



SHURE

ELECTROMAGNETIC COMPATIBILITY LABORATORY

TEST REPORT

TEST REPORT TITLE: Electromagnetic Compatibility Tests of the Shure QLXD1 Digital Wireless Microphone Transmitter in the J50A Band (572MHz to 616MHz)

TEST ITEM DESCRIPTION:

The Shure QLXD1 is a digital wireless microphone transmitter.

For: Shure Incorporated
5800 West Touhy Avenue
Niles, IL 60714

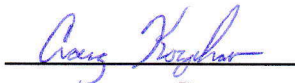
Project ID Number: SEL-041/QLXD1 J50A FCC15C

Date Tested: July 27 thru September 9, 2020 and November 9, 2020


Test Personnel: Sharjeel Sohail and Juan Castrejon

Test Specification:

IC RSS-Gen – General Requirements and Information for the Certification of Radio Apparatus
IC RSS-210 - License-exempt Radio Apparatus (All Frequency Bands): Category I Equipment
FCC Part 15C, Section 15.236(d)(1)
FCC Part 15C, Section 15.236(d)(2)
FCC Part 15C, Section 15.236(g)
FCC Part 15C, Section 15.236(d)(1)
FCC Part 15C, Section 15.236(f)(1)
FCC Part 15C, Section 15.236(f)(2)

TEST REPORT BY:  Global Compliance Engineer

November 10, 2020

APPROVED BY:  Manager, Quality Labs
Signature Position

November 10, 2020
Date

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LIST OF APPENDICIES

APPENDIX	TEST DESCRIPTION
A	Necessary Bandwidth, Frequency Offset, Maximum Bandwidth, 99% Emission Bandwidth
B	Radiated Spurious Emissions
C	Maximum Radiated Power



REPORT REVISION HISTORY

Revision	Date	Description
0	September 9, 2020	Initial release
1	November 10, 2020	Added RSS-210, RSS-Gen 99% Emission Bandwidth

1. INTRODUCTION

1.1. Scope of Tests

This report presents the results of testing per FCC Part 15C, Section 15.236(g), Section 15.236(d)(1), Section 15.236 (d)(2), Section 15.236(f)(1), Section 15.236(f)(2), FCC OET Basic Certification Requirements for Wireless Microphones, RSS-Gen, and RSS-210. The following data was taken following the measurement method as described in the document section(s) listed on page 1 of this document. Provided is the data for the test sample. Also included is a summary of the measurements made and a description of the measurement setup. The test samples meet the requirements of the above standards. The equipment under test (EUT) contained a transmitter that was designed to transmit in the UHF TV frequency bands shown in Table 1.

Model	Band	Frequency (MHz)	Output Power (mW)
QLXD1	J50A	572.000 – 616.000	1 and 10
QLXD1	J50	572.000 – 608.000	1 and 10

Table 1. EUT Frequencies and Power Levels

1.2. Purpose

This series of testing was performed to determine if the test item would meet the requirements of FCC Part 15C, Section 236(g), Section 15.236(d)(1), Section 15.236(d)(2), Section 15.236(f)(1), Section 15.236(f)(2), the FCC OET Basic Certification Requirements for Wireless Microphones, RSS-Gen, and RSS-210.

1.3 Deviations, Additions and Exclusions

None

1.4 EMC Laboratory Identification

The electromagnetic compatibility tests were performed at the Shure Electromagnetic Laboratory, Shure Incorporated, 5800 West Touhy Ave, Niles, Illinois 60714-4608. This laboratory is registered with Industry Canada as Site # 616A-1. The Shure Electromagnetic Laboratory is accredited by the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP).

The NVLAP Lab Code is: 200946-0.

1.5 Summary of Tests Performed

The following electromagnetic compatibility tests (Table 2) were performed on the test item in accordance with ETSI specifications.

Table 2. Summary of tests performed

FCC Part 15C Test Spec	Description	EUT Firmware	Tested Frequency in MHz	Appendix	Test Results
15.236(g)	Necessary Bandwidth	2.3.22	572.000, 589.925, 607.875, 614.125, 615.875	A	Pass
15.236(f)(1)	Frequency Offset	2.3.22	572.000, 589.925, 607.875, 614.125, 615.875	A	Pass
15.236(f)(2)	Maximum Bandwidth	2.3.22	572.000, 589.925, 607.875, 614.125, 615.875	A	Pass
RSS-210, RSS-Gen	99% Emission Bandwidth	2.3.22	572.000, 589.925, 607.875, 614.125, 615.875	A	Pass
15.236(g)	Radiated Spurious Emissions	2.3.22	572.000, 589.925, 607.875, 614.125, 615.875	B	Pass
15.236(d)(1) 15.236(d)(2)	Maximum Radiated Power	2.3.22	572.000, 589.925, 607.875, 614.125, 615.875	C	Pass

2 APPLICABLE DOCUMENTS

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

FCC Part 15C, Section 15.236(g)

FCC Part 15C, Section 15.236(d)(1)

FCC Part 15C, Section 15.236(d)(2)

FCC Part 15C, Section 15.236(f)(1)

FCC Part 15C, Section 15.236(f)(2)

FCC Part 15C, Section 15.236(f)(3)

EN 300 422-1 V1.4.2 (2011-08), "Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless Microphones in the 25 MHz to 3 GHz frequency range; Part 1: technical characteristics and methods of measurement"

ANSI C63.10 (2013), "American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices"

“Federal Communications Commission
Office of Engineering and Technology, Laboratory Division
BASIC CERTIFICATION REQUIREMENTS FOR WIRELESS MICROPHONES”
Dated December 13, 2017

RSS-Gen Issue 5, “General Requirements for Compliance of Radio Apparatus”

RSS-210 Issue 9, “Licence-Exempt Radio Apparatus: Category I Equipment”

3 EUT SET-UP AND OPERATION

3.1. General Description

The test sample used was Shure QLXD1 digital wireless microphone transmitter. The EUT was arranged and tested per individual Appendices.

3.2 Test Sample

The following product sample was tested:

Table 3: Shure QLXD1 Digital Wireless Transmitter Sample

Band	Serial Numbers
J50A	1 and N6

3.3 Operational Mode

The transmit frequency and output power modes shown in the individual appendices.

4. Test Instrumentation

A list of the test equipment used can be found in Table 10-1. All equipment used was within calibration during and throughout the duration of the tests. All calibrations are traceable to the National Institute of Standards and Technology (NIST).

5. Procedure

The specific test procedures are presented in the individual appendices.

6. Other Test Conditions:

6.1. Test Personnel

All EMC tests were performed by qualified personnel from the Shure EMC Laboratory.

6.2. Disposition of the EUT

The EUTs and all associated equipment were returned to Shure Incorporated upon completion of the tests.

7. Results of Tests:

The results are presented in Appendices. It was found that the EUT meets the requirements of FCC Part 15C, Section 236(g), Section 15.236(d)(1), Section 15.236(d)(2), Section 15.236(f)(1), Section 15.236(f)(2), the FCC OET Basic Certification Requirements for Wireless Microphones, RSS-Gen, and RSS-210

8. Conclusions:

It was determined that the Shure QLXD1 Digital Wireless Microphone Transmitter did fully comply with the requirements of FCC Part 15C, Section 236(g), Section 15.236(d)(1), Section 15.236(d)(2), Section 15.236(f)(1), Section 15.236(f)(2), and the FCC OET Basic Certification Requirements for Wireless Microphones, RSS-Gen, RSS-210.

9. Certification:

Shure EMC Laboratory 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 EUTs at the test date. Any electrical or mechanical modification made to the EUTs subsequent to the specified test date will serve to invalidate the data and void this certification.

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

10. Equipment List

Table 10-1 Test Equipment

L# or ID	Description	Manufacturer	Model #	Serial #	Frequency Range	Cal Date	Due Date
L23-011-01	3-meter RF Chamber	ETS Lindgren	FACT-3	AJ640	25MHz - 18GHz	5/23/2019	5/23/2021
L23-011-02	Electric Powered Turntable	ETS Lindgren	2088	N/A	N/A	N/A	N/A
L23-011-08	Controller	EMCO	2090	29799	N/A	N/A	N/A
L23-011-09	Antenna Positioner	ETS Lindgren	2071-2	35500	N/A	N/A	N/A
L23-011-15	BiConiLog Antenna	ETS Lindgren	3142C	34790	25MHz-1GHz	7/16/2019	7/16/2021
L23-011-54	EMI Test Receiver	Rohde & Schwarz	ESR26	100220	9kHz-26GHz	11/18/2019	11/18/2021
L23-011-31	EMI/EMS Test Software	Rohde & Schwarz	EMC32	V 9.21.00	N/A	N/A	N/A
L23-011-53	Horn antenna with pre-amplifier	ETS Lindgren	3117-PA	200363	1GHz to 18 GHz	9/17/2019	9/17/2021
L23-011-41	Horn Antenna	ETS Lindgren	3117	123511	1GHz to 18 GHz	1/23/2019	1/23/2021
L23-011-56	High Pass Filter	K&L	11SH10-940/X10000-0/0	2	940MHz – 10GHz	3/3/2020	3/3/2022
L23-022-02	Spectrum Analyzer	Rohde & Schwarz	FSW26	103788	9kHz-26GHz	3/4/2020	3/4/2022
L23-022-01	Spectrum Analyzer	Rohde & Schwarz	FSU26	201043	9kHz-26GHz	8/23/2017	8/14/2021
L23-034-02	Temperature Hygrometer	Extech	445703	48254-65	N/A	5/1/2020	5/1/2022
L23-034-04	Temperature Hygrometer	Extech	445703	48254-13	N/A	5/1/2020	5/1/2022
L23-040-03	20dB Attenuator	MCL	BW-N20W5+	N/A	20MHz to 18GHz	3/2/2020	3/2/2022
L23-045-36	RF Power Sensor	ETS-Lindgren	7002-006	151071	10MHz to 6GHz	1/10/2020	1/10/2022
L23-023-01	RF Signal Generator	Rohde & Schwarz	SMF100A	101553	20Hz to 26.5GHz	8/14/2019	8/14/2021

Appendix A

NECESSARY BANDWIDTH

FREQUENCY OFFSET

OPERATING BANDWIDTH

PURPOSE

This test was performed to determine if the EUT meets the necessary bandwidth requirements of EN 300 422-1, section 8.3.2., and RSS-210 Annex G, with the EUT operating at 572.000, 589.925MHz, 607.875MHz, 614.125MHz, and 615.875MHz.

This testing results show the EUT meets FCC 15C 15.236(f)(1), a frequency offset of the lower band limits by 25kHz or an integral multiple thereof. The frequency offset is 125 kHz.

The testing results show the EUT meets FCC 15C 15.236(f)(2) and RSS-210, operating bandwidth does not exceed 200kHz.

REQUIREMENTS

As stated in EN 300 422-1, section 8.3.2, the emission mask given in section 8.3.2.2 shall not be exceeded.

TEST SETUP AND INSTRUMENTATION

A photograph of the test setup is shown in Figure A-1. The test instrumentation can be determined from Table 10-1.

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. Values of Expanded Measurement Uncertainty (95% Confidence):

Measurement Type	U_{LAB}
Necessary Bandwidth	$\pm 0.130 \%$

U_{lab} = Determined for Shure EMC Laboratory

Since U_{LAB} is less than or equal to U_{ETSI} :

- Compliance is deemed to occur if no measured disturbance exceeds the disturbance limit;
- Non-compliance is deemed to occur if any measured disturbance exceeds the disturbance limit.

EUT OPERATION

The EUT was powered up and the transmit frequency and power output of the EUT were selected. A Shure TL47 microphone was plugged into the EUT microphone socket. The EUT was checked for proper operation after it was setup for the test. Testing was conducted with the EUT set to transmit at 572.000MHz, 589.925MHz, 607.875MHz, 614.125MHz and 615.875MHz, at an output power level of 1mW and 10mW. The transmitter was modulated per EN300422-1 V1.4.2 (2011-08), clause 7.1.2.

Appendix A

TEST PROCEDURE

The test procedure followed is shown in EN300422-1 V1.4.2 (2011-08), section 8.3.2.

RESULTS

The necessary bandwidth data is presented on pages 12 and 20. Data is shown on the figures for each transmitter. The figure shows the maximum relative level within the emission mask with modulation. As shown by the test data, the necessary bandwidth of the EUT meets the requirements of EN 300 422-1, section 8.3.2. The RSS-Gen maximum ISD Canada 99% bandwidth measurement was less than 200 kHz.

The temperature during the testing was 74 degrees F, with relative humidity of 17%.

