

Test Report

Prepared for: Etherstack, Inc

Model: XBR5100T5VI

Description: XBR Base Station Transceiver

FCC ID: 2ADAKXBR5100T5VI

ISED ID: 9487A-XBR5100T5VI

Serial Number: 250500153

Project No: p2540016.8

Test Results: Pass

To

FCC Part 90

ISED RSS-119 Issue 12

Date of Issue: April 23, 2026

On the behalf of the applicant:

Etherstack Inc
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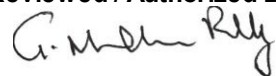
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ISED Site Reg. #2044A-2

Reviewed / Authorized By:



Madhava Gooduru,
EMC RF Test Engineer

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All results contained herein relate only to the sample tested .

Test Result Summary

Band 700 MHz

Specification		Test Name	Test Methodology clause	Pass, Fail, N/A Comments	Comments Specification
FCC	ISED				
2.1046 90.205(j) 90.541(a) 90.635(a)	RSS-119 §5.4	Carrier Output Power (Conducted)	ANSI C63.26-2015 §5.2	Pass	
2.1051 2.1057 90.543(c) 90.543(f)	RSS-119 §5.8 §5.8.9.2	Unwanted Emissions (Transmitter Conducted)	ANSI C63.26-2015 §5.7.4 & §6.5.2.7.4	Pass	
2.1053 2.1057 90.543(c)	RSS-119 §5.8 §5.8.9.2	Field Strength of Spurious Radiation	ANSI C63.26-2015 §5.5.4	Pass	
90.543	NA	Adjacent channel power / emission limitations	ANSI C63.26-2015 §6.5.2.4	Pass	
2.1049(c)	RSS-119 §5.5	Occupied Bandwidth	ANSI C63.26-2015 §5.4	Pass	
2.1047(a)	N/A	Audio Low Pass Filter (Voice Input)	TIA-603-E §2.2.15	Pass	
2.1047(a)	N/A	Audio Frequency Response	ANSI C63.26-2015 §5.3.3.2	Pass	
2.1047(b)	N/A	Modulation Limiting	ANSI C63.26-2015 §5.3.2	Pass	
2.1055 90.213(a) 90.539	RSS-119 §5.3	Frequency Stability (Temperature Variation)	ANSI C63.26-2015 §5.4	Pass	
2.1055 90.213(a) 90.539	RSS-119 §5.3	Frequency Stability (Voltage Variation)	ANSI C63.26-2015 §5.4	Pass	
2.202 (g) TRC-43 issue 3	TRC-43 issue 3	Necessary Bandwidth Calculation	ITU-R SM.1138	Pass	

Band 800 MHz

Specification		Test Name	Test procedure clause	Pass, Fail, N/A Comments	Comments Specification
FCC					
2.1046 90.205(k) 90.635(a)	RSS-119 §5.4	Carrier Output Power (Conducted)	ANSI C63.26-2015 §5.2	Pass	
2.1051 90.210(b)(d)	RSS-119 §5.8	Unwanted Emissions (Transmitter Conducted)	ANSI C63.26-2015 §5.7.4	Pass	
2.1053 90.210(b)(d)	RSS-119 §5.8	Field Strength of Spurious Radiation	ANSI C63.26-2015 §5.5.4	Pass	
2.1049(c) 90.210 90.691	RSS-119 §5.5 RSS-119 §5.8	Emission Masks/Limitations	ANSI C63.26-2015 §5.7.3	Pass	
90.221	NA	Adjacent channel power limits	ANSI C63.26-2015 §6.5.2.4	Pass	For 25 kHz Ch. BW only
2.1049(c)	RSS-119 §5.5	Occupied Bandwidth	ANSI C63.26-2015 §5.4	Pass	
2.1047(a)	N/A	Audio Low Pass Filter (Voice Input)	TIA-603-E §2.2.15	Pass	
2.1047(a)	N/A	Audio Frequency Response	ANSI C63.26-2015 §5.3.3	Pass	
2.1047(b)	N/A	Modulation Limiting	ANSI C63.26-2015 §5.3.2	Pass	
2.1055 90.213(a)	RSS-119 §5.3	Frequency Stability (Temperature Variation)	ANSI C63.26-2015 §5.4	Pass	
2.1055 90.213(a)	RSS-119 §5.3	Frequency Stability (Voltage Variation)	ANSI C63.26-2015 §5.4	Pass	
2.202 (g)	2.202 (g) TRC-43 issue 3	Necessary Bandwidth Calculation	ITU-R SM.1138	Pass	

Statements of conformity are reported as:

- Pass - the measured value is below the acceptance limit, *acceptance limit = test limit*.
- Fail - the measured value is above the acceptance limit, *acceptance limit = test limit*.

Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	4/23/2026	Madhava Gooduru	Original Document
2.0	5/4/2026	Madhava Gooduru	Test data updated to two decimal places; typo errors corrected throughout the document.

Table of Contents

<u>Description</u>	<u>Page</u>
Test Result Summary	2
Table of Contents	5
Table of Annexes	5
Standard Test Conditions and Engineering Practices	7
EUT Description	8
Accessories:	9
Modifications: None	9
Carrier Output Power (Conducted)	10
Conducted Spurious Emissions	12
Conducted Spurious Emissions in GNSS band (1559 – 1610 MHz)	14
Field Strength of Spurious Radiation	15
Adjacent Channel power	17
Emission Masks	19
Occupied Bandwidth	20
Audio Low Pass Filter (Voice Input)	21
Audio Frequency Response	23
Modulation Limiting	25
Frequency Stability (Temperature Variation)	28
Necessary Bandwidth Calculations	31
Measurement Uncertainty	32
Test Equipment Utilized	33

Table of Annexes

<u>Description</u>	<u>Page</u>
Annex A Output Power	11
Annex B Conducted Spurious Emission	13
Annex B Conducted Spurious Emission	14
Annex C Radiated Spurious Emission	16
Annex D Adjacent Channel Power	18
Annex E Emission Mask	19
Annex F Occupied Bandwidth	20

ANAB

Compliance Testing, LLC, has been accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to the joint ISO-ILAC-IAF Communiqué dated January 2009).

The tests results contained within this test report all fall within our scope of accreditation, unless noted below.

Please refer to <http://www.compliancetesting.com/labscope.html> for current scope of accreditation.



Test and Measurement Data

All tests and measurement data shown were performed in accordance with FCC Rules and Regulations, Volume II, Part 2, Subpart J, Sections 2.947, 2.1033(c), 2.1041, 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, ANSI C63.26-2015, TIA-603-E, FCC Part 90.

Standard Test Conditions and Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing.

In accordance with ANSI/TIA 603C, and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104°F) unless the particular equipment requirements specified testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Environmental Conditions		
Temperature (°C)	Humidity (%)	Barometric Pressure (mbar)
22.2 – 28.1	28.7 – 36.9	965.1 – 980.4

Measurement results, unless otherwise noted, are worse case measurements.

EUT Description

Model:	XBR5100T5VI
Serial:	250500153
Firmware:	0.2.05_0
Software:	N/A
HVIN	XBR5100T5VI
PMN	XBR5100
UPN	XBR5100T5VI
FVIN	ES2202_RL10
Description:	XBR Base Station Transceiver
Additional Information:	The EUT is a 100-watt base station transceiver, using FM and C4FM modulation, operating in the 700 MHz and 800 MHz band as noted in Table 1.
Power	13.8 vdc and 28 vdc
Receipt of Sample(s):	2/17/2026
EUT Condition:	Visual Damage No State of Development Production/Production Equivalent

EUT Operation during Tests

The EUT is powered by 13.8 vdc and power amplifier in Transmitter is powered by 28.0 vdc.

The base station transceiver operates at the minimum (1 watt) and maximum (100 watts) power levels with NB (12.5 kHz channel), C4FM, and WB (25 kHz), where allowed.

were recorded for test frequencies

The output power was set to the maximum for all tests unless otherwise stated.

Table 1 – Frequency Range, Modulation Type and Emission Designators

Frequency Range (MHz)	Test Frequency (MHz)	Modulation	Emission Designator
769 - 775	769.025 774.975	FM-Narrow Band (WB)	16K0F3E
		FM-Narrow Band (NB)	11K0F3E
		C4FM	8K10F1D, 8K10F1E, 8K10F1W, 8K10F7D, 8K10F7E, 8K10F7W
851 - 869	851.025 859.975 868.975	FM-Narrow Band (WB)	16K0F3E
		FM-Narrow Band (NB)	11K0F3E
		C4FM	8K10F1D, 8K10F1E, 8K10F1W, 8K10F7D, 8K10F7E, 8K10F7W

Accessories:

Qty	Description	Length	Model	S/N
1	Ethernet cable from transmitter to PC	3m	N/A	N/A
1	3 wire power cable from transmitter to power supply	2m	N/A	N/A
1	Multi-pin connector to 3 BNC cables from transmitter Audio input and output	1m	N/A	N/A

Modifications: None

Carrier Output Power (Conducted)

Engineer: Madhava Gooduru

Test Date: 2/20/2026

Test Procedure

Band 700 MHz

The applicable limits were evaluated in accordance with FCC 47 CFR § 90.205(j) and RSS-119 Issue 12, § 5.4.

Band 800 MHz

The applicable limits were evaluated in accordance with FCC 47 CFR § 90.205(k) and RSS-119 Issue 12, § 5.4.

According to FCC §§ 2.1046 and 90.205, the transmitting power of base transmitters shall not exceed the limits specified in § 90.635(a), (b), and (c).

RSS-119 Limit

The output power shall be within ± 1 dB of the manufacturer's rated power listed in the equipment specifications.

The Equipment Under Test (EUT) was connected to a spectrum analyzer through a 30 dB power attenuator.

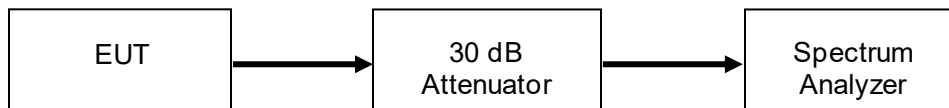
A fixed reference level offset of 30 dB was entered in the spectrum analyzer for the attenuator, and the remaining cable and attenuation losses were entered as amplitude correction factors to ensure accurate measurements.

For narrowband and wideband analog signals, output power measurements were performed using an unmodulated carrier with the peak detector. For digital signals, output power measurements were performed using a C4FM signal with the average detector.

