



Engineering Solutions & Electromagnetic Compatibility Services

**Certification Application Report  
FCC Part 15.247 & ISED RSS-247**

|  |   |   |                            |
|--|---|---|----------------------------|
| Test Lab:<br>Rhein Tech Laboratories, Inc. Phone: 703-689 0368<br>360 Herndon Parkway www.rheintech.com<br>Suite 1400<br>Herndon, VA 20170 |   | Applicant:<br>L3Harris Technologies<br>221 Jefferson Ridge Parkway<br>Lynchburg, VA 24501 USA |                            |
| <b>FCC ID/<br/>IC</b>  | OWDTR-0166-E/<br>3636B-0166   | <b>Test Report Date</b>   | April 18, 2023             |
| <b>Platform</b>  | N/A   | <b>RTL Work Order #</b>   | 2022003                    |
| <b>Model /<br/>HVIN</b>  | XL-95P V/U /<br>XL-x5-V/U   | <b>RTL Quote Number</b>   | QRTL22-003A                |
| <b>American National<br/>Standard Institute</b>  | ANSI C63.10-2013 American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices   |   |                            |
| <b>FCC Classification</b>  | DTS – Part 15 Digital Transmission System   |   |                            |
| <b>FCC Rule Part(s)</b>  | FCC Rules Part 15.247: Operation within the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz (10/01/21)   |   |                            |
| <b>ISED Standards</b>  | RSS-247 Issue 2: Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices<br>RSS-Gen Issue 5 Amendments 1/2: General Requirements for Compliance of Radio Apparatus |   |                            |
| <b>Frequency Range<br/>(MHz)</b>   | <b>Output Power (mW)<br/>Peak Conducted</b>   | <b>Frequency Tolerance</b>  | <b>Emission Designator</b> |
| 2412 – 2462  | 8.3   | N/A   | N/A                        |

I, the undersigned, hereby declare that the equipment tested and referenced in this report conforms to the identified standard(s) as described in this test report. No modifications were made to the equipment during testing in order to achieve compliance with these standards. Furthermore, there was no deviation from, additions to, or exclusions from, the applicable parts of FCC Part 2, FCC Part 15, ANSI C63.10, and ISED RSS-247 and RSS-Gen.

Signature: 

Date: April 18, 2023

Typed/Printed Name: Desmond A. Fraser

Position: President

*These tests are accredited and meet the requirements of ISO/IEC 17025 as verified by ANAB.  
Refer to certificate and scope of accreditation AT-1445.  
This report replaces R1.2.*

*This report may not be reproduced, except in full, without the written approval of Rhein Tech Laboratories, Inc. and L3Harris Technologies. The test results relate only to the item(s) tested.*

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## 1 General Information

### 1.1 Scope

#### Applicable Standards

- FCC Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz
- ISED RSS-247: Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices
- ISED RSS-Gen Issue 5 Amendments 1/2: General Requirements for Compliance of Radio Apparatus

### 1.2 Description of EUT

|                             |                                 |
|-----------------------------|---------------------------------|
| <b>Equipment Under Test</b> | Portable Radio                  |
| <b>Model</b>                | XL-95P Multi-Band Portable, V/U |
| <b>Power Supply</b>         | 7.4 VDC                         |
| <b>Modulation Type</b>      | CCK, DSSS, OFDM (802.11b/g/n)   |
| <b>Frequency Range</b>      | 2412 – 2462 MHz                 |

### 1.3 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located at 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170.

ISED CAB ID: US0079, Company Number: 2956A.

### 1.4 Related Submittal(s)/Grant(s)

This is an original certification application for L3Harris Technologies XL-95P Multi-Band Portable V/U Radio, HVIN: XL-x5-V/U, FCC ID: OWDTR-0166-E, IC: 3636B-0166.

### 1.5 Modifications

No modifications were required for compliance.

## 2 Test Information

### 2.1 Description of Test Modes

In accordance with FCC 15.31(m), and because the EUT utilizes an operating band greater than 10 MHz, the following frequencies were tested.

**Table 2-1: Channels Tested for Wi-Fi – 802.11b (11 Mbps); 802.11g (54 Mbps); 802.11n (6.5 Mbps)**

| Channel (#) | Frequency (MHz) |
|-------------|-----------------|
| 1           | 2412            |
| 6           | 2437            |
| 11          | 2462            |

### 2.2 Exercising the EUT

The EUT was tested in all three orthogonal planes in order to determine worst-case emissions. The EUT was provided with software to continuously transmit during testing. The carrier was also checked to verify that information was being transmitted; all modes were investigated, and the worst-case mode was used for final testing (11.0 Mbps for 802.11b, 24.0 Mbps for 802.11g, and 19.5 Mbps for 802.11n). There were no deviations from the test standard(s) and/or methods. The test results reported relate only to the item tested.

### 2.3 Test Result Summary

**Table 2-2: Test Result Summary – FCC Part 15, Subpart C (Section 15.247); RSS-247, RSS-Gen**

| FCC              | ISED                           | Test                                 | Result |
|------------------|--------------------------------|--------------------------------------|--------|
| FCC 15.207       | RSS-Gen 8.8                    | AC Conducted Emissions               | Pass   |
| FCC 15.209       | RSS-247 5.5; RSS-Gen 8.9, 8.10 | Radiated Emissions                   | Pass   |
| FCC 15.247(a)(2) | RSS-247 5.2(a)                 | 6 dB Bandwidth                       | Pass   |
| FCC 15.247(b)(1) | RSS-247 5.4(b); RSS-Gen 6.12   | Maximum Peak Power Output            | Pass   |
| FCC 15.247(d)    | RSS-247 5.5; RSS-Gen 6.13      | Antenna Conducted Spurious Emissions | Pass   |
| FCC 15.247(d)    | RSS-247 5.5                    | Band Edge Measurement                | Pass   |
| FCC 15.247(e)    | RSS-247 5.2(b)                 | Power Spectral Density               | Pass   |
| N/A              | RSS-Gen 6.7                    | 99% Bandwidth                        | Pass   |

### 2.4 Tested System Details

The test samples were received on December 10, 2020 and August 22, 2022. The FCC identifiers for all applicable equipment, plus descriptions of all cables used in the tested system, are identified in the following tables.

**Table 2-3: Equipment Under Test (EUT)**

| Part                       | Manufacturer          | Model / HVIN     | Serial Number  | FCC ID       | RTL Bar Code |
|----------------------------|-----------------------|------------------|----------------|--------------|--------------|
| Handheld Radio (conducted) | L3Harris Technologies | XL-95P 7/800 MHz | A40198E2A016   | OWDTR-0162-E | 23756        |
| Radio (radiated)           | L3Harris Technologies | XL-95P V/U       | A40199E24A-001 | OWDTR-0166-E | 24159        |
| Radio (radiated)           | L3Harris Technologies | XL-95P V/U       | A40199E24A-002 | OWDTR-0166-E | 24216        |

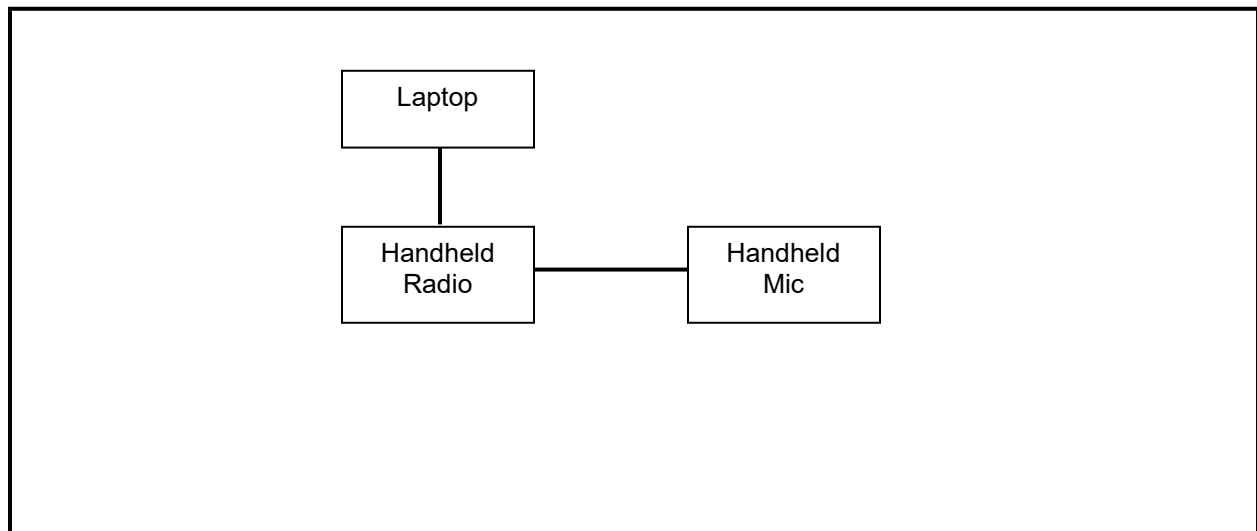
**Table 2-4: Support Equipment**

| Part   | Manufacturer | Model | PN/SN           | FCC ID | RTL Bar Code |
|--------|--------------|-------|-----------------|--------|--------------|
| Laptop | ASUS         | N550J | F2N0CY33003067G | N/A    | N/A          |

**Table 2-5: Auxiliary Equipment**

| Part         | Manufacturer          | Model | PN/SN    | FCC ID | RTL Bar Code |
|--------------|-----------------------|-------|----------|--------|--------------|
| Handheld Mic | L3Harris Technologies | N/A   | 01HE3327 | N/A    | 23762        |

**2.5 Configuration of Tested System**



**Figure 2-1: Configuration of System Under Test**

**3 Peak Output Power – FCC 15.247(b)(1); RSS-247 5.4(b), RSS-Gen 6.12**

**3.1 Power Output Test Procedure**

A conducted power measurement of the EUT was taken using an Agilent Analyzer. The following settings were used:

- 1) Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel (5 MHz used)
- 2) RBW >20 dB bandwidth of the emission being measured (2 MHz used)
- 3) VBW ≥RBW (3 MHz used)
- 4) Sweep: Auto
- 5) Detector function: Peak
- 6) Trace: Max hold. The trace was allowed to stabilize, and the marker-to-peak function was used to set the marker to the peak of the emission.

**Table 3-1: Power Output Test Equipment**

| RTL Asset # | Manufacturer         | Model  | Part Type                            | Serial Number | Calibration Due Date |
|-------------|----------------------|--------|--------------------------------------|---------------|----------------------|
| 901583      | Agilent Technologies | N9010A | EXA Signal Analyzer (10 Hz-26.5 GHz) | MY51250846    | 10/04/2024           |

**3.2 Power Output Test Results**

**Table 3-2: Power Output Test Data**

| Rate (b/g/n, Mbps) | Channel (#) | Frequency (MHz) | Conducted Peak Power (dBm) | Limit (dBm) | Margin (dB) |
|--------------------|-------------|-----------------|----------------------------|-------------|-------------|
| 802.11b<br>11.0    | 1           | 2412            | 7.9                        | 30.0        | -22.1       |
|                    | 6           | 2437            | 7.9                        | 30.0        | -22.1       |
|                    | 11          | 2462            | 8.2                        | 30.0        | -21.8       |
| 802.11g<br>24.0    | 1           | 2412            | 8.2                        | 30.0        | -21.8       |
|                    | 6           | 2437            | 8.0                        | 30.0        | -22.0       |
|                    | 11          | 2462            | 9.2                        | 30.0        | -20.8       |
| 802.11n<br>65.0    | 1           | 2412            | 8.1                        | 30.0        | -21.9       |
|                    | 6           | 2437            | 7.9                        | 30.0        | -22.1       |
|                    | 11          | 2462            | 8.0                        | 30.0        | -22.0       |

Highest conducted peak power measured: 9.2 dBm ≈ 8.3 mW

$$P(\text{Watts}) = 10^{(\text{dBm} / 10)} / 1000$$

Measurement uncertainty: ±0.5 dB. This measurement uncertainty is an expanded uncertainty for 95% confidence level received with a coverage factor k=2.

**Results: Pass**

**Test Personnel:**

|   |   |  |
|---|---|--|
| Khue Do / Daniel W. Baltzell<br>Test Engineer | <br>Signature | December 14, 2020<br>April 14, 2023<br>Dates of Test |
|---|---|--|



#### 4 Compliance with the Band Edge – FCC 15.247(d); RSS-247 5.5

##### 4.1 Band Edge Test Procedure

The transmitter output was connected to its appropriate antenna. 1 MHz peak and 1 MHz average corrected measurements were taken within the restricted band to show compliance.

**Table 4-1: Band Edge Test Equipment**

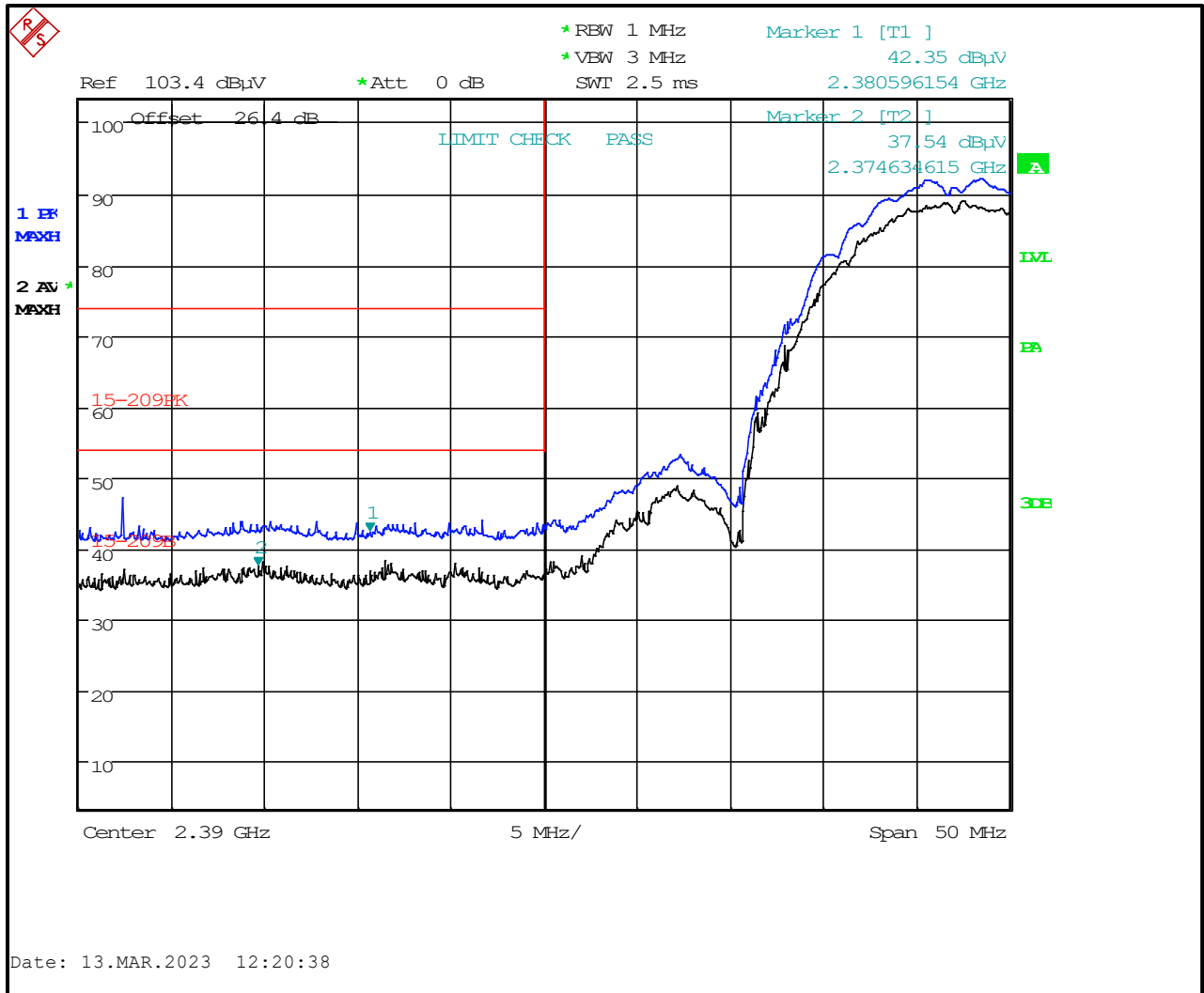
| RTL Asset # | Manufacturer    | Model | Part Type         | Serial Number | Calibration Due Date |
|-------------|-----------------|-------|-------------------|---------------|----------------------|
| 901581      | Rohde & Schwarz | FSU   | Spectrum Analyzer | 1166.1660.50  | 10/01/2024           |

