

Measurement of RF Emissions from a Handheld Transmitter, Model No. QLXD2

For

5800 West Touhy Avenue

Niles, IL 60714

P.O. Number

4500292783

Shure Inc.

Date Tested Test Personnel April 6, 2015 through April 10, 2015

Mark Longinotti

Test Specification FCC "Code of Federal Regulations" Title 47, Part 15,

Subpart C, Section 15.247 for Digital

Modulation Intentional Radiators Operating within

The band 902-928MHz Industry Canada RSS-GEN Industry Canada RSS-210

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THIS REPORT SHALL NOT BE REPRODUCED, EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF ELITE ELECTRONIC ENGINEERING INCORPORATED.



REVISION HISTORY

Revision	Date	Description
— 8 June 2015		Initial release



Measurement of RF Emissions from a Handheld Transmitter, Model No. QLXD2

1. Introduction

1.1. Scope of Tests

This report represents the results of the series of radio interference measurements performed on a Shure Inc. Handheld Transmitter, Model No. QLXD2, Serial No. None Assigned, (hereinafter referred to as the Equipment Under Test (EUT)). The EUT is a digital modulation transmitter. The transmitter was designed to transmit in the 902-928 MHz band using an internal, non-removable antenna. (For testing purposes only, the antenna was removed from the board and an SMA connector was soldered onto the circuit board in place of the antenna.) The EUT was manufactured and submitted for testing by Shure Inc. located in Niles, IL.

1.2. Purpose

The test series was performed to determine if the EUT meets the conducted and radiated RF emission requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, Sections 15.207 and 15.247 for Intentional Radiators. Testing was performed in accordance with ANSI C63.4-2009.

The test series was also performed to determine if the EUT meets the conducted RF emission requirements of the Industry Canada Radio Standards Specification, RSS-Gen, Section 8.8 and the radiated RF emission requirements of the Industry Canada Radio Standards Specification, RSS-210, Annex 8 for transmitters. Testing was performed in accordance with ANSI C63.4-2014.

1.3. Deviations, Additions and Exclusions

There were no deviations, additions to, or exclusions from the test specification during this test series.

1.4. EMC Laboratory Identification

This series of tests was performed by Elite Electronic Engineering Incorporated of Downers Grove, Illinois. The laboratory is accredited by The American Association for Laboratory Accreditation (A2LA). A2LA Certificate Number: 1786.01.

1.5. Laboratory Conditions

The temperature at the time of the test was 21°C and the relative humidity was 21%.

2. APPLICABLE DOCUMENTS

The following documents of the exact issue designated form part of this document to the extent specified herein:

- Federal Communications Commission "Code of Federal Regulations", Title 47, Part 15, Subpart C, dated 1 October 2014
- ANSI C63.4-2009, "American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz"
- ANSI C63.4-2014, "American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz"
- Federal Communications Commission Office of Engineering and Technology Laboratory Division Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under Section 15.247, June 5, 2014



- Industry Canada Radio Standards Specification, RSS-Gen, "General Requirements and Information for the Certification of Radiocommunication Equipment", Issue 4, November 2014
- Industry Canada Radio Standards Specification, RSS-210, "Low-power License-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment", Issue 8, December 2010, with Amendment 1, February 2015

3. EUT SETUP AND OPERATION

3.1. General Description

The EUT is a Shure Inc., Handheld Transmitter, Model No. QLXD2. A block diagram of the EUT setup is shown as Figure 1. A photograph of the EUT is shown as Figure 2.

3.1.1.Power Input

The EUT was powered with 3VDC from 2 each internal "AA" batteries.

3.1.2.Peripheral Equipment

The EUT was tested with a Shure SM58 microphone cartridge attached.

3.1.3. Signal Input/Output Leads

The EUT was submitted for testing with no signal leads.

3.1.4. Grounding

The EUT was not grounded during testing.

3.2. Software

For all tests the EUT had Software Package 1.1.9 loaded onto the device to provide correct load characteristics.

3.3. Operational Mode

All emissions tests were performed separately in the following modes:

Transmit at 902.4MHz, low power Transmit at 915MHz, low power Transmit at 927.6MHz, low power Transmit at 902.4MHz, high power Transmit at 915MHz, high power Transmit at 927.6MHz, hi power

3.4. EUT Modifications

No modifications were required for compliance.

4. TEST FACILITY AND TEST INSTRUMENTATION

4.1. Shielded Enclosure

All tests were performed in a 32ft. x 20ft. x 18ft. hybrid ferrite-tile/anechoic absorber lined test chamber. With the exception of the floor, the reflective surfaces of the shielded chamber are lined with ferrite tiles on the walls and ceiling. Anechoic absorber material is installed over the ferrite tile. The floor of the chamber is used as the ground plane. The chamber complies with ANSI C63.4 for site attenuation.



4.2. Test Instrumentation

The test instrumentation and auxiliary equipment used during the tests are listed in Table 9-1.

Conducted and radiated emission measurements were performed with a spectrum analyzer. This receiver allows measurements with the bandwidths and detector functions specified in the requirements.

4.3. Calibration Traceability

Test equipment is maintained and calibrated on a regular basis. All calibrations are traceable to the National Institute of Standards and Technology (NIST).

4.4. Measurement Uncertainty

All measurements are an estimate of their true value. The measurement uncertainty characterizes, with a specified confidence level, the spread of values which may be possible for a given measurement system.

The measurement uncertainty for these tests is presented below:

Conducted Emissions Measurements						
Combined Standard Uncertainty	1.07	-1.07				
Expanded Uncertainty (95% confidence)	2.1	-2.1				

Radiated Emissions Measurements		
Combined Standard Uncertainty	2.26	-2.18
Expanded Uncertainty (95% confidence)	4.5	-4.4

5. TEST PROCEDURES

5.1. Powerline Conducted Emissions

5.1.1.Requirements

Since the EUT was powered by internal batteries and has no connections for AC power, no conducted emissions tests are required to be performed.

5.2. 6dB Bandwidth

5.2.1.Requirement

Per 15.247(a)(2),the minimum 6dB bandwidth shall be at least 500kHz for all systems using digital modulation techniques.

5.2.2.Procedures

The output of the EUT was connected to the spectrum analyzer through 30dB of attenuation.

The EUT was allowed to transmit continuously. The transmit channel was set separately to low, middle, and high channels. The resolution bandwidth (RBW) was set to 100kHz and the span was set to greater than the RBW.

The 'Max-Hold' function was engaged. The analyzer was allowed to scan until the envelope of the transmitter bandwidth was defined. The analyzer's display was plotted using a 'screen dump' utility.



5.2.3.Results

The plots on pages 18 through 23 show that the minimum 6 dB bandwidth was 563.36kHz which is greater than minimum allowable 6dB bandwidth requirement of 500kHz for systems using digital modulation techniques. The 99% bandwidth was measured to be 521kHz.

5.3. Effective Isotropic Radiated Power (EIRP)

5.3.1.Requirements

Per section 15.247(b)(3), for systems using digital modulation the maximum peak output conducted power shall not be greater than 1.0W (30dBm). Per section 15.247(b)(4), this limit is based on the use of antennas with directional gains that do not exceed 6dBi. Since the limit allows for a 6dBi antenna gain, the maximum EIRP can be increased by 6dB to 4 Watt (36dBm).

5.3.2.Procedures

The EUT was placed on the non-conductive stand and set to transmit. A bilog antenna was placed at a test distance of 3 meters from the EUT. The resolution bandwidth (RBW) of the spectrum analyzer was set to greater than the 6dB bandwidth. The EUT was maximized for worst case emissions (or maximum output power) at the measuring antenna. The maximum meter reading was recorded. The peak power output was measured for the low, middle and high channels.

The equivalent power was determined from the field intensity levels measured at 3 meters using the substitution method. To determine the emission power, a dipole antenna was then set in place of the EUT and connected to a calibrated signal generator. The output of the signal generator was adjusted to match the received level at the spectrum analyzer. The signal level was recorded. The reading was then corrected to compensate for cable loss as required. The peak power output was calculated for low, middle, and high hopping frequencies.

5.3.3.Results

The results are presented on pages 24 through 29. The maximum EIRP measured from the transmitter was 15.6 dBm or 36.3mW which is below the 4 Watt limit.

5.4. Radiated Spurious Emissions Measurements

5.4.1.Requirements

Per section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated emissions measurement. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must comply with the radiated emission limits specified in §15.209(a).

Paragraph 15.209(a) has the following radiated emission limits:

Frequency	Field Strength	Measurement distance
MHz	(microvolts/meter)	(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	3
30.0-88.0	100	3
88.0-216.0	150	3
216.0-960.0	200	3
Above 960	500	3



5.4.2.Procedures

All tests were performed in a 32ft. x 20ft. x 18ft. hybrid ferrite-tile/anechoic absorber lined test chamber. The walls and ceiling of the shielded chamber are lined with ferrite tiles. Anechoic absorber material is installed over the ferrite tile. The floor of the chamber is used as the ground plane. The chamber complies with ANSI C63.4 for site attenuation.

The shielded enclosure prevents emissions from other sources, such as radio and TV stations from interfering with the measurements. All Powerline and signal lines entering the enclosure pass through filters on the enclosure wall. The Powerline filters prevent extraneous signals from entering the enclosure on these leads.

Preliminary radiated emissions tests were performed to determine the emission characteristics of the EUT. For the preliminary test, a broadband measuring antenna was positioned at a 3 meter distance from the EUT. The entire frequency range from 30MHz to 10.0GHz was investigated using a peak detector function.

The final open field emission tests were then manually performed over the frequency range of 30MHz to 10.0GHz.

- 1) For all harmonics not in the restricted bands, the following procedure was used:
 - a) The field strength of the fundamental was measured using a bilog antenna. The bilog antenna was positioned at a 3 meter distance from the EUT. A peak detector with a resolution bandwidth of 100 kHz was used on the spectrum analyzer.
 - b) The field strengths of all of the harmonics not in the restricted band were then measured using a double-ridged waveguide antenna. The waveguide antenna was positioned at a 3 meter distance from the EUT. A peak detector with a resolution bandwidth of 100 kHz was used on the spectrum analyzer.
 - c) To ensure that maximum or worst case emission levels at the fundamental and harmonics were measured, the following steps were taken when measuring the fundamental emissions and the spurious emissions:
 - i) The EUT was rotated so that all of its sides were exposed to the receiving antenna.
 - ii) Since the measuring antenna is linearly polarized, both horizontal and vertical field components were measured.
 - iii) The measuring antenna was raised and lowered for each antenna polarization to maximize the readings.
 - iv) In instances where it was necessary to use a shortened cable between the measuring antenna and the spectrum analyzer, the measuring antenna was not raised or lowered to ensure maximized readings. Instead the EUT was rotated through all axes to ensure the maximum readings were recorded for the EUT.
 - d) All harmonics not in the restricted bands must be at least 20 dB below levels measured at the fundamental. However, attenuation below the general limits specified in §15.209(a) is not required.
- 2) For all emissions in the restricted bands, the following procedure was used:
 - a) The field strengths of all emissions below 1 GHz were measured using a bi-log antenna. The bi-log antenna was positioned at a 3 meter distance from the EUT. A peak detector with a resolution bandwidth of 100 kHz was used on the spectrum analyzer.
 - b) The field strengths of all emissions above 1 GHz were measured using a double-ridged waveguide antenna. The waveguide antenna was positioned at a 3 meter distance from the EUT. A peak detector with a resolution bandwidth of 1 MHz was used on the spectrum analyzer.
 - c) To ensure that maximum or worst case emission levels were measured, the following steps were taken when taking all measurements:
 - i) The EUT was rotated so that all of its sides were exposed to the receiving antenna.
 - ii) Since the measuring antenna is linearly polarized, both horizontal and vertical field components were measured.
 - iii) The measuring antenna was raised and lowered for each antenna polarization to maximize the readings.
 - iv) In instances where it was necessary to use a shortened cable between the measuring antenna and the spectrum analyzer, the measuring antenna was not raised or lowered to ensure maximized readings. Instead the EUT was rotated through all axes to ensure the maximum



readings were recorded for the EUT.

- d) For all radiated emissions measurements below 1 GHz, if the peak reading is below the limits listed in 15.209(a), no further measurements are required. If however, the peak readings exceed the limits listed in 15.209(a), then the emissions are remeasured using a quasi-peak detector.
- e) For all radiated emissions measurements above 1 GHz, the peak readings must comply with the 15.35(b) limits. 15.35(b) states that when average radiated emissions measurements are specified, there also is a limit on the peak level of the radiated emissions. The limit on the peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test. Therefore, all peak readings above 1 GHz must be no greater than 20 dB above the limits specified in 15.209(a).
- f) Next, for all radiated emissions measurements above 1GHz, the resolution bandwidth was set to 1MHz. The analyzer was set to linear mode with a 10Hz video bandwidth in order to simulate an average detector. An average reading was taken.

5.4.3.Results

Preliminary radiated emissions plots with the EUT transmitting at 902.4MHz, 915MHz, and 927.6MHz are shown on pages 30 through 53. Final radiated emissions data are presented on data pages 54 through 71. As can be seen from the data, all emissions measured from the EUT were within the specification limits. The emissions level closet to the limit (worst case) occurred at 1855.2MHz. The emissions level at this frequency was 38.1dB within the limit. Photographs of the test configuration which yielded the highest, or worst case, radiated emission levels are shown on Figure 3 and Figure 4.

5.5. Band Edge Compliance

5.5.1.Requirement

Per section 15.247(d), the emissions at the band-edges must be at least 20dB below the highest level measured within the band but attenuation below the general limits listed in 15.209(a) is not required.

5.5.2.Procedures

5.10.2.1 Low Band Edge

- 1) The EUT was setup inside the test chamber on a non-conductive stand.
- 2) A broadband measuring antenna was placed at a test distance of 3 meters from the EUT.
- 3) The EUT was set to transmit continuously at the channel closest to the low band-edge.
- 4) The EUT was maximized for worst case emissions at the measuring antenna. The maximum meter reading was recorded.
- 5) To determine the band edge compliance, the following spectrum analyzer settings were used:
 - a. Center frequency = low band-edge frequency.
 - b. Span = Wide enough to capture the peak level of the emission operating on the channel closest to the band-edge, as well as any modulation products which fall outside of the authorized band of operation.
 - c. Resolution bandwidth (RBW) ≥ 1% of the span.
 - d. The 'Max-Hold' function was engaged. The analyzer was allowed to scan until the envelope of the transmitter bandwidth was defined.
 - e. The marker was set on the peak of the in-band emissions. A display line was placed 20dB down from the peak of the in-band emissions. All emissions which fall outside of the authorized band of operation must be below the 20dB down display line. (All emissions to the left of the center frequency (band-edge) must be below the display line.)
 - f. The analyzer's display was plotted using a 'screen dump' utility.