Output power was recorded at both the lowest and highest power settings.

Manufacturer's Maximum Rated Power at the antenna port: 100 watts (50 dBm)

Test Setup



Transmitter Peak Output Power CW - Narrowband

Tuned Frequency	Power Level Setting	Output Power		Result
MHz	watts	dBm	watts	
769.025	1	30.07	1.02	Pass
774.975	1	30.02	1.00	Pass
851.025	1	29.95	0.99	Pass
859.975	1	29.96	0.99	Pass
868.975	1	29.93	0.99	Pass
769.025	100	50.13	103.06	Pass
774.975	100	50.19	104.52	Pass
851.025	100	50.10	102.38	Pass
859.975	100	50.13	103.13	Pass
868.975	100	50.14	103.25	Pass

Transmitter Peak Output Power CW - Wideband

Tuned Frequency	Power Level Setting	Output Power		Result
MHz	watts	dBm	watts	
769.025	1	29.86	0.97	Pass
774.975	1	29.95	0.99	Pass
851.025	1	29.88	0.97	Pass
859.975	1	29.90	0.98	Pass
868.975	1	29.88	0.97	Pass
769.025	100	50.13	102.94	Pass
774.975	100	50.17	103.97	Pass
851.025	100	50.10	102.21	Pass
859.975	100	50.12	102.68	Pass
868.975	100	50.14	103.28	Pass

Transmitter Output Power for C4FM modulation

Tuned Frequency	Power Level Setting	Output Power		Result
MHz	watts	dBm	watts	
769.025	1	29.73	0.94	Pass
774.975	1	29.62	0.92	Pass
851.025	1	29.64	0.92	Pass
859.975	1	29.60	0.91	Pass
868.975	1	29.84	0.96	Pass
769.025	100	50.01	100.17	Pass
774.975	100	50.18	104.26	Pass
851.025	100	50.05	101.22	Pass
859.975	100	50.03	100.65	Pass
868.975	100	50.17	103.89	Pass

Annex A Output Power
Refer to Annex A for Output Power plots.

Conducted Spurious Emissions

Engineer: Madhava Gooduru

Test Date: 3/11/2026

Test Procedure

The EUT was connected to a spectrum analyzer through a 30 dB Power attenuator to verify that the EUT met the requirements for spurious emissions.

A fixed reference level offset of 30 dB was set in the spectrum analyzer for the attenuator, and the remaining cable and attenuation losses were entered as amplitude correction factors to ensure accurate measurements

The resolution bandwidth was set for 100 kHz or 1 MHz as required per the rule section and the reference level was adjusted to ensure the system had sufficient dynamic range to measure spurious emissions.

A tunable notch filter was utilized for 30 MHz to 1 GHz to ensure the fundamental did not put the spectrum analyzer into compression. The notch filter was replaced with a 1 GHz high pass filter that was used for measurements above 1 GHz.

The frequency range from 30 MHz to the 10th harmonic of the fundamental transmitter was observed and plotted. In this case, it was measured up to 9 GHz.

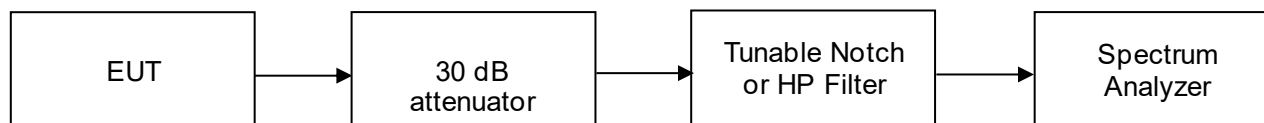
The conducted spurious emissions were recorded using FM and C4FM modulation.

The specification limit was set for -20 dBm for comparison to the emission mask "D" limit.

Note: A marker was placed on the fundamental frequency and the highest spurious emission in 30-1000 MHz. Only the fundamental TX signal exceeded the limit as shown in the spectrum analyzer screenshots.

The output power was set to maximum power for all conducted spurious measurements.

Test Setup



Conducted Spurious Emissions Test Summary Table FM - Narrowband

Frequency Span	Tuned Frequency	Conducted Spurious		Limit	Margin	Result
		Frequency	Level			
MHz	MHz	MHz	dBm	dBm	dB	
30 - 1000	769.025	890.51	-40.80	-20	-20.80	Pass
30 - 1000	774.975	871.23	-41.14	-20	-21.14	Pass
30-1000	851.025	758.11	-38.78	-20	-18.78	Pass
30 - 1000	859.975	776.78	-40.55	-20	-20.55	Pass
30 - 1000	868.975	779.57	-39.33	-20	-19.33	Pass
1000 - 9000	769.025	3845.10	-33.35	-20	-13.35	Pass
1000 - 9000	774.975	3874.40	-23.43	-20	-3.43	Pass
1000 - 9000	851.025	7367.00	-36.84	-20	-16.84	Pass
1000 - 9000	859.975	7740.10	-36.20	-20	-16.20	Pass
1000 - 9000	868.975	7465.60	-36.17	-20	-16.17	Pass

Conducted Spurious Emissions Test Summary Table FM – Wideband

Frequency Span	Tuned Frequency	Conducted Spurious		Limit	Margin	Result
		Frequency	Level			
MHz	MHz	MHz	dBm	dBm	dB	
30 - 1000	769.025	890.03	-39.87	-13	-26.87	Pass
30 - 1000	774.975	878.26	-42.11	-13	-29.11	Pass
30 - 1000	851.025	757.26	-38.55	-13	-25.55	Pass
30 - 1000	859.975	745.98	-39.47	-13	-26.47	Pass
30 - 1000	868.975	735.68	-41.08	-13	-28.08	Pass
1000 - 9000	769.025	3845.10	-33.31	-13	-20.31	Pass
1000 - 9000	774.975	3874.40	-23.29	-13	-10.29	Pass
1000 - 9000	851.025	7866.10	-35.31	-13	-22.31	Pass
1000 - 9000	859.975	7394.30	-36.62	-13	-23.62	Pass
1000 - 9000	868.975	7252.70	-35.88	-13	-22.88	Pass

Conducted Spurious Emissions Test Summary Table C4FM

Frequency Span	Tuned Frequency	Conducted Spurious		Limit	Margin	Result
		Frequency	Level			
MHz	MHz	MHz	dBm	dBm	dB	
30 - 1000	769.025	900.82	-41.35	-20	-21.35	Pass
30 - 1000	774.975	886.75	-41.94	-20	-21.94	Pass
30 - 1000	851.025	918.52	-38.32	-20	-18.32	Pass
30 - 1000	859.975	773.02	-39.96	-20	-19.96	Pass
30 - 1000	868.975	750.10	-40.90	-20	-20.90	Pass
1000 - 9000	769.025	3845.10	-33.56	-20	-13.56	Pass
1000 - 9000	774.975	3874.40	-23.41	-20	-3.41	Pass
1000 - 9000	851.025	7237.10	-36.33	-20	-16.33	Pass
1000 - 9000	859.975	7226.30	-36.20	-20	-16.20	Pass
1000 - 9000	868.975	7917.80	-35.73	-20	-15.73	Pass

Annex B Conducted Spurious Emission
Refer to Annex B for Conducted Spurious Emission plots.

Conducted Spurious Emissions in GNSS band (1559 – 1610 MHz)

Engineer: Madhava Gooduru

Test Date: 3/17/2026

Test Procedure

Conducted spurious test data was recorded for FCC part 90.543(f) requirements as per Test Methodology ANSI63.26-2015 §6.5.2.7.4.

90.543(f): For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotopically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

The EUT was connected to a spectrum analyzer through a 30 dB Power attenuator to verify that the EUT met the requirements for spurious emissions.

A fixed reference level offset of 30 dB was set in the spectrum analyzer for the attenuator, and the remaining cable and attenuation losses were entered as amplitude correction factors to ensure accurate measurements

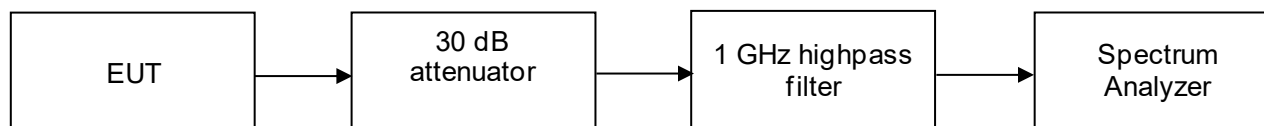
A 1 GHz highpass filter was utilized as required to ensure the fundamental did not put the spectrum analyzer into compression.

The resolution bandwidth set for 700 Hz or 1 MHz as required per the rule section and the reference level was adjusted to ensure the system had sufficient dynamic range to measure spurious emissions.

The manufacturer does not sell Antenna along with EUT and does not provide an antenna.

The antenna gain of 3.16 dBi was used in the EIRP calculation for the Final value listed in the test results table.

Test Setup



EIRP Emissions in GNSS Band (1559 -1610 MHz)

Tuned Frequency MHz	RBW kHz	Modulation	Spurious Emissions				Limit dBm	Margin dB	Result
			Frequency MHz	Level dBm	Ant Gain dBi	EIRP dBm			
769.025	1000	WB	1569.40	-51.48	3.16	-48.32	-40	-8.32	Pass
769.025	1000	NB	1559.21	-51.05	3.16	-47.89	-40	-7.89	Pass
769.025	1000	C4FM	1591.02	-51.60	3.16	-48.44	-40	-8.44	Pass
774.975	1000	WB	1578.14	-50.91	3.16	-47.75	-40	-7.75	Pass
774.975	1000	NB	1604.71	-51.36	3.16	-48.20	-40	-8.20	Pass
774.975	1000	C4FM	1600.98	-50.74	3.16	-47.58	-40	-7.58	Pass
769.025	0.7	WB	1575.16	-83.56	3.16	-80.40	-50	-30.40	Pass
769.025	0.7	NB	1559.44	-83.47	3.16	-80.31	-50	-30.31	Pass
769.025	0.7	C4FM	1565.28	-83.11	3.16	-79.95	-50	-29.95	Pass
774.975	0.7	WB	1593.43	-83.67	3.16	-80.51	-50	-30.51	Pass
774.975	0.7	NB	1584.75	-82.80	3.16	-79.64	-50	-29.64	Pass
774.975	0.7	C4FM	1564.34	-83.39	3.16	-80.23	-50	-30.23	Pass

Annex B Conducted Spurious Emission

Refer to Annex B for Conducted Spurious Emission (1559 – 1610 MHz) plots.

