REGULATORY COMPLIANCE TEST REPORT

FCC CFR 47, SubPart C 15.247 (DTS)
ISED RSS-247 Issue 2

REPORT No.: MIKO81-U4 Rev A

Company: MikrotikIs SIA (MikroTik)

Test of: RBD25G-5HPacQD2HPnD-US

REGULATORY COMPLIANCE TEST REPORT

Company: Mikrotikls SIA (MikroTik)

Test of: RBD25G-5HPacQD2HPnD-US

To: FCC CFR 47 Subpart C 15.247 (DTS), ISED RSS-247

Test Report Serial No.: MIKO81-U4 Rev A

This report supersedes: NONE

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

Issue Date: 2nd May 2019

This Test Report is Issued Under the Authority of:

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

ACCREDITED
TESTING CERT #2381.01

MiCOM Labs is an ISO 17025 Accredited Testing Laboratory

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1. ACCREDITATION, LISTINGS & RECOGNITION

1.1. TESTING ACCREDITATION

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

ilac-MRA A2LA

Accredited Laboratory

A2LA has accredited

MiCOM LABS

Pleasanton, CA

for technical competence in the field of

Electrical Testing

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

Presented this 14th day of May 2018.

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

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

1.2. RECOGNITION

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

Country	Recognition Body	Status	Phase	Identification No.
USA	Federal Communications Commission (FCC)	TCB	-	US0159 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 14th day of May 2018

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

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

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

2. DOCUMENT HISTORY

Document History		
Revision	Date	Comments
Draft	9th April 2019	Initial Draft
Draft	27th April 2019	
Rev A	2nd May 2019	Initial Release
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In the above table the latest report revision will replace all earlier versions.

3. TEST RESULT CERTIFICATE

Manufacturer:	Mikrotikls SIA (MikroTik) Brivibas gatve 214i Riga LV-1039 Latvia	**Tested By:**	MiCOM Labs, Inc. 575 Boulder Court Pleasanton California 94566 USA
Model:	RBD25G-5HPacQD2HPnD-US	**Telephone:**	+1 925 462 0304
Type Of Equipment:	Wireless Access Point	**Fax:**	+1 925 462 0306
S/N's:	A645094C227B		
Test Date(s):	14th February – 21st March 2019	**Website:**	www.micomlabs.com

STANDARD(S)	TEST RESULTS
FCC CFR 47 Part 15 Subpart C 15.247 (DTS)	EQUIPMENT COMPLIES

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

Notes:

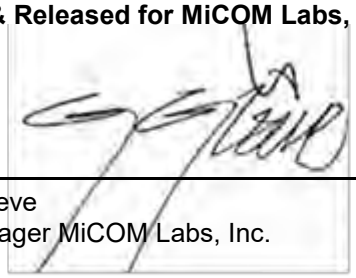
1. This document reports conditions under which testing was conducted and the results of testing performed.

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

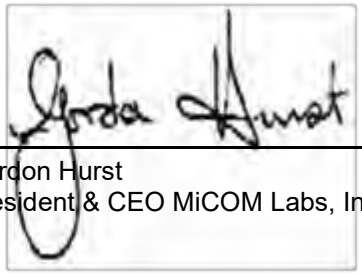
3. Test results apply only to the item(s) tested.

A2LA ACCREDITED
TESTING CERT #2381.01

Approved & Released for MiCOM Labs, Inc. by:



Graeme Grieve
Quality Manager MiCOM Labs, Inc.



Gordon Hurst
President & CEO MiCOM Labs, Inc.

4. REFERENCES AND MEASUREMENT UNCERTAINTY

4.1. Normative References

REF.	PUBLICATION	YEAR	TITLE
I	KDB 662911 D01 & D02	Oct 31 2013	Guidance for measurement of output emission of devices that employ single transmitter with multiple outputs or systems with multiple transmitters operating simultaneously in the same frequency band
II	KDB 558074 D01 v05	24th August 2018	Guidance for Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices operating under section 15.247 of the FCC Rules.
III	A2LA	August 2018	R105 - Requirement's When Making Reference to A2LA Accreditation Status
IV	ANSI C63.10	2013	American National Standard for Testing Unlicensed Wireless Devices
V	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
VI	CISPR 32	2015	Electromagnetic compatibility of multimedia equipment - Emission requirements
VII	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
VIII	FCC 47 CFR Part 15.247	2016	Radio Frequency Devices; Subpart C – Intentional Radiators
IX	ICES-003	Issue 6 Jan 2016; Updated April 2017	Information Technology Equipment (Including Digital Apparatus) – Limits and methods of measurement.
X	M 3003	Edition 3 Nov.2012	Expression of Uncertainty and Confidence in Measurements
XI	RSS-247 Issue 2	Feb 2017	Digital Transmission Systems (DTSs), Frequency Hopping System (FHSs) and License-Exempt Local Area Network (LE-LEN) Devices
XII	RSS-Gen Issue 5	April 2018	General Requirements for Compliance of Radio Apparatus
XIII	FCC 47 CFR Part 2.1033	2016	FCC requirements and rules regarding photographs and test setup diagrams.
XIV	KDB 789033 D02 V02r01	14th December, 2017	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E

4.2. Test and Uncertainty Procedure

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

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

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

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

5. PRODUCT DETAILS AND TEST CONFIGURATIONS

5.1. Technical Details

Details	Description
Purpose:	Test of the Mikrotikls SIA (MikroTik) Audience to: FCC CFR 47 Part 15 Subpart C 15.247 (DTS). Radio Frequency Devices; Subpart C – Intentional Radiators ISED RSS-247 Issue 2 Digital Transmission Systems (DTSs), Frequency Hopping System (FHSs) and License-Exempt Local Area Network (LE-LEN) Devices
Applicant:	Mikrotikls SIA (MikroTik) Brivibas gatve 214i Riga LV-1039 Latvia
Manufacturer:	Mikrotikls SIA (MikroTik)
Laboratory performing the tests:	MiCOM Labs, Inc. 575 Boulder Court Pleasanton California 94566 USA
Test report reference number:	MIKO81-U4
Date EUT received:	15th October 2018
Dates of test (from - to):	14th February – 21st March 2019
No of Units Tested:	2
Product Family Name:	RouterBOARD
Model(s):	RBD25G-5HPacQD2HPnD-US
Location for use:	Indoors
Declared Frequency Range(s):	2400 - 2483.5 MHz;
Type of Modulation:	Per 802.11 –CCK, BPSK, QPSK, DSSS, OFDM
EUT Modes of Operation:	b; g; HT-20; HT-40;
Declared Nominal Output Power (dBm):	+27 dBm
Transmit/Receive Operation:	Transceiver 2 Chains
Rated Input Voltage and Current:	100 – 240 V_{AC} 1.3A MAX, 50-60 Hz, PoE: 24Vdc, 1500mA
Operating Temperature Range:	-40ºC to +70ºC
ITU Emission Designator:	802.11b 13M2G1D 802.11g 6M5D1D 802.11n – HT-20 17M6D1D 802.11n – HT-40 38M0D1D
Equipment Dimensions:	97 x 100 x 234 mm
Weight:	850 grams
Hardware Rev:	r2
Software Rev:	ROS v6.43.2

5.2. Scope Of Test Program

Mikrotikls SIA (MikroTik) RBD25G-5HPacQD2HPnD

The scope of the test program was to test the Mikrotikls RBD25G-5HPacQD2HPnD-US, Audience configurations in the frequency ranges 2400 - 2483.5 MHz; for compliance against the following specification:

FCC CFR 47 Part 15 Subpart C 15.247 (DTS)
Radio Frequency Devices – Intentional Radiators

ISED RSS-247
Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

Mikrotikls SIA (MikroTik) RBD25G-5HPacQD2HPnD-US

Front View

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

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

5.4. Antenna Details

Type	Manufacturer	Model	Family	Gain (dBi)	BF Gain	Dir BW	X-Pol	Frequency Band (MHz)
integral	Wistron Neweb	db_PIFA_2_4-5_5_AN_grnd_v1_1	PIFA	2.5	-	150º	-	2400 - 2483.5

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

5.5. Cabling and I/O Ports

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

5.6. Test Configurations

Results for the following configurations are provided in this report:

Operational Mode(s) (802.11a/b/g/n/ac)	Data Rate with Highest Power MBit/s	Channel Frequency (MHz)		
		Low	Mid	High
2400 - 2483.5 MHz				
b	1	2,412.00	2,437.00	2,462.00
g	6	2,412.00	2,437.00	2,462.00
HT-20	6.5	2,412.00	2,437.00	2,462.00
HT-40	13.5	2,422.00	2,437.00	2,452.00

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
6 dB & 99% Bandwidth	Complies	View Data
Conducted Output Power	Complies	View Data
Power Spectral Density	Complies	View Data
Emissions	Complies	-
(1) Conducted Emissions	Complies	-
(i) Conducted Spurious Emissions	Complies	View Data
(ii) Conducted Band-Edge Emissions	Complies	View Data
(2) Radiated Emissions	Complies	-
(i) TX Spurious & Restricted Band Emissions	Complies	View Data
(ii) Restricted Edge & Band-Edge Emissions	Complies	View Data
(3) Digital Emissions (0.03 - 1 GHz)	Complies	View Data
(4) AC Wireline Emissions	Complies	View Data

