

# FCC and ISED Canada Testing of the

Ypsomed AG  
SmartPilot YpsoMate 2.25



In accordance with FCC 47 CFR part 15.247 and  
ISED Canada's Radio Standards Specifications  
RSS-247

Prepared for: Ypsomed AG  
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FCC ID: 2AFJO-B01  
IC: 20559-B01

## COMMERCIAL-IN-CONFIDENCE

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RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Authorized Signatory	Dave Ernest	2025 -August-12	
Testing	Thierry Jean Charles	2025-August-12	

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
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### EXECUTIVE SUMMARY

Samples of this product were tested and found to be in compliance with FCC 15.247 and ISED Canada's RSS-247.

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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	2024-November-08
2	Added the ISED Canada's Certification Number	2025-May-13
3	Corrected the EUT antenna gain	2025-August-12

## 1.2 Introduction

The purpose of this report is to demonstrate compliance with Part 15 Subpart C of the FCC's Code of Federal Regulations Section 15.247 and Innovation Science and Economic Development Canada's Radio Standards Specification RSS-247 for the tests documented herein.



Applicant	Ypsomed AG
Manufacturer	Ypsomed AG
Applicant's Email Address	<a href="mailto:yao.di@ypsomed.com">yao.di@ypsomed.com</a>
Model Number(s)	SmartPilot YpsoMate 2.25
Serial Number(s)	20007607 (Radiated Measurements), SMY MOD 24 (RF Conducted Measurements)
FCC ID	2AFJO-B01
ISED Certification Number	20559-B01
Hardware Version(s)	Electronics: EleSer2_V1.1.0 Mechanical parts: According to manufacturing order 6253756
Software Version(s)	Standard devices: 6.4.0 Software Development Kit (YDS SDK): 6.2.2
Number of Samples Tested	2
Test Specification/Issue/Date	US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart C: Radio Frequency Devices, Intentional Radiators, 2023 Innovation, Science and Economic Development Canada Radio Standards Specification: RSS-247 — Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices, Issue 3, August 2023
Test Plan/Issue/Date	2023-June-14
Order Number	72192807
Date	2023-August-21
Date of Receipt of EUT	2024-July-26
Start of Test	2024-July-26
Finish of Test	2024-October-07
Name of Engineer(s)	Thierry Jean-Charles
Related Document(s)	ANSI C63.10-2013: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices US Code of Federal Regulations (CFR): Title 47, Part 2, Subpart J: Equipment Authorization Procedures, 2025. FCC OET KDB Publication 558074 D01 15.247 Meas Guidance v05r02: Guidance for Compliance Measurements on Digital Transmission System,



Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operating under Section 15.247 of the FCC Rules, April 2019

Innovation, Science and Economic Development Canada  
Radio Standards Specification: RSS-GEN - General Requirements for Compliance of Radio Apparatus, Issue 5, April 2018, Amendment 1, March 2019, Amendment 2, February 2021.



### 1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC Part 15.247 and ISED Canada's RSS-247 is shown below.

**Table 1.3-1: Test Result Summary**

Test Parameter	Test Plan (Yes/No)	Test Result	FCC 47 CFR Rule Part	ISED Canada's RSS	Test Report Page No
Antenna Requirement	Yes	Pass	15.203, 15.204	-----	13
6 dB Bandwidth	Yes	Pass	15.247(a)(2)	RSS-247 5.2(a)	14
99% Bandwidth	Yes	Pass	-----	RSS-GEN 6.6	19
Peak Output Power	Yes	Pass	15.247(b)(3)	RSS-247 5.4(d)	24
Band-Edge Compliance of RF Conducted Emissions	Yes	Pass	15.247(d)	RSS-247 5.5	29
RF Conducted Spurious Emissions	Yes	Pass	15.247(d)	RSS-247 5.5	33
Radiated Spurious Emissions into Restricted Frequency Bands	Yes	Pass	15.205, 15.209	RSS-GEN 8.9, 8.10	38
Power Spectral Density	Yes	Pass	15.247(e)	RSS-247 5.2(b)	55
Duty Cycle	Yes	-----	N/A	N/A	60
Power Line Conducted Emissions	No	Not Tested	15.207	RSS-GEN 8.8	-----

The EUT is a battery powered only device without any provisions for connection to the AC Mains. The EUT is exempt from the power line conducted emissions requirements.



## 1.4 Product Information

### 1.4.1 Technical Description

The EUT is a handheld Add-On dedicated for the YpsoMate auto injector. Its functions include the detection of the injection state of the YpsoMate, logging of the injection process data and interconnectivity with smartphones. For this, the YpsoMate auto injector can be coupled to the SmartPilot YpsoMate.

The EUT includes a 2.4 GHz BLE radio and a 13.56 MHz NFC reader. Both radios were active during this evaluation. This document reports the compliance of BLE radio and of any intermodulation products caused by both radios transmitting simultaneously.

#### Technical Details

Mode of Operation: Bluetooth Low Energy (BLE)  
Frequency Range: 2402 MHz - 2480 MHz  
Number of Channels: 40  
Channel Separation: 2 MHz  
Data Rate: 1 Mbps, 2 Mbps  
Modulations: GFSK  
Antenna Type/Gain: PCB trace antenna / -2.53 dBi  
Input Power: 3.95 VDC Lithium-Ion Polymer Battery (rechargeable)  
3 VDC, Lithium Manganese Dioxide Battery (primary)

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

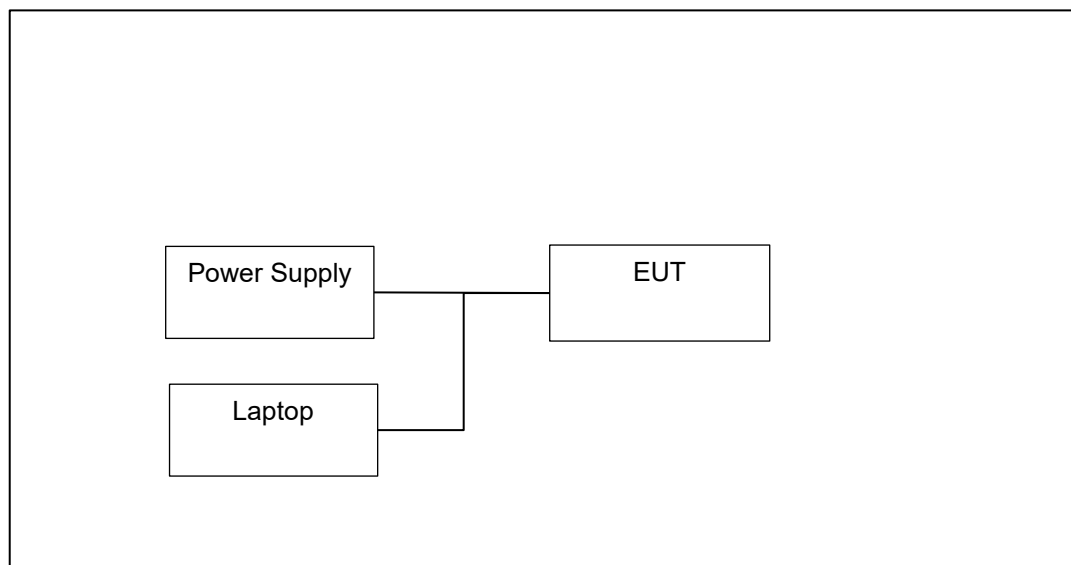


Figure 1.4.1-1 – Radiated Emissions Test Setup Diagram



Note: The EUT is a battery powered standalone device without any provisions for connections to external accessories. The power leads, power supply and laptop were used for testing purposes only.

**Table 1.4.1-1 – Cable Descriptions**

Cable/Port	Description
DC Power Leads	10 m, EUT to Power Supply
USB to UART cable	10 m, laptop to EUT

**Table 1.4.1-2 – Support Equipment Descriptions**

Make/Model	Description
Lambda / LA-200	Regulated DC Power Supply, SN: LA2-AA20-45 0470
Lenovo / T480S	Laptop Computer, S/N: A2667022





## Declaration of Build Status

EQUIPMENT DESCRIPTION	
Model Name/Number	SmartPilot YpsoMate 2.25
Part Number	700020624
Standard Devices	Device with the following serial number: <ul style="list-style-type: none"> <li>• 20007334</li> <li>• 20007460</li> <li>• 20007564</li> <li>• 20007627</li> <li>• 20007634</li> <li>• 20007647</li> <li>• 20007735</li> <li>• 20007757</li> <li>• 20007771</li> <li>• 20007934</li> </ul>
Hardware Version	Standard devices: <ul style="list-style-type: none"> <li>• Electronics: EleSer2_V1.1.0</li> <li>• Mechanical parts: According to manufacturing order 6253756</li> </ul>
Software Version	Standard devices: 6.4.0 Software Development Kit (YDS SDK): 6.2.2
Special Builds	Device with ID starting with SMY mod. (SMY mod 20 – SMY mod 40, SMY mod 43, SMY mod 44) The devices are used in electrical safety test, Immunity testing, unintentional emission, ESD testing, conducted RF emission, radiated emission, wireless co-existence tests The detailed build status is documented in 10373174 DTP SubSys EMC. And 10419700 TR TÜV Sample Modifications beyond DTP.
FCC ID (if applicable)	N/A
ISED ID (if applicable)	N/A
Technical Description (Please provide a brief description of the intended use of the equipment)	The SmartPilot YpsoMate 2.25 (in short: SmartPilot) is an optional, battery operated, single-patient reusable device. The SmartPilot is designed to be used together with a compatible YpsoMate Autoinjector. The SmartPilot records device data, injection data and injection states. The SmartPilot also provides visual and acoustic guidance feedback to the user during the injection. The SmartPilot is not intended to ensure the biologic/drug quantity nor serve as a dose counter. It is also not intended to ensure the biologic/drug information from the SmartLabel.

UN-INTENTIONAL RADIATOR	
Highest frequency generated or used in the device or on which the device operates or tunes	2.4835 GHz (BLE)
Lowest frequency generated or used in the device or on which the device operates or tunes	800 kHz (inductive sensor)
Class A Digital Device (Use in commercial, industrial or business environment) <input checked="" 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"/>	N/A, no external AC power source
External DC	Nominal Voltage		Maximum Current
	N/A, no external DC power source		N/A, no external DC power source
Battery	Nominal Voltage		Battery Operating End Point Voltage
	Primary battery: 3.00 V Rechargeable battery: 3.95 V		Primary battery: 2.60 V Rechargeable battery: 3.40 V

EXTREME CONDITIONS			
Maximum temperature	+35	°C	Minimum temperature
			+5 °C

Ancillaries
Please list all ancillaries which will be used with the device.
<ul style="list-style-type: none"> <li>• iPhone with the YDS SMS Testing App installed (Equipment Number: 417554)</li> <li>• iPhone with the NFC Trigger App installed (According to 10400525 NFC Trigger App)</li> <li>• Laptop (Equipment Number: 421207) with Commander App (Equipment Number: 417726)</li> <li>• YpsoMate 2.25 mL filled with water (Material Number: 700026295)</li> <li>• YpsoMate 2.25 mL filled with NaCl solution (According to 10400249 Final Assembly YM with NaCl)</li> </ul>

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

Name: DI, Yao

Position held: System Verification Manager      Date: 05.11.2024



#### 1.4.2 Modes of Operation

The EUT is powered using non-replaceable battery. For testing purposes, especially to facilitate continuous operation, the EUT was configured with leads to allow connection to an external power supply.

Additional leads were added to allow UART connection to a computer for the configuration of the radio parameters. The device was connected to a laptop computer which was running the Nordic nRF Connect Direct Test Mode v2.3.1 application. The unit was set to transmit continuously a PBRS9 signal at a power setting of -8 dBm.

For the RF conducted measurements, the EUT was configured with the coaxial connector to allow direct coupling to a spectrum analyzer.

#### 1.4.3 Monitoring of Performance

For the radiated spurious emissions evaluation, preliminary measurements were performed on the EUT in 3 orthogonal orientations. The orientation leading to the highest emissions with respect to the limits was used for the final measurements.

#### 1.4.4 Performance Criteria

The EUT was evaluated for the following performance criteria.

**Table 1.4.4-1: Performance Criteria**

Parameter	Requirement
Antenna Requirement	FCC: Section 15.203. 15.204
6 dB Bandwidth	FCC: Section 15.247(a)(2); ISED Canada: RSS-247 5.2(a)
99% Bandwidth	ISED Canada: RSS-GEN 6.6
Peak Output Power	FCC: Section 15.247(b)(3); ISED Canada: RSS-247 5.4(d)
Band-Edge Compliance of RF Conducted Emissions	FCC: Section 15.247(d); ISED Canada: RSS-247 5.5
RF Conducted Spurious Emissions	FCC: Section 15.247(d); ISED Canada: RSS-247 5.5
Radiated Spurious Emissions into Restricted Frequency Bands	FCC: Sections 15.205, 15.209; ISED Canada: RSS-GEN 8.9, 8.10
Power Spectral Density	FCC: Section 15.247(e); ISED Canada: RSS-247(b)
Duty Cycle	N/A

#### 1.5 Deviations from the Standard

The EUT was evaluated without any deviation from the test standards.



## 1.6 EUT Modification Record

The table below details modifications made to the EUT during the test programme. 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	N/A	N/A	N/A

The equipment was tested as provided without any modifications for compliance.

## 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		
Antenna Requirement	Thierry Jean-Charles	A2LA
6 dB Bandwidth	Thierry Jean-Charles	A2LA
99% Bandwidth	Thierry Jean-Charles	A2LA
Peak Output Power	Thierry Jean-Charles	A2LA
Band-Edge Compliance of RF Conducted Emissions	Thierry Jean-Charles	A2LA
RF Conducted Spurious Emissions	Thierry Jean-Charles	A2LA
Radiated Spurious Emissions into Restricted Frequency Bands	Thierry Jean-Charles	A2LA
Power Spectral Density	Thierry Jean-Charles	A2LA
Duty Cycle	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 Antenna Requirements

#### 2.1.1 Specification Reference

FCC: Section 15.203, 15.204;  
ISED Canada RSS-Gen 6.8.

#### 2.1.2 Equipment Under Test and Modification State

S/N: SMY mod 24, refer to Section 1.6.

#### 2.1.3 Date of Test

7/26/2024

#### 2.1.4 Test Method

N/A

#### 2.1.5 Environmental Conditions

Ambient Temperature	N/A
Relative Humidity	N/A
Atmospheric Pressure	N/A

#### 2.1.6 Test Results

Limit Clause FCC Sections: 15.203, 15.204

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

The EUT is using an integral PCB trace antenna. The antenna is not replaceable by the end user and therefore meets the requirements of FCC Section 15.203.

#### 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.

As this is a visual inspection, no test equipment was used.



## 2.2 6 dB Bandwidth

### 2.2.1 Specification Reference

FCC: Section 15.247(a)(2)  
ISED Canada: RSS-247 5.2(a)

### 2.2.2 Equipment Under Test and Modification State

S/N: SMY mod 24

### 2.2.3 Date of Test

9/18/2024

### 2.2.4 Test Method

The 6dB bandwidth was measured in accordance with ANSI C63.10 Subclause 11.8.1 Option 1. The RBW of the spectrum analyzer was set to 100 kHz and VBW 300 kHz. Span was set large enough to capture the emissions and >> RBW. A peak detector was used for the measurements.

### 2.2.5 Environmental Conditions

Ambient Temperature 22.9°C  
Relative Humidity 45.6 %  
Atmospheric Pressure 1011.6 mbar

### 2.2.6 Test Results

DC Powered, Operating

Limit Clause FCC Part 15.247(a)(2), ISED RSS-247 5.2(a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

