REGULATORY COMPLIANCE TEST REPORT

FCC CFR 47, SubPart E 15.407 (NII)

REPORT #: MIKO81-U6 Rev A

Company: MikrotikIs 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
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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

Accredited Laboratory

A2LA has accredited

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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.

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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 Listing #: 102167
Canada	Industry Canada (IC)	FCB	APEC MRA 2	US0159 Listing #: 4143A-2 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) 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

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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

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

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3. TEST RESULT CERTIFICATE

Manufacturer:	Mikrotikls SIA (MikroTik) Brivibas gatve 214i Riga LV-1039 Latvia	**Tested By:**	MiCOM Labs, Inc. 575 Boulder Court Pleasanton California 94566 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.

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.

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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

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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.

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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: 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) Brivibas gatve 214i Riga LV-1039 Latvia
Manufacturer:	Mikrotikls SIA (MikroTik)
Laboratory performing the tests:	MiCOM Labs, Inc. 575 Boulder Court 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 802.11a 802.11-nHT-20, nHT-40 802.11-ac-20, -ac-40, ac-80
Declared Nominal Output Power (dBm):	5150 - 5250 MHz: +20 dBm 5725 - 5850 MHz: +27 dBm
Transmit/Receive Operation:	Transceiver 5,150 – 5,250 MHz: 2 Antenna Ports 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 802.11n HT-20 17M7D1D 802.11n HT-40 36M2D1D 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

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5.2. Scope Of Test Program

Mikrotikls SIA (MikroTik) RBD25G-5HPacQD2HPnD

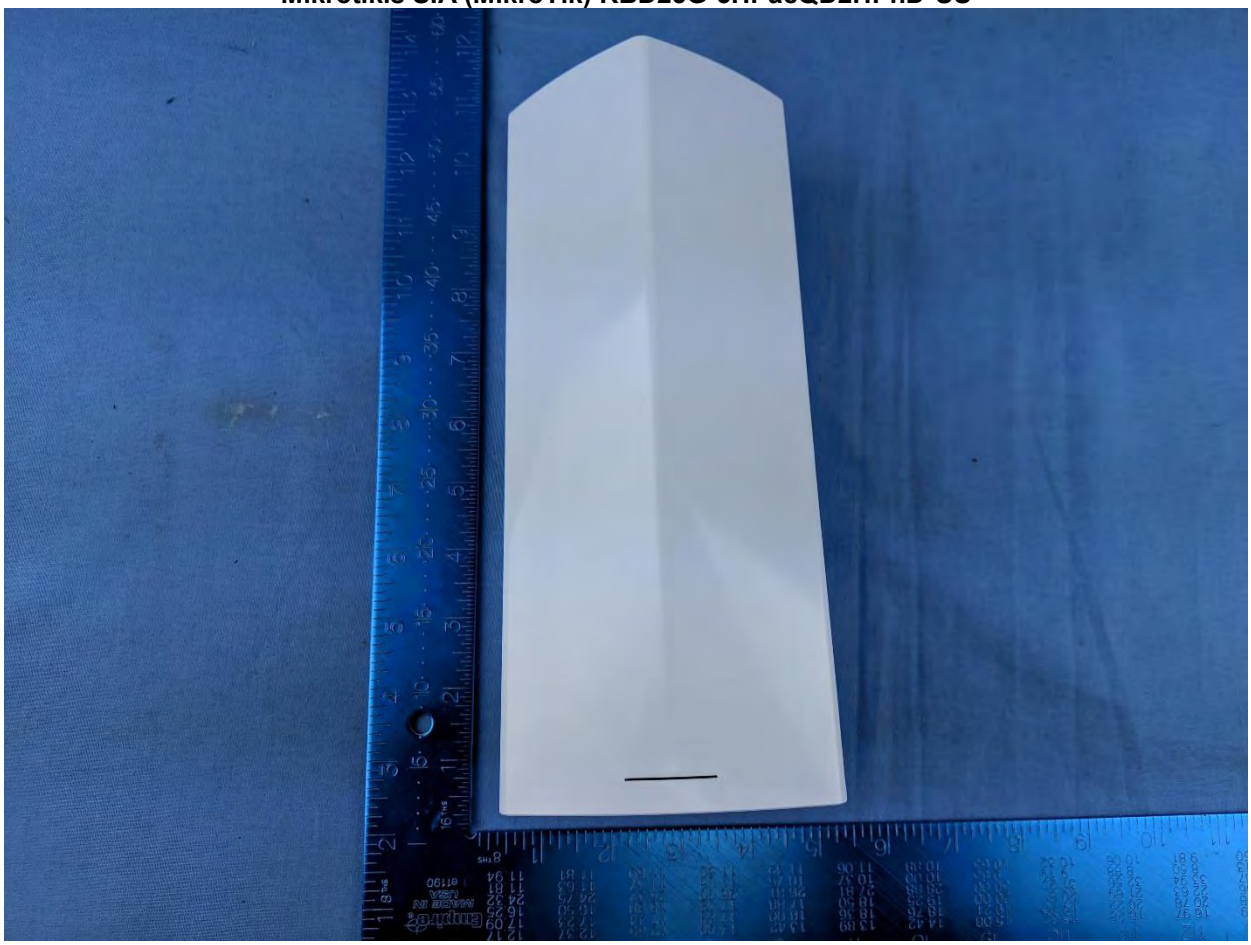
The scope of the test program was to test the Mikrotikls SIA RBD25G-5HPacQD2HPnD-US, Audience configurations in the frequency ranges 5150 - 5250 MHz; 5725 - 5850 MHz; for compliance against the following specification:

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

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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 100 – 240 V_{AC} 1.3A MAX, 50-60 Hz +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

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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

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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

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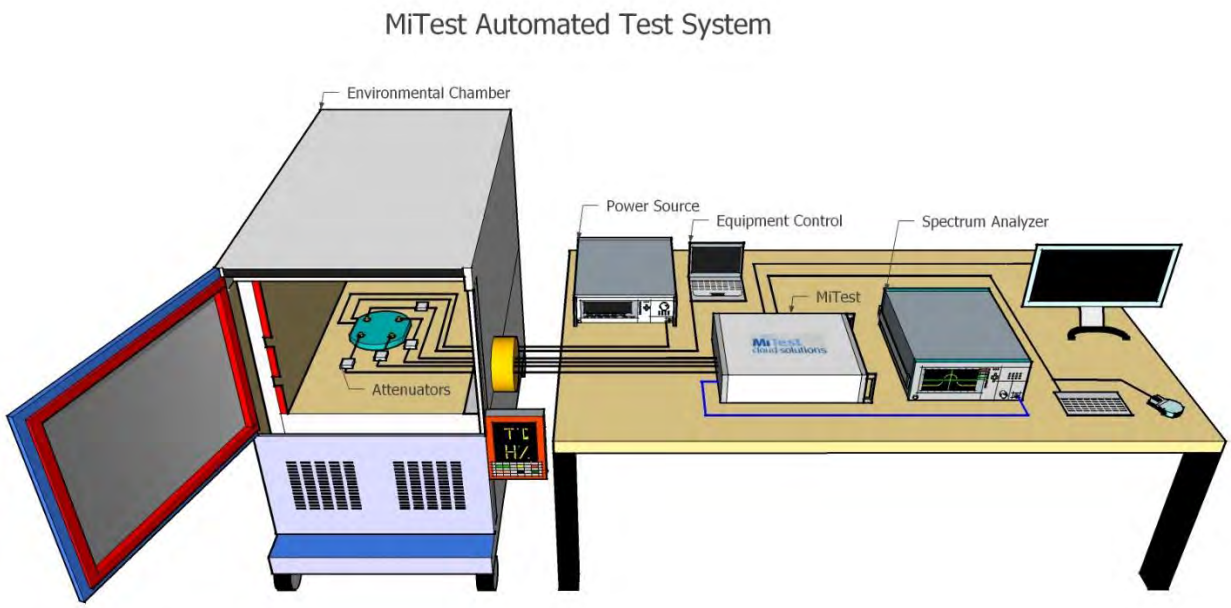
7. TEST EQUIPMENT CONFIGURATION(S)

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

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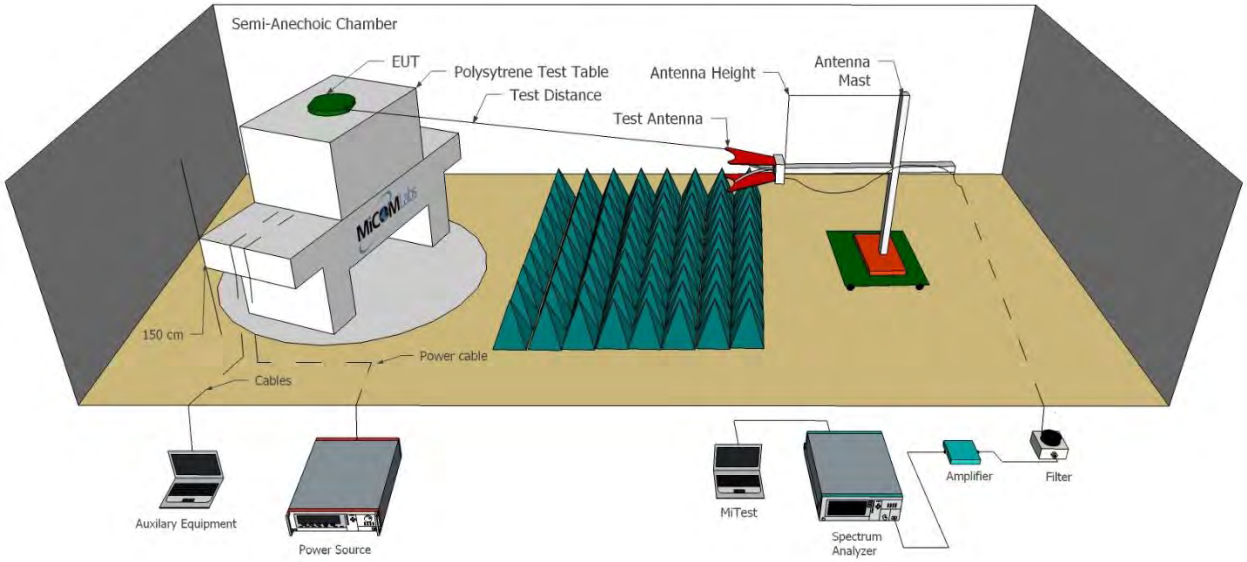
7.2. Radiated Emissions - 3m Chamber

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

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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

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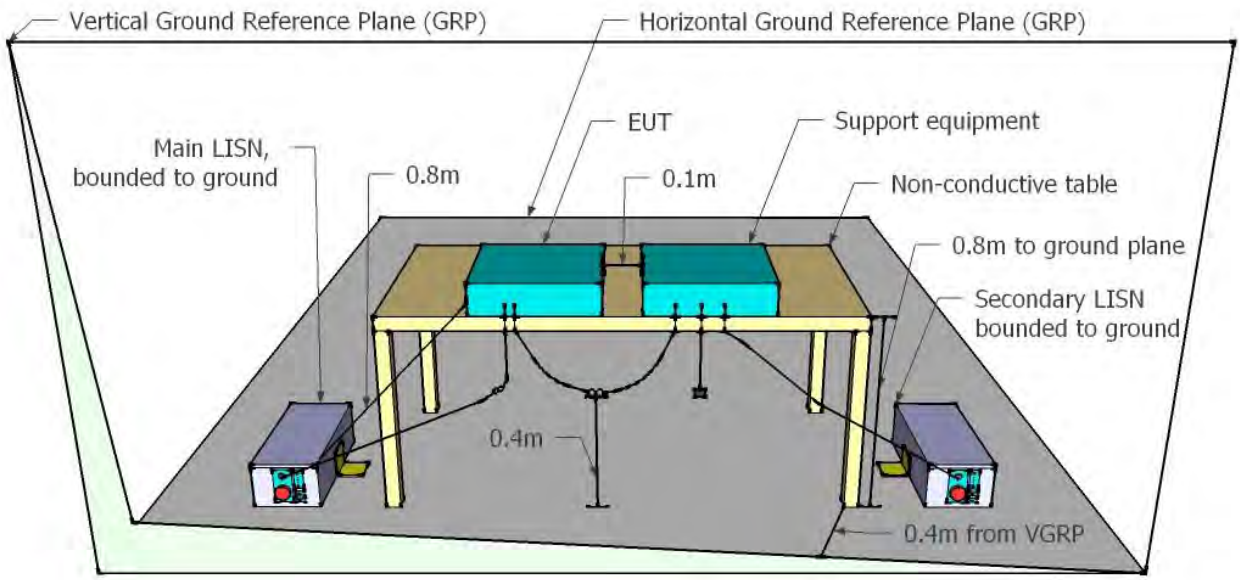
7.3. AC Mains Power Input / Output Test Setup



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

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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)

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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

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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.

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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.

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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.

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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

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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.

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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.

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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.

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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.

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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.

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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.

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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)				26 dB Bandwidth (MHz)			
	Port(s)							
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)				99% Bandwidth (MHz)			
	Port(s)							
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).

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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)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5210.0	87.856	88.176	--	--	88.176	87.856		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
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).

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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)				26 dB Bandwidth (MHz)			
	Port(s)							
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)				99% Bandwidth (MHz)			
	Port(s)							
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).

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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)				26 dB Bandwidth (MHz)			
	Port(s)							
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)				99% Bandwidth (MHz)			
	Port(s)							
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).

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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)				6 dB Bandwidth (MHz)			
	Port(s)							
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)				99% Bandwidth (MHz)			
	Port(s)							
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).

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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)				6 dB Bandwidth (MHz)			
	Port(s)							
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)				99% Bandwidth (MHz)			
	Port(s)							
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).

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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)				6 dB Bandwidth (MHz)			
	Port(s)							
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)				99% Bandwidth (MHz)			
	Port(s)							
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).

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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)				6 dB Bandwidth (MHz)			
	Port(s)							
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)				99% Bandwidth (MHz)			
	Port(s)							
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).

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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

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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.

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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).

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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).

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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

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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

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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

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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).

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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).

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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).

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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.

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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.

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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.

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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

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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);

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

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			

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(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).

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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.												

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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.												

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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.												

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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												

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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												

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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												

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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.

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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												

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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												

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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												

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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												

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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.												

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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.												

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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.												

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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.												

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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												

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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.												

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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.												

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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.												

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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

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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

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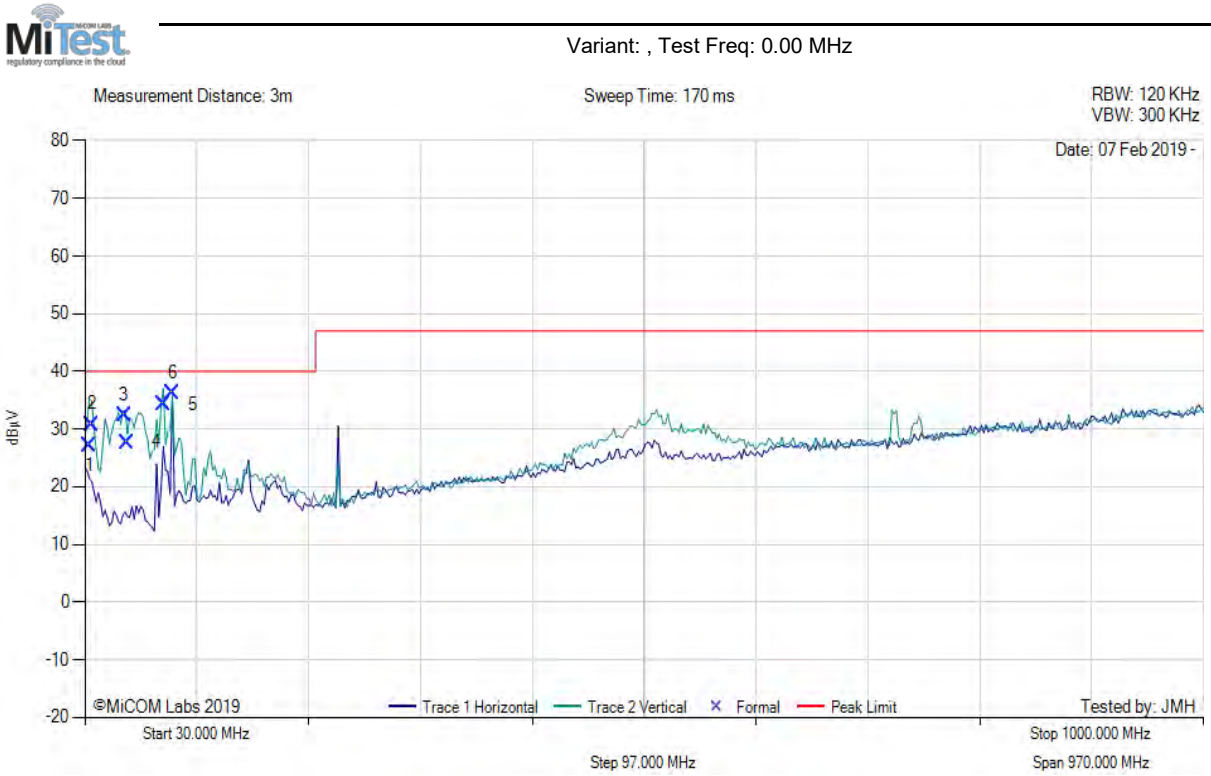
POE Powered 30-1000 MHz

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		



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

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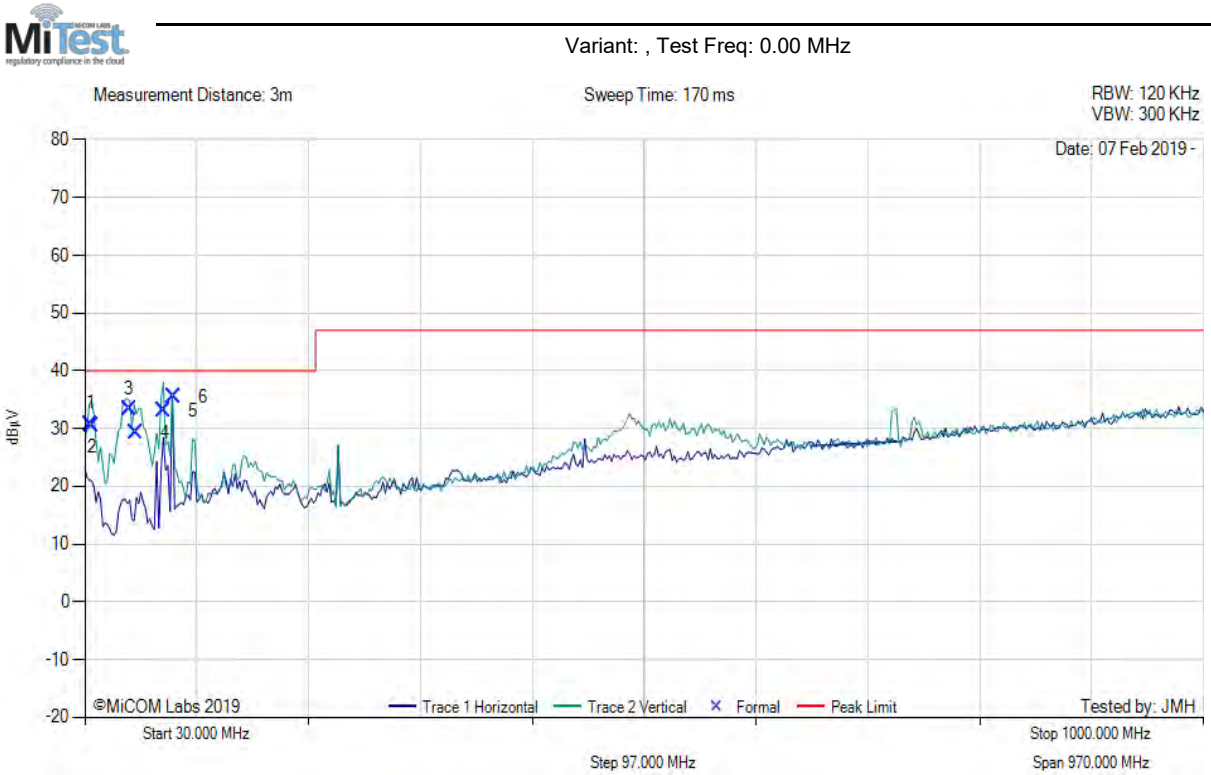
AC/DC PS Powered 30-1000 MHz



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

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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

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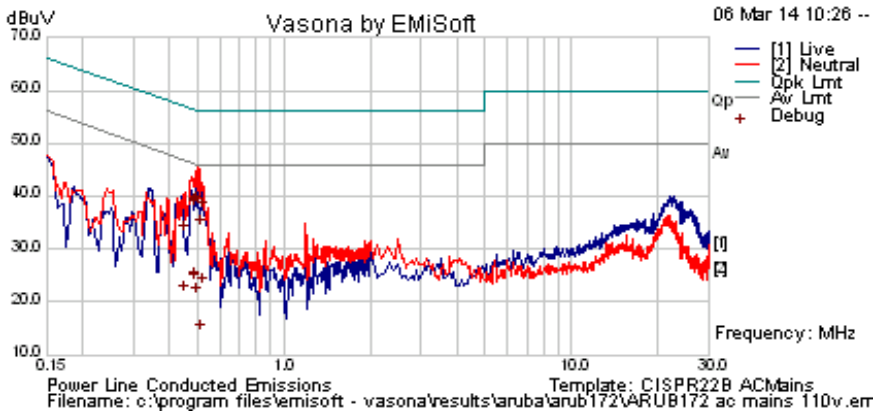
AC Wireline Emissions

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

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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

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APPENDIX A - GRAPHICAL IMAGES

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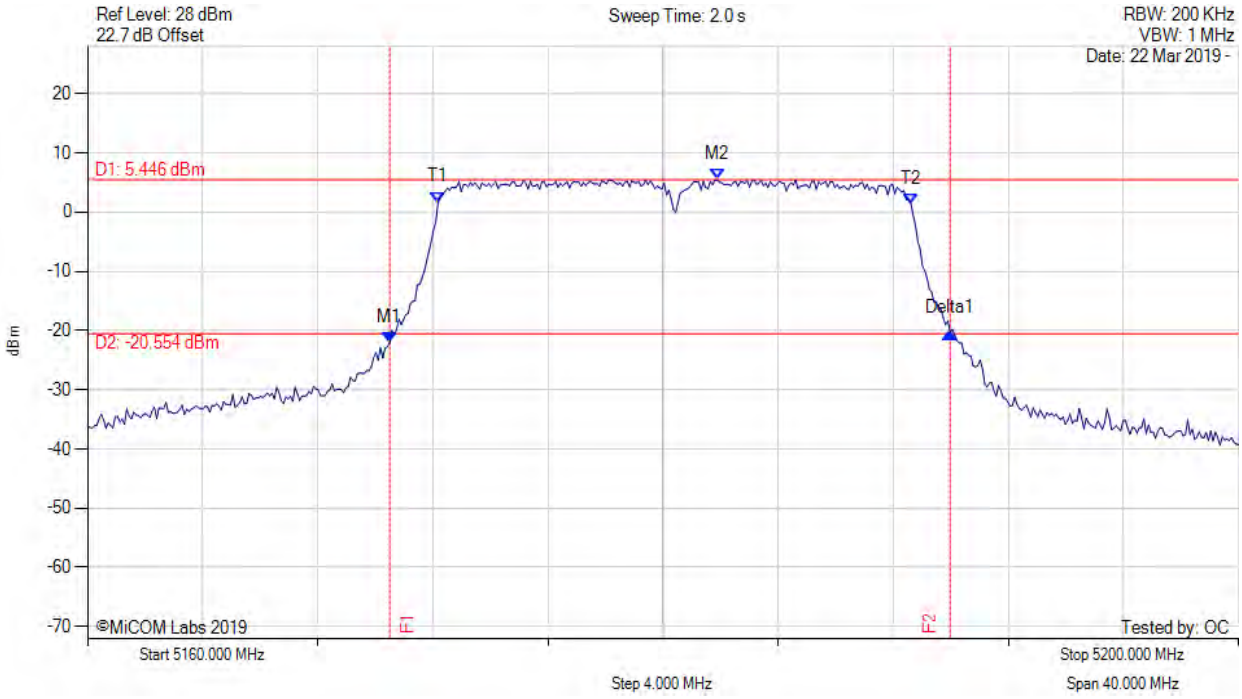
A.1. 99% Bandwidth

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5170.501 MHz : -22.059 dBm M2 : 5181.884 MHz : 5.446 dBm Delta1 : 19.479 MHz : 1.692 dB T1 : 5172.184 MHz : 1.671 dBm T2 : 5188.617 MHz : 1.386 dBm OBW : 16.433 MHz	Measured 26 dB Bandwidth: 19.479 MHz Measured 99% Bandwidth: 16.433 MHz

back to matrix

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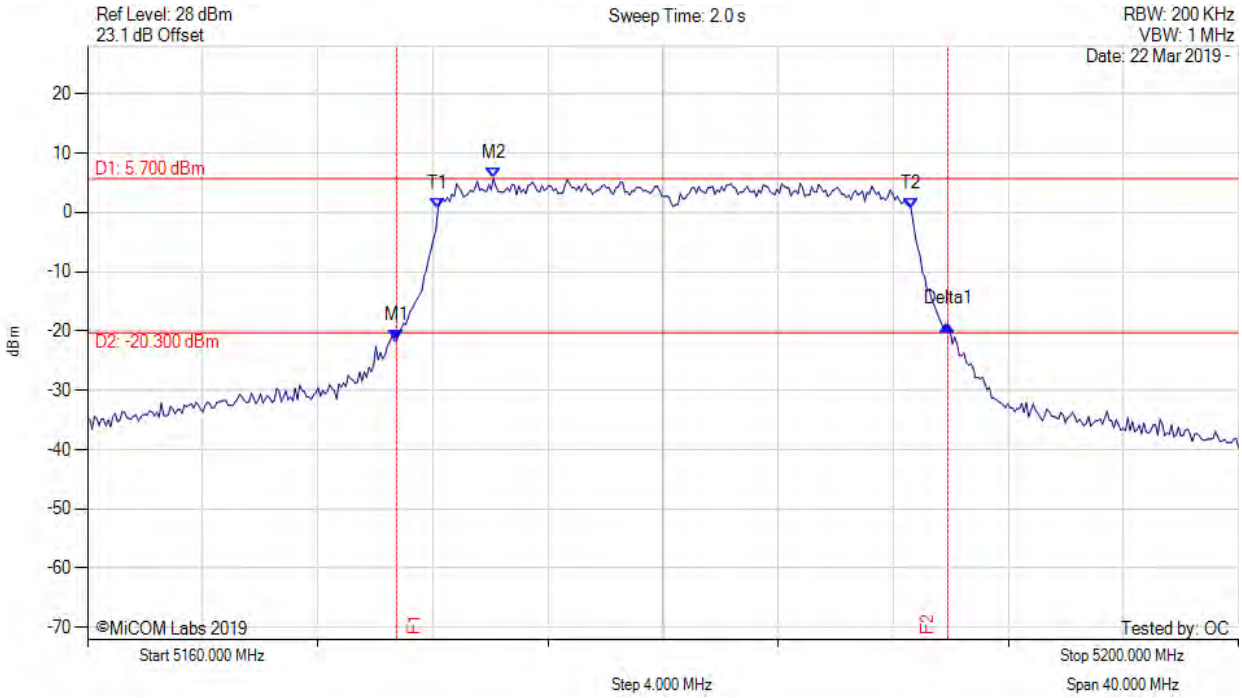
26 dB & 99% BANDWIDTH

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



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

back to matrix

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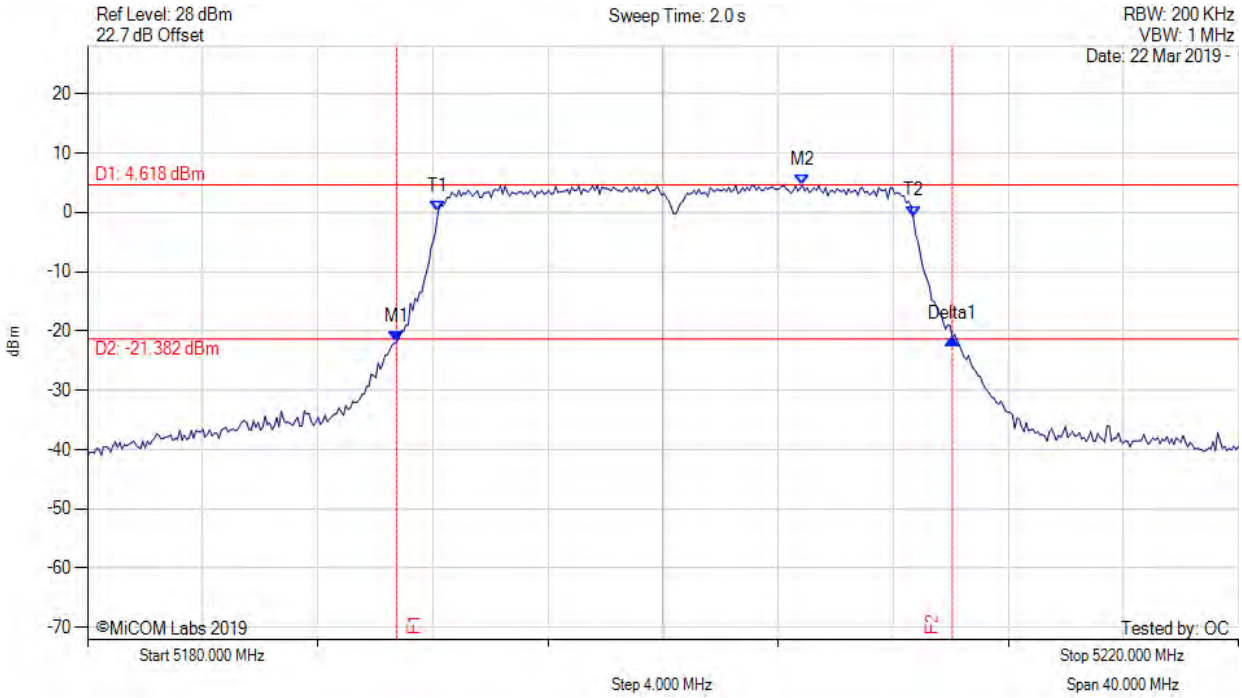
26 dB & 99% BANDWIDTH

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



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

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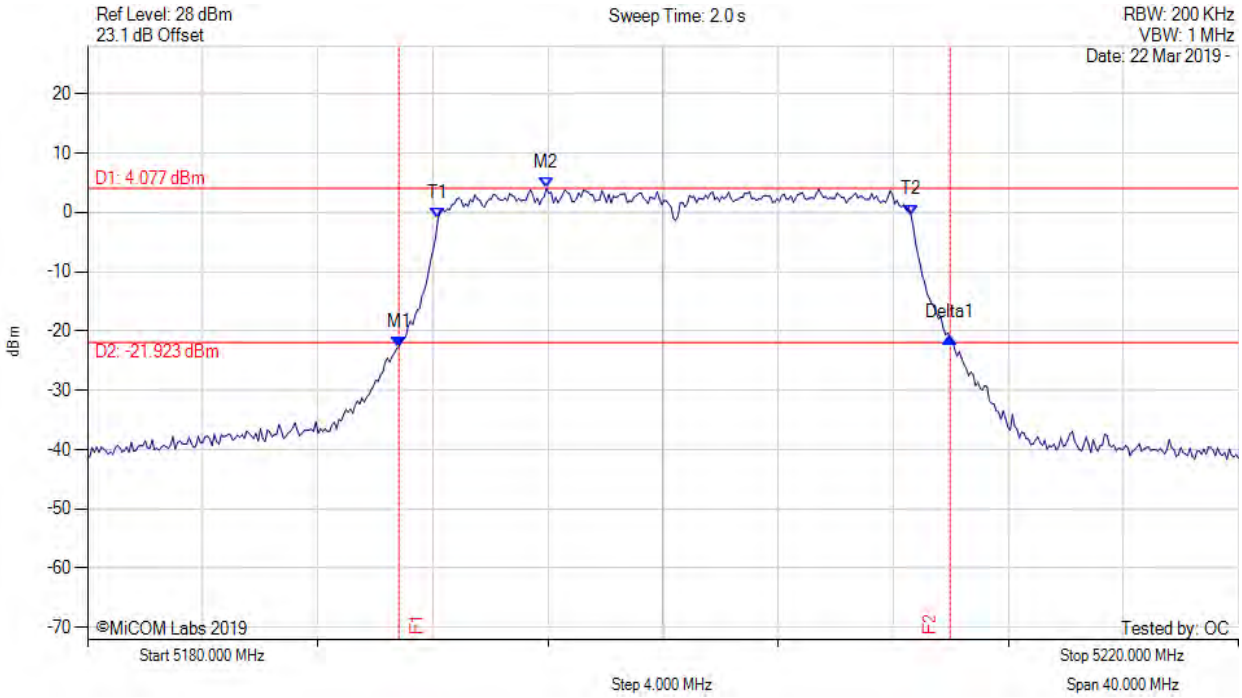
26 dB & 99% BANDWIDTH

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



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

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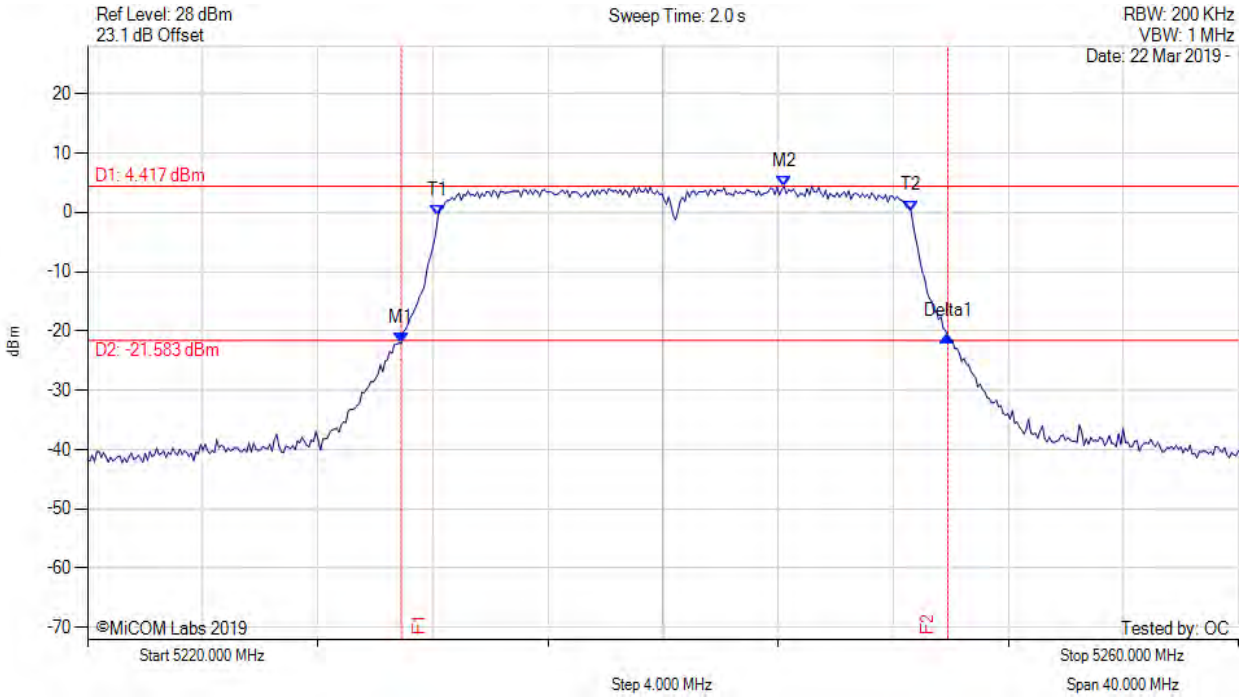
26 dB & 99% BANDWIDTH

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



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

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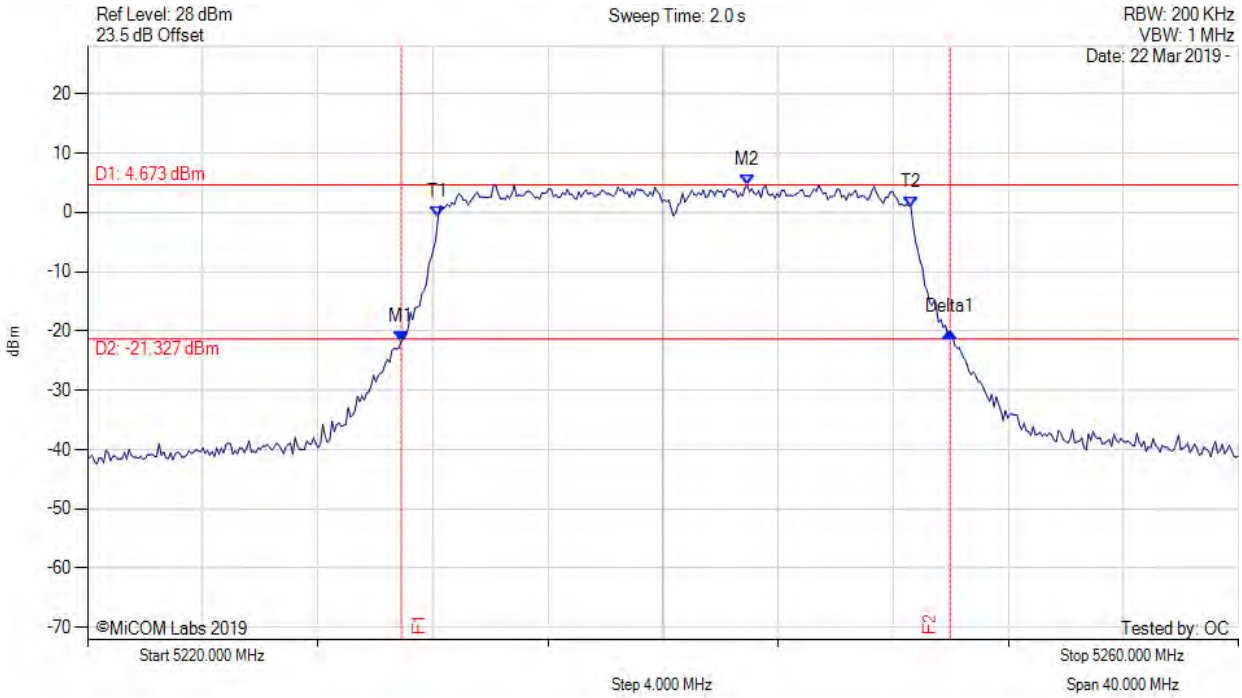
26 dB & 99% BANDWIDTH

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



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

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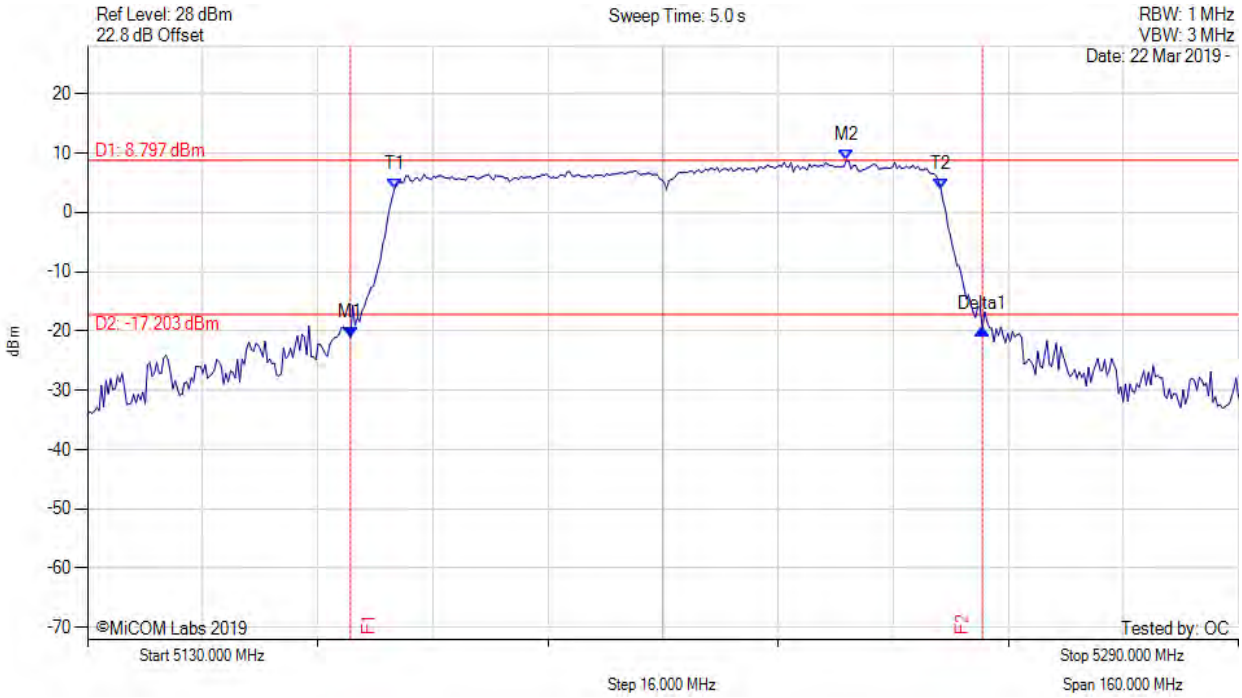
26 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5166.553 MHz : -21.133 dBm M2 : 5235.491 MHz : 8.797 dBm Delta1 : 87.856 MHz : 1.472 dB T1 : 5172.645 MHz : 3.931 dBm T2 : 5248.637 MHz : 3.892 dBm OBW : 75.992 MHz	Measured 26 dB Bandwidth: 87.856 MHz Measured 99% Bandwidth: 75.992 MHz

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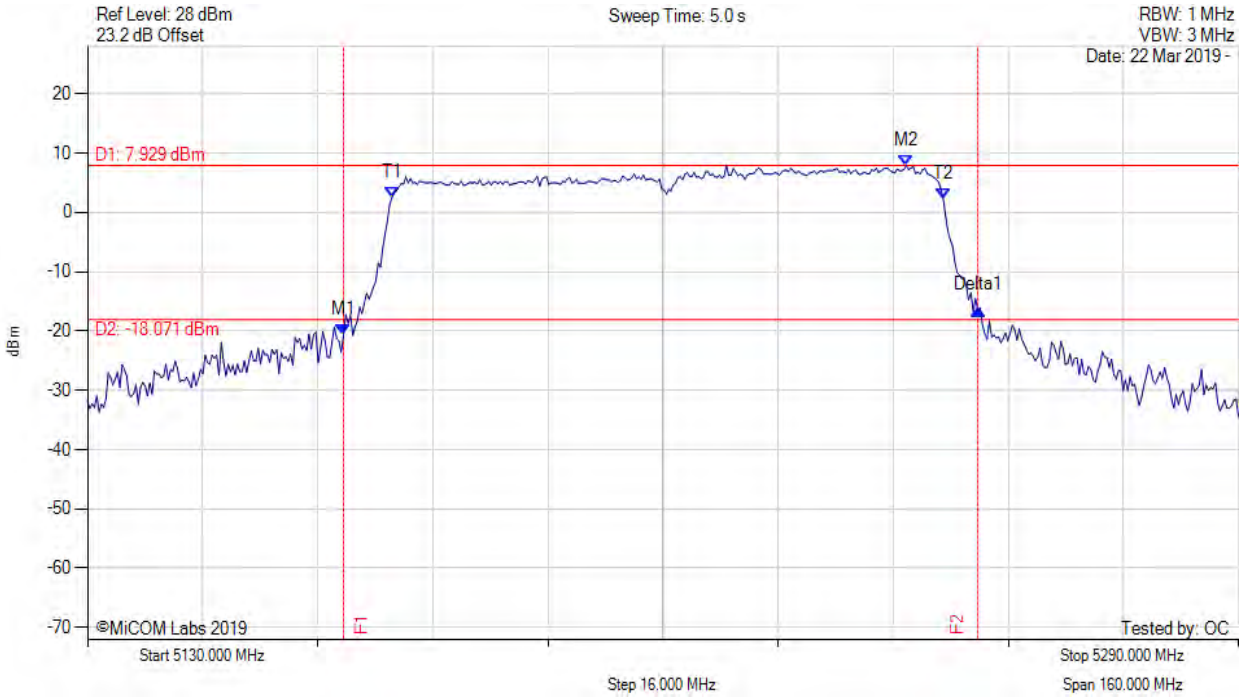
26 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5165.591 MHz : -20.602 dBm M2 : 5243.828 MHz : 7.929 dBm Delta1 : 88.176 MHz : 4.157 dB T1 : 5172.325 MHz : 2.444 dBm T2 : 5248.958 MHz : 2.334 dBm OBW : 76.633 MHz	Measured 26 dB Bandwidth: 88.176 MHz Measured 99% Bandwidth: 76.633 MHz

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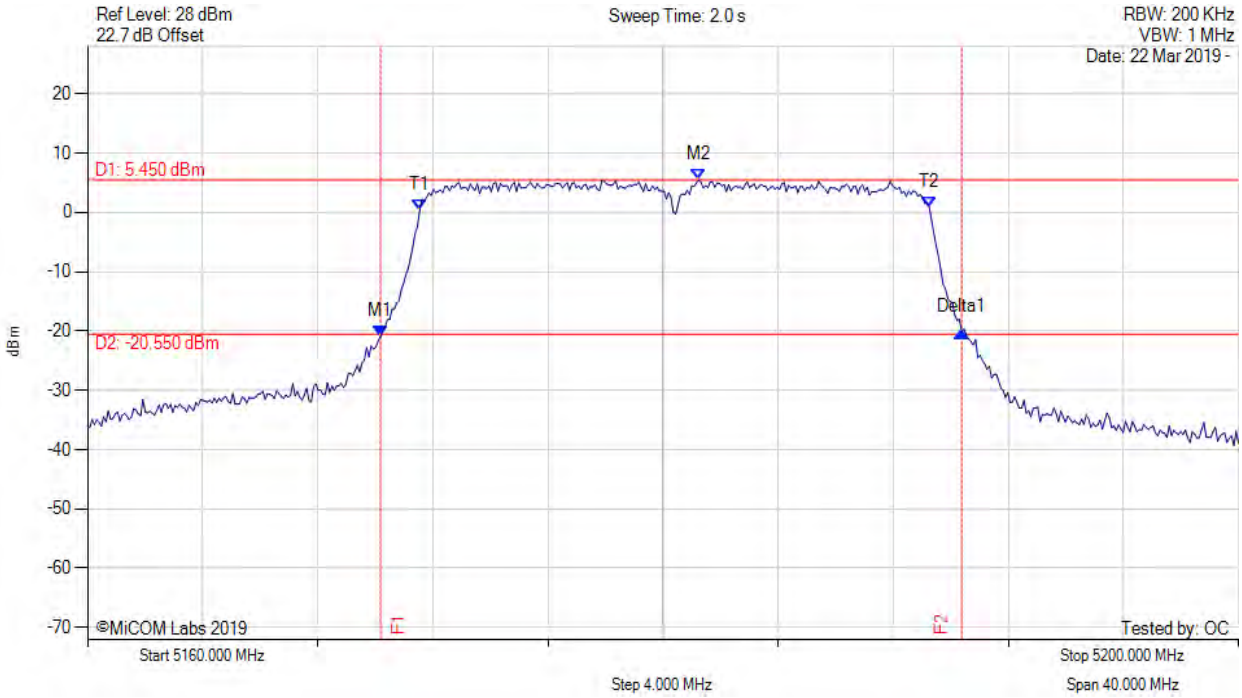
26 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5170.180 MHz : -20.975 dBm M2 : 5181.242 MHz : 5.450 dBm Delta1 : 20.200 MHz : 0.848 dB T1 : 5171.543 MHz : 0.353 dBm T2 : 5189.259 MHz : 0.837 dBm OBW : 17.715 MHz	Measured 26 dB Bandwidth: 20.200 MHz Measured 99% Bandwidth: 17.715 MHz

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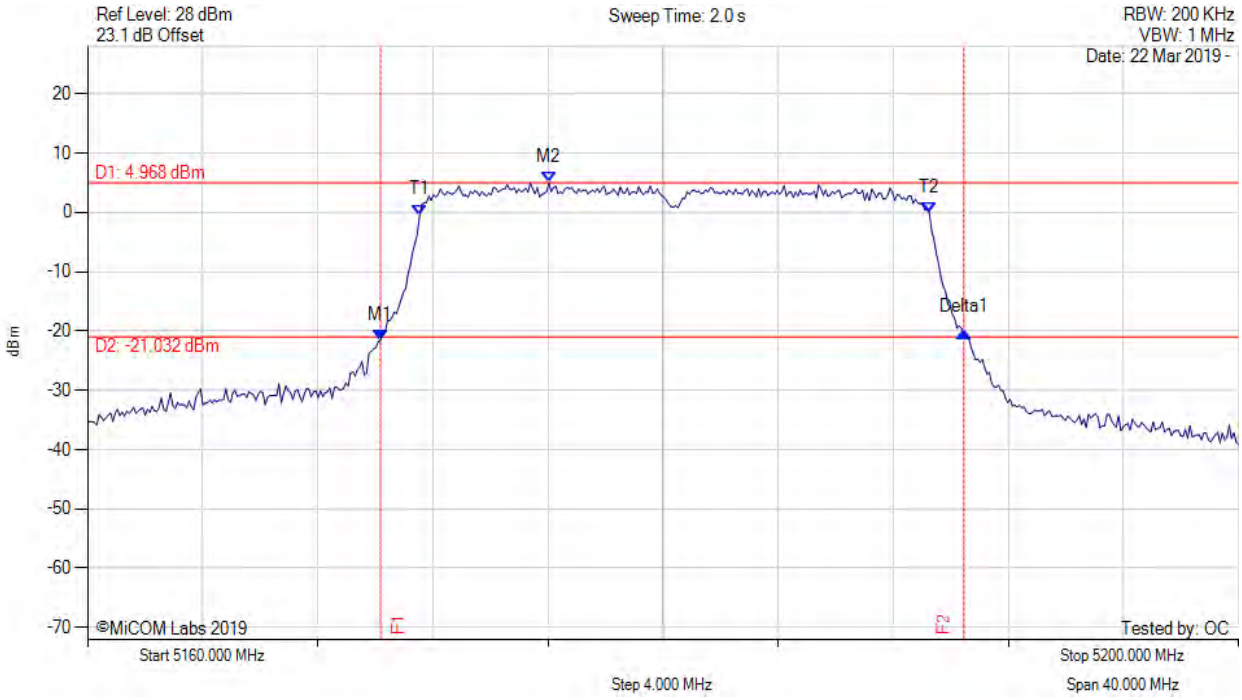
26 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5170.180 MHz : -21.583 dBm M2 : 5176.032 MHz : 4.968 dBm Delta1 : 20.281 MHz : 1.389 dB T1 : 5171.543 MHz : -0.413 dBm T2 : 5189.259 MHz : -0.161 dBm OBW : 17.715 MHz	Measured 26 dB Bandwidth: 20.281 MHz Measured 99% Bandwidth: 17.715 MHz

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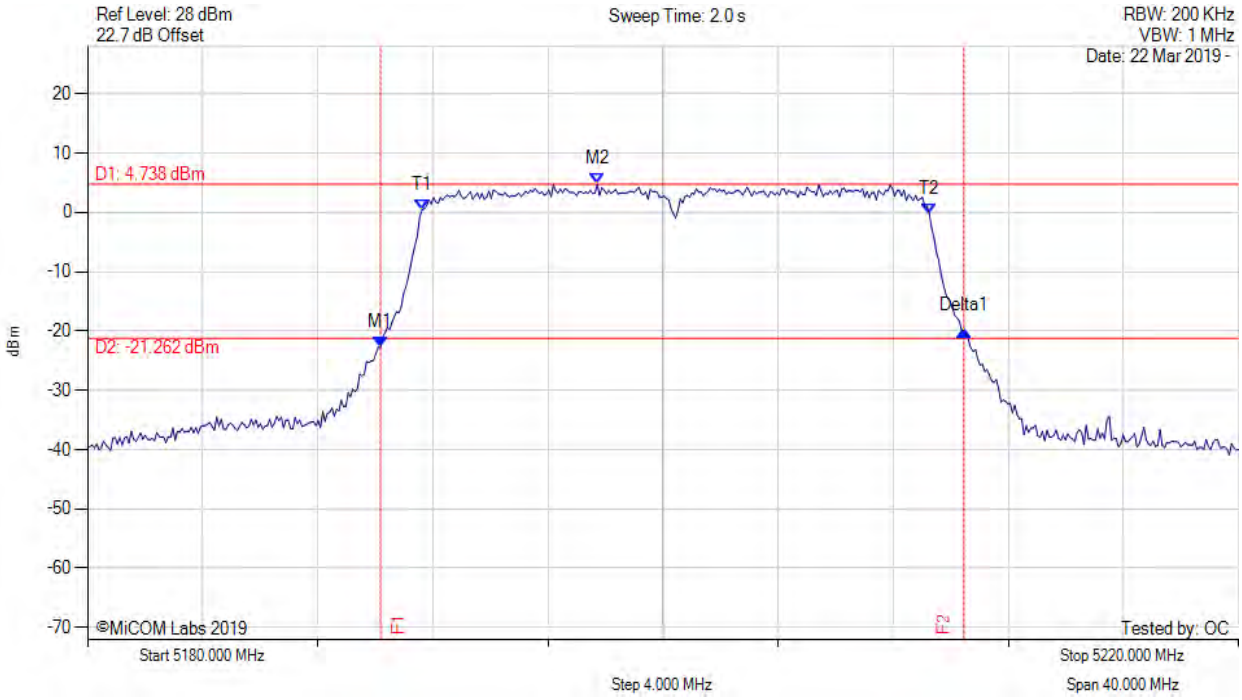
26 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5190.180 MHz : -22.785 dBm M2 : 5197.715 MHz : 4.738 dBm Delta1 : 20.281 MHz : 2.827 dB T1 : 5191.623 MHz : 0.433 dBm T2 : 5209.259 MHz : -0.216 dBm OBW : 17.635 MHz	Measured 26 dB Bandwidth: 20.281 MHz Measured 99% Bandwidth: 17.635 MHz

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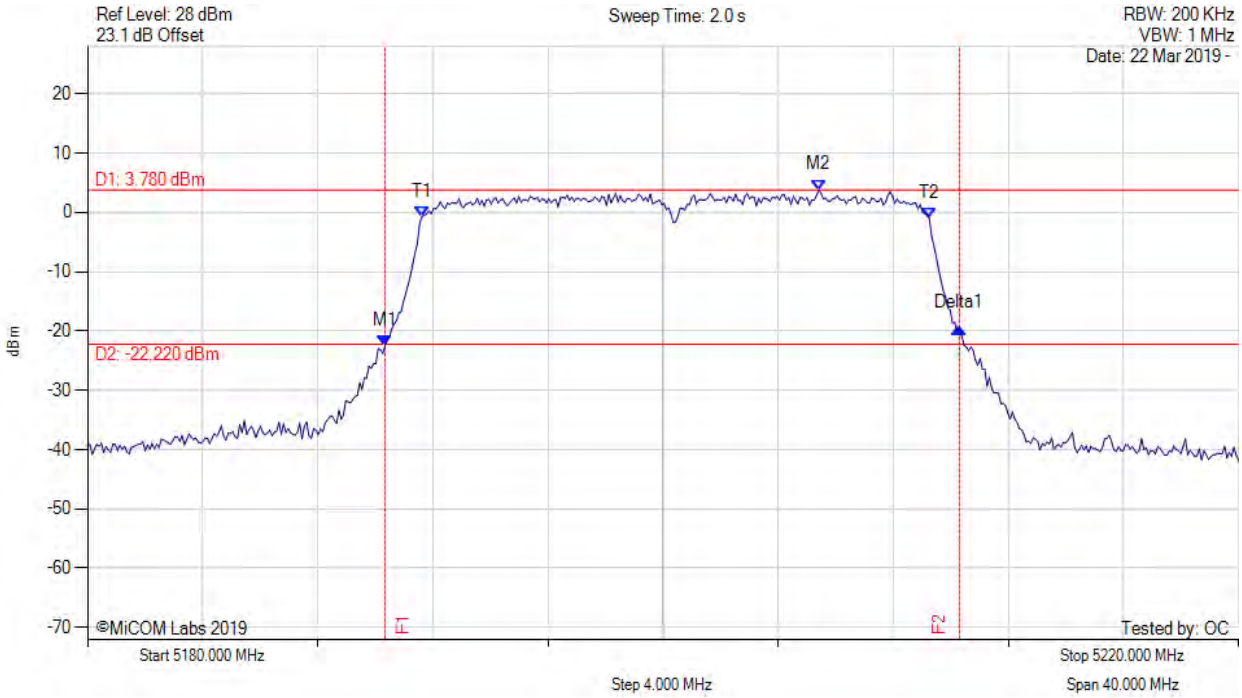
26 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5190.341 MHz : -22.439 dBm M2 : 5205.411 MHz : 3.780 dBm Delta1 : 19.960 MHz : 2.994 dB T1 : 5191.623 MHz : -0.757 dBm T2 : 5209.259 MHz : -1.103 dBm OBW : 17.635 MHz	Measured 26 dB Bandwidth: 19.960 MHz Measured 99% Bandwidth: 17.635 MHz

