

# TEST REPORT

|                        |  |
|------------------------|--|
| EUT Description        | WLAN and BT, 2x2 PCIe M.2 2230 adapter card  |
| Brand Name             | Intel® WiFi 6E AX411   |
| Model Name             | AX411NGW   |
| FCC ID / IC ID         | PD9AX411NG/ IC 1000M-AX411NG   |
| Date of Test Start/End | 2021-12-15 / 2024-04-16  |
| Features               | 802.11ax, Tri Band, 2x2 Wi-Fi 6E + Bluetooth® 5.2<br>+ CDB (Concurrent Dual Band simultaneous wi-fi connection)<br>(see section 5) |

|                      |  |
|----------------------|--|
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|                     |  |
|---------------------|--|
| Reference Standards | FCC CFR Title 47 Part 15 E<br>RSS-248 issue 2, RSS-Gen issue 5 - A1<br>(see section 1) |
|---------------------|--|

|                            |   |
|----------------------------|---|
| Test Report identification | 221108-01.TR07  |
| Revision Control           | Rev. 00<br>This test report revision replaces any previous test report revision.<br>(see section 8) |

The test results relate only to the samples tested.  
Reference to accreditation shall be used only by full reproduction of test report.

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## 1. Standards, reference documents and applicable test methods

|      |   |
|------|---|
| FCC  | <ol style="list-style-type: none"> <li>1. FCC Title 47 eCFR part 15 – Subpart E - Unlicensed National Information Infrastructure Devices. 2021-10-01 edition</li> <li>2. FCC OET KDB 987594 D01 U-NII 6GHz General Requirements v01r02</li> <li>3. FCC OET KDB 987594 D02 U-NII 6 GHz EMC Measurement v01r01</li> <li>4. FCC OET KDB 987594 D03 U-NII 6 GHz QA v01</li> <li>5. FCC OET KDB 987594 D04 UN6GHZ Pre-Approval Guidance Checklist v01</li> <li>6. FCC OET KDB 789033 D02 v02r01 - General U-NII Test Procedures New Rules – Guidelines for compliance testing of Unlicensed National Information Infrastructure (U-NII) Devices.</li> <li>7. FCC OET KDB 662911 D01 v02r01 - Emissions Testing of Transmitters with Multiple Outputs in the Same Band.</li> <li>8. ANSI C63.10-2013 American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.</li> </ol> |
| ISED | <ol style="list-style-type: none"> <li>1. RSS-248 Issue 2 - Radio Local Area Network (RLAN) Devices operating in the 5925-7125 MHz band.</li> <li>2. RSS-Gen Issue 5 Amendment 1 - General Requirements for Compliance of Radio Apparatus.</li> <li>3. FCC OET KDB 987594 D01 U-NII 6GHz General Requirements v01r02</li> <li>4. FCC OET KDB 987594 D02 U-NII 6 GHz EMC Measurement v01r01</li> <li>5. FCC OET KDB 987594 D03 U-NII 6 GHz QA v01</li> <li>6. ANSI C63.10-2013 American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices</li> </ol>   |

## 2. General conditions, competences and guarantees

- ✓ Tests performed under FCC standards identified in section 1 are covered by A2LA accreditation.
- ✓ Tests performed under ISED standards identified in section 1 are covered by Cofrac accreditation.
- ✓ Intel Corporation SAS Wireless RF Lab (Intel WRF Lab) is an ISO/IEC 17025:2017 laboratory accredited by the American Association for Laboratory Accreditation (A2LA) with the certificate number 3478.01.
- ✓ Intel Corporation SAS Wireless RF Lab (Intel WRF Lab) is an Accredited Test Firm recognized by the FCC, with Designation Number FR0011.
- ✓ Intel Corporation SAS Wireless RF Lab (Intel WRF Lab) is an ISO/IEC 17025:2017 testing laboratory accredited by the French Committee for Accreditation (Cofrac) with the certificate number 1-6736.
- ✓ Intel Corporation SAS Wireless RF Lab (Intel WRF Lab) is a Registered Test Site listed by ISED, with ISED #1000Y and CAB identifier FR0005.
- ✓ Intel WRF Lab only provides testing services and is committed to providing reliable, unbiased test results and interpretations.
- ✓ Intel WRF Lab is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.
- ✓ Intel WRF Lab has developed calibration and proficiency programs for its measurement equipment to ensure correlated and reliable results to its customers.
- ✓ This report is only referred to the item that has undergone the test.
- ✓ This report does not imply an approval of the product by the Certification Bodies or competent Authorities.

## 3. Environmental Conditions

- ✓ At the site where the measurements were performed the following limits were not exceeded during the tests:

|             |              |
|-------------|--------------|
| Temperature | 25.3 ± 2.6°C |
| Humidity    | 38.1 ± 8.3%  |

#### 4. Test samples

| Sample | Control #     | Description    | Model               | Serial #          | Date of receipt | Note  |
|--------|---------------|----------------|---------------------|-------------------|-----------------|---|
| #01    | 210611-02.S01 | WiFi 6E Module | AX411NGW            | WFM: 3413E8F0B009 | 2021-07-01      | Used for RF conducted tests, Dual Client test and Proper Power Adjustment |
|        | 200611-01.S12 | Extender       | PCB00651-01         | AS000651-1-502    | 2020-11-30      |   |
|        | 210903-02.S52 | Laptop         | DELL Latitude E5450 | GTXV562           | 2018-01-18      |   |
| #02    | 210611-02.S04 | WiFi 6E Module | AX411NGW            | WFM: 3413E8F0B419 | 2021-07-01      | Used for Frequency Stability tests  |
|        | 170000-01.S19 | Laptop         | Latitude E5450      | 4TXV562           | 2020-02-04      |   |
|        | 200611-01.S19 | Extender       | PCB00651_01         | -                 | 2021-06-02      |   |
| #03    | 210611-02.S01 | WiFi 6E Module | AX411NGW            | WFM:3413E8F0B009  | 2021-07-01      | Used for CBP Test   |
|        | 170000-01.S18 | Laptop         | Latitude E5470      | 4L1BVF2           | 2019-05-23      |   |
|        | 200611-01.S13 | Extender       | -                   | -                 | 2020-11-30      |   |

## 5. EUT Features

The herein information is provided by the customer.

Intel WRF Lab declines any responsibility for the accuracy of the stated customer provided information, especially if it has any impact on the correctness of test results presented in this report.

|  |   |                      |                      |
|--|---|----------------------|----------------------|
| Brand Name                                 | Intel® WiFi 6E AX411  |                      |                      |
| Model Name                                 | AX411NGW  |                      |                      |
| Software Version                           | DRTU.05726.99.0.86  |                      |                      |
| Driver Version                             | 99.0.86.3 / 23.30.0.4   |                      |                      |
| Supported Radios                           | 802.11b/g/n/ax  | 2.4GHz               |                      |
|  | 802.11a/n/ac/ax   | 5.2GHz               |                      |
|  |   | 5.6GHz               |                      |
|  |   | 5.8GHz               |                      |
|  |   | 5.9GHz               |                      |
|  | 802.11ax  | 6.0GHz               |                      |
|  | Bluetooth   | 2.4GHz               |                      |
| Antenna Information                        | Transmitter   | Main(2)/Chain A      | Aux(1)/Chain B       |
|  | Manufacturer  | Intel WRF Lab        | Intel WRF Lab        |
|  | Antenna type  | PIFA                 | PIFA                 |
|  | Part number   | WRF-Tri Band-Antenna | WRF-Tri Band-Antenna |
|  | Declared Antenna peak gain (dBi)  | +5.59                | +5.59                |
| Channel puncturing and bandwidth reduction | The EUT does not support channel puncturing and bandwidth reduction for incumbent avoidance |                      |                      |

## 6. Remarks and comments

1. No deviations were made from the test methods listed in section 1 of this report.
2. Only the worst-case plot per Bandwidth and test case measurements have been reported excepted for band edge measurements where all plots are reported.
3. This report only presents conducted measurements, for radiated spurious measurements refer to report: 210611-02.TR39 & 211201-01.TR16
4. Full and Partial RU's are supported. Full RU was completely tested as this was considered worse case. Target powers for Full are higher than partial RU. Spot checking was done to confirm this during testing for power and PSD. Only the middle channels partial RU is reported as part of the emissions mask.

## 7. Test Verdicts summary

The statement of conformity to applicable standards in the table below are based on the measured values, without taking into account the measurement uncertainties.

### 7.1. 802.11 ax – U-NII-5 to U-NII-7

| FCC part           | RSS clause                                   | Test name   | Verdict |
|--------------------|--|---|---------|
| 15.407 (a)<br>(10) | RSS-248 Clause 4.4                           | Occupied Bandwidth                                    | P       |
| 15.407 (a)<br>(8)  | RSS-248 Clause 4.5                           | Maximum output power                                  | P       |
| 15.407 (a)<br>(8)  | RSS-248 Clause 4.5                           | Power spectral density                                | P       |
| 15.407 (b)<br>(5)  | RSS-248 Clause 4.6                           | Undesirable emissions limits: out of band (conducted) | P       |
| 15.407 (b)<br>(6)  | RSS-248 Clause 4.6                           | In-Band Emissions (Mask)                              | P       |
| 15.407 (d)<br>(6)  | RSS-248 Clause 4.7                           | Contention based protocol                             | P       |
| 15.407(g)          | RSS-Gen Issue 5<br>Amendment 1 – clause 6.11 | Frequency Stability                                   | P       |
| 15.407(d)          | RSS-248 Clause 4.8                           | Dual Client Test                                      | P       |
| 15.407(d)          | RSS-248 Clause 4.8.3                         | Proper Power Adjustment                               | P       |

P: Pass

F: Fail

NM: Not Measured

NA: Not Applicable

## 8. Document Revision History

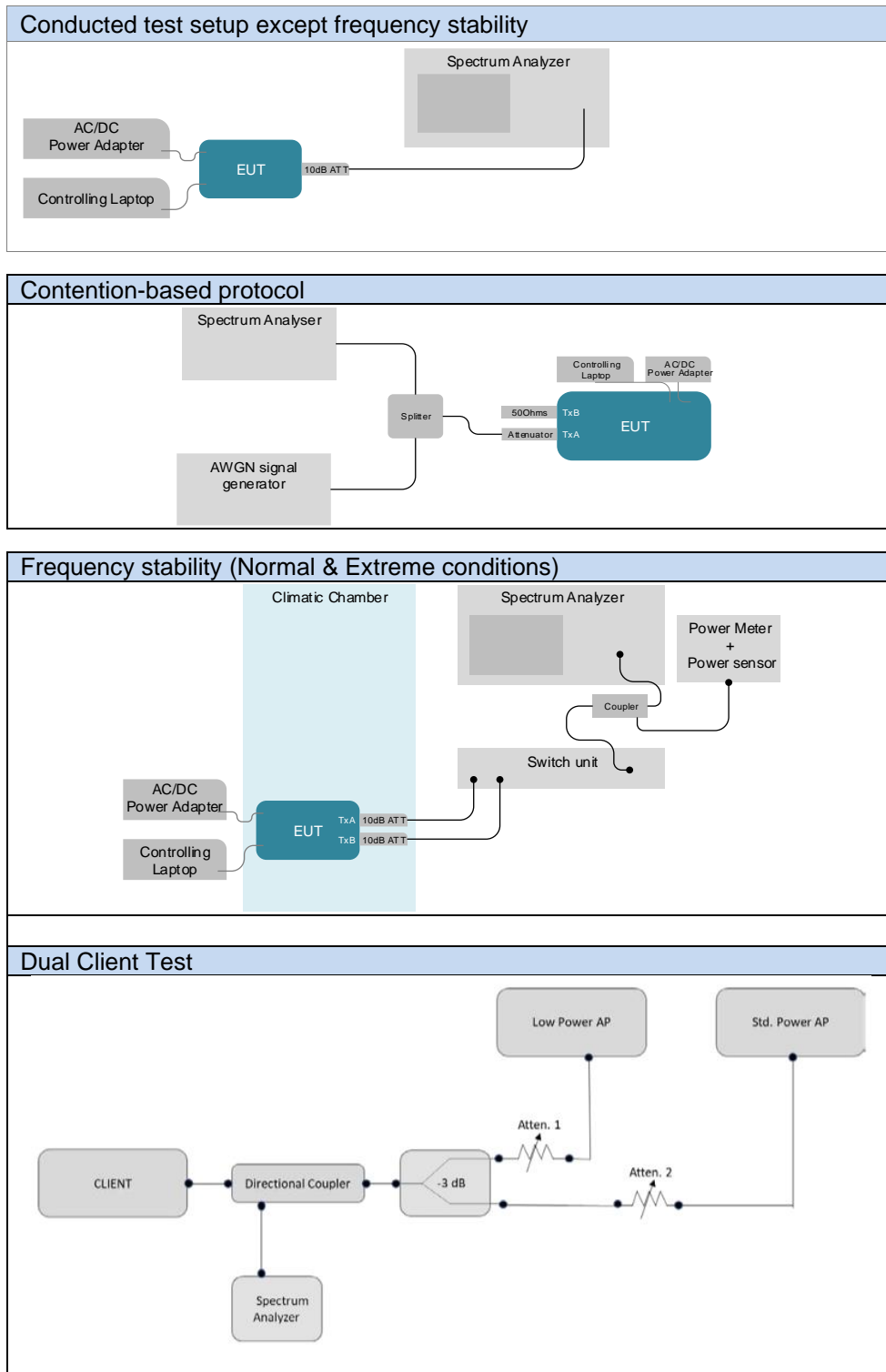
| Revision # | Modified by | Revision Details |
|------------|-------------|------------------|
| Rev. 00    | T.MATHIEU   | First Issue      |

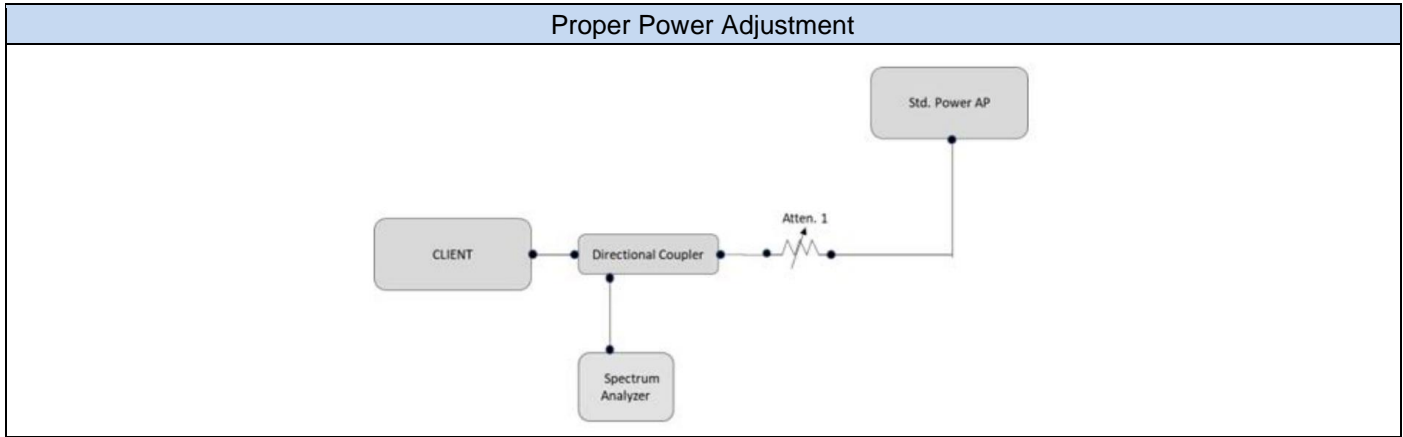
# Annex A. Test & System Description

## A.1 Measurement System

Measurements were performed using these following setups.

The DUT was installed in a test fixture and this test fixture is connected to a laptop computer and AC/DC power adapter. The laptop computer was used to configure the EUT to continuously transmit at a specified output power using all different modes and modulation schemes, using the Intel proprietary tool DRTU.







## A.2 Test Equipment List

### Conducted setup

| ID#     | Device                  | Type/Model    | Serial #    | Manufacturer    | Cal. Date  | Cal. Due Date |
|---------|-------------------------|---------------|-------------|-----------------|------------|---------------|
| 265-000 | Spectrum Analyzer       | FSV30         | 103318      | Rohde & Schwarz | 2023-11-06 | 2025-11-06    |
| 280-000 | Spectrum Analyzer       | FSV30         | 103310      | Rohde & Schwarz | 2024-03-22 | 2026-03-22    |
| 019-003 | SMA-SMA 100cm cable     | FLC-1M-SMSM+  | 21112742    | Mini-Circuits   | 2024-02-21 | 2025-02-21    |
| 019-004 | 6dB Attenuator + MH4    | 3M-6          | 71456       | WEINSCHTEL      | 2024-02-21 | 2025-02-21    |
| 363-000 | Temp & Humidity Logger  | RA12E-TH1-RAS | RA12-E16EDA | AVITECH         | 2023-09-28 | 2025-09-28    |
| 413-000 | Measurement SW v1.5.4.2 | Octopi        | N/A         | Step AT         | N/A        | N/A           |

N/A: not applicable

### Contention-based protocol

| ID#      | Device                          | Type/Model    | Serial #    | Manufacturer       | Cal. Date  | Cal. Due Date |
|----------|---------------------------------|---------------|-------------|--------------------|------------|---------------|
| 098-000* | Vector Signal generator         | SMW200A       | 103732      | Rohde & Schwarz    | 2020-07-20 | 2022-07-20    |
| 134-000* | Spectrum Analyzer               | FSV13         | 103308      | Rohde & Schwarz    | 2021-04-21 | 2023-04-21    |
| 018-004* | 50 Ohm Load                     | -             | -           | -                  | 2021-08-24 | 2022-02-24    |
| 018-000* | 2 Way SMA Power Divider         | PE2084        | -           | Pasternack         | 2021-08-24 | 2022-02-24    |
| 349-000* | Temp & Humidity Logger          | RA12E-TH1-RAS | RA12-D4F8C3 | Avtech             | 2021-07-30 | 2023-07-30    |
| 018-005* | Cable SMA Male to SMA Male 45CM | FMC0202085-18 | -           | Fairview Microwave | 2021-08-24 | 2022-02-24    |
| 018-006* | Cable SMA Male to SMA Male 45CM | FMC0202085-18 | -           | Fairview Microwave | 2021-08-24 | 2022-02-24    |
| 016-003* | Cable SMA Male to SMA Male 45CM | FMC0202085-18 | -           | Fairview Microwave | 2021-08-24 | 2022-02-24    |

\* Equipment not used during out of calibration period

N/A: Not Applicable

### Frequency stability

| ID#      | Device                   | Type/Model       | Serial #       | Manufacturer    | Cal. Date  | Cal. Due Date |
|----------|--------------------------|------------------|----------------|-----------------|------------|---------------|
| 017-015* | Switch unit              | OSP 120          | 100945         | Rohde & Schwarz | 2020-04-21 | 2022-04-21    |
| 017-003* | DC Power supply          | E3640A           | MY40006885     | Agilent         | N/A        | N/A           |
| 060-000* | Multimeter               | 34401A           | US36054685     | Agilent         | 2020-10-26 | 2022-10-26    |
| 311-000* | Climatic chamber         | SLT34/40         | 56746020930010 | Secasi          | 2021-12-13 | 2023-12-13    |
| 280-000* | Spectrum analyzer        | FSV30            | 103310         | Rohde & Schwarz | 2020-06-03 | 2022-06-03    |
| 017-000* | Measurement Software     | WMS 32 v11.00.00 | 200226         | Rohde & Schwarz | N/A        | N/A           |
| 322-000* | Temp & Humidity Logger   | RA12E-TH1-RAS    | RA12-B89702    | AVTECH          | 2021-09-02 | 2023-09-02    |
| 237-000* | 10dB directional coupler | MC2047-10        | 01-062         | Fairview        | 2021-08-26 | 2022-02-26    |
| 017-005* | RF Cable 0.5m            | PE3CA1039        | -              | Pasternack      | 2021-08-26 | 2022-02-26    |
| 017-007* | Cable SMA Male to ML51-P | HRMP-ML51LP      | DTR178-100RS   | Hirose          | 2021-08-26 | 2022-02-26    |
| 017-008* | Cable SMA Male to ML51-P | HRMP-ML51LP      | DTR178-100RS   | Hirose          | 2021-08-26 | 2022-02-26    |
| 053-000* | Thermometer              | t3000FC          | 46320032       | Fluke           | 2021-11-15 | 2023-11-15    |
| 017-011* | RF Cable 2m              | 0900670672000PJ  | 1936949        | Radiall         | 2021-08-26 | 2022-02-26    |
| 017-012* | RF Cable 2m              | 0900670672000PJ  | 1936947        | Radiall         | 2021-08-26 | 2022-02-26    |
| 017-019* | 10dB attenuator          | -                | -              | Pasternack      | 2021-08-26 | 2022-02-26    |
| 017-020* | 10dB attenuator          | -                | -              | Pasternack      | 2021-08-26 | 2022-02-26    |

