# Electromagnetic Compatibility Test Report

## Tests Performed on a Fybr

## Vehicle Sensor, Model Sensor IV

## Radiometrics Document RP-9966

ACCREDITED
TESTING CERT #1495.01

| *Product Detail:* |
|---|
| FCC ID: 2ALBF5040<br>IC: 22374-5040<br>Equipment type: DTS Digital Transmission System |
| *Test Standards:* |
| US CFR Title 47, Chapter I, FCC Part 15 Subpart C<br>FCC Part 15 CFR Title 47: 2024<br>Canada ISED; RSS-247, Issue 3; 2023<br>IC RSS-GEN Issue 5: 2018<br><br>This report concerns: Original Grant for Certification<br>FCC Part 15.247 |

| *Tests Performed For:* | *Test Facility:* |
|---|---|
| **Fybr, LLC**<br>640 Cepi Dr., Suite C<br>Chesterfield, MO 63005 | **Radiometrics Midwest Corporation**<br>12 Devonwood Avenue<br>Romeoville, IL 60446-1349<br>(815) 293-0772 |

| *Test Date(s):* |
|---|
| May 8-14 and October 7, 2024 and January 20, 2025 |

| Document RP-9966 Revisions: | | |
|---|---|---|
| Rev. | Issue Date | Revised By |
| 0 | January 7, 2025 | |
| 1 | January 24, 2025 | Joseph Strzelecki |
| | | |
| | | |

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## 1.0 ADMINISTRATIVE DATA

| *Equipment Under Test:* | |
|---|---|
| A Fybr, Vehicle Sensor<br>Model: Sensor IV; Serial Number: SMP1<br>This will be referred to as the EUT in this Report | |
| *Date EUT Received at Radiometrics:* | *Test Date(s):* |
| April 25, 2024 | May 8-14 and October 7, 2024, and Jan 20, 2025 |
| *Test Report Written and Authorized By:* | *Test Witnessed By:* |
| Joseph Strzelecki<br>Senior EMC Engineer | The tests were not witnessed by personnel from Fybr |
| *Radiometrics' Personnel Responsible for Test:* | *EUT Checked By:* |
| Joseph Strzelecki 01/07/2025<br>Date<br>Joseph Strzelecki<br>Senior EMC Engineer<br>NARTE EMC-000877-NE | Joseph Strzelecki<br>Chris Dalessio<br>Radiometrics |

## 2.0 TEST SUMMARY AND RESULTS

The EUT (Equipment Under Test) is a Transceiver, Model Sensor IV, manufactured by Fybr. The detailed test results are presented in a separate section. The following is a summary of the test results.

**Spread Spectrum Transmitter Requirements**

| Environmental Phenomena | Frequency Range | FCC Section | RSS- Section | Test Result |
|---|---|---|---|---|
| 6 dB Bandwidth Test | 902 to 928 MHz | 15.247 a | RSS-247 (5.2) | Pass |
| Peak Output Power | 902 to 928 MHz | 15.247 b | RSS-247 (5.4d) | Pass |
| Spurious Radiated Emissions | 30 MHz to 9.3 GHz | 15.247 d | RSS-247 (3.3) | Pass |
| Antenna Port Conducted Unwanted Emissoins | 30 MHz to 9.3 GHz | 15.247 d | RSS-247 (5.5) | Pass |
| Power Spectral Density | 902 to 928 MHz | 15.247 e | RSS-247 (5.2b) | Pass |

RF AC Mains Conducted Emissions is not required since the EUT is battery powered and there is no means to charge the batteries with AC power.

### 2.1 RF Exposure Compliance Requirements

The EUT meets the FCC requirement for RF exposure and it is exempt from RSS-102 SAR and RF exposure evaluations. There are no power level adjustments available to the end user. The antenna is permanently attached. The detailed calculations for RF Exposure are presented in a separate document.

## 3.0 EQUIPMENT UNDER TEST (EUT) DETAILS

### 3.1 EUT Description

The EUT is a vehicle sensor for use in parking lots, Model Sensor IV, manufactured by Fybr. The EUT was in good working condition during the tests, with no known defects. The EUT broadcasts a location ping periodically, in order to facilitate tracking of staff within a facility equipped with one or more tracking receivers.

| | |
|---|---|
| Type of modulation including the bit rate and symbol rate | LoRA, SF8, 500kHz, 4/5 coding rate. |
| Name and version of the test software used to exercise the device | Test 1.0 |
| Power settings used for the purpose of exercising the device | 15dBm Nominal setting |
| Firmware number of the transmitter | N/A |

The EUT has a modularly approved RF module installed during all tests. It is FCC ID: 2AQ6KA1201 and IC ID: 24388-A121. It operates at 60 GHz. The antenna is in the IC lid.

#### 3.1.1 FCC Section 15.203 & RSS-GEN Antenna Requirements

The antenna is permanently soldered to the printed circuit board. The antenna is internal to the EUT and it is not readily available to be modified by the end user. Therefore, it meets the 15.203 Requirements.

Since the measurements at the antenna port are used to determine the RF output power, RSS-GEN section 6.8 requires that the effective gain of the products antenna be stated. The Antenna peak gain is 1.0 dBi, based on the antenna's manufacturer.

## 4.0 TESTED SYSTEM DETAILS

### 4.1 Tested System Configuration

The system was configured for testing in a typical fashion. The EUT was placed on an 80-cm or 150 cm high, nonconductive test stand. The testing was performed in conditions as close as possible to installed conditions. The EUT was tested as a stand-alone device. Power was supplied with a new battery.

**Tested System Configuration List**

| Item | Description | Type* | Manufacturer | Model Number | Serial Number |
|---|---|---|---|---|---|
| 1 | Transceiver | E | Fybr, LLC | Sensor IV | SMP1 |

* Type: E = EUT, P = Peripheral, S = Support Equipment; H = Host Computer

### 4.2 EUT Operating Modes

The transmit mode for all tests was continuous. The EUT was in its normal GFSK modulation during the tests. It was tested as a stand-alone, battery powered device, since that is the configuration in the final installation.

### 4.3 Special Accessories

No special accessories were used during the tests in order to achieve compliance.

### 4.4 Equipment Modifications

No modifications were made to the EUT at Radiometrics' test facility in order to comply with the standards listed in this report.

## 5.0 TEST SPECIFICATIONS

| Document | Date | Title |
|---|---|---|
| FCC CFR Title 47 | 2024 | Code of Federal Regulations Title 47, Chapter 1, Federal Communications Commission, Part 15 - Radio Frequency Devices |
| IC RSS-247 Issue 3 | 2023 | Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices |
| IC RSS-Gen Issue 5 | 2018 | General Requirements and Information for the Certification of Radiocommunication Equipment (RSS-Gen) Amd 1 (2019) & Amd 2 (2021) |

## 6.0 TEST PROCEDURE DOCUMENTS

The tests were performed using the procedures from the following specifications:

| Document | Date | Title |
|---|---|---|
| ANSI C63.4-2014 | 2014 | Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz |
| ANSI C63.10-2013 | 2013 | American National Standard for Testing Unlicensed Wireless Devices |
| FCC KDB 558074 D01 | 2019 | Guidance For Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, And Hybrid System Devices Operating Under § 15.247 Of The FCC Rules; v05r02 |

## 7.0 RADIOMETRICS' TEST FACILITIES

The results of these tests were obtained at Radiometrics Midwest Corp. in Romeoville, Illinois, USA. Radiometrics is accredited by A2LA (American Association for Laboratory Accreditation) to conform to ISO/IEC 17025: 2017 "General Requirements for the Competence of Calibration and Testing Laboratories". Radiometrics' Lab Code is 121191 and Certification Number is 1495.01. Radiometrics' scope of accreditation includes all of the test methods listed herein. A copy of the accreditation can be accessed on our web site (www.radiomet.com). Radiometrics accreditation status can be verified at A2LA's web site (www.a2la2.org).

The following is a list of shielded enclosures located in Romeoville, Illinois used during the tests:

Chamber E: Is a custom-made anechoic chamber that measures 52' L X 30' W X 18' H. The walls and ceiling are fully lined with RF absorbers. Pro-shield of Collinsville, Oklahoma manufactured the chamber. The floor has a 9' x 9' section of microwave absorber for testing above 1 GHz.

A separate ten-foot long, brass plated, steel ground rod attached via a 6-inch copper braid grounds the above chamber. The enclosure is also equipped with low-pass power line filters.

The FCC has accepted this site as test site number US1065. The FCC test site Registration Number is 732175. Details of the site characteristics are on file with the Industry Canada as site number IC 3124A-1.

A complete list of the test equipment is provided herein. The calibration due dates are indicated on the equipment list. The equipment is calibrated in accordance with ANSI/NCSL Z540-1 with traceability to the National Institute of Standards and Technology (NIST).

## 8.0 DEVIATIONS AND EXCLUSIONS FROM THE TEST SPECIFICATIONS

There were no deviations or exclusions from the test specifications.

## 9.0 CERTIFICATION

Radiometrics Midwest Corporation certifies that the data contained herein was taken under conditions that meet or exceed the requirements of the test specification and the data contained herein was taken with calibrated test equipment. The results relate only to the EUT listed herein.

## 10.0 TEST EQUIPMENT TABLE

| RMC ID | Manufacturer | Description | Model No. | Serial No. | Frequency Range | Cal Period | Cal Date |
|---|---|---|---|---|---|---|---|
| AMP-05 | RMC/Celeritek | Pre-amplifier | MW110G | 1001 | 1.0-12GHz | 12 Mo. | 01/31/24 |
| AMP-59 | Amplitech | Pre-amplifier | APTMP44 | AMP-59 | 18-26 GHz | 12 Mo. | 01/31/24 |
| ANT-48 | RMC | Std Gain Horn | HW2020 | 1001 | 18-26 GHz | 36 Mo. | 11/23/22 |
| ANT-66 | ETS-Lindgren | Horn Antenna | 3115 | 62580 | 1.0-18GHz | 24 Mo. | 03/16/23 |
| ANT-68 | EMCO | Log-Periodic Ant. | 93146 | 9604-4456 | 200-1000MHz | 24 Mo. | 01/30/24 |
| ANT-80 | AH Systems | Bicon Antenna | SAS-540 | 294 | 20-330MHz | 24 Mo. | 01/26/23 |
| ATT-53 | Weinschel | Attenuator (20 dB) | 23-20-34 | CG7857 | DC-18 GHz | 24 Mo | 05/03/24 |
| CAB-114G | Teledyne | Coaxial Cable | N/A | N/A | DC-25 GHz | 24 Mo. | 12/18/23 |
| CAB-160B | Teledyne | Coaxial Cable | N/A | N/A | DC-25 GHz | 24 Mo. | 12/18/23 |
| CAB-507A | Teledyne | Coaxial Cable | N/A | N/A | DC-25 GHz | 24 Mo. | 12/18/23 |
| HPF-07 | Mini-Circuits | High Pass Filter | VHF-1500+ | 31121 | 1.7-10 GHz | 24 Mo. | 05/22/24 |
| REC-21 | Agilent | Spectrum Analyzer | E7405A | MY45118341 | 9Hz-26.5 GHz | 24 Mo. | 04/24/24 |
| REC-44 | Agilent | Spectrum Analyzer | E4440A | US40420673 | 3Hz-26.5GHz | 24 Mo. | 07/18/24 |
| THM-02 | Fluke | Temp/Humid Meter | 971 | 93490471 | N/A | 24 Mo. | 11/22/22 |
| THM-03 | Fluke | Temp/Humid Meter | 971 | 95850465 | N/A | 24 Mo. | 04/14/23 |

REC-44 was only used after July 24, 2024.
THM-02 was only used before November 21, 2024.
Note: All calibrated equipment is subject to periodic checks.

| Software Company | Test Software Name | Version | Applicable Tests |
|---|---|---|---|
| Radiometrics | REREC11D | 07.21.22 | RF Radiated Emissions (FCC Part 15 & EN 55032) |
| Agilent | PSA/ESA-E/L/EMC | 2.4.0.42 | Bandwidth and screen shots |

## 11.0 TEST SECTIONS

### 11.1 Occupied Bandwidth

The test procedures were in accordance to FCC DTS Measurement Guideline 558074 D01, Section 8.1.

The spectrum analyzer was set to the MAX HOLD mode to record the worst case of the modulation. The EUT was transmitting at its maximum data rate. The trace was allowed to stabilize.

The marker-to-peak function was set to the peak of the emission. Then the marker-delta function was used to measure 6 or 20 dB down one side of the emission. The marker-delta function was reset and then moved to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the bandwidth of the emission.

