

FCC and ISED Canada Radio Testing of the

Sensus Metering Systems Inc.
522M

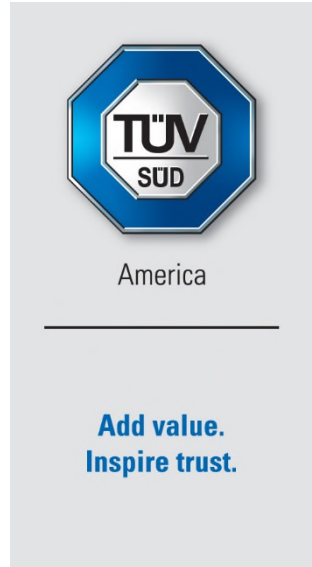
In accordance with FCC 47 CFR Part 24 Subpart D, Part 101 Subpart C and ISED Canada's Radio Standards Specifications RSS-119 and RSS-134

Prepared for: Sensus Metering Systems Inc.
639 Davis Drive
Morrisville, NC 27560

FCC ID: SDBWFL2
IC: 2220A-WFL2

COMMERCIAL-IN-CONFIDENCE

Document Number: TP72166992.200 | Version Number: 01



| RESPONSIBLE FOR | NAME | DATE | SIGNATURE |
|----------------------|----------------------|-------------|-----------|
| Authorized Signatory | Peter Walsh | 2021-May-03 | |
| Testing | Thierry Jean-Charles | 2021-May-03 | |

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD Product Service document control rules.

FCC Accreditation
Designation Number US1063 Tampa, FL Test Laboratory

Innovation, Science, and Economic Development Canada
Accreditation
Site Number 2087A-2 Tampa, FL Test Laboratory

EXECUTIVE SUMMARY
Samples of this product were tested and found to be in compliance with FCC Part 24 Subpart D, Part 101 Subpart C and ISED Canada's RSS-119 and RSS-134.

| | |
|----------------------------|--|
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1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

| Issue | Description of Change | Date of Issue |
|-------|-----------------------|---------------|
| 1 | First Issue | 2021-May-03 |

1.2 Introduction

The purpose of this report is to demonstrate compliance with the FCC's Code of Federal Regulations Part 24 Subpart D, Part 101 Subpart C and Innovation Science and Economic Development Canada's Radio Standards Specification RSS-119 and RSS-134 for the tests documented herein.



| | |
|-------------------------------|---|
| Applicant | Sensus Metering Systems Inc. |
| Manufacturer | Sensus Metering Systems Inc. |
| Applicant's Email Address | james.francisco@xyleminc.com |
| Model Number(s) | 522M |
| Serial Number(s) | 125000283, KDS TCXO (Radiated Emissions) 125000297, TXC TCXO (Radiated Emissions) 125000294, TAITIEN TCXO (Radiated Emissions) 125000296, TXC TCXO (RF Conducted Measurements) 125000291, KDS TCXO (RF Conducted Measurements) 125000293, TAITIEN TCXO (RF Conducted Measurements) |
| FCC ID | SDBWFL2 |
| ISED Certification Number | 2220A-WFL2 |
| Hardware Version(s) | WFL2B |
| Software Version(s) | B1.0.0.9 |
| Number of Samples Tested | 6 |
| Test Specification/Issue/Date | US Code of Federal Regulations (CFR): Title 47, Part 24, Subpart D: Personal Communications Services – 2021 US Code of Federal Regulations (CFR): Title 47, Part 101, Subpart C: Fixed Microwave Services -2012 Industry Canada Radio Standards Specification: RSS-119 - Land Mobile and Fixed Equipment Operating in the Frequency Range 27.41-960 MHz, Issue 12, May 2015 Industry Canada Radio Standards Specification: RSS-134 - 900 MHz Narrowband Personal Communication Service, Issue 2, February 2016 |
| Test Plan/Issue/Date | 2021-February-15 |
| Order Number | 72166992 |
| Date | 2021-February-19 |
| Date of Receipt of EUT | 2021-March-25 |
| Start of Test | 2021-March-25 |
| Finish of Test | 2021-April-29 |
| Name of Engineer(s) | Thierry Jean-Charles, Jean N. Rene |
| Related Document(s) | US Code of Federal Regulations (CFR): Title 47, Part 2, Subpart J: Equipment Authorization Procedures - 2021 Innovation, Science and Economic Development Canada Radio Standards Specification: RSS-GEN - General Requirements for Compliance of Radio Apparatus, Issue 5, Amendment 1, March 2019 |



ANSI C63.26: 2015: American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services.



1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with 24 Subpart D, Part 101 Subpart C and ISED Canada's RSS-119 and RSS-134 is shown below.

Table 1.3-1: Test Result Summary

| Test Parameter | Test Plan (Yes/No) | Test Results | FCC 47 CFR Rule Part | ISED Canada's RSS | Test Report Page No. |
|---|--------------------|--------------|---|---|----------------------|
| RF Power Output | Yes | Pass | 2.1046; 24.132; 101.113(a) | RSS-Gen 6.12; RSS-119 5.4; RSS-134 4.3(a), (b) | 12 |
| Out of Band Unwanted Emissions | No | ----- | 2.1053; 24.133 a(1), a(2); 101.111 a(6) | RSS-Gen 6.13; RSS-119 5.8.6; RSS-134 4.4 | 28 |
| Occupied Bandwidth | No | ----- | 2.1049; 101.109 | RSS-Gen 6.7 | 42 |
| Spurious Emissions at Antenna Terminals | No | ----- | 2.1053; 24.133 a(1), a(2); 101.111 a(6) | RSS-Gen 6.13; RSS-119 5.8.6; RSS-134 4.4 | 54 |
| Field Strength of Spurious Radiation | Yes | Pass | 2.1053; 24.133 a(1), a(2); 101.111a(6) | RSS-Gen 6.13; RSS-119 5.8.6; RSS-134 4.4 | 60 |
| Frequency Stability | Yes | Pass | 2.1055; 24.135; 101.107 | RSS-Gen 6.11; RSS-119 5.3; RSS-134 4.5 | 71 |



1.4 Product Information

1.4.1 Technical Description

The equipment under test was a two-way endpoint device used in utility metering applications. It is a battery-operated transceiver hardware / software architecture which is able to support Walk By, Drive By and Fixed Base 2-Watt operation.

Technical Details

Mode of Operation: Flexnet Radio
 Frequency Range: 901 - 960 MHz
 Antenna Type/Gain: Asymmetrical Dipole Antenna, 2 dBi
 Input Power: 3.6 VDC

The 522M transmitters produce 6 distinct modulation formats. The emissions designators for the modulation types used by the 522M transmitters are as follows:

EMISSIONS DESIGNATORS:

Normal Mode: 9K60F2D (7-FSK)
 Double Density Mode: 9K60F2D (13-FSK)
 C&I Mode: 4K80F2D (7-FSK)
 Boost Mode: 1K10F2D (7-FSK)
 MPass Mode (5K): 5K90F1D (2-GFSK)
 MPass Mode (10K): 11K80F1D (2-GFSK)

A full description and detailed product specification details are available from the manufacturer.

Table 1.4.1-1 – Cable Descriptions

| Cable/Port | Description |
|-------------|--|
| Power Leads | 2.3m, Not Shielded, Twisted Pair, EUT to DC Power Supply |

Table 1.4.1-2 – Support Equipment Descriptions

| Make/Model | Description |
|-------------------------|----------------------------------|
| Lambda / LA-200 | Regulated DC Power Supply |
| Hewlett Packard / 6291A | DC Power Supply, S/N: 1928A05628 |



Declaration of Build Status

| EQUIPMENT DESCRIPTION | |
|---|-------------------------|
| Model Name/Number | 522M |
| Part Number | 5396331200095 |
| Hardware Version | WFL2B |
| Software Version | B1.0.0.9 |
| FCC ID (if applicable) | SDBWFL2 |
| ISED ID (if applicable) | 2220A-WFL2 |
| Technical Description (Please provide a brief description of the intended use of the equipment) | Remote Telemetry module |

| UN-INTENTIONAL RADIATOR | |
|---|---------|
| Highest frequency generated or used in the device or on which the device operates or tunes | 960 MHz |
| Lowest frequency generated or used in the device or on which the device operates or tunes | 32kHz |
| Class A Digital Device (Use in commercial, industrial or business environment) <input type="checkbox"/> | |
| Class B Digital Device (Use in residential environment only) <input checked="" type="checkbox"/> | |

| Power Source | | | |
|--------------|--------------------------|--------------------------|-------------------------------------|
| AC | Single Phase | Three Phase | Nominal Voltage |
| | <input type="checkbox"/> | <input type="checkbox"/> | |
| External DC | Nominal Voltage | | Maximum Current |
| | | | |
| Battery | Nominal Voltage | | Battery Operating End Point Voltage |
| | 3.6VDC | | 3.2VDC |

| EXTREME CONDITIONS | | | |
|---------------------|-----|----|---------------------|
| Maximum temperature | +85 | °C | Minimum temperature |
| | | | -40 °C |

| Ancillaries |
|---|
| Please list all ancillaries which will be used with the device. |
| |

I hereby declare that the information supplied is correct and complete.

Name: James Francisco

Position held: Sr. HW Test Regulatory Engineer

Date: 4/28/2021



1.4.2 Modes of Operation

The tested mode of operation was for the 900 MHz Flexnet radio transmitting continuously. The TX power setting was not configurable during the evaluation.

1.4.3 Monitoring of Performance

Preliminary measurements were performed three TCXO configurations of the EUT (TXC, KDS and TAITIEN). Where applicable, the results are provided for the worst case.

The radiated emissions evaluations were performed on the EUT connected to a DC power supply. The EUT was investigated in three orthogonal orientations. The EUT set up vertically on the table top was determined to be the worst case and was used for all the radiated emissions results documented herein.

For the RF conducted measurements, the EUT was configured with an RF connector at the antenna port.

The EUT is designed to operate in multiple bands under the requirements of CFR 47 Parts 24 and 101. The following is a list of the frequency bands of operation sorted based on the FCC rule parts in which the band is associated.

| CFR Title 47 Rule Part | ISED Canada RSS | Frequency Band of Operation (MHz) |
|------------------------|-----------------|-----------------------------------|
| 24D | 134 | 901.0 - 902.0 |
| 24D | 134 | 930.0 - 931.0 |
| 24D | 134 | 940.0 - 941.0 |
| 101 | 119 | 928.85 - 929.0 |
| 101 | 119 | 932.0 - 932.5 |
| 101 | 119 | 941.0 - 941.5 |
| 101 | N/A | 959.85 - 960.0 |



Based on the requirements set forth in accordance 47 CFR 2.1046-2.1057 as stated above, the methodology in selecting the places to test in the available bands of operation is outlined in the following table.

| CFR Title 47 Rule Part | ISED Canada RSS | Frequency Band of Operation (MHz) | Location in the Range of Operation | Approx. Test Freq. |
|------------------------|-----------------|-----------------------------------|------------------------------------|--------------------|
| 24D | 134 | 901.0 - 902.0 | Middle | 901.5000 |
| 101 | 119 | 928.85 - 929.0 | Middle | 928.9250 |
| 24D | 134 | 930.0 - 931.0 | Middle | 930.5000 |
| 101 | 119 | 932.0 - 932.5 | Middle | 932.2500 |
| 24D | 134 | 940.0 - 941.0 | 1 near top and 1 near bottom | 940.0125 |
| 101 | 119 | 941.0 - 941.5 | | 941.4875 |
| 101 | N/A | 959.85 – 960.0 | Middle | 959.9250 |

1.4.4 Performance Criteria

The parameters evaluated are summarized below.

Table 1.4.4-1: Performance Criteria

| Parameter | Requirement |
|--|---|
| RF Output Power | FCC 47 CFR Part 2.1046; 24.132; 101.113(a) ISED Canada RSS-119 5.4; RSS-134 4.3(a),(b) |
| Out-of-Band Unwanted Emissions | FCC 47 CFR Parts: 2.1053; 24.133 a(1), a(2); 101.111 a(6) ISED Canada RSS-119 5.8.6; RSS-134 4.4 |
| Occupied Bandwidth | ISED Canada RSS-GEN 6.7 |
| Unwanted Emissions at the Antenna Terminal | FCC 47 CFR Parts: 2.1053; 24.133 a(1), a(2); 101.111 a(6) ISED Canada RSS-119 5.8.6; RSS-134 4.4 |
| Radiated Spurious Emissions | FCC 47 CFR Parts: 2.1053; 24.133 a(1), a(2); 101.111 a(6) ISED Canada RSS-119 5.8.6; RSS-134 4.4 |
| Frequency Stability | FCC Parts: 2.1055; 24.135 ISED Canada RSS-134 4.5 |

1.5 Deviations from the Standard

No deviations from the applicable test standard were made during testing.



1.6 EUT Modification Record

The table below details modifications made to the EUT during the test program. The modifications incorporated during each test are recorded on the appropriate test pages.

| Modification State | Description of Modification still fitted to EUT | Modification Fitted By | Date Modification Fitted |
|--------------------|---|------------------------|--------------------------|
| None | | | |

1.7 Test Location

TÜV SÜD Product Service conducted the following tests at our Tampa FL Test Laboratory.

| Test Name | Name of Engineer(s) | Accreditation |
|--|---------------------------------------|---------------|
| DC Powered Operating | | |
| RF Power Output | Thierry Jean-Charles | A2LA |
| Out of Band Emissions | Thierry Jean-Charles | A2LA |
| Occupied Bandwidth | Thierry Jean-Charles | A2LA |
| Spurious Emissions at the Antenna Terminal | Thierry Jean-Charles | A2LA |
| Field Strength of Spurious Radiation | Thierry Jean-Charles and Jean N. Rene | A2LA |
| Frequency Stability | Thierry Jean-Charles | A2LA |

Office Address:

TÜV SÜD America, Inc.
 5610 W. Sligh Ave, Suite 100
 Tampa, FL 33634
 USA



2 Test Details

2.1 RF Power Output

2.1.1 Specification Reference

FCC 47 CFR Part 2.1046; 24.132; 101.113(a)
ISED Canada RSS-119 5.4; RSS-134 4.3(a),(b)

2.1.2 Equipment Under Test and Modification State

TXC TCXO, SN: 125000296
KDS TCXO, SN: 125000291
TAITIEN TCXO, SN: 125000293

2.1.3 Date of Test

2021-April-16

2.1.4 Test Method

The RF output of the equipment under test was directly connected to the input of the Spectrum Analyzer through 30 dB of passive attenuation. The resolution and video bandwidths of the spectrum analyzer were set at sufficient levels, >> signal bandwidth.

2.1.5 Environmental Conditions

| | |
|----------------------|-----------|
| Ambient Temperature | 25.9 °C |
| Relative Humidity | 43.2 % |
| Atmospheric Pressure | 1011 mbar |



2.1.6 Test Results

522M - TXC TCXO

Table 2.1.6-1: RF Output Power – TXC TCXO – FCC 47 CFR Part 24.132; ISED Canada RSS-134 4.3

| Frequency MHz | Power (dBm) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
|---------------|-------------|--------------------|------------|-------------|-------------|
| 901.5 | 29.83 | 2 | 31.83 | 40.6 | 8.77 |
| 930.5 | 29.59 | 2 | 31.59 | 40.6 | 9.01 |
| 940.0125 | 29.42 | 2 | 31.42 | 40.6 | 9.18 |

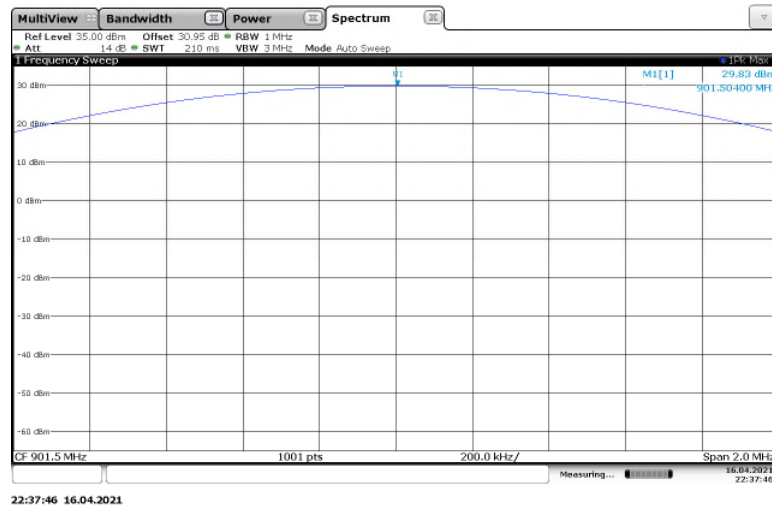


Figure 2.1.6-1: RF Output Power – TXC TCXO – 901.5 MHz

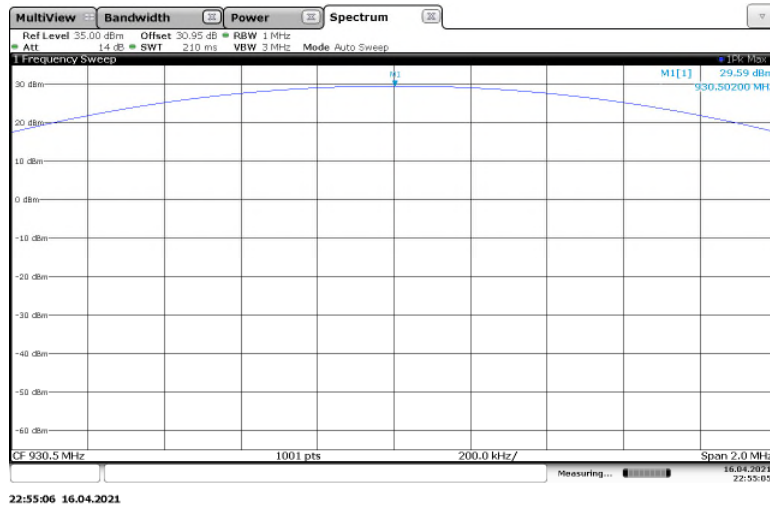


Figure 2.1.6-2: RF Output Power – TXC TCXO – 930.5 MHz

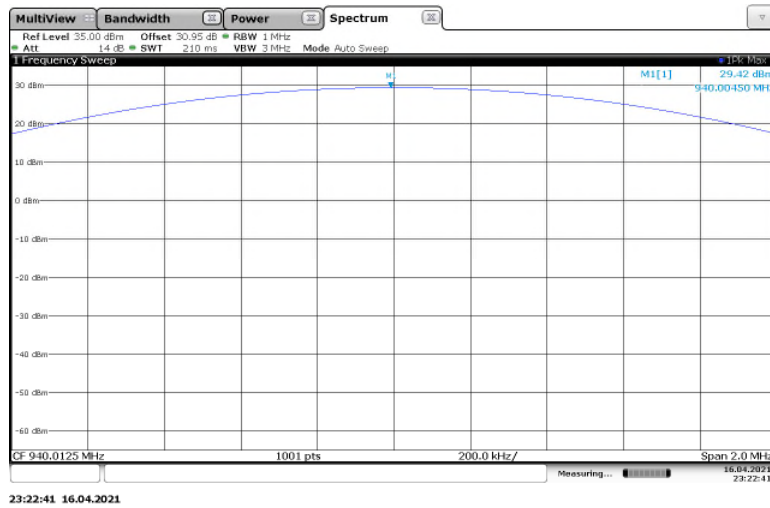


Figure 2.1.6-3: RF Output Power – TXC TCXO – 940.0125 MHz



Table 2.1.6-2: RF Output Power – TXC TCXO – FCC 47 CFR Part 101.113(a); ISED Canada RSS-119 5.4

| Frequency MHz | Power (dBm) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
|---------------|-------------|--------------------|------------|-------------|-------------|
| 928.925 | 29.59 | 2 | 31.59 | 44 | 12.41 |
| 932.25 | 29.54 | 2 | 31.54 | 44 | 12.46 |
| 941.4875 | 29.40 | 2 | 31.40 | 44 | 12.60 |
| 959.925 | 29.11 | 2 | 31.11 | 44 | 12.89 |

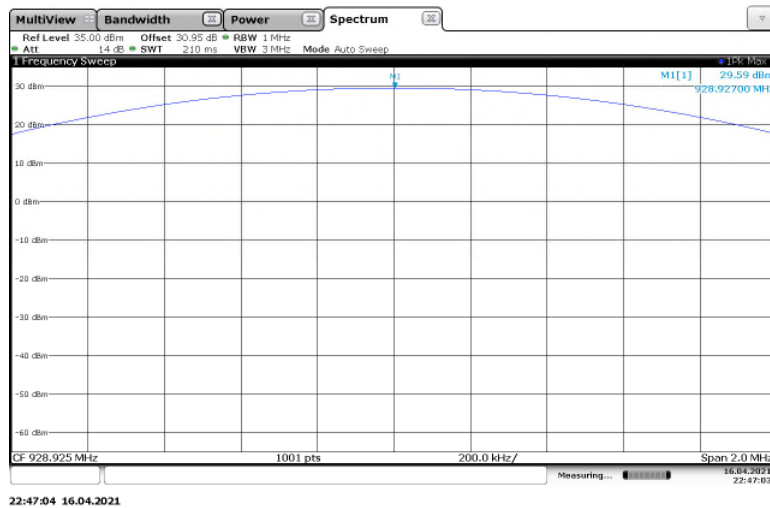


Figure 2.1.6-4: RF Output Power – TXC TCXO – 928.925 MHz

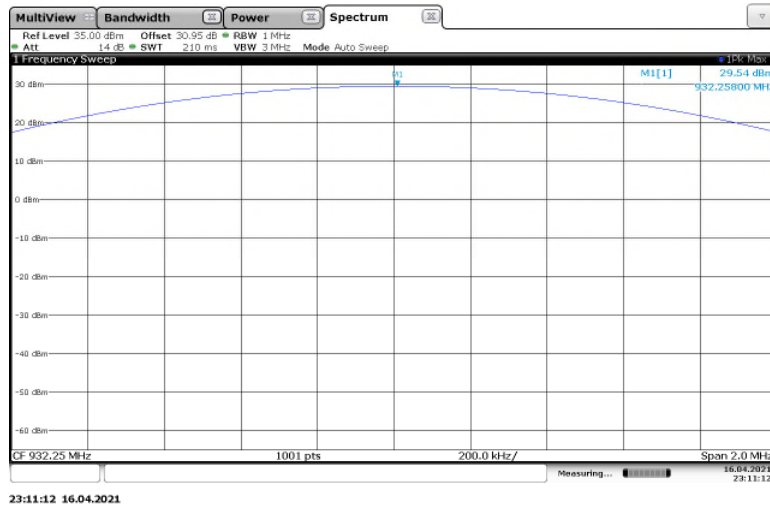


Figure 2.1.6-5: RF Output Power – TXC TCXO – 932.25 MHz

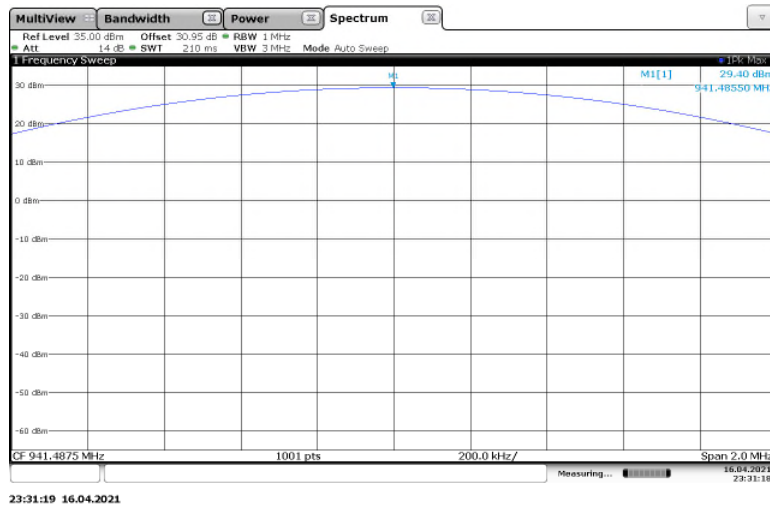


Figure 2.1.6-6: RF Output Power – TXC TCXO – 941.4875 MHz

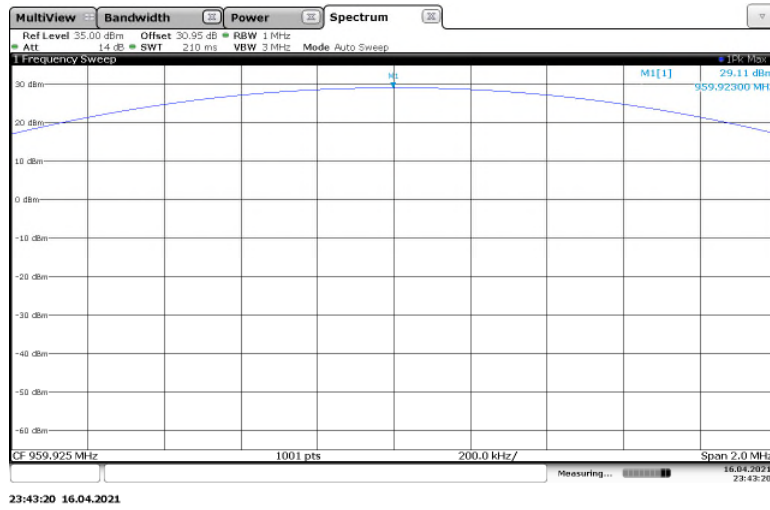


Figure 2.1.6-7: RF Output Power – TXC TCXO – 959.925 MHz



522M - KDS TCXO

Table 2.1.6-3: RF Output Power – KDS TCXO – FCC 47 CFR Part 24.132; ISED Canada RSS-134 4.3

| Frequency MHz | Power (dBm) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
|---------------|-------------|--------------------|------------|-------------|-------------|
| 901.5 | 29.41 | 2 | 31.41 | 40.6 | 9.19 |
| 930.5 | 29.21 | 2 | 31.21 | 40.6 | 9.39 |
| 940.0125 | 29.05 | 2 | 31.05 | 40.6 | 9.55 |