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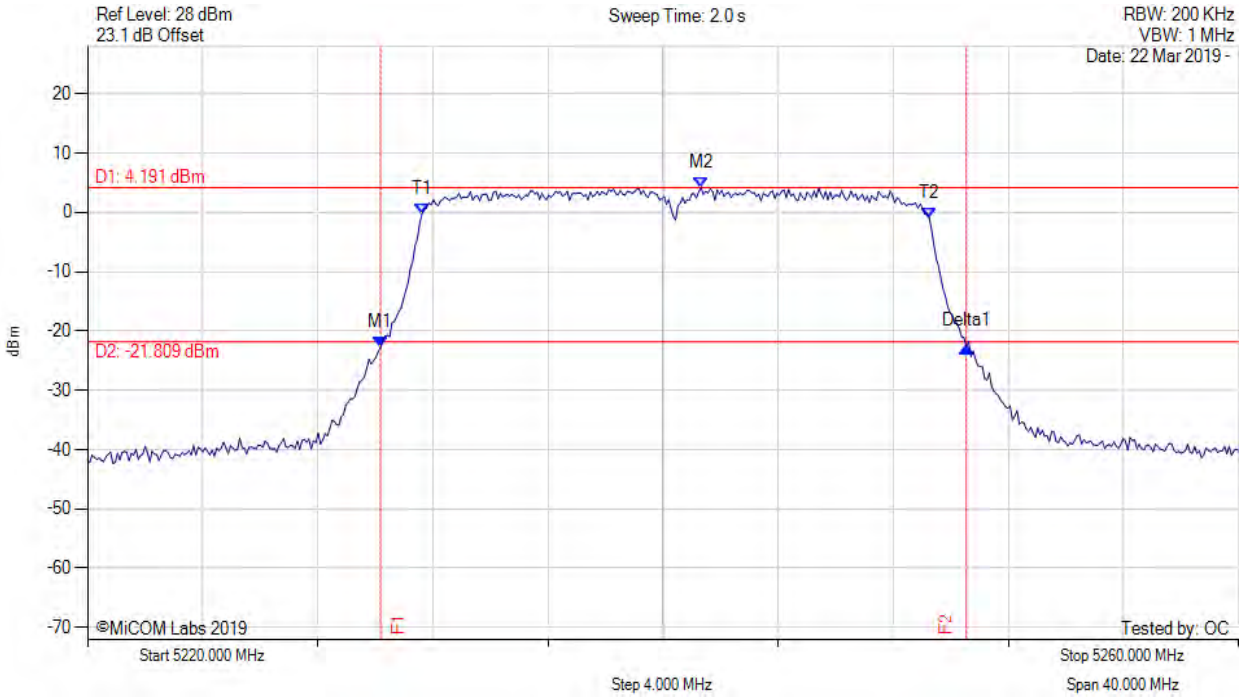
26 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5230.180 MHz : -22.842 dBm M2 : 5241.323 MHz : 4.191 dBm Delta1 : 20.361 MHz : 0.226 dB T1 : 5231.623 MHz : -0.241 dBm T2 : 5249.259 MHz : -1.007 dBm OBW : 17.635 MHz	Measured 26 dB Bandwidth: 20.361 MHz Measured 99% Bandwidth: 17.635 MHz

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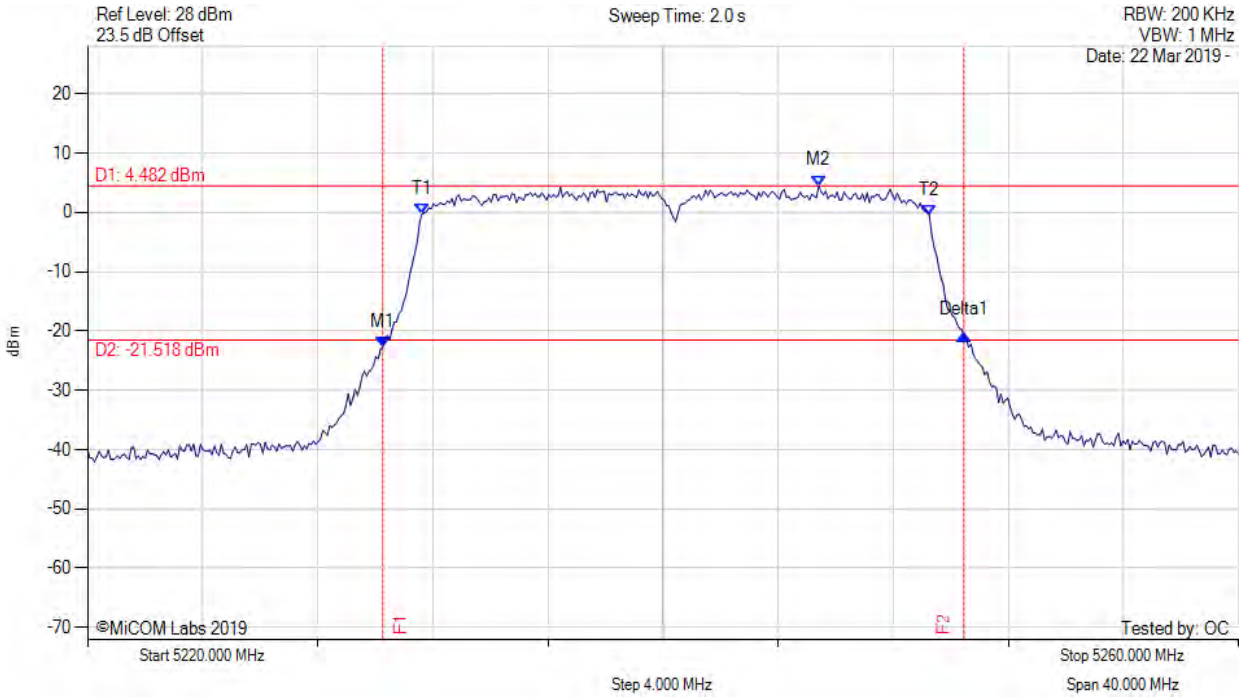
26 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5230.261 MHz : -22.709 dBm M2 : 5245.411 MHz : 4.482 dBm Delta1 : 20.200 MHz : 1.991 dB T1 : 5231.623 MHz : -0.224 dBm T2 : 5249.259 MHz : -0.507 dBm OBW : 17.635 MHz	Measured 26 dB Bandwidth: 20.200 MHz Measured 99% Bandwidth: 17.635 MHz

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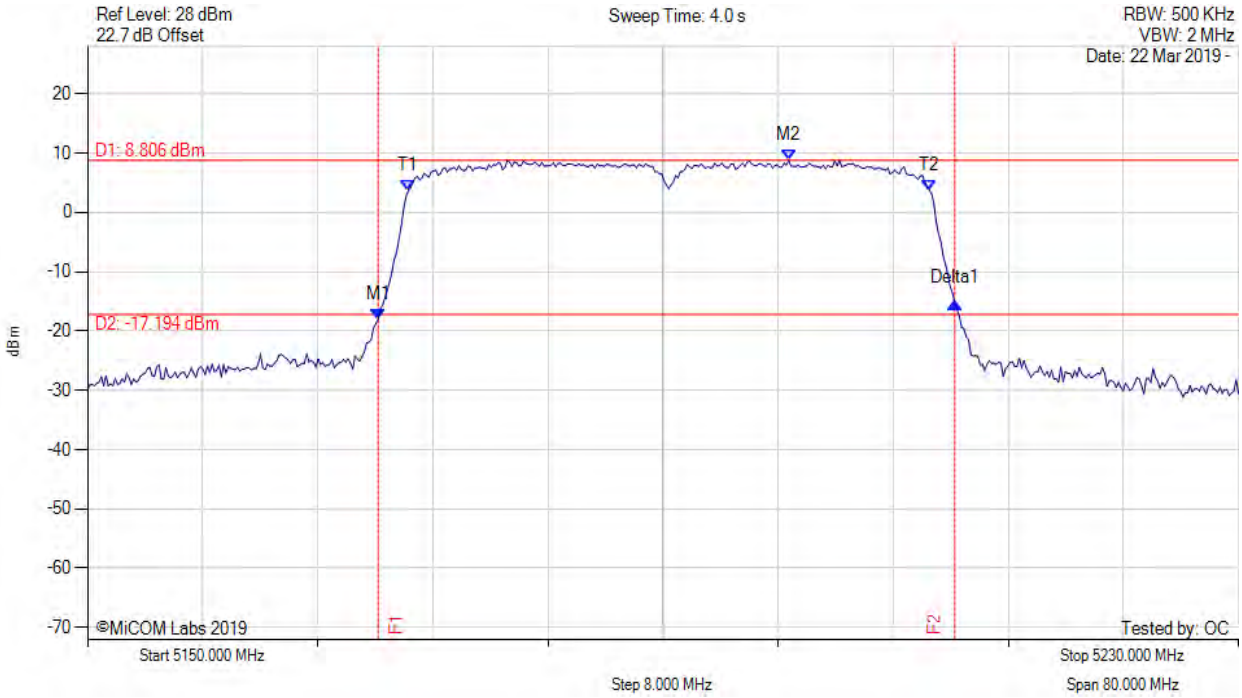
26 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5170.200 MHz : -18.044 dBm M2 : 5198.737 MHz : 8.806 dBm Delta1 : 40.080 MHz : 2.772 dB T1 : 5172.285 MHz : 3.583 dBm T2 : 5208.517 MHz : 3.758 dBm OBW : 36.232 MHz	Measured 26 dB Bandwidth: 40.080 MHz Measured 99% Bandwidth: 36.232 MHz

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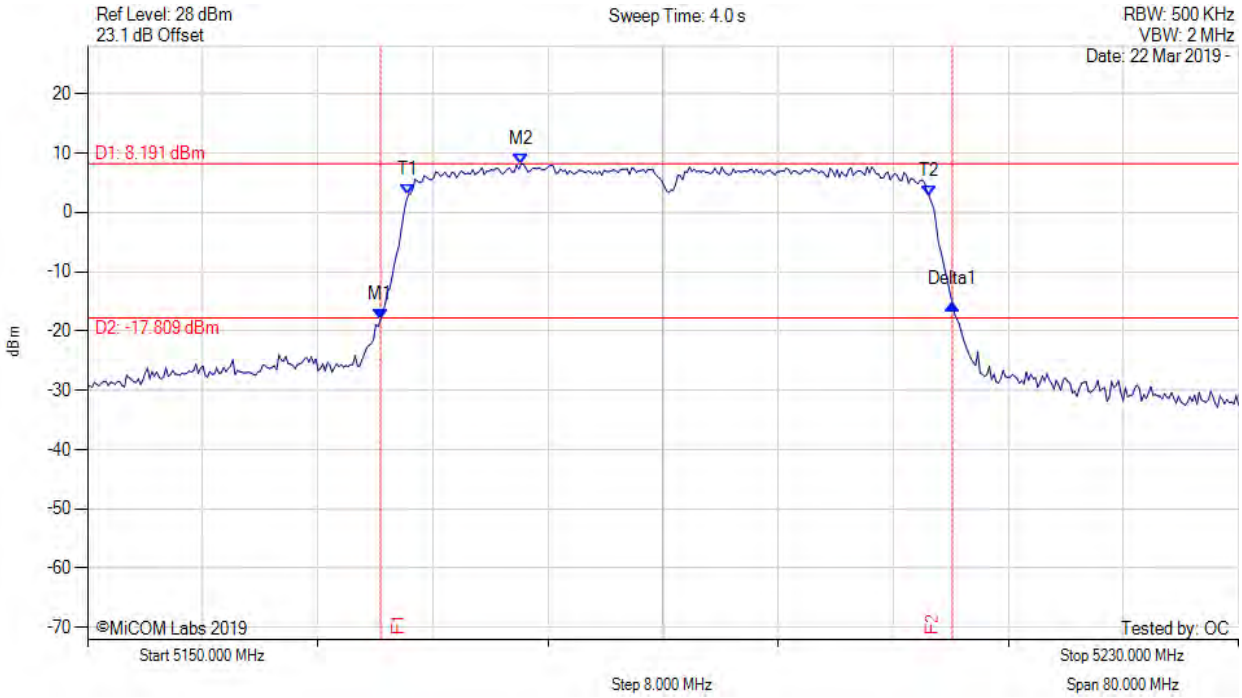
26 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5170.361 MHz : -18.127 dBm M2 : 5180.140 MHz : 8.191 dBm Delta1 : 39.760 MHz : 2.699 dB T1 : 5172.285 MHz : 2.920 dBm T2 : 5208.517 MHz : 2.698 dBm OBW : 36.232 MHz	Measured 26 dB Bandwidth: 39.760 MHz Measured 99% Bandwidth: 36.232 MHz

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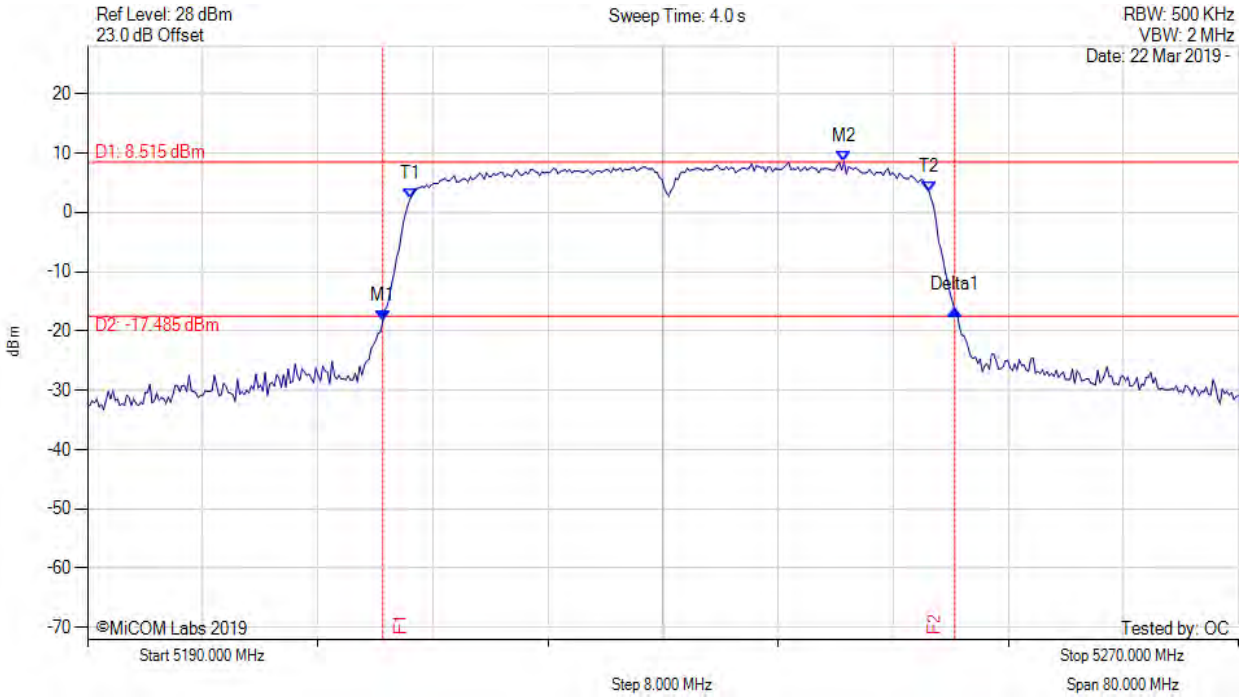
26 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5210.521 MHz : -18.314 dBm M2 : 5242.585 MHz : 8.515 dBm Delta1 : 39.760 MHz : 1.942 dB T1 : 5212.445 MHz : 2.361 dBm T2 : 5248.517 MHz : 3.365 dBm OBW : 36.072 MHz	Measured 26 dB Bandwidth: 39.760 MHz Measured 99% Bandwidth: 36.072 MHz

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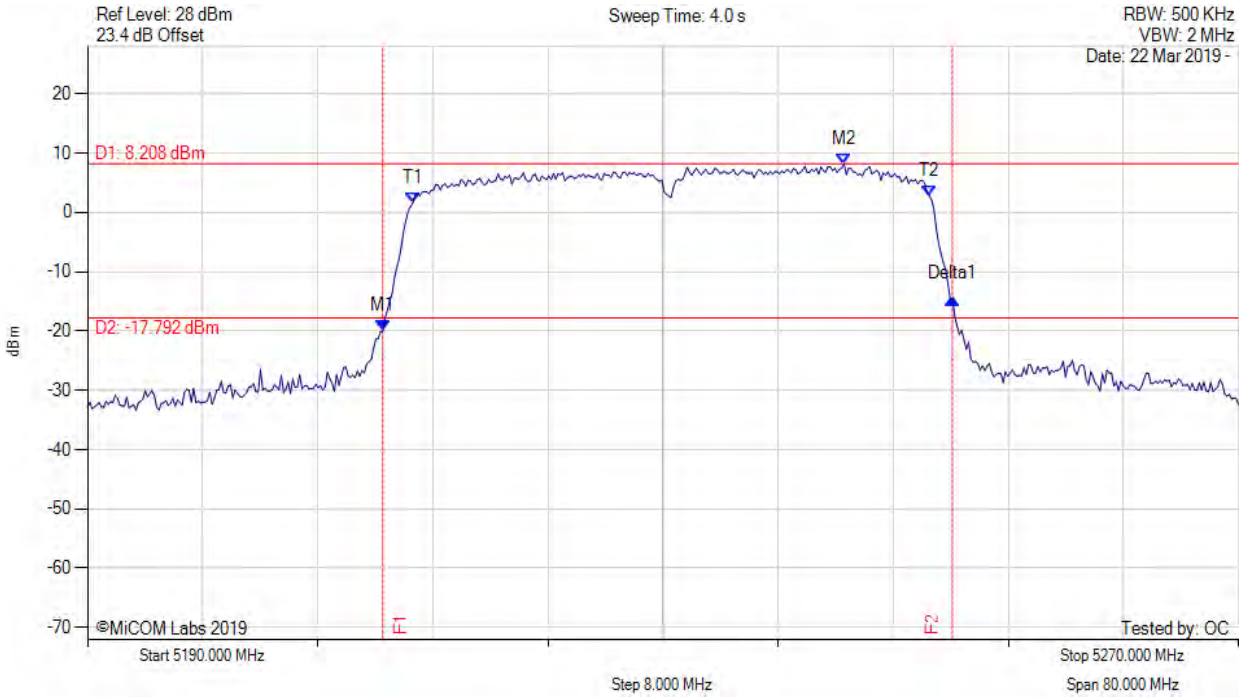
26 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5210.521 MHz : -19.986 dBm M2 : 5242.585 MHz : 8.208 dBm Delta1 : 39.599 MHz : 5.420 dB T1 : 5212.605 MHz : 1.551 dBm T2 : 5248.517 MHz : 2.767 dBm OBW : 35.912 MHz	Measured 26 dB Bandwidth: 39.599 MHz Measured 99% Bandwidth: 35.912 MHz

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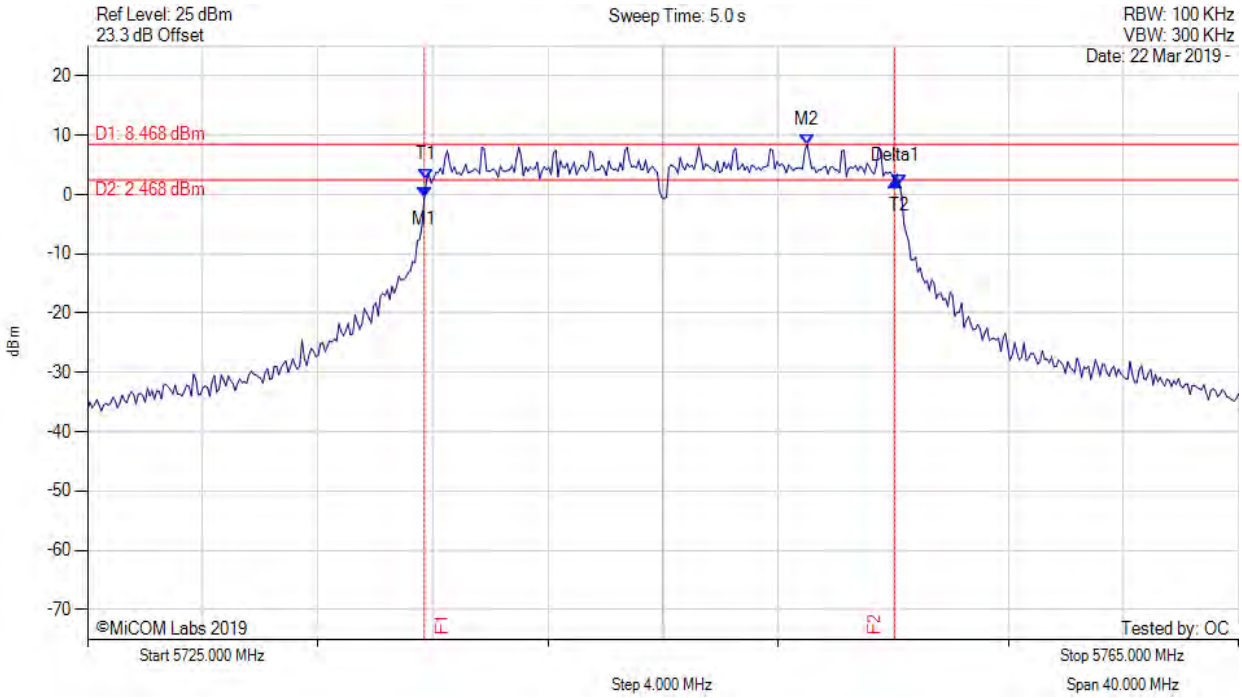
6 dB & 99% BANDWIDTH

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



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

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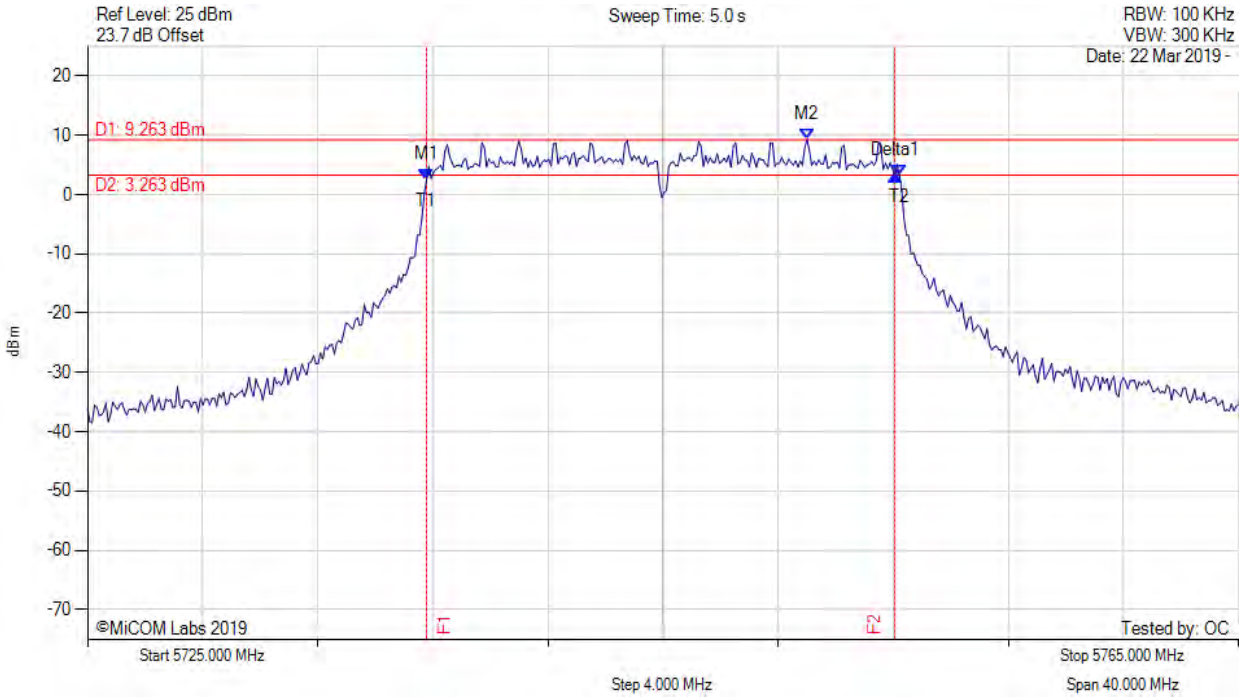
6 dB & 99% BANDWIDTH

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



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

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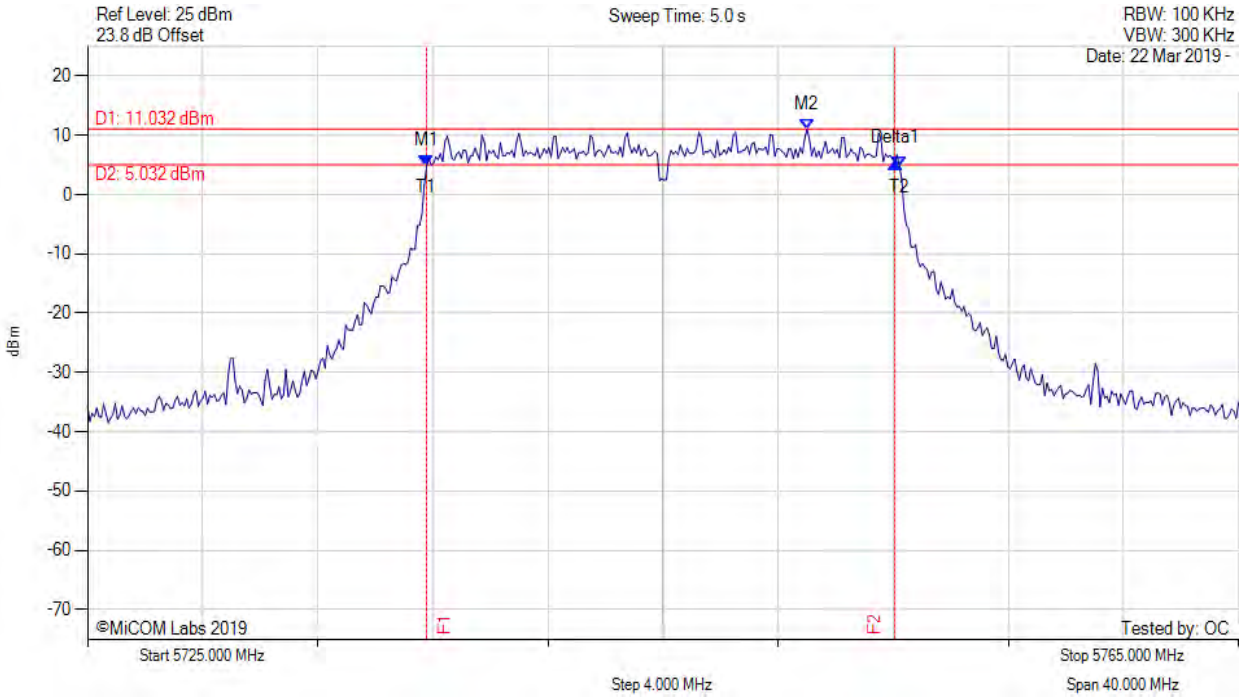
6 dB & 99% BANDWIDTH

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



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

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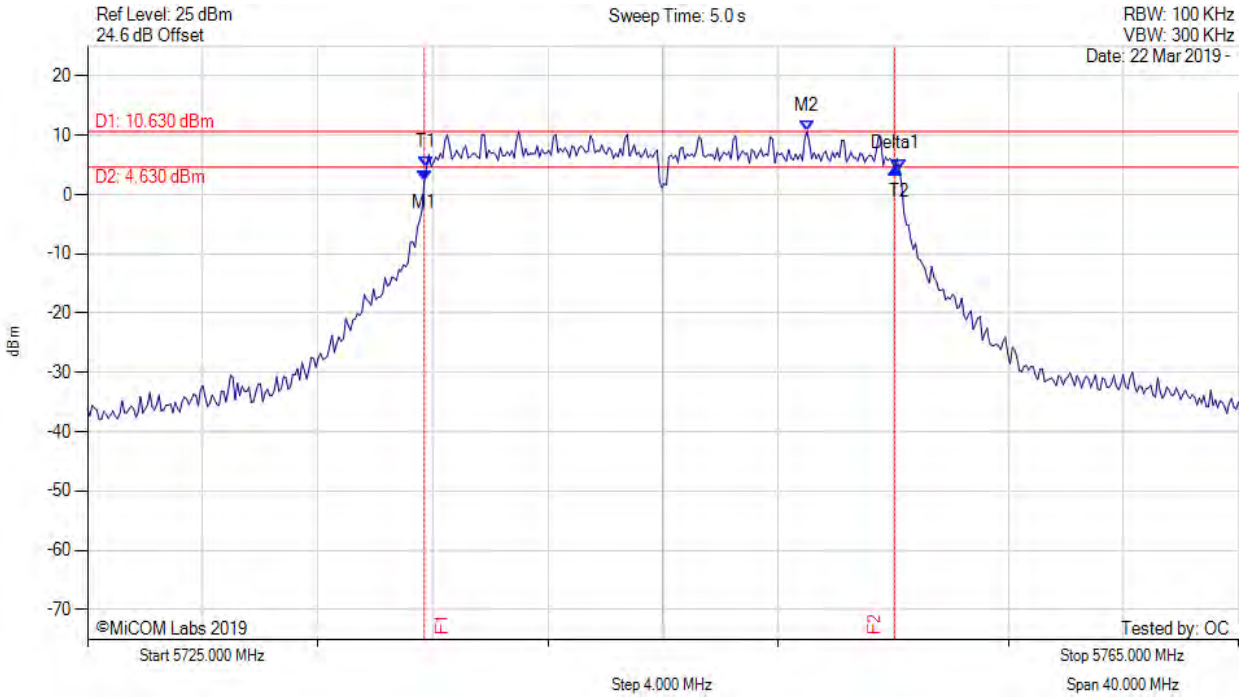
6 dB & 99% BANDWIDTH

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



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

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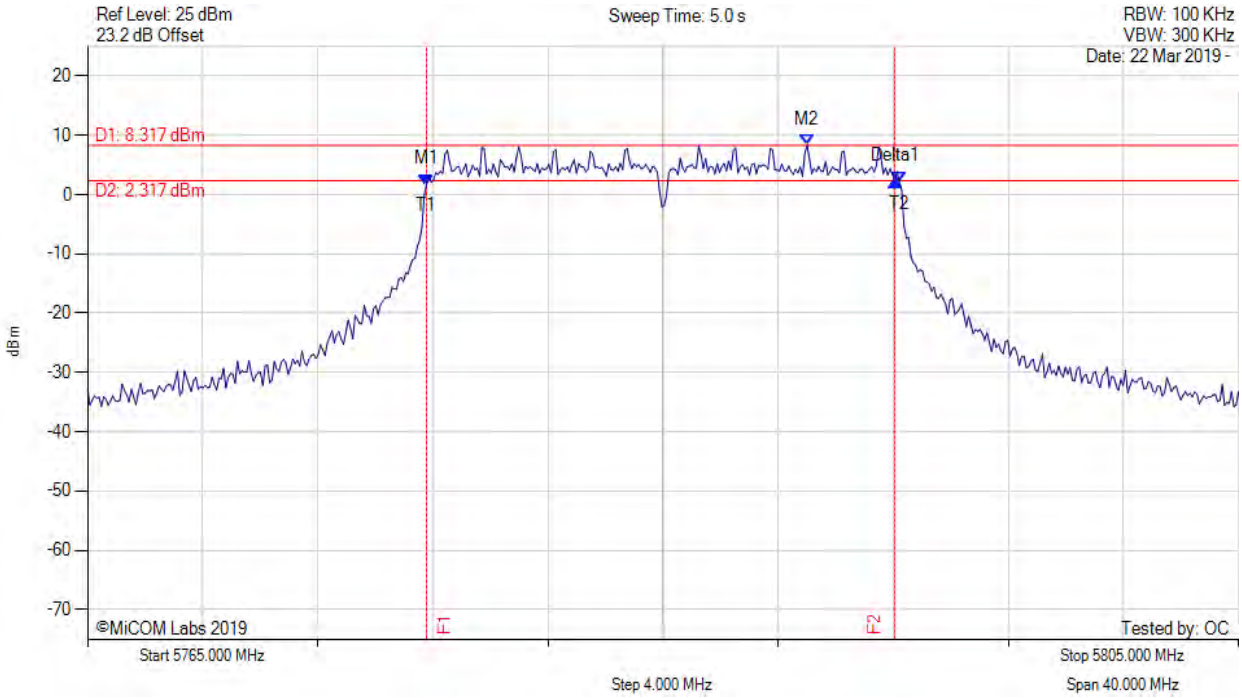
6 dB & 99% BANDWIDTH

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



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

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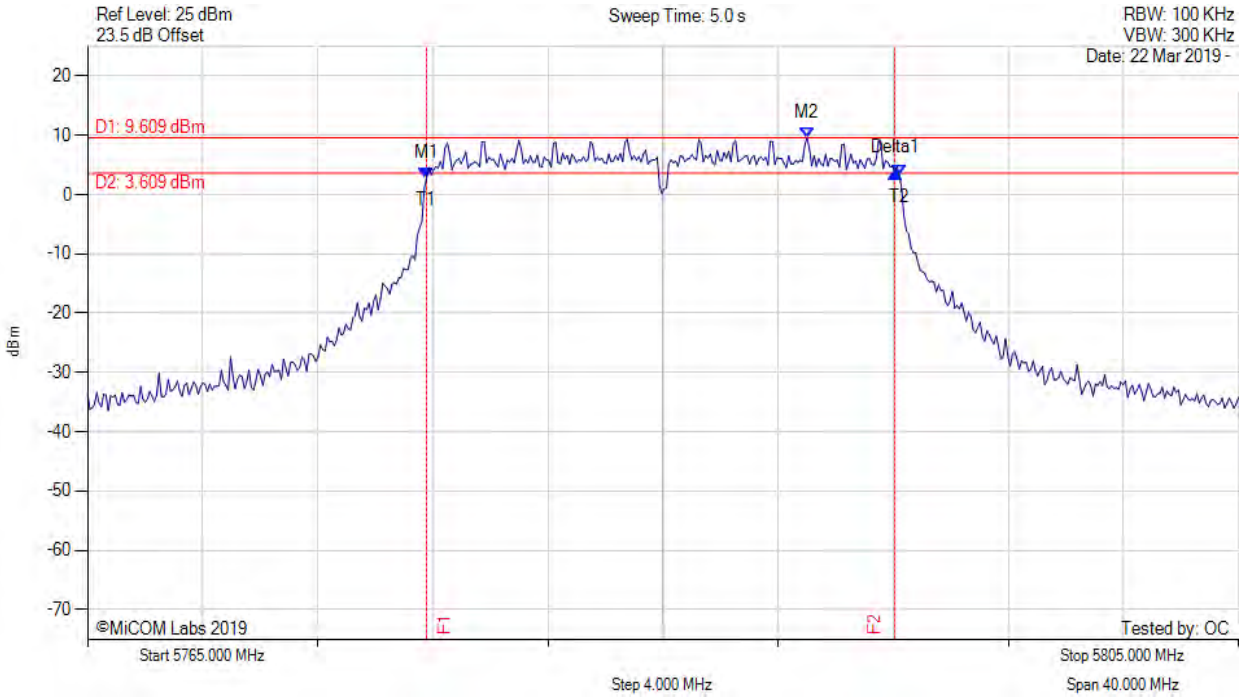
6 dB & 99% BANDWIDTH

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



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

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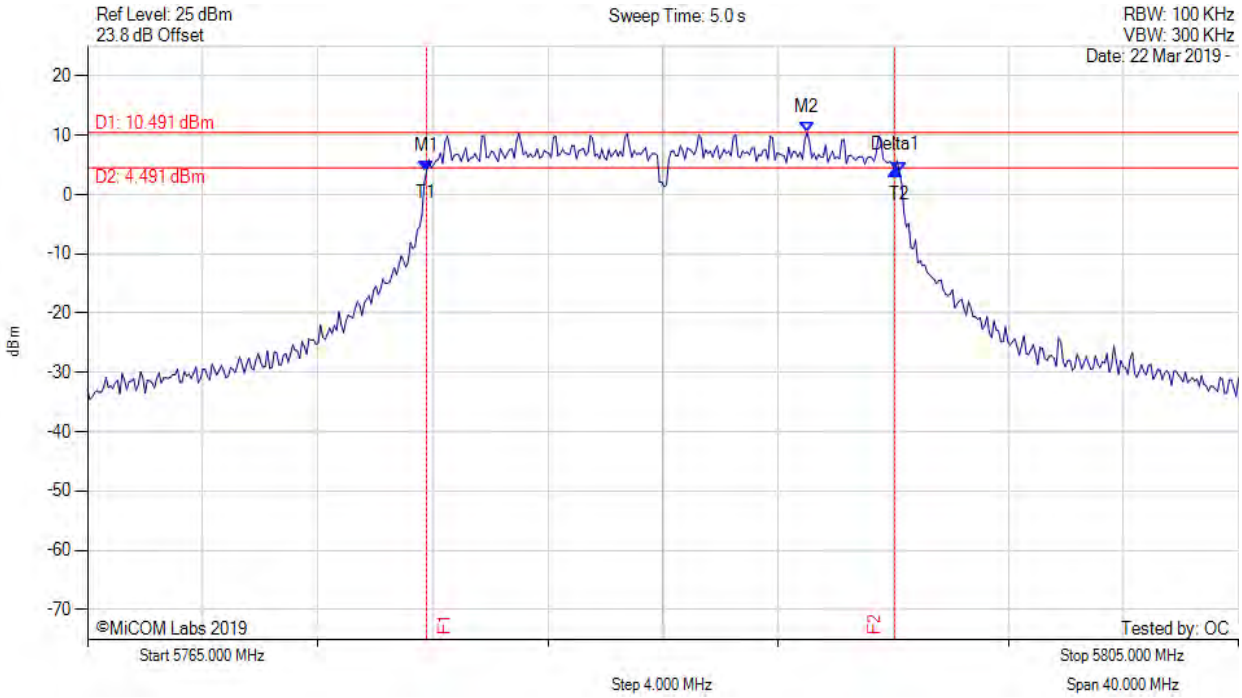
6 dB & 99% BANDWIDTH

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



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

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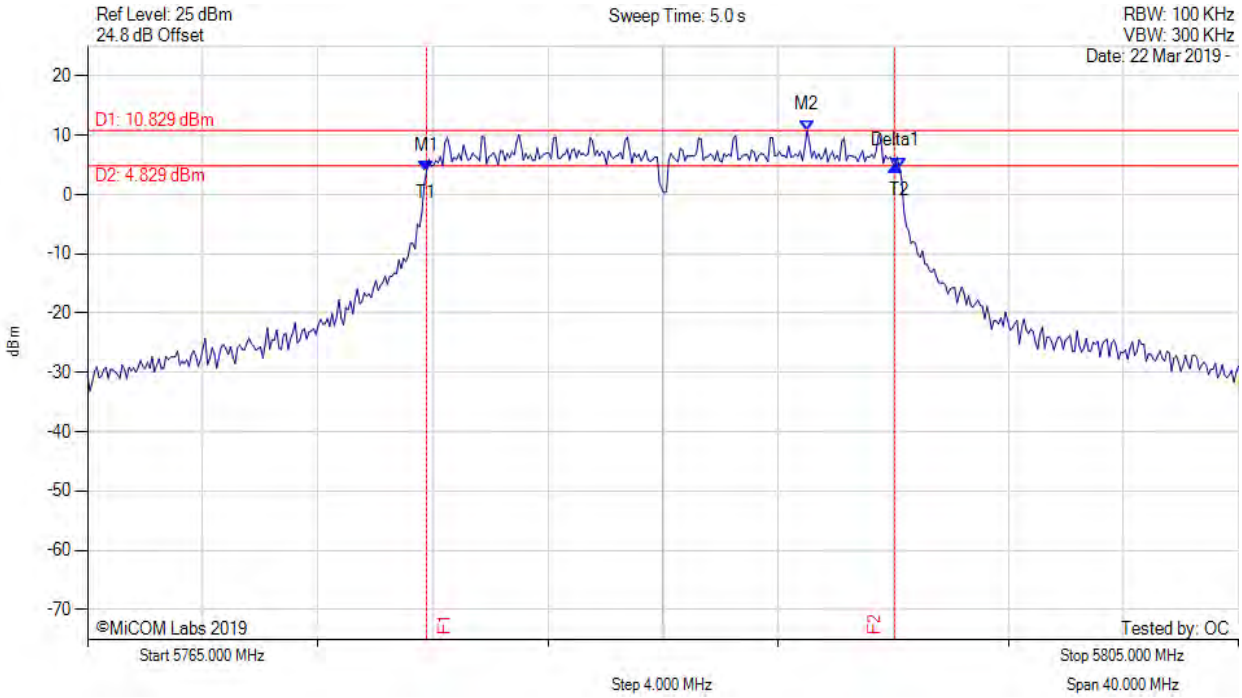
6 dB & 99% BANDWIDTH

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



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

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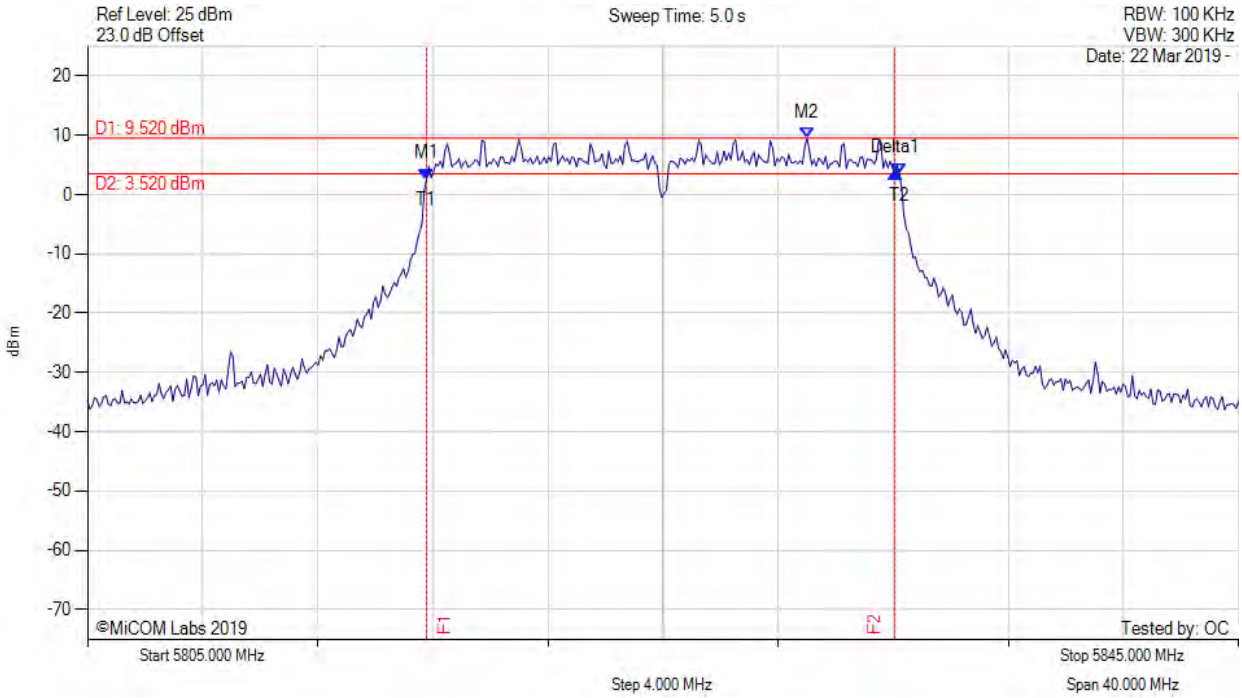
6 dB & 99% BANDWIDTH

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



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

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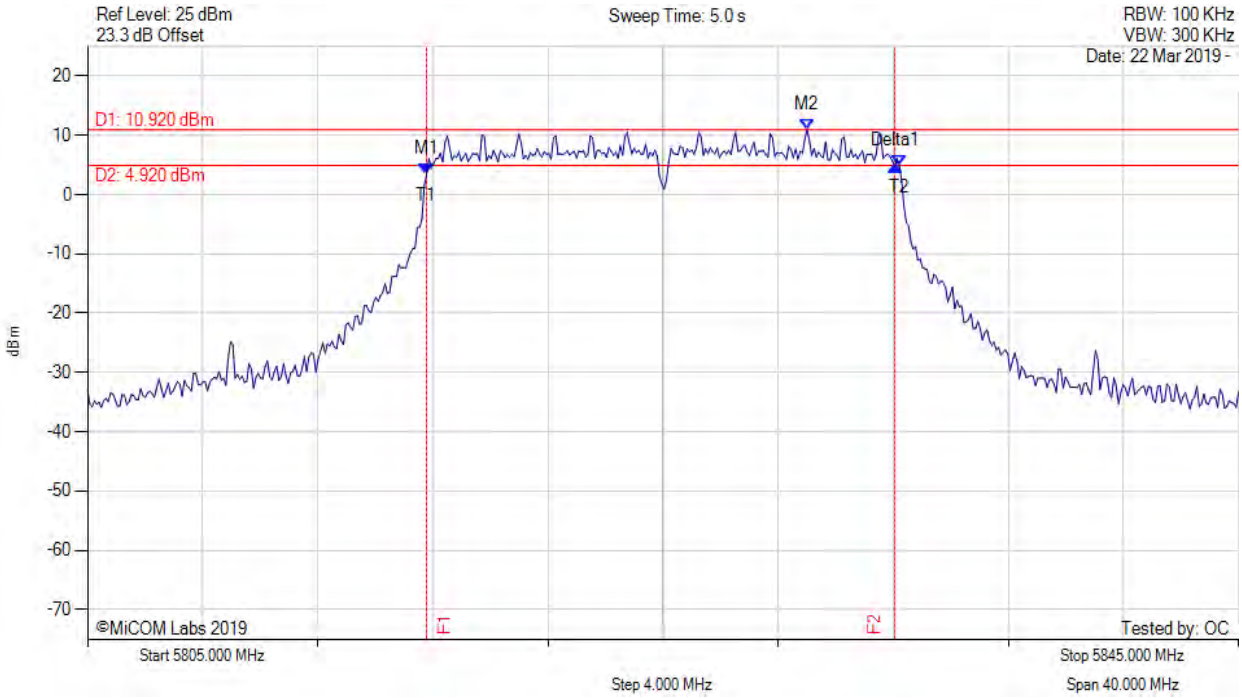
6 dB & 99% BANDWIDTH

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



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

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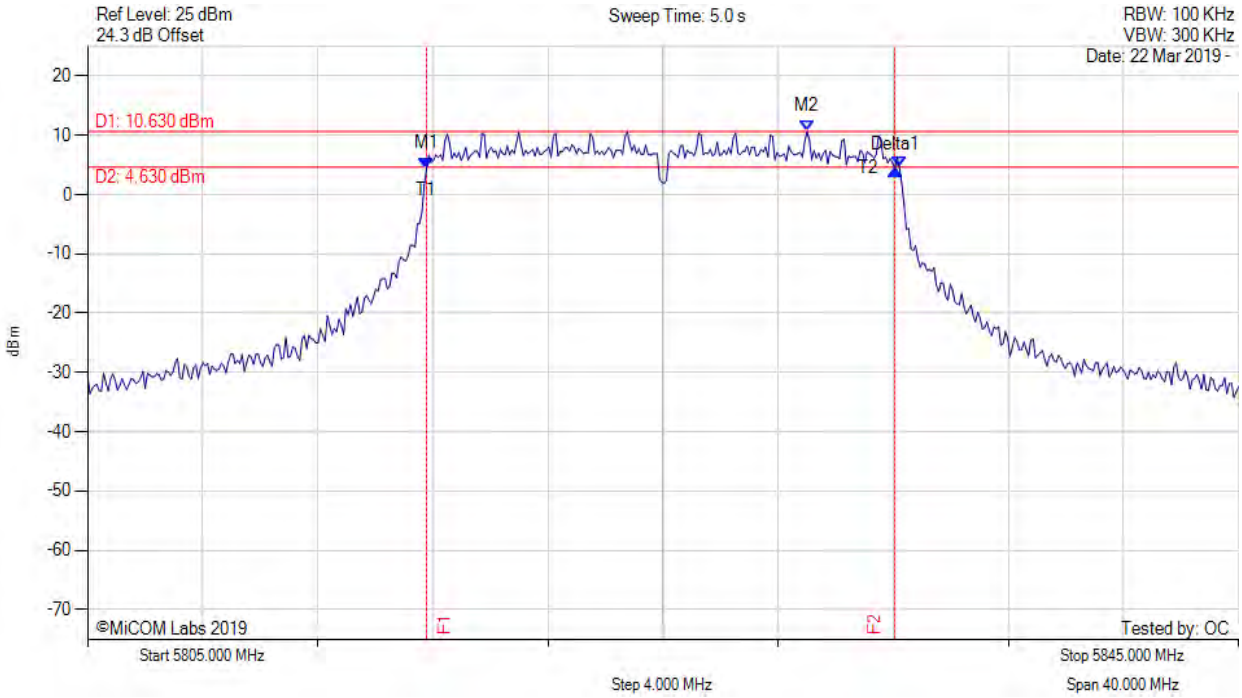
6 dB & 99% BANDWIDTH

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



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

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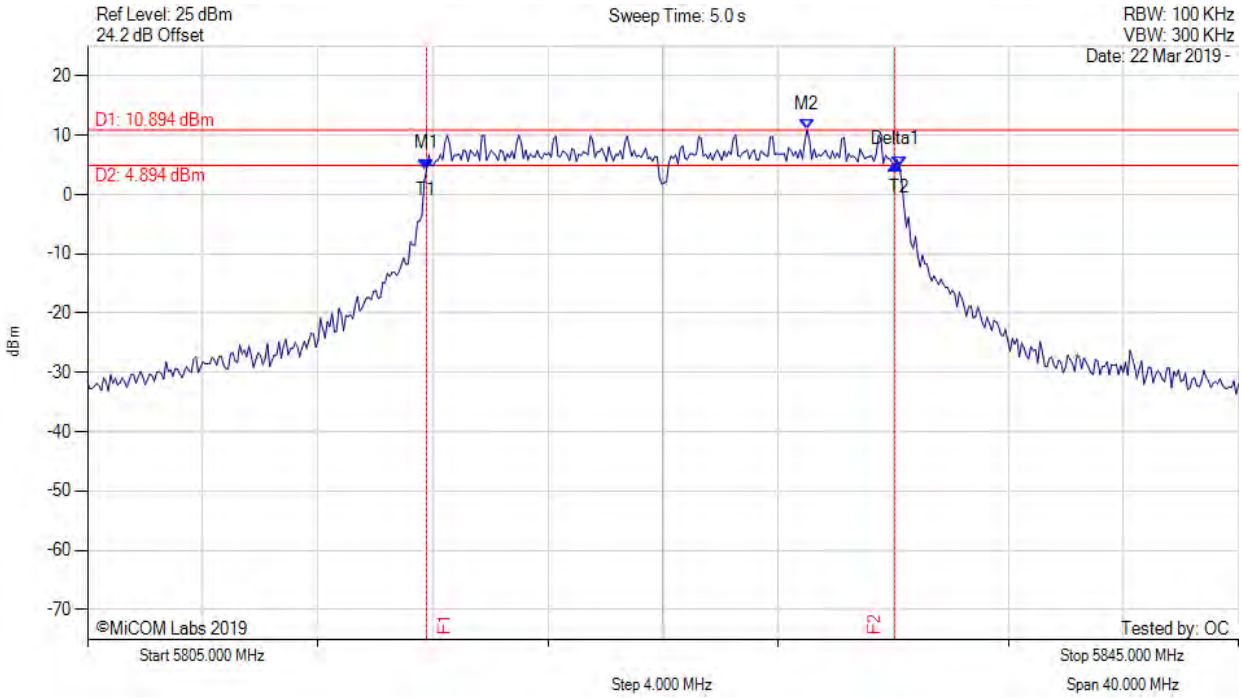
6 dB & 99% BANDWIDTH

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



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

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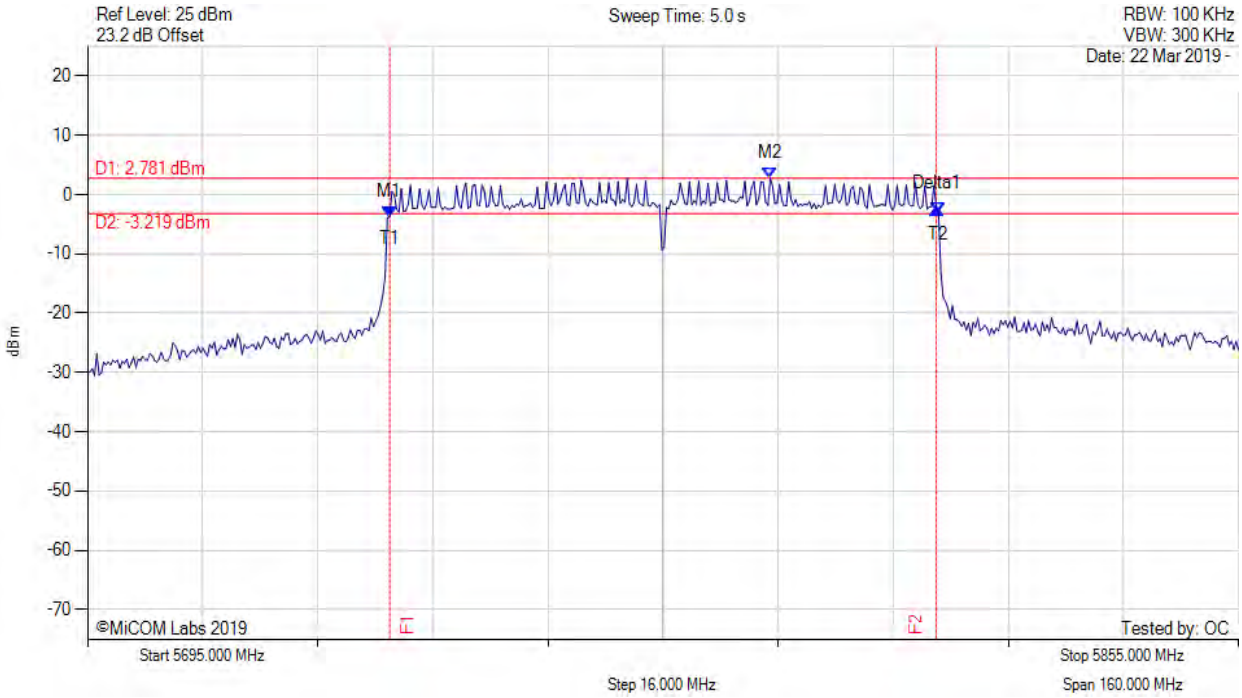
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5737.004 MHz : -3.759 dBm M2 : 5789.910 MHz : 2.781 dBm Delta1 : 75.992 MHz : 1.426 dB T1 : 5737.004 MHz : -3.759 dBm T2 : 5813.317 MHz : -3.119 dBm OBW : 76.313 MHz	Measured 6 dB Bandwidth: 75.992 MHz Measured 99% Bandwidth: 76.313 MHz