#### 4.2 Restricted Band Edge Test Results

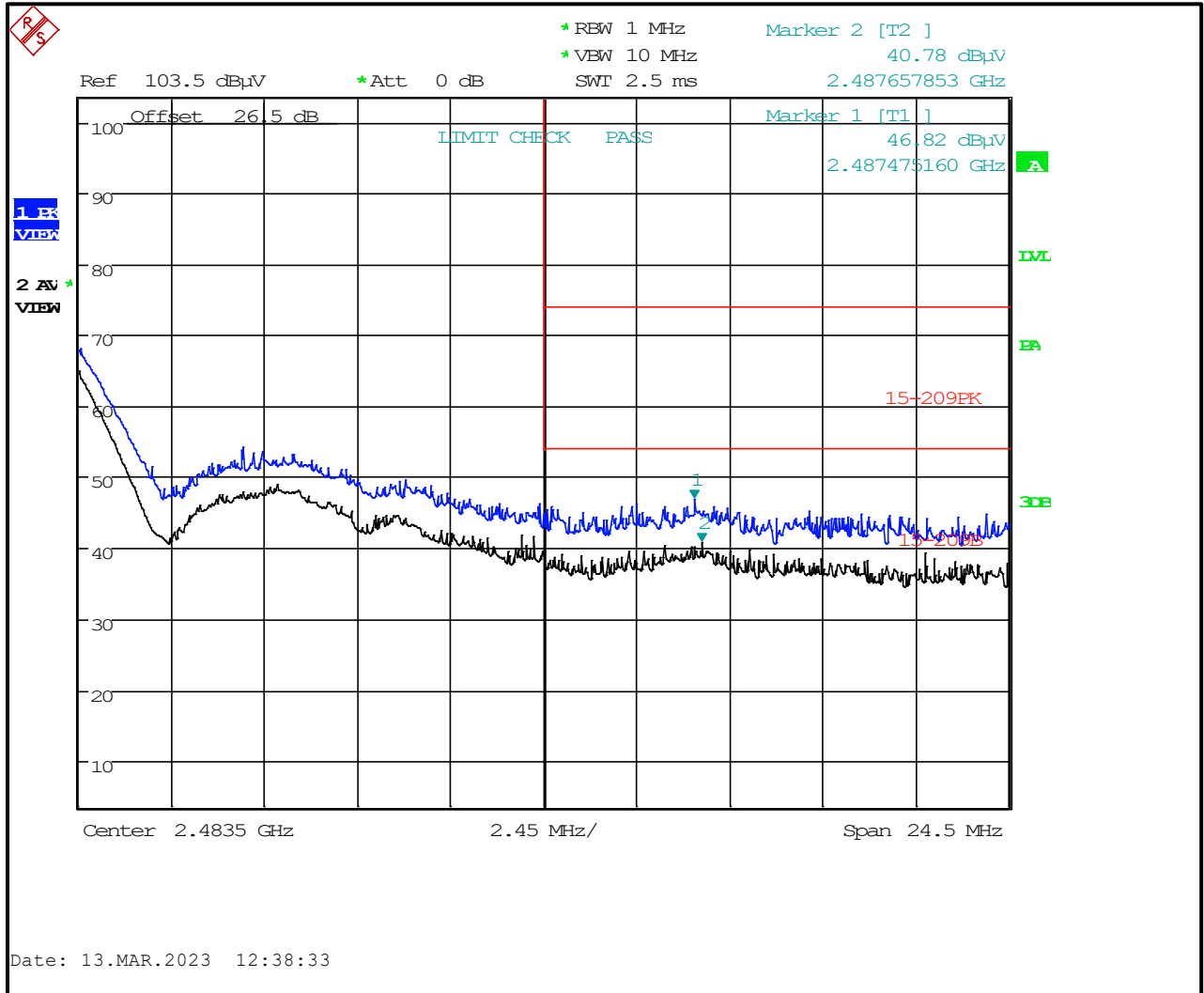
EUT was programmed to TX with 20 MHz BW and high power level for all test frequencies. Rate 1.0 Mbps was used for 802.11b, rate 12.0 Mbps was used for 802.11g, and rate 65 Mbps was used for 802.11n.

#### 4.3 Band Edge Plots

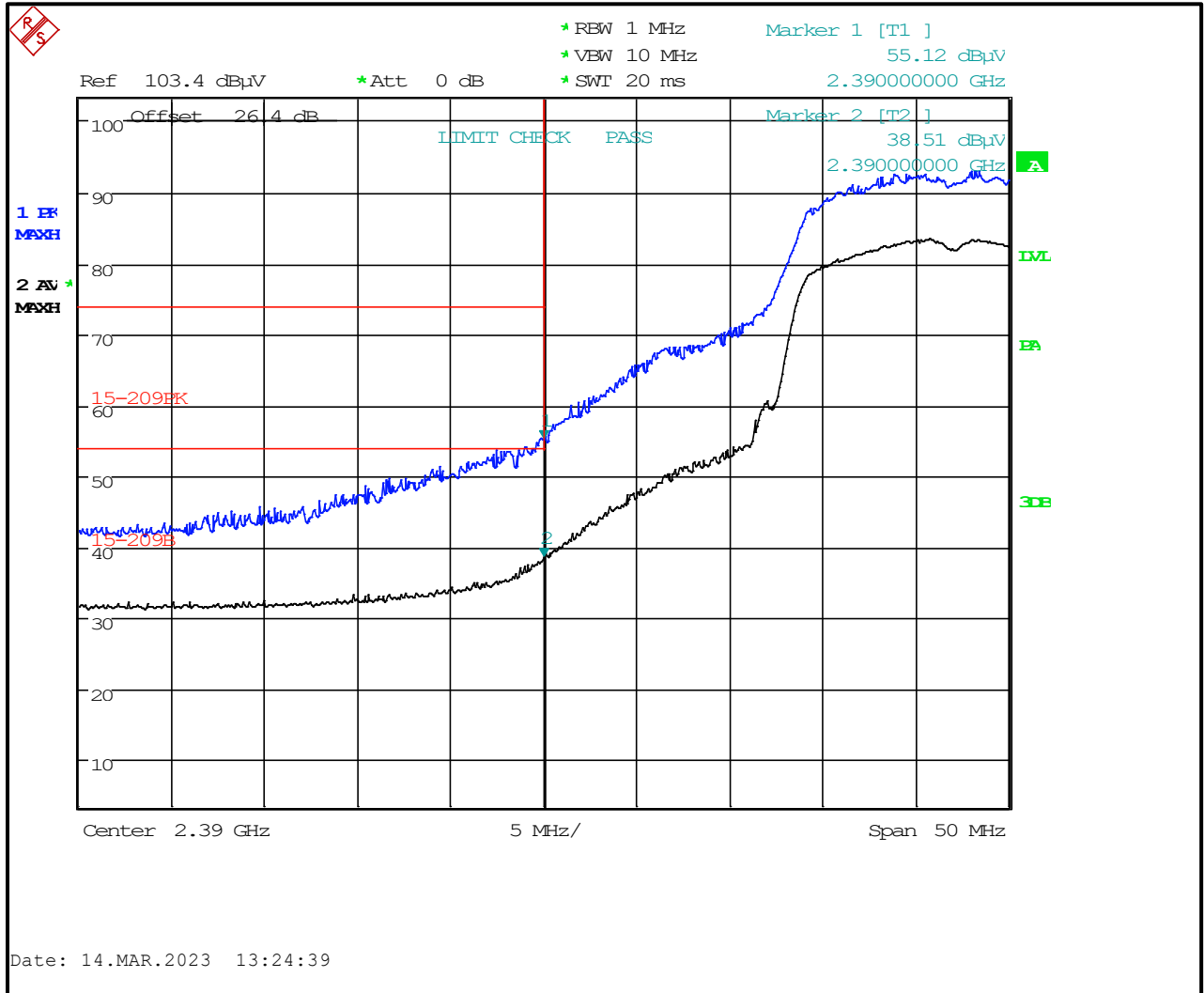
Plot 4-1: Lower Band Edge – 802.11b (1.0 Mbps)



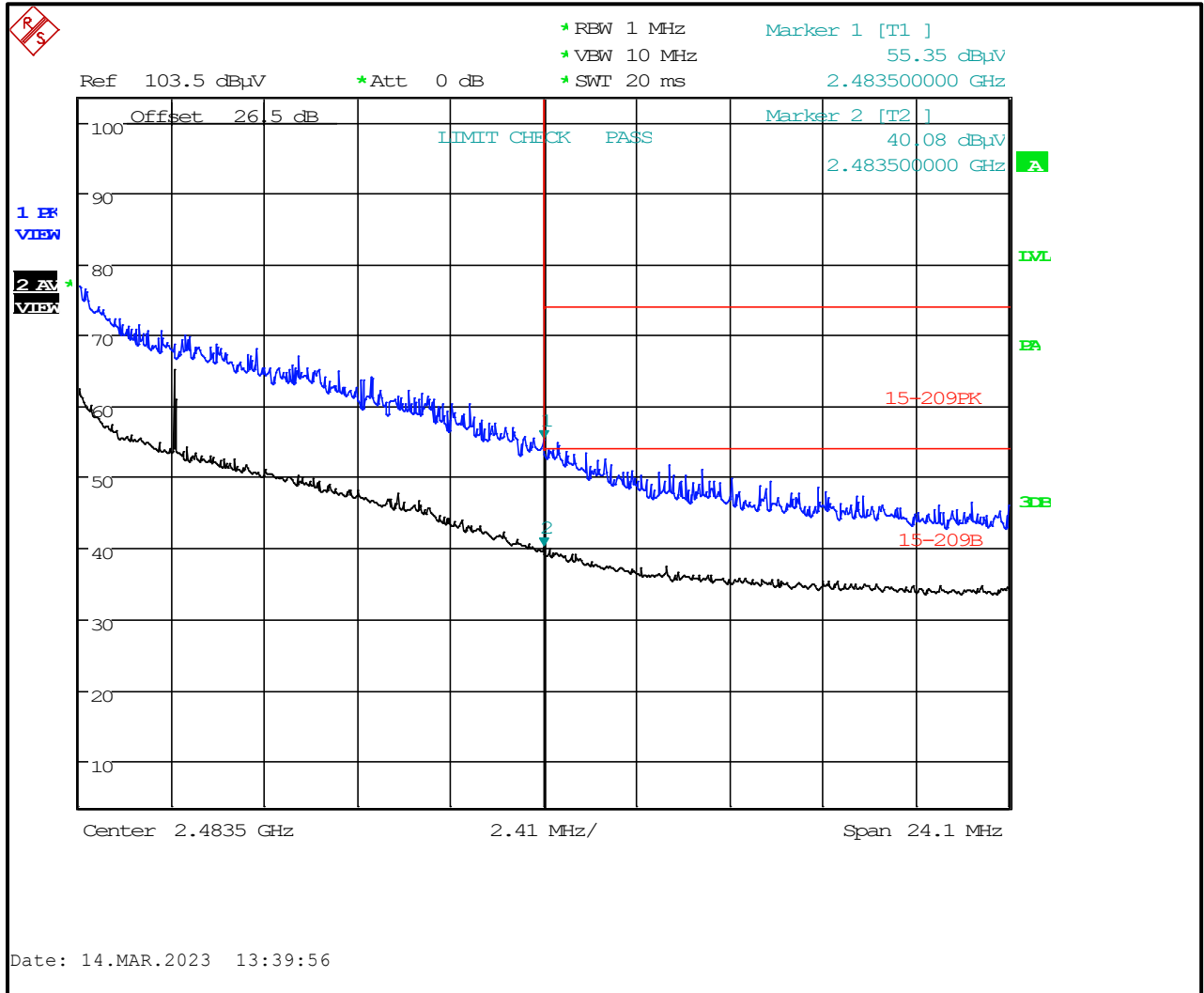
Plot 4-2: Upper Band Edge – 802.11b (1.0 Mbps)



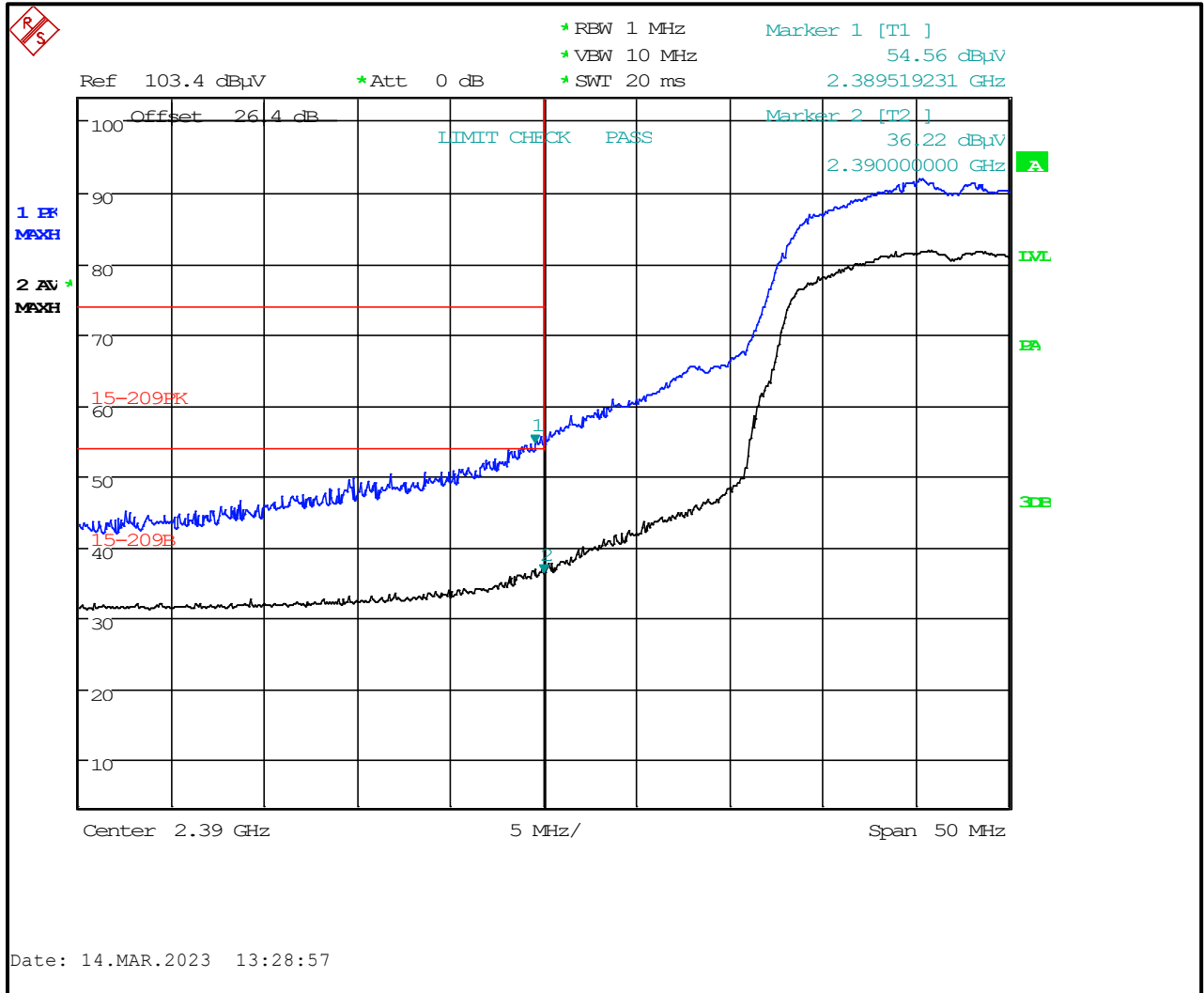
**Plot 4-3: Lower Band Edge – 802.11g (12.0 Mbps)**



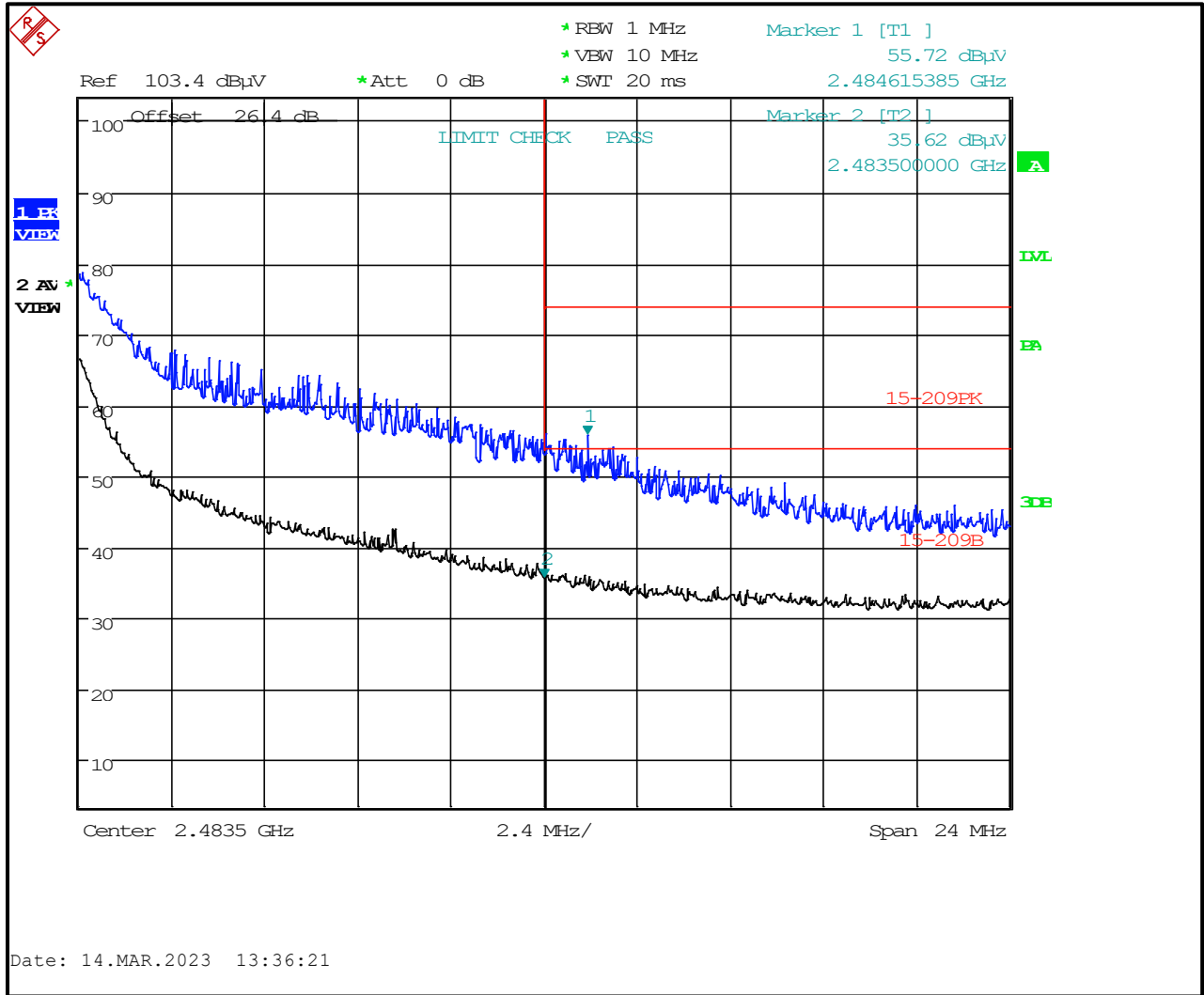
Plot 4-4: Upper Band Edge – 802.11g (12.0 Mbps)



**Plot 4-5: Lower Band Edge – 802.11n (65 Mbps)**



**Plot 4-6: Upper Band Edge – 802.11n (65.0 Mbps)**



Measurement uncertainty: ±0.5 dB. This measurement uncertainty is an expanded uncertainty for 95% confidence level received with a coverage factor k=2.

