# REGULATORY COMPLIANCE TEST REPORT

## FCC CFR 47, SubPart E 15.407 (NII)

**REPORT #: MIKO81-U6 Rev A**

**Company:** Mikrotikls SIA (MikroTik)

**Test of:** RBD25G-5HPacQD2HPnD-US

# REGULATORY COMPLIANCE TEST REPORT

**Company:** Mikrotikls SIA (MikroTik)

**Test of:** RBD25G-5HPacQD2HPnD-US

**To:** FCC CFR 47 Subpart E 15. 407 (NII)

**Test Report Serial No.:** MIKO81-U6 Rev A

This report supersedes: NONE

Applicant: Mikrotikls SIA (MikroTik)
Brivibas gatve 214i
Riga, LV-1039
Latvia

Issue Date: 2nd May 2019

**This Test Report is Issued Under the Authority of:**

**MiCOM Labs, Inc.**
575 Boulder Court
Pleasanton California 94566
USA
Phone: +1 (925) 462-0304
Fax: +1 (925) 462-0306
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A2LA ACCREDITED
TESTING CERT #2381.01

**MiCOM Labs is an ISO 17025 Accredited Testing Laboratory**

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# 1. ACCREDITATION, LISTINGS & RECOGNITION

## 1.1. TESTING ACCREDITATION

MiCOM Labs, Inc. is an accredited Electrical testing laboratory per the international standard ISO/IEC 17025:2005. The company is accredited by the American Association for Laboratory Accreditation (A2LA) www.a2la.org test laboratory number 2381.01. MiCOM Labs test schedule is available at the following URL; http://www.a2la.org/scopepdf/2381-01.pdf

ilac-MRA A2LA

**Accredited Laboratory**

A2LA has accredited

**MiCOM LABS**

*Pleasanton, CA*

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 14th day of May 2018.

President and CEO
For the Accreditation Council
Certificate Number 2381.01
Valid to November 30, 2019

*For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.*

## 1.2. RECOGNITION

MiCOM Labs, Inc has widely recognized wireless testing capabilities. Our international recognition includes Conformity Assessment Body designation by APEC MRA countries. MiCOM Labs test reports are accepted globally.

| Country | Recognition Body | Status | Phase | Identification No. |
|---|---|---|---|---|
| USA | Federal Communications Commission (FCC) | TCB | - | US0159<br>Listing #: 102167 |
| Canada | Industry Canada (IC) | FCB | APEC MRA 2 | US0159<br>Listing #: 4143A-2<br>4143A-3 |
| Japan | MIC (Ministry of Internal Affairs and Communication) | CAB | APEC MRA 2 | RCB 210 |
| | VCCI | -- | -- | A-0012 |
| Europe | European Commission | NB | EU MRA | NB 2280 |
| Australia | Australian Communications and Media Authority (ACMA) | CAB | APEC MRA 1 | US0159 |
| Hong Kong | Office of the Telecommunication Authority (OFTA) | CAB | APEC MRA 1 | |
| Korea | Ministry of Information and Communication Radio Research Laboratory (RRL) | CAB | APEC MRA 1 | |
| Singapore | Infocomm Development Authority (IDA) | CAB | APEC MRA 1 | |
| Taiwan | National Communications Commission (NCC)<br>Bureau of Standards, Metrology and Inspection (BSMI) | CAB | APEC MRA 1 | |
| Vietnam | Ministry of Communication (MIC) | CAB | APEC MRA 1 | |

EU MRA – European Union Mutual Recognition Agreement.
NB – Notified Body
APEC MRA – Asia Pacific Economic Community Mutual Recognition Agreement. Recognition agreement under which test lab is accredited to regulatory standards of the APEC member countries.

Phase I - recognition for product testing
Phase II – recognition for both product testing and certification

## 1.3. PRODUCT CERTIFICATION

MiCOM Labs, Inc. is an accredited Product Certification Body per the international standard ISO/IEC 17065:2012. The company is accredited by the American Association for Laboratory Accreditation (A2LA) www.a2la.org test laboratory number 2381.02. MiCOM Labs test schedule is available at the following URL; http://www.a2la.org/scopepdf/2381-02.pdf

**Accredited Product Certification Body**

A2LA has accredited

**MiCOM LABS**

*Pleasanton, CA*

This product certification body is accredited in accordance with the recognized International Standard ISO/IEC 17065:2012 *Requirements for bodies certifying products, processes and services*. This product certification body also meets the *A2LA R322 – Specific Requirements – Notified Body Accreditation Requirements* and *A2LA R308 - Specific Requirements - ISO-IEC 17065 - Telecommunication Certification Body Accreditation Program*. This accreditation demonstrates technical competence for a defined scope and the operation of a management system.

Presented this 14th day of May 2018

President and CEO
For the Accreditation Council
Certificate Number 2381.02
Valid to November 30, 2019

*For the product certification schemes to which this accreditation applies, please refer to the organization's Product Certification Scope of Accreditation.*

United States of America – Telecommunication Certification Body (TCB)
Industry Canada – Certification Body, CAB Identifier – US0159
Europe – Notified Body (NB), NB Identifier - 2280
Japan – Recognized Certification Body (RCB), RCB Identifier - 210

## 2. DOCUMENT HISTORY

| Document History | | |
|---|---|---|
| Revision | Date | Comments |
| Draft | 9th April 2019 | Initial Draft |
| Draft | 27th April 2019 | |
| Rev A | 2nd May 2019 | Initial Release |
| . | | |
| . | | |
| . | | |
| . | | |
| . | | |

In the above table the latest report revision will replace all earlier versions.

# 3. TEST RESULT CERTIFICATE

| | | | |
|---|---|---|---|
| **Manufacturer:** | Mikrotikls SIA (MikroTik)<br>Brivibas gatve 214i<br>Riga LV-1039<br>Latvia | **Tested By:** | MiCOM Labs, Inc.<br>575 Boulder Court<br>Pleasanton California 94566<br>USA |
| **Model:** | RBD25G-5HPacQD2HPnD-US | **Telephone:** | +1 925 462 0304 |
| **Equipment Type:** | Wireless Access Point | **Fax:** | +1 925 462 0306 |
| **S/N's:** | A645094C227B | | |
| **Test Date(s):** | 14th February – 25th March 2019 | **Website:** | www.micomlabs.com |

| STANDARD(S) | TEST RESULTS |
|---|---|
| FCC CFR 47 Part 15 Subpart E 15.407 | EQUIPMENT COMPLIES |

MiCOM Labs, Inc. tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report.

**Notes:**

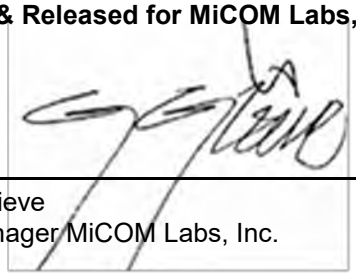
1. This document reports conditions under which testing was conducted and the results of testing performed.

2. Details of test methods used have been recorded and kept on file by the laboratory.

3. Test results apply only to the item(s) tested.

A2LA ACCREDITED
TESTING CERT #2381.01

**Approved & Released for MiCOM Labs, Inc. by**:



Graeme Grieve
Quality Manager MiCOM Labs, Inc.

Gordon Hurst
President & CEO MiCOM Labs, Inc.

# 4. REFERENCES AND MEASUREMENT UNCERTAINTY

## 4.1. Normative References

| REF. | PUBLICATION | YEAR | TITLE |
|---|---|---|---|
| I | KDB 662911 D01 & D02 | Oct 31 2013 | Guidance for measurement of output emission of devices that employ single transmitter with multiple outputs or systems with multiple transmitters operating simultaneously in the same frequency band |
| II | KDB 905462 D07 v02 | 22nd August 2016 | Test guidance to demonstrate compliance for U-NII devices subject to DFS requirements. |
| III | KDB 926956 D01 v02 | 22nd August 2016 | U-NII Device Transition Plan |
| IV | A2LA | August 2018 | R105 - Requirement's When Making Reference to A2LA Accreditation Status |
| V | ANSI C63.10 | 2013 | American National Standard for Testing Unlicensed Wireless Devices |
| VI | ANSI C63.4 | 2014 | American National Standards for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz |
| VII | CISPR 32 | 2015 | Electromagnetic compatibility of multimedia equipment - Emission requirements |
| VIII | ETSI TR 100 028 | 2001-12 | Parts 1 and 2 Electromagnetic compatibility and Radio Spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics |
| IX | FCC 06-96 | Jun 30 2006 | Memorandum Opinion and Order |
| X | FCC 47 CFR Part 15.407 | 2016 | Radio Frequency Devices; Subpart E –Unlicensed National Information Infrastructure Devices |
| XI | ICES-003 | Issue 6 Jan 2016; Updated April 2017 | Information Technology Equipment (Including Digital Apparatus) – Limits and methods of measurement. |
| XII | M 3003 | Edition 3 Nov.2012 | Expression of Uncertainty and Confidence in Measurements |
| XIII | RSS-247 Issue 2 | Feb 2017 | Digital Transmission Systems (DTSs), Frequency Hopping System (FHSs) and Licence-Exempt Local Area Network (LE-LEN) Devices |
| XIV | RSS-Gen Issue 5 | April 2018 | General Requirements for Compliance of Radio Apparatus |
| XV | FCC 47 CFR Part 2.1033 | 2016 | FCC requirements and rules regarding photographs and test setup diagrams. |
| XVI | KDB 905462 D02 v02 | April 8 2016 | Compliance Measurement Procedures for Unlicensed National Information Infrastructure devices operating in the 5250 to 5350 MHz and 5470 to 5725 MHz bands incorporating Dynamic Frequency Selection. |
| XVII | KDB 789033 D02 V02r01 | 14th December, 2017 | Guidelines For Compliance Testing Of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E |

## 4.2. Test and Uncertainty Procedure

Conducted and radiated emission measurements were conducted in accordance with American National Standards Institute ANSI C63.4, listed in the Normative References section of this report.

Measurement uncertainty figures are calculated in accordance with ETSI TR 100 028 Parts 1 and 2.

Measurement uncertainties stated are based on a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95 % in accordance with UKAS document M 3003 listed in the Normative References section of this report.



MiCOM Labs, 575 Boulder Court, Pleasanton, California 94566 USA, Phone: +1 (925) 462 0304, Fax: +1 (925) 462 0306, www.micomlabs.com

# 5. PRODUCT DETAILS AND TEST CONFIGURATIONS

## 5.1. Technical Details

| Details | Description |
|---|---|
| Purpose: | Test of the Mikrotikls SIA (MikroTik) Audience to FCC CFR 47 Part 15 Subpart E 15.407:<br>Compliance Measurement Procedures for Unlicensed National Information Infrastructure devices operating in the 5150 to 5350 MHz and 5470 to 5725 MHz bands incorporating Dynamic Frequency Selection. |
| Applicant: | Mikrotikls SIA (MikroTik)<br>Brivibas gatve 214i<br>Riga LV-1039 Latvia |
| Manufacturer: | Mikrotikls SIA (MikroTik) |
| Laboratory performing the tests: | MiCOM Labs, Inc.<br>575 Boulder Court<br>Pleasanton California 94566 USA |
| Test report reference number: | MIKO81-U6 |
| Date EUT received: | 15th October 2018 |
| Standard(s) applied: | FCC CFR 47 Part 15 Subpart E 15.407 |
| Dates of test (from - to): | 14th February – 25th March 2019 |
| No of Units Tested: | 2 |
| Product Family Name: | RouterBOARD |
| Model(s): | RBD25G-5HPacQD2HPnD-US |
| Location for use: | Indoors |
| Declared Frequency Range(s): | 5150 - 5250 MHz; 5725 - 5850 MHz; |
| Type of Modulation: | OFDM |
| EUT Modes of Operation: | 5150 - 5250 MHz & 5725 - 5850 MHz<br>802.11a<br>802.11-nHT-20, nHT-40<br>802.11-ac-20, -ac-40, ac-80 |
| Declared Nominal Output Power (dBm): | 5150 - 5250 MHz: +20 dBm<br>5725 - 5850 MHz: +27 dBm |
| Transmit/Receive Operation: | Transceiver<br>5,150 – 5,250 MHz: 2 Antenna Ports<br>5,470 – 5,725 MHz: 4 Antenna Ports |
| Rated Input Voltage and Current: | 100 – 240 $V_{AC}$ 1.3A MAX, 50-60 Hz, PoE: 24Vdc, 1500mA |
| Operating Temperature Range: | -40ºC to +70ºC |
| ITU Emission Designator: | 802.11a 16M4D1D<br>802.11n HT-20 17M7D1D<br>802.11n HT-40 36M2D1D<br>802.11n zc-80 76M6D1D |
| Equipment Dimensions: | 97 x 100 x 234 mm |
| Weight: | 850 grams |
| Hardware Rev: | r2 |
| Software Rev: | ROS v6.43.2 |

## 5.2. Scope Of Test Program

**Mikrotikls SIA (MikroTik) RBD25G-5HPacQD2HPnD**

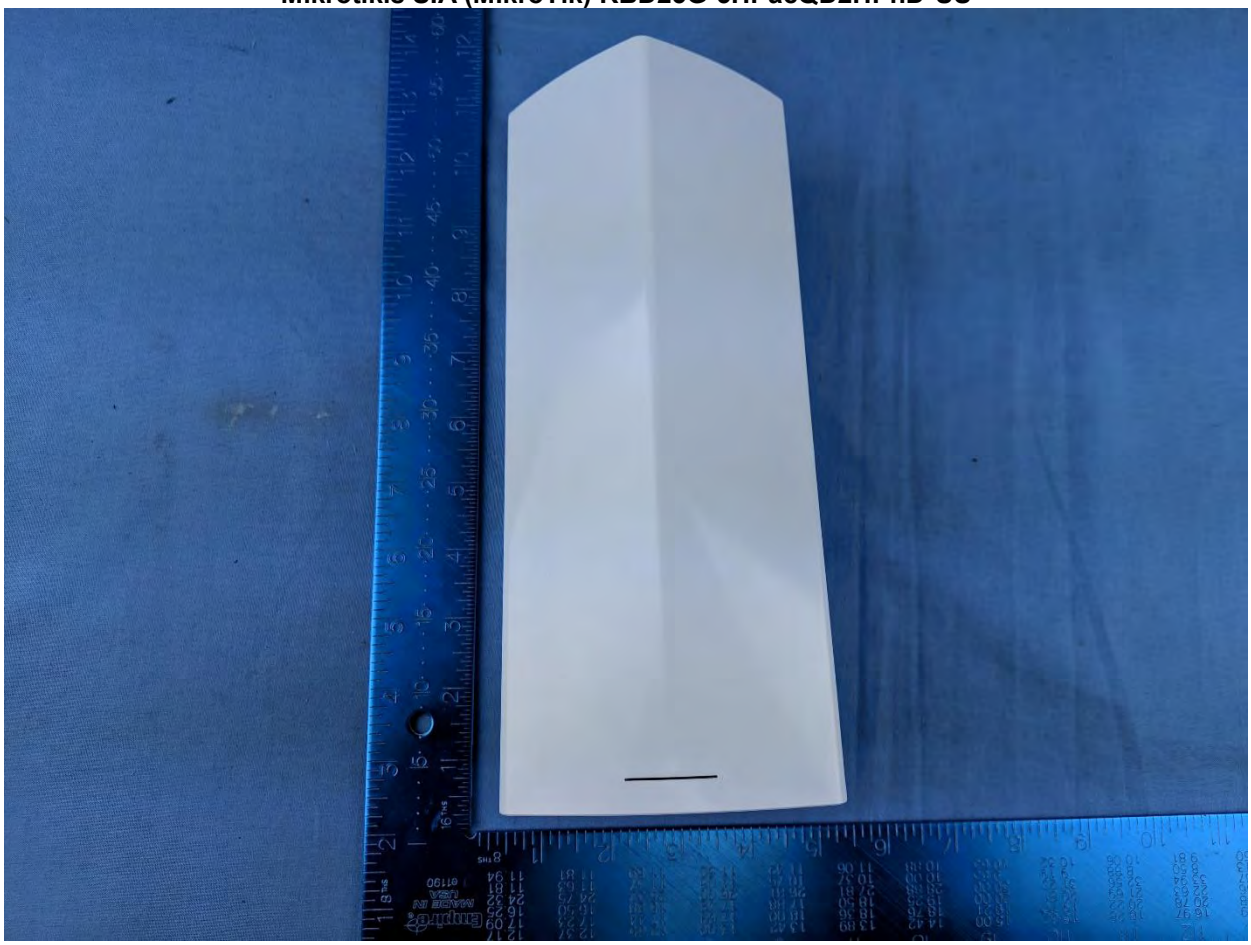
The scope of the test program was to test the Mikrotikls SIA RBD25G-5HPacQD2HPnD-US, Audience configurations in the frequency ranges 5150 - 5250 MHz; 5725 - 5850 MHz; for compliance against the following specification:

5,150 – 5,250 MHz: 2 Active Antenna Ports
5,470 – 5,725 MHz: 4 Active Antenna Ports

**FCC CFR 47 Part 15 Subpart E 15.407**
Compliance Measurement Procedures for Unlicensed National Information Infrastructure devices operating in the 5150 - 5350 MHz, 5470 - 5725 MHz, 5725 – 5850 MHz bands.

Testing was limited to non-DFS bands 5150 – 5250 and 5725 – 5850 MHz

**Mikrotikls SIA (MikroTik) RBD25G-5HPacQD2HPnD-US**



Front View

## 5.3. Equipment Model(s) and Serial Number(s)

| Type (EUT/ Support) | Equipment Description | Mfr | Model No. | Serial No. |
|---|---|---|---|---|
| EUT | Wireless Access Point | MikroTik | RBD25G-5HPacQD2HPnD-US | A645094C227B |
| EUT | Power Supply Unit<br>100 – 240 $V_{AC}$ 1.3A MAX, 50-60 Hz<br>+24 $V_{DC}$ 1500mA | CullPower | SAW36-240-1500U | 411802012 |

## 5.4. Antenna Details

| Type | Manufacturer | Model | Family | Gain (dBi) | BF Gain | Dir BW | X-Pol | Frequency Band (MHz) |
|---|---|---|---|---|---|---|---|---|
| integral | Wistron Neweb | db_PIFA_2_4-5_5_AN_grnd_v1_1 | PIFA | 3.5 | - | 150º | - | 5150-5250 |
| integral | Wistron Neweb | 95XKAA15.GB9 | patch | 4.5 | - | 150º | - | 5470-5725 |

BF Gain - Beamforming Gain
Dir BW - Directional BeamWidth
X-Pol - Cross Polarization

## 5.5. Cabling and I/O Ports

| Port Type | Port Description | Qty. | Screened (Yes/ No) | Length |
|---|---|---|---|---|
| Ethernet | PoE in | 1 | Yes | > 3m |
| Ethernet | Ethernet Port | 1 | Yes | > 3m |
| SIM cards | SIM | 1 | N/A | N/A |

## 5.6. Test Configurations

Results for the following configurations are provided in this report:

| Operational Mode(s) (802.11a/b/g/n/ac) | Data Rate with Highest Power MBit/s | Channel Frequency (MHz) | | |
|---|---|---|---|---|
| | | Low | Mid | High |
| **5150 - 5250 MHz** | | | | |
| a | 6 | 5,180.00 | 5,200.00 | 5,240.00 |
| ac-80 | 29.3 | 5,210.00 | -- | -- |
| HT-20 | 6.5 | 5,180.00 | 5,200.00 | 5,240.00 |
| HT-40 | 13.5 | 5,190.00 | -- | 5,230.00 |
| **5725 - 5850 MHz** | | | | |
| a | 6 | 5,745.00 | 5,785.00 | 5,825.00 |
| ac-80 | 29.3 | 5,775.00 | -- | 5,775.00 |
| HT-20 | 6.5 | 5,745.00 | 5,785.00 | 5,825.00 |
| HT-40 | 13.5 | 5,755.00 | -- | 5,795.00 |

## 5.7. Equipment Modifications

The following modifications were required to bring the equipment into compliance:
1. NONE

## 5.8. Deviations from the Test Standard

The following deviations from the test standard were required in order to complete the test program:
1. NONE

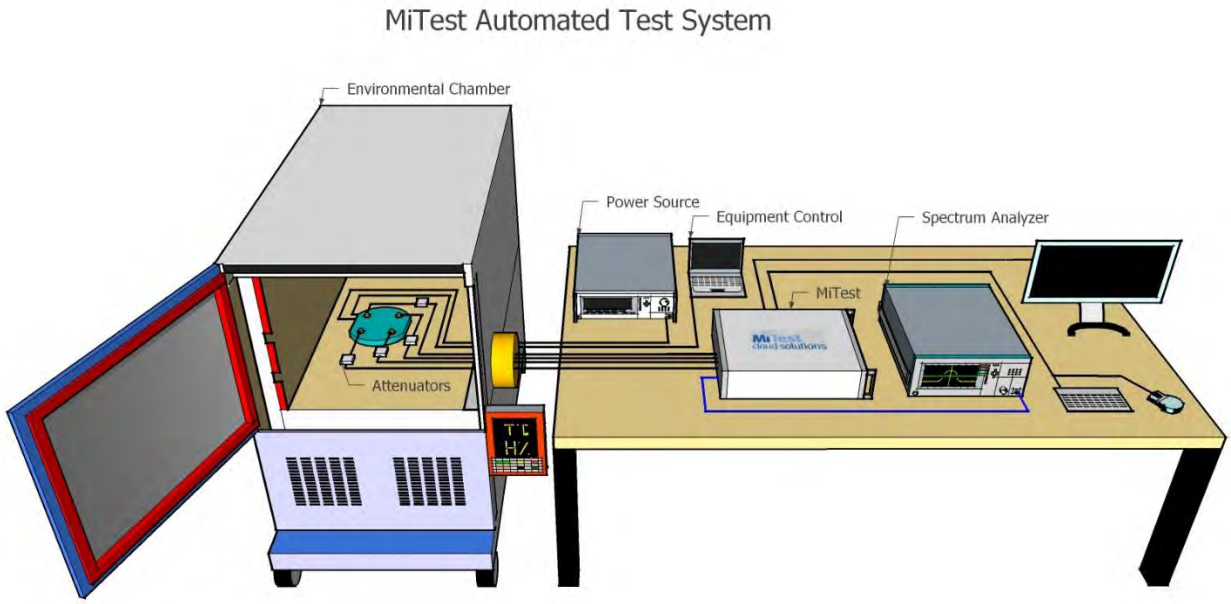
# 6. TEST SUMMARY

List of Measurements

| Test Header | Result | Data Link |
|---|---|---|
| Peak Transmit Power | Complies | View Data |
| 26 dB & 99% Bandwidth | Complies | View Data |
| Power Spectral Density | Complies | View Data |
| Frequency Stability | Declaration | - |
| Transmit Power Control (TPC) | Not Tested | - |
| Dynamic Frequency Selection (DFS) | Not Tested | - |
| Channel Availability Check | - | - |
| Initial CAC | - | - |
| Beginning CAC | - | - |
| End CAC | - | - |
| Channel Close / Transmission Time | - | - |
| Non-Occupancy Period | - | - |
| Probability of Detection | - | - |
| Detection Bandwidth | - | - |
| Radiated | Complies | - |
| TX Spurious & Restricted Band Emissions | Complies | View Data |
| Restricted Edge & Band-Edge Emissions | Complies | View Data |
| Digital Emissions | Complies | View Data |
| AC Wireline | Complies | View Data |

# 7. TEST EQUIPMENT CONFIGURATION(S)

## 7.1. Conducted Test Setup



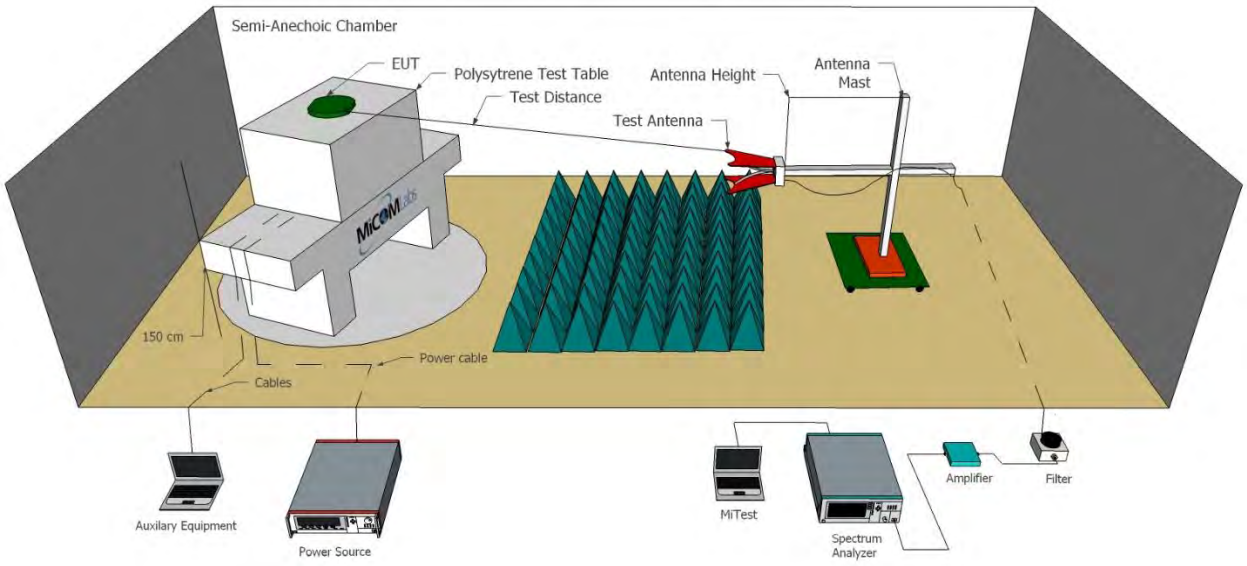

A full system calibration was performed on the test station and any resulting system losses (or gains) were considered in the production of all final measurement data.

| Asset# | Description | Manufacturer | Model# | Serial# | Calibration Due Date |
|---|---|---|---|---|---|
| 249 | Resistance Thermometer | Thermotronics | GR2105-02 | 9340 #2 | 30 Oct 2019 |
| 361 | Desktop for RF#1, Labview Software installed | Dell | Vostro 220 | WS RF#1 | Not Required |
| 378 | Rohde & Schwarz 40 GHz Receiver with Generator | Rhode & Schwarz | ESIB40 | 100107/040 | 12 Oct 2019 |
| 405 | DC Power Supply 0-60V | Agilent | 6654A | MY4001826 | Cal when used |
| 408 | USB to GPIB interface | National Instruments | GPIB-USB HS | 14C0DE9 | Not Required |
| 445 | PoE Injector | D-Link | DPE-101GL | QTAH1E2000625 | Not Required |
| 461 | Spectrum Analyzer | Agilent | E4440A | MY46185537 | 20 Sep 2019 |
| 510 | Barometer/Thermometer | Control Company | 68000-49 | 170871375 | 11 Dec 2019 |
| 75 | Environmental Chamber | Thermatron | SE-300-2-2 | 27946 | 24 Feb 2020 |

## 7.2. Radiated Emissions - 3m Chamber

The following tests were performed using the radiated test set-up shown in the diagram below.
Radiated emissions above 1GHz.

Radiated Emissions Above 1GHz Test Setup

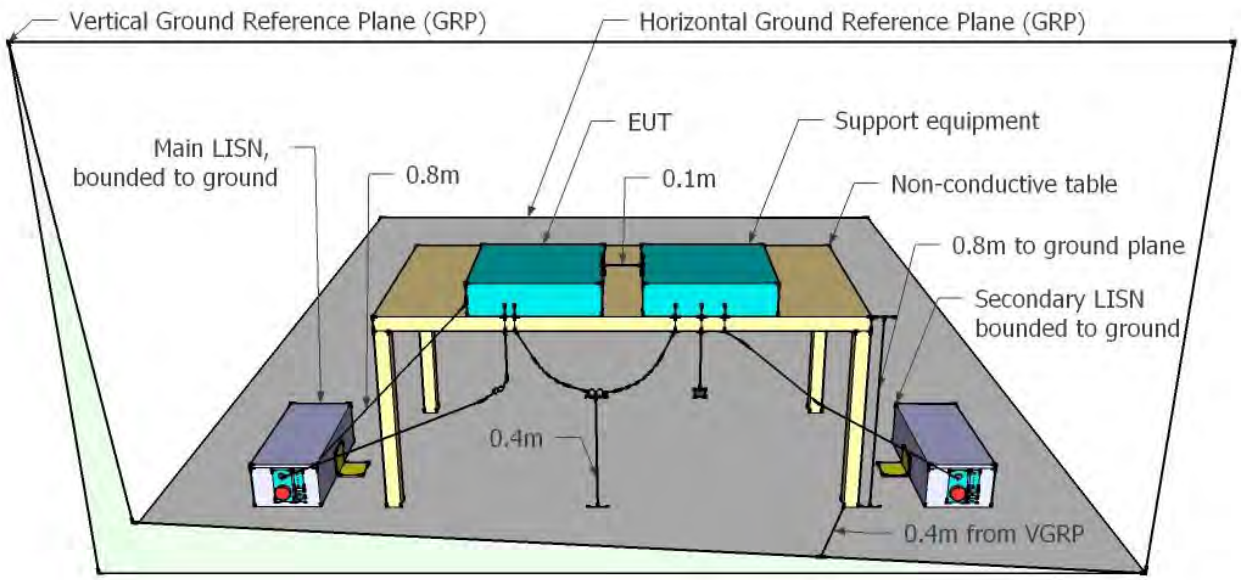



A full system calibration was performed on the test station and any resulting system losses (or gains) were considered in the production of all final measurement data.

| Asset# | Description | Manufacturer | Model# | Serial# | Calibration Due Date |
|---|---|---|---|---|---|
| 170 | Video System Controller for Semi Anechoic Chamber | Panasonic | WV-CU101 | 04R08507 | Not Required |
| 298 | 3M Radiated Emissions Chamber Maintenance Check | MiCOM | 3M Chamber | 298 | 21 Apr 2019 |
| 338 | Sunol 30 to 3000 MHz Antenna | Sunol | JB3 | A052907 | 4 Apr 2019 |
| 378 | Rohde & Schwarz 40 GHz Receiver with Generator | Rhode & Schwarz | ESIB40 | 100107/040 | 12 Oct 2019 |
| 397 | Amp 10 - 2500MHz | MiCOM Labs | Amp 10 - 2500 MHz | NA | 12 Apr 2019 |
| 399 | ETS 1-18 GHz Horn Antenna | ETS | 3117 | 00154575 | 12 Oct 2019 |
| 406 | Amplifier for Radiated Emissions | MiCOM Labs | 40dB 1 to 18GHz Amp | 0406 | 12 Apr 2019 |
| 410 | Desktop Computer | Dell | Inspiron 620 | WS38 | Not Required |
| 411 | Mast/Turntable Controller | Sunol Sciences | SC98V | 060199-1D | Not Required |

| | | | | | |
|---|---|---|---|---|---|
| 412 | USB to GPIB Interface | National Instruments | GPIB-USB HS | 11B8DC2 | Not Required |
| 413 | Mast Controller | Sunol Science | TWR95-4 | 030801-3 | Not Required |
| 415 | Turntable Controller | Sunol Sciences | Turntable Controller | None | Not Required |
| 416 | Gigabit ethernet filter | ETS-Lingren | Gigafoil 260366 | None | Not Required |
| 447 | MiTest Rad Emissions Test Software | MiCOM | Rad Emissions Test Software Version 1.0 | 447 | Not Required |
| 462 | Schwarzbeck cable from Antenna to Amplifier. | Schwarzbeck | AK 9513 | 462 | 9 Oct 2019 |
| 463 | Schwarzbeck cable from Amplifier to Bulkhead. | Schwarzbeck | AK 9513 | 463 | 9 Oct 2019 |
| 464 | Schwarzbeck cable from Bulkhead to Receiver | Schwarzbeck | AK 9513 | 464 | 9 Oct 2019 |
| 465 | Low Pass Filter DC-1000 MHz | Mini-Circuits | NLP-1200+ | VUU01901402 | 9 Oct 2019 |
| 480 | Cable - Bulkhead to Amp | SRC Haverhill | 157-3050360 | 480 | 24 Aug 2019 |
| 481 | Cable - Bulkhead to Receiver | SRC Haverhill | 151-3050787 | 481 | 24 Aug 2019 |
| 510 | Barometer/Thermometer | Control Company | 68000-49 | 170871375 | 11 Dec 2019 |
| 518 | Cable - Amp to Antenna | SRC Haverhill | 157-3051574 | 518 | 24 Aug 2019 |

## 7.3. AC Mains Power Input / Output Test Setup




A full system calibration was performed on the test station and any resulting system losses (or gains) were considered in the production of all final measurement data.

| Asset# | Description | Manufacturer | Model# | Serial# | Calibration Due Date |
|---|---|---|---|---|---|
| 184 | Pulse Limiter | Rhode & Schwarz | ESH3Z2 | 357.8810.52 | 6 Oct 2019 |
| 190 | LISN (two-line V-network) | Rhode & Schwarz | ESH3Z5 | 836679/006 | 18 Oct 2019 |
| 193 | Receiver 20 Hz to 7 GHz | Rhode & Schwarz | ESI 7 | 838496/007 | 10 Oct 2019 |
| 287 | Rohde & Schwarz 40 GHz Receiver | Rhode & Schwarz | ESIB40 | 100201 | 2 May 2019 |
| 295 | Conducted Emissions Chamber Maintenance Check | MiCOM | Conducted Emissions Chamber | 295 | 19 Apr 2019 |
| 307 | BNC-CABLE | Megaphase | 1689 1GVT4 | 15F50B002 | 11 Apr 2019 |
| 316 | Dell desktop computer workstation | Dell | Desktop | WS04 | Not Required |
| 388 | LISN (3 Phase) 9kHz - 30MHz | Rohde & Schwarz | ESH2-Z5 | 892107/022 | 20 Oct 2019 |
| 510 | Barometer/Thermometer | Control Company | 68000-49 | 170871375 | 11 Dec 2019 |

# 8. MEASUREMENT AND PRESENTATION OF TEST DATA

The measurement and graphical data presented in this test report was generated automatically using state-of-the-art technology creating an easy to read report structure. Numerical measurement data is separated from supporting graphical data (plots) through hyperlinks. Numerical measurement data can be reviewed without scrolling through numerous graphical pages to arrive at the next data matrix.

Plots have been relegated into the Appendix 'Graphical Data'.

Test and report automation was performed by MiTest. MiTest is an automated test system developed by MiCOM Labs. MiTest is the first cloud based modular test system enabling end-to-end automation of regulatory compliance testing for conducted RF testing.


The MiCOM Labs "MiTest" Automated Test System" (Patent Pending)

# 9. TEST RESULTS

## 9.1. Peak Transmit Power

| Conducted Test Conditions for Maximum Conducted Output Power | | | |
|---|---|---|---|
| **Standard:** | FCC CFR 47:15.407 | **Ambient Temp. (ºC):** | 24.0 - 27.5 |
| **Test Heading:** | Maximum Conducted Output Power | **Rel. Humidity (%):** | 32 - 45 |
| **Standard Section(s):** | 15.407 (a) | **Pressure (mBars):** | 999 - 1001 |
| **Reference Document(s):** | See Normative References | | |

**Test Procedure for Maximum Conducted Output Power Measurement**
Method PM (Measurement using an RF average power meter). KDB 789033 defines a methodology using an average wideband power meter. Measurements were made while the EUT was operating in a continuous transmission mode (100% duty cycle) at the appropriate center frequency. All operational modes and frequency bands were measured independently, and the resultant calculated. Where the device operated with multiple antenna ports i.e. MIMO device, each port was measured and reported separately. A summation (Σ) of each antenna port output power is provided which includes any offset due to Duty Cycle Correction Factor (DCCF). Testing was performed under ambient conditions at nominal voltage.

Test configuration and setup used for the measurement was per the Conducted Test Set-up section specified in this document.
Supporting Information
Calculated Power = A + G + Y+ 10 log (1/x) dBm

A = Total Power [10*Log10 ($10^{a/10}$ + $10^{b/10}$ + $10^{c/10}$ + $10^{d/10}$)]
G = Antenna Gain
Y = Beamforming Gain
x = Duty Cycle (average power measurements only)

**Limits Maximum Conducted Output Power**

**Operating Frequency Band 5150-5250 MHz**

15. 407 (a)(1)
(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 MHz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are

used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**Operating Frequency Band 5250-5350 and 5470 – 5725 MHz**

15. 407 (a)(2)
For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**Operating Frequency Band 5725 – 5850 MHz**

15. 407 (a)(3)
For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

| Equipment Configuration for Peak Transmit Power | | | |
|---|---|---|---|
| **Variant:** | 802.11a | **Duty Cycle (%):** | 95.0 |
| **Data Rate:** | 6.00 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured Conducted Output Power (dBm) Port(s) | | | | Calculated Total Power | Minimum 26 dB Bandwidth | Limit | Margin | EUT Power Setting |
|---|---|---|---|---|---|---|---|---|---|
| MHz | a | b | c | d | Σ Port(s) dBm | MHz | dBm | dB | |
| **5180.0** | 15.80 | 15.01 | -- | -- | 18.43 | N/A | 30.00 | -11.57 | 23.00 |
| **5200.0** | 14.76 | 13.71 | -- | -- | 17.28 | N/A | 30.00 | -12.72 | 23.00 |
| **5240.0** | 14.43 | 14.38 | -- | -- | 17.42 | N/A | 30.00 | -12.58 | 23.00 |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-01 MEASURING RF OUTPUT POWER |
| Measurement Uncertainty: | ±1.33 dB |

The above measurements are true pulse readings and therefore a Duty Cycling correction factor is not required.

| Equipment Configuration for Peak Transmit Power | | | |
|---|---|---|---|
| **Variant:** | 802.11ac-80 | **Duty Cycle (%):** | 80.0 |
| **Data Rate:** | 29.30 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured Conducted Output Power (dBm) Port(s) | | | | Calculated Total Power | Minimum 26 dB Bandwidth | Limit | Margin | EUT Power Setting |
|---|---|---|---|---|---|---|---|---|---|
| MHz | a | b | c | d | Σ Port(s) dBm | MHz | dBm | dB | |
| **5210.0** | 15.33 | 14.42 | -- | -- | 17.91 | N/A | 30.00 | -12.09 | 23.00 |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-01 MEASURING RF OUTPUT POWER |
| Measurement Uncertainty: | ±1.33 dB |

The above measurements are true pulse readings and therefore a Duty Cycling correction factor is not required.

| Equipment Configuration for Peak Transmit Power | | | |
|---|---|---|---|
| **Variant:** | 802.11n HT-20 | **Duty Cycle (%):** | 94.0 |
| **Data Rate:** | 6.50 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured Conducted Output Power (dBm) Port(s) | | | | Calculated Total Power | Minimum 26 dB Bandwidth | Limit | Margin | EUT Power Setting |
|---|---|---|---|---|---|---|---|---|---|
| MHz | a | b | c | d | Σ Port(s) dBm | MHz | dBm | dB | |
| **5180.0** | 15.61 | 14.81 | -- | -- | 18.24 | N/A | 30.00 | -11.76 | 23.00 |
| **5200.0** | 14.67 | 13.65 | -- | -- | 17.20 | N/A | 30.00 | -12.80 | 23.00 |
| **5240.0** | 14.26 | 14.18 | -- | -- | 17.23 | N/A | 30.00 | -12.77 | 23.00 |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-01 MEASURING RF OUTPUT POWER |
| Measurement Uncertainty: | ±1.33 dB |

The above measurements are true pulse readings and therefore a Duty Cycling correction factor is not required.

| Equipment Configuration for Peak Transmit Power | | | |
|---|---|---|---|
| **Variant:** | 802.11n HT-40 | **Duty Cycle (%):** | 84.0 |
| **Data Rate:** | 13.50 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured Conducted Output Power (dBm) Port(s) | | | | Calculated Total Power | Minimum 26 dB Bandwidth | Limit | Margin | EUT Power Setting |
|---|---|---|---|---|---|---|---|---|---|
| MHz | a | b | c | d | Σ Port(s) dBm | MHz | dBm | dB | |
| **5190.0** | 17.39 | 16.40 | -- | -- | 19.93 | N/A | 30.00 | -10.07 | 23.00 |
| **5230.0** | 16.60 | 15.80 | -- | -- | 19.23 | N/A | 30.00 | -10.77 | 23.00 |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-01 MEASURING RF OUTPUT POWER |
| Measurement Uncertainty: | ±1.33 dB |

The above measurements are true pulse readings and therefore a Duty Cycling correction factor is not required.

| Equipment Configuration for Peak Transmit Power |
|---|

| | | | |
|---|---|---|---|
| **Variant:** | 802.11a | **Duty Cycle (%):** | 92.0 |
| **Data Rate:** | 6.00 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured Conducted Output Power (dBm) Port(s) | | | | Calculated Total Power | Minimum 99% Bandwidth | Limit | Margin | EUT Power Setting |
|---|---|---|---|---|---|---|---|---|---|
| MHz | a | b | c | d | Σ Port(s) dBm | MHz | dBm | dB | |
| **5745.0** | 18.48 | 19.58 | 20.61 | 20.71 | 25.96 | 16.273 | 30.00 | -4.04 | 30.00 |
| **5785.0** | 18.41 | 19.76 | 20.15 | 20.38 | 25.76 | 16.273 | 30.00 | -4.24 | 30.00 |
| **5825.0** | 19.88 | 20.98 | 20.42 | 20.73 | 26.54 | 16.273 | 30.00 | -3.46 | 30.00 |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-01 MEASURING RF OUTPUT POWER |
| Measurement Uncertainty: | ±1.33 dB |

The above measurements are true pulse readings and therefore a Duty Cycling correction factor is not required.

| Equipment Configuration for Peak Transmit Power | | | |
|---|---|---|---|
| **Variant:** | 802.11ac-80 | **Duty Cycle (%):** | 77.0 |
| **Data Rate:** | 29.30 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured Conducted Output Power (dBm) Port(s) | | | | Calculated Total Power | Minimum 99% Bandwidth | Limit | Margin | EUT Power Setting |
|---|---|---|---|---|---|---|---|---|---|
| MHz | a | b | c | d | Σ Port(s) dBm | MHz | dBm | dB | |
| **5775.0** | 18.48 | 19.58 | 20.32 | 20.32 | 25.76 | 75.671 | 30.00 | -4.24 | 30.00 |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-01 MEASURING RF OUTPUT POWER |
| Measurement Uncertainty: | ±1.33 dB |

The above measurements are true pulse readings and therefore a Duty Cycling correction factor is not required.

| Equipment Configuration for Peak Transmit Power | | | |
|---|---|---|---|
| **Variant:** | 802.11n HT-20 | **Duty Cycle (%):** | 93.0 |
| **Data Rate:** | 6.50 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured Conducted Output Power (dBm) Port(s) | | | | Calculated Total Power | Minimum 99% Bandwidth | Limit | Margin | EUT Power Setting |
|---|---|---|---|---|---|---|---|---|---|
| MHz | a | b | c | d | Σ Port(s) dBm | MHz | dBm | dB | |
| **5745.0** | 18.19 | 19.27 | 20.35 | 20.31 | 25.64 | 17.555 | 30.00 | -4.36 | 30.00 |
| **5785.0** | 18.28 | 19.50 | 19.95 | 20.16 | 25.55 | 17.555 | 30.00 | -4.45 | 30.00 |
| **5825.0** | 18.71 | 19.77 | 19.34 | 19.50 | 25.37 | 17.555 | 30.00 | -4.63 | 30.00 |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-01 MEASURING RF OUTPUT POWER |
| Measurement Uncertainty: | ±1.33 dB |

The above measurements are true pulse readings and therefore a Duty Cycling correction factor is not required.

| Equipment Configuration for Peak Transmit Power | | | |
|---|---|---|---|
| **Variant:** | 802.11n HT-40 | **Duty Cycle (%):** | 79.0 |
| **Data Rate:** | 13.50 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured Conducted Output Power (dBm) Port(s) | | | | Calculated Total Power | Minimum 99% Bandwidth | Limit | Margin | EUT Power Setting |
|---|---|---|---|---|---|---|---|---|---|
| MHz | a | b | c | d | Σ Port(s) dBm | MHz | dBm | dB | |
| **5755.0** | 18.99 | 20.16 | 21.25 | 21.37 | 26.57 | 35.110 | 30.00 | -3.43 | 30.00 |
| **5795.0** | 19.25 | 20.41 | 20.71 | 21.14 | 26.45 | 35.110 | 30.00 | -3.55 | 30.00 |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-01 MEASURING RF OUTPUT POWER |
| Measurement Uncertainty: | ±1.33 dB |

The above measurements are true pulse readings and therefore a Duty Cycling correction factor is not required.

## 9.2. 26 dB & 99% Bandwidth

| Conducted Test Conditions for 26 dB and 99% Bandwidth | | | |
|---|---|---|---|
| **Standard:** | FCC CFR 47:15.407 | **Ambient Temp. (ºC):** | 24.0 - 27.5 |
| **Test Heading:** | 26 dB and 99 % Bandwidth | **Rel. Humidity (%):** | 32 - 45 |
| **Standard Section(s):** | 15.407 (a) | **Pressure (mBars):** | 999 - 1001 |
| **Reference Document(s):** | See Normative References | | |

**Test Procedure for 26 dB and 99% Bandwidth Measurement**
The bandwidth at 26 dB and 99 % is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency. The Resolution Bandwidth was set to approximately 1% of the emission bandwidth.
Testing was performed under ambient conditions at nominal voltage. Where the device operated with multiple antenna ports i.e. MIMO device, each port was measured and reported.

Test configuration and setup used for the measurement was per the Conducted Test Set-up section specified in this document.

| Equipment Configuration for 26 dB & 99% Occupied Bandwidth | | | |
|---|---|---|---|
| **Variant:** | 802.11a | **Duty Cycle (%):** | 95.0 |
| **Data Rate:** | 6.00 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured 26 dB Bandwidth (MHz) Port(s) | | | | 26 dB Bandwidth (MHz) | | | |
|---|---|---|---|---|---|---|---|---|
| **MHz** | **a** | **b** | **c** | **d** | **Highest** | **Lowest** | | |
| **5180.0** | 19.479 | 19.158 | -- | -- | 19.479 | 19.158 | | |
| **5200.0** | 19.319 | 19.158 | -- | -- | 19.319 | 19.158 | | |
| **5240.0** | 18.998 | 19.078 | -- | -- | 19.078 | 18.998 | | |

| Test Frequency | Measured 99% Bandwidth (MHz) Port(s) | | | | 99% Bandwidth (MHz) | | | |
|---|---|---|---|---|---|---|---|---|
| **MHz** | **a** | **b** | **c** | **d** | **Highest** | **Lowest** | | |
| **5180.0** | 16.433 | 16.433 | -- | -- | 16.433 | 16.433 | | |
| **5200.0** | 16.513 | 16.433 | -- | -- | 16.513 | 16.433 | | |
| **5240.0** | 16.433 | 16.433 | -- | -- | 16.433 | 16.433 | | |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-03 MEASURING RF SPECTRUM MASK |
| Measurement Uncertainty: | ±2.81 dB |

Note: click the links in the above matrix to view the graphical image (plot).

| Equipment Configuration for 26 dB & 99% Occupied Bandwidth | | | |
|---|---|---|---|
| **Variant:** | 802.11ac-80 | **Duty Cycle (%):** | 80.0 |
| **Data Rate:** | 29.30 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured 26 dB Bandwidth (MHz) Port(s) | | | | 26 dB Bandwidth (MHz) | | | |
|---|---|---|---|---|---|---|---|---|
| **MHz** | **a** | **b** | **c** | **d** | **Highest** | **Lowest** | | |
| **5210.0** | 87.856 | 88.176 | -- | -- | 88.176 | 87.856 | | |

| Test Frequency | Measured 99% Bandwidth (MHz) Port(s) | | | | 99% Bandwidth (MHz) | | | |
|---|---|---|---|---|---|---|---|---|
| **MHz** | **a** | **b** | **c** | **d** | **Highest** | **Lowest** | | |
| **5210.0** | 75.992 | 76.633 | -- | -- | 76.633 | 75.992 | | |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-03 MEASURING RF SPECTRUM MASK |
| Measurement Uncertainty: | ±2.81 dB |

Note: click the links in the above matrix to view the graphical image (plot).

| Equipment Configuration for 26 dB & 99% Occupied Bandwidth | | | |
|---|---|---|---|
| **Variant:** | 802.11n HT-20 | **Duty Cycle (%):** | 94.0 |
| **Data Rate:** | 6.50 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured 26 dB Bandwidth (MHz) Port(s) | | | | 26 dB Bandwidth (MHz) | | | |
|---|---|---|---|---|---|---|---|---|
| **MHz** | **a** | **b** | **c** | **d** | **Highest** | **Lowest** | | |
| **5180.0** | 20.200 | 20.281 | -- | -- | 20.281 | 20.200 | | |
| **5200.0** | 20.281 | 19.960 | -- | -- | 20.281 | 19.960 | | |
| **5240.0** | 20.361 | 20.200 | -- | -- | 20.361 | 20.200 | | |

| Test Frequency | Measured 99% Bandwidth (MHz) Port(s) | | | | 99% Bandwidth (MHz) | | | |
|---|---|---|---|---|---|---|---|---|
| **MHz** | **a** | **b** | **c** | **d** | **Highest** | **Lowest** | | |
| **5180.0** | 17.715 | 17.715 | -- | -- | 17.715 | 17.715 | | |
| **5200.0** | 17.635 | 17.635 | -- | -- | 17.635 | 17.635 | | |
| **5240.0** | 17.635 | 17.635 | -- | -- | 17.635 | 17.635 | | |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-03 MEASURING RF SPECTRUM MASK |
| Measurement Uncertainty: | ±2.81 dB |

Note: click the links in the above matrix to view the graphical image (plot).

| Equipment Configuration for 26 dB & 99% Occupied Bandwidth | | | |
|---|---|---|---|
| **Variant:** | 802.11n HT-40 | **Duty Cycle (%):** | 84.0 |
| **Data Rate:** | 13.50 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured 26 dB Bandwidth (MHz) Port(s) | | | | 26 dB Bandwidth (MHz) | | | |
|---|---|---|---|---|---|---|---|---|
| **MHz** | **a** | **b** | **c** | **d** | **Highest** | **Lowest** | | |
| **5190.0** | 40.080 | 39.760 | -- | -- | 40.080 | 39.760 | | |
| **5230.0** | 39.760 | 39.599 | -- | -- | 39.760 | 39.599 | | |

| Test Frequency | Measured 99% Bandwidth (MHz) Port(s) | | | | 99% Bandwidth (MHz) | | | |
|---|---|---|---|---|---|---|---|---|
| **MHz** | **a** | **b** | **c** | **d** | **Highest** | **Lowest** | | |
| **5190.0** | 36.232 | 36.232 | -- | -- | 36.232 | 36.232 | | |
| **5230.0** | 36.072 | 35.912 | -- | -- | 36.072 | 35.912 | | |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-03 MEASURING RF SPECTRUM MASK |
| Measurement Uncertainty: | ±2.81 dB |

Note: click the links in the above matrix to view the graphical image (plot).

| Equipment Configuration for 6 dB & 99% Bandwidth | | | |
|---|---|---|---|
| **Variant:** | 802.11a | **Duty Cycle (%):** | 92.0 |
| **Data Rate:** | 6.00 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured 6 dB Bandwidth (MHz) Port(s) | | | | 6 dB Bandwidth (MHz) | | | |
|---|---|---|---|---|---|---|---|---|
| **MHz** | **a** | **b** | **c** | **d** | **Highest** | **Lowest** | | |
| **5745.0** | 16.353 | 16.273 | 16.273 | 16.353 | 16.353 | 16.273 | | |
| **5785.0** | 16.273 | 16.273 | 16.273 | 16.273 | 16.273 | 16.273 | | |
| **5825.0** | 16.273 | 16.273 | 16.273 | 16.273 | 16.273 | 16.273 | | |

| Test Frequency | Measured 99% Bandwidth (MHz) Port(s) | | | | 99% Bandwidth (MHz) | | | |
|---|---|---|---|---|---|---|---|---|
| **MHz** | **a** | **b** | **c** | **d** | **Highest** | **Lowest** | | |
| **5745.0** | 16.433 | 16.433 | 16.433 | 16.433 | 16.433 | 16.433 | | |
| **5785.0** | 16.433 | 16.433 | 16.433 | 16.433 | 16.433 | 16.433 | | |
| **5825.0** | 16.433 | 16.433 | 16.433 | 16.433 | 16.433 | 16.433 | | |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-03 MEASURING RF SPECTRUM MASK |
| Measurement Uncertainty: | ±2.81 dB |

Note: click the links in the above matrix to view the graphical image (plot).

| Equipment Configuration for 6 dB & 99% Bandwidth | | | |
|---|---|---|---|
| **Variant:** | 802.11ac-80 | **Duty Cycle (%):** | 77.0 |
| **Data Rate:** | 29.30 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured 6 dB Bandwidth (MHz) Port(s) | | | | 6 dB Bandwidth (MHz) | | | |
|---|---|---|---|---|---|---|---|---|
| **MHz** | **a** | **b** | **c** | **d** | **Highest** | **Lowest** | | |
| **5775.0** | 75.992 | 75.992 | 75.992 | 75.671 | 75.992 | 75.671 | | |

| Test Frequency | Measured 99% Bandwidth (MHz) Port(s) | | | | 99% Bandwidth (MHz) | | | |
|---|---|---|---|---|---|---|---|---|
| **MHz** | **a** | **b** | **c** | **d** | **Highest** | **Lowest** | | |
| **5775.0** | 76.313 | 75.992 | 75.992 | 76.313 | 76.313 | 75.992 | | |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-03 MEASURING RF SPECTRUM MASK |
| Measurement Uncertainty: | ±2.81 dB |

Note: click the links in the above matrix to view the graphical image (plot).

| Equipment Configuration for 6 dB & 99% Bandwidth | | | |
|---|---|---|---|
| **Variant:** | 802.11n HT-20 | **Duty Cycle (%):** | 93.0 |
| **Data Rate:** | 6.50 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured 6 dB Bandwidth (MHz) Port(s) | | | | 6 dB Bandwidth (MHz) | | | |
|---|---|---|---|---|---|---|---|---|
| **MHz** | **a** | **b** | **c** | **d** | **Highest** | **Lowest** | | |
| **5745.0** | 17.555 | 17.555 | 17.555 | 17.555 | 17.555 | 17.555 | | |
| **5785.0** | 17.555 | 17.555 | 17.555 | 17.555 | 17.555 | 17.555 | | |
| **5825.0** | 17.555 | 17.555 | 17.555 | 17.555 | 17.555 | 17.555 | | |

| Test Frequency | Measured 99% Bandwidth (MHz) Port(s) | | | | 99% Bandwidth (MHz) | | | |
|---|---|---|---|---|---|---|---|---|
| **MHz** | **a** | **b** | **c** | **d** | **Highest** | **Lowest** | | |
| **5745.0** | 17.635 | 17.635 | 17.555 | 17.555 | 17.635 | 17.555 | | |
| **5785.0** | 17.635 | 17.555 | 17.555 | 17.635 | 17.635 | 17.555 | | |
| **5825.0** | 17.555 | 17.555 | 17.555 | 17.555 | 17.555 | 17.555 | | |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-03 MEASURING RF SPECTRUM MASK |
| Measurement Uncertainty: | ±2.81 dB |

Note: click the links in the above matrix to view the graphical image (plot).

| Equipment Configuration for 6 dB & 99% Bandwidth | | | |
|---|---|---|---|
| **Variant:** | 802.11n HT-40 | **Duty Cycle (%):** | 79.0 |
| **Data Rate:** | 13.50 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured 6 dB Bandwidth (MHz) Port(s) | | | | 6 dB Bandwidth (MHz) | | | |
|---|---|---|---|---|---|---|---|---|
| **MHz** | **a** | **b** | **c** | **d** | **Highest** | **Lowest** | | |
| **5755.0** | 35.110 | 35.110 | 35.110 | 35.110 | 35.110 | 35.110 | | |
| **5795.0** | 35.110 | 35.110 | 35.110 | 35.110 | 35.110 | 35.110 | | |

| Test Frequency | Measured 99% Bandwidth (MHz) Port(s) | | | | 99% Bandwidth (MHz) | | | |
|---|---|---|---|---|---|---|---|---|
| **MHz** | **a** | **b** | **c** | **d** | **Highest** | **Lowest** | | |
| **5755.0** | 36.232 | 36.072 | 36.072 | 36.232 | 36.232 | 36.072 | | |
| **5795.0** | 36.072 | 36.232 | 36.232 | 36.393 | 36.393 | 36.072 | | |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-03 MEASURING RF SPECTRUM MASK |
| Measurement Uncertainty: | ±2.81 dB |

Note: click the links in the above matrix to view the graphical image (plot).

## 9.3. Power Spectral Density

| Conducted Test Conditions for Power Spectral Density | | | |
|---|---|---|---|
| **Standard:** | FCC CFR 47:15.407 | **Ambient Temp. (ºC):** | 24.0 - 27.5 |
| **Test Heading:** | Power Spectral Density | **Rel. Humidity (%):** | 32 - 45 |
| **Standard Section(s):** | 15.407 (a) | **Pressure (mBars):** | 999 - 1001 |
| **Reference Document(s):** | See Normative References | | |

**Test Procedure for Power Spectral Density**
The in-band power spectral density was measured using the test technique specified in KDB 789033. A 1 MHz measurement bandwidth was implemented for the analyzer sweep. Once the sweep is complete the analyzer trace data is downloaded and used for post processing purposes.
Where the device operated with multiple antenna ports i.e. MIMO device, each port was measured separately. The Peak Power Spectral Density is the highest level found across the emission bandwidth. With multiple antenna port measurements the numerical analyzer data from each port is summed (å) and a link to this additional graphic is provided.

Test configuration and setup used for the measurement was per the Conducted Test Set-up section specified in this document.

Measure and sum the spectra across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The individual spectra are then summed mathematically in linear power units. Unlike in-band power measurements, in which the sum involves a single measured value (output power) from each output, measurements for compliance with PSD limits involve summing entire spectra across corresponding frequency bins on the various outputs. Consistency is maintained for any device with multiple transmitter outputs to be certain the individual outputs are all aligned with the same span and same number of points. In this instance, the linear power spectrum value within the first spectral bin of output 0 is summed with that in the first spectral bin of output 1, and the first spectral bin of output 2, and so on up to the Nth output to obtain the true value for the first frequency bin of the summed spectrum. The summed spectrum value for each frequency bin is computed in this fashion. These summed spectral values were post processed and the resulting numerical and graphical data presented.

NOTE: It may be observed that spectrum in some plots break the limit line however this in itself does NOT constitute a failure. In all cases a spectrum summation plot is provided in order to prove compliance. A failure occurs only after the summation of all spectrum plots have been summed and are found to be greater than the limit line.

Supporting Information
Calculated Power = A + 10 log (1/x) dBm
A = Total Power Spectral Density [10*Log10 ($10^{a/10}$ + $10^{b/10}$ + $10^{c/10}$ + $10^{d/10}$)]
x = Duty Cycle

**Limits Power Spectral Density**

**Operating Frequency Band 5150-5250 MHz**

15. 407 (a)(1)
(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any

corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**Operating Frequency Band 5250-5350 and 5470 – 5725 MHz**

15. 407 (a)(2)
For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**Operating Frequency Band 5725 – 5850 MHz**

15. 407 (a)(3)
For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

| Equipment Configuration for Power Spectral Density | | | |
|---|---|---|---|
| **Variant:** | 802.11a | **Duty Cycle (%):** | 95.0 |
| **Data Rate:** | 6.00 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured Power Spectral Density Port(s) (dBm/MHz) | | | | Summation Peak Marker + DCCF (+0.22 dB) | Limit | Margin |
|---|---|---|---|---|---|---|---|
| MHz | a | b | c | d | dBm/MHz | dBm/MHz | dB |
| 5180.0 | 4.556 | 3.295 | -- | -- | 6.742 | 17.0 | -10.3 |
| 5200.0 | 2.800 | 1.692 | -- | -- | 5.435 | 17.0 | -11.6 |
| 5240.0 | 2.247 | 2.774 | -- | -- | 5.406 | 17.0 | -11.6 |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-03 MEASURING RF SPECTRUM MASK |
| Measurement Uncertainty: | ±2.81 dB |

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

| Equipment Configuration for Power Spectral Density | | | |
|---|---|---|---|
| **Variant:** | 802.11ac-80 | **Duty Cycle (%):** | 80.0 |
| **Data Rate:** | 29.30 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured Power Spectral Density Port(s) (dBm/MHz) | | | | Summation Peak Marker + DCCF (+0.97 dB) | Limit | Margin |
|---|---|---|---|---|---|---|---|
| **MHz** | **a** | **b** | **c** | **d** | **dBm/MHz** | **dBm/MHz** | **dB** |
| **5210.0** | -6.042 | -6.570 | -- | -- | -2.936 | 17.0 | -19.9 |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-03 MEASURING RF SPECTRUM MASK |
| Measurement Uncertainty: | ±2.81 dB |

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

| Equipment Configuration for Power Spectral Density | | | |
|---|---|---|---|
| **Variant:** | 802.11n HT-20 | **Duty Cycle (%):** | 94.0 |
| **Data Rate:** | 6.50 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured Power Spectral Density Port(s) (dBm/MHz) | | | | Summation Peak Marker + DCCF (+0.27 dB) | Limit | Margin |
|---|---|---|---|---|---|---|---|
| **MHz** | **a** | **b** | **c** | **d** | **dBm/MHz** | **dBm/MHz** | **dB** |
| **5180.0** | 3.556 | 2.915 | -- | -- | 6.209 | 17.0 | -10.8 |
| **5200.0** | 2.895 | 1.635 | -- | -- | 5.415 | 17.0 | -11.6 |
| **5240.0** | 1.627 | 1.494 | -- | -- | 4.789 | 17.0 | -12.2 |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-03 MEASURING RF SPECTRUM MASK |
| Measurement Uncertainty: | ±2.81 dB |

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

| Equipment Configuration for Power Spectral Density | | | |
|---|---|---|---|
| **Variant:** | 802.11n HT-40 | **Duty Cycle (%):** | 84.0 |
| **Data Rate:** | 13.50 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured Power Spectral Density Port(s) (dBm/MHz) | | | | Summation Peak Marker + DCCF (+0.76 dB) | Limit | Margin |
|---|---|---|---|---|---|---|---|
| **MHz** | **a** | **b** | **c** | **d** | **dBm/MHz** | **dBm/MHz** | **dB** |
| **5190.0** | 2.461 | -0.169 | -- | -- | 4.619 | 17.0 | -12.4 |
| **5230.0** | 0.874 | 0.198 | -- | -- | 3.667 | 17.0 | -13.4 |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-03 MEASURING RF SPECTRUM MASK |
| Measurement Uncertainty: | ±2.81 dB |

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

| Equipment Configuration for Power Spectral Density | | | |
|---|---|---|---|
| **Variant:** | 802.11a | **Duty Cycle (%):** | 92.0 |
| **Data Rate:** | 6.00 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured Power Spectral Density Port(s) (dBm/500 KHz) | | | | Summation Peak Marker + DCCF (+0.36 dB) | Limit | Margin |
|---|---|---|---|---|---|---|---|
| MHz | a | b | c | d | dBm/500 KHz | dBm/500 KHz | dB |
| 5745.0 | 3.071 | 4.349 | 5.973 | 5.269 | 10.311 | 30.0 | -19.7 |
| 5785.0 | 3.481 | 4.419 | 2.942 | 6.190 | 9.991 | 30.0 | -20.0 |
| 5825.0 | 4.842 | 6.225 | 5.921 | 5.789 | 10.883 | 30.0 | -19.1 |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-03 MEASURING RF SPECTRUM MASK |
| Measurement Uncertainty: | ±2.81 dB |

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

| Equipment Configuration for Power Spectral Density | | | |
|---|---|---|---|
| **Variant:** | 802.11ac-80 | **Duty Cycle (%):** | 77.0 |
| **Data Rate:** | 29.30 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

| Test Measurement Results | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Test Frequency** | **Measured Power Spectral Density Port(s) (dBm/500 KHz)** | | | | **Summation Peak Marker + DCCF (+1.14 dB)** | **Limit** | **Margin** |
| **MHz** | **a** | **b** | **c** | **d** | **dBm/500 KHz** | **dBm/500 KHz** | **dB** |
| **5775.0** | -7.684 | -6.272 | -3.466 | -3.609 | 3.111 | 30.0 | -26.9 |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-03 MEASURING RF SPECTRUM MASK |
| Measurement Uncertainty: | ±2.81 dB |

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

| Equipment Configuration for Power Spectral Density | | | |
|---|---|---|---|
| **Variant:** | 802.11n HT-20 | **Duty Cycle (%):** | 93.0 |
| **Data Rate:** | 6.50 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured Power Spectral Density Port(s) (dBm/500 KHz) | | | | Summation Peak Marker + DCCF (+0.32 dB) | Limit | Margin |
|---|---|---|---|---|---|---|---|
| **MHz** | **a** | **b** | **c** | **d** | **dBm/500 KHz** | **dBm/500 KHz** | **dB** |
| **5745.0** | 2.416 | 3.722 | 5.010 | 4.871 | 9.590 | 30.0 | -20.4 |
| **5785.0** | 2.400 | 3.841 | 5.407 | 4.316 | 9.687 | 30.0 | -20.3 |
| **5825.0** | 4.199 | 4.909 | 4.463 | 4.830 | 9.640 | 30.0 | -20.4 |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-03 MEASURING RF SPECTRUM MASK |
| Measurement Uncertainty: | ±2.81 dB |

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

| Equipment Configuration for Power Spectral Density | | | |
|---|---|---|---|
| **Variant:** | 802.11n HT-40 | **Duty Cycle (%):** | 79.0 |
| **Data Rate:** | 13.50 MBit/s | **Antenna Gain (dBi):** | 0.00 |
| **Modulation:** | OFDM | **Beam Forming Gain (Y)(dB):** | Not Applicable |
| **TPC:** | Not Applicable | **Tested By:** | OC |
| **Engineering Test Notes:** | | | |

**Test Measurement Results**

| Test Frequency | Measured Power Spectral Density Port(s) (dBm/500 KHz) | | | | Summation Peak Marker + DCCF (+1.02 dB) | Limit | Margin |
|---|---|---|---|---|---|---|---|
| **MHz** | **a** | **b** | **c** | **d** | **dBm/500 KHz** | **dBm/500 KHz** | **dB** |
| **5755.0** | -1.276 | 0.433 | 0.575 | 0.391 | 5.262 | 30.0 | -24.8 |
| **5795.0** | -1.116 | -0.335 | -0.396 | -0.699 | 5.342 | 30.0 | -24.7 |

| Traceability to Industry Recognized Test Methodologies | |
|---|---|
| Work Instruction: | WI-03 MEASURING RF SPECTRUM MASK |
| Measurement Uncertainty: | ±2.81 dB |

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

## 9.4. Frequency Stability

**FCC, Part 15 Subpart C 15.407(g)**

**Specification**

**Limits**

| |
|---|
| **15.407 (g)** Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual. |

**Manufacturer Declaration**

The frequency stability of the reference oscillator sets the frequency stability of the RF transceiver signals. Therefore, all RF signals should have ±20ppm stability.

This stability accounts for room temp tolerance of the crystal oscillator circuit, frequency variation across temperature, and crystal ageing.

±20ppm at 5.150 GHz translates to a maximum frequency shift of ±103 KHz. As the edge of the channels are at least one MHz from either of the band edges, ±103 KHz is sufficient to guarantee that the intentional emission will remain in the band over the entire operating range of the EUT.

## 9.5. Transmit Power Control (TPC)

No requirement to test. Only required for when testing Dynamic Frequency Selection bands (5,250 – 5,350 and 5,470 – 5,725 MHz). This compliance test program is limited to non-DFS frequency bands 5,150 – 5,250 and 5,725 – 5,850 MHz.

## 9.6. Dynamic Frequency Selection (DFS)

No requirement to test. This compliance test program is limited to non-DFS frequency bands 5,150 – 5,250 and 5,725 – 5,850 MHz.

## 9.7. Radiated

| Radiated Test Conditions for Radiated Spurious and Band-Edge Emissions | | | |
|---|---|---|---|
| **Standard:** | FCC CFR 47:15.407 | **Ambient Temp. (ºC):** | 20.0 - 24.5 |
| **Test Heading:** | Radiated Spurious and Band-Edge Emissions | **Rel. Humidity (%):** | 32 - 45 |
| **Standard Section(s):** | 15.407 (b), 15.205, 15.209 | **Pressure (mBars):** | 999 - 1001 |
| **Reference Document(s):** | See Normative References | | |

**Test Procedure for Radiated Spurious and Band-Edge Emissions**
Radiated emissions for restricted bands above 1 GHz are measured in the anechoic chamber at a 3-meter distance on every azimuth in both horizontal and vertical polarities. The emissions are recorded and maximized as a function of azimuth by rotation through 360° with a spectrum analyzer in peak hold mode. Depending on the frequency band spanned a notch filter was used to remove the fundamental frequency. The highest emissions relative to the limit are listed for each frequency spanned.
Measurements on any restricted band frequency or frequencies above 1 GHz are based on the use of measurement instrumentation employing peak and average detectors. All measurements were performed using a resolution bandwidth of 1 MHz.

Test configuration and setup for Undesirable Measurement were per the Radiated Test Set-up specified in this document.

15.407 (b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.

(7) The provisions of §15.205 apply to intentional radiators operating under this section.

(8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.

**Limits for Restricted Bands (15.205, 15.209)**
**Peak emission: 74 dBuV/m**
**Average emission: 54 dBuV/m**

**Field Strength Calculation**
**The field strength is calculated by adding the Antenna Factor and Cable Loss, and subtracting Amplifier Gain from the measured reading. All factors are included in the reported data.**
**FS = R + AF + CORR - FO**

**where:**
**FS = Field Strength**
**R = Measured Spectrum analyzer Input Amplitude**
**AF = Antenna Factor**
**CORR = Correction Factor = CL – AG + NFL**
**CL = Cable Loss**
**AG = Amplifier Gain**
**FO = Distance Falloff Factor**
**NFL = Notch Filter Loss**

**Example:**
**The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength (dBµV/m);**

$$E = \frac{1000000 \times \sqrt{30P}}{3} \ \mu V/m$$

where P is the EIRP in Watts

Therefore: -27 dBm/MHz equates to 68.23 dBuV/m

Conversion between dBmV/m (or dBmV) and mV/m (or mV) are as follows:
Level (dBmV/m) = 20 * Log (level (mV/m))

40 dBmV/m = 100 mV/m
48 dBmV/m = 250 mV/m

**Restricted Bands of Operation (15.205)**
(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| Frequency Band | | | |
|---|---|---|---|
| **MHz** | **MHz** | **MHz** | **GHz** |
| 0.090-0.110 | 16.42-16.423 | 399.9-410 | 4.5-5.15 |
| 0.495-0.505 | 16.69475-16.69525 | 608-614 | 5.35-5.46 |
| 2.1735-2.1905 | 16.80425-16.80475 | 960-1240 | 7.25-7.75 |
| 4.125-4.128 | 25.5-25.67 | 1300-1427 | 8.025-8.5 |
| 4.17725-4.17775 | 37.5-38.25 | 1435-1626.5 | 9.0-9.2 |
| 4.20725-4.20775 | 73-74.6 | 1645.5-1646.5 | 9.3-9.5 |
| 6.215-6.218 | 74.8-75.2 | 1660-1710 | 10.6-12.7 |
| 6.26775-6.26825 | 108-121.94 | 1718.8-1722.2 | 13.25-13.4 |
| 6.31175-6.31225 | 123-138 | 2200-2300 | 14.47-14.5 |
| 8.291-8.294 | 149.9-150.05 | 2310-2390 | 15.35-16.2 |
| 8.362-8.366 | 156.52475-156.52525 | 2483.5-2500 | 17.7-21.4 |
| 8.37625-8.38675 | 156.7-156.9 | 2690-2900 | 22.01-23.12 |
| 8.41425-8.41475 | 162.0125-167.17 | 3260-3267 | 23.6-24.0 |
| 12.29-12.293 | 167.72-173.2 | 3332-3339 | 31.2-31.8 |
| 12.51975-12.52025 | 240-285 | 3345.8-3358 | 36.43-36.5 |
| 12.57675-12.57725 | 322-335.4 | 3600-4400 | Above 38.6 |
| 13.36-13.41 | | | |

(b) Except as provided in paragraphs (d) and (e) of this section, the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

(c) Except as provided in paragraphs (d) and (e) of this section, regardless of the field strength limits specified elsewhere in this subpart, the provisions of this section apply to emissions from any intentional radiator.

