



Solutions

TEST REPORT

Test Report No. : UL-RPT-RP-14978163-116-FCC-WLAN 5GHz

Applicant * : Robert Bosch GmbH
Model No. * : CTP3NA
FCC ID * : 2AUXS-CTP3NA
Technology * : WLAN 5 GHz (802.11 a, n, ac, ax)
Test Standard(s) : **FCC Parts 15.207, 15.209(a) & 15.407**

For details of applied tests refer to test result summary

1. This test report shall not be reproduced in full or partial, without the written approval of UL International Germany GmbH.
2. The results in this report apply only to the sample tested.
3. The test results in this report are traceable to the national or international standards.
4. Test Report Version 1.0
5. Result of the tested sample: **PASS**
6. All information marked with a (*) were provided by customer / applicant or authorized representative

Prepared by: Muhammad Faiq Khan
Title: Project Engineer
Date: 09 November 2023

Approved by: Rachid, Acharkaoui
Title: Operations Manager
Date: 09 November 2023



Deutsche
Akkreditierungsstelle
D-PL-19381-02-00

This laboratory is accredited by DAkkS.
The tests reported herein have been performed in
accordance with its' terms of accreditation.

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Table of Contents

1. Customer Information *4
 1.1. Applicant Information 4
 1.2. Manufacturer Information 4

2. Summary of Testing5
 2.1. General Information 5
 Applied Standards 5
 Location 5
 Date information 5
 2.2. Summary of Test Results 6
 2.3. Methods and Procedures 6
 2.4. Deviations from the Test Specification 6

3. Equipment Under Test (EUT)7
 3.1. Identification of Equipment Under Test (EUT) * 7
 3.2. Description of EUT * 7
 3.3. Modifications Incorporated in the EUT 7
 3.4. Additional Information Related to Testing 8
 3.5. Support Equipment 9
 A. Support Equipment (In-house) 9
 B. Support Equipment (Manufacturer supplied) * 9

4. Operation and Monitoring of the EUT during Testing10
 4.1. Operating Modes 10
 4.2. Configuration and Peripherals 11

5. Measurements, Examinations and Derived Results12
 5.1. General Comments 12
 5.2. Test Results 13
 5.2.1. Transmitter Duty Cycle 13
 5.2.2. Transmitter Out of Band Radiated Emissions (5.15-5.850 GHz band operation) 16
 5.2.3. Transmitter Band Edge Radiated Emissions 84

6. Measurement Uncertainty98

7. Used equipment.....99

8. Report Revision History 100

1. Customer Information *

1.1.Applicant Information

| | |
|--------------------------------|--|
| Company Name: | Robert Bosch GmbH |
| Company Address: | Robert-Bosch-Platz 1 70839 Gerlingen GERMANY |
| Contact Person: | Karin Silberhorn |
| Contact E-Mail Address: | karin.silberhorn@de.bosch.com |
| Contact Phone No.: | +49 5121-49-7662 |

1.2.Manufacturer Information

| | |
|--------------------------------|--|
| Company Name: | Robert Bosch GmbH |
| Company Address: | Robert-Bosch-Platz 1 70839 Gerlingen GERMANY |
| Contact Person: | Karin Silberhorn |
| Contact E-Mail Address: | karin.silberhorn@de.bosch.com |
| Contact Phone No.: | +49 5121-49-7662 |

2. Summary of Testing

2.1. General Information

Applied Standards

| | |
|---------------------------------|---|
| Specification Reference: | 47CFR15.407 and 47CFR15.403 |
| Specification Title: | Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart E (Unlicensed National Information Infrastructure Devices) – Sections 15.403 and 15.407 |
| Specification Reference: | 47CFR15.207 and 47CFR15.209 |
| Specification Title: | Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart C (Intentional Radiators) - Sections 15.207 and 15.209 |

Location

| | |
|--------------------------------|--|
| Location of Testing: | UL International Germany GmbH Hedelfinger Str. 61 70327 Stuttgart Germany |
| Test Firm Registration: | 399704 |

Date information

| | |
|----------------------|--|
| Order Date: | 19 September 2023 |
| EUT arrived: | 20 September 2023 |
| Test Dates: | 20 September 2023 to 28 September 2023 |
| EUT returned: | -/- |

2.2. Summary of Test Results

| Clause | Measurement (5.15-5.85 GHz band) | Complied | Did not comply | Not performed | Not applicable |
|---|---|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|
| Part 15.207 | Transmitter AC Conducted Emissions ⁽¹⁾ | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Part 15.403(i) | Transmitter 26 dB Emission Bandwidth ⁽³⁾ | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Part 15.35(c) | Transmitter Duty Cycle ⁽²⁾ | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Part 15.407(a)(1)(iv) | Transmitter Maximum Conducted Output Power ⁽³⁾ | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Part 15.407(a)(1)(iv) | Transmitter Peak Power Spectral Density ⁽³⁾ | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Part 15.407(b)/15.209(a) | Transmitter Out of Band Radiated Emissions | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Part 15.407(b)/15.209(a) | Transmitter Band Edge Radiated Emissions | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Part 15.407(g) | Transmitter Frequency Stability ⁽³⁾ (Temperature & Voltage Variation) | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Part 15.407(h)(1) | Transmitter Power Control ⁽³⁾ | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <p>Decision rule: If the decision rule is not included in the applied customer specification or testing standard, the binary statement for simple acceptance, as defined in ILAC G8: 2019 Section 4.2.1, is applied as the decision rule for a pass/ fail statement. If the measured value is on the limit, the result is defined as a pass. In this case the risk of a false positive is 50%. For further information regarding risk assessment refer to ILAC G8: 2019.</p> | | | | | |

Note(s):

- The EUT is vehicular equipment and will be powered by the battery of the vehicle, therefore no AC conduct emission tests are required.
- The measurement was performed to assist the other average measurements.
- At the client's request, only partial testing was performed for the radiated spurious emissions and the band edge radiated emissions as the EUT is a host product that contains a pre-certified radio module (Model: ATC6NPL002C)

2.3. Methods and Procedures

| | |
|-------------------|--|
| Reference: | ANSI C63.10-2013 |
| Title: | American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices |
| Reference: | FCC KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 December 14, 2017 |
| Title: | Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E |

2.4. Deviations from the Test Specification

For the measurements contained within this test report, there were no deviations from, additions to, or exclusions from the test specification identified above.

3. Equipment Under Test (EUT)

3.1. Identification of Equipment Under Test (EUT) *

| | |
|-----------------------------------|-------------------------------------|
| Brand Name: | Bosch |
| Model Name: | CTP3NA |
| Model Number: | CTP3NA Ext |
| Test Sample Serial Number: | 1150003350 |
| Hardware Version: | C2 |
| Software Version: | DAIMLER_CTP3_ISTANBUL_RC2_HF2_S.010 |
| FCC ID: | 2AUXS-CTP3NA |

3.2. Description of EUT *

The equipment under test was an In-Vehicle-Telematic-Unit, contains Model Name: CTP3NA, supporting WLAN 2.4 GHz, WLAN 5 GHz, Bluetooth LE and Bluetooth BR/EDR technologies.

While testing WLAN 5GHz all other supported radio technologies were either switched off or were in idle mode.

3.3. Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing.

3.4. Additional Information Related to Testing

| | | |
|--|--|--------------------------------|
| Technology Tested: | WLAN (IEEE 802.11a,n, ac, ax) / Digital Transmission System | |
| Type of Unit: | Transceiver | |
| Supported Modulation Types: | OFDM | |
| Tested Data rates: | 802.11a | 54 Mbit/s (SISO) |
| | 802.11ax HT20 | MCS0 (SISO) |
| | 802.11ax HT40 | MCS0 (SISO) |
| | 802.11ax HT80 | MCS0 (SISO) |
| Power Supply Requirement(s): * | 24 V DC via external power supply | |
| Declared Antenna Gain: | 6.2 dBi | |
| Antenna Type: | combinatorial Antenna | |
| Antenna Details: | A 006 820 39 75 | |
| Transceiver Frequency Band: | 5150 MHz to 5850 MHz | |
| Nominal Channel Bandwidth * | 20 MHz | |
| Transmit Channels Tested: BW 20 MHz | Channel Number | Channel Frequency (MHz) |
| | 36 | 5180 |
| | 40 | 5200 |
| | 48 | 5240 |
| | 52 | 5260 |
| | 60 | 5300 |
| | 64 | 5320 |
| | 100 | 5500 |
| | 116 | 5580 |
| | 140 | 5700 |
| | 149 | 5745 |
| | 157 | 5785 |
| | 165 | 5825 |
| Nominal Channel Bandwidth * | 40 MHz | |
| Transmit Channels Tested: BW 40 MHz | Channel Number | Channel Frequency (MHz) |
| | 62 | 5310 |
| | 102 | 5510 |
| | 134 | 5670 |
| Nominal Channel Bandwidth * | 80 MHz | |
| Transmit Channels Tested: BW 80 MHz | Channel Number | Channel Frequency (MHz) |
| | 42 | 5210 |
| | 155 | 5775 |

3.5. Support Equipment

The following support equipment was used to exercise the EUT during testing:

A. Support Equipment (In-house)

| Item | Description | Brand Name | Model Name or Number | Serial Number |
|------|-------------|------------|----------------------|---------------|
| 1 | -/- | -/- | -/- | -/- |

B. Support Equipment (Manufacturer supplied) *

| Item | Description | Brand Name | Model Name or Number | Serial Number |
|------|-------------|------------|----------------------|---------------|
| 1 | Laptop | Fujitsu | H770 | DS1U006875 |

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

The EUT was tested in the following operating mode(s):

Transmitter / Modulated Carrier Continuous Transmissions Mode WLAN 2.4 GHz, Worst Case:

- 802.11a | 20 MHz | 54 Mbps | Channel 36 | 5180 MHz ⁽¹⁾⁽²⁾
- 802.11a | 20 MHz | 54 Mbps | Channel 40 | 5200 MHz ⁽¹⁾
- 802.11ax (SU) | 80 MHz | MCS0 | Channel 42 | 5210 MHz ⁽²⁾
- 802.11a | 20 MHz | 54 Mbps | Channel 48 | 5240 MHz ⁽¹⁾
- 802.11ax (SU) | 20 MHz | MCS0 | Channel 48 | 5240 MHz ⁽¹⁾
- 802.11a | 20 MHz | 54 Mbps | Channel 52 | 5260 MHz ⁽¹⁾
- 802.11a | 20 MHz | 54 Mbps | Channel 60 | 5300 MHz ⁽¹⁾
- 802.11ax (SU) | 40 MHz | MCS0 | Channel 62 | 5310 MHz ⁽²⁾
- 802.11ax (RU52) | 20 MHz | MCS0 | Channel 60 | 5300 MHz ⁽¹⁾
- 802.11a | 20 MHz | 54 Mbps | Channel 64 | 5320 MHz ⁽¹⁾⁽²⁾
- 802.11a | 20 MHz | 54 Mbps | Channel 100 | 5500 MHz ⁽¹⁾⁽²⁾
- 802.11ax (SU) | 40 MHz | MCS0 | Channel 102 | 5510 MHz ⁽²⁾
- 802.11a | 20 MHz | 54 Mbps | Channel 116 | 5580 MHz ⁽¹⁾
- 802.11ax (RU52) | 20 MHz | MCS0 | Channel 60 | 5670 MHz ⁽¹⁾
- 802.11a | 20 MHz | 54 Mbps | Channel 140 | 5700 MHz ⁽¹⁾⁽²⁾
- 802.11a | 20 MHz | 54 Mbps | Channel 149 | 5745 MHz ⁽¹⁾⁽²⁾
- 802.11ax (RU996_67) | 80 MHz | MCS0 | Channel 155 | 5775 MHz ⁽²⁾
- 802.11a | 20 MHz | 54 Mbps | Channel 157 | 5785 MHz ⁽¹⁾
- 802.11a | 20 MHz | 54 Mbps | Channel 165 | 5825 MHz ⁽¹⁾⁽²⁾
- 802.11ax (RU52) | 20 MHz | MCS0 | Channel 165 | 5825 MHz ⁽¹⁾

⁽¹⁾ According to customer declaration the unwanted (spurious) radiated emissions measurement was performed on this mode.

⁽²⁾ According to customer declaration this mode was used for Band edge measurements.

4.2. Configuration and Peripherals

The EUT was tested in the following configuration(s):

EUT Power Supply:

- The EUT was powered with 24V DC via an external AC/DC power supply

Test Mode Activation:

- The EUT can be connected to the Test laptop via USB supplied by the customer.
- The test modes were activated by the terminal software "Kitty". The commands to setup the respective modes and power were defined by the customer.

Radiated Measurements:

- As per the applicant's declaration &/operational description of the EUT, the EUT is a tabletop equipment for its intended application. Therefore, EUT's test setup placement was performed in accordance with ANSI C63.10 section 6.2.3.2 & section 6.12 Figure 4.
- The worst-case position was declared by the customer.
- Radiated measurements below 30 MHz were performed with the EUT positioned on the turn table and rotating 360 degrees while the loop antenna height was set at 100 cm.
- Radiated measurements above 30 MHz were performed with the EUT positioned on the turn table and rotating 360° while the antenna height varies from 1 to 4 m over the measurement frequency range.
- R&S® EMC32 V11.30 Software was used for the Radiated spurious emission measurements.

Duty Cycle Correction Details:

- As the continuous transmission of the EUT ($D \geq 98\%$) can be achieved and EUT was transmitting continuously at Duty Cycles of 98 % (duty cycle variations are less than $\pm 2\%$ at the respective data rate) for ax-mode HT40 MCS0. Therefore, No Duty Cycle Correction Factors were added to all average measurements.
- As the continuous transmission of the EUT ($D \geq 98\%$) cannot be achieved and EUT was transmitting continuously at Duty Cycles of 91.95 % and 42.07% (duty cycle variations are less than $\pm 2\%$ at the respective data rate) for A-mode HT20 54Mbps and ax-mode HT80 MCS0 respectively. Therefore, Duty Cycle Correction Factor of 0.36 dB and 8.94 dB was added to all average measurements, to compute the corrected average values of the emissions that would have been measured had the test been performed at 100% Duty Cycle.

5. Measurements, Examinations and Derived Results

5.1. General Comments

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to Section 6 *Measurement Uncertainty* for details.

In accordance with DAkkS requirements all the measurement equipment is on a calibration schedule. All equipment was within the calibration period on the date of testing.

5.2. Test Results

5.2.1. Transmitter Duty Cycle

Test Summary:

| | | | |
|-----------------------------------|--------------------|-------------------|---------------------------------------|
| Test Engineer: | Muhammad Faiq Khan | Test Date: | 21 September 2023 & 28 September 2023 |
| Test Sample Serial Number: | 1150003350 | | |
| Test Site Identification | SR 1/2 | | |

| | |
|--------------------------|--------------------------------------|
| FCC Reference: | Part 15.35(c) |
| Test Method Used: | FCC KDB 789033 D02 Section II.B.2.b) |

Environmental Conditions:

| | |
|-------------------------------|--------------|
| Temperature (°C): | 23.8 to 24.8 |
| Relative Humidity (%): | 45.1 to 52.1 |

Notes:

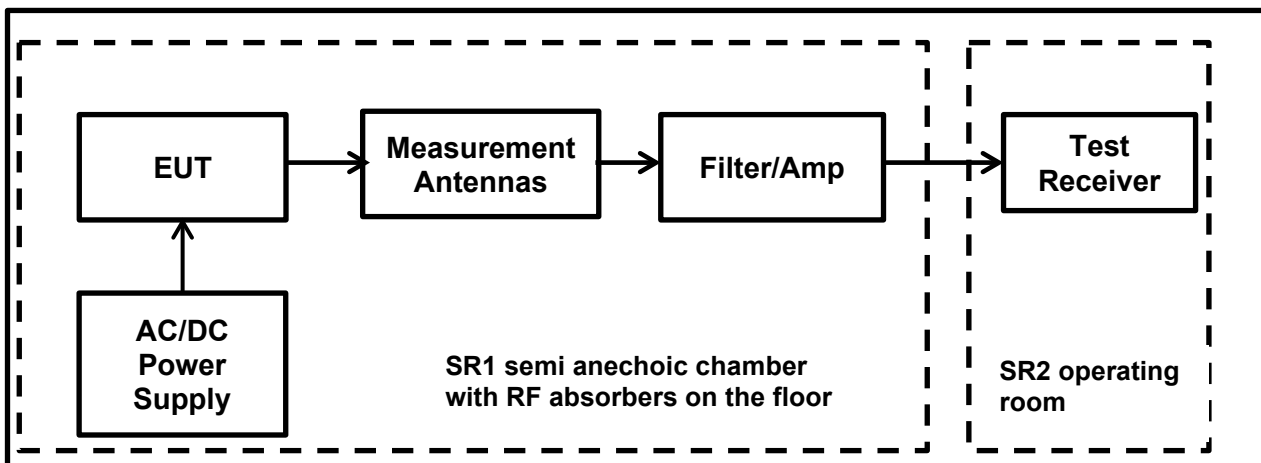
- The transmitter duty cycle was measured using a spectrum analyser in the time domain and calculated by using the following calculation:

$$Duty\ Cycle\ (\%) = 100 \times [On\ Time\ (T_{ON})] / [Period(T_{ON} + T_{OFF})\ or\ 100ms\ whichever\ is\ the\ lesser]$$

$$Duty\ Cycle\ Correction\ Factor = 10 \log 1 / [On\ Time\ (T_{ON})] / [Period(T_{ON} + T_{OFF})\ or\ 100ms\ whichever\ is\ the\ lesser]$$

- Duty Cycle Correction Factor for a-mode 54 Mbps: 0.36dB
- Duty Cycle Correction Factor for ax-mode HT80 MCS0: 13.20dB

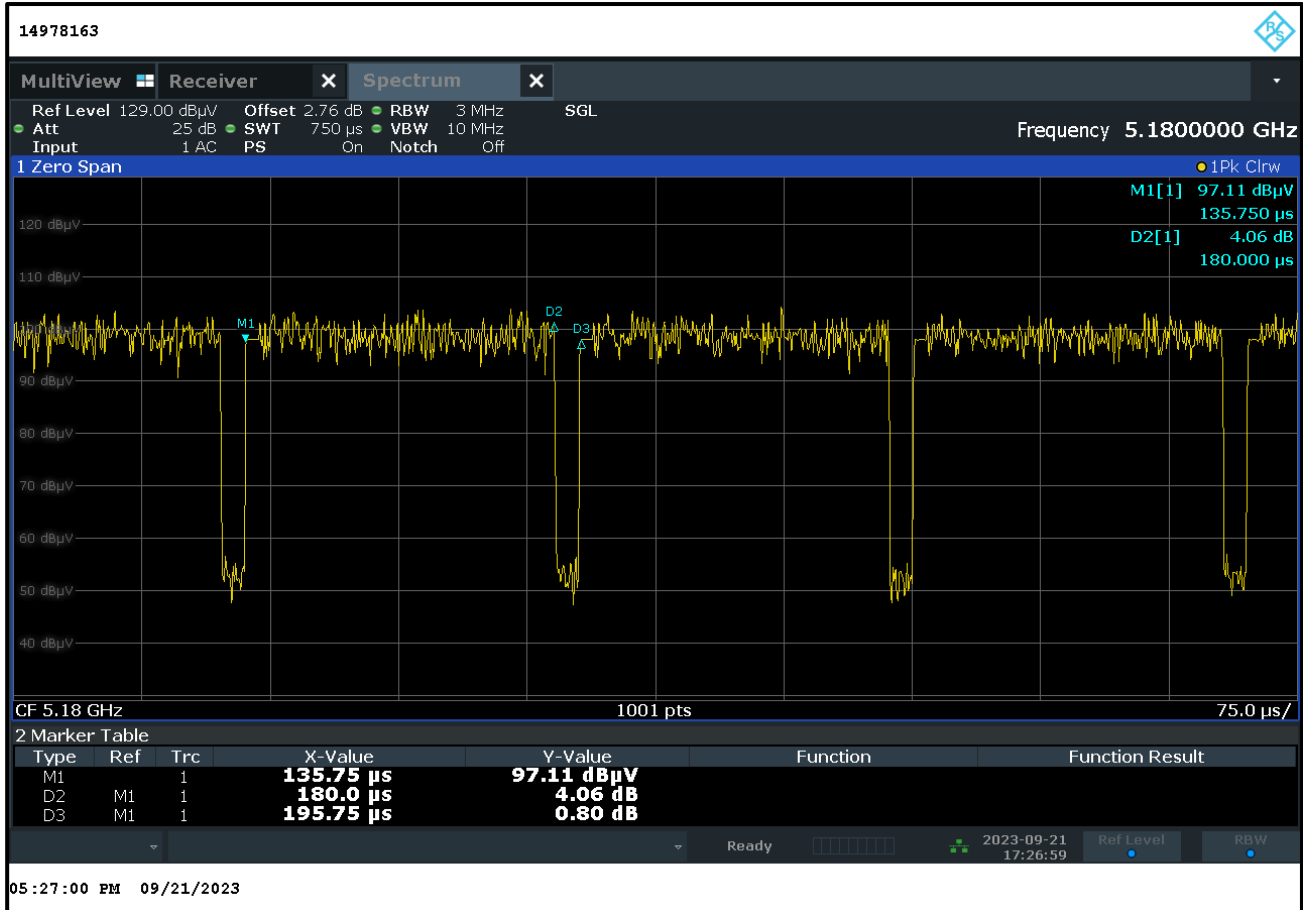
Test Setup:



Transmitter Duty Cycle (continued)

Results: AC-DC Power Supply 802.11a / 20 MHz / 54 Mbps

| Pulse On Time (T _{ON}) (ms) | Pulse Period (T _{ON} + T _{OFF}) (ms) | Duty Cycle (%) | Duty Cycle Correction Factor (dB) |
|---------------------------------------|---|----------------|-----------------------------------|
| 0.18000 | 0.19575 | 91.95 | 0.36 |

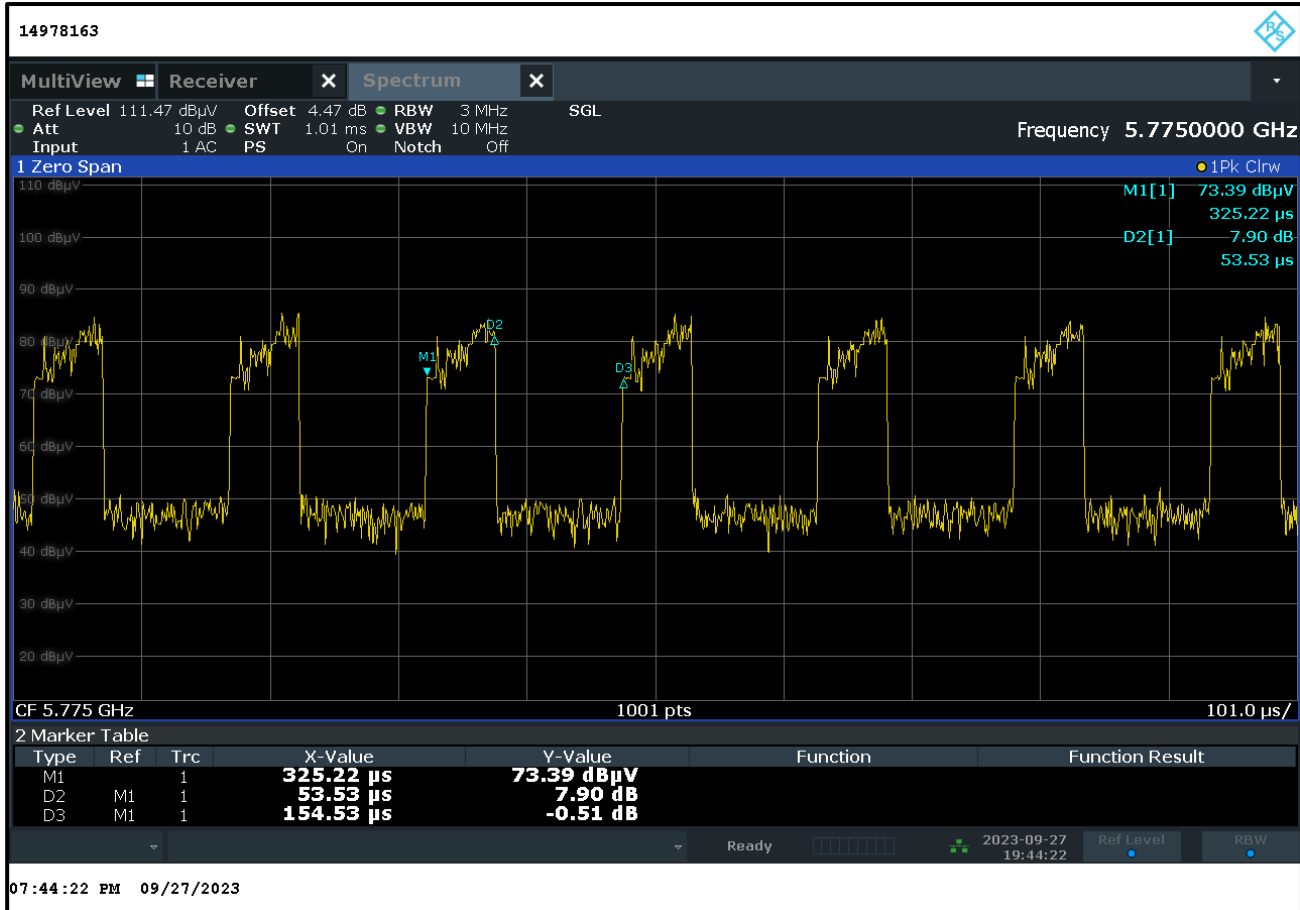


Result: Pass

Transmitter Duty Cycle (continued)

Results: AC-DC Power Supply / 802.11ax / 80 MHz / MCS0

| Pulse On Time (T _{ON}) (ms) | Pulse Period (T _{ON} + T _{OFF}) (ms) | Duty Cycle (%) | Duty Cycle Correction Factor (dB) |
|---------------------------------------|---|----------------|-----------------------------------|
| 0.05353 | 0.15453 | 34.76 | 13.20 |



Result: Pass

5.2.2. Transmitter Out of Band Radiated Emissions (5.15-5.850 GHz band operation)**Test Summary:**

| | | | |
|-----------------------------------|-------------------|-------------------|-------------------|
| Test Engineer: | Abbas Al-Hussainy | Test Date: | 26 September 2023 |
| Test Sample Serial Number: | 1150003350 | | |
| Test Site Identification | SR 1/2 | | |

| | |
|--------------------------|--|
| FCC Reference: | Parts 15.407(b)(1),(9) & 15.209(a) |
| Test Method Used: | FCC KDB 789033 II .G.1, II .G.2, II .G.3 & II .G.4. & ANSI C63.10 Sections 6.3 and 6.4 |
| Frequency Range: | 9 kHz to 30 MHz |

Environmental Conditions:

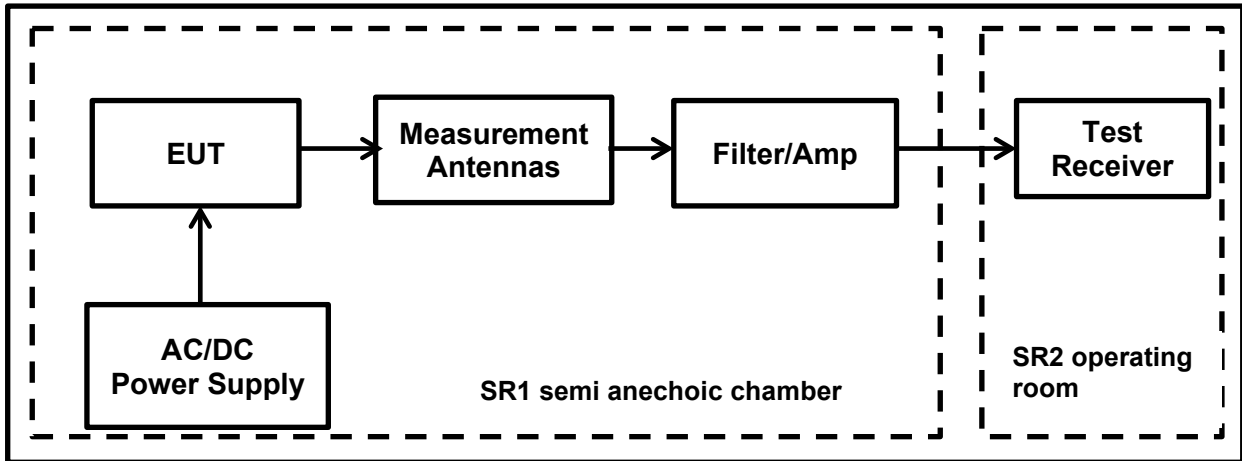
| | |
|-------------------------------|------|
| Temperature (°C): | 24.5 |
| Relative Humidity (%): | 46 |

Note(s):

- In accordance with FCC KDB 414788 D01 Radiated Test Site & ANSI C63.10 clause 5.2 an alternative test site that can demonstrate equivalence to a open area test site may be used. Therefore, the measurement was performed in a Semi Anechoic Chamber. (The OATS / SAC comparison data is available upon request).
- The limits are specified at a test distances of 30 and 300 metres. However, as specified in FCC Section 15.31 (f)(2) & ANSI C63.10 clause 6.4.3, measurements may be performed at a closer distance and the measured level extrapolated to the specified measurement distance using the method described in clauses 6.4.4, specifically sub-clause 6.4.4.1 which specifies that the measured level shall be extrapolated to the specified distance by conservatively presuming that the field strength decays at 40 dB/decade.
- Therefore the limit values are extrapolated to a measurement distance of 3 m.
 - 9 kHz- 490 kHz: limits extrapolated from 300 m to 3 m by adding 80 dB at 40 dB/decade.
 - 490kHz-1705 kHz: limits extrapolated from 30 m to 3 m by adding 40 dB /decade.
- All emissions shown on the pre-scan plots were investigated and found to be below system noise floor.
- Measurements below 30 MHz were performed in a semi-anechoic chamber SR1/ 2 (Asset Number 1603665) at a distance of 3 m. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. The measurement loop antenna height was 100 cm.
- Pre-scans were performed and markers placed on the highest measured levels. The test receiver was set to:
 - Frequency range: 9 kHz-150kHz : RBW: 300 Hz /VBW: 1 kHz
 - Frequency range: 150 kHz – 30 MHz: RBW: 10 kHz /VBW: 30 kHz
 - Detector: Max-Peak detector
 - Trace Mode: Max Hold

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Test Setup:

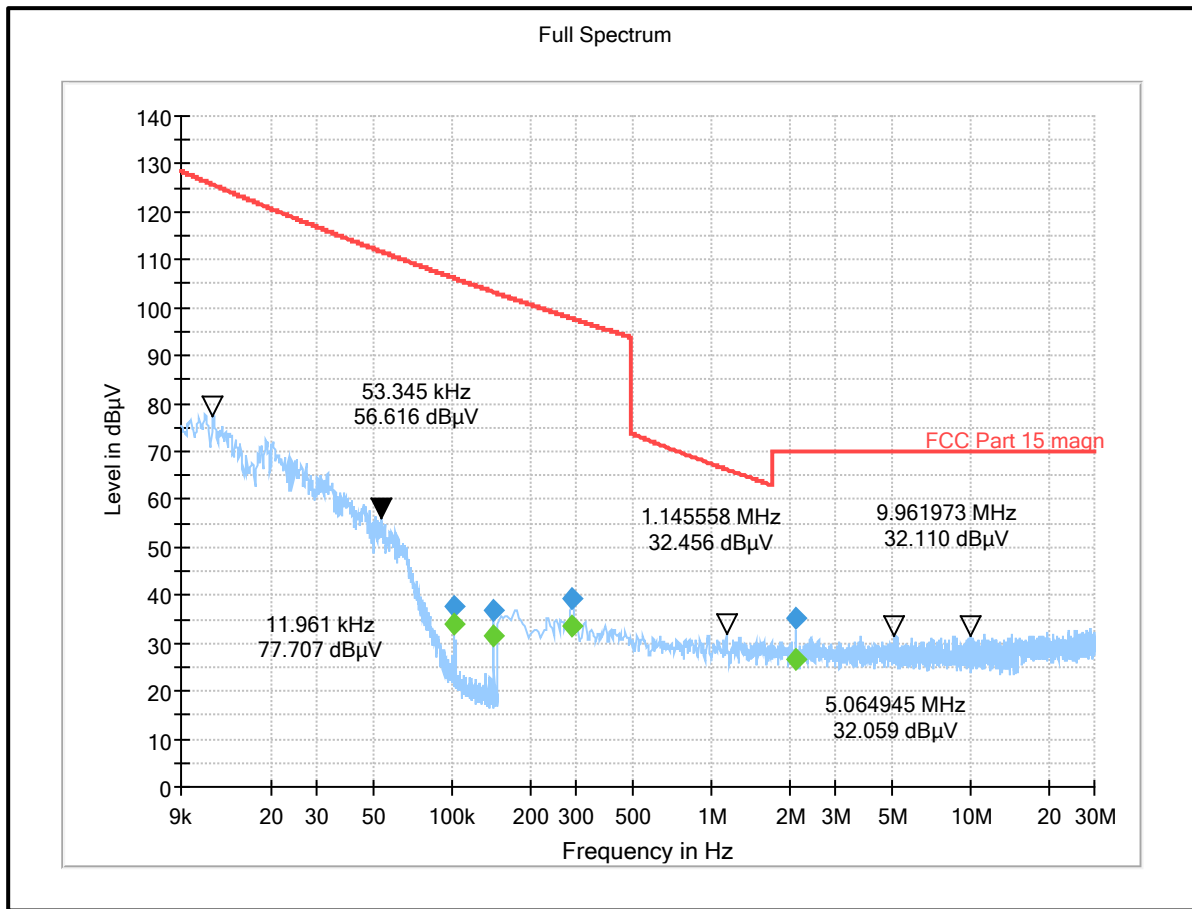


Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11ax (SU) / 20 MHz / MCS0 / Channel 48

| Frequency (MHz) | Loop Antenna Orientation | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|--------------------------|----------------------|----------------------|-------------|----------|
| 0.101496 | 90° to EUT | 37.58 | 106.18 | 68.60 | Complied |
| 0.144783 | 0° to EUT | 37.01 | 103.25 | 66.24 | Complied |
| 0.288915 | 0° to EUT | 39.32 | 97.78 | 58.46 | Complied |
| 2.108040 | 90° to EUT | 35.04 | 70.00 | 34.96 | Complied |

Plot: Radiated Transmitter spurious emission from 9 kHz – 30 MHz



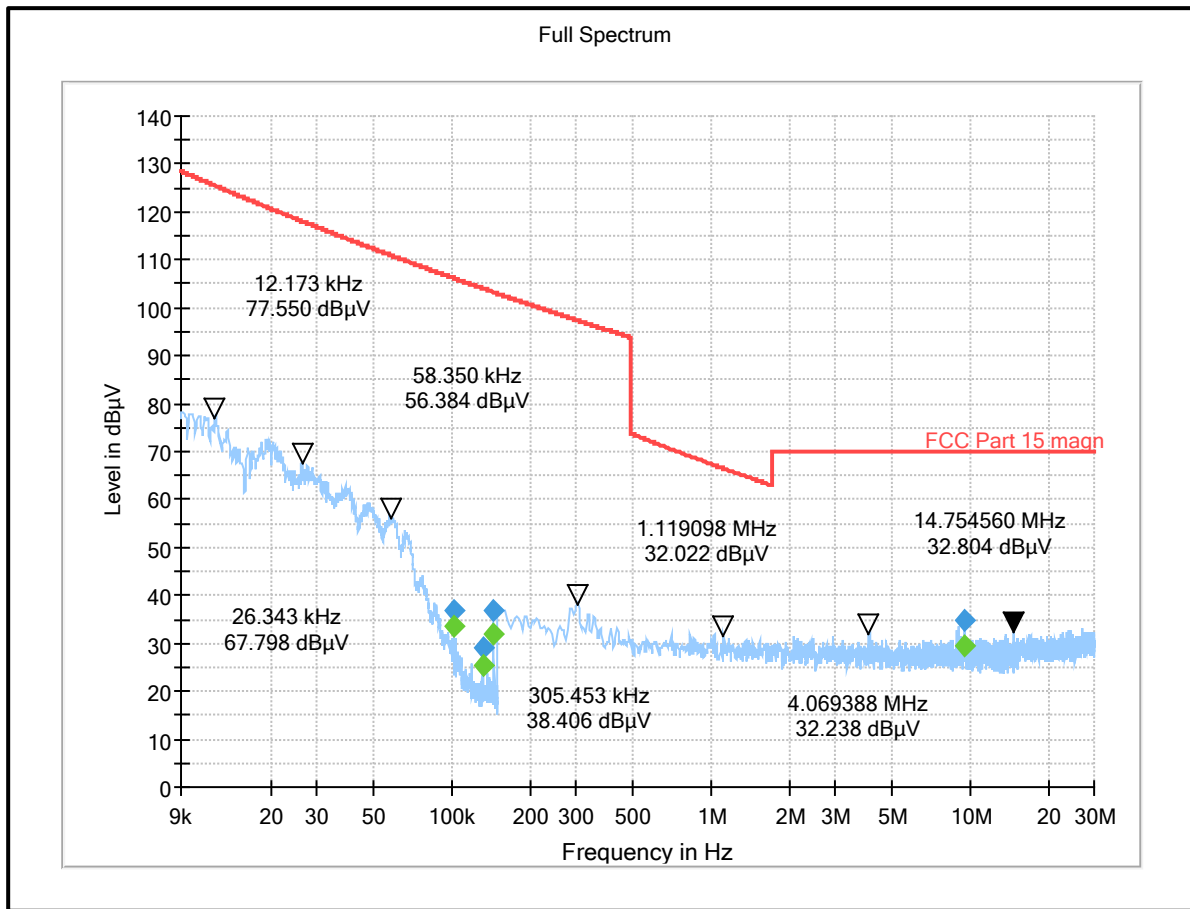
Result: **Pass/**

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11ax (RU52-38) / 20 MHz / MCS0 / Channel 60

| Frequency (MHz) | Loop Antenna Orientation | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|--------------------------|----------------------|----------------------|-------------|----------|
| 0.101849 | 90° to EUT | 36.94 | 106.15 | 69.21 | Complied |
| 0.131106 | 0° to EUT | 29.07 | 104.06 | 74.99 | Complied |
| 0.144783 | 0° to EUT | 37.03 | 103.25 | 66.22 | Complied |
| 9.473010 | 90° to EUT | 34.76 | 70.00 | 35.24 | Complied |

