



166 South Carter, Genoa City, WI 53128

Company: Shure Incorporated  
Model Tested: PA821BX  
Report Number: 22310  
Project Number: 8114

**Code of Federal Regulations 47 Part 74 – EXPERIMENTAL RADIO,  
AUXILIARY, SPECIAL BROADCAST AND OTHER PROGRAM  
DISTRIBUTIONAL SERVICES**

**Subpart H – Low Power Auxiliary Stations**

**Section 74.861(d)**

**THE FOLLOWING MEETS THE ABOVE TEST SPECIFICATION**

Formal Name: Antenna Combiner  
Kind of Equipment: Wireless Microphone Accessory  
Frequency Range: 944-952 MHz  
Test Configuration: Tabletop  
Model Number(s): PA821BX  
Model(s) Tested: PA821BX  
Serial Number(s): prototype sample  
Date of Tests: May 27<sup>th</sup> to June 21<sup>st</sup>, 2016 and August 9<sup>th</sup>, 2016  
Test Conducted For: Shure Incorporated  
5800 W. Touhy Avenue  
Niles, Illinois 60714-4608

**NOTICE:** "This test report relates only to the items tested and must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government". Please see the "Description of Test Sample" page listed inside of this report.

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166 South Carter, Genoa City, WI 53128  
SIGNATURE PAGE

Company: Shure Incorporated  
Model Tested: PA821BX  
Report Number: 22310  
Project Number: 8114

Tested By:

A handwritten signature in black ink that reads "Paul Leo".

Paul Leo  
Test Engineer

Reviewed By:

A handwritten signature in black ink that reads "Craig Brandt".

Craig Brandt  
Senior Test Engineer

Approved By:

A handwritten signature in black ink that reads "William Stumpf".

William Stumpf  
OATS Manager



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United States Department of Commerce  
National Institute of Standards and Technology



## Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 100276-0

**D.L.S. Electronic Systems, Inc.**  
Wheeling, IL

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,  
listed on the Scope of Accreditation, for:*

### **Electromagnetic Compatibility & Telecommunications**

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.  
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality  
management system (refer to joint ISO-ILAC-IAF Communiqué dated January 2009).*

2015-09-25 through 2016-09-30

Effective Dates



*For the National Voluntary Laboratory Accreditation Program*

**ELECTROMAGNETIC  
COMPATIBILITY &  
TELECOMMUNICATIONS**

**NVLAP LAB CODE 100276-0**

### **Emissions**

**Designation**

Off-site test location

**Description**

D.L.S. Electronics performs radiated emissions testing at an additional location, 166 South Carter Street, Genoa City, WI 53128.



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## 1.0 Summary of Test Report

It was determined that the Antenna Combiner, Model PA821BX, complies with the requirements of CFR 47 Part 74 Subpart H Section 74.861(d) for low power auxiliary stations.

### Subpart H Applicable Technical Requirements Tested:

Section	Description	Procedure	Note	Compliant?
74.861(d)(1), 2.1046	Conducted Output Power	TIA-603D 2010 (2.2.1)	1	Yes
74.861(d)(3), 2.1049	99% Emission Bandwidth	FCC Part 2.1049	1	Yes
74.861(d)(4), 2.1051	Emission Mask	N/A	2	N/A
74.861(d)(3), 2.1051	RF Conducted Spurious Emissions	TIA-603D 2010 (2.2.13)	1	Yes
74.861(d)(3), 2.1053	Radiated Spurious Emissions	TIA-603D 2010 (2.2.12)	3	Yes
Part 15 Subpart C Section 15.207	AC Line Conducted Emissions	ANSI C63.4-2014	4	Yes

Note 1: RF Conducted Measurement.

Note 2: Emission Mask tests not tested by D.L.S. Electronic Systems, Inc.

Note 3: Radiated Emission Measurement.

Note 4: AC Line Conducted Measurement.

## 2.0 Introduction

From May 27<sup>th</sup> to June 21<sup>st</sup>, 2016 and August 9<sup>th</sup>, 2016 the Antenna Combiner, Model PA821BX, as provided from Shure Incorporated was tested to the requirements of CFR 47 Part 74 Subpart H Section 74.861(d). To meet these requirements, the procedures contained within this report were performed by personnel of D.L.S Electronic Systems, Inc.

## 3.0 Test Facilities

D.L.S. Electronic Systems, Inc. is a full service EMC/Safety Testing Laboratory accredited to ISO 17025. NVLAP Certificate and Scope can be viewed at <http://www.dlsemc.com/certificate>. Our facilities are registered with the FCC, Industry Canada, and VCCI.

### Wisconsin Test Facility:

D.L.S. Electronic Systems, Inc.  
166 S. Carter Street  
Genoa City, Wisconsin 53128

### Wheeling Test Facility:

D.L.S. Electronic Systems, Inc.  
1250 Peterson Drive  
Wheeling, IL 60090

**FCC Registration #90531**



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## 4.0 Description of Test Sample

### Description:

Combines outputs of personal-monitor transmitters into a single antenna output.

### Type of Equipment / Frequency Range:

Antenna Combiner / 944-952 MHz

### Physical Dimensions of Equipment Under Test:

Length: 14.4 in. x Width: 15.8 in. x Height: 1.7 in.

### Power Source:

120V, 240V / 60 Hz

### Internal Frequencies:

70-100kHz, 225kHz

### Transmit Frequencies Used For Test Purpose:

945.150MHz, 949.400MHz, 951.875MHz  
946.625MHz, 947.250MHz, 947.900MHz, 948.850MHz, 949.975MHz

### Type of Modulation(s) / Antenna Type:

FM / Shure UA860SWB passive wide band UHF omnidirectional antenna (470-1100 MHz)  
with 2.15 dBi gain

### Description of Circuit Board(s) / Part Number:

Antenna Combiner PCB	95B31572
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## 5.0 Test Equipment

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

### 5.0a D.L.S. Wisconsin - Test Equipment:

#### 30 – 1000 MHz (OATS Site 2)

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Date	Cal Due Dates
Receiver	Rohde & Schwarz	ESI 40	837808/006	20 Hz – 40 GHz	6-25-15	6-25-16
Antenna	EMCO	3104C	00054892	20 MHz – 200 MHz	3-11-16	3-11-18
Antenna	Electro-Metrics	LPA-25	1205	200 MHz – 1 GHz	3-23-16	3-23-18
Test Software	Rohde & Schwarz	ESK-1	V1.7.1	N/A	N/A	N/A

#### Additional if 1-18 GHz (OATS Site 2)

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Date	Cal Due Dates
Preamp	Miteq	AMF-7D-01001800-22-10P	17779900	1GHz-18GHz	1-22-16	1-22-17
Horn Antenna	EMCO	3115	6204	1-18GHz	8-25-15	8-25-17
High Pass Filter	Planer	HP2G-1780-CD-SS	PF1227/0728	1-20GHz	6-5-16	6-5-17
High Pass Filter	Q Microwave	100460	2	500MHz-18GHz	10-14-15	10-14-16
Test Software	Rohde & Schwarz	ESK-1	V1.7.1	N/A	N/A	N/A

#### Other

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Date	Cal Due Dates
Horn Antenna	EMCO	3115	9502-4451	1-18GHz	6-1-15	6-1-17
Di-Pole Antenna	Com-Power	AD-100	40139	30-1000MHz	N/A	N/A
20 dB attenuator	MCE/weinschel	5955A-20	0256	DC- 40 GHz	7-1-15	7-1-16
20 dB attenuator	Aeroflex/weinschel	75A-20-12	1071	DC – 40 GHz	7-1-15	7-1-16
Signal Generator	Rhode & Schwarz	SMT-03	DE23762	5kHz-3GHz	6-25-15	6-25-16
Signal Generator	Rhode & Schwarz	SMR40	100092	1-40 GHz	6-25-15	6-25-16
Function Generator	Hewlet Packard	3312A	2501A18150	0.1Hz-13MHz	N/A	N/A
Power Meter	Anritsu	ML2487A	6K00002069	100kHz-65GHz	6-25-15	6-25-16
Power Sensor	Anritsu	MA2490A	031563	50MHz-8GHz	6-25-15	6-25-16

#### AC Line Conducted (Screen Room)

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Date	Cal Due Dates
Receiver	Narda PMM	9010F	020WW40102	10Hz-50MHz	6-25-15	6-25-16
LISN	Solar	9252-50-R-24-BNC	961019	9 kHz – 30 MHz	5-4-16	5-4-17
Filter- High-Pass	SOLAR	7930-120	090702	120 kHz – 30 MHz	12-3-15	12-3-16
Limiter	Electro-Metrics	EM-7600	705	9 kHz – 30 MHz	12-3-15	12-3-16
Test Software	Narda PMM	PMM Emission Suite	Rel.2.17	N/A	N/A	N/A

### 5.0b Shure Equipment:

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Date	Cal Due Dates
Audio Signal Generator	Leader	LAG-25	2237708	10Hz-1MHz	3-15-16	3-15-17



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Audio Signal Generator	Leader	LAG-25	2237702	10Hz-1MHz	3-15-16	3-15-17
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## 6.0 Test Arrangements

### Radiated Emissions Measurement Arrangement:

All radiated emission measurements were performed at D.L.S. Electronic Systems, Inc. and set up according to TIA-603d 2010 or ANSI C63.4-2014, unless otherwise noted. Description of procedures and measurements can be found in Appendix B – Measurement Data. See Appendix A for additional photos of the test set up. See Appendix C for Measurement Uncertainty.

Unless otherwise noted, the bandwidth of the measuring receiver / analyzer used during testing is shown below.