\* Equipment not used during out of calibration period

N/A: not applicable

Dual Client and Proper power adjustment tests

| ID#           | Device                  | Type/Model    | Serial #    | Manufacturer    | Cal. Date  | Cal. Due Date |
|---------------|-------------------------|---------------|-------------|-----------------|------------|---------------|
| 503-000       | Spectrum Analyzer       | FSVA3013      | 102318      | Rohde & Schwarz | 2023-08-09 | 2025-08-09    |
| 200904-01.S01 | Laptop                  | HP Opel       | 0000750594  | HP              | N/A        | N/A           |
| 499-000       | Directional Coupler     | PE2CP000-10-  | 2139        | Pasternack      | 2024-02-19 | 2025-02-19    |
| 499-001       | Power Divider           | PE2028        | 1640        | Pasternack      | 2024-02-19 | 2025-02-19    |
| 499-002       | Power Divider           | PE2028        | 1609        | Pasternack      | 2024-02-19 | 2025-02-19    |
| 499-003       | Cable 1.80m K-K         | E40-6FT-KMKM+ | 21101338    | Mini-Circuits   | 2024-02-19 | 2025-02-19    |
| 499-004       | Cable 1.80m K-K         | E40-6FT-KMKM+ | 21101364    | Mini-Circuits   | 2024-02-19 | 2025-02-19    |
| 499-005       | Cable 1.80m K-K         | E40-6FT-KMKM+ | 21101350    | Mini-Circuits   | 2024-02-19 | 2025-02-19    |
| 018-007       | Programmable Attenuator | RCDAT-8000-90 | 12111080069 | Mini-Circuits   | N/A        | N/A           |
| 462-000       | Attenuator              | 8495D         | MY2144103   | Agilent         | N/A        | N/A           |

### A.3 Measurement Uncertainty Evaluation

The system uncertainty evaluation is shown in the table below with a coverage factor of  $k = 2$  to indicate a 95% level of confidence:

| Measurement type          | Uncertainty  | Unit |
|---------------------------|--------------|------|
| Timing                    | $\pm 0.12$   | %    |
| Power Spectral density    | $\pm 1.47$   | dB   |
| Frequency stability       | $\pm 53.0$   | ppm  |
| Occupied bandwidth        | $\pm 2.07$   | %    |
| Conducted Power           | $\pm 1.03$   | dB   |
| Temperature               | $\pm 0.30$   | °C   |
| Supply voltages           | $< \pm 0.01$ | %    |
| Contention Based Protocol | $\pm 1.21$   | dB   |

# Annex B. Test Results

The herein test results were performed by:

| Test case measurement                                 | Test Personnel |
|---|----------------|
| Maximum output power                                  | T.MATHIEU      |
| 26dB and 99% Bandwidth measurement                    | T.MATHIEU      |
| Maximum power spectral density                        | T.MATHIEU      |
| Frequency stability                                   | G.ROUSTAN      |
| Undesirable emissions limits: out of band (conducted) | T.MATHIEU      |
| In-Band Emissions Mask                                | T.MATHIEU      |
| Contention-based Protocol                             | G.ROUSTAN      |
| Dual Client Test                                      | T.MATHIEU      |
| Proper Power Adjustment                               | T.MATHIEU      |

## B.1 Test Conditions

For 802.11ax20 (20 MHz channel bandwidth), 802.11ax40 (40MHz channel bandwidth), 802.11ax80 (80MHz channel bandwidth) and 802.11ax160 (160MHz channel bandwidth) modes the EUT can transmit at both CHAIN A and CHAIN B RF outputs individually, and also simultaneously.

The following data rates were selected based on preliminary testing that identified those rates as the worst cases for output power and spurious levels at the band edges:

| Transmission | Mode     | Bandwidth (MHz) | Worst Case Data Rate |
|--------------|----------|-----------------|----------------------|
| SISO         | 802.11ax | 20              | MCS0                 |
|              |          | 40              | MCS0                 |
|              |          | 80              | MCS0                 |
|              |          | 160             | MCS0                 |
| MIMO         | 802.11ax | 20/40/80/160    | MCS0                 |

## B.2 Test Results Tables

### B.2.1 26dB & 99% Bandwidth

#### Test limits

| FCC part           | RSS part              | Limits  |
|--------------------|-----------------------|---|
| 15.407<br>(a) (10) | RSS-248<br>Clause 4.4 | The maximum transmitter channel bandwidth for U-NII devices in the 5.925-7.125 GHz band is 320 megahertz. |

#### Test procedure

The conducted setup shown in section *Test & System Description* was used to measure the 26dB & 99% bandwidth. The antenna terminal of the EUT is connected to the spectrum analyzer through an attenuator, and the spectrum analyzer reading is compensated to include the RF path loss.

**See Annex C.1.1 for the screenshot results<sup>1</sup>**

#### Results tables

Max value

Maximum bandwidth value highlighted per BW and channel bandwidth over uninterrupted UNII-5 – 7 bands

<sup>1</sup> Only the worst-case plots per BW and channel bandwidth were reported over uninterrupted UNII-5 – 7 bands

**UNI15**

| Bandwidth [MHz] | Mode     | Rate | Channel | Frequency [MHz] | Antenna | 26dB BW [MHz] | 99% BW [MHz] |
|-----------------|----------|------|---------|-----------------|---------|---------------|--------------|
| 20              | 802.11ax | MCS0 | 1       | 5955            | SISO A  | 25.28         | 18.96        |
|                 |          |      |         |                 | SISO B  | 24.08         | 19.04        |
|                 |          |      |         |                 | MIMO A  | 24.32         | 18.96        |
|                 |          |      |         |                 | MIMO B  | 23.52         | 18.96        |
|                 |          |      | 45      | 6175            | SISO A  | 25.52         | 19.04        |
|                 |          |      |         |                 | SISO B  | 25.20         | 19.04        |
|                 |          |      |         |                 | MIMO A  | 39.68         | 19.60        |
|                 |          |      |         |                 | MIMO B  | 23.92         | 18.96        |
|                 |          |      | 93      | 6415            | SISO A  | 26.96         | 19.12        |
|                 |          |      |         |                 | SISO B  | 27.28         | 19.04        |
|                 |          |      |         |                 | MIMO A  | 23.60         | 18.88        |
|                 |          |      |         |                 | MIMO B  | 23.84         | 18.96        |
| 40              | 802.11ax | MCS0 | 3       | 5965            | SISO A  | 43.84         | 37.60        |
|                 |          |      |         |                 | SISO B  | 44.96         | 37.76        |
|                 |          |      |         |                 | MIMO A  | 44.16         | 37.60        |
|                 |          |      |         |                 | MIMO B  | 44.64         | 37.44        |
|                 |          |      | 43      | 6165            | SISO A  | 46.40         | 37.44        |
|                 |          |      |         |                 | SISO B  | 47.84         | 37.76        |
|                 |          |      |         |                 | MIMO A  | 44.16         | 37.60        |
|                 |          |      |         |                 | MIMO B  | 43.36         | 37.60        |
|                 |          |      | 91      | 6405            | SISO A  | 46.56         | 37.76        |
|                 |          |      |         |                 | SISO B  | 47.20         | 37.60        |
|                 |          |      |         |                 | MIMO A  | 44.80         | 37.60        |
|                 |          |      |         |                 | MIMO B  | 44.16         | 37.76        |
| 80              | 802.11ax | MCS0 | 7       | 5985            | SISO A  | 83.52         | 76.80        |
|                 |          |      |         |                 | SISO B  | 84.80         | 76.80        |
|                 |          |      |         |                 | MIMO A  | 84.48         | 77.12        |
|                 |          |      |         |                 | MIMO B  | 83.20         | 76.80        |
|                 |          |      | 39      | 6145            | SISO A  | 84.48         | 76.80        |
|                 |          |      |         |                 | SISO B  | 89.60         | 77.12        |
|                 |          |      |         |                 | MIMO A  | 84.80         | 76.80        |
|                 |          |      |         |                 | MIMO B  | 85.76         | 76.80        |
|                 |          |      | 87      | 6385            | SISO A  | 84.48         | 76.80        |
|                 |          |      |         |                 | SISO B  | 116.48        | 77.12        |
|                 |          |      |         |                 | MIMO A  | 83.52         | 76.80        |
|                 |          |      |         |                 | MIMO B  | 85.44         | 76.80        |
| 160             | 802.11ax | MCS0 | 15      | 6025            | SISO A  | 241.60        | 154.88       |
|                 |          |      |         |                 | SISO B  | 165.44        | 154.88       |
|                 |          |      |         |                 | MIMO A  | 165.44        | 154.88       |
|                 |          |      |         |                 | MIMO B  | 165.12        | 154.88       |
|                 |          |      | 79      | 6345            | SISO A  | 165.12        | 154.88       |
|                 |          |      |         |                 | SISO B  | 165.44        | 154.88       |
|                 |          |      |         |                 | MIMO A  | 166.40        | 154.56       |
|                 |          |      |         |                 | MIMO B  | 164.80        | 154.24       |

NA : Not Applicable

**UNII6**

| Bandwidth [MHz] | Mode     | Rate | Channel | Frequency [MHz] | Antenna | 26dB BW [MHz] | 99% BW [MHz] |
|-----------------|----------|------|---------|-----------------|---------|---------------|--------------|
| 20              | 802.11ax | MCS0 | 97      | 6435            | SISO A  | 29.60         | 19.36        |
|                 |          |      |         |                 | SISO B  | 33.20         | 19.28        |
|                 |          |      |         |                 | MIMO A  | 29.76         | 19.44        |
|                 |          |      |         |                 | MIMO B  | 29.68         | 19.20        |
|                 |          |      | 105     | 6475            | SISO A  | 31.52         | 19.28        |
|                 |          |      |         |                 | SISO B  | 28.48         | 19.28        |
|                 |          |      |         |                 | MIMO A  | 33.36         | 19.36        |
|                 |          |      |         |                 | MIMO B  | 26.48         | 19.36        |
|                 |          |      | 113     | 6515            | SISO A  | 31.84         | 19.28        |
|                 |          |      |         |                 | SISO B  | 31.52         | 19.28        |
|                 |          |      |         |                 | MIMO A  | 31.84         | 19.28        |
|                 |          |      |         |                 | MIMO B  | 27.60         | 19.28        |
| 40              | 802.11ax | MCS0 | 99      | 6445            | SISO A  | 73.92         | 38.40        |
|                 |          |      |         |                 | SISO B  | 49.92         | 38.08        |
|                 |          |      |         |                 | MIMO A  | 67.20         | 38.40        |
|                 |          |      |         |                 | MIMO B  | 45.44         | 38.08        |
|                 |          |      | 107     | 6485            | SISO A  | 49.60         | 38.08        |
|                 |          |      |         |                 | SISO B  | 46.08         | 37.92        |
|                 |          |      |         |                 | MIMO A  | 77.28         | 38.40        |
|                 |          |      |         |                 | MIMO B  | 49.60         | 38.08        |
|                 |          |      | 115     | 6525            | SISO A  | 88.40         | 40.00        |
|                 |          |      |         |                 | SISO B  | 46.00         | 37.92        |
|                 |          |      |         |                 | MIMO A  | 82.60         | 38.88        |
|                 |          |      |         |                 | MIMO B  | 52.20         | 38.08        |
| 80              | 802.11ax | MCS0 | 103     | 6465            | SISO A  | 130.88        | 77.76        |
|                 |          |      |         |                 | SISO B  | 87.04         | 77.12        |
|                 |          |      |         |                 | MIMO A  | 86.72         | 77.12        |
|                 |          |      |         |                 | MIMO B  | 90.24         | 77.12        |
|                 |          |      | 119     | 6545            | SISO A  | 134.72        | 77.76        |
|                 |          |      |         |                 | SISO B  | 88.96         | 77.12        |
|                 |          |      |         |                 | MIMO A  | 88.64         | 77.12        |
|                 |          |      |         |                 | MIMO B  | 87.68         | 77.12        |
| 160             | 802.11ax | MCS0 | 111     | 6505            | SISO A  | 164.80        | 155.52       |
|                 |          |      |         |                 | SISO B  | 165.12        | 154.88       |
|                 |          |      |         |                 | MIMO A  | 165.44        | 154.88       |
|                 |          |      |         |                 | MIMO B  | 165.12        | 154.88       |

NA : Not Applicable

**UNI17**

| Bandwidth [MHz] | Mode     | Rate | Channel | Frequency [MHz] | Antenna | 26dB BW [MHz] | 99% BW [MHz] |
|-----------------|----------|------|---------|-----------------|---------|---------------|--------------|
| 20              | 802.11ax | MCS0 | 117     | 6535            | SISO A  | 26.96         | 19.04        |
|                 |          |      |         |                 | SISO B  | 26.08         | 19.04        |
|                 |          |      |         |                 | MIMO A  | 23.92         | 18.88        |
|                 |          |      |         |                 | MIMO B  | 23.68         | 18.96        |
|                 |          |      | 149     | 6695            | SISO A  | 26.56         | 19.12        |
|                 |          |      |         |                 | SISO B  | 25.36         | 18.96        |
|                 |          |      |         |                 | MIMO A  | 24.32         | 18.96        |
|                 |          |      |         |                 | MIMO B  | 22.88         | 18.96        |
|                 |          |      | 181     | 6855            | SISO A  | 26.32         | 18.96        |
|                 |          |      |         |                 | SISO B  | 24.16         | 18.96        |
|                 |          |      |         |                 | MIMO A  | 24.08         | 18.96        |
|                 |          |      |         |                 | MIMO B  | 22.72         | 18.96        |
| 40              | 802.11ax | MCS0 | 123     | 6565            | SISO A  | 66.24         | 37.92        |
|                 |          |      |         |                 | SISO B  | 44.48         | 37.44        |
|                 |          |      |         |                 | MIMO A  | 46.08         | 37.60        |
|                 |          |      |         |                 | MIMO B  | 44.48         | 37.60        |
|                 |          |      | 147     | 6685            | SISO A  | 66.24         | 37.92        |
|                 |          |      |         |                 | SISO B  | 43.20         | 37.60        |
|                 |          |      |         |                 | MIMO A  | 45.44         | 37.76        |
|                 |          |      |         |                 | MIMO B  | 44.96         | 37.60        |
|                 |          |      | 179     | 6845            | SISO A  | 74.88         | 38.08        |
|                 |          |      |         |                 | SISO B  | 43.84         | 37.60        |
|                 |          |      |         |                 | MIMO A  | 46.24         | 37.76        |
|                 |          |      |         |                 | MIMO B  | 44.00         | 37.44        |
| 80              | 802.11ax | MCS0 | 135     | 6625            | SISO A  | 84.16         | 77.12        |
|                 |          |      |         |                 | SISO B  | 85.76         | 76.80        |
|                 |          |      |         |                 | MIMO A  | 86.08         | 76.80        |
|                 |          |      |         |                 | MIMO B  | 86.40         | 76.80        |
|                 |          |      | 151     | 6705            | SISO A  | 84.48         | 76.80        |
|                 |          |      |         |                 | SISO B  | 85.12         | 77.12        |
|                 |          |      |         |                 | MIMO A  | 88.00         | 77.12        |
|                 |          |      |         |                 | MIMO B  | 86.40         | 76.80        |
|                 |          |      | 167     | 6785            | SISO A  | 88.32         | 76.80        |
|                 |          |      |         |                 | SISO B  | 85.44         | 76.80        |
|                 |          |      |         |                 | MIMO A  | 84.80         | 76.80        |
|                 |          |      |         |                 | MIMO B  | 84.48         | 77.12        |
| 160             | 802.11ax | MCS0 | 143     | 6665            | SISO A  | 165.12        | 155.20       |
|                 |          |      |         |                 | SISO B  | 164.80        | 155.20       |
|                 |          |      |         |                 | MIMO A  | 166.08        | 154.88       |
|                 |          |      |         |                 | MIMO B  | 165.12        | 154.88       |



## B.2.2 Maximum Output power & Maximum power spectral Density

### Test limits

| FCC part          | RSS part                | Limits  |
|-------------------|-------------------------|---|
| 15.407<br>(a) (7) | RSS-248<br>Clause 4.5.5 | For client devices, except for fixed client devices as defined in this subpart, operating under the control of a standard power access point in 5.925– 6.425 GHz and 6.525–6.875 GHz bands : <ul style="list-style-type: none"> <li>▪ the maximum power spectral density must not exceed 17 dBm e.i.r.p. in any 1- megahertz band,</li> <li>▪ the maximum e.i.r.p. over the frequency band of operation must not exceed 30 dBm</li> <li>▪ the device must limit its power to no more than 6 dB below its associated standard power access point's authorized transmit power.</li> </ul> |

### Test procedure

The Maximum Conducted Output Power was measured using the channel integration method over the entire 99% occupied bandwidth according to section E) 2) d) (Method SA-2) of KDB 789033

The maximum power spectral density (PSD) was measured using the method according to section F) (Method SA-2 ) of KDB 789033

In the *measure-and-sum* approach for MIMO mode, the conducted emission level (e.g., transmit power or power in specified bandwidth) is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically in linear power units to determine the total emission level from the device. When MIMO mode is running each single antenna conducted output power is reduced by 3dBi such that MIMO mode does not exceed the output of a single chain in SISO mode.  $SISO\ A\ pwr = SISO\ B\ pwr = MIMO\ pwr\ (1/2\ A\ pwr + 1/2\ B\ pwr)$ .

The EIRP power (dBm) is calculated by adding the declared maximum antenna gain to the measured conducted power in accordance with KDB 662911 D01 v02r01. All transmit signals are completely uncorrelated with each other.

Therefore, Directional gain  $G_{ANT} = +5.59\ dBi$ .

Per KDB 662911 D01 v02r01: MIMO Spacial diversity applies as completely uncorrelated, neither beamforming, whether fixed or adaptative, nor Cyclic Delay Diversity (CDD) technique are used. For further details, refer to 'MIMO Theory of Operation' document.

The conducted setup shown in section *Test & System Description* was used to measure the maximum conducted output power and power spectral density. The antenna terminal of the EUT is connected to the spectrum analyser through an attenuator, and the spectrum analyzer reading is compensated to include the RF path loss.