Plot: Radiated Transmitter spurious emission from 9 kHz – 30 MHz



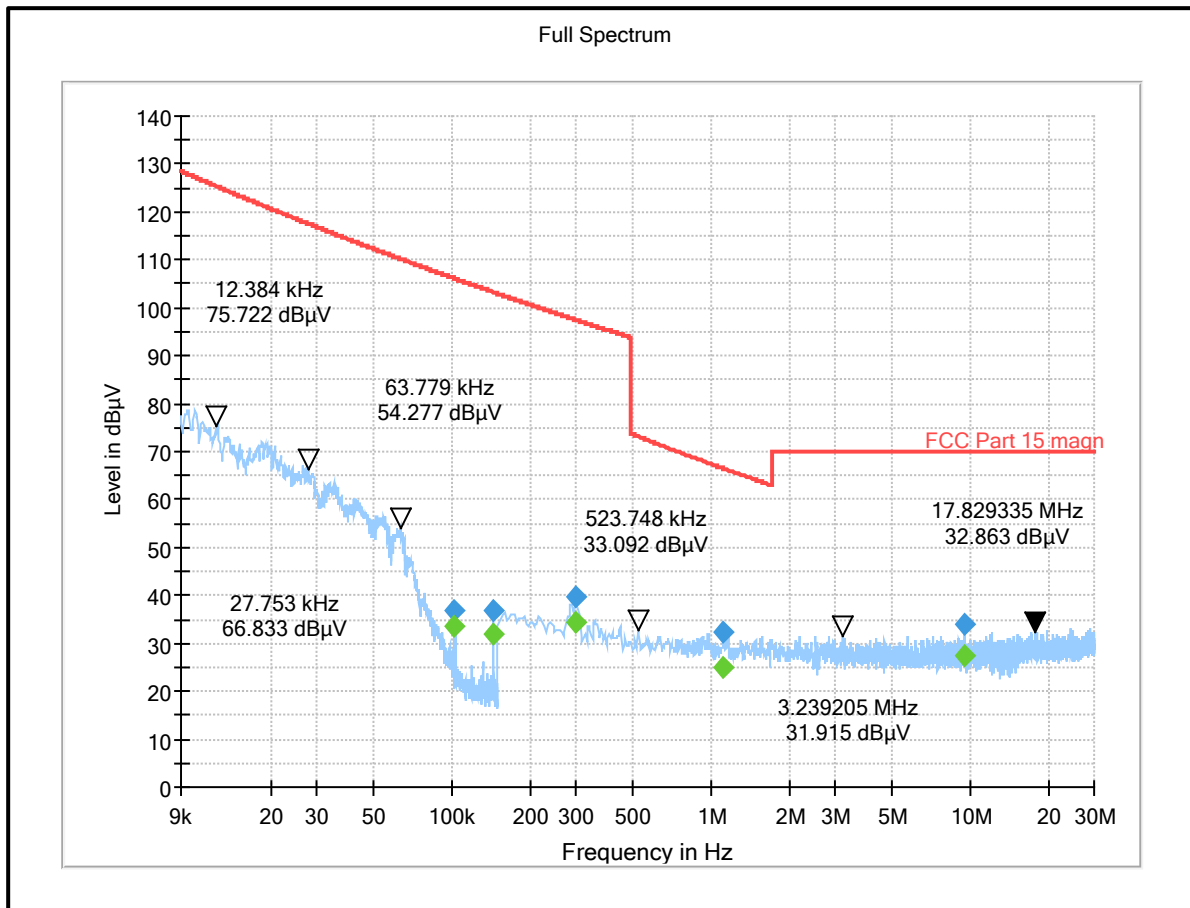
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11ax (RU52-38) / 40 MHz / MCS0 / Channel 134

| Frequency (MHz) | Loop Antenna Orientation | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|--------------------------|----------------------|----------------------|-------------|----------|
| 0.101849 | 90° to EUT | 36.87 | 106.15 | 69.28 | Complied |
| 0.144783 | 0° to EUT | 36.93 | 103.25 | 66.32 | Complied |
| 0.302145 | 0° to EUT | 39.54 | 97.44 | 57.90 | Complied |
| 1.112483 | 0° to EUT | 32.41 | 66.49 | 34.08 | Complied |
| 9.470503 | 90° to EUT | 33.81 | 70.00 | 36.19 | Complied |

Plot: Radiated Transmitter spurious emission from 9 kHz – 30 MHz



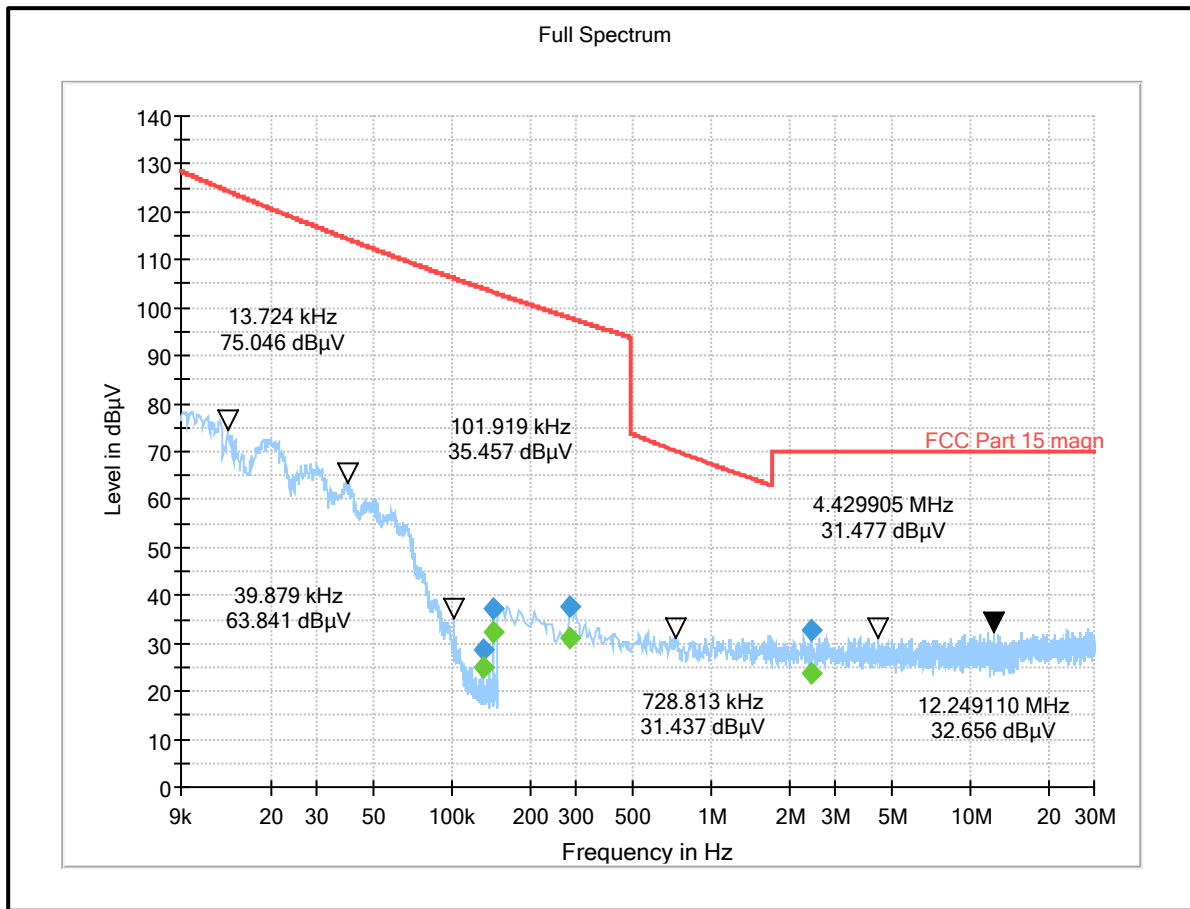
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11ax (RU52-38) / 20 MHz / MCS0 / Channel 165

| Frequency (MHz) | Loop Antenna Orientation | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|--------------------------|----------------------|----------------------|-------------|----------|
| 0.131036 | 0° to EUT | 28.74 | 104.07 | 75.33 | Complied |
| 0.144783 | 0° to EUT | 37.14 | 103.25 | 66.11 | Complied |
| 0.285608 | 0° to EUT | 37.86 | 97.87 | 60.01 | Complied |
| 2.435483 | 0° to EUT | 32.76 | 70.00 | 37.24 | Complied |

Plot: Radiated Transmitter spurious emission from 9 kHz – 30 MHz



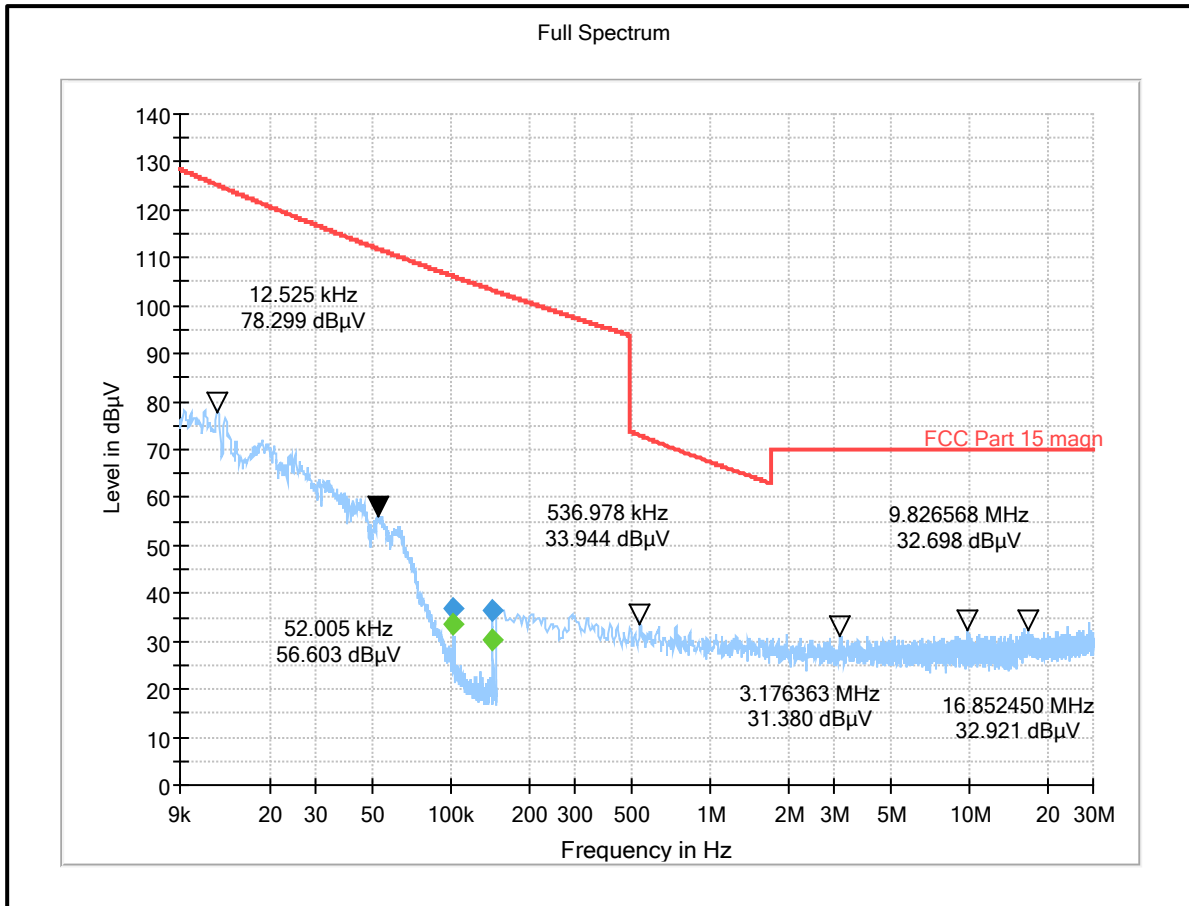
Result: **Pass/**

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 36

| Frequency (MHz) | Loop Antenna Orientation | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|--------------------------|----------------------|----------------------|-------------|----------|
| 0.101496 | 90° to EUT | 36.88 | 106.18 | 69.30 | Complied |
| 0.144854 | 90° to EUT | 36.33 | 103.25 | 66.92 | Complied |

Plot: Radiated Transmitter spurious emission from 9 kHz – 30 MHz



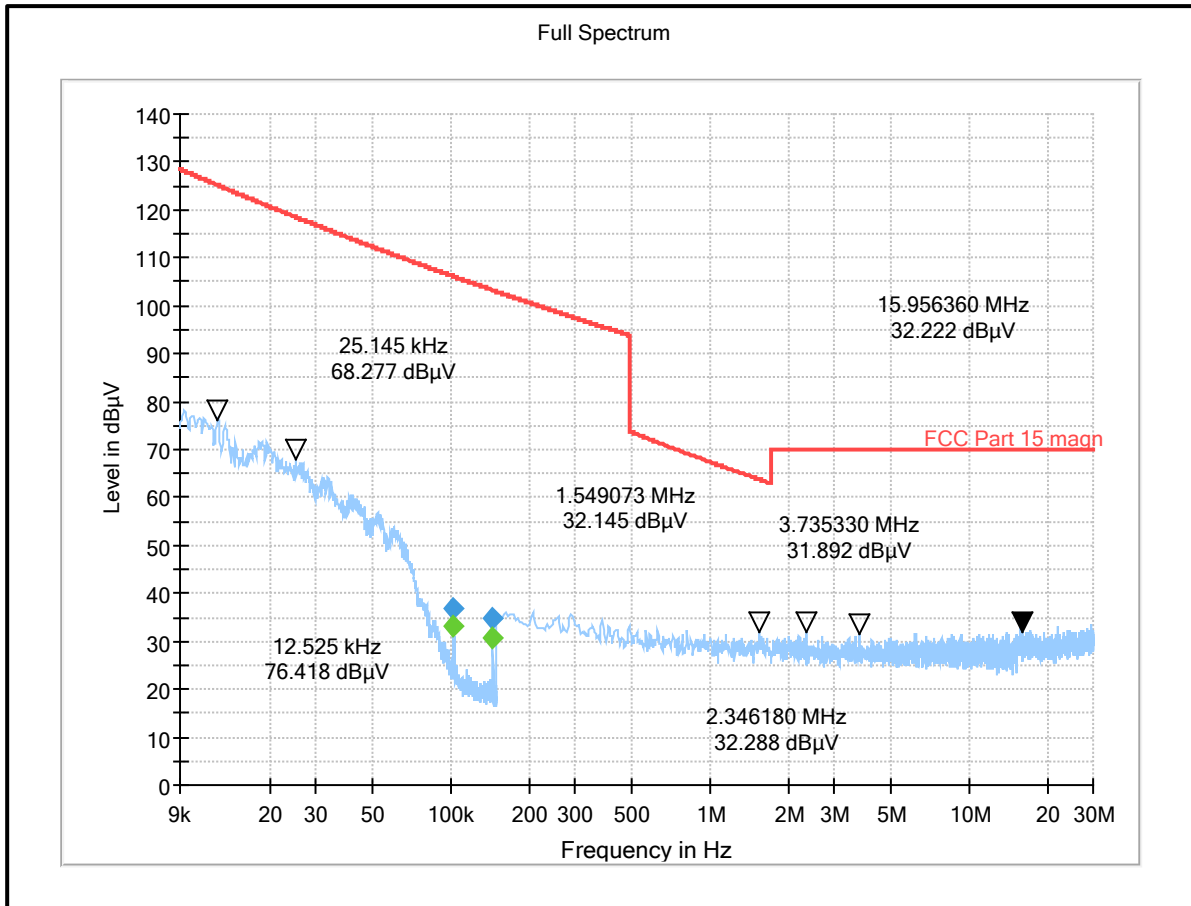
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 40

| Frequency (MHz) | Loop Antenna Orientation | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|--------------------------|----------------------|----------------------|-------------|----------|
| 0.101496 | 90° to EUT | 36.95 | 106.18 | 69.23 | Complied |
| 0.145206 | 90° to EUT | 34.70 | 103.23 | 68.53 | Complied |

Plot: Radiated Transmitter spurious emission from 9 kHz – 30 MHz



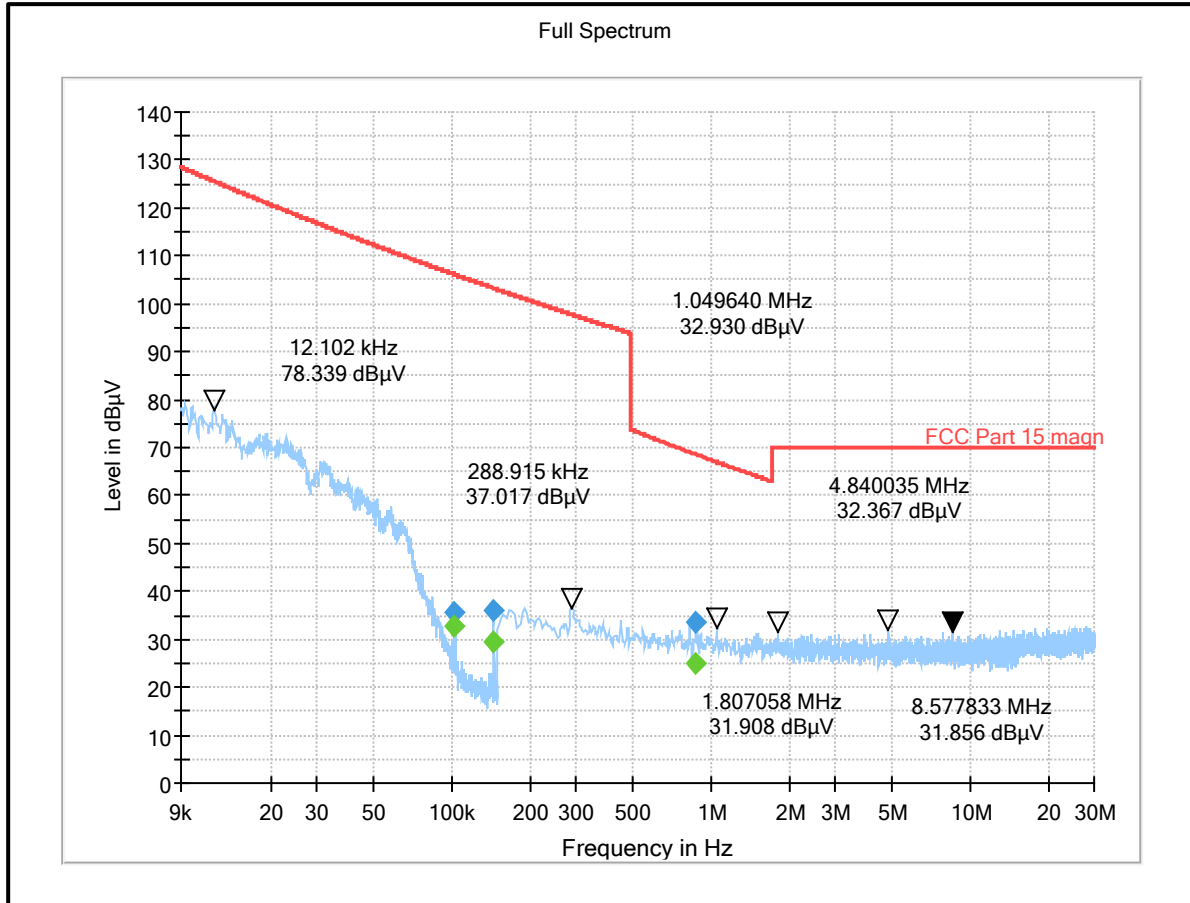
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 48

| Frequency (MHz) | Loop Antenna Orientation | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|--------------------------|----------------------|----------------------|-------------|----------|
| 0.101426 | 90° to EUT | 35.52 | 106.19 | 70.67 | Complied |
| 0.144854 | 0° to EUT | 36.13 | 103.25 | 67.12 | Complied |
| 0.871035 | 90° to EUT | 33.66 | 68.59 | 34.93 | Complied |

Plot: Radiated Transmitter spurious emission from 9 kHz – 30 MHz



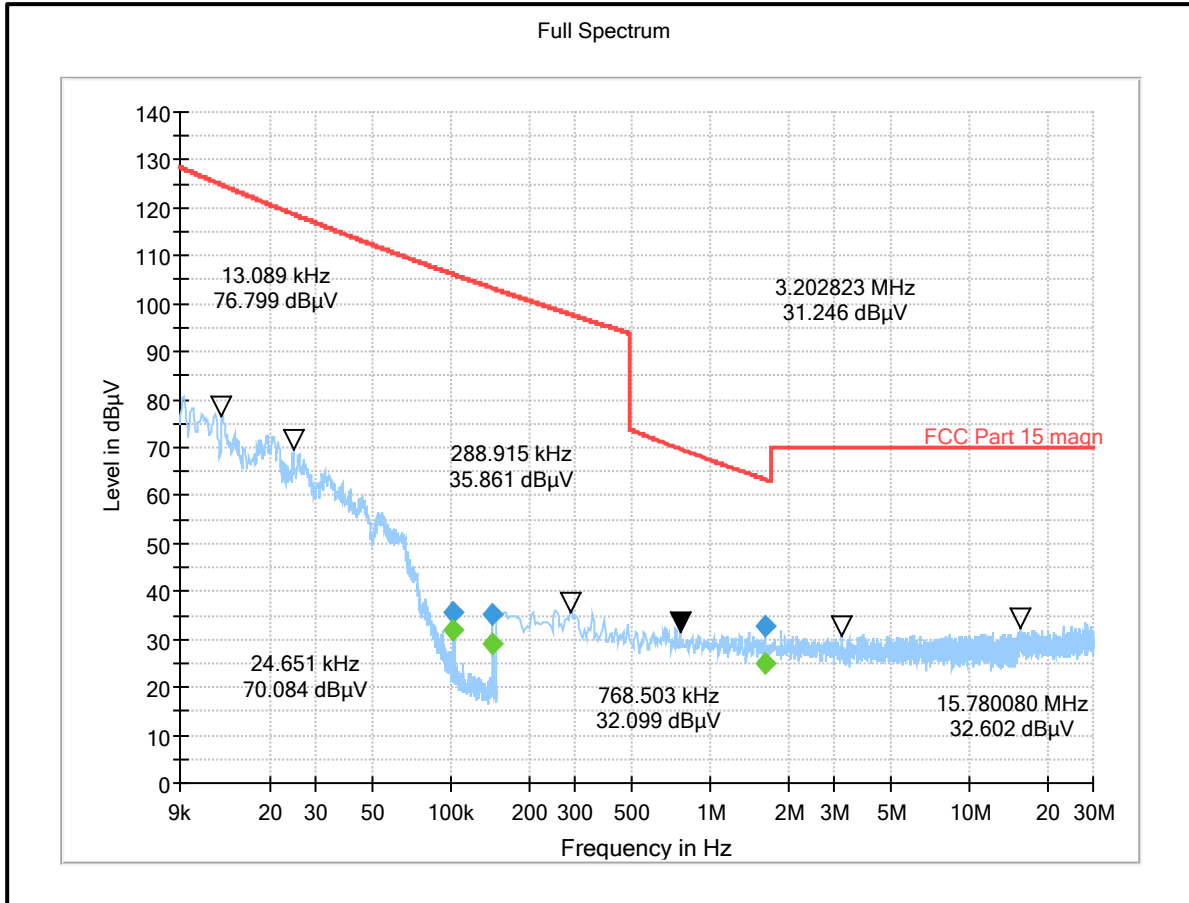
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 52

| Frequency (MHz) | Loop Antenna Orientation | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|--------------------------|----------------------|----------------------|-------------|----------|
| 0.101496 | 90° to EUT | 35.59 | 106.18 | 70.59 | Complied |
| 0.144854 | 0° to EUT | 35.33 | 103.25 | 67.92 | Complied |
| 1.625145 | 90° to EUT | 32.89 | 63.36 | 30.47 | Complied |

Plot: Radiated Transmitter spurious emission from 9 kHz – 30 MHz



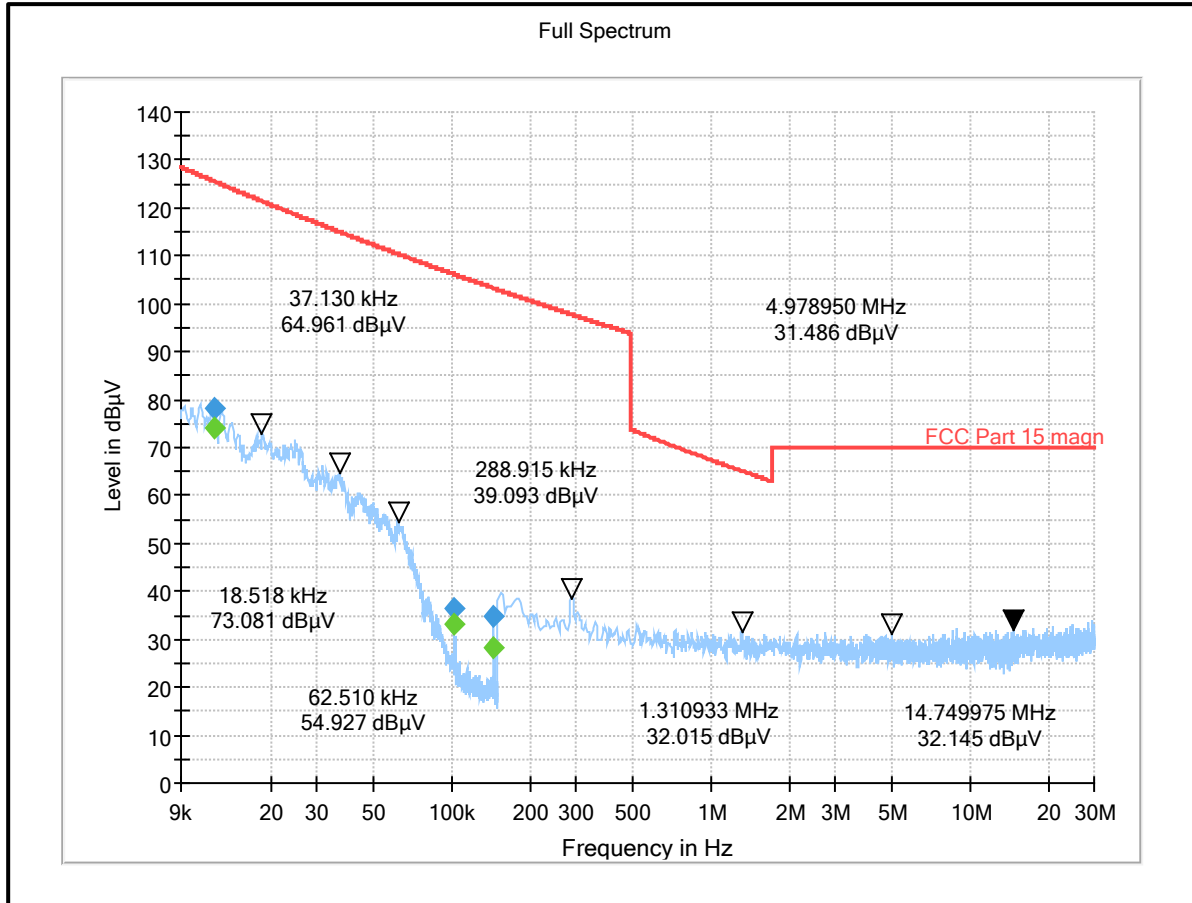
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 60

| Frequency (MHz) | Loop Antenna Orientation | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|--------------------------|----------------------|----------------------|-------------|----------|
| 0.012102 | 90° to EUT | 78.17 | 125.54 | 47.37 | Complied |
| 0.101426 | 90° to EUT | 36.30 | 106.19 | 69.89 | Complied |
| 0.144783 | 0° to EUT | 34.75 | 103.25 | 68.50 | Complied |

Plot: Radiated Transmitter spurious emission from 9 kHz – 30 MHz



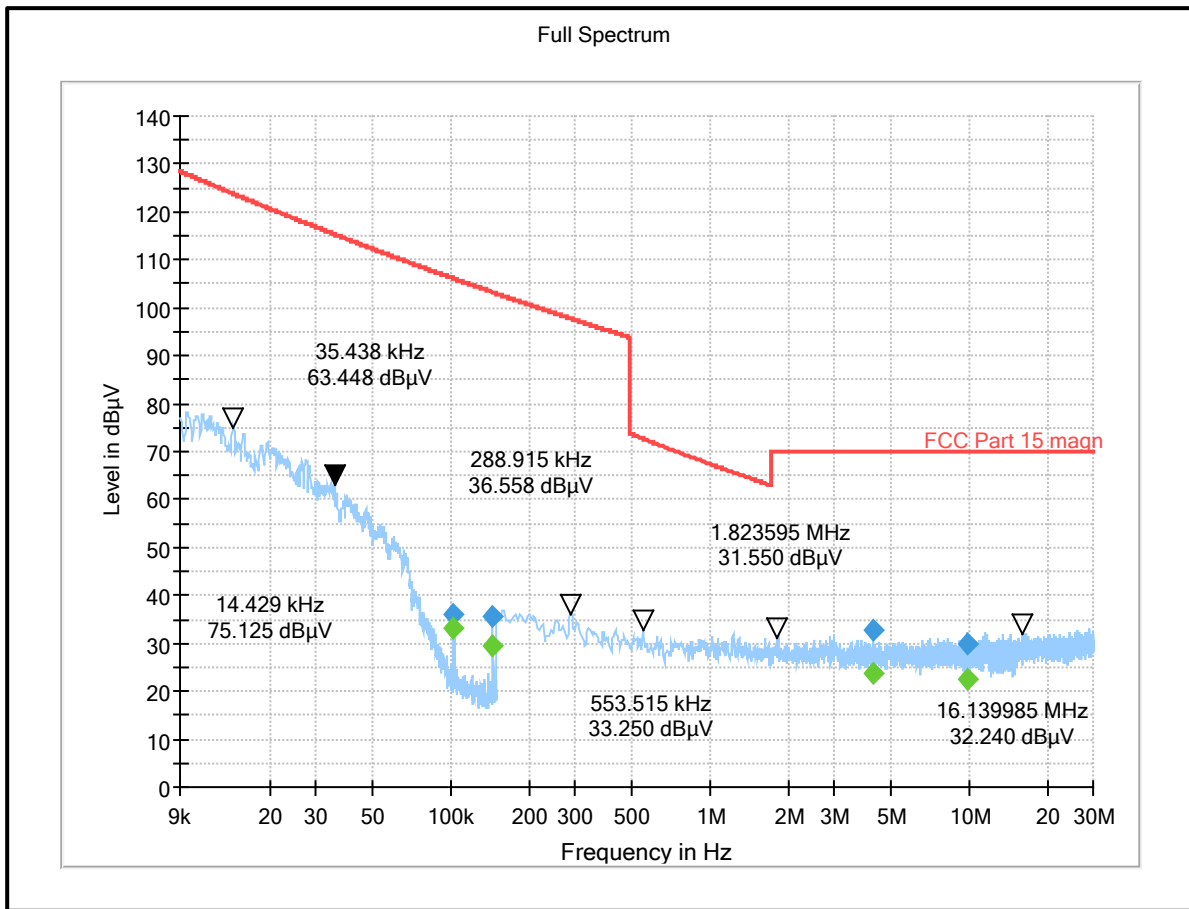
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 64

| Frequency (MHz) | Loop Antenna Orientation | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|--------------------------|----------------------|----------------------|-------------|----------|
| 0.101426 | 90° to EUT | 35.89 | 106.19 | 70.30 | Complied |
| 0.144854 | 0° to EUT | 35.76 | 103.25 | 67.49 | Complied |
| 4.241378 | 90° to EUT | 32.73 | 70.00 | 37.27 | Complied |
| 9.778925 | 90° to EUT | 30.00 | 70.00 | 40.00 | Complied |

Plot: Radiated Transmitter spurious emission from 9 kHz – 30 MHz



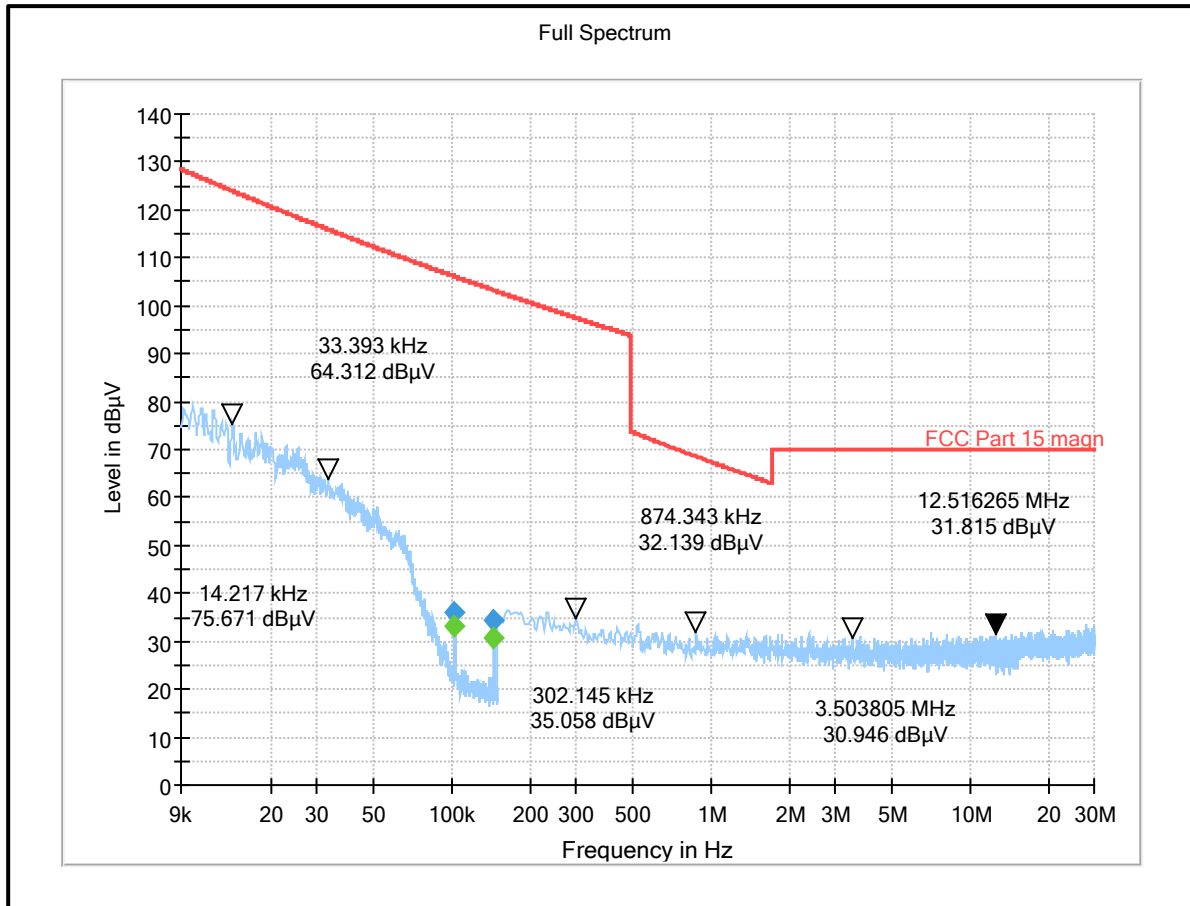
Result: **Pass/**

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 100

| Frequency (MHz) | Loop Antenna Orientation | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|--------------------------|----------------------|----------------------|-------------|----------|
| 0.101426 | 90° to EUT | 35.98 | 106.19 | 70.21 | Complied |
| 0.145347 | 0° to EUT | 34.44 | 103.22 | 68.78 | Complied |

