Company: MikroTik

Test of: RBD52G-5HacD2HnD-TC

To: FCC Part 15 Subpart E 15.407 & RSS-247

Report No.: MIKO65-U6 Rev A

COMPLETE TEST REPORT

TEST REPORT

FROM

MiCOM Labs
opening wireless markets

Test of: MikroTik RBD52G-5HacD2HnD-TC

To: FCC Part 15 Subpart E 15.407 & RSS-247

Test Report Serial No.: MIKO65-U6 Rev A

This report supersedes: NONE

Applicant:	MikroTik Aizkraukles iela 23 Riga, LV-1006 Latvia
Product function:	802.11b/g/n/ac wireless router
Issue Date:	22nd December 2017

This Test Report is Issued Under the Authority of:

MiCOM Labs, Inc.
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Pleasanton California 94566
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A2LA ACCREDITED
TESTING CERT #2381.01

MiCOM Labs is an ISO 17025 Accredited Testing Laboratory

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1. ACCREDITATION, LISTINGS & RECOGNITION

1.1. TESTING ACCREDITATION

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

ilac-MRA A2LA

Accredited Laboratory

A2LA has accredited

MICOM LABS

Pleasanton, CA

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009*).

Presented this 4th day of February 2016.

President and CEO
For the Accreditation Council
Certificate Number 2381.01
Valid to January 31, 2018
Revised November 22, 2017

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

1.2. RECOGNITION

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

Country	Recognition Body	Status	Phase	Identification No.
USA	Federal Communications Commission (FCC)	TCB	-	US0159 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

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 4th day of February 2016.

President and CEO
For the Accreditation Council
Certificate Number 2381.02
Valid to January 31, 2018
Revised November 22, 2017

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

United States of America – Telecommunication Certification Body (TCB)

Industry Canada – Certification Body, CAB Identifier – US0159

Europe – Notified Body (NB), NB Identifier - 2280

Japan – Recognized Certification Body (RCB), RCB Identifier - 210

2. DOCUMENT HISTORY

Document History		
Revision	Date	Comments
Draft	13th December 2017	Draft for client review.
Rev A	22nd December 2017	Initial release.
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In the above table the latest report revision will replace all earlier versions.

3. TEST RESULT CERTIFICATE

Manufacturer:	MikroTik Aizkraukles iela 23 Riga LV 1006 Latvia	**Tested By:**	MiCOM Labs, Inc. 575 Boulder Court Pleasanton California 94566 USA
Model:	MikroTik hAP ac	**Telephone:**	+1 925 462 0304
		Fax:	+1 925 462 0306
Type Of Equipment:	WLAN Access Point		
S/N's:	8588078BA3C2		
Test Date(s):	31st October – 30th November 2017	**Website:**	www.micomlabs.com

STANDARD(S)	TEST RESULTS
FCC Part 15 Subpart E 15.407 & RSS-247	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:

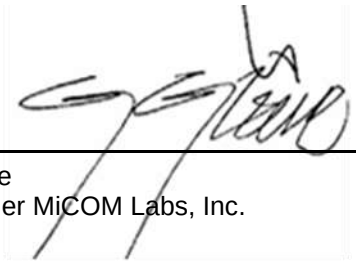
1. This document reports conditions under which testing was conducted and the results of testing performed.

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

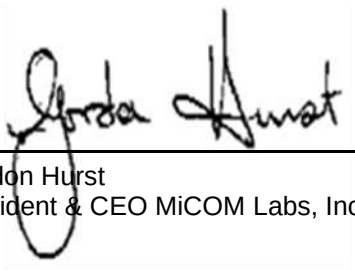
3. Test results apply only to the item(s) tested.

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.

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	KDB 789033 D02 v01r04	2nd May 2017	Guidelines for compliance testing of Unlicensed National Information Infrastructure (U-NII) Devices (Part 15, Subpart E)
V	A2LA	August 2017	R105 - Requirement's When Making Reference to A2LA Accreditation Status
VI	ANSI C63.10	2013	American National Standard for Testing Unlicensed Wireless Devices
VII	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
VIII	CISPR 32	2015	Electromagnetic compatibility of multimedia equipment - Emission requirements
IX	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
X	FCC 06-96	Jun 30 2006	Memorandum Opinion and Order
XI	FCC 47 CFR Part 15.407	2016	Radio Frequency Devices; Subpart E –Unlicensed National Information Infrastructure Devices
XII	ICES-003	Issue 6 Jan 2016; Updated April 2017	Spectrum Management and Telecommunications; Interference-Causing Equipment Standard. Information Technology Equipment (Including Digital Apparatus) – Limits and methods of measurement.
XIII	M 3003	Edition 3 Nov.2012	Expression of Uncertainty and Confidence in Measurements
XIV	RSS-247 Issue 2	Feb 2017	Digital Transmission Systems (DTSs), Frequency Hopping System (FHSs) and Licence-Exempt Local Area Network (LE-LEN) Devices
XV	RSS-Gen Issue 4	November 2014	General Requirements and Information for the Certification of Radiocommunication Equipment
XVI	KDB 644545 D03 v01	August 14th 2014	Guidance for IEEE 802.11ac New Rules
XVII	FCC 47 CFR Part 2.1033	2016	FCC requirements and rules regarding photographs and test setup diagrams.
XVIII	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.

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.

5. PRODUCT DETAILS AND TEST CONFIGURATIONS

5.1. Technical Details

Details	Description
Purpose:	Test of the MikroTik RBD52G-5HacD2HnD-TC to FCC Part 15 Subpart E 15.407 & RSS-247.
Applicant:	MikroTik Aizkraukles iela 23 Riga LV 1006 Latvia
Manufacturer:	MikroTik
Laboratory performing the tests:	MiCOM Labs, Inc. 575 Boulder Court Pleasanton California 94566 USA
Test report reference number:	MIKO65-U6 Rev A
Date EUT received:	30th October 2017
Standard(s) applied:	FCC Part 15 Subpart E 15.407 & RSS-247
Dates of test (from - to):	31st October – 30th November 2017
No of Units Tested:	2
Product Family Name:	RouterBOARD
Model(s):	RBD52G-5HacD2HnD-TC
Location for use:	Indoors
Declared Frequency Range(s):	5150 - 5250 MHz; 5725 - 5850 MHz;
Type of Modulation:	OFDM
EUT Modes of Operation:	802.11a, 802.11ac-80, 802.11n HT-20, 802.11n HT-40
Declared Nominal Output Power (dBm):	27.0
Transmit/Receive Operation:	Transceiver Half Duplex
Rated Input Voltage and Current:	POE adaptor sold with unit 24 Vdc AC/DC adaptor sold with unit 24 Vdc
Operating Temperature Range:	Declared Range -20°C to 35°C
ITU Emission Designator:	802.11a: 42M8D1D 802.11n HT-20: 43M6D1D 802.11n HT-40: 68M1D1D 802.11ac-80: 76M9D1D
Equipment Dimensions:	34 mm x 119 mm x 99 mm
Weight:	0.17 Kg
Hardware Rev:	r2
Software Rev:	WinBox 6.40.4 on hAP ac^2(arm)

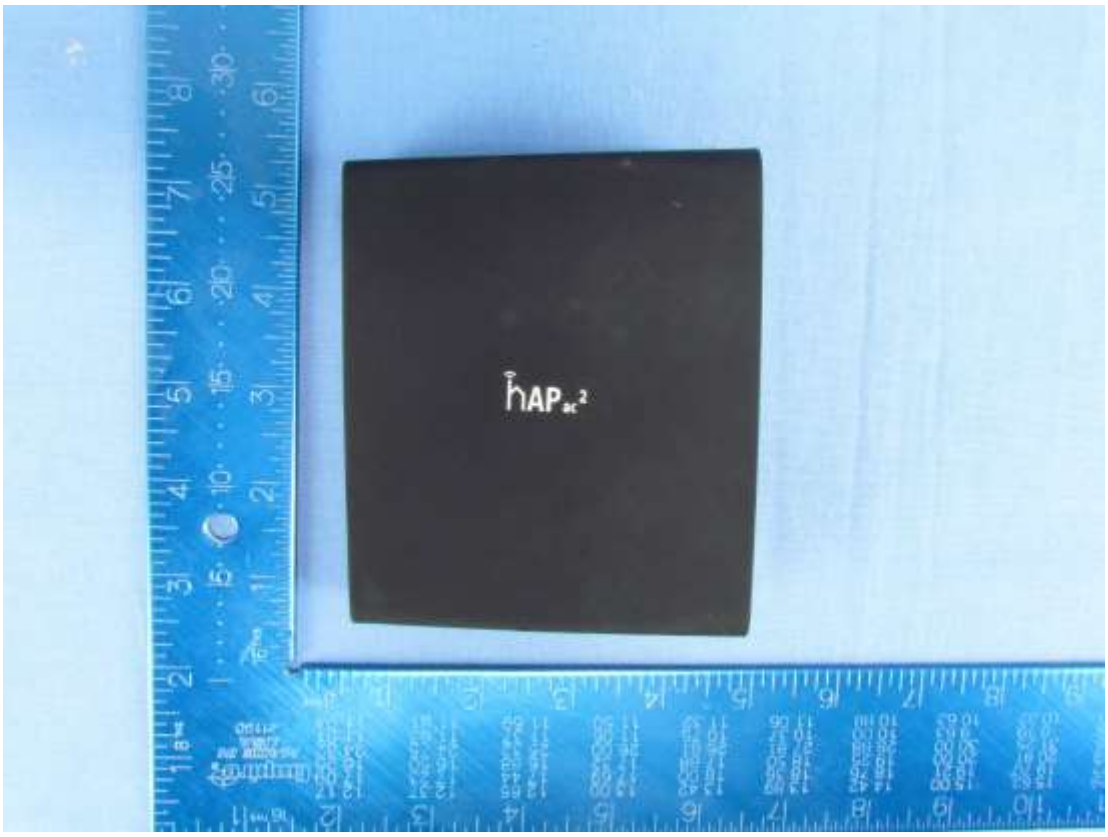
5.2. Scope Of Test Program

MikroTik RBD52G-5HacD2HnD-TC
The scope of the test program was to test the MikroTik RBD52G-5HacD2HnD-TC configurations in the frequency ranges 5150 - 5250 MHz; 5725 - 5850 MHz; for compliance against the following specification:

FCC Part 15 Subpart E 15.407 & RSS-247
Compliance Measurement Procedures for Unlicensed National Information Infrastructure devices operating in the 5150 to 5250 MHz and 5725 to 5850 MHz bands.

Industry Canada RSS-247
This Radio Standard Specification sets out certification requirements for radio apparatus operating in the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz employing frequency hopping, digital modulation and/or a combination (hybrid) of both techniques. It also includes licence-exempt local area network (LE-LAN) devices operating in the bands 5150-5250 MHz, 5250-5350 MHz, 5470-5725 MHz and 5725-5850 MHz as specified in SP-5150 MHz.

MikroTik RBD52G-5HacD2HnD-TC



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

Type	Description	Manf	Model	Serial No.	Delivery Date
EUT	802.11b/g/n/ac wireless router	MikroTik	RBD52G-5HacD2HnD-TC	8588078BA3C2	6th November 2017
Support	Laptop PC	DELL	E7450	None	N/A

5.4. Antenna Details

Type	Manufacturer	Gain (dBi)	BF Gain	Dir BW	X-Pol	Frequency Band (MHz)
integral	Mikrotik	2.5	-	360	-	5150 - 5250
integral	Mikrotik	2.5	-	360	-	5250 - 5350
integral	Mikrotik	2.5	-	360	-	5470 - 5725
integral	Mikrotik	2.5	-	360	-	5725 - 5850

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

5.5. Cabling and I/O Ports

Port Type	Max Cable Length (m)	# of Ports	Screened	Conn Type	Data Type	Bit Rate
Ethernet	3=<Cable<10	5	--	RJ45	Packet Data	10/100/1000
USB	Cable <3	1	--	USB-Type A	Digital	--

5.6. Test Configurations

Results for the following configurations are provided in this report:

Operational Mode(s)	Data Rate with Highest Power MBit/s	Channel Frequency (MHz)		
		Low	Mid	High
5150 - 5250 MHz				
802.11a	6.00	5180.00	5200.00	5240.00
802.11ac-80	29.30	5210.00	--	--
802.11n HT-20	6.50	5180.00	5200.00	5240.00
802.11n HT-40	13.50	5190.00	--	5230.00
5725 - 5850 MHz				
802.11a	6.00	5745.00	5785.00	5825.00
802.11ac-80	29.30	5775.00	--	--
802.11n HT-20	6.50	5745.00	5785.00	5825.00
802.11n HT-40	13.50	5755.00	--	5795.00

5.7. Equipment Modifications

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

5.8. Deviations from the Test Standard

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

6. TEST SUMMARY

List of Measurements

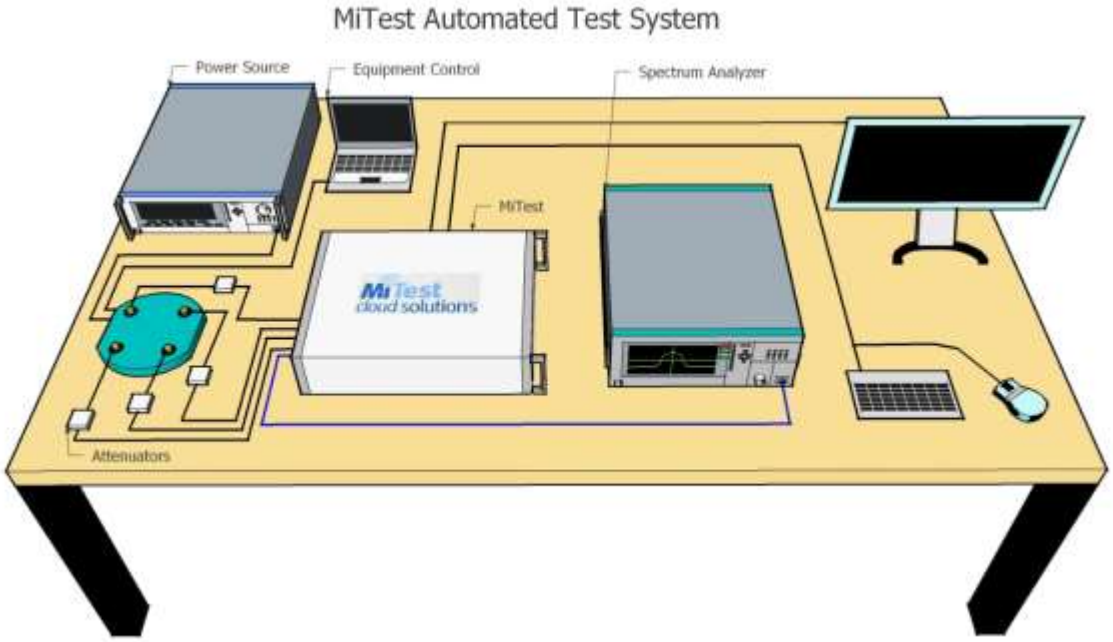
Test Header	Result	Data Link
Peak Transmit Power	Complies	View Data
26 dB & 99% Bandwidth	Complies	View Data
6 dB & 99% Bandwidth	Complies	View Data
Power Spectral Density	Complies	View Data
Radiated	Complies	-
TX Spurious & Restricted Band Emissions	Complies	View Data
Restricted Edge & Band-Edge Emissions	Complies	View Data
Digital Emissions	Complies	View Data
AC Wireline Emissions	Complies	View Data

7. TEST EQUIPMENT CONFIGURATION(S)

7.1. Conducted

Conducted RF Emission Test Set-up(s). The following tests were performed using the conducted test set-up shown in the diagram below.

1. Peak Transmit Power
2. 6 dB 99% Bandwidth
3. 26 dB 99% Bandwidth
4. Power Spectral Density



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

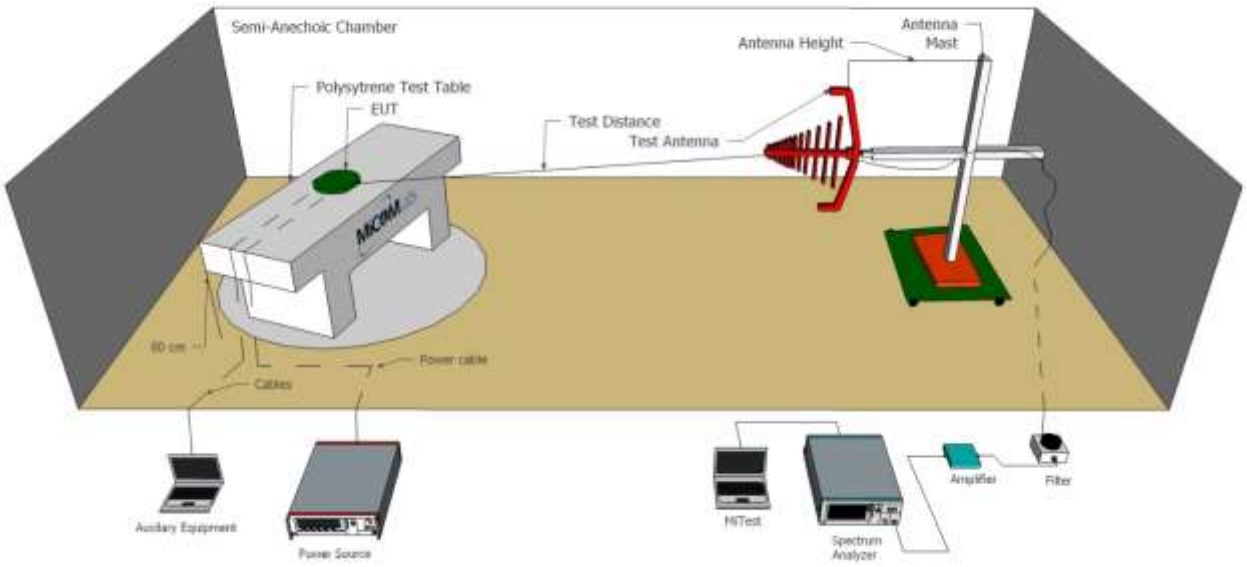
Asset#	Description	Manufacturer	Model#	Serial#	Calibration Due Date
127	Power Supply	HP	6674A	US36370530	Cal when used
158	Barometer/Thermometer	Control Company	4196	E2846	30 Nov 2018
248	Resistance Thermometer	Thermotronics	GR2105-02	9340 #1	30 Oct 2018
287	Rohde & Schwarz 40 GHz Receiver	Rhode & Schwarz	ESIB40	100201	2 May 2018
376	USB 10MHz - 18GHz Average Power Sensor	Agilent	U2000A	MY51440005	23 Oct 2018

381	4x4 RF Switch Box	MiCOM Labs	MiTest RF Switch Box	MIC002	8 Mar 2018
398	MiTest RF Conducted Test Software	MiCOM	MiTest ATS	Version 4.1	Not Required
419	Laptop with Labview Software	Lenova	W520	TS02	Not Required
420	USB to GPIB Interface	National Instruments	GPIB-USB HS	1346738	Not Required
440	USB Wideband Power Sensor	Boonton	55006	9178	22 Sep 2018
442	USB Wideband Power Sensor	Boonton	55006	9181	6 Oct 2018
445	PoE Injector	D-Link	DPE-101GL	QTAH1E2000625	Not Required
460	Dell Computer with installation of MiTest executable.	Dell	Optiplex330	BC944G1	Not Required
461	Spectrum Analyzer	Agilent	E4440A	MY46185537	20 Sep 2018
493	USB Wideband Power Sensor	Boonton	55006	9634	10 Mar 2018
494	USB Wideband Power Sensor	Boonton	55006	9726	10 Mar 2018
74	Environmental Chamber Chamber 3	Tenney	TTC	12808-1	28 Sep 2018
RF#2 GPIB#1	GPIB cable to Power Supply	HP	GPIB	None	Not Required
RF#2 SMA#1	EUT to Mitest box port 1	Flexco	SMA Cable port1	None	8 Mar 2018
RF#2 SMA#2	EUT to Mitest box port 2	Flexco	SMA Cable port2	None	8 Mar 2018
RF#2 SMA#3	EUT to Mitest box port 3	Flexco	SMA Cable port3	None	8 Mar 2018
RF#2 SMA#4	EUT to Mitest box port 4	Flexco	SMA Cable port4	None	8 Mar 2018
RF#2 SMA#SA	Mitest box to SA	Flexco	SMA Cable SA	None	8 Mar 2018
RF#2 USB#1	USB Cable to Mitest Box	Dynex	USB Cable	None	Not Required

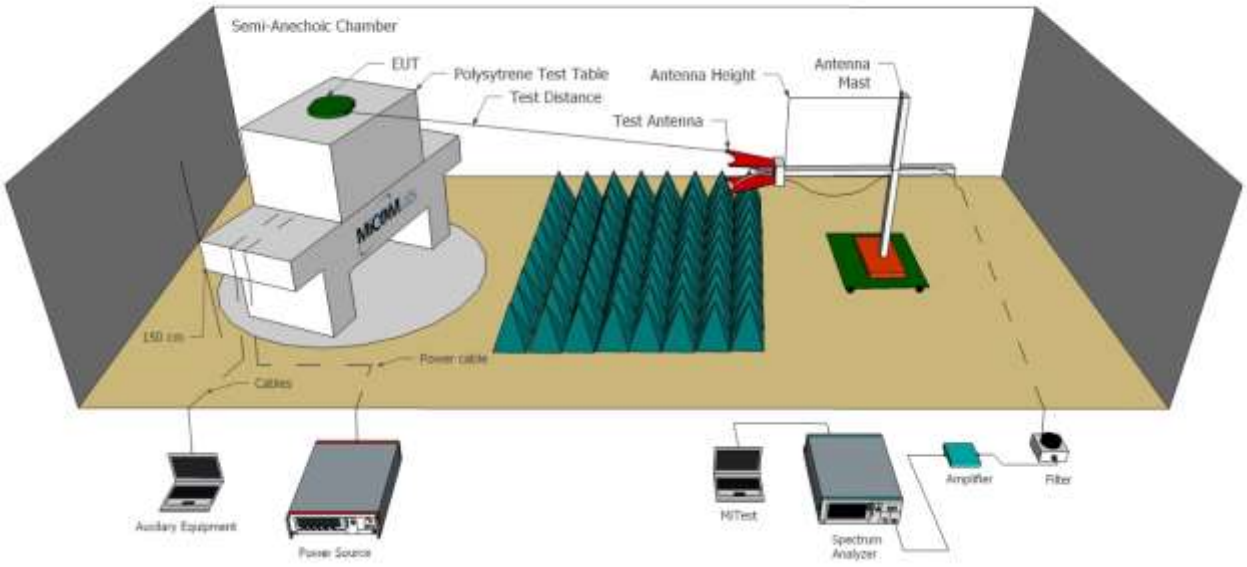
7.1. Radiated Emissions - 3m Chamber

The following tests were performed using the radiated test set-up shown in the diagram below.

Radiated Emissions Below 1GHz Test Setup



Radiated Emissions Above 1GHz Test Setup



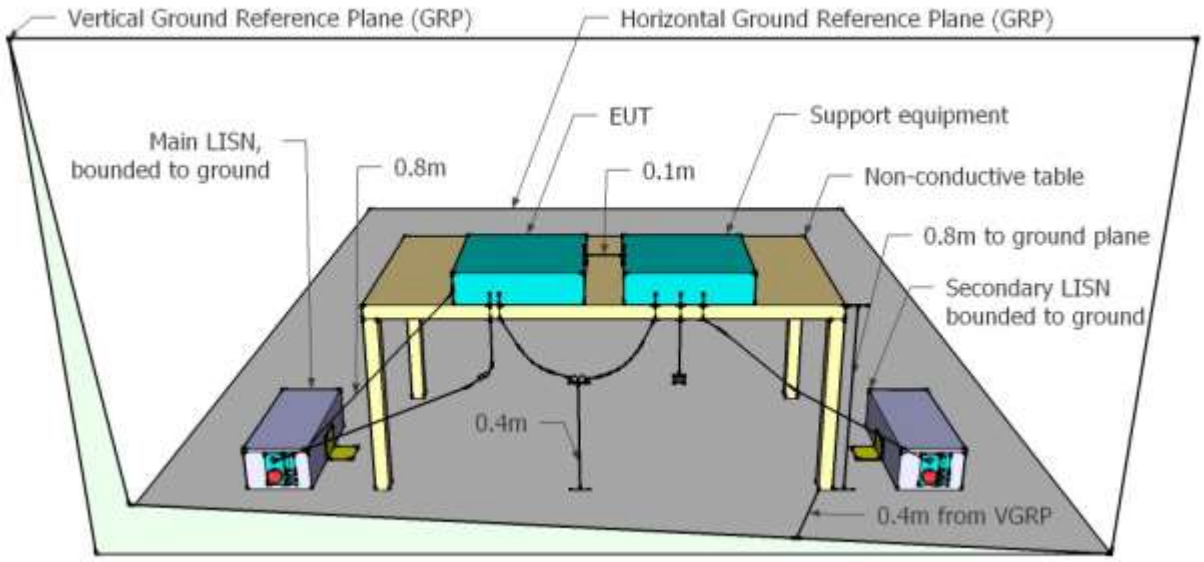
A full system calibration was performed on the test station and any resulting system losses (or gains) were taken into account in the production of all final measurement data.

Asset#	Description	Manufacturer	Model#	Serial#	Calibration Due Date
158	Barometer/Thermometer	Control Company	4196	E2846	30 Nov 2018
170	Video System Controller for Semi Anechoic Chamber	Panasonic	WV-CU101	04R08507	Not Required
287	Rohde & Schwarz 40 GHz Receiver	Rhode & Schwarz	ESIB40	100201	2 May 2018
301	5470 to 5725 MHz Notch Filter	Microtronics	RBC50704	001	6 Oct 2018
302	5150 to 5350 MHz Notch Filter	Microtronics	BRC50703	002	6 Oct 2018
303	5725 to 5875 MHz Notch filter	Microtronics	BRC50705	003	6 Oct 2018
330	Variac 0-280 Vac	Staco Energy Co	3PN1020B	0546	Cal when used
338	Sunol 30 to 3000 MHz Antenna	Sunol	JB3	A052907	5 Oct 2018
341	900MHz Notch Filter	EWT	EWT-14-0199	H1	6 Oct 2018
342	2.4 GHz Notch Filter	EWT	EWT-14-0203	H1	6 Oct 2018
343	5.15 GHz Notch Filter	EWT	EWT-14-0200	H1	6 Oct 2018
344	5.35 GHz Notch Filter	EWT	EWT-14-0201	H1	6 Oct 2018
345	5.46 GHz Notch Filter	EWT	EWT-14-0202	H1	6 Oct 2018
346	1.6 TO 10GHz High Pass Filter	EWT	EWT-57-0112	H1	6 Oct 2018
373	26III RMS Multimeter	Fluke	Fluke 26 series III	76080720	21 Sep 2018
377	Band Rejection Filter 5150 to 5880MHz	Microtronics	BRM50716	034	6 Oct 2018
393	DC - 1050 MHz Low Pass Filter	Microcircuits	VLFX-1050	N/A	6 Oct 2018
396	2.4 GHz Notch Filter	Microtronics	BRM50701	001	6 Oct 2018
397	Amp 10 - 2500MHz	MiCOM Labs	Amp 10 - 2500 MHz	NA	12 Oct 2018
399	ETS 1-18 GHz Horn Antenna	ETS	3117	00154575	12 Oct 2018
406	Amplifier for Radiated Emissions	MiCOM Labs	40dB 1 to 18GHz Amp	0406	12 Oct 2018
410	Desktop Computer	Dell	Inspiron 620	WS38	Not Required
411	Mast/Turntable Controller	Sunol Sciences	SC98V	060199-1D	Not Required
412	USB to GPIB Interface	National Instruments	GPIB-USB HS	11B8DC2	Not Required
413	Mast Controller	Sunol Science	TWR95-4	030801-3	Not Required
414	DC Power Supply 0-60V	HP	6274	1029A01285	Cal when used

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	4 Oct 2018
463	Schwarzbeck cable from Amplifier to Bulkhead.	Schwarzbeck	AK 9513	463	4 Oct 2018
464	Schwarzbeck cable from Bulkhead to Receiver	Schwarzbeck	AK 9513	464	4 Oct 2018
465	Low Pass Filter DC-1000 MHz	Mini-Circuits	NLP-1200+	VUU01901402	6 Oct 2018
466	Low Pass Filter DC-1500 MHz	Mini-Circuits	NLP-1750+	VUU10401438	6 Oct 2018
467	2495 to 2650 MHz notch filter	MicroTronics	BRM50709	011	6 Oct 2018
468	Low pass filter	Mini Circuits	SLP-550	None	6 Oct 2018
469	Low pass filter	Mini Circuit	SLP-1000	None	6 Oct 2018
470	High Pass filter	Mini Circuits	SHP-700	None	6 Oct 2018
476	Low Pass dc-2200MHz filter	Mini Circuits	15542 NLP-2400+	VUU13801345	6 Oct 2018
480	Cable - Bulkhead to Amp	SRC Haverhill	157-3050360	480	6 Oct 2018
481	Cable - Bulkhead to Receiver	SRC Haverhill	151-3050787	481	6 Oct 2018
482	Cable - Amp to Antenna	SRC Haverhill	157-3051574	482	6 Oct 2018
87	Uninterruptible Power Supply	Falcon Electric	ED2000-1/2LC	F3471 02/01	Cal when used
CC05	Confidence Check	MiCOM	CC05	None	7 Jan 2018
VLF-1700	Low pass filter DC-1700 MHz	Mini Circuits	VLF-1700	None	6 Oct 2018

7.2. AC Wireline Emissions

The following tests were performed using the test set-up shown in the diagram below.



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

Test Equipment Utilized

Asset#	Description	Manufacturer	Model#	Serial#	Calibration Due Date
158	Barometer/Thermometer	Control Company	4196	E2846	30 Nov 2018
184	Pulse Limiter	Rhode & Schwarz	ESH3Z2	357.8810.52	6 Oct 2018
190	LISN (two-line V-network)	Rhode & Schwarz	ESH3Z5	836679/006	18 Oct 2018
287	Rohde & Schwarz 40 GHz Receiver	Rhode & Schwarz	ESIB40	100201	2 May 2018
307	BNC-CABLE	Megaphase	1689 1GVT4	15F50B002	6 Oct 2018
316	Dell desktop computer workstation	Dell	Desktop	WS04	Not Required
372	AC Variable PS	California Instruments	1251P	L06951	Cal when used
378	Rohde & Schwarz 40 GHz Receiver with Generator	Rhode & Schwarz	ESIB40	100107/040	12 Oct 2018
388	LISN (3 Phase) 9kHz -	Rohde &	ESH2-Z5	892107/022	20 Oct 2018

	30MHz	Schwarz			
496	MiTest Conducted Emissions test software.	MiCOM	Conducted Emissions Test Software Version 1.0	496	Not Required
CCEMC01	Confidence Check.	MiCOM	CCEMC01	None	2 Apr 2018

8. MEASUREMENT AND PRESENTATION OF TEST DATA

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

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

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

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

9. TEST RESULTS

9.1. Peak Transmit Power

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

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

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

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

Limits Maximum Conducted Output Power

Operating Frequency Band 5150-5250 MHz

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

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

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

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band

of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Operating Frequency Band 5250-5350 and 5470 – 5725 MHz

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

Operating Frequency Band 5725 – 5850 MHz

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

Equipment Configuration for Peak Transmit Power

Variant:	802.11a	**Duty Cycle (%):**	99.0
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dB	
5180.0	16.66	18.09	--	--	20.44	--	30.00	-9.56	40.00
5200.0	16.61	18.47	--	--	20.65	--	30.00	-9.35	40.00
5240.0	16.86	18.98	--	--	21.06	--	30.00	-8.94	40.00

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

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

Equipment Configuration for Peak Transmit Power

Variant:	802.11ac-80	**Duty Cycle (%):**	99.0
Data Rate:	29.30 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dB	
5210.0	15.79	17.78	--	--	19.91	--	30.00	-10.09	40.00

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

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

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-20	**Duty Cycle (%):**	99.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

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	16.60	18.04	--	--	20.39	--	30.00	-9.61	40.00
5200.0	16.51	18.33	--	--	20.52	--	30.00	-9.48	40.00
5240.0	16.94	18.93	--	--	21.06	--	30.00	-8.94	40.00

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

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

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-40	**Duty Cycle (%):**	99.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

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	15.88	17.68	--	--	19.88	--	30.00	-10.12	40.00
5230.0	16.47	18.64	--	--	20.70	--	30.00	-9.30	40.00

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

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

Equipment Configuration for Peak Transmit Power

Variant:	802.11a	**Duty Cycle (%):**	99.0
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

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	
5745.0	16.43	18.11	--	--	20.36	--	30.00	-9.64	40.00
5785.0	14.76	17.00	--	--	19.03	--	30.00	-10.97	40.00
5825.0	14.65	16.14	--	--	18.47	--	30.00	-11.53	40.00

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

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

Equipment Configuration for Peak Transmit Power

Variant:	802.11ac-80	**Duty Cycle (%):**	99.0
Data Rate:	29.30 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

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	
5775.0	14.33	16.43	--	--	18.52	--	30.00	-11.48	40.00

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

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

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-20	**Duty Cycle (%):**	99.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

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	
5745.0	16.38	18.05	--	--	20.31	--	30.00	-9.69	40.00
5785.0	14.63	16.97	--	--	18.97	--	30.00	-11.03	40.00
5825.0	14.54	16.11	--	--	18.41	--	30.00	-11.59	40.00

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

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

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-40	**Duty Cycle (%):**	99.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

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	
5755.0	15.41	17.45	--	--	19.56	--	30.00	-10.44	40.00
5795.0	13.97	16.15	--	--	18.21	--	30.00	-11.79	40.00

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

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

9.2. 26 dB & 99% Bandwidth

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

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

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

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11a	**Duty Cycle (%):**	99.0
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz) Port(s)				26 dB Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5180.0	23.246	28.056	--	--	28.056	23.246		
5200.0	29.459	32.265	--	--	32.265	29.459		
5240.0	59.319	38.277	--	--	59.319	38.277		

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				99% Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5180.0	16.633	16.633	--	--	16.633	16.633		
5200.0	16.834	17.034	--	--	17.034	16.834		
5240.0	42.886	21.042	--	--	42.886	21.042		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

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

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11ac-80	**Duty Cycle (%):**	99.0
Data Rate:	29.30 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz) Port(s)				26 dB Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5210.0	119.439	107.415	--	--	119.439	107.415		

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				99% Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5210.0	76.954	76.954	--	--	76.954	76.954		

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

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

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11n HT-20	**Duty Cycle (%):**	99.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz) Port(s)				26 dB Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5180.0	24.649	26.653	--	--	26.653	24.649		
5200.0	28.257	31.663	--	--	31.663	28.257		
5240.0	60.120	38.878	--	--	60.120	38.878		

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				99% Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5180.0	17.836	17.836	--	--	17.836	17.836		
5200.0	18.036	18.036	--	--	18.036	18.036		
5240.0	43.687	21.643	--	--	43.687	21.643		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

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

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11n HT-40	**Duty Cycle (%):**	99.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz) Port(s)				26 dB Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5190.0	48.096	65.331	--	--	65.331	48.096		
5230.0	94.990	80.561	--	--	94.990	80.561		

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				99% Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5190.0	36.473	36.874	--	--	36.874	36.473		
5230.0	68.136	41.683	--	--	68.136	41.683		

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

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

9.3. 6 dB & 99% Bandwidth

Conducted Test Conditions for 6 dB and 99% Bandwidth			
Standard:	FCC CFR 47:15.407	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	6 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 6 dB and 99% Bandwidth Measurement
The bandwidth at 6 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 100 kHz.
Testing was performed under ambient conditions at nominal voltage. Where the device operated with multiple antenna ports i.e. MIMO device, each port was measured and reported.

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

Equipment Configuration for 6 dB & 99% Bandwidth

Variant:	802.11a	**Duty Cycle (%):**	99.0
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5745.0	16.433	16.433	--	--	16.433	16.433		
5785.0	16.433	16.433	--	--	16.433	16.433		
5825.0	16.433	16.433	--	--	16.433	16.433		

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				99% Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5745.0	16.633	17.635	--	--	17.635	16.633		
5785.0	16.433	16.633	--	--	16.633	16.433		
5825.0	16.433	16.633	--	--	16.633	16.433		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

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

Equipment Configuration for 6 dB & 99% Bandwidth			
Variant:	802.11ac-80	**Duty Cycle (%):**	99.0
Data Rate:	29.30 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5775.0	75.351	75.351	--	--	75.351	75.351		

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				99% Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5775.0	76.152	76.152	--	--	76.152	76.152		

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

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

Equipment Configuration for 6 dB & 99% Bandwidth

Variant:	802.11n HT-20	**Duty Cycle (%):**	99.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5745.0	17.635	17.635	--	--	17.635	17.635		
5785.0	17.635	17.635	--	--	17.635	17.635		
5825.0	17.635	17.635	--	--	17.635	17.635		

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				99% Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5745.0	17.836	18.437	--	--	18.437	17.836		
5785.0	17.635	17.836	--	--	17.836	17.635		
5825.0	17.635	17.635	--	--	17.635	17.635		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

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

Equipment Configuration for 6 dB & 99% Bandwidth

Variant:	802.11n HT-40	**Duty Cycle (%):**	99.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5755.0	35.271	35.271	--	--	35.271	35.271		
5795.0	35.271	35.271	--	--	35.271	35.271		

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				99% Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5755.0	36.473	36.473	--	--	36.473	36.473		
5795.0	36.072	36.473	--	--	36.473	36.072		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

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

9.4. Power Spectral Density

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

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

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

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

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

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

Limits Power Spectral Density

Operating Frequency Band 5150-5250 MHz

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

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

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the

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

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

Operating Frequency Band 5250-5350 and 5470 – 5725 MHz

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

Operating Frequency Band 5725 – 5850 MHz

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

Equipment Configuration for Power Spectral Density

Variant:	802.11a	**Duty Cycle (%):**	99.0
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Summation Peak Marker + DCCF (+0.04 dB)	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5180.0	5.467	7.736	--	--	9.098	17.0	-7.9
5200.0	5.071	6.661	--	--	8.819	17.0	-8.2
5240.0	4.896	8.103	--	--	9.615	17.0	-7.4

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

DCCF - Duty Cycle Correction Factor

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

Equipment Configuration for Power Spectral Density

Variant:	802.11ac-80	**Duty Cycle (%):**	99.0
Data Rate:	29.30 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Summation Peak Marker + DCCF (+0.04 dB)	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5210.0	-5.526	-3.641	--	--	-2.412	17.0	-19.4

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

DCCF - Duty Cycle Correction Factor

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

Equipment Configuration for Power Spectral Density

Variant:	802.11n HT-20	**Duty Cycle (%):**	99.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Summation Peak Marker + DCCF (+0.04 dB)	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5180.0	4.407	7.258	--	--	8.710	17.0	-8.3
5200.0	4.716	7.642	--	--	8.920	17.0	-8.1
5240.0	4.636	6.803	--	--	8.352	17.0	-8.7

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).

Equipment Configuration for Power Spectral Density

Variant:	802.11n HT-40	**Duty Cycle (%):**	99.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Summation Peak Marker + DCCF (+0.04 dB)	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5190.0	0.344	1.868	--	--	4.215	17.0	-12.8
5230.0	-0.078	4.046	--	--	4.606	17.0	-12.4

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

DCCF - Duty Cycle Correction Factor

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

Equipment Configuration for Power Spectral Density			
Variant:	802.11a	**Duty Cycle (%):**	99.0
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/500 KHz)				Summation Peak Marker + DCCF (+0.04 dB)	Limit	Margin
MHz	a	b	c	d	dBm/500 KHz	dBm/500 KHz	dB
5745.0	1.828	3.379	--	--	5.595	30.0	-24.4
5785.0	0.226	2.756	--	--	4.417	30.0	-25.6
5825.0	0.223	2.729	--	--	4.080	30.0	-25.9

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

DCCF - Duty Cycle Correction Factor

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

Equipment Configuration for Power Spectral Density			
Variant:	802.11ac-80	**Duty Cycle (%):**	99.0
Data Rate:	29.30 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

Test Measurement Results							
Test Frequency	**Measured Power Spectral Density Port(s) (dBm/500 KHz)**				**Summation Peak Marker + DCCF (+0.04 dB)**	**Limit**	**Margin**
MHz	**a**	**b**	**c**	**d**	**dBm/500 KHz**	**dBm/500 KHz**	**dB**
5775.0	-10.146	-6.505	--	--	-3.428	30.0	-33.4

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

DCCF - Duty Cycle Correction Factor

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

Equipment Configuration for Power Spectral Density

Variant:	802.11n HT-20	**Duty Cycle (%):**	99.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/500 KHz)				Summation Peak Marker + DCCF (+0.04 dB)	Limit	Margin
MHz	a	b	c	d	dBm/500 KHz	dBm/500 KHz	dB
5745.0	0.926	3.349	--	--	4.974	30.0	-25.0
5785.0	-2.056	2.145	--	--	3.019	30.0	-27.0
5825.0	-0.440	1.798	--	--	3.597	30.0	-26.4

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

DCCF - Duty Cycle Correction Factor

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

Equipment Configuration for Power Spectral Density

Variant:	802.11n HT-40	**Duty Cycle (%):**	99.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	2.50
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:	None		

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/500 KHz)				Summation Peak Marker + DCCF (+0.04 dB)	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**dBm/500 KHz**	**dBm/500 KHz**	**dB**
5755.0	-3.763	-1.577	--	--	0.284	30.0	-29.7
5795.0	-3.410	-2.297	--	--	-0.336	30.0	-30.3

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

DCCF - Duty Cycle Correction Factor

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

9.5. Radiated

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

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

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

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

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

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

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

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

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

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

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

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

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

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

where:

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

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

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

where P is the EIRP in Watts

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

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

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

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

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

13.36-13.41			

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

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

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

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

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

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

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

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

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

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

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

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

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

9.5.1. TX Spurious & Restricted Band Emissions

5150 - 5250 MHz

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	MikroTik	**Variant:**	802.11a
Antenna Gain (dBi):	2.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5180.00	**Data Rate:**	6.00 MBit/s
Power Setting:	20	**Tested By:**	OC

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5183.81	71.76	3.13	-12.02	62.87	Fundamental	Horizontal	100	0	--	--	
#2	6906.74	65.05	3.19	-8.05	60.19	Max Peak (NRB)	Horizontal	174	337	68.2	-8.0	Pass
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.												

NRB- Non Restricted Band emissions.

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	MikroTik	**Variant:**	802.11a
Antenna Gain (dBi):	2.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5200.00	**Data Rate:**	6.00 MBit/s
Power Setting:	40	**Tested By:**	OC

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5198.48	83.05	3.10	-11.98	74.17	Fundamental	Horizontal	100	0	--	--	
#2	6933.42	69.93	3.19	-7.96	65.16	Max Peak (NRB)	Horizontal	190	40	68.2	-3.1	Pass
#3	10398.01	60.62	4.41	-5.77	59.26	Max Peak (NRB)	Horizontal	175	219	68.2	-9.0	Pass
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.												

NRB- Non Restricted Band emissions.

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	MikroTik	**Variant:**	802.11a
Antenna Gain (dBi):	2.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5240.00	**Data Rate:**	6.00 MBit/s
Power Setting:	40	**Tested By:**	OC

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5237.95	85.96	3.12	-12.27	76.81	Fundamental	Horizontal	100	0	--	--	
#2	6988.99	57.86	3.26	-7.69	53.43	Max Peak (NRB)	Horizontal	98	48	68.2	-14.8	Pass
#3	10477.83	64.97	4.49	-6.28	63.18	Max Peak (NRB)	Horizontal	178	221	68.2	-5.1	Pass
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.												

NRB- Non Restricted Band emissions.

5725 - 5850 MHz

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	MikroTik	**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:	40	**Tested By:**	OC

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5745.01	60.63	3.18	-11.06	52.75	Fundamental	Horizontal	100	97	--	--	
#2	7660.02	56.64	3.83	-7.19	53.28	Max Peak	Horizontal	180	330	68.2	-15.0	Pass
#3	7660.02	52.22	3.83	-7.19	48.86	Max Avg	Horizontal	180	330	54.0	-5.1	Pass
#4	16715.50	46.61	5.66	0.73	53.00	Peak (NRB)	Vertical	100	173	--	--	Pass
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.												

NRB- Non Restricted Band emissions.

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	MikroTik	**Variant:**	802.11a
Antenna Gain (dBi):	2.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5785.00	**Data Rate:**	6.00 MBit/s
Power Setting:	40	**Tested By:**	OC

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	3856.93	57.27	2.74	-11.61	48.40	Max Peak	Horizontal	98	195	68.2	-19.8	Pass
#2	3856.93	51.92	2.74	-11.61	43.05	Max Avg	Horizontal	98	195	54.0	-11.0	Pass
#3	5790.54	68.16	3.20	-10.80	60.56	Fundamental	Vertical	100	0	--	--	
#4	7713.46	54.60	3.75	-7.24	51.11	Max Peak	Horizontal	194	317	68.2	-17.1	Pass
#5	7713.46	48.10	3.75	-7.24	44.61	Max Avg	Horizontal	194	317	54.0	-9.4	Pass
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.												

NRB- Non Restricted Band emissions.

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	MikroTik	**Variant:**	802.11a
Antenna Gain (dBi):	2.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5825.00	**Data Rate:**	6.00 MBit/s
Power Setting:	40	**Tested By:**	OC

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5822.01	70.07	3.23	-10.74	62.56	Fundamental	Horizontal	100	0	--	--	
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.												

NRB- Non Restricted Band emissions.

9.5.2. Restricted Edge & Band-Edge Emissions

RESULTS SUMMARY FOR RADIATED BAND-EDGE EMISSIONS

5150 - 5250 MHz

Mikrotik		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	58.73	43.80	20
802.11ac-80	5210.00	5150.00	67.18	44.88	17
802.11n HT-20	5180.00	5150.00	67.83	50.91	21
802.11n HT-40	5190.00	5150.00	68.05	52.31	22

5725 MHz Radiated Lower Band-Edge Emissions

Mikrotik		Band-Edge Freq	Level dBµV/m	Level dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
802.11a	5725.00	5725.00	89.29	64.54	40
802.11ac-80	5725.00	5725.00	65.90	64.27	25
802.11n HT-20	5725.00	5725.00	64.85	64.64	40
802.11n HT-40	5725.00	5725.00	65.89	65.67	40

5850 MHz Radiated Higher Band-Edge Emissions

Mikrotik		Band-Edge Freq	Level dBµV/m	Level dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
802.11a	5850.00	5850.00	76.48	62.54	40
802.11ac-80	5850.00	5850.00	73.54	62.92	25
802.11n HT-20	5850.00	5850.00	65.91	64.11	40
802.11n HT-40	5850.00	5850.00	68.02	61.90	40

Click on the links to view the data.

5150 - 5250 MHz

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	MikroTik	**Variant:**	802.11a
Antenna Gain (dBi):	2.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5180.00	**Data Rate:**	6.00 MBit/s
Power Setting:	20	**Tested By:**	OC

Test Measurement Results

4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5125.25	21.49	3.07	34.17	58.73	Max Peak	Horizontal	148	15	68.2	-9.5	Pass
#2	5148.50	6.53	3.06	34.21	43.80	Max Avg	Horizontal	148	15	54.0	-10.2	Pass
#3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.												

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	MikroTik	**Variant:**	802.11ac-80
Antenna Gain (dBi):	2.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5210.00	**Data Rate:**	29.30 MBit/s
Power Setting:	17	**Tested By:**	OC

Test Measurement Results

4500.00 - 5350.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5136.37	7.63	3.06	34.19	44.88	Max Avg	Horizontal	148	15	54.0	-9.1	Pass
#2	5138.08	29.93	3.06	34.19	67.18	Max Peak	Horizontal	148	15	68.2	-1.1	Pass
#3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.												

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	MikroTik	**Variant:**	802.11n HT-20
Antenna Gain (dBi):	2.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5180.00	**Data Rate:**	6.50 MBit/s
Power Setting:	21	**Tested By:**	OC

Test Measurement Results

4500.00 - 5195.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5150.00	13.64	3.06	34.21	50.91	Max Avg	Horizontal	148	15	54.0	-3.1	Pass
#2	5150.00	30.56	3.06	34.21	67.83	Max Peak	Horizontal	148	15	68.2	-0.4	Pass
#3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.												

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	MikroTik	**Variant:**	802.11n HT-40
Antenna Gain (dBi):	2.50	**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:**	OC

Test Measurement Results

4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5139.48	15.06	3.06	34.19	52.31	Max Avg	Horizontal	148	15	54.0	-1.7	Pass
#2	5148.50	30.78	3.06	34.21	68.05	Max Peak	Horizontal	148	15	68.2	-0.2	Pass
#3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.												

5725 - 5850 MHz

Lower Band-Edge

Equipment Configuration for 5725 MHz Radiated Band-Edge Emissions

Antenna:	MikroTik	**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:	40	**Tested By:**	OC

Test Measurement Results

5600.00 - 5780.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5635.18	26.70	3.20	34.64	64.54	Max Peak	Horizontal	167	338	68.2	-3.7	Pass
#2	5724.64	51.40	3.17	34.72	89.29	Max Peak	Horizontal	167	338	122.2	-32.9	Pass
#3	5725.00	--	--	--	--	Band-Edge	--	--	--	--	--	--
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.												

Equipment Configuration for 5725 MHz Radiated Band-Edge Emissions

Antenna:	MikroTik	**Variant:**	802.11ac-80
Antenna Gain (dBi):	2.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5775.00	**Data Rate:**	29.30 MBit/s
Power Setting:	25	**Tested By:**	OC

Test Measurement Results

5600.00 - 5780.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5638.43	26.44	3.19	34.64	64.27	Max Peak	Horizontal	164	338	68.2	-4.0	Pass
#2	5651.87	28.05	3.22	34.63	65.90	Max Peak	Horizontal	164	338	69.7	-3.8	Pass
#3	5725.00	--	--	--	--	Band-Edge	--	--	--	--	--	--
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.												

Equipment Configuration for 5725 MHz Radiated Band-Edge Emissions

Antenna:	MikroTik	**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:	40	**Tested By:**	OC

Test Measurement Results

5600.00 - 5780.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5607.77	26.77	3.22	34.65	64.64	Max Peak	Horizontal	164	338	68.2	-3.6	Pass
#2	5635.18	27.01	3.20	34.64	64.85	Max Peak	Horizontal	164	338	68.2	-3.4	Pass
#3	5725.00	--	--	--	--	Band-Edge	--	--	--	--	--	--
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.												

Equipment Configuration for 5725 MHz Radiated Band-Edge Emissions

Antenna:	MikroTik	**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:	40	**Tested By:**	OC

Test Measurement Results

5600.00 - 5780.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5641.67	27.85	3.18	34.64	65.67	Max Peak	Horizontal	164	338	68.2	-2.6	Pass
#2	5659.45	28.04	3.21	34.64	65.89	Max Peak	Horizontal	164	338	74.9	-9.0	Pass
#3	5725.00	--	--	--	--	Band-Edge	--	--	--	--	--	--
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.												

Higher Band-Edge

Equipment Configuration for 5850 MHz Radiated Band-Edge Emissions

Antenna:	MikroTik	**Variant:**	802.11a
Antenna Gain (dBi):	2.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5825.00	**Data Rate:**	6.00 MBit/s
Power Setting:	40	**Tested By:**	OC

Test Measurement Results

5770.00 - 6000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#2	5857.11	38.30	3.20	34.98	76.48	Max Peak	Horizontal	167	338	110.2	-33.7	Pass
#3	5930.52	24.25	3.18	35.11	62.54	Max Peak	Horizontal	167	338	68.2	-5.7	Pass
#1	5850.00	--	--	--	--	Band-Edge	--	--	--	--	--	--
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.												