**Results: Pass**

Daniel W. Baltzell  
 Test Engineer

*Daniel W. Baltzell*  
 Signature

March 13-14, 2023  
 Dates of Test

**5 Antenna Conducted Spurious Emissions – FCC 15.247(d); RSS-247 5.5, RSS-Gen 6.13**

**5.1 Antenna Conducted Spurious Emissions Test Procedures**

Antenna spurious emissions per FCC 15.247(d) were measured from the EUT antenna port using a 50-ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 100 kHz. The modulated carrier was identified at the following frequencies: 2412 MHz, 2437 MHz and 2462 MHz.

**Table 5-1: Antenna Conducted Spurious Emissions Test Equipment**

| RTL Asset # | Manufacturer         | Model  | Part Type                            | Serial Number | Calibration Due Date |
|-------------|----------------------|--------|--------------------------------------|---------------|----------------------|
| 901583      | Agilent Technologies | N9010A | EXA Signal Analyzer (10 Hz-26.5 GHz) | MY51250846    | 03/18/2021           |

**5.2 Antenna Conducted Spurious Emissions Test Results**

No harmonics or spurs were found within 20 dB (note that we are reporting power as peak) of the limit from 30 MHz to the 10<sup>th</sup> harmonic of the carrier frequency; per FCC 2.1051 no data is being reported.

Measurement uncertainty: ±0.5 dB. This measurement uncertainty is an expanded uncertainty for 95% confidence level received with a coverage factor k=2.

**Results: Pass**

**Test Personnel:**

|                          |  |                                   |
|--------------------------|--|-----------------------------------|
| Khue Do<br>Test Engineer | <br>Signature | December 15, 2020<br>Date of Test |
|--------------------------|--|-----------------------------------|



**6 Bandwidths – FCC 15.247(a)(2); RSS-247 5.2(a); RSS-Gen 6.7**

**6.1 Bandwidth Test Procedure**

The minimum 6 dB and 99% bandwidths per FCC 15.247(a)(2), RSS-247 5.2(a) and RSS-Gen 6.7 were measured using a 50-ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at  $\geq 3 \times$  RBW. The device was modulated, VBW shall not be smaller than three times the RBW value. Video averaging is not permitted.

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

**Table 6-1: Bandwidth Test Equipment**

| RTL Asset # | Manufacturer         | Model  | Part Type                            | Serial Number | Calibration Due Date |
|-------------|----------------------|--------|--------------------------------------|---------------|----------------------|
| 901583      | Agilent Technologies | N9010A | EXA Signal Analyzer (10 Hz-26.5 GHz) | MY51250846    | 03/18/2021           |

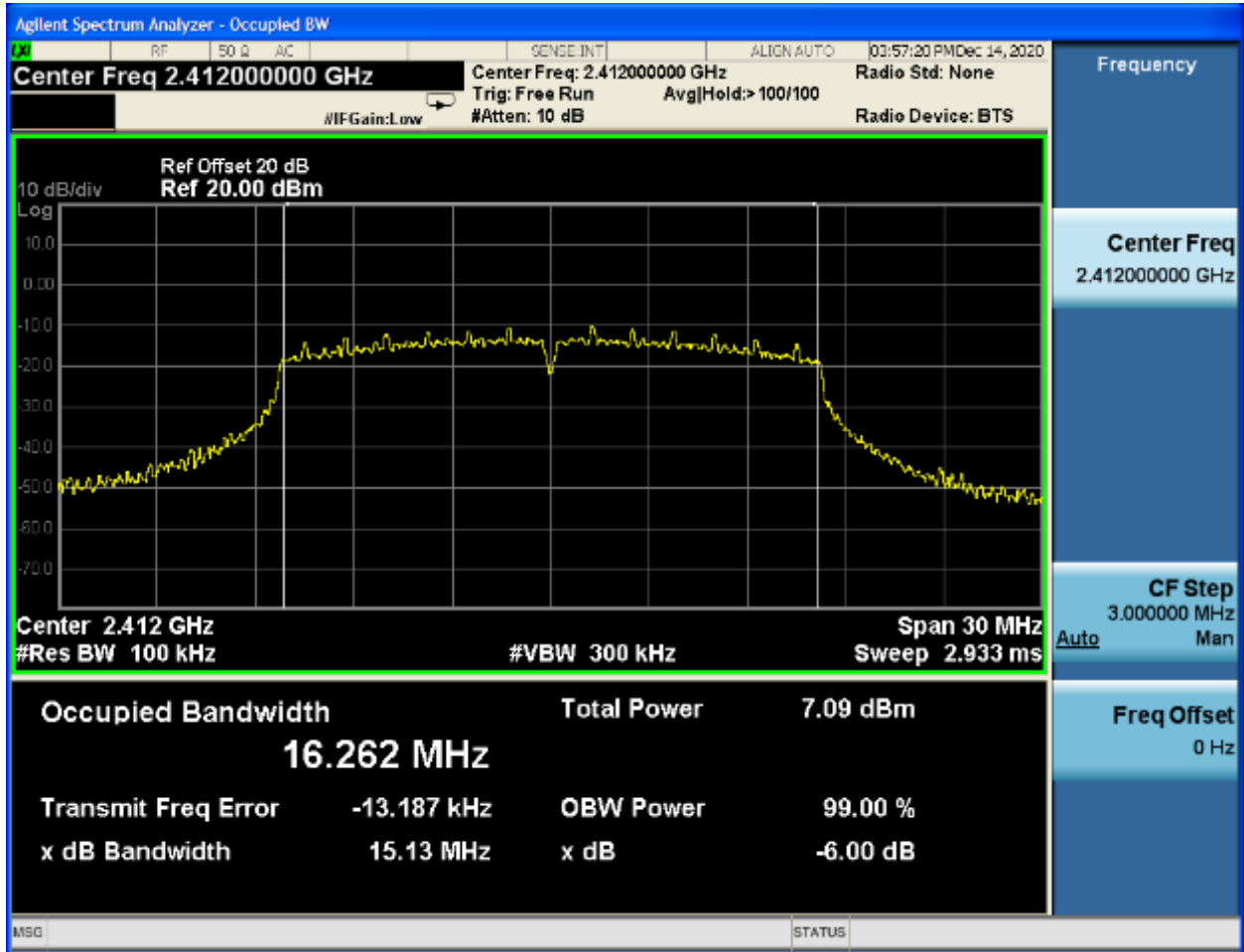
**6.2 Modulated Bandwidth Test Results**

**Table 6-2: Modulated Bandwidth Test Data**

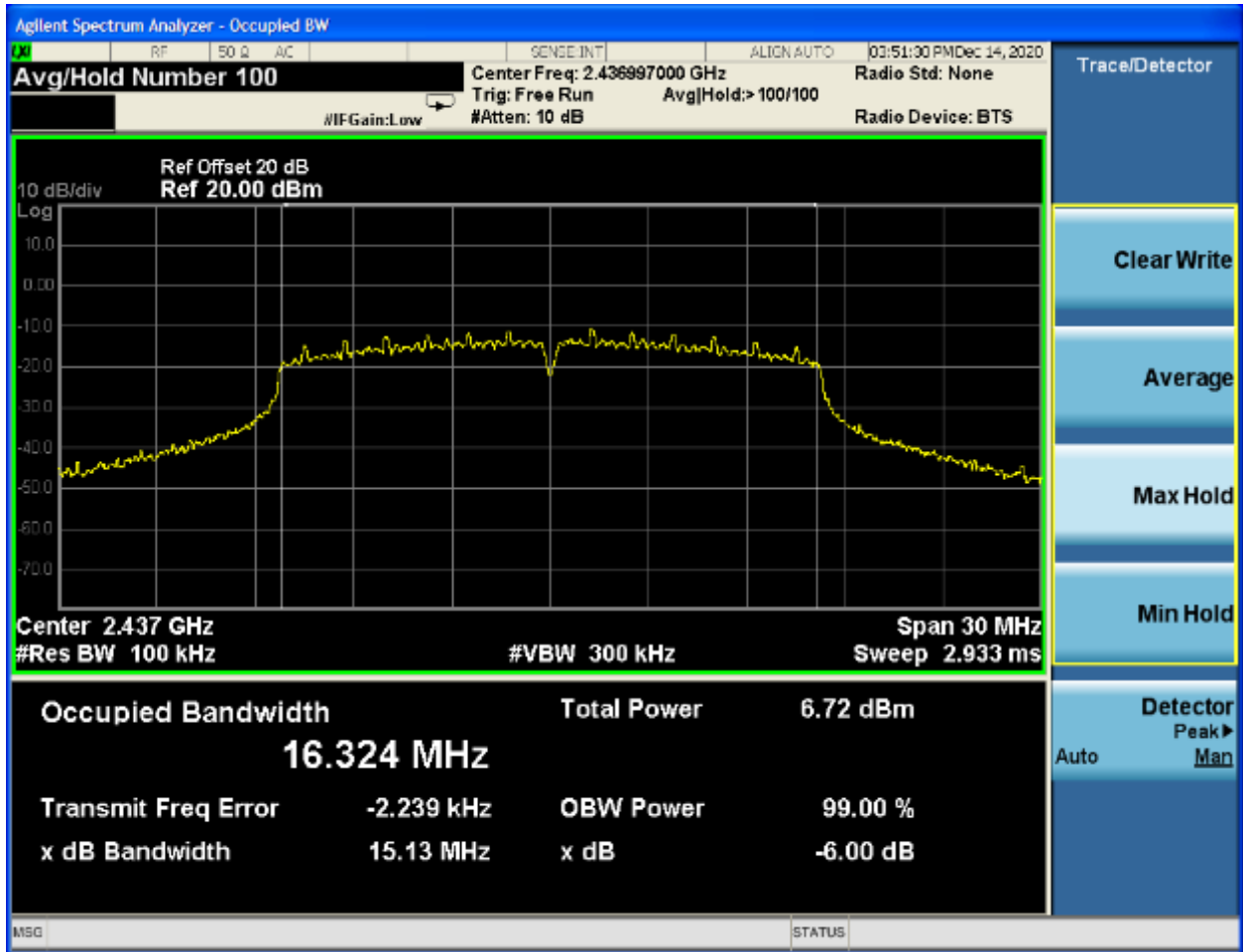
| Rate (b/g/n, Mbps) | Frequency (MHz) | 6 dB Bandwidth (MHz) | 99% Bandwidth (MHz) |
|--------------------|-----------------|----------------------|---------------------|
| 802.11b<br>11.0    | 2412            | 15.13                | 16.262              |
|                    | 2437            | 15.13                | 16.324              |
|                    | 2462            | 15.13                | 16.247              |
| 802.11g<br>54.0    | 2412            | 15.14                | 17.479              |
|                    | 2437            | 15.13                | 17.524              |
|                    | 2462            | 15.44                | 17.464              |
| 802.11n<br>65.0    | 2412            | 15.14                | 17.464              |
|                    | 2437            | 15.13                | 17.464              |
|                    | 2462            | 15.15                | 17.427              |

### 6.3 Bandwidth Plots

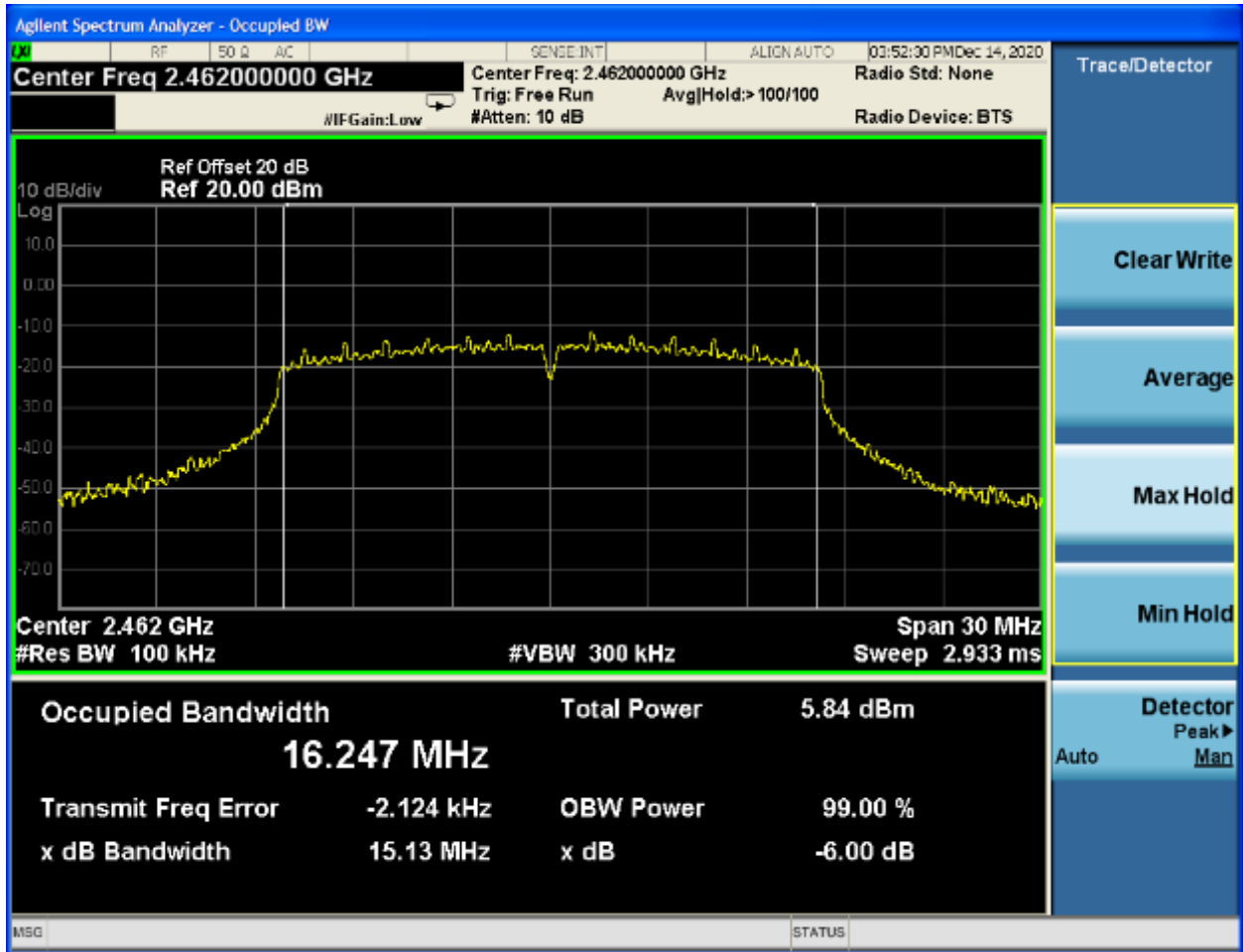
Plot 6-1: 6 dB and 99% Bandwidth – 2412 MHz – 802.11b (11.0 Mbps)