**See Annex C.1.2 for the screenshot results.**

**Results tables****Duty cycle**

| Bandwidth [MHz] | Mode     | Rate | Antenna | Duty Cycle [%] |
|-----------------|----------|------|---------|----------------|
| 20              | 802.11ax | MCS0 | SISO A  | 98.40          |
|                 |          |      | SISO B  | 98.40          |
|                 |          |      | MIMO A  | 98.60          |
|                 |          |      | MIMO B  | 98.60          |
| 40              | 802.11ax | MCS0 | SISO A  | 98.40          |
|                 |          |      | SISO B  | 98.40          |
|                 |          |      | MIMO A  | 98.30          |
|                 |          |      | MIMO B  | 98.30          |
| 80              | 802.11ax | MCS0 | SISO A  | 98.40          |
|                 |          |      | SISO B  | 98.40          |
|                 |          |      | MIMO A  | 98.40          |
|                 |          |      | MIMO B  | 98.40          |
| 160             | 802.11ax | MCS0 | SISO A  | 98.40          |
|                 |          |      | SISO B  | 98.40          |
|                 |          |      | MIMO A  | 98.30          |
|                 |          |      | MIMO B  | 98.30          |

**Maximum output power**

**UNII5 (FCC & ISED)**

| Mode     | Rate | BW [MHz] | Channel      | Freq [MHz] | Chain        | Ouput Power [dBm] | Max <sup>(1)</sup> Ouput Power [dBm] | Max <sup>(1)</sup> EIRP [dBm] | Max <sup>(1)</sup> Output Power [mW] | Max <sup>(1)(2)</sup> EIRP [mW] | Antenna Gain [dBi] |
|----------|------|----------|--------------|------------|--------------|-------------------|--------------------------------------|-------------------------------|--------------------------------------|---------------------------------|--------------------|
| 802.11ax | MCS0 | 20       | 1            | 5955       | SISO A       | 19.51             | 19.51                                | 25.10                         | 89.33                                | 323.59                          | +5.59              |
|          |      |          |              |            | SISO B       | 19.81             | 19.81                                | 25.40                         | 95.72                                | 346.74                          |                    |
|          |      |          |              |            | MIMO A       | 18.91             | 18.91                                | 24.50                         | 77.80                                | 281.84                          |                    |
|          |      |          |              |            | MIMO B       | 17.86             | 17.86                                | 23.45                         | 61.09                                | 221.31                          |                    |
|          |      |          |              |            | Combined A+B | 21.43             | 21.43                                | 27.02                         | 138.90                               | 503.15                          |                    |
|          |      |          | 45           | 6175       | SISO A       | 20.04             | 20.04                                | 25.63                         | 100.93                               | 365.59                          |                    |
|          |      |          |              |            | SISO B       | 20.07             | 20.07                                | 25.66                         | 101.62                               | 368.13                          |                    |
|          |      |          |              |            | MIMO A       | 18.58             | 18.58                                | 24.17                         | 72.11                                | 261.22                          |                    |
|          |      |          |              |            | MIMO B       | 17.80             | 17.80                                | 23.39                         | 60.26                                | 218.27                          |                    |
|          |      |          | Combined A+B | 21.22      | 21.22        | 26.81             | 132.37                               | 479.49                        |                                      |                                 |                    |
|          |      |          | 93           | 6415       | SISO A       | 20.26             | 20.26                                | 25.85                         | 106.17                               | 384.59                          |                    |
|          |      |          |              |            | SISO B       | 20.25             | 20.25                                | 25.84                         | 105.93                               | 383.71                          |                    |
|          |      |          |              |            | MIMO A       | 18.88             | 18.88                                | 24.47                         | 77.27                                | 279.90                          |                    |
|          |      |          |              |            | MIMO B       | 17.28             | 17.28                                | 22.87                         | 53.46                                | 193.64                          |                    |
|          |      |          |              |            | Combined A+B | 21.16             | 21.16                                | 26.75                         | 130.72                               | 473.54                          |                    |
| 802.11ax | MCS0 | 40       | 3            | 5965       | SISO A       | 19.44             | 19.44                                | 25.03                         | 87.90                                | 318.42                          |                    |
|          |      |          |              |            | SISO B       | 19.70             | 19.70                                | 25.29                         | 93.33                                | 338.06                          |                    |
|          |      |          |              |            | MIMO A       | 19.56             | 19.56                                | 25.15                         | 90.36                                | 327.34                          |                    |
|          |      |          |              |            | MIMO B       | 18.34             | 18.34                                | 23.93                         | 68.23                                | 247.17                          |                    |
|          |      |          |              |            | Combined A+B | 22.00             | 22.00                                | 27.59                         | 158.60                               | 574.51                          |                    |
|          |      |          | 43           | 6165       | SISO A       | 19.97             | 19.97                                | 25.56                         | 99.31                                | 359.75                          |                    |
|          |      |          |              |            | SISO B       | 20.38             | 20.38                                | 25.97                         | 109.14                               | 395.37                          |                    |
|          |      |          |              |            | MIMO A       | 20.01             | 20.01                                | 25.60                         | 100.23                               | 363.08                          |                    |
|          |      |          |              |            | MIMO B       | 18.82             | 18.82                                | 24.41                         | 76.21                                | 276.06                          |                    |
|          |      |          | Combined A+B | 22.47      | 22.47        | 28.06             | 176.44                               | 639.14                        |                                      |                                 |                    |
|          |      |          | 91           | 6405       | SISO A       | 20.17             | 20.17                                | 25.76                         | 103.99                               | 376.70                          |                    |
|          |      |          |              |            | SISO B       | 19.88             | 19.88                                | 25.47                         | 97.27                                | 352.37                          |                    |
|          |      |          |              |            | MIMO A       | 20.14             | 20.14                                | 25.73                         | 103.28                               | 374.11                          |                    |
|          |      |          |              |            | MIMO B       | 18.40             | 18.40                                | 23.99                         | 69.18                                | 250.61                          |                    |
|          |      |          |              |            | Combined A+B | 22.37             | 22.37                                | 27.96                         | 172.46                               | 624.72                          |                    |
| 802.11ax | MCS0 | 80       | 7            | 5985       | SISO A       | 18.88             | 18.98                                | 24.57                         | 79.15                                | 286.72                          |                    |
|          |      |          |              |            | SISO B       | 19.51             | 19.61                                | 25.20                         | 91.51                                | 331.48                          |                    |
|          |      |          |              |            | MIMO A       | 19.95             | 19.95                                | 25.54                         | 98.86                                | 358.10                          |                    |
|          |      |          |              |            | MIMO B       | 18.14             | 18.14                                | 23.73                         | 65.16                                | 236.05                          |                    |
|          |      |          |              |            | Combined A+B | 22.15             | 22.15                                | 27.74                         | 164.02                               | 594.14                          |                    |
|          |      |          | 39           | 6145       | SISO A       | 18.79             | 18.89                                | 24.48                         | 77.53                                | 280.84                          |                    |
|          |      |          |              |            | SISO B       | 20.09             | 20.19                                | 25.78                         | 104.58                               | 378.84                          |                    |
|          |      |          |              |            | MIMO A       | 20.07             | 20.07                                | 25.66                         | 101.62                               | 368.13                          |                    |
|          |      |          |              |            | MIMO B       | 18.70             | 18.70                                | 24.29                         | 74.13                                | 268.53                          |                    |
|          |      |          |              |            | Combined A+B | 22.45             | 22.45                                | 28.04                         | 175.76                               | 636.66                          |                    |
|          |      |          | 87           | 6385       | SISO A       | 18.70             | 18.80                                | 24.39                         | 75.94                                | 275.08                          |                    |
|          |      |          |              |            | SISO B       | 19.93             | 20.03                                | 25.62                         | 100.80                               | 365.14                          |                    |
|          |      |          |              |            | MIMO A       | 19.96             | 19.96                                | 25.55                         | 99.08                                | 358.92                          |                    |
|          |      |          |              |            | MIMO B       | 18.76             | 18.76                                | 24.35                         | 75.16                                | 272.27                          |                    |
|          |      |          |              |            | Combined A+B | 22.41             | 22.41                                | 28.00                         | 174.25                               | 631.19                          |                    |

| Mode     | Rate  | BW [MHz] | Channel | Freq [MHz] | Chain        | Ouput Power [dBm] | Max <sup>(1)</sup> Ouput Power [dBm] | Max <sup>(1)</sup> EIRP [dBm] | Max <sup>(1)</sup> Output Power [mW] | Max <sup>(1)(2)</sup> EIRP [mW] | Antenna Gain [dBi] |
|----------|-------|----------|---------|------------|--------------|-------------------|--------------------------------------|-------------------------------|--------------------------------------|---------------------------------|--------------------|
| 802.11ax | MCSSO | 160      | 15      | 6025       | SISO A       | 16.87             | 16.87                                | 22.46                         | 48.64                                | 176.20                          | +5.59              |
|          |       |          |         |            | SISO B       | 16.57             | 16.57                                | 22.16                         | 45.39                                | 164.44                          |                    |
|          |       |          |         |            | MIMO A       | 16.76             | 16.90                                | 22.49                         | 48.97                                | 177.40                          |                    |
|          |       |          |         |            | MIMO B       | 15.64             | 15.78                                | 21.37                         | 37.84                                | 137.07                          |                    |
|          |       |          |         |            | Combined A+B | 19.25             | 19.39                                | 24.98                         | 86.81                                | 314.47                          |                    |
|          |       |          | 79      | 6345       | SISO A       | 17.15             | 17.15                                | 22.74                         | 51.88                                | 187.93                          |                    |
|          |       |          |         |            | SISO B       | 17.12             | 17.12                                | 22.71                         | 51.52                                | 186.64                          |                    |
|          |       |          |         |            | MIMO A       | 16.76             | 16.90                                | 22.49                         | 48.97                                | 177.40                          |                    |
|          |       |          |         |            | MIMO B       | 15.60             | 15.74                                | 21.33                         | 37.49                                | 135.81                          |                    |
|          |       |          |         |            | Combined A+B | 19.23             | 19.37                                | 24.96                         | 86.46                                | 313.21                          |                    |

(1) Value compensated with the duty cycle

(2) Max/Min value highlighted per bandwidth

**UNII6 (Only ISED)**

| Mode     | Rate  | BW [MHz] | Channel | Freq [MHz] | Chain        | Ouput Power [dBm] | Max <sup>(1)</sup> Ouput Power [dBm] | Max <sup>(1)</sup> EIRP [dBm] | Max <sup>(1)</sup> Output Power [mW] | Max <sup>(1)(2)</sup> EIRP [mW] | Antenna Gain [dBi] |
|----------|-------|----------|---------|------------|--------------|-------------------|--------------------------------------|-------------------------------|--------------------------------------|---------------------------------|--------------------|
| 802.11ax | MCSSO | 20       | 97      | 6435       | SISO A       | 16.95             | 16.95                                | 22.54                         | 49.55                                | 179.47                          | +5.59              |
|          |       |          |         |            | SISO B       | 16.31             | 16.31                                | 21.90                         | 42.76                                | 154.88                          |                    |
|          |       |          |         |            | MIMO A       | 16.60             | 16.60                                | 22.19                         | 45.71                                | 165.58                          |                    |
|          |       |          |         |            | MIMO B       | 15.71             | 15.71                                | 21.30                         | 37.24                                | 134.90                          |                    |
|          |       |          |         |            | Combined A+B | 19.19             | 19.19                                | 24.78                         | 82.95                                | 300.47                          |                    |
|          |       |          | 105     | 6475       | SISO A       | 16.97             | 16.97                                | 22.56                         | 49.77                                | 180.30                          |                    |
|          |       |          |         |            | SISO B       | 15.81             | 15.81                                | 21.40                         | 38.11                                | 138.04                          |                    |
|          |       |          |         |            | MIMO A       | 16.69             | 16.69                                | 22.28                         | 46.67                                | 169.04                          |                    |
|          |       |          |         |            | MIMO B       | 15.18             | 15.18                                | 20.77                         | 32.96                                | 119.40                          |                    |
|          |       |          |         |            | Combined A+B | 19.01             | 19.01                                | 24.60                         | 79.63                                | 288.44                          |                    |
|          |       |          | 113     | 6515       | SISO A       | 17.35             | 17.35                                | 22.94                         | 54.33                                | 196.79                          |                    |
|          |       |          |         |            | SISO B       | 15.68             | 15.68                                | 21.27                         | 36.98                                | 133.97                          |                    |
|          |       |          |         |            | MIMO A       | 16.76             | 16.76                                | 22.35                         | 47.42                                | 171.79                          |                    |
|          |       |          |         |            | MIMO B       | 15.01             | 15.01                                | 20.60                         | 31.70                                | 114.82                          |                    |
|          |       |          |         |            | Combined A+B | 18.98             | 18.98                                | 24.57                         | 79.12                                | 286.61                          |                    |
| 802.11ax | MCSSO | 40       | 99      | 6445       | SISO A       | 14.14             | 14.14                                | 19.73                         | 25.94                                | 93.97                           | +5.59              |
|          |       |          |         |            | SISO B       | 15.72             | 15.72                                | 21.31                         | 37.33                                | 135.21                          |                    |
|          |       |          |         |            | MIMO A       | 13.90             | 13.90                                | 19.49                         | 24.55                                | 88.92                           |                    |
|          |       |          |         |            | MIMO B       | 15.39             | 15.39                                | 20.98                         | 34.59                                | 125.31                          |                    |
|          |       |          |         |            | Combined A+B | 17.72             | 17.72                                | 23.31                         | 59.14                                | 214.23                          |                    |
|          |       |          | 107     | 6485       | SISO A       | 14.51             | 14.51                                | 20.10                         | 28.25                                | 102.33                          |                    |
|          |       |          |         |            | SISO B       | 15.04             | 15.04                                | 20.63                         | 31.92                                | 115.61                          |                    |
|          |       |          |         |            | MIMO A       | 13.17             | 13.17                                | 18.76                         | 20.75                                | 75.16                           |                    |
|          |       |          |         |            | MIMO B       | 15.45             | 15.45                                | 21.04                         | 35.08                                | 127.06                          |                    |

| Mode     | Rate | BW [MHz] | Channel | Freq [MHz] | Chain        | Ouput Power [dBm] | Max <sup>(1)</sup> Ouput Power [dBm] | Max <sup>(1)</sup> EIRP [dBm] | Max <sup>(1)</sup> Output Power [mW] | Max <sup>(1)(2)</sup> EIRP [mW] | Antenna Gain [dBi] |
|----------|------|----------|---------|------------|--------------|-------------------|--------------------------------------|-------------------------------|--------------------------------------|---------------------------------|--------------------|
|          |      |          | 115     | 6525       | Combined A+B | 17.47             | 17.47                                | 23.06                         | 55.82                                | 202.22                          |                    |
|          |      |          |         |            | SISO A       | 13.67             | 13.67                                | 19.26                         | 23.28                                | 84.33                           |                    |
|          |      |          |         |            | SISO B       | 15.01             | 15.01                                | 20.60                         | 31.70                                | 114.82                          |                    |
|          |      |          |         |            | MIMO A       | 13.50             | 13.50                                | 19.09                         | 22.39                                | 81.10                           |                    |
|          |      |          |         |            | MIMO B       | 14.46             | 14.46                                | 20.05                         | 27.93                                | 101.16                          |                    |
|          |      |          |         |            | Combined A+B | 17.02             | 17.02                                | 22.61                         | 50.31                                | 182.25                          |                    |
| 802.11ax | MCS0 | 80       | 103     | 6465       | SISO A       | 19.70             | 19.80                                | 25.39                         | 95.60                                | 346.31                          |                    |
|          |      |          |         |            | SISO B       | 16.40             | 16.50                                | 22.09                         | 44.72                                | 161.98                          |                    |
|          |      |          |         |            | MIMO A       | 17.29             | 17.29                                | 22.88                         | 53.58                                | 194.09                          |                    |
|          |      |          |         |            | MIMO B       | 16.27             | 16.27                                | 21.86                         | 42.36                                | 153.46                          |                    |
|          |      |          |         |            | Combined A+B | 19.82             | 19.82                                | 25.41                         | 95.94                                | 347.55                          |                    |
|          |      |          | 119     | 6545       | SISO A       | 19.53             | 19.63                                | 25.22                         | 91.93                                | 333.01                          |                    |
|          |      |          |         |            | SISO B       | 16.26             | 16.36                                | 21.95                         | 43.30                                | 156.84                          |                    |
|          |      |          |         |            | MIMO A       | 17.27             | 17.27                                | 22.86                         | 53.33                                | 193.20                          |                    |
|          |      |          |         |            | MIMO B       | 16.12             | 16.12                                | 21.71                         | 40.93                                | 148.25                          |                    |
|          |      |          |         |            | Combined A+B | 19.74             | 19.74                                | 25.33                         | 94.26                                | 341.45                          |                    |
| 802.11ax | MCS0 | 160      | 111     | 6505       | SISO A       | 17.76             | 17.76                                | 23.35                         | 59.70                                | 216.27                          |                    |
|          |      |          |         |            | SISO B       | 15.82             | 15.82                                | 21.41                         | 38.19                                | 138.36                          |                    |
|          |      |          |         |            | MIMO A       | 16.66             | 16.80                                | 22.39                         | 47.86                                | 173.36                          |                    |
|          |      |          |         |            | MIMO B       | 15.54             | 15.68                                | 21.27                         | 36.98                                | 133.95                          |                    |
|          |      |          |         |            | Combined A+B | 19.15             | 19.29                                | 24.88                         | 84.84                                | 307.31                          |                    |

(1) Value compensated with the duty cycle  
(2) Max/Min value highlighted per bandwidth

**UNII7 (FCC & ISED)**

| Mode     | Rate | BW [MHz] | Channel      | Freq [MHz] | Chain        | Ouput Power [dBm] | Max <sup>(1)</sup> Ouput Power [dBm] | Max <sup>(1)</sup> EIRP [dBm] | Max <sup>(1)</sup> Output Power [mW] | Max <sup>(1)(2)</sup> EIRP [mW] | Antenna Gain [dBi] |
|----------|------|----------|--------------|------------|--------------|-------------------|--------------------------------------|-------------------------------|--------------------------------------|---------------------------------|--------------------|
| 802.11ax | MCSO | 20       | 117          | 6535       | SISO A       | 20.26             | 20.26                                | 25.85                         | 106.17                               | 384.59                          |                    |
|          |      |          |              |            | SISO B       | 19.69             | 19.69                                | 25.28                         | 93.11                                | 337.29                          |                    |
|          |      |          |              |            | MIMO A       | 18.65             | 18.65                                | 24.24                         | 73.28                                | 265.46                          |                    |
|          |      |          |              |            | MIMO B       | 17.66             | 17.66                                | 23.25                         | 58.34                                | 211.35                          |                    |
|          |      |          |              |            | Combined A+B | 21.19             | 21.19                                | 26.78                         | 131.63                               | 476.81                          |                    |
|          |      |          | 149          | 6695       | SISO A       | 19.71             | 19.71                                | 25.30                         | 93.54                                | 338.84                          |                    |
|          |      |          |              |            | SISO B       | 19.61             | 19.61                                | 25.20                         | 91.41                                | 331.13                          |                    |
|          |      |          |              |            | MIMO A       | 18.62             | 18.62                                | 24.21                         | 72.78                                | 263.63                          |                    |
|          |      |          |              |            | MIMO B       | 17.06             | 17.06                                | 22.65                         | 50.82                                | 184.08                          |                    |
|          |      |          | Combined A+B | 20.92      | 20.92        | 26.51             | 123.59                               | 447.71                        |                                      |                                 |                    |
|          |      |          | 181          | 6855       | SISO A       | 20.08             | 20.08                                | 25.67                         | 101.86                               | 368.98                          |                    |
|          |      |          |              |            | SISO B       | 19.41             | 19.41                                | 25.00                         | 87.30                                | 316.23                          |                    |
|          |      |          |              |            | MIMO A       | 18.76             | 18.76                                | 24.35                         | 75.16                                | 272.27                          |                    |
|          |      |          |              |            | MIMO B       | 17.65             | 17.65                                | 23.24                         | 58.21                                | 210.86                          |                    |
|          |      |          |              |            | Combined A+B | 21.25             | 21.25                                | 26.84                         | 133.37                               | 483.13                          |                    |
| 802.11ax | MCSO | 40       | 123          | 6565       | SISO A       | 19.92             | 19.92                                | 25.51                         | 98.17                                | 355.63                          | +5.59              |
|          |      |          |              |            | SISO B       | 18.62             | 18.62                                | 24.21                         | 72.78                                | 263.63                          |                    |
|          |      |          |              |            | MIMO A       | 20.01             | 20.01                                | 25.60                         | 100.23                               | 363.08                          |                    |
|          |      |          |              |            | MIMO B       | 18.32             | 18.32                                | 23.91                         | 67.92                                | 246.04                          |                    |
|          |      |          |              |            | Combined A+B | 22.26             | 22.26                                | 27.85                         | 168.15                               | 609.11                          |                    |
|          |      |          | 147          | 6685       | SISO A       | 19.81             | 19.81                                | 25.40                         | 95.72                                | 346.74                          |                    |
|          |      |          |              |            | SISO B       | 19.18             | 19.18                                | 24.77                         | 82.79                                | 299.92                          |                    |
|          |      |          |              |            | MIMO A       | 19.96             | 19.96                                | 25.55                         | 99.08                                | 358.92                          |                    |
|          |      |          |              |            | MIMO B       | 18.88             | 18.88                                | 24.47                         | 77.27                                | 279.90                          |                    |
|          |      |          | Combined A+B | 22.46      | 22.46        | 28.05             | 176.35                               | 638.82                        |                                      |                                 |                    |
|          |      |          | 179          | 6845       | SISO A       | 19.54             | 19.54                                | 25.13                         | 89.95                                | 325.84                          |                    |
|          |      |          |              |            | SISO B       | 18.25             | 18.25                                | 23.84                         | 66.83                                | 242.10                          |                    |
|          |      |          |              |            | MIMO A       | 19.95             | 19.95                                | 25.54                         | 98.86                                | 358.10                          |                    |
|          |      |          |              |            | MIMO B       | 19.00             | 19.00                                | 24.59                         | 79.43                                | 287.74                          |                    |
|          |      |          |              |            | Combined A+B | 22.51             | 22.51                                | 28.10                         | 178.29                               | 645.84                          |                    |
| 802.11ax | MCSO | 80       | 135          | 6625       | SISO A       | 18.26             | 18.36                                | 23.95                         | 68.62                                | 248.58                          |                    |
|          |      |          |              |            | SISO B       | 18.95             | 19.05                                | 24.64                         | 80.44                                | 291.38                          |                    |
|          |      |          |              |            | MIMO A       | 19.88             | 19.88                                | 25.47                         | 97.27                                | 352.37                          |                    |
|          |      |          |              |            | MIMO B       | 18.63             | 18.63                                | 24.22                         | 72.95                                | 264.24                          |                    |
|          |      |          |              |            | Combined A+B | 22.31             | 22.31                                | 27.90                         | 170.22                               | 616.61                          |                    |
|          |      |          | 151          | 6705       | SISO A       | 19.34             | 19.44                                | 25.03                         | 88.00                                | 318.76                          |                    |
|          |      |          |              |            | SISO B       | 18.77             | 18.87                                | 24.46                         | 77.17                                | 279.55                          |                    |
|          |      |          |              |            | MIMO A       | 19.52             | 19.52                                | 25.11                         | 89.54                                | 324.34                          |                    |
|          |      |          |              |            | MIMO B       | 18.55             | 18.55                                | 24.14                         | 71.61                                | 259.42                          |                    |
|          |      |          | Combined A+B | 22.07      | 22.07        | 27.66             | 161.15                               | 583.76                        |                                      |                                 |                    |
|          |      |          | 167          | 6785       | SISO A       | 17.28             | 17.38                                | 22.97                         | 54.76                                | 198.36                          |                    |
|          |      |          |              |            | SISO B       | 18.87             | 18.97                                | 24.56                         | 78.97                                | 286.06                          |                    |
|          |      |          |              |            | MIMO A       | 19.59             | 19.59                                | 25.18                         | 90.99                                | 329.61                          |                    |
|          |      |          |              |            | MIMO B       | 18.65             | 18.65                                | 24.24                         | 73.28                                | 265.46                          |                    |
|          |      |          |              |            | Combined A+B | 22.16             | 22.16                                | 27.75                         | 164.27                               | 595.07                          |                    |
| 802.11ax | MCSO | 160      | 143          | 6665       | SISO A       | 17.48             | 17.48                                | 23.07                         | 55.98                                | 202.77                          |                    |
|          |      |          |              |            | SISO B       | 15.59             | 15.59                                | 21.18                         | 36.22                                | 131.22                          |                    |
|          |      |          |              |            | MIMO A       | 16.53             | 16.67                                | 22.26                         | 46.45                                | 168.25                          |                    |
|          |      |          |              |            | MIMO B       | 15.52             | 15.66                                | 21.25                         | 36.81                                | 133.34                          |                    |
|          |      |          |              |            | Combined A+B | 19.06             | 19.20                                | 24.79                         | 83.25                                | 301.58                          |                    |