(d) The following devices are exempt from the requirements of this section:

(1) Swept frequency field disturbance sensors operating between 1.705 and 37 MHz provided their emissions only sweep through the bands listed in paragraph (a) of this section, the sweep is never stopped with the fundamental emission within the bands listed in paragraph (a) of this section, and the fundamental emission is outside of the bands listed in paragraph (a) of this section more than 99% of the time the device is actively transmitting, without compensation for duty cycle.

(2) Transmitters used to detect buried electronic markers at 101.4 kHz which are employed by telephone companies.

(3) Cable locating equipment operated pursuant to §15.213.

(4) Any equipment operated under the provisions of §15.253, 15.255, and 15.256 in the frequency band 75-85 GHz, or §15.257 of this part.

(5) Biomedical telemetry devices operating under the provisions of §15.242 of this part are not subject to the restricted band 608-614 MHz but are subject to compliance within the other restricted bands.

(6) Transmitters operating under the provisions of subparts D or F of this part.

(7) Devices operated pursuant to §15.225 are exempt from complying with this section for the 13.36-13.41 MHz band only.

(8) Devices operated in the 24.075-24.175 GHz band under §15.245 are exempt from complying with the requirements of this section for the 48.15-48.35 GHz and 72.225-72.525 GHz bands only, and shall not exceed the limits specified in §15.245(b).

(9) Devices operated in the 24.0-24.25 GHz band under §15.249 are exempt from complying with the requirements of this section for the 48.0-48.5 GHz and 72.0-72.75 GHz bands only, and shall not exceed the limits specified in §15.249(a).

(e) Harmonic emissions appearing in the restricted bands above 17.7 GHz from field disturbance sensors operating under the provisions of §15.245 shall not exceed the limits specified in §15.245(b).

## 9.7.1. TX Spurious & Restricted Band Emissions

Integral Antenna

**Equipment Configuration for TX Spurious & Restricted Band Emissions**

| | | | |
|---|---|---|---|
| **Antenna:** | Integral Antenna | **Variant:** | 802.11a |
| **Antenna Gain (dBi):** | 0.00 | **Modulation:** | OFDM |
| **Beam Forming Gain (Y):** | Not Applicable | **Duty Cycle (%):** | 99 |
| **Channel Frequency (MHz):** | 5180.00 | **Data Rate:** | 6.00 MBit/s |
| **Power Setting:** | 25 | **Tested By:** | JMH |

**Test Measurement Results**

| 1000.00 - 18000.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| #1 | 5183.71 | 73.33 | 3.68 | -11.49 | 65.52 | Fundamental | Horizontal | 101 | 0 | -- | -- | |
| Test Notes: EUT Powered by power supply, connected to laptop outside chamber. 5 GHz notch in front of amp to prevent overloads. | | | | | | | | | | | | |

## Equipment Configuration for TX Spurious & Restricted Band Emissions

| | | | |
|---|---|---|---|
| **Antenna:** | Integral Antenna | **Variant:** | 802.11a |
| **Antenna Gain (dBi):** | 0.00 | **Modulation:** | OFDM |
| **Beam Forming Gain (Y):** | Not Applicable | **Duty Cycle (%):** | 99 |
| **Channel Frequency (MHz):** | 5200.00 | **Data Rate:** | 6.00 MBit/s |
| **Power Setting:** | 30 | **Tested By:** | JMH |

## Test Measurement Results

| 1000.00 - 18000.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| #1 | 5203.00 | 88.72 | -2.64 | -11.94 | 74.14 | Fundamental | Vertical | 100 | 0 | -- | -- | |
| Test Notes: EUT Powered by power supply, connected to laptop outside chamber. 5 GHz notch in front of amp to prevent overloads. | | | | | | | | | | | | |

## Equipment Configuration for TX Spurious & Restricted Band Emissions

| | | | |
|---|---|---|---|
| **Antenna:** | Integral Antenna | **Variant:** | 802.11a |
| **Antenna Gain (dBi):** | 0.00 | **Modulation:** | OFDM |
| **Beam Forming Gain (Y):** | Not Applicable | **Duty Cycle (%):** | 99 |
| **Channel Frequency (MHz):** | 5240.00 | **Data Rate:** | 6.00 MBit/s |
| **Power Setting:** | 30 | **Tested By:** | JMH |

## Test Measurement Results

| 1000.00 - 18000.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| #1 | 5236.96 | 90.93 | -2.62 | -12.28 | 76.03 | Fundamental | Vertical | 100 | 0 | -- | -- | |
| Test Notes: EUT Powered by power supply, connected to laptop outside chamber. 5 GHz notch in front of amp to prevent overloads. | | | | | | | | | | | | |

## Equipment Configuration for TX Spurious & Restricted Band Emissions

| | | | |
|---|---|---|---|
| **Antenna:** | Integral Antenna | **Variant:** | 802.11a |
| **Antenna Gain (dBi):** | 0.00 | **Modulation:** | OFDM |
| **Beam Forming Gain (Y):** | Not Applicable | **Duty Cycle (%):** | 99 |
| **Channel Frequency (MHz):** | 5745.00 | **Data Rate:** | 6.00 MBit/s |
| **Power Setting:** | 30 | **Tested By:** | JMH |

## Test Measurement Results

| 1000.00 - 18000.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| #1 | 5751.07 | 68.60 | -2.76 | -10.92 | 54.92 | Fundamental | Horizontal | 100 | 0 | -- | -- | |
| #2 | 11488.52 | 71.93 | -4.01 | -6.67 | 61.25 | Max Peak | Vertical | 105 | 23 | 68.2 | -7.0 | Pass |
| #3 | 11488.52 | 57.20 | -4.01 | -6.67 | 46.52 | Max Avg | Vertical | 105 | 23 | 54.0 | -7.5 | Pass |
| Test Notes: EUT powered by PS. Connected to laptop outside chamber | | | | | | | | | | | | |

## Equipment Configuration for TX Spurious & Restricted Band Emissions

| | | | |
|---|---|---|---|
| **Antenna:** | Integral Antenna | **Variant:** | 802.11a |
| **Antenna Gain (dBi):** | 0.00 | **Modulation:** | OFDM |
| **Beam Forming Gain (Y):** | Not Applicable | **Duty Cycle (%):** | 99 |
| **Channel Frequency (MHz):** | 5785.00 | **Data Rate:** | 6.00 MBit/s |
| **Power Setting:** | 30 | **Tested By:** | JMH |

## Test Measurement Results

| 1000.00 - 18000.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| #1 | 5791.75 | 77.61 | -2.75 | -10.81 | 64.05 | Fundamental | Horizontal | 100 | 0 | -- | -- | |
| #2 | 11569.87 | 72.30 | -4.08 | -6.30 | 61.92 | Max Peak | Vertical | 140 | 17 | 68.2 | -6.3 | Pass |
| #3 | 11569.87 | 57.81 | -4.08 | -6.30 | 47.43 | Max Avg | Vertical | 140 | 17 | 54.0 | -6.6 | Pass |
| Test Notes: EUT powered by PS. Connected to laptop outside chamber | | | | | | | | | | | | |

## Equipment Configuration for TX Spurious & Restricted Band Emissions

| | | | |
|---|---|---|---|
| **Antenna:** | Integral Antenna | **Variant:** | 802.11a |
| **Antenna Gain (dBi):** | 0.00 | **Modulation:** | OFDM |
| **Beam Forming Gain (Y):** | Not Applicable | **Duty Cycle (%):** | 99 |
| **Channel Frequency (MHz):** | 5825.00 | **Data Rate:** | 6.00 MBit/s |
| **Power Setting:** | 30 | **Tested By:** | JMH |

## Test Measurement Results

| 1000.00 - 18000.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| #1 | 5820.75 | 79.36 | -2.79 | -10.72 | 65.85 | Fundamental | Horizontal | 100 | 0 | -- | -- | |
| #2 | 11647.36 | 71.97 | -4.17 | -4.43 | 63.37 | Max Peak | Vertical | 98 | 13 | 68.2 | -4.9 | Pass |
| #3 | 11647.36 | 57.15 | -4.17 | -4.43 | 48.55 | Max Avg | Vertical | 98 | 13 | 54.0 | -5.5 | Pass |
| Test Notes: EUT powered by PS. Connected to laptop outside chamber | | | | | | | | | | | | |

### 9.7.2. Restricted Edge & Band-Edge Emissions

Integral Antenna

RESULTS SUMMARY FOR RADIATED BAND-EDGE EMISSIONS

5150 - 5250 MHz

| Integral Antenna | | Band-Edge Freq | Limit 68.2dBµV/m | Limit 54.0dBµV/m | Power Setting |
|---|---|---|---|---|---|
| Operational Mode | Operating Frequency (MHz) | MHz | dBµV/m | dBµV/m | |
| 802.11a | 5180.00 | 5150.00 | 66.66 | 52.53 | 25 |
| 802.11ac-80 | 5210.00 | 5150.00 | 67.71 | 46.51 | 15 |
| 802.11n HT-20 | 5180.00 | 5150.00 | 65.39 | 51.58 | 25 |
| 802.11n HT-40 | 5190.00 | 5150.00 | 65.33 | 50.13 | 22 |

5725 MHz Radiated Lower Band-Edge Emissions

| Integral Antenna | | Band-Edge Freq | Limit 68.2dBµV/m | Limit 68.2dBµV/m | Power Setting |
|---|---|---|---|---|---|
| Operational Mode | Operating Frequency (MHz) | MHz | dBµV/m | dBµV/m | |
| 802.11a | 5725.00 | 5725.00 | 59.53 | 74.67 | 30 |
| 802.11ac-80 | 5725.00 | 0.00 | 0.00 | 0.00 | 27 |
| 802.11n HT-20 | 5725.00 | 5725.00 | 59.79 | 71.28 | 30 |
| 802.11n HT-40 | 5725.00 | 5725.00 | 64.56 | 71.37 | 29 |

5850 MHz Radiated Higher Band-Edge Emissions

| Integral Antenna | | Band-Edge Freq | Limit 122.2dBµV/m | Limit 110.8dBµV/m | Power Setting |
|---|---|---|---|---|---|
| Operational Mode | Operating Frequency (MHz) | MHz | dBµV/m | dBµV/m | |
| 802.11a | 5850.00 | 5850.00 | 70.58 | 60.57 | 30 |
| 802.11ac-80 | 5850.00 | 5850.00 | 74.36 | 64.18 | 27 |
| 802.11n HT-20 | 5850.00 | 5850.00 | 69.03 | 60.11 | 30 |
| 802.11n HT-40 | 5850.00 | 5850.00 | 68.22 | 59.61 | 29 |

Click on the links to view the data.

## Equipment Configuration for Restricted Lower Band-Edge Emissions

| | | | |
|---|---|---|---|
| **Antenna:** | Integral Antenna | **Variant:** | 802.11a |
| **Antenna Gain (dBi):** | 0.00 | **Modulation:** | OFDM |
| **Beam Forming Gain (Y):** | Not Applicable | **Duty Cycle (%):** | 99 |
| **Channel Frequency (MHz):** | 5180.00 | **Data Rate:** | 6.00 MBit/s |
| **Power Setting:** | 25 | **Tested By:** | JMH |

## Test Measurement Results

| 4500.00 - 5250.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| #1 | 5150.00 | 20.93 | -2.61 | 34.21 | 52.53 | Max Avg | Horizontal | 154 | 301 | 54.0 | -1.5 | Pass |
| #2 | 5150.00 | 35.06 | -2.61 | 34.21 | 66.66 | Max Peak | Horizontal | 154 | 301 | 68.2 | -1.6 | Pass |
| #3 | 5150.00 | -- | -- | -- | -- | Restricted-Band | -- | -- | -- | -- | -- | -- |
| Test Notes: EUT Powered by power supply, connected to laptop outside chamber. 3 dB pad in front of rcvr | | | | | | | | | | | | |

## Equipment Configuration for Restricted Lower Band-Edge Emissions

| | | | |
|---|---|---|---|
| **Antenna:** | Integral Antenna | **Variant:** | 802.11ac-80 |
| **Antenna Gain (dBi):** | 0.00 | **Modulation:** | OFDM |
| **Beam Forming Gain (Y):** | Not Applicable | **Duty Cycle (%):** | 99 |
| **Channel Frequency (MHz):** | 5210.00 | **Data Rate:** | 29.30 MBit/s |
| **Power Setting:** | 15 | **Tested By:** | JMH |

## Test Measurement Results

| 4500.00 - 52600.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| #1 | 5146.95 | 14.91 | -2.61 | 34.21 | 46.51 | Max Avg | Horizontal | 154 | 301 | 54.0 | -7.5 | Pass |
| #2 | 5150.00 | 36.11 | -2.61 | 34.21 | 67.71 | Max Peak | Horizontal | 154 | 301 | 68.2 | -0.5 | Pass |
| #3 | 5150.00 | -- | -- | -- | -- | Restricted-Band | -- | -- | -- | -- | -- | -- |
| Test Notes: EUT Powered by power supply, connected to laptop outside chamber. 3 dB pad in front of rcvr | | | | | | | | | | | | |

## Equipment Configuration for Restricted Lower Band-Edge Emissions

| | | | |
|---|---|---|---|
| **Antenna:** | Integral Antenna | **Variant:** | 802.11n HT-20 |
| **Antenna Gain (dBi):** | Not Applicable | **Modulation:** | OFDM |
| **Beam Forming Gain (Y):** | Not Applicable | **Duty Cycle (%):** | 99 |
| **Channel Frequency (MHz):** | 5180.00 | **Data Rate:** | 6.50 MBit/s |
| **Power Setting:** | 25 | **Tested By:** | JMH |

## Test Measurement Results

| 4500.00 - 5250.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| #1 | 5150.00 | 19.98 | -2.61 | 34.21 | 51.58 | Max Avg | Horizontal | 154 | 301 | 54.0 | -2.4 | Pass |
| #2 | 5150.00 | 33.79 | -2.61 | 34.21 | 65.39 | Max Peak | Horizontal | 154 | 301 | 68.2 | -2.8 | Pass |
| #3 | 5150.00 | -- | -- | -- | -- | Restricted-Band | -- | -- | -- | -- | -- | -- |
| Test Notes: EUT Powered by power supply, connected to laptop outside chamber. 3 dB pad in front of rcvr | | | | | | | | | | | | |

## Equipment Configuration for Restricted Lower Band-Edge Emissions

| | | | |
|---|---|---|---|
| **Antenna:** | Integral Antenna | **Variant:** | 802.11n HT-40 |
| **Antenna Gain (dBi):** | Not Applicable | **Modulation:** | OFDM |
| **Beam Forming Gain (Y):** | Not Applicable | **Duty Cycle (%):** | 99 |
| **Channel Frequency (MHz):** | 5190.00 | **Data Rate:** | 13.50 MBit/s |
| **Power Setting:** | 22 | **Tested By:** | JMH |

## Test Measurement Results

| 4500.00 - 5250.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| #1 | 5150.00 | 18.53 | -2.61 | 34.21 | 50.13 | Max Avg | Horizontal | 154 | 301 | 54.0 | -3.9 | Pass |
| #2 | 5150.00 | 33.73 | -2.61 | 34.21 | 65.33 | Max Peak | Horizontal | 154 | 301 | 68.2 | -2.9 | Pass |
| #3 | 5150.00 | -- | -- | -- | -- | Restricted-Band | -- | -- | -- | -- | -- | -- |
| Test Notes: EUT Powered by power supply, connected to laptop outside chamber. 3 dB pad in front of rcvr | | | | | | | | | | | | |

## Equipment Configuration for 5725 MHz Radiated Band-Edge Emissions

| | | | |
|---|---|---|---|
| **Antenna:** | Integral Antenna | **Variant:** | 802.11a |
| **Antenna Gain (dBi):** | 2.50 | **Modulation:** | OFDM |
| **Beam Forming Gain (Y):** | Not Applicable | **Duty Cycle (%):** | 99 |
| **Channel Frequency (MHz):** | 5745.00 | **Data Rate:** | 6.00 MBit/s |
| **Power Setting:** | 30 | **Tested By:** | JMH |

## Test Measurement Results

| 5600.00 - 5780.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| #1 | 5646.10 | 27.62 | -2.72 | 34.63 | 59.53 | Max Avg | Horizontal | 180 | 289 | 68.2 | -8.7 | Pass |
| #2 | 5719.95 | 42.72 | -2.76 | 34.71 | 74.67 | Max Avg | Horizontal | 180 | 289 | 109.7 | -35.0 | Pass |
| #3 | 5725.00 | -- | -- | -- | -- | Band-Edge | -- | -- | -- | -- | -- | -- |
| Test Notes: EUT powered by PS. | | | | | | | | | | | | |

## Equipment Configuration for 5725 MHz Radiated Band-Edge Emissions

| | | | |
|---|---|---|---|
| **Antenna:** | Integral Antenna | **Variant:** | 802.11ac-80 |
| **Antenna Gain (dBi):** | 0.00 | **Modulation:** | OFDM |
| **Beam Forming Gain (Y):** | Not Applicable | **Duty Cycle (%):** | 99 |
| **Channel Frequency (MHz):** | 5775.00 | **Data Rate:** | 29.30 MBit/s |
| **Power Setting:** | 27 | **Tested By:** | JMH |

## Test Measurement Results

| 5600.00 - 5780.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| #1 | 5649.71 | 32.46 | -2.72 | 34.63 | 64.37 | Max Avg | Horizontal | 180 | 289 | 68.2 | -3.9 | Pass |
| #2 | 5701.36 | 38.95 | -2.78 | 34.68 | 70.85 | Max Avg | Horizontal | 180 | 289 | 105.5 | -34.6 | Pass |
| #3 | 5725.00 | -- | -- | -- | -- | Band-Edge | -- | -- | -- | -- | -- | -- |
| Test Notes: EUT powered by PS. | | | | | | | | | | | | |

## Equipment Configuration for 5725 MHz Radiated Band-Edge Emissions

| | | | |
|---|---|---|---|
| **Antenna:** | Integral Antenna | **Variant:** | 802.11n HT-20 |
| **Antenna Gain (dBi):** | 2.50 | **Modulation:** | OFDM |
| **Beam Forming Gain (Y):** | Not Applicable | **Duty Cycle (%):** | 99 |
| **Channel Frequency (MHz):** | 5745.00 | **Data Rate:** | 6.50 MBit/s |
| **Power Setting:** | 30 | **Tested By:** | JMH |

## Test Measurement Results

| 5600.00 - 5780.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| #1 | 5647.18 | 27.88 | -2.72 | 34.63 | 59.79 | Max Avg | Horizontal | 180 | 289 | 68.2 | -8.4 | Pass |
| #2 | 5711.29 | 39.37 | -2.79 | 34.70 | 71.28 | Max Avg | Horizontal | 180 | 289 | 108.3 | -37.0 | Pass |
| #3 | 5725.00 | -- | -- | -- | -- | Band-Edge | -- | -- | -- | -- | -- | -- |
| Test Notes: EUT powered by PS. | | | | | | | | | | | | |

## Equipment Configuration for 5725 MHz Radiated Band-Edge Emissions

| | | | |
|---|---|---|---|
| **Antenna:** | Integral Antenna | **Variant:** | 802.11n HT-40 |
| **Antenna Gain (dBi):** | Not Applicable | **Modulation:** | OFDM |
| **Beam Forming Gain (Y):** | Not Applicable | **Duty Cycle (%):** | 99 |
| **Channel Frequency (MHz):** | 5755.00 | **Data Rate:** | 13.50 MBit/s |
| **Power Setting:** | 29 | **Tested By:** | JMH |

## Test Measurement Results

| 5600.00 - 5780.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| #1 | 5659.81 | 32.65 | -2.73 | 34.64 | 64.56 | Max Avg | Horizontal | 180 | 289 | 75.6 | -11.0 | Pass |
| #2 | 5690.73 | 39.48 | -2.78 | 34.67 | 71.37 | Max Avg | Horizontal | 180 | 289 | 98.5 | -27.2 | Pass |
| #3 | 5725.00 | -- | -- | -- | -- | Band-Edge | -- | -- | -- | -- | -- | -- |

Test Notes: EUT powered by PS.

## Equipment Configuration for 5850 MHz Radiated Band-Edge Emissions

| | | | |
|---|---|---|---|
| **Antenna:** | Integral Antenna | **Variant:** | 802.11a |
| **Antenna Gain (dBi):** | Not Applicable | **Modulation:** | OFDM |
| **Beam Forming Gain (Y):** | Not Applicable | **Duty Cycle (%):** | 99 |
| **Channel Frequency (MHz):** | 5825.00 | **Data Rate:** | 6.00 MBit/s |
| **Power Setting:** | 30 | **Tested By:** | JMH |

## Test Measurement Results

| 5770.00 - 6000.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| #2 | 5860.60 | 38.36 | -2.77 | 34.99 | 70.58 | Max Avg | Horizontal | 180 | 289 | 109.3 | -38.7 | Pass |
| #3 | 5929.14 | 28.24 | -2.78 | 35.11 | 60.57 | Max Avg | Horizontal | 180 | 289 | 68.2 | -7.7 | Pass |
| #1 | 5850.00 | -- | -- | -- | -- | Band-Edge | -- | -- | -- | -- | -- | -- |
| Test Notes: EUT powered by PS. Connected to laptop outside chamber | | | | | | | | | | | | |

## Equipment Configuration for 5850 MHz Radiated Band-Edge Emissions

| | | | |
|---|---|---|---|
| **Antenna:** | Integral Antenna | **Variant:** | 802.11ac-80 |
| **Antenna Gain (dBi):** | 0.00 | **Modulation:** | OFDM |
| **Beam Forming Gain (Y):** | Not Applicable | **Duty Cycle (%):** | 99 |
| **Channel Frequency (MHz):** | 5775.00 | **Data Rate:** | 29.30 MBit/s |
| **Power Setting:** | 27 | **Tested By:** | JMH |

## Test Measurement Results

| 5770.00 - 6000.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| #2 | 5860.60 | 42.14 | -2.77 | 34.99 | 74.36 | Max Avg | Horizontal | 180 | 289 | 109.5 | -35.1 | Pass |
| #3 | 5930.06 | 31.85 | -2.78 | 35.11 | 64.18 | Max Avg | Horizontal | 180 | 289 | 68.2 | -4.1 | Pass |
| #1 | 5850.00 | -- | -- | -- | -- | Band-Edge | -- | -- | -- | -- | -- | -- |
| Test Notes: EUT powered by PS. | | | | | | | | | | | | |

## Equipment Configuration for 5850 MHz Radiated Band-Edge Emissions

| | | | |
|---|---|---|---|
| **Antenna:** | Integral Antenna | **Variant:** | 802.11n HT-20 |
| **Antenna Gain (dBi):** | Not Applicable | **Modulation:** | OFDM |
| **Beam Forming Gain (Y):** | Not Applicable | **Duty Cycle (%):** | 99 |
| **Channel Frequency (MHz):** | 5825.00 | **Data Rate:** | 6.50 MBit/s |
| **Power Setting:** | 30 | **Tested By:** | JMH |

## Test Measurement Results

| 5770.00 - 6000.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| #2 | 5861.98 | 36.81 | -2.77 | 34.99 | 69.03 | Max Avg | Horizontal | 180 | 289 | 108.5 | -39.3 | Pass |
| #3 | 5929.60 | 27.78 | -2.78 | 35.11 | 60.11 | Max Avg | Horizontal | 180 | 289 | 68.2 | -8.1 | Pass |
| #1 | 5850.00 | -- | -- | -- | -- | Band-Edge | -- | -- | -- | -- | -- | -- |
| Test Notes: EUT powered by PS. | | | | | | | | | | | | |

## Equipment Configuration for 5850 MHz Radiated Band-Edge Emissions

| | | | |
|---|---|---|---|
| **Antenna:** | Integral Antenna | **Variant:** | 802.11n HT-40 |
| **Antenna Gain (dBi):** | 0.00 | **Modulation:** | OFDM |
| **Beam Forming Gain (Y):** | Not Applicable | **Duty Cycle (%):** | 99 |
| **Channel Frequency (MHz):** | 5795.00 | **Data Rate:** | 13.50 MBit/s |
| **Power Setting:** | 29 | **Tested By:** | JMH |

## Test Measurement Results

| 5770.00 - 6000.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| #2 | 5861.52 | 36.00 | -2.77 | 34.99 | 68.22 | Max Avg | Horizontal | 180 | 289 | 108.7 | -40.0 | Pass |
| #3 | 5928.68 | 27.28 | -2.78 | 35.11 | 59.61 | Max Avg | Horizontal | 180 | 289 | 68.2 | -8.6 | Pass |
| #1 | 5850.00 | -- | -- | -- | -- | Band-Edge | -- | -- | -- | -- | -- | -- |
| Test Notes: EUT powered by PS. | | | | | | | | | | | | |

### 9.7.3. Digital Emissions

FCC, Part 15 Subpart C 15.205 / 15.209

**Test Procedure**

Testing 30M-1 GHz was performed in a 3-meter anechoic chamber using a CISPR compliant receiver. Preliminary radiated emissions were measured on every azimuth and with the receiving antenna in both horizontal and vertical polarizations. To further maximize emissions the receive antenna was varied between 1 and 4 meters. The emissions are recorded with receiver in peak hold mode. Emissions closest to the limits are measured in the quasi-peak mode with the tuned receiver using a bandwidth of 120 kHz. Only the highest emissions relative to the limit are listed. The anechoic chamber test set-up is identified in Section 6 Test Set-Up Photographs.

The EUT had two methods of powering on ac/dc converter and Power over Ethernet (POE). Both modes were tested for emissions below 1GHz.

See Section 7.2 'Radiated Emissions – 3M Chamber' for Radiated Emissions + Test Equipment utilized during the test

**Field Strength Calculation**

The field strength is calculated by adding the Antenna Factor and Cable Loss, and subtracting Amplifier Gain from the measured reading. In this test facility, the Antenna Factor, Cable Loss, and Amplifier Gains are loaded into the Rohde & Schwarz Receiver and the corrected field strength can be read directly on the receiver.

$$FS = R + AF + CORR$$

where:

FS = Field Strength
R = Measured Receiver Input Amplitude
AF = Antenna Factor
CORR = Correction Factor = CL – AG + NFL
CL = Cable Loss
AG = Amplifier Gain

For example:
Given a Receiver input reading of 51.5dBμV; Antenna Factor of 8.5dB; Cable Loss of 1.3dB; Falloff Factor of 0dB, an Amplifier Gain of 26dB and Notch Filter Loss of 1dB. The Field Strength of the measured emission is:

FS = 51.5 + 8.5 + 1.3 - 26.0 +1 = 36.3dBμV/m

Conversion between dBμV/m (or dBμV) and μV/m (or μV) are done as:

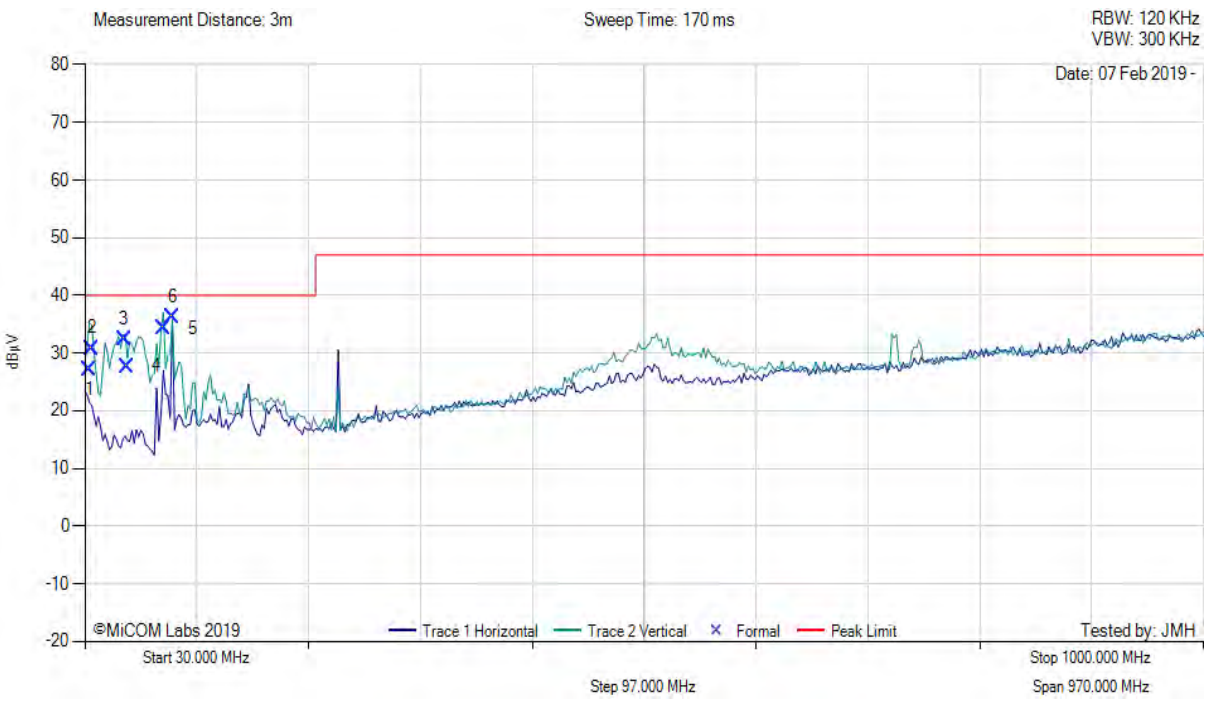
Level (dBμV/m) = 20 * Log (level (μV/m))

40 dBμV/m = 100μV/m
48 dBμV/m = 250μV/m

POE Powered 30-1000 MHz

| | | | |
|---|---|---|---|
| **Model Number** | **Error! Reference source not found.** | **Engineer** | JMH |
| **Variant** | Digital Emissions 230VAC, 50Hz | **Temp (ºC)** | 15 |
| **Freq. Range** | 30 – 1000 MHz | **Rel. Hum.(%)** | 48 |
| **Power Setting** | Max | **Press. (mBars)** | 1011 |
| **Antenna** | Integral | | |
| **Test Notes 1** | ACDC + PoE powered 230V 50 Hz, Shielded Cat 5 ethernet connected to ENET Ports | | |

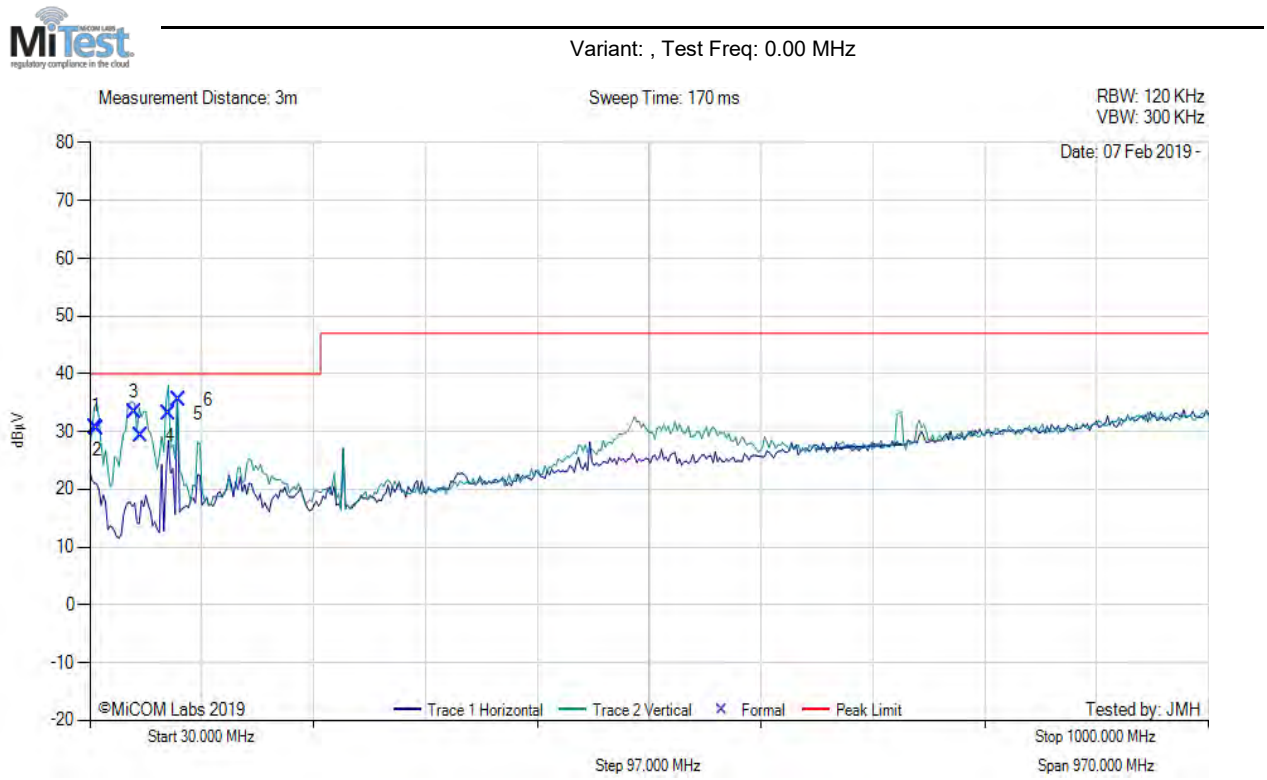
Variant: , Test Freq: 0.00 MHz




| 30.00 - 1000.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| 1 | 33.65 | 34.09 | 3.55 | -10.40 | 27.24 | MaxQP | Vertical | 98 | 157 | 40.0 | -12.8 | Pass |
| 2 | 36.21 | 39.75 | 3.57 | -12.50 | 30.82 | MaxQP | Vertical | 98 | 183 | 40.0 | -9.2 | Pass |
| 3 | 63.85 | 49.40 | 3.80 | -20.80 | 32.40 | MaxQP | Vertical | 151 | 80 | 40.0 | -7.6 | Pass |
| 4 | 66.21 | 44.62 | 3.82 | -20.70 | 27.74 | MaxQP | Vertical | 137 | 287 | 40.0 | -12.3 | Pass |
| 5 | 98.13 | 48.87 | 4.00 | -18.60 | 34.27 | MaxQP | Vertical | 111 | 212 | 40.0 | -5.7 | Pass |
| 6 | 105.81 | 48.80 | 4.03 | -16.60 | 36.23 | MaxQP | Vertical | 105 | 238 | 40.0 | -3.8 | Pass |

**Test Notes:** EUT Powered by POE, connected to laptop outside chamber. Cell call active. WiFi on . Replaced ethernet with 2 shielded cat 5 cable

AC/DC PS Powered 30-1000 MHz




| 30.00 - 1000.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| 1 | 35.37 | 38.80 | 3.56 | -11.50 | 30.86 | MaxQP | Vertical | 98 | 160 | 40.0 | -9.1 | Pass |
| 2 | 36.21 | 39.34 | 3.57 | -12.50 | 30.41 | MaxQP | Vertical | 123 | 122 | 40.0 | -9.6 | Pass |
| 3 | 68.48 | 49.94 | 3.83 | -20.40 | 33.37 | MaxQP | Vertical | 141 | 115 | 40.0 | -6.6 | Pass |
| 4 | 74.30 | 45.88 | 3.87 | -20.50 | 29.25 | MaxQP | Vertical | 114 | 129 | 40.0 | -10.8 | Pass |
| 5 | 98.13 | 47.69 | 4.00 | -18.60 | 33.09 | MaxQP | Vertical | 101 | 206 | 40.0 | -6.9 | Pass |
| 6 | 106.91 | 48.01 | 4.03 | -16.50 | 35.54 | MaxQP | Vertical | 129 | 46 | 40.0 | -4.5 | Pass |

**Test Notes:** EUT Powered by PS, connected to laptop outside chamber. Cell call active. WiFi on . Replaced ethernet with 2 shielded cat 5 cable

## 9.8. AC Wireline

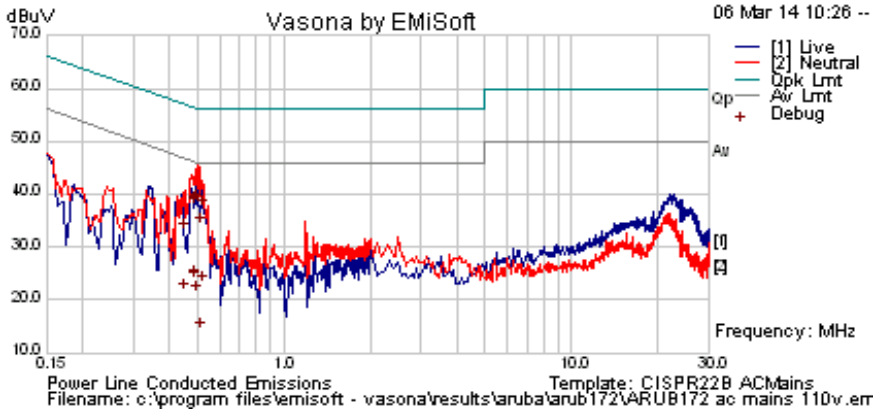
**Test Procedure**

The EUT is configured in accordance with ANSI C63.4. The conducted emissions are measured in a shielded room with a spectrum analyzer in peak hold in the first instance. Emissions closest to the limit are measured in the quasi-peak mode (QP) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation. The highest emissions relative to the limit are listed.

See Section 7.3 for AC Mains Power Input / Output Test Setup + Test Equipment utilized during the test

## AC Wireline Emissions

| | | | |
|---|---|---|---|
| **Test Freq.** | N/A | **Engineer** | JMH |
| **Variant** | AC Line Emissions | **Temp (ºC)** | 18 |
| **Freq. Range** | 0.150 MHz - 30 MHz | **Rel. Hum.(%)** | 35 |
| **Power Setting** | NA | **Press. (mBars)** | 1004 |
| **Antenna** | N/A | | |
| **Test Notes 1** | 115VAC 60Hz | | |
| **Test Notes 2** | | | |




### Formally measured emission peaks

| Frequency MHz | Raw dBuV | Cable Loss | Factors dB | Level dBuV | Measurement Type | Line | Limit dBuV | Margin dB | Pass /Fail | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.447 | 11.6 | 9.9 | 0.1 | 21.6 | Average | Neutral | 46.93 | -25.4 | Pass | |
| 0.447 | 22.8 | 9.9 | 0.1 | 32.8 | Quasi Peak | Neutral | 56.93 | -24.2 | Pass | |
| 0.481 | 27.8 | 9.9 | 0.1 | 37.8 | Quasi Peak | Neutral | 56.32 | -18.5 | Pass | |
| 0.481 | 14.0 | 9.9 | 0.1 | 24.0 | Average | Neutral | 46.32 | -22.4 | Pass | |
| 0.485 | 13.5 | 9.9 | 0.1 | 23.5 | Average | Neutral | 46.25 | -22.8 | Pass | |
| 0.485 | 28.0 | 9.9 | 0.1 | 38.0 | Quasi Peak | Neutral | 56.25 | -18.2 | Pass | |
| 0.491 | 11.1 | 9.9 | 0.1 | 21.1 | Average | Neutral | 46.15 | -25.1 | Pass | |
| 0.491 | 28.3 | 9.9 | 0.1 | 38.3 | Quasi Peak | Neutral | 56.15 | -17.9 | Pass | |
| 0.505 | 24.1 | 9.9 | 0.1 | 34.1 | Quasi Peak | Neutral | 56 | -21.9 | Pass | |
| 0.505 | 4.0 | 9.9 | 0.1 | 14.0 | Average | Neutral | 46 | -32.0 | Pass | |
| 0.519 | 27.3 | 9.9 | 0.1 | 37.3 | Quasi Peak | Neutral | 56 | -18.7 | Pass | |
| 0.519 | 12.8 | 9.9 | 0.1 | 22.8 | Average | Neutral | 46 | -23.2 | Pass | |

| | |
|---|---|
| Legend: | DIG = Digital Device Emission; TX = Transmitter Emission; FUND = Fundamental Frequency |
| | NRB = Non-Restricted Band, Limit is 20 dB below Fundamental; RB = Restricted Band |

## Specification

### Limit

**§15.207 (a)** Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μΩ line impedance stabilization network (LISN), see §15.207 (a) matrix below. Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

**RSS-Gen 7.2**
The radio frequency voltage that is conducted back into the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in the table below. The tighter limit applies at the frequency range boundaries.

**15.207 (a)** and **RSS-Gen 7.2** Limit Matrix
The lower limit applies at the boundary between frequency ranges

| Frequency of Emission (MHz) | Conducted Limit (dBμV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

* Decreases with the logarithm of the frequency

### Laboratory Measurement Uncertainty for Conducted Emissions

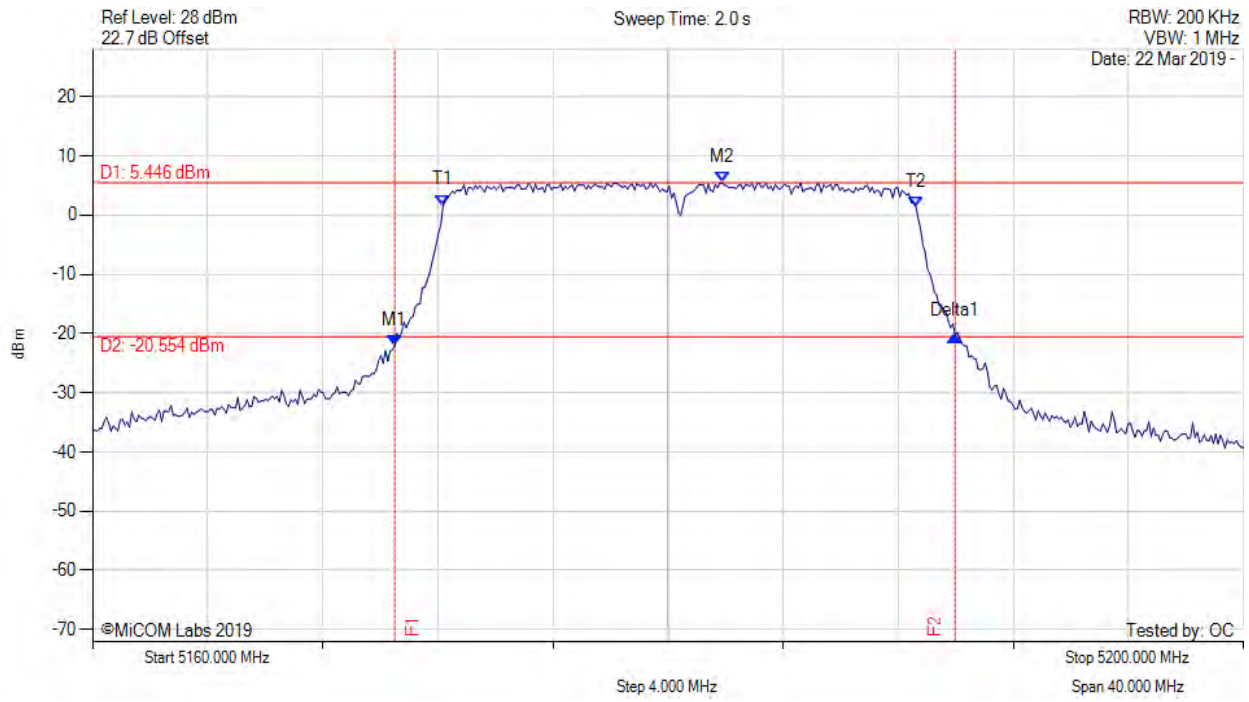
| | |
|---|---|
| Measurement uncertainty | ±2.64 dB |

# APPENDIX A - GRAPHICAL IMAGES

## A.1. 99% Bandwidth

26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5180.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

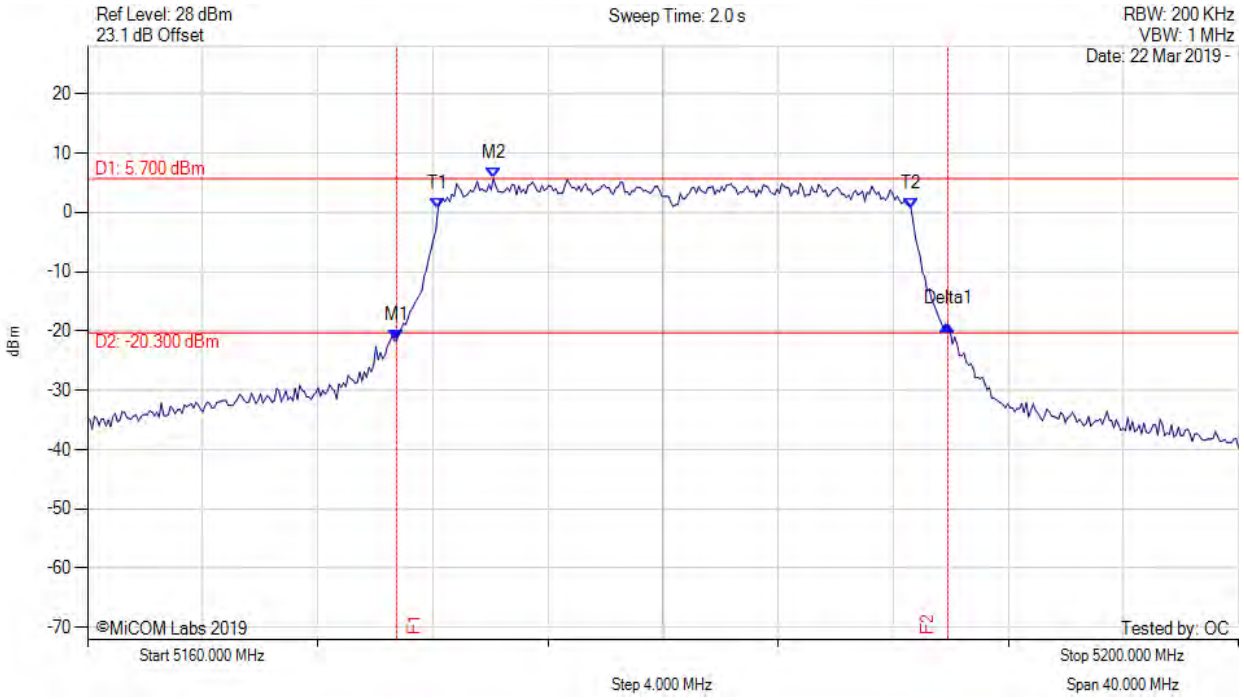



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5170.501 MHz : -22.059 dBm<br>M2 : 5181.884 MHz : 5.446 dBm<br>Delta1 : 19.479 MHz : 1.692 dB<br>T1 : 5172.184 MHz : 1.671 dBm<br>T2 : 5188.617 MHz : 1.386 dBm<br>OBW : 16.433 MHz | Measured 26 dB Bandwidth: 19.479 MHz<br>Measured 99% Bandwidth: 16.433 MHz |

back to matrix

## 26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5180.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

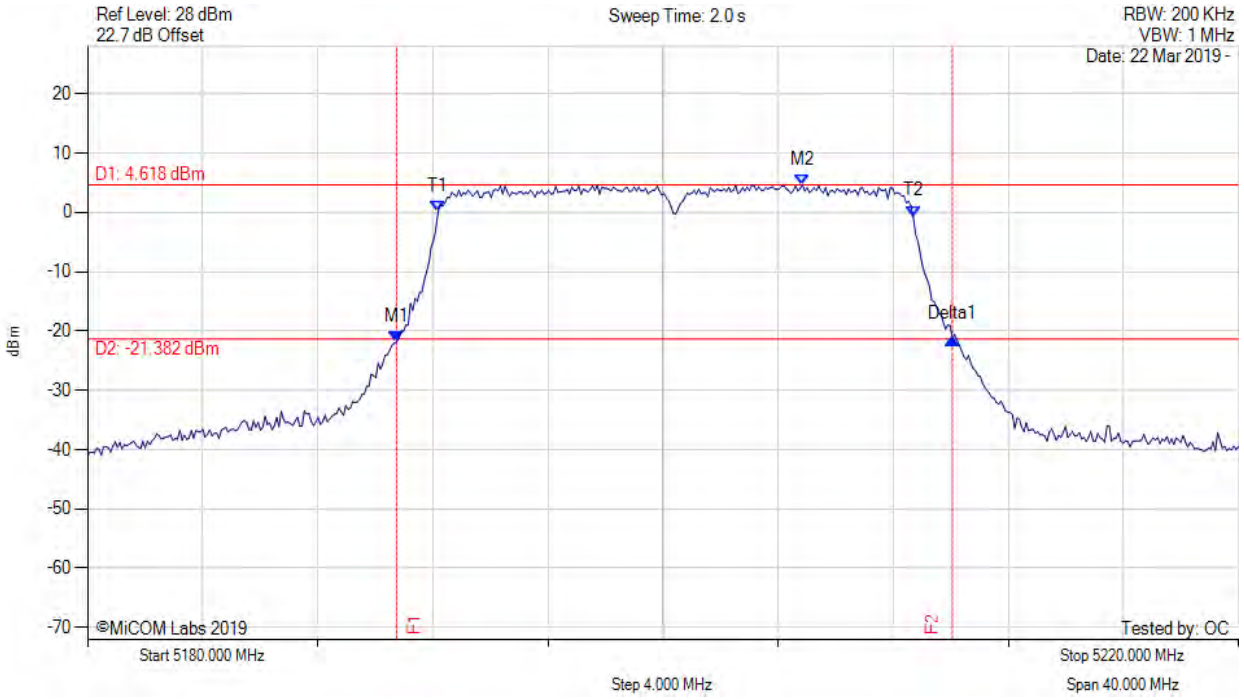



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5170.741 MHz : -21.632 dBm<br>M2 : 5174.108 MHz : 5.700 dBm<br>Delta1 : 19.158 MHz : 2.750 dB<br>T1 : 5172.184 MHz : 0.650 dBm<br>T2 : 5188.617 MHz : 0.723 dBm<br>OBW : 16.433 MHz | Measured 26 dB Bandwidth: 19.158 MHz<br>Measured 99% Bandwidth: 16.433 MHz |

back to matrix

## 26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5200.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

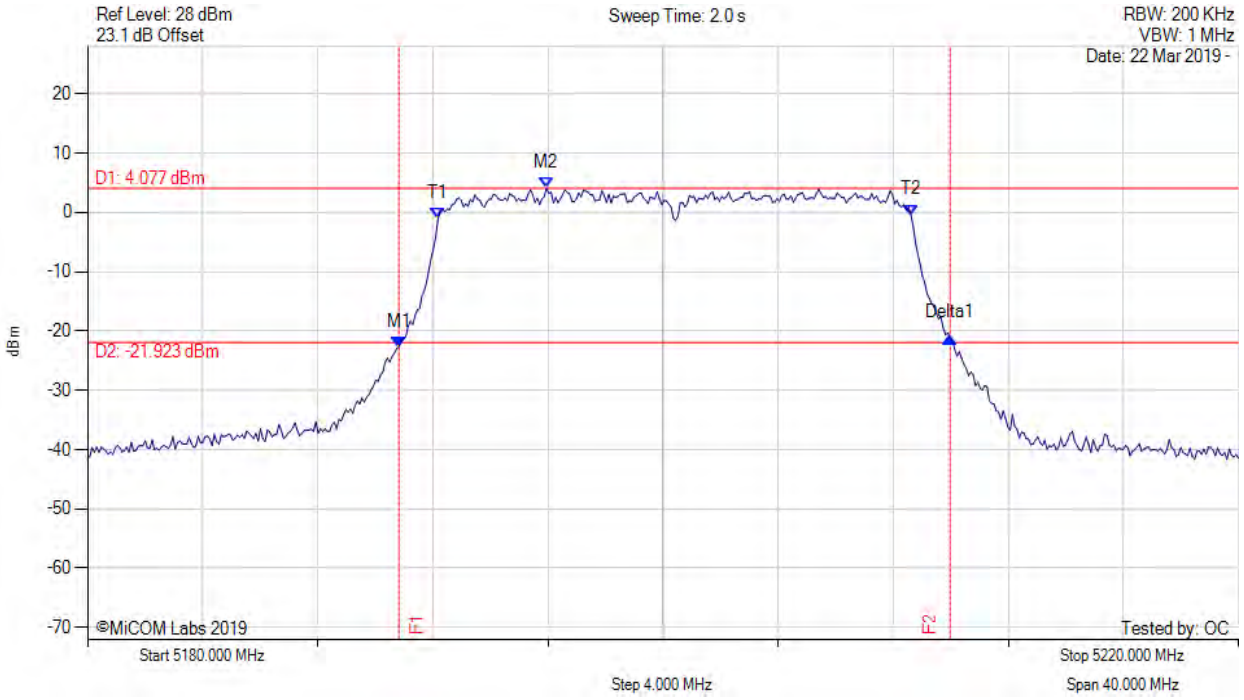



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5190.741 MHz : -21.845 dBm<br>M2 : 5204.850 MHz : 4.618 dBm<br>Delta1 : 19.319 MHz : 0.470 dB<br>T1 : 5192.184 MHz : 0.064 dBm<br>T2 : 5208.697 MHz : -0.645 dBm<br>OBW : 16.513 MHz | Measured 26 dB Bandwidth: 19.319 MHz<br>Measured 99% Bandwidth: 16.513 MHz |

back to matrix

## 26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5200.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

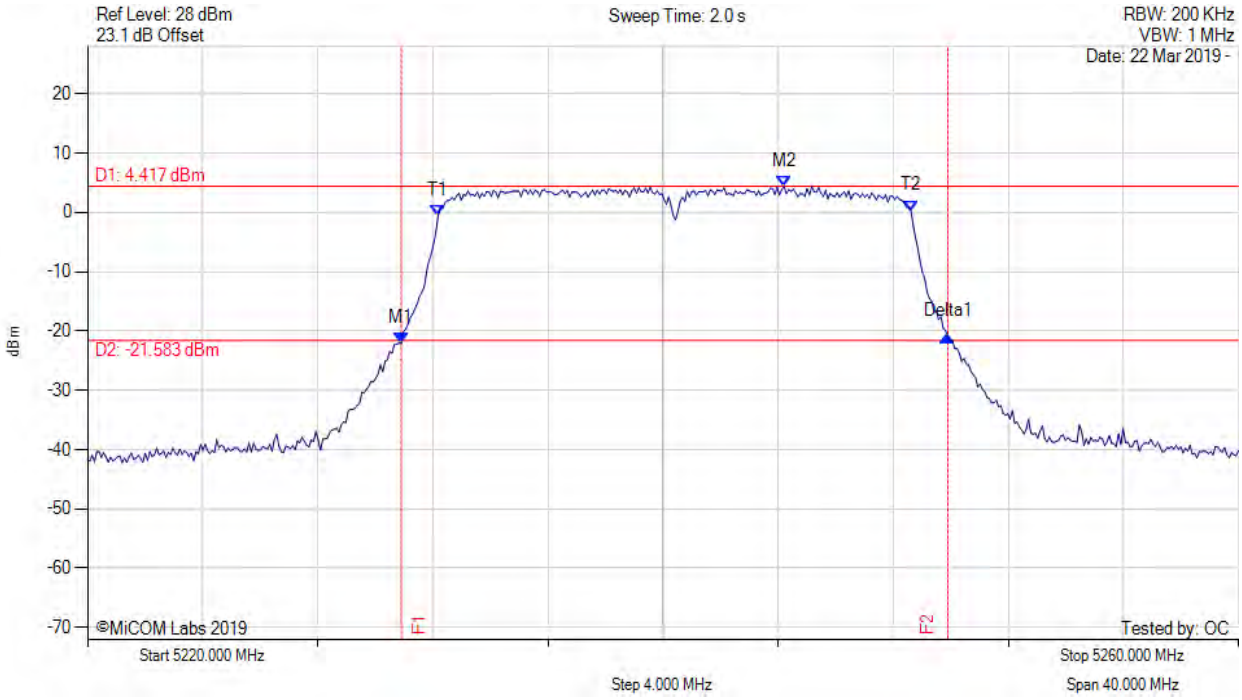



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5190.822 MHz : -22.648 dBm<br>M2 : 5195.952 MHz : 4.077 dBm<br>Delta1 : 19.158 MHz : 1.444 dB<br>T1 : 5192.184 MHz : -1.001 dBm<br>T2 : 5208.617 MHz : -0.432 dBm<br>OBW : 16.433 MHz | Measured 26 dB Bandwidth: 19.158 MHz<br>Measured 99% Bandwidth: 16.433 MHz |

back to matrix

## 26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5240.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

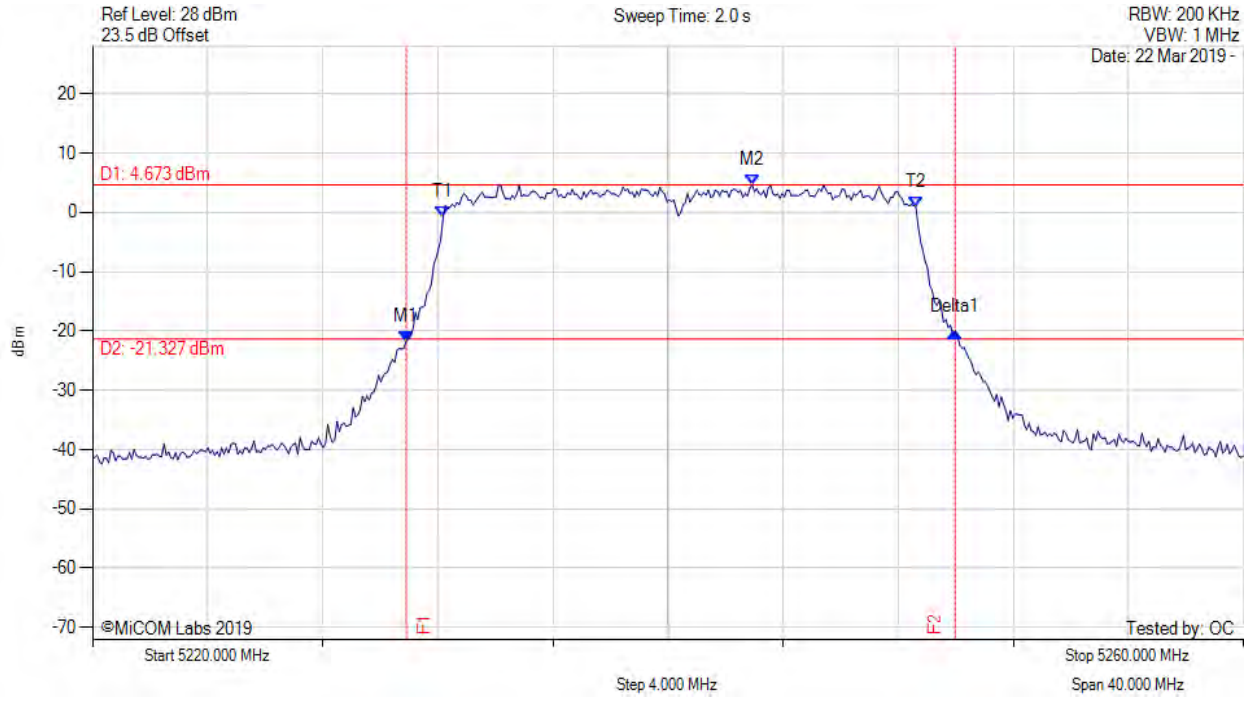



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5230.902 MHz : -22.030 dBm<br>M2 : 5244.208 MHz : 4.417 dBm<br>Delta1 : 18.998 MHz : 1.224 dB<br>T1 : 5232.184 MHz : -0.629 dBm<br>T2 : 5248.617 MHz : 0.266 dBm<br>OBW : 16.433 MHz | Measured 26 dB Bandwidth: 18.998 MHz<br>Measured 99% Bandwidth: 16.433 MHz |

back to matrix

## 26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5240.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

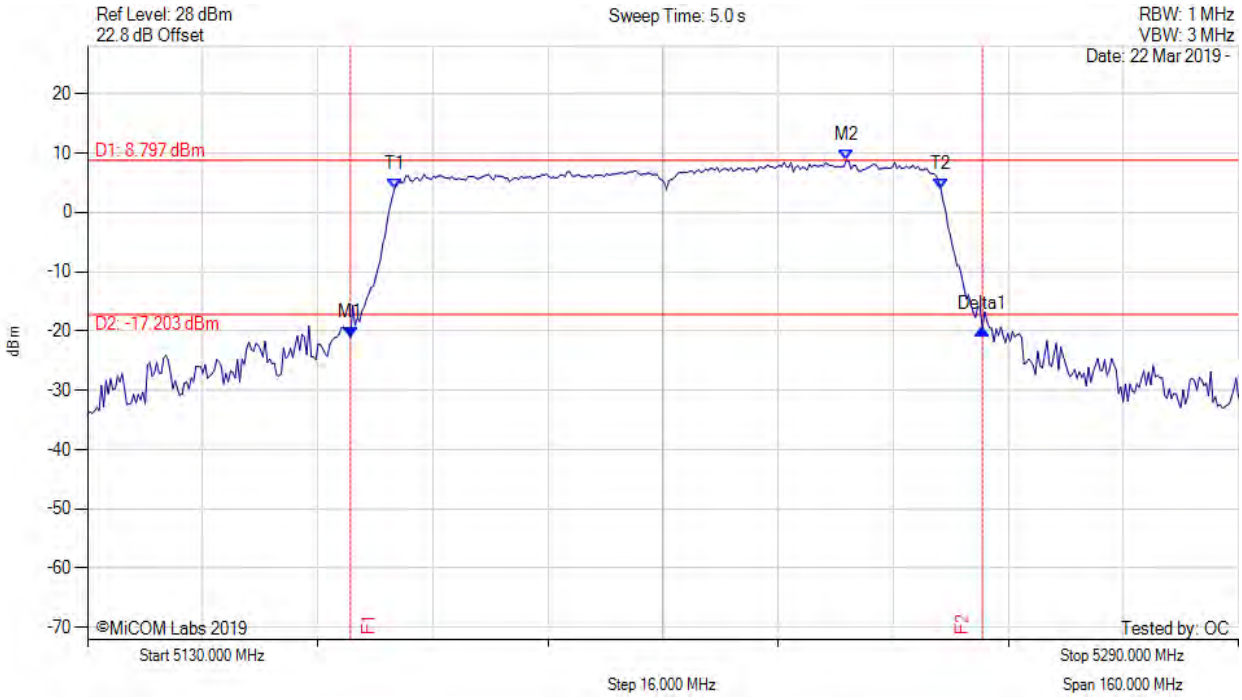



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5230.902 MHz : -21.709 dBm<br>M2 : 5242.926 MHz : 4.673 dBm<br>Delta1 : 19.078 MHz : 1.623 dB<br>T1 : 5232.184 MHz : -0.796 dBm<br>T2 : 5248.617 MHz : 0.878 dBm<br>OBW : 16.433 MHz | Measured 26 dB Bandwidth: 19.078 MHz<br>Measured 99% Bandwidth: 16.433 MHz |

back to matrix

## 26 dB & 99% BANDWIDTH

Variant: 802.11ac-80, Channel: 5210.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

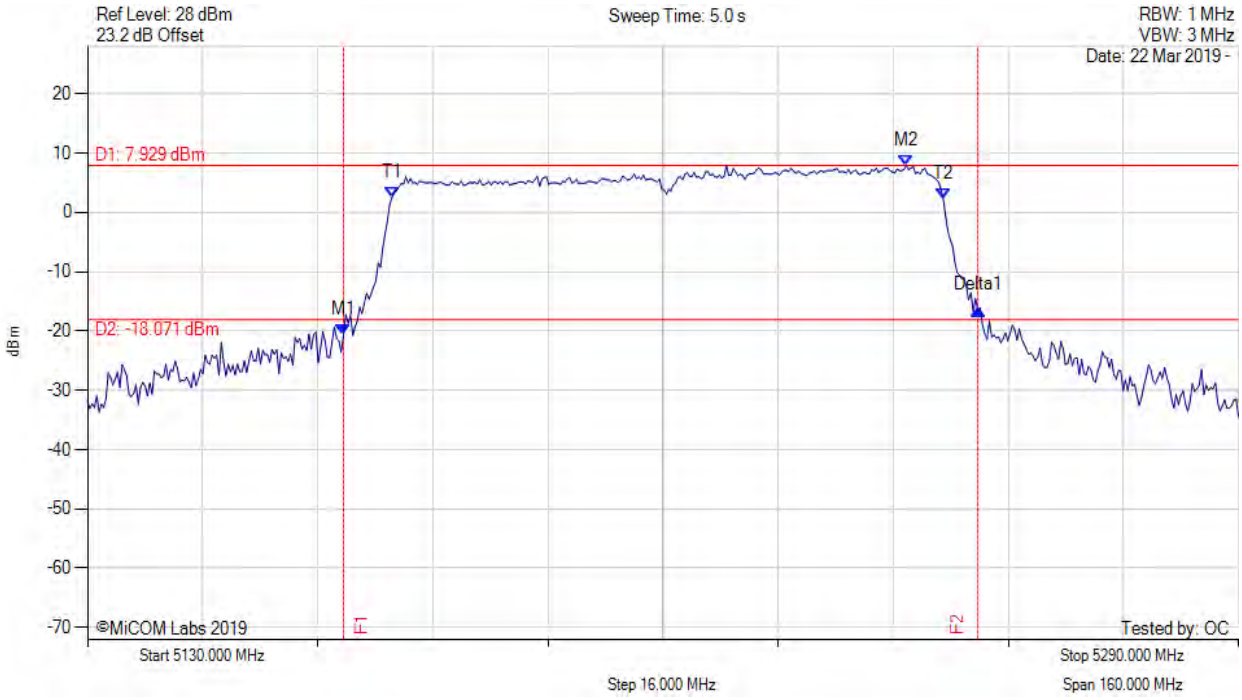



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5166.553 MHz : -21.133 dBm<br>M2 : 5235.491 MHz : 8.797 dBm<br>Delta1 : 87.856 MHz : 1.472 dB<br>T1 : 5172.645 MHz : 3.931 dBm<br>T2 : 5248.637 MHz : 3.892 dBm<br>OBW : 75.992 MHz | Measured 26 dB Bandwidth: 87.856 MHz<br>Measured 99% Bandwidth: 75.992 MHz |

back to matrix

## 26 dB & 99% BANDWIDTH

Variant: 802.11ac-80, Channel: 5210.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