5.10.2.2 High Band Edge

1) The EUT was setup inside the test chamber on a non-conductive stand.



- 2) A broadband measuring antenna was placed at a test distance of 3 meters from the EUT.
- 3) The EUT was set to transmit continuously at the channel closest to the high band-edge.
- 4) The EUT was maximized for worst case emissions at the measuring antenna.
- 5) To determine the band edge compliance, the following spectrum analyzer settings were used:
 - a. Center frequency = high band-edge frequency.
 - b. Span = Wide enough to capture the peak level of the emission operating on the channel closest to the band-edge, as well as any modulation products which fall outside of the authorized band of operation.
 - c. Resolution bandwidth (RBW) \geq 1% of the span.
 - d. The 'Max-Hold' function was engaged. The analyzer was allowed to scan until the envelope of the transmitter bandwidth was defined.
 - e. The marker was set on the peak of the in-band emissions. A display line was placed 20dB down from the peak of the in-band emissions. All emissions which fall outside of the authorized band of operation must be below the 20dB down display line. (All emissions to the right of the center frequency (band-edge) must be below the display line.)
 - f. The analyzer's display was plotted using a 'screen dump' utility.

5.5.3.Results

Pages 72 and 75 show the conducted band-edge compliance results. As can be seen from these plots, the emissions at the low end band edge and the high end band edge are within the 20 dB down limits.

5.6. Power Spectral Density

5.6.1.Requirements

Per section 15.247(e), the peak power spectral density from the intentional radiator shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

5.6.2. Procedures

- 1) The output of the EUT was connected to the spectrum analyzer through 30dB of attenuation.
- 2) The EUT was set to transmit separately at the low, middle, and high channels.
- 3) To determine the power spectral density, the following spectrum analyzer settings were used:
 - a. Center frequency = transmit frequency
 - b. Span =1.5times the channel bandwidth
 - c. Resolution bandwidth 3kHz ≤ (RBW) ≥ 100kHz
 - d. Video bandwidth (VBW) ≥ 3 x RBW
 - e. Sweep time = auto couple
 - f. The analyzer was allowed to scan until the envelope of the transmitter bandwidth was defined. The peak detector and 'Max-Hold' function was engaged.
 - g. The analyzer's display was plotted using a 'screen dump' utility.
 - h. If the measured value exceeds the +8dBm limit, reduce the RBW (no less than 3kHz) and repeat step 3.

5.6.3.Results

Pages 76 through 81 show the power spectral density results. As can be seen from the plots, the peak power density is less than 8dBm in a 3kHz band during any time interval of continuous transmission.

6. OTHER TEST CONDITIONS

6.1. Test Personnel and Witnesses

All tests were performed by qualified personnel from Elite Electronic Engineering Incorporated.



6.2. Disposition of the EUT

The EUT and all associated equipment were returned to Shure Inc. upon completion of the tests.

7. CONCLUSIONS

It was determined that the Shure Inc. Handheld Transmitter, Model No. QLXD2, digital modulation transmitter, Serial No. None Assigned, did fully meet the conducted and radiated emission requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, Sections 15.207 and 15.247 for Intentional Radiators Operating within the 902-928 MHz band when tested per ANSI C63.4-2009.

It was also determined that the Shure Inc. Handheld Transmitter, Model No. QLXD2, digital modulation transmitter, Serial No. None Assigned, did fully meet the conducted and radiated RF emission requirements of the Industry Canada Radio Standards Specification, RSS-Gen Section 8.8 and RSS-210 Annex 8, for transmitters, when tested per ANSI C63.4-2014.

8. CERTIFICATION

Elite Electronic Engineering Incorporated certifies that the information contained in this report was obtained under conditions which meet or exceed those specified in the test specifications.

The data presented in this test report pertains to the EUT at the test date. Any electrical or mechanical modification made to the EUT subsequent to the specified test date will serve to invalidate the data and void this certification.

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the Federal Government.



9. EQUIPMENT LIST

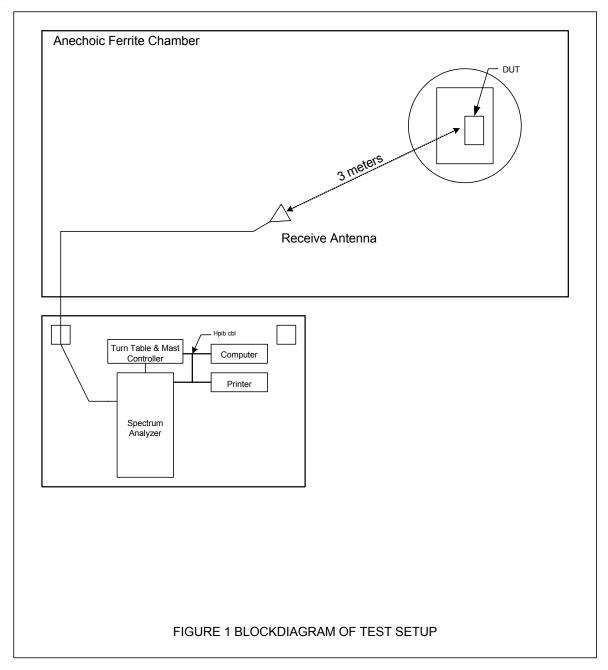
Table 9-1 Equipment List

Eq ID	Equipment Description	Manufacturer	Model No.	Serial No.	Frequency Range	Cal Date	Due Date
APW3	PREAMPLIFIER	PLANAR ELECTRONICS	PE2-35-120-5R0-10-12	PL2924	1GHZ-20GHZ	11/3/2014	11/3/2015
CDX8	COMPUTER	ELITE	WORKSTATION			N/A	
GSD3	SIGNAL GENERATOR	ROHDE & SCHWARZ	SMB100A	104454	9KHZ-6GHZ	9/10/2014	9/10/2015
NDQ1	TUNED DIPOLE ANTENNA	EMCO	3121C-DB4	313	400-1000MHZ	4/17/2014	4/17/2016
NTA3	BILOG ANTENNA	TESEQ	6112D	32853	25-1000MHz	3/27/2015	3/27/2016
NWQ1	DOUBLE RIDGED WAVEGUIDE ANTENNA	ETS-LINDGREN	3117	66655	1GHZ-18GHZ	3/11/2014	3/11/2016
RBA0	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB26	100145	20HZ-26.5GHZ	3/3/2015	3/3/2016
RBB0	EMI TEST RECEIVER 20HZ TO 40 GHZ.	ROHDE & SCHWARZ	ESIB40	100250	20 HZ TO 40GHZ	2/13/2015	2/13/2016
SES0	24VDC POWER SUPPLY	P-TRANS	FS-32024-1M	001	18-27VDC	NOTE 1	
T1E4	10DB 25W ATTENUATOR	WEINSCHEL	46-10-43	AV5805	DC-18GHZ	11/17/2014	11/17/2015
T1E5	10DB 25W ATTENUATOR	WEINSCHEL	46-10-34	BG3492	DC-18GHZ	7/21/2014	7/21/2015
T2D8	20DB, 25W ATTENUATOR	WEINSCHEL	46-20-43	AY9247	DC-18GHZ	10/13/2014	10/13/2015
T2SA	20DB 25W ATTENUATOR	WEINSCHEL	46-20-34	CD5015	DC-18GHZ	10/13/2014	10/13/2015
XPQ3	HIGH PASS FILTER	K&L MICROWAVE	4IH30-1804/T10000-0	4	1.8GHZ-10GHZ	10/24/2014	10/24/2015

I/O: Initial Only N/A: Not Applicable

Note 1: For the purpose of this test, the equipment was calibrated over the specified frequency range, pulse rate, or modulation prior to the test or monitored by a calibrated instrument.





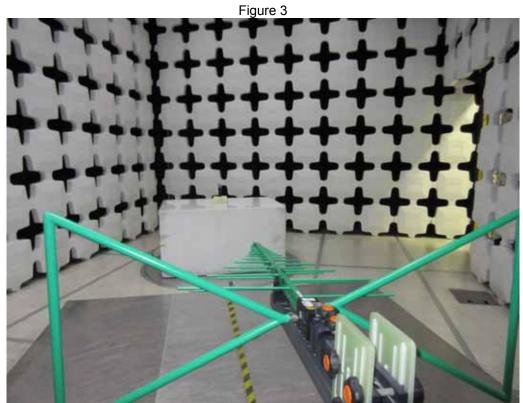


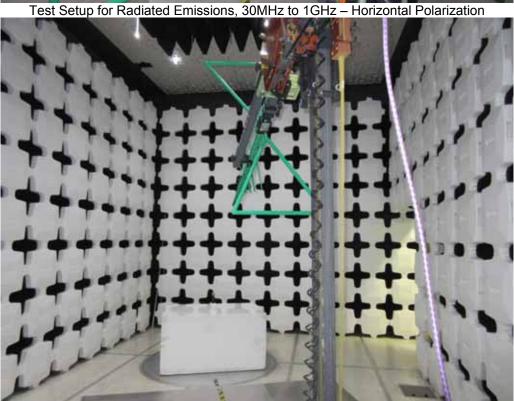




Photograph of the EUT

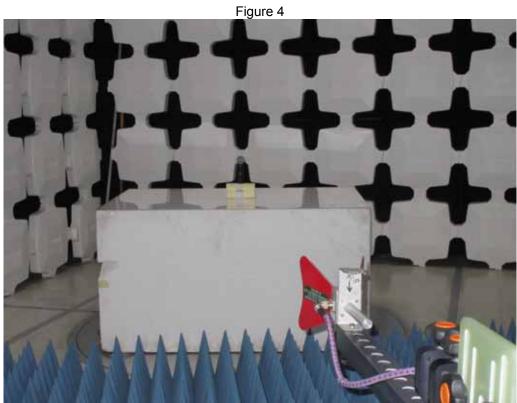






Test Setup for Radiated Emissions, 30MHz to 1GHz – Vertical Polarization

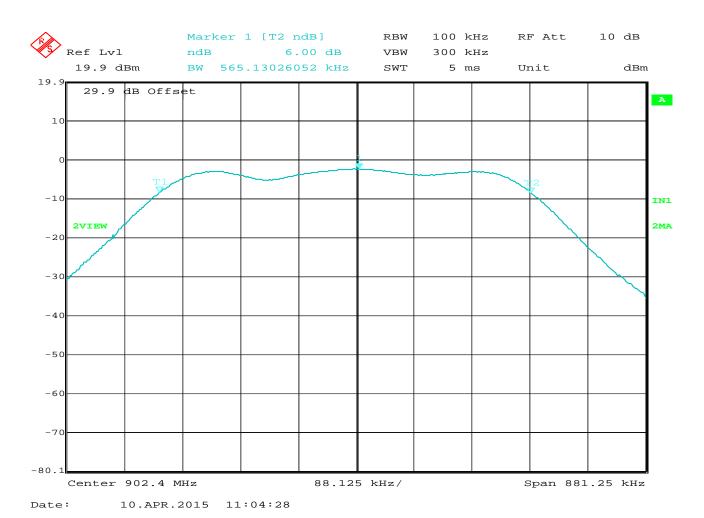






Test Setup for Radiated Emissions, 1GHz to 10GHz – Vertical Polarization





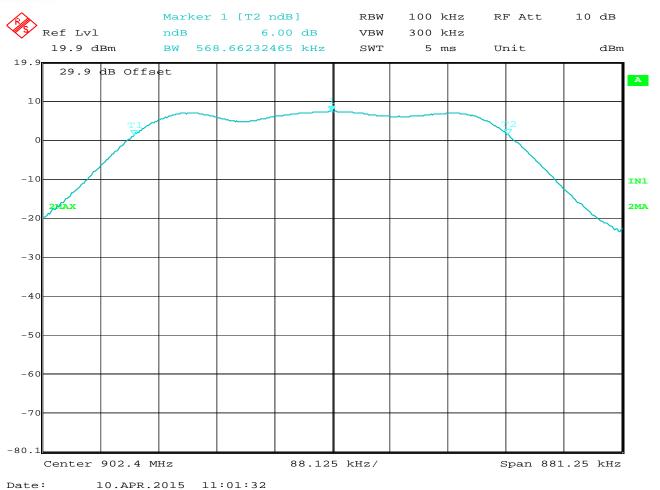
Manufacturer : Shure Model No. : QLXD2

Serial No. :

Date : April 10, 2015 Test Performed : DTS Bandwidth

Mode : Tx @ 902.4MHz Low Power Notes : DTS bandwidth = 565.13kHz





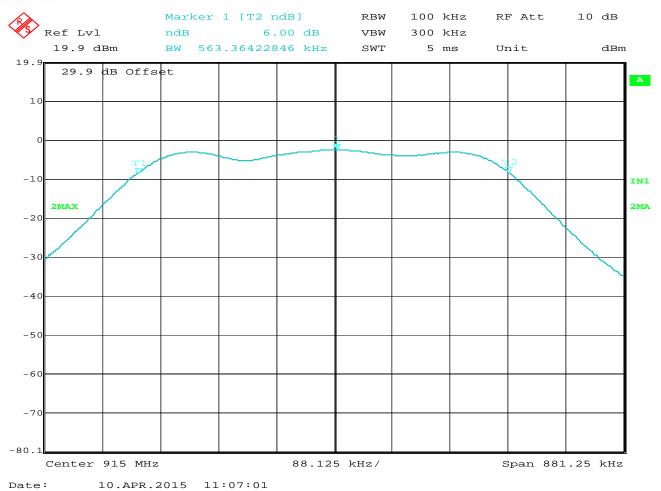
Manufacturer : Shure Model No. : QLXD2

Serial No. :

