# TEST REPORT

**Report Number:** 13179110-E4V2

| | | |
|---|---|---|
| **Applicant** | : | APPLE, INC.<br>1 APPLE PARK WAY<br>CUPERTINO, CA 95014, U.S.A |
| **Model** | : | A2176 |
| **FCC ID** | : | BCG-E3539A |
| **IC** | : | 579C-E3539A |
| **EUT Description** | : | SMARTPHONE |
| **Test Standard(s)** | : | FCC 47 CFR PART 15 SUBPART C<br>ISED RSS-247 ISSUE 2<br>ISED RSS-GEN ISSUE 5 |

**Date of Issue:**
October 01, 2020

**Prepared by:**
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NVLAP Lab code: 200065-0

# REPORT REVISION HISTORY

| Rev. | Issue Date | Revisions | Revised By |
|---|---|---|---|
| V1 | 9/21/2020 | Initial Issue | Chin Pang |
| V2 | 10/1/2020 | Updated per TCB's questions | Vien Tran |


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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** APPLE INC.
1 APPLE PARK WAY
CUPERTINO, CA 95014, U.S.A.

**EUT DESCRIPTION:** SMARTPHONE

**MODEL:** A2176

**SERIAL NUMBER:** C7CD603Z08HK, C7CCT014Q90Y

**DATE TESTED:** APRIL 23, 2020- SEPTEMBER 02, 2020

| APPLICABLE STANDARDS | |
|---|---|
| **STANDARD** | **TEST RESULTS** |
| CFR 47 Part 15 Subpart C | Complies |
| ISED RSS-247 Issue 2 | Complies |
| ISED RSS-GEN Issue 5 | Complies |

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released For
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# 2. TEST RESULTS SUMMARY

| FCC Clause | ISED Clause | Requirement | Result | Comment |
|---|---|---|---|---|
| See Comment | | Duty Cycle | Reporting purposes only | ANSI C63.10 Section 11.6. |
| See Comment | RSS-GEN 6.7 | 99% OBW | Reporting purposes only | ANSI C63.10 Section 6.9.3. |
| 15.247 (a) (2) | RSS-247 5.2 (a) | 6dB BW | Complies | None. |
| 15.247 (b) (3) | RSS-247 5.4 (d) | Output Power | Complies | None. |
| See Comment | | Average power | Reporting purposes only | Per ANSI C63.10, Section 11.9.2.3.2. |
| 15.247 (e) | RSS-247 5.2 (b) | PSD | Complies | None. |
| 15.247 (d) | RSS-247 5.5 | Conducted Spurious Emissions | Complies | None. |
| 15.209, 15.205 | RSS-GEN 8.9, 8.10 | Radiated Emissions | Complies | None. |
| 15.207 | RSS-Gen 8.8 | AC Mains Conducted Emissions | Complies | None. |

# 3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with;
- FCC CFR 47 Part 2
- FCC CFR 47 Part 15
- FCC KDB 558074 D01 v05r02 15.247 Meas Guidance
- ANSI C63.10-2013
- RSS-GEN Issue 5
- RSS-247 Issue 2

# 4. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, and 47658 Kato Road, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

| 47173 Benicia Street | 47266 Benicia Street | 47658 Kato Rd. |
|---|---|---|
| ☐ Chamber A (IC:2324B-1) | ☐ Chamber D (IC:22541-1) | ☒ Chamber I (IC: 2324A-5) |
| ☒ Chamber B (IC:2324B-2) | ☒ Chamber E (IC:22541-2) | ☒ Chamber J (IC: 2324A-6) |
| ☐ Chamber C (IC:2324B-3) | ☐ Chamber F (IC:22541-3) | ☐ Chamber K (IC: 2324A-1) |
| | ☐ Chamber G (IC:22541-4) | ☒ Chamber L (IC: 2324A-3) |
| | ☒ Chamber H (IC:22541-5) | ☐ Chamber M (IC: 2324A-2) |

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers above are covered under Industry Canada company address and respective code

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0


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# 5. DECISION RULES AND MEASUREMENT UNCERTAINTY

## 5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

## 5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

## 5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| PARAMETER | $U_{LAB}$ |
|---|---|
| Worst Case Conducted Disturbance, 9KHz to 0.15 MHz | 3.39 dB |
| Worst Case Conducted Disturbance, 0.15 to 30 MHz | 3.07 dB |
| Worst Case Radiated Disturbance, 9KHz to 30 MHz | 2.52 dB |
| Worst Case Radiated Disturbance, 30 to 1000 MHz | 4.88 dB |
| Worst Case Radiated Disturbance, 1000 to 18000 MHz | 4.24 dB |
| Worst Case Radiated Disturbance, 18000 to 26000 MHz | 4.37 dB |
| Worst Case Radiated Disturbance, 26000 to 40000 MHz | 5.17 dB |

Uncertainty figures are valid to a confidence level of 95%.


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# 6. EQUIPMENT UNDER TEST

## 6.1. EUT DESCRIPTION

The Apple iPhone is a smartphone with multimedia functions (music, application support, and video), cellular GSM, GPRS, EGPRS, UMTS, LTE, 5G, CDMA, IEEE 802.11a/b/g/n/ac/ax, Bluetooth, Ultra-Wideband, GPS, NFC and WPT. All models support at least one UICC based SIM. The second SIM is either an UICC based p-SIM (physical SIM) or e-SIM (electronic SIM). The device supports a built-in inductive charging transmitter and receiver. The rechargeable battery is not user accessible.

## 6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

| Frequency Range (MHz) | Mode | Output Power (dBm) | Output Power (mW) |
|---|---|---|---|
| **1Tx** | | | |
| 2412 - 2472 | 802.11b | 22.41 | 174.18 |
| | 802.11g | Covered by 802.11n HT20 1TX | |
| | 802.11n HT20 | 21.45 | 139.64 |
| | 802.11ax HE20 | 21.47 | 140.28 |

| | | | |
|---|---|---|---|
| **2Tx** | | | |
| 2412-2472 | 802.11n HT20 CDD | 24.23 | 264.85 |
| | 802.11g SDM/STBC | Covered by 802.11n HT20 2TX CDD | |
| | 802.11ax HE20 | 24.25 | 266.07 |

## 6.3. DESCRIPTION OF AVAILABLE ANTENNAS

| Frequency Range (GHz) | ANT 4 (dBi) | ANT 3 (dBi) |
|---|---|---|
| 2.4 | -2.3 | -0.6 |

## 6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was FW 20_10_619_14.


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## 6.5. WORST-CASE CONFIGURATION AND MODE

EUT was investigated in three orthogonal orientations X, Y and Z on ANT 4: ANT 3 and 2TX. It was determined that X (Flatbed) orientation was worst-case orientation for ANT 4: and 2TX and Z (portrait) for ANT 3.

Radiated band edge, harmonic, and spurious emissions from 1GHz to 18GHz were performed with the EUT set to transmit at highest power on Low/Middle/High channels.

Radiated emissions below below 1GHz, 18-26GHz and power line conducted emissions were performed with the EUT transmits at the channel with the highest output power as worst-case scenario. There were no emissions found below 30MHz within 20dB of the limit.

For radiated harmonics spurious below 1GHz, 1-18GHz L/M/H channels, 18-26GHz, and power line conducted emissions were performed with the EUT set at the 2TX CDD mode among the CDD/SDM modes and 2TX HE mode with power setting equal or higher than SISO modes as worst-case scenario. G mode covered by HT20 mode since it has the same power as HT20.

Below 1GHz tests were performed with EUT connected to AC power adapter as the worst case; and for above 1GHz tests, the worst-case configuration reported was with EUT only. For AC line conducted emission, test was investigated with AC power adapter and with laptop.

The output power and psd for the 802.11 ax mode were investigated between all different tones, and we found that the highest tone had the highest output power and PSD readings, the lowest tone had the highest PSD readings. Therefore, full testing was performed on both the highest and lowest tones.

The PSD were performed as worst case mode.

Worst-case data rates as provided by the client were:

802.11b mode: 1 Mbps
802.11n HT20 mode: MCS0, MCS 7
802.11ax HE20mode: MCS0, MCS 9
802.11ax HE20 FULL RU & RU26: MCS09 for Band Edge

There are two vendors of the WiFi/Bluetooth radio modules: variant 1 and variant 2. The Wi-Fi/Bluetooth radio modules have the same mechanical outline (e.g., the same package dimension and pin-out layout), use the same on-board antenna matching circuit, have an identical antenna structure, and are built and tested to conform to the same specifications and to operate within the same tolerances.

Baseline testing was performed on the two variants to determine the worst case on all conducted power and radiated emissions.


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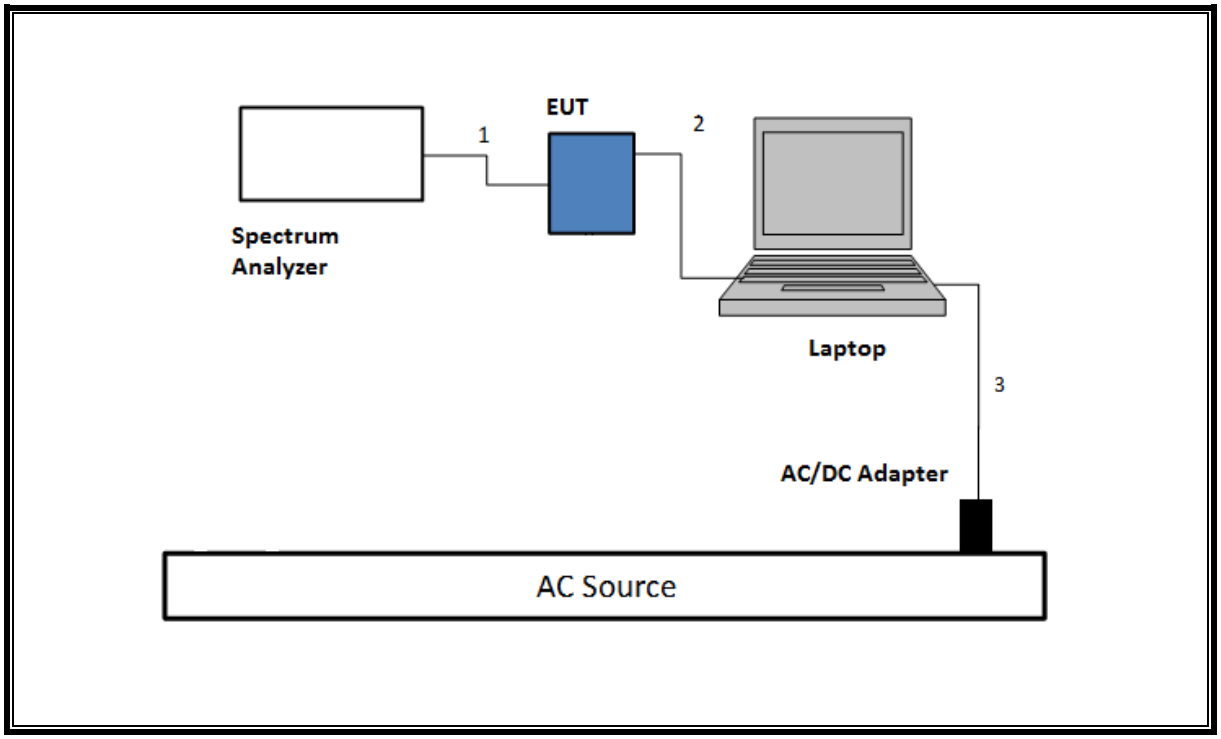
## 6.6. DESCRIPTION OF TEST SETUP

| SUPPORT TEST EQUIPMENT | | | | | | |
|---|---|---|---|---|---|---|
| Description | | Manufacturer | Model | Serial Number | | FCC ID/ DoC |
| Laptop | | Apple | A1502 | HRP003436 | | QDS-BRCM1080 |
| Laptop AC/DC adapter | | Liteon Technology | PA-1450-BA1 | B123 | | NA |
| EUT AC/DC adapter | | Apple | A1385 | D29325SM03XDHLHC9 | | NA |
| I/O CABLES (RF CONDUCTED TEST) | | | | | | |
| Cable No. | Port | # of Identical Ports | Connector Type | Cable Type | Cable Length (m) | Remarks |
| 1 | Antenna | 1 | SMA | Un-shielded | 0.2 | To spectrum Analyzer |
| 2 | USB | 1 | USB | Shielded | 1.0 | N/A |
| 3 | AC | 1 | AC | Un-shielded | 2 | N/A |
| I/O CABLES (RF RADIATED TEST) | | | | | | |
| Cable No. | Port | # of Identical Ports | Connector Type | Cable Type | Cable Length (m) | Remarks |
| 1 | AC | 1 | AC | Un-shielded | 2 | N/A |
| 2 | USB | 1 | USB | Un-shielded | 1 | N/A |

**TEST SETUP**

The EUT setup is shown as below. Test software exercised the radio card.

**SETUP DIAGRAM FOR CONDUCTED TESTS**





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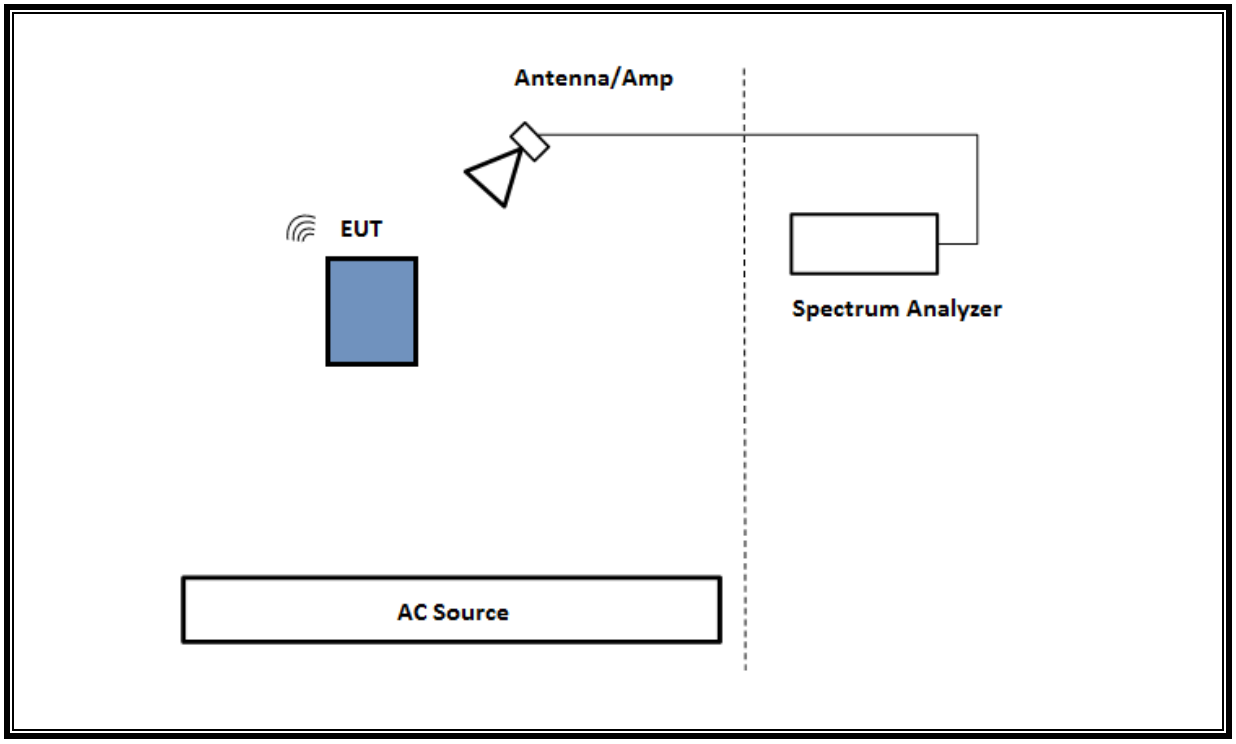
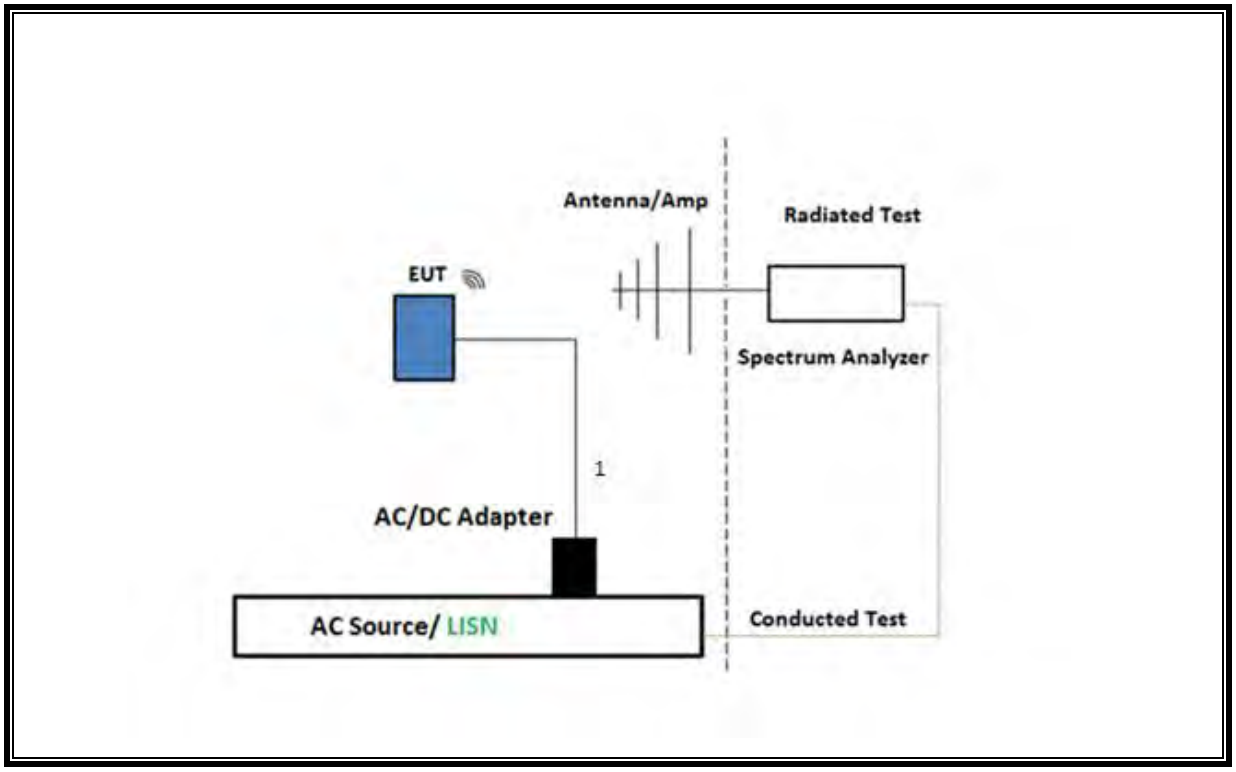
**SETUP DIAGRAM FOR RADIATED TESTS Above 1 GHz**




**SETUP DIAGRAM FOR Below 1GHz and AC LINE CONDUCTED TEST**





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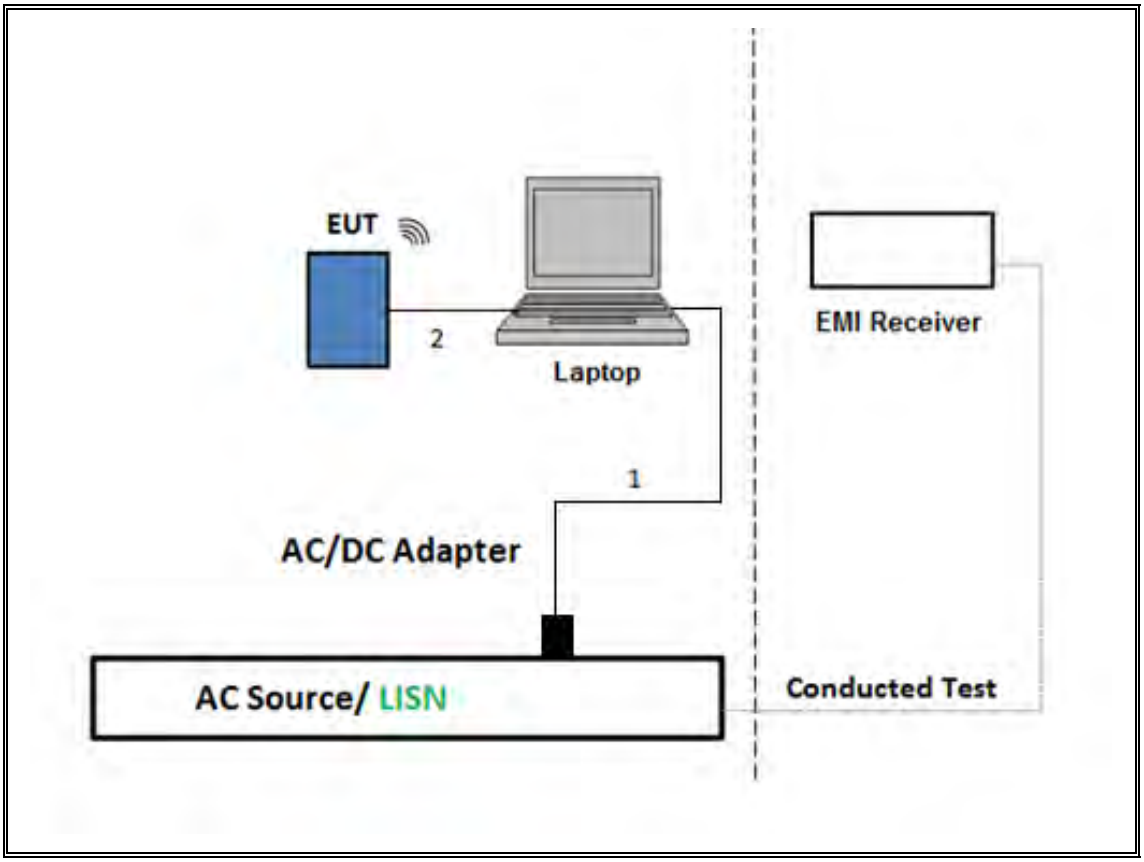
**TEST SETUP- AC LINE CONDUCTED: LAPTOP CONFIGURATION**





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# 7. MEASUREMENT METHOD

| Test Item | Test Method |
|---|---|
| 6 dB BW | ANSI C63.10 Subclause -11.8.1 RBW ≥ DTS BW |
| 99% BW | ANSI C63.10-2013, Subclause 6.9.3. |
| Output Power | ANSI C63.10 Subclause -11.9.2.3.1 Method AVGPM (Measurement using an RF average-reading power meter) |
| PSD | ANSI C63.10 Subclause -11.10.3 Method AVGPSD-1 |
| Radiated emissions non-restricted frequency bands | ANSI C63.10 Subclause -11.11 & Clause 13 |
| Radiated emissions restricted frequency bands | ANSI C63.10 Subclause -11.12.1 & Clause 13 |
| Conducted emissions in restricted frequency bands | ANSI C63.10 Subclause -11.12.2 |
| Band-edge | ANSI C63.10 Subclause -11.13.3.2 & Clause 13: Integration method -Peak detection |
| Band-edge | ANSI C63.10 Subclause -11.13.3.3 & Clause 13: Integration method -Trace averaging with continuous transmission at full power |
| Radiated Spurious Emissions Below 30MHz | ANSI C63.10-2013 Subclause 6.4 & Clause 13 |
| AC Power Line Conducted Emissions | ANSI C63.10-2013, Subclause 6.2 |