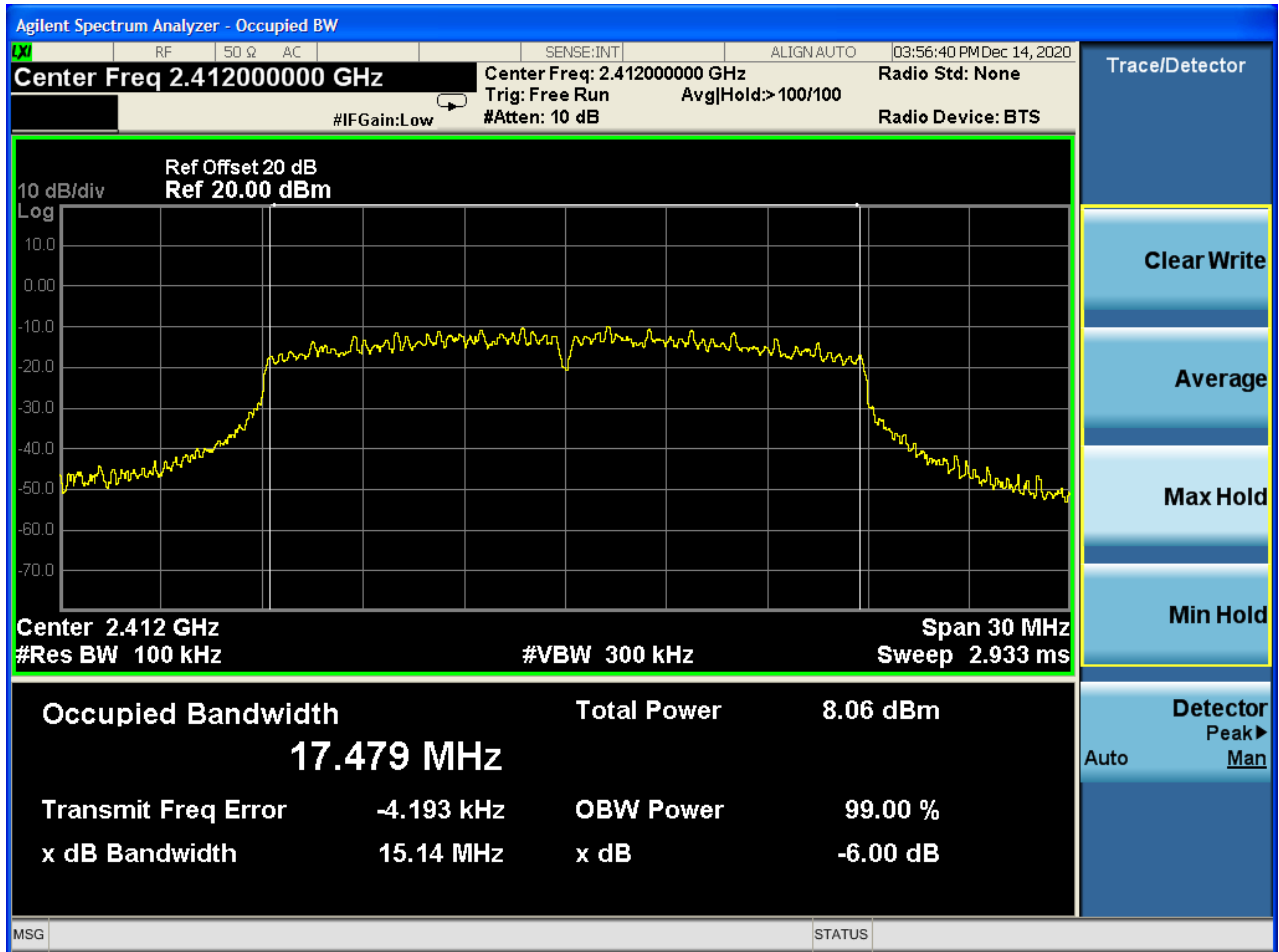
**Plot 6-2: 6 dB and 99% Bandwidth – 2437 MHz – 802.11b (11.0 Mbps)**



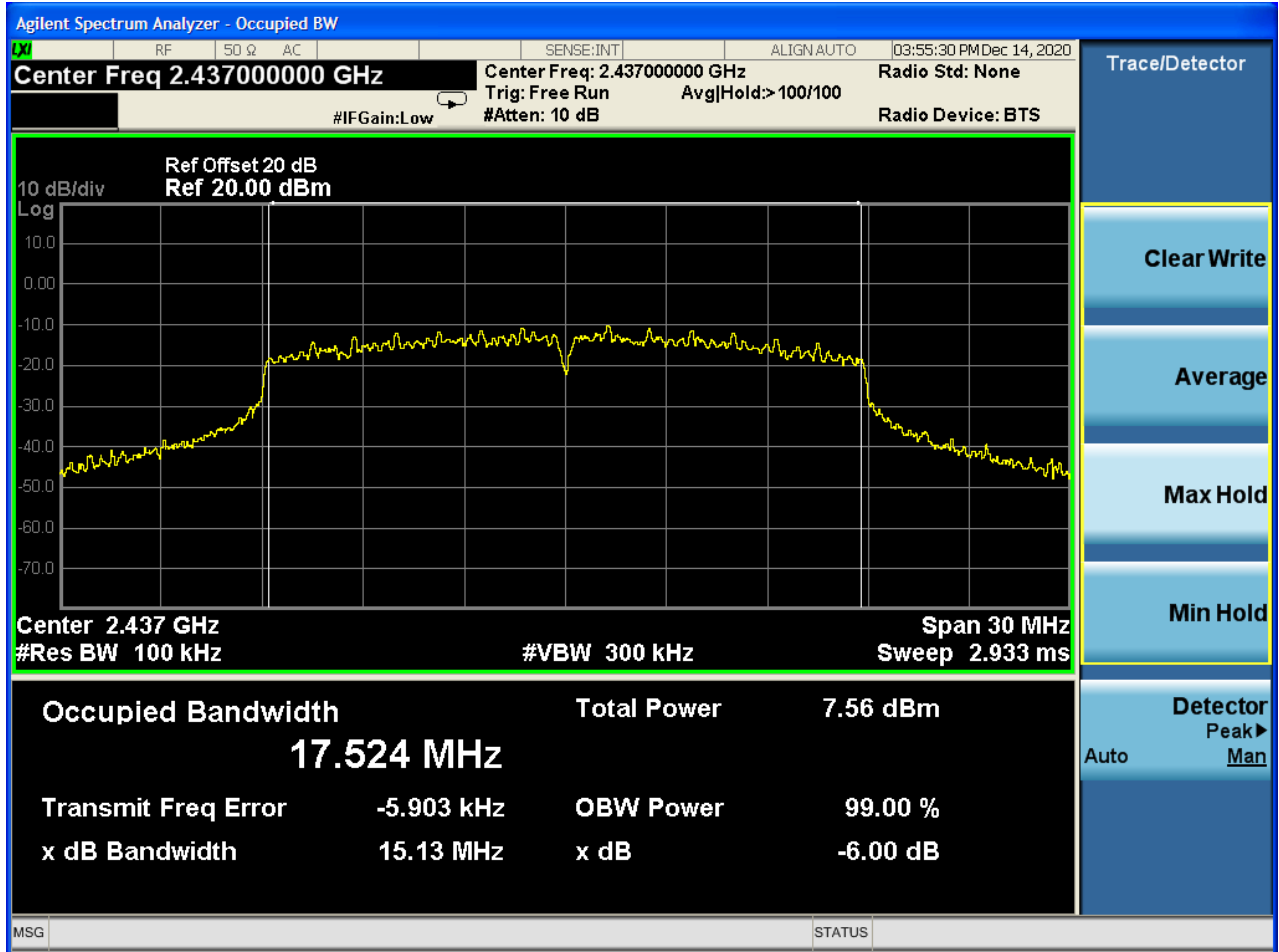
**Plot 6-3: 6 dB and 99% Bandwidth – 2462 MHz – 802.11b (11.0 Mbps)**



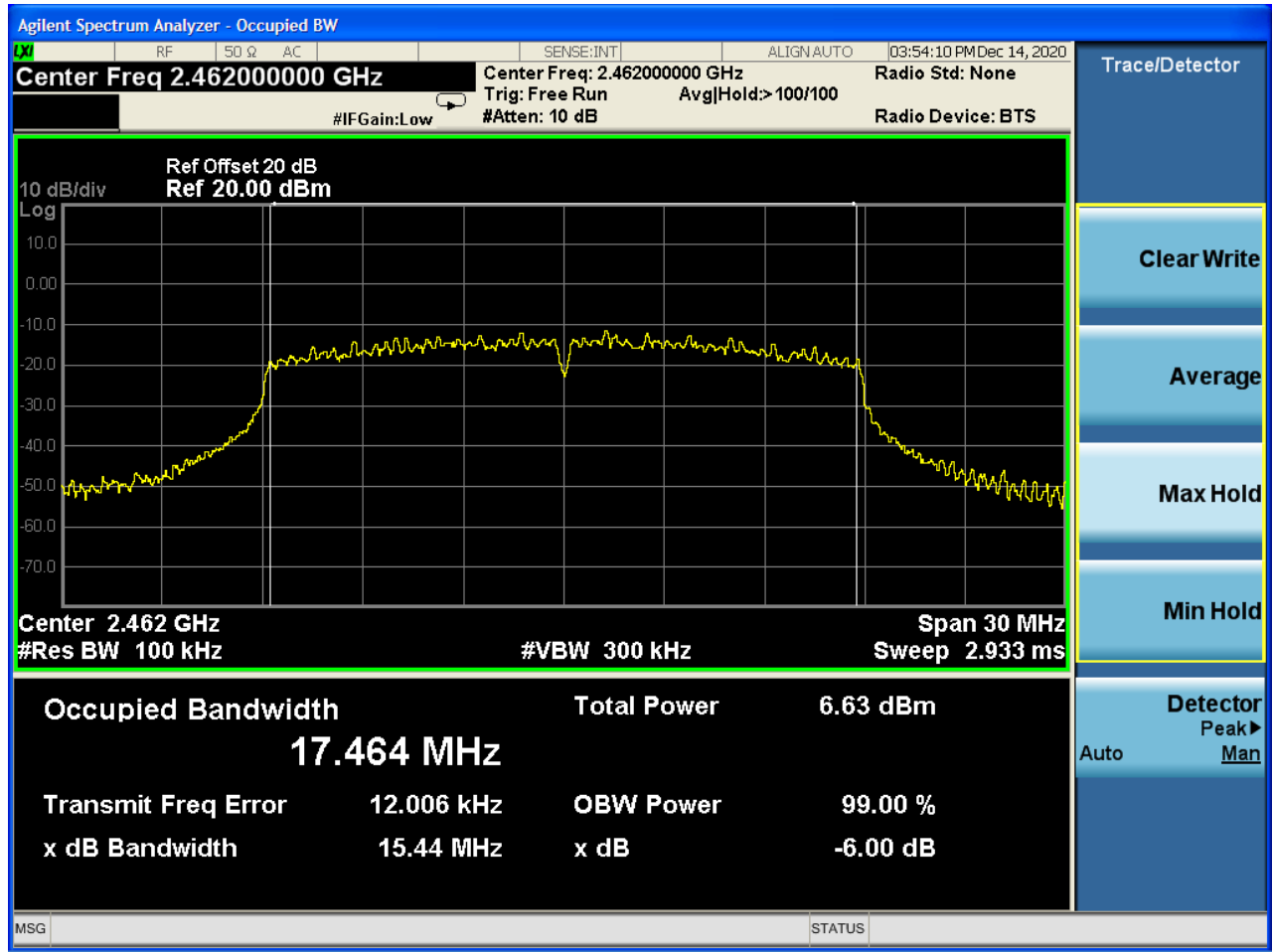
**Plot 6-4: 6 dB and 99% Bandwidth – 2412 MHz – 802.11g (54.0 Mbps)**



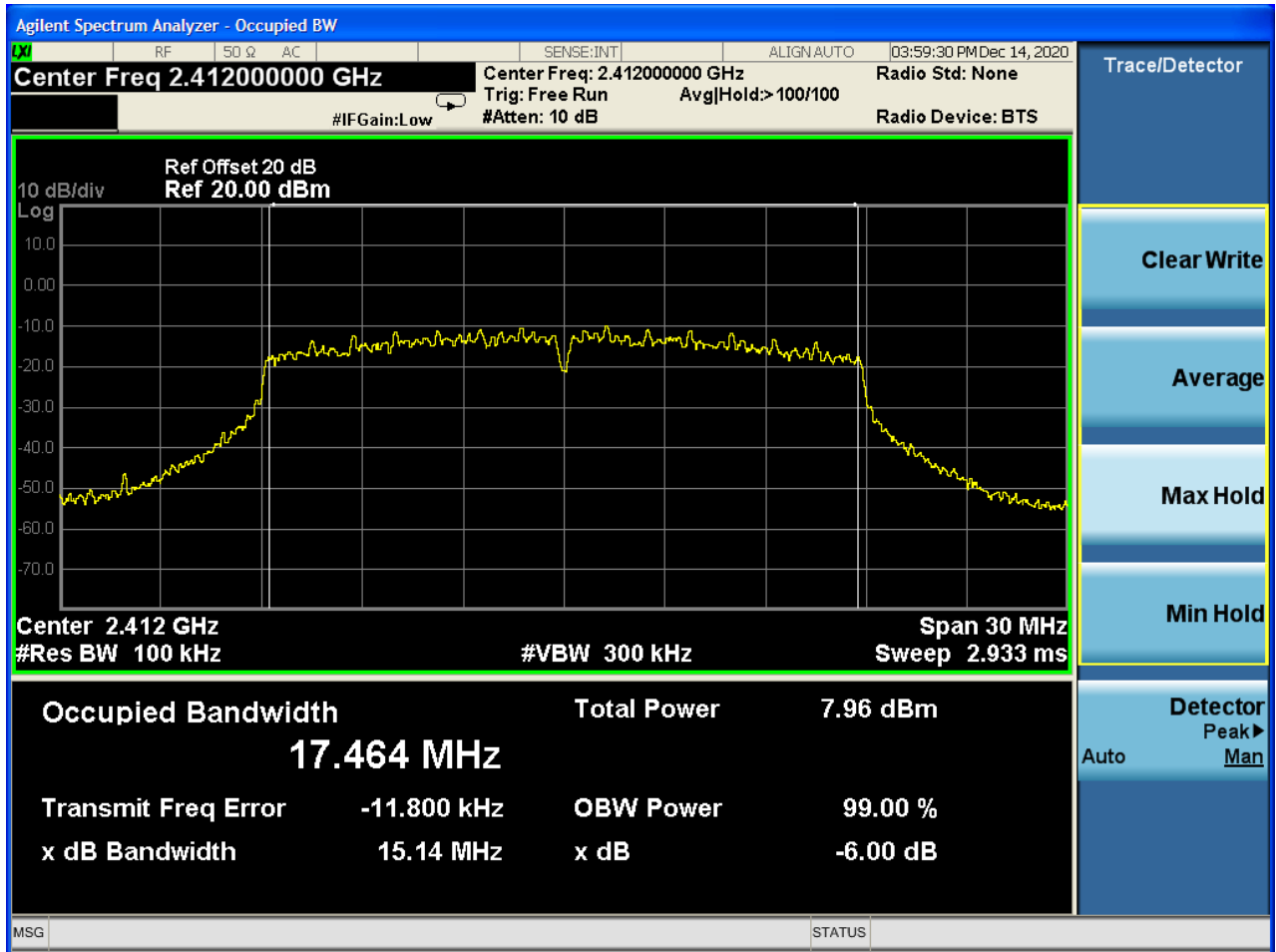
**Plot 6-5: 6 dB and 99% Bandwidth – 2437 MHz – 802.11g (54.0 Mbps)**