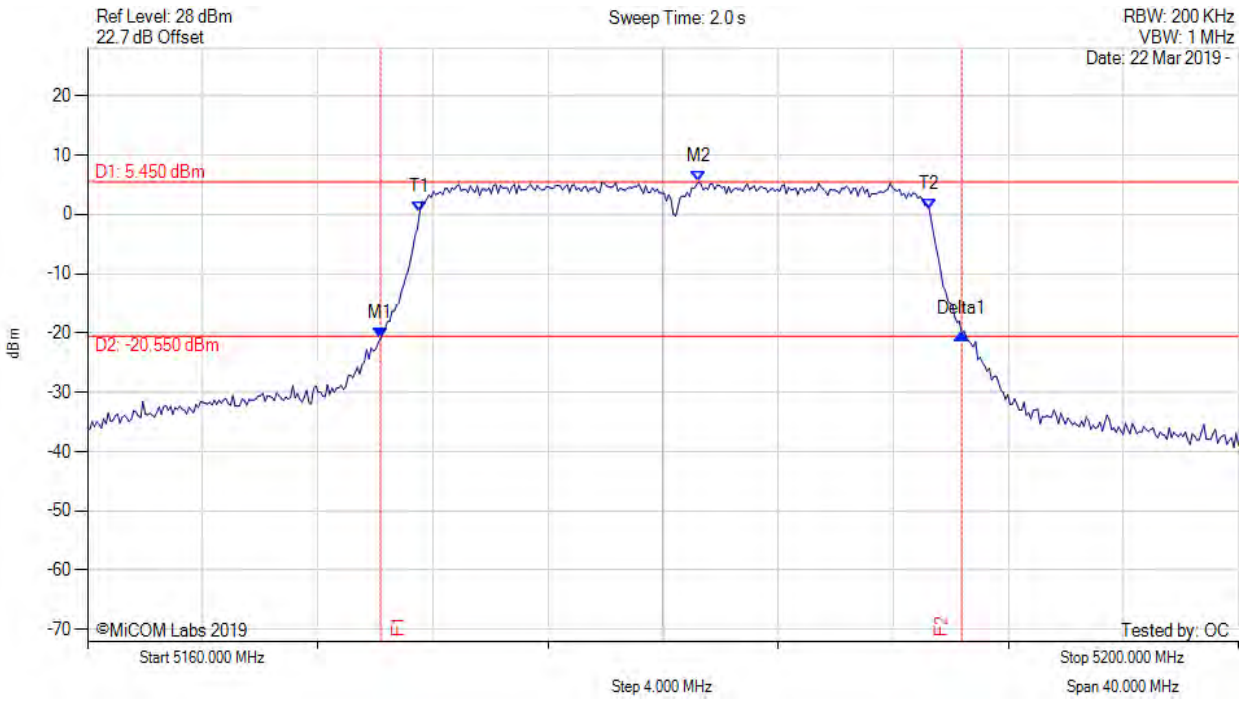



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5165.591 MHz : -20.602 dBm<br>M2 : 5243.828 MHz : 7.929 dBm<br>Delta1 : 88.176 MHz : 4.157 dB<br>T1 : 5172.325 MHz : 2.444 dBm<br>T2 : 5248.958 MHz : 2.334 dBm<br>OBW : 76.633 MHz | Measured 26 dB Bandwidth: 88.176 MHz<br>Measured 99% Bandwidth: 76.633 MHz |

back to matrix

## 26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5180.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

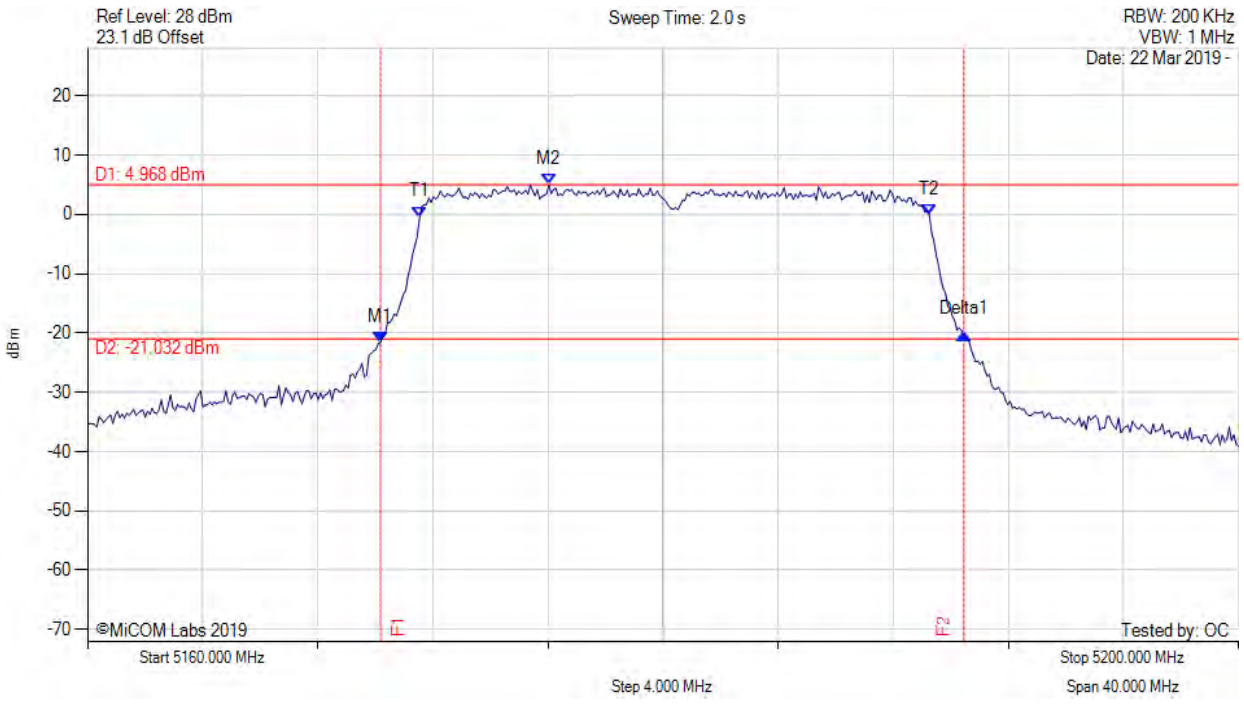



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5170.180 MHz : -20.975 dBm<br>M2 : 5181.242 MHz : 5.450 dBm<br>Delta1 : 20.200 MHz : 0.848 dB<br>T1 : 5171.543 MHz : 0.353 dBm<br>T2 : 5189.259 MHz : 0.837 dBm<br>OBW : 17.715 MHz | Measured 26 dB Bandwidth: 20.200 MHz<br>Measured 99% Bandwidth: 17.715 MHz |

back to matrix

## 26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5180.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

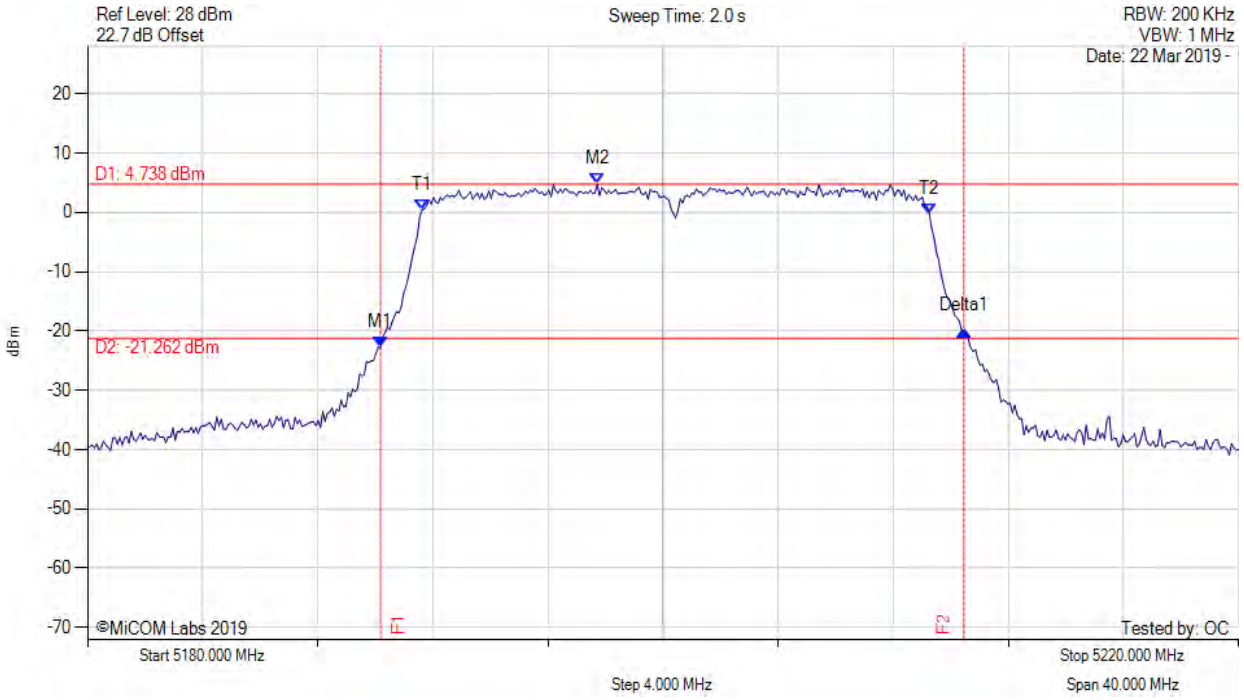



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5170.180 MHz : -21.583 dBm<br>M2 : 5176.032 MHz : 4.968 dBm<br>Delta1 : 20.281 MHz : 1.389 dB<br>T1 : 5171.543 MHz : -0.413 dBm<br>T2 : 5189.259 MHz : -0.161 dBm<br>OBW : 17.715 MHz | Measured 26 dB Bandwidth: 20.281 MHz<br>Measured 99% Bandwidth: 17.715 MHz |

back to matrix

## 26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5200.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

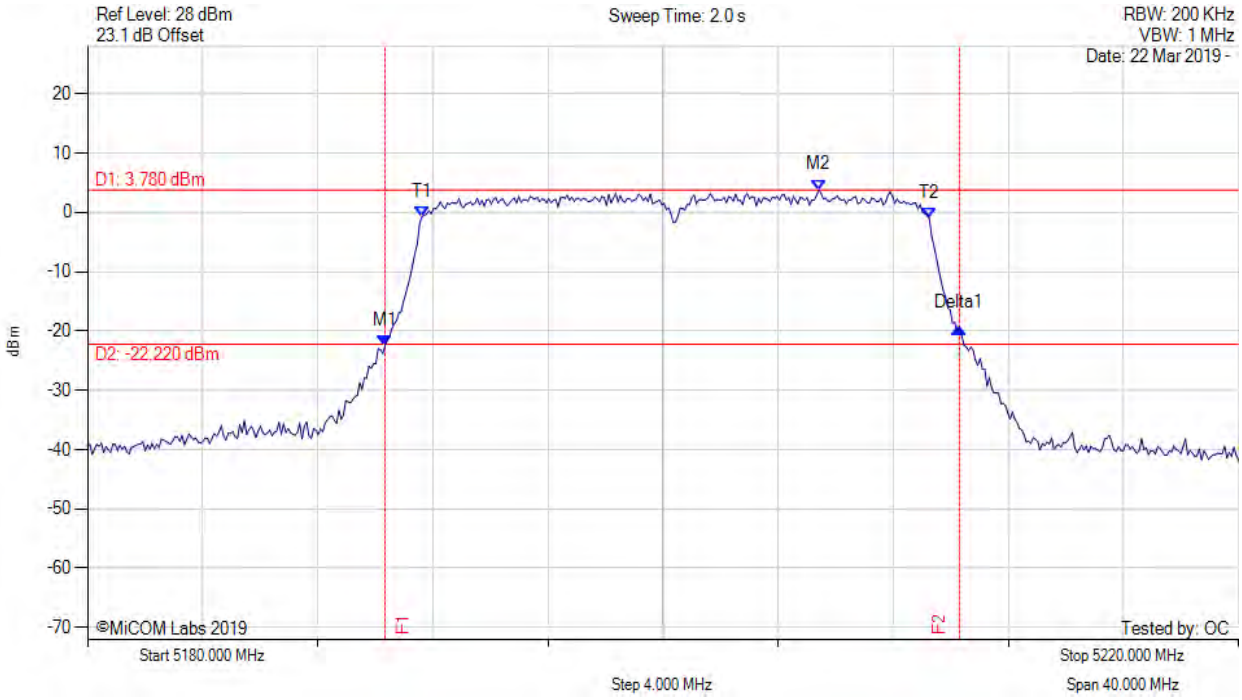



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5190.180 MHz : -22.785 dBm<br>M2 : 5197.715 MHz : 4.738 dBm<br>Delta1 : 20.281 MHz : 2.827 dB<br>T1 : 5191.623 MHz : 0.433 dBm<br>T2 : 5209.259 MHz : -0.216 dBm<br>OBW : 17.635 MHz | Measured 26 dB Bandwidth: 20.281 MHz<br>Measured 99% Bandwidth: 17.635 MHz |

back to matrix

## 26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5200.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

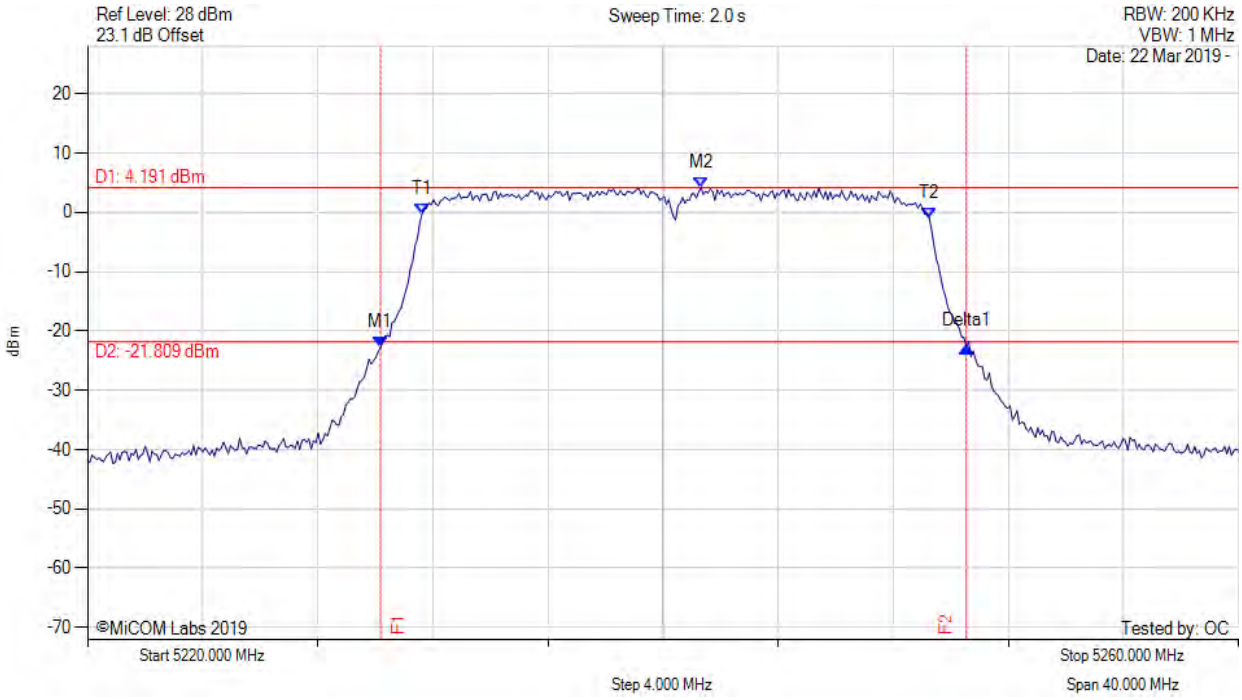



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5190.341 MHz : -22.439 dBm<br>M2 : 5205.411 MHz : 3.780 dBm<br>Delta1 : 19.960 MHz : 2.994 dB<br>T1 : 5191.623 MHz : -0.757 dBm<br>T2 : 5209.259 MHz : -1.103 dBm<br>OBW : 17.635 MHz | Measured 26 dB Bandwidth: 19.960 MHz<br>Measured 99% Bandwidth: 17.635 MHz |

back to matrix

## 26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5240.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

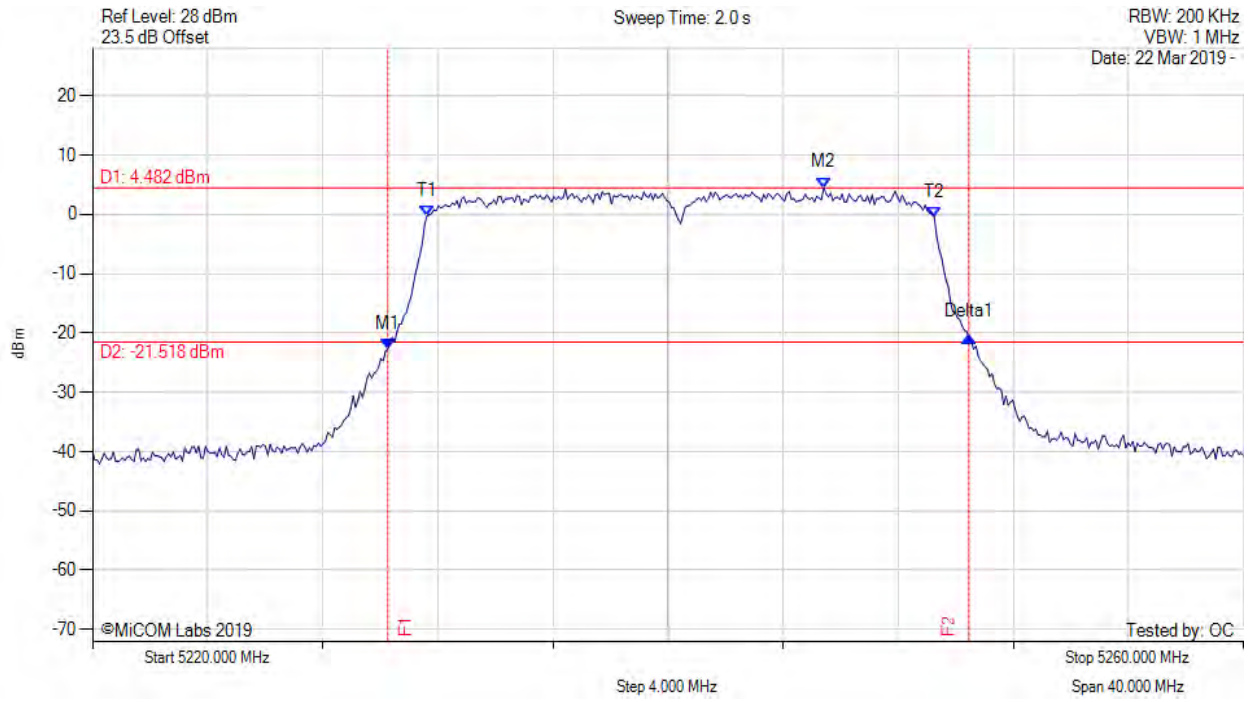



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5230.180 MHz : -22.842 dBm<br>M2 : 5241.323 MHz : 4.191 dBm<br>Delta1 : 20.361 MHz : 0.226 dB<br>T1 : 5231.623 MHz : -0.241 dBm<br>T2 : 5249.259 MHz : -1.007 dBm<br>OBW : 17.635 MHz | Measured 26 dB Bandwidth: 20.361 MHz<br>Measured 99% Bandwidth: 17.635 MHz |

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5240.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

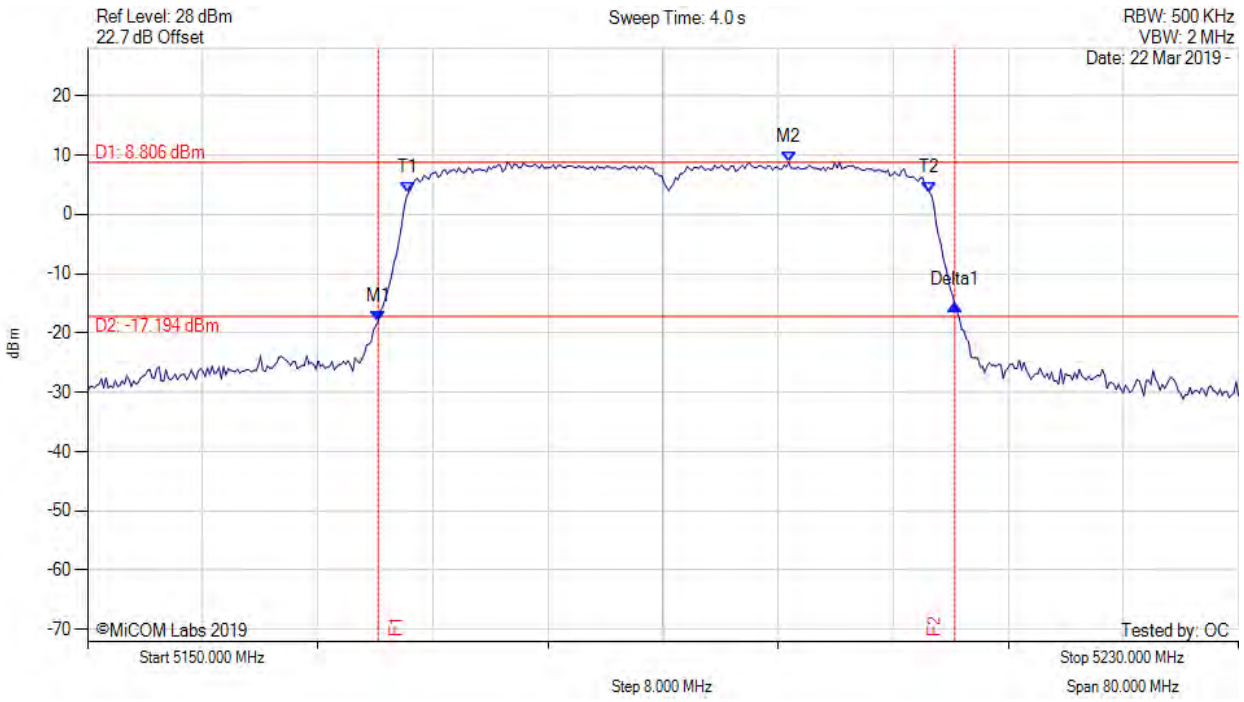



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5230.261 MHz : -22.709 dBm<br>M2 : 5245.411 MHz : 4.482 dBm<br>Delta1 : 20.200 MHz : 1.991 dB<br>T1 : 5231.623 MHz : -0.224 dBm<br>T2 : 5249.259 MHz : -0.507 dBm<br>OBW : 17.635 MHz | Measured 26 dB Bandwidth: 20.200 MHz<br>Measured 99% Bandwidth: 17.635 MHz |

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5190.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

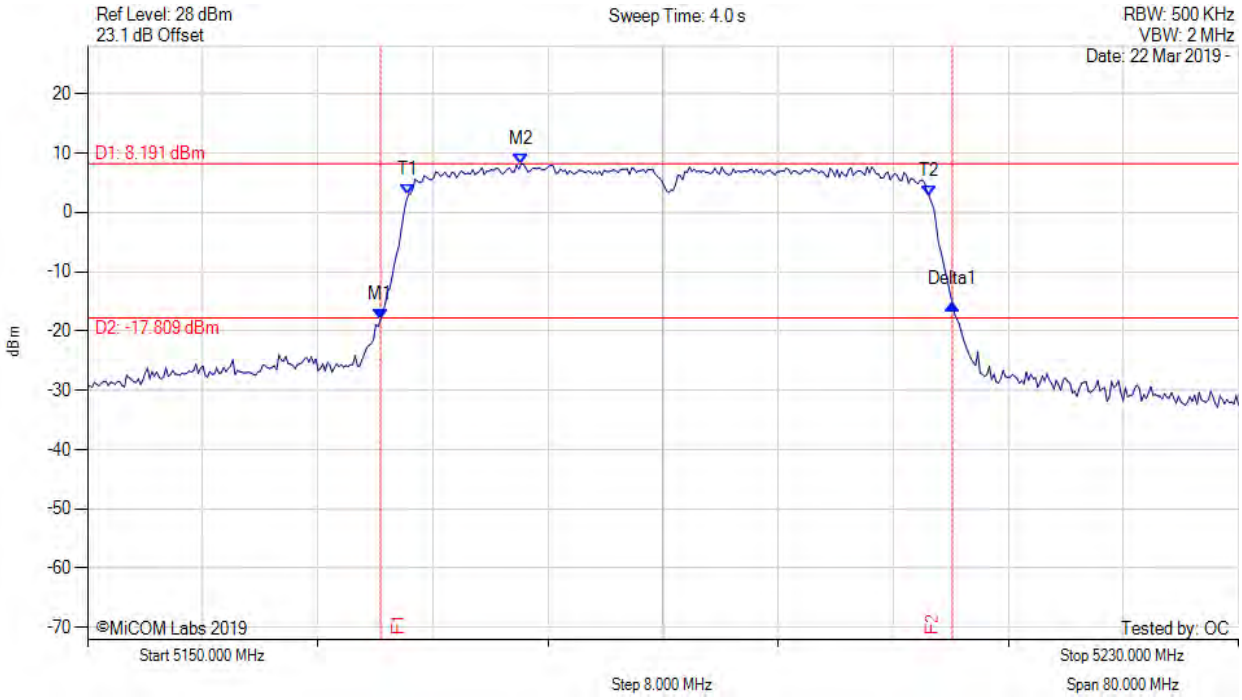



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5170.200 MHz : -18.044 dBm<br>M2 : 5198.737 MHz : 8.806 dBm<br>Delta1 : 40.080 MHz : 2.772 dB<br>T1 : 5172.285 MHz : 3.583 dBm<br>T2 : 5208.517 MHz : 3.758 dBm<br>OBW : 36.232 MHz | Measured 26 dB Bandwidth: 40.080 MHz<br>Measured 99% Bandwidth: 36.232 MHz |

back to matrix

## 26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5190.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

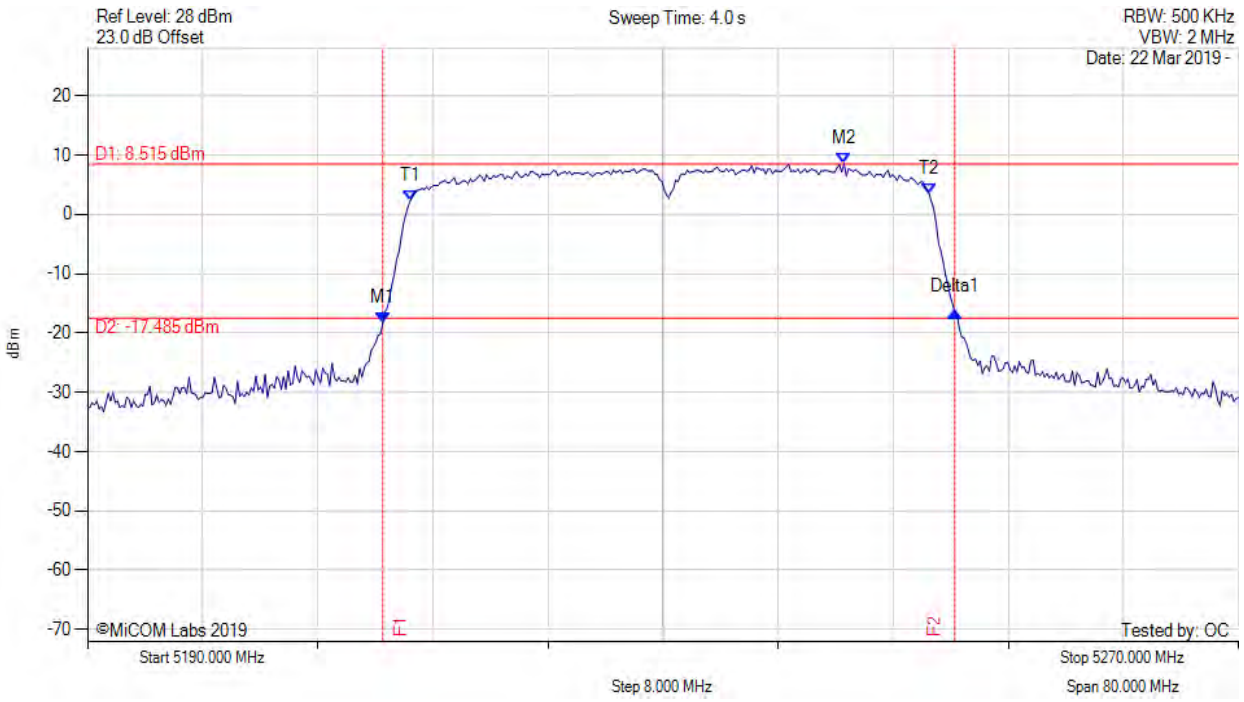



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5170.361 MHz : -18.127 dBm<br>M2 : 5180.140 MHz : 8.191 dBm<br>Delta1 : 39.760 MHz : 2.699 dB<br>T1 : 5172.285 MHz : 2.920 dBm<br>T2 : 5208.517 MHz : 2.698 dBm<br>OBW : 36.232 MHz | Measured 26 dB Bandwidth: 39.760 MHz<br>Measured 99% Bandwidth: 36.232 MHz |

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5230.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

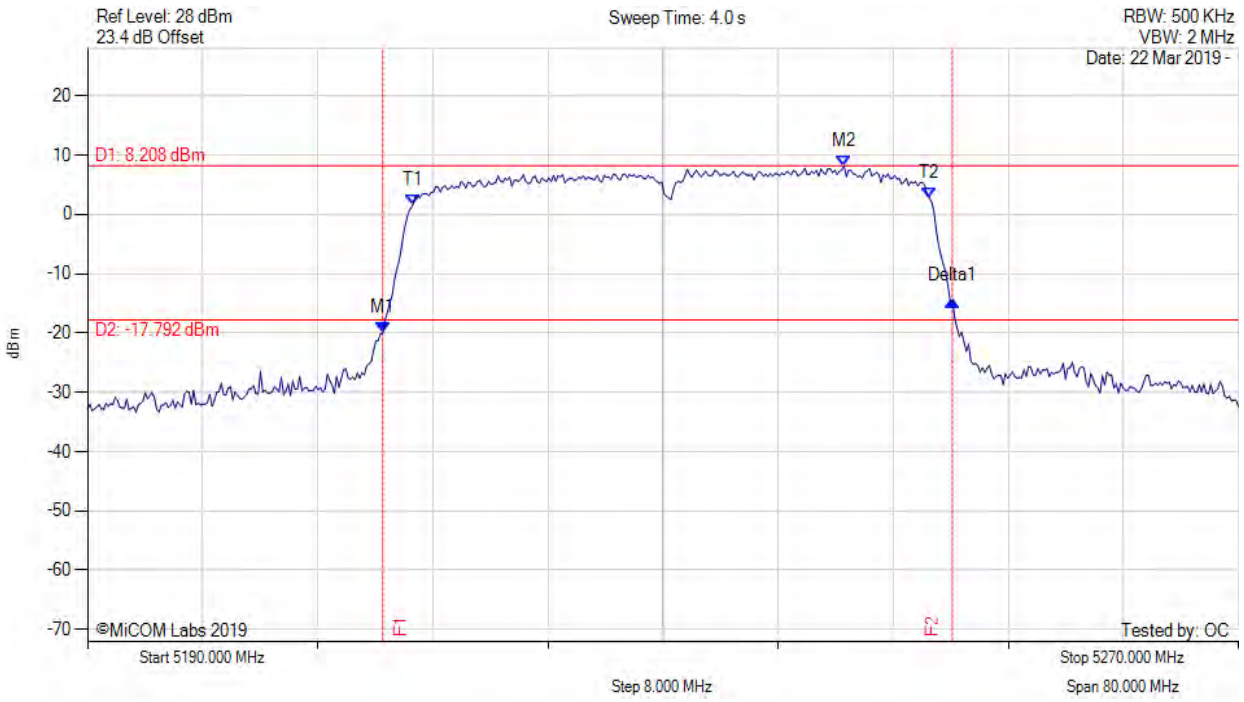



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5210.521 MHz : -18.314 dBm<br>M2 : 5242.585 MHz : 8.515 dBm<br>Delta1 : 39.760 MHz : 1.942 dB<br>T1 : 5212.445 MHz : 2.361 dBm<br>T2 : 5248.517 MHz : 3.365 dBm<br>OBW : 36.072 MHz | Measured 26 dB Bandwidth: 39.760 MHz<br>Measured 99% Bandwidth: 36.072 MHz |

back to matrix

## 26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5230.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5210.521 MHz : -19.986 dBm<br>M2 : 5242.585 MHz : 8.208 dBm<br>Delta1 : 39.599 MHz : 5.420 dB<br>T1 : 5212.605 MHz : 1.551 dBm<br>T2 : 5248.517 MHz : 2.767 dBm<br>OBW : 35.912 MHz | Measured 26 dB Bandwidth: 39.599 MHz<br>Measured 99% Bandwidth: 35.912 MHz |

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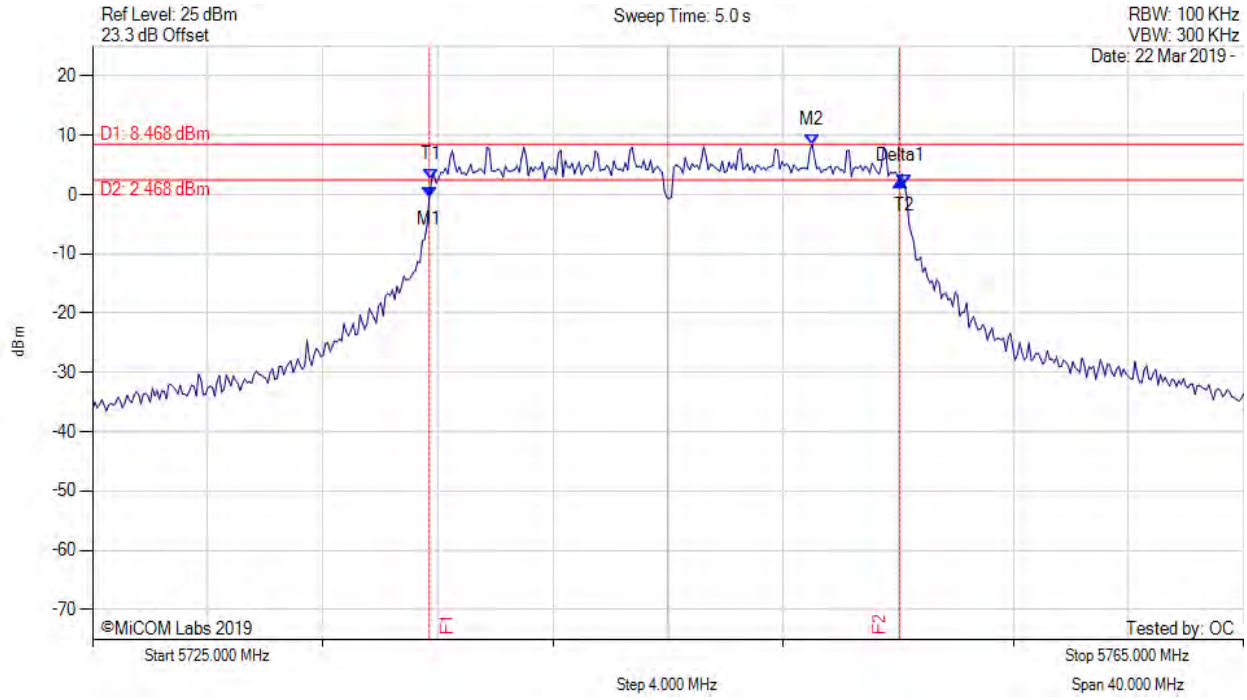
6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5745.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5736.703 MHz : -0.542 dBm<br>M2 : 5750.010 MHz : 8.468 dBm<br>Delta1 : 16.353 MHz : 2.746 dB<br>T1 : 5736.784 MHz : 2.501 dBm<br>T2 : 5753.216 MHz : 1.683 dBm<br>OBW : 16.433 MHz | Measured 6 dB Bandwidth: 16.353 MHz<br>Measured 99% Bandwidth: 16.433 MHz |

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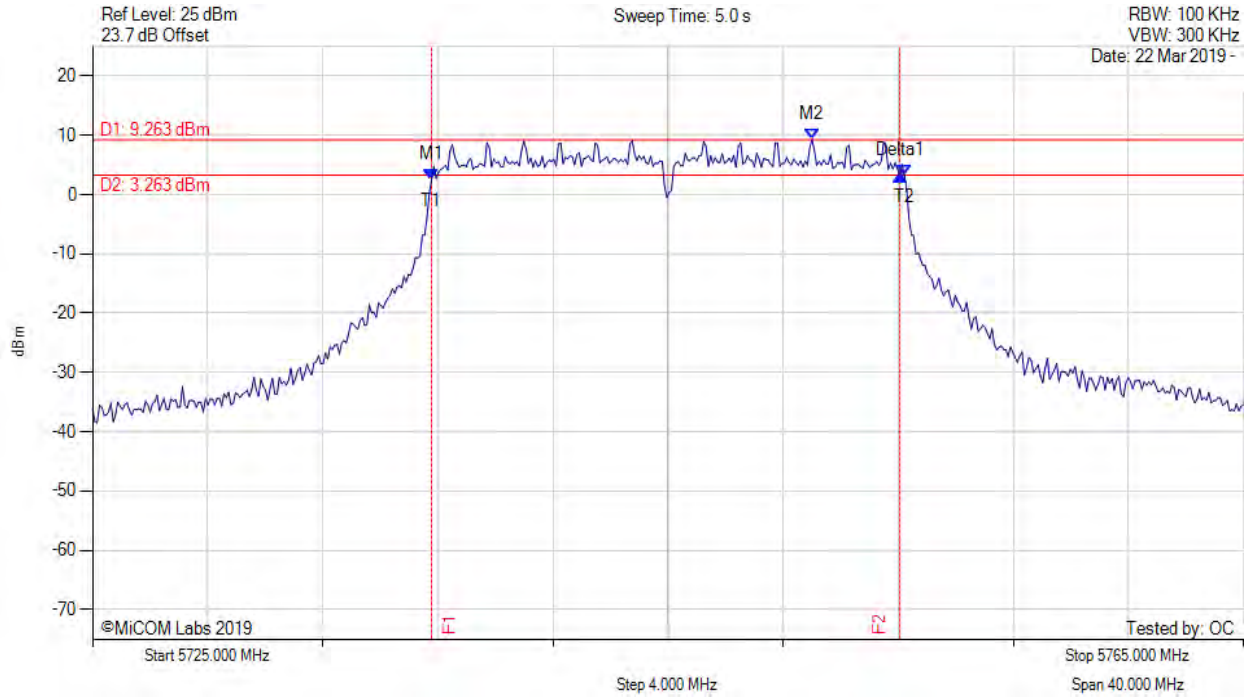
## 6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5745.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5736.784 MHz : 2.484 dBm<br>M2 : 5750.010 MHz : 9.263 dBm<br>Delta1 : 16.273 MHz : 0.696 dB<br>T1 : 5736.784 MHz : 2.484 dBm<br>T2 : 5753.216 MHz : 3.158 dBm<br>OBW : 16.433 MHz | Measured 6 dB Bandwidth: 16.273 MHz<br>Measured 99% Bandwidth: 16.433 MHz |

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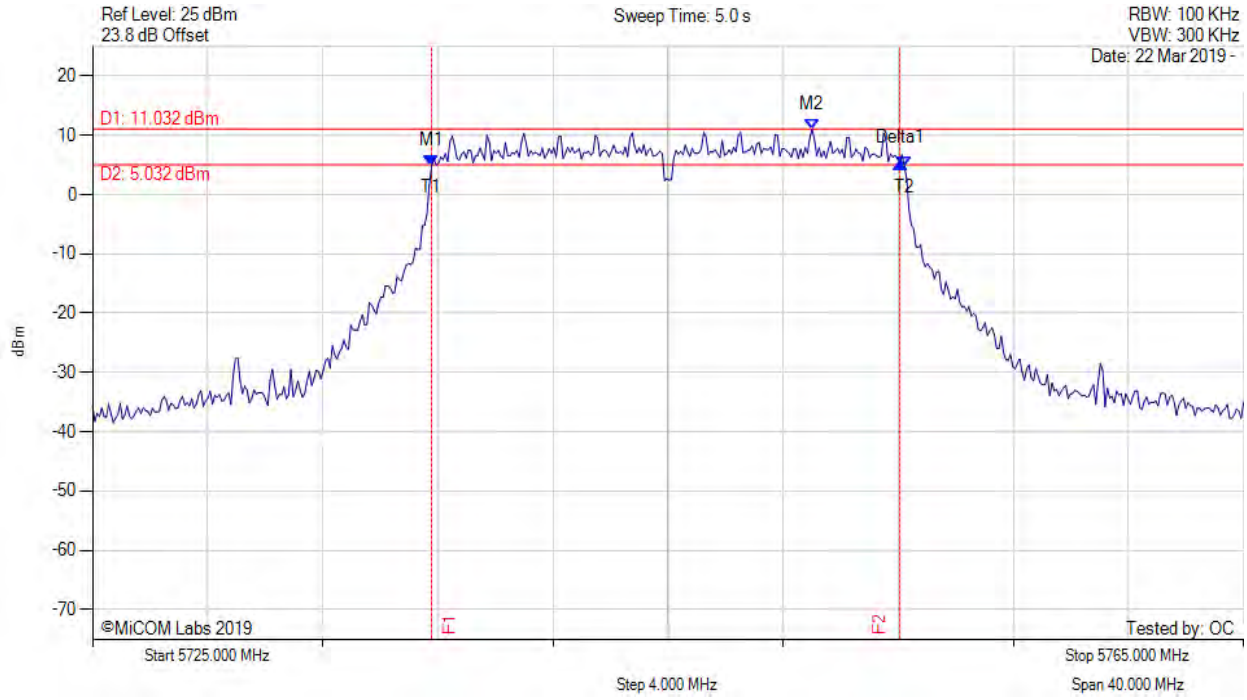
6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5745.00 MHz, Chain c, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5736.784 MHz : 4.770 dBm<br>M2 : 5750.010 MHz : 11.032 dBm<br>Delta1 : 16.273 MHz : 0.610 dB<br>T1 : 5736.784 MHz : 4.770 dBm<br>T2 : 5753.216 MHz : 4.677 dBm<br>OBW : 16.433 MHz | Measured 6 dB Bandwidth: 16.273 MHz<br>Measured 99% Bandwidth: 16.433 MHz |

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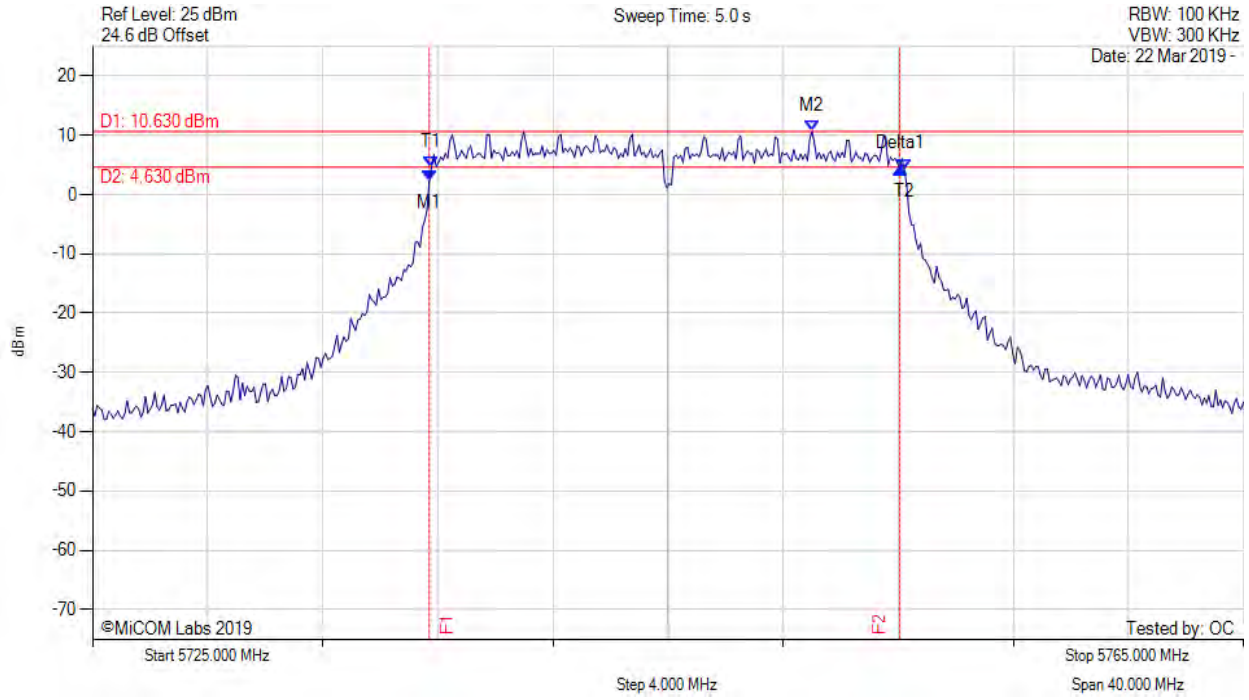
## 6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5745.00 MHz, Chain d, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5736.703 MHz : 2.275 dBm<br>M2 : 5750.010 MHz : 10.630 dBm<br>Delta1 : 16.353 MHz : 2.186 dB<br>T1 : 5736.784 MHz : 4.709 dBm<br>T2 : 5753.216 MHz : 4.097 dBm<br>OBW : 16.433 MHz | Measured 6 dB Bandwidth: 16.353 MHz<br>Measured 99% Bandwidth: 16.433 MHz |

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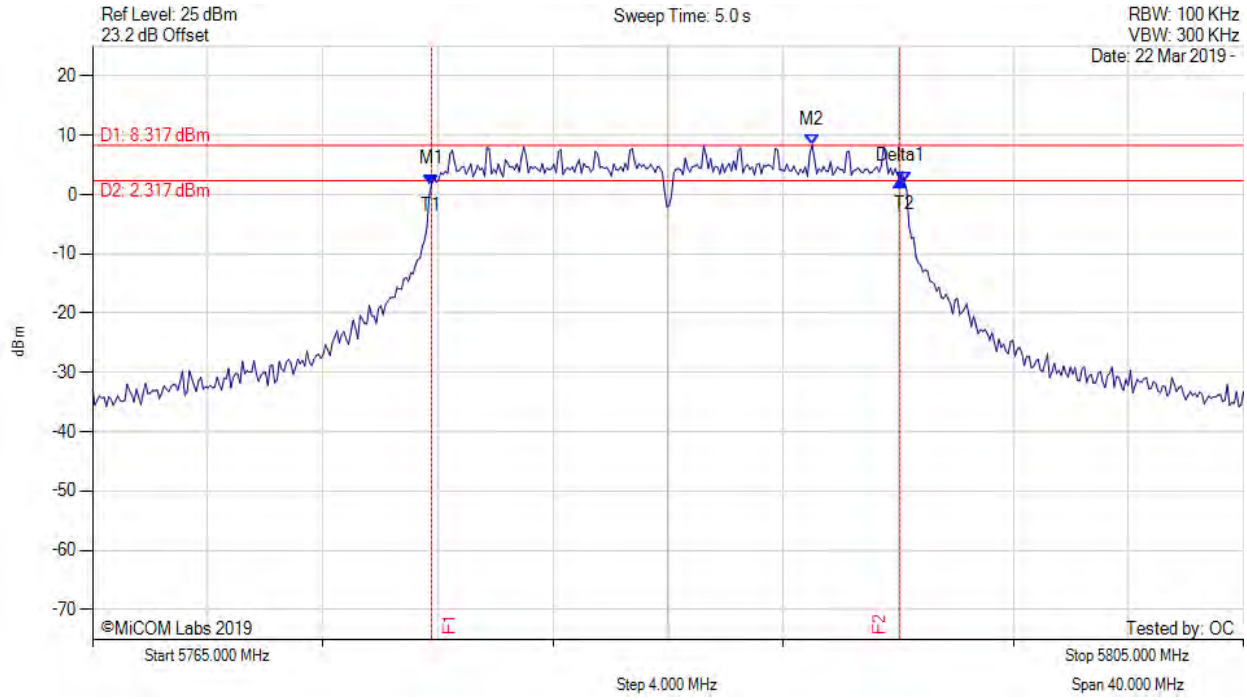
6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5785.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5776.784 MHz : 1.726 dBm<br>M2 : 5790.010 MHz : 8.317 dBm<br>Delta1 : 16.273 MHz : 0.563 dB<br>T1 : 5776.784 MHz : 1.726 dBm<br>T2 : 5793.216 MHz : 2.004 dBm<br>OBW : 16.433 MHz | Measured 6 dB Bandwidth: 16.273 MHz<br>Measured 99% Bandwidth: 16.433 MHz |

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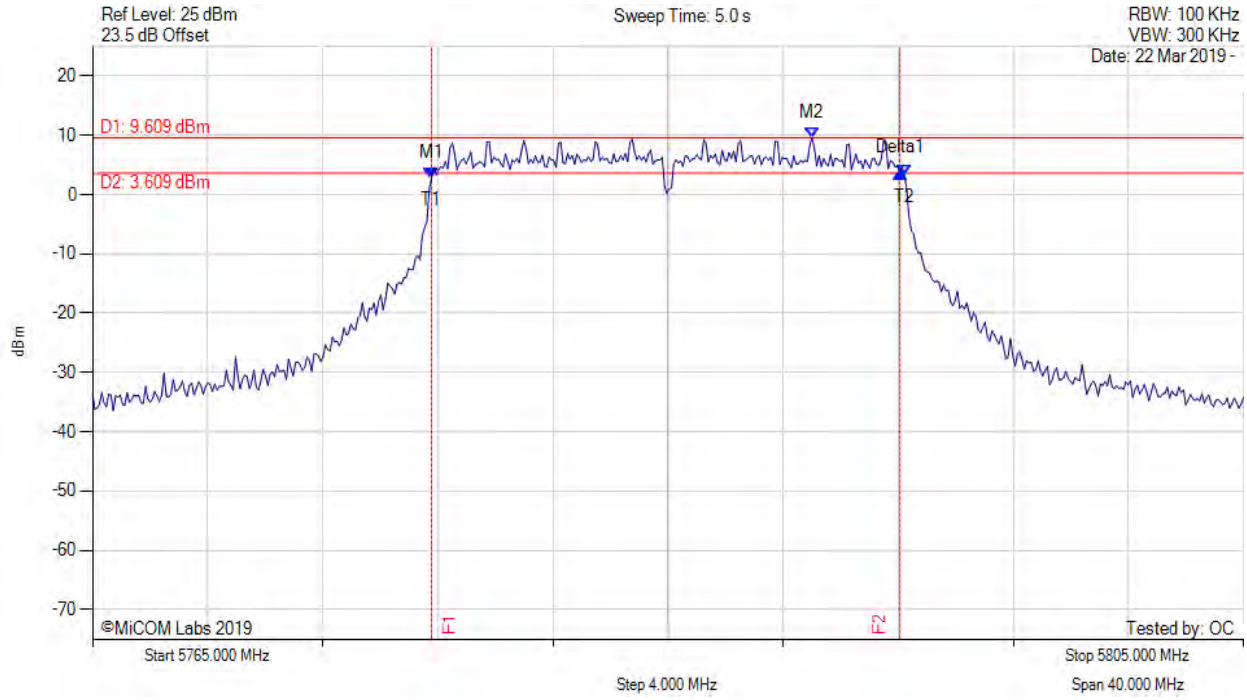
6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5785.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5776.784 MHz : 2.787 dBm<br>M2 : 5790.010 MHz : 9.609 dBm<br>Delta1 : 16.273 MHz : 0.970 dB<br>T1 : 5776.784 MHz : 2.787 dBm<br>T2 : 5793.216 MHz : 3.210 dBm<br>OBW : 16.433 MHz | Measured 6 dB Bandwidth: 16.273 MHz<br>Measured 99% Bandwidth: 16.433 MHz |

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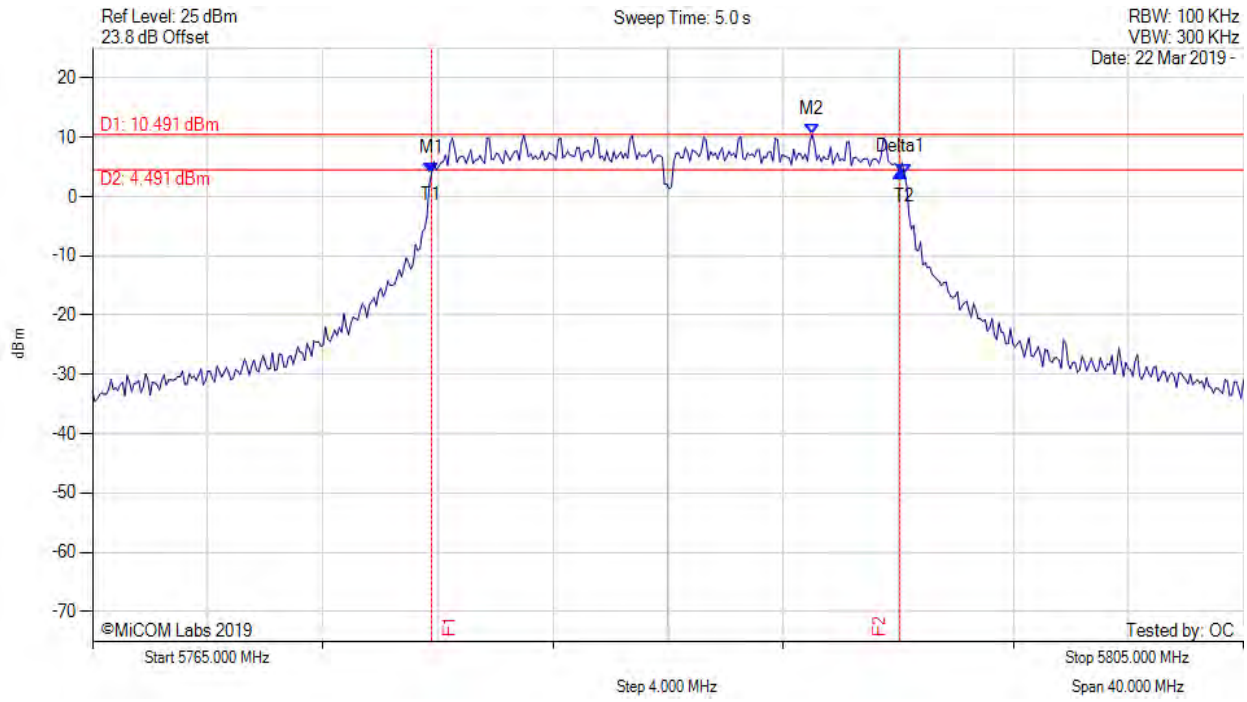
6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5785.00 MHz, Chain c, Temp: 20, Voltage: 24 Vdc

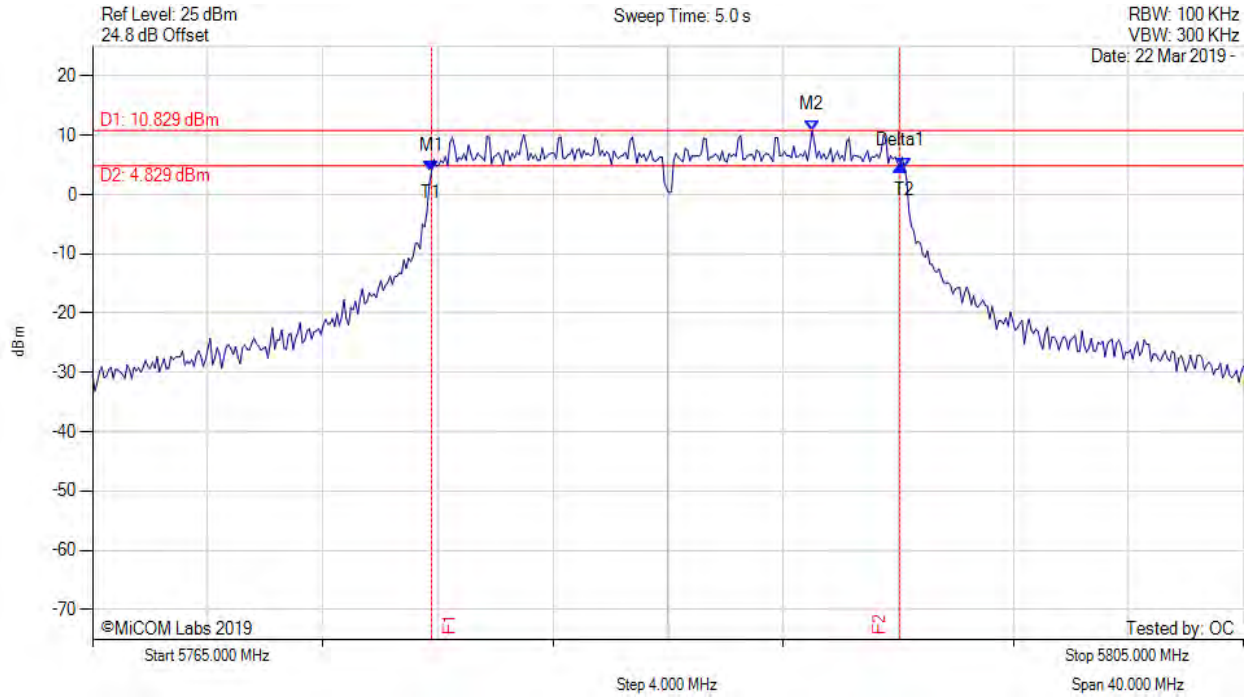



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5776.784 MHz : 3.953 dBm<br>M2 : 5790.010 MHz : 10.491 dBm<br>Delta1 : 16.273 MHz : 0.189 dB<br>T1 : 5776.784 MHz : 3.953 dBm<br>T2 : 5793.216 MHz : 3.686 dBm<br>OBW : 16.433 MHz | Measured 6 dB Bandwidth: 16.273 MHz<br>Measured 99% Bandwidth: 16.433 MHz |

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5785.00 MHz, Chain d, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5776.784 MHz : 3.943 dBm<br>M2 : 5790.010 MHz : 10.829 dBm<br>Delta1 : 16.273 MHz : 0.901 dB<br>T1 : 5776.784 MHz : 3.943 dBm<br>T2 : 5793.216 MHz : 4.412 dBm<br>OBW : 16.433 MHz | Measured 6 dB Bandwidth: 16.273 MHz<br>Measured 99% Bandwidth: 16.433 MHz |

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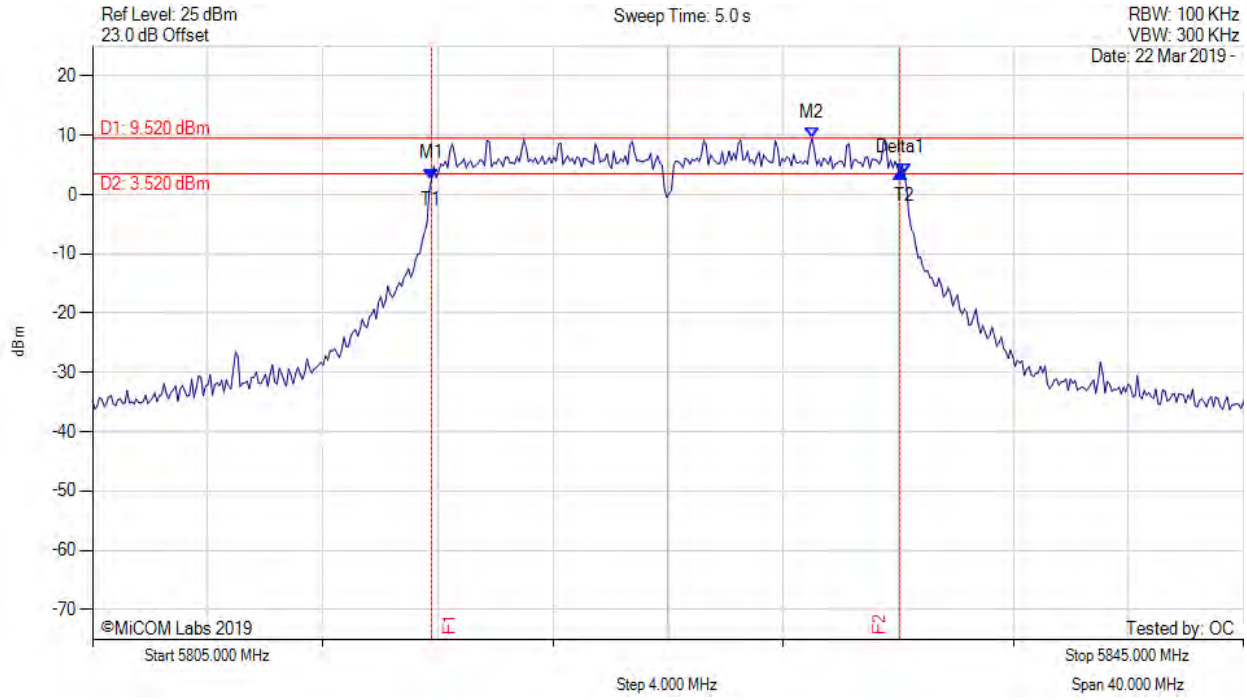
6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5825.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

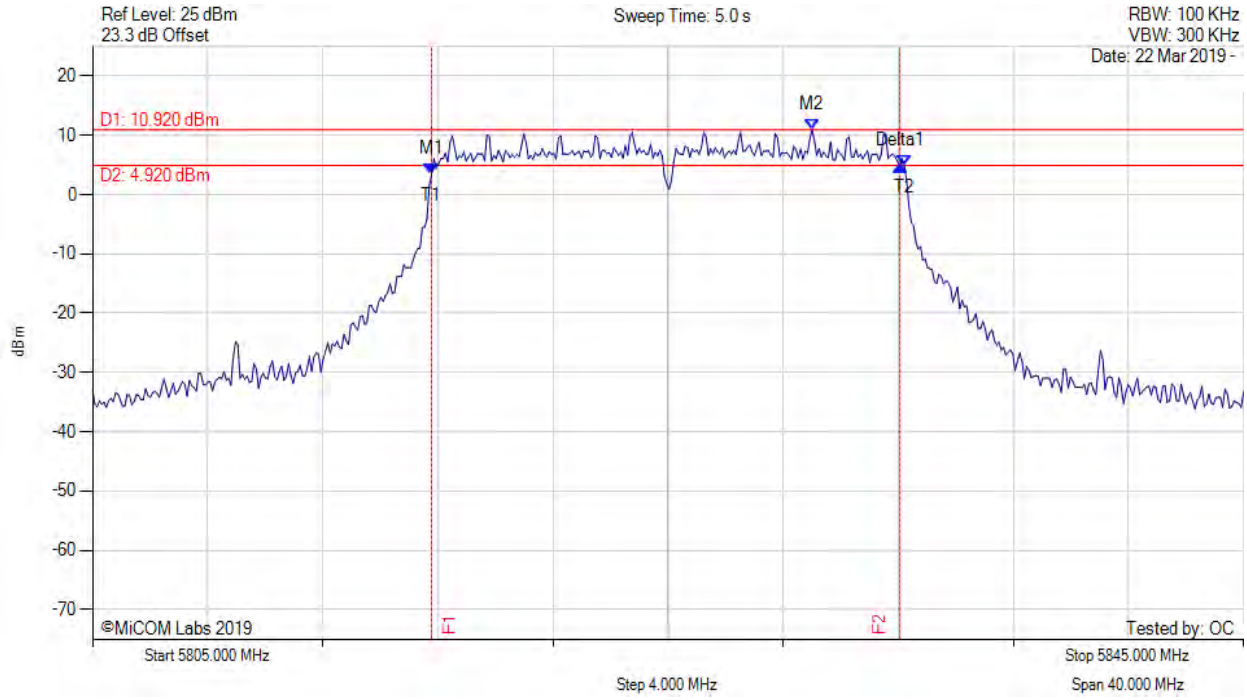



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5816.784 MHz : 2.641 dBm<br>M2 : 5830.010 MHz : 9.515 dBm<br>Delta1 : 16.273 MHz : 0.970 dB<br>T1 : 5816.784 MHz : 2.641 dBm<br>T2 : 5833.216 MHz : 3.448 dBm<br>OBW : 16.433 MHz | Measured 6 dB Bandwidth: 16.273 MHz<br>Measured 99% Bandwidth: 16.433 MHz |

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5825.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

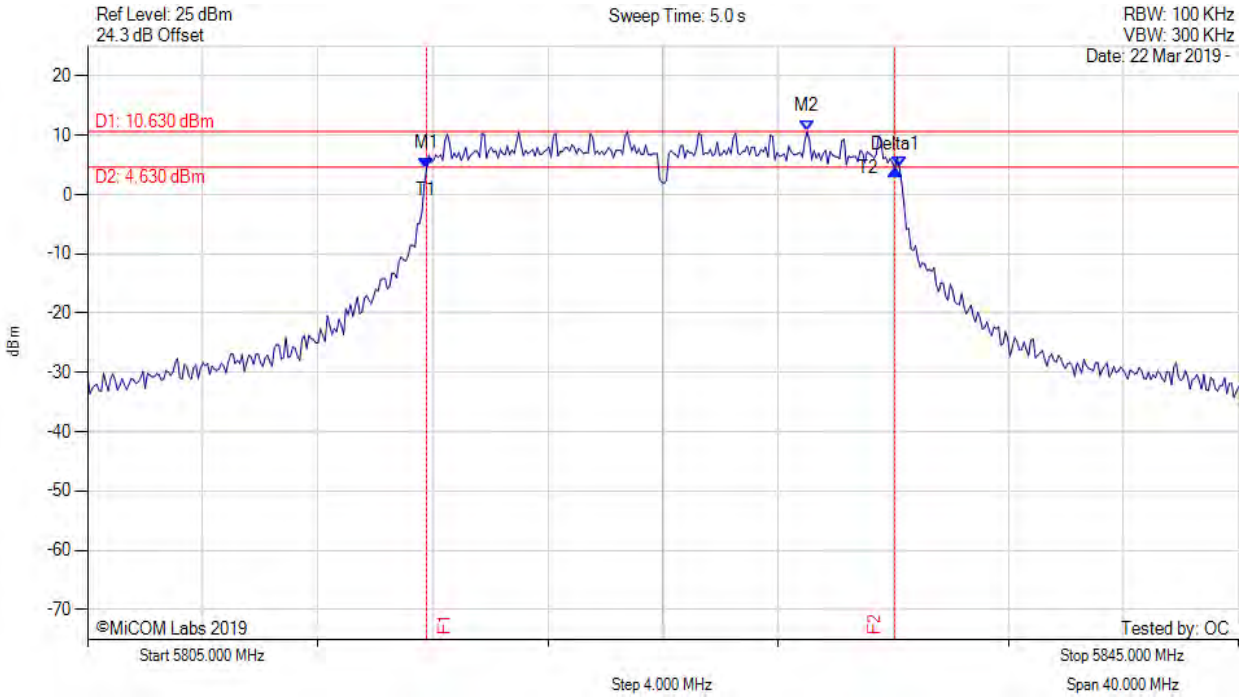



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5816.784 MHz : 3.481 dBm<br>M2 : 5830.010 MHz : 10.920 dBm<br>Delta1 : 16.273 MHz : 1.291 dB<br>T1 : 5816.784 MHz : 3.481 dBm<br>T2 : 5833.216 MHz : 4.811 dBm<br>OBW : 16.433 MHz | Measured 6 dB Bandwidth: 16.273 MHz<br>Measured 99% Bandwidth: 16.433 MHz |

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5825.00 MHz, Chain c, Temp: 20, Voltage: 24 Vdc

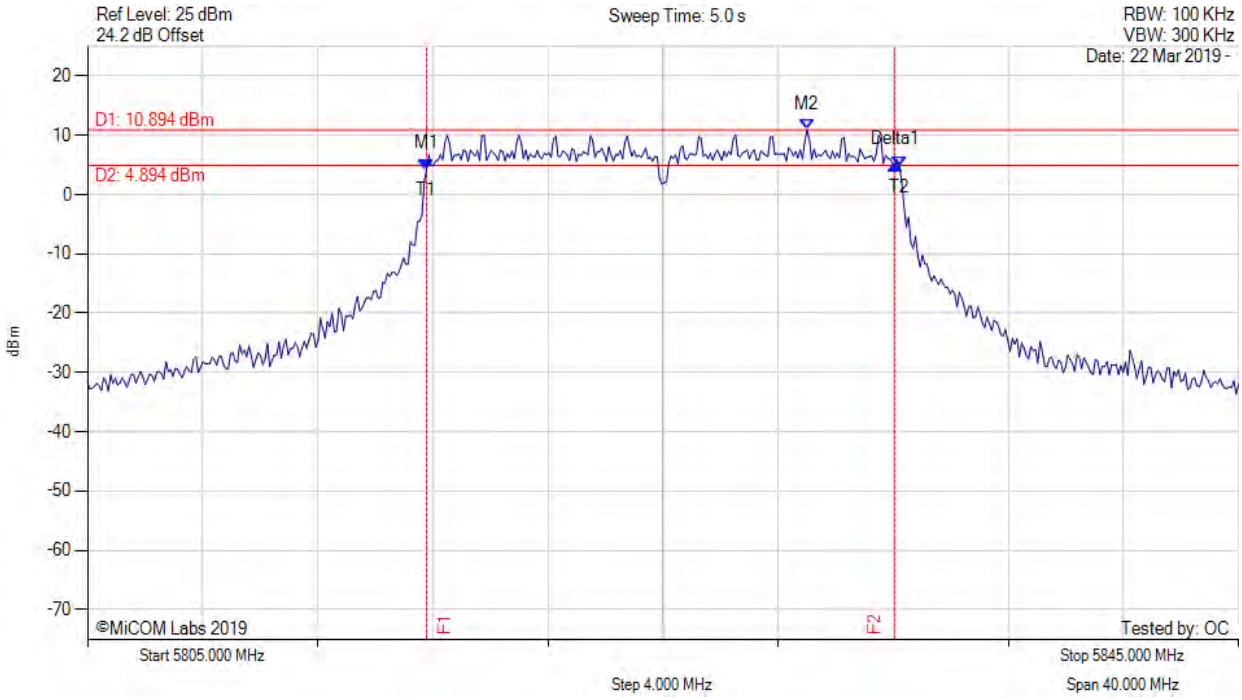



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5816.784 MHz : 4.402 dBm<br>M2 : 5830.010 MHz : 10.630 dBm<br>Delta1 : 16.273 MHz : -0.270 dB<br>T1 : 5816.784 MHz : 4.402 dBm<br>T2 : 5833.216 MHz : 4.541 dBm<br>OBW : 16.433 MHz | Measured 6 dB Bandwidth: 16.273 MHz<br>Measured 99% Bandwidth: 16.433 MHz |

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5825.00 MHz, Chain d, Temp: 20, Voltage: 24 Vdc

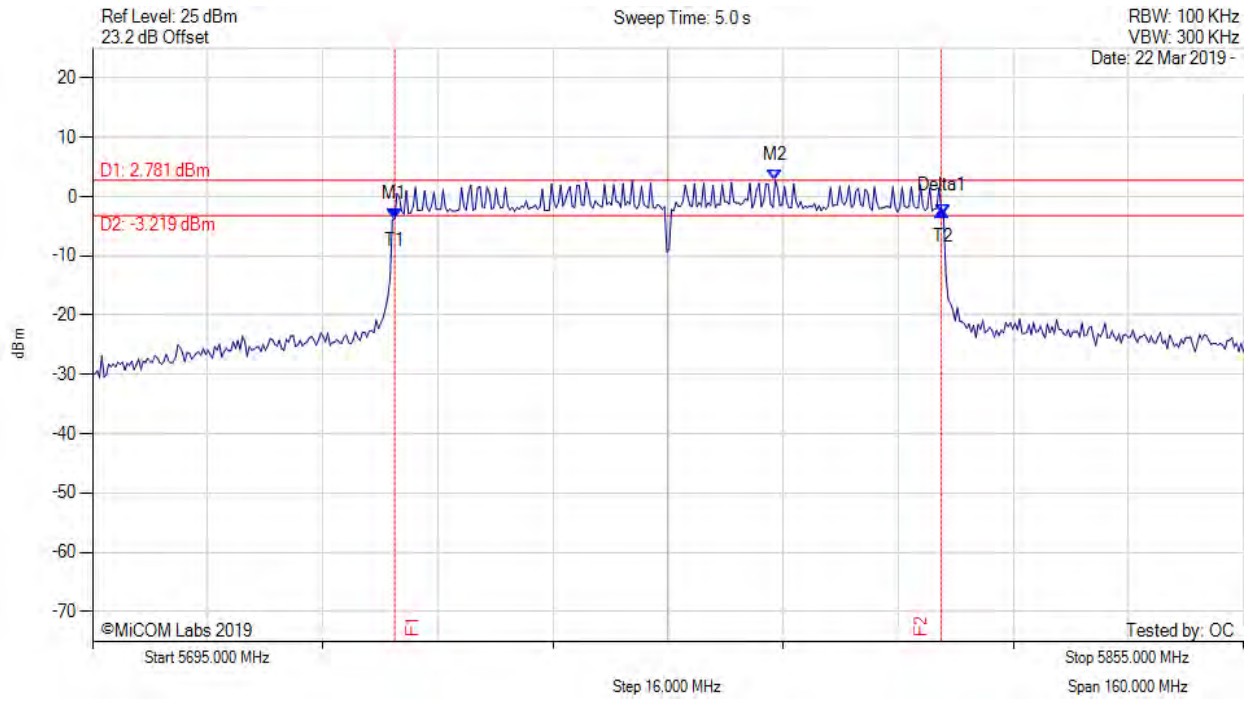



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5816.784 MHz : 4.296 dBm<br>M2 : 5830.010 MHz : 10.894 dBm<br>Delta1 : 16.273 MHz : 0.736 dB<br>T1 : 5816.784 MHz : 4.296 dBm<br>T2 : 5833.216 MHz : 4.750 dBm<br>OBW : 16.433 MHz | Measured 6 dB Bandwidth: 16.273 MHz<br>Measured 99% Bandwidth: 16.433 MHz |

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11ac-80, Channel: 5775.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

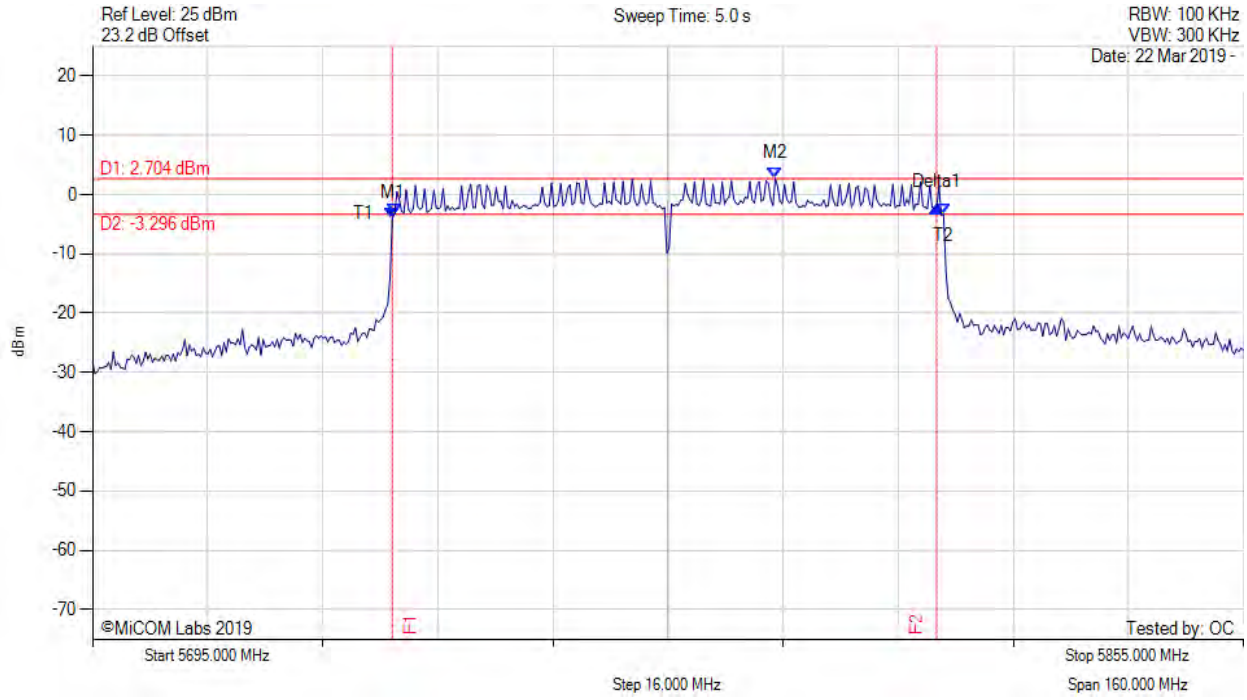



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5737.004 MHz : -3.759 dBm<br>M2 : 5789.910 MHz : 2.781 dBm<br>Delta1 : 75.992 MHz : 1.426 dB<br>T1 : 5737.004 MHz : -3.759 dBm<br>T2 : 5813.317 MHz : -3.119 dBm<br>OBW : 76.313 MHz | Measured 6 dB Bandwidth: 75.992 MHz<br>Measured 99% Bandwidth: 76.313 MHz |