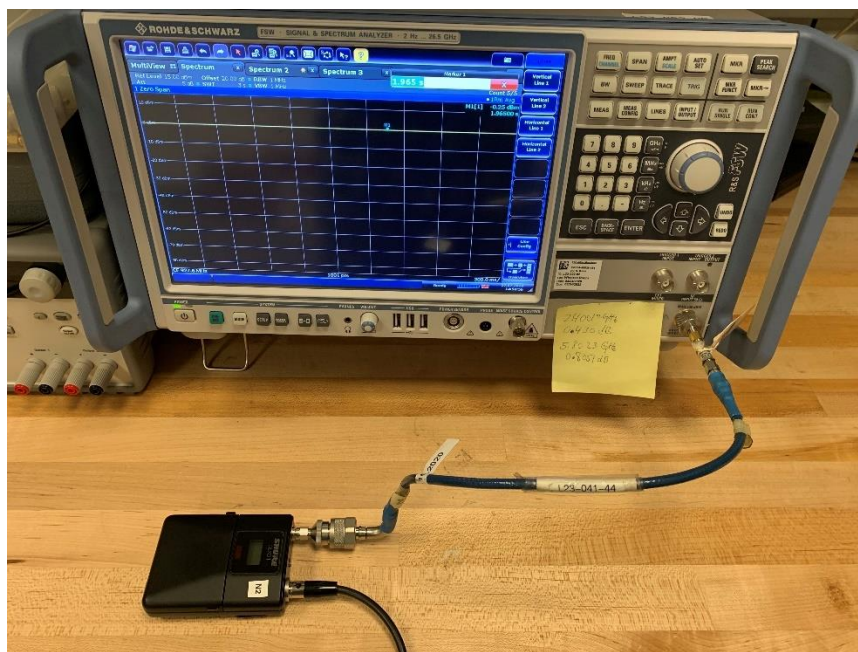
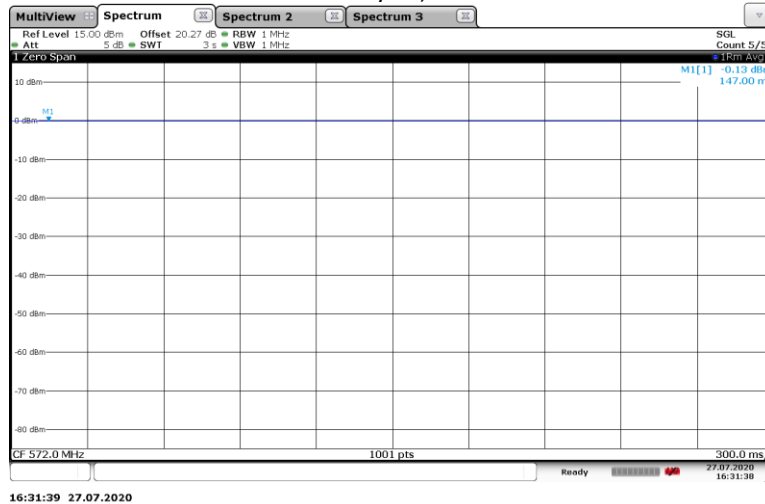


Figure A-1 - Test Setup for Necessary Bandwidth

Appendix A

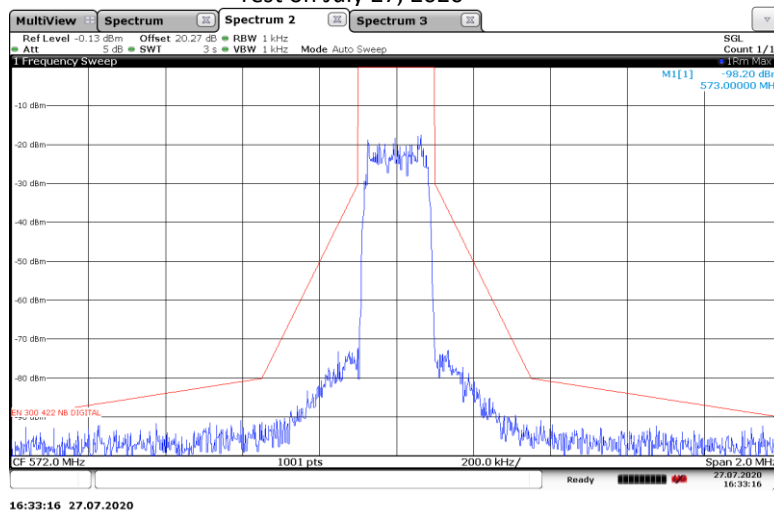
Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: EN 300 422 Digital Necessary Bandwidth
 Operating Conditions: Low Frequency, 572.000MHz, 1mW
 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 1; Carrier Power
 Date Tested: Tested on July 27, 2020



Test Information

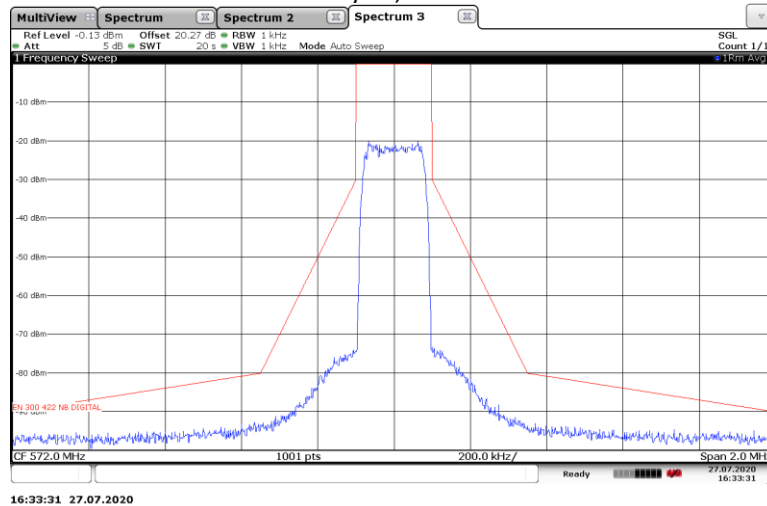
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 Comment: 8.3.3.1: Step 2; Maximum Relative Level
 Date Tested: Test on July 27, 2020



Appendix A

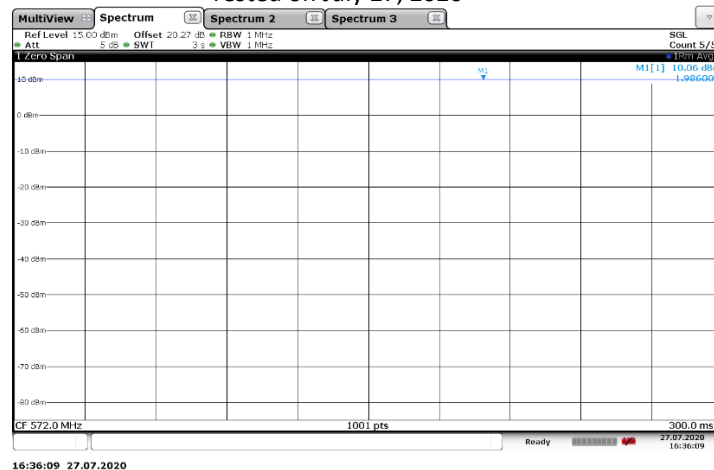
Test Information

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 Serial Number: N6
 Test Description: EN 300 422 Digital Necessary Bandwidth
 Operating Conditions: Low Frequency, 572.000MHz, 1mW
 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 3; Lower and upper frequency transmitter band
 Wide band noise floor
 Date Tested: Test on July 27, 2020



Test Information

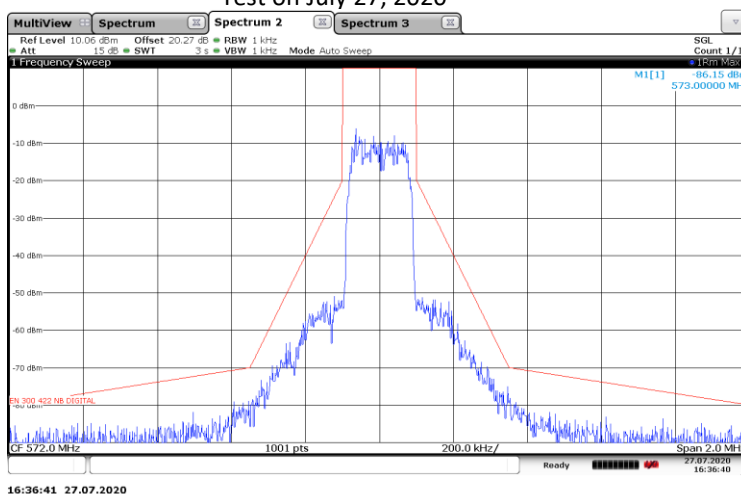
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 Operating Conditions: Low Frequency, 572.000MHz, 10mW
 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 1; Carrier Power
 Date Tested: Tested on July 27, 2020



Appendix A

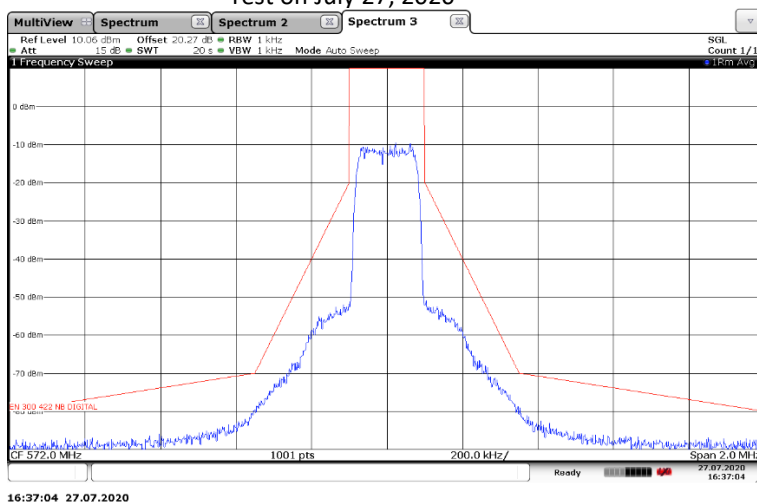
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 Serial Number: N6
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 Operating Conditions: Low Frequency, 572.000MHz, 10mW
 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 2; Maximum Relative Level
 Date Tested: Test on July 27, 2020



Test Information

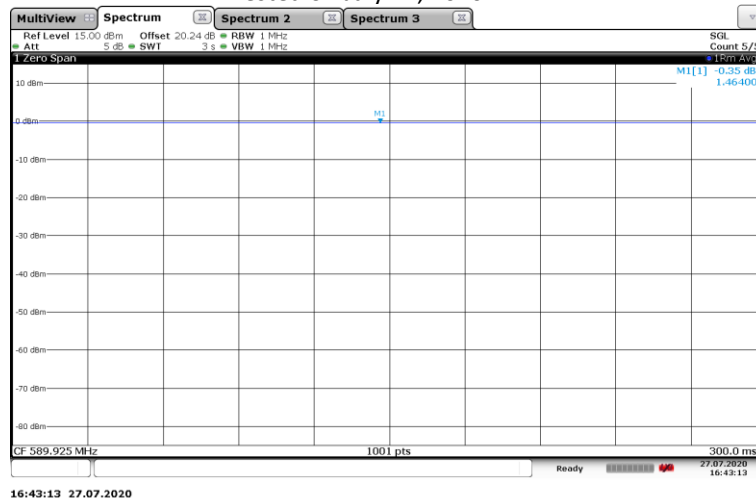
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 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 3; Lower and upper frequency transmitter band
 Wide band noise floor
 Date Tested: Test on July 27, 2020



Appendix A

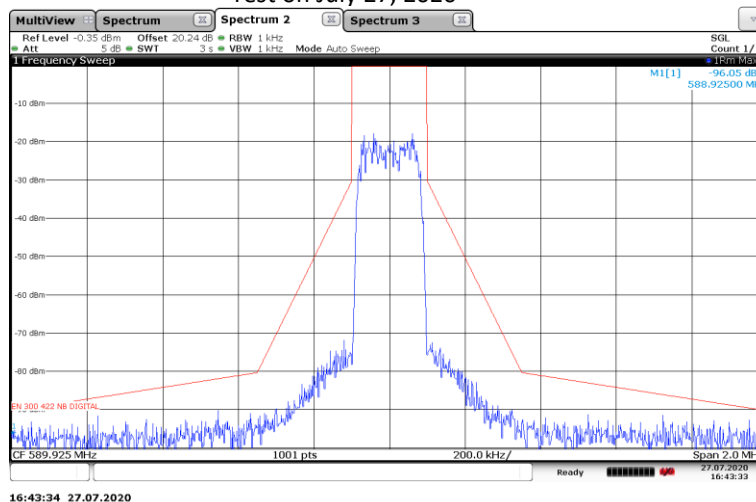
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 Serial Number: N6
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 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 1; Carrier Power
 Date Tested: Tested on July 27, 2020



Test Information

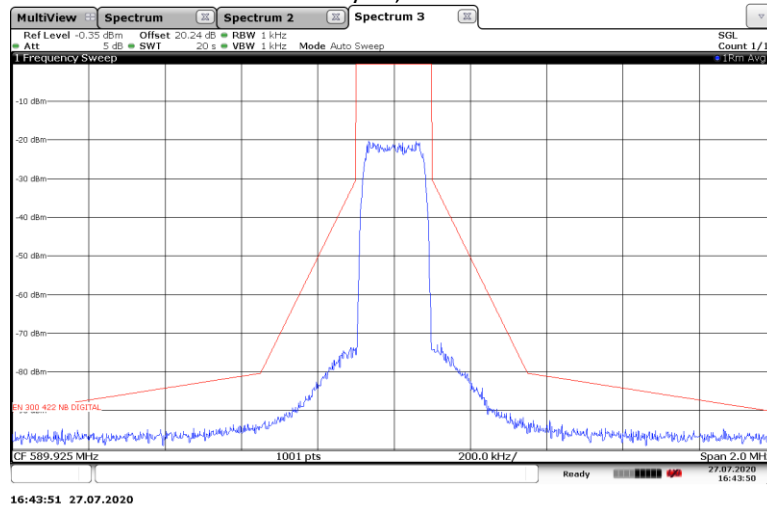
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 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 2; Maximum Relative Level
 Date Tested: Test on July 27, 2020