Frequency Range	Bandwidth (-6 dB)
30 MHz to 1 GHz	120 kHz
Above 1 GHz	1 MHz

## 7.0 Test Conditions

### Temperature and Humidity:

73°F at 45% RH - Conducted testing,  
66°F at 46% RH - Radiated testing

### Supply Voltage:

120V, 240V / 60 Hz

## 8.0 Modifications Made To EUT For Compliance

None noted at time of test.

## 9.0 Additional Descriptions & Notes

Continuous Transmit at maximum output power level.

The EUT was tested at Low, Mid., and High Channels, unmodulated, modulated at 2.5kHz 16dB > 50% modulation, and 15kHz at 85% modulation



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Frequency stability testing was not performed. The EUT (combiner) is a pass-through device. The frequency determining circuits are part of the transmitter inputs and not part of the combiner.

Emission mask test was not performed by D.L.S. Electronic Systems, Inc.

The modulation characteristics test was not performed by D.L.S. Electronic Systems, Inc.

## 10.0 Results

Measurements were performed in accordance with TIA-603D 2010 and ANSI C63.4-2014. Graphical and tabular data can be found in Appendix B at the end of this report.

## 11.0 Conclusion

The Antenna Combiner, Model PA821BX as provided from Shure Incorporated, tested from May 27<sup>th</sup> to June 21<sup>st</sup>, 2016 and August 9<sup>th</sup>, 2016 **meets** the requirements of CFR 47 Part 74 Subpart H Section 74.861(d).



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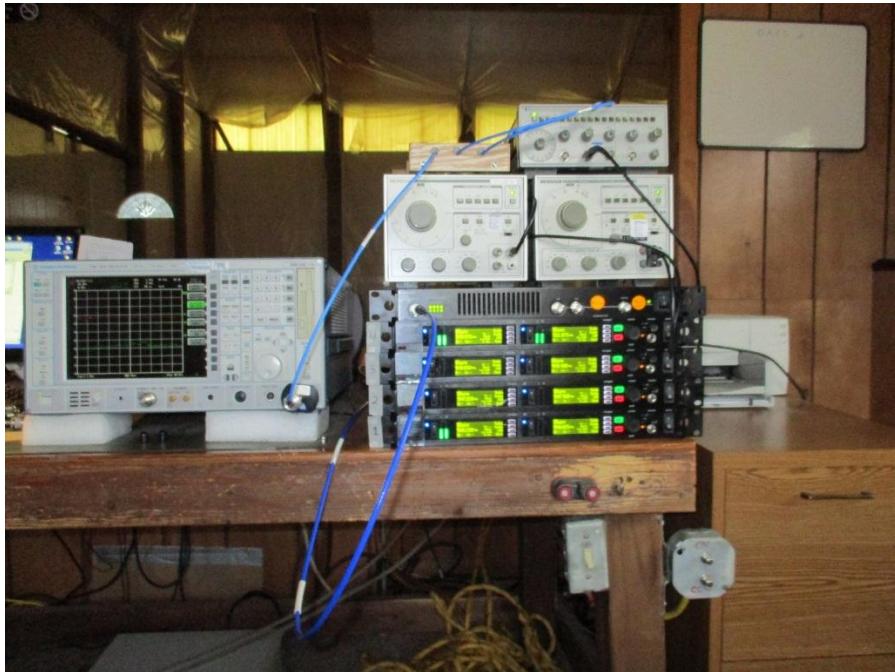
Company: Shure Incorporated  
Model Tested: PA821BX  
Report Number: 22310  
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## Appendix A – Test Setup Photos

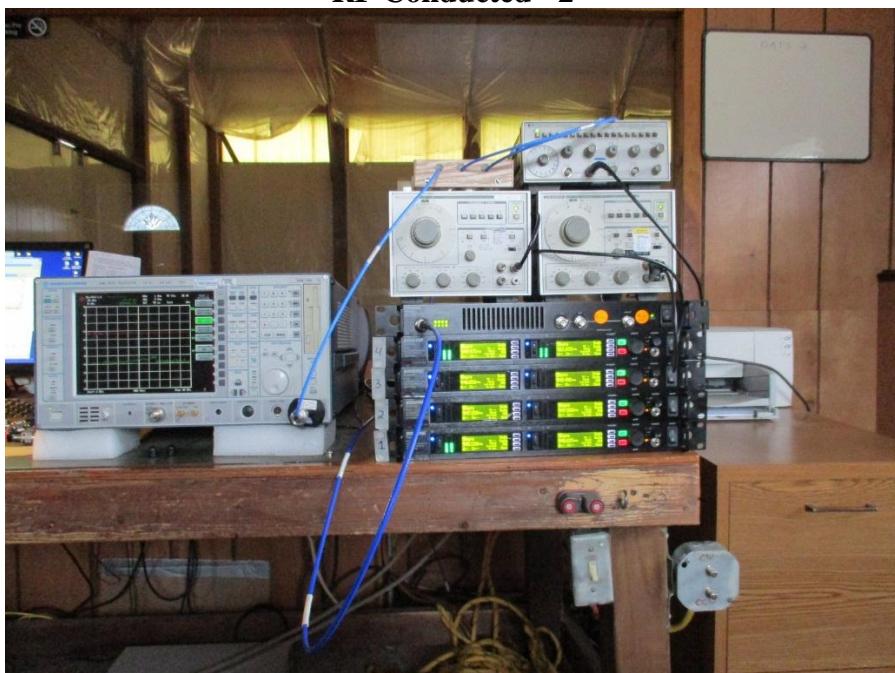
### Photo Information and Test Setup:

Item: EUT – Model PA821BX

**RF Conducted - 1**



**RF Conducted - 2**





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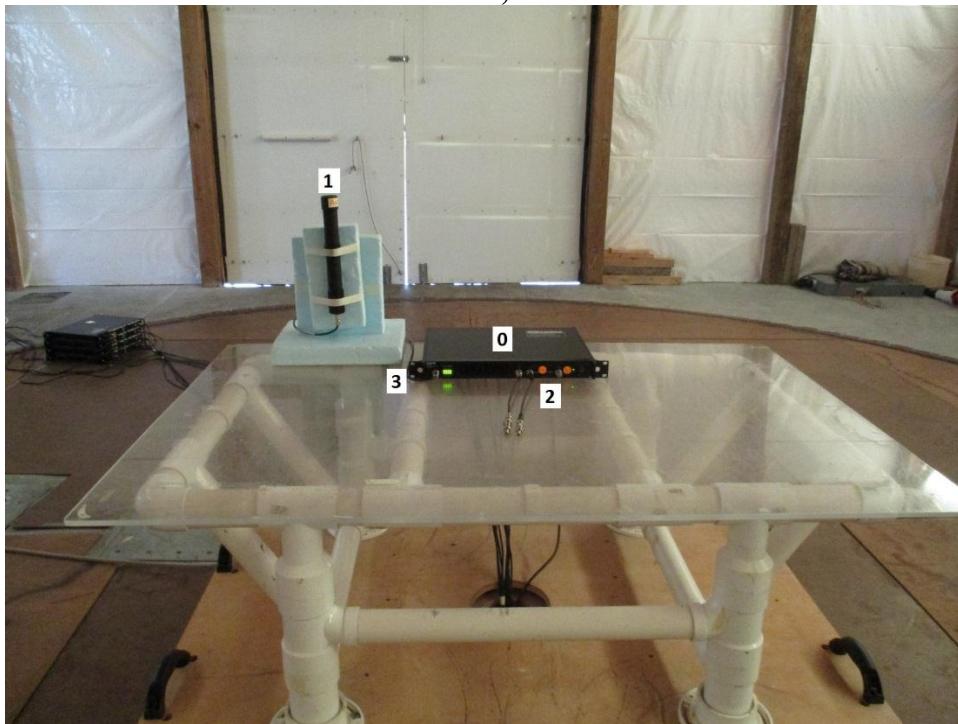
Company: Shure Incorporated  
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## Appendix A

### Conducted Power



### Radiated – Front, 30-1000 MHz





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## Appendix A

### Radiated – Back, 30-1000 MHz



### Radiated – Front, 1-7 GHz





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## Appendix A

### Radiated – Back, 1-7 GHz



### AC Line Conducted - Front





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## Appendix A

### AC Line Conducted - Back





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**Appendix B – Measurement Data**

**B1.0 Conducted Output Power**

**Rule Part:** FCC Part 74.861(d)(1), Part 2.1046

**Test Procedure:** TIA-603D 2010 (2.2.1)

**Limit:** 1W (30.0 dBm)

**Results:** Compliant

**Sample Equation:**  $10^{(15.87\text{dBm}/10)} = 38.64\text{mW}$

**Notes:** This was an RF conducted measurement. The EUT was connected to the measuring equipment through the external antenna connector. Cable loss and attenuation was accounted for in the transducer factors set in the analyzer.  
The EUT was set to transmit continuously at its maximum power level at the low, middle and high channels of the operating band.  
The transmitter was modulated by a 2500Hz tone at an input level 16dB greater than that necessary to produce 50% modulation