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11ac-80, Channel: 5775.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

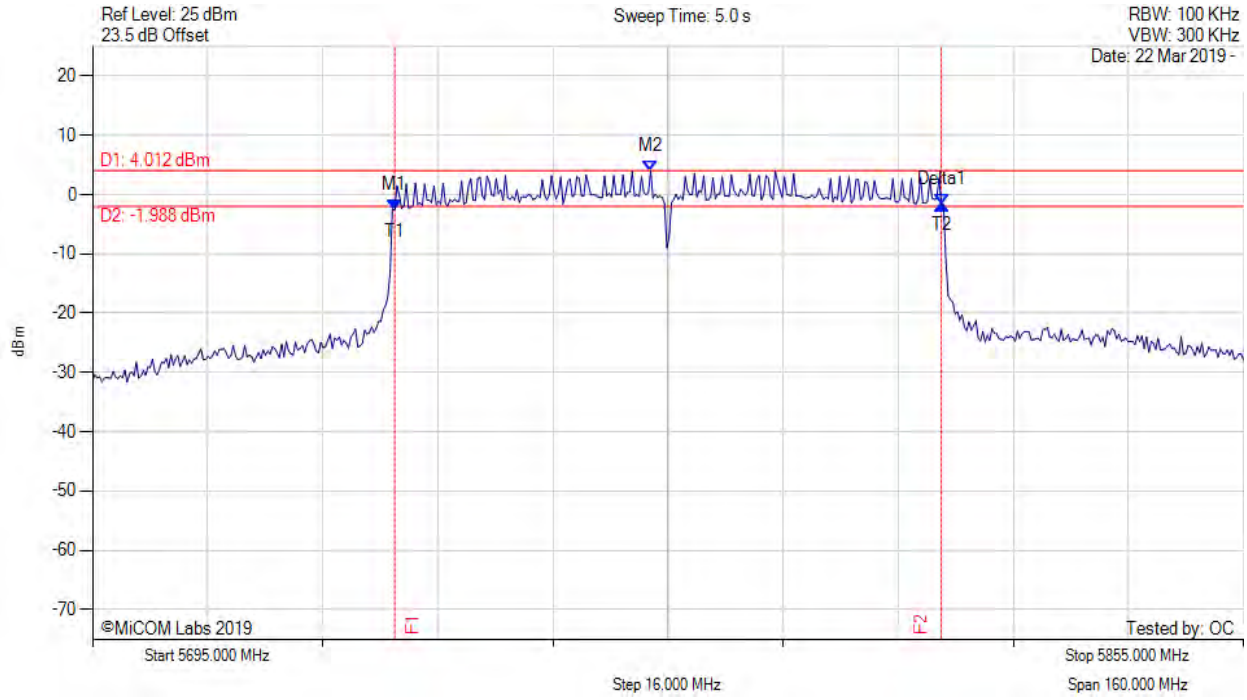



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5736.683 MHz : -3.985 dBm<br>M2 : 5789.910 MHz : 2.704 dBm<br>Delta1 : 75.671 MHz : 1.841 dB<br>T1 : 5737.004 MHz : -3.224 dBm<br>T2 : 5813.317 MHz : -3.371 dBm<br>OBW : 76.313 MHz | Channel Frequency: 5775.00 MHz |

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11ac-80, Channel: 5775.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

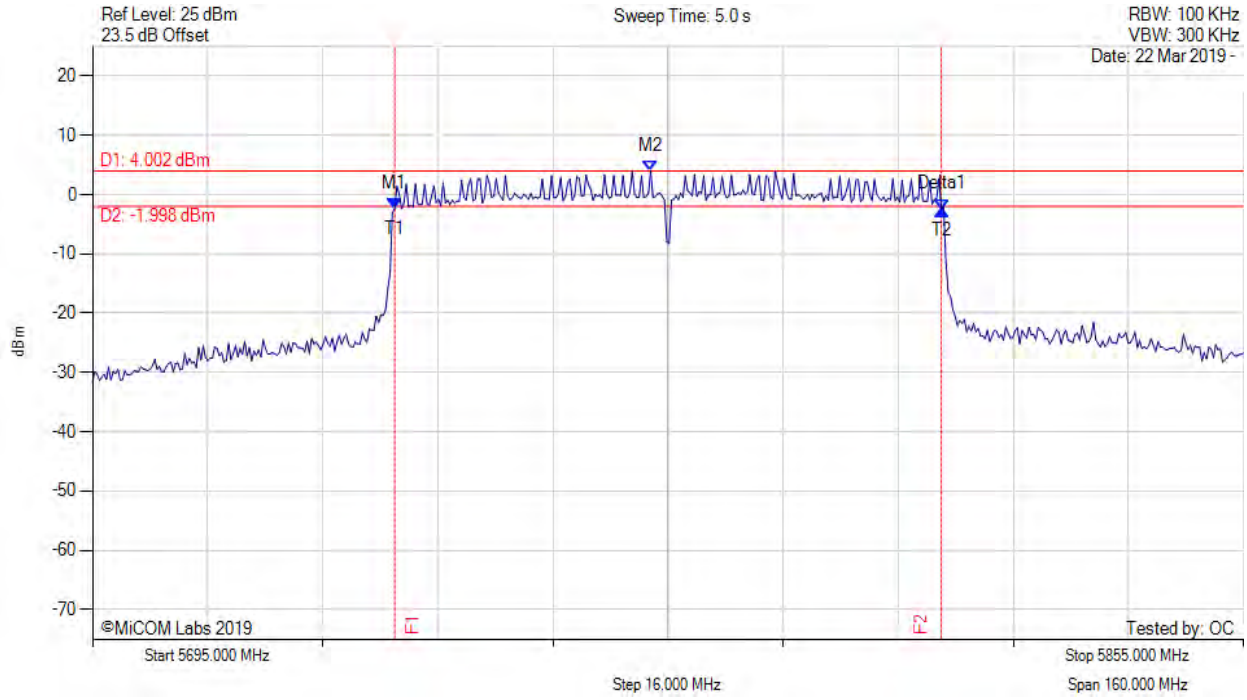



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5737.004 MHz : -2.606 dBm<br>M2 : 5772.595 MHz : 4.012 dBm<br>Delta1 : 75.992 MHz : 1.027 dB<br>T1 : 5737.004 MHz : -2.606 dBm<br>T2 : 5812.996 MHz : -1.579 dBm<br>OBW : 75.992 MHz | Measured 6 dB Bandwidth: 75.992 MHz<br>Measured 99% Bandwidth: 75.992 MHz |

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11ac-80, Channel: 5775.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

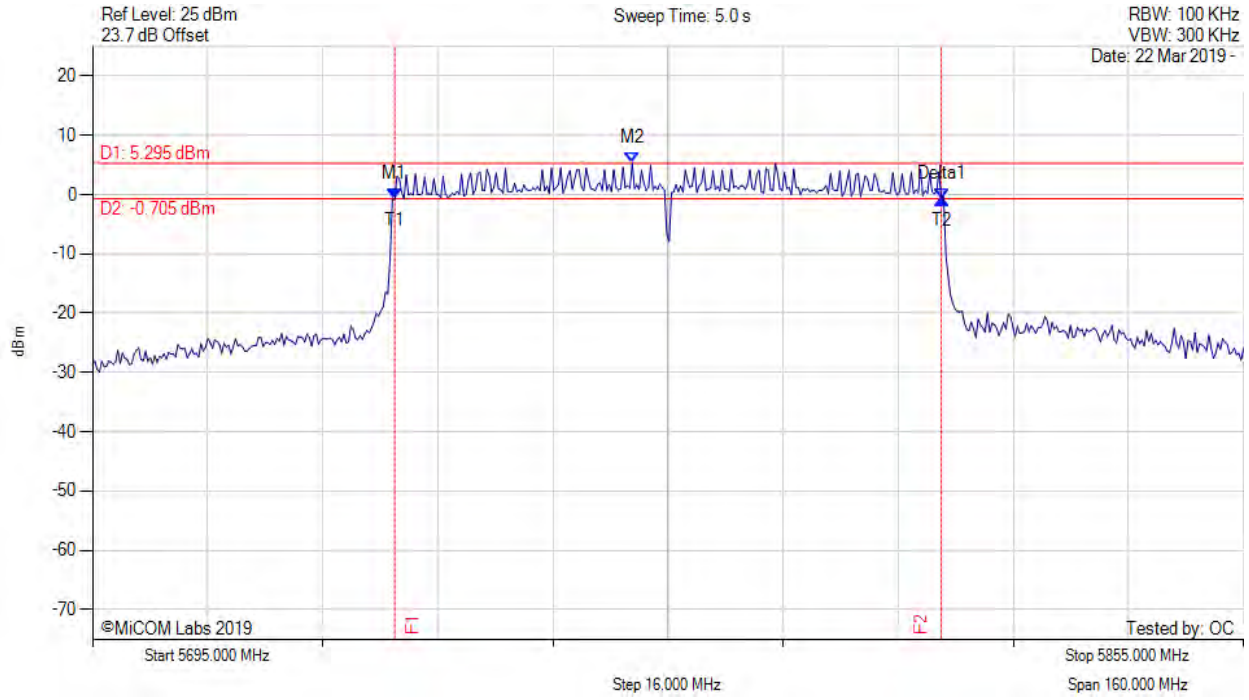



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5737.004 MHz : -2.287 dBm<br>M2 : 5772.595 MHz : 4.002 dBm<br>Delta1 : 75.992 MHz : -0.193 dB<br>T1 : 5737.004 MHz : -2.287 dBm<br>T2 : 5812.996 MHz : -2.480 dBm<br>OBW : 75.992 MHz | Channel Frequency: 5775.00 MHz |

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11ac-80, Channel: 5775.00 MHz, Chain c, Temp: 20, Voltage: 24 Vdc

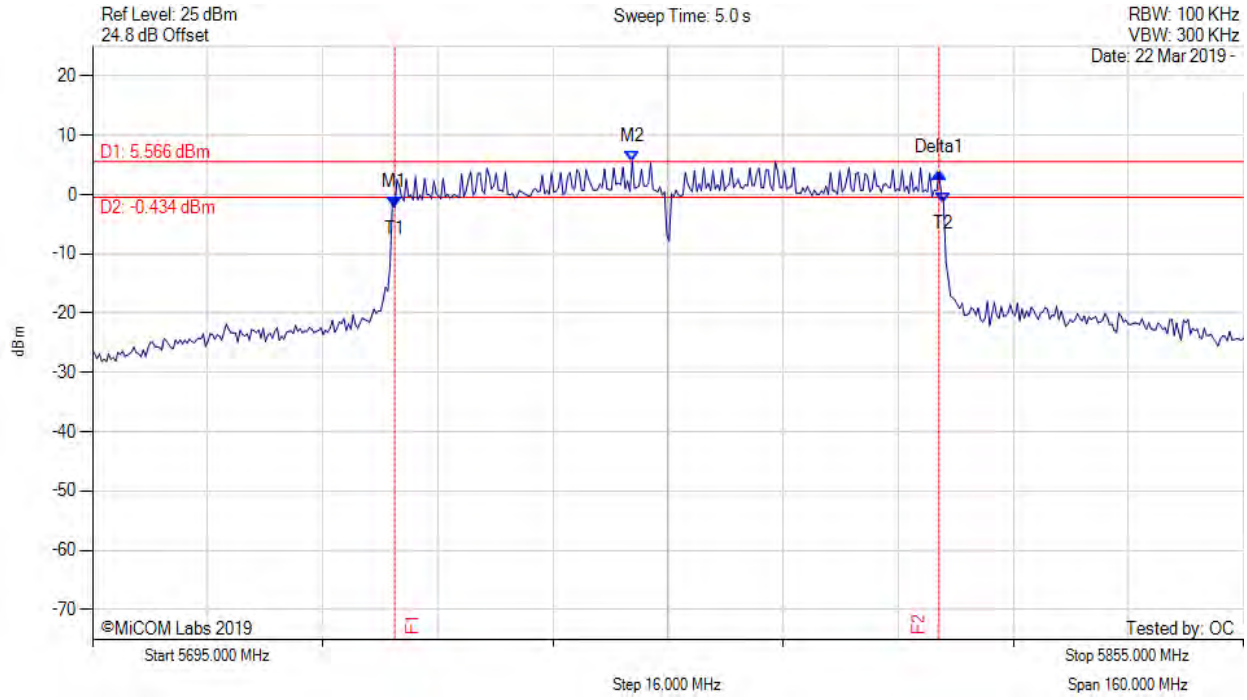



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5737.004 MHz : -0.818 dBm<br>M2 : 5770.030 MHz : 5.295 dBm<br>Delta1 : 75.992 MHz : 0.087 dB<br>T1 : 5737.004 MHz : -0.818 dBm<br>T2 : 5812.996 MHz : -0.731 dBm<br>OBW : 75.992 MHz | Measured 6 dB Bandwidth: 75.992 MHz<br>Measured 99% Bandwidth: 75.992 MHz |

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11ac-80, Channel: 5775.00 MHz, Chain d, Temp: 20, Voltage: 24 Vdc

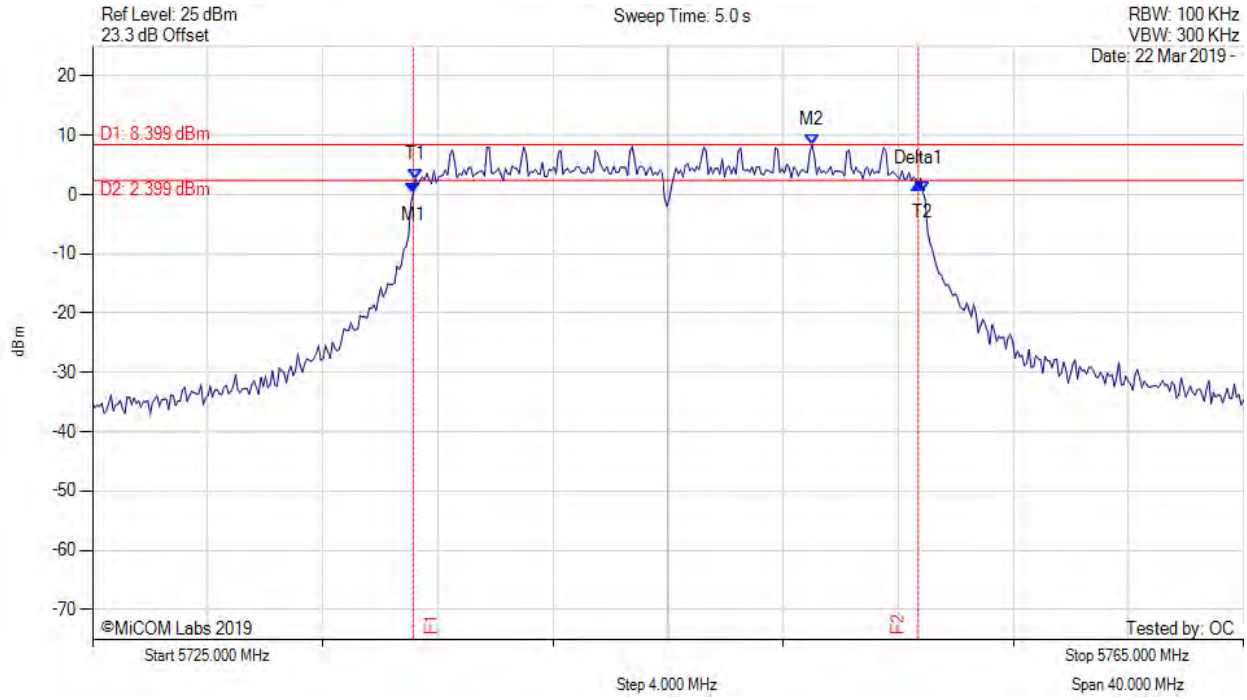



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5737.004 MHz : -2.207 dBm<br>M2 : 5770.030 MHz : 5.566 dBm<br>Delta1 : 75.671 MHz : 5.924 dB<br>T1 : 5737.004 MHz : -2.207 dBm<br>T2 : 5813.317 MHz : -1.345 dBm<br>OBW : 76.313 MHz | Measured 6 dB Bandwidth: 75.671 MHz<br>Measured 99% Bandwidth: 76.313 MHz |

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5745.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

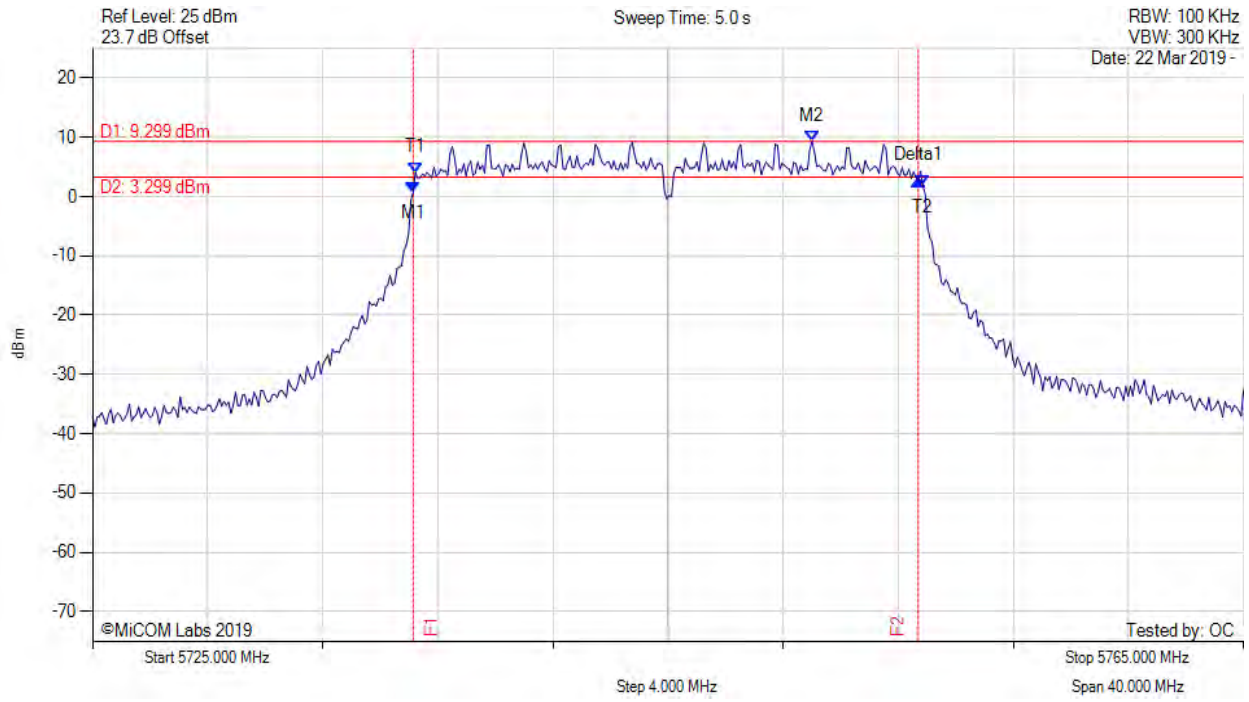



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5736.142 MHz : 0.115 dBm<br>M2 : 5750.010 MHz : 8.399 dBm<br>Delta1 : 17.555 MHz : 1.696 dB<br>T1 : 5736.222 MHz : 2.610 dBm<br>T2 : 5753.858 MHz : 0.542 dBm<br>OBW : 17.635 MHz | Measured 6 dB Bandwidth: 17.555 MHz<br>Measured 99% Bandwidth: 17.635 MHz |

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5745.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5736.142 MHz : 0.782 dBm<br>M2 : 5750.010 MHz : 9.299 dBm<br>Delta1 : 17.555 MHz : 1.944 dB<br>T1 : 5736.222 MHz : 4.048 dBm<br>T2 : 5753.858 MHz : 1.801 dBm<br>OBW : 17.635 MHz | Measured 6 dB Bandwidth: 17.555 MHz<br>Measured 99% Bandwidth: 17.635 MHz |

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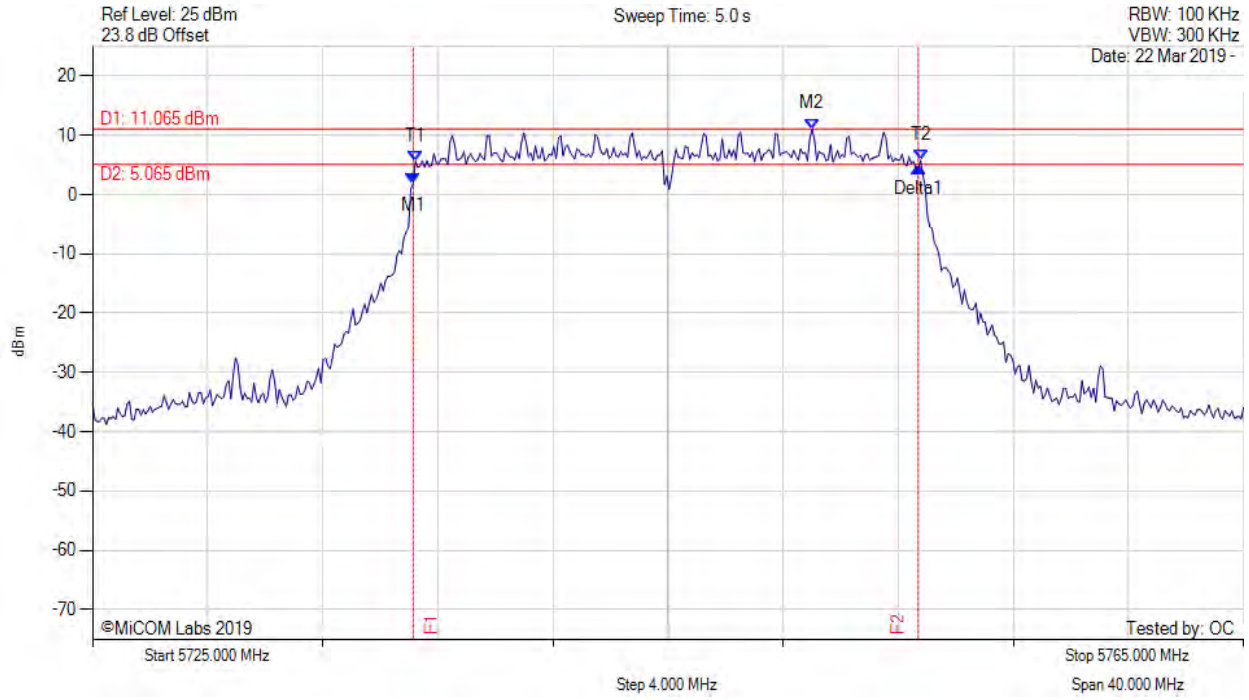
## 6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5745.00 MHz, Chain c, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5736.142 MHz : 1.769 dBm<br>M2 : 5750.010 MHz : 11.065 dBm<br>Delta1 : 17.555 MHz : 2.845 dB<br>T1 : 5736.222 MHz : 5.586 dBm<br>T2 : 5753.778 MHz : 5.738 dBm<br>OBW : 17.555 MHz | Measured 6 dB Bandwidth: 17.555 MHz<br>Measured 99% Bandwidth: 17.555 MHz |

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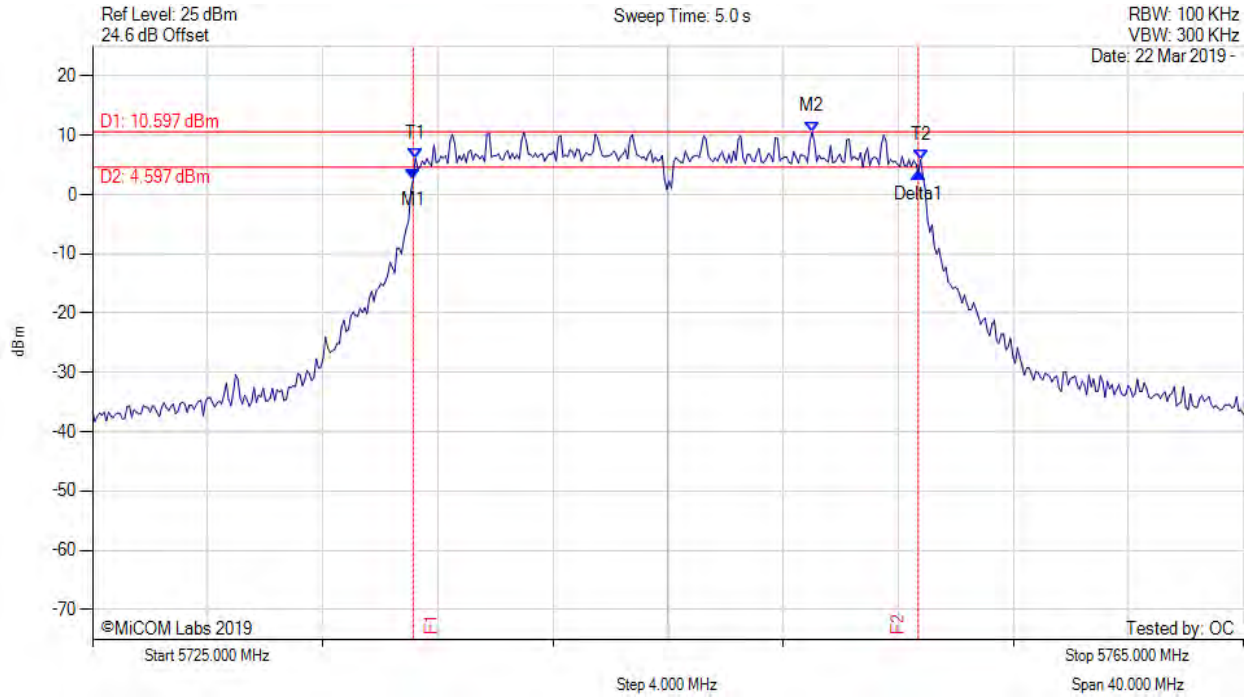
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5745.00 MHz, Chain d, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5736.142 MHz : 2.633 dBm<br>M2 : 5750.010 MHz : 10.597 dBm<br>Delta1 : 17.555 MHz : 1.102 dB<br>T1 : 5736.222 MHz : 6.141 dBm<br>T2 : 5753.778 MHz : 5.905 dBm<br>OBW : 17.555 MHz | Measured 6 dB Bandwidth: 17.555 MHz<br>Measured 99% Bandwidth: 17.555 MHz |

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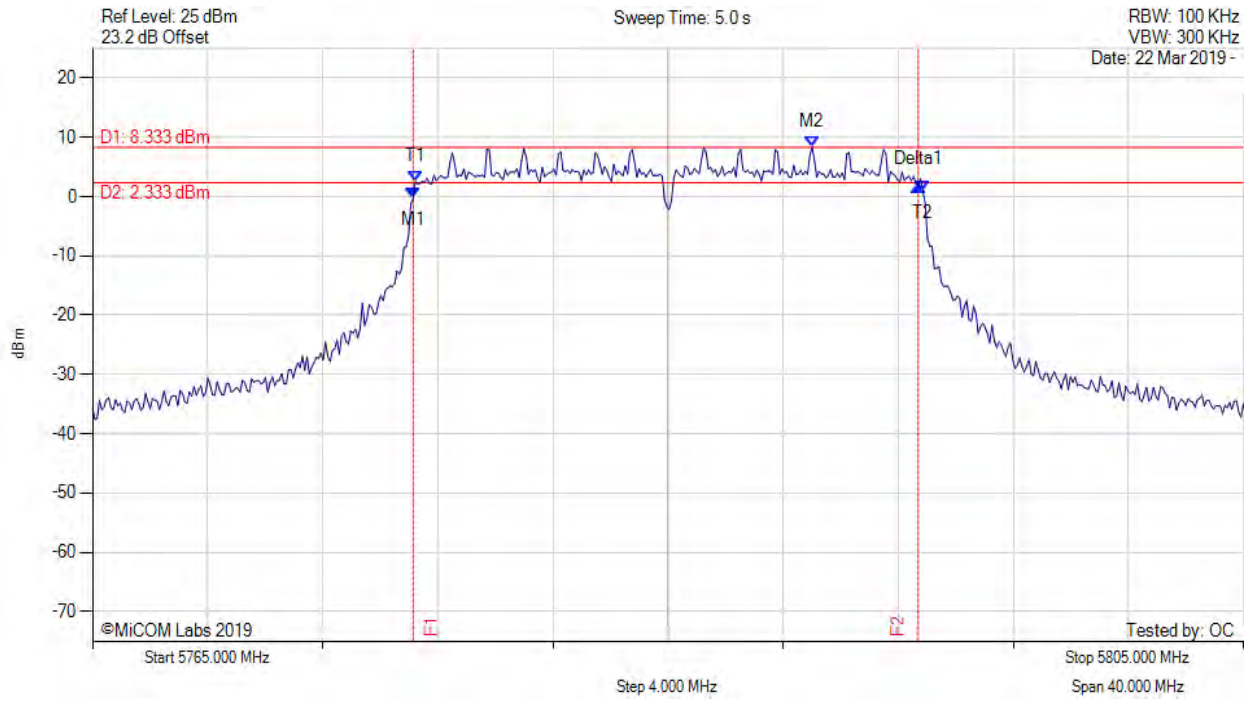
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5785.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5776.142 MHz : -0.312 dBm<br>M2 : 5790.010 MHz : 8.333 dBm<br>Delta1 : 17.555 MHz : 2.249 dB<br>T1 : 5776.222 MHz : 2.523 dBm<br>T2 : 5793.858 MHz : 0.882 dBm<br>OBW : 17.635 MHz | Measured 6 dB Bandwidth: 17.555 MHz<br>Measured 99% Bandwidth: 17.635 MHz |

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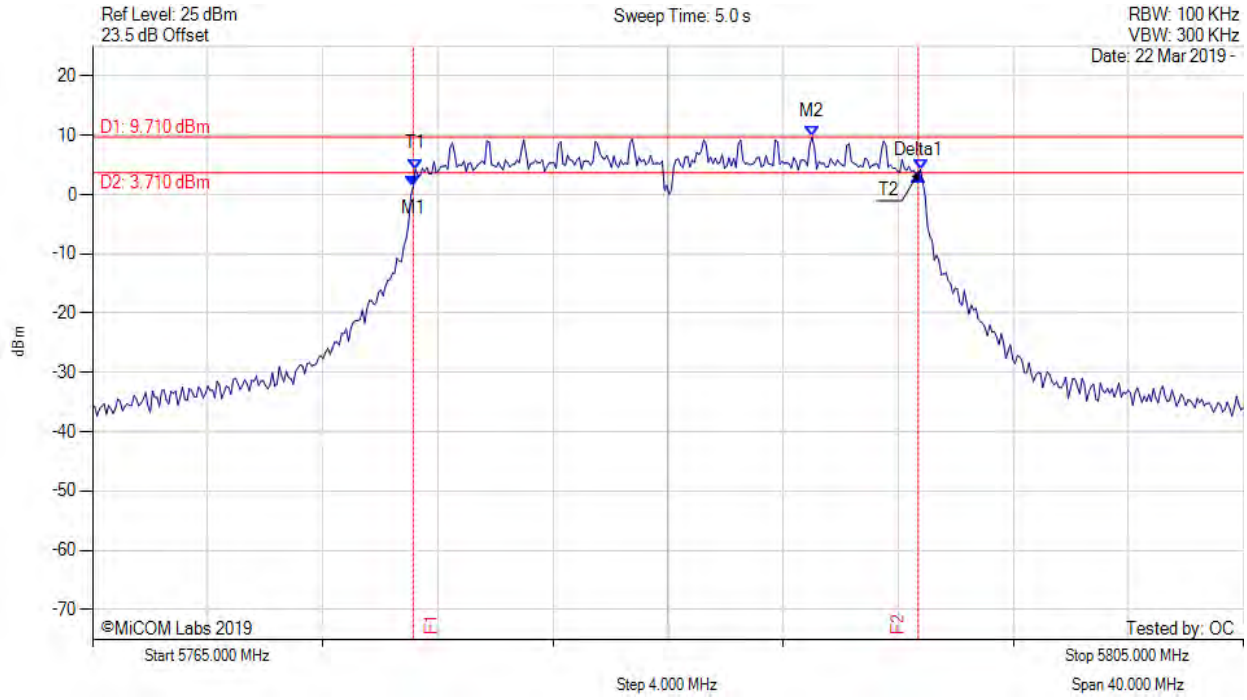
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5785.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5776.142 MHz : 1.309 dBm<br>M2 : 5790.010 MHz : 9.710 dBm<br>Delta1 : 17.555 MHz : 1.991 dB<br>T1 : 5776.222 MHz : 4.294 dBm<br>T2 : 5793.778 MHz : 4.240 dBm<br>OBW : 17.555 MHz | Measured 6 dB Bandwidth: 17.555 MHz<br>Measured 99% Bandwidth: 17.555 MHz |

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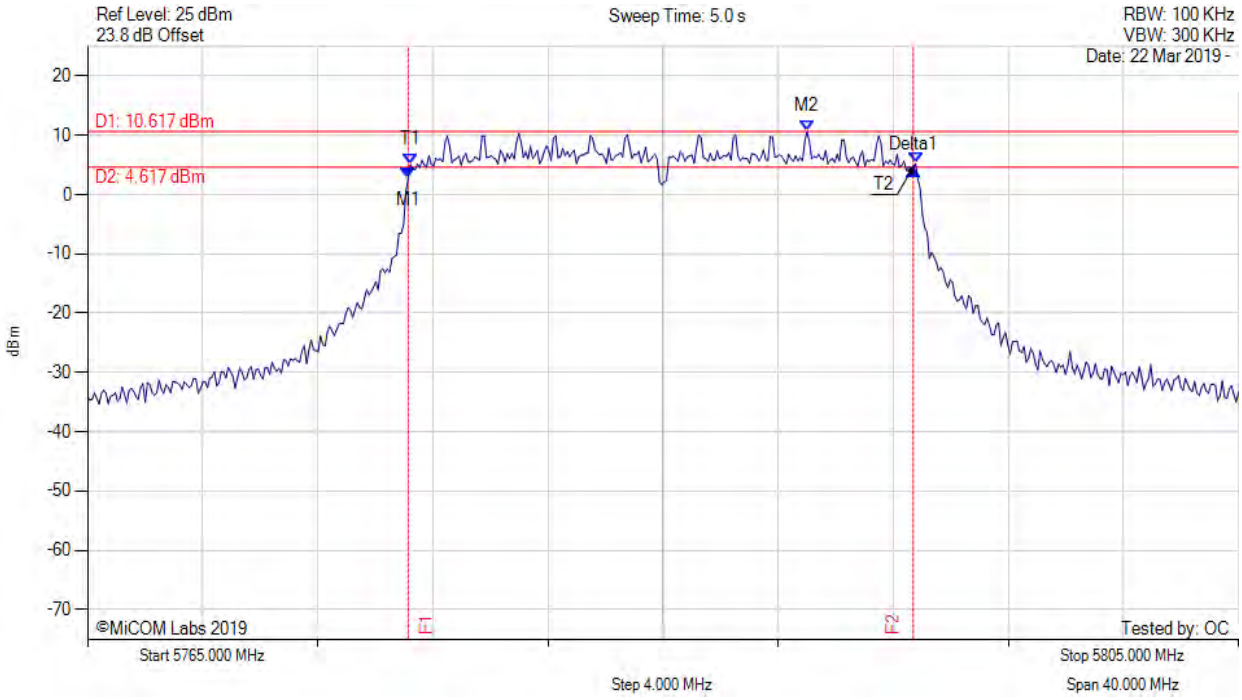
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5785.00 MHz, Chain c, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5776.142 MHz : 2.730 dBm<br>M2 : 5790.010 MHz : 10.617 dBm<br>Delta1 : 17.555 MHz : 1.487 dB<br>T1 : 5776.222 MHz : 5.051 dBm<br>T2 : 5793.778 MHz : 5.250 dBm<br>OBW : 17.555 MHz | Measured 6 dB Bandwidth: 17.555 MHz<br>Measured 99% Bandwidth: 17.555 MHz |

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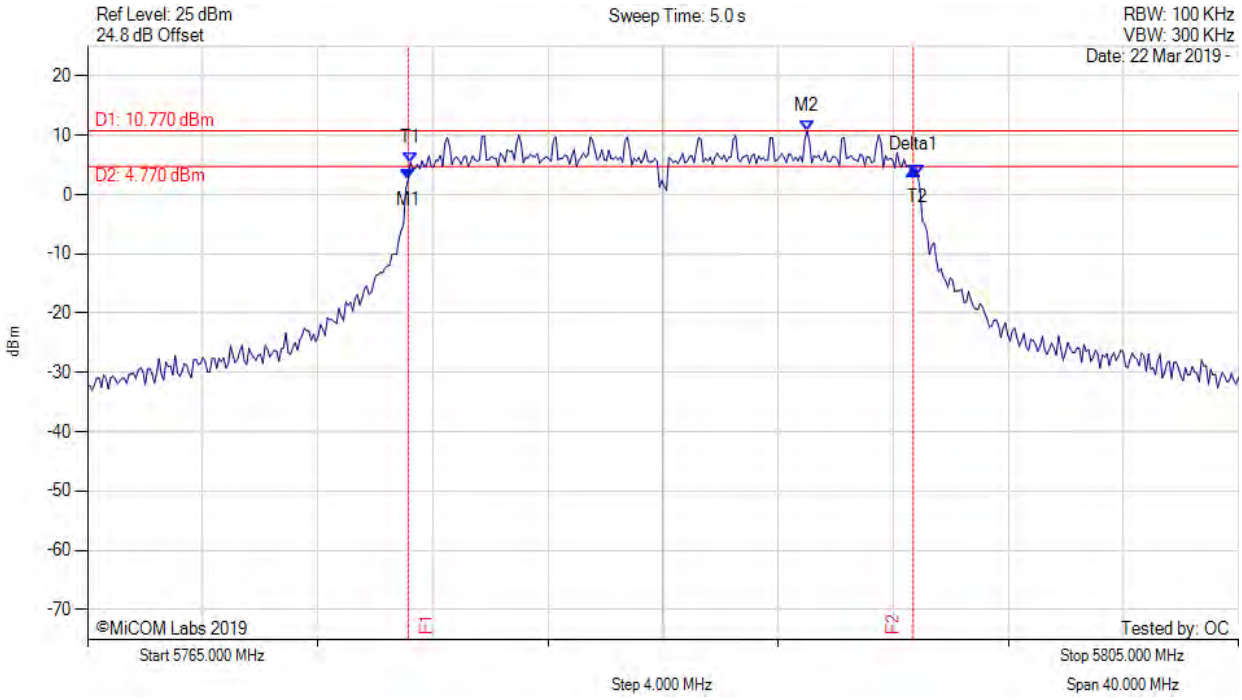
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5785.00 MHz, Chain d, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5776.142 MHz : 2.592 dBm<br>M2 : 5790.010 MHz : 10.770 dBm<br>Delta1 : 17.555 MHz : 1.668 dB<br>T1 : 5776.222 MHz : 5.433 dBm<br>T2 : 5793.858 MHz : 3.172 dBm<br>OBW : 17.635 MHz | Measured 6 dB Bandwidth: 17.555 MHz<br>Measured 99% Bandwidth: 17.635 MHz |

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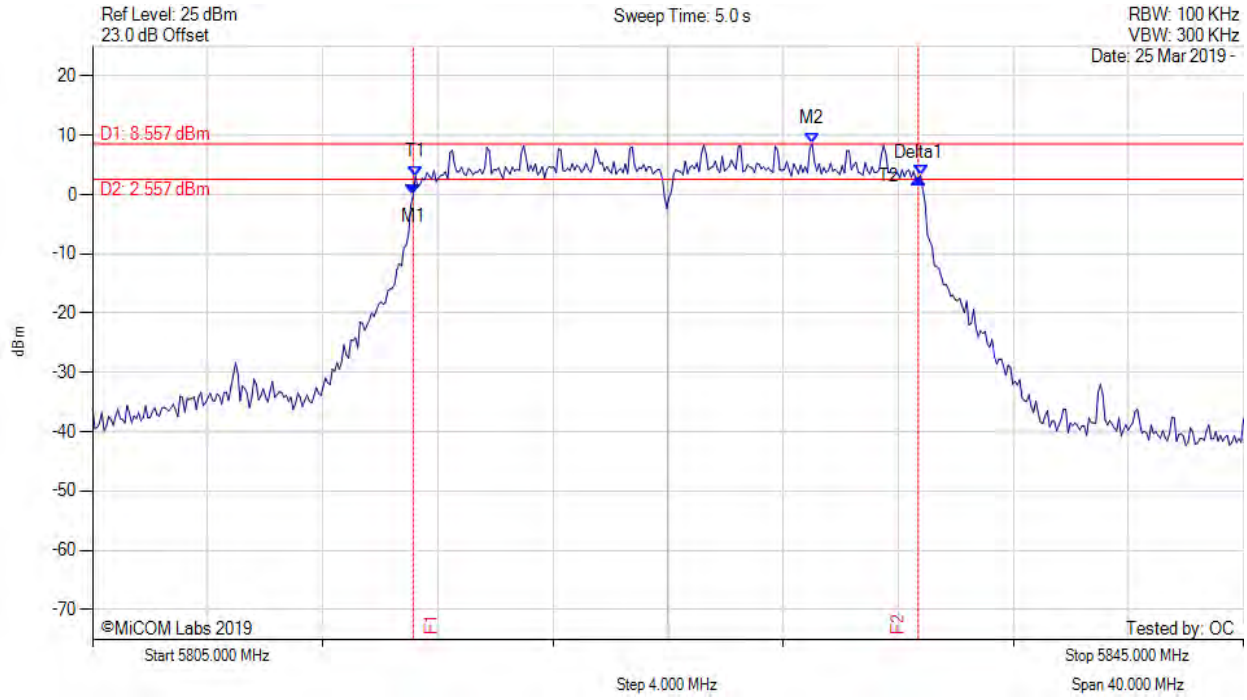
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5825.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5816.142 MHz : -0.096 dBm<br>M2 : 5830.010 MHz : 8.557 dBm<br>Delta1 : 17.555 MHz : 2.815 dB<br>T1 : 5816.222 MHz : 3.084 dBm<br>T2 : 5833.778 MHz : 3.265 dBm<br>OBW : 17.555 MHz | Measured 6 dB Bandwidth: 17.555 MHz<br>Measured 99% Bandwidth: 17.555 MHz |

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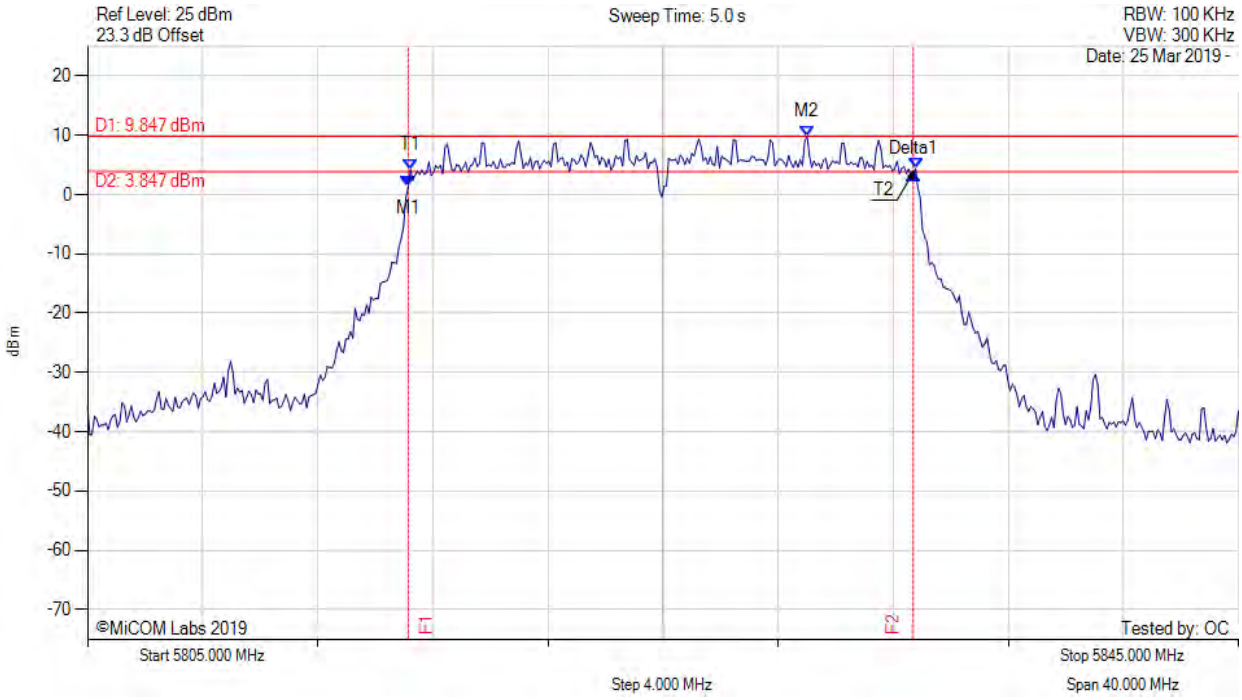
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5825.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5816.142 MHz : 1.297 dBm<br>M2 : 5830.010 MHz : 9.847 dBm<br>Delta1 : 17.555 MHz : 2.121 dB<br>T1 : 5816.222 MHz : 4.176 dBm<br>T2 : 5833.778 MHz : 4.347 dBm<br>OBW : 17.555 MHz | Measured 6 dB Bandwidth: 17.555 MHz<br>Measured 99% Bandwidth: 17.555 MHz |

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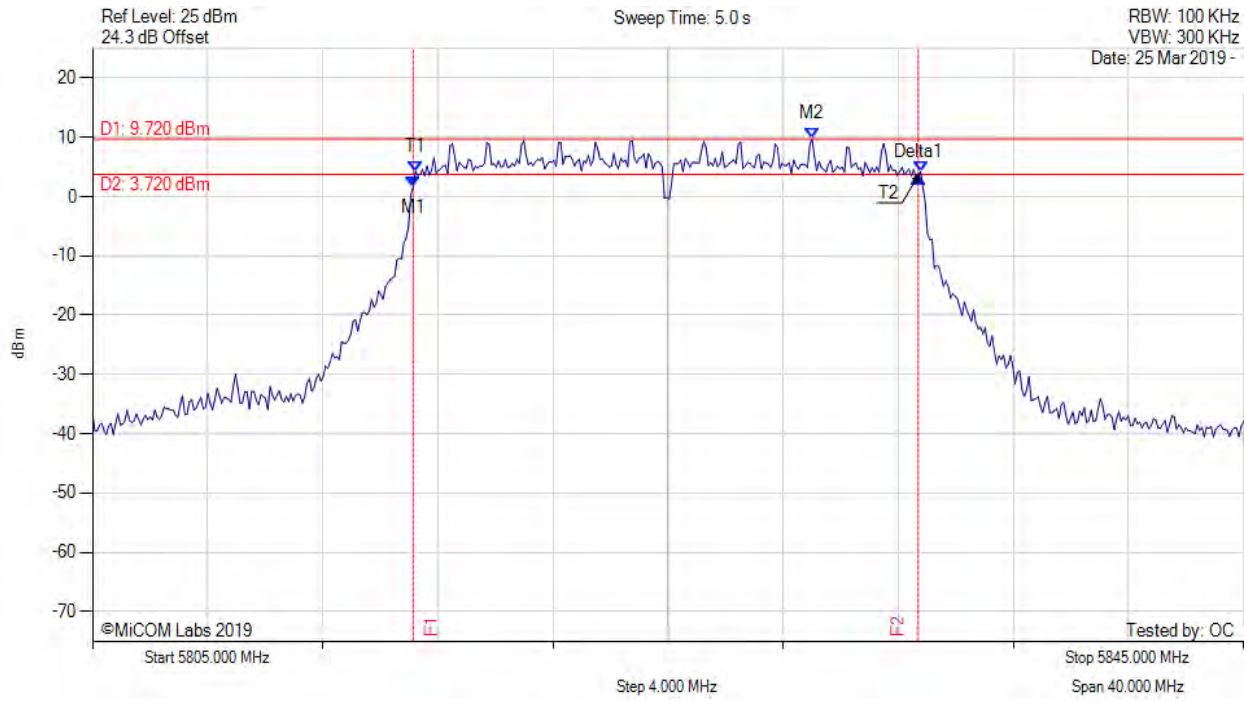
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5825.00 MHz, Chain c, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5816.142 MHz : 1.699 dBm<br>M2 : 5830.010 MHz : 9.720 dBm<br>Delta1 : 17.555 MHz : 1.635 dB<br>T1 : 5816.222 MHz : 4.264 dBm<br>T2 : 5833.778 MHz : 4.201 dBm<br>OBW : 17.555 MHz | Measured 6 dB Bandwidth: 17.555 MHz<br>Measured 99% Bandwidth: 17.555 MHz |

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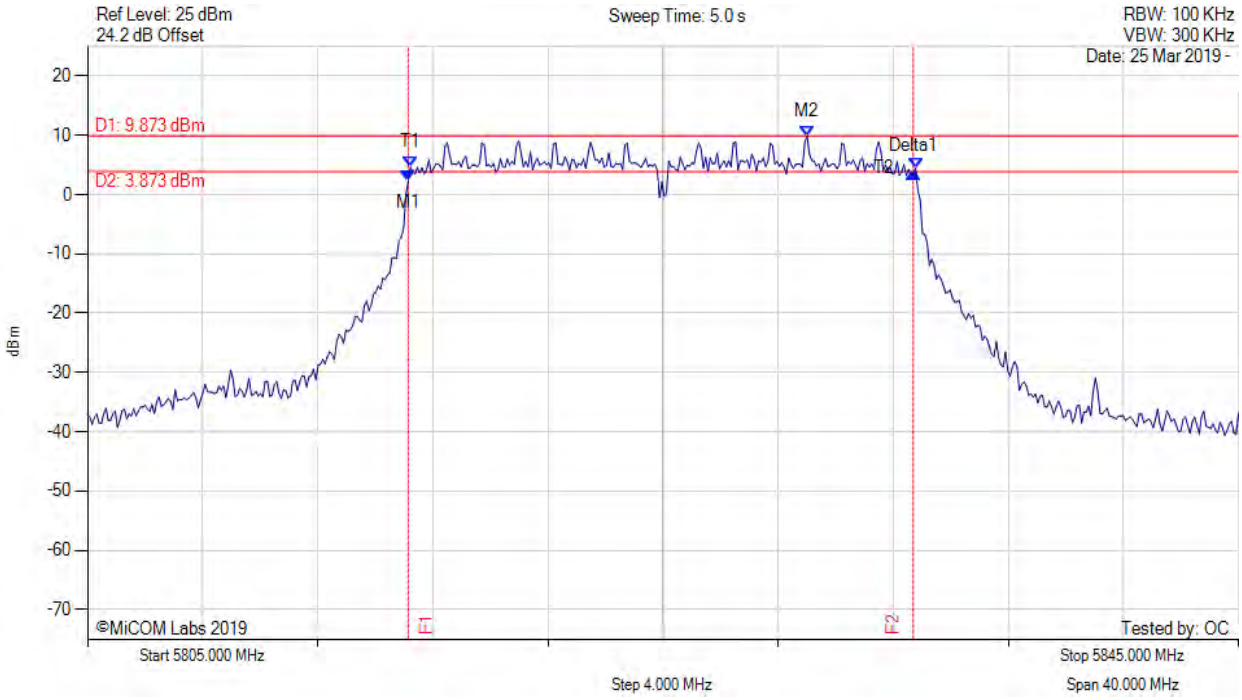
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5825.00 MHz, Chain d, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5816.142 MHz : 2.200 dBm<br>M2 : 5830.010 MHz : 9.873 dBm<br>Delta1 : 17.555 MHz : 1.621 dB<br>T1 : 5816.222 MHz : 4.636 dBm<br>T2 : 5833.778 MHz : 4.467 dBm<br>OBW : 17.555 MHz | Measured 6 dB Bandwidth: 17.555 MHz<br>Measured 99% Bandwidth: 17.555 MHz |

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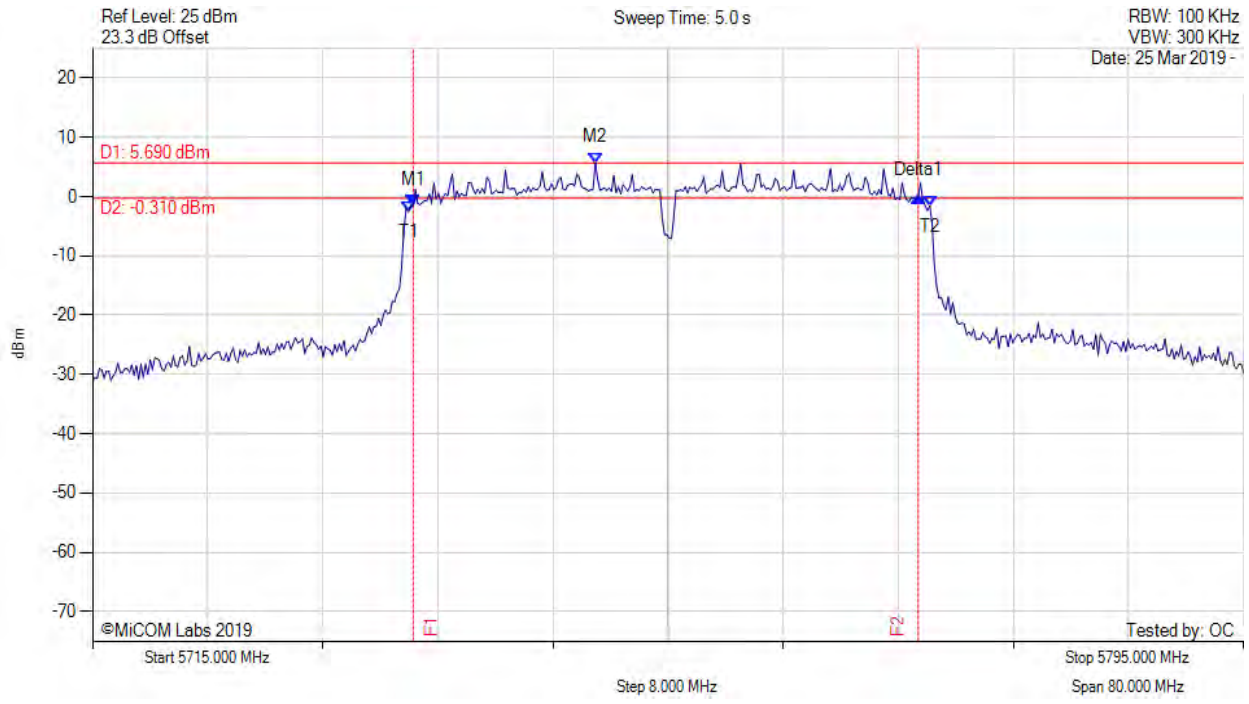
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5755.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

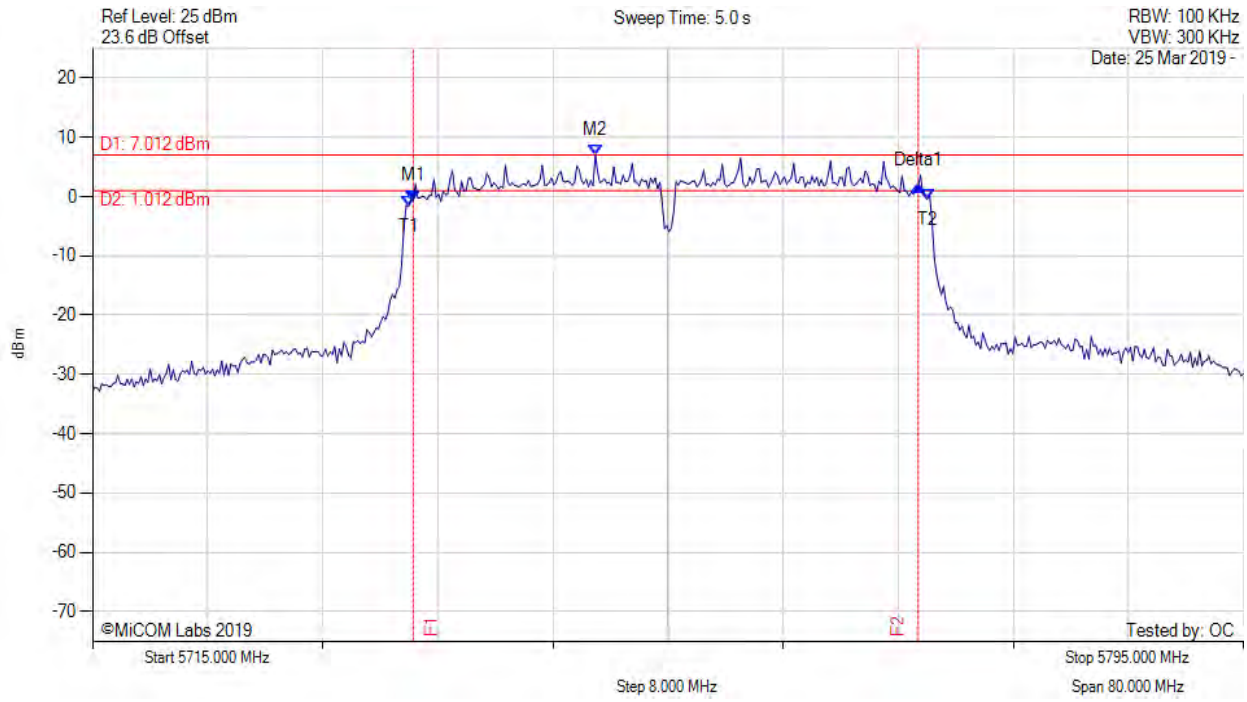



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5737.285 MHz : -1.483 dBm<br>M2 : 5749.950 MHz : 5.690 dBm<br>Delta1 : 35.110 MHz : 1.566 dB<br>T1 : 5736.964 MHz : -2.484 dBm<br>T2 : 5773.196 MHz : -1.565 dBm<br>OBW : 36.232 MHz | Measured 6 dB Bandwidth: 35.110 MHz<br>Measured 99% Bandwidth: 36.232 MHz |

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5755.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5737.285 MHz : -0.713 dBm<br>M2 : 5749.950 MHz : 7.012 dBm<br>Delta1 : 35.110 MHz : 2.573 dB<br>T1 : 5736.964 MHz : -1.605 dBm<br>T2 : 5773.036 MHz : -0.426 dBm<br>OBW : 36.072 MHz | Measured 6 dB Bandwidth: 35.110 MHz<br>Measured 99% Bandwidth: 36.072 MHz |

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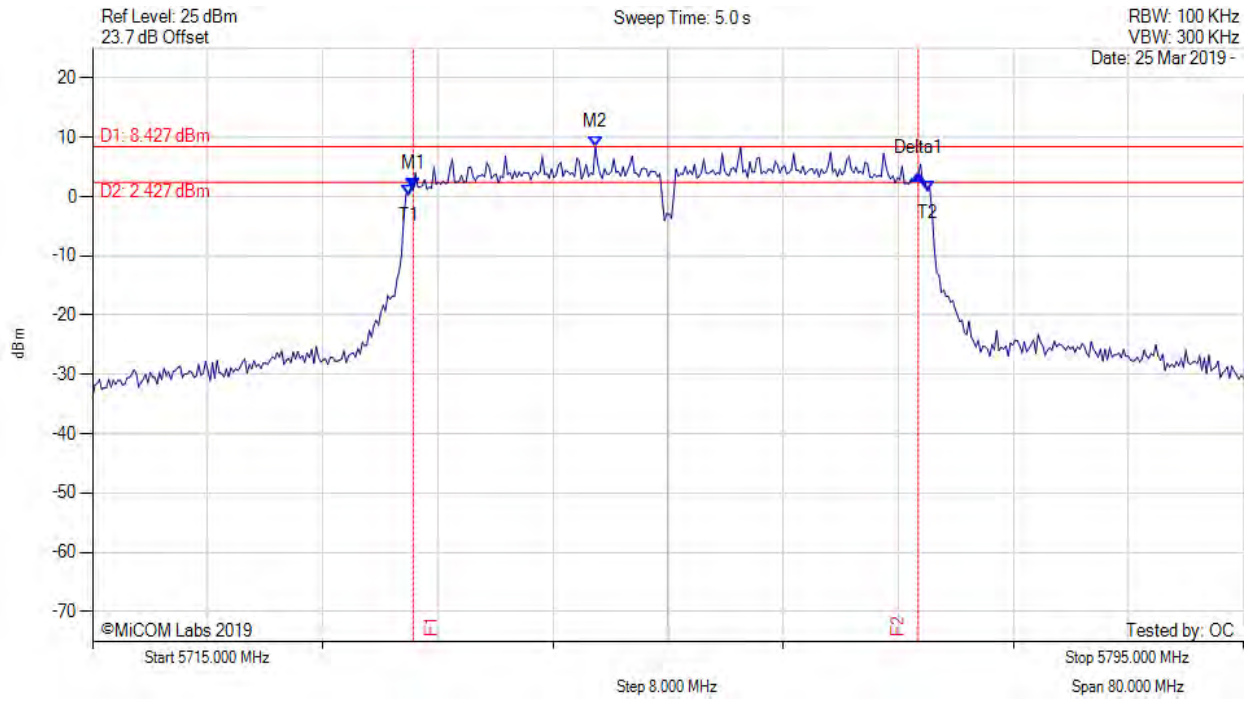
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5755.00 MHz, Chain c, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5737.285 MHz : 1.272 dBm<br>M2 : 5749.950 MHz : 8.427 dBm<br>Delta1 : 35.110 MHz : 2.558 dB<br>T1 : 5736.964 MHz : 0.280 dBm<br>T2 : 5773.036 MHz : 0.925 dBm<br>OBW : 36.072 MHz | Measured 6 dB Bandwidth: 35.110 MHz<br>Measured 99% Bandwidth: 36.072 MHz |

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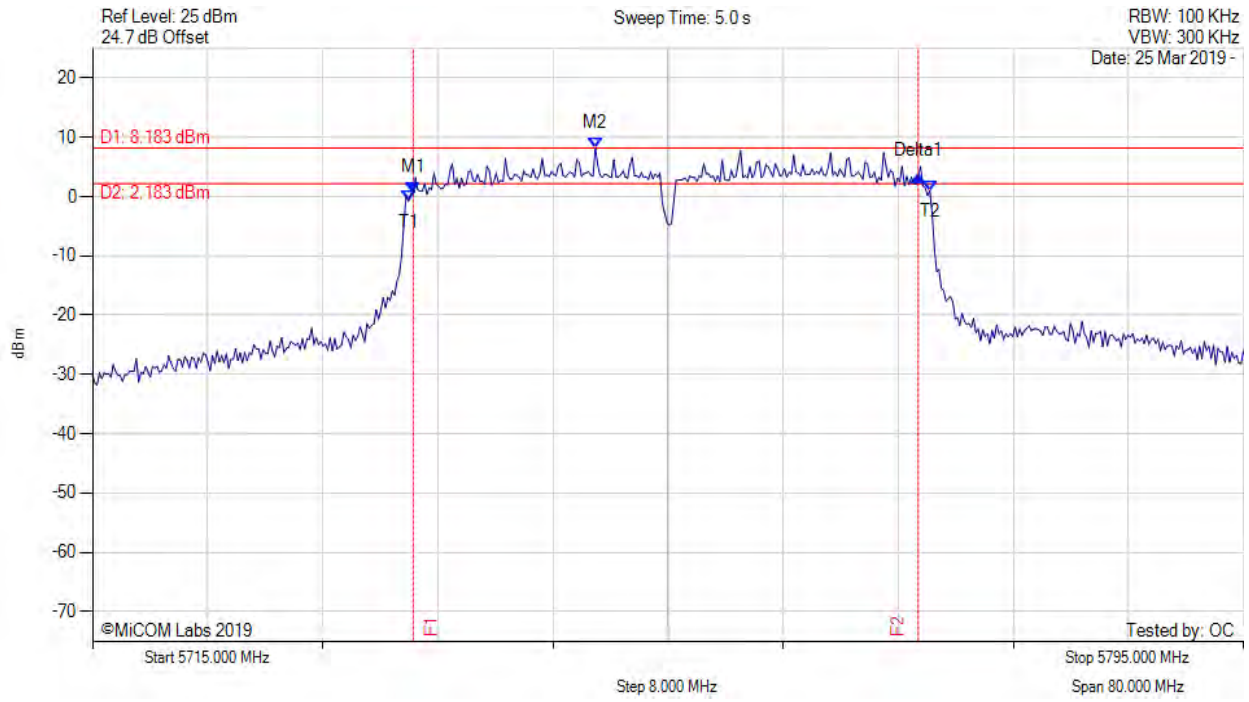
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5755.00 MHz, Chain d, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5737.285 MHz : 0.585 dBm<br>M2 : 5749.950 MHz : 8.183 dBm<br>Delta1 : 35.110 MHz : 2.910 dB<br>T1 : 5736.964 MHz : -0.778 dBm<br>T2 : 5773.196 MHz : 0.998 dBm<br>OBW : 36.232 MHz | Measured 6 dB Bandwidth: 35.110 MHz<br>Measured 99% Bandwidth: 36.232 MHz |

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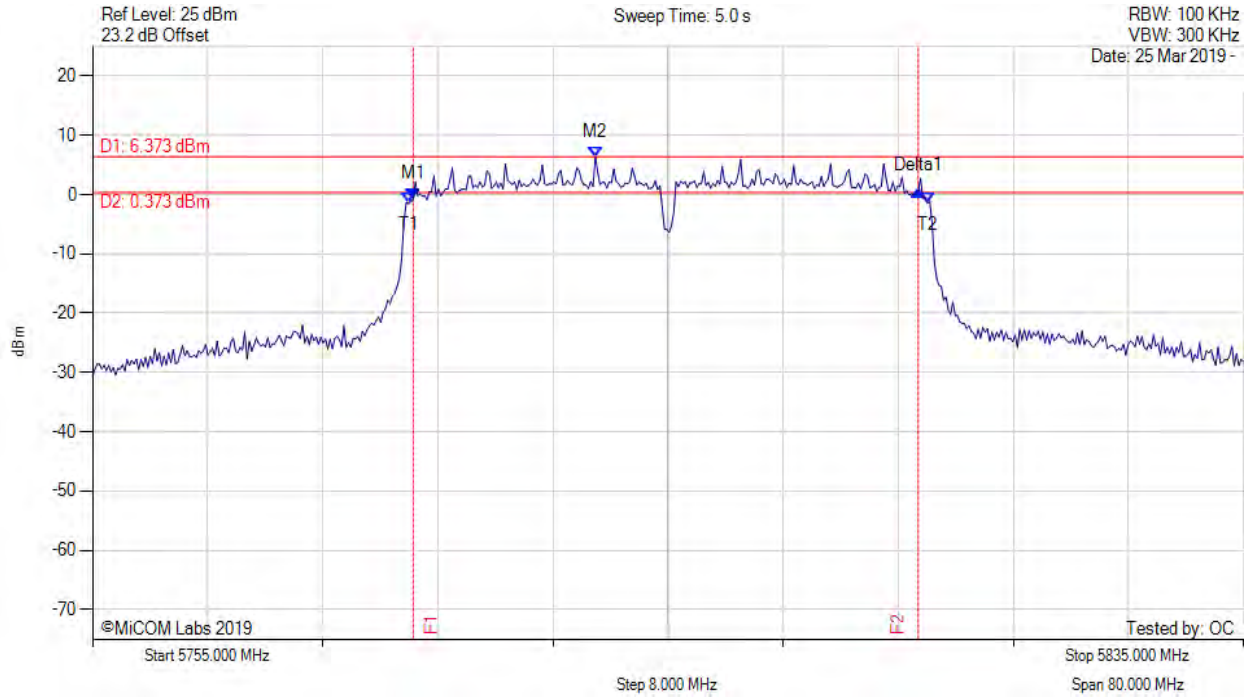
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5795.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5777.285 MHz : -0.812 dBm<br>M2 : 5789.950 MHz : 6.373 dBm<br>Delta1 : 35.110 MHz : 1.401 dB<br>T1 : 5776.964 MHz : -1.530 dBm<br>T2 : 5813.036 MHz : -1.477 dBm<br>OBW : 36.072 MHz | Measured 6 dB Bandwidth: 35.110 MHz<br>Measured 99% Bandwidth: 36.072 MHz |

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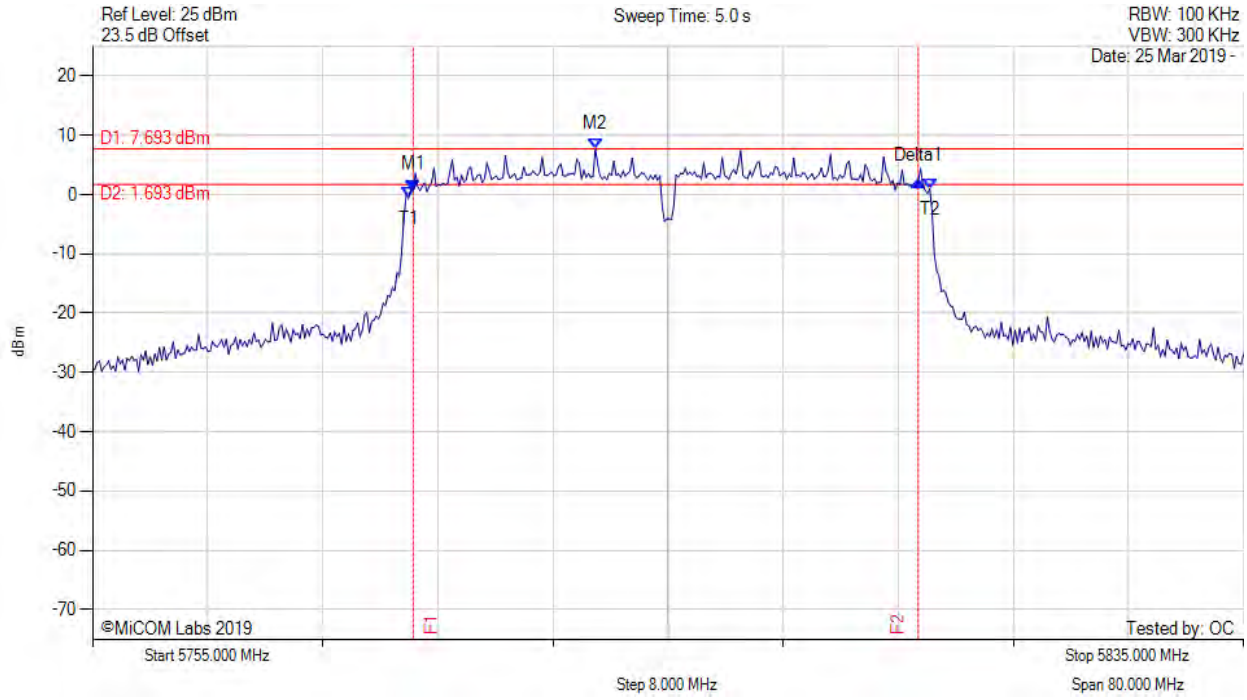
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5795.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5777.285 MHz : 0.774 dBm<br>M2 : 5789.950 MHz : 7.693 dBm<br>Delta1 : 35.110 MHz : 1.566 dB<br>T1 : 5776.964 MHz : -0.601 dBm<br>T2 : 5813.196 MHz : 0.975 dBm<br>OBW : 36.232 MHz | Measured 6 dB Bandwidth: 35.110 MHz<br>Measured 99% Bandwidth: 36.232 MHz |