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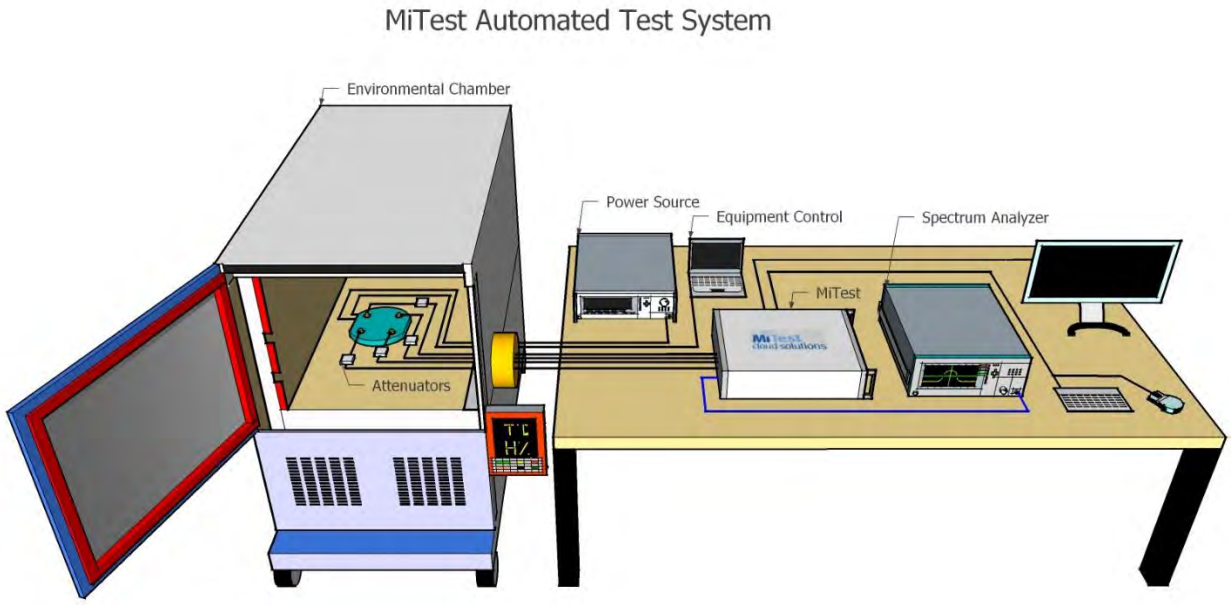
7. TEST EQUIPMENT CONFIGURATION(S)

7.1. Conducted Test Setup



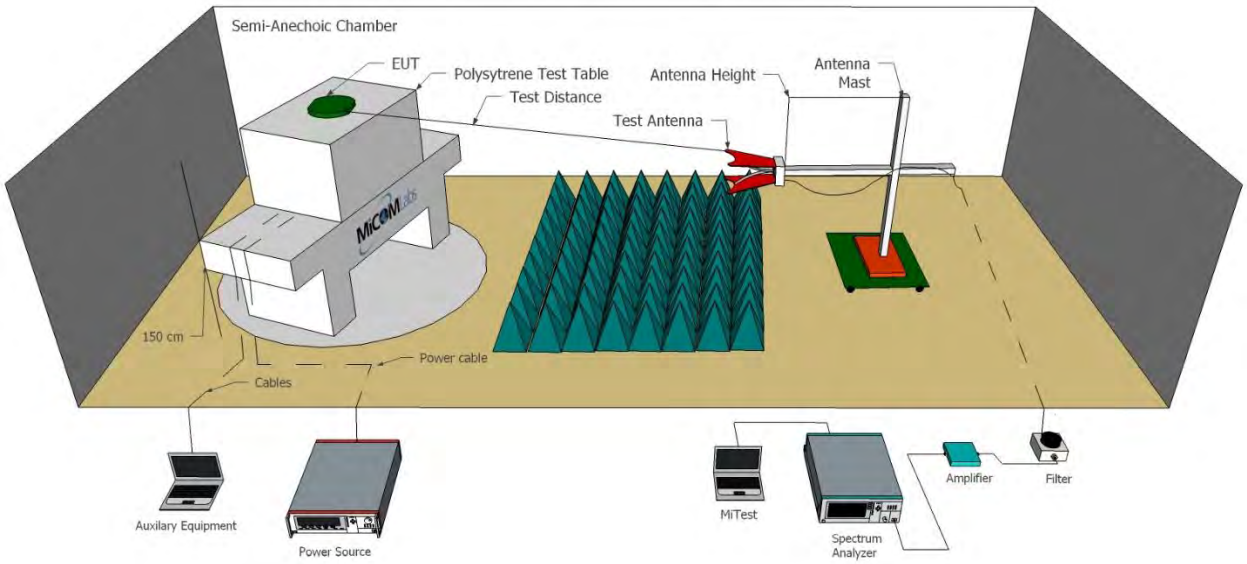
A full system calibration was performed on the test station and any resulting system losses (or gains) were considered in the production of all final measurement data.

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

7.2. Radiated Emissions - 3m Chamber

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

Radiated Emissions Above 1GHz Test Setup

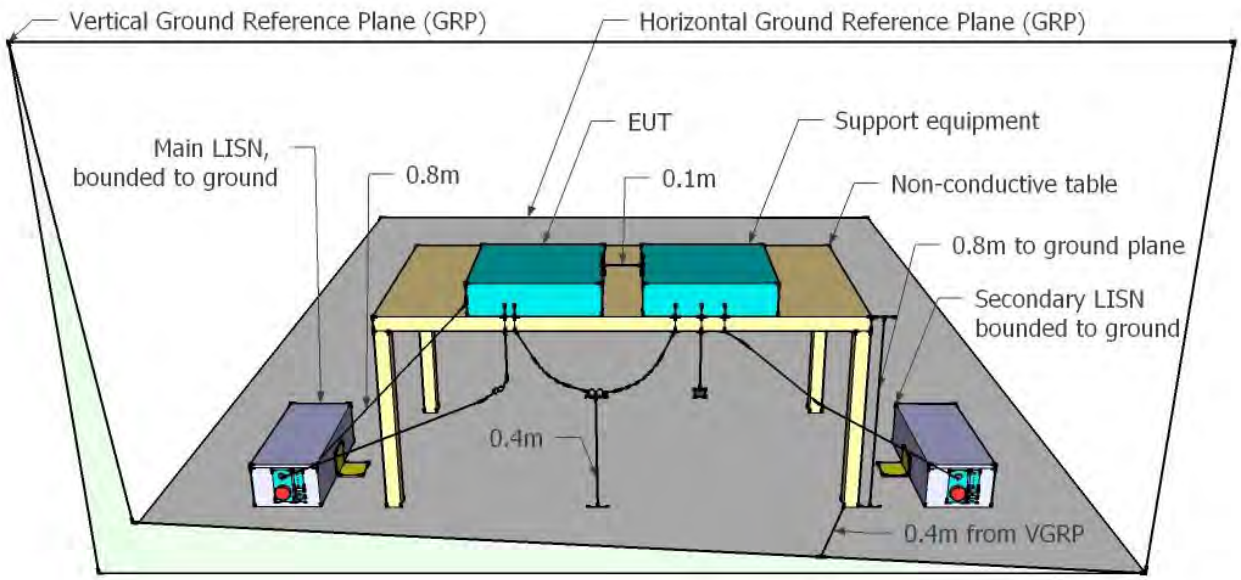


A full system calibration was performed on the test station and any resulting system losses (or gains) were considered in the production of all final measurement data.

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

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

7.3. AC Mains Power Input / Output Test Setup



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

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

8. MEASUREMENT AND PRESENTATION OF TEST DATA

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

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

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

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

9. TEST RESULTS

9.1. 6 dB & 99% Bandwidth

Conducted Test Conditions for 6 dB and 99% Bandwidth			
Standard:	FCC CFR 47:15.247	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	6 dB and 99 % Bandwidth	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.247 (a)(2)	**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 % was measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

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 specified in this document.