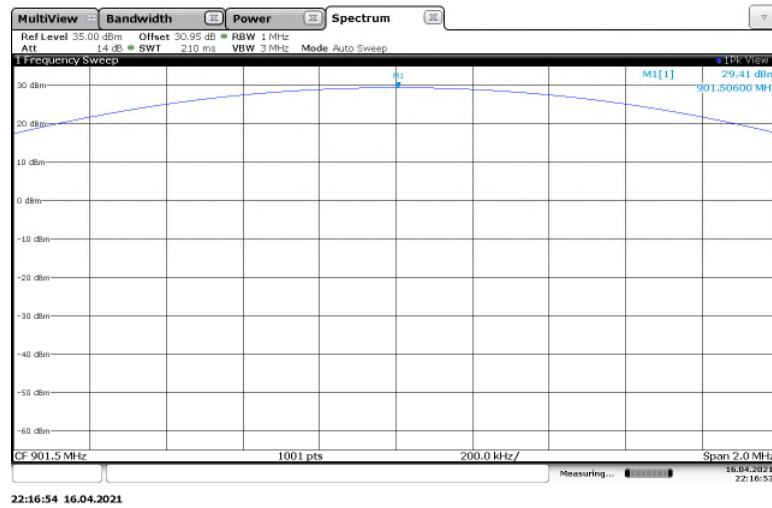


Figure 2.1.6-8: RF Output Power – KDS TCXO – 901.5 MHz

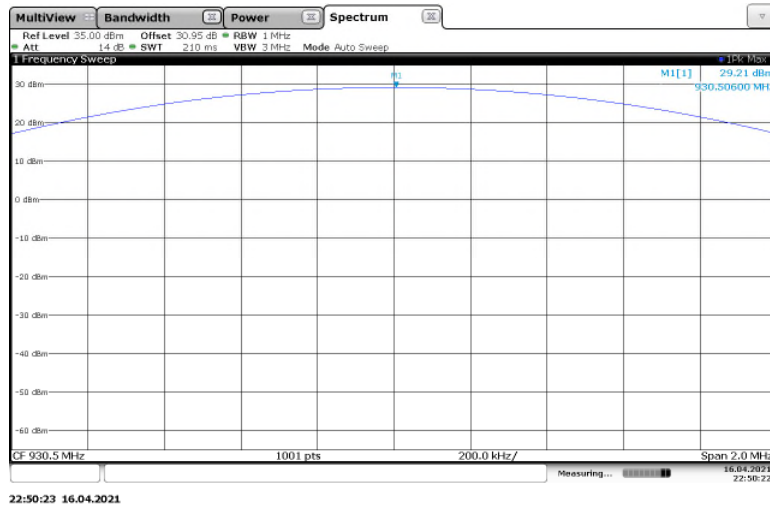


Figure 2.1.6-9: RF Output Power – KDS TCXO – 930.5 MHz

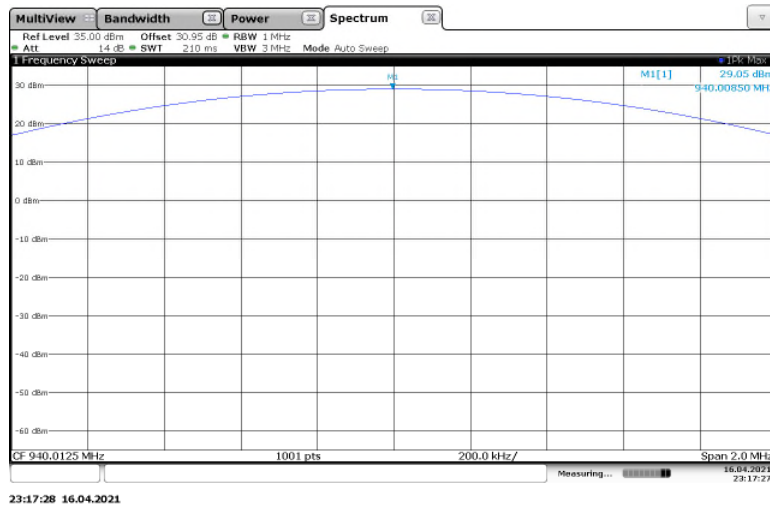


Figure 2.1.6-10: RF Output Power – KDS TCXO – 940.0125 MHz



Table 2.1.6-4: RF Output Power – KDS TCXO – FCC 47 CFR Part 101.113(a); ISED Canada RSS-119 5.4

| Frequency MHz | Power (dBm) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
|---------------|-------------|--------------------|------------|-------------|-------------|
| 928.925 | 29.24 | 2 | 31.24 | 44 | 12.76 |
| 932.25 | 29.19 | 2 | 31.19 | 44 | 12.81 |
| 941.4875 | 29.03 | 2 | 31.03 | 44 | 12.97 |
| 959.925 | 28.74 | 2 | 30.74 | 44 | 13.26 |

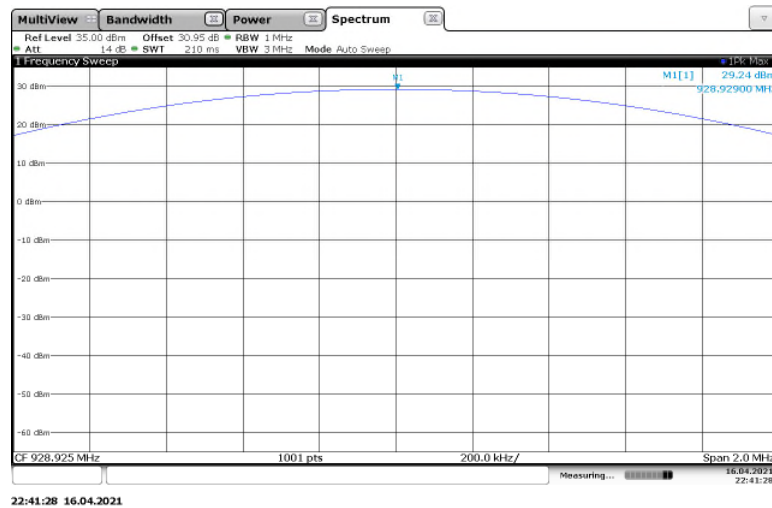


Figure 2.1.6-11: RF Output Power – KDS TCXO – 928.925 MHz

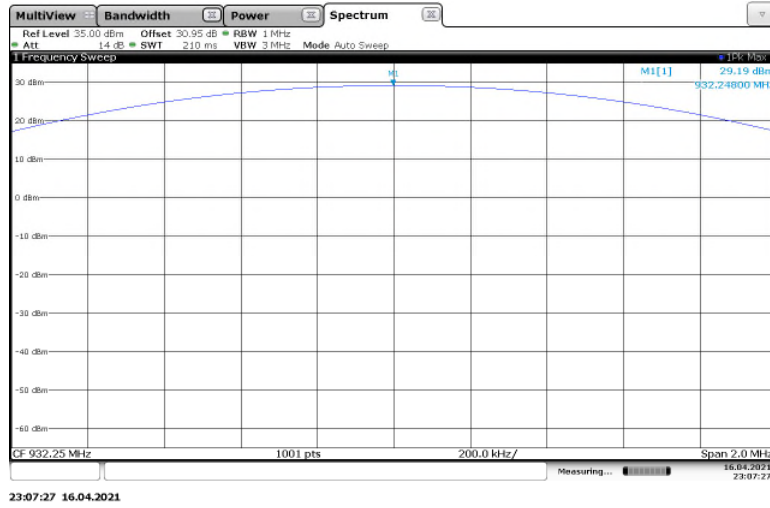


Figure 2.1.6-12: RF Output Power – KDS TCXO – 932.25 MHz

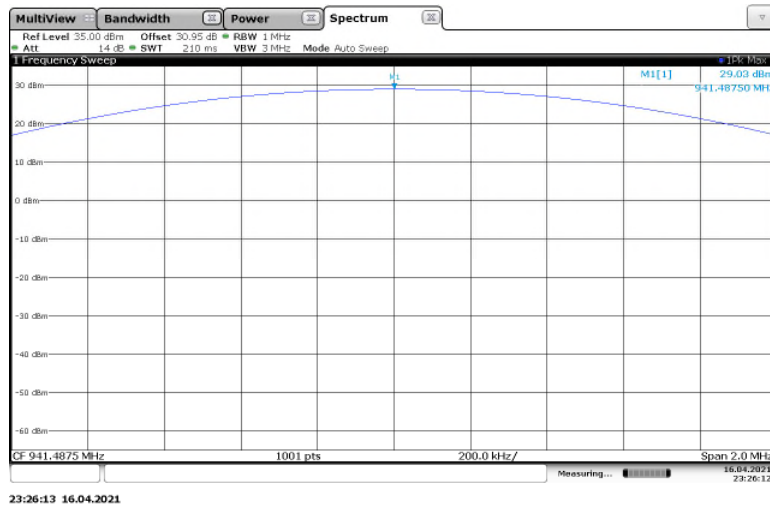


Figure 2.1.6-13: RF Output Power – KDS TCXO – 941.4875 MHz

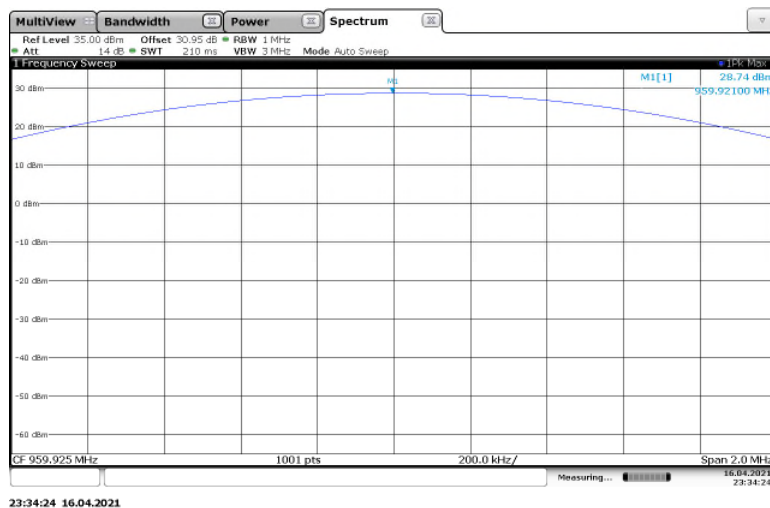


Figure 2.1.6-14: RF Output Power – KDS TCXO – 959.925 MHz



522M - TAITIEN TCXO

Table 2.1.6-5: RF Output Power – TAITIEN TCXO – FCC 47 CFR Part 24.132; ISED Canada RSS-134 4.3

| Frequency MHz | Power (dBm) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
|---------------|-------------|--------------------|------------|-------------|-------------|
| 901.5 | 29.6 | 2 | 31.60 | 40.6 | 9.00 |
| 930.5 | 29.43 | 2 | 31.43 | 40.6 | 9.17 |
| 940.0125 | 29.28 | 2 | 31.28 | 40.6 | 9.32 |

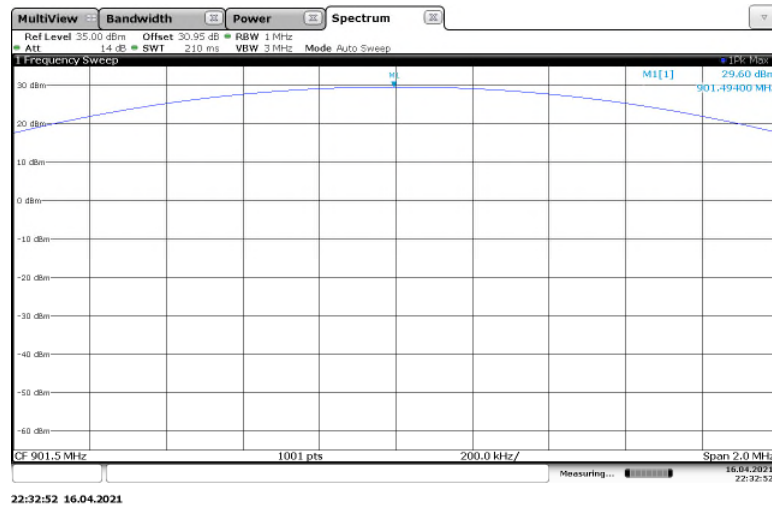


Figure 2.1.6-15: RF Output Power – TAITIEN TCXO – 901.5 MHz

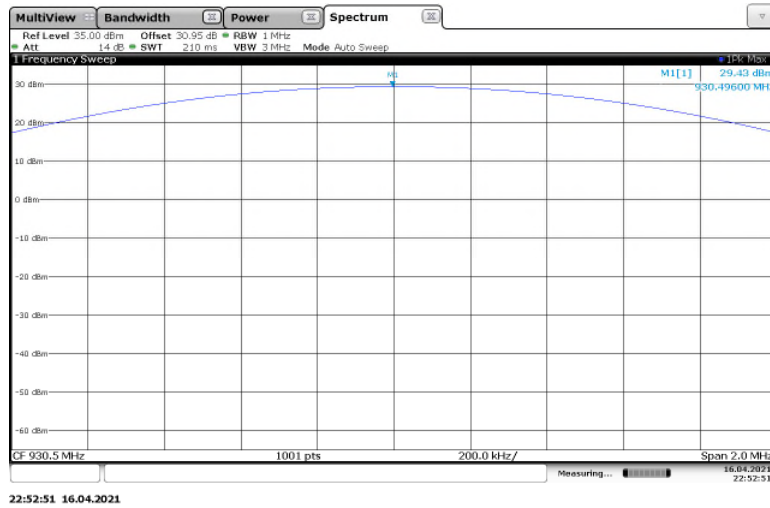


Figure 2.1.6-16: RF Output Power – TAITIEN TCXO – 930.5 MHz

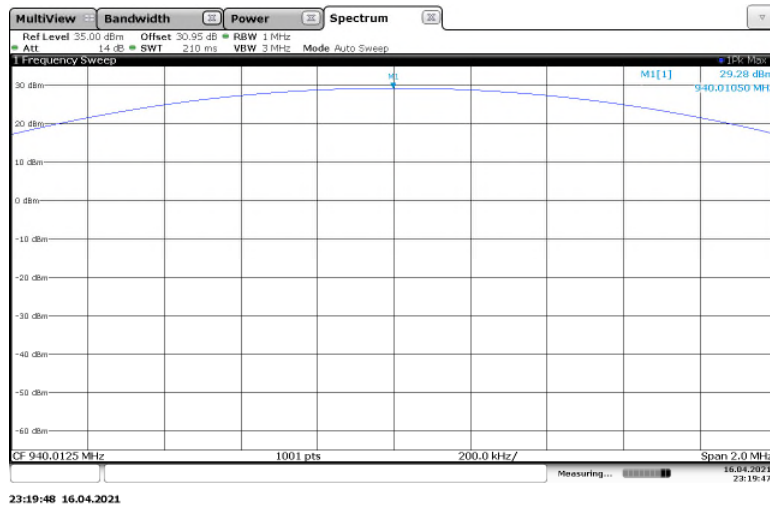


Figure 2.1.6-17: RF Output Power – TAITIEN TCXO – 940.0125 MHz



Table 2.1.6-6: RF Output Power – TAITIEN TCXO – FCC 47 CFR Part 101.113(a); ISED Canada RSS-119 5.4

| Frequency MHz | Power (dBm) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
|---------------|-------------|--------------------|------------|-------------|-------------|
| 928.925 | 29.44 | 2 | 31.44 | 44 | 12.56 |
| 932.25 | 29.26 | 2 | 31.26 | 44 | 12.74 |
| 941.4875 | 29.25 | 2 | 31.25 | 44 | 12.75 |
| 959.925 | 28.97 | 2 | 30.97 | 44 | 13.03 |

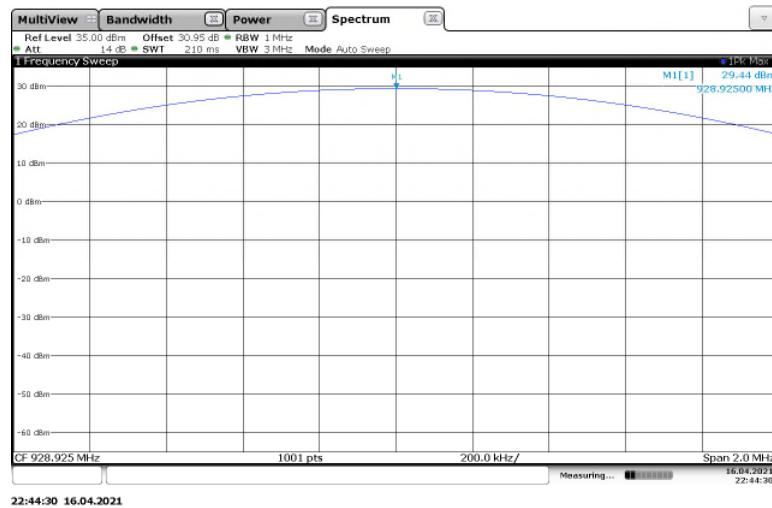


Figure 2.1.6-18: RF Output Power – TAITIEN TCXO – 928.925 MHz

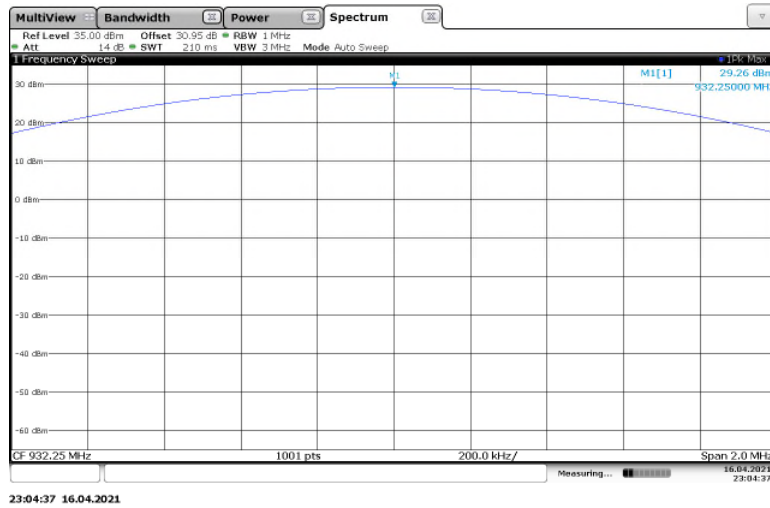


Figure 2.1.6-19: RF Output Power – TAITIEN TCXO – 932.25 MHz

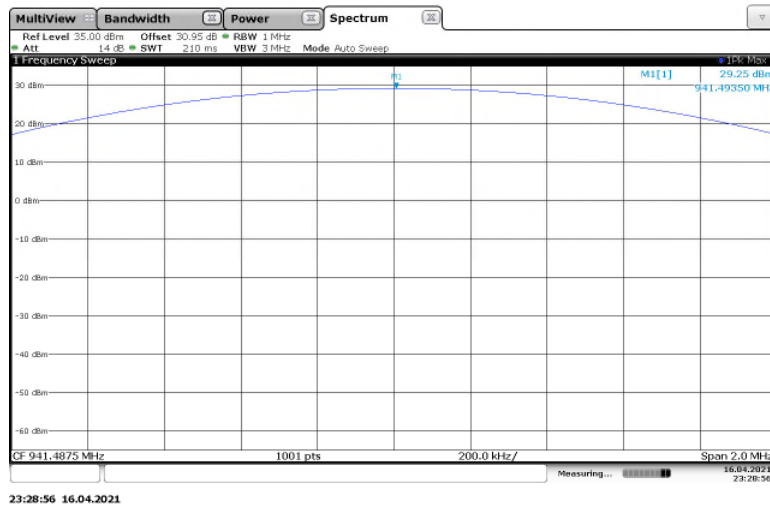


Figure 2.1.6-20: RF Output Power – TAITIEN TCXO – 941.4875 MHz

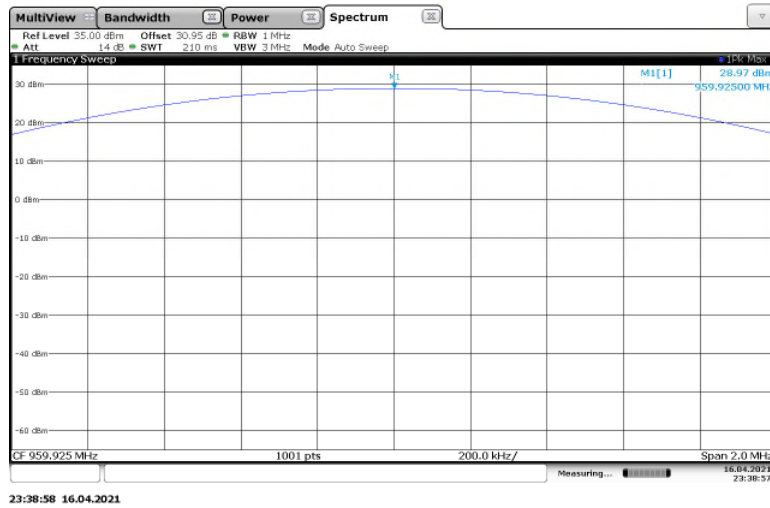


Figure 2.1.6-21: RF Output Power – TAITIEN TCXO – 959.925 MHz

2.1.7 Test Location and Test Equipment Used

This test was carried out in TÜV SÜD America, Inc., 5610 W. Sligh Ave, Suite 100, Tampa, FL 33634, USA.

| Instrument | Manufacturer | Type No | TE No | Software / Firmware Revision | Calibration Period (months) | Calibration Due |
|--|-----------------|----------|-----------|------------------------------|-----------------------------|-----------------|
| Digital MultiMeter | Fluke | 115 | BEMC02108 | N/A | 24 | 29-Mar-2023 |
| Signal & Spectrum Analyzer | Rohde & Schwarz | FSW43 | DEMC3085 | N/A | 24 | 07-Dec-2022 |
| DC Power Supply | Xantrex | XHR60-18 | TEMC00001 | N/A | N/A | NCR |
| 2.92mm Attenuator M/F 40GHz 30dB 2W VSWR 1.45 | Centric RF | C402-30 | TEMC00222 | N/A | 12 | 08-Mar-2022 |

TU - Traceability Unscheduled
 O/P MON - Traceability Unscheduled
 N/A - Not Applicable
 NCR – No Calibration Required



2.2 Out of Band Unwanted Emissions

2.2.1 Specification Reference

FCC 47 CFR Parts: 2.1053; 24.133 a(1), a(2); 101.111 a(6)
ISED Canada RSS-119 5.8.6; RSS-134 4.4

2.2.2 Equipment Under Test and Modification State

TXC TCXO, SN: 125000296

2.2.3 Date of Test

2021-April-19 to 2021-April-29

2.2.4 Test Method

The RF output of the equipment under test was directly connected to the input of the Spectrum Analyzer through a 20 dB passive attenuator. The spectrum analyzer resolution and video bandwidths were set to 300 Hz and 3000 Hz, respectively. The internal correction factors of the spectrum analyzer were employed to correct for any cable or attenuator losses. Results of the test are shown below for all modes of operation.