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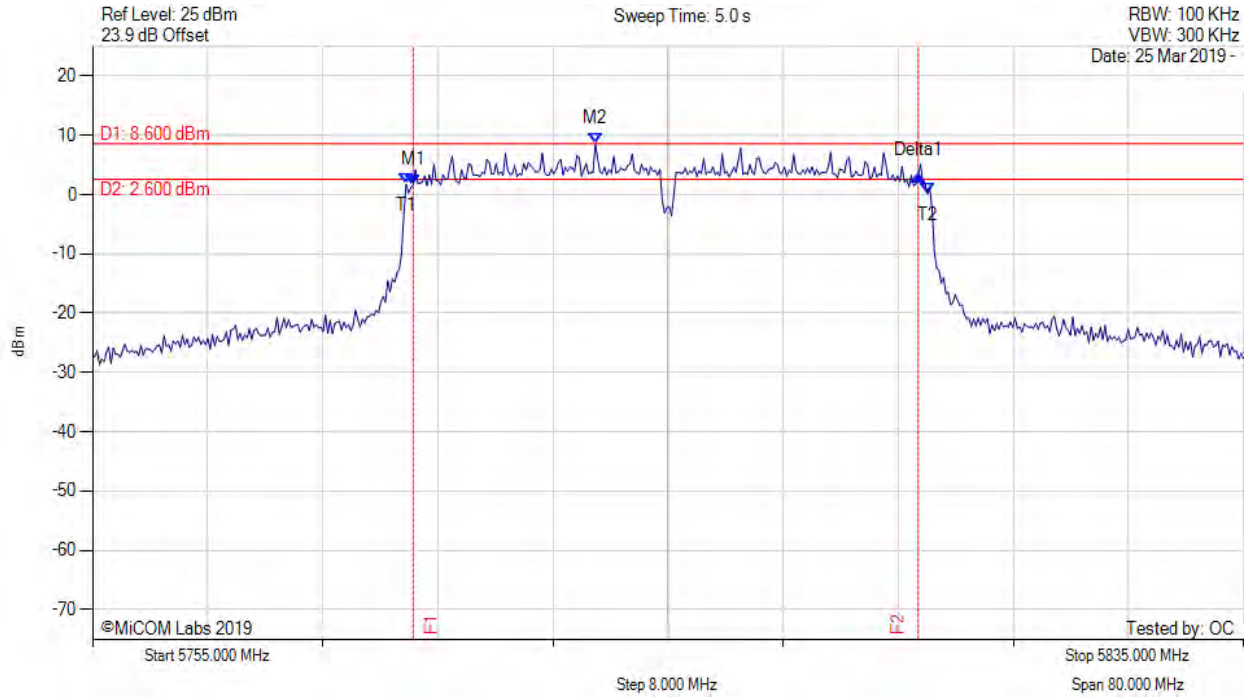
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5795.00 MHz, Chain c, Temp: 20, Voltage: 24 Vdc




| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5777.285 MHz : 1.600 dBm<br>M2 : 5789.950 MHz : 8.600 dBm<br>Delta1 : 35.110 MHz : 1.700 dB<br>T1 : 5776.804 MHz : 1.732 dBm<br>T2 : 5813.036 MHz : 0.119 dBm<br>OBW : 36.232 MHz | Measured 6 dB Bandwidth: 35.110 MHz<br>Measured 99% Bandwidth: 36.232 MHz |

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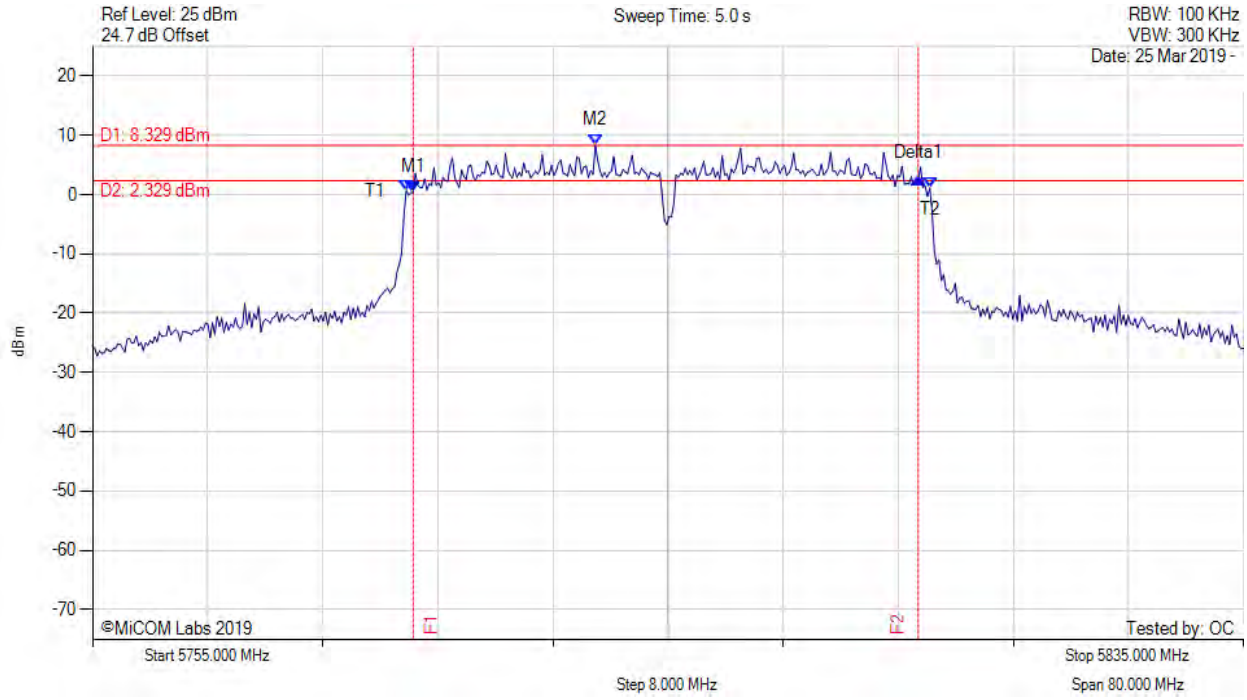
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5795.00 MHz, Chain d, Temp: 20, Voltage: 24 Vdc



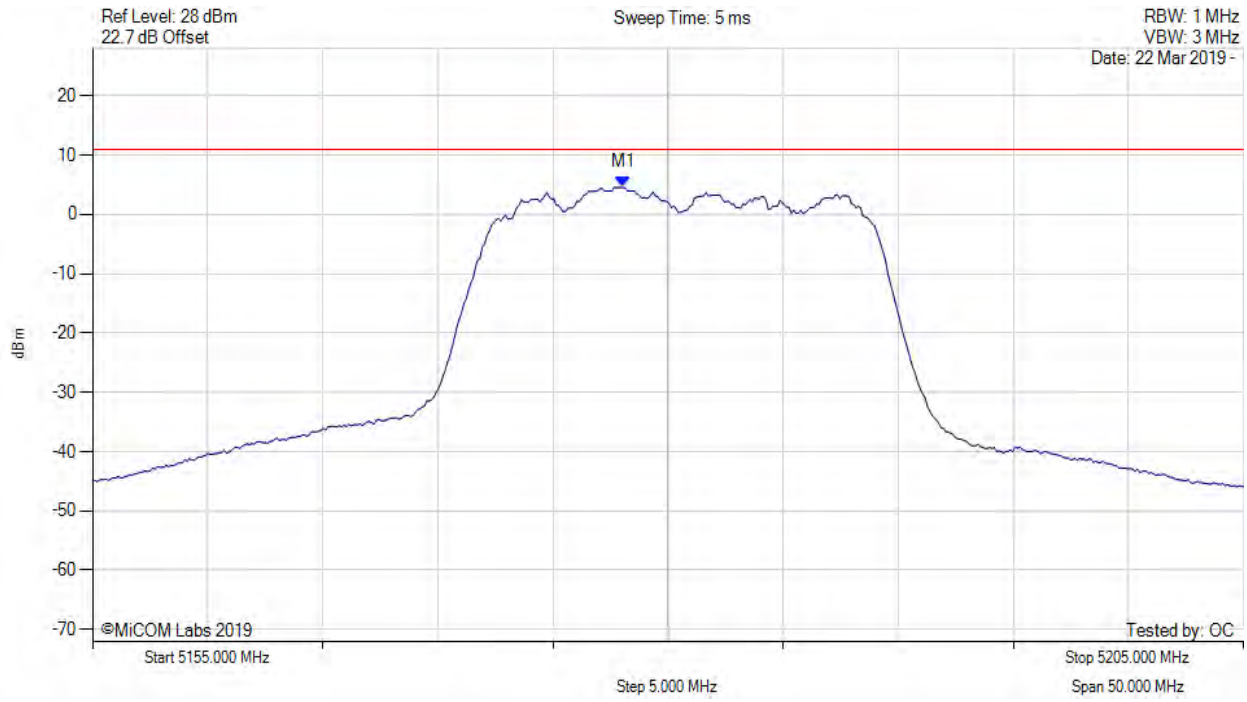

| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = MAX PEAK<br>Sweep Count = 0<br>RF Atten (dB) = 20<br>Trace Mode = MAX HOLD | M1 : 5777.285 MHz : 0.404 dBm<br>M2 : 5789.950 MHz : 8.329 dBm<br>Delta1 : 35.110 MHz : 2.284 dB<br>T1 : 5776.804 MHz : 0.652 dBm<br>T2 : 5813.196 MHz : 1.130 dBm<br>OBW : 36.393 MHz | Measured 6 dB Bandwidth: 35.110 MHz<br>Measured 99% Bandwidth: 36.393 MHz |

back to matrix

## A.2. Power Spectral Density

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5180.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

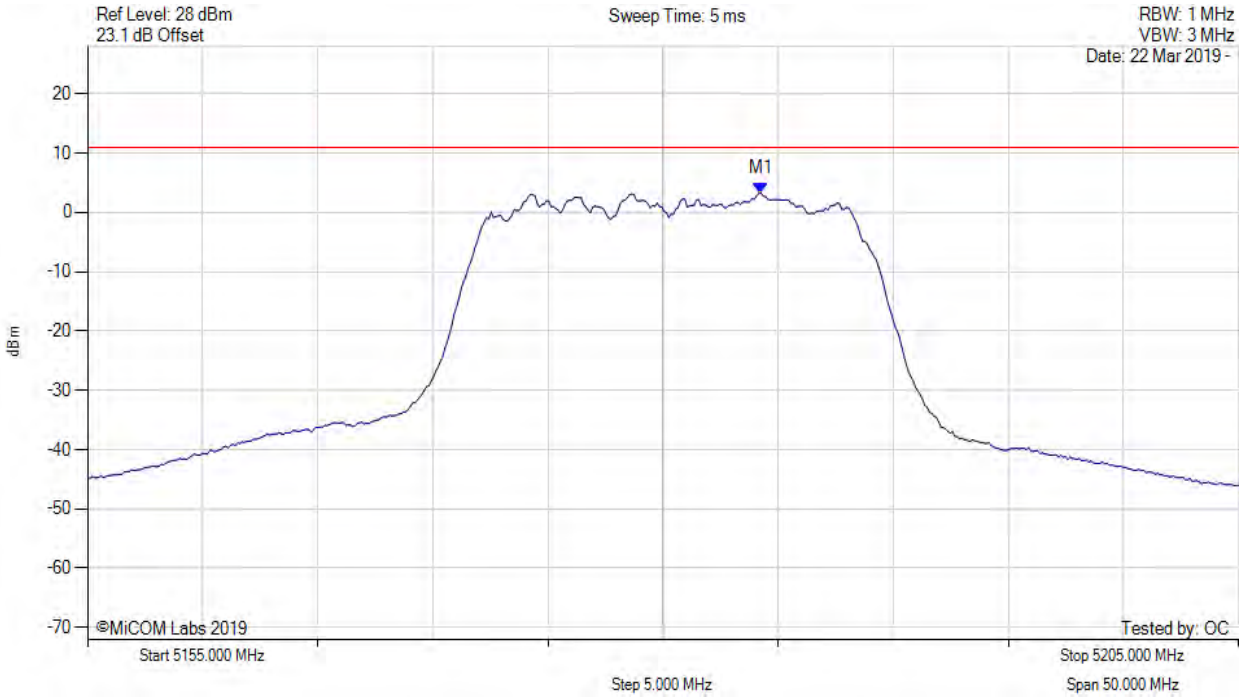



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5178.046 MHz : 4.556 dBm | Limit: ≤ 10.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5180.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

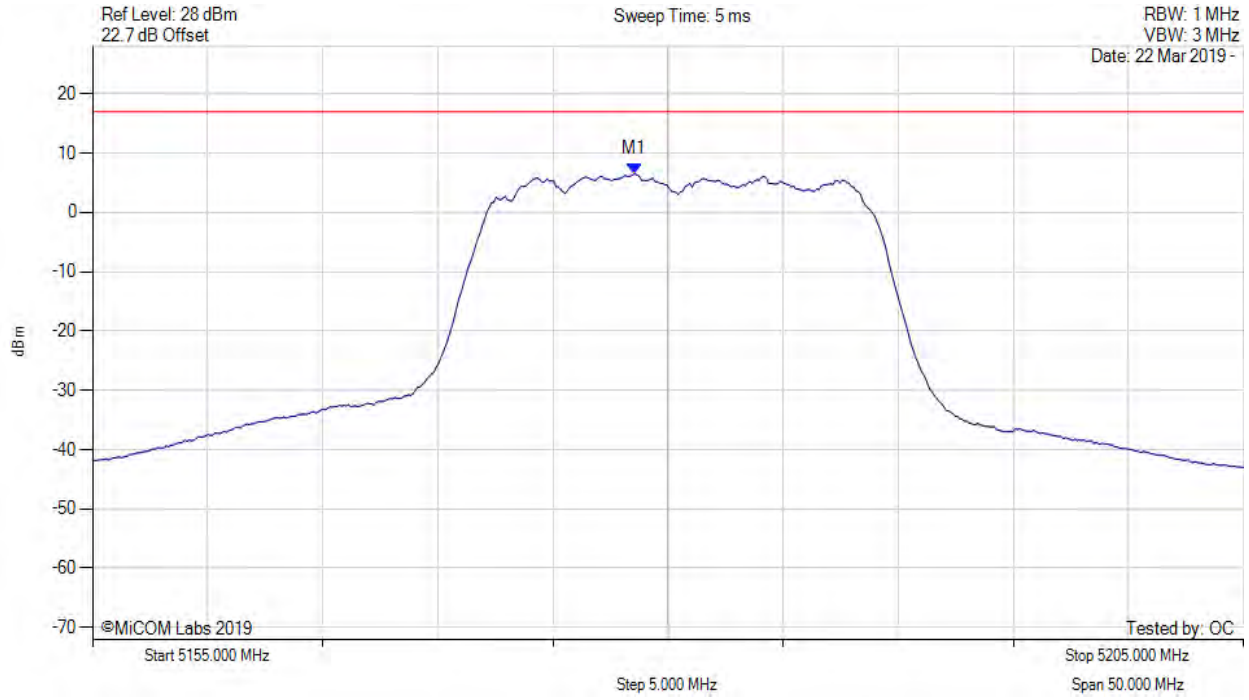



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5184.259 MHz : 3.295 dBm | Limit: ≤ 10.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5180.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

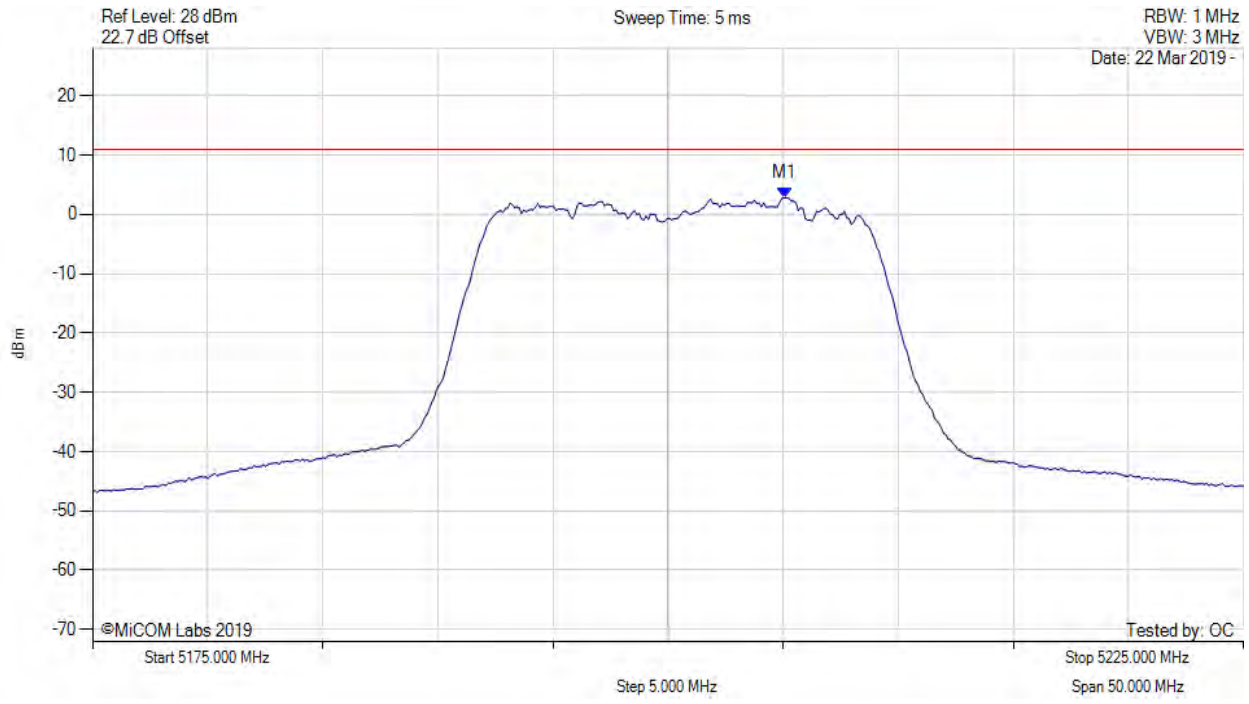



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5178.500 MHz : 6.519 dBm<br>M1 + DCCF : 5178.500 MHz : 6.742 dBm<br>Duty Cycle Correction Factor : +0.22 dB | Limit: ≤ 17.0 dBm<br>Margin: -10.3 dB |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5200.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

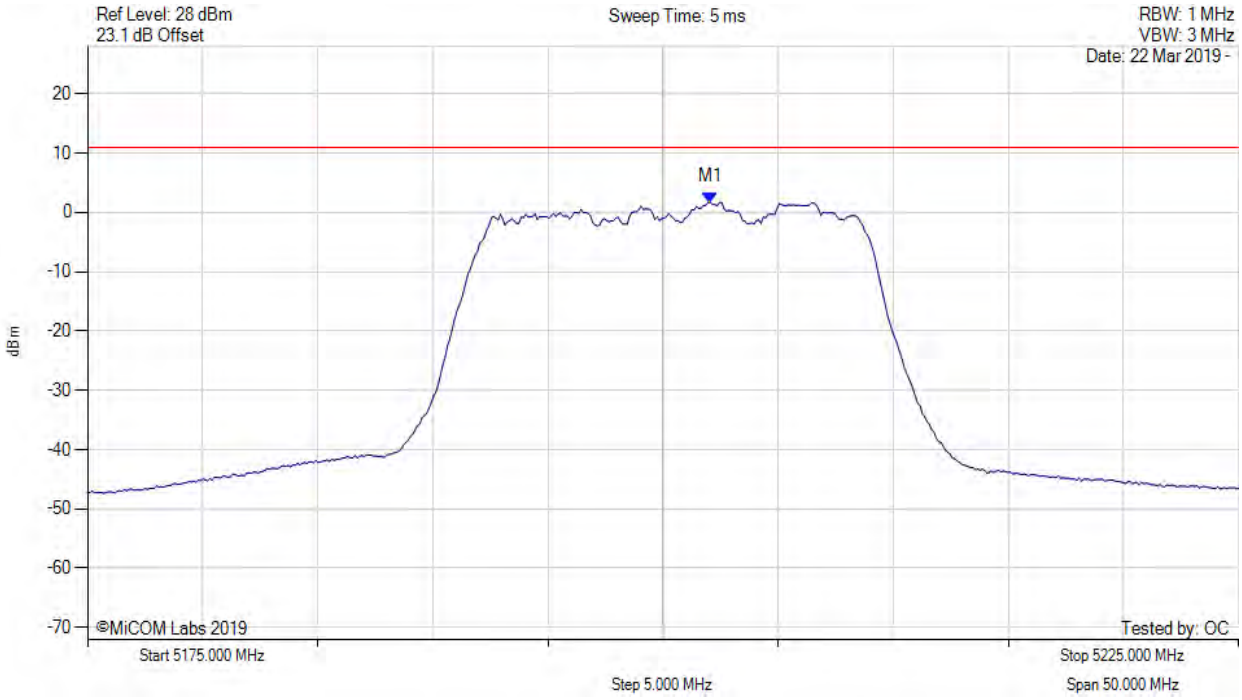



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5205.060 MHz : 2.800 dBm | Limit: ≤ 10.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5200.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

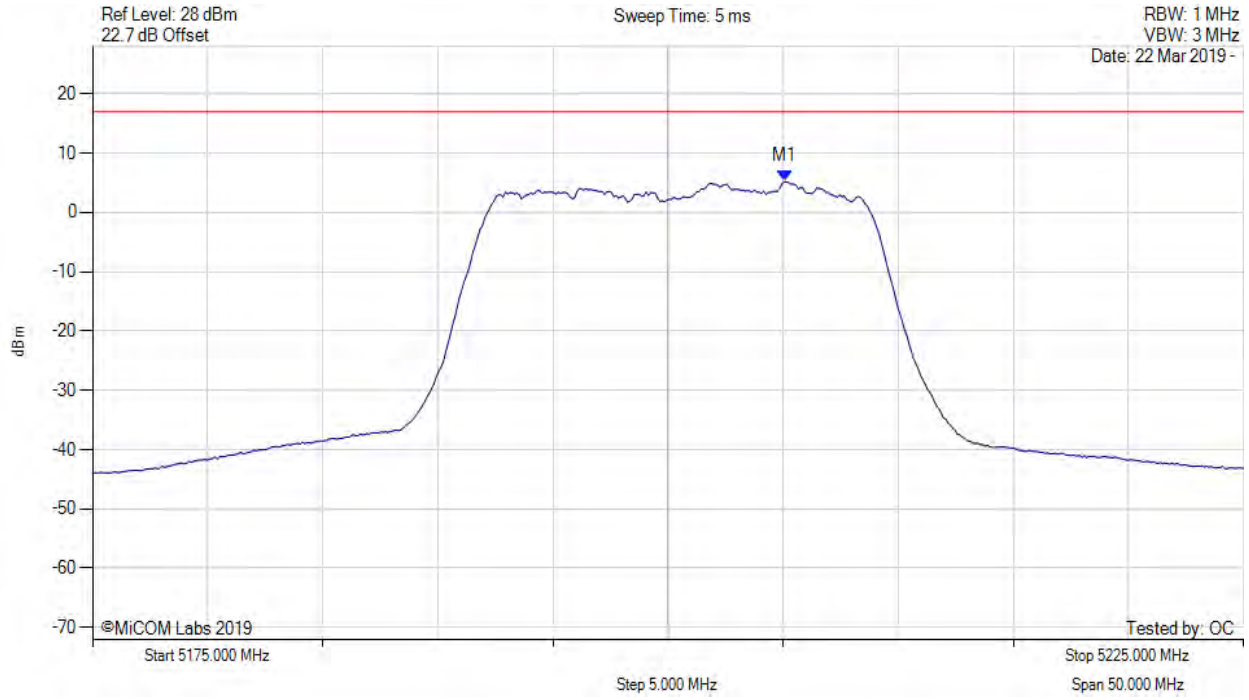



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5202.054 MHz : 1.692 dBm | Channel Frequency: 5200.00 MHz |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5200.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

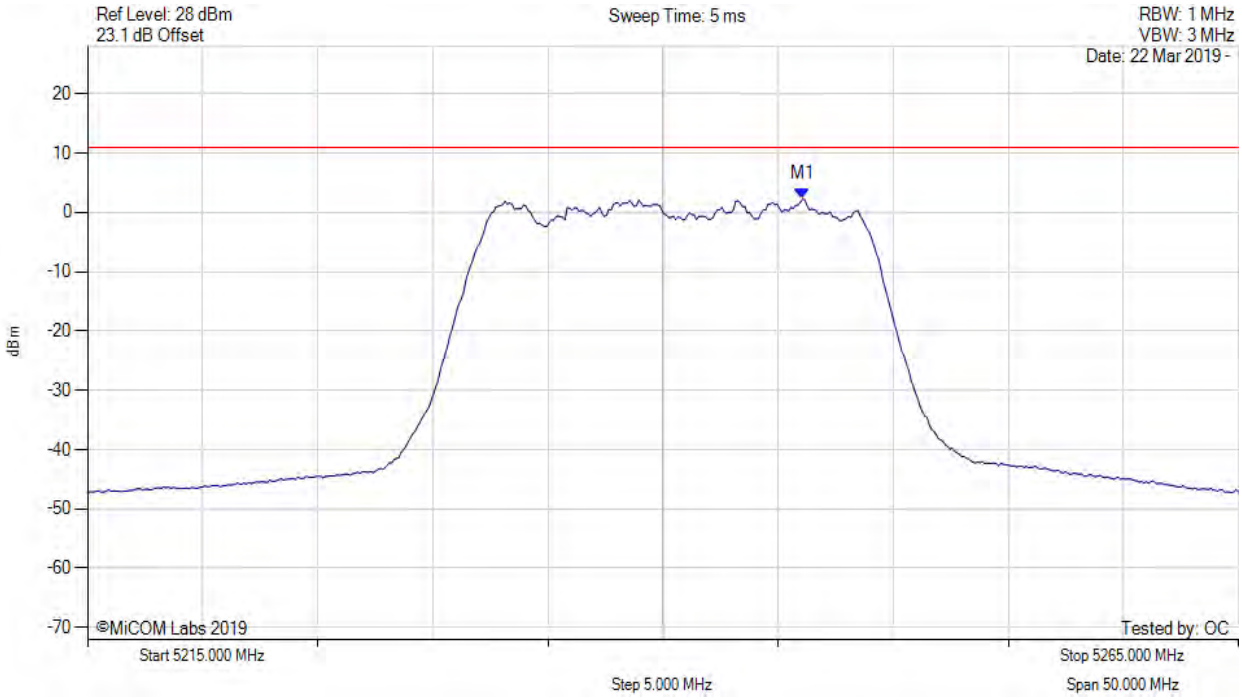



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5205.100 MHz : 5.212 dBm<br>M1 + DCCF : 5205.100 MHz : 5.435 dBm<br>Duty Cycle Correction Factor : +0.22 dB | Limit: ≤ 17.0 dBm<br>Margin: -11.6 dB |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5240.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

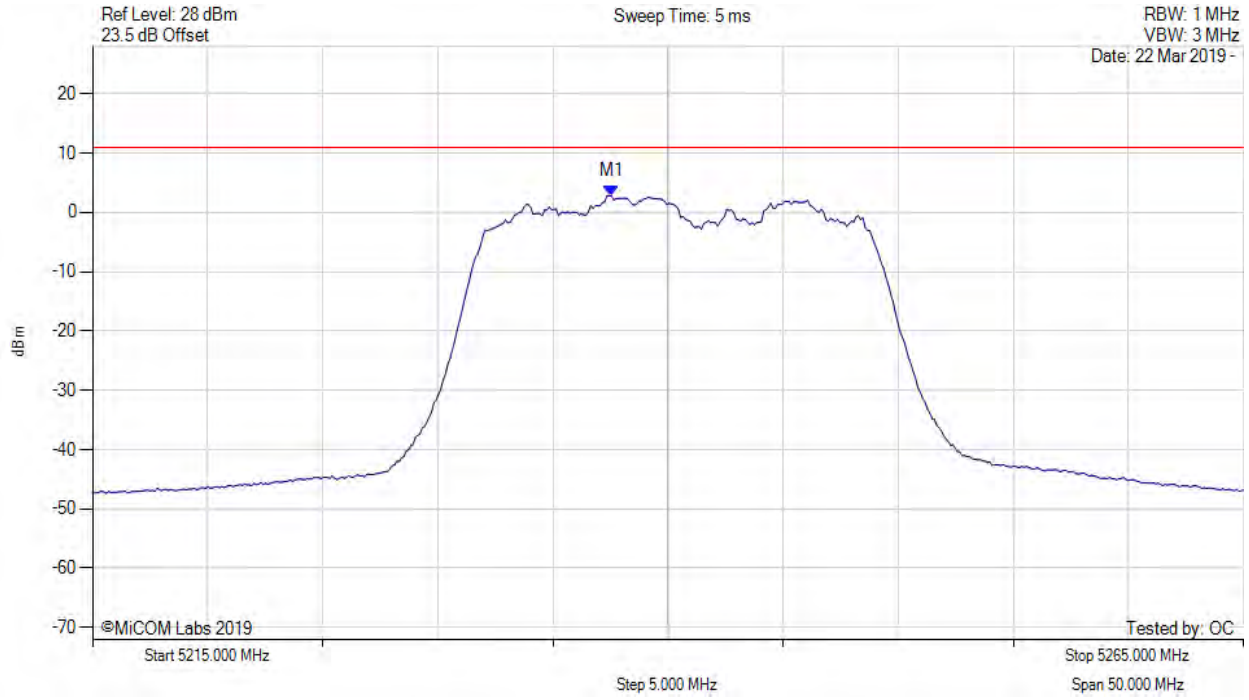



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5246.062 MHz : 2.247 dBm | Limit: ≤ 10.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5240.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

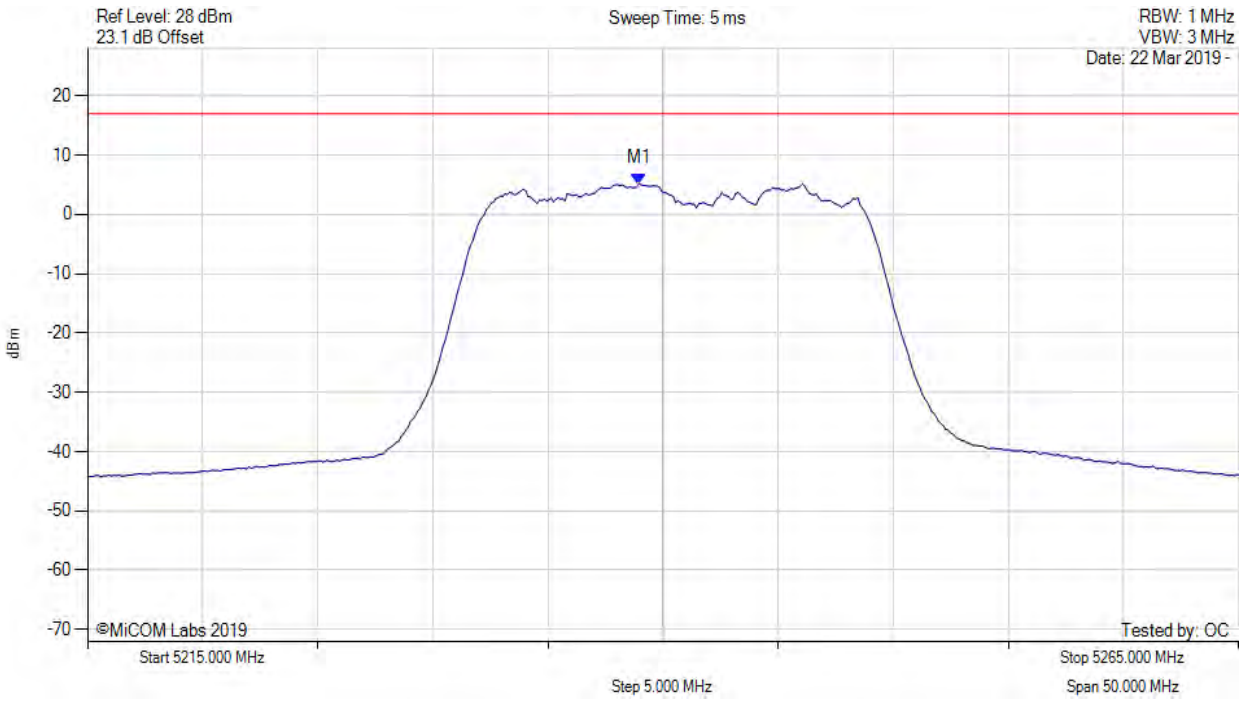



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5237.545 MHz : 2.774 dBm | Limit: ≤ 10.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5240.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

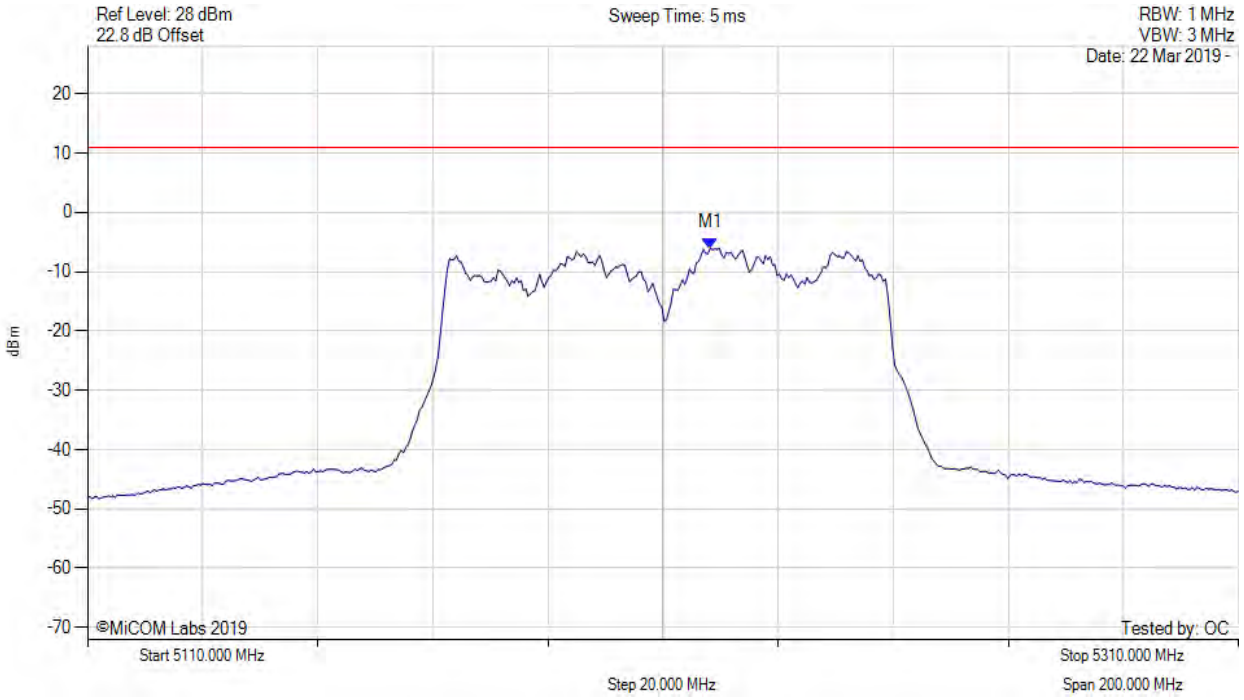



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5238.900 MHz : 5.183 dBm<br>M1 + DCCF : 5238.900 MHz : 5.406 dBm<br>Duty Cycle Correction Factor : +0.22 dB | Limit: ≤ 17.0 dBm<br>Margin: -11.6 dB |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5210.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

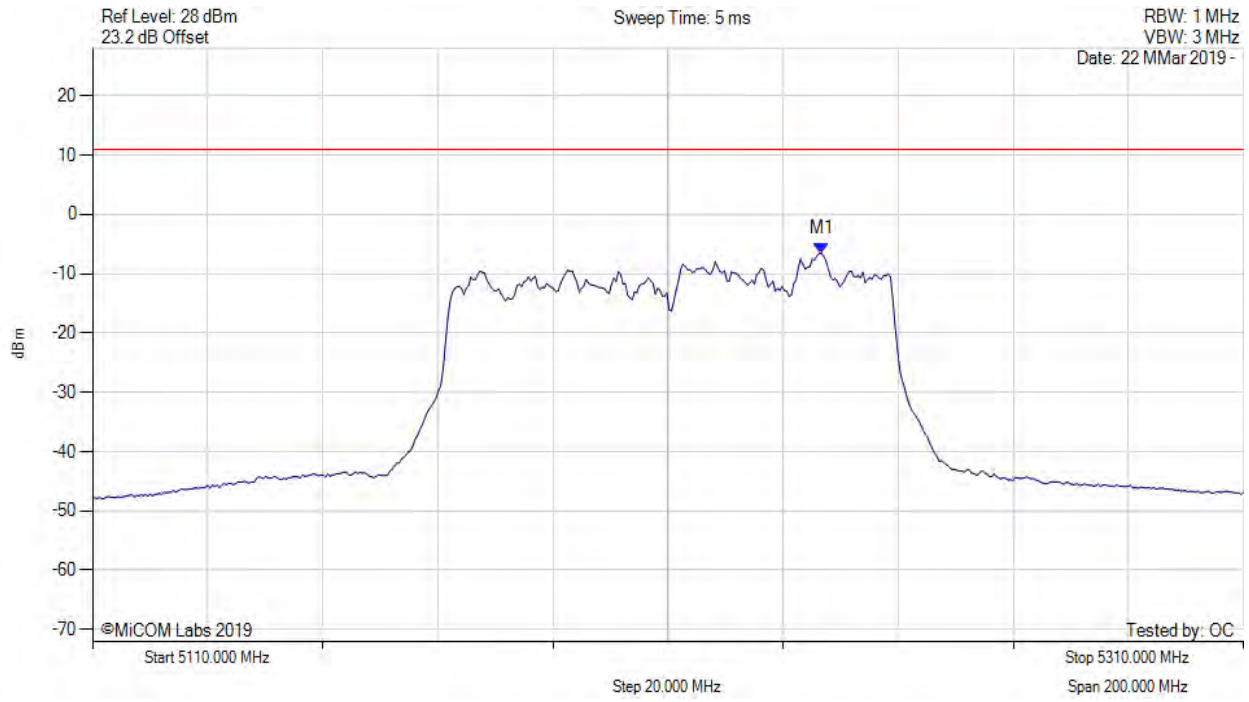



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5218.216 MHz : -6.042 dBm | Limit: ≤ 10.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5210.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

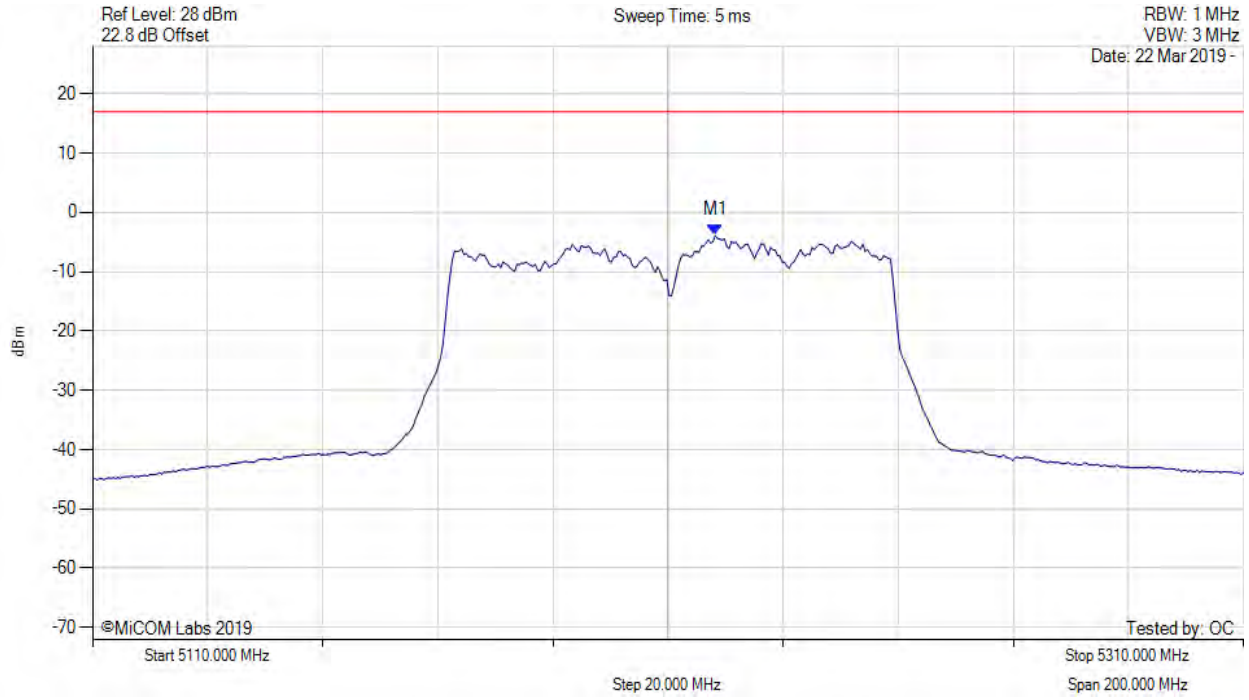



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5236.653 MHz : -6.570 dBm | Limit: ≤ 10.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5210.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

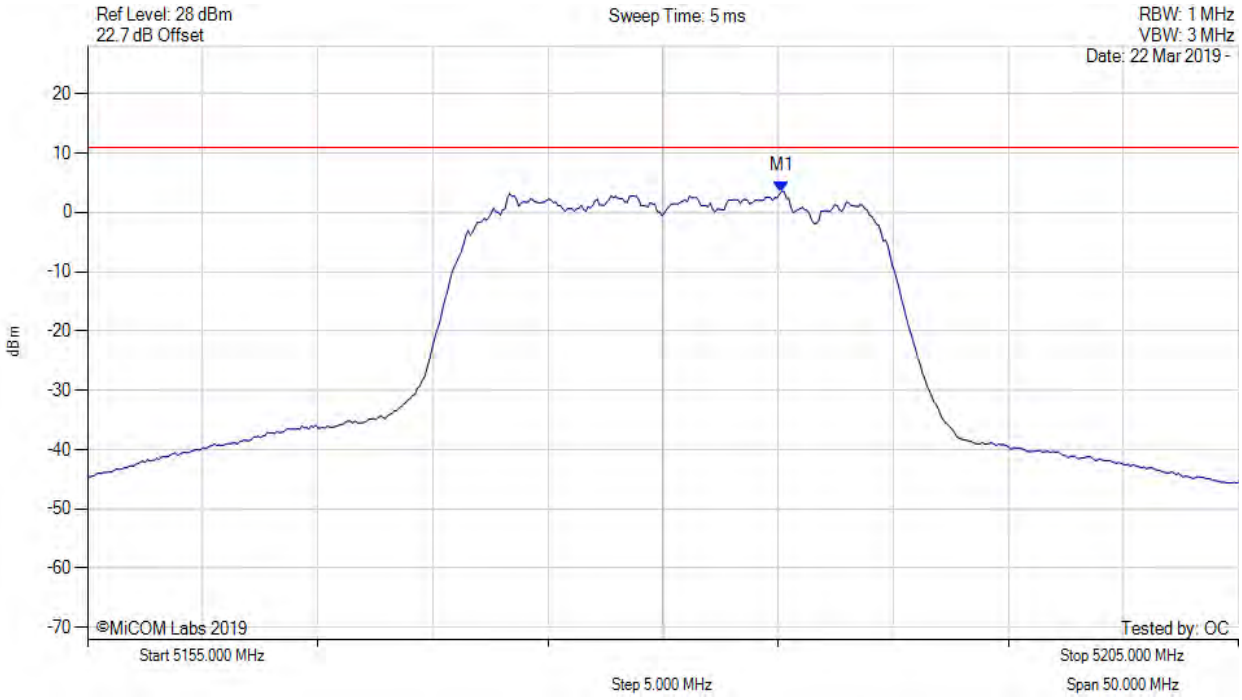



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5218.200 MHz : -3.905 dBm<br>M1 + DCCF : 5218.200 MHz : -2.936 dBm<br>Duty Cycle Correction Factor : +0.97 dB | Limit: ≤ 17.0 dBm<br>Margin: -20.0 dB |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5180.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

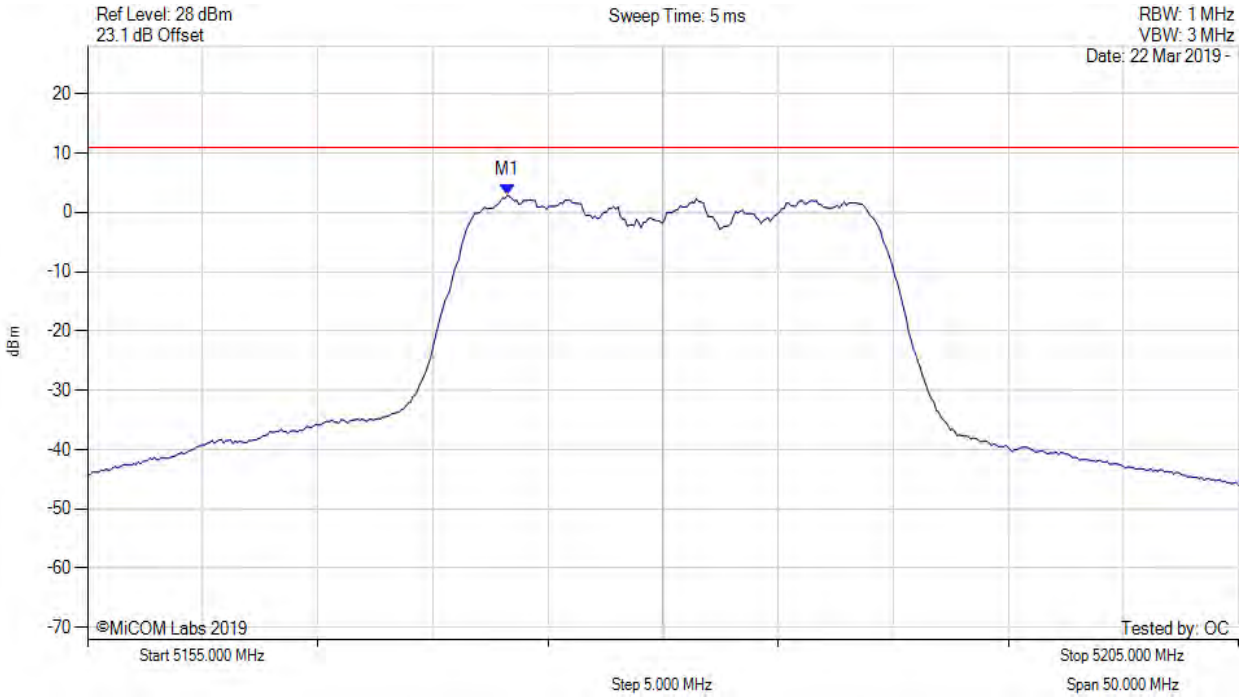



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5185.160 MHz : 3.556 dBm | Limit: ≤ 10.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5180.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

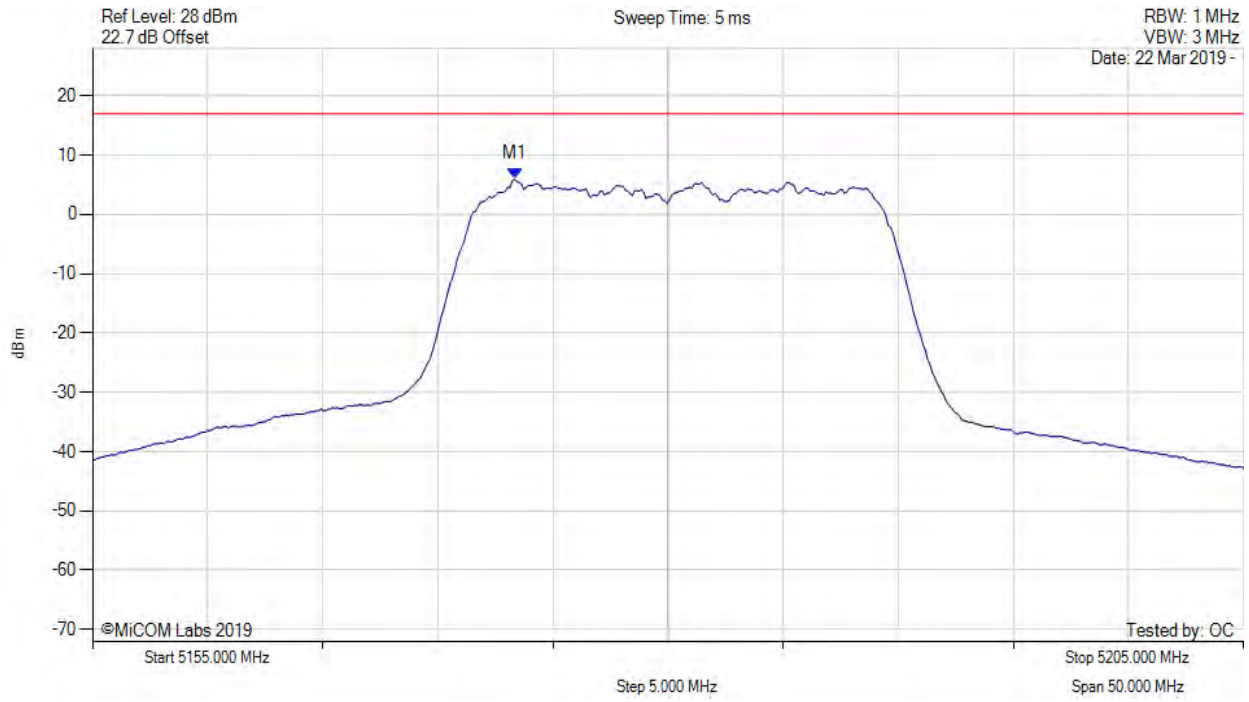



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5173.236 MHz : 2.915 dBm | Limit: ≤ 10.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5180.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

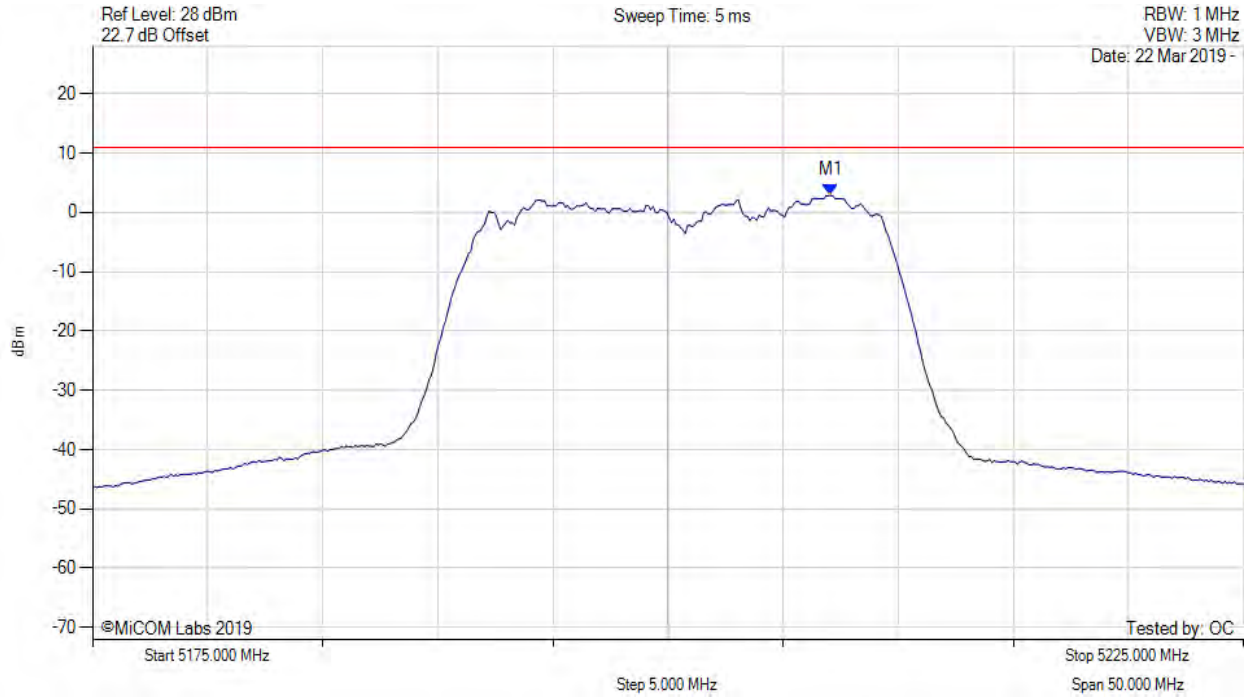



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5173.300 MHz : 5.940 dBm<br>M1 + DCCF : 5173.300 MHz : 6.209 dBm<br>Duty Cycle Correction Factor : +0.27 dB | Limit: ≤ 17.0 dBm<br>Margin: -10.8 dB |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5200.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

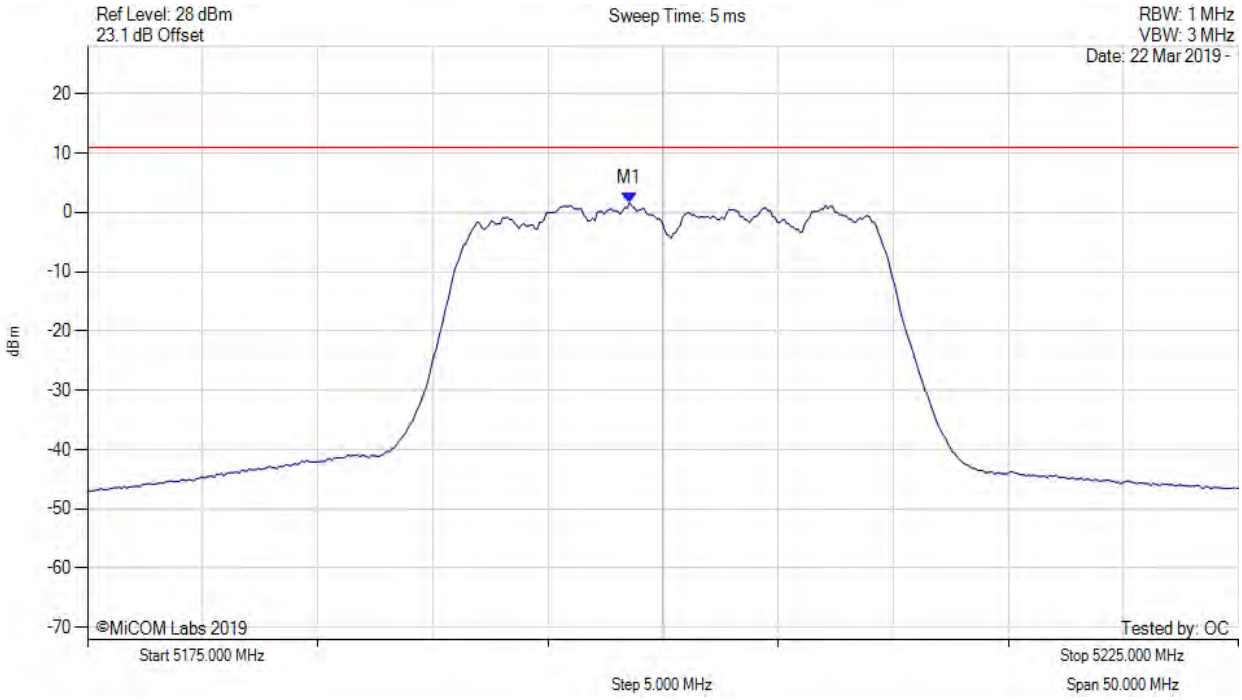



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5207.064 MHz : 2.895 dBm | Limit: ≤ 10.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5200.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

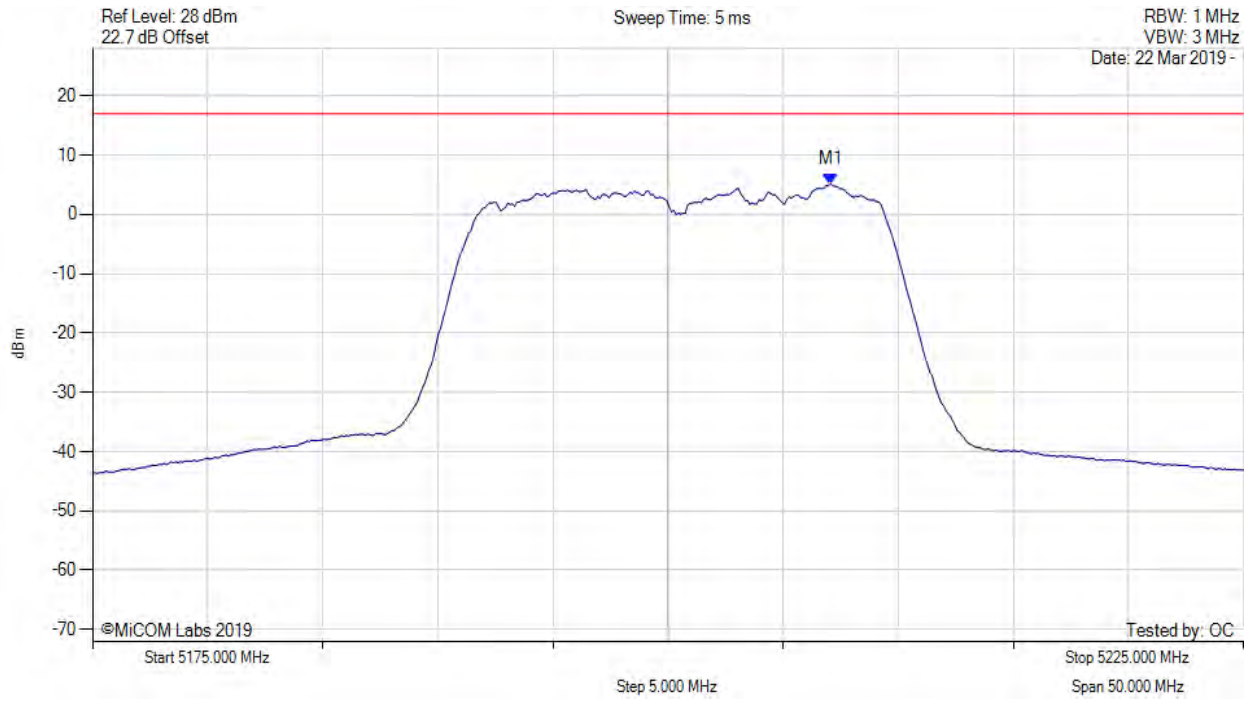



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5198.547 MHz : 1.635 dBm | Channel Frequency: 5200.00 MHz |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5200.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

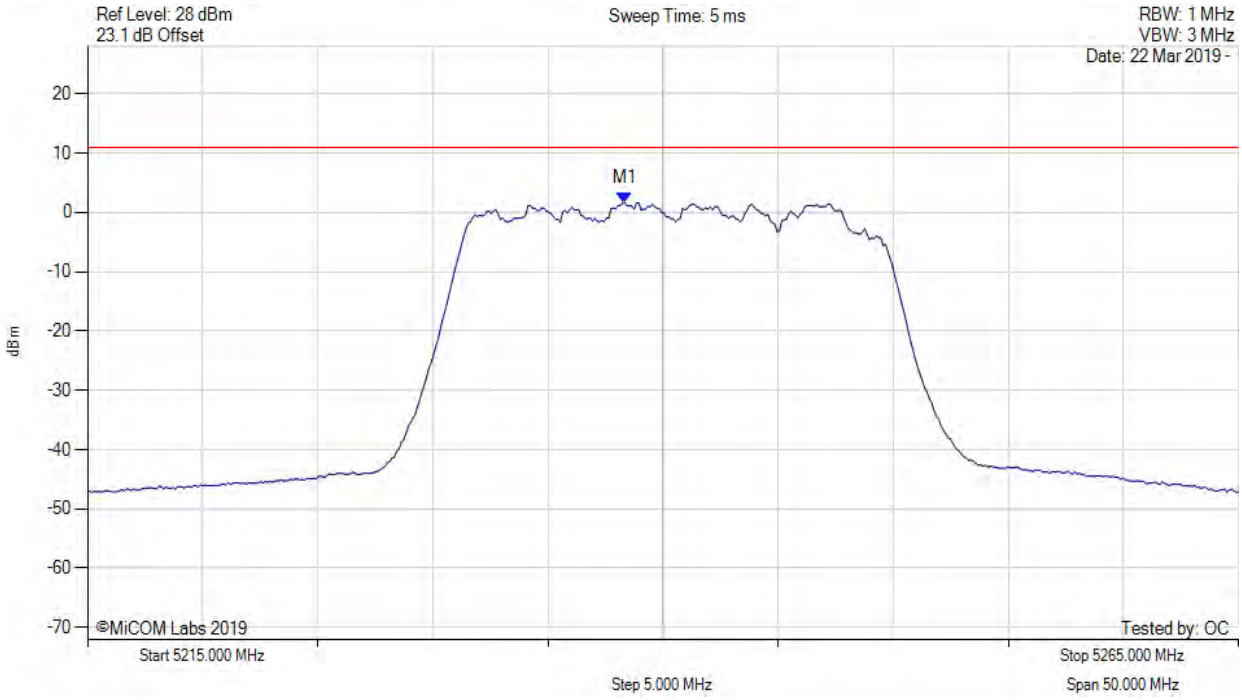



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5207.100 MHz : 5.146 dBm<br>M1 + DCCF : 5207.100 MHz : 5.415 dBm<br>Duty Cycle Correction Factor : +0.27 dB | Limit: ≤ 17.0 dBm<br>Margin: -11.6 dB |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5240.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

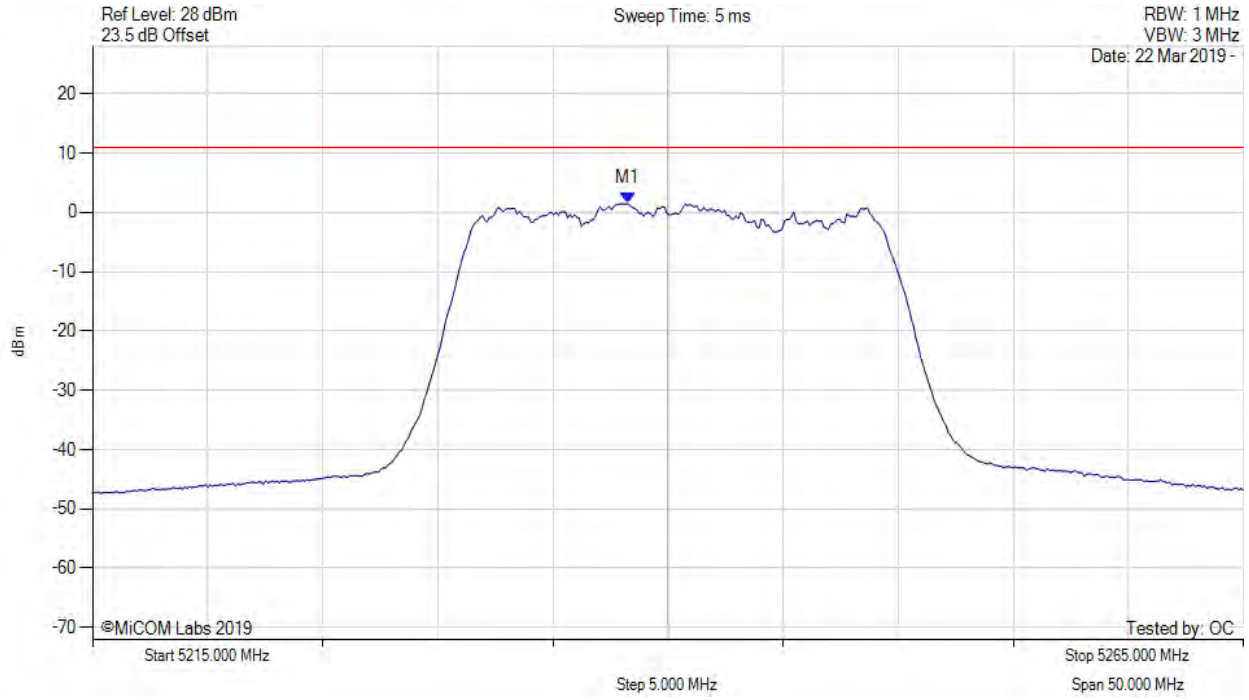



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5238.347 MHz : 1.627 dBm | Limit: ≤ 10.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5240.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

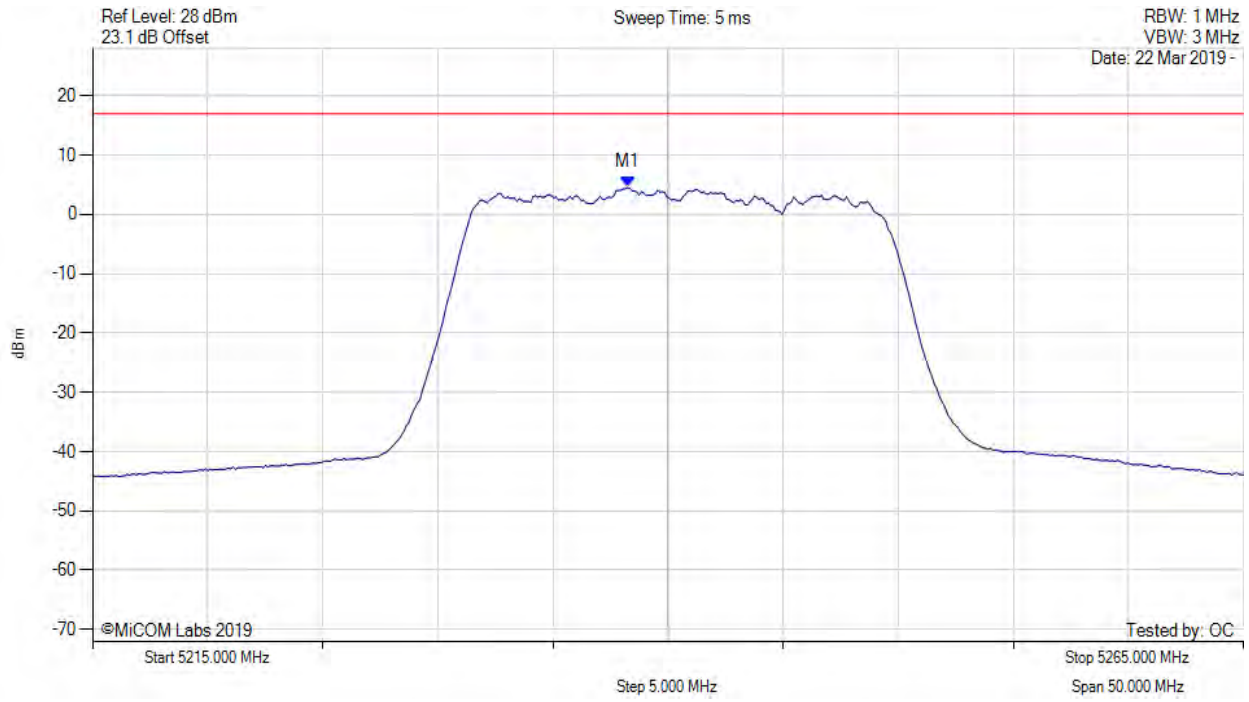



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5238.246 MHz : 1.494 dBm | Limit: ≤ 10.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5240.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

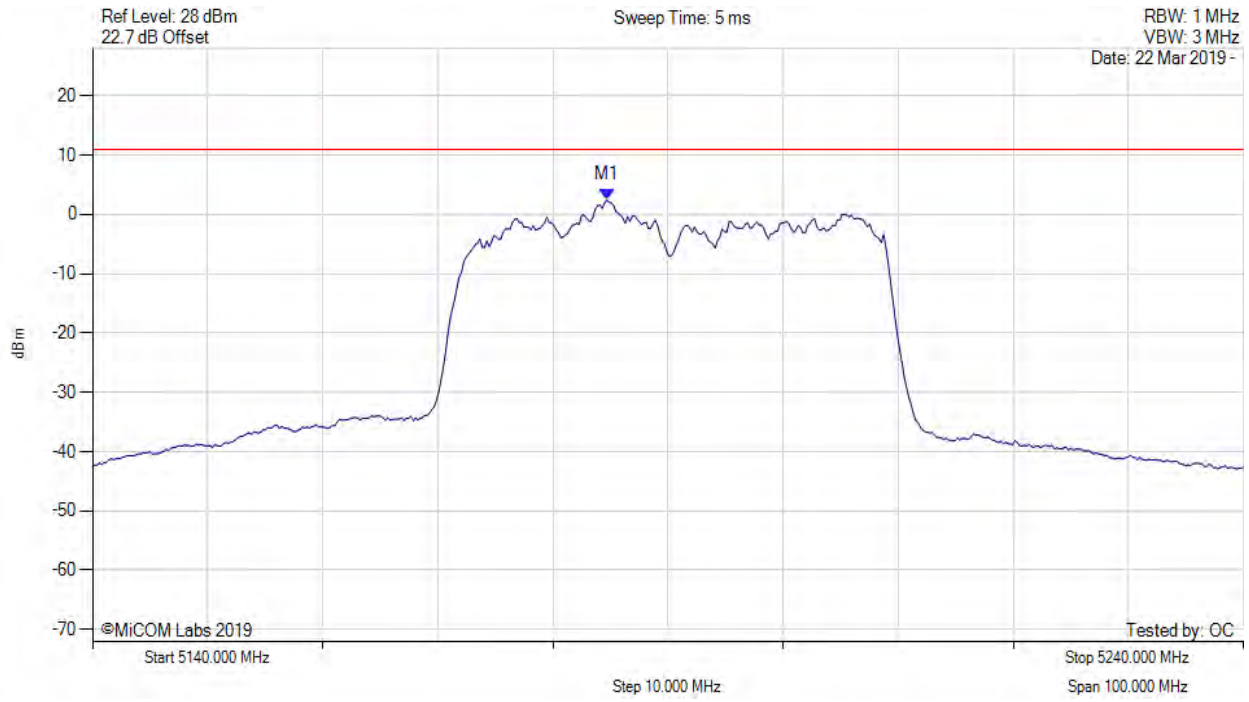



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5238.200 MHz : 4.520 dBm<br>M1 + DCCF : 5238.200 MHz : 4.789 dBm<br>Duty Cycle Correction Factor : +0.27 dB | Limit: ≤ 17.0 dBm<br>Margin: -12.2 dB |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5190.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