Limits for 6 dB and 99% Bandwidth

(a) Operation under the provisions of this Section is limited to frequency hopping and digitally modulated intentional radiators that comply with the following provisions:

(2) Systems using digital modulation techniques may operate in the 902-928 MHz and 2400-2483.5 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Equipment Configuration for 6 dB & 99% Bandwidth			
Variant:	802.11b	**Duty Cycle (%):**	98
Data Rate:	1.00 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	CCK	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	KHz	MHz
2412.0	8.497	8.497	--	--	8.497	8.497	≥500.0	-8.00
2437.0	8.497	8.497	--	--	8.497	8.497	≥500.0	-8.00
2462.0	8.577	8.016	--	--	8.577	8.016	≥500.0	-7.52

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				Maximum 99% Bandwidth (MHz)		
MHz	a	b	c	d			
2412.0	13.066	13.066	--	--	13.066		
2437.0	13.146	13.146	--	--	13.146		
2462.0	13.226	12.986	--	--	13.226		

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:	802.11g	**Duty Cycle (%):**	86
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	KHz	MHz
2412.0	16.353	16.513	--	--	16.513	16.353	≥500.0	-15.85
2437.0	16.353	16.353	--	--	16.353	16.353	≥500.0	-15.85
2462.0	15.711	15.711	--	--	15.711	15.711	≥500.0	-15.21

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				Maximum 99% Bandwidth (MHz)		
MHz	a	b	c	d			
2412.0	16.433	16.433	--	--	16.433		
2437.0	16.513	16.513	--	--	16.513		
2462.0	16.513	16.433	--	--	16.513		

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 (%):**	96
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	KHz	MHz
2412.0	17.475	17.315	--	--	17.475	17.315	≥500.0	-16.82
2437.0	17.555	17.635	--	--	17.635	17.555	≥500.0	-17.06
2462.0	16.353	16.353	--	--	16.353	16.353	≥500.0	-15.85

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				Maximum 99% Bandwidth (MHz)		
MHz	a	b	c	d			
2412.0	17.635	17.635	--	--	17.635		
2437.0	17.635	17.635	--	--	17.635		
2462.0	17.635	17.555	--	--	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 (%):**	82
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	KHz	MHz
2422.0	32.705	32.705	--	--	32.705	32.705	≥500.0	-32.20
2437.0	35.912	35.271	--	--	35.912	35.271	≥500.0	-34.77
2452.0	31.423	31.423	--	--	31.423	31.423	≥500.0	-30.92

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				Maximum 99% Bandwidth (MHz)		
MHz	a	b	c	d			
2422.0	36.393	36.072	--	--	36.393		
2437.0	37.996	36.553	--	--	37.996		
2452.0	36.072	36.072	--	--	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).

9.2. Conducted Output Power

Conducted Test Conditions for Fundamental Emission Output Power			
Standard:	FCC CFR 47:15.247	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Output Power	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.247 (b) & (c)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Fundamental Emission Output Power Measurement
In the case of average power measurements an average power sensor was utilized.

For peak power measurements the spectrum analyzer built-in power function was used to integrate peak power over the 20 dB bandwidth.

Testing was performed under ambient conditions at nominal voltage only. Where the device operated with multiple antenna ports i.e. MIMO device, each port was measured, summed (Σ) and reported.

Test configuration and setup used for the measurement was per the Conducted Test Set-up 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 for Fundamental Emission Output Power
(b) The maximum peak conducted output power of the intentional radiator shall not exceed the following for non-frequency hopping systems:

(3) For systems using digital modulation in the 902-928 MHz and 2400-2483.5 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(c) Operation with directional antenna gains greater than 6 dBi.
(1) Fixed point-to-point operation:
(i) Systems operating in the 2400-2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

(iii) Fixed, point-to-point operation, as used in paragraphs (c)(1)(i) and (c)(1)(ii) of this section, excludes the use of point-to-multipoint systems, omnidirectional applications, and multiple co-located intentional radiators transmitting the same information. The operator of the spread spectrum or digitally modulated intentional radiator or, if the equipment is professionally installed, the installer is responsible for ensuring that the system is used exclusively for fixed, point-to-point operations. The instruction manual furnished with the intentional radiator shall contain language in the installation instructions informing the operator and the installer of this responsibility.

(2) In addition to the provisions in paragraphs (b)(3), (b)(4) and (c)(1)(i) of this section, transmitters operating in the 2400-2483.5 MHz band that emit multiple directional beams, simultaneously or sequentially, for the purpose of directing signals to individual receivers or to groups of receivers provided the emissions comply with the following:

(i) Different information must be transmitted to each receiver.

(ii) If the transmitter employs an antenna system that emits multiple directional beams but does not do emit multiple directional beams simultaneously, the total output power conducted to the array or arrays that comprise the device, i.e., the sum of the power supplied to all antennas, antenna elements, staves, etc. and summed across all carriers or frequency channels, shall not exceed the limit specified in paragraph (b)(1) or (b)(3) of this section, as applicable. However, the total conducted output power shall be reduced by 1 dB below the specified limits for each 3 dB that the directional gain of the antenna/antenna array exceeds 6 dBi. The directional antenna gain shall be computed as follows:

(A) The directional gain shall be calculated as the sum of 10 log (number of array elements or staves) plus the directional gain of the element or stave having the highest gain.

(B) A lower value for the directional gain than that calculated in paragraph (c)(2)(ii)(A) of this section will be accepted if sufficient evidence is presented, e.g., due to shading of the array or coherence loss in the beamforming.

(iii) If a transmitter employs an antenna that operates simultaneously on multiple directional beams using the same or different frequency channels, the power supplied to each emission beam is subject to the power limit specified in paragraph (c)(2)(ii) of this section. If transmitted beams overlap, the power shall be reduced to ensure that their aggregate power does not exceed the limit specified in paragraph (c)(2)(ii) of this section. In addition, the aggregate power transmitted simultaneously on all beams shall not exceed the limit specified in paragraph (c)(2)(ii) of this section by more than 8 dB.

(iv) Transmitters that emit a single directional beam shall operate under the provisions of paragraph (c)(1) of this section.

Equipment Configuration for Peak Output Power

Variant:	802.11b	**Duty Cycle (%):**	98.0
Data Rate:	1.00 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	CCK	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power (dBm) Port(s)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	dBm	dBm	dB	
2412.0	24.85	24.16	--	--	27.53	30.00	-2.47	30.00
2437.0	24.60	23.74	--	--	27.20	30.00	-2.80	30.00
2462.0	23.63	23.71	--	--	26.68	30.00	-3.32	30.00

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

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

Equipment Configuration for Peak Output Power

Variant:	802.11g	**Duty Cycle (%):**	86.0
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power (dBm) Port(s)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	dBm	dBm	dB	
2412.0	23.26	22.74	--	--	26.02	30.00	-3.98	30.00
2437.0	23.28	22.51	--	--	25.92	30.00	-4.08	30.00
2462.0	22.48	22.43	--	--	25.47	30.00	-4.53	30.00

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

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

Equipment Configuration for Peak Output Power

Variant:	802.11n HT-20	**Duty Cycle (%):**	96.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power (dBm) Port(s)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	dBm	dBm	dB	
2412.0	21.96	21.66	--	--	24.82	30.00	-5.18	30.00
2437.0	22.95	22.16	--	--	25.58	30.00	-4.42	30.00
2462.0	22.19	22.02	--	--	25.12	30.00	-4.88	30.00

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

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

Equipment Configuration for Peak Output Power

Variant:	802.11n HT-40	**Duty Cycle (%):**	82.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power (dBm) Port(s)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	dBm	dBm	dB	
2422.0	24.52	24.13	--	--	27.34	30.00	-2.66	30.00
2437.0	24.69	24.17	--	--	27.45	30.00	-2.55	30.00
2452.0	24.05	23.68	--	--	26.88	30.00	-3.12	30.00

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

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

9.3. Power Spectral Density

Conducted Test Conditions for Power Spectral Density			
Standard:	FCC CFR 47:15.247	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Power Spectral Density	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.247 (e)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Power Spectral Density
The transmitter output was connected to a spectrum analyzer and the measured made in a 3 kHz resolution bandwidth using the analyzer auto-coupled sweep-time. A peak value was found over the full emission bandwidth and the spectrum downloaded 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.

Testing was performed under ambient conditions at nominal voltage only.

Test configuration and setup used for the measurement was per the Conducted Test Set-up 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 the spectrum in some antenna port 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
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than +8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

Equipment Configuration for Power Spectral Density - Peak			
Variant:	802.11b	**Duty Cycle (%):**	98.0
Data Rate:	1.00 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	CCK	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/3KHz)				Amplitude Summation	Limit	Margin
MHz	a	b	c	d	dBm/3KHz	dBm/3KHz	dB
2412.0	3.660	2.593	--	--	4.867	8.0	-3.1
2437.0	1.794	0.310	--	--	4.063	8.0	-3.9
2462.0	1.750	0.784	--	--	4.304	8.0	-3.7

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).

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

Equipment Configuration for Power Spectral Density - Peak			
Variant:	802.11g	**Duty Cycle (%):**	86.0
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/3KHz)				Amplitude Summation	Limit	Margin
MHz	a	b	c	d	dBm/3KHz	dBm/3KHz	dB
2412.0	-1.679	-2.909	--	--	0.265	8.0	-7.7
2437.0	-2.705	-2.480	--	--	-0.179	8.0	-8.2
2462.0	-0.991	-0.139	--	--	2.466	8.0	-5.5

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).

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

Equipment Configuration for Power Spectral Density - Peak			
Variant:	802.11n HT-20	**Duty Cycle (%):**	96.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/3KHz)				Amplitude Summation	Limit	Margin
MHz	a	b	c	d	dBm/3KHz	dBm/3KHz	dB
2412.0	-2.513	-2.534	--	--	0.362	8.0	-7.6
2437.0	-3.085	-3.078	--	--	-1.101	8.0	-9.1
2462.0	-1.919	-1.880	--	--	0.429	8.0	-7.6

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 Power Spectral Density - Peak			
Variant:	802.11n HT-40	**Duty Cycle (%):**	82.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/3KHz)				Amplitude Summation	Limit	Margin
MHz	a	b	c	d	dBm/3KHz	dBm/3KHz	dB
2422.0	-2.807	-3.152	--	--	-0.773	8.0	-8.8
2437.0	-3.321	-4.099	--	--	-1.240	8.0	-9.3
2452.0	-2.665	-3.138	--	--	-0.808	8.0	-8.8

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).