2.2.5 Environmental Conditions

| | |
|----------------------|-------------|
| Ambient Temperature | 25.5 °C |
| Relative Humidity | 42.1 % |
| Atmospheric Pressure | 1012.6 mbar |



2.2.6 Test Results

DC Powered Operating

FCC 47 CFR Parts: 2.1053; 24.133 a(1), a(2); ISED Canada RSS-134 4.4

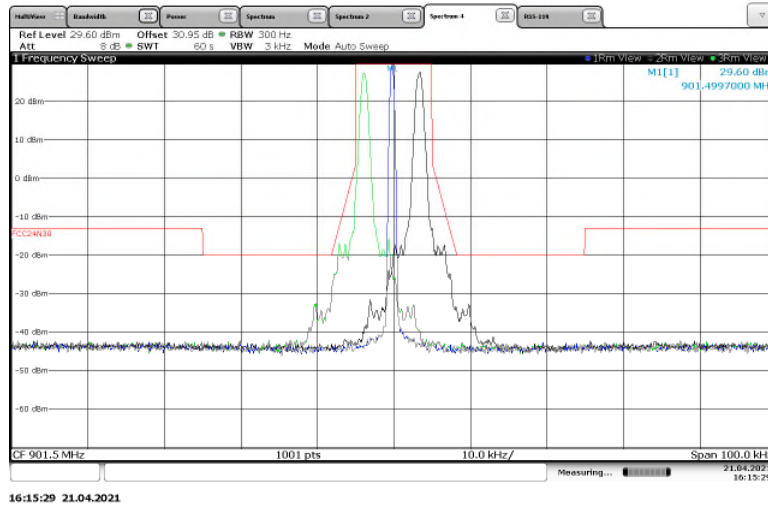


Figure 2.2.6-1: Emissions Mask – TXC TCXO – 901.5 MHz - 12.5 kHz Channel Spacing - Boost Mode – Offset Channel +/- 6 (+/- 3600)

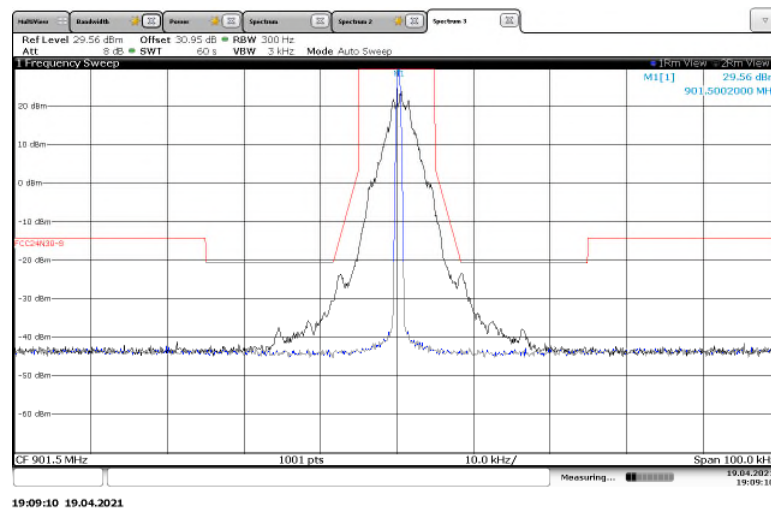


Figure 2.2.6-2: Emissions Mask – TXC TCXO – 901.5 MHz - 12.5 kHz Channel Spacing - C&I Mode

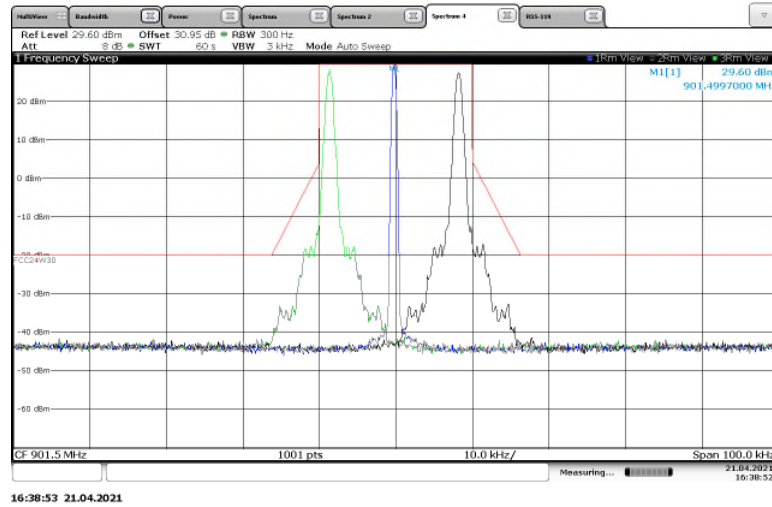


Figure 2.2.6-3: Emissions Mask – TXC TCXO – 901.5 MHz - 25 kHz Channel Spacing- Boost Mode – Offset Channel +/- 14 (+/- 8400)

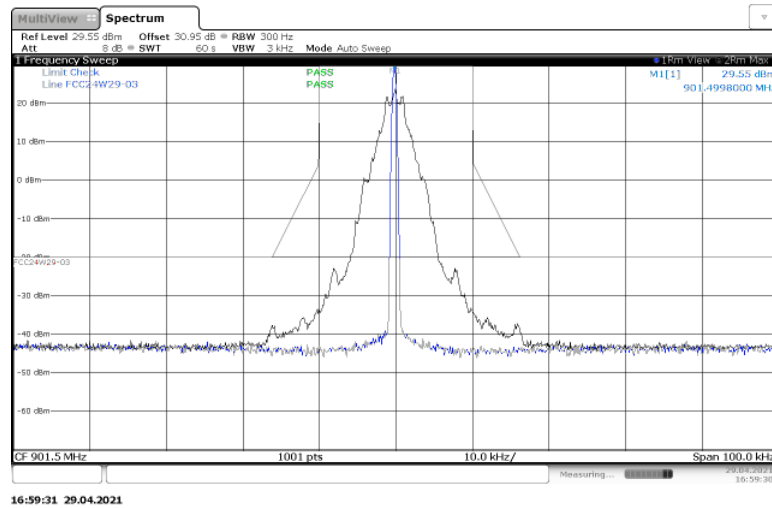


Figure 2.2.6-4: Emissions Mask – TXC TCXO – 901.5 MHz - 25 kHz Channel Spacing- C&I Mode

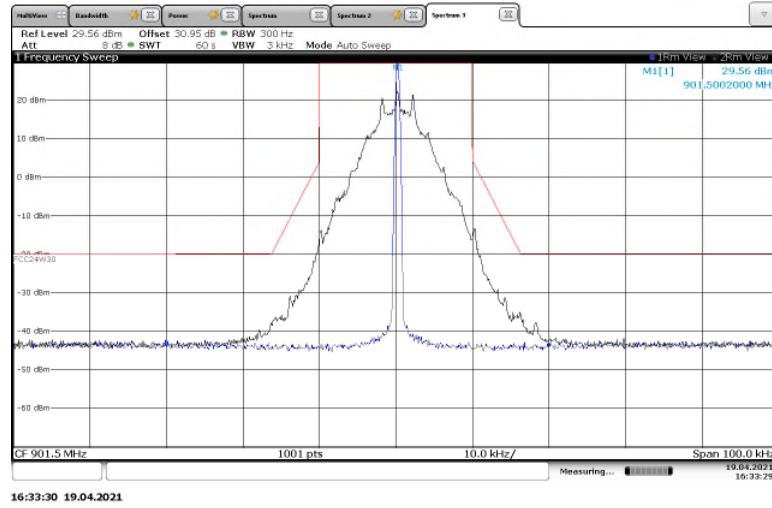


Figure 2.2.6-5: Emissions Mask – TXC TCXO – 901.5 MHz - 25 kHz Channel Spacing- Normal Mode

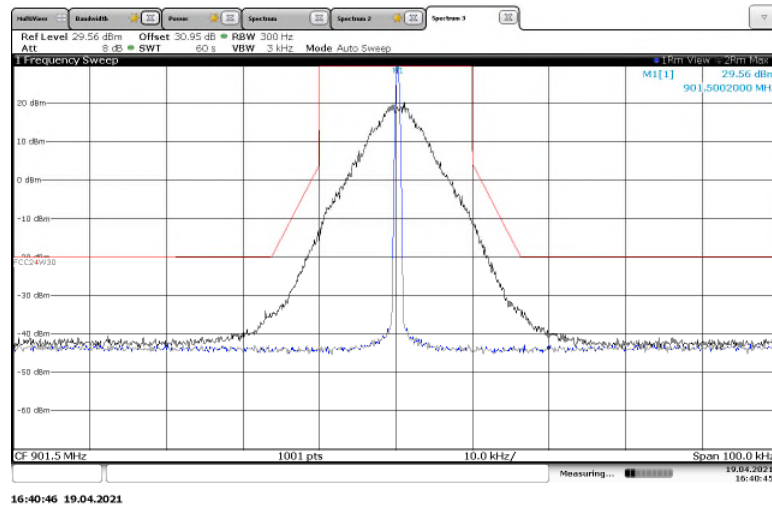


Figure 2.2.6-6: Emissions Mask – TXC TCXO – 901.5 MHz - 25 kHz Channel Spacing- Double Density Mode

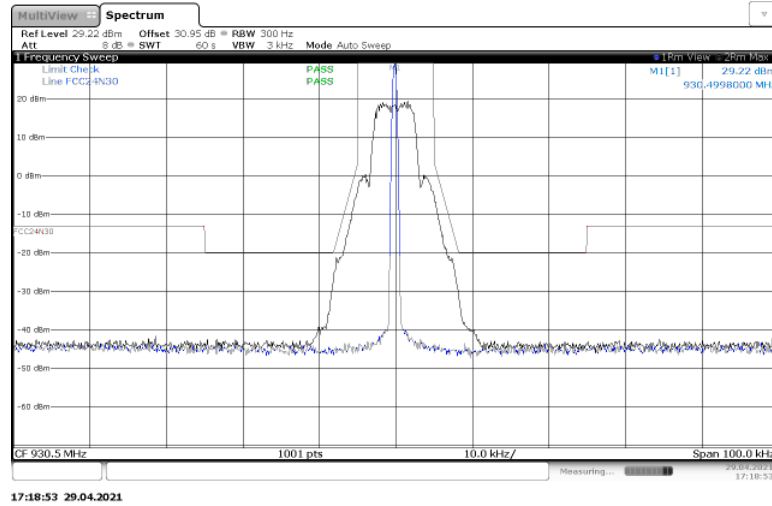


Figure 2.2.6-7: Emissions Mask – TXC TCXO – 930.5 MHz - 12.5 kHz Channel Spacing- mPass5k Mode

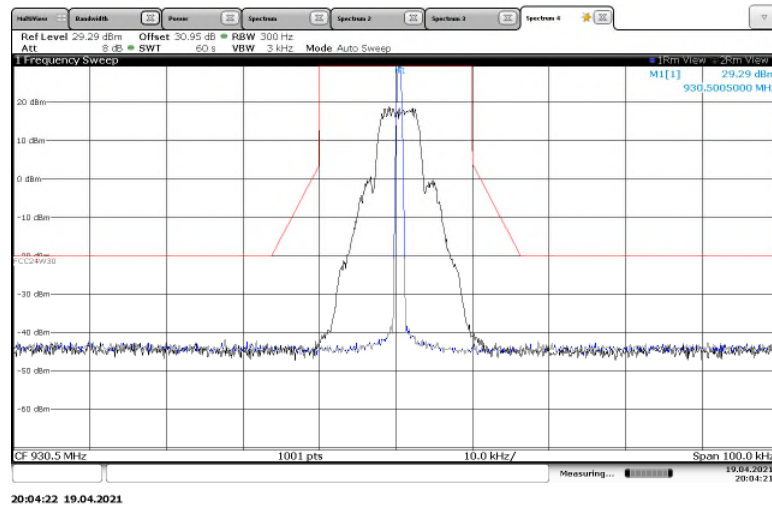


Figure 2.2.6-8: Emissions Mask – TXC TCXO – 930.5 MHz - 25 kHz Channel Spacing- mPass5k Mode

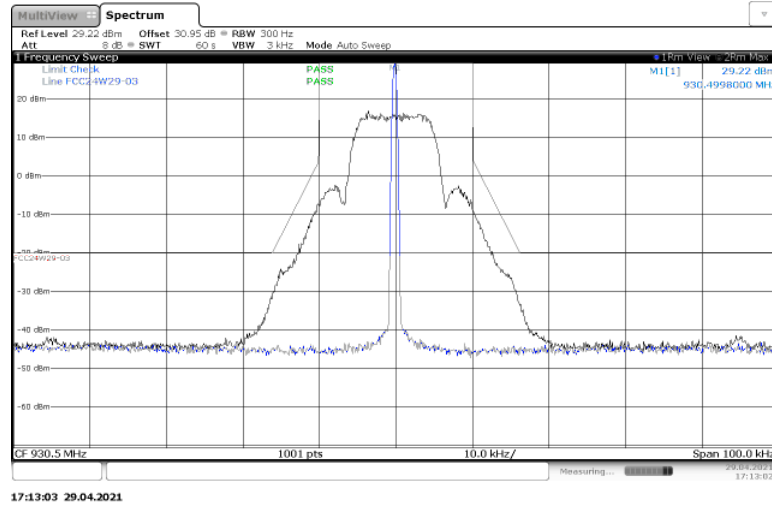


Figure 2.2.6-9: Emissions Mask – TXC TCXO – 930.5 MHz - 25 kHz Channel Spacing- Mpass10k Mode

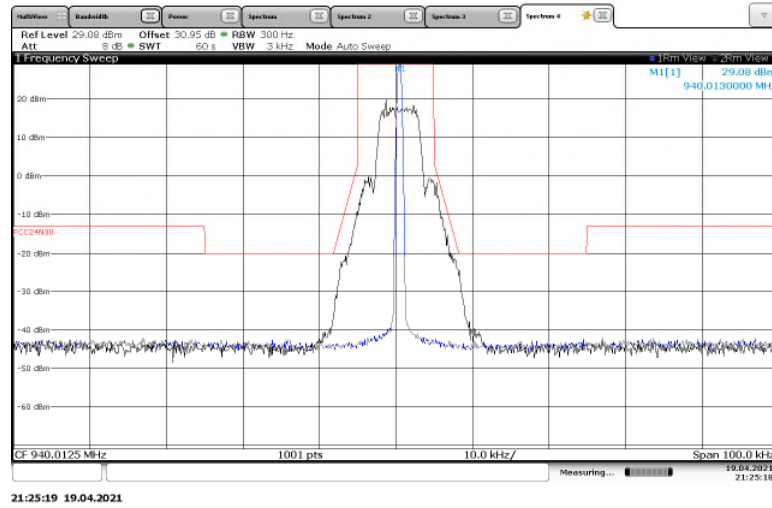


Figure 2.2.6-10: Emissions Mask – TXC TCXO – 940.0125 MHz - 12.5 kHz Channel Spacing- mPass5k Mode

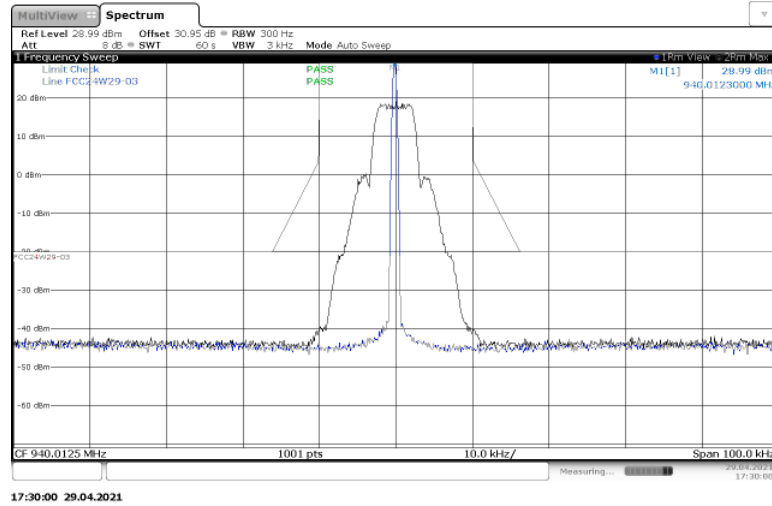


Figure 2.2.6-11: Emissions Mask – TXC TCXO – 940.0125 MHz - 25 kHz Channel Spacing- mPass5k Mode

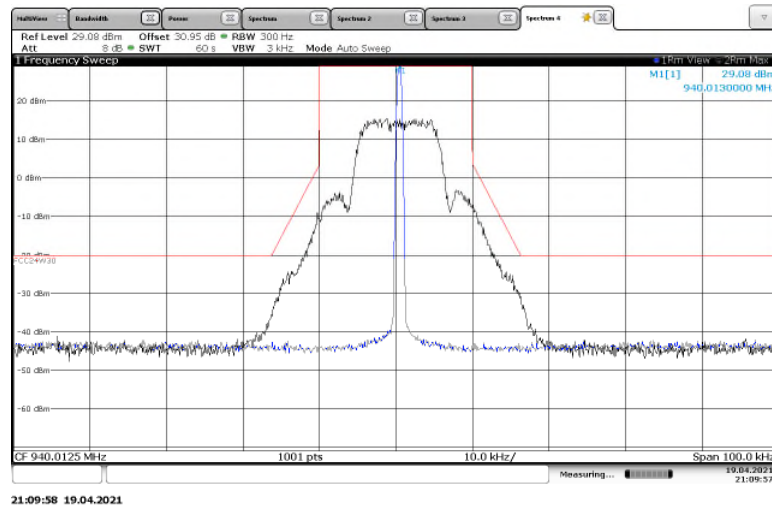


Figure 2.2.6-12: Emissions Mask – TXC TCXO – 940.0125 MHz - 25 kHz Channel Spacing- mPass10k Mode

FCC 47 CFR Parts: 2.1053; 101.111 a(6); ISED Canada RSS-119 5.8.6

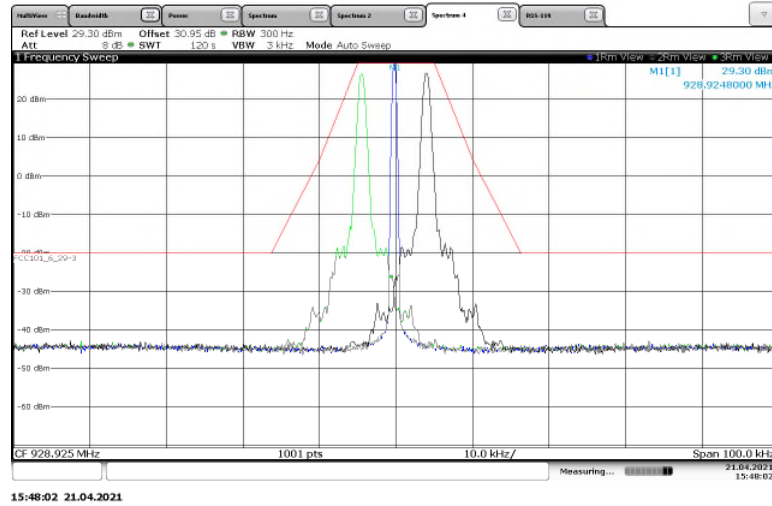


Figure 2.2.6-13: Emissions Mask – TXC TCXO – 928.925 MHz - 25 kHz Channel Spacing- Boost Mode – Offset Channel +/- 7 (+/- 4200)

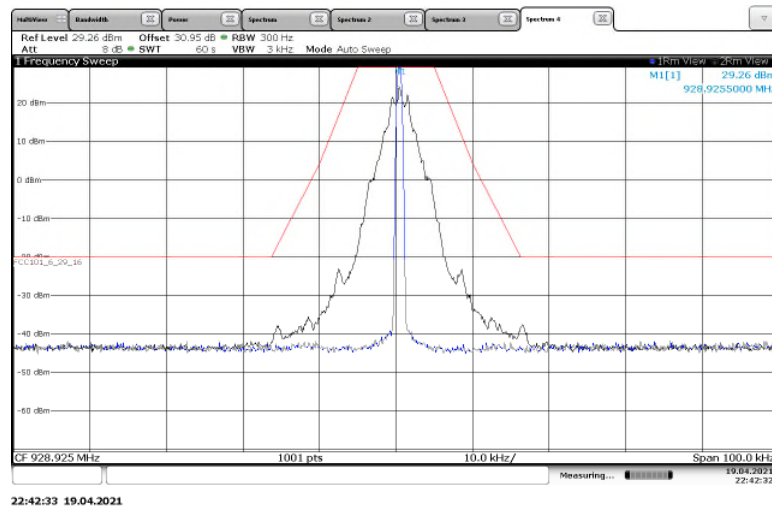


Figure 2.2.6-14: Emissions Mask – TXC TCXO – 928.925 MHz - 25 kHz Channel Spacing- C&I Mode

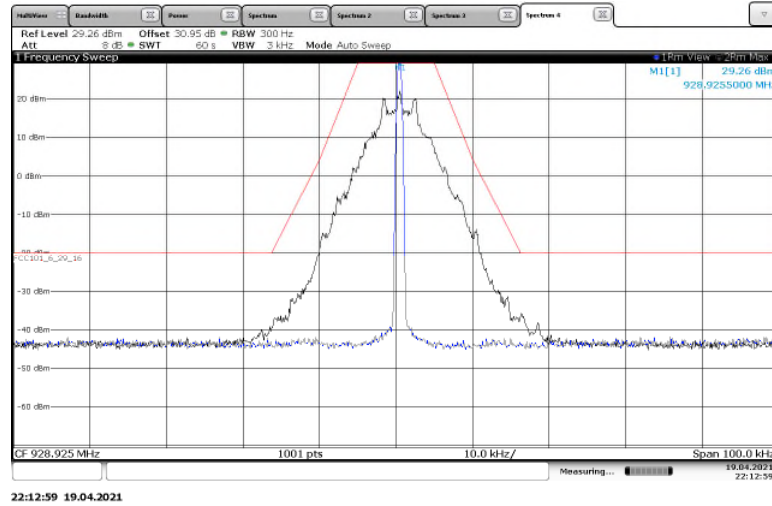


Figure 2.2.6-15: Emissions Mask – TxC TCXO – 928.925 MHz - 25 kHz Channel Spacing- Normal Mode

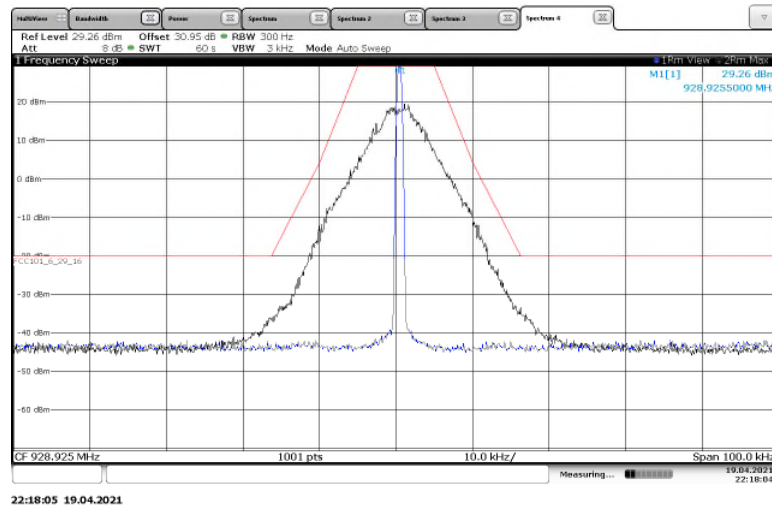


Figure 2.2.6-16: Emissions Mask – TxC TCXO – 928.925 MHz - 25 kHz Channel Spacing- Double Density Mode

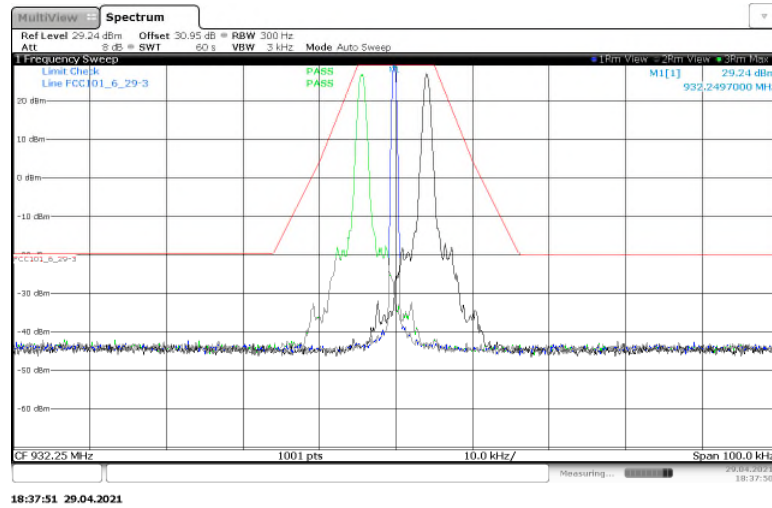


Figure 2.2.6-17: Emissions Mask – TXC TCXO – 932.25 MHz - 25 kHz Channel Spacing- Boost Mode – Offset Channel +/- 7 (+/- 4200)

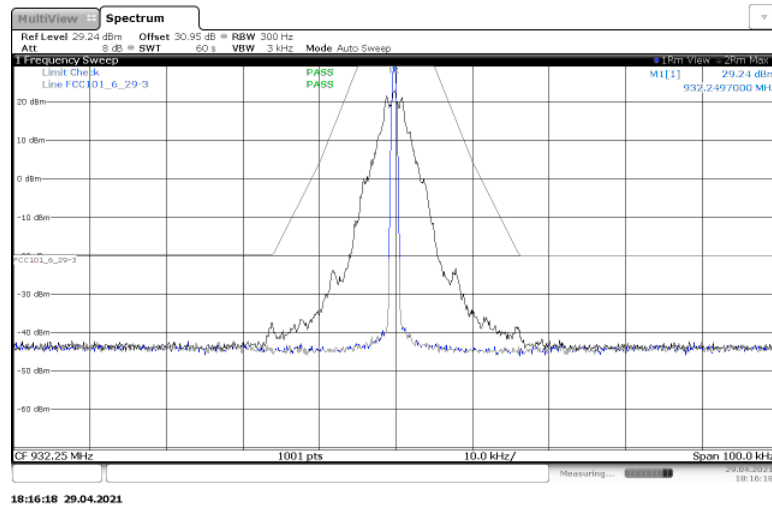


Figure 2.2.6-18: Emissions Mask – TXC TCXO – 932.25 MHz - 25 kHz Channel Spacing- C&I Mode

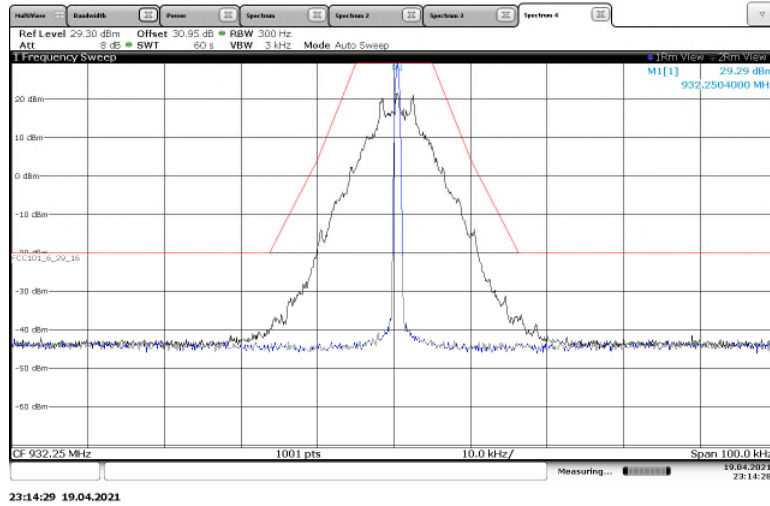


Figure 2.2.6-19: Emissions Mask – TXC TCXO – 932.25 MHz - 25 kHz Channel Spacing- Normal Mode