**Table 2.2.6-1: 6 dB Bandwidth Test Results - 1 Mbps**

Frequency (MHz)	6 dB Bandwidth (kHz)
2402	692.93
2440	695.04
2480	696.75

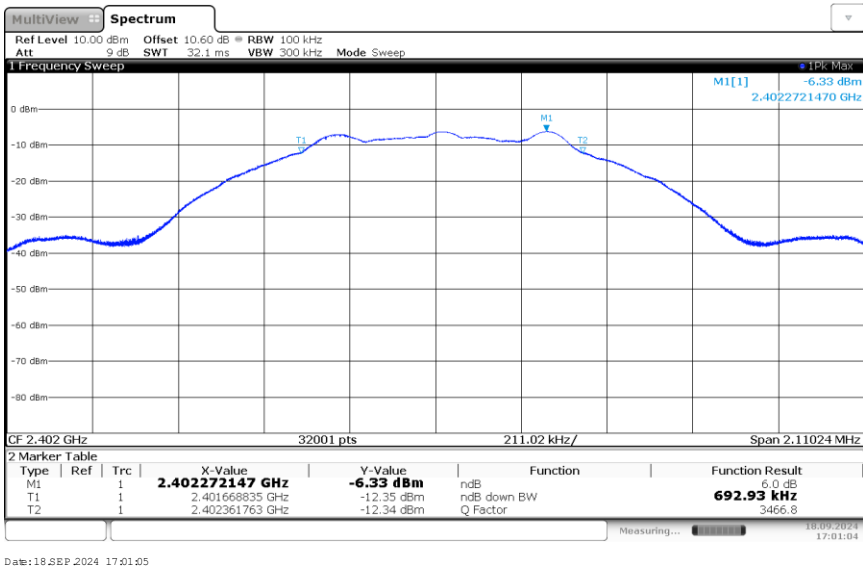


Figure 2.2.6-1: 6 dB Bandwidth Test Results Low Channel- 1 Mbps

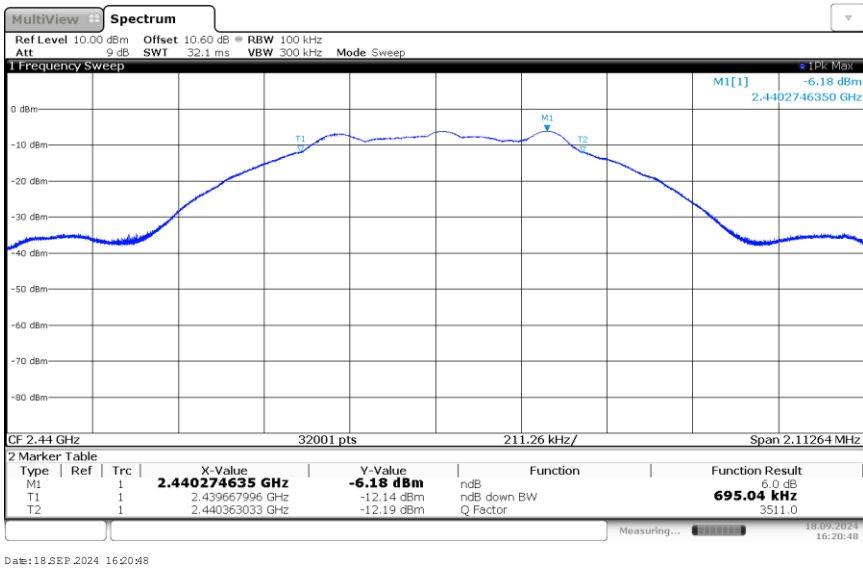


Figure 2.2.6-2: 6 dB Bandwidth Test Results Middle Channel- 1 Mbps

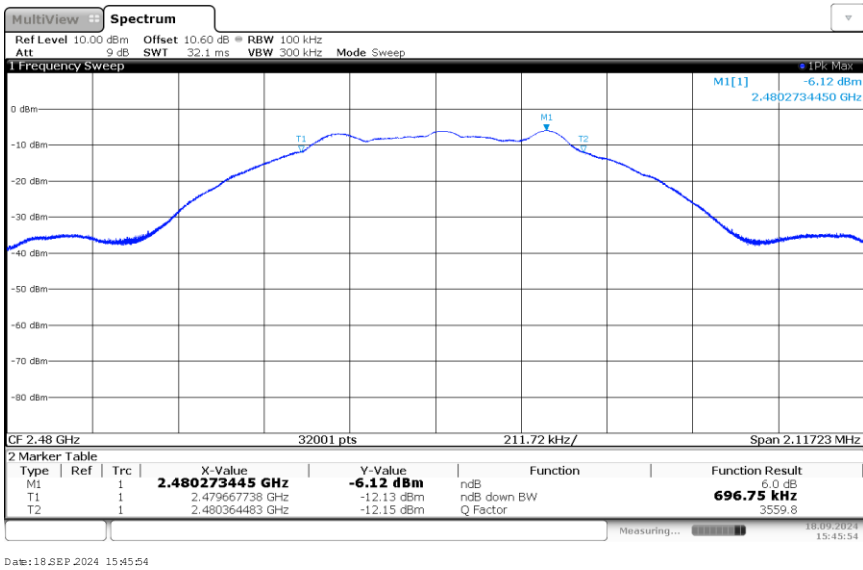


Figure 2.2.6-3: 6 dB Bandwidth Test Results High Channel - 1 Mbps

Table 2.2.6-2: 6 dB Bandwidth Test Results - 2 Mbps

Frequency (MHz)	6 dB Bandwidth (kHz)
2402	1153.29
2440	1161.47
2480	1164.74



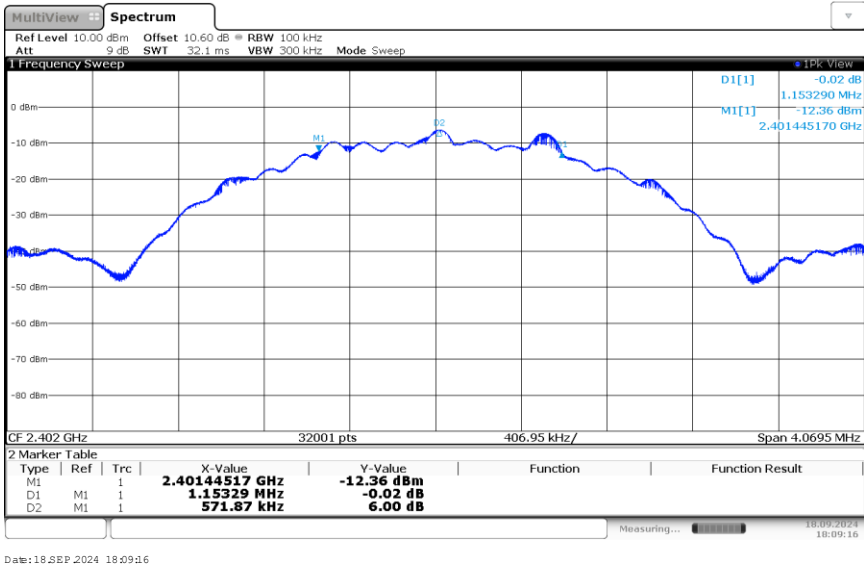


Figure 2.2.6-4: 6 dB Bandwidth Test Results Low Channel - 2 Mbps

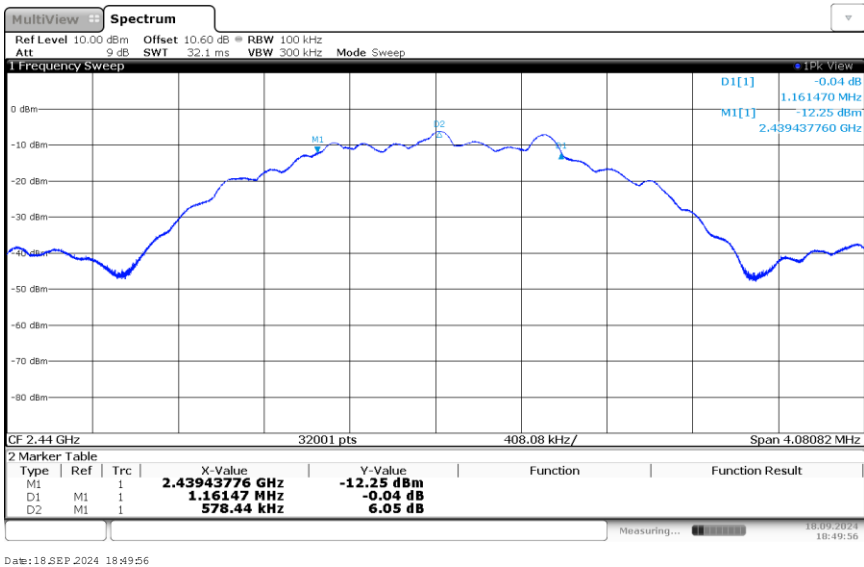
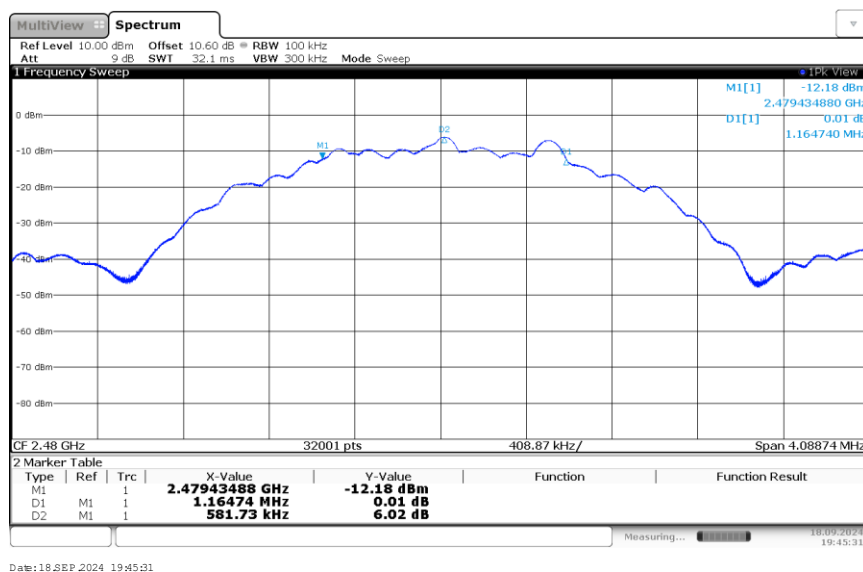


Figure 2.2.6-5: 6 dB Bandwidth Test Results Middle Channel - 2 Mbps



**Figure 2.2.6-6: 6 dB Bandwidth Test Results High Channel - 2 Mbps**

## 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
Atten 10dB 2.9mm-M/F, DC-26.5GHz, 2W	Aeroflex Inmet	26AH-10	DEMC3046	N/A	12	25-Jun-2025
Signal & Spectrum Analyzer	Rohde & Schwarz	FSW43	DEMC3085	2.90 SP1	12	03-Jun-2025
DC Power Supply	Xantrex	HPD-60-5	TAME01064	N/A	N/A	NCR / O/P MON

TU - Traceability Unscheduled

O/P MON – Output Monitored with Calibrated Equipment

N/A - Not Applicable

NCR – No Calibration Required



## 2.3 99% Bandwidth

### 2.3.1 Specification Reference

ISED Canada: RSS-GEN 6.7

### 2.3.2 Equipment Under Test and Modification State

S/N: SMY mod 24

### 2.3.3 Date of Test

9/18/2024

### 2.3.4 Test Method

The 99% occupied bandwidth was measured with the spectrum analyzer span set to fully display the emission. The RBW was set to 1% to 5% of the approximated bandwidth. The occupied 99% bandwidth was measured by using 99% bandwidth equipment function of the spectrum analyzer using a peak detector.

### 2.3.5 Environmental Conditions

Ambient Temperature 22.9°C  
Relative Humidity 45.6 %  
Atmospheric Pressure 1011.6 mbar

### 2.3.6 Test Results

DC Powered, Operating

Limit Clause ISED RSS-GEN 6.7

**Table 2.3.6-1: 99% Bandwidth Test Results - 1 Mbps**

Frequency (MHz)	99% Bandwidth (MHz)
2402	1.056
2440	1.059
2480	1.060

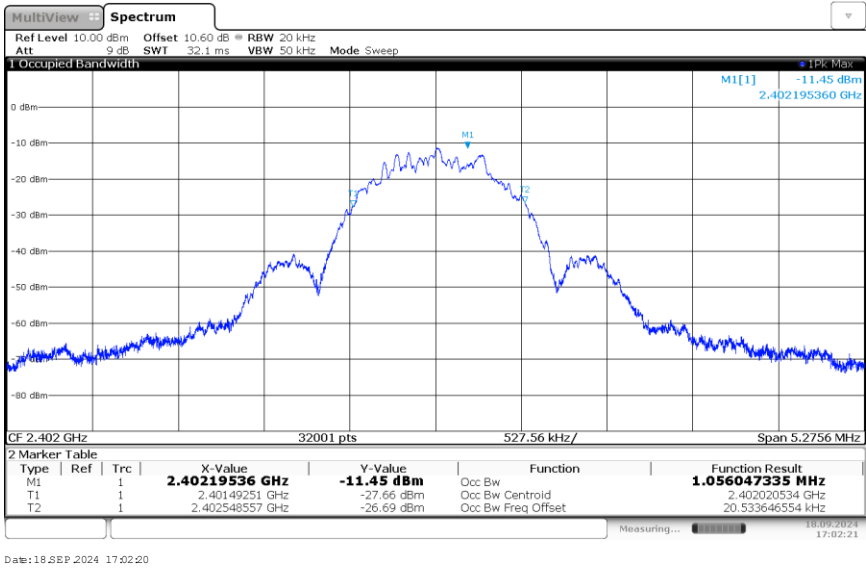


Figure 2.3.6-1: 99% Bandwidth Test Results Low Channel - 1 Mbps

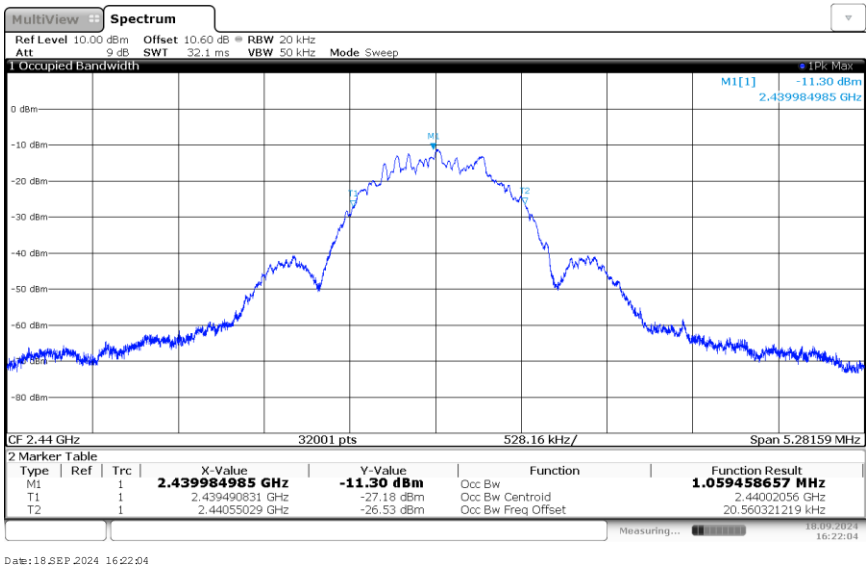


Figure 2.3.6-2: 99% Bandwidth Test Results Middle Channel - 1 Mbps

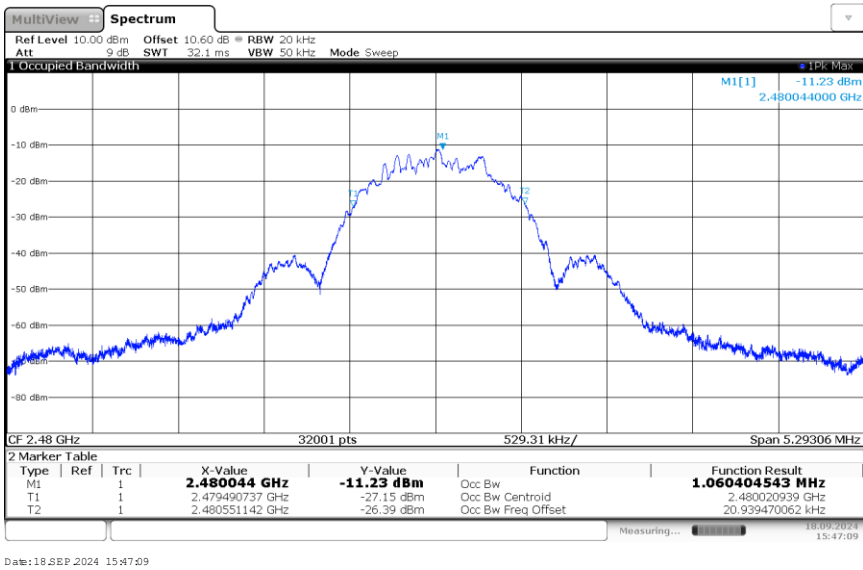


Figure 2.3.6-3: 99% Bandwidth Test Results High Channel - 1 Mbps

Table 2.3.6-2: 99% Bandwidth Test Results - 2 Mbps

Frequency (MHz)	99% Bandwidth (MHz)
2402	2.038
2440	2.043
2480	2.048

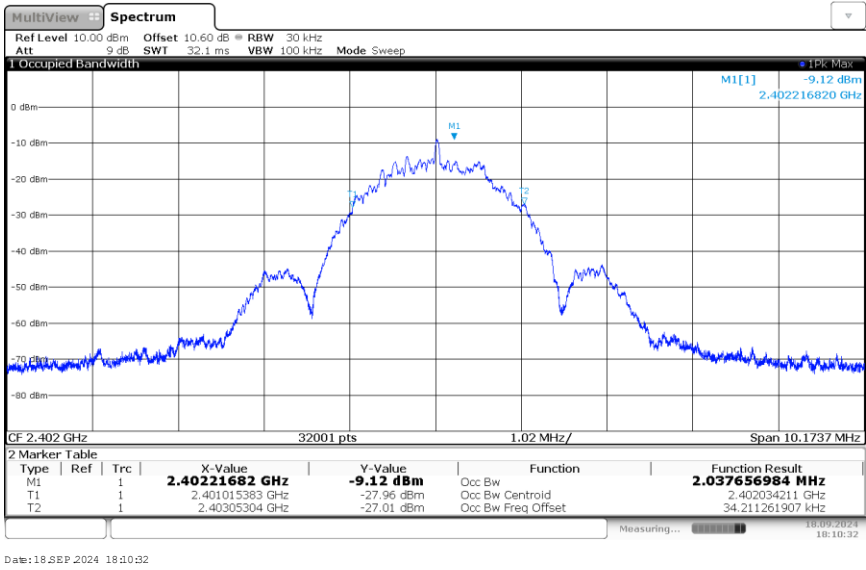


Figure 2.3.6-4: 99% Bandwidth Test Results Low Channel - 2 Mbps

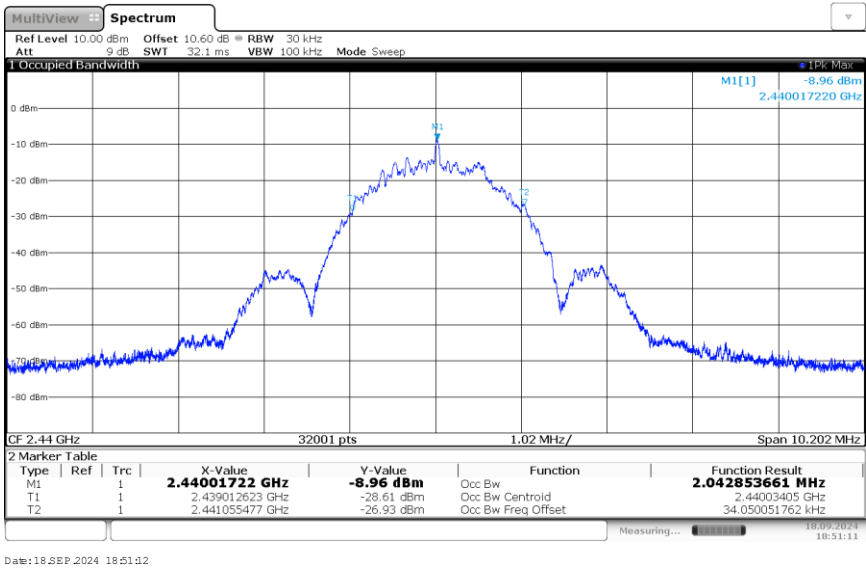
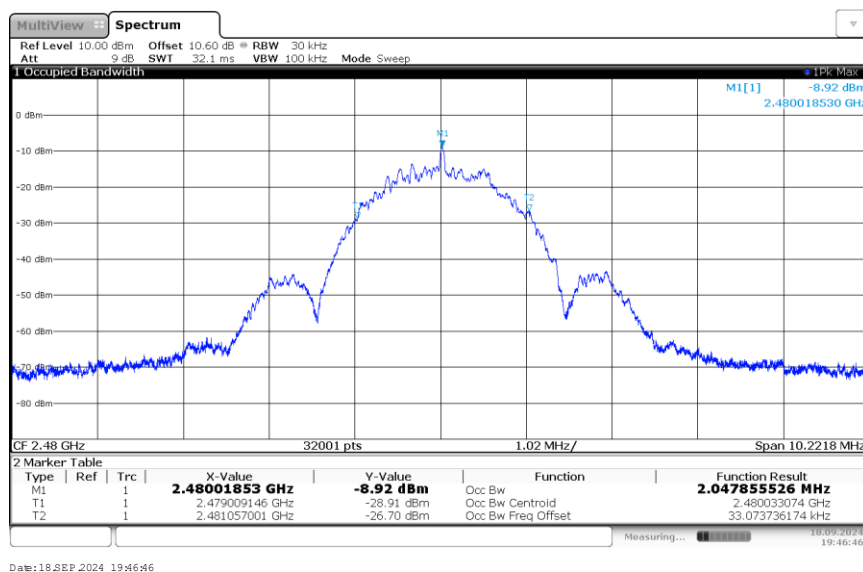


Figure 2.3.6-5: 99% Bandwidth Test Results Middle Channel - 2 Mbps



**Figure 2.3.6-6: 99% Bandwidth Test Results High Channel - 2 Mbps**

### 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
Atten 10dB 2.9mm-M/F, DC-26.5GHz, 2W	Aeroflex Inmet	26AH-10	DEMC3046	N/A	12	25-Jun-2025
Signal & Spectrum Analyzer	Rohde & Schwarz	FSW43	DEMC3085	2.90 SP1	12	03-Jun-2025
DC Power Supply	Xantrex	HPD-60-5	TAME01064	N/A	N/A	NCR / O/P MON

TU - Traceability Unscheduled

O/P MON – Output Monitored with Calibrated Equipment

N/A - Not Applicable

NCR – No Calibration Required



## 2.4 Peak Output Power

### 2.4.1 Specification Reference

FCC Section 15.247(b)(3)  
ISED Canada: RSS-247 5.4(d)

### 2.4.2 Equipment Under Test and Modification State

S/N: SMY mod 24

### 2.4.3 Date of Test

9/18/2024

### 2.4.4 Test Method

The fundamental emission output power was measured in accordance with ANSI C63.10 Subclause 11.9.1.1 RBW  $\geq$  DTS bandwidth. The RF output of the equipment under test was directly connected to the input of the spectrum analyzer through suitable attenuation.