Equipment Configuration for 5850 MHz Radiated Band-Edge Emissions

Antenna:	MikroTik	**Variant:**	802.11ac-80
Antenna Gain (dBi):	2.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5775.00	**Data Rate:**	29.30 MBit/s
Power Setting:	25	**Tested By:**	OC

Test Measurement Results

5770.00 - 6000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#2	5863.83	35.34	3.20	35.00	73.54	Max Peak	Horizontal	164	338	108.3	-34.8	Pass
#3	5927.76	24.62	3.19	35.11	62.92	Max Peak	Horizontal	164	338	68.2	-5.3	Pass
#1	5850.00	--	--	--	--	Band-Edge	--	--	--	--	--	--
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.												

Equipment Configuration for 5850 MHz Radiated Band-Edge Emissions

Antenna:	MikroTik	**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:	40	**Tested By:**	OC

Test Measurement Results

5770.00 - 6000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#2	5905.77	27.59	3.22	35.10	65.91	Max Peak	Horizontal	164	338	82.4	-16.5	Pass
#3	5931.90	25.81	3.19	35.11	64.11	Max Peak	Horizontal	164	338	68.2	-4.1	Pass
#1	5850.00	--	--	--	--	Band-Edge	--	--	--	--	--	--
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.												

Equipment Configuration for 5850 MHz Radiated Band-Edge Emissions

Antenna:	MikroTik	**Variant:**	802.11n HT-40
Antenna Gain (dBi):	2.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5795.00	**Data Rate:**	13.50 MBit/s
Power Setting:	40	**Tested By:**	OC

Test Measurement Results

5770.00 - 6000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#2	5878.12	29.77	3.21	35.04	68.02	Max Peak	Horizontal	164	338	102.8	-34.8	Pass
#3	5939.28	23.57	3.21	35.12	61.90	Max Peak	Horizontal	164	338	68.2	-6.3	Pass
#1	5850.00	--	--	--	--	Band-Edge	--	--	--	--	--	--
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.												

9.5.3. Digital Emissions

Radiated Test Conditions for Radiated Digital Emissions (0.03 – 1 GHz)			
Standard:	FCC CFR 47:15.247	**Ambient Temp. (ºC):**	20.0 - 24.5
Test Heading:	Digital Emissions	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.209	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Radiated Digital Emissions (0.03 – 1 GHz)
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.

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

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 51.5dBmV; 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 = 36.3dBmV/m

Conversion between dBmV/m (or dBmV) and mV/m (or mV) are done as:

Level (dBmV/m) = 20 * Log (level (mV/m))

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

Limits for Radiated Digital Emissions (0.03 – 1 GHz)

(a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength		Measurement Distance (m)
	µV/m (microvolts/meter)	dBµV/m (dB microvolts/meter)	

0.009-0.490	2400/F(kHz)	--	300
0.490-1.705	24000/F(kHz)	--	30
1.705-30.0	30	29.5	30
30-88	100**	40	3
88-216	150**	43.5	3
216-960	200**	46.0	3
Above 960	500	54.0	3

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241. (b) In the emission table above, the tighter limit applies at the band edges. (c) The level of any unwanted emissions from an intentional radiator operating under these general provisions shall not exceed the level of the fundamental emission. For intentional radiators which operate under the provisions of other sections within this part and which are required to reduce their unwanted emissions to the limits specified in this table, the limits in this table are based on the frequency of the unwanted emission and not the fundamental frequency. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency. (d) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector. (e) The provisions in §§15.31, 15.33, and 15.35 for measuring emissions at distances other than the distances specified in the above table, determining the frequency range over which radiated emissions are to be measured, and limiting peak emissions apply to all devices operated under this part. (f) In accordance with §15.33(a), in some cases the emissions from an intentional radiator must be measured to beyond the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator because of the incorporation of a digital device. If measurements above the tenth harmonic are so required, the radiated emissions above the tenth harmonic shall comply with the general radiated emission limits applicable to the incorporated digital device, as shown in §15.109 and as based on the frequency of the emission being measured, or, except for emissions contained in the restricted frequency bands shown in §15.205, the limit on spurious emissions specified for the intentional radiator, whichever is the higher limit. Emissions which must be measured above the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator and which fall within the restricted bands shall comply with the general radiated emission limits in §15.109 that are applicable to the incorporated digital device. (g) Perimeter protection systems may operate in the 54-72 MHz and 76-88 MHz bands under the provisions of this section. The use of such perimeter protection systems is limited to industrial, business and commercial applications.

Equipment Configuration for Digital Emissions

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	30.66	37.63	3.41	-10.38	30.66	MaxQP	Vertical	100	157	40.0	-9.3	Pass
2	36.11	43.24	3.45	-15.57	31.12	MaxQP	Vertical	100	356	40.0	-8.9	Pass
3	50.51	47.10	3.55	-22.95	27.70	MaxQP	Vertical	100	71	40.0	-12.3	Pass
4	98.09	49.54	3.82	-21.18	32.18	MaxQP	Vertical	100	88	43.5	-11.3	Pass

Test Notes: Model: RBD52G-5HacD2HnD-TC. AC/DC + PoE configuration. Placed 80cm non-conductive table.

Equipment Configuration for Digital Emissions

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	30.66	34.93	3.41	-10.38	27.96	MaxQP	Vertical	98	117	40.0	-12.0	Pass
2	148.16	42.18	4.04	-18.76	27.46	MaxQP	Vertical	99	242	43.5	-16.0	Pass

Test Notes: Model: RBD52G-5HacD2HnD-TC. AC/DC configuration. Placed 80cm non-conductive table.

9.5.4. AC Wireline Emissions

Test Conditions for AC Wireline			
Standard:	FCC CFR 47:15.247	**Ambient Temp. (ºC):**	20.0 - 24.5
Test Heading:	Digital Emissions	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.207	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Scope

This test assesses the ability of the EUT to limit its internal noise from being present on the AC mains power input/output ports.

Test Method

The test method shall be in accordance with §15.207 and the Artificial Mains Networks (AMNs) shall be connected to the AC mains power source.

The measurement frequency range extends from 150 kHz to 30 MHz. When the EUT is a transmitter operating at frequencies below 30 MHz, then the exclusion band for transmitters applies for measurements in the transmit mode of operation.

Test Procedure

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.

Limits

The equipment shall meet the class B limits given in §15.207. Alternatively, for equipment intended to be used in telecommunication centres only, the class A limits given in §15.207 may be used.

Class B Emissions
* Decreases with the logarithm of the frequency

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

Class A Emissions

Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	Quasi-peak	Average
0.15-0.5	79	66
0.5-30	73	60

Traceability

All conducted emission measurements are traceable to national standards. The uncertainty of measurement at a confidence level of not less than 95 %, with a coverage factor of k=2, in the range 9 kHz – 30 MHz (Average & Quasi-peak) is ±2.64 dB.

Laboratory Measurement Uncertainty	
Measurement uncertainty	Measurement uncertainty
Method	
Measurements were made per work instruction WI-EMC-01 ‘Measurement of Conducted Emissions’	

Equipment Configuration for AC Wireline Emissions

Num	Frequency MHz	Raw dBµV	Cable Loss dB	Factor dB	Total Correction dBµV	Corrected Value dBµV	Measurement Type	Line	Limit dBµV	Margin dB	Pass /Fail
1	0.460	15.82	0.07	9.93	10.00	25.82	Max Avg	Live	47.1	-21.3	Pass
2	0.460	26.61	0.07	9.93	10.00	36.61	Max Qp	Live	57.1	-20.5	Pass
3	0.464	15.38	0.07	9.93	10.00	25.38	Max Avg	Neutral	47.0	-21.7	Pass
4	0.464	26.88	0.07	9.93	10.00	36.88	Max Qp	Neutral	57.0	-20.2	Pass
5	23.129	28.97	0.64	10.85	11.49	40.46	Max Avg	Neutral	50.0	-9.5	Pass
6	23.129	32.15	0.64	10.85	11.49	43.64	Max Qp	Neutral	60.0	-16.4	Pass
7	26.610	28.29	0.73	10.88	11.61	39.90	Max Avg	Live	50.0	-10.1	Pass
8	26.610	31.82	0.73	10.88	11.61	43.43	Max Qp	Live	60.0	-16.6	Pass
9	26.488	25.86	0.72	10.88	11.60	37.46	Max Avg	Neutral	50.0	-12.5	Pass
10	26.488	29.85	0.72	10.88	11.60	41.45	Max Qp	Neutral	60.0	-18.6	Pass
11	0.151	16.43	0.05	9.92	9.97	26.40	Max Avg	Neutral	56.0	-29.6	Pass
12	0.151	31.64	0.05	9.92	9.97	41.61	Max Qp	Neutral	66.0	-24.4	Pass

Test Notes: Model hAP ac2. AC/DC + PoE configuration. 120V 60Hz. AC Mains.

Equipment Configuration for AC Wireline Emissions

Num	Frequency MHz	Raw dBµV	Cable Loss dB	Factor dB	Total Correction dBµV	Corrected Value dBµV	Measurement Type	Line	Limit dBµV	Margin dB	Pass /Fail
1	0.990	14.22	0.07	9.93	10.00	24.22	Max Avg	Neutral	46.0	-21.8	Pass
2	0.990	21.72	0.07	9.93	10.00	31.72	Max Qp	Neutral	56.0	-24.3	Pass
3	1.024	8.67	0.07	9.94	10.01	18.68	Max Avg	Live	46.0	-27.3	Pass
4	1.024	18.99	0.07	9.94	10.01	29.00	Max Qp	Live	56.0	-27.0	Pass
5	0.858	17.03	0.10	9.94	10.04	27.07	Max Avg	Neutral	46.0	-18.9	Pass
6	0.858	24.85	0.10	9.94	10.04	34.89	Max Qp	Neutral	56.0	-21.1	Pass
7	0.526	16.05	0.09	9.92	10.01	26.06	Max Avg	Live	46.0	-19.9	Pass
8	0.526	23.47	0.09	9.92	10.01	33.48	Max Qp	Live	56.0	-22.5	Pass
9	0.844	16.51	0.10	9.94	10.04	26.55	Max Avg	Live	46.0	-19.5	Pass
10	0.844	24.89	0.10	9.94	10.04	34.93	Max Qp	Live	56.0	-21.1	Pass
11	0.191	11.20	0.06	9.92	9.98	21.18	Max Avg	Live	54.8	-33.7	Pass
12	0.191	27.08	0.06	9.92	9.98	37.06	Max Qp	Live	64.8	-27.8	Pass

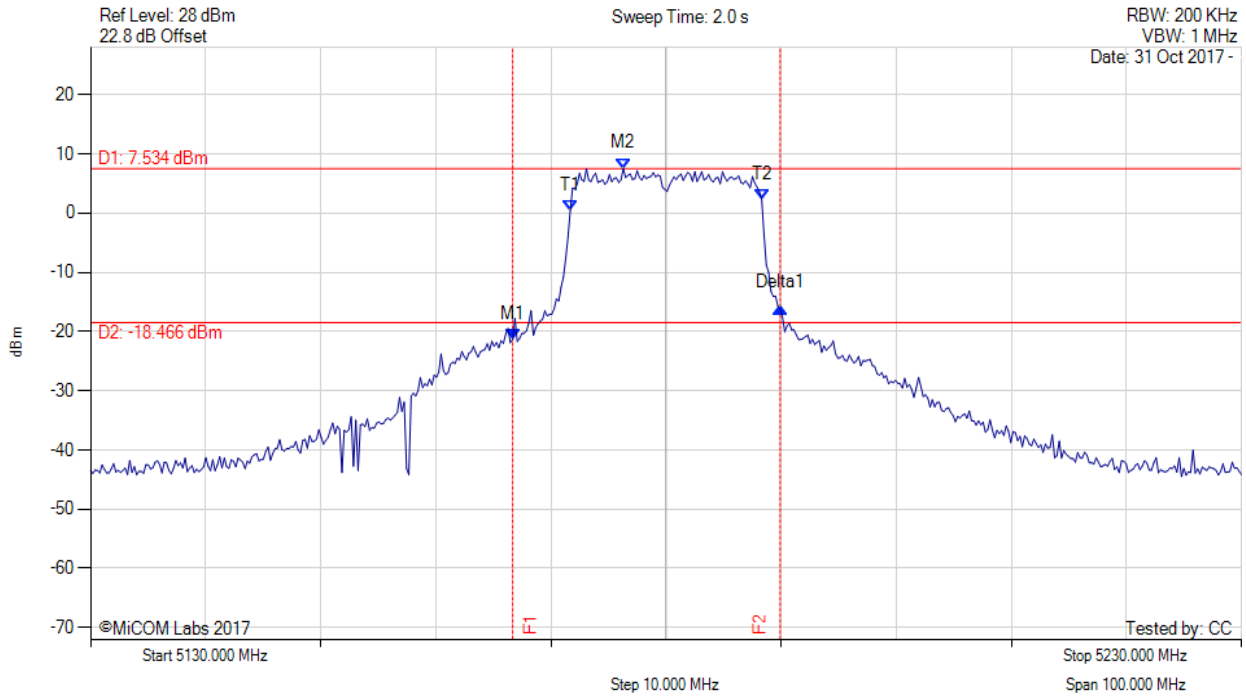
Test Notes: Model hAP ac2. AC/DC configuration. 120V 60Hz. AC Mains.

A. APPENDIX - GRAPHICAL IMAGES

A.1. 26 dB & 99% Bandwidth

26 dB & 99% BANDWIDTH

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

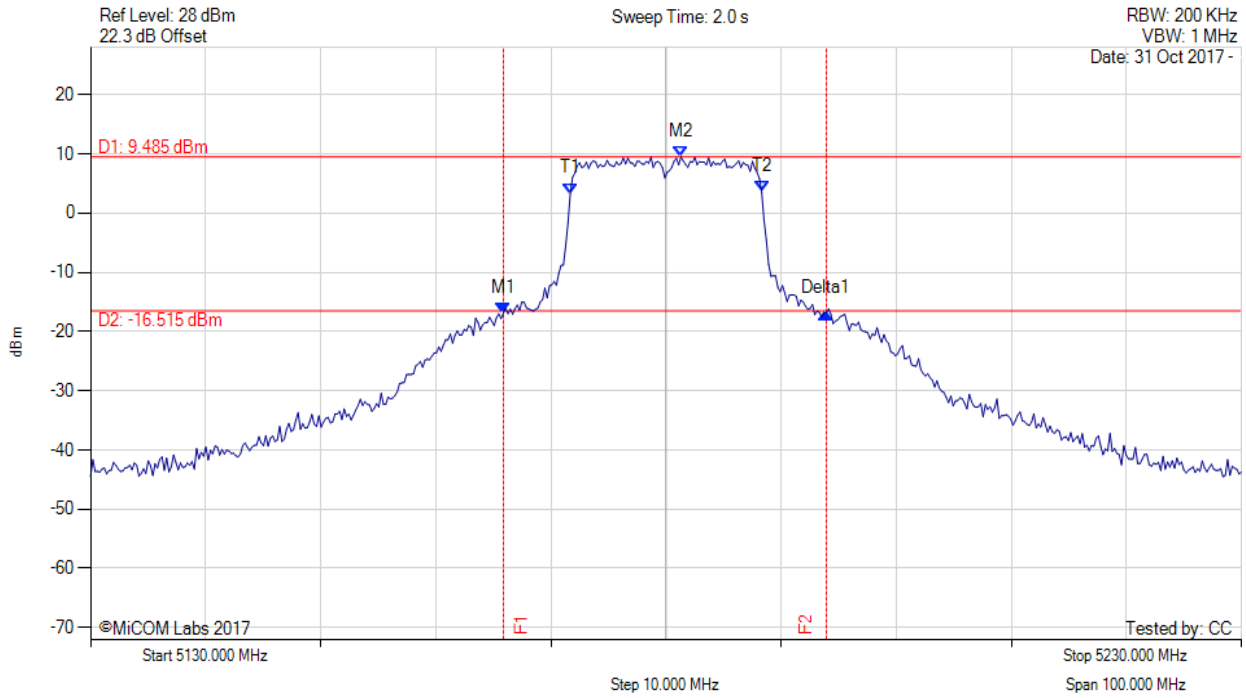


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5166.673 MHz : -21.324 dBm M2 : 5176.293 MHz : 7.534 dBm Delta1 : 23.246 MHz : 5.276 dB T1 : 5171.683 MHz : 0.457 dBm T2 : 5188.317 MHz : 2.302 dBm OBW : 16.633 MHz	Measured 26 dB Bandwidth: 23.246 MHz Measured 99% Bandwidth: 16.633 MHz

back to matrix

26 dB & 99% BANDWIDTH

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

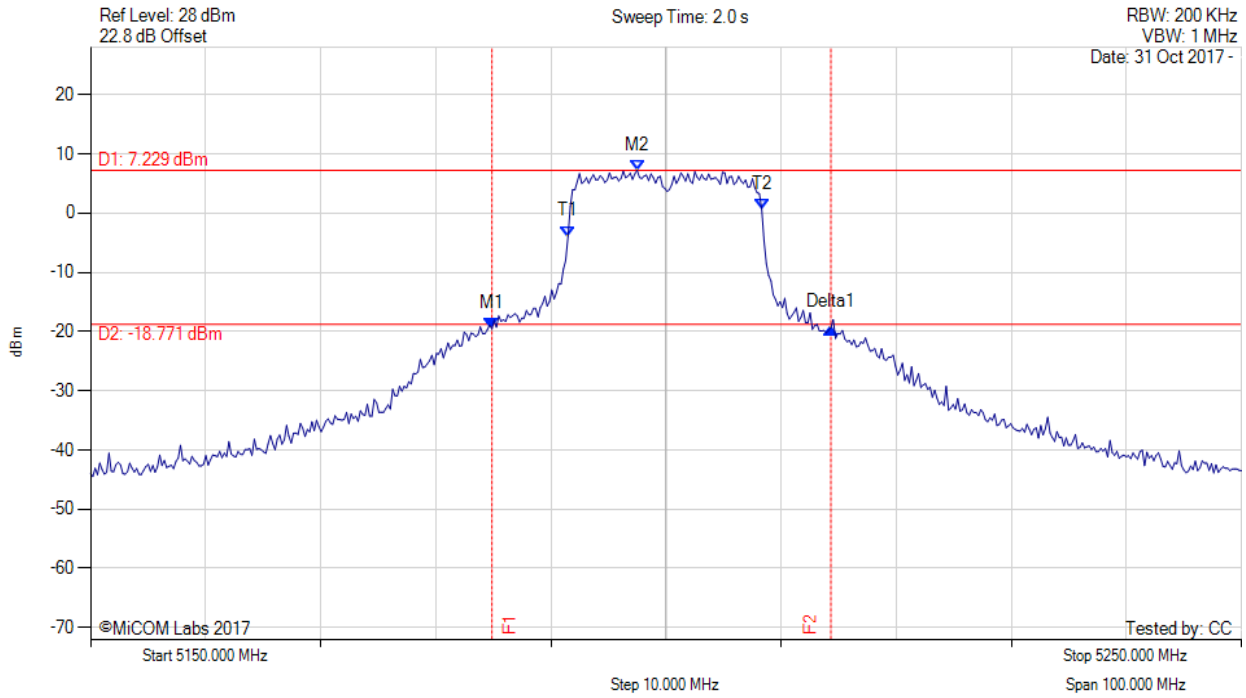


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5165.872 MHz : -16.883 dBm M2 : 5181.303 MHz : 9.485 dBm Delta1 : 28.056 MHz : 0.057 dB T1 : 5171.683 MHz : 3.304 dBm T2 : 5188.317 MHz : 3.571 dBm OBW : 16.633 MHz	Measured 26 dB Bandwidth: 28.056 MHz Measured 99% Bandwidth: 16.633 MHz

back to matrix

26 dB & 99% BANDWIDTH

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

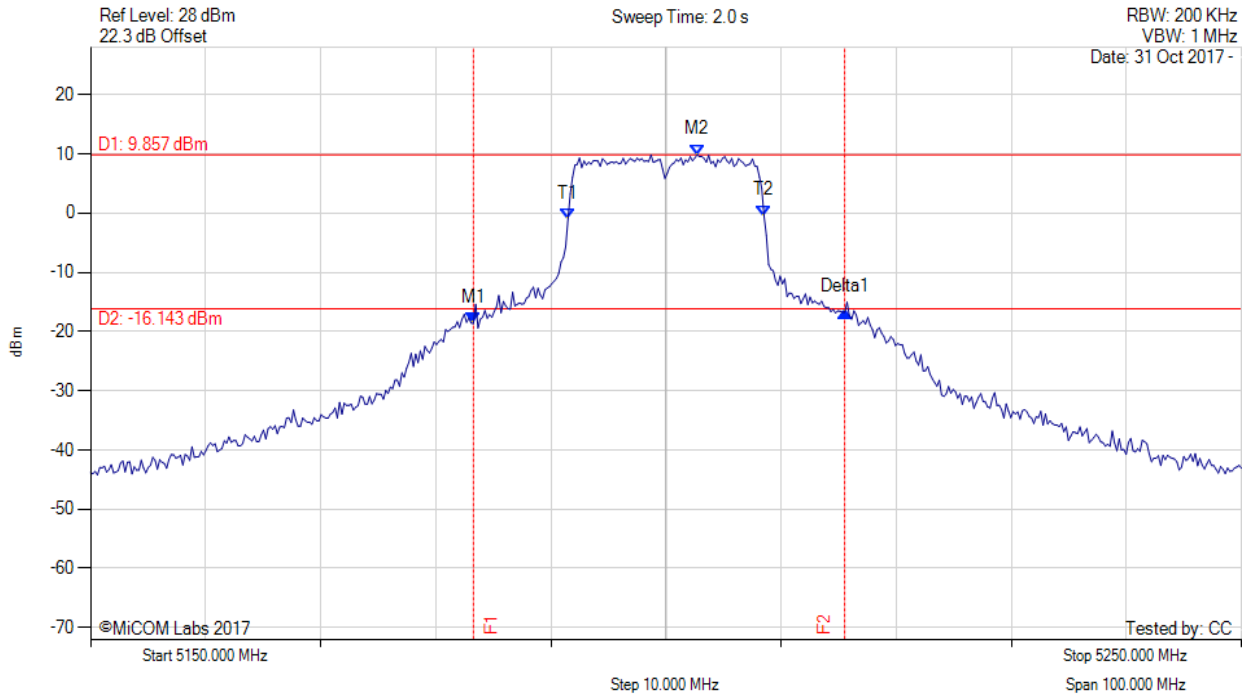


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5184.870 MHz : -19.561 dBm M2 : 5197.495 MHz : 7.229 dBm Delta1 : 29.459 MHz : 0.216 dB T1 : 5191.483 MHz : -3.940 dBm T2 : 5208.317 MHz : 0.636 dBm OBW : 16.834 MHz	Measured 26 dB Bandwidth: 29.459 MHz Measured 99% Bandwidth: 16.834 MHz

back to matrix

26 dB & 99% BANDWIDTH

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

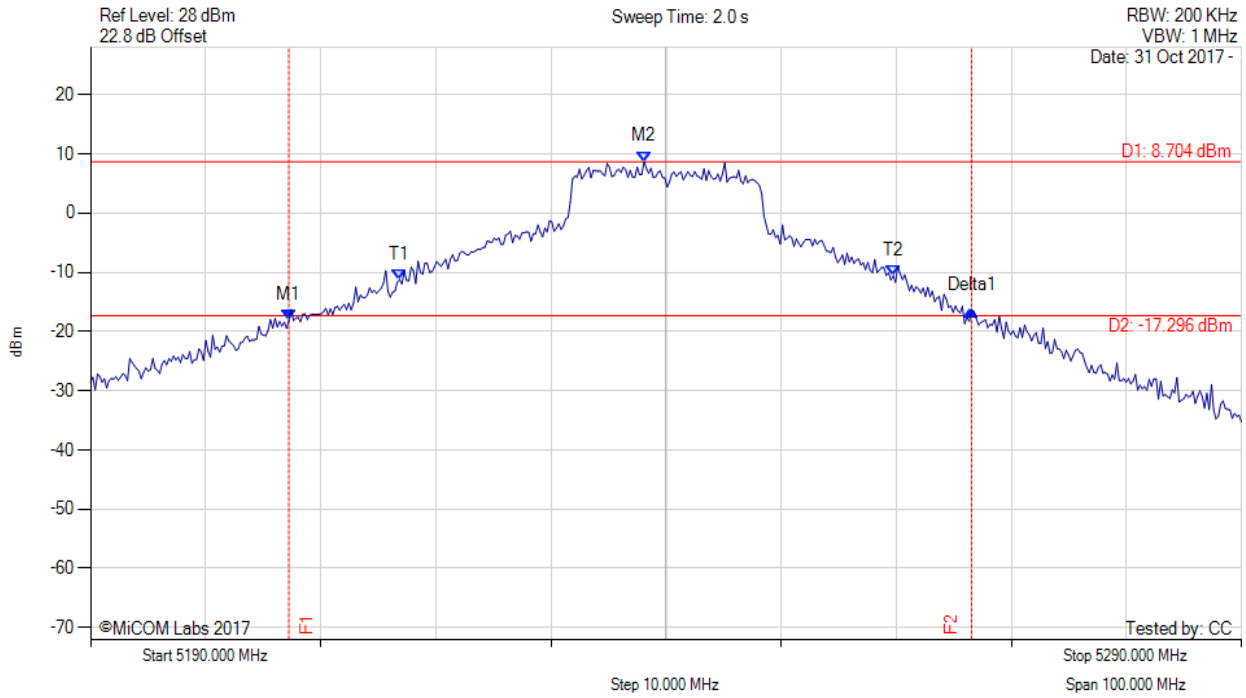


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5183.267 MHz : -18.630 dBm M2 : 5202.705 MHz : 9.857 dBm Delta1 : 32.265 MHz : 1.916 dB T1 : 5191.483 MHz : -0.965 dBm T2 : 5208.517 MHz : -0.411 dBm OBW : 17.034 MHz	Measured 26 dB Bandwidth: 32.265 MHz Measured 99% Bandwidth: 17.034 MHz

back to matrix

26 dB & 99% BANDWIDTH

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

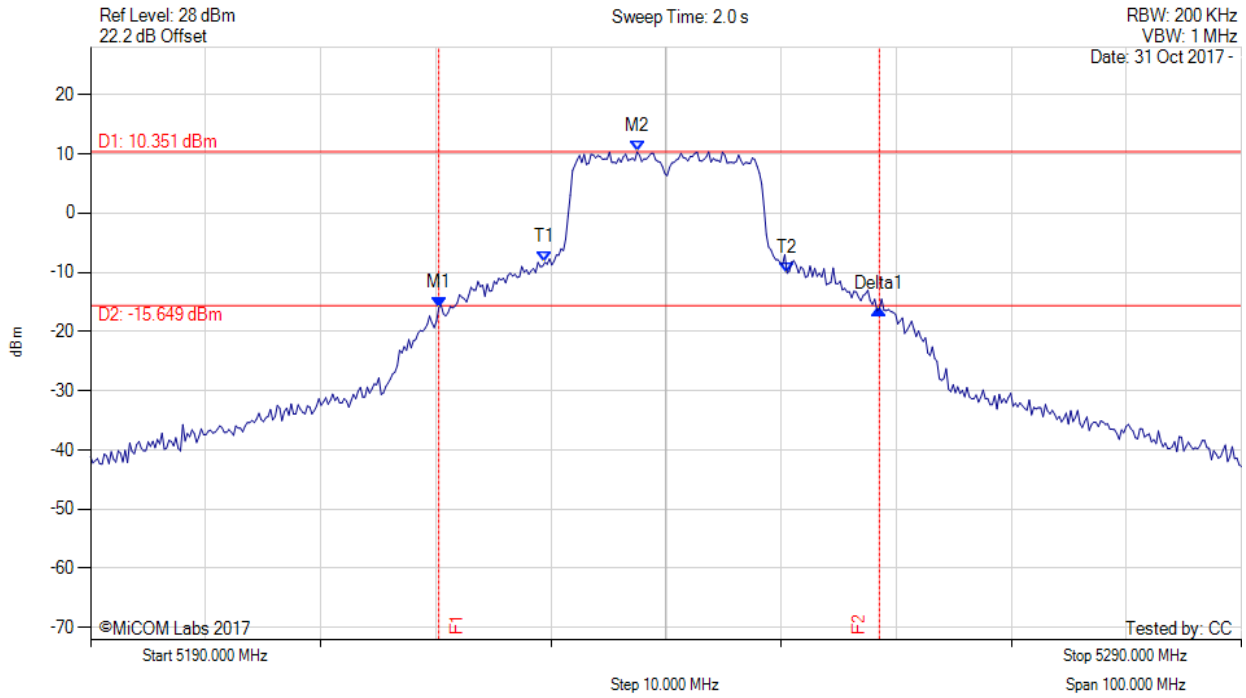


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5207.234 MHz : -18.142 dBm M2 : 5238.096 MHz : 8.704 dBm Delta1 : 59.319 MHz : 1.680 dB T1 : 5216.854 MHz : -11.231 dBm T2 : 5259.739 MHz : -10.588 dBm OBW : 42.886 MHz	Measured 26 dB Bandwidth: 59.319 MHz Measured 99% Bandwidth: 42.886 MHz

back to matrix

26 dB & 99% BANDWIDTH

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

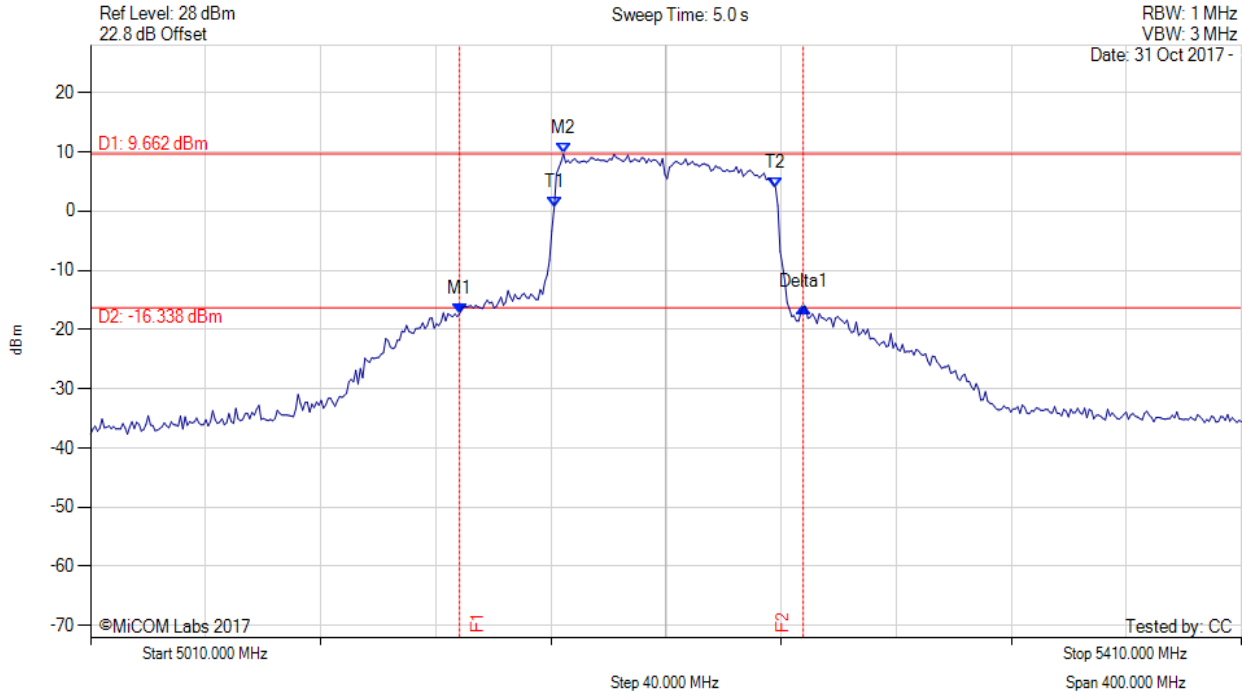


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5220.261 MHz : -15.994 dBm M2 : 5237.495 MHz : 10.351 dBm Delta1 : 38.277 MHz : -0.234 dB T1 : 5229.479 MHz : -8.319 dBm T2 : 5250.521 MHz : -10.161 dBm OBW : 21.042 MHz	Measured 26 dB Bandwidth: 38.277 MHz Measured 99% Bandwidth: 21.042 MHz

back to matrix

26 dB & 99% BANDWIDTH

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

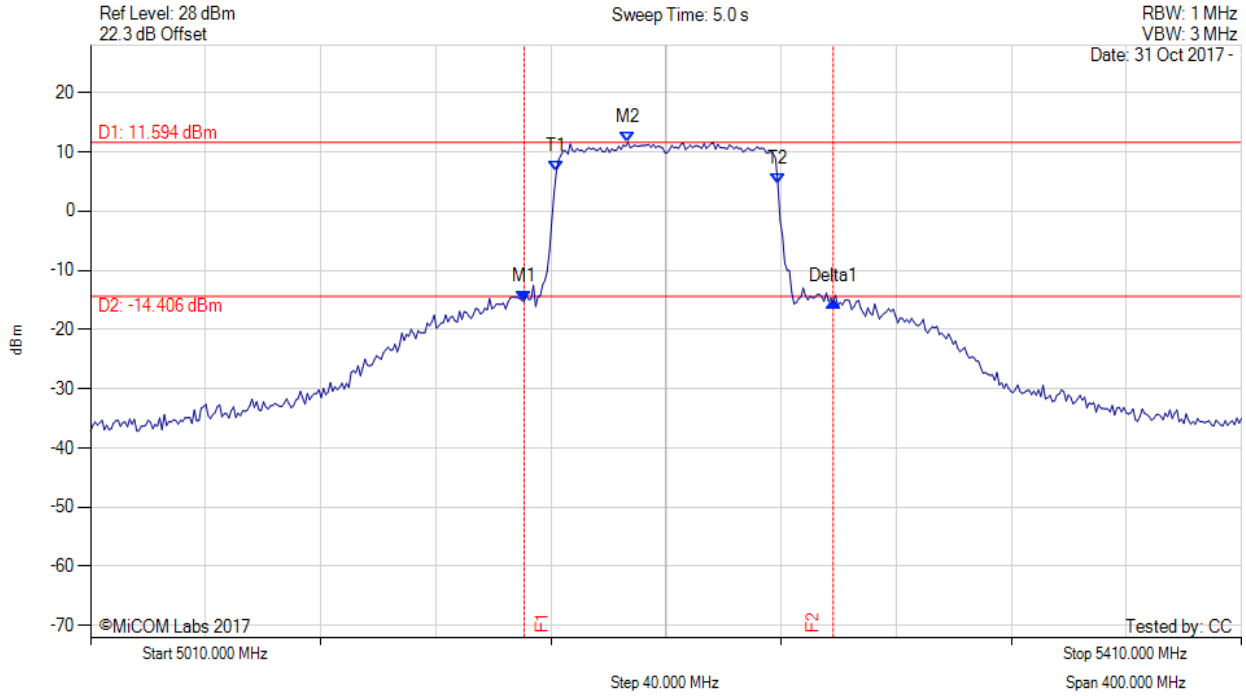


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5138.257 MHz : -17.287 dBm M2 : 5174.329 MHz : 9.662 dBm Delta1 : 119.439 MHz : 1.084 dB T1 : 5171.122 MHz : 0.540 dBm T2 : 5248.076 MHz : 3.933 dBm OBW : 76.954 MHz	Measured 26 dB Bandwidth: 119.439 MHz Measured 99% Bandwidth: 76.954 MHz

back to matrix

26 dB & 99% BANDWIDTH

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

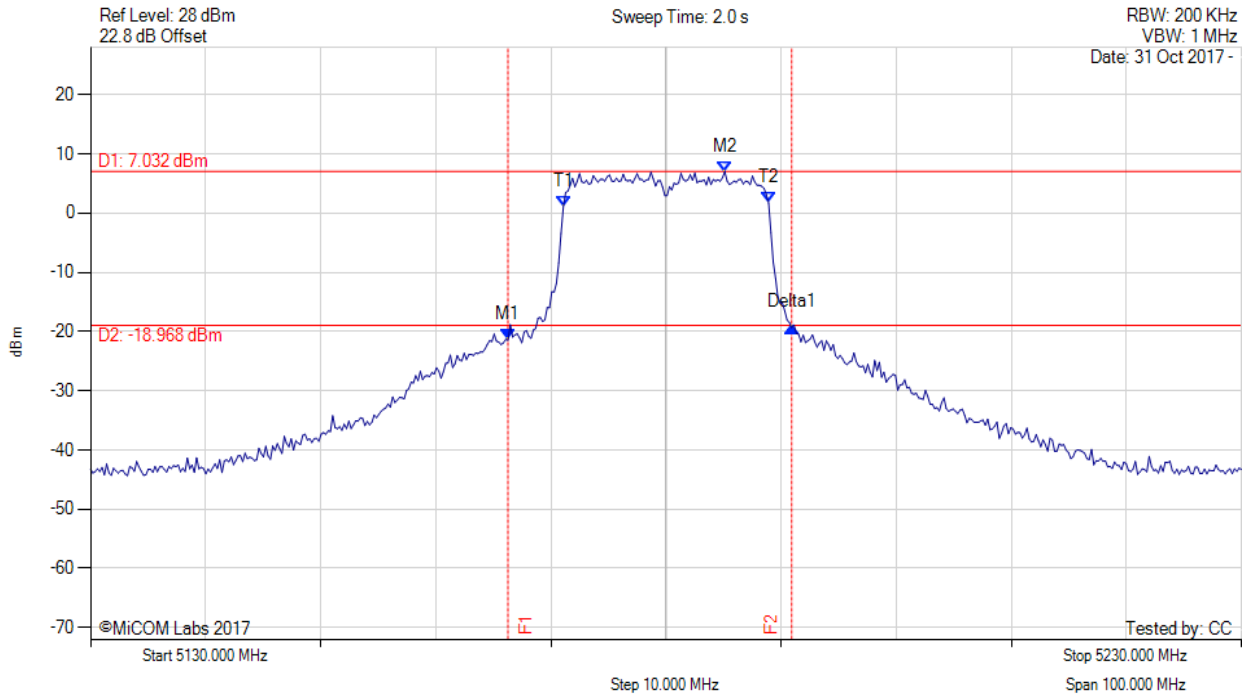


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5160.701 MHz : -15.203 dBm M2 : 5196.774 MHz : 11.594 dBm Delta1 : 107.415 MHz : -0.126 dB T1 : 5171.924 MHz : 6.719 dBm T2 : 5248.878 MHz : 4.555 dBm OBW : 76.954 MHz	Measured 26 dB Bandwidth: 107.415 MHz Measured 99% Bandwidth: 76.954 MHz

back to matrix

26 dB & 99% BANDWIDTH

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

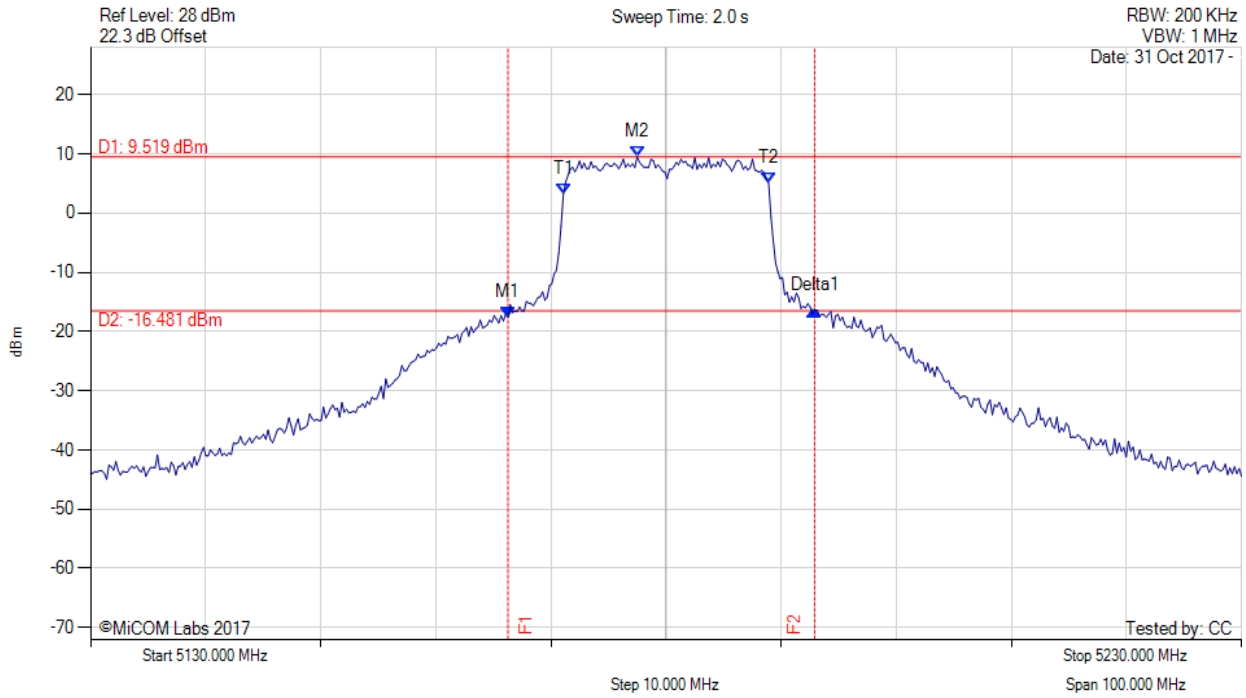


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5166.273 MHz : -21.434 dBm M2 : 5185.110 MHz : 7.032 dBm Delta1 : 24.649 MHz : 2.101 dB T1 : 5171.082 MHz : 1.150 dBm T2 : 5188.918 MHz : 1.712 dBm OBW : 17.836 MHz	Measured 26 dB Bandwidth: 24.649 MHz Measured 99% Bandwidth: 17.836 MHz

back to matrix

26 dB & 99% BANDWIDTH

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

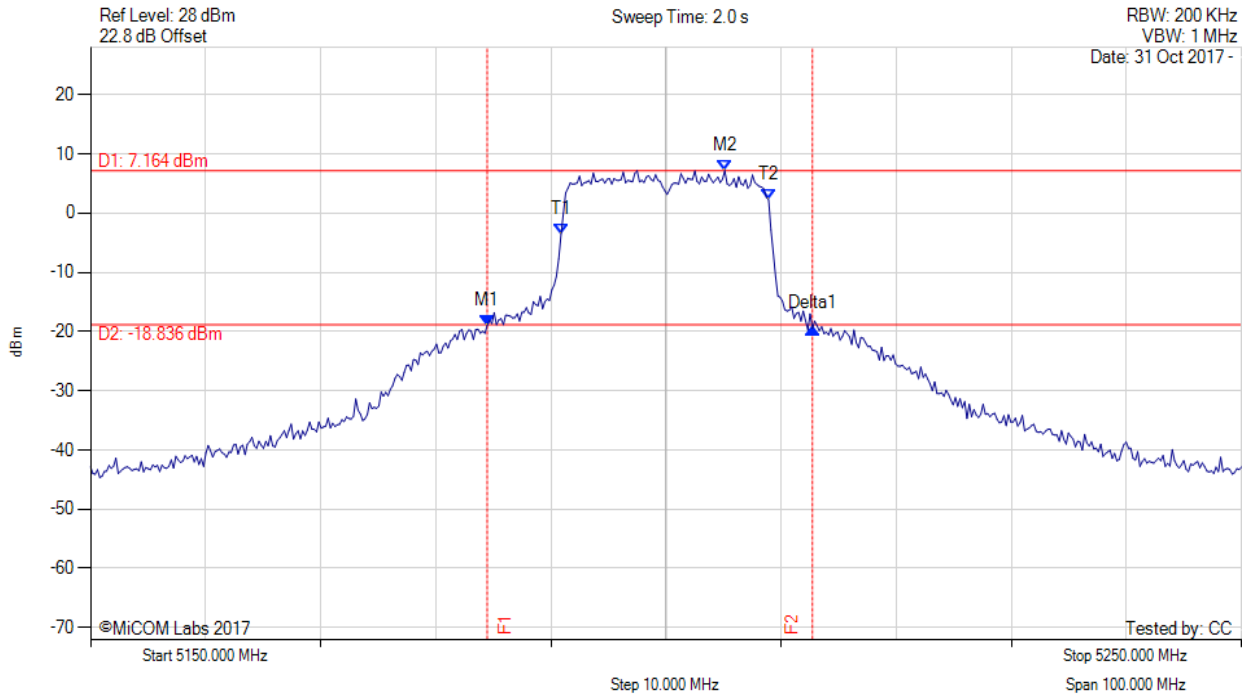


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5166.273 MHz : -17.603 dBm M2 : 5177.495 MHz : 9.519 dBm Delta1 : 26.653 MHz : 1.192 dB T1 : 5171.082 MHz : 3.235 dBm T2 : 5188.918 MHz : 5.082 dBm OBW : 17.836 MHz	Measured 26 dB Bandwidth: 26.653 MHz Measured 99% Bandwidth: 17.836 MHz

back to matrix

26 dB & 99% BANDWIDTH

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

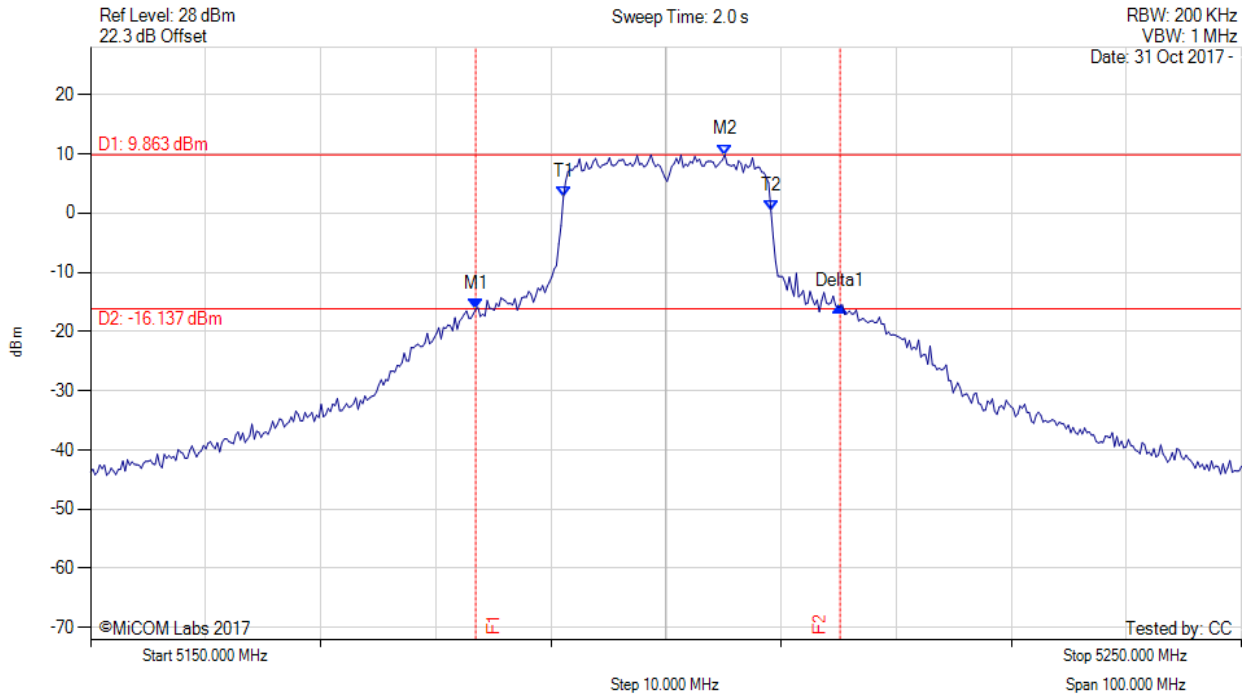


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5184.469 MHz : -18.919 dBm M2 : 5205.110 MHz : 7.164 dBm Delta1 : 28.257 MHz : -0.502 dB T1 : 5190.882 MHz : -3.588 dBm T2 : 5208.918 MHz : 2.234 dBm OBW : 18.036 MHz	Measured 26 dB Bandwidth: 28.257 MHz Measured 99% Bandwidth: 18.036 MHz

back to matrix

26 dB & 99% BANDWIDTH

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

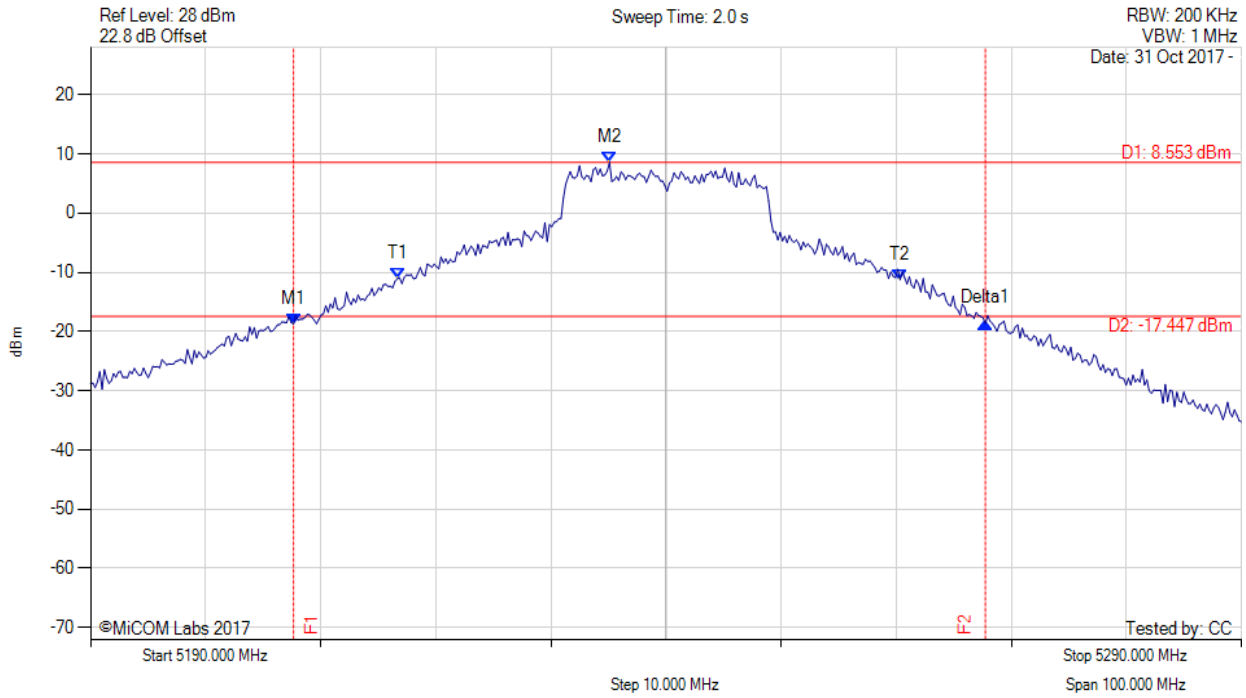


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5183.467 MHz : -16.256 dBm M2 : 5205.110 MHz : 9.863 dBm Delta1 : 31.663 MHz : 0.445 dB T1 : 5191.082 MHz : 2.731 dBm T2 : 5209.118 MHz : 0.335 dBm OBW : 18.036 MHz	Measured 26 dB Bandwidth: 31.663 MHz Measured 99% Bandwidth: 18.036 MHz