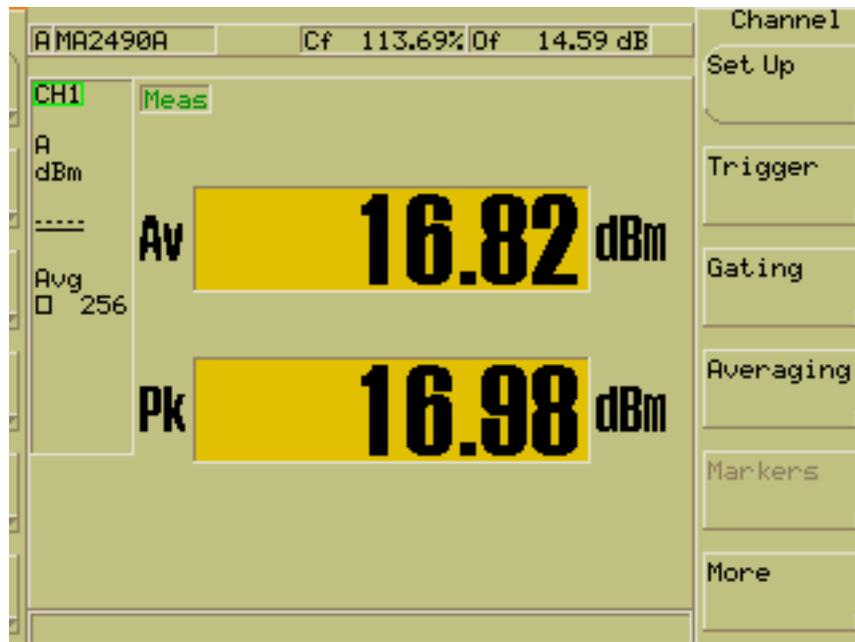


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Company: Shure Incorporated  
Model Tested: PA821BX  
Report Number: 22310  
Project Number: 8114

Test Date: 05-27-2016  
Company: Shure, Inc.  
EUT: PA821BX 8-input Combiner  
Test: Peak Power Output - Conducted (Modulated 2.5khz 16db> 50%)  
Rule part: FCC Part 74; FCC Part 2.1046  
Operator: Paul L  
Comment: Channel: 945.150MHz

Peak Output Power = 16.98dBm = 49.89mW



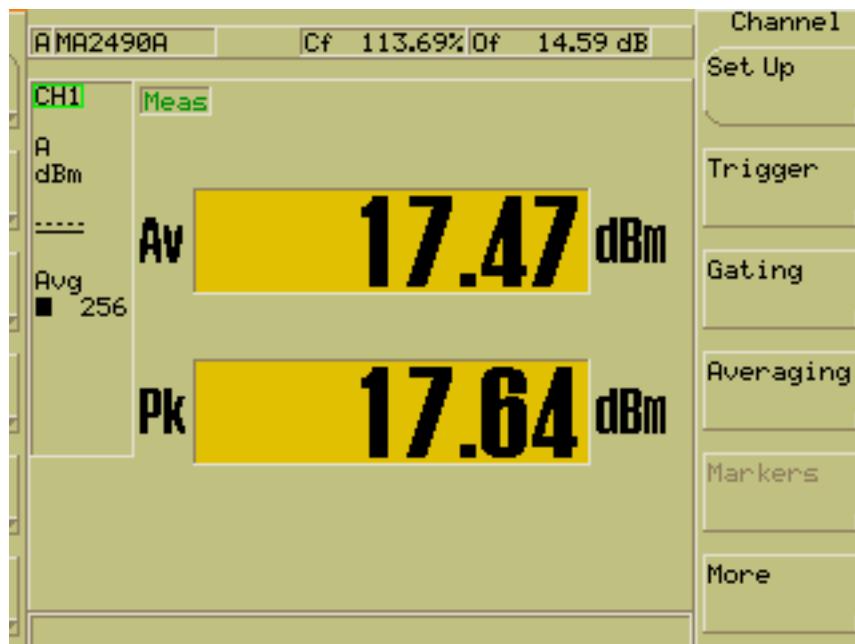


166 South Carter, Genoa City, WI 53128

Company: Shure Incorporated  
Model Tested: PA821BX  
Report Number: 22310  
Project Number: 8114

Test Date: 05-27-2016  
Company: Shure, Inc.  
EUT: PA821BX 8-input Combiner  
Test: Peak Power Output - Conducted (Modulated 2.5khz 16db> 50%)  
Rule part: FCC Part 74; FCC Part 2.1046  
Operator: Paul L  
Comment: Channel: 949.400MHz

Peak Output Power = 17.64dBm = 58.08 mW



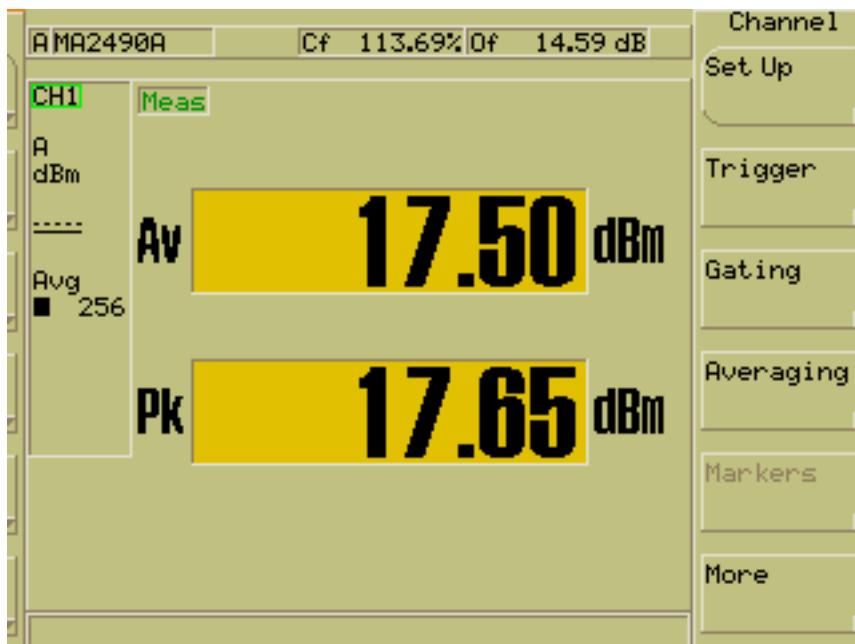


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Company: Shure Incorporated  
Model Tested: PA821BX  
Report Number: 22310  
Project Number: 8114

Test Date: 05-27-2016  
Company: Shure, Inc.  
EUT: PA821BX 8-input Combiner  
Test: Peak Power Output - Conducted (Modulated 2.5khz 16db> 50%)  
Rule part: FCC Part 74; FCC Part 2.1046  
Operator: Paul L  
Comment: Channel: 951.875MHz

Peak Output Power = 17.65dBm = 58.21 mW





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## B2.0 99% Emission Bandwidth

**Rule Parts:** FCC Part 74.861(d)(3), FCC Part 2.1049

**Test Procedure:** FCC Part 2.1049

**Limit:** The occupied bandwidth shall not be greater than that necessary for satisfactory transmission.

**Results:** Compliant

**Sample Equation:** None

**Notes:** The EUT was set to transmit at its maximum power. The EUT was tested at Low, Mid, and High Channels modulated at 2500 Hz 16dB > 50% modulation & 15kHz @ 85% modulation.



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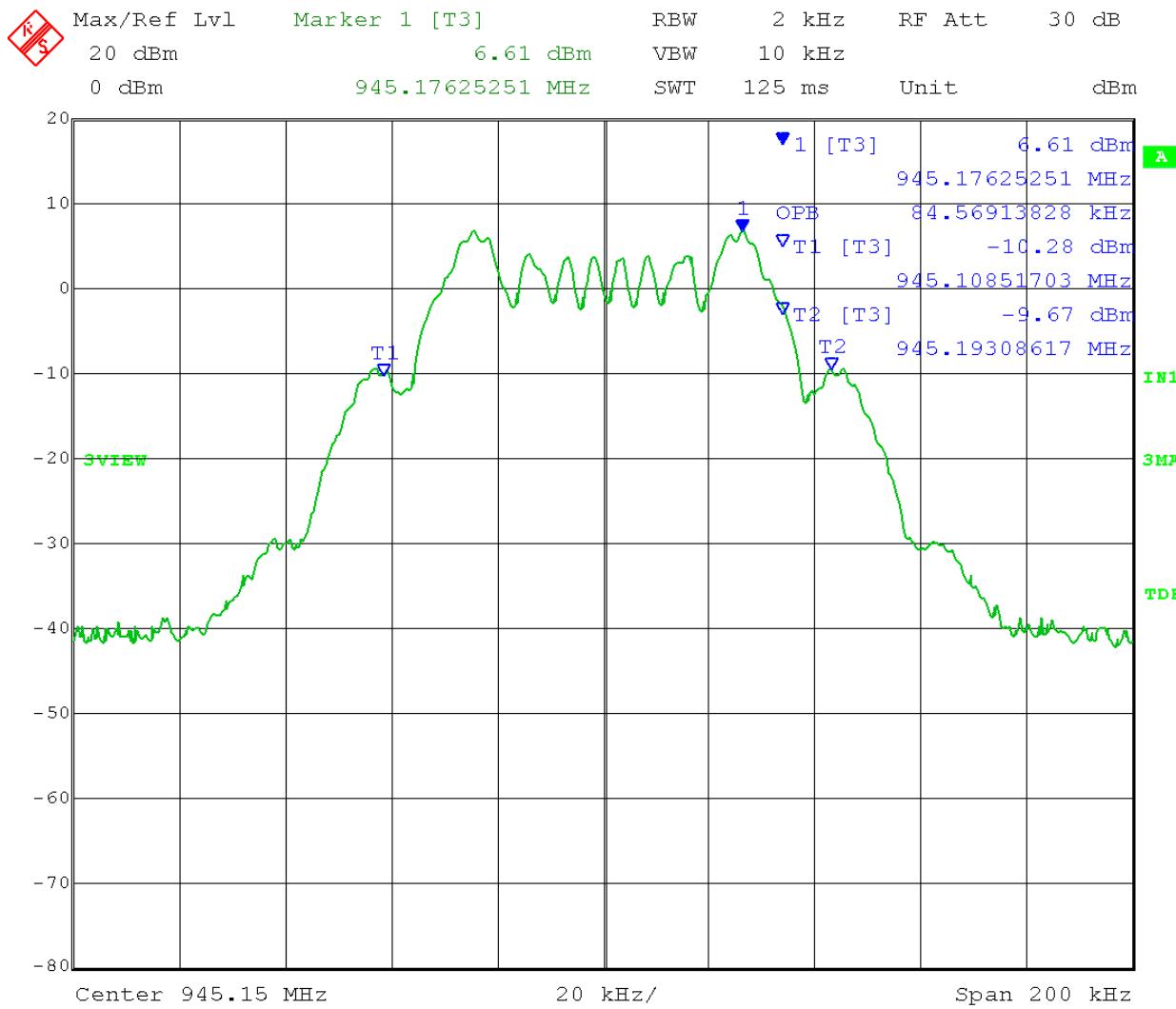
Company: Shure Incorporated  
Model Tested: PA821BX  
Report Number: 22310  
Project Number: 8114