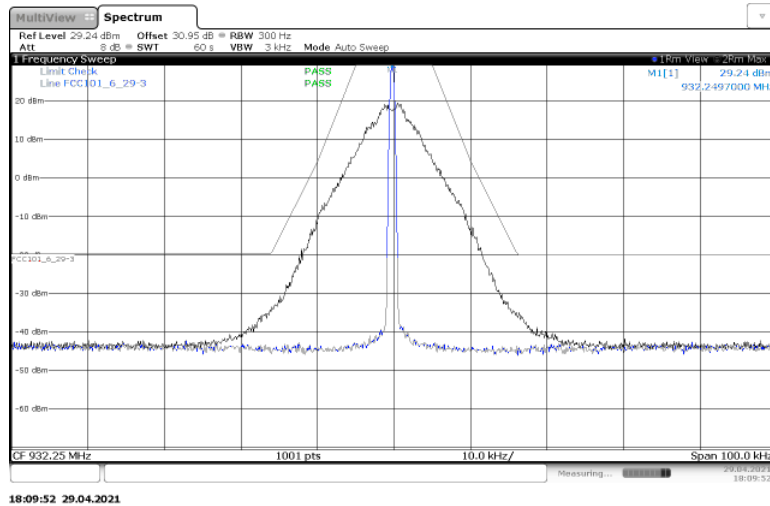


Figure 2.2.6-20: Emissions Mask – TXC TCXO – 932.25 MHz - 25 kHz Channel Spacing- Double Density Mode

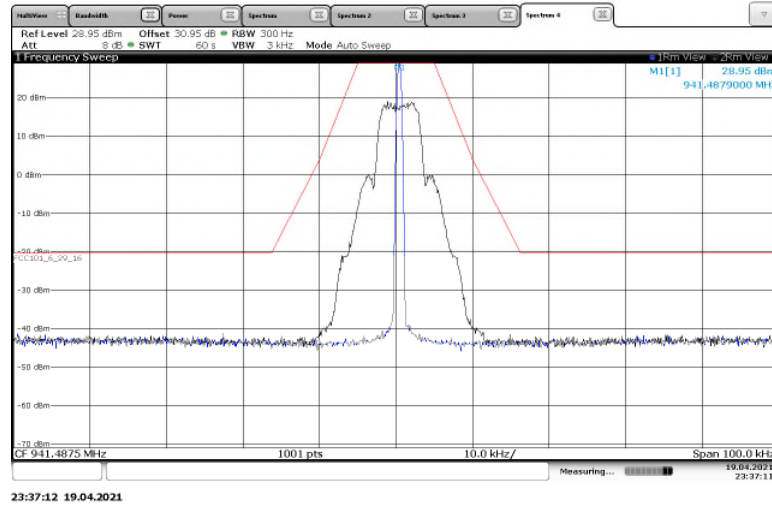


Figure 2.2.6-21: Emissions Mask – TXC TCXO – 941.4875 MHz - 25 kHz Channel Spacing- mPass5k Mode

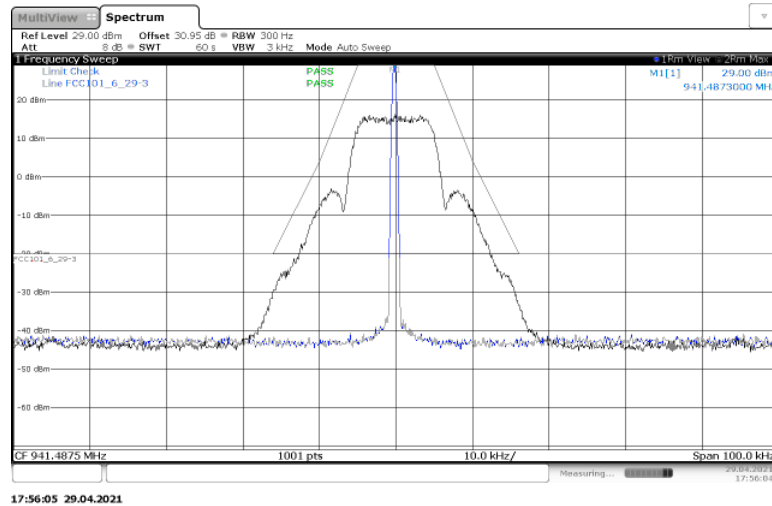


Figure 2.2.6-22: Emissions Mask – TXC TCXO – 941.4875 MHz - 25 kHz Channel Spacing- mPass10k Mode

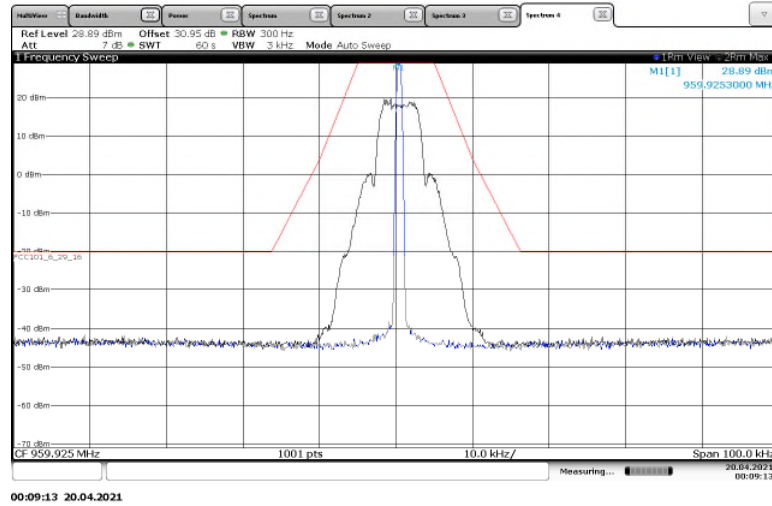


Figure 2.2.6-23: Emissions Mask – TXC TCXO – 959.925 MHz - 25 kHz Channel Spacing- mPass5k Mode

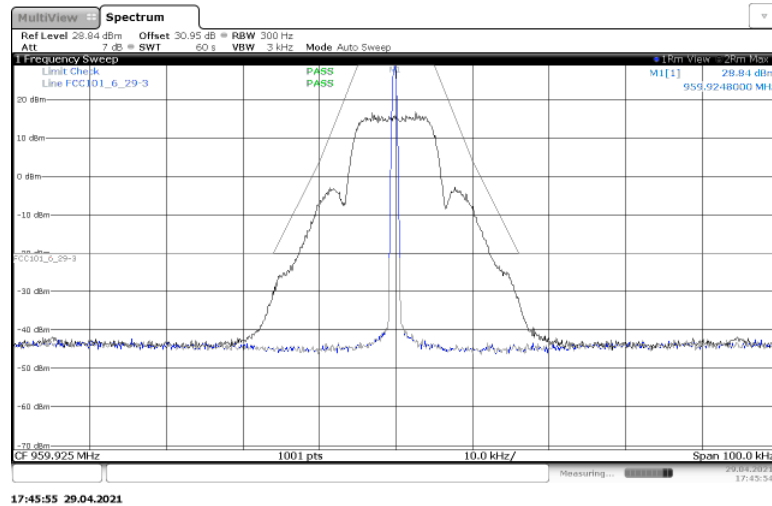


Figure 2.2.6-24: Emissions Mask – TXC TCXO – 959.925 MHz - 25 kHz Channel Spacing- mPass10k Mode



2.2.7 Test Location and Test Equipment Used

This test was carried out in TÜV SÜD America, Inc., 5610 W. Sligh Ave, Suite 100, Tampa, FL 33634, USA.

| Instrument | Manufacturer | Type No | TE No | Software / Firmware Revision | Calibration Period (months) | Calibration Due |
|--|-----------------|----------|-----------|------------------------------|-----------------------------|-----------------|
| Digital MultiMeter | Fluke | 115 | BEMC02108 | N/A | 24 | 29-Mar-2023 |
| Signal & Spectrum Analyzer | Rohde & Schwarz | FSW43 | DEMC3085 | N/A | 24 | 07-Dec-2022 |
| DC Power Supply | Xantrex | XHR60-18 | TEMC00001 | N/A | N/A | NCR |
| 2.92mm Attenuator M/F 40GHz 30dB 2W VSWR 1.45 | Centric RF | C402-30 | TEMC00222 | N/A | 12 | 08-Mar-2022 |

TU - Traceability Unscheduled
 O/P MON - Traceability Unscheduled
 N/A - Not Applicable
 NCR – No Calibration Required



2.3 Occupied Bandwidth

2.3.1 Specification Reference

FCC Section 2.1049; ISED Canada RSS-GEN 6.7

2.3.2 Equipment Under Test and Modification State

TXC TCXO, SN: 125000296

2.3.3 Date of Test

2021-April-17

2.3.4 Test Method

The RF output of the equipment under test was directly connected to the input of the Spectrum Analyzer through suitable of passive attenuation. The internal correction factors of the spectrum analyzer were employed to correct for any cable and attenuator losses.

The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts. The nominal IF filter 3 dB bandwidth (RBW) is in the range of 1% to 5% of the OBW, and the VBW was set $\geq 3 \times$ RBW. The reference level was set to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. The measurements were made using the spectrum analyzer’s 99% BW function.

2.3.5 Environmental Conditions

Ambient Temperature 25.6 °C
 Relative Humidity 48.2 %
 Atmospheric Pressure 1011.5 mbar

2.3.6 Test Results

Table 2.3.6-1: 99% Bandwidth – TXC TCXO – 901.5 MHz

| Frequency (MHz) | ISED Canada Rule Part | Mode | 99% Bandwidth (kHz) |
|-----------------|-----------------------|----------------|---------------------|
| 901.5 | RSS-134 | Boost | 1.2476 |
| 901.5 | RSS-134 | C&I | 6.1849 |
| 901.5 | RSS-134 | Normal | 11.967 |
| 901.5 | RSS-134 | Double Density | 13.8971 |

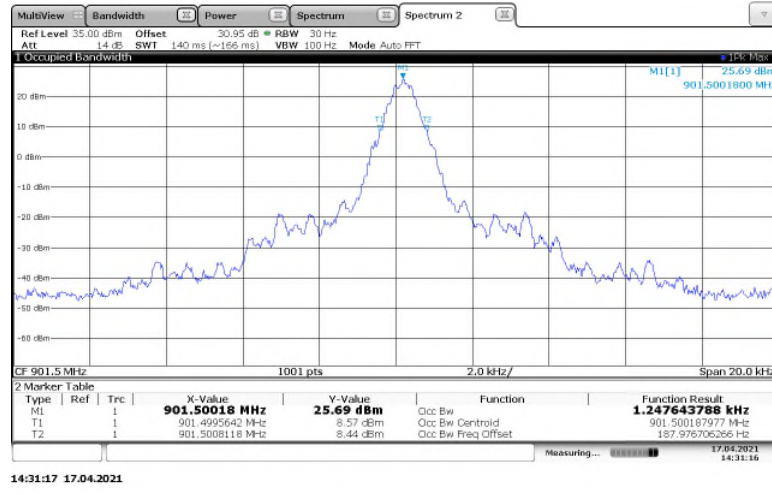


Figure 2.3.6-1: 99% Bandwidth – TXC TCXO – 901.5 MHz - Boost Mode

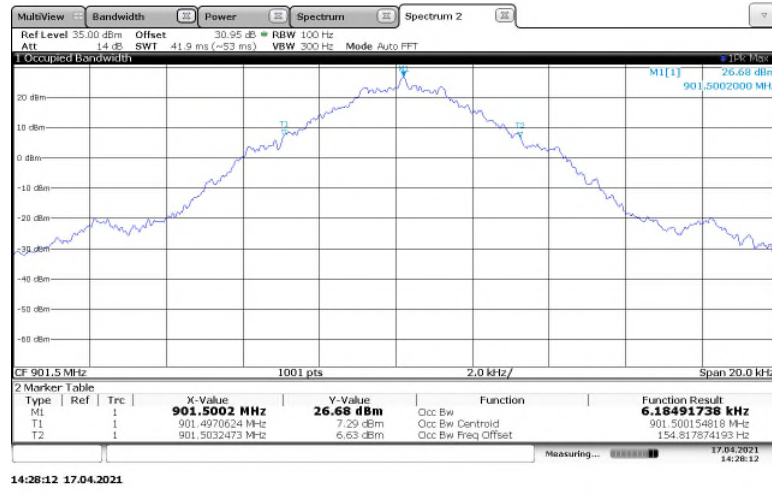


Figure 2.3.6-2: 99% Bandwidth – TXC TCXO – 901.5 MHz - C&I Mode

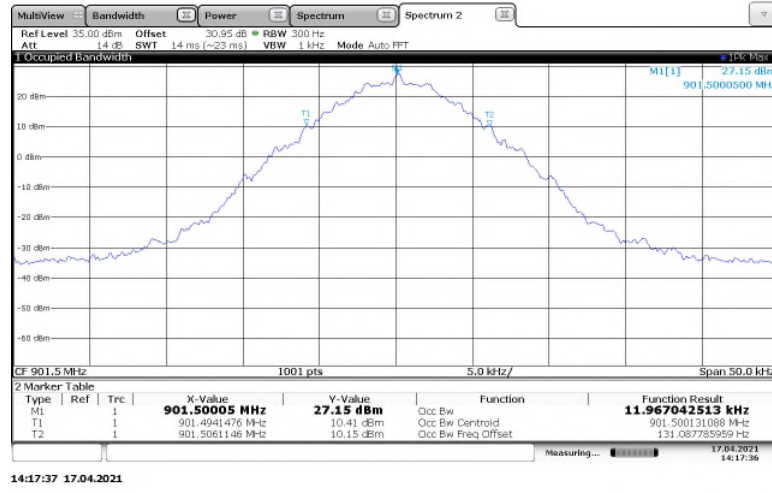


Figure 2.3.6-3: 99% Bandwidth – TXC TCXO – 901.5 MHz - Normal Mode



Figure 2.3.6-4: 99% Bandwidth – TXC TCXO – 901.5 MHz - Double Density Mode



Table 2.3.6-2: 99% Bandwidth – TXC TCXO – 928.925 MHz

| Frequency (MHz) | ISED Canada Rule Part | Mode | 99% Bandwidth (kHz) |
|-----------------|-----------------------|----------------|---------------------|
| 928.925 | RSS-119 | Boost | 1.3088 |
| 928.925 | RSS-119 | C&I | 6.2072 |
| 928.925 | RSS-119 | Normal | 11.9086 |
| 928.925 | RSS-119 | Double Density | 13.8972 |

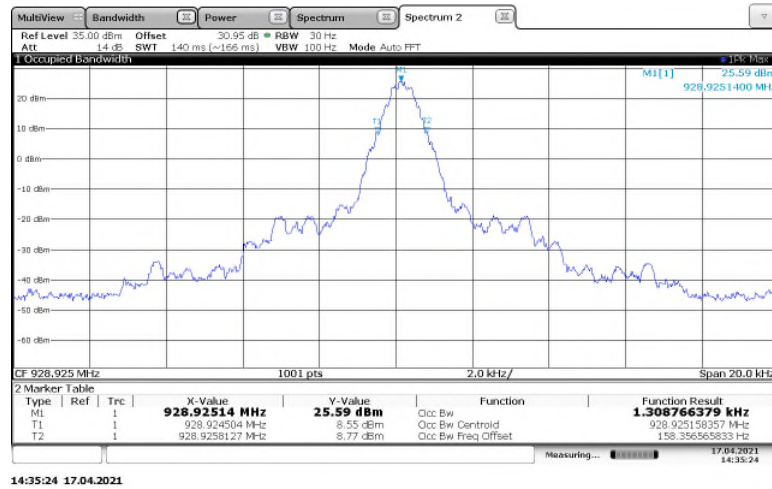


Figure 2.3.6-5: 99% Bandwidth – TXC TCXO – 928.925 MHz - Boost Mode

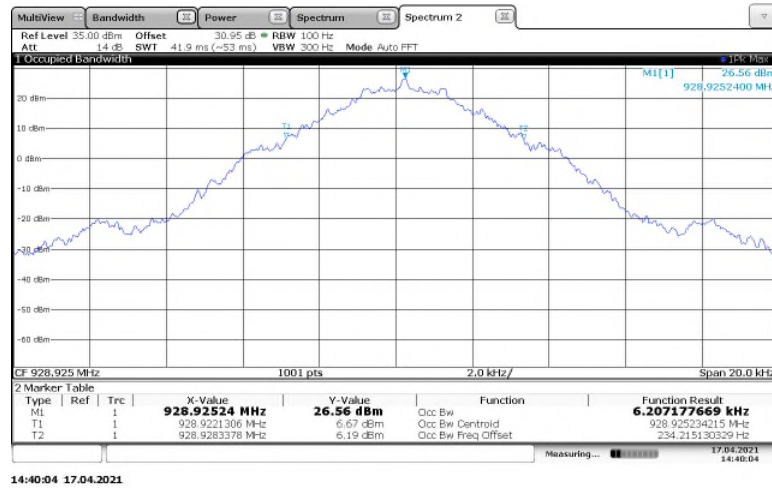


Figure 2.3.6-6: 99% Bandwidth – TXC TCXO – 928.925 MHz - C&I Mode

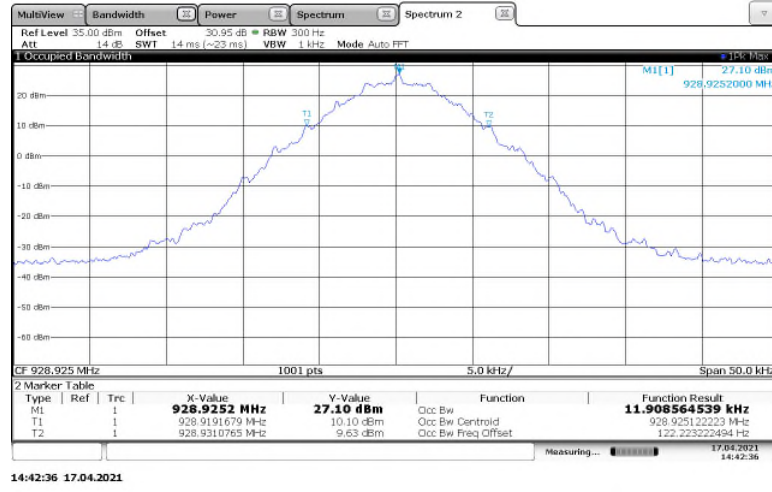


Figure 2.3.6-7: 99% Bandwidth – TXC TCXO – 928.925 MHz - Normal Mode

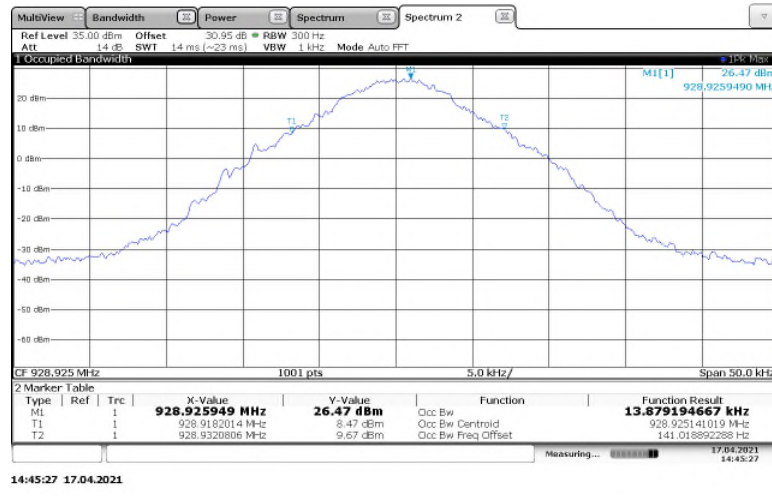


Figure 2.3.6-8: 99% Bandwidth – TXC TCXO – 928.925 MHz - Double Density Mode



Table 2.3.6-3: 99% Bandwidth – TXC TCXO – 930.5 MHz

| Frequency (MHz) | ISED Canada Rule Part | Mode | 99% Bandwidth (kHz) |
|-----------------|-----------------------|-----------|---------------------|
| 930.5 | RSS-134 | mPass 5k | 6.1719 |
| 930.5 | RSS-134 | mPass 10k | 11.8454 |

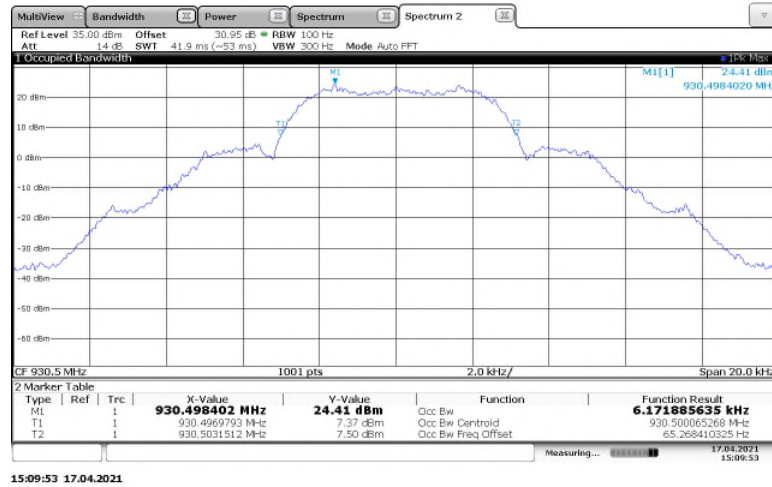


Figure 2.3.6-9: 99% Bandwidth – TXC TCXO – 930.5 MHz - mPass5k Mode

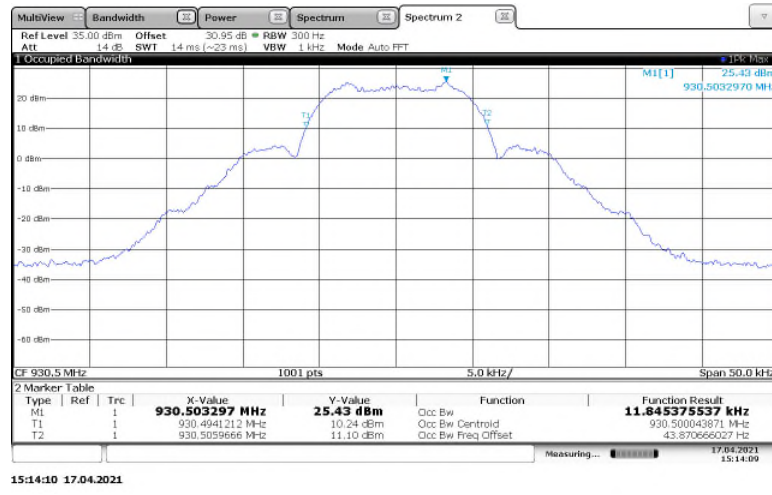


Figure 2.3.6-10: 99% Bandwidth – TXC TCXO – 930.5 MHz - Mpass10k Mode



Table 2.3.6-4: 99% Bandwidth – TxC TCXO – 932.25 MHz

| Frequency (MHz) | ISED Canada Rule Part | Mode | 99% Bandwidth (kHz) |
|-----------------|-----------------------|----------------|---------------------|
| 932.25 | RSS-119 | Boost | 1.3384 |
| 932.25 | RSS-119 | C&I | 6.2030 |
| 932.25 | RSS-119 | Normal | 11.9759 |
| 932.25 | RSS-119 | Double Density | 13.7706 |

