SHURE

ELECTROMAGNETIC COMPATIBILITY LABORATORY
TEST REPORT

TEST REPORT TITLE: P10T H22 Test Report FCC Part 15 RSS 210 Issue 9

TEST ITEM DESCRIPTION: The P10T is a rack-mounted dual channel personal monitoring system transmitter with Left and Right transmitter outputs for use in professional audio configurations. It is powered by 60Hz 120V power from US outlets and features a full shutoff switch in the rear as well as a partial shutoff switch in the front of the device.

PROJECT ID NUMBER: SEL-038
Smorgasbord

DATE TESTED:8/16/2019 through 8/27/2019

TEST PERSONNEL: Moonie Hart

TEST SPECIFICATION (STANDARDS APPLIED): FCC Part 15.236
RSS 210 Issue 9, Annex G: Low-Power Radio Apparatus Operating in the Television Bands

TEST REPORT BY:	SIGNATURE	Global Compliance Engineer POSITION	9/5/2019 DATE
APPROVED BY:	SIGNATURE	GC Project Engineer POSITION	9/5/2019 DATE

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C	Frequency Stability

REPORT REVISION HISTORY

Revision	Date	Description
0	9/5/2019	Released for use

Report Title:

1. INTRODUCTION

1.1. Scope of Tests

This report presents the results of testing per FCC Part 15, Section 236 and RSS 210 Issue 9, Annex G for Radiated RF Spurious Emissions, Necessary Bandwidth, and Maximum Radiated Power. 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 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 Range (MHz)	Nominal Output Power (mW)
P10T	H22	518 to 584	10

1.2. Purpose

This series of tests was performed to determine if the test item would meet the selected requirements of the FCC Part 15 and RSS 210 Issue 9 specifications.

1.3. Deviations, Additions and Exclusions

None

1.4. EMC Laboratory Identification

The electromagnetic compatibility tests were performed by the Shure Electromagnetic Laboratory, Shure Incorporated, 5800 West Touhy Ave, Niles, Illinois 60714-4608.

1.5. Summary of Tests Performed

The following electromagnetic compatibility tests were performed on the test item in accordance with FCC and ISED specifications.

Test Spec (STD)	Description	Tested Range	Described in Appendix	Test Results
FCC Part 15.236 (d)(1) RSS 210.9 G.3.1	RF Power Output	518MHz to 584MHz	A	Pass
FCC Part 15.236(g) RSS 210.9 G.3.4	Necessary Bandwidth	518MHz to 584MHz	B	Pass
FCC Part 15.236(f)(3) RSS 210.9 G.3.3	Frequency Stability	518MHz to 584MHz	C	Pass

2. APPLICABLE DOCUMENTS
The following documents of the exact issue designated form part of this document to the extent specified herein.

CFR Title 47 Part 15: Radio Frequency Devices

RSS 210 Issue 9: License-Exempt Radio Apparatus: Category I Equipment

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 9kHz to 40GHz

3. TEST ITEM SET-UP AND OPERATION

3.1. General Description

3.1.1. Power Input
The EUT obtains power through the internal power supply.

3.1.2. Signal Input /Output Leads
Audio input through L and R XLR/1/4" inputs. RF out through BNC outputs, audio is wirelessly transmitted.

3.1.3. Grounding Considerations

3.2. Test Sample
The following sample was tested:

Table 3: Shure P10T H22 Wireless Transmitter Sample

P10T H22 Serial Numbers
Test Sample 1

3.3. Operational Mode

All tests were performed at the following transmit frequencies and output power modes shown in table 4.

Band	Frequency in MHz	L/M/H	Power Level in mW
H22	518	Low	10
H22	551	Middle	10
H22	584	High	10

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

5. TEST PROCEDURES
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 SUTs and all associated equipment were returned to Shure Incorporated upon completion of the tests.

7. RESULTS OF TESTS

The results are presented in the Appendices. It was found that the EUT met the requirements of FCC Part 15, Section 236 and RSS 210 Issue 9, Annex G for Maximum Radiated Power, Necessary Bandwidth, and Frequency Stability.

8. CONCLUSIONS

It was determined the EUT did fully comply with the requirements of FCC Part 15, Section 236 and RSS 210 Issue 9, Annex G for Maximum Radiated Power, Necessary Bandwidth, and Frequency Stability.

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

L# or ID	Description	Manufacturer	Model #	Serial #	Frequency Range	Cal Date	Due Date
L05-068-02	Modulation Analyzer	Boonton	8200	46410-1223	100kHz-2000MHz	05/30/2018	05/30/2020
L10-001-14	Audio Amplifier	Shure	FP83			N/A	N/A
L19-010-02	Temperature Chamber	Cincinnati Sub-Zero	ZPHS-32-1.5-H/AC	ZP0344026	N/A	04/16/2019	04/16/2020
L23-021-01	Audio Signal Generator/Analyzer	Audio Precision	SYS2722	48254-1041		4/26/2018	4/26/2020
L23-022-02	Signal and Spectrum Analyzer	Rohde & Schwarz	FSW26	104788	2Hz – 26.5GHz	4/24/2018	4/24/2020
L23-024-01	Universal Frequency Counter/Timer	Agilent	53220A	48254-162	100MHz-6GHz	11/27/2018	11/27/2020
L23-040-01	20dB Attenuator	MCL	BW-S20W2+	46410-1064	DC-18GHz	4/25/2018	4/25/2020
L23-040-04	20dB Attenuator	MCL	BW-N20W5+	48254-109	DC-18GHz	05/31/2018	05/31/2020
L23-040-22	ETSI Noise Filter	Shure	ETSI Noise Filter 2014	N/A			
L23-040-32	ETSI Noise Filter	Shure	ETSI Noise Filter 2014	N/A			
L23-045-36	RF Power Meter	EMPower	7002-006	00151071	18GHz	1/31/2018	1/31/2020
L23-047-14	Programmable AC Power Source	Apt	APT6010	CI114-53835-435	47Hz-500Hz	4/24/2018	4/24/2020

Appendix A – RF Power Output

A.1. PURPOSE

This test was performed to determine if the EUT meets the RF Power Output requirements of FC Part 15.236(d)(1) and RSS 210 Issue 9, Annex G.3.1

A.2.REQUIREMENTS

As stated in FCC Part 15.236(d)(1):

"(d) The maximum radiated power shall not exceed the following values:

(1) In the bands allocated and assigned for broadcast television and in the 600 MHz service band: 50 mW EIRP"

As stated in RSS 210 Issue 9, Annex G.3.1:

"The frequency bands, transmit power, authorized bandwidths and frequency stability limits are provided in Table G1."

Table G1 — Specification for Low-Power Radio Apparatus

Frequency Bands (MHz)	Transmit e.i.r.p. (mW)	Authorized Bandwidth (kHz)	Frequency Stability (ppm)
54-72 76-88 174-216	50	200	± 50
470-608 614-698[Note]	250	200	± 50

A.3. MEASUREMENT UNCERTAINTY

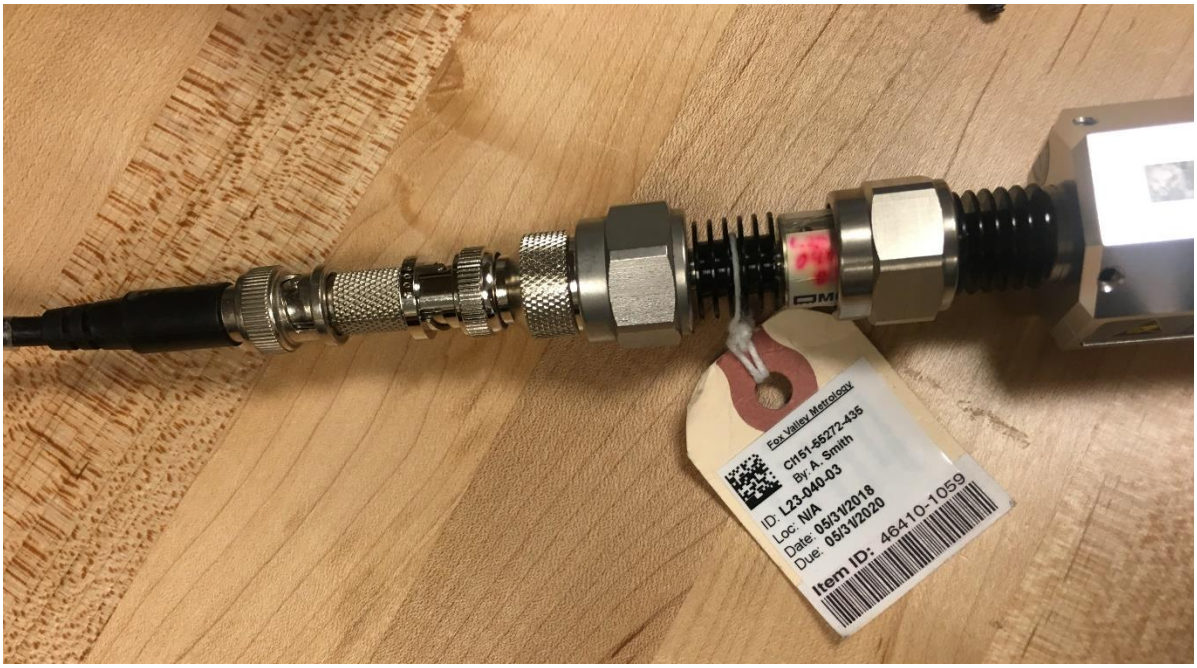
All measurements are an estimate of their true value. The measurement uncertainty characterizes, with a specified confidence level, the spread of values which may be possible for a given measurement system.