### 2.4.5 Environmental Conditions

Ambient Temperature 22.9°C  
Relative Humidity 45.6 %  
Atmospheric Pressure 1011.6 mbar

### 2.4.6 Test Results

DC Powered, Operating

Limit Clause FCC Part 15.247(b)(3), ISED RSS-247 5.4(d)

The Maximum Output Power allowed for systems using digital modulation is 1 Watt (30 dBm)

**Table 2.4.6-1: Maximum Output Power Results - 1 Mbps**

Frequency (MHz)	Output Power (dBm)
2402	-6.27
2440	-6.10
2480	-6.06



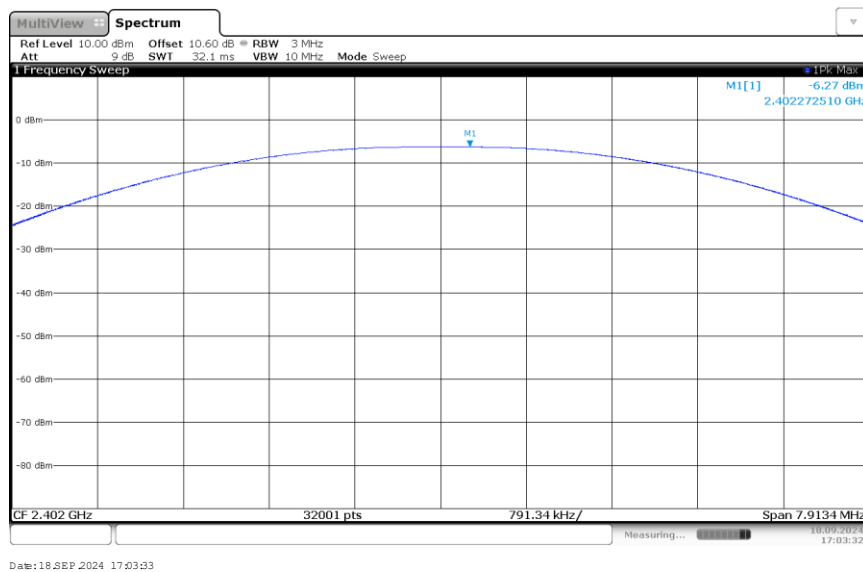


Figure 2.4.6-1: Maximum Output Power Results Low Channel - 1 Mbps

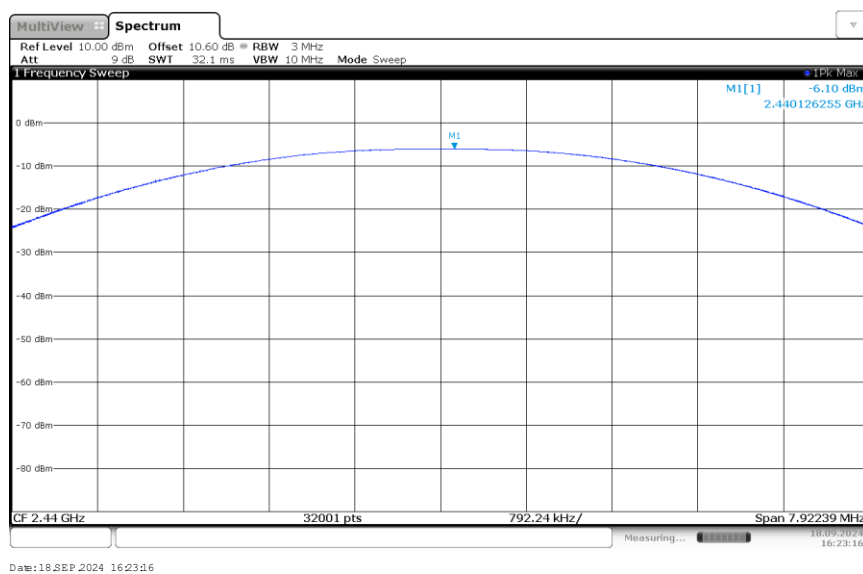


Figure 2.4.6-2: Maximum Output Power Results Middle Channel - 1 Mbps

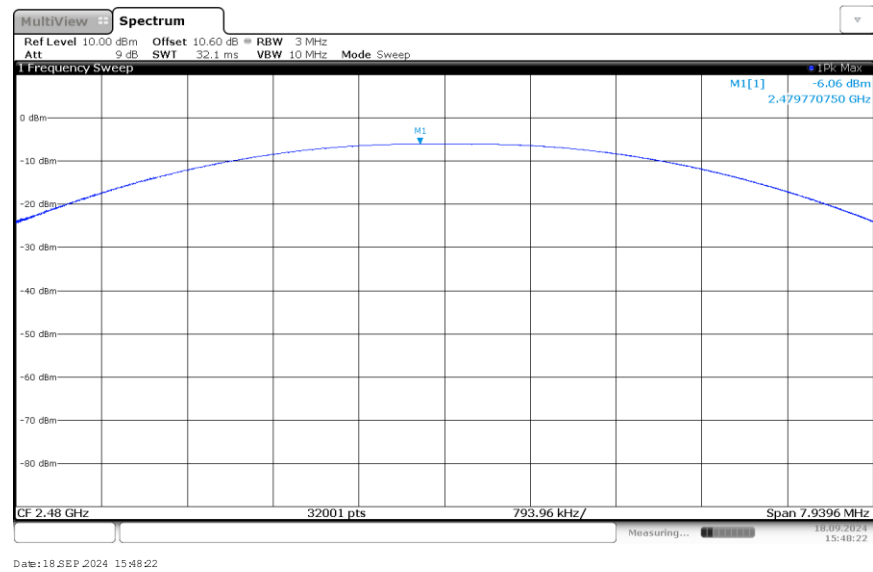


Figure 2.4.6-3: Maximum Output Power Results High Channel - 1 Mbps

Table 2.4.6-2: Maximum Output Power Results - 2 Mbps

Frequency (MHz)	Output Power (dBm)
2402	-6.24
2440	-6.06
2480	-6.04

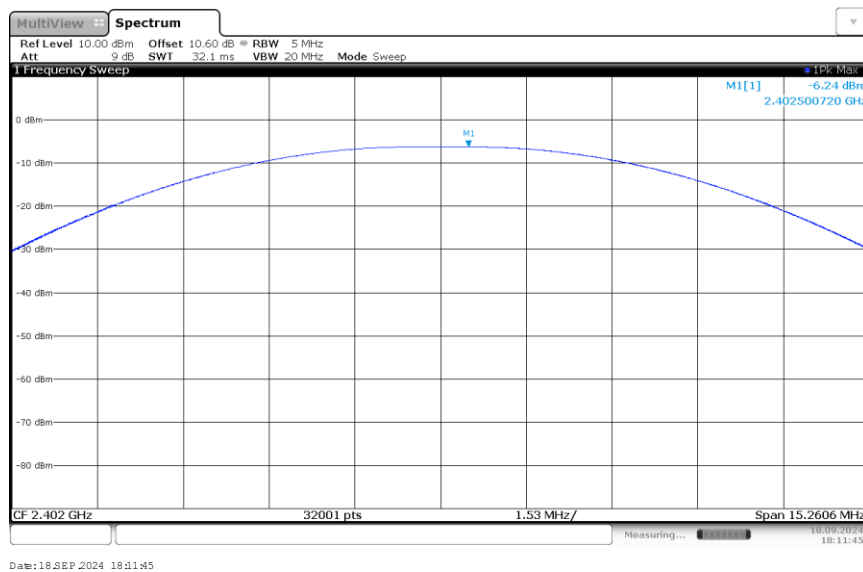


Figure 2.4.6-4: Maximum Output Power Results Low Channel - 2 Mbps

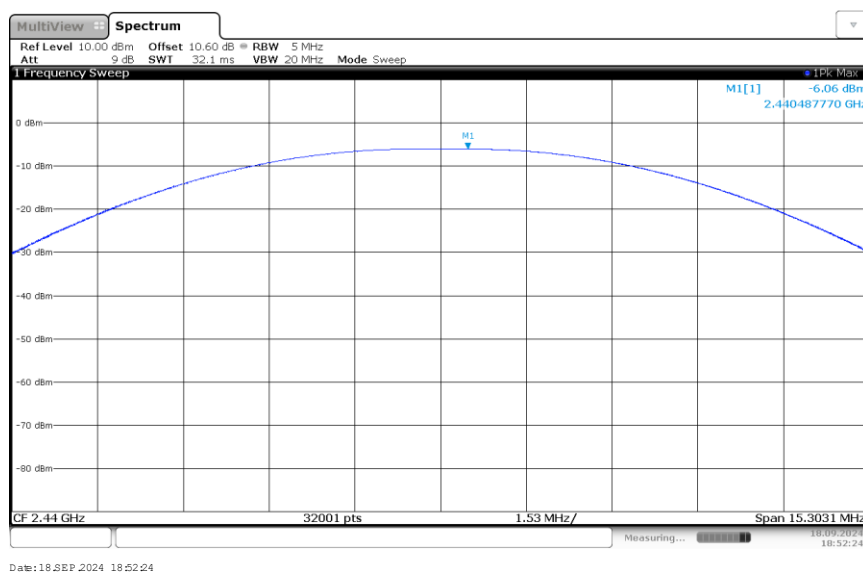
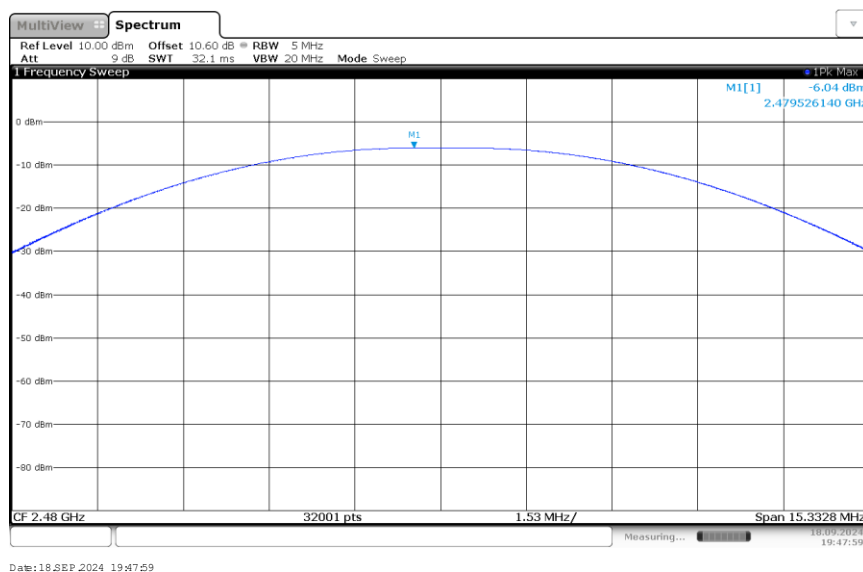


Figure 2.4.6-5: Maximum Output Power Results Middle Channel - 2 Mbps



**Figure 2.4.6-6: Maximum Output Power Results High Channel - 2 Mbps**

#### 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
Atten 10dB 2.9mm-M/F, DC-26.5GHz, 2W	Aeroflex Inmet	26AH-10	DEMC3046	N/A	12	25-Jun-2025
Signal & Spectrum Analyzer	Rohde & Schwarz	FSW43	DEMC3085	2.90 SP1	12	03-Jun-2025
DC Power Supply	Xantrex	HPD-60-5	TAME01064	N/A	N/A	NCR / O/P MON

TU - Traceability Unscheduled

O/P MON – Output Monitored with Calibrated Equipment

N/A - Not Applicable

NCR – No Calibration Required



## **2.5 Band-Edge Compliance of RF Conducted Emissions**

### **2.5.1 Specification Reference**

FCC: Section 15.247(d)  
ISED Canada: RSS-247 5.5

### **2.5.2 Equipment Under Test and Modification State**

S/N: SMY mod 24

### **2.5.3 Date of Test**

9/18/2024

### **2.5.4 Test Method**

The RF Conducted Emissions at the Band-Edges were measured in accordance with Subclause 11.11 of ANSI C63.10. The RF output port of the EUT was connected to the input of the spectrum analyzer through suitable attenuation. The EUT was investigated at the lowest and highest channel available to determine band-edge compliance. For each measurement the spectrum analyzer's RBW was set to 100 kHz, and the VBW was set to  $\geq 300$  kHz.

### **2.5.5 Environmental Conditions**

Ambient Temperature	22.9 °C
Relative Humidity	45.6 %
Atmospheric Pressure	1011.6 mbar

### **2.5.6 Test Results**

DC Powered, Operating

Limit Clause FCC Section 15.247(d), ISED Canada: RSS-247 5.5

In any 100 kHz bandwidth outside of the frequency band the radio frequency power shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of desired power. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required shall be 30 dB instead of 20 dB.

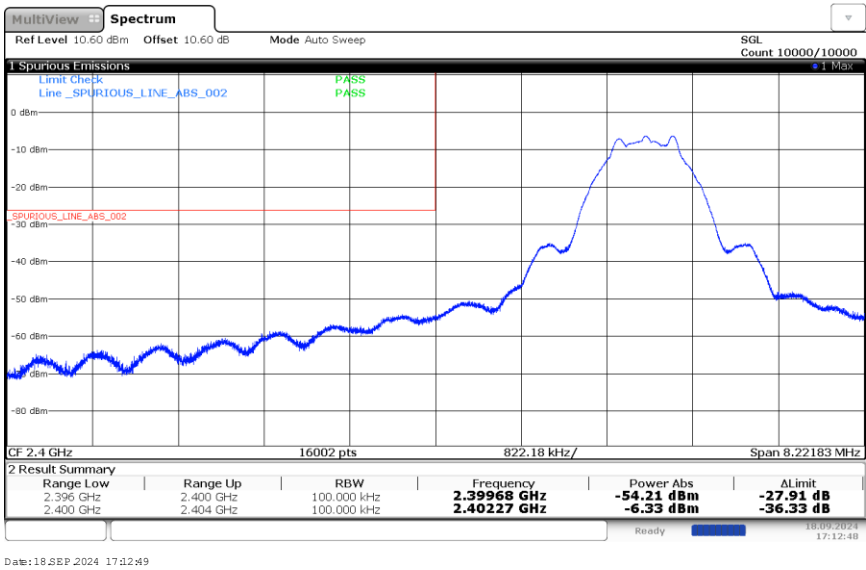


Figure 2.5.6-1: RF Conducted Band-Edge Results Low Channel - 1 Mbps

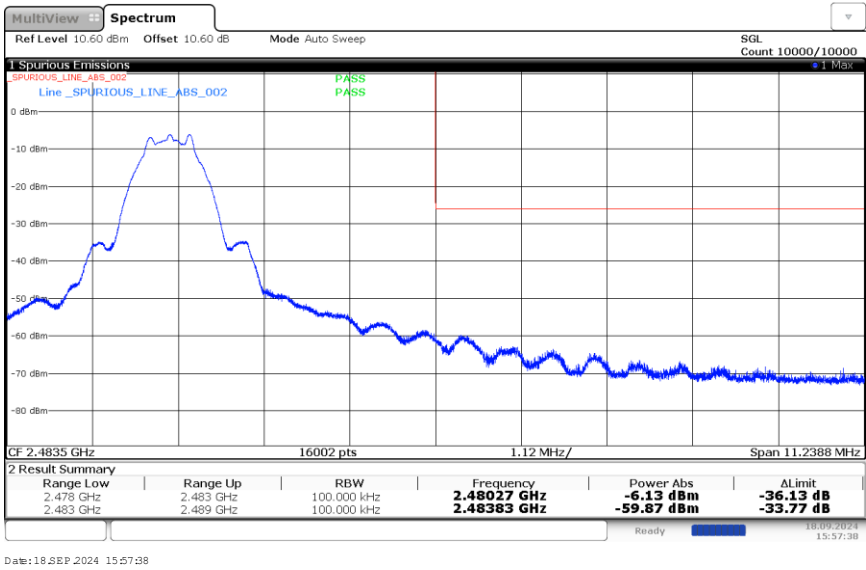


Figure 2.5.6-2: RF Conducted Band-Edge Results High Channel - 1 Mbps

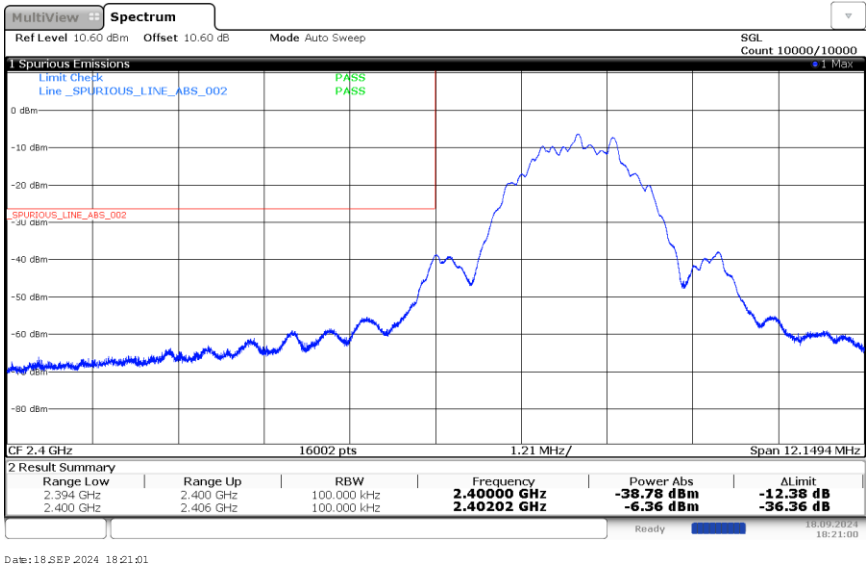


Figure 2.5.6-3: RF Conducted Band-Edge Results Low Channel - 2 Mbps

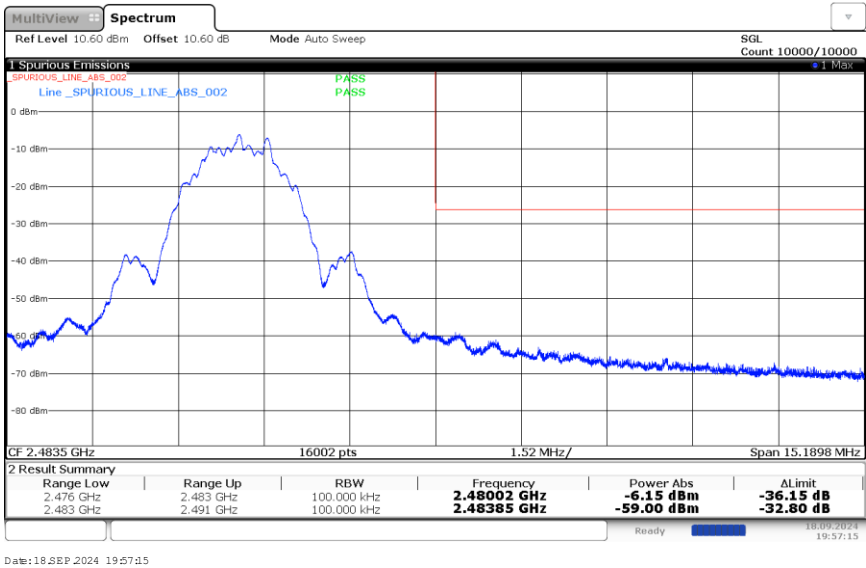


Figure 2.5.6-4: RF Conducted Band-Edge Results High Channel - 2 Mbps



### 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
Atten 10dB 2.9mm-M/F, DC-26.5GHz, 2W	Aeroflex Inmet	26AH-10	DEMC3046	N/A	12	25-Jun-2025
Signal & Spectrum Analyzer	Rohde & Schwarz	FSW43	DEMC3085	2.90 SP1	12	03-Jun-2025
DC Power Supply	Xantrex	HPD-60-5	TAME01064	N/A	N/A	NCR / O/P MON

TU - Traceability Unscheduled

O/P MON – Output Monitored with Calibrated Equipment

N/A - Not Applicable

NCR – No Calibration Required





## **2.6 RF Conducted Spurious Emissions**

### **2.6.1 Specification Reference**

FCC: Section 15.247(d)  
ISED Canada: RSS-247 5.5

### **2.6.2 Equipment Under Test and Modification State**

S/N: SMY mod 24

### **2.6.3 Date of Test**

9/18/2024

### **2.6.4 Test Method**

The RF Conducted Spurious Emissions were measured in accordance with Subclause 11.11 of ANSI C63.10. The RF output port of the equipment under test was directly connected to the input of the spectrum analyzer. The EUT was investigated for conducted spurious emissions from 30 MHz to 25 GHz, 10 times the highest fundamental frequency. Measurements were made at the low, center and high channels of the EUT. For each measurement, the spectrum analyzer's RBW was set to 100 kHz and the VBW was set to 300 kHz. The peak Max Hold function of the analyzer was utilized.