Appendix A

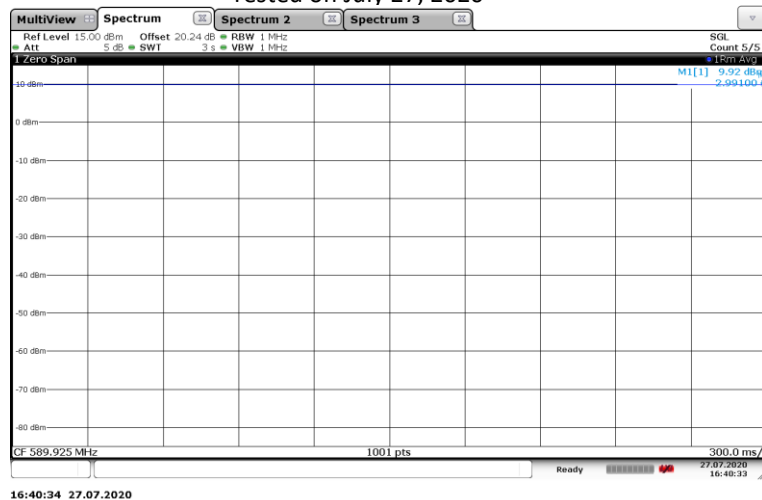
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EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: EN 300 422 Digital Necessary Bandwidth
 Operating Conditions: Middle Frequency, 589.925MHz, 1mW
 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 3; Lower and upper frequency transmitter band
 Wide band noise floor
 Date Tested: Test on July 27, 2020



Test Information

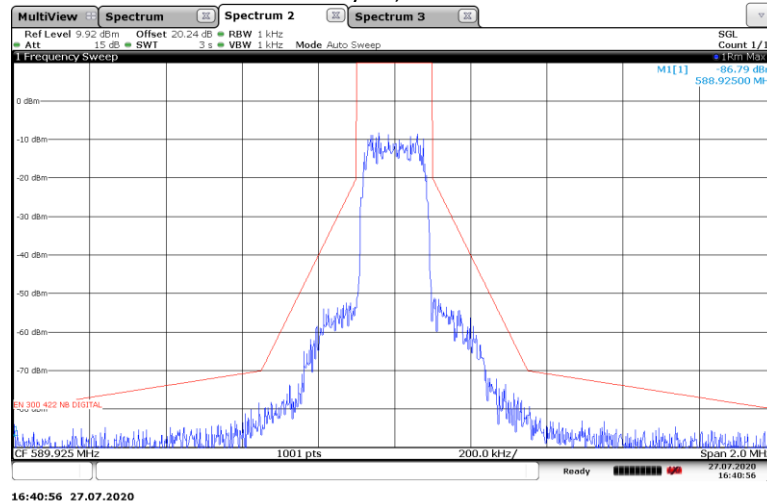
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 Operator Name: Juan Castrejon
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 Date Tested: Tested on July 27, 2020



Appendix A

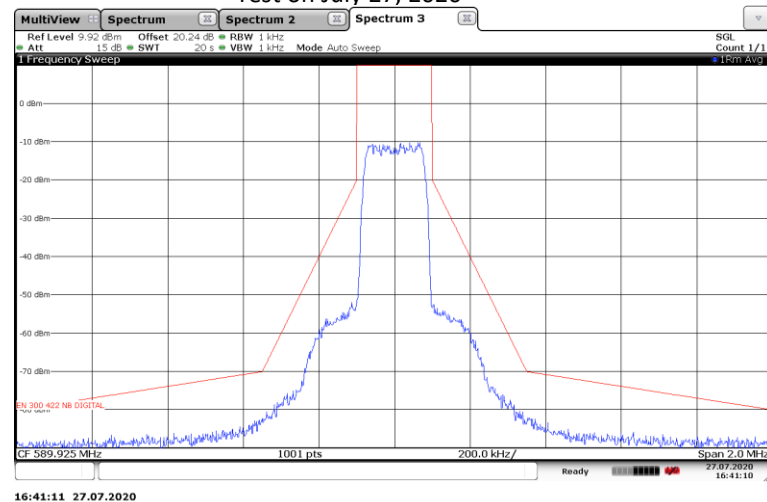
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 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 2; Maximum Relative Level
 Date Tested: Test on July 27, 2020



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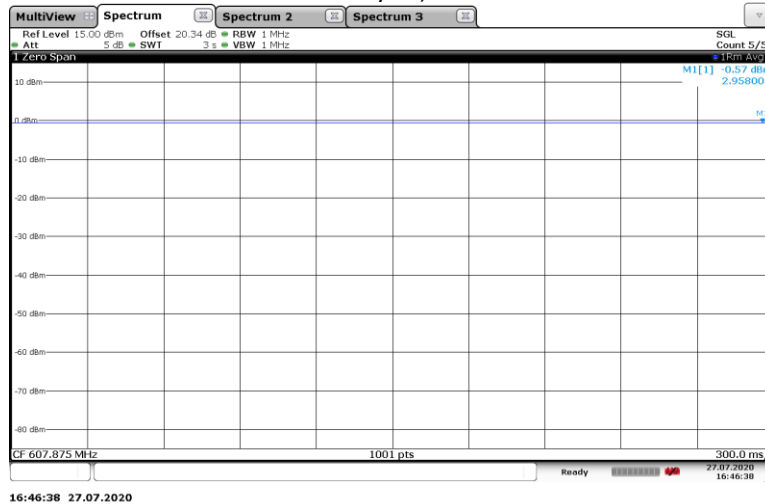
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 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 3; Lower and upper frequency transmitter band
 Wide band noise floor
 Date Tested: Test on July 27, 2020



Appendix A

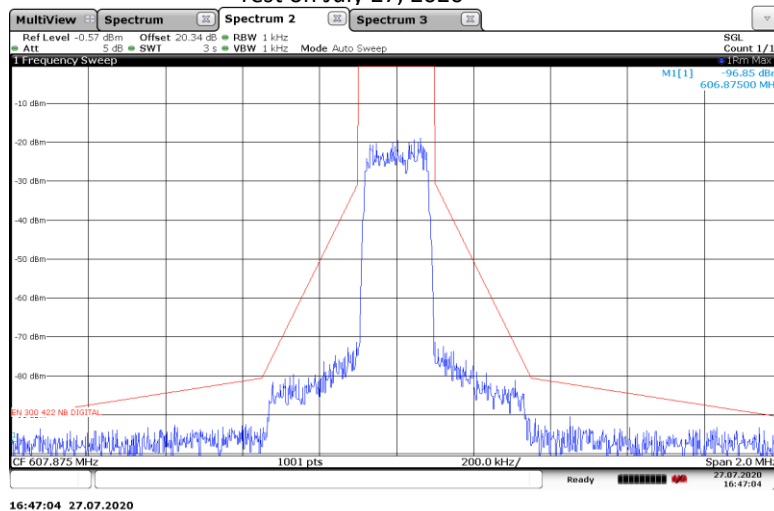
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 Test Description: EN 300 422 Digital Necessary Bandwidth
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 Operator Name: Juan Castrejon
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 Date Tested: Tested on July 27, 2020



Test Information

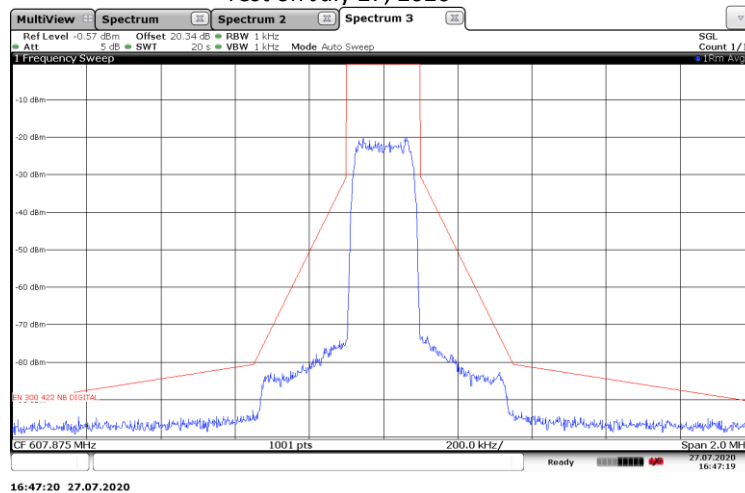
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 Operating Conditions: High Frequency, 607.875MHz, 1mW
 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 2; Maximum Relative Level
 Date Tested: Test on July 27, 2020



Appendix A

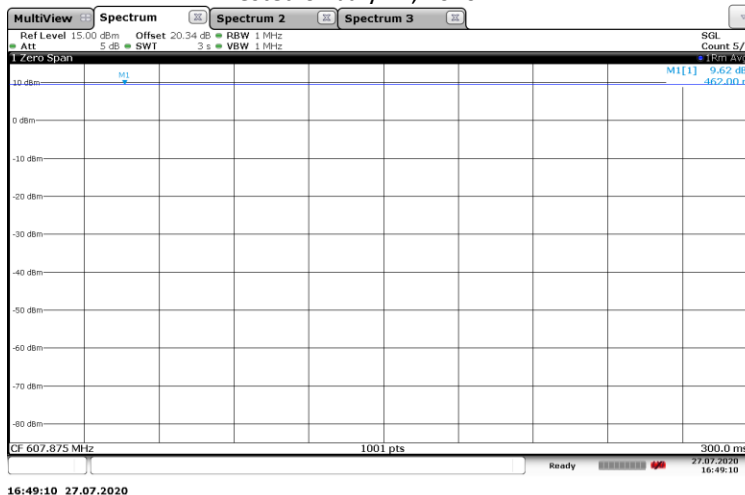
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EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: EN 300 422 Digital Necessary Bandwidth
 Operating Conditions: High Frequency, 607.875MHz, 1mW
 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 3; Lower and upper frequency transmitter band
 Wide band noise floor
 Date Tested: Test on July 27, 2020



Test Information

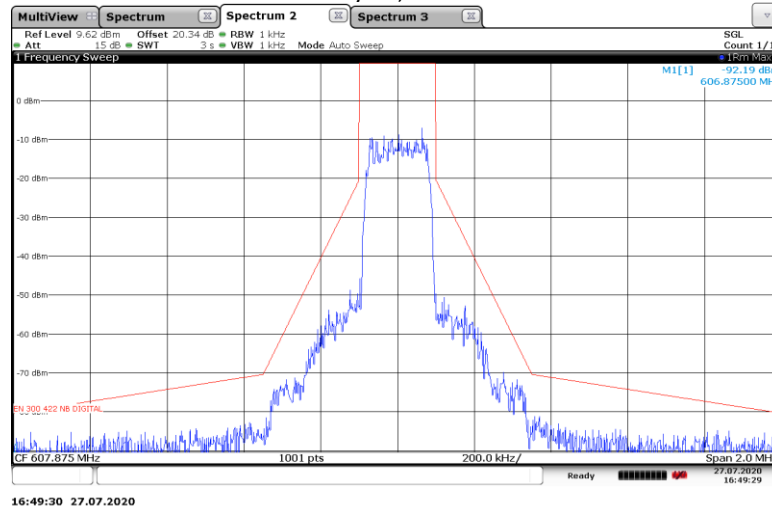
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 Serial Number: N6
 Test Description: EN 300 422 Digital Necessary Bandwidth
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 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 1; Carrier Power
 Date Tested: Tested on July 27, 2020



Appendix A

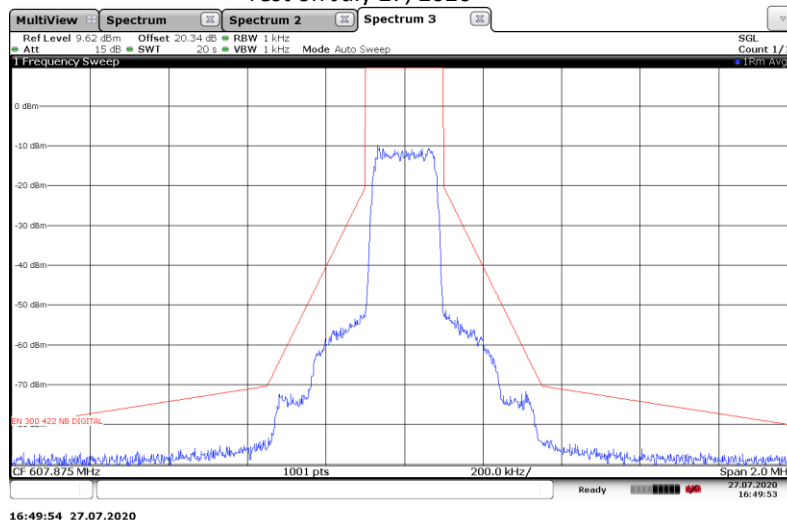
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 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 2; Maximum Relative Level
 Date Tested: Test on July 27, 2020



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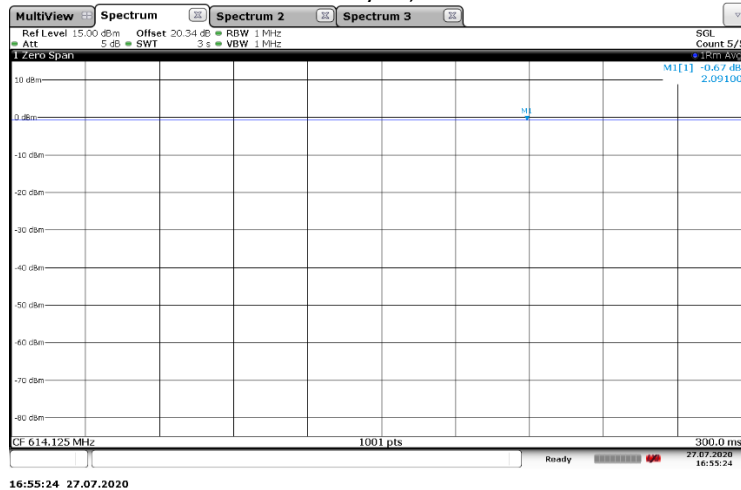
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 Operating Conditions: High Frequency, 607.875MHz, 10mW
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 Wide band noise floor
 Date Tested: Test on July 27, 2020