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

9.4. Emissions

9.4.1. Conducted Emissions

9.4.1.1. Conducted Spurious Emissions

Conducted Test Conditions for Transmitter Conducted Spurious and Band-Edge Emissions			
Standard:	FCC CFR 47:15.247	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Max Unwanted Emission Levels	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.247 (d)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Transmitter Conducted Spurious and Band-Edge Emissions Measurement
Transmitter Conducted Spurious and Band-Edge emissions were measured at a limit of 30 dBc (average detector) or 20 dBc (peak detector) below the highest in-band spectral density measured with a spectrum analyzer connected to the antenna terminal. Measurements were made while EUT was operating in transmit mode of operation at the appropriate centre frequency closest to the band-edge. Emissions were maximized during the measurement and limits derived from the peak spectral power and drawn on each plot.

Where the device operated with multiple antenna ports i.e. MIMO device, each port was measured separately. Testing was performed under ambient conditions at nominal voltage only.

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

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

Equipment Configuration for Conducted Spurious Emissions - Peak			
Variant:	802.11b	**Duty Cycle (%):**	98
Data Rate:	1.00 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	CCK	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Conducted Spurious Emissions - Peak (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	SE	Limit	SE	Limit	SE	Limit	SE	Limit
2412.0	30.0 - 26000.0	-42.795	-3.67	-42.514	-4.64	--	--	--	--
2437.0	30.0 - 26000.0	-41.885	-5.88	-42.602	-7.31	--	--	--	--
2462.0	30.0 - 26000.0	-42.895	-5.61	-41.554	-5.98	--	--	--	--

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ±2.37 dB, > 40 GHz ±4.6 dB

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

Equipment Configuration for Conducted Spurious Emissions - Peak			
Variant:	802.11g	**Duty Cycle (%):**	86
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Conducted Spurious Emissions - Peak (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	SE	Limit	SE	Limit	SE	Limit	SE	Limit
2412.0	30.0 - 26000.0	-42.868	-7.73	-43.016	-7.35	--	--	--	--
2437.0	30.0 - 26000.0	-42.399	-9.89	-42.433	-10.52	--	--	--	--
2462.0	30.0 - 26000.0	-42.604	-9.33	-41.977	-8.17	--	--	--	--

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ±2.37 dB, > 40 GHz ±4.6 dB

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

Equipment Configuration for Conducted Spurious Emissions - Peak			
Variant:	802.11n HT-20	**Duty Cycle (%):**	96
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Conducted Spurious Emissions - Peak (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	SE	Limit	SE	Limit	SE	Limit	SE	Limit
2412.0	30.0 - 26000.0	-42.163	-10.49	-42.603	-7.94	--	--	--	--
2437.0	30.0 - 26000.0	-42.664	-10.30	-42.122	-10.10	--	--	--	--
2462.0	30.0 - 26000.0	-41.917	-9.30	-41.741	-9.31	--	--	--	--

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ±2.37 dB, > 40 GHz ±4.6 dB

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

Equipment Configuration for Conducted Spurious Emissions - Peak			
Variant:	802.11n HT-40	**Duty Cycle (%):**	82
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Conducted Spurious Emissions - Peak (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	SE	Limit	SE	Limit	SE	Limit	SE	Limit
2422.0	30.0 - 26000.0	-43.344	-8.39	-43.056	-9.75	--	--	--	--
2437.0	30.0 - 26000.0	-42.690	-8.89	-42.351	-10.00	--	--	--	--
2452.0	30.0 - 26000.0	-42.876	-10.48	-42.280	-8.38	--	--	--	--

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ±2.37 dB, > 40 GHz ±4.6 dB

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

9.4.1.2. Conducted Band-Edge Emissions

Conducted Test Conditions for Transmitter Conducted Spurious and Band-Edge Emissions			
Standard:	FCC CFR 47:15.247	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Max Unwanted Emission Levels	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.247 (d)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Transmitter Conducted Spurious and Band-Edge Emissions Measurement
Transmitter Conducted Spurious and Band-Edge emissions were measured at a limit of 30 dBc (average detector) or 20 dBc (peak detector) below the highest in-band spectral density measured with a spectrum analyzer connected to the antenna terminal. Measurements were made while EUT was operating in transmit mode of operation at the appropriate centre frequency closest to the band-edge. Emissions were maximized during the measurement and limits derived from the peak spectral power and drawn on each plot.

Where the device operated with multiple antenna ports i.e. MIMO device, each port was measured separately. Testing was performed under ambient conditions at nominal voltage only.

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

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

Equipment Configuration for Conducted Low Band-Edge Emissions - Peak

Variant:	802.11b	**Duty Cycle (%):**	98.0
Data Rate:	1.00 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	CCK	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	2412.0 MHz
Band-Edge Frequency:	2400.0 MHz
Test Frequency Range:	2350.0 - 2422.0 MHz

Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M1 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-41.32	-3.08	2404.70	--	--	-4.700
b	-42.94	-3.20	2404.70	--	--	-4.700

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ±2.37 dB, > 40 GHz ±4.6 dB

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

Equipment Configuration for Conducted Low Band-Edge Emissions - Peak

Variant:	802.11g	**Duty Cycle (%):**	86.0
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	2412.0 MHz
Band-Edge Frequency:	2400.0 MHz
Test Frequency Range:	2350.0 - 2422.0 MHz

Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M1 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-18.38	-6.27	2403.40	--	--	-3.400
b	-20.76	-6.47	2403.50	--	--	-3.500

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ±2.37 dB, > 40 GHz ±4.6 dB

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

Equipment Configuration for Conducted Low Band-Edge Emissions - Peak

Variant:	802.11n HT-20	**Duty Cycle (%):**	96.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	2412.0 MHz
Band-Edge Frequency:	2400.0 MHz
Test Frequency Range:	2350.0 - 2422.0 MHz

Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M1 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-19.83	-6.16	2403.00	--	--	-3.000
b	-22.72	-6.49	2403.00	--	--	-3.000

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ±2.37 dB, > 40 GHz ±4.6 dB

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

Equipment Configuration for Conducted Low Band-Edge Emissions - Peak

Variant:	802.11n HT-40	**Duty Cycle (%):**	82.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	2422.0 MHz
Band-Edge Frequency:	2400.0 MHz
Test Frequency Range:	2292.0 - 2442.0 MHz

Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M1 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	13.49	-6.51	2403.20	--	--	-3.200
b	-15.63	-6.49	2403.50	--	--	-3.500

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ±2.37 dB, > 40 GHz ±4.6 dB

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

Equipment Configuration for Conducted High Band-Edge Emissions - Peak			
Variant:	802.11b	**Duty Cycle (%):**	98.0
Data Rate:	1.00 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	CCK	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	2462.0 MHz					
Band-Edge Frequency:	2483.5 MHz					
Test Frequency Range:	2452.0 - 2524.0 MHz					
Port(s)	**Band-Edge Markers and Limit**			**Revised Limit**		**Margin**
	M3 Amplitude (dBm)	**Plot Limit (dBm)**	**M2 Frequency (MHz)**	**Amplitude (dBm)**	**M2A Frequency (MHz)**	**(MHz)**
a	-32.33	-6.57	2471.30	--	--	-12.200
b	-33.93	-6.22	2471.30	--	--	-12.200

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ±2.37 dB, > 40 GHz ±4.6 dB

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

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Equipment Configuration for Conducted High Band-Edge Emissions - Peak

Variant:	802.11g	**Duty Cycle (%):**	86.0
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	2462.0 MHz
Band-Edge Frequency:	2483.5 MHz
Test Frequency Range:	2452.0 - 2524.0 MHz

Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M3 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-30.97	-6.58	2470.80	--	--	-12.700
b	-34.02	-6.77	2470.60	--	--	-12.900

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ±2.37 dB, > 40 GHz ±4.6 dB

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

Equipment Configuration for Conducted High Band-Edge Emissions - Peak

Variant:	802.11n HT-20	**Duty Cycle (%):**	96.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	2462.0 MHz
Band-Edge Frequency:	2483.5 MHz
Test Frequency Range:	2452.0 - 2524.0 MHz

Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M3 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-33.02	-6.59	2471.30	--	--	-12.200
b	-34.25	-6.77	2471.30	--	--	-12.200

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ±2.37 dB, > 40 GHz ±4.6 dB

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

Equipment Configuration for Conducted High Band-Edge Emissions - Peak			
Variant:	802.11n HT-40	**Duty Cycle (%):**	82.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	0.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	OC
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	2452.0 MHz
Band-Edge Frequency:	2483.5 MHz
Test Frequency Range:	2432.0 - 2582.0 MHz

Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M3 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-16.02	-7.13	2470.50	--	--	-13.000
b	-18.40	-7.11	2470.50	--	--	-13.000

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ±2.37 dB, > 40 GHz ±4.6 dB

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

9.4.2. Radiated Emissions

9.4.2.3. TX Spurious & Restricted Band Emissions

Radiated Test Conditions for Radiated Spurious and Band-Edge Emissions (Restricted Bands)			
Standard:	FCC CFR 47 Part 15 Subpart C 15.247 (DTS)	**Ambient Temp. (ºC):**	20.0 - 24.5
Test Heading:	Radiated Spurious and Band-Edge Emissions	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.205, 15.209	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Radiated Spurious and Band-Edge Emissions (Restricted Bands)
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 and waveguide 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 Radiated Spurious and Band-Edge Measurement were per the Radiated Test Set-up specified in this document.