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# 8. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

| TEST EQUIPMENT LIST | | | | | |
|---|---|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **ID Num** | **Cal Due** | **Last Cal** |
| Antenna, Horn 1-18GHz | ETS Lindgren | 3117 | T712 | 03/09/2021 | 03/09/2020 |
| *Amplifier, 1 to 18GHz | Miteq | AFS42-00101800-25-S-42 | T740 | 07/31/2020 | 07/31/2019 |
| Antenna, Horn 1-18GHz | ETS-Lindgren | 3117 | T344 | 05/26/2021 | 05/26/2020 |
| Amplifier, 1 to 18GHz | Miteq | AFS42-00101800-25-S-42 | T931 | 05/11/2021 | 05/11/2020 |
| *Antenna, Horn 1-18GHz | ETS Lindgren | 3117 | T344 | 05/07/2020 | 05/07/2019 |
| *Amplifier, 1 to 18GHz | Miteq | AFS42-00101800-25-S-42 | T931 | 05/11/2020 | 05/11/2019 |
| Spectrum Analyzer, PXA, 3Hz to 44GHz | Agilent (Keysight) Technologies | N9030A | T459 | 01/23/2021 | 01/23/2020 |
| Antenna, Double Ridge Guide Horn Antenna | A.H. Systems, Inc. | SAS-571 | T963 | 01/25/2021 | 01/25/2020 |
| EMI Test Receiver | Rohde & Schwarz | ESW44 | Pre0179372 | 02/25/2021 | 02/25/2020 |
| Amplifier, 1 to 18GHz, 35dB | AMPLICAL | AMP1G18-35 | T1569 | 01/30/2021 | 01/30/2020 |
| *Antenna, Horn 1-18GHz | ETS Lindgren | 3117 | T862 | 08/20/2020 | 08/20/2019 |
| *RF Amplifier, 1-18GHz | MITEQ | AFS42-00101800-25-S-42 | 171460 | 08/24/2020 | 08/24/2019 |
| EMI Test Receiver | Rohde & Schwarz | ESW44 | Pre0179522 | 02/20/2021 | 02/20/2020 |
| *EMI Test Receiver | Rohde & Schwarz | ESW44 | Pre0179367 | 05/16/2020 | 05/16/2019 |
| Antenna Horn, 18 to 26GHz | ARA | SWH-28 | T125 | 04/17/2021 | 04/17/2020 |
| Pre-Amp 18-26GHz | Agilent Technology | 8449B | T404 | 04/08/2021 | 04/08/2020 |
| Spectrum Analyzer, PXA, 3Hz to 44GHz | Agilent (Keysight) Technologies | N9030A | T1454 | 01/23/2021 | 01/23/2020 |
| *Antenna, Broadband Hybrid, 30MHz to 2000MHz | Sunsol Sciences Corp. | JB3 | T408 | 08/23/2020 | 08/23/2019 |
| *Amplifier, 10KHz to 1GHz, 32dB | Sonoma | 310N | T286 | 07/31/2020 | 07/31/2019 |
| Power Sensor | Keysight | N1921A | T1226 | 02/13/2021 | 02/13/2020 |
| Power Meter, P-series single channel | Keysight | N1911A | PRE0126090 | 01/212021 | 01/212020 |
| Antenna, Active Loop 9kHz-30MHz | ETS-Lindgren | 6502 | T1683 | 04/28/2021 | 04/28/2020 |

| AC Line Conducted | | | | | |
|---|---|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **ID Num** | **Cal Due** | **Last Cal** |
| EMI Test Receiver 9kHz-7GHz | Rohde & Schwarz | ESR | T1436 | 02/20/2021 | 02/20/2020 |
| Power Cable, Line Conducted Emissions | UL | PR1 | T861 | 10/27/2020 | 10/27/2019 |
| LISN for Conducted Emissions CISPR-16 | FISCHER CUSTOM COMMUNICATIONS | FCC-LISN-50/250-25-2-01 | PRE0186446 | 01/23/2021 | 01/23/2020 |
| **UL AUTOMATION SOFTWARE** | | | | | |
| Radiated Software | UL | UL EMC | Ver 9.5, Mar 6, 2020 | | |
| Conducted Software | UL | UL EMC | 2020.2.26 | | |
| AC Line Conducted Software | UL | UL EMC | Ver 9.5, February 21, 2020 | | |

*Testing is completed before equipment expiration date.


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# 9. ANTENNA PORT TEST RESULTS

## 9.1. ON TIME AND DUTY CYCLE

**LIMITS**

None; for reporting purposes only.

**PROCEDURE**

KDB 558074 Zero-Span Spectrum Analyzer Method.

**ON TIME AND DUTY CYCLE RESULTS**

| Mode | ON Time B (msec) | Period (msec) | Duty Cycle x (linear) | Duty Cycle (%) | Duty Cycle Correction Factor (dB) | 1/B Minimum VBW (kHz) |
|---|---|---|---|---|---|---|
| **2.4GHz Band** | | | | | | |
| 802.11b MCS0 | 1.850 | 1.850 | 1.000 | 100.00% | 0.00 | 0.010 |
| 802.11b MCS11 | 1.208 | 1.221 | 0.989 | 98.87% | 0.00 | 0.010 |
| 802.11n HT20 1Tx MCS0 | 1.920 | 1.944 | 0.988 | 98.77% | 0.00 | 0.010 |
| 802.11n HT20 1Tx MCS7 | 0.227 | 0.248 | 0.915 | 91.49% | 0.39 | 4.400 |
| 802.11n HT20 2Tx MCS0 | 0.984 | 1.003 | 0.981 | 98.12% | 0.00 | 0.010 |
| 802.11n HT20 2Tx MCS7 | 0.136 | 0.156 | 0.871 | 87.14% | 0.60 | 7.342 |
| 802.11ax HE20 1Tx MCS0 | 1.560 | 1.584 | 0.985 | 98.48% | 0.00 | 0.010 |
| 802.11ax HE20 1Tx MCS9 | 1.560 | 1.584 | 0.985 | 98.48% | 0.00 | 0.010 |
| 802.11ax HE20 2Tx MCS0 | 1.557 | 1.581 | 0.985 | 98.48% | 0.00 | 0.010 |
| 802.11ax HE20 2Tx MCS9 | 1.560 | 1.581 | 0.987 | 98.67% | 0.00 | 0.010 |


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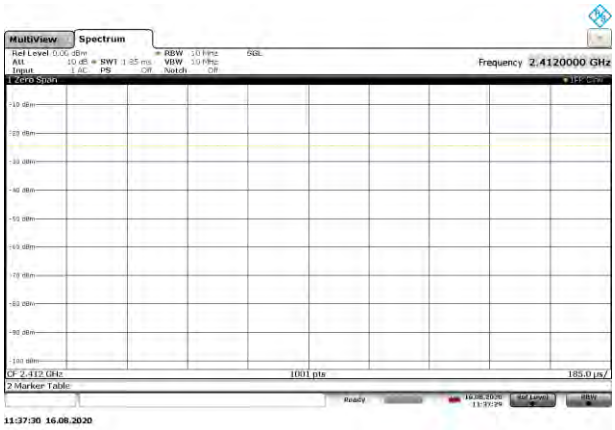
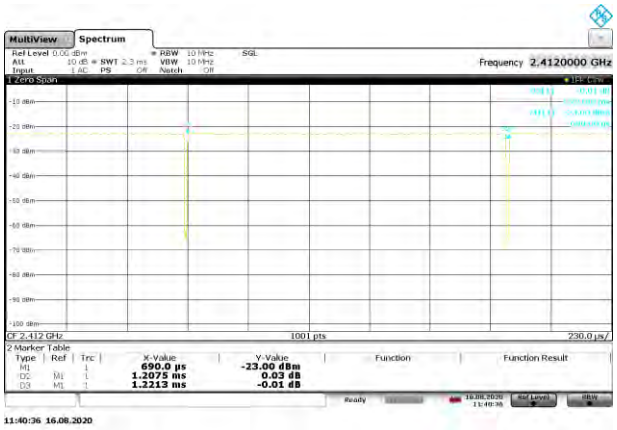
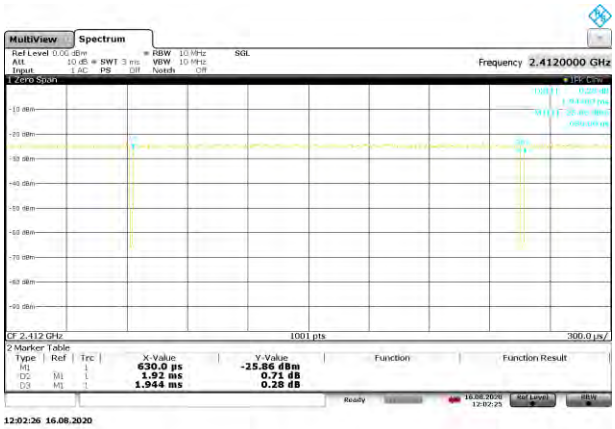
## DUTY CYCLE PLOTS



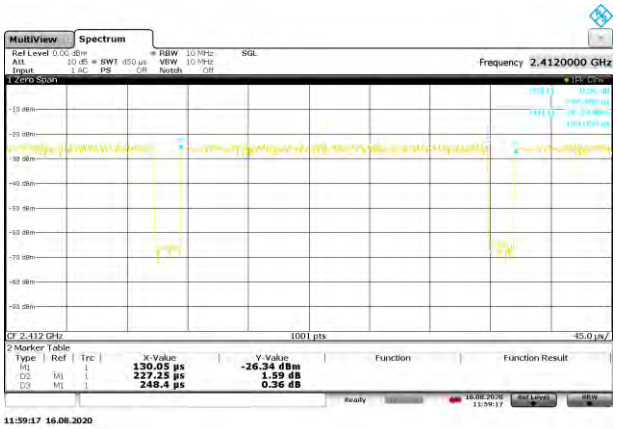

DUTY CYCLE 802.11b MODE MCS0




DUTY CYCLE 802.11b MODE MCS11

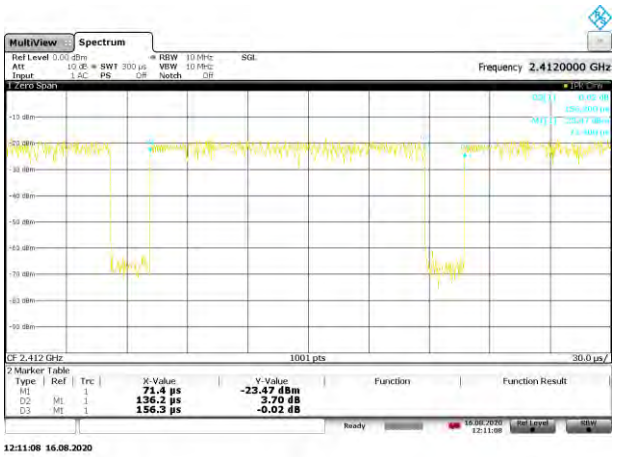



DUTY CYCLE 802.11n HT20 1Tx MCS0




DUTY CYCLE 802.11n HT20 1Tx MCS7

DUTY CYCLE 802.11n HT20 2Tx MCS0




DUTY CYCLE 802.11n HT20 2Tx MCS7



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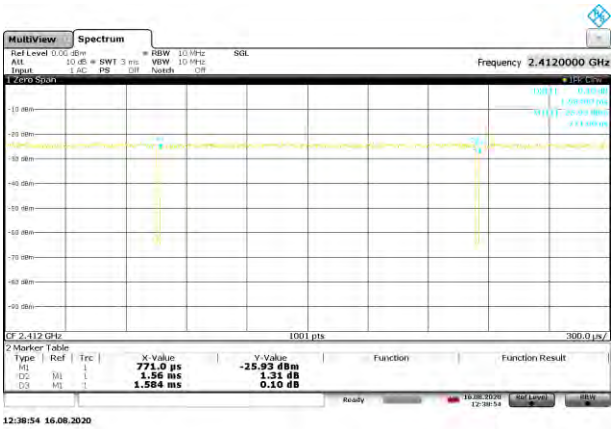


DUTY CYCLE 802.11ax HE20 1Tx MCS0

DUTY CYCLE 802.11ax HE20 1Tx MCS9

DUTY CYCLE 802.11ax HE20 2Tx MCS0

DUTY CYCLE 802.11ax HE20 2Tx MCS9


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## 9.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**RESULTS**

Only Mid channel plot is reported to show setting parameter complies with testing method/procedure.



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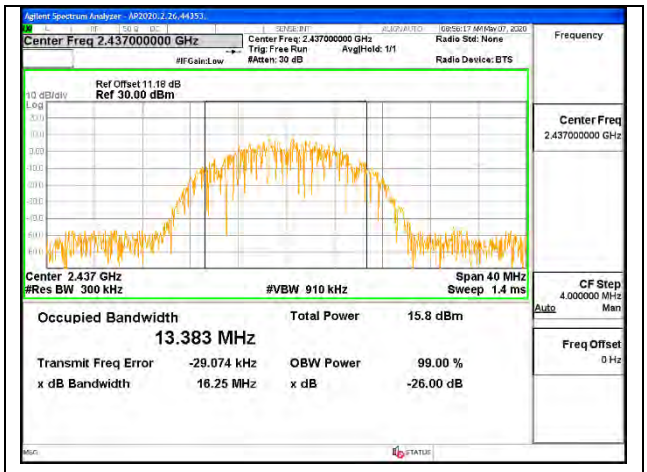
### 9.2.1. **802.11b MODE 1TX**

**1TX ANT 4 MODE**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low 1 | 2412 | 13.228 |
| Mid 6 | 2437 | 13.383 |
| High 11 | 2462 | 12.929 |
| High 12 | 2467 | 13.187 |
| High 13 | 2472 | 12.841 |




**MID CHANNEL 6**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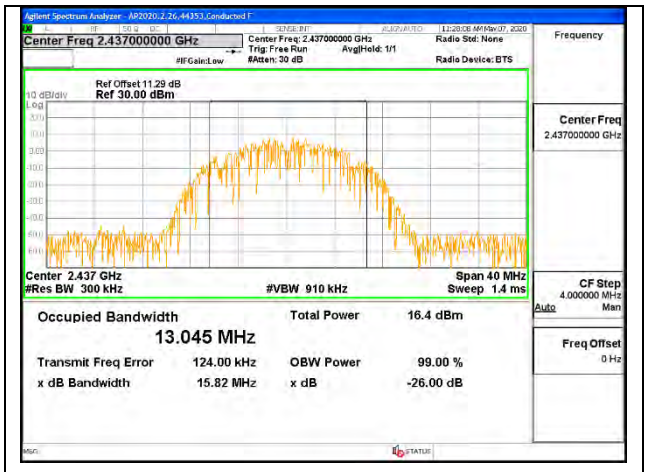
**1TX ANT 3 MODE**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low 1 | 2412 | 13.239 |
| Mid 6 | 2437 | 13.045 |
| High 11 | 2462 | 13.324 |
| High 12 | 2467 | 13.189 |
| High 13 | 2472 | 13.298 |

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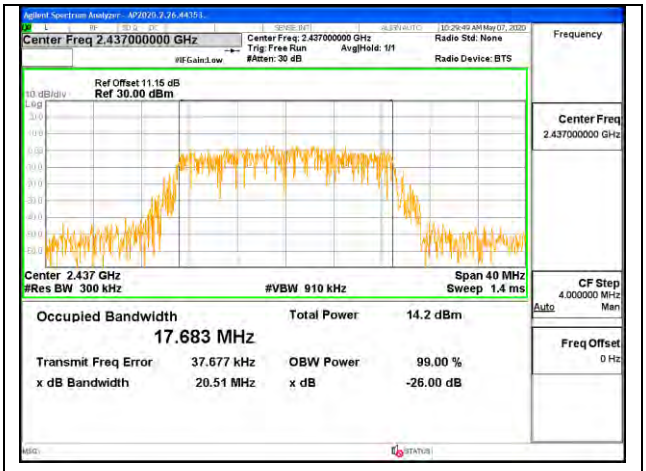
### 9.2.2. **802.11n HT20 MODE**

**1TX ANT 4 MODE**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low 1 | 2412 | 17.691 |
| Low 2 | 2417 | 17.735 |
| Low 3 | 2422 | 17.686 |
| Mid 6 | 2437 | 17.683 |
| High 9 | 2452 | 17.667 |
| High 10 | 2457 | 17.632 |
| High 11 | 2462 | 17.667 |
| High 12 | 2467 | 17.702 |
| High 13 | 2472 | 17.537 |

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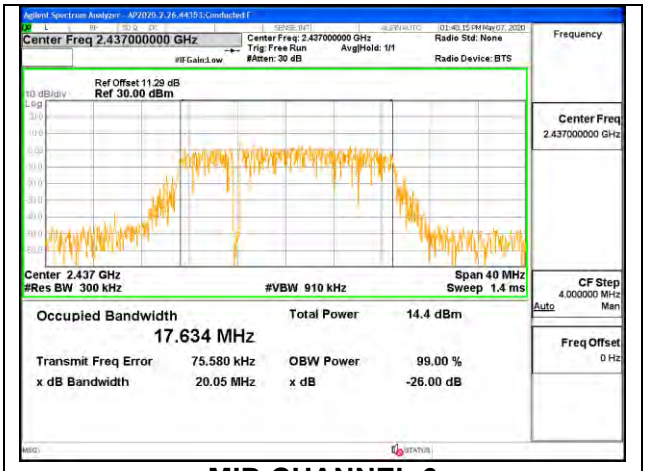
**1TX ANT 3 MODE**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low 1 | 2412 | 17.733 |
| Low 2 | 2417 | 17.668 |
| Low 3 | 2422 | 17.755 |
| Mid 6 | 2437 | 17.634 |
| High 9 | 2452 | 17.701 |
| High 10 | 2457 | 17.684 |
| High 11 | 2462 | 17.654 |
| High 12 | 2467 | 17.729 |
| High 13 | 2472 | 17.593 |

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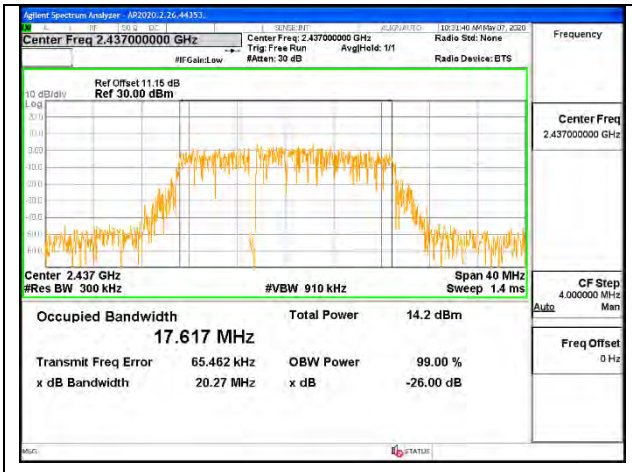
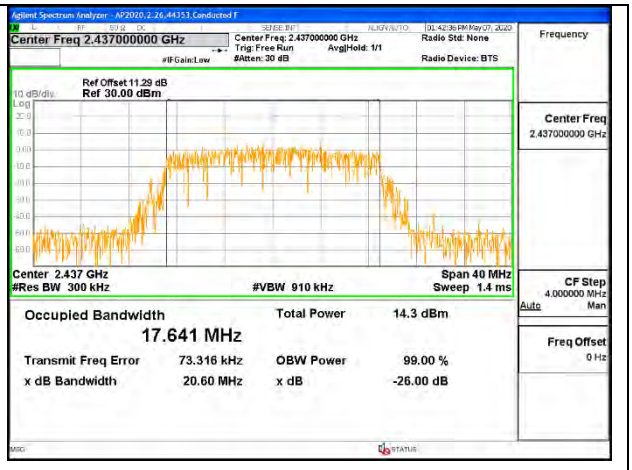
### 9.2.3. **802.11n HT20 CDD MODE**

**ANT 4 + ANT 3 2TX MODE**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) ANT 4 | 99% Bandwidth (MHz) ANT 3 |
|---|---|---|---|
| Low 1 | 2412 | 17.611 | 17.739 |
| Low 2 | 2417 | 17.696 | 17.665 |
| Low 3 | 2422 | 17.635 | 17.673 |
| Mid 6 | 2437 | 17.617 | 17.641 |
| High 9 | 2452 | 17.642 | 17.718 |
| High 10 | 2457 | 17.730 | 17.671 |
| High 11 | 2462 | 17.716 | 17.660 |
| High 12 | 2467 | 17.728 | 17.621 |
| High 13 | 2472 | 17.638 | 17.598 |




**MID CHANNEL 6 ANT 4**




**MID CHANNEL 6 ANT 3**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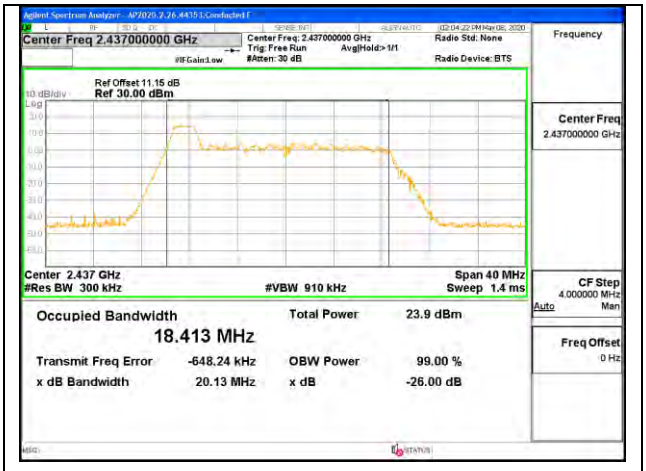
### 9.2.4. **802.11ax HE20 MODE**

**ANT 4 SISO MODE: 26-Tones, RU index 0**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low 1 | 2412 | 18.479 |
| Low 2 | 2417 | 18.496 |
| Low 3 | 2422 | 18.452 |
| Mid 6 | 2437 | 18.413 |
| High 9 | 2452 | 18.355 |
| High 10 | 2457 | 18.350 |
| High 11 | 2462 | 18.401 |
| High 12 | 2467 | 18.370 |
| High 13 | 2472 | 18.053 |

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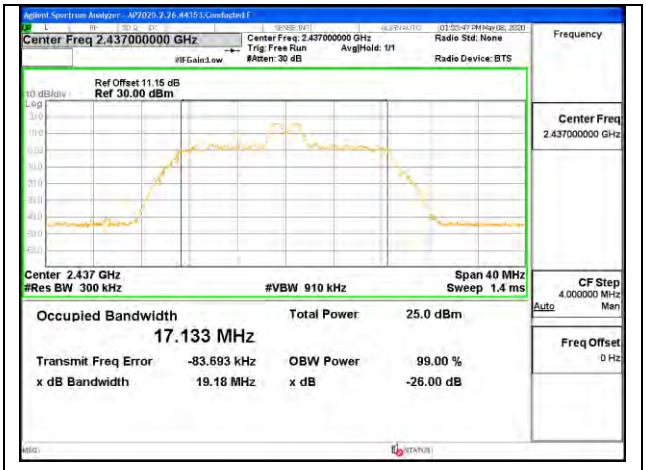
**ANT 4 SISO MODE: 26-Tones, RU Index 4**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low 1 | 2412 | 17.153 |
| Low 2 | 2417 | 17.058 |
| Low 3 | 2422 | 17.112 |
| Mid 6 | 2437 | 17.133 |
| High 9 | 2452 | 17.115 |
| High 10 | 2457 | 17.098 |
| High 11 | 2462 | 16.974 |
| High 12 | 2467 | 17.078 |
| High 13 | 2472 | 16.738 |