Note: Conducted Spurious Emission (1559 – 1610 MHz) plots are included with Annex B.

Field Strength of Spurious Radiation

Engineer: Madhava Gooduru

Test Date: 4/18/2026

Test Procedure

The EUT was tested in a semi-anechoic chamber with the turntable set 3m from the receiving antenna.

A spectrum analyzer was used to verify that the EUT met the requirements for radiated emissions.

The EUT was tested by rotating it 360 degrees with the antenna in both vertical and horizontal orientation while raised from 1 to 4 meters to ensure that the signal levels were maximized.

All cable and antenna correction factors were input into the spectrum analyzer ensuring an accurate measurement in ERP/EIRP with the resultant power in dBm.

The EUT was set to transmit at maximum power with the RF output terminated with a 150-watt 50-ohm load.

Radiated spurious emissions were recorded with the EUT using CW (for Analog FM) and C4FM.

The RBW was set to 100 kHz for measurements below 1 GHz and 1 MHz for measurements above 1 GHz.

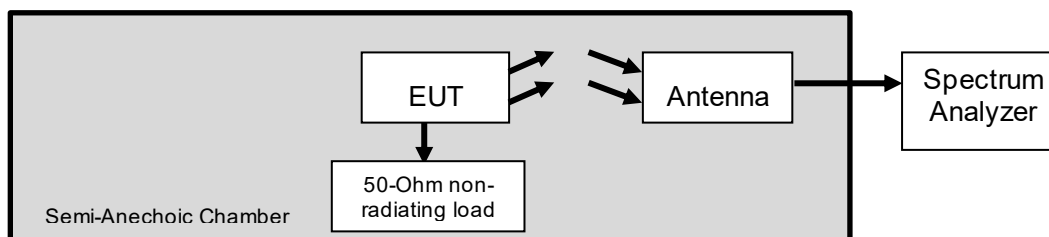
The VBW was set to 3 times the RBW.

The following formula was used for calculating the limits:

The worst case radiated spurious limit = $P_1 - (50 + 10\log(P_2)) = -20 \text{ dBm}$

On the 30 – 1000 MHz plots, marker 1 is the fundamental transmit frequency and is not subject to the -20 dBm limit.

Test Setup



Radiated Spurious Emissions Test Summary Table FM - CW

Frequency Span	Tuned Frequency	Radiated Spurious		Limit	Margin	Result
		Frequency	Level			
MHz	MHz	MHz	dBm	dBm	dB	
30 - 1000	769.025	100.62	-40.20	-20	-20.20	Pass
30 - 1000	774.975	100.71	-41.63	-20	-21.63	Pass
30-1000	851.025	100.71	-42.55	-20	-22.55	Pass
30 - 1000	859.975	100.71	-43.07	-20	-23.07	Pass
30 - 1000	868.975	100.71	-42.11	-20	-22.11	Pass
1000 - 9000	769.025	1538.40	-36.87	-20	-16.87	Pass
1000 - 9000	774.975	3876.00	-35.88	-20	-15.88	Pass
1000 - 9000	851.025	2553.60	-36.40	-20	-16.40	Pass
1000 - 9000	859.975	2580.80	-39.00	-20	-19.00	Pass
1000 - 9000	868.975	2607.20	-42.11	-20	-22.11	Pass

Radiated Spurious Emissions Test Summary Table C4FM

Frequency Span	Tuned Frequency	Radiated Spurious		Limit	Margin	Result
		Frequency	Level			
MHz	MHz	MHz	dBm	dBm	dB	
30 - 1000	769.025	100.616	-40.74	-20	-20.74	Pass
30 - 1000	774.975	100.713	-43.08	-20	-23.08	Pass
30 - 1000	851.025	100.713	-43.22	-20	-23.22	Pass
30 - 1000	859.975	100.713	-42.35	-20	-22.35	Pass
30 - 1000	868.975	100.713	-42.50	-20	-22.50	Pass
1000 - 9000	769.025	3845.6	-36.41	-20	-16.41	Pass
1000 - 9000	774.975	3875.2	-35.07	-20	-15.07	Pass
1000 - 9000	851.025	2553.6	-35.21	-20	-15.21	Pass
1000 - 9000	859.975	2580.8	-38.80	-20	-18.80	Pass
1000 - 9000	868.975	2607.2	-39.11	-20	-19.11	Pass

Annex C Radiated Spurious Emission
Refer to Annex C for Radiated Spurious Emission plots

Adjacent Channel power

Engineer: Madhava Gooduru

Test Date: 3/17/2026

Measurement Procedure

Adjacent channel power measurements were performed to demonstrate compliance with FCC § 90.543 for operation in the 769–775 MHz and 799–805 MHz bands, and with FCC § 90.221 for operation in the 809–824 MHz / 854–869 MHz bands.

The EUT was connected to a spectrum analyzer through a 30 dB Power attenuator to verify that the EUT met the requirements for spurious emissions.

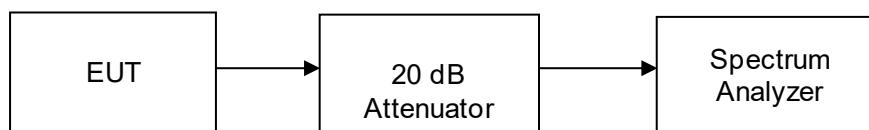
A fixed reference level offset of 30 dB was set in the spectrum analyzer for the attenuator, and the remaining cable and attenuator losses were entered as amplitude correction factors to ensure accurate measurements

For analog FM modulation, the transmitter was adjusted with 650 Hz and 2200 Hz tones to the levels required to produce 50 percent of rated system deviation, and each tone level was then increased by 10 dB for the adjacent channel power measurement. For C4FM modulation the internal C4FM standard test pattern was used.

The Adjacent channel power was recorded using FM and C4FM modulations

For the portion of the test (In the paired receive band), a notch filter was used to achieve the 100 dB dynamic range required in the paired receive band.

Test Setup



Adjacent Channel power Test Summary Table for 800 band ,WB-FM modulation

Center frequency (Fc)→	859.975		868.975		Limit
Power setting →	100W	1W	100W	1W	
Offset from Fc ↓	(dBc)	(dBc)	(dBc)	(dBc)	(dBc)
25 kHz	-71.18	-71.11	-71.53	-71.17	-55
50 kHz	-76.45	-76.25	-76.20	-75.96	-65
75kHz	-79.89	-79.62	-79.80	-79.57	-70

Adjacent Channel power Test Summary Table for 700 band, NB-FM and C4FM Modulation

Center frequency (Fc)→	769.025 MHz				774.975 MHz				Limit	Result
Modulation→	NB	NB	C4FM	C4FM	NB	NB	C4FM	C4FM		
Power setting →	100 W	1 W	100 W	1 W	100 W	1 W	100 W	1 W		
Offset from Fc ↓	(dBc)	(dBc)	(dBc)	(dBc)	(dBc)	(dBc)	(dBc)	(dBc)	(dBc)	
9.375 kHz	-40.88	-40.33	-40.31	-40.26	-40.77	-40.03	-40.47	-42.06	-40	Pass
15.625 kHz	-79.15	-78.43	-78.84	-78.53	-78.64	-78.79	-78.59	-78.90	-60	Pass
21.875 kHz	-79.63	-79.74	-80.03	-79.95	-79.82	-79.69	-79.52	-80.16	-60	Pass
37.5 kHz	-72.64	-72.63	-72.81	-72.38	-72.61	-72.62	-72.73	-72.39	-60	Pass
62.5 kHz	-76.78	-76.73	-76.83	-76.55	-76.81	-76.72	-76.72	-76.42	-65	Pass
87.5 kHz	-79.95	-79.73	-79.87	-79.67	-79.74	-79.78	-79.73	-79.45	-65	Pass
150 kHz	-76.92	-77.21	-76.92	-77.15	-77.10	-77.77	-77.27	-77.67	-65	Pass
250 kHz	-83.19	-83.19	-83.26	-83.22	-83.23	-83.20	-83.24	-83.56	-65	Pass
350 kHz	-86.67	-86.66	-86.74	-86.65	-86.64	-86.66	-86.83	-86.80	-65	Pass
>400 kHz to 12 MHz	-86.79	-87.24	-88.03	-87.61	-88.95	-87.35	-87.27	-86.91	-80	Pass
12 MHz to paired receive band	-91.87	-84.91	-91.64	-84.37	-92.18	-90.22	-91.95	-89.32	-80	Pass
In the paired receive band	-92.20	-86.02	-92.57	-85.42	-92.15	-85.99	-92.02	-85.21	-85	Pass

Adjacent Channel power Test Summary Table for 700 band, WB-FM modulation

Center frequency(Fc)→	769.025 MHz		774.975 MHz		Limit	Result
Power setting →	100W	1W	100W	1W		
Offset from Fc ↓	(dBc)	(dBc)	(dBc)	(dBc)		
15.625 kHz	-79.10	-78.84	-79.08	-78.42	-40	Pass
21.875 kHz	-79.97	-79.45	-79.91	-79.87	-60	Pass
37.5 kHz	-72.66	-72.69	-72.66	-72.63	-60	Pass
62.5 kHz	-76.76	-76.62	-76.69	-76.64	-65	Pass
87.5 kHz	-79.75	-79.59	-79.67	-79.54	-65	Pass
150 kHz	-76.70	-77.12	-77.48	-77.65	-65	Pass
250 kHz	-83.16	-83.31	-83.17	-83.23	-65	Pass
350 kHz	-86.72	-86.69	-86.69	-86.78	-65	Pass
>400 kHz to 12 MHz	-88.65	-87.75	-92.81	-87.29	-80	Pass
12 MHz to paired receive band	-92.41	-84.54	-91.99	-89.84	-80	Pass
In the paired receive band	-92.61	-85.16	-92.42	-85.33	-85	Pass

Annex D Adjacent Channel Power
Refer to Annex D for Adjacent Channel Power plots.

Emission Masks

Engineer: Madhava Gooduru

Test Date: 3/18/2026

Measurement Procedure

The EUT connected to a spectrum analyzer through a 30 dB Power attenuator to verify that the transmitter complies with the applicable emission mask requirements.

A fixed reference level offset of 30 dB was set in the spectrum analyzer for the attenuator, and the remaining cable and attenuator losses were entered as amplitude correction factors to ensure accurate measurements

The reference level was set to the maximum power recorded previously.