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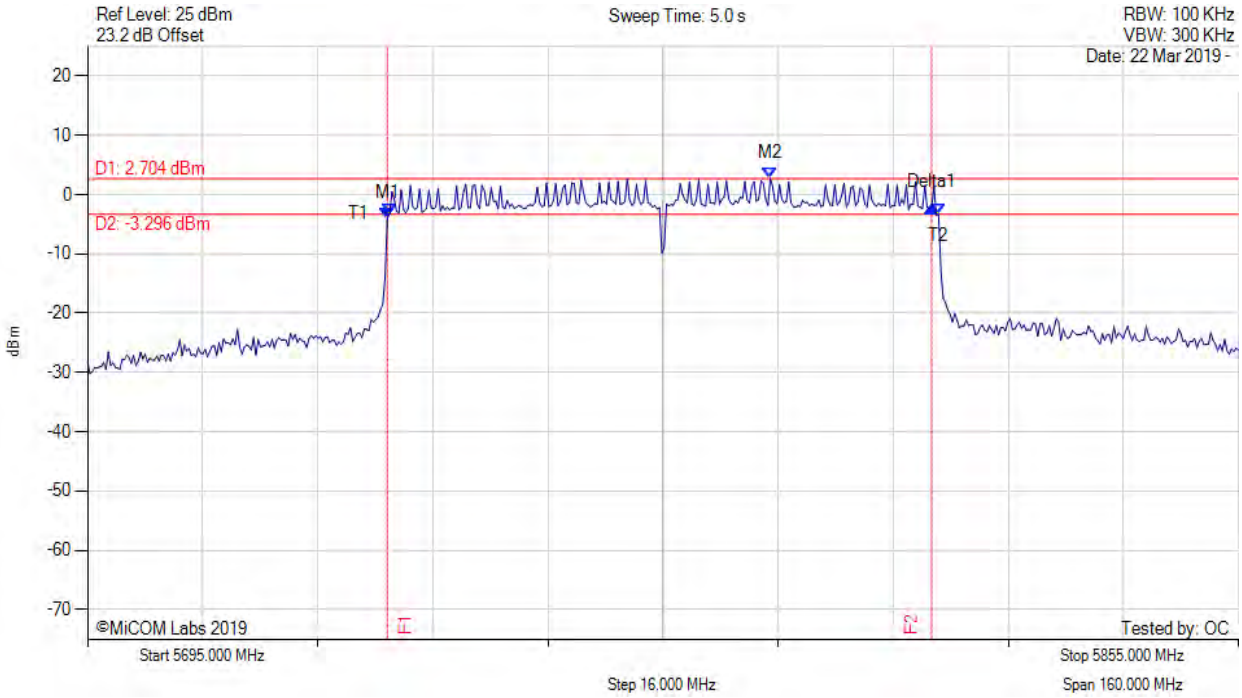
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5736.683 MHz : -3.985 dBm M2 : 5789.910 MHz : 2.704 dBm Delta1 : 75.671 MHz : 1.841 dB T1 : 5737.004 MHz : -3.224 dBm T2 : 5813.317 MHz : -3.371 dBm OBW : 76.313 MHz	Channel Frequency: 5775.00 MHz

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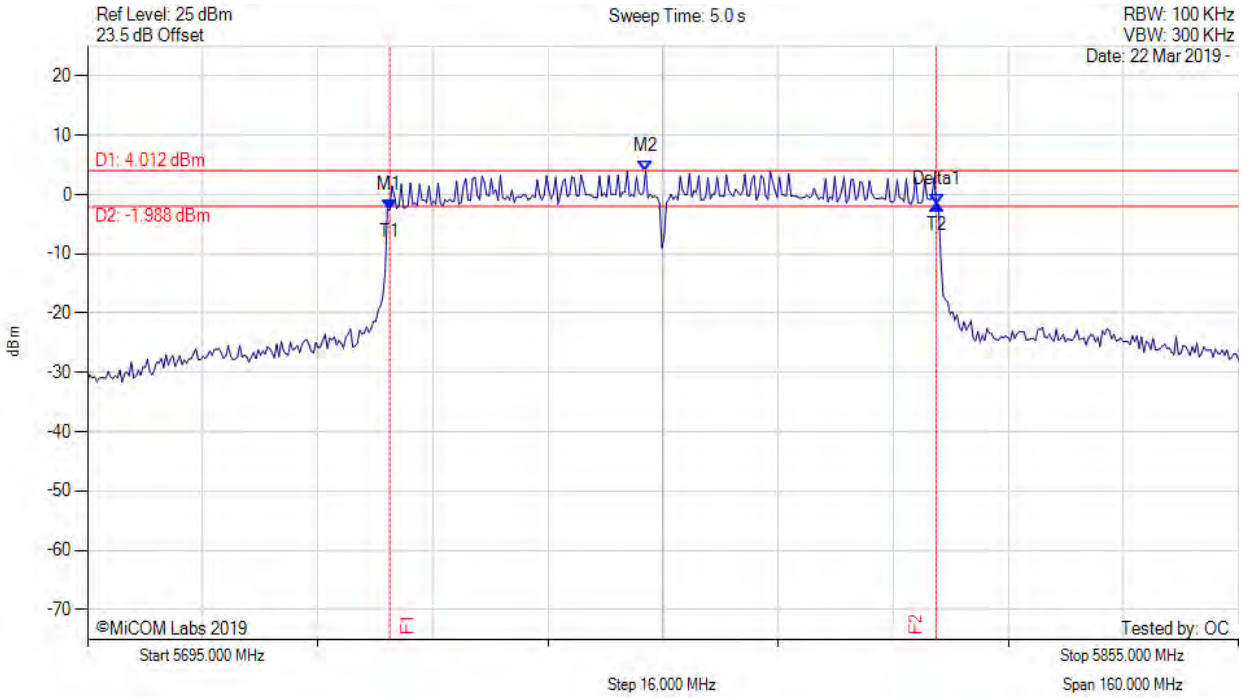
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5737.004 MHz : -2.606 dBm M2 : 5772.595 MHz : 4.012 dBm Delta1 : 75.992 MHz : 1.027 dB T1 : 5737.004 MHz : -2.606 dBm T2 : 5812.996 MHz : -1.579 dBm OBW : 75.992 MHz	Measured 6 dB Bandwidth: 75.992 MHz Measured 99% Bandwidth: 75.992 MHz

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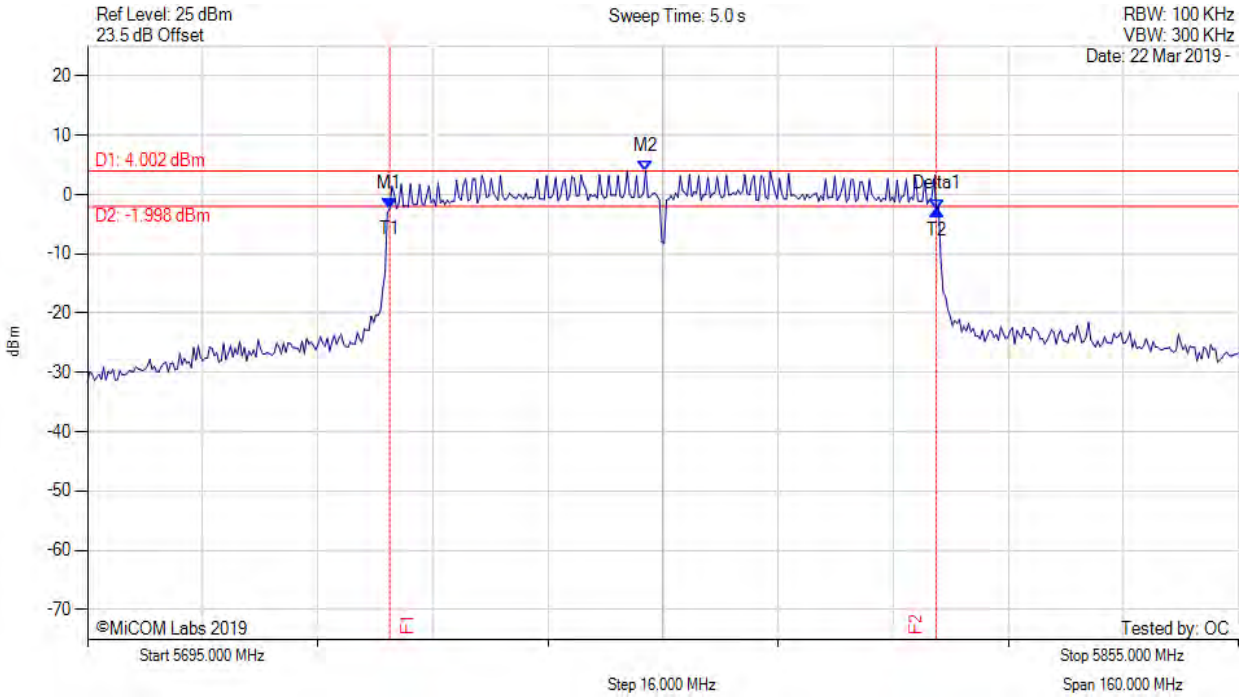
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5737.004 MHz : -2.287 dBm M2 : 5772.595 MHz : 4.002 dBm Delta1 : 75.992 MHz : -0.193 dB T1 : 5737.004 MHz : -2.287 dBm T2 : 5812.996 MHz : -2.480 dBm OBW : 75.992 MHz	Channel Frequency: 5775.00 MHz

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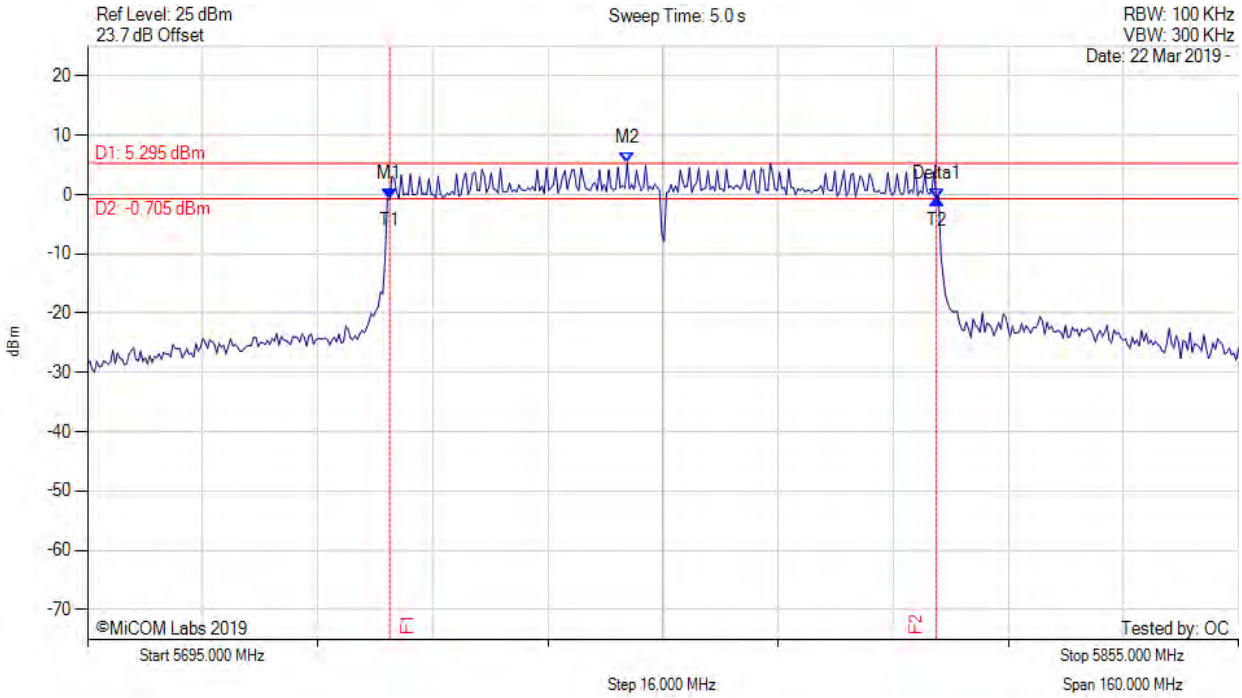
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5737.004 MHz : -0.818 dBm M2 : 5770.030 MHz : 5.295 dBm Delta1 : 75.992 MHz : 0.087 dB T1 : 5737.004 MHz : -0.818 dBm T2 : 5812.996 MHz : -0.731 dBm OBW : 75.992 MHz	Measured 6 dB Bandwidth: 75.992 MHz Measured 99% Bandwidth: 75.992 MHz

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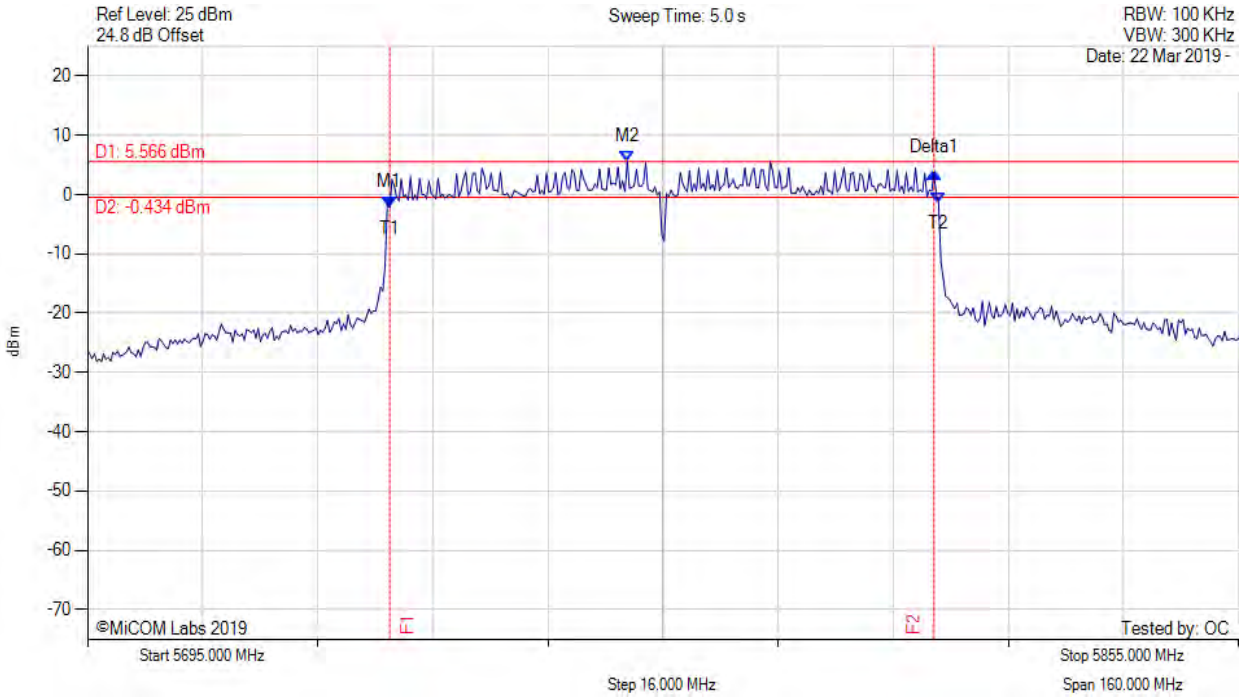
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5737.004 MHz : -2.207 dBm M2 : 5770.030 MHz : 5.566 dBm Delta1 : 75.671 MHz : 5.924 dB T1 : 5737.004 MHz : -2.207 dBm T2 : 5813.317 MHz : -1.345 dBm OBW : 76.313 MHz	Measured 6 dB Bandwidth: 75.671 MHz Measured 99% Bandwidth: 76.313 MHz

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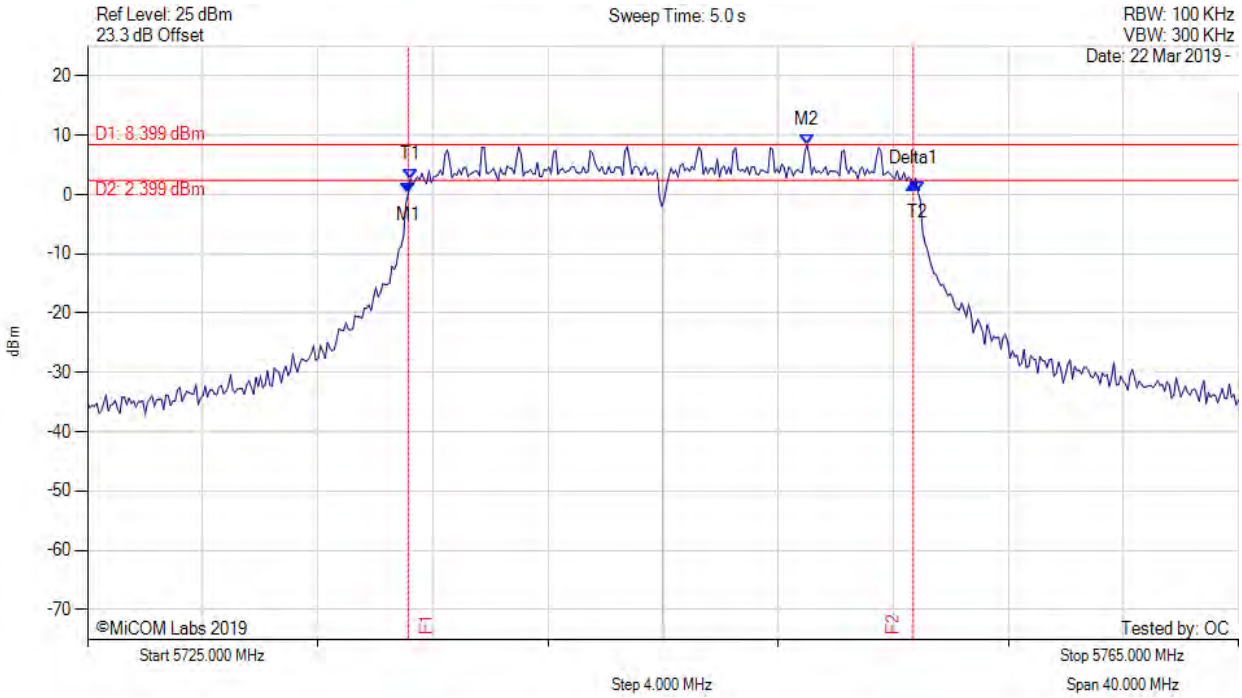
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5736.142 MHz : 0.115 dBm M2 : 5750.010 MHz : 8.399 dBm Delta1 : 17.555 MHz : 1.696 dB T1 : 5736.222 MHz : 2.610 dBm T2 : 5753.858 MHz : 0.542 dBm OBW : 17.635 MHz	Measured 6 dB Bandwidth: 17.555 MHz Measured 99% Bandwidth: 17.635 MHz

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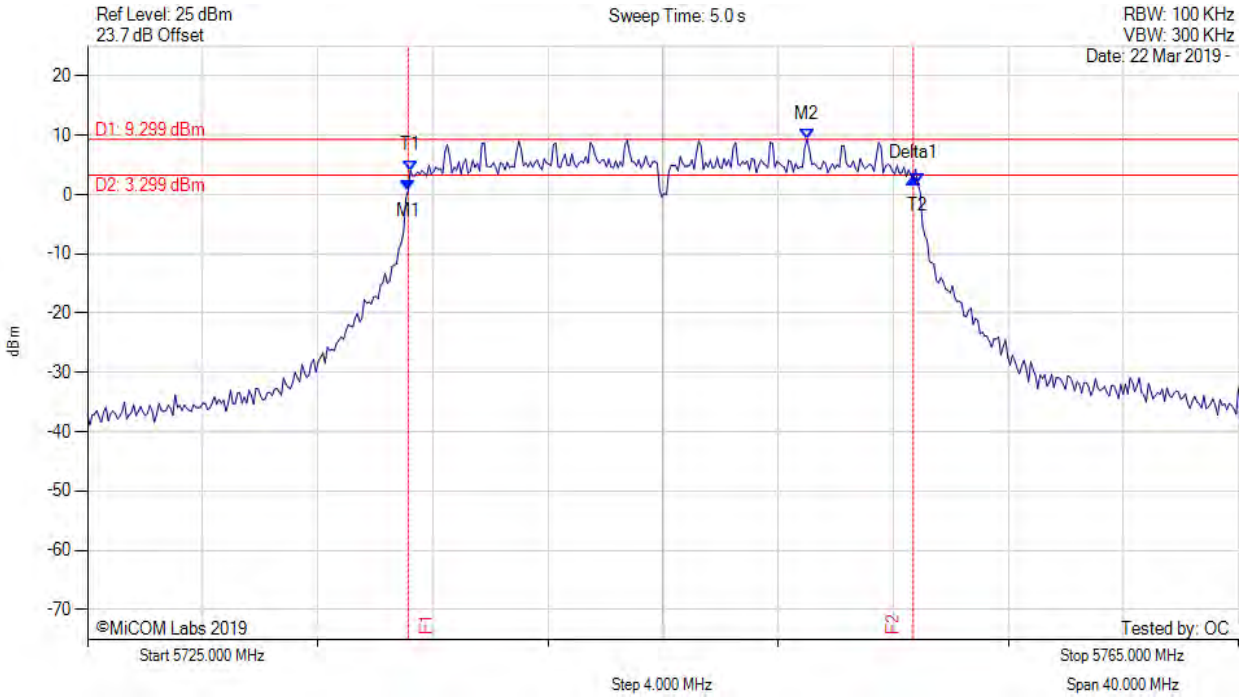
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5736.142 MHz : 0.782 dBm M2 : 5750.010 MHz : 9.299 dBm Delta1 : 17.555 MHz : 1.944 dB T1 : 5736.222 MHz : 4.048 dBm T2 : 5753.858 MHz : 1.801 dBm OBW : 17.635 MHz	Measured 6 dB Bandwidth: 17.555 MHz Measured 99% Bandwidth: 17.635 MHz

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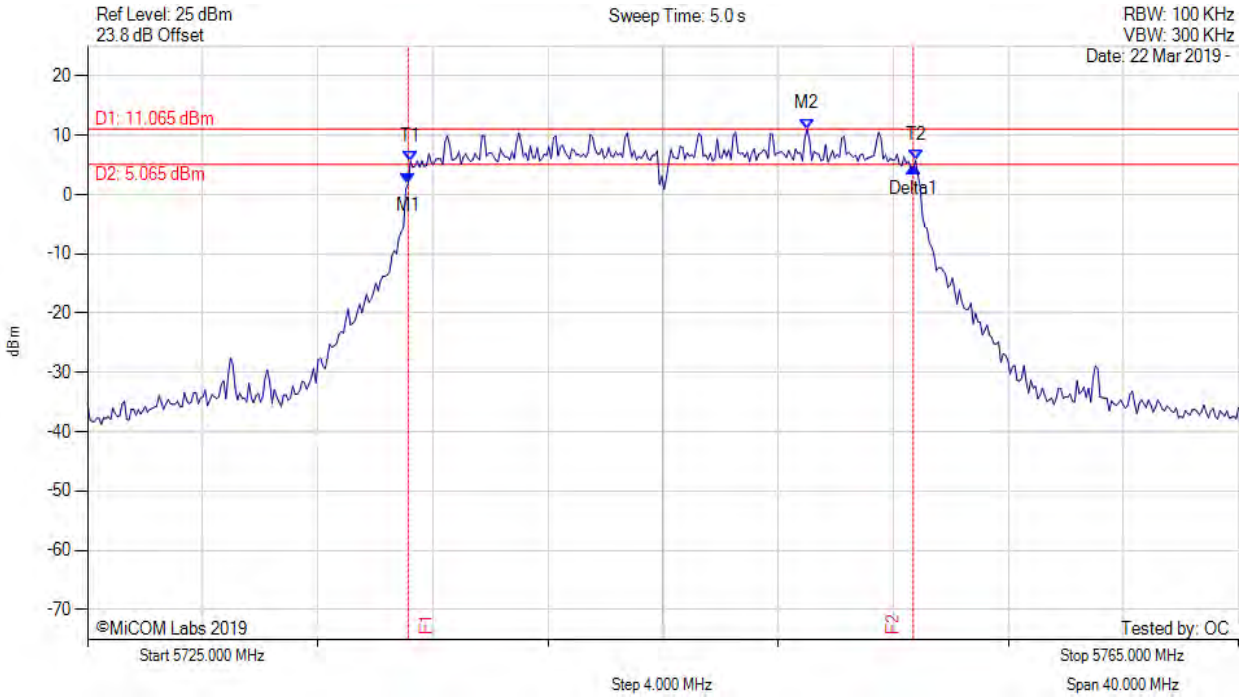
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5736.142 MHz : 1.769 dBm M2 : 5750.010 MHz : 11.065 dBm Delta1 : 17.555 MHz : 2.845 dB T1 : 5736.222 MHz : 5.586 dBm T2 : 5753.778 MHz : 5.738 dBm OBW : 17.555 MHz	Measured 6 dB Bandwidth: 17.555 MHz Measured 99% Bandwidth: 17.555 MHz

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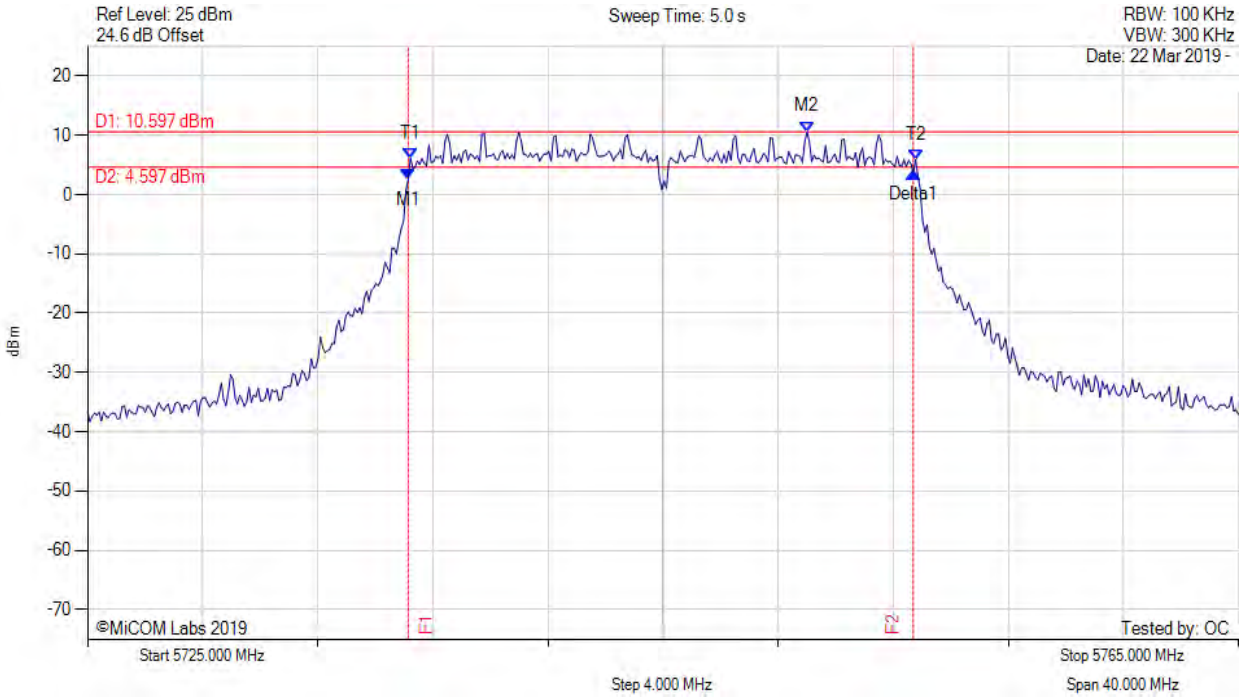
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5736.142 MHz : 2.633 dBm M2 : 5750.010 MHz : 10.597 dBm Delta1 : 17.555 MHz : 1.102 dB T1 : 5736.222 MHz : 6.141 dBm T2 : 5753.778 MHz : 5.905 dBm OBW : 17.555 MHz	Measured 6 dB Bandwidth: 17.555 MHz Measured 99% Bandwidth: 17.555 MHz

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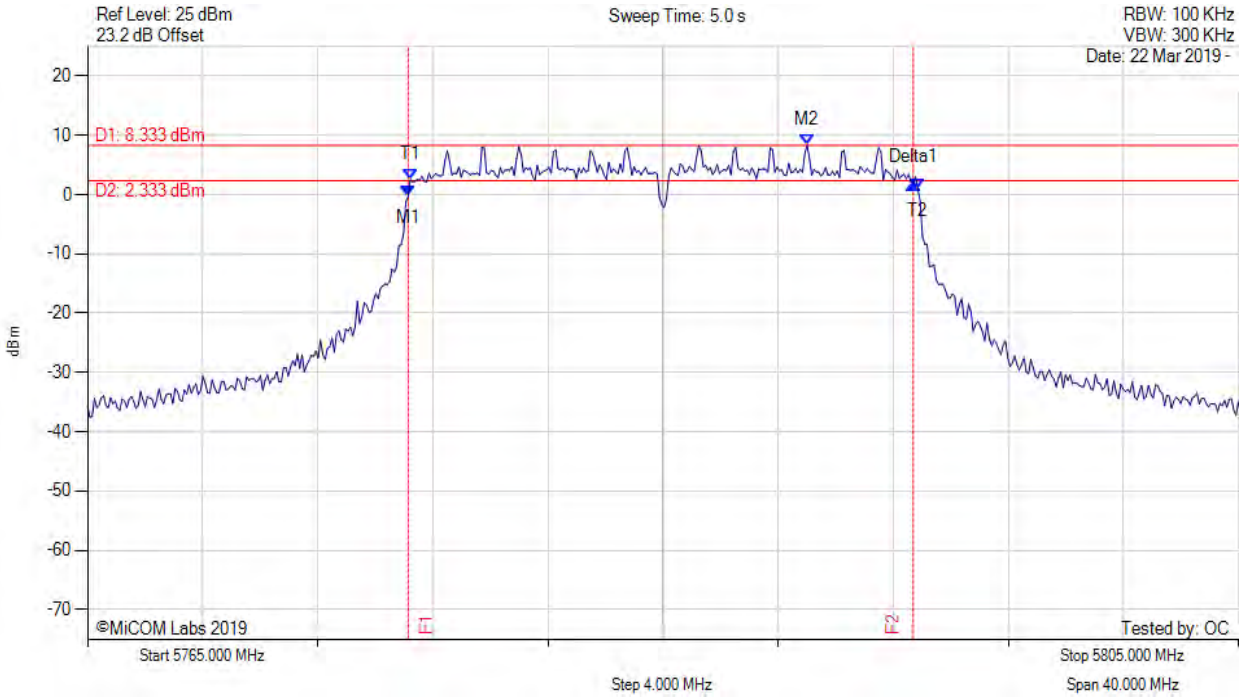
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5776.142 MHz : -0.312 dBm M2 : 5790.010 MHz : 8.333 dBm Delta1 : 17.555 MHz : 2.249 dB T1 : 5776.222 MHz : 2.523 dBm T2 : 5793.858 MHz : 0.882 dBm OBW : 17.635 MHz	Measured 6 dB Bandwidth: 17.555 MHz Measured 99% Bandwidth: 17.635 MHz

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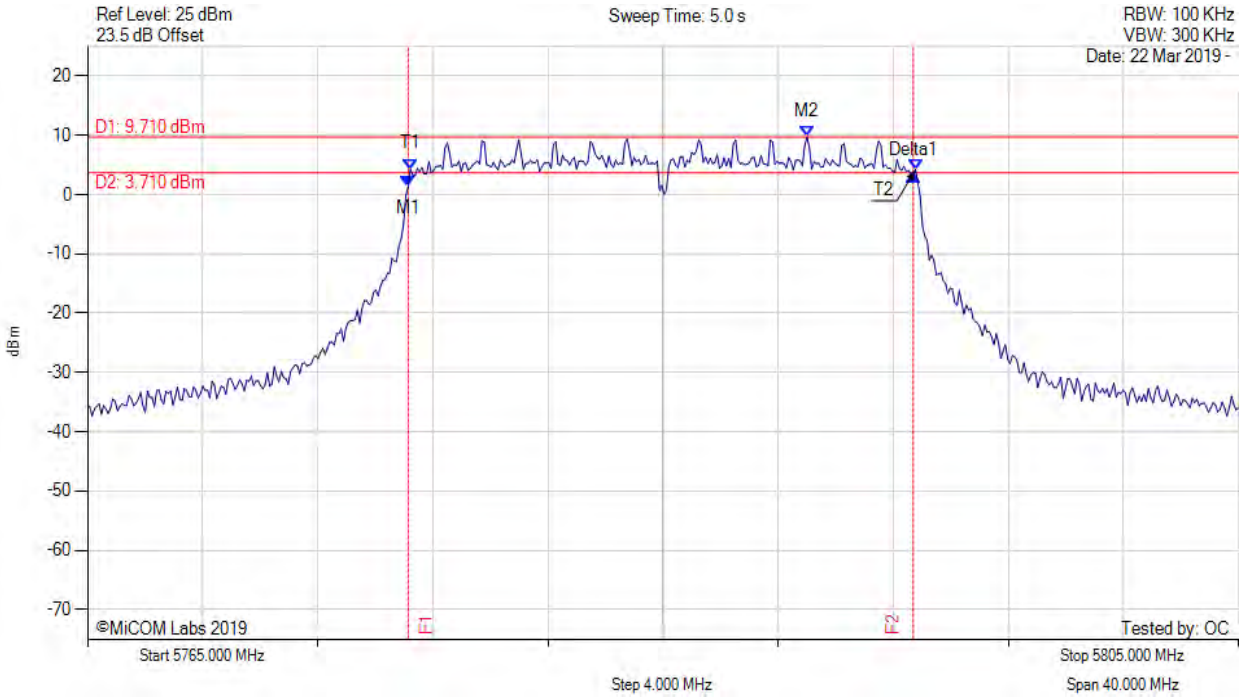
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5776.142 MHz : 1.309 dBm M2 : 5790.010 MHz : 9.710 dBm Delta1 : 17.555 MHz : 1.991 dB T1 : 5776.222 MHz : 4.294 dBm T2 : 5793.778 MHz : 4.240 dBm OBW : 17.555 MHz	Measured 6 dB Bandwidth: 17.555 MHz Measured 99% Bandwidth: 17.555 MHz

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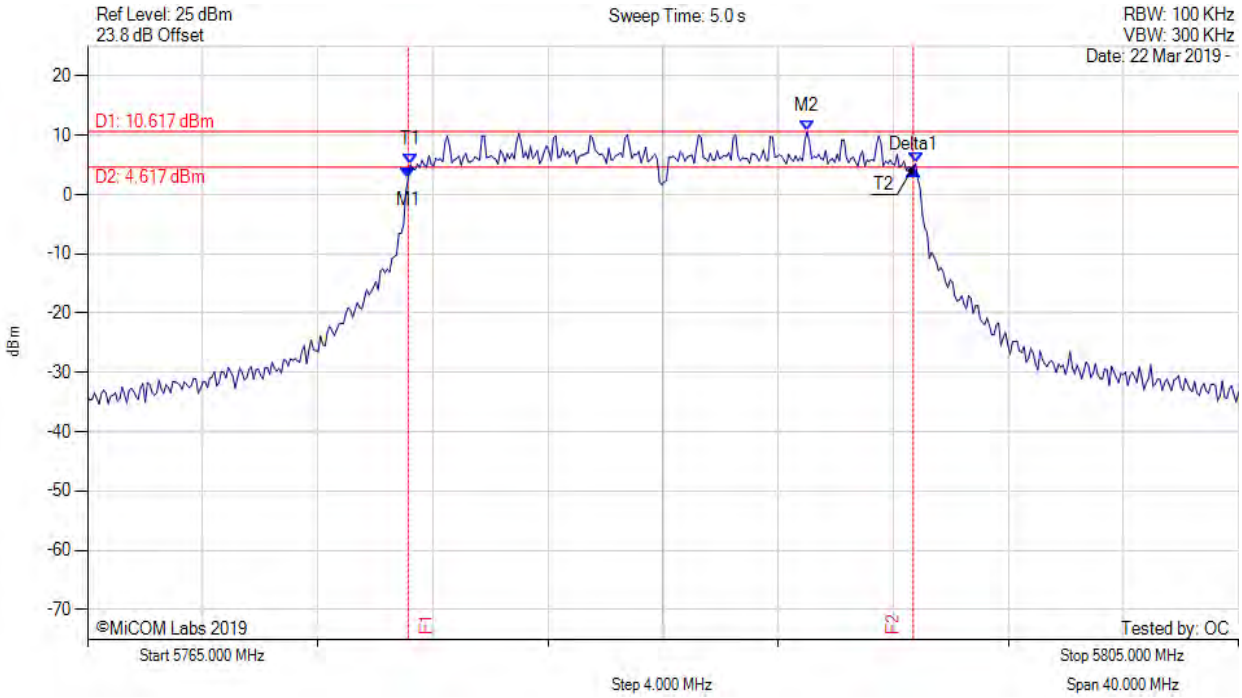
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5776.142 MHz : 2.730 dBm M2 : 5790.010 MHz : 10.617 dBm Delta1 : 17.555 MHz : 1.487 dB T1 : 5776.222 MHz : 5.051 dBm T2 : 5793.778 MHz : 5.250 dBm OBW : 17.555 MHz	Measured 6 dB Bandwidth: 17.555 MHz Measured 99% Bandwidth: 17.555 MHz

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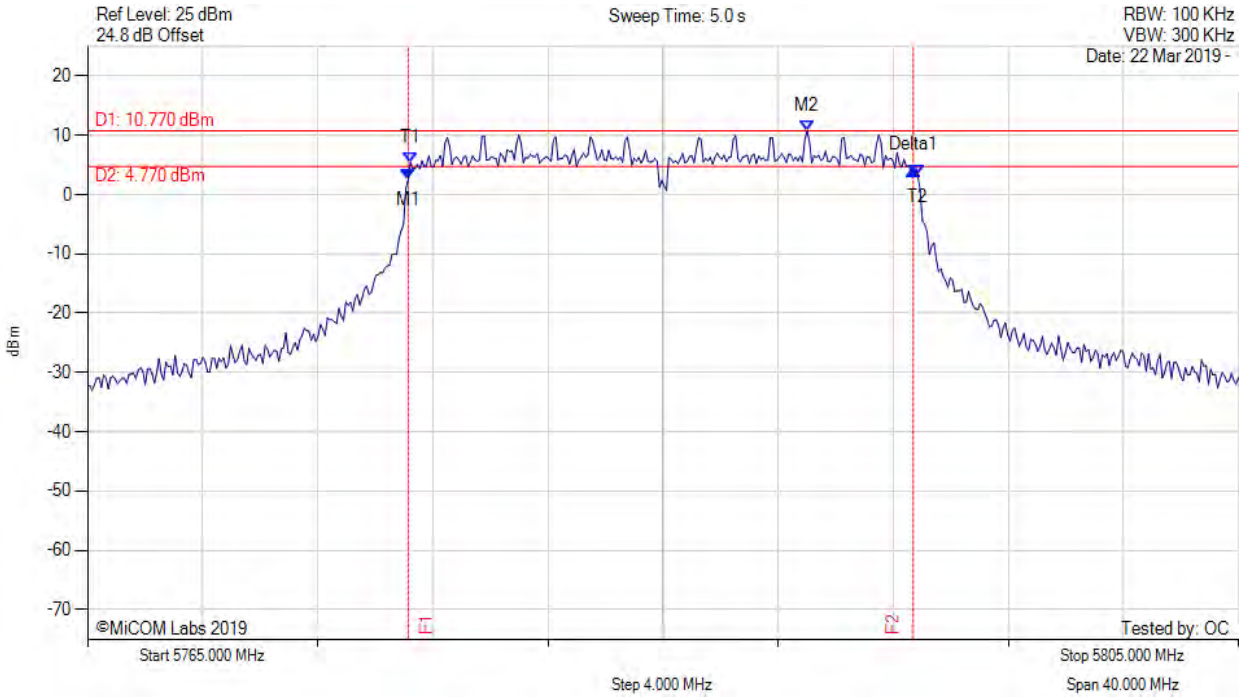
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5776.142 MHz : 2.592 dBm M2 : 5790.010 MHz : 10.770 dBm Delta1 : 17.555 MHz : 1.668 dB T1 : 5776.222 MHz : 5.433 dBm T2 : 5793.858 MHz : 3.172 dBm OBW : 17.635 MHz	Measured 6 dB Bandwidth: 17.555 MHz Measured 99% Bandwidth: 17.635 MHz

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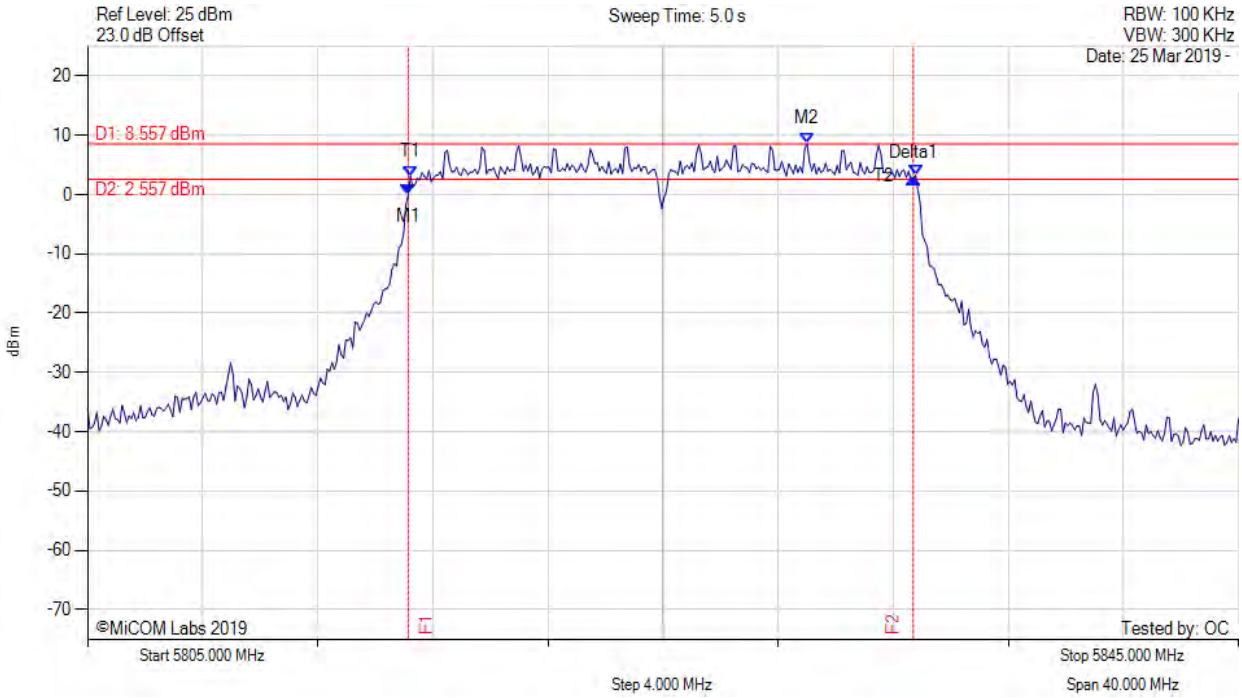
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5816.142 MHz : -0.096 dBm M2 : 5830.010 MHz : 8.557 dBm Delta1 : 17.555 MHz : 2.815 dB T1 : 5816.222 MHz : 3.084 dBm T2 : 5833.778 MHz : 3.265 dBm OBW : 17.555 MHz	Measured 6 dB Bandwidth: 17.555 MHz Measured 99% Bandwidth: 17.555 MHz

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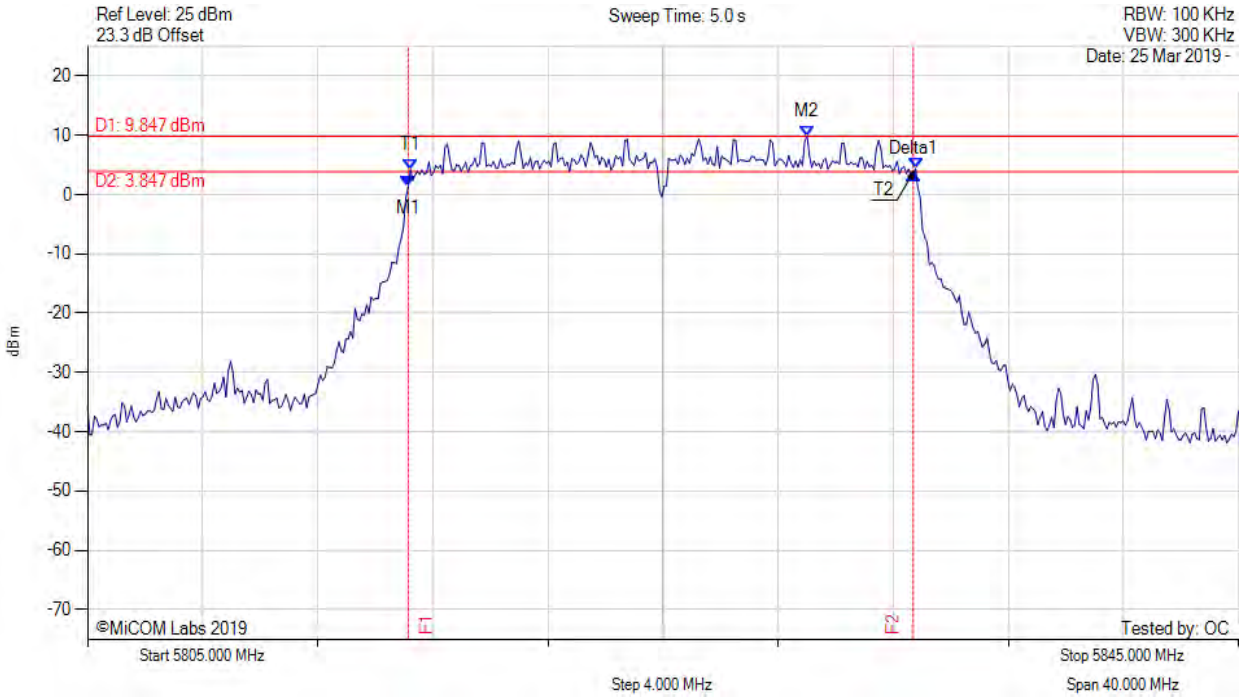
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5816.142 MHz : 1.297 dBm M2 : 5830.010 MHz : 9.847 dBm Delta1 : 17.555 MHz : 2.121 dB T1 : 5816.222 MHz : 4.176 dBm T2 : 5833.778 MHz : 4.347 dBm OBW : 17.555 MHz	Measured 6 dB Bandwidth: 17.555 MHz Measured 99% Bandwidth: 17.555 MHz

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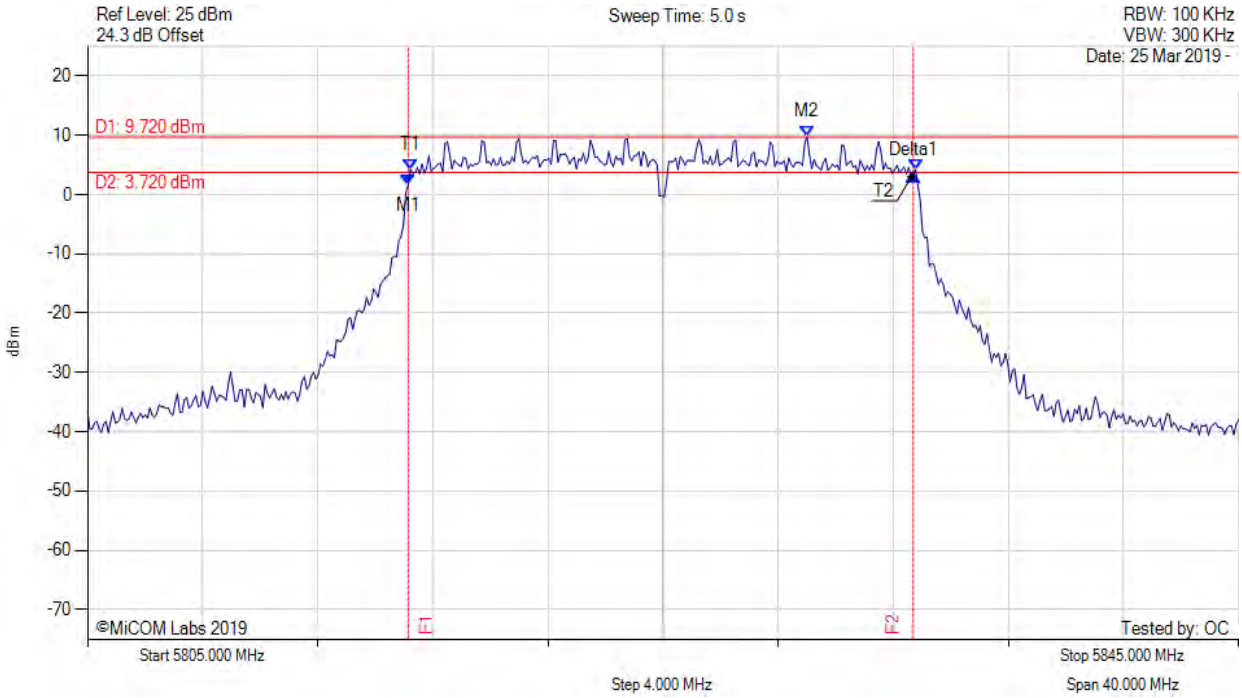
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5816.142 MHz : 1.699 dBm M2 : 5830.010 MHz : 9.720 dBm Delta1 : 17.555 MHz : 1.635 dB T1 : 5816.222 MHz : 4.264 dBm T2 : 5833.778 MHz : 4.201 dBm OBW : 17.555 MHz	Measured 6 dB Bandwidth: 17.555 MHz Measured 99% Bandwidth: 17.555 MHz

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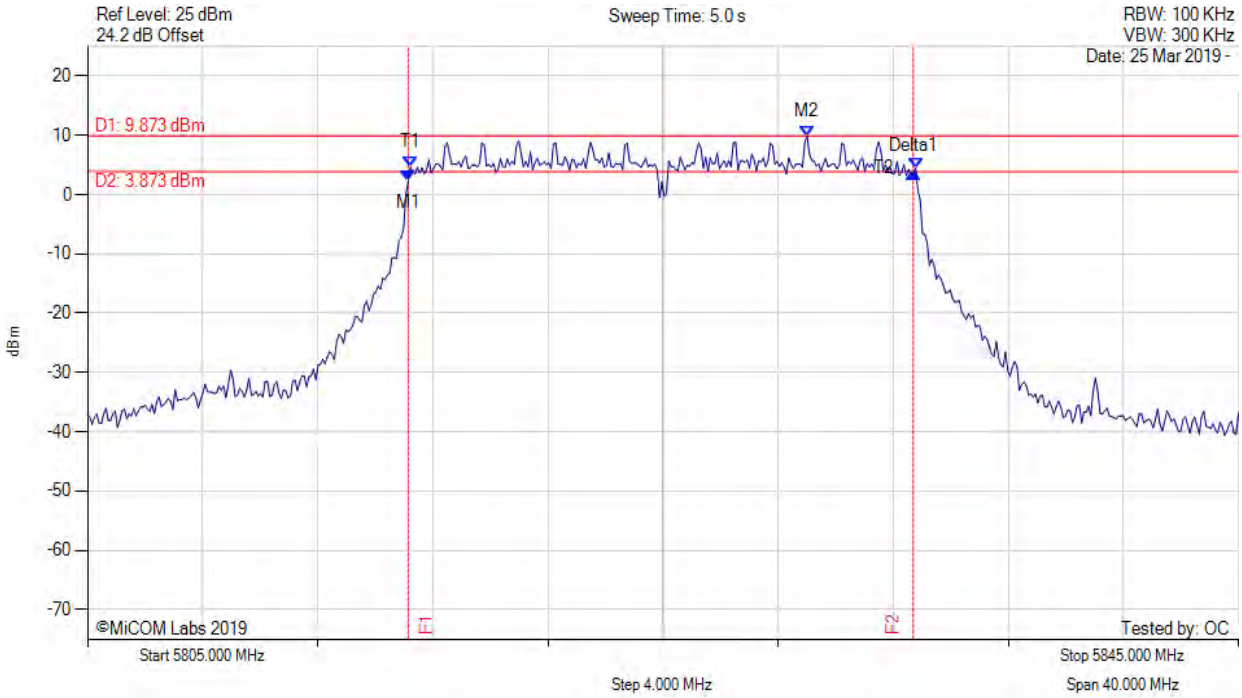
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5816.142 MHz : 2.200 dBm M2 : 5830.010 MHz : 9.873 dBm Delta1 : 17.555 MHz : 1.621 dB T1 : 5816.222 MHz : 4.636 dBm T2 : 5833.778 MHz : 4.467 dBm OBW : 17.555 MHz	Measured 6 dB Bandwidth: 17.555 MHz Measured 99% Bandwidth: 17.555 MHz

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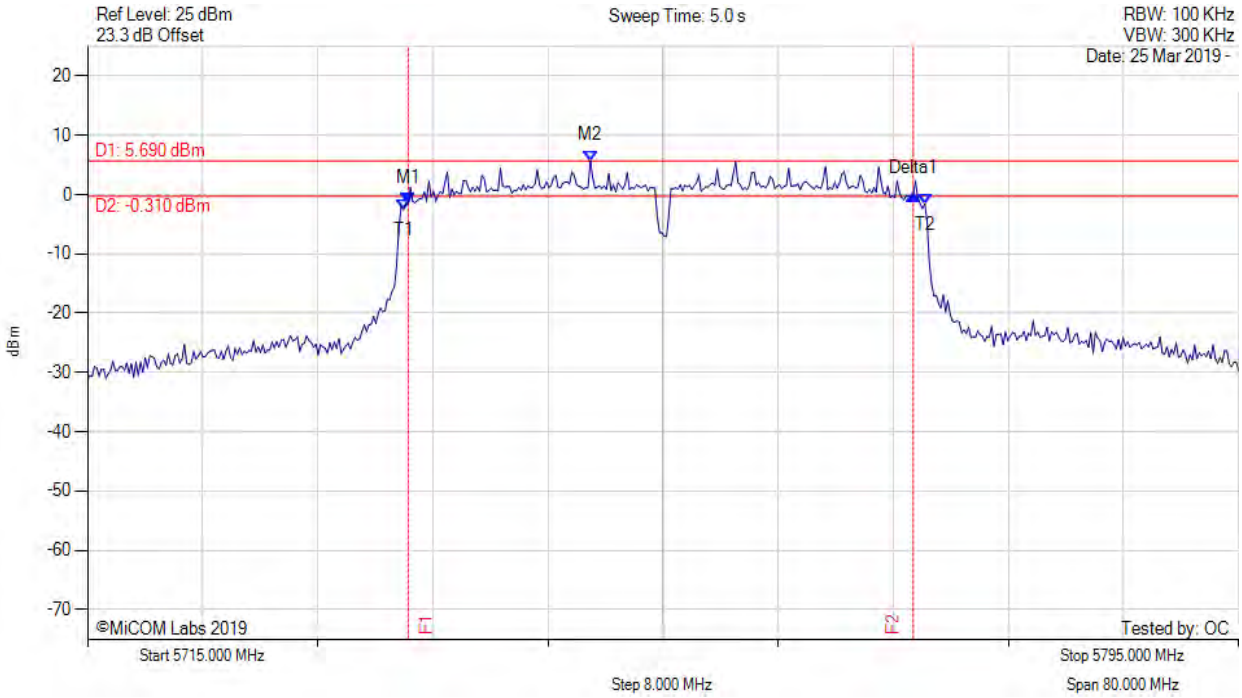
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5737.285 MHz : -1.483 dBm M2 : 5749.950 MHz : 5.690 dBm Delta1 : 35.110 MHz : 1.566 dB T1 : 5736.964 MHz : -2.484 dBm T2 : 5773.196 MHz : -1.565 dBm OBW : 36.232 MHz	Measured 6 dB Bandwidth: 35.110 MHz Measured 99% Bandwidth: 36.232 MHz