back to matrix

26 dB & 99% BANDWIDTH

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

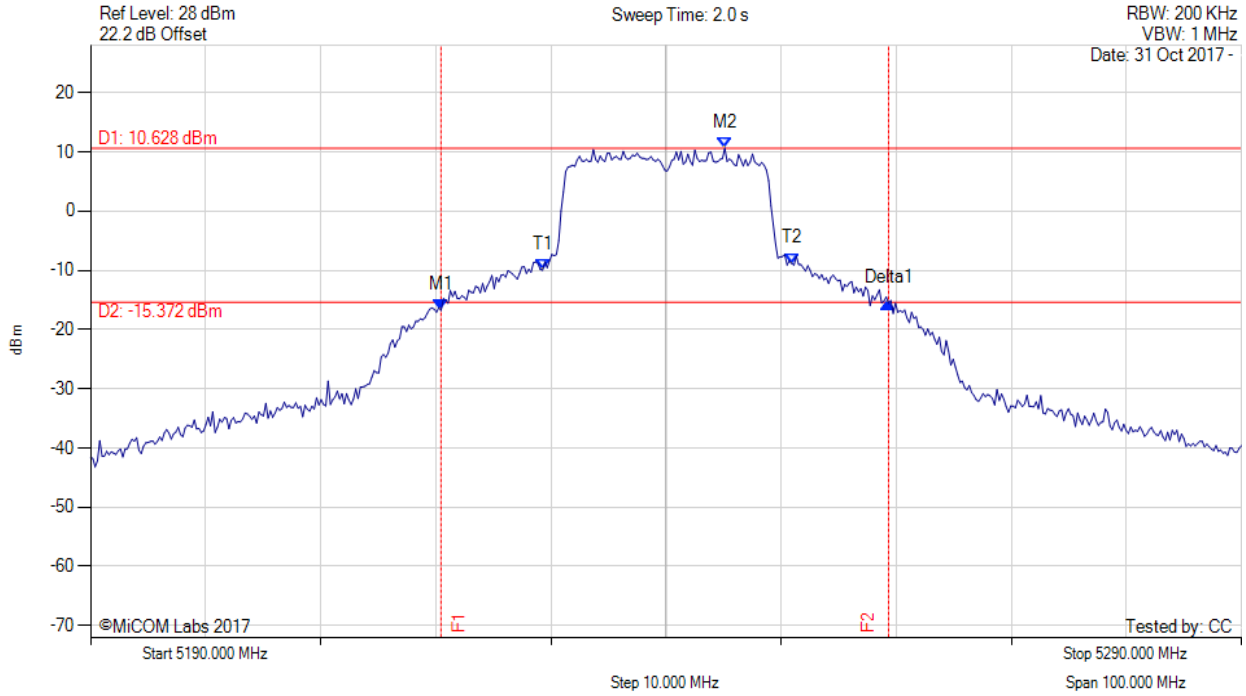


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5207.635 MHz : -18.719 dBm M2 : 5235.090 MHz : 8.553 dBm Delta1 : 60.120 MHz : 0.104 dB T1 : 5216.653 MHz : -11.074 dBm T2 : 5260.341 MHz : -11.243 dBm OBW : 43.687 MHz	Measured 26 dB Bandwidth: 60.120 MHz Measured 99% Bandwidth: 43.687 MHz

back to matrix

26 dB & 99% BANDWIDTH

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

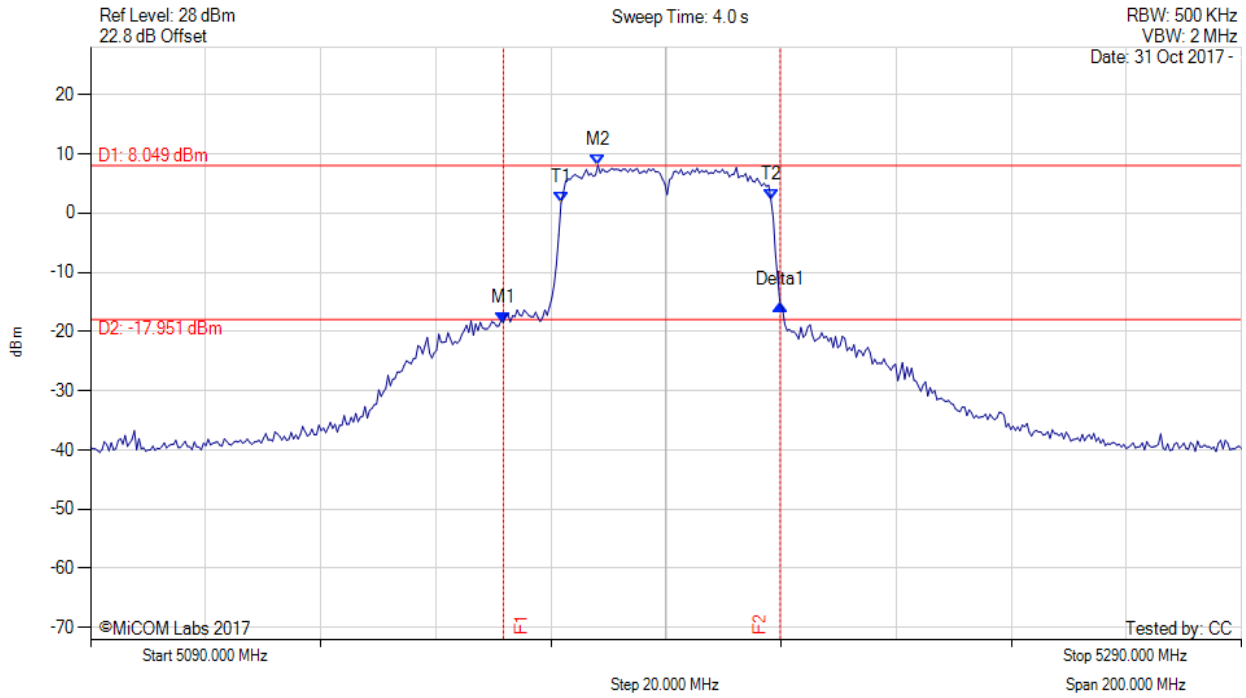


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5220.461 MHz : -16.759 dBm M2 : 5245.110 MHz : 10.628 dBm Delta1 : 38.878 MHz : 1.194 dB T1 : 5229.279 MHz : -9.956 dBm T2 : 5250.922 MHz : -8.843 dBm OBW : 21.643 MHz	Measured 26 dB Bandwidth: 38.878 MHz Measured 99% Bandwidth: 21.643 MHz

back to matrix

26 dB & 99% BANDWIDTH

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

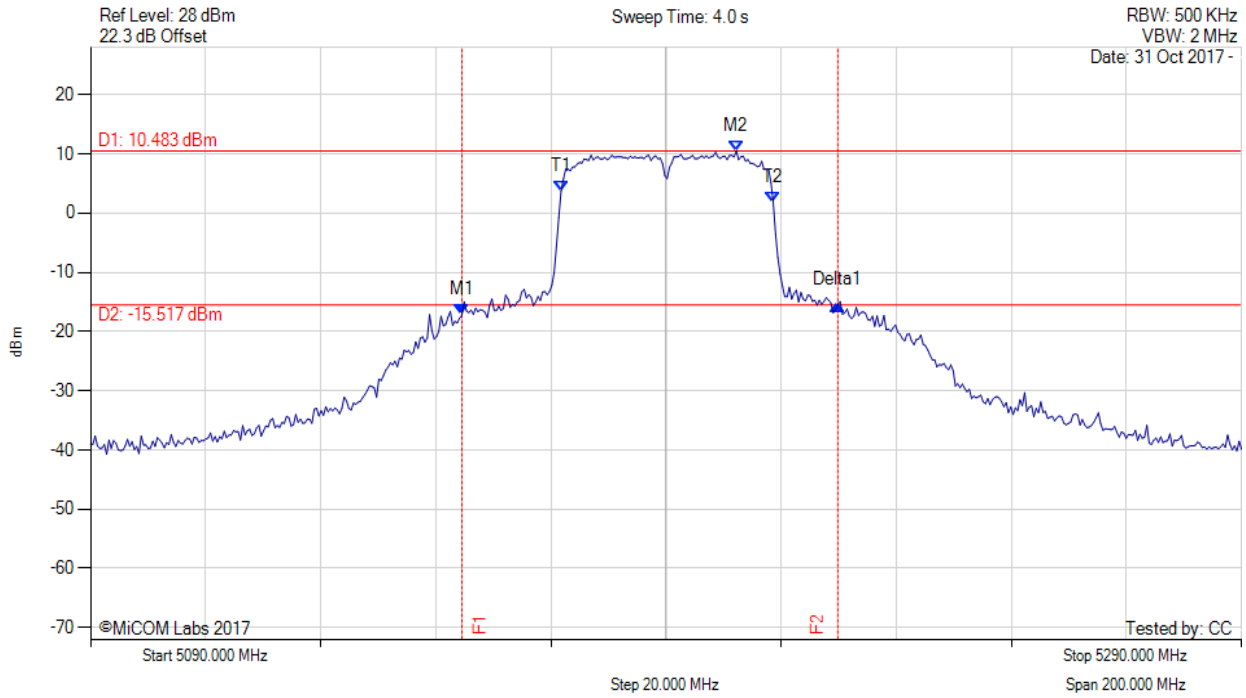


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5161.743 MHz : -18.500 dBm M2 : 5178.176 MHz : 8.049 dBm Delta1 : 48.096 MHz : 3.042 dB T1 : 5171.764 MHz : 1.710 dBm T2 : 5208.236 MHz : 2.220 dBm OBW : 36.473 MHz	Measured 26 dB Bandwidth: 48.096 MHz Measured 99% Bandwidth: 36.473 MHz

back to matrix

26 dB & 99% BANDWIDTH

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

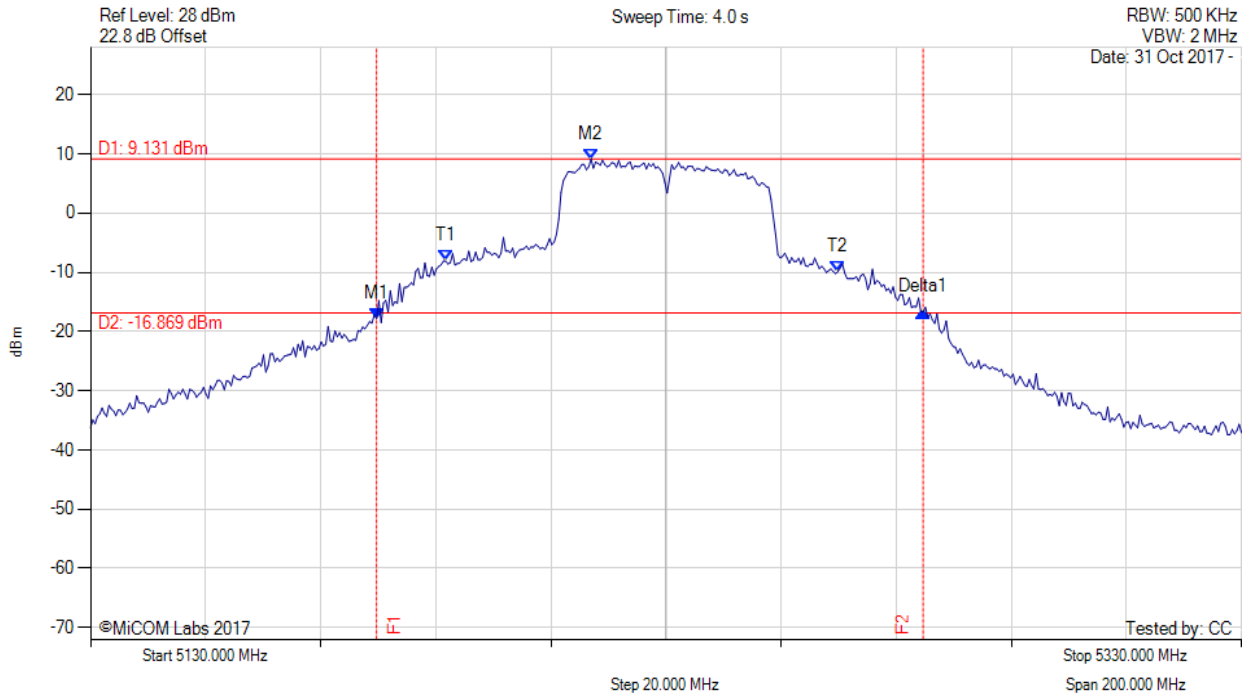


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5154.529 MHz : -17.212 dBm M2 : 5202.224 MHz : 10.483 dBm Delta1 : 65.331 MHz : 1.800 dB T1 : 5171.764 MHz : 3.676 dBm T2 : 5208.637 MHz : 1.779 dBm OBW : 36.874 MHz	Measured 26 dB Bandwidth: 65.331 MHz Measured 99% Bandwidth: 36.874 MHz

back to matrix

26 dB & 99% BANDWIDTH

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

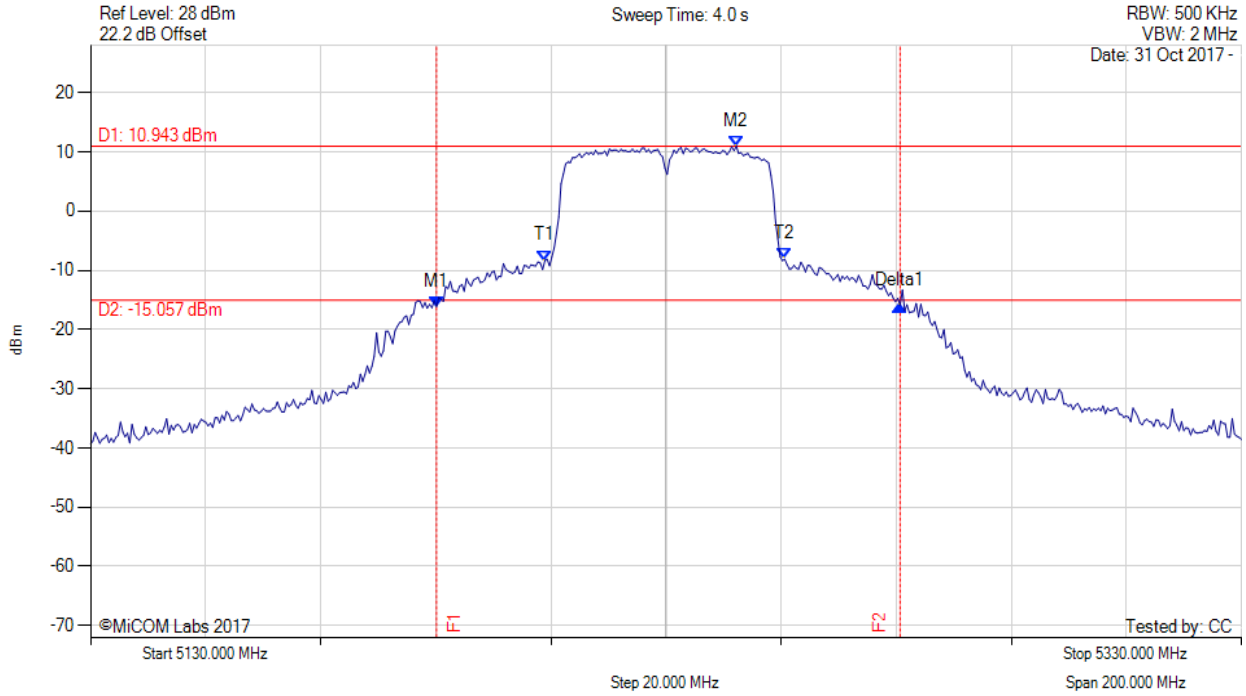


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5179.699 MHz : -17.796 dBm M2 : 5216.974 MHz : 9.131 dBm Delta1 : 94.990 MHz : 1.094 dB T1 : 5191.723 MHz : -8.097 dBm T2 : 5259.860 MHz : -9.903 dBm OBW : 68.136 MHz	Measured 26 dB Bandwidth: 94.990 MHz Measured 99% Bandwidth: 68.136 MHz

back to matrix

26 dB & 99% BANDWIDTH

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



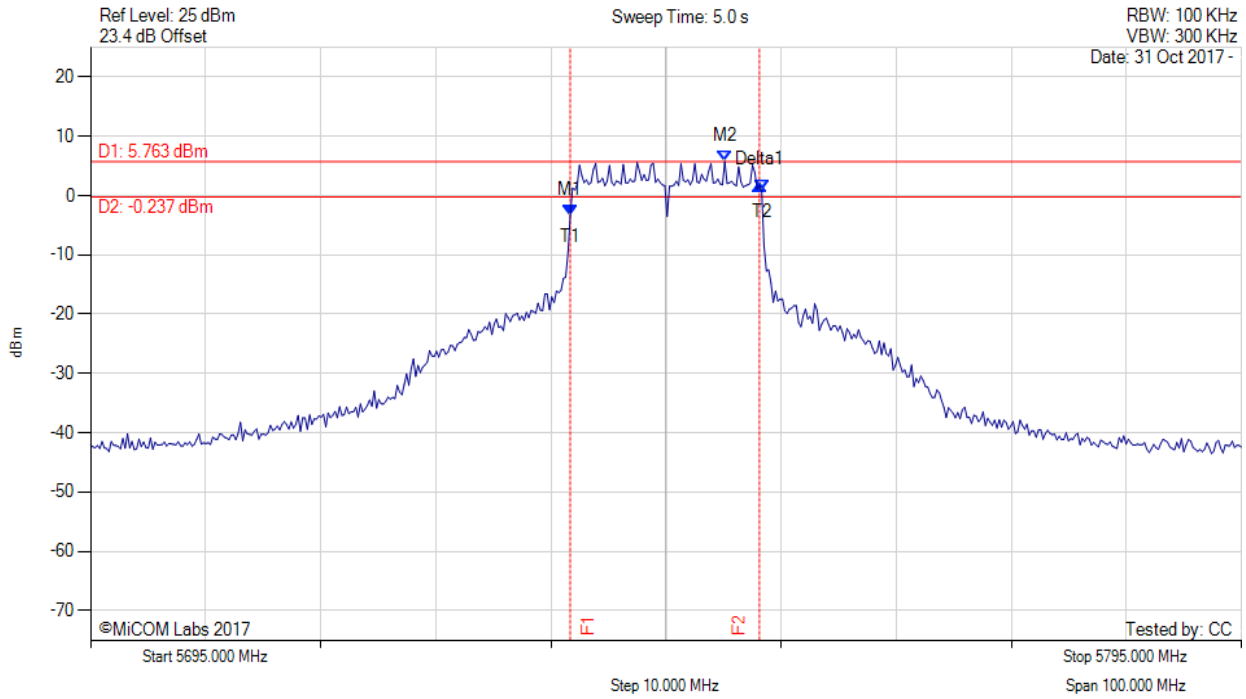
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5190.120 MHz : -16.114 dBm M2 : 5242.224 MHz : 10.943 dBm Delta1 : 80.561 MHz : 0.244 dB T1 : 5208.958 MHz : -8.361 dBm T2 : 5250.641 MHz : -8.121 dBm OBW : 41.683 MHz	Measured 26 dB Bandwidth: 80.561 MHz Measured 99% Bandwidth: 41.683 MHz

back to matrix

A.2. 6 dB & 99% Bandwidth

6 dB & 99% BANDWIDTH

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

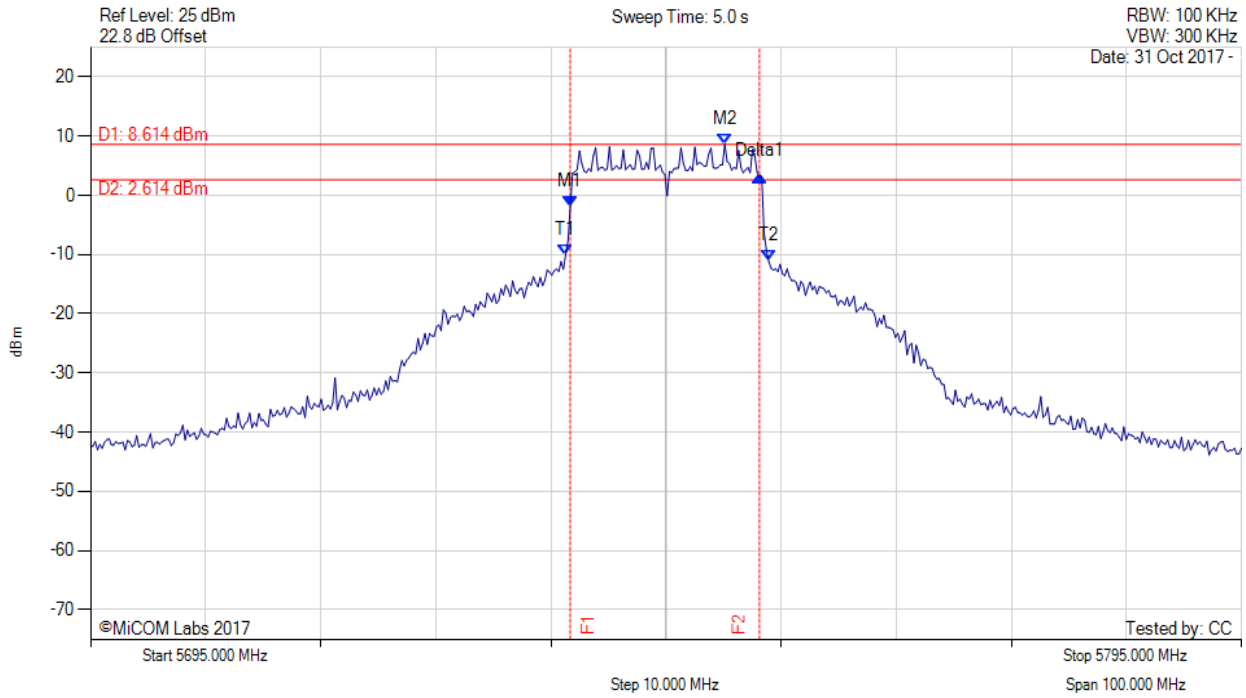


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5736.683 MHz : -3.287 dBm M2 : 5750.110 MHz : 5.763 dBm Delta1 : 16.433 MHz : 5.027 dB T1 : 5736.683 MHz : -3.287 dBm T2 : 5753.317 MHz : 0.802 dBm OBW : 16.633 MHz	Measured 6 dB Bandwidth: 16.433 MHz Measured 99% Bandwidth: 16.633 MHz

back to matrix

6 dB & 99% BANDWIDTH

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

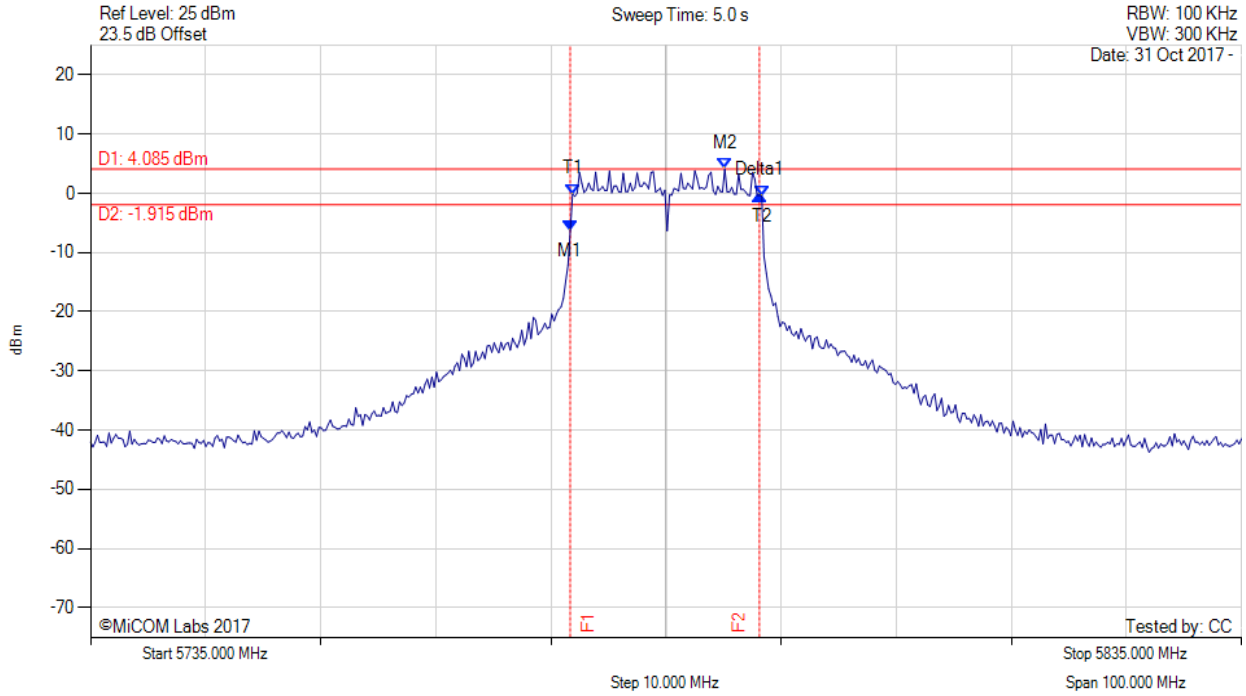


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5736.683 MHz : -1.931 dBm M2 : 5750.110 MHz : 8.614 dBm Delta1 : 16.433 MHz : 5.076 dB T1 : 5736.283 MHz : -9.999 dBm T2 : 5753.918 MHz : -11.083 dBm OBW : 17.635 MHz	Measured 6 dB Bandwidth: 16.433 MHz Measured 99% Bandwidth: 17.635 MHz

back to matrix

6 dB & 99% BANDWIDTH

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

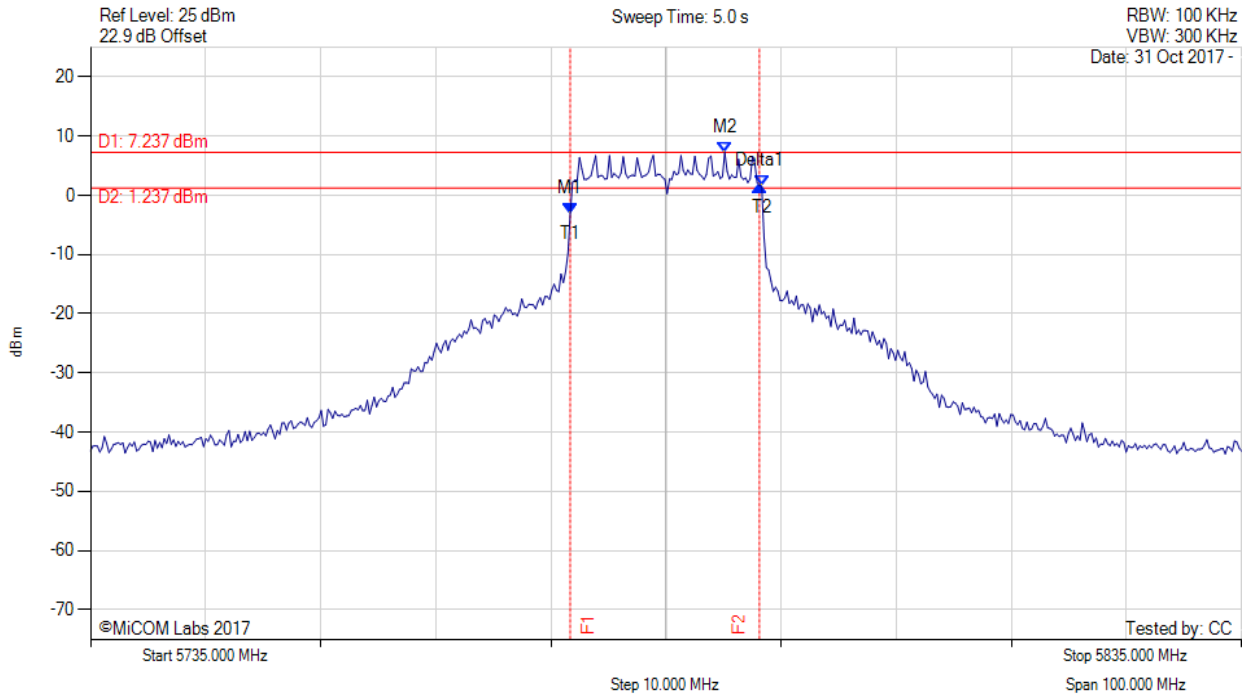


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5776.683 MHz : -6.263 dBm M2 : 5790.110 MHz : 4.085 dBm Delta1 : 16.433 MHz : 5.906 dB T1 : 5776.884 MHz : -0.149 dBm T2 : 5793.317 MHz : -0.373 dBm OBW : 16.433 MHz	Measured 6 dB Bandwidth: 16.433 MHz Measured 99% Bandwidth: 16.433 MHz

back to matrix

6 dB & 99% BANDWIDTH

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

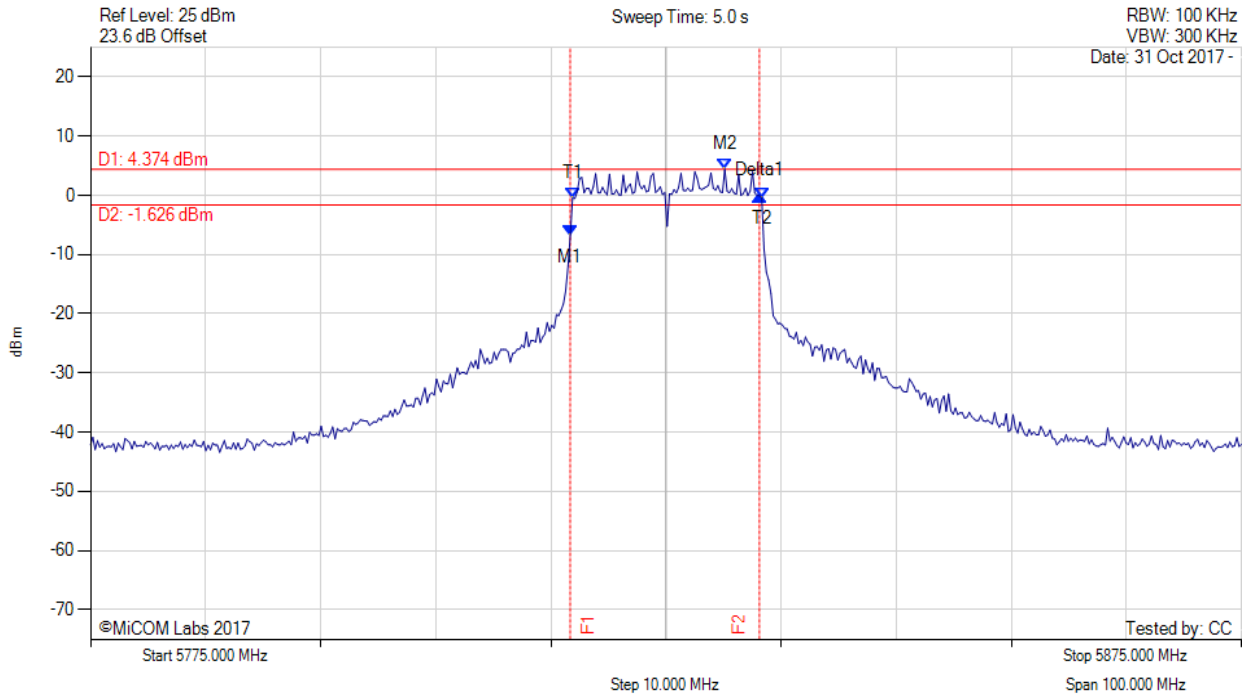


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5776.683 MHz : -2.995 dBm M2 : 5790.110 MHz : 7.237 dBm Delta1 : 16.433 MHz : 4.690 dB T1 : 5776.683 MHz : -2.995 dBm T2 : 5793.317 MHz : 1.510 dBm OBW : 16.633 MHz	Measured 6 dB Bandwidth: 16.433 MHz Measured 99% Bandwidth: 16.633 MHz

back to matrix

6 dB & 99% BANDWIDTH

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

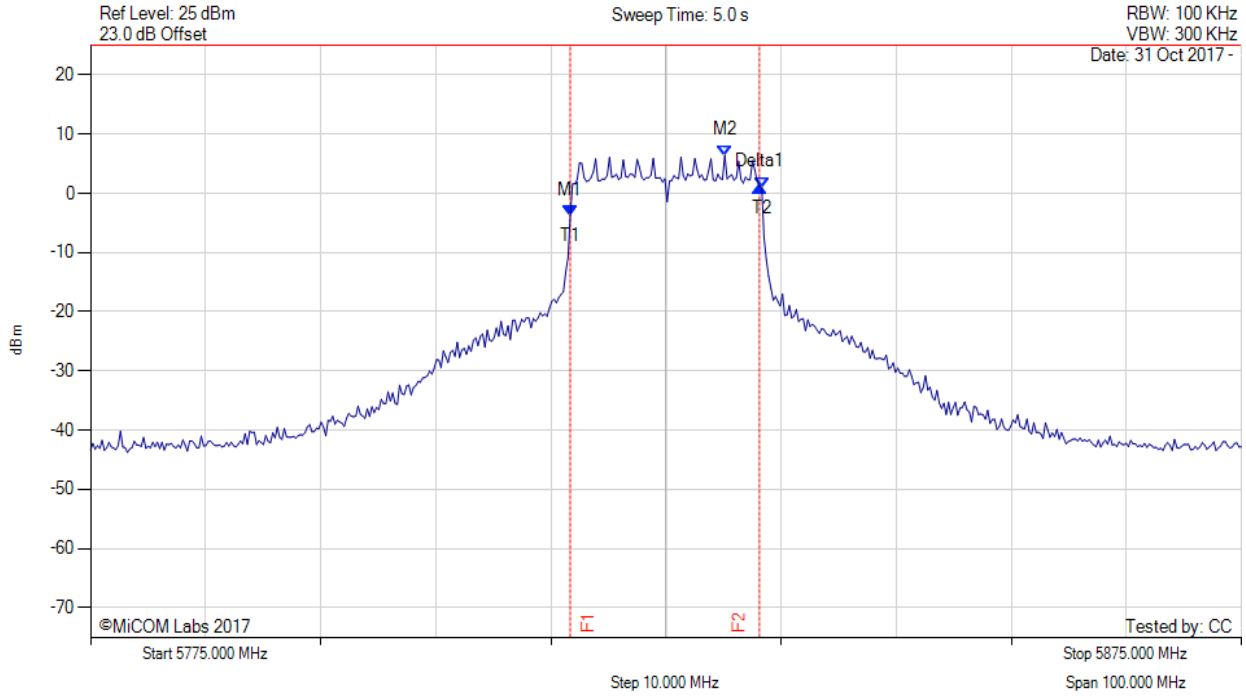


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5816.683 MHz : -6.842 dBm M2 : 5830.110 MHz : 4.374 dBm Delta1 : 16.433 MHz : 6.817 dB T1 : 5816.884 MHz : -0.485 dBm T2 : 5833.317 MHz : -0.385 dBm OBW : 16.433 MHz	Measured 6 dB Bandwidth: 16.433 MHz Measured 99% Bandwidth: 16.433 MHz

back to matrix

6 dB & 99% BANDWIDTH

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

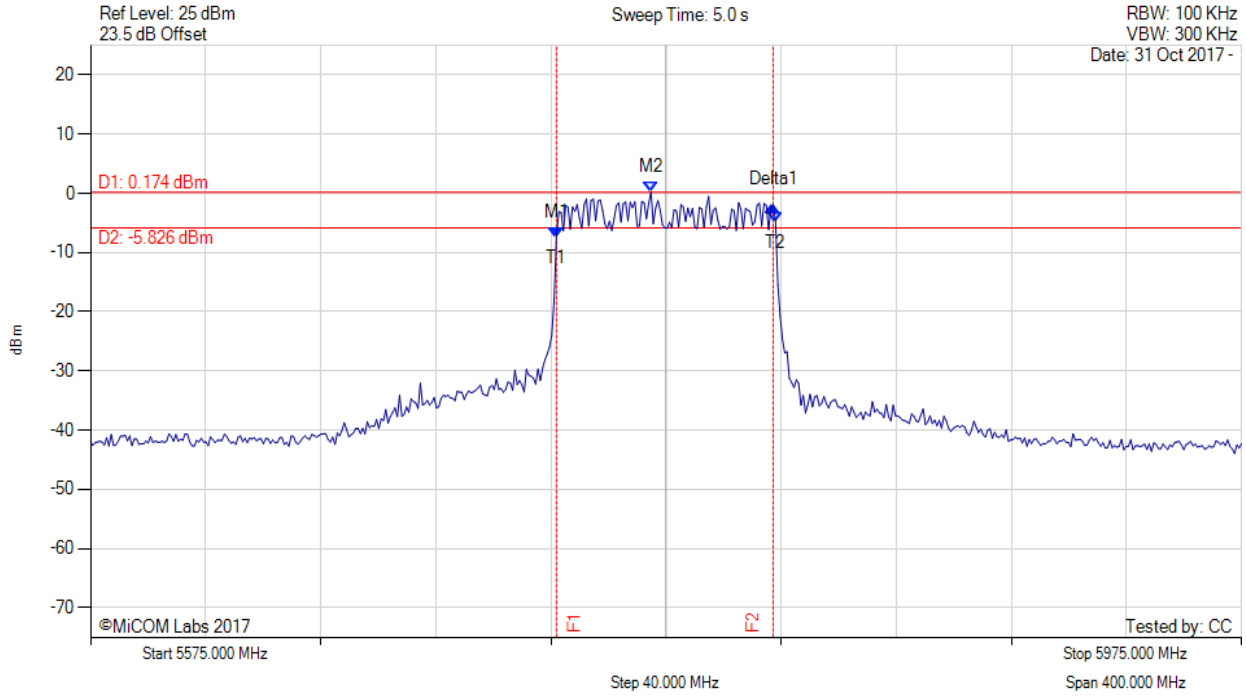


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5816.683 MHz : -3.727 dBm M2 : 5830.110 MHz : 6.403 dBm Delta1 : 16.433 MHz : 4.942 dB T1 : 5816.683 MHz : -3.727 dBm T2 : 5833.317 MHz : 1.028 dBm OBW : 16.633 MHz	Measured 6 dB Bandwidth: 16.433 MHz Measured 99% Bandwidth: 16.633 MHz

back to matrix

6 dB & 99% BANDWIDTH

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

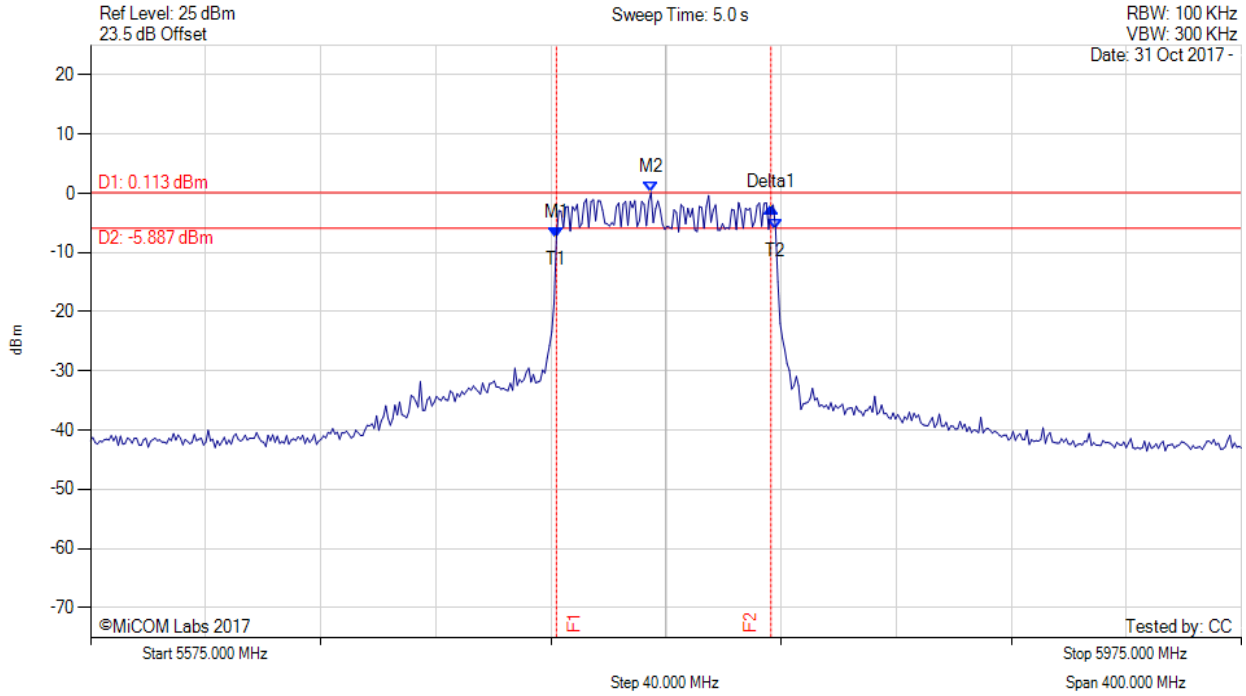


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5736.924 MHz : -7.467 dBm M2 : 5769.790 MHz : 0.174 dBm Delta1 : 75.351 MHz : 5.457 dB T1 : 5736.924 MHz : -7.467 dBm T2 : 5813.076 MHz : -4.898 dBm OBW : 76.152 MHz	Measured 6 dB Bandwidth: 75.351 MHz Measured 99% Bandwidth: 76.152 MHz

back to matrix

6 dB & 99% BANDWIDTH

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

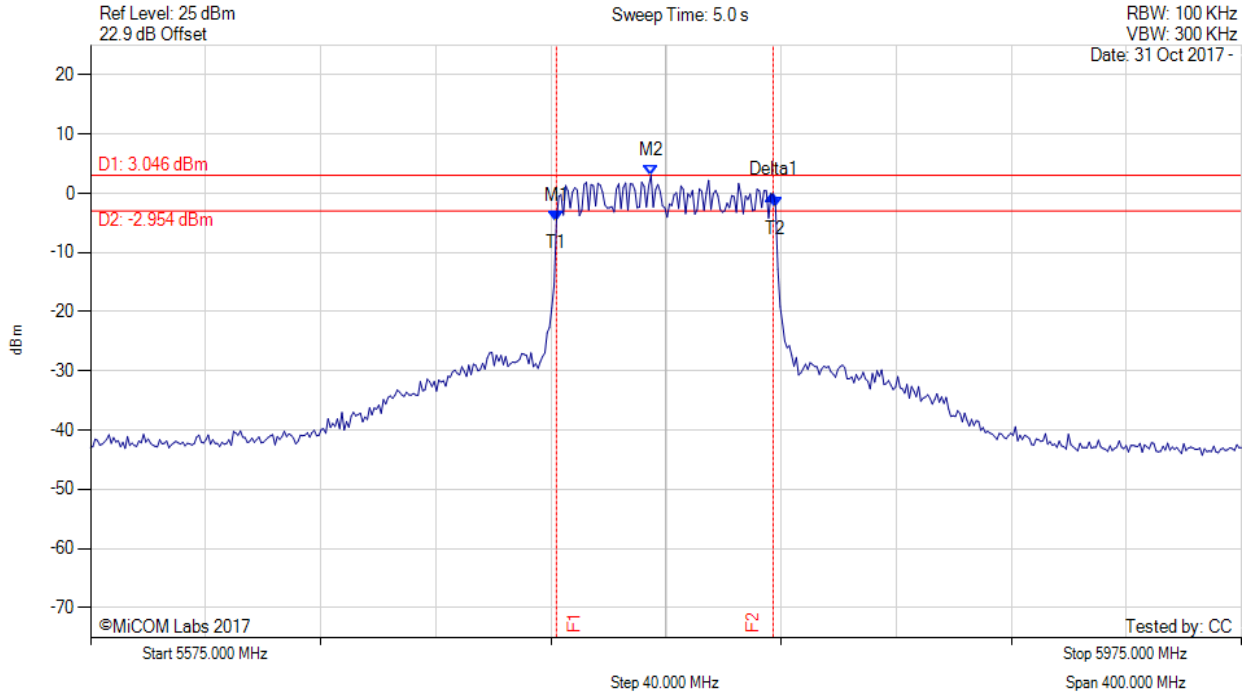


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5736.924 MHz : -7.487 dBm M2 : 5769.790 MHz : 0.113 dBm Delta1 : 74.549 MHz : 5.123 dB T1 : 5736.924 MHz : -7.487 dBm T2 : 5813.076 MHz : -6.116 dBm OBW : 76.152 MHz	Channel Frequency: 5775.00 MHz

back to matrix

6 dB & 99% BANDWIDTH

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



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5736.924 MHz : -4.780 dBm M2 : 5769.790 MHz : 3.046 dBm Delta1 : 75.351 MHz : 4.556 dB T1 : 5736.924 MHz : -4.780 dBm T2 : 5813.076 MHz : -2.364 dBm OBW : 76.152 MHz	Channel Frequency: 5775.00 MHz

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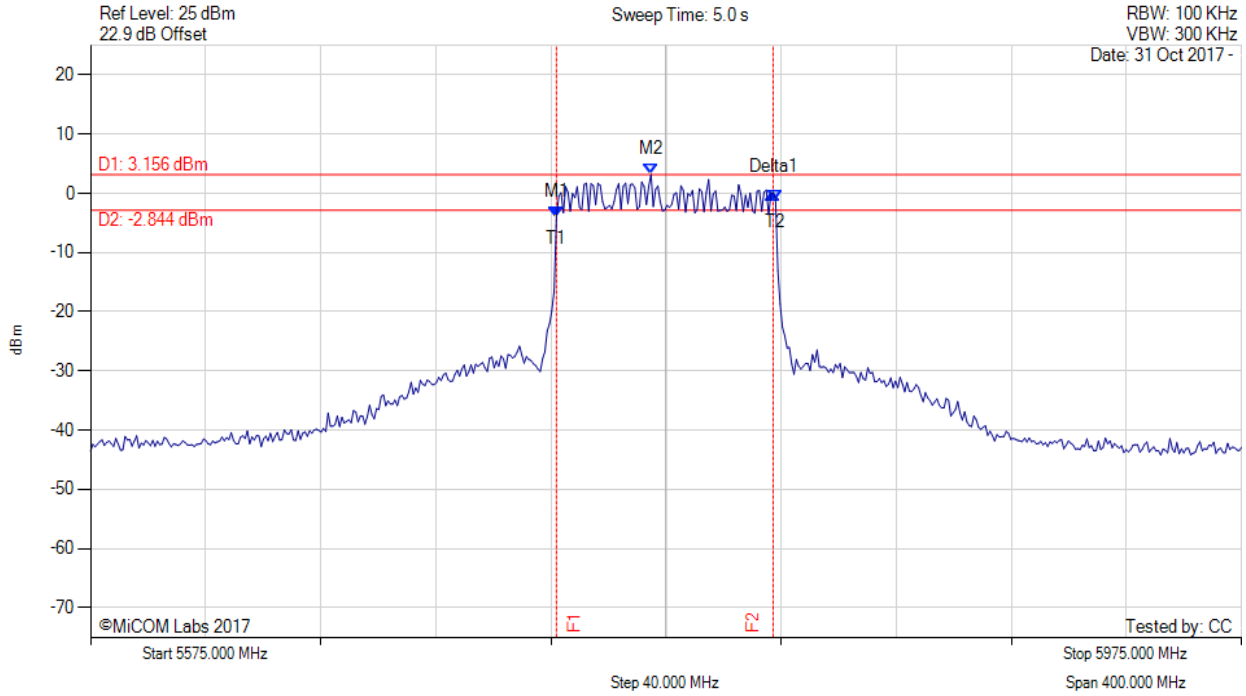
6 dB & 99% BANDWIDTH