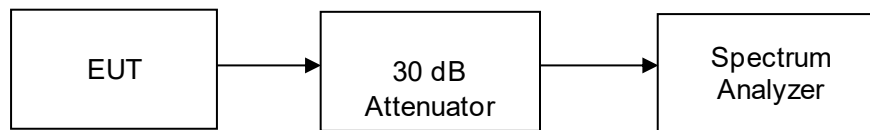
Mask B was used for wideband FM operation, while Mask D was used for narrowband FM and C4FM operation. In addition, Mask H was applied where required for FCC 90.210 Table 1(6)

For operation on the applicable outer channels, compliance with FCC § 90.691 was also assessed.

For FM modulation, the transmitter was modulated by a 2500 Hz tone at an input level 16 dB greater than that necessary to produce 50 percent modulation.

For C4FM modulation the internal C4FM standard test pattern was used.

Test Setup



Annex E Emission Mask

Refer to Annex E for Emission Mask plots.

Occupied Bandwidth

Engineer: Madhava Gooduru

Test Date: 2/23/2026

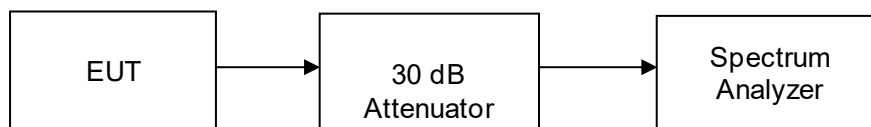
Measurement Procedure

The EUT was connected directly to a spectrum analyzer to verify that the EUT meets the required occupied bandwidth. The internal occupied bandwidth tool built into the spectrum analyzer was used to record the -26 dB and 99% occupied bandwidth.

For FM modulation, the transmitter was modulated by a 2500 Hz tone at an input level 16 dB greater than that necessary to produce 50 percent modulation.

For C4FM modulation the internal C4FM standard test pattern was used.

Test Setup



Occupied Bandwidth Summary Table

Tuned Frequency	Modulation	99%	-26 dB
MHz	NB, WB, C4FM	kHz	kHz
769.025	NB	12.69	10.45
774.975	NB	12.60	10.45
851.025	NB	12.67	10.46
859.975	NB	12.73	10.46
868.9750	NB	12.59	10.45
769.025	WB	9.59	15.57
774.975	WB	9.55	15.57
851.025	WB	9.54	15.58
859.975	WB	9.63	15.59
868.9750	WB	9.53	15.57
769.025	C4FM	8.20	11.87
774.975	C4FM	8.13	10.88
851.025	C4FM	8.26	10.97
859.975	C4FM	8.29	11.19
868.9750	C4FM	8.17	10.87

Note: occupied Bandwidth -26dB is for report purpose only

Annex F Occupied Bandwidth

Refer to Annex F for Occupied Bandwidth plots.

Audio Low Pass Filter (Voice Input)

Engineer: Madhava Gooduru

Test Date: 2/23/2026

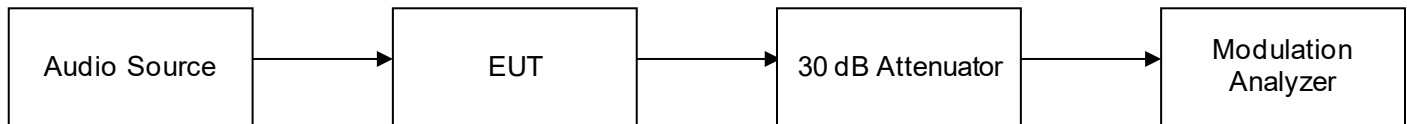
Measurement Procedure

The EUT was connected directly to a modulation analyzer through an attenuator.

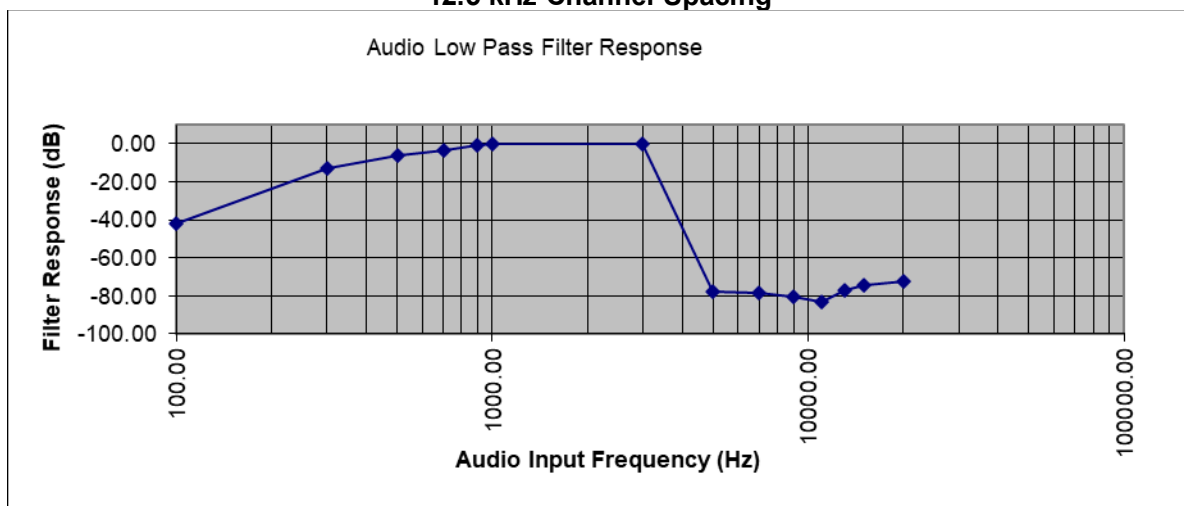
Set the audio frequency generator to 1 kHz and adjust the level for 60% deviation per manufacturer's specifications. The audio source was tuned from 100 Hz to 20 kHz and the audio frequency response was measured and plotted. The modulation analyzer is a real time spectrum analyzer with integrated demodulation, audio measurement capabilities, and timing analysis.

The Audio Low Pass Filter test data was recorded for 12.5 kHz and 25 kHz channel spacing.

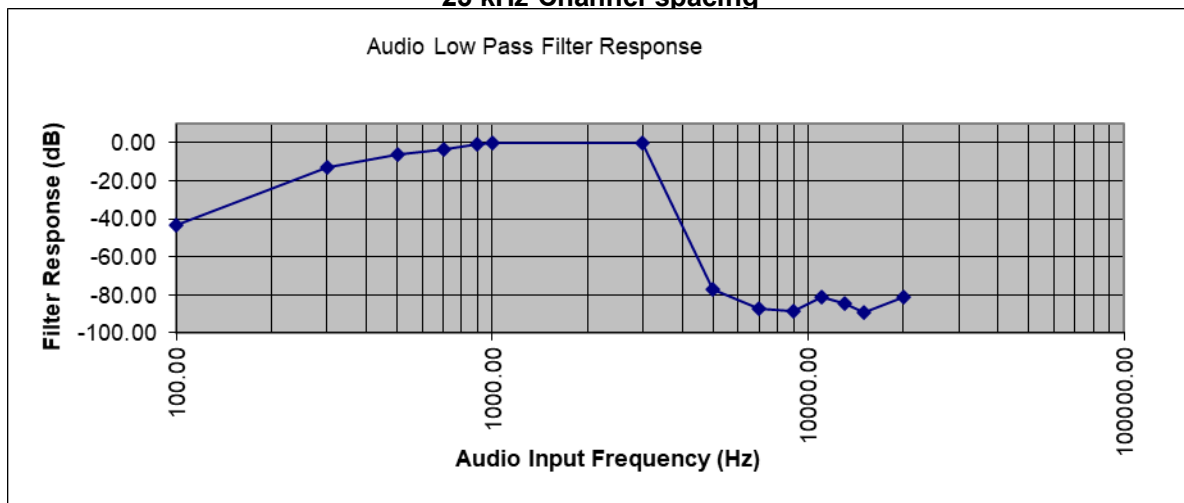
Test Setup



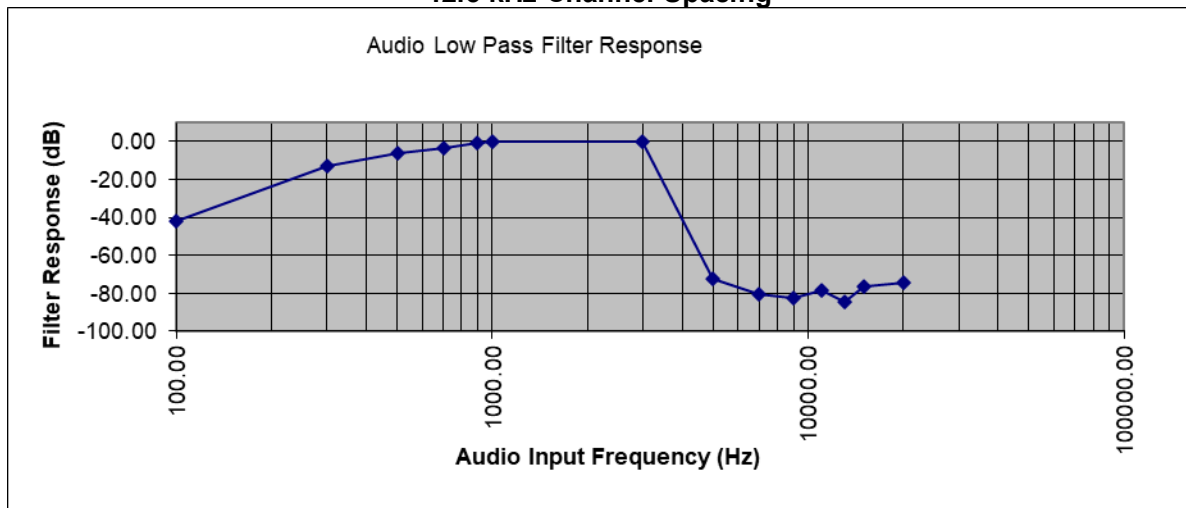
Test Results 700 MHz Band (774.975 MHz) 12.5 kHz Channel Spacing