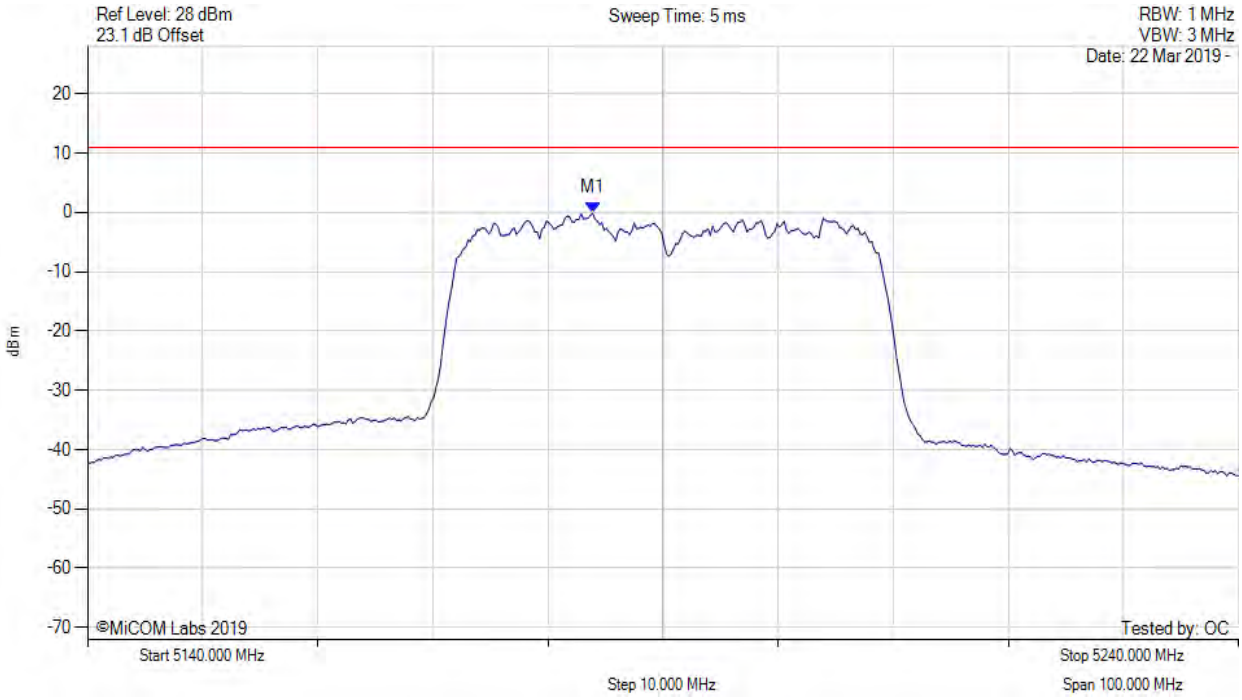



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5184.689 MHz : 2.461 dBm | Limit: ≤ 10.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5190.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

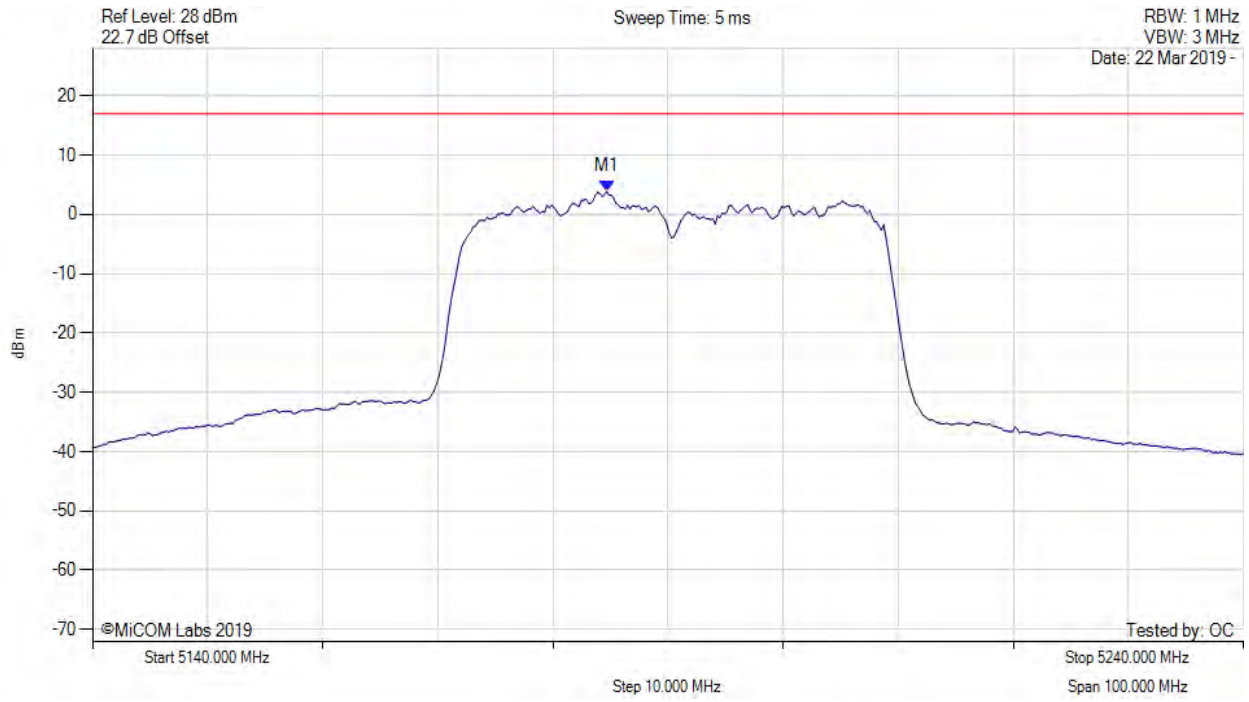



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5183.888 MHz : -0.169 dBm | Limit: ≤ 10.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5190.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

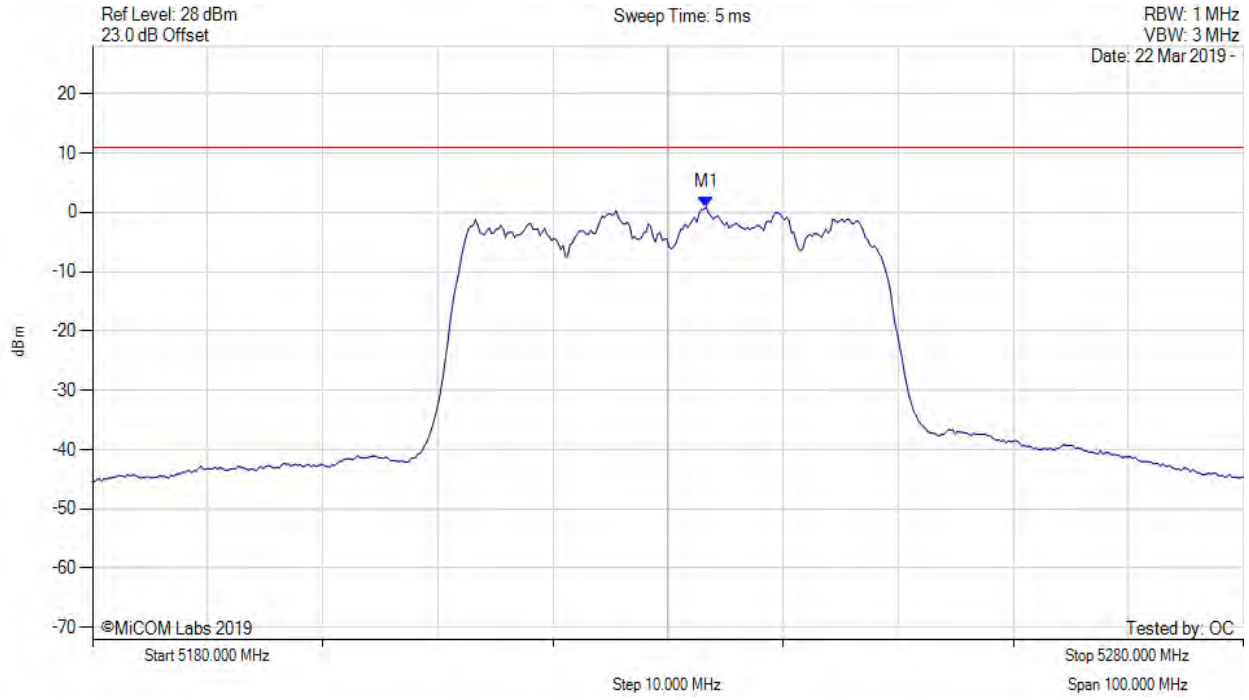



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5184.700 MHz : 3.862 dBm<br>M1 + DCCF : 5184.700 MHz : 4.619 dBm<br>Duty Cycle Correction Factor : +0.76 dB | Limit: ≤ 17.0 dBm<br>Margin: -12.4 dB |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5230.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

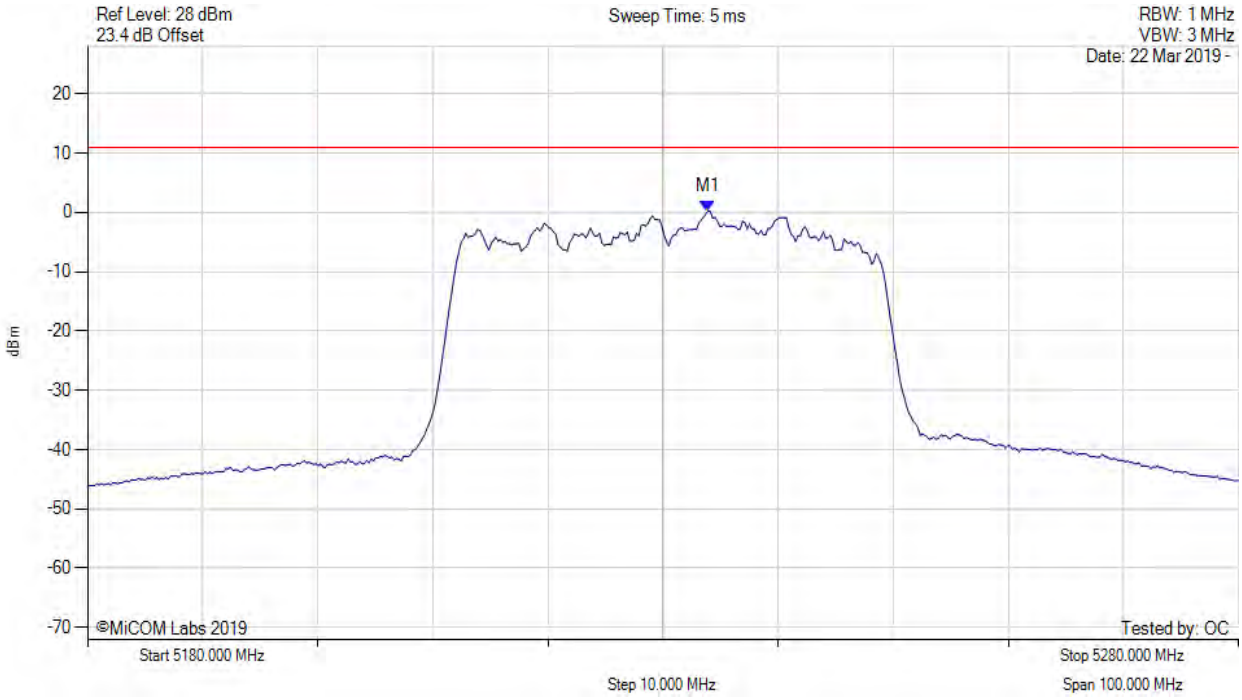



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5233.307 MHz : 0.874 dBm | Limit: ≤ 10.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5230.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

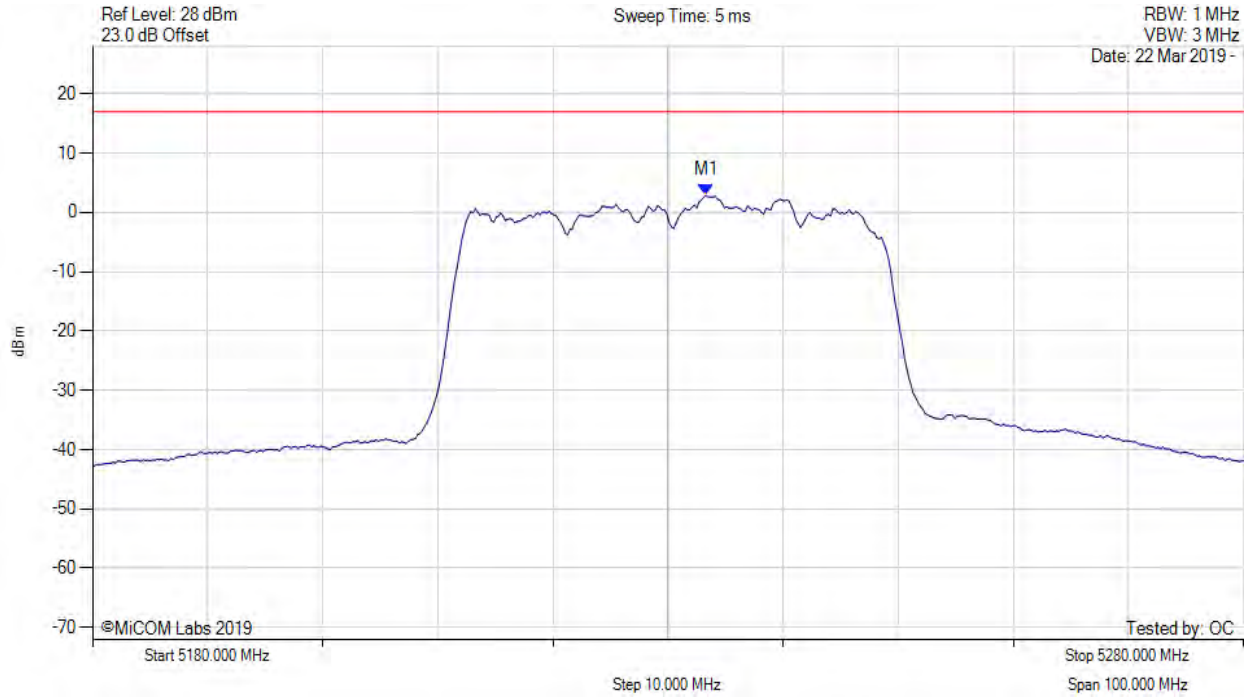



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5233.908 MHz : 0.198 dBm | Limit: ≤ 10.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5230.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

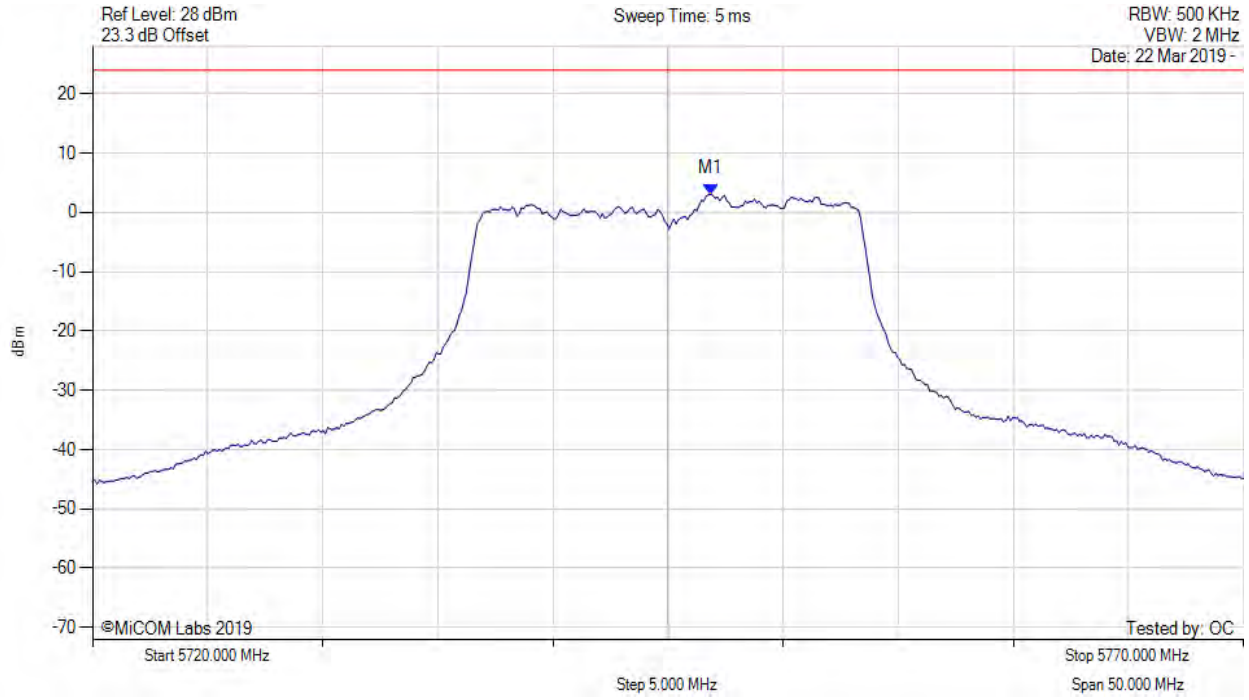



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5233.300 MHz : 2.910 dBm<br>M1 + DCCF : 5233.300 MHz : 3.667 dBm<br>Duty Cycle Correction Factor : +0.76 dB | Limit: ≤ 17.0 dBm<br>Margin: -13.4 dB |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5745.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

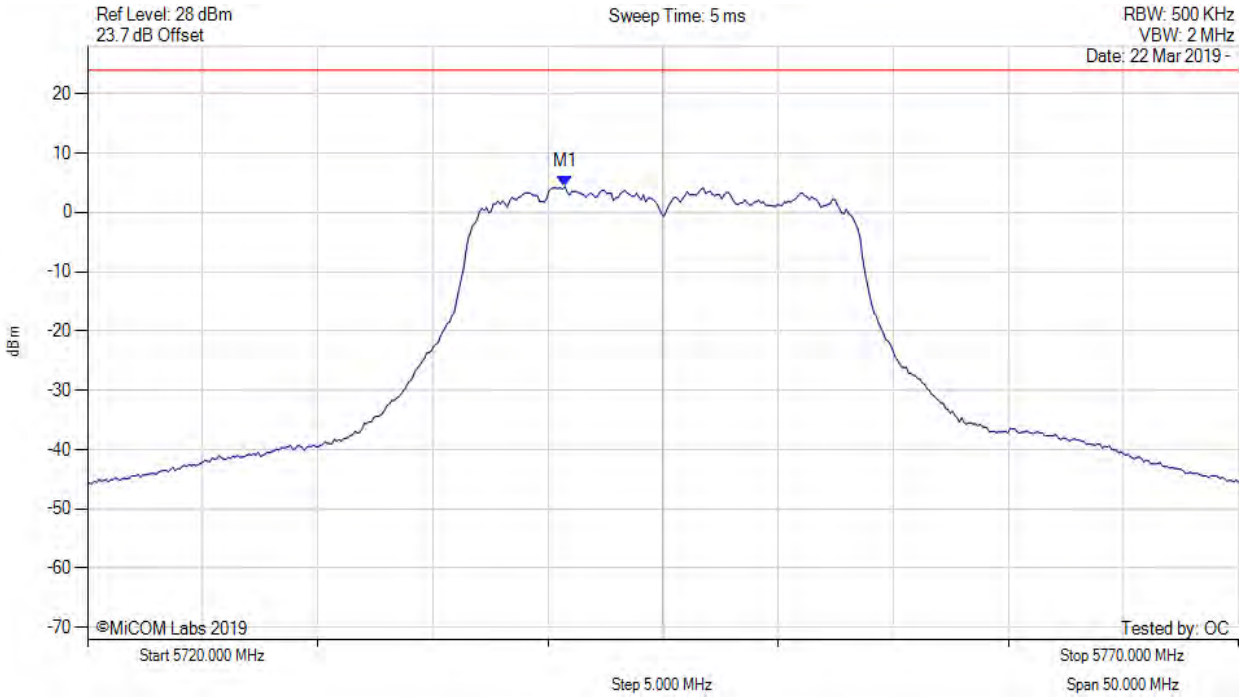



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5746.854 MHz : 3.071 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5745.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

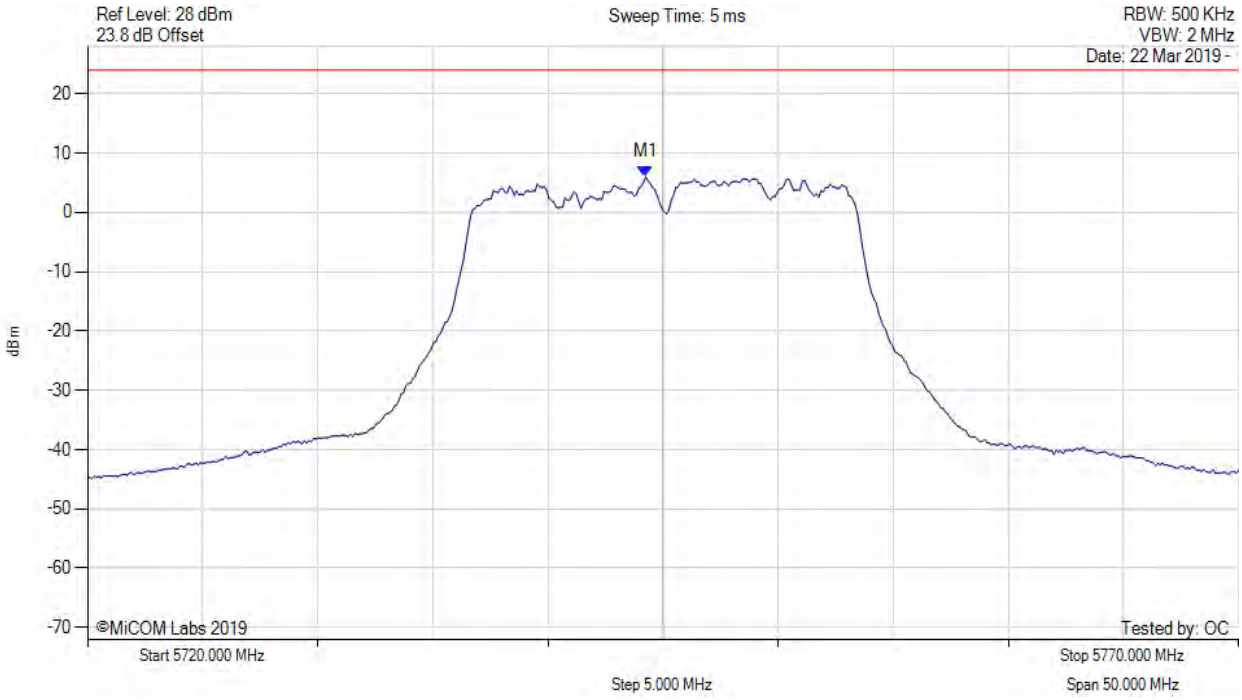



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5740.741 MHz : 4.349 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5745.00 MHz, Chain c, Temp: 20, Voltage: 24 Vdc

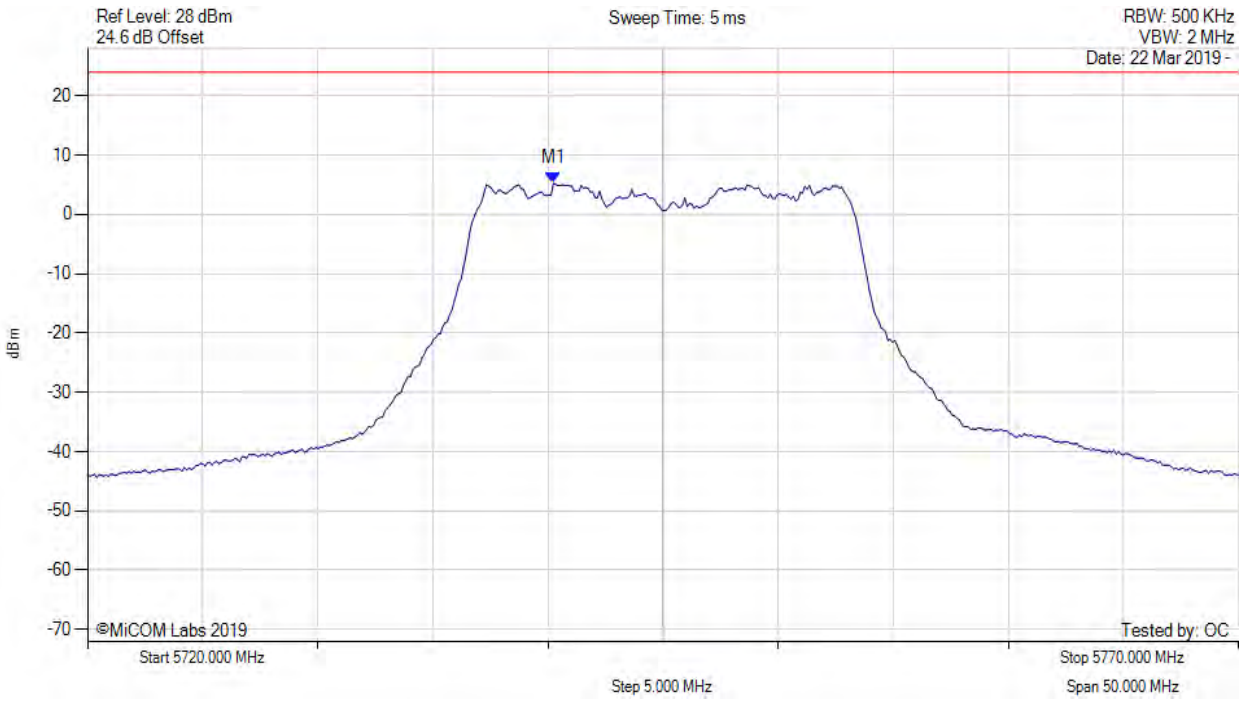



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5744.248 MHz : 5.973 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5745.00 MHz, Chain d, Temp: 20, Voltage: 24 Vdc

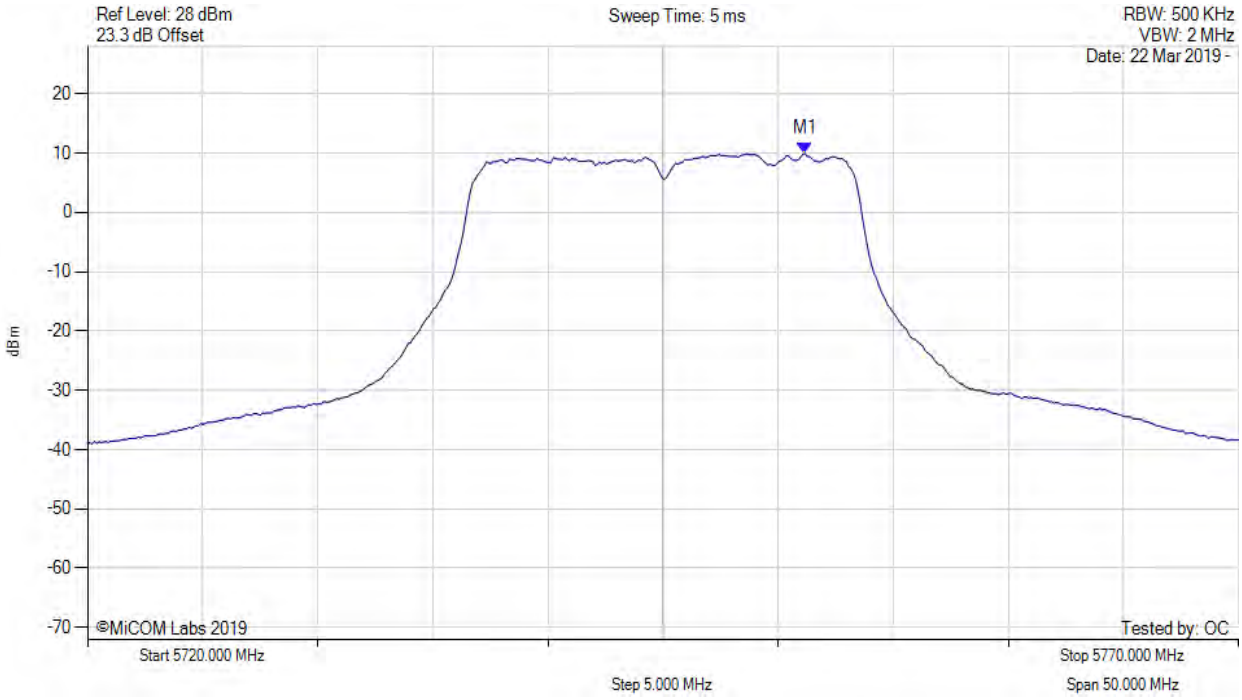



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5740.240 MHz : 5.269 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5745.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

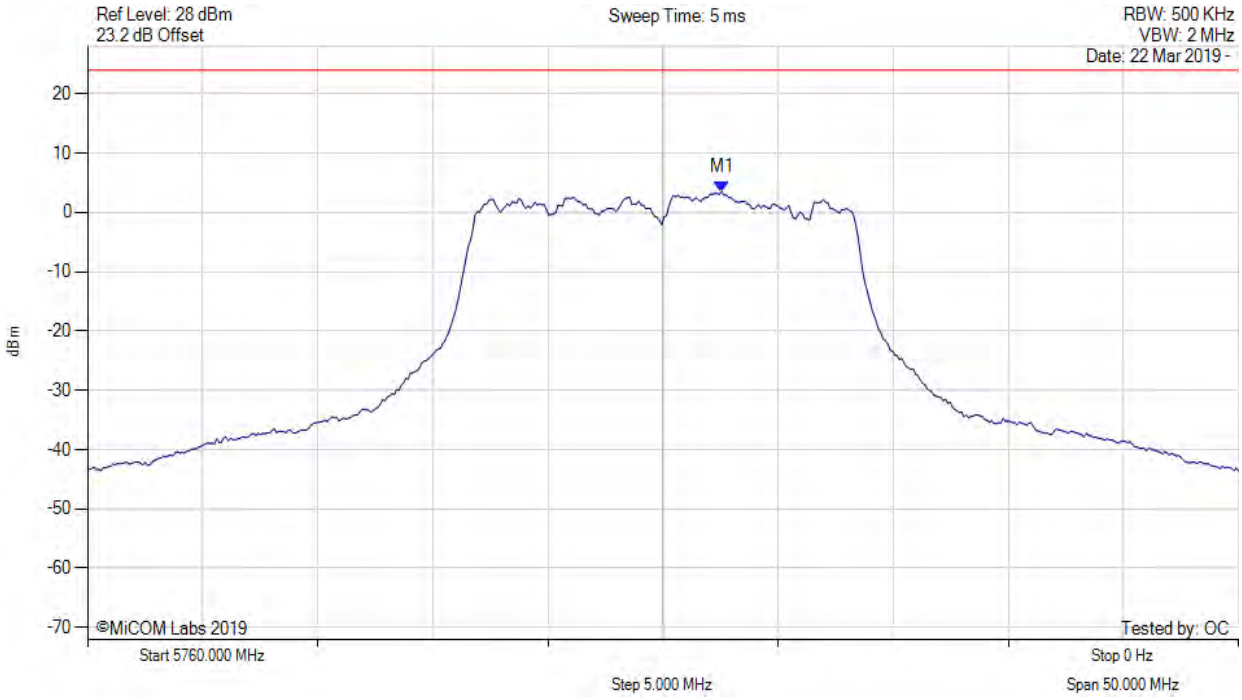



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5751.200 MHz : 9.949 dBm<br>M1 + DCCF : 5751.200 MHz : 10.311 dBm<br>Duty Cycle Correction Factor : +0.36 dB | Limit: ≤ 30.0 dBm<br>Margin: -19.7 dB |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5785.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

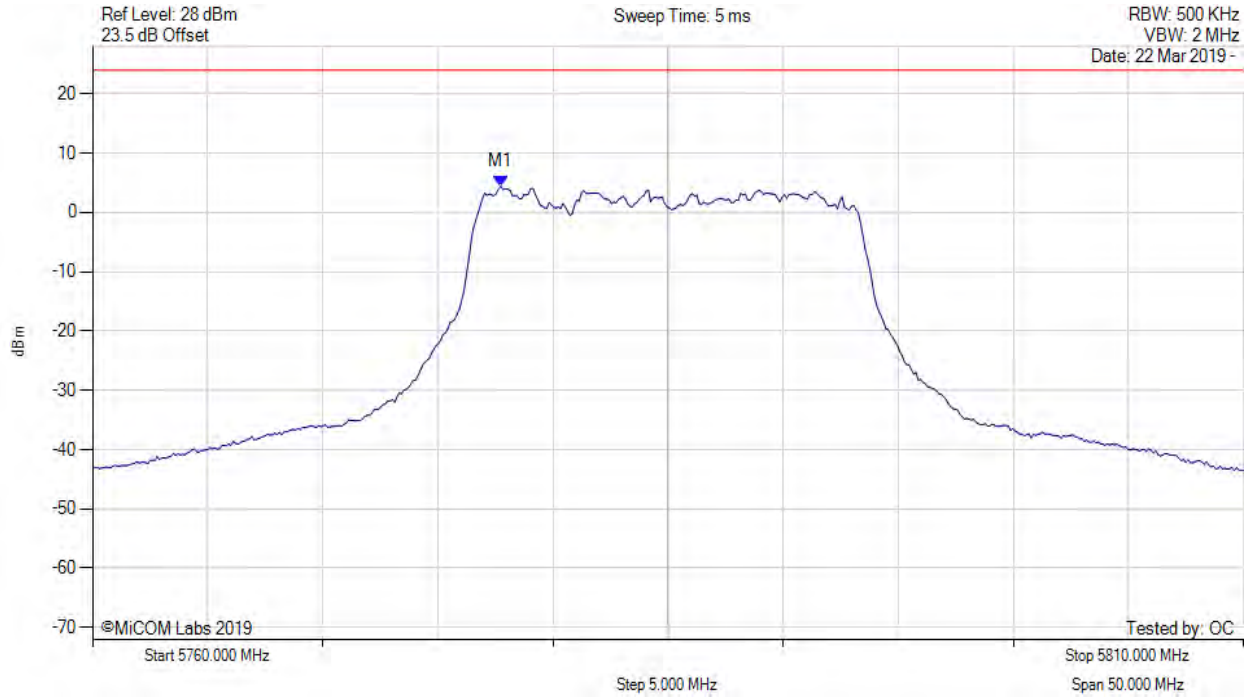



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5787.555 MHz : 3.481 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5785.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

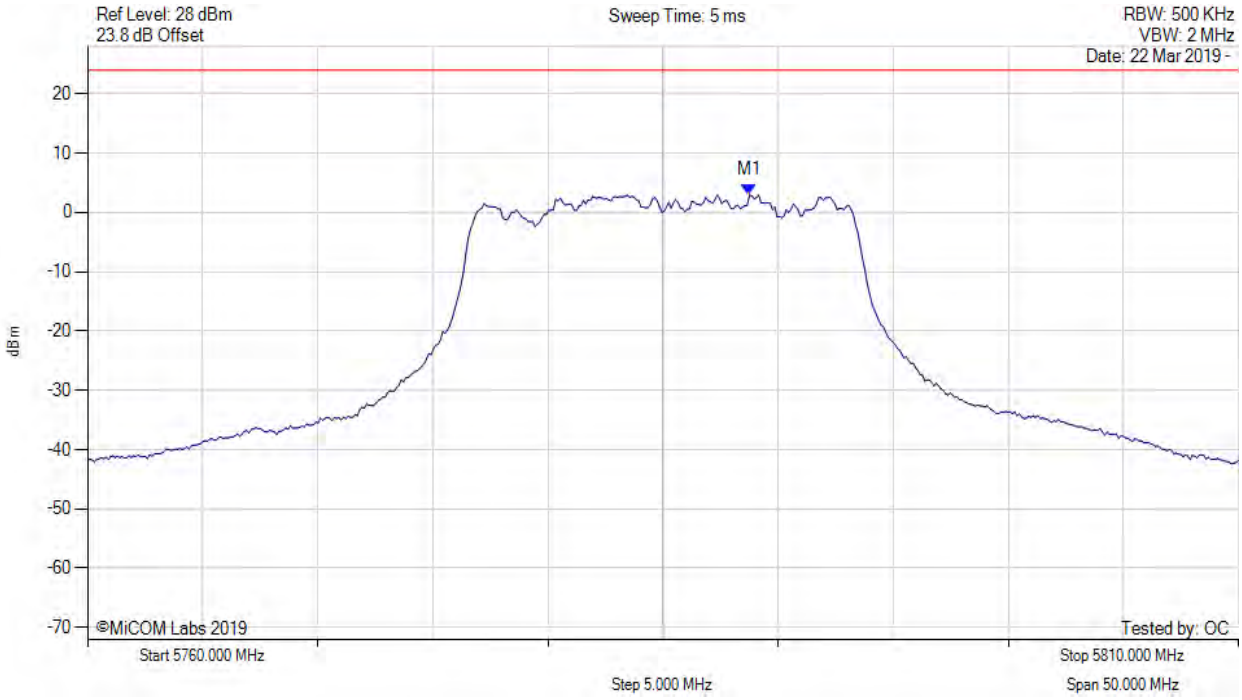



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5777.735 MHz : 4.419 dBm | Channel Frequency: 5785.00 MHz |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5785.00 MHz, Chain c, Temp: 20, Voltage: 24 Vdc

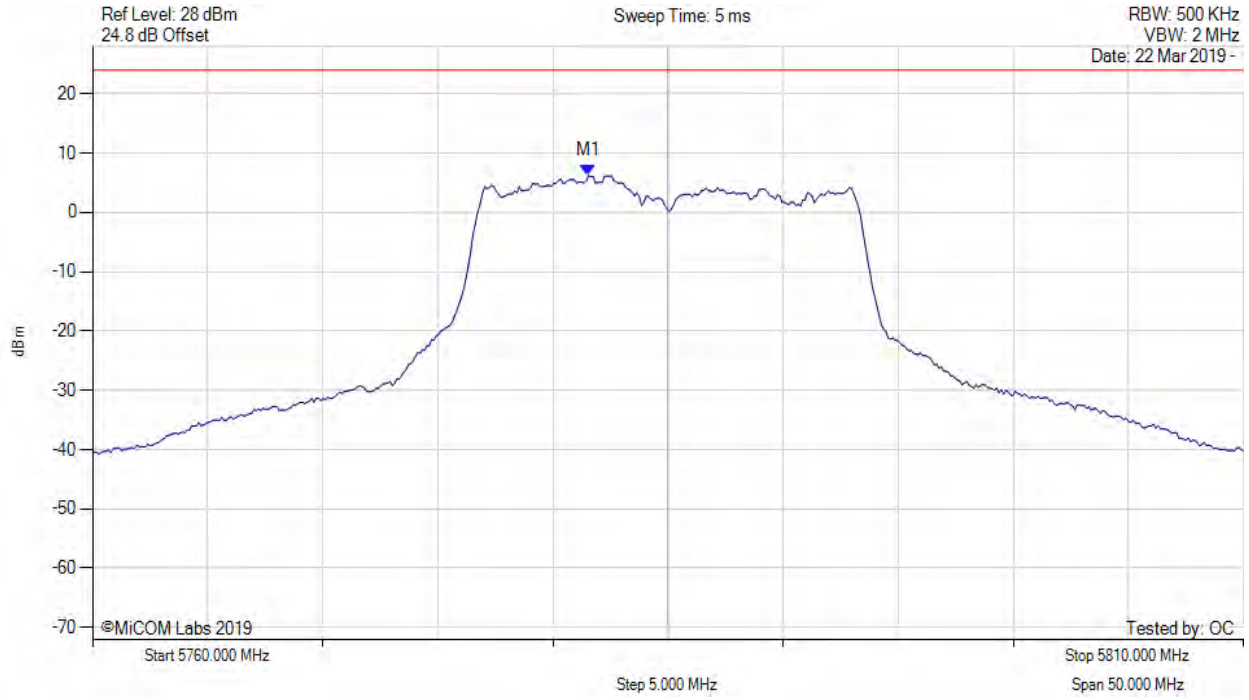



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5788.758 MHz : 2.942 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5785.00 MHz, Chain d, Temp: 20, Voltage: 24 Vdc

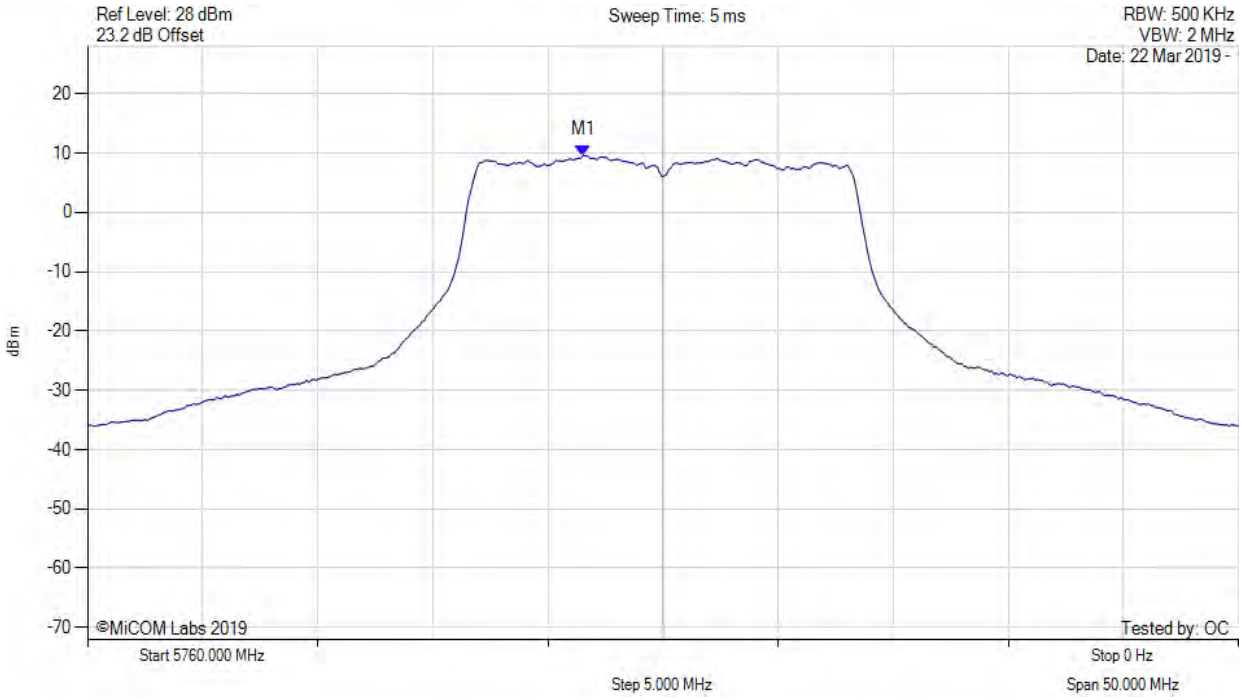



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5781.543 MHz : 6.190 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5785.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

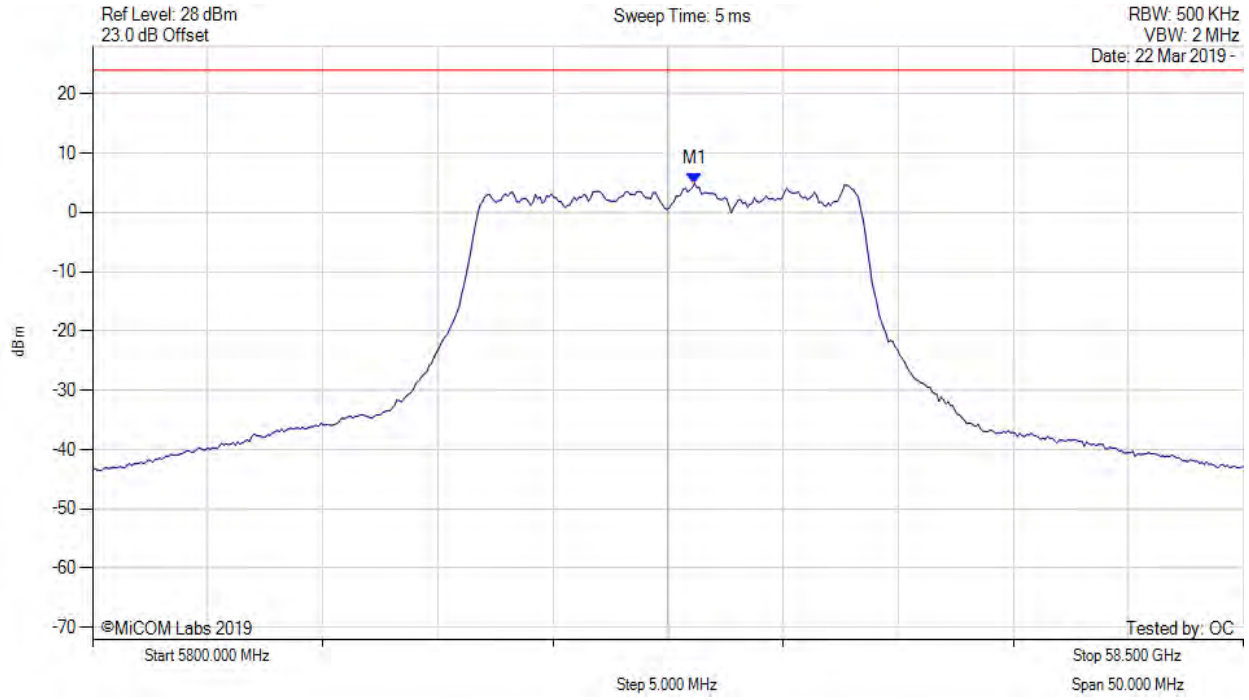



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5781.500 MHz : 9.629 dBm<br>M1 + DCCF : 5781.500 MHz : 9.991 dBm<br>Duty Cycle Correction Factor : +0.36 dB | Limit: ≤ 30.0 dBm<br>Margin: -20.0 dB |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5825.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

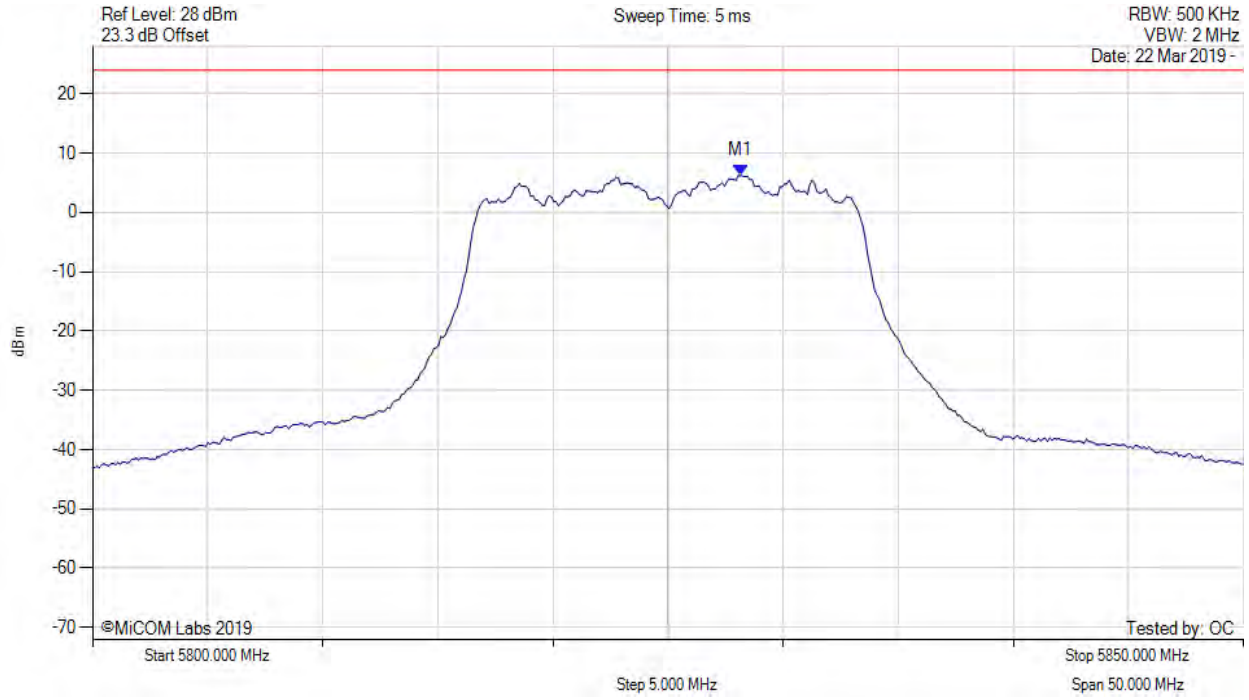



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5826.152 MHz : 4.842 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5825.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

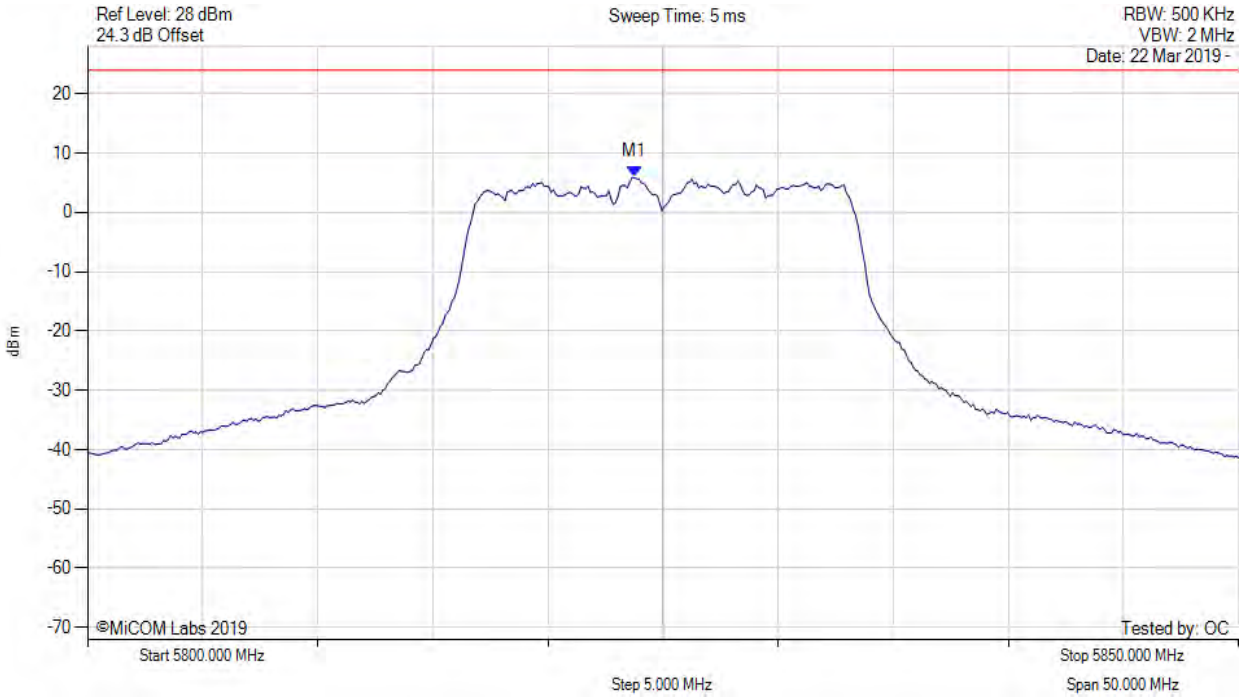



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5828.156 MHz : 6.225 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5825.00 MHz, Chain c, Temp: 20, Voltage: 24 Vdc

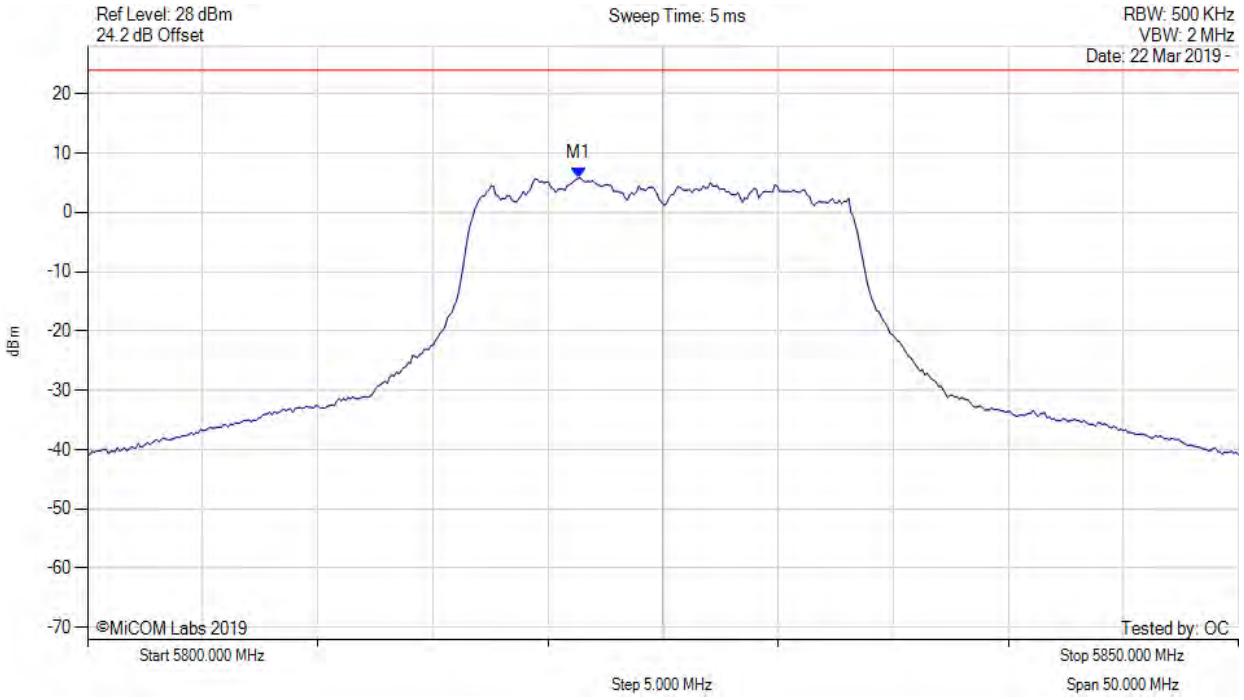



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5823.747 MHz : 5.921 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5825.00 MHz, Chain d, Temp: 20, Voltage: 24 Vdc

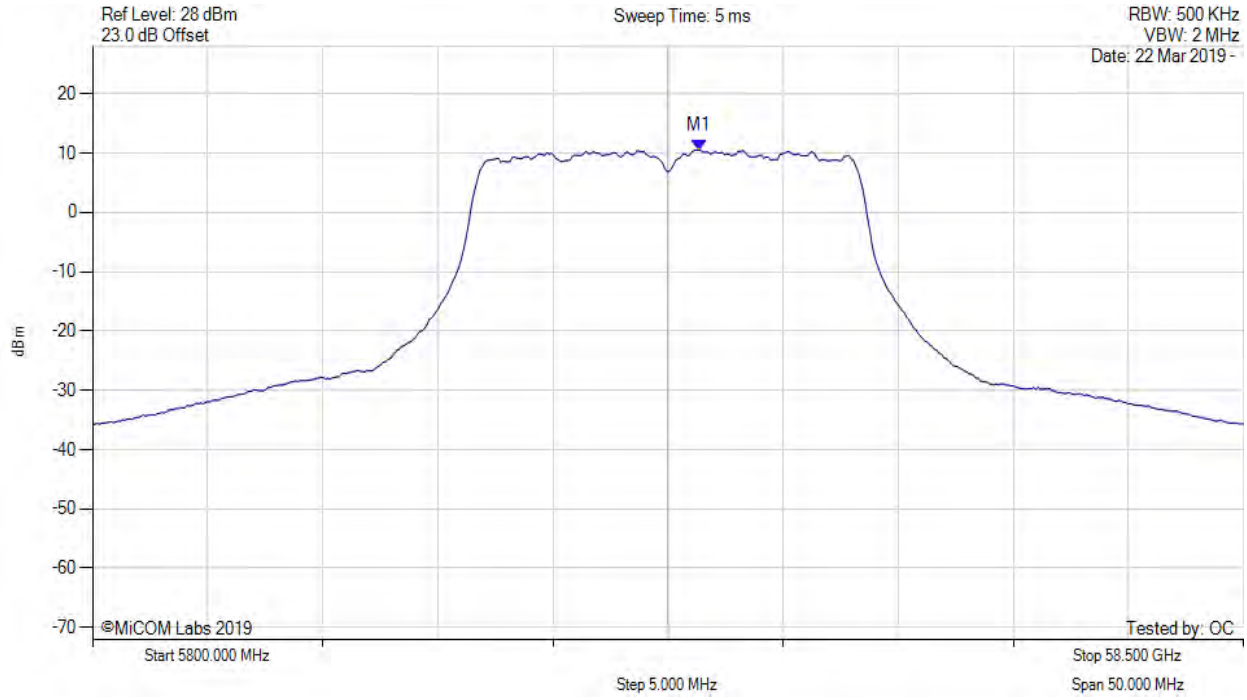



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5821.343 MHz : 5.789 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5825.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

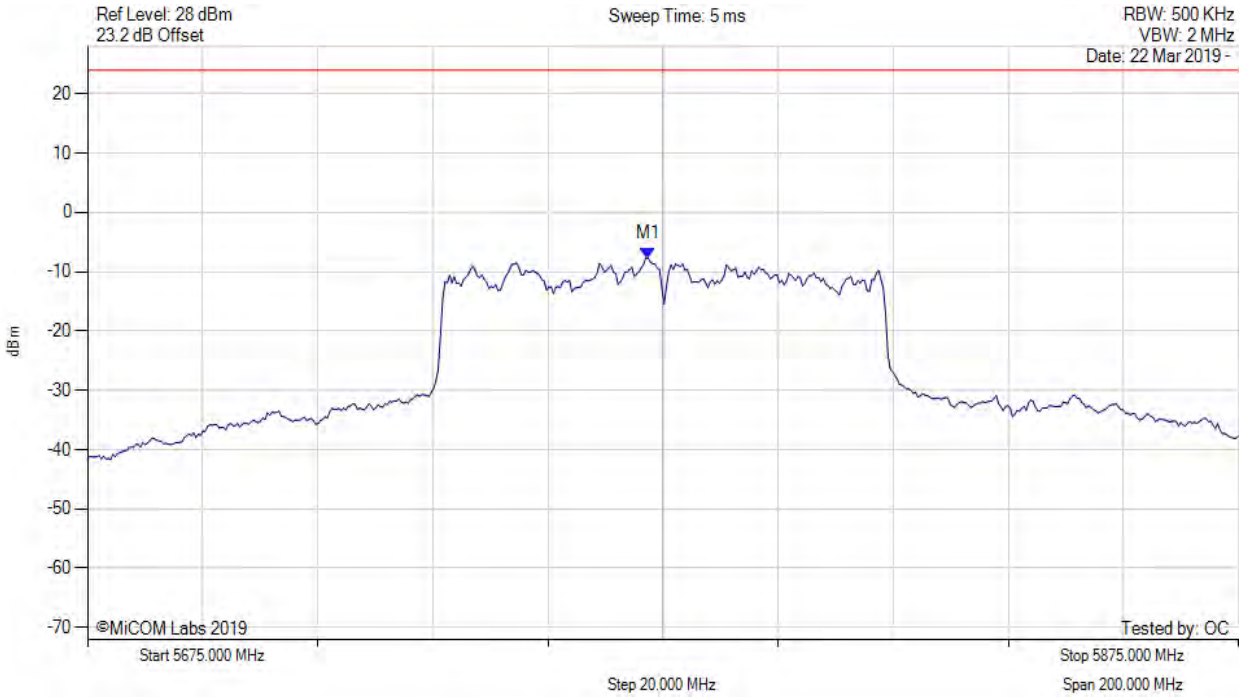



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5826.400 MHz : 10.521 dBm<br>M1 + DCCF : 5826.400 MHz : 10.883 dBm<br>Duty Cycle Correction Factor : +0.36 dB | Limit: ≤ 30.0 dBm<br>Margin: -19.1 dB |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5775.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

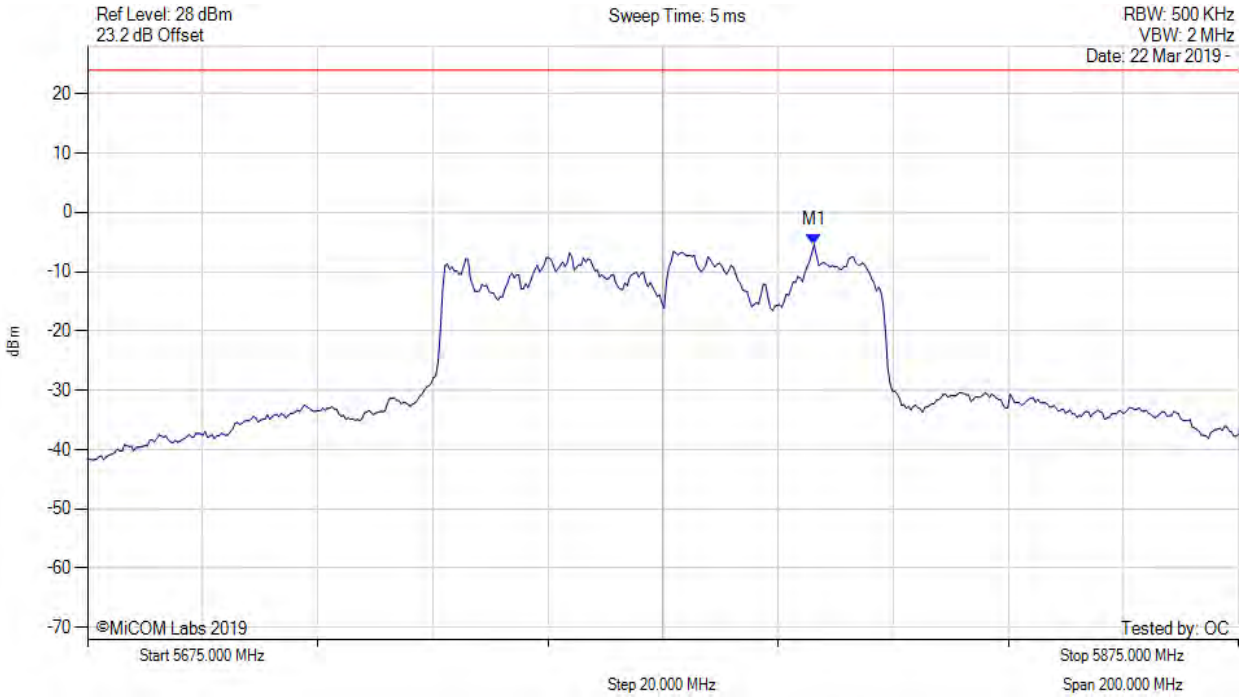



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5772.395 MHz : -7.684 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5775.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

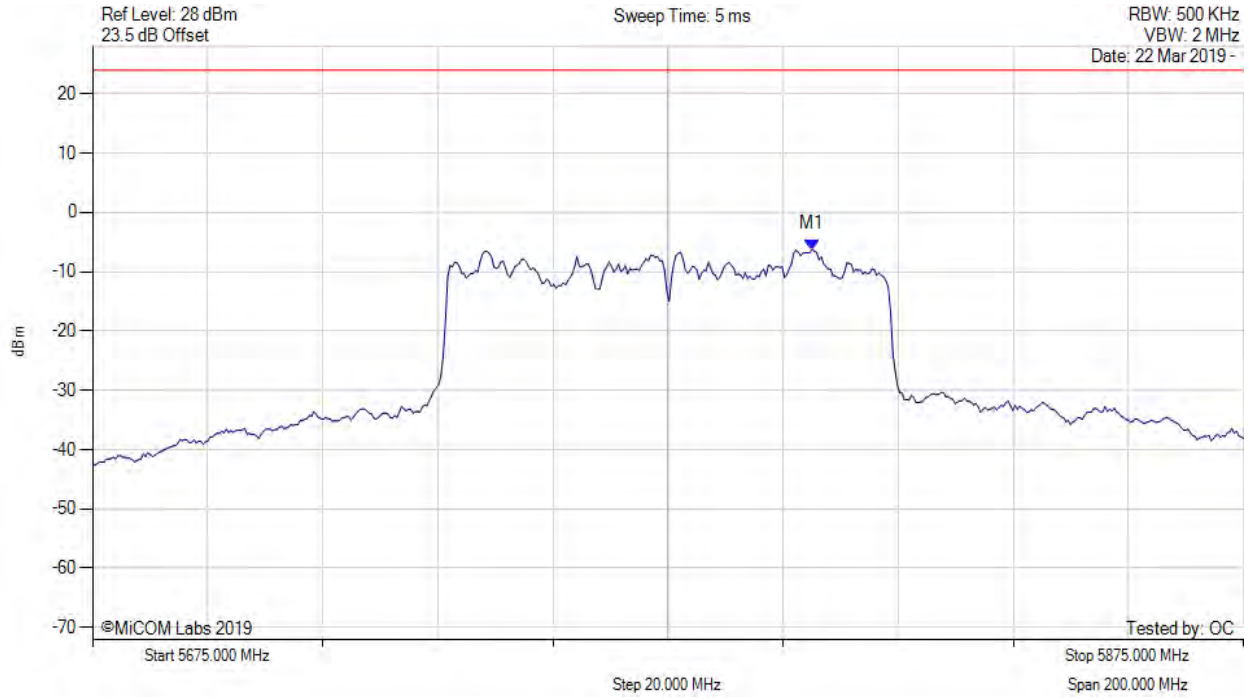



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5801.253 MHz : -5.473 dBm | Channel Frequency: 5775.00 MHz |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5775.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

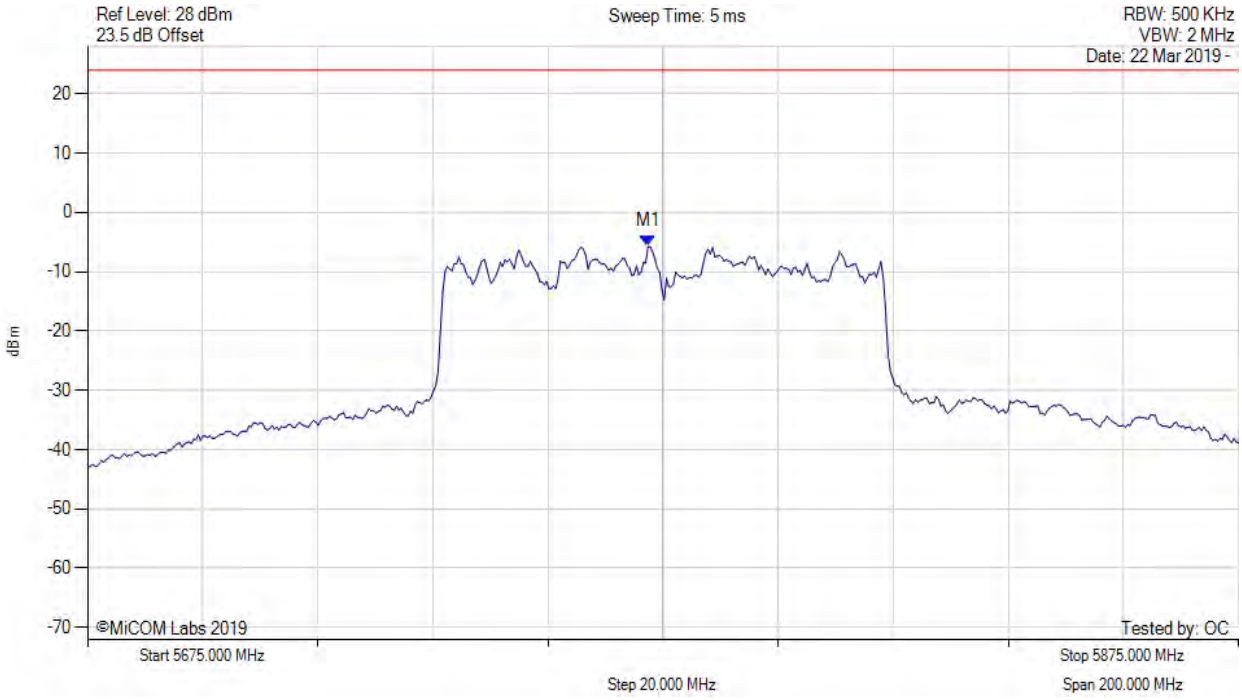



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5800.050 MHz : -6.272 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5775.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

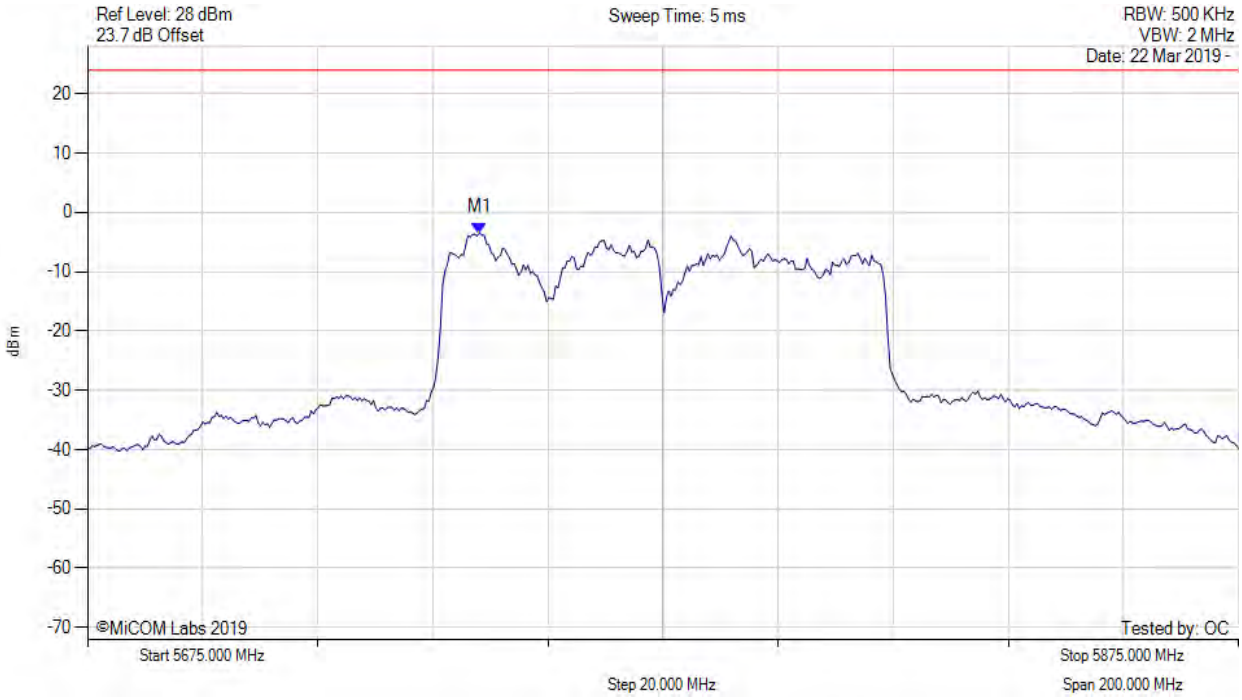



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5772.395 MHz : -5.772 dBm | Channel Frequency: 5775.00 MHz |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5775.00 MHz, Chain c, Temp: 20, Voltage: 24 Vdc

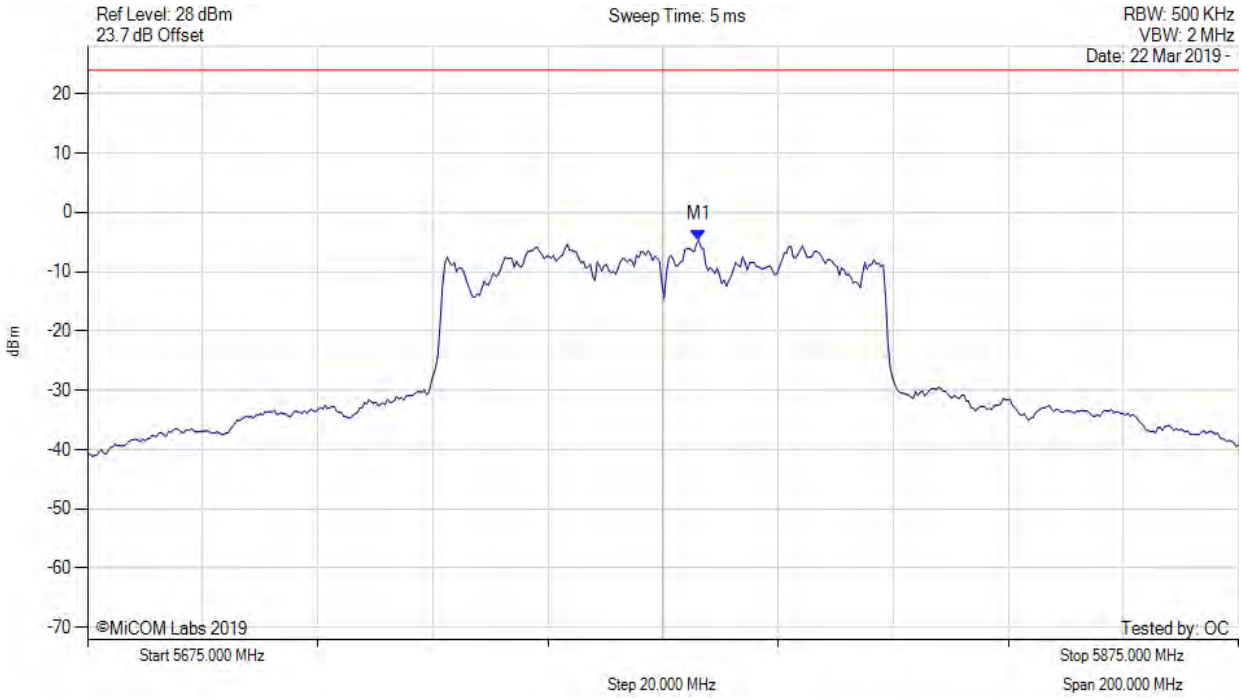



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5743.136 MHz : -3.466 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5775.00 MHz, Chain c, Temp: 20, Voltage: 24 Vdc