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

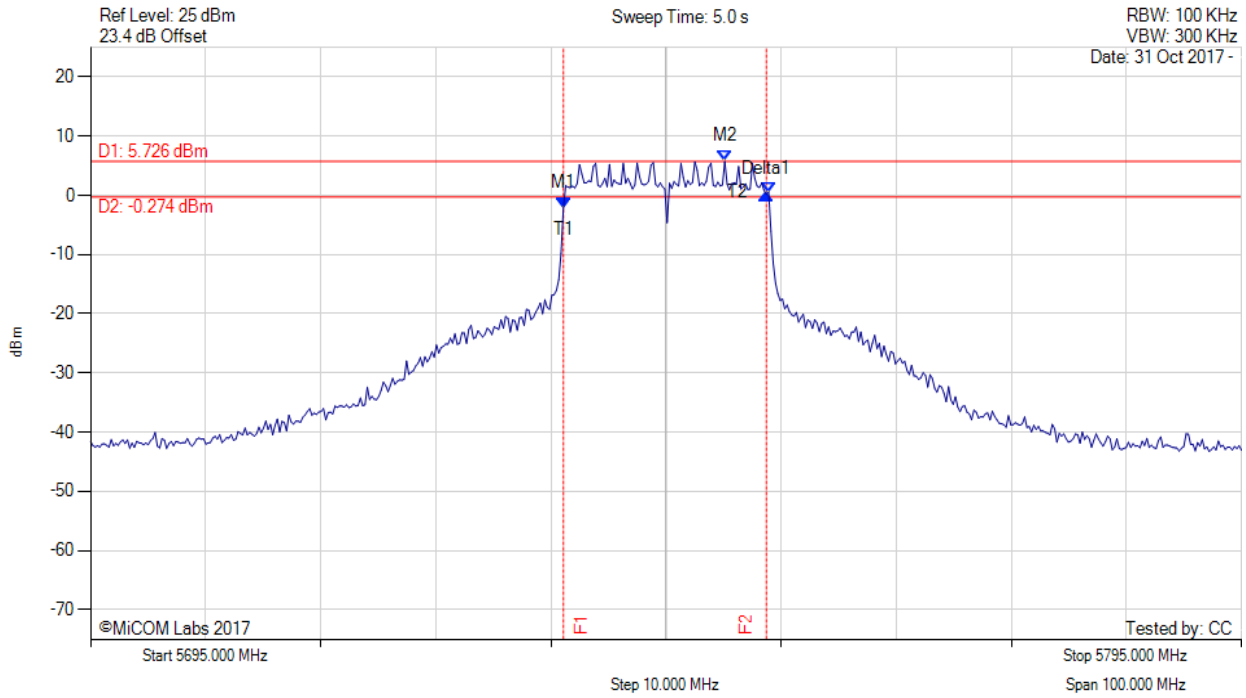


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5736.924 MHz : -4.050 dBm M2 : 5769.790 MHz : 3.156 dBm Delta1 : 75.351 MHz : 4.118 dB T1 : 5736.924 MHz : -4.050 dBm T2 : 5813.076 MHz : -1.262 dBm OBW : 76.152 MHz	Measured 6 dB Bandwidth: 75.351 MHz Measured 99% Bandwidth: 76.152 MHz

back to matrix

6 dB & 99% BANDWIDTH

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

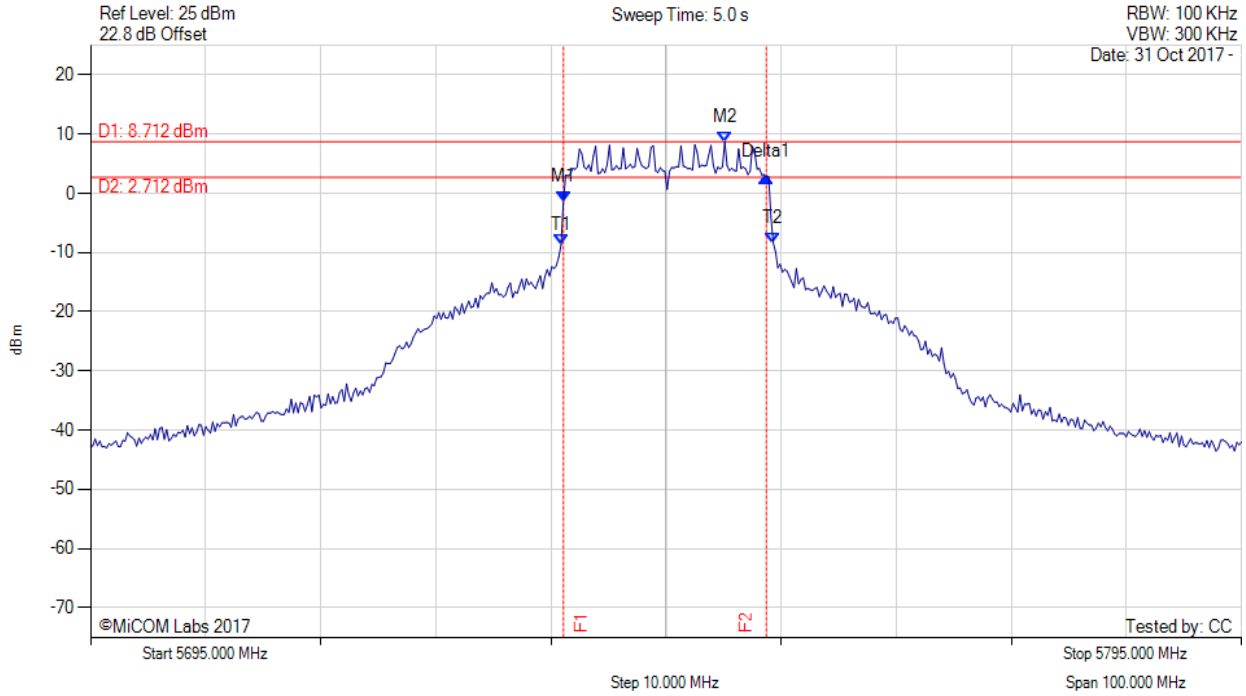


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5736.082 MHz : -2.120 dBm M2 : 5750.110 MHz : 5.726 dBm Delta1 : 17.635 MHz : 2.300 dB T1 : 5736.082 MHz : -2.120 dBm T2 : 5753.918 MHz : 0.514 dBm OBW : 17.836 MHz	Measured 6 dB Bandwidth: 17.635 MHz Measured 99% Bandwidth: 17.836 MHz

back to matrix

6 dB & 99% BANDWIDTH

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

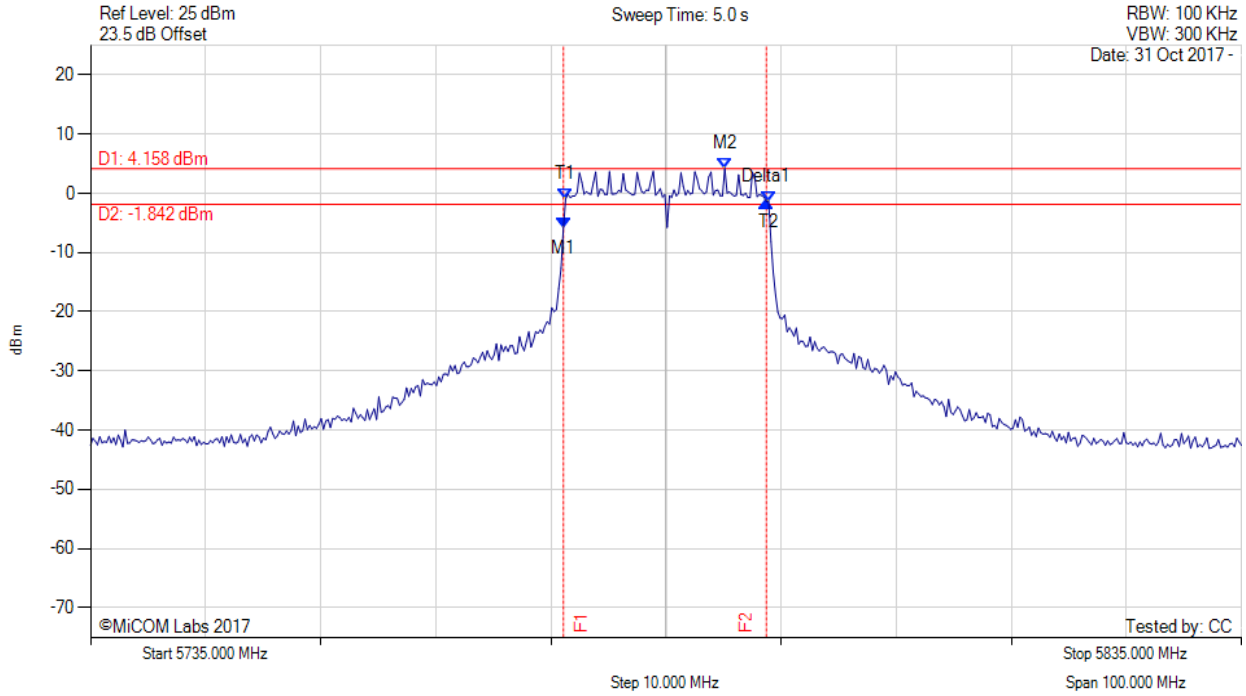


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5736.082 MHz : -1.345 dBm M2 : 5750.110 MHz : 8.712 dBm Delta1 : 17.635 MHz : 4.135 dB T1 : 5735.882 MHz : -8.705 dBm T2 : 5754.319 MHz : -8.374 dBm OBW : 18.437 MHz	Measured 6 dB Bandwidth: 17.635 MHz Measured 99% Bandwidth: 18.437 MHz

back to matrix

6 dB & 99% BANDWIDTH

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

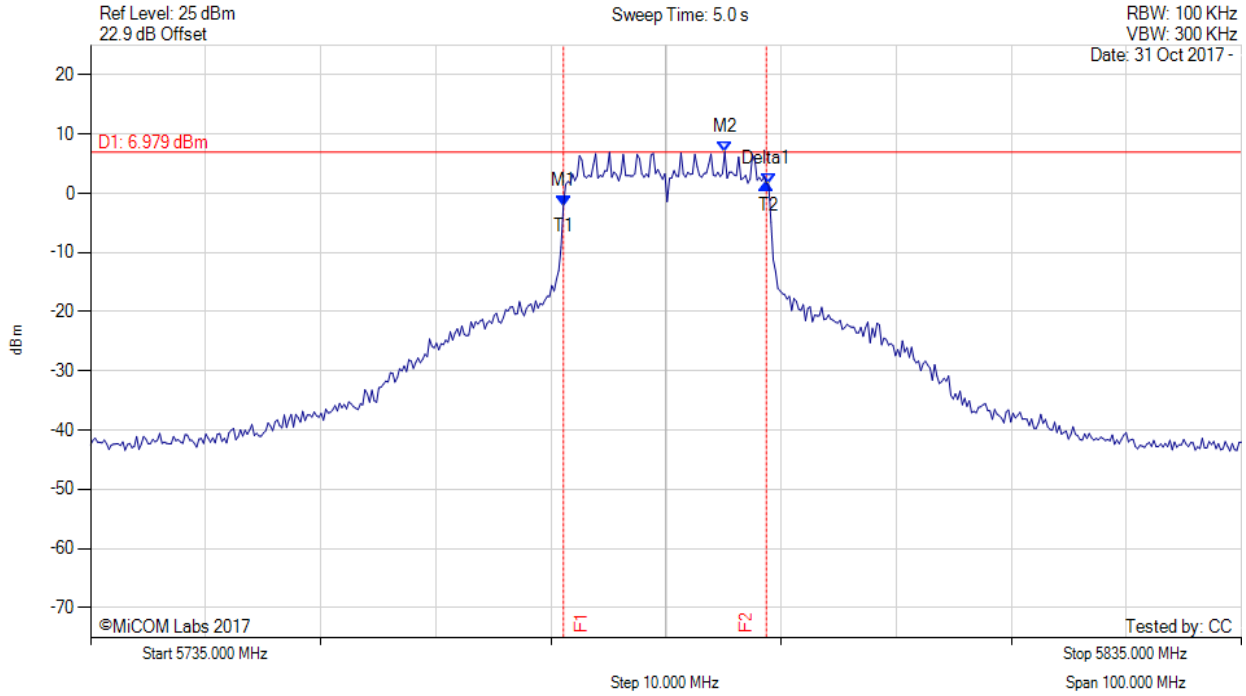


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5776.082 MHz : -5.815 dBm M2 : 5790.110 MHz : 4.158 dBm Delta1 : 17.635 MHz : 4.450 dB T1 : 5776.283 MHz : -0.922 dBm T2 : 5793.918 MHz : -1.335 dBm OBW : 17.635 MHz	Measured 6 dB Bandwidth: 17.635 MHz Measured 99% Bandwidth: 17.635 MHz

back to matrix

6 dB & 99% BANDWIDTH

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

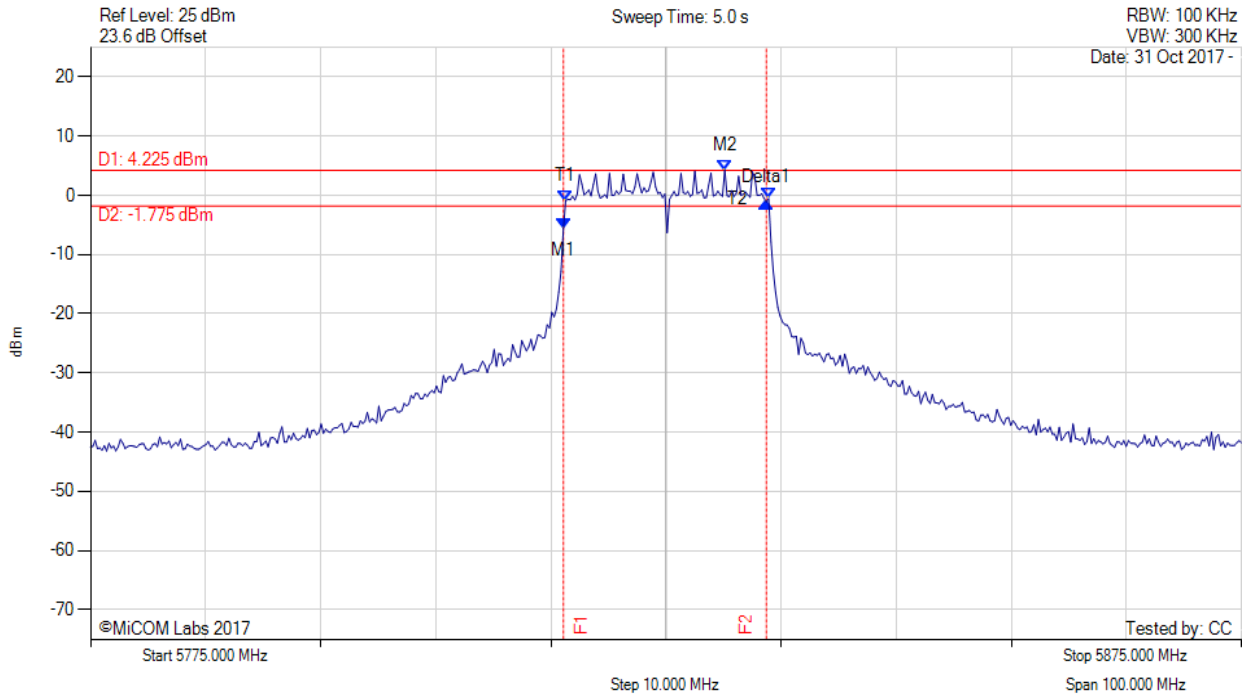


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5776.082 MHz : -2.053 dBm M2 : 5790.110 MHz : 6.979 dBm Delta1 : 17.635 MHz : 3.701 dB T1 : 5776.082 MHz : -2.053 dBm T2 : 5793.918 MHz : 1.547 dBm OBW : 17.836 MHz	Measured 6 dB Bandwidth: 17.635 MHz Measured 99% Bandwidth: 17.836 MHz

back to matrix

6 dB & 99% BANDWIDTH

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

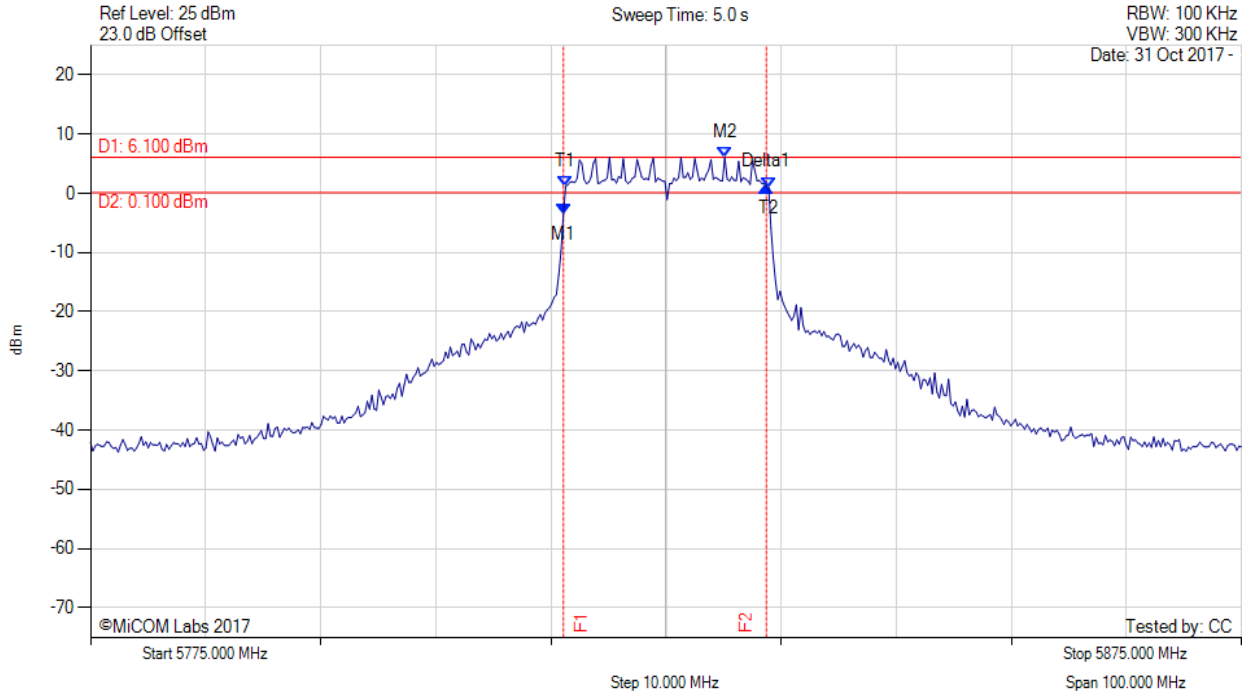


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5816.082 MHz : -5.612 dBm M2 : 5830.110 MHz : 4.225 dBm Delta1 : 17.635 MHz : 4.484 dB T1 : 5816.283 MHz : -0.892 dBm T2 : 5833.918 MHz : -0.544 dBm OBW : 17.635 MHz	Measured 6 dB Bandwidth: 17.635 MHz Measured 99% Bandwidth: 17.635 MHz

back to matrix

6 dB & 99% BANDWIDTH

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

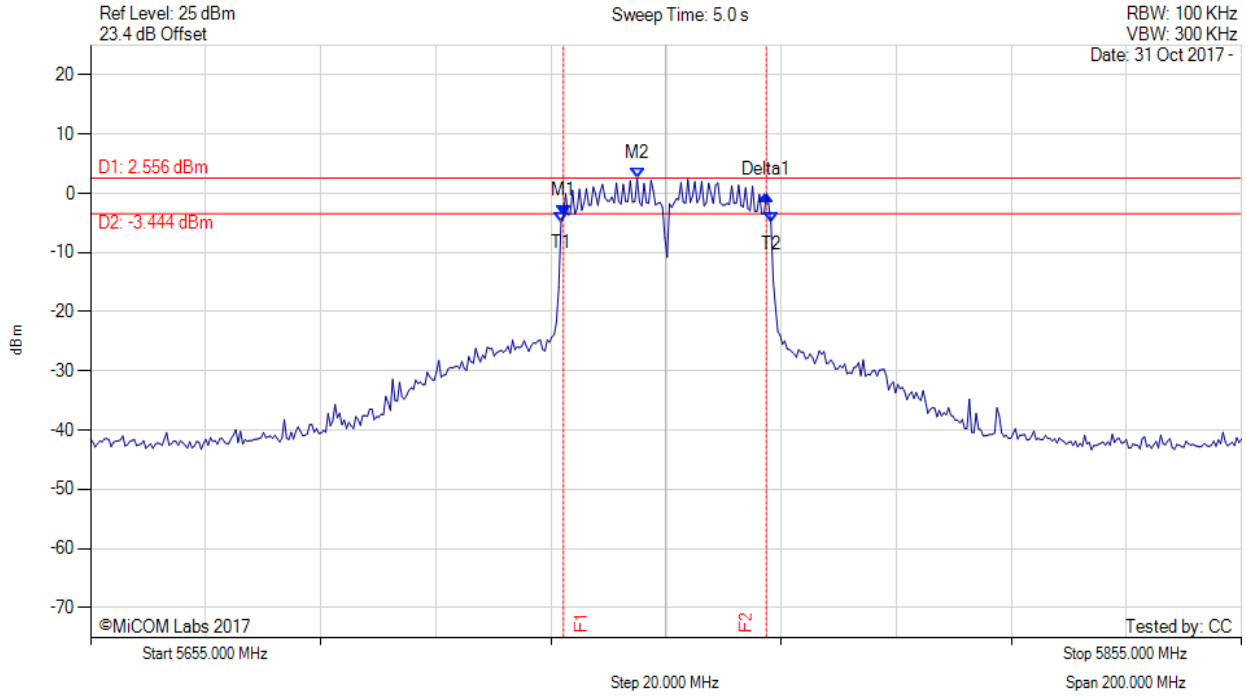


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5816.082 MHz : -3.472 dBm M2 : 5830.110 MHz : 6.100 dBm Delta1 : 17.635 MHz : 4.645 dB T1 : 5816.283 MHz : 1.134 dBm T2 : 5833.918 MHz : 1.012 dBm OBW : 17.635 MHz	Measured 6 dB Bandwidth: 17.635 MHz Measured 99% Bandwidth: 17.635 MHz

back to matrix

6 dB & 99% BANDWIDTH

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

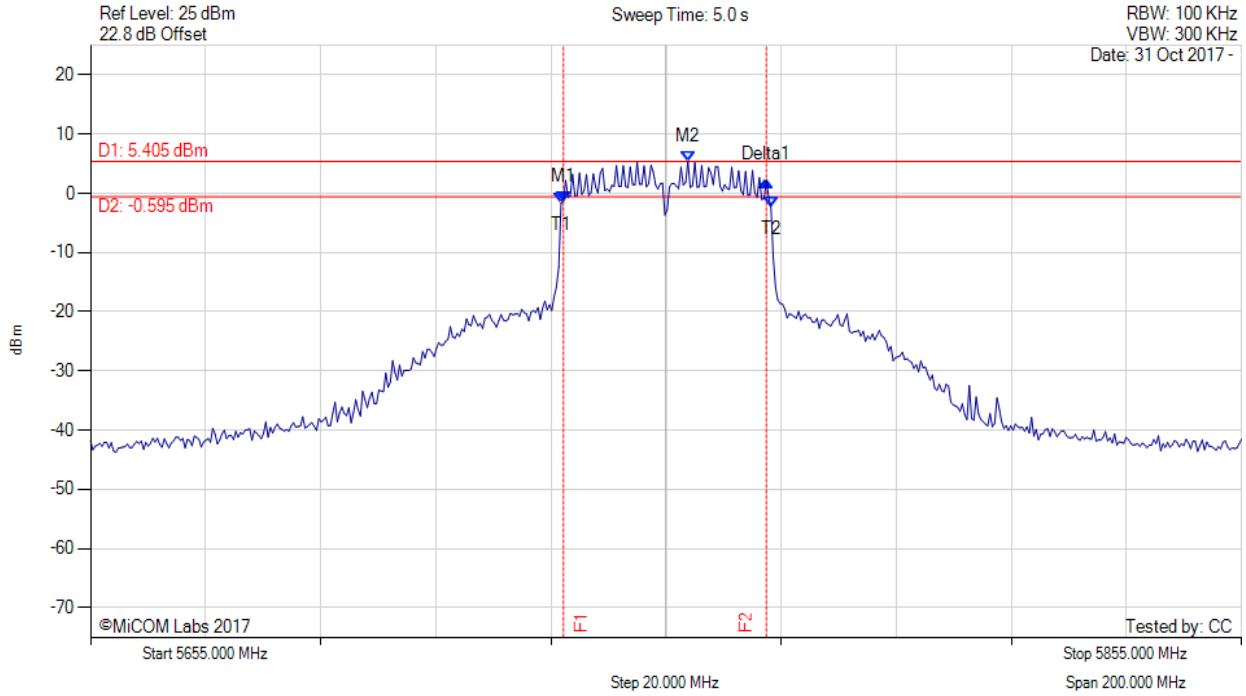


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5737.164 MHz : -3.698 dBm M2 : 5749.990 MHz : 2.556 dBm Delta1 : 35.271 MHz : 3.413 dB T1 : 5736.764 MHz : -4.831 dBm T2 : 5773.236 MHz : -5.042 dBm OBW : 36.473 MHz	Measured 6 dB Bandwidth: 35.271 MHz Measured 99% Bandwidth: 36.473 MHz

back to matrix

6 dB & 99% BANDWIDTH

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

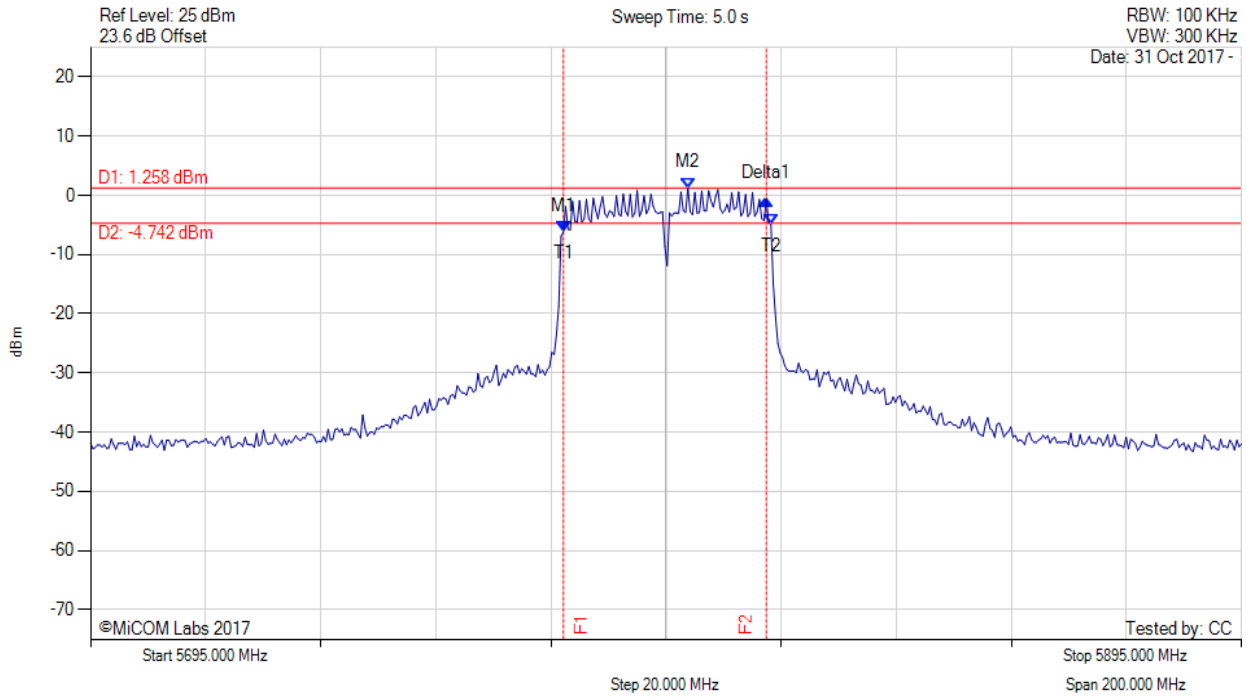


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5737.164 MHz : -1.343 dBm M2 : 5758.808 MHz : 5.405 dBm Delta1 : 35.271 MHz : 3.537 dB T1 : 5736.764 MHz : -1.650 dBm T2 : 5773.236 MHz : -2.405 dBm OBW : 36.473 MHz	Measured 6 dB Bandwidth: 35.271 MHz Measured 99% Bandwidth: 36.473 MHz

back to matrix

6 dB & 99% BANDWIDTH

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

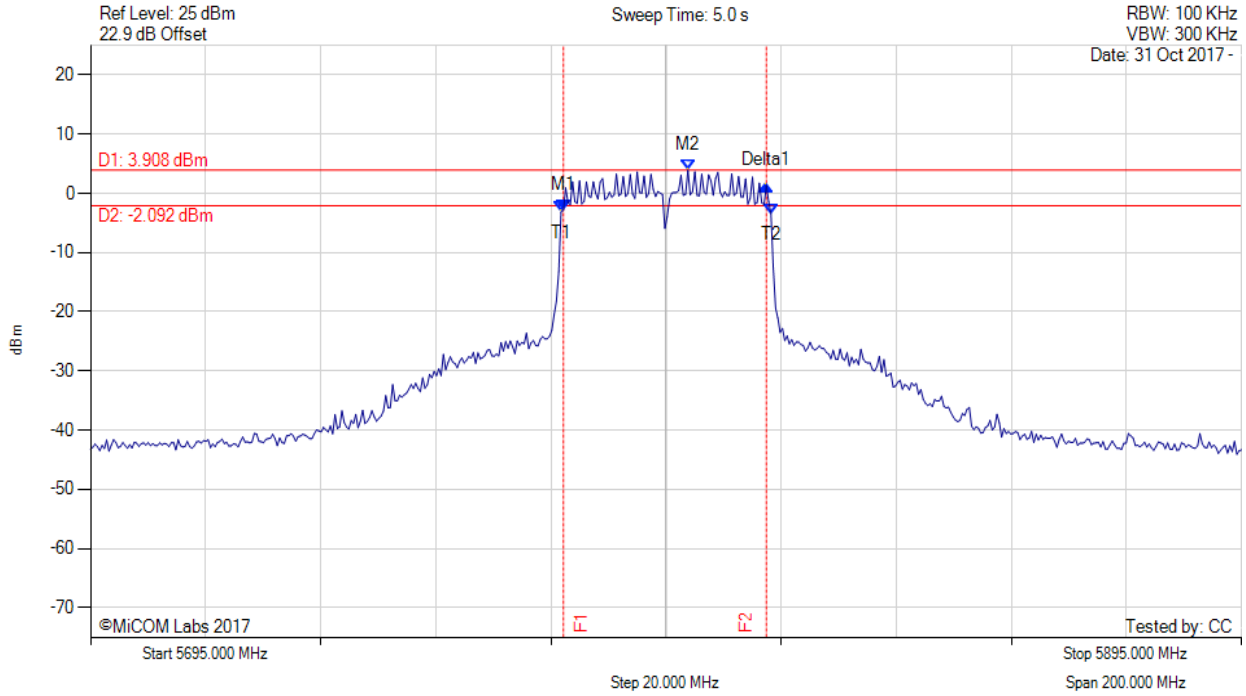


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5777.164 MHz : -6.190 dBm M2 : 5798.808 MHz : 1.258 dBm Delta1 : 35.271 MHz : 5.579 dB T1 : 5777.164 MHz : -6.190 dBm T2 : 5813.236 MHz : -4.953 dBm OBW : 36.072 MHz	Measured 6 dB Bandwidth: 35.271 MHz Measured 99% Bandwidth: 36.072 MHz

back to matrix

6 dB & 99% BANDWIDTH

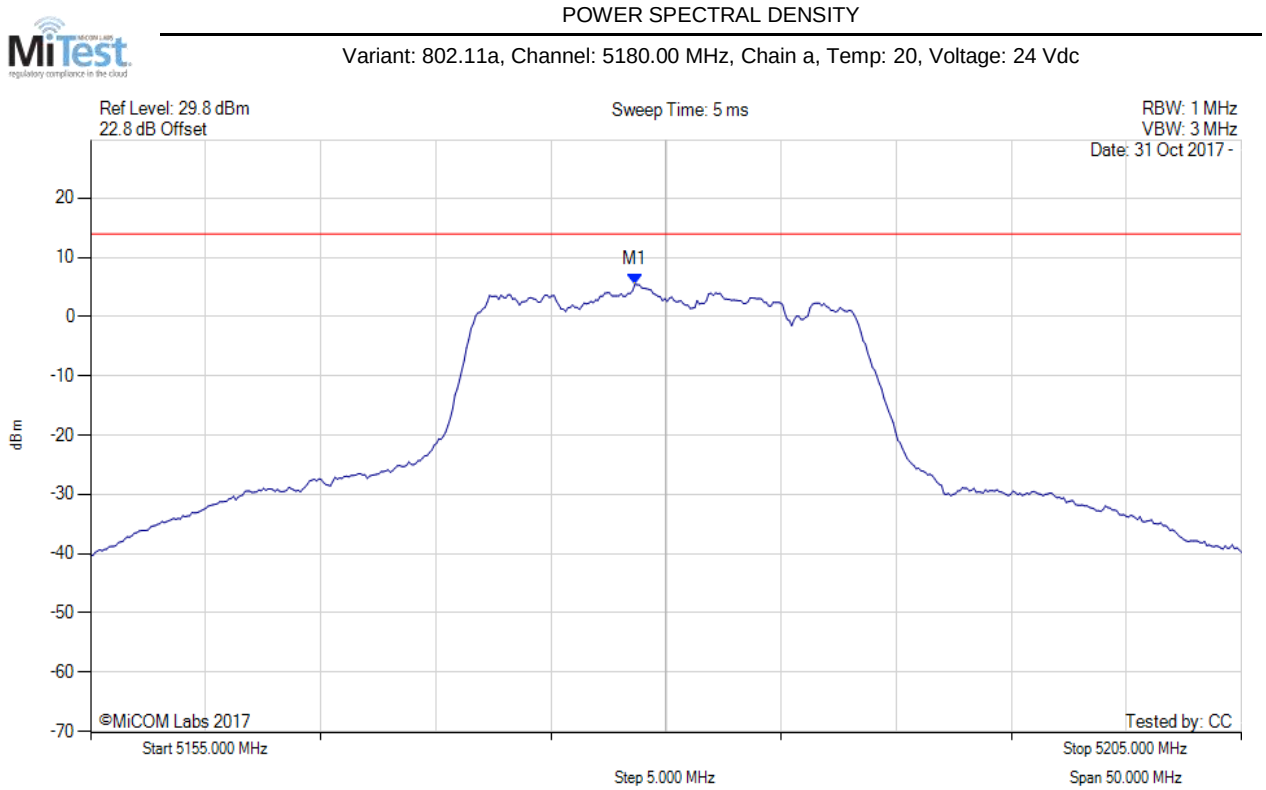
Variant: 802.11n HT-40, Channel: 5795.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5777.164 MHz : -2.848 dBm M2 : 5798.808 MHz : 3.908 dBm Delta1 : 35.271 MHz : 4.185 dB T1 : 5776.764 MHz : -3.143 dBm T2 : 5813.236 MHz : -3.495 dBm OBW : 36.473 MHz	Measured 6 dB Bandwidth: 35.271 MHz Measured 99% Bandwidth: 36.473 MHz

back to matrix

A.3. Power Spectral Density

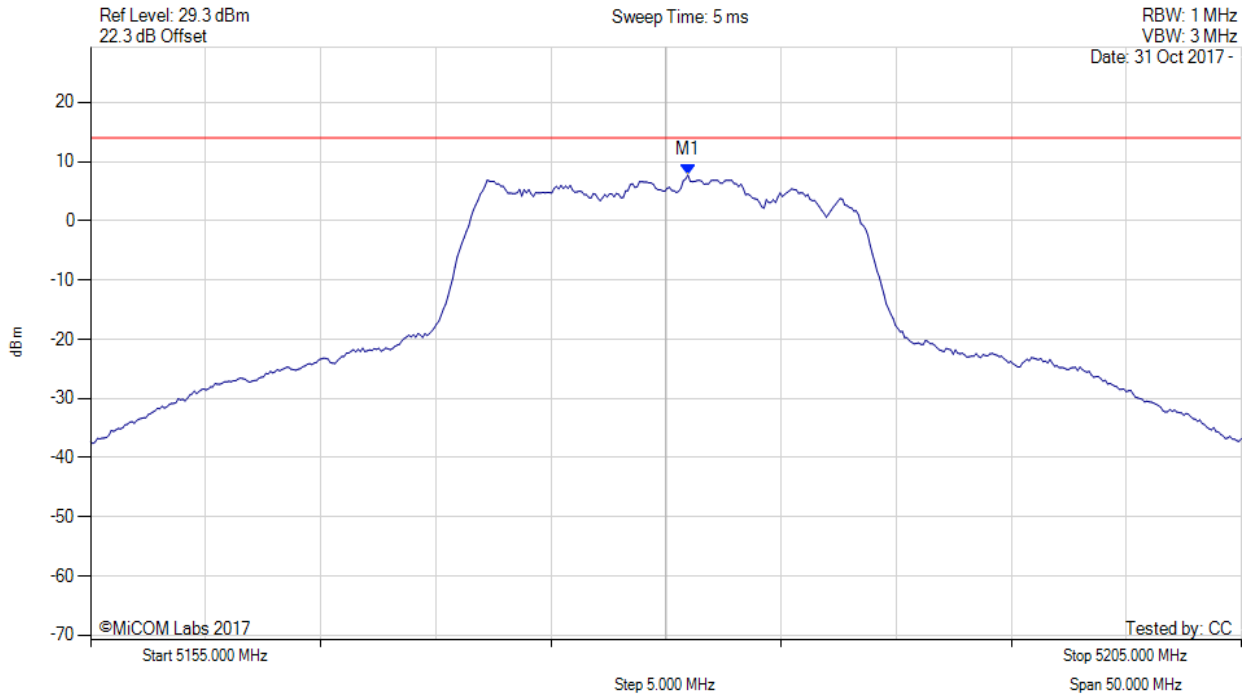


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5178.647 MHz : 5.467 dBm	Limit: ≤ 13.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5180.952 MHz : 7.736 dBm	Limit: ≤ 13.990 dBm

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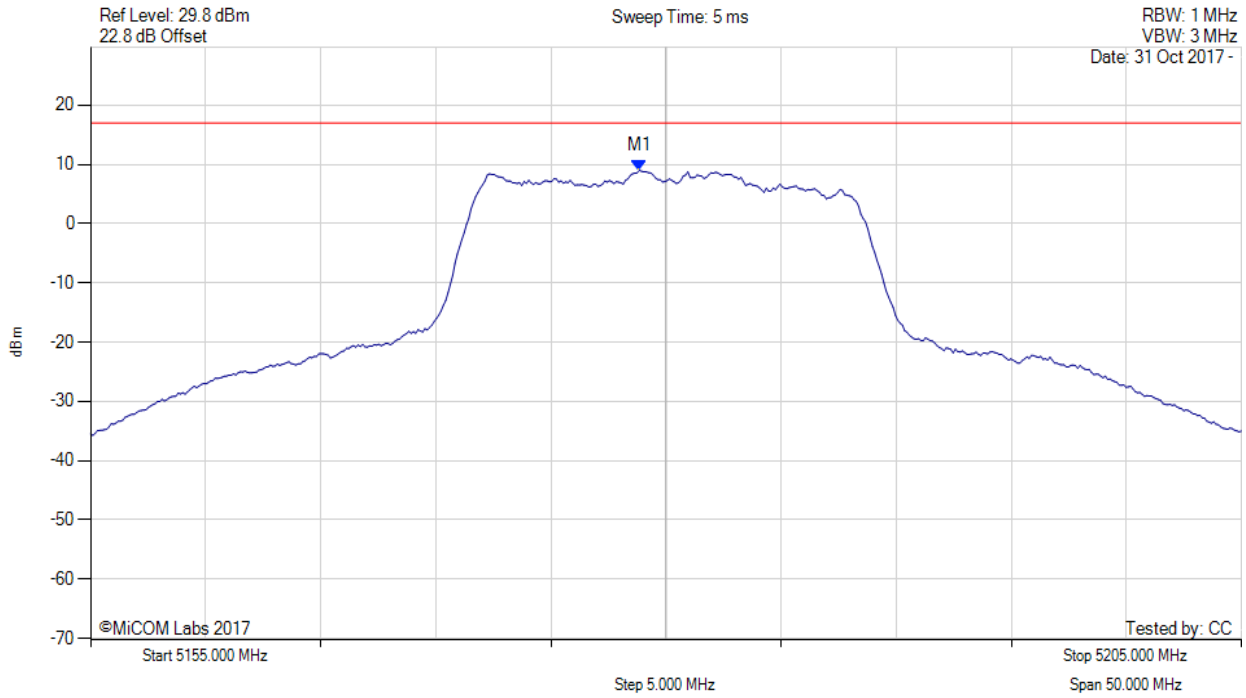
POWER SPECTRAL DENSITY

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 : 5178.800 MHz : 9.054 dBm M1 + DCCF : 5178.800 MHz : 9.098 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 17.0 dBm Margin: -7.9 dB

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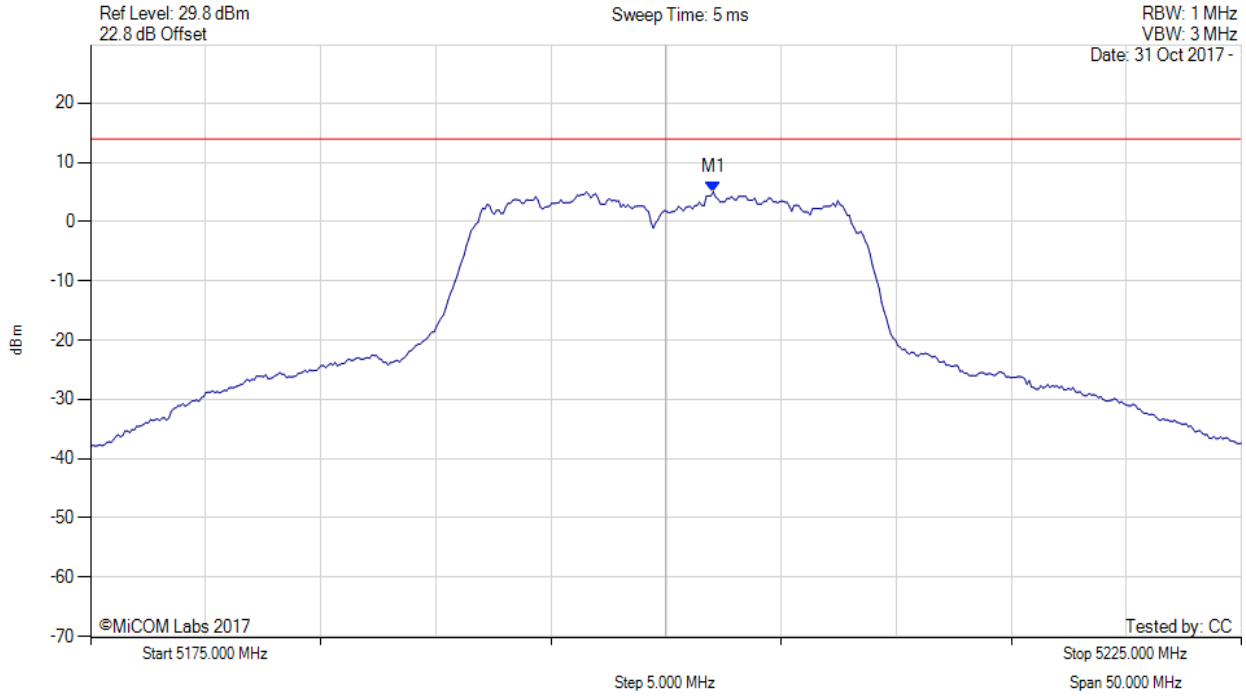
POWER SPECTRAL DENSITY

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

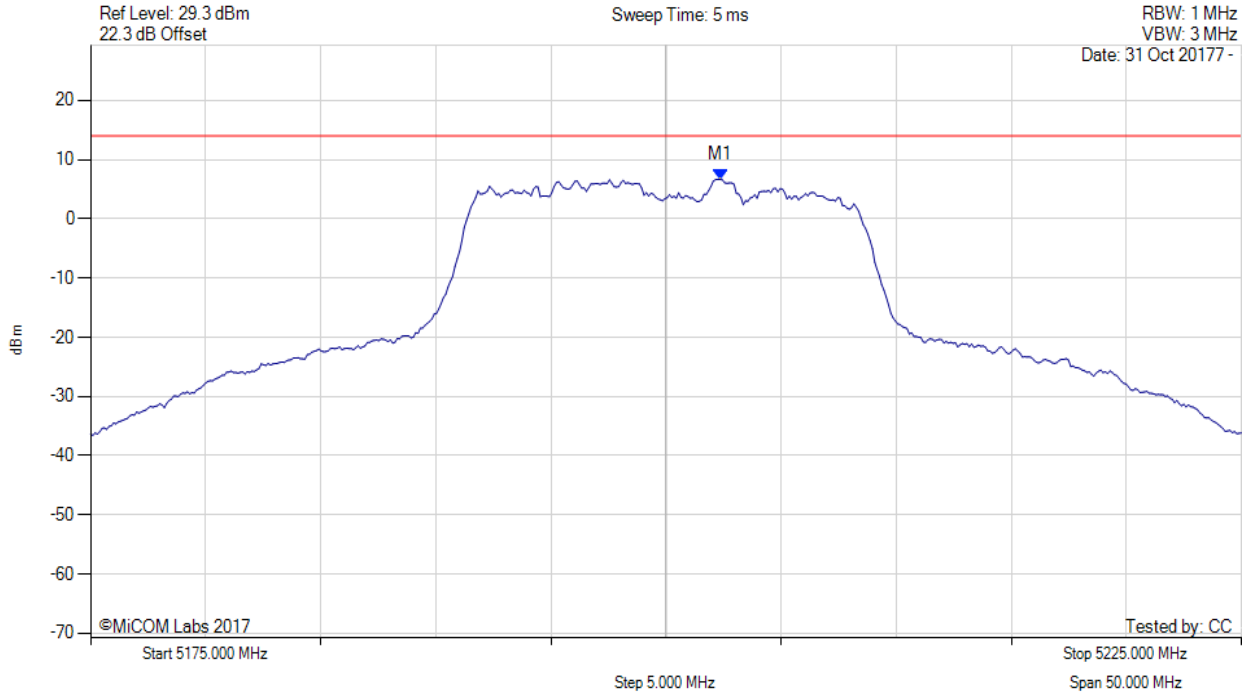


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5202.054 MHz : 5.071 dBm	Limit: ≤ 13.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

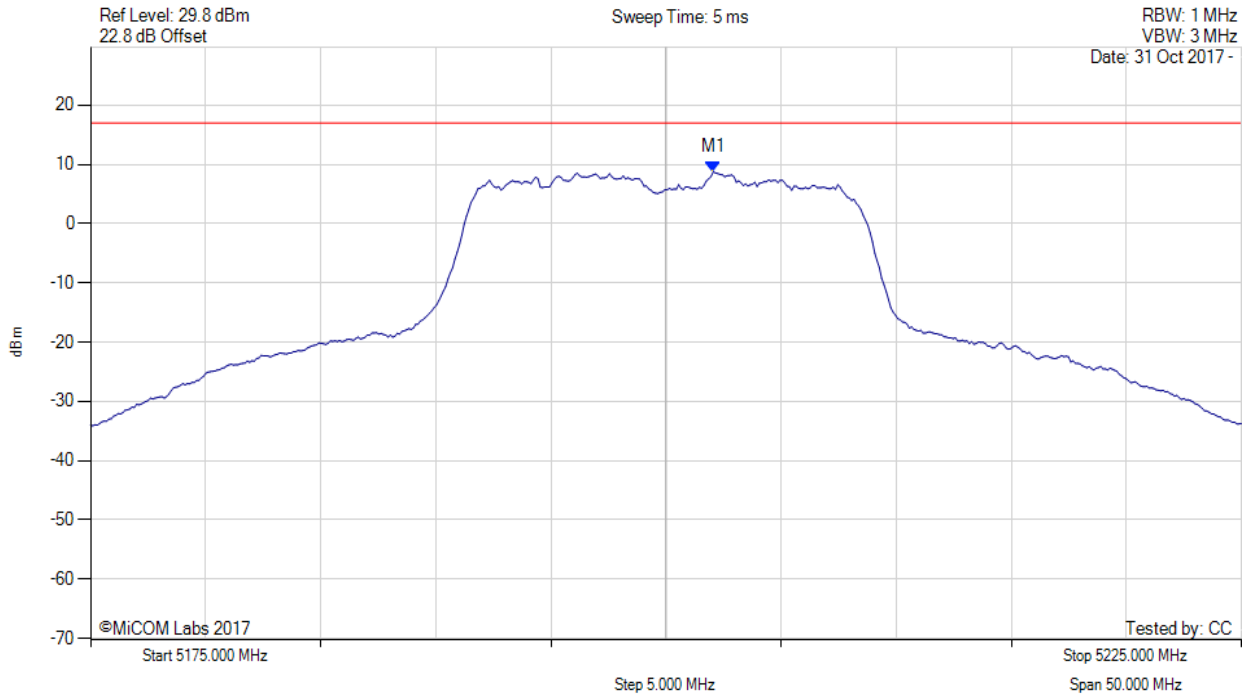


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5202.355 MHz : 6.661 dBm	Channel Frequency: 5200.00 MHz

back to matrix

POWER SPECTRAL DENSITY

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

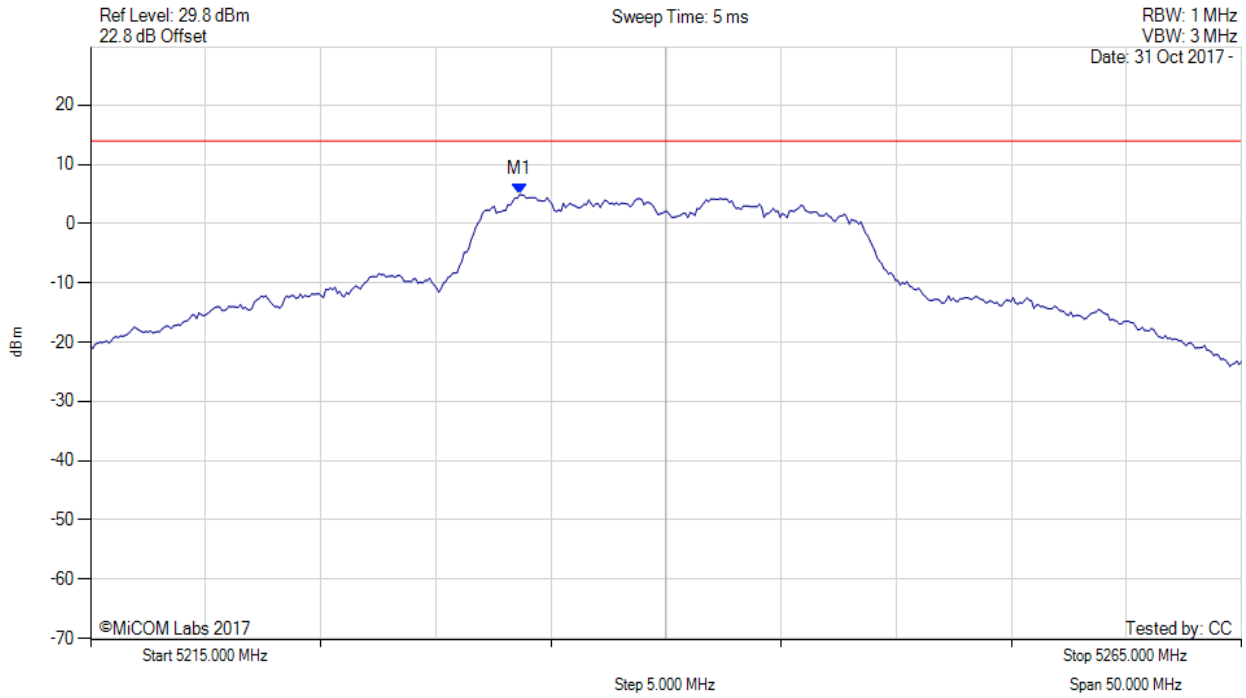


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5202.100 MHz : 8.775 dBm M1 + DCCF : 5202.100 MHz : 8.819 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 17.0 dBm Margin: -8.2 dB

back to matrix

POWER SPECTRAL DENSITY

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

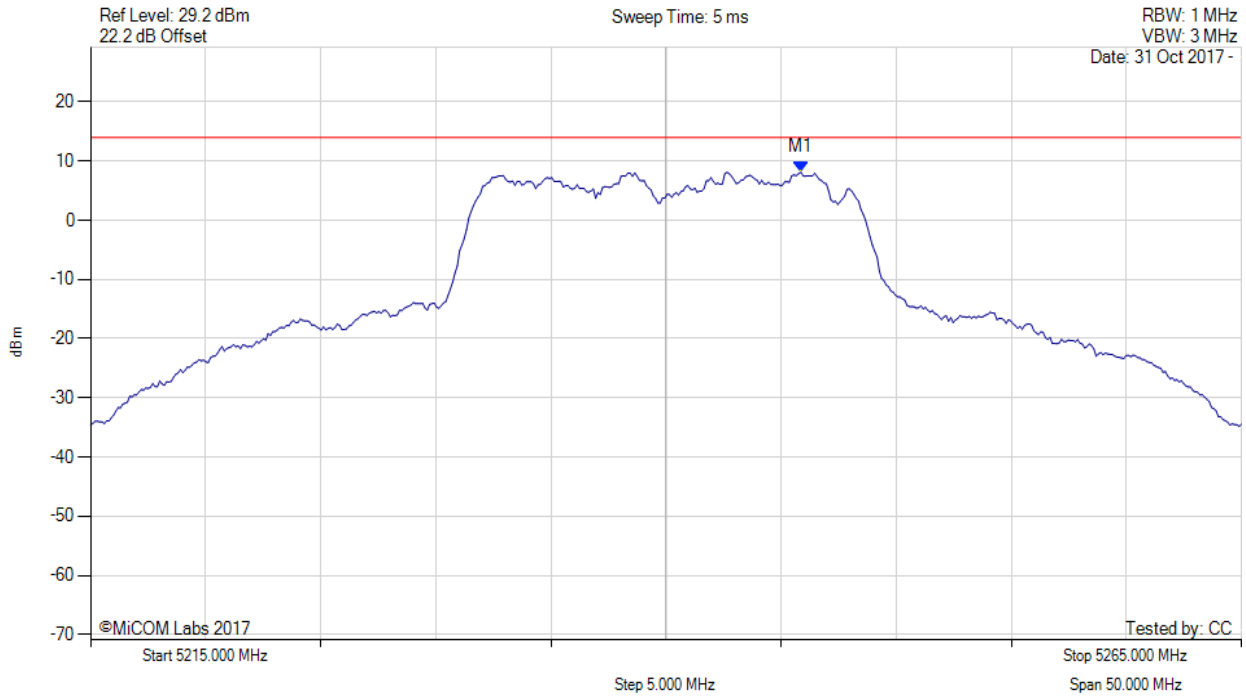


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5233.637 MHz : 4.896 dBm	Limit: ≤ 13.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

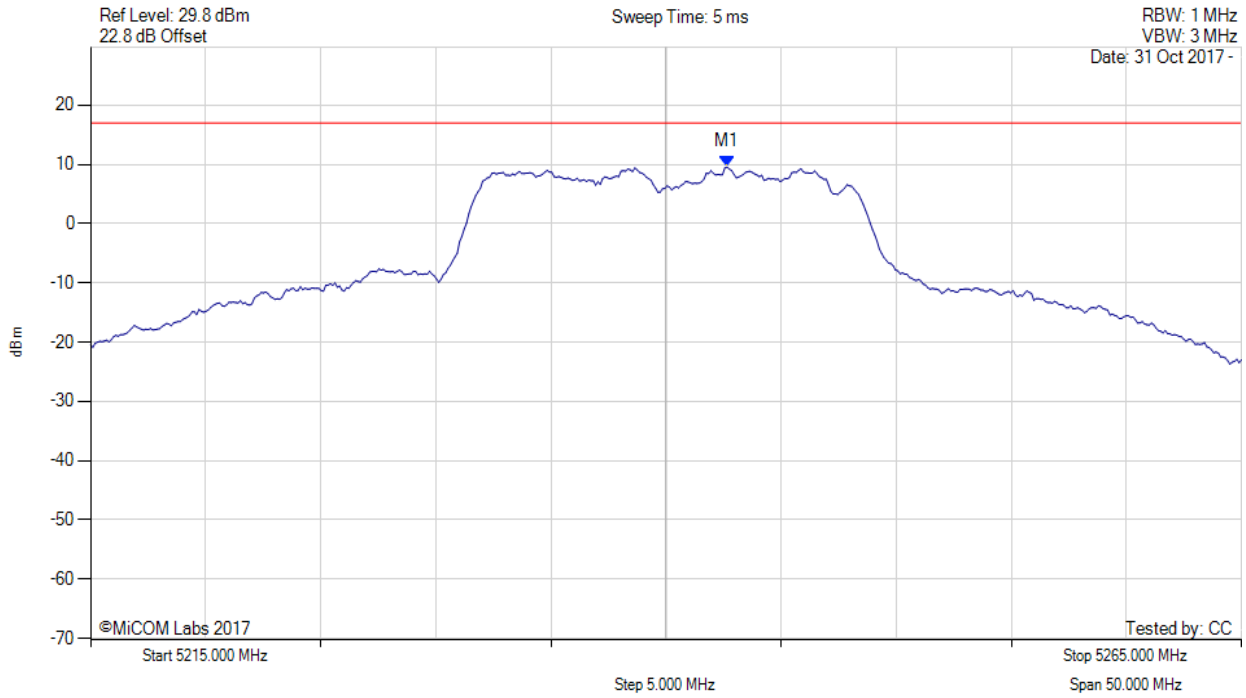


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5245.862 MHz : 8.103 dBm	Limit: ≤ 13.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