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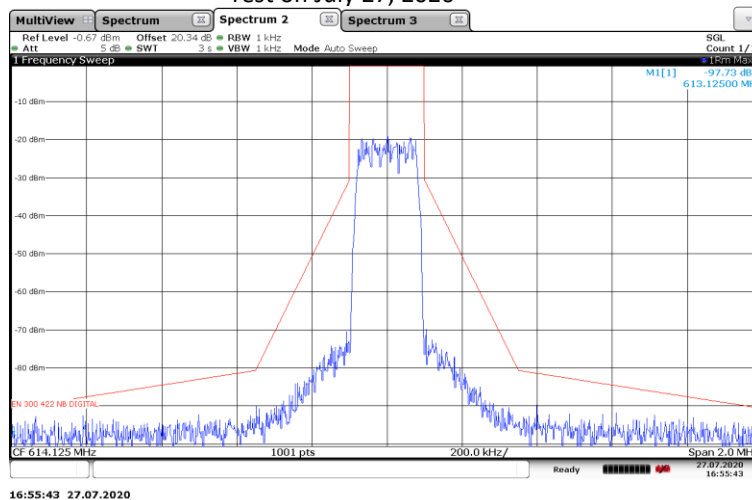
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 Serial Number: N6
 Test Description: EN 300 422 Digital Necessary Bandwidth
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 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 1; Carrier Power
 Date Tested: Tested on July 27, 2020



Test Information

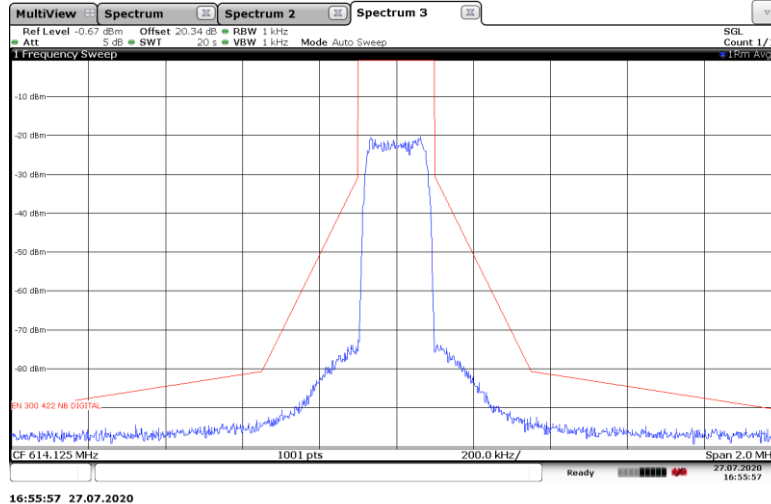
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 Date Tested: Test on July 27, 2020



Appendix A

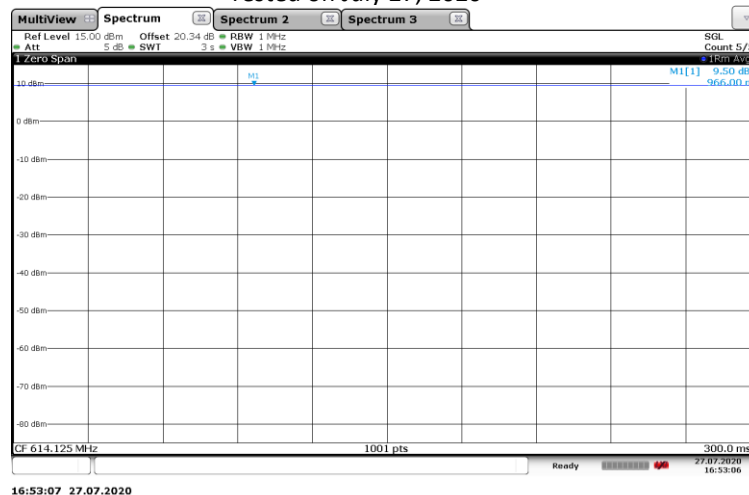
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 Serial Number: N6
 Test Description: EN 300 422 Digital Necessary Bandwidth
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 Date Tested: Test on July 27, 2020



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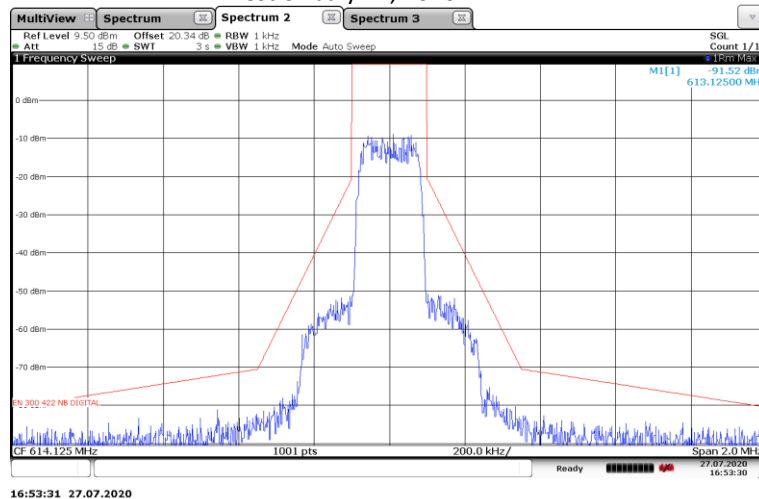
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 Serial Number: N6
 Test Description: EN 300 422 Digital Necessary Bandwidth
 Operating Conditions: Low Frequency, 614.125MHz, 10mW
 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 1; Carrier Power
 Date Tested: Tested on July 27, 2020



Appendix A

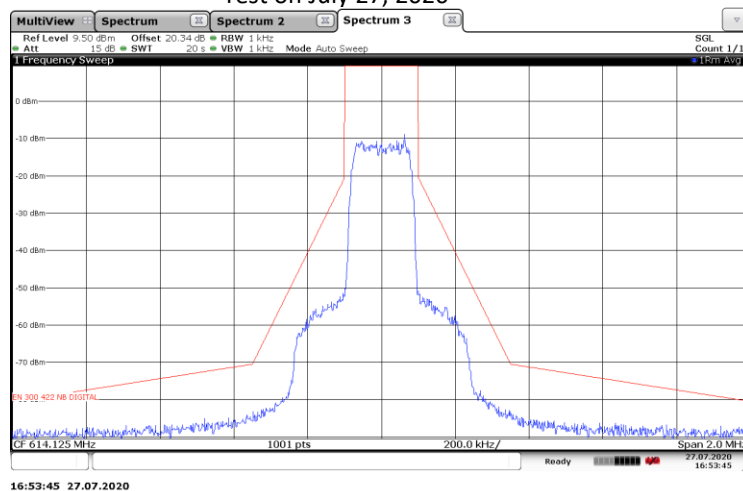
Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: EN 300 422 Digital Necessary Bandwidth
 Operating Conditions: Low Frequency, 614.125MHz, 10mW
 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 2; Maximum Relative Level
 Date Tested: Test on July 27, 2020



Test Information

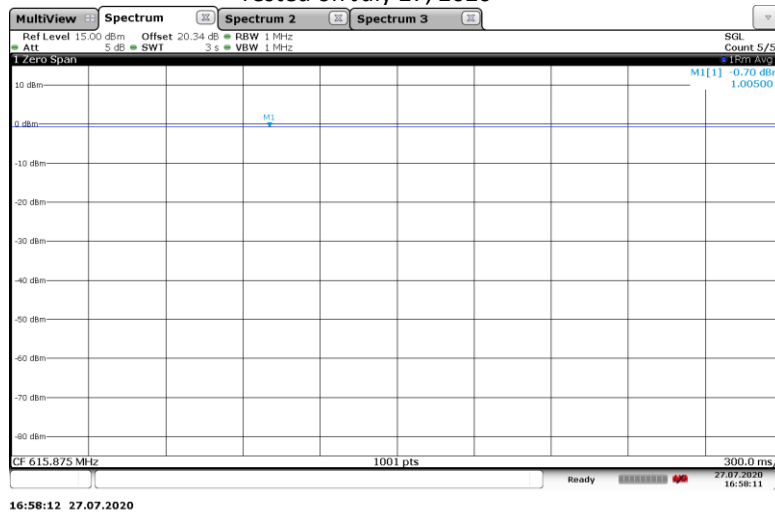
EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: EN 300 422 Digital Necessary Bandwidth
 Operating Conditions: Low Frequency, 614.125MHz, 10mW
 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 3; Lower and upper frequency transmitter band
 Date Tested: Wide band noise floor
 Test on July 27, 2020



Appendix A

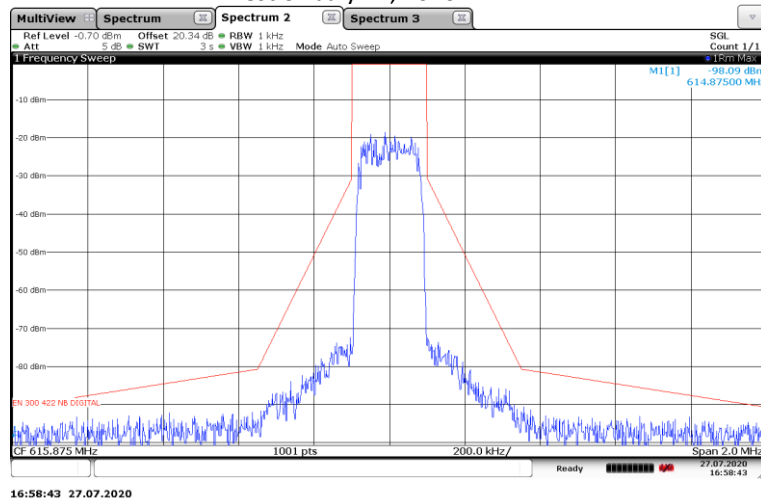
Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: EN 300 422 Digital Necessary Bandwidth
 Operating Conditions: High Frequency, 615.875MHz, 1mW
 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 1; Carrier Power
 Date Tested: Tested on July 27, 2020



Test Information

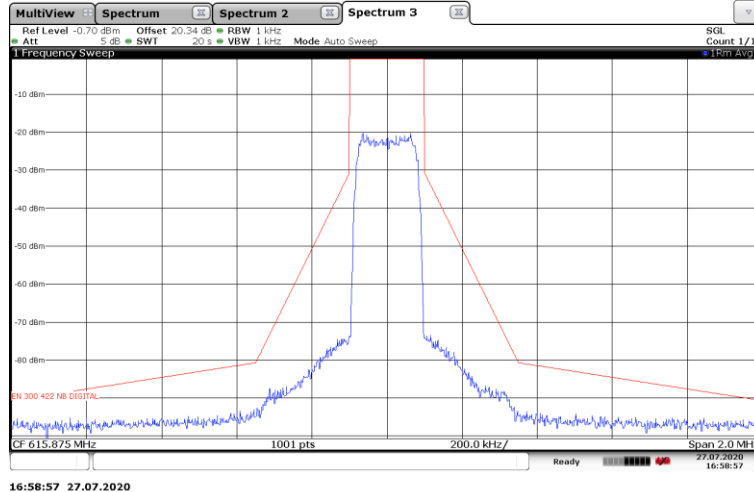
EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: EN 300 422 Digital Necessary Bandwidth
 Operating Conditions: High Frequency, 615.875MHz, 1mW
 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 2; Maximum Relative Level
 Date Tested: Test on July 27, 2020



Appendix A

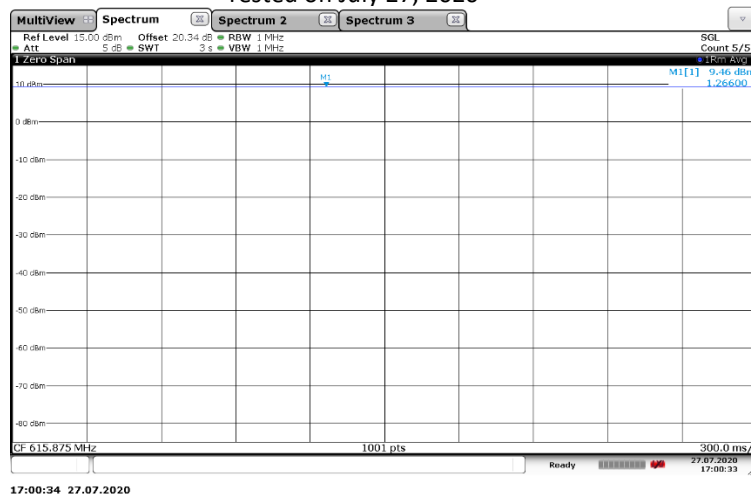
Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: EN 300 422 Digital Necessary Bandwidth
 Operating Conditions: High Frequency, 615.875MHz, 1mW
 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 3; Lower and upper frequency transmitter band
 Wide band noise floor
 Date Tested: Test on July 27, 2020