Plot: Radiated Transmitter spurious emission from 9 kHz – 30 MHz



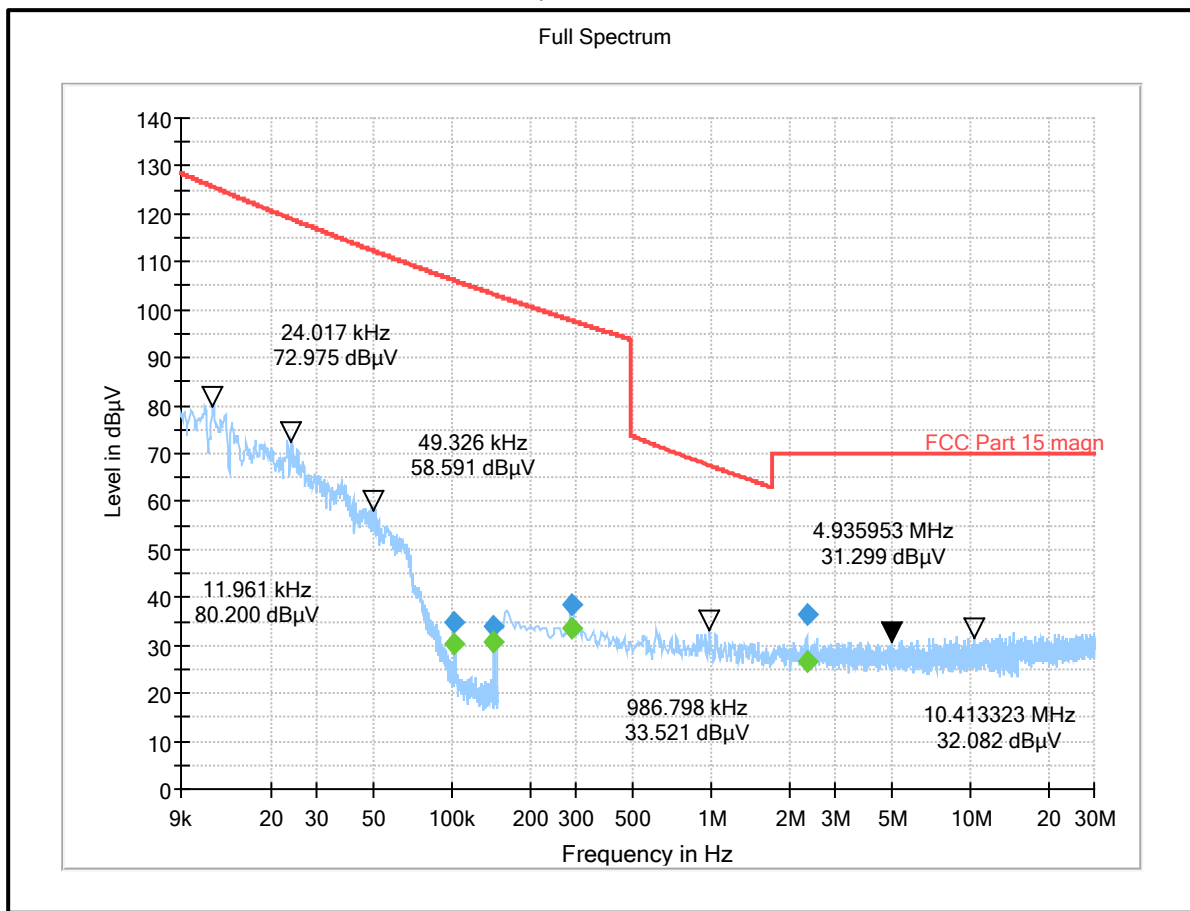
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 116

| Frequency (MHz) | Loop Antenna Orientation | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|--------------------------|----------------------|----------------------|-------------|----------|
| 0.102201 | 90° to EUT | 34.65 | 106.12 | 71.47 | Complied |
| 0.145347 | 0° to EUT | 33.90 | 103.22 | 69.32 | Complied |
| 0.288915 | 0° to EUT | 38.58 | 97.78 | 59.20 | Complied |
| 2.329643 | 90° to EUT | 36.45 | 70.00 | 33.55 | Complied |

Plot: Radiated Transmitter spurious emission from 9 kHz – 30 MHz



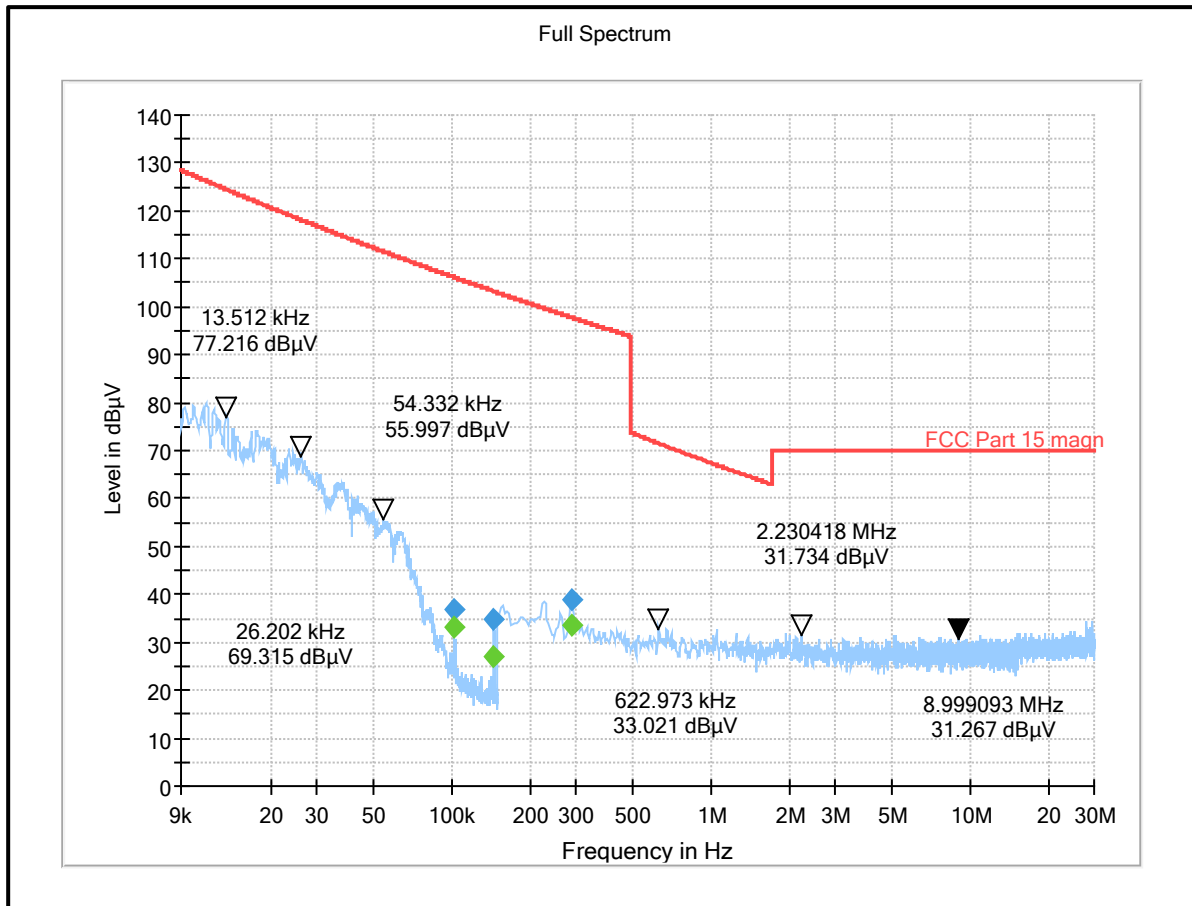
Result: **Pass/**

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 140

| Frequency (MHz) | Loop Antenna Orientation | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|--------------------------|----------------------|----------------------|-------------|----------|
| 0.102131 | 90° to EUT | 36.77 | 106.13 | 69.36 | Complied |
| 0.144854 | 0° to EUT | 34.70 | 103.25 | 68.55 | Complied |
| 0.288915 | 90° to EUT | 38.96 | 97.78 | 58.82 | Complied |

Plot: Radiated Transmitter spurious emission from 9 kHz – 30 MHz



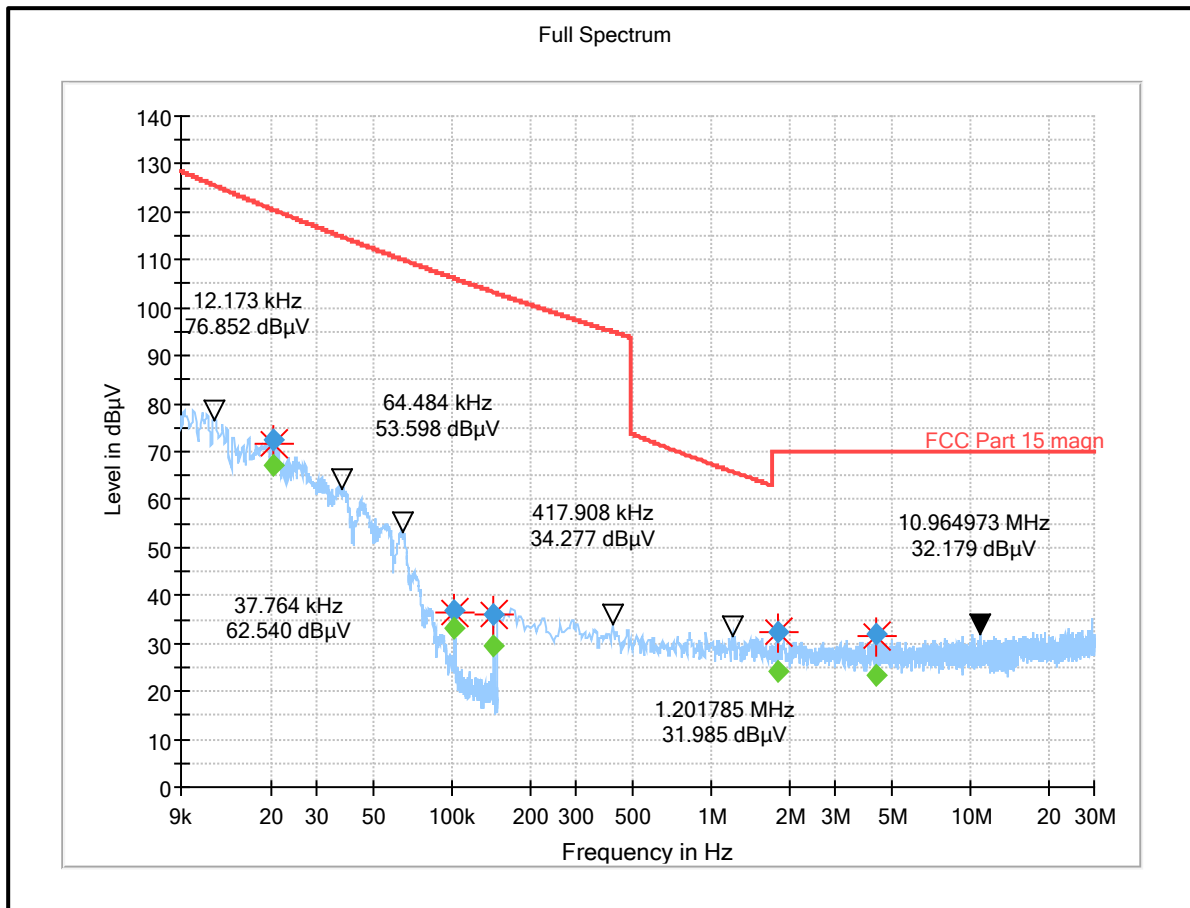
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 149

| Frequency (MHz) | Loop Antenna Orientation | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|--------------------------|----------------------|----------------------|-------------|----------|
| 0.020351 | 90° to EUT | 72.57 | 120.50 | 47.93 | Complied |
| 0.102131 | 90° to EUT | 36.88 | 106.13 | 69.25 | Complied |
| 0.144854 | 0° to EUT | 36.04 | 103.25 | 67.21 | Complied |
| 1.797.135 | 90° to EUT | 32.39 | 70.00 | 37.61 | Complied |
| 4.363.755 | 90° to EUT | 32.05 | 70.00 | 37.95 | Complied |

Plot: Radiated Transmitter spurious emission from 9 kHz – 30 MHz



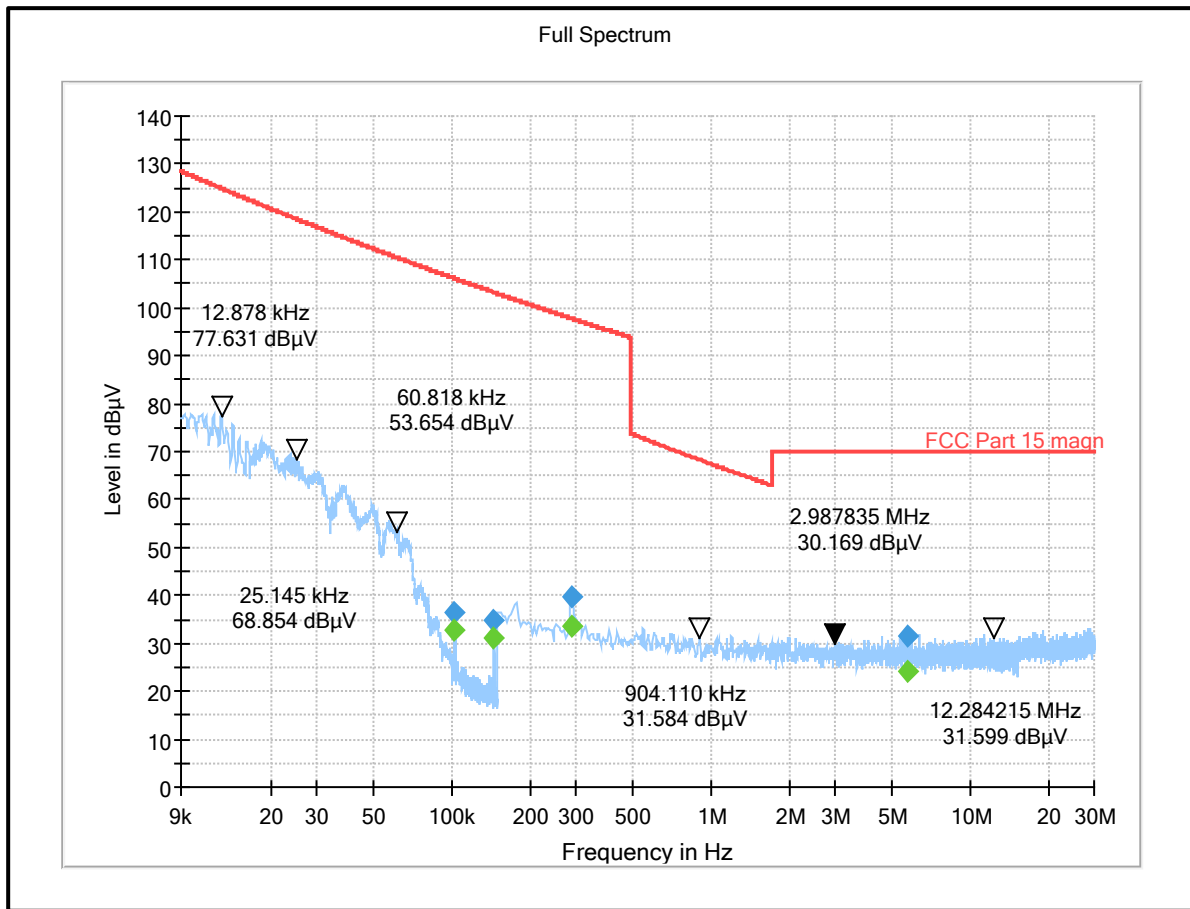
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 157

| Frequency (MHz) | Loop Antenna Orientation | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|--------------------------|----------------------|----------------------|-------------|----------|
| 0.102060 | 90° to EUT | 36.35 | 106.13 | 69.78 | Complied |
| 0.145065 | 0° to EUT | 34.94 | 103.24 | 68.30 | Complied |
| 0.288915 | 0° to EUT | 39.60 | 97.78 | 58.18 | Complied |
| 5.723.138 | 0° to EUT | 31.58 | 70.00 | 38.42 | Complied |

Plot: Radiated Transmitter spurious emission from 9 kHz – 30 MHz



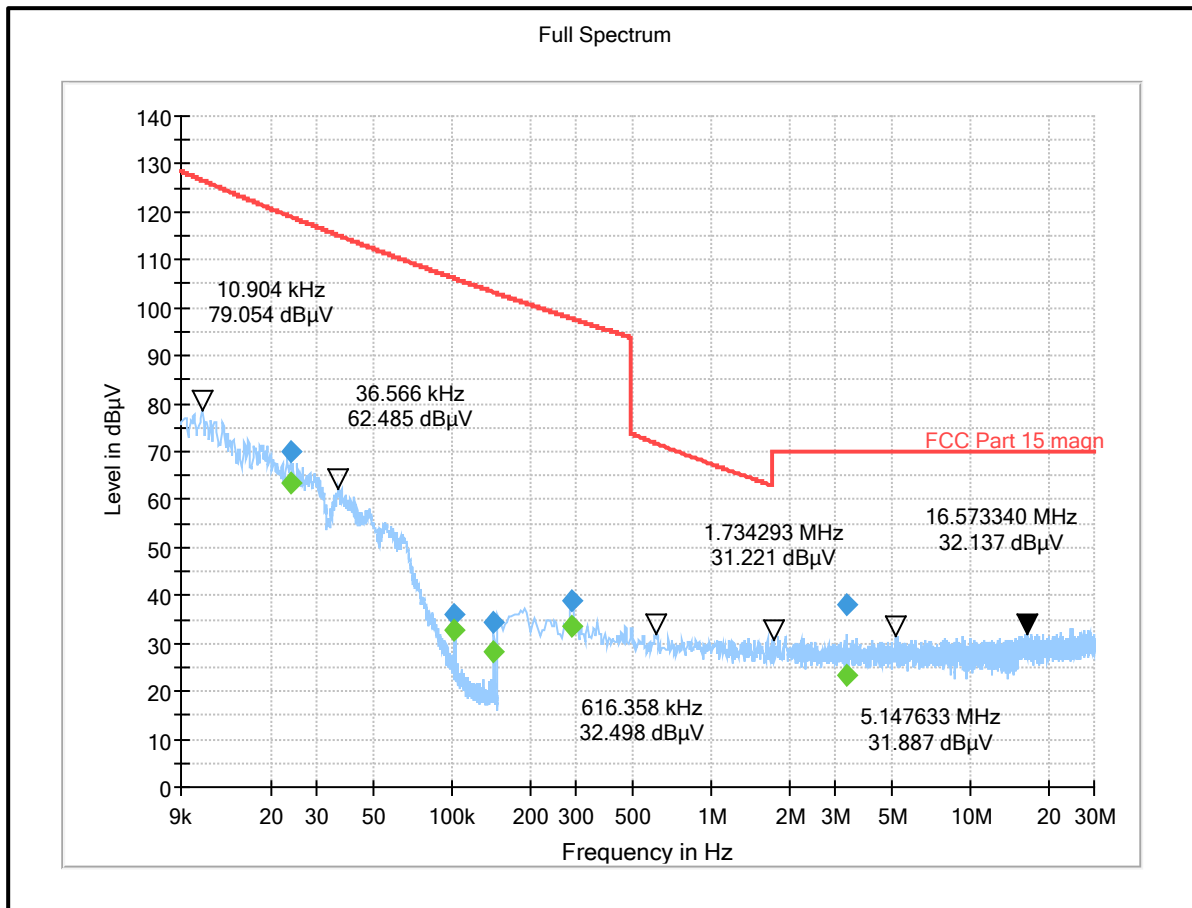
Result: **Pass/**

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 165

| Frequency (MHz) | Loop Antenna Orientation | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|--------------------------|----------------------|----------------------|-------------|----------|
| 0.023876 | 90° to EUT | 69.91 | 119.00 | 49.09 | Complied |
| 0.102131 | 90° to EUT | 36.05 | 106.13 | 70.08 | Complied |
| 0.144924 | 0° to EUT | 34.36 | 103.24 | 68.88 | Complied |
| 0.288915 | 0° to EUT | 39.01 | 97.78 | 58.77 | Complied |
| 3.315.278 | 90° to EUT | 37.94 | 70.00 | 32.06 | Complied |

Plot: Radiated Transmitter spurious emission from 9 kHz – 30 MHz



Result: **Pass/**

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Test Summary:

| | | | |
|-----------------------------------|-------------------|-------------------|-------------------------------|
| Test Engineer: | Abbas Al-Hussainy | Test Date: | 22, 27 & 28 September 2023 |
| Test Sample Serial Number: | 1150003350 | | |
| Test Site Identification | SR 1/2 | | |

| | |
|--------------------------|---|
| FCC Reference: | Parts 15.407(b)(1),(9) & 15.209(a) |
| Test Method Used: | FCC KDB 789033 II .G.1, II .G.2, II .G.3 & II .G.4 & ANSI C63.10 Sections 6.3 and 6.5 |
| Frequency Range: | 30 MHz to 1000 MHz |

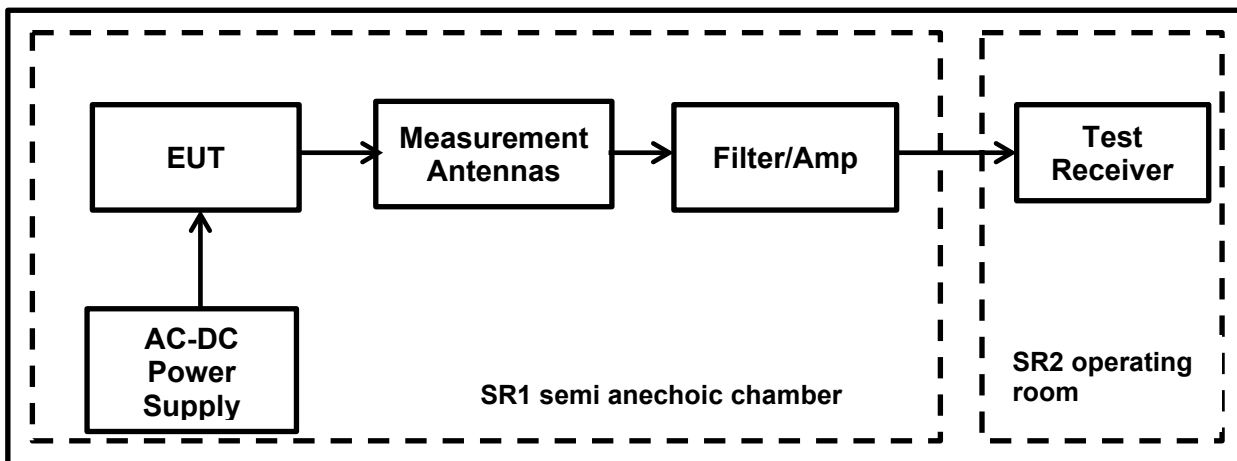
Environmental Conditions:

| | |
|-------------------------------|--------------|
| Temperature (°C): | 23.2 to 24.7 |
| Relative Humidity (%): | 45.2 to 51 |

Note(s):

1. Measurements below 1 GHz were performed in a semi-anechoic chamber SR1/ 2 (Asset Number 1603665) at a distance of 3 m. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 m to 4 m.
2. Pre-scans were performed and markers placed on the highest measured levels. The test receiver resolution bandwidth was set to 100 kHz and video bandwidth 300 kHz. A peak detector was used, sweep time was set to auto and trace mode was Max Hold.
3. All emissions shown on the pre-scan plots were investigated and found to be below system noise floor.

Test Setup:

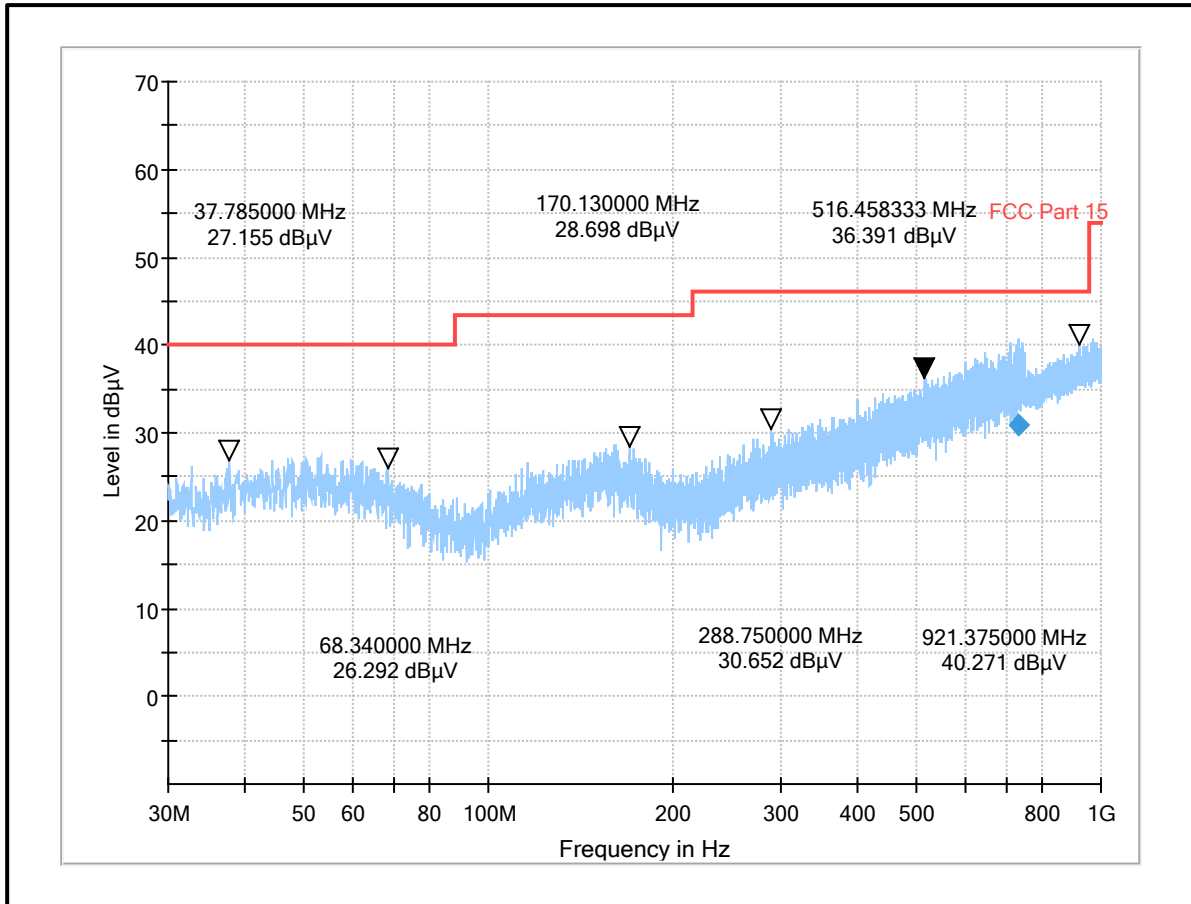


Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11ax (SU) / 20 MHz / MCS0 / Channel 48

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|----------------------|----------------------|----------------------|-------------|----------|
| 733.750000 | Vertical | 30.91 | 46.00 | 15.09 | Complied |

Plot: Radiated Transmitter spurious emission from 30 MHz – 1GHz



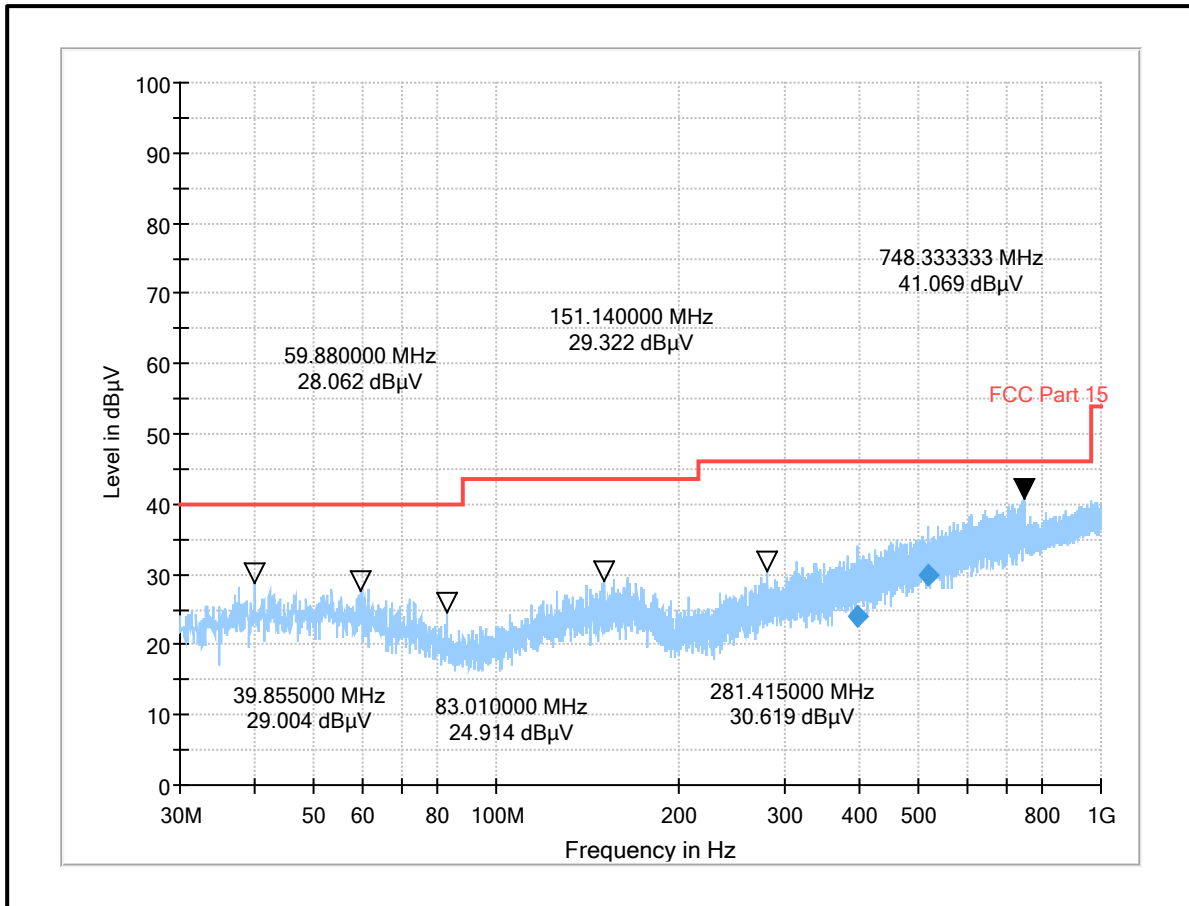
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11ax (RU52-38) / 20 MHz / MCS0 / Channel 60

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|----------------------|----------------------|----------------------|-------------|----------|
| 394.333333 | Horizontal | 24.05 | 46.00 | 21.95 | Complied |
| 516.166667 | Horizontal | 29.97 | 46.00 | 16.03 | Complied |

Plot: Radiated Transmitter spurious emission from 30 MHz – 1GHz



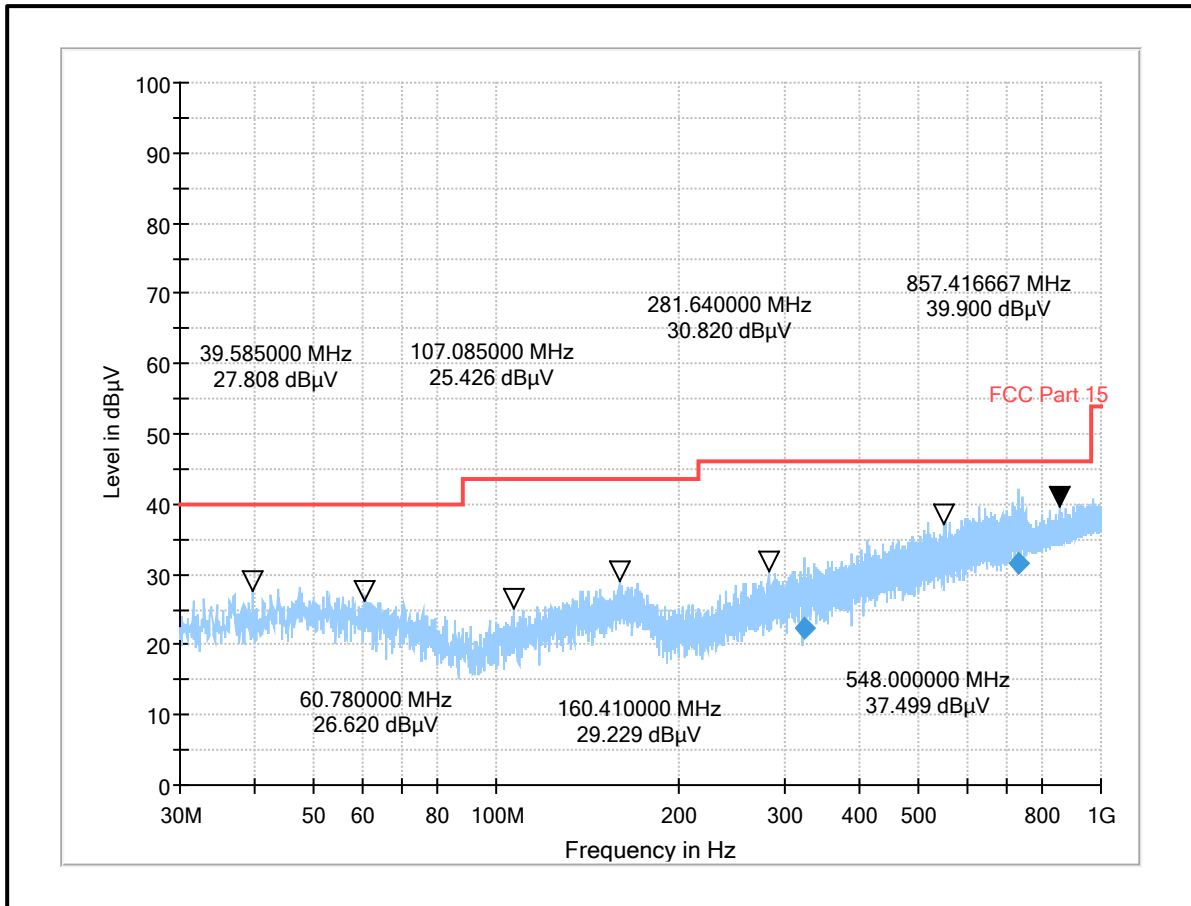
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11ax (RU52-38) / 40 MHz / MCS0 / Channel 134

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|----------------------|----------------------|----------------------|-------------|----------|
| 322.666667 | Vertical | 22.37 | 46.00 | 23.63 | Complied |
| 730.708333 | Horizontal | 31.62 | 46.00 | 14.38 | Complied |