**Plot 6-6: 6 dB and 99% Bandwidth – 2462 MHz – 802.11g (54.0 Mbps)**

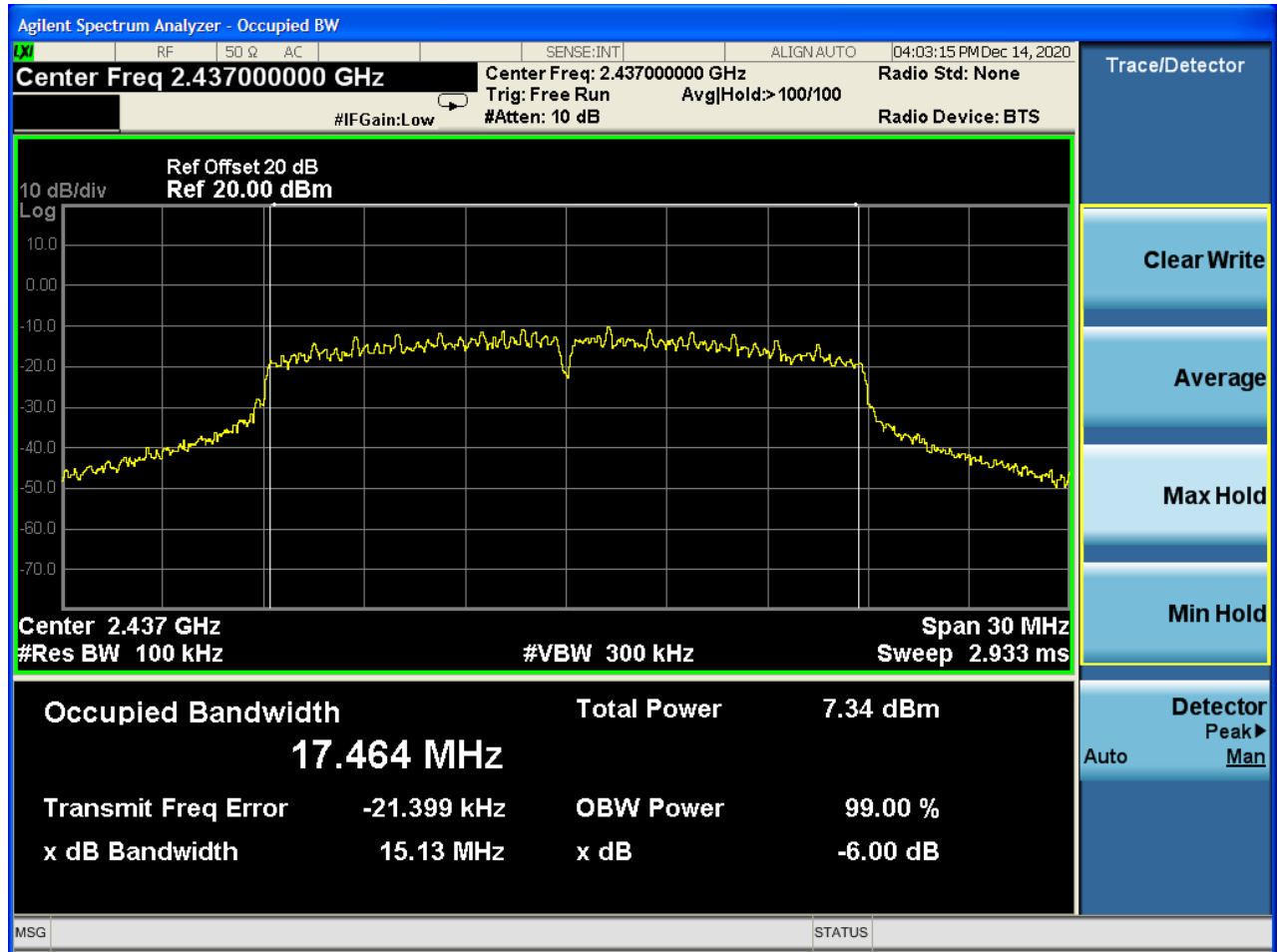


**Plot 6-7: 6 dB and 99% Bandwidth – 2412 MHz – 802.11n (65.0 Mbps)**

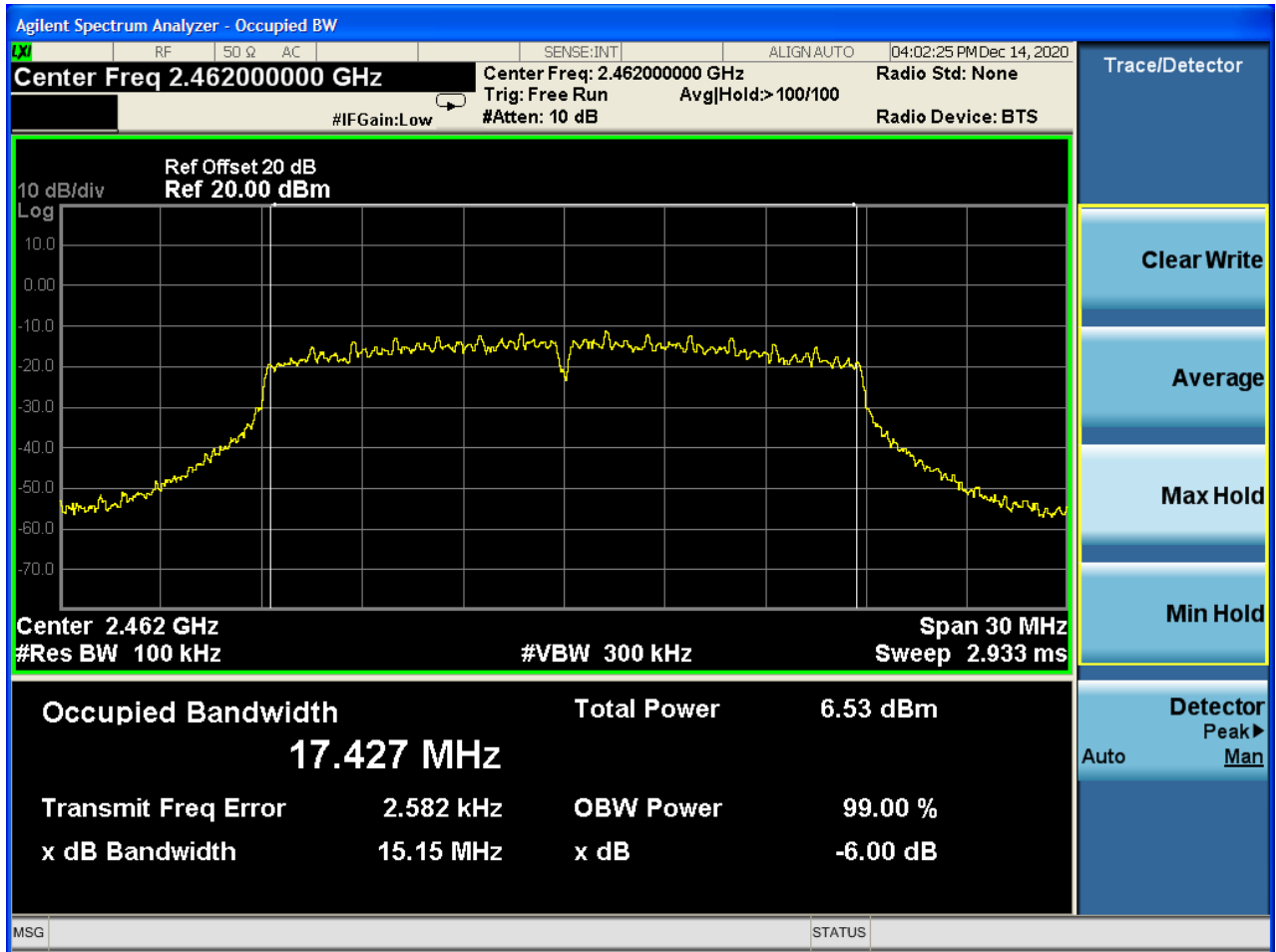




**Plot 6-8: 6 dB and 99% Bandwidth – 2437 MHz – 802.11n (65.0 Mbps)**



**Plot 6-9: 6 dB and 99% Bandwidth – 2462 MHz – 802.11n (65.0 Mbps)**



Measurement uncertainty:  $\pm 1 \times 10^{-6}$  Hz. This measurement uncertainty is an expanded uncertainty for 95% confidence level received with a coverage factor k=2.

**Results: Pass**

**Test Personnel:**

|                          |  |                                   |
|--------------------------|--|-----------------------------------|
| Khue Do<br>Test Engineer | <br>Signature | December 14, 2020<br>Date of Test |
|--------------------------|--|-----------------------------------|

## 7 Power Spectral Density – FCC 15.247(e); RSS-247 5.2(b)

### 7.1 Power Spectral Density Test Procedure

The power spectral density per FCC 15.247(e) was measured using a 50-ohm spectrum analyzer with the resolution bandwidth set at 3 kHz  $\leq$  RBW  $\leq$  100 kHz, the video bandwidth set at VBW  $\geq$  (3 X RBW), and the auto sweep time. The spectral lines were resolved for the modulated carriers at 2412 MHz, 2437 MHz, and 2462 MHz for Wi-Fi. These levels are below the +8 dBm limit.

**Table 7-1: Power Spectral Density Test Equipment**

| RTL Asset # | Manufacturer         | Model  | Part Type                               | Serial Number | Calibration Due Date |
|-------------|----------------------|--------|---|---------------|----------------------|
| 901583      | Agilent Technologies | N9010A | EXA Signal Analyzer<br>(10 Hz-26.5 GHz) | MY51250846    | 03/18/2021           |

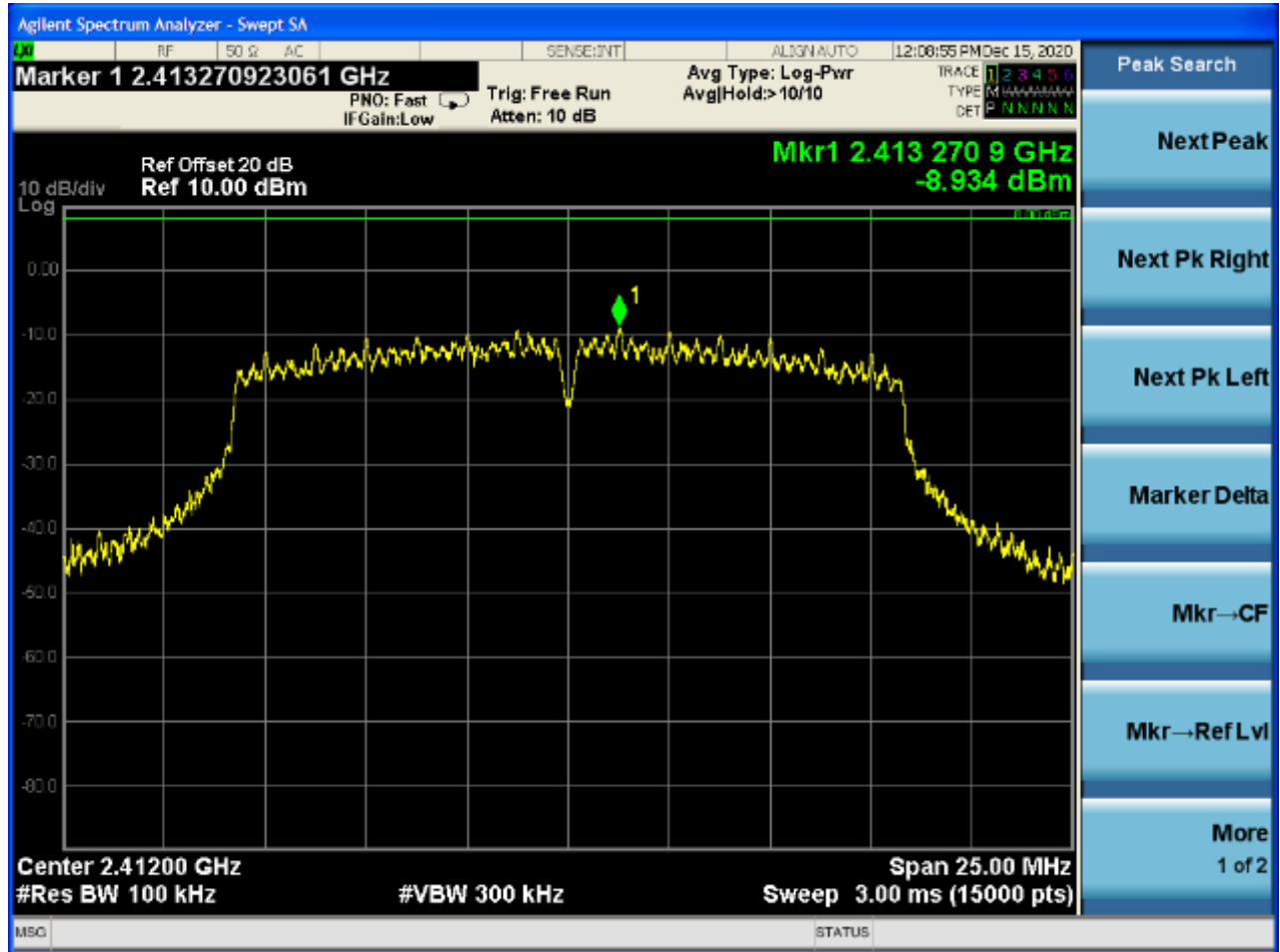
### 7.2 Power Spectral Density Test Results

**Table 7-2: Power Spectral Density Test Data**

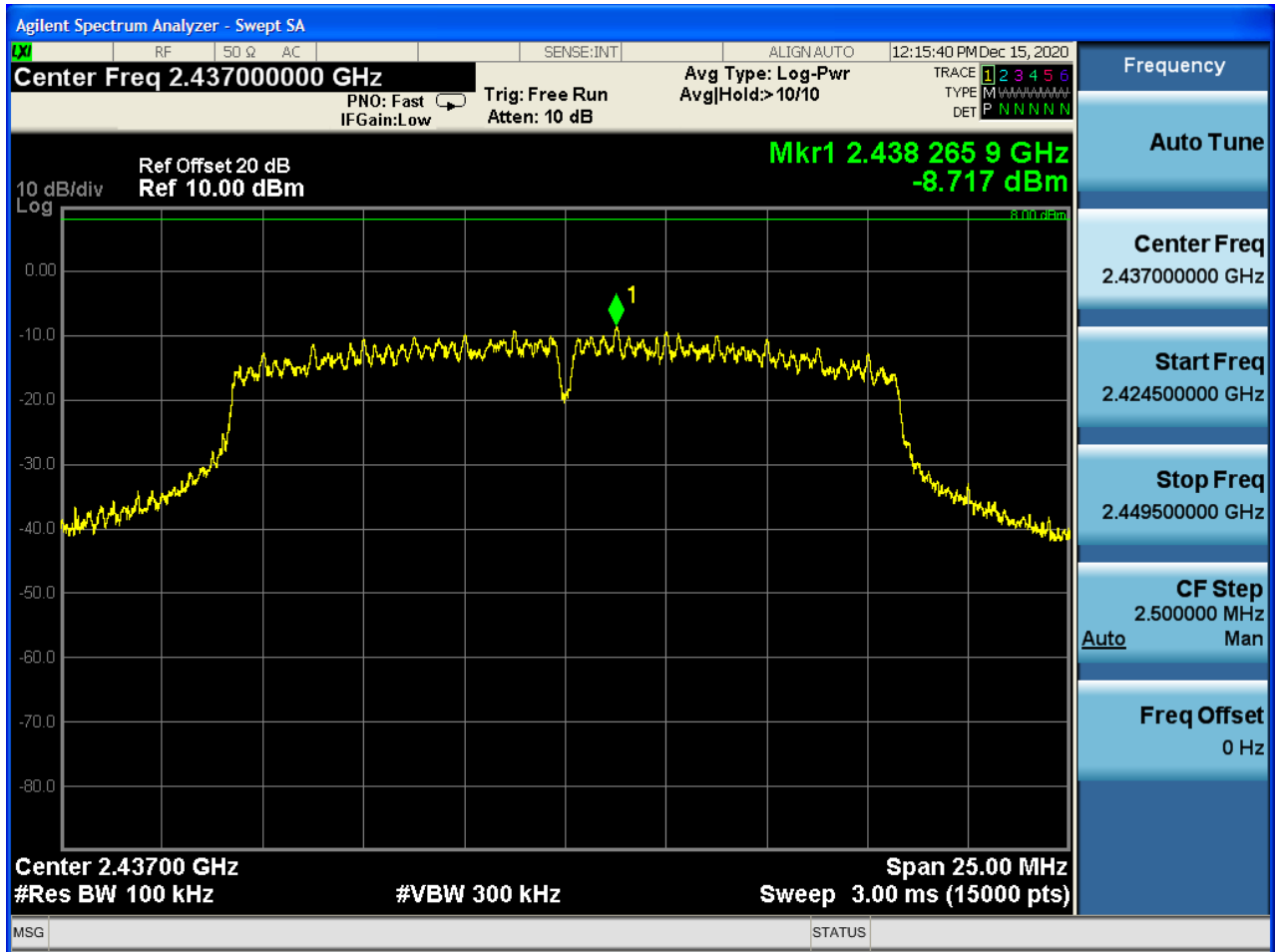
| Rate<br>(b/g/n, Mbps) | Frequency<br>(MHz) | PSD<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|-----------------------|--------------------|--------------|----------------|----------------|
| 802.11g<br>24.0       | 2412               | -8.9         | 8.0            | -16.9          |
|                       | 2437               | -8.7         | 8.0            | -16.7          |
|                       | 2462               | -9.6         | 8.0            | -17.6          |