(1) Value compensated with the duty cycle

(2) Max/Min value highlighted per bandwidth

**Maximum Power Spectral Density (PSD)****UNII5 (FCC & ISSED)**

| Mode     | Rate | Rate | Channel | Freq. [MHz] | Antenna      | PSD [dBm/MHz] | Max <sup>(1)</sup> PSD [dBm/MHz] | Max <sup>(1)</sup> PSD EIRP [dBm/MHz] | Antenna Gain [dBi] |
|----------|------|------|---------|-------------|--------------|---------------|----------------------------------|---------------------------------------|--------------------|
| 802.11ax | MCS0 | 20   | 1       | 5955        | SISO A       | 8.72          | 8.72                             | 14.31                                 | +5.59              |
|          |      |      |         |             | SISO B       | 8.97          | 8.97                             | 14.56                                 |                    |
|          |      |      |         |             | MIMO A       | 8.33          | 8.33                             | 13.92                                 |                    |
|          |      |      |         |             | MIMO B       | 7.15          | 7.15                             | 12.74                                 |                    |
|          |      |      |         |             | Combined A+B | 10.79         | 10.79                            | 16.38                                 |                    |
|          |      |      | 45      | 6175        | SISO A       | 9.33          | 9.33                             | 14.92                                 |                    |
|          |      |      |         |             | SISO B       | 9.30          | 9.30                             | 14.89                                 |                    |
|          |      |      |         |             | MIMO A       | 6.70          | 6.70                             | 12.29                                 |                    |
|          |      |      |         |             | MIMO B       | 6.95          | 6.95                             | 12.54                                 |                    |
|          |      |      |         |             | Combined A+B | 9.84          | 9.84                             | 15.43                                 |                    |
|          |      |      | 93      | 6415        | SISO A       | 9.35          | 9.35                             | 14.94                                 |                    |
|          |      |      |         |             | SISO B       | 9.42          | 9.42                             | 15.01                                 |                    |
|          |      |      |         |             | MIMO A       | 8.29          | 8.29                             | 13.88                                 |                    |
|          |      |      |         |             | MIMO B       | 6.58          | 6.58                             | 12.17                                 |                    |
|          |      |      |         |             | Combined A+B | 10.53         | 10.53                            | 16.12                                 |                    |
| 802.11ax | MCS0 | 40   | 3       | 5965        | SISO A       | 5.35          | 5.35                             | 10.94                                 |                    |
|          |      |      |         |             | SISO B       | 5.67          | 5.67                             | 11.26                                 |                    |
|          |      |      |         |             | MIMO A       | 5.35          | 5.35                             | 10.94                                 |                    |
|          |      |      |         |             | MIMO B       | 4.34          | 4.34                             | 9.93                                  |                    |
|          |      |      |         |             | Combined A+B | 7.88          | 7.88                             | 13.47                                 |                    |
|          |      |      | 43      | 6165        | SISO A       | 5.89          | 5.89                             | 11.48                                 |                    |
|          |      |      |         |             | SISO B       | 6.28          | 6.28                             | 11.87                                 |                    |
|          |      |      |         |             | MIMO A       | 5.83          | 5.83                             | 11.42                                 |                    |
|          |      |      |         |             | MIMO B       | 4.85          | 4.85                             | 10.44                                 |                    |
|          |      |      |         |             | Combined A+B | 8.38          | 8.38                             | 13.97                                 |                    |
|          |      |      | 91      | 6405        | SISO A       | 5.97          | 5.97                             | 11.56                                 |                    |
|          |      |      |         |             | SISO B       | 5.97          | 5.97                             | 11.56                                 |                    |
|          |      |      |         |             | MIMO A       | 5.96          | 5.96                             | 11.55                                 |                    |
|          |      |      |         |             | MIMO B       | 4.31          | 4.31                             | 9.90                                  |                    |
|          |      |      |         |             | Combined A+B | 8.22          | 8.22                             | 13.81                                 |                    |
| 802.11ax | MCS0 | 80   | 7       | 5985        | SISO A       | 1.69          | 1.79                             | 7.38                                  |                    |
|          |      |      |         |             | SISO B       | 2.35          | 2.45                             | 8.04                                  |                    |
|          |      |      |         |             | MIMO A       | 2.71          | 2.71                             | 8.30                                  |                    |
|          |      |      |         |             | MIMO B       | 0.92          | 0.92                             | 6.51                                  |                    |
|          |      |      |         |             | Combined A+B | 4.92          | 4.92                             | 10.51                                 |                    |
|          |      |      | 39      | 6145        | SISO A       | 1.60          | 1.70                             | 7.29                                  |                    |
|          |      |      |         |             | SISO B       | 2.90          | 3.00                             | 8.59                                  |                    |
|          |      |      |         |             | MIMO A       | 3.09          | 3.09                             | 8.68                                  |                    |
|          |      |      |         |             | MIMO B       | 1.67          | 1.67                             | 7.26                                  |                    |
|          |      |      |         |             | Combined A+B | 5.45          | 5.45                             | 11.04                                 |                    |
|          |      |      | 87      | 6385        | SISO A       | 1.60          | 1.70                             | 7.29                                  |                    |
|          |      |      |         |             | SISO B       | 2.88          | 2.98                             | 8.57                                  |                    |
|          |      |      |         |             | MIMO A       | 2.74          | 2.74                             | 8.33                                  |                    |
|          |      |      |         |             | MIMO B       | 1.65          | 1.65                             | 7.24                                  |                    |
|          |      |      |         |             | Combined A+B | 5.24          | 5.24                             | 10.83                                 |                    |

| Mode     | Rate | Rate | Channel | Freq. [MHz] | Antenna      | PSD [dBm/MHz] | Max <sup>(1)</sup> PSD [dBm/MHz] | Max <sup>(1)</sup> PSD EIRP [dBm/MHz] | Antenna Gain [dBi] |
|----------|------|------|---------|-------------|--------------|---------------|----------------------------------|---------------------------------------|--------------------|
| 802.11ax | MCS0 | 160  | 15      | 6025        | SISO A       | -2.98         | -2.98                            | 2.61                                  | +5.59              |
|          |      |      |         |             | SISO B       | -3.12         | -3.12                            | 2.47                                  |                    |
|          |      |      |         |             | MIMO A       | -3.11         | -2.97                            | 2.62                                  |                    |
|          |      |      |         |             | MIMO B       | -4.18         | -4.04                            | 1.55                                  |                    |
|          |      |      |         |             | Combined A+B | -0.60         | -0.46                            | 5.13                                  |                    |
|          |      |      | 79      | 6345        | SISO A       | -2.61         | -2.61                            | 2.98                                  |                    |
|          |      |      |         |             | SISO B       | -2.68         | -2.68                            | 2.91                                  |                    |
|          |      |      |         |             | MIMO A       | -2.87         | -2.73                            | 2.86                                  |                    |
|          |      |      |         |             | MIMO B       | -4.06         | -3.92                            | 1.67                                  |                    |
|          |      |      |         |             | Combined A+B | -0.41         | -0.27                            | 5.32                                  |                    |

<sup>(1)</sup> Value compensated with the duty cycle



**UNII6 (Only ISED)**

| Mode         | Rate  | Rate         | Channel | Freq. [MHz] | Antenna      | PSD [dBm/MHz] | Max <sup>(1)</sup> PSD [dBm/MHz] | Max <sup>(1)</sup> PSD EIRP [dBm/MHz] | Antenna Gain [dBi] |
|--------------|-------|--------------|---------|-------------|--------------|---------------|----------------------------------|---------------------------------------|--------------------|
| 802.11ax     | MCS0  | 20           | 97      | 6435        | SISO A       | 5.16          | 5.16                             | 10.75                                 | +5.59              |
|              |       |              |         |             | SISO B       | 4.65          | 4.65                             | 10.24                                 |                    |
|              |       |              |         |             | MIMO A       | 4.80          | 4.80                             | 10.39                                 |                    |
|              |       |              |         |             | MIMO B       | 3.92          | 3.92                             | 9.51                                  |                    |
|              |       |              |         |             | Combined A+B | 7.39          | 7.39                             | 12.98                                 |                    |
|              |       |              | 105     | 6475        | SISO A       | 5.01          | 5.01                             | 10.60                                 |                    |
|              |       |              |         |             | SISO B       | 3.94          | 3.94                             | 9.53                                  |                    |
|              |       |              |         |             | MIMO A       | 4.82          | 4.82                             | 10.41                                 |                    |
|              |       |              |         |             | MIMO B       | 3.32          | 3.32                             | 8.91                                  |                    |
|              |       |              | 113     | 6515        | SISO A       | 5.58          | 5.58                             | 11.17                                 |                    |
|              |       |              |         |             | SISO B       | 3.83          | 3.83                             | 9.42                                  |                    |
|              |       |              |         |             | MIMO A       | 5.02          | 5.02                             | 10.61                                 |                    |
|              |       |              |         |             | MIMO B       | 3.19          | 3.19                             | 8.78                                  |                    |
|              |       |              |         |             | Combined A+B | 7.21          | 7.21                             | 12.80                                 |                    |
|              |       |              |         |             | 802.11ax     | MCS0          | 40                               | 99                                    |                    |
| SISO B       | 0.80  | 0.80         | 6.39    |             |              |               |                                  |                                       |                    |
| MIMO A       | -1.07 | -1.07        | 4.52    |             |              |               |                                  |                                       |                    |
| MIMO B       | 0.64  | 0.64         | 6.23    |             |              |               |                                  |                                       |                    |
| Combined A+B | 2.88  | 2.88         | 8.47    |             |              |               |                                  |                                       |                    |
| 107          | 6485  | SISO A       | -0.39   | -0.39       |              |               |                                  | 5.20                                  |                    |
|              |       | SISO B       | 0.14    | 0.14        |              |               |                                  | 5.73                                  |                    |
|              |       | MIMO A       | -1.62   | -1.62       |              |               |                                  | 3.97                                  |                    |
|              |       | MIMO B       | 0.50    | 0.50        |              |               |                                  | 6.09                                  |                    |
|              |       | Combined A+B | 2.58    | 2.58        |              |               |                                  | 8.17                                  |                    |
| 115          | 6525  | SISO A       | -1.21   | -1.21       |              |               |                                  | 4.38                                  |                    |
|              |       | SISO B       | 0.11    | 0.11        |              |               |                                  | 5.70                                  |                    |
|              |       | MIMO A       | -1.35   | -1.35       |              |               |                                  | 4.24                                  |                    |
|              |       | MIMO B       | -0.08   | -0.08       |              |               |                                  | 5.51                                  |                    |
|              |       | Combined A+B | 2.34    | 2.34        |              |               |                                  | 7.93                                  |                    |
| 802.11ax     | MCS0  | 80           | 103     | 6465        | SISO A       | 2.58          | 2.68                             | 8.27                                  | +5.59              |
|              |       |              |         |             | SISO B       | -0.77         | -0.67                            | 4.92                                  |                    |
|              |       |              |         |             | MIMO A       | 0.12          | 0.12                             | 5.71                                  |                    |
|              |       |              |         |             | MIMO B       | -0.81         | -0.81                            | 4.78                                  |                    |
|              |       |              |         |             | Combined A+B | 2.69          | 2.69                             | 8.28                                  |                    |
|              |       |              | 119     | 6545        | SISO A       | 2.50          | 2.60                             | 8.19                                  |                    |
|              |       |              |         |             | SISO B       | -0.89         | -0.79                            | 4.80                                  |                    |
|              |       |              |         |             | MIMO A       | 0.03          | 0.03                             | 5.62                                  |                    |
|              |       |              |         |             | MIMO B       | -1.07         | -1.07                            | 4.52                                  |                    |
|              |       |              |         |             | Combined A+B | 2.53          | 2.53                             | 8.12                                  |                    |
| 802.11ax     | MCS0  | 160          | 111     | 6505        | SISO A       | -2.04         | -2.04                            | 3.55                                  | +5.59              |
|              |       |              |         |             | SISO B       | -3.90         | -3.90                            | 1.69                                  |                    |
|              |       |              |         |             | MIMO A       | -3.17         | -3.03                            | 2.56                                  |                    |
|              |       |              |         |             | MIMO B       | -4.06         | -3.92                            | 1.67                                  |                    |
|              |       |              |         |             | Combined A+B | -0.58         | -0.44                            | 5.15                                  |                    |

<sup>(1)</sup> Value compensated with the duty cycle

**UNII7 (FCC & ISED)**

| Mode     | Rate | Rate | Channel      | Freq. [MHz] | Antenna      | PSD [dBm/MHz] | Max <sup>(1)</sup> PSD [dBm/MHz] | Max <sup>(1)</sup> PSD EIRP [dBm/MHz] <sub>v</sub> | Antenna Gain [dBi] |
|----------|------|------|--------------|-------------|--------------|---------------|----------------------------------|--|--------------------|
| 802.11ax | MCS0 | 20   | 117          | 6535        | SISO A       | 9.68          | 9.68                             | 15.27  | +5.59              |
|          |      |      |              |             | SISO B       | 8.98          | 8.98                             | 14.57  |                    |
|          |      |      |              |             | MIMO A       | 7.78          | 7.78                             | 13.37  |                    |
|          |      |      |              |             | MIMO B       | 6.91          | 6.91                             | 12.50  |                    |
|          |      |      |              |             | Combined A+B | 10.38         | 10.38                            | 15.97  |                    |
|          |      |      | 149          | 6695        | SISO A       | 9.25          | 9.25                             | 14.84  |                    |
|          |      |      |              |             | SISO B       | 8.89          | 8.89                             | 14.48  |                    |
|          |      |      |              |             | MIMO A       | 7.90          | 7.90                             | 13.49  |                    |
|          |      |      |              |             | MIMO B       | 6.26          | 6.26                             | 11.85  |                    |
|          |      |      | Combined A+B | 10.17       | 10.17        | 15.76         |                                  |  |                    |
|          |      |      |              |             |              |               |                                  | SISO A   |                    |
|          |      |      | 181          | 6855        | SISO B       | 8.67          | 8.67                             | 14.26  |                    |
|          |      |      |              |             | MIMO A       | 8.15          | 8.15                             | 13.74  |                    |
|          |      |      |              |             | MIMO B       | 6.91          | 6.91                             | 12.50  |                    |
|          |      |      |              |             | Combined A+B | 10.58         | 10.58                            | 16.17  |                    |
|          |      |      |              |             |              |               |                                  |  |                    |
| 802.11ax | MCS0 | 40   | 123          | 6565        | SISO A       | 5.70          | 5.70                             | 11.29  |                    |
|          |      |      |              |             | SISO B       | 4.45          | 4.45                             | 10.04  |                    |
|          |      |      |              |             | MIMO A       | 5.86          | 5.86                             | 11.45  |                    |
|          |      |      |              |             | MIMO B       | 4.25          | 4.25                             | 9.84   |                    |
|          |      |      |              |             | Combined A+B | 8.14          | 8.14                             | 13.73  |                    |
|          |      |      | 147          | 6685        | SISO A       | 5.74          | 5.74                             | 11.33  |                    |
|          |      |      |              |             | SISO B       | 5.05          | 5.05                             | 10.64  |                    |
|          |      |      |              |             | MIMO A       | 5.75          | 5.75                             | 11.34  |                    |
|          |      |      |              |             | MIMO B       | 4.93          | 4.93                             | 10.52  |                    |
|          |      |      | Combined A+B | 8.37        | 8.37         | 13.96         |                                  |  |                    |
|          |      |      |              |             |              |               |                                  | SISO A   | 5.30               |
|          |      |      | 179          | 6845        | SISO B       | 4.08          | 4.08                             | 9.67   |                    |
|          |      |      |              |             | MIMO A       | 5.78          | 5.78                             | 11.37  |                    |
|          |      |      |              |             | MIMO B       | 4.87          | 4.87                             | 10.46  |                    |
|          |      |      |              |             | Combined A+B | 8.36          | 8.36                             | 13.95  |                    |
|          |      |      |              |             |              |               |                                  |  |                    |
| 802.11ax | MCS0 | 80   | 135          | 6625        | SISO A       | 1.09          | 1.19                             | 6.78   |                    |
|          |      |      |              |             | SISO B       | 1.81          | 1.91                             | 7.50   |                    |
|          |      |      |              |             | MIMO A       | 2.75          | 2.75                             | 8.34   |                    |
|          |      |      |              |             | MIMO B       | 1.46          | 1.46                             | 7.05   |                    |
|          |      |      |              |             | Combined A+B | 5.16          | 5.16                             | 10.75  |                    |
|          |      |      | 151          | 6705        | SISO A       | 2.28          | 2.38                             | 7.97   |                    |
|          |      |      |              |             | SISO B       | 1.56          | 1.66                             | 7.25   |                    |
|          |      |      |              |             | MIMO A       | 2.25          | 2.25                             | 7.84   |                    |
|          |      |      |              |             | MIMO B       | 1.30          | 1.30                             | 6.89   |                    |
|          |      |      | Combined A+B | 4.81        | 4.81         | 10.40         |                                  |  |                    |
|          |      |      |              |             |              |               |                                  | SISO A   | 0.07               |
|          |      |      | 167          | 6785        | SISO B       | 1.63          | 1.73                             | 7.32   |                    |
|          |      |      |              |             | MIMO A       | 2.42          | 2.42                             | 8.01   |                    |
|          |      |      |              |             | MIMO B       | 1.37          | 1.37                             | 6.96   |                    |
|          |      |      |              |             | Combined A+B | 4.94          | 4.94                             | 10.53  |                    |
|          |      |      |              |             |              |               |                                  |  |                    |
| 802.11ax | MCS0 | 160  | 143          | 6665        | SISO A       | -2.22         | -2.22                            | 3.37   |                    |
|          |      |      |              |             | SISO B       | -4.14         | -4.14                            | 1.45   |                    |
|          |      |      |              |             | MIMO A       | -3.14         | -3.00                            | 2.59   |                    |
|          |      |      |              |             | MIMO B       | -4.00         | -3.86                            | 1.73   |                    |
|          |      |      |              |             | Combined A+B | -0.54         | -0.40                            | 5.19   |                    |

(1) Value compensated with the duty cycle

### B.2.3 Emissions mask

Test limits

| FCC part          | RSS part                 | Limits  |
|-------------------|--------------------------|---|
| 15.407 (b)<br>(7) | RSS-248<br>Clause 4.6.2b | <ul style="list-style-type: none"> <li>▪ For transmitters operating within the 5.925–7.125 GHz bands: Power spectral density must be suppressed:               <ul style="list-style-type: none"> <li>○ by 20 dB at 1 MHz outside of channel edge,</li> <li>○ by 28 dB at one channel bandwidth from the channel center, and</li> <li>○ by 40 dB at one- and one-half times the channel bandwidth away from channel center.</li> </ul> </li> <li>▪ At frequencies between one megahertz outside an unlicensed device's channel edge and one channel bandwidth from the center of the channel, the limits must be linearly interpolated between 20 dB and 28 dB suppression, and</li> <li>▪ at frequencies between one and one- and onehalf times an unlicensed device's channel bandwidth, the limits must be linearly interpolated between 28 dB and 40 dB suppression.</li> <li>▪ Emissions removed from the channel center by more than one- and one-half times the channel bandwidth must be suppressed by at least 40 dB.</li> </ul> |

Test procedure

The conducted setup shown in section *Test & System Description* was used to measure the unwanted mask emissions. The antenna terminal of the EUT is connected to the spectrum analyzer through an attenuator, and the spectrum analyzer reading is compensated to include the RF path loss and the declared antenna gain.