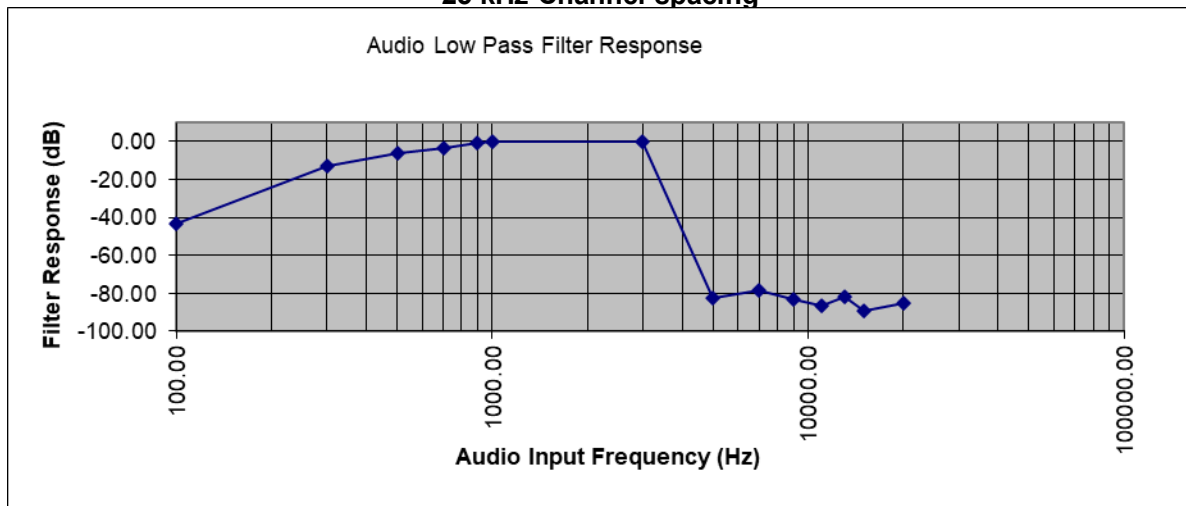
25 kHz Channel spacing



800 MHz Band (859.975 MHz) 12.5 kHz Channel Spacing



25 kHz Channel spacing



Audio Frequency Response

Engineer: Madhava Gooduru

Test Date: 2/23/2026

Measurement Procedure

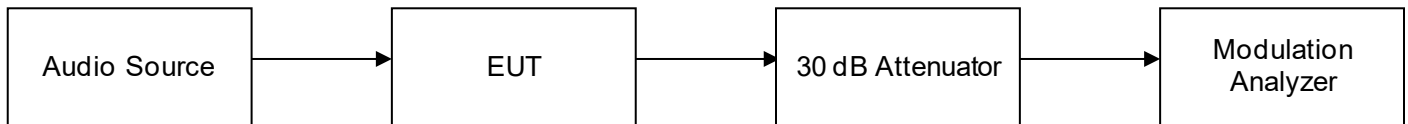
The EUT was connected directly to a modulation analyzer through an attenuator.

The audio frequency was set to 1 kHz and the level was adjusted for 20% deviation according to the manufacturer's instructions.

The audio source was tuned from 100 Hz to 5000 Hz and the audio frequency response was measured and plotted. The modulation analyzer is a real time spectrum analyzer with integrated demodulation, audio measurement capabilities, and timing analysis.

The Audio Frequency Response test data was recorded for 12.5 kHz and 25 kHz channel spacing.