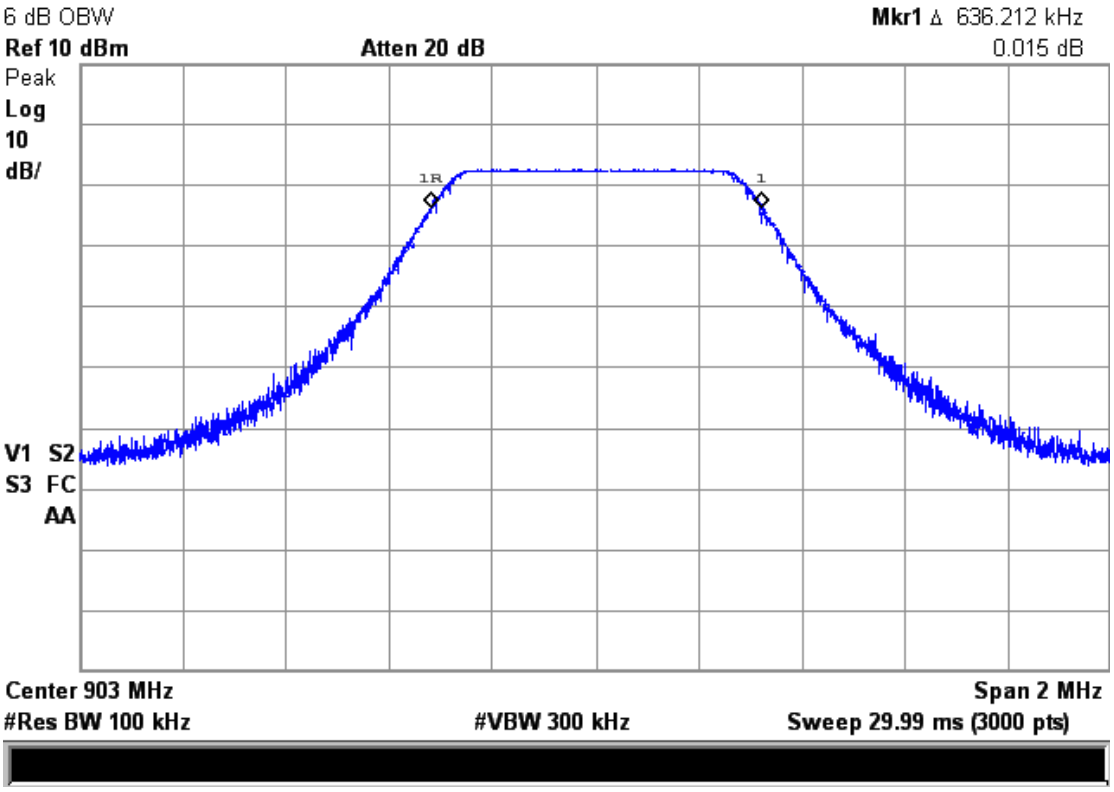
Tested by: Joseph Strzelecki
Test Date: May 8, 2024 and January 20, 2025

**Occupied Bandwidth**

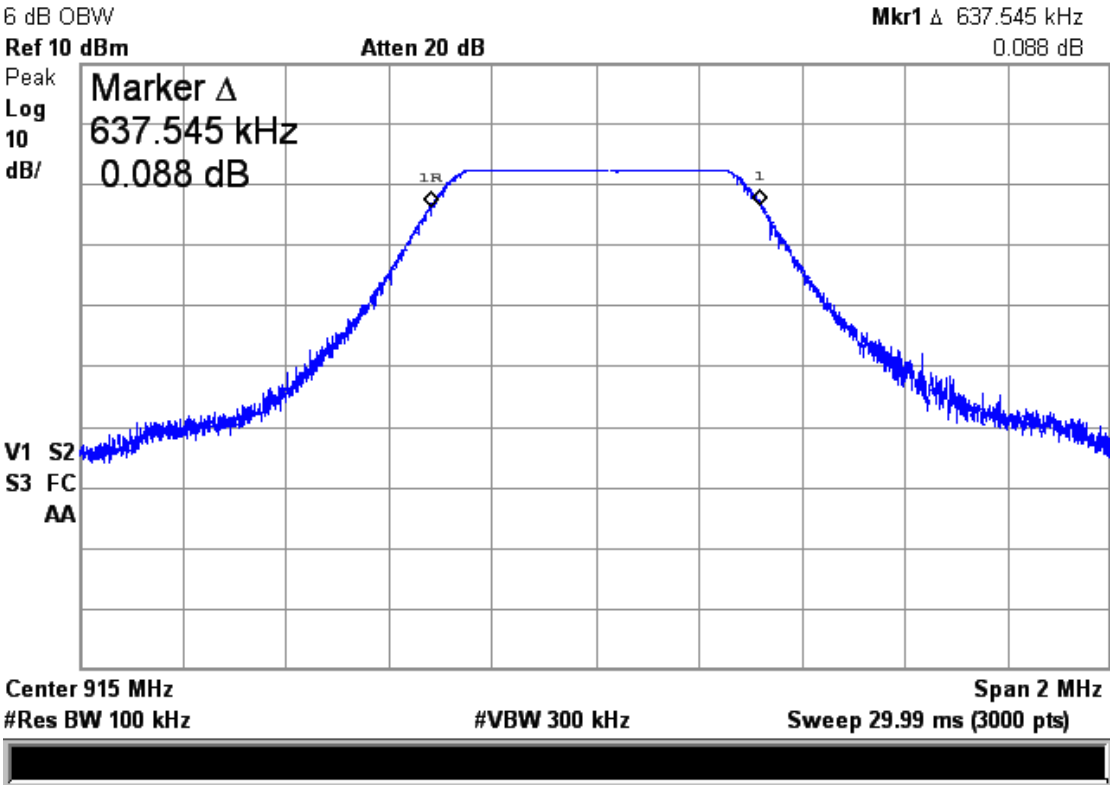
| Channel | 6 dB EBW kHz | 99% EBW kHz | Minimum 6 dB EBW kHz |
|---|---|---|---|
| 903 | 636.2 | 517.9 | 500 |
| 915 | 637.5 | 519.1 | 500 |
| 927 | 635.5 | 519.5 | 500 |