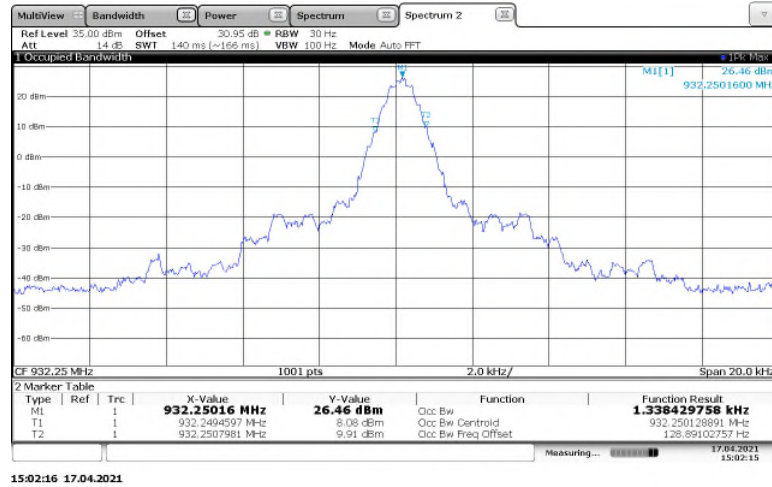


Figure 2.3.6-11: 99% Bandwidth – TxC TCXO – 932.25 MHz - Boost Mode

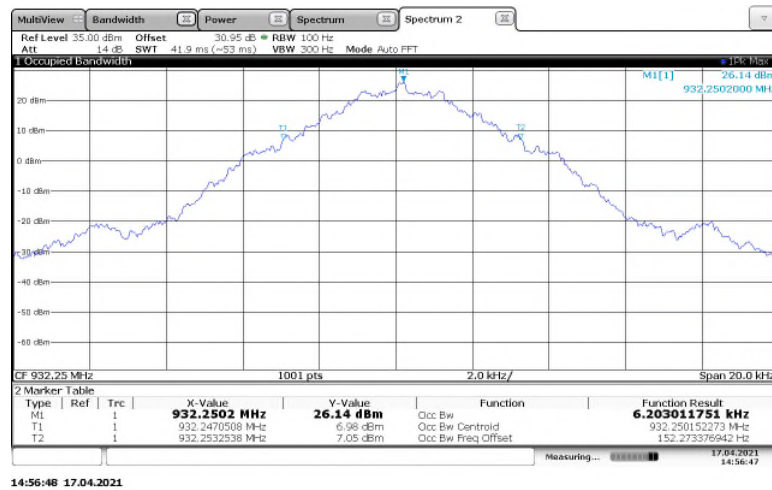


Figure 2.3.6-12: 99% Bandwidth – TxC TCXO – 932.25 MHz - C&I Mode

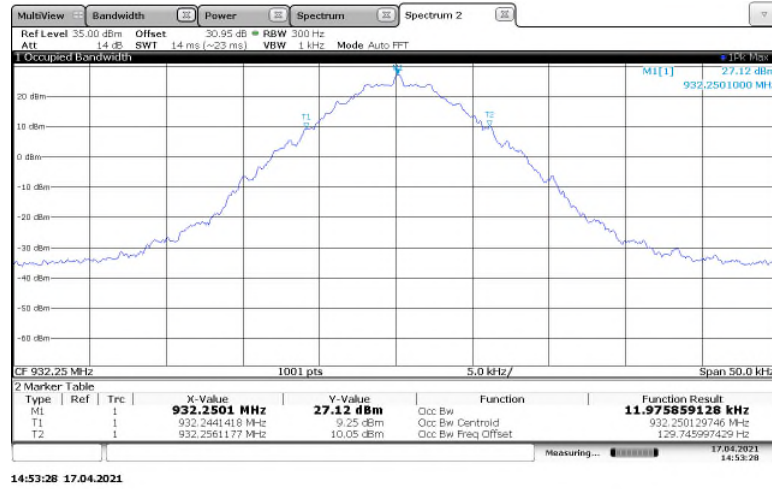


Figure 2.3.6-13: 99% Bandwidth – TXC TCXO – 932.25 MHz - Normal Mode

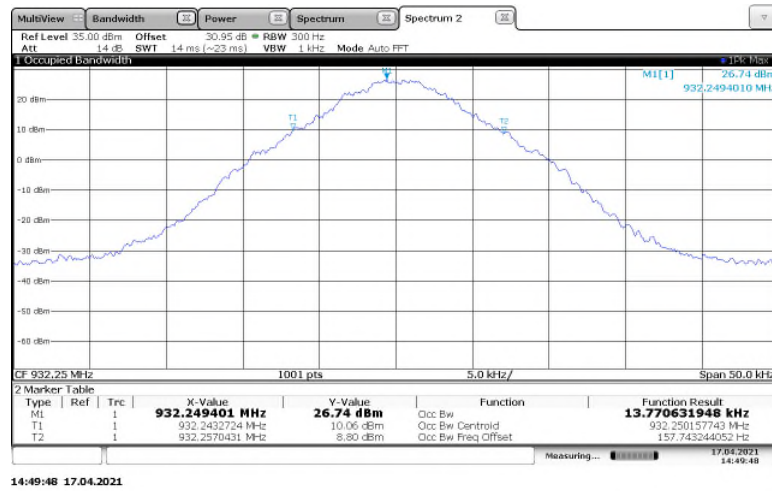


Figure 2.3.6-14: 99% Bandwidth – TXC TCXO – 932.25 MHz - Double Density Mode



Table 2.3.6-5: 99% Bandwidth – TXC TCXO – 940.0125 MHz

| Frequency (MHz) | ISED Canada Rule Part | Mode | 99% Bandwidth (kHz) |
|-----------------|-----------------------|-----------|---------------------|
| 940.0125 | RSS-134 | mPass 5k | 6.0645 |
| 940.0125 | RSS-134 | mPass 10k | 11.7915 |

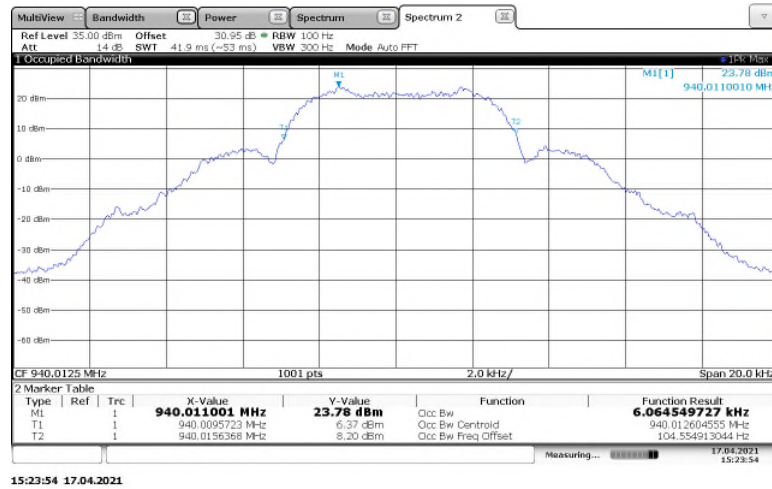


Figure 2.3.6-15: 99% Bandwidth – TXC TCXO – 940.0125 MHz - mPass5k Mode

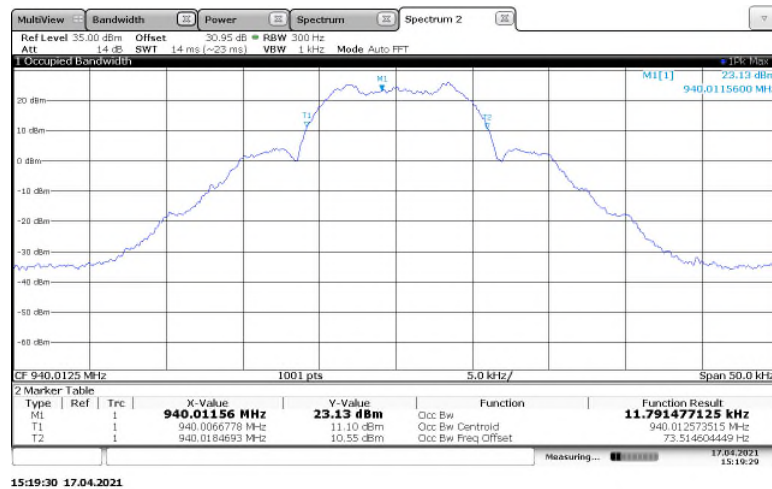


Figure 2.3.6-16: 99% Bandwidth – TXC TCXO – 940.0125 MHz - Mpass10k Mode



Table 2.3.6-6: 99% Bandwidth – TXC TCXO – 941.4875 MHz

| Frequency (MHz) | ISED Canada Rule Part | Mode | 99% Bandwidth (kHz) |
|-----------------|-----------------------|-----------|---------------------|
| 941.4875 | RSS-134 | mPass 5k | 6.0984 |
| 941.4875 | RSS-134 | mPass 10k | 11.8821 |

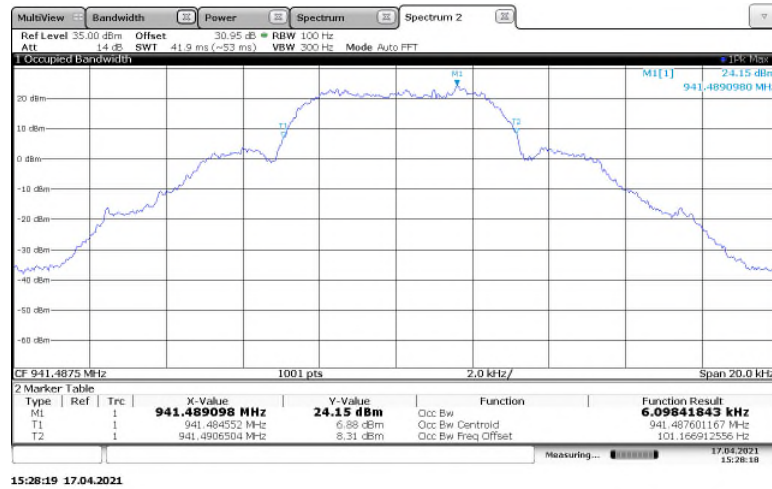


Figure 2.3.6-17: 99% Bandwidth – TXC TCXO – 941.4875 MHz - mPass5k Mode



Figure 2.3.6-18: 99% Bandwidth – TXC TCXO – 941.4875 MHz - Mpass10k Mode



Table 2.3.6-7: 99% Bandwidth – TXC TCXO – 959.925 MHz

| Frequency (MHz) | ISED Canada Rule Part | Mode | 99% Bandwidth (kHz) |
|-----------------|-----------------------|-----------|---------------------|
| 959.925 | RSS-119 | mPass 5k | 6.0246 |
| 959.925 | RSS-119 | mPass 10k | 11.8087 |



Figure 2.3.6-19: 99% Bandwidth – TXC TCXO – 959.925 MHz - mPass5k Mode

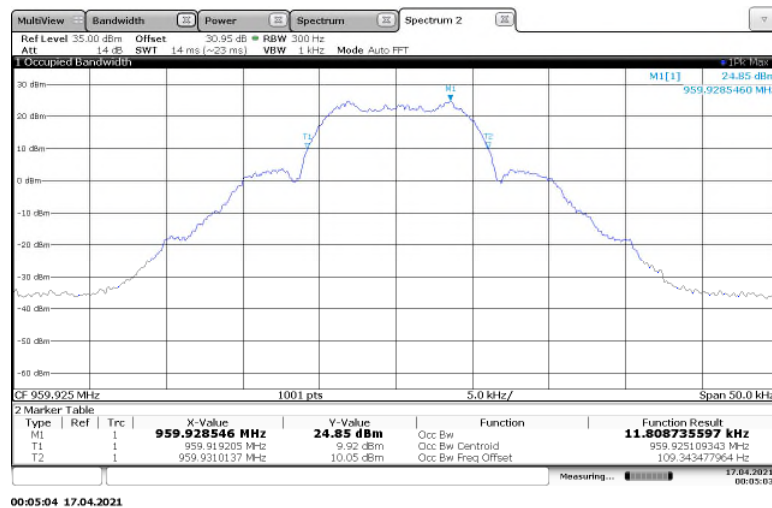


Figure 2.3.6-20: 99% Bandwidth – TXC TCXO – 959.925 MHz - Mpass10k Mode



2.3.7 Test Location and Test Equipment Used

This test was carried out in TÜV SÜD America, Inc., 5610 W. Sligh Ave, Suite 100, Tampa, FL 33634, USA.

| Instrument | Manufacturer | Type No | TE No | Software / Firmware Revision | Calibration Period (months) | Calibration Due |
|--|-----------------|----------|-----------|------------------------------|-----------------------------|-----------------|
| Digital MultiMeter | Fluke | 115 | BEMC02108 | N/A | 24 | 29-Mar-2023 |
| Signal & Spectrum Analyzer | Rohde & Schwarz | FSW43 | DEMC3085 | N/A | 24 | 07-Dec-2022 |
| DC Power Supply | Xantrex | XHR60-18 | TEMC00001 | N/A | N/A | NCR |
| 2.92mm Attenuator M/F 40GHz 30dB 2W VSWR 1.45 | Centric RF | C402-30 | TEMC00222 | N/A | 12 | 08-Mar-2022 |

TU - Traceability Unscheduled

O/P MON - Traceability Unscheduled

N/A - Not Applicable

NCR – No Calibration Required



2.4 Spurious Emissions at Antenna Terminals

2.4.1 Specification Reference

FCC 47 CFR Parts: 2.1053; 24.133 a(1), a(2); 101.111 a(6)
ISED Canada RSS-119 5.8.6; RSS-134 4.4

2.4.2 Equipment Under Test and Modification State

TXC TCXO, SN: 125000296

2.4.3 Date of Test

2021-April-17 to 2021-April-21

2.4.4 Test Method

The RF output of the equipment under test was directly connected to the input of the Spectrum Analyzer through a 30 dB passive attenuator. The spectrum analyzer resolution bandwidth was set to 100 kHz below 1000 MHz and 1 MHz above 1000 MHz. The internal correction factors of the spectrum analyzer were employed to correct for any cable or attenuator. The spectrum was investigated in accordance with CFR 47 Part 2.1057

2.4.5 Environmental Conditions

| | |
|----------------------|-------------|
| Ambient Temperature | 26.3 °C |
| Relative Humidity | 45.9 % |
| Atmospheric Pressure | 1010.6 mbar |

2.4.6 Test Results

DC Powered Operating

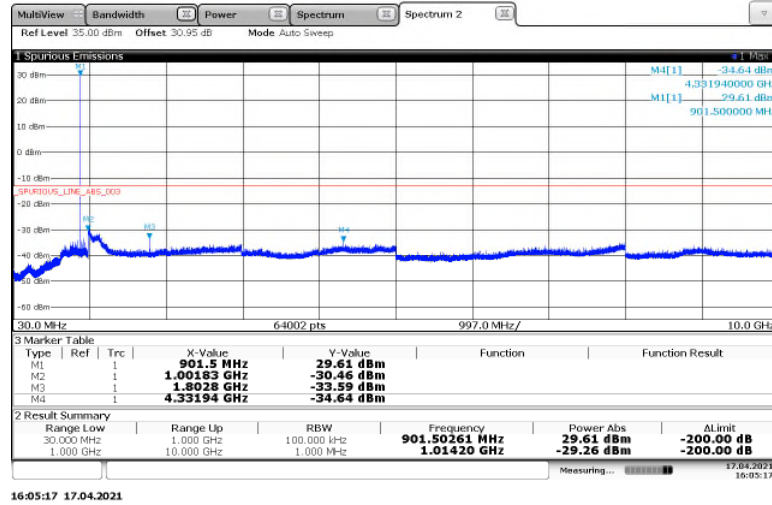


Figure 2.4.6-1: Transmitter Conducted Spurious Emissions – TXC TCXO – 901.5 MHz - Normal Mode

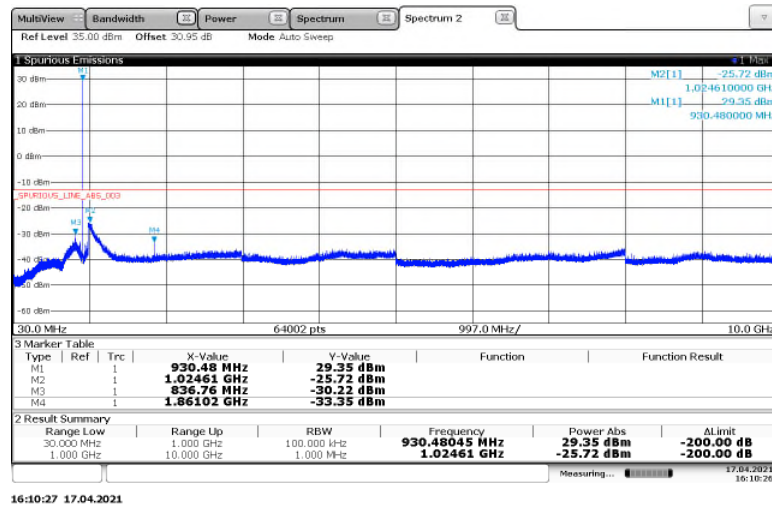


Figure 2.4.6-2: Transmitter Conducted Spurious Emissions – TXC TCXO – 930.5 MHz - mPass5k Mode

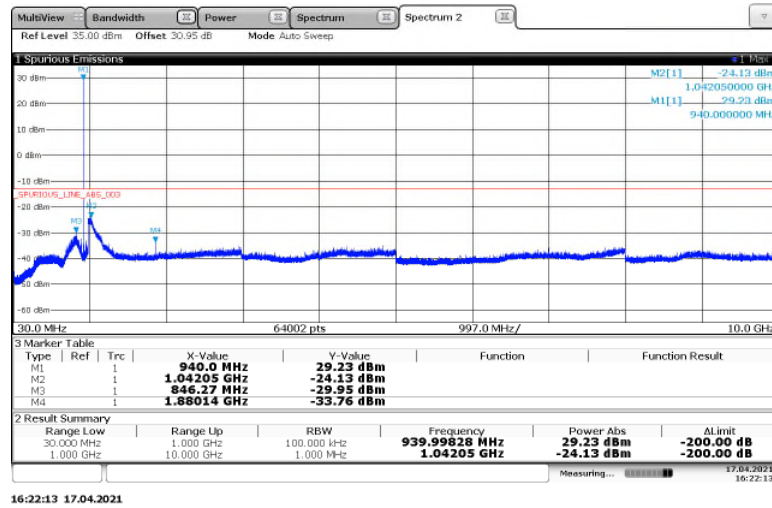


Figure 2.4.6-3: Transmitter Conducted Spurious Emissions – TXC TCXO – 940.0125 MHz - mPass5k Mode

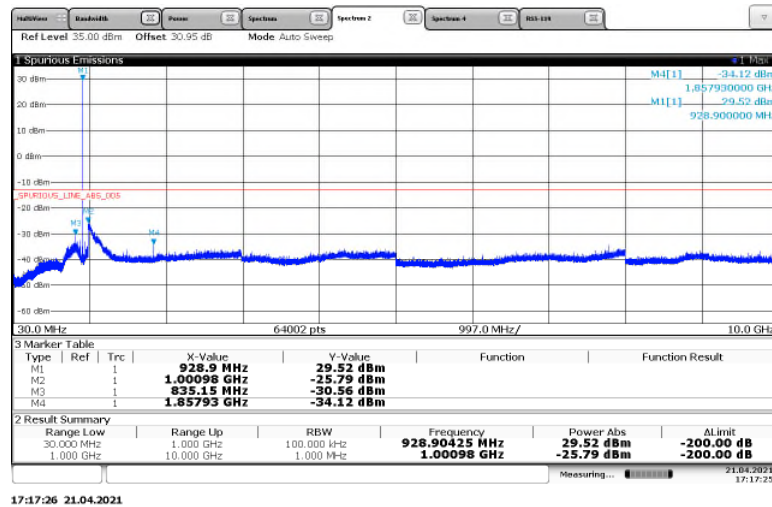


Figure 2.4.6-4: Transmitter Conducted Spurious Emissions – TXC TCXO – 928.925 MHz - Normal Mode

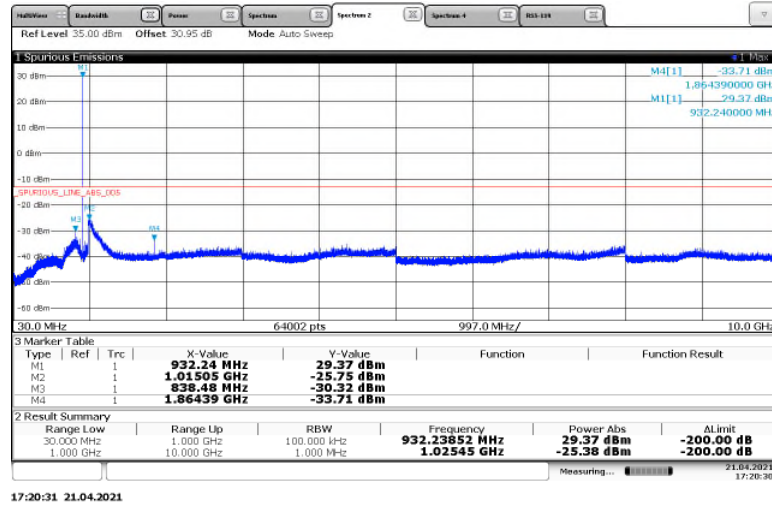


Figure 2.4.6-5: Transmitter Conducted Spurious Emissions – TXC TCXO – 932.25 MHz - Normal Mode

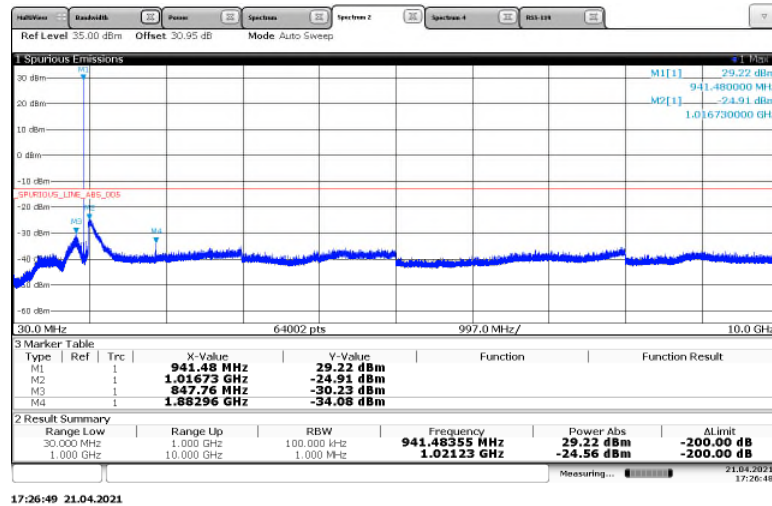


Figure 2.4.6-6: Transmitter Conducted Spurious Emissions – TXC TCXO – 941.4875 MHz - mPass5k Mode

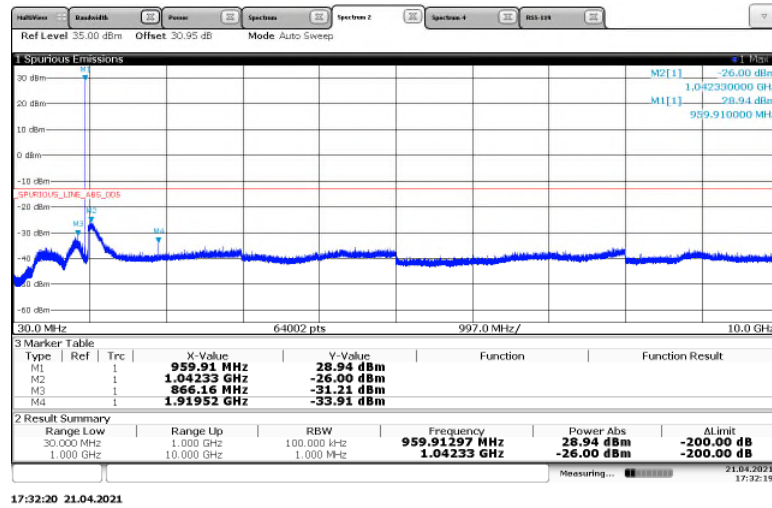


Figure 2.4.6-7: Transmitter Conducted Spurious Emissions – TXC TCXO – 959.925 MHz - mPass5k Mode

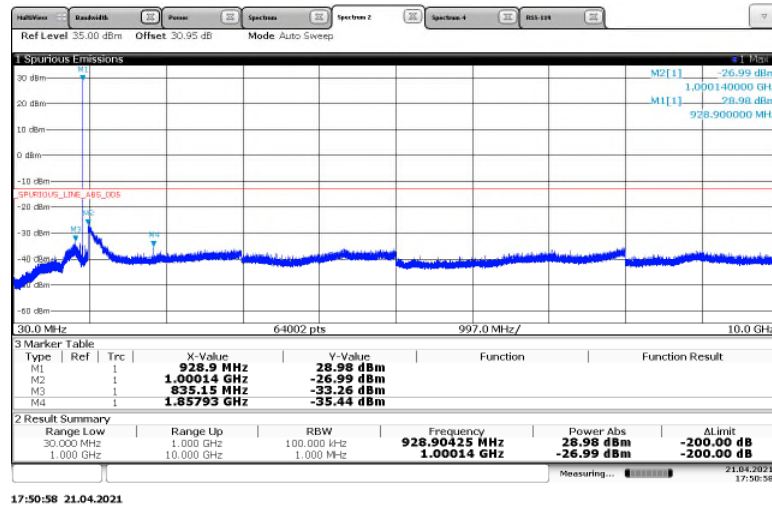


Figure 2.4.6-8: Transmitter Conducted Spurious Emissions – KDS TCXO – 928.925 MHz - Normal Mode

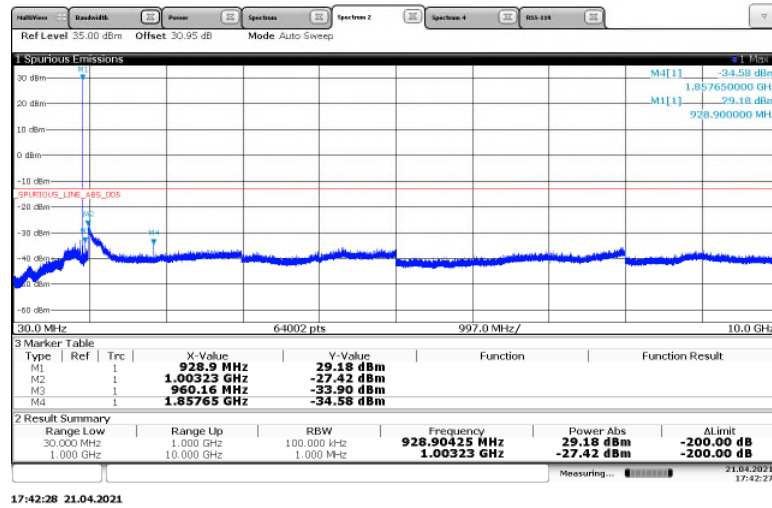


Figure 2.4.6-9: Transmitter Conducted Spurious Emissions – TAITIEN TCXO – 928.925 MHz - Normal Mode

2.4.7 Test Location and Test Equipment Used

This test was carried out in TÜV SÜD America, Inc., 5610 W. Sligh Ave, Suite 100, Tampa, FL 33634, USA.

| Instrument | Manufacturer | Type No | TE No | Software / Firmware Revision | Calibration Period (months) | Calibration Due |
|--|-----------------|----------|-----------|------------------------------|-----------------------------|-----------------|
| Digital MultiMeter | Fluke | 115 | BEMC02108 | N/A | 24 | 29-Mar-2023 |
| Signal & Spectrum Analyzer | Rohde & Schwarz | FSW43 | DEMC3085 | N/A | 24 | 07-Dec-2022 |
| DC Power Supply | Xantrex | XHR60-18 | TEMCO0001 | N/A | N/A | NCR |
| 2.92mm Attenuator M/F 40GHz 30dB 2W VSWR 1.45 | Centric RF | C402-30 | TEMCO0222 | N/A | 12 | 08-Mar-2022 |

TU - Traceability Unscheduled
 O/P MON - Traceability Unscheduled
 N/A - Not Applicable
 NCR – No Calibration Required



2.5 Field Strength of Spurious Radiation

2.5.1 Specification Reference

FCC 47 CFR Parts: 2.1053; 24.133 a(1), a(2); 101.111 a(6)
ISED Canada RSS-119 5.8.6; RSS-134 4.4

2.5.2 Equipment Under Test and Modification State

KDS TCXO, SN: 125000283

2.5.3 Date of Test

2021-March-25 to 2021-April-29

2.5.4 Test Method

The EUT was evaluated in accordance to ANSI C63.26:2015 Section 5.5.3 Measurement of Spurious Emissions using Substitution Method.