The nominal bandwidth was used to construct the mask according to KDB 987594 D02.

**See Section C.1.3 for the screenshot results.**

## B.2.4 Frequency stability

### Test limits

| FCC part   | RSS part                                | Limits  |
|------------|---|---|
| 15.407 (g) | RSS-Gen issue<br>5 - A1- clause<br>6.11 | The frequency stability shall be sufficient to ensure that the occupied bandwidth of the device stays within the 5925-7125MHz frequency band when the stability is tested at the temperature and supply voltage variation |

### Test procedure

The conducted setups shown in section *Test & System Description* were used to verify that the occupied bandwidth 99% of the device stays within the 5925-7125MHz frequency band

For the test results refer to the report :211201-01.TR17

## B.2.5 Contention-based protocol

### Test limits

Indoor access points, subordinate devices and client devices operating in the 5.925-7.125 GHz band are required to use technologies that include a contention-based protocol to avoid co-channel interference with incumbent devices sharing the band. To ensure incumbent co-channel operations are detected in a technology-agnostic manner, unlicensed devices are required to detect co-channel radio frequency energy (energy detect) and avoid simultaneous transmission.

Unlicensed indoor low-power devices must detect co-channel radio frequency power that is at least -62 dBm or lower. Upon detection of energy in the band, unlicensed low power indoor devices must vacate the channel and stay off the channel as long as detected radio frequency power is equal to or greater than the threshold (-62 dBm).

### Test procedure

The contention-based protocol setup shown in section *Test & System Description* was used to measure the contention-based protocol. The EUT ceased transmission when the AWGN source signal level described in table result below is set to transmit.

Incumbent signal is emulated by using a 10MHz bandwidth AWGN source generated by the vector signal generator. The EUT is transmitting at the maximum possible payload and the spectrum analyzer monitors the transmissions in response to the AWGN signal. Insertion loss of the test setup were considered on the spectrum analyzer reading.

For the test results refer to the report:

- Max Antenna Gain of +5.59dBi: 211201-01.TR17

## B.2.6 Undesirable emission limits : Conducted

### Test limits

| FCC part      | RSS Part              | Limits  |
|---------------|-----------------------|---|
| 15.407 (b)(6) | RSS-248 Clause 4.6.2a | For transmitters operating within the 5.925-7.125 GHz band: Any emissions outside of the 5.925-7.125 GHz band must not exceed an e.i.r.p. of -27 dBm/MHz.   |
| 15.35 (b)     | -                     | Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz. When average radiated emission measurements are specified in this part, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. Unless otherwise specified, e.g., see §§ 15.250, 15.252, 15.253(d), 15.255, 15.256, and 15.509 through 15.519, the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device, e.g., the total peak power level |

### Test procedure

The conducted setup shown in section *Test & System Description* was used to measure undesirable emissions on the out of band domain. The antenna terminal of the EUT is connected to the spectrum analyzer through an attenuator, and the spectrum analyzer reading is compensated to include the RF path loss and the declared antenna gain.

For the lower and upper side of the out of band, the integration method was used as defined in the out of band measurements section II.G.3.d of KDB 789033. Tests were performed using both RMS and peak detectors.

For out of band emission measurements in MIMO mode the emission level of individual output is adjusted by  $10 \log(N_{\text{ant}}) = 3\text{dB}$  for  $N_{\text{ant}} = 2$  which is equivalent to compare the individual output emission level to the limit minus 3dB. The same approach is applied for peak and RMS detectors.

**See Section C.1.4. for the screenshot results.**

## B.2.7 Dual Client Test, Demonstration of Proper Power Adjustment based on Associated AP

### Test limits

A client device may connect to a Standard Power AP with a maximum power level of 30 dBm EIRP. A client may also connect to a Low Power indoor AP, but the power level is limited to a maximum of 24 dBm EIRP. If a client has the flexibility to connect to both APs, verification is needed to show that it can distinguish between the two configurations, and then control the power levels accordingly.

### Test procedure

The dual client test setup shown in section **Test & System Description**.

Client and APs are prepared so they associate and start sending data (stream data) to each other. Client is configured to transmit at its highest power level.

Initially, attenuation on Atten 1 is set high, so the Client will only associate with the Std Power AP. Transmission between Client and Std Power AP is verified by measuring Client Tx power using SA-3 method from C63.10. Atten 2 is gradually increased while Atten 1 is decreased. This simulates the Client moving from outdoors to indoors. At some level of attenuation, the Client should associate with the Low Power indoor AP. Transmission between Client and Low Power AP is verified by measuring Client Tx power using the same method mentioned in this paragraph. It must not be greater than 24 dBm EIRP.

| Connected AP type | Channel | Freq. [MHz] | BW [MHz] | Rate | Chain  | Duty cycle (%) | Measured Client Tx Power [dBm] | Compensated Client Tx Power [dBm] | Antenna Gain [dBi] | Client Tx Power EIRP [dBm] |
|-------------------|---------|-------------|----------|------|--------|----------------|--------------------------------|-----------------------------------|--------------------|----------------------------|
| Standard Power    | 37      | 6135        | 20       | MCS0 | SISO B | 82             | 13.55                          | 14.41                             | 5.59               | 20.00                      |
| Low Power         | 37      | 6135        | 20       | MCS0 | SISO B | 82             | 1.34                           | 2.20                              | 5.59               | 7.79                       |

**See Section C.1.5 for the screenshot results.**

## B.2.8 Proper Power Adjustment, Client Devices Connected to a Standard Power Access Point

### Test limits

A client device that connects to a Standard Power AP\* must limit its EIRP to a minimum of 6 dB lower than its associated Standard Power access point's authorized transmit power.

\*AP is emulated by a proprietary SoftAP solution with a BE200 module generating Std Power Beacon.

### Test procedure

The proper power adjustment test setup shown in section **Test & System Description**.

Client and AP are prepared so they associate and start sending data (stream data) to each other.

Client is configured to transmit at following power levels:

- Highest power level
- Mid power level
- Lowest power level, as declared by the manufacturer.

For each configuration, Client Tx power is measured using SA-2 method from C63.10 for U-NII devices.

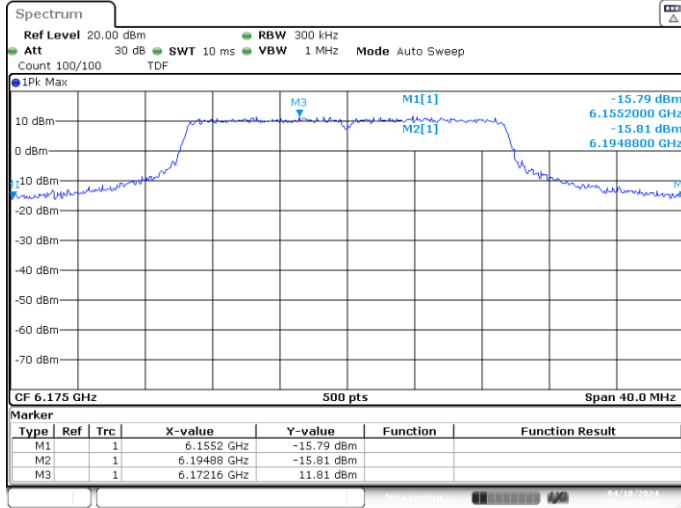
| Std Power access point EIRP limitation [dBm] | Std Power Max client EIRP limitation [dBm] | Std Power Max client conducted. [dBm] | Channel | Freq. [MHz] | BW [MHz] | Rate | Chain  | Duty Cycle [%] | Measured Client Tx Power [dBm] | Compensated Client Tx Power [dBm] | Antenna Gain [dBi] | Client Tx Power EIRP [dBm] |
|--|--|---------------------------------------|---------|-------------|----------|------|--------|----------------|--------------------------------|-----------------------------------|--------------------|----------------------------|
| 34   | 28   | 22.41                                 | 37      | 6135        | 20       | MCS0 | SISO B | 82             | 13.55                          | 14.41                             | 5.59               | 20.00                      |
| 23   | 17   | 11.41                                 |         |             |          |      |        |                | 10.27                          | 11.13                             |                    | 16.72                      |
| 14   | 8  | 2.41                                  |         |             |          |      |        |                | 1.15                           | 2.01                              |                    | 7.60                       |

**See Section C.1.6. for the screenshot results**

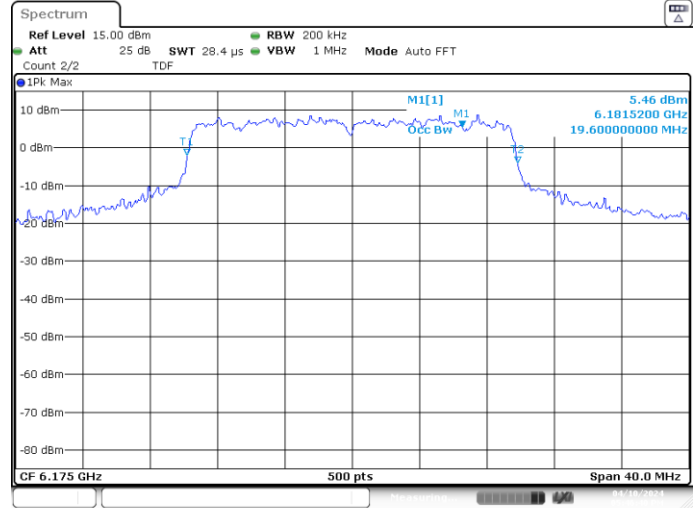


# Annex C. System Plots

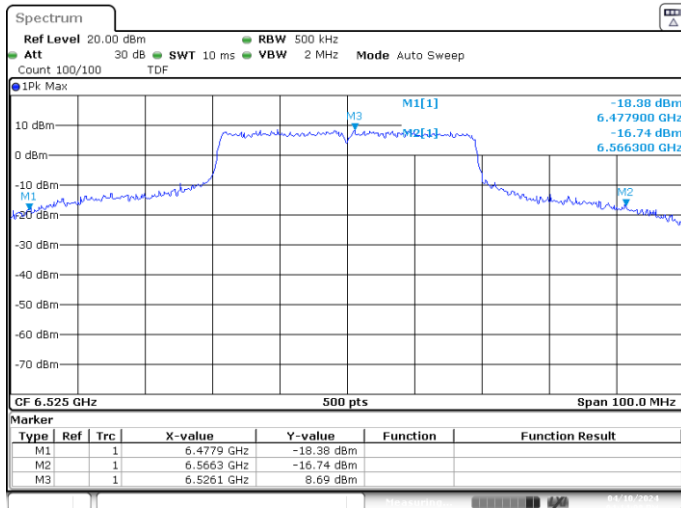
## C.1.1 26dB & 99% bandwidth



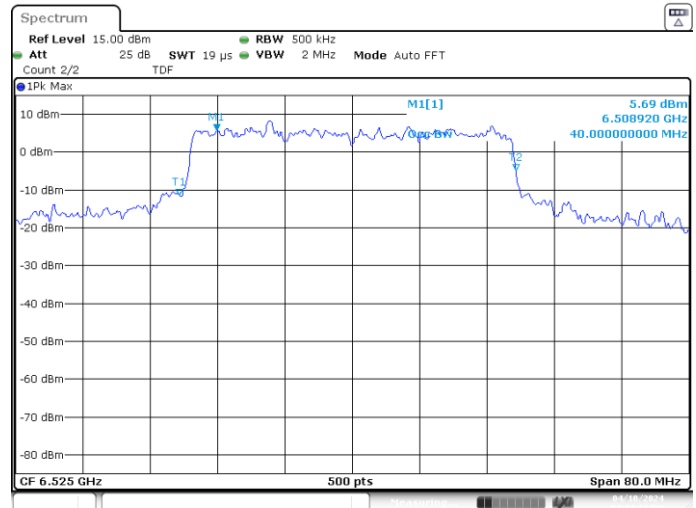
UNII-5 MIMO A 802.11ax20 CH45 6175MHz 26dB



UNII-5 MIMO A 802.11ax20 CH45 6175MHz 99%



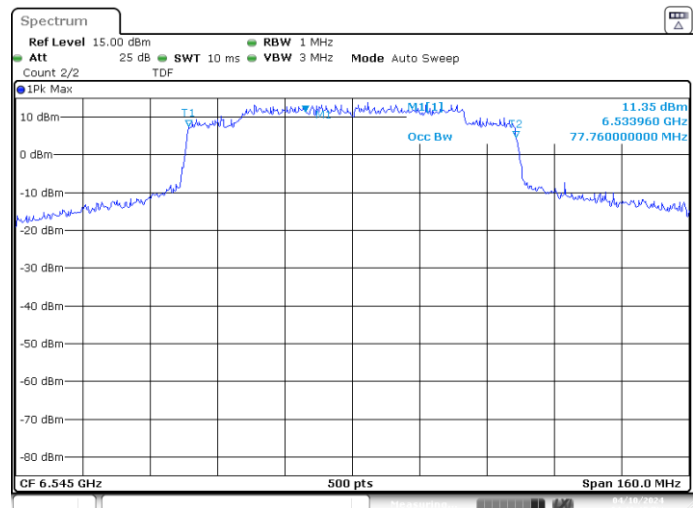
UNII-6 SISO A 802.11ax40 CH115 6525MHz 26dB



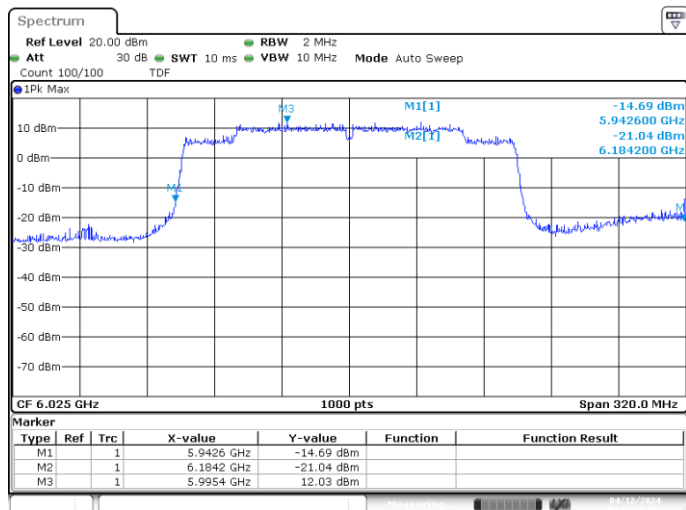
UNII-6 SISO A 802.11ax40 CH115 6525MHz 99%



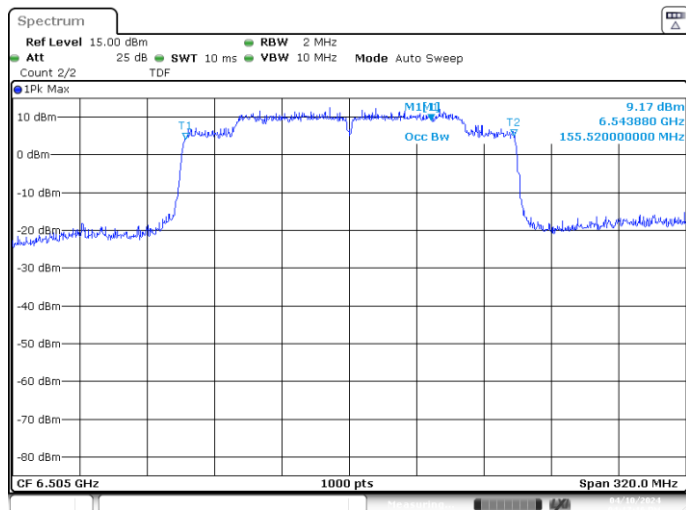
UNII-6 SISO A 802.11ax80 CH119 6345MHz 26dB



UNII-6 SISO A 802.11ax80 CH119 6345MHz 99%

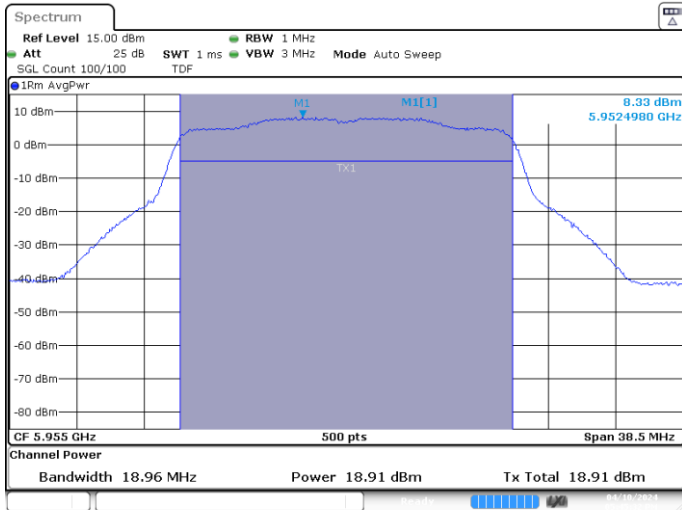


UNII-5 SISO A 802.11ax160 CH15 6025MHz 26dB

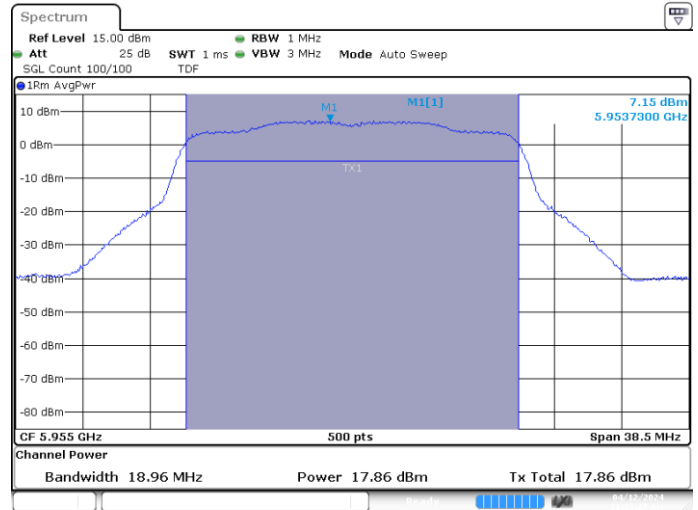


UNII-6 SISO A 802.11ax160 CH111 6505MHz 99%

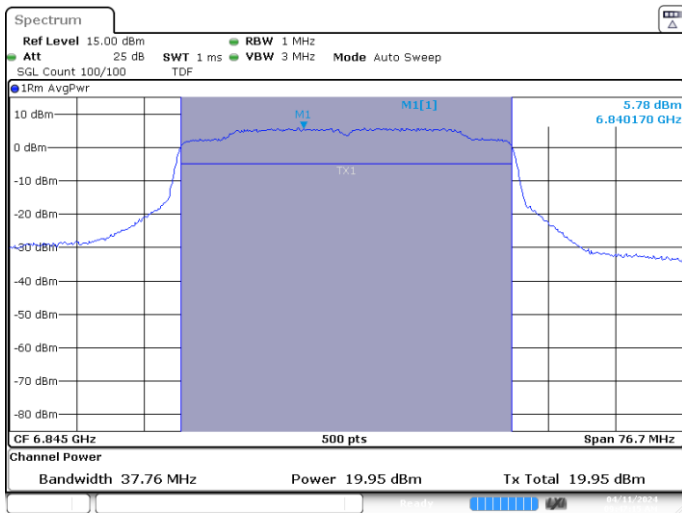
### C.1.2 Maximum Output Power & Maximum power spectral Density