The 6 dB bandwidth is greater than 500 kHz.
Judgement: Pass

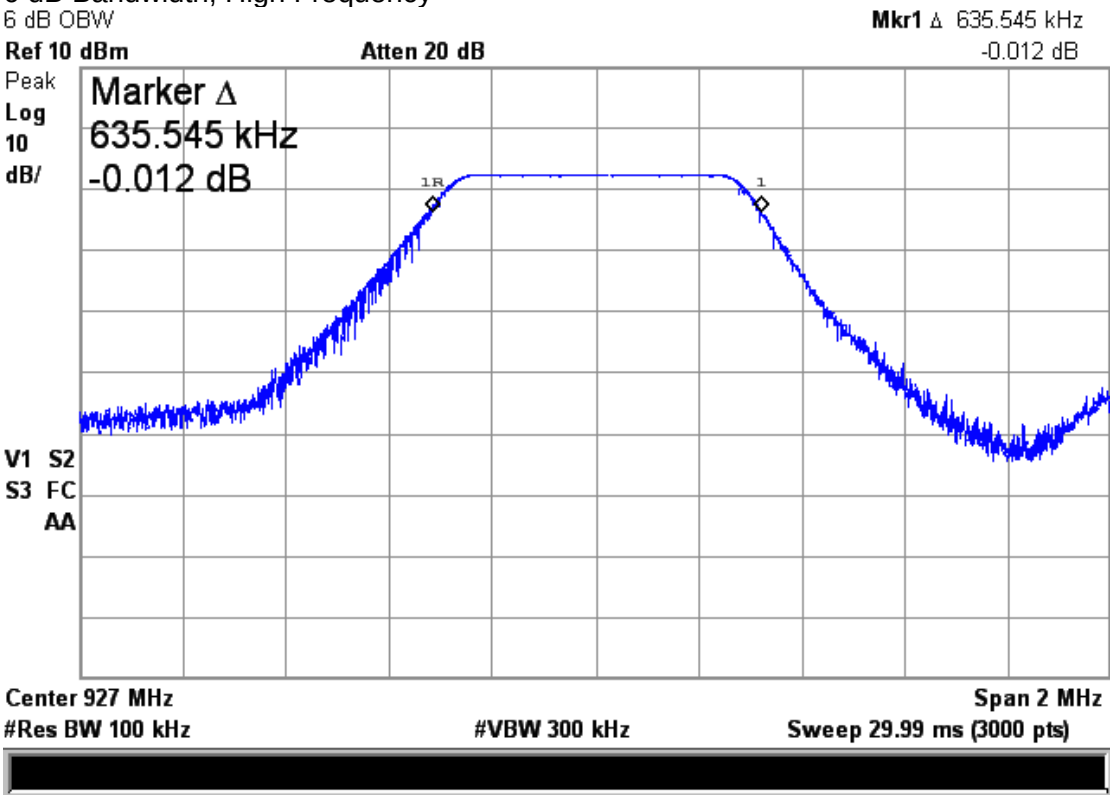
6 dB Bandwidth; Low Frequency



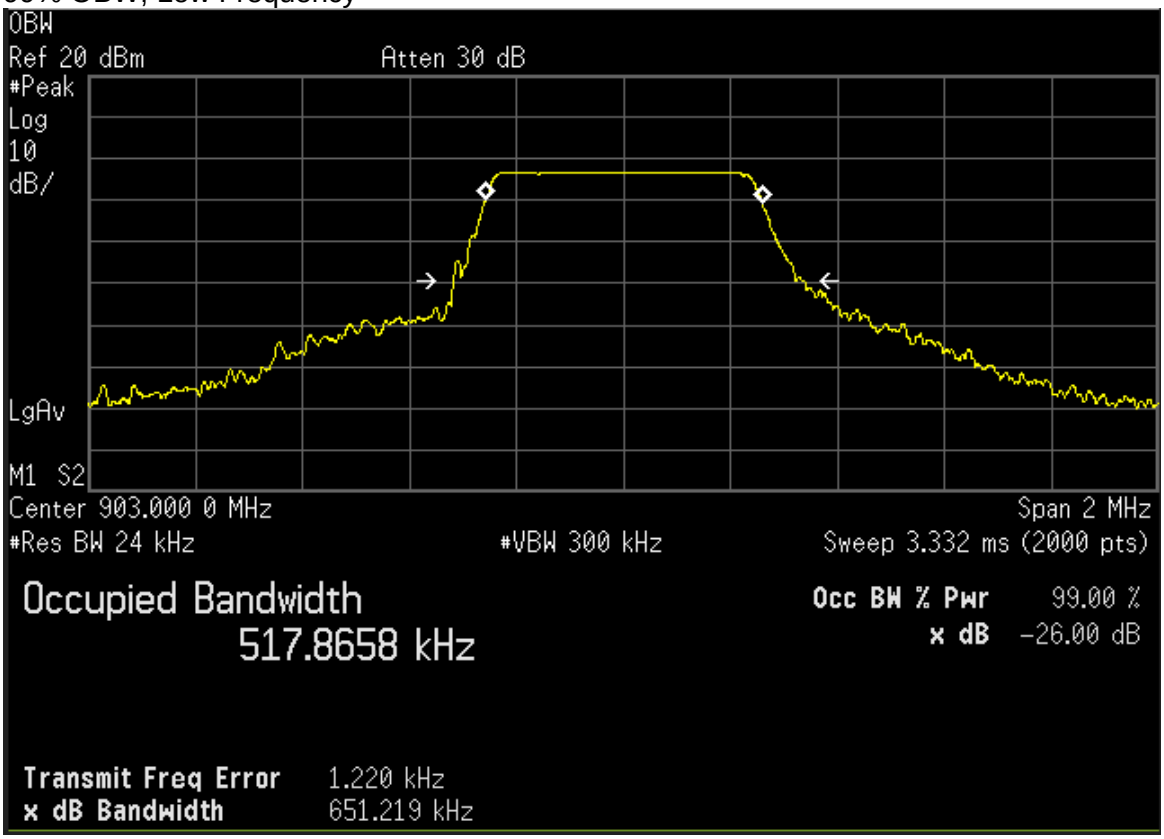
6 dB Bandwidth; Middle Frequency



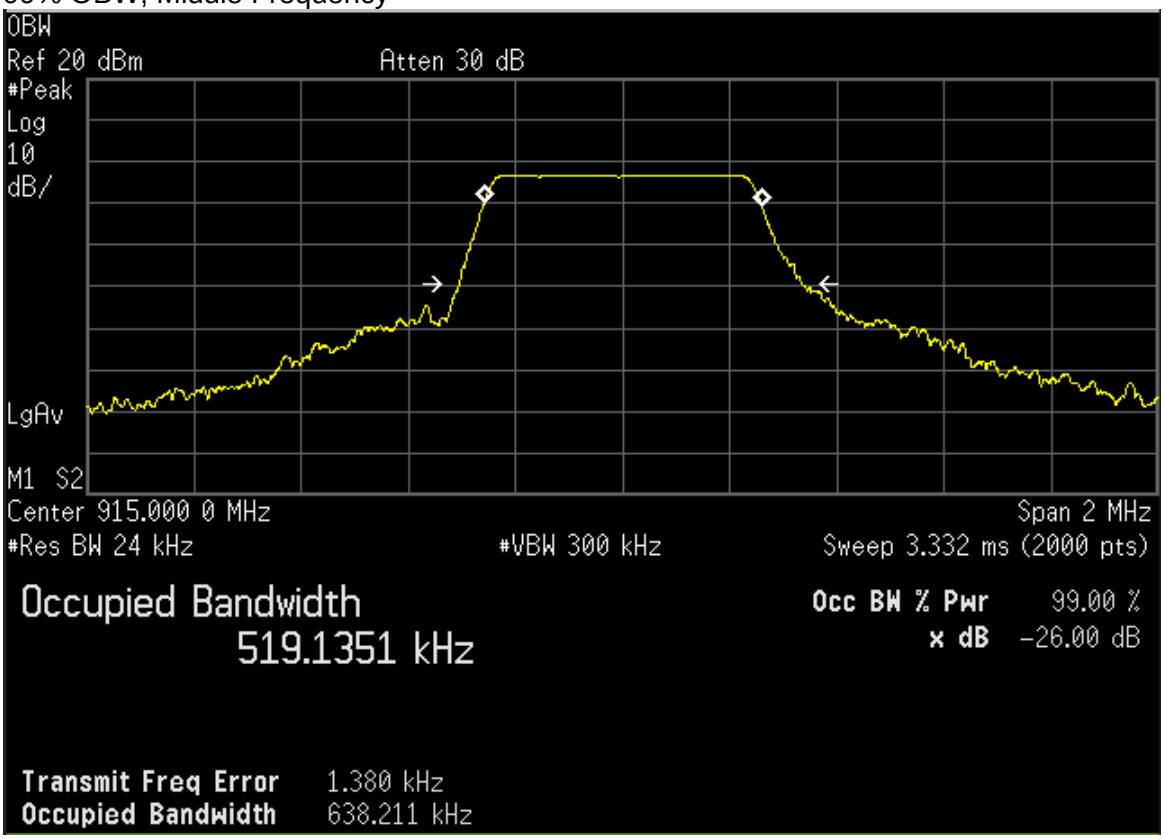

6 dB Bandwidth; High Frequency



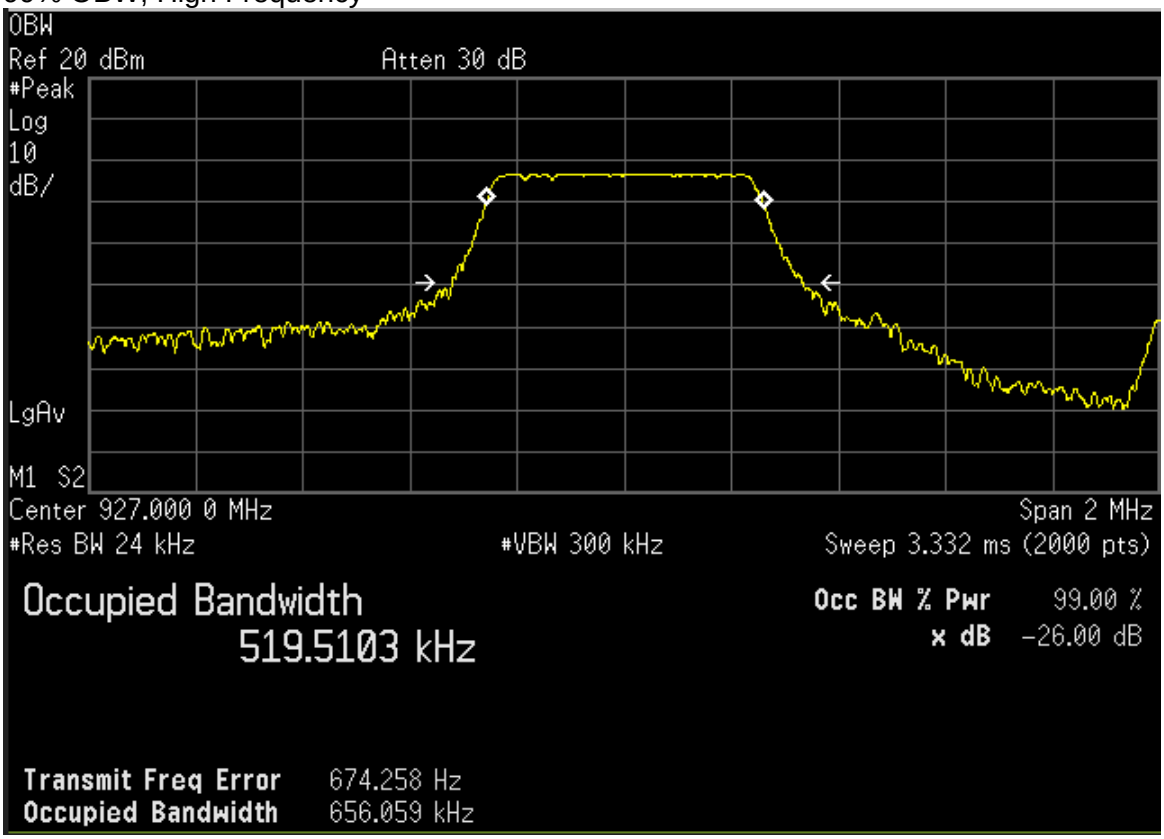
99% OBW; Low Frequency




99% OBW; Middle Frequency



99% OBW; High Frequency




### 11.2 Peak Output Power

The power output test method from ANSI C63.10 section 11.9.1.1 was used for this test. The spectrum analyzer was set to the following settings:

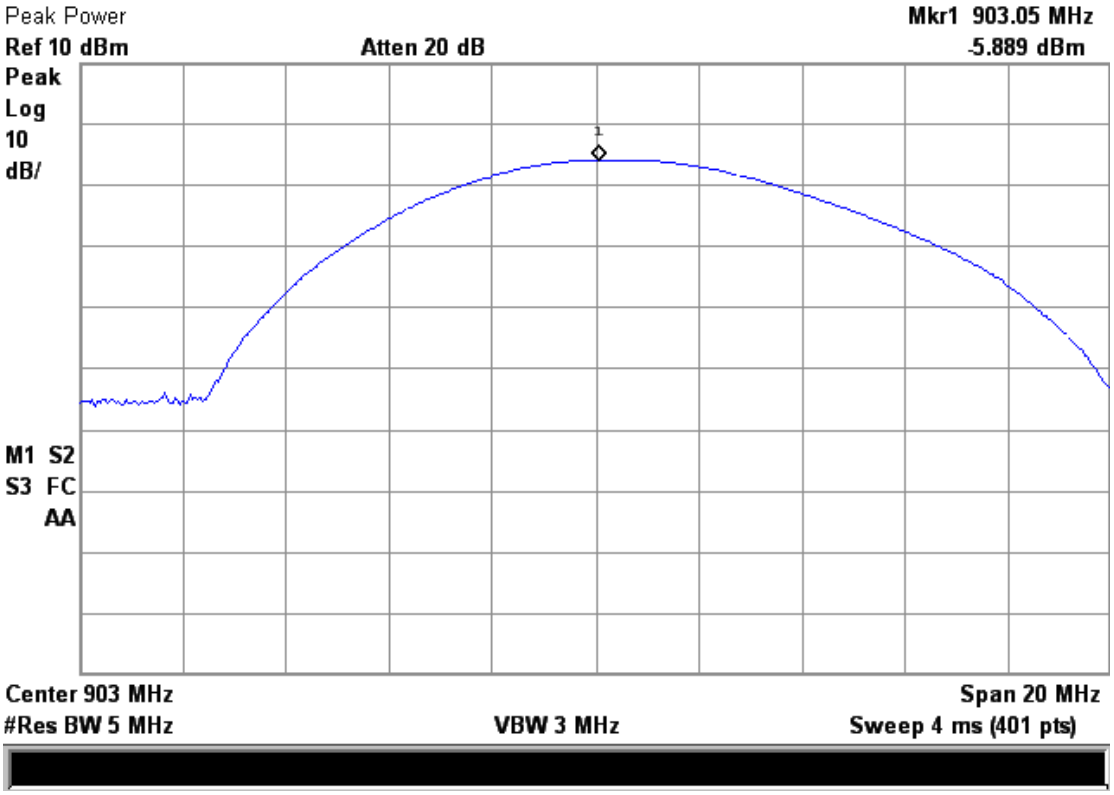
Span = 20 MHz
RBW = 5 MHz
VBW = 3 MHz
Sweep = auto
Detector function = peak
Trace = max hold

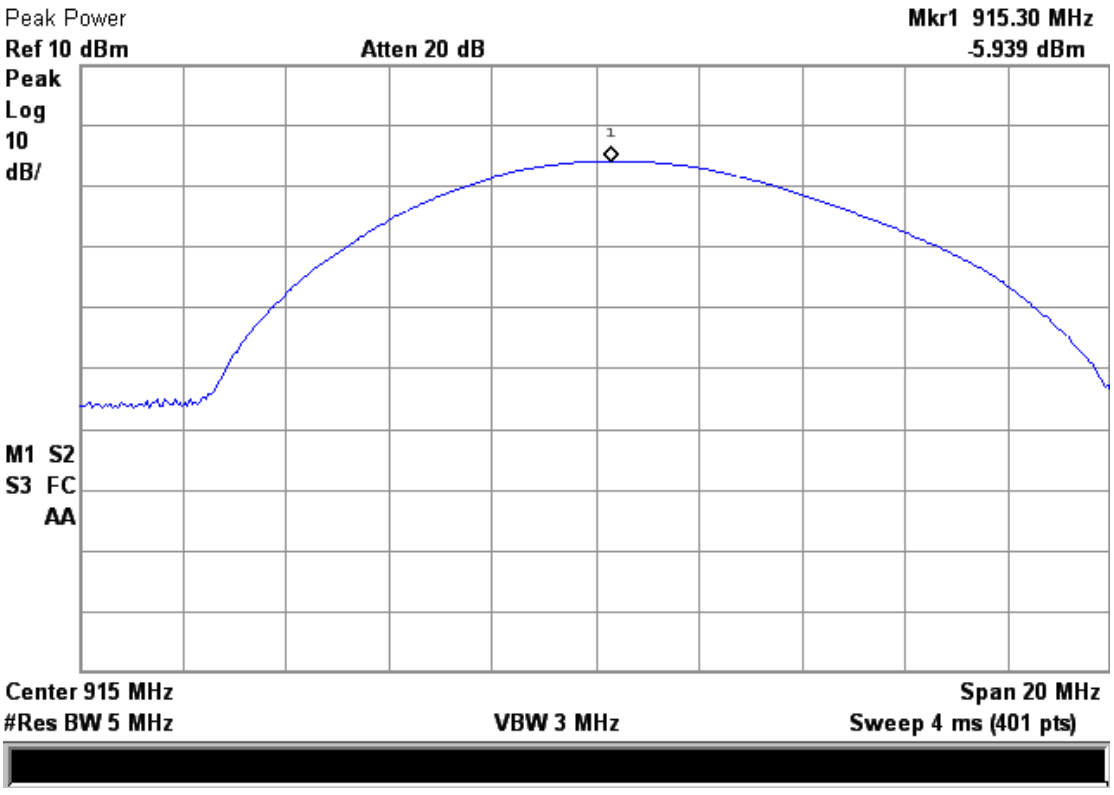
The trace was allowed to stabilize. The indicated level is the peak output power. Since the gain of the antenna is always less than 6 dB, the limit is not reduced. The EUT antenna port was connected to the Spectrum analyzer Via a coaxial cable.

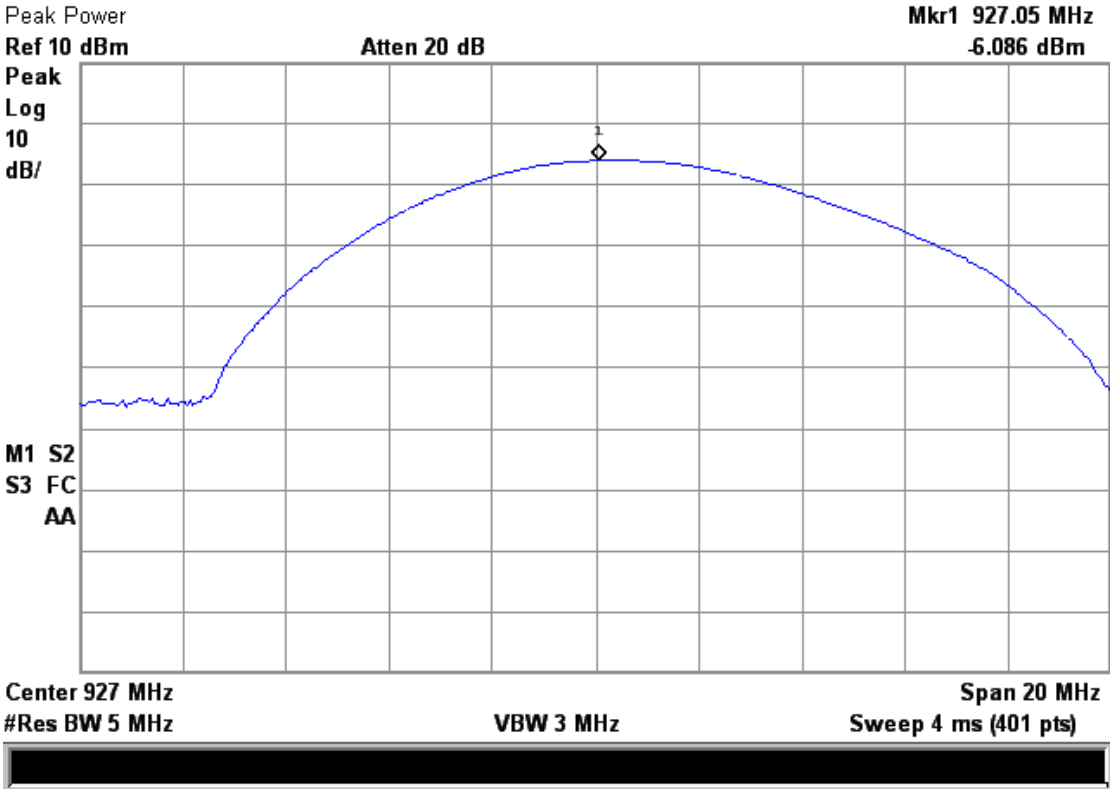
Tested by: Joseph Strzelecki
Test Date: 05/14/2024

| Frequency (MHz) | Reading (dBm) | Cable & Atten Loss (dB) | Total Power (dBm) | | Limit (dBm) |
|---|---|---|---|---|---|
| | | | dBm | milliwatts | |
| 903 | -5.9 | 20.5 | 14.6 | 28.8 | 30 |
| 915 | -5.9 | 20.5 | 14.6 | 28.8 | 30 |
| 927 | -6.1 | 20.5 | 14.4 | 27.5 | 30 |