Plot: Radiated Transmitter spurious emission from 30 MHz – 1GHz



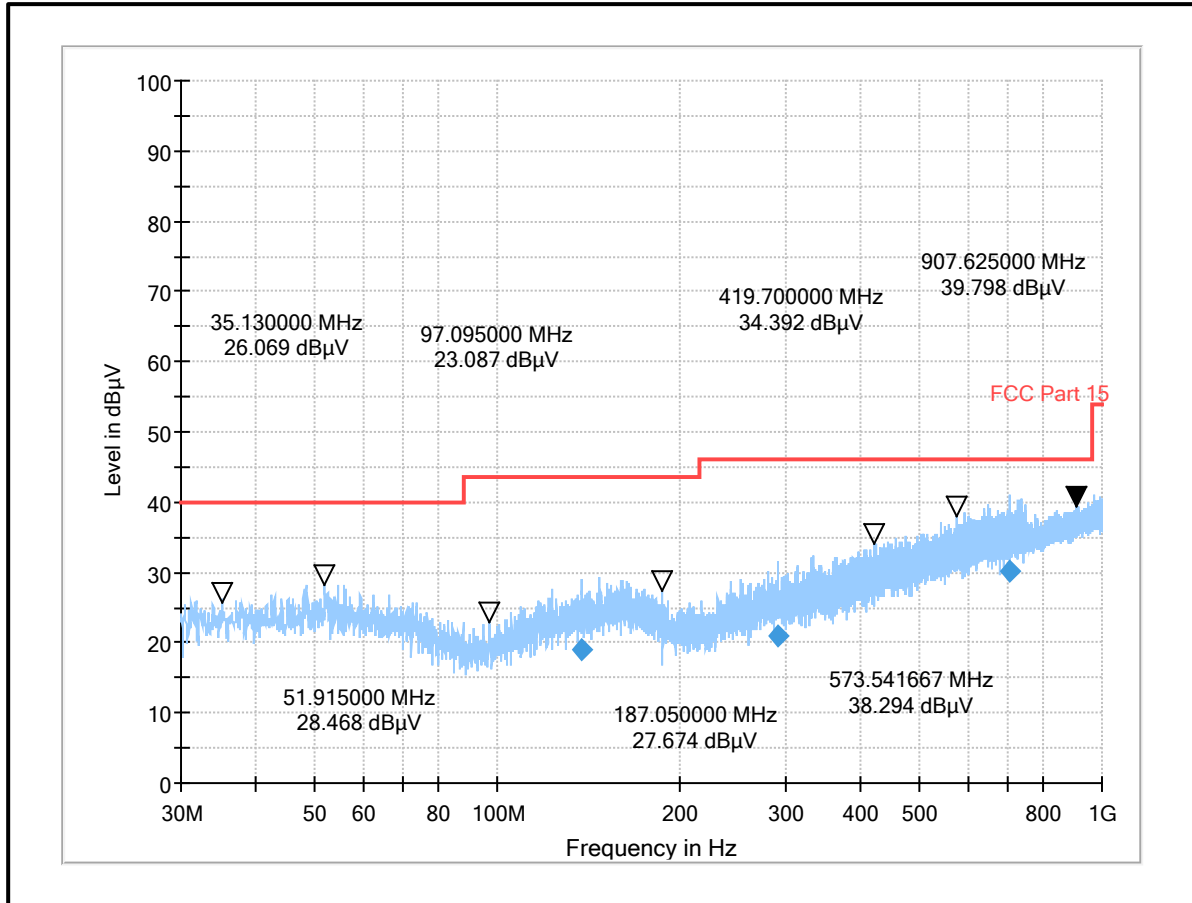
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11ax (RU52-38) / 20 MHz / MCS0 / Channel 165

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|----------------------|----------------------|----------------------|-------------|----------|
| 137.640000 | Horizontal | 18.89 | 43.50 | 24.61 | Complied |
| 290.460000 | Vertical | 20.85 | 46.00 | 25.15 | Complied |
| 703.125000 | Vertical | 30.14 | 46.00 | 15.86 | Complied |

Plot: Radiated Transmitter spurious emission from 30 MHz – 1GHz



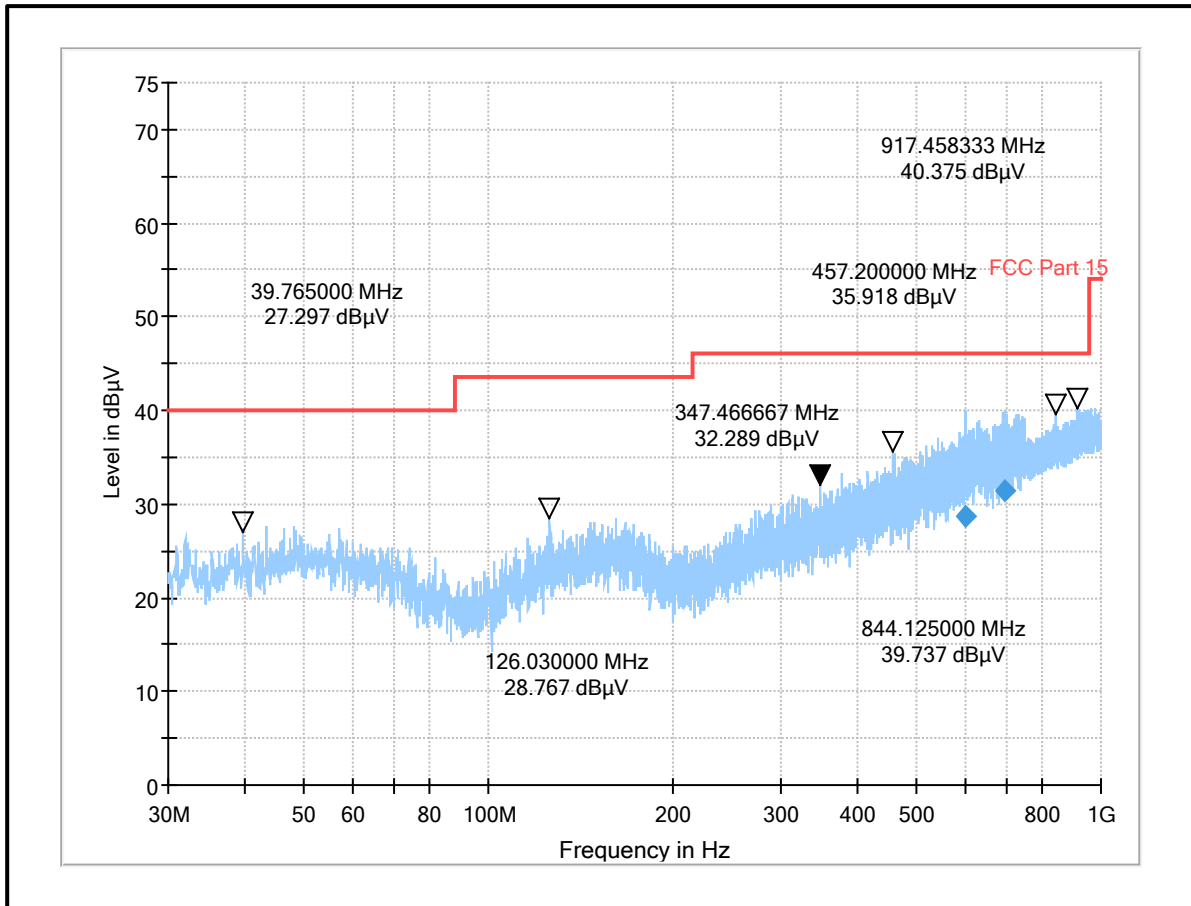
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 36

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|----------------------|----------------------|----------------------|-------------|----------|
| 600.333333 | Horizontal | 28.71 | 46.00 | 17.29 | Complied |
| 694.125000 | Vertical | 31.34 | 46.00 | 14.66 | Complied |

Plot: Radiated Transmitter spurious emission from 30 MHz – 1GHz



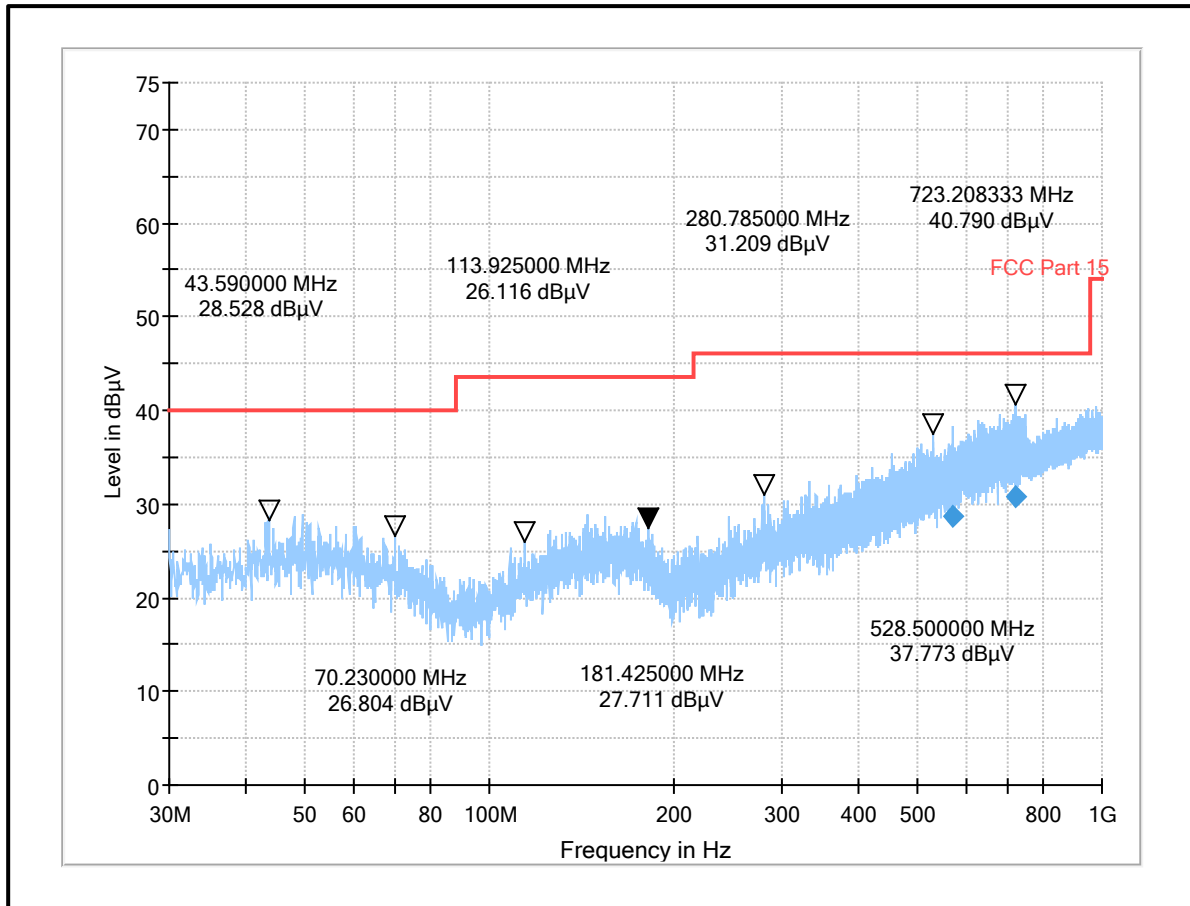
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 40

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|----------------------|----------------------|----------------------|-------------|----------|
| 570.625000 | Horizontal | 28.61 | 46.00 | 17.39 | Complied |
| 723.208333 | Vertical | 30.71 | 46.00 | 15.29 | Complied |

Plot: Radiated Transmitter spurious emission from 30 MHz – 1GHz



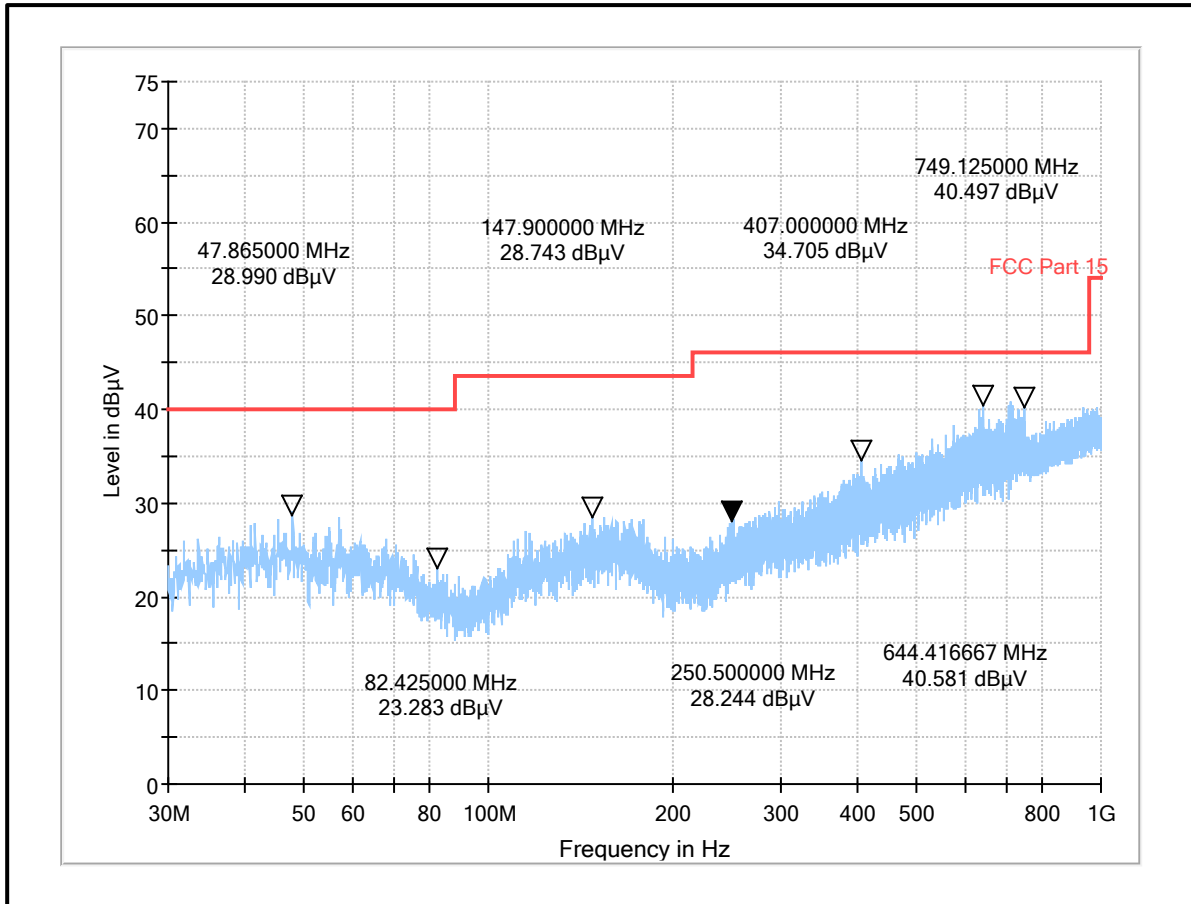
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 48

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 30 MHz – 1GHz



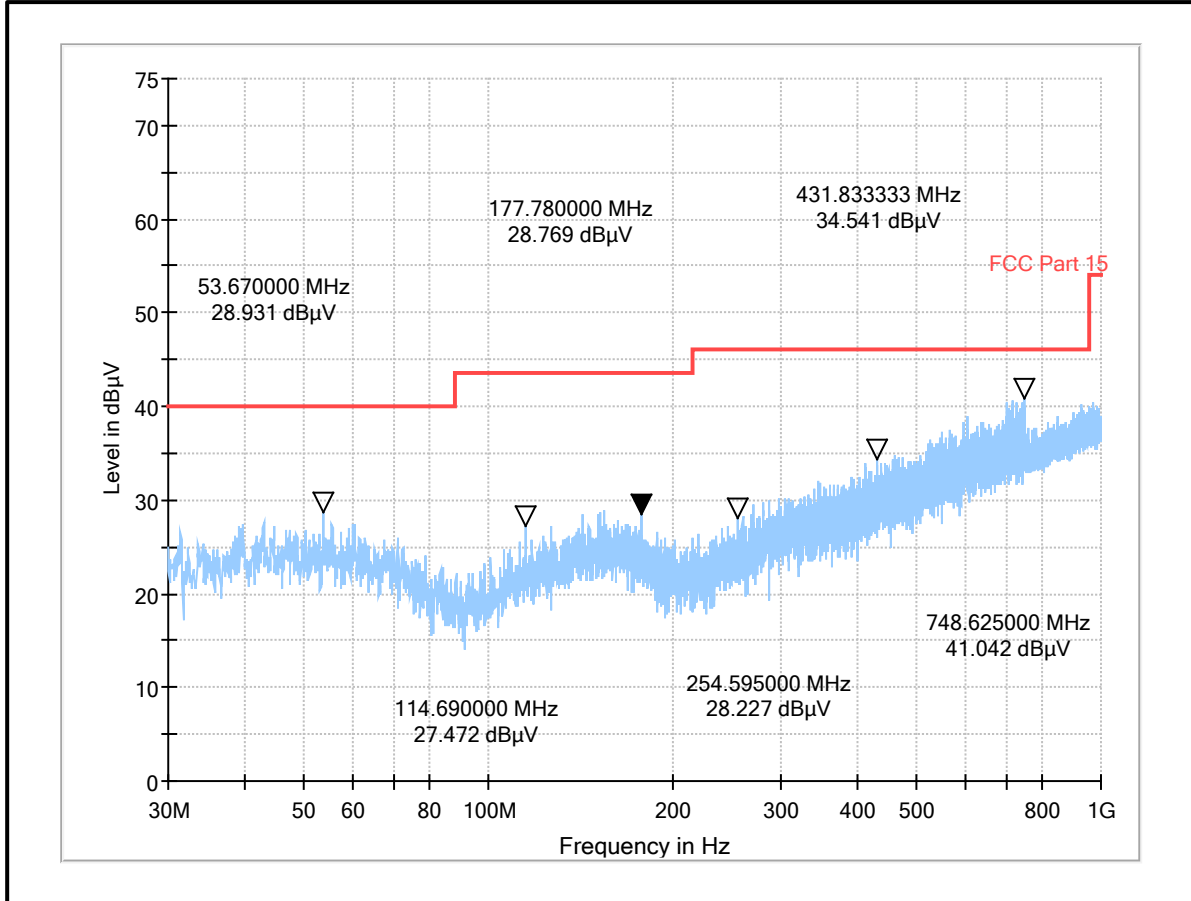
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 52

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 30 MHz – 1GHz



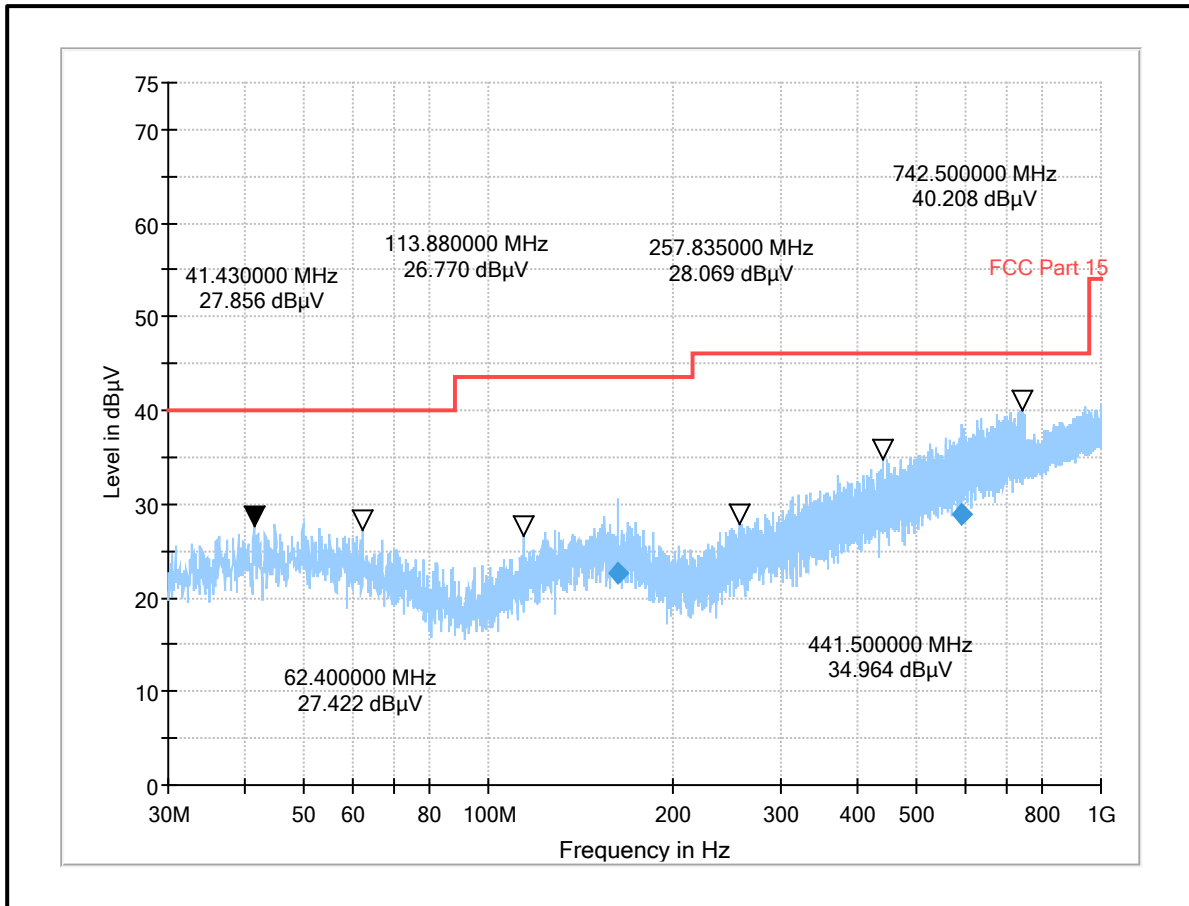
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 60

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|----------------------|----------------------|----------------------|-------------|----------|
| 163.110000 | Vertical | 22.60 | 43.50 | 20.90 | Complied |
| 592.291667 | Horizontal | 28.97 | 46.00 | 17.03 | Complied |

Plot: Radiated Transmitter spurious emission from 30 MHz – 1GHz



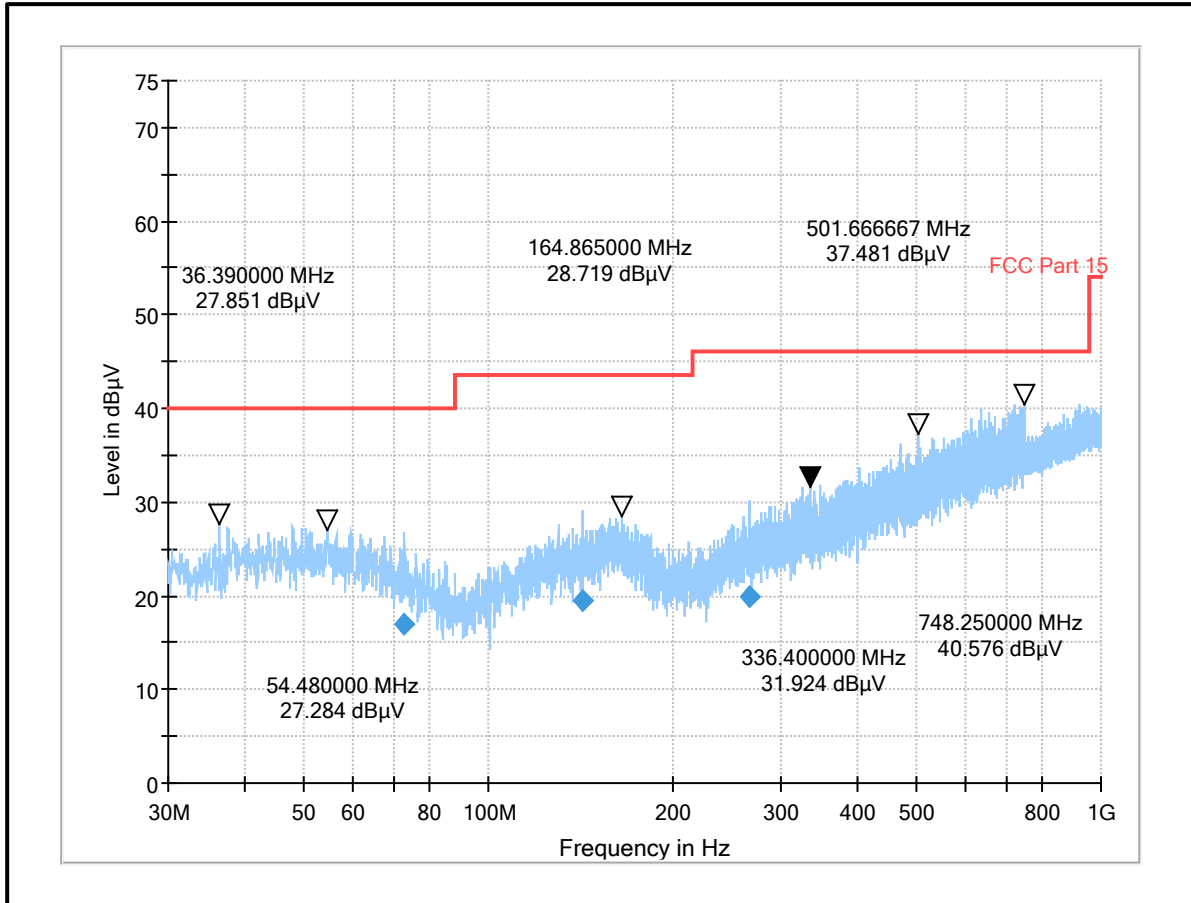
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 64

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|----------------------|----------------------|----------------------|-------------|----------|
| 72.975000 | Horizontal | 17.07 | 40.00 | 22.93 | Complied |
| 142.005000 | Horizontal | 19.42 | 43.50 | 24.08 | Complied |
| 265.890000 | Horizontal | 19.80 | 46.00 | 26.20 | Complied |

Plot: Radiated Transmitter spurious emission from 30 MHz – 1GHz



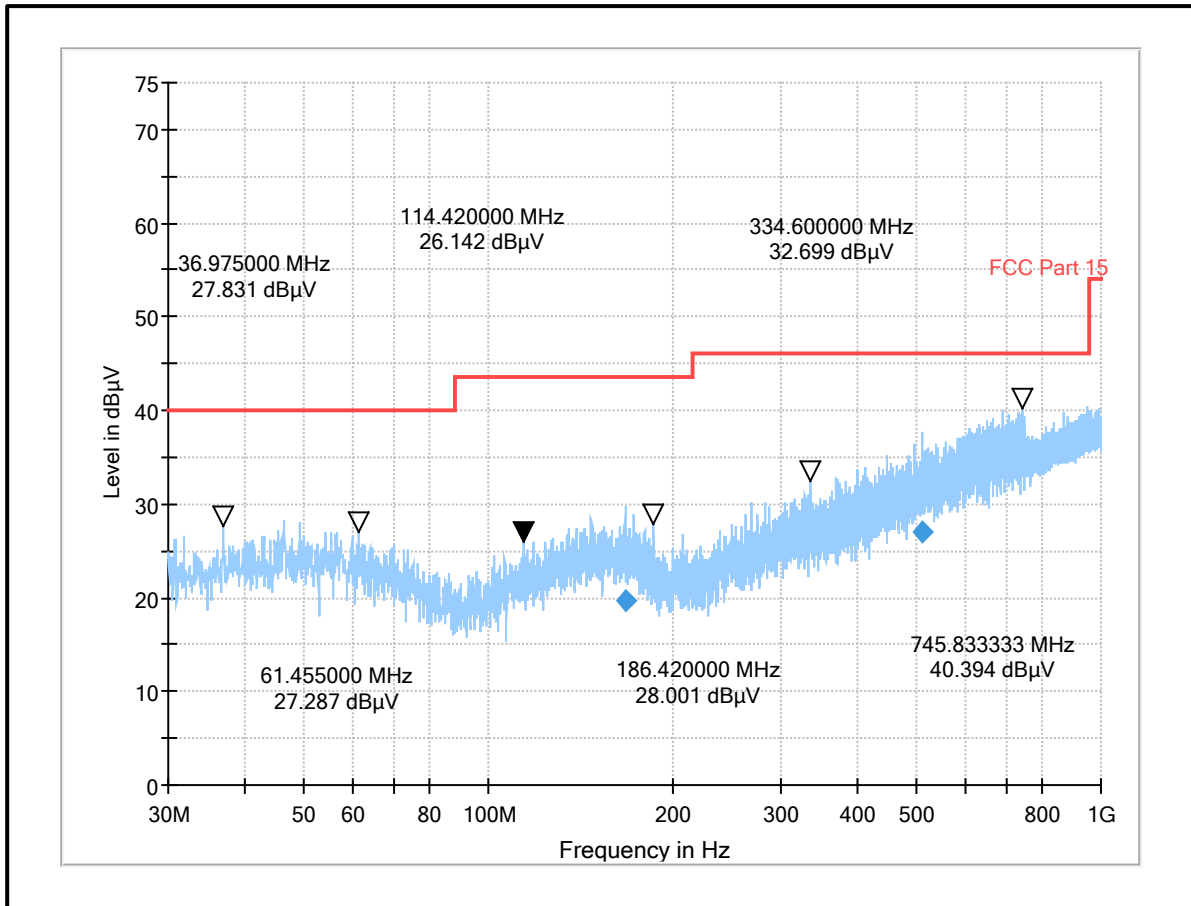
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 100

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|----------------------|----------------------|----------------------|-------------|----------|
| 166.980000 | Vertical | 19.62 | 43.50 | 23.88 | Complied |
| 511.583333 | Vertical | 27.12 | 46.00 | 18.88 | Complied |

Plot: Radiated Transmitter spurious emission from 30 MHz – 1GHz



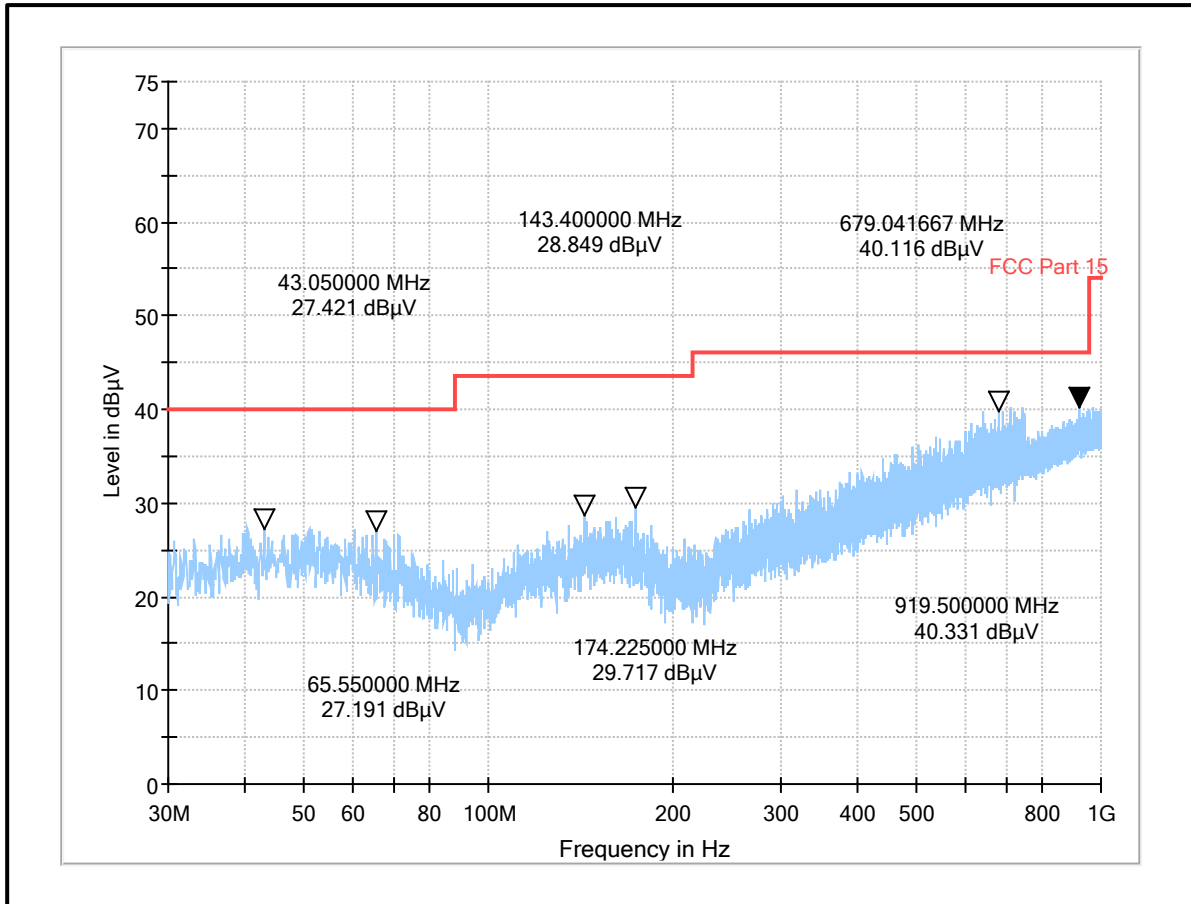
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 116

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 30 MHz – 1GHz



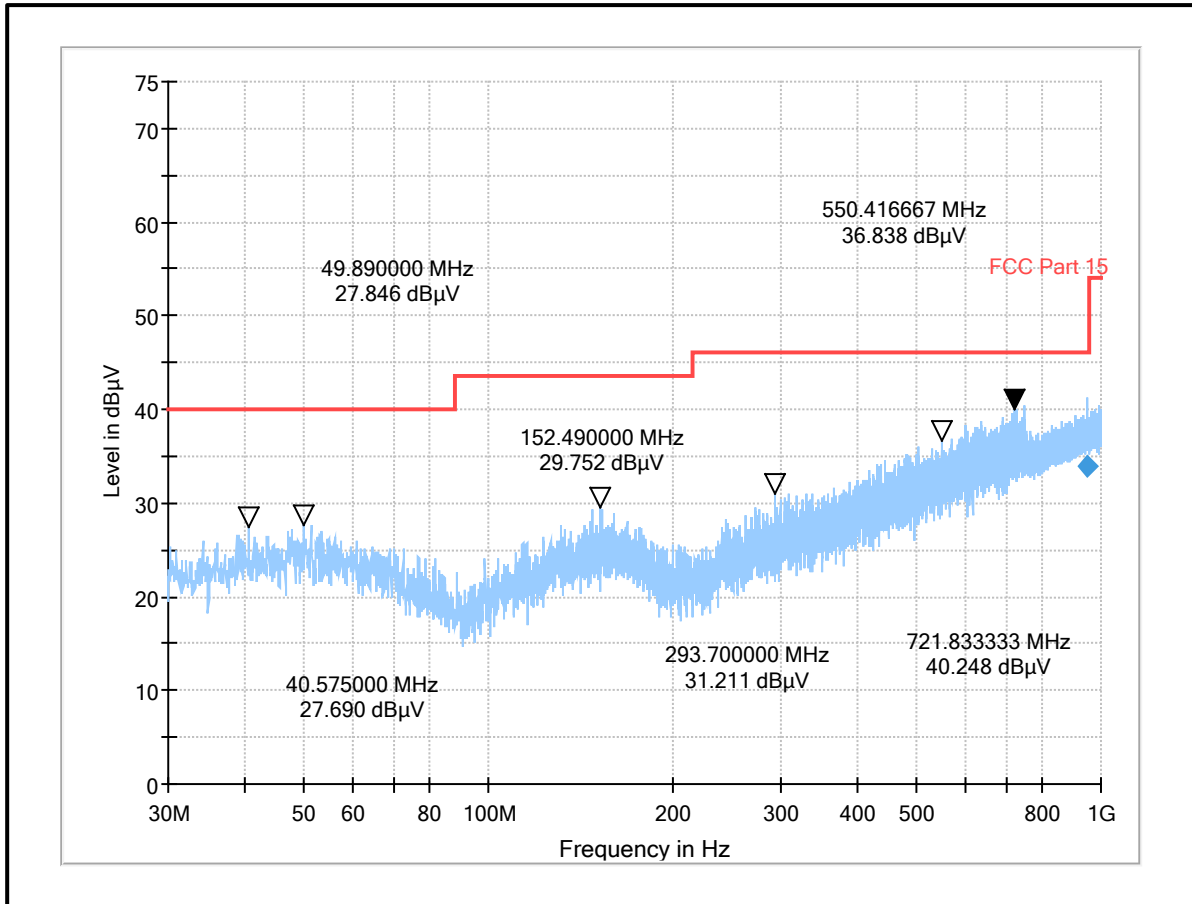
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 140

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|----------------------|----------------------|----------------------|-------------|----------|
| 946.458333 | Vertical | 34.02 | 46.00 | 11.98 | Complied |