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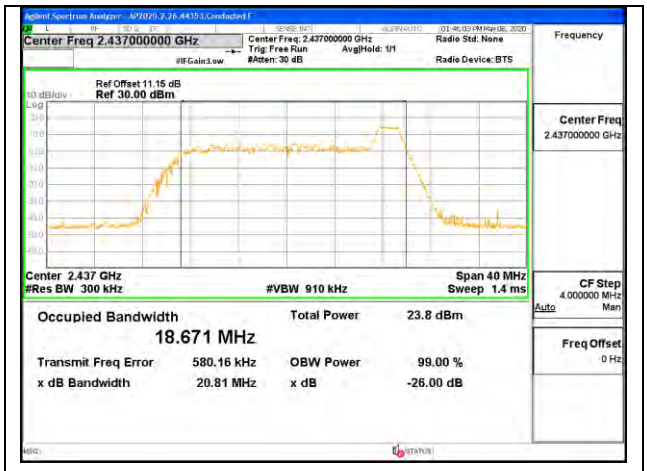
**ANT 4 SISO MODE: 26-Tones, RU Index 8**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low 1 | 2412 | 18.535 |
| Low 2 | 2417 | 18.569 |
| Low 3 | 2422 | 18.765 |
| Mid 6 | 2437 | 18.671 |
| High 9 | 2452 | 18.697 |
| High 10 | 2457 | 18.863 |
| High 11 | 2462 | 18.593 |
| High 12 | 2467 | 18.697 |
| High 13 | 2472 | 18.729 |

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**ANT 4 SISO MODE: 242-Tones, RU Index 61**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low 1 | 2412 | 18.850 |
| Low 2 | 2417 | 18.897 |
| Low 3 | 2422 | 19.046 |
| Mid 6 | 2437 | 18.833 |
| High 9 | 2452 | 18.921 |
| High 10 | 2457 | 18.947 |
| High 11 | 2462 | 18.940 |
| High 12 | 2467 | 18.987 |
| High 13 | 2472 | 18.712 |

**MID CHANNEL 6**


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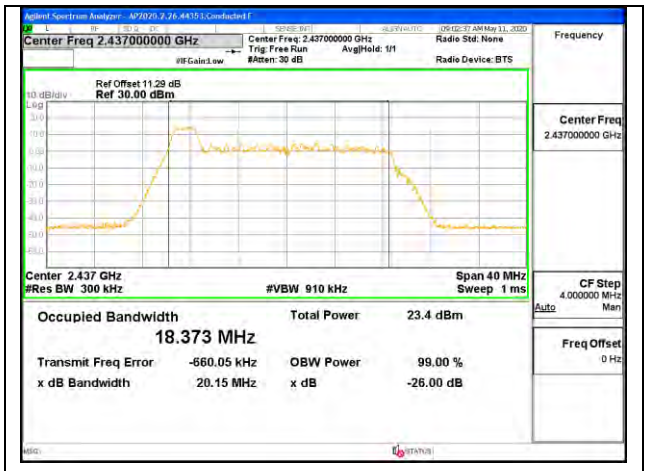
**ANT 3 SISO MODE: 26-Tones, RU Index 0**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low 1 | 2412 | 18.445 |
| Low 2 | 2417 | 18.423 |
| Low 3 | 2422 | 18.457 |
| Mid 6 | 2437 | 18.373 |
| High 9 | 2452 | 18.346 |
| High 10 | 2457 | 18.447 |
| High 11 | 2462 | 18.391 |
| High 12 | 2467 | 18.326 |
| High 13 | 2472 | 18.140 |

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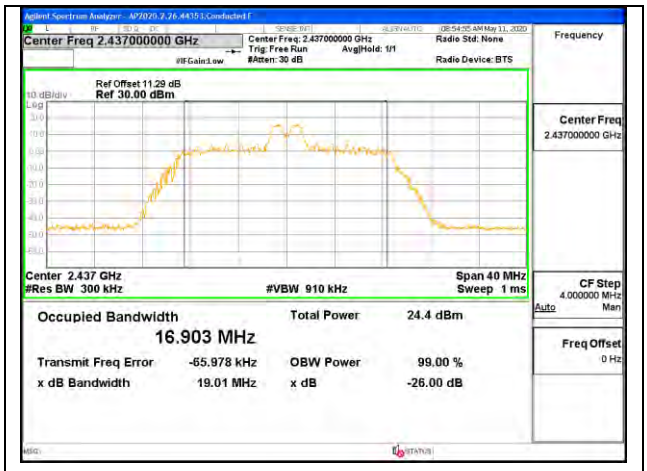
**ANT 3 SISO MODE: 26-Tones, RU Index 4**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low 1 | 2412 | 17.205 |
| Low 2 | 2417 | 17.211 |
| Low 3 | 2422 | 17.161 |
| Mid 6 | 2437 | 16.903 |
| High 9 | 2452 | 17.232 |
| High 10 | 2457 | 17.186 |
| High 11 | 2462 | 17.247 |
| High 12 | 2467 | 17.175 |
| High 13 | 2472 | 16.843 |

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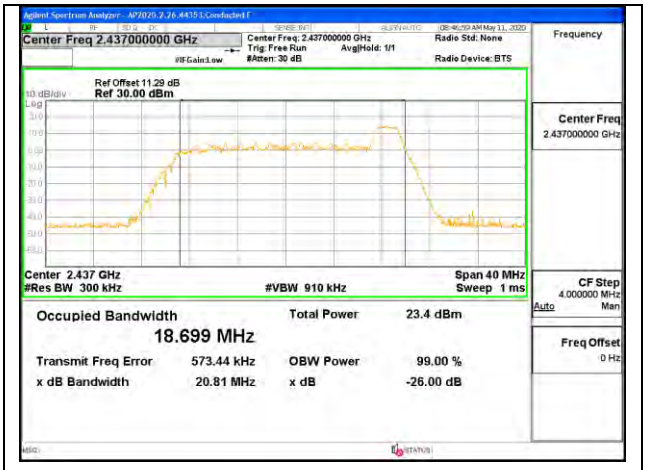
**ANT 3 SISO MODE: 26-Tones, RU Index 8**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low 1 | 2412 | 18.608 |
| Low 2 | 2417 | 18.733 |
| Low 3 | 2422 | 18.754 |
| Mid 6 | 2437 | 18.699 |
| High 9 | 2452 | 18.682 |
| High 10 | 2457 | 18.865 |
| High 11 | 2462 | 18.739 |
| High 12 | 2467 | 18.692 |
| High 13 | 2472 | 18.851 |

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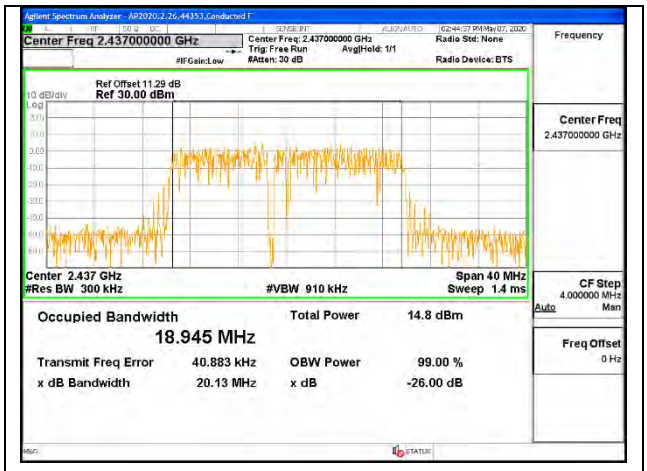
**ANT 3 SISO MODE: 242-Tones, RU Index 61**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low 1 | 2412 | 18.893 |
| Low 2 | 2417 | 18.887 |
| Low 3 | 2422 | 18.908 |
| Mid 6 | 2437 | 18.945 |
| High 9 | 2452 | 18.886 |
| High 10 | 2457 | 18.929 |
| High 11 | 2462 | 18.936 |
| High 12 | 2467 | 19.040 |
| High 13 | 2472 | 18.638 |

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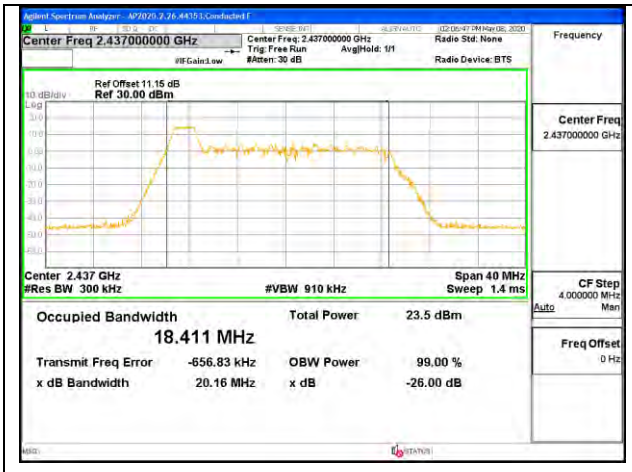
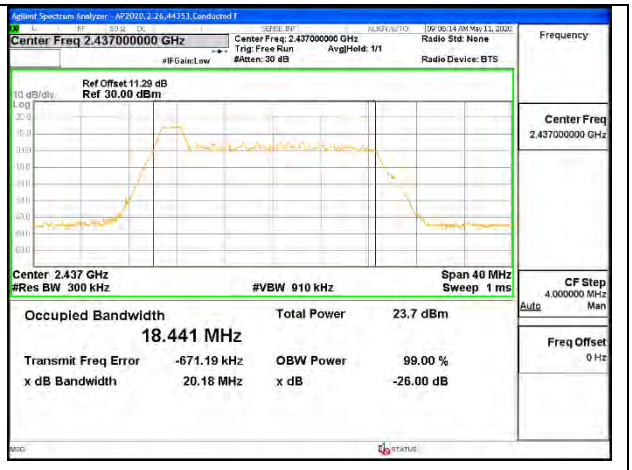
### 9.2.5. **802.11ax HE20 OFDMA MODE 2TX**

**ANT 4 + ANT 3 2TX MODE: 26-Tones, RU Index 0**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) ANT 4 | 99% Bandwidth (MHz) ANT 3 |
|---|---|---|---|
| Low 1 | 2412 | 18.489 | 18.415 |
| Low 2 | 2417 | 18.462 | 18.442 |
| Low 3 | 2422 | 18.385 | 18.431 |
| Mid 6 | 2437 | 18.411 | 18.441 |
| High 9 | 2452 | 18.347 | 18.297 |
| High 10 | 2457 | 18.427 | 18.415 |
| High 11 | 2462 | 18.322 | 18.391 |
| High 12 | 2467 | 18.304 | 18.383 |
| High 13 | 2472 | 18.087 | 18.159 |




**MID CHANNEL 6 ANT 4**




**MID CHANNEL 6 ANT 3**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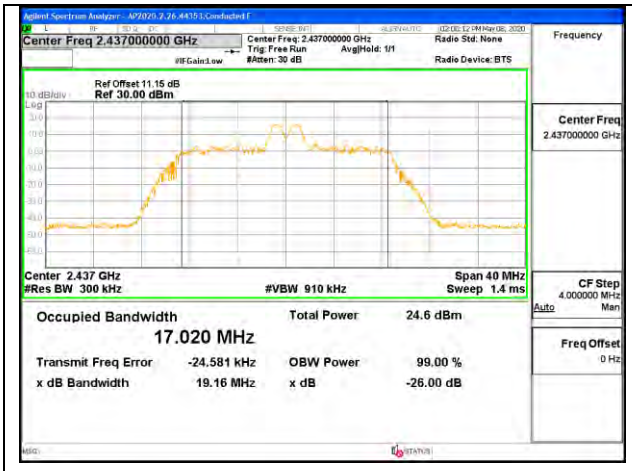
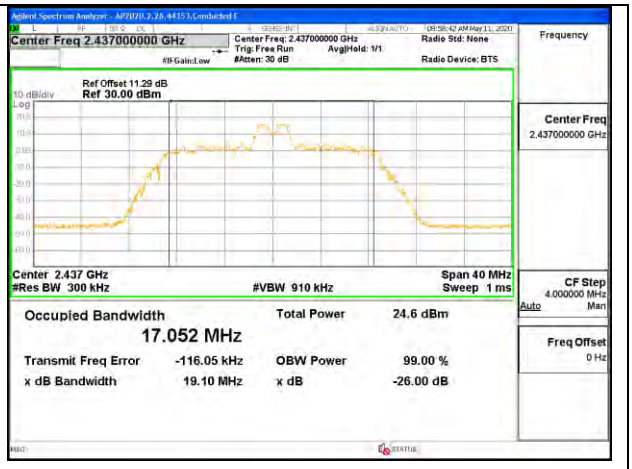
**ANT 4 + ANT 3 2TX MODE: 26-Tones, RU Index 4**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) ANT 4 | 99% Bandwidth (MHz) ANT 3 |
|---|---|---|---|
| Low 1 | 2412 | 17.201 | 17.153 |
| Low 2 | 2417 | 17.171 | 17.108 |
| Low 3 | 2422 | 17.007 | 16.797 |
| Mid 6 | 2437 | 17.020 | 17.052 |
| High 9 | 2452 | 17.110 | 17.261 |
| High 10 | 2457 | 17.223 | 17.125 |
| High 11 | 2462 | 17.148 | 17.102 |
| High 12 | 2467 | 17.043 | 17.181 |
| High 13 | 2472 | 16.902 | 16.942 |




**MID CHANNEL 6 ANT 4**




**MID CHANNEL 6 ANT 3**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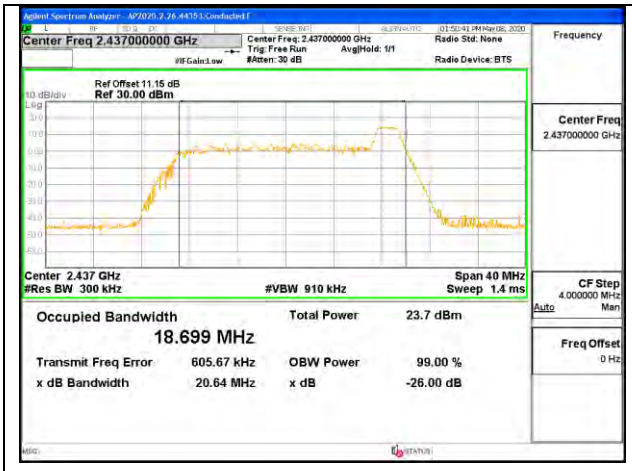
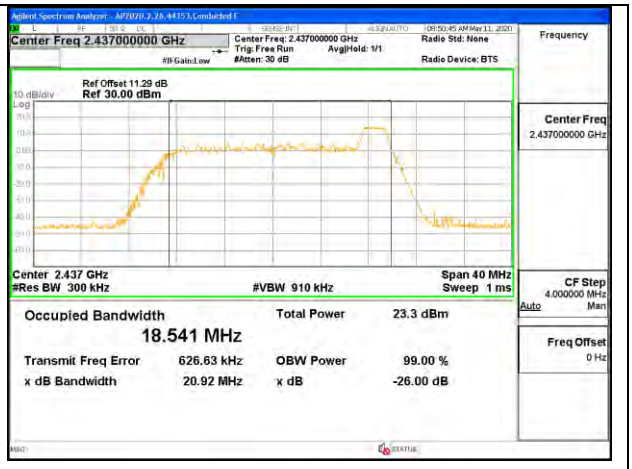
**ANT 4 + ANT 3 2TX MODE: 26-Tones, RU Index 8**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) ANT 4 | 99% Bandwidth (MHz) ANT 3 |
|---|---|---|---|
| Low 1 | 2412 | 18.535 | 18.800 |
| Low 2 | 2417 | 18.590 | 18.649 |
| Low 3 | 2422 | 18.659 | 18.713 |
| Mid 6 | 2437 | 18.699 | 18.541 |
| High 9 | 2452 | 18.676 | 18.765 |
| High 10 | 2457 | 18.747 | 18.812 |
| High 11 | 2462 | 18.668 | 18.738 |
| High 12 | 2467 | 18.615 | 18.801 |
| High 13 | 2472 | 18.842 | 18.763 |




**MID CHANNEL 6 ANT 4**




**MID CHANNEL 6 ANT 3**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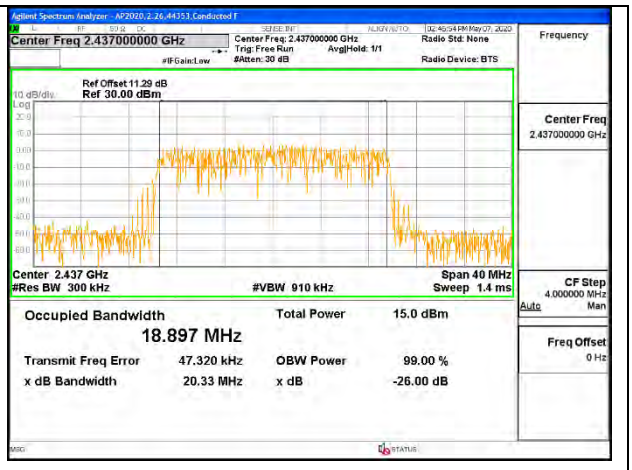
**ANT 4 + ANT 3 2TX MODE: 242-Tones, RU Index 61**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) ANT 4 | 99% Bandwidth (MHz) ANT 3 |
|---|---|---|---|
| Low 1 | 2412 | 18.883 | 19.021 |
| Low 2 | 2417 | 18.937 | 18.871 |
| Low 3 | 2422 | 18.939 | 19.000 |
| Low 4 | 2427 | 18.880 | 18.910 |
| Mid 6 | 2437 | 18.960 | 18.897 |
| High 8 | 2447 | 18.990 | 18.856 |
| High 9 | 2452 | 18.946 | 18.912 |
| High 10 | 2457 | 18.956 | 18.952 |
| High 11 | 2462 | 18.896 | 19.006 |
| High 12 | 2467 | 18.928 | 19.035 |
| High 13 | 2472 | 18.608 | 18.871 |

**MID CHANNEL 6 ANT 4**




**MID CHANNEL 6 ANT 3**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## 9.3. 6dB BANDWIDTH

**LIMITS**

FCC §15.247 (a) (2)

RSS-247 5.2 (a)

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

**RESULTS**

The 6dB bandwidth was measured for the narrowest bandwidth mode, b Mode and ax HE20 Mode 26-Tones as worst case to demonstrate compliance with the minimum required bandwidth of 500 kHz to cover all OFDMA modes.

Only Mid channel plot is reported to show setting parameter complies with testing method/procedure.


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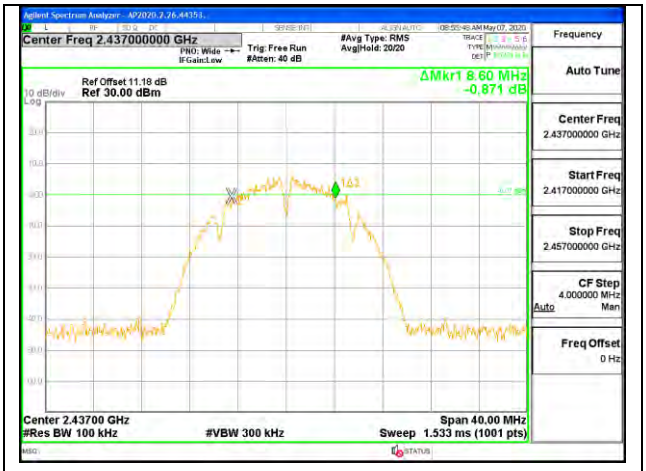
### 9.3.1. **802.11b MODE 1TX**

**1TX ANT 4 MODE**

| Channel | Frequency (MHz) | 6dB Bandwidth (MHz) | Minimum Limit (MHz) |
|---|---|---|---|
| Low 1 | 2412 | 8.12 | 0.5 |
| Mid 6 | 2437 | 8.60 | 0.5 |
| High 11 | 2462 | 8.68 | 0.5 |
| High 12 | 2467 | 7.36 | 0.5 |
| High 13 | 2472 | 7.16 | 0.5 |

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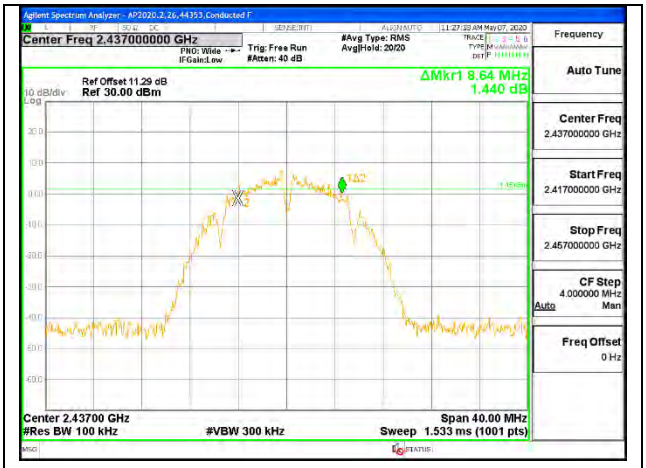
**1TX ANT 3 MODE**

| Channel | Frequency (MHz) | 6dB Bandwidth (MHz) | Minimum Limit (MHz) |
|---|---|---|---|
| Low 1 | 2412 | 7.32 | 0.5 |
| Mid 6 | 2437 | 8.64 | 0.5 |
| High 11 | 2462 | 8.16 | 0.5 |
| High 12 | 2467 | 8.64 | 0.5 |
| High 13 | 2472 | 8.16 | 0.5 |

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### 9.3.2. **802.11ax HE20 MODE**

**ANT 4 SISO MODE: 26-Tones, RU index 0**

| Channel | Frequency (MHz) | 6dB Bandwidth (MHz) | Minimum Limit (MHz) |
|---|---|---|---|
| Low 1 | 2412 | 2.16 | 0.5 |
| Low 2 | 2417 | 2.12 | 0.5 |
| Low 3 | 2422 | 2.16 | 0.5 |
| Mid 6 | 2437 | 2.16 | 0.5 |
| High 9 | 2452 | 2.04 | 0.5 |
| High 10 | 2457 | 2.12 | 0.5 |
| High 11 | 2462 | 2.16 | 0.5 |
| High 12 | 2467 | 2.16 | 0.5 |
| High 13 | 2472 | 2.16 | 0.5 |

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**ANT 4 SISO MODE: 26-Tones, RU Index 4**

| Channel | Frequency (MHz) | 6dB Bandwidth (MHz) | Minimum Limit (MHz) |
|---|---|---|---|
| Low 1 | 2412 | 2.68 | 0.5 |
| Low 2 | 2417 | 2.64 | 0.5 |
| Low 3 | 2422 | 2.64 | 0.5 |
| Mid 6 | 2437 | 2.56 | 0.5 |
| High 9 | 2452 | 2.68 | 0.5 |
| High 10 | 2457 | 2.68 | 0.5 |
| High 11 | 2462 | 2.60 | 0.5 |
| High 12 | 2467 | 2.68 | 0.5 |
| High 13 | 2472 | 2.64 | 0.5 |