### **2.6.5 Environmental Conditions**

Ambient Temperature	22.9 °C
Relative Humidity	45.6 %
Atmospheric Pressure	1011.6 mbar

### **2.6.6 Test Results**

DC Powered, Operating

Limit Clause FCC Section 15.247(d), ISED Canada: RSS-247 5.5

In any 100 kHz bandwidth outside of the frequency band the radio frequency power shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of desired power. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required shall be 30 dB instead of 20 dB.

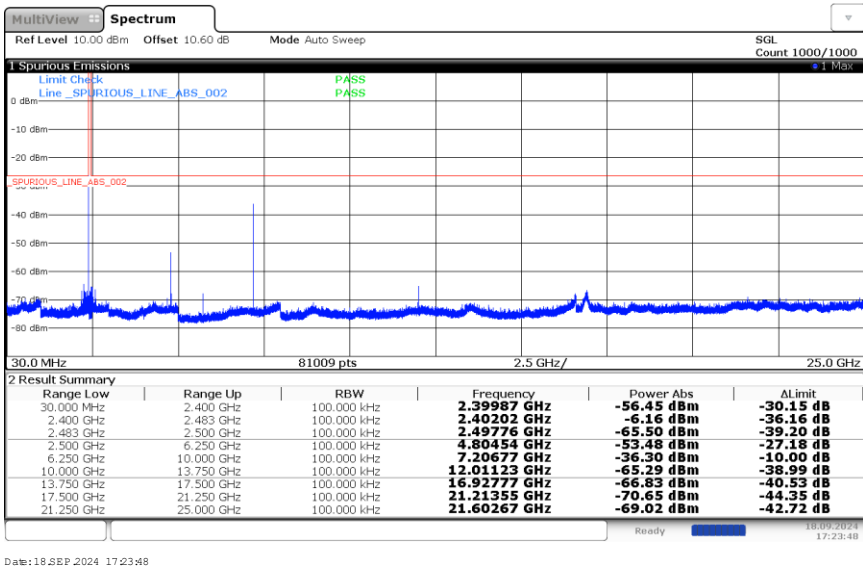


Figure 2.6.6-1: RF Conducted Spurious Emissions Results Low Channel - 1 Mbps

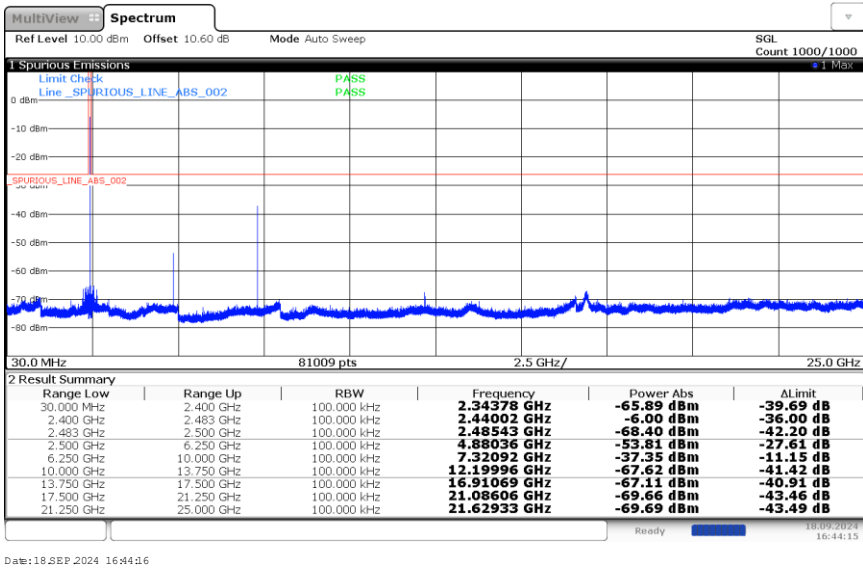


Figure 2.6.6-2: RF Conducted Spurious Emissions Results Middle Channel - 1 Mbps

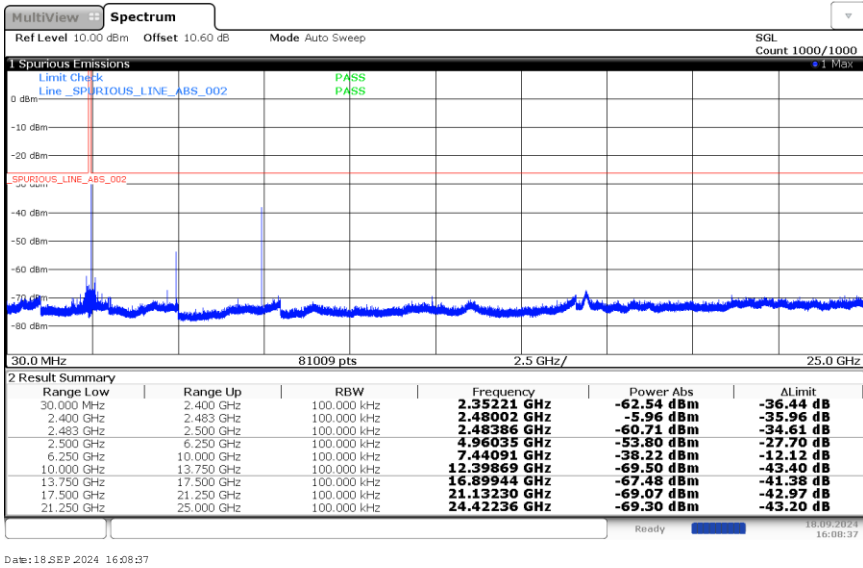


Figure 2.6.6-3: RF Conducted Spurious Emissions Results High Channel - 1 Mbps

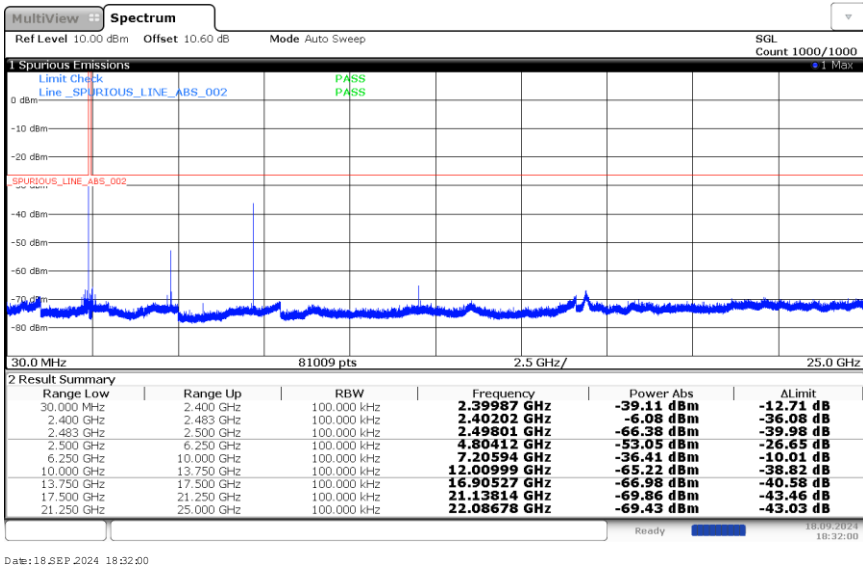


Figure 2.6.6-4: RF Conducted Spurious Emissions Results Low Channel - 2 Mbps

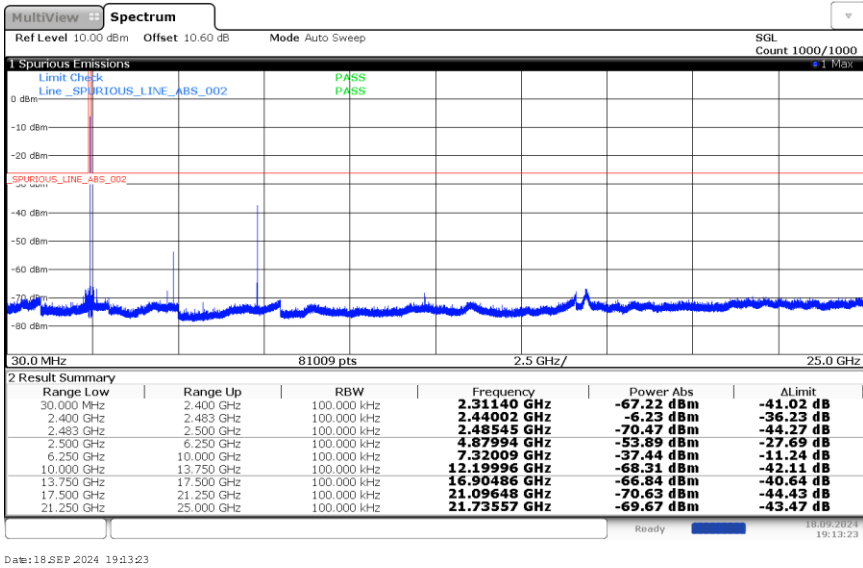


Figure 2.6.6-5: RF Conducted Spurious Emissions Results Middle Channel - 2 Mbps

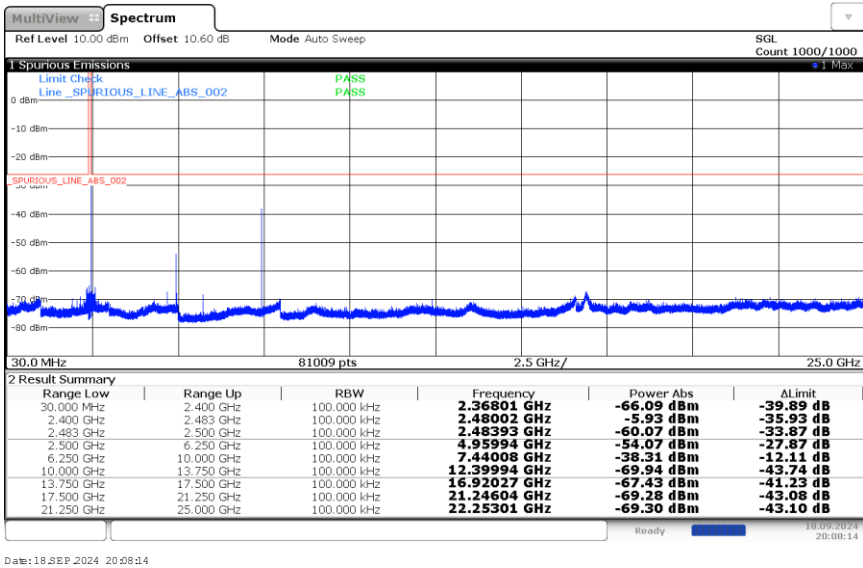


Figure 2.6.6-6: RF Conducted Spurious Emissions Results High Channel - 2 Mbps



## 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
Atten 10dB 2.9mm-M/F, DC-26.5GHz, 2W	Aeroflex Inmet	26AH-10	DEMC3046	N/A	12	25-Jun-2025
Signal & Spectrum Analyzer	Rohde & Schwarz	FSW43	DEMC3085	2.90 SP1	12	03-Jun-2025
DC Power Supply	Xantrex	HPD-60-5	TAME01064	N/A	N/A	NCR / O/P MON

TU - Traceability Unscheduled

O/P MON – Output Monitored with Calibrated Equipment

N/A - Not Applicable

NCR – No Calibration Required



## **2.7 Radiated Spurious Emissions into Restricted Frequency Bands**

### **2.7.1 Specification Reference**

FCC Sections: 15.205, 15.209;  
ISED Canada: RSS-GEN 8.9, 8.10

### **2.7.2 Equipment Under Test and Modification State**

S/N: 20007607

### **2.7.3 Date of Test**

7/26/2024 to 10/7/2024

### **2.7.4 Test Method**

Radiated emissions tests were made over the frequency range of 9 kHz to 26 GHz, 10 times the highest fundamental frequency. Each emission found to be in a restricted band as defined by section 15.205, including any emission at the operational band-edge, was compared to the radiated emission limits as defined in Section 15.209.

For measurements below 30 MHz, the receive antenna height was set to 1 m and the EUT was rotated through 360 degrees. The resolution bandwidth was set to 200 Hz below 150 kHz and to 9 kHz above 150 kHz.

The EUT was rotated through 360° and the receive antenna height was varied from 1m to 4m so that the maximum radiated emissions level would be detected. For frequencies below 1000 MHz, quasi-peak measurements were made using a resolution bandwidth RBW of 120 kHz and a video bandwidth VBW of 300 kHz. For frequencies above 1000 MHz, peak measurements are made with RBW of 1 MHz and VBW of 3 MHz. Average measurements are performed in the linear scale using VBW of 3 kHz ( $VBW > 1/T$ , where T is the width of the transmitted burst).

### **2.7.5 Duty Cycle Correction**

The EUT was configured to transmit at the maximum duty cycle allowed by the configuration tool during the evaluation. No Duty Cycle Correction was applied to the average measurements for the corrected average results.

### **2.7.6 Environmental Conditions**

Ambient Temperature	23.2 °C
Relative Humidity	47.7 %
Atmospheric Pressure	1015.9 mbar



## 2.7.7 Test Results

DC Powered, Operating

Limit Clause FCC Sections 15.205, 15.209, ISED Canada: RSS-GEN 8.9, 8.10

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009-0.490	2400/F(kHz)	300
0.4090-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

**Table 2.7.7-1 – Transmitter Radiated Spurious Emissions 30 MHz - 1 GHz**

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Limit (dBμV/m)	Margin (dB)
<b>36.15</b>	31.27	123	V	250	22.5	40	8.73
<b>40.68</b>	37.63	100	V	153	19.8	40	2.37
<b>45.18</b>	25.64	110	V	84	17.2	40	14.36
<b>45.21</b>	26.26	105	V	170	17.1	40	13.74
<b>67.8</b>	26.1	167	V	-5	13.1	40	13.9
<b>76.26</b>	26.96	300	V	214	13.4	40	13.04
<b>122.04</b>	28.66	205	H	236	19.2	43.5	14.84
<b>203.4</b>	32.45	113	H	222	16.6	43.5	11.05
<b>230.52</b>	35.6	130	H	90	17.6	46	10.4
<b>257.64</b>	39.98	116	H	212	20.7	46	6.02
<b>284.76</b>	38.43	100	H	222	20.3	46	7.57
<b>311.88</b>	35.75	100	H	212	20.9	46	10.25
<b>339</b>	34.09	100	H	212	21.4	46	11.91
<b>406.8</b>	31	100	H	215	23.6	46	15
<b>433.92</b>	33.19	107	H	219	24.2	46	12.81

Note: The emissions below 30 MHz were > 20 dB below the limits.



Table 2.7.7-2: Radiated Emissions Test Results - 1 Mbps

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel										
2379.93	56.91	43.88	H	-5.60	51.31	38.28	74.0	54.0	22.7	15.7
2387.752	57.37	44.10	V	-5.59	51.78	38.51	74.0	54.0	22.2	15.5
2390	55.51	44.58	H	-5.58	49.93	39.00	74.0	54.0	24.1	15.0
2390	54.97	44.13	V	-5.58	49.39	38.55	74.0	54.0	24.6	15.5
4804	42.10	31.58	H	-0.37	41.73	31.21	74.0	54.0	32.3	22.8
4804	43.67	33.65	V	-0.37	43.30	33.28	74.0	54.0	30.7	20.7
Middle Channel										
4880	43.30	32.09	H	-0.19	43.11	31.90	74.0	54.0	30.9	22.1
4880	43.77	34.23	V	-0.19	43.58	34.04	74.0	54.0	30.4	20.0
7320	50.16	43.60	H	4.10	54.26	47.70	74.0	54.0	19.7	6.3
7320	54.16	48.25	V	4.10	58.26	52.35	74.0	54.0	15.7	1.6
High Channel										
2483.5	56.55	44.18	H	-5.43	51.12	38.75	74.0	54.0	22.9	15.3
2483.5	56.50	43.49	V	-5.43	51.07	38.06	74.0	54.0	22.9	15.9
2487.006	57.37	43.31	H	-5.42	51.95	37.89	74.0	54.0	22.1	16.1
2486.987	58.10	44.20	V	-5.42	52.68	38.78	74.0	54.0	21.3	15.2
4960	42.27	32.17	H	-0.01	42.26	32.16	74.0	54.0	31.7	21.8
4960	42.97	33.39	V	-0.01	42.96	33.38	74.0	54.0	31.0	20.6
7440	47.25	39.92	H	4.21	51.46	44.13	74.0	54.0	22.5	9.9
7440	52.07	46.06	V	4.21	56.28	50.27	74.0	54.0	17.7	3.7

All the emissions above 7.44 GHz were attenuated below the limits and the noise floor of the measurement equipment.





Table 2.7.7-3: Radiated Emissions Test Results - 2 Mbps

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel										
2378.91	56.53	44.00	H	-5.60	50.93	38.40	74.0	54.0	23.1	15.6
2380.26	58.48	44.12	V	-5.60	52.88	38.52	74.0	54.0	21.1	15.5
2390	57.20	44.48	H	-5.58	51.62	38.90	74.0	54.0	22.4	15.1
2390	56.28	43.96	V	-5.58	50.70	38.38	74.0	54.0	23.3	15.6
4804	41.97	31.49	H	-0.37	41.60	31.12	74.0	54.0	32.4	22.9
4804	42.89	32.54	V	-0.37	42.52	32.17	74.0	54.0	31.5	21.8
Middle Channel										
4880	43.77	32.89	H	-0.19	43.58	32.70	74.0	54.0	30.4	21.3
4880	43.15	30.54	V	-0.19	42.96	30.35	74.0	54.0	31.0	23.7
7320	48.51	40.21	H	4.10	52.61	44.31	74.0	54.0	21.4	9.7
7320	52.16	45.06	V	4.10	56.26	49.16	74.0	54.0	17.7	4.8
High Channel										
2483.5	57.63	43.73	H	-5.43	52.20	38.30	74.0	54.0	21.8	15.7
2483.5	55.98	43.80	V	-5.43	50.55	38.37	74.0	54.0	23.5	15.6
2485.84	58.00	44.29	H	-5.43	52.57	38.86	74.0	54.0	21.4	15.1
2486.3	57.10	44.38	V	-5.43	51.67	38.95	74.0	54.0	22.3	15.1
4960	43.04	32.52	H	-0.01	43.03	32.51	74.0	54.0	31.0	21.5
4960	43.17	32.55	V	-0.01	43.16	32.54	74.0	54.0	30.8	21.5
7440	47.50	39.51	H	4.21	51.71	43.72	74.0	54.0	22.3	10.3
7440	50.95	43.19	V	4.21	55.16	47.40	74.0	54.0	18.8	6.6

All the emissions above 7.44 GHz were attenuated below the limits and the noise floor of the measurement equipment.