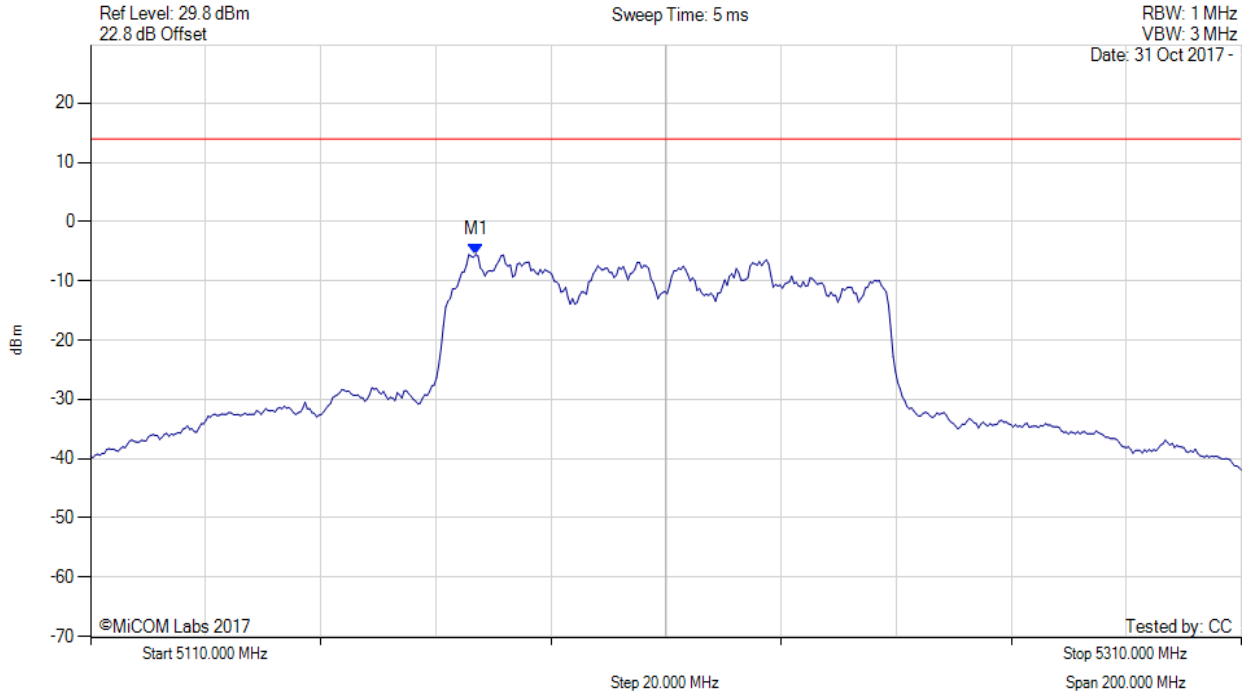


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5242.700 MHz : 9.571 dBm M1 + DCCF : 5242.700 MHz : 9.615 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 17.0 dBm Margin: -7.4 dB

back to matrix

POWER SPECTRAL DENSITY

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

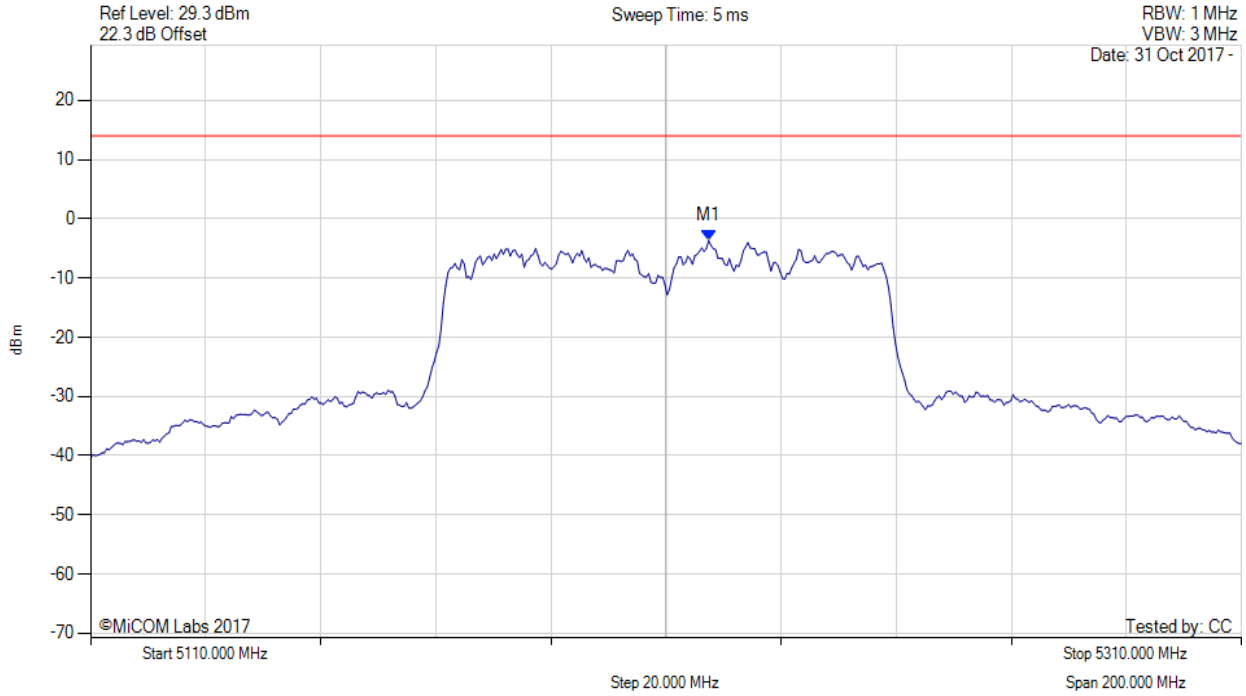


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5176.934 MHz : -5.526 dBm	Limit: ≤ 13.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

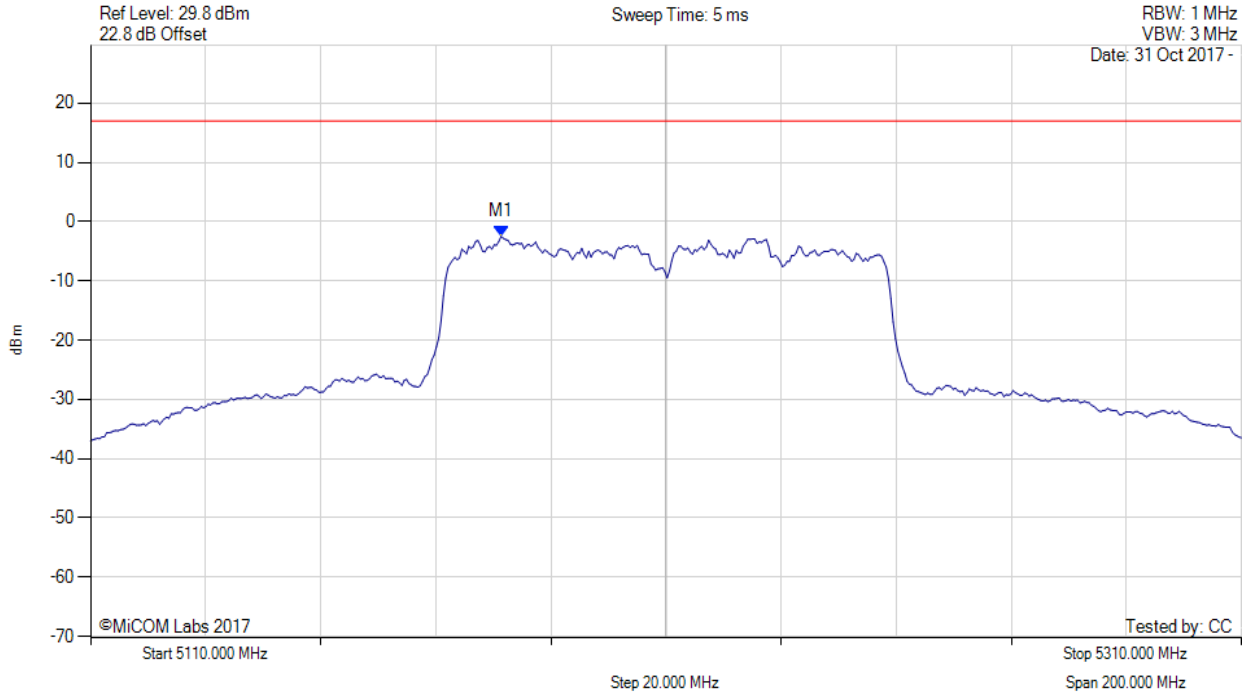


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5217.415 MHz : -3.641 dBm	Limit: ≤ 13.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

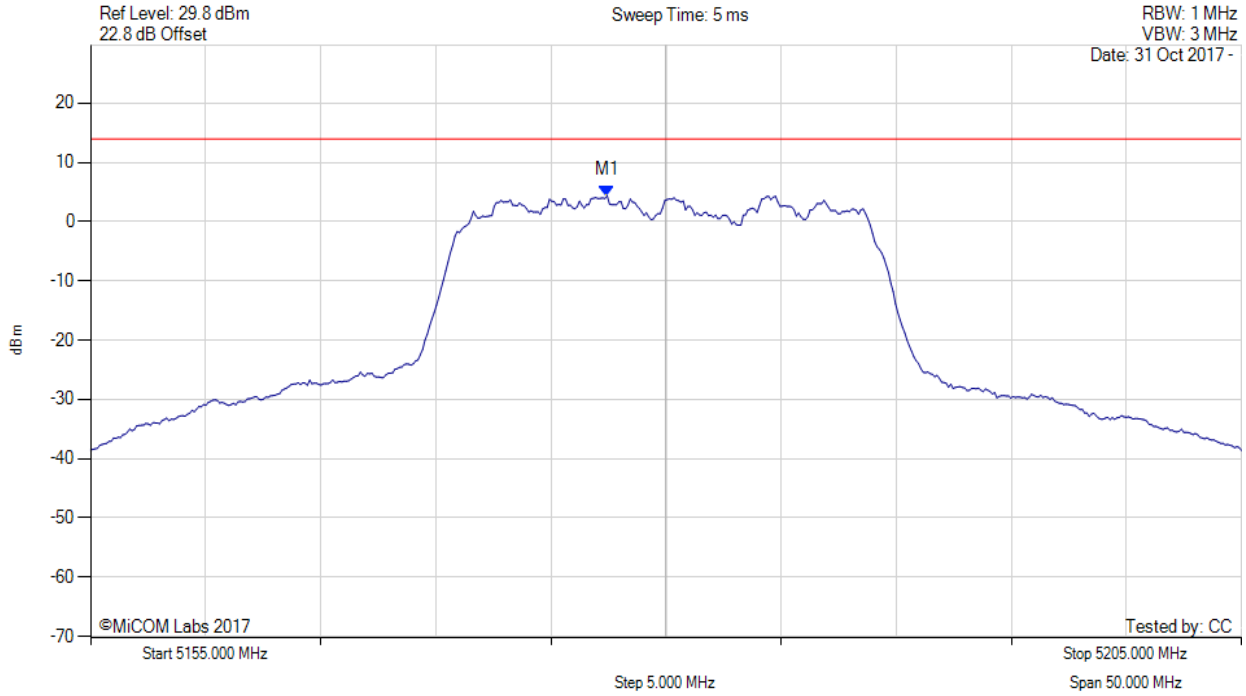


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5181.300 MHz : -2.456 dBm M1 + DCCF : 5181.300 MHz : -2.412 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 17.0 dBm Margin: -19.4 dB

back to matrix

POWER SPECTRAL DENSITY

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

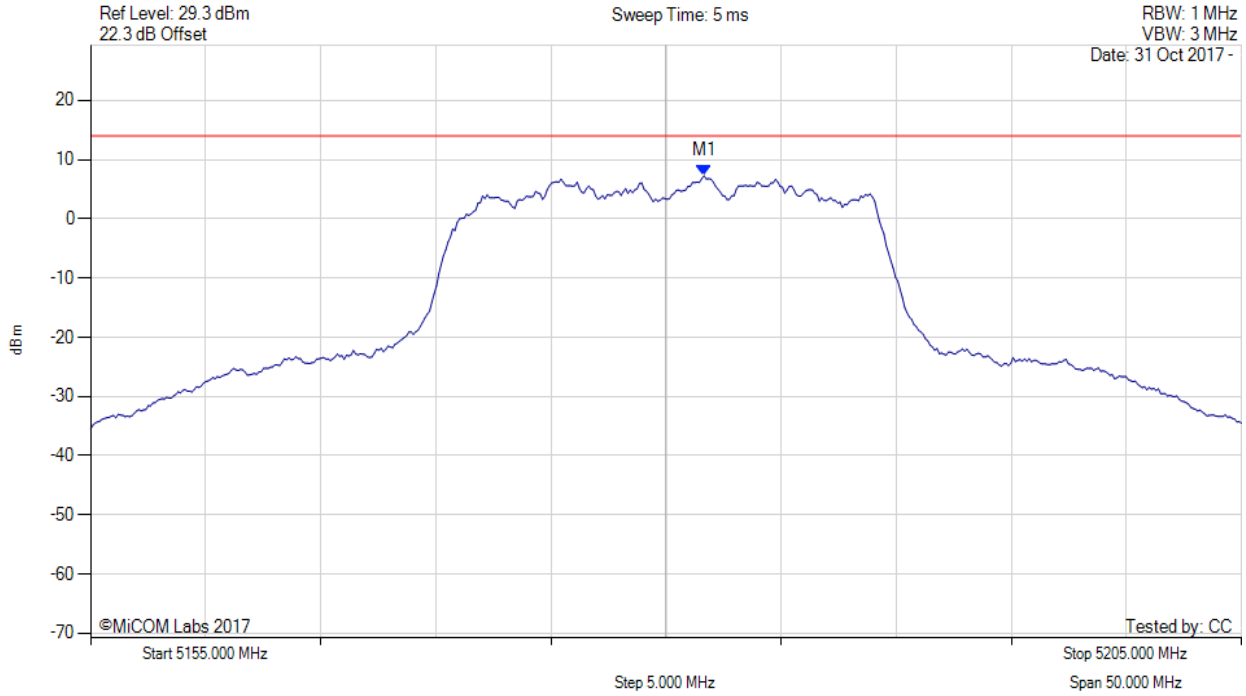


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5177.445 MHz : 4.407 dBm	Limit: ≤ 13.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

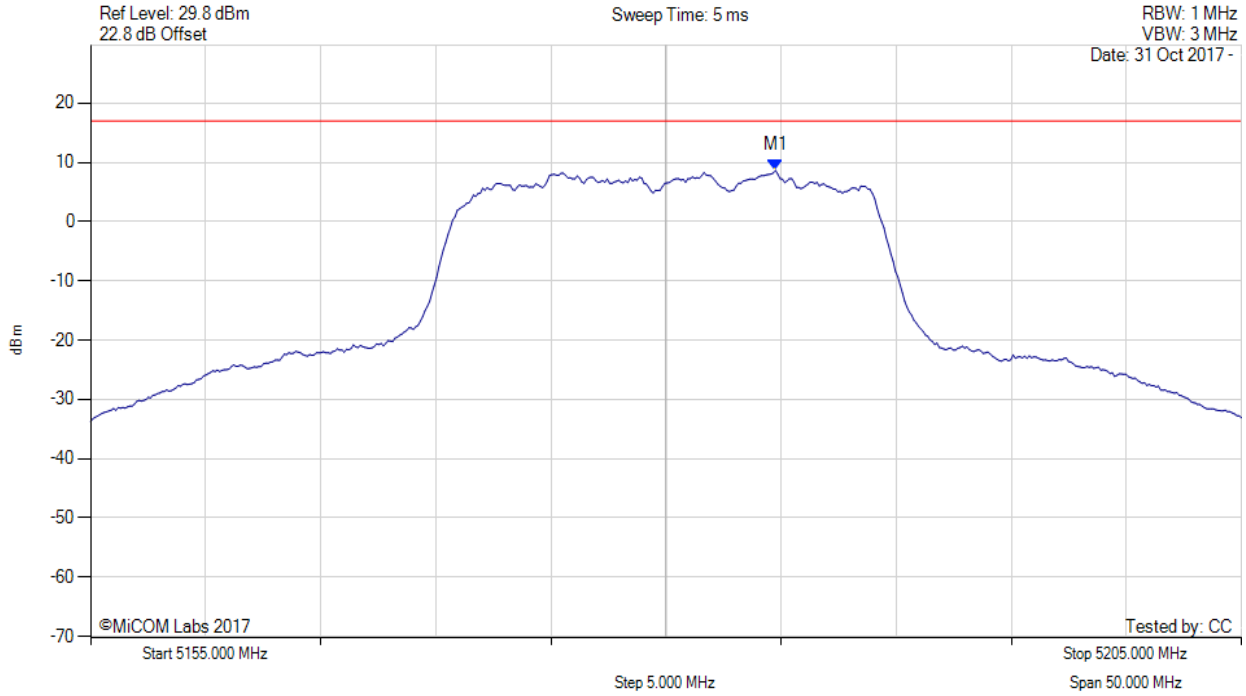


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5181.653 MHz : 7.258 dBm	Limit: ≤ 13.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

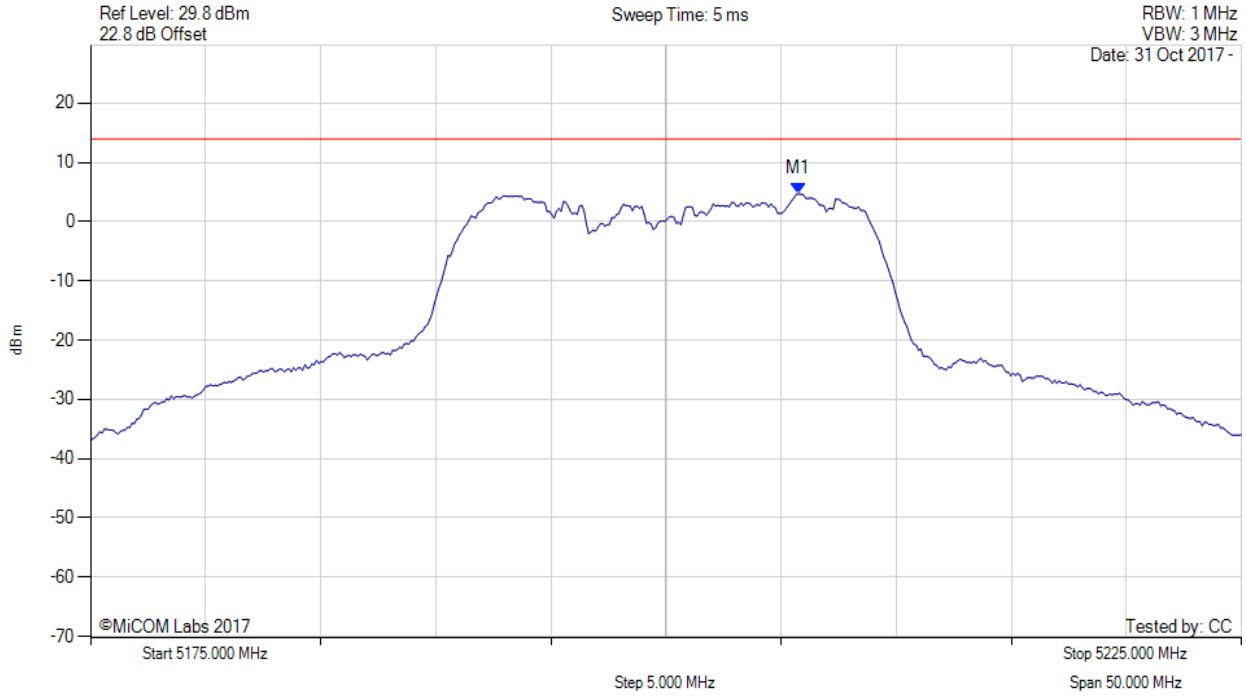


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5184.800 MHz : 8.666 dBm M1 + DCCF : 5184.800 MHz : 8.710 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 17.0 dBm Margin: -8.3 dB

back to matrix

POWER SPECTRAL DENSITY

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

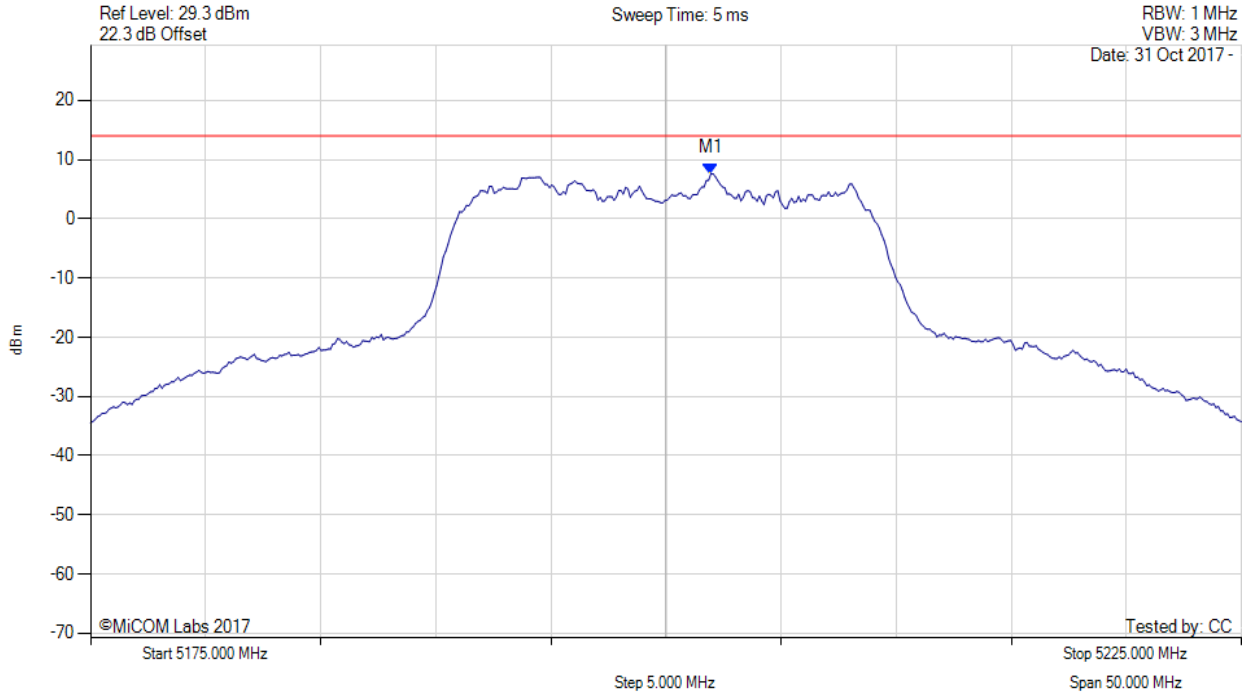


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5205.762 MHz : 4.716 dBm	Limit: ≤ 13.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

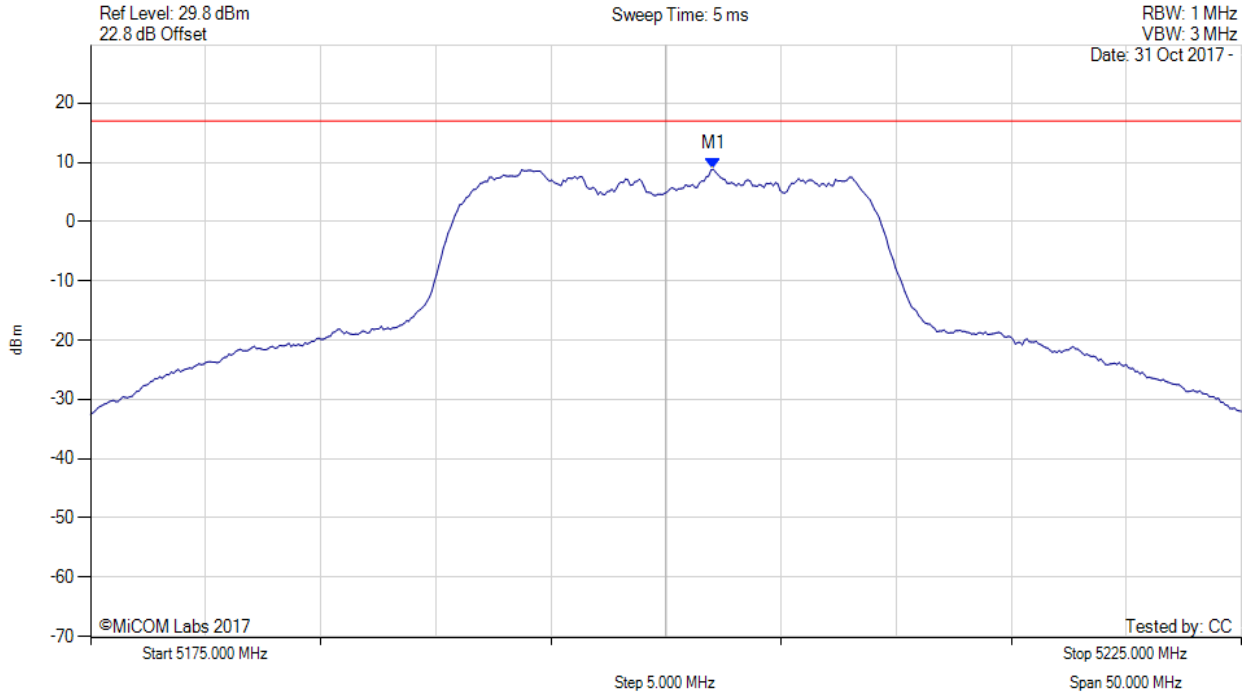


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5201.954 MHz : 7.642 dBm	Channel Frequency: 5200.00 MHz

back to matrix

POWER SPECTRAL DENSITY

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

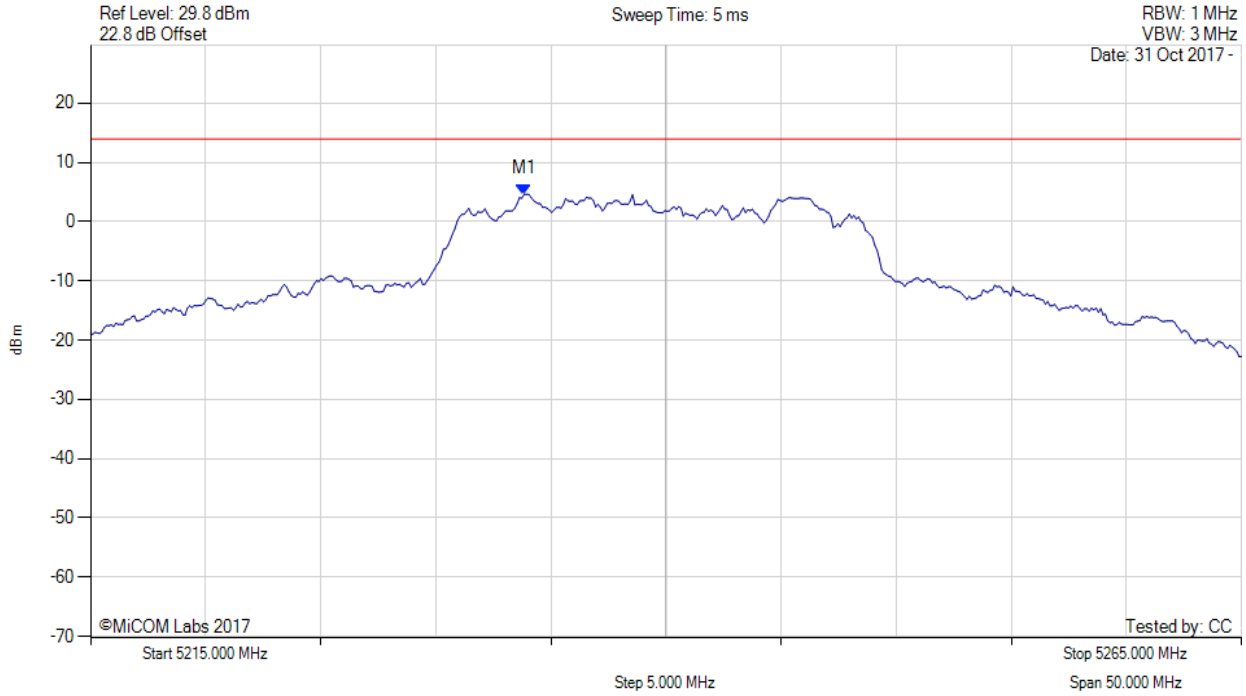


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5202.100 MHz : 8.876 dBm M1 + DCCF : 5202.100 MHz : 8.920 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 17.0 dBm Margin: -8.1 dB

back to matrix

POWER SPECTRAL DENSITY

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

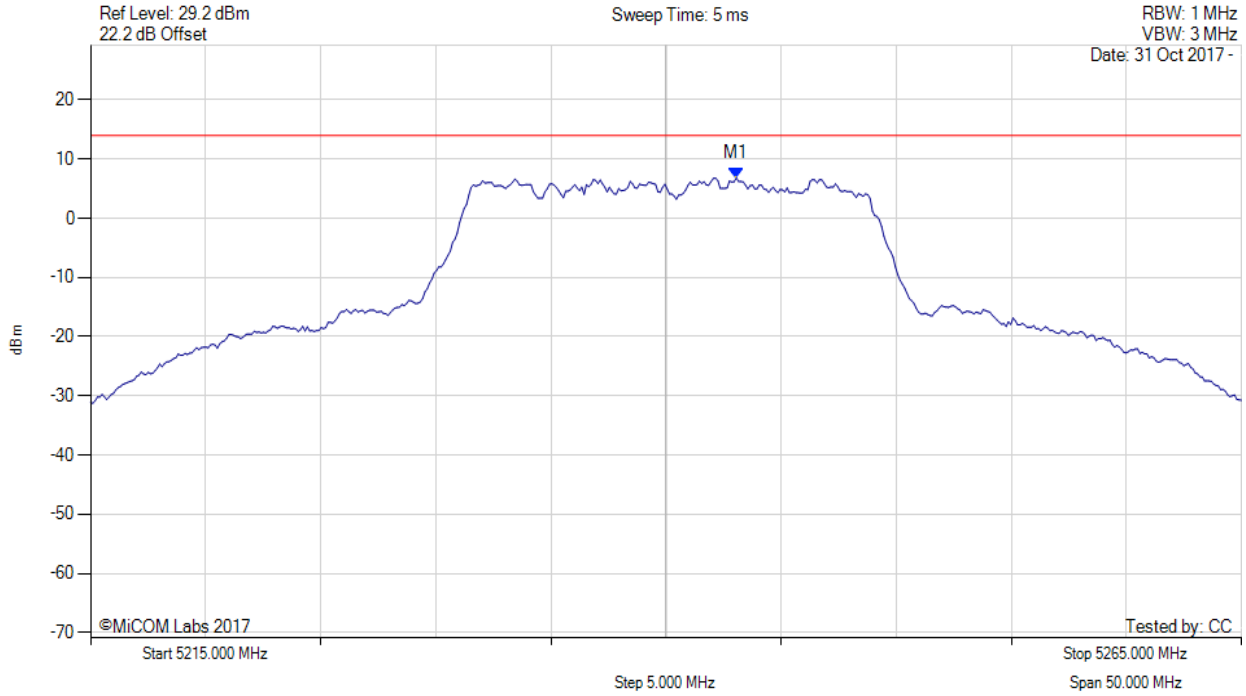


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5233.838 MHz : 4.636 dBm	Limit: ≤ 13.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

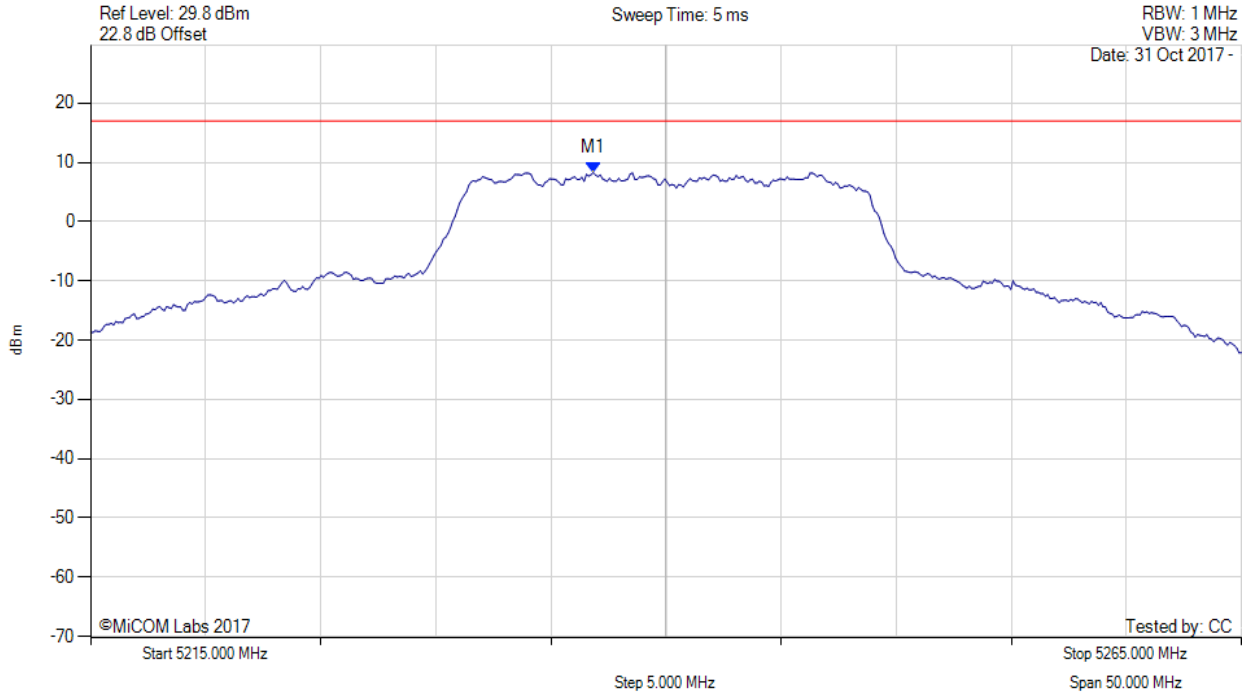


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5243.056 MHz : 6.803 dBm	Limit: ≤ 13.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

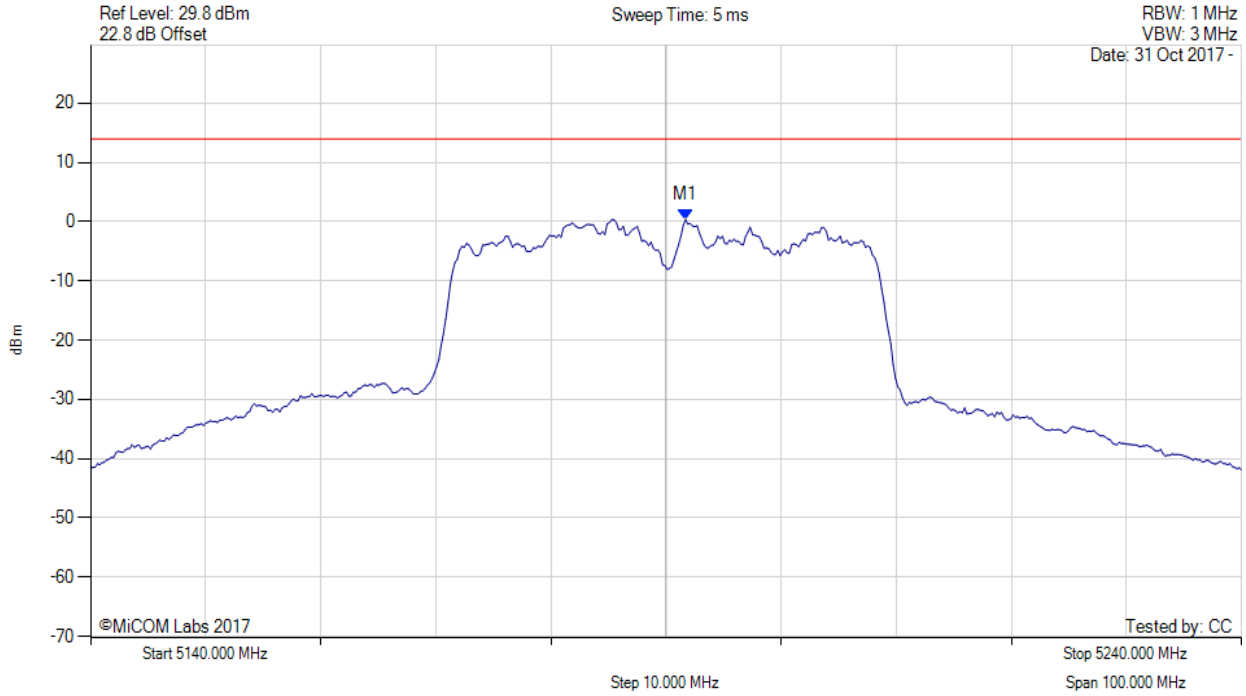


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5236.800 MHz : 8.308 dBm M1 + DCCF : 5236.800 MHz : 8.352 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 17.0 dBm Margin: -8.7 dB

back to matrix

POWER SPECTRAL DENSITY

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

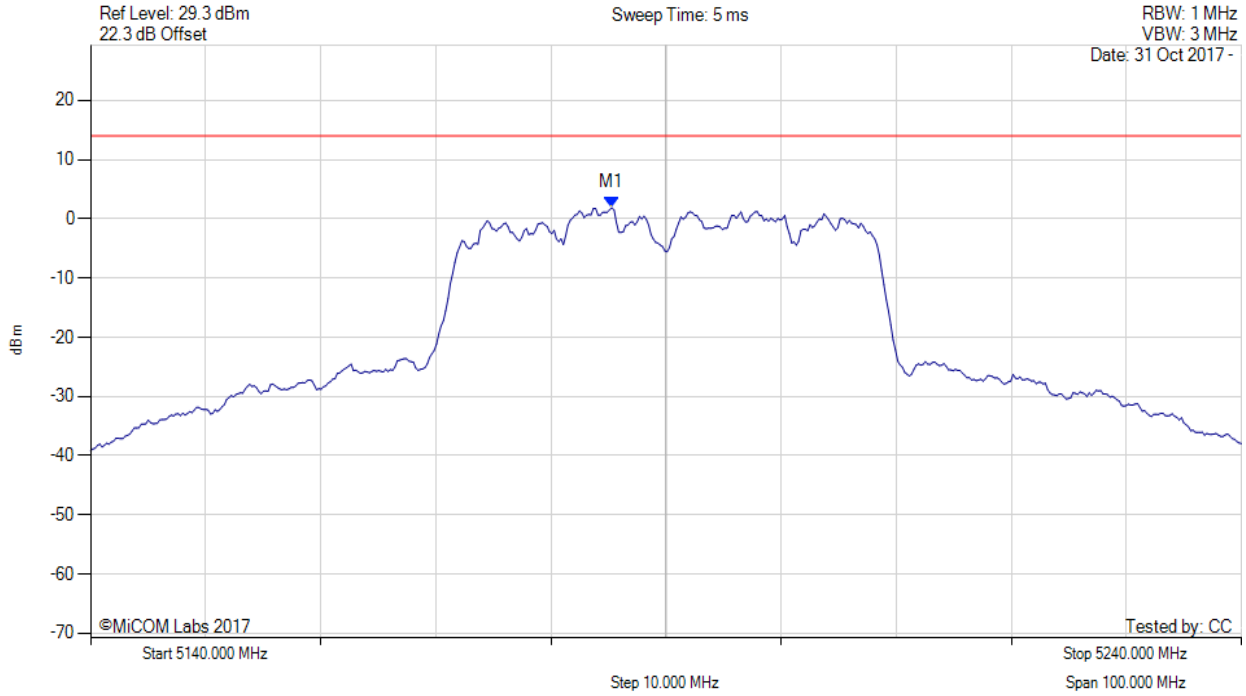


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5191.703 MHz : 0.344 dBm	Limit: ≤ 13.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

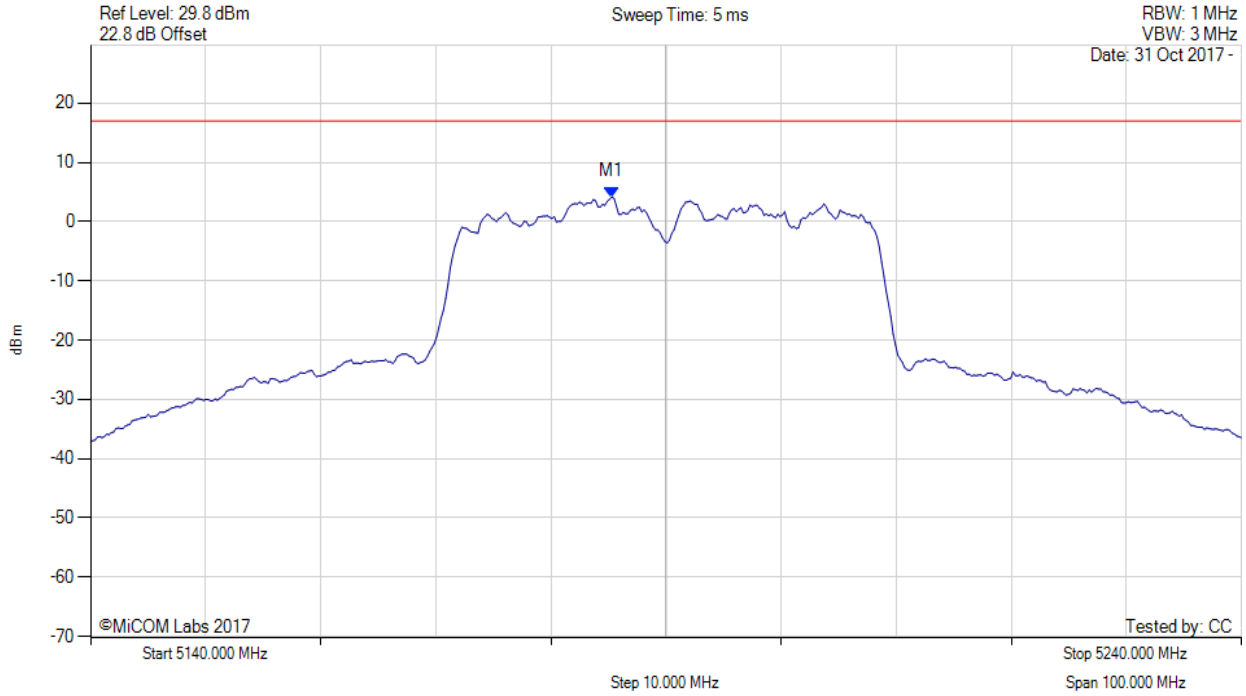


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5185.291 MHz : 1.868 dBm	Limit: ≤ 13.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

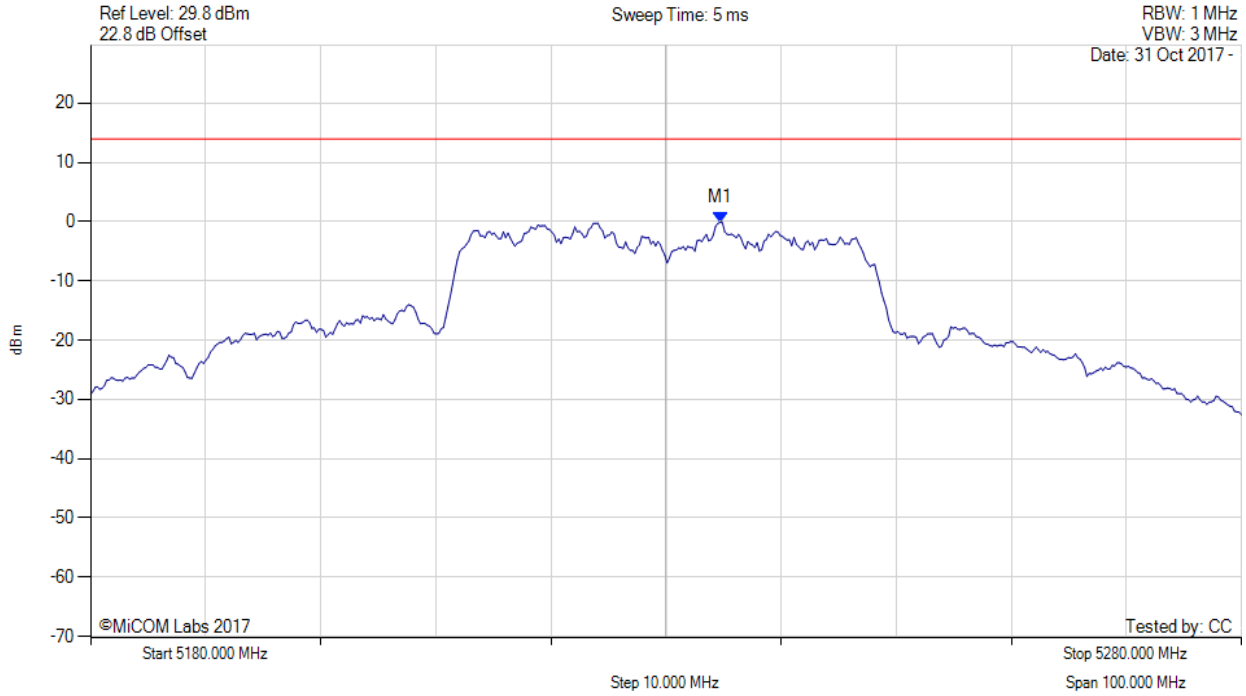


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5185.300 MHz : 4.171 dBm M1 + DCCF : 5185.300 MHz : 4.215 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 17.0 dBm Margin: -12.8 dB

back to matrix

POWER SPECTRAL DENSITY

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

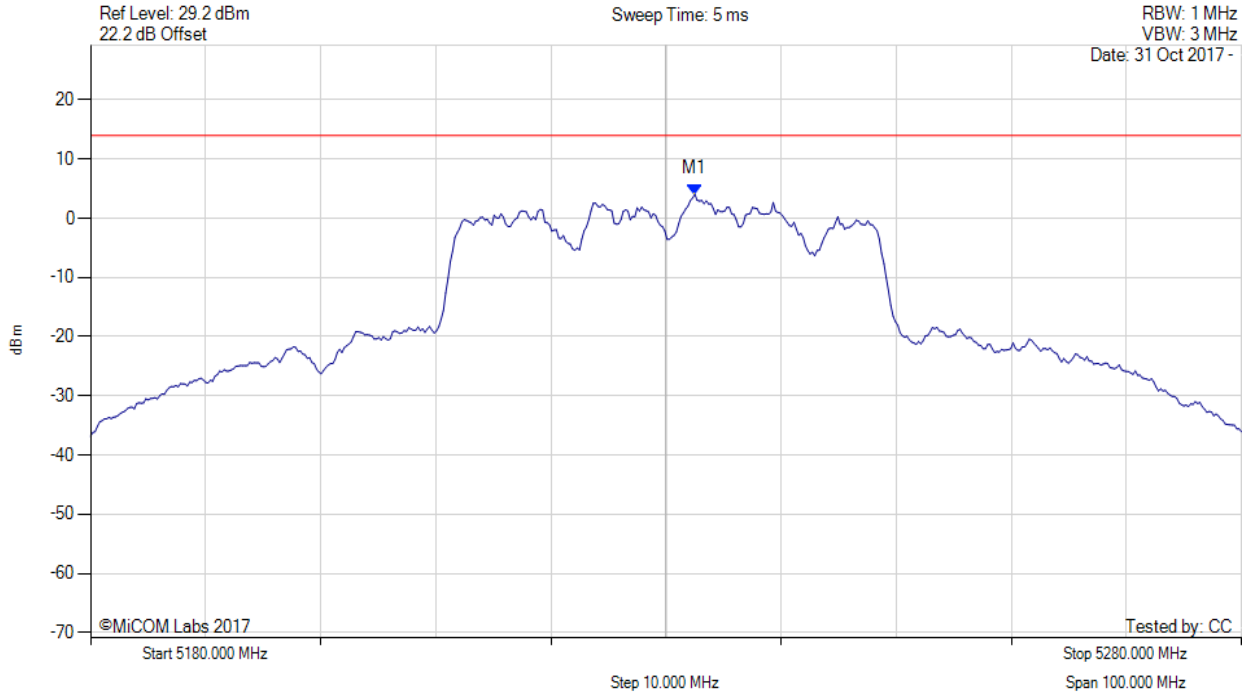


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5234.709 MHz : -0.078 dBm	Limit: ≤ 13.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

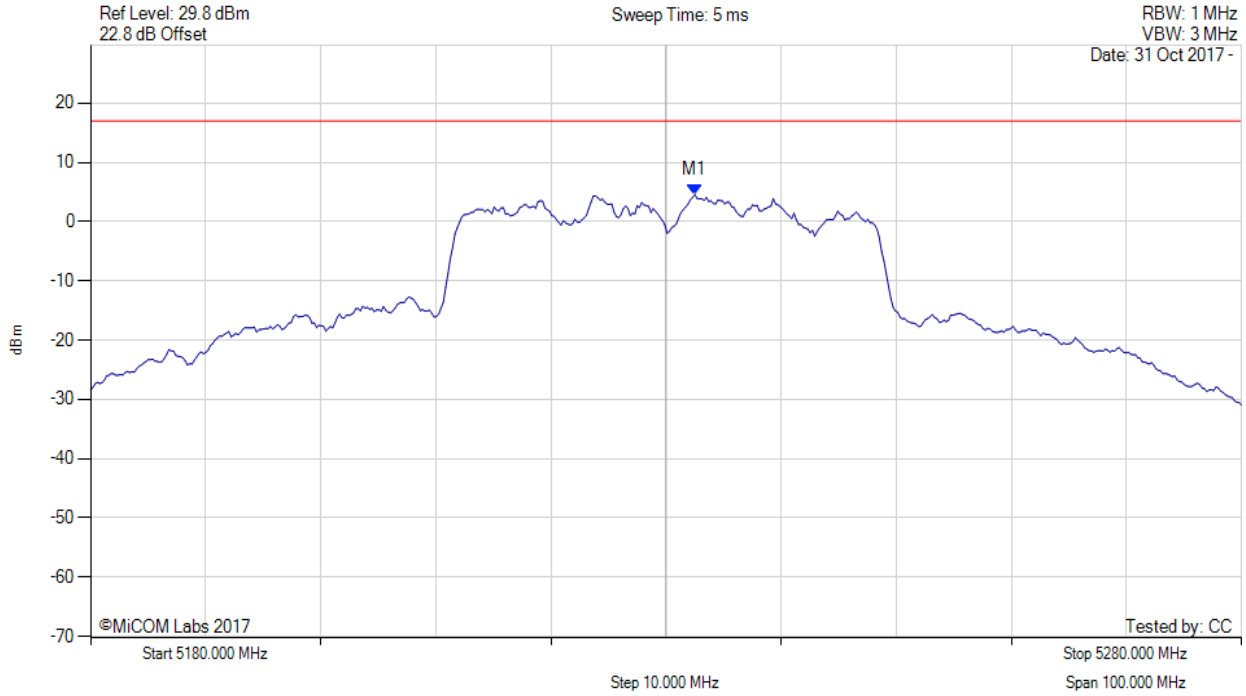


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5232.505 MHz : 4.046 dBm	Limit: ≤ 13.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