Plot: Radiated Transmitter spurious emission from 30 MHz – 1GHz



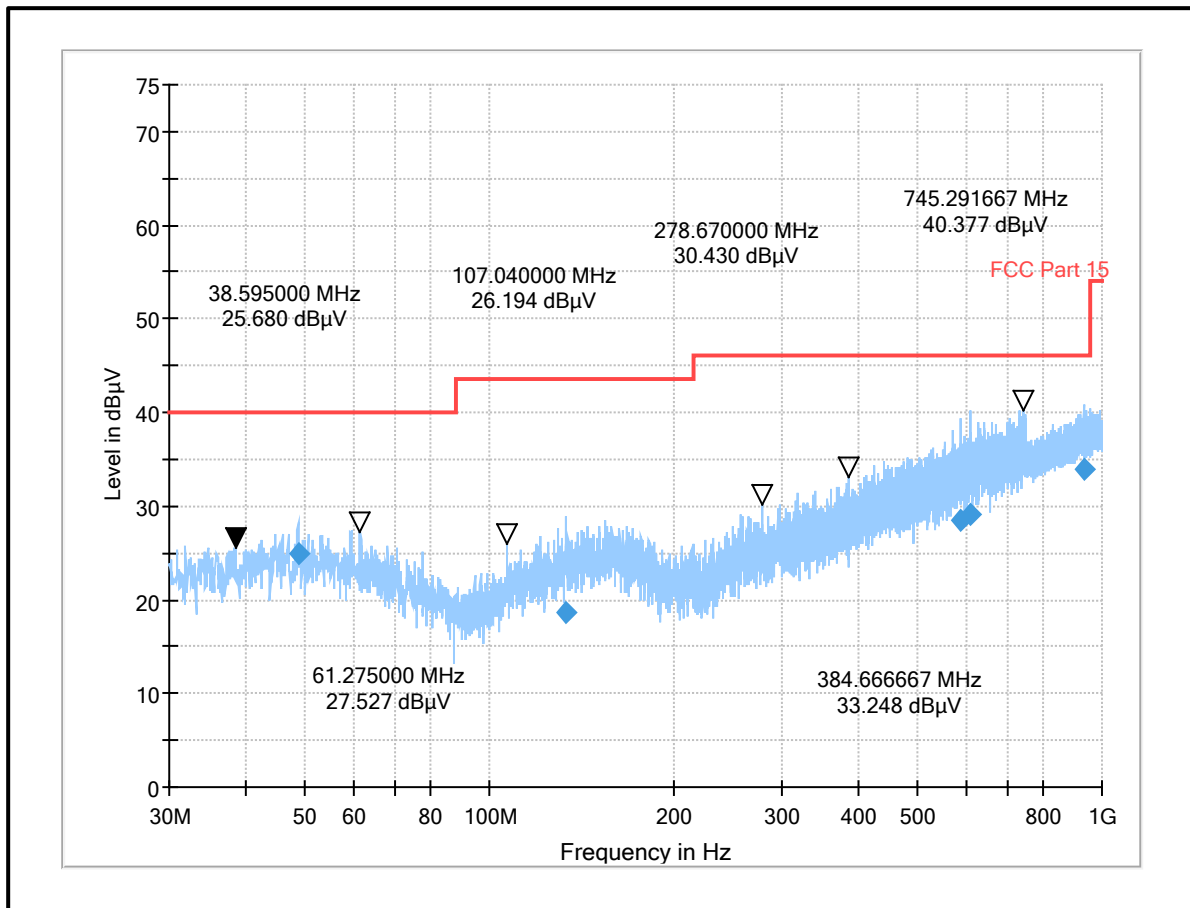
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 149

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|----------------------|----------------------|----------------------|-------------|----------|
| 48.675000 | Vertical | 24.86 | 40.00 | 15.14 | Complied |
| 133.545000 | Vertical | 18.68 | 43.50 | 24.82 | Complied |
| 586.291667 | Vertical | 28.56 | 46.00 | 17.44 | Complied |
| 611.000000 | Horizontal | 29.10 | 46.00 | 16.90 | Complied |
| 932.291667 | Horizontal | 33.97 | 46.00 | 12.03 | Complied |

Plot: Radiated Transmitter spurious emission from 30 MHz – 1GHz



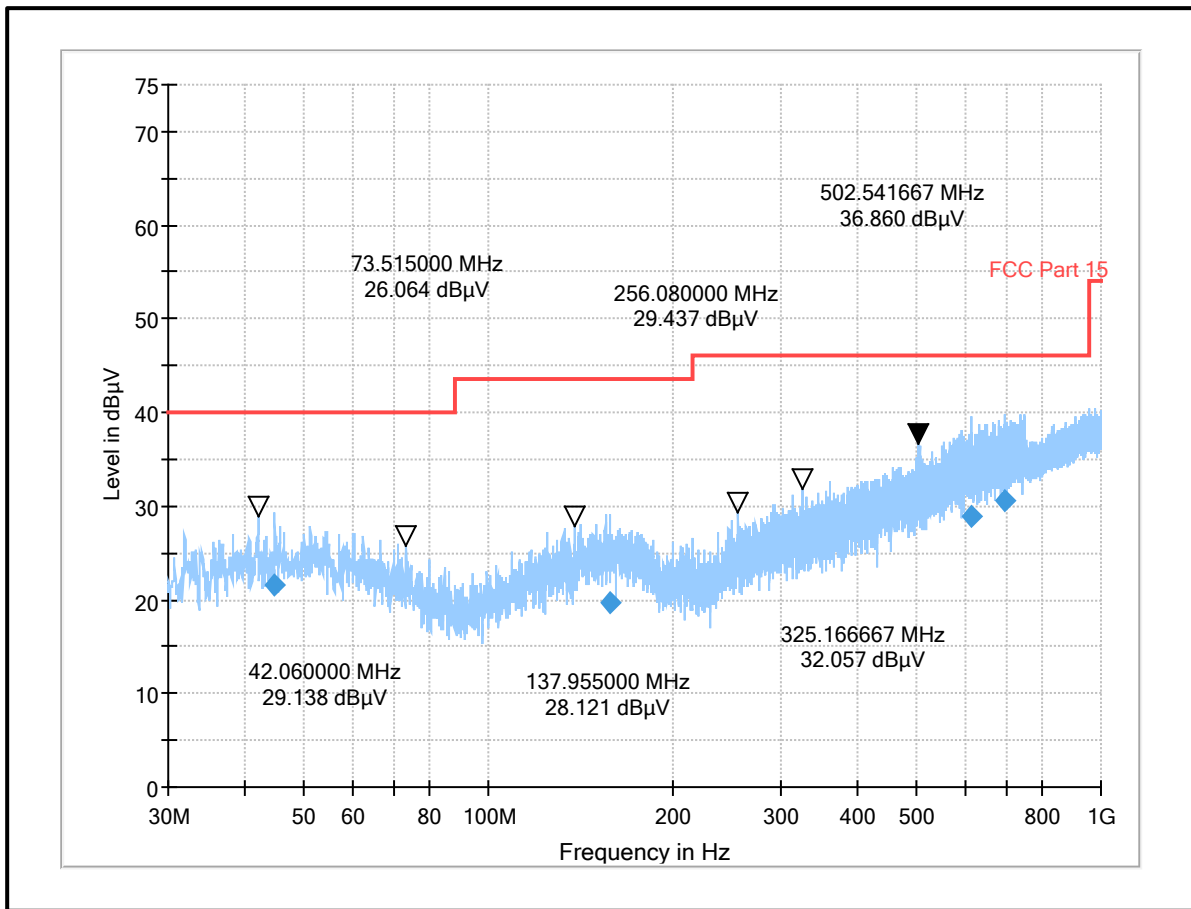
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 157

| Frequency (MHz) | Antenna Polarization | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Result |
|-----------------|----------------------|----------------|----------------|-------------|----------|
| 44.805000 | Vertical | 21.56 | 40.00 | 18.44 | Complied |
| 157.800000 | Horizontal | 19.78 | 43.50 | 23.72 | Complied |
| 616.458333 | Vertical | 28.93 | 46.00 | 17.07 | Complied |
| 695.708333 | Horizontal | 30.68 | 46.00 | 15.32 | Complied |

Plot: Radiated Transmitter spurious emission from 30 MHz – 1GHz



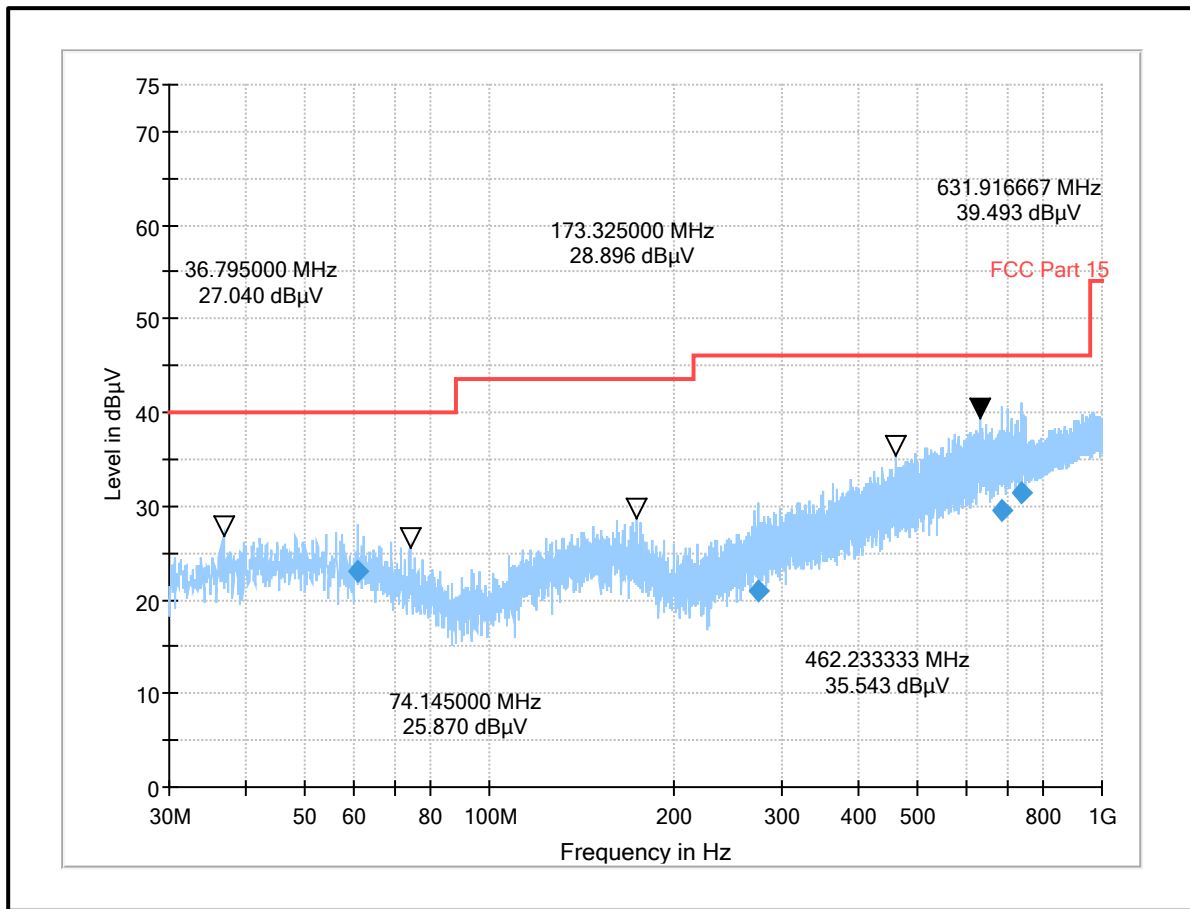
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 165

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|----------------------|----------------------|----------------------|-------------|----------|
| 61.050000 | Vertical | 22.95 | 40.00 | 17.05 | Complied |
| 274.980000 | Horizontal | 20.88 | 46.00 | 25.12 | Complied |
| 684.625000 | Vertical | 29.46 | 46.00 | 16.54 | Complied |
| 741.208333 | Horizontal | 31.39 | 46.00 | 14.61 | Complied |

Plot: Radiated Transmitter spurious emission from 30 MHz – 1GHz



Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Test Summary:

| | | | |
|-----------------------------------|-------------------|-------------------|-------------------------|
| Test Engineer: | Abbas Al-Hussainy | Test Date: | 20 to 28 September 2023 |
| Test Sample Serial Number: | 1150003350 | | |
| Test Site Identification | SR 1/2 | | |

| | |
|--------------------------|---|
| FCC Reference: | Parts 15.407(b)(1),(8) & 15.209(a) |
| Test Method Used: | FCC KDB 789033 II .G.1, II .G.2, II .G.3, II .G.5 &, II .G.6 ANSI C63.10:2013 Sections 6.3 and 6.6 |
| Frequency Range | 1 GHz to 40 GHz |

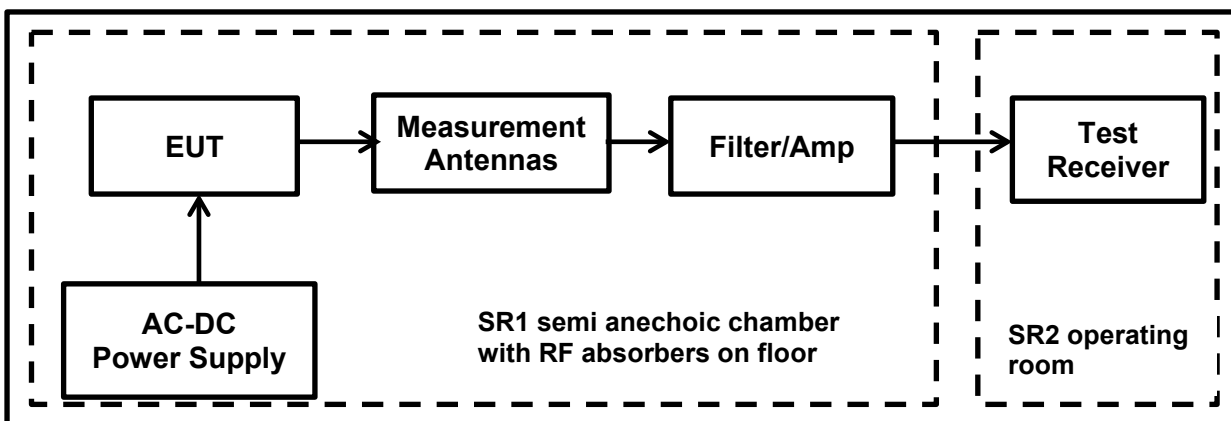
Environmental Conditions:

| | |
|-------------------------------|----------|
| Temperature (°C): | 22 to 25 |
| Relative Humidity (%): | 44 to 55 |

Note(s):

1. The emissions shown at frequencies approximately 5.15-5.85 GHz on the 1 GHz to 18 GHz plots are the EUT fundamental for the tested channel.
2. Pre-scans above 1 GHz were performed in a semi-anechoic chamber SR1/ 2 (Asset Number 1603665) with absorber on the floor at a distance of 3 m. The EUT was placed at a height of 1.5 m above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 m above the test chamber floor, in line with the EUT. Final measurements above 1 GHz were performed in a semi-anechoic chamber SR1/ 2 (Asset Number 1603665) with absorber on the floor at a distance of 3 m. The EUT was placed at a height of 1.5 m above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 m to 4 m.
3. Pre-scans were performed and a marker placed on the highest measured level of the appropriate plot. The test receiver resolution bandwidth was set to 1 MHz and video bandwidth 3 MHz. The sweep time was set to auto.
4. For frequency range between 1 GHz to 18 GHz, no critical emissions were found. All emissions shown on the pre-scans were investigated and found to be below the noise floor of the measurement system.
5. For frequency range between 18 GHz and 40 GHz, no critical emissions were found. All emissions shown on the pre-scans were investigated and found to be below the noise floor of the measurement system.

Test Setup:

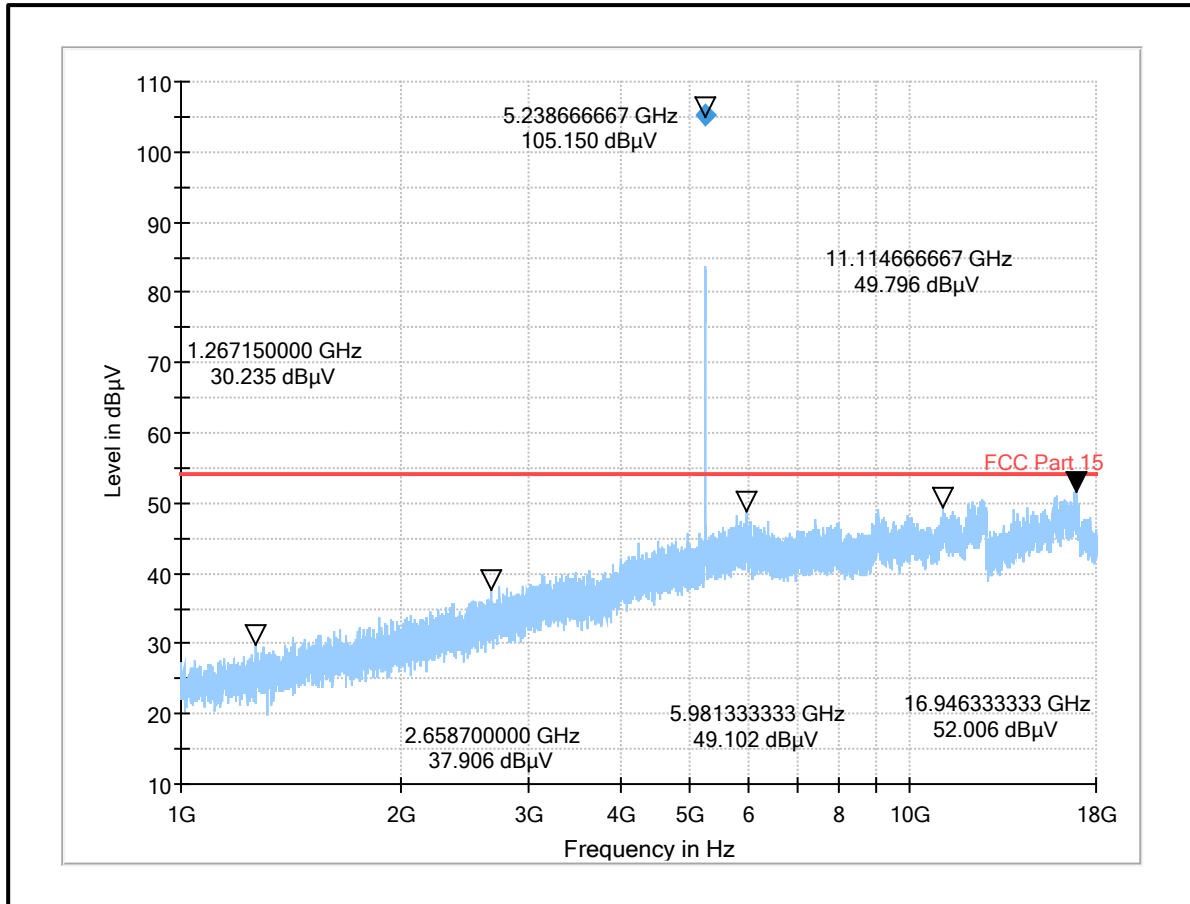


Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11ax (SU) / 20 MHz / MCS0 / Channel 48

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 1 GHz – 18 GHz



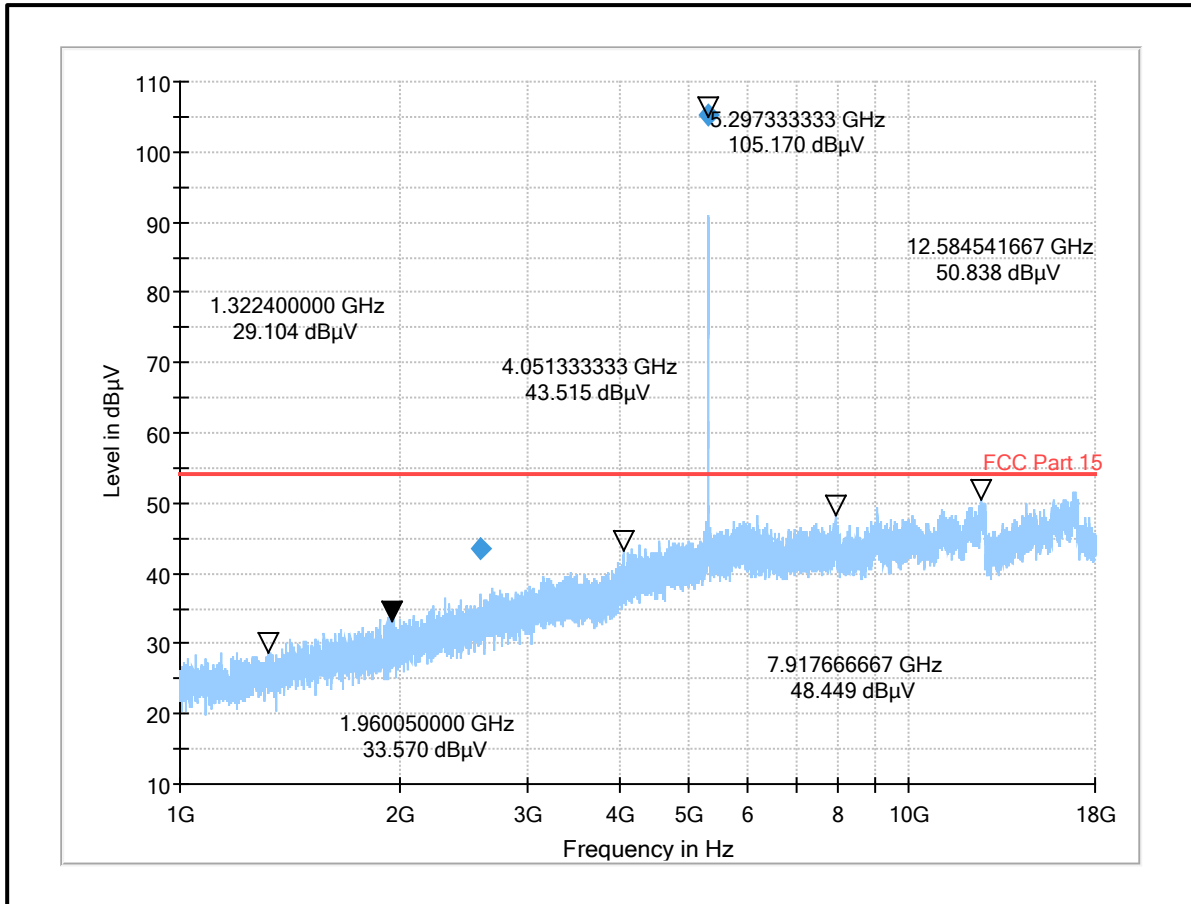
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11ax (RU52-38) / 20 MHz / MCS0 / Channel 60

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|----------------------|----------------------|----------------------|-------------|----------|
| 2583.616667 | Vertical | 43.45 | 54.00 | 10.55 | Complied |

Plot: Radiated Transmitter spurious emission from 1 GHz – 18 GHz



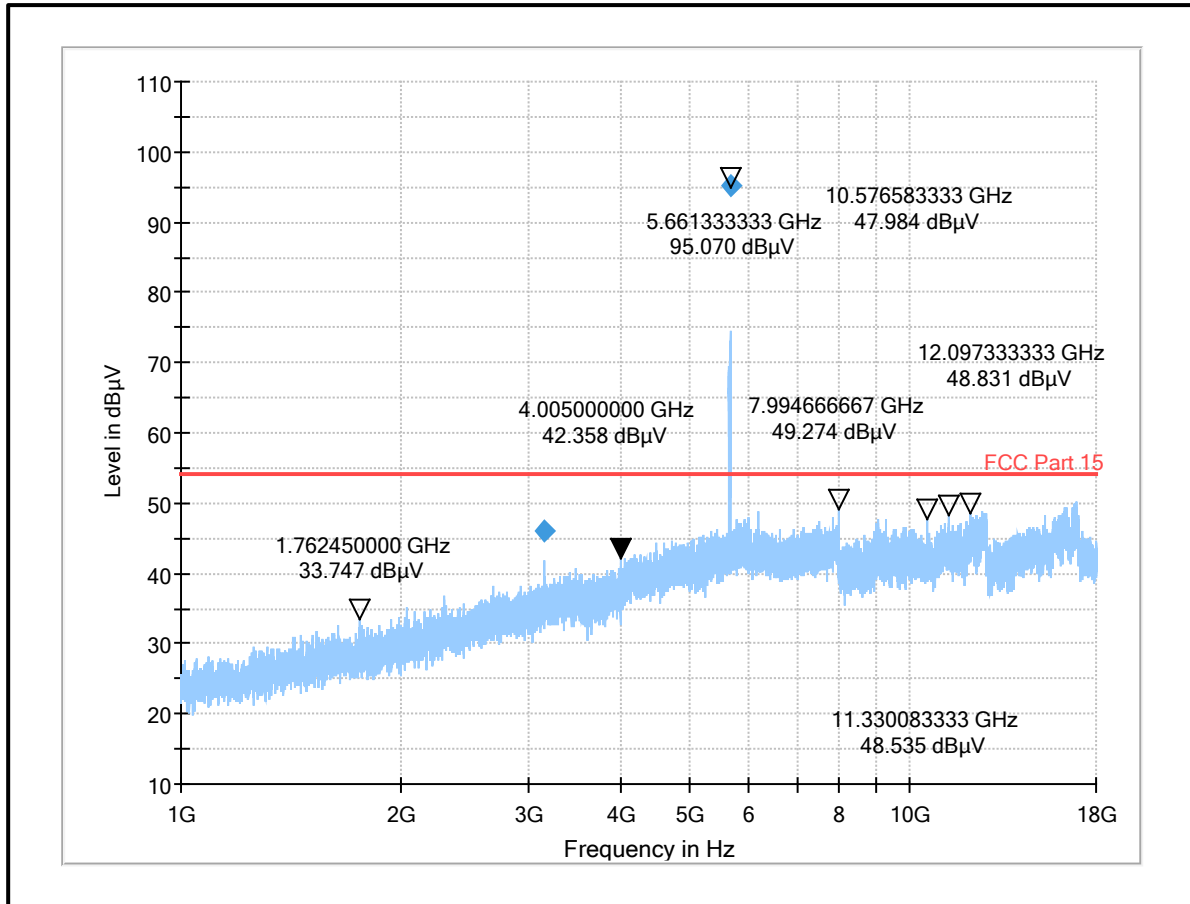
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11ax (RU52-38) / 40 MHz / MCS0 / Channel 134

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|----------------------|----------------------|----------------------|-------------|----------|
| 3148.583333 | Horizontal | 45.90 | 54.00 | 8.10 | Complied |

Plot: Radiated Transmitter spurious emission from 1 GHz – 18 GHz



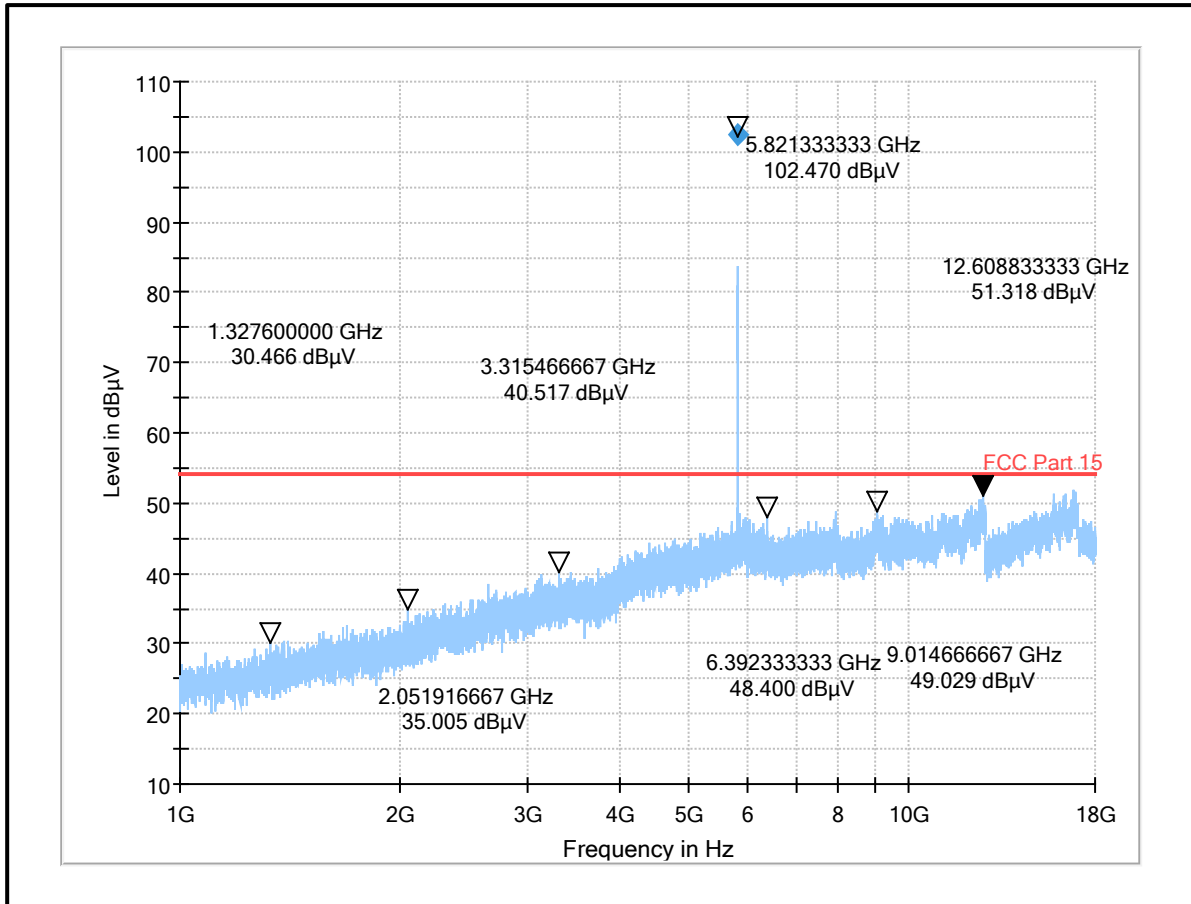
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11ax (RU52-38) / 20 MHz / MCS0 / Channel 165

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 1 GHz – 18 GHz



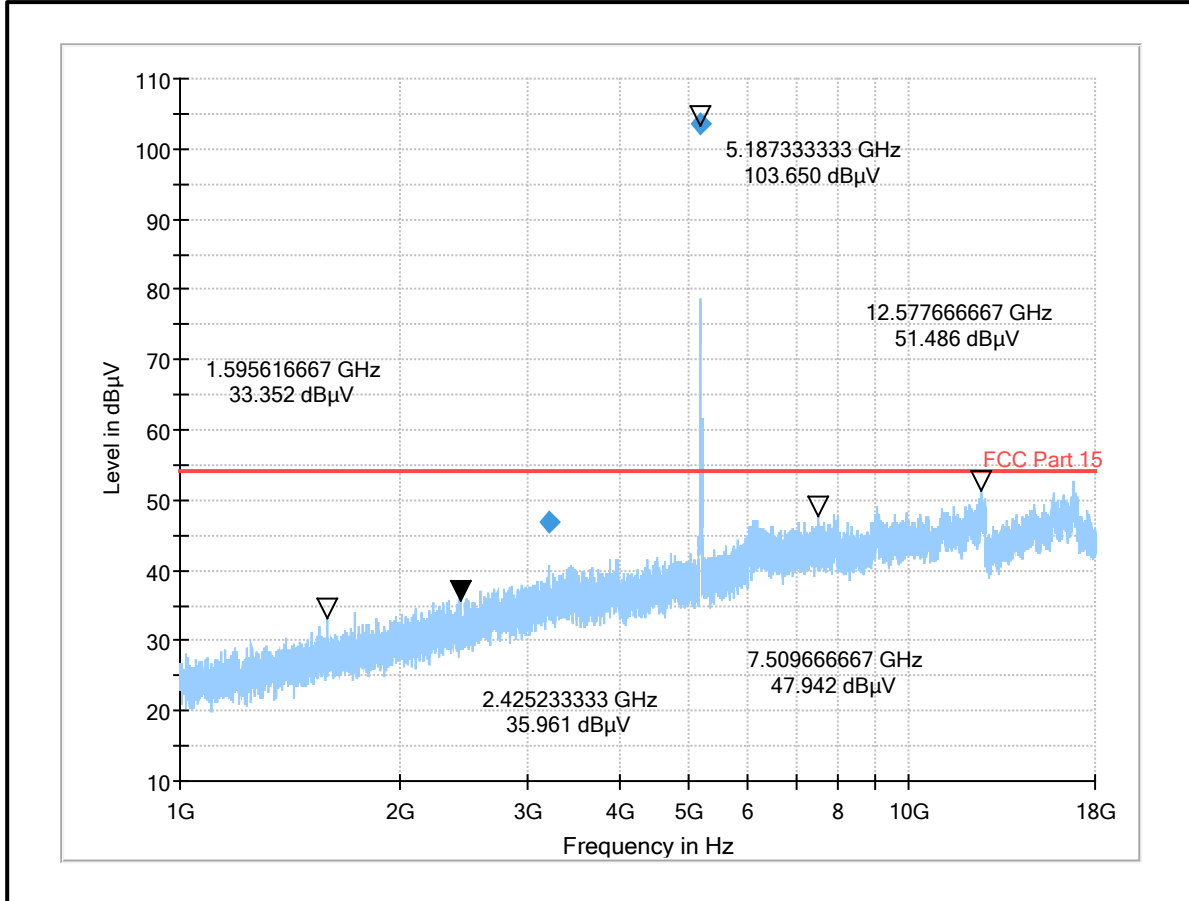
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 36

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|----------------------|----------------------|----------------------|-------------|----------|
| 3199.583333 | Horizontal | 46.76 | 54.00 | 7.24 | Complied |

Plot: Radiated Transmitter spurious emission from 1 GHz – 18 GHz



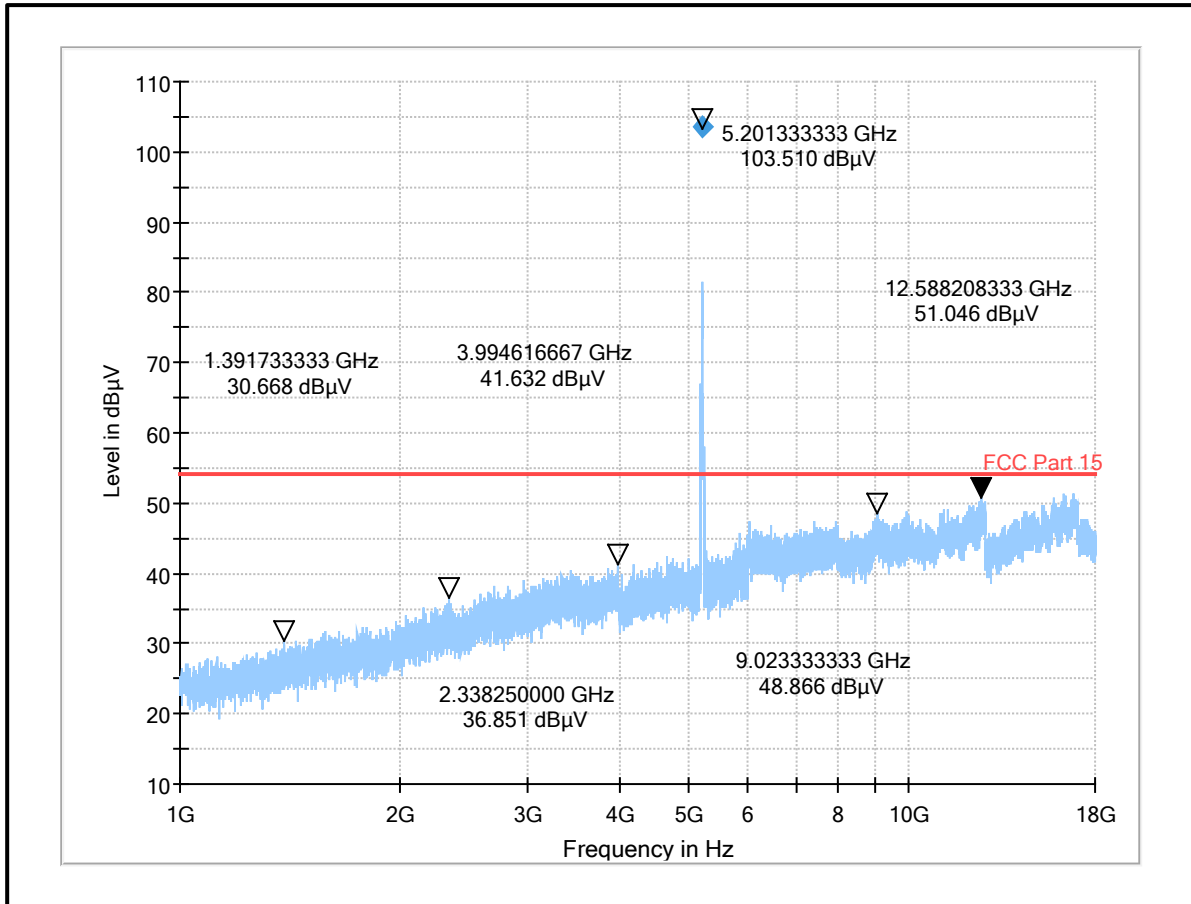
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 40