Judgment: Passed by 15.6 dB


Peak Power
Mkr1 903.05 MHz
Ref 10 dBm
Atten 20 dB
-5.889 dBm
Peak
Log
10
dB/
M1 S2
S3 FC
AA
Center 903 MHz
Span 20 MHz
#Res BW 5 MHz
VBW 3 MHz
Sweep 4 ms (401 pts)


Peak Power
Mkr1 915.30 MHz
Ref 10 dBm
Atten 20 dB
-5.939 dBm
Peak
Log
10
dB/
M1 S2
S3 FC
AA
Center 915 MHz
Span 20 MHz
#Res BW 5 MHz
VBW 3 MHz
Sweep 4 ms (401 pts)




## 11.3 Power Spectral Density

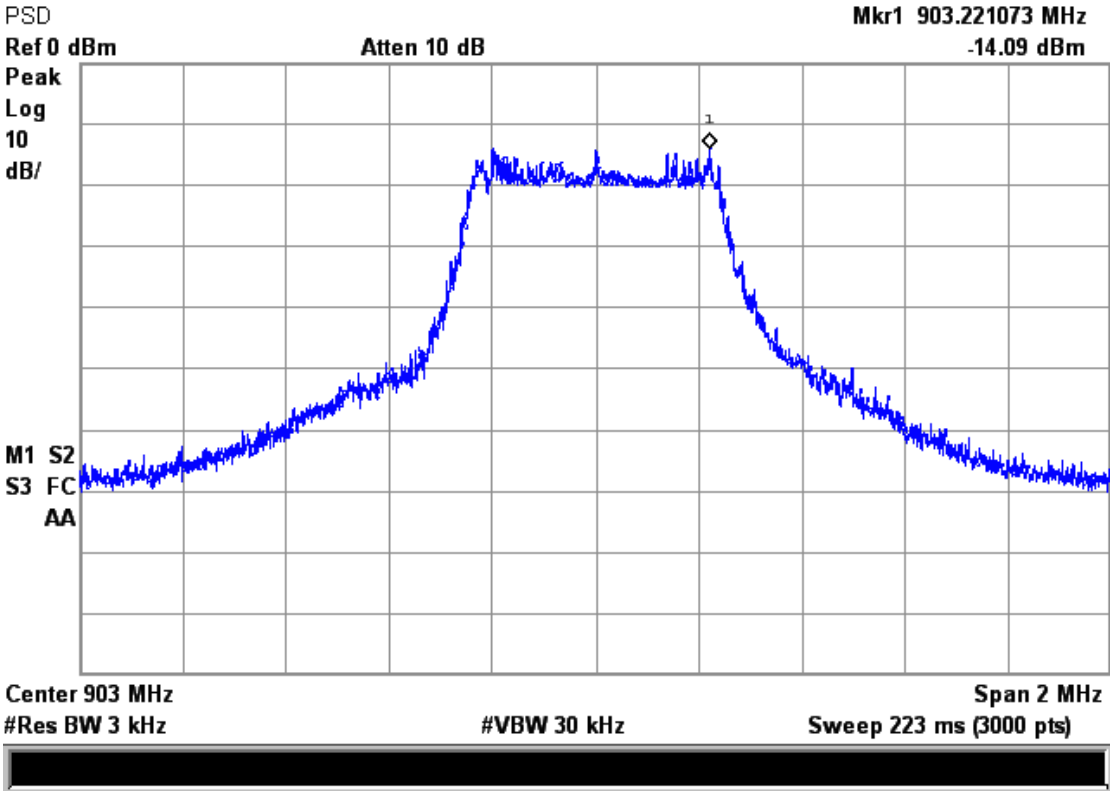
The PSD test method from ANSI C63.10 section 11.10.2 and FCC DTS Measurement Guideline 558074 D01, Section 10.2. The spectrum analyzer was set to the following settings:

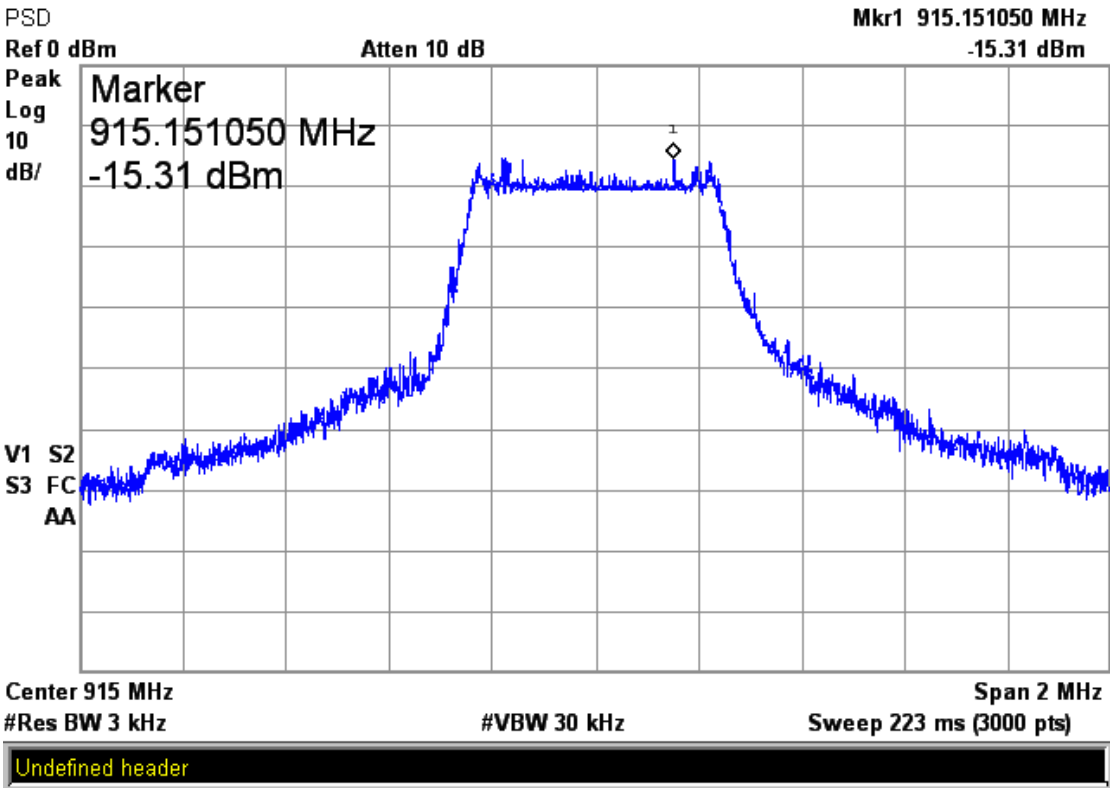
Span = 3 MHz; RBW = 3 kHz; VBW = 30 kHz

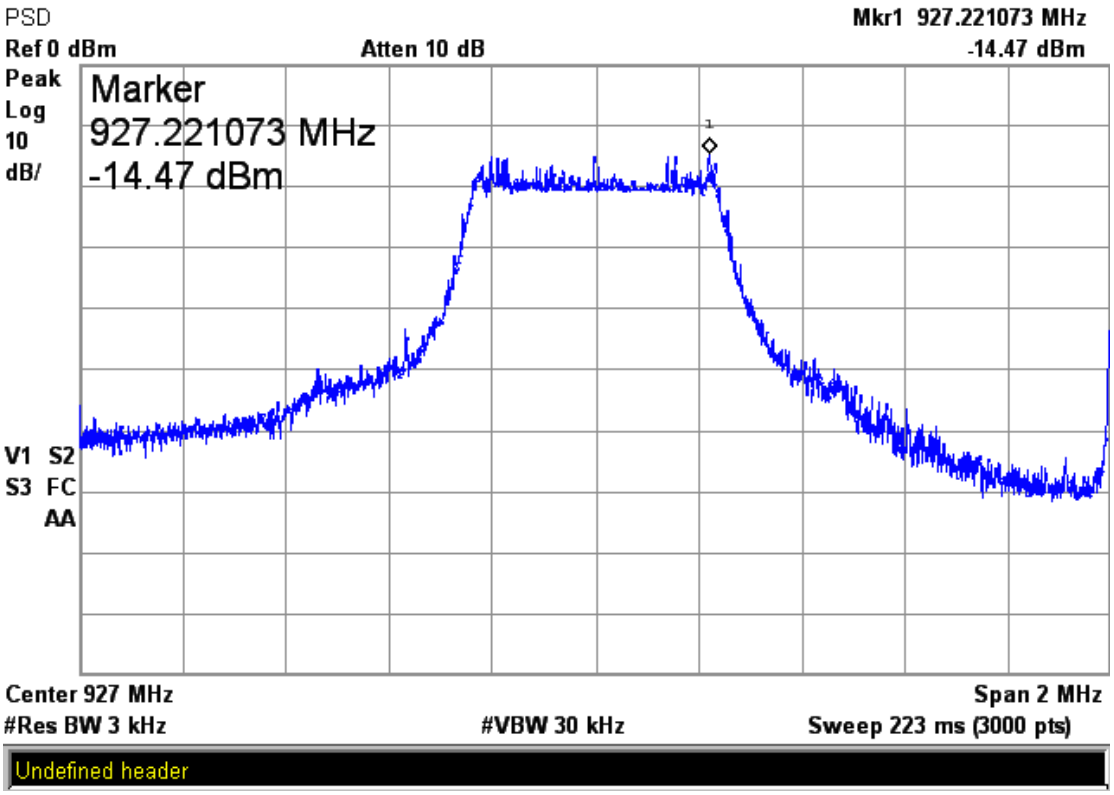
Tested by: Joseph Strzelecki
Test Date: 05/08/2024

| Frequency (MHz) | Reading dBm | Cable Loss (dB) | 3 kHz Spectral Density (dBm) | Limit (dBm) |
|---|---|---|---|---|
| 902 | -14.0 | 20.5 | 6.5 | 8.0 |
| 915 | -15.3 | 20.5 | 5.2 | 8.0 |
| 927 | -14.5 | 20.5 | 6.0 | 8.0 |

Judgment: Passed by 1.5 dB


PSD
Mkr1 903.221073 MHz
Ref 0 dBm
Atten 10 dB
-14.09 dBm
Peak
Log
10
dB/
M1 S2
S3 FC
AA
Center 903 MHz
Span 2 MHz
#Res BW 3 kHz
#VBW 30 kHz
Sweep 223 ms (3000 pts)


PSD
Mkr1 915.151050 MHz
Ref 0 dBm
Atten 10 dB
-15.31 dBm
Peak
Log
10
dB/
Marker
915.151050 MHz
-15.31 dBm
V1 S2
S3 FC
AA
Center 915 MHz
Span 2 MHz
#Res BW 3 kHz
#VBW 30 kHz
Sweep 223 ms (3000 pts)
Undefined header