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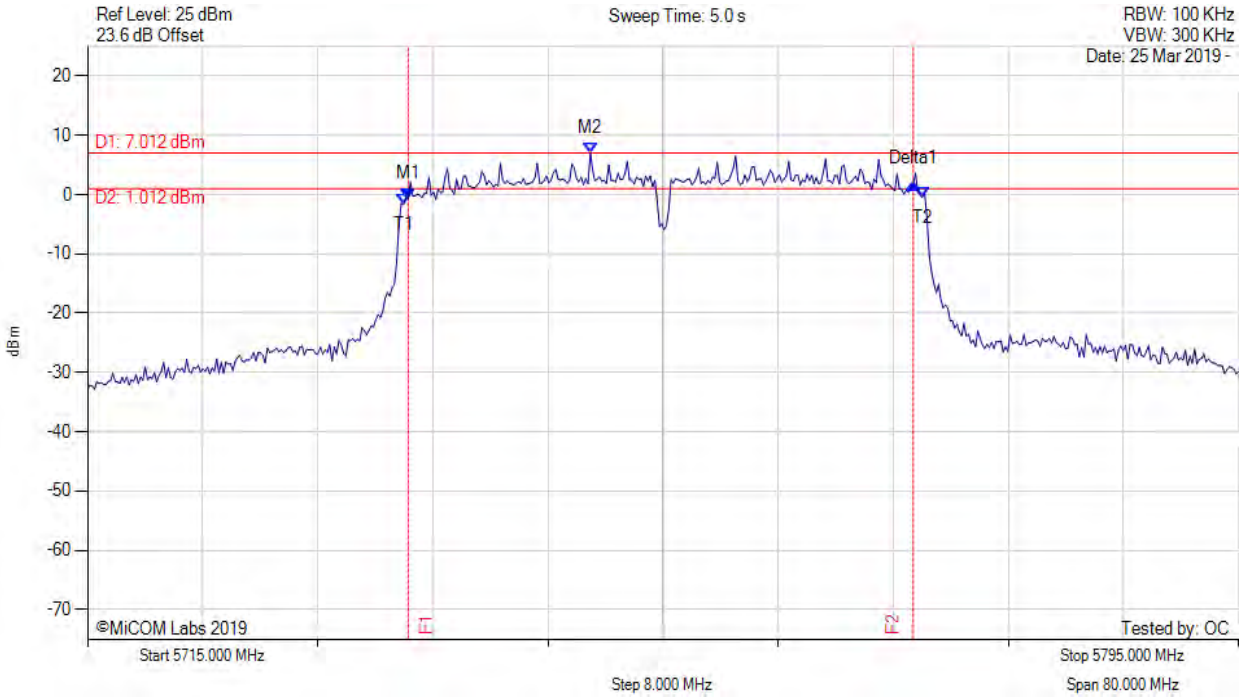
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5737.285 MHz : -0.713 dBm M2 : 5749.950 MHz : 7.012 dBm Delta1 : 35.110 MHz : 2.573 dB T1 : 5736.964 MHz : -1.605 dBm T2 : 5773.036 MHz : -0.426 dBm OBW : 36.072 MHz	Measured 6 dB Bandwidth: 35.110 MHz Measured 99% Bandwidth: 36.072 MHz

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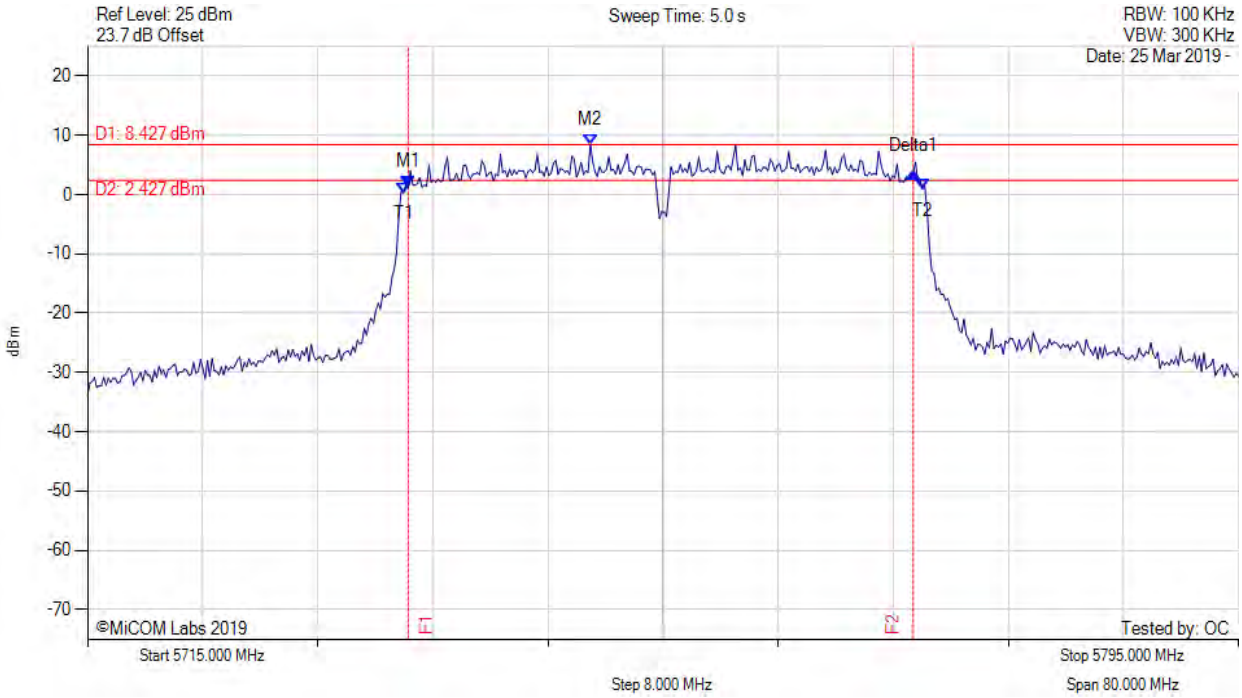
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5737.285 MHz : 1.272 dBm M2 : 5749.950 MHz : 8.427 dBm Delta1 : 35.110 MHz : 2.558 dB T1 : 5736.964 MHz : 0.280 dBm T2 : 5773.036 MHz : 0.925 dBm OBW : 36.072 MHz	Measured 6 dB Bandwidth: 35.110 MHz Measured 99% Bandwidth: 36.072 MHz

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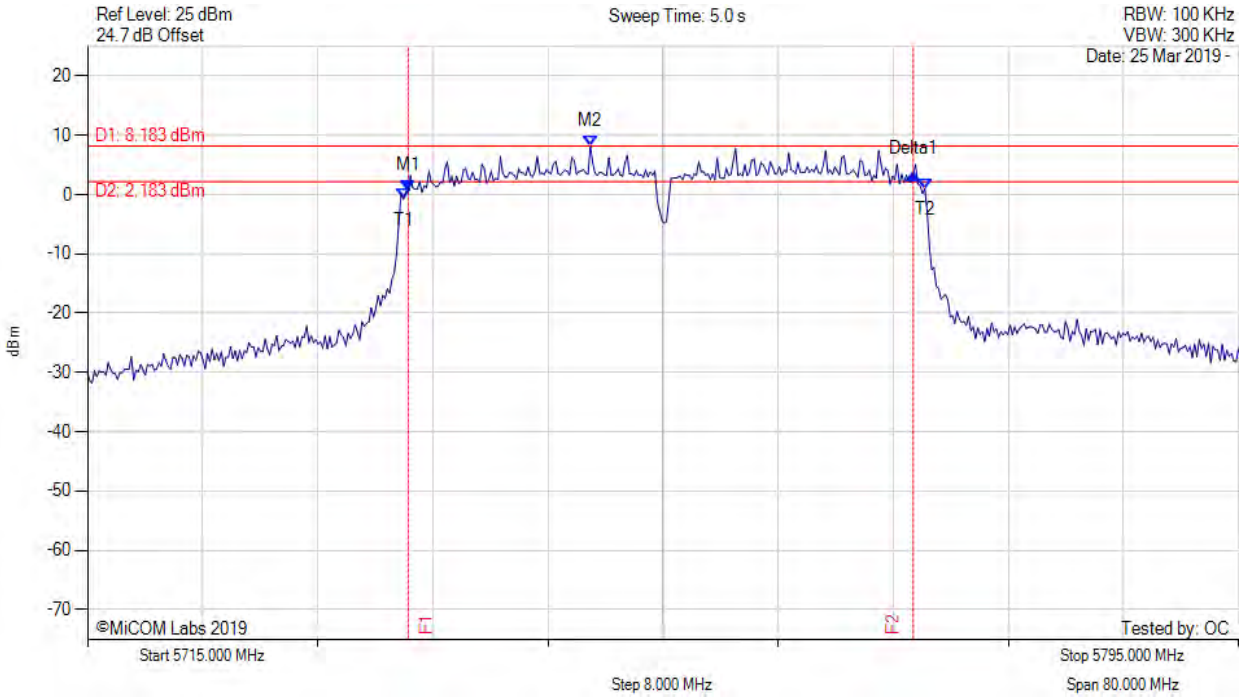
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5737.285 MHz : 0.585 dBm M2 : 5749.950 MHz : 8.183 dBm Delta1 : 35.110 MHz : 2.910 dB T1 : 5736.964 MHz : -0.778 dBm T2 : 5773.196 MHz : 0.998 dBm OBW : 36.232 MHz	Measured 6 dB Bandwidth: 35.110 MHz Measured 99% Bandwidth: 36.232 MHz

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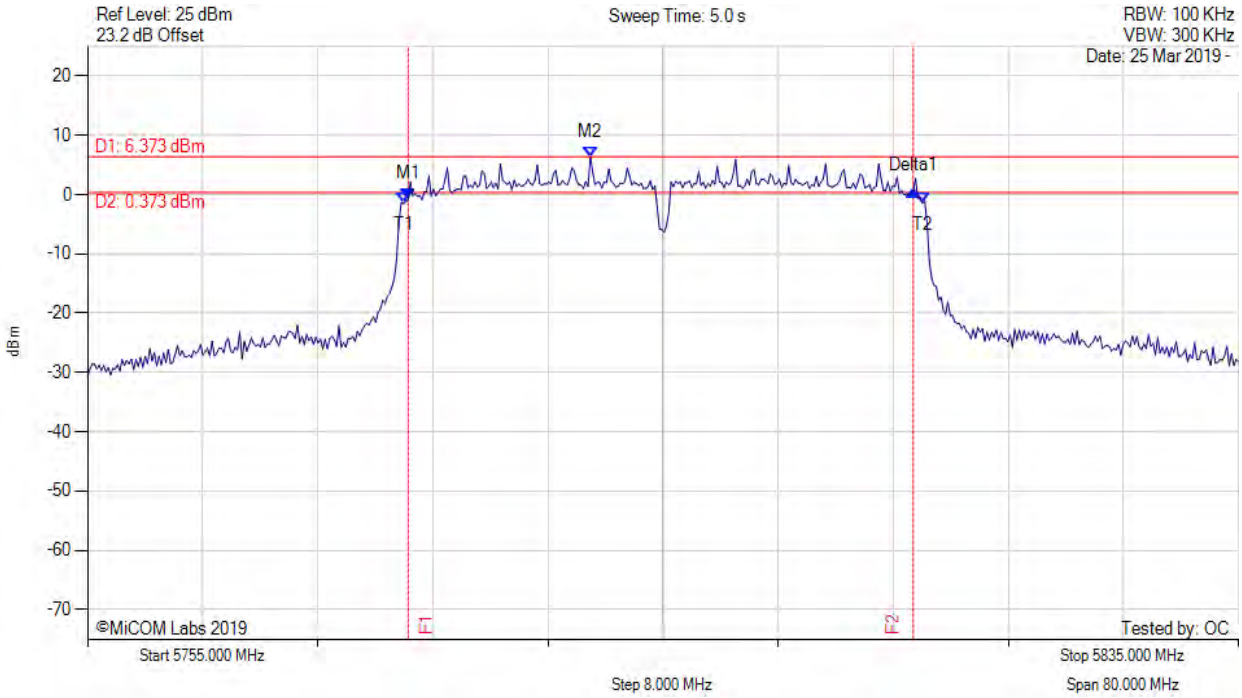
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5777.285 MHz : -0.812 dBm M2 : 5789.950 MHz : 6.373 dBm Delta1 : 35.110 MHz : 1.401 dB T1 : 5776.964 MHz : -1.530 dBm T2 : 5813.036 MHz : -1.477 dBm OBW : 36.072 MHz	Measured 6 dB Bandwidth: 35.110 MHz Measured 99% Bandwidth: 36.072 MHz

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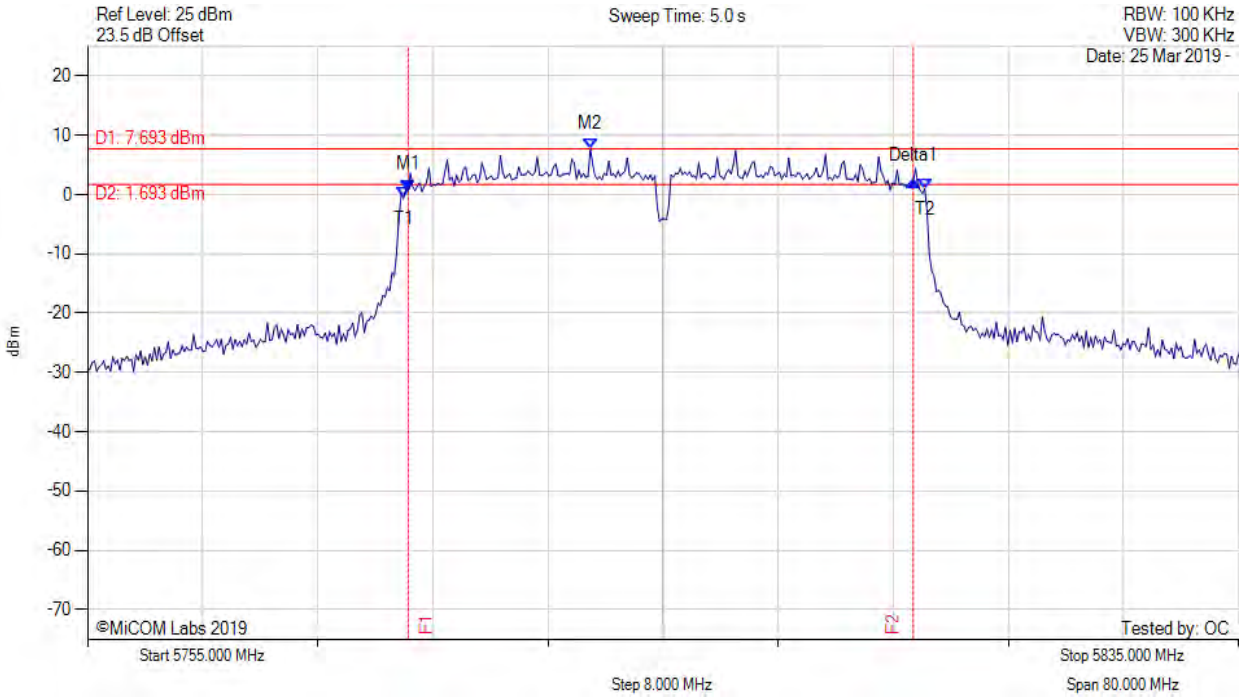
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5777.285 MHz : 0.774 dBm M2 : 5789.950 MHz : 7.693 dBm Delta1 : 35.110 MHz : 1.566 dB T1 : 5776.964 MHz : -0.601 dBm T2 : 5813.196 MHz : 0.975 dBm OBW : 36.232 MHz	Measured 6 dB Bandwidth: 35.110 MHz Measured 99% Bandwidth: 36.232 MHz

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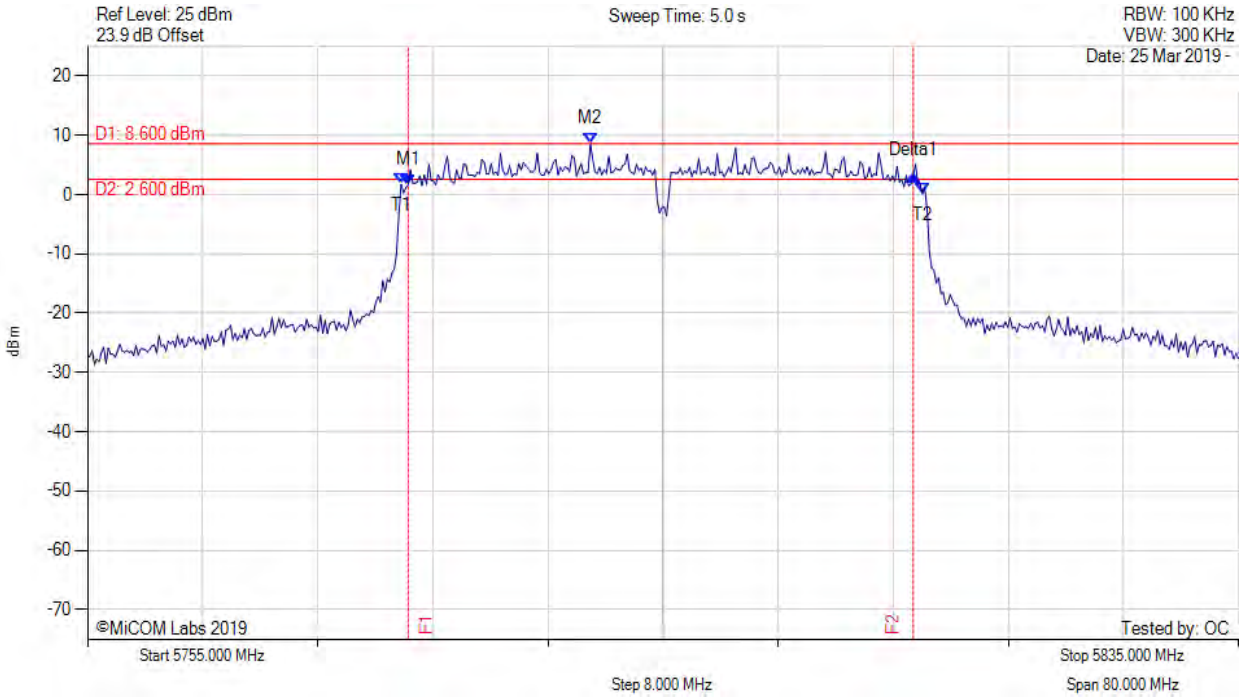
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5777.285 MHz : 1.600 dBm M2 : 5789.950 MHz : 8.600 dBm Delta1 : 35.110 MHz : 1.700 dB T1 : 5776.804 MHz : 1.732 dBm T2 : 5813.036 MHz : 0.119 dBm OBW : 36.232 MHz	Measured 6 dB Bandwidth: 35.110 MHz Measured 99% Bandwidth: 36.232 MHz

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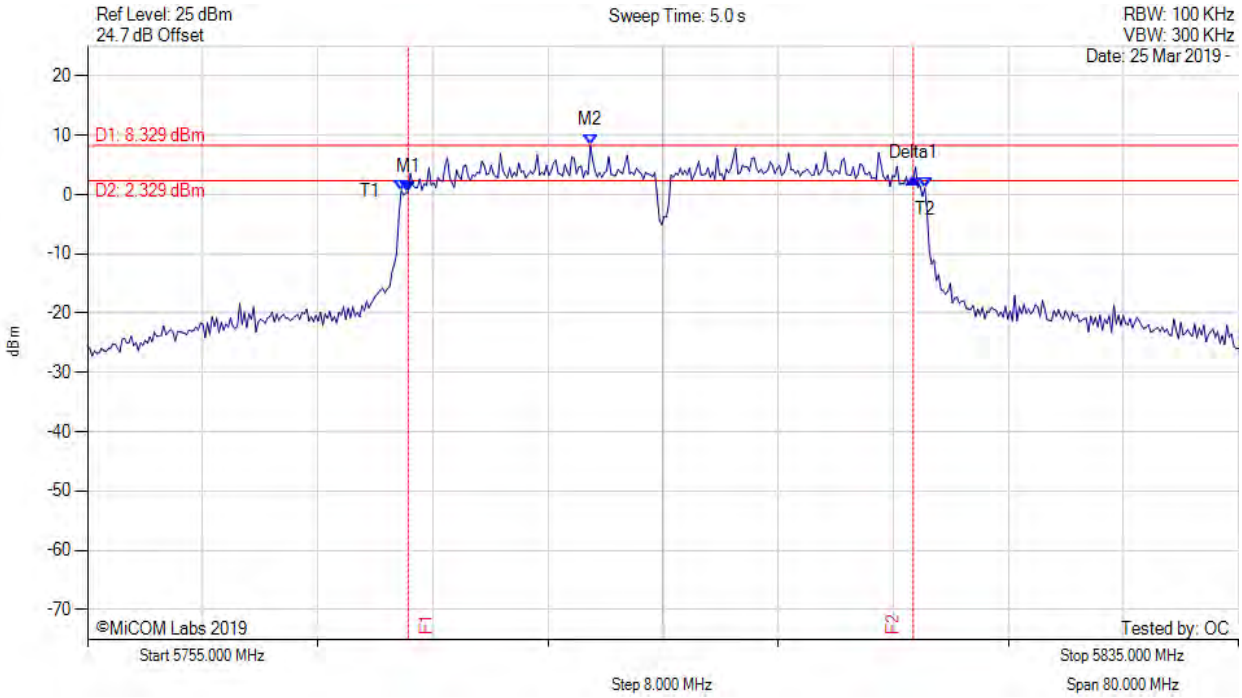
6 dB & 99% BANDWIDTH

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 Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5777.285 MHz : 0.404 dBm M2 : 5789.950 MHz : 8.329 dBm Delta1 : 35.110 MHz : 2.284 dB T1 : 5776.804 MHz : 0.652 dBm T2 : 5813.196 MHz : 1.130 dBm OBW : 36.393 MHz	Measured 6 dB Bandwidth: 35.110 MHz Measured 99% Bandwidth: 36.393 MHz

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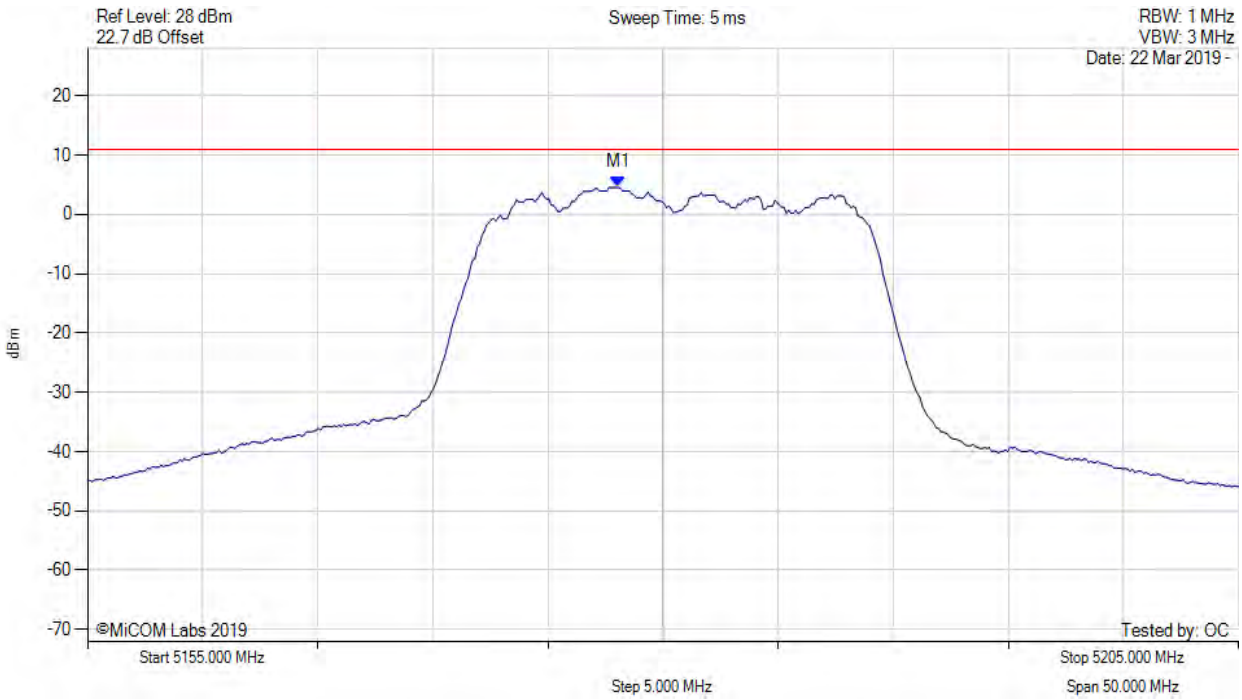
A.2. Power Spectral Density

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5178.046 MHz : 4.556 dBm	Limit: ≤ 10.980 dBm

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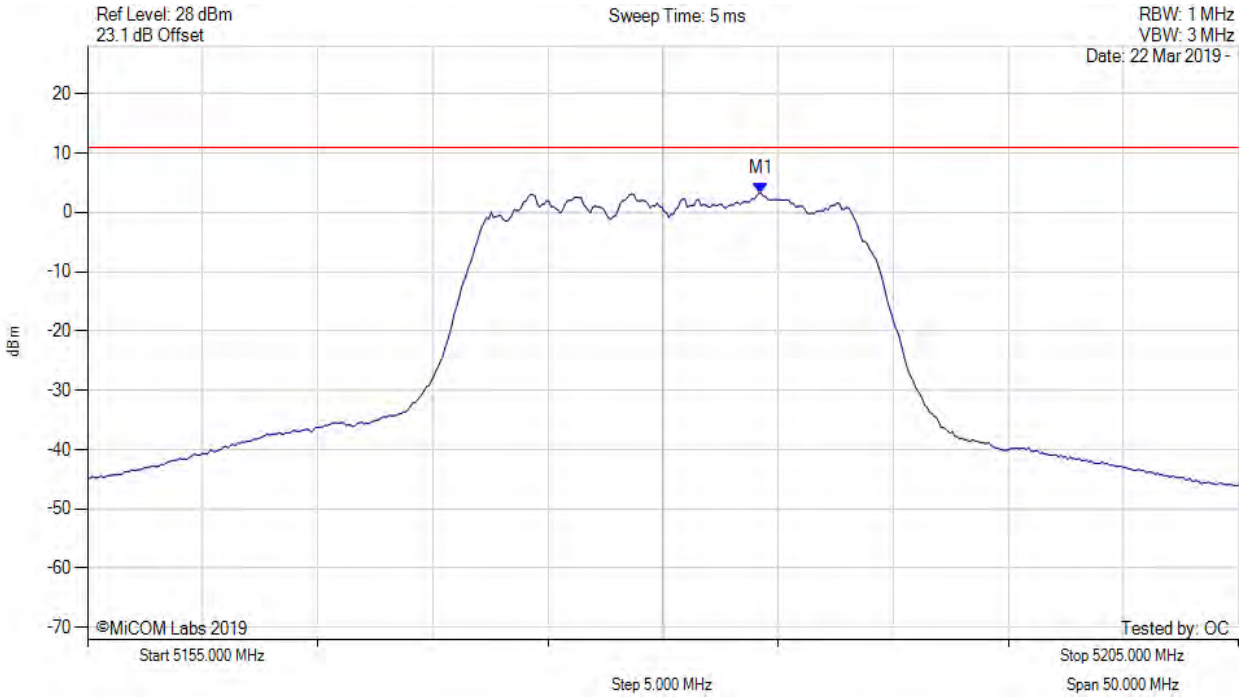
POWER SPECTRAL DENSITY

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



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

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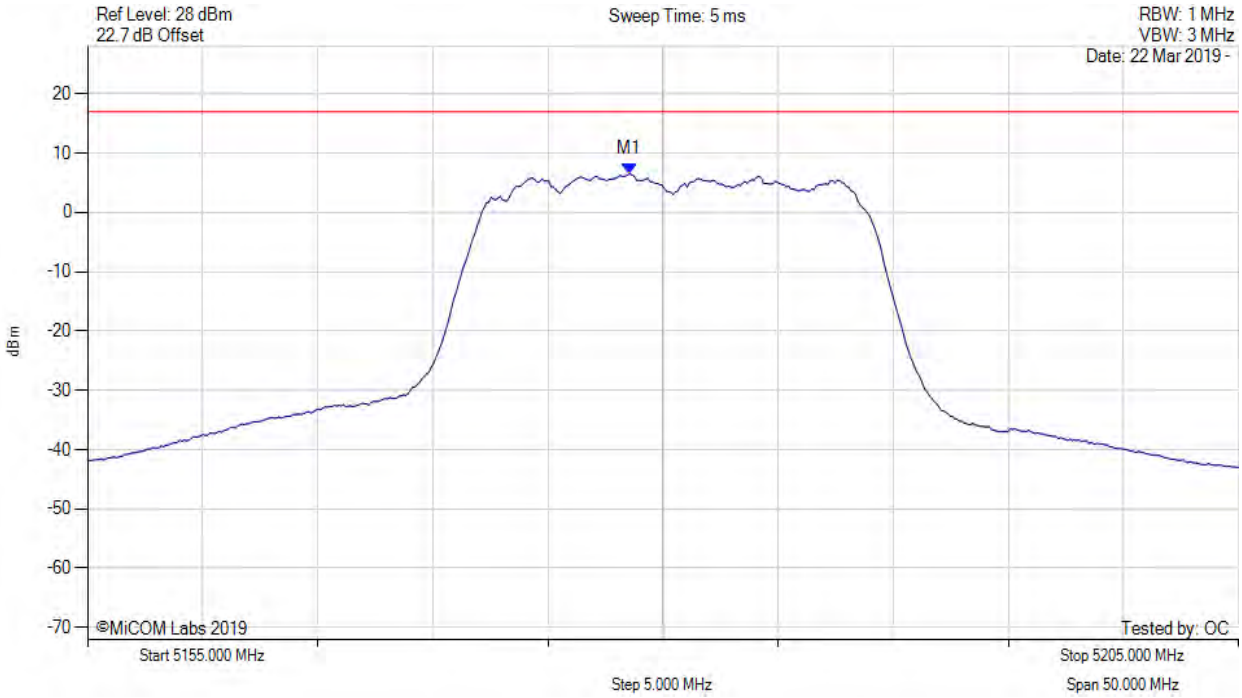
POWER SPECTRAL DENSITY

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



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

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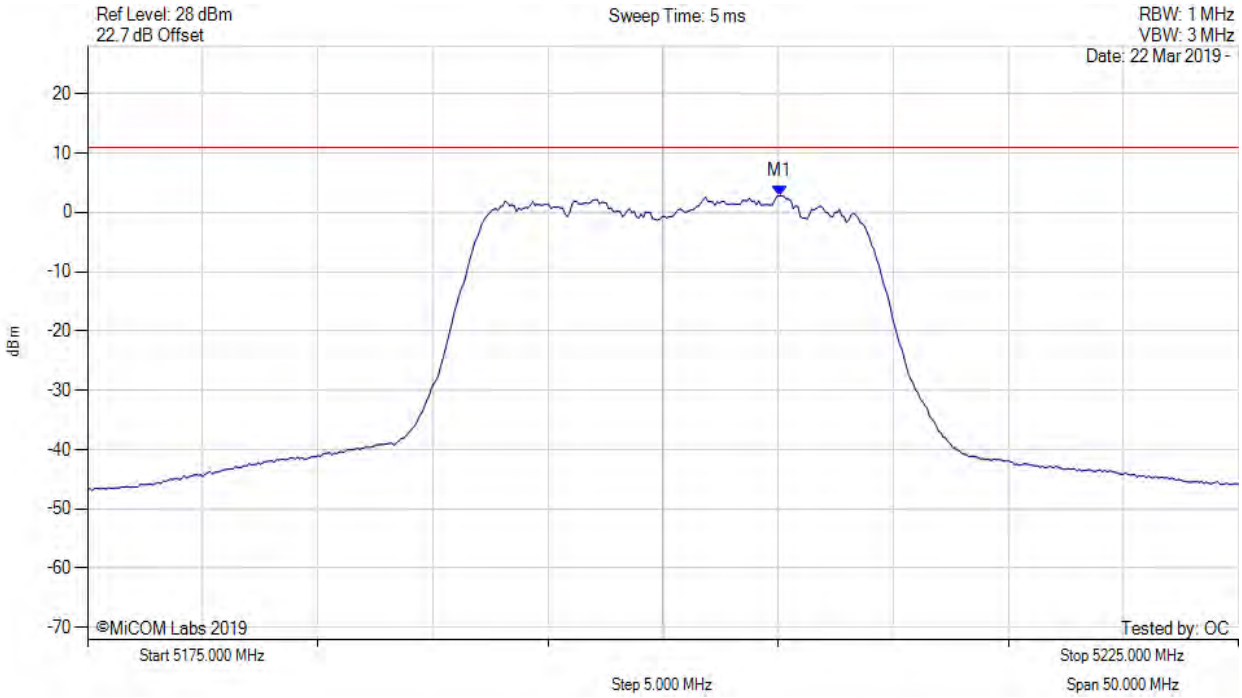
POWER SPECTRAL DENSITY

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



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

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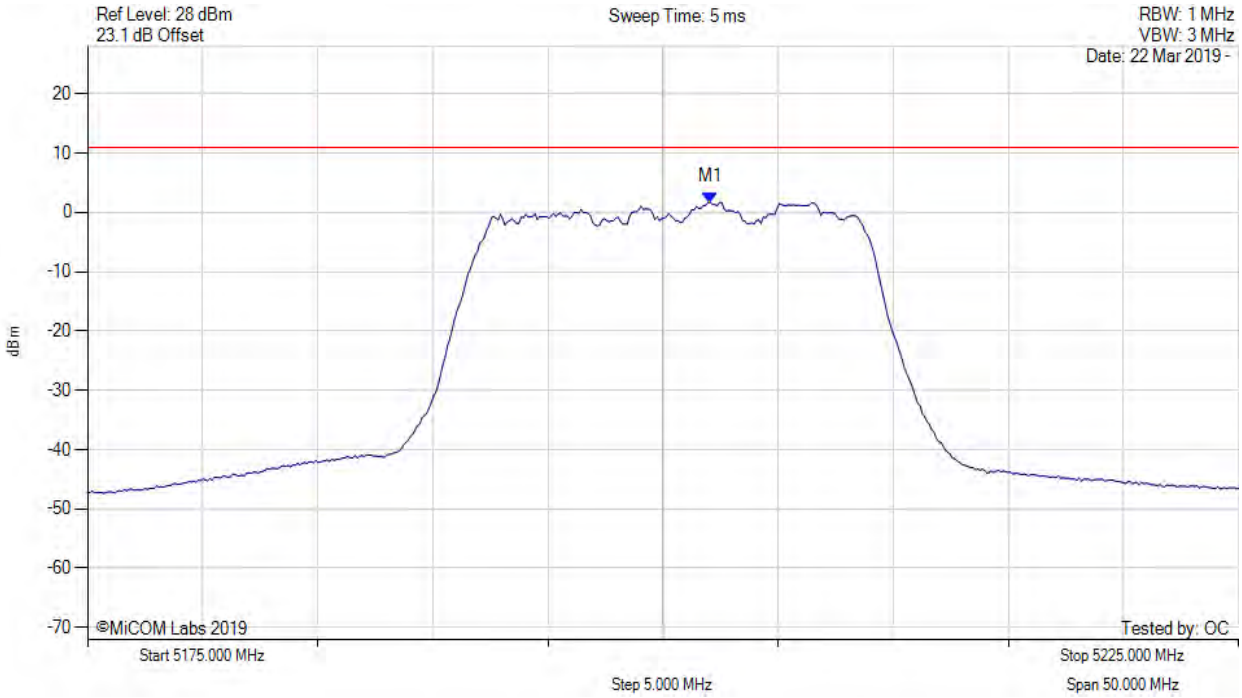
POWER SPECTRAL DENSITY

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



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

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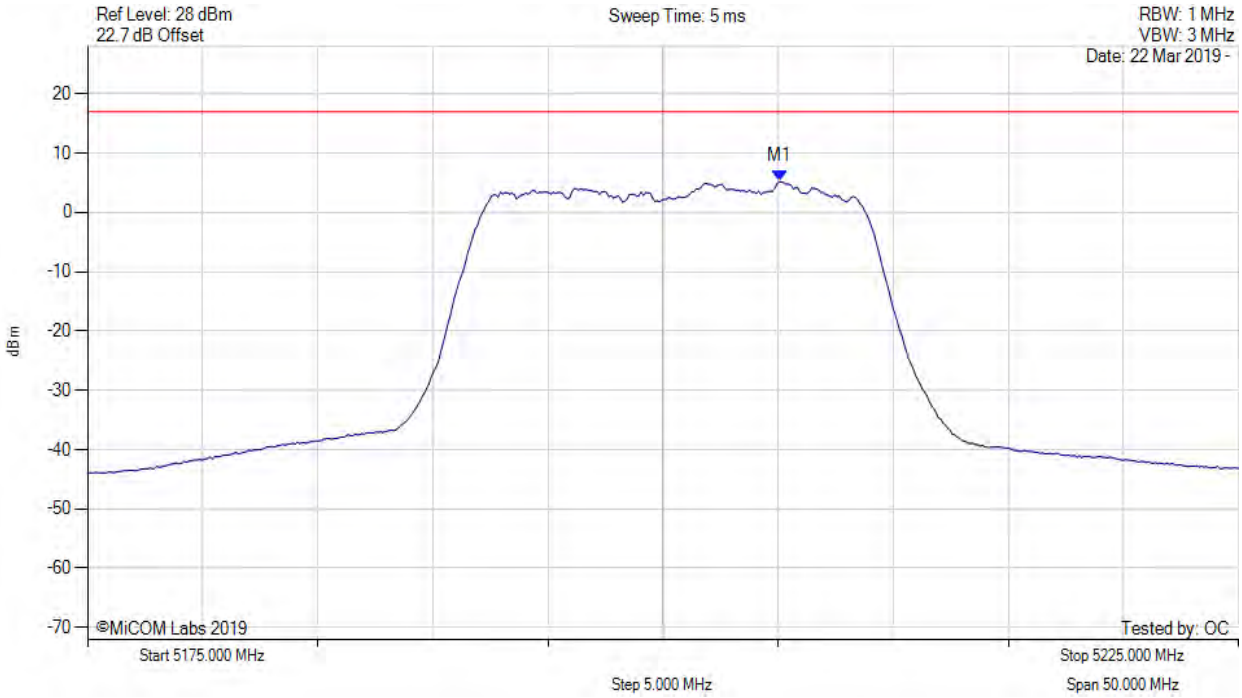
POWER SPECTRAL DENSITY

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



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

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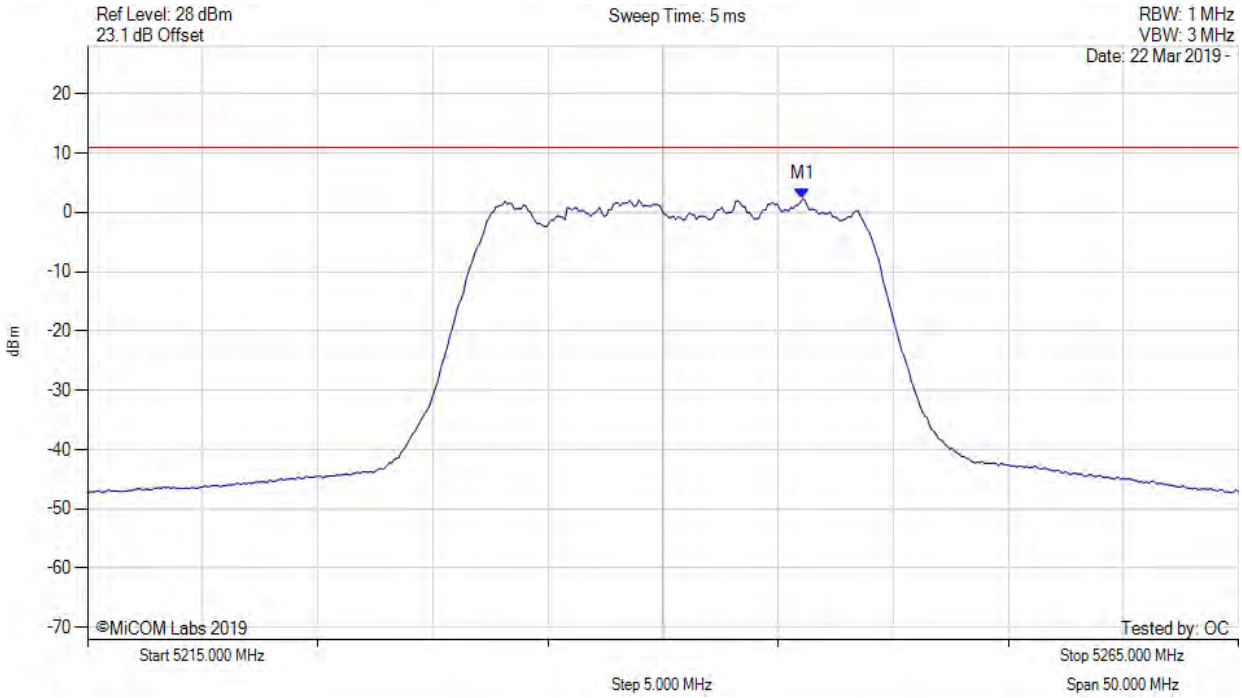
POWER SPECTRAL DENSITY

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



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

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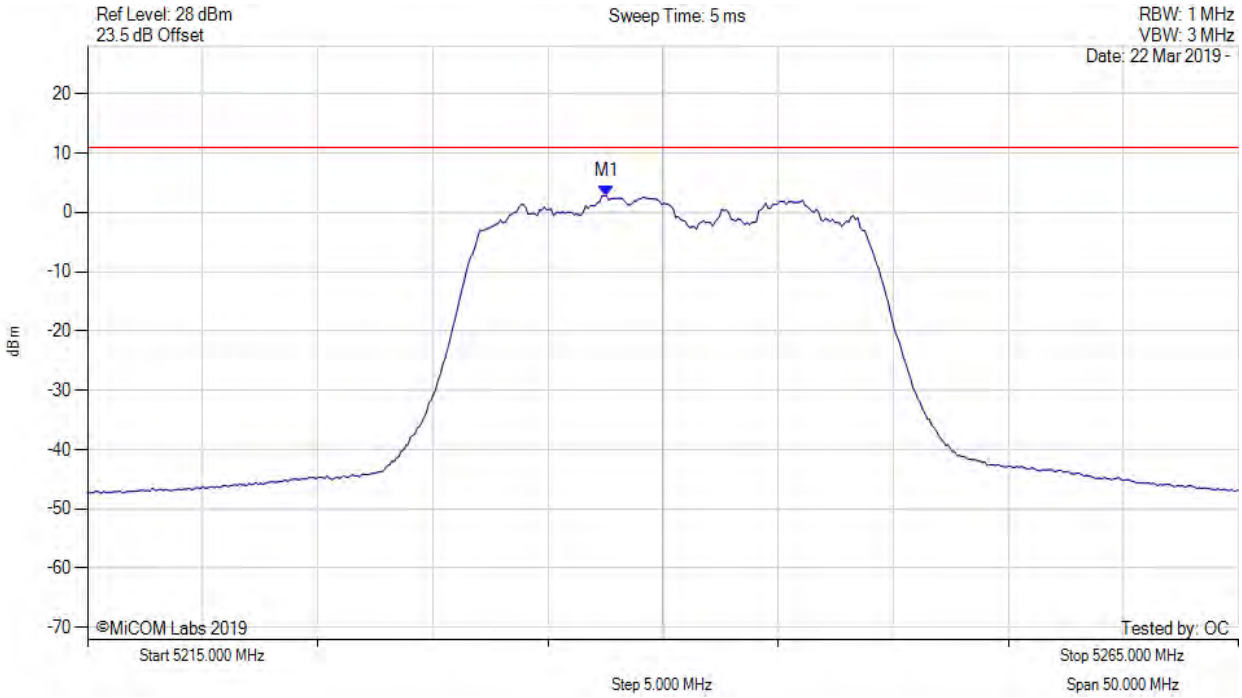
POWER SPECTRAL DENSITY

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



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

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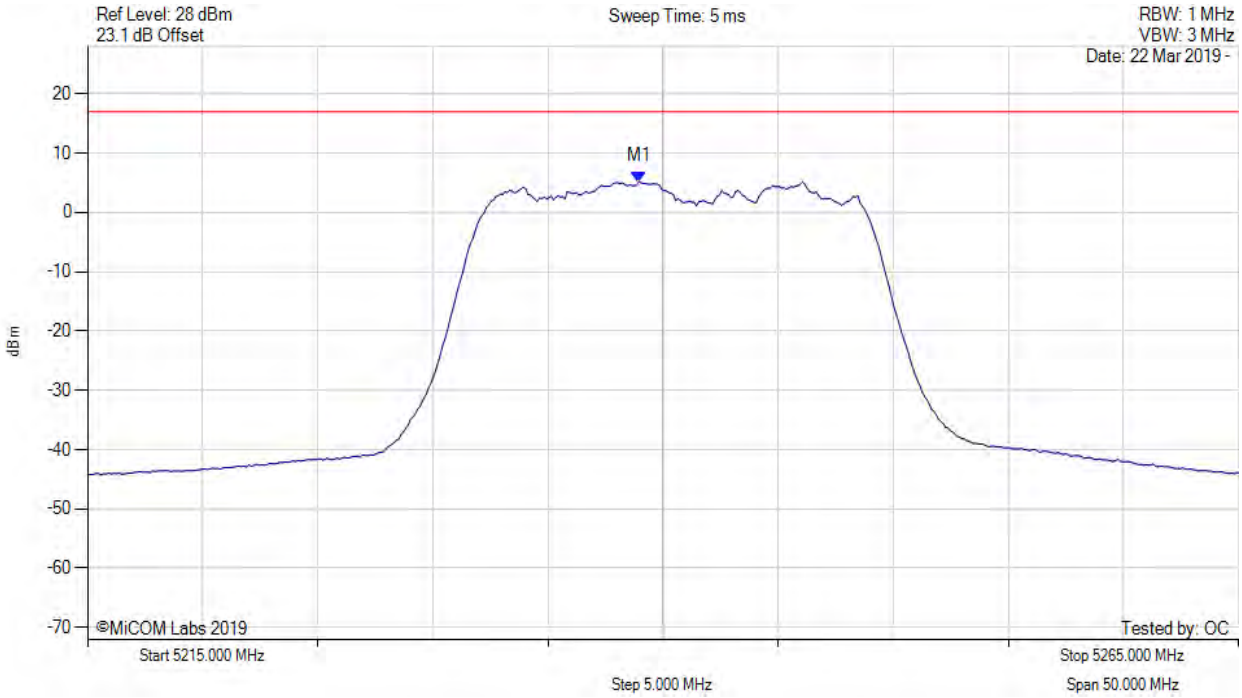
POWER SPECTRAL DENSITY

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



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

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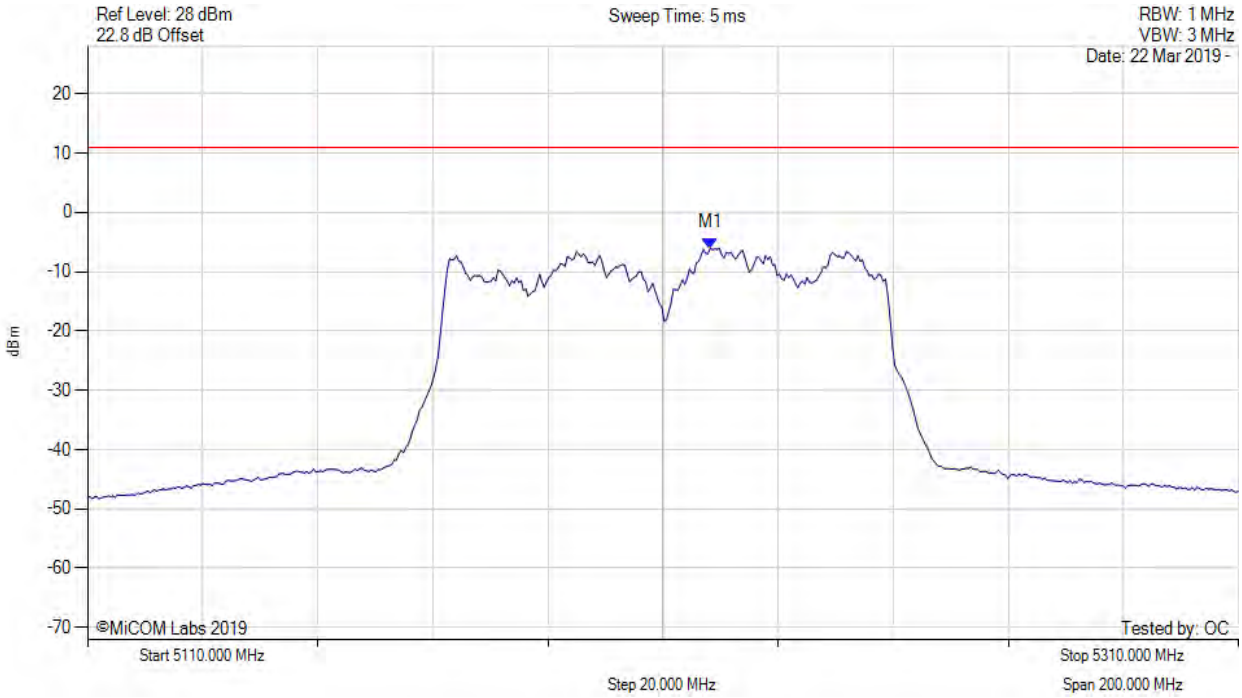
POWER SPECTRAL DENSITY

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



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

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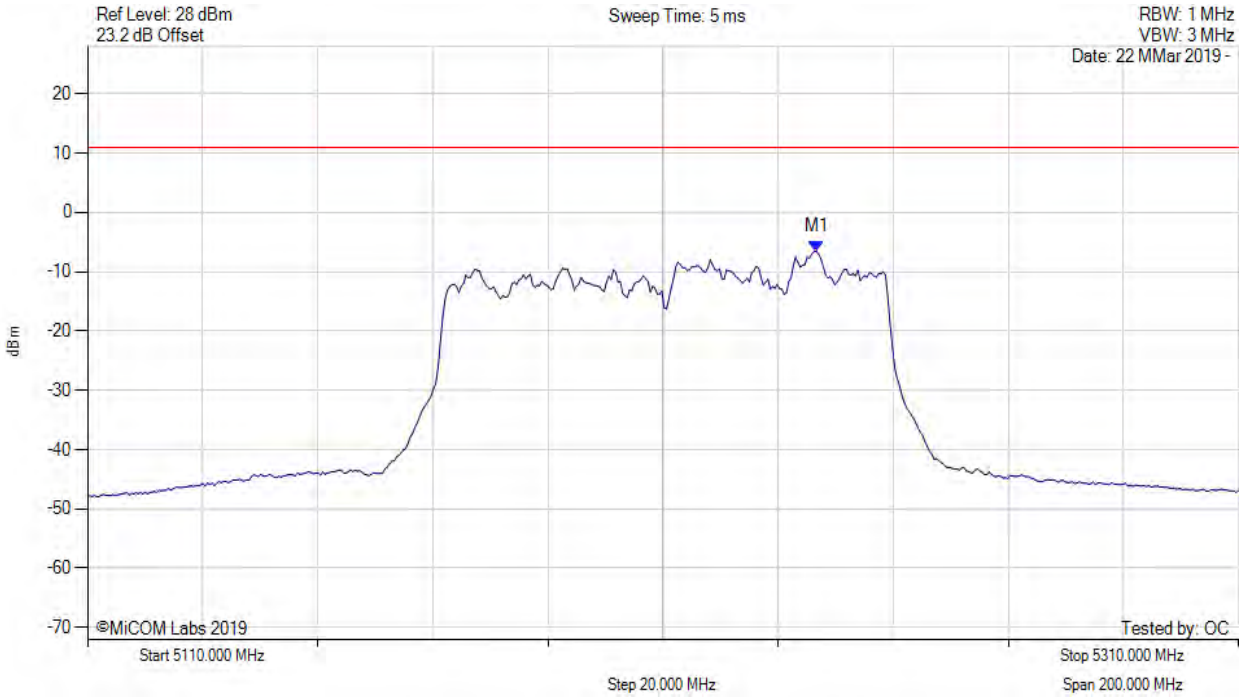
POWER SPECTRAL DENSITY

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



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

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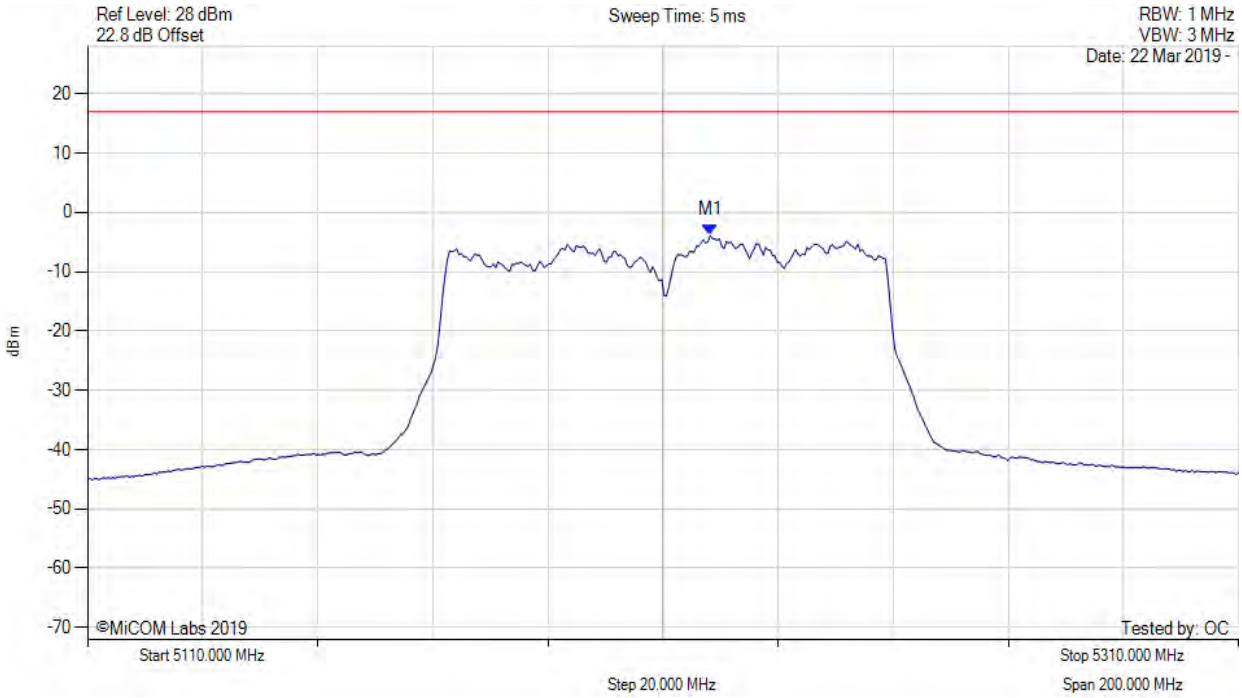
POWER SPECTRAL DENSITY

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



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

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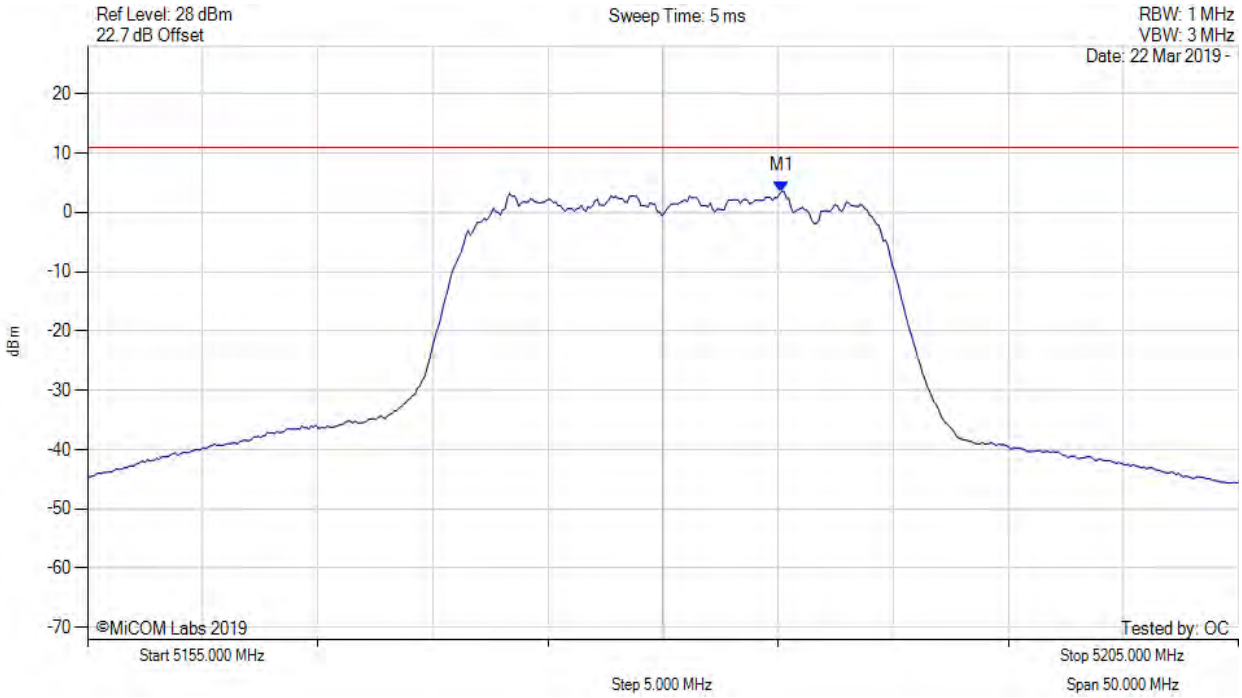
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5185.160 MHz : 3.556 dBm	Limit: ≤ 10.980 dBm