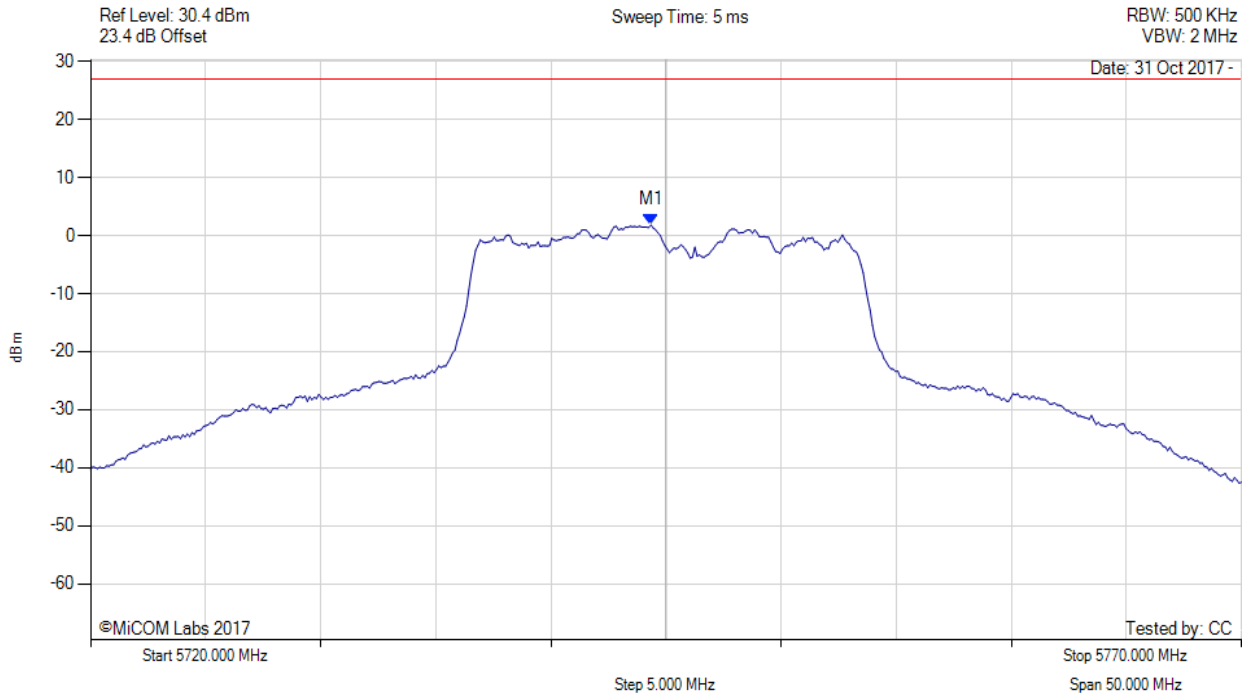


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5232.500 MHz : 4.562 dBm M1 + DCCF : 5232.500 MHz : 4.606 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 17.0 dBm Margin: -12.4 dB

back to matrix

POWER SPECTRAL DENSITY

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

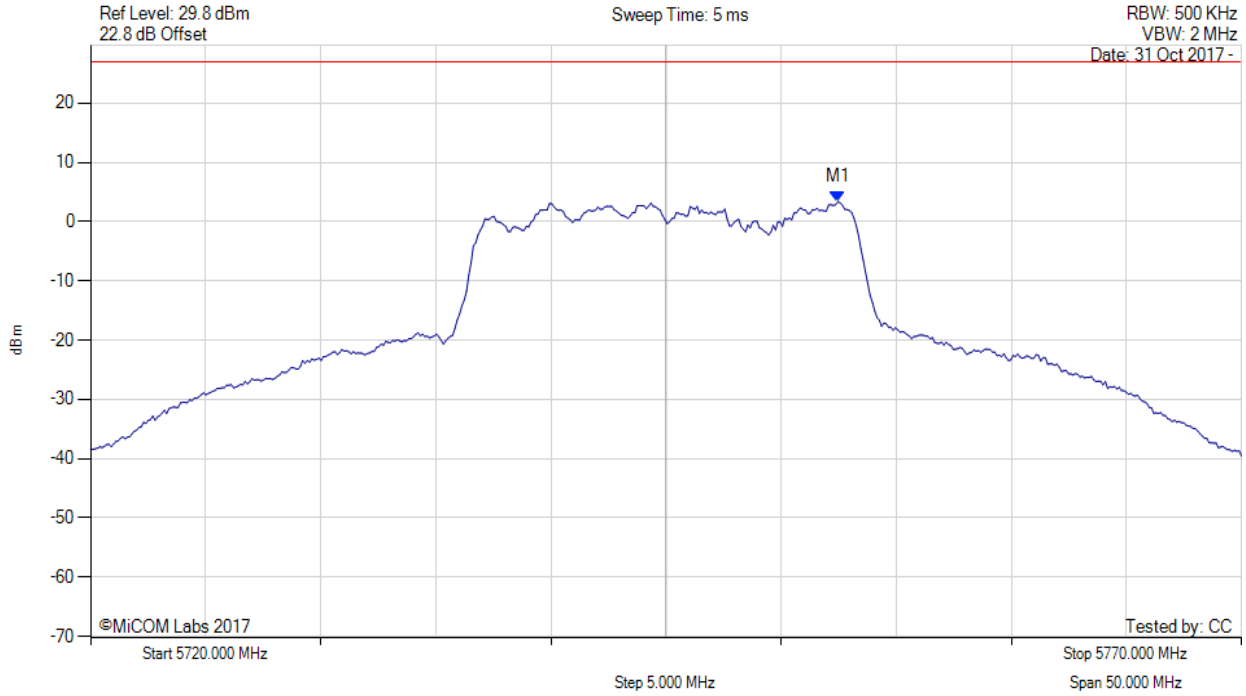


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5744.349 MHz : 1.828 dBm	Limit: ≤ 26.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

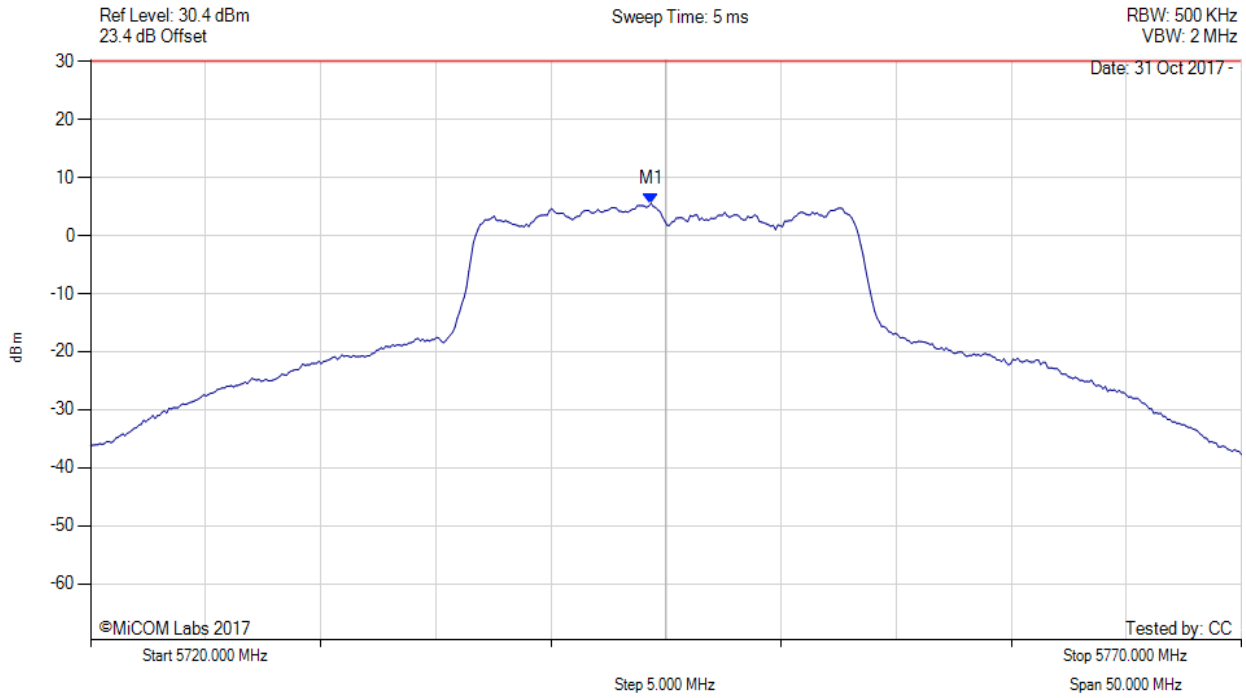


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5752.465 MHz : 3.379 dBm	Limit: ≤ 26.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

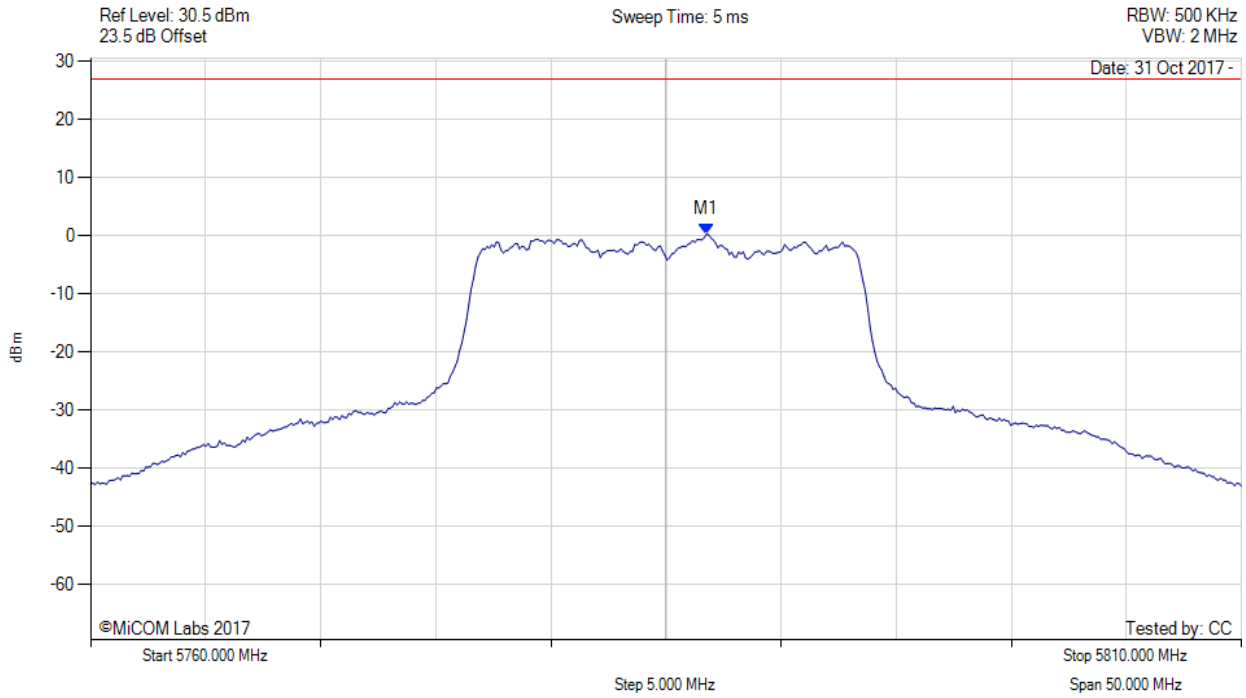


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5744.300 MHz : 5.551 dBm M1 + DCCF : 5744.300 MHz : 5.595 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 30.0 dBm Margin: -24.4 dB

back to matrix

POWER SPECTRAL DENSITY

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

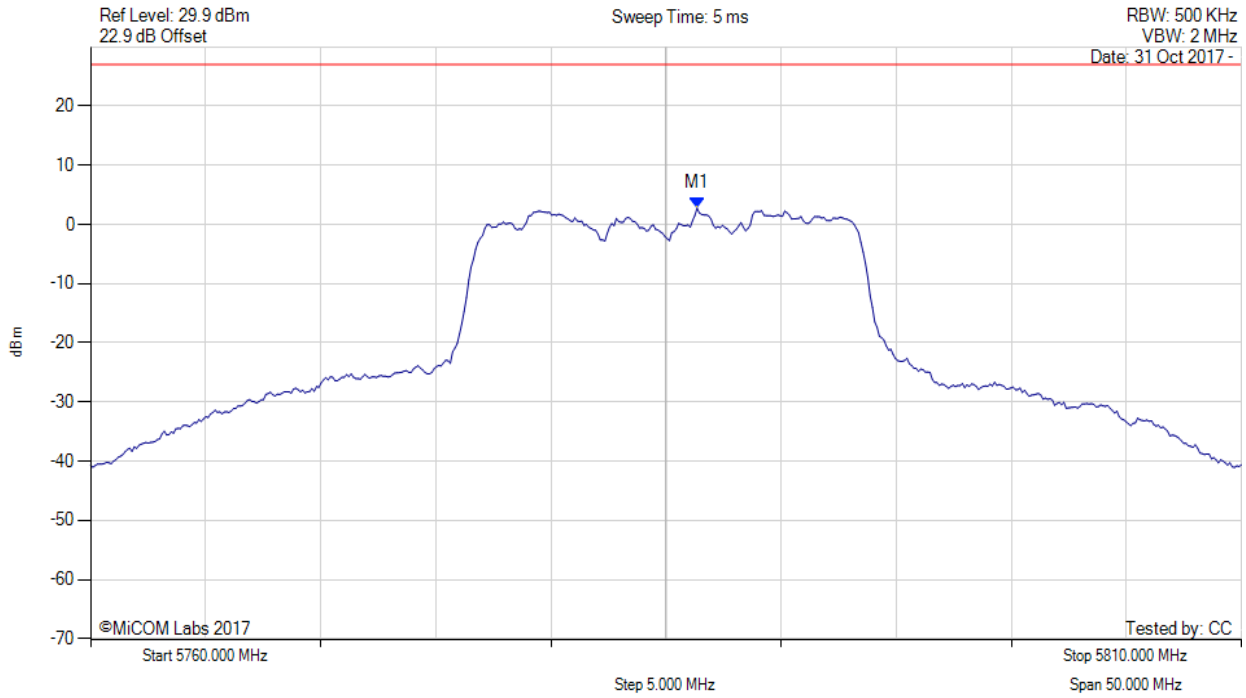


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5786.754 MHz : 0.226 dBm	Limit: ≤ 26.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

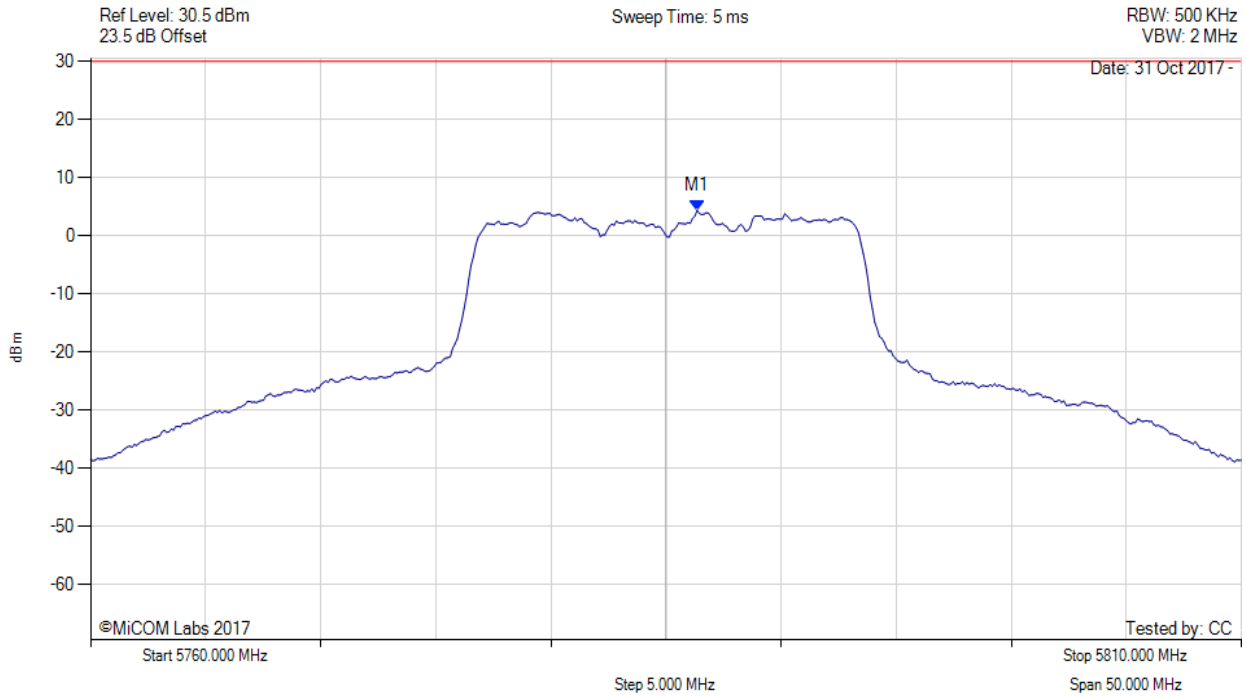


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5786.353 MHz : 2.756 dBm	Channel Frequency: 5785.00 MHz

back to matrix

POWER SPECTRAL DENSITY

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

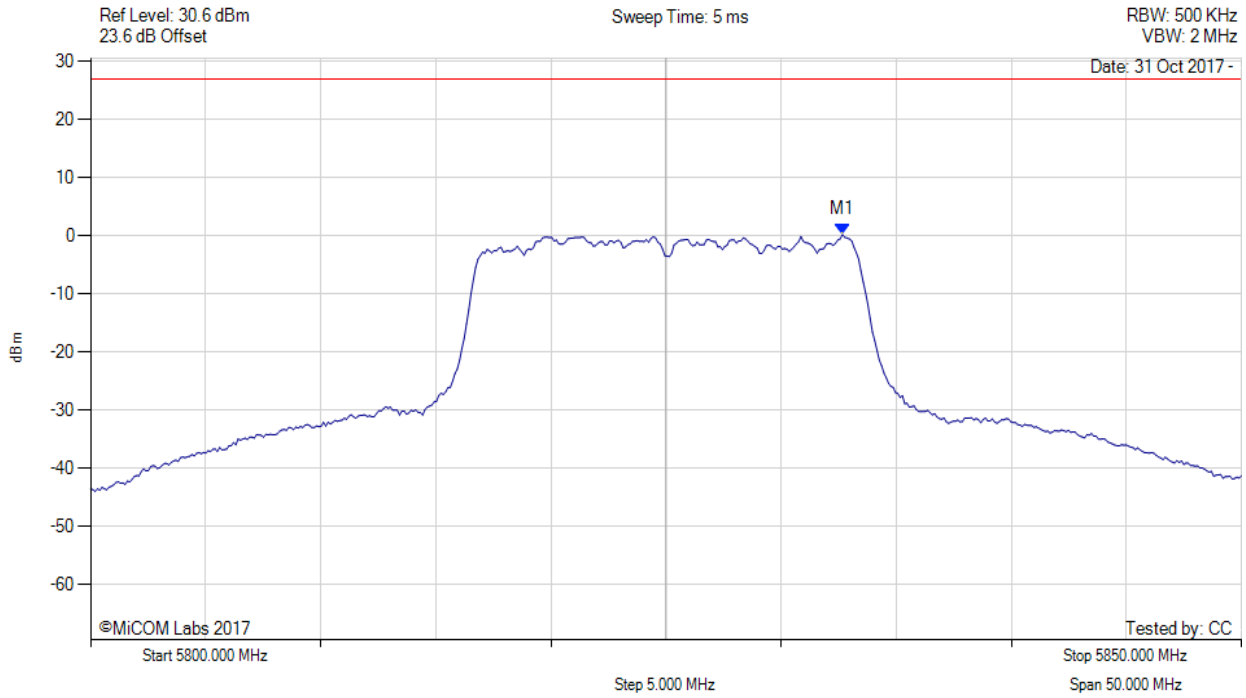


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5786.400 MHz : 4.373 dBm M1 + DCCF : 5786.400 MHz : 4.417 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 30.0 dBm Margin: -25.6 dB

back to matrix

POWER SPECTRAL DENSITY

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

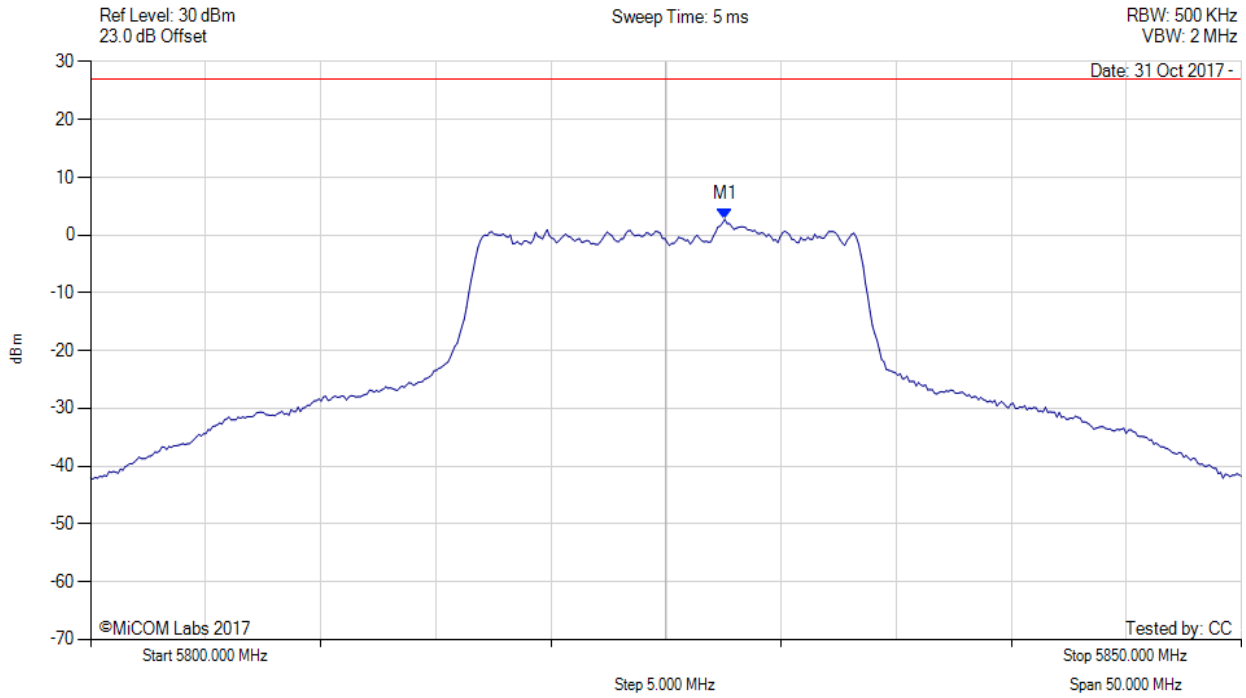


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5832.665 MHz : 0.223 dBm	Limit: ≤ 26.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

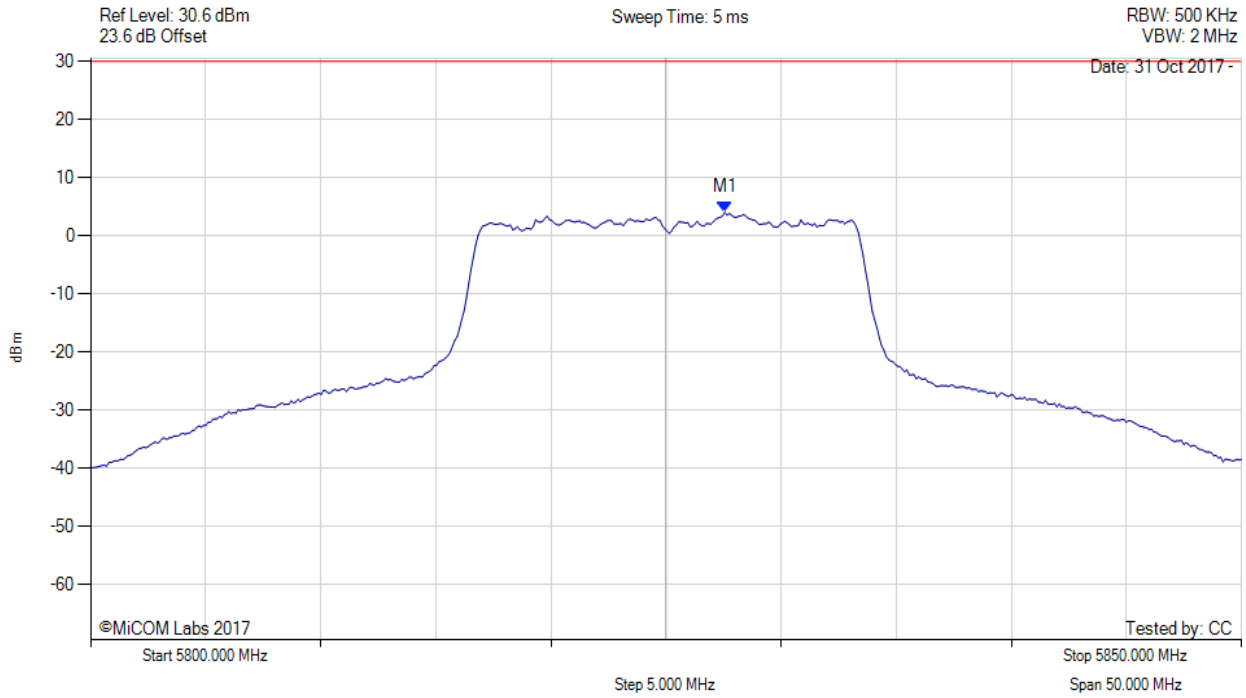


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5827.555 MHz : 2.729 dBm	Limit: ≤ 26.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

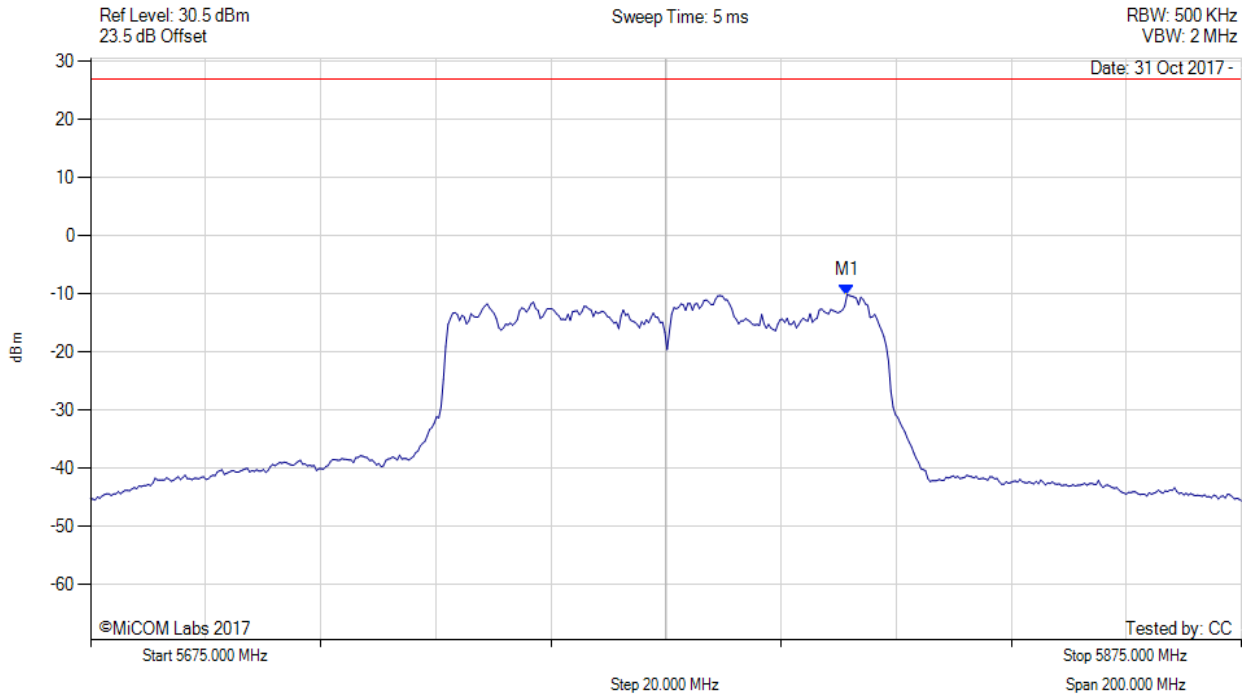


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5827.600 MHz : 4.036 dBm M1 + DCCF : 5827.600 MHz : 4.080 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 30.0 dBm Margin: -25.9 dB

back to matrix

POWER SPECTRAL DENSITY

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

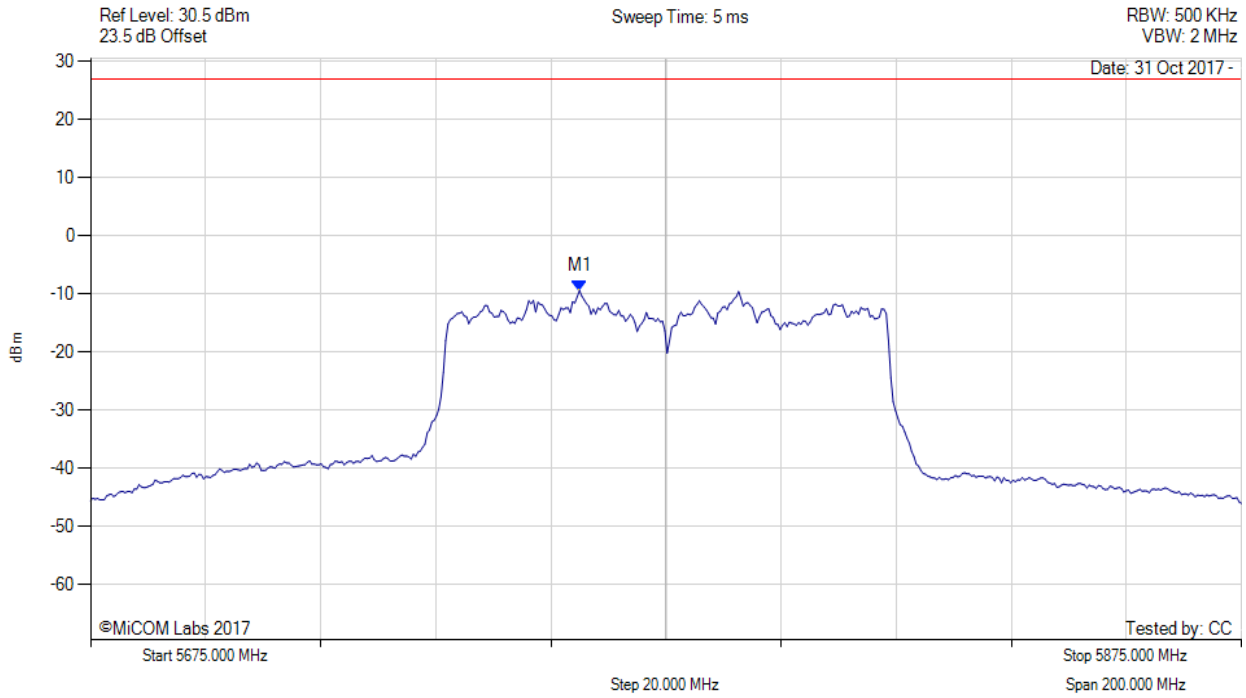


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5806.463 MHz : -10.146 dBm	Limit: ≤ 26.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

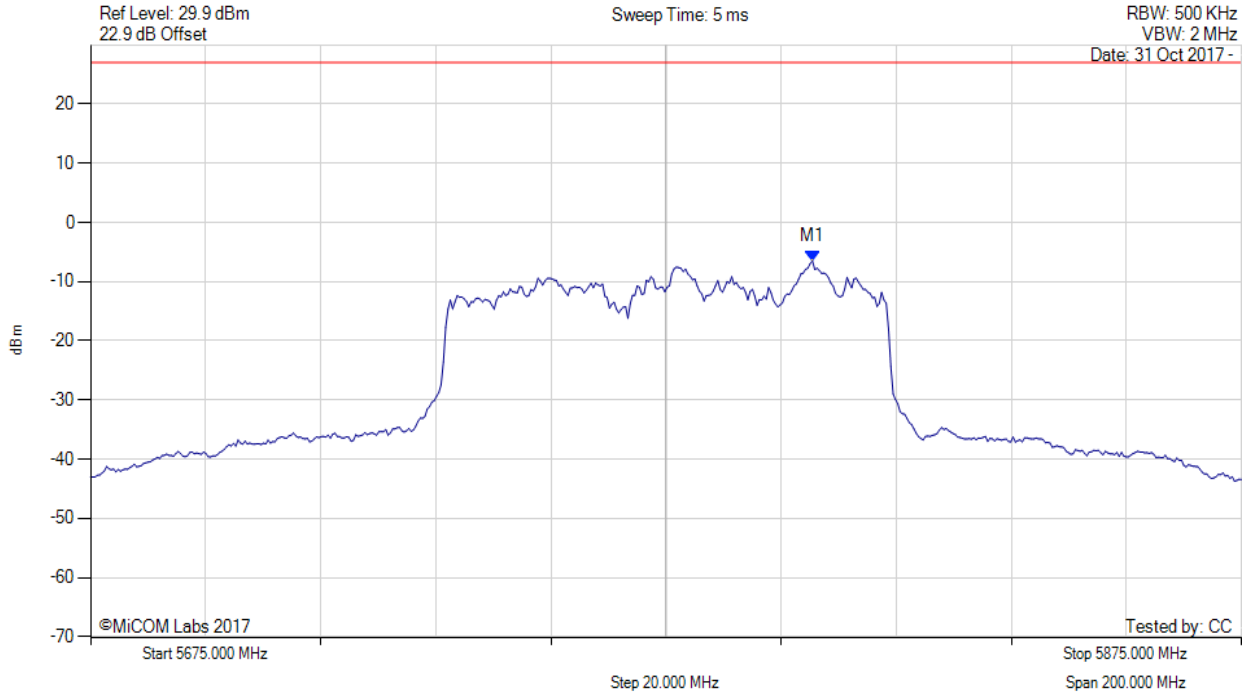


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5759.970 MHz : -9.436 dBm	Channel Frequency: 5775.00 MHz

back to matrix

POWER SPECTRAL DENSITY

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

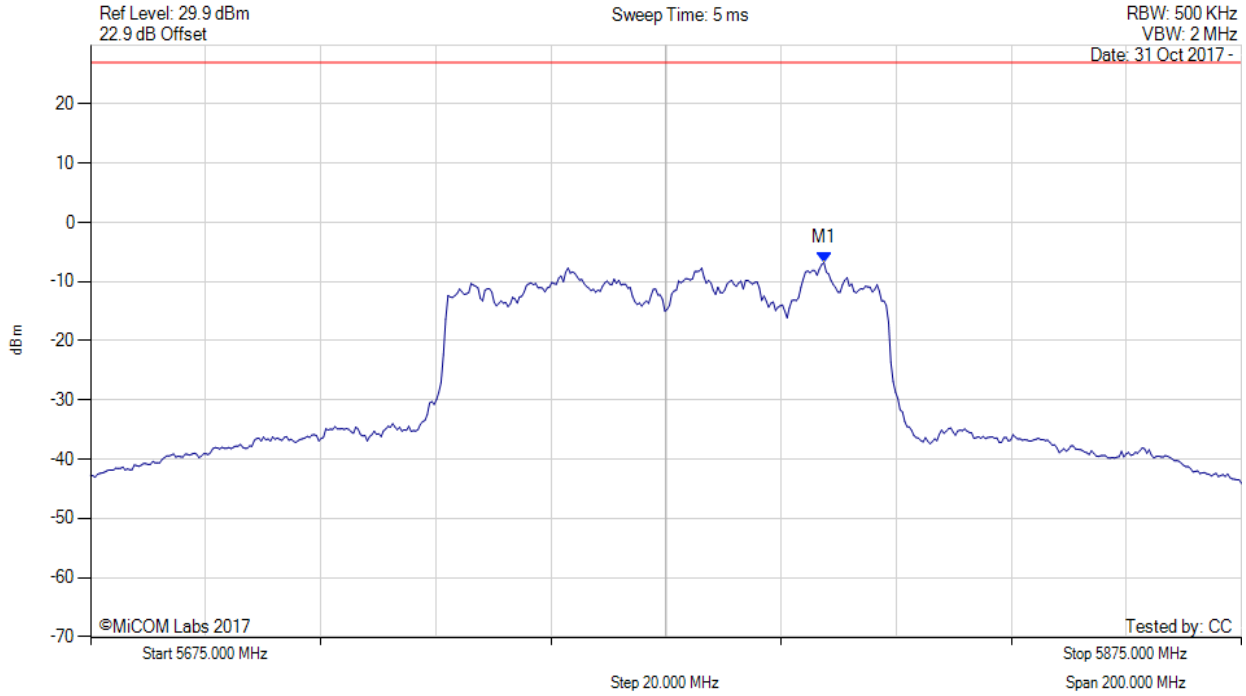


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5800.451 MHz : -6.505 dBm	Limit: ≤ 26.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

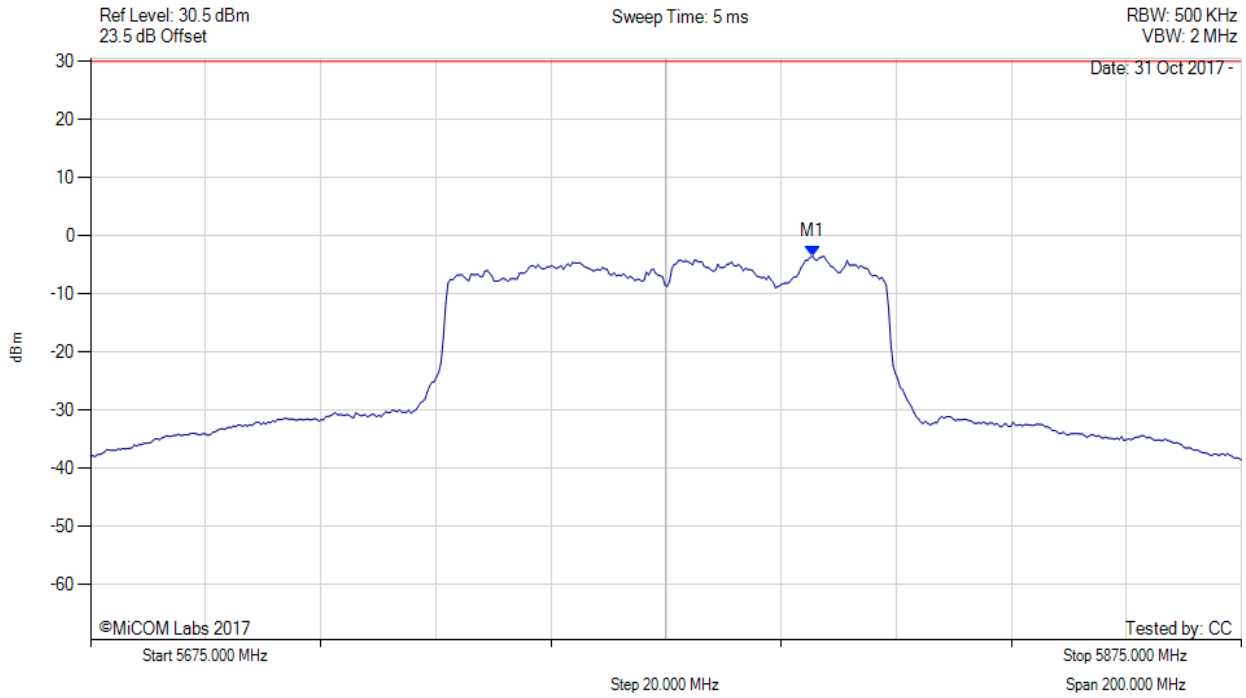


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5802.455 MHz : -6.791 dBm	Channel Frequency: 5775.00 MHz

back to matrix

POWER SPECTRAL DENSITY

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

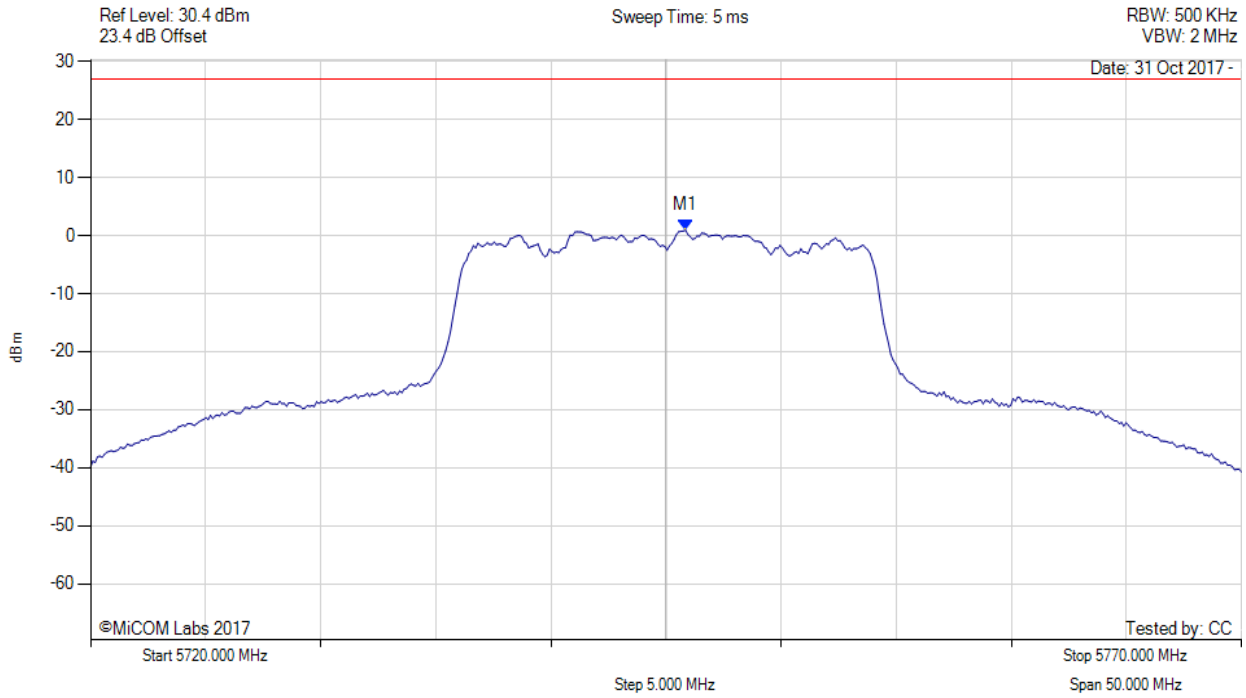


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5800.500 MHz : -3.472 dBm M1 + DCCF : 5800.500 MHz : -3.428 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 30.0 dBm Margin: -33.4 dB

back to matrix

POWER SPECTRAL DENSITY

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

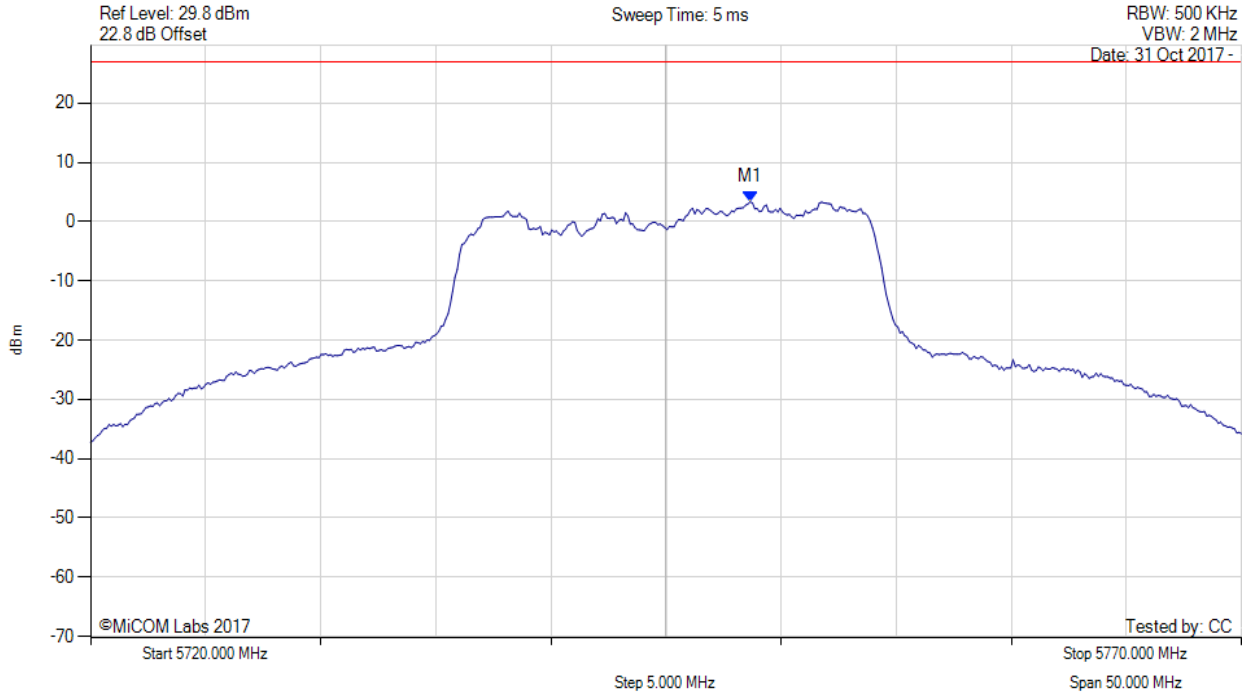


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5745.852 MHz : 0.926 dBm	Limit: ≤ 26.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

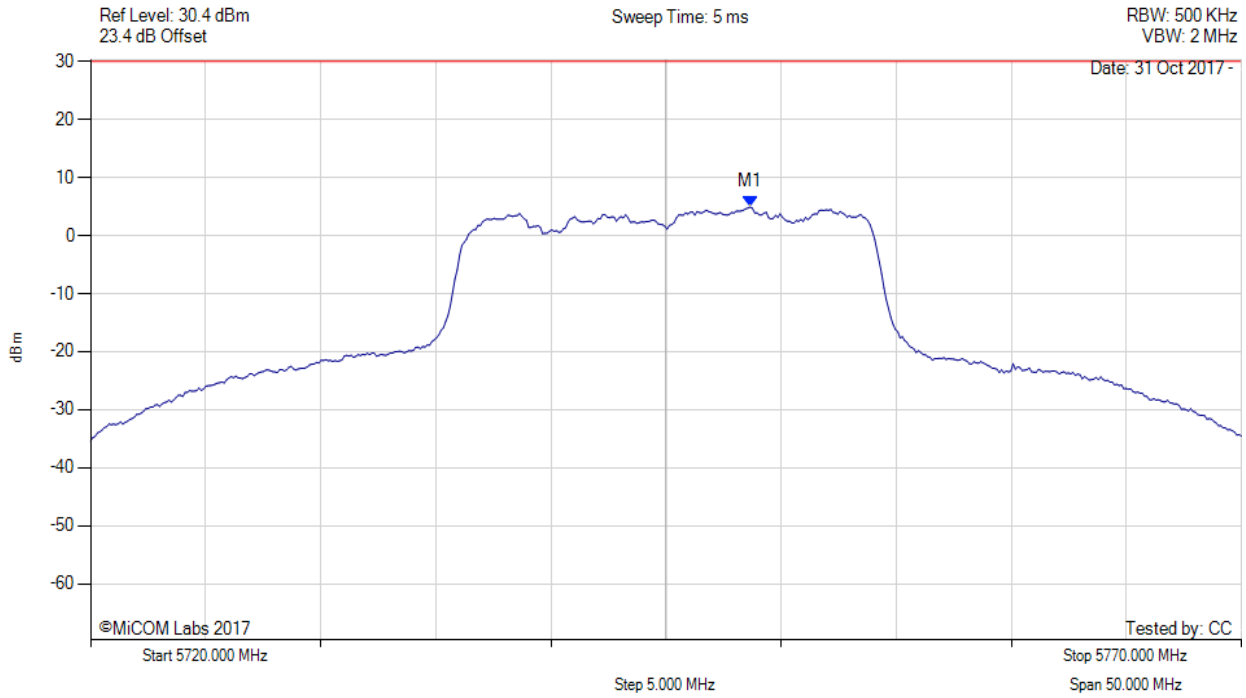


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5748.657 MHz : 3.349 dBm	Limit: ≤ 26.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

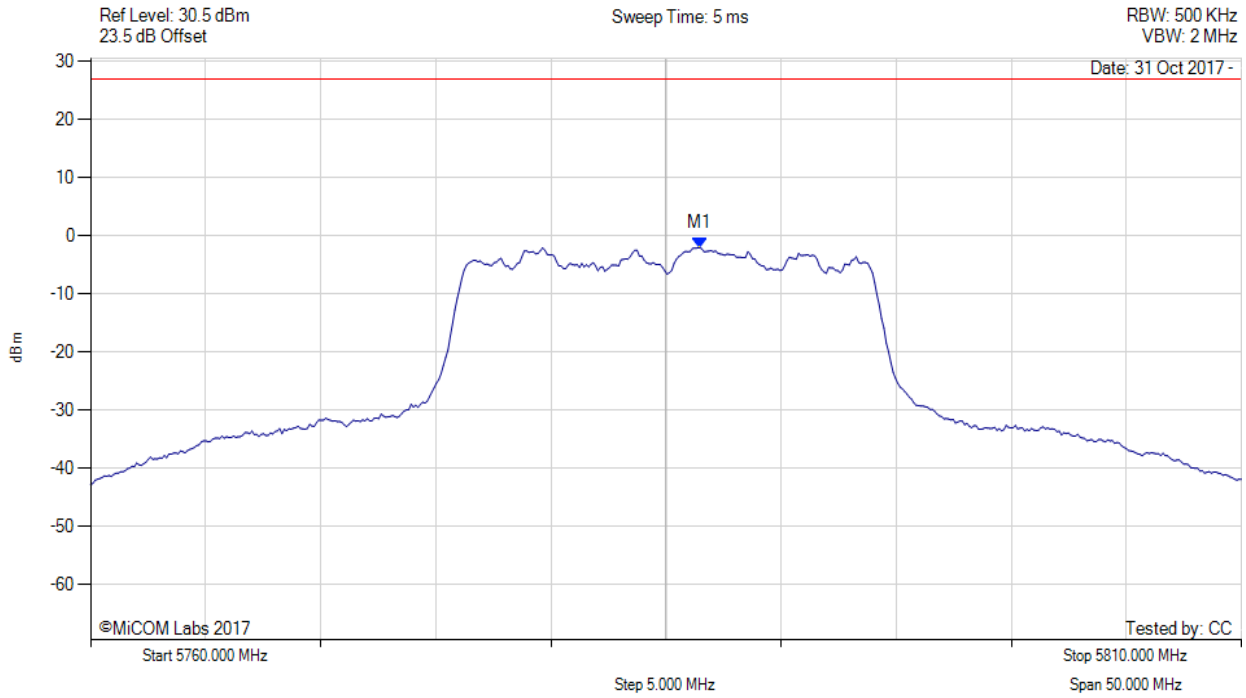


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5748.700 MHz : 4.930 dBm M1 + DCCF : 5748.700 MHz : 4.974 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 30.0 dBm Margin: -25.0 dB

back to matrix

POWER SPECTRAL DENSITY

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

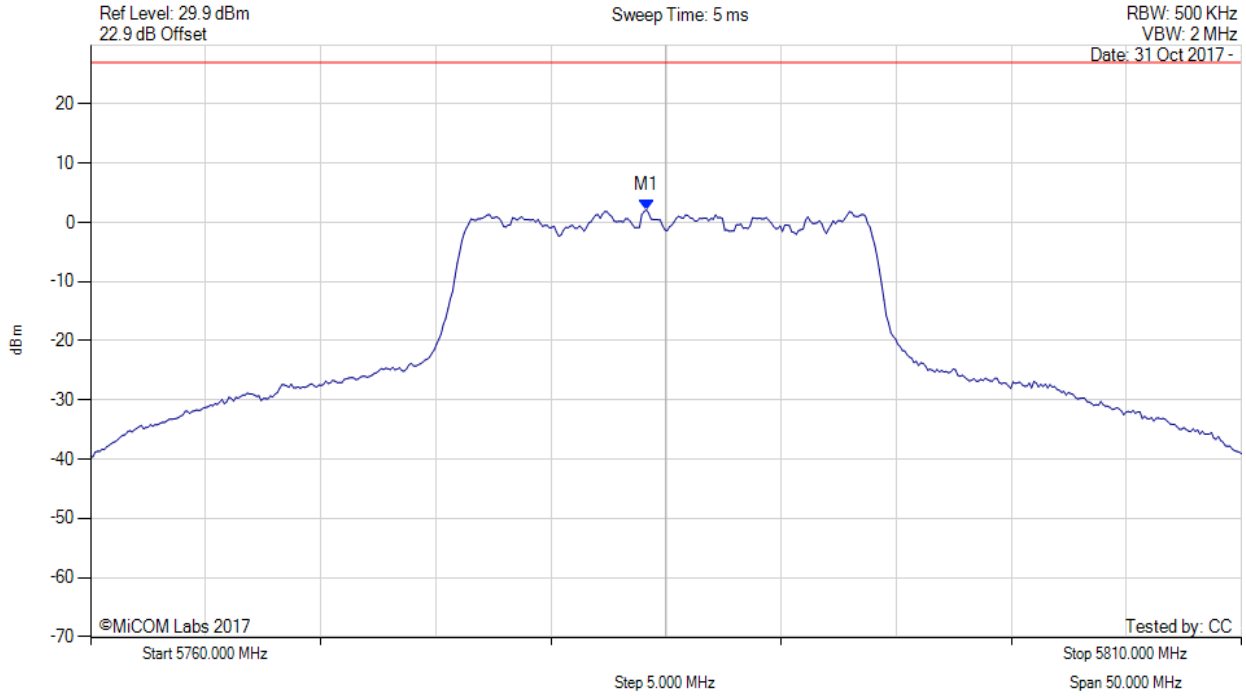


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5786.453 MHz : -2.056 dBm	Limit: ≤ 26.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