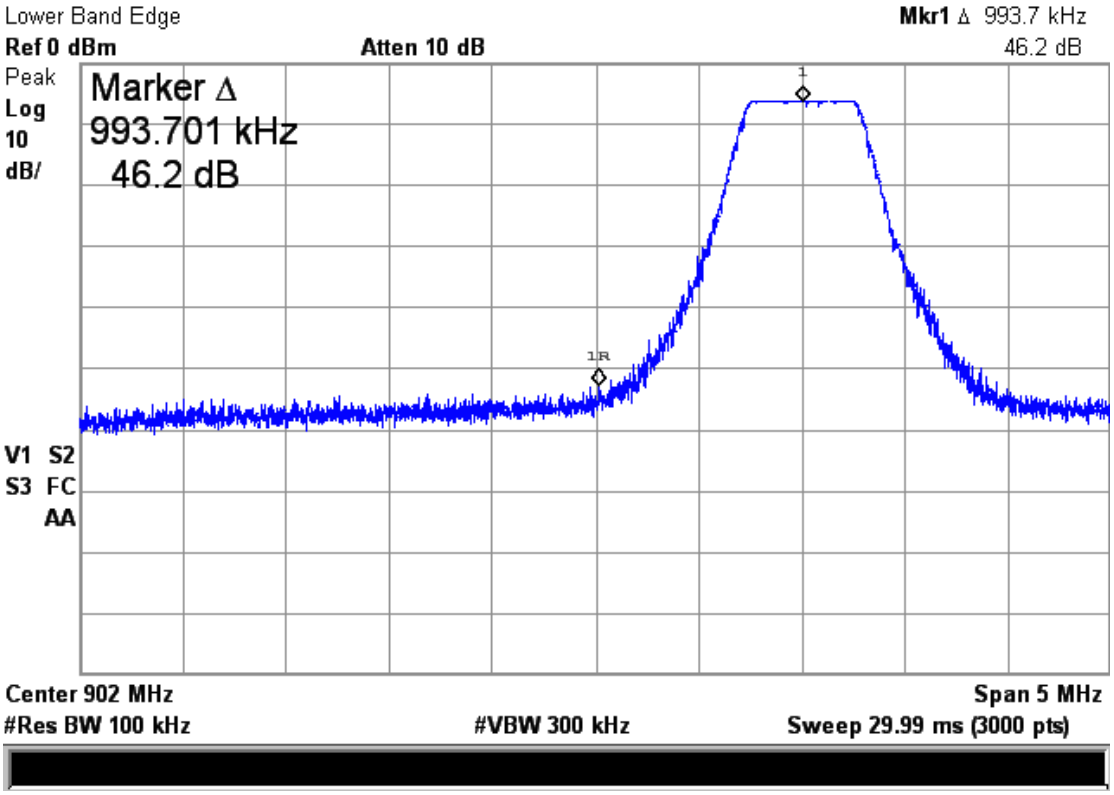

## 11.4 Band-edge Compliance of RF Conducted Emissions

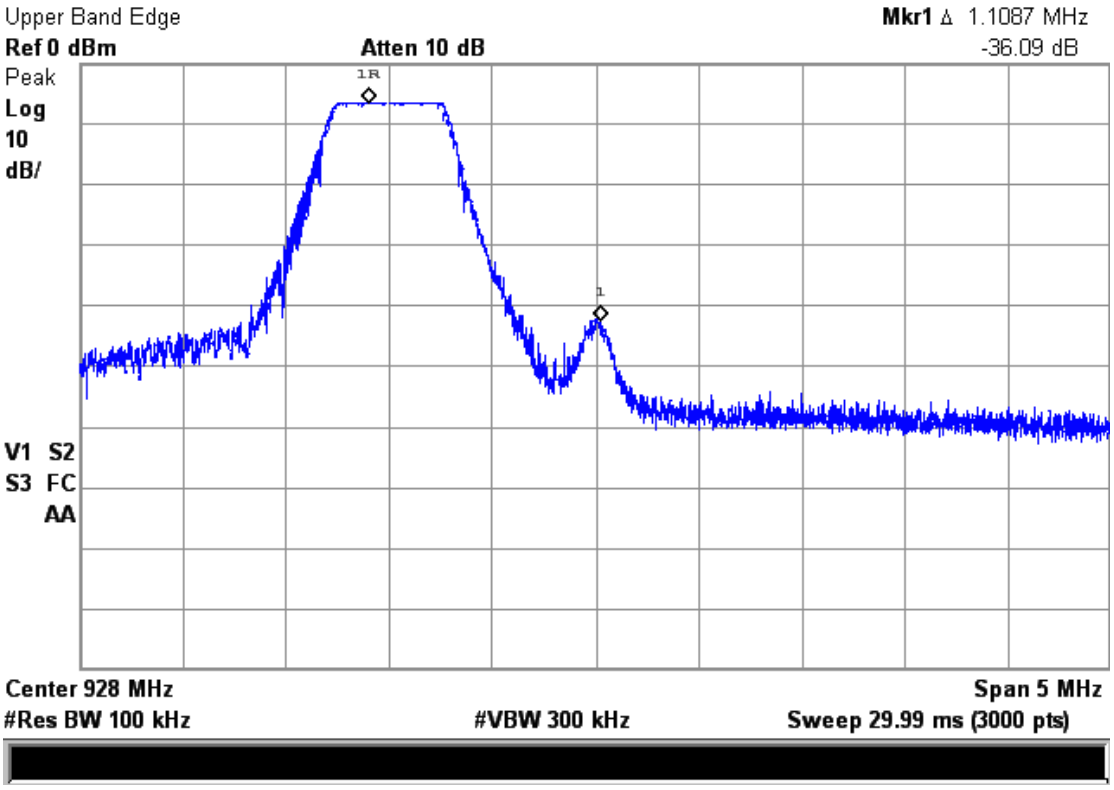
The spectrum analyzer was set to the MAX HOLD mode to record the worst case of the modulation at the band-edge, with the EUT set to the lowest or highest frequency. The trace was allowed to stabilize.

Tested by: Joseph Strzelecki
Test Date: May 8, 2024

| Channel | Reading at Band Edge | | Minimum Allowed |
|---|---|---|---|
| | Freq. (MHz) | Delta (dB) | dB |
| 903 Lower Band edge | 902 | 46.2 | 20 |
| 927 Upper Band edge | 928 | 36.1 | 20 |

Judgment: Passed by at least 20 dB

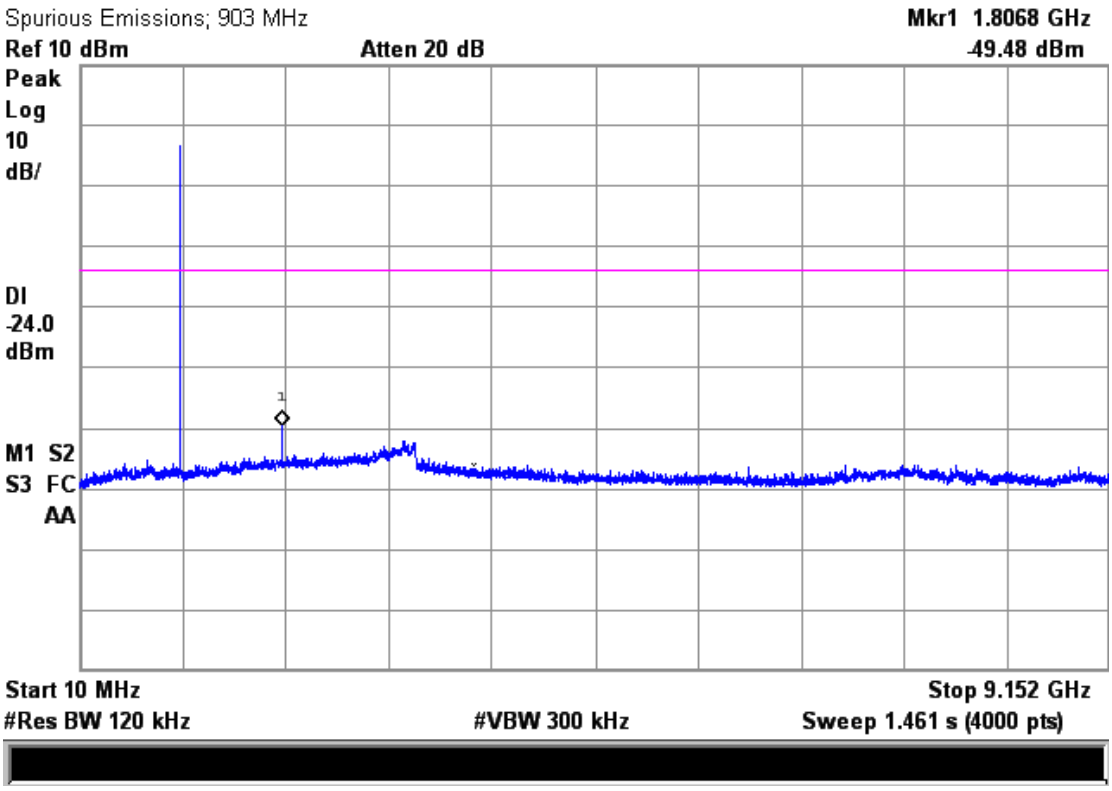

Lower Band Edge
Mkr1 Δ 993.7 kHz
46.2 dB
Ref 0 dBm
Atten 10 dB
Peak
Log
10
dB/
Marker Δ
993.701 kHz
46.2 dB
1R
1
V1 S2
S3 FC
AA
Center 902 MHz
Span 5 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 29.99 ms (3000 pts)

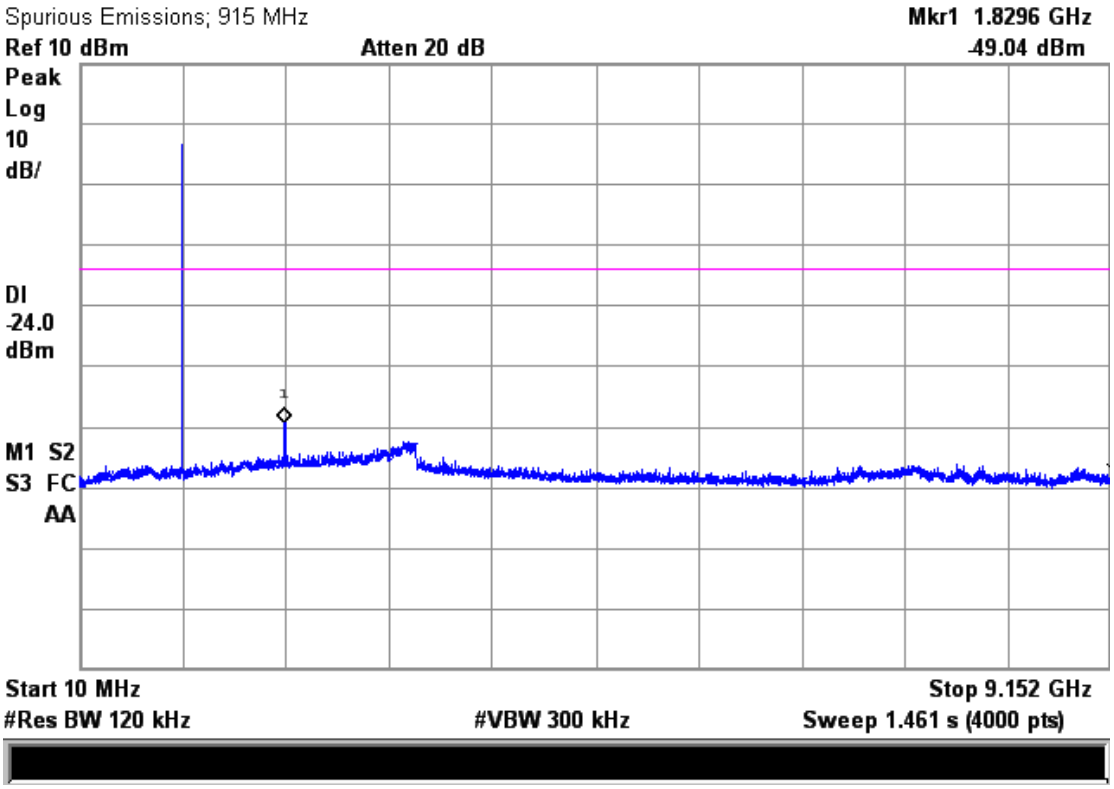

Upper Band Edge
Mkr1 Δ 1.1087 MHz
-36.09 dB
Ref 0 dBm
Atten 10 dB
Peak
Log
10
dB/
1R
1
V1 S2
S3 FC
AA
Center 928 MHz
Span 5 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 29.99 ms (3000 pts)

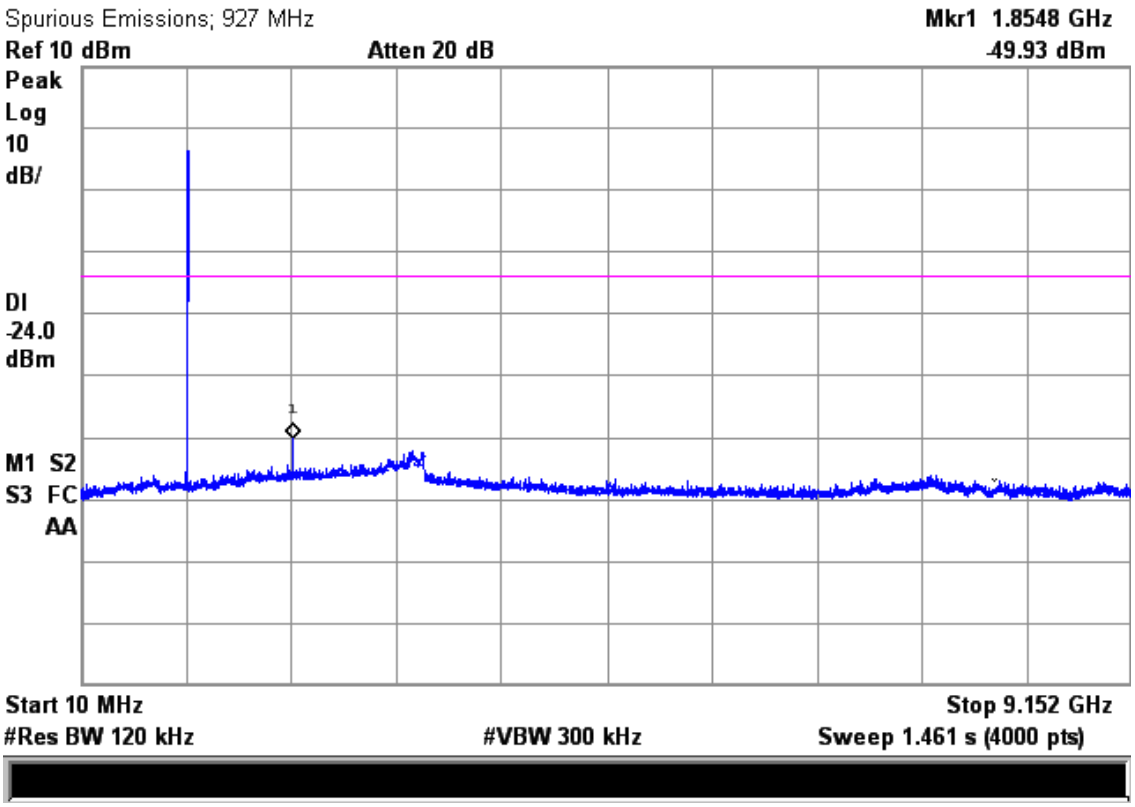
## 11.5 Spurious RF Conducted Emissions at Antenna Port

The spectrum analyzer was set to the MAX HOLD mode to record all spurious emissions from the lowest frequency generated in the EUT up through the 10th harmonic. The trace was allowed to stabilize. The first two plots were made while stepping through three frequencies (Low middle and high). Each frequency was on for at least 30 seconds.