Limits for Restricted Bands
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 or Waveguide Loss

Example:
Given receiver input reading of 51.5 dBmV; Antenna Factor of 8.5 dB; Cable Loss of 1.3 dB; Falloff Factor of 0 dB, an Amplifier Gain of 26 dB and Notch Filter Loss of 1 dB. The Field Strength (FS) of the measured emission is:

FS = 51.5 + 8.5 + 1.3 - 26.0 +1 = 36.3 dBmV/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).

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Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	integral integral	**Variant:**	802.11b
Antenna Gain (dBi):	0.00	**Modulation:**	CCK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	2412.00	**Data Rate:**	1.00 MBit/s
Power Setting:	30	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	2413.93	58.35	-1.77	-12.29	44.29	Fundamental	Horizontal	100	0	--	--	
#2	4824.02	66.52	-2.53	-12.42	51.57	Max Peak	Vertical	99	328	74.0	-22.4	Pass
#3	4824.02	61.77	-2.53	-12.42	46.82	Max Avg	Vertical	99	328	54.0	-7.2	Pass
#4	5239.89	60.40	-2.62	-12.24	45.54	Peak (NRB)	Horizontal	100	0	--	--	Pass
Test Notes: EUT Powered by power supply, connected to laptop outside chamber. 2.4GHz notch in front of amp to prevent overloads.												

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	integral integral	**Variant:**	802.11b
Antenna Gain (dBi):	0.00	**Modulation:**	CCK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	2437.00	**Data Rate:**	1.00 MBit/s
Power Setting:	30	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	2436.21	66.81	-1.78	-12.13	52.90	Fundamental	Vertical	100	0	--	--	
#2	4873.98	69.10	-2.51	-12.61	53.98	Max Peak	Horizontal	101	333	74.0	-20.0	Pass
#3	4873.98	66.04	-2.51	-12.61	50.92	Max Avg	Horizontal	101	333	54.0	-3.1	Pass
#4	5239.98	60.21	-2.62	-12.24	45.35	Peak (NRB)	Horizontal	100	0	--	--	Pass
Test Notes: EUT Powered by power supply, connected to laptop outside chamber. 2.4GHz notch in front of amp to prevent overloads.												

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	integral integral	**Variant:**	802.11b
Antenna Gain (dBi):	0.00	**Modulation:**	CCK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	2462.00	**Data Rate:**	1.00 MBit/s
Power Setting:	29	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	2462.73	70.09	-1.79	-11.96	56.34	Fundamental	Horizontal	100	0	--	--	
#2	4923.99	69.61	-2.56	-12.35	54.70	Max Peak	Horizontal	150	335	74.0	-19.3	Pass
#3	4923.99	66.48	-2.56	-12.35	51.57	Max Avg	Horizontal	150	335	54.0	-2.4	Pass
#4	5239.95	60.72	-2.62	-12.24	45.86	Peak (NRB)	Horizontal	100	0	--	--	Pass
Test Notes: EUT Powered by power supply, connected to laptop outside chamber. 2.4GHz notch in front of amp to prevent overloads.												

9.4.2.4. Restricted Edge & Band-Edge Emissions

Integral Antenna		Band-Edge Freq	Limit 74.0dBµV/m	Limit 54.0dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
802.11b	2412.00	2390.00	62.88	51.06	30
802.11g	2412.00	2390.00	67.89	53.80	28
802.11n HT-20	2412.00	2390.00	66.64	52.46	28
802.11n HT-40	2422.00	2390.00	68.87	53.10	25

Integral Antenna		Band-Edge Freq	Limit 74.0dBµV/m	Limit 54.0dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
802.11b	2462.00	2483.50	69.10	51.77	29
802.11g	2462.00	2483.50	69.50	51.77	27
802.11n HT-20	2462.00	2483.50	68.57	52.50	27
802.11n HT-40	2452.00	2483.50	67.21	52.84	24

Equipment Configuration for Radiated - Lower Restricted Band-Edge Emissions			
Antenna:	Integral Antenna	**Variant:**	802.11b
Antenna Gain (dBi):	0.00	**Modulation:**	CCK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	2412.00	**Data Rate:**	1.00 MBit/s
Power Setting:	30	**Tested By:**	JMH

Test Measurement Results

2310.00 - 2422.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	2390.00	20.87	-1.77	31.96	51.06	Max Avg	Horizontal	155	253	54.0	-2.9	Pass
#2	2390.00	32.69	-1.77	31.96	62.88	Max Peak	Horizontal	155	253	74.0	-11.1	Pass
#3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT Powered by power supply, connected to laptop outside chamber. 3 dB pad in front of rcvr												

Equipment Configuration for Radiated - Lower Restricted Band-Edge Emissions			
Antenna:	Integral Antenna	**Variant:**	802.11g
Antenna Gain (dBi):	0.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	2412.00	**Data Rate:**	6.00 MBit/s
Power Setting:	28	**Tested By:**	JMH

Test Measurement Results

2310.00 - 2422.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	2389.01	37.71	-1.77	31.95	67.89	Max Peak	Horizontal	155	253	74.0	-6.1	Pass
#2	2389.33	23.62	-1.77	31.95	53.80	Max Avg	Horizontal	155	253	54.0	-0.2	Pass
#3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT Powered by power supply, connected to laptop outside chamber. 3 dB pad in front of rcvr												

Equipment Configuration for Radiated - Lower Restricted Band-Edge Emissions

Antenna:	Integral Antenna	**Variant:**	802.11n HT-20
Antenna Gain (dBi):	0.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	2412.00	**Data Rate:**	6.50 MBit/s
Power Setting:	28	**Tested By:**	JMH

Test Measurement Results

2310.00 - 2422.00 MHz

Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	2390.00	22.27	-1.77	31.96	52.46	Max Avg	Horizontal	155	253	54.0	-1.5	Pass
#2	2390.00	36.45	-1.77	31.96	66.64	Max Peak	Horizontal	155	253	74.0	-7.4	Pass
#3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

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

Equipment Configuration for Radiated - Lower Restricted Band-Edge Emissions

Antenna:	Integral Antenna	**Variant:**	802.11n HT-40
Antenna Gain (dBi):	0.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	2422.00	**Data Rate:**	13.50 MBit/s
Power Setting:	25	**Tested By:**	JMH

Test Measurement Results

2310.00 - 2422.00 MHz

Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	2390.00	22.91	-1.77	31.96	53.10	Max Avg	Horizontal	155	253	54.0	-0.9	Pass
#2	2390.00	38.68	-1.77	31.96	68.87	Max Peak	Horizontal	155	253	74.0	-5.1	Pass
#3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

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

Equipment Configuration for Radiated - Upper Restricted Band-Edge Emissions

Antenna:	Integral Antenna	**Variant:**	802.11b
Antenna Gain (dBi):	0.00	**Modulation:**	CCK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	2462.00	**Data Rate:**	1.00 MBit/s
Power Setting:	29	**Tested By:**	JMH

Test Measurement Results

2452.00 - 2520.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	2483.50	21.22	-1.78	32.33	51.77	Max Avg	Horizontal	155	253	54.0	-2.2	Pass
#3	2484.18	38.55	-1.78	32.33	69.10	Max Peak	Horizontal	155	253	74.0	-4.9	Pass
#2	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT Powered by power supply, connected to laptop outside chamber. 3 dB pad in front of rcvr												

Equipment Configuration for Radiated - Upper Restricted Band-Edge Emissions

Antenna:	Integral Antenna	**Variant:**	802.11g
Antenna Gain (dBi):	0.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	2462.00	**Data Rate:**	6.00 MBit/s
Power Setting:	27	**Tested By:**	JMH

Test Measurement Results

2452.00 - 2520.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	2483.50	21.22	-1.78	32.33	51.77	Max Avg	Horizontal	155	253	54.0	-2.2	Pass
#3	2485.25	38.95	-1.78	32.33	69.50	Max Peak	Horizontal	155	253	74.0	-4.5	Pass
#2	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT Powered by power supply, connected to laptop outside chamber. 3 dB pad in front of rcvr												

Equipment Configuration for Radiated - Upper Restricted Band-Edge Emissions			
Antenna:	Integral Antenna	**Variant:**	802.11n HT-20
Antenna Gain (dBi):	0.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	2462.00	**Data Rate:**	6.50 MBit/s
Power Setting:	27	**Tested By:**	JMH

Test Measurement Results

2452.00 - 2520.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	2483.50	21.95	-1.78	32.33	52.50	Max Avg	Horizontal	155	253	54.0	-1.5	Pass
#3	2483.64	38.02	-1.78	32.33	68.57	Max Peak	Horizontal	155	253	74.0	-5.4	Pass
#2	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT Powered by power supply, connected to laptop outside chamber. 3 dB pad in front of rcvr												

Equipment Configuration for Radiated - Upper Restricted Band-Edge Emissions

Antenna:	Integral Antenna	**Variant:**	802.11n HT-40
Antenna Gain (dBi):	0.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	2452.00	**Data Rate:**	13.50 MBit/s
Power Setting:	24	**Tested By:**	JMH