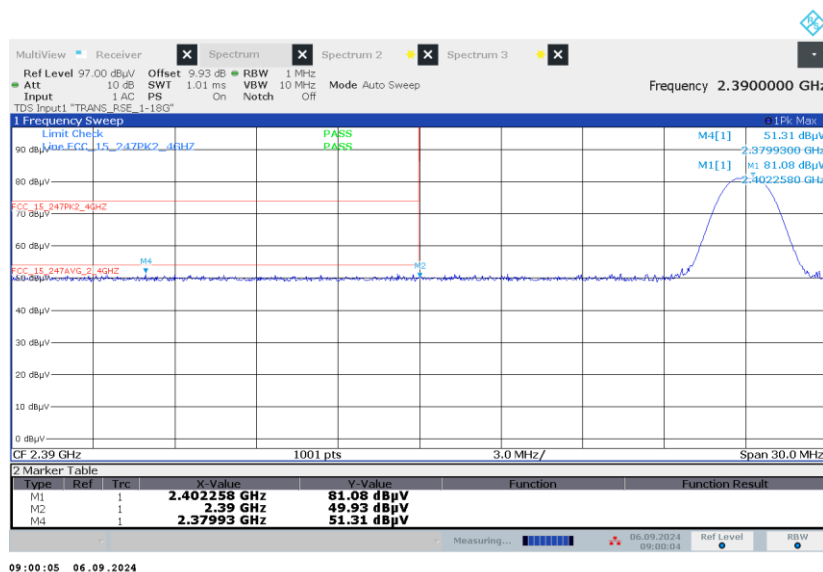


Figure 2.7.7-1: Radiated Band-Edge Emissions - 1 MBPS – Peak – 2402 MHz – Horizontal Polarization



Figure 2.7.7-2: Radiated Band-Edge Emissions - 1 MBPS – Average – 2402 MHz – Horizontal Polarization

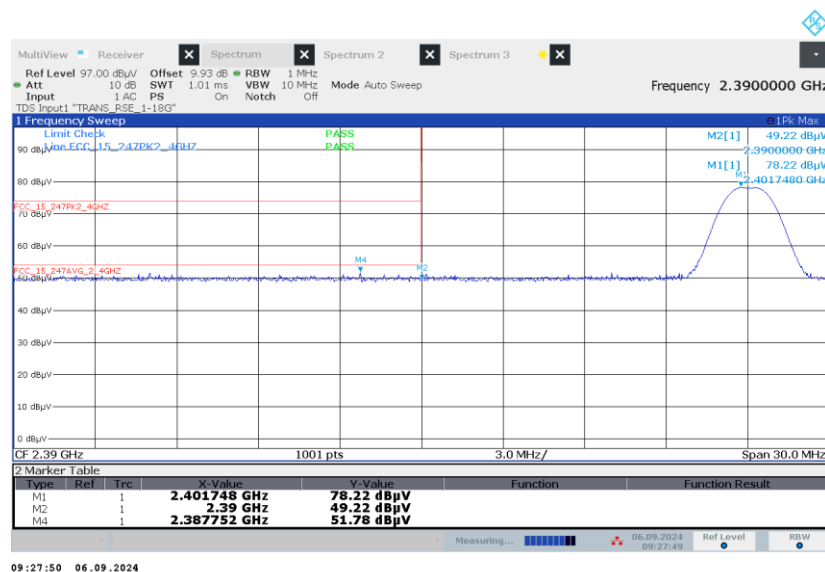


Figure 2.7.7-3: Radiated Band-Edge Emissions - 1 MBPS – Peak – 2402 MHz – Vertical Polarization



Figure 2.7.7-4: Radiated Band-Edge Emissions - 1 MBPS – Average – 2402 MHz – Vertical Polarization

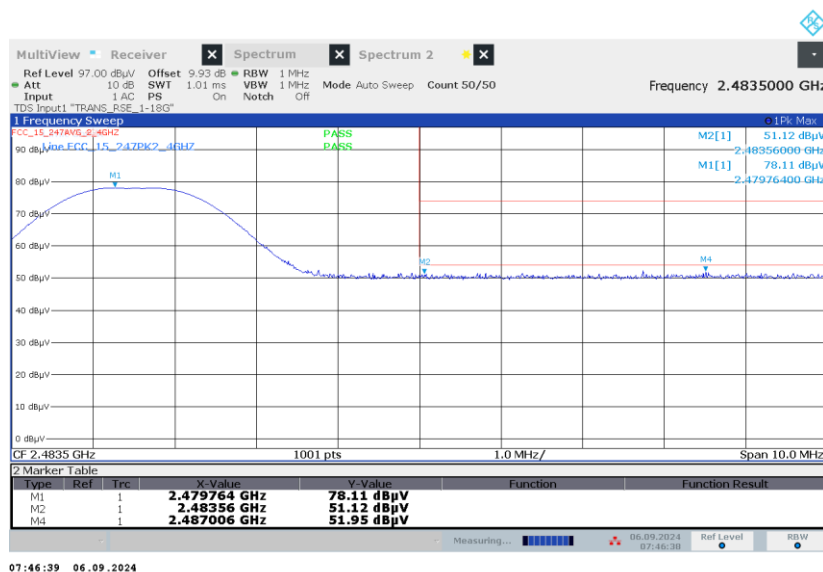


Figure 2.7.7-5: Radiated Band-Edge Emissions - 1 MBPS – Peak – 2480 MHz – Horizontal Polarization

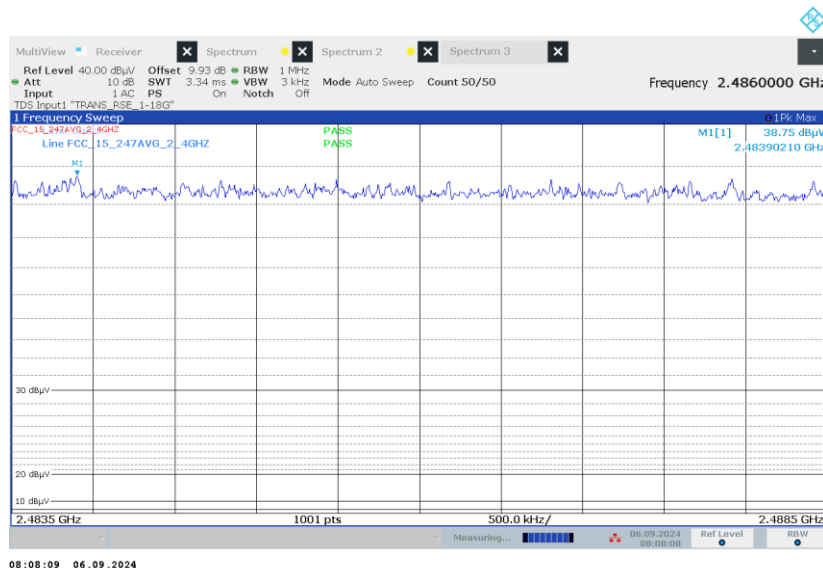


Figure 2.7.7-6: Radiated Band-Edge Emissions - 1 MBPS – Average – 2480 MHz – Horizontal Polarization

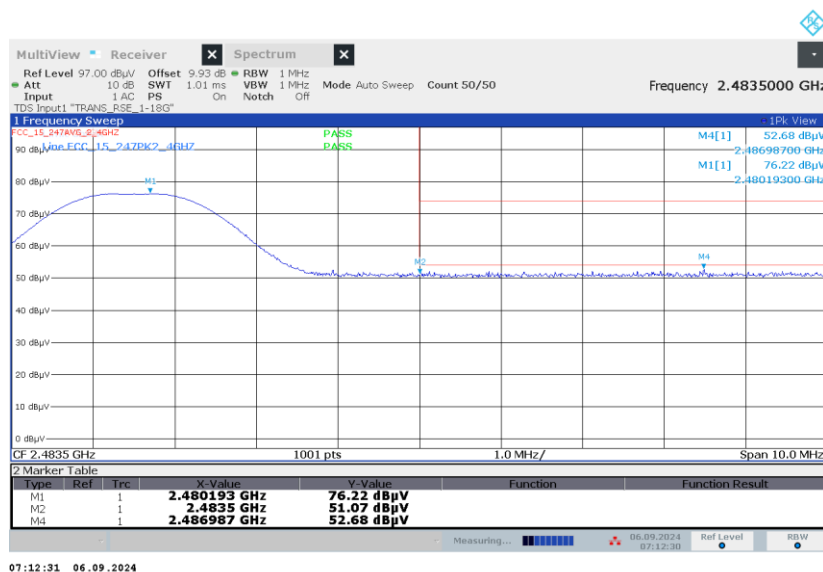


Figure 2.7.7-7: Radiated Band-Edge Emissions - 1 MBPS – Peak – 2480 MHz – Vertical Polarization

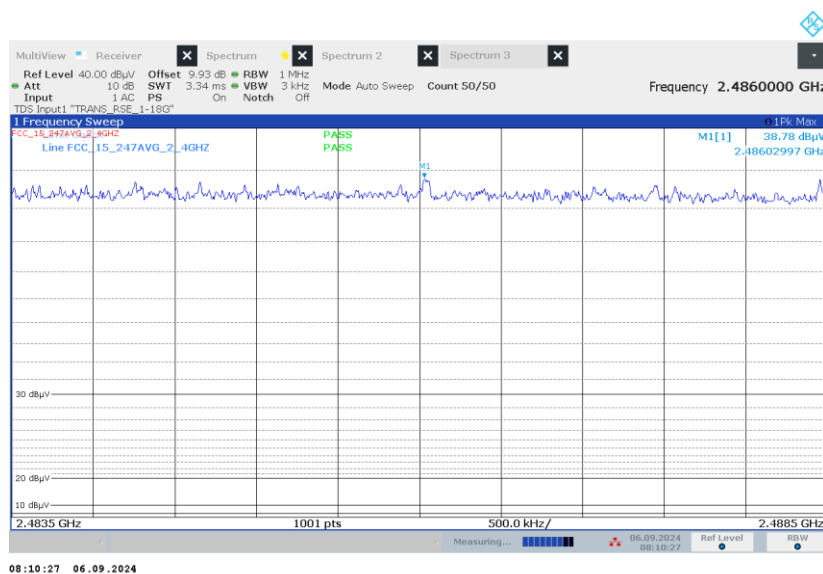
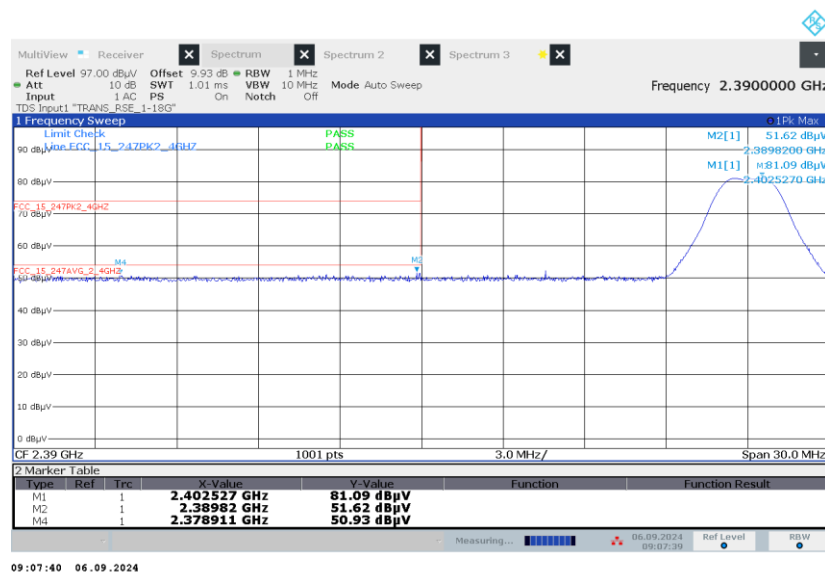
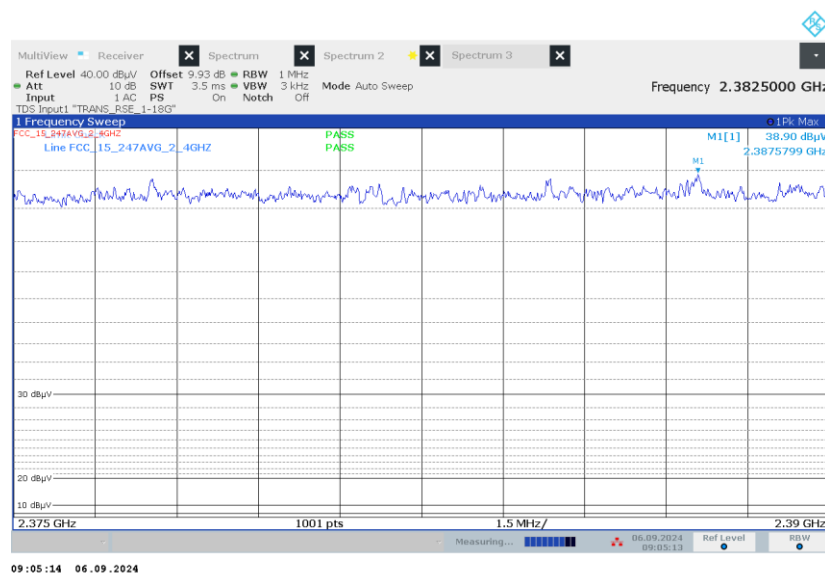


Figure 2.7.7-8: Radiated Band-Edge Emissions - 1 MBPS – Average – 2480 MHz – Vertical Polarization



**Figure 2.7.7-9: Radiated Band-Edge Emissions - 2 MBPS – Peak – 2402 MHz – Horizontal Polarization**



**Figure 2.7.7-10: Radiated Band-Edge Emissions - 2 MBPS – Average – 2402 MHz – Horizontal Polarization**

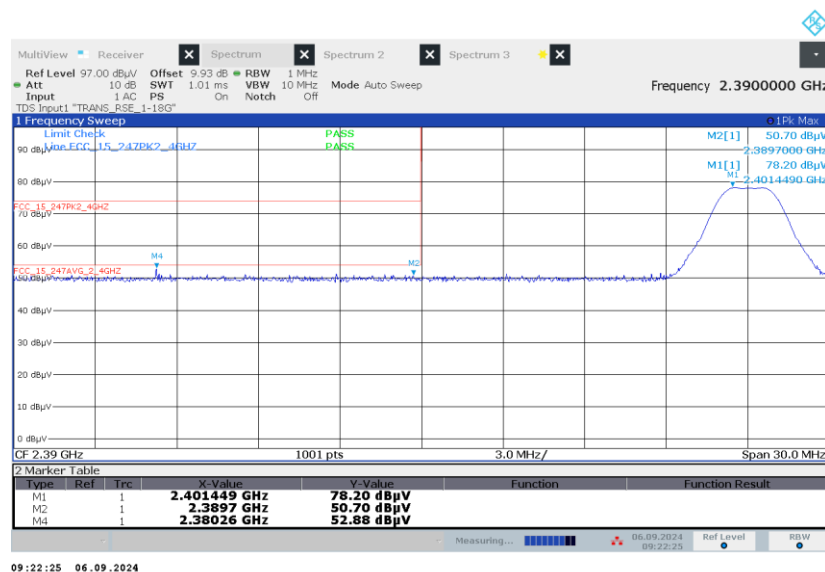


Figure 2.7.7-11: Radiated Band-Edge Emissions - 2 MBPS – Peak – 2402 MHz – Vertical Polarization

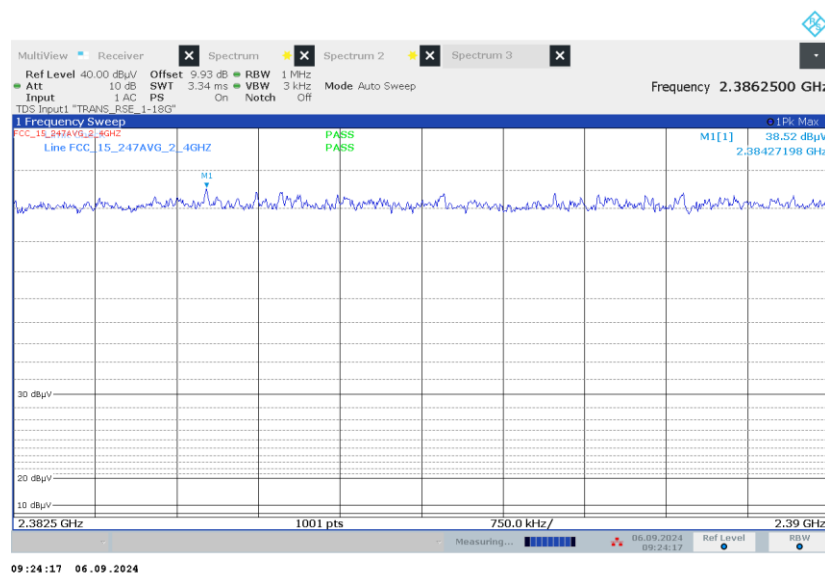


Figure 2.7.7-12: Radiated Band-Edge Emissions - 2 MBPS – Average – 2402 MHz – Vertical Polarization



**Figure 2.7.7-13: Radiated Band-Edge Emissions - 2 MBPS – Peak – 2480 MHz – Horizontal Polarization**



**Figure 2.7.7-14: Radiated Band-Edge Emissions - 2 MBPS – Average – 2480 MHz – Horizontal Polarization**





Figure 2.7.7-15: Radiated Band-Edge Emissions - 2 MBPS – Peak – 2480 MHz – Vertical Polarization

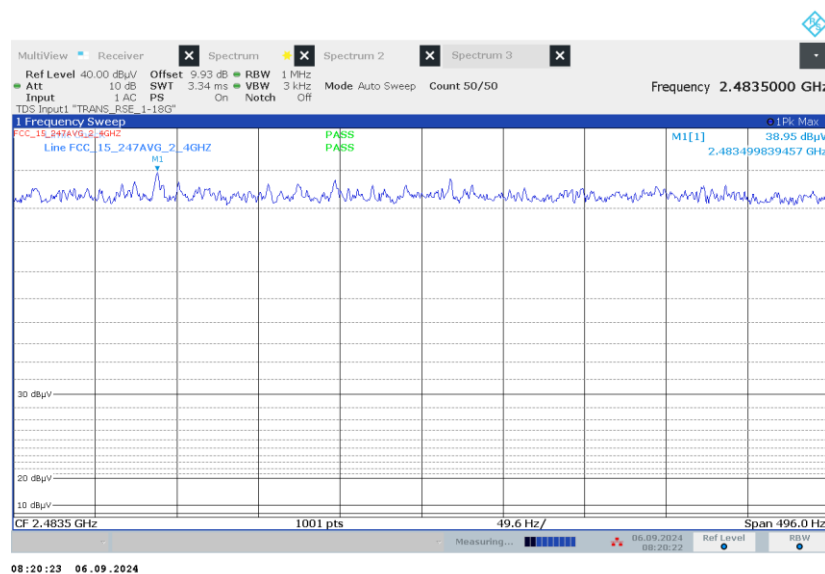


Figure 2.7.7-16: Radiated Band-Edge Emissions - 2 MBPS – Average – 2480 MHz – Vertical Polarization