Test Date: 6-16-2016  
Company: Shure, Inc.  
EUT: PA821BX Antenna Combiner  
Test: Occupied Bandwidth; 99% bandwidth  
Rule part: FCC Part 74; FCC Part 2.1049  
Operator: Paul L

Frequency: 945.15 MHz

Audio Input: Modulated 2.5khz, 16db> 50%)

99% power bandwidth = 84.57kHz



Date: 16.JUN.2016 15:58:43

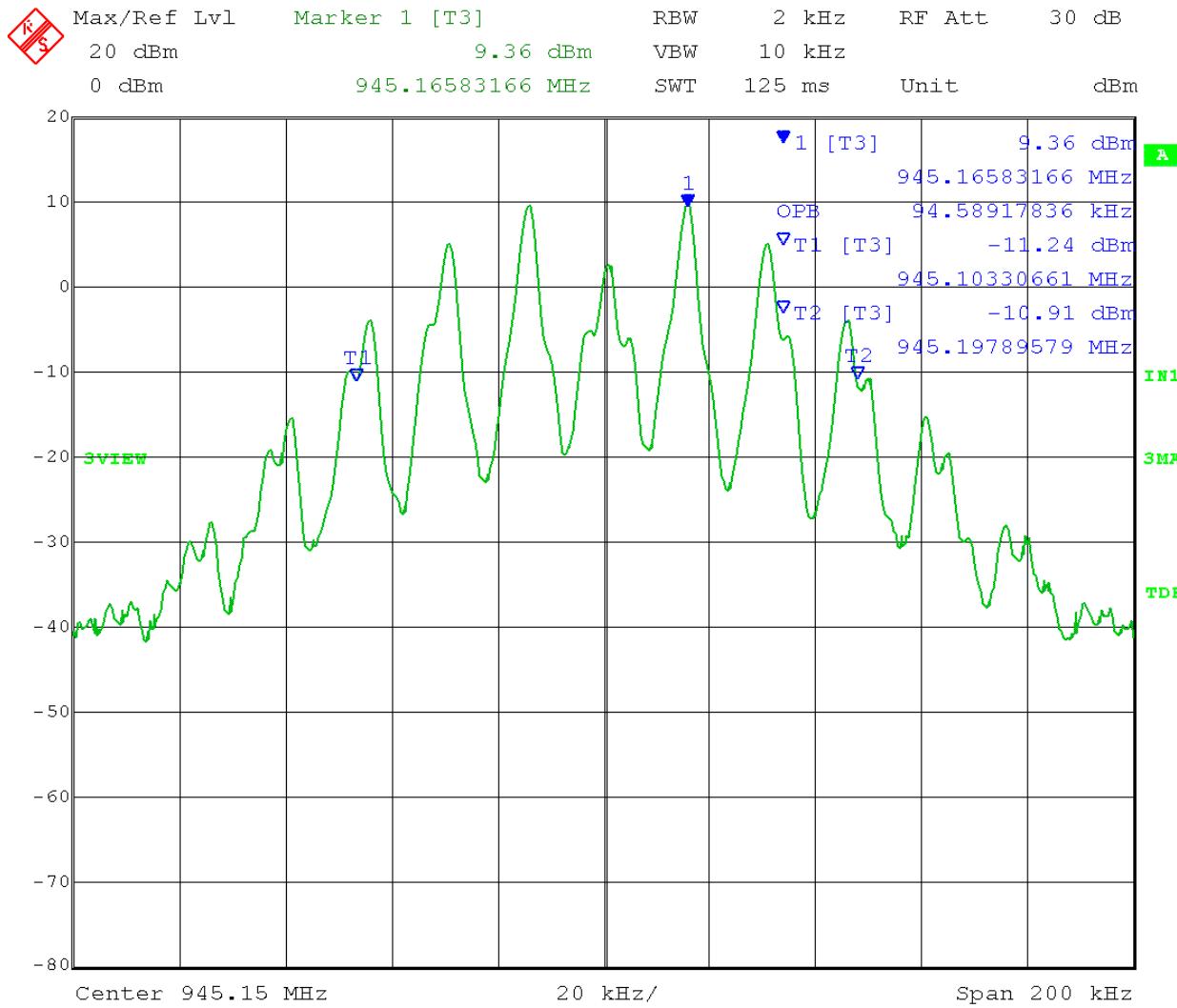


166 South Carter, Genoa City, WI 53128

Company: Shure Incorporated  
Model Tested: PA821BX  
Report Number: 22310  
Project Number: 8114

Test Date: 06-16-2016  
Company: Shure, Inc.  
EUT: PA821BX Antenna Combiner  
Test: Occupied Bandwidth; 99% bandwidth  
Rule part: FCC Part 74; FCC Part 2.1049  
Operator: Paul L

Frequency: 945.15MHz  
Audio Input: Modulated 15khz 85% Modulation  
99% power bandwidth = 94.59kHz



Date: 16.JUN.2016 16:00:06

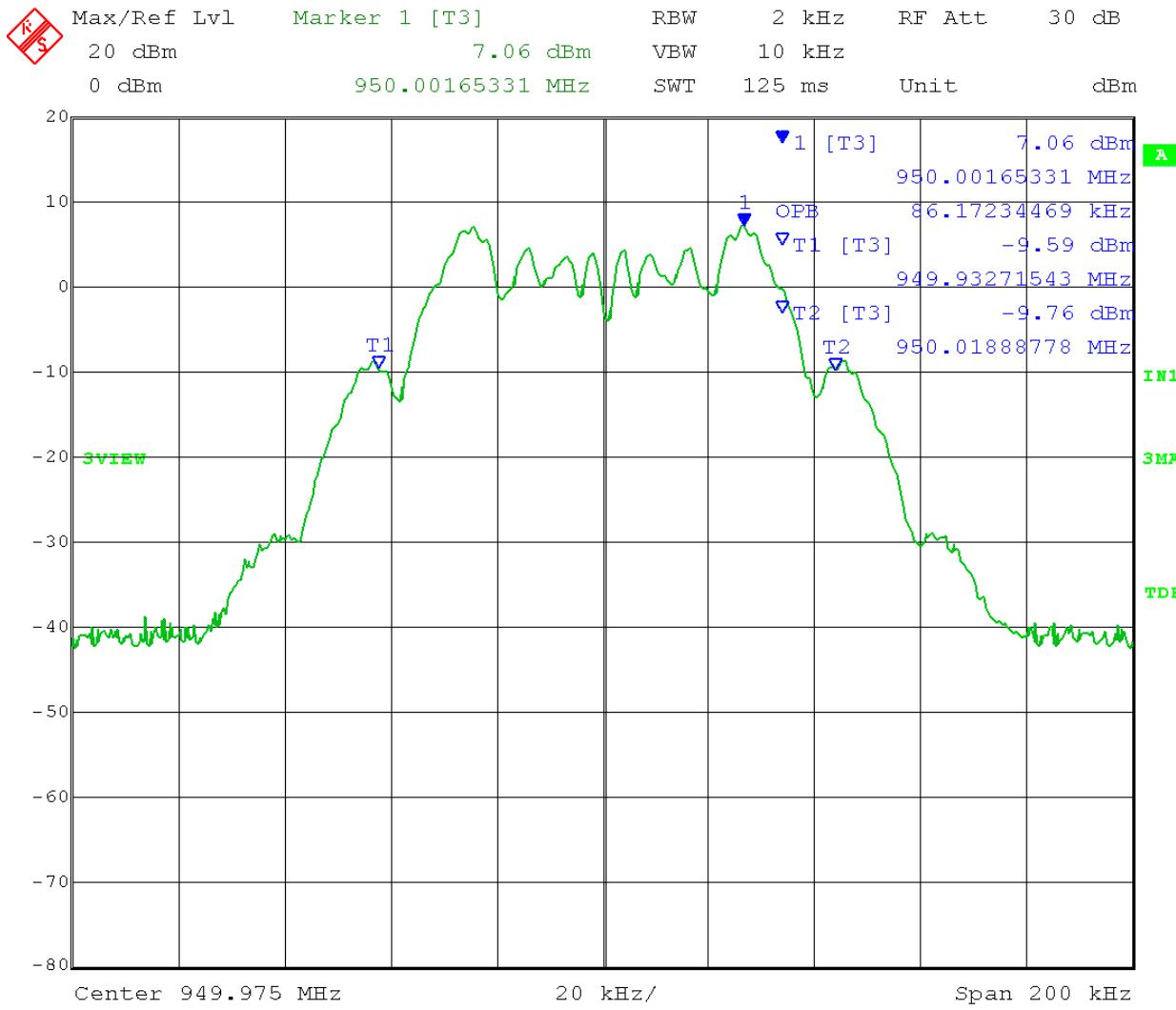


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Company: Shure Incorporated  
Model Tested: PA821BX  
Report Number: 22310  
Project Number: 8114