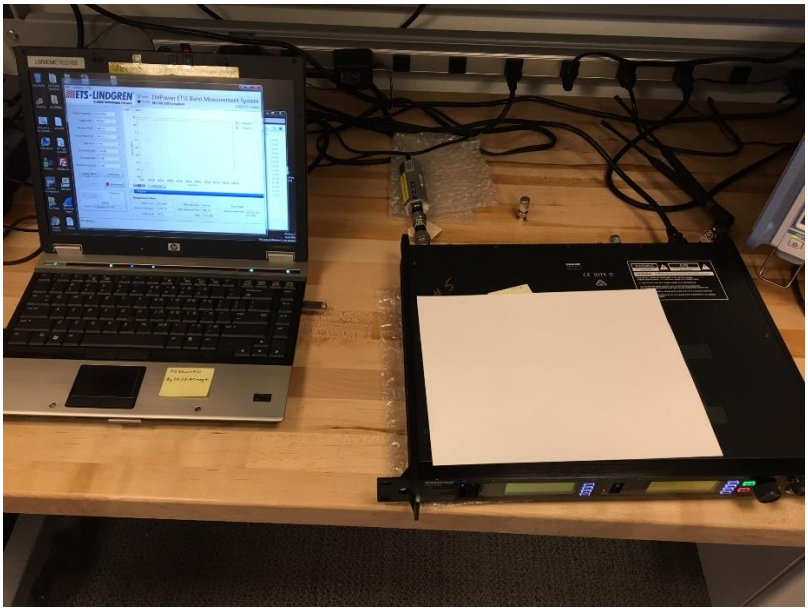
Values of Expanded Measurement Uncertainty (95% Confidence):

	Std uncertainty +u(dB)	-u(dB)
Expanded Uncertainty (U_{95}):	**0.461**	**0.461**

These values can be found in the document titled 'Carrier Power w ETS Power Meter (L23-045-36).xlsx' located at *\\shure.com\organization\Quality\Product Conformance-Lab Services\Global Compliance\Shure EMC Lab\Controlled Documents\Measurement Uncertainties.*

A.4. TEST SETUP AND INSTRUMENTATION





A.5. EUT OPERATION

The EUT was powered up and the transmit frequencies (518MHz, 551MHz, and 584MHz) and the power output level (10mW) of the transmitter were selected using the front panel controls.

A.6. SPECIFIC TEST PROCEDURES

1. The EUT's left RF out was connected to an artificial antenna at ambient temperature and set at 10mW output power.
2. The EUT's frequency was set at the low test frequency (518.000MHz).
3. The power level was measured and recorded.

4. Step 2) was repeated at the mid and high frequencies (551.000MHz and 584MHz).
5. The above procedure was then repeated for the right RF output.

A.7. CONCLUSION

The device performed within the bounds set by FCC Part 15 and RSS 210.9 Annex G. The following tables detail the output power at each frequency tested at 10mW compared to the FCC and IC limits. The first table shows the values for the left RF transmitter and the second is for the right RF transmitter on the stereo device.

A.8. DATA

Smorgasbord
P10T
H22

Left Transmitter	Frequency (MHz)	Nominal Power (mW)	Measured Power (dBm)	Measured Power (mW)	FCC Limit (mW) EIRP	RSS Limit (mW)
RF Out1 **H22**	518.000	10	9.57	9.06	50	250
	551.000	10	9.54	8.99	50	250
	584.000	10	9.57	9.06	50	250

Right Transmitter	Frequency (MHz)	Nominal Power (mW)	Measured Power (dBm)	Measured Power (mW)	FCC Limit (mW)	RSS Limit (mW)
RF Out2 **H22**	518.000	10	9.72	9.38	50	250
	551.000	10	9.55	9.02	50	250
	584.000	10	9.74	9.42	50	250

Appendix B – Necessary Bandwidth

B.1 PURPOSE

This test was performed to determine if the EUT meets the necessary bandwidth requirements of FCC Part15(g) and RSS 210.9 Annex G.3.4.

B.2 REQUIREMENTS

As stated in FCC 15.236(g):

"(g) Emissions within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the emission mask in §8.3 of ETSI 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. Emissions outside of this band shall comply with the limits specified in section 8.4 of ETSI EN 300 422-1 V1.4.2 (2011-08)."

As stated in RSS 210 Issue 9 Annex G.3.4:

"The transmitter unwanted emissions shall meet the requirements in sections 8.3 and 8.4 of ETSI 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."

B.3 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):

	Std uncertainty	
	+u(%)	-u(%)
Expanded Uncertainty (U_{95}):	**0.130**	**0.130**

These values can be found in the document titled 'Occupied Bandwidth Max Input Freq Above 3kHz.xlsx' located at *shure.com**organization**Quality**Product Conformance-Lab Services**Global Compliance**Shure EMC Lab**Controlled Documents**Measurement Uncertainties.*

B.4 TEST SETUP AND INSTRUMENTATION

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

B.5 EUT OPERATION

The device was powered on and set to the test frequencies (518MHz, 551MHz, and 584MHz) using the buttons on the front of the device.

B.6 SPECIFIC TEST PROCEDURES

The device was tested using procedures outlined in EN 300 422-1 part 8.3.2.1 as listed below.

“The arrangement of test equipment as shown in figure B.1 shall be used. Note that the noise meter conforms to (quasi peak) without weighting filter (flat).

With the Low Frequency (LF) audio signal generator set to 500 Hz, the audio input level to the DUT shall be adjusted to 8 dB below the limiting threshold (-8 dB (lim)) as declared by the manufacturer.

The corresponding audio output level from the demodulator shall be measured and recorded.

The input impedance of the noise meter shall be sufficiently high to avoid more than 0,1 dB change in input level when the meter is switched between input and output.

The audio input level shall be increased by 20 dB, i.e. to +12 dB (lim), and the corresponding change in output level shall be measured.

It shall be checked that the audio output level has increased by ≤ 10 dB.

If this condition is not met, the initial audio input level shall be increased from -8 dB (lim) in 1 dB steps until the above condition is fulfilled, and the input level recorded in the test report. This level replaces the value derived from the manufacturer's declaration and is defined as -8 dB (lim).

Measure the input level at the transmitter required to give +12 dB (lim).

The LF generator shall be replaced with the weighted noise source to Recommendation ITU-R BS.559-2 [i.3], band-limited to 15 kHz as described in IEC 60244-13 [2], and the level shall be adjusted such that the measured input to the transmitter corresponds to +12 dB (lim).

If the transmitter incorporates any ancillary coding or signalling channels (e.g. pilot-tones), these shall be enabled prior to any spectral measurements.

If the transmitter incorporates more than one audio input, e.g. stereo systems, the second and subsequent channels shall be simultaneously driven from the same noise source, attenuated to a level of -6 dB (lim).

The transmitter RF output spectrum shall be measured, using a spectrum analyser with the following settings:

- centre frequency: fc: Transmitter (Tx) nominal frequency;
- dispersion (Span): fc - 1 MHz to fc + 1 MHz;
- Resolution BandWidth (RBW): 1 kHz;
- Video BandWidth (VBW): 1 kHz;
- detector: Peak hold.

