8 649.25 MHz
Date: 11-04-03

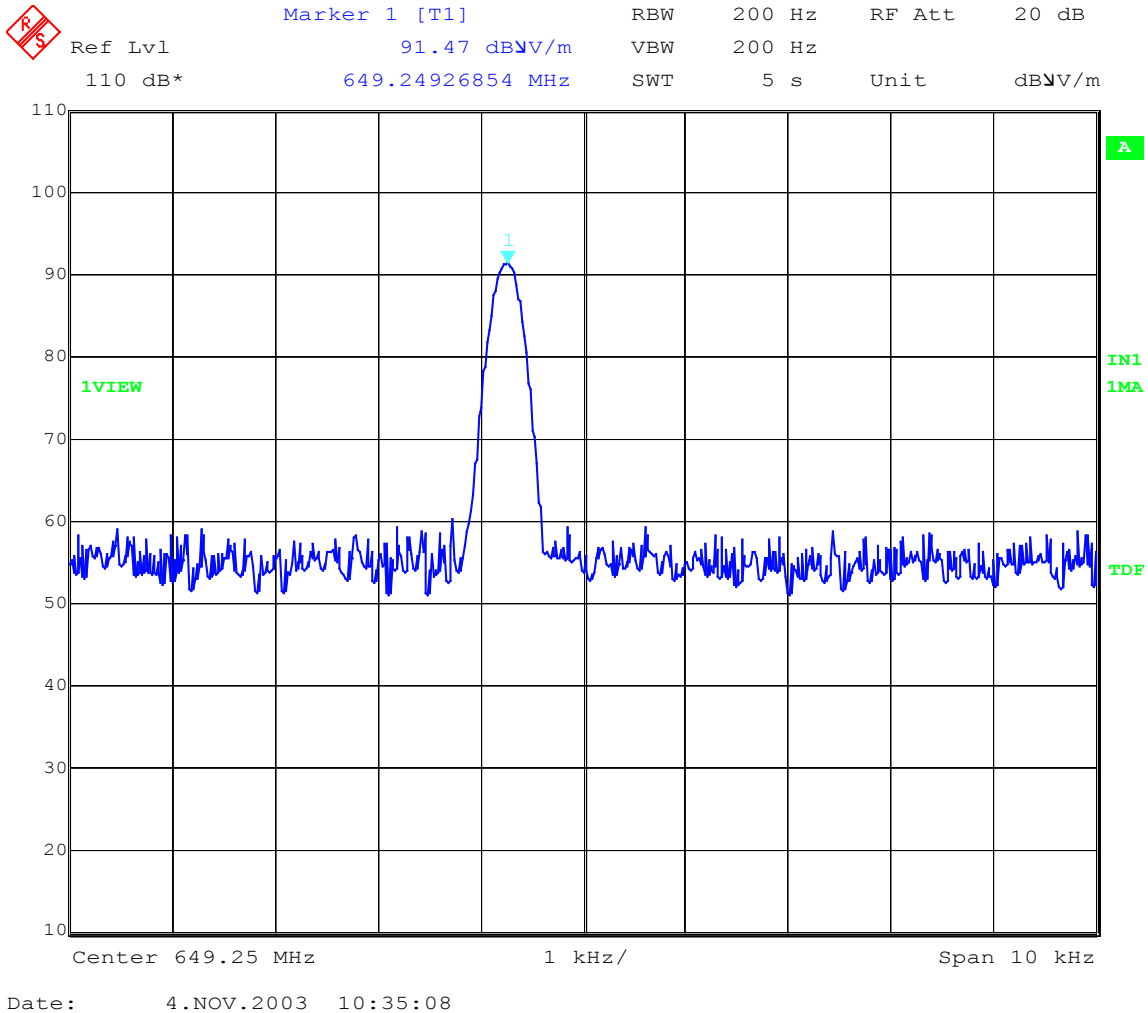


Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

+30 deg. C



EUT: SLX1 638 – 662 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 3 CH 8 649.25 MHz
Date: 11-04-03