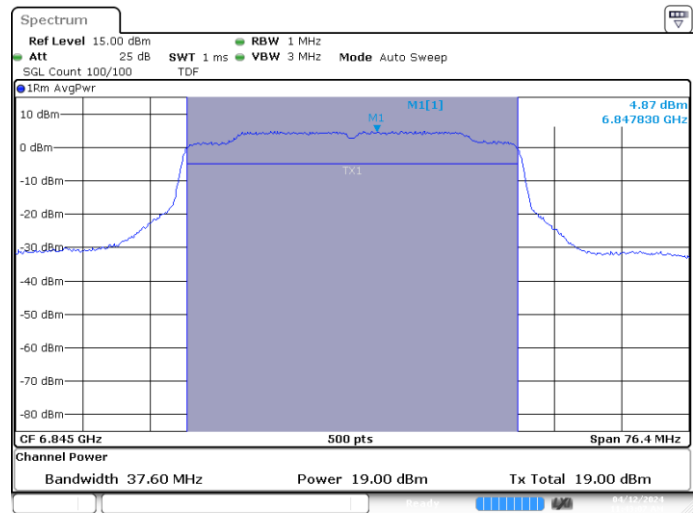
UNII-5 MIMO A-802.11ax-20MHz-Ch1-5955MHz-MCS0



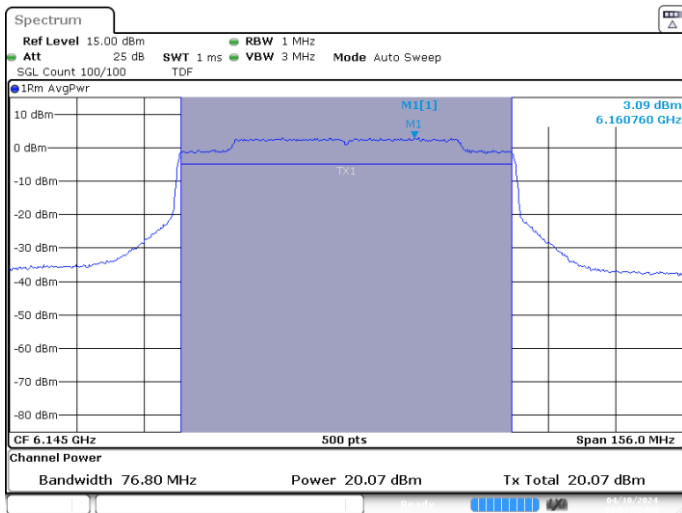
UNII-5 MIMO B-802.11ax-20MHz-Ch1-5955MHz-MCS0



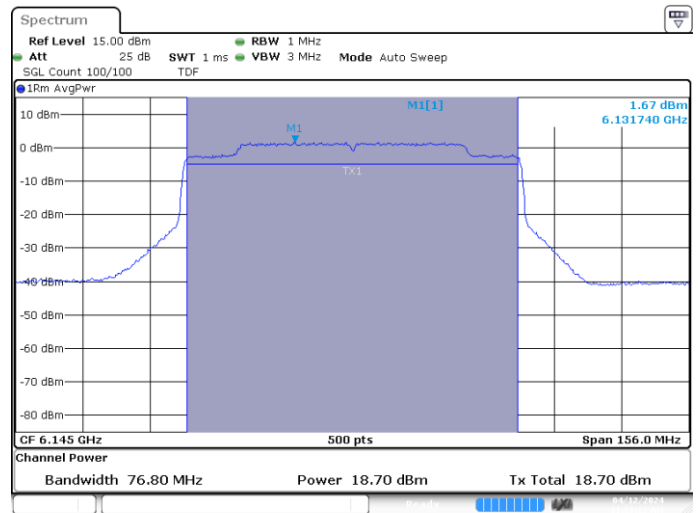
UNII-7 MIMO A-802.11ax-40MHz-Ch179-6845MHz-MCS0



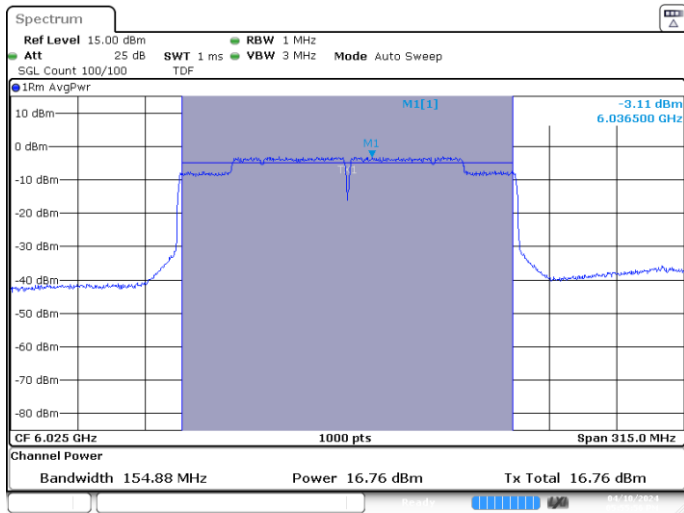
UNII-7 MIMO B-802.11ax-40MHz-Ch179-6845MHz-MCS0



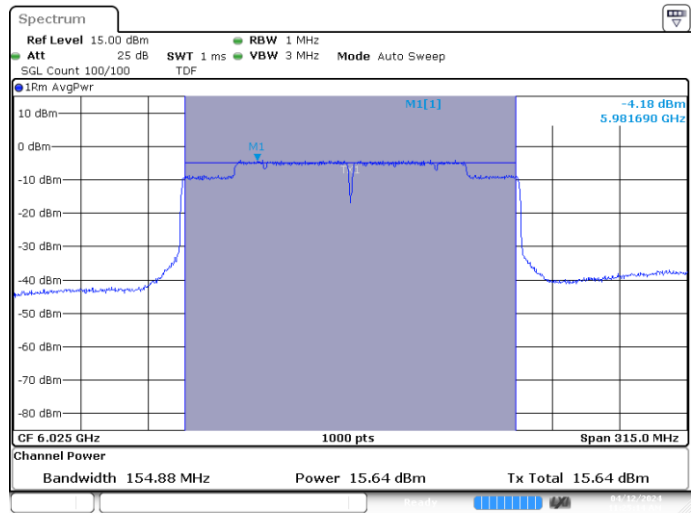
UNII-5 MIMO A-802.11ax-80MHz-Ch39-6145MHz-MCS0



UNII-5 MIMO B-802.11ax-80MHz-Ch39-6145MHz-MCS0

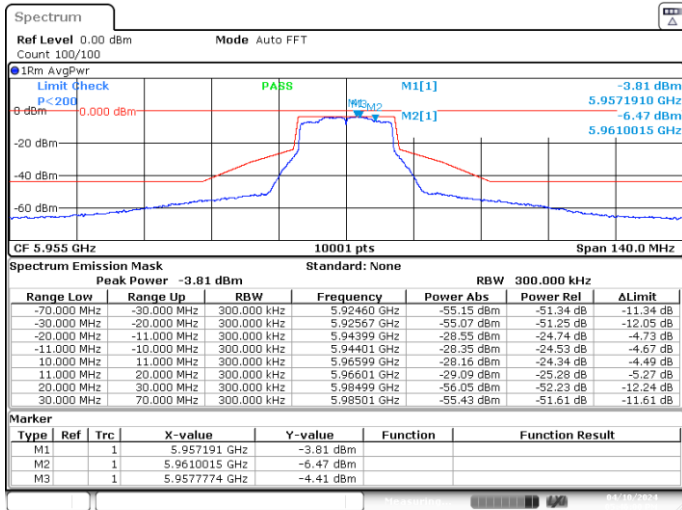


UNII-5 MIMO A-802.11ax-160MHz-Ch15-6025MHz-MCS0

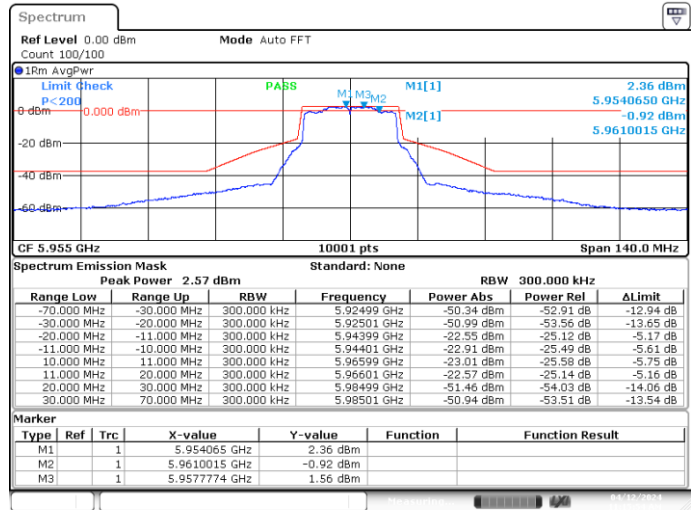


UNII-5 MIMO B-802.11ax-160MHz-Ch15-6025MHz-MCS0

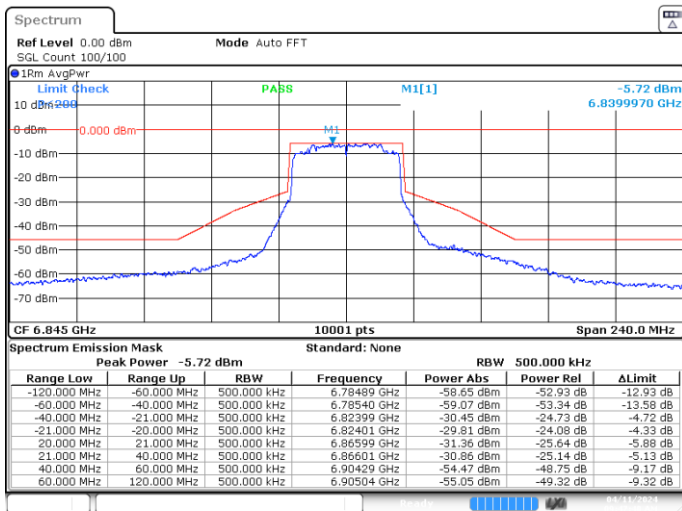
### C.1.3 In-Band Emissions (Mask)



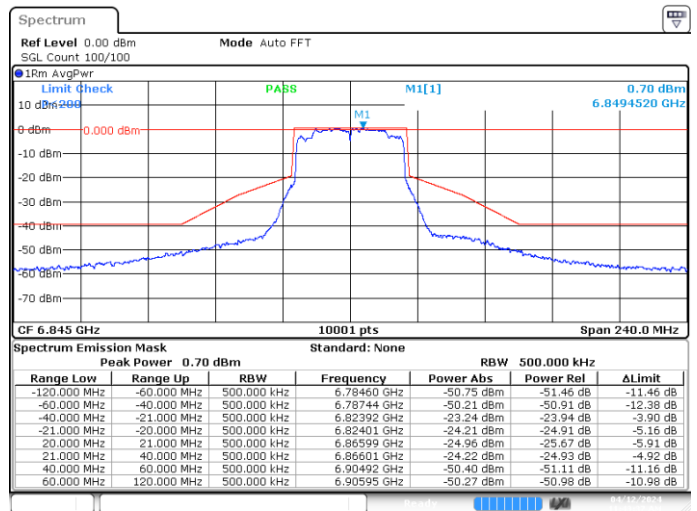
UNII-5 MIMO A-802.11ax-20MHz-Ch1-5955MHz-MCS0



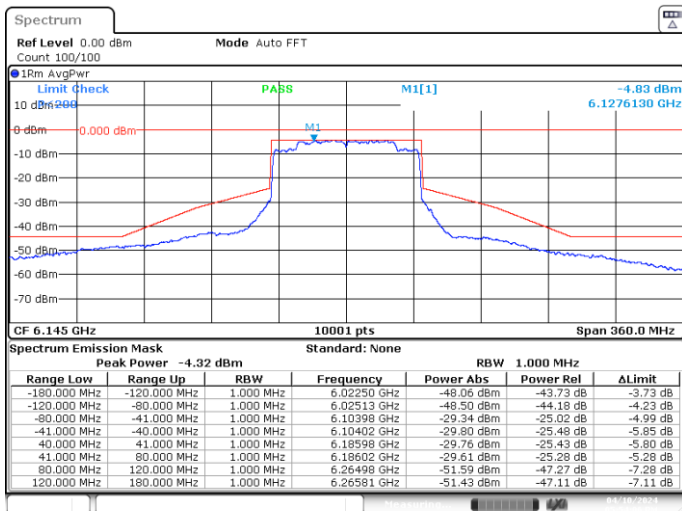
UNII-5 MIMO B-802.11ax-20MHz-Ch1-5955MHz-MCS0



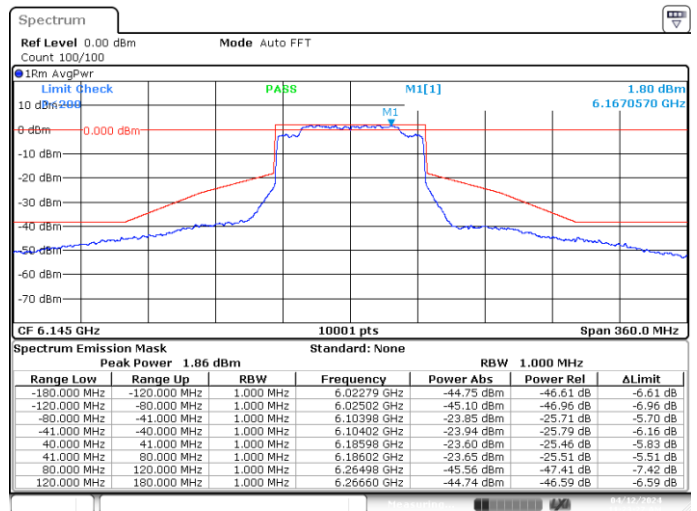
UNII-7 MIMO A-802.11ax-40MHz-Ch179-6845MHz-MCS0



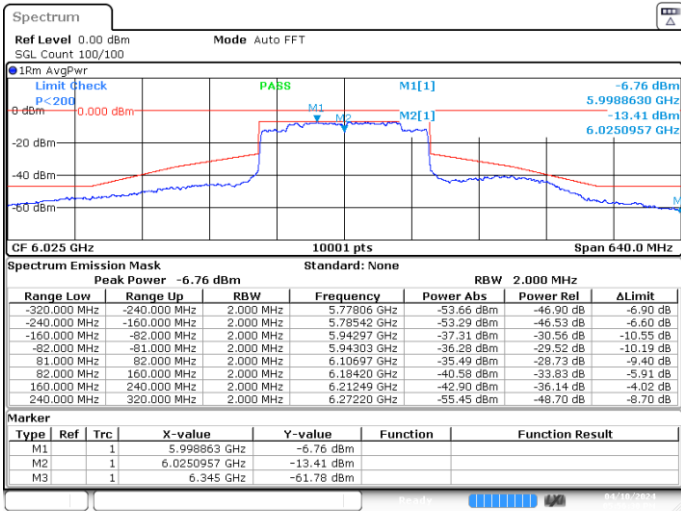
UNII-7 MIMO B-802.11ax-40MHz-Ch179-6845MHz-MCS0



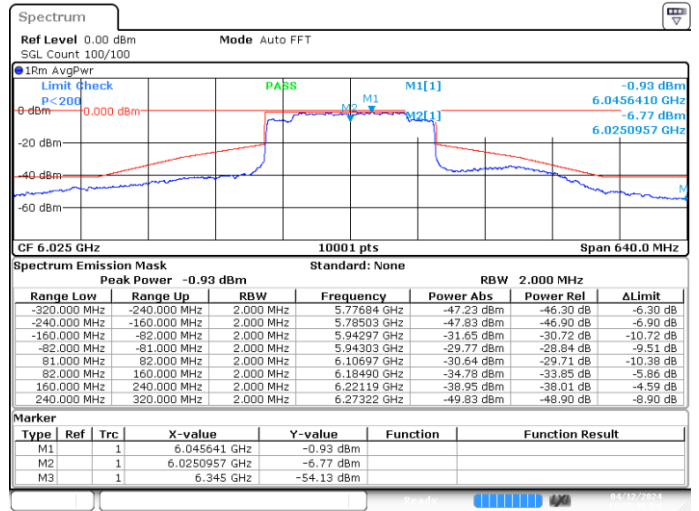
UNII-5 MIMO A-802.11ax-80MHz-Ch39-6145MHz-MCS0



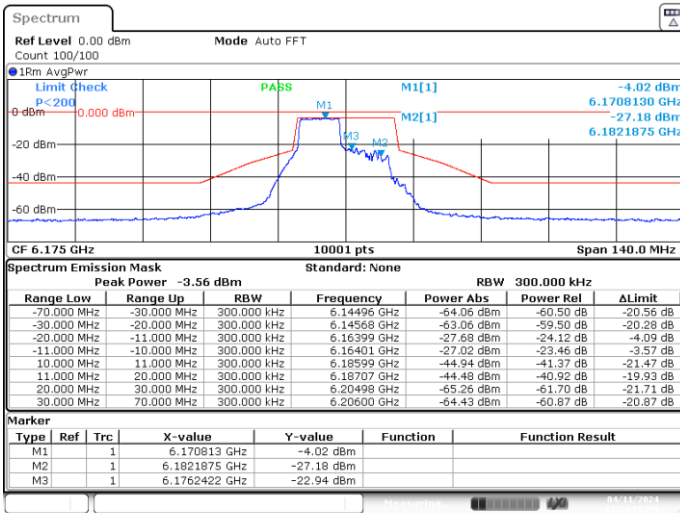
UNII-5 MIMO B-802.11ax-80MHz-Ch39-6145MHz-MCS0



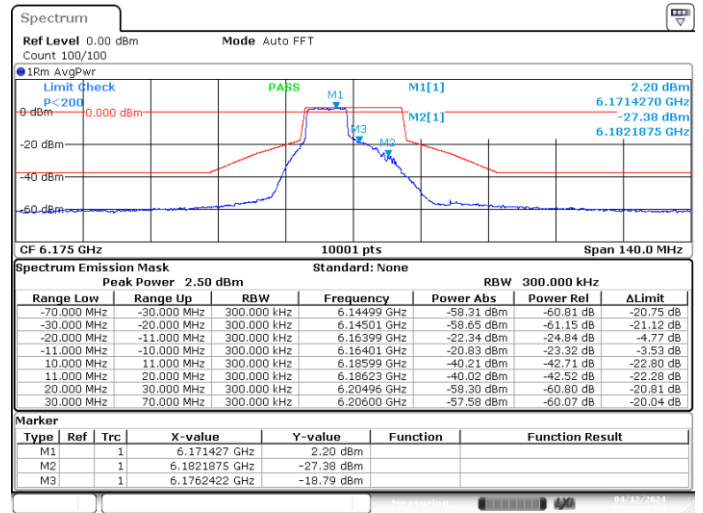
UNII-5 MIMO A-802.11ax-160MHz-Ch15-6025MHz-MCS0