Test Information

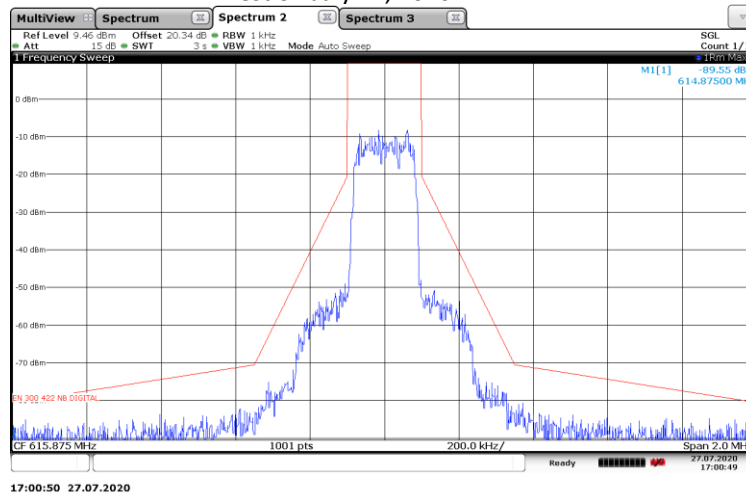
EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: EN 300 422 Digital Necessary Bandwidth
 Operating Conditions: High Frequency, 615.875MHz, 10mW
 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 1; Carrier Power
 Date Tested: Tested on July 27, 2020



Appendix A

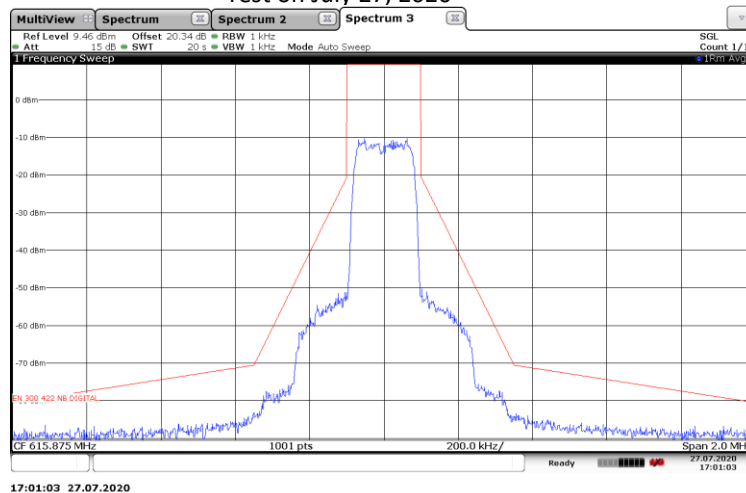
Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: EN 300 422 Digital Necessary Bandwidth
 Operating Conditions: High Frequency, 615.875MHz, 10mW
 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 2; Maximum Relative Level
 Date Tested: Test on July 27, 2020



Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: EN 300 422 Digital Necessary Bandwidth
 Operating Conditions: High Frequency, 615.875MHz, 10mW
 Operator Name: Juan Castrejon
 Comment: 8.3.3.1: Step 3; Lower and upper frequency transmitter band
 Date Tested: Wide band noise floor
 Test on July 27, 2020



**Appendix A****RSS-210, RSS-Gen 99% Emissions Bandwidth**

QLXD1 Unit # N6	Frequency in MHz	Measured 99% BW (kHz)	RSS-210 Limit (kHz)
	572.000	161.90	200
	589.925	162.17	200
	607.875	162.39	200
	614.125	162.79	200
	615.875	163.17	200

RF Power Output set to 10 mW

Tested by Juan Castrejon, November 9, 2020

Appendix B

Radiated Spurious Emissions

Purpose:

This test performed to determine if the EUT meets the radiated RF emission requirements of the FCC Part 15C section 236(g) and FCC OET Basic Certification Requirements for Wireless Microphones over the frequency range from 30MHz to 6GHz. A Quasi-Peak and Average detectors were used for the measurements. Both FCC Part 15C and IC RSS-Gen require measurements to the 10th harmonic of the carrier.

Requirements:

As stated in FCC 15C section 236(g), the FCC OET Basic Certification Requirements for Wireless Microphones, and RSS-210 Annex G, Compliance for spurious emission requirements shall be demonstrated using the applicable measurement procedures of ETSI EN 300 422-1. Compliance with the emission limits shall be demonstrated using a QP detector below 1GHz and a RMS Average detector above 1GHz. Emissions shall be investigated up to the 10th harmonic of the fundamental.

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.

Values of Expanded Measurement Uncertainty (95% Confidence)

Measurement Type	U _{lab}	U _{ETSI}
Radiated disturbance (electric field strength on an open area test site or alternative test site) (30 MHz – 1000 MHz)	4.24 dB	6.00 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site) (1 GHz – 13 GHz)	4.56 dB	6.00 dB

U_{lab} = Determined for Shure EMC Laboratory

U_{ETSI} = From ETSI EN 300 422-1 Table 10

Since U_{lab} is less than or equal to U_{ETSI}:

- Compliance is deemed to occur if no measured disturbance exceeds the disturbance limit;
Non-compliance is deemed to occur if any measured disturbance exceeds the disturbance limit.

Test Setup and Instrumentation:

Photographs of the test setup are shown in Figure B 1 and Figure B 2. The test instrumentation can be determined from Table 10-1.

EUT Operation:

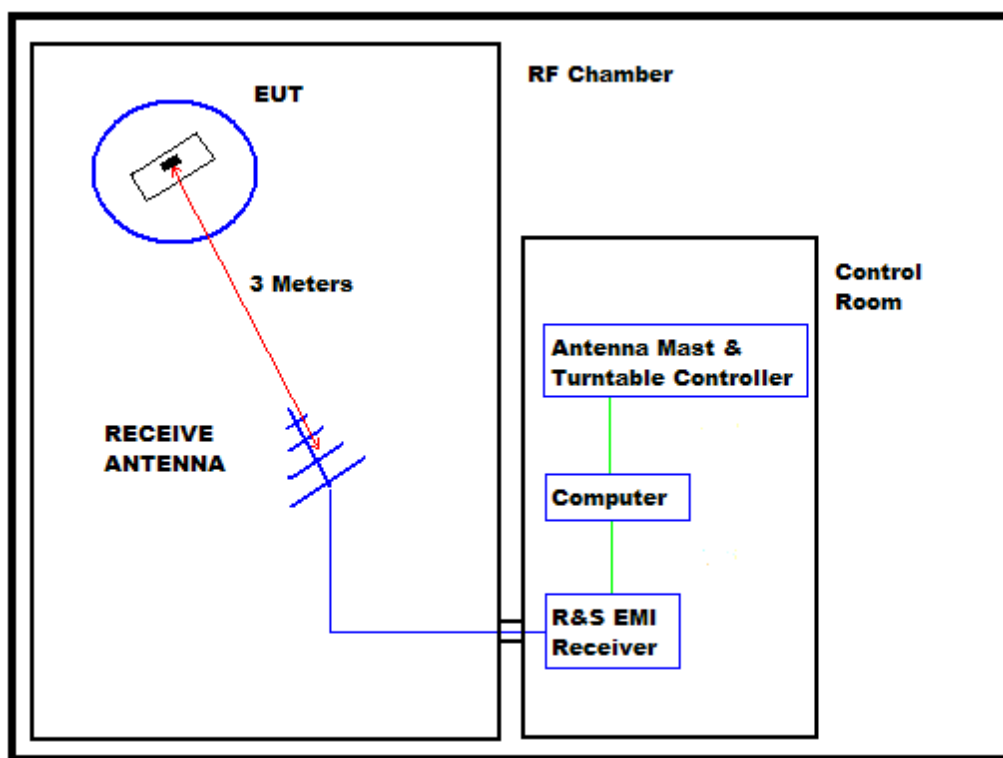
The EUT was powered up and the frequency of the transmitter was selected using the front panel controls. A Shure TL47 microphone was plugged into the EUT microphone socket. The EUT was checked for proper operation after it was setup on the test table. For radiated spurious emissions the testing was performed with the EUT set to the low, middle, and high frequencies with RF power output of 1mW and 10mW.

Appendix B

Specific Test Procedures:

All tests were performed in a 28ft. x 20ft. x 18.5ft. 3m semi-anechoic 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 C63.4a-2017 for site attenuation.

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



BLOCK DIAGRAM OF SHIELDED ENCLOSURE

Preliminary radiated measurements were performed to determine the frequencies where the significant emissions might be found. With the EUT at one set position and the measurement antenna at a set height (i.e. without maximizing), the radiated emissions were measured using a peak detector and automatically plotted. The BiConiLog measuring antenna was positioned at a 3-meter distance from the EUT for below 1GHz testing, and a double ridged waveguide antenna above 1GHz testing.

Appendix B

All significant broadband and narrowband signals found in the preliminary sweeps were then measured using a peak detector at a test distance of 3 meters.

To ensure that maximum emission levels were measured, the following steps were taken:

- i. The EUT was rotated so that all of its sides were exposed to the receiving antenna.
- ii. Since the measuring antennas are linearly polarized, both horizontal and vertical field components were measured.
- iii. The measuring antenna was raised and lowered from 1 to 4 meters for each antenna polarization to maximize the readings.

The equivalent power was determined from the field intensity levels measured at 3 meters using the substitution method. To determine the emission power, another antenna was set in place of the EUT and connected to a calibrated signal generator. (A tuned dipole was used for all measurements below 1GHz and a double ridged waveguide antenna was used for all measurements above 1GHz.) The output of the signal generator was adjusted to match the received level at the EMI receiver. The signal level was recorded. The reading was corrected to compensate for cable loss and antenna gain.

Results:

The plots of the peak preliminary radiated voltage levels in the graphs on page 30 thru page 39. The ERP measurements are shown on pages 40 thru page 42. All emissions measured from the EUT were within the ETSI EN 300 422-1 specification limits.



Figure B 1: QLXD1 Transmitter Test Setup

Figure B 2: QLXD1 Transmitter Test Setup

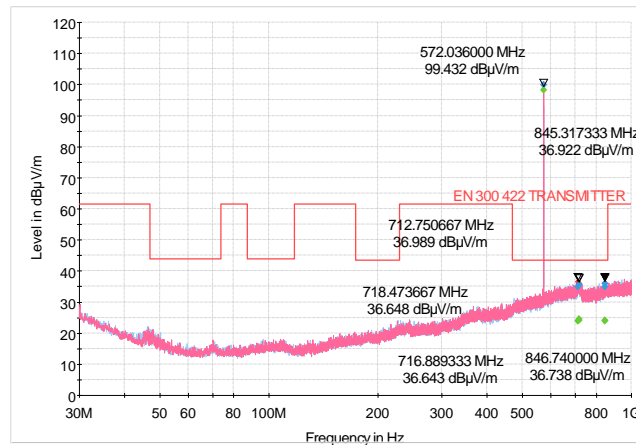
Appendix B

SHURE Radiated RF Emissions Test Report

Common Information

Test Description: FCC 15C Radiated Emissions 30MHz - 1GHz
 EUT: QLXD1 J50A
 Serial Number: 1
 Operating Frequency: Low Frequency 572.000MHz
 RF Power Level: 1mW
 Tester Name: Sharjeel Sohail
 Date Tested: July 28, 2020, 75F 39% RH

Full Spectrum

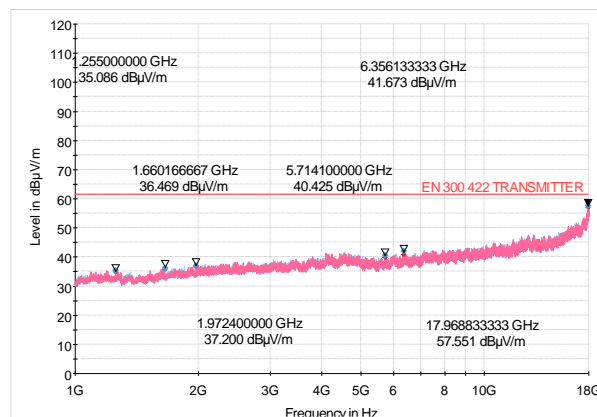


SHURE Radiated RF Emissions Test Report

Common Information

Test Description: FCC 15C Radiated Emissions 1GHz - 7GHz
 EUT: QLXD1 J50A
 Serial Number: 1
 Operating Frequency: Low frequency 572.000MHz
 RF Power Level: 1mW
 Tester Name: Sharjeel Sohail
 Date Tested: August 17, 2020, 75F 36% RH

Full Spectrum



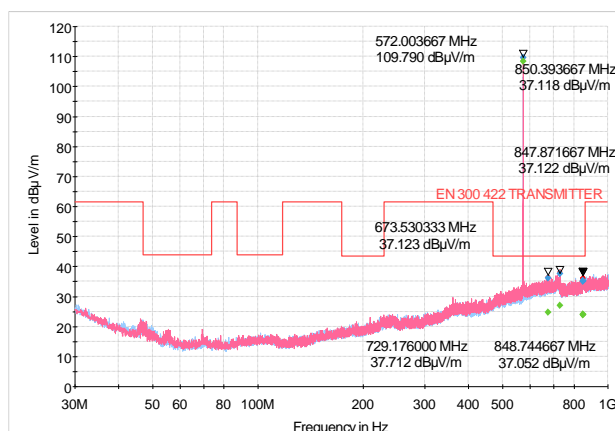
Appendix B

SHURE Radiated RF Emissions Test Report

Common Information

Test Description: FCC 15C Radiated Emissions 30MHz - 1GHz
EUT: QLXD1 J50A
Serial Number: 1
Operating Frequency: Low Frequency 572.000MHz
RF Power Level: 10mW
Tester Name: Sharjeel Sohail
Date Tested: July 29, 2020, 73F 44% RH