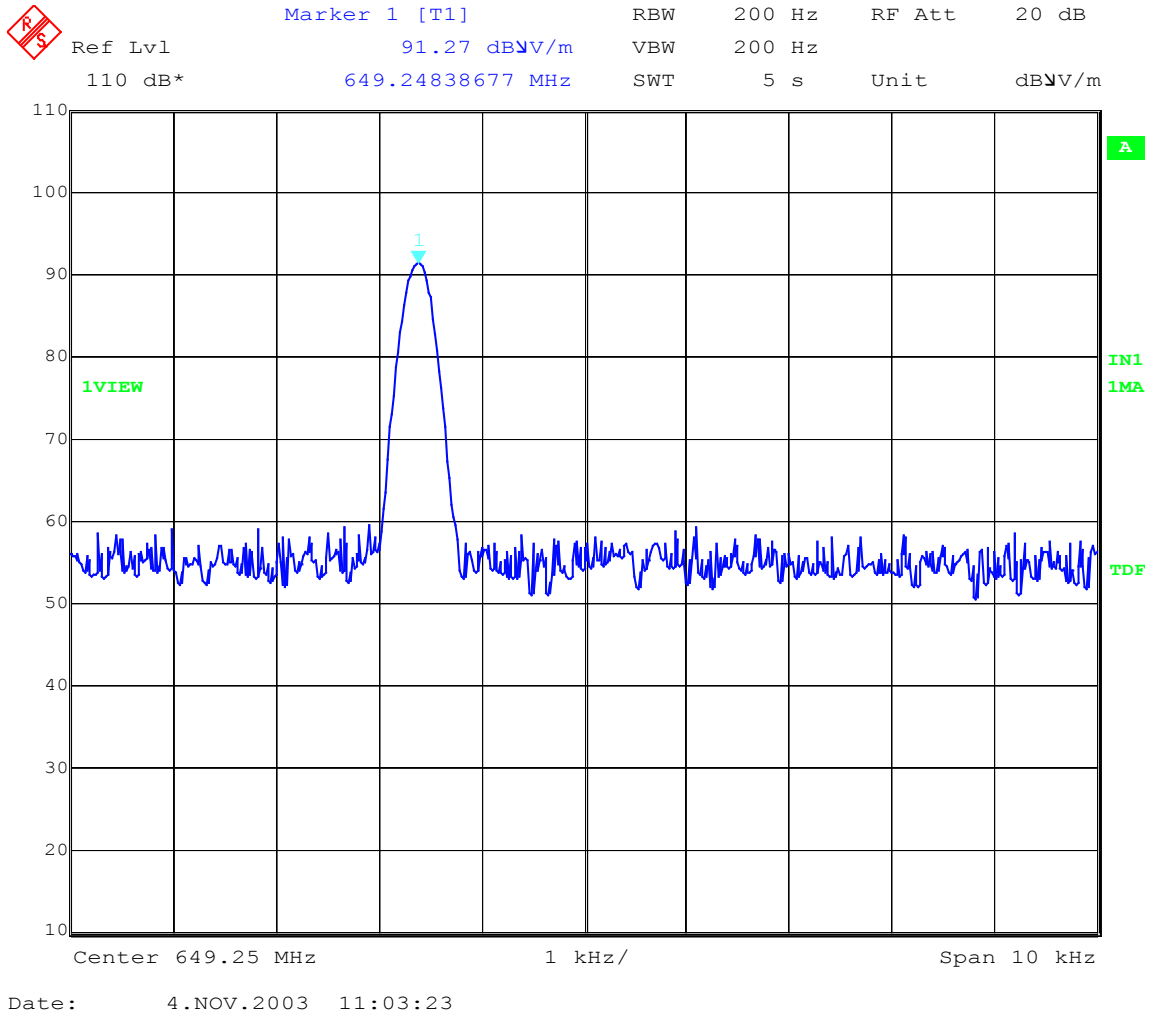


Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

+40 deg. C



EUT: SLX1 638 – 662 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 3 CH 8 649.25 MHz
Date: 11-04-03