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 1 GHz – 18 GHz



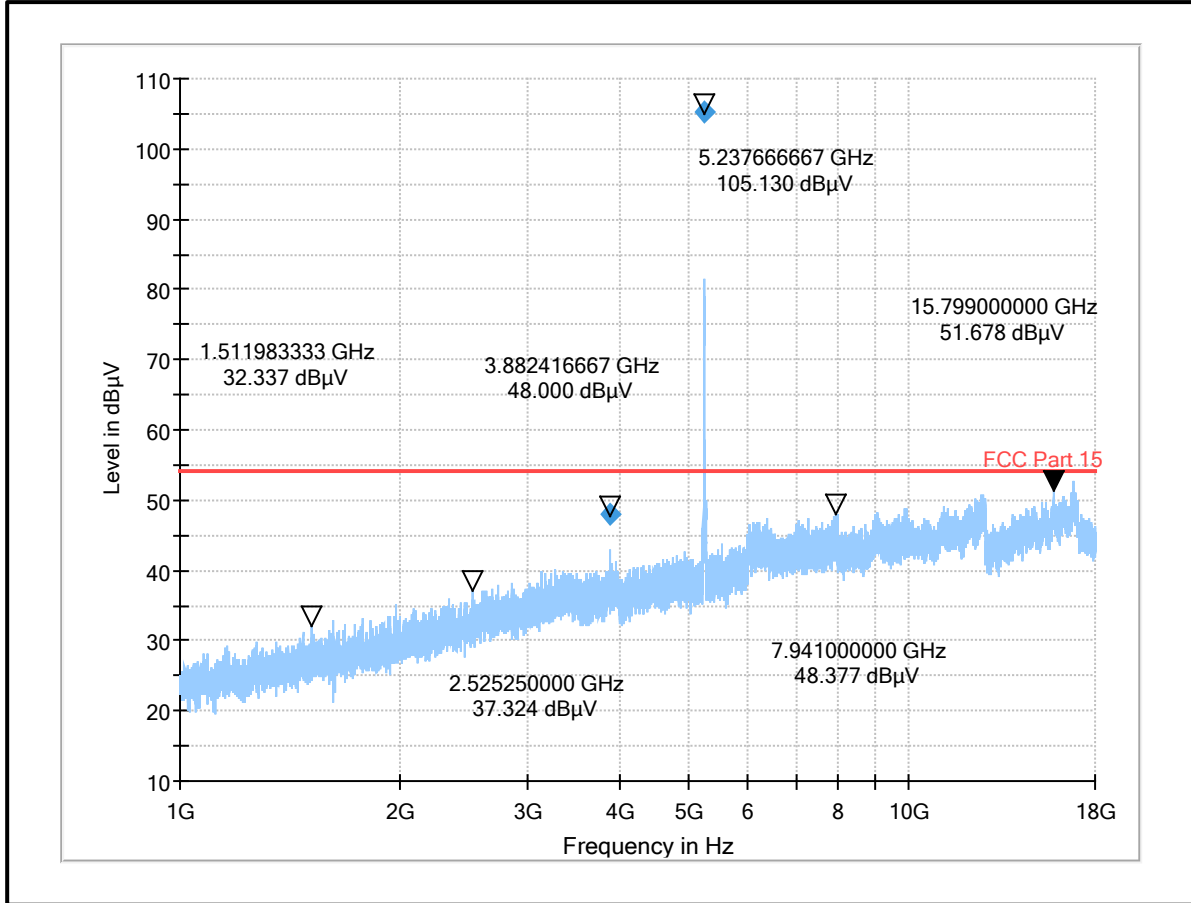
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 48

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|----------------------|----------------------|----------------------|-------------|----------|
| 3882.416667 | Vertical | 48.00 | 54.00 | 6.00 | Complied |

Plot: Radiated Transmitter spurious emission from 1 GHz – 18 GHz



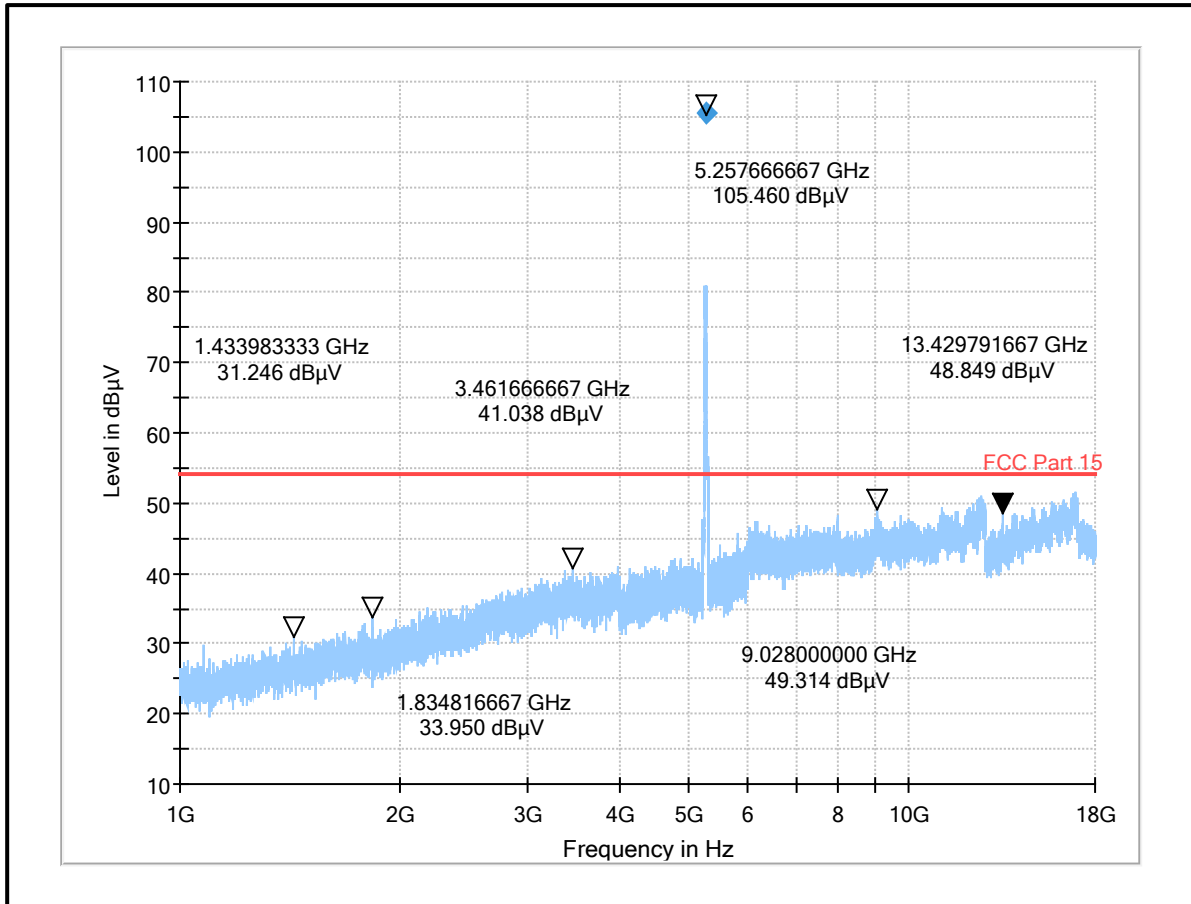
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 52

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 1 GHz – 18 GHz



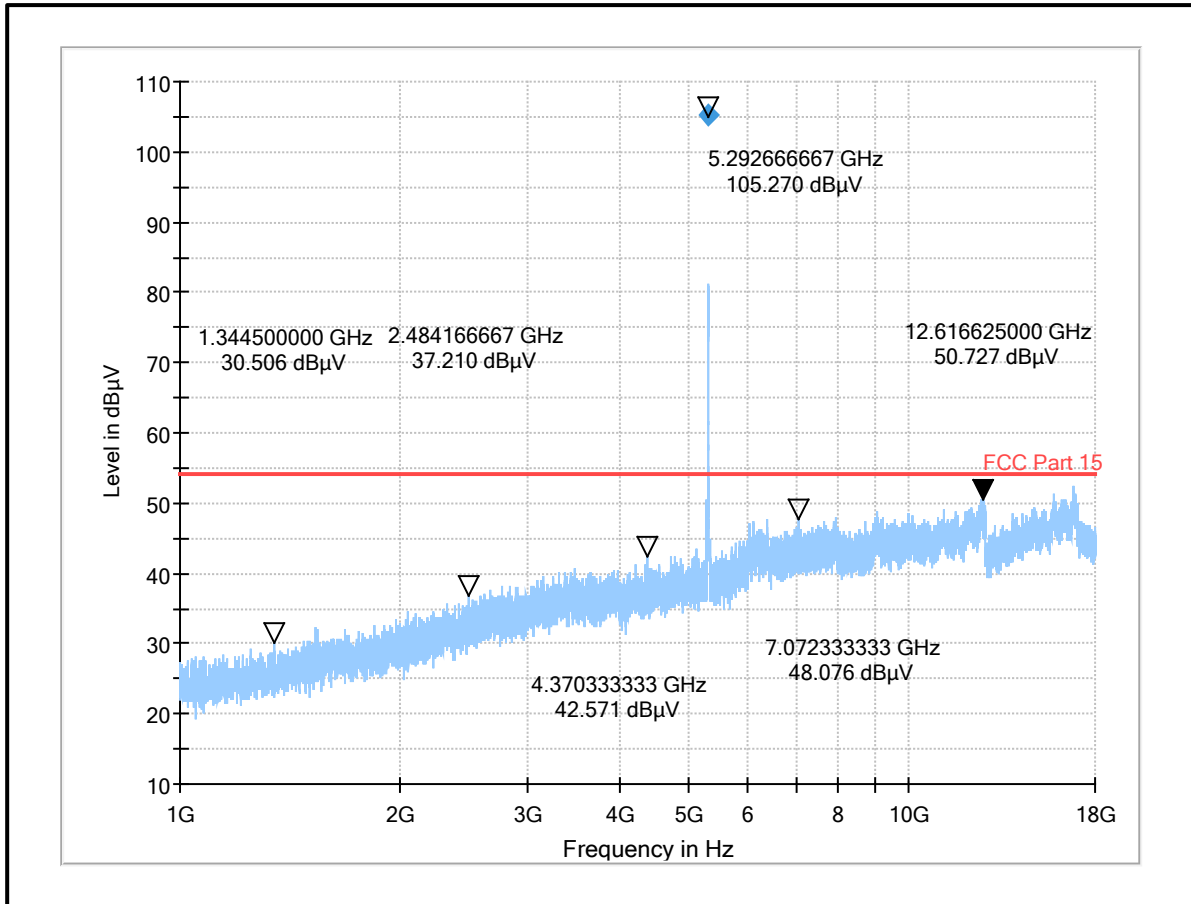
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 60

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 1 GHz – 18 GHz



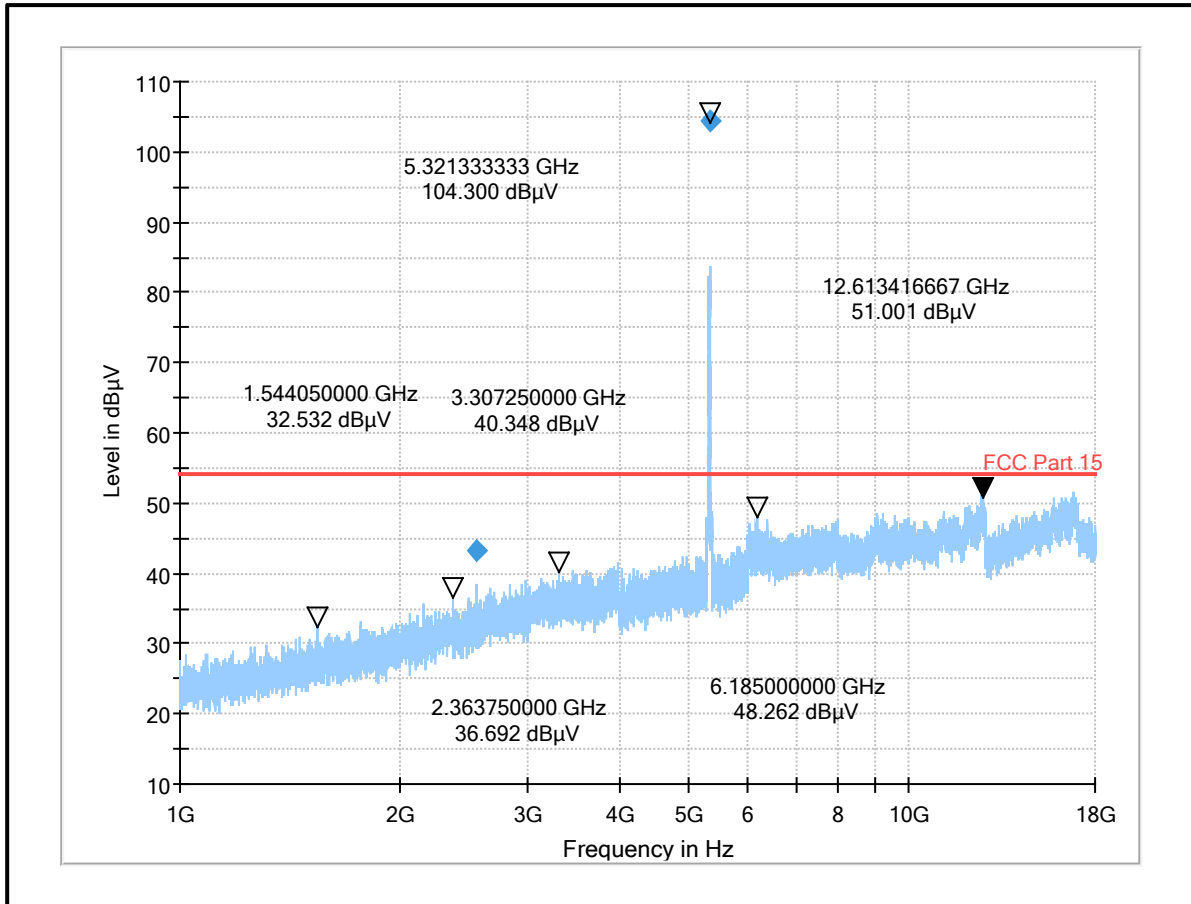
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 64

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|----------------------|----------------------|----------------------|-------------|----------|
| 2543.950000 | Vertical | 43.14 | 54.00 | 10.86 | Complied |

Plot: Radiated Transmitter spurious emission from 1 GHz – 18 GHz



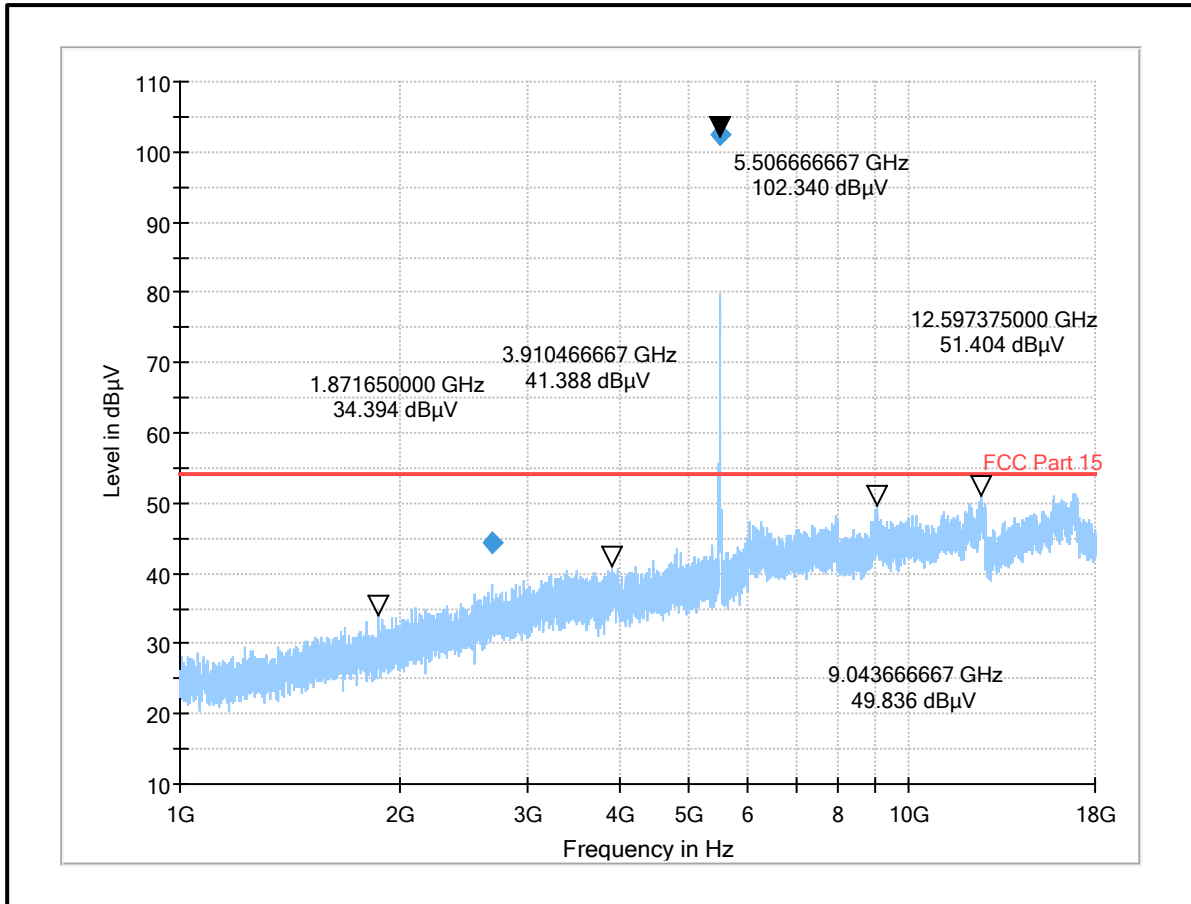
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 100

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|----------------------|----------------------|----------------------|-------------|----------|
| 2687.600000 | Horizontal | 44.31 | 54.00 | 9.69 | Complied |

Plot: Radiated Transmitter spurious emission from 1 GHz – 18 GHz



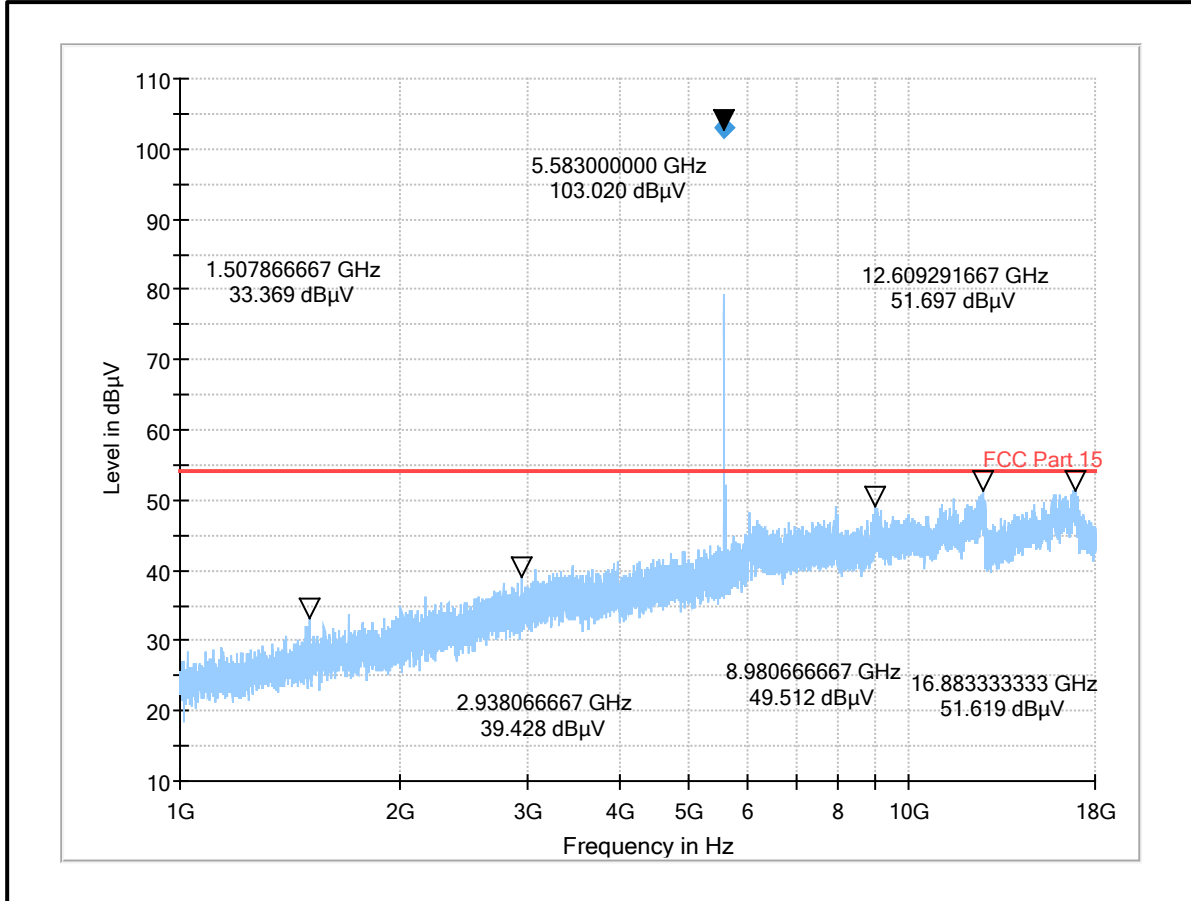
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 116

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 1 GHz – 18 GHz



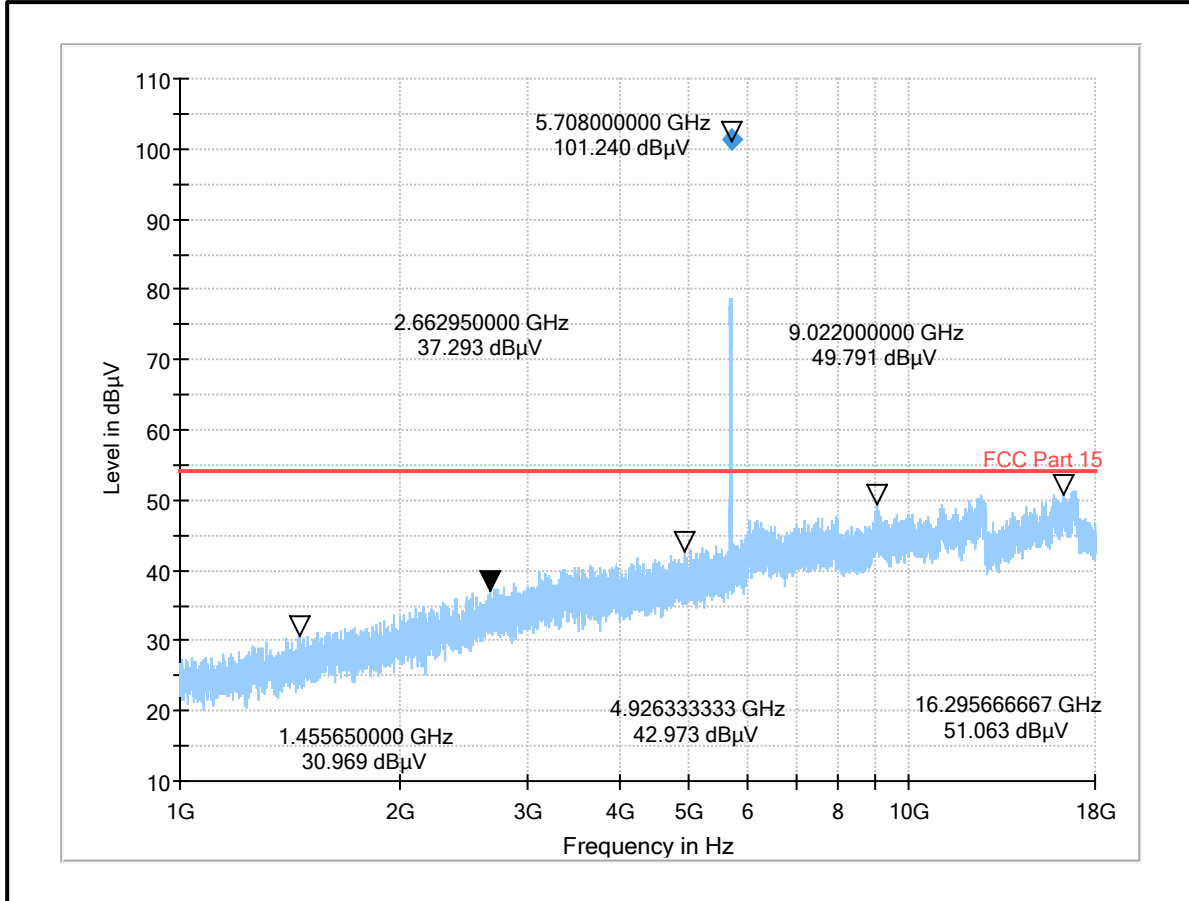
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 140

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 1 GHz – 18 GHz



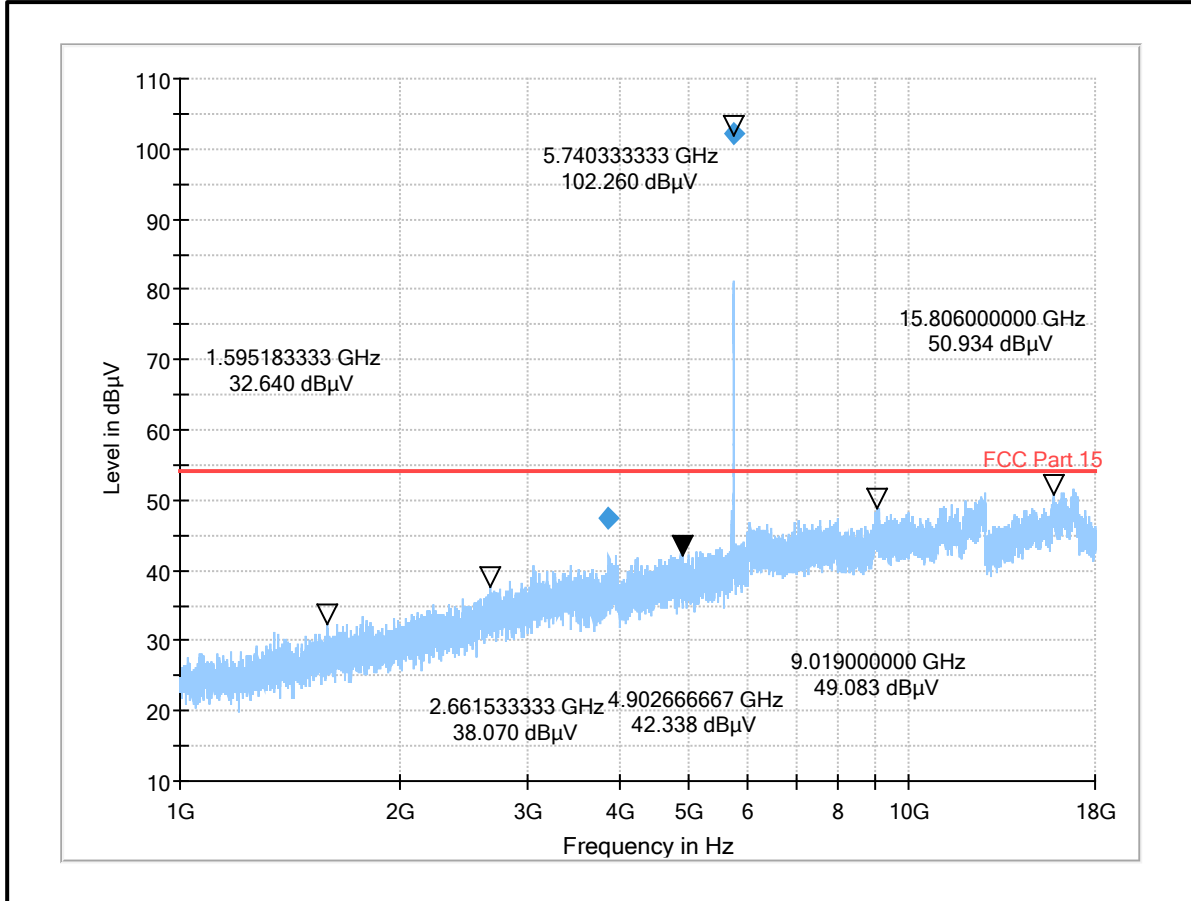
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 149

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|----------------------|----------------------|----------------------|-------------|----------|
| 3877.600000 | Vertical | 47.43 | 54.00 | 6.57 | Complied |

Plot: Radiated Transmitter spurious emission from 1 GHz – 18 GHz



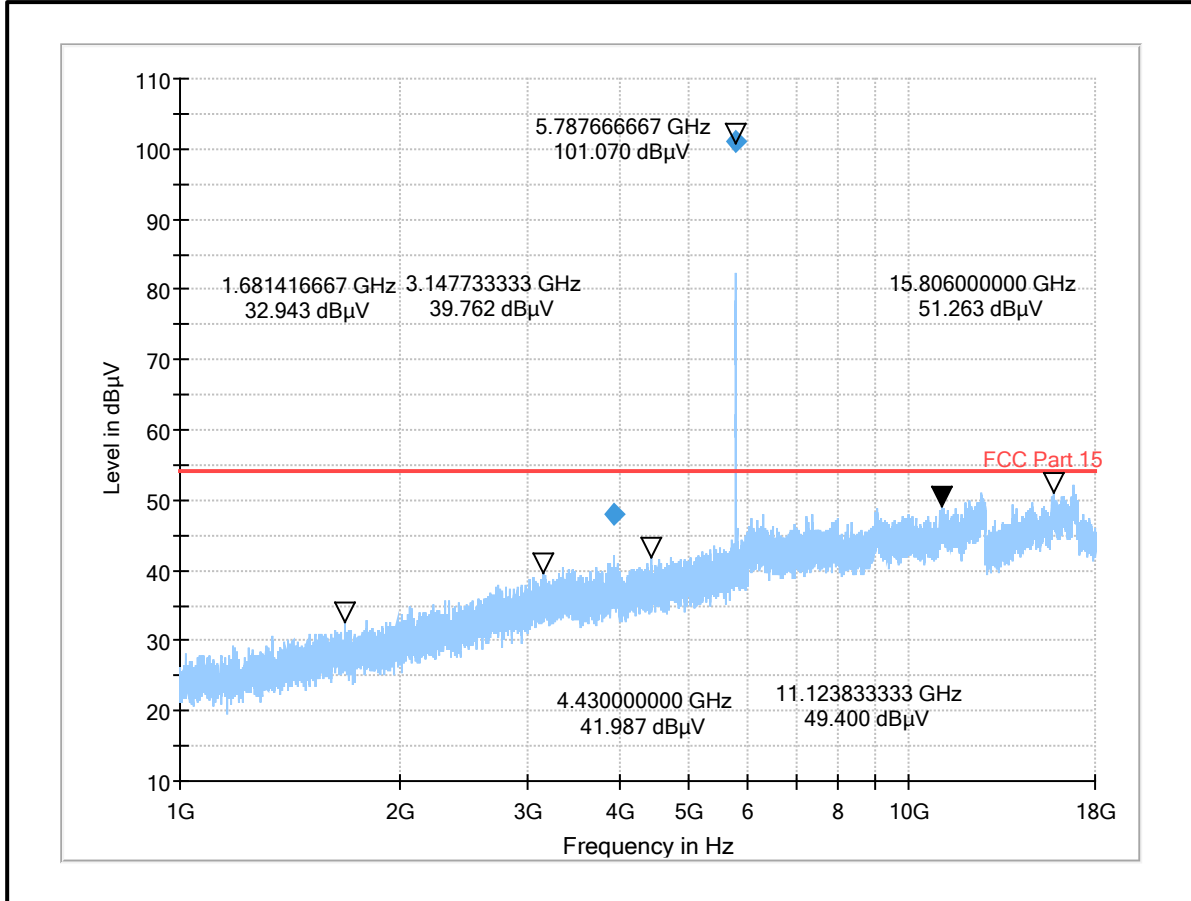
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 157

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|----------------------|----------------------|----------------------|-------------|----------|
| 3933.416667 | Horizontal | 47.88 | 54.00 | 6.12 | Complied |

Plot: Radiated Transmitter spurious emission from 1 GHz – 18 GHz



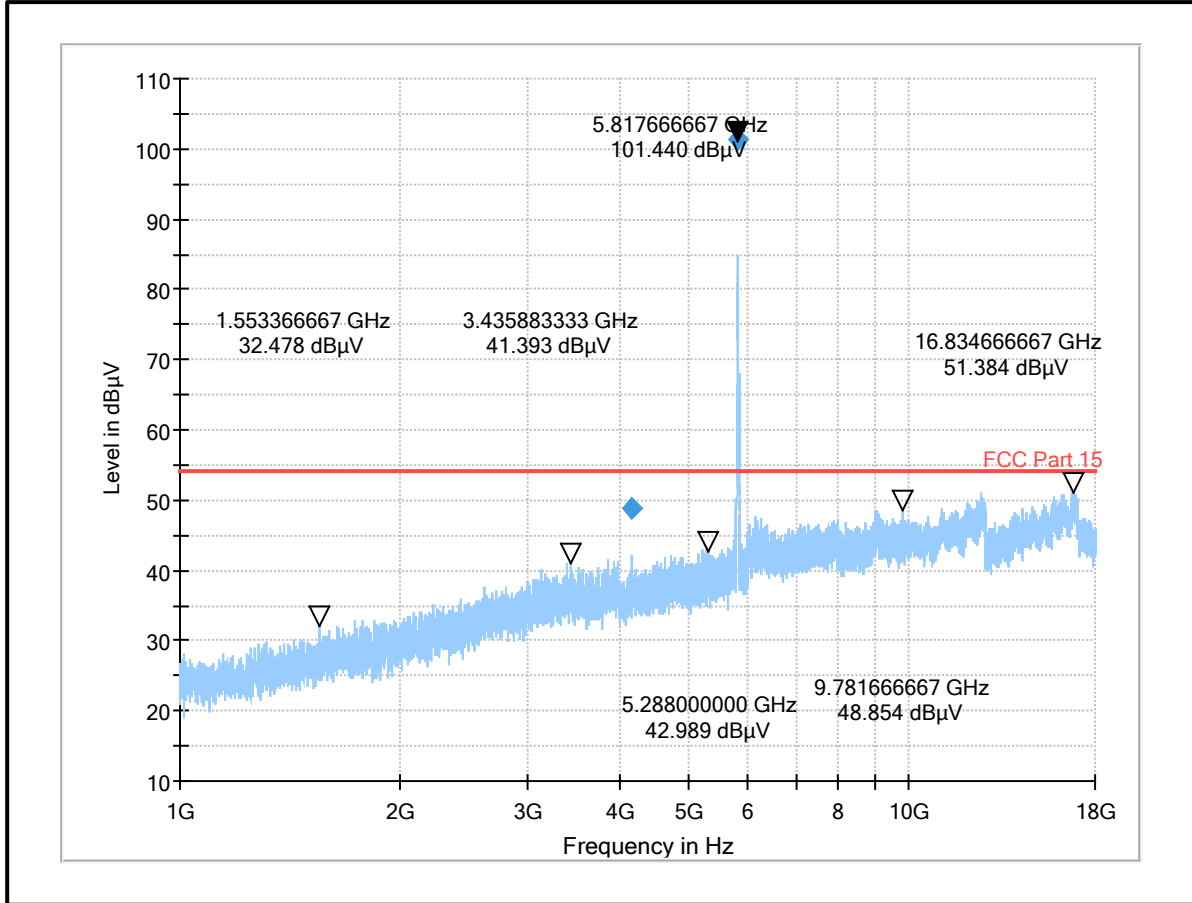
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 165