Date : April 10, 2015 Test Performed : DTS Bandwidth

Mode : Tx @ 902.4MHz High Power Notes : DTS bandwidth = 568.66kHz





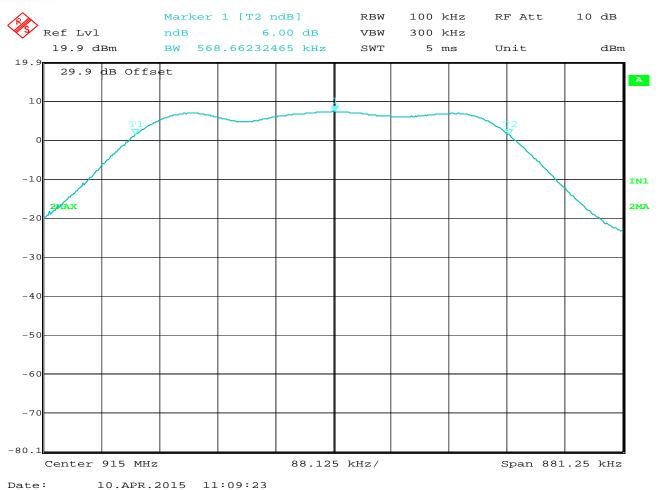
Manufacturer : Shure Model No. : QLXD2

Serial No. :

Date : April 10, 2015 Test Performed : DTS Bandwidth

Mode : Tx @ 915MHz Low Power Notes : DTS bandwidth = 563.36kHz





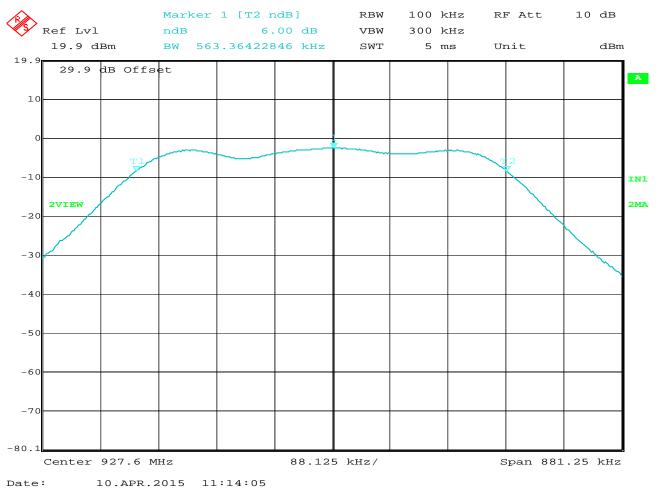
Manufacturer : Shure Model No. : QLXD2

Serial No. :

Date : April 10, 2015 Test Performed : DTS Bandwidth

Mode : Tx @ 915MHz High Power Notes : DTS bandwidth = 568.66kHz





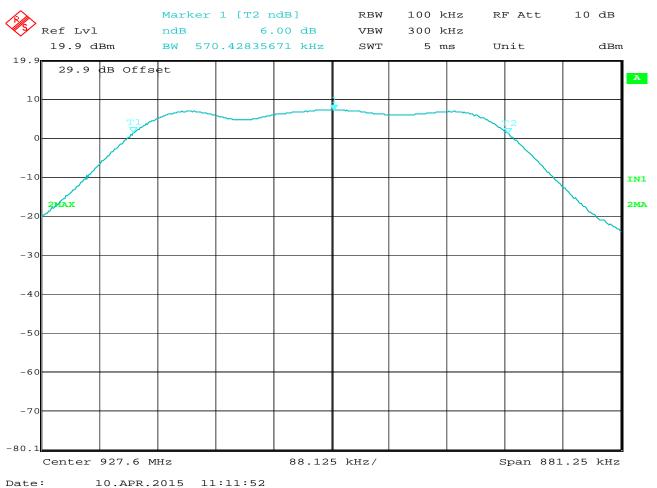
Manufacturer : Shure Model No. : QLXD2

Serial No. :

Date : April 10, 2015 Test Performed : DTS Bandwidth

Mode : Tx @ 927.6MHz Low Power Notes : DTS bandwidth = 563.36kHz





Manufacturer : Shure Model No. : QLXD2

Serial No. :

Date : April 10, 2015 Test Performed : DTS Bandwidth

Mode : Tx @ 927.6MHz High Power Notes : DTS bandwidth = 570.43kHz



Serial No. : None Assigned
Date Tested : April 6 and 7, 2015

Test Performed : Effective Isotropic Radiated Power (EIRP)

Mode : Transmit at 902.4MHz, Lo Power

Test Distance : 3 meters

Freq.	Ant	Meter Reading	Matched Sig. Gen. Reading	Equivalent Antenna Gain	Cable Loss	EIRP (dDm)	Limit	Margin
(MHz)	Pol	(dBuV)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
902.40	Н	59.9	-15.6	2.2	2.0	-15.5	36.0	-51.5
902.40	V	77.4	5.2	2.2	2.0	5.3	36.0	-30.7

EIRP (dBm) = Meter Reading (dBuV) + Matched Sig. Gen. Reading (dBm) + Antenna Gain (dB) – Cable Loss (dB)



Serial No. : None Assigned

Test Performed : Effective Isotropic Radiated Power (EIRP)

Date Tested : April 6 and 7, 2015

Mode : Transmit at 902.4MHz, Hi Power

Test Distance : 3 meters

Freq.	Ant	Meter Reading	Matched Sig. Gen. Reading	Equivalent Antenna Gain	Cable Loss	EIRP	Limit	Margin
(MHz)	Pol	(dBuV)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
902.40	Н	67.1	-8.7	2.2	2.0	-8.6	36.0	-44.6
902.40	V	87.4	15.1	2.2	2.0	15.2	36.0	-20.8

EIRP (dBm) = Meter Reading (dBuV) + Matched Sig. Gen. Reading (dBm) + Antenna Gain (dB) – Cable Loss (dB)



Serial No. : None Assigned

Test Performed : Effective Isotropic Radiated Power (EIRP)

Date Tested : April 6 and 7, 2015

Mode : Transmit at 915MHz, Lo Power

Test Distance : 3 meters

Freq. (MHz)	Ant	Meter Reading	Matched Sig. Gen. Reading	Equivalent Antenna Gain	Cable Loss	EIRP	Limit	Margin
(IVI⊟Z)	Pol	(dBuV)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
915.00	Н	59.7	-16.1	2.2	2.1	-16.0	36.0	-52.0
915.00	V	78.2	5.8	2.2	2.1	5.9	36.0	-30.1

EIRP (dBm) = Meter Reading (dBuV) + Matched Sig. Gen. Reading (dBm) + Antenna Gain (dB) - Cable Loss (dB)



Serial No. : None Assigned

Test Performed : Effective Isotropic Radiated Power (EIRP)

Date Tested : April 6 and 7, 2015

Mode : Transmit at 915MHz, Hi Power

Test Distance : 3 meters

Freq. (MHz)	Ant Pol	Meter Reading (dBuV)	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
(1VII 1Z)	1 01	(ubuv)	(ubiii)	(ub)	(ub)	(ubiii)	(ubiii)	(ub)
915.00	Н	69.3	-6.4	2.2	2.1	-6.3	36.0	-42.3
915.00	V	87.9	15.5	2.2	2.1	15.6	36.0	-20.4

EIRP (dBm) = Meter Reading (dBuV) + Matched Sig. Gen. Reading (dBm) + Antenna Gain (dB) - Cable Loss (dB)



Serial No. : None Assigned

Test Performed : Effective Isotropic Radiated Power (EIRP)

Date Tested : April 6 and 7, 2015

Mode : Transmit at 927.6MHz, Lo Power

Test Distance : 3 meters

Freq.	Ant	Meter Reading	Matched Sig. Gen. Reading	Equivalent Antenna Gain	Cable Loss	EIRP	Limit	Margin
(MHz)	Pol	(dBuV)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
927.60	Н	59.4	-17.3	2.2	2.1	-17.2	36.0	-53.2
927.60	V	77.8	4.0	2.2	2.1	4.1	36.0	-31.9

EIRP (dBm) =Meter Reading (dBuV) + Matched Sig. Gen. Reading (dBm) + Antenna Gain (dB) - Cable Loss (dB)



Serial No. : None Assigned

Test Performed : Effective Isotropic Radiated Power (EIRP)

Date Tested : April 6 and 7, 2015

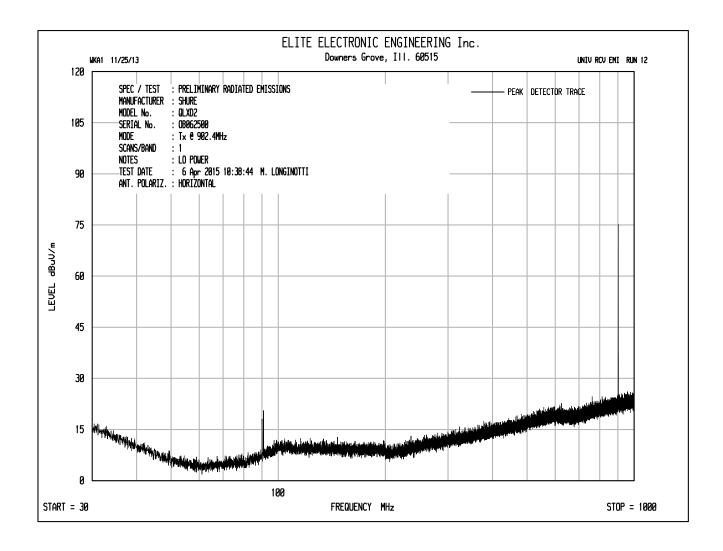
Mode : Transmit at 927.6MHz, Hi Power

Test Distance : 3 meters

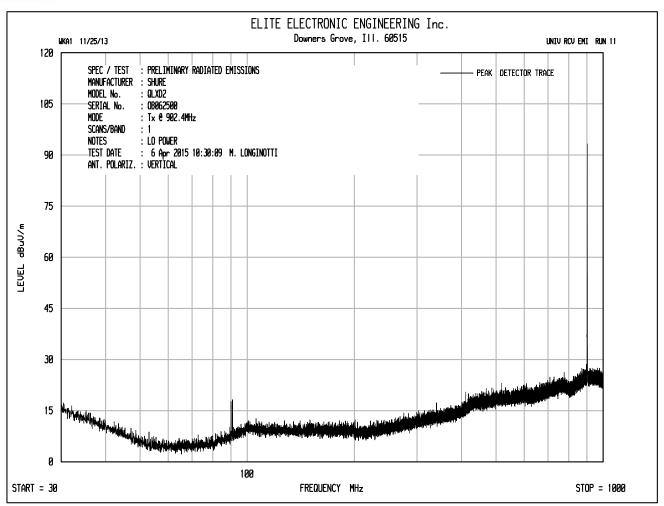
Freq. (MHz)	Ant Pol	Meter Reading (dBuV)	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
		,	,	, ,	\ /	, ,	, ,	` ′
927.60	Н	69.3	-7.3	2.2	2.1	-7.2	36.0	-43.2
927.60	V	88.1	14.1	2.2	2.1	14.2	36.0	-21.8

EIRP (dBm) =Meter Reading (dBuV) + Matched Sig. Gen. Reading (dBm) + Antenna Gain (dB) - Cable Loss (dB)