### 7.3 Power Spectral Density Plots

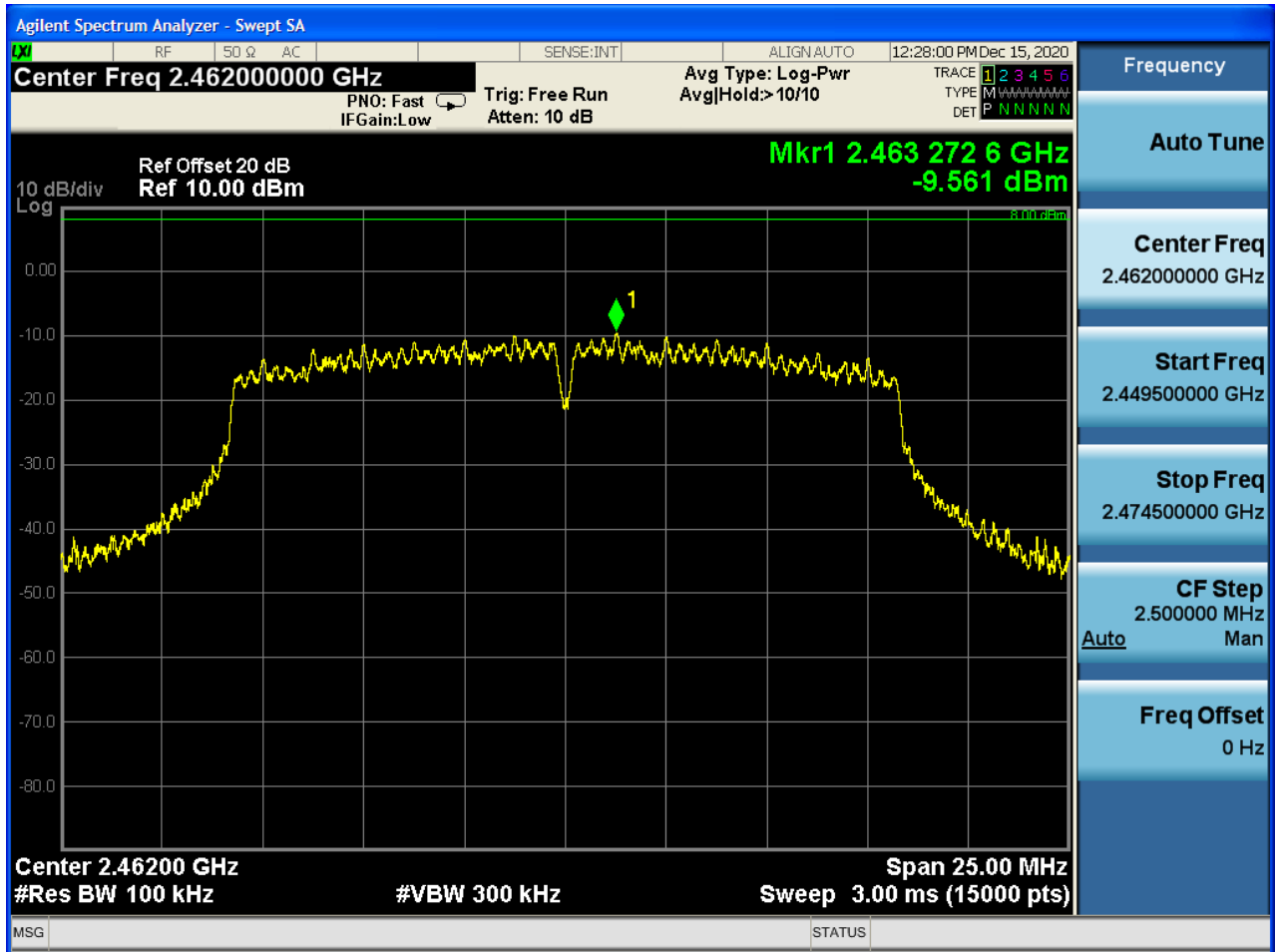
Plot 7-1: Power Spectral Density – 2412 MHz – 802.11g (24.0 Mbps)



**Plot 7-2: Power Spectral Density – 2437 MHz – 802.11g (24.0 Mbps)**



**Plot 7-3: Power Spectral Density – 2462 MHz – 802.11g (24.0 Mbps)**



Measurement uncertainty:  $\pm 0.5$  dB. This measurement uncertainty is an expanded uncertainty for 95% confidence level received with a coverage factor  $k=2$ .

**Results: Pass**

**Test Personnel:**

|                          |  |                                   |
|--------------------------|--|-----------------------------------|
| Khue Do<br>Test Engineer | <br>Signature | December 15, 2020<br>Date of Test |
|--------------------------|--|-----------------------------------|

## 8 AC Conducted Emissions – FCC 15.207; RSS-Gen 8.8

### 8.1 Conducted Emissions Test Procedure

The powerline conducted emissions measurement were performed in a Series 81 Type shielded enclosure manufactured by Rayproof. The EUT was assembled on a wooden table 80 cm high. Power was fed to the EUT through a 50 Ω/ 50 μH Line Impedance Stabilization Network (LISN). The EUT LISN was fed power through an AC filter box on the outside of the shielded enclosure. The filter box and EUT LISN housing are bonded to the ground plane of the shielded enclosure. A second LISN, the peripheral LISN, provides isolation for the EUT test peripherals. This peripheral LISN was also fed AC power. A metal power outlet box, which is bonded to the ground plane and electrically connected to the peripheral LISN, powers a DC power supply which powers the EUT.

The spectrum analyzer (SA) was connected to the AC line through an isolation transformer. The 50 Ω output of the LISN was connected to the SA input through a Solar 100 kHz high-pass filter. The filter is used to prevent overload of the SA from noise below 100 kHz. Conducted emission levels were measured on each current-carrying line with the SA operating in the CISPR quasi-peak (QPK) mode or peak (PK) mode if applicable.

The SA's 6 dB bandwidth was set to 9 kHz. Video bandwidth (VBW) filter less than 10 times the resolution bandwidth (RBW) is not used. Average (AVG) measurements are performed in linear mode using a 10 kHz RBW, 1 Hz VBW, and by increasing the sweep time in order to obtain a calibrated measurement. The emission spectrum was scanned from 150 kHz to 30 MHz. The highest emission amplitudes relative to the appropriate limits were measured and recorded.

Rate 802.11b 11 Mbps was chosen for this test at 2412, 2437 and 2462 MHz.

### 8.2 Conducted Emissions Limits

**Table 8-1: Conducted Emissions Limits per FCC Part 15.207**

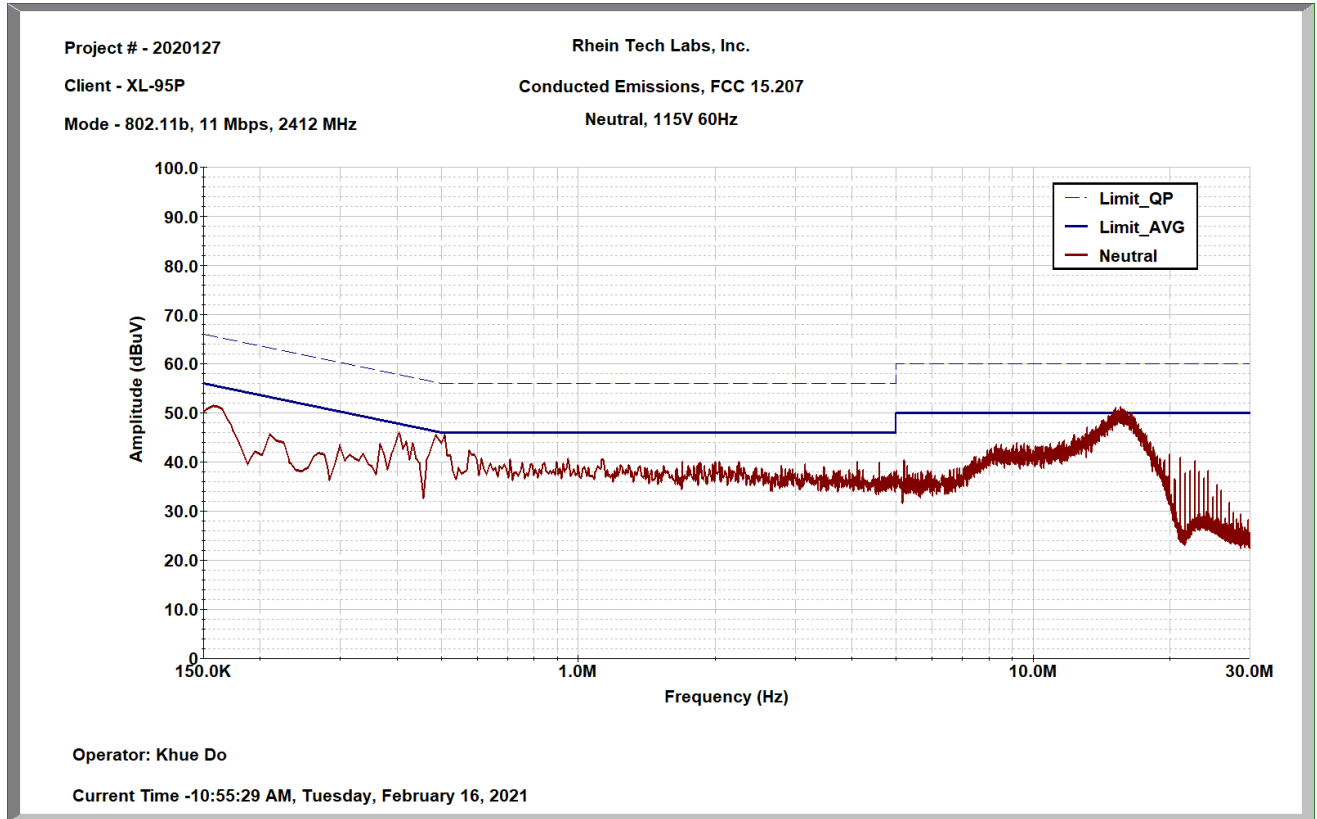
| Frequency (MHz) | QPK (dBμV) | AVG (dBμV) |
|-----------------|------------|------------|
| 0.15 – 0.50     | 66 – 56    | 56 – 46    |
| 0.5 – 5.0       | 56         | 46         |
| 5 – 30          | 60         | 50         |

**Table 8-2: Conducted Emissions Test Equipment**

| RTL Barcode | Part                                 | Manufacture           | Model     | Serial Number | Calibration Due Date |
|-------------|--------------------------------------|-----------------------|-----------|---------------|----------------------|
| 900339      | Quasi-Peak Adapter (30 Hz–1 GHz)     | Hewlett Packard       | 85650A    | 2521A00743    | 04/24/2021           |
| 900728      | High Pass Filter                     | Solar Electronics Co. | Type 8130 | 947305        | 04/30/2023           |
| 900968      | Spectrum Analyzer (10 kHz–1.5 GHz)   | Hewlett Packard       | 8567A     | 2602A00160    | 04/30/2021           |
| 900970      | Spectrum Analyzer Display            | Hewlett Packard       | 85662A    | 2542A11239    | 04/30/2021           |
| 901083      | Line Impedance Stabilization Network | AFJ International     | LS16      | 16010020080   | 02/16/2023           |
| N/          | Test Software                        | ETS Lindgren          | TILE! 7   | 7.1.3.20      | N/A                  |

### 8.3 Conducted Emissions Test Results

**Plot 8-1: Conducted Emissions, AC, Neutral, 2412 MHz**

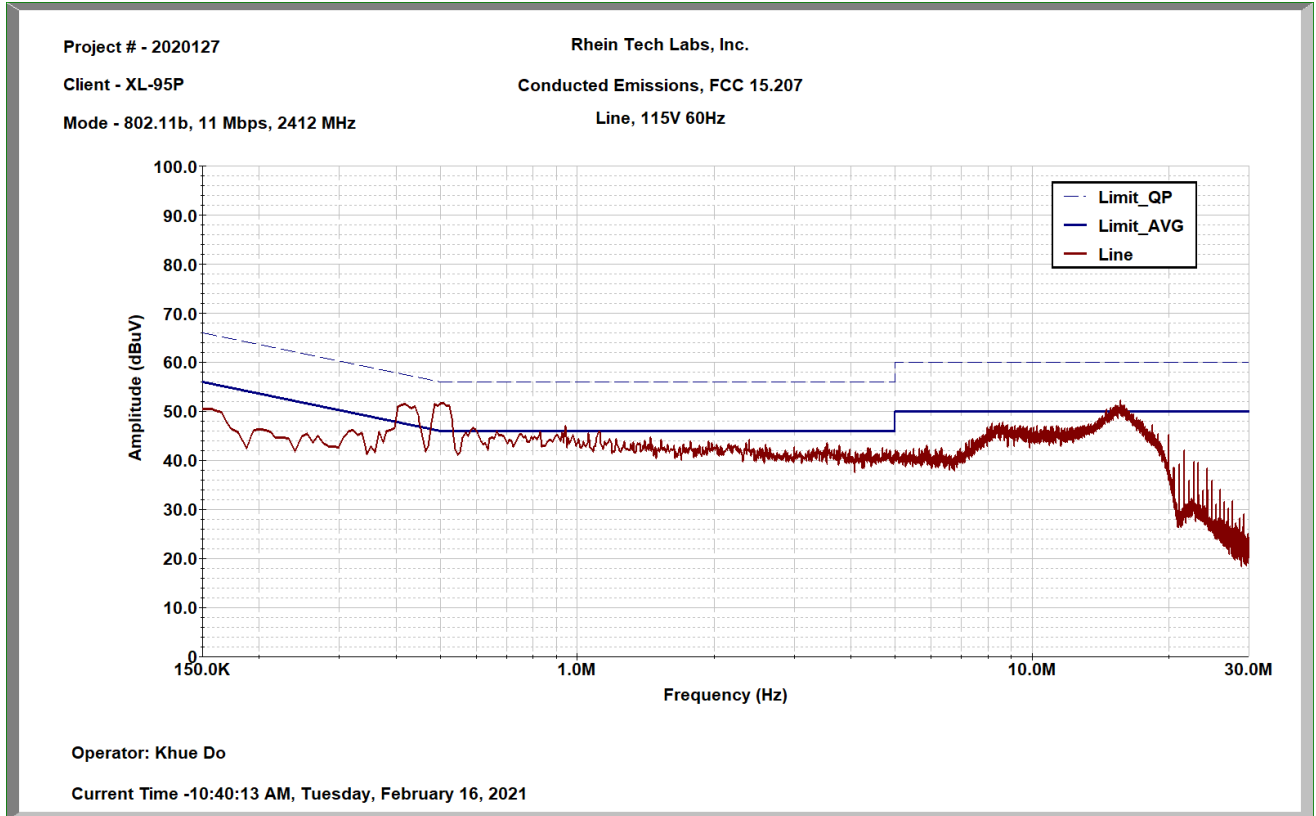


**Table 8-3: Conducted Emissions Test Result, AC, Neutral, 2412 MHz**

| Frequency (MHz) | Detector Type | Emission (dB $\mu$ V) | Limit (dB $\mu$ V) | Margin (dB) | Result |
|-----------------|---------------|-----------------------|--------------------|-------------|--------|
| 15.668          | AVG           | 27.7                  | 50.0               | -22.3       | Pass   |
| 15.668          | QPK           | 45.2                  | 60.0               | -14.8       | Pass   |



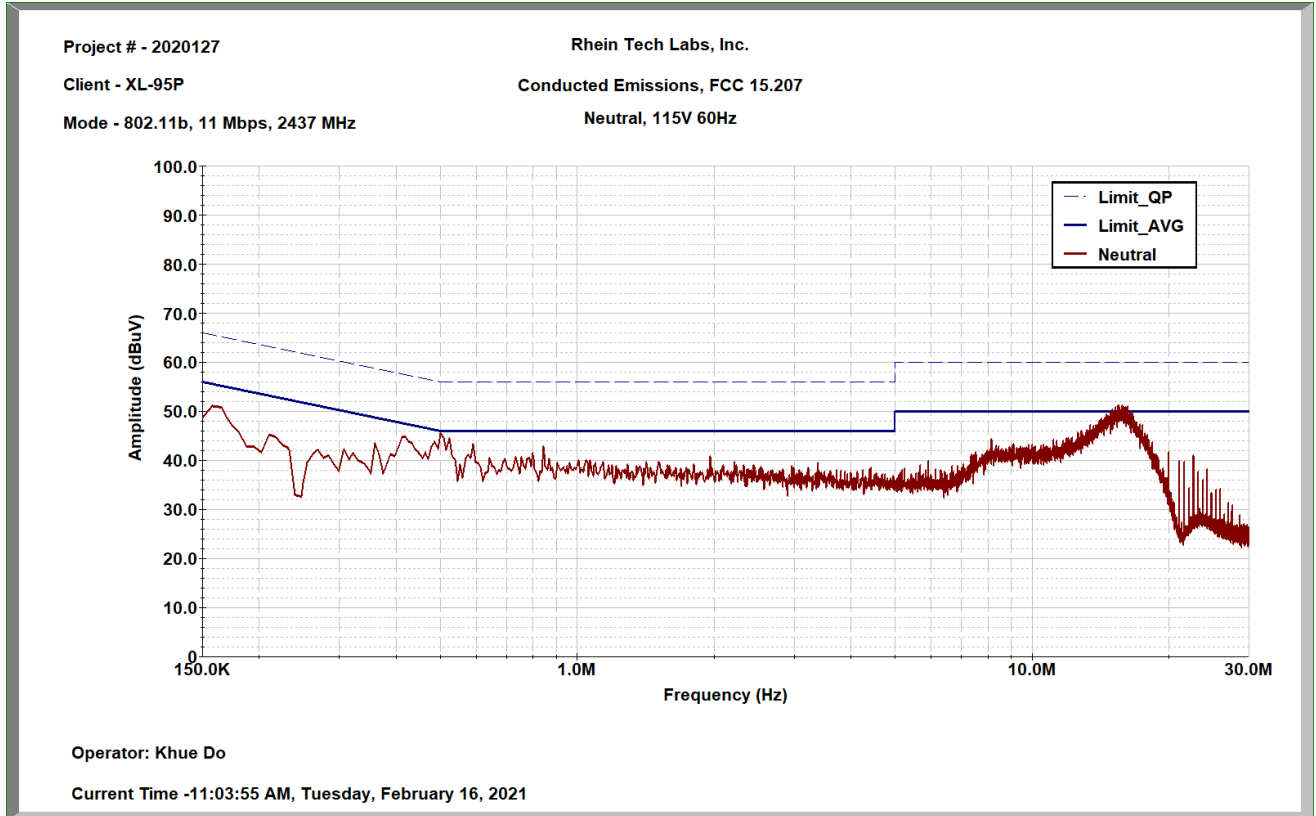
**Plot 8-2: Conducted Emissions, AC, Line, 2412 MHz**