Radiated emissions tests were made over the frequency range of 30 MHz to 10 times the highest fundamental frequency. The equipment under test is placed in the Semi-Anechoic Chamber on a RF transparent table at the turntable center. For each spurious emission, the antenna mast is raised and lowered from one (1) to four (4) meters and the turntable is rotated 360° and the maximum reading on the spectrum analyzer is recorded. This was repeated for both horizontal and vertical polarizations of the receive antenna.

The equipment under test is then replaced with a substitution antenna fed by a signal generator. The signal generator's frequency is set to that of the spurious emission recorded from the equipment under test. The antenna mast is raised and lowered from one (1) to four (4) meters to obtain a maximum reading on the spectrum analyzer. The output of the signal generator is then adjusted until the reading on the spectrum analyzer matches that obtained from the equipment under test. The signal generator level is recorded. The power in dBm of each spurious emission is calculated by correcting the signal generator level for the cable loss and gain of the substitution antenna referenced to a dipole. The spectrum was investigated in accordance to FCC CFR 47 Part 2.1057.

The magnitude of all spurious emissions not reported were attenuated below the noise floor of the measurement system and therefore not specified in this report. Results are shown below.

2.5.5 Environmental Conditions

| | |
|----------------------|-------------|
| Ambient Temperature | 25.6 °C |
| Relative Humidity | 42.8 % |
| Atmospheric Pressure | 1020.9 mbar |



2.5.6 Test Results

DC Powered Operating

FCC Part 24.133a(1),(a2); ISED Canada RSS-134 4.4

Table 2.5.6-1: Transmitter Radiated Spurious Emissions – KDS TCXO – 901.5 MHz - Normal Mode

| Frequency MHz | Level dBuV | Antenna Polarity (H/V) | ERP dBm | Limit dBm | Margin dB |
|---------------|------------|------------------------|---------|-----------|-----------|
| 1803 | 66.42 | H | -37.69 | -13.0 | 24.69 |
| 2704.5 | 62.94 | H | -38.58 | -13.0 | 25.58 |
| 3606 | 55.63 | H | -44.96 | -13.0 | 31.96 |
| 4507.5 | 56.11 | H | -42.02 | -13.0 | 29.02 |
| 5409 | 53.07 | H | -42.71 | -13.0 | 29.71 |
| 6310.5 | 50.03 | H | -43.98 | -13.0 | 30.98 |
| 7212 | 47.43 | H | -46.19 | -13.0 | 33.19 |
| 8113.5 | 46.22 | H | -46.28 | -13.0 | 33.28 |
| 9015 | 47.49 | H | -44.07 | -13.0 | 31.07 |
| 1803 | 65.70 | V | -38.41 | -13.0 | 25.41 |
| 2704.5 | 65.40 | V | -36.12 | -13.0 | 23.12 |
| 3606 | 55.10 | V | -45.49 | -13.0 | 32.49 |
| 4507.5 | 54.62 | V | -43.51 | -13.0 | 30.51 |
| 5409 | 54.57 | V | -41.21 | -13.0 | 28.21 |
| 6310.5 | 48.39 | V | -45.62 | -13.0 | 32.62 |
| 7212 | 47.82 | V | -45.8 | -13.0 | 32.8 |
| 8113.5 | 50.51 | V | -41.99 | -13.0 | 28.99 |
| 9015 | 51.63 | V | -39.93 | -13.0 | 26.93 |



Table 2.5.6-2: Transmitter Radiated Spurious Emissions – KDS TCXO – 930.5 MHz - mPass5k Mode

| Frequency MHz | Level dBuV | Antenna Polarity (H/V) | ERP dBm | Limit dBm | Margin dB |
|---------------|------------|------------------------|---------|-----------|-----------|
| 1861 | 66.43 | H | -37.25 | -13.0 | 24.25 |
| 2791.5 | 64.62 | H | -36.74 | -13.0 | 23.74 |
| 3722 | 60.13 | H | -40.18 | -13.0 | 27.18 |
| 4652.5 | 53.27 | H | -44.54 | -13.0 | 31.54 |
| 5583 | 53.48 | H | -41.85 | -13.0 | 28.85 |
| 6513.5 | 49.00 | H | -44.69 | -13.0 | 31.69 |
| 7444 | 47.61 | H | -45.94 | -13.0 | 32.94 |
| 8374.5 | 48.08 | H | -44.05 | -13.0 | 31.05 |
| 9305 | 45.80 | H | -46.18 | -13.0 | 33.18 |
| 1861 | 65.05 | V | -38.63 | -13.0 | 25.63 |
| 2791.5 | 60.50 | V | -40.86 | -13.0 | 27.86 |
| 3722 | 61.01 | V | -39.3 | -13.0 | 26.3 |
| 4652.5 | 54.46 | V | -43.35 | -13.0 | 30.35 |
| 5583 | 53.81 | V | -41.52 | -13.0 | 28.52 |
| 6513.5 | 50.88 | V | -42.81 | -13.0 | 29.81 |
| 7444 | 50.09 | V | -43.46 | -13.0 | 30.46 |
| 8374.5 | 54.14 | V | -37.99 | -13.0 | 24.99 |
| 9305 | 46.96 | V | -45.02 | -13.0 | 32.02 |



Table 2.5.6-3: Transmitter Radiated Spurious Emissions – KDS TCXO – 940.0125 MHz - mPass5k Mode

| Frequency MHz | Level dBuV | Antenna Polarity (H/V) | ERP dBm | Limit dBm | Margin dB |
|---------------|------------|------------------------|---------|-----------|-----------|
| 1880.025 | 60.65 | H | -42.89 | -13.0 | 29.89 |
| 2820.038 | 67.17 | H | -34.14 | -13.0 | 21.14 |
| 3760.05 | 60.16 | H | -40.06 | -13.0 | 27.06 |
| 4700.063 | 52.03 | H | -45.68 | -13.0 | 32.68 |
| 5640.075 | 51.81 | H | -43.42 | -13.0 | 30.42 |
| 6580.088 | 50.18 | H | -43.51 | -13.0 | 30.51 |
| 7520.1 | 47.53 | H | -45.96 | -13.0 | 32.96 |
| 8460.113 | 49.74 | H | -42.28 | -13.0 | 29.28 |
| 9400.125 | 44.35 | H | -47.77 | -13.0 | 34.77 |
| 1880.025 | 62.09 | V | -41.45 | -13.0 | 28.45 |
| 2820.038 | 71.84 | V | -29.47 | -13.0 | 16.47 |
| 3760.05 | 61.23 | V | -38.99 | -13.0 | 25.99 |
| 4700.063 | 51.97 | V | -45.74 | -13.0 | 32.74 |
| 5640.075 | 53.12 | V | -42.11 | -13.0 | 29.11 |
| 6580.088 | 51.85 | V | -41.84 | -13.0 | 28.84 |
| 7520.1 | 50.12 | V | -43.37 | -13.0 | 30.37 |
| 8460.113 | 56.89 | V | -35.13 | -13.0 | 22.13 |
| 9400.125 | 46.21 | V | -45.91 | -13.0 | 32.91 |



FCC 47 CFR Parts: 101.111 a(6); ISED Canada RSS-119 5.8.6

Table 2.5.6-4: Transmitter Radiated Spurious Emissions – KDS TCXO – 928.925 MHz - Normal Mode

| Frequency MHz | Level dBuV | Antenna Polarity (H/V) | ERP dBm | Limit dBm | Margin dB |
|---------------|------------|------------------------|---------|-----------|-----------|
| 1857.85 | 64.78 | H | -38.92 | -13.0 | 25.92 |
| 2786.775 | 64.30 | H | -37.07 | -13.0 | 24.07 |
| 3715.7 | 59.25 | H | -41.07 | -13.0 | 28.07 |
| 4644.625 | 53.23 | H | -44.6 | -13.0 | 31.6 |
| 5573.55 | 51.76 | H | -43.59 | -13.0 | 30.59 |
| 6502.475 | 48.28 | H | -45.41 | -13.0 | 32.41 |
| 7431.4 | 46.99 | H | -46.56 | -13.0 | 33.56 |
| 8360.325 | 47.84 | H | -44.31 | -13.0 | 31.31 |
| 9289.25 | 45.44 | H | -46.52 | -13.0 | 33.52 |
| 1857.85 | 65.22 | V | -38.48 | -13.0 | 25.48 |
| 2786.775 | 69.39 | V | -31.98 | -13.0 | 18.98 |
| 3715.7 | 59.55 | V | -40.77 | -13.0 | 27.77 |
| 4644.625 | 53.79 | V | -44.04 | -13.0 | 31.04 |
| 5573.55 | 53.75 | V | -41.6 | -13.0 | 28.6 |
| 6502.475 | 51.77 | V | -41.92 | -13.0 | 28.92 |
| 7431.4 | 49.54 | V | -44.01 | -13.0 | 31.01 |
| 8360.325 | 52.73 | V | -39.42 | -13.0 | 26.42 |
| 9289.25 | 47.56 | V | -44.4 | -13.0 | 31.4 |



Table 2.5.6-5: Transmitter Radiated Spurious Emissions – KDS TCXO – 932.25 MHz - Normal Mode

| Frequency MHz | Level dBuV | Antenna Polarity (H/V) | ERP dBm | Limit dBm | Margin dB |
|---------------|------------|------------------------|---------|-----------|-----------|
| 1864.5 | 66.51 | H | -37.14 | -13.0 | 24.14 |
| 2796.75 | 64.77 | H | -36.58 | -13.0 | 23.58 |
| 3729 | 59.37 | H | -40.92 | -13.0 | 27.92 |
| 4661.25 | 51.58 | H | -46.22 | -13.0 | 33.22 |
| 5593.5 | 53.55 | H | -41.76 | -13.0 | 28.76 |
| 6525.75 | 49.08 | H | -44.61 | -13.0 | 31.61 |
| 7458 | 47.02 | H | -46.52 | -13.0 | 33.52 |
| 8390.25 | 49.08 | H | -43.03 | -13.0 | 30.03 |
| 9322.5 | 45.00 | H | -47.01 | -13.0 | 34.01 |
| 1864.5 | 64.21 | V | -39.44 | -13.0 | 26.44 |
| 2796.75 | 69.15 | V | -32.2 | -13.0 | 19.2 |
| 3729 | 61.14 | V | -39.15 | -13.0 | 26.15 |
| 4661.25 | 54.35 | V | -43.45 | -13.0 | 30.45 |
| 5593.5 | 53.37 | V | -41.94 | -13.0 | 28.94 |
| 6525.75 | 52.52 | V | -41.17 | -13.0 | 28.17 |
| 7458 | 49.71 | V | -43.83 | -13.0 | 30.83 |
| 8390.25 | 55.66 | V | -36.45 | -13.0 | 23.45 |
| 9322.5 | 47.03 | V | -44.98 | -13.0 | 31.98 |



Table 2.5.6-6: Transmitter Radiated Spurious Emissions – KDS TCXO – 941.4875 MHz - mPass5k Mode

| Frequency MHz | Level dBuV | Antenna Polarity (H/V) | ERP dBm | Limit dBm | Margin dB |
|---------------|------------|------------------------|---------|-----------|-----------|
| 1882.975 | 61.18 | H | -42.34 | -13.0 | 29.34 |
| 2824.463 | 67.17 | H | -34.13 | -13.0 | 21.13 |
| 3765.95 | 60.10 | H | -40.1 | -13.0 | 27.1 |
| 4707.438 | 51.12 | H | -46.57 | -13.0 | 33.57 |
| 5648.925 | 50.94 | H | -44.27 | -13.0 | 31.27 |
| 6590.413 | 48.71 | H | -44.98 | -13.0 | 31.98 |
| 7531.9 | 48.61 | H | -44.86 | -13.0 | 31.86 |
| 8473.388 | 49.89 | H | -42.11 | -13.0 | 29.11 |
| 9414.875 | 43.74 | H | -48.4 | -13.0 | 35.4 |
| 1882.975 | 62.37 | V | -41.15 | -13.0 | 28.15 |
| 2824.463 | 71.00 | V | -30.3 | -13.0 | 17.3 |
| 3765.95 | 60.07 | V | -40.13 | -13.0 | 27.13 |
| 4707.438 | 51.66 | V | -46.03 | -13.0 | 33.03 |
| 5648.925 | 52.14 | V | -43.07 | -13.0 | 30.07 |
| 6590.413 | 50.59 | V | -43.1 | -13.0 | 30.1 |
| 7531.9 | 50.00 | V | -43.47 | -13.0 | 30.47 |
| 8473.388 | 57.23 | V | -34.77 | -13.0 | 21.77 |
| 9414.875 | 45.30 | V | -46.84 | -13.0 | 33.84 |



Table 2.5.6-7: Transmitter Radiated Spurious Emissions – KDS TCXO – 959.925 MHz - mPass5k Mode

| Frequency MHz | Level dBuV | Antenna Polarity (H/V) | ERP dBm | Limit dBm | Margin dB |
|---------------|------------|------------------------|---------|-----------|-----------|
| 1919.85 | 58.05 | H | -45.2 | -13.0 | 32.2 |
| 2879.775 | 67.98 | H | -33.22 | -13.0 | 20.22 |
| 3839.7 | 60.48 | H | -39.54 | -13.0 | 26.54 |
| 4799.625 | 50.29 | H | -47.2 | -13.0 | 34.2 |
| 5759.55 | 50.09 | H | -44.91 | -13.0 | 31.91 |
| 6719.475 | 48.51 | H | -45.18 | -13.0 | 32.18 |
| 7679.4 | 47.03 | H | -46.19 | -13.0 | 33.19 |
| 8639.325 | 47.18 | H | -44.66 | -13.0 | 31.66 |
| 9599.25 | 45.82 | H | -46.1 | -13.0 | 33.1 |
| 1919.85 | 60.10 | V | -43.15 | -13.0 | 30.15 |
| 2879.775 | 73.89 | V | -27.31 | -13.0 | 14.31 |
| 3839.7 | 61.05 | V | -38.97 | -13.0 | 25.97 |
| 4799.625 | 51.76 | V | -45.73 | -13.0 | 32.73 |
| 5759.55 | 50.91 | V | -44.09 | -13.0 | 31.09 |
| 6719.475 | 49.03 | V | -44.66 | -13.0 | 31.66 |
| 7679.4 | 49.13 | V | -44.09 | -13.0 | 31.09 |
| 8639.325 | 53.94 | V | -37.9 | -13.0 | 24.9 |
| 9599.25 | 46.09 | V | -45.83 | -13.0 | 32.83 |

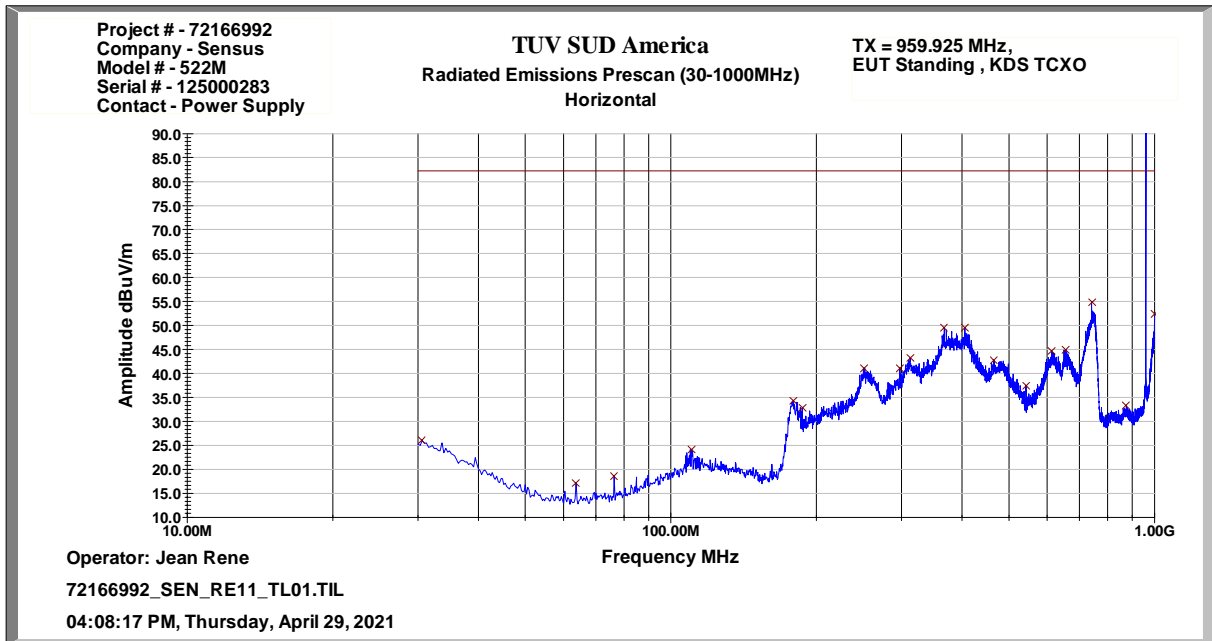


Figure 2.5.6-1: Transmitter Radiated Spurious Emissions – KDS TCXO – 959.925 MHz - mPass5k Mode – 30 MHz – 1 GHz – Horizontal Polarization

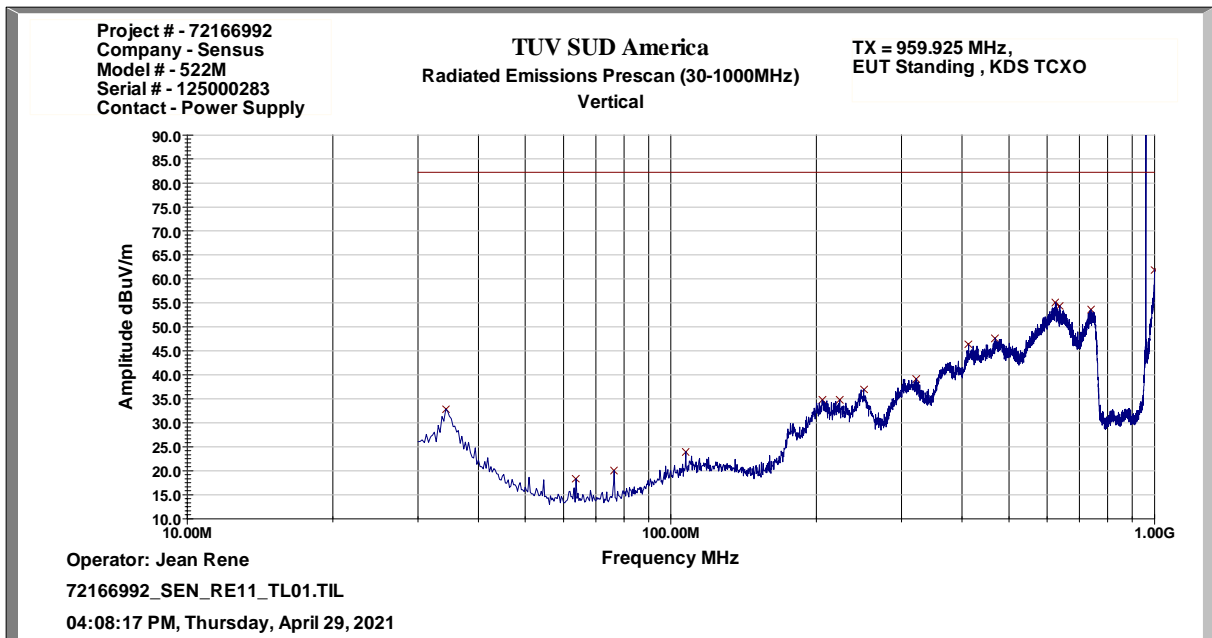


Figure 2.5.6-2: Transmitter Radiated Spurious Emissions – KDS TCXO – 959.925 MHz - mPass5k Mode – 30 MHz – 1 GHz – Vertical Polarization

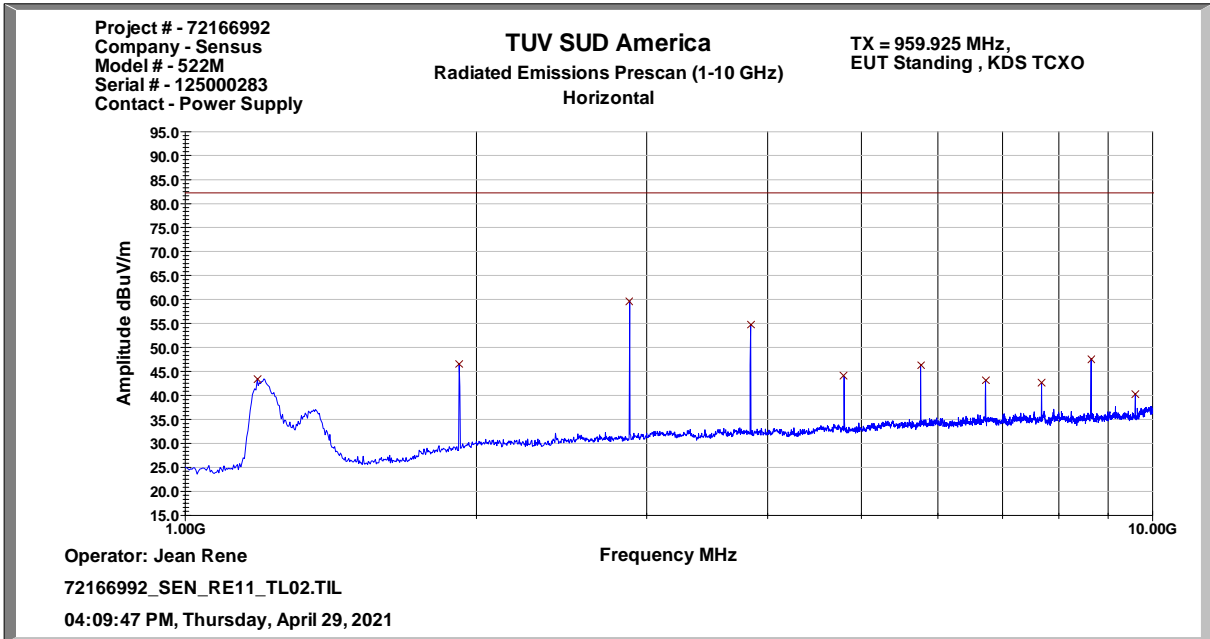


Figure 2.5.6-3: Transmitter Radiated Spurious Emissions – KDS TCXO – 959.925 MHz - mPass5k Mode – 1 GHz – 10 GHz – Horizontal Polarization

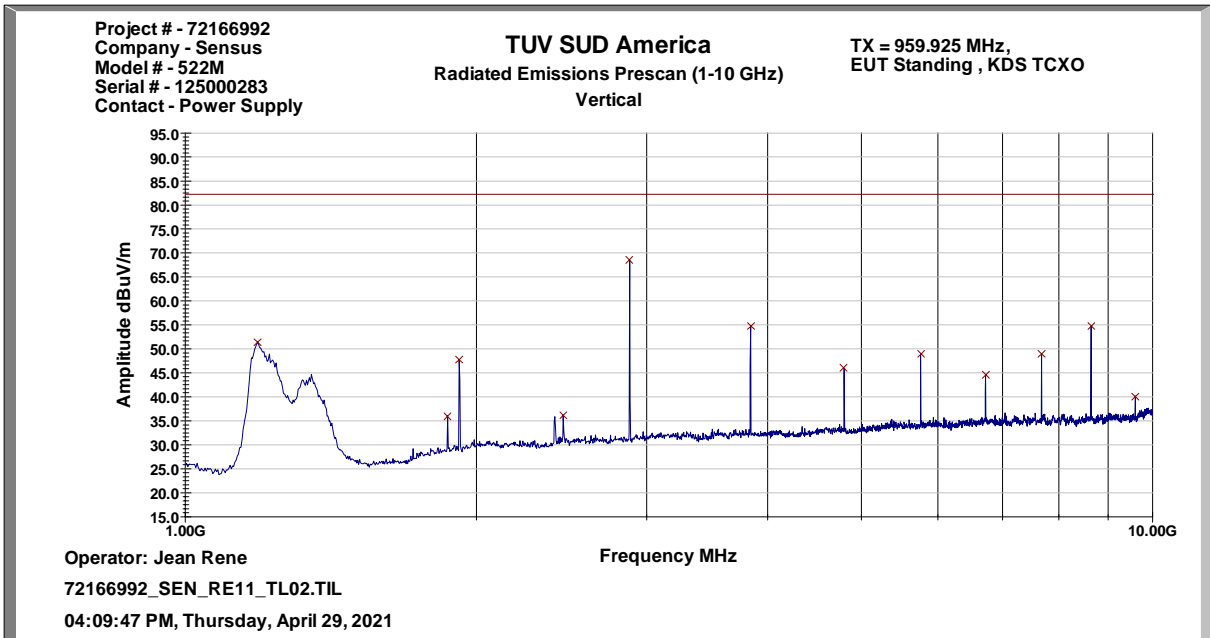


Figure 2.5.6-4: Transmitter Radiated Spurious Emissions – KDS TCXO – 959.925 MHz - mPass5k Mode – 1 GHz – 10 GHz – Vertical Polarization



2.5.7 Test Location and Test Equipment Used

This test was carried out in TÜV SÜD America, Inc., 5610 W. Sligh Ave, Suite 100, Tampa, FL 33634, USA.

| Instrument | Manufacturer | Type No | TE No | Software / Firmware Revision | Calibration Period (months) | Calibration Due |
|---------------------------|-------------------------|------------------------|-----------|------------------------------|-----------------------------|-----------------|
| Notch Filter | Trilithic, Inc. | 7NM867/122-X1-AA | BEMC02069 | N/A | 12 | 21-Jan-2022 |
| Tile Automation Software | ETS Lindgren | TILE4! - Version 4.2.A | BEMC02095 | 4.2A | N/A | NCR |
| BI LOG PERIODIC, ANTENNA | Schaffner | CBL6112B | TEMC00005 | N/A | 24 | 31-Oct-2021 |
| EMC Analyzer | Agilent | E7405A | TEMC00012 | A.09.02 | 24 | 27-Mar-2022 |
| EMC Chamber | Panasheid | N/A | TEMC00031 | N/A | 36 | 28-Jan-2024 |
| Double Ridge Guide Horn | ETS Lindgren | 3117 | TEMC00061 | N/A | 24 | 07-Feb-2022 |
| PAM-118A | Com-Power Corporation | PAM-118A | TEMC00160 | N/A | 12 | 10-Apr-2022 |
| 1.2 GHz High Pass Filter | Micro-Tronics | HPM50108-01 | TEMC00175 | N/A | 12 | 09-Mar-2022 |
| A81-0303 18 GHz Cable Set | Teledyne Storm Products | A81-0303-360/96 | TEMC00201 | N/A | 12 | 10-Apr-2022 |

TU - Traceability Unscheduled

O/P MON - Traceability Unscheduled

N/A - Not Applicable

NCR – No Calibration Required



2.6 Frequency Stability

2.6.1 Specification Reference

FCC Section 2.1055; FCC Section 24.135
ISED Canada RSS-134 4.5

2.6.2 Equipment Under Test and Modification State

TXC TCXO, SN: 125000296
KDS TCXO, SN: 125000291
TAITIEN TCXO, SN: 125000293

2.6.3 Date of Test

2021-March-29 to 2021-April-27

2.6.4 Test Method

The equipment under test is placed inside an environmental chamber. The RF output is directly coupled to the input of the measurement equipment and a power supply is attached to the primary supply voltage.