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|----------------------|----------------------|----------------------|-------------|----------|
| 4167.333333 | Horizontal | 48.95 | 54.00 | 5.05 | Complied |

Plot: Radiated Transmitter spurious emission from 1 GHz – 18 GHz



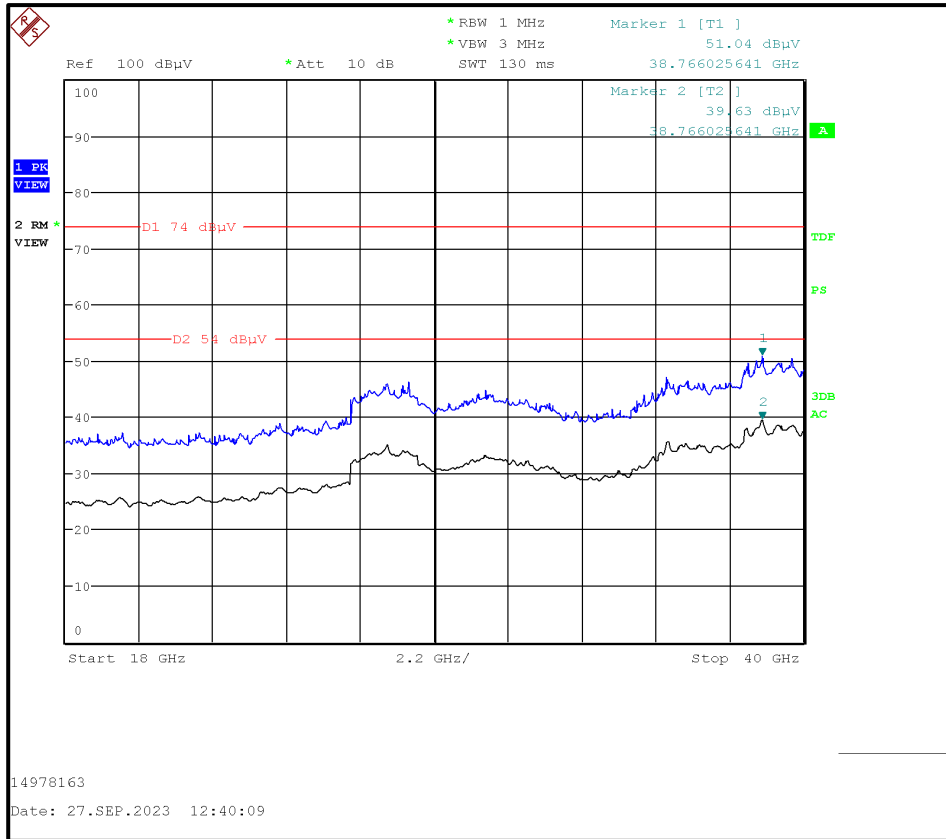
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11ax (SU) / 20 MHz / MCS0 / Channel 48

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 18 GHz – 40 GHz



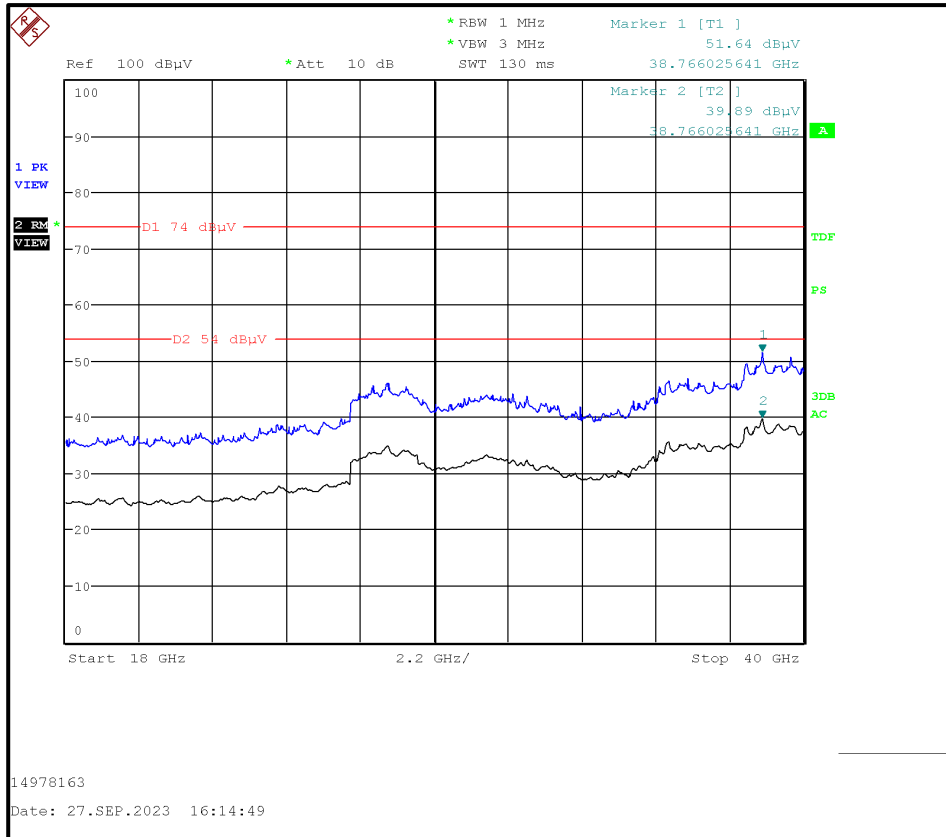
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11ax (RU52-38) / 20 MHz / MCS0 / Channel 60

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 18 GHz – 40 GHz



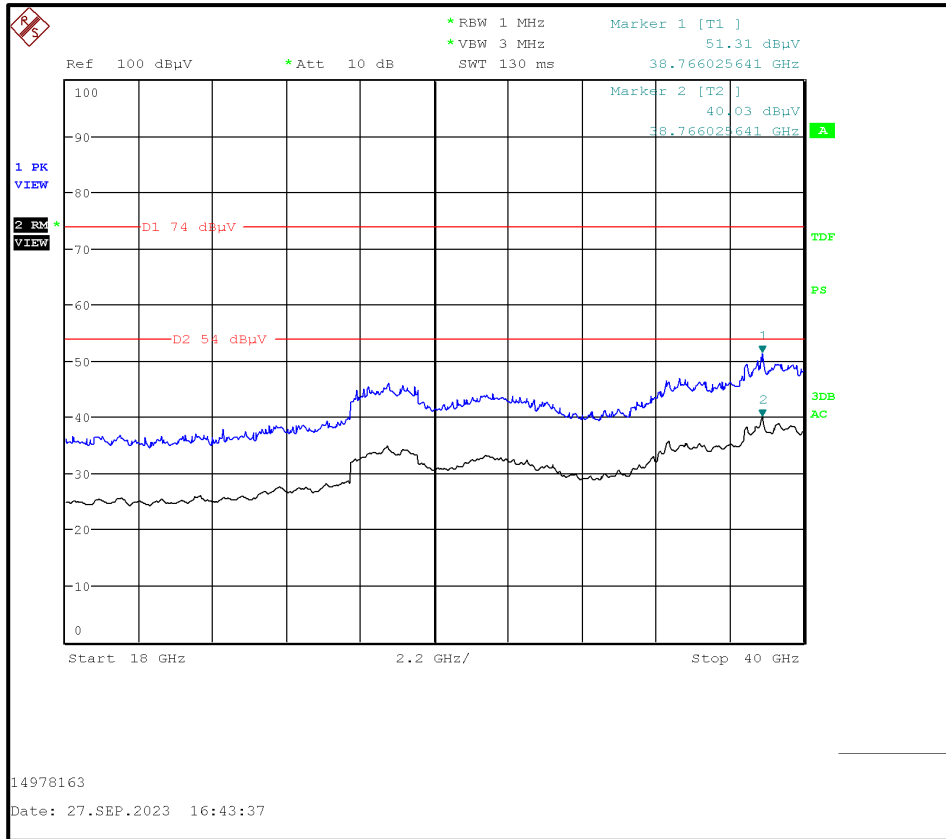
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11ax (RU52-38) / 40 MHz / MCS0 / Channel 134

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 18 GHz – 40 GHz



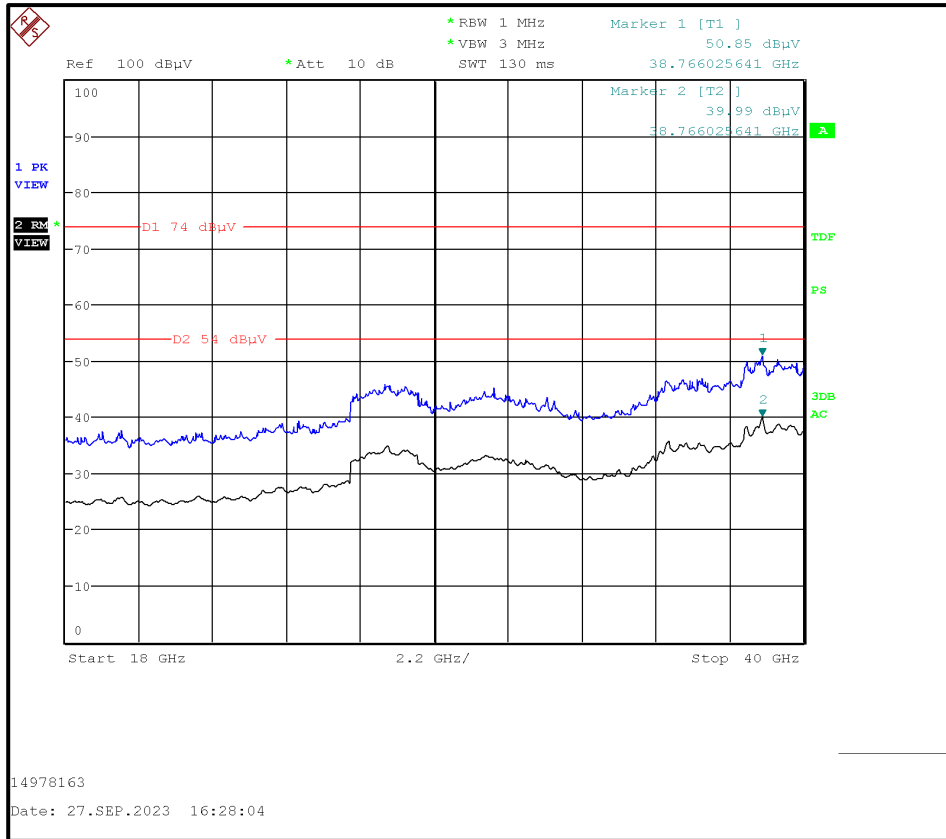
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11ax (RU52-38) / 20 MHz / MCS0 / Channel 165

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 18 GHz – 40 GHz



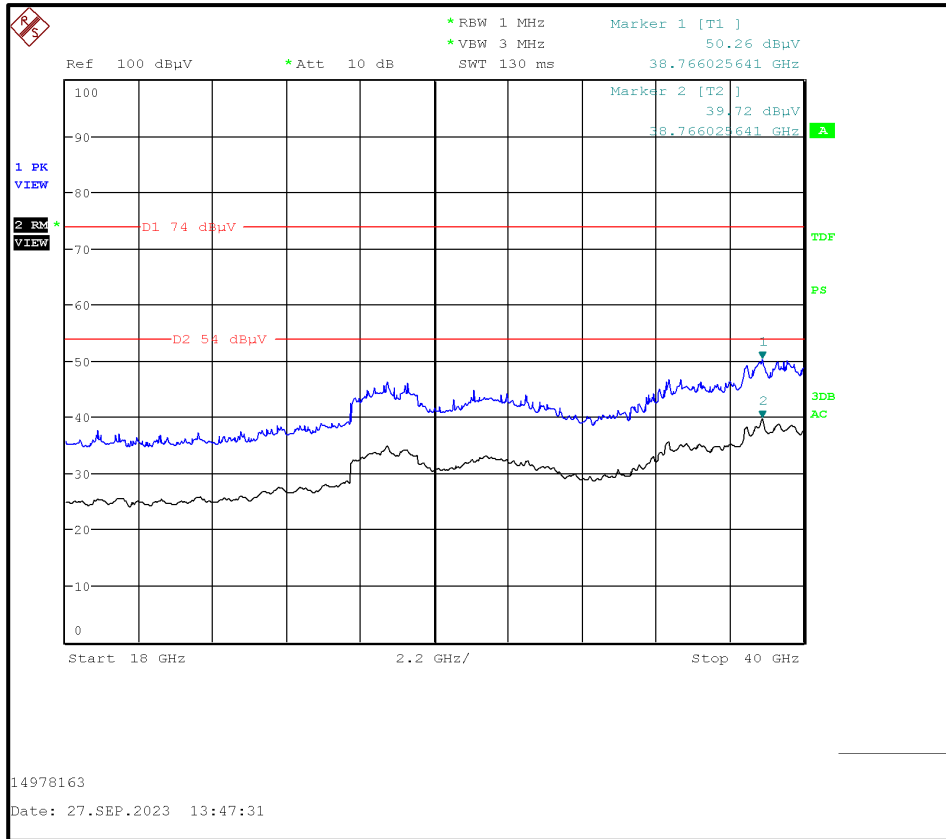
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 36

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 18 GHz – 40 GHz



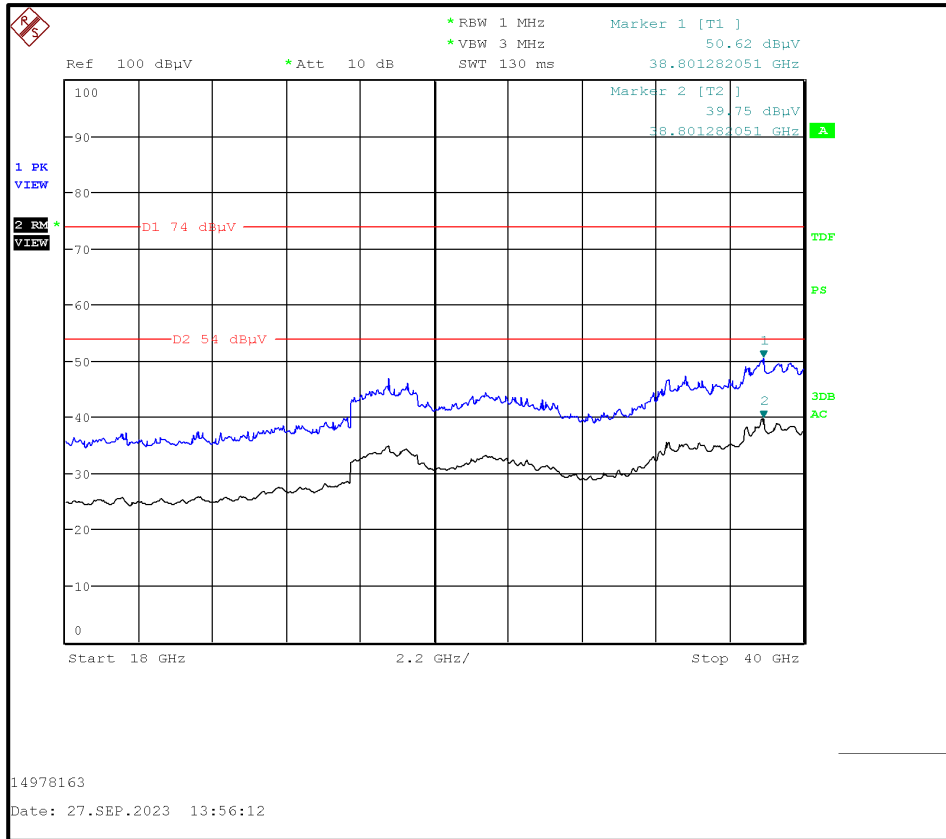
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 40

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 18 GHz – 40 GHz



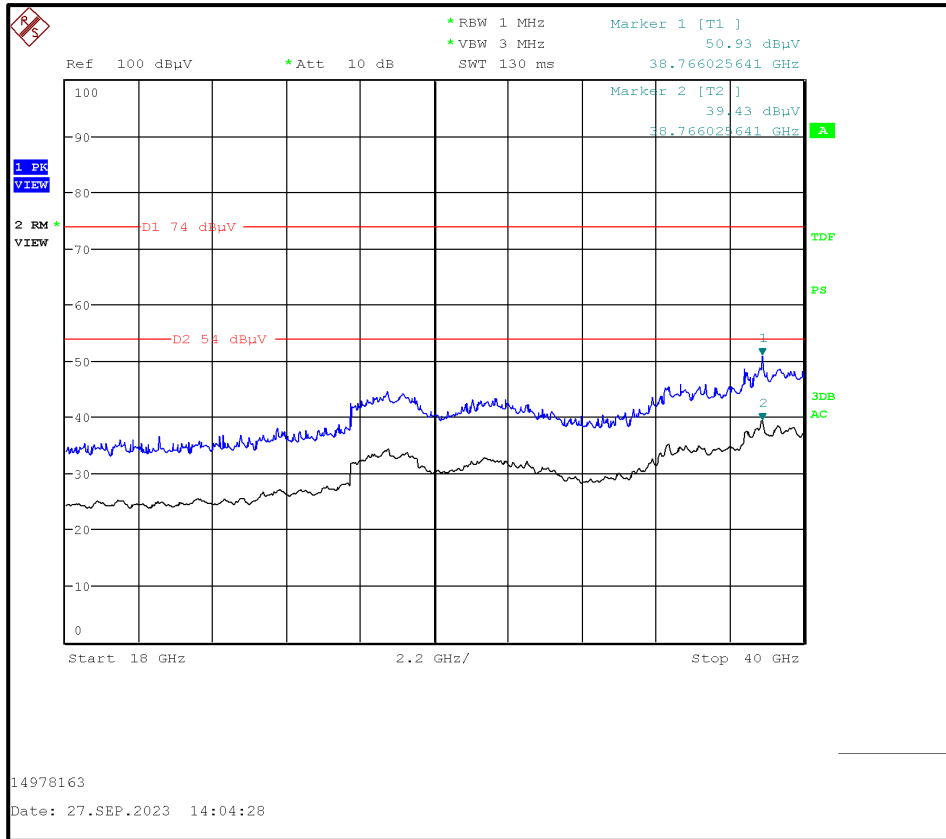
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 48

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 18 GHz – 40 GHz



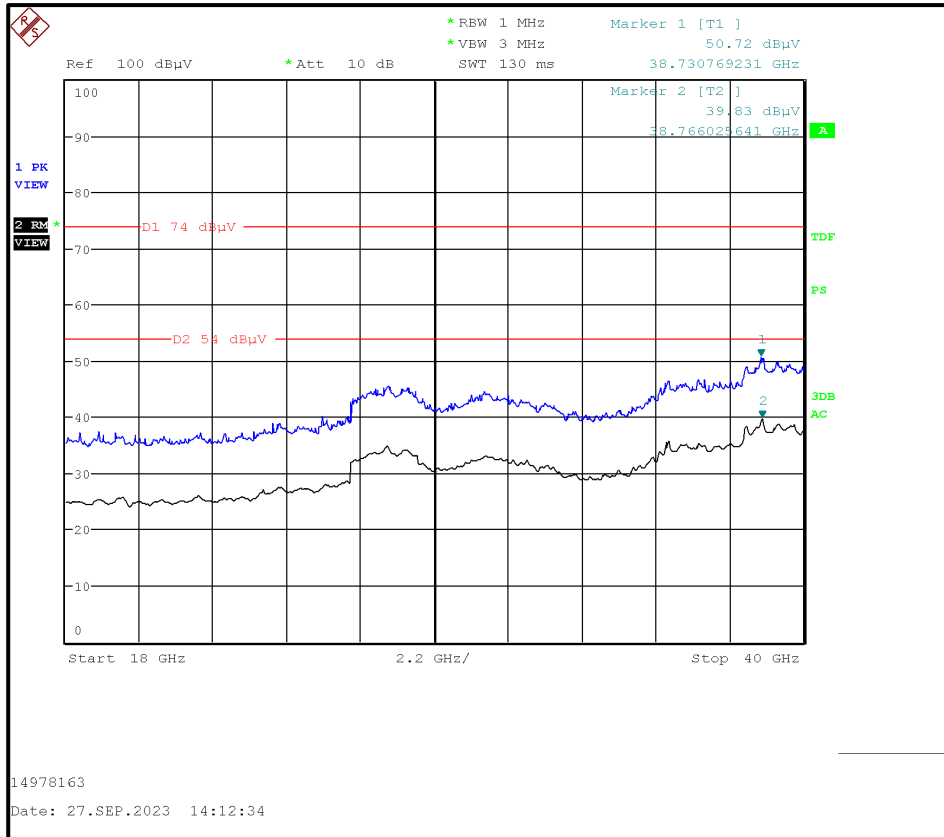
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 52

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 18 GHz – 40 GHz



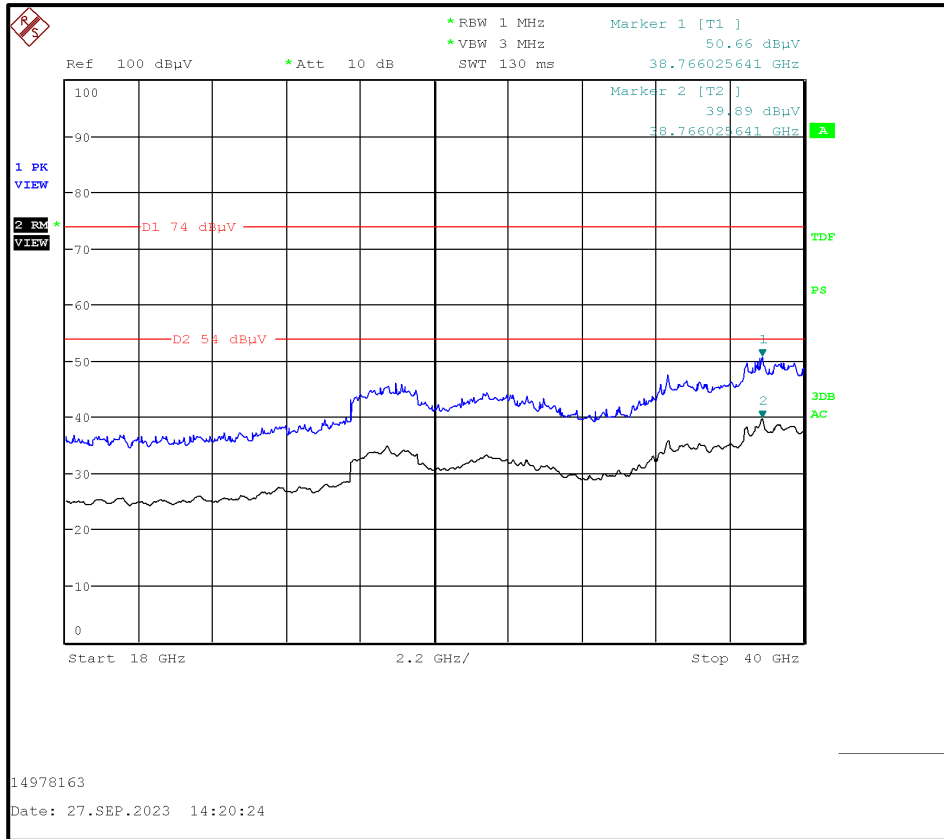
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 60

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 18 GHz – 40 GHz



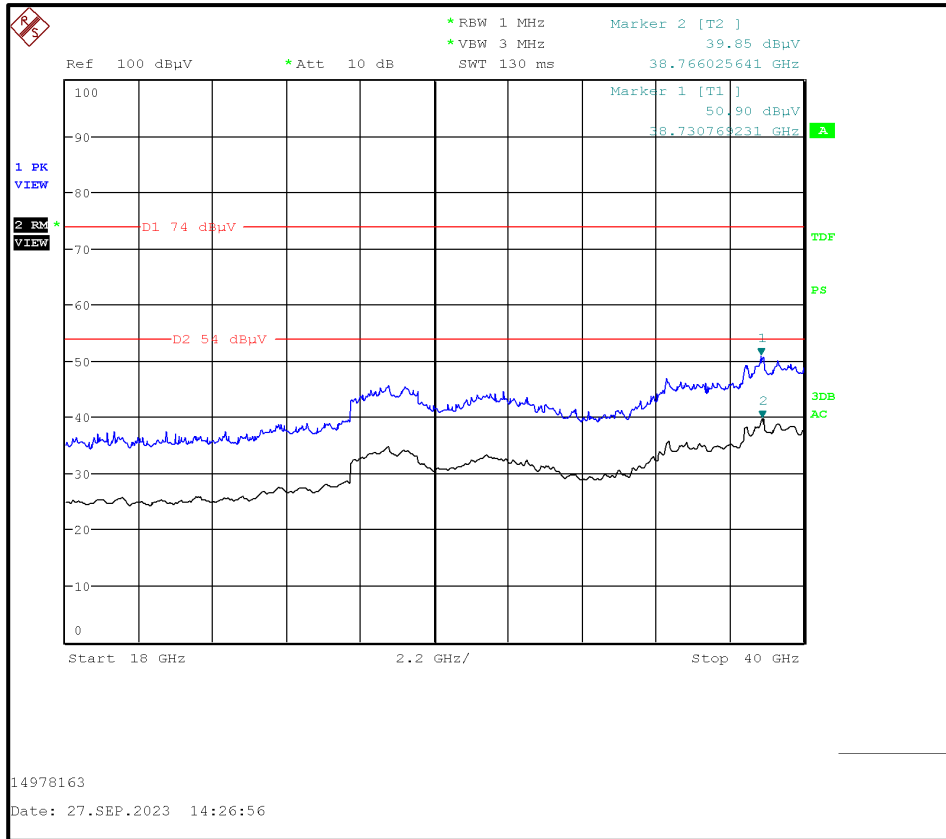
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 64

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 18 GHz – 40 GHz



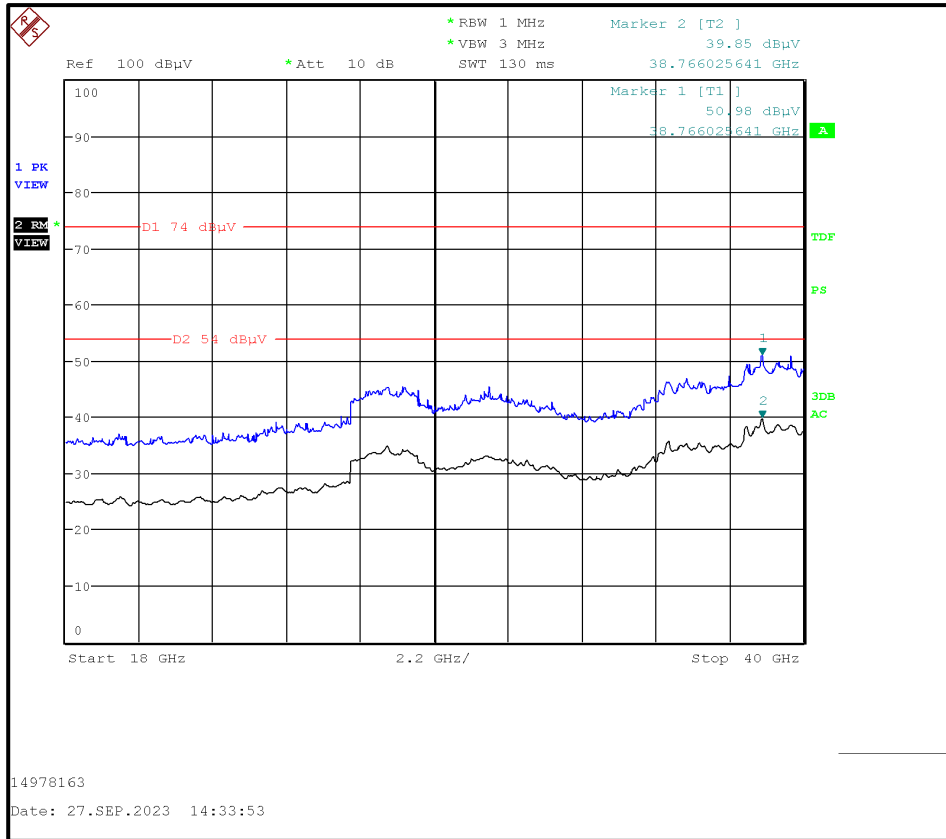
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 100

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 18 GHz – 40 GHz



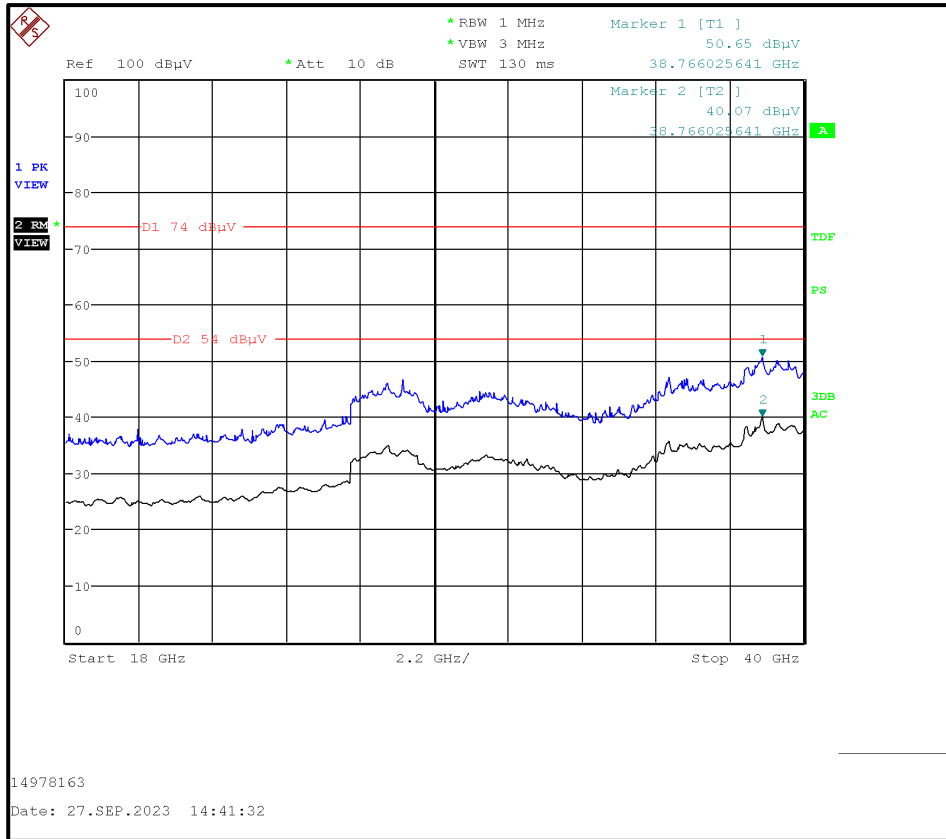
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 116

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 18 GHz – 40 GHz



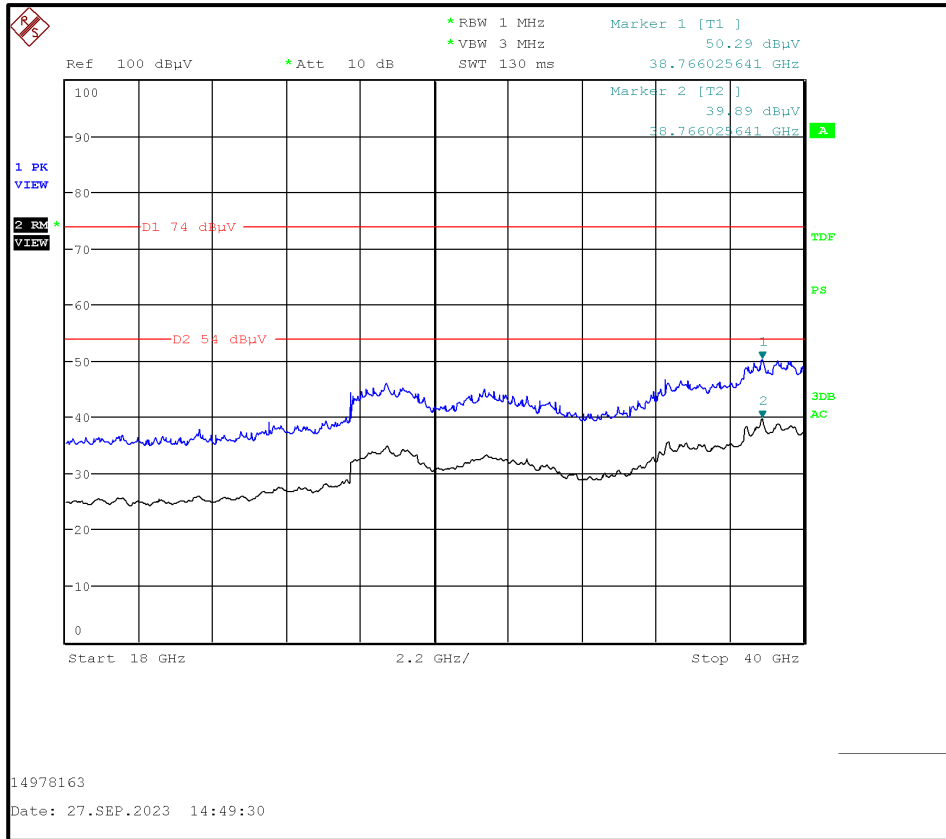
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 140

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 18 GHz – 40 GHz



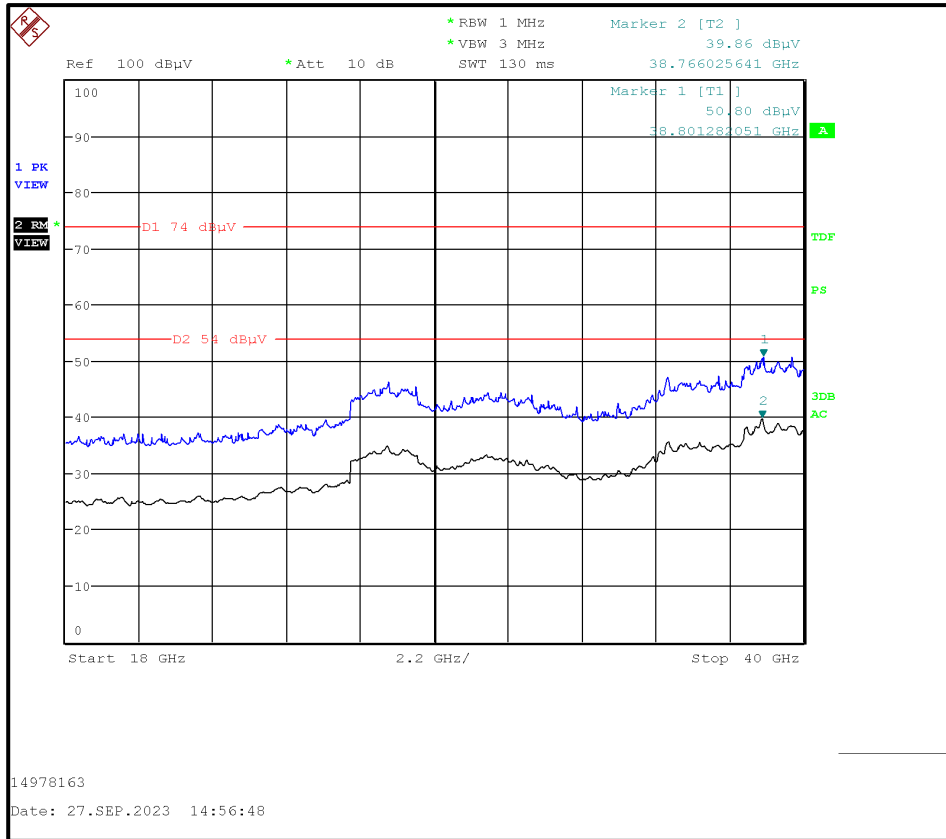
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 149