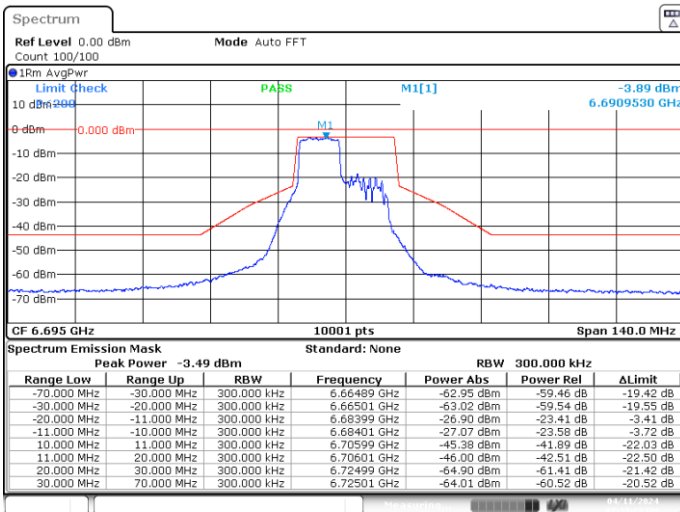
UNII-5 MIMO B-802.11ax-160MHz-Ch15-6025MHz-MCS0



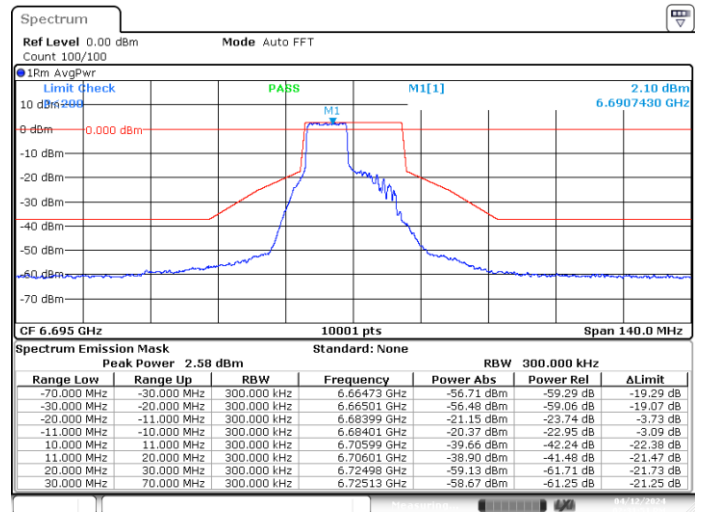
UNII-5 MIMO-A, 802.11ax20-MCS0, Ch45-8m-53



UNII-5 MIMO-B, 802.11ax20-MCS0, Ch45-8m-53



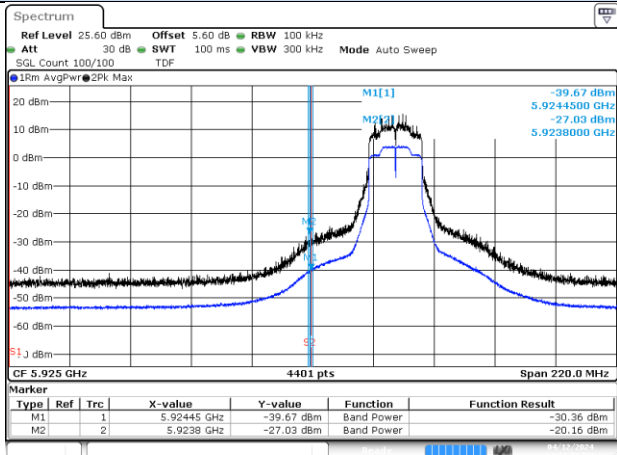
UNII-7 MIMO-A, 802.11ax20-MCS0, Ch149-8m-53



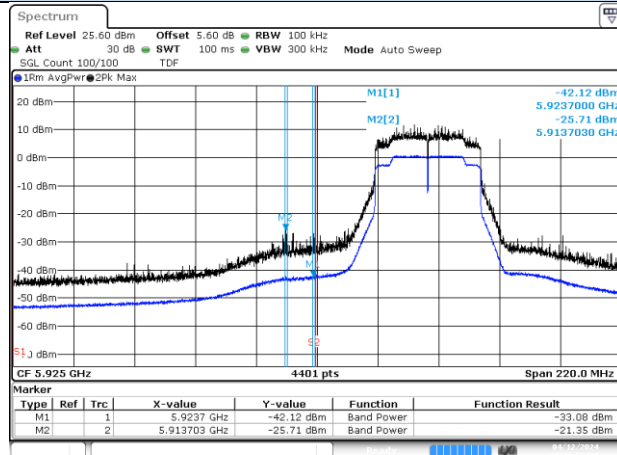
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### C.1.4 Undesirable emission limits : out of band (Conducted)

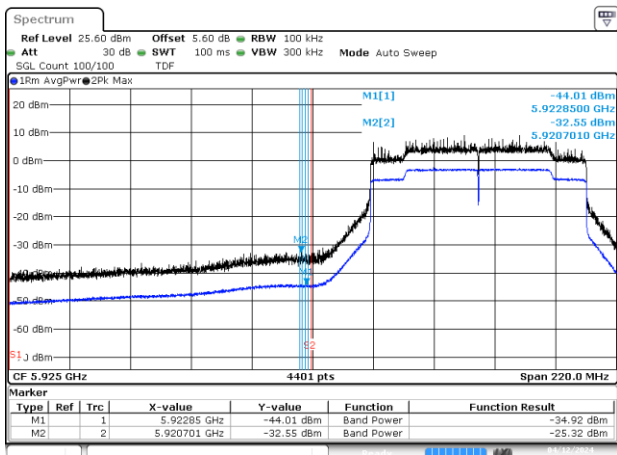
#### SISO A



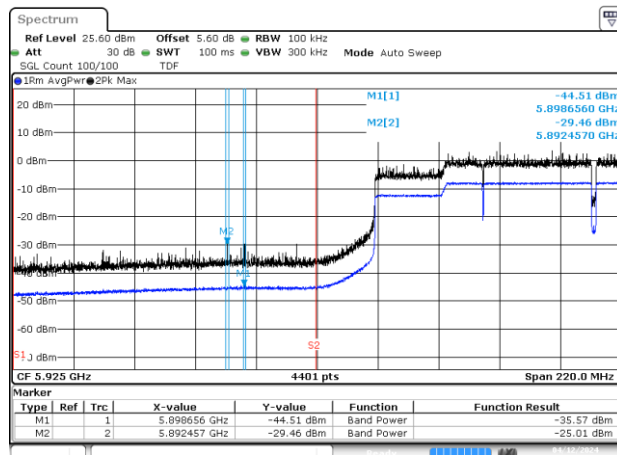
BE-NR-LOW, SISO-A, 802.11ax20-MCS0, Ch1



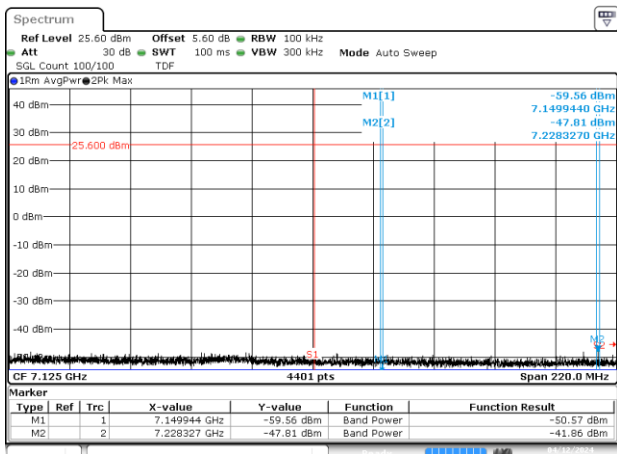
BE-NR-LOW, SISO-A, 802.11ax40-MCS0, Ch3



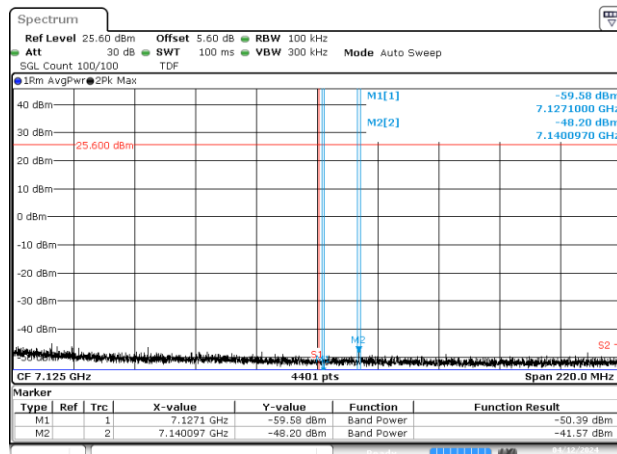
BE-NR-LOW, SISO-A, 802.11ax80-MCS0, Ch7



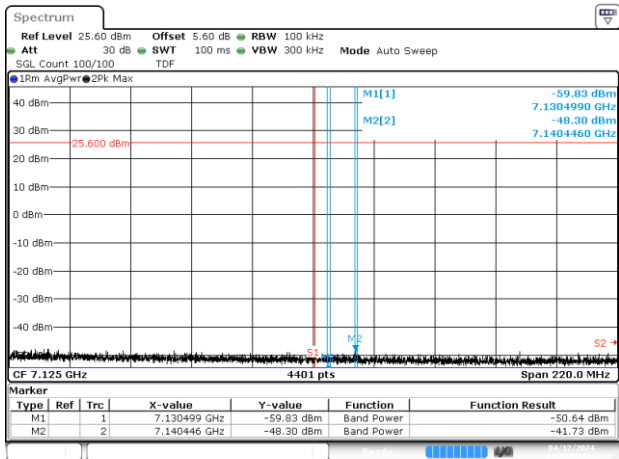
BE-NR-LOW, SISO-A, 802.11ax160-MCS0, Ch15



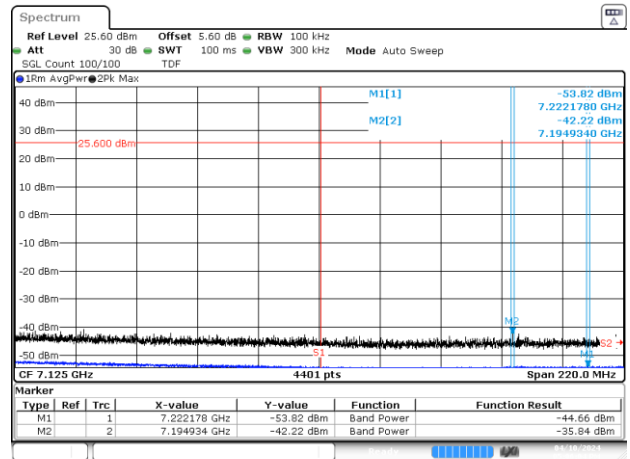
BE-NR-HIGH, SISO-A, 802.11ax20-MCS0, Ch181



BE-NR-HIGH, SISO-A, 802.11ax40-MCS0, Ch179

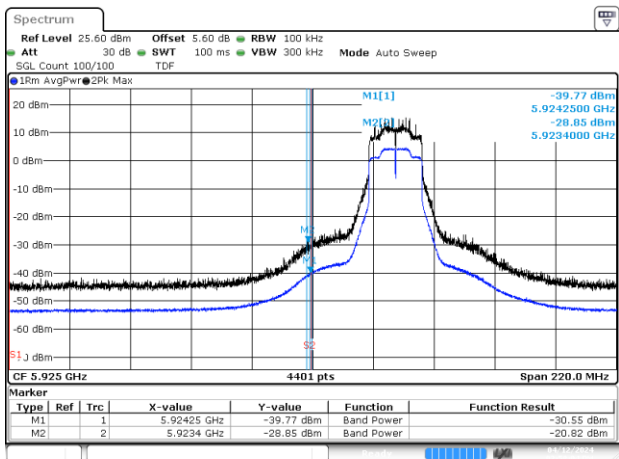


BE-NR-HIGH, SISO-A, 802.11ax80-MCS0, Ch167

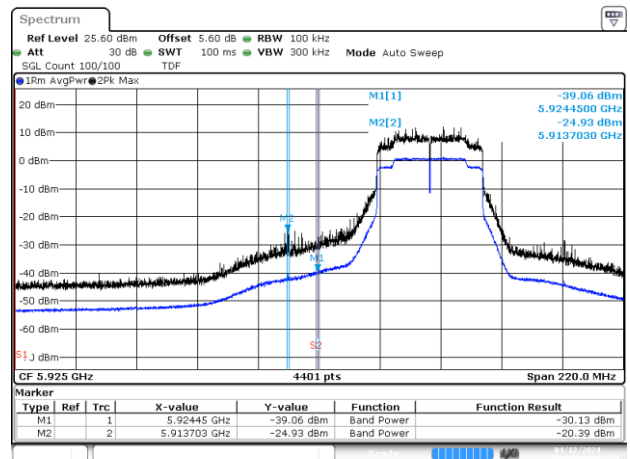


BE-NR-HIGH, SISO-A, 802.11ax160-MCS0, Ch143

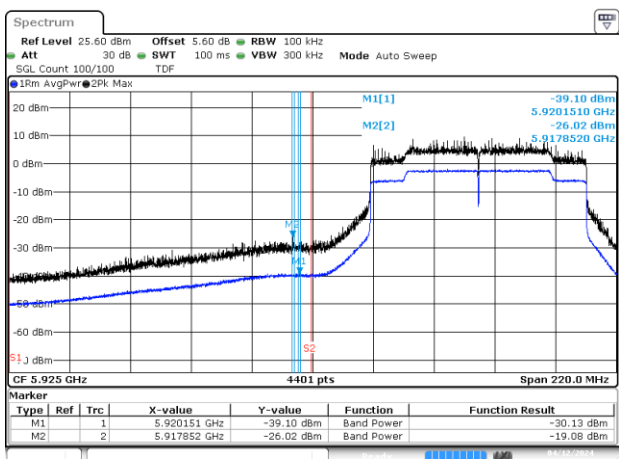
SISO B



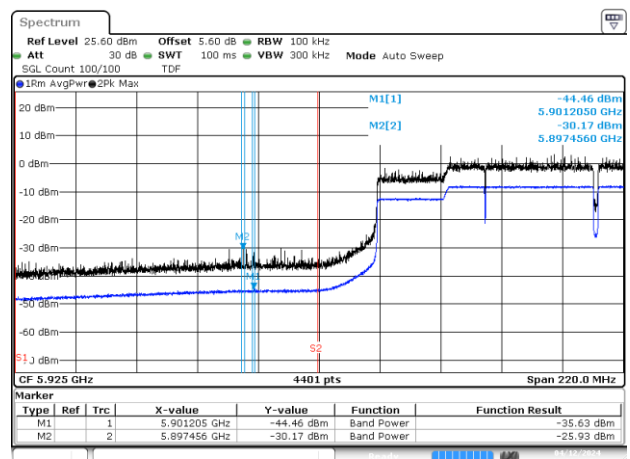
BE-NR-LOW, SISO-B, 802.11ax20-MCS0, Ch1



BE-NR-LOW, SISO-B, 802.11ax40-MCS0, Ch3

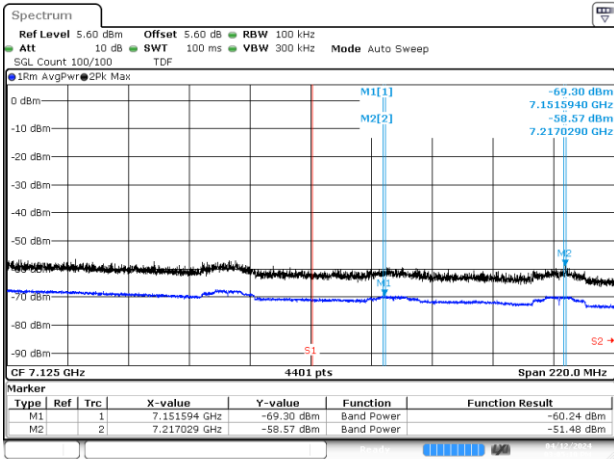


BE-NR-LOW, SISO-B, 802.11ax80-MCS0, Ch7

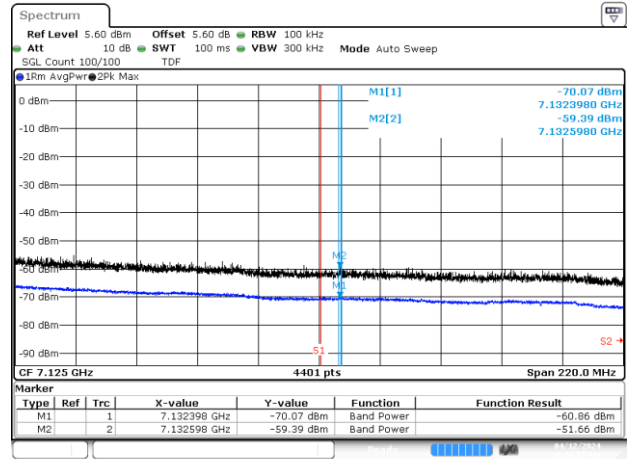


BE-NR-LOW, SISO-B, 802.11ax160-MCS0, Ch15

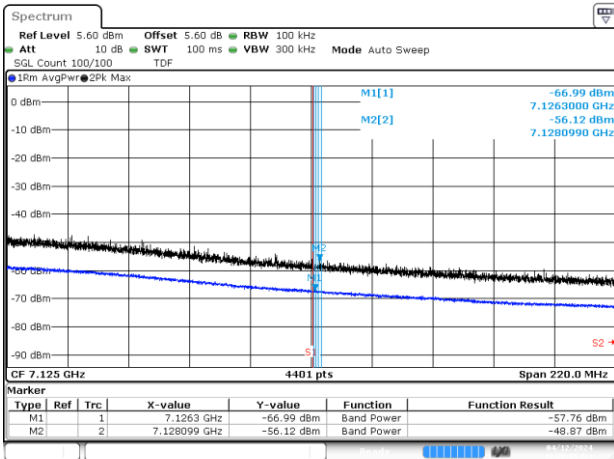




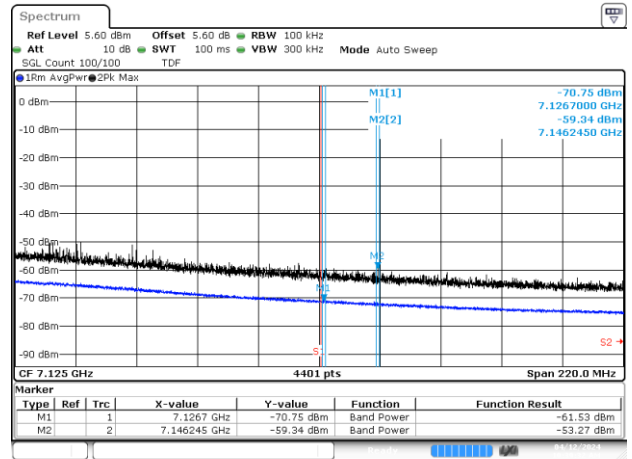
BE-NR-HIGH, SISO-B, 802.11ax20-MCS0, Ch181