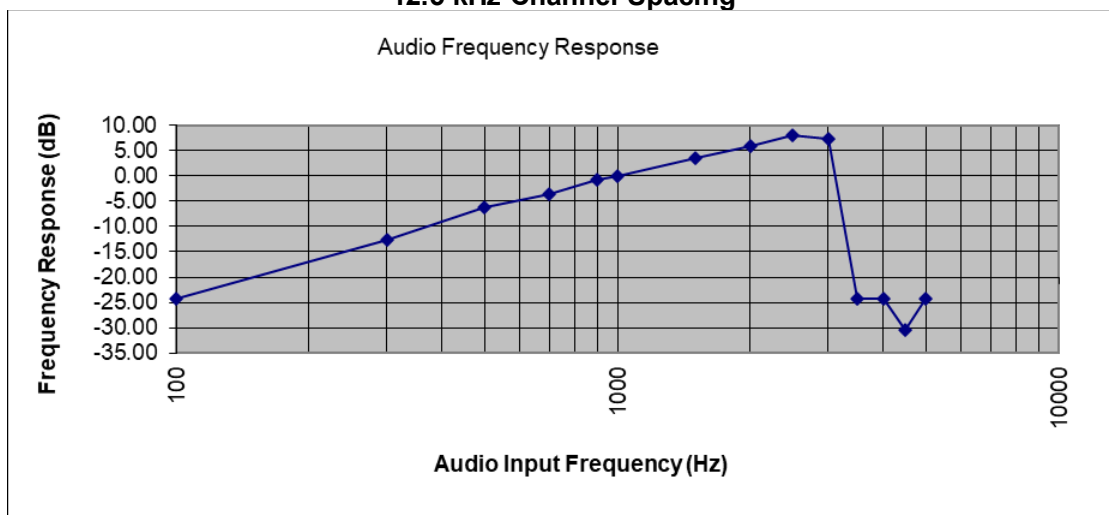
Test Setup



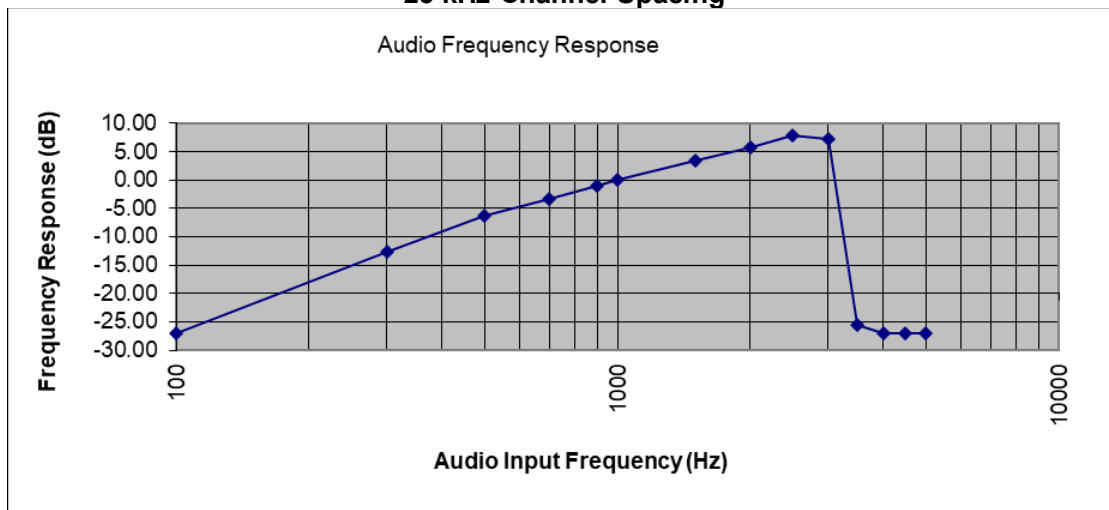
Test Results

700 MHz Band (774.975 MHz)

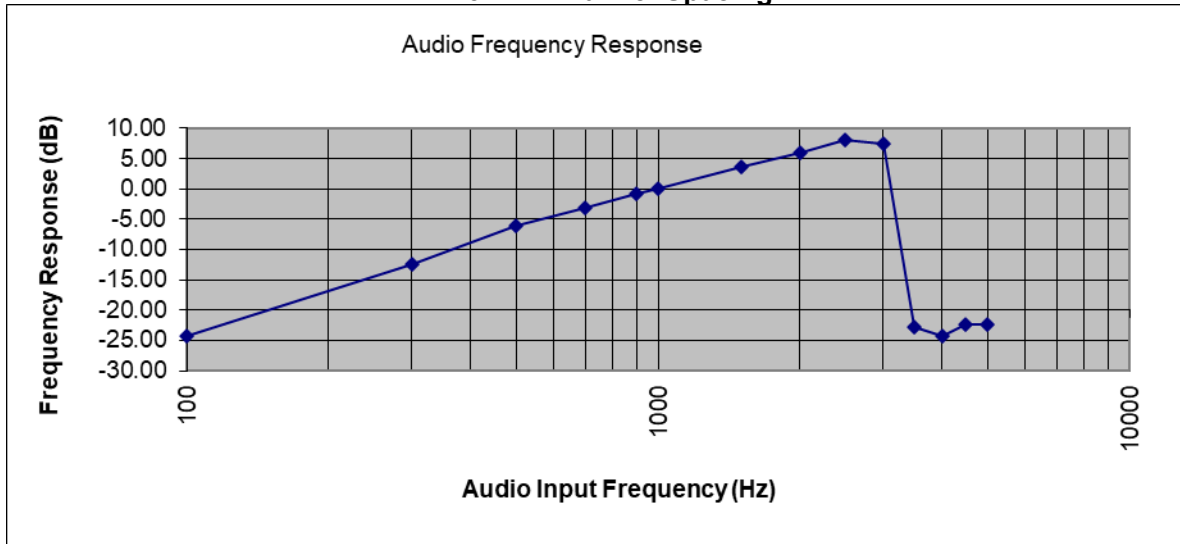
12.5 kHz Channel Spacing



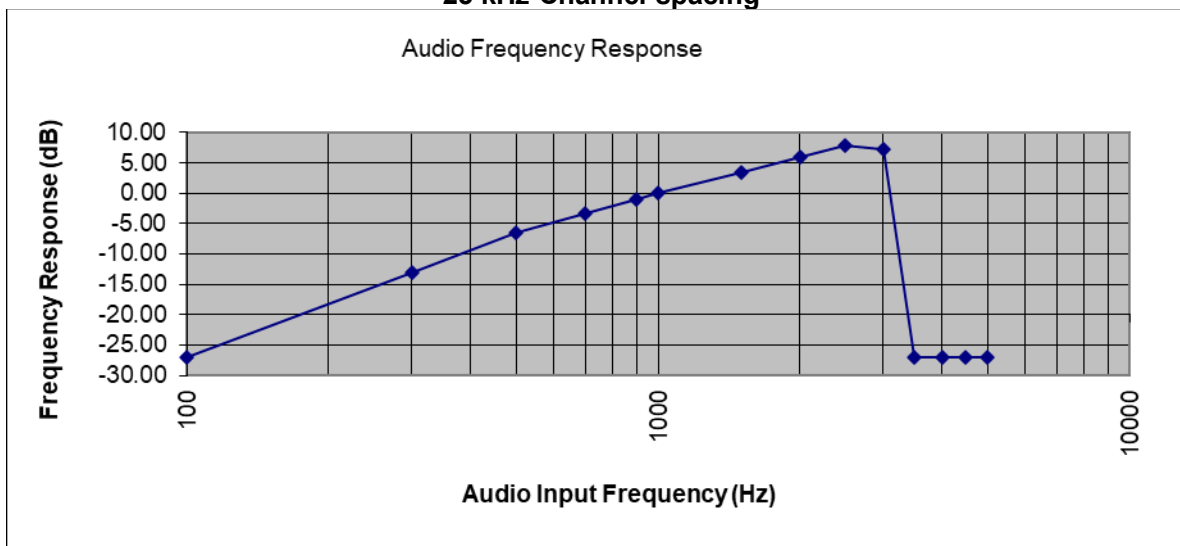
25 kHz Channel Spacing



**800 MHz Band (859.975 MHz)
12.5 kHz Channel Spacing**



25 kHz Channel spacing



Modulation Limiting

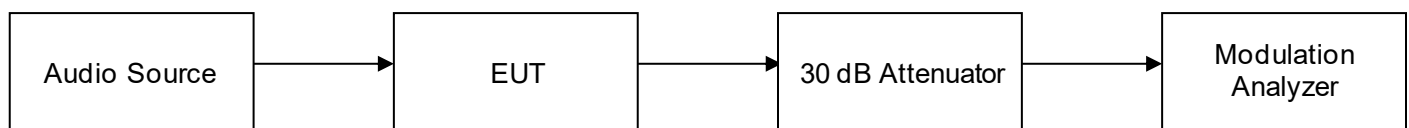
Engineer: Madhava Gooduru

Test Date: 2/23/2026

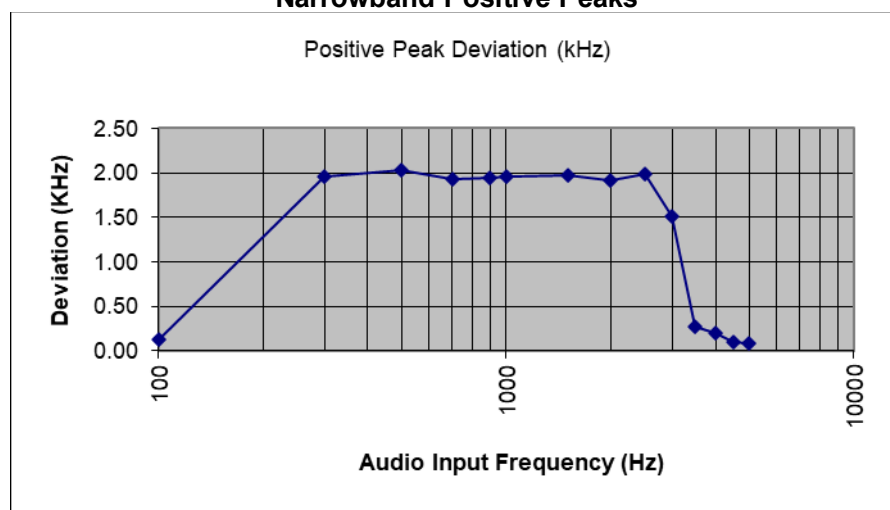
Measurement Procedure

The EUT was connected directly to a modulation analyzer through an attenuator. The audio frequency was set to 1 kHz and the level was adjusted for 60% deviation according to the manufacturer's instructions. The input level was then set to 20 dB above the level used for 60 % modulation. The audio source was tuned from 100 Hz to 5000 Hz and the audio frequency response was measured and plotted. The modulation analyzer is a real time spectrum analyzer with integrated demodulation, audio measurement capabilities, and timing analysis. The Modulation Limiting test data was recorded for 12.5 kHz and 25 kHz channel spacing.

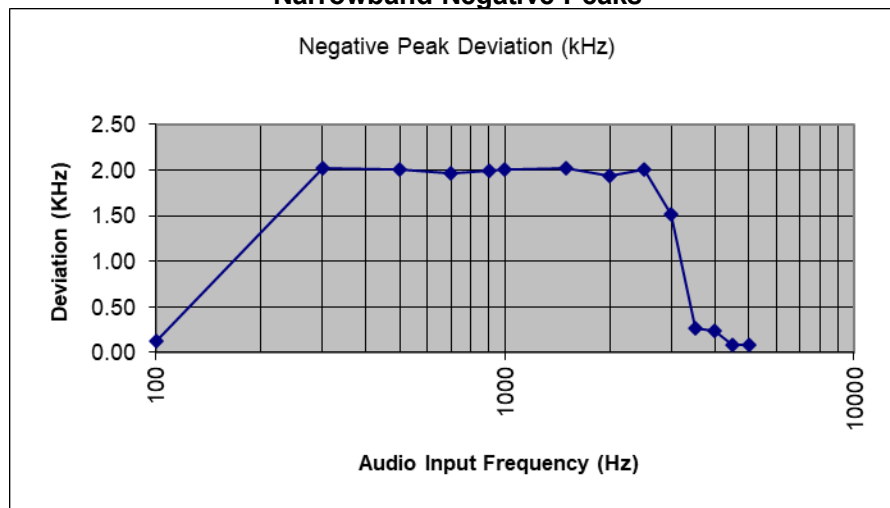
Test Setup



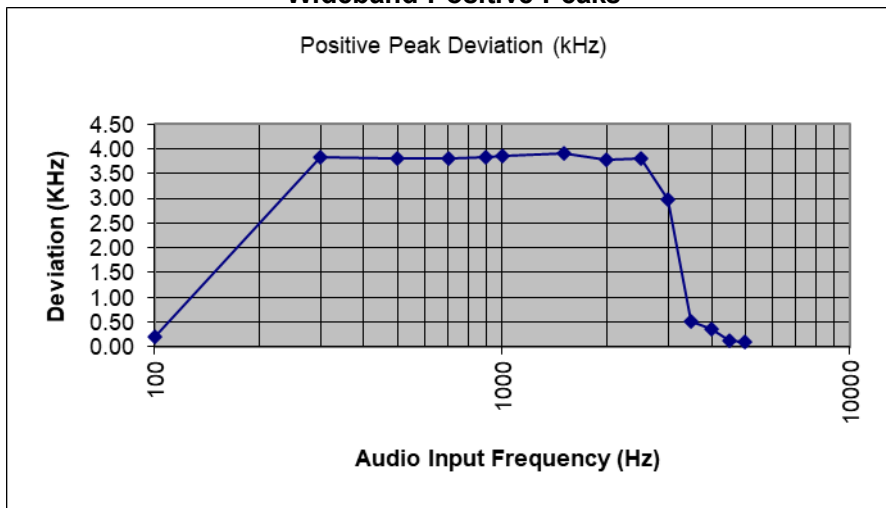
Test Results : 700 MHz Band (774.975 MHz) Narrowband Positive Peaks