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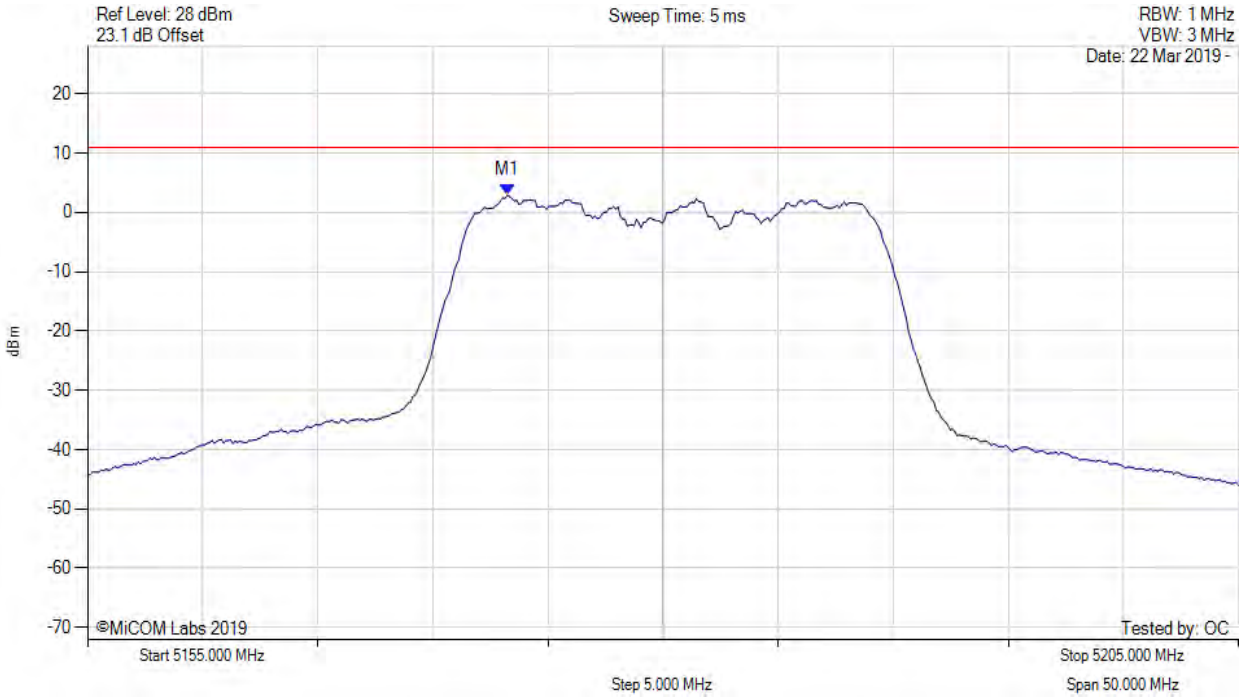
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5173.236 MHz : 2.915 dBm	Limit: ≤ 10.980 dBm

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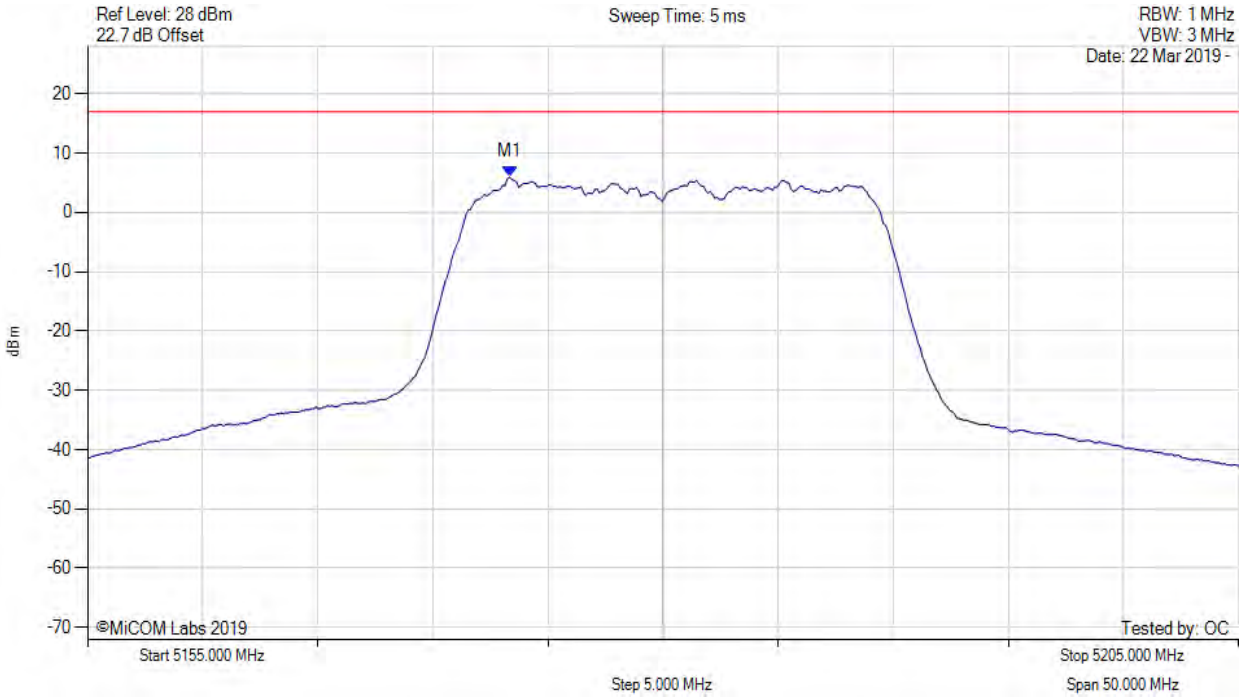
POWER SPECTRAL DENSITY

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



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

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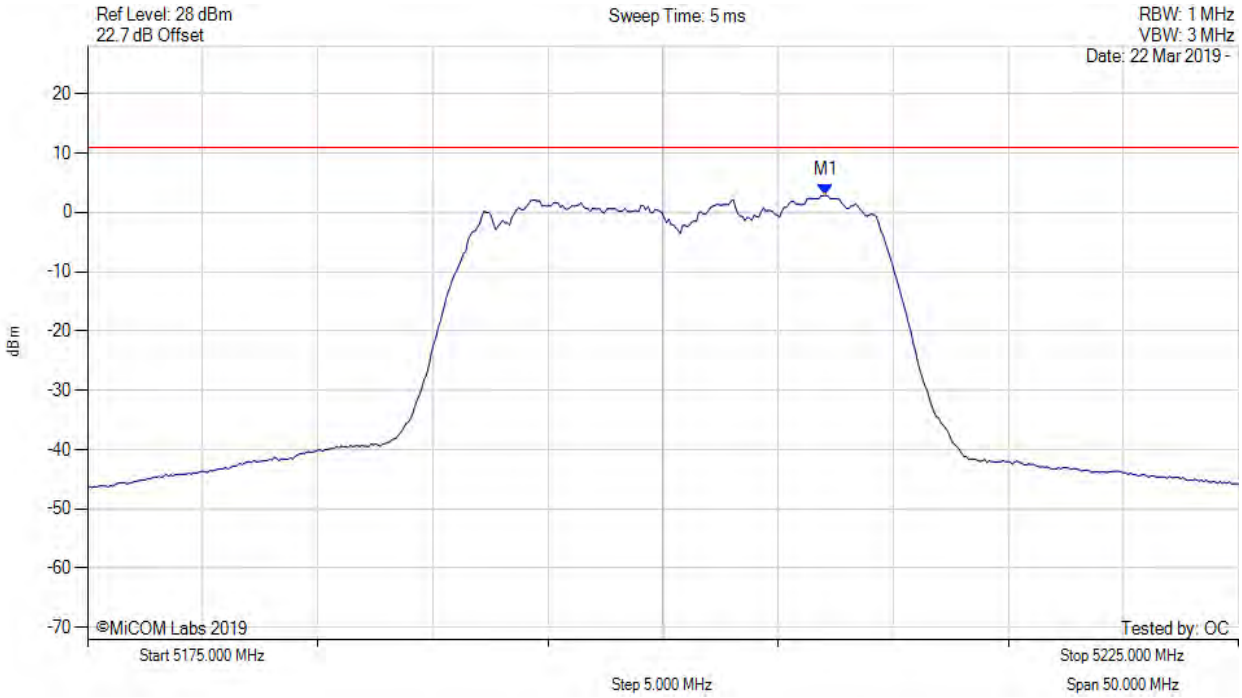
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5207.064 MHz : 2.895 dBm	Limit: ≤ 10.980 dBm

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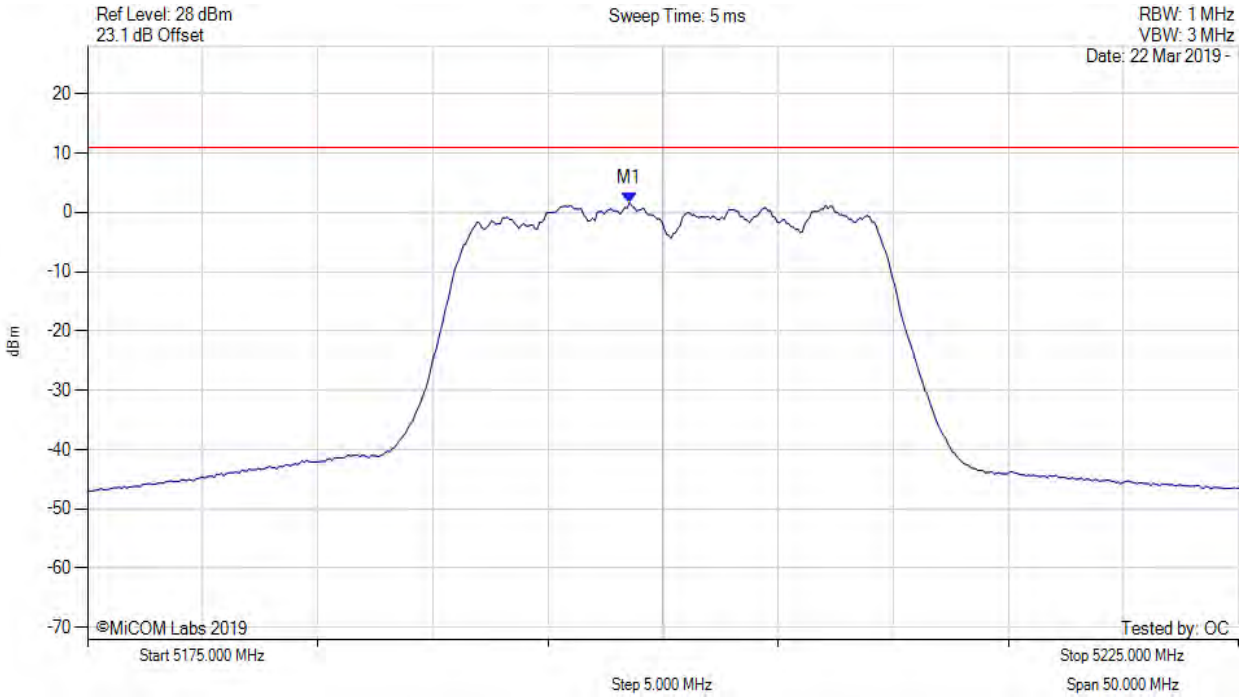
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5198.547 MHz : 1.635 dBm	Channel Frequency: 5200.00 MHz

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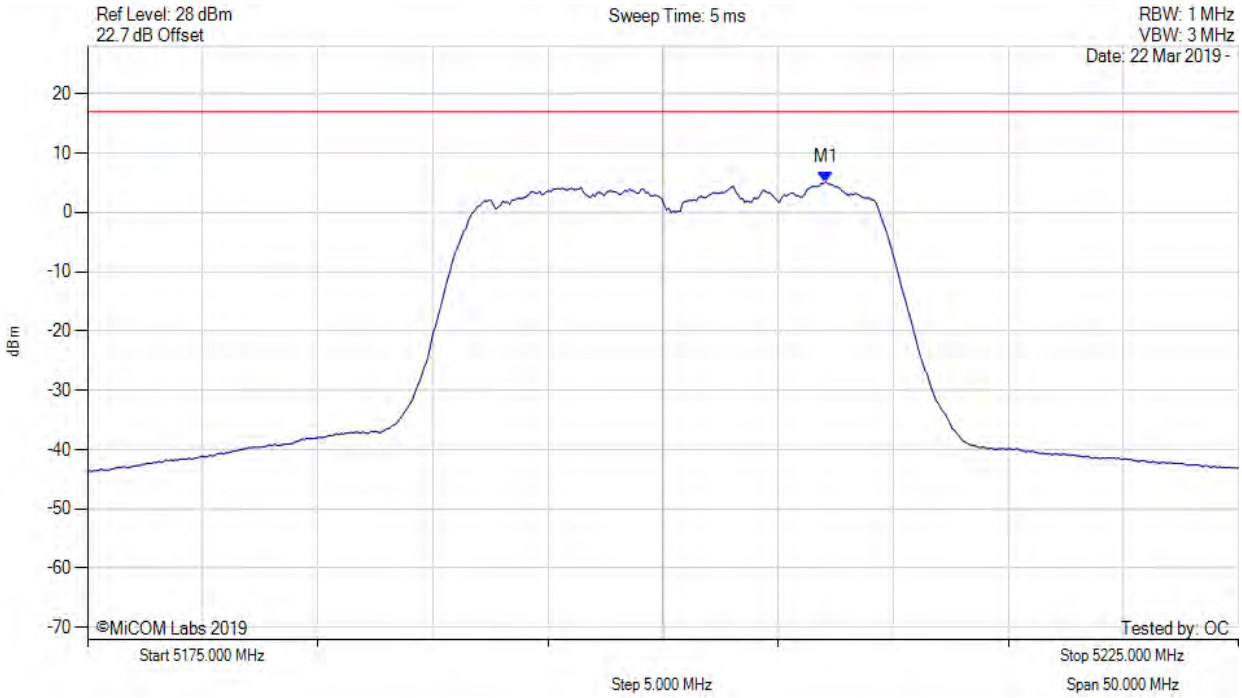
POWER SPECTRAL DENSITY

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



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

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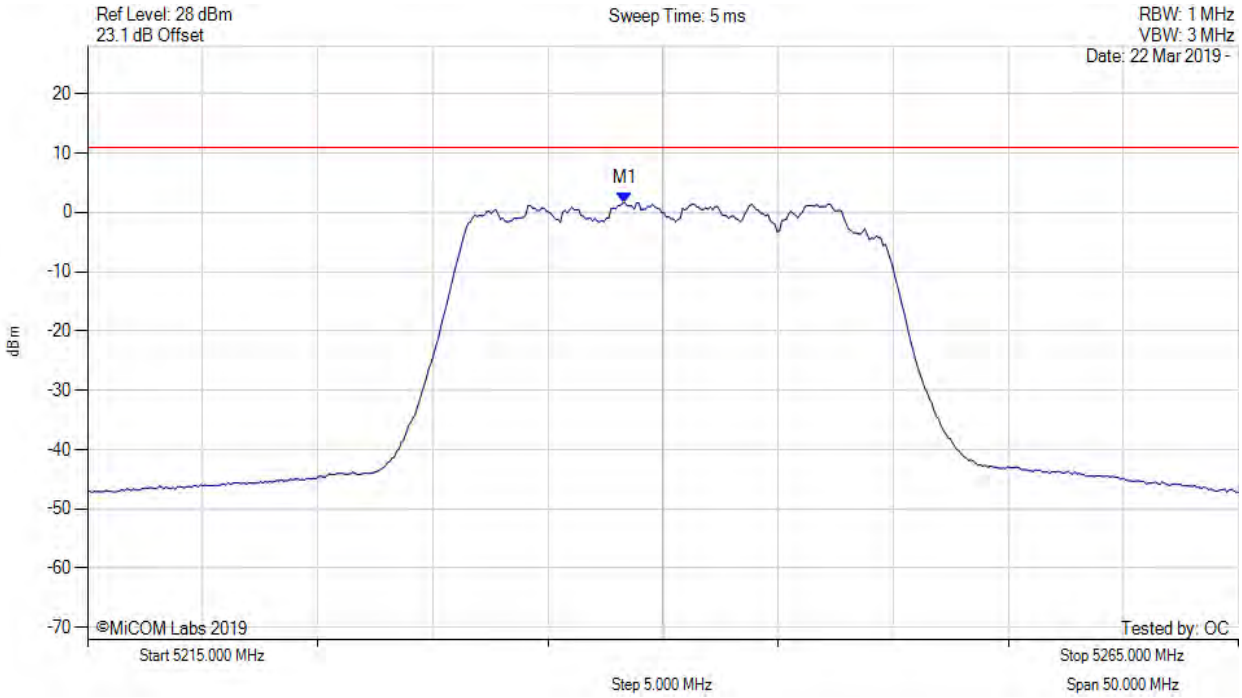
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5238.347 MHz : 1.627 dBm	Limit: ≤ 10.980 dBm

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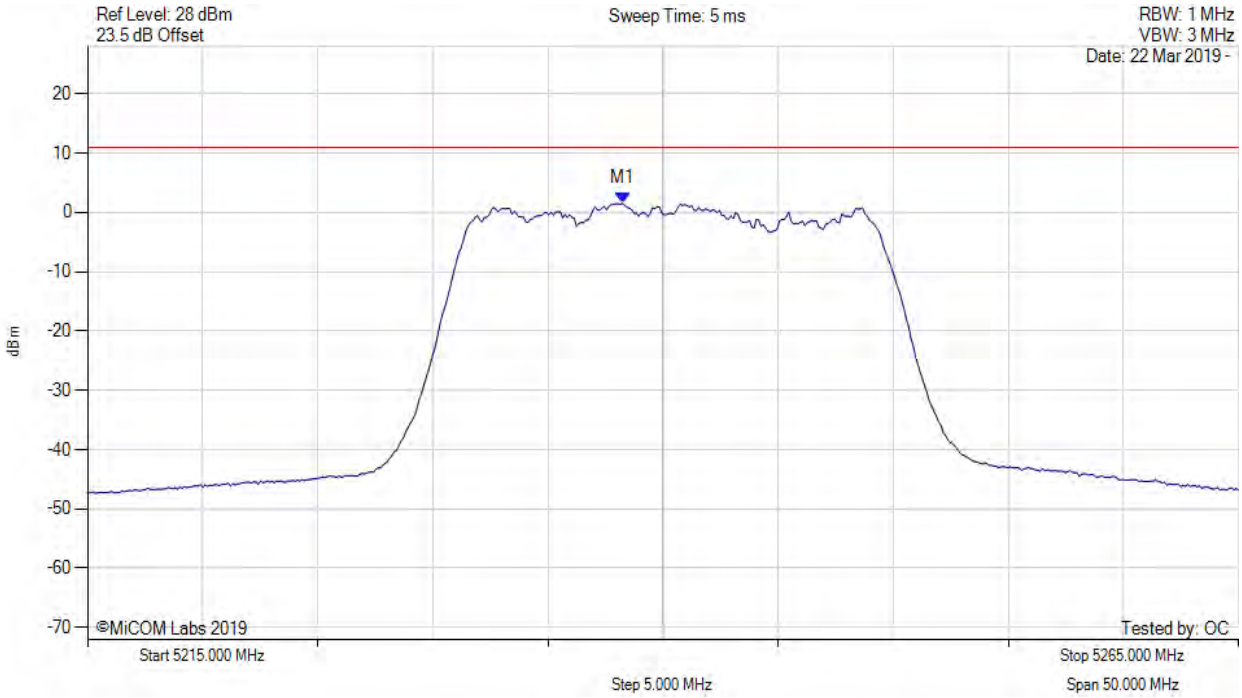
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5238.246 MHz : 1.494 dBm	Limit: ≤ 10.980 dBm

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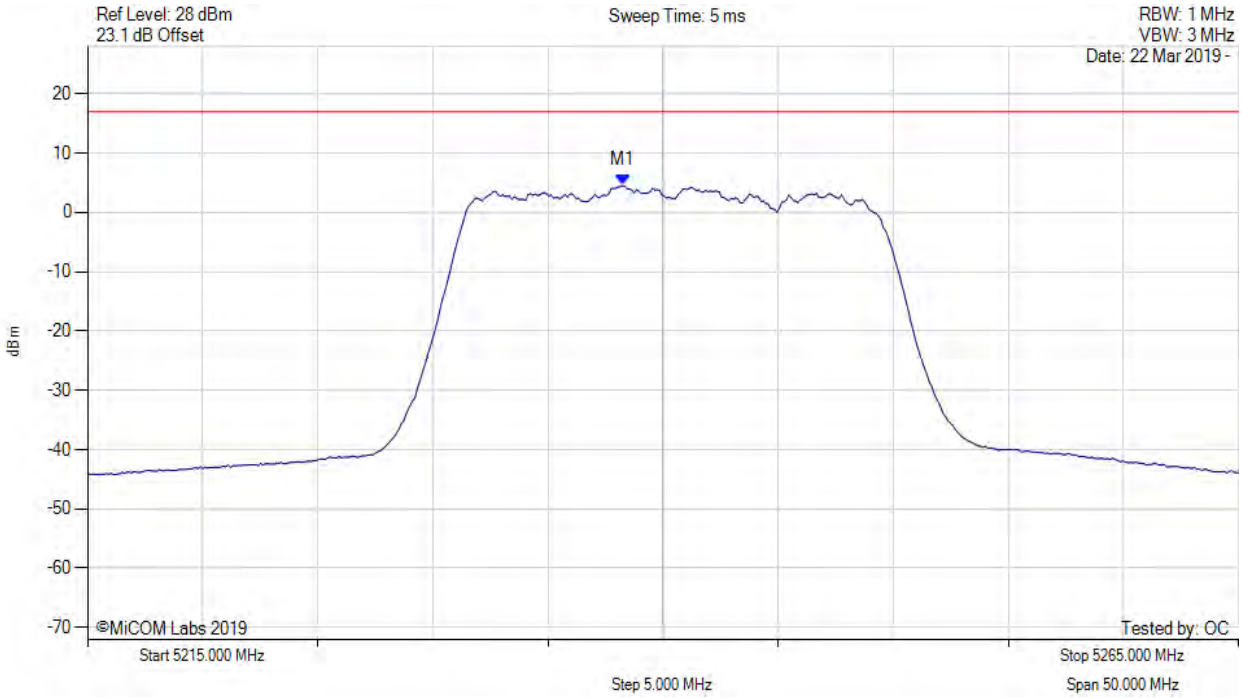
POWER SPECTRAL DENSITY

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



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

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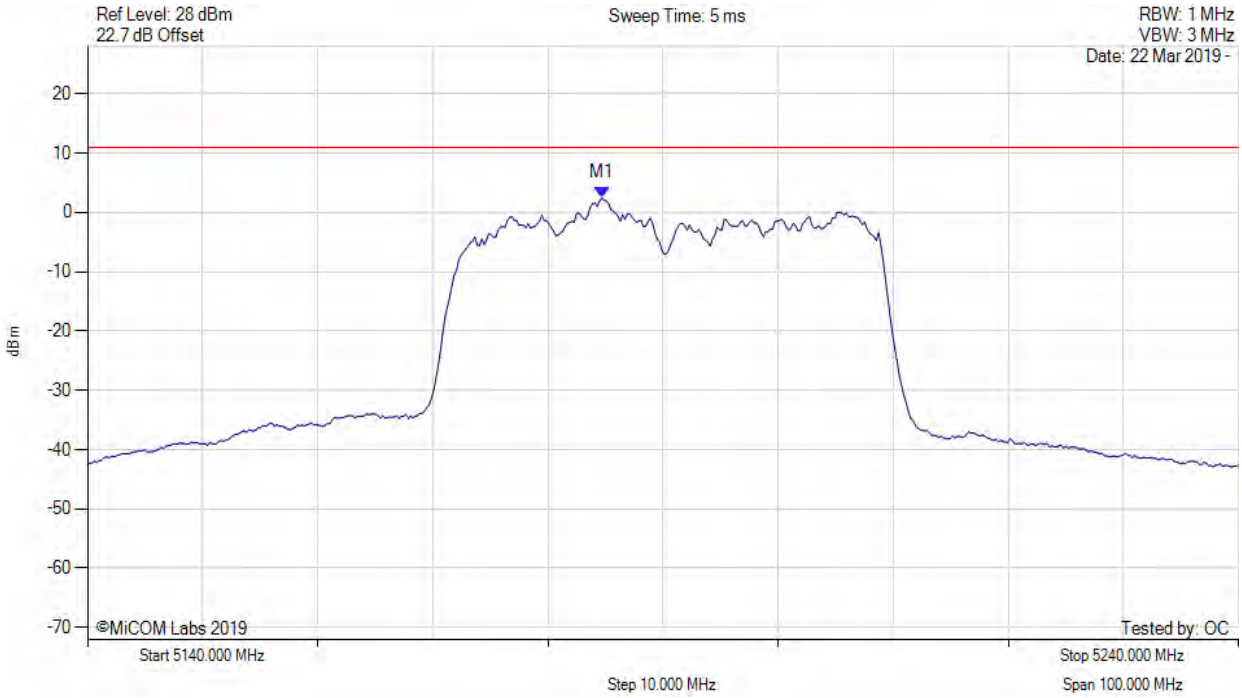
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5184.689 MHz : 2.461 dBm	Limit: ≤ 10.980 dBm

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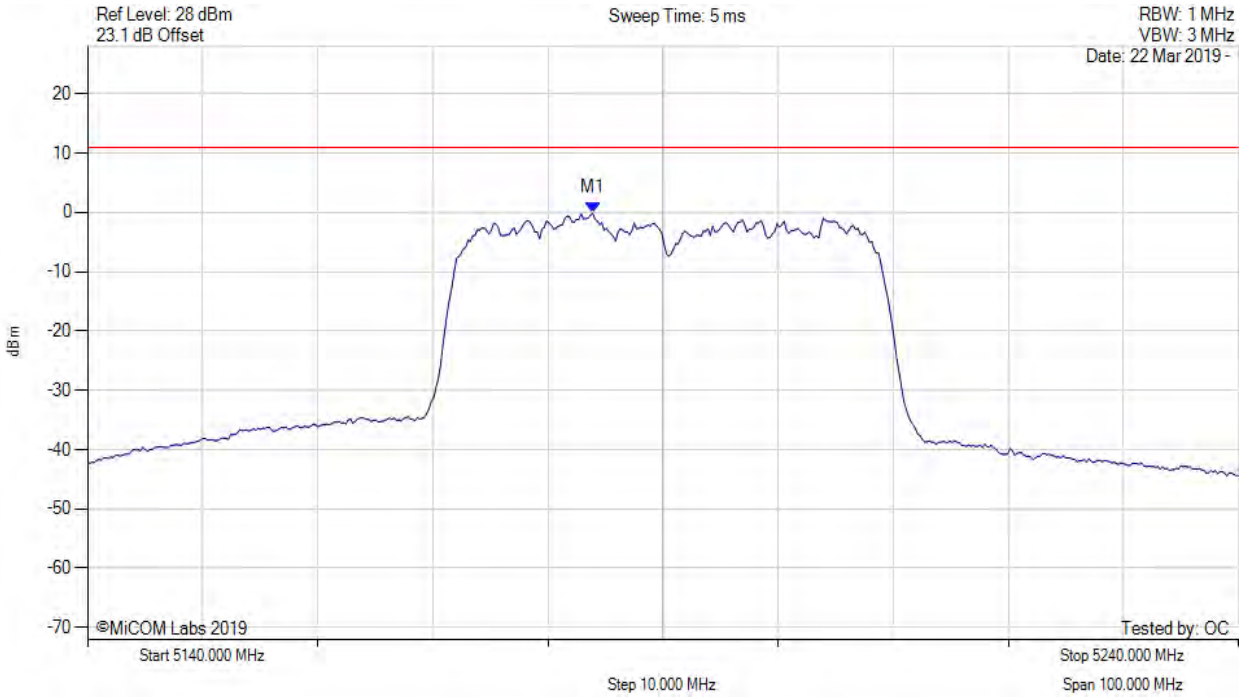
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5183.888 MHz : -0.169 dBm	Limit: ≤ 10.980 dBm

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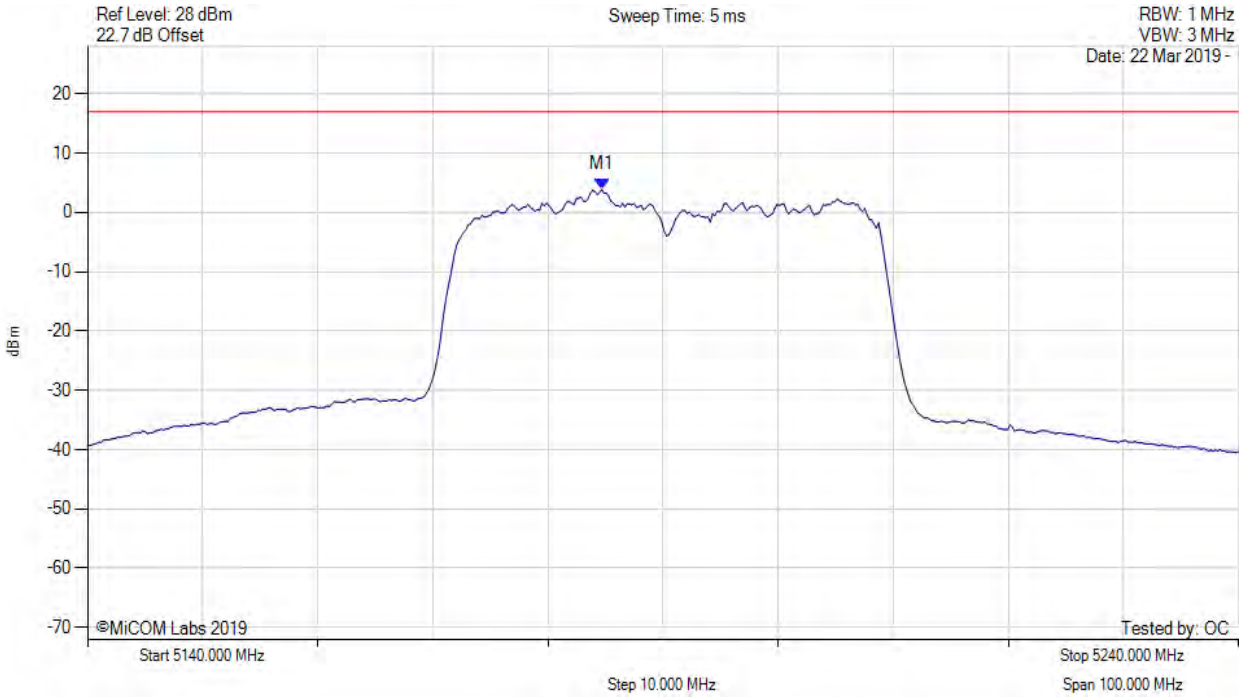
POWER SPECTRAL DENSITY

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



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

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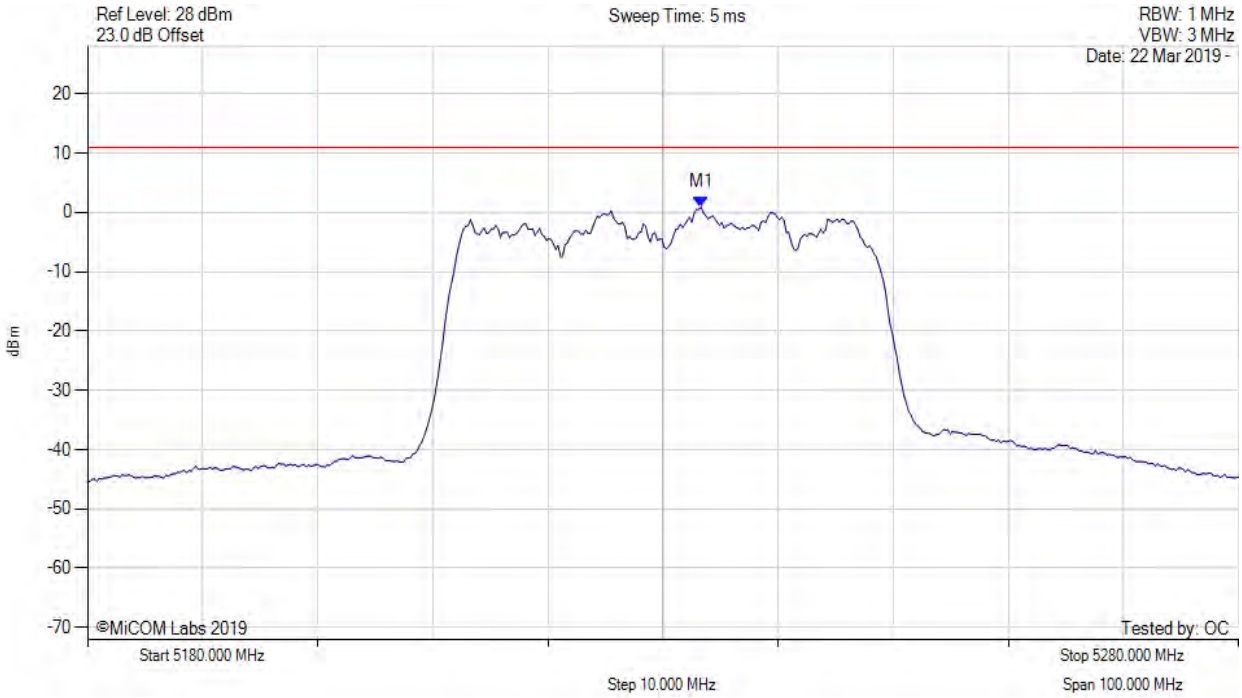
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5233.307 MHz : 0.874 dBm	Limit: ≤ 10.980 dBm

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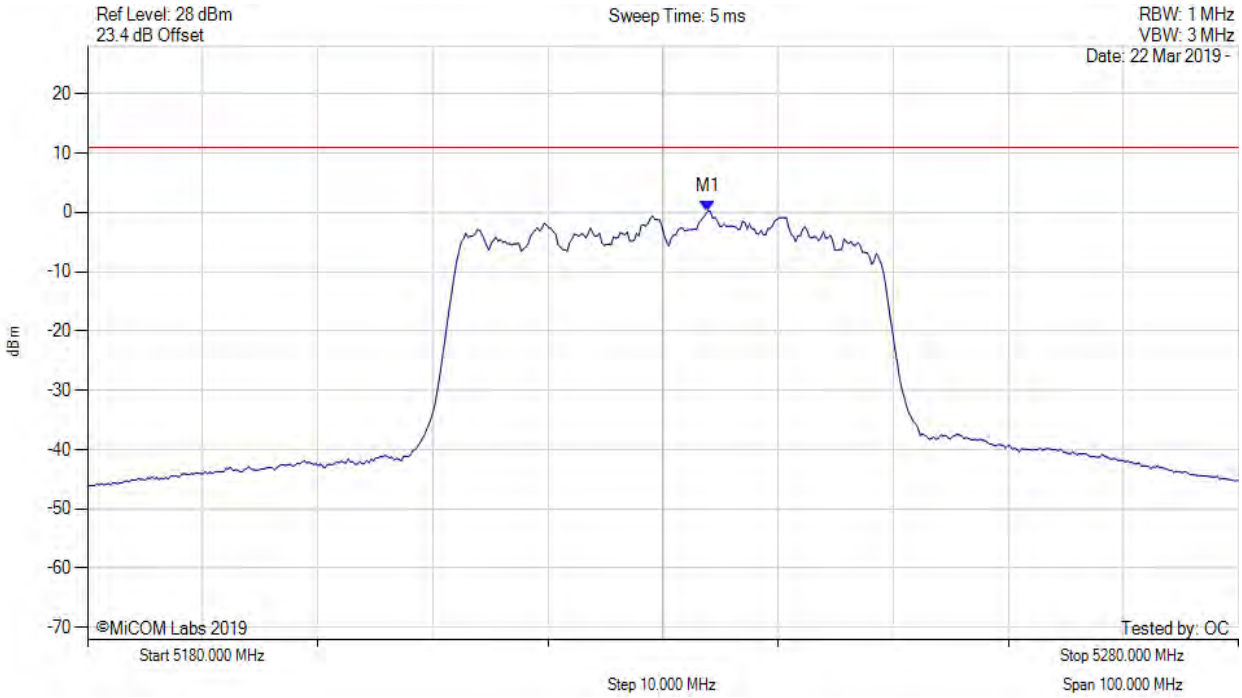
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5233.908 MHz : 0.198 dBm	Limit: ≤ 10.980 dBm

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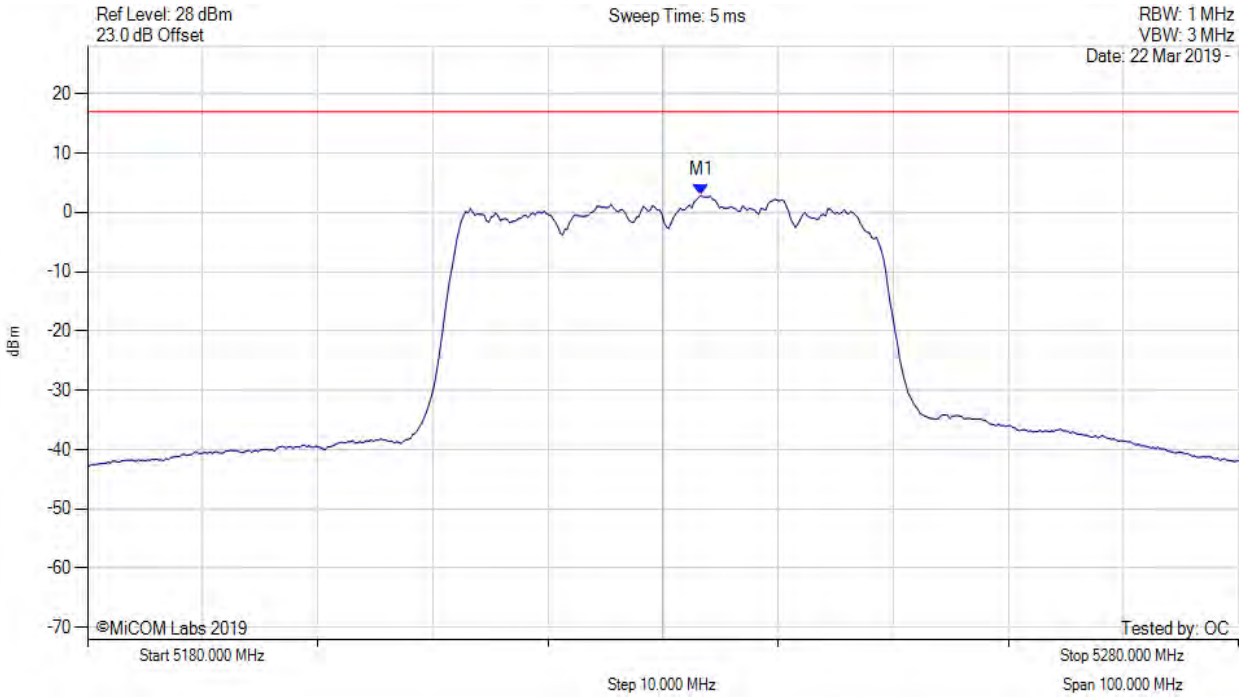
POWER SPECTRAL DENSITY

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



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

back to matrix

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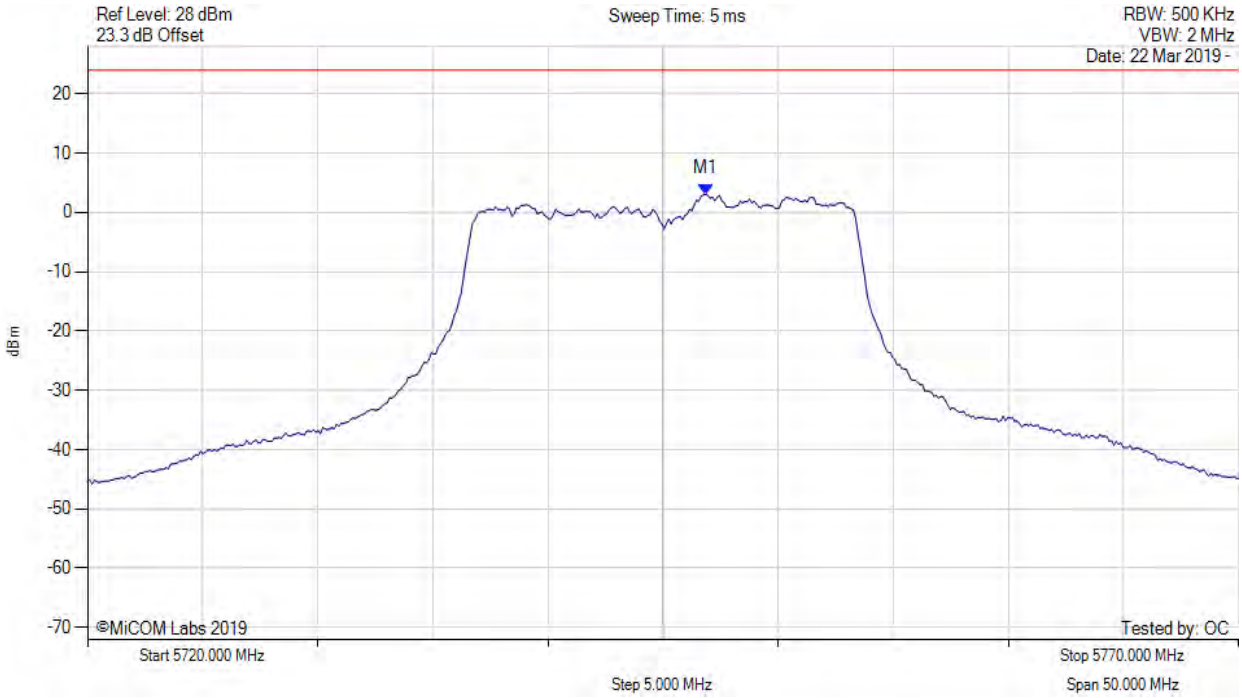
POWER SPECTRAL DENSITY

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



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

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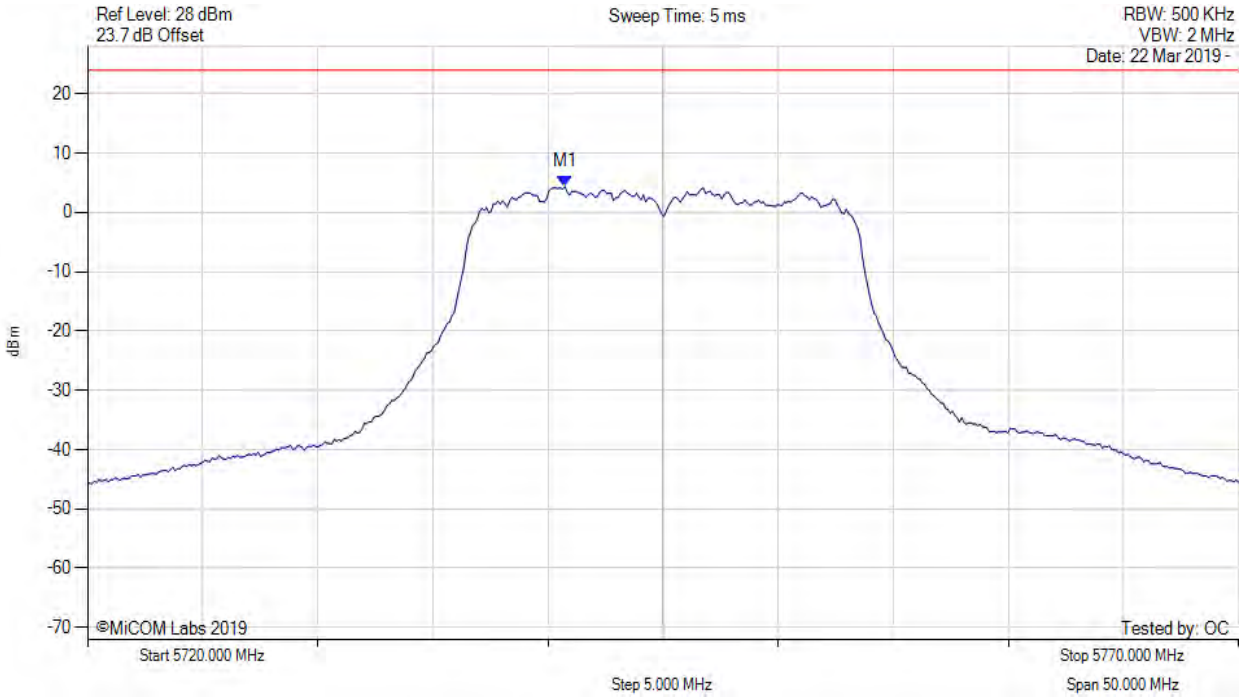
POWER SPECTRAL DENSITY

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



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

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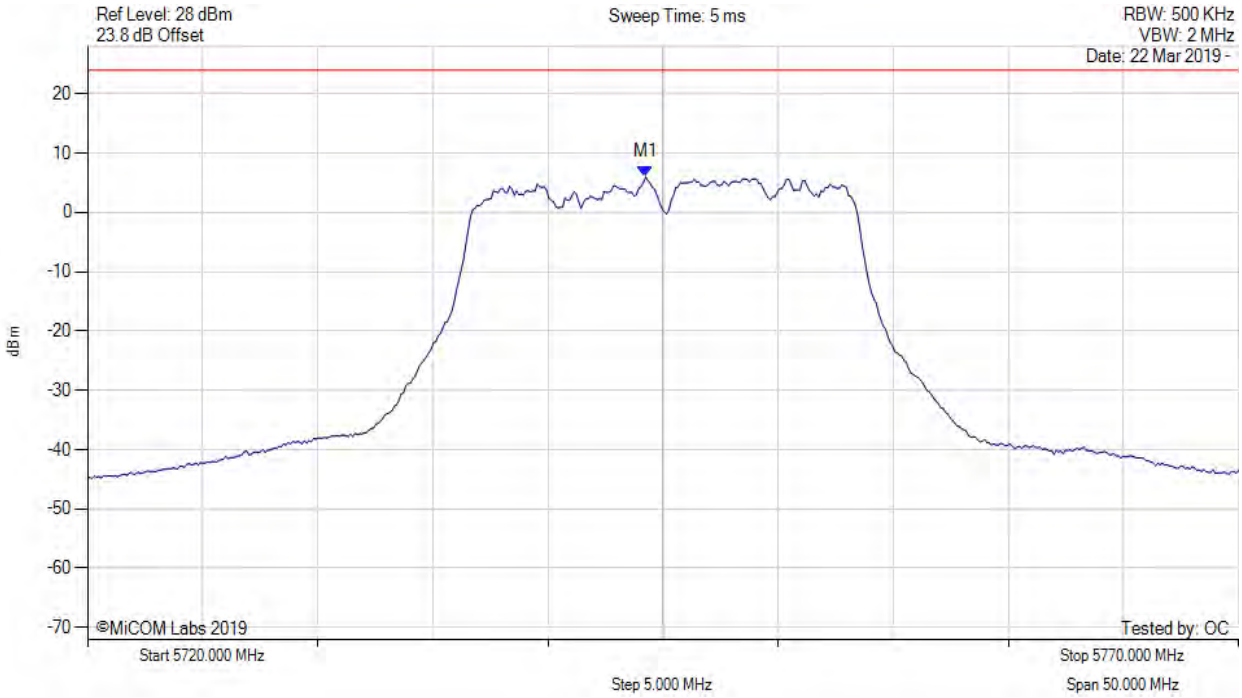
POWER SPECTRAL DENSITY

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



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

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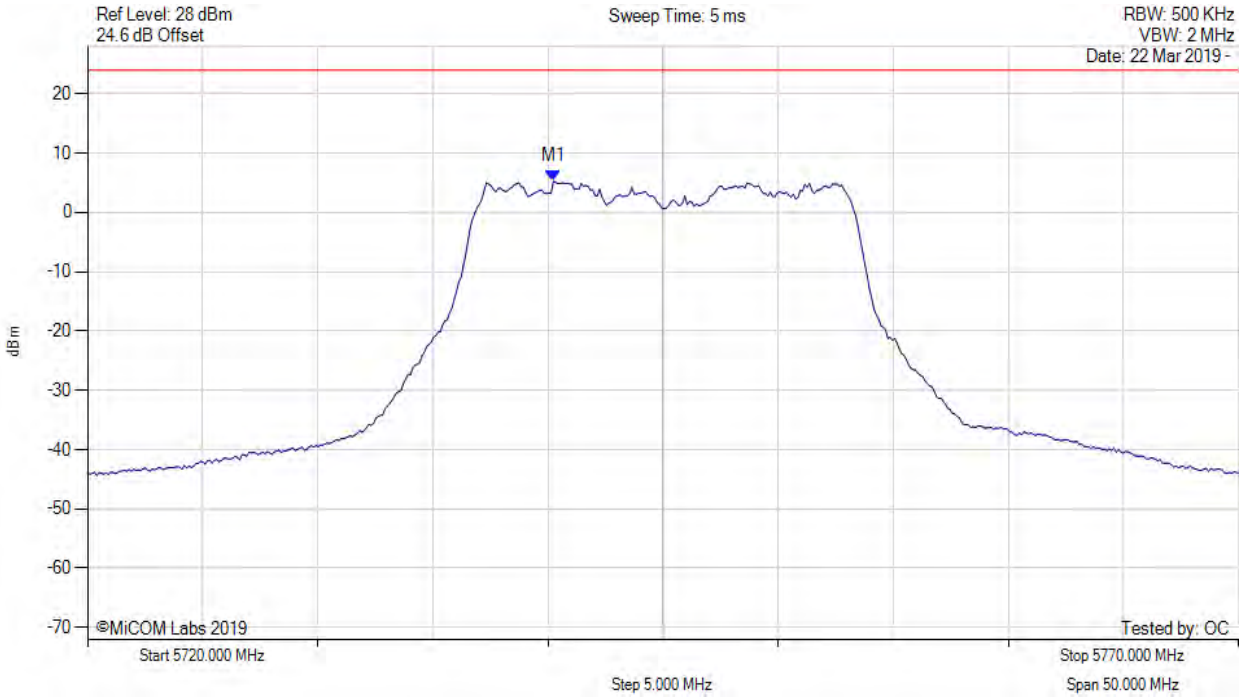
POWER SPECTRAL DENSITY

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



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

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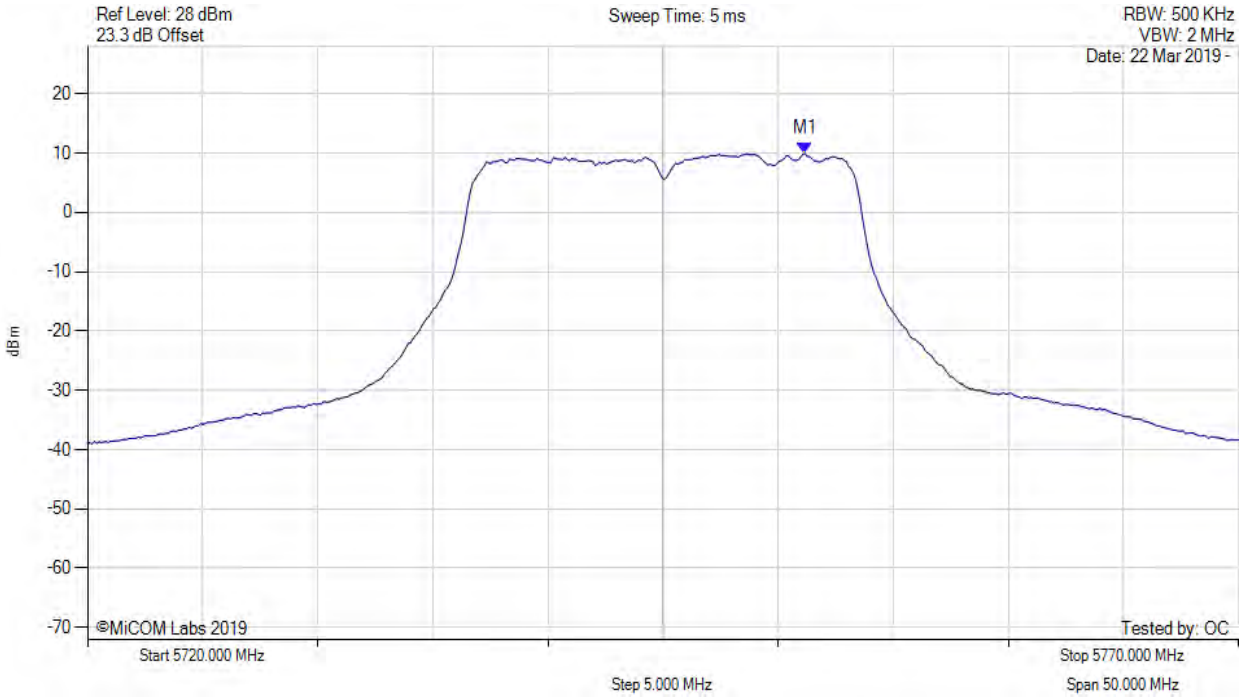
POWER SPECTRAL DENSITY

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



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

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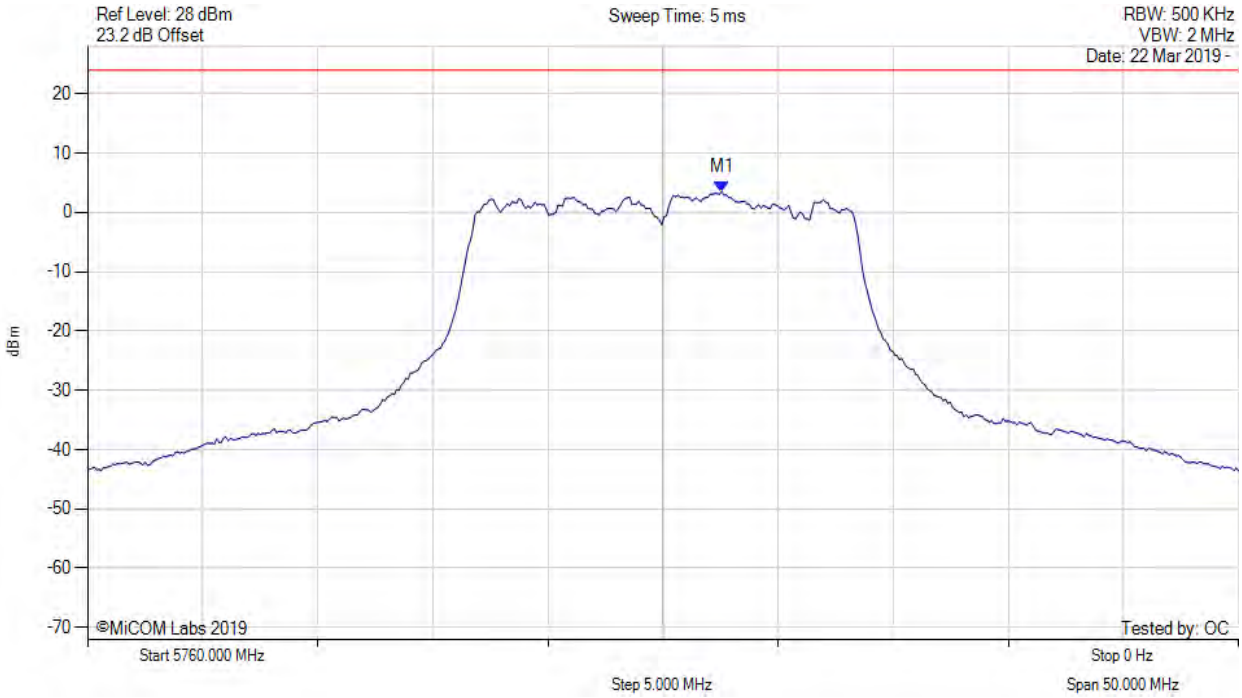
POWER SPECTRAL DENSITY