BE-NR-HIGH, SISO-B, 802.11ax40-MCS0, Ch179

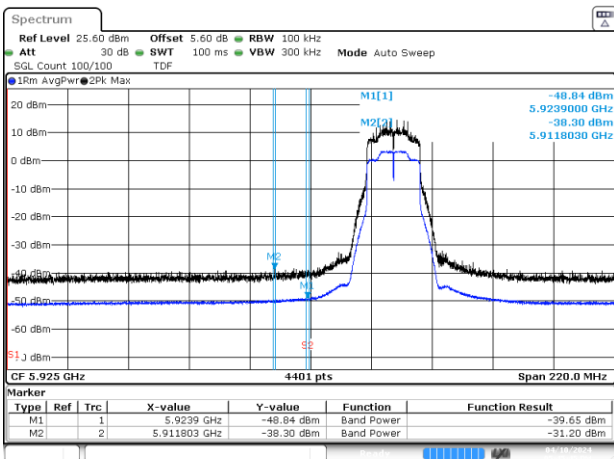


BE-NR-HIGH, SISO-B, 802.11ax80-MCS0, Ch167

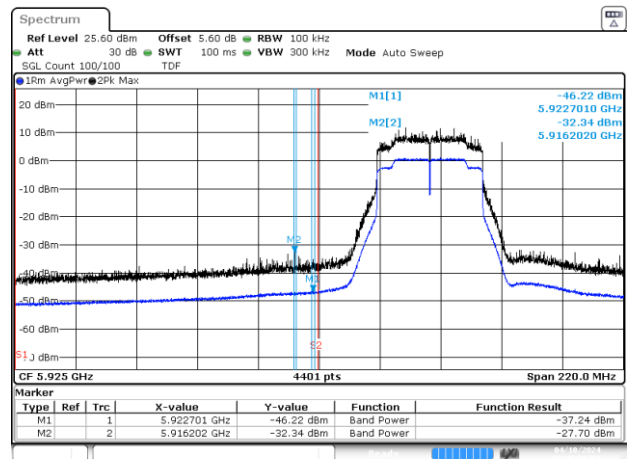


BE-NR-HIGH, SISO-B, 802.11ax160-MCS0, Ch143

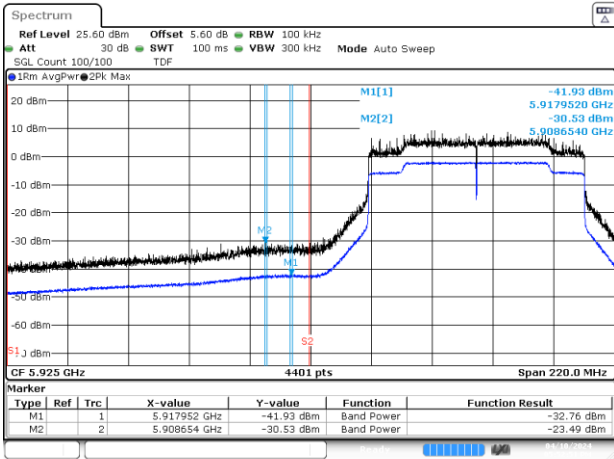
MIMO A



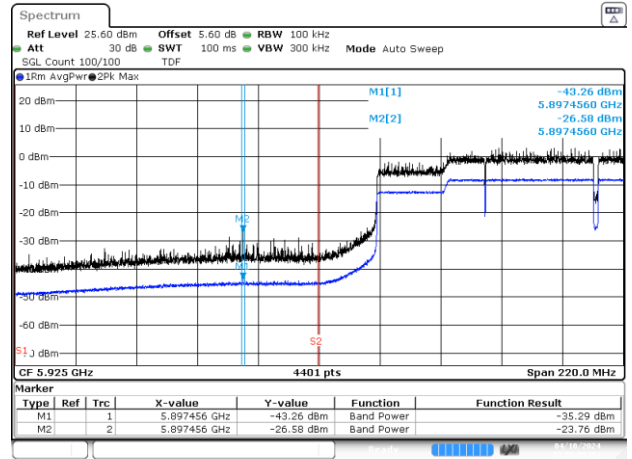
BE-NR-LOW, MIMO-A, 802.11ax20-MCS0, Ch1



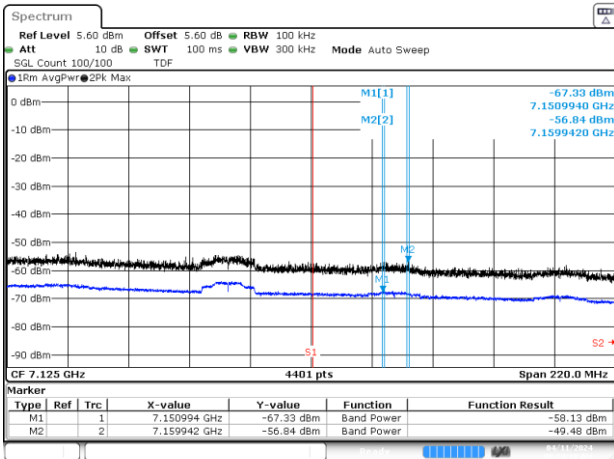
BE-NR-LOW, MIMO-A, 802.11ax40-MCS0, Ch3



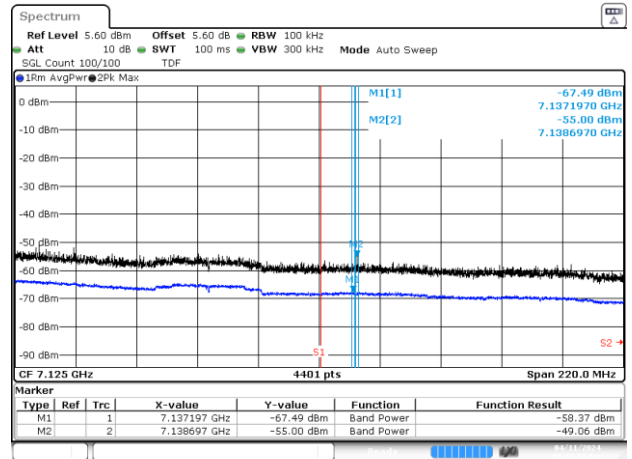
BE-NR-LOW, MIMO-A, 802.11ax80-MCS0, Ch7



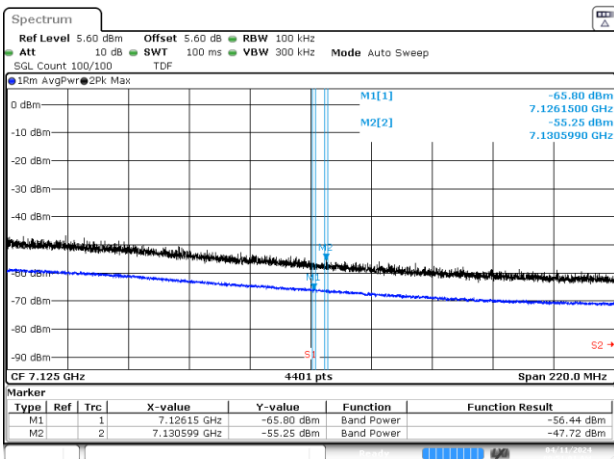
BE-NR-LOW, MIMO-A, 802.11ax160-MCS0, Ch15



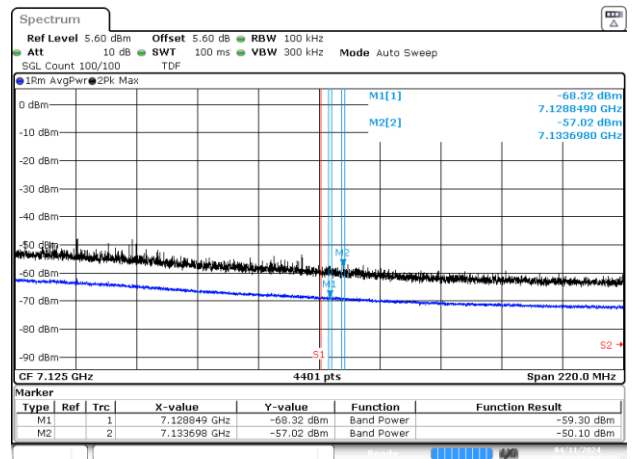
BE-NR-HIGH, MIMO-A, 802.11ax20-MCS0, Ch181



BE-NR-HIGH, MIMO-A, 802.11ax40-MCS0, Ch179

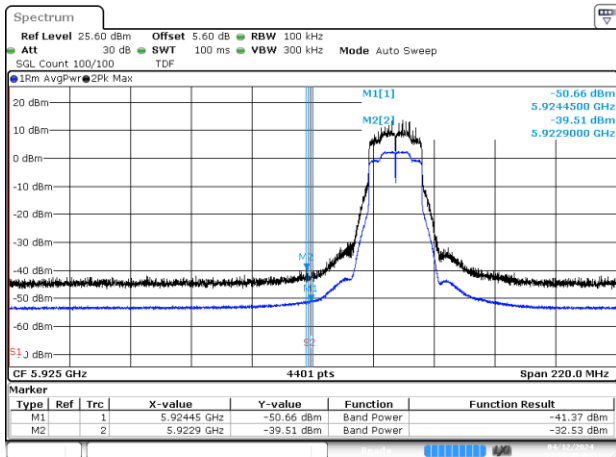


BE-NR-HIGH, MIMO-A, 802.11ax80-MCS0, Ch167

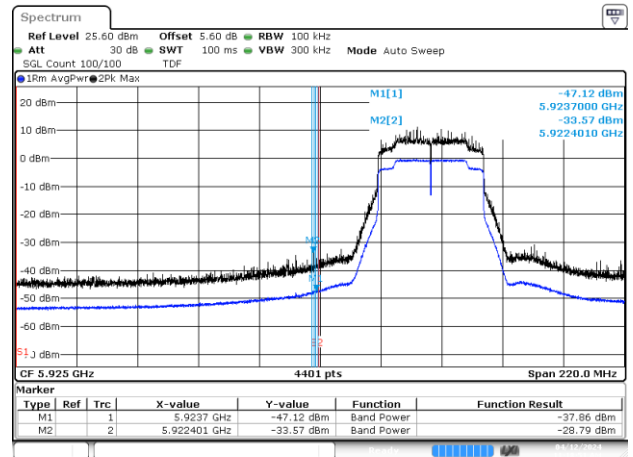


BE-NR-HIGH, MIMO-A, 802.11ax160-MCS0, Ch143

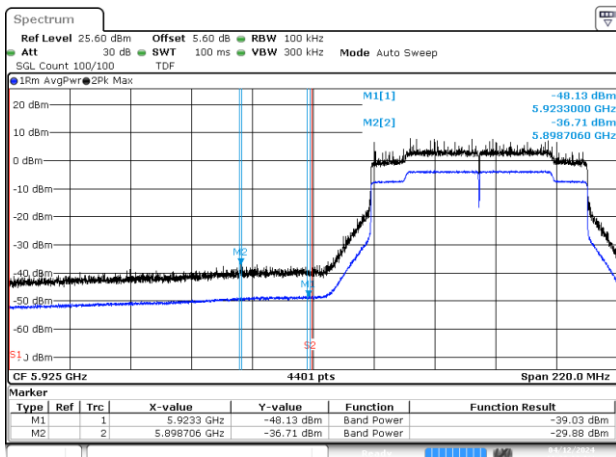
MIMO B



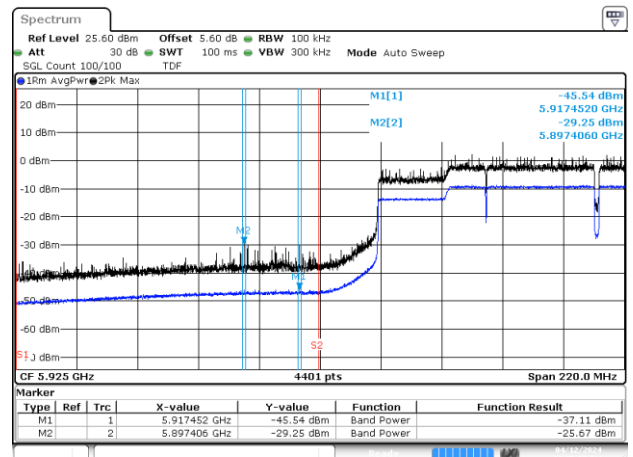
BE-NR-LOW, MIMO-B, 802.11ax20-MCS0, Ch1



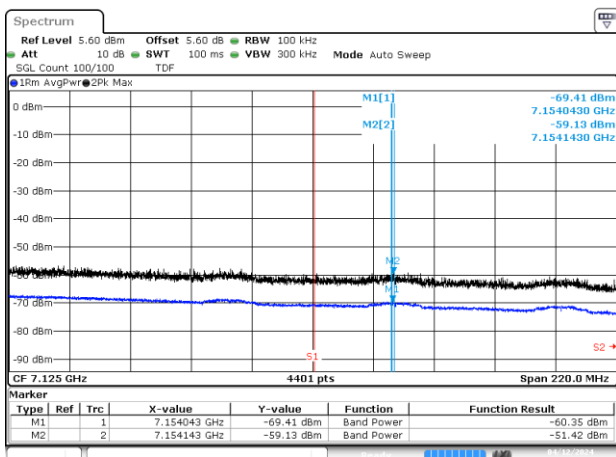
BE-NR-LOW, MIMO-B, 802.11ax40-MCS0, Ch3



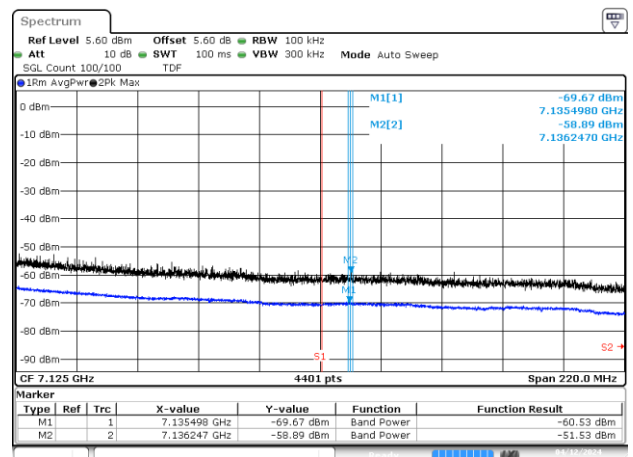
BE-NR-LOW, MIMO-B, 802.11ax80-MCS0, Ch7



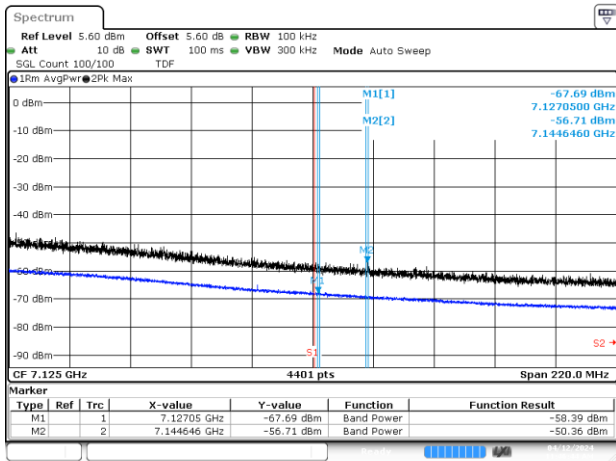
BE-NR-LOW, MIMO-B, 802.11ax160-MCS0, Ch15



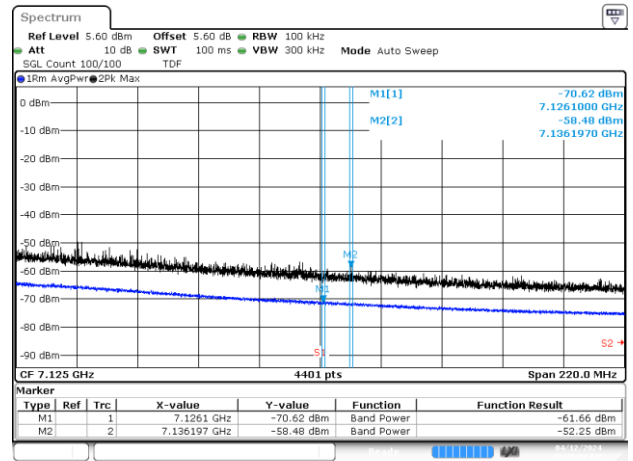
BE-NR-HIGH, MIMO-B, 802.11ax20-MCS0, Ch181



BE-NR-HIGH, MIMO-B, 802.11ax40-MCS0, Ch179



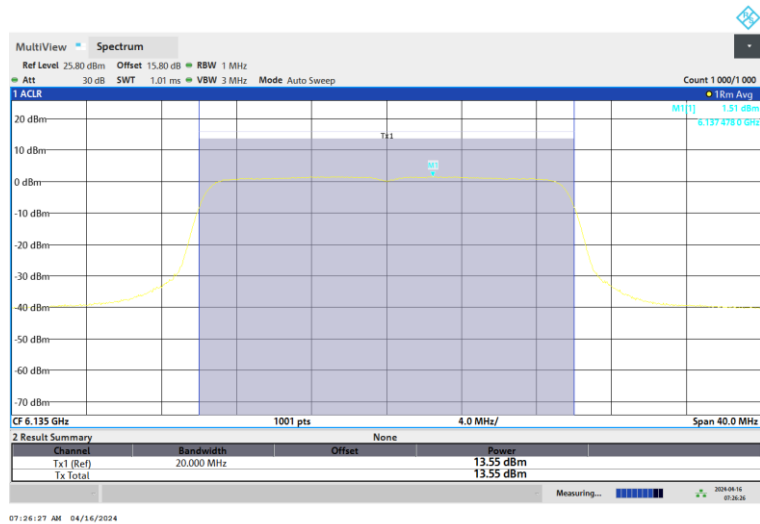
BE-NR-HIGH, MIMO-B, 802.11ax80-MCS0, Ch167



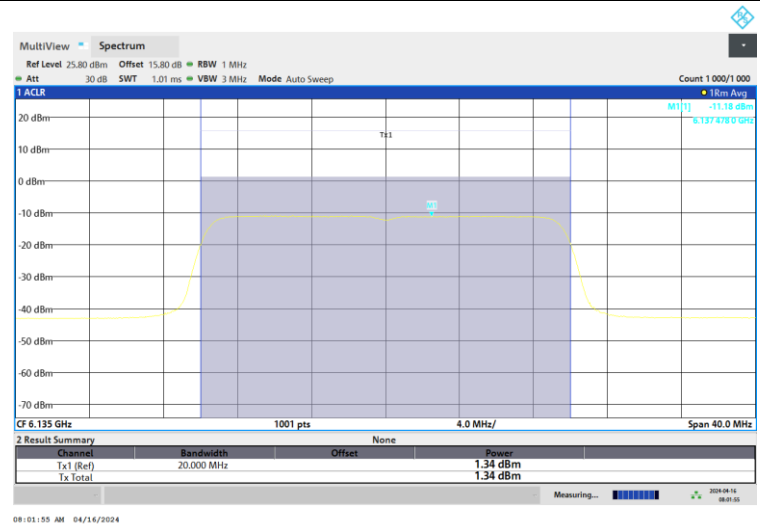
BE-NR-HIGH, MIMO-B, 802.11ax160-MCS0, Ch143

### C.1.5 Dual Client Test, Demonstration of Proper Power Adjustment based on Associated AP

Client Tx Power when connected to Standard Power AP

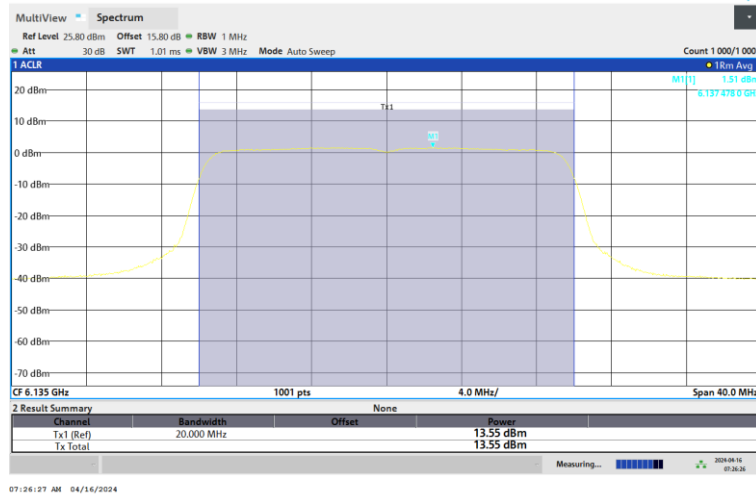


Client Tx Power when connected to Low Power AP

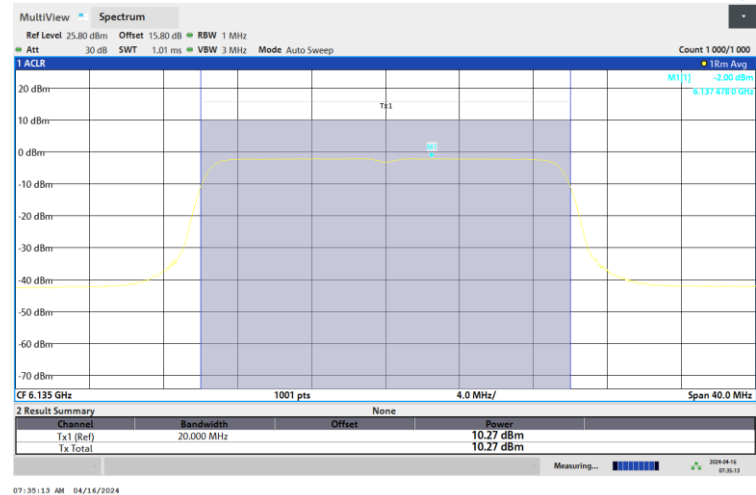


### C.1.6 Proper Power Adjustment, Client Devices Connected to a Standard Power Access Point

Client at its highest rated Tx Power, as declared by the manufacturer



Client at its midpoint rated Tx Power, as declared by the manufacturer



Client at its lowest rated Tx Power, as declared by the manufacturer