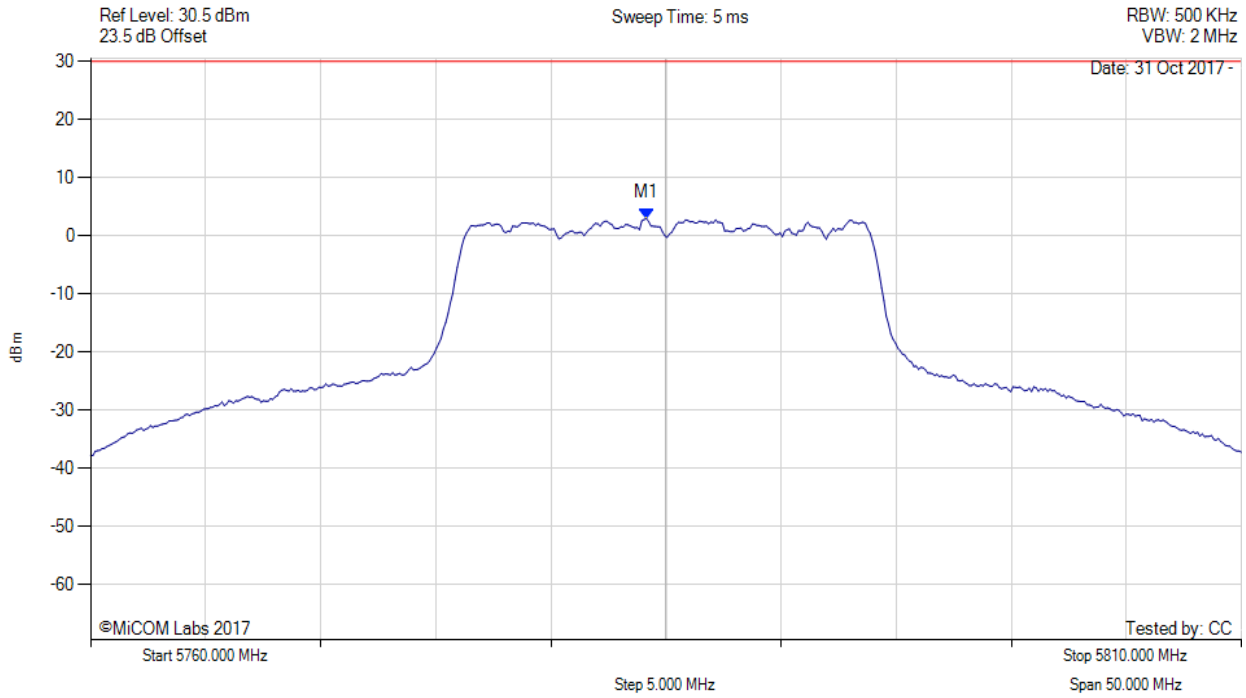


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5784.148 MHz : 2.145 dBm	Channel Frequency: 5785.00 MHz

back to matrix

POWER SPECTRAL DENSITY

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

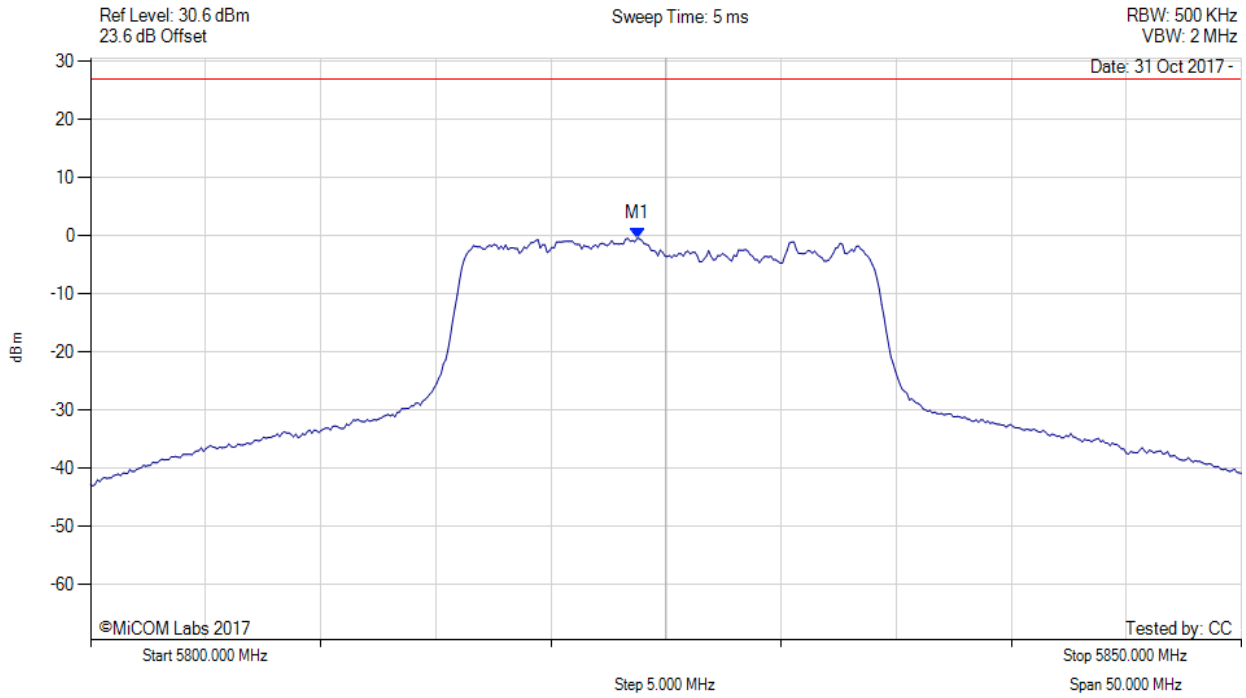


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5784.100 MHz : 2.975 dBm M1 + DCCF : 5784.100 MHz : 3.019 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 30.0 dBm Margin: -27.0 dB

back to matrix

POWER SPECTRAL DENSITY

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

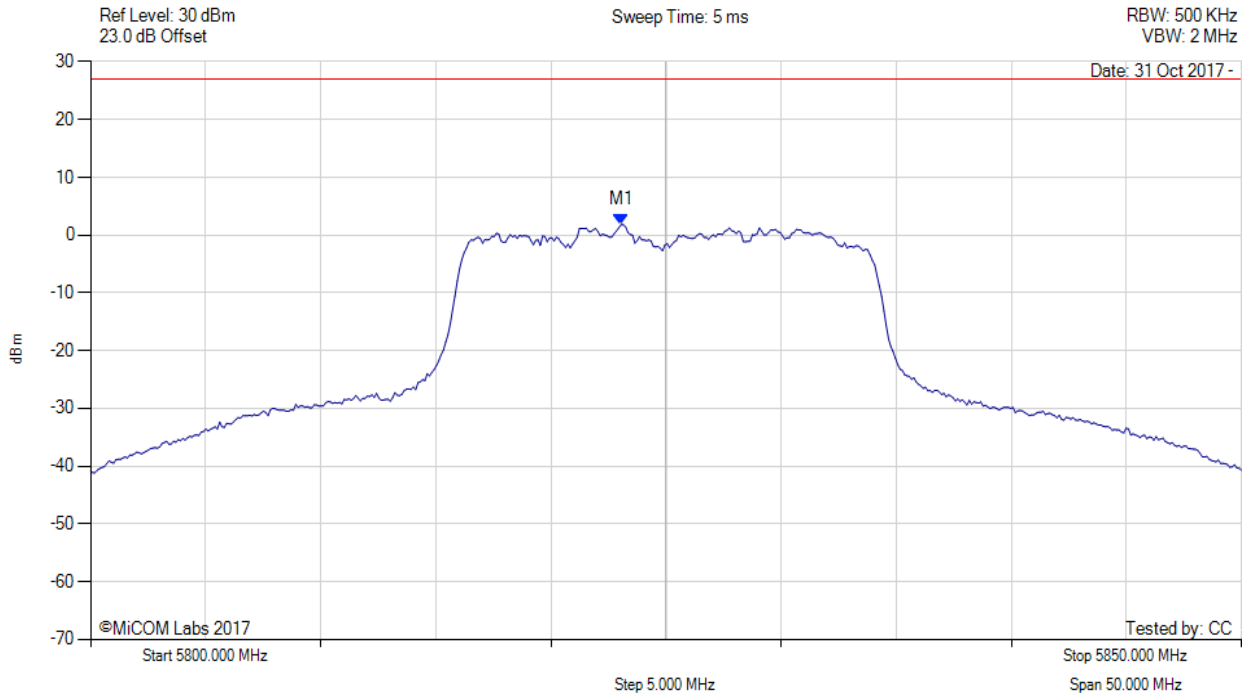


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5823.747 MHz : -0.440 dBm	Limit: ≤ 26.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

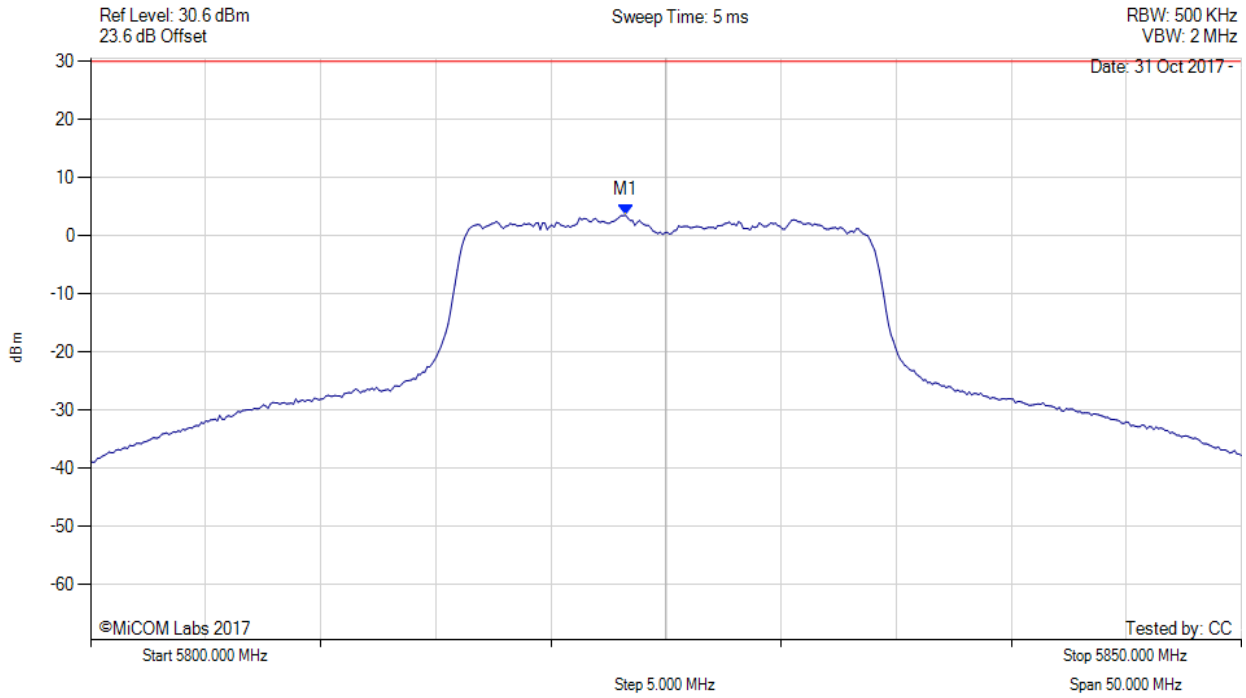


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5823.046 MHz : 1.798 dBm	Limit: ≤ 26.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

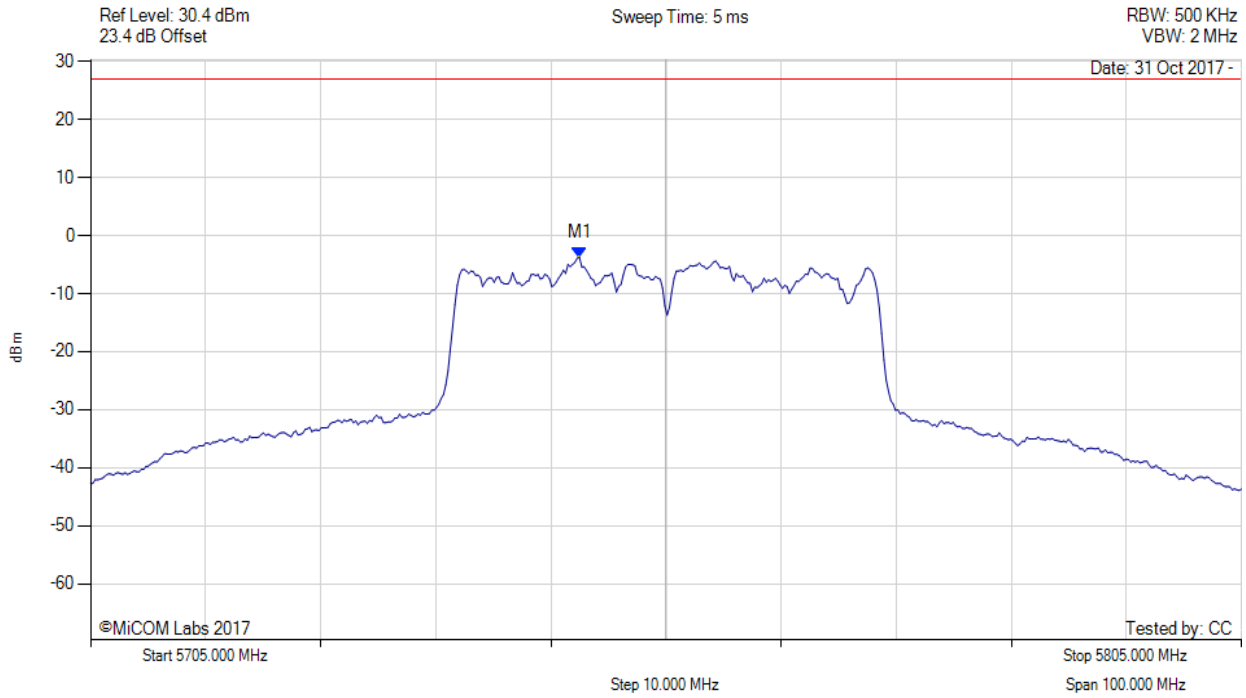


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5823.200 MHz : 3.553 dBm M1 + DCCF : 5823.200 MHz : 3.597 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 30.0 dBm Margin: -26.4 dB

back to matrix

POWER SPECTRAL DENSITY

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

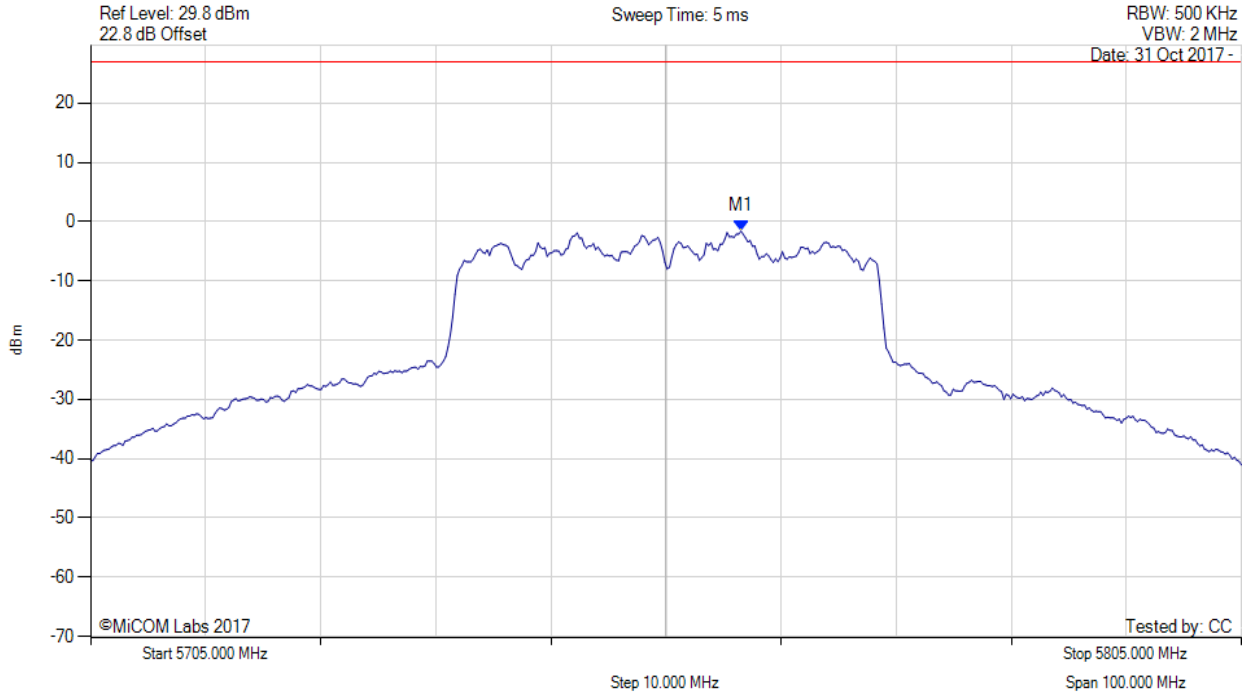


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5747.485 MHz : -3.763 dBm	Limit: ≤ 26.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

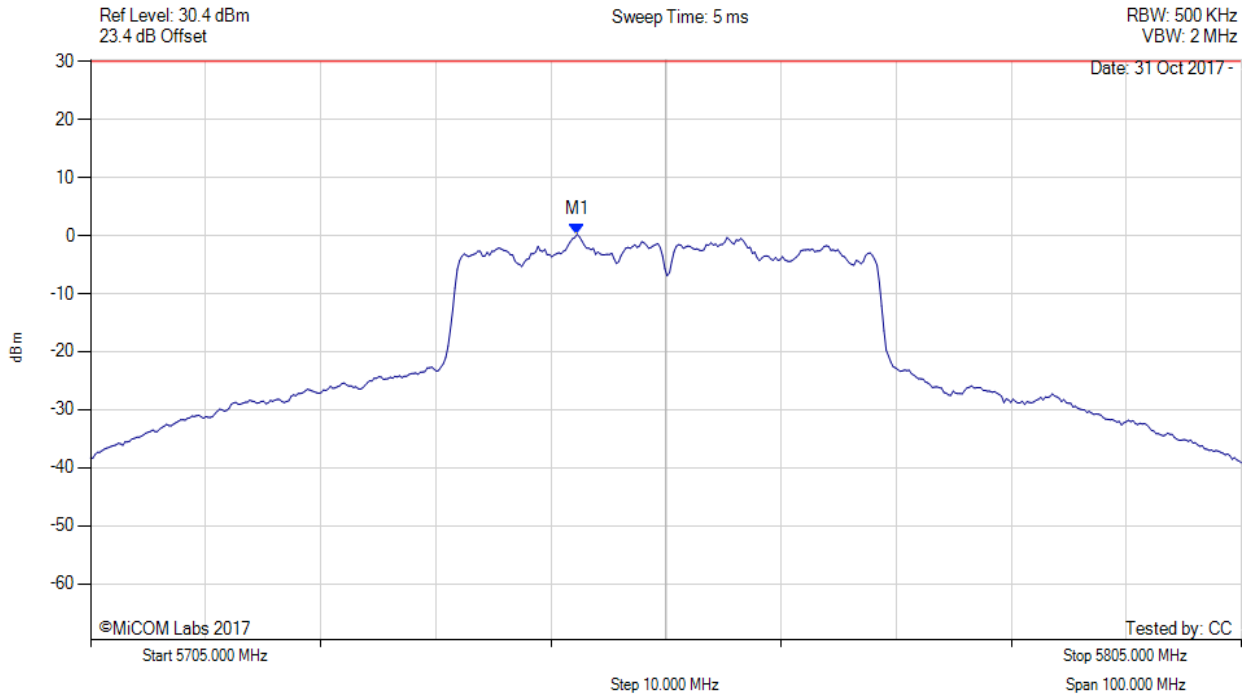


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5761.513 MHz : -1.577 dBm	Limit: ≤ 26.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

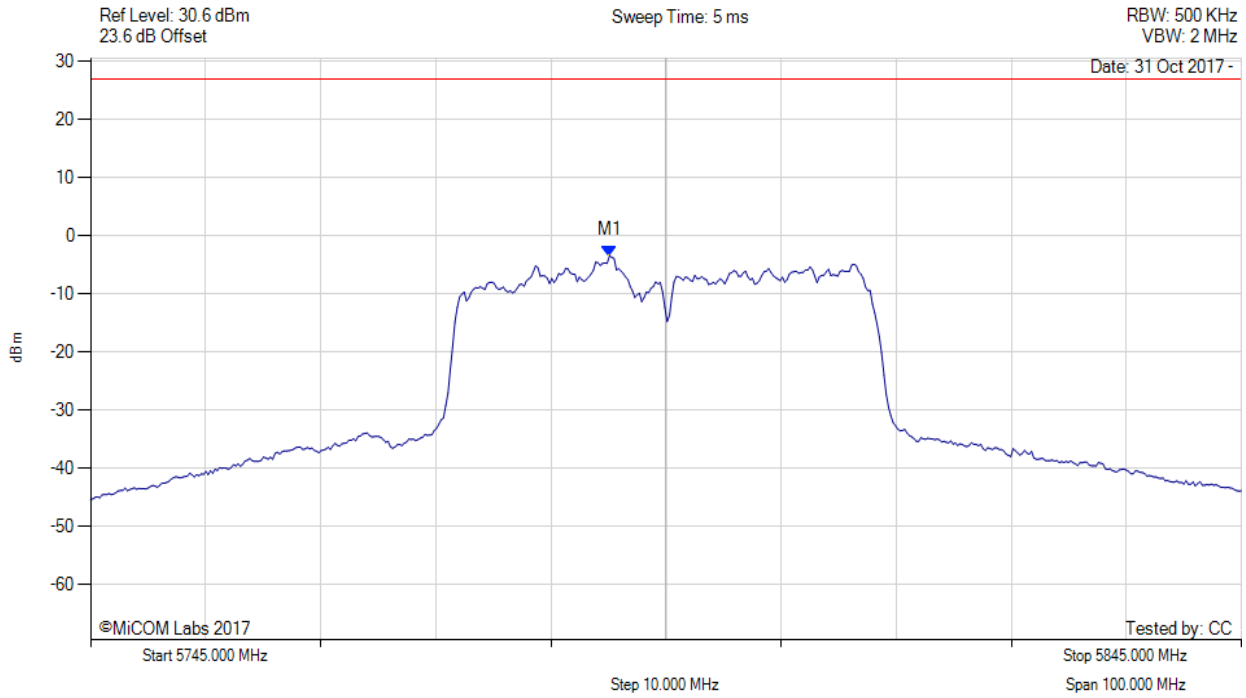


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5747.300 MHz : 0.240 dBm M1 + DCCF : 5747.300 MHz : 0.284 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 30.0 dBm Margin: -29.7 dB

back to matrix

POWER SPECTRAL DENSITY

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

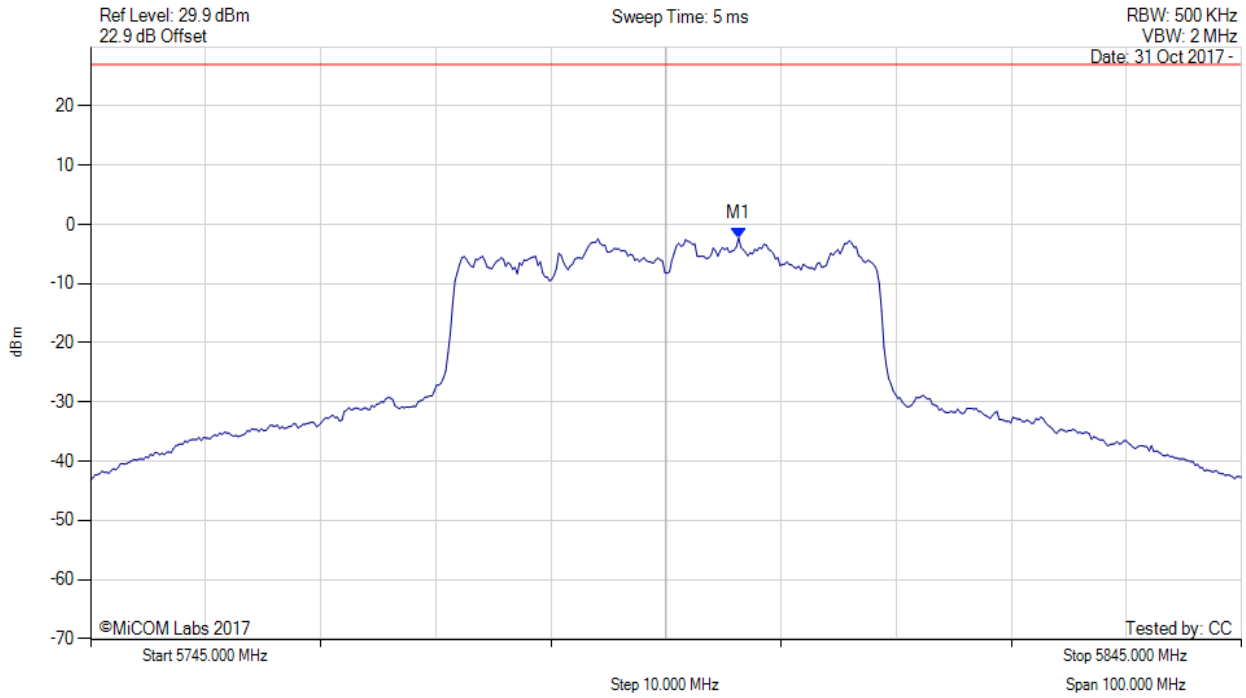


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5790.090 MHz : -3.410 dBm	Limit: ≤ 26.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

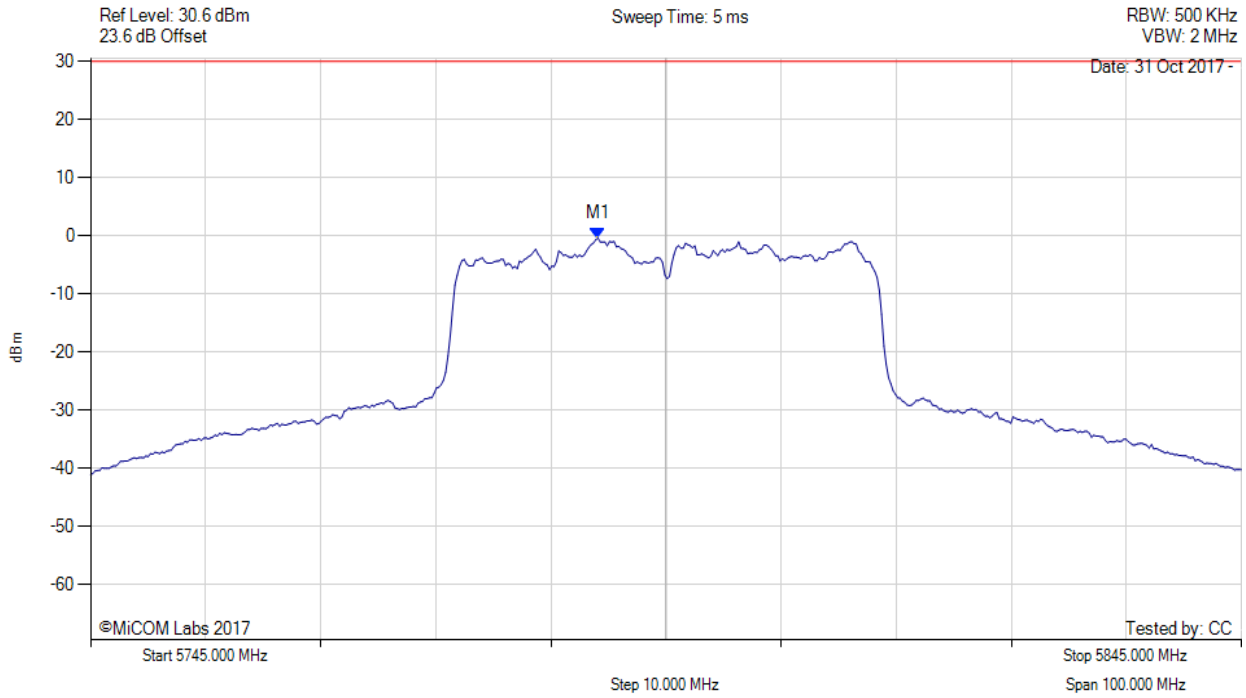


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5801.313 MHz : -2.297 dBm	Limit: ≤ 26.990 dBm

back to matrix

POWER SPECTRAL DENSITY

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

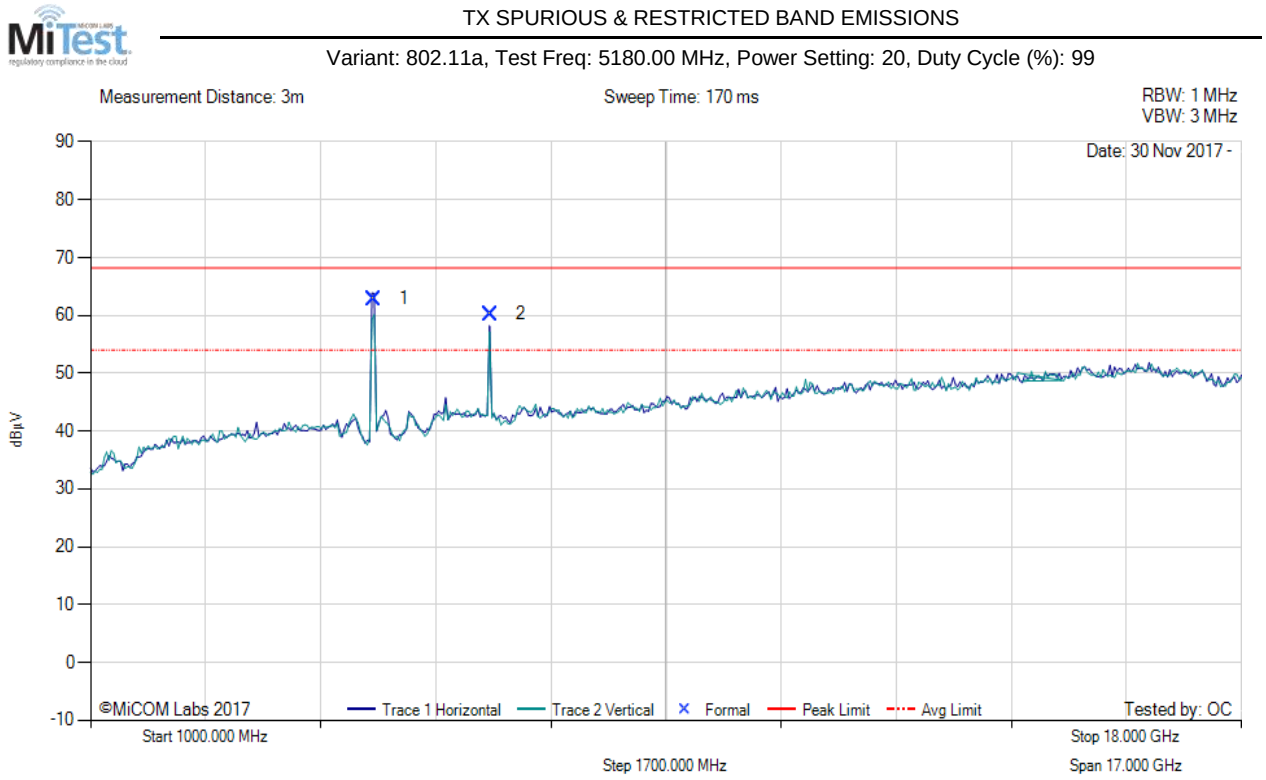


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5789.100 MHz : -0.380 dBm M1 + DCCF : 5789.100 MHz : -0.336 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 30.0 dBm Margin: -30.3 dB

back to matrix

A.4. Radiated

A.4.1. TX Spurious & Restricted Band Emissions



1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	5183.81	71.76	3.13	-12.02	62.87	Fundamental	Horizontal	100	0	--	--	
2	6906.74	65.05	3.19	-8.05	60.19	Max Peak (NRB)	Horizontal	174	337	68.2	-8.0	Pass

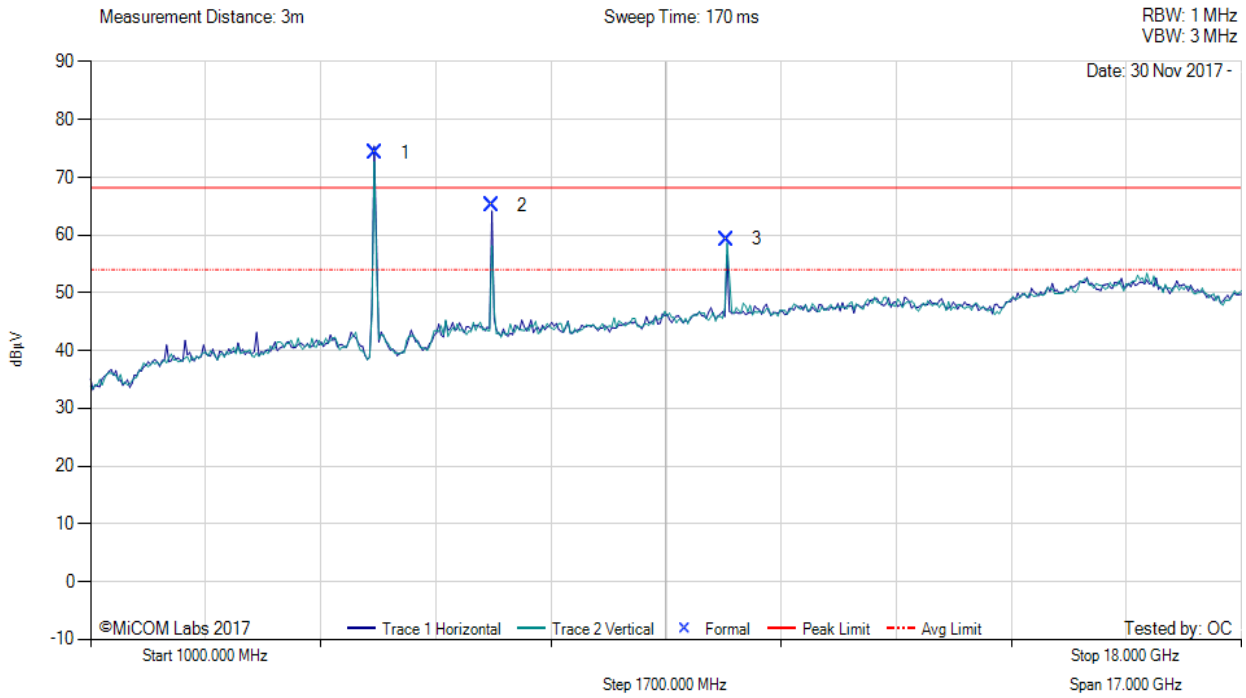
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.

NRB- Non Restricted Band emissions.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5200.00 MHz, Power Setting: 40, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	5198.48	83.05	3.10	-11.98	74.17	Fundamental	Horizontal	100	0	--	--	
2	6933.42	69.93	3.19	-7.96	65.16	Max Peak (NRB)	Horizontal	190	40	68.2	-3.1	Pass
3	10398.01	60.62	4.41	-5.77	59.26	Max Peak (NRB)	Horizontal	175	219	68.2	-9.0	Pass

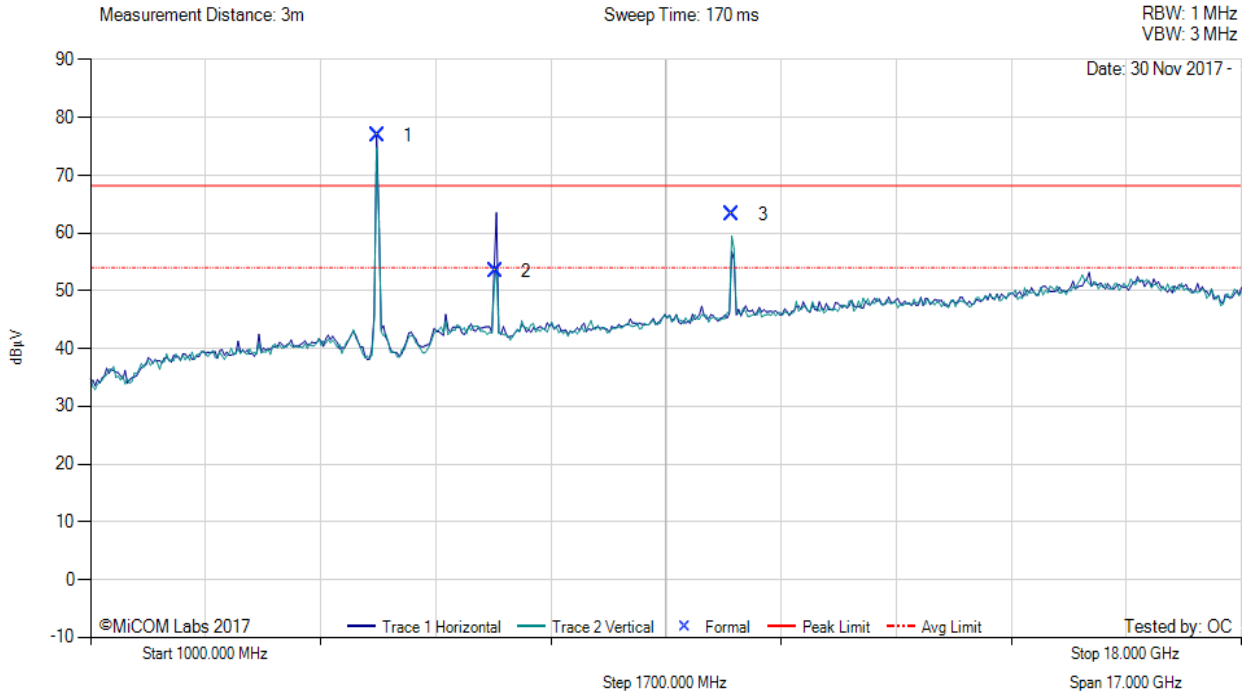
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.

NRB- Non Restricted Band emissions.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5240.00 MHz, Power Setting: 40, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	5237.95	85.96	3.12	-12.27	76.81	Fundamental	Horizontal	100	0	--	--	
2	6988.99	57.86	3.26	-7.69	53.43	Max Peak (NRB)	Horizontal	98	48	68.2	-14.8	Pass
3	10477.83	64.97	4.49	-6.28	63.18	Max Peak (NRB)	Horizontal	178	221	68.2	-5.1	Pass

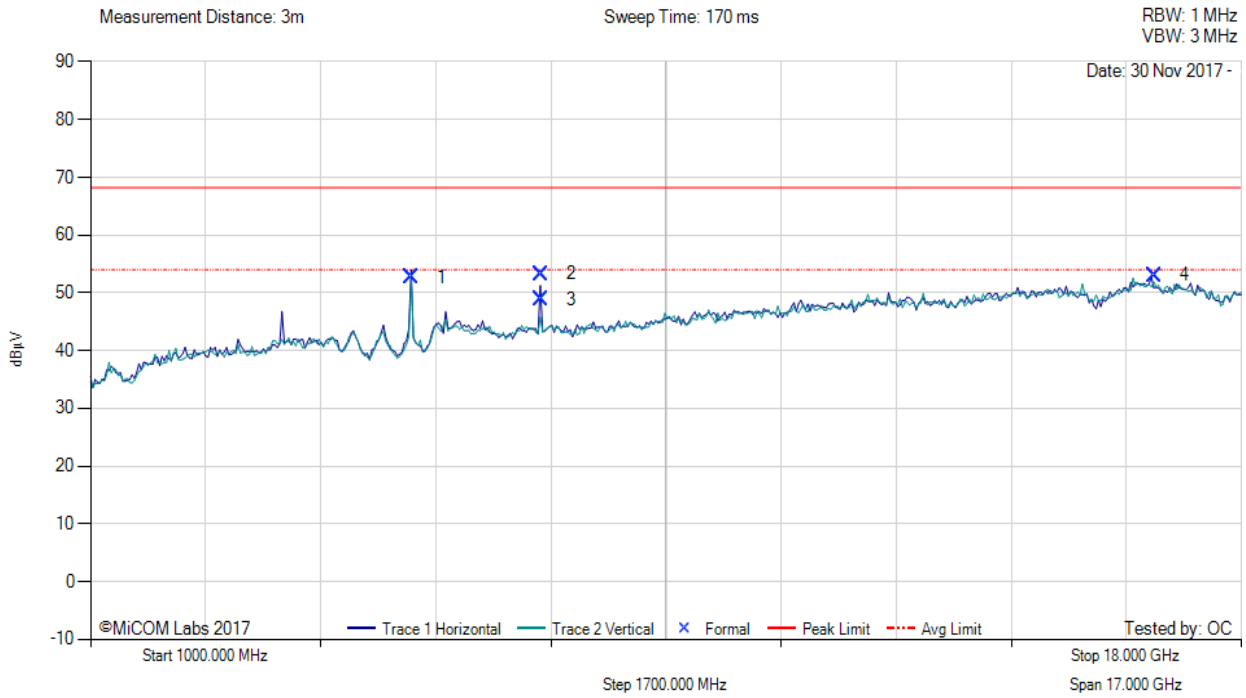
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.

NRB- Non Restricted Band emissions.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5745.00 MHz, Power Setting: 40, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	5745.01	60.63	3.18	-11.06	52.75	Fundamental	Horizontal	100	97	--	--	
2	7660.02	56.64	3.83	-7.19	53.28	Max Peak	Horizontal	180	330	68.2	-15.0	Pass
3	7660.02	52.22	3.83	-7.19	48.86	Max Avg	Horizontal	180	330	54.0	-5.1	Pass
4	16715.50	46.61	5.66	0.73	53.00	Peak (NRB)	Vertical	100	173	--	--	Pass

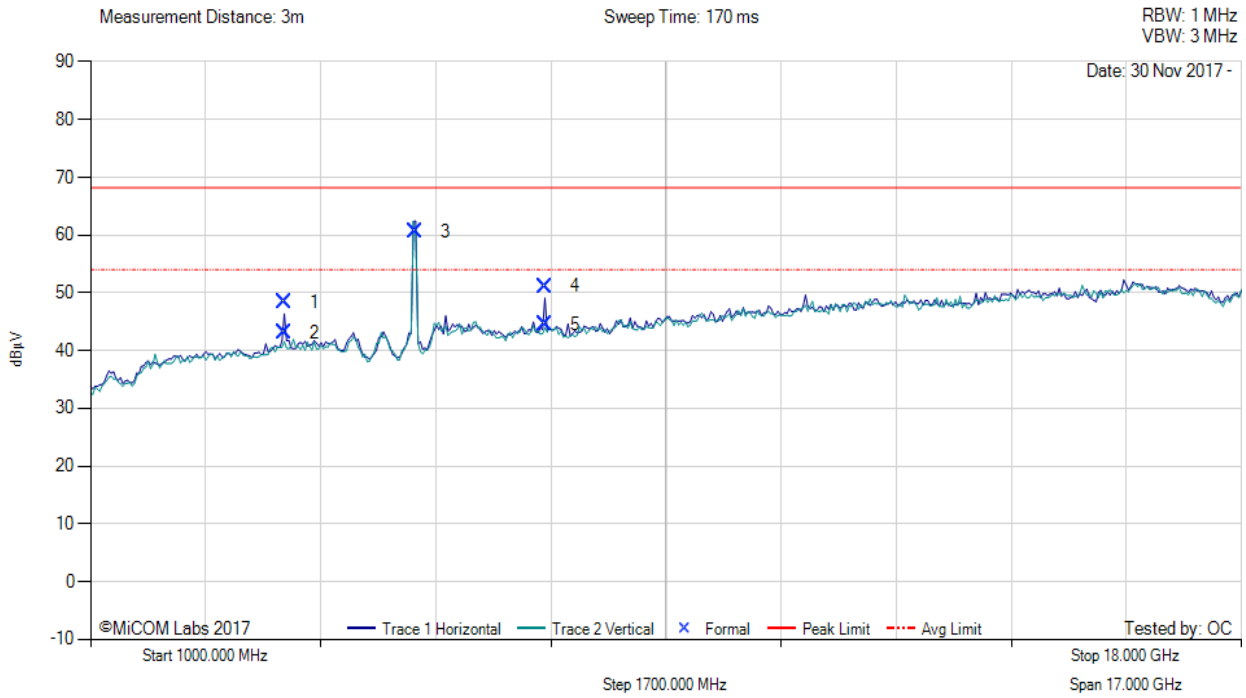
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.

NRB- Non Restricted Band emissions.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5785.00 MHz, Power Setting: 40, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	3856.93	57.27	2.74	-11.61	48.40	Max Peak	Horizontal	98	195	68.2	-19.8	Pass
2	3856.93	51.92	2.74	-11.61	43.05	Max Avg	Horizontal	98	195	54.0	-11.0	Pass
3	5790.54	68.16	3.20	-10.80	60.56	Fundamental	Vertical	100	0	--	--	
4	7713.46	54.60	3.75	-7.24	51.11	Max Peak	Horizontal	194	317	68.2	-17.1	Pass
5	7713.46	48.10	3.75	-7.24	44.61	Max Avg	Horizontal	194	317	54.0	-9.4	Pass

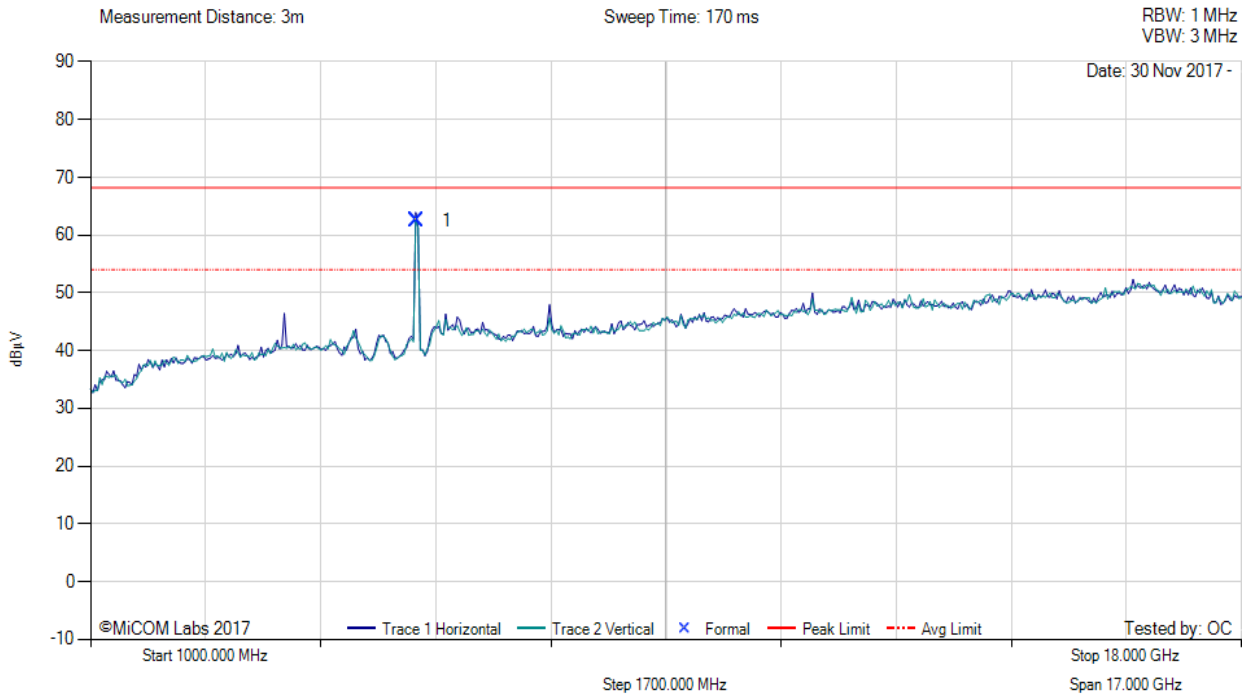
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.

NRB- Non Restricted Band emissions.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5825.00 MHz, Power Setting: 40, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	5822.01	70.07	3.23	-10.74	62.56	Fundamental	Horizontal	100	0	--	--	

Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.

NRB- Non Restricted Band emissions.