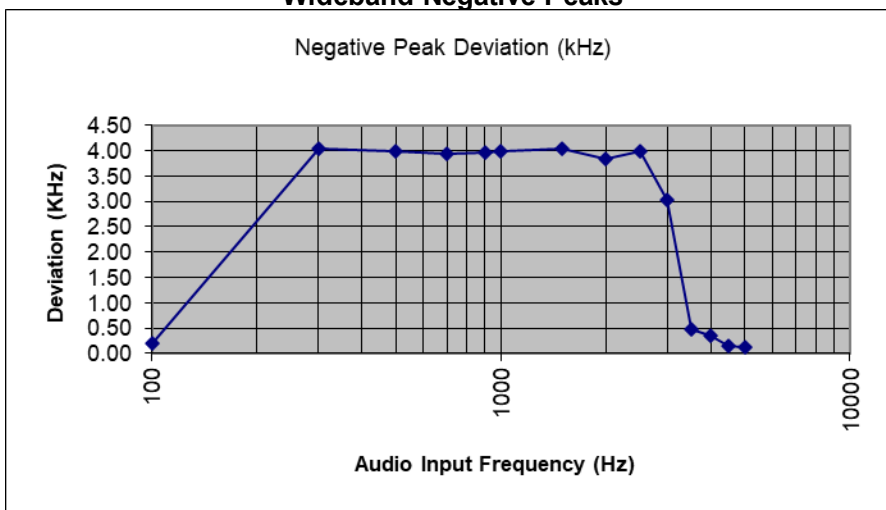
Narrowband Negative Peaks



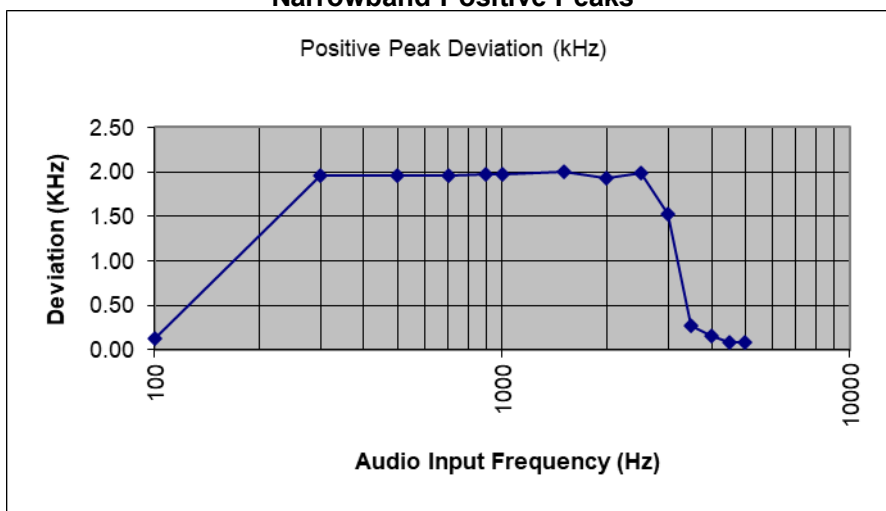
Wideband Positive Peaks



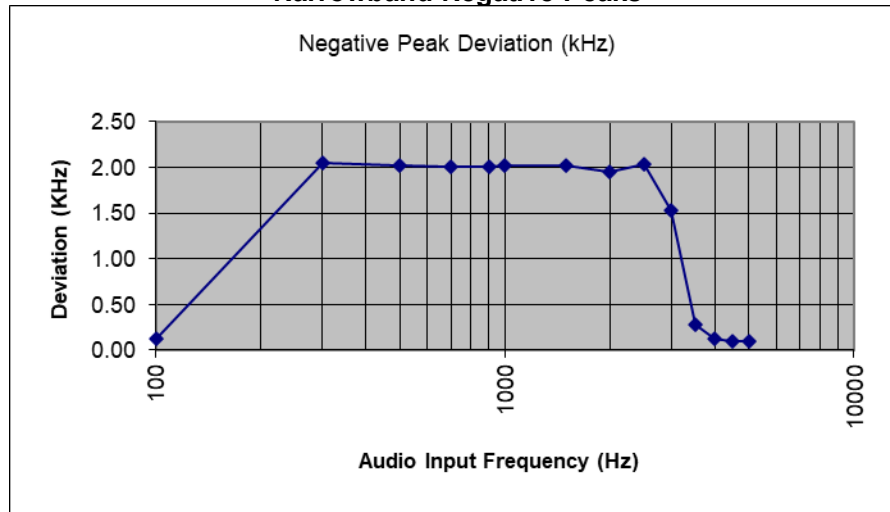
Wideband Negative Peaks



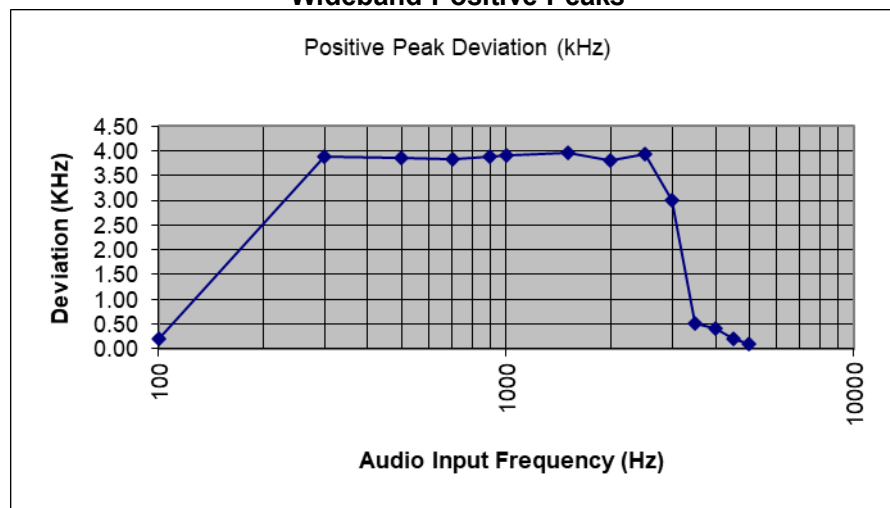
800 MHz Band (859.975 MHz) Narrowband Positive Peaks



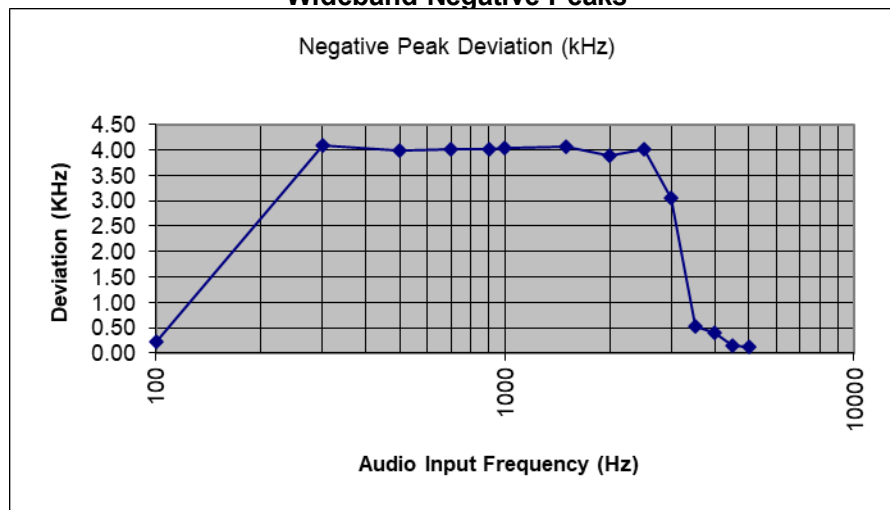
Narrowband Negative Peaks



Wideband Positive Peaks



Wideband Negative Peaks



Frequency Stability (Temperature Variation)

Engineer: Madhava Gooduru

Test Date: 2/25/2026

Measurement Procedure

The EUT was placed in an environmental test chamber and the RF output was connected directly to a spectrum analyzer.

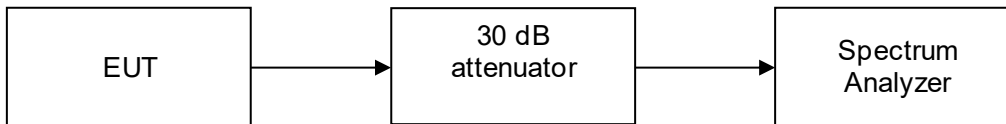
The temperature was varied from -30°C to 50°C in 10°C increments.

After a sufficient time for temperature stabilization the RF output frequency was measured.

At 20°C the power supply voltage to the EUT was varied from 85% to 115% of the nominal value and the RF output was measured.

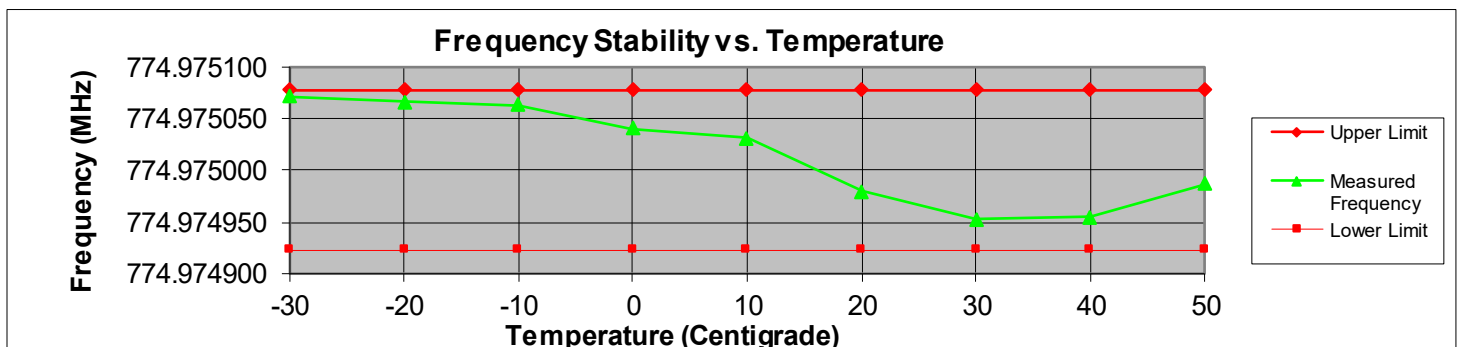
The transmitter DC input = 13.8 vdc.and 28 vdc

Measurement Setup



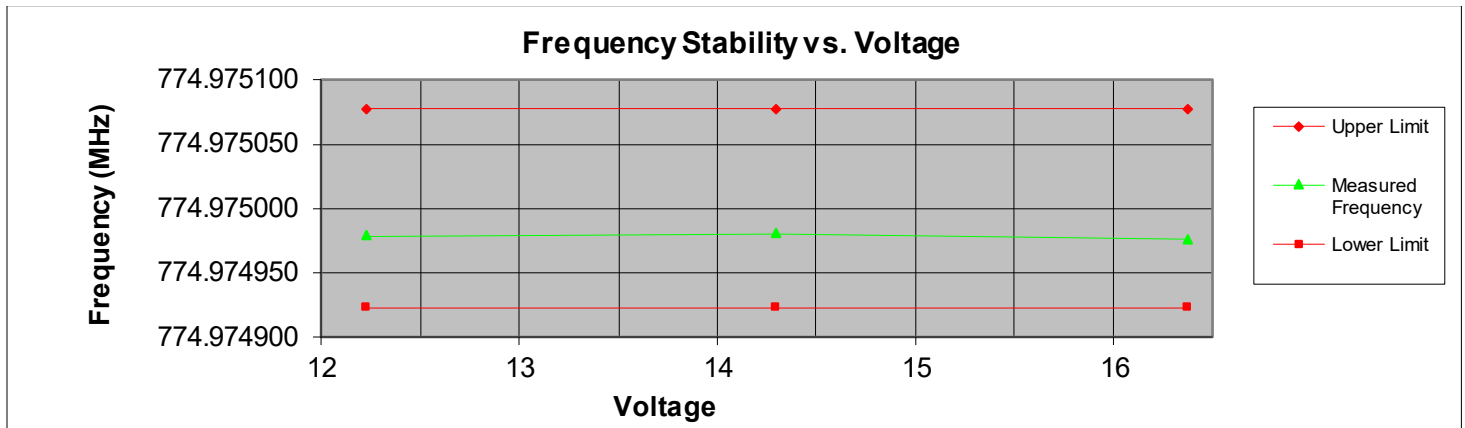
Frequency Stability vs Temperature for 700 MHz Band

Tuned Frequency	Temperature	Tolerance	Measured Frequency	Upper Limit	Lower Limit	Upper Margin	Lower Margin
(MHz)	(deg C)	(PPM)	(MHz)	(MHz)	(MHz)	(MHz)	(MHz)
774.975	-30	0.1	774.975071	774.975077	774.974923	-0.000006	0.000149
774.975	-20	0.1	774.975066	774.975077	774.974923	-0.000011	0.000144
774.975	-10	0.1	774.975064	774.975077	774.974923	-0.000014	0.000141
774.975	0	0.1	774.975041	774.975077	774.974923	-0.000037	0.000118
774.975	10	0.1	774.975031	774.975077	774.974923	-0.000047	0.000108
774.975	20	0.1	774.974980	774.975077	774.974923	-0.000097	0.000057
774.975	30	0.1	774.974953	774.975077	774.974923	-0.000124	0.000030
774.975	40	0.1	774.974955	774.975077	774.974923	-0.000122	0.000032
774.975	50	0.1	774.974987	774.975077	774.974923	-0.000090	0.000064