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



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

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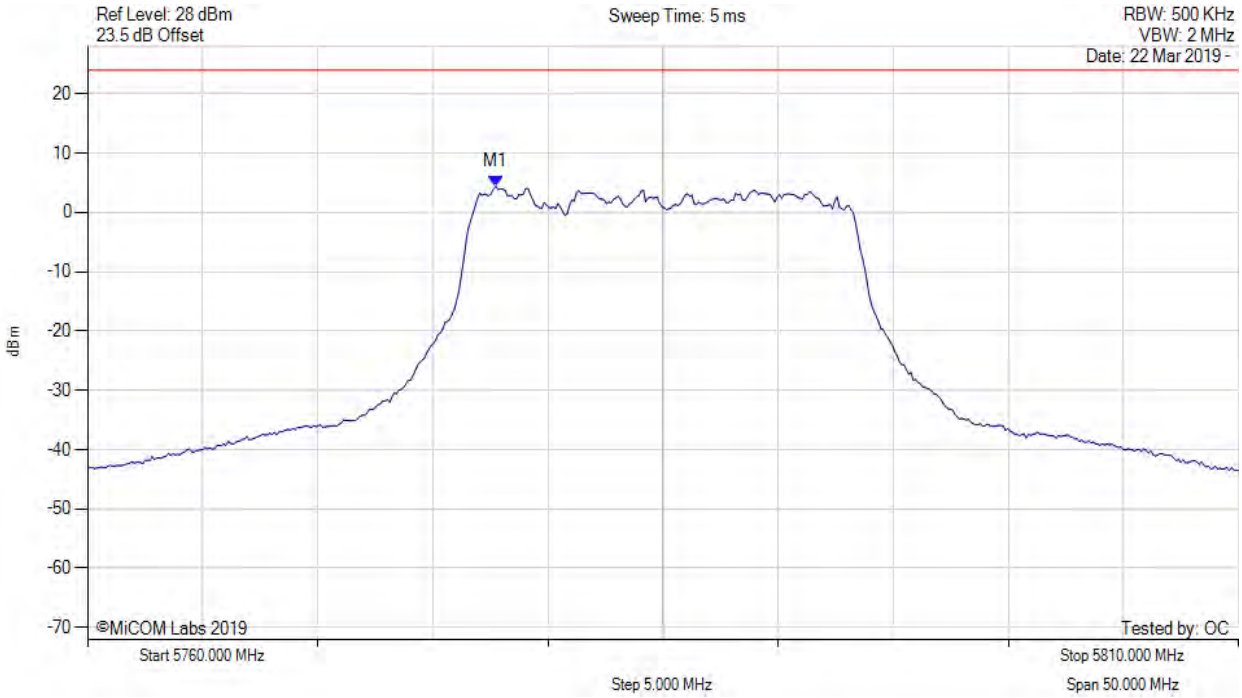
POWER SPECTRAL DENSITY

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



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

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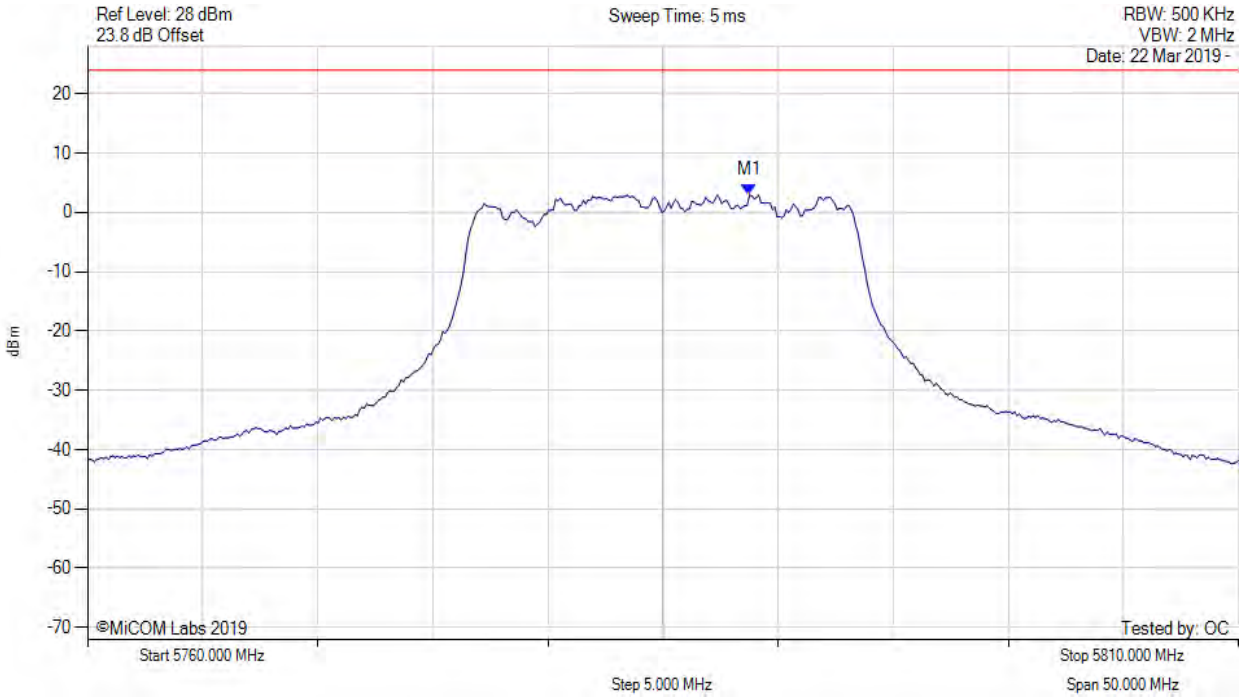
POWER SPECTRAL DENSITY

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



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

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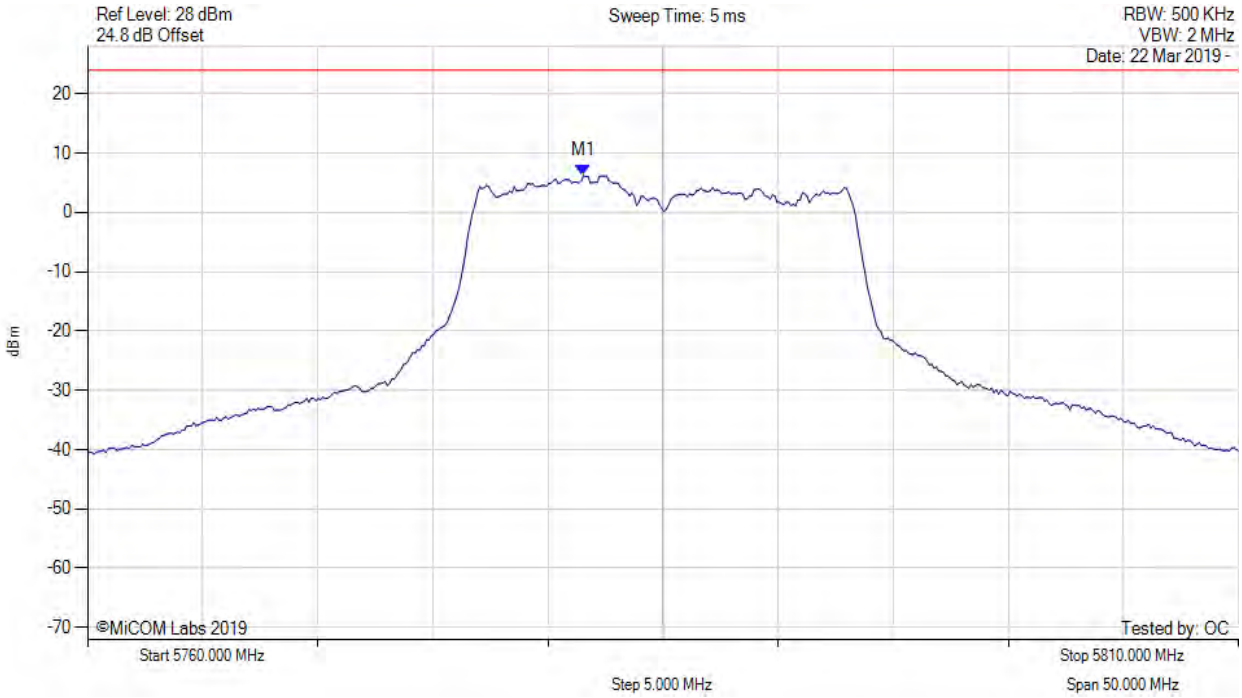
POWER SPECTRAL DENSITY

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



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

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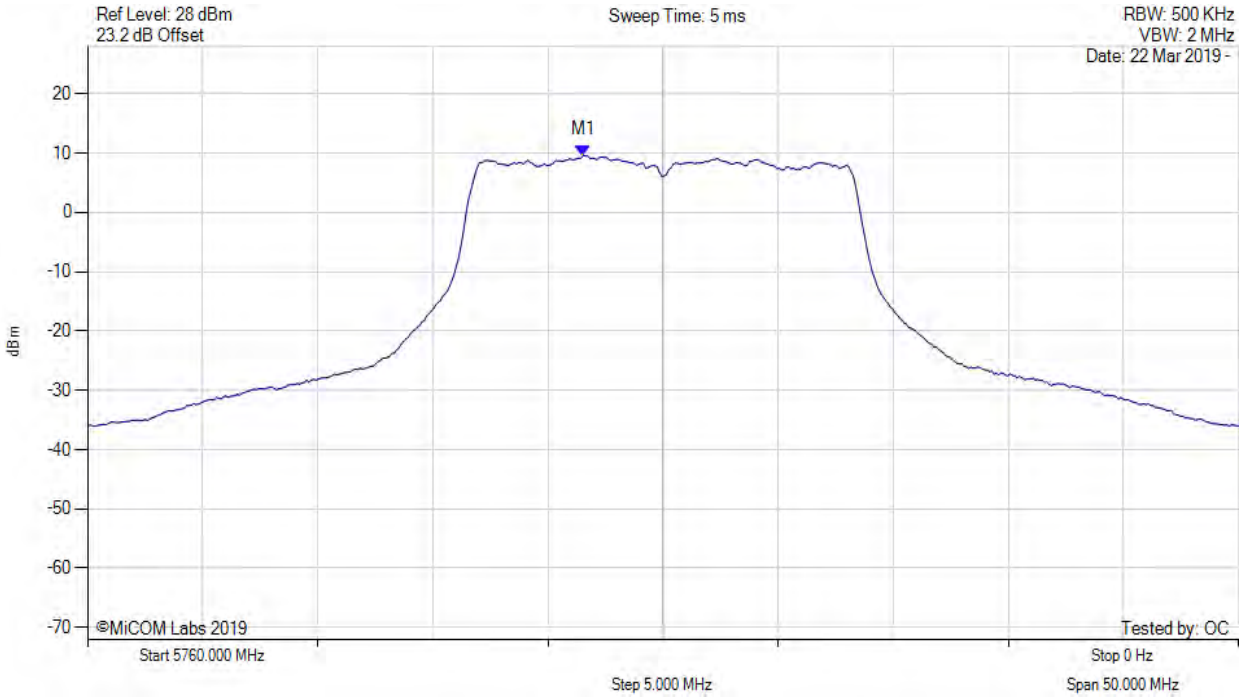
POWER SPECTRAL DENSITY

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



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

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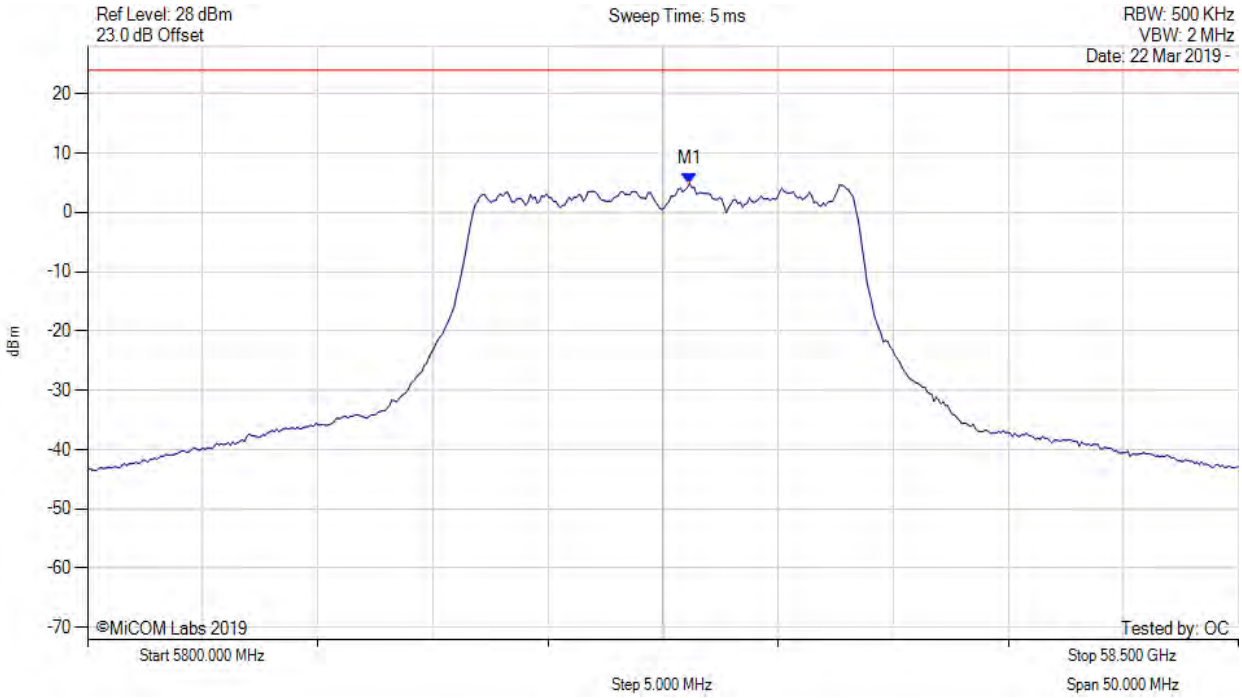
POWER SPECTRAL DENSITY

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



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

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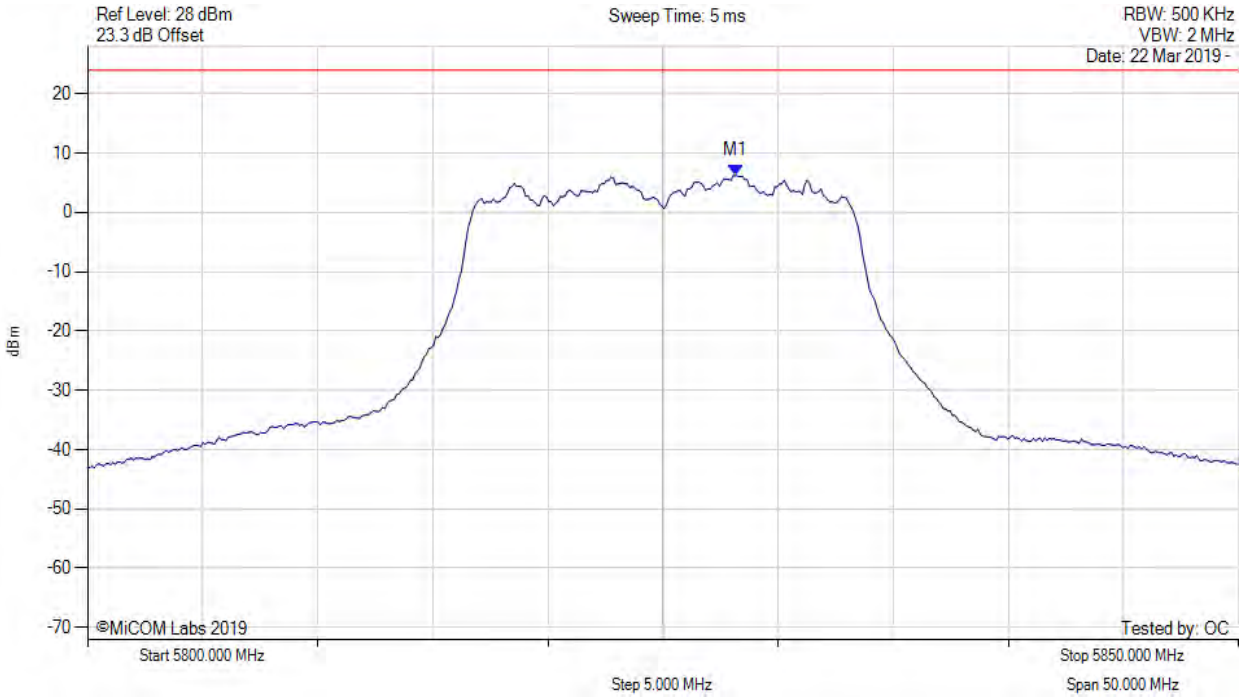
POWER SPECTRAL DENSITY

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



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

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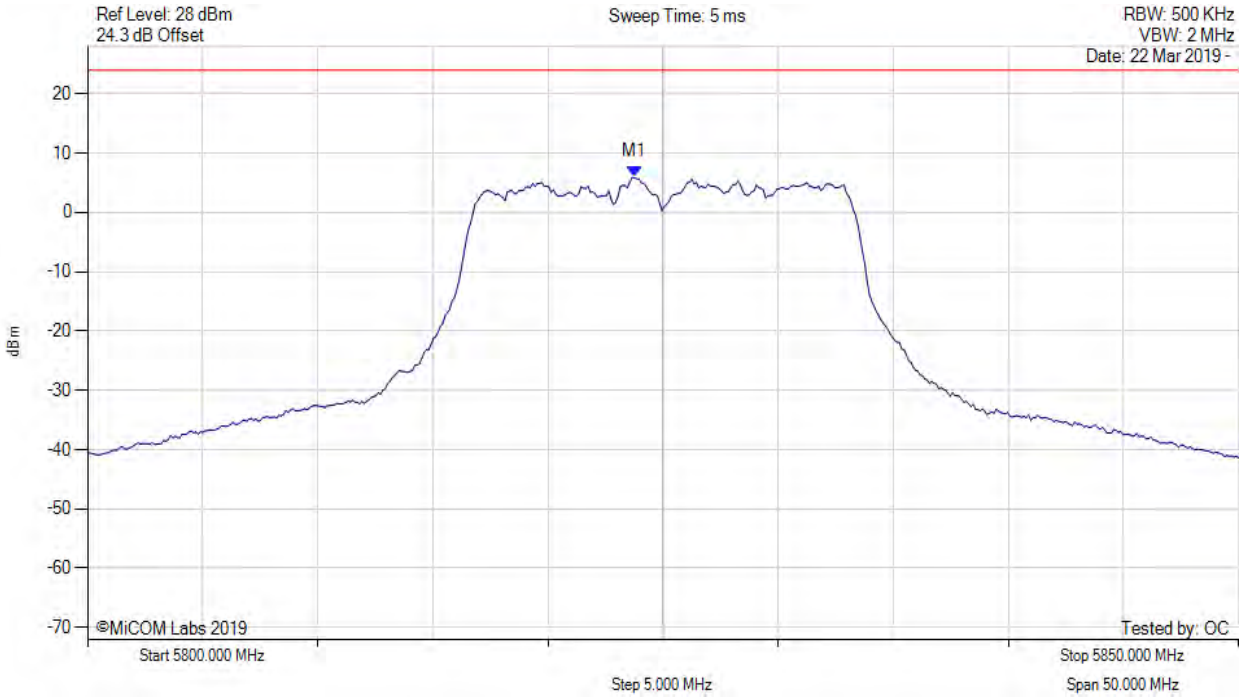
POWER SPECTRAL DENSITY

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



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

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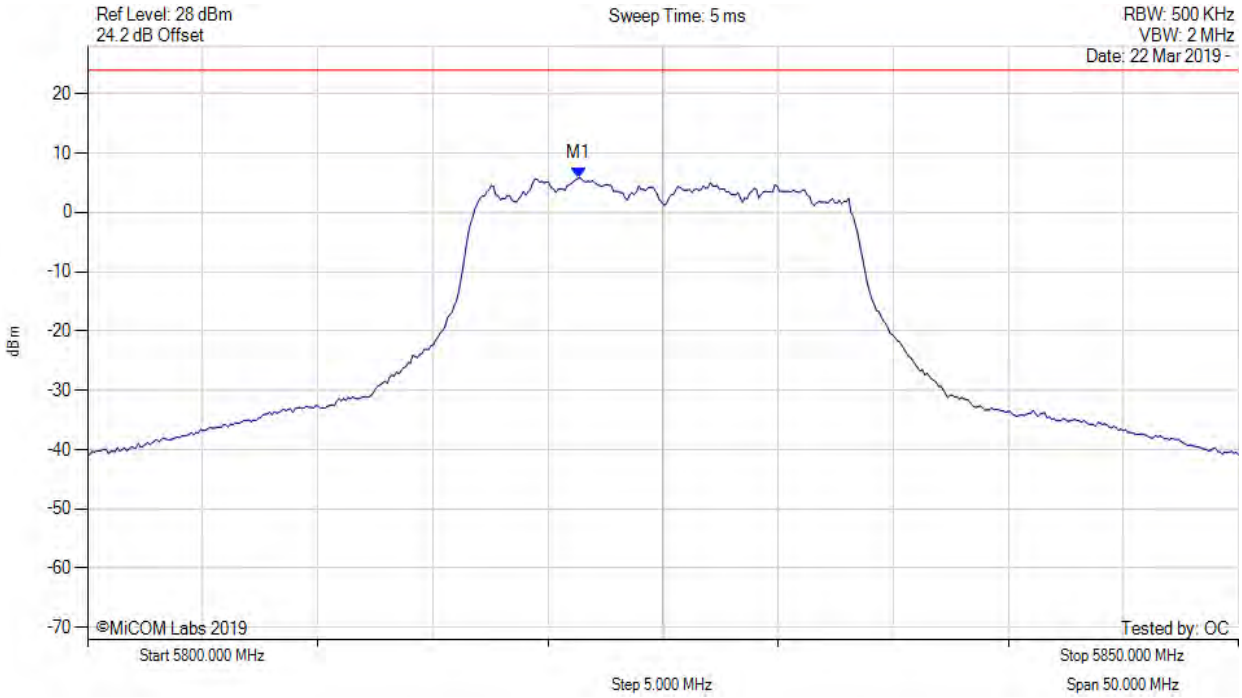
POWER SPECTRAL DENSITY

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



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

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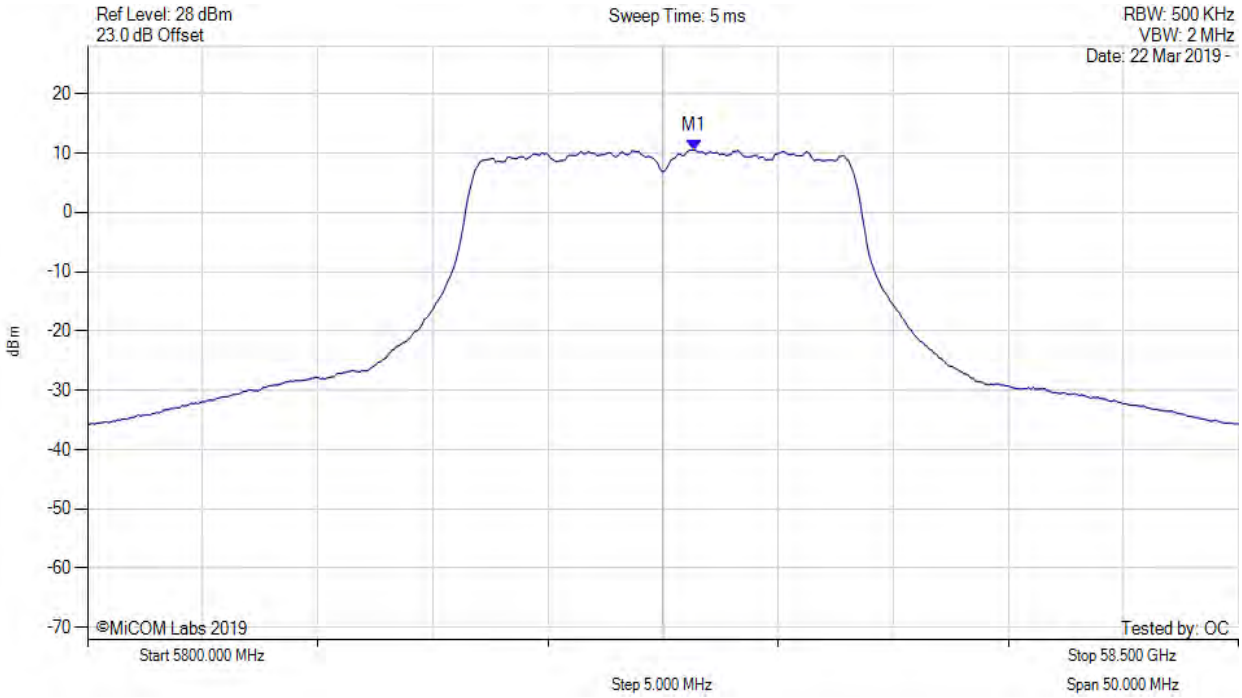
POWER SPECTRAL DENSITY

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



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

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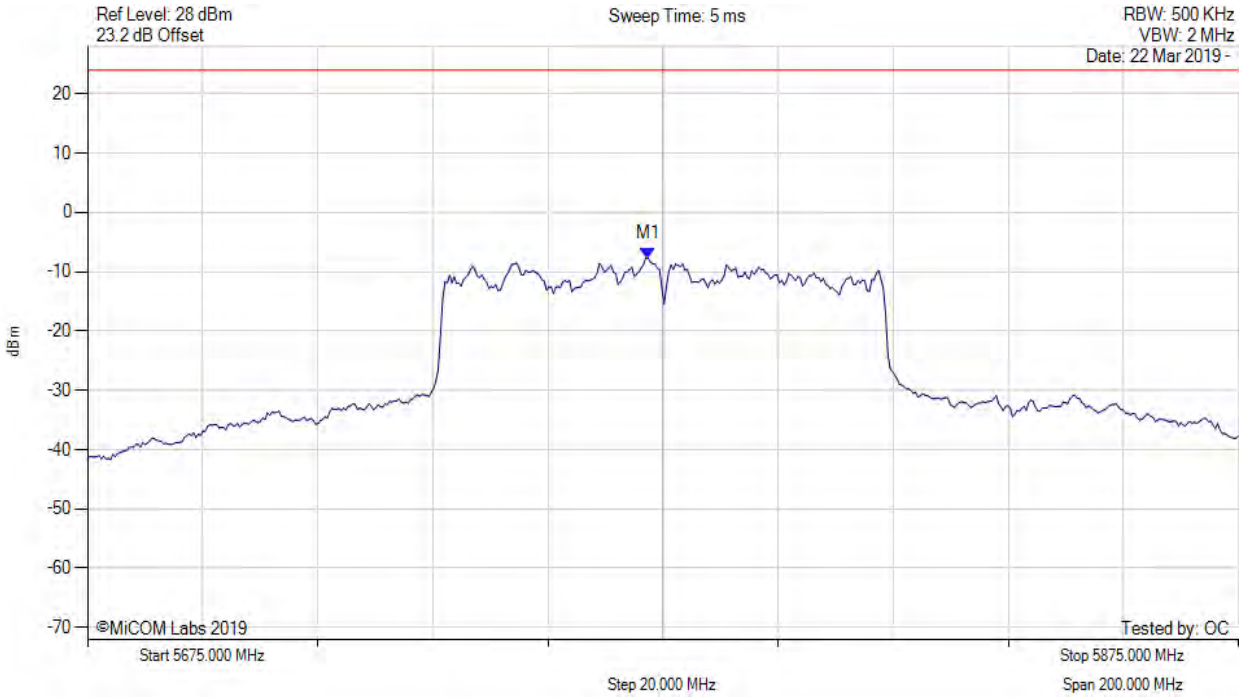
POWER SPECTRAL DENSITY

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



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

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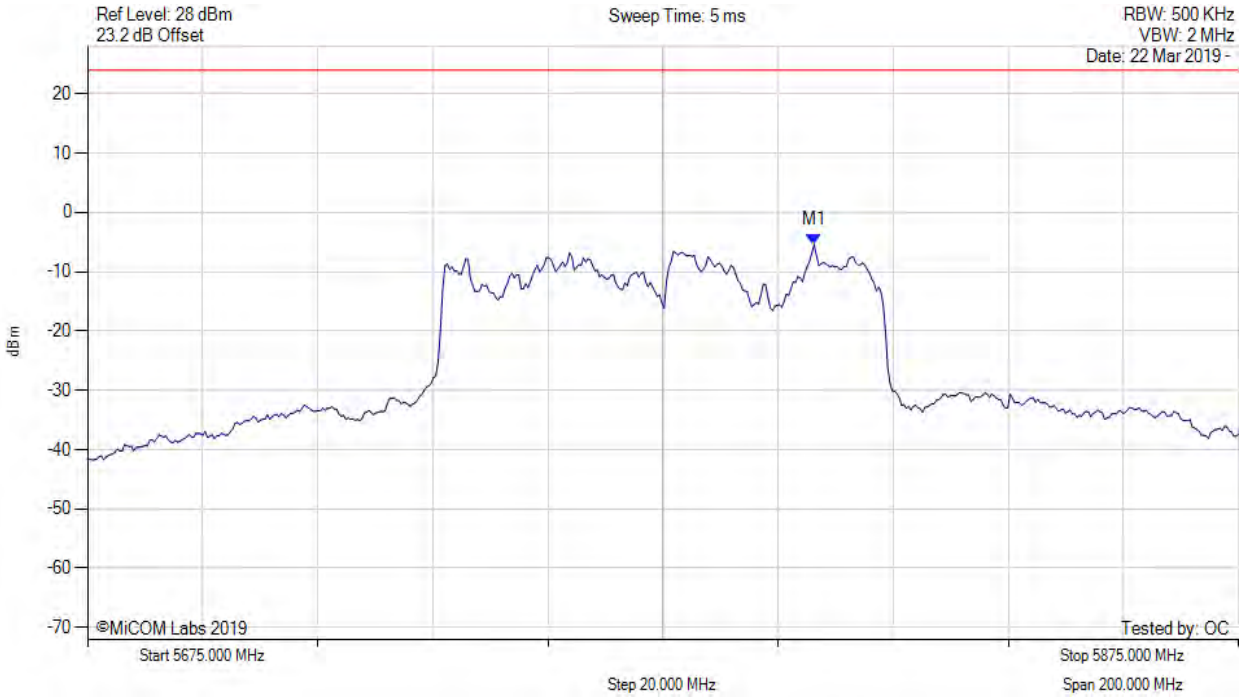
POWER SPECTRAL DENSITY

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



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

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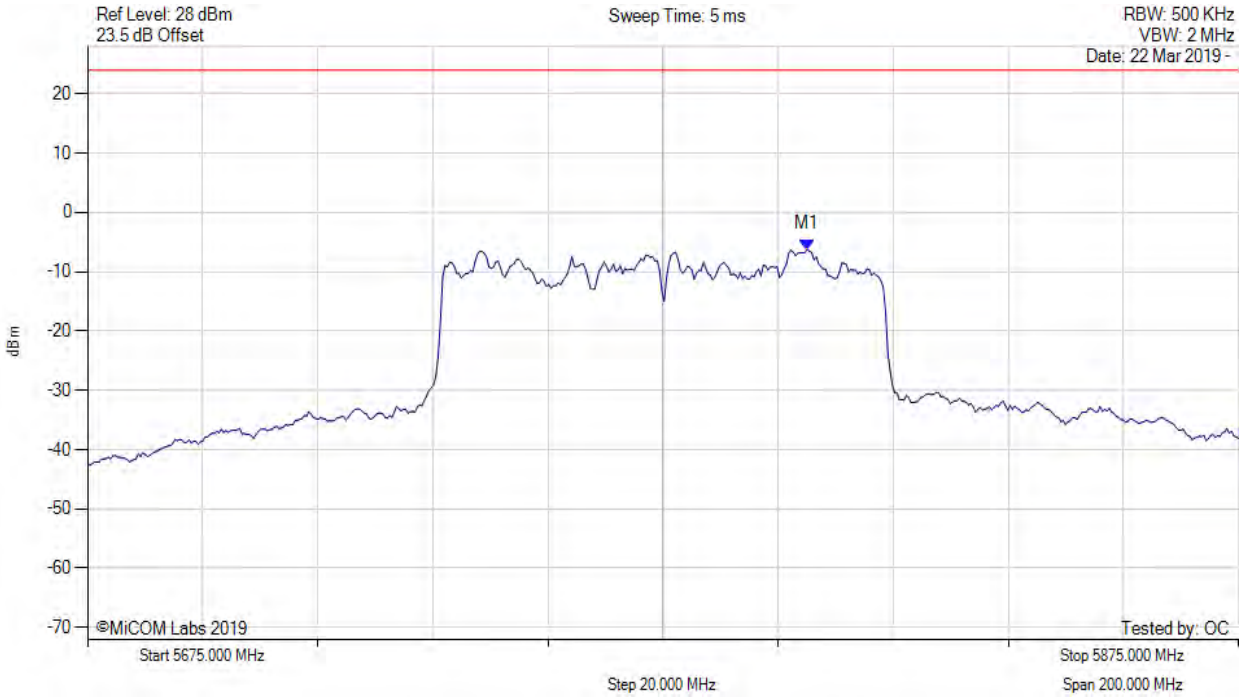
POWER SPECTRAL DENSITY

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



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

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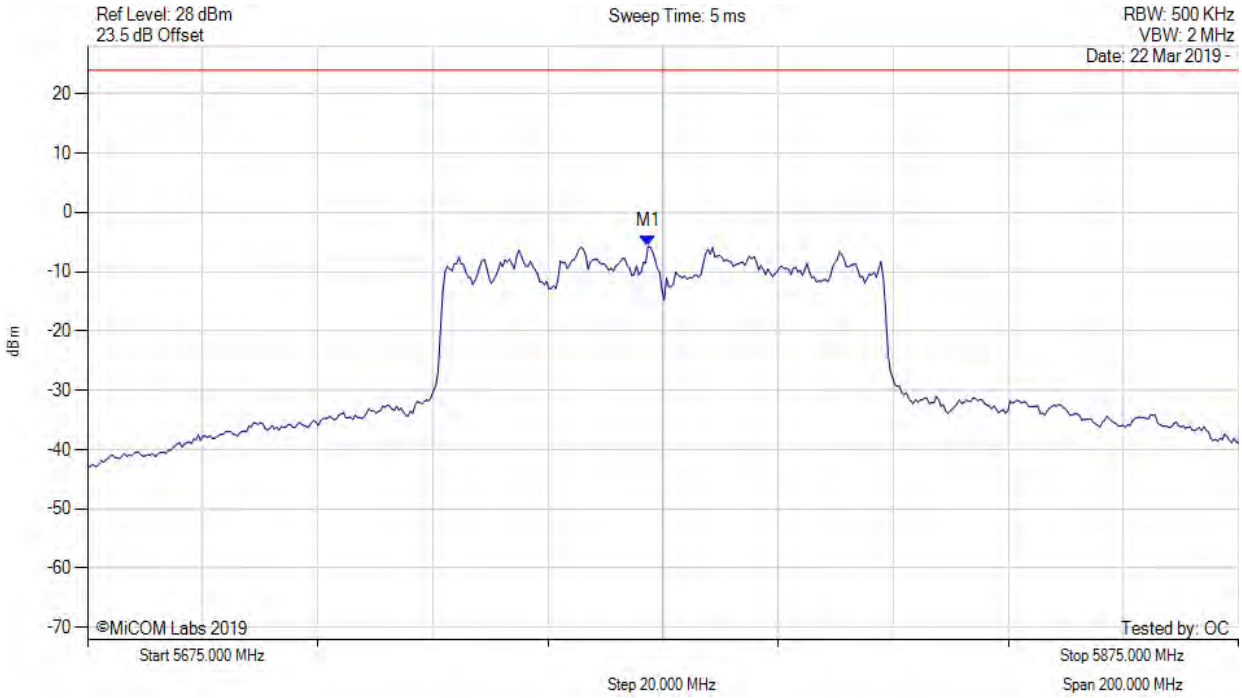
POWER SPECTRAL DENSITY

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



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

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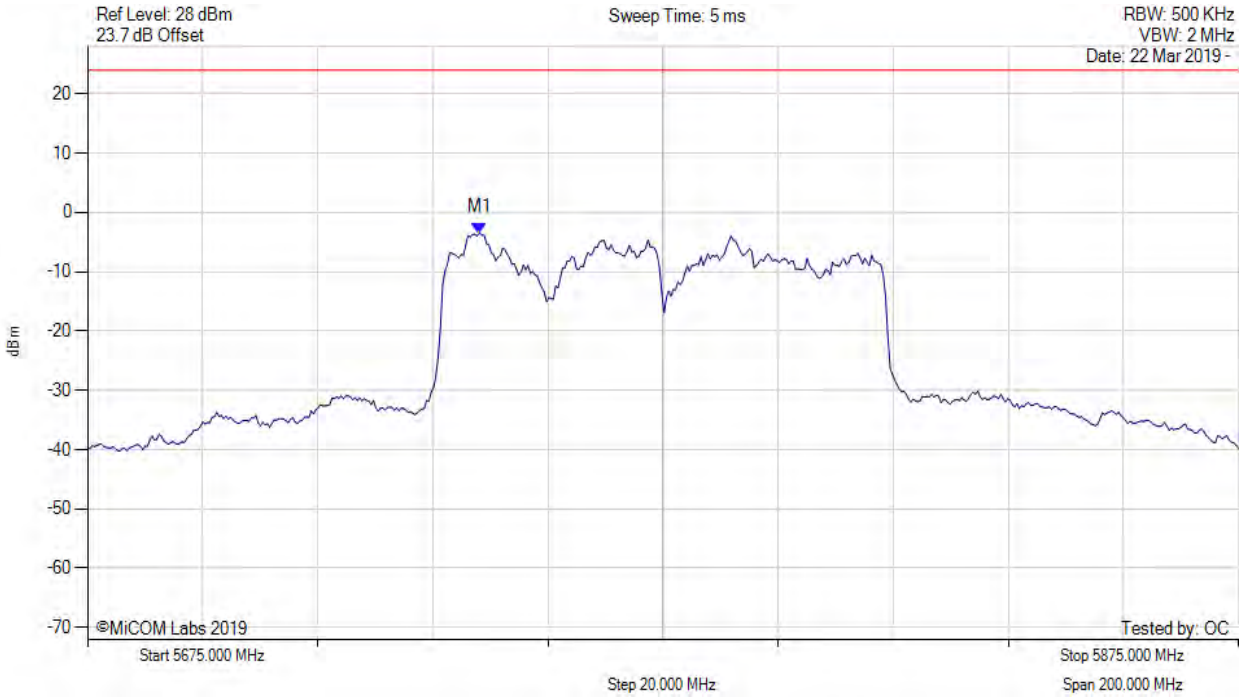
POWER SPECTRAL DENSITY

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



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

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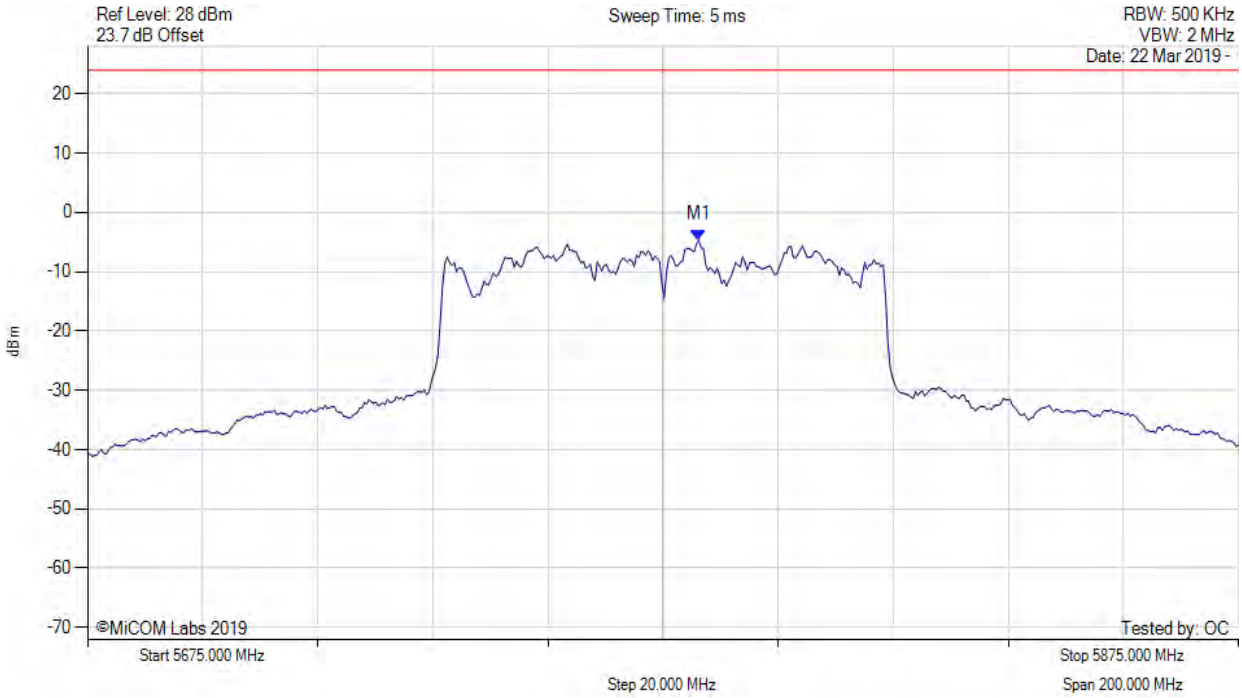
POWER SPECTRAL DENSITY

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



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

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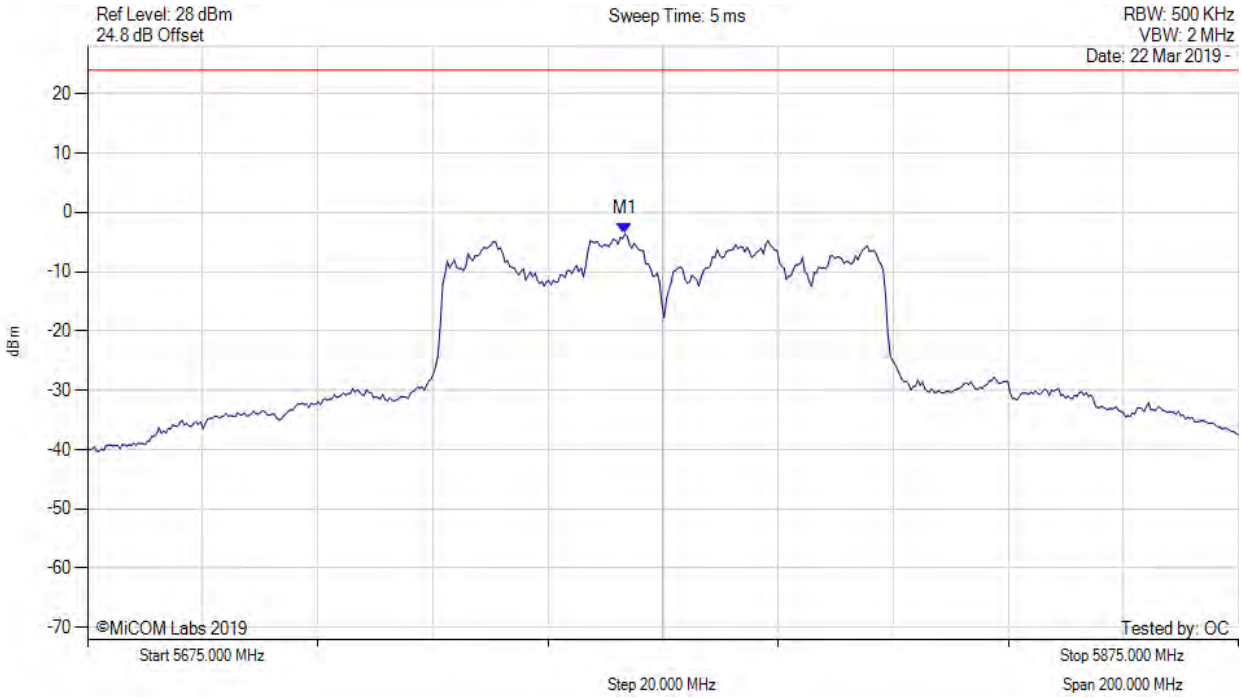
POWER SPECTRAL DENSITY

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



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

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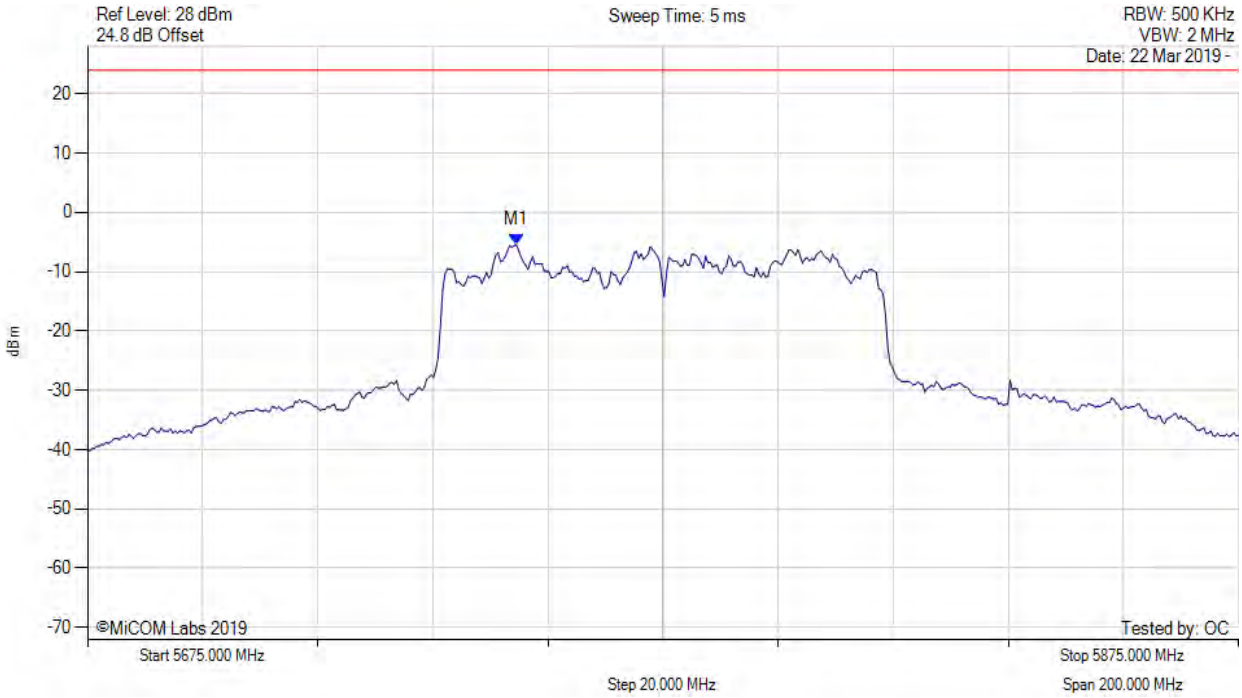
POWER SPECTRAL DENSITY

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



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

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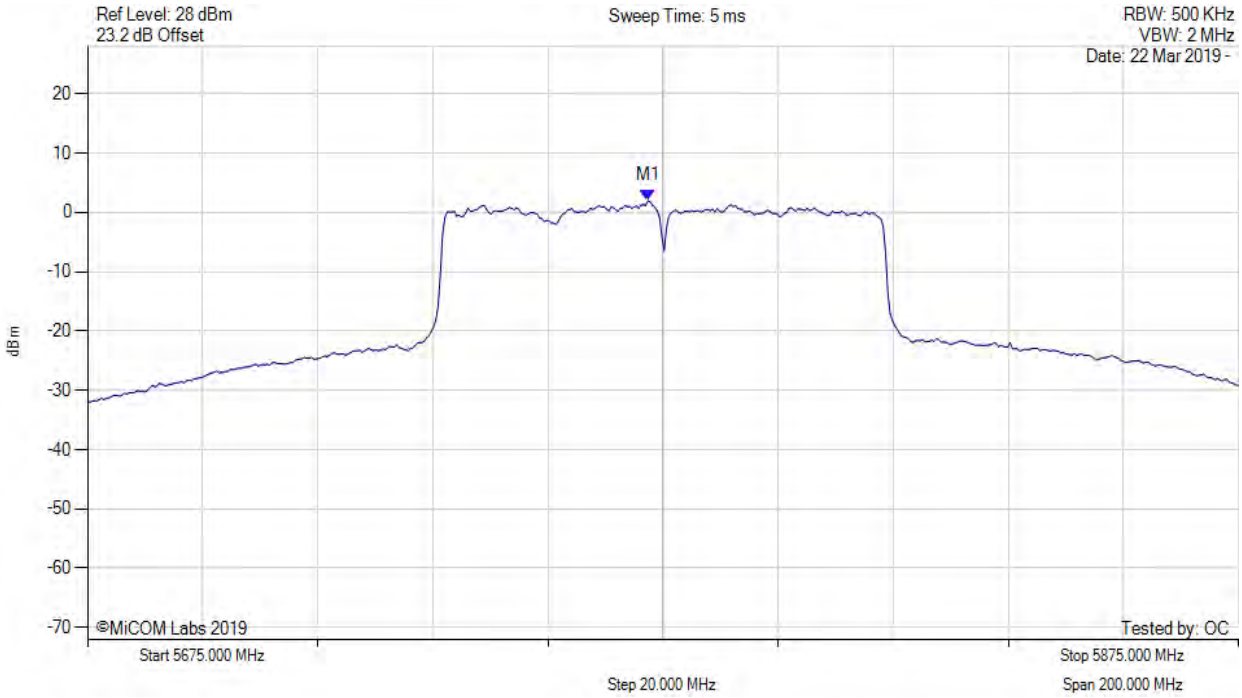
POWER SPECTRAL DENSITY

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



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

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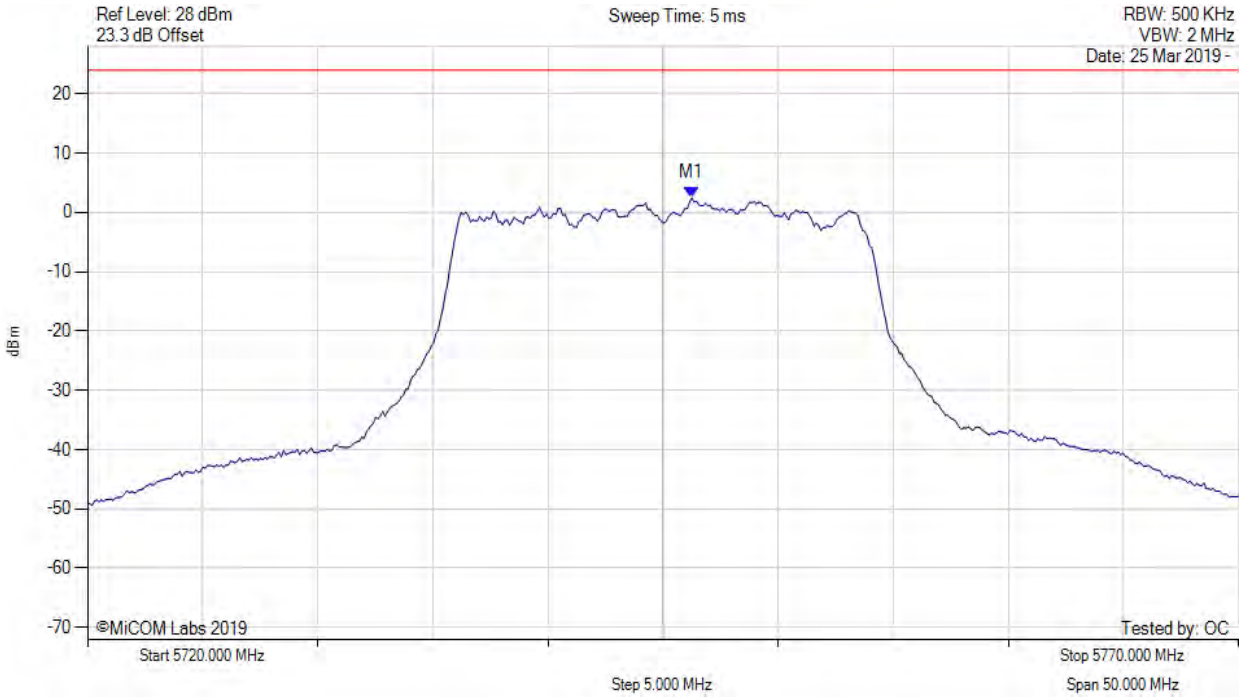
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5746.253 MHz : 2.416 dBm	Limit: ≤ 23.980 dBm

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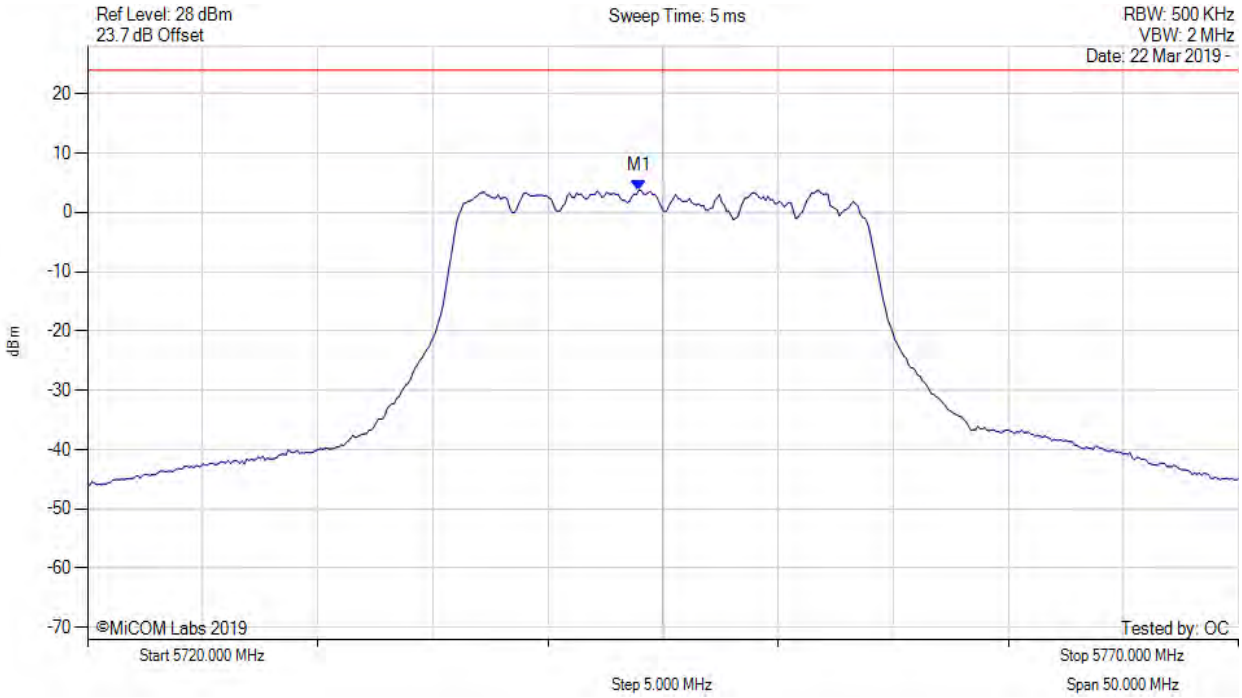
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5743.948 MHz : 3.722 dBm	Limit: ≤ 23.980 dBm

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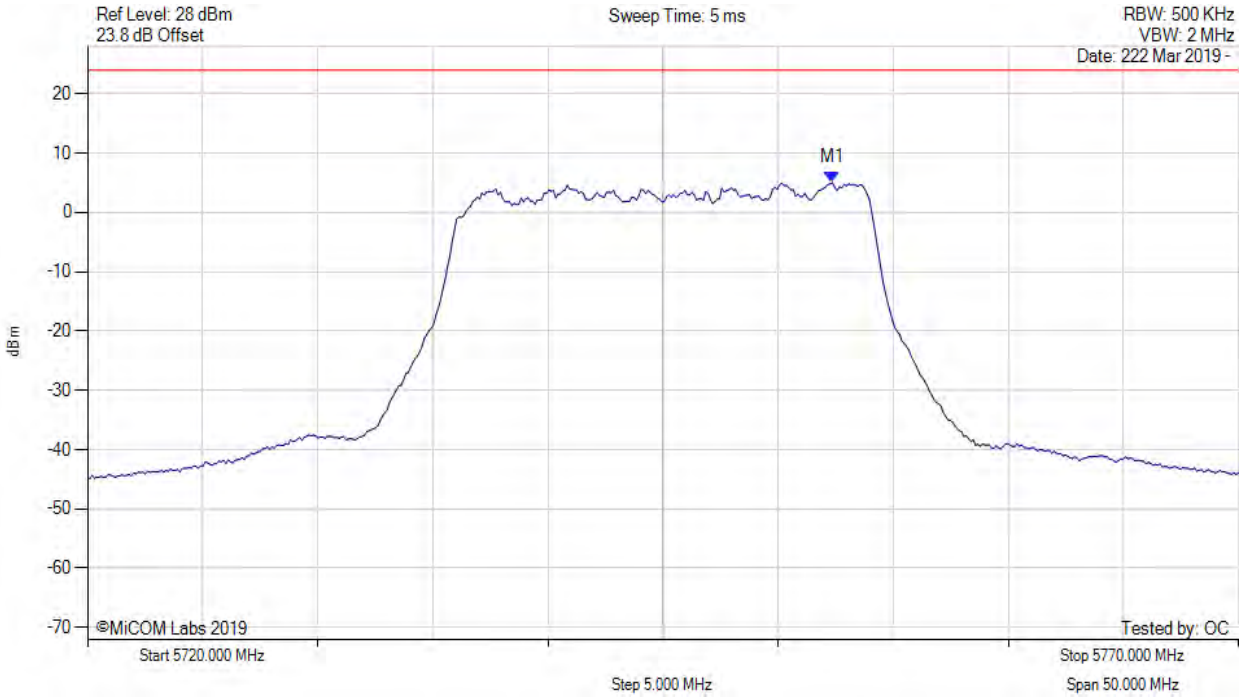
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5752.365 MHz : 5.010 dBm	Limit: ≤ 23.980 dBm