Test Measurement Results

2452.00 - 2520.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	2483.50	22.29	-1.78	32.33	52.84	Max Avg	Horizontal	155	253	54.0	-1.2	Pass
#3	2483.77	36.66	-1.78	32.33	67.21	Max Peak	Horizontal	155	253	74.0	-6.8	Pass
#2	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT Powered by power supply, connected to laptop outside chamber. 3 dB pad in front of rcvr												

9.4.3. Digital Emissions (0.03 - 1 GHz)

FCC, Part 15 Subpart C §15.205/ §15.209
Industry Canada RSS-Gen 8.10

Test Procedure

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

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

See Section 7.2 for Radiated Emissions + Test Equipment utilized during the test

Field Strength Calculation

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

$$FS = R + AF + CORR$$

where:

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

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

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

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

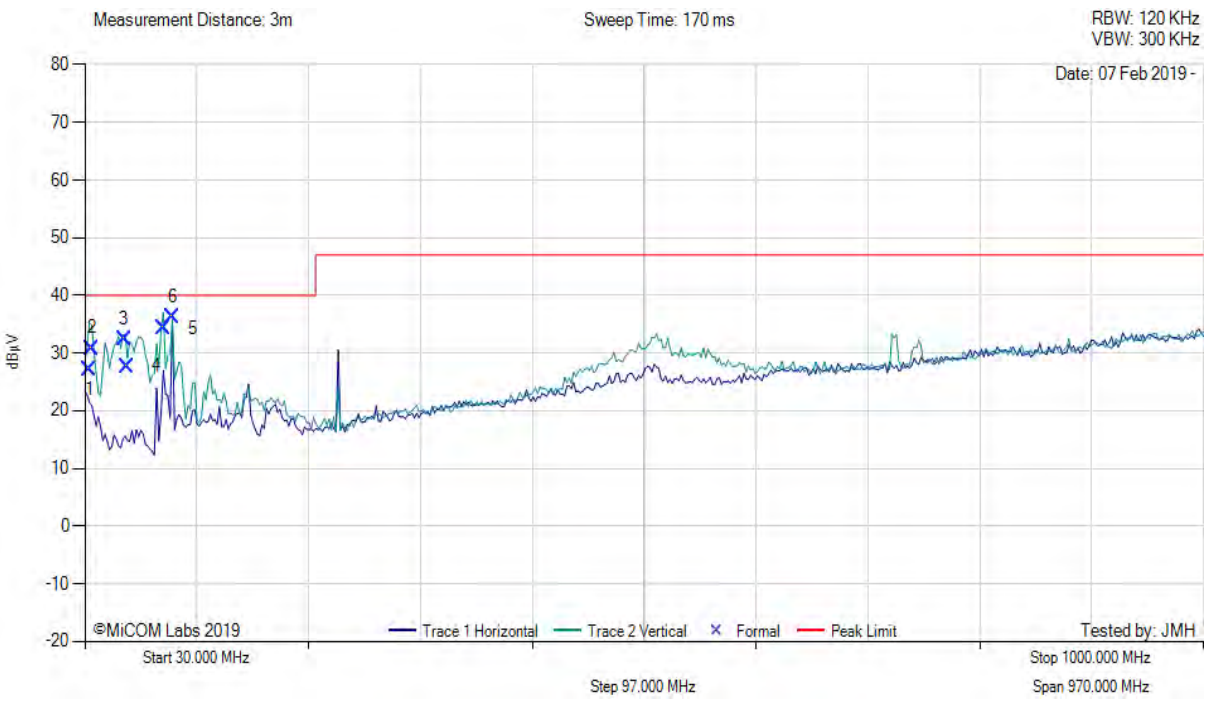
Level (dBμV/m) = 20 * Log (level (μV/m))

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

POE Powered 30-1000 MHz

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

Variant: , Test Freq: 0.00 MHz

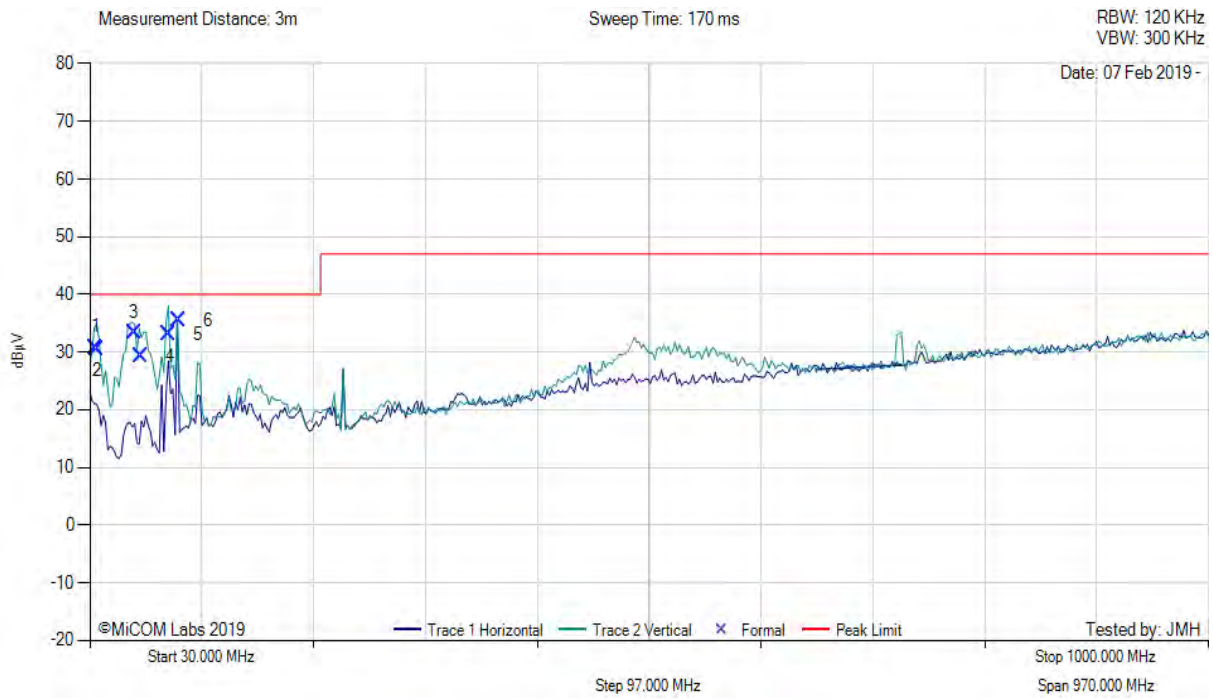


30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	33.65	34.09	3.55	-10.40	27.24	MaxQP	Vertical	98	157	40.0	-12.8	Pass
2	36.21	39.75	3.57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