Frequency measurements were made at the extremes of the of temperature range -30° C to +50° C and at intervals of 10° C at normal supply voltage. Sufficient time to stabilize all components of the equipment was allowed at each frequency measurement. At a temperature 20° C the supply voltage was reduced to the battery operating endpoint. The maximum variation of frequency was recorded.

2.6.5 Environmental Conditions

| | |
|----------------------|-------------|
| Ambient Temperature | 26.7 °C |
| Relative Humidity | 36.8 % |
| Atmospheric Pressure | 1017.4 mbar |



2.6.6 Test Results

Frequency Stability

Frequency (MHz): 901.500112
 Deviation Limit (PPM): 1

| Temperature C | Frequency MHz | Frequency Error (PPM) | Voltage (%) | Voltage (VDC) |
|------------------|------------------|--------------------------|----------------|------------------|
| -30 C | 901.500681 | 0.632 | 100% | 3.65 |
| -20 C | 901.500577 | 0.516 | 100% | 3.65 |
| -10 C | 901.500328 | 0.239 | 100% | 3.65 |
| 0 C | 901.500146 | 0.038 | 100% | 3.65 |
| 10 C | 901.500026 | -0.095 | 100% | 3.65 |
| 20 C | 901.500112 | 0.000 | 100% | 3.65 |
| 30 C | 901.500088 | -0.027 | 100% | 3.65 |
| 40 C | 901.500142 | 0.033 | 100% | 3.65 |
| 50 C | 901.500156 | 0.049 | 100% | 3.65 |
| 20 C | 901.500256 | 0.160 | Endpoint | 3.20 |

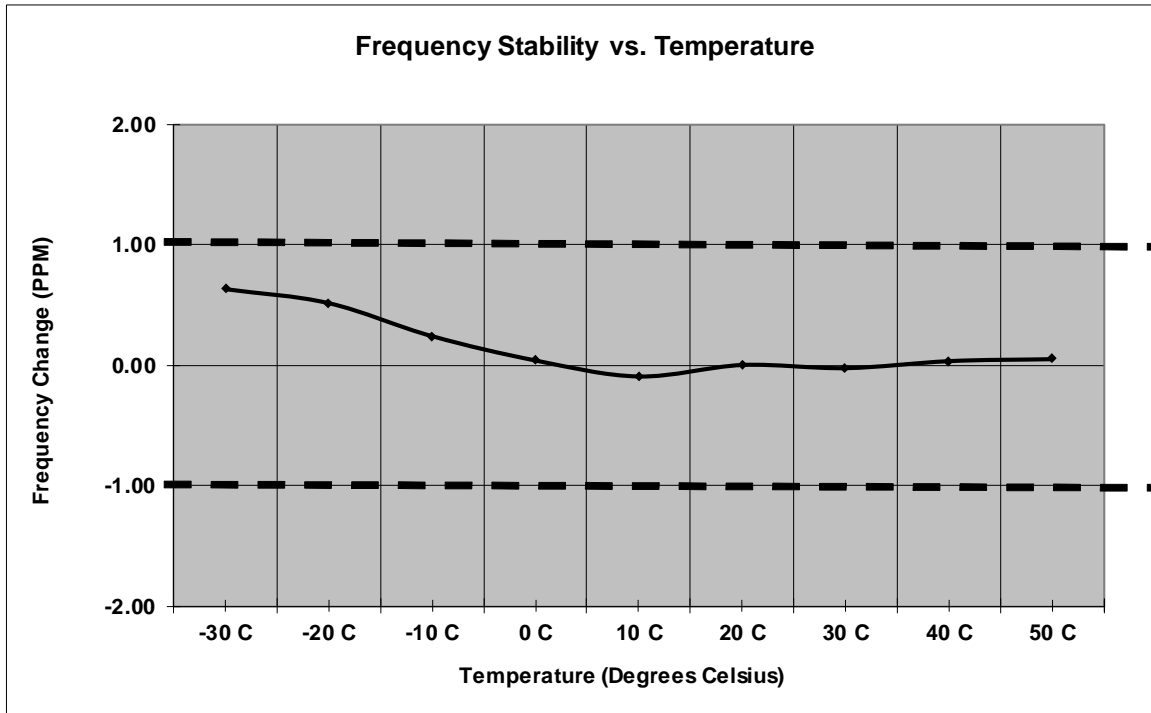


Figure 2.6.6-1: Frequency Stability – TXC TCXO – 901.5 MHz



Frequency Stability

Frequency (MHz): 930.500206

Deviation Limit (PPM): 1

| Temperature C | Frequency MHz | Frequency Error (PPM) | Voltage (%) | Voltage (VDC) |
|------------------|------------------|--------------------------|----------------|------------------|
| -30 C | 930.500707 | 0.539 | 100% | 3.65 |
| -20 C | 930.500541 | 0.361 | 100% | 3.65 |
| -10 C | 930.500300 | 0.101 | 100% | 3.65 |
| 0 C | 930.500070 | -0.146 | 100% | 3.65 |
| 10 C | 930.500030 | -0.189 | 100% | 3.65 |
| 20 C | 930.500206 | 0.000 | 100% | 3.65 |
| 30 C | 930.500144 | -0.067 | 100% | 3.65 |
| 40 C | 930.500142 | -0.069 | 100% | 3.65 |
| 50 C | 930.500130 | -0.082 | 100% | 3.65 |
| 20 C | 930.500196 | -0.011 | Endpoint | 3.20 |

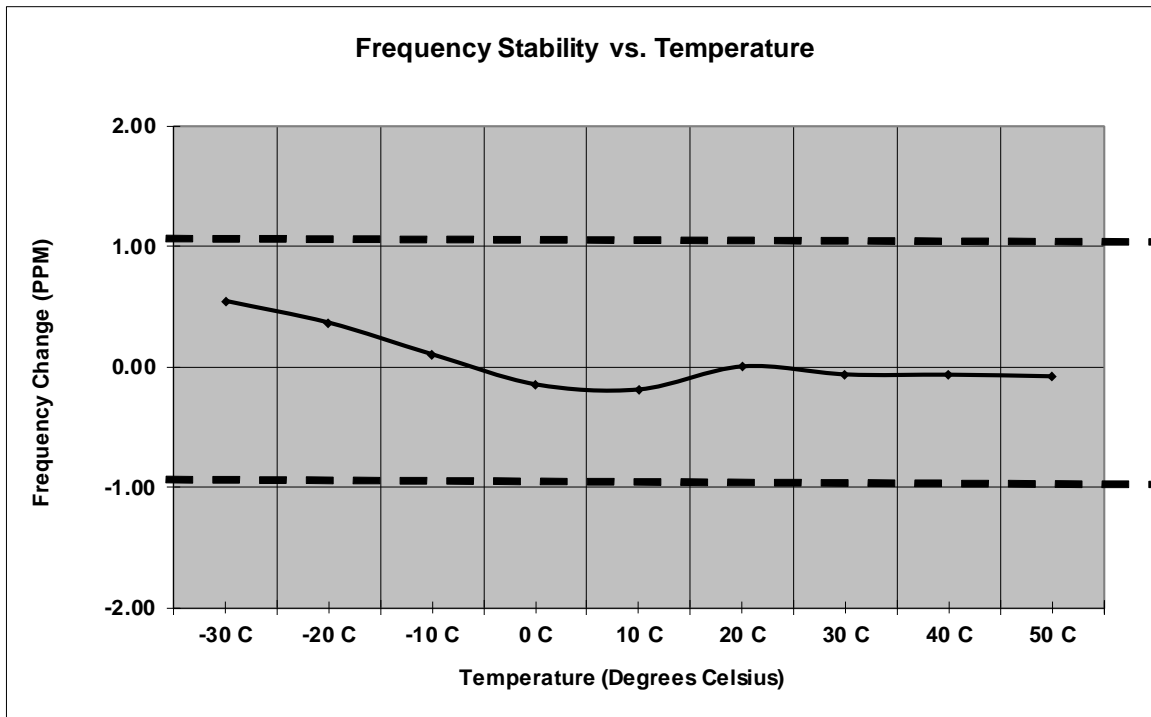


Figure 2.6.6-2: Frequency Stability – TXC TCXO – 930.5 MHz



Frequency Stability

Frequency (MHz): 959.925000

Deviation Limit (PPM): 1

| Temperature C | Frequency MHz | Frequency Error (PPM) | Voltage (%) | Voltage (VDC) |
|------------------|------------------|--------------------------|----------------|------------------|
| -30 C | 959.925701 | 0.731 | 100% | 3.65 |
| -20 C | 959.925533 | 0.556 | 100% | 3.65 |
| -10 C | 959.925302 | 0.314 | 100% | 3.65 |
| 0 C | 959.925128 | 0.133 | 100% | 3.65 |
| 10 C | 959.924922 | -0.081 | 100% | 3.65 |
| 20 C | 959.925000 | 0.000 | 100% | 3.65 |
| 30 C | 959.925118 | 0.123 | 100% | 3.65 |
| 40 C | 959.925128 | 0.133 | 100% | 3.65 |
| 50 C | 959.925058 | 0.060 | 100% | 3.65 |
| 20 C | 959.925186 | 0.194 | Endpoint | 3.20 |

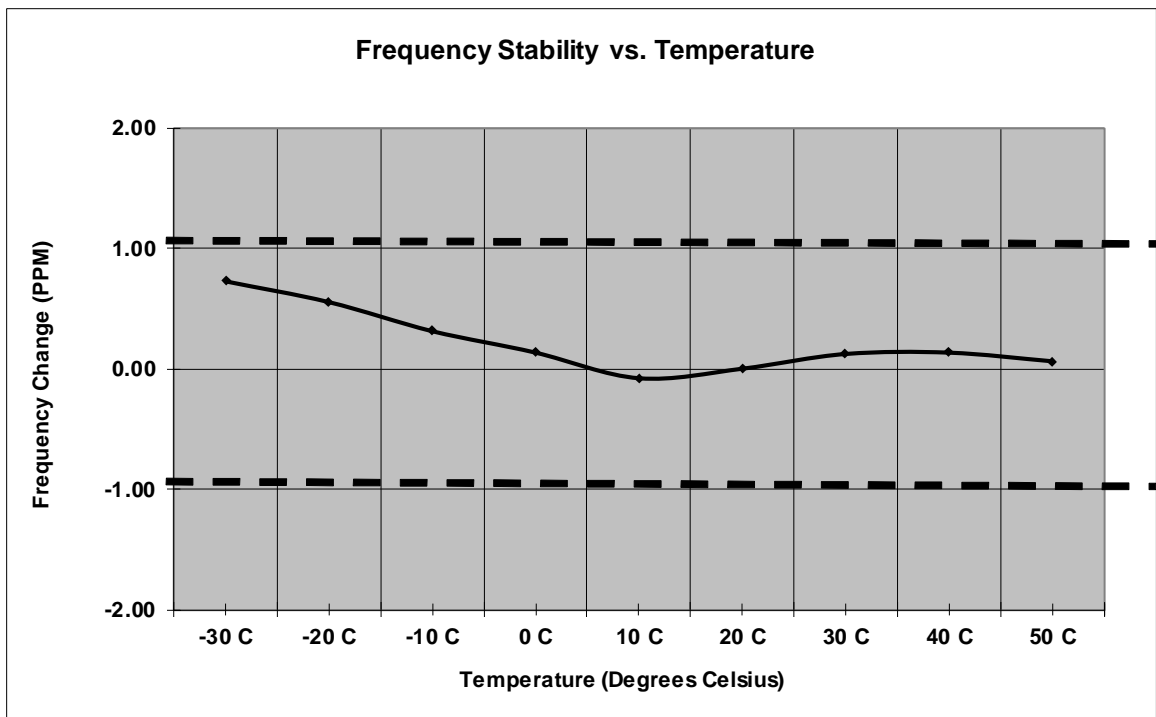


Figure 2.6.6-3: Frequency Stability – TXC TCXO – 959.925 MHz



Frequency Stability

Frequency (MHz): 901.500032

Deviation Limit (PPM): 1

| Temperature C | Frequency MHz | Frequency Error (PPM) | Voltage (%) | Voltage (VDC) |
|------------------|------------------|--------------------------|----------------|------------------|
| -30 C | 901.500232 | 0.222 | 100% | 3.65 |
| -20 C | 901.500038 | 0.007 | 100% | 3.65 |
| -10 C | 901.500012 | -0.022 | 100% | 3.65 |
| 0 C | 901.500084 | 0.058 | 100% | 3.65 |
| 10 C | 901.500046 | 0.015 | 100% | 3.65 |
| 20 C | 901.500032 | 0.000 | 100% | 3.65 |
| 30 C | 901.500022 | -0.011 | 100% | 3.65 |
| 40 C | 901.500180 | 0.164 | 100% | 3.65 |
| 50 C | 901.500278 | 0.273 | 100% | 3.65 |
| 20 C | 901.500058 | 0.029 | Endpoint | 3.20 |

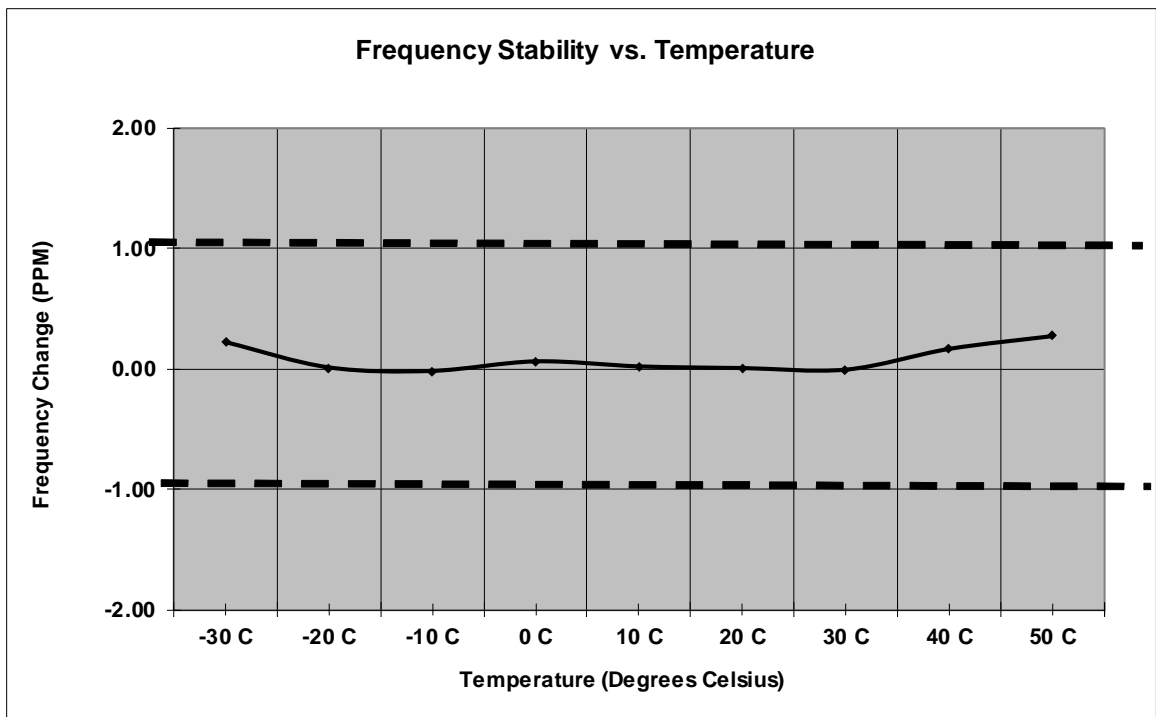


Figure 2.6.6-4: Frequency Stability – KDS TCXO – 901.5 MHz



Frequency Stability

Frequency (MHz): 930.500040

Deviation Limit (PPM): 1

| Temperature C | Frequency MHz | Frequency Error (PPM) | Voltage (%) | Voltage (VDC) |
|------------------|------------------|--------------------------|----------------|------------------|
| -30 C | 930.500070 | 0.032 | 100% | 3.65 |
| -20 C | 930.500046 | 0.006 | 100% | 3.65 |
| -10 C | 930.500106 | 0.071 | 100% | 3.65 |
| 0 C | 930.500062 | 0.024 | 100% | 3.65 |
| 10 C | 930.500002 | -0.041 | 100% | 3.65 |
| 20 C | 930.500040 | 0.000 | 100% | 3.65 |
| 30 C | 930.499934 | -0.114 | 100% | 3.65 |
| 40 C | 930.500130 | 0.097 | 100% | 3.65 |
| 50 C | 930.500262 | 0.238 | 100% | 3.65 |
| 20 C | 930.500024 | -0.017 | Endpoint | 3.20 |

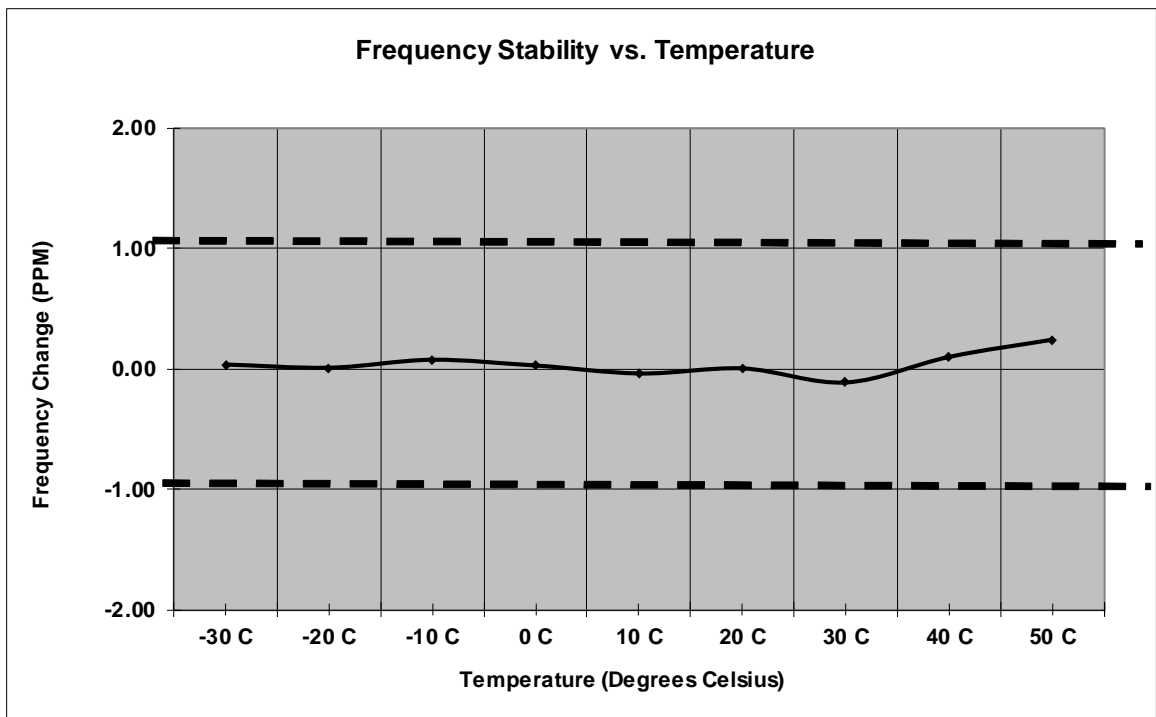


Figure 2.6.6-5: Frequency Stability – KDS TCXO – 930.5 MHz



Frequency Stability

Frequency (MHz): 959.925000

Deviation Limit (PPM): 1

| Temperature C | Frequency MHz | Frequency Error (PPM) | Voltage (%) | Voltage (VDC) |
|------------------|------------------|--------------------------|----------------|------------------|
| -30 C | 959.925056 | 0.058 | 100% | 3.65 |
| -20 C | 959.925056 | 0.058 | 100% | 3.65 |
| -10 C | 959.925116 | 0.121 | 100% | 3.65 |
| 0 C | 959.925058 | 0.060 | 100% | 3.65 |
| 10 C | 959.924975 | -0.026 | 100% | 3.65 |
| 20 C | 959.925000 | 0.000 | 100% | 3.65 |
| 30 C | 959.924916 | -0.087 | 100% | 3.65 |
| 40 C | 959.925146 | 0.152 | 100% | 3.65 |
| 50 C | 959.925276 | 0.287 | 100% | 3.65 |
| 20 C | 959.925030 | 0.031 | Endpoint | 3.20 |