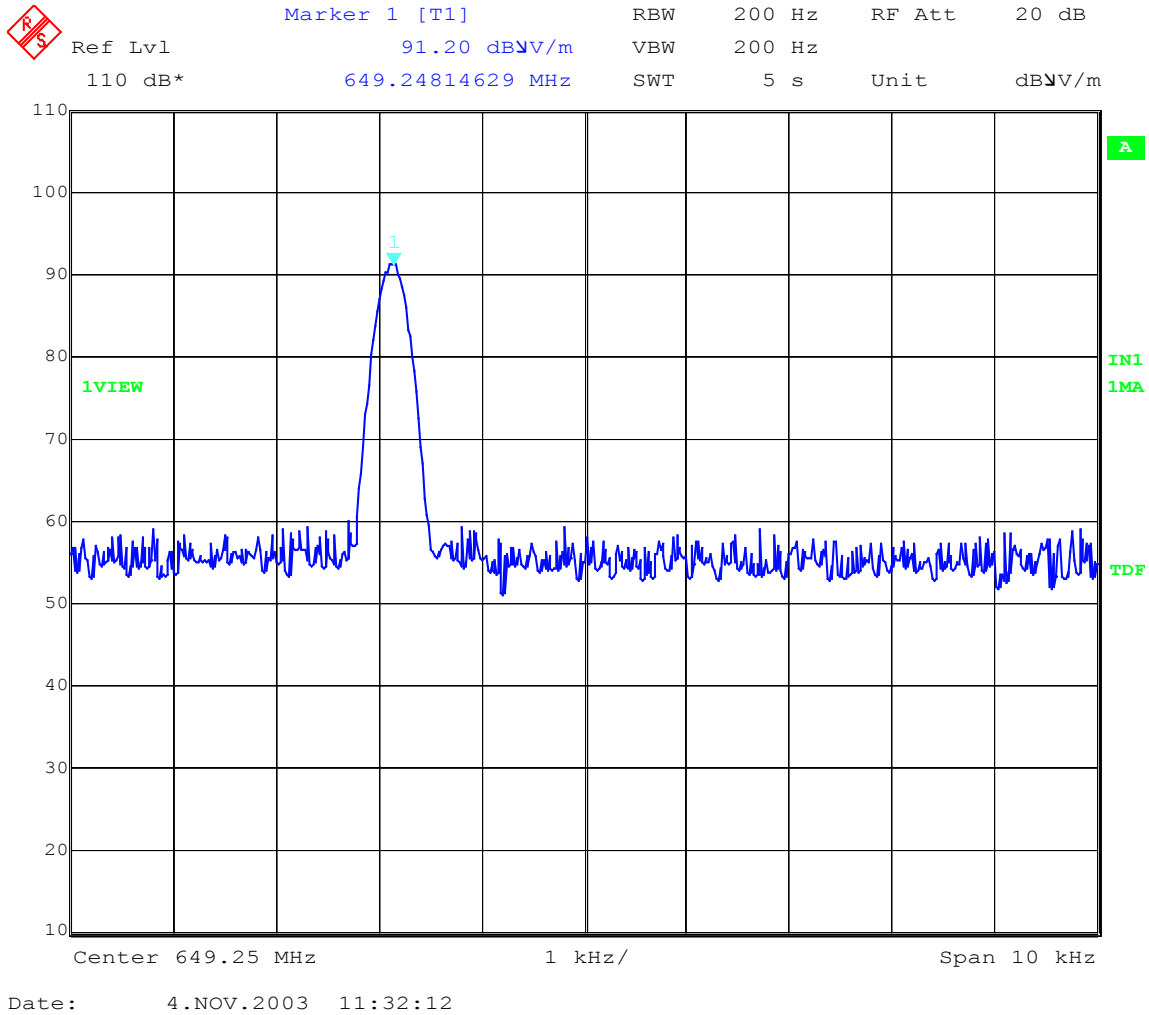


Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

+50 deg. C



EUT: SLX1 638 – 662 MHz
Test: Frequency Stability – Temperature
Operator: Craig Brandt
Comment: GRP 3 CH 8 649.25 MHz
Date: 11-04-03

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

10.0 FREQUENCY STABILITY (TEMPERATURE) PHOTOS TAKEN DURING TESTING





Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

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

The frequency stability of SLX Wireless BodyPack 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%	0
100%	0
115%	0

NOTE: This test was not run because the device is hand held.

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 649250478.96
Frequency #2 649250540.11
Frequency #3 0
Frequency #4 0
Frequency #5 0
Frequency #6 0

Worst Case Variance: = **61.15**

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: = **32462.5**

NOTE: This is well inside the specified limits.



Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

GRAPH(S) TAKEN FOR FREQUENCY

STABILITY WHEN VARYING THE

PRIMARY SUPPLY VOLTAGE

PART 2.1055d

NOTE: This is well inside the specified limits.