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

AC/DC PS Powered 30-1000 MHz

Variant: , Test Freq: 0.00 MHz



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

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

9.4.4. AC Wireline Emissions

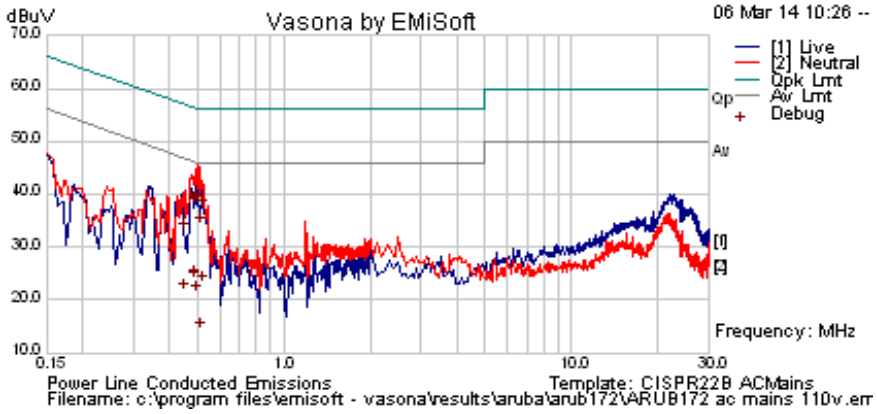
Test Procedure

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

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

AC Wireline Emissions

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



Formally measured emission peaks

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

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

Specification

Limit

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

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

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

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

* Decreases with the logarithm of the frequency

Laboratory Measurement Uncertainty for Conducted Emissions

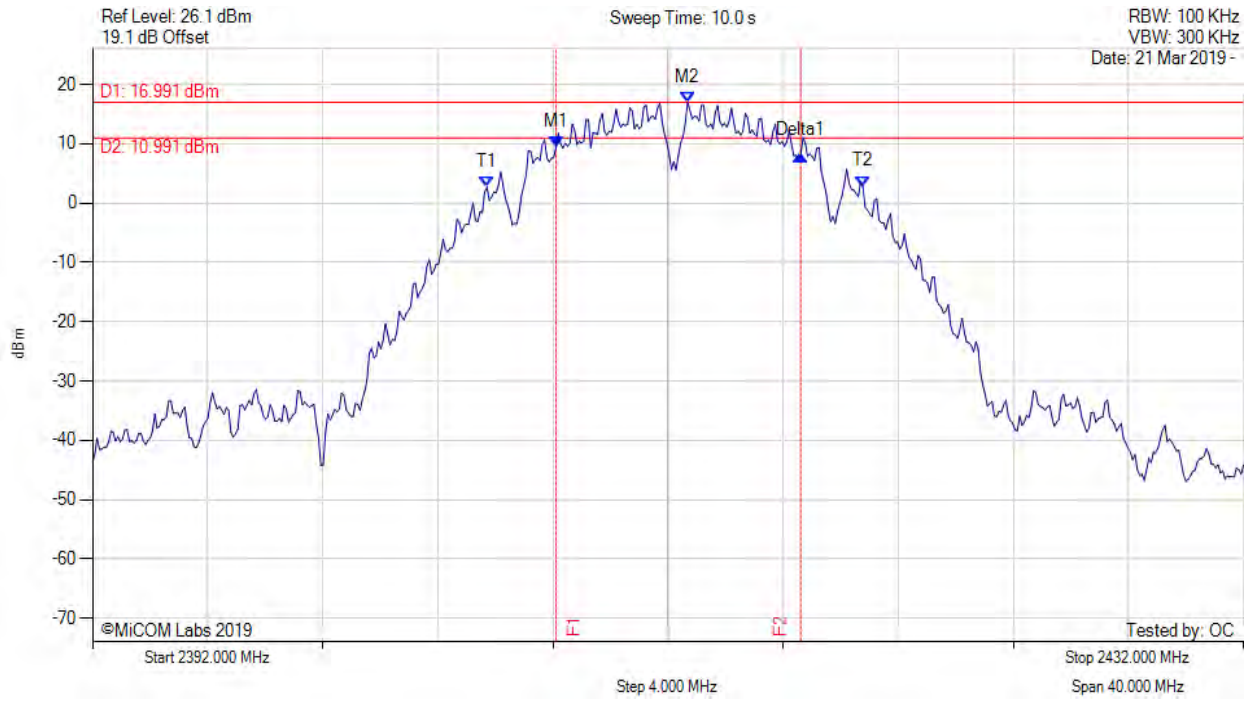
Measurement uncertainty	±2.64 dB

APPENDIX A - GRAPHICAL IMAGES

A.1. 6 dB & 99% Bandwidth

6 dB & 99% BANDWIDTH

Variant: 802.11b, Channel: 2412.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

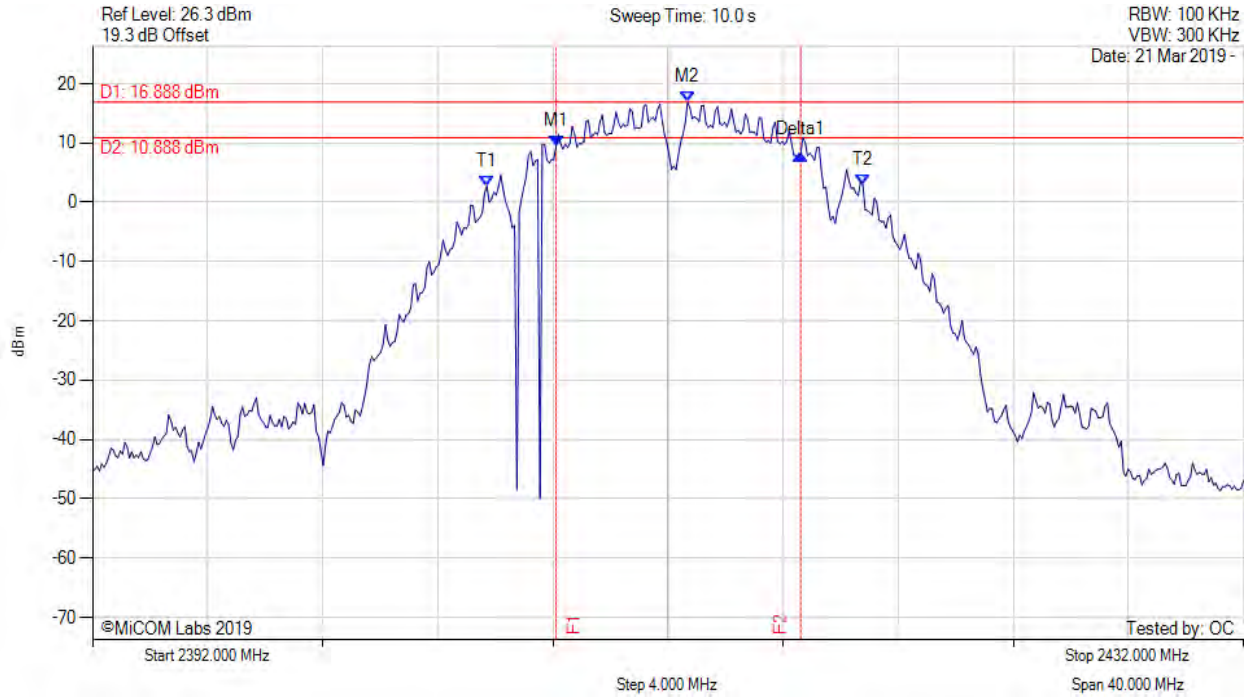


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2408.112 MHz : 9.560 dBm M2 : 2412.681 MHz : 16.991 dBm Delta1 : 8.497 MHz : -1.554 dB T1 : 2405.707 MHz : 2.700 dBm T2 : 2418.774 MHz : 2.803 dBm OBW : 13.066 MHz	Measured 6 dB Bandwidth: 8.497 MHz Limit: ≥500.0 kHz Margin: -8.00 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11b, Channel: 2412.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

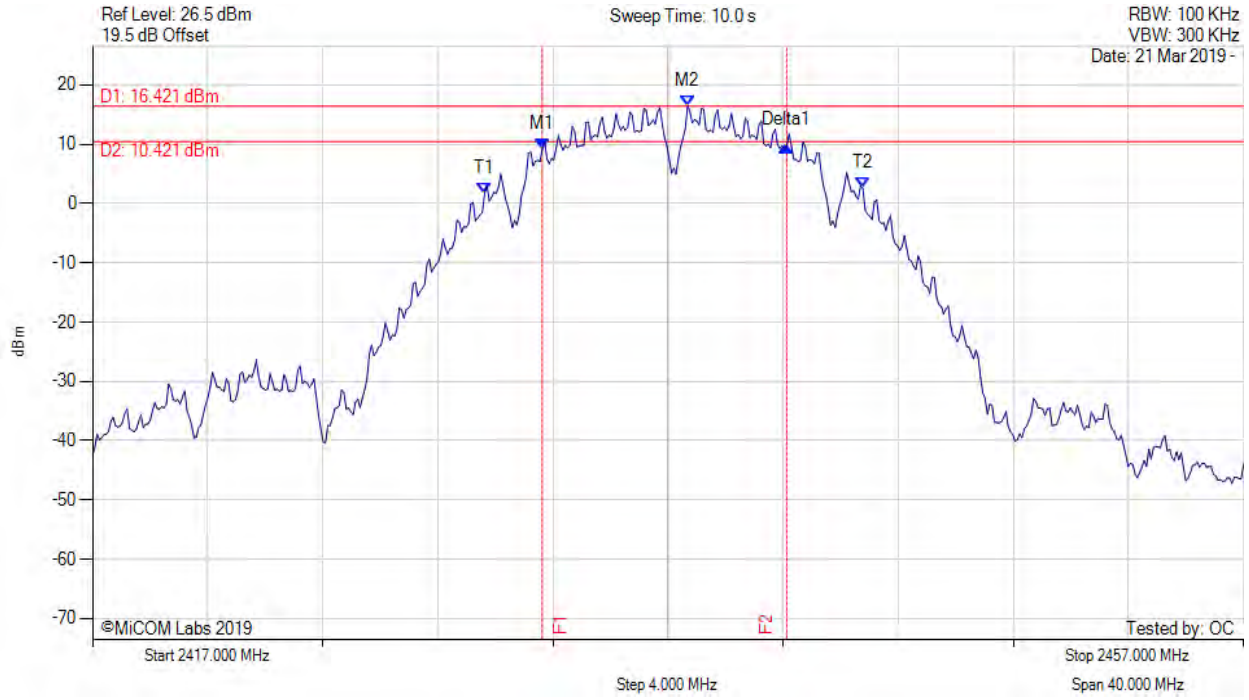


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2408.112 MHz : 9.513 dBm M2 : 2412.681 MHz : 16.888 dBm Delta1 : 8.497 MHz : -1.450 dB T1 : 2405.707 MHz : 2.686 dBm T2 : 2418.774 MHz : 2.888 dBm OBW : 13.066 MHz	Measured 6 dB Bandwidth: 8.497 MHz Limit: ≥500.0 kHz Margin: -8.00 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11b, Channel: 2437.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