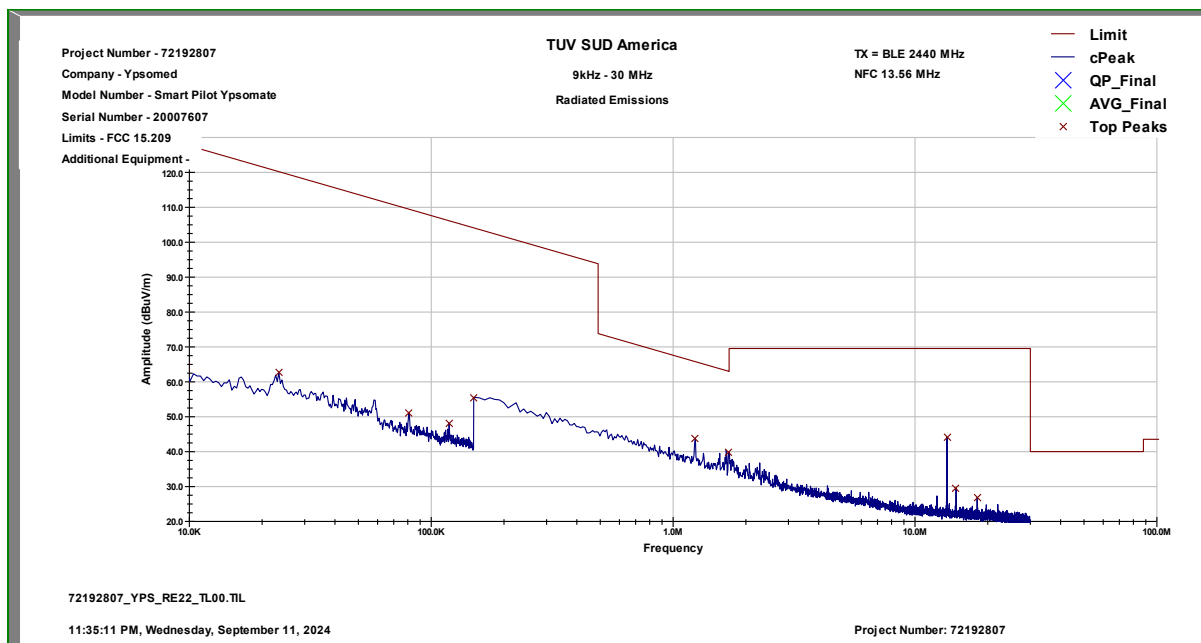


Figure 2.7.7-17: Radiated Emissions Representative Scan below 30 MHz - Vertical Polarization

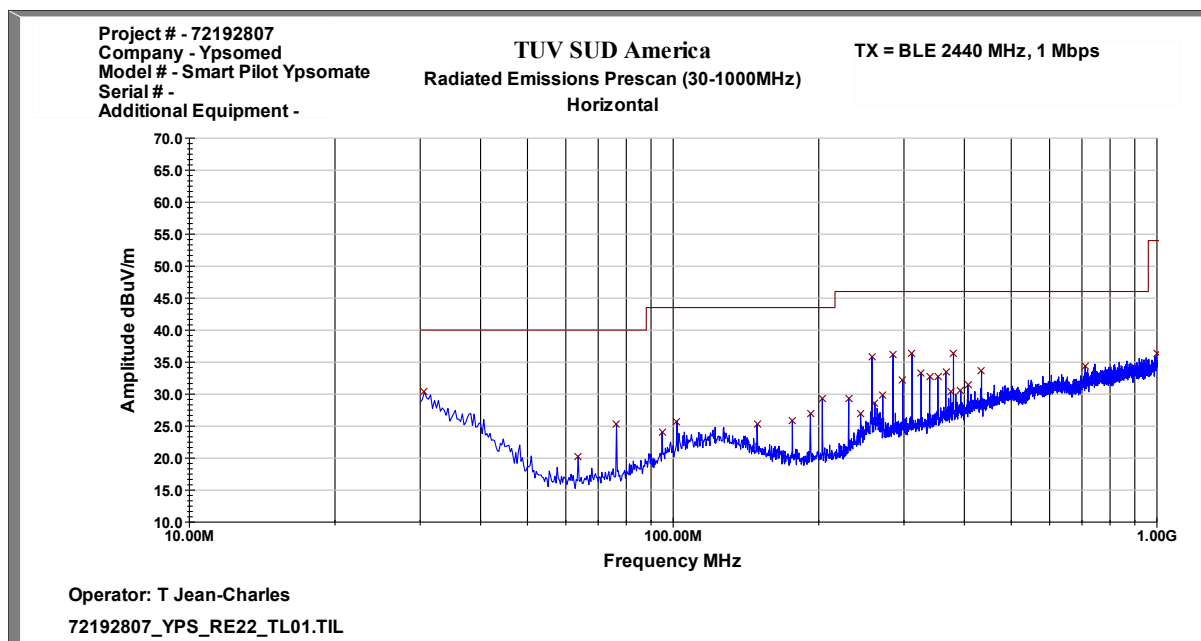


Figure 2.7.7-18: Radiated Emissions Representative Scan 30 MHz - 1 GHz - Horizontal Polarization

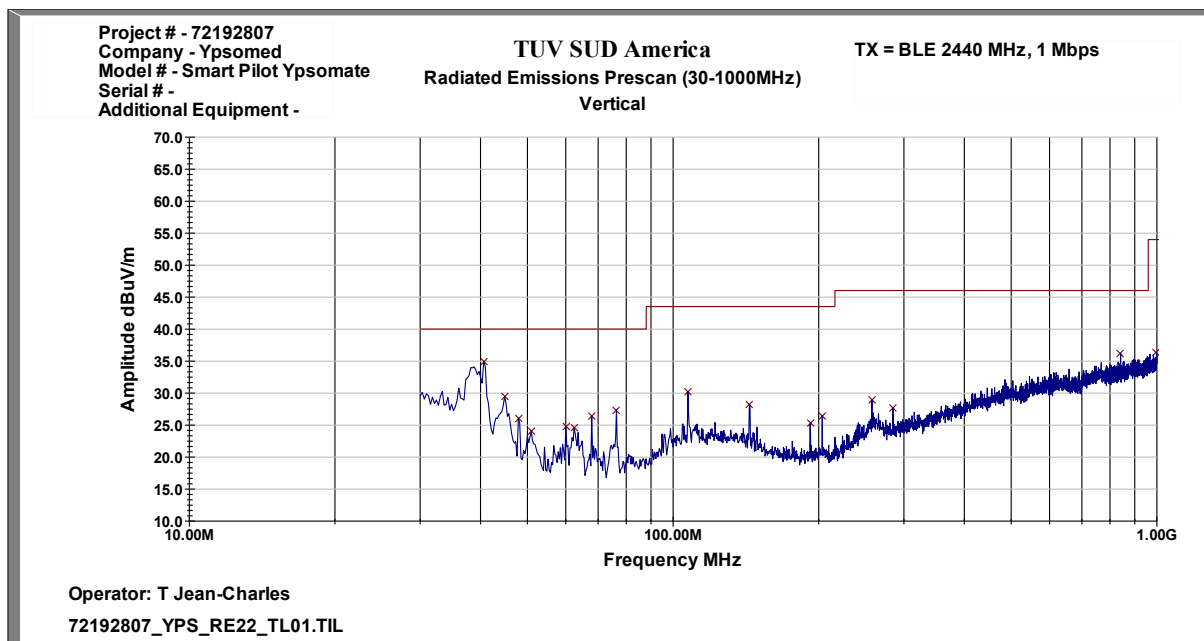


Figure 2.7.7-19: Radiated Emissions Representative Scan 30 MHz - 1 GHz - Vertical Polarization

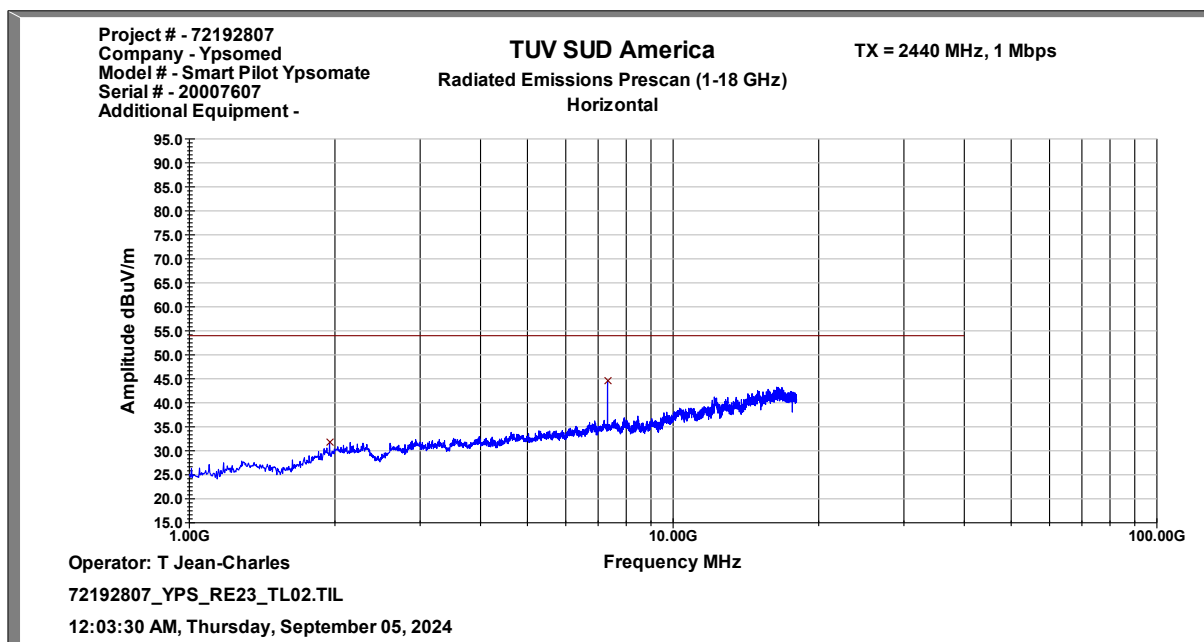


Figure 2.7.7-20: Radiated Emissions Representative Scan 1 GHz - 18 GHz - Horizontal Polarization

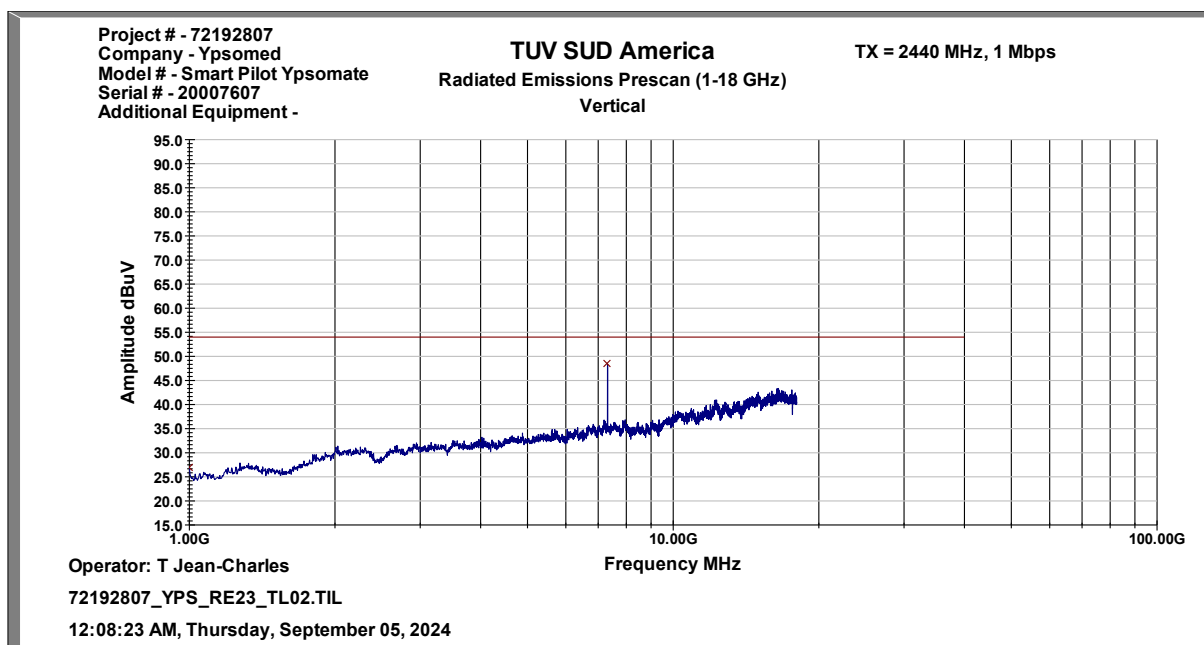


Figure 2.7.7-21: Radiated Emissions Representative Scan 1 GHz - 18 GHz - Vertical Polarization

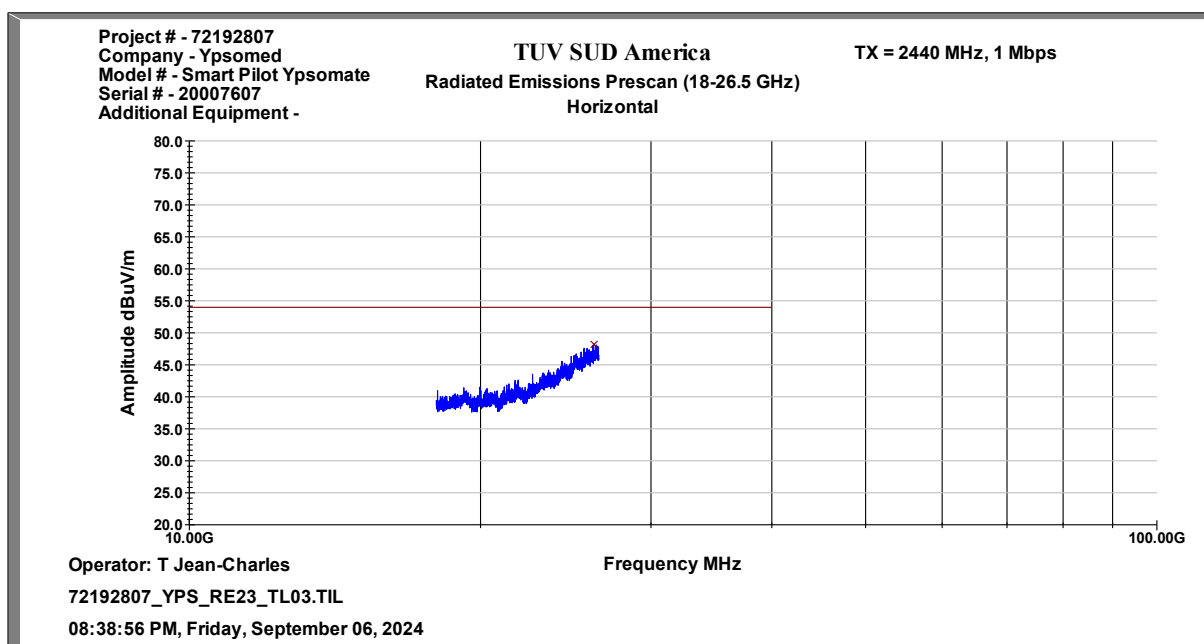
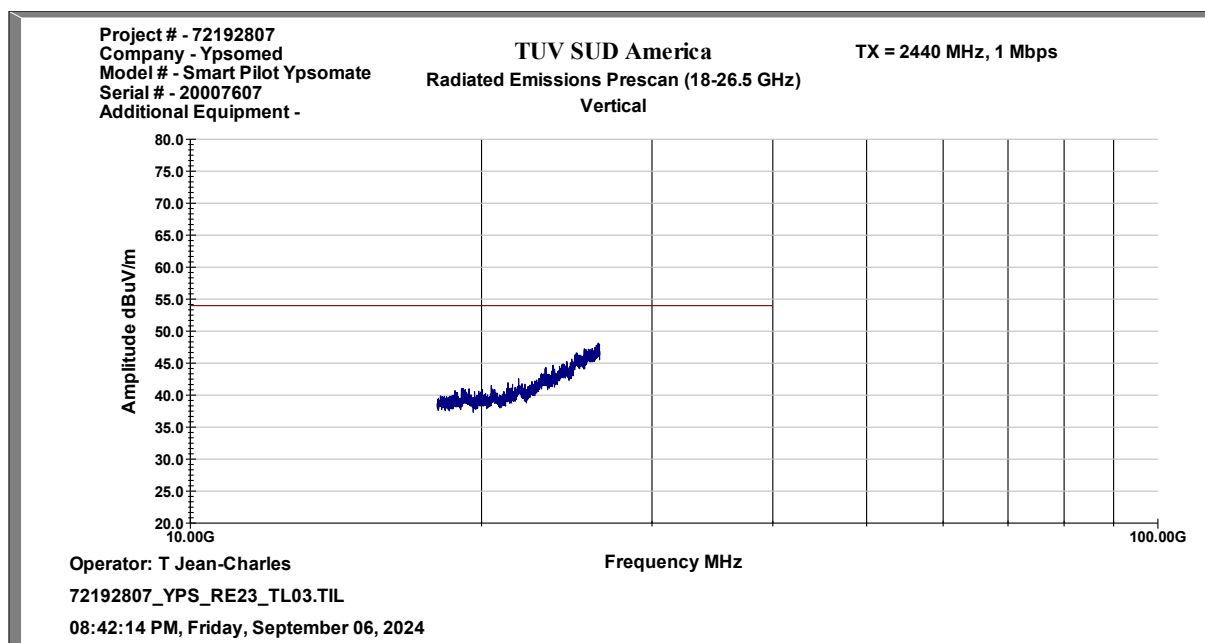


Figure 2.7.7-22: Radiated Emissions Representative Scan 18 GHz -26 GHz - Horizontal Polarization



**Figure 2.7.7-23: Radiated Emissions Representative Scan 18 GHz -26 GHz - Vertical Polarization**

## 2.7.8 Sample Calculations

$$R_C = R_U + CF_T$$

Where:

$CF_T$	=	Total Correction Factor (AF+CA+AG)-DC (Average Measurements Only)
$R_U$	=	Uncorrected Reading
$R_C$	=	Corrected Level
AF	=	Antenna Factor
CA	=	Cable Attenuation
AG	=	Amplifier Gain
DC	=	Duty Cycle Correction Factor

### Example Calculation: Peak

Corrected Level:  $55.44 + (-5.58) = 49.86 \text{ dB}\mu\text{V/m}$

Margin:  $74 \text{ dB}\mu\text{V/m} - 49.86 \text{ dB}\mu\text{V/m} = 24.14 \text{ dB}$

### Example Calculation: Average

Corrected Level:  $43.88 + (-5.58) - 0 = 38.30 \text{ dB}\mu\text{V/m}$

Margin:  $54 \text{ dB}\mu\text{V/m} - 38.30 \text{ dB}\mu\text{V/m} = 15.70 \text{ dB}$



## 2.7.9 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
Active Loop Antenna	EMCO	6502	BEMC00078	N/A	24	06-Sep-2025
100Hz-26.5GHz EMC analyzer/HYZ	Hewlett Packard	E7405A	BEMC00523	A.14.06	12	25-Jun-2025
10dB Attenuator	Merrimac	FAN-6-10K	BEMC02086	N/A	12	30-Oct-2024
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	07-Nov-2025
Horn Antenna	Schwarzbeck	BBHA-9170	TEMC00029	N/A	120	23-Aug-2026
EMC Chamber	Panashield	N/A	TEMC00031	N/A	24	19-Oct-2025
Double Ridge Guide Horn	ETS Lindgren	3117	TEMC00061	N/A	24	15-Feb-2026
18 GHz-40 GHz Microwave Preamplifier	COM-power	PAM-840A	TEMC00147	N/A	12	13-Jun-2025
Microwave Preamplifier	Com-Power Corporation	PAM-118A	TEMC00160	N/A	12	28-Nov-2024
2.4 GHz Notch Filter	Micro-Tronics	BRM50702-01	TEMC00176	N/A	12	19-Apr-2025
Test Software	Rohde & Schwarz	EMC32	TEMC00184	10.60.00	N/A	NCR
1571AN 40 GHz Cable	IW Microwave	KPS-1571AN	TEMC00218	N/A	12	13-Jun-2025
R & S ESW EMI Test Receiver	Rohde & Schwarz	ESW	TEMC00232	2.00 SP1	12	04-Jun-2025
DC to 18 GHz Cable	SSI Technologies	2801-03-03-360/WN	TEMC00293	N/A	12	05-Apr-2025

TU - Traceability Unscheduled

O/P MON – Output Monitored with Calibrated Equipment

N/A - Not Applicable

NCR – No Calibration Required



## 2.8 Power Spectral Density

### 2.8.1 Specification Reference

FCC: Section 15.247(e)  
ISED Canada: RSS-247 5.2(b)

### 2.8.2 Equipment Under Test and Modification State

S/N: SMY mod 24

### 2.8.3 Date of Test

9/18/2024

### 2.8.4 Test Method

The power spectral density was measured in accordance with ANSI C63.10 Subclause 11.10.2 Method PKPSD (peak PSD). The RF output port of the EUT was directly connected to the input of the spectrum analyzer. Offset values were input for cable and external attenuation. The spectrum analyzer's RBW was set to 3 kHz and VBW to 10 kHz. The Span was adjusted to 1.5 times the DTS bandwidth and the sweep time was set to auto. The measurements were performed using a Peak detector.