Test Date: 6-16-2016  
Company: Shure, Inc.  
EUT: PA821BX Antenna Combiner  
Test: Occupied Bandwidth; 99% bandwidth  
Rule part: FCC Part 74; FCC Part 2.1049  
Operator: Paul L

Frequency: 949.975 MHz  
Audio Input: Modulated 2.5khz, 16db > 50%  
99% power bandwidth = 86.17kHz



Date: 16.JUN.2016 15:53:56

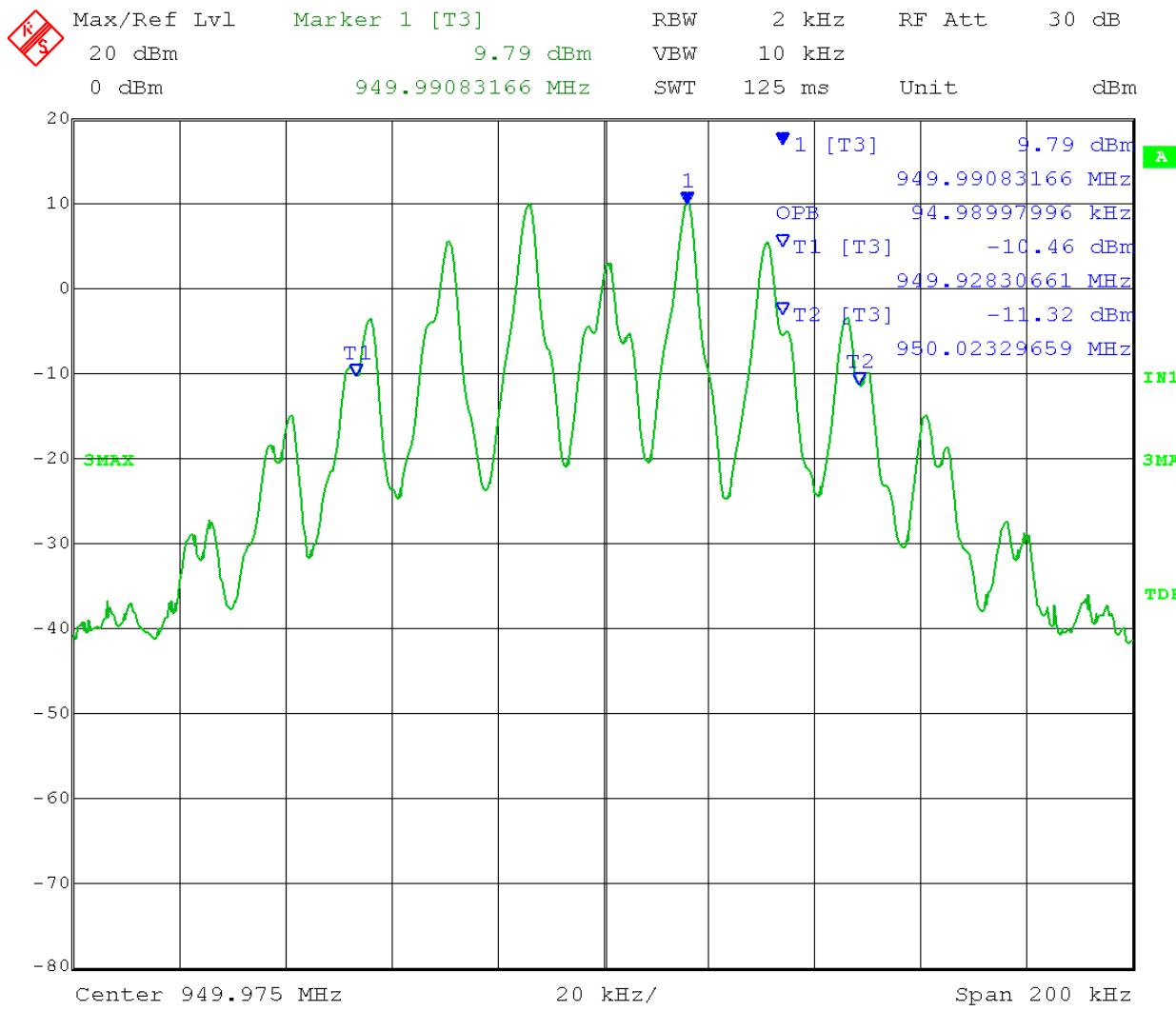


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Company: Shure Incorporated  
Model Tested: PA821BX  
Report Number: 22310  
Project Number: 8114

Test Date: 06-16-2016  
Company: Shure, Inc.  
EUT: PA821BX Antenna Combiner  
Test: Occupied Bandwidth; 99% bandwidth  
Rule part: FCC Part 74; FCC Part 2.1049  
Operator: Paul L

Frequency: 949.975MHz  
Audio Input: Modulated 15khz 85% Modulation  
99% power bandwidth = 94.99kHz



Date: 16.JUN.2016 15:55:34

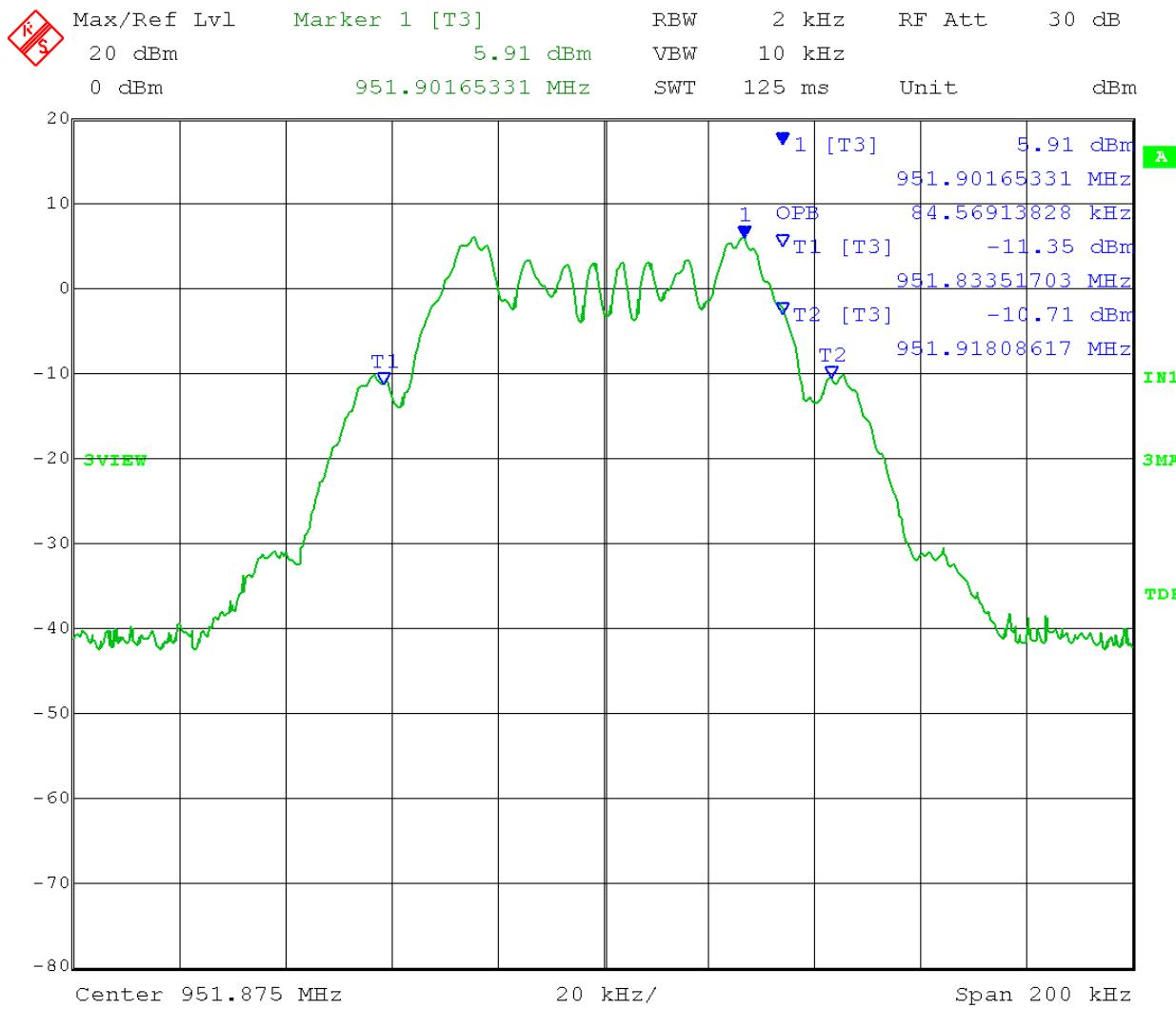


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Project Number: 8114

Test Date: 6-16-2016  
Company: Shure, Inc.  
EUT: PA821BX Antenna Combiner  
Test: Occupied Bandwidth; 99% bandwidth  
Rule part: FCC Part 74; FCC Part 2.1049  
Operator: Paul L

Frequency: 951.875 MHz  
Audio Input: Modulated 2.5khz, 16db> 50%)  
99% power bandwidth = 84.57kHz