Full Spectrum

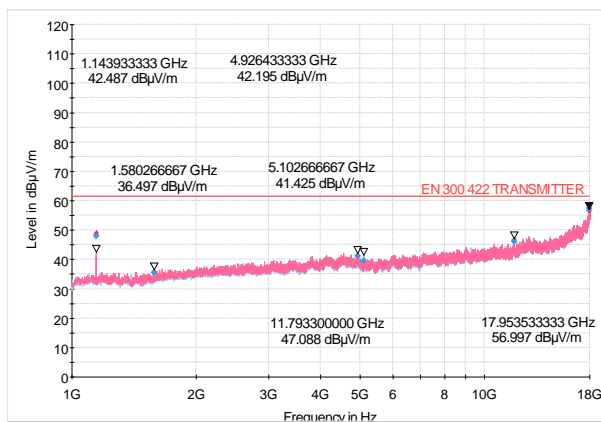


SHURE Radiated RF Emissions Test Report

Common Information

Test Description: FCC 15C Radiated Emissions 1GHz - 7GHz
EUT: QLXD1 J50A
Serial Number: 1
Operating Frequency: Low Frequency 572.000MHz
RF Power Level: 10mW
Tester Name: Sharjeel Sohail
Date Tested: August 18, 2020, 74F 39% RH

Full Spectrum



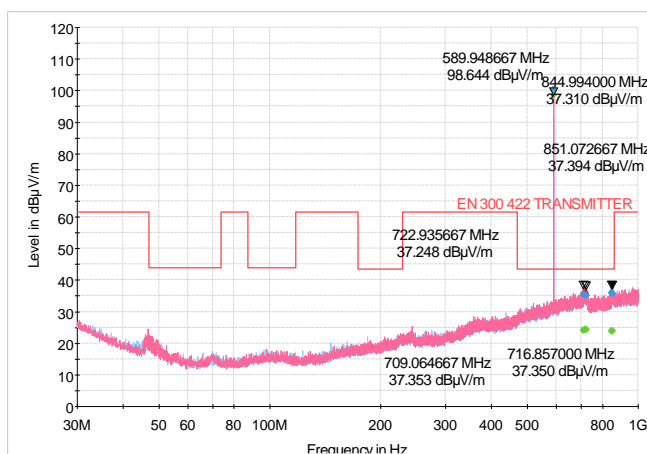
Appendix B

SHURE Radiated RF Emissions Test Report

Common Information

Test Description: FCC 15C Radiated Emissions 30MHz - 1GHz
 EUT: QLXD1 J50A
 Serial Number: 1
 Operating Frequency: Middle Frequency 589.925MHz
 RF Power Level: 1mW
 Tester Name: Sharjeel Sohail
 Date Tested: July 29, 2020, 74F 43% RH

Full Spectrum

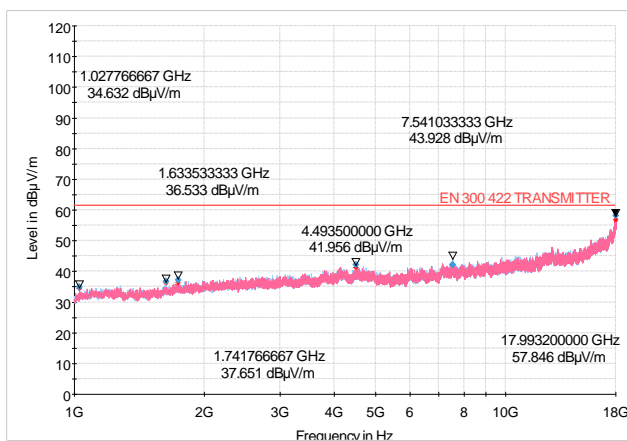


SHURE Radiated RF Emissions Test Report

Common Information

Test Description: FCC 15C Radiated Emissions 1GHz - 7GHz
 EUT: QLXD1 J50A
 Serial Number: 1
 Operating Frequency: Middle Frequency 589.925MHz
 RF Power Level: 1mW
 Tester Name: Sharjeel Sohail
 Date Tested: August 18, 2020, 74F 38% RH

Full Spectrum



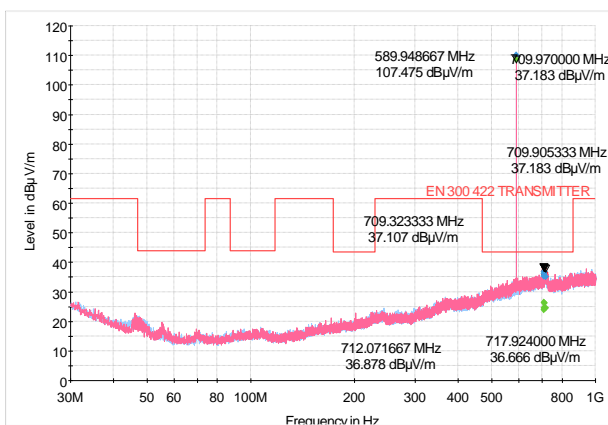
Appendix B

SHURE Radiated RF Emissions Test Report

Common Information

Test Description: FCC 15C Radiated Emissions 30MHz - 1GHz
EUT: QLXD1 J50A
Serial Number: 1
Operating Frequency: Middle Frequency 589.925MHz
RF Power Level: 10mW
Tester Name: Sharjeel Sohail
Date Tested: July 29, 2020, 74F 43% RH

Full Spectrum

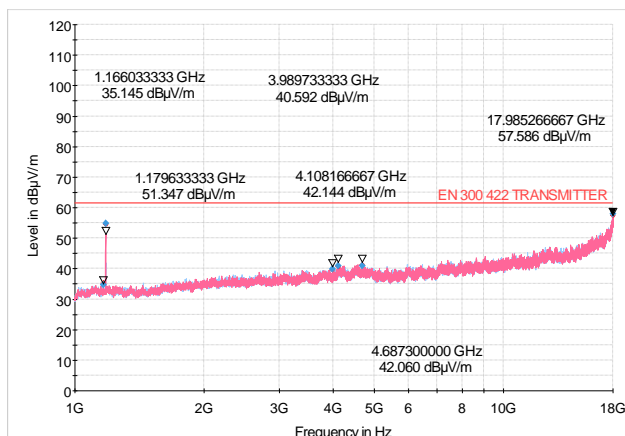


SHURE Radiated RF Emissions Test Report

Common Information

Test Description: FCC 15C Radiated Emissions 1GHz - 7GHz
EUT: QLXD1 J50A
Serial Number: 1
Operating Frequency: Middle Frequency 589.925MHz
RF Power Level: 10mW
Tester Name: Sharjeel Sohail
Date Tested: August 18, 2020, 74F 38% RH

Full Spectrum



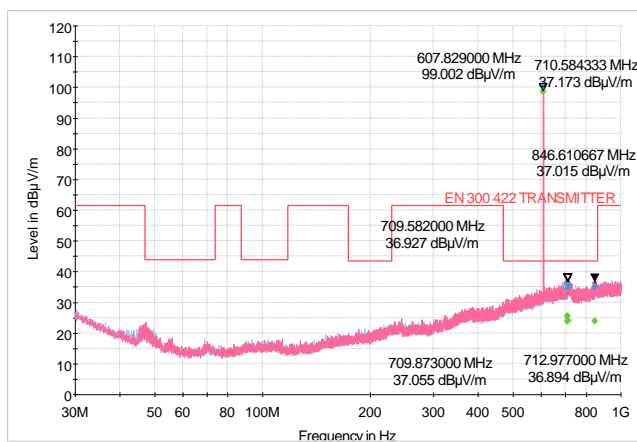
Appendix B

SHURE Radiated RF Emissions Test Report

Common Information

Test Description: FCC 15C Radiated Emissions 30MHz - 1GHz
 EUT: QLXD1 J50A
 Serial Number: 1
 Operating Frequency: High Frequency 607.875MHz
 RF Power Level: 1mW
 Tester Name: Sharjeel Sohail
 Date Tested: July 29, 2020, 75F 43% RH

Full Spectrum

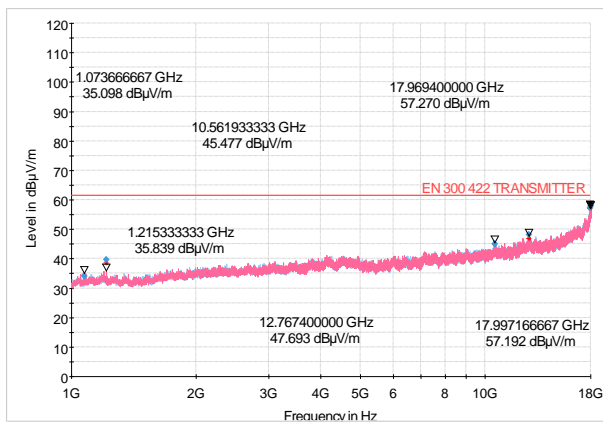


SHURE Radiated RF Emissions Test Report

Common Information

Test Description: FCC 15C Radiated Emissions 1GHz - 7GHz
 EUT: QLXD1 J50A
 Serial Number: 1
 Operating Frequency: High Frequency 607.875MHz
 RF Power Level: 1mW
 Tester Name: Sharjeel Sohail
 Date Tested: August 18, 2020, 75F 38% RH

Full Spectrum



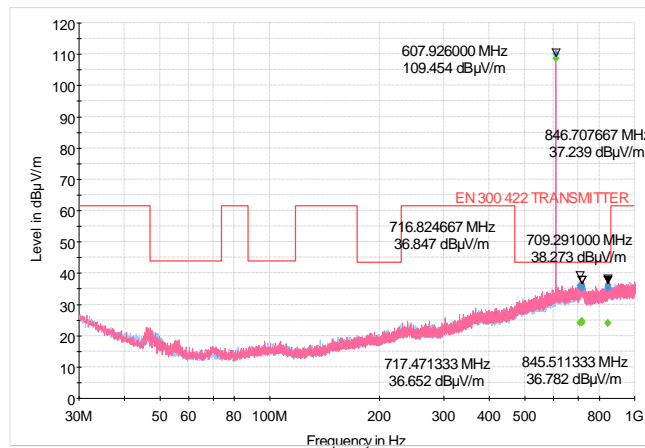
Appendix B

SHURE Radiated RF Emissions Test Report

Common Information

Test Description: FCC 15C Radiated Emissions 30MHz - 1GHz
EUT: QLXD1 J50A
Serial Number: 1
Operating Frequency: High Frequency 607.875MHz
RF Power Level: 10mW
Tester Name: Sharjeel Sohail
Date Tested: July 29, 2020, 75F 42% RH

Full Spectrum

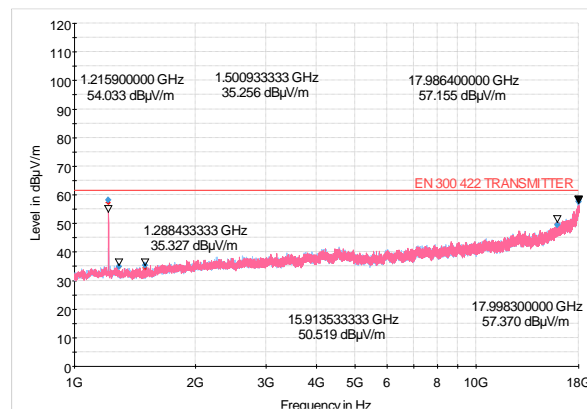


SHURE Radiated RF Emissions Test Report

Common Information

Test Description: FCC 15C Radiated Emissions 1GHz - 7GHz
EUT: QLXD1 J50A
Serial Number: 1
Operating Frequency: High Frequency 607.875MHz
RF Power Level: 10mW
Tester Name: Sharjeel Sohail
Date Tested: August 18, 2020, 75F 37% RH

Full Spectrum



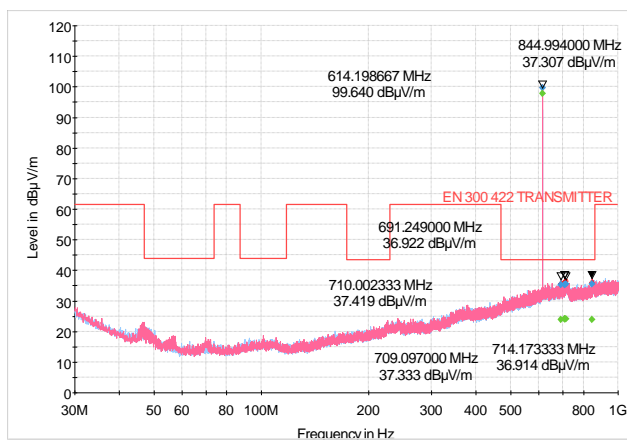
Appendix B

SHURE Radiated RF Emissions Test Report

Common Information

Test Description: FCC 15C Radiated Emissions 30MHz - 1GHz
 EUT: QLXD1 J50A
 Serial Number: 1
 Operating Frequency: Low Frequency 614.125MHz
 RF Power Level: 1mW
 Tester Name: Sharjeel Sohail
 Date Tested: July 29, 2020, 75F 43% RH

Full Spectrum

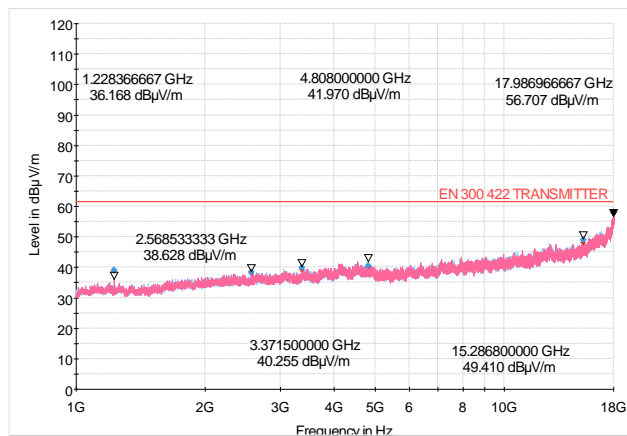


SHURE Radiated RF Emissions Test Report

Common Information

Test Description: FCC 15C Radiated Emissions 1GHz - 7GHz
 EUT: QLXD1 J50A
 Serial Number: 1
 Operating Frequency: Low Frequency 614.125MHz
 RF Power Level: 1mW
 Tester Name: Sharjeel Sohail
 Date Tested: August 18, 2020, 75F 37% RH