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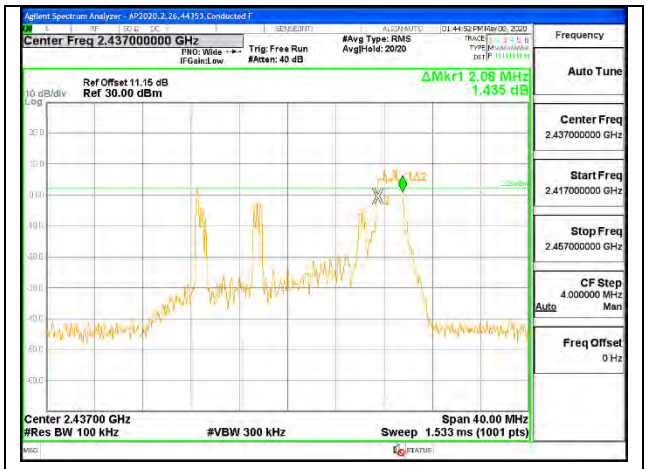
**ANT 4 SISO MODE: 26-Tones, RU Index 8**

| Channel | Frequency (MHz) | 6dB Bandwidth (MHz) | Minimum Limit (MHz) |
|---|---|---|---|
| Low 1 | 2412 | 2.12 | 0.5 |
| Low 2 | 2417 | 2.16 | 0.5 |
| Low 3 | 2422 | 2.04 | 0.5 |
| Mid 6 | 2437 | 2.08 | 0.5 |
| High 9 | 2452 | 2.20 | 0.5 |
| High 10 | 2457 | 2.16 | 0.5 |
| High 11 | 2462 | 2.08 | 0.5 |
| High 12 | 2467 | 2.12 | 0.5 |
| High 13 | 2472 | 2.12 | 0.5 |

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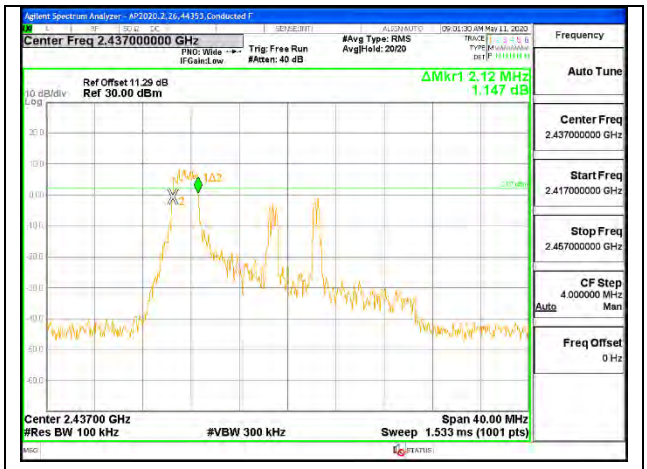
**ANT 3 SISO MODE: 26-Tones, RU Index 0**

| Channel | Frequency (MHz) | 6dB Bandwidth (MHz) | Minimum Limit (MHz) |
|---|---|---|---|
| Low 1 | 2412 | 2.12 | 0.5 |
| Low 2 | 2417 | 2.16 | 0.5 |
| Low 3 | 2422 | 2.04 | 0.5 |
| Mid 6 | 2437 | 2.12 | 0.5 |
| High 9 | 2452 | 2.20 | 0.5 |
| High 10 | 2457 | 2.12 | 0.5 |
| High 11 | 2462 | 2.08 | 0.5 |
| High 12 | 2467 | 2.16 | 0.5 |
| High 13 | 2472 | 2.12 | 0.5 |

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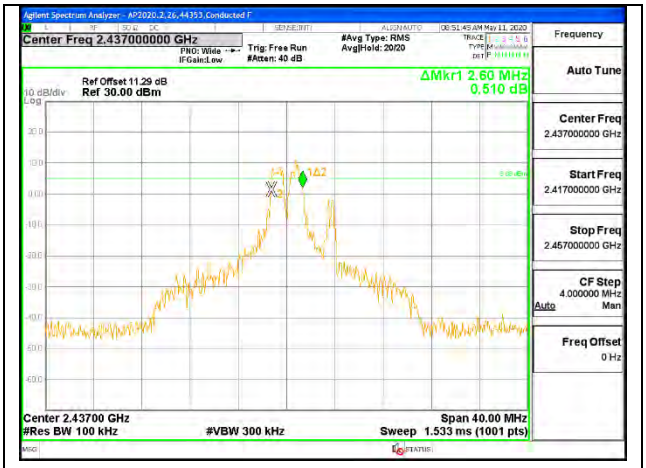
**ANT 3 SISO MODE: 26-Tones, RU Index 4**

| Channel | Frequency (MHz) | 6dB Bandwidth (MHz) | Minimum Limit (MHz) |
|---|---|---|---|
| Low 1 | 2412 | 2.68 | 0.5 |
| Low 2 | 2417 | 2.68 | 0.5 |
| Low 3 | 2422 | 2.76 | 0.5 |
| Mid 6 | 2437 | 2.60 | 0.5 |
| High 9 | 2452 | 2.64 | 0.5 |
| High 10 | 2457 | 2.64 | 0.5 |
| High 11 | 2462 | 2.72 | 0.5 |
| High 12 | 2467 | 2.68 | 0.5 |
| High 13 | 2472 | 2.64 | 0.5 |

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**ANT 3 SISO MODE: 26-Tones, RU Index 8**

| Channel | Frequency (MHz) | 6dB Bandwidth (MHz) | Minimum Limit (MHz) |
|---|---|---|---|
| Low 1 | 2412 | 2.12 | 0.5 |
| Low 2 | 2417 | 2.12 | 0.5 |
| Low 3 | 2422 | 2.12 | 0.5 |
| Mid 6 | 2437 | 2.08 | 0.5 |
| High 9 | 2452 | 2.12 | 0.5 |
| High 10 | 2457 | 2.16 | 0.5 |
| High 11 | 2462 | 2.20 | 0.5 |
| High 12 | 2467 | 2.16 | 0.5 |
| High 13 | 2472 | 2.12 | 0.5 |

**MID CHANNEL 6**


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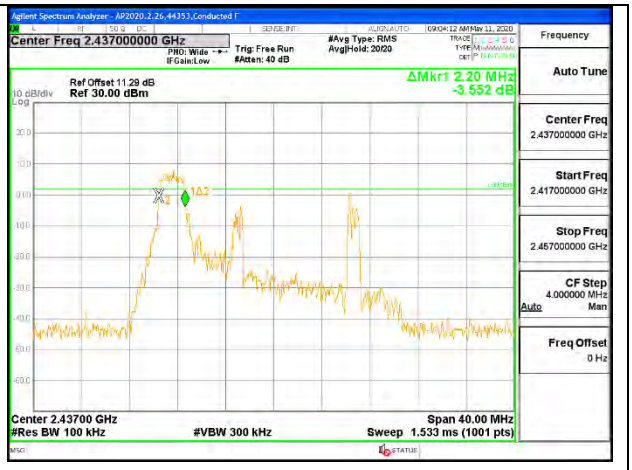
### 9.3.3. **802.11ax HE20 OFDMA MODE 2TX**

**ANT 4 + ANT 3 2TX MODE: 26-Tones, RU Index 0**

| Channel | Frequency (MHz) | 6dB BW(MHz) ANT 4 | 6dB BW (MHz) ANT 3 | Minimum Limit (MHz) |
|---|---|---|---|---|
| Low 1 | 2412 | 2.16 | 2.12 | 0.5 |
| Low 2 | 2417 | 2.08 | 2.04 | 0.5 |
| Low 3 | 2422 | 2.12 | 2.08 | 0.5 |
| Mid 6 | 2437 | 2.04 | 2.20 | 0.5 |
| High 9 | 2452 | 2.12 | 2.12 | 0.5 |
| High 10 | 2457 | 2.12 | 2.08 | 0.5 |
| High 11 | 2462 | 2.20 | 2.08 | 0.5 |
| High 12 | 2467 | 2.12 | 2.16 | 0.5 |
| High 13 | 2472 | 2.12 | 2.08 | 0.5 |

**MID CHANNEL 6 ANT 4**




**MID CHANNEL 6 ANT 3**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**ANT 4 + ANT 3 2TX MODE: 26-Tones, RU Index 4**

| Channel | Frequency (MHz) | 6dB BW(MHz) ANT 4 | 6dB BW (MHz) ANT 3 | Minimum Limit (MHz) |
|---|---|---|---|---|
| Low 1 | 2412 | 2.64 | 2.68 | 0.5 |
| Low 2 | 2417 | 2.68 | 2.68 | 0.5 |
| Low 3 | 2422 | 2.68 | 2.72 | 0.5 |
| Mid 6 | 2437 | 2.68 | 2.72 | 0.5 |
| High 9 | 2452 | 2.76 | 2.64 | 0.5 |
| High 10 | 2457 | 2.68 | 2.68 | 0.5 |
| High 11 | 2462 | 2.64 | 2.60 | 0.5 |
| High 12 | 2467 | 2.64 | 2.68 | 0.5 |
| High 13 | 2472 | 2.64 | 2.68 | 0.5 |

**MID CHANNEL 6 ANT 4**

**MID CHANNEL 6 ANT 3**


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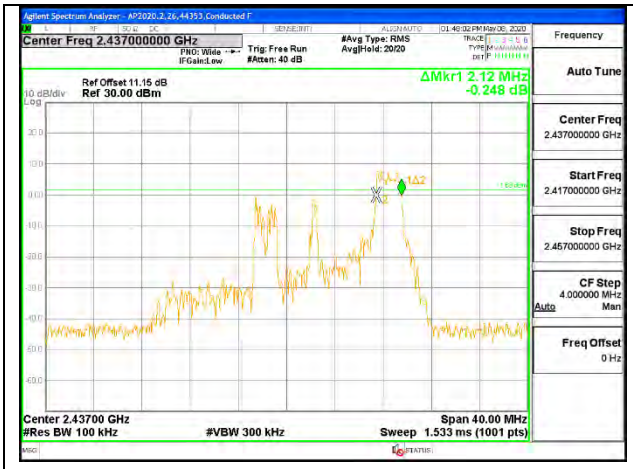
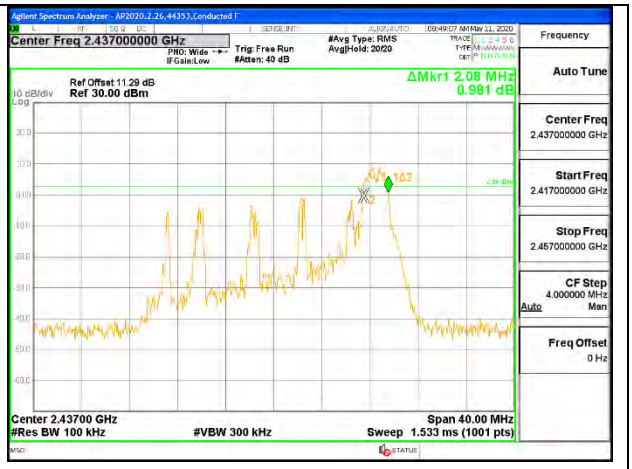
**ANT 4 + ANT 3 2TX MODE: 26-Tones, RU Index 8**

| Channel | Frequency (MHz) | 6dB BW(MHz) ANT 4 | 6dB BW (MHz) ANT 3 | Minimum Limit (MHz) |
|---|---|---|---|---|
| Low 1 | 2412 | 2.08 | 2.12 | 0.5 |
| Low 2 | 2417 | 2.12 | 2.24 | 0.5 |
| Low 3 | 2422 | 2.12 | 2.04 | 0.5 |
| Mid 6 | 2437 | 2.12 | 2.08 | 0.5 |
| High 9 | 2452 | 2.08 | 2.12 | 0.5 |
| High 10 | 2457 | 2.12 | 2.08 | 0.5 |
| High 11 | 2462 | 2.12 | 2.16 | 0.5 |
| High 12 | 2467 | 2.12 | 2.08 | 0.5 |
| High 13 | 2472 | 2.16 | 2.08 | 0.5 |




**MID CHANNEL 6 ANT 4**




**MID CHANNEL 6 ANT 3**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## 9.4. OUTPUT POWER

**LIMITS**

FCC §15.247 (b) (3)

RSS-247 5.4 (d)

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**TEST PROCEDURE**

The power output was measured on the EUT antenna port using SMA cable with 10dB attenuator connected to a power meter via wideband average power sensor. Gated average output power was read directly from power meter.

**DIRECTIONAL ANTENNA GAIN**

For 1 TX:
There is only one transmitter output therefore the directional gain is equal to the antenna gain.

For 2 TX:

Tx chains are uncorrelated for power and correlated for PSD due to the device supporting CDD in all MIMO modes. The directional gains are as follows:

| Band (GHz) | ANT 4 Antenna Gain (dBi) | ANT 3 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|---|
| 2.4 | -2.30 | -0.60 | -1.37 | 1.60 |

**RESULTS**


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### 9.4.1. **802.11b MODE 1TX**

| | |
|---|---|
| **Test Engineer:** | 44352 |
| **Test Date:** | 8/26/2020 |

**1TX ANT 4 MODE**

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC Power Limit (dBm) | ISED Power Limit (dBm) | ISED EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|---|
| Low 1 | 2412 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| Mid 6 | 2437 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 11 | 2462 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 12 | 2467 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 13 | 2472 | -2.30 | 30.00 | 30 | 36 | 30.00 |

| | | |
|---|---|---|
| **Duty Cycle CF (dB)** | 0.00 | **Included in Calculations of Corr'd Power** |

**Results**

| Channel | Frequency (MHz) | Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| Low 1 | 2412 | 20.93 | 20.93 | 30.00 | -9.07 |
| Mid 6 | 2437 | 20.94 | 20.94 | 30.00 | -9.06 |
| High 11 | 2462 | 20.87 | 20.87 | 30.00 | -9.13 |
| High 12 | 2467 | 20.84 | 20.84 | 30.00 | -9.16 |
| High 13 | 2472 | 20.82 | 20.82 | 30.00 | -9.18 |

*PSD is tested at higher power.


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**1TX ANT 3 MODE**

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC Power Limit (dBm) | ISED Power Limit (dBm) | ISED EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|---|
| Low 1 | 2412 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| Mid 6 | 2437 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 11 | 2462 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 12 | 2467 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 13 | 2472 | -0.60 | 30.00 | 30 | 36 | 30.00 |

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of Corr'd Power |
|---|---|---|

**Results**

| Channel | Frequency (MHz) | Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| Low 1 | 2412 | 21.91 | 21.91 | 30.00 | -8.09 |
| Mid 6 | 2437 | 22.41 | 22.41 | 30.00 | -7.59 |
| High 11 | 2462 | 21.91 | 21.91 | 30.00 | -8.09 |
| High 12 | 2467 | 21.84 | 21.84 | 30.00 | -8.16 |
| High 13 | 2472 | 20.83 | 20.83 | 30.00 | -9.17 |


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### 9.4.2. **802.11n HT20 MODE**

| | |
|---|---|
| **Test Engineer:** | 44352 |
| **Test Date:** | 8/26/2020 |

**1TX ANT 4 MODE**

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC Power Limit (dBm) | ISED Power Limit (dBm) | ISED EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|---|
| Low 1 | 2412 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| Low 2 | 2417 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| Low 3 | 2422 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| Mid 6 | 2437 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 9 | 2452 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 10 | 2457 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 11 | 2462 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 12 | 2467 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 13 | 2472 | -2.30 | 30.00 | 30 | 36 | 30.00 |

| | | |
|---|---|---|
| **Duty Cycle CF (dB)** | 0.00 | **Included in Calculations of Corr'd Power** |

**Results**

| Channel | Frequency (MHz) | Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| Low 1 | 2412 | 17.46 | 17.46 | 30.00 | -12.54 |
| Low 2 | 2417 | 19.34 | 19.34 | 30.00 | -10.66 |
| Low 3 | 2422 | 20.88 | 20.88 | 30.00 | -9.12 |
| Mid 6 | 2437 | 20.95 | 20.95 | 30.00 | -9.05 |
| High 9 | 2452 | 20.92 | 20.92 | 30.00 | -9.08 |
| High 10 | 2457 | 19.48 | 19.48 | 30.00 | -10.52 |
| High 11 | 2462 | 17.44 | 17.44 | 30.00 | -12.56 |
| High 12 | 2467 | 15.39 | 15.39 | 30.00 | -14.61 |
| High 13 | 2472 | 15.40 | 15.40 | 30.00 | -14.60 |

*PSD is tested at higher power.


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**1TX ANT 3 MODE**

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC Power Limit (dBm) | ISED Power Limit (dBm) | ISED EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|---|
| Low 1 | 2412 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| Low 2 | 2417 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| Low 3 | 2422 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| Mid 6 | 2437 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 9 | 2452 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 10 | 2457 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 11 | 2462 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 12 | 2467 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 13 | 2472 | -0.60 | 30.00 | 30 | 36 | 30.00 |

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of Corr'd Power |
|---|---|---|

**Results**

| Channel | Frequency (MHz) | Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| Low 1 | 2412 | 17.41 | 17.41 | 30.00 | -12.59 |
| Low 2 | 2417 | 19.47 | 19.47 | 30.00 | -10.53 |
| Low 3 | 2422 | 21.40 | 21.40 | 30.00 | -8.60 |
| Mid 6 | 2437 | 21.45 | 21.45 | 30.00 | -8.55 |
| High 9 | 2452 | 20.93 | 20.93 | 30.00 | -9.07 |
| High 10 | 2457 | 19.41 | 19.41 | 30.00 | -10.59 |
| High 11 | 2462 | 17.47 | 17.47 | 30.00 | -12.53 |
| High 12 | 2467 | 15.42 | 15.42 | 30.00 | -14.58 |
| High 13 | 2472 | 15.40 | 15.40 | 30.00 | -14.60 |


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### 9.4.3. **802.11n HT20 CDD MODE 2TX**

| | |
|---|---|
| **Test Engineer:** | 44352 |
| **Test Date:** | 8/26/2020 |

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC/ISED Power Limit (dBm) | ISED EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|
| Low 1 | 2412 | -1.37 | 30.00 | 36 | 30.00 |
| Low 2 | 2417 | -1.37 | 30.00 | 36 | 30.00 |
| Low 3 | 2422 | -1.37 | 30.00 | 36 | 30.00 |
| Mid 6 | 2437 | -1.37 | 30.00 | 36 | 30.00 |
| High 9 | 2452 | -1.37 | 30.00 | 36 | 30.00 |
| High 10 | 2457 | -1.37 | 30.00 | 36 | 30.00 |
| High 11 | 2462 | -1.37 | 30.00 | 36 | 30.00 |
| High 12 | 2467 | -1.37 | 30.00 | 36 | 30.00 |
| High 13 | 2472 | -1.37 | 30.00 | 36 | 30.00 |

| | | |
|---|---|---|
| **Duty Cycle CF (dB)** | 0.00 | **Included in Calculations of Corr'd Power** |

**Results**

| Channel | Frequency (MHz) | ANT 4 Meas Power (dBm) | ANT 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|
| Low 1 | 2412 | 16.40 | 16.46 | 19.44 | 30.00 | -10.56 |
| Low 2 | 2417 | 18.47 | 18.41 | 21.45 | 30.00 | -8.55 |
| Low 3 | 2422 | 19.82 | 19.93 | 22.89 | 30.00 | -7.11 |
| Mid 6 | 2437 | 20.94 | 21.48 | 24.23 | 30.00 | -5.77 |
| High 9 | 2452 | 19.43 | 19.47 | 22.46 | 30.00 | -7.54 |
| High 10 | 2457 | 18.38 | 18.43 | 21.42 | 30.00 | -8.58 |
| High 11 | 2462 | 16.46 | 16.43 | 19.46 | 30.00 | -10.54 |
| High 12 | 2467 | 13.92 | 13.89 | 16.92 | 30.00 | -13.08 |
| High 13 | 2472 | 13.90 | 13.88 | 16.90 | 30.00 | -13.10 |

*PSD is tested at higher power.


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### 9.4.4. **802.11ax HE20 MODE**

| | |
|---|---|
| **Test Engineer:** | 44352 |
| **Test Date:** | 8/26/2020 |

**1TX ANT 4 MODE: 26-Tones, RU Index 0**

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC Power Limit (dBm) | ISED Power Limit (dBm) | ISED EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|---|
| Low 1 | 2412 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| Low 2 | 2417 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| Low 3 | 2422 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| Mid 6 | 2437 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 9 | 2452 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 10 | 2457 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 11 | 2462 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 12 | 2467 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 13 | 2472 | -2.30 | 30.00 | 30 | 36 | 30.00 |

| | | |
|---|---|---|
| **Duty Cycle CF (dB)** | 0.00 | **Included in Calculations of Corr'd Power** |

**Results**

| Channel | Frequency (MHz) | Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| Low 1 | 2412 | 15.96 | 15.96 | 30.00 | -14.04 |
| Low 2 | 2417 | 17.97 | 17.97 | 30.00 | -12.03 |
| Low 3 | 2422 | 20.80 | 20.80 | 30.00 | -9.20 |
| Mid 6 | 2437 | 20.93 | 20.93 | 30.00 | -9.07 |
| High 9 | 2452 | 20.88 | 20.88 | 30.00 | -9.12 |
| High 10 | 2457 | 17.91 | 17.91 | 30.00 | -12.09 |
| High 11 | 2462 | 15.85 | 15.85 | 30.00 | -14.15 |
| High 12 | 2467 | 13.91 | 13.91 | 30.00 | -16.09 |
| High 13 | 2472 | 0.97 | 0.97 | 30.00 | -29.03 |

*PSD is tested at higher power.


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**1TX ANT 4 MODE: 26-Tones, RU Index 4**

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC Power Limit (dBm) | ISED Power Limit (dBm) | ISED EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|---|
| Low 1 | 2412 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| Low 2 | 2417 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| Low 3 | 2422 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| Mid 6 | 2437 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 9 | 2452 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 10 | 2457 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 11 | 2462 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 12 | 2467 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 13 | 2472 | -2.30 | 30.00 | 30 | 36 | 30.00 |

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of Corr'd Power |
|---|---|---|

**Results**

| Channel | Frequency (MHz) | Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| Low 1 | 2412 | 15.93 | 15.93 | 30.00 | -14.07 |
| Low 2 | 2417 | 17.91 | 17.91 | 30.00 | -12.09 |
| Low 3 | 2422 | 20.82 | 20.82 | 30.00 | -9.18 |
| Mid 6 | 2437 | 20.98 | 20.98 | 30.00 | -9.02 |
| High 9 | 2452 | 20.95 | 20.95 | 30.00 | -9.05 |
| High 10 | 2457 | 17.86 | 17.86 | 30.00 | -12.14 |
| High 11 | 2462 | 15.81 | 15.81 | 30.00 | -14.19 |
| High 12 | 2467 | 13.88 | 13.88 | 30.00 | -16.12 |
| High 13 | 2472 | 0.96 | 0.96 | 30.00 | -29.04 |

*PSD is tested at higher power.


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**1TX ANT 4 MODE: 26-Tones, RU Index 8**

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC Power Limit (dBm) | ISED Power Limit (dBm) | ISED EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|---|
| Low 1 | 2412 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| Low 2 | 2417 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| Low 3 | 2422 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| Mid 6 | 2437 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 9 | 2452 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 10 | 2457 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 11 | 2462 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 12 | 2467 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 13 | 2472 | -2.30 | 30.00 | 30 | 36 | 30.00 |

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of Corr'd Power |
|---|---|---|

**Results**

| Channel | Frequency (MHz) | Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| Low 1 | 2412 | 15.90 | 15.90 | 30.00 | -14.10 |
| Low 2 | 2417 | 17.93 | 17.93 | 30.00 | -12.07 |
| Low 3 | 2422 | 20.85 | 20.85 | 30.00 | -9.15 |
| Mid 6 | 2437 | 20.96 | 20.96 | 30.00 | -9.04 |
| High 9 | 2452 | 20.84 | 20.84 | 30.00 | -9.16 |
| High 10 | 2457 | 17.79 | 17.79 | 30.00 | -12.21 |
| High 11 | 2462 | 15.84 | 15.84 | 30.00 | -14.16 |
| High 12 | 2467 | 13.95 | 13.95 | 30.00 | -16.05 |
| High 13 | 2472 | 0.94 | 0.94 | 30.00 | -29.06 |

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**1TX ANT 4 MODE: 242-Tones, RU Index 61**

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC Power Limit (dBm) | ISED Power Limit (dBm) | ISED EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|---|
| Low 1 | 2412 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| Low 2 | 2417 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| Low 3 | 2422 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| Mid 6 | 2437 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 9 | 2452 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 10 | 2457 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 11 | 2462 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 12 | 2467 | -2.30 | 30.00 | 30 | 36 | 30.00 |
| High 13 | 2472 | -2.30 | 30.00 | 30 | 36 | 30.00 |

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of Corr'd Power |
|---|---|---|

**Results**

| Channel | Frequency (MHz) | Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| Low 1 | 2412 | 15.80 | 15.80 | 30.00 | -14.20 |
| Low 2 | 2417 | 17.82 | 17.82 | 30.00 | -12.18 |
| Low 3 | 2422 | 20.77 | 20.77 | 30.00 | -9.23 |
| Mid 6 | 2437 | 20.91 | 20.91 | 30.00 | -9.09 |
| High 9 | 2452 | 20.88 | 20.88 | 30.00 | -9.12 |
| High 10 | 2457 | 17.91 | 17.91 | 30.00 | -12.09 |
| High 11 | 2462 | 15.84 | 15.84 | 30.00 | -14.16 |
| High 12 | 2467 | 13.90 | 13.90 | 30.00 | -16.10 |
| High 13 | 2472 | 9.82 | 9.82 | 30.00 | -20.18 |

*PSD is tested at higher power.