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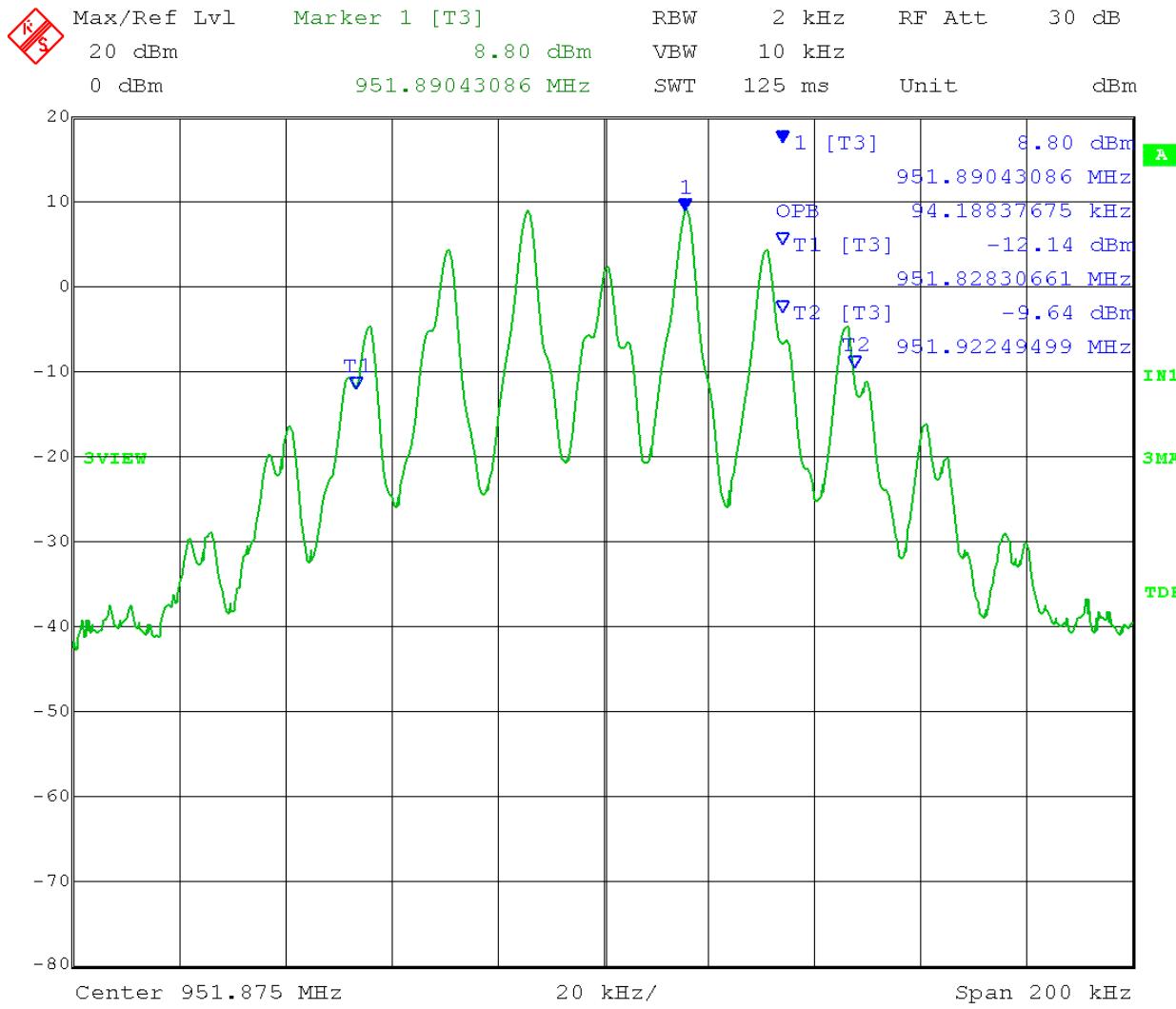


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Company: Shure Incorporated  
Model Tested: PA821BX  
Report Number: 22310  
Project Number: 8114

Test Date: 06-16-2016  
Company: Shure, Inc.  
EUT: PA821BX Antenna Combiner  
Test: Occupied Bandwidth; 99% bandwidth  
Rule part: FCC Part 74; FCC Part 2.1049  
Operator: Paul L

Frequency: 951.875MHz  
Audio Input: Modulated 15khz 85% Modulation  
99% power bandwidth = 94.19kHz



Date: 16.JUN.2016 15:49:57



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## Appendix B

Company: Shure Incorporated  
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### B3.0 RF Conducted Spurious Emissions

**Rule Part:** FCC Part 74.861(d)(3)), FCC Part 2.1051

**Test Procedure:** TIA 603D 2010 2.2.13

**Limit:** An emission appearing on any discrete frequency outside the authorized band shall be attenuated, at least  $43+10\log^{10}$  (mean output power, in watts)dB below the mean output power of the transmitting unit

**Results:** Compliant

**Notes:** The EUT was set to transmit at its maximum power. A peak detector was used for this test.

The EUT was tested in two configurations: 1) A transmitted signal passed through all available channels unmodulated. 2) A transmitted signal passed through all channels with three channels modulated at 2.5khz 16db >50% modulation.

**Sample Equation:**  $43+10\log(.04989W)=29.98$

$$10\log(49.89\text{mW})=16.98\text{dbm}$$

$$16.98 - 29.98 = -13\text{dbm}$$

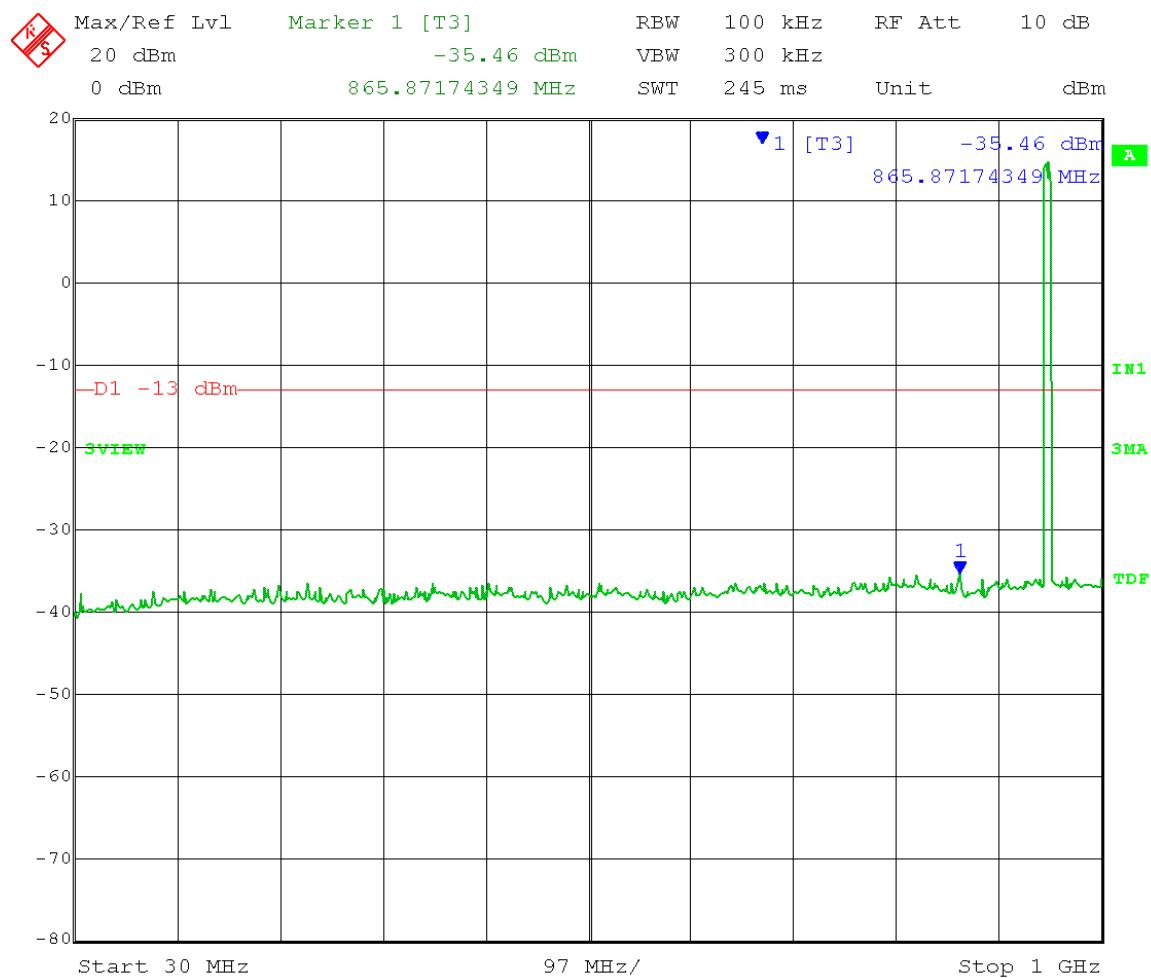


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Project Number: 8114

Test Date: 6-16-2016  
Company: Shure, Inc.  
EUT: PA821BX Antenna Combiner  
Test: Spurious Emissions - Conducted  
Rule part: FCC Part 74; FCC Part 2.1051  
Operator: Paul L  
Comment: Inputs: 945.15 MHz  
946.625MHz  
947.25 MHz  
947.90MHz  
948.85MHz  
949.40MHz  
949.975MHz  
951.875MHz