### 2.8.5 Environmental Conditions

Ambient Temperature	22.9 °C
Relative Humidity	45.6 %
Atmospheric Pressure	1011.6 mbar

### 2.8.6 Test Results

DC Powered, Operating

Limit FCC: Section 15.247(e), ISED Canada: RSS-247 5.2(b)

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time of continuous transmission.

**Table 2.8.6-1: Power Spectral Density Results - 1 Mbps**

Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
2402	-22.43	8	30.43
2440	-22.37	8	30.37
2480	-22.31	8	30.31

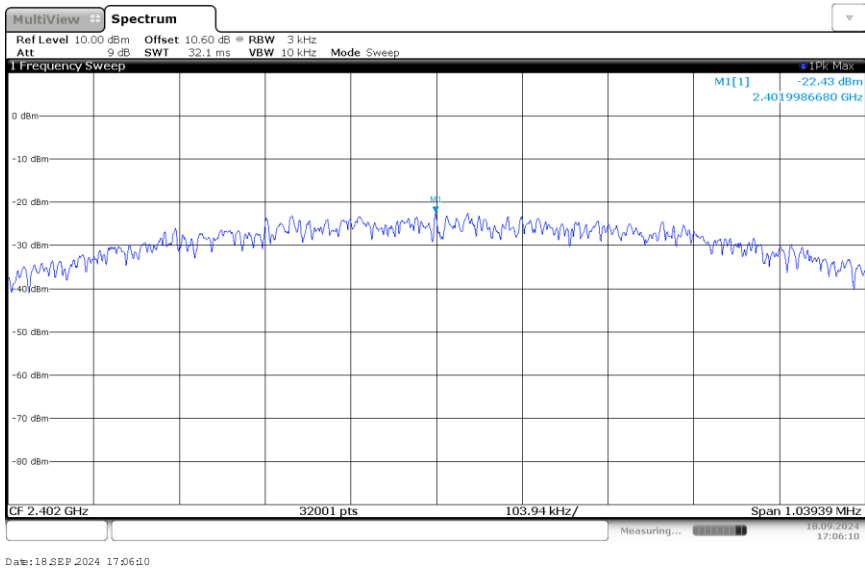


Figure 2.8.6-1: Power Spectral Density Results – Low Channel - 1 Mbps

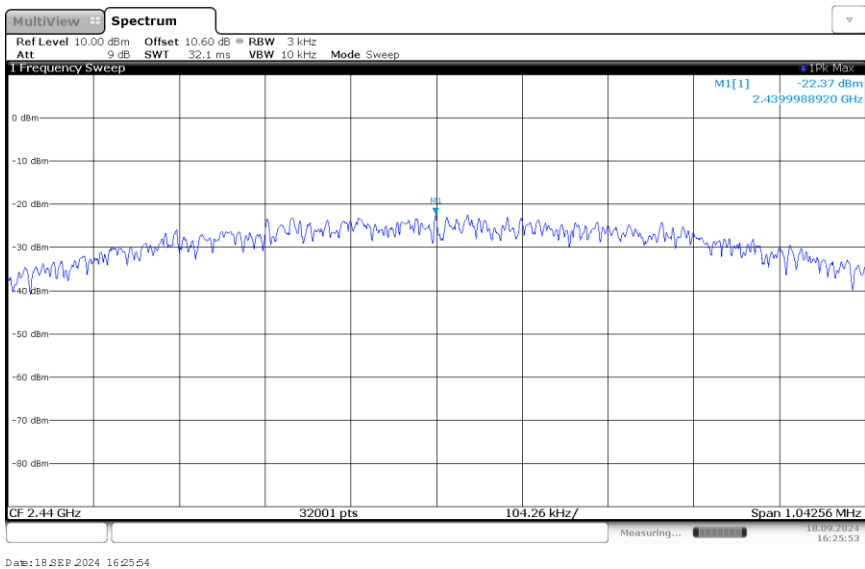
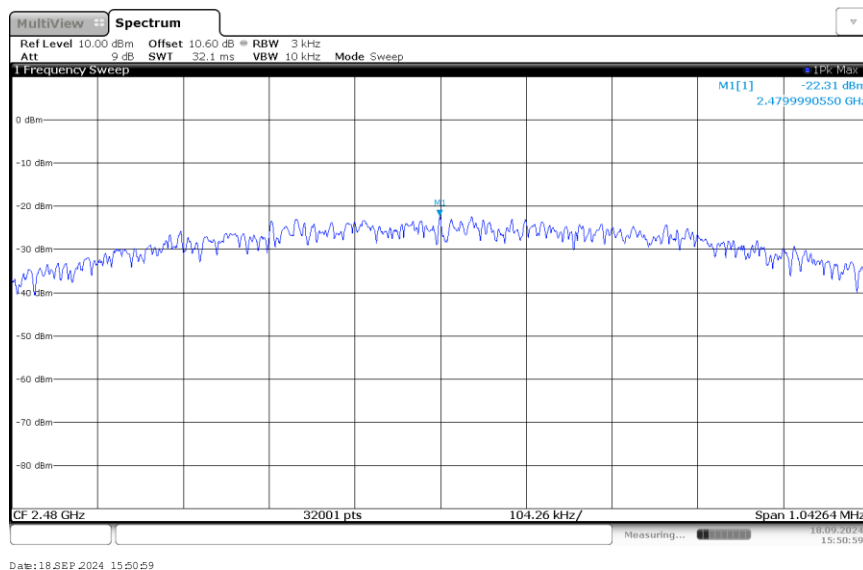


Figure 2.8.6-2: Power Spectral Density Results – Middle Channel - 1 Mbps





**Figure 2.8.6-3: Power Spectral Density Results – High Channel - 1 Mbps**

**Table 2.8.6-2: Power Spectral Density Results - 2 Mbps**

Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
2402	-24.44	8	32.44
2440	-24.27	8	32.27
2480	-24.26	8	32.26

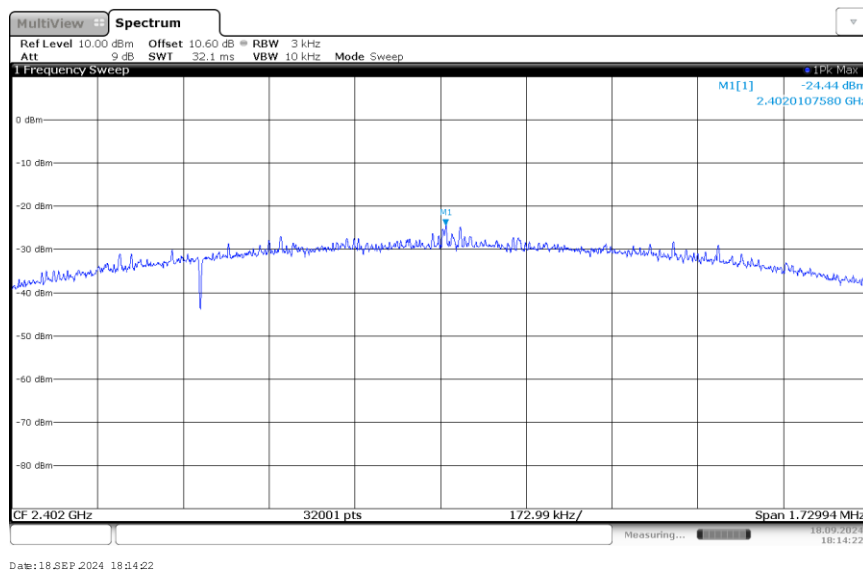


Figure 2.8.6-4: Power Spectral Density Results – Low Channel - 2 Mbps

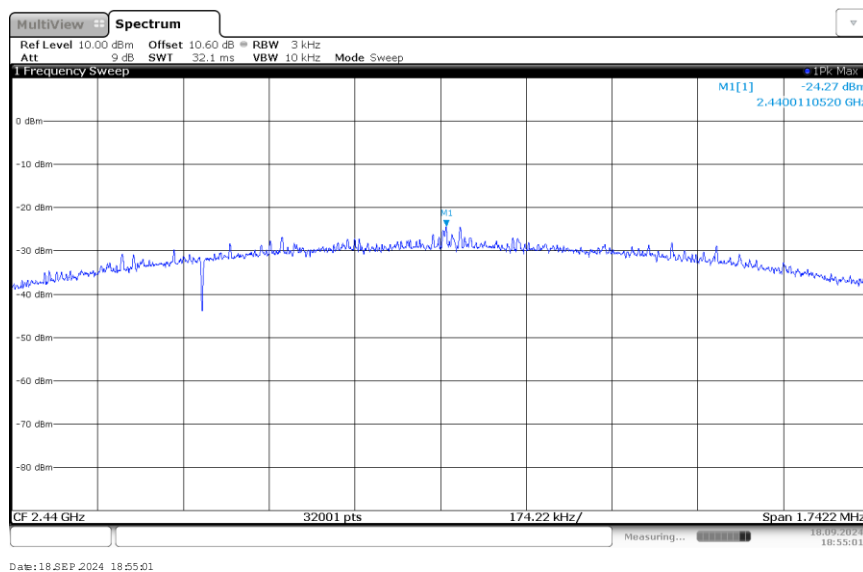
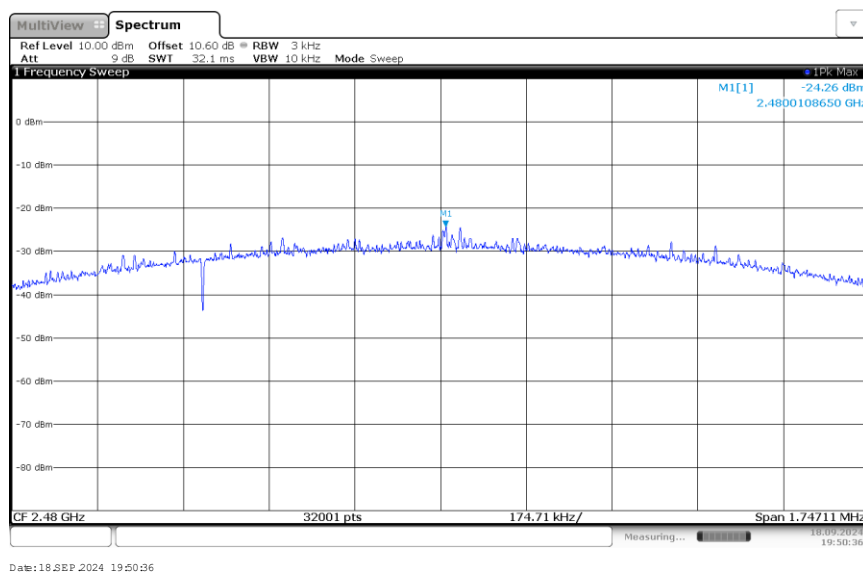


Figure 2.8.6-5: Power Spectral Density Results – Middle Channel - 2 Mbps



**Figure 2.8.6-6: Power Spectral Density Results – High Channel - 2 Mbps**

## 2.8.7 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
Atten 10dB 2.9mm-M/F, DC-26.5GHz, 2W	Aeroflex Inmet	26AH-10	DEMC3046	N/A	12	25-Jun-2025
Signal & Spectrum Analyzer	Rohde & Schwarz	FSW43	DEMC3085	2.90 SP1	12	03-Jun-2025
DC Power Supply	Xantrex	HPD-60-5	TAME01064	N/A	N/A	NCR

TU - Traceability Unscheduled

O/P MON – Output Monitored with Calibrated Equipment

N/A - Not Applicable

NCR – No Calibration Required



## 2.9 Duty Cycle of the Test Mode of Operation

### 2.9.1 Specification Reference

FCC: Section: N/A  
ISED Canada: N/A

### 2.9.2 Equipment Under Test and Modification State

S/N: SMY mod 24

### 2.9.3 Date of Test

9/18/2024

### 2.9.4 Test Method

The transmitter duty cycle was measured in accordance with FCC KDB 558074 D01 15.247 Meas Guidance v05r02. The RF output port of the EUT was directly connected to the input of the spectrum analyzer. The reference level of the measuring equipment was offset to account for the insertion loss of the measurement cable and external attenuation. The spectrum analyzer RBW was set to  $\geq$  OBW or the largest value. The measurements were performed using a Peak detector.

### 2.9.5 Environmental Conditions

Ambient Temperature 22.9 °C  
Relative Humidity 45.6 %  
Atmospheric Pressure 1011.6 mbar

### 2.9.6 Test Results

DC Powered, Operating

**Table 2.9.6-1: Duty Cycle Results - 1 Mbps**

Frequency (MHz)	Tx On (ms)	Period (ms)	Duty Cycle (%)
2402	2.12	2.48	85.48
2440	2.12	2.48	85.48
2480	2.12	2.48	85.48

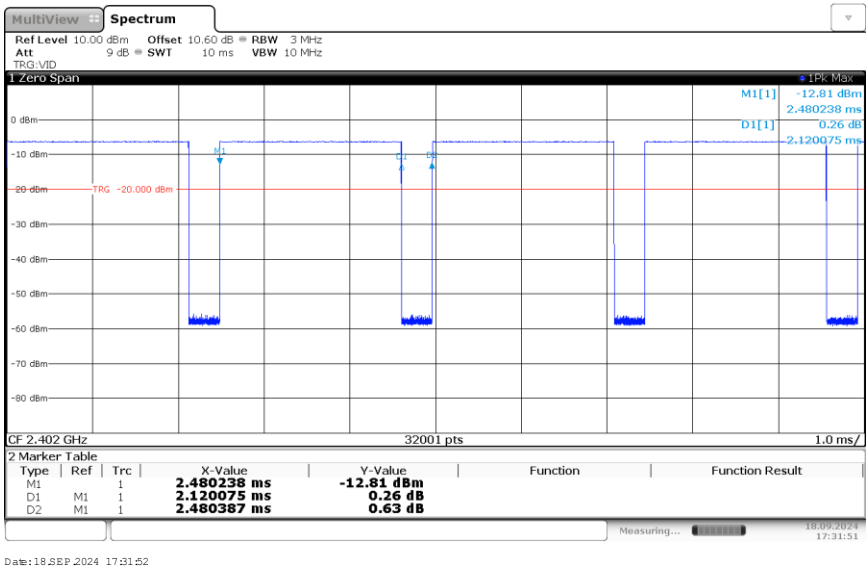


Figure 2.9.6-1: Duty Cycle Results – Low Channel - 1 Mbps

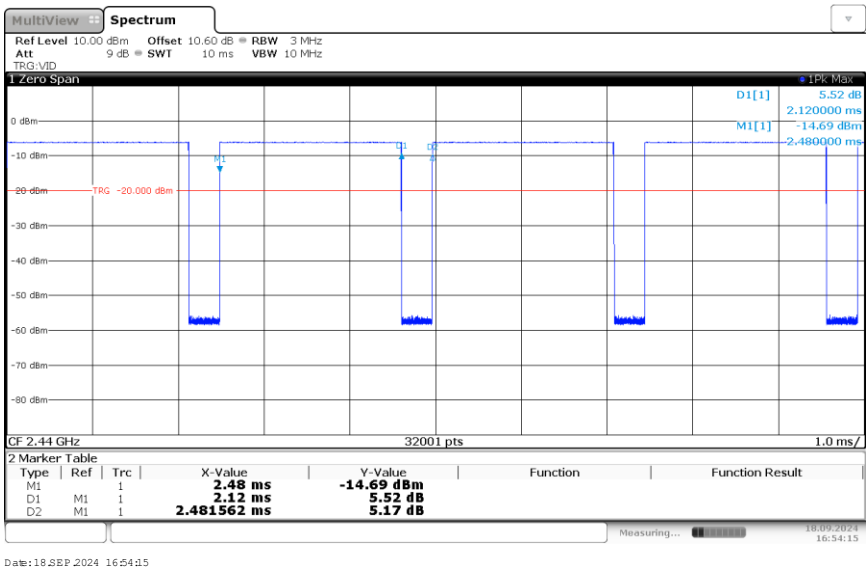


Figure 2.9.6-2: Duty Cycle Results – Middle Channel - 1 Mbps

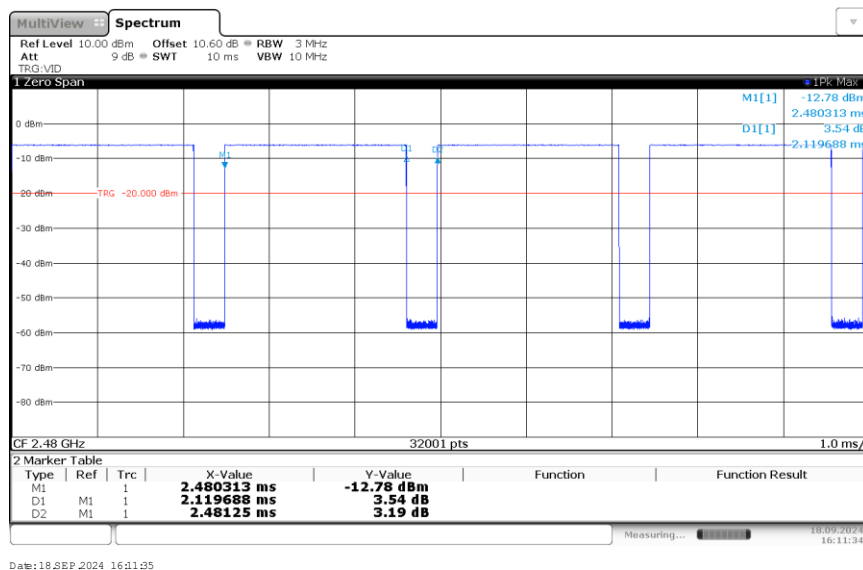


Figure 2.9.6-3: Duty Cycle Results – High Channel - 1 Mbps

Table 2.9.6-2: Duty Cycle Results - 2 Mbps

Frequency (MHz)	Tx On (ms)	Period (ms)	Duty Cycle (%)
2402	1.053	1.832	57.48
2440	1.054	1.831	57.56
2480	1.054	1.831	57.56