**Table 8-4: Conducted Emissions Test Result, AC, Line, 2412 MHz**

| Frequency (MHz) | Detector Type | Emission (dB $\mu$ V) | Limit (dB $\mu$ V) | Margin (dB) | Result |
|-----------------|---------------|-----------------------|--------------------|-------------|--------|
| 0.575           | AVG           | 23.2                  | 46.0               | -22.8       | Pass   |
| 0.575           | QPK           | 32.9                  | 56.0               | -23.1       | Pass   |
| 15.670          | AVG           | 30.5                  | 50.0               | -19.5       | Pass   |
| 15.670          | QPK           | 44.8                  | 60.0               | -15.2       | Pass   |

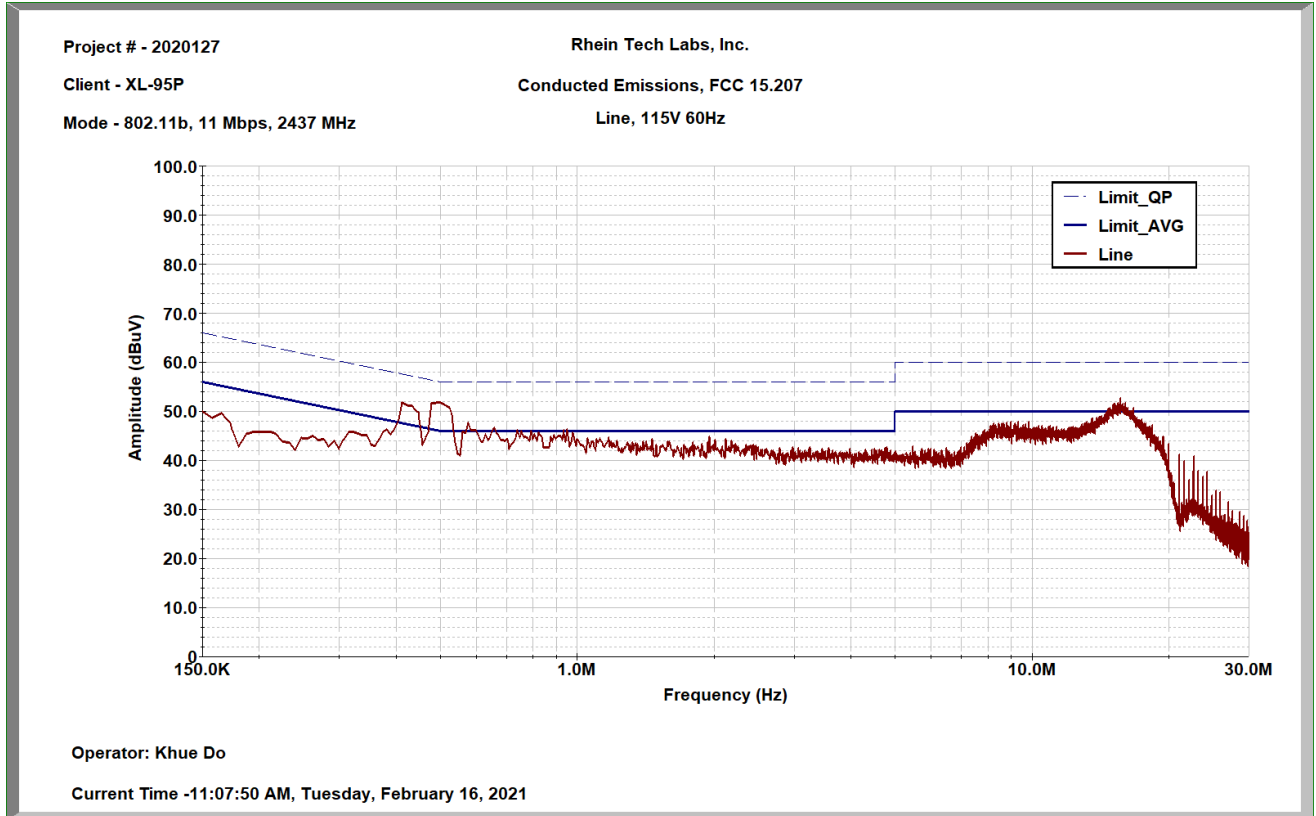
**Plot 8-3: Conducted Emissions, AC, Neutral, 2437 MHz**



**Table 8-5: Conducted Emissions Test Result, AC, Neutral, 2437 MHz**

| Frequency (MHz) | Detector Type | Emission (dB $\mu$ V) | Limit (dB $\mu$ V) | Margin (dB) | Result |
|-----------------|---------------|-----------------------|--------------------|-------------|--------|
| 15.640          | AVG           | 28.8                  | 50.0               | -21.2       | Pass   |
| 15.640          | QPK           | 45.8                  | 60.0               | -14.2       | Pass   |

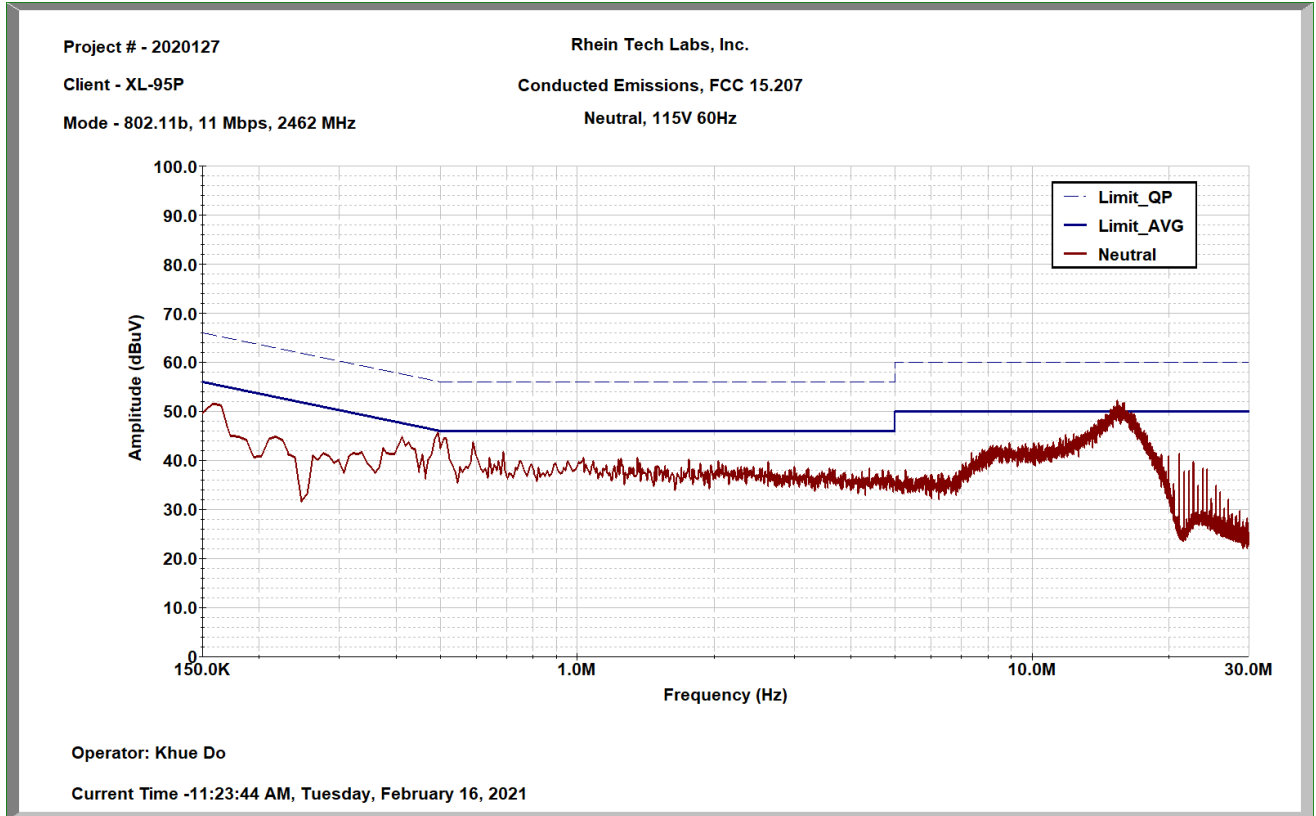
**Plot 8-4: Conducted Emissions, AC, Line, 2437 MHz**



**Table 8-6: Conducted Emissions Test Result, AC, Line, 2437 MHz**

| Frequency (MHz) | Detector Type | Emission (dBµV) | Limit (dBµV) | Margin (dB) | Result |
|-----------------|---------------|-----------------|--------------|-------------|--------|
| 0.531           | AVG           | 31.3            | 46.0         | -14.7       | Pass   |
| 0.531           | QPK           | 49.7            | 56.0         | -6.3        | Pass   |
| 15.620          | AVG           | 28.8            | 50.0         | -21.2       | Pass   |
| 15.620          | QPK           | 45.6            | 60.0         | -14.4       | Pass   |

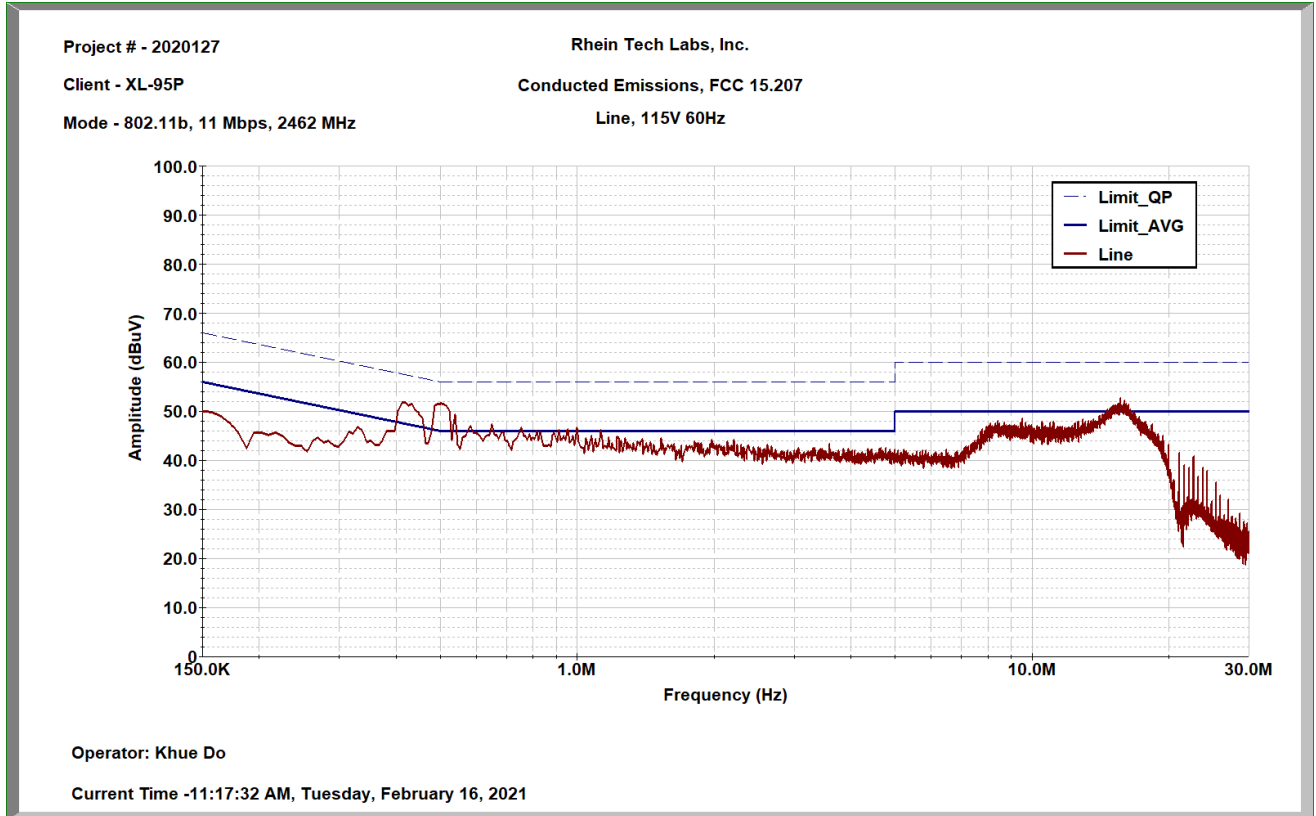
**Plot 8-5: Conducted Emissions, AC, Neutral, 2462 MHz**



**Table 8-7: Conducted Emissions Test Result, AC, Neutral, 2462 MHz**

| Frequency (MHz) | Detector Type | Emission (dB $\mu$ V) | Limit (dB $\mu$ V) | Margin (dB) | Result |
|-----------------|---------------|-----------------------|--------------------|-------------|--------|
| 15.636          | AVG           | 28.6                  | 50.0               | -21.4       | Pass   |
| 15.636          | QPK           | 48.3                  | 60.0               | -11.7       | Pass   |

**Plot 8-6: Conducted Emissions, AC, Line, 2462 MHz**



**Table 8-8: Conducted Emissions Test Result, AC, Line, 2462 MHz**

| Frequency (MHz) | Detector Type | Emission (dBµV) | Limit (dBµV) | Margin (dB) | Result |
|-----------------|---------------|-----------------|--------------|-------------|--------|
| 0.576           | AVG           | 21.4            | 46.0         | -24.6       | Pass   |
| 0.576           | QPK           | 34.0            | 56.0         | -22.0       | Pass   |
| 15.664          | AVG           | 31.5            | 50.0         | -18.5       | Pass   |
| 15.664          | QPK           | 48.1            | 60.0         | -11.9       | Pass   |

Measurement uncertainty: ±3.6 dB. This measurement uncertainty is an expanded uncertainty for 95% confidence level received with a coverage factor k=2.

**Results: Pass**

**Test Personnel:**

|                          |  |                                   |
|--------------------------|--|-----------------------------------|
| Khue Do<br>Test Engineer | <br>Signature | February 16, 2021<br>Date of Test |
|--------------------------|--|-----------------------------------|

**9 Radiated Emissions – FCC 15.209; RSS-247 5.5; RSS-Gen 8.9, 8.10**

**9.1 Limits of Radiated Emissions Measurement**

| Frequency (MHz) | Field Strength (µV/m) | Measurement Distance (m) |
|-----------------|-----------------------|--------------------------|
| 0.009-0.490     | 2400/f (kHz)          | 300                      |
| 0.490-1.705     | 2400/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                        |

As shown in 15.35(b), for frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any circumstances of modulation.

**9.2 Radiated Emissions Measurement Test Procedure**

Before final measurements of radiated emissions were made on the open-field three/ten-meter range, the EUT was scanned indoors at one and three-meter distances. This was done in order to determine its emissions spectrum signature. The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. This process was repeated during final radiated emissions measurements on the open-field range, at each frequency, in order to ensure that maximum emission amplitudes were attained.

Final radiated emissions measurements were made on the three/ten-meter, open-field test site. The EUT was placed on a nonconductive turntable 0.8 meters above the ground plane. The spectrum was examined from 9 kHz to the 10<sup>th</sup> harmonic of the highest fundamental transmitter frequency (24.8 GHz).