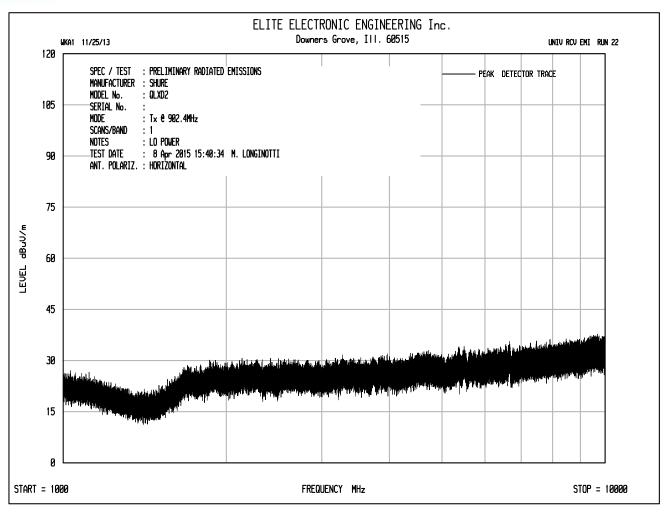




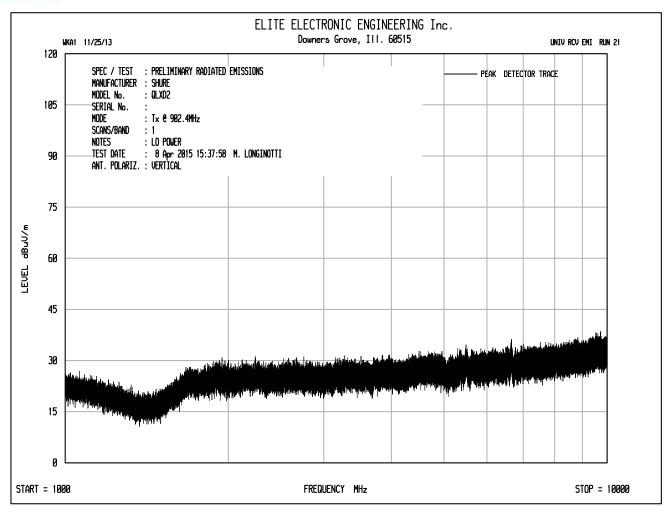




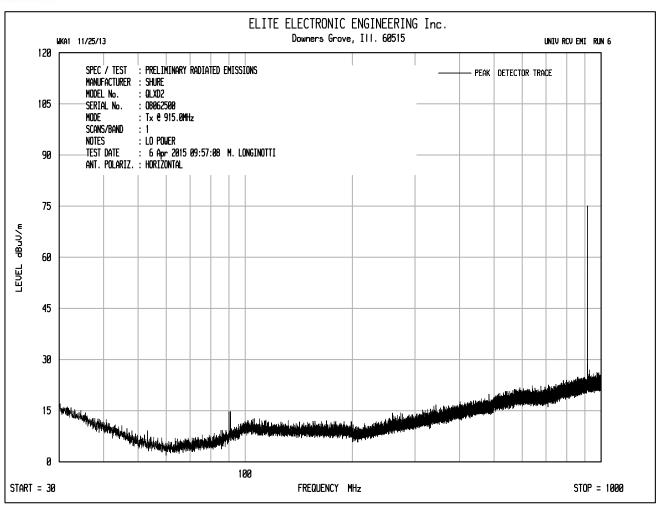




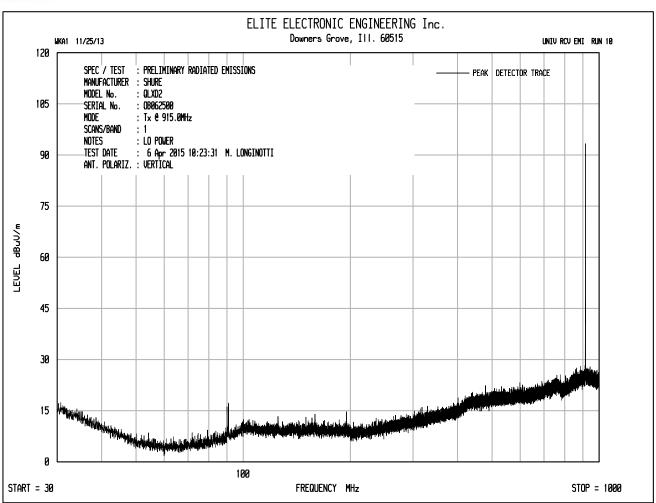




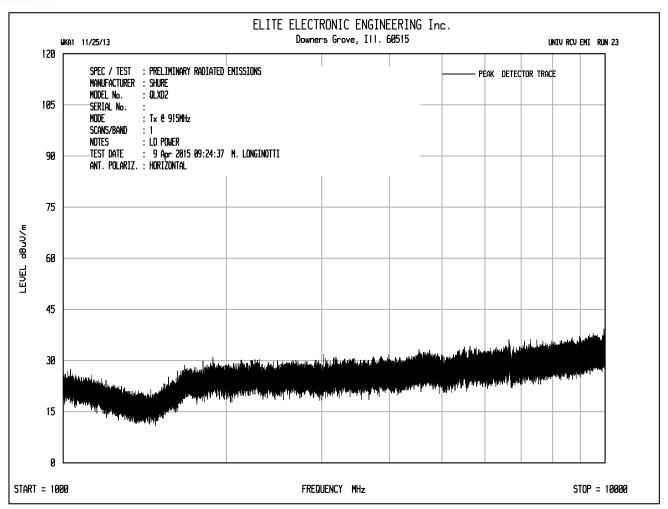




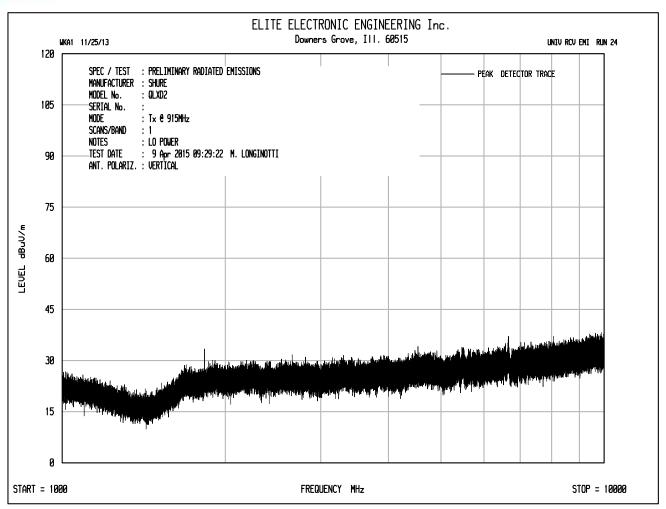




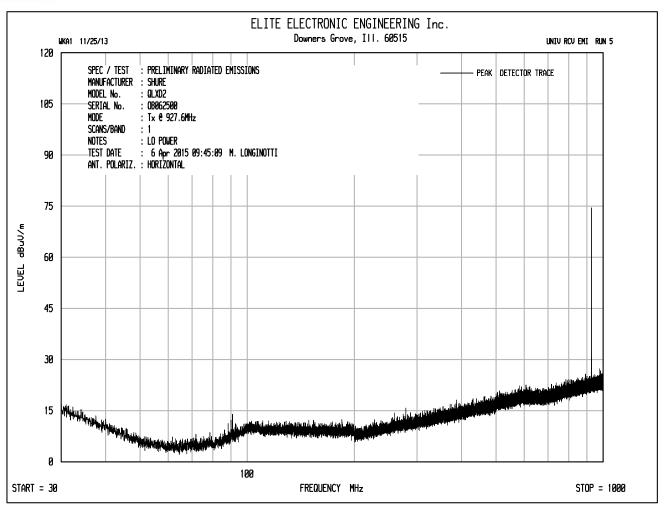




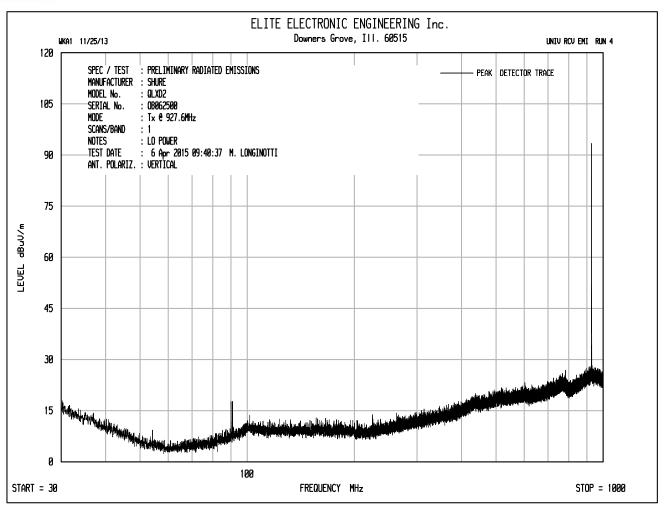




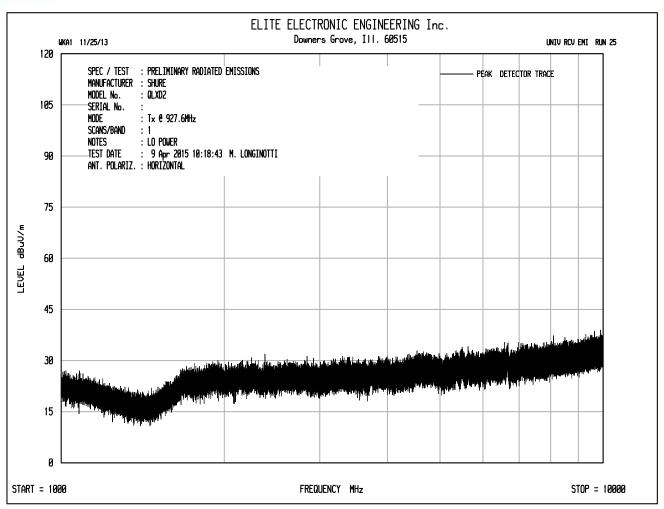




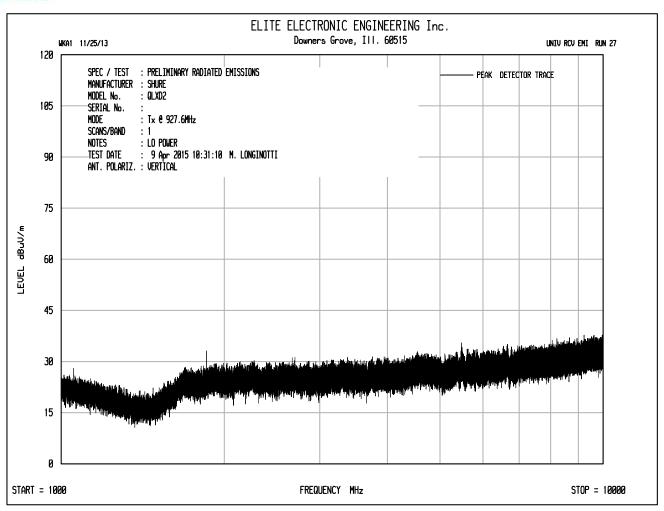




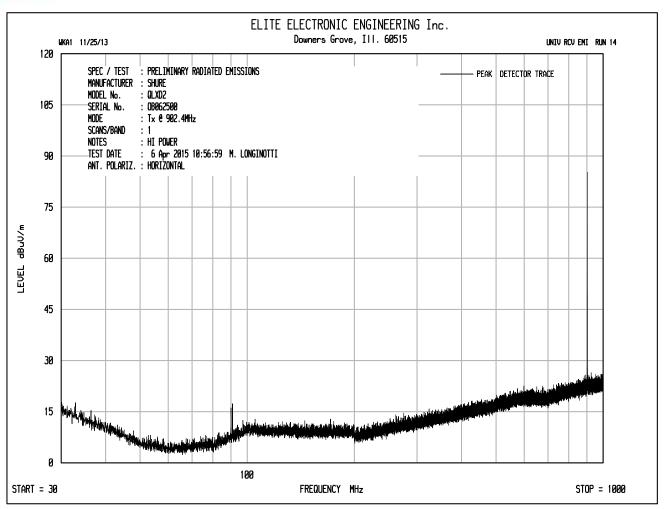




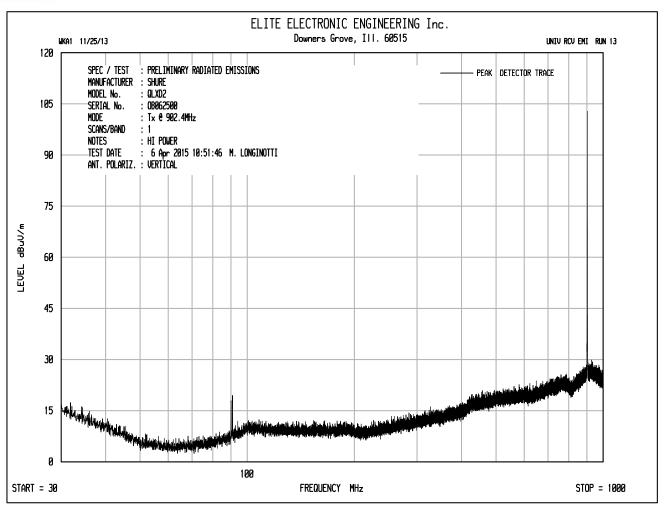




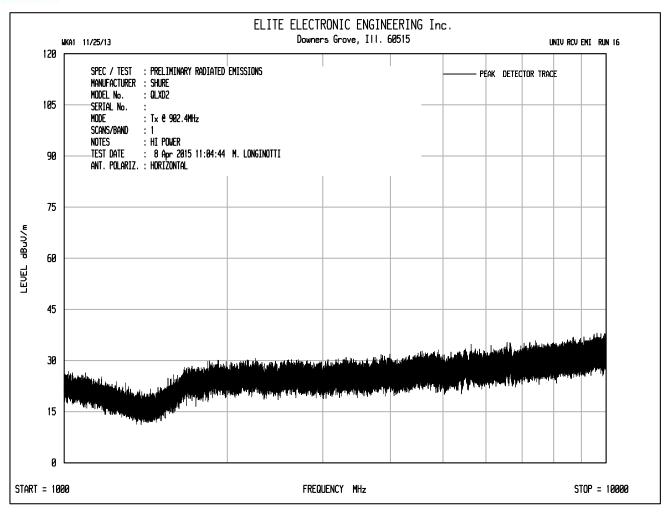




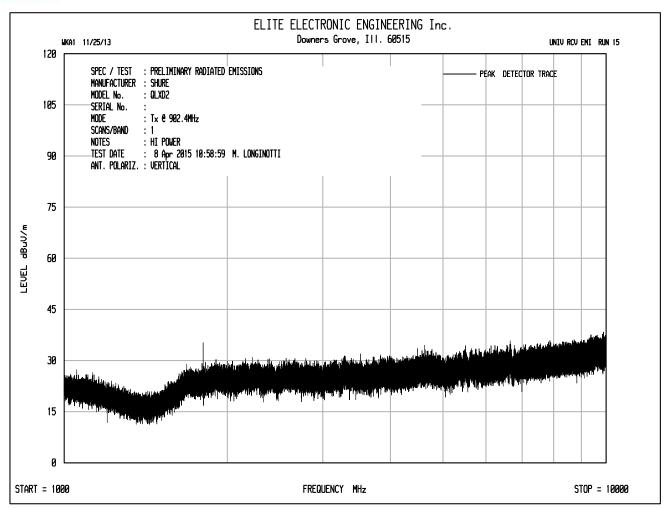




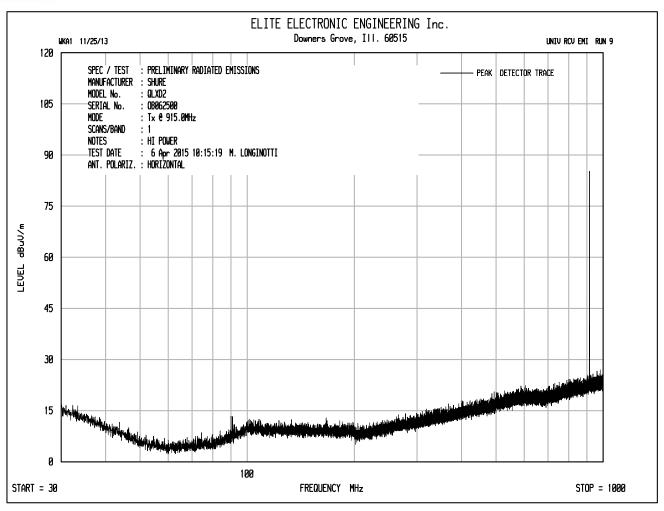




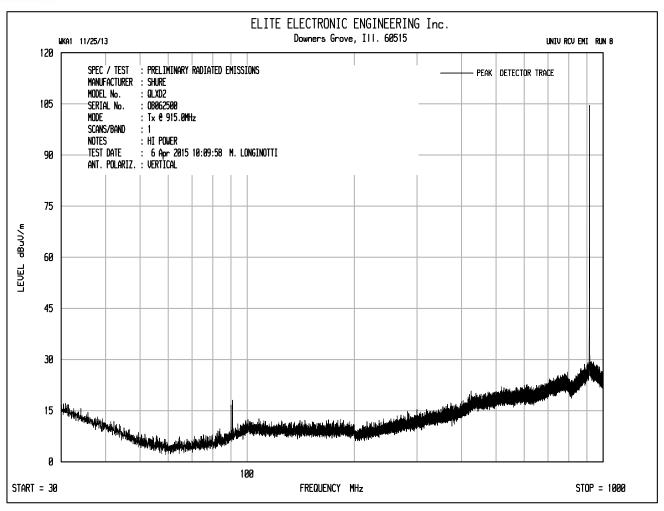




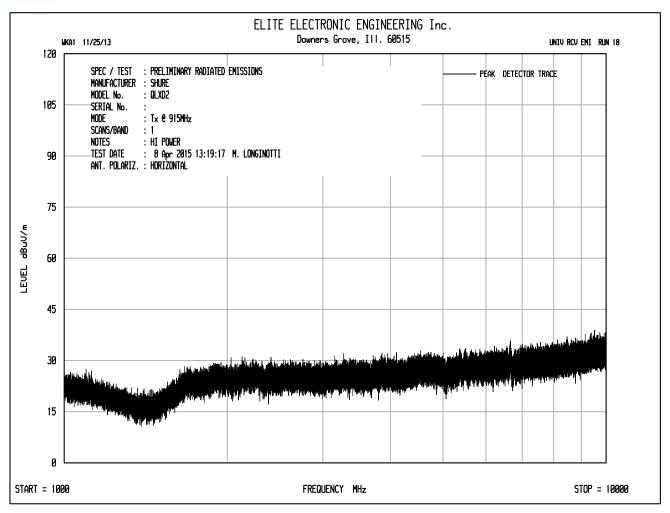




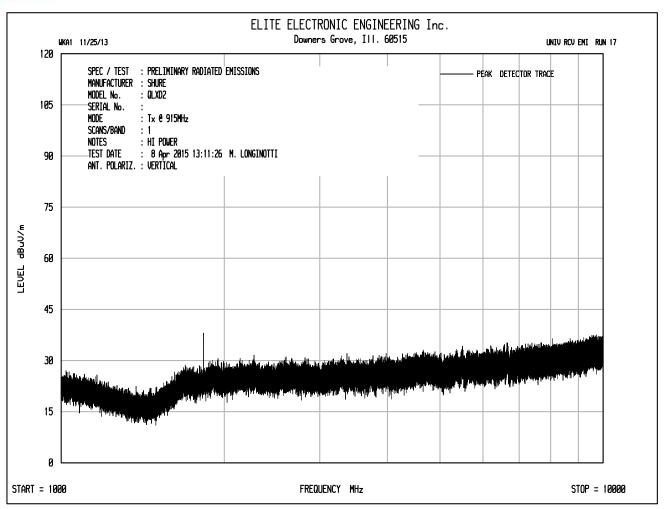




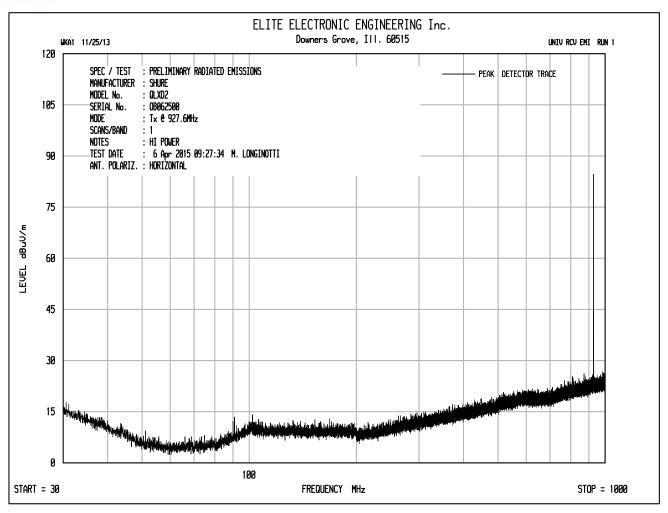




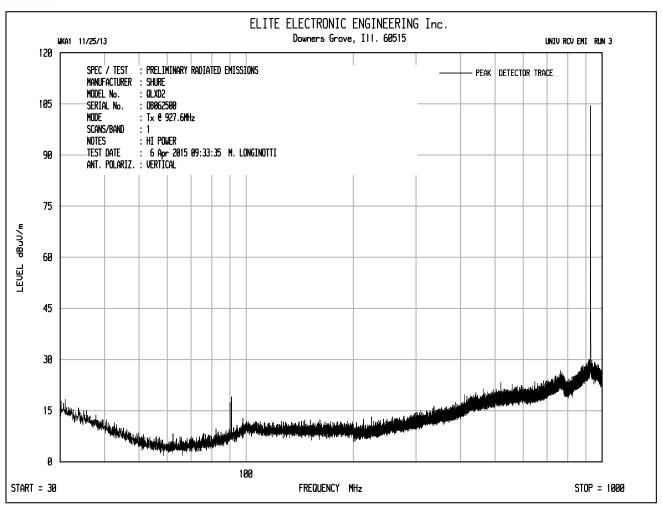




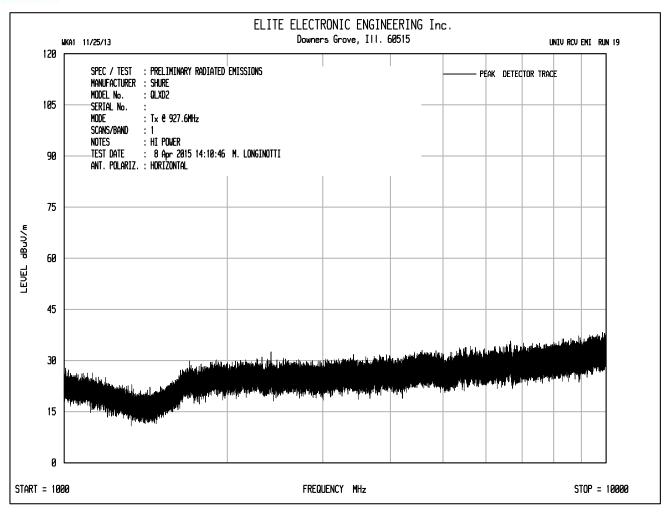




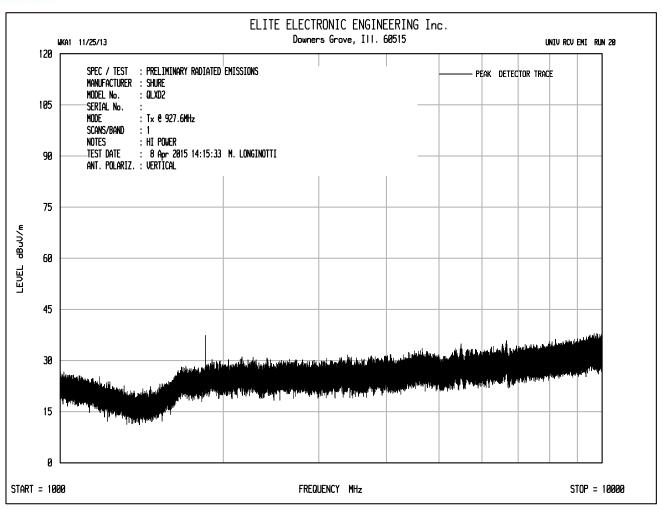














Serial No. : None Assigned

Date Tested : April 7, 2015 through April 10, 2015

Test Performed : Radiated Spurious Emissions NOT in Restricted Bands

Mode : Transmit at 902.4MHz, Lo power

Test Distance : 3 meters

Notes : Peak Readings with a 100kHz RBW

							Peak	Peak	Peak	
		Meter		CBL	Ant	Pre	Total	Total	Limit	
Freq.	Ant	Reading		Fac	Fac	Amp	dBuV/m	uV/m	uV/m	Margin
MHz	Pol	(dBuV)	Ambient	(dB)	(dB)	(dB)	at 3m	at 3 m	at 3 m	(dB)
902.40	Н	53.7		1.5	20.8	0.0	76.1	6360.0		
902.40	V	71.5		1.5	20.8	0.0	93.9	49369.6		
1804.80	Н	37.5	Ambient	2.2	30.6	-40.9	29.4	29.7	4937.0	-44.4
1804.80	V	42.9		2.2	30.6	-40.9	34.8	55.2	4937.0	-39.0
6316.80	Н	35.5	Ambient	4.3	35.7	-40.2	35.3	58.5	4937.0	-38.5
6316.80	V	35.6	Ambient	4.3	35.7	-40.2	35.4	59.2	4937.0	-38.4
7219.20	Н	37.2	Ambient	4.6	35.7	-40.1	37.4	74.4	4937.0	-36.4
7219.20	V	36.6	Ambient	4.6	35.7	-40.1	36.8	69.4	4937.0	-37.0

Peak Total (dBuV/m) = Meter Reading (dBuV) + CBL Fac (dB) + Ant Fac (dB) + Pre Amp (dB)



Serial No. : None Assigned

Date Tested : April 7, 2015 through April 10, 2015

Test Performed : Radiated Spurious Emissions in Restricted Bands

Mode : Transmit at 902.4MHz, Lo power

Test Distance : 3 meters

Notes : Peak Readings with a 1MHz RBW

							Peak	Peak	Peak	
		Meter		CBL	Ant	Pre	Total	Total	Limit	
Freq.	Ant	Reading		Fac	Fac	Amp	dBuV/m	uV/m	uV/m	Margin
MHz	Pol	(dBuV)	Ambient	(dB)	(dB)	(dB)	at 3m	at 3 m	at 3 m	(dB)
2707.20	Н	48.3	Ambient	2.8	32.8	-40.4	43.5	149.5	5000.0	-30.5
2707.20	V	47.9	Ambient	2.8	32.8	-40.4	43.1	142.7	5000.0	-30.9
3609.60	Н	46.9	Ambient	3.2	33.2	-40.3	43.1	142.2	5000.0	-30.9
3609.60	V	47.3	Ambient	3.2	33.2	-40.3	43.5	148.9	5000.0	-30.5
4512.00	Н	47.3	Ambient	3.6	34.2	-40.1	45.0	177.8	5000.0	-29.0