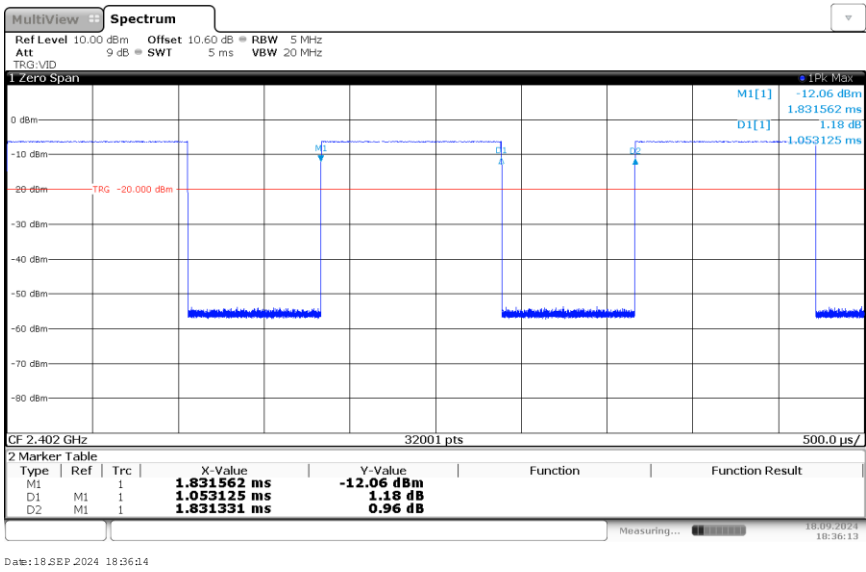


Figure 2.9.6-4: Duty Cycle Results – Low Channel - 2 Mbps

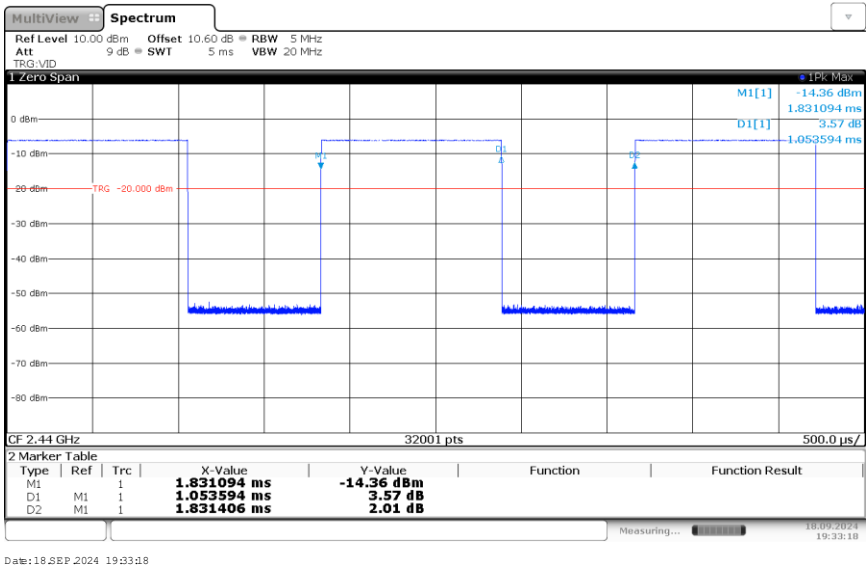


Figure 2.9.6-5: Duty Cycle Results – Middle Channel - 2 Mbps

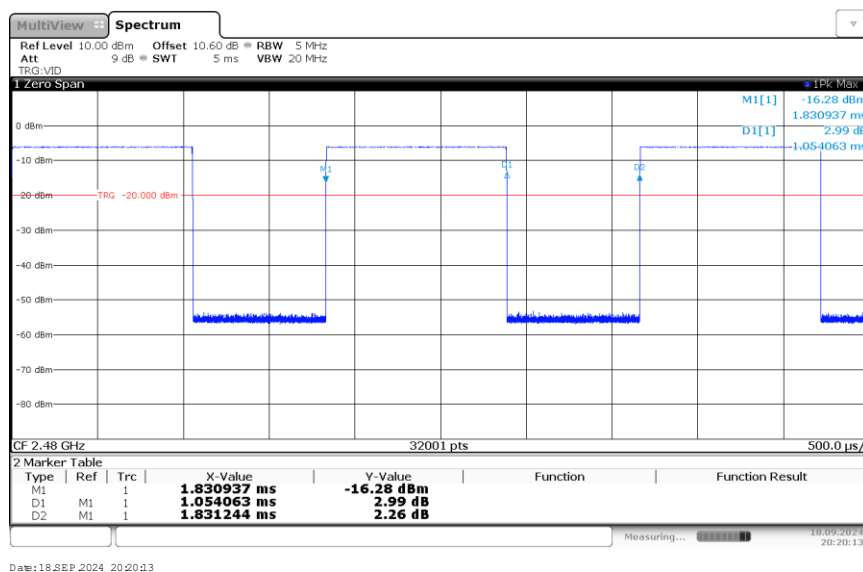


Figure 2.9.6-6: Duty Cycle Results – High Channel - 2 Mbps

## 2.9.7 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
Atten 10dB 2.9mm-M/F, DC-26.5GHz, 2W	Aeroflex Inmet	26AH-10	DEMC3046	N/A	12	25-Jun-2025
Signal & Spectrum Analyzer	Rohde & Schwarz	FSW43	DEMC3085	2.90 SP1	12	03-Jun-2025
DC Power Supply	Xantrex	HPD-60-5	TAME01064	N/A	N/A	NCR

TU - Traceability Unscheduled

O/P MON – Output Monitored with Calibrated Equipment

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
Active Loop Antenna	EMCO	6502	BEMC00078	N/A	24	6-Sep-2025
100Hz-26.5GHz EMC analyzer/HYZ	Hewlett Packard	E7405A	BEMC00523	A.14.06	12	25-Jun-2025
10dB Attenuator	Merrimac	FAN-6-10K	BEMC02086	N/A	12	30-Oct-2024
Tile Automation Software	ETS Lindgren	TILE4! - Version 4.2.A	BEMC02095	4.2A	N/A	NCR
Atten 10dB 2.9mm-M/F, DC-26.5GHz, 2W	Aeroflex Inmet	26AH-10	DEMC3046	N/A	12	25-Jun-2025
Signal & Spectrum Analyzer	Rohde & Schwarz	FSW43	DEMC3085	2.90 SP1	12	3-Jun-2025
DC Power Supply	Xantrex	HPD-60-5	TAME01064	N/A	N/A	NCR
BI LOG PERIODIC, ANTENNA	Schaffner	CBL6112B	TEMC00005	N/A	24	7-Nov-2025
Horn Antenna	Schwarzbeck	BBHA-9170	TEMC00029	N/A	120	23-Aug-2026
EMC Chamber	Panashield	N/A	TEMC00031	N/A	24	19-Oct-2025
Double Ridge Guide Horn	ETS Lindgren	3117	TEMC00061	N/A	24	15-Feb-2026
18 GHz-40 GHz Microwave Preamplifier	COM-power	PAM-840A	TEMC00147	N/A	12	13-Jun-2025
Microwave Preamplifier	Com-Power Corporation	PAM-118A	TEMC00160	N/A	12	28-Nov-2024
2.4 GHz Notch Filter	Micro-Tronics	BRM50702-01	TEMC00176	N/A	12	19-Apr-2025
Test Software	Rohde & Schwarz	EMC32	TEMC00184	10.60.00	N/A	NCR
1571AN 40 GHz Cable	IW Microwave	KPS-1571AN	TEMC00218	N/A	12	13-Jun-2025
R & S ESW EMI Test Receiver	Rohde & Schwarz	ESW	TEMC00232	2.00 SP1	12	4-Jun-2025
DC to 18 GHz Cable	SSI Technologies	2801-03-03-360/WN	TEMC00293	N/A	12	5-Apr-2025

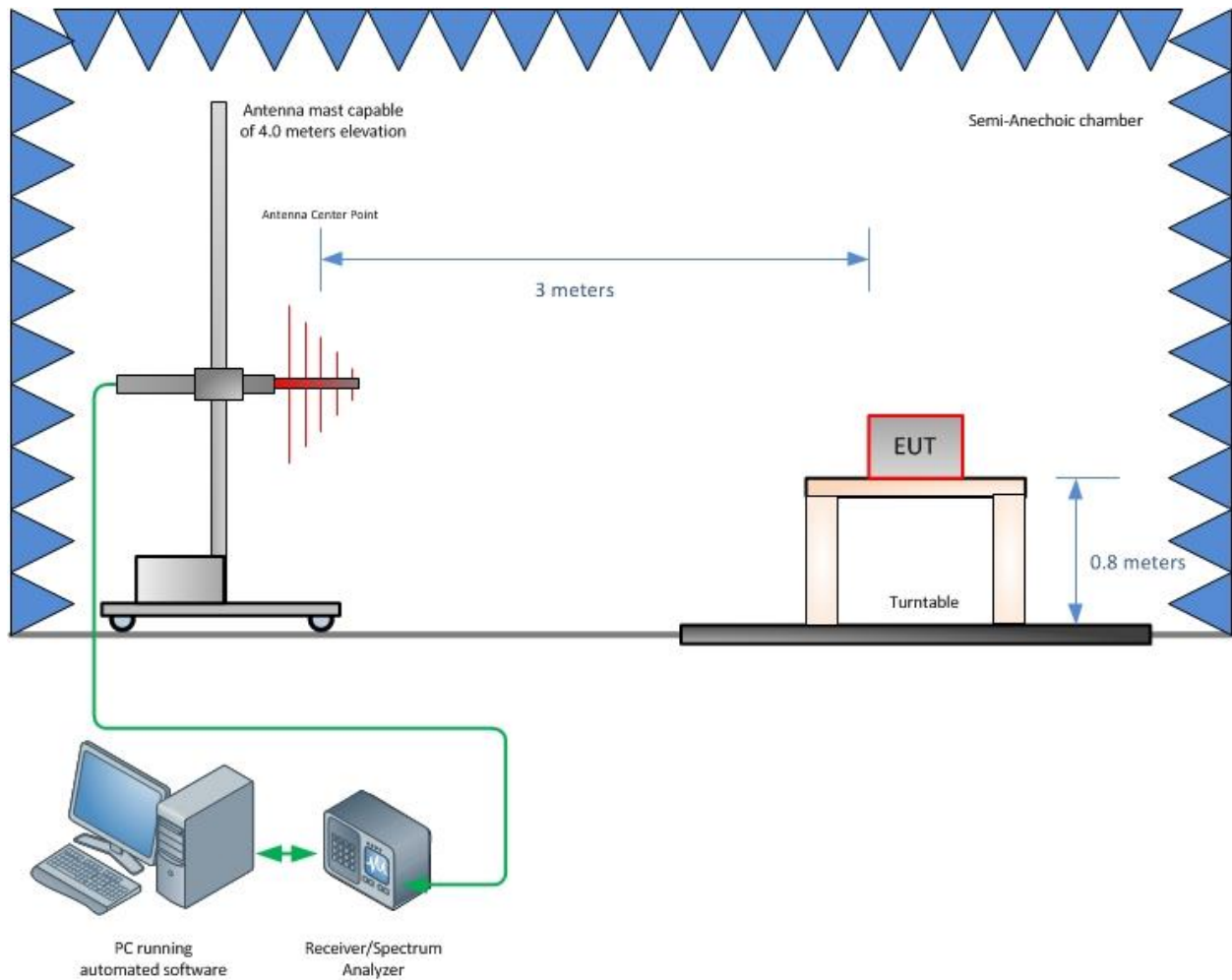
TU - Traceability Unscheduled

O/P MON – Output Monitored with Calibrated Equipment

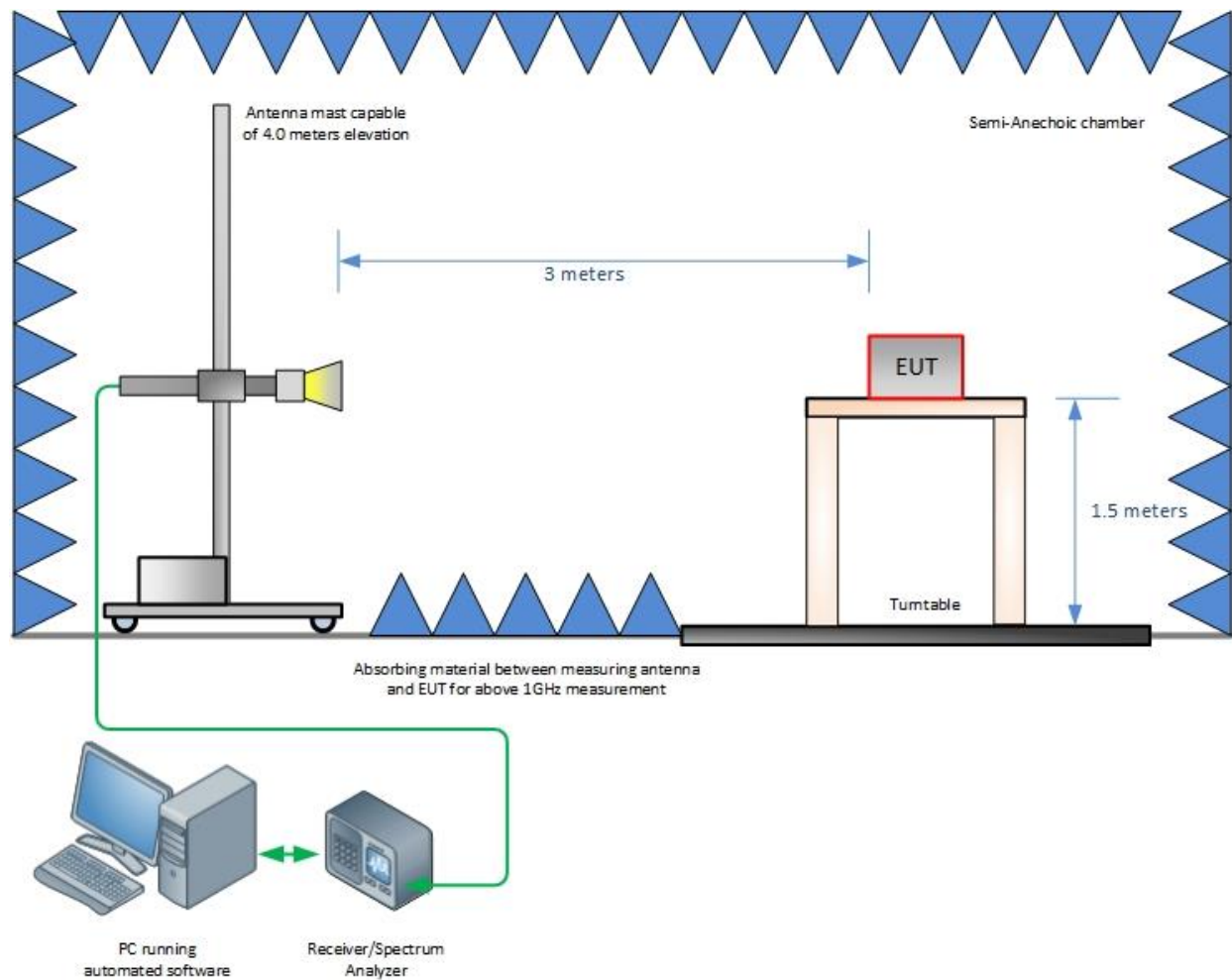
N/A - Not Applicable

NCR – No Calibration Required

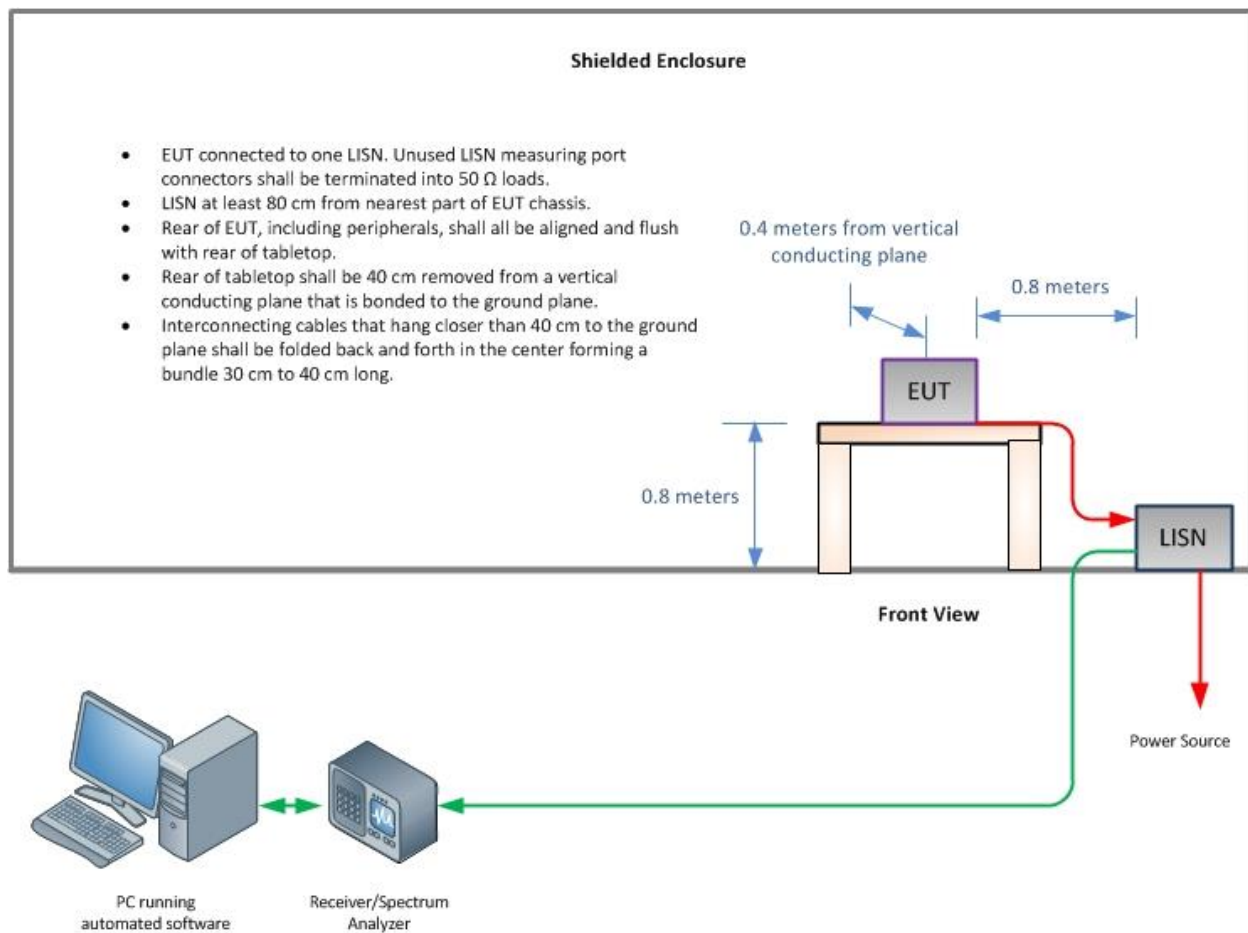
## 4 Diagram of Test Set-ups



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



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



**Figure 4-3 – Conducted Emissions Test Setup**



## 5 Measurement Uncertainty

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

**Table 5-1- Values of  $U_{\text{CISPR}}$  and  $U_{\text{Lab}}$**

Measurement	$U_{\text{CISPR}}$	$U_{\text{Lab}}$
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	4.10 dB 4.49 dB 4.93 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	5.94 dB 5.07 dB 5.07 dB

### Notes:

$U_{\text{CISPR}}$  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.



## **6 Accreditation, Disclaimers and Copyright**

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