Tested by: Joseph Strzelecki
Test Date: May 8, 2024
Judgement: Pass by at least 10 dB




Spurious Emissions; 915 MHz
Mkr1 1.8296 GHz
Ref 10 dBm
Atten 20 dB
-49.04 dBm
Peak
Log
10
dB/
Dl
-24.0
dBm
M1 S2
S3 FC
AA
Start 10 MHz
Stop 9.152 GHz
#Res BW 120 kHz
#VBW 300 kHz
Sweep 1.461 s (4000 pts)


Spurious Emissions; 927 MHz
Mkr1 1.8548 GHz
Ref 10 dBm
Atten 20 dB
-49.93 dBm
Peak
Log
10
dB/
Dl
-24.0
dBm
M1 S2
S3 FC
AA
Start 10 MHz
Stop 9.152 GHz
#Res BW 120 kHz
#VBW 300 kHz
Sweep 1.461 s (4000 pts)

## 11.6 Spurious Radiated Emissions (Restricted Band)

The procedures were in accordance to FCC DTS Measurement Guideline 558074 D01, Section 12.1 and ANSI C63.10.

Radiated emission measurements were performed with linearly polarized broadband antennas. The results obtained with these antennas can be correlated with results obtained with a tuned dipole antenna. The radiated emission measurements were performed with a spectrum analyzer. The bandwidth used from 150 kHz to 30 MHz is 9 kHz and the bandwidth from 30 MHz to 1000 MHz is 120 kHz. Above 1 GHz, a 1 MHz bandwidth is used. A 10 dB linearity check is performed prior to start of testing in order to determine if an overload condition exists. Figure 4 herein lists the details of the test equipment used during radiated emissions tests.

For tests from 1 to 10 GHz, a high pass filter was used to reduce the fundamental emission. High pass filters were not needed above 10 GHz, since the preamplifiers attenuated the fundamental emission. Figure 4 herein lists the details of the test equipment used during radiated emissions tests. The was device was rotated through three orthogonal axes as per ANSI C63.10 during the radiated tests.

Final radiated emissions measurements were performed inside of an anechoic chamber at a test distance of 3 meters. The anechoic chamber is designated as Chamber E. This Chamber meets the Site Attenuation requirements of ANSI C63.4. Chamber E is located at 12 Devonwood Ave. Romeoville, Illinois EMI test lab.

The entire frequency range from 30 to 25,000 MHz was slowly scanned with particular attention paid to those frequency ranges which appeared high. Measurements were performed using two antenna polarizations, (vertical and horizontal). The worst-case emissions were recorded. All measurements may be performed using either the peak, average or quasi-peak detector functions. If the peak detector data exceeds or is marginally close to the limits, the measurements are repeated using a quasi-peak detector or average function as required by the specification for final determination of compliance.

The detected emission levels were maximized by rotating the EUT, adjusting the positions of all cables, and by scanning the measurement antenna from 1 to 4 meters above the ground.

**Radiated Emissions Field Strength Limits**

| Frequency Range (MHz) | Test Distance (meters) | Class B Limits | |
|---|---|---|---|
| | | uV/m | dB(uV/m) |
| 30 - 88 | 3 | 100 | 40.0 |
| 88 - 216 | 3 | 150 | 43.5 |
| 216 - 960 | 3 | 200 | 46.0 |
| Above 960 | 3 | 500 | 54.0 |

### 11.6.1 Radiated Emissions Field Strength Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Loss, and by subtracting the Amplifier Gain from the measured reading. The basic equation is as follows:

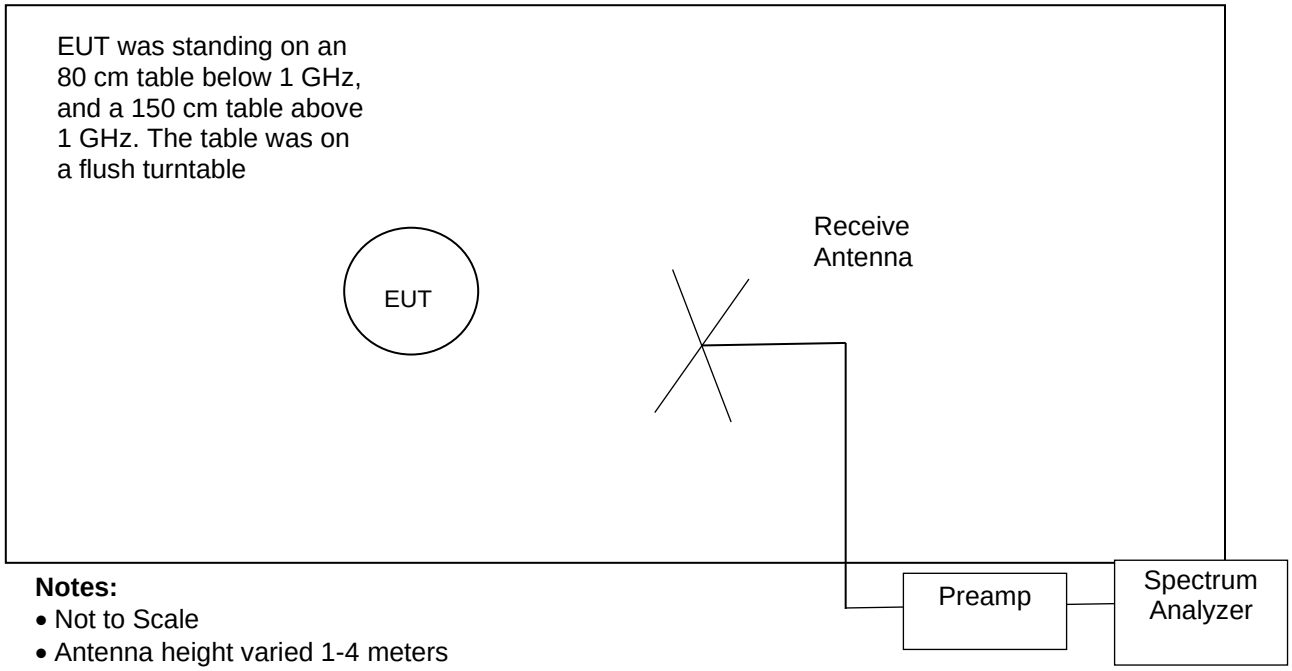
FS = RA + AF + CF - AG

Where: FS = Field Strength
RA = Receiver Amplitude
AF = Antenna Factor
CF = Cable Attenuation Factor
AG = Amplifier Gain
HPF = High pass Filter Loss

PKA = Peak to Average Factor (This is zero for non-average measurements)
The Peak to average factor is used when average measurements are required. It is calculated by the highest duty cycle in percent over any 100mS transmission. The factor in dB is 20 * Log(Duty cycle/100).

**Figure 1. Drawing of Radiated Emissions Setup**

Chamber E, anechoic

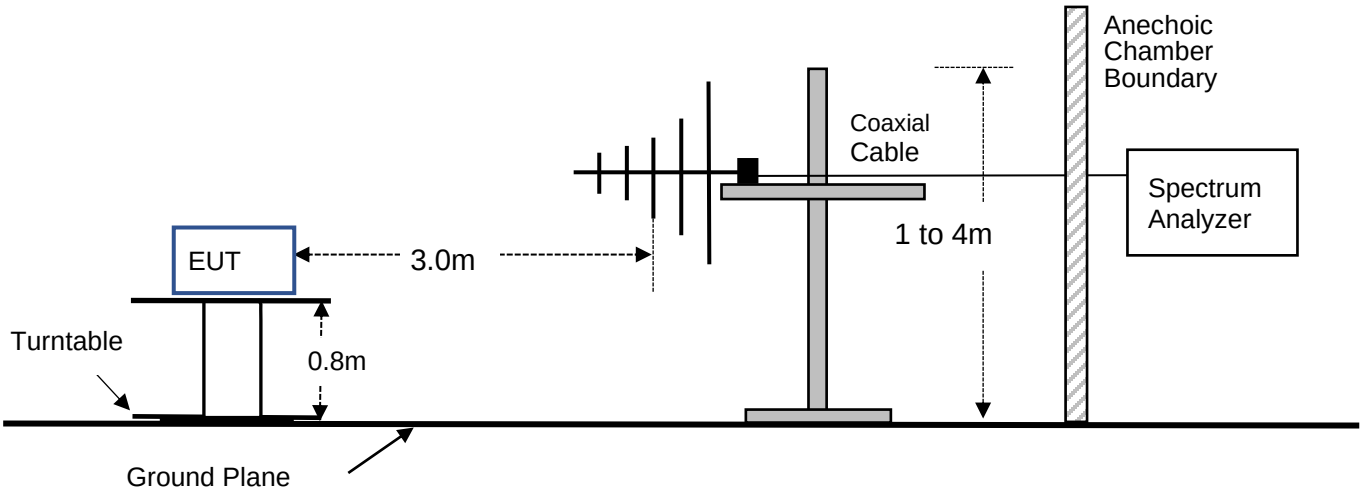



**Notes:**
- Not to Scale
- Antenna height varied 1-4 meters
- Distance from antenna to tested system is 3 meters
- AC cords not shown. They are connected to AC outlet with low-pass filter on turntable

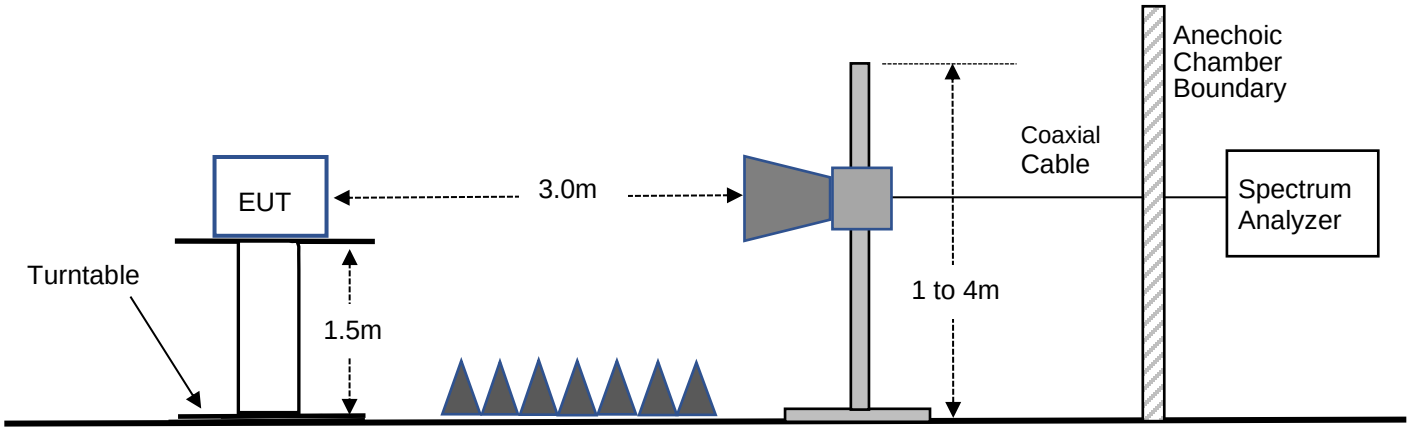
| Frequency Range | Receive Antenna | Pre-Amplifier | Spectrum Analyzer | High Pass Filter |
|---|---|---|---|---|
| 30 to 200 MHz | ANT-80 | None | REC-21 | None* |
| 200 to 1000 MHz | ANT-68 | None | REC-21 | None* |
| 1 to 10 GHz | ANT-66 | AMP-05 | REC-21 | HPF-07 |

* A high pass filter was not needed since the fundamental frequency was outside of the amplifiers pass band. No High pass filter was used for Receive mode.

**Radiated Emissions Test Setup for Frequencies from 30MHz to 1000MHz (Side View)**




**Radiated Emissions Test Setup for Frequencies over 1000MHz (Side View)**




Receive mode used an 80 cm high test stand and transmit mode used an 150 cm test stand.

### 11.6.2 Spurious Radiated Emissions Test Results (Restricted Band)

The following spectrum analyzer settings were used.

Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
A Video Bandwidth of 10 Hz was used for Average measurements above 1 GHz.

The EUT was in the highest power mode and the highest duty cycle for this test.

| | | | |
|---|---|---|---|
| Manufacturer | Fybr | Specification | FCC Part 15 Subpart C & RSS-210 |
| Model | Sensor IV | Test Date | May 9-10, 2024 |
| Serial Number | SMP1 | Test Distance | 3 Meters |
| Abbreviations | Pol = Antenna Polarization; V = Vertical; H = Horizontal; BC = Biconical (ANT-80); LP = Log-Periodic (ANT-68); HN = Horn (ANT-66) P = peak; Q = QP | | |
| Notes | Corr. Factors = Cable Loss – Preamp Gain; External Preamp used above 1 GHz | | |

The following table includes all emissions except Fundamental, and harmonics emissions. All bands were measured including Non-Restricted band emissions.