4512.00	V	47.1	Ambient	3.6	34.2	-40.1	44.8	173.7	5000.0	-29.2
5414.40	Н	45.9	Ambient	3.9	35.0	-40.2	44.6	169.4	5000.0	-29.4
5414.40	V	46.0	Ambient	3.9	35.0	-40.2	44.7	171.4	5000.0	-29.3
8121.60	Н	46.3	Ambient	4.9	35.7	-40.0	47.0	224.4	5000.0	-27.0
8121.60	V	46.8	Ambient	4.9	35.7	-40.0	47.5	237.7	5000.0	-26.5
9024.00	Н	46.4	Ambient	4.9	36.1	-39.7	47.8	244.2	5000.0	-26.2
9024.00	V	46.6	Ambient	4.9	36.1	-39.7	48.0	249.9	5000.0	-26.0

Peak Total (dBuV/m) = Meter Reading (dBuV) + CBL Fac (dB) + Ant Fac (dB) + Pre Amp (dB)



: Shure Inc. Manufacturer Model No. : QLXD2 Serial No. : None Assigned

Date Tested

: April 7, 2015 through April 10, 2015 : Radiated Spurious Emissions in Restricted Bands **Test Performed**

Mode : Transmit at 902.4MHz, Lo power

Test Distance : 3 meters

Notes : Average Readings with a 1MHz RBW, 10Hz VBW

							Average	Average	Average	
		Meter		CBL	Ant	Pre	Total	Total	Limit	
Freq.	Ant	Reading		Fac	Fac	Amp	dBuV/m	uV/m	uV/m	Margin
MHz	Pol	(dBuV)	Ambient	(dB)	(dB)	(dB)	at 3m	at 3 m	at 3 m	(dB)
2707.20	Н	34.70	Ambient	2.8	32.8	-40.4	29.9	31.2	500.0	-24.1
2707.20	V	34.8	Ambient	2.8	32.8	-40.4	30.0	31.6	500.0	-24.0
3609.60	Н	34.2	Ambient	3.2	33.2	-40.3	30.4	32.9	500.0	-23.6
3609.60	V	34.3	Ambient	3.2	33.2	-40.3	30.5	33.3	500.0	-23.5
4512.00	Н	34.2	Ambient	3.6	34.2	-40.1	31.9	39.3	500.0	-22.1
4512.00	V	34.2	Ambient	3.6	34.2	-40.1	31.9	39.3	500.0	-22.1
5414.40	Н	32.9	Ambient	3.9	35.0	-40.2	31.6	37.9	500.0	-22.4
5414.40	V	33.0	Ambient	3.9	35.0	-40.2	31.7	38.4	500.0	-22.3
8121.60	Н	33.6	Ambient	4.9	35.7	-40.0	34.3	52.0	500.0	-19.7
8121.60	V	33.6	Ambient	4.9	35.7	-40.0	34.3	52.0	500.0	-19.7
9024.00	Н	33.4	Ambient	4.9	36.1	-39.7	34.8	54.7	500.0	-19.2
9024.00	V	33.4	Ambient	4.9	36.1	-39.7	34.8	54.7	500.0	-19.2

Average Total (dBuV/m) = Meter Reading (dBuV) + CBL Fac (dB) + Ant Fac (dB) + Pre Amp (dB)



Serial No. : None Assigned

Date Tested : April 7, 2015 through April 10, 2015

Test Performed : Radiated Spurious Emissions NOT in Restricted Bands

Mode : Transmit at 902.4MHz, Hi power

Test Distance : 3 meters

Notes : Peak Readings with a 100kHz RBW

							Peak	Peak	Peak	
		Meter		CBL	Ant	Pre	Total	Total	Limit	
Freq.	Ant	Reading		Fac	Fac	Amp	dBuV/m	uV/m	uV/m	Margin
MHz	Pol	(dBuV)	Ambient	(dB)	(dB)	(dB)	at 3m	at 3 m	at 3 m	(dB)
902.40	Н	63.6		1.5	20.8	0.0	86.0	19882.0		
902.40	V	81.6		1.5	20.8	0.0	104.0	157928.2		
1804.80	Н	38.3	Ambient	2.2	30.6	-40.9	30.2	32.5	15792.8	-53.7
1804.80	V	46.2		2.2	30.6	-40.9	38.1	80.7	15792.8	-45.8
6316.80	Н	36.1	Ambient	4.3	35.7	-40.2	35.9	62.7	15792.8	-48.0
6316.80	V	36.1	Ambient	4.3	35.7	-40.2	35.9	62.7	15792.8	-48.0
7219.20	Н	36.9	Ambient	4.6	35.7	-40.1	37.1	71.9	15792.8	-46.8
7219.20	V	36.5	Ambient	4.6	35.7	-40.1	36.7	68.7	15792.8	-47.2