Frequency Range: 30 to 1000 MHz  
Limit = -13 dBm

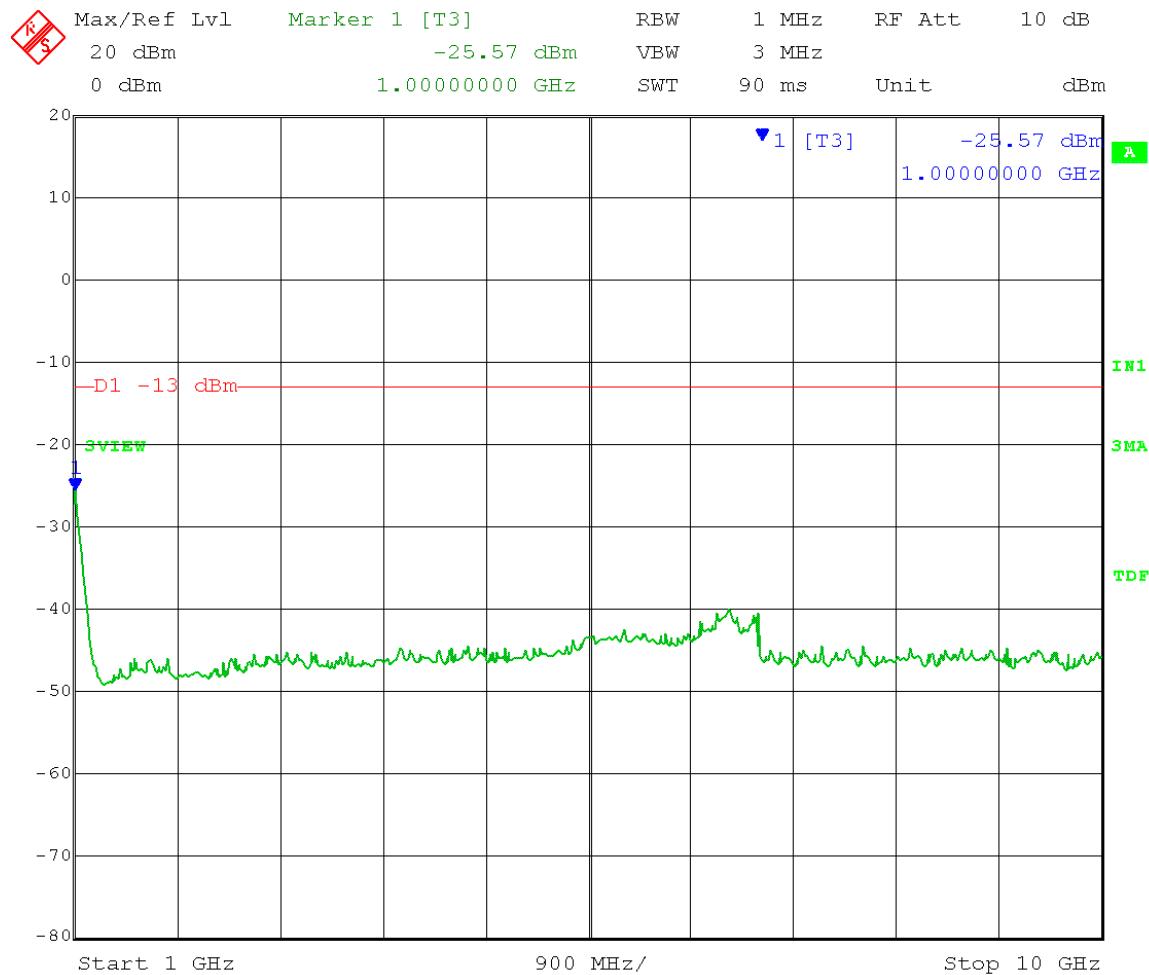




166 South Carter, Genoa City, WI 53128

Company: Shure Incorporated  
Model Tested: PA821BX  
Report Number: 22310  
Project Number: 8114

Test Date: 6-16-2016  
Company: Shure, Inc.  
EUT: PA821BX Antenna Combiner  
Test: Spurious Emissions - Conducted  
Rule part: FCC Part 74; FCC Part 2.1051  
Operator: Paul L  
Comment: Inputs: 945.15 MHz  
946.625MHz  
947.25 MHz  
947.90MHz  
948.85MHz  
949.40MHz  
949.975MHz  
951.875MHz  
Frequency Range: 1 to 10GHz  
Limit = -13 dBm



Date: 16.JUN.2016 13:29:33



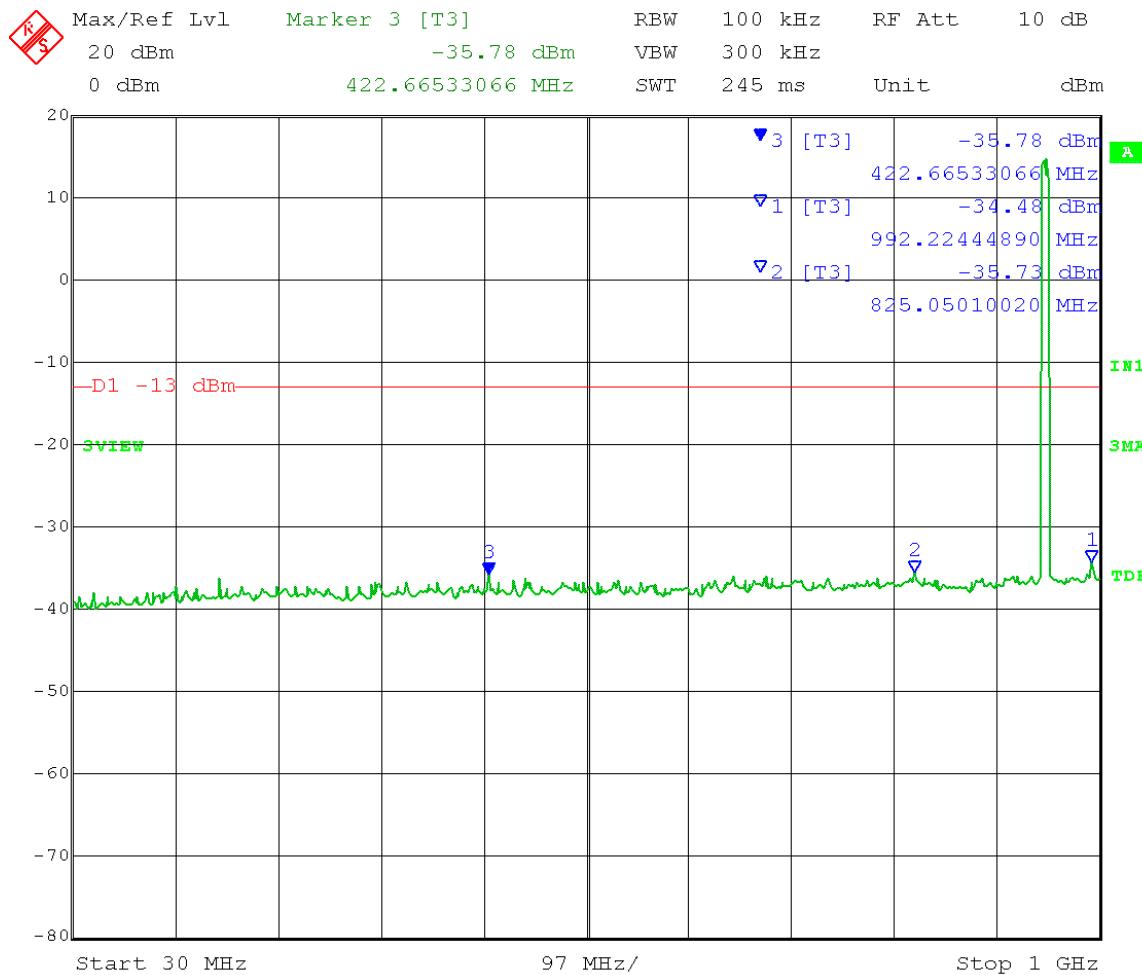
166 South Carter, Genoa City, WI 53128

Company: Shure Incorporated  
Model Tested: PA821BX  
Report Number: 22310  
Project Number: 8114

Test Date: 6-16-2016  
Company: Shure, Inc.  
EUT: PA821BX Antenna Combiner  
Test: Spurious Emissions - Conducted  
Intermodulation 3 signal test. (2.5khz 16db >50% modulation)  
Rule part: FCC Part 74; FCC Part 2.1051  
Operator: Paul L  
Comment: Modulated Inputs: 945.15 MHz  
949.975MHz  
951.875MHz  
Other Inputs: 946.625MHz  
947.25 MHz  
947.90MHz  
948.85MHz  
949.40MHz