Transmit Mode

| Freq. MHz | Meter Reading dBuV | Dect. | Ant. Pol. | Ant Factor dB/m | Cable & amp Factors | Dist Fact dB | EUT dBuV/m | Limit dBuV/m | Margin Under Limit dB | Note |
|---|---|---|---|---|---|---|---|---|---|---|
| 41.1 | 9.3 | P | H | 10.5 | 0.7 | 0.0 | 20.5 | 40.0 | 19.5 | |
| 59.9 | 9.8 | P | H | 8.8 | 0.8 | 0.0 | 19.4 | 40.0 | 20.6 | |
| 69.4 | 9.9 | P | H | 8.9 | 0.9 | 0.0 | 19.7 | 40.0 | 20.3 | |
| 79.1 | 11.1 | P | H | 9.2 | 1.0 | 0.0 | 21.3 | 40.0 | 18.7 | |
| 90.8 | 10.7 | P | H | 9.6 | 1.0 | 0.0 | 21.3 | 43.5 | 22.2 | |
| 104.1 | 12.0 | P | H | 10.4 | 1.1 | 0.0 | 23.5 | 43.5 | 20.0 | |
| 113.8 | 10.1 | P | H | 11.1 | 1.1 | 0.0 | 22.3 | 43.5 | 21.2 | |
| 124.7 | 10.5 | P | H | 11.7 | 1.2 | 0.0 | 23.4 | 43.5 | 20.1 | |
| 134.2 | 11.2 | P | H | 12.1 | 1.3 | 0.0 | 24.6 | 43.5 | 18.9 | |
| 151.5 | 10.7 | P | H | 12.6 | 1.3 | 0.0 | 24.6 | 43.5 | 18.9 | |
| 172.9 | 10.4 | P | H | 13.2 | 1.4 | 0.0 | 25.0 | 43.5 | 18.5 | |
| 197.7 | 10.8 | P | H | 14.2 | 1.5 | 0.0 | 26.5 | 43.5 | 17.0 | |
| 218.5 | 10.7 | P | H | 14.7 | 1.6 | 0.0 | 27.0 | 46.0 | 19.0 | |
| 238.8 | 11.4 | P | H | 15.0 | 1.7 | 0.0 | 28.1 | 46.0 | 17.9 | |
| 286.6 | 7.4 | P | H | 13.8 | 1.8 | 0.0 | 23.0 | 46.0 | 23.0 | |
| 325.7 | 8.5 | P | H | 14.2 | 2.0 | 0.0 | 24.7 | 46.0 | 21.3 | |
| 374.4 | 8.8 | P | H | 14.8 | 2.1 | 0.0 | 25.7 | 46.0 | 20.3 | |
| 417.2 | 10.1 | P | H | 15.6 | 2.3 | 0.0 | 28.0 | 46.0 | 18.0 | |
| 461.4 | 9.6 | P | H | 16.6 | 2.4 | 0.0 | 28.6 | 46.0 | 17.4 | |
| 553.6 | 9.2 | P | H | 18.2 | 2.6 | 0.0 | 30.0 | 46.0 | 16.0 | |
| 621.6 | 9.4 | P | H | 19.3 | 2.8 | 0.0 | 31.5 | 46.0 | 14.5 | |
| 688.2 | 10.3 | P | H | 21.3 | 2.9 | 0.0 | 34.5 | 46.0 | 11.5 | |
| 739.2 | 10.7 | P | H | 21.1 | 3.1 | 0.0 | 34.9 | 46.0 | 11.1 | |
| 783.8 | 9.1 | P | H | 21.2 | 3.2 | 0.0 | 33.5 | 46.0 | 12.5 | |
| 864.4 | 8.4 | P | H | 22.8 | 3.3 | 0.0 | 34.5 | 46.0 | 11.5 | |
| 964.5 | 8.5 | P | H | 23.5 | 3.5 | 0.0 | 35.5 | 54.0 | 18.5 | |
| 40.6 | 11.4 | P | V | 10.5 | 0.7 | 0.0 | 22.6 | 40.0 | 17.4 | |
| 51.0 | 10.1 | P | V | 9.3 | 0.8 | 0.0 | 20.2 | 40.0 | 19.8 | |
| 67.2 | 12.5 | P | V | 9.1 | 0.9 | 0.0 | 22.5 | 40.0 | 17.5 | |
| 79.1 | 10.6 | P | V | 9.2 | 1.0 | 0.0 | 20.8 | 40.0 | 19.2 | |
| 88.2 | 13.7 | P | V | 9.4 | 1.0 | 0.0 | 24.1 | 43.5 | 19.4 | |
| 95.3 | 13.7 | P | V | 9.9 | 1.0 | 0.0 | 24.6 | 43.5 | 18.9 | |
| 107.2 | 11.1 | P | V | 10.7 | 1.1 | 0.0 | 22.9 | 43.5 | 20.6 | |
| 129.5 | 10.8 | P | V | 11.9 | 1.2 | 0.0 | 23.9 | 43.5 | 19.6 | |
| 153.2 | 12.2 | P | V | 12.7 | 1.3 | 0.0 | 26.2 | 43.5 | 17.3 | |
| 173.8 | 11.8 | P | V | 13.2 | 1.4 | 0.0 | 26.4 | 43.5 | 17.1 | |
| 194.6 | 10.9 | P | V | 14.1 | 1.5 | 0.0 | 26.5 | 43.5 | 17.0 | |
| 216.0 | 11.1 | P | V | 14.7 | 1.6 | 0.0 | 27.4 | 43.5 | 16.1 | |
| 228.9 | 15.3 | P | V | 14.9 | 1.7 | 0.0 | 31.9 | 46.0 | 14.1 | |
| 238.4 | 15.2 | P | V | 15.0 | 1.7 | 0.0 | 31.9 | 46.0 | 14.1 | |
| 286.3 | 9.2 | P | V | 13.8 | 1.8 | 0.0 | 24.8 | 46.0 | 21.2 | |
| 335.3 | 8.7 | P | V | 14.2 | 2.0 | 0.0 | 24.9 | 46.0 | 21.1 | |

| Freq. MHz | Meter Reading dBuV | Dect. | Ant. Pol. | Ant Factor dB/m | Cable & amp Factors | Dist Fact dB | EUT dBuV/m | Limit dBuV/m | Margin Under Limit dB | Note |
|---|---|---|---|---|---|---|---|---|---|---|
| 377.4 | 9.3 | P | V | 14.9 | 2.1 | 0.0 | 26.3 | 46.0 | 19.7 | |
| 414.5 | 9.2 | P | V | 15.6 | 2.2 | 0.0 | 27.0 | 46.0 | 19.0 | |
| 450.0 | 9.8 | P | V | 16.4 | 2.3 | 0.0 | 28.5 | 46.0 | 17.5 | |
| 473.5 | 11.8 | P | V | 17.0 | 2.4 | 0.0 | 31.2 | 46.0 | 14.8 | |
| 567.1 | 10.0 | P | V | 18.3 | 2.6 | 0.0 | 30.9 | 46.0 | 15.1 | |
| 668.7 | 9.5 | P | V | 20.6 | 2.9 | 0.0 | 33.0 | 46.0 | 13.0 | |
| 748.2 | 9.5 | P | V | 21.0 | 3.1 | 0.0 | 33.6 | 46.0 | 12.4 | |
| 820.8 | 9.4 | P | V | 21.7 | 3.3 | 0.0 | 34.4 | 46.0 | 11.6 | |
| 880.4 | 9.1 | P | V | 22.8 | 3.3 | 0.0 | 35.2 | 46.0 | 10.8 | |
| 958.0 | 10.7 | P | V | 23.4 | 3.5 | 0.0 | 37.6 | 46.0 | 8.4 | |
| 1175.9 | 42.3 | P | V | 24.8 | -34.2 | 0.0 | 32.9 | 74.0 | 41.1 | 1 |
| 1490.2 | 43.6 | P | V | 25.2 | -34.4 | 0.0 | 34.4 | 74.0 | 39.6 | 1 |
| 1865.6 | 45.1 | P | V | 27.0 | -34.1 | 0.0 | 38.0 | 74.0 | 36.0 | 1 |
| 3218.0 | 41.3 | P | V | 31.0 | -32.7 | 0.0 | 39.6 | 74.0 | 34.4 | 1 |
| 3508.3 | 41.2 | P | V | 31.2 | -32.5 | 0.0 | 39.9 | 74.0 | 34.1 | 1 |
| 3817.6 | 43.2 | P | V | 32.7 | -32.3 | 0.0 | 43.6 | 74.0 | 30.4 | 1 |
| 4228.0 | 41.3 | P | V | 32.4 | -31.8 | 0.0 | 41.9 | 74.0 | 32.1 | 1 |
| 4499.3 | 41.8 | P | V | 32.9 | -31.4 | 0.0 | 43.3 | 74.0 | 30.7 | 1 |
| 4811.6 | 40.5 | P | V | 33.4 | -31.1 | 0.0 | 42.8 | 74.0 | 31.2 | 1 |

Note 1: The Peak data is under the Average limit, therefore Average measurement not performed.
Judgment: Passed by 8.4 dB

Standby/Receive Mode:

| Freq. MHz | Meter Reading dBuV | Dect. | Ant. Pol. | Ant Factor dB/m | Cable & amp Factors | Dist Fact dB | EUT dBuV/m | Limit dBuV/m | Margin Under Limit dB | Note |
|---|---|---|---|---|---|---|---|---|---|---|
| 40.6 | 10.3 | P | H | 10.5 | 0.7 | 0.0 | 21.5 | 40.0 | 18.5 | |
| 51.9 | 9.8 | P | H | 9.1 | 0.8 | 0.0 | 19.7 | 40.0 | 20.3 | |
| 57.9 | 10.9 | P | H | 9.1 | 0.8 | 0.0 | 20.8 | 40.0 | 19.2 | |
| 66.7 | 12.6 | P | H | 9.1 | 0.8 | 0.0 | 22.5 | 40.0 | 17.5 | |
| 78.9 | 10.6 | P | H | 9.2 | 1.0 | 0.0 | 20.8 | 40.0 | 19.2 | |
| 88.2 | 14.0 | P | H | 9.4 | 1.0 | 0.0 | 24.4 | 43.5 | 19.1 | |
| 95.5 | 13.8 | P | H | 9.9 | 1.0 | 0.0 | 24.7 | 43.5 | 18.8 | |
| 107.9 | 11.7 | P | H | 10.7 | 1.1 | 0.0 | 23.5 | 43.5 | 20.0 | |
| 128.4 | 10.5 | P | H | 12.0 | 1.2 | 0.0 | 23.7 | 43.5 | 19.8 | |
| 149.5 | 11.7 | P | H | 12.6 | 1.3 | 0.0 | 25.6 | 43.5 | 17.9 | |
| 172.9 | 11.3 | P | H | 13.2 | 1.4 | 0.0 | 25.9 | 43.5 | 17.6 | |
| 191.9 | 11.7 | P | H | 13.9 | 1.5 | 0.0 | 27.1 | 43.5 | 16.4 | |
| 220.0 | 11.9 | P | H | 14.8 | 1.6 | 0.0 | 28.3 | 46.0 | 17.7 | |
| 228.9 | 16.0 | P | H | 14.9 | 1.7 | 0.0 | 32.6 | 46.0 | 13.4 | |
| 238.4 | 16.2 | P | H | 15.0 | 1.7 | 0.0 | 32.9 | 46.0 | 13.1 | |
| 285.8 | 8.9 | P | H | 13.8 | 1.8 | 0.0 | 24.5 | 46.0 | 21.5 | |
| 328.1 | 8.5 | P | H | 14.2 | 2.0 | 0.0 | 24.7 | 46.0 | 21.3 | |
| 373.3 | 10.6 | P | H | 14.8 | 2.1 | 0.0 | 27.5 | 46.0 | 18.5 | |
| 420.2 | 9.9 | P | H | 15.7 | 2.3 | 0.0 | 27.9 | 46.0 | 18.1 | |
| 464.4 | 10.9 | P | H | 16.7 | 2.4 | 0.0 | 30.0 | 46.0 | 16.0 | |
| 589.0 | 9.0 | P | H | 18.6 | 2.7 | 0.0 | 30.3 | 46.0 | 15.7 | |
| 671.0 | 10.3 | P | H | 20.8 | 2.9 | 0.0 | 34.0 | 46.0 | 12.0 | |
| 773.7 | 9.3 | P | H | 21.0 | 3.1 | 0.0 | 33.4 | 46.0 | 12.6 | |
| 859.2 | 8.1 | P | H | 22.7 | 3.3 | 0.0 | 34.1 | 46.0 | 11.9 | |
| 944.3 | 8.4 | P | H | 23.2 | 3.5 | 0.0 | 35.1 | 46.0 | 10.9 | |
| 1153.9 | 43.8 | P | H | 24.7 | -34.3 | 0.0 | 34.2 | 74.0 | 39.8 | 1 |
| 1504.3 | 45.4 | P | H | 25.2 | -34.4 | 0.0 | 36.2 | 74.0 | 37.8 | 1 |
| 1812.6 | 45.5 | P | H | 27.0 | -34.2 | 0.0 | 38.3 | 74.0 | 35.7 | 1 |