Peak Total (dBuV/m) = Meter Reading (dBuV) + CBL Fac (dB) + Ant Fac (dB) + Pre Amp (dB)



Serial No. : None Assigned

Date Tested : April 7, 2015 through April 10, 2015

Test Performed : Radiated Spurious Emissions in Restricted Bands

Mode : Transmit at 902.4MHz, Hi power

Test Distance : 3 meters

Notes : Peak Readings with a 1MHz RBW

							Peak	Peak	Peak	
		Meter		CBL	Ant	Pre	Total	Total	Limit	
Freq.	Ant	Reading		Fac	Fac	Amp	dBuV/m	uV/m	uV/m	Margin
MHz	Pol	(dBuV)	Ambient	(dB)	(dB)	(dB)	at 3m	at 3 m	at 3 m	(dB)
2707.20	Н	47.2	Ambient	2.8	32.8	-40.4	42.4	131.7	5000.0	-31.6
2707.20	V	47.5	Ambient	2.8	32.8	-40.4	42.7	136.3	5000.0	-31.3
3609.60	Н	47.2	Ambient	3.2	33.2	-40.3	43.4	147.1	5000.0	-30.6
3609.60	V	46.9	Ambient	3.2	33.2	-40.3	43.1	142.2	5000.0	-30.9
4512.00	Н	47.3	Ambient	3.6	34.2	-40.1	45.0	177.8	5000.0	-29.0
4512.00	V	46.4	Ambient	3.6	34.2	-40.1	44.1	160.3	5000.0	-29.9
5414.40	Н	46.1	Ambient	3.9	35.0	-40.2	44.8	173.3	5000.0	-29.2
5414.40	V	46.7	Ambient	3.9	35.0	-40.2	45.4	185.7	5000.0	-28.6
8121.60	Н	46.7	Ambient	4.9	35.7	-40.0	47.4	235.0	5000.0	-26.6
8121.60	V	46.4	Ambient	4.9	35.7	-40.0	47.1	227.0	5000.0	-26.9
9024.00	Н	43.1	Ambient	4.9	36.1	-39.7	44.5	167.0	5000.0	-29.5
9024.00	V	46.7	Ambient	4.9	36.1	-39.7	48.1	252.8	5000.0	-25.9

Peak Total (dBuV/m) = Meter Reading (dBuV) + CBL Fac (dB) + Ant Fac (dB) + Pre Amp (dB)



Manufacturer : Shure Inc.

Model No. : QLXD2

Serial No. : None Assigned

Date Tested : April 7, 2015 through April 10, 2015

Test Performed : Radiated Spurious Emissions in Restricted Bands

Mode : Transmit at 902.4MHz, Hi power

Test Distance : 3 meters

Notes : Average Readings with a 1MHz RBW, 10Hz VBW

							Average	Average	Average	
		Meter		CBL	Ant	Pre	Total	Total	Limit	
Freq.	Ant	Reading		Fac	Fac	Amp	dBuV/m	uV/m	uV/m	Margin
MHz	Pol	(dBuV)	Ambient	(dB)	(dB)	(dB)	at 3m	at 3 m	at 3 m	(dB)
2707.20	Н	34.70	Ambient	2.8	32.8	-40.4	29.9	31.2	500.0	-24.1
2707.20	V	34.8	Ambient	2.8	32.8	-40.4	30.0	31.6	500.0	-24.0
3609.60	Н	34.2	Ambient	3.2	33.2	-40.3	30.4	32.9	500.0	-23.6
3609.60	V	34.2	Ambient	3.2	33.2	-40.3	30.4	32.9	500.0	-23.6
4512.00	Н	34.2	Ambient	3.6	34.2	-40.1	31.9	39.3	500.0	-22.1
4512.00	V	34.1	Ambient	3.6	34.2	-40.1	31.8	38.9	500.0	-22.2
5414.40	Н	32.9	Ambient	3.9	35.0	-40.2	31.6	37.9	500.0	-22.4
5414.40	V	33.0	Ambient	3.9	35.0	-40.2	31.7	38.4	500.0	-22.3
8121.60	Н	33.7	Ambient	4.9	35.7	-40.0	34.4	52.6	500.0	-19.6
8121.60	V	33.6	Ambient	4.9	35.7	-40.0	34.3	52.0	500.0	-19.7
9024.00	Н	33.4	Ambient	4.9	36.1	-39.7	34.8	54.7	500.0	-19.2
9024.00	V	33.4	Ambient	4.9	36.1	-39.7	34.8	54.7	500.0	-19.2

Average Total (dBuV/m) = Meter Reading (dBuV) + CBL Fac (dB) + Ant Fac (dB) + Pre Amp (dB)



Serial No. : None Assigned

Date Tested : April 7, 2015 through April 10, 2015

Test Performed : Radiated Spurious Emissions NOT in Restricted Bands

Mode : Transmit at 915MHz, Lo power

Test Distance : 3 meters

Notes : Peak Readings with a 100kHz RBW

							Peak	Peak	Peak	
		Meter		CBL	Ant	Pre	Total	Total	Limit	
Freq.	Ant	Reading		Fac	Fac	Amp	dBuV/m	uV/m	uV/m	Margin
MHz	Pol	(dBuV)	Ambient	(dB)	(dB)	(dB)	at 3m	at 3 m	at 3 m	(dB)
915.00	Н	53.4		1.6	20.9	0.0	75.9	6223.9		
915.00	V	71.7		1.6	20.9	0.0	94.2	51175.7		
1830.00	Н	39.1	Ambient	2.2	30.6	-40.8	31.1	35.7	5117.6	-43.1
1830.00	V	44.9		2.2	30.6	-40.8	36.9	69.7	5117.6	-37.3
5490.00	Н	38.4	Ambient	3.9	35.0	-40.2	37.1	71.9	5117.6	-37.0
5490.00	V	39.3	Ambient	3.9	35.0	-40.2	38.0	79.8	5117.6	-36.1
6405.00	Н	36.3	Ambient	4.3	35.8	-40.1	36.3	65.0	5117.6	-37.9
6405.00	V	35.7	Ambient	4.3	35.8	-40.1	35.7	60.7	5117.6	-38.5

Peak Total (dBuV/m) = Meter Reading (dBuV) + CBL Fac (dB) + Ant Fac (dB) + Pre Amp (dB)



Serial No. : None Assigned

Date Tested : April 7, 2015 through April 10, 2015

Test Performed : Radiated Spurious Emissions in Restricted Bands

Mode : Transmit at 915MHz, Lo power

Test Distance : 3 meters

Notes : Peak Readings with a 1MHz RBW

							Peak	Peak	Peak	
		Meter		CBL	Ant	Pre	Total	Total	Limit	
Freq.	Ant	Reading		Fac	Fac	Amp	dBuV/m	uV/m	uV/m	Margin
MHz	Pol	(dBuV)	Ambient	(dB)	(dB)	(dB)	at 3m	at 3 m	at 3 m	(dB)
2745.00	Н	48.5	Ambient	2.8	32.8	-40.4	43.7	152.8	5000.0	-30.3
2745.00	V	47.3	Ambient	2.8	32.8	-40.4	42.5	133.1	5000.0	-31.5
3660.00	Н	46.7	Ambient	3.3	33.3	-40.3	43.0	141.3	5000.0	-31.0
3660.00	V	47.1	Ambient	3.3	33.3	-40.3	43.4	147.9	5000.0	-30.6
4575.00	Н	47.7	Ambient	3.6	34.3	-40.1	45.5	188.4	5000.0	-28.5
4575.00	V	48.0	Ambient	3.6	34.3	-40.1	45.8	195.0	5000.0	-28.2
7320.00	Н	46.9	Ambient	4.7	35.6	-40.1	47.1	226.7	5000.0	-26.9
7320.00	V	47.1	Ambient	4.7	35.6	-40.1	47.3	232.0	5000.0	-26.7
8235.00	Н	47.3	Ambient	4.9	35.9	-39.9	48.2	256.0	5000.0	-25.8
8235.00	V	46.9	Ambient	4.9	35.9	-39.9	47.8	244.5	5000.0	-26.2
9150.00	Н	47.4	Ambient	5.0	36.2	-39.7	48.9	278.2	5000.0	-25.1
9150.00	V	47.1	Ambient	5.0	36.2	-39.7	48.6	268.8	5000.0	-25.4

Peak Total (dBuV/m) = Meter Reading (dBuV) + CBL Fac (dB) + Ant Fac (dB) + Pre Amp (dB)



Manufacturer : Shure Inc.

Model No. : QLXD2

Serial No. : None Assigned

Date Tested : April 7, 2015 through April 10, 2015

Test Performed : Radiated Spurious Emissions in Restricted Bands

Mode : Transmit at 915MHz, Lo power

Test Distance : 3 meters

Notes : Average Readings with a 1MHz RBW, 10Hz VBW

							Average	Average	Average	
		Meter		CBL	Ant	Pre	Total	Total	Limit	
Freq.	Ant	Reading		Fac	Fac	Amp	dBuV/m	uV/m	uV/m	Margin
MHz	Pol	(dBuV)	Ambient	(dB)	(dB)	(dB)	at 3m	at 3 m	at 3 m	(dB)
2745.00	Н	34.40	Ambient	2.8	32.8	-40.4	29.6	30.1	500.0	-24.4
2745.00	V	34.5	Ambient	2.8	32.8	-40.4	29.7	30.5	500.0	-24.3
3660.00	Н	33.5	Ambient	3.3	33.3	-40.3	29.8	30.9	500.0	-24.2
3660.00	V	33.6	Ambient	3.3	33.3	-40.3	29.9	31.3	500.0	-24.1
4575.00	Н	34.5	Ambient	3.6	34.3	-40.1	32.3	41.2	500.0	-21.7
4575.00	V	34.6	Ambient	3.6	34.3	-40.1	32.4	41.7	500.0	-21.6
7320.00	Н	34.0	Ambient	4.7	35.6	-40.1	34.2	51.3	500.0	-19.8
7320.00	V	34.0	Ambient	4.7	35.6	-40.1	34.2	51.3	500.0	-19.8
8235.00	Н	34.0	Ambient	4.9	35.9	-39.9	34.9	55.4	500.0	-19.1
8235.00	V	34.0	Ambient	4.9	35.9	-39.9	34.9	55.4	500.0	-19.1
9150.00	Н	34.0	Ambient	5.0	36.2	-39.7	35.5	59.5	500.0	-18.5
9150.00	V	34.1	Ambient	5.0	36.2	-39.7	35.6	60.2	500.0	-18.4

Average Total (dBuV/m) = Meter Reading (dBuV) + CBL Fac (dB) + Ant Fac (dB) + Pre Amp (dB)



Serial No. : None Assigned

Date Tested : April 7, 2015 through April 10, 2015

Test Performed : Radiated Spurious Emissions NOT in Restricted Bands

Mode : Transmit at 915MHz, Hi power

Test Distance : 3 meters

Notes : Peak Readings with a 100kHz RBW

							Peak	Peak	Peak	
		Meter		CBL	Ant	Pre	Total	Total	Limit	
Freq.	Ant	Reading		Fac	Fac	Amp	dBuV/m	uV/m	uV/m	Margin
MHz	Pol	(dBuV)	Ambient	(dB)	(dB)	(dB)	at 3m	at 3 m	at 3 m	(dB)
915.00	Н	63.7		1.6	20.9	0.0	86.2	20373.4		
915.00	V	82.0		1.6	20.9	0.0	104.5	167518.8		
1830.00	Н	39.5	Ambient	2.2	30.6	-40.8	31.5	37.4	16751.9	-53.0
1830.00	V	47.4		2.2	30.6	-40.8	39.4	92.9	16751.9	-45.1
5490.00	Н	37.9	Ambient	3.9	35.0	-40.2	36.6	67.9	16751.9	-47.8
5490.00	V	38.4	Ambient	3.9	35.0	-40.2	37.1	71.9	16751.9	-47.3
6405.00	Н	36.3	Ambient	4.3	35.8	-40.1	36.3	65.0	16751.9	-48.2
6405.00	V	36.0	Ambient	4.3	35.8	-40.1	36.0	62.8	16751.9	-48.5

Peak Total (dBuV/m) = Meter Reading (dBuV) + CBL Fac (dB) + Ant Fac (dB) + Pre Amp (dB)



Serial No. : None Assigned

Date Tested : April 7, 2015 through April 10, 2015

Test Performed : Radiated Spurious Emissions in Restricted Bands

Mode : Transmit at 915MHz, Hi power

Test Distance : 3 meters

Notes : Peak Readings with a 1MHz RBW

							Peak	Peak	Peak	
		Meter		CBL	Ant	Pre	Total	Total	Limit	
Freq.	Ant	Reading		Fac	Fac	Amp	dBuV/m	uV/m	uV/m	Margin
MHz	Pol	(dBuV)	Ambient	(dB)	(dB)	(dB)	at 3m	at 3 m	at 3 m	(dB)
2745.00	Н	46.9	Ambient	2.8	32.8	-40.4	42.1	127.1	5000.0	-31.9
2745.00	V	48.5	Ambient	2.8	32.8	-40.4	43.7	152.8	5000.0	-30.3
3660.00	Н	46.5	Ambient	3.3	33.3	-40.3	42.8	138.1	5000.0	-31.2
3660.00	V	46.5	Ambient	3.3	33.3	-40.3	42.8	138.1	5000.0	-31.2
4575.00	Н	47.5	Ambient	3.6	34.3	-40.1	45.3	184.1	5000.0	-28.7
4575.00	V	47.3	Ambient	3.6	34.3	-40.1	45.1	179.9	5000.0	-28.9
7320.00	Н	46.9	Ambient	4.7	35.6	-40.1	47.1	226.7	5000.0	-26.9
7320.00	V	46.8	Ambient	4.7	35.6	-40.1	47.0	224.1	5000.0	-27.0
8235.00	Н	47.0	Ambient	4.9	35.9	-39.9	47.9	247.3	5000.0	-26.1
8235.00	V	47.1	Ambient	4.9	35.9	-39.9	48.0	250.2	5000.0	-26.0
9150.00	Н	46.8	Ambient	5.0	36.2	-39.7	48.3	259.7	5000.0	-25.7
9150.00	V	46.8	Ambient	5.0	36.2	-39.7	48.3	259.7	5000.0	-25.7