Figure 8 shows the spectrum mask for all analogue systems in the band. The -90 dBc point shall be ±1 MHz from fc measured with an average detector. To comply, a measured value shall fall below the mask limit.”

A +12dB level of -28dBV and a -8dB level of -48dBV were chosen using the first set of instructions, and the output RF power was measured with inputs of -28dBV for the +12dB level and -46dBV for the -6dB level.

B.7 CONCLUSION

It was found that the EUT complies with the requirements of FCC Part 15.236(g) and RSS 210 Issue 9, Annex G.3.4.

B.8 DATA

The necessary bandwidth data are presented on the following pages. Data are shown as the maximum relative level of the output level within the emission mask. As shown by the test data, the necessary bandwidth of the EUT meets the requirements of FCC Part 15.236(g) and RSS 210 Issue 9, Annex G.3.4.

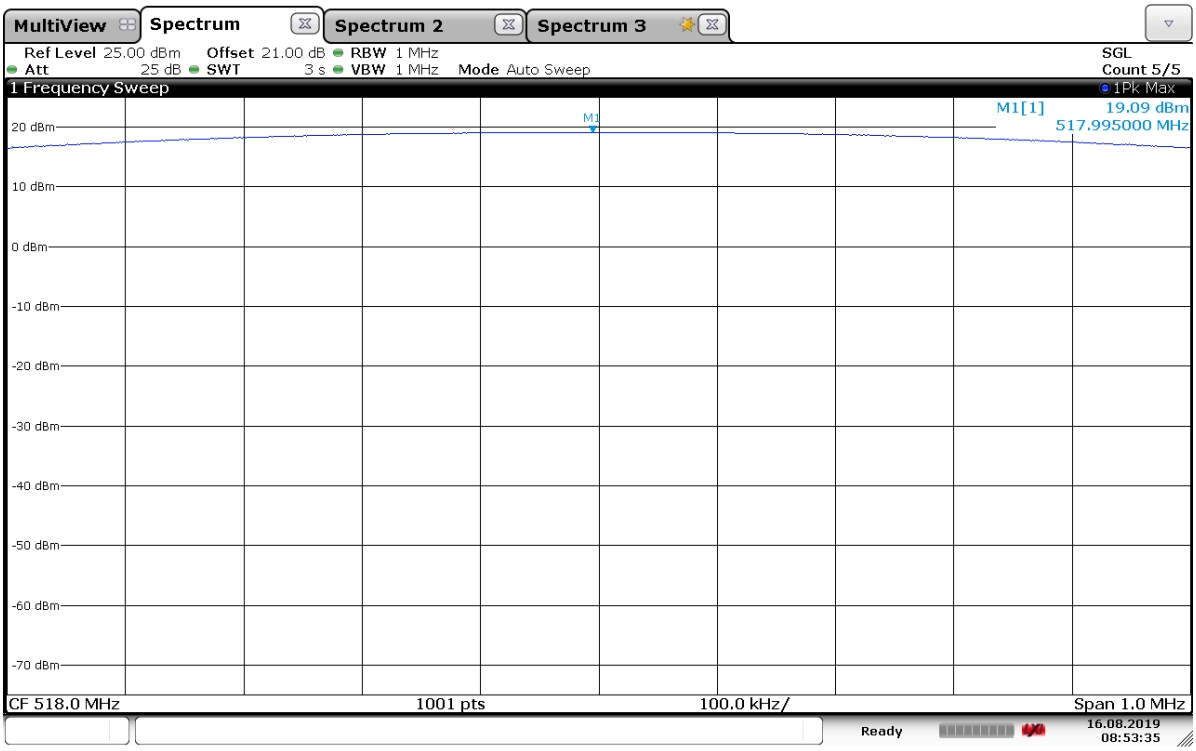


Figure 1: Offset value for 518MHz carrier frequency on left transmitter