| Freq. MHz | Meter Reading dBuV | Dect. | Ant. Pol. | Ant Factor dB/m | Cable & amp Factors | Dist Fact dB | EUT dBuV/m | Limit dBuV/m | Margin Under Limit dB | Note |
|---|---|---|---|---|---|---|---|---|---|---|
| 2169.9 | 41.0 | P | H | 27.7 | -34.0 | 0.0 | 34.7 | 74.0 | 39.3 | 1 |
| 2474.2 | 42.0 | P | H | 28.4 | -33.7 | 0.0 | 36.7 | 74.0 | 37.3 | 1 |
| 2884.6 | 44.2 | P | H | 29.5 | -33.4 | 0.0 | 40.3 | 74.0 | 33.7 | 1 |
| 3157.9 | 41.3 | P | H | 30.7 | -32.8 | 0.0 | 39.2 | 74.0 | 34.8 | 1 |
| 3504.3 | 41.5 | P | H | 31.2 | -32.5 | 0.0 | 40.2 | 74.0 | 33.8 | 1 |
| 3823.6 | 40.8 | P | H | 32.7 | -32.3 | 0.0 | 41.2 | 74.0 | 32.8 | 1 |
| 4168.9 | 40.4 | P | H | 32.4 | -31.8 | 0.0 | 41.0 | 74.0 | 33.0 | 1 |
| 4497.3 | 40.5 | P | H | 32.9 | -31.4 | 0.0 | 42.0 | 74.0 | 32.0 | 1 |
| 4825.6 | 40.4 | P | H | 33.4 | -31.1 | 0.0 | 42.7 | 74.0 | 31.3 | 1 |
| 41.5 | 10.6 | P | V | 10.5 | 0.7 | 0.0 | 21.8 | 40.0 | 18.2 | |
| 66.5 | 13.4 | P | V | 9.1 | 0.8 | 0.0 | 23.3 | 40.0 | 16.7 | |
| 76.7 | 10.6 | P | V | 8.8 | 0.9 | 0.0 | 20.3 | 40.0 | 19.7 | |
| 88.2 | 14.4 | P | V | 9.4 | 1.0 | 0.0 | 24.8 | 43.5 | 18.7 | |
| 95.5 | 13.0 | P | V | 9.9 | 1.0 | 0.0 | 23.9 | 43.5 | 19.6 | |
| 104.6 | 11.4 | P | V | 10.4 | 1.1 | 0.0 | 22.9 | 43.5 | 20.6 | |
| 114.3 | 10.4 | P | V | 11.1 | 1.1 | 0.0 | 22.6 | 43.5 | 20.9 | |
| 124.7 | 10.6 | P | V | 11.7 | 1.2 | 0.0 | 23.5 | 43.5 | 20.0 | |
| 134.2 | 11.3 | P | V | 12.1 | 1.3 | 0.0 | 24.7 | 43.5 | 18.8 | |
| 151.7 | 12.0 | P | V | 12.6 | 1.3 | 0.0 | 25.9 | 43.5 | 17.6 | |
| 171.6 | 13.5 | P | V | 13.1 | 1.4 | 0.0 | 28.0 | 43.5 | 15.5 | |
| 196.1 | 11.6 | P | V | 14.1 | 1.5 | 0.0 | 27.2 | 43.5 | 16.3 | |
| 218.9 | 11.3 | P | V | 14.7 | 1.6 | 0.0 | 27.6 | 46.0 | 18.4 | |
| 228.9 | 16.3 | P | V | 14.9 | 1.7 | 0.0 | 32.9 | 46.0 | 13.1 | |
| 238.4 | 15.5 | P | V | 15.0 | 1.7 | 0.0 | 32.2 | 46.0 | 13.8 | |
| 289.8 | 8.3 | P | V | 14.0 | 1.9 | 0.0 | 24.2 | 46.0 | 21.8 | |
| 337.2 | 8.9 | P | V | 14.2 | 2.0 | 0.0 | 25.1 | 46.0 | 20.9 | |
| 382.4 | 9.7 | P | V | 15.0 | 2.2 | 0.0 | 26.9 | 46.0 | 19.1 | |
| 419.2 | 10.2 | P | V | 15.7 | 2.3 | 0.0 | 28.2 | 46.0 | 17.8 | |
| 461.3 | 9.5 | P | V | 16.6 | 2.4 | 0.0 | 28.5 | 46.0 | 17.5 | |
| 586.0 | 10.3 | P | V | 18.5 | 2.7 | 0.0 | 31.5 | 46.0 | 14.5 | |
| 674.1 | 9.5 | P | V | 21.0 | 2.9 | 0.0 | 33.4 | 46.0 | 12.6 | |
| 757.6 | 9.3 | P | V | 20.9 | 3.1 | 0.0 | 33.3 | 46.0 | 12.7 | |
| 824.7 | 9.4 | P | V | 21.8 | 3.3 | 0.0 | 34.5 | 46.0 | 11.5 | |
| 922.3 | 8.7 | P | V | 23.0 | 3.4 | 0.0 | 35.1 | 46.0 | 10.9 | |
| 1193.9 | 42.1 | P | V | 24.9 | -34.2 | 0.0 | 32.8 | 74.0 | 41.2 | 1 |
| 1491.2 | 43.2 | P | V | 25.2 | -34.4 | 0.0 | 34.0 | 74.0 | 40.0 | 1 |
| 1831.6 | 42.7 | P | V | 27.0 | -34.2 | 0.0 | 35.5 | 74.0 | 38.5 | 1 |
| 2179.9 | 40.0 | P | V | 27.7 | -34.0 | 0.0 | 33.7 | 74.0 | 40.3 | 1 |
| 2513.3 | 41.7 | P | V | 28.5 | -33.6 | 0.0 | 36.6 | 74.0 | 37.4 | 1 |
| 2833.6 | 43.9 | P | V | 29.3 | -33.3 | 0.0 | 39.9 | 74.0 | 34.1 | 1 |
| 3187.9 | 41.9 | P | V | 30.9 | -32.7 | 0.0 | 40.1 | 74.0 | 33.9 | 1 |
| 3502.3 | 41.1 | P | V | 31.2 | -32.5 | 0.0 | 39.8 | 74.0 | 34.2 | 1 |
| 3815.6 | 41.1 | P | V | 32.7 | -32.3 | 0.0 | 41.5 | 74.0 | 32.5 | 1 |
| 4191.9 | 40.3 | P | V | 32.4 | -31.8 | 0.0 | 40.9 | 74.0 | 33.1 | 1 |
| 4495.2 | 42.0 | P | V | 32.9 | -31.4 | 0.0 | 43.5 | 74.0 | 30.5 | 1 |
| 4802.6 | 40.4 | P | V | 33.4 | -31.1 | 0.0 | 42.7 | 74.0 | 31.3 | 1 |

Note 1: The Peak data is under the Average limit, therefore Average measurement not performed.

Judgment: Passed by 10.9 dB

**Radiated emissions (Restricted Band) Transmit Mode**

Fundamental, Harmonic and Band edge emissions

| | Tx | Spectrum Analyzer Readings dBuV | | | | | | | | | EUT | Peak | Ave | Peak | Ave | Margin |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| harm | Freq | Peak | | | Ave | Peak | | | Ave | Corr. | Emission | Tot. FS | | Limit | | Under |
| | | Vertical Polarization | | | | Horizontal Polarization | | | | Fact | Freq | | | | | Limit |
| # | MHz | X | Y | Z | Max | X | Y | Z | Max | dB | MHz | dBuV/m | | dBuV/m | | dB |
| 3 | 903 | 59.7 | 61.1 | 59.7 | 54.2 | 55.8 | 59.2 | 57.9 | 52.1 | -4.0 | 2709.0 | 57.1 | 50.2 | 74 | 54 | 3.8 |
| 4 | 903 | 56.1 | 55.6 | 55.1 | 48.7 | 48.9 | 53.6 | 52.4 | 46.3 | -0.3 | 3612.0 | 55.8 | 48.4 | 74 | 54 | 5.6 |
| 5 | 903 | 51.1 | 47.7 | 48.0 | 43.2 | 47.0 | 48.1 | 49.3 | 41.3 | 2.8 | 4515.0 | 53.9 | 46.0 | 74 | 54 | 8.0 |
| 6 | 903 | 45.4 | 43.2 | 43.4 | 37.4 | 44.7 | 40.9 | 44.0 | 36.9 | 5.8 | 5418.0 | 51.2 | 43.2 | 74 | 54 | 10.8 |
| 8 | 903 | 38.5 | 40.7 | 39.6 | 32.7 | 38.4 | 42.4 | 38.2 | 34.7 | 10.6 | 7224.0 | 53.0 | 45.3 | 74 | 54 | 8.7 |
| 9 | 903 | 38.1 | 37.0 | 36.2 | 29.2 | 36.3 | 38.4 | 36.4 | 29.8 | 12.9 | 8127.0 | 51.3 | 42.7 | 74 | 54 | 11.3 |
| 10 | 903 | 36.9 | 37.8 | 35.9 | 29.7 | 35.4 | 37.5 | 36.2 | 29.3 | 13.7 | 9030.0 | 51.5 | 43.4 | 74 | 54 | 10.6 |
| 3 | 915 | 58.5 | 60.4 | 57.1 | 52.7 | 56.4 | 57.3 | 55.6 | 49.8 | -3.9 | 2745.0 | 56.5 | 48.8 | 74 | 54 | 5.2 |
| 4 | 915 | 52.4 | 54.0 | 50.3 | 46.4 | 47.5 | 46.8 | 49.3 | 41.6 | -0.1 | 3660.0 | 53.9 | 46.3 | 74 | 54 | 7.7 |
| 5 | 915 | 48.3 | 47.1 | 46.0 | 40.8 | 48.8 | 45.3 | 46.2 | 41.2 | 3.0 | 4575.0 | 51.8 | 44.2 | 74 | 54 | 9.8 |
| 8 | 915 | 42.0 | 36.9 | 41.9 | 34.5 | 39.2 | 38.4 | 37.2 | 31.1 | 10.7 | 7320.0 | 52.7 | 45.2 | 74 | 54 | 8.8 |
| 9 | 915 | 45.8 | 46.4 | 40.3 | 37.3 | 45.8 | 45.9 | 44.3 | 37.1 | 12.6 | 8235.0 | 59.0 | 49.9 | 74 | 54 | 4.1 |
| 10 | 915 | 37.3 | 37.3 | 36.5 | 28.8 | 36.2 | 36.0 | 35.5 | 27.9 | 14.0 | 9150.0 | 51.3 | 42.8 | 74 | 54 | 11.2 |
| 3 | 927 | 58.8 | 60.3 | 58.6 | 52.3 | 54.0 | 58.6 | 56.5 | 51.3 | -3.9 | 2781.0 | 56.4 | 48.4 | 74 | 54 | 5.6 |
| 4 | 927 | 50.1 | 53.2 | 49.4 | 45.7 | 47.0 | 53.6 | 50.3 | 46.2 | 0.2 | 3708.0 | 53.8 | 46.4 | 74 | 54 | 7.6 |
| 5 | 927 | 43.9 | 46.7 | 41.3 | 38.7 | 47.8 | 49.3 | 44.1 | 41.5 | 3.3 | 4635.0 | 52.6 | 44.8 | 74 | 54 | 9.2 |
| 8 | 927 | 39.1 | 38.9 | 37.8 | 31.1 | 37.9 | 38.9 | 35.1 | 30.8 | 11.7 | 7416.0 | 50.8 | 42.8 | 74 | 54 | 11.2 |
| 9 | 927 | 40.0 | 40.8 | 42.6 | 35.1 | 44.7 | 44.2 | 37.6 | 36.2 | 11.8 | 8343.0 | 56.5 | 48.0 | 74 | 54 | 6.0 |
| Column numbers (see below for explanations) | | | | | | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |

Column #1. harm = Harmonic; BE = Band Edge emissions
Column #2. Frequency of Transmitter.
Column #3. Uncorrected readings from the spectrum analyzer with First Axis Rotation.
Column #4. Uncorrected readings from the spectrum analyzer with Second Axis Rotation.
Column #5. Uncorrected readings from the spectrum analyzer with Third Axis Rotation.
Column #6. Highest Average Reading for Vertical Polarization.
Column #7. Uncorrected readings from the spectrum analyzer with First Axis Rotation.
Column #8. Uncorrected readings from the spectrum analyzer with Second Axis Rotation.
Column #9. Uncorrected readings from the spectrum analyzer with Third Axis Rotation.
Column #10. Highest Average Reading for Horizontal Polarization.
Column #11. Corr. Factors = Cable Loss – Preamp Gain + Antenna Factor + HPF Factor
Column #12. Frequency of Tested Emission
Column #13. Highest peak field strength at listed frequency.
Column #14. Highest Average field strength at listed frequency.
Column #15. Peak Limit.
Column #16. Average Limit.
Column #17. The margin (last column) is the worst-case margin under the peak or average limits for that row.

Overall Judgment: Passed by 3.8 dB
No other Emissions were detected from 30 to 9300 MHz within 10 dB of the limits.

### 11.6.3 Measurement Instrumentation Uncertainty

| Measurement | Uncertainty |
|---|---|
| Bandwidth using marker delta method at a span of 2 MHz | 10 kHz |
| 99% Occupied Bandwidth | 1% of frequency span |
| Amplitude measurement 1-10,000 MHz | 2.0 dB |
| Radiated Emissions, E-field, 3 meters, 30 to 200 MHz | 4.8 dB |
| Radiated Emissions, E-field, 3 meters, 200 to 1000 MHz | 4.6 dB |
| Radiated Emissions, E-field, 3 meters, 1 to 6 GHz | 5.0 dB |
| Radiated Emissions, E-field, 3 meters, 6 to 18 GHz | 5.5 dB |
| Temperature THM-02 | 0.6 Deg C |

The uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2 in accordance with CISPR 16-4-2.

## 12.0 REVISION HISTORY

| RP-9966 Revisions: | | | |
|---|---|---|---|
| Rev. | Affected Sections | Description | Rationale |
| 1 | 3.1 | Added info about RF module installed | Omitted in original report |
| | 7.0 | Removed Reference to AC Conducted test station | Did not use that station |
| 1 | 11.1 | Repeated OBW test with new RBW on analyzer | Error in original test |
| 1 | 11.2 | Changed 10 MHz to 20 MHz | Typographical Error |
| | | | |
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