Full Spectrum



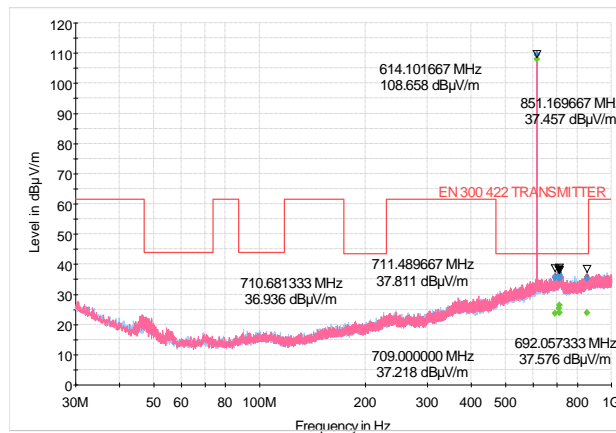
Appendix B

SHURE Radiated RF Emissions Test Report

Common Information

Test Description: FCC 15C Radiated Emissions 30MHz - 1GHz
 EUT: QLXD1 J50A
 Serial Number: 1
 Operating Frequency: Low Frequency 614.125MHz
 RF Power Level: 10mW
 Tester Name: Sharjeel Sohail
 Date Tested: July 29, 2020, 74F 43% RH

Full Spectrum

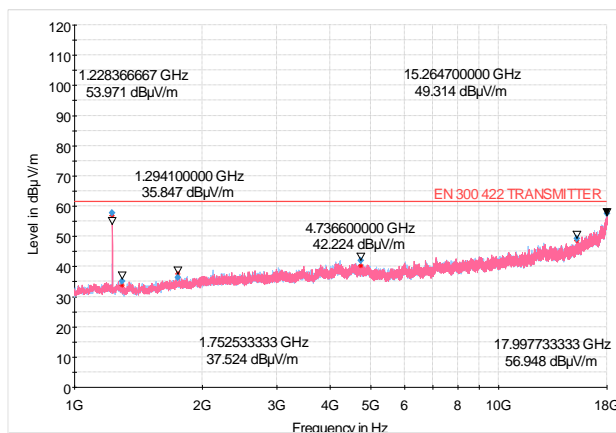


SHURE Radiated RF Emissions Test Report

Common Information

Test Description: FCC 15C Radiated Emissions 1GHz - 7GHz
 EUT: QLXD1 J50A
 Serial Number: 1
 Operating Frequency: Low Frequency 614.125MHz
 RF Power Level: 10mW
 Tester Name: Sharjeel Sohail
 Date Tested: August 18, 2020, 75F 37% RH

Full Spectrum



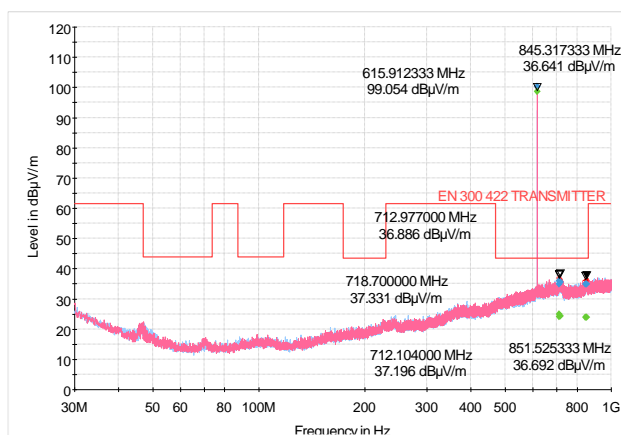
Appendix B

SHURE Radiated RF Emissions Test Report

Common Information

Test Description: FCC 15C Radiated Emissions 30MHz - 1GHz
 EUT: QLXD1 J50A
 Serial Number: 1
 Operating Frequency: High Frequency 615.875MHz
 RF Power Level: 1mW
 Tester Name: Sharjeel Sohail
 Date Tested: July 29, 2020, 75F 43% RH

Full Spectrum

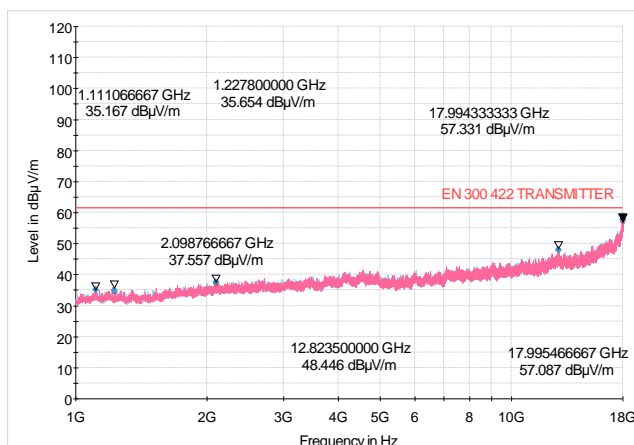


SHURE Radiated RF Emissions Test Report

Common Information

Test Description: FCC 15C Radiated Emissions 1GHz - 7GHz
 EUT: QLXD1 J50A
 Serial Number: 1
 Operating Frequency: High Frequency 615.875MHz
 RF Power Level: 1mW
 Tester Name: Sharjeel Sohail
 Date Tested: August 18, 2020, 75F 36% RH

Full Spectrum



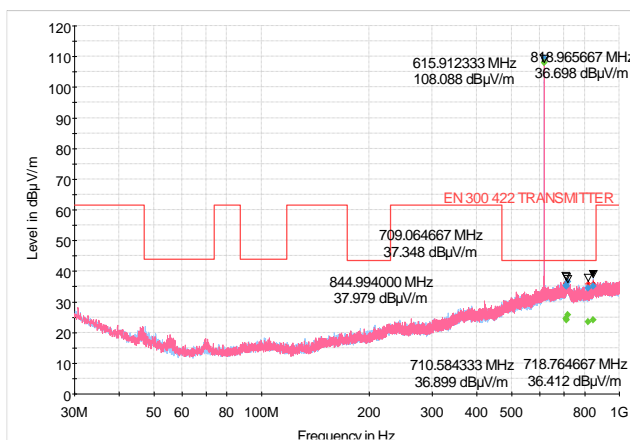
Appendix B

SHURE Radiated RF Emissions Test Report

Common Information

Test Description: FCC 15C Radiated Emissions 30MHz - 1GHz
EUT: QLXD1 J50A
Serial Number: 1
Operating Frequency: High Frequency 615.875MHz
RF Power Level: 10mW
Tester Name: Sharjeel Sohail
Date Tested: July 30, 2020, 74F 43% RH

Full Spectrum

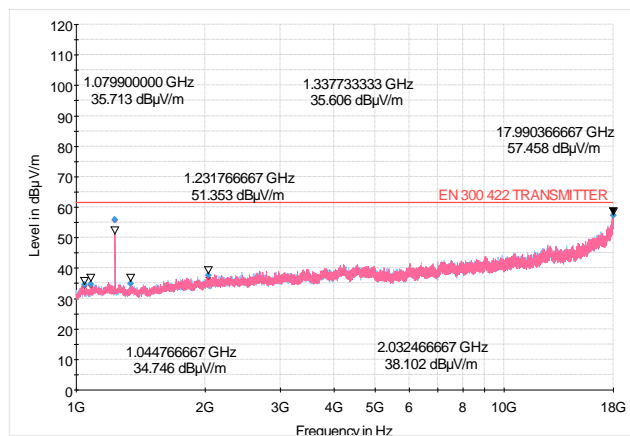


SHURE Radiated RF Emissions Test Report

Common Information

Test Description: FCC 15C Radiated Emissions 1GHz - 7GHz
EUT: QLXD1 J50A
Serial Number: 1
Operating Frequency: High Frequency 615.875MHz
RF Power Level: 10mW
Tester Name: Sharjeel Sohail
Date Tested: August 18, 2020, 75F 36% RH

Full Spectrum



Appendix B

Date: September 9, 2020
 EUT: QLXD1
 Band: J50A
 Serial Number: 1
 Specification: EN 300 422-1, Spurious Radiated Emissions
 Comments: Test Distance is 3 meters
 Mode: EUT set to Low Frequency 572.000MHz at 10mW
 Tested By: Sharjeel Sohail

Frequency in MHz	Detector Used	Antenna Polarity	Measured Level in dBuV	Matched Sig. Gen. Reading in dBm	Antenna Gain in dB	Cable Loss in dB	ERP Total in dBm	ETSI Limit in dBm	Margin In dB
1443.933	Average	V	47.92	-41.26	3.41	2.83	-40.68	-30.00	10.68
1580.267	Average	V	35.52	-80.10	6.20	3.25	-77.15	-30.00	47.15
4926.433	Average	V	41.17	-71.06	10.15	6.34	-67.25	-30.00	37.25
51.02.667	Average	V	39.41	-68.92	10.20	6.50	-65.22	-30.00	35.22

Total (dBm) = Matched Signal. Generator Reading (dBm) + Antenna Gain (dB) – Cable Loss (dB)

Date: September 9, 2020
 EUT: QLXD1
 Band: J50A
 Serial Number: 1
 Specification: EN 300 422-1, Spurious Radiated Emissions
 Comments: Test Distance is 3 meters
 Mode: EUT set to Middle Frequency 589.925MHz at 10mW
 Tested By: Sharjeel Sohail

Frequency in MHz	Detector Used	Antenna Polarity	Measured Level in dBuV	Matched Sig. Gen. Reading in dBm	Antenna Gain in dB	Cable Loss in dB	ERP Total in dBm	ETSI Limit in dBm	Margin In dB
1133.033	Average	V	34.65	-52.20	3.50	3.31	-52.01	-30.00	22.01
1179.633	Average	V	54.71	-34.98	3.58	2.78	-34.18	-30.00	4.18
3989.733	Average	V	39.94	-75.31	8.86	5.53	-71.98	-30.00	41.98
4108.167	Average	V	40.91	-72.82	9.12	5.64	-69.34	-30.00	39.34
4687.300	Average	V	40.87	-67.88	9.58	6.01	-64.32	-30.00	34.32

Total (dBm) = Matched Signal. Generator Reading (dBm) + Antenna Gain (dB) – Cable Loss (dB)

Appendix B

Date: September 9, 2020
 EUT: QLXD1
 Band: J50A
 Serial Number: 1
 Specification: EN 300 422-1, Spurious Radiated Emissions
 Comments: Test Distance is 3 meters
 Mode: EUT set to High Frequency 607.875MHz at 10mW
 Tested By: Sharjeel Sohail

Frequency in MHz	Detector Used	Antenna Polarity	Measured Level in dBuV	Matched Sig. Gen. Reading in dBm	Antenna Gain in dB	Cable Loss in dB	ERP Total in dBm	ETSI Limit in dBm	Margin In dB
1215.900	Average	V	58.03	-32.72	3.57	3.32	-32.47	-30.00	2.47
1288.433	Average	V	34.98	-82.21	3.96	2.87	-81.12	-30.00	51.12
1500.933	Average	V	35.22	-73.87	6.10	3.18	-70.95	-30.00	40.95

Date: September 9, 2020
 EUT: QLXD1
 Band: J50A
 Serial Number: 1
 Specification: EN 300 422-1, Spurious Radiated Emissions
 Comments: Test Distance is 3 meters
 Mode: EUT set to Low Frequency 614.125MHz at 10mW
 Tested By: Sharjeel Sohail

Frequency in MHz	Detector Used	Antenna Polarity	Measured Level in dBuV	Matched Sig. Gen. Reading in dBm	Antenna Gain in dB	Cable Loss in dB	ERP Total in dBm	ETSI Limit in dBm	Margin In dB
1228.367	Average	V	57.69	-32.75	3.54	2.84	-32.05	-30.00	2.05
1294.100	Average	V	35.03	-82.11	4.03	2.87	-80.95	-30.00	50.95
1752.533	Average	V	36.42	-74.95	5.47	3.39	-72.87	-30.00	42.87
4736.600	Average	V	41.86	-72.23	9.67	6.29	-68.85	-30.00	38.85

Appendix B

Date: September 9, 2020
 EUT: QLXD1
 Band: J50A
 Serial Number: 1
 Specification: EN 300 422-1, Spurious Radiated Emissions
 Comments: Test Distance is 3 meters
 Mode: EUT set to High Frequency 615.875MHz at 10mW
 Tested By: Sharjeel Sohail

Frequency in MHz	Detector Used	Antenna Polarity	Measured Level in dBuV	Matched Sig. Gen. Reading in dBm	Antenna Gain in dB	Cable Loss in dB	ERP Total in dBm	ETSI Limit in dBm	Margin In dB
1044.767	Average	V	34.49	-61.44	3.23	2.60	-60.81	-30.00	30.81
1079.900	Average	V	34.66	-43.30	3.42	2.68	-42.56	-30.00	12.56
1231.767	Average	V	55.81	-34.35	3.54	2.86	-33.67	-30.00	3.67
1337.733	Average	V	34.81	-74.23	4.25	2.97	-72.95	-30.00	42.95
2032.467	Average	V	37.59	-74.32	5.16	3.74	-72.90	-30.00	42.90

Appendix C

Maximum Radiated Power

Purpose:

This test performed to determine if the EUT meets the Maximum Radiated Power requirements of the FCC Part15C, Section 15.236(d)(1), Section 15.236(d)(2), the FCC OET Basic Certification Requirements for Wireless Microphones, and RSS-210 Annex G.