Peak Total (dBuV/m) = Meter Reading (dBuV) + CBL Fac (dB) + Ant Fac (dB) + Pre Amp (dB)



Manufacturer : Shure Inc.
Model No. : QLXD2
Social No. : None Again

Serial No. : None Assigned

Date Tested : April 7, 2015 through April 10, 2015

Test Performed : Radiated Spurious Emissions in Restricted Bands

Mode : Transmit at 915MHz, Hi power

Test Distance : 3 meters

Notes : Average Readings with a 1MHz RBW, 10Hz VBW

							Average	Average	Average	
		Meter		CBL	Ant	Pre	Total	Total	Limit	
Freq.	Ant	Reading		Fac	Fac	Amp	dBuV/m	uV/m	uV/m	Margin
MHz	Pol	(dBuV)	Ambient	(dB)	(dB)	(dB)	at 3m	at 3 m	at 3 m	(dB)
2745.00	Н	34.10	Ambient	2.8	32.8	-40.4	29.3	29.1	500.0	-24.7
2745.00	V	34.8	Ambient	2.8	32.8	-40.4	30.0	31.6	500.0	-24.0
3660.00	Н	33.3	Ambient	3.3	33.3	-40.3	29.6	30.2	500.0	-24.4
3660.00	V	33.8	Ambient	3.3	33.3	-40.3	30.1	32.0	500.0	-23.9
4575.00	Н	34.3	Ambient	3.6	34.3	-40.1	32.1	40.3	500.0	-21.9
4575.00	V	34.3	Ambient	3.6	34.3	-40.1	32.1	40.3	500.0	-21.9
7320.00	Н	34.1	Ambient	4.7	35.6	-40.1	34.3	51.9	500.0	-19.7
7320.00	V	34.1	Ambient	4.7	35.6	-40.1	34.3	51.9	500.0	-19.7
8235.00	Н	33.8	Ambient	4.9	35.9	-39.9	34.7	54.1	500.0	-19.3
8235.00	V	33.7	Ambient	4.9	35.9	-39.9	34.6	53.5	500.0	-19.4
9150.00	Н	33.7	Ambient	5.0	36.2	-39.7	35.2	57.5	500.0	-18.8
9150.00	V	33.7	Ambient	5.0	36.2	-39.7	35.2	57.5	500.0	-18.8

Average Total (dBuV/m) = Meter Reading (dBuV) + CBL Fac (dB) + Ant Fac (dB) + Pre Amp (dB)



Serial No. : None Assigned

Date Tested : April 7, 2015 through April 10, 2015

Test Performed : Radiated Spurious Emissions NOT in Restricted Bands

Mode : Transmit at 927.6MHz, Lo power

Test Distance : 3 meters

Notes : Peak Readings with a 100kHz RBW

							Peak	Peak	Peak	
		Meter		CBL	Ant	Pre	Total	Total	Limit	
Freq.	Ant	Reading		Fac	Fac	Amp	dBuV/m	uV/m	uV/m	Margin
MHz	Pol	(dBuV)	Ambient	(dB)	(dB)	(dB)	at 3m	at 3 m	at 3 m	(dB)
927.60	Н	52.6		1.6	21.0	0.0	75.2	5749.4		
927.60	V	71.9		1.6	21.0	0.0	94.5	53041.9		
1855.20	Н	39.8	Ambient	2.3	30.7	-40.8	31.9	39.3	5304.2	-42.6
1855.20	V	44.3		2.3	30.7	-40.8	36.4	66.0	5304.2	-38.1
5565.60	Н	34.2	Ambient	4.0	35.0	-40.2	33.0	44.5	5304.2	-41.5
5565.60	V	35.2	Ambient	4.0	35.0	-40.2	34.0	49.9	5304.2	-40.5
6493.20	Н	35.1	Ambient	4.4	35.9	-40.1	35.2	57.7	5304.2	-39.3
6493.20	V	35.7	Ambient	4.4	35.9	-40.1	35.8	61.9	5304.2	-38.7
9276.00	Н	37.4	Ambient	5.0	36.2	-39.7	39.0	88.8	5304.2	-35.5
9276.00	V	37.3	Ambient	5.0	36.2	-39.7	38.9	87.8	5304.2	-35.6

Peak Total (dBuV/m) = Meter Reading (dBuV) + CBL Fac (dB) + Ant Fac (dB) + Pre Amp (dB)



Serial No. : None Assigned

Date Tested : April 7, 2015 through April 10, 2015

Test Performed : Radiated Spurious Emissions in Restricted Bands

Mode : Transmit at 927.6MHz, Lo power

Test Distance : 3 meters

Notes : Peak Readings with a 1MHz RBW

							Peak	Peak	Peak	
		Meter		CBL	Ant	Pre	Total	Total	Limit	
Freq.	Ant	Reading		Fac	Fac	Amp	dBuV/m	uV/m	uV/m	Margin
MHz	Pol	(dBuV)	Ambient	(dB)	(dB)	(dB)	at 3m	at 3 m	at 3 m	(dB)
2782.80	Н	47.7	Ambient	2.8	32.7	-40.4	42.9	139.3	5000.0	-31.1
2782.80	V	47.2	Ambient	2.8	32.7	-40.4	42.4	131.5	5000.0	-31.6
3710.40	Н	47.7	Ambient	3.3	33.3	-40.2	44.1	160.2	5000.0	-29.9
3710.40	V	48.4	Ambient	3.3	33.3	-40.2	44.8	173.6	5000.0	-29.2
4638.00	Н	47.2	Ambient	3.6	34.6	-40.2	45.2	182.3	5000.0	-28.8
4638.00	V	47.2	Ambient	3.6	34.6	-40.2	45.2	182.3	5000.0	-28.8
7420.80	Н	46.4	Ambient	4.7	35.6	-40.0	46.7	215.4	5000.0	-27.3
7420.80	V	46.1	Ambient	4.7	35.6	-40.0	46.4	208.0	5000.0	-27.6
8348.40	Н	46.7	Ambient	4.9	35.8	-39.9	47.6	239.3	5000.0	-26.4
8348.40	V	47.1	Ambient	4.9	35.8	-39.9	48.0	250.6	5000.0	-26.0

Peak Total (dBuV/m) = Meter Reading (dBuV) + CBL Fac (dB) + Ant Fac (dB) + Pre Amp (dB)



Serial No. : None Assigned

Date Tested : April 7, 2015 through April 10, 2015

Test Performed : Radiated Spurious Emissions in Restricted Bands

Mode : Transmit at 927.6MHz, Lo power

Test Distance : 3 meters

Notes : Average Readings with a 1MHz RBW, 10Hz VBW

							Average	Average	Average	
		Meter		CBL	Ant	Pre	Total	Total	Limit	
Freq.	Ant	Reading		Fac	Fac	Amp	dBuV/m	uV/m	uV/m	Margin
MHz	Pol	(dBuV)	Ambient	(dB)	(dB)	(dB)	at 3m	at 3 m	at 3 m	(dB)
2782.80	Н	34.80	Ambient	2.8	32.7	-40.4	30.0	31.5	500.0	-24.0
2782.80	V	34.8	Ambient	2.8	32.7	-40.4	30.0	31.5	500.0	-24.0
3710.40	Н	34.3	Ambient	3.3	33.3	-40.2	30.7	34.2	500.0	-23.3
3710.40	V	34.8	Ambient	3.3	33.3	-40.2	31.2	36.3	500.0	-22.8
4638.00	Н	34.0	Ambient	3.6	34.6	-40.2	32.0	39.9	500.0	-22.0
4638.00	V	34.0	Ambient	3.6	34.6	-40.2	32.0	39.9	500.0	-22.0
7420.80	Н	33.5	Ambient	4.7	35.6	-40.0	33.8	48.8	500.0	-20.2
7420.80	V	33.5	Ambient	4.7	35.6	-40.0	33.8	48.8	500.0	-20.2
8348.40	Н	34.0	Ambient	4.9	35.8	-39.9	34.9	55.5	500.0	-19.1
8348.40	V	34.1	Ambient	4.9	35.8	-39.9	35.0	56.1	500.0	-19.0

Average Total (dBuV/m) = Meter Reading (dBuV) + CBL Fac (dB) + Ant Fac (dB) + Pre Amp (dB)



Serial No. : None Assigned

Date Tested : April 7, 2015 through April 10, 2015

Test Performed : Radiated Spurious Emissions NOT in Restricted Bands

Mode : Transmit at 927.6MHz, Hi power

Test Distance : 3 meters

Notes : Peak Readings with a 100kHz RBW

							Peak	Peak	Peak	
		Meter		CBL	Ant	Pre	Total	Total	Limit	
Freq.	Ant	Reading		Fac	Fac	Amp	dBuV/m	uV/m	uV/m	Margin
MHz	Pol	(dBuV)	Ambient	(dB)	(dB)	(dB)	at 3m	at 3 m	at 3 m	(dB)
927.60	Н	63.1		1.6	21.0	0.0	85.7	19258.3		
927.60	V	82.2		1.6	21.0	0.0	104.8	173627.6		
1855.20	Н	38.7	Ambient	2.3	30.7	-40.8	30.8	34.7	17362.8	-54.0
1855.20	V	45.6		2.3	30.7	-40.8	37.7	76.7	17362.8	-47.1
5565.60	Н	34.7	Ambient	4.0	35.0	-40.2	33.5	47.1	17362.8	-51.3
5565.60	V	35.5	Ambient	4.0	35.0	-40.2	34.3	51.6	17362.8	-50.5
6493.20	Н	35.2	Ambient	4.4	35.9	-40.1	35.3	58.4	17362.8	-49.5
6493.20	V	35.2	Ambient	4.4	35.9	-40.1	35.3	58.4	17362.8	-49.5
9276.00	Н	36.6	Ambient	5.0	36.2	-39.7	38.2	81.0	17362.8	-46.6
9276.00	V	36.9	Ambient	5.0	36.2	-39.7	38.5	83.8	17362.8	-46.3

Peak Total (dBuV/m) = Meter Reading (dBuV) + CBL Fac (dB) + Ant Fac (dB) + Pre Amp (dB)



Serial No. : None Assigned

Date Tested : April 7, 2015 through April 10, 2015

Test Performed : Radiated Spurious Emissions in Restricted Bands

Mode : Transmit at 927.6MHz, Hi power

Test Distance : 3 meters

Notes : Peak Readings with a 1MHz RBW

							Peak	Peak	Peak	
		Meter		CBL	Ant	Pre	Total	Total	Limit	
Freq.	Ant	Reading		Fac	Fac	Amp	dBuV/m	uV/m	uV/m	Margin
MHz	Pol	(dBuV)	Ambient	(dB)	(dB)	(dB)	at 3m	at 3 m	at 3 m	(dB)
2782.80	Н	47.1	Ambient	2.8	32.7	-40.4	42.3	130.0	5000.0	-31.7
2782.80	V	47.2	Ambient	2.8	32.7	-40.4	42.4	131.5	5000.0	-31.6
3710.40	Н	48.7	Ambient	3.3	33.3	-40.2	45.1	179.7	5000.0	-28.9
3710.40	V	47.2	Ambient	3.3	33.3	-40.2	43.6	151.2	5000.0	-30.4
4638.00	Н	46.7	Ambient	3.6	34.6	-40.2	44.7	172.1	5000.0	-29.3
4638.00	V	46.5	Ambient	3.6	34.6	-40.2	44.5	168.2	5000.0	-29.5
7420.80	Н	46.2	Ambient	4.7	35.6	-40.0	46.5	210.5	5000.0	-27.5
7420.80	V	46.2	Ambient	4.7	35.6	-40.0	46.5	210.5	5000.0	-27.5
8348.40	Н	47.2	Ambient	4.9	35.8	-39.9	48.1	253.5	5000.0	-25.9
8348.40	V	47.1	Ambient	4.9	35.8	-39.9	48.0	250.6	5000.0	-26.0

Peak Total (dBuV/m) = Meter Reading (dBuV) + CBL Fac (dB) + Ant Fac (dB) + Pre Amp (dB)



Serial No. : None Assigned

Date Tested : April 7, 2015 through April 10, 2015

Test Performed : Radiated Spurious Emissions in Restricted Bands

Mode : Transmit at 927.6MHz, Hi power

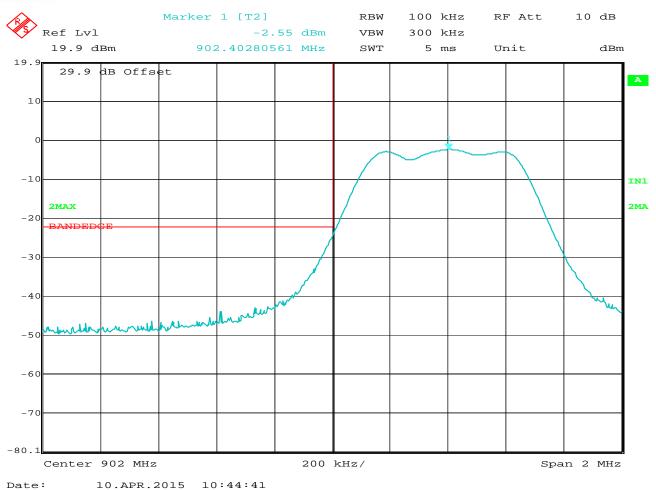
Test Distance : 3 meters

Notes : Average Readings with a 1MHz RBW, 10Hz VBW

							Average	Average	Average	
		Meter		CBL	Ant	Pre	Total	Total	Limit	
Freq.	Ant	Reading		Fac	Fac	Amp	dBuV/m	uV/m	uV/m	Margin
MHz	Pol	(dBuV)	Ambient	(dB)	(dB)	(dB)	at 3m	at 3 m	at 3 m	(dB)
2782.80	Н	34.90	Ambient	2.8	32.7	-40.4	0.0	30.1	31.9	500.0
2782.80	V	34.9	Ambient	2.8	32.7	-40.4	0.0	30.1	31.9	500.0
3710.40	Н	34.2	Ambient	3.3	33.3	-40.2	0.0	30.6	33.9	500.0
3710.40	V	34.3	Ambient	3.3	33.3	-40.2	0.0	30.7	34.2	500.0
4638.00	Н	34.1	Ambient	3.6	34.6	-40.2	0.0	32.1	40.3	500.0
4638.00	V	34.0	Ambient	3.6	34.6	-40.2	0.0	32.0	39.9	500.0
7420.80	Н	33.4	Ambient	4.7	35.6	-40.0	0.0	33.7	48.2	500.0
7420.80	V	33.3	Ambient	4.7	35.6	-40.0	0.0	33.6	47.7	500.0
8348.40	Н	34.0	Ambient	4.9	35.8	-39.9	0.0	34.9	55.5	500.0
8348.40	V	34.0	Ambient	4.9	35.8	-39.9	0.0	34.9	55.5	500.0

Average Total (dBuV/m) = Meter Reading (dBuV) + CBL Fac (dB) + Ant Fac (dB) + Pre Amp (dB)





Manufacturer : Shure Model No. : QLXD2

Serial No.