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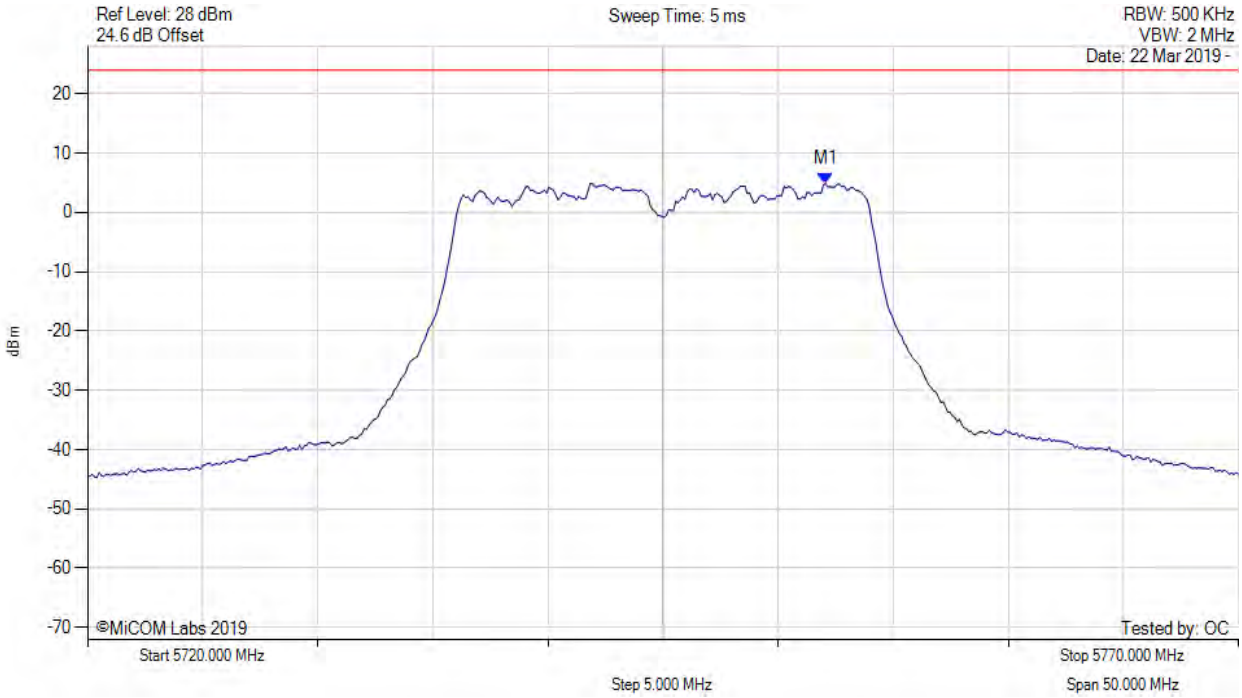
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5752.064 MHz : 4.871 dBm	Limit: ≤ 23.980 dBm

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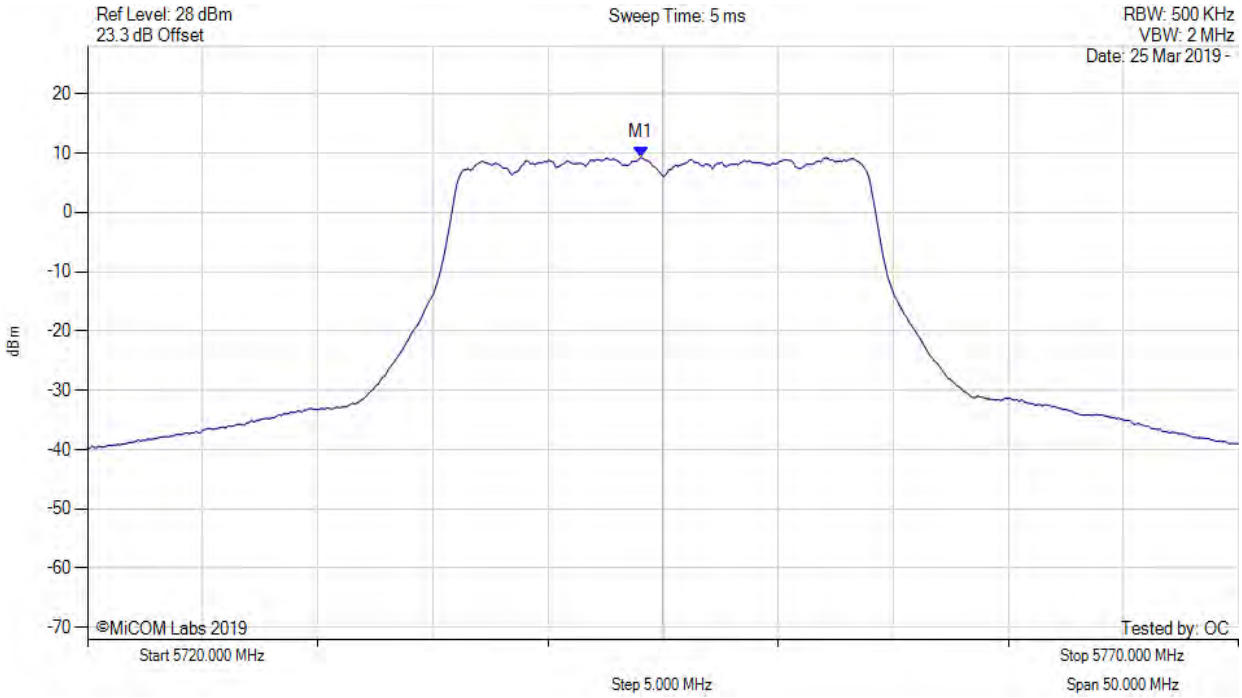
POWER SPECTRAL DENSITY

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



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

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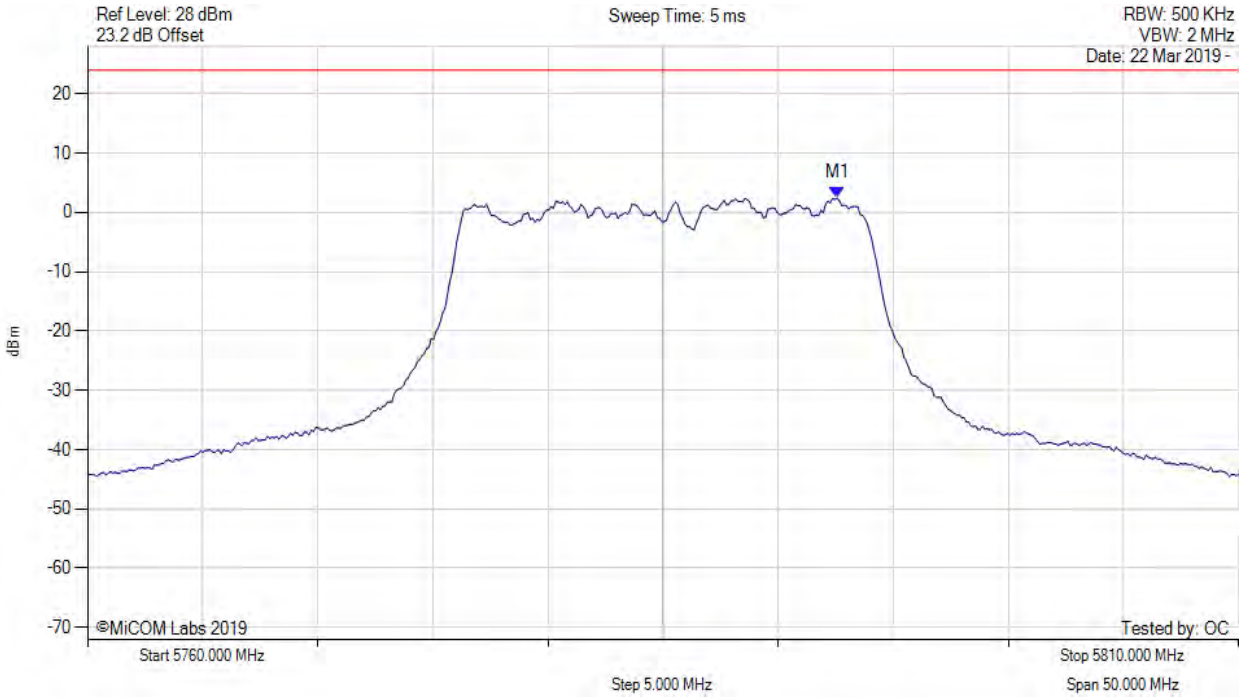
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5792.565 MHz : 2.400 dBm	Limit: ≤ 23.980 dBm

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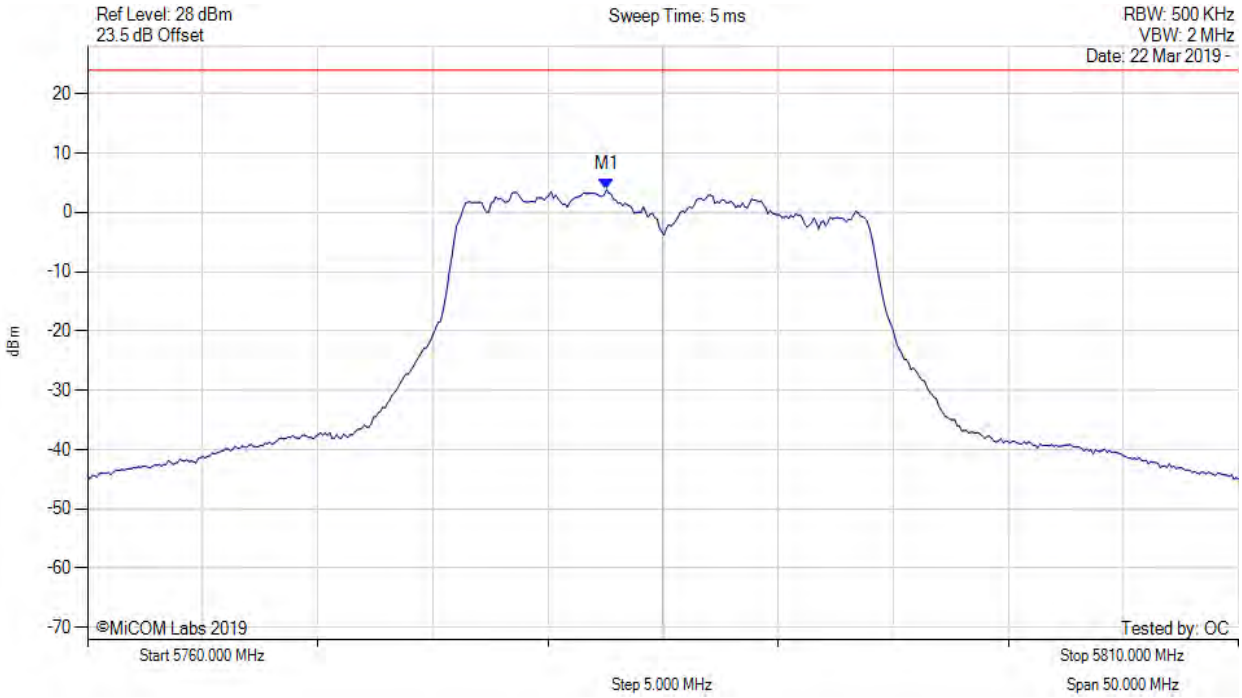
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5782.545 MHz : 3.841 dBm	Channel Frequency: 5785.00 MHz

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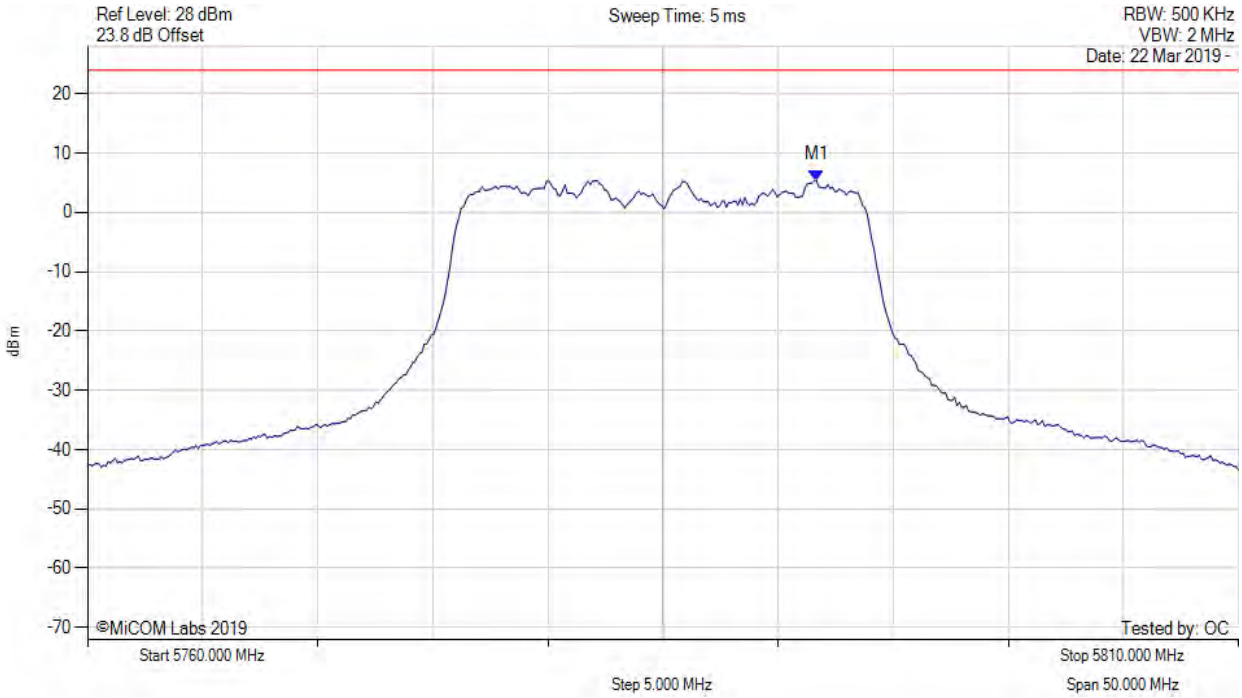
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5791.663 MHz : 5.407 dBm	Limit: ≤ 23.980 dBm

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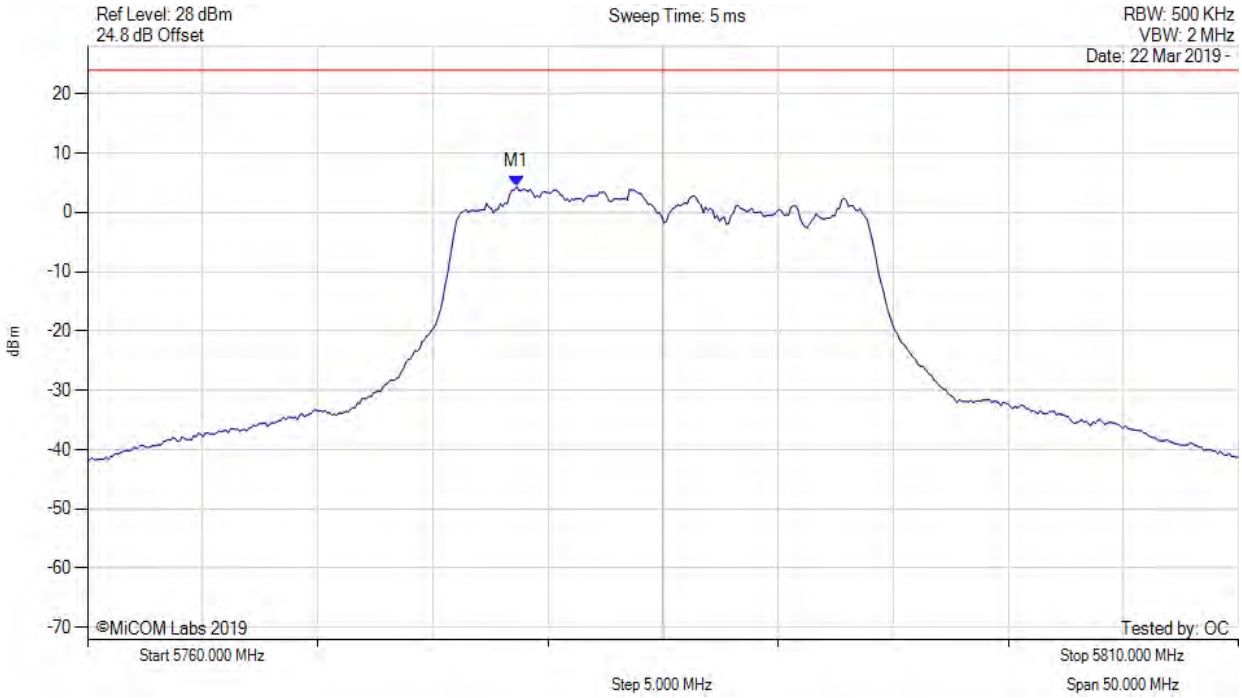
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5778.637 MHz : 4.316 dBm	Limit: ≤ 23.980 dBm

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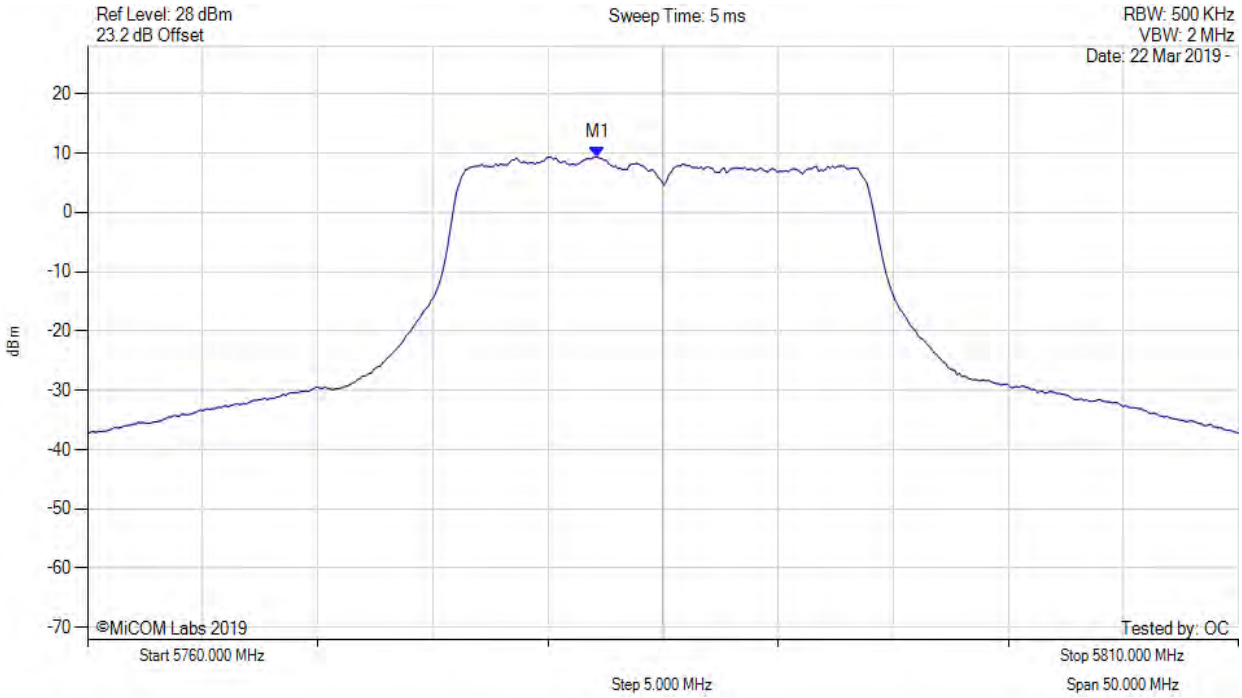
POWER SPECTRAL DENSITY

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



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

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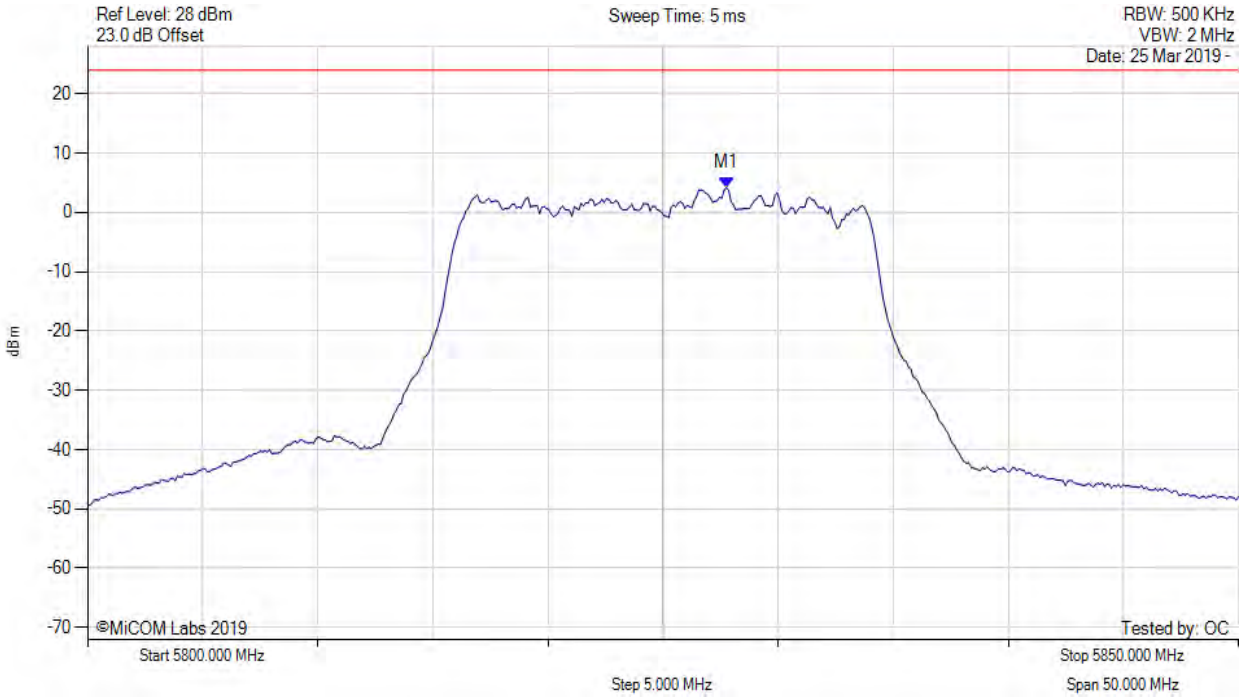
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5827.756 MHz : 4.199 dBm	Limit: ≤ 23.980 dBm

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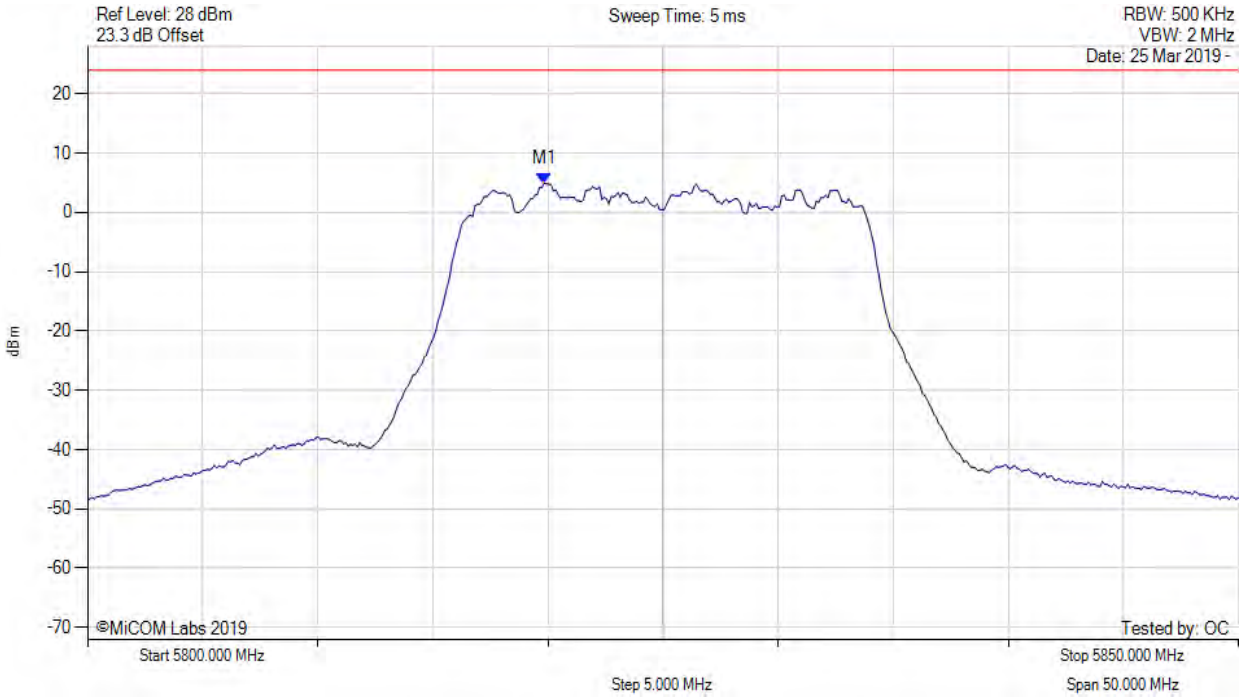
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5819.840 MHz : 4.909 dBm	Limit: ≤ 23.980 dBm

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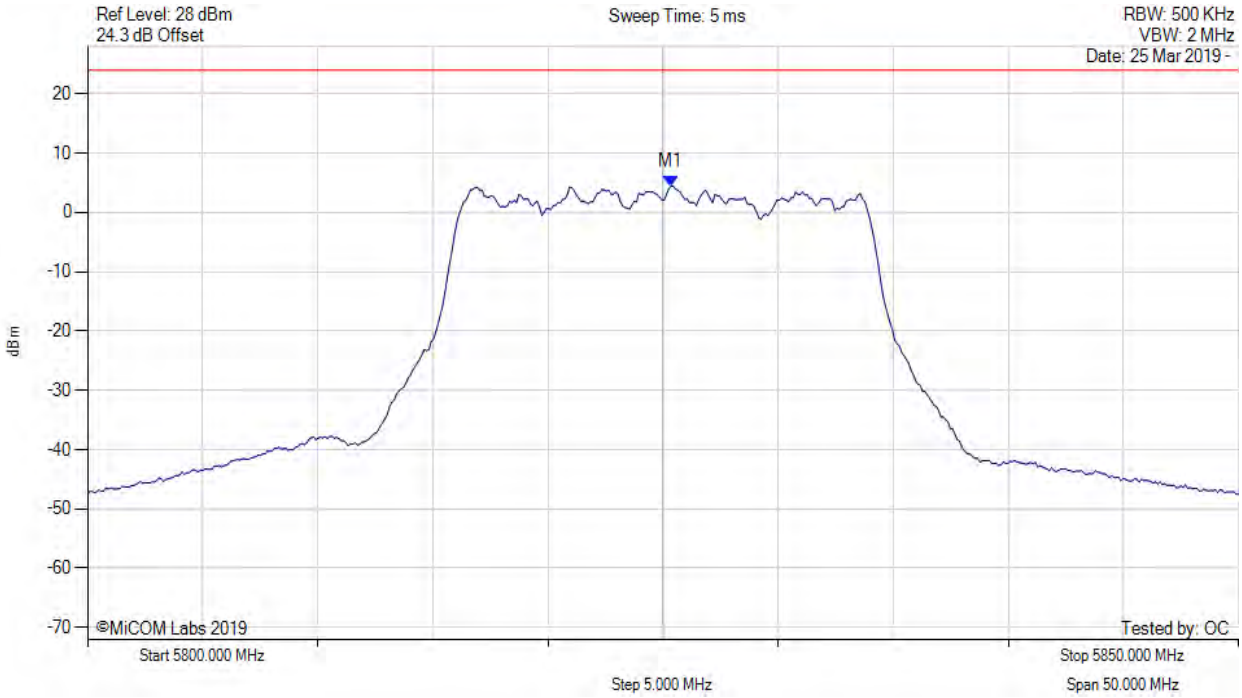
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5825.351 MHz : 4.463 dBm	Limit: ≤ 23.980 dBm

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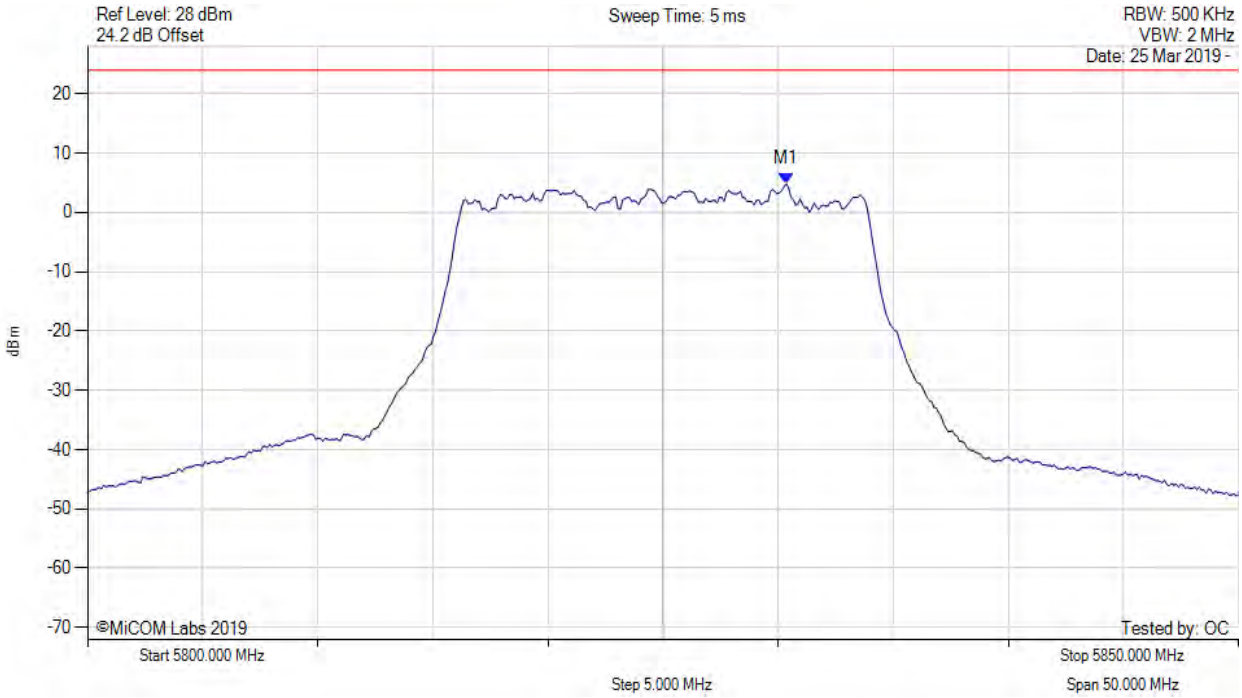
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5830.361 MHz : 4.830 dBm	Limit: ≤ 23.980 dBm

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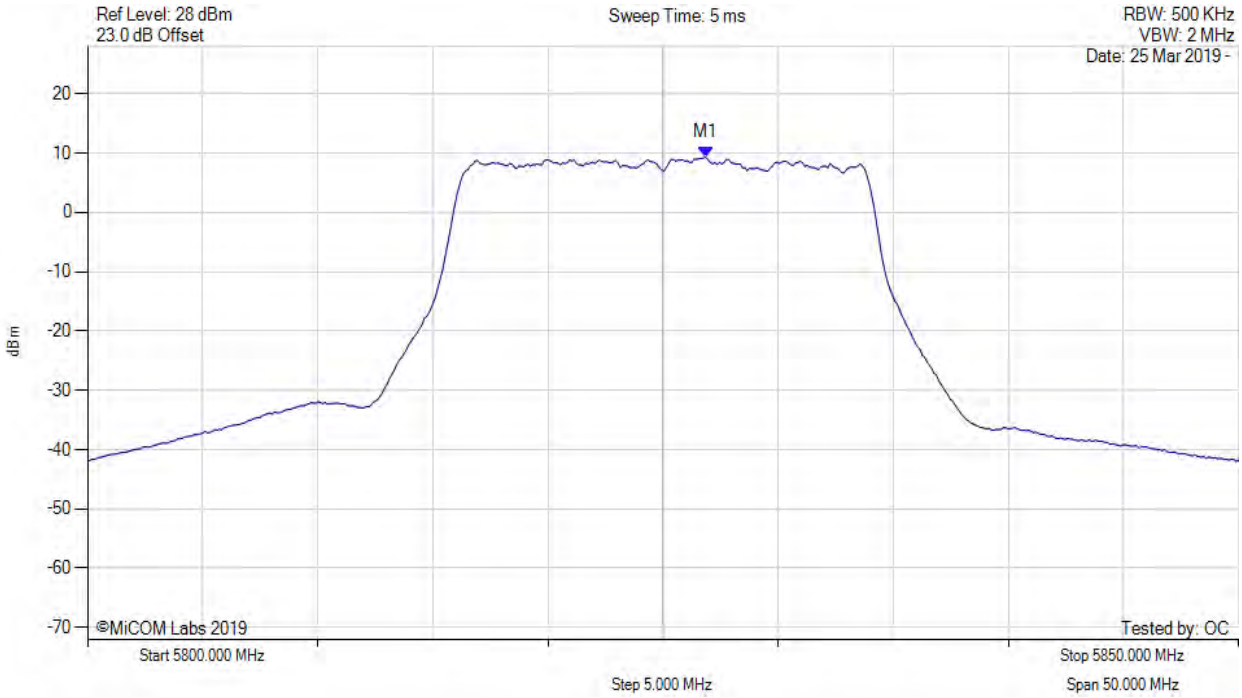
POWER SPECTRAL DENSITY

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



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

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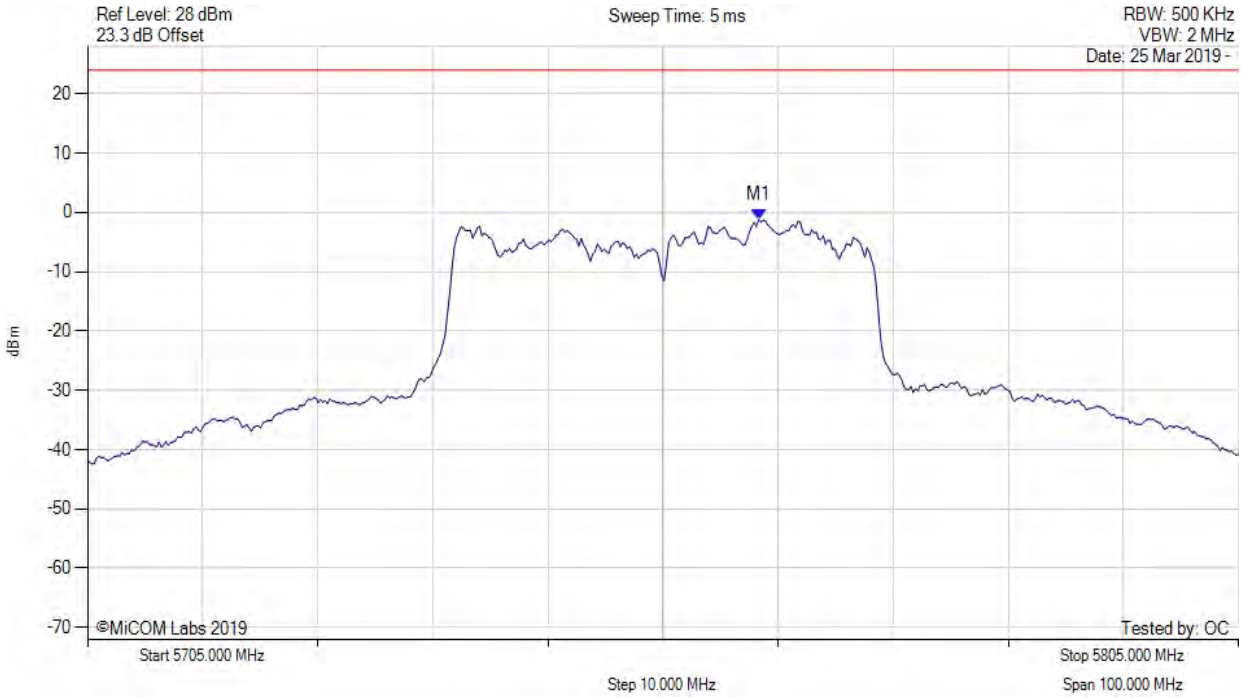
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5763.317 MHz : -1.276 dBm	Limit: ≤ 23.980 dBm

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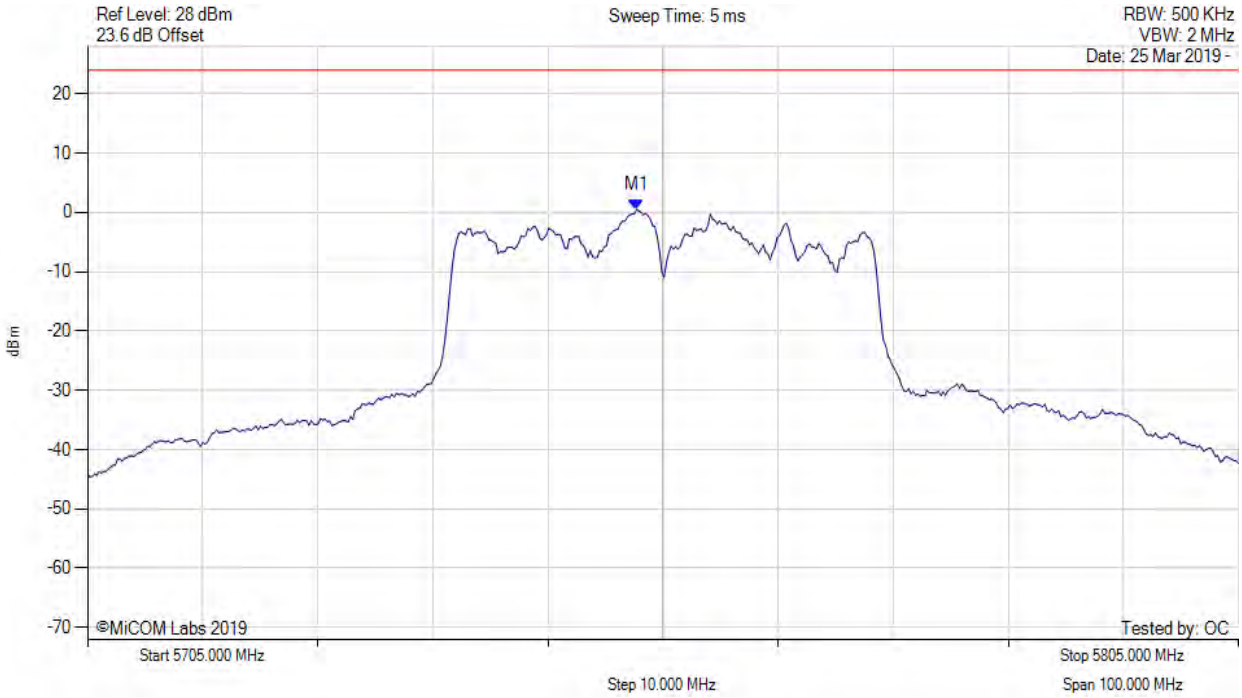
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5752.695 MHz : 0.433 dBm	Limit: ≤ 23.980 dBm

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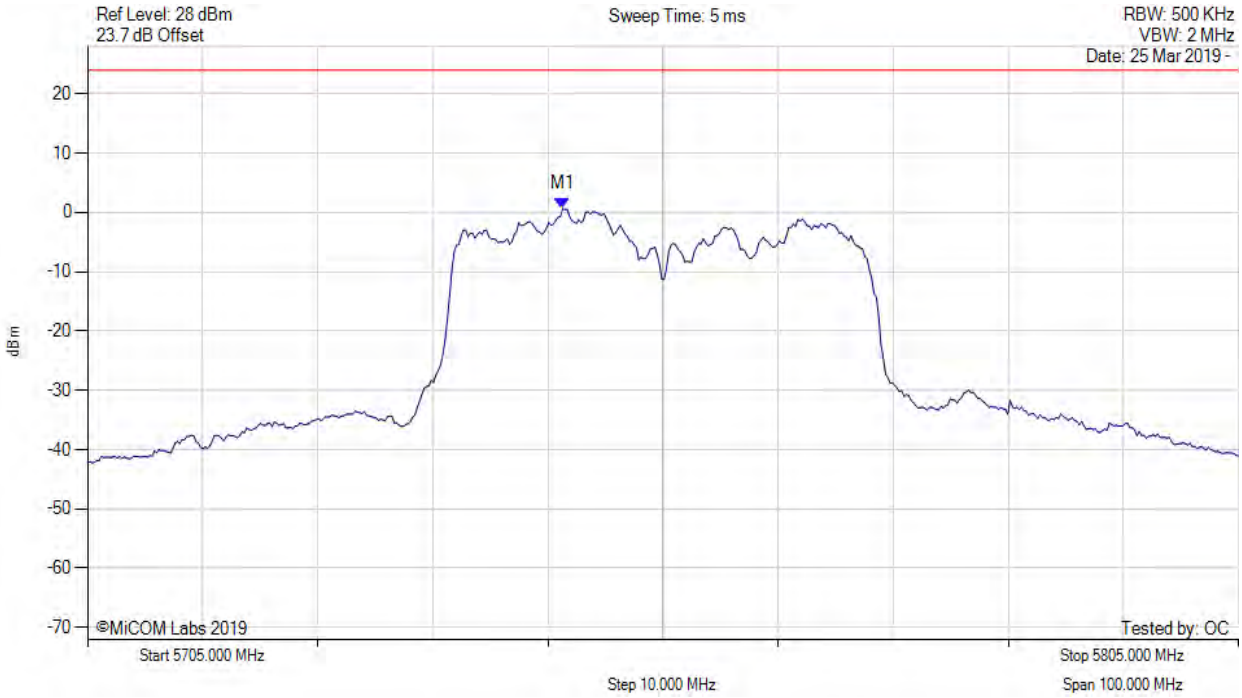
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5746.283 MHz : 0.575 dBm	Limit: ≤ 23.980 dBm

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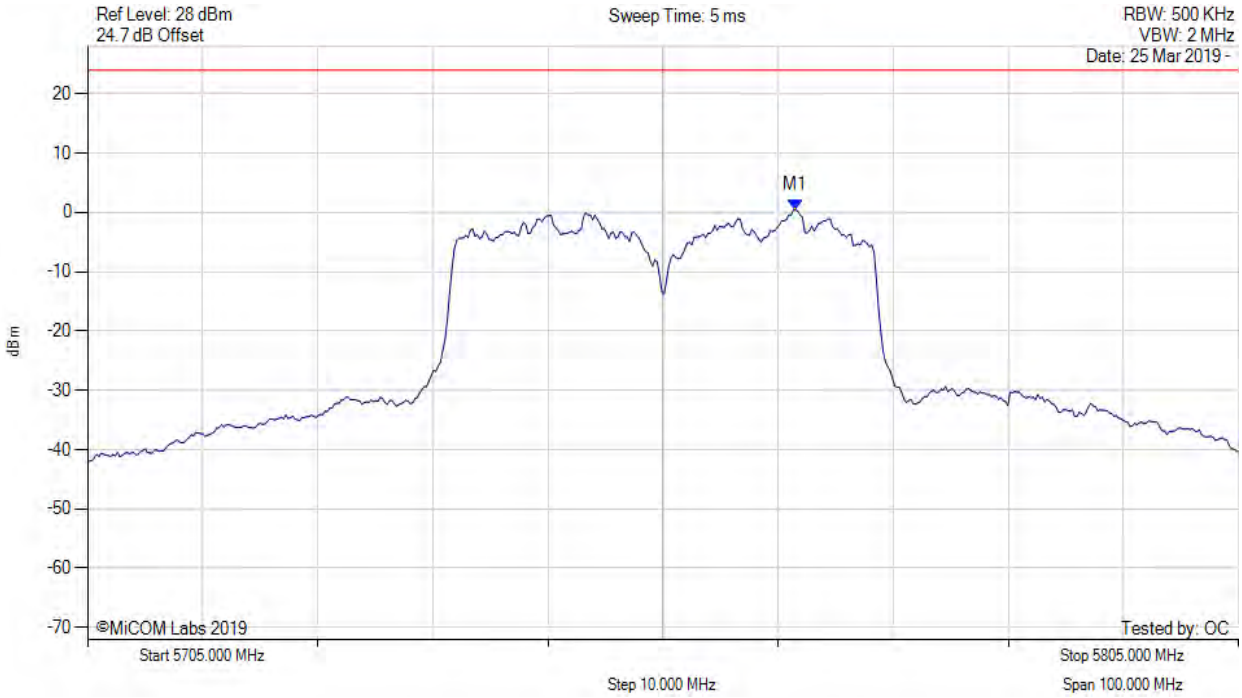
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5766.523 MHz : 0.391 dBm	Limit: ≤ 23.980 dBm

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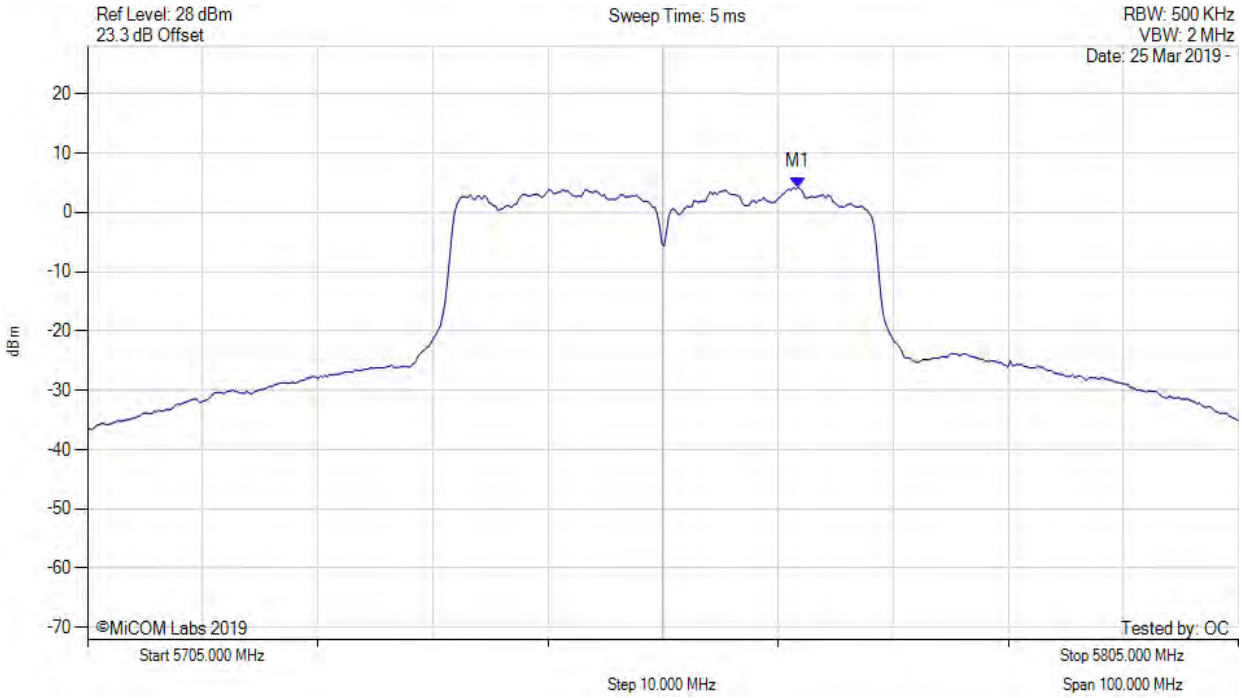
POWER SPECTRAL DENSITY

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



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

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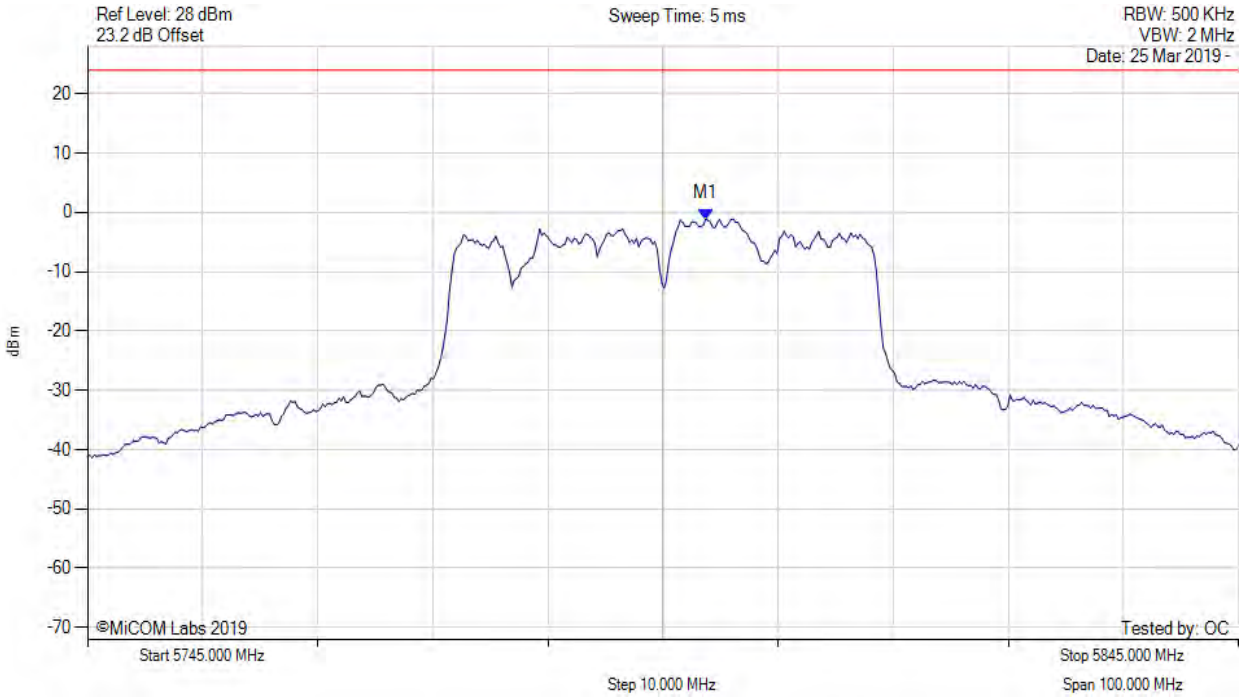
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5798.707 MHz : -1.116 dBm	Limit: ≤ 23.980 dBm

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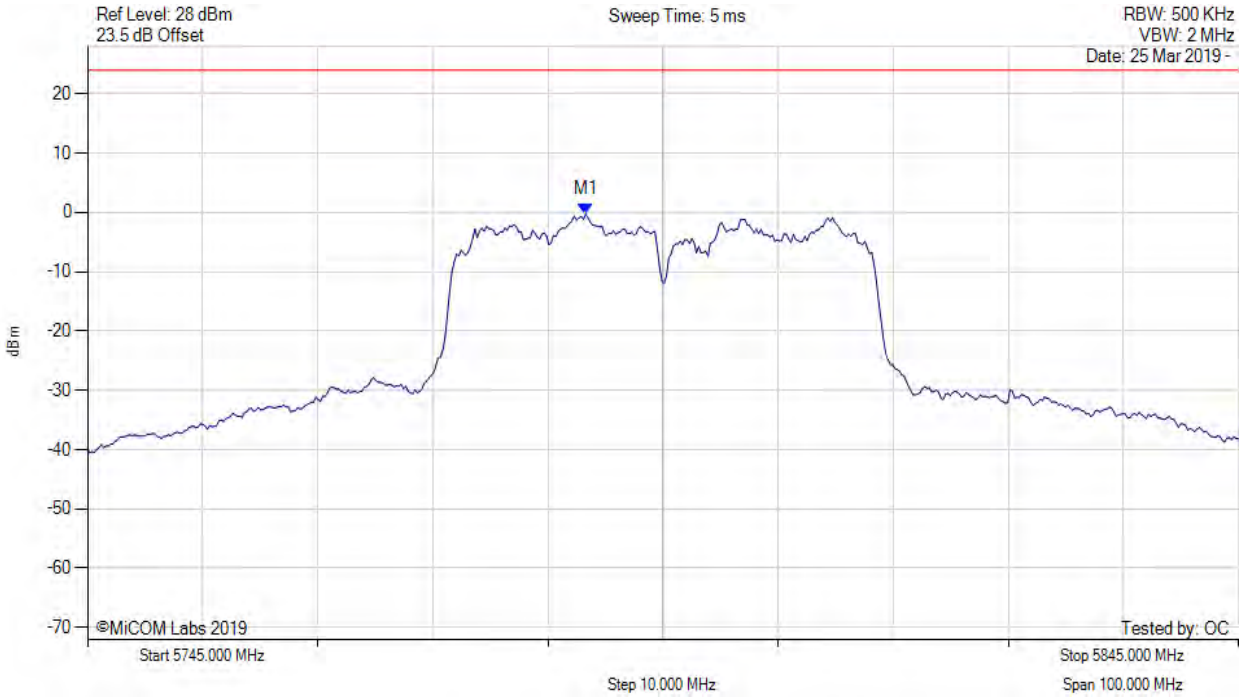
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5788.287 MHz : -0.335 dBm	Limit: ≤ 23.980 dBm

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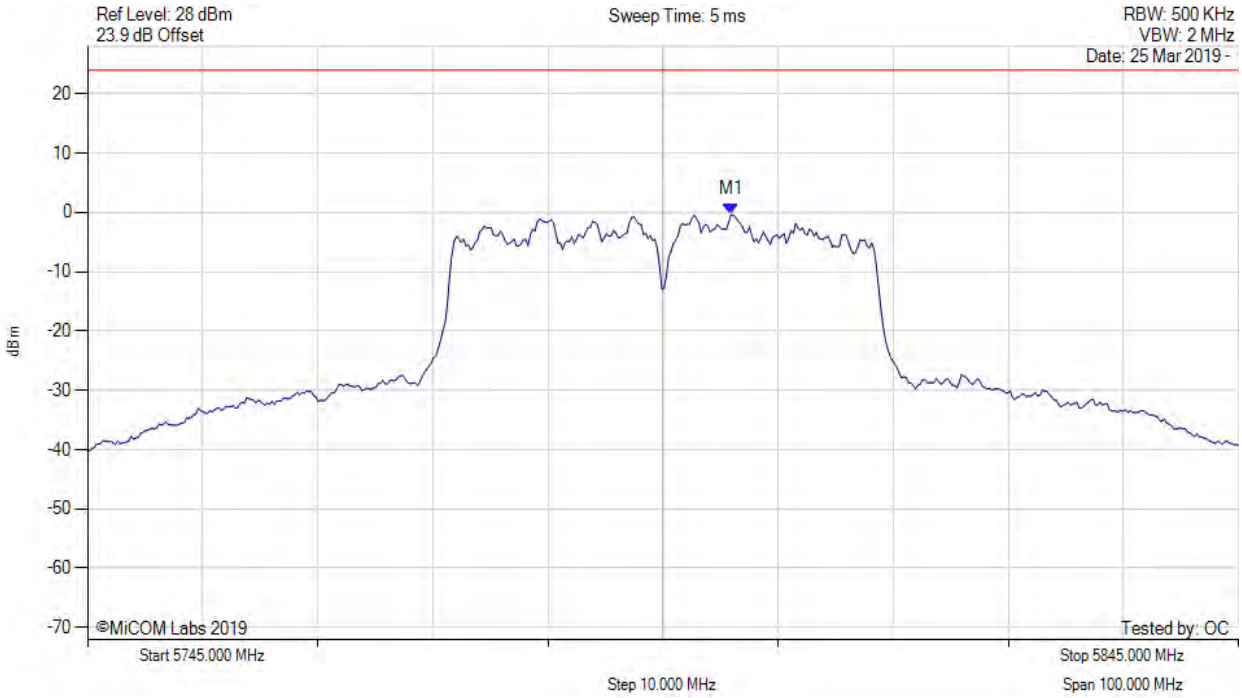
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5800.912 MHz : -0.396 dBm	Limit: ≤ 23.980 dBm