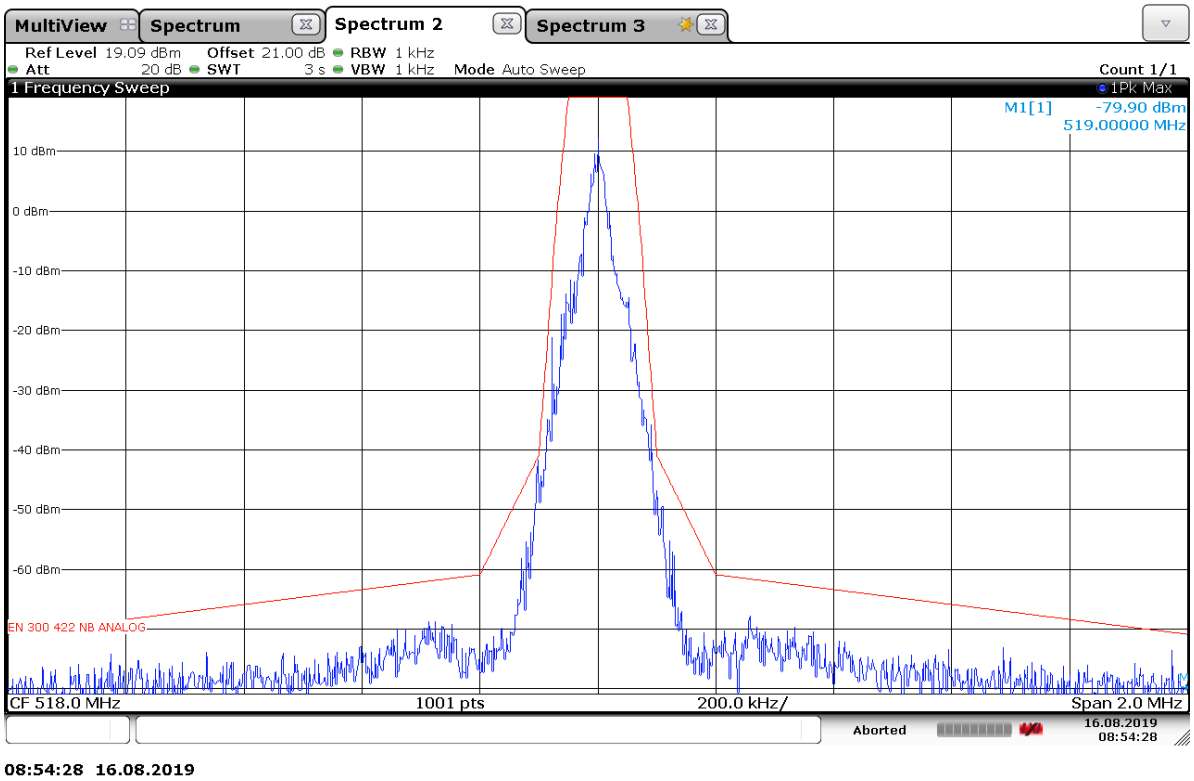


Figure 2: Emission Mask for 518MHz carrier frequency on left transmitter

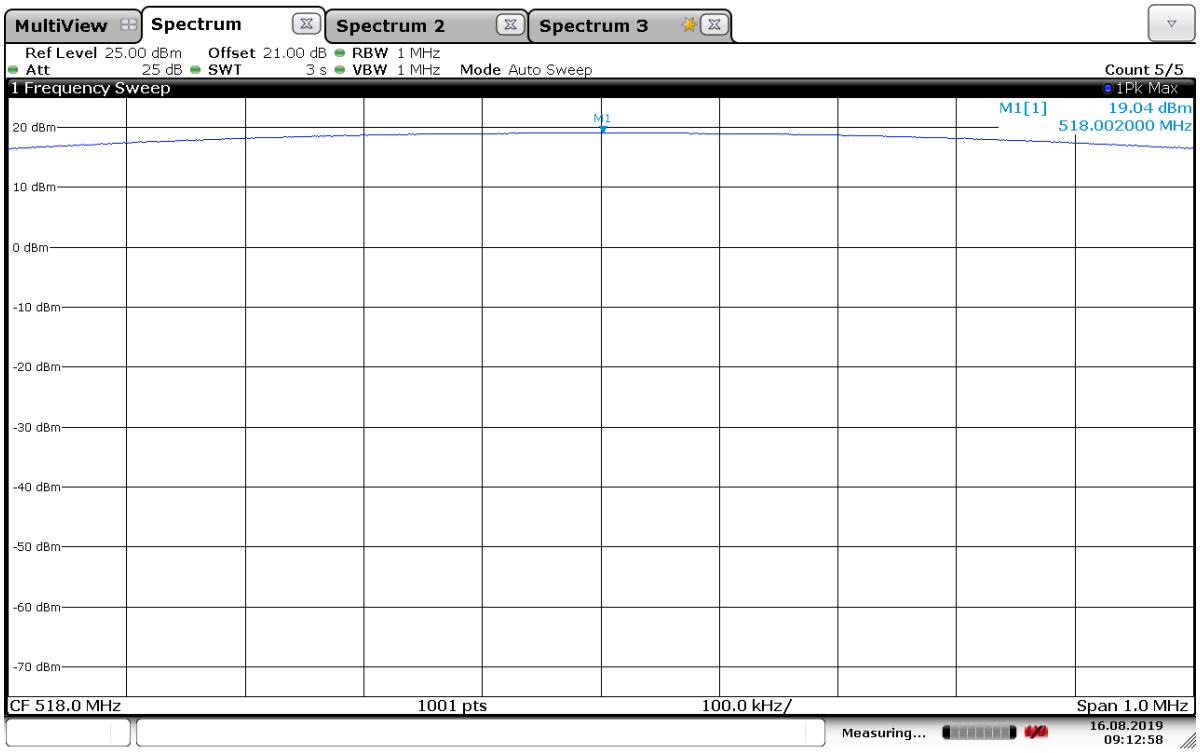


Figure 3: Offset value for 518MHz carrier frequency on right transmitter

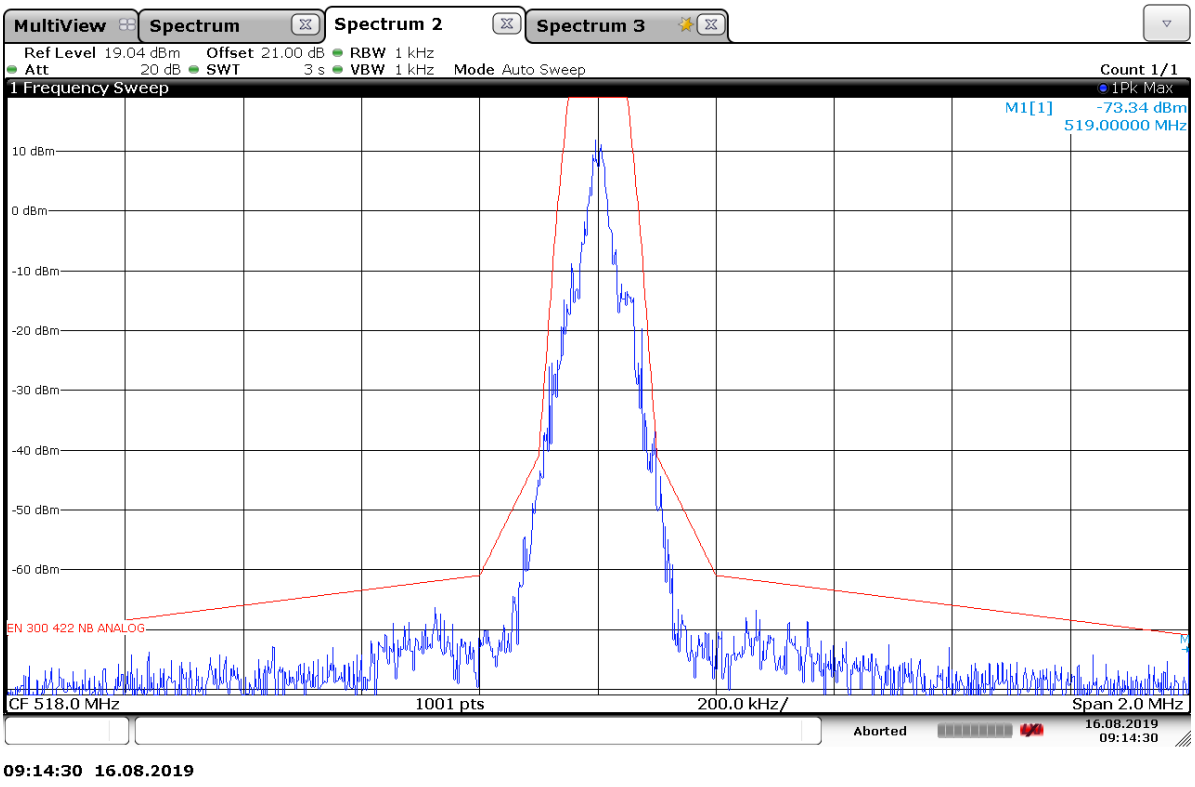


Figure 4: Emission Mask for 518MHz carrier frequency on right transmitter

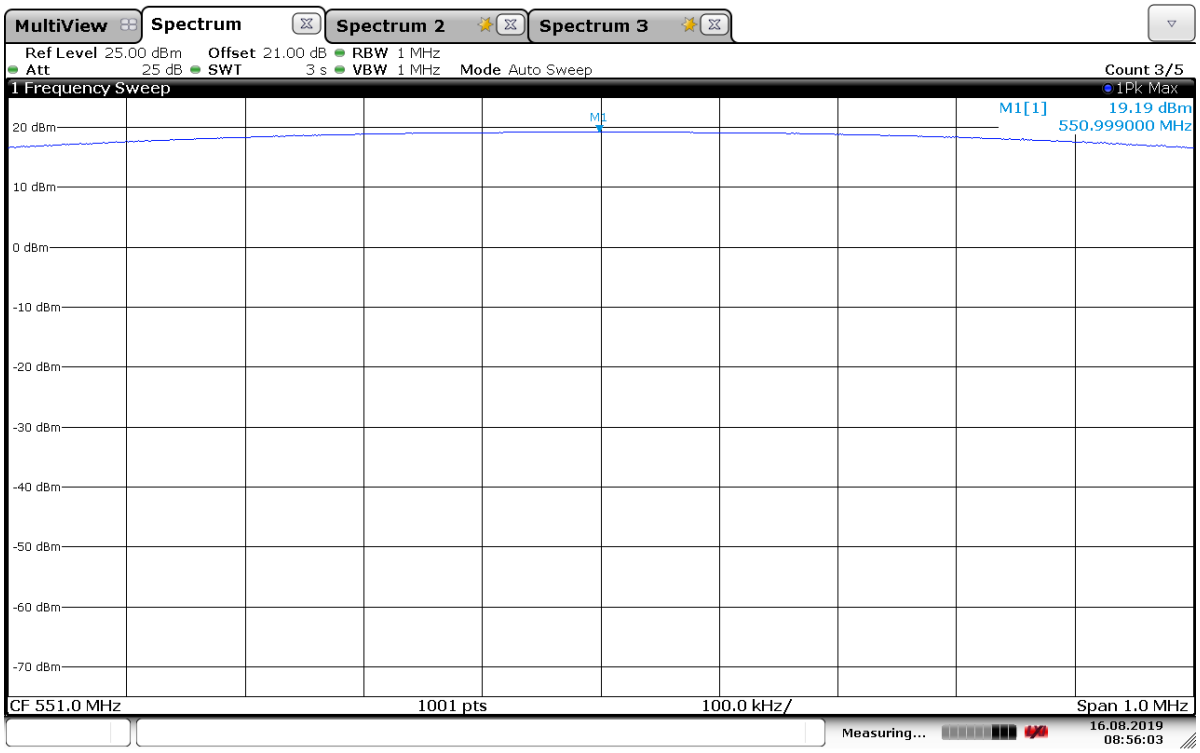


Figure 5: Offset value for 551MHz carrier frequency on left transmitter

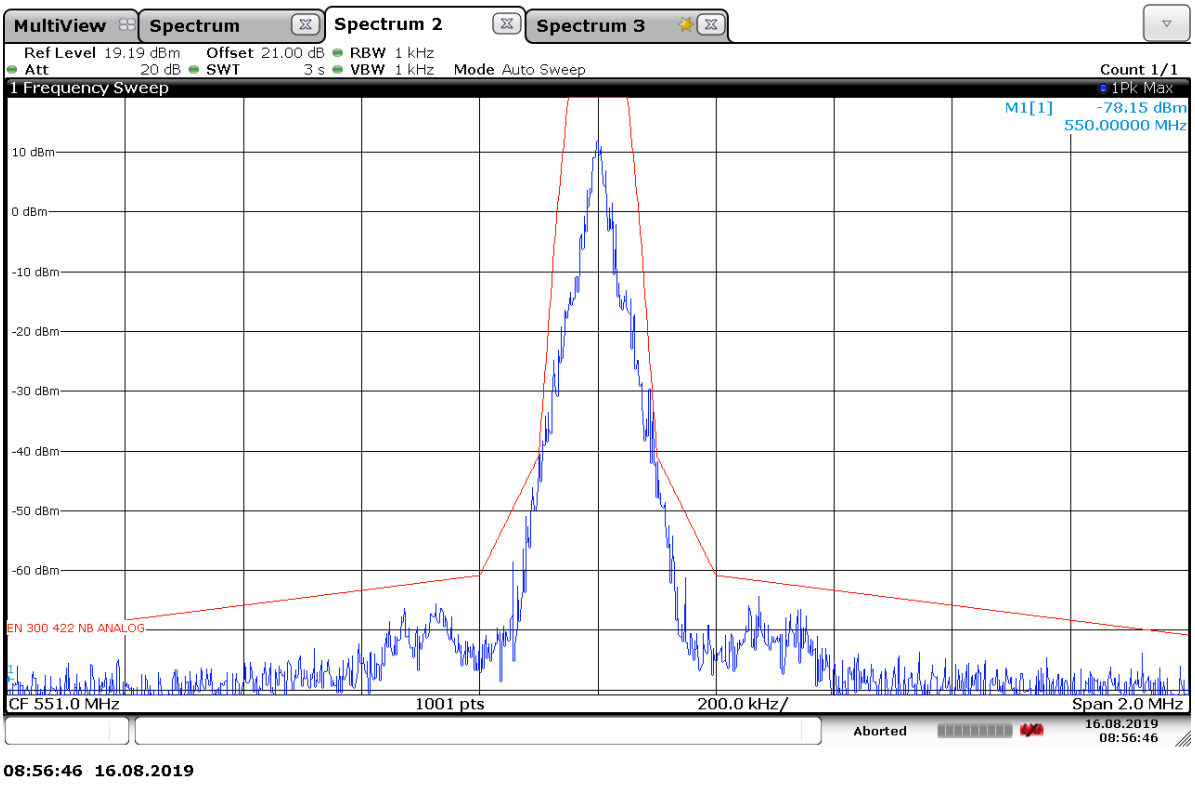


Figure 6: Emission Mask for 551MHz carrier frequency on left transmitter

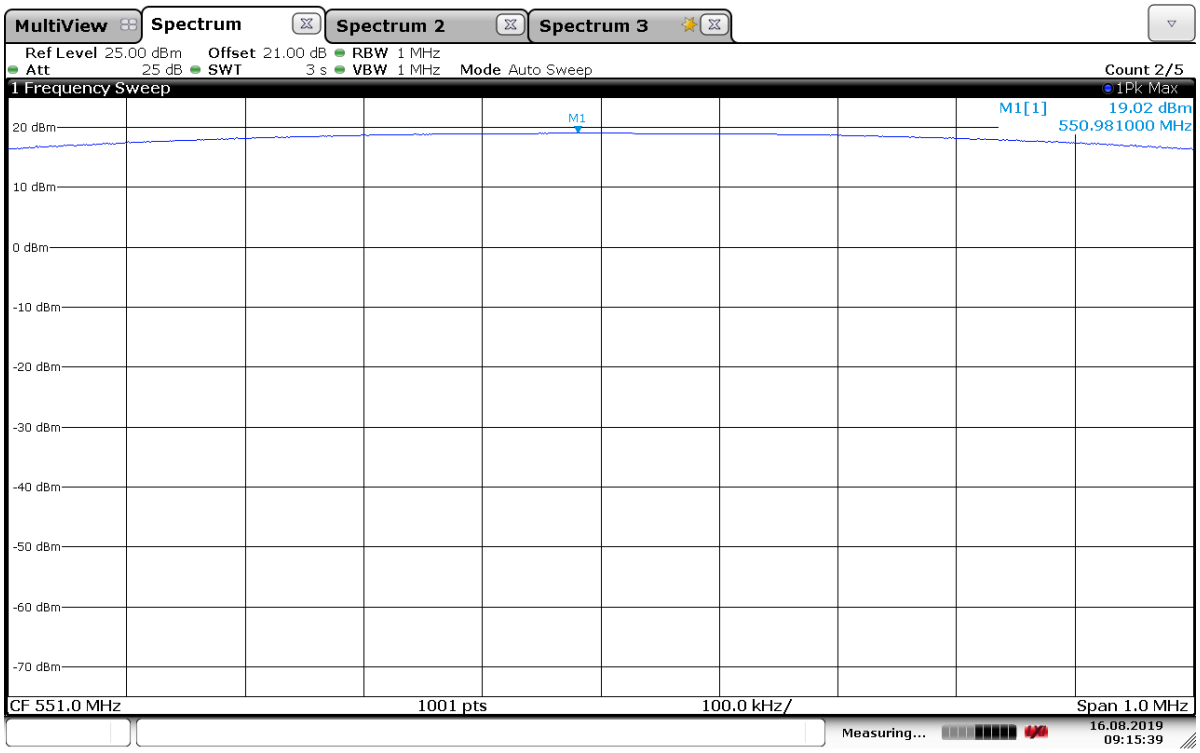


Figure 7: Offset value for 551MHz carrier frequency on right transmitter

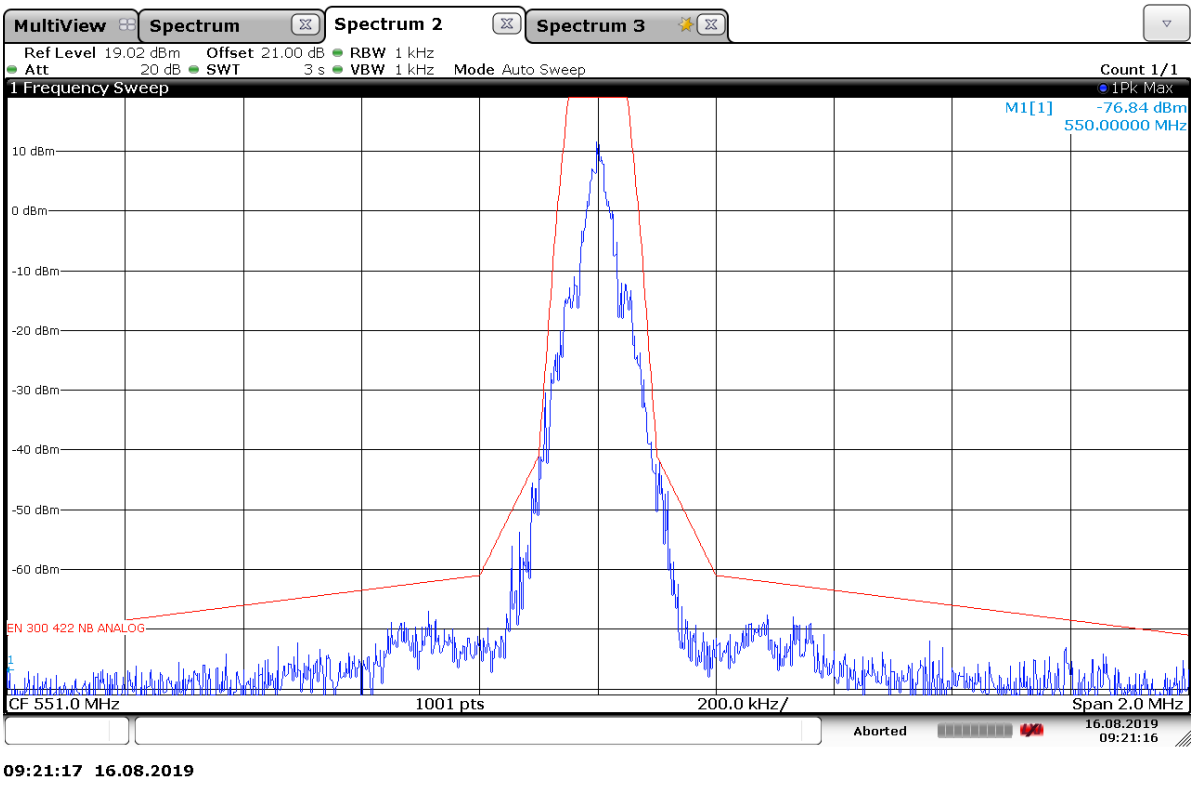


Figure 8: Emission Mask for 551MHz carrier frequency on right transmitter

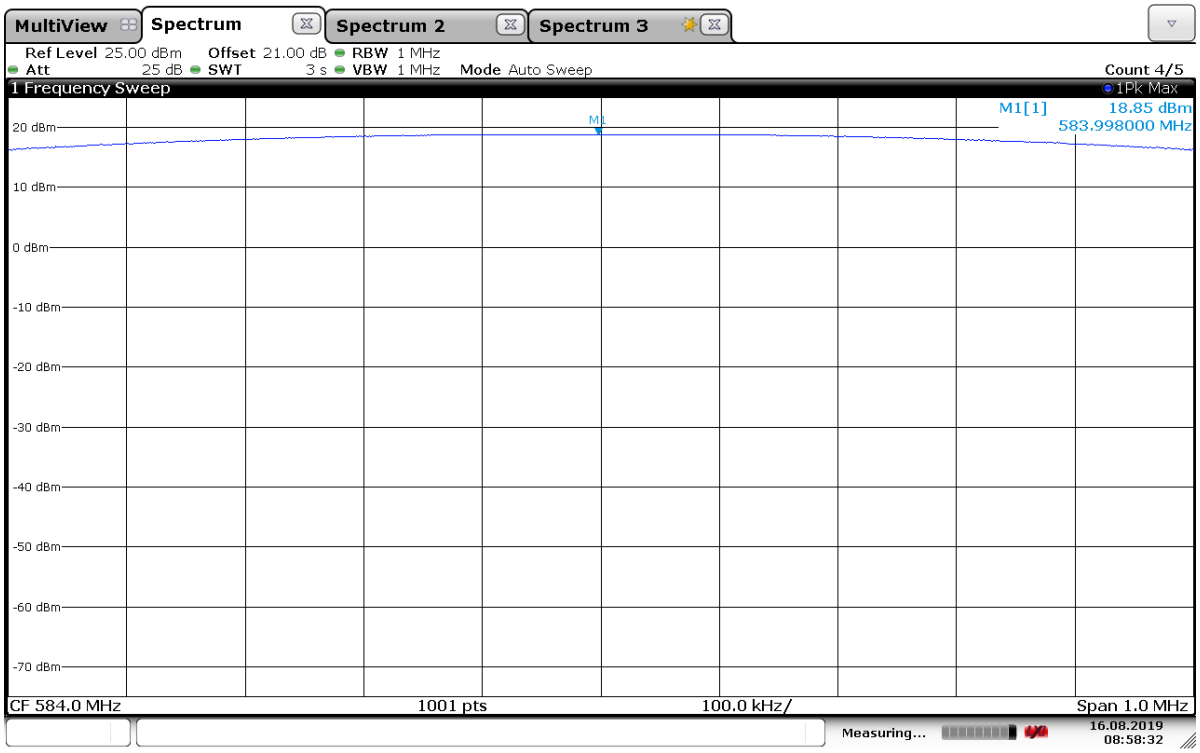


Figure 9: Offset value for 584MHz carrier frequency on left transmitter