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**1TX ANT 3 MODE: 26-Tones, RU Index 0**

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC Power Limit (dBm) | ISED Power Limit (dBm) | ISED EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|---|
| Low 1 | 2412 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| Low 2 | 2417 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| Low 3 | 2422 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| Mid 6 | 2437 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 9 | 2452 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 10 | 2457 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 11 | 2462 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 12 | 2467 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 13 | 2472 | -0.60 | 30.00 | 30 | 36 | 30.00 |

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of Corr'd Power |
|---|---|---|

**Results**

| Channel | Frequency (MHz) | Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| Low 1 | 2412 | 15.79 | 15.79 | 30.00 | -14.21 |
| Low 2 | 2417 | 17.84 | 17.84 | 30.00 | -12.16 |
| Low 3 | 2422 | 21.44 | 21.44 | 30.00 | -8.56 |
| Mid 6 | 2437 | 21.47 | 21.47 | 30.00 | -8.53 |
| High 9 | 2452 | 21.40 | 21.40 | 30.00 | -8.60 |
| High 10 | 2457 | 17.85 | 17.85 | 30.00 | -12.15 |
| High 11 | 2462 | 15.82 | 15.82 | 30.00 | -14.18 |
| High 12 | 2467 | 13.86 | 13.86 | 30.00 | -16.14 |
| High 13 | 2472 | 0.90 | 0.90 | 30.00 | -29.10 |


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**1TX ANT 3 MODE: 26-Tones, RU Index 4**

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC Power Limit (dBm) | ISED Power Limit (dBm) | ISED EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|---|
| Low 1 | 2412 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| Low 2 | 2417 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| Low 3 | 2422 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| Mid 6 | 2437 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 9 | 2452 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 10 | 2457 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 11 | 2462 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 12 | 2467 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 13 | 2472 | -0.60 | 30.00 | 30 | 36 | 30.00 |

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of Corr'd Power |
|---|---|---|

**Results**

| Channel | Frequency (MHz) | Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| Low 1 | 2412 | 15.71 | 15.71 | 30.00 | -14.29 |
| Low 2 | 2417 | 17.91 | 17.91 | 30.00 | -12.09 |
| Low 3 | 2422 | 21.43 | 21.43 | 30.00 | -8.57 |
| Mid 6 | 2437 | 21.46 | 21.46 | 30.00 | -8.54 |
| High 9 | 2452 | 21.36 | 21.36 | 30.00 | -8.64 |
| High 10 | 2457 | 17.83 | 17.83 | 30.00 | -12.17 |
| High 11 | 2462 | 15.88 | 15.88 | 30.00 | -14.12 |
| High 12 | 2467 | 13.84 | 13.84 | 30.00 | -16.16 |
| High 13 | 2472 | 0.92 | 0.92 | 30.00 | -29.08 |


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**1TX ANT 3 MODE: 26-Tones, RU Index 8**

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC Power Limit (dBm) | ISED Power Limit (dBm) | ISED EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|---|
| Low 1 | 2412 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| Low 2 | 2417 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| Low 3 | 2422 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| Mid 6 | 2437 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 9 | 2452 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 10 | 2457 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 11 | 2462 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 12 | 2467 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 13 | 2472 | -0.60 | 30.00 | 30 | 36 | 30.00 |

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of Corr'd Power |
|---|---|---|

**Results**

| Channel | Frequency (MHz) | Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| Low 1 | 2412 | 15.92 | 15.92 | 30.00 | -14.08 |
| Low 2 | 2417 | 17.86 | 17.86 | 30.00 | -12.14 |
| Low 3 | 2422 | 21.43 | 21.43 | 30.00 | -8.57 |
| Mid 6 | 2437 | 21.47 | 21.47 | 30.00 | -8.53 |
| High 9 | 2452 | 21.38 | 21.38 | 30.00 | -8.62 |
| High 10 | 2457 | 17.85 | 17.85 | 30.00 | -12.15 |
| High 11 | 2462 | 15.97 | 15.97 | 30.00 | -14.03 |
| High 12 | 2467 | 13.81 | 13.81 | 30.00 | -16.19 |
| High 13 | 2472 | 0.91 | 0.91 | 30.00 | -29.09 |


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**1TX ANT 3 MODE: 242-Tones, RU Index 61**

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC Power Limit (dBm) | ISED Power Limit (dBm) | ISED EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|---|
| Low 1 | 2412 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| Low 2 | 2417 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| Low 3 | 2422 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| Mid 6 | 2437 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 9 | 2452 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 10 | 2457 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 11 | 2462 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 12 | 2467 | -0.60 | 30.00 | 30 | 36 | 30.00 |
| High 13 | 2472 | -0.60 | 30.00 | 30 | 36 | 30.00 |

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of Corr'd Power |
|---|---|---|

**Results**

| Channel | Frequency (MHz) | Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| Low 1 | 2412 | 15.91 | 15.91 | 30.00 | -14.09 |
| Low 2 | 2417 | 17.89 | 17.89 | 30.00 | -12.11 |
| Low 3 | 2422 | 21.41 | 21.41 | 30.00 | -8.59 |
| Mid 6 | 2437 | 21.44 | 21.44 | 30.00 | -8.56 |
| High 9 | 2452 | 21.39 | 21.39 | 30.00 | -8.61 |
| High 10 | 2457 | 17.93 | 17.93 | 30.00 | -12.07 |
| High 11 | 2462 | 15.90 | 15.90 | 30.00 | -14.10 |
| High 12 | 2467 | 13.88 | 13.88 | 30.00 | -16.12 |
| High 13 | 2472 | 9.86 | 9.86 | 30.00 | -20.14 |


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## 9.4.5. 802.11ax HE20 OFDMA MODE 2TX

| | |
|---|---|
| **Test Engineer:** | 44352 |
| **Test Date:** | 8/26/2020 |

**ANT 4 + ANT 3 2TX MODE: 26-Tones, RU Index 0**

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC/ISED Power Limit (dBm) | ISED EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|
| Low 1 | 2412 | -1.37 | 30.00 | 36 | 30.00 |
| Low 2 | 2417 | -1.37 | 30.00 | 36 | 30.00 |
| Low 3 | 2422 | -1.37 | 30.00 | 36 | 30.00 |
| Mid 6 | 2437 | -1.37 | 30.00 | 36 | 30.00 |
| High 9 | 2452 | -1.37 | 30.00 | 36 | 30.00 |
| High 10 | 2457 | -1.37 | 30.00 | 36 | 30.00 |
| High 11 | 2462 | -1.37 | 30.00 | 36 | 30.00 |
| High 12 | 2467 | -1.37 | 30.00 | 36 | 30.00 |
| High 13 | 2472 | -1.37 | 30.00 | 36 | 30.00 |

| | | |
|---|---|---|
| **Duty Cycle CF (dB)** | 0.00 | **Included in Calculations of Corr'd Power** |

**Results**

| Channel | Frequency (MHz) | ANT 4 Meas Power (dBm) | ANT 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|
| Low 1 | 2412 | 14.91 | 14.83 | 17.88 | 30.00 | -12.12 |
| Low 2 | 2417 | 16.88 | 16.75 | 19.83 | 30.00 | -10.17 |
| Low 3 | 2422 | 18.91 | 18.94 | 21.94 | 30.00 | -8.06 |
| Mid 6 | 2437 | 19.94 | 19.95 | 22.96 | 30.00 | -7.04 |
| High 9 | 2452 | 18.47 | 18.37 | 21.43 | 30.00 | -8.57 |
| High 10 | 2457 | 16.99 | 16.83 | 19.92 | 30.00 | -10.08 |
| High 11 | 2462 | 14.83 | 14.79 | 17.82 | 30.00 | -12.18 |
| High 12 | 2467 | 12.76 | 12.81 | 15.80 | 30.00 | -14.20 |
| High 13 | 2472 | -0.12 | -0.14 | 2.88 | 30.00 | -27.12 |


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**ANT 4 + ANT 3 2TX MODE: 26-Tones, RU Index 4**

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC/ISED Power Limit (dBm) | ISED EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|
| Low 1 | 2412 | -1.37 | 30.00 | 36 | 30.00 |
| Low 2 | 2417 | -1.37 | 30.00 | 36 | 30.00 |
| Low 3 | 2422 | -1.37 | 30.00 | 36 | 30.00 |
| Low 4 | 2427 | -1.37 | 30.00 | 36 | 30.00 |
| Mid 6 | 2437 | -1.37 | 30.00 | 36 | 30.00 |
| High 8 | 2447 | -1.37 | 30.00 | 36 | 30.00 |
| High 9 | 2452 | -1.37 | 30.00 | 36 | 30.00 |
| High 10 | 2457 | -1.37 | 30.00 | 36 | 30.00 |
| High 11 | 2462 | -1.37 | 30.00 | 36 | 30.00 |
| High 12 | 2467 | -1.37 | 30.00 | 36 | 30.00 |
| High 13 | 2472 | -1.37 | 30.00 | 36 | 30.00 |

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of Corr'd Power |
|---|---|---|

**Results**

| Channel | Frequency (MHz) | ANT 4 Meas Power (dBm) | ANT 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|
| Low 1 | 2412 | 14.83 | 14.85 | 17.85 | 30.00 | -12.15 |
| Low 2 | 2417 | 16.91 | 16.83 | 19.88 | 30.00 | -10.12 |
| Low 3 | 2422 | 18.97 | 18.91 | 21.95 | 30.00 | -8.05 |
| Low 4 | 2427 | 19.82 | 19.84 | 22.84 | 30.00 | -7.16 |
| Mid 6 | 2437 | 19.99 | 19.92 | 22.97 | 30.00 | -7.03 |
| High 8 | 2447 | 19.72 | 19.83 | 22.79 | 30.00 | -7.21 |
| High 9 | 2452 | 18.41 | 18.45 | 21.44 | 30.00 | -8.56 |
| High 10 | 2457 | 16.83 | 16.91 | 19.88 | 30.00 | -10.12 |
| High 11 | 2462 | 14.69 | 14.74 | 17.73 | 30.00 | -12.27 |
| High 12 | 2467 | 12.83 | 12.89 | 15.87 | 30.00 | -14.13 |
| High 13 | 2472 | -0.13 | -0.10 | 2.90 | 30.00 | -27.10 |


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**ANT 4 + ANT 3 2TX MODE: 26-Tones, RU Index 8**

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC/ISED Power Limit (dBm) | ISED EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|
| Low 1 | 2412 | -1.37 | 30.00 | 36 | 30.00 |
| Low 2 | 2417 | -1.37 | 30.00 | 36 | 30.00 |
| Low 3 | 2422 | -1.37 | 30.00 | 36 | 30.00 |
| Low 4 | 2427 | -1.37 | 30.00 | 36 | 30.00 |
| Mid 6 | 2437 | -1.37 | 30.00 | 36 | 30.00 |
| High 8 | 2447 | -1.37 | 30.00 | 36 | 30.00 |
| High 9 | 2452 | -1.37 | 30.00 | 36 | 30.00 |
| High 10 | 2457 | -1.37 | 30.00 | 36 | 30.00 |
| High 11 | 2462 | -1.37 | 30.00 | 36 | 30.00 |
| High 12 | 2467 | -1.37 | 30.00 | 36 | 30.00 |
| High 13 | 2472 | -1.37 | 30.00 | 36 | 30.00 |

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of Corr'd Power |
|---|---|---|

**Results**

| Channel | Frequency (MHz) | ANT 4 Meas Power (dBm) | ANT 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|
| Low 1 | 2412 | 14.88 | 14.81 | 17.86 | 30.00 | -12.14 |
| Low 2 | 2417 | 16.87 | 16.92 | 19.91 | 30.00 | -10.09 |
| Low 3 | 2422 | 18.74 | 18.89 | 21.83 | 30.00 | -8.17 |
| Low 4 | 2427 | 19.90 | 19.84 | 22.88 | 30.00 | -7.12 |
| Mid 6 | 2437 | 19.98 | 19.94 | 22.97 | 30.00 | -7.03 |
| High 8 | 2447 | 19.87 | 19.79 | 22.84 | 30.00 | -7.16 |
| High 9 | 2452 | 18.35 | 18.42 | 21.40 | 30.00 | -8.60 |
| High 10 | 2457 | 16.93 | 16.88 | 19.92 | 30.00 | -10.08 |
| High 11 | 2462 | 14.93 | 14.89 | 17.92 | 30.00 | -12.08 |
| High 12 | 2467 | 12.85 | 12.90 | 15.89 | 30.00 | -14.11 |
| High 13 | 2472 | -0.15 | -0.14 | 2.87 | 30.00 | -27.13 |


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**ANT 4 + ANT 3 2TX MODE: 242-Tones, RU Index 61**

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC/ISED Power Limit (dBm) | ISED EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|
| Low 1 | 2412 | -1.37 | 30.00 | 36 | 30.00 |
| Low 2 | 2417 | -1.37 | 30.00 | 36 | 30.00 |
| Low 3 | 2422 | -1.37 | 30.00 | 36 | 30.00 |
| Low 4 | 2427 | -1.37 | 30.00 | 36 | 30.00 |
| Mid 6 | 2437 | -1.37 | 30.00 | 36 | 30.00 |
| High 8 | 2447 | -1.37 | 30.00 | 36 | 30.00 |
| High 9 | 2452 | -1.37 | 30.00 | 36 | 30.00 |
| High 10 | 2457 | -1.37 | 30.00 | 36 | 30.00 |
| High 11 | 2462 | -1.37 | 30.00 | 36 | 30.00 |
| High 12 | 2467 | -1.37 | 30.00 | 36 | 30.00 |
| High 13 | 2472 | -1.37 | 30.00 | 36 | 30.00 |

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of Corr'd Power |
|---|---|---|

**Results**

| Channel | Frequency (MHz) | ANT 4 Meas Power (dBm) | ANT 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|
| Low 1 | 2412 | 14.99 | 14.93 | 17.97 | 30.00 | -12.03 |
| Low 2 | 2417 | 16.85 | 16.90 | 19.89 | 30.00 | -10.11 |
| Low 3 | 2422 | 18.89 | 18.88 | 21.90 | 30.00 | -8.10 |
| Low 4 | 2427 | 20.93 | 21.43 | 24.20 | 30.00 | -5.80 |
| Mid 6 | 2437 | 20.98 | 21.48 | 24.25 | 30.00 | -5.75 |
| High 8 | 2447 | 20.92 | 21.42 | 24.19 | 30.00 | -5.81 |
| High 9 | 2452 | 18.47 | 18.39 | 21.44 | 30.00 | -8.56 |
| High 10 | 2457 | 16.92 | 16.98 | 19.96 | 30.00 | -10.04 |
| High 11 | 2462 | 14.90 | 14.89 | 17.91 | 30.00 | -12.09 |
| High 12 | 2467 | 12.95 | 12.91 | 15.94 | 30.00 | -14.06 |
| High 13 | 2472 | 8.46 | 8.44 | 11.46 | 30.00 | -18.54 |


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## 9.5. POWER SPECTRAL DENSITY

**LIMITS**

FCC §15.247 (e)

RSS-247 (5.2) (b)

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

**RESULTS**

Only Mid channel plot is reported to show setting parameter complies with testing method/procedure.

Note: RBW setting is used greater than 3KHz on PSD measurement
.


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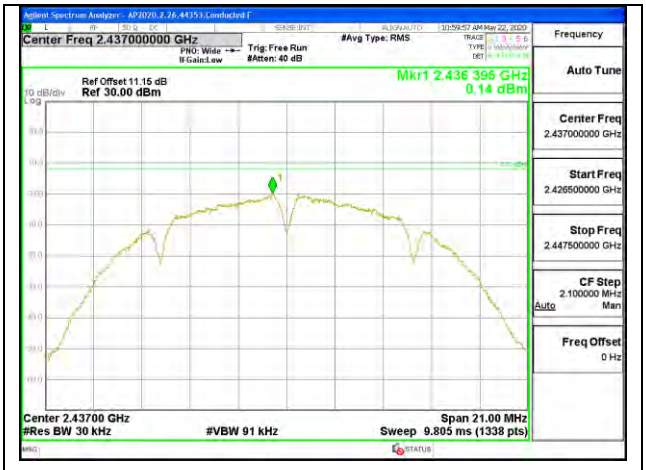
### 9.5.1. **802.11b MODE 1TX**

**1TX ANT 4 MODE**

| Duty Cycle CF (dB) | | 0.00 | Included in Calculations of Corr'd PSD | | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Meas (dBm) | Total Corr'd PSD (dBm) | Limit (dBm/ 3kHz) | Margin (dB) |
| Low 1 | 2412 | -1.17 | -1.17 | 8.0 | -9.2 |
| Mid 6 | 2437 | 0.14 | 0.14 | 8.0 | -7.9 |
| High 11 | 2462 | 0.13 | 0.13 | 8.0 | -7.9 |
| High 12 | 2467 | -1.05 | -1.05 | 8.0 | -9.1 |
| High 13 | 2472 | -3.47 | -3.47 | 8.0 | -11.5 |

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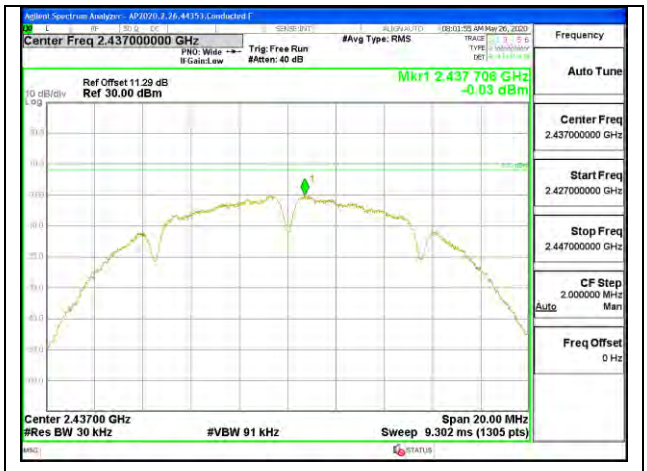
**1TX ANT 3 MODE**

| Duty Cycle CF (dB) | | 0.00 | Included in Calculations of Corr'd PSD | | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Meas (dBm) | Total Corr'd PSD (dBm) | Limit (dBm/ 3kHz) | Margin (dB) |
| Low 1 | 2412 | -1.05 | -1.05 | 8.0 | -9.1 |
| Mid 6 | 2437 | -0.03 | -0.03 | 8.0 | -8.0 |
| High 11 | 2462 | -0.12 | -0.12 | 8.0 | -8.1 |
| High 12 | 2467 | -0.99 | -0.99 | 8.0 | -9.0 |
| High 13 | 2472 | -3.45 | -3.45 | 8.0 | -11.5 |

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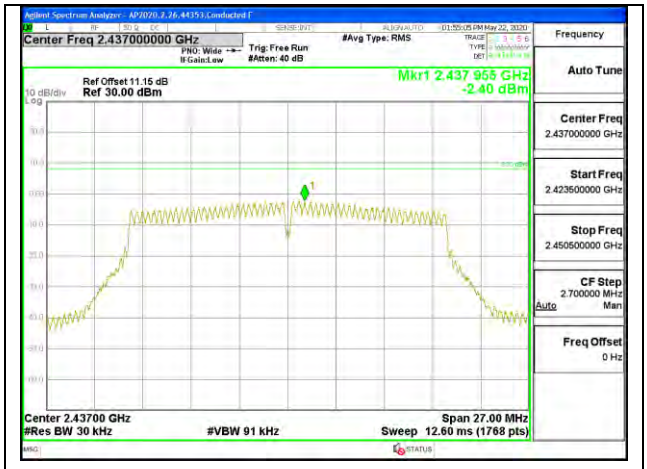
## 9.5.2. **802.11n HT20 MODE**

**1TX ANT 4 MODE**

| Duty Cycle CF (dB) | | 0.00 | Included in Calculations of Corr'd PSD | | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Meas (dBm) | Total Corr'd PSD (dBm) | Limit (dBm/ 3kHz) | Margin (dB) |
| Low 1 | 2412 | -6.42 | -6.42 | 8.0 | -14.4 |
| Low 2 | 2417 | -4.52 | -4.52 | 8.0 | -12.5 |
| Low 3 | 2422 | -2.47 | -2.47 | 8.0 | -10.5 |
| Mid 6 | 2437 | -2.40 | -2.40 | 8.0 | -10.4 |
| High 9 | 2452 | -2.53 | -2.53 | 8.0 | -10.5 |
| High 10 | 2457 | -4.46 | -4.46 | 8.0 | -12.5 |
| High 11 | 2462 | -6.41 | -6.41 | 8.0 | -14.4 |
| High 12 | 2467 | -8.58 | -8.58 | 8.0 | -16.6 |
| High 13 | 2472 | -16.38 | -16.38 | 8.0 | -24.4 |

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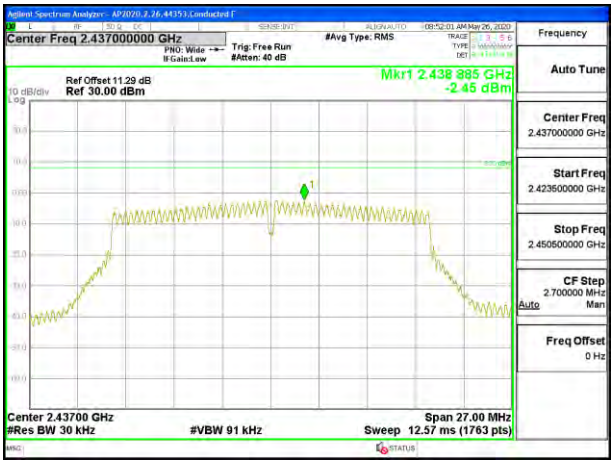
**1TX ANT 3 MODE**

| Duty Cycle CF (dB) | | 0.00 | Included in Calculations of Corr'd PSD | | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Meas (dBm) | Total Corr'd PSD (dBm) | Limit (dBm/ 3kHz) | Margin (dB) |
| Low 1 | 2412 | -6.52 | -6.52 | 8.0 | -14.5 |
| Low 2 | 2417 | -4.49 | -4.49 | 8.0 | -12.5 |
| Low 3 | 2422 | -2.56 | -2.56 | 8.0 | -10.6 |
| Mid 6 | 2437 | -2.45 | -2.45 | 8.0 | -10.5 |
| High 9 | 2452 | -2.40 | -2.40 | 8.0 | -10.4 |
| High 10 | 2457 | -4.46 | -4.46 | 8.0 | -12.5 |
| High 11 | 2462 | -6.45 | -6.45 | 8.0 | -14.5 |
| High 12 | 2467 | -8.55 | -8.55 | 8.0 | -16.6 |
| High 13 | 2472 | -16.56 | -16.56 | 8.0 | -24.6 |