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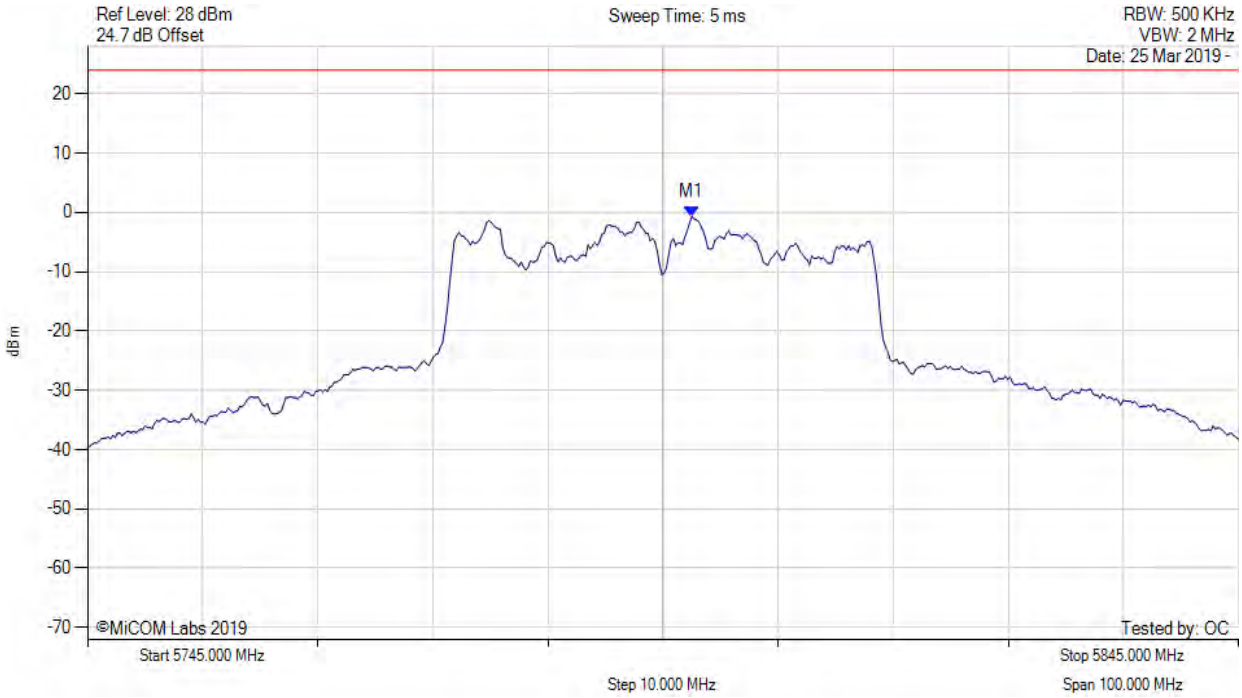
POWER SPECTRAL DENSITY

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 Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5797.505 MHz : -0.699 dBm	Limit: ≤ 23.980 dBm

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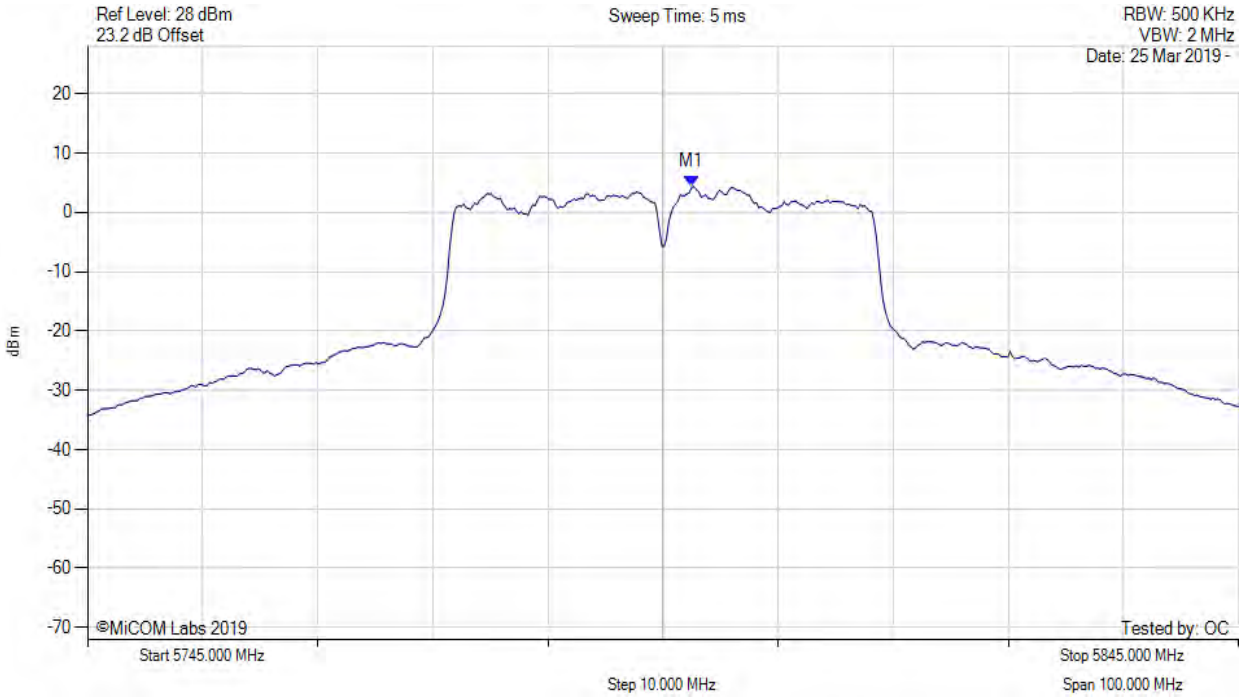
POWER SPECTRAL DENSITY

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



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

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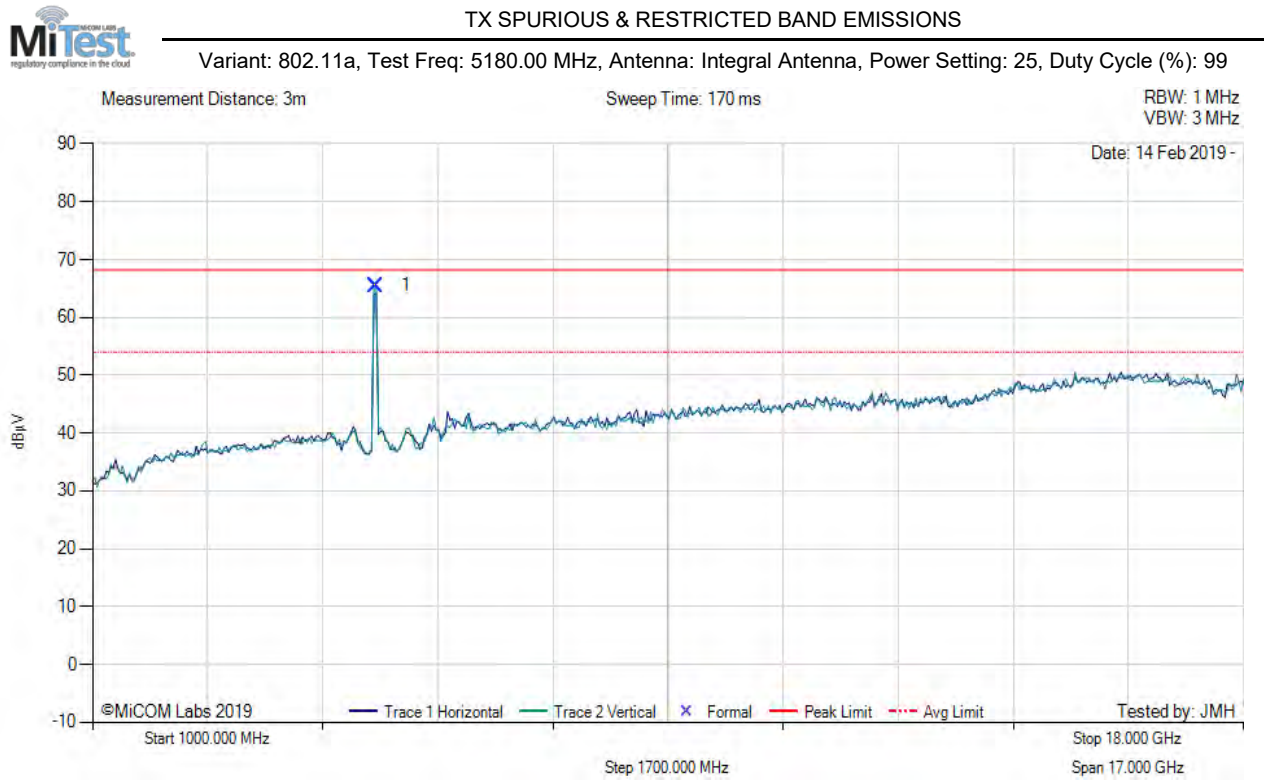
A.3. Radiated

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.

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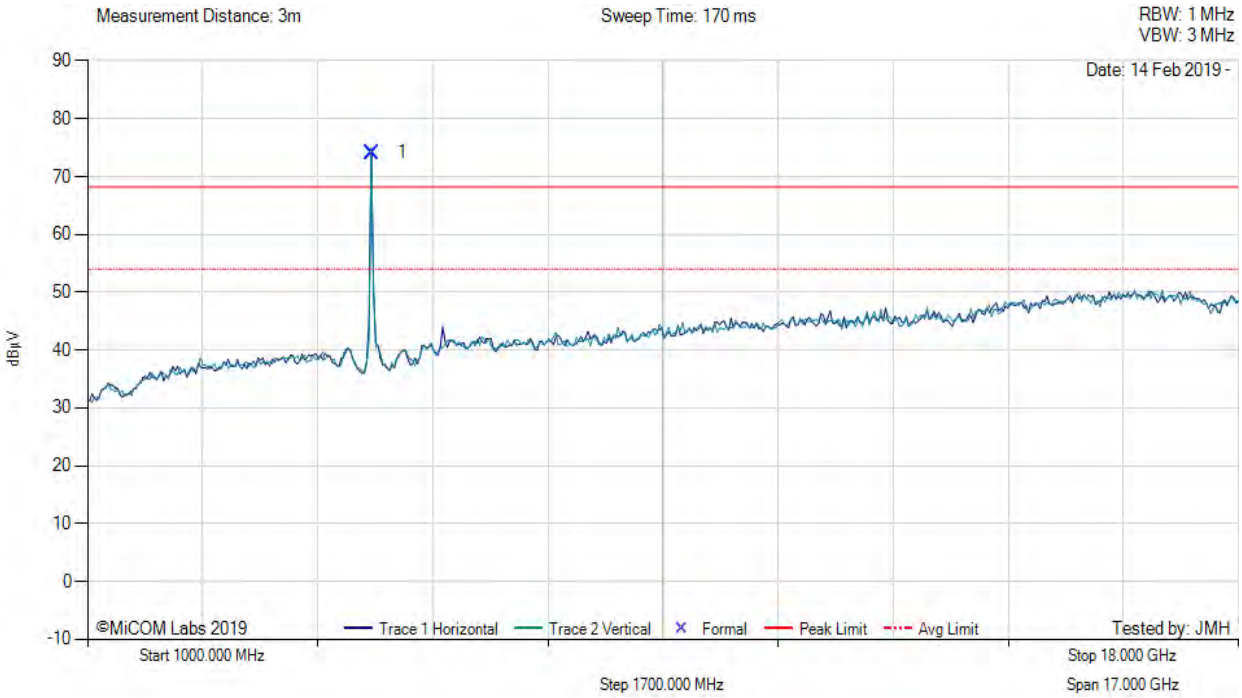
TX SPURIOUS & RESTRICTED BAND EMISSIONS

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.

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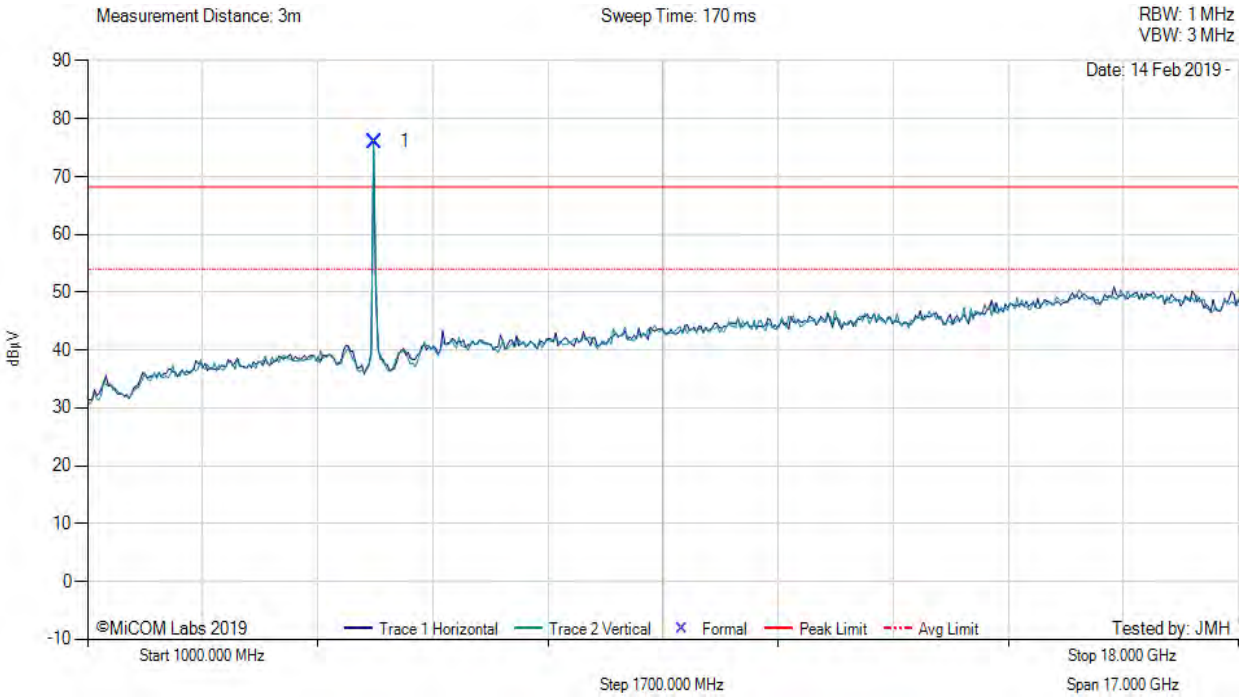
TX SPURIOUS & RESTRICTED BAND EMISSIONS

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.

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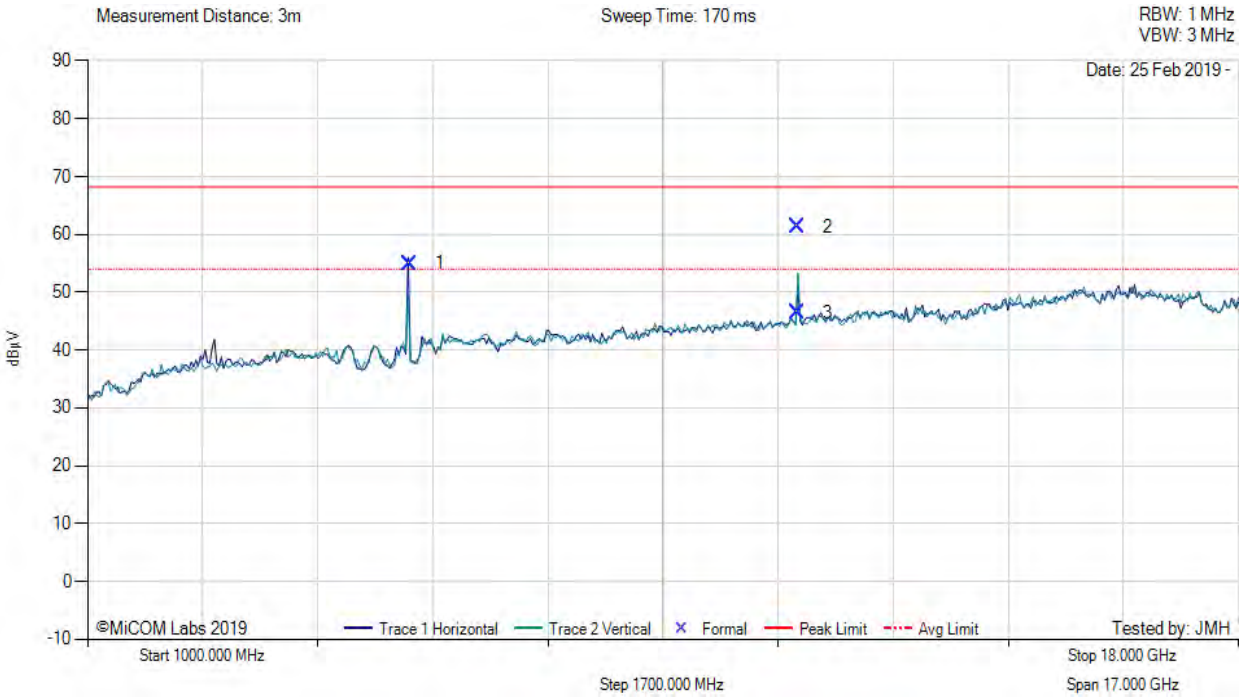
TX SPURIOUS & RESTRICTED BAND EMISSIONS

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

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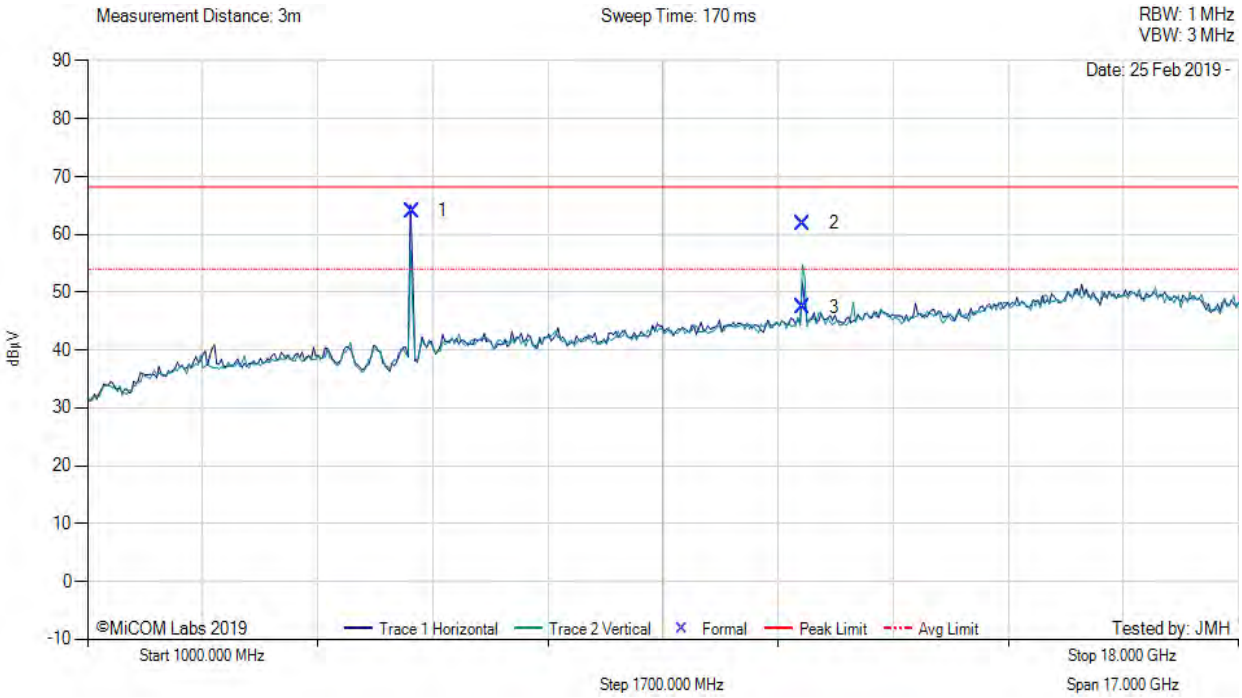
TX SPURIOUS & RESTRICTED BAND EMISSIONS

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

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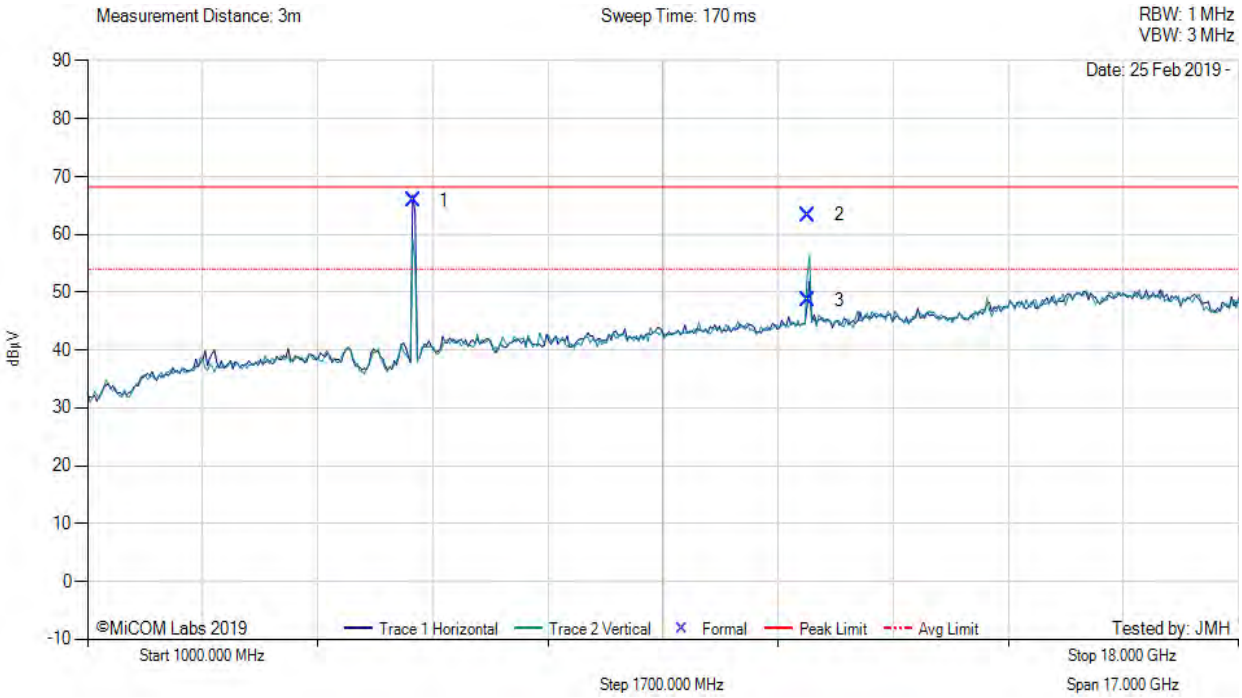
TX SPURIOUS & RESTRICTED BAND EMISSIONS

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

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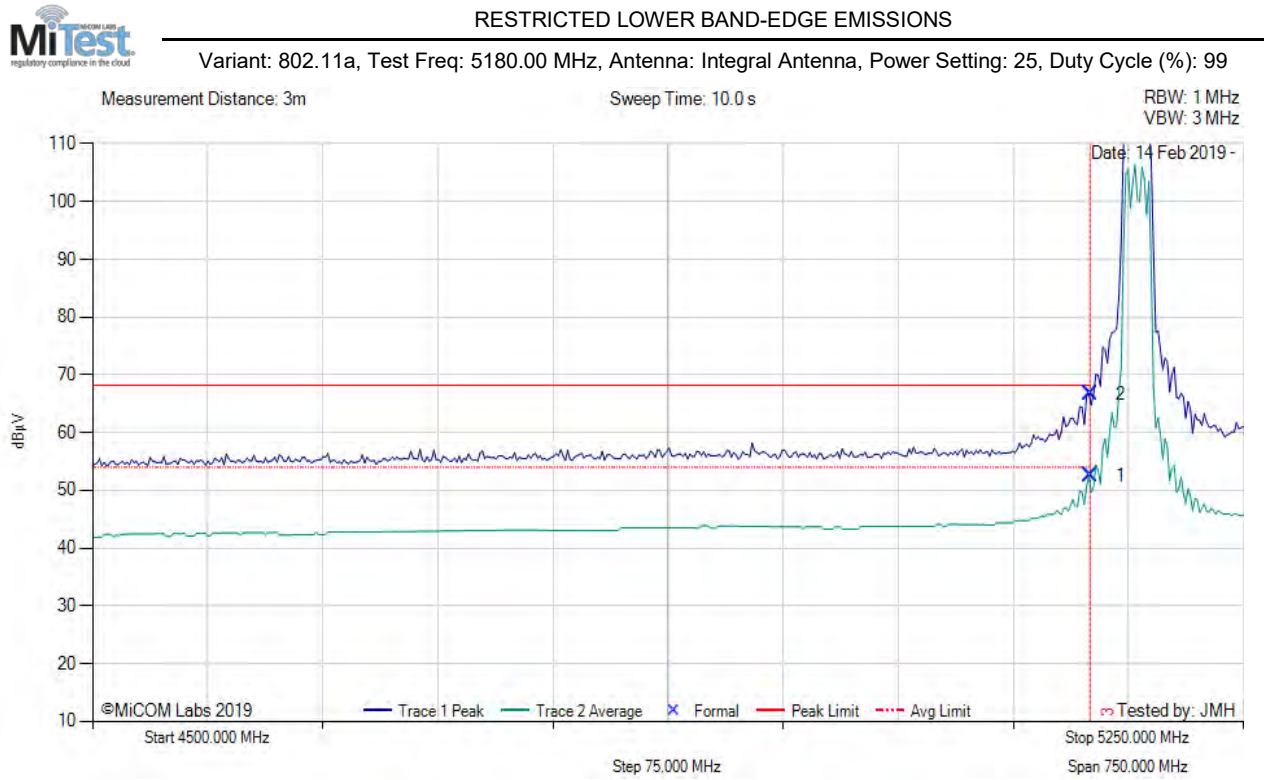
A.3.2. Restricted Edge & Band-Edge Emissions

A.3.2.2. Integral Antenna



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

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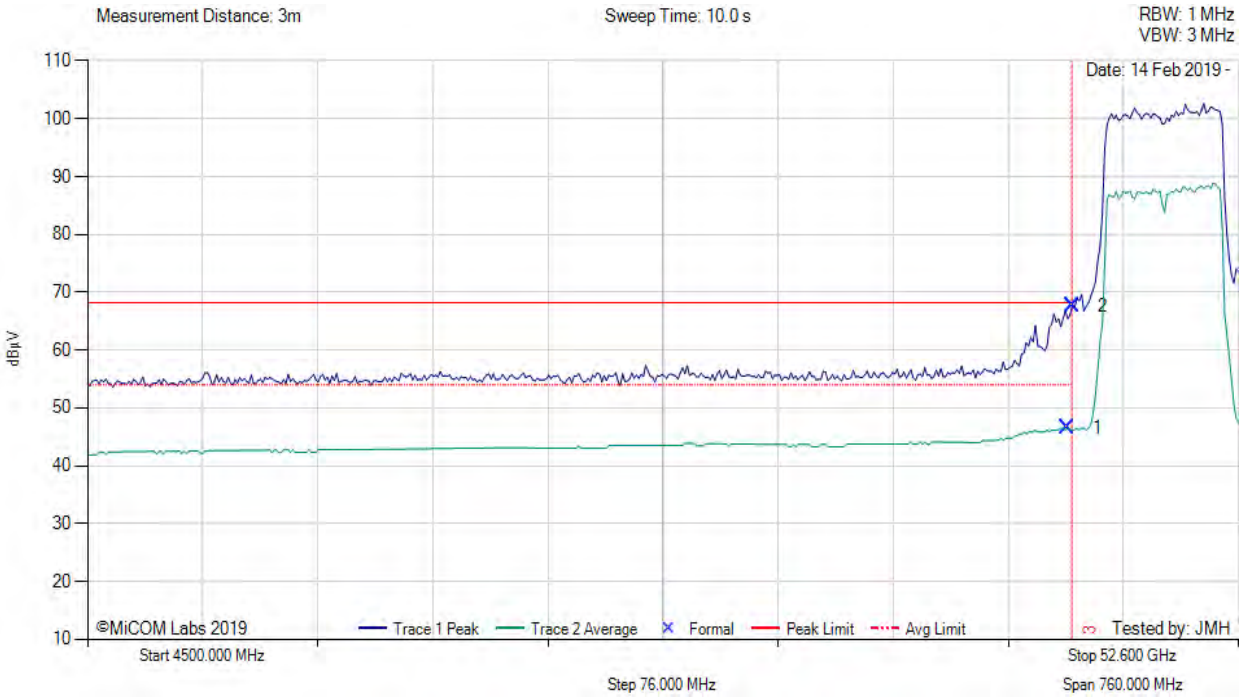
RESTRICTED LOWER BAND-EDGE EMISSIONS

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

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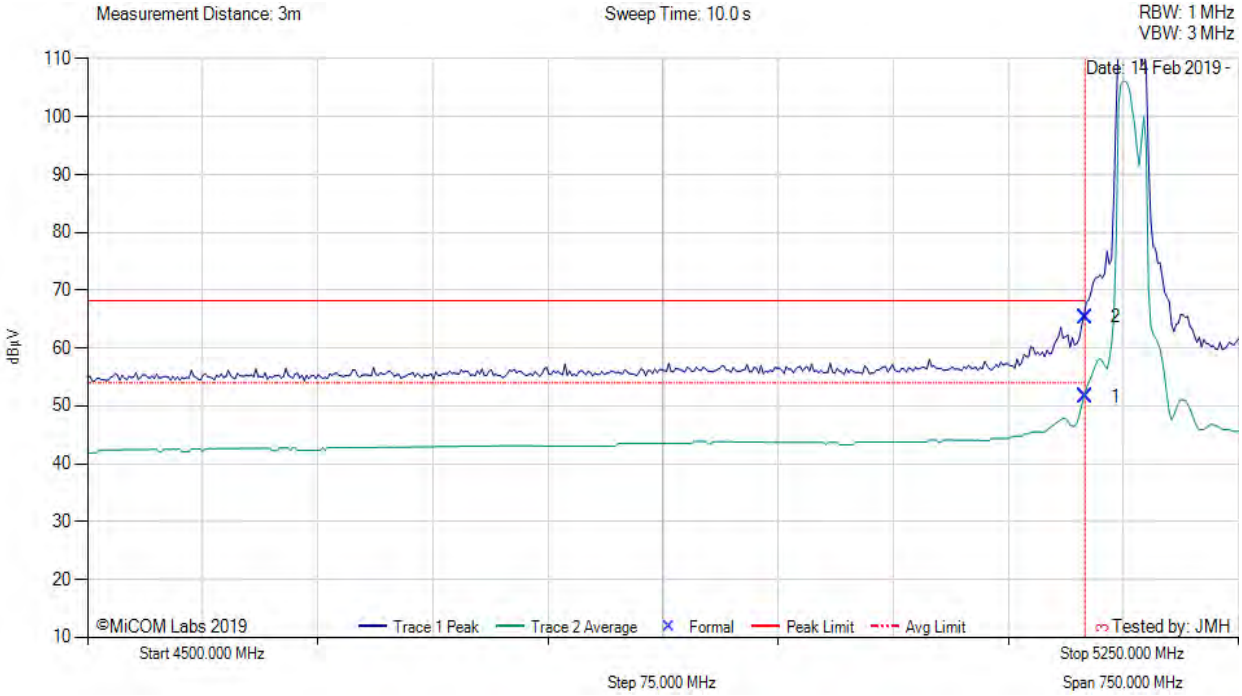
RESTRICTED LOWER BAND-EDGE EMISSIONS

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

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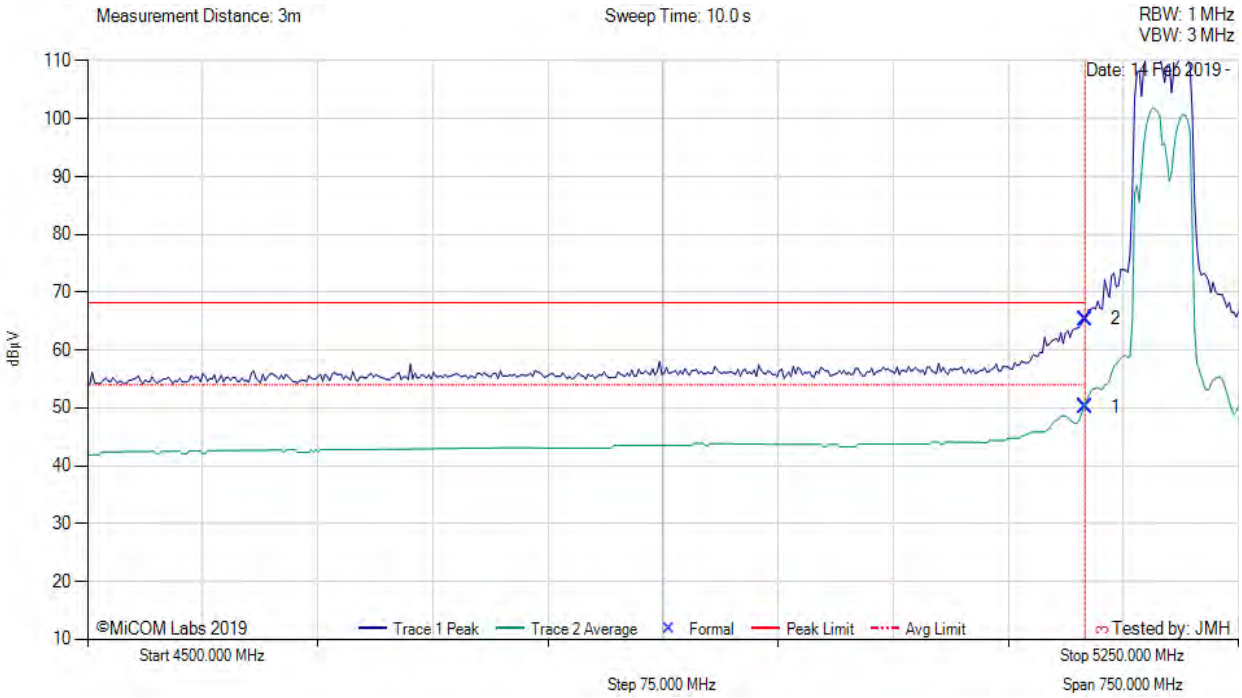
RESTRICTED LOWER BAND-EDGE EMISSIONS

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

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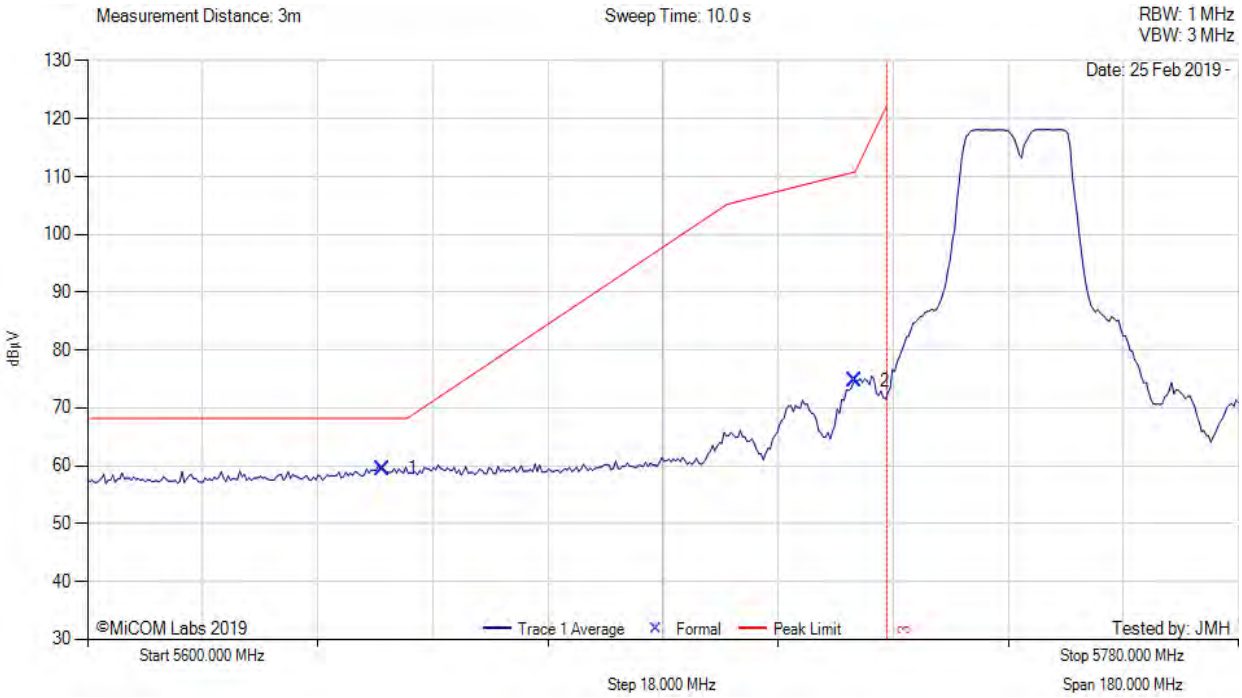
5725 MHz RADIATED BAND-EDGE EMISSIONS

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.

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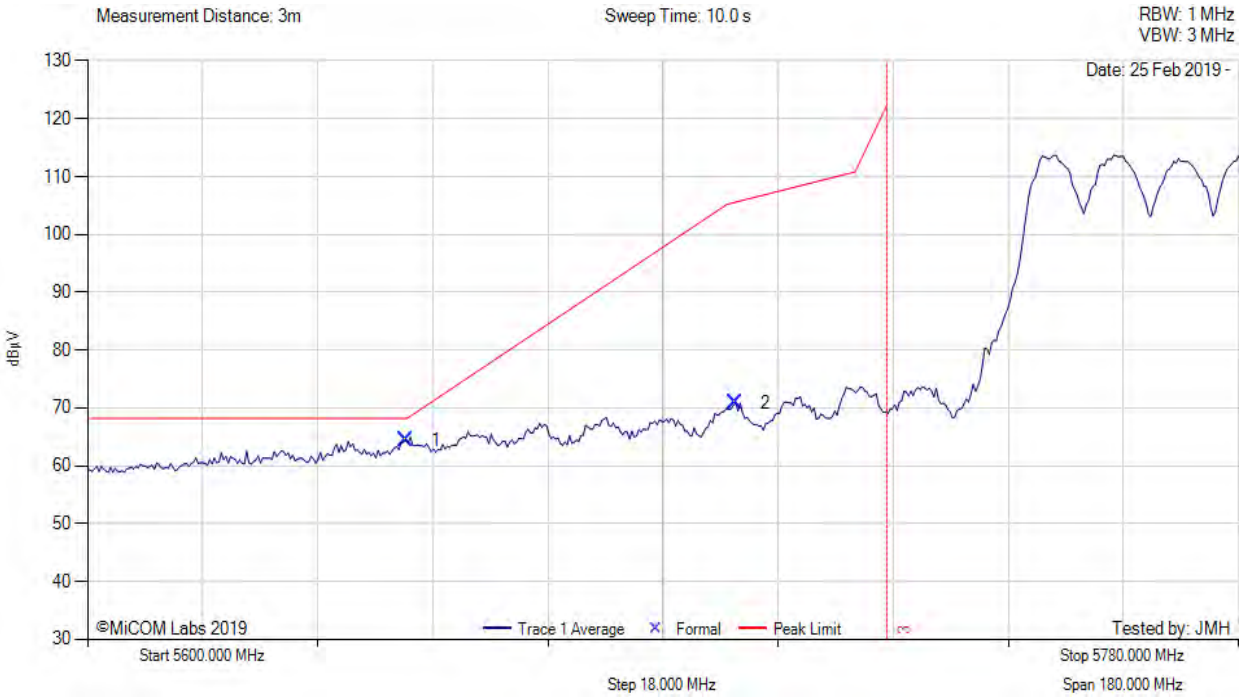
5725 MHz RADIATED BAND-EDGE EMISSIONS

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.

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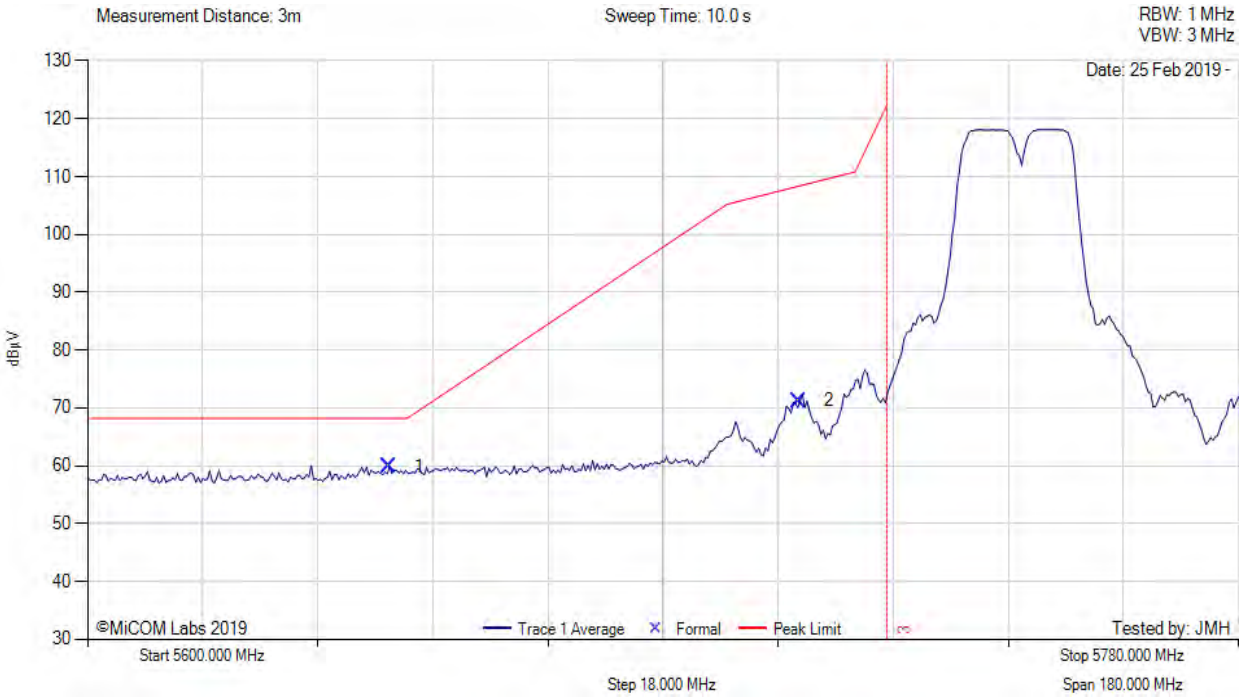
5725 MHz RADIATED BAND-EDGE EMISSIONS

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.

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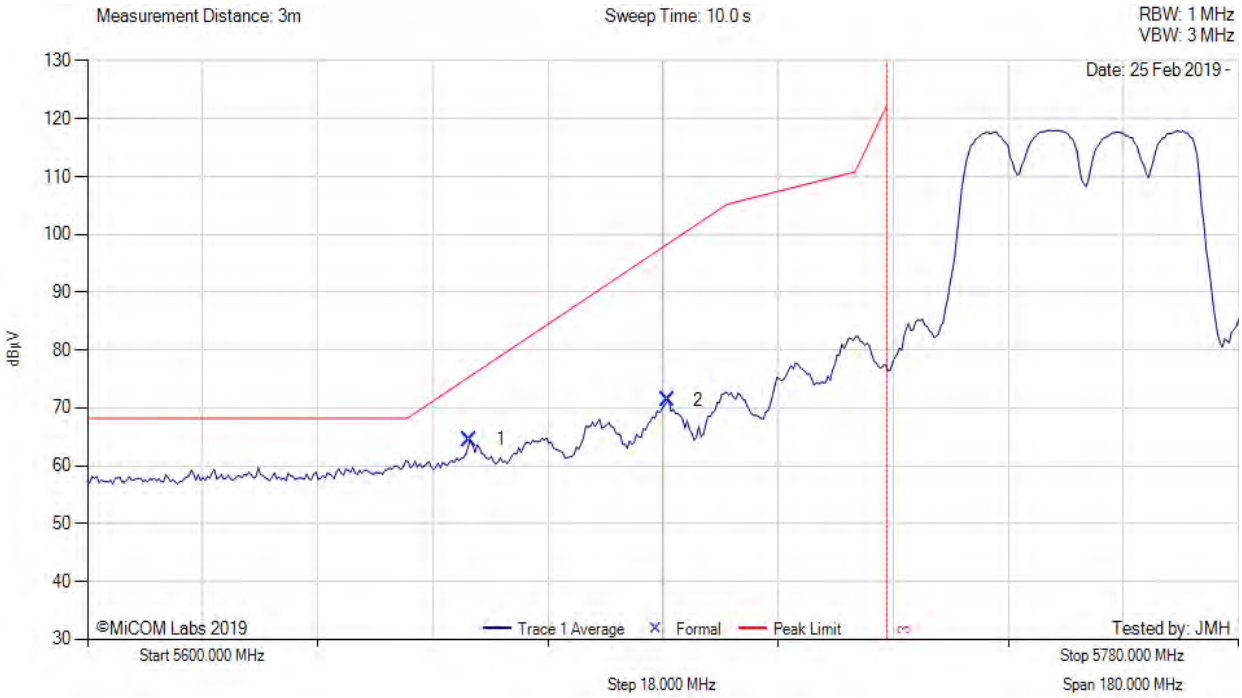
5725 MHz RADIATED BAND-EDGE EMISSIONS

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.

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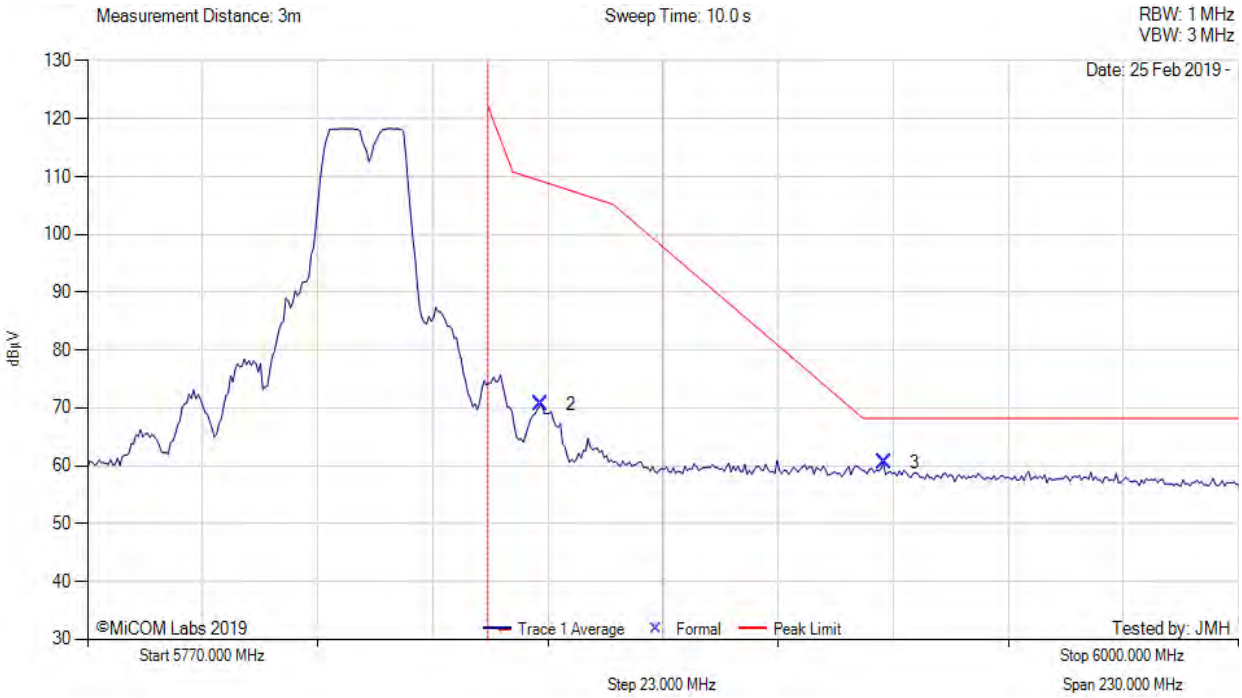
5850 MHz RADIATED BAND-EDGE EMISSIONS

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

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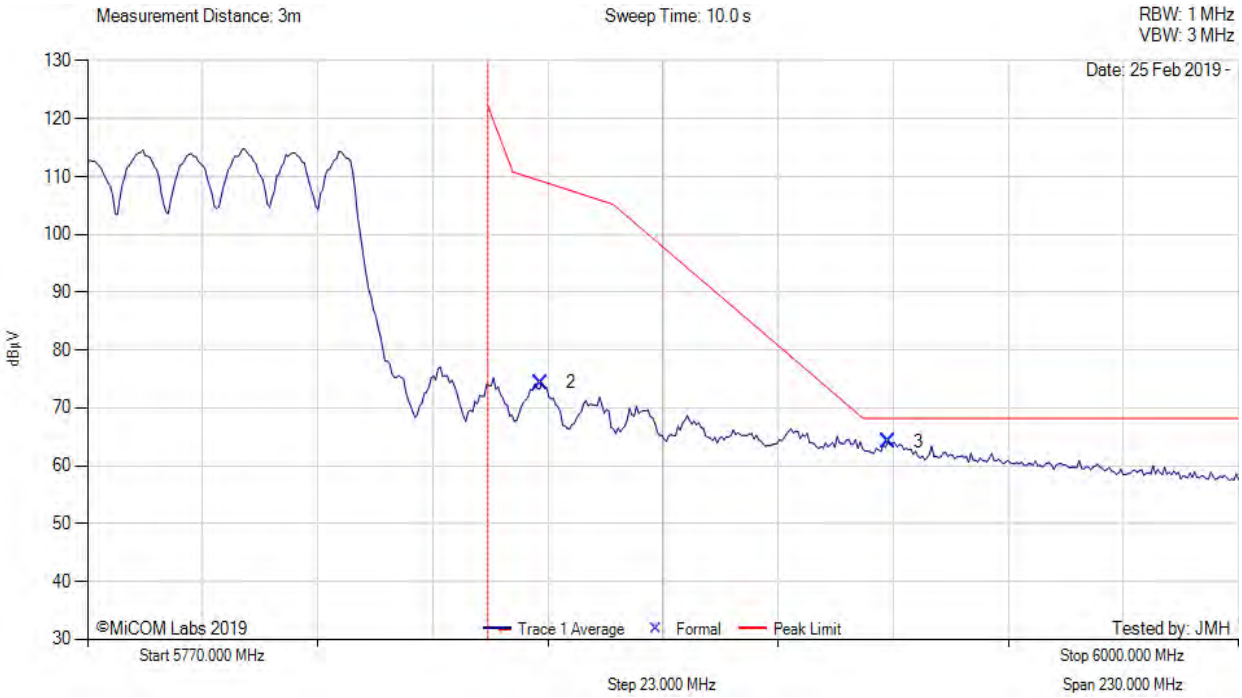
5850 MHz RADIATED BAND-EDGE EMISSIONS

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.

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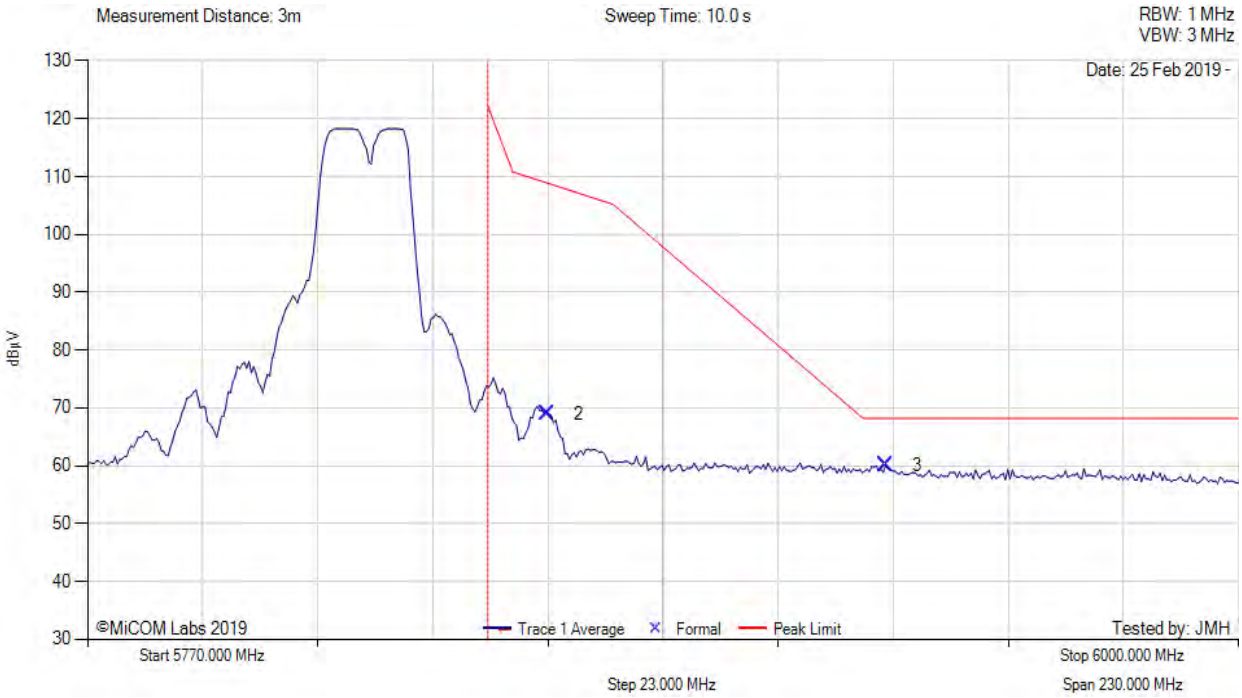
5850 MHz RADIATED BAND-EDGE EMISSIONS

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.

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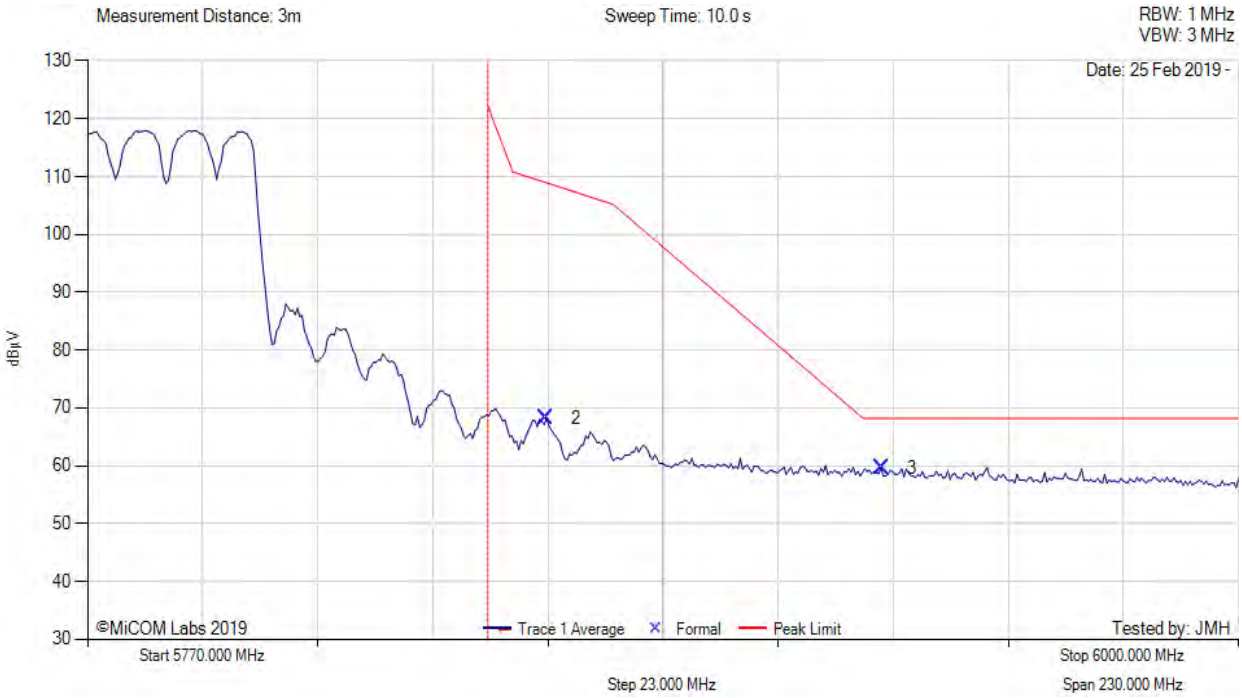
5850 MHz RADIATED BAND-EDGE EMISSIONS

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.

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