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 18 GHz – 40 GHz



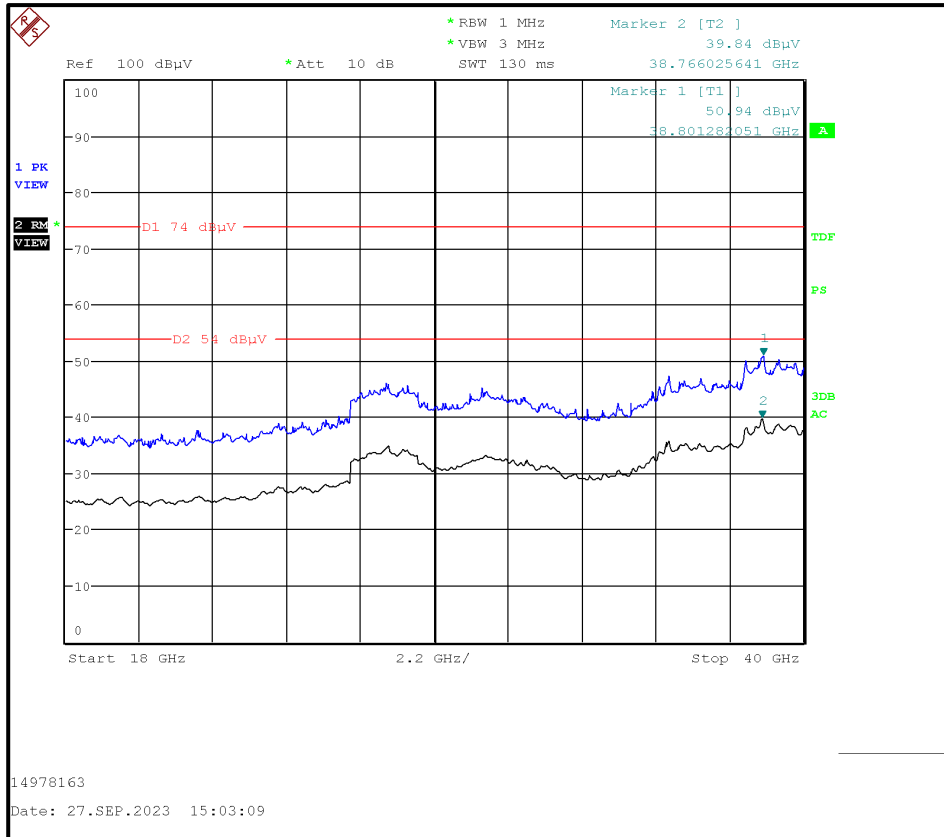
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 157

| Frequency (MHz) | Antenna Polarization | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------------|----------------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 18 GHz – 40 GHz



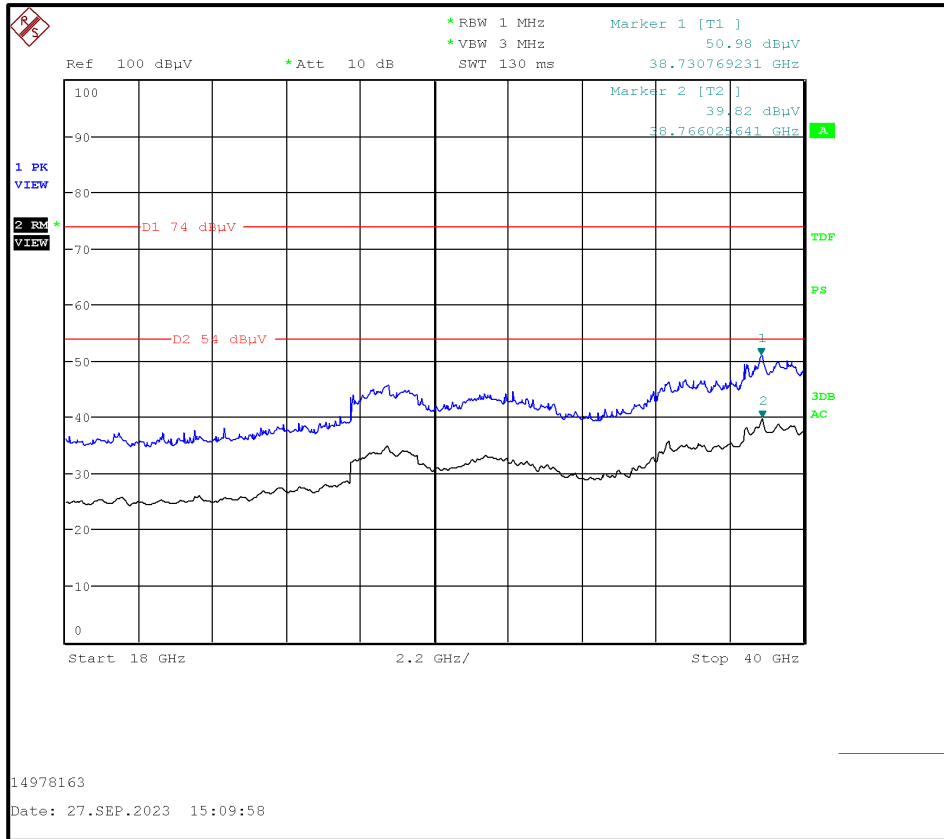
Result: Pass/

Transmitter Out of Band Radiated Emissions (5.15-5.85 GHz band operation) (continued)

Results: AC-DC Power Supply / 802.11a / 20 MHz / 54 Mbps / Channel 165

| Frequency (MHz) | Antenna Polarization | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Result |
|-------------------------------------|----------------------|----------------|----------------|-------------|--------|
| No critical emissions were detected | | | | | |

Plot: Radiated Transmitter spurious emission from 18 GHz – 40 GHz



Result: Pass/

5.2.3. Transmitter Band Edge Radiated Emissions

Test Summary:

| | | | |
|-----------------------------------|-------------------|-------------------|-------------------------|
| Test Engineer: | Abbas Al-Hussainy | Test Date: | 20 to 28 September 2023 |
| Test Sample Serial Number: | 1150003350 | | |
| Test Site Identification | SR 1/2 | | |

| | |
|--------------------------|--|
| FCC Reference: | Parts 15.407(b)(1),(8), 15.205 & 15.209(a) |
| Test Method Used: | FCC KDB 789033 D02 Section II.G.1, II.G.2, II.G.3, II.G.5 & II.G.6 ANSI C63.10 Sections 6.3 and 6.6 |

Environmental Conditions:

| | |
|-------------------------------|----------|
| Temperature (°C): | 22 to 25 |
| Relative Humidity (%): | 44 to 55 |

Notes:

1. According to FCC KDB 789033 D02 Section II.G.5 & II.G.6 Transmitter Band Edge Radiated Emissions were performed.)
2. The test receiver was set to RBW: 1 MHz | VBW: 3 MHz | Sweep time: Auto | Trace mode: max hold | Span: large enough to capture unwanted band edge emissions with trace stabilizations.
3. In accordance with KDB 789033 Section II.D.v), Method AD (vi), the average measurements were performed using an increased number of sweeps A value of 300 was used for all measurements as this number ensured that the requirement $\text{Sweep} \geq 2 \times \text{Span} / \text{RBW}$ is met.
4. Transmitter Band Edge Radiated Emissions were performed in a semi-anechoic chamber SR1/ 2 (Asset Number 1603665) with absorbers on the ground at a distance of 3 meters. The EUT was placed at a height of 1.5 meters above the test chamber floor in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna with tilting function enabled over the range 1 meter to 4 meters above the test chamber floor, in line with the EUT.
5. The maximum emissions around band edges were searched & are indicated with a marker placed on them.
6. For transmitters operating in the 5.15-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz also for transmitters operating in the 5.47–5.725 GHz band: All emissions outside of the 5.47–5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz. However, there are restricted bands of operation below the lower band edge at 4.5-5.15 GHz and also at 5.35-5.46 GHz therefore the provisions of FCC Part 15.205 apply.
7. For unwanted emissions measured with Peak detector there are two limit possibilities:
 - According to FCC 15.209 peak limit (above 1 GHz) is 74 dBµV/m (restricted band limit)
 - According to FCC 15.407(b)(4)(i) peak limit is 68.2 dBµV/m (non-restricted band limit)
8. *Therefore, for UNII-1 unwanted emissions in restricted as well non restricted bands, measured with Peak detector lowest limit 68.2 dBµV/m has been applied.
9. Field strength measurements using peak and average detectors were performed in the restricted bands below 5.15 GHz and above 5.35 GHz.
10. For transmitters operating in the 5.725-5.850GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

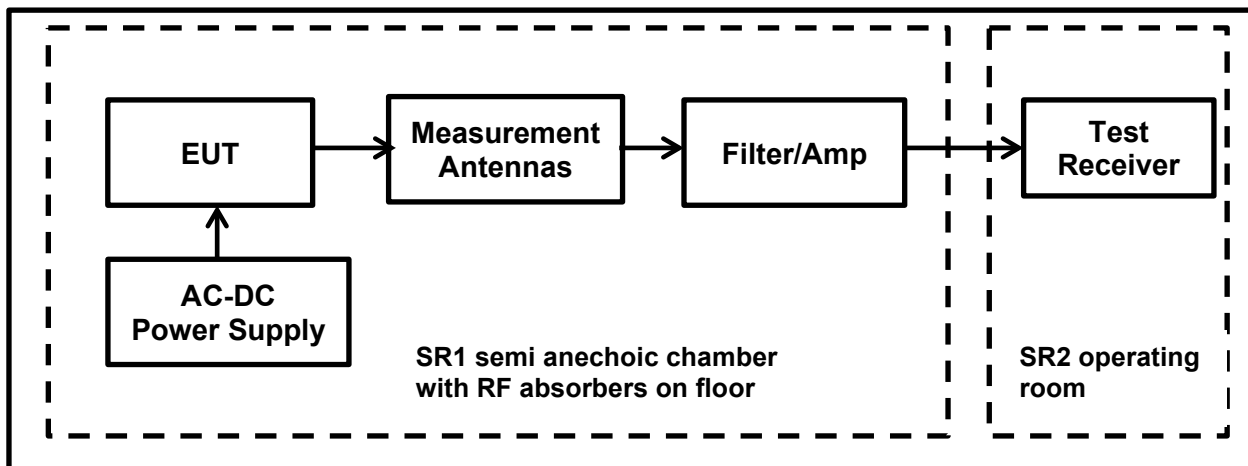
Transmitter Band Edge Radiated Emissions (continued)

Notes:

- 11. As all radiated band edge measurements have been performed with R.B.W. 1 MHz; the limits in dBm / MHz can be converted to dBµV/m by adding a conversion factor of 95.2 (in accordance with KDB 789033 G.2.d)(iii)).
- 12. In accordance with ANSI C63.10 Section 12.7.7.2 Method AD g), for average measurements, data rates where the EUT was transmitting < 98% duty cycle, the duty cycle correction factor calculated in section 5.2.3 was added to the measured result.
- 13. As the continuous transmission of the EUT (D ≥ 98%) cannot be achieved and EUT was transmitting with different duty cycles w.r.t to different modes. Duty Cycle Correction Factors were added to all average measurements respectively according to the modes used to compensate as if it was transmitting with 100% duty cycle.

| Mode | Duty cycle | Correction factor |
|-----------|------------|-------------------|
| a-mode | 91.95 | 0.36 |
| ac80-mode | 34.76 | 13.20 |

Test Setup:



Transmitter Band Edge Radiated Emissions (continued)

Results: AC-DC Power Supply / UNII-1 & UNII-2A / 802.11a / 20 MHz / 54 Mbps

Results: CH36 / Lower Band Edge / Peak

| Frequency (MHz) | Peak Level (dBµV/m) | Peak Limit (dBµV/m) | Margin (dB) | Result |
|-----------------|---------------------|---------------------|-------------|----------|
| 5148.80 | 57.58 | 68.20* | 10.62 | Complied |
| 5150.00 | 57.22 | 68.20* | 10.98 | Complied |

Results: CH36 / Lower Band Edge / Average

| Frequency (MHz) | Average Level (dBµV/m) | Duty Cycle Correction Factor (dB) | Corrected Average Level (dBµV/m) | Average Limit (dBµV/m) | Margin (dB) | Result |
|-----------------|------------------------|-----------------------------------|----------------------------------|------------------------|-------------|----------|
| 5145.50 | 40.65 | 0.36 | 41.01** | 54.00 | 12.99 | Complied |
| 5150.00 | 40.02 | 0.36 | 40.38** | 54.00 | 13.62 | Complied |

Results: CH48 / Upper Band Edge / Peak

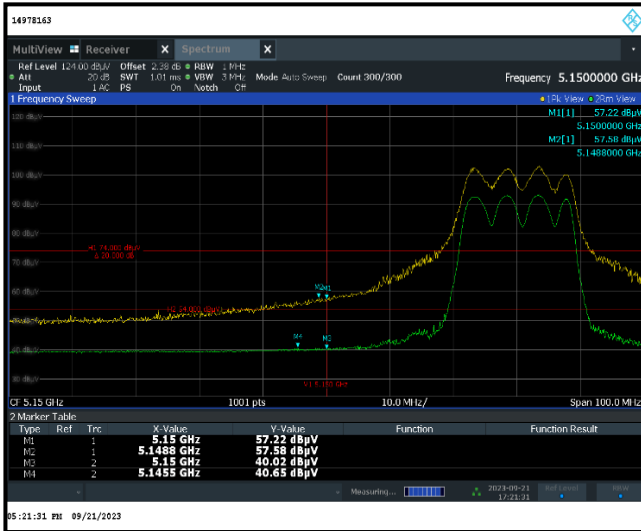
| Frequency (MHz) | Peak Level (dBµV/m) | Peak Limit (dBµV/m) | Margin (dB) | Result |
|-----------------|---------------------|---------------------|-------------|----------|
| 5350.00 | 57.43 | 68.20* | 10.77 | Complied |
| 5350.70 | 58.08 | 68.20* | 10.12 | Complied |

Results: CH48 / Upper Band Edge / Average

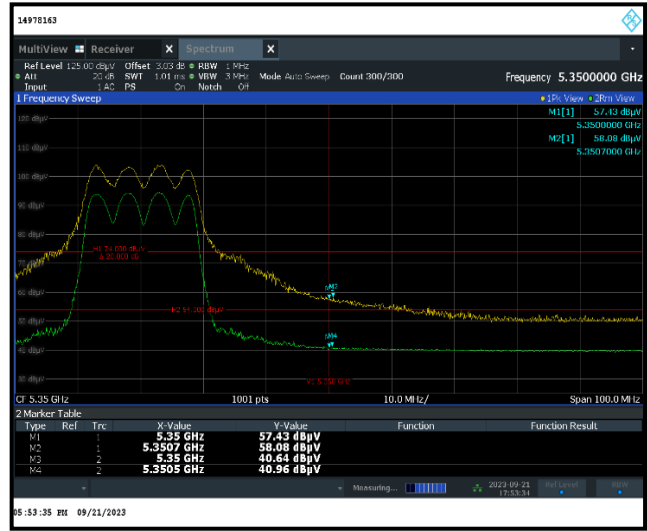
| Frequency (MHz) | Average Level (dBµV/m) | Duty Cycle Correction Factor (dB) | Corrected Average Level (dBµV/m) | Average Limit (dBµV/m) | Margin (dB) | Result |
|-----------------|------------------------|-----------------------------------|----------------------------------|------------------------|-------------|----------|
| 5350.00 | 40.64 | 0.36 | 41.00** | 54.00 | 13.00 | Complied |
| 5350.50 | 40.96 | 0.36 | 41.32** | 54.00 | 12.68 | Complied |

Transmitter Band Edge Radiated Emissions (continued)

Results: AC-DC Power Supply / UNII-1 & UNII-2A / 802.11a / 20 MHz / 54 Mbps



Lower Band Edge Measurement



Upper Band Edge Measurement

Result: **Pass**

Transmitter Band Edge Radiated Emissions (continued)

Results: AC-DC Power Supply / UNII-1 / 802.11ax (SU) / 80 MHz / MCS0

Results: CH42 / Lower Band Edge / Peak

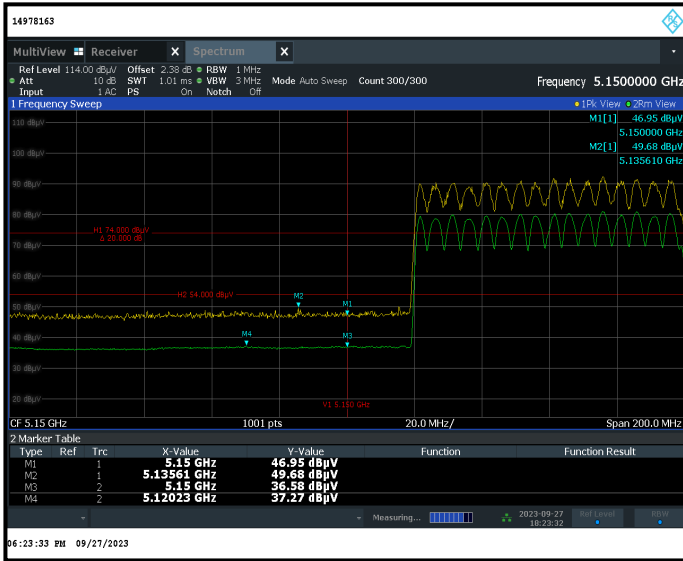
| Frequency (MHz) | Peak Level (dBµV/m) | Peak Limit (dBµV/m) | Margin (dB) | Result |
|-----------------|---------------------|---------------------|-------------|----------|
| 5135.61 | 49.68 | 68.20* | 18.52 | Complied |
| 5150.00 | 46.95 | 68.20* | 21.25 | Complied |

Results: CH42 / Lower Band Edge / Average

| Frequency (MHz) | Average Level (dBµV/m) | Duty Cycle Correction Factor (dB) | Corrected Average Level (dBµV/m) | Average Limit (dBµV/m) | Margin (dB) | Result |
|-----------------|------------------------|-----------------------------------|----------------------------------|------------------------|-------------|----------|
| 5120.23 | 37.27 | 13.20 | 50.47** | 54.00 | 3.53 | Complied |
| 5150.00 | 36.58 | 13.20 | 49.78** | 54.00 | 4.22 | Complied |

Transmitter Band Edge Radiated Emissions (continued)

AC-DC Power Supply / 802.11ax (SU) / UNII-1 / 802.11a / 80 MHz / MCS0



Lower Band Edge Measurement

Result: Pass

Transmitter Band Edge Radiated Emissions (continued)

Results: AC-DC Power Supply / UNII-2A / 802.11ax (SU) / 40 MHz / MCS0

Results: CH62 / Upper Band Edge / Peak

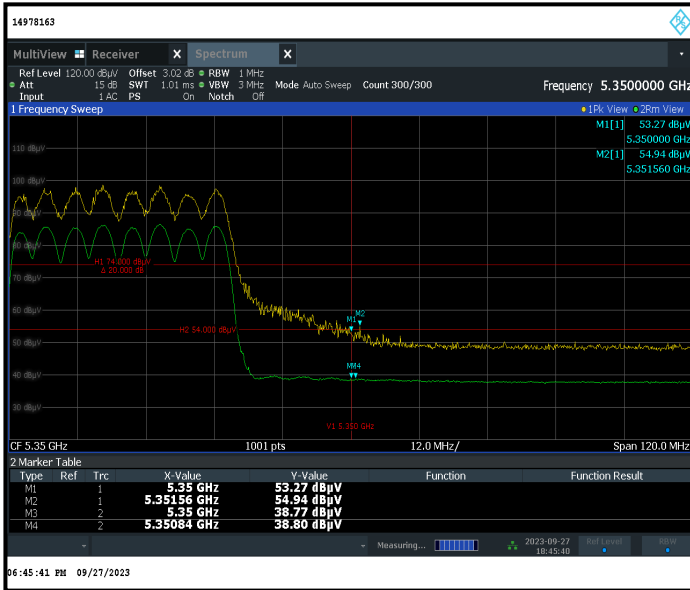
| Frequency (MHz) | Peak Level (dBµV/m) | Peak Limit (dBµV/m) | Margin (dB) | Result |
|-----------------|---------------------|---------------------|-------------|----------|
| 5351.56 | 54.94 | 68.20* | 13.26 | Complied |
| 5350.00 | 53.27 | 68.20* | 14.93 | Complied |

Results: CH62 / Upper Band Edge / Average

| Frequency (MHz) | Average Level (dBµV/m) | Duty Cycle Correction Factor (dB) | Corrected Average Level (dBµV/m) | Average Limit (dBµV/m) | Margin (dB) | Result |
|-----------------|------------------------|-----------------------------------|----------------------------------|------------------------|-------------|----------|
| 5350.84 | 38.80 | 13.20 | 52.00** | 54.00 | 2.00 | Complied |
| 5350.00 | 38.77 | 13.20 | 51.97** | 54.00 | 2.03 | Complied |

Transmitter Band Edge Radiated Emissions (continued)

Results: AC-DC Power Supply / 802.11ax (SU) / UNII-2A / 802.11a / 40 MHz / MCS0



Upper Band Edge Measurement

Result: Pass

Transmitter Band Edge Radiated Emissions (continued)

Results: AC-DC Power Supply / UNII-2C / 802.11a / 20 MHz / 54 Mbps

Results: CH100 / Lower Band Edge / Peak

| Frequency (MHz) | Peak Level (dBµV/m) | Peak Limit (dBµV/m) | Margin (dB) | Result |
|-----------------|---------------------|---------------------|-------------|----------|
| 5469.00 | 57.95 | 68.20* | 10.25 | Complied |
| 5470.00 | 56.60 | 68.20* | 11.60 | Complied |

Results: CH100 / Lower Band Edge / Average

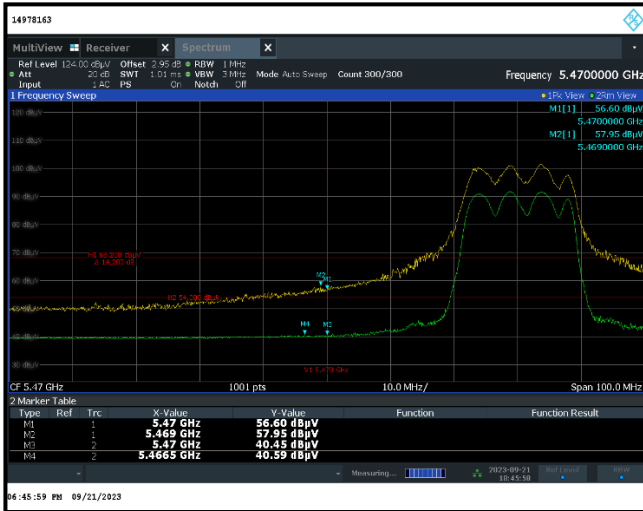
| Frequency (MHz) | Average Level (dBµV/m) | Duty Cycle Correction Factor (dB) | Corrected Average Level (dBµV/m) | Average Limit (dBµV/m) | Margin (dB) | Result |
|-----------------|------------------------|-----------------------------------|----------------------------------|------------------------|-------------|----------|
| 5466.50 | 40.59 | 0.36 | 40.95** | 54.00 | 13.05 | Complied |
| 5470.00 | 40.45 | 0.36 | 40.81** | 54.00 | 13.19 | Complied |

Results: CH140 / Upper Band Edge / Peak

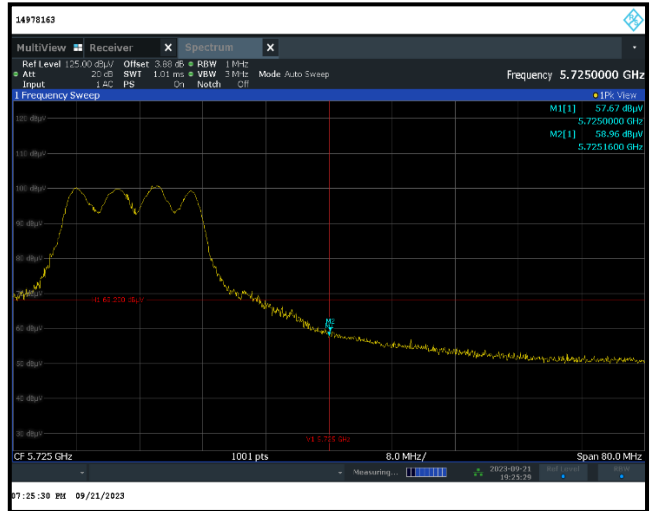
| Frequency (MHz) | Peak Level (dBµV/m) | Peak Limit (dBµV/m) | Margin (dB) | Result |
|-----------------|---------------------|---------------------|-------------|----------|
| 5725.16 | 58.96 | 68.20* | 9.24 | Complied |
| 5725.00 | 57.67 | 68.20* | 10.53 | Complied |

Transmitter Band Edge Radiated Emissions (continued)

Results: AC-DC Power Supply / UNII-2C / 802.11a / 20 MHz / 54 Mbps



Lower Band Edge Measurement



Upper Band Edge Measurement

Result: **Pass**

Transmitter Band Edge Radiated Emissions (continued)

Results: AC-DC Power Supply / UNII-2C / 802.11ax (SU) / 40 MHz / MCS0

Results: CH102 / Lower Band Edge / Peak

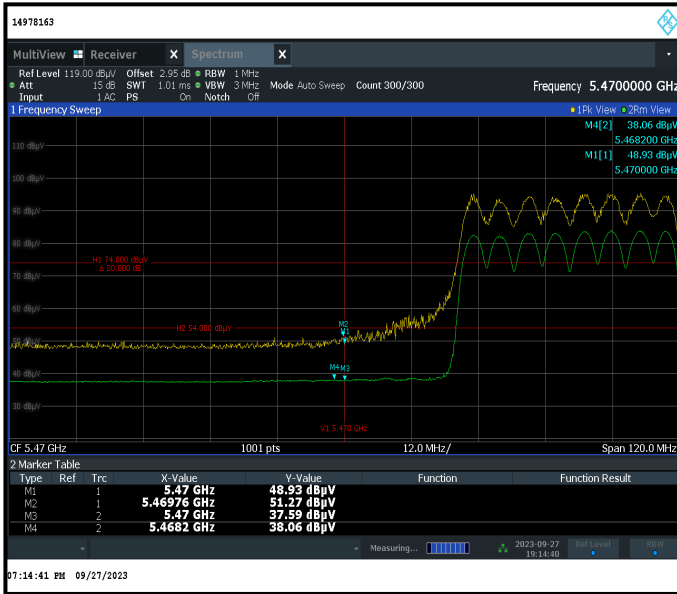
| Frequency (MHz) | Peak Level (dBµV/m) | Peak Limit (dBµV/m) | Margin (dB) | Result |
|-----------------|---------------------|---------------------|-------------|----------|
| 5469.76 | 51.27 | 68.20* | 16.93 | Complied |
| 5470.00 | 48.93 | 68.20* | 19.27 | Complied |

Results: CH102 / Lower Band Edge / Average

| Frequency (MHz) | Average Level (dBµV/m) | Average Limit (dBµV/m) | Margin (dB) | Result |
|-----------------|------------------------|------------------------|-------------|----------|
| 5468.20 | 38.06 | 54.00 | 15.94 | Complied |
| 5470.00 | 37.59 | 54.00 | 16.41 | Complied |

Transmitter Band Edge Radiated Emissions (continued)

Results: AC-DC Power Supply / UNII-2C / 802.11ax (SU) / 40 MHz / MCS0



Lower Band Edge Measurement

Result: Pass

Transmitter Band Edge Radiated Emissions (continued)

Results: AC-DC Power Supply / UNII-3 / 802.11a / 20 MHz / 54 Mbps

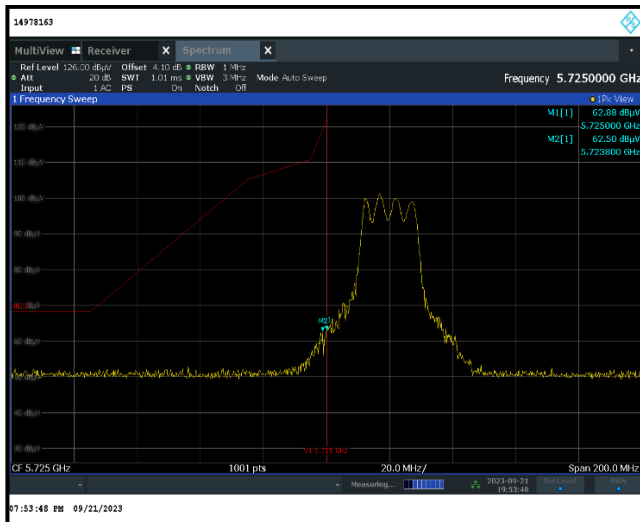
Results: CH149 / Lower Band Edge

| Frequency (MHz) | Peak Level (dBµV/m) | Peak Limit (dBµV/m) | Margin (dB) | Result |
|-----------------|---------------------|---------------------|-------------|----------|
| 5723.80 | 62.50 | 110.8 | 48.30 | Complied |
| 5725.00 | 62.88 | 122.2 | 59.32 | Complied |

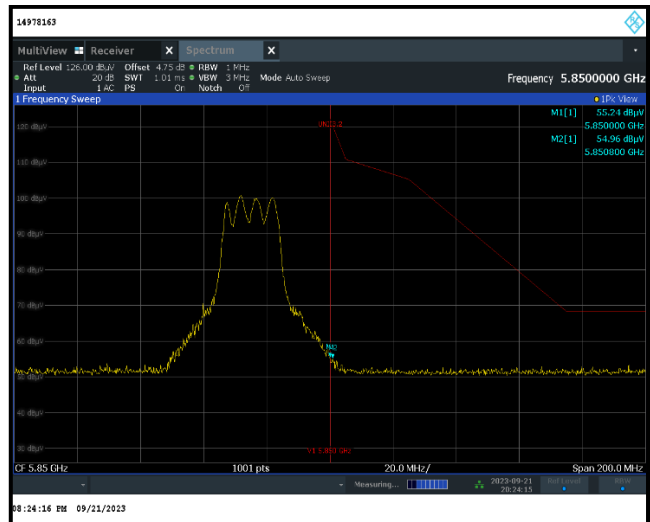
Results: CH165 / Upper Band Edge

| Frequency (MHz) | Peak Level (dBµV/m) | Peak Limit (dBµV/m) | Margin (dB) | Result |
|-----------------|---------------------|---------------------|-------------|----------|
| 5480.80 | 54.96 | 110.8 | 55.84 | Complied |
| 5850.00 | 55.24 | 122.2 | 66.96 | Complied |

Plots: AC-DC Power Supply / UNII-3 / 802.11a / 20 MHz / 54 Mbps



Lower Band Edge Measurement



Upper Band Edge Measurement

Result: **Pass**

Transmitter Band Edge Radiated Emissions (continued)

Results: AC-DC Power Supply / UNII-3 / 802.11ax (RU996-67) / 80 MHz / MCS0

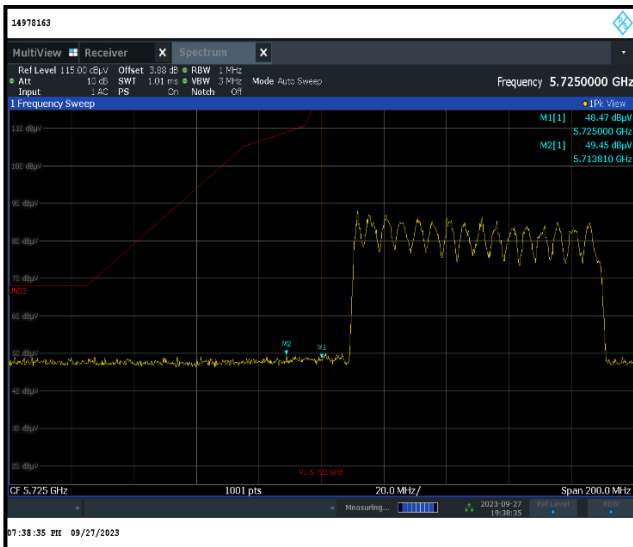
Results: CH155 / Lower Band Edge

| Frequency (MHz) | Peak Level (dBµV/m) | Peak Limit (dBµV/m) | Margin (dB) | Result |
|-----------------|---------------------|---------------------|-------------|----------|
| 5713.81 | 49.45 | 110.8 | 61.35 | Complied |
| 5725.00 | 48.47 | 122.2 | 73.73 | Complied |

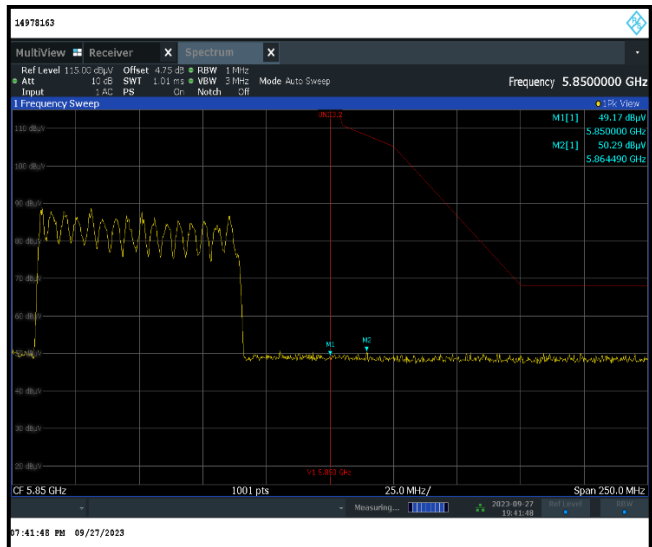
Results: CH155 / Upper Band Edge

| Frequency (MHz) | Peak Level (dBµV/m) | Peak Limit (dBµV/m) | Margin (dB) | Result |
|-----------------|---------------------|---------------------|-------------|----------|
| 5864.49 | 50.29 | 110.8 | 60.51 | Complied |
| 5850.00 | 49.17 | 122.2 | 73.03 | Complied |

Plots: AC-DC Power Supply / UNII-3 / 802.11ax (RU996-67) / 80 MHz / MCS0



Lower Band Edge Measurement



Upper Band Edge Measurement

Result: **Pass**

6. Measurement Uncertainty

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor such that a confidence level of approximately 95% is maintained. For the purposes of this document “approximately” is interpreted as meaning “effectively” or “for most practical purposes”.

| Measurement Type | Confidence Level (%) | Calculated Uncertainty |
|------------------------------|----------------------|------------------------|
| Radiated Spurious Emissions | 95% | ±3.10 dB |
| Band Edge Radiated Emissions | 95% | ±3.10 dB |
| Transmitter Duty Cycle | 95% | ±3.4% |

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty the published guidance of the appropriate accreditation body is followed.

7. Used equipment

Test site: SR 1/2

| ID | Manufacturer | Type | Model | Serial | Calibration Date | Cal. Cycle (months) |
|---------|-------------------------------------|---------------------------------|--------------|-----------------------|------------------|---------------------|
| 1 | Rohde & Schwarz | Antenna, Loop | HFH2-Z2 | 831247/012 | 18/07/2023 | 36 |
| 377 | BONN Elektronik | Amplifier, Low Noise Pre | BLMA 0118-1A | 025294B | 18/07/2023 | 12 |
| 423 | Bonn Elektronik | Amplifier, Low Noise Pre | BLMA 1840-1A | 55929 | 18/07/2023 | 12 |
| 460 | Deisel | Turntable | DT 4250 S | n/a | n/a | n/a |
| 465 | Schwarzbeck | Antenna, Trilog Broadband | VULB 9168 | 9168-240 | 02/09/2020 | 42 |
| 496 | Rohde & Schwarz | Antenna, log. - periodical | HL050 | 100297 | 22/08/2022 | 24 |
| 588 | Maturo | Controller | NCD | 029/7180311 | n/a | n/a |
| 591 | Rohde & Schwarz | Receiver | ESU 40 | 100244/040 | 13/07/2023 | 12 |
| 669 | Rohde & Schwarz | EMI Test Receiver | ESW 44 | 103087 | 13/07/2023 | 18 |
| 607 | Schwarzbeck | Antenna broadband horn antenna | BBHA 9170 | 9170-561 | 15/10/2019 | 48 |
| 608 | Rohde & Schwarz | Switch Matrix | OSP 120 | 101227 | lab verification | n/a |
| 628 | Maturo | Antenna mast | CAM 4.0-P | 224/19590716 | n/a | n/a |
| 629 | Maturo | Kippeinrichtung | KE 2.5-R-M | MAT002 | n/a | n/a |
| -/- | Testo | Thermo-Hygrometer | 608-H1 | 01 | lab verification | n/a |
| 328 | SPS | AC/DC power distribution system | PAS 5000 | A2464 00/2 0200 | lab verification | n/a |
| 1603665 | Siemens Matsushita Components | semi-anechoic chamber SR1/ 2 | -/- | B83117-A1421- T161 | n/a | n/a |
| 681 | Maturo | Antenna mast, tilting | BAM4.5-P | 402/0718.1 | n/a | n/a |

8. Report Revision History

| Version Number | Revision Details | | |
|----------------|------------------|--------|-----------------|
| | Page No(s) | Clause | Details |
| 1.0 | 100 | - | Initial Version |