Requirements:

As stated in FCC 15C Section 15.236 (d)(1), Section 15.236(d)(2). the FCC OET Basic Certification Requirements for Wireless Microphones, and RSS-210 Annex G.

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.

Values of Expanded Measurement Uncertainty (95% Confidence)

Measurement Type	U_{lab}
Radiated measurements (30 MHz – 1000 MHz)	4.24 dB

U_{lab} = Determined for Shure EMC Laboratory

Since U_{lab} is less than or equal to U_{ETSI} :

- Compliance is deemed to occur if no measured disturbance exceeds the disturbance limit;
Non-compliance is deemed to occur if any measured disturbance exceeds the disturbance limit.

Test Setup and Instrumentation:

Photographs of the test setup are shown in Figure B 1. The test instrumentation can be determined from Table 10-1.

EUT Operation:

The EUT was powered up and the frequency of the transmitter was selected using the front panel controls. A Shure TL47 microphone was plugged into the EUT microphone socket. For rated output power, the testing was performed with the EUT set to the low, middle, and high frequency within the operating frequency range, and at 1mW and 10mW RF output.

Appendix C**Specific Test Procedures:**

The Maximum Rated Power test was performed with the RF output port connected to a 20dB attenuator, which was connected to the EMPower RF Power Sensor.

The EUT was set to transmit on the low, middle, and high frequencies, and power levels of 1mW and 10mW.

Results:

The EIRP for all frequencies measured meets the FCC15C Section 15.236(d)(1), Section 15.236(d)(2) requirements, the FCC OET Basic Certification Requirements for Wireless Microphones requirements, and RSS-210 Annex G.

The results are shown on page 45 thru page 54.



Figure C-1 Maximum Radiated RF Output Power setup

Appendix C

Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: Maximum Radiated Output
 Operating Conditions: Low Frequency, 572.000MHz, 1mW
 Operator Name: Juan Castrejon
 Comment: FCC Part15C, Section 15.236
 Date Tested: Tested on July 27, 2020

Measured in RF Output, in dBm	Equivalent Antenna Gain in dBi	EIRP in dBm	EIRP in mW	EIRP Limit in mW	Margin In mW
-0.26	0.2	-0.06	0.99	50.00	49.01

$$\text{EIRP (dBm)} = \text{Measurement (dBm)} + \text{Equivalent Antenna Gain (dBi)}$$

Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: Maximum Radiated Output
 Operating Conditions: Low Frequency, 572.000MHz, 10mW
 Operator Name: Juan Castrejon
 Comment: FCC Part15C, Section 15.236
 Date Tested: Tested on July 27, 2020

Measured in RF Output, in dBm	Equivalent Antenna Gain in dBi	EIRP in dBm	EIRP in mW	EIRP Limit in mW	Margin In mW
10.03	0.2	10.23	10.54	50.00	39.46

$$\text{EIRP (dBm)} = \text{Measurement (dBm)} + \text{Equivalent Antenna Gain (dBi)}$$

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Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: Maximum Radiated Output
 Operating Conditions: Middle Frequency, 589.925MHz, 1mW
 Operator Name: Juan Castrejon
 Comment: FCC Part15C, Section 15.236
 Date Tested: Tested on July 27, 2020

Measured in RF Output, in dBm	Equivalent Antenna Gain in dBi	EIRP in dBm	EIRP in mW	EIRP Limit in mW	Margin In mW
-0.34	0.2	-0.14	0.97	50.00	49.03

$$\text{EIRP (dBm)} = \text{Measurement (dBm)} + \text{Equivalent Antenna Gain (dBi)}$$

Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: Maximum Radiated Output
 Operating Conditions: Middle Frequency, 589.925MHz, 10mW
 Operator Name: Juan Castrejon
 Comment: FCC Part15C, Section 15.236
 Date Tested: Tested on July 27, 2020

Measured in RF Output, in dBm	Equivalent Antenna Gain in dBi	EIRP in dBm	EIRP in mW	EIRP Limit in mW	Margin In mW
9.92	0.2	10.12	10.28	50.00	39.72

$$\text{EIRP (dBm)} = \text{Measurement (dBm)} + \text{Equivalent Antenna Gain (dBi)}$$

Appendix C

Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: Maximum Radiated Output
 Operating Conditions: High Frequency, 607.875MHz, 1mW
 Operator Name: Juan Castrejon
 Comment: FCC Part15C, Section 15.236
 Date Tested: Tested on July 27, 2020

Measured in RF Output, in dBm	Equivalent Antenna Gain in dBi	EIRP in dBm	EIRP in mW	EIRP Limit in mW	Margin In mW
-0.54	0.2	-0.34	0.93	50.00	49.07

$$\text{EIRP (dBm)} = \text{Measurement (dBm)} + \text{Equivalent Antenna Gain (dBi)}$$

Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: Maximum Radiated Output
 Operating Conditions: High Frequency, 607.875MHz, 10mW
 Operator Name: Juan Castrejon
 Comment: FCC Part15C, Section 15.236
 Date Tested: Tested on July 27, 2020

Measured in RF Output, in dBm	Equivalent Antenna Gain in dBi	EIRP in dBm	EIRP in mW	EIRP Limit in mW	Margin In mW
9.67	0.2	9.87	9.71	50.00	40.29

$$\text{EIRP (dBm)} = \text{Measurement (dBm)} + \text{Equivalent Antenna Gain (dBi)}$$



Appendix C

Test Information

EUT Name: QLXD1 J50A
Serial Number: N6
Test Description: Maximum Radiated Output
Operating Conditions: Low Frequency, 614.125MHz, 1mW
Operator Name: Juan Castrejon
Comment: FCC Part15C, Section 15.236
Date Tested: Tested on July 27, 2020

Measured in RF Output, in dBm	Equivalent Antenna Gain in dBi	EIRP in dBm	EIRP in mW	EIRP Limit in mW	Margin In mW
-0.63	0.2	-0.43	0.91	20.00	19.09

$$\text{EIRP (dBm)} = \text{Measurement (dBm)} + \text{Equivalent Antenna Gain (dBi)}$$

Test Information

EUT Name: QLXD1 J50A
Serial Number: N6
Test Description: Maximum Radiated Output
Operating Conditions: Low Frequency, 614.125MHz, 10mW
Operator Name: Juan Castrejon
Comment: FCC Part15C, Section 15.236
Date Tested: Tested on July 27, 2020

Measured in RF Output, in dBm	Equivalent Antenna Gain in dBi	EIRP in dBm	EIRP in mW	EIRP Limit in mW	Margin In mW
9.56	0.2	9.76	9.46	20.00	10.54

$$\text{EIRP (dBm)} = \text{Measurement (dBm)} + \text{Equivalent Antenna Gain (dBi)}$$

Appendix C

Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: Maximum Radiated Output
 Operating Conditions: High Frequency, 615.875MHz, 1mW
 Operator Name: Juan Castrejon
 Comment: FCC Part15C, Section 15.236
 Date Tested: Tested on July 27, 2020

Measured in RF Output, in dBm	Equivalent Antenna Gain in dBi	EIRP in dBm	EIRP in mW	EIRP Limit in mW	Margin In mW
-0.58	0.2	-0.38	0.92	20.00	19.08

$$\text{EIRP (dBm)} = \text{Measurement (dBm)} + \text{Equivalent Antenna Gain (dBi)}$$

Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: Maximum Radiated Output
 Operating Conditions: High Frequency, 615.875MHz, 10mW
 Operator Name: Juan Castrejon
 Comment: FCC Part15C, Section 15.236
 Date Tested: Tested on July 27, 2020

Measured in RF Output, in dBm	Equivalent Antenna Gain in dBi	EIRP in dBm	EIRP in mW	EIRP Limit in mW	Margin In mW
9.55	0.2	9.75	9.44	20.00	10.56

$$\text{EIRP (dBm)} = \text{Measurement (dBm)} + \text{Equivalent Antenna Gain (dBi)}$$

Appendix C

Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: Maximum Radiated Output
 Operating Conditions: Low Frequency, 572.000MHz, 1mW
 Operator Name: Juan Castrejon
 Comment: RSS-210
 Date Tested: Tested on July 27, 2020

Measured in RF Output, in dBm	Equivalent Antenna Gain in dBi	EIRP in dBm	EIRP in mW	EIRP Limit in mW	Margin In mW
-0.26	0.2	-0.06	0.99	250.00	249.01

$$\text{EIRP (dBm)} = \text{Measurement (dBm)} + \text{Equivalent Antenna Gain (dBi)}$$

Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: Maximum Rated Output
 Operating Conditions: Low Frequency, 572.000MHz, 10mW
 Operator Name: Juan Castrejon
 Comment: RSS-210
 Date Tested: Tested on July 27, 2020

Measured in RF Output, in dBm	Equivalent Antenna Gain in dBi	EIRP in dBm	EIRP in mW	EIRP Limit in mW	Margin In mW
10.03	0.2	10.23	10.54	250.00	239.46

$$\text{EIRP (dBm)} = \text{Measurement (dBm)} + \text{Equivalent Antenna Gain (dBi)}$$

Appendix C

Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: Maximum Radiated Output
 Operating Conditions: Middle Frequency, 589.925MHz, 1mW
 Operator Name: Juan Castrejon
 Comment: RSS-210
 Date Tested: Tested on July 27, 2020

Measured in RF Output, in dBm	Equivalent Antenna Gain in dBi	EIRP in dBm	EIRP in mW	EIRP Limit in mW	Margin In mW
-0.34	0.2	-0.14	0.97	250.00	249.03

$$\text{EIRP (dBm)} = \text{Measurement (dBm)} + \text{Equivalent Antenna Gain (dBi)}$$

Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: Maximum Rated Output
 Operating Conditions: Middle Frequency, 589.925MHz, 10mW
 Operator Name: Juan Castrejon
 Comment: RSS-210
 Date Tested: Tested on July 27, 2020

Measured in RF Output, in dBm	Equivalent Antenna Gain in dBi	EIRP in dBm	EIRP in mW	EIRP Limit in mW	Margin In mW
9.92	0.2	10.12	10.28	250.00	239.72

$$\text{EIRP (dBm)} = \text{Measurement (dBm)} + \text{Equivalent Antenna Gain (dBi)}$$

Appendix C

Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: Maximum Radiated Output
 Operating Conditions: High Frequency, 607.875MHz, 1mW
 Operator Name: Juan Castrejon
 Comment: RSS-210
 Date Tested: Tested on July 27, 2020

Measured in RF Output, in dBm	Equivalent Antenna Gain in dBi	EIRP in dBm	EIRP in mW	EIRP Limit in mW	Margin In mW
-0.54	0.2	-0.34	0.92	250.00	249.08

$$\text{EIRP (dBm)} = \text{Measurement (dBm)} + \text{Equivalent Antenna Gain (dBi)}$$

Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: Maximum Rated Output
 Operating Conditions: High Frequency, 607.875MHz, 10mW
 Operator Name: Juan Castrejon
 Comment: RSS-210
 Date Tested: Tested on July 27, 2020

Measured in RF Output, in dBm	Equivalent Antenna Gain in dBi	EIRP in dBm	EIRP in mW	EIRP Limit in mW	Margin In mW
9.67	0.2	9.87	9.71	250.00	240.29

$$\text{EIRP (dBm)} = \text{Measurement (dBm)} + \text{Equivalent Antenna Gain (dBi)}$$

Appendix C

Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: Maximum Radiated Output
 Operating Conditions: Low Frequency, 614.125MHz, 1mW
 Operator Name: Juan Castrejon
 Comment: RSS-210
 Date Tested: Tested on July 27, 2020

Measured in RF Output, in dBm	Equivalent Antenna Gain in dBi	EIRP in dBm	EIRP in mW	EIRP Limit in mW	Margin In mW
-0.63	0.2	-0.43	0.91	20.00	19.09

$$\text{EIRP (dBm)} = \text{Measurement (dBm)} + \text{Equivalent Antenna Gain (dBi)}$$

Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: Maximum Rated Output
 Operating Conditions: Low Frequency, 614.125MHz, 10mW
 Operator Name: Juan Castrejon
 Comment: RSS-210
 Date Tested: Tested on July 27, 2020

Measured in RF Output, in dBm	Equivalent Antenna Gain in dBi	EIRP in dBm	EIRP in mW	EIRP Limit in mW	Margin In mW
9.56	0.2	9.76	9.46	20.00	10.54

$$\text{EIRP (dBm)} = \text{Measurement (dBm)} + \text{Equivalent Antenna Gain (dBi)}$$

Appendix C

Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: Maximum Radiated Output
 Operating Conditions: High Frequency, 615.875MHz, 1mW
 Operator Name: Juan Castrejon
 Comment: RSS-210
 Date Tested: Tested on July 27, 2020

Measured in RF Output, in dBm	Equivalent Antenna Gain in dBi	EIRP in dBm	EIRP in mW	EIRP Limit in mW	Margin In mW
-0.58	0.2	-0.38	0.92	20.00	19.08

$$\text{EIRP (dBm)} = \text{Measurement (dBm)} + \text{Equivalent Antenna Gain (dBi)}$$

Test Information

EUT Name: QLXD1 J50A
 Serial Number: N6
 Test Description: Maximum Rated Output
 Operating Conditions: High Frequency, 615.875MHz, 10mW
 Operator Name: Juan Castrejon
 Comment: RSS-210
 Date Tested: Tested on July 27, 2020

Measured in RF Output, in dBm	Equivalent Antenna Gain in dBi	EIRP in dBm	EIRP in mW	EIRP Limit in mW	Margin In mW
9.55	0.2	9.75	9.44	20.00	10.56

$$\text{EIRP (dBm)} = \text{Measurement (dBm)} + \text{Equivalent Antenna Gain (dBi)}$$