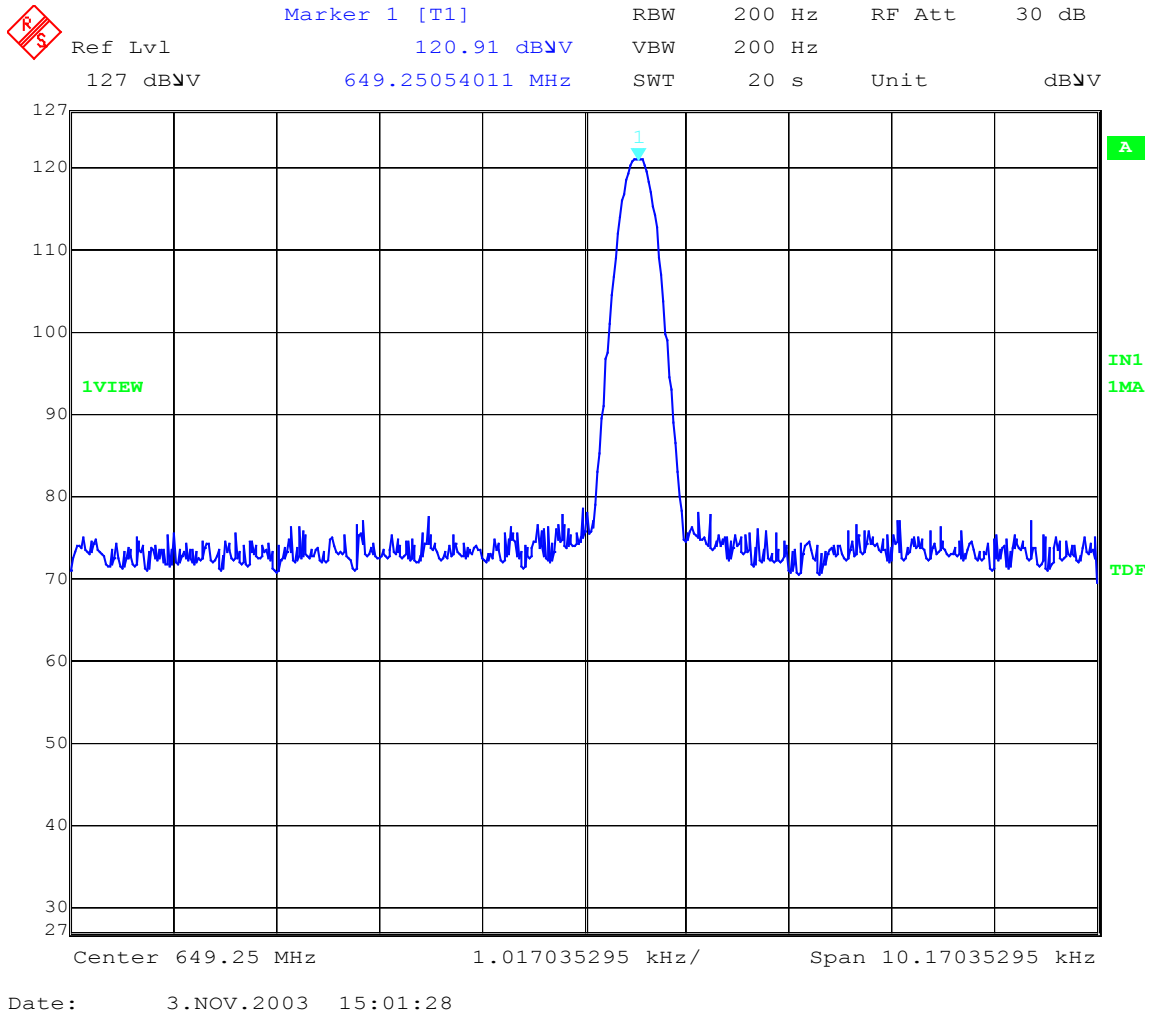


Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

3.0 Volt Supply



EUT: SLX1 638 – 662 MHz
Test: Frequency Stability – Supply Voltage
Operator: Craig Brandt
Comment: GRP 3 CH 8 649.25 MHz
Date: 11-03-03