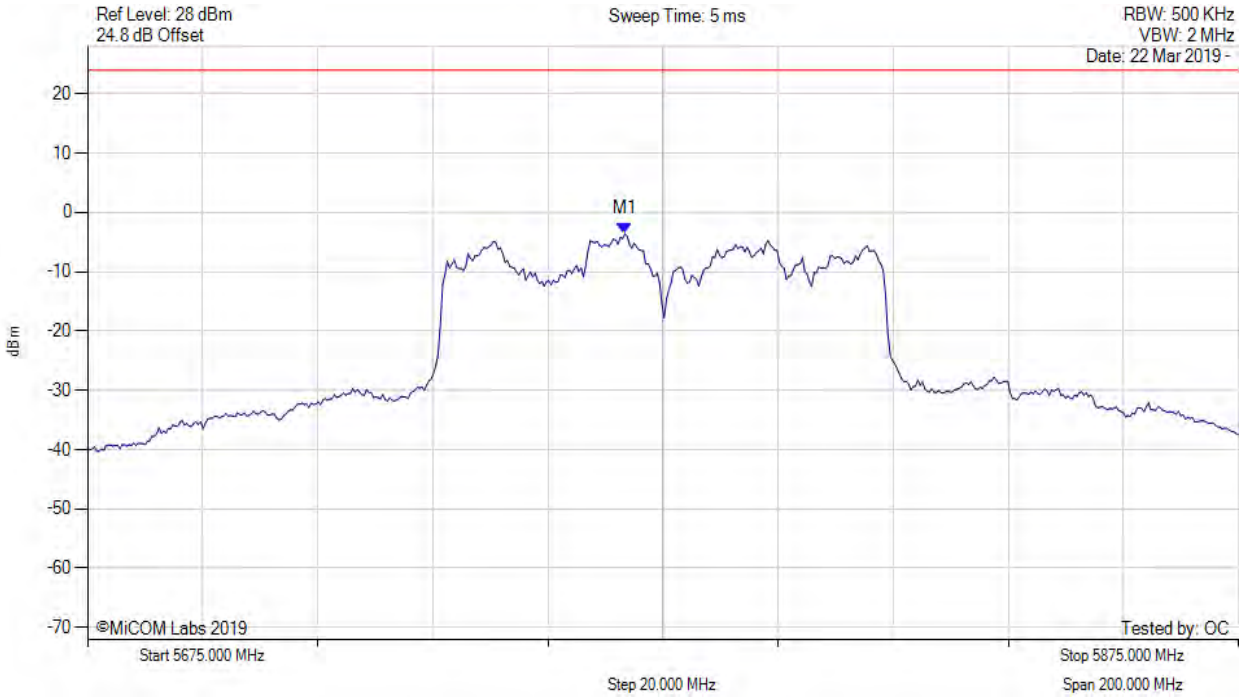



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5781.212 MHz : -4.640 dBm | Channel Frequency: 5775.00 MHz |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5775.00 MHz, Chain d, Temp: 20, Voltage: 24 Vdc

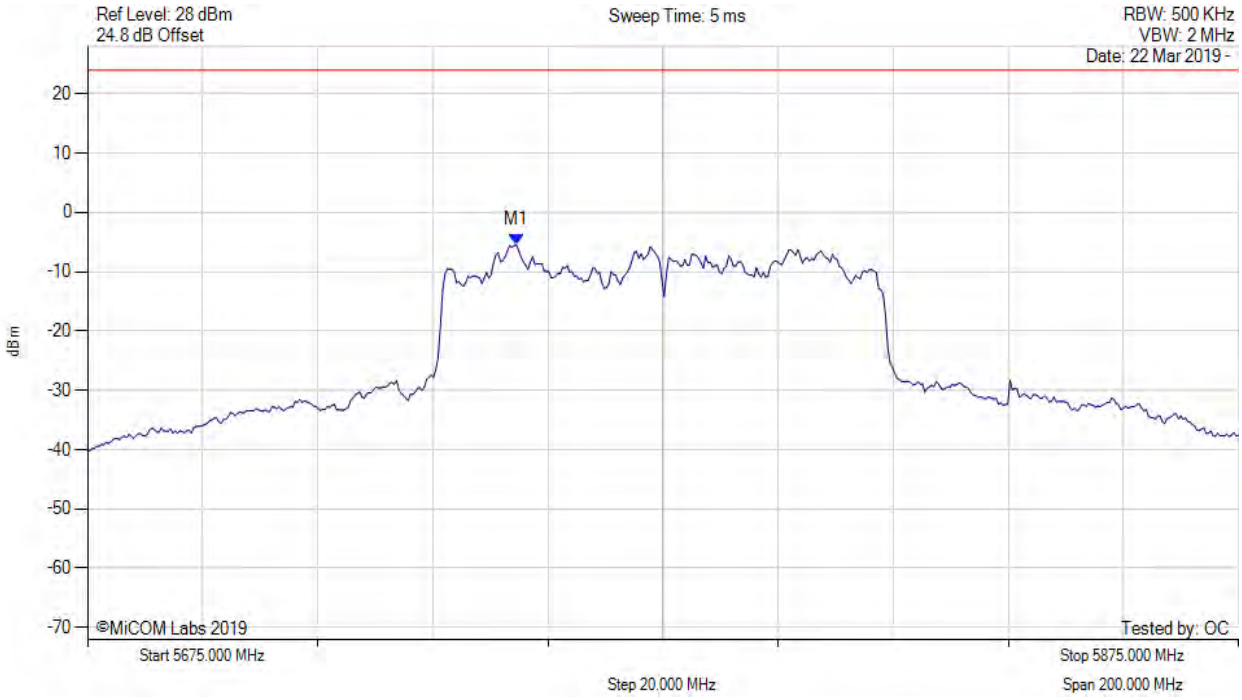



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5768.387 MHz : -3.609 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5775.00 MHz, Chain d, Temp: 20, Voltage: 24 Vdc

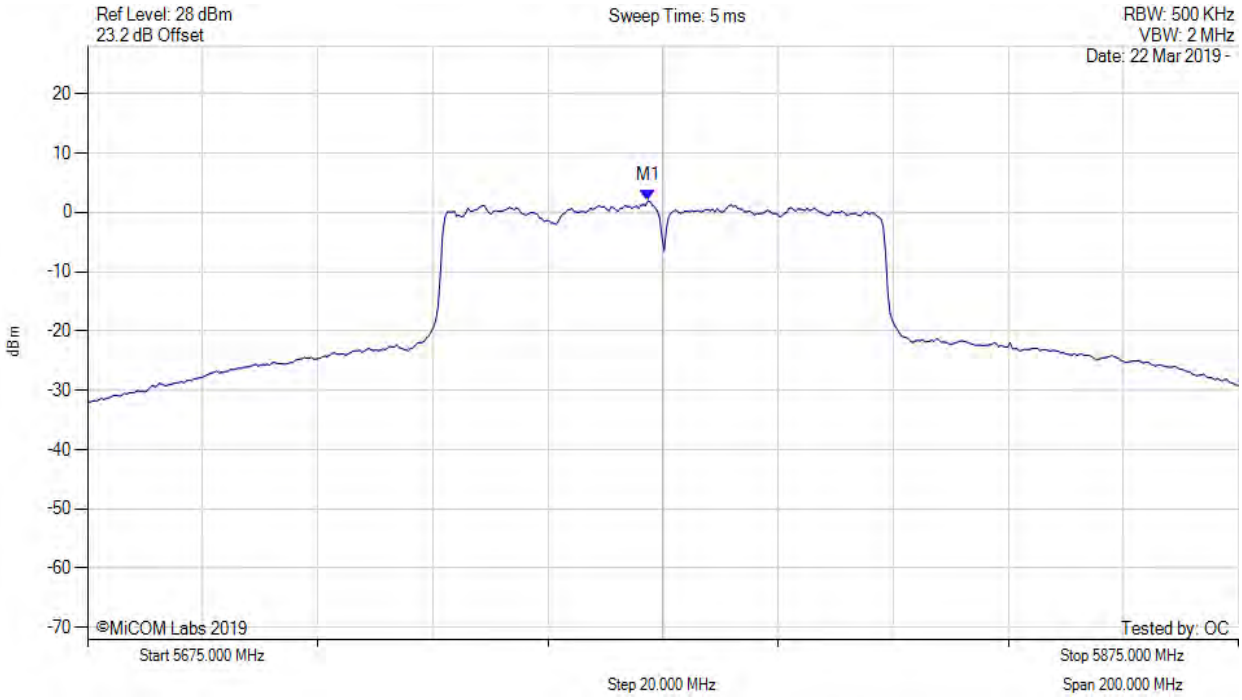



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5749.549 MHz : -5.527 dBm | Channel Frequency: 5775.00 MHz |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5775.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

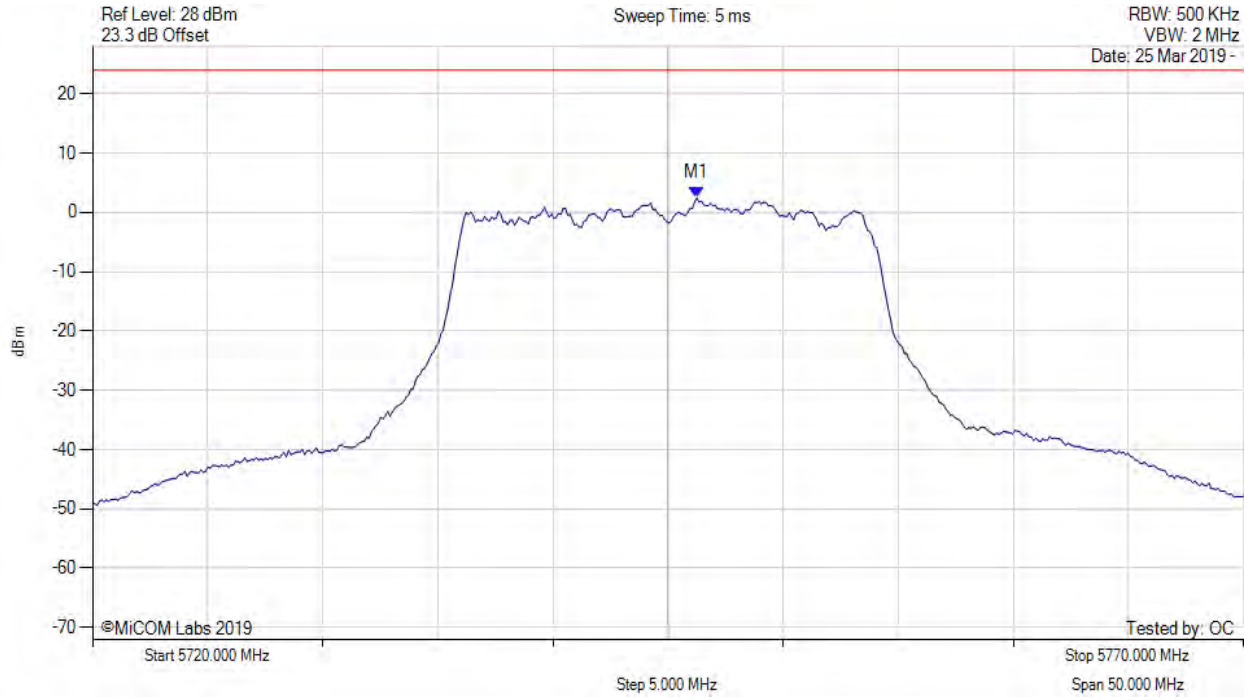



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5772.400 MHz : 1.976 dBm<br>M1 + DCCF : 5772.400 MHz : 3.111 dBm<br>Duty Cycle Correction Factor : +1.14 dB | Limit: ≤ 30.0 dBm<br>Margin: -26.9 dB |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5745.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

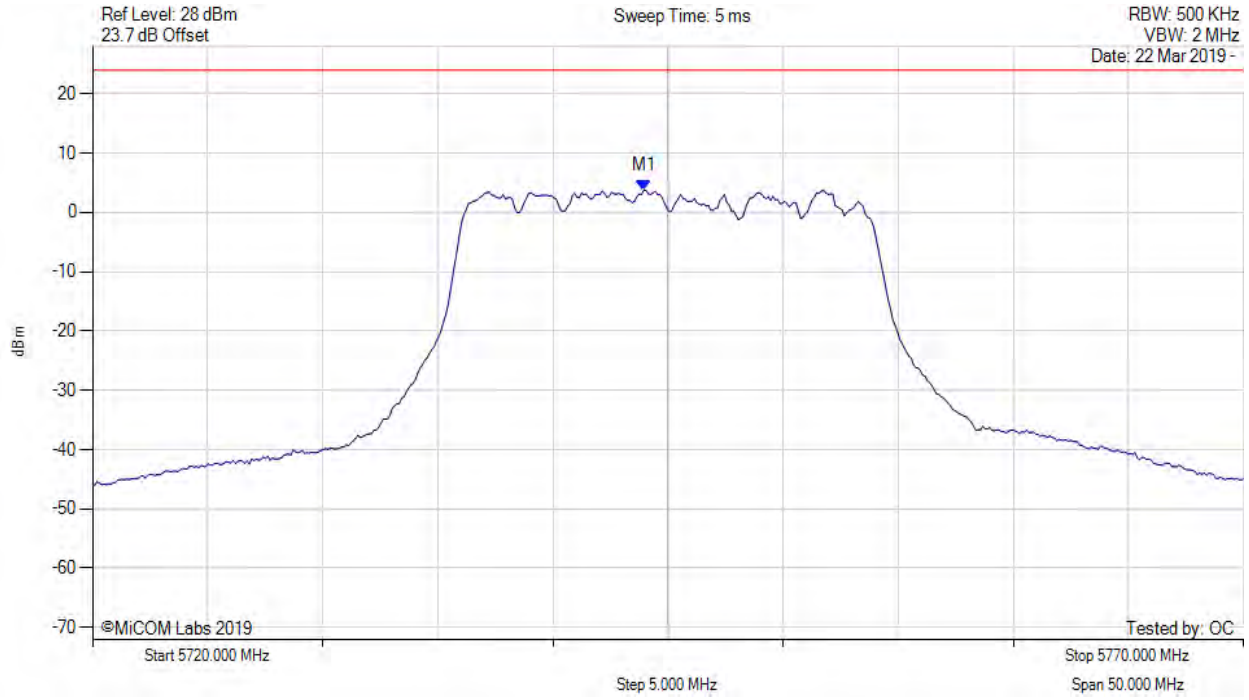



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5746.253 MHz : 2.416 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5745.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

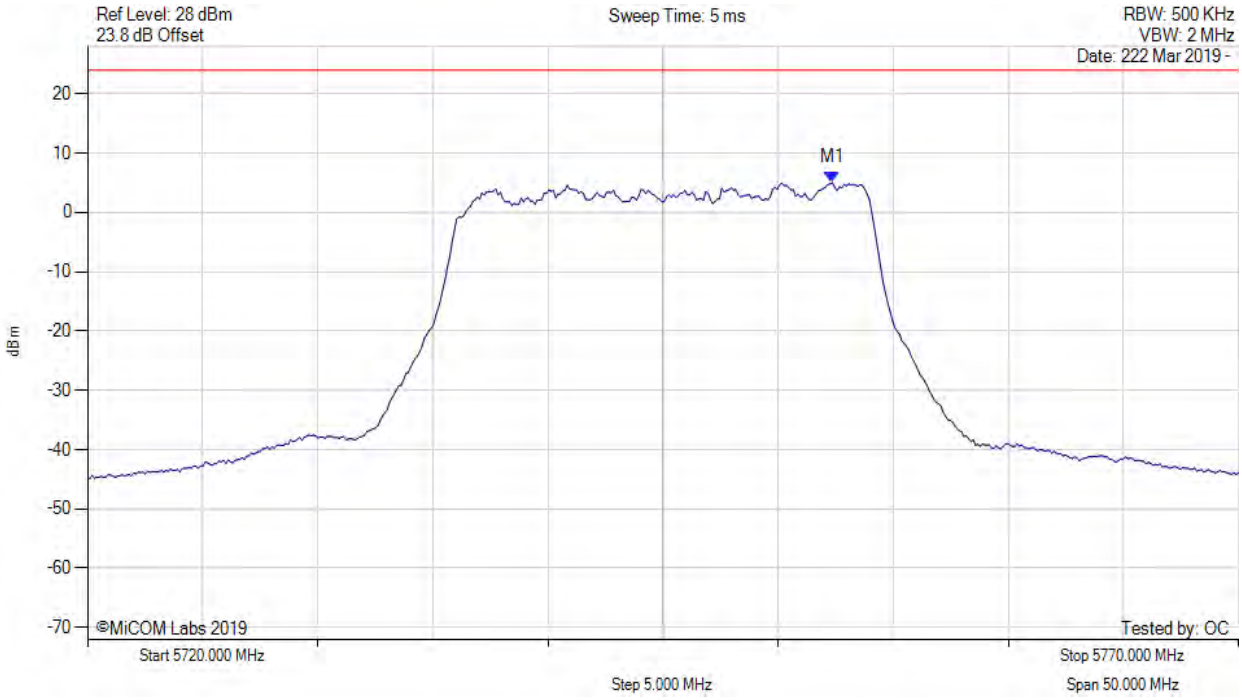



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5743.948 MHz : 3.722 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5745.00 MHz, Chain c, Temp: 20, Voltage: 24 Vdc

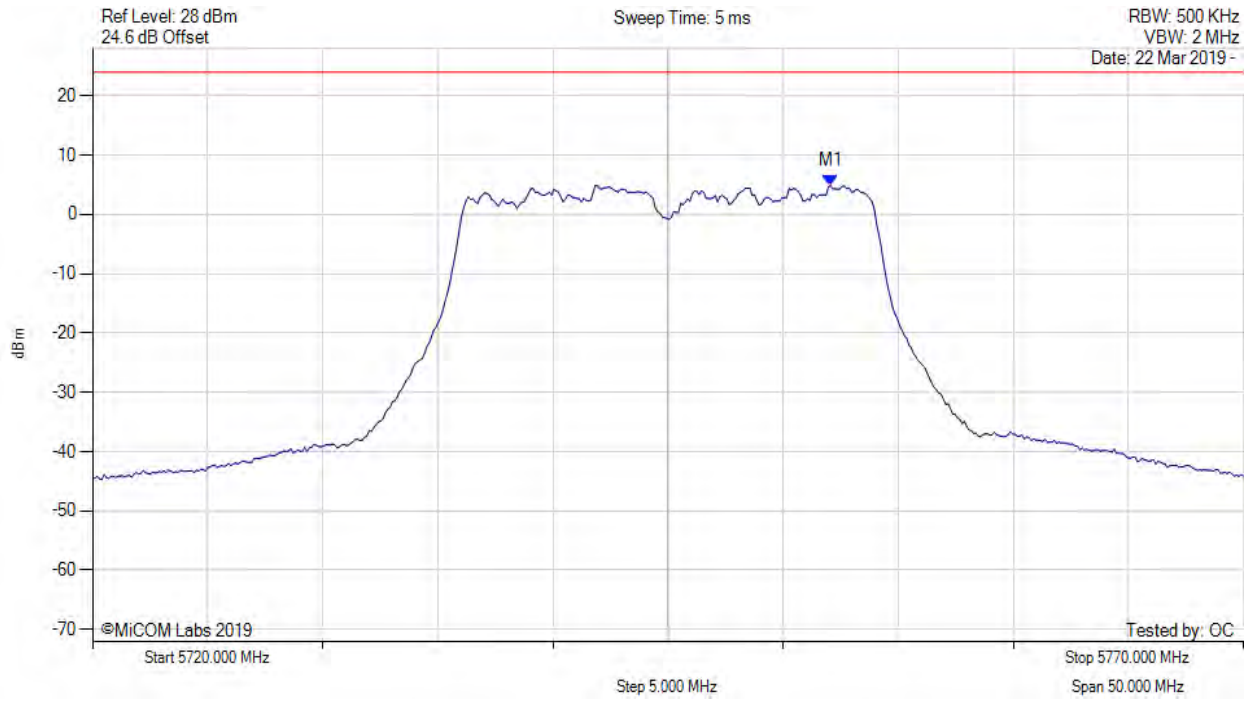



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5752.365 MHz : 5.010 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5745.00 MHz, Chain d, Temp: 20, Voltage: 24 Vdc

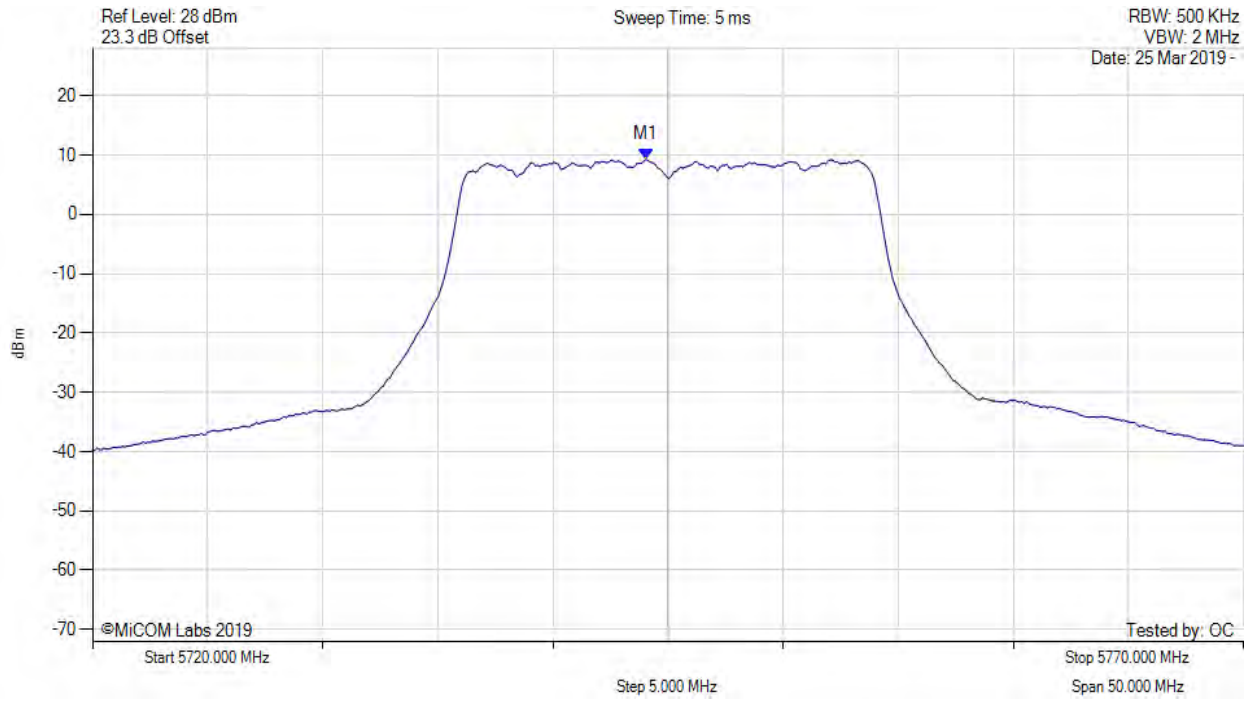



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5752.064 MHz : 4.871 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5745.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

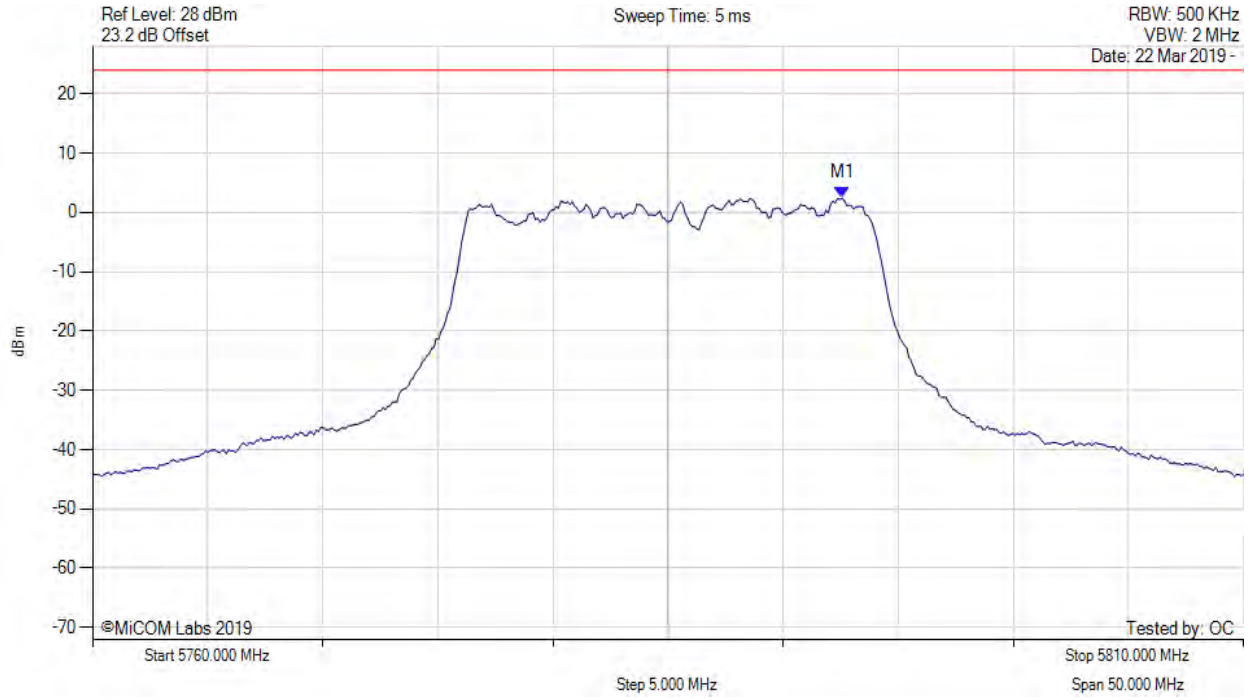



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5744.000 MHz : 9.275 dBm<br>M1 + DCCF : 5744.000 MHz : 9.590 dBm<br>Duty Cycle Correction Factor : +0.32 dB | Limit: ≤ 30.0 dBm<br>Margin: -20.4 dB |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5785.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

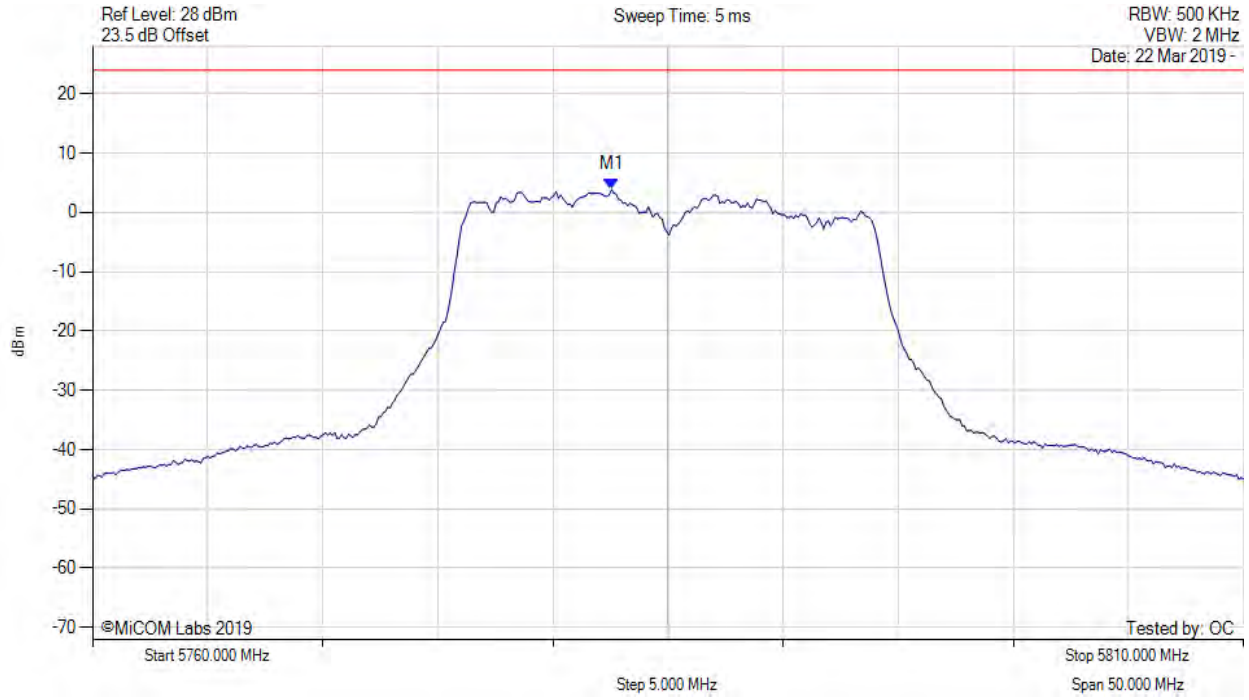



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5792.565 MHz : 2.400 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5785.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

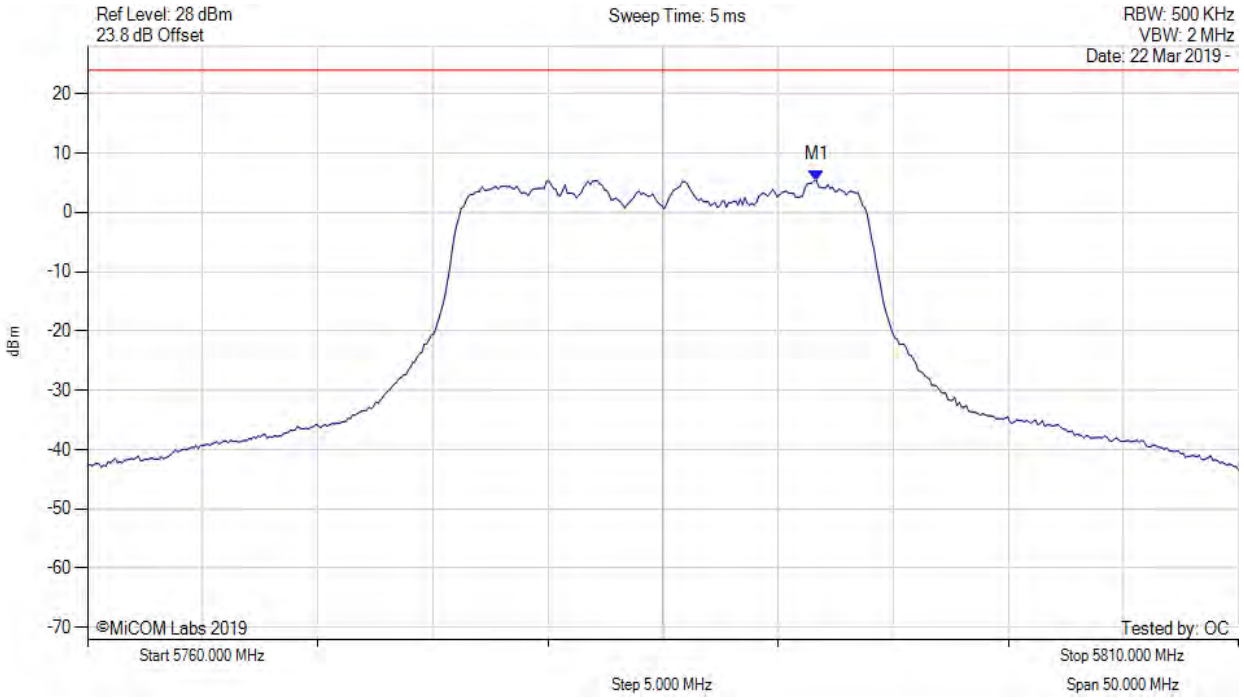



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5782.545 MHz : 3.841 dBm | Channel Frequency: 5785.00 MHz |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5785.00 MHz, Chain c, Temp: 20, Voltage: 24 Vdc

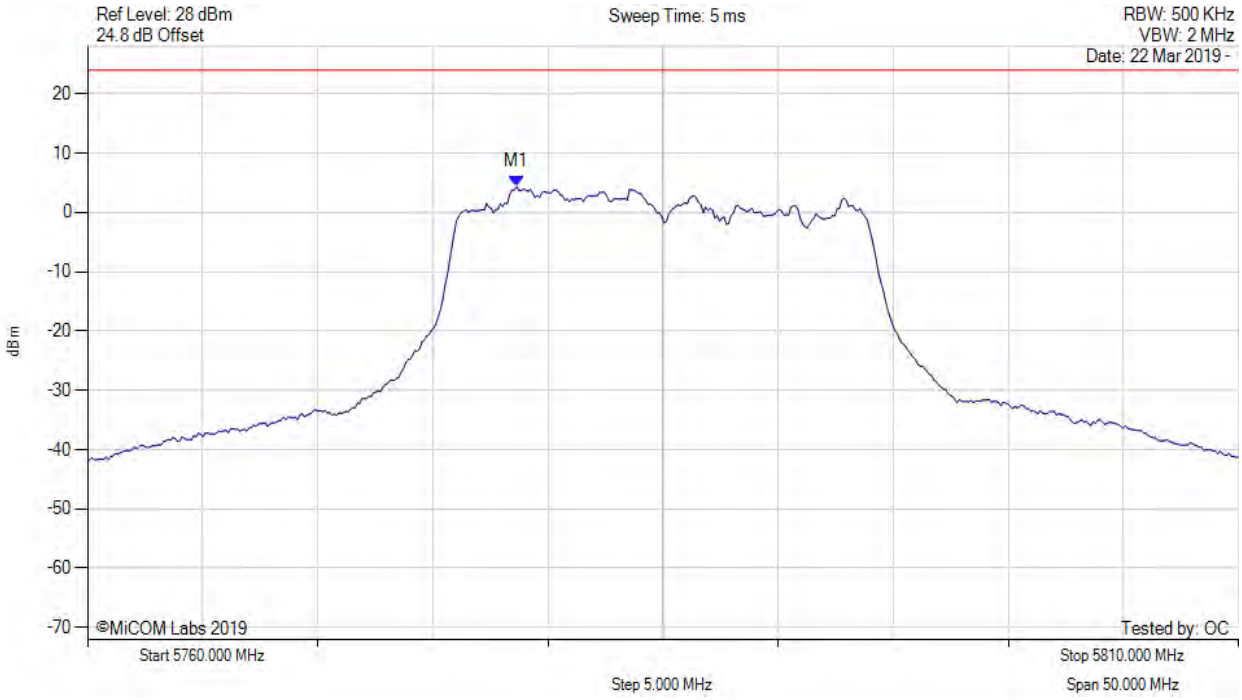



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5791.663 MHz : 5.407 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5785.00 MHz, Chain d, Temp: 20, Voltage: 24 Vdc

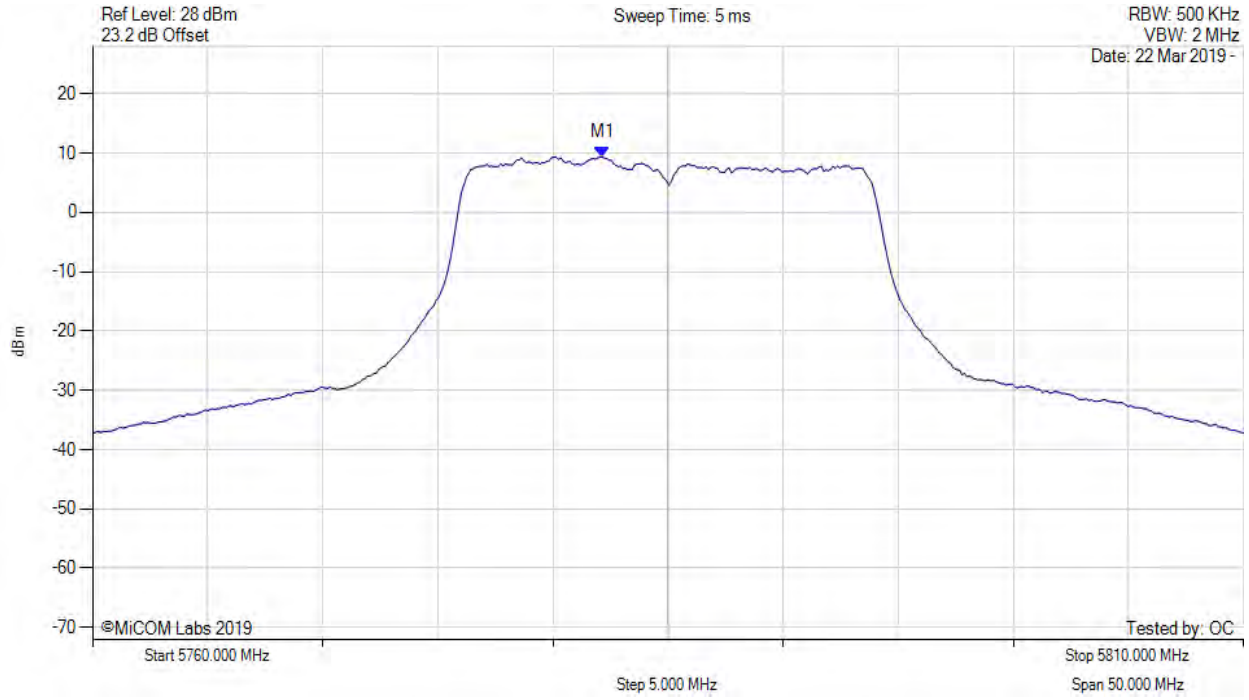



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5778.637 MHz : 4.316 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5785.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

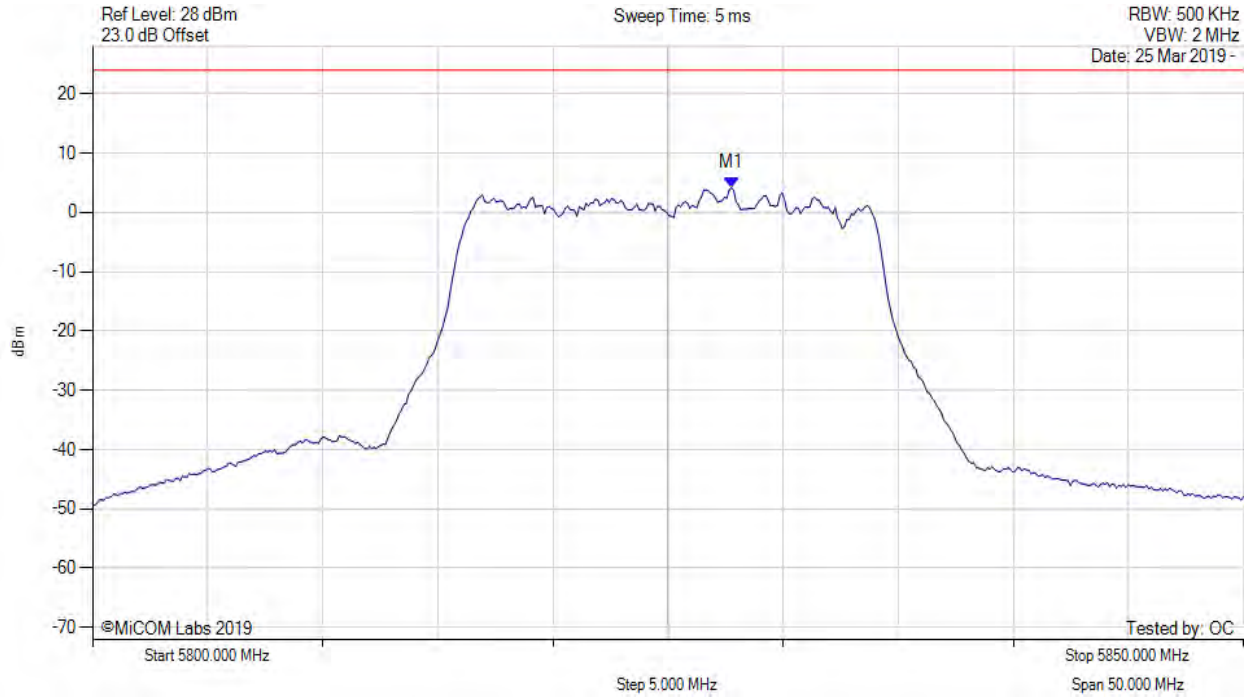



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5782.100 MHz : 9.325 dBm<br>M1 + DCCF : 5782.100 MHz : 9.687 dBm<br>Duty Cycle Correction Factor : +0.32 dB | Limit: ≤ 30.0 dBm<br>Margin: -20.3 dB |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5825.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

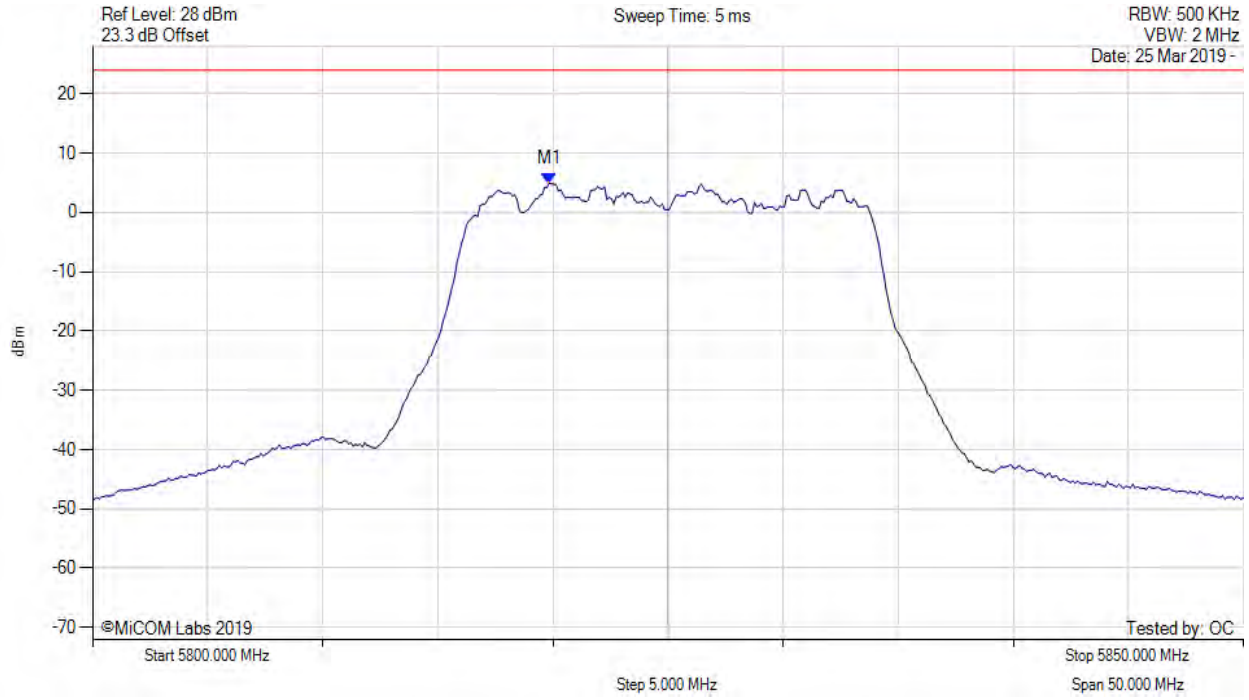



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5827.756 MHz : 4.199 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5825.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

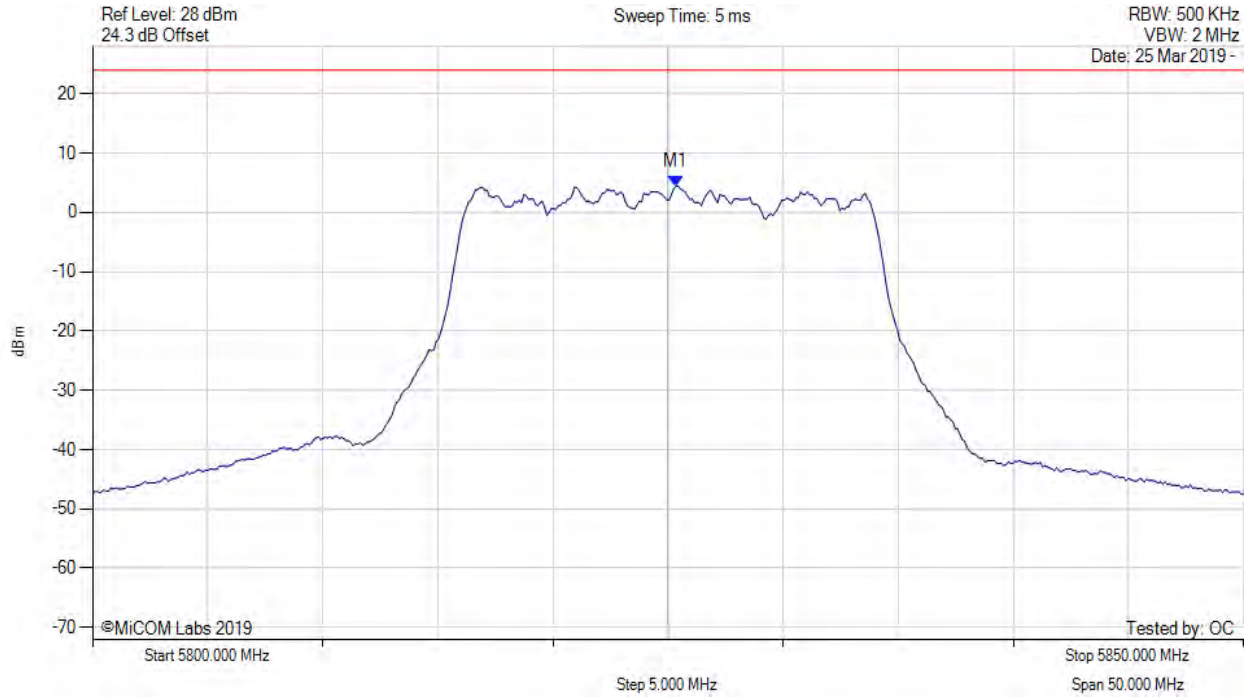



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5819.840 MHz : 4.909 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5825.00 MHz, Chain c, Temp: 20, Voltage: 24 Vdc

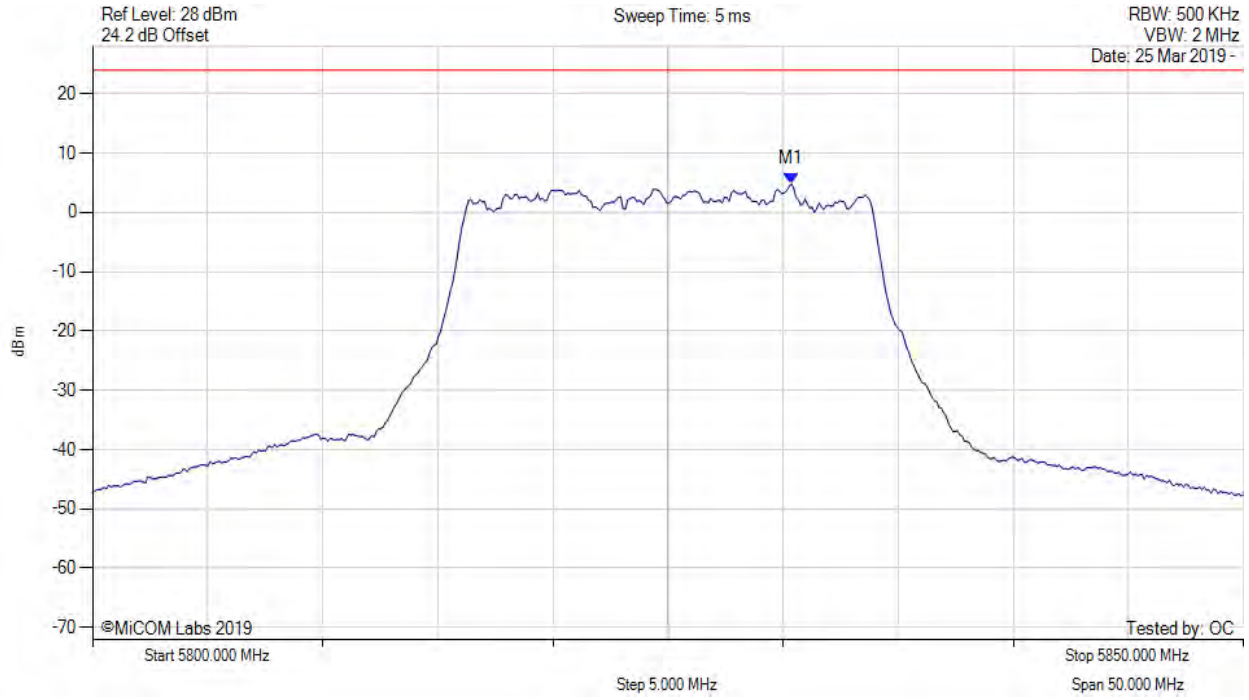



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5825.351 MHz : 4.463 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5825.00 MHz, Chain d, Temp: 20, Voltage: 24 Vdc

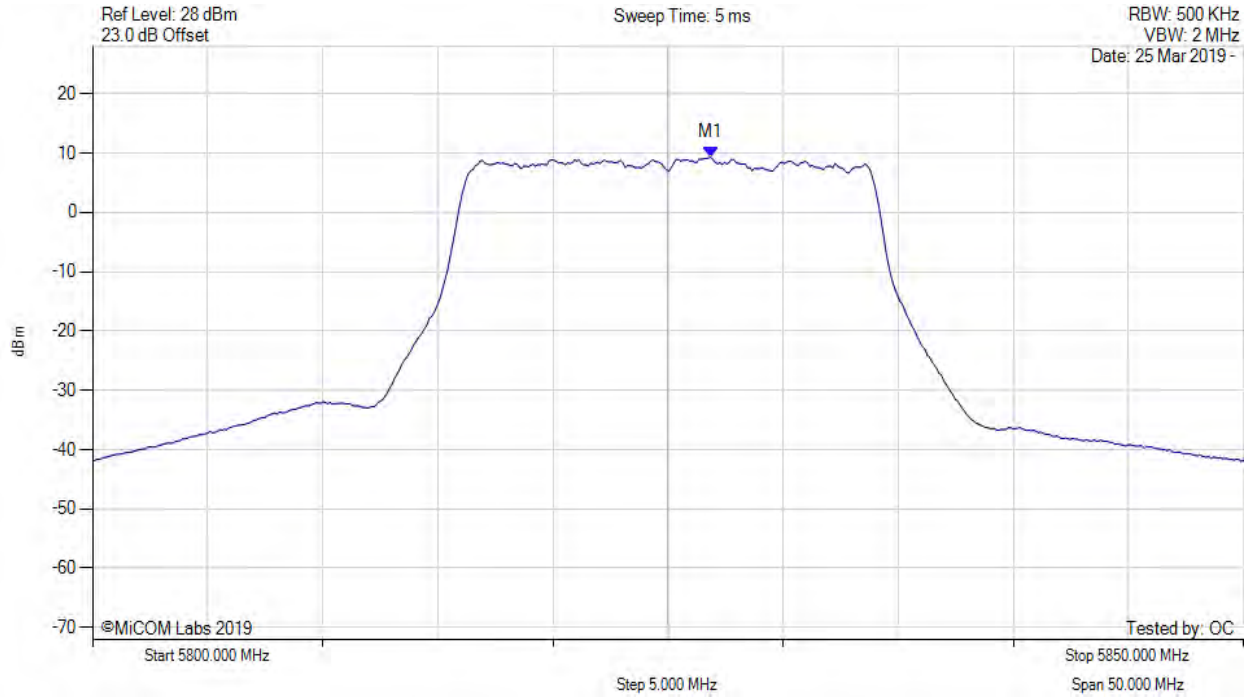



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5830.361 MHz : 4.830 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5825.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

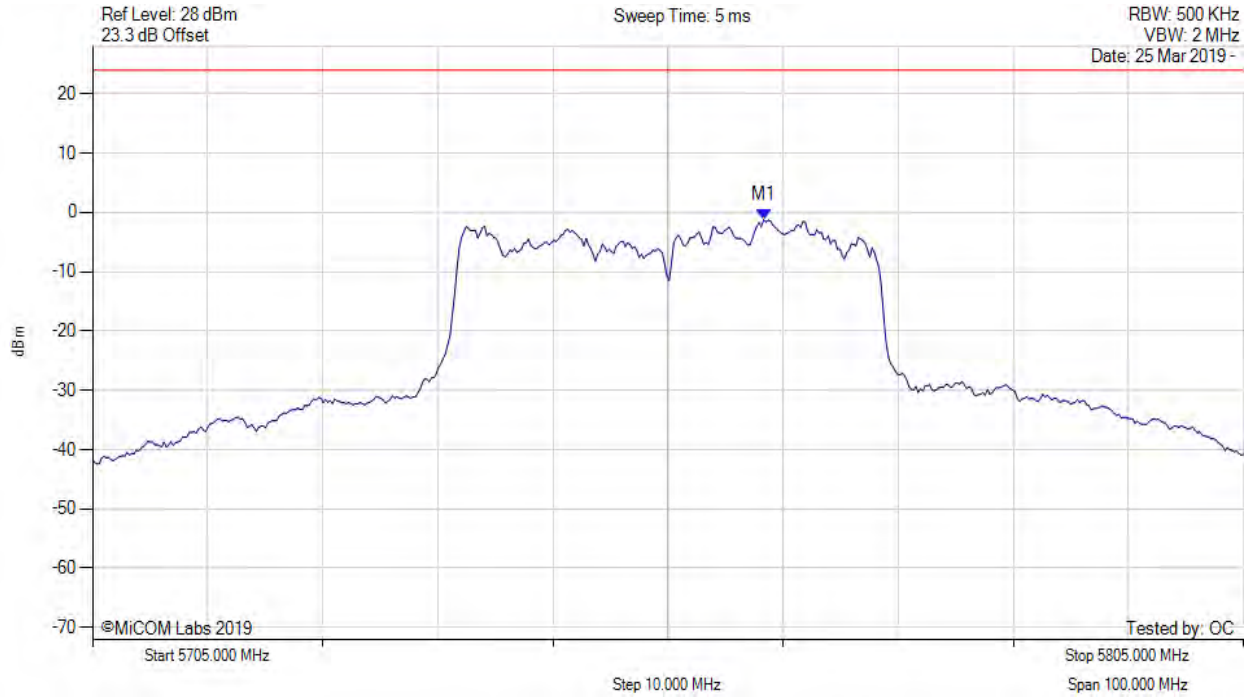



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5826.900 MHz : 9.325 dBm<br>M1 + DCCF : 5826.900 MHz : 9.640 dBm<br>Duty Cycle Correction Factor : +0.32 dB | Limit: ≤ 30.0 dBm<br>Margin: -20.4 dB |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5755.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

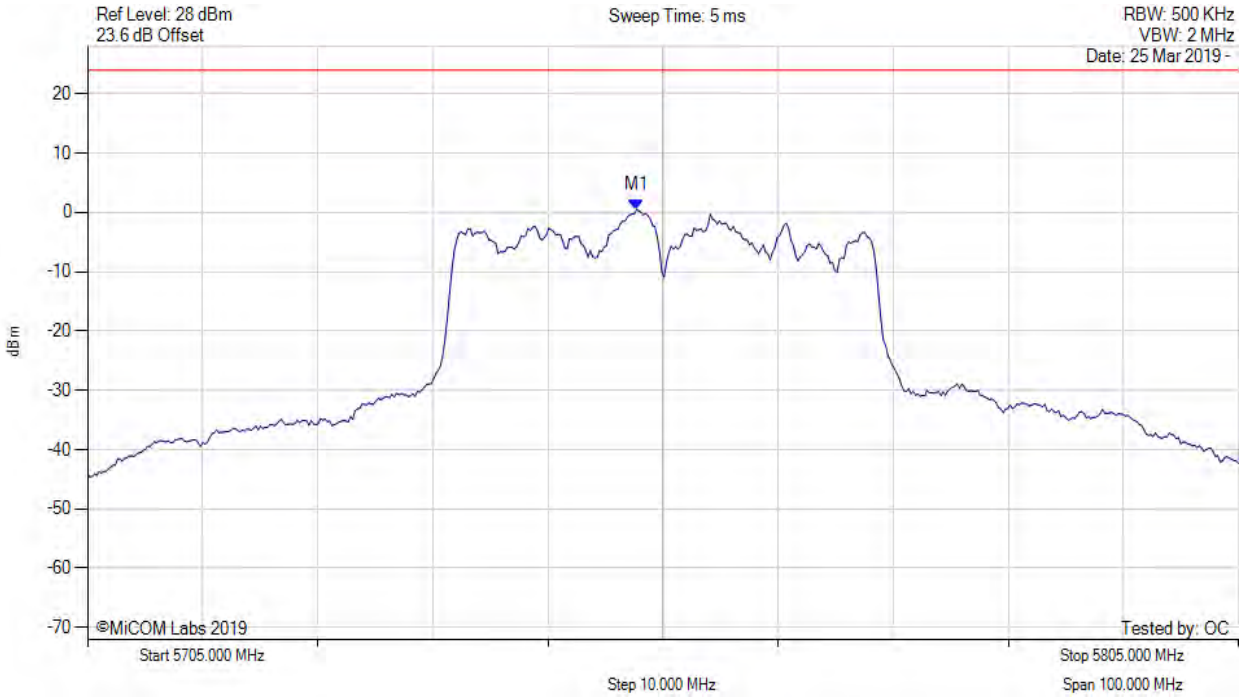



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5763.317 MHz : -1.276 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5755.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

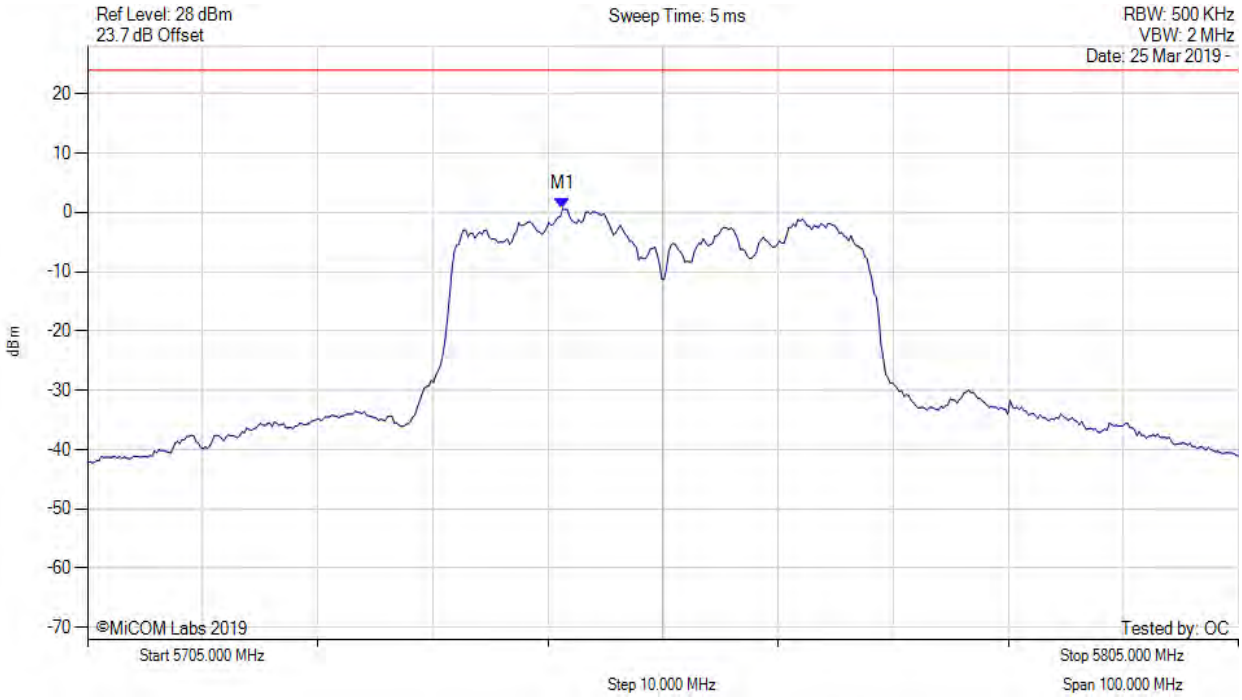



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5752.695 MHz : 0.433 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5755.00 MHz, Chain c, Temp: 20, Voltage: 24 Vdc

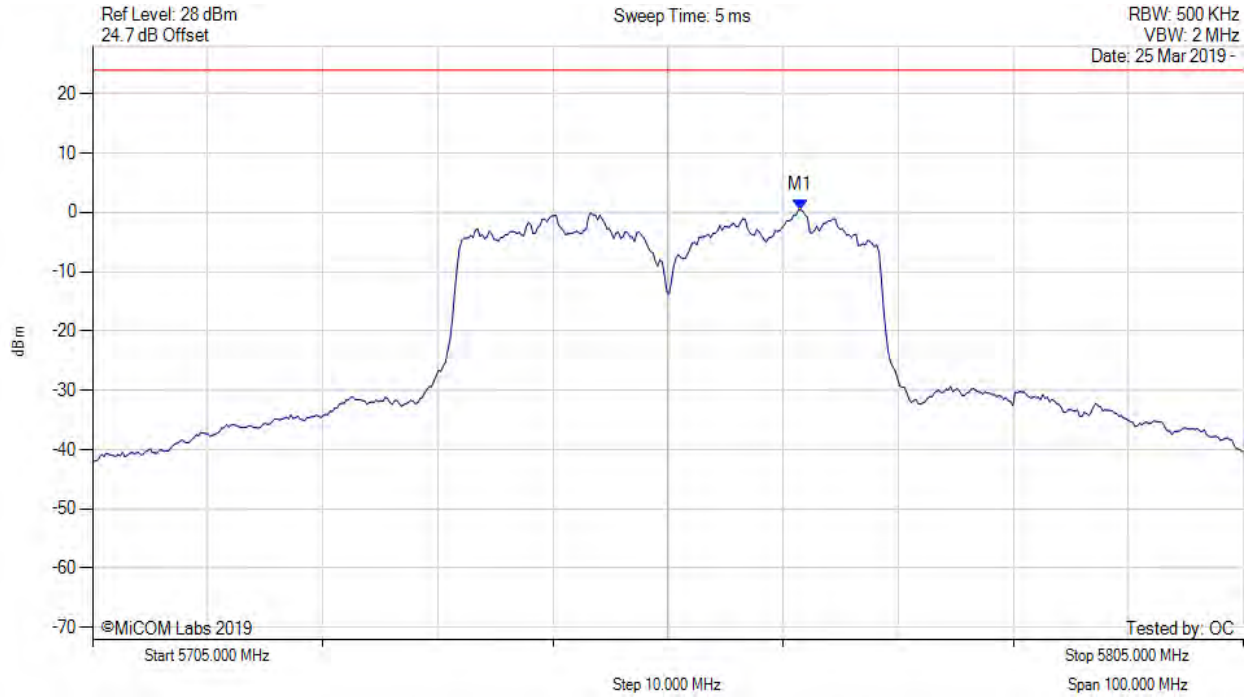



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5746.283 MHz : 0.575 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5755.00 MHz, Chain d, Temp: 20, Voltage: 24 Vdc

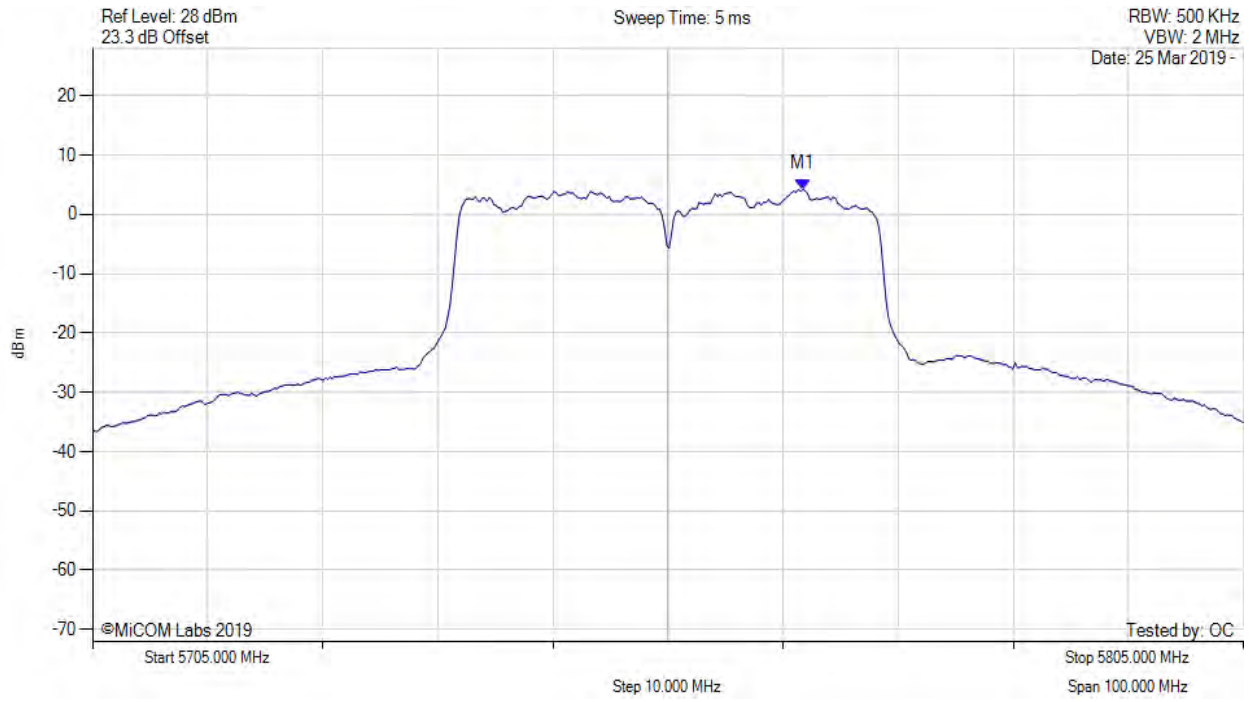



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5766.523 MHz : 0.391 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5755.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

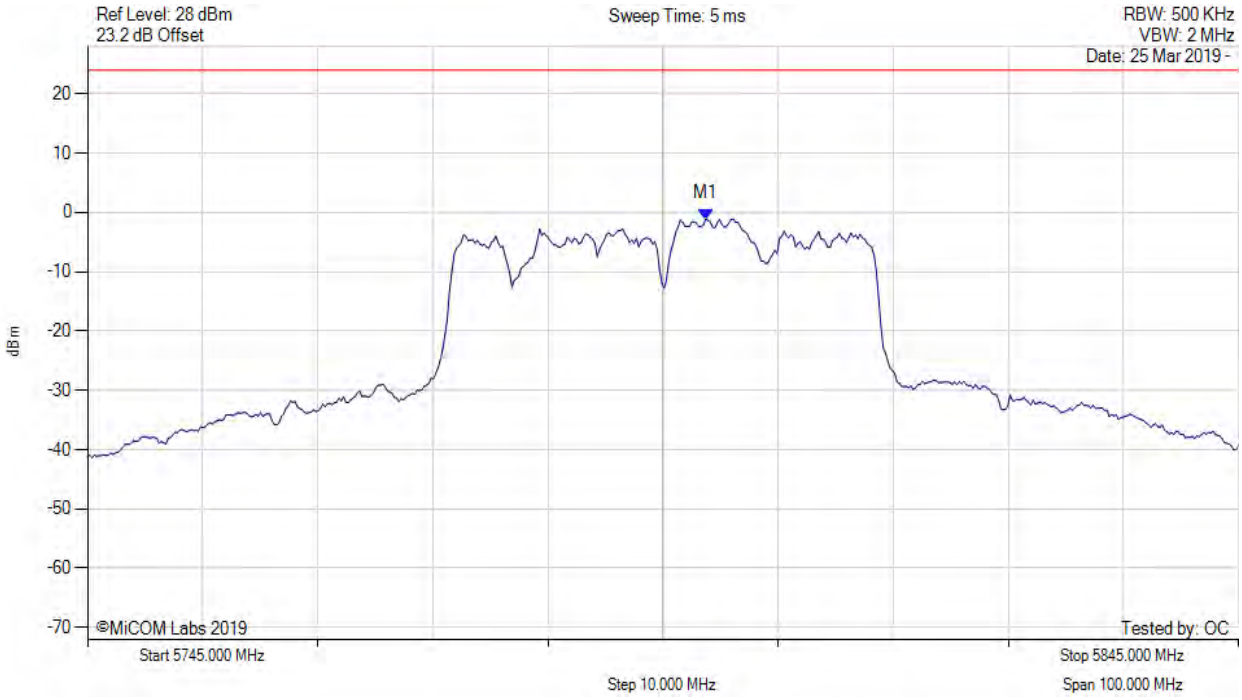



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5766.700 MHz : 4.238 dBm<br>M1 + DCCF : 5766.700 MHz : 5.262 dBm<br>Duty Cycle Correction Factor : +1.02 dB | Limit: ≤ 30.0 dBm<br>Margin: -24.8 dB |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5795.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

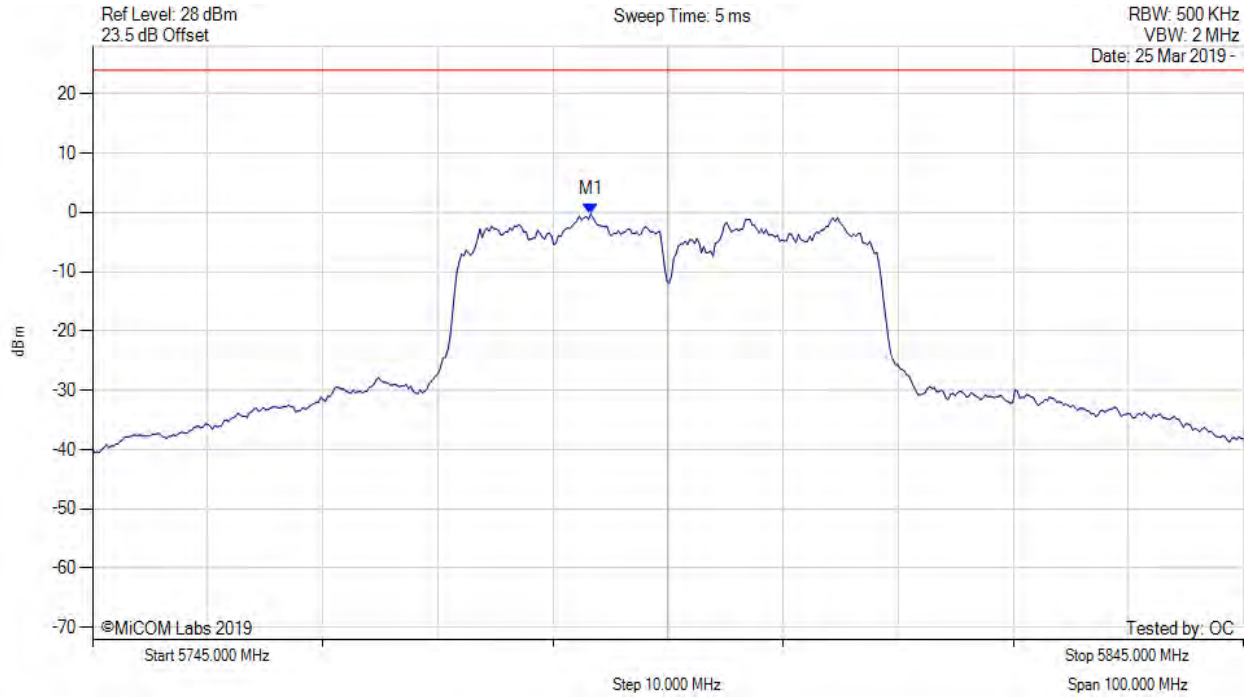



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5798.707 MHz : -1.116 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5795.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