At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the emission's maximum level. Measurements were taken using both horizontal and vertical antenna polarizations. For frequencies between 30 and 1000 MHz, the spectrum analyzer's 6 dB bandwidth was set to 120 kHz, and the analyzer was operated in the CISPR quasi-peak detection mode. For emissions above 1000 MHz, emissions are measured using the average detector function with a minimum resolution bandwidth of 1 MHz. No video filter less than 10 times the resolution bandwidth was used. The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

**Table 9-1: Radiated Emissions Test Equipment**

| RTL Asset # | Manufacturer                  | Model   | Part Type                            | Serial Number | Calibration Due Date |
|-------------|-------------------------------|---------|--------------------------------------|---------------|----------------------|
| 900772      | EMCO                          | 3161-02 | Horn Antenna (2.0–4.0 GHz)           | 9804-1044     | 08/05/2024           |
| 900321      | EMCO                          | 3161-03 | Horn Antennas (4.0–8.2 GHz)          | 9508-1020     | 08/05/2024           |
| 900323      | EMCO                          | 3160-7  | Horn Antennas (8.2–12.4 GHz)         | 9605-1054     | 08/05/2024           |
| 900356      | EMCO                          | 3160-08 | Horn Antenna (12.4–18.0 GHz)         | 9607-1044     | 08/05/2024           |
| 901218      | EMCO                          | 3160-09 | Horn Antenna (18-26.5 GHz)           | 960281-003    | 08/05/2024           |
| 901669      | ETS-Lindgren                  | 3142E   | Biconilog Antenna (30 MHz–6000 MHz)  | 00166065      | 07/11/2025           |
| 901581      | Rohde & Schwarz               | FSU     | Spectrum Analyzer                    | 1166.1660.50  | 12/01/2024           |
| 901583      | Agilent Technologies          | N9010A  | EXA Signal Analyzer (10 Hz-26.5 GHz) | MY51250846    | 10/04/2024           |
| 901723      | Hewlett Packard               | 8449B   | Amplifier (1–26.5 GHz)               | 3008A00762    | 11/22/2023           |
| 900905      | Rhein Tech Laboratories, Inc. | PR-1040 | Amplifier (10 MHz–2 GHz)             | 1006          | 01/30/2024           |

### 9.3 Radiated Emissions Test Results

**Table 9-2: Radiated Emissions Harmonics/Spurious – 2412 MHz, Peak Detector; 802.11b**

| Frequency (MHz) | Peak Analyzer (dBµV/m) | Site Correction Factor (dB/m) | Peak Corrected (dBµV/m) | Peak Limit (dBµV/m) | Peak Margin (dB) |
|-----------------|------------------------|-------------------------------|-------------------------|---------------------|------------------|
| 4824.0          | 18.1                   | 34.0                          | 52.1                    | 74.0                | -21.9            |
| 12060.0         | 12.7                   | 44.8                          | 57.5                    | 74.0                | -16.5            |
| 14472.0         | 13.7                   | 48.8                          | 62.5                    | 74.0                | -11.5            |
| 19296.0         | 4.2                    | 53.8                          | 58.0                    | 74.0                | -16.0            |

**Table 9-3: Radiated Emissions Harmonics/Spurious – 2412 MHz, Average Detector; 802.11b**

| Frequency (MHz) | Average Analyzer (dBµV/m) | Site Correction Factor (dB/m) | Average Corrected (dBµV/m) | Average Limit (dBµV/m) | Average Margin (dB) |
|-----------------|---------------------------|-------------------------------|----------------------------|------------------------|---------------------|
| 4824.0          | 14.1                      | 34.0                          | 48.1                       | 54.0                   | -5.9                |
| 12060.0         | 1.3                       | 44.8                          | 46.1                       | 54.0                   | -7.9                |
| 14472.0         | 2.4                       | 48.8                          | 51.2                       | 54.0                   | -2.8                |
| 19296.0         | -7.6                      | 53.8                          | 46.2                       | 54.0                   | -7.8                |

**Table 9-4: Radiated Emissions Harmonics/Spurious – 2437 MHz, Peak Detector; 802.11b**

| Frequency (MHz) | Peak Analyzer (dBµV/m) | Site Correction Factor (dB/m) | Peak Corrected (dBµV/m) | Peak Limit (dBµV/m) | Peak Margin (dB) |
|-----------------|------------------------|-------------------------------|-------------------------|---------------------|------------------|
| 4874.0          | 17.6                   | 34.0                          | 51.6                    | 74.0                | -22.4            |
| 7311.0          | 12.6                   | 36.5                          | 49.1                    | 74.0                | -24.9            |
| 12185.0         | 12.0                   | 44.9                          | 56.9                    | 74.0                | -17.1            |
| 19496.0         | 2.4                    | 53.8                          | 56.2                    | 74.0                | -17.8            |

**Table 9-5: Radiated Emissions Harmonics/Spurious – 2437 MHz, Average Detector; 802.11b**

| Frequency (MHz) | Average Analyzer (dBµV/m) | Site Correction Factor (dB/m) | Average Corrected (dBµV/m) | Average Limit (dBµV/m) | Average Margin (dB) |
|-----------------|---------------------------|-------------------------------|----------------------------|------------------------|---------------------|
| 4874.0          | 13.7                      | 34.0                          | 47.7                       | 54.0                   | -6.3                |
| 7311.0          | 1.3                       | 36.5                          | 37.8                       | 54.0                   | -16.2               |
| 12185.0         | 0.9                       | 44.9                          | 45.8                       | 54.0                   | -8.2                |
| 19496.0         | -8.4                      | 53.8                          | 45.4                       | 54.0                   | -8.6                |



**Table 9-6: Radiated Emissions Harmonics/Spurious – 2462 MHz, Peak Detector; 802.11b**

| Frequency (MHz) | Peak Analyzer (dBµV/m) | Site Correction Factor (dB/m) | Peak Corrected (dBµV/m) | Peak Limit (dBµV/m) | Peak Margin (dB) |
|-----------------|------------------------|-------------------------------|-------------------------|---------------------|------------------|
| 4924.0          | 17.7                   | 34.1                          | 51.8                    | 74.0                | -22.2            |
| 7386.0          | 11.9                   | 36.6                          | 48.5                    | 74.0                | -25.5            |
| 12310.0         | 12.0                   | 44.9                          | 56.9                    | 74.0                | -17.1            |
| 19696.0         | 2.9                    | 53.9                          | 56.8                    | 74.0                | -17.2            |
| 22158.0         | 3.0                    | 55.6                          | 58.6                    | 74.0                | -15.4            |

**Table 9-7: Radiated Emissions Harmonics/Spurious – 2462 MHz, Average Detector; 802.11b**

| Frequency (MHz) | Average Analyzer (dBµV/m) | Site Correction Factor (dB/m) | Average Corrected (dBµV/m) | Average Limit (dBµV/m) | Average Margin (dB) |
|-----------------|---------------------------|-------------------------------|----------------------------|------------------------|---------------------|
| 4924.0          | 14.1                      | 34.1                          | 48.2                       | 54.0                   | -5.8                |
| 7386.0          | 0.9                       | 36.6                          | 37.5                       | 54.0                   | -16.5               |
| 12310.0         | 1.4                       | 44.9                          | 46.3                       | 54.0                   | -7.7                |
| 19696.0         | -7.9                      | 53.9                          | 46.0                       | 54.0                   | -8.0                |
| 22158.0         | -7.8                      | 55.6                          | 47.8                       | 54.0                   | -6.2                |

**Table 9-8: Radiated Emissions Harmonics/Spurious – 2412 MHz, Peak Detector; 802.11g**

| Frequency (MHz) | Peak Analyzer (dBµV/m) | Site Correction Factor (dB/m) | Peak Corrected (dBµV/m) | Peak Limit (dBµV/m) | Peak Margin (dB) |
|-----------------|------------------------|-------------------------------|-------------------------|---------------------|------------------|
| 4824.0          | 13.8                   | 34.0                          | 47.8                    | 74.0                | -26.2            |
| 12060.0         | 3.4                    | 44.8                          | 48.2                    | 74.0                | -25.8            |
| 14472.0         | 4.0                    | 48.8                          | 52.8                    | 74.0                | -21.2            |
| 19296.0         | 2.7                    | 53.8                          | 56.5                    | 74.0                | -17.5            |

**Table 9-9: Radiated Emissions Harmonics/Spurious – 2412 MHz, Average Detector; 802.11g**

| Frequency (MHz) | Average Analyzer (dBµV/m) | Site Correction Factor (dB/m) | Average Corrected (dBµV/m) | Average Limit (dBµV/m) | Average Margin (dB) |
|-----------------|---------------------------|-------------------------------|----------------------------|------------------------|---------------------|
| 4824.0          | 3.6                       | 34.0                          | 37.6                       | 54.0                   | -16.4               |
| 12060.0         | -7.7                      | 44.8                          | 37.2                       | 54.0                   | -16.8               |
| 14472.0         | -7.7                      | 48.8                          | 41.1                       | 54.0                   | -12.9               |
| 19296.0         | -7.9                      | 53.8                          | 45.9                       | 54.0                   | -8.1                |

**Table 9-10: Radiated Emissions Harmonics/Spurious – 2437 MHz, Peak Detector; 802.11g**

| Frequency (MHz) | Peak Analyzer (dBµV/m) | Site Correction Factor (dB/m) | Peak Corrected (dBµV/m) | Peak Limit (dBµV/m) | Peak Margin (dB) |
|-----------------|------------------------|-------------------------------|-------------------------|---------------------|------------------|
| 4874.0          | 14.8                   | 34.0                          | 48.8                    | 74.0                | -25.2            |
| 7311.0          | -2.5                   | 36.5                          | 34.0                    | 74.0                | -40.0            |
| 12185.0         | -3.3                   | 44.9                          | 41.5                    | 74.0                | -32.5            |
| 19496.0         | -3.1                   | 53.8                          | 50.8                    | 74.0                | -23.2            |

**Table 9-11: Radiated Emissions Harmonics/Spurious – 2437 MHz, Average Detector; 802.11g**

| Frequency (MHz) | Average Analyzer (dBµV/m) | Site Correction Factor (dB/m) | Average Corrected (dBµV/m) | Average Limit (dBµV/m) | Average Margin (dB) |
|-----------------|---------------------------|-------------------------------|----------------------------|------------------------|---------------------|
| 4874.0          | 3.8                       | 34.0                          | 37.8                       | 54.0                   | -16.2               |
| 7311.0          | -12.7                     | 36.5                          | 23.8                       | 54.0                   | -30.2               |
| 12185.0         | -14.0                     | 44.9                          | 30.9                       | 54.0                   | -23.1               |
| 19496.0         | -14.3                     | 53.8                          | 39.5                       | 54.0                   | -14.5               |

**Table 9-12: Radiated Emissions Harmonics/Spurious – 2462 MHz, Peak Detector; 802.11g**

| Frequency (MHz) | Peak Analyzer (dBµV/m) | Site Correction Factor (dB/m) | Peak Corrected (dBµV/m) | Peak Limit (dBµV/m) | Peak Margin (dB) |
|-----------------|------------------------|-------------------------------|-------------------------|---------------------|------------------|
| 4924.0          | 14.0                   | 34.1                          | 48.1                    | 74.0                | -25.9            |
| 7386.0          | 11.7                   | 36.6                          | 48.3                    | 74.0                | -25.7            |
| 12310.0         | 5.1                    | 44.9                          | 50.0                    | 74.0                | -24.0            |
| 19696.0         | -14.4                  | 53.9                          | 39.5                    | 74.0                | -34.5            |
| 22158.0         | -1.5                   | 55.6                          | 54.1                    | 74.0                | -19.9            |

**Table 9-13: Radiated Emissions Harmonics/Spurious – 2462 MHz, Average Detector; 802.11g**

| Frequency (MHz) | Average Analyzer (dBµV/m) | Site Correction Factor (dB/m) | Average Corrected (dBµV/m) | Average Limit (dBµV/m) | Average Margin (dB) |
|-----------------|---------------------------|-------------------------------|----------------------------|------------------------|---------------------|
| 4924.0          | 2.9                       | 34.1                          | 37.0                       | 54.0                   | -17.0               |
| 7386.0          | 0.9                       | 36.6                          | 37.5                       | 54.0                   | -16.5               |
| 12310.0         | -1.7                      | 44.9                          | 43.1                       | 54.0                   | -10.9               |
| 19696.0         | -18.8                     | 53.9                          | 35.1                       | 54.0                   | -18.9               |
| 22158.0         | -12.5                     | 55.6                          | 43.1                       | 54.0                   | -10.9               |

**Table 9-14: Radiated Emissions Harmonics/Spurious – 2412 MHz, Peak Detector; 802.11n**

| Frequency (MHz) | Peak Analyzer (dBµV/m) | Site Correction Factor (dB/m) | Peak Corrected (dBµV/m) | Peak Limit (dBµV/m) | Peak Margin (dB) |
|-----------------|------------------------|-------------------------------|-------------------------|---------------------|------------------|
| 4824.0          | 9.9                    | 34.0                          | 43.9                    | 74.0                | -30.1            |
| 12060.0         | 3.1                    | 44.8                          | 48.0                    | 74.0                | -26.0            |
| 14472.0         | 3.6                    | 48.8                          | 52.4                    | 74.0                | -21.6            |
| 19296.0         | -14.7                  | 53.8                          | 39.1                    | 74.0                | -34.9            |

**Table 9-15: Radiated Emissions Harmonics/Spurious – 2412 MHz, Average Detector; 802.11n**

| Frequency (MHz) | Average Analyzer (dBµV/m) | Site Correction Factor (dB/m) | Average Corrected (dBµV/m) | Average Limit (dBµV/m) | Average Margin (dB) |
|-----------------|---------------------------|-------------------------------|----------------------------|------------------------|---------------------|
| 4824.0          | 0.2                       | 34.0                          | 34.2                       | 54.0                   | -19.8               |
| 12060.0         | -8.3                      | 44.8                          | 36.6                       | 54.0                   | -17.4               |
| 14472.0         | -8.1                      | 48.8                          | 40.7                       | 54.0                   | -13.3               |
| 19296.0         | -21.1                     | 53.8                          | 32.7                       | 54.0                   | -21.3               |

**Table 9-16: Radiated Emissions Harmonics/Spurious – 2437 MHz, Peak Detector; 802.11n**

| Frequency (MHz) | Peak Analyzer (dBµV/m) | Site Correction Factor (dB/m) | Peak Corrected (dBµV/m) | Peak Limit (dBµV/m) | Peak Margin (dB) |
|-----------------|------------------------|-------------------------------|-------------------------|---------------------|------------------|
| 4874.0          | 10.8                   | 34.0                          | 44.8                    | 74.0                | -29.2            |
| 7311.0          | 7.4                    | 36.5                          | 43.9                    | 74.0                | -30.1            |
| 12185.0         | 3.1                    | 44.9                          | 47.9                    | 74.0                | -26.1            |
| 19496.0         | -15.3                  | 53.8                          | 38.5                    | 74.0                | -35.5            |

**Table 9-17: Radiated Emissions Harmonics/Spurious – 2437 MHz, Average Detector; 802.11n**

| Frequency (MHz) | Average Analyzer (dBµV/m) | Site Correction Factor (dB/m) | Average Corrected (dBµV/m) | Average Limit (dBµV/m) | Average Margin (dB) |
|-----------------|---------------------------|-------------------------------|----------------------------|------------------------|---------------------|
| 4874.0          | 0.9                       | 34.0                          | 35.0                       | 54.0                   | -19.0               |
| 7311.0          | -4.2                      | 36.5                          | 32.3                       | 54.0                   | -21.7               |
| 12185.0         | -7.9                      | 44.9                          | 37.0                       | 54.0                   | -17.0               |
| 19496.0         | -21.5                     | 53.8                          | 32.3                       | 54.0                   | -21.7               |

**Table 9-18: Radiated Emissions Harmonics/Spurious – 2462 MHz, Peak Detector; 802.11n**

| Frequency (MHz) | Peak Analyzer (dBµV/m) | Site Correction Factor (dB/m) | Peak Corrected (dBµV/m) | Peak Limit (dBµV/m) | Peak Margin (dB) |
|-----------------|------------------------|-------------------------------|-------------------------|---------------------|------------------|
| 4924.0          | 8.2                    | 34.1                          | 42.3                    | 74.0                | -31.7            |
| 7386.0          | 7.0                    | 36.6                          | 43.6                    | 74.0                | -30.4            |
| 12310.0         | 3.5                    | 44.9                          | 48.3                    | 74.0                | -25.7            |
| 19696.0         | -14.1                  | 53.9                          | 39.8                    | 74.0                | -34.2            |
| 22158.0         | -16.5                  | 55.6                          | 39.1                    | 74.0                | -34.9            |

**Table 9-19: Radiated Emissions Harmonics/Spurious – 2462 MHz, Average Detector; 802.11n**

| Frequency (MHz) | Average Analyzer (dBµV/m) | Site Correction Factor (dB/m) | Average Corrected (dBµV/m) | Average Limit (dBµV/m) | Average Margin (dB) |
|-----------------|---------------------------|-------------------------------|----------------------------|------------------------|---------------------|
| 4924.0          | -1.9                      | 34.1                          | 32.1                       | 54.0                   | -21.9               |
| 7386.0          | -4.4                      | 36.6                          | 32.2                       | 54.0                   | -21.8               |
| 12310.0         | -6.6                      | 44.9                          | 38.3                       | 54.0                   | -15.7               |
| 19696.0         | -20.8                     | 53.9                          | 33.1                       | 54.0                   | -20.9               |
| 22158.0         | -27.5                     | 55.6                          | 28.0                       | 54.0                   | -26.0               |

Measurement uncertainty: ±4.6 dB. This measurement uncertainty is an expanded uncertainty for 95% confidence level received with a coverage factor k=2.

**Results: Pass**

|               |   |                   |
|---------------|---|-------------------|
| Dan Baltzell  |  | March 13-22, 2023 |
| Test Engineer | Signature   | Dates of Test     |

**10 Conclusion**

The data in this DTS measurement report shows that the EUT as tested, L3Harris Technologies, XL-95P Multi-Band Portable, V/U, HVIN: XL-x5-V/U, FCC ID: OWDTR-0166-E, IC: 3636B-0166, complies with the applicable requirements of FCC Parts 2 and 15 and ISED RSS-247 and RSS-Gen.