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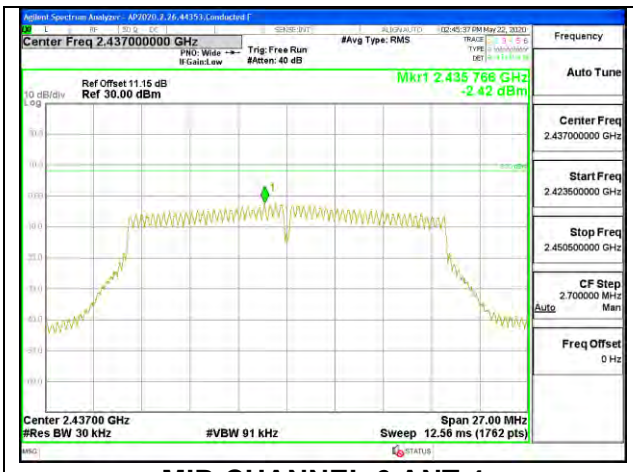
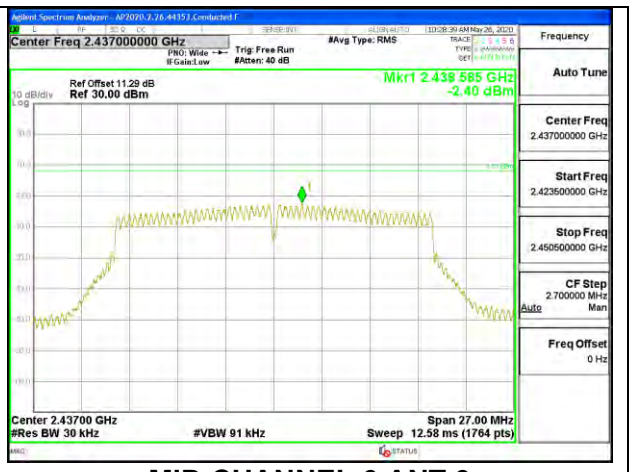
### 9.5.3. **802.11n HT20 CDD MODE 2TX**

| Duty Cycle CF (dB) | | 0.00 | Included in Calculations of Corr'd PSD | | | |
|---|---|---|---|---|---|---|
| Channel | Frequency (MHz) | ANT 4 Meas (dBm) | ANT 3 Meas (dBm) | Total Corr'd PSD (dBm) | Limit (dBm/ 3kHz) | Margin (dB) |
| Low 1 | 2412 | -7.52 | -7.44 | -4.47 | 8.0 | -12.5 |
| Low 2 | 2417 | -5.41 | -5.53 | -2.46 | 8.0 | -10.5 |
| Low 3 | 2422 | -4.01 | -3.93 | -0.96 | 8.0 | -9.0 |
| Mid 6 | 2437 | -2.42 | -2.40 | 0.60 | 8.0 | -7.4 |
| High 9 | 2452 | -4.56 | -4.54 | -1.54 | 8.0 | -9.5 |
| High 10 | 2457 | -5.58 | -5.64 | -2.60 | 8.0 | -10.6 |
| High 11 | 2462 | -7.50 | -7.62 | -4.55 | 8.0 | -12.5 |
| High 12 | 2467 | -9.93 | -10.05 | -6.98 | 8.0 | -15.0 |
| High 13 | 2472 | -18.52 | -18.03 | -15.26 | 8.0 | -23.3 |




**MID CHANNEL 6 ANT 4**




**MID CHANNEL 6 ANT 3**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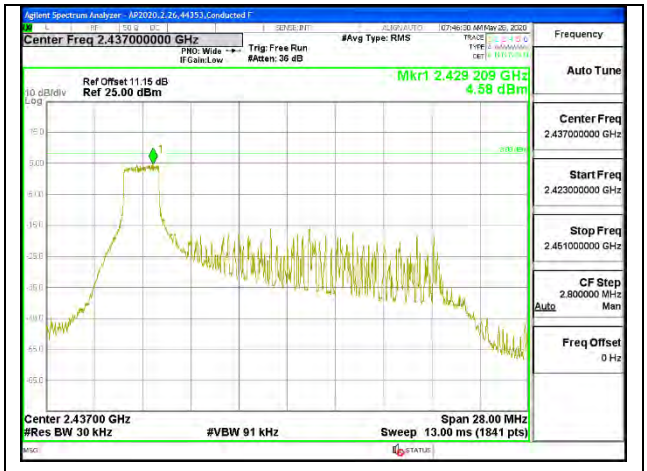
## 9.5.4. **802.11ax HE20 MODE**

**1TX ANT 4 MODE , 26-Tone RU Index 0**

| Duty Cycle CF (dB) | | 0.00 | Included in Calculations of Corr'd PSD | | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Meas (dBm) | Total Corr'd PSD (dBm) | Limit (dBm/ 3kHz) | Margin (dB) |
| Low 1 | 2412 | -1.16 | -1.16 | 8.0 | -9.2 |
| Low 2 | 2417 | 1.09 | 1.09 | 8.0 | -6.9 |
| Low 3 | 2422 | 4.31 | 4.31 | 8.0 | -3.7 |
| Mid 6 | 2437 | 4.58 | 4.58 | 8.0 | -3.4 |
| High 9 | 2452 | 4.50 | 4.50 | 8.0 | -3.5 |
| High 10 | 2457 | 1.03 | 1.03 | 8.0 | -7.0 |
| High 11 | 2462 | -0.98 | -0.98 | 8.0 | -9.0 |
| High 12 | 2467 | -3.14 | -3.14 | 8.0 | -11.1 |
| High 13 | 2472 | -16.64 | -16.64 | 8.0 | -24.6 |

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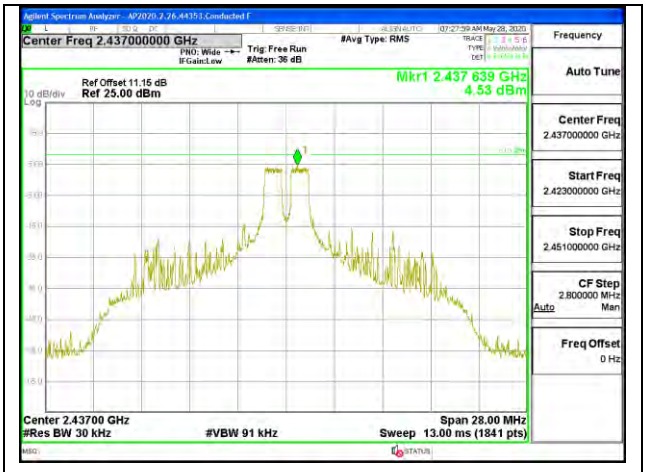
**1TX ANT 4 MODE , 26-Tone RU Index 4**

| Duty Cycle CF (dB) | | 0.00 | Included in Calculations of Corr'd PSD | | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Meas (dBm) | Total Corr'd PSD (dBm) | Limit (dBm/ 3kHz) | Margin (dB) |
| Low 1 | 2412 | -1.07 | -1.07 | 8.0 | -9.1 |
| Low 2 | 2417 | 0.91 | 0.91 | 8.0 | -7.1 |
| Low 3 | 2422 | 4.47 | 4.47 | 8.0 | -3.5 |
| Mid 6 | 2437 | 4.53 | 4.53 | 8.0 | -3.5 |
| High 9 | 2452 | 4.42 | 4.42 | 8.0 | -3.6 |
| High 10 | 2457 | 1.06 | 1.06 | 8.0 | -6.9 |
| High 11 | 2462 | -0.99 | -0.99 | 8.0 | -9.0 |
| High 12 | 2467 | -2.94 | -2.94 | 8.0 | -10.9 |
| High 13 | 2472 | -17.12 | -17.12 | 8.0 | -25.1 |

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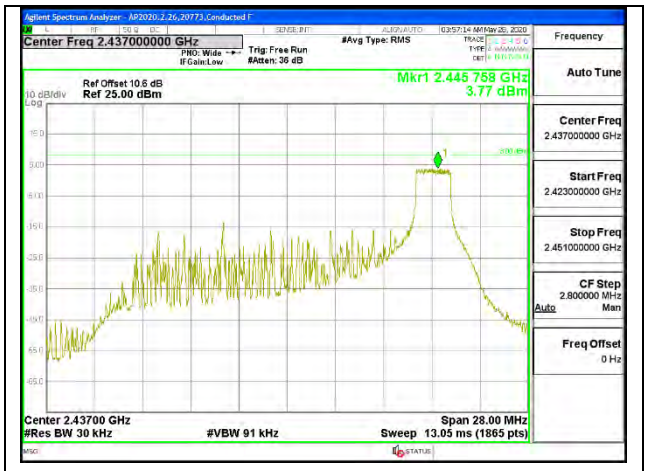
**1TX ANT 4 MODE , 26-Tone RU Index 8**

| Duty Cycle CF (dB) | | 0.00 | Included in Calculations of Corr'd PSD | | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Meas (dBm) | Total Corr'd PSD (dBm) | Limit (dBm/ 3kHz) | Margin (dB) |
| Low 1 | 2412 | -1.03 | -1.03 | 8.0 | -9.0 |
| Low 2 | 2417 | 0.90 | 0.90 | 8.0 | -7.1 |
| Low 3 | 2422 | 4.31 | 4.31 | 8.0 | -3.7 |
| Mid 6 | 2437 | 4.37 | 4.37 | 8.0 | -3.6 |
| High 9 | 2452 | 4.35 | 4.35 | 8.0 | -3.7 |
| High 10 | 2457 | 0.96 | 0.96 | 8.0 | -7.0 |
| High 11 | 2462 | -0.90 | -0.90 | 8.0 | -8.9 |
| High 12 | 2467 | -3.13 | -3.13 | 8.0 | -11.1 |
| High 13 | 2472 | -16.61 | -16.61 | 8.0 | -24.6 |

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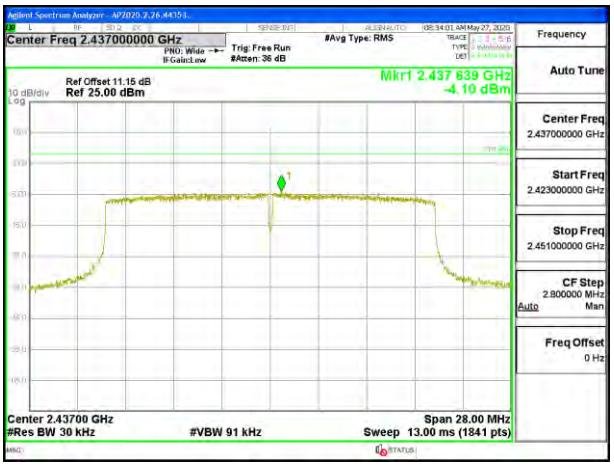
**1TX ANT 4 MODE , 242-Tone RU Index 61**

| Duty Cycle CF (dB) | | 0.00 | Included in Calculations of Corr'd PSD | | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Meas (dBm/ 3kHz) | Total Corr'd PSD (dBm/ 3kHz) | Limit (dBm/ 3kHz) | Margin (dB) |
| Low 1 | 2412 | -9.37 | -9.37 | 8.0 | -17.4 |
| Low 2 | 2417 | -7.40 | -7.40 | 8.0 | -15.4 |
| Low 3 | 2422 | -4.63 | -4.63 | 8.0 | -12.6 |
| Mid 6 | 2437 | -4.10 | -4.10 | 8.0 | -12.1 |
| High 9 | 2452 | -4.09 | -4.09 | 8.0 | -12.1 |
| High 10 | 2457 | -7.55 | -7.55 | 8.0 | -15.6 |
| High 11 | 2462 | -9.67 | -9.67 | 8.0 | -17.7 |
| High 12 | 2467 | -11.66 | -11.66 | 8.0 | -19.7 |
| High 13 | 2472 | -18.48 | -18.48 | 8.0 | -26.5 |

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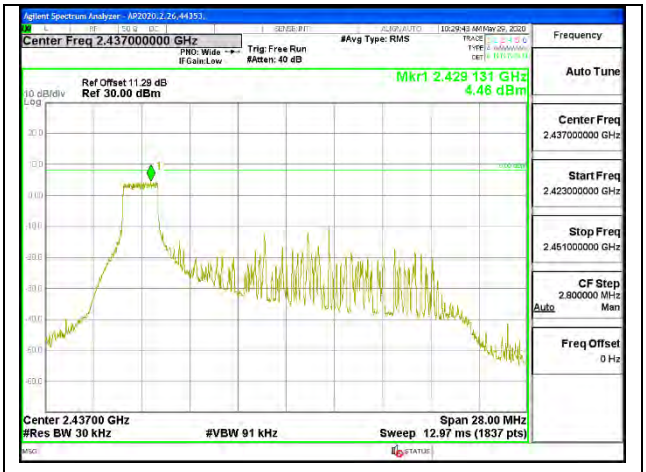
**1TX ANT 3 MODE , 26-Tone RU Index 0**

| Duty Cycle CF (dB) | | 0.00 | Included in Calculations of Corr'd PSD | | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Meas (dBm) | Total Corr'd PSD (dBm) | Limit (dBm/ 3kHz) | Margin (dB) |
| Low 1 | 2412 | -1.07 | -1.07 | 8.0 | -9.1 |
| Low 2 | 2417 | 0.98 | 0.98 | 8.0 | -7.0 |
| Low 3 | 2422 | 4.43 | 4.43 | 8.0 | -3.6 |
| Mid 6 | 2437 | 4.46 | 4.46 | 8.0 | -3.5 |
| High 9 | 2452 | 4.52 | 4.52 | 8.0 | -3.5 |
| High 10 | 2457 | 1.04 | 1.04 | 8.0 | -7.0 |
| High 11 | 2462 | -1.06 | -1.06 | 8.0 | -9.1 |
| High 12 | 2467 | -2.91 | -2.91 | 8.0 | -10.9 |
| High 13 | 2472 | -17.24 | -17.24 | 8.0 | -25.2 |

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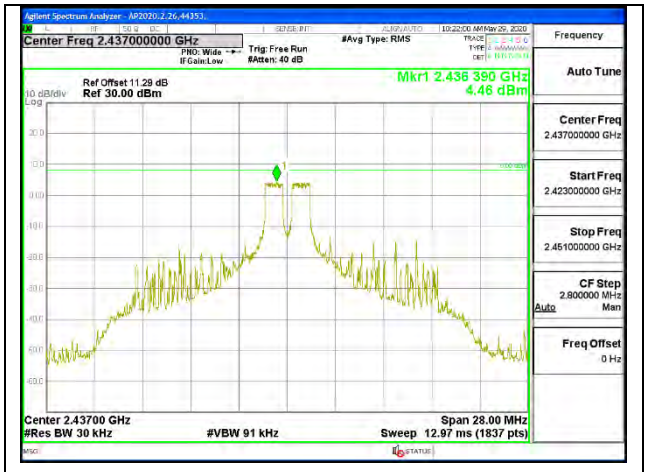
**1TX ANT 3 MODE , 26-Tone RU Index 4**

| Duty Cycle CF (dB) | | 0.00 | Included in Calculations of Corr'd PSD | | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Meas (dBm) | Total Corr'd PSD (dBm) | Limit (dBm/ 3kHz) | Margin (dB) |
| Low 1 | 2412 | -0.96 | -0.96 | 8.0 | -9.0 |
| Low 2 | 2417 | 1.06 | 1.06 | 8.0 | -6.9 |
| Low 3 | 2422 | 4.48 | 4.48 | 8.0 | -3.5 |
| Mid 6 | 2437 | 4.46 | 4.46 | 8.0 | -3.5 |
| High 9 | 2452 | 4.39 | 4.39 | 8.0 | -3.6 |
| High 10 | 2457 | 1.03 | 1.03 | 8.0 | -7.0 |
| High 11 | 2462 | -0.97 | -0.97 | 8.0 | -9.0 |
| High 12 | 2467 | -3.09 | -3.09 | 8.0 | -11.1 |
| High 13 | 2472 | -16.80 | -16.80 | 8.0 | -24.8 |




**MID CHANNEL 6**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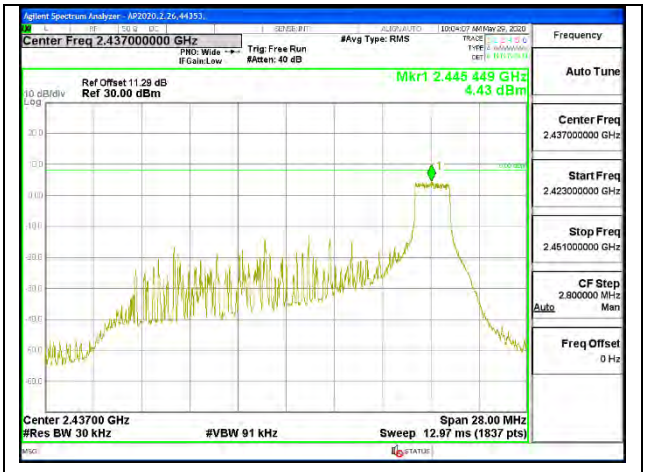
**1TX ANT 3 MODE , 26-Tone RU Index 8**

| Duty Cycle CF (dB) | | 0.00 | Included in Calculations of Corr'd PSD | | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Meas (dBm) | Total Corr'd PSD (dBm) | Limit (dBm/ 3kHz) | Margin (dB) |
| Low 1 | 2412 | -0.97 | -0.97 | 8.0 | -9.0 |
| Low 2 | 2417 | 0.97 | 0.97 | 8.0 | -7.0 |
| Low 3 | 2422 | 4.33 | 4.33 | 8.0 | -3.7 |
| Mid 6 | 2437 | 4.43 | 4.43 | 8.0 | -3.6 |
| High 9 | 2452 | 4.31 | 4.31 | 8.0 | -3.7 |
| High 10 | 2457 | 1.09 | 1.09 | 8.0 | -6.9 |
| High 11 | 2462 | -0.99 | -0.99 | 8.0 | -9.0 |
| High 12 | 2467 | -2.91 | -2.91 | 8.0 | -10.9 |
| High 13 | 2472 | -16.77 | -16.77 | 8.0 | -24.8 |

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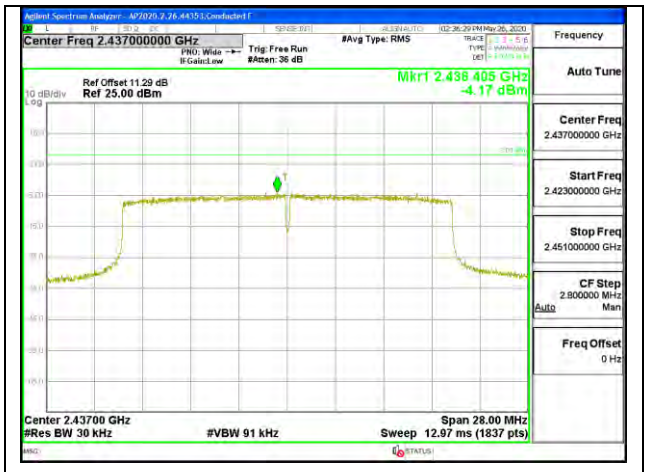
**1TX ANT 3 MODE , 242-Tone RU Index 61**

| Duty Cycle CF (dB) | | 0.00 | Included in Calculations of Corr'd PSD | | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Meas (dBm/ 3kHz) | Total Corr'd PSD (dBm/ 3kHz) | Limit (dBm/ 3kHz) | Margin (dB) |
| Low 1 | 2412 | -9.45 | -9.45 | 8.0 | -17.5 |
| Low 2 | 2417 | -7.64 | -7.64 | 8.0 | -15.6 |
| Low 3 | 2422 | -4.61 | -4.61 | 8.0 | -12.6 |
| Mid 6 | 2437 | -4.17 | -4.17 | 8.0 | -12.2 |
| High 9 | 2452 | -4.04 | -4.04 | 8.0 | -12.0 |
| High 10 | 2457 | -7.60 | -7.60 | 8.0 | -15.6 |
| High 11 | 2462 | -9.67 | -9.67 | 8.0 | -17.7 |
| High 12 | 2467 | -11.56 | -11.56 | 8.0 | -19.6 |
| High 13 | 2472 | -18.40 | -18.40 | 8.0 | -26.4 |




**MID CHANNEL 6**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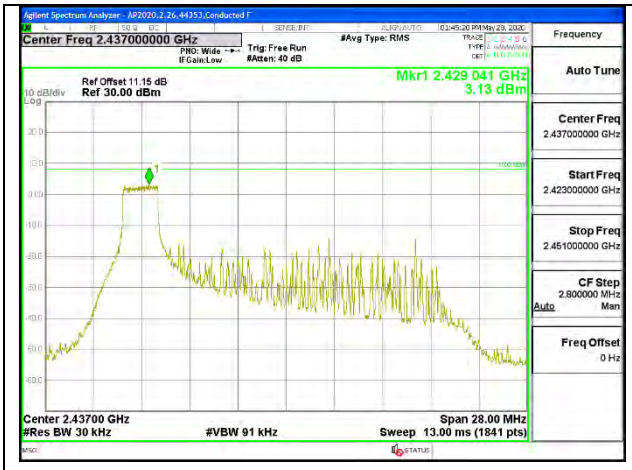
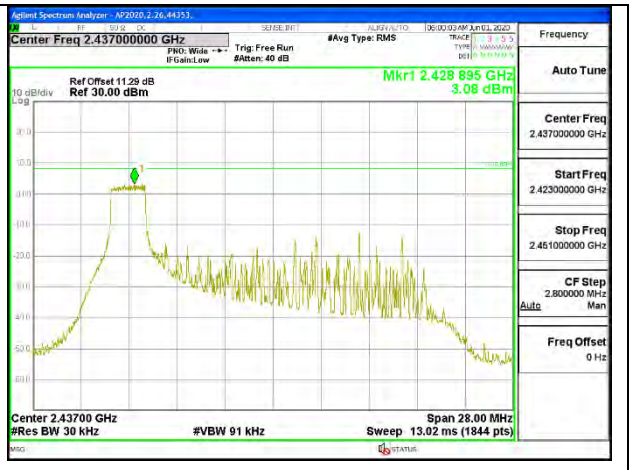
## 9.5.5. **802.11ax HE20 OFDMA MODE 2TX**

**ANT 4 + ANT 3 2TX MODE: 26-Tones, RU Index 0**

| Duty Cycle CF (dB) | | 0.00 | Included in Calculations of Corr'd PSD | | | |
|---|---|---|---|---|---|---|
| Channel | Frequency (MHz) | ANT 4 Meas (dBm) | ANT 3 Meas (dBm) | Total Corr'd PSD (dBm) | Limit (dBm/ 3kHz) | Margin (dB) |
| Low 1 | 2412 | -1.99 | -2.10 | 0.97 | 8.0 | -7.0 |
| Low 2 | 2417 | 0.02 | -0.14 | 2.95 | 8.0 | -5.0 |
| Low 3 | 2422 | 2.12 | 1.98 | 5.06 | 8.0 | -2.9 |
| Mid 6 | 2437 | 3.13 | 3.08 | 6.12 | 8.0 | -1.9 |
| High 9 | 2452 | 1.46 | 1.46 | 4.47 | 8.0 | -3.5 |
| High 11 | 2462 | -2.15 | -2.09 | 0.89 | 8.0 | -7.1 |
| High 12 | 2467 | -3.99 | -4.11 | -1.04 | 8.0 | -9.0 |
| High 13 | 2472 | -17.01 | -16.85 | -13.92 | 8.0 | -21.9 |