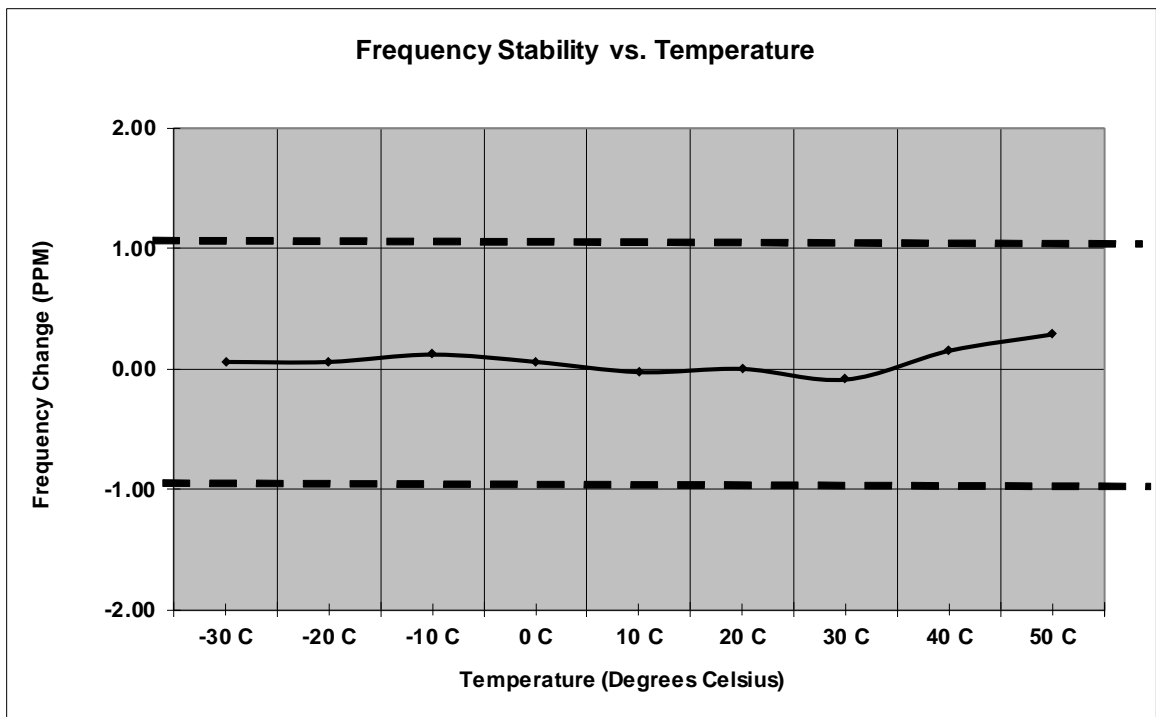


Figure 2.6.6-6: Frequency Stability – KDS TCXO – 959.925 MHz



Frequency Stability

Frequency (MHz): 901.499928

Deviation Limit (PPM): 1

| Temperature C | Frequency MHz | Frequency Error (PPM) | Voltage (%) | Voltage (VDC) |
|------------------|------------------|--------------------------|----------------|------------------|
| -30 C | 901.499463 | -0.516 | 100% | 3.65 |
| -20 C | 901.499219 | -0.787 | 100% | 3.65 |
| -10 C | 901.499319 | -0.676 | 100% | 3.65 |
| 0 C | 901.499321 | -0.674 | 100% | 3.65 |
| 10 C | 901.499714 | -0.237 | 100% | 3.65 |
| 20 C | 901.499928 | 0.000 | 100% | 3.65 |
| 30 C | 901.499638 | -0.321 | 100% | 3.65 |
| 40 C | 901.499684 | -0.270 | 100% | 3.65 |
| 50 C | 901.499421 | -0.563 | 100% | 3.65 |
| 20 C | 901.500240 | 0.346 | Endpoint | 3.20 |

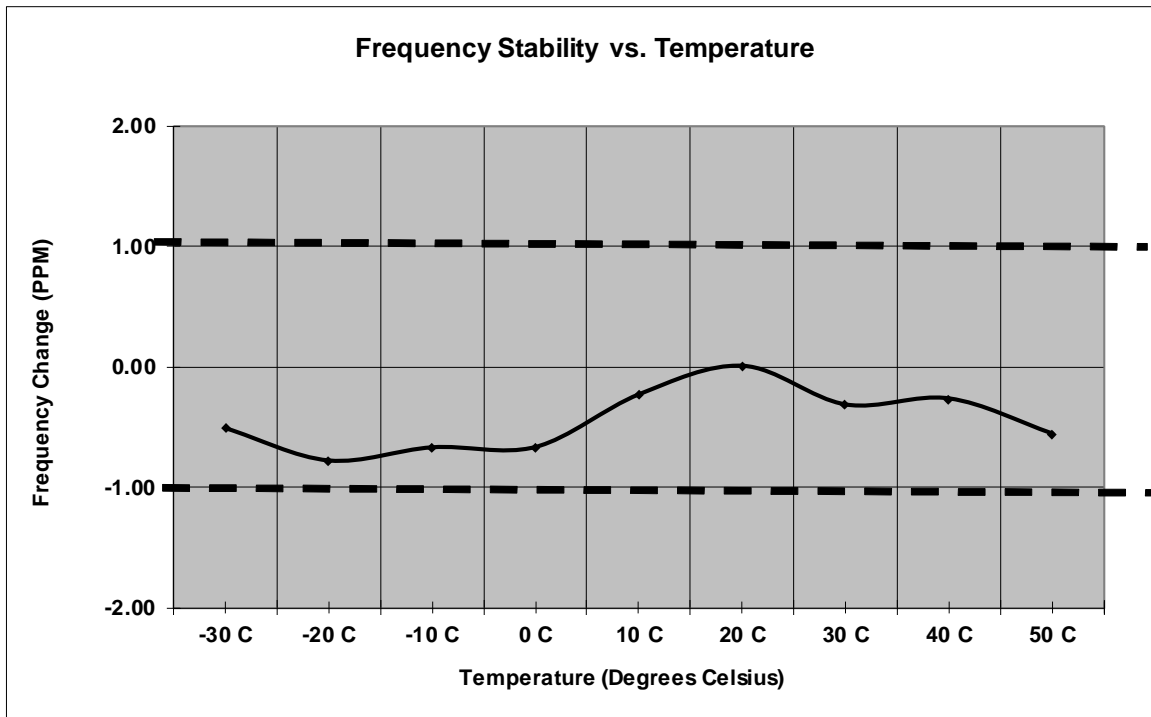


Figure 2.6.6-7: Frequency Stability – TAITIEN TCXO – 901.5 MHz



Frequency Stability

Frequency (MHz): 930.499980

Deviation Limit (PPM):

| Temperature C | Frequency MHz | Frequency Error (PPM) | Voltage (%) | Voltage (VDC) |
|------------------|------------------|--------------------------|----------------|------------------|
| -30 C | 930.499357 | -0.670 | 100% | 3.65 |
| -20 C | 930.499343 | -0.685 | 100% | 3.65 |
| -10 C | 930.499505 | -0.511 | 100% | 3.65 |
| 0 C | 930.499592 | -0.417 | 100% | 3.65 |
| 10 C | 930.499618 | -0.389 | 100% | 3.65 |
| 20 C | 930.499980 | 0.000 | 100% | 3.65 |
| 30 C | 930.499558 | -0.453 | 100% | 3.65 |
| 40 C | 930.499614 | -0.393 | 100% | 3.65 |
| 50 C | 930.499574 | -0.436 | 100% | 3.65 |
| 20 C | 930.500108 | 0.137 | Endpoint | 3.20 |

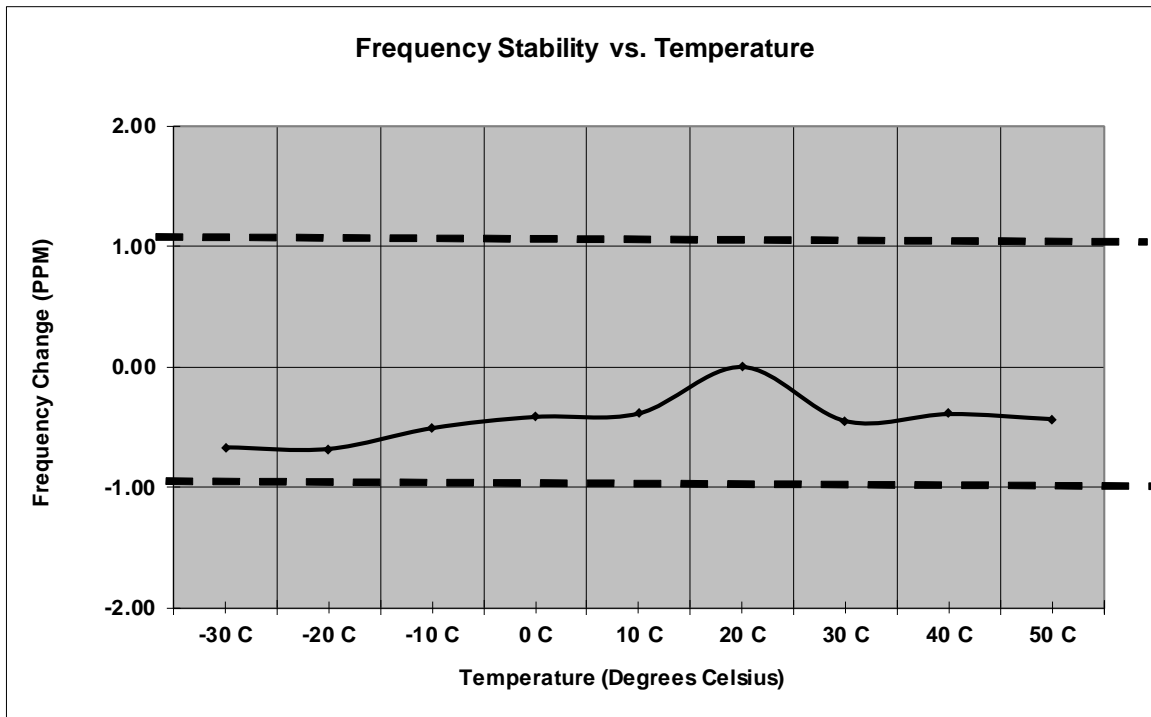


Figure 2.6.6-8: Frequency Stability – TAITIEN TCXO – 930.5 MHz



Frequency Stability

Frequency (MHz): 959.924824

Deviation Limit (PPM):

| Temperature C | Frequency MHz | Frequency Error (PPM) | Voltage (%) | Voltage (VDC) |
|------------------|------------------|--------------------------|----------------|------------------|
| -30 C | 959.924231 | -0.618 | 100% | 3.65 |
| -20 C | 959.924209 | -0.641 | 100% | 3.65 |
| -10 C | 959.924395 | -0.448 | 100% | 3.65 |
| 0 C | 959.924520 | -0.316 | 100% | 3.65 |
| 10 C | 959.924578 | -0.256 | 100% | 3.65 |
| 20 C | 959.924824 | 0.000 | 100% | 3.65 |
| 30 C | 959.924451 | -0.389 | 100% | 3.65 |
| 40 C | 959.924605 | -0.228 | 100% | 3.65 |
| 50 C | 959.924227 | -0.622 | 100% | 3.65 |
| 20 C | 959.924800 | -0.025 | Endpoint | 3.20 |

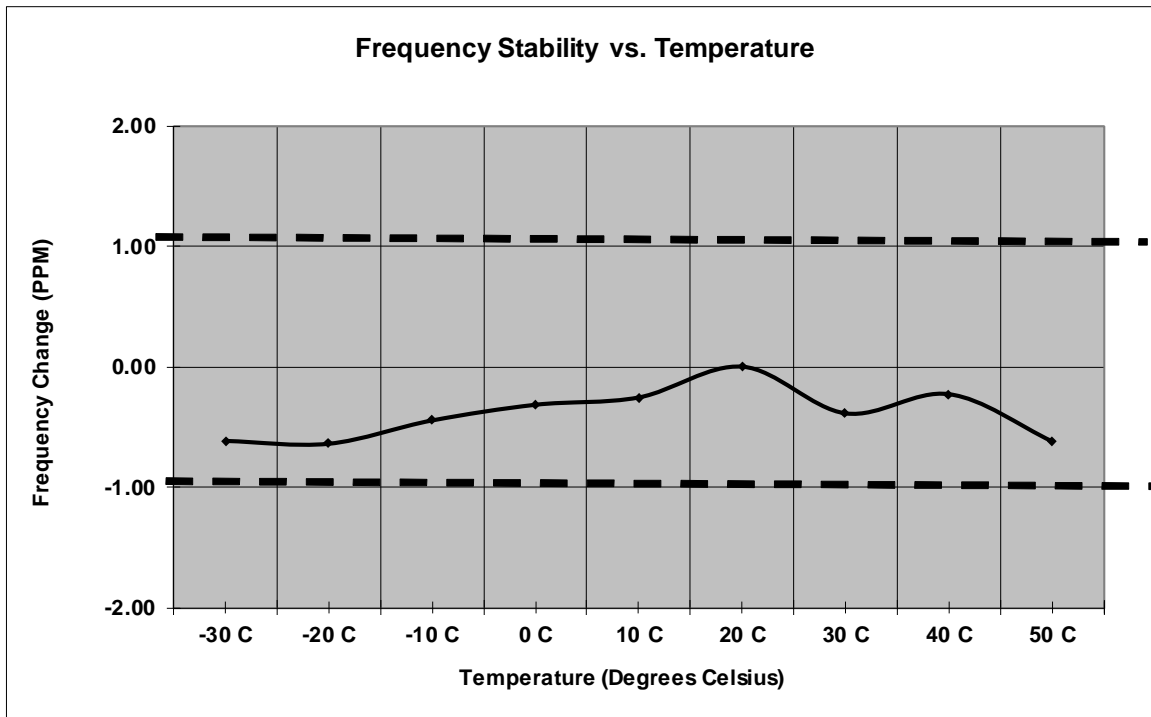


Figure 2.6.6-9: Frequency Stability – TAITIEN TCXO – 959.925 MHz



2.6.7 Test Location and Test Equipment Used

This test was carried out in TÜV SÜD America, Inc., 5610 W. Sligh Ave, Suite 100, Tampa, FL 33634, USA.

| Instrument | Manufacturer | Type No | TE No | Software / Firmware Revision | Calibration Period (months) | Calibration Due |
|--|-------------------|-----------|-----------|------------------------------|-----------------------------|-----------------|
| Digital Thermometer | Omega Engineering | MDSS41-TC | BEMC00002 | N/A | 24 | 03-Oct-2021 |
| 1.5 Cu Ft, -73°C to +175°C, Floor Standing Version | Test Equity | 115 | BEMC02102 | N/A | N/A | NCR |
| Digital MultiMeter | Fluke | 115 | BEMC02108 | N/A | 24 | 29-Mar-2023 |
| Signal & Spectrum Analyzer | Rohde & Schwarz | FSW43 | DEMC3085 | N/A | 24 | 07-Dec-2022 |
| DMM Multimeter | Fluke | 27 | TAME01003 | N/A | 12 | 12-Jan-2022 |
| Multimeter | Fluke | 77 | TAME01006 | N/A | 12 | 12-Jan-2022 |
| DC Power Supply | Xantrex | XHR60-18 | TEMC00001 | N/A | N/A | NCR |
| 2.92mm Attenuator M/F 40GHz 30dB 2W VSWR 1.45 | Centric RF | C402-30 | TEMC00222 | N/A | 12 | 08-Mar-2022 |

TU - Traceability Unscheduled
 O/P MON - Traceability Unscheduled
 N/A - Not Applicable
 NCR - No Calibration Required



3 Test Equipment Information

3.1 General Test Equipment Used

| Instrument | Manufacturer | Type No | TE No | Software / Firmware Revision | Calibration Period (months) | Calibration Due |
|--|-------------------------|------------------------|-----------|------------------------------|-----------------------------|-----------------|
| Digital Thermometer | Omega Engineering | MDSS41-TC | BEMC00002 | N/A | 24 | 03-Oct-2021 |
| 1.5 Cu Ft, -73°C to +175°C, Floor Standing Version | Test Equity | 115 | BEMC02102 | N/A | N/A | NCR |
| Digital MultiMeter | Fluke | 115 | BEMC02108 | N/A | 24 | 29-Mar-2023 |
| Signal & Spectrum Analyzer | Rohde & Schwarz | FSW43 | DEMC3085 | N/A | 24 | 07-Dec-2022 |
| DMM Multimeter | Fluke | 27 | TAME01003 | N/A | 12 | 12-Jan-2022 |
| Multimeter | Fluke | 77 | TAME01006 | N/A | 12 | 12-Jan-2022 |
| DC Power Supply | Xantrex | XHR60-18 | TEMC00001 | N/A | N/A | NCR |
| 2.92mm Attenuator M/F 40GHz 30dB 2W VSWR 1.45 | Centric RF | C402-30 | TEMC00222 | N/A | 12 | 08-Mar-2022 |
| Notch Filter | Trilithic, Inc. | 7NM867/122-X1-AA | BEMC02069 | N/A | 12 | 21-Jan-2022 |
| Tile Automation Software | ETS Lindgren | TILE4! - Version 4.2.A | BEMC02095 | 4.2A | N/A | NCR |
| BI LOG PERIODIC, ANTENNA | Schaffner | CBL6112B | TEMC00005 | N/A | 24 | 31-Oct-2021 |
| EMC Analyzer | Agilent | E7405A | TEMC00012 | A.09.02 | 24 | 27-Mar-2022 |
| EMC Chamber | Panasheild | N/A | TEMC00031 | N/A | 36 | 28-Jan-2024 |
| Double Ridge Guide Horn | ETS Lindgren | 3117 | TEMC00061 | N/A | 24 | 07-Feb-2022 |
| PAM-118A | Com-Power Corporation | PAM-118A | TEMC00160 | N/A | 12 | 10-Apr-2022 |
| 1.2 GHz High Pass Filter | Micro-Tronics | HPM50108-01 | TEMC00175 | N/A | 12 | 09-Mar-2022 |
| A81-0303 18 GHz Cable Set | Teledyne Storm Products | A81-0303-360/96 | TEMC00201 | N/A | 12 | 10-Apr-2022 |
| PAM-118A | Com-Power Corporation | PAM-118A | TEMC00160 | N/A | 12 | 10-Apr-2022 |
| 1.2 GHz High Pass Filter | Micro-Tronics | HPM50108-01 | TEMC00175 | N/A | 12 | 09-Mar-2022 |



TU - Traceability Unscheduled
O/P MON - Traceability Unscheduled
N/A - Not Applicable
NCR - No Calibration Required

4 Diagram of Test Set-ups

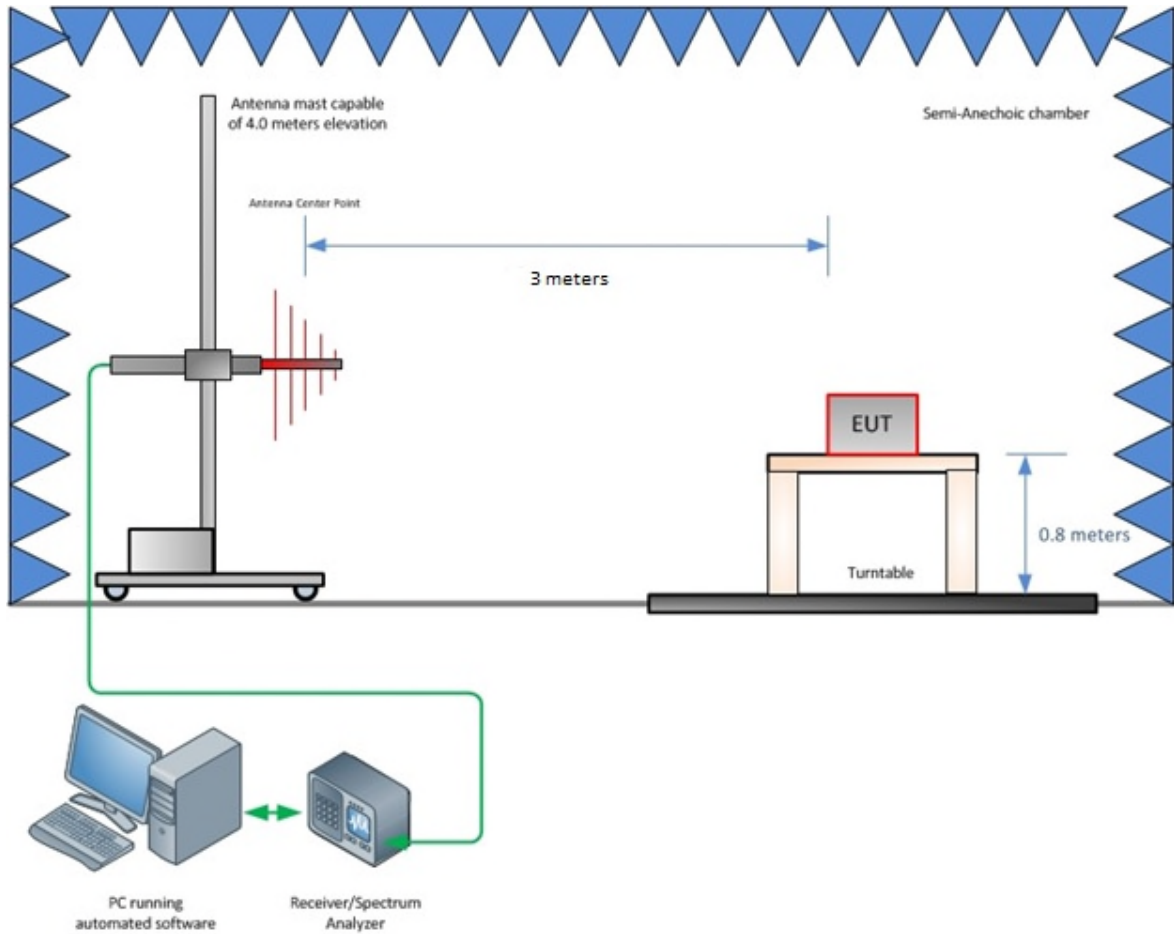


Figure 4-1 - Radiated Emissions Test Setup up to 1 GHz

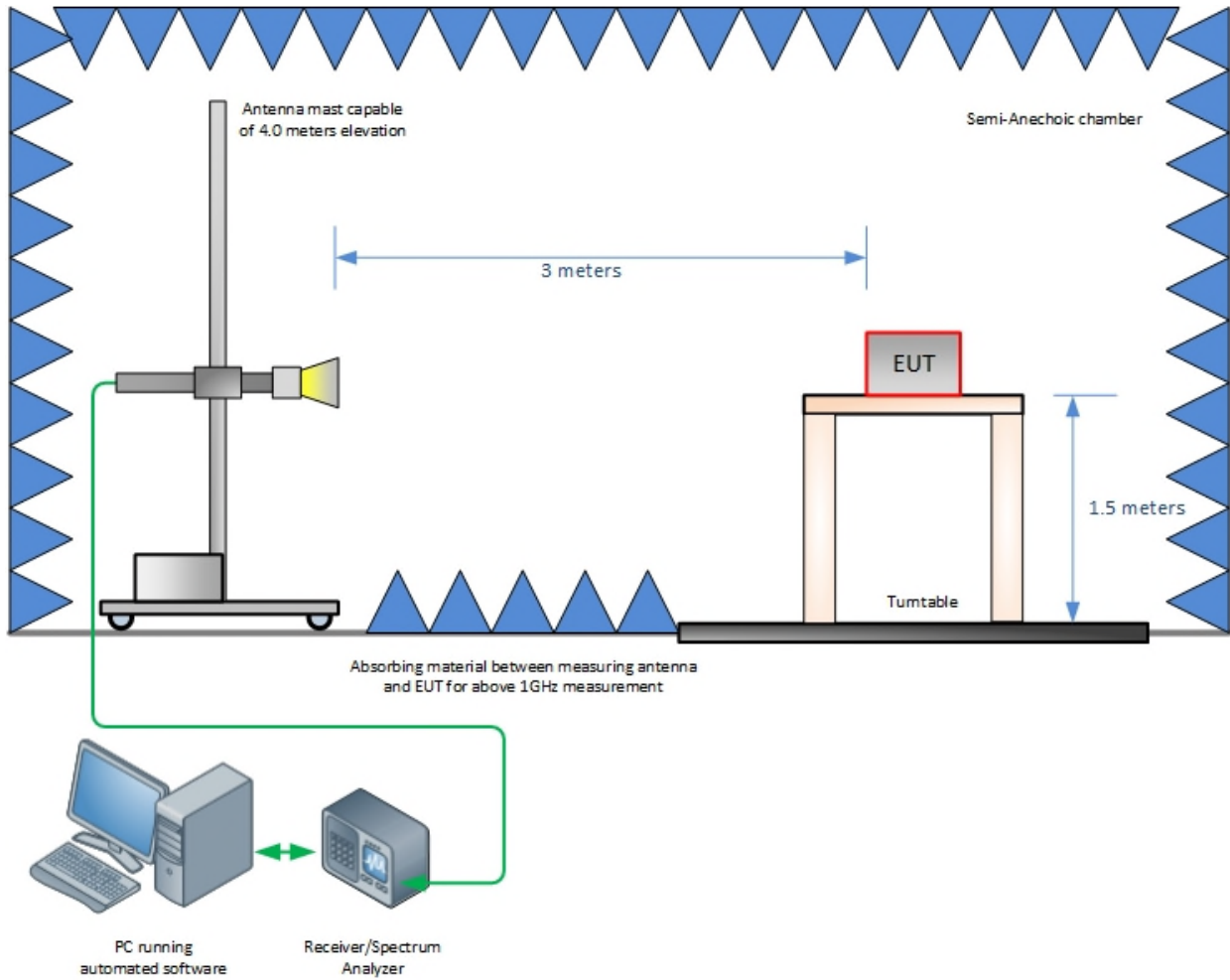


Figure 4-2 - Radiated Emissions Test Setup above 1 GHz



5 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

Table 5-1 - Values of U_{CISPR} and U_{Lab}

| Measurement | U_{CISPR} | U_{Lab} |
|--|----------------------------|-------------------------------|
| Conducted disturbance (mains port) (9 kHz – 150 kHz) (150 kHz – 30 MHz) | 3.8 dB 3.4 dB | 3.71 dB 3.31 dB |
| Conducted disturbance (telecom port) (150 kHz – 30 MHz 55 dB LCL) (150 kHz – 30 MHz 65 dB LCL) (150 kHz – 30 MHz 75 dB LCL) | 5.0 dB 5.0 dB 5.0 dB | 4.11 dB 4.50 dB 4.94 dB |
| Radiated disturbance (electric field strength on an open area test site or alternative test site) (30 MHz – 1 000 MHz) (1 – 6 GHz) (6-18 GHz) | 6.3 dB 5.2 dB 5.5 dB | 5.85 dB 4.48 dB 4.48 dB |

Notes:

U_{CISPR} resembles a value of measurement uncertainty for a specific test, which was determined by considering uncertainties associated with the quantities listed in CISPR 16-4-2:2011.



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