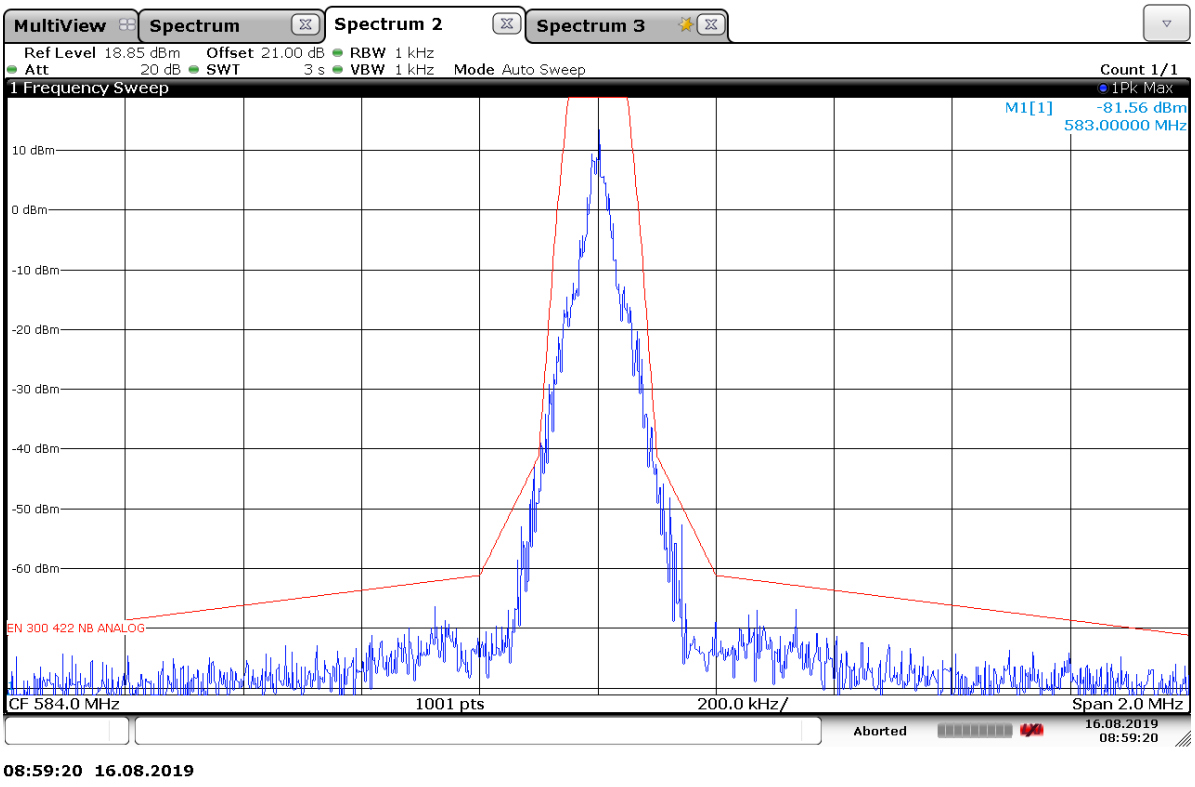


Figure 10: Emission Mask for 584MHz carrier frequency on left transmitter

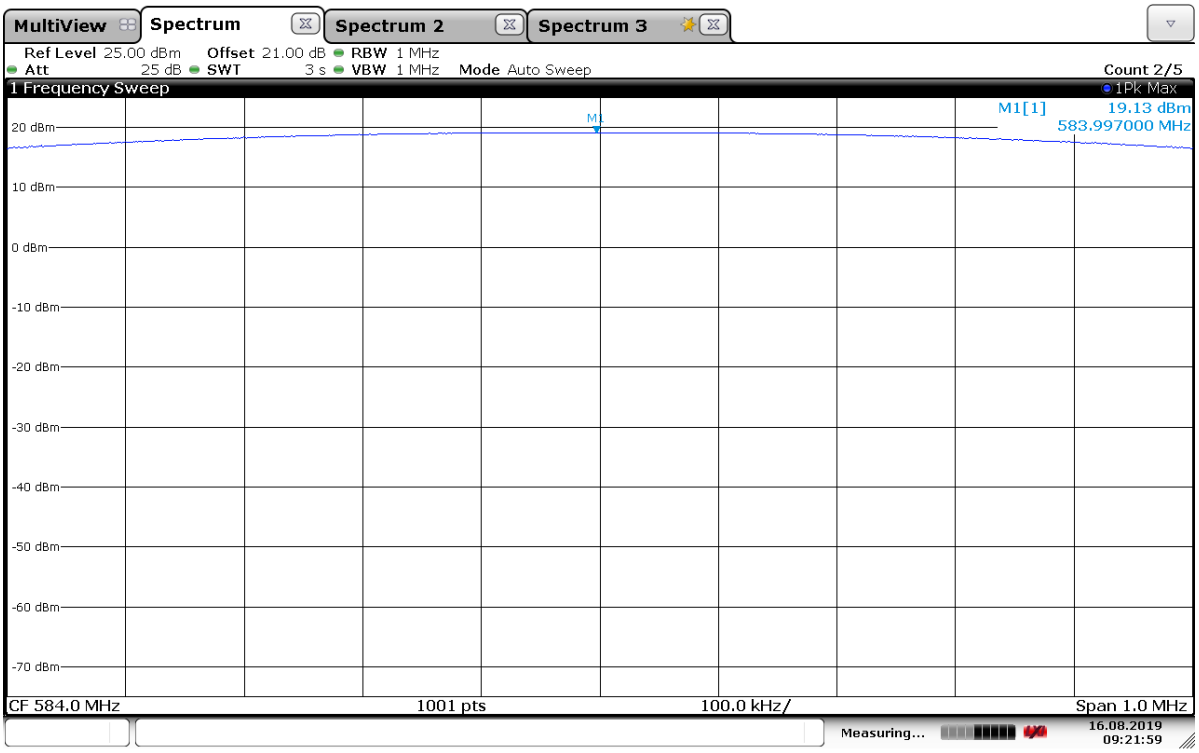


Figure 11: Offset value for 584MHz carrier frequency on right transmitter

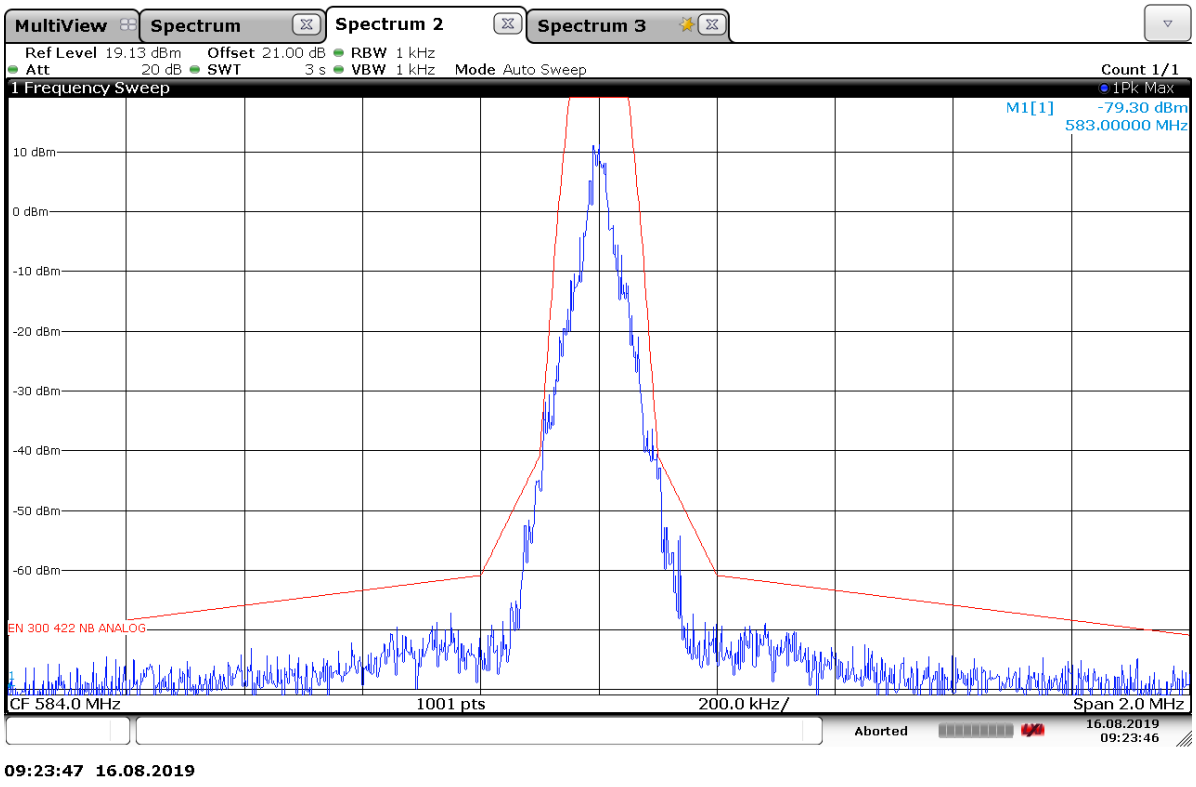


Figure 12: Emission Mask for 584MHz carrier frequency on right transmitter

Annex C – Frequency Stability

C.1 PURPOSE

This test was performed to determine if the EUT meets the frequency stability requirements of FCC Part 15.236(f)(3) and RSS 210 Issue 9, Annex G.3.3.

C.2 REQUIREMENTS

As stated in FCC Part 15.236(f)(3):

"The frequency tolerance of the carrier signal shall be maintained within ±0.005% of the operating frequency over a temperature variation of −20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. Battery operated equipment shall be tested using a new battery."

As stated in RSS 210 Issue 9, Annex G.3.3:

"The frequency stability of equipment shall comply with the limits specified in Table G1, when tested under the frequency stability testing condition specified in RSS-Gen."

C.3 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):

	Std uncertainty ±u(error)
Expanded Uncertainty (U_{95}):	**5.83E-08**

These values can be found in the document titled 'Frequency Error_Stability – 2018_09_24.xlsx' located at *\\shure.com\organization\Quality\Product Conformance-Lab Services\Global Compliance\Shure EMC Lab\Controlled Documents\Measurement Uncertainties.*

- 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.

C.4 TEST SETUP AND INSTRUMENTATION

Test setup can be seen in the images below. Instrumentation is listed in the table 10-1.


L19-010-02
9.9°C
EXTECH
Type K / J Thermometer
SAFE


SHURE
Shure
518.000
Shure
518.000
6000 SERIES PROGRAMMABLE AC POWER SOURCE
AC OUTPUT
97.7 V 0.328 A


TEMPERATURE/
HUMIDITY TEST 2
CAUTION
O NOT DISTURB
ST IN PROGRESS
DATE 8/17
ATE 8/26
INFO
Moore

C.5 EUT OPERATION

The device was powered on and set to the test frequencies (518MHz, 551MHz, and 584MHz) and power level (10mW) using the buttons on the front of the device.

C.6 SPECIFIC TEST PROCEDURES

(1) The temperature chamber was set to -30°C with the EUT inside and powered on.
(2) The EUT was allowed to soak for ~20 minutes after the temperature chamber reached the set temperature.
(3) The measured frequency of the transmitter was then recorded in the spreadsheet in section D.7.
(4) The temperature chamber was incremented +10°C with the EUT inside and powered on.
(5) Steps 2 through 4 were repeated until the device reached +50°C.
(6) Steps 1 through 4 were repeated for representative low, mid and high frequencies within the EUT's operational bands.

C.7 CONCLUSION

It was found that the P10T H22 fully complies with the requirements listed in FCC Part 15.236(f)(3) and RSS 210 Issue 9, Annex G.3.3.

C.8 DATA

The data from the test is listed on the following pages.