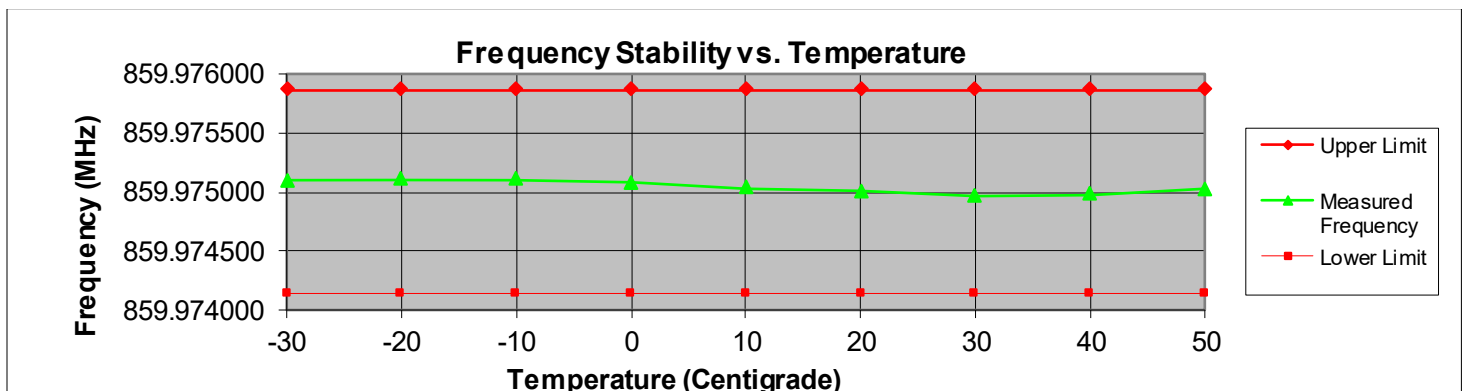
Frequency Stability vs Voltage for 700 MHz Band

Tuned Frequency	Tolerance	Voltage	Measured Frequency	Upper Limit	Lower Limit	Upper Margin	Lower Margin
(MHz)	(PPM)	(PPM)	(MHz)	(MHz)	(MHz)	(MHz)	(MHz)
774.975	0.1	11.73 & 23.8	774.974979	774.975077	774.974923	-0.000099	0.000056
774.975	0.1	13.80 & 28.0	774.974980	774.975077	774.974923	-0.000097	0.000057
774.975	0.1	15.87 & 32.2	774.974976	774.975077	774.974923	-0.000101	0.000053



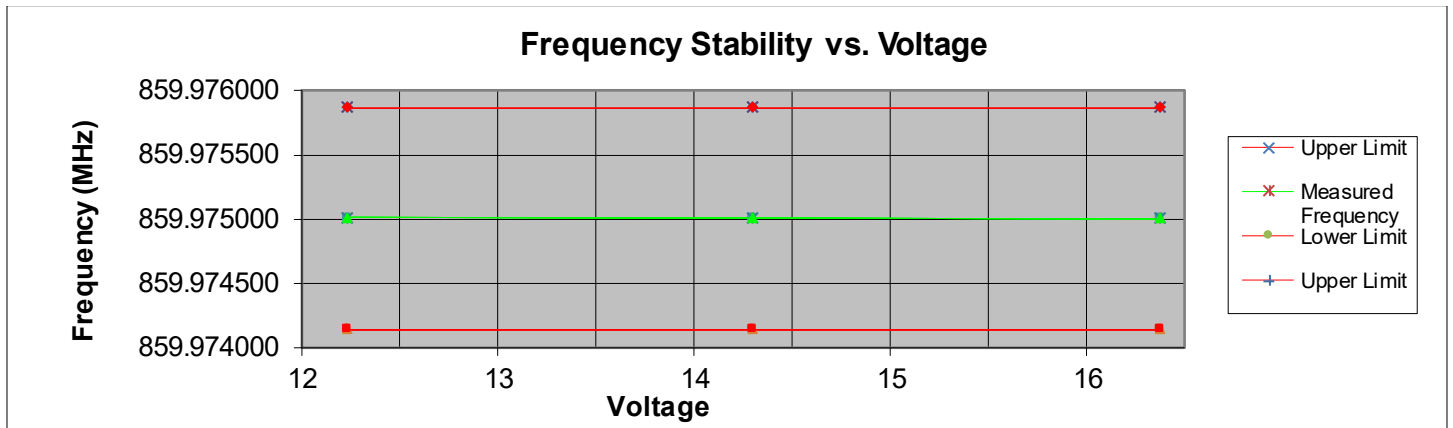
Frequency Stability vs Temperature for 800 MHz Band

Tuned Frequency	Temperature	Tolerance	Measured Frequency	Upper Limit	Lower Limit	Upper Margin	Lower Margin
(MHz)	(deg C)	(PPM)	(MHz)	(MHz)	(MHz)	(MHz)	(MHz)
859.975	-30	1.0	859.975099	859.975860	859.974140	-0.000761	0.000958
859.975	-20	1.0	859.975102	859.975860	859.974140	-0.000758	0.000961
859.975	-10	1.0	859.975100	859.975860	859.974140	-0.000760	0.000960
859.975	0	1.0	859.975075	859.975860	859.974140	-0.000785	0.000935
859.975	10	1.0	859.975036	859.975860	859.974140	-0.000824	0.000896
859.975	20	1.0	859.975008	859.975860	859.974140	-0.000852	0.000868
859.975	30	1.0	859.974965	859.975860	859.974140	-0.000895	0.000825
859.975	40	1.0	859.974980	859.975860	859.974140	-0.000880	0.000840
859.975	50	1.0	859.975026	859.975860	859.974140	-0.000834	0.000886



Frequency Stability vs Voltage for 800 MHz Band

Tuned Frequency	Tolerance	Voltage	Measured Frequency	Upper Limit	Lower Limit	Upper Margin	Lower Margin
(MHz)	(PPM)	(PPM)	(MHz)	(MHz)	(MHz)	(MHz)	(MHz)
859.975	1.0	11.73 & 23.8	859.975006	859.975860	859.974140	-0.000854	0.000866
859.975	1.0	13.80 & 28.0	859.975008	859.975860	859.974140	-0.000852	0.000868
859.975	1.0	15.87 & 32.2	859.975000	859.975860	859.974140	-0.000860	0.000860



Necessary Bandwidth Calculations

Engineer: Madhava Gooduru

Test Date: 10/22/2025

Modulation = 11K0F3E		
Necessary Bandwidth Calculation:		
Maximum Modulation (M), kHz	=	3
Maximum Deviation (D), kHz	=	2.5
Constant Factor (K)	=	1
Necessary Bandwidth (B _N), kHz	=	(2xM)+(2xDxK)
	=	11.0

Modulation = 16K0F3E		
Necessary Bandwidth Calculation:		
Maximum Modulation (M) kHz	=	3
Maximum Deviation (D), kHz	=	5
Constant Factor (K)	=	1
Necessary Bandwidth (B _N), kHz	=	(2xM)+(2xDxK)
	=	16.0

Modulation = 8K10F1E, 8K10F1W, 8K10F7D, 8K10F7E, 8K10F7W, 8K10F1D		
Necessary Bandwidth Calculation:		
Data Rate (R) Kbps	=	9.6
Maximum Deviation (D), kHz	=	3.111
Signaling States	=	4
Constant Factor (K)	=	0.531
Necessary Bandwidth (B _N), kHz	=	(R/log ₂ S)+2DK
	=	8.1

Measurement Uncertainty

Measurement Uncertainty (U_{lab}) for Compliance Testing is listed in the table below.

Measurement	U_{lab}
Radio Frequency	$\pm 3.3 \times 10^{-8}$
RF Power, conducted	$\pm .54$ dB
RF Power Density, conducted	± 1.0 dB
Conducted Emissions	± 0.94 dB
Radiated Emissions 9kHz-30MHz	± 2.76 dB
Radiated Emissions 30MHz-1000MHz	± 4.25 dB
Radiated Emissions – 1GHz-18GHz	± 4.49 dB
Temperature	± 1.5 deg C
Humidity	± 4.3 %
DC voltage	± 0.20 VDC
AC Voltage	± 1.2 VAC

The reported expanded uncertainty $\pm U_{lab}(\text{dB})$ has been estimated at a 95% confidence level ($k=2$)

U_{lab} is less than or equal to U_{ETSI} therefore

- 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 Equipment Utilized

Description	Manufacturer	Model #	CT Asset #	Last Cal Date	Cal Due Date
Digital Radio Test Set	Aeroflex	3920B	I00524	Verified on: 2/20/26	
Tunable notch filter 500-1000MHT	K&L Microwave	3 TNF-500/1000-N/N	i00691	Verified on: 2/20/26	
High pass Filter (1 GHz)	K&L	7IH40-980/T6000-O/O	i00432	Verified on: 2/20/26	
Horn Antenna	ARA	DRG-118/A	i00271	8/9/2024	8/9/2026
Temp./humidity/pressure monitor (Main Lab)	Omega Engineering	iBTHX-W-5	i00686	1/28/2026	1/28/2027
Data Logger	Fluke	Hydra Data Bucket	i00343	7/1/2025	7/1/2026
Attenuator, 30 dB, 150W	Narda	769-30	i00347	Verified on: 2/20/25	
Bi-Log Antenna	Schaffner	CBL 6111D	i00349	2/27/25	2/27/27
Spectrum Analyzer	Textronix	RSA5126A	i00424	7/1/2025	7/1/2026
Spectrum Analyzer	Agilent	E4445A	I00471	2/25/2026	2/25/2027
3 Meter Semi-Anechoic Chamber	Panashield	3 Meter Semi-Anechoic Chamber	i00428	7/13/23	7/13/26
Multimeter	Fluke	179	i00488	6/25/25	6/25/26
MXE EMI receiver	Keysight	N9038A	i00552	3/23/2026	3/23/2027
Temperature Chamber	Thermotron	SE-1000-3-3	i00557	Verified on: PTV	
DC Power Supply	Keysight	N7973A	i00565	Verified on: 2/20/26	
Preamplifier	COM-Power	PAM-103	i00734	Verified on: 2/23/26	
Preamplifier	Eravant	SBB-0115034019-2F2F-E3	i00722	Verified on: 2/23/26	

In addition to the above-listed equipment, standard RF connectors and cables were utilized in the testing of the equipment described. Prior to testing, these components were tested to verify proper operation.

END OF TEST REPORT