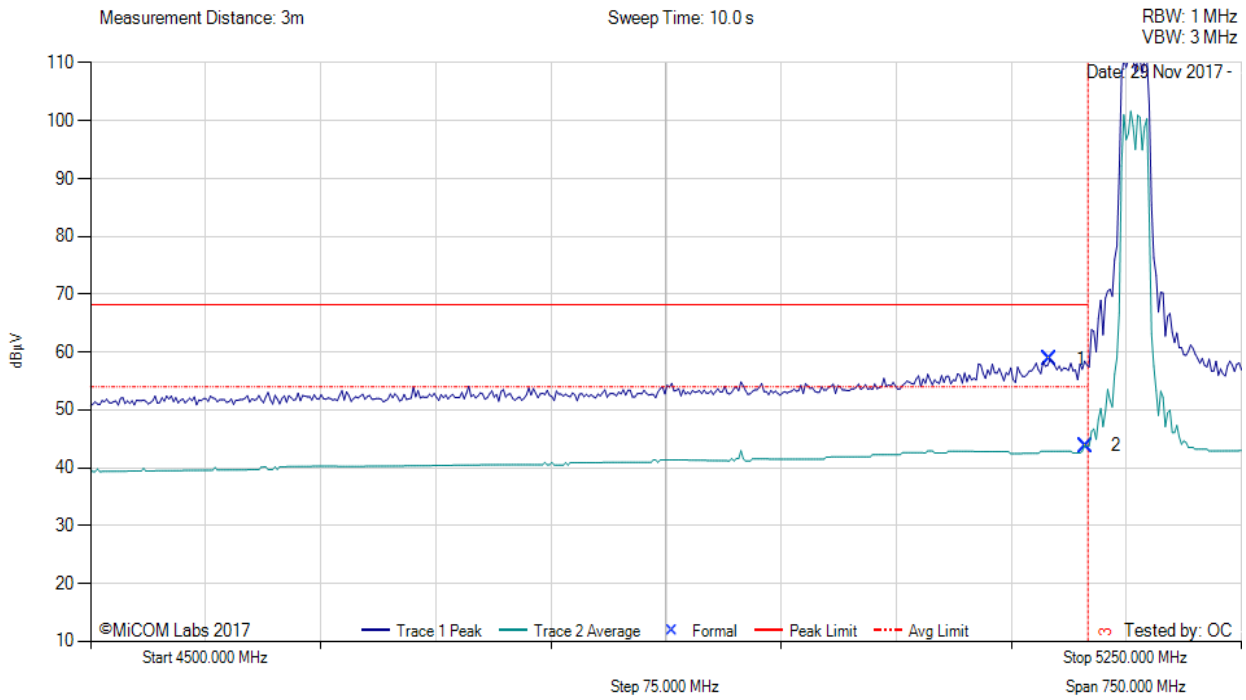
back to matrix

A.4.2. Restricted Edge & Band-Edge Emissions

5150 - 5250 MHz

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 802.11a, Test Freq: 5180.00 MHz, Power Setting: 20, Duty Cycle (%): 99



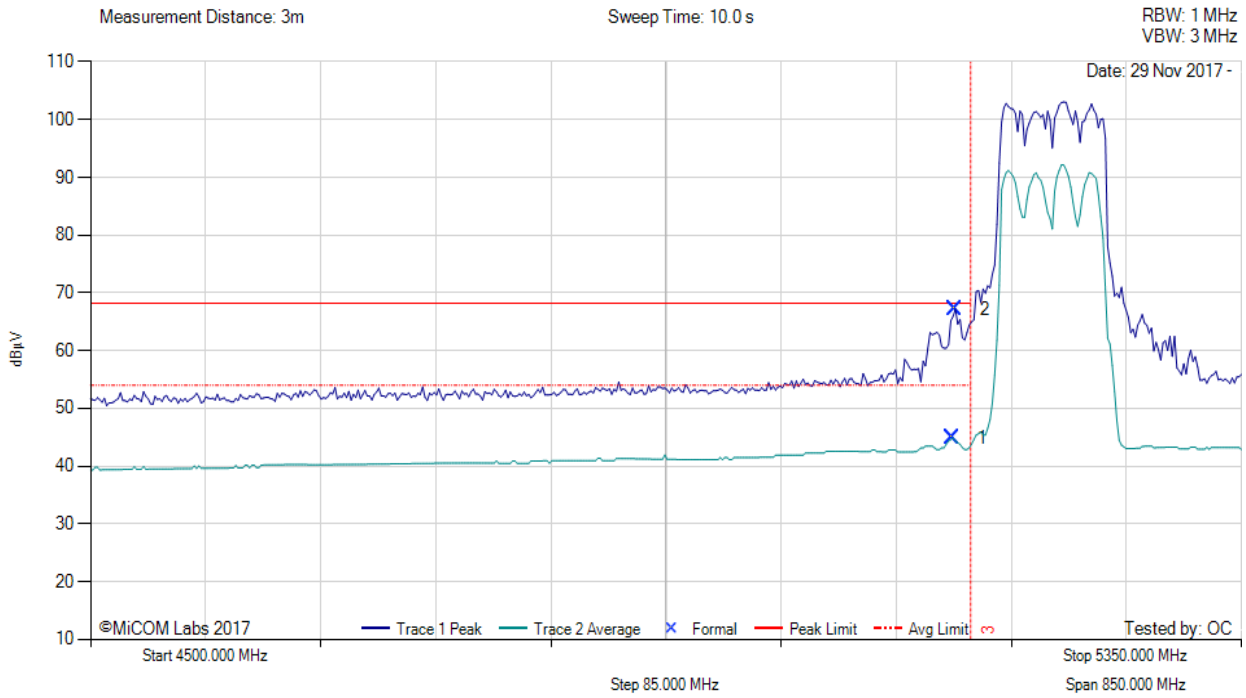
4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	5125.25	21.49	3.07	34.17	58.73	Max Peak	Horizontal	148	15	68.2	-9.5	Pass
2	5148.50	6.53	3.06	34.21	43.80	Max Avg	Horizontal	148	15	54.0	-10.2	Pass
3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.

back to matrix

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 802.11ac-80, Test Freq: 5210.00 MHz, Power Setting: 17, Duty Cycle (%): 99



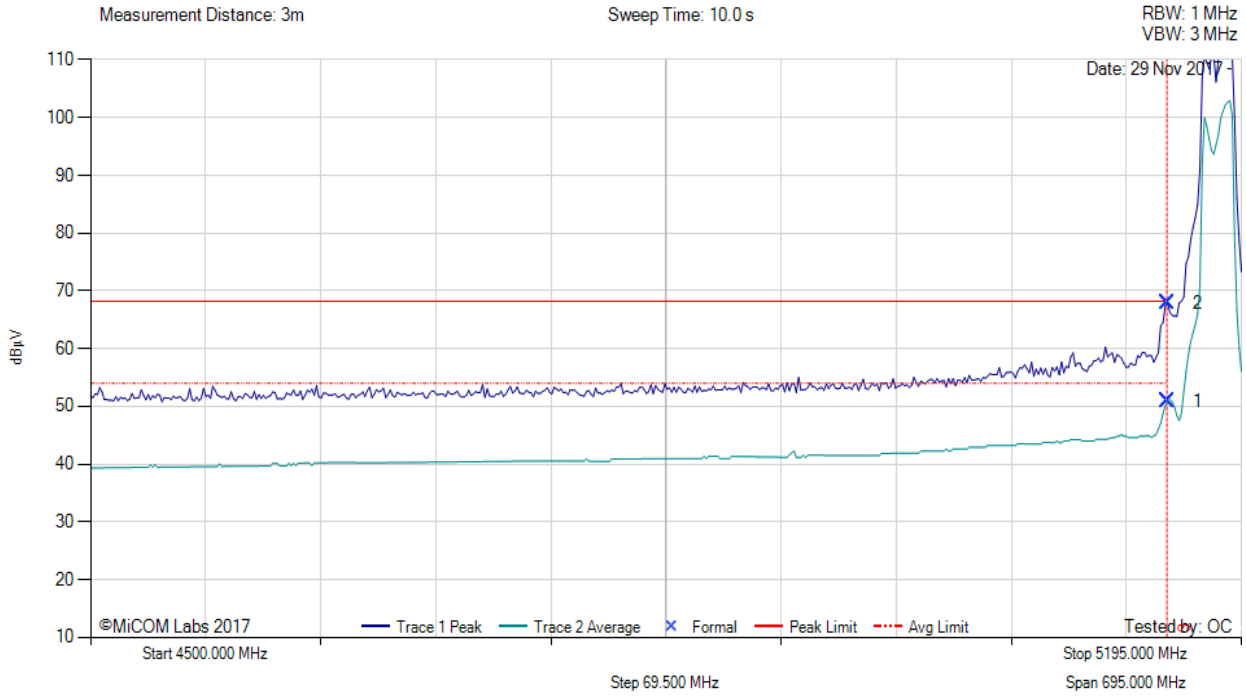
4500.00 - 5350.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	5136.37	7.63	3.06	34.19	44.88	Max Avg	Horizontal	148	15	54.0	-9.1	Pass
2	5138.08	29.93	3.06	34.19	67.18	Max Peak	Horizontal	148	15	68.2	-1.1	Pass
3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.

back to matrix

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 802.11n HT-20, Test Freq: 5180.00 MHz, Power Setting: 21, Duty Cycle (%): 99



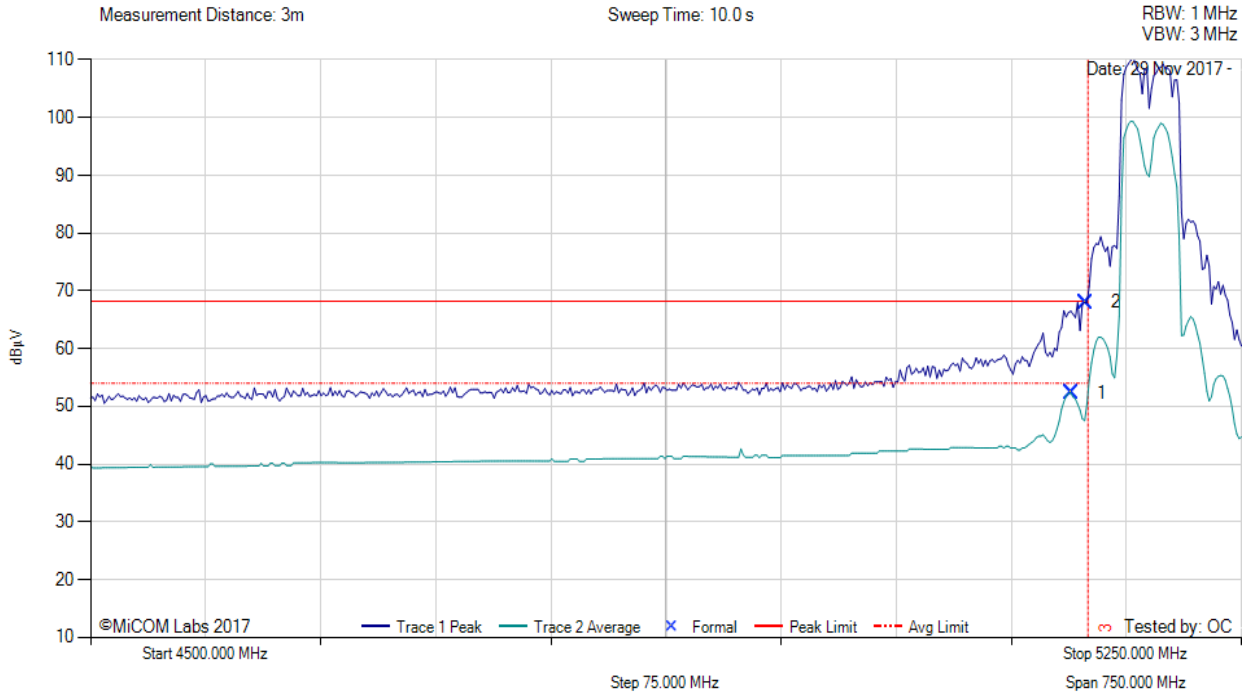
4500.00 - 5195.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	5150.00	13.64	3.06	34.21	50.91	Max Avg	Horizontal	148	15	54.0	-3.1	Pass
2	5150.00	30.56	3.06	34.21	67.83	Max Peak	Horizontal	148	15	68.2	-0.4	Pass
3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.

back to matrix

RESTRICTED LOWER BAND-EDGE EMISSIONS

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



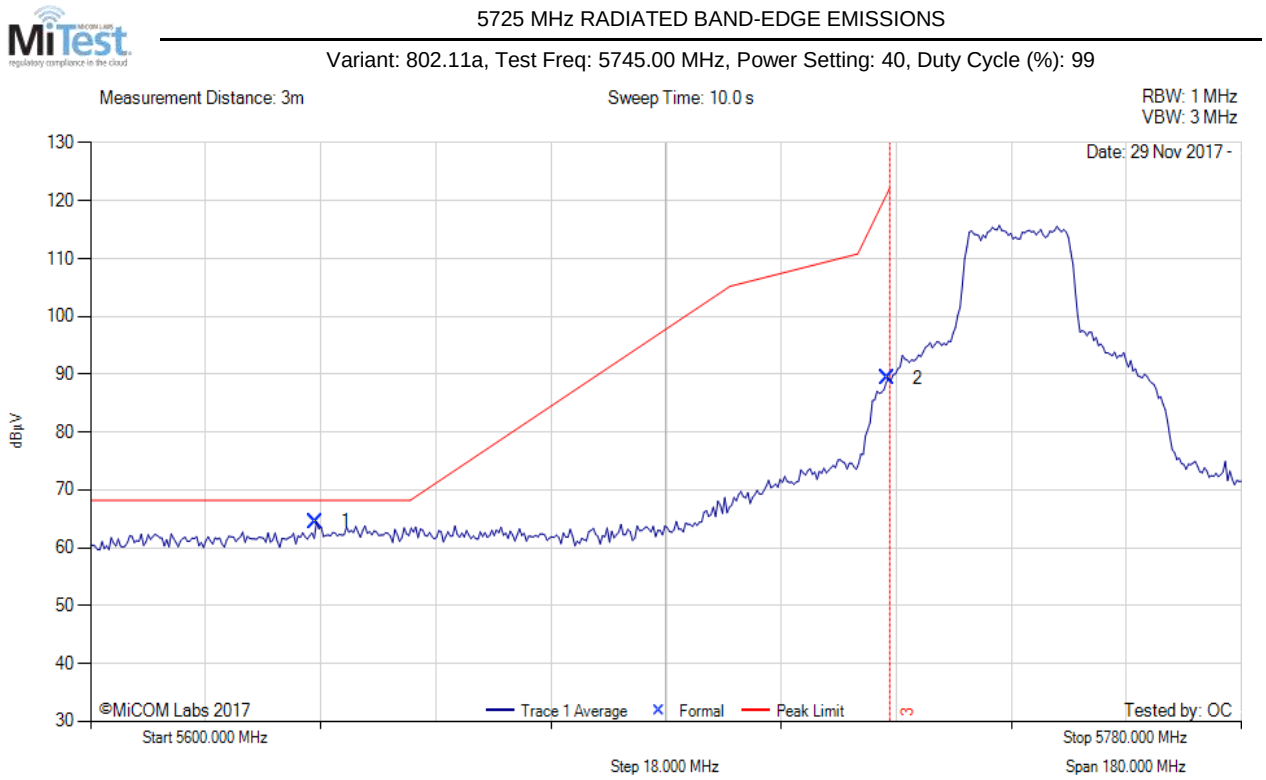
4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	5139.48	15.06	3.06	34.19	52.31	Max Avg	Horizontal	148	15	54.0	-1.7	Pass
2	5148.50	30.78	3.06	34.21	68.05	Max Peak	Horizontal	148	15	68.2	-0.2	Pass
3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.

back to matrix

5725 - 5850 MHz

Lower Band-Edge



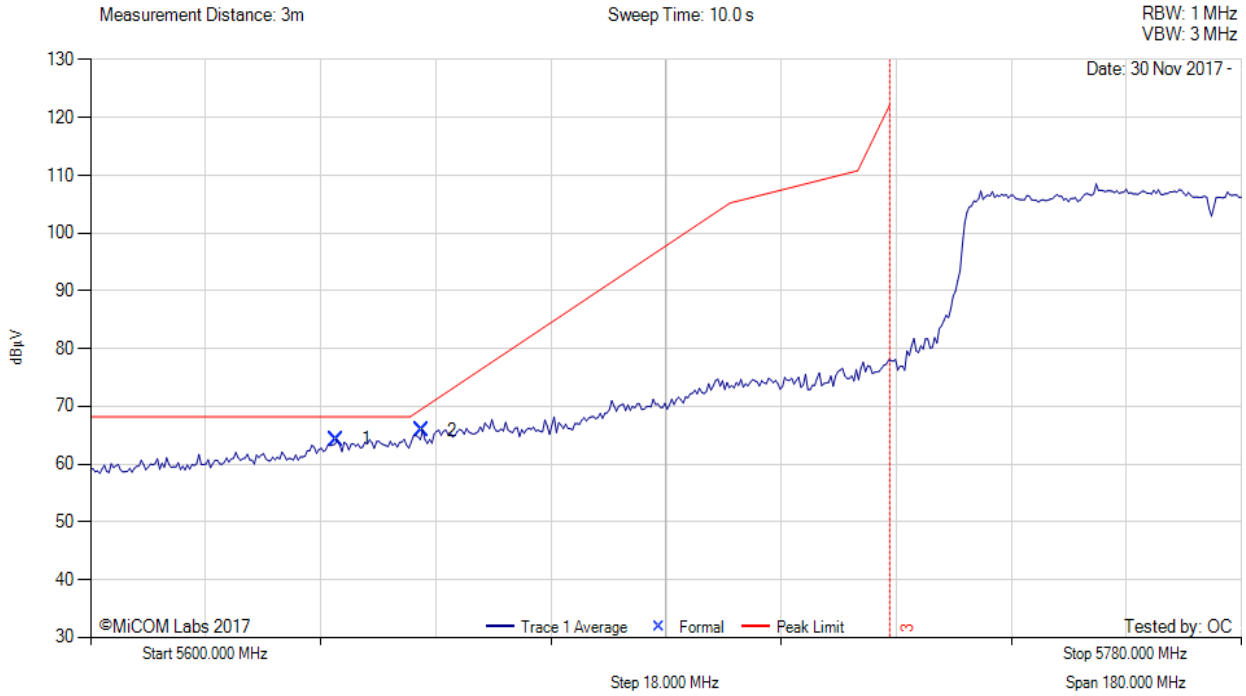
5600.00 - 5780.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	5635.18	26.70	3.20	34.64	64.54	Max Peak	Horizontal	167	338	68.2	-3.7	Pass
2	5724.64	51.40	3.17	34.72	89.29	Max Peak	Horizontal	167	338	122.2	-32.9	Pass
3	5725.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.

back to matrix

5725 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11ac-80, Test Freq: 5775.00 MHz, Power Setting: 25, Duty Cycle (%): 99



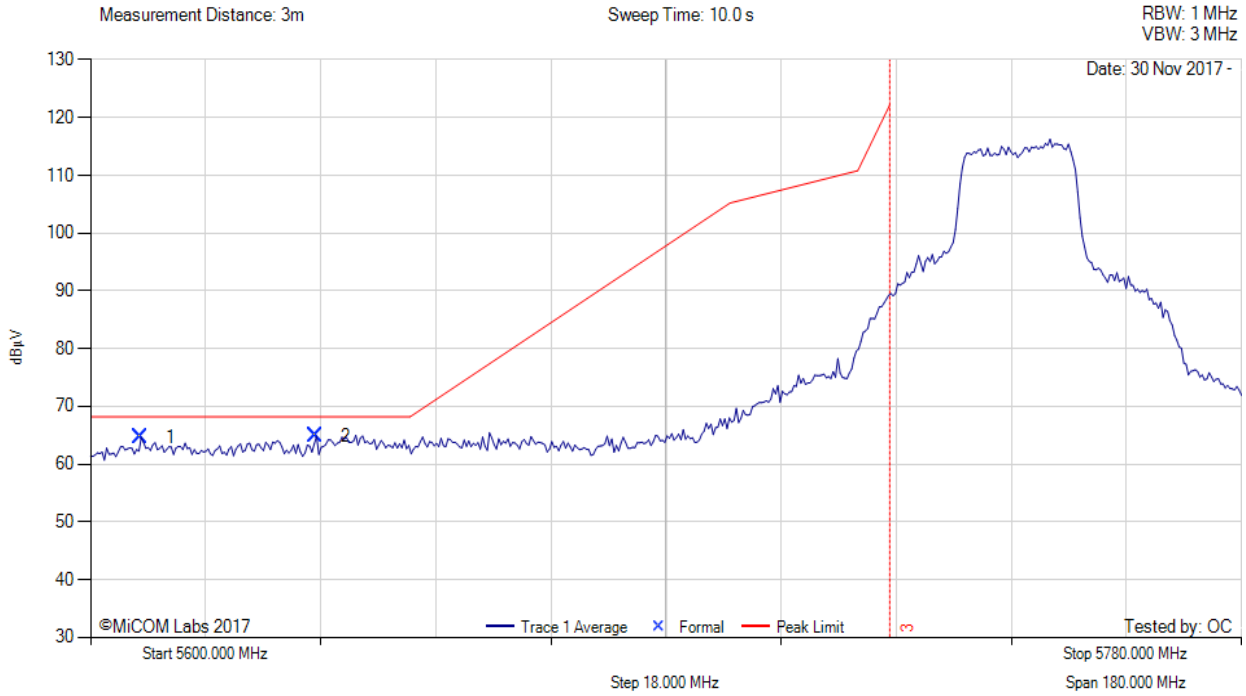
5600.00 - 5780.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	5638.43	26.44	3.19	34.64	64.27	Max Peak	Horizontal	164	338	68.2	-4.0	Pass
2	5651.87	28.05	3.22	34.63	65.90	Max Peak	Horizontal	164	338	69.7	-3.8	Pass
3	5725.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.

back to matrix

5725 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11n HT-20, Test Freq: 5745.00 MHz, Power Setting: 40, Duty Cycle (%): 99



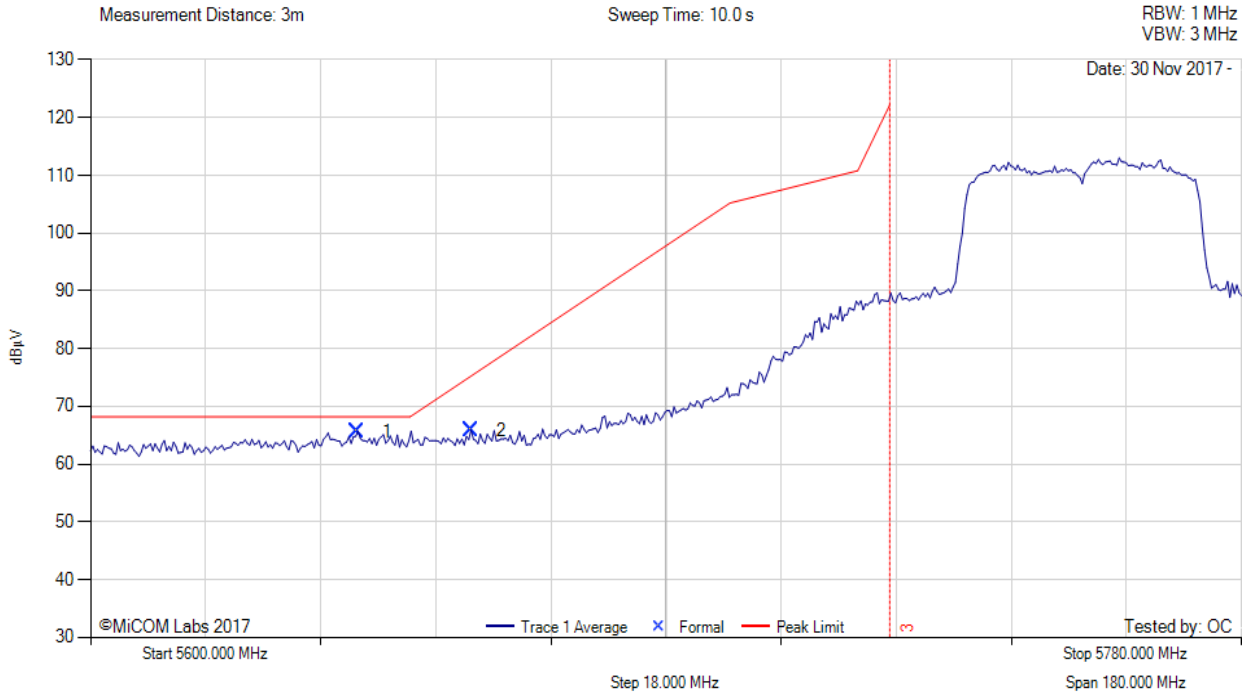
5600.00 - 5780.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	5607.77	26.77	3.22	34.65	64.64	Max Peak	Horizontal	164	338	68.2	-3.6	Pass
2	5635.18	27.01	3.20	34.64	64.85	Max Peak	Horizontal	164	338	68.2	-3.4	Pass
3	5725.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.

back to matrix

5725 MHz RADIATED BAND-EDGE EMISSIONS

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



5600.00 - 5780.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	5641.67	27.85	3.18	34.64	65.67	Max Peak	Horizontal	164	338	68.2	-2.6	Pass
2	5659.45	28.04	3.21	34.64	65.89	Max Peak	Horizontal	164	338	74.9	-9.0	Pass
3	5725.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

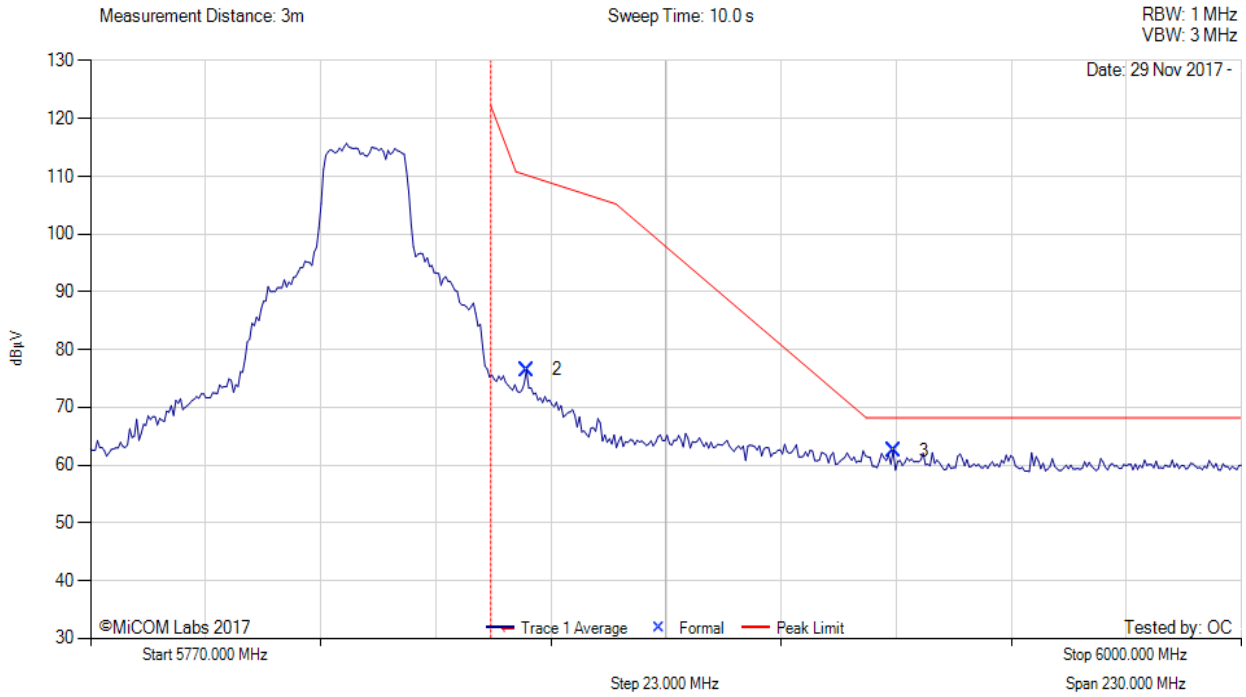
Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.

back to matrix

Higher Band-Edge

5850 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11a, Test Freq: 5825.00 MHz, Power Setting: 40, Duty Cycle (%): 99



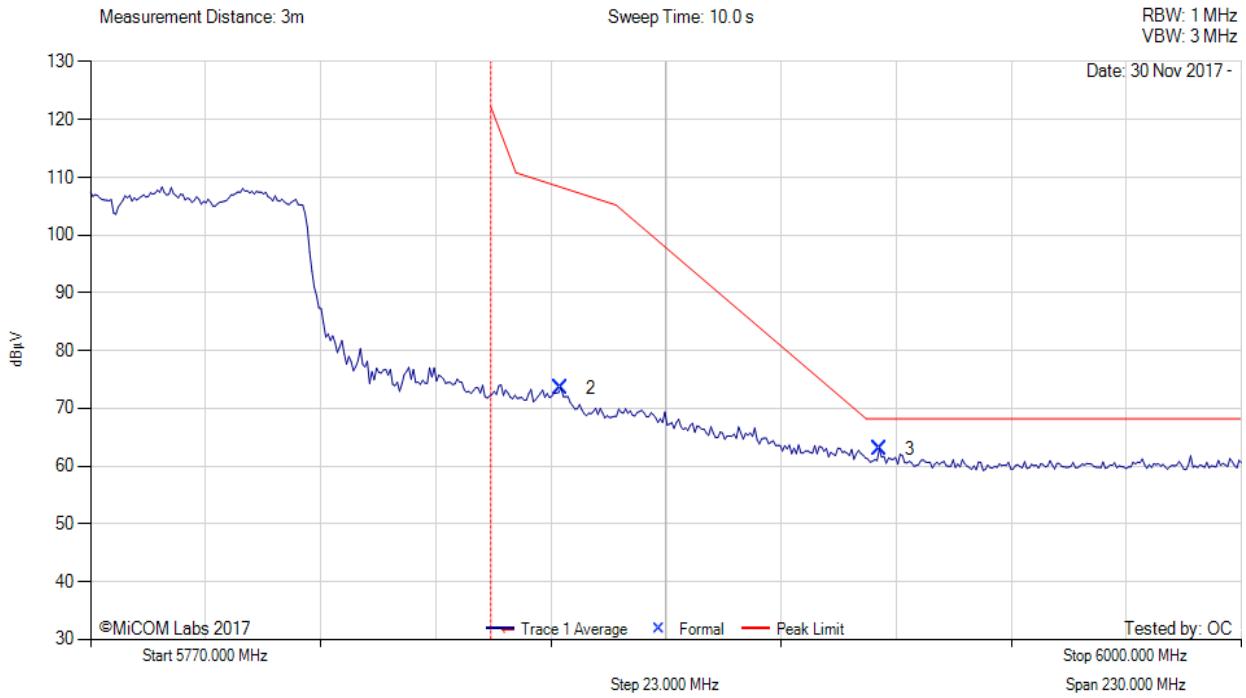
5770.00 - 6000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
2	5857.11	38.30	3.20	34.98	76.48	Max Peak	Horizontal	167	338	110.2	-33.7	Pass
3	5930.52	24.25	3.18	35.11	62.54	Max Peak	Horizontal	167	338	68.2	-5.7	Pass
1	5850.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.

back to matrix

5850 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11ac-80, Test Freq: 5775.00 MHz, Power Setting: 25, Duty Cycle (%): 99



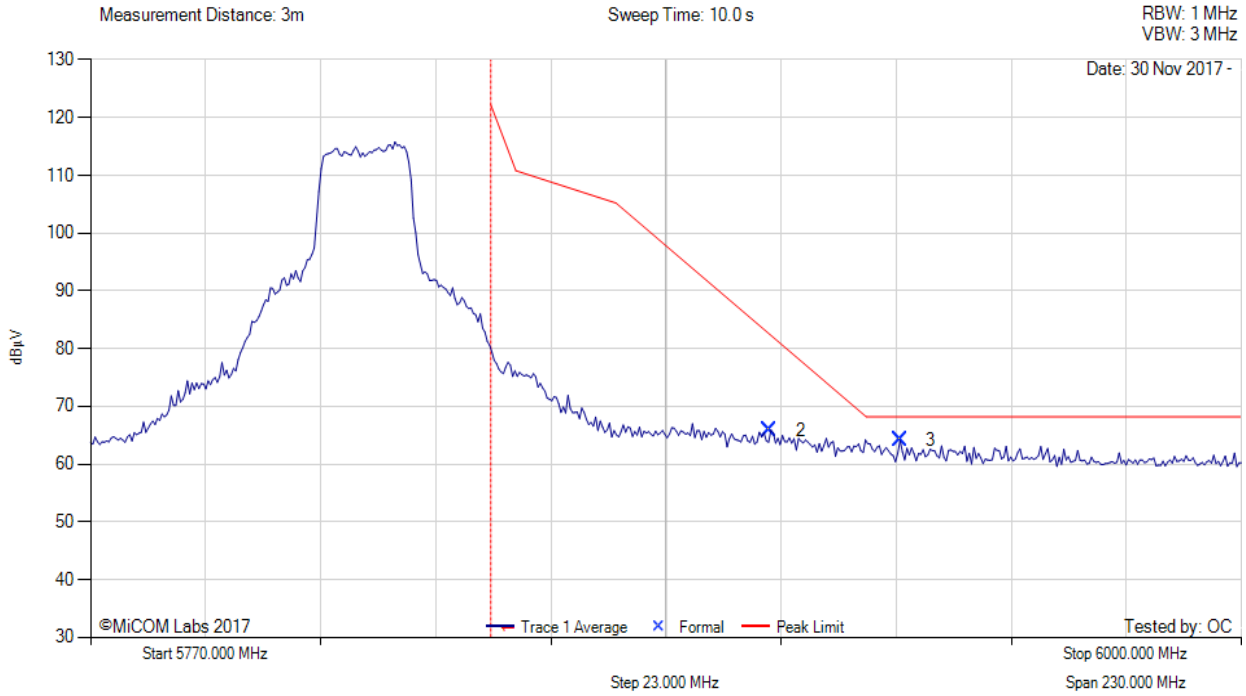
5770.00 - 6000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
2	5863.83	35.34	3.20	35.00	73.54	Max Peak	Horizontal	164	338	108.3	-34.8	Pass
3	5927.76	24.62	3.19	35.11	62.92	Max Peak	Horizontal	164	338	68.2	-5.3	Pass
1	5850.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.

back to matrix

5850 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11n HT-20, Test Freq: 5825.00 MHz, Power Setting: 40, Duty Cycle (%): 99



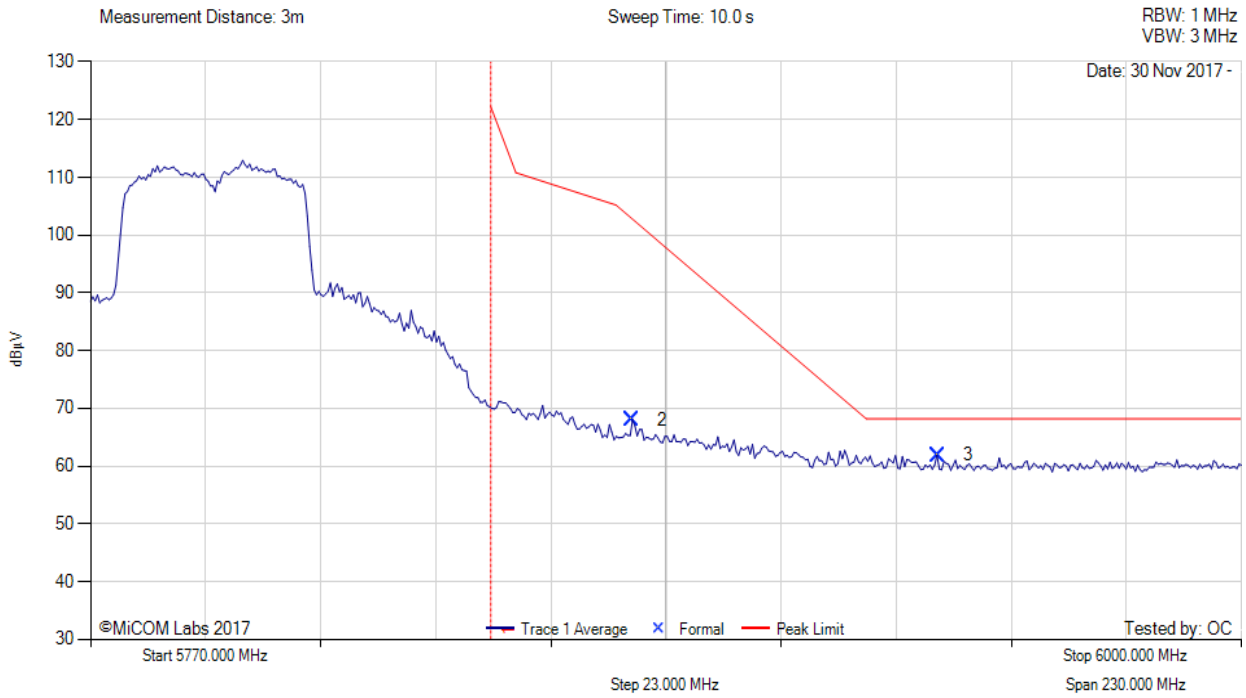
5770.00 - 6000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
2	5905.77	27.59	3.22	35.10	65.91	Max Peak	Horizontal	164	338	82.4	-16.5	Pass
3	5931.90	25.81	3.19	35.11	64.11	Max Peak	Horizontal	164	338	68.2	-4.1	Pass
1	5850.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.

back to matrix

5850 MHz RADIATED BAND-EDGE EMISSIONS

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



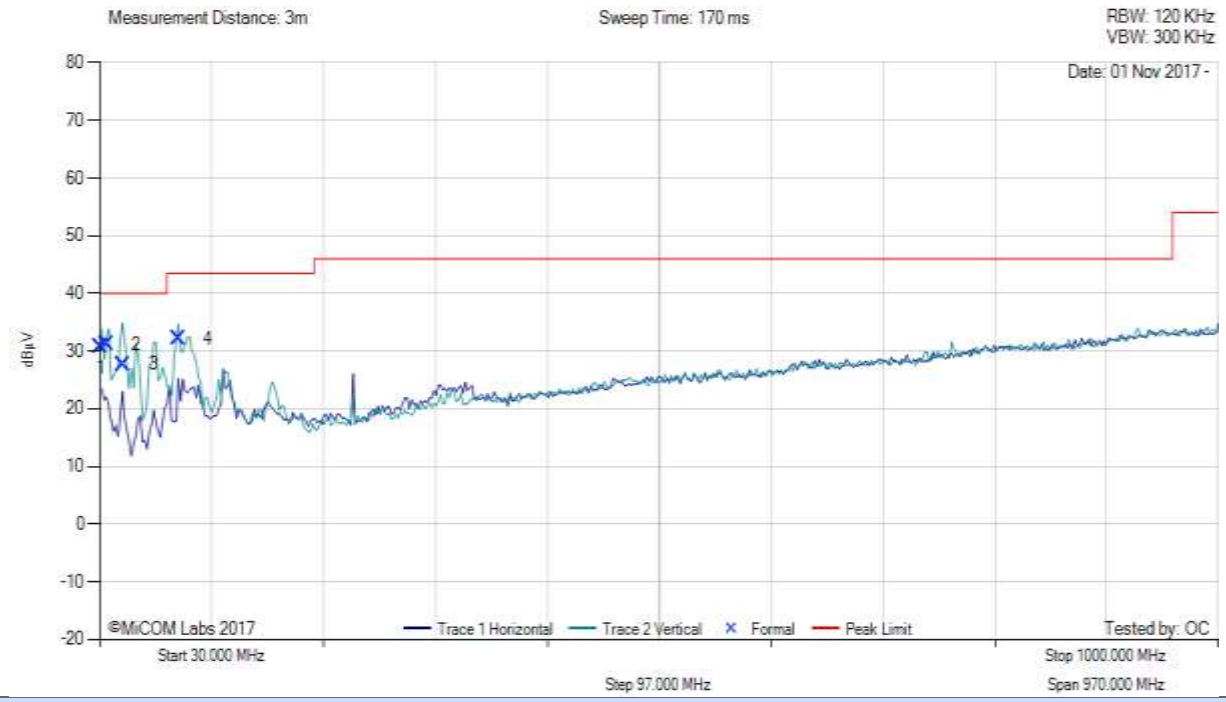
5770.00 - 6000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
2	5878.12	29.77	3.21	35.04	68.02	Max Peak	Horizontal	164	338	102.8	-34.8	Pass
3	5939.28	23.57	3.21	35.12	61.90	Max Peak	Horizontal	164	338	68.2	-6.3	Pass
1	5850.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: RBD52G-5HacD2HnD-TC. Placed 150cm non-conductive table.

back to matrix

A.4.3. Digital Emissions

Variant: Digital Emissions, Test Freq: 30 - 1000 MHz

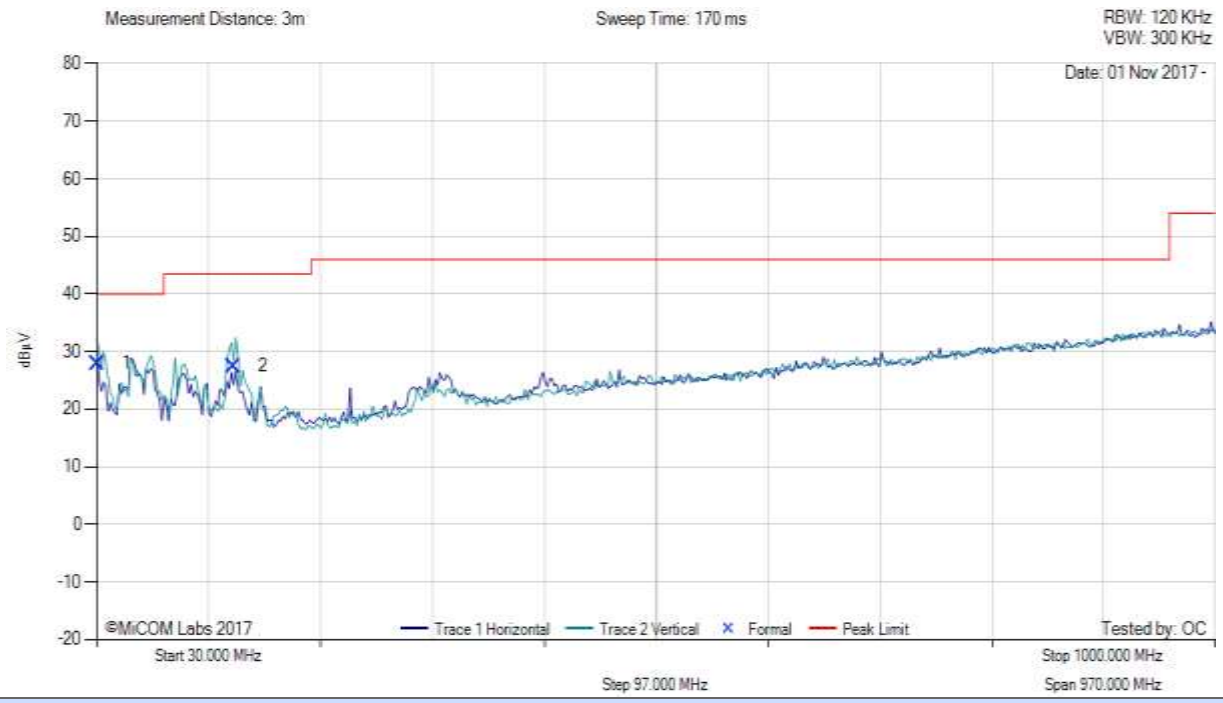


30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	30.66	37.63	3.41	-10.38	30.66	MaxQP	Vertical	100	157	40.0	-9.3	Pass
2	36.11	43.24	3.45	-15.57	31.12	MaxQP	Vertical	100	356	40.0	-8.9	Pass
3	50.51	47.10	3.55	-22.95	27.70	MaxQP	Vertical	100	71	40.0	-12.3	Pass
4	98.09	49.54	3.82	-21.18	32.18	MaxQP	Vertical	100	88	43.5	-11.3	Pass

Test Notes: Model: RBD52G-5HacD2HnD-TC. AC/DC + PoE configuration. Placed 80cm non-conductive table.

back to matrix

Variant: Digital Emissions, Test Freq: 30 - 1000 MHz



30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	30.66	34.93	3.41	-10.38	27.96	MaxQP	Vertical	98	117	40.0	-12.0	Pass
2	148.16	42.18	4.04	-18.76	27.46	MaxQP	Vertical	99	242	43.5	-16.0	Pass

Test Notes: Model: RBD52G-5HacD2HnD-TC. AC/DC configuration. Placed 80cm non-conductive table.

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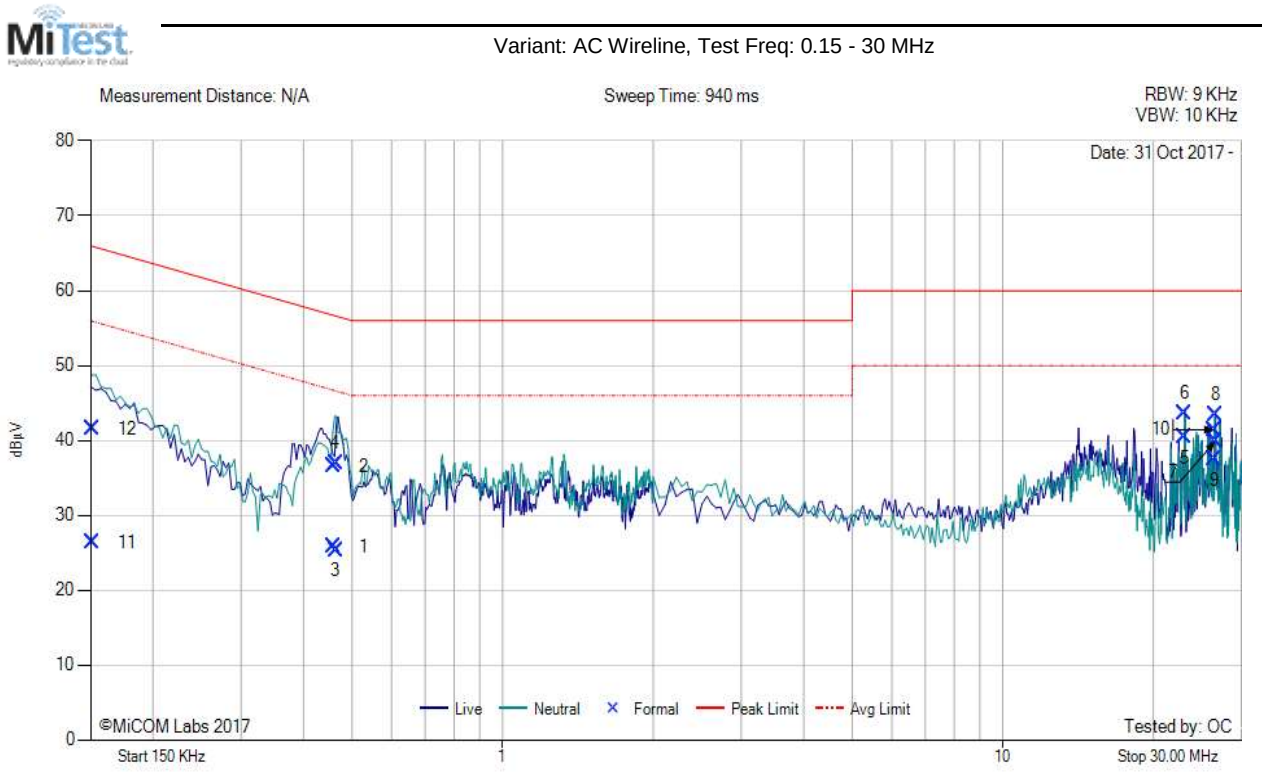
A.4.4. AC Wireline Emissions



Num	Frequency MHz	Raw dBµV	Cable Loss dB	Factor dB	Total Correction dBµV	Corrected Value dBµV	Measurement Type	Line	Limit dBµV	Margin dB	Pass /Fail
1	0.460	15.82	0.07	9.93	10.00	25.82	Max Avg	Live	47.1	-21.3	Pass
2	0.460	26.61	0.07	9.93	10.00	36.61	Max Qp	Live	57.1	-20.5	Pass
3	0.464	15.38	0.07	9.93	10.00	25.38	Max Avg	Neutral	47.0	-21.7	Pass
4	0.464	26.88	0.07	9.93	10.00	36.88	Max Qp	Neutral	57.0	-20.2	Pass
5	23.129	28.97	0.64	10.85	11.49	40.46	Max Avg	Neutral	50.0	-9.5	Pass
6	23.129	32.15	0.64	10.85	11.49	43.64	Max Qp	Neutral	60.0	-16.4	Pass
7	26.610	28.29	0.73	10.88	11.61	39.90	Max Avg	Live	50.0	-10.1	Pass
8	26.610	31.82	0.73	10.88	11.61	43.43	Max Qp	Live	60.0	-16.6	Pass
9	26.488	25.86	0.72	10.88	11.60	37.46	Max Avg	Neutral	50.0	-12.5	Pass
10	26.488	29.85	0.72	10.88	11.60	41.45	Max Qp	Neutral	60.0	-18.6	Pass
11	0.151	16.43	0.05	9.92	9.97	26.40	Max Avg	Neutral	56.0	-29.6	Pass
12	0.151	31.64	0.05	9.92	9.97	41.61	Max Qp	Neutral	66.0	-24.4	Pass

Test Notes: Model hAP ac2. AC/DC + PoE configuration. 120V 60Hz. AC Mains.

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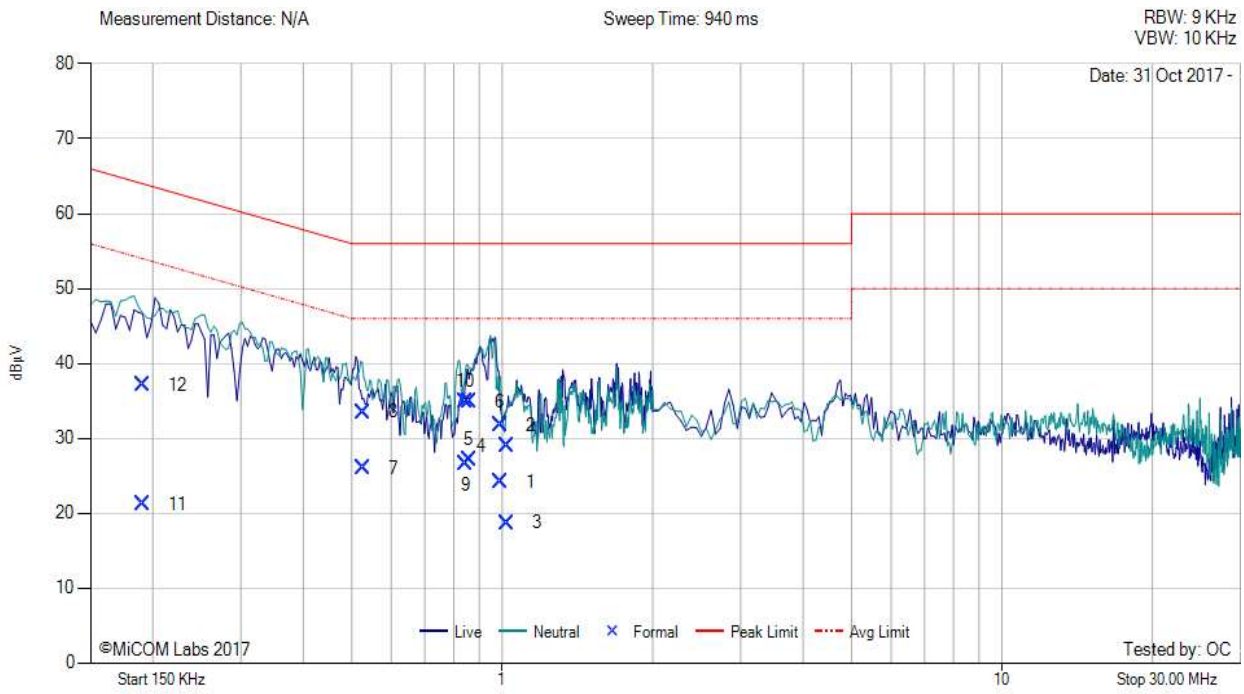
Variant: AC Wireline, Test Freq: 0.15 - 30 MHz



Num	Frequency MHz	Raw dBµV	Cable Loss dB	Factor dB	Total Correction dBµV	Corrected Value dBµV	Measurement Type	Line	Limit dBµV	Margin dB	Pass /Fail
1	0.990	14.22	0.07	9.93	10.00	24.22	Max Avg	Neutral	46.0	-21.8	Pass
2	0.990	21.72	0.07	9.93	10.00	31.72	Max Qp	Neutral	56.0	-24.3	Pass
3	1.024	8.67	0.07	9.94	10.01	18.68	Max Avg	Live	46.0	-27.3	Pass
4	1.024	18.99	0.07	9.94	10.01	29.00	Max Qp	Live	56.0	-27.0	Pass
5	0.858	17.03	0.10	9.94	10.04	27.07	Max Avg	Neutral	46.0	-18.9	Pass
6	0.858	24.85	0.10	9.94	10.04	34.89	Max Qp	Neutral	56.0	-21.1	Pass
7	0.526	16.05	0.09	9.92	10.01	26.06	Max Avg	Live	46.0	-19.9	Pass
8	0.526	23.47	0.09	9.92	10.01	33.48	Max Qp	Live	56.0	-22.5	Pass
9	0.844	16.51	0.10	9.94	10.04	26.55	Max Avg	Live	46.0	-19.5	Pass
10	0.844	24.89	0.10	9.94	10.04	34.93	Max Qp	Live	56.0	-21.1	Pass
11	0.191	11.20	0.06	9.92	9.98	21.18	Max Avg	Live	54.8	-33.7	Pass
12	0.191	27.08	0.06	9.92	9.98	37.06	Max Qp	Live	64.8	-27.8	Pass

Test Notes: Model hAP ac2. AC/DC configuration. 120V 60Hz. AC Mains.

back to matrix

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