FCC									
	Temperature (°C)	Voltage	Nominal Frequency (MHz)	Measured Frequency (MHz)	Deviation (%)	Frequency Stability (%)	Deviation (Hz)	Frequency Stability (Hz)	Pass/Fail
518MHz, 100mW									
	-30	120VAC, 60Hz	518.000	518.000140	0.000027	0.005	140.000	25900	PASS
	-20	120VAC, 60Hz	518.000	518.000071	0.000014	0.005	71.000	25900	PASS
	-10	120VAC, 60Hz	518.000	518.000095	0.000018	0.005	95.000	25900	PASS
	0	120VAC, 60Hz	518.000	518.000090	0.000017	0.005	90.000	25900	PASS
	10	120VAC, 60Hz	518.000	518.000041	0.000008	0.005	41.000	25900	PASS
	20	120VAC, 60Hz	518.000	518.000009	0.000002	0.005	9.000	25900	PASS
	30	120VAC, 60Hz	518.000	517.999978	0.000004	0.005	22.000	25900	PASS
	40	120VAC, 60Hz	518.000	517.999945	0.000011	0.005	55.000	25900	PASS
	50	120VAC, 60Hz	518.000	517.999933	0.000013	0.005	67.000	25900	PASS
	19.9	97.75VAC, 60Hz	518.000	518.000011	0.000002	1.005	11.000	5205900	PASS
	19.9	115VAC, 60Hz	518.000	518.000014	0.000003	2.005	14.000	10385900	PASS
	19.9	132.25VAC, 60Hz	518.000	517.999999	0.000000	3.005	1.000	15565900	PASS
	19.9	102VAC, 60Hz	518.000	518.000011	0.000002	3.005	11.000	15565900	PASS
	19.9	138VAC, 60Hz	518.000	518.000018	0.000003	4.005	18.000	20745900	PASS
551MHz, 100mW									
	-30	120VAC, 60Hz	551.000	551.000144	0.000026	0.005	144.000	27550.00	PASS
	-20	120VAC, 60Hz	551.000	551.000081	0.000015	0.005	81.000	27550.00	PASS
	-10	120VAC, 60Hz	551.000	551.000101	0.000018	0.005	101.000	27550.00	PASS
	0	120VAC, 60Hz	551.000	551.000088	0.000016	0.005	88.000	27550.00	PASS
	10	120VAC, 60Hz	551.000	551.000051	0.000009	0.005	51.000	27550.00	PASS
	20	120VAC, 60Hz	551.000	551.000006	0.000001	0.005	6.000	27550.00	PASS
	30	120VAC, 60Hz	551.000	550.999970	0.000005	0.005	30.000	27550.00	PASS
	40	120VAC, 60Hz	551.000	550.999943	0.000010	0.005	57.000	27550.00	PASS
	50	120VAC, 60Hz	551.000	550.999925	0.000014	0.005	75.000	27550.00	PASS
	19.9	97.75VAC, 60Hz	551.000	551.000010	0.000002	1.005	10.000	5537550.00	PASS
	19.9	115VAC, 60Hz	551.000	550.999997	0.000001	2.005	3.000	11047550.00	PASS
	19.9	132.25VAC, 60Hz	551.000	550.999995	0.000001	3.005	5.000	16557550.00	PASS
	19.9	102VAC, 60Hz	551.000	550.999995	0.000001	3.005	5.000	16557550.00	PASS
	19.9	138VAC, 60Hz	551.000	551.000014	0.000003	4.005	14.000	22067550.00	PASS
584MHz, 100mW									
	-30	120VAC, 60Hz	584.000	584.000119	0.000020	0.005	119.000	29200	PASS
	-20	120VAC, 60Hz	584.000	584.000083	0.000014	0.005	83.000	29200	PASS
	-10	120VAC, 60Hz	584.000	584.000107	0.000018	0.005	107.000	29200	PASS
	0	120VAC, 60Hz	584.000	584.000101	0.000017	0.005	101.000	29200	PASS
	10	120VAC, 60Hz	584.000	584.000049	0.000008	0.005	49.000	29200	PASS
	20	120VAC, 60Hz	584.000	584.000022	0.000004	0.005	22.000	29200	PASS
	30	120VAC, 60Hz	584.000	583.999968	0.000005	0.005	32.000	29200	PASS
	40	120VAC, 60Hz	584.000	583.999936	0.000011	0.005	64.000	29200	PASS
	50	120VAC, 60Hz	584.000	583.999925	0.000013	0.005	75.000	29200	PASS
	19.9	97.75VAC, 60Hz	584.000	584.000015	0.000003	1.005	15.000	5869200	PASS
	19.9	115VAC, 60Hz	584.000	584.000007	0.000001	2.005	7.000	11709200	PASS
	19.9	132.25VAC, 60Hz	584.000	583.999997	0.000001	3.005	3.000	17549200	PASS
	19.9	102VAC, 60Hz	584.000	583.999995	0.000001	3.005	5.000	17549200	PASS
	19.9	138VAC, 60Hz	584.000	584.000022	0.000004	4.005	22.000	23389200	PASS

Figure 13: Frequency Stability data for left transmitter

FCC									
			Nominal	Measured		Frequency		Frequency	
	Temperature	Voltage	Frequency	Frequency	Deviation	Stability	Deviation	Stability	Pass/Fail
	(°C)		(MHz)	(MHz)	(%)	(%)	(Hz)	(Hz)	
518MHz, 100mW									
	-30	120VAC, 60Hz	518.000	518.000094	0.000018	0.005	94.000	25900	PASS
	-20	120VAC, 60Hz	518.000	518.000117	0.000023	0.005	117.000	25900	PASS
	-10	120VAC, 60Hz	518.000	518.000141	0.000027	0.005	141.000	25900	PASS
	0	120VAC, 60Hz	518.000	518.000099	0.000019	0.005	99.000	25900	PASS
	10	120VAC, 60Hz	518.000	518.000051	0.000010	0.005	51.000	25900	PASS
	20	120VAC, 60Hz	518.000	518.000041	0.000008	0.005	41.000	25900	PASS
	30	120VAC, 60Hz	518.000	518.000040	0.000008	0.005	40.000	25900	PASS
	40	120VAC, 60Hz	518.000	518.000022	0.000004	0.005	22.000	25900	PASS
	50	120VAC, 60Hz	518.000	517.999975	0.000005	0.005	25.000	25900	PASS
	19.9	97.75VAC, 60Hz	518.000	518.000033	0.000006	0.005	33.000	25900	PASS
	19.9	115VAC, 60Hz	518.000	518.000044	0.000008	0.005	44.000	25900	PASS
	19.9	132.25VAC, 60Hz	518.000	518.000029	0.000006	0.005	29.000	25900	PASS
	19.9	102VAC, 60Hz	518.000	518.000035	0.000007	1.005	35.000	5205900	PASS
	19.9	138VAC, 60Hz	518.000	518.000035	0.000007	2.005	35.000	10385900	PASS
551MHz, 100mW									
	-30	120VAC, 60Hz	551.000	551.000102	0.000019	0.005	102.000	27550.00	PASS
	-20	120VAC, 60Hz	551.000	551.000111	0.000020	0.005	111.000	27550.00	PASS
	-10	120VAC, 60Hz	551.000	551.000153	0.000028	0.005	153.000	27550.00	PASS
	0	120VAC, 60Hz	551.000	551.000101	0.000018	0.005	101.000	27550.00	PASS
	10	120VAC, 60Hz	551.000	551.000052	0.000009	0.005	52.000	27550.00	PASS
	20	120VAC, 60Hz	551.000	551.000043	0.000008	0.005	43.000	27550.00	PASS
	30	120VAC, 60Hz	551.000	551.000042	0.000008	0.005	42.000	27550.00	PASS
	40	120VAC, 60Hz	551.000	551.000025	0.000005	0.005	25.000	27550.00	PASS
	50	120VAC, 60Hz	551.000	550.999977	0.000004	0.005	23.000	27550.00	PASS
	19.9	97.75VAC, 60Hz	551.000	551.000039	0.000007	0.005	39.000	27550.00	PASS
	19.9	115VAC, 60Hz	551.000	551.000028	0.000005	0.005	28.000	27550.00	PASS
	19.9	132.25VAC, 60Hz	551.000	551.000024	0.000004	0.005	24.000	27550.00	PASS
	19.9	102VAC, 60Hz	551.000	551.000029	0.000005	1.005	29.000	5537550.00	PASS
	19.9	138VAC, 60Hz	551.000	551.000033	0.000006	0.005	33.000	27550.00	PASS
584MHz, 100mW									
	-30	120VAC, 60Hz	584.000	584.000119	0.000020	0.005	119.000	29200	PASS
	-20	120VAC, 60Hz	584.000	584.000122	0.000021	0.005	122.000	29200	PASS
	-10	120VAC, 60Hz	584.000	584.000162	0.000028	0.005	162.000	29200	PASS
	0	120VAC, 60Hz	584.000	584.000103	0.000018	0.005	103.000	29200	PASS
	10	120VAC, 60Hz	584.000	584.000054	0.000009	0.005	54.000	29200	PASS
	20	120VAC, 60Hz	584.000	584.000048	0.000008	0.005	48.000	29200	PASS
	30	120VAC, 60Hz	584.000	584.000042	0.000007	0.005	42.000	29200	PASS
	40	120VAC, 60Hz	584.000	584.000026	0.000004	0.005	26.000	29200	PASS
	50	120VAC, 60Hz	584.000	583.999977	0.000004	0.005	23.000	29200	PASS
	19.9	97.75VAC, 60Hz	584.000	584.000047	0.000008	1.005	47.000	5869200	PASS
	19.9	115VAC, 60Hz	584.000	584.000033	0.000006	2.005	33.000	11709200	PASS
	19.9	132.25VAC, 60Hz	584.000	584.000041	0.000007	3.005	41.000	17549200	PASS
	19.9	102VAC, 60Hz	584.000	584.000036	0.000006	4.005	36.000	23389200	PASS
	19.9	138VAC, 60Hz	584.000	584.000036	0.000006	5.005	36.000	29229200	PASS

Figure 14: Frequency Stability data for right transmitter