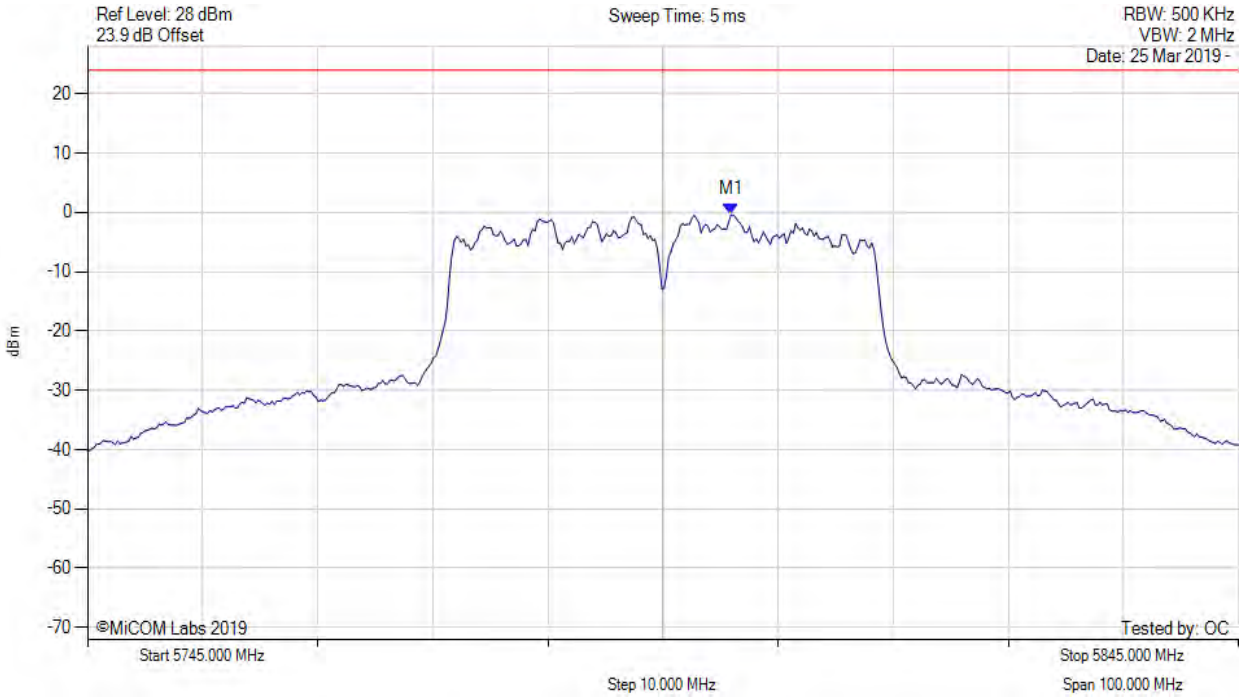



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5788.287 MHz : -0.335 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5795.00 MHz, Chain c, Temp: 20, Voltage: 24 Vdc

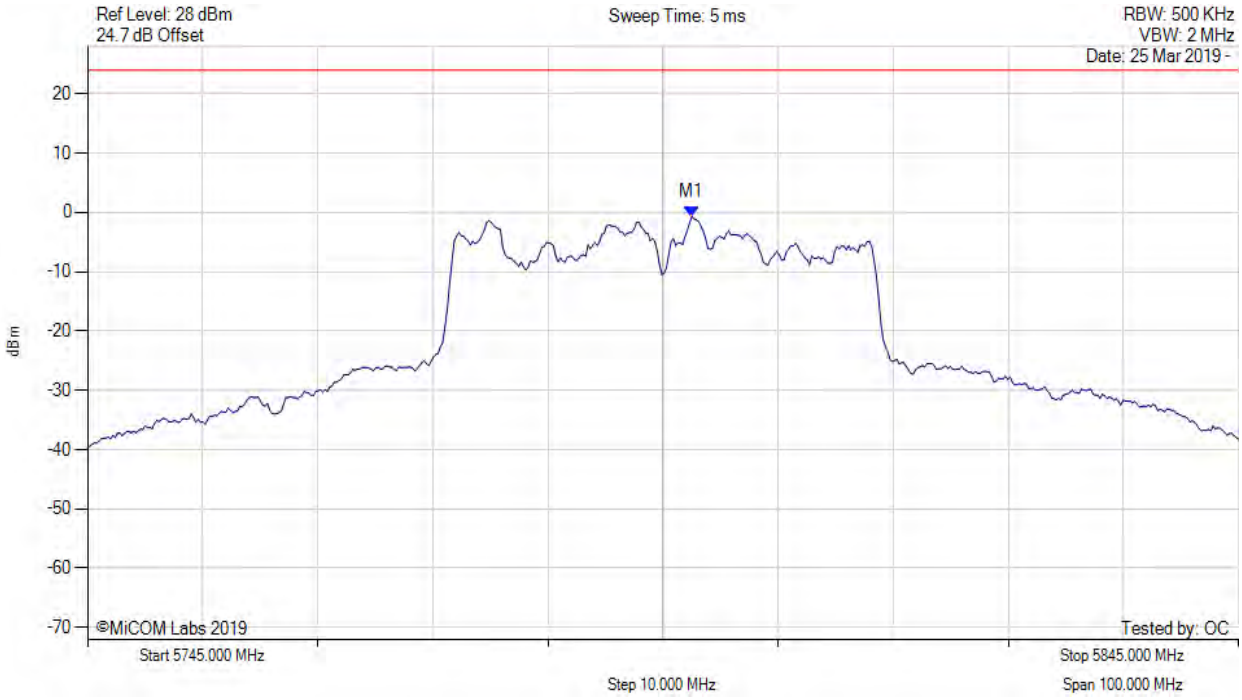



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5800.912 MHz : -0.396 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5795.00 MHz, Chain d, Temp: 20, Voltage: 24 Vdc

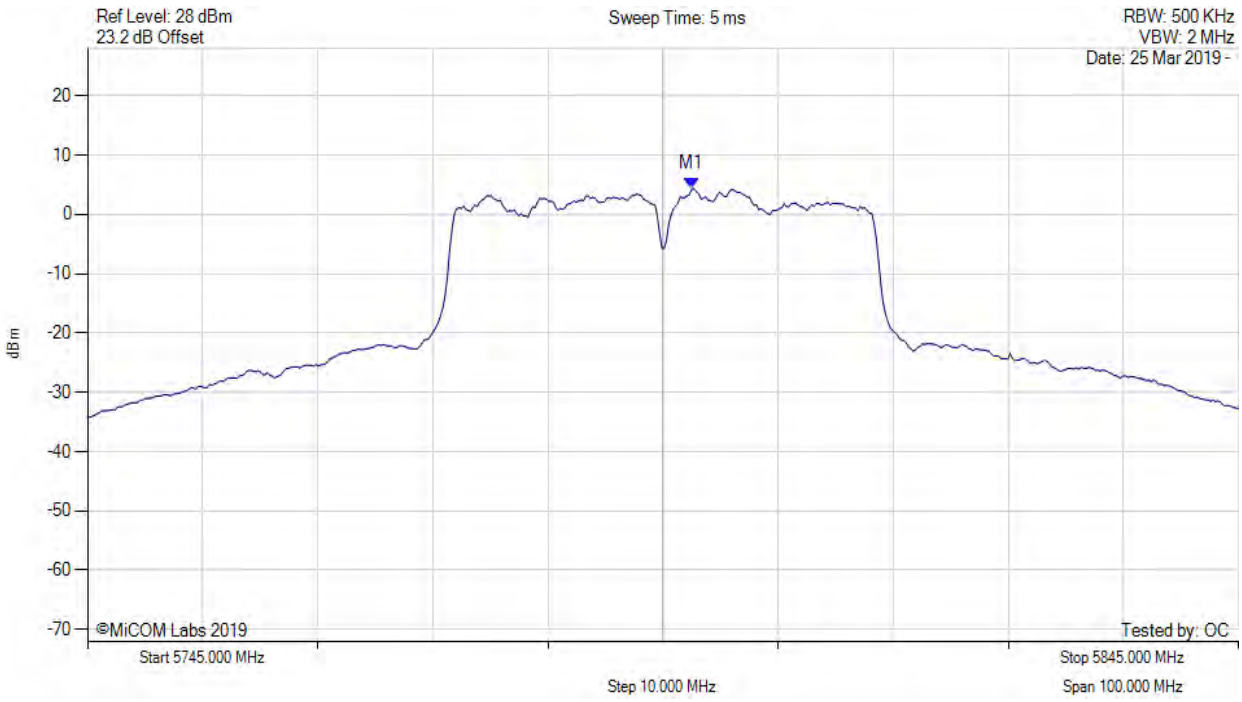



| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5797.505 MHz : -0.699 dBm | Limit: ≤ 23.980 dBm |

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5795.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc



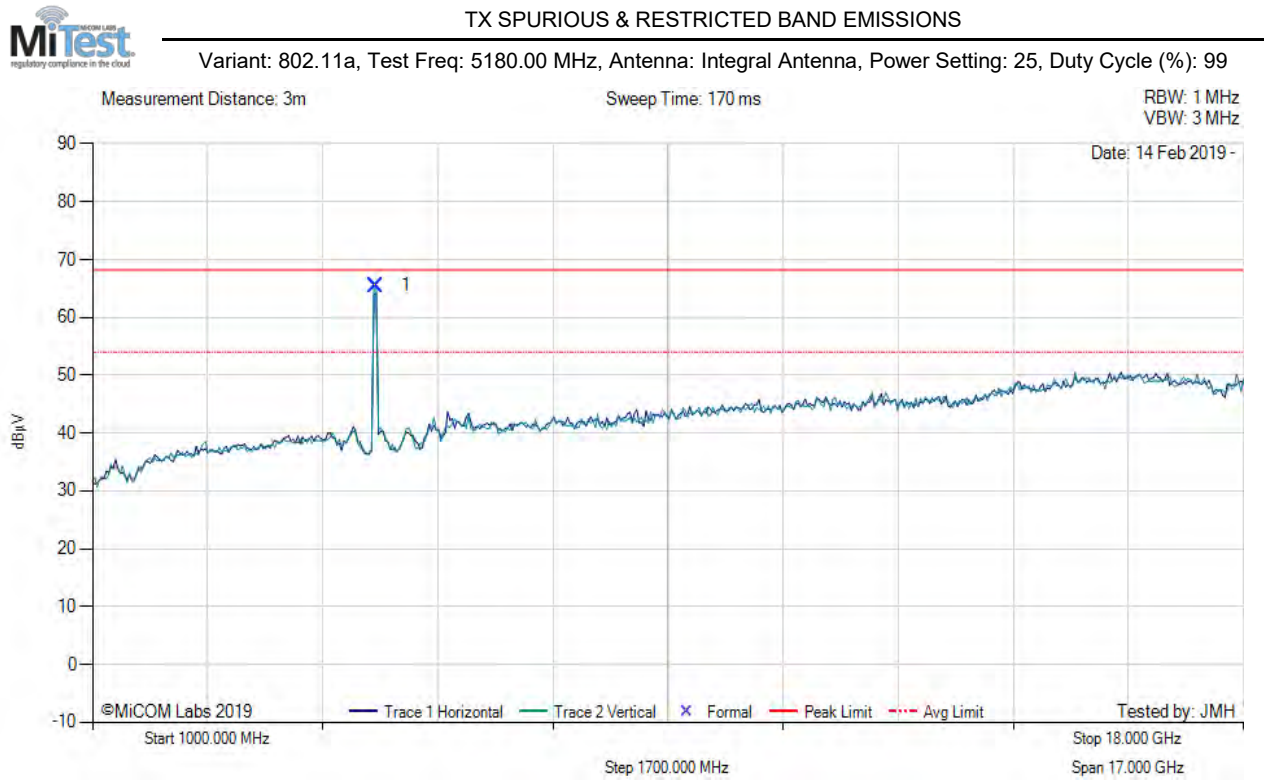

| Analyzer Setup | Marker:Frequency:Amplitude | Test Results |
|---|---|---|
| Detector = RMS<br>Sweep Count = 100<br>RF Atten (dB) = 20<br>Trace Mode = VIEW | M1 : 5797.500 MHz : 4.318 dBm<br>M1 + DCCF : 5797.500 MHz : 5.342 dBm<br>Duty Cycle Correction Factor : +1.02 dB | Limit: ≤ 30.0 dBm<br>Margin: -24.7 dB |

back to matrix

# A.3. Radiated

## A.3.1. TX Spurious & Restricted Band Emissions

### A.3.1.1. Integral Antenna



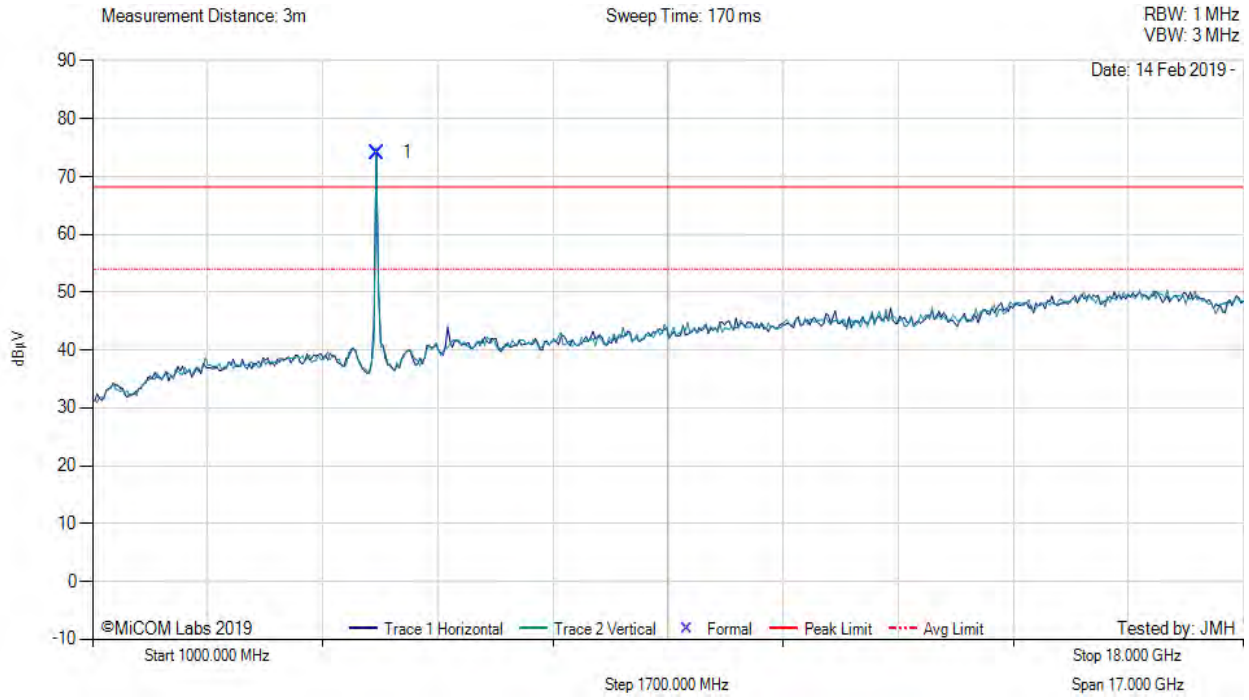

| 1000.00 - 18000.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Num | Frequency MHz | Raw dBµV | Cable Loss dB | AF dB/m | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1 | 5183.71 | 73.33 | 3.68 | -11.49 | 65.52 | Fundamental | Horizontal | 101 | 0 | -- | -- | |

**Test Notes:** EUT Powered by power supply, connected to laptop outside chamber. 5 GHz notch in front of amp to prevent overloads.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5200.00 MHz, Antenna: Integral Antenna, Power Setting: 30, Duty Cycle (%): 99



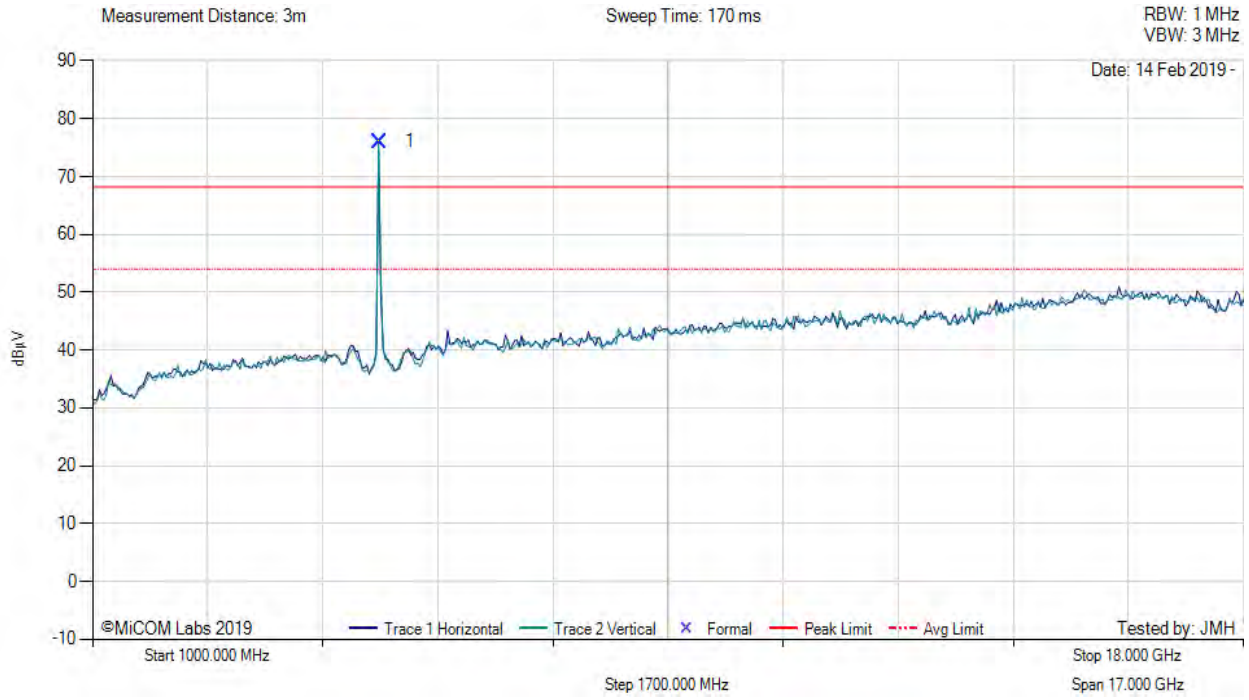

| 1000.00 - 18000.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| 1 | 5203.00 | 88.72 | -2.64 | -11.94 | 74.14 | Fundamental | Vertical | 100 | 0 | -- | -- | |

**Test Notes:** EUT Powered by power supply, connected to laptop outside chamber. 5 GHz notch in front of amp to prevent overloads.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5240.00 MHz, Antenna: Integral Antenna, Power Setting: 30, Duty Cycle (%): 99



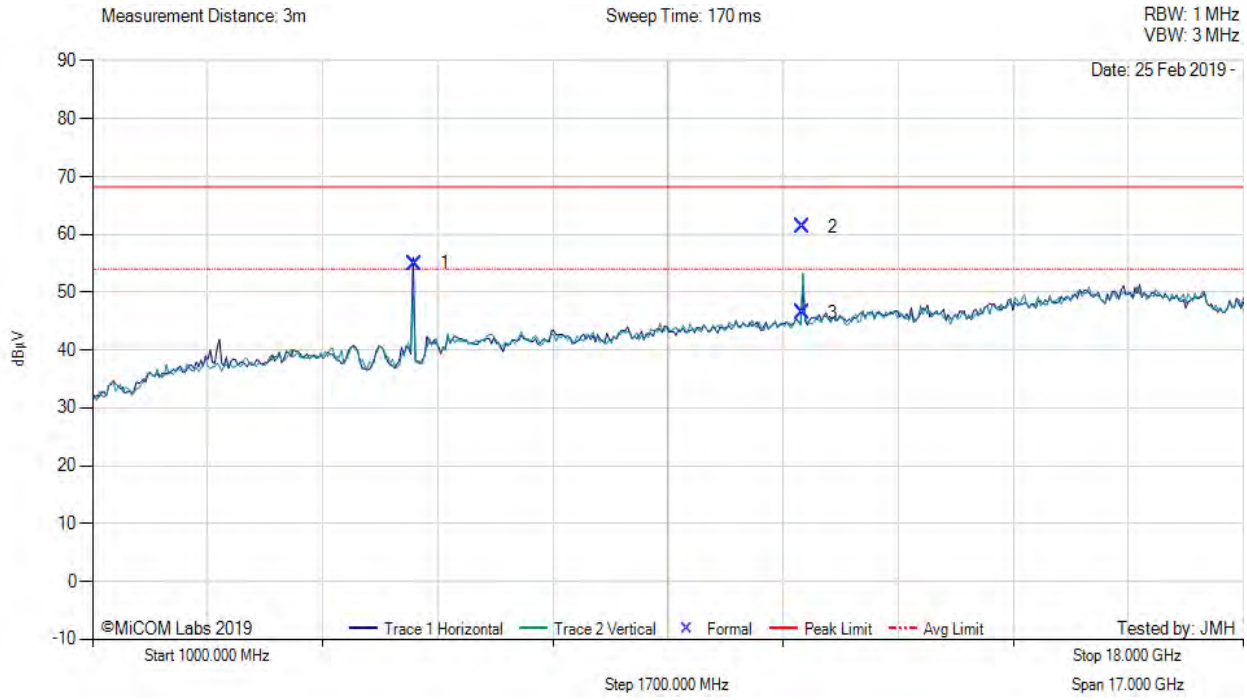

| 1000.00 - 18000.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| 1 | 5236.96 | 90.93 | -2.62 | -12.28 | 76.03 | Fundamental | Vertical | 100 | 0 | -- | -- | |

**Test Notes:** EUT Powered by power supply, connected to laptop outside chamber. 5 GHz notch in front of amp to prevent overloads.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5745.00 MHz, Antenna: Integral Antenna, Power Setting: 30, Duty Cycle (%): 99



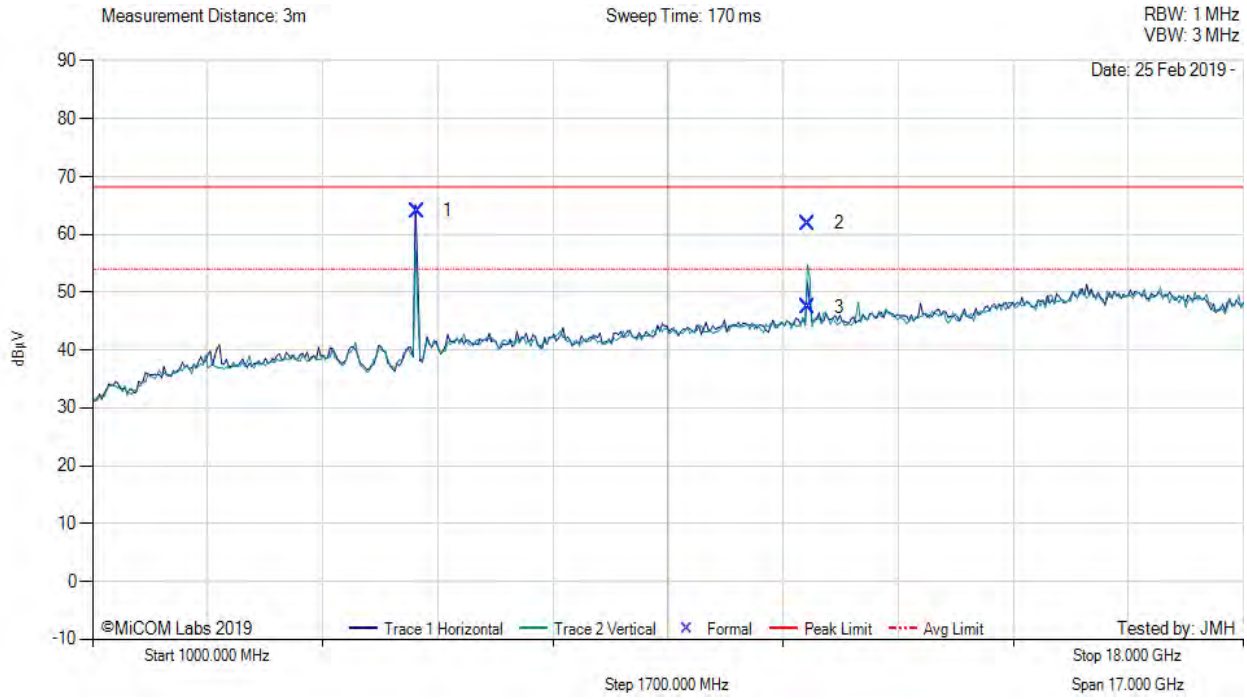

| 1000.00 - 18000.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| 1 | 5751.07 | 68.60 | -2.76 | -10.92 | 54.92 | Fundamental | Horizontal | 100 | 0 | -- | -- | |
| 2 | 11488.52 | 71.93 | -4.01 | -6.67 | 61.25 | Max Peak | Vertical | 105 | 23 | 68.2 | -7.0 | Pass |
| 3 | 11488.52 | 57.20 | -4.01 | -6.67 | 46.52 | Max Avg | Vertical | 105 | 23 | 54.0 | -7.5 | Pass |

**Test Notes:** EUT powered by PS. Connected to laptop outside chamber

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5785.00 MHz, Antenna: Integral Antenna, Power Setting: 30, Duty Cycle (%): 99



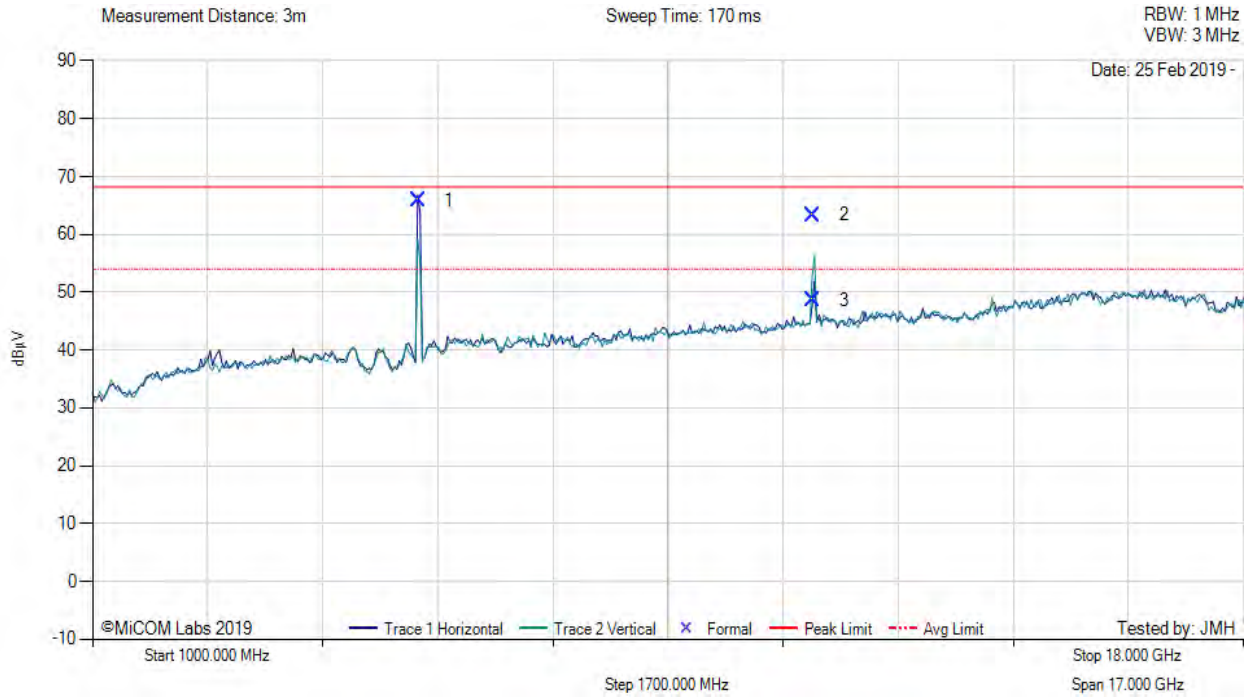

| 1000.00 - 18000.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| 1 | 5791.75 | 77.61 | -2.75 | -10.81 | 64.05 | Fundamental | Horizontal | 100 | 0 | -- | -- | |
| 2 | 11569.87 | 72.30 | -4.08 | -6.30 | 61.92 | Max Peak | Vertical | 140 | 17 | 68.2 | -6.3 | Pass |
| 3 | 11569.87 | 57.81 | -4.08 | -6.30 | 47.43 | Max Avg | Vertical | 140 | 17 | 54.0 | -6.6 | Pass |

**Test Notes:** EUT powered by PS. Connected to laptop outside chamber

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5825.00 MHz, Antenna: Integral Antenna, Power Setting: 30, Duty Cycle (%): 99




| 1000.00 - 18000.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| 1 | 5820.75 | 79.36 | -2.79 | -10.72 | 65.85 | Fundamental | Horizontal | 100 | 0 | -- | -- | |
| 2 | 11647.36 | 71.97 | -4.17 | -4.43 | 63.37 | Max Peak | Vertical | 98 | 13 | 68.2 | -4.9 | Pass |
| 3 | 11647.36 | 57.15 | -4.17 | -4.43 | 48.55 | Max Avg | Vertical | 98 | 13 | 54.0 | -5.5 | Pass |

**Test Notes:** EUT powered by PS. Connected to laptop outside chamber

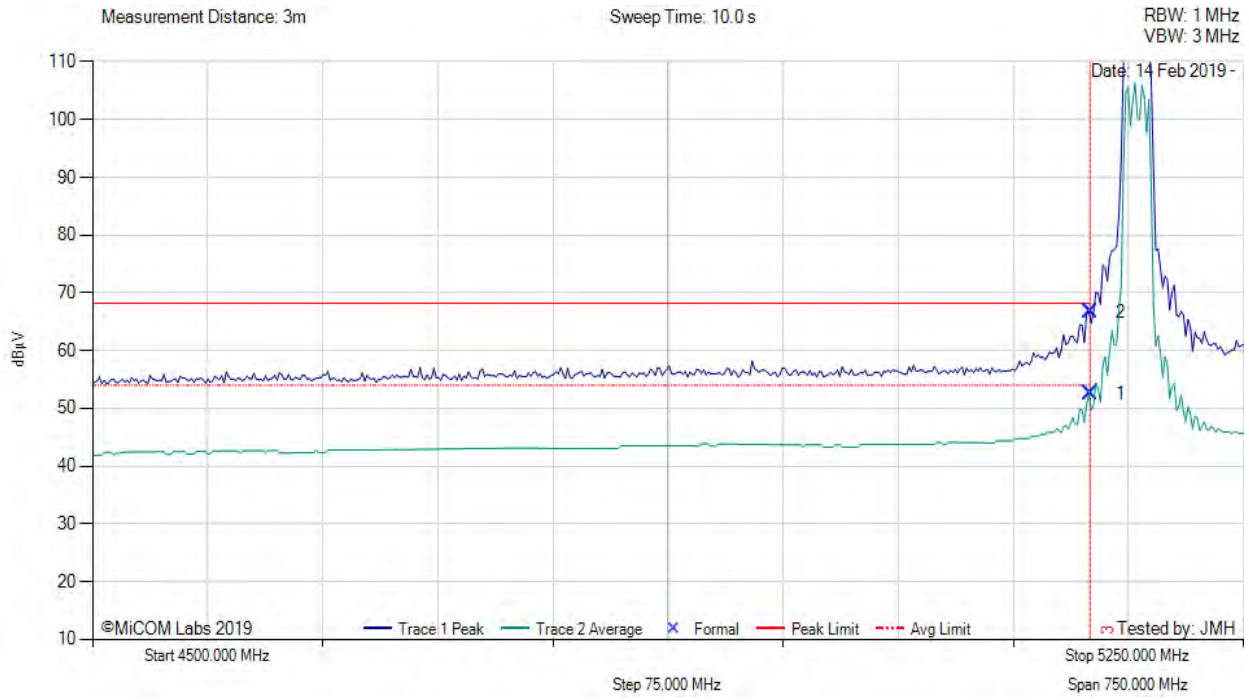
back to matrix

## A.3.2. Restricted Edge & Band-Edge Emissions

### A.3.2.2. Integral Antenna

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 802.11a, Test Freq: 5180.00 MHz, Antenna: Integral Antenna, Power Setting: 25, Duty Cycle (%): 99



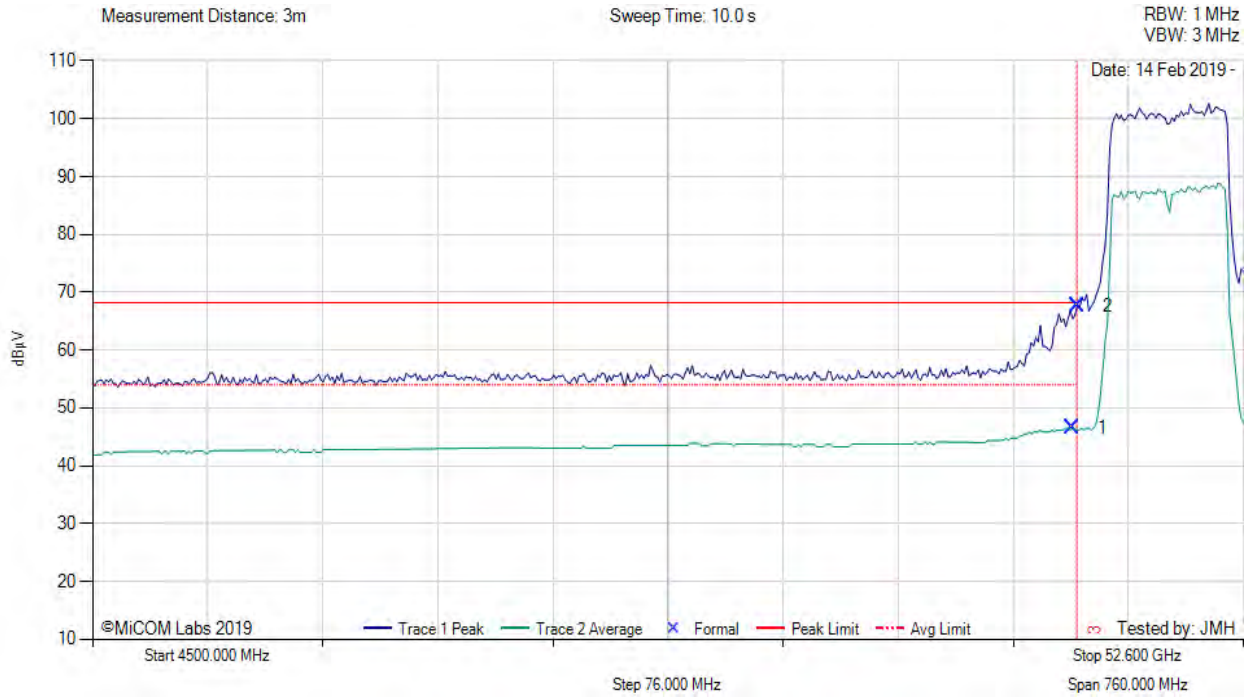

| 4500.00 - 5250.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Num | Frequency MHz | Raw dBµV | Cable Loss dB | AF dB/m | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1 | 5150.00 | 20.93 | -2.61 | 34.21 | 52.53 | Max Avg | Horizontal | 154 | 301 | 54.0 | -1.5 | Pass |
| 2 | 5150.00 | 35.06 | -2.61 | 34.21 | 66.66 | Max Peak | Horizontal | 154 | 301 | 68.2 | -1.6 | Pass |
| 3 | 5150.00 | -- | -- | -- | -- | Restricted-Band | -- | -- | -- | -- | -- | -- |

**Test Notes:** EUT Powered by power supply, connected to laptop outside chamber. 3 dB pad in front of rcvr

back to matrix

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 802.11ac-80, Test Freq: 5210.00 MHz, Antenna: Integral Antenna, Power Setting: 15, Duty Cycle (%): 99



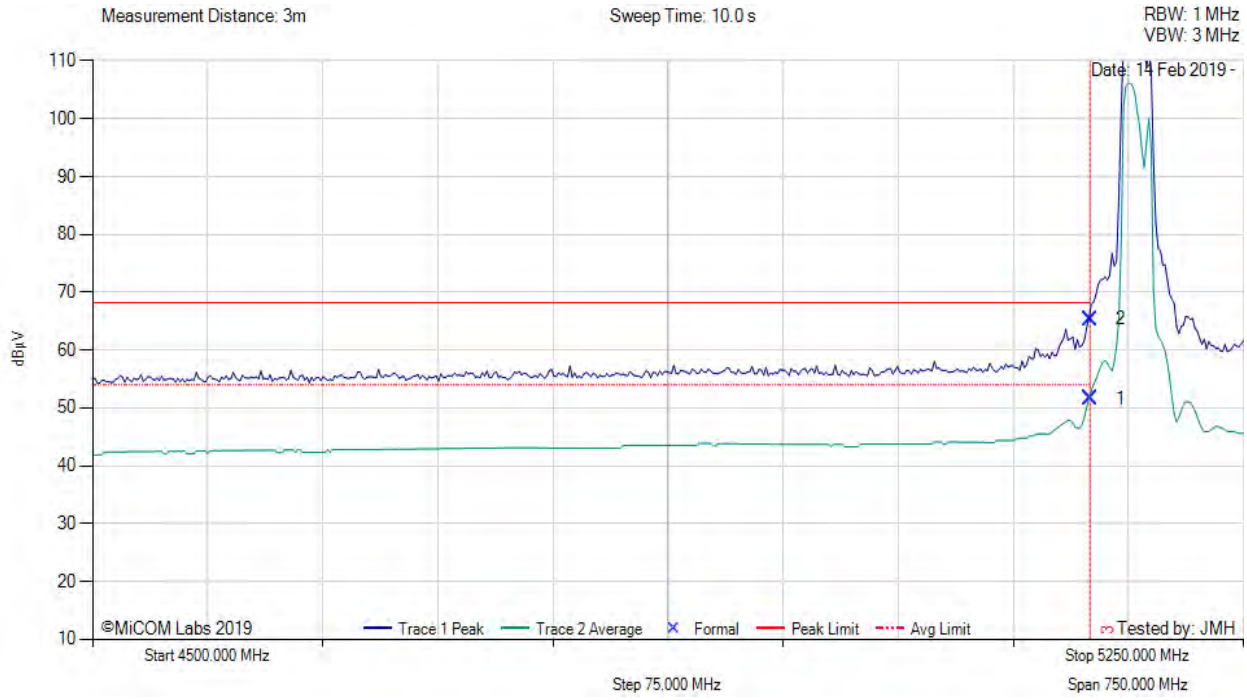

| 4500.00 - 52600.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| 1 | 5146.95 | 14.91 | -2.61 | 34.21 | 46.51 | Max Avg | Horizontal | 154 | 301 | 54.0 | -7.5 | Pass |
| 2 | 5150.00 | 36.11 | -2.61 | 34.21 | 67.71 | Max Peak | Horizontal | 154 | 301 | 68.2 | -0.5 | Pass |
| 3 | 5150.00 | -- | -- | -- | -- | Restricted-Band | -- | -- | -- | -- | -- | -- |

**Test Notes:** EUT Powered by power supply, connected to laptop outside chamber. 3 dB pad in front of rcvr

back to matrix

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 802.11n HT-20, Test Freq: 5180.00 MHz, Antenna: Integral Antenna, Power Setting: 25, Duty Cycle (%): 99



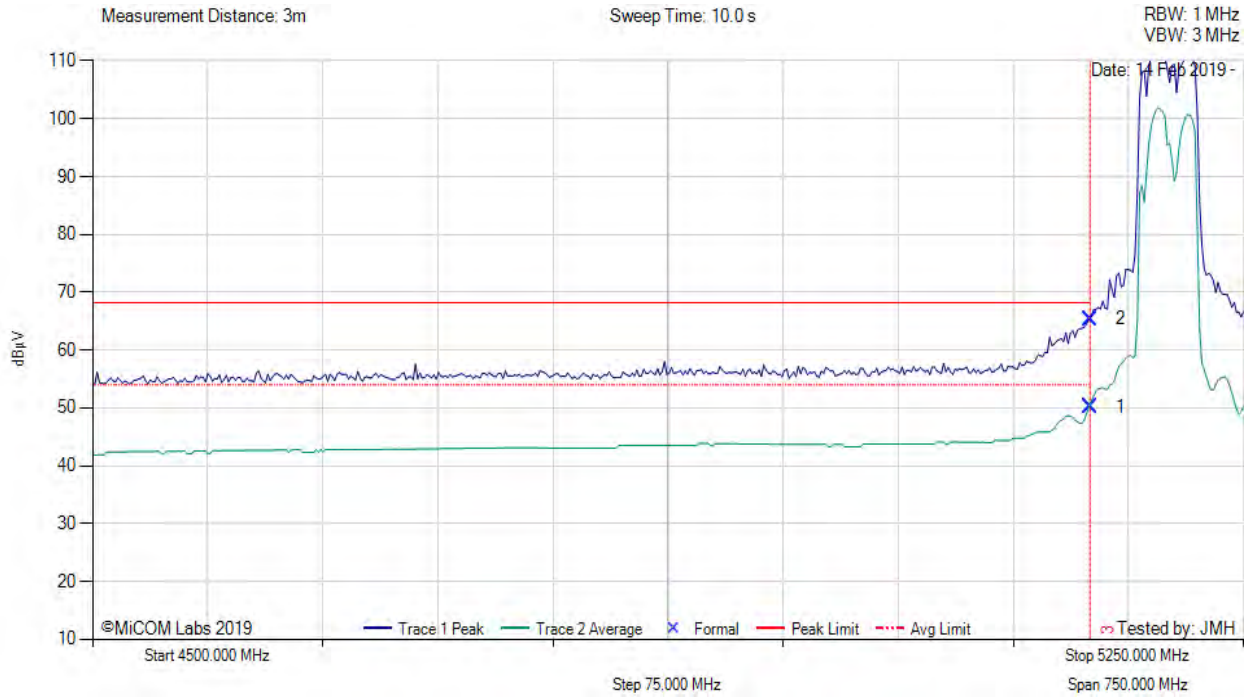

| 4500.00 - 5250.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| 1 | 5150.00 | 19.98 | -2.61 | 34.21 | 51.58 | Max Avg | Horizontal | 154 | 301 | 54.0 | -2.4 | Pass |
| 2 | 5150.00 | 33.79 | -2.61 | 34.21 | 65.39 | Max Peak | Horizontal | 154 | 301 | 68.2 | -2.8 | Pass |
| 3 | 5150.00 | -- | -- | -- | -- | Restricted-Band | -- | -- | -- | -- | -- | -- |

**Test Notes:** EUT Powered by power supply, connected to laptop outside chamber. 3 dB pad in front of rcvr

back to matrix

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 802.11n HT-40, Test Freq: 5190.00 MHz, Antenna: Integral Antenna, Power Setting: 22, Duty Cycle (%): 99



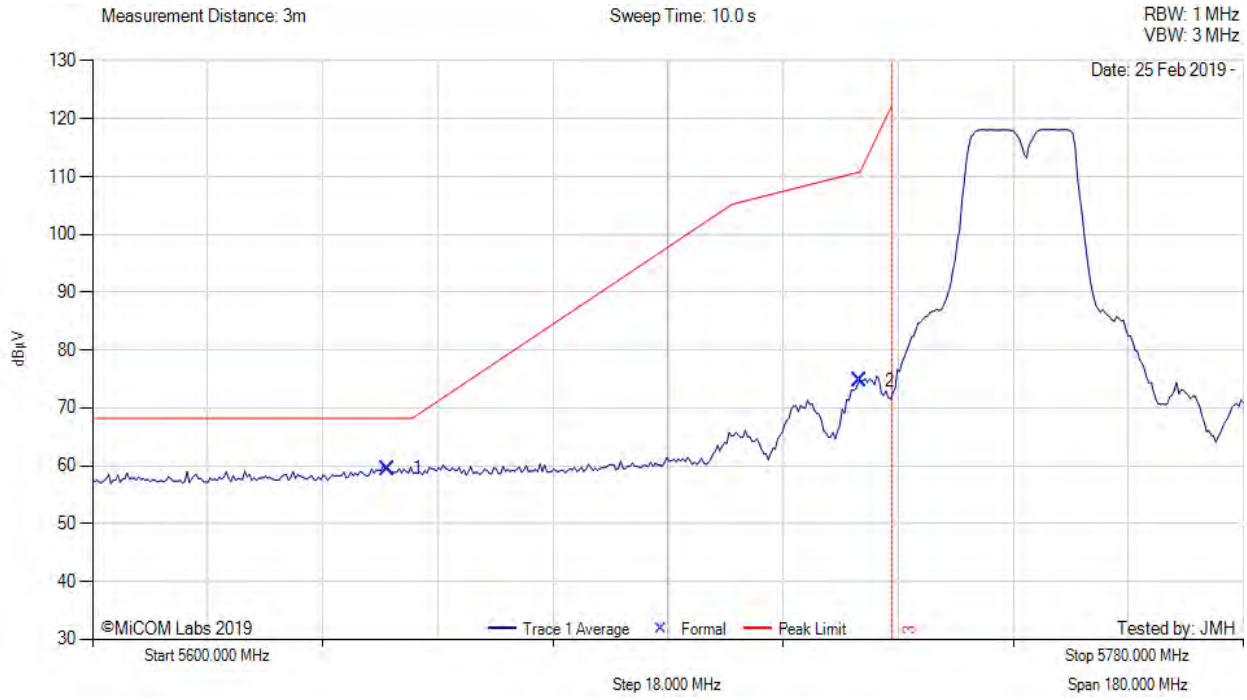

| 4500.00 - 5250.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| 1 | 5150.00 | 18.53 | -2.61 | 34.21 | 50.13 | Max Avg | Horizontal | 154 | 301 | 54.0 | -3.9 | Pass |
| 2 | 5150.00 | 33.73 | -2.61 | 34.21 | 65.33 | Max Peak | Horizontal | 154 | 301 | 68.2 | -2.9 | Pass |
| 3 | 5150.00 | -- | -- | -- | -- | Restricted-Band | -- | -- | -- | -- | -- | -- |

**Test Notes:** EUT Powered by power supply, connected to laptop outside chamber. 3 dB pad in front of rcvr

back to matrix

5725 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11a, Test Freq: 5745.00 MHz, Antenna: Integral Antenna, Power Setting: 30, Duty Cycle (%): 99



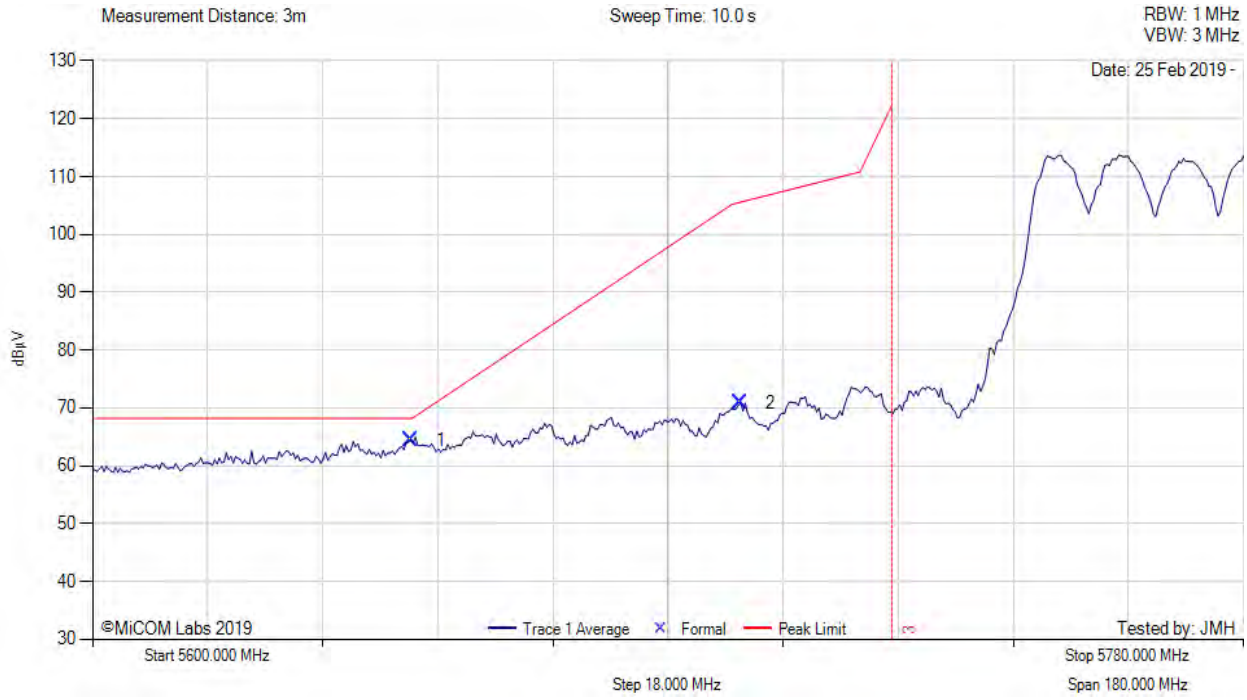

| 5600.00 - 5780.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| 1 | 5646.10 | 27.62 | -2.72 | 34.63 | 59.53 | Max Avg | Horizontal | 180 | 289 | 68.2 | -8.7 | Pass |
| 2 | 5719.95 | 42.72 | -2.76 | 34.71 | 74.67 | Max Avg | Horizontal | 180 | 289 | 109.7 | -35.0 | Pass |
| 3 | 5725.00 | -- | -- | -- | -- | Band-Edge | -- | -- | -- | -- | -- | -- |

**Test Notes:** EUT powered by PS.

back to matrix

5725 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11ac-80, Test Freq: 5775.00 MHz, Antenna: Integral Antenna, Power Setting: 27, Duty Cycle (%): 99



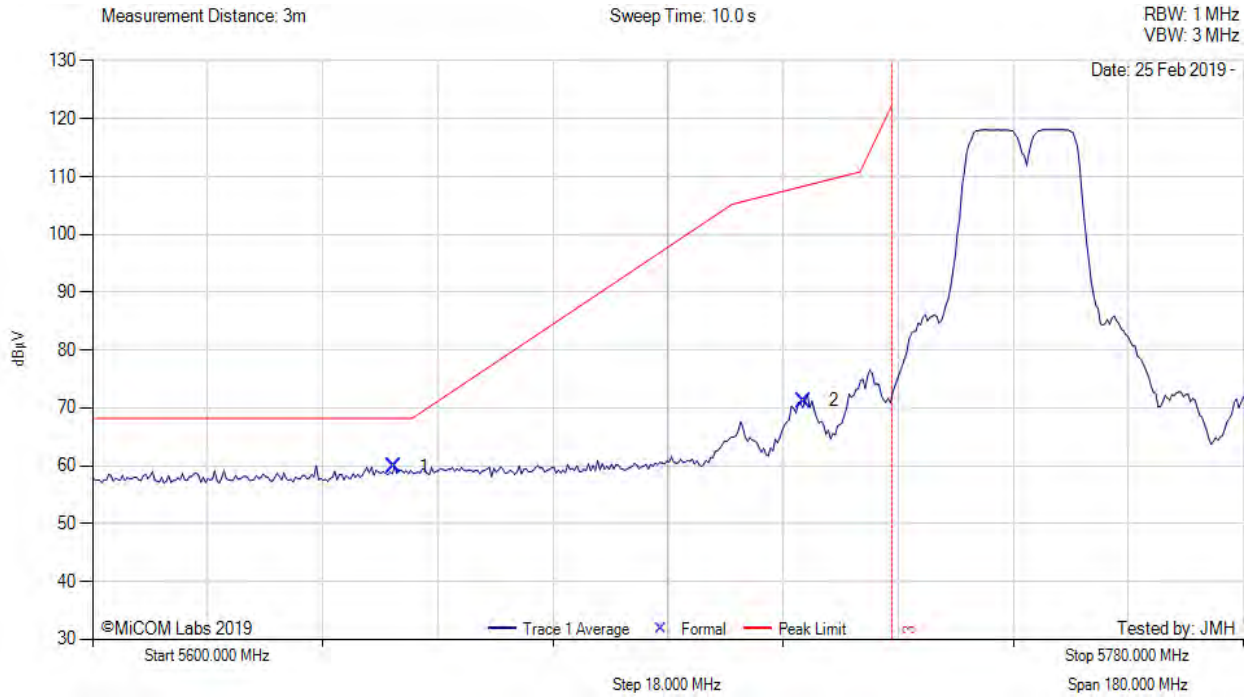

| 5600.00 - 5780.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| 1 | 5649.71 | 32.46 | -2.72 | 34.63 | 64.37 | Max Avg | Horizontal | 180 | 289 | 68.2 | -3.9 | Pass |
| 2 | 5701.36 | 38.95 | -2.78 | 34.68 | 70.85 | Max Avg | Horizontal | 180 | 289 | 105.5 | -34.6 | Pass |
| 3 | 5725.00 | -- | -- | -- | -- | Band-Edge | -- | -- | -- | -- | -- | -- |

**Test Notes:** EUT powered by PS.

back to matrix

5725 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11n HT-20, Test Freq: 5745.00 MHz, Antenna: Integral Antenna, Power Setting: 30, Duty Cycle (%): 99



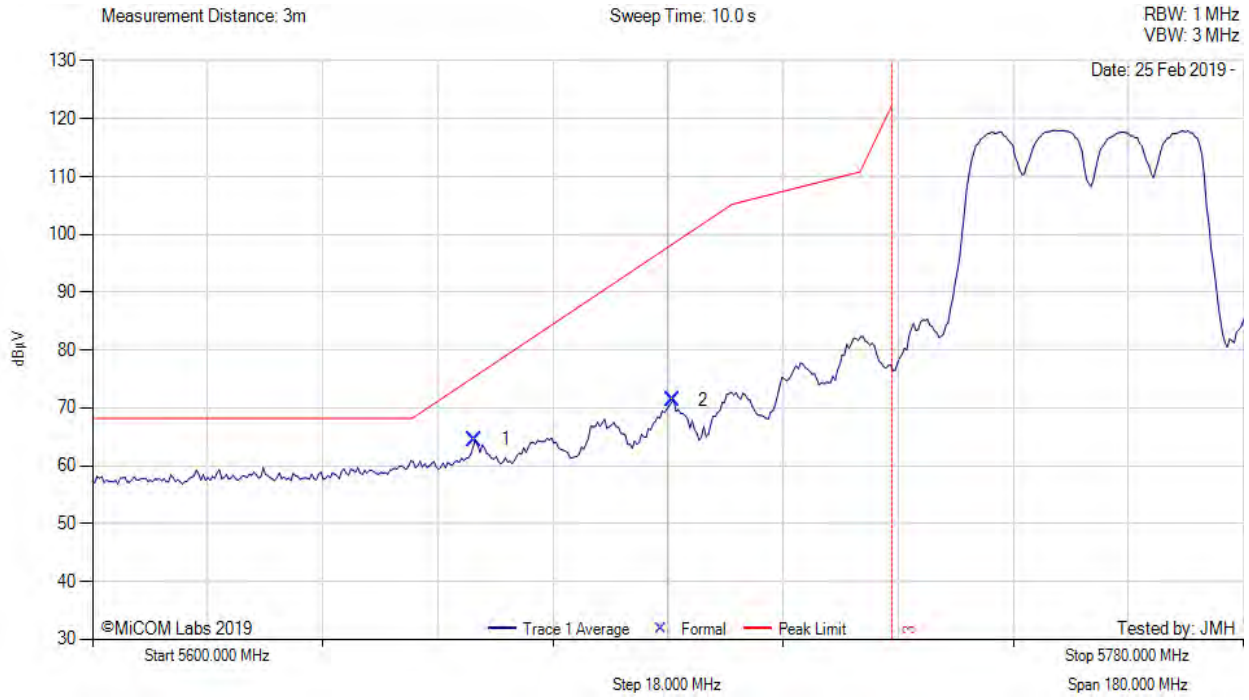

| 5600.00 - 5780.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| 1 | 5647.18 | 27.88 | -2.72 | 34.63 | 59.79 | Max Avg | Horizontal | 180 | 289 | 68.2 | -8.4 | Pass |
| 2 | 5711.29 | 39.37 | -2.79 | 34.70 | 71.28 | Max Avg | Horizontal | 180 | 289 | 108.3 | -37.0 | Pass |
| 3 | 5725.00 | -- | -- | -- | -- | Band-Edge | -- | -- | -- | -- | -- | -- |

**Test Notes:** EUT powered by PS.

back to matrix

5725 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11n HT-40, Test Freq: 5755.00 MHz, Antenna: Integral Antenna, Power Setting: 29, Duty Cycle (%): 99



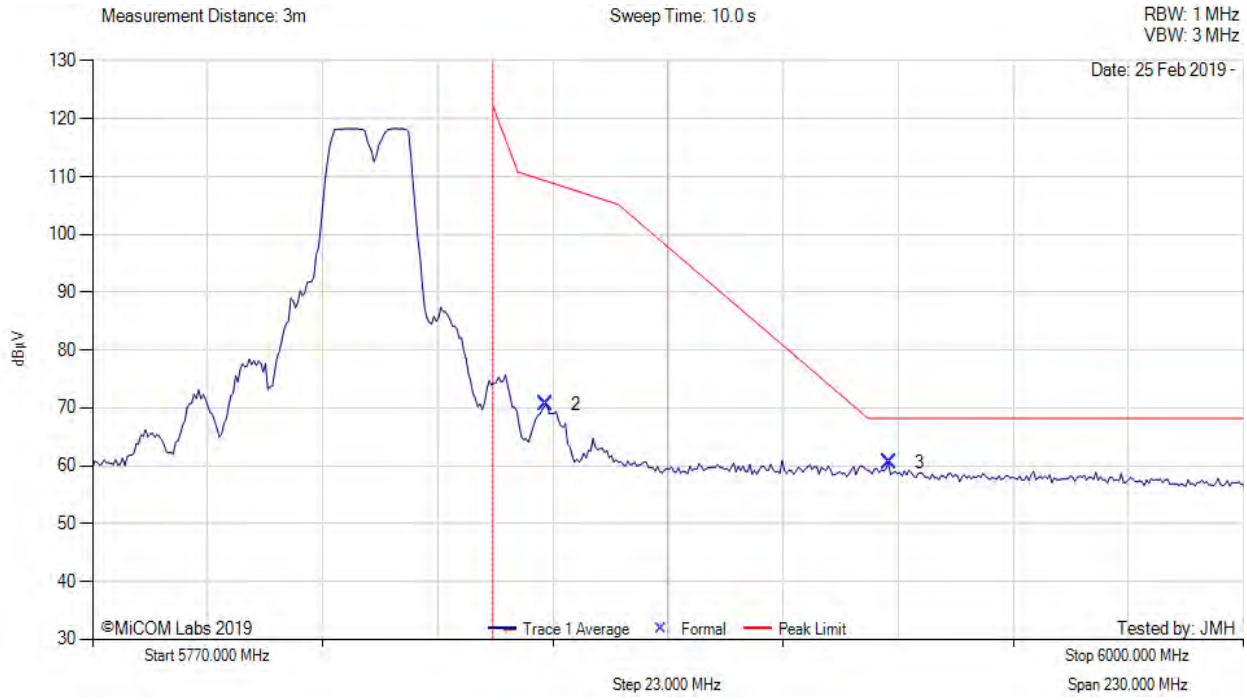

| 5600.00 - 5780.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| 1 | 5659.81 | 32.65 | -2.73 | 34.64 | 64.56 | Max Avg | Horizontal | 180 | 289 | 75.6 | -11.0 | Pass |
| 2 | 5690.73 | 39.48 | -2.78 | 34.67 | 71.37 | Max Avg | Horizontal | 180 | 289 | 98.5 | -27.2 | Pass |
| 3 | 5725.00 | -- | -- | -- | -- | Band-Edge | -- | -- | -- | -- | -- | -- |

**Test Notes:** EUT powered by PS.

back to matrix

5850 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11a, Test Freq: 5825.00 MHz, Antenna: Integral Antenna, Power Setting: 30, Duty Cycle (%): 99



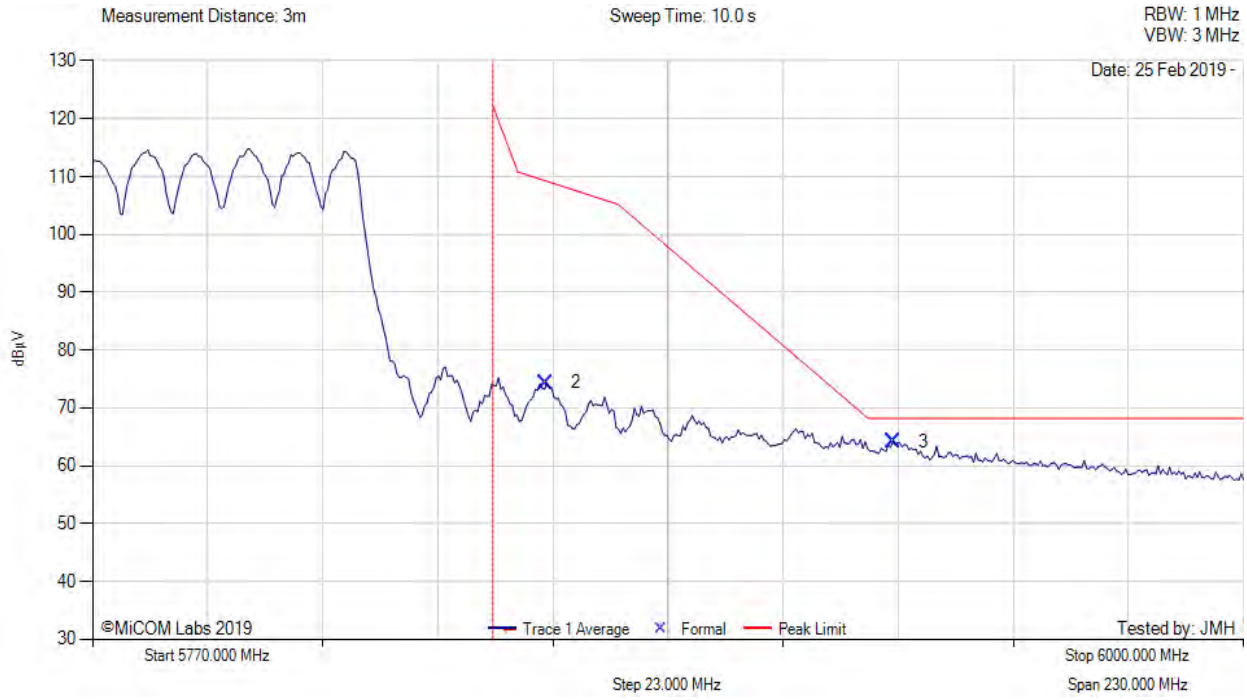

| 5770.00 - 6000.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| 2 | 5860.60 | 38.36 | -2.77 | 34.99 | 70.58 | Max Avg | Horizontal | 180 | 289 | 109.3 | -38.7 | Pass |
| 3 | 5929.14 | 28.24 | -2.78 | 35.11 | 60.57 | Max Avg | Horizontal | 180 | 289 | 68.2 | -7.7 | Pass |
| 1 | 5850.00 | -- | -- | -- | -- | Band-Edge | -- | -- | -- | -- | -- | -- |

**Test Notes:** EUT powered by PS. Connected to laptop outside chamber

back to matrix

5850 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11ac-80, Test Freq: 5775.00 MHz, Antenna: Integral Antenna, Power Setting: 27, Duty Cycle (%): 99



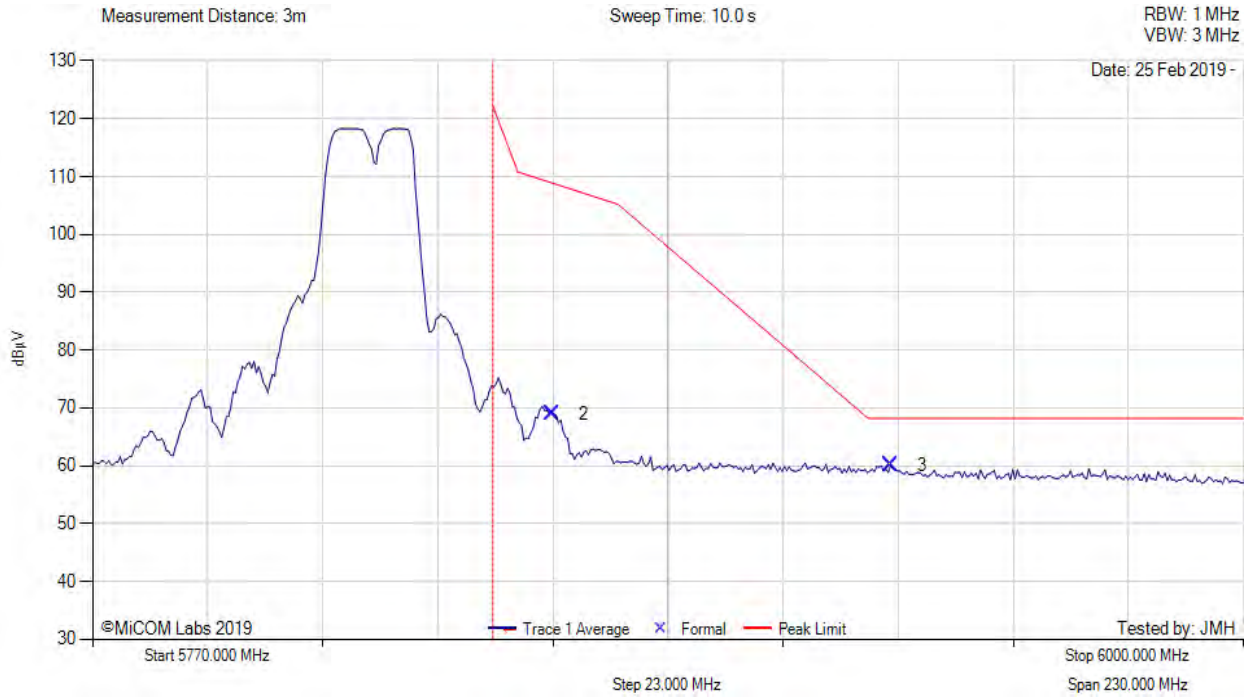

| 5770.00 - 6000.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| 2 | 5860.60 | 42.14 | -2.77 | 34.99 | 74.36 | Max Avg | Horizontal | 180 | 289 | 109.5 | -35.1 | Pass |
| 3 | 5930.06 | 31.85 | -2.78 | 35.11 | 64.18 | Max Avg | Horizontal | 180 | 289 | 68.2 | -4.1 | Pass |
| 1 | 5850.00 | -- | -- | -- | -- | Band-Edge | -- | -- | -- | -- | -- | -- |

**Test Notes:** EUT powered by PS.

back to matrix

5850 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11n HT-20, Test Freq: 5825.00 MHz, Antenna: Integral Antenna, Power Setting: 30, Duty Cycle (%): 99



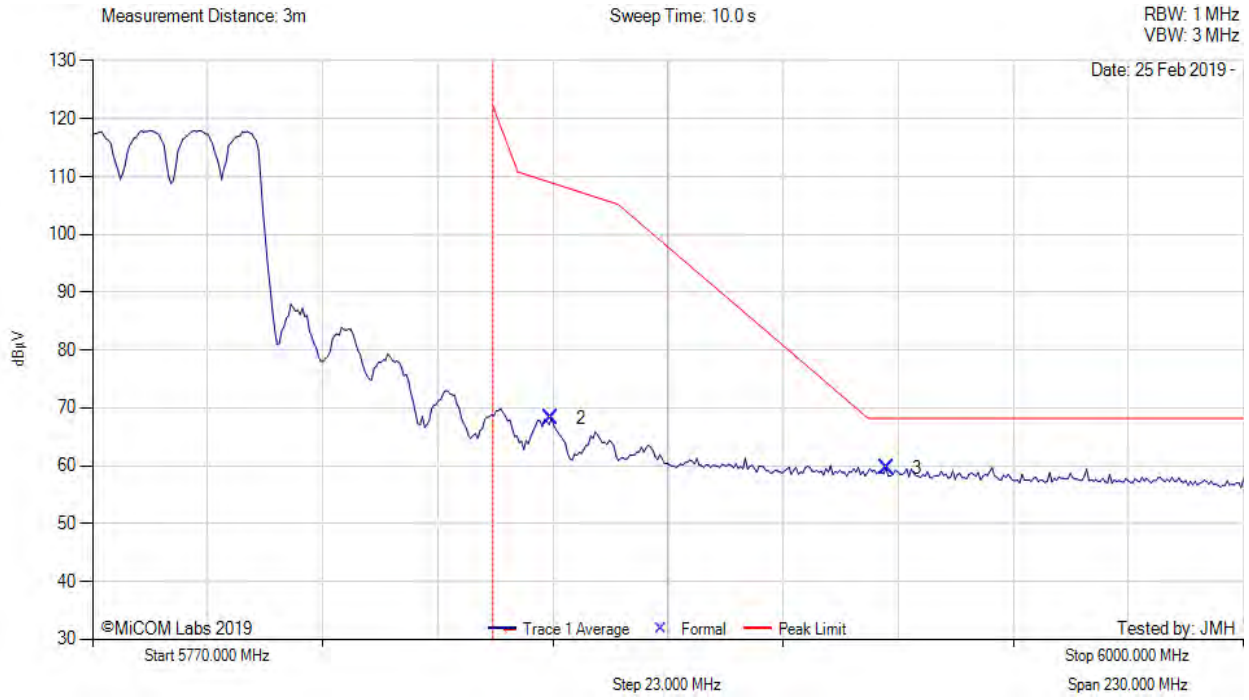

| 5770.00 - 6000.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Num | Frequency MHz | Raw dBµV | Cable Loss dB | AF dB/m | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 2 | 5861.98 | 36.81 | -2.77 | 34.99 | 69.03 | Max Avg | Horizontal | 180 | 289 | 108.5 | -39.3 | Pass |
| 3 | 5929.60 | 27.78 | -2.78 | 35.11 | 60.11 | Max Avg | Horizontal | 180 | 289 | 68.2 | -8.1 | Pass |
| 1 | 5850.00 | -- | -- | -- | -- | Band-Edge | -- | -- | -- | -- | -- | -- |

**Test Notes:** EUT powered by PS.

back to matrix

5850 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11n HT-40, Test Freq: 5795.00 MHz, Antenna: Integral Antenna, Power Setting: 29, Duty Cycle (%): 99




| 5770.00 - 6000.00 MHz | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Num** | **Frequency MHz** | **Raw dBµV** | **Cable Loss dB** | **AF dB/m** | **Level dBµV/m** | **Measurement Type** | **Pol** | **Hgt cm** | **Azt Deg** | **Limit dBµV/m** | **Margin dB** | **Pass /Fail** |
| 2 | 5861.52 | 36.00 | -2.77 | 34.99 | 68.22 | Max Avg | Horizontal | 180 | 289 | 108.7 | -40.0 | Pass |
| 3 | 5928.68 | 27.28 | -2.78 | 35.11 | 59.61 | Max Avg | Horizontal | 180 | 289 | 68.2 | -8.6 | Pass |
| 1 | 5850.00 | -- | -- | -- | -- | Band-Edge | -- | -- | -- | -- | -- | -- |

**Test Notes:** EUT powered by PS.

back to matrix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