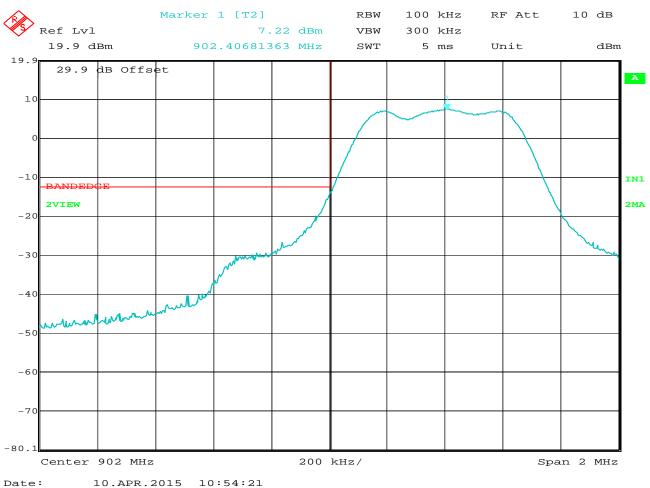
Date : April 10, 2015

Test Performed : High Band Edge Requirements Mode : Tx @ 902.4MHz Low Power

Notes : In any 100kHz bandwidth outside of the authorized frequency band, the power

: shall be attenuated by at least 20dB relative to the maximum in-band peak power





Manufacturer : Shure Model No. : QLXD2

Serial No.

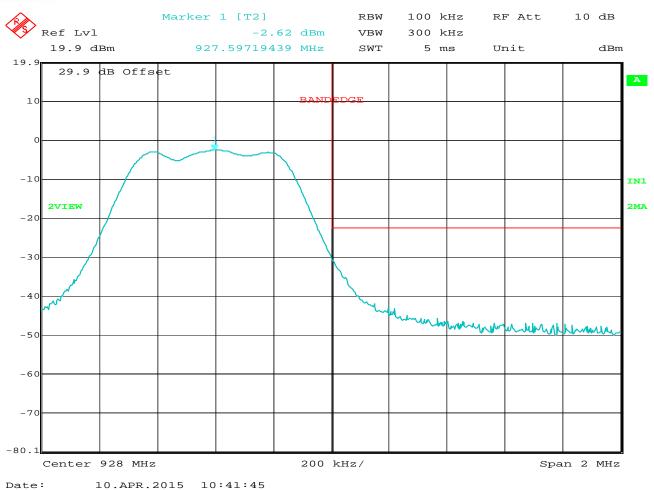
Date : April 10, 2015

Test Performed : Low Band Edge Requirements Mode : Tx @ 902.4MHz High Power

Notes : In any 100kHz bandwidth outside of the authorized frequency band, the power

: shall be attenuated by at least 20dB relative to the maximum in-band peak power





Manufacturer : Shure Model No. : QLXD2

Serial No.

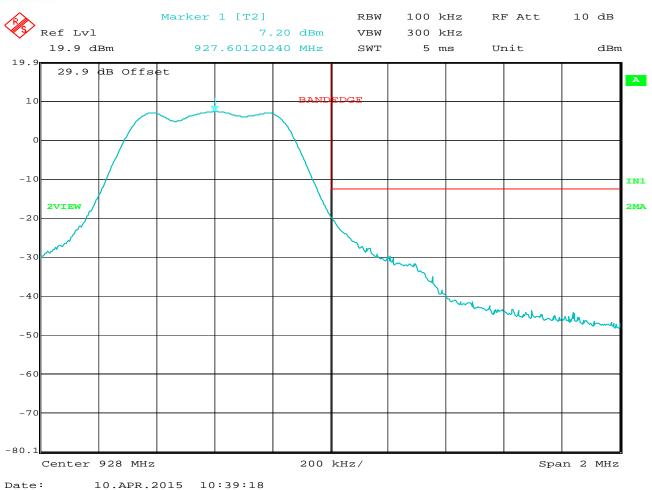
Date : April 10, 2015

Test Performed : High Band Edge Requirements Mode : Tx @ 927.6MHz Low Power

Notes : In any 100kHz bandwidth outside of the authorized frequency band, the power

: shall be attenuated by at least 20dB relative to the maximum in-band peak power





Manufacturer : Shure Model No. : QLXD2

Serial No.

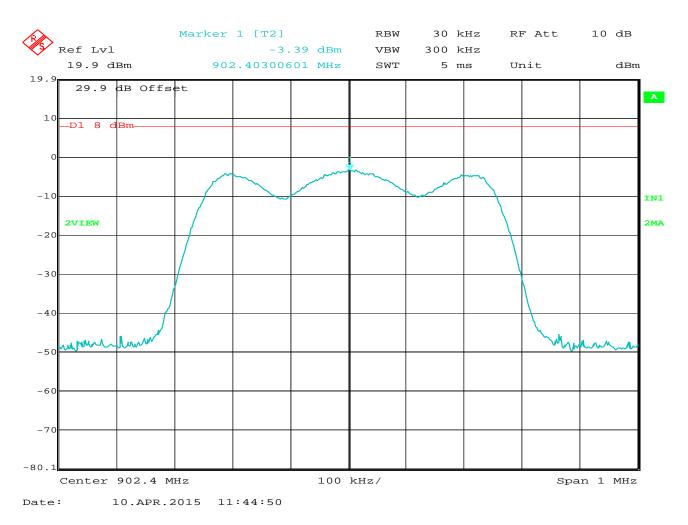
Date : April 10, 2015

Test Performed : High Band Edge Requirements Mode : Tx @ 927.6MHz High Power

Notes : In any 100kHz bandwidth outside of the authorized frequency band, the power

: shall be attenuated by at least 20dB relative to the maximum in-band peak power





Manufacturer : Shure Model No. : QLXD2

Serial No.

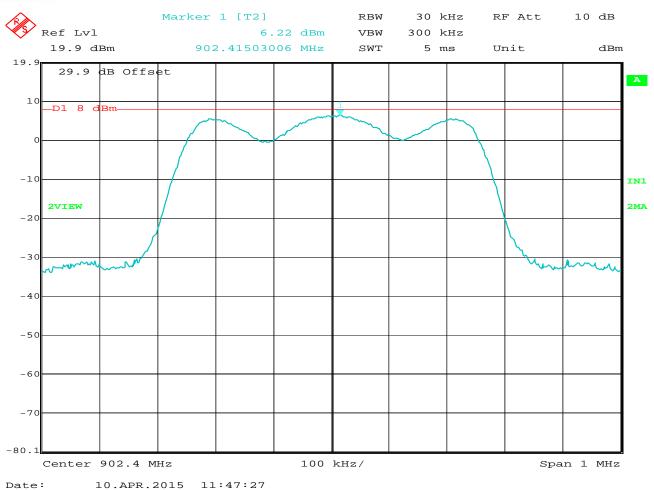
Date : April 10, 2015

Test Performed : Power Spectral Density (PSD) in a 30kHz bandwidth

Mode : Tx @ 902.4MHz Low Power

Notes : PSD in a 30kHz bandwidth = -3.39dBm





Manufacturer : Shure Model No. : QLXD2

Serial No. :

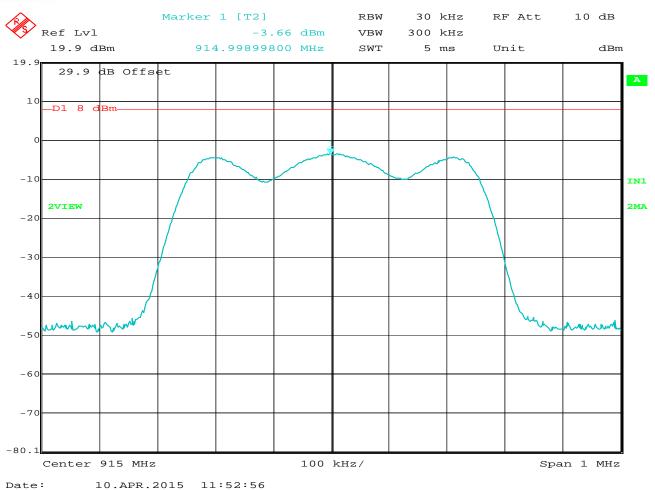
Date : April 10, 2015

Test Performed : Power Spectral Density (PSD) in a 30kHz bandwidth

Mode : Tx @ 902.4MHz High Power

Notes : PSD in a 30kHz bandwidth = 6.22dBm





Manufacturer : Shure Model No. : QLXD2

Serial No. :

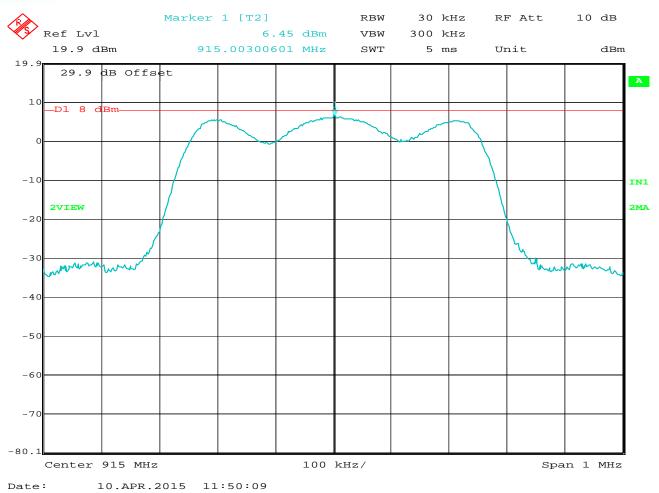
Date : April 10, 2015

Test Performed : Power Spectral Density (PSD) in a 30kHz bandwidth

Mode : Tx @ 915MHz Low Power

Notes : PSD in a 30kHz bandwidth = -3.66dBm





Manufacturer : Shure Model No. : QLXD2

Serial No. :

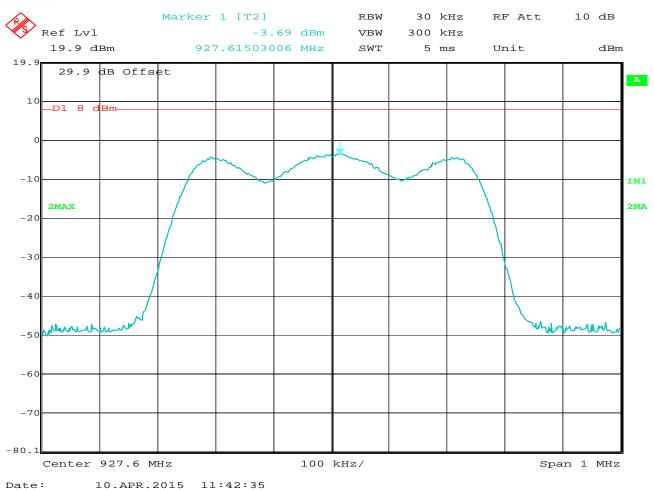
Date : April 10, 2015

Test Performed : Power Spectral Density (PSD) in a 30kHz bandwidth

Mode : Tx @ 915MHz High Power

Notes : PSD in a 30kHz bandwidth = 6.45dBm





Manufacturer : Shure Model No. : QLXD2

Serial No. :

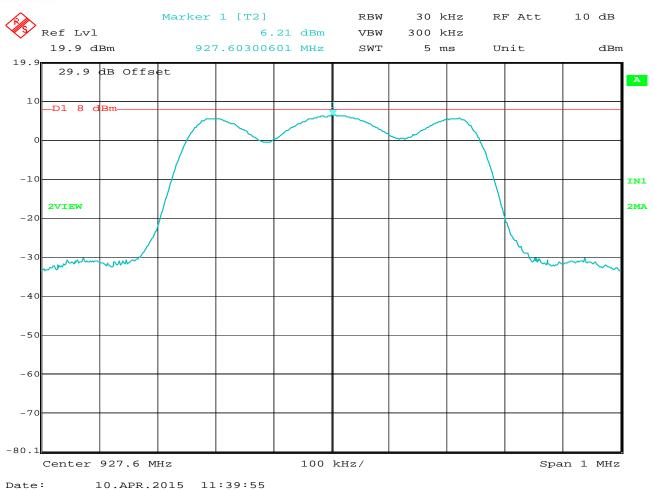
Date : April 10, 2015

Test Performed : Power Spectral Density (PSD) in a 30kHz bandwidth

Mode : Tx @ 927.6MHz Low Power

Notes : PSD in a 30kHz bandwidth = -3.69dBm





Manufacturer : Shure Model No. : QLXD2

Serial No. :

Date : April 10, 2015

Test Performed : Power Spectral Density (PSD) in a 30kHz bandwidth

Mode : Tx @ 927.6MHz High Power

Notes : PSD in a 30kHz bandwidth = 6.21dBm