**MID CHANNEL 6 ANT 4**




**MID CHANNEL 6 ANT 3**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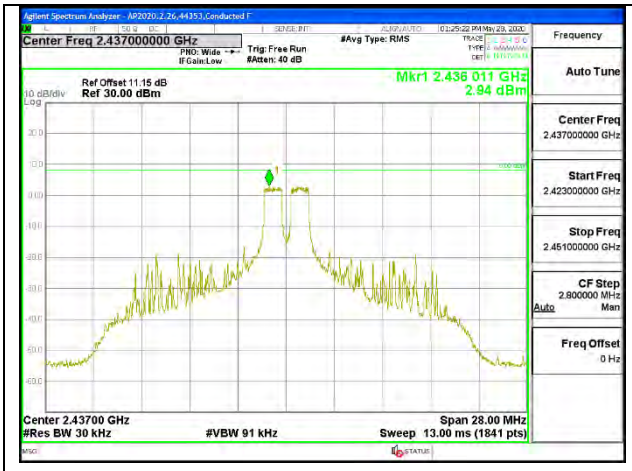
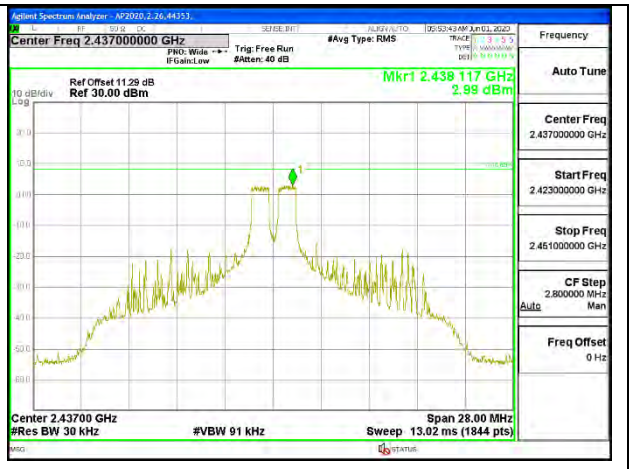
**ANT 4 + ANT 3 2TX MODE: 26-Tones, RU Index 4**

| Duty Cycle CF (dB) | | 0.00 | Included in Calculations of Corr'd PSD | | | |
|---|---|---|---|---|---|---|
| Channel | Frequency (MHz) | ANT 4 Meas (dBm) | ANT 3 Meas (dBm) | Total Corr'd PSD (dBm) | Limit (dBm/ 3kHz) | Margin (dB) |
| Low 1 | 2412 | -2.10 | -1.98 | 0.97 | 8.0 | -7.0 |
| Low 2 | 2417 | 0.01 | -0.02 | 3.01 | 8.0 | -5.0 |
| Low 3 | 2422 | 2.06 | 2.02 | 5.05 | 8.0 | -2.9 |
| Mid 6 | 2437 | 2.94 | 2.99 | 5.98 | 8.0 | -2.0 |
| High 9 | 2452 | 1.59 | 1.55 | 4.58 | 8.0 | -3.4 |
| High 11 | 2462 | -2.12 | -2.09 | 0.91 | 8.0 | -7.1 |
| High 12 | 2467 | -4.09 | -3.94 | -1.00 | 8.0 | -9.0 |
| High 13 | 2472 | -17.09 | -16.92 | -13.99 | 8.0 | -22.0 |




**MID CHANNEL 6 ANT 4**




**MID CHANNEL 6 ANT 3**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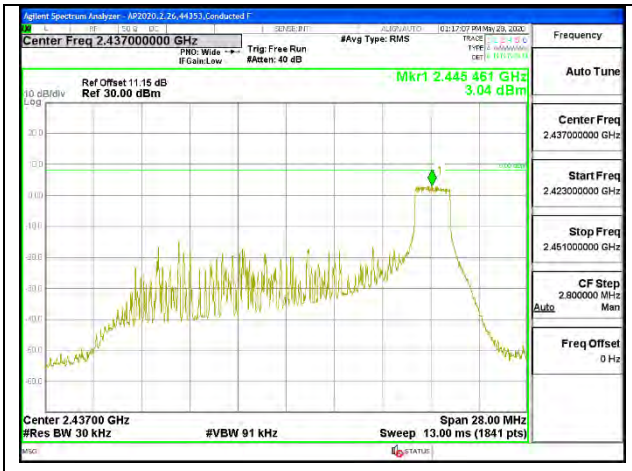
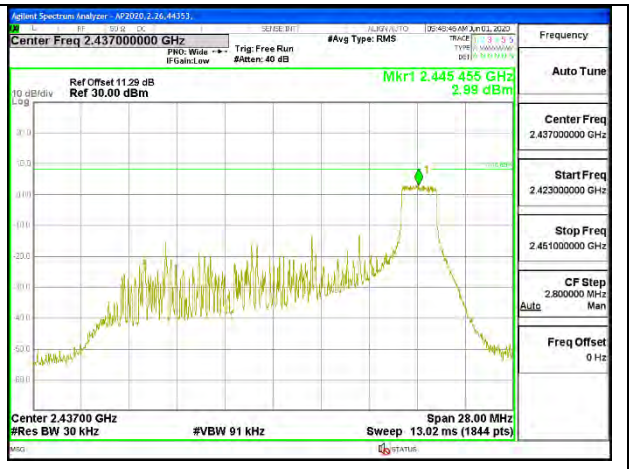
**ANT 4 + ANT 3 2TX MODE: 26-Tones, RU Index 8**

| Duty Cycle CF (dB) | | 0.00 | Included in Calculations of Corr'd PSD | | | |
|---|---|---|---|---|---|---|
| Channel | Frequency (MHz) | ANT 4 Meas (dBm) | ANT 3 Meas (dBm) | Total Corr'd PSD (dBm) | Limit (dBm/ 3kHz) | Margin (dB) |
| Low 1 | 2412 | -2.09 | -1.94 | 1.00 | 8.0 | -7.0 |
| Low 2 | 2417 | -0.10 | -0.03 | 2.95 | 8.0 | -5.1 |
| Low 3 | 2422 | 1.91 | 2.06 | 4.99 | 8.0 | -3.0 |
| Mid 6 | 2437 | 3.04 | 2.99 | 6.03 | 8.0 | -2.0 |
| High 9 | 2452 | 1.47 | 1.44 | 4.47 | 8.0 | -3.5 |
| High 11 | 2462 | -2.05 | -1.99 | 0.99 | 8.0 | -7.0 |
| High 12 | 2467 | -4.14 | -4.13 | -1.12 | 8.0 | -9.1 |
| High 13 | 2472 | -16.77 | -16.79 | -13.77 | 8.0 | -21.8 |




**MID CHANNEL 6 ANT 4**




**MID CHANNEL 6 ANT 3**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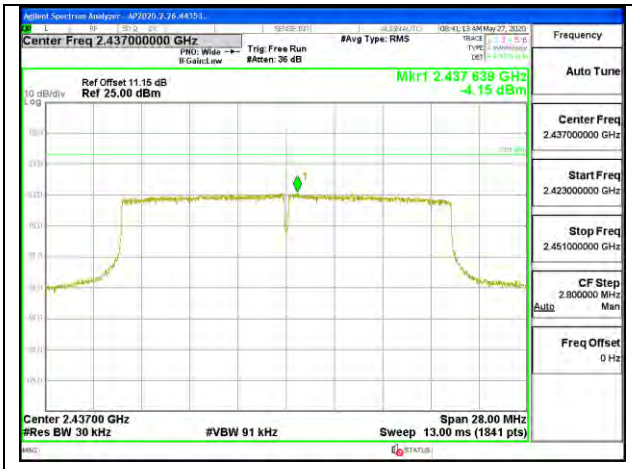
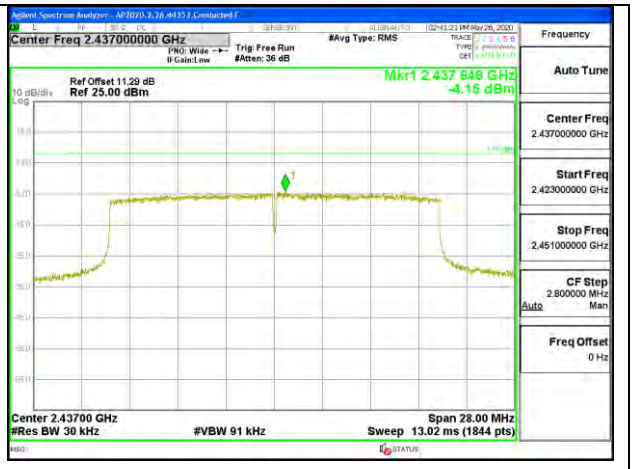
**ANT 4 + ANT 3 2TX MODE: 242-Tone RU Index 61**

| Duty Cycle CF (dB) | | 0.00 | Included in Calculations of Corr'd PSD | | | |
|---|---|---|---|---|---|---|
| Channel | Frequency (MHz) | ANT 4 Meas (dBm) | ANT 3 Meas (dBm) | Total Corr'd PSD (dBm) | Limit (dBm/ 3kHz) | Margin (dB) |
| Low 1 | 2412 | -10.54 | -10.40 | -7.46 | 8.0 | -15.5 |
| Low 2 | 2417 | -8.41 | -8.57 | -5.48 | 8.0 | -13.5 |
| Low 3 | 2422 | -6.63 | -6.53 | -3.57 | 8.0 | -11.6 |
| Low 4 | 2427 | -4.17 | -3.91 | -1.03 | 8.0 | -9.0 |
| Mid 6 | 2437 | -4.15 | -4.15 | -1.14 | 8.0 | -9.1 |
| High 8 | 2447 | -3.98 | -4.19 | -1.07 | 8.0 | -9.1 |
| High 9 | 2452 | -7.20 | -7.12 | -4.15 | 8.0 | -12.1 |
| High 10 | 2457 | -8.57 | -8.58 | -5.56 | 8.0 | -13.6 |
| High 11 | 2462 | -10.49 | -10.35 | -7.41 | 8.0 | -15.4 |
| High 12 | 2467 | -12.53 | -12.54 | -9.52 | 8.0 | -17.5 |
| High 13 | 2472 | -20.57 | -20.33 | -17.44 | 8.0 | -25.4 |




**MID CHANNEL 6 ANT 4**




**MID CHANNEL 6 ANT 3**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## 9.6. CONDUCTED SPURIOUS EMISSIONS

**LIMITS**

FCC §15.247 (d)

RSS-247 5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

**RESULTS**


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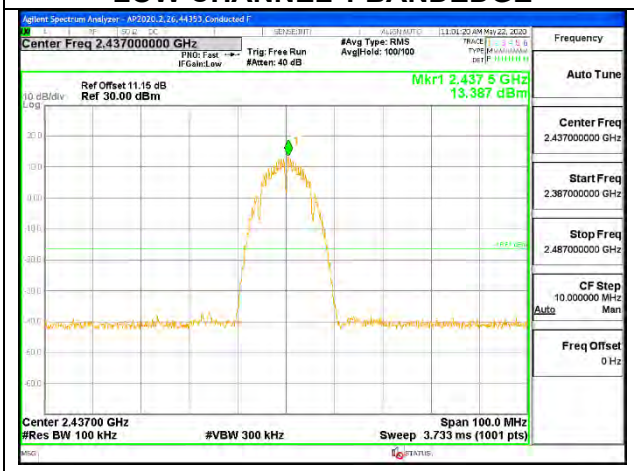
## 9.6.1. **802.11b MODE 1TX**

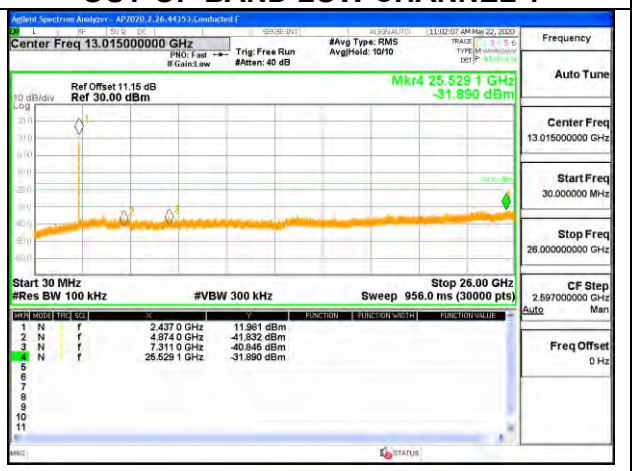
**1TX ANT 4 MODE**

**LOW CHANNEL 1 BANDEDGE**

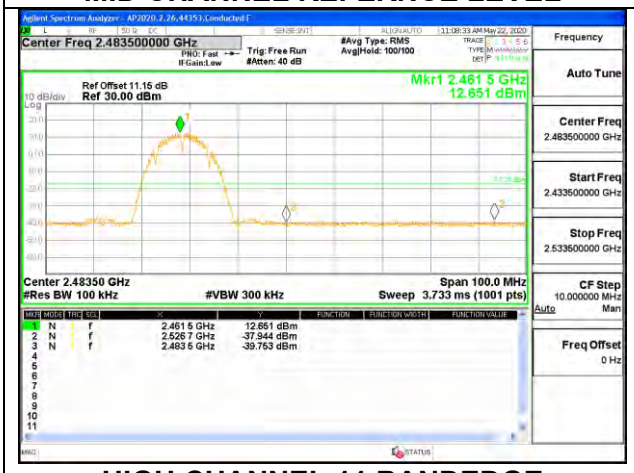
**OUT-OF-BAND LOW CHANNEL 1**



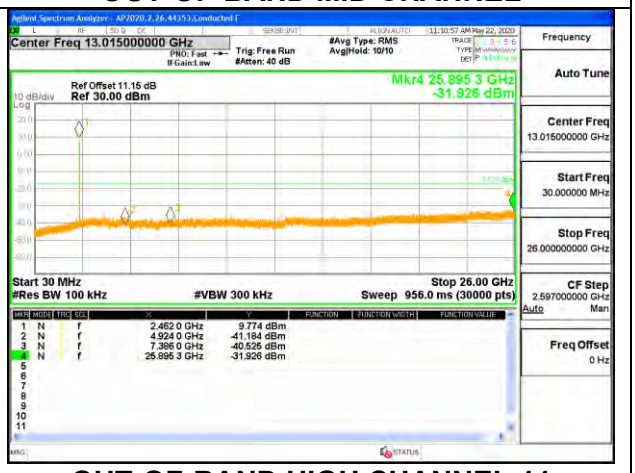

**MID CHANNEL REFERNCE LEVEL**




**OUT-OF-BAND MID CHANNEL**




**HIGH CHANNEL 11 BANDEDGE**




**OUT-OF-BAND HIGH CHANNEL 11**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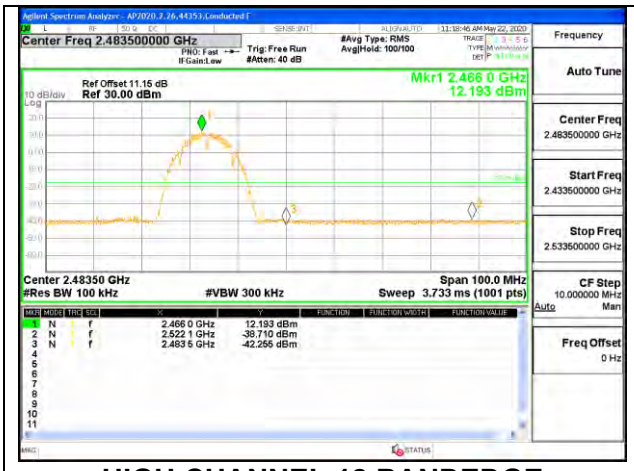
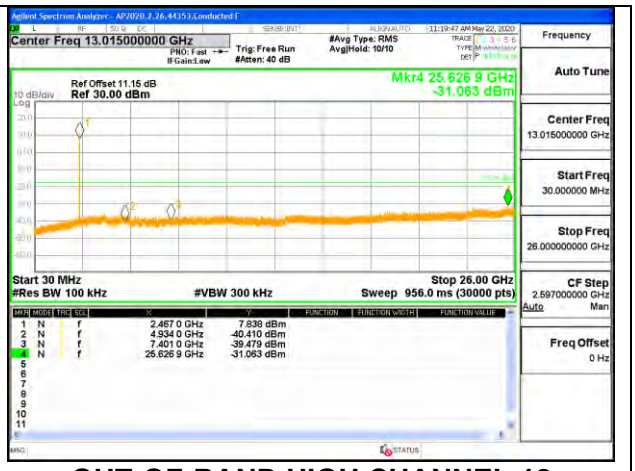



HIGH CHANNEL 12 BANDEDGE




OUT-OF-BAND HIGH CHANNEL 12

HIGH CHANNEL 13 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 13



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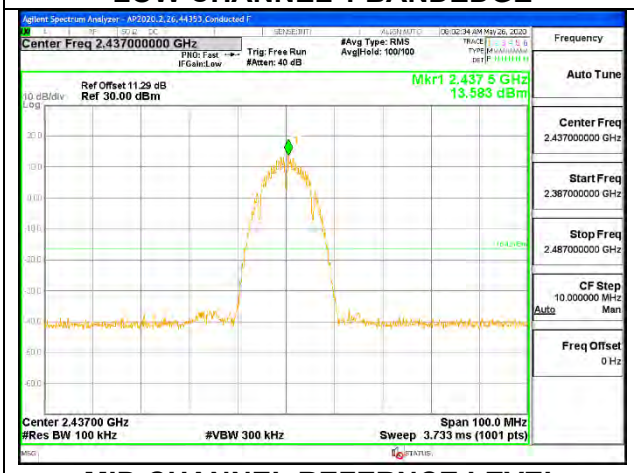
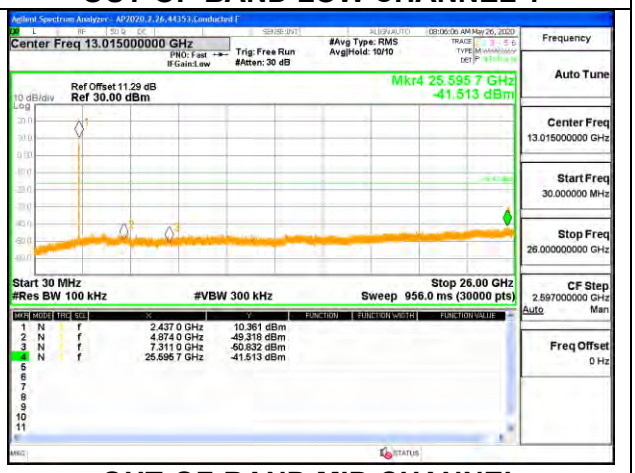
**1TX ANT 3 MODE**

**LOW CHANNEL 1 BANDEDGE**

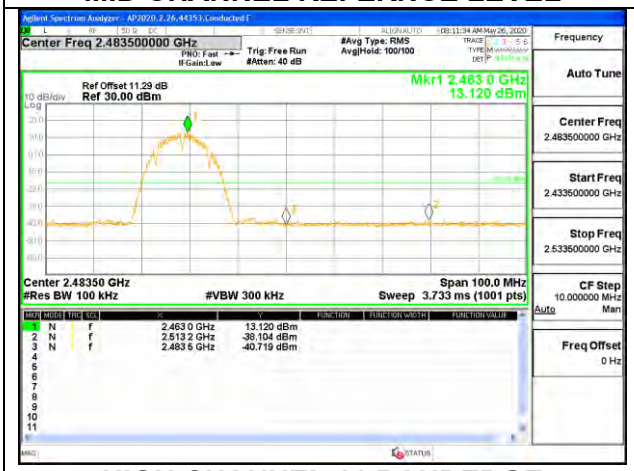
**OUT-OF-BAND LOW CHANNEL 1**




**MID CHANNEL REFERNCE LEVEL**




**OUT-OF-BAND MID CHANNEL**




**HIGH CHANNEL 11 BANDEDGE**

**OUT-OF-BAND HIGH CHANNEL 11**



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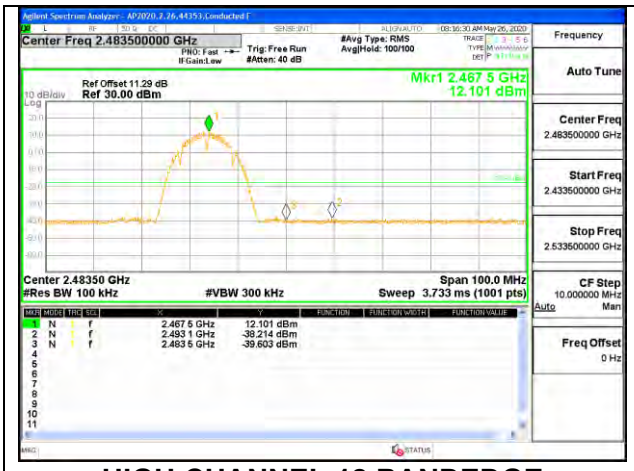


HIGH CHANNEL 12 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 12

HIGH CHANNEL 13 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 13



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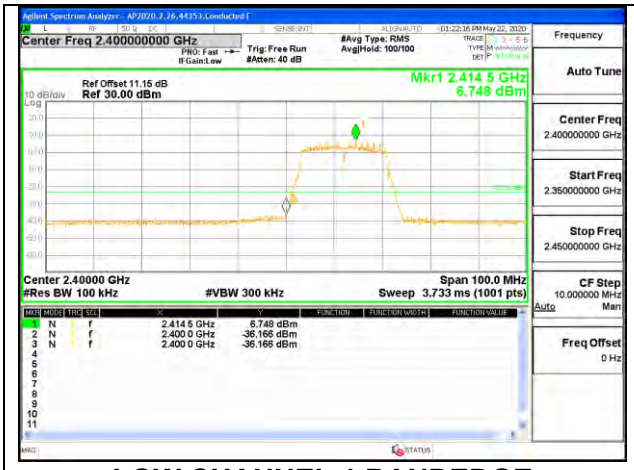
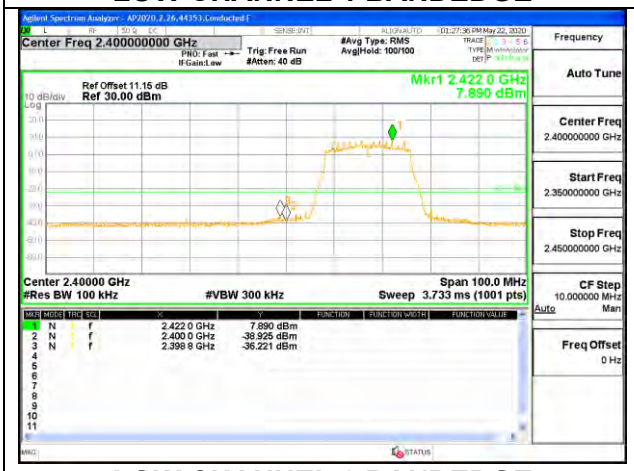
## 9.6.2. **802.11n HT20 MODE**