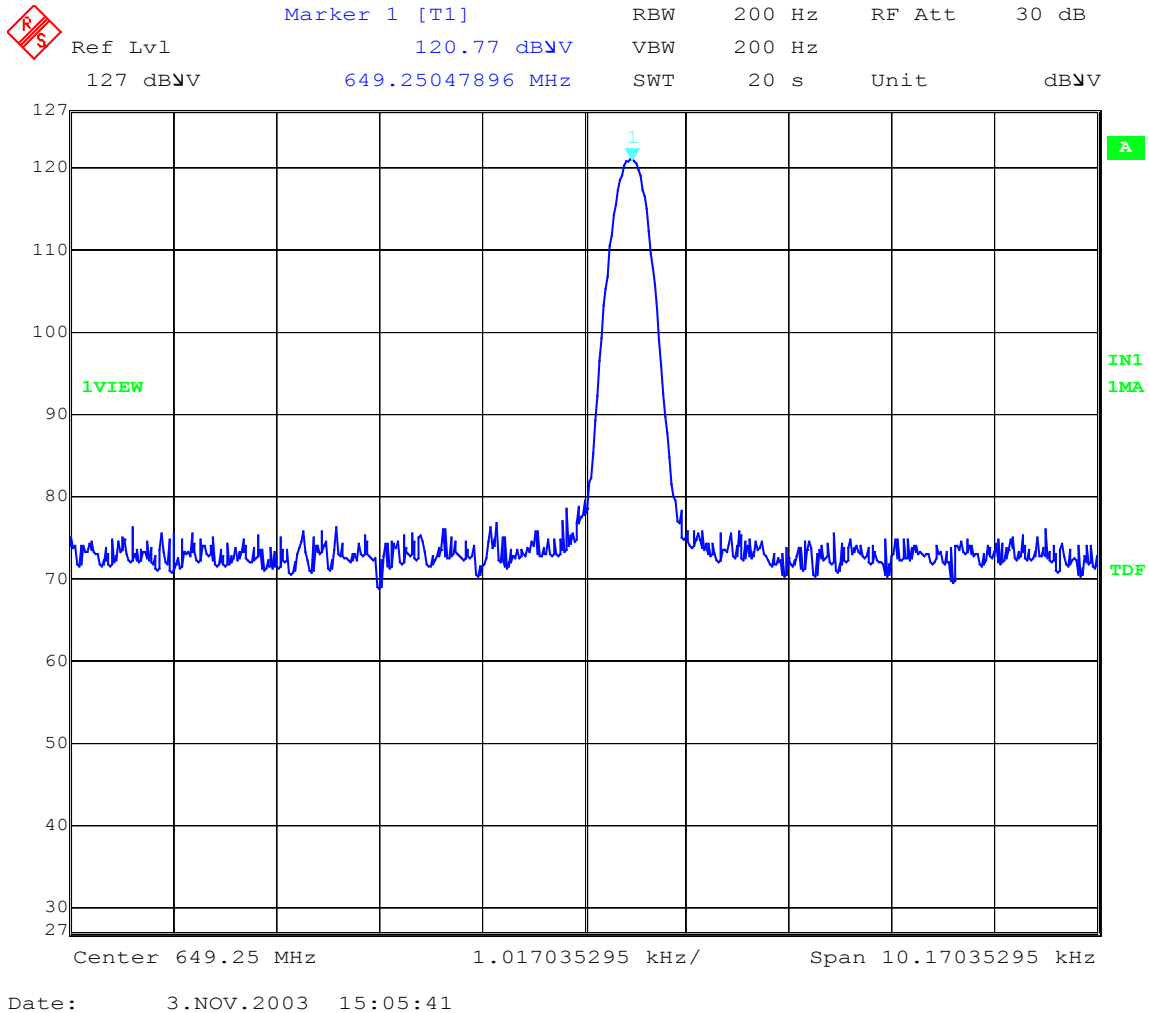


Company: Shure Inc.
Model Tested: SLX1
Report Number: 10422

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

2.4 Volt Supply



EUT: SLX1 638 – 662 MHz
Test: Frequency Stability – Supply Voltage
Operator: Craig Brandt
Comment: GRP 3 CH 8 649.25 MHz
Date: 11-03-03

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX C

12.0 FREQUENCY STABILITY (VOLTAGE) PHOTOS TAKEN DURING TESTING