Frequency Range: 30 to 1000 MHz

Limit = -13 dBm



Date: 16.JUN.2016 13:50:31



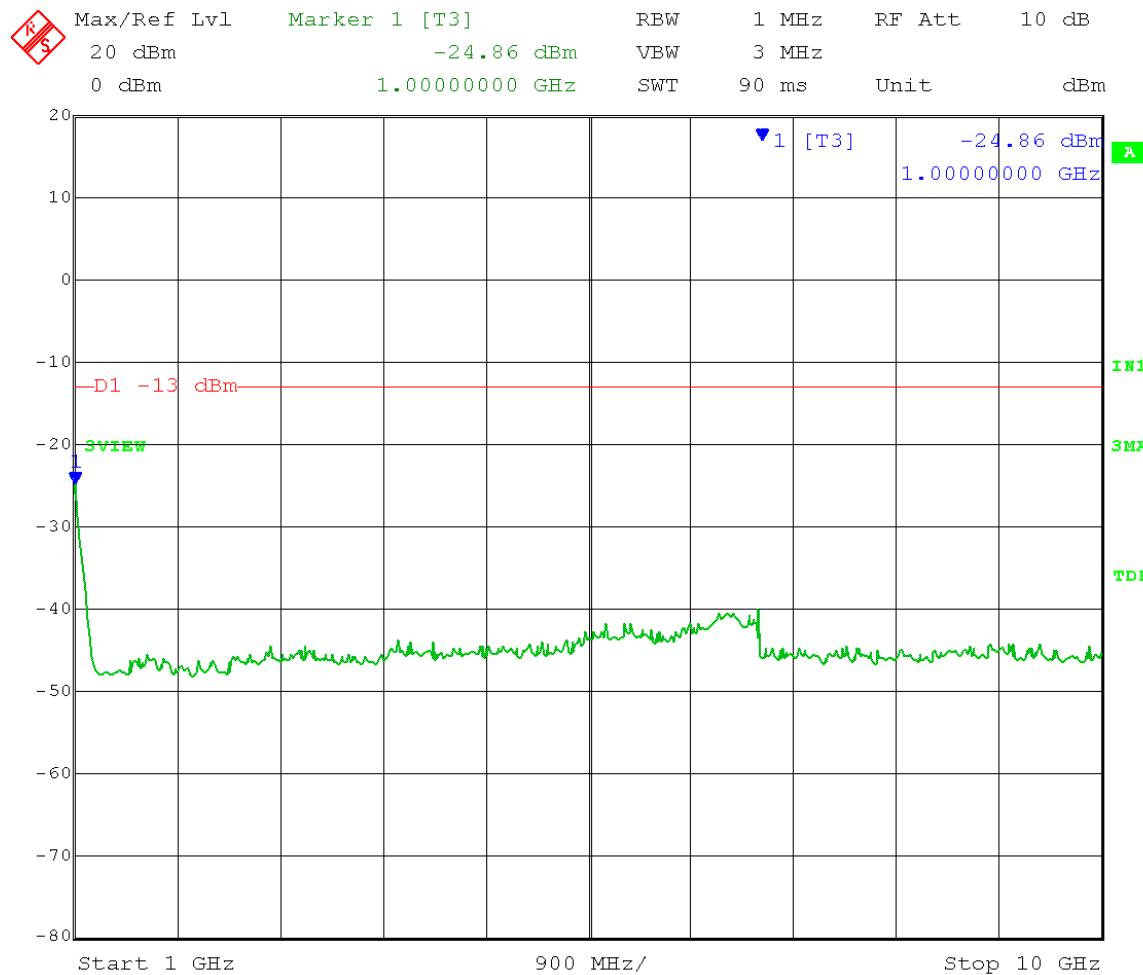
166 South Carter, Genoa City, WI 53128

Company: Shure Incorporated  
Model Tested: PA821BX  
Report Number: 22310  
Project Number: 8114

Test Date: 6-16-2016  
Company: Shure, Inc.  
EUT: PA821BX Antenna Combiner  
Test: Spurious Emissions - Conducted  
Intermodulation 3 signal test. (2.5khz 16db >50% modulation)  
Rule part: FCC Part 74; FCC Part 2.1051  
Operator: Paul L  
Comment: Modulated Inputs: 945.15 MHz  
949.975MHz  
951.875MHz  
Other Inputs: 946.625MHz  
947.25 MHz  
947.90MHz  
948.85MHz  
949.40MHz

Frequency Range: 1-10GHz

Limit = -13 dBm



Date: 16.JUN.2016 13:23:20



166 South Carter, Genoa City, WI 53128

Company: Shure Incorporated  
Model Tested: PA821BX  
Report Number: 22310  
Project Number: 8114

## B4.0 Radiated Spurious Emissions

**Rule Part:** FCC Part 74.861(d)(3)), FCC Part 2.1051

**Test Procedure:** TIA 603D 2010 2.2.13

**Limit:** An emission appearing on any discrete frequency outside the authorized band shall be attenuated, at least  $43+10\log^{10}$  (mean output power, in watts)dB below the mean output power of the transmitting unit

**Results:** Compliant

**Notes:** The EUT was set to transmit at its maximum power. A peak detector was used for this test.

The EUT was tested in two configurations: 1) A transmitted signal passed through all available channels unmodulated. 2) A transmitted signal passed through all channels with three channels modulated at 2.5khz 16db >50% modulation.

**Sample Equation:**  $43+10\log(.04989W)=29.98$

$$10\log(49.89\text{mW})=16.98\text{dbm}$$

$$16.98 - 29.98 = -13\text{dbm}$$

**Notes:** The measurement bandwidth on the receiver was set 120 kHz from 30 to 1000 MHz, and 1 MHz from 1 to 7GHz. The detector was set to Quasi-Peak below 1 GHz and Peak above 1 GHz. The test distance was 3 meters.



Company: Shure Incorporated  
 Model Tested: PA821BX  
 Report Number: 22310  
 Project Number: 8114

166 South Carter, Genoa City, WI 53128

Company: Shure, Inc

Operator: Paul L

Date of test: 06-13-2016

Temperature: 73 deg. F

Humidity: 44% R.H.

Test: FCC Pt.74.861, FCC PT.2.1053

Transmitter Radiated Spurious Emissions (e.r.p. substitution method) 30 MHz to 10.0 GHz

Model: PA821BX Transmit Frequency (MHz): 945.150, 946.625, 947.250, 947.900, 948.850, 949.400, 949.975, 951.875

	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 subst. antenna (dB)	Gain of subst. antenna (dBi)	Strength of emission [ERP] (dBm)	Limit (dBm)	Margin (dB)	Strength of emission [ERP] (uW)
73.50 vertical	30.7	-70	1.89	2.15	-71.89	-13	58.89	6.47143E-05
80.28 vertical	29.4	-72.4	1.94	2.15	-74.34	-13	61.34	3.68129E-05
111.06 vertical	32.4	-77.8	2.5	2.15	-80.3	-13	67.3	9.33254E-06
118.32 vertical	35.8	-67.6	2.62	2.15	-70.22	-13	57.22	9.50605E-05
1890.4 vertical	46.8	-60.4	2.55	8.49	-56.61	-13	43.61	0.00218273
1890.4 horizontal	47.1	-60.2	2.55	8.6	-56.3	-13	43.3	0.002344229
1893.2 vertical	45	-63	2.55	8.49	-59.21	-13	46.21	0.001199499
1894.8 vertical	48.3	-57.5	2.55	8.49	-53.71	-13	40.71	0.004255984
1895.6 horizontal	49.5	-57.7	2.55	8.6	-53.8	-13	40.8	0.004168694
1898.8 horizontal	49.5	-57.1	2.56	8.6	-53.21	-13	40.21	0.004775293
2841.6 horizontal	45	-61.2	3.12	10.23	-56.24	-13	43.24	0.00237684
2848.0 horizontal	42.1	-66.5	3.13	10.21	-61.57	-13	48.57	0.000696627
3780.40 horizontal	44.4	-63.3	3.72	9.15	-60.02	-13	47.02	0.000995405
3789.2 horizontal	44.2	-63.8	3.72	9.11	-60.56	-13	47.56	0.000879023
3786.4 vertical	48.3	-56.2	3.72	9.06	-53.01	-13	40.01	0.005000345
3797.6 vertical	50	-53.9	3.73	9	-50.78	-13	37.78	0.00836
3797.6 horizontal	44.1	-64.3	3.73	9.07	-61.11	-13	48.11	0.00077
3807.6 horizontal	45.4	-61.5	3.73	9.07	-58.31	-13	45.31	0.00148
4736.4 vertical	45.2	-66.8	4.24	10.98	-62.21	-13	49.21	0.00060
4739.6 horizontal	44.7	-68.5	4.24	10.97	-63.92	-13	50.92	0.00041
4759.375 vertical	45.8	-66	4.26	10.97	-61.44	-13	48.44	0.00072
4759.375 horizontal	44.8	-68.7	4.26	10.98	-64.13	-13	51.13	0.00039
5696.4 vertical	47.2	-60.3	4.71	11.44	-55.72	-13	42.72	0.00268
5696.4 horizontal	46.4	-66.2	4.71	11.47	-61.59	-13	48.59	0.00069
5711.2 horizontal	46.7	-62.3	4.72	11.49	-57.68	-13	44.68	0.00171

EIRP = Signal generator output - cable loss + antenna gain

ERP<sub>ref. to 1/2λ dipole</sub> = Signal generator output - cable loss + antenna gain - 2.15



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Company: Shure Incorporated  
Model Tested: PA821BX  
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Project Number: 8114

## Appendix B

### B5.0 AC Line Conducted Emissions

**Rule Part:** FCC Part 15.207

**Test Procedure:** ANSI C63.4-2014

**Limit:** 15.207 Class B

**Results:** Compliant

**Notes:** This was an AC Mains Conducted emissions measurement.  
The EUT was powered with an input of 120 and 240 VAC 60 Hz.



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**B5.0a 120V, 60Hz**



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166 South Carter, Genoa City, WI 53128  
**B5.0b 240V, 60Hz**

Company: Shure Incorporated  
Model Tested: PA821BX  
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Model Tested: PA821BX  
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## Appendix C – Measurement Uncertainty

Compliance with the limits in this standard are based on the results of the compliance measurement. Our calculated measurement uncertainty including the measurement instrumentation, associated connections between the various instruments in the measurement chain, and other contributions, are provided in this section of the test report.

Parameter	Expanded Uncertainty (K=2)
Emission Bandwidth, Conducted	+/-1.14%
RF Output Power, Conducted	+/-1.36dB
Power Spectral Density, Conducted	+/-1.26dB
All Emissions, Radiated	+/-5.69dB
Duty Cycle	+/-0.05%



166 South Carter, Genoa City, WI 53128

Company: Shure Incorporated  
Model Tested: PA821BX  
Report Number: 22310  
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## END OF REPORT

Revision #	Date	Comments	By
1.0	11-9-2016	Initial Release	PL