**1TX ANT 4 MODE**




**LOW CHANNEL 1 BANDEDGE**

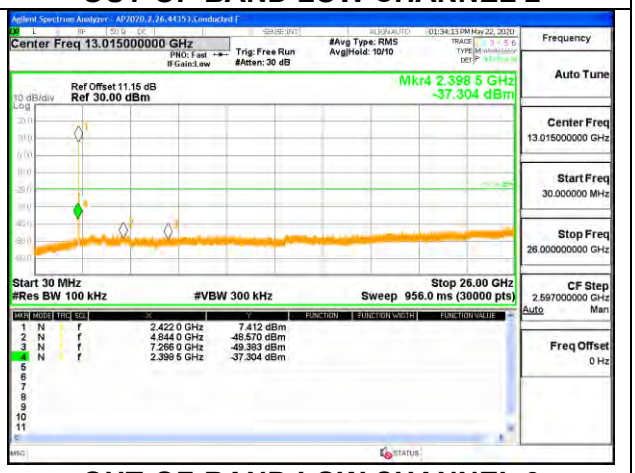
**OUT-OF-BAND LOW CHANNEL 1**




**LOW CHANNEL 2 BANDEDGE**

**OUT-OF-BAND LOW CHANNEL 2**

**LOW CHANNEL 3 BANDEDGE**




**OUT-OF-BAND LOW CHANNEL 3**



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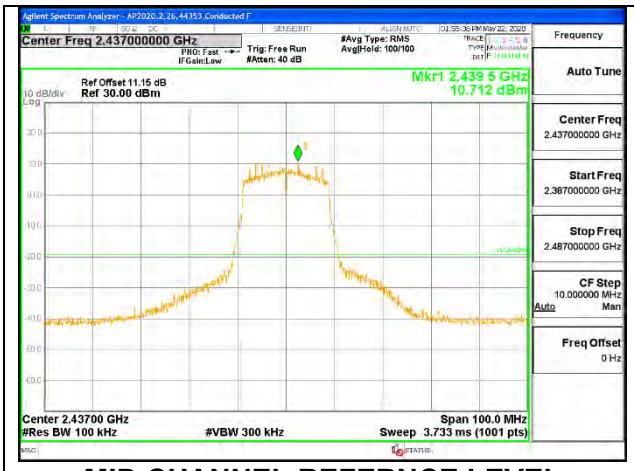
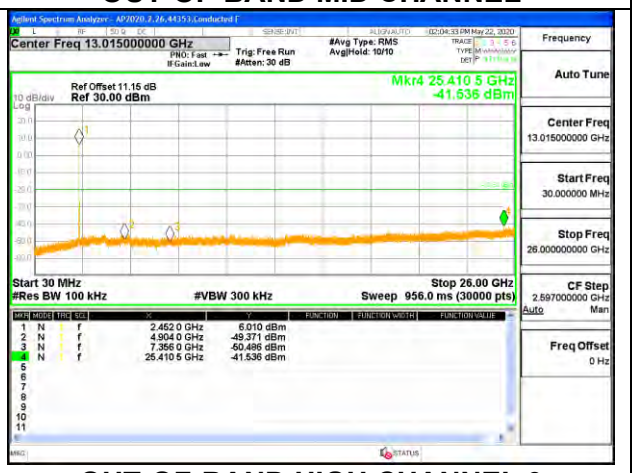



MID CHANNEL REFERNCE LEVEL

OUT-OF-BAND MID CHANNEL

HIGH CHANNEL 9 BANDEDGE




OUT-OF-BAND HIGH CHANNEL 9

HIGH CHANNEL 10 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 10



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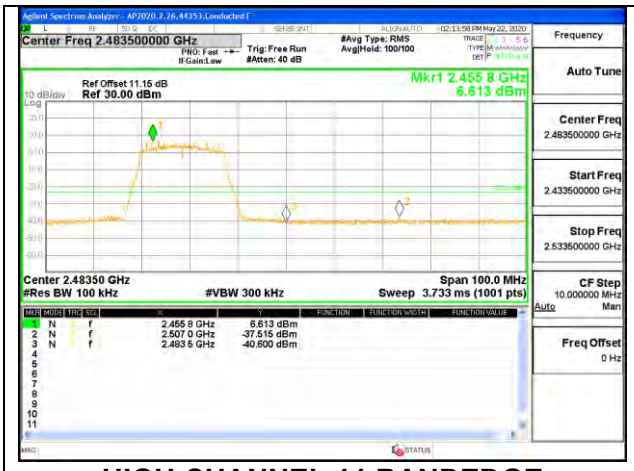


HIGH CHANNEL 11 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 11

HIGH CHANNEL 12 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 12

HIGH CHANNEL 13 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 13



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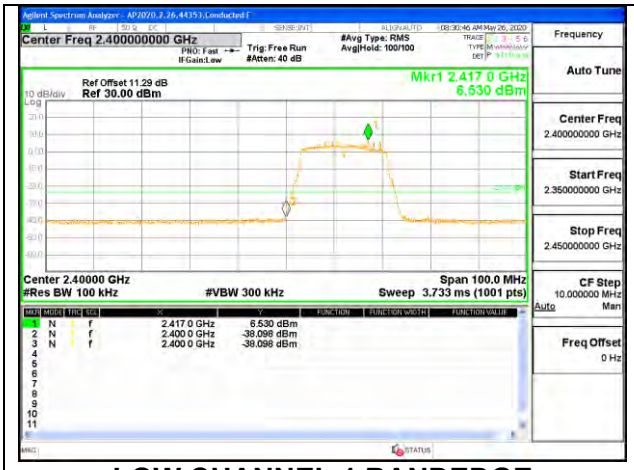
**1TX ANT 3 MODE**




LOW CHANNEL 1 BANDEDGE

OUT-OF-BAND LOW CHANNEL 1

LOW CHANNEL 2 BANDEDGE

OUT-OF-BAND LOW CHANNEL 2

LOW CHANNEL 3 BANDEDGE

OUT-OF-BAND LOW CHANNEL 3



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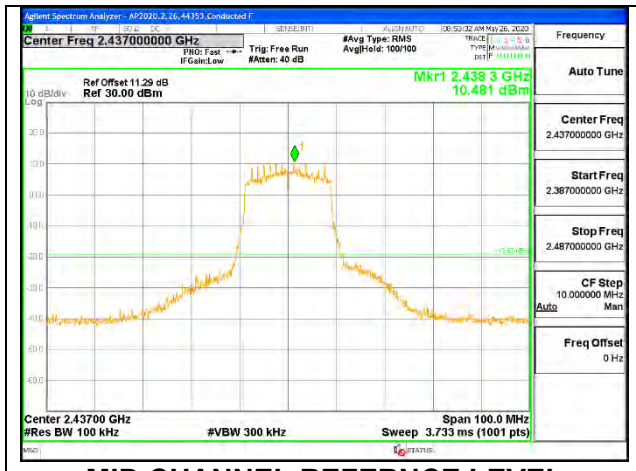
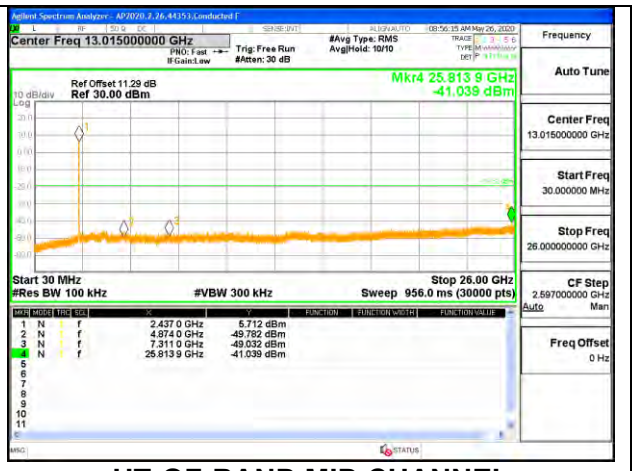



MID CHANNEL REFERNCE LEVEL




UT-OF-BAND MID CHANNEL

HIGH CHANNEL 9 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 9

HIGH CHANNEL 10 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 10



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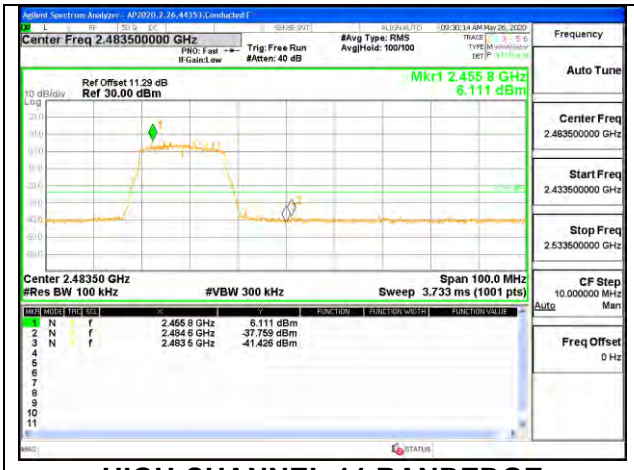


HIGH CHANNEL 11 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 11

HIGH CHANNEL 12 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 12

HIGH CHANNEL 13 BANDEDGE

OUT-OF-BAND HIGH CHANNEL 13



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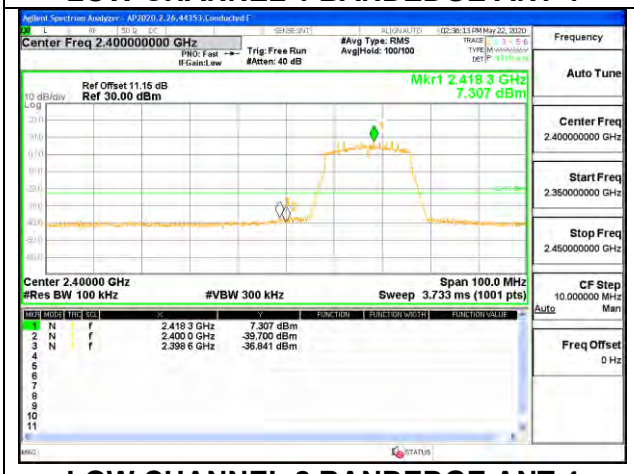
## 9.6.3. **802.11n HT20 MODE 2TX**

**2TX ANT 4 + ANT 3 CDD MODE**

**LOW CHANNEL 1 BANDEDGE ANT 4**

**OUT-OF-BAND LOW CHANNEL 1 ANT 4**




**LOW CHANNEL 2 BANDEDGE ANT 4**

**OUT-OF-BAND LOW CHANNEL 2 ANT 4**

**LOW CHANNEL 3 BANDEDGE ANT 4**

**OUT-OF-BAND LOW CHANNEL 3 ANT 4**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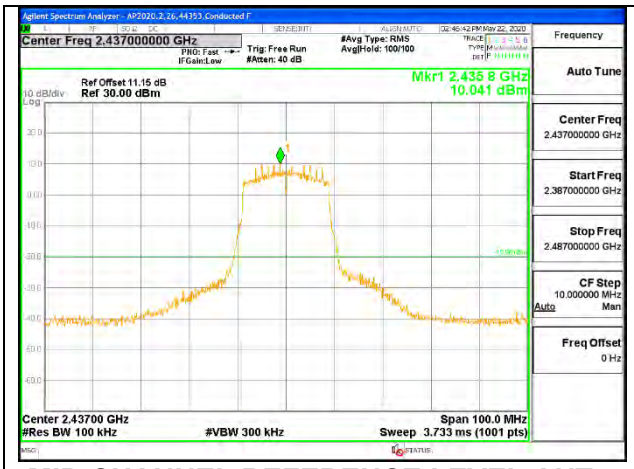
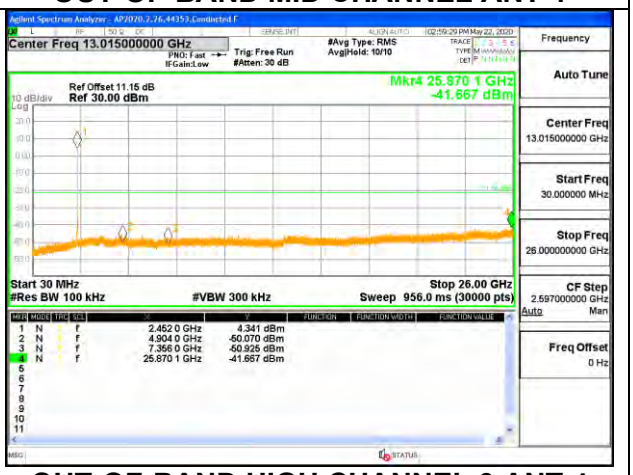


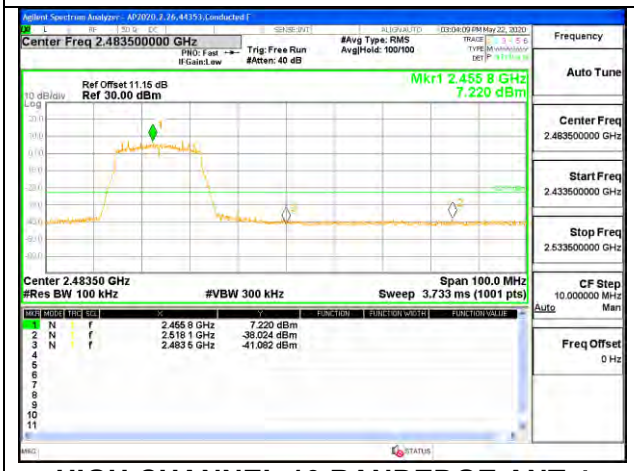

**MID CHANNEL REFERENCE LEVEL ANT 4**

**OUT-OF-BAND MID CHANNEL ANT 4**

**HIGH CHANNEL 9 BANDEDGE ANT 4**




**OUT-OF-BAND HIGH CHANNEL 9 ANT 4**




**HIGH CHANNEL 10 BANDEDGE ANT 4**

**OUT-OF-BAND HIGH CHANNEL 10 ANT 4**



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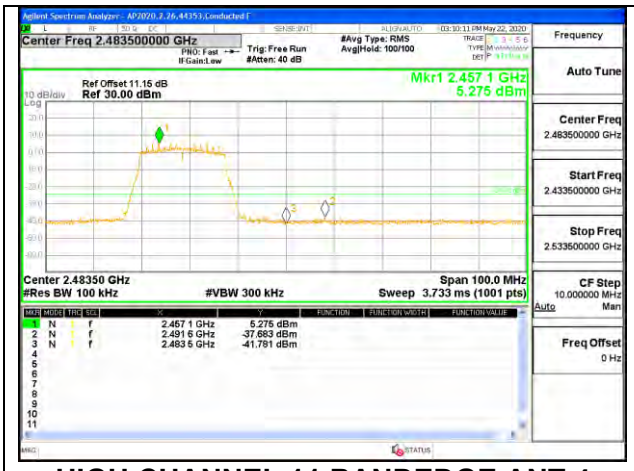


HIGH CHANNEL 11 BANDEDGE ANT 4

OUT-OF-BAND HIGH CHANNEL 11 ANT 4

HIGH CHANNEL 12 BANDEDGE ANT 4

OUT-OF-BAND HIGH CHANNEL 12 ANT 4

HIGH CHANNEL 13 BANDEDGE ANT 4

OUT-OF-BAND HIGH CHANNEL 13 ANT 4



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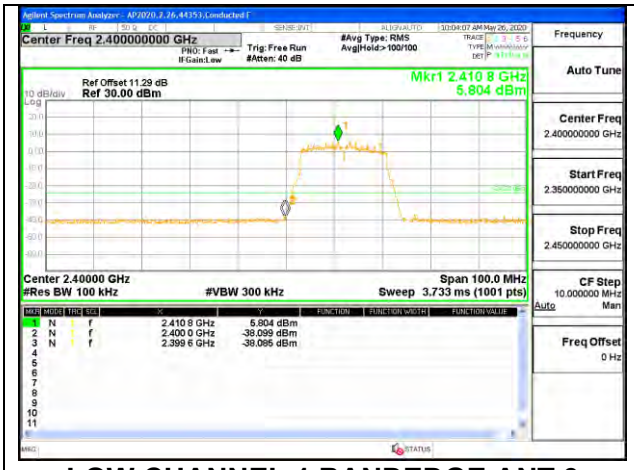
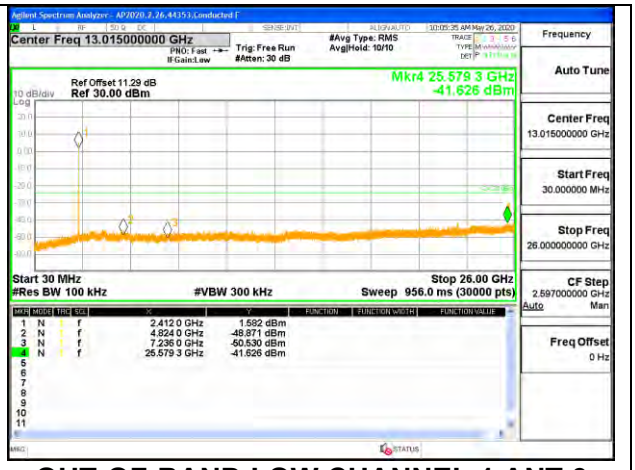
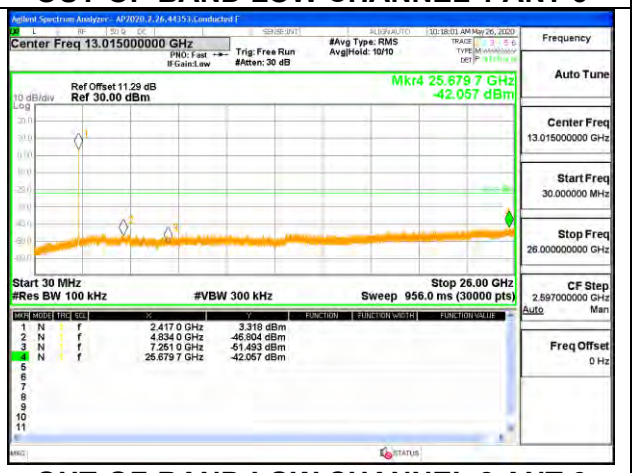



LOW CHANNEL 1 BANDEDGE ANT 3



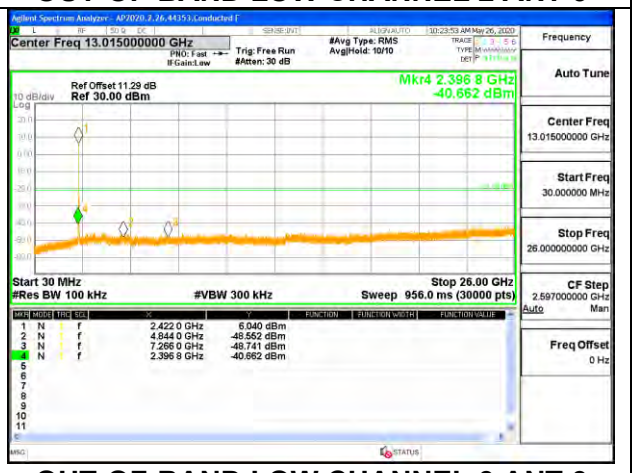

OUT-OF-BAND LOW CHANNEL 1 ANT 3

LOW CHANNEL 2 BANDEDGE ANT 3




OUT-OF-BAND LOW CHANNEL 2 ANT 3

LOW CHANNEL 3 BANDEDGE ANT 3




OUT-OF-BAND LOW CHANNEL 3 ANT 3



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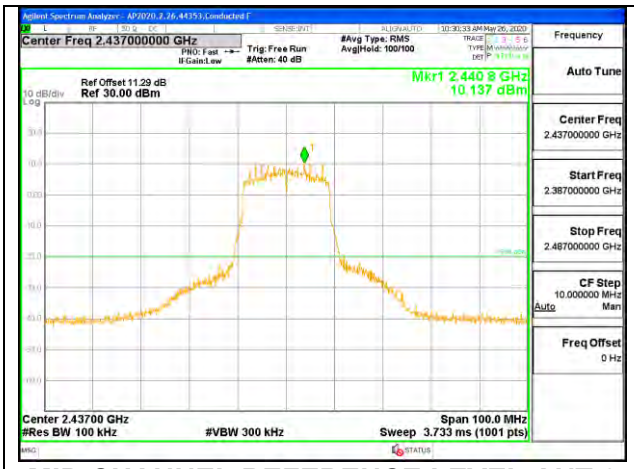
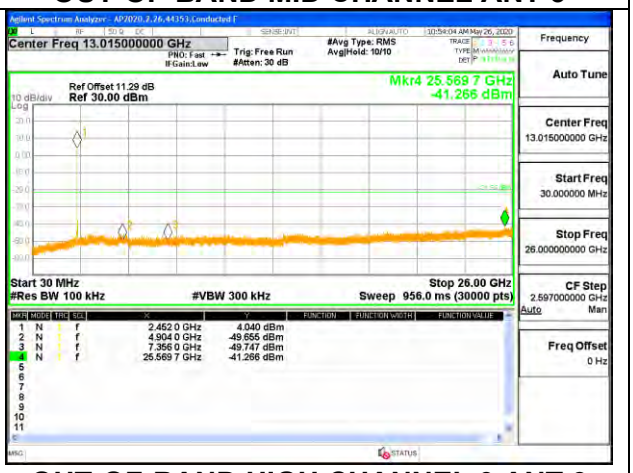



**MID CHANNEL REFERENCE LEVEL ANT 3**

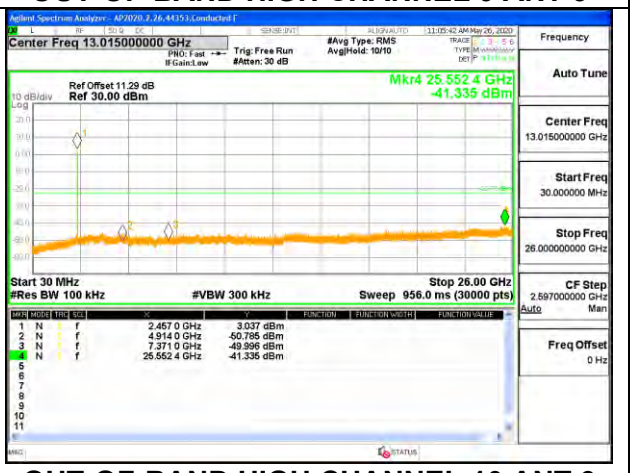
**OUT-OF-BAND MID CHANNEL ANT 3**

**HIGH CHANNEL 9 BANDEDGE ANT 3**




**OUT-OF-BAND HIGH CHANNEL 9 ANT 3**

**HIGH CHANNEL 10 BANDEDGE ANT 3**




**OUT-OF-BAND HIGH CHANNEL 10 ANT 3**



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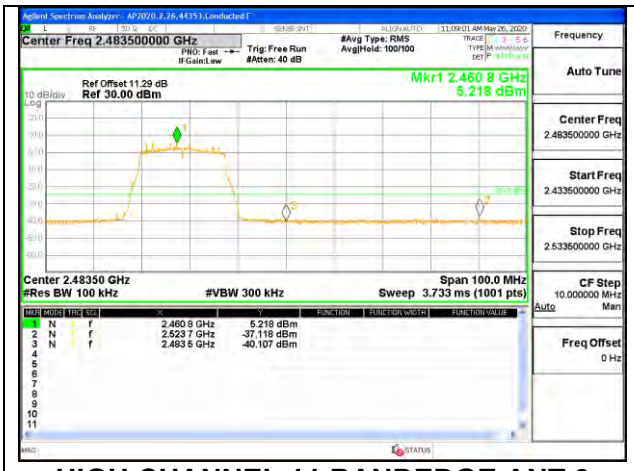


HIGH CHANNEL 11 BANDEDGE ANT 3

OUT-OF-BAND HIGH CHANNEL 11 ANT 3

HIGH CHANNEL 12 BANDEDGE ANT 3

OUT-OF-BAND HIGH CHANNEL 12 ANT 3

HIGH CHANNEL 13 BANDEDGE ANT 3

OUT-OF-BAND HIGH CHANNEL 13 ANT 3



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