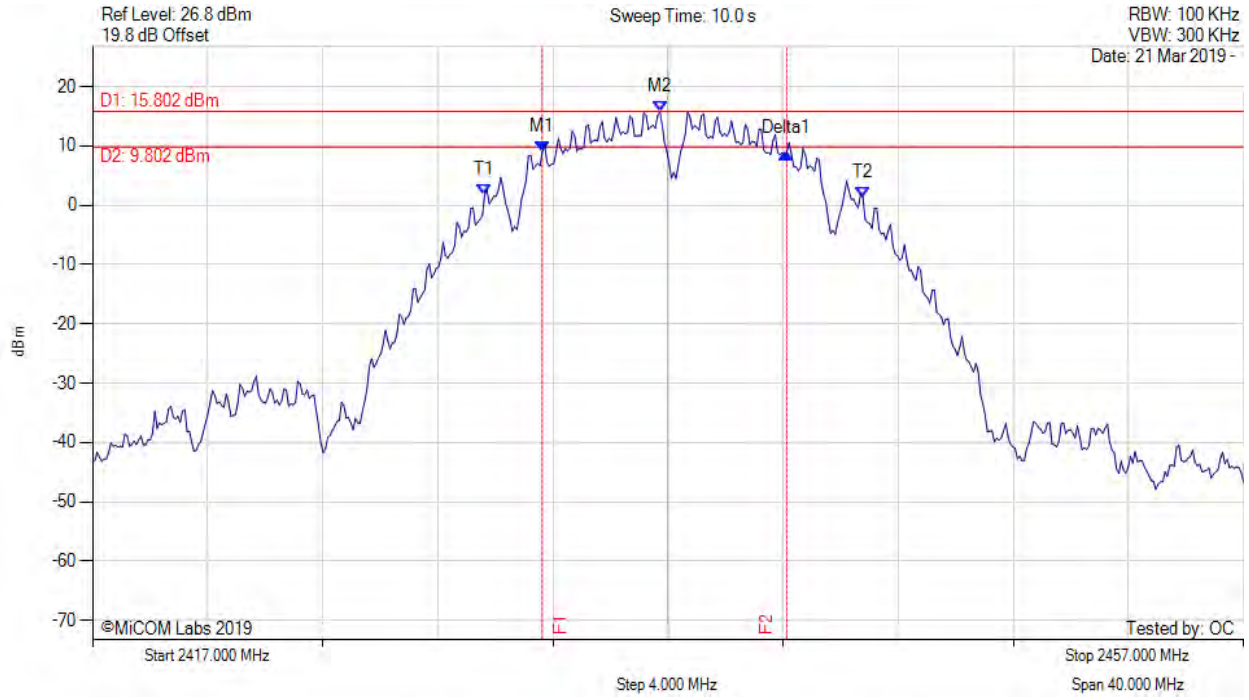


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2432.631 MHz : 9.219 dBm M2 : 2437.681 MHz : 16.421 dBm Delta1 : 8.497 MHz : 0.541 dB T1 : 2430.627 MHz : 1.737 dBm T2 : 2443.774 MHz : 2.547 dBm OBW : 13.146 MHz	Measured 6 dB Bandwidth: 8.497 MHz Limit: ≥500.0 kHz Margin: -8.00 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11b, Channel: 2437.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

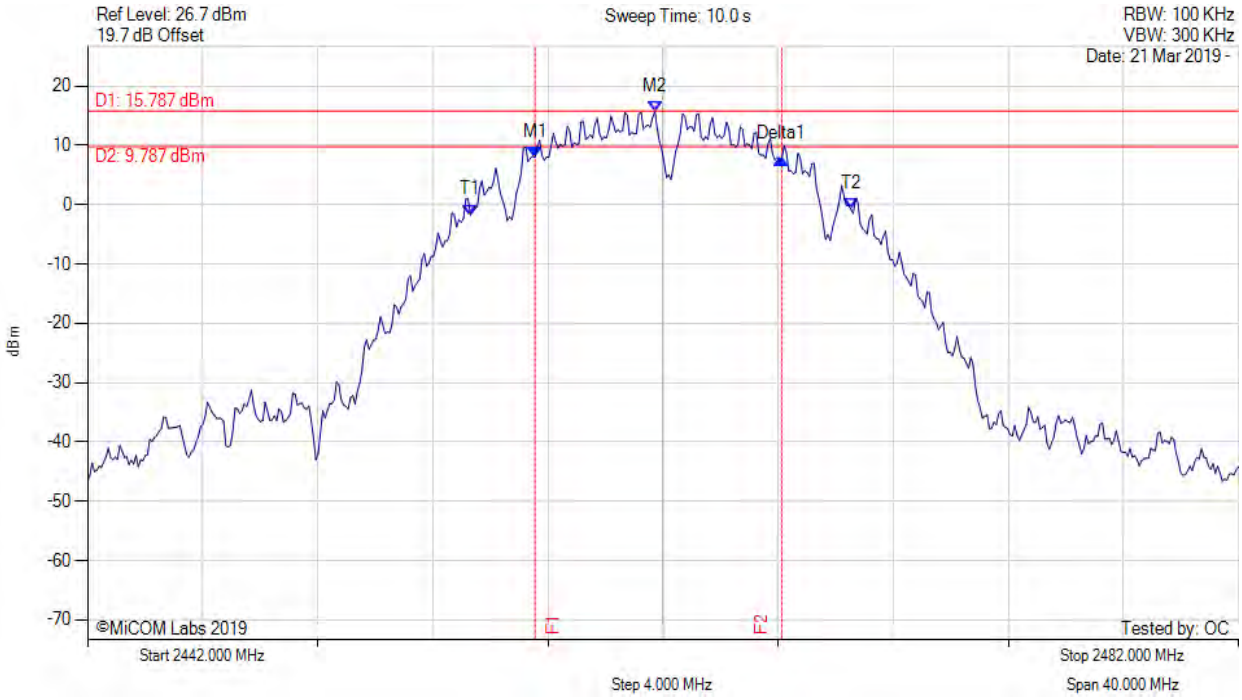


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2432.631 MHz : 9.023 dBm M2 : 2436.719 MHz : 15.802 dBm Delta1 : 8.497 MHz : -0.150 dB T1 : 2430.627 MHz : 1.679 dBm T2 : 2443.774 MHz : 1.342 dBm OBW : 13.146 MHz	Measured 6 dB Bandwidth: 8.497 MHz Limit: ≥500.0 kHz Margin: -8.00 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11b, Channel: 2462.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

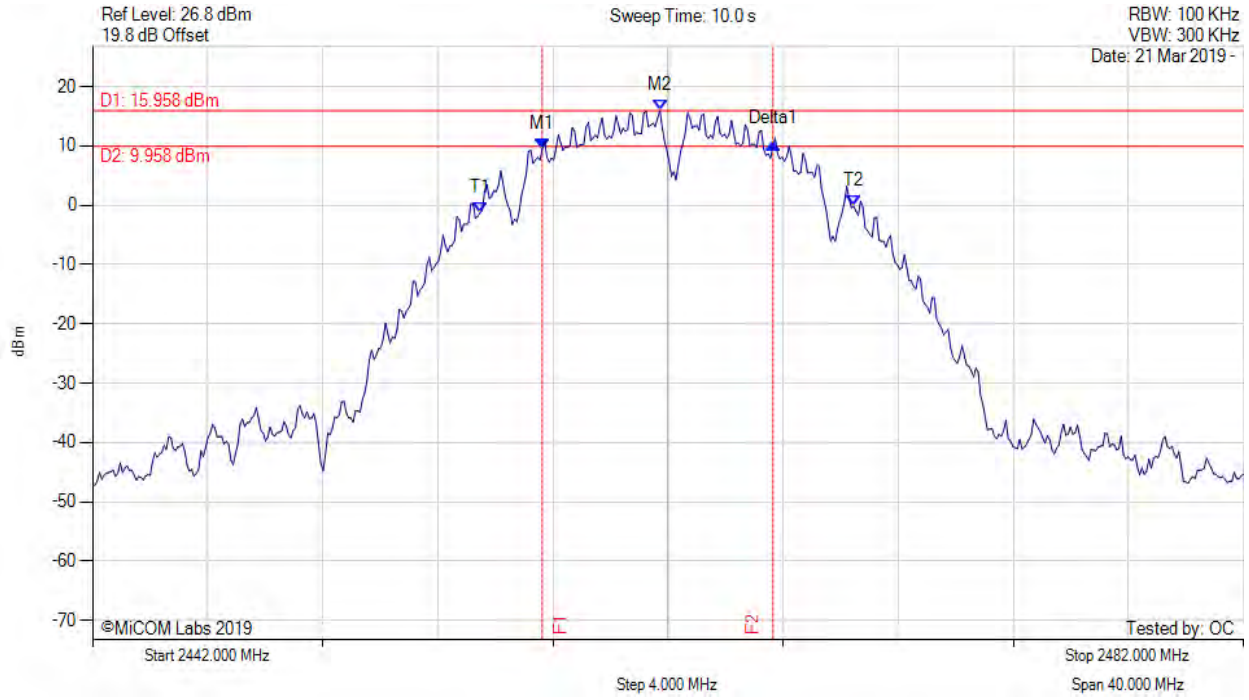


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2457.551 MHz : 8.002 dBm M2 : 2461.719 MHz : 15.787 dBm Delta1 : 8.577 MHz : -0.244 dB T1 : 2455.307 MHz : -1.713 dBm T2 : 2468.533 MHz : -0.756 dBm OBW : 13.226 MHz	Measured 6 dB Bandwidth: 8.577 MHz Limit: ≥500.0 kHz Margin: -8.08 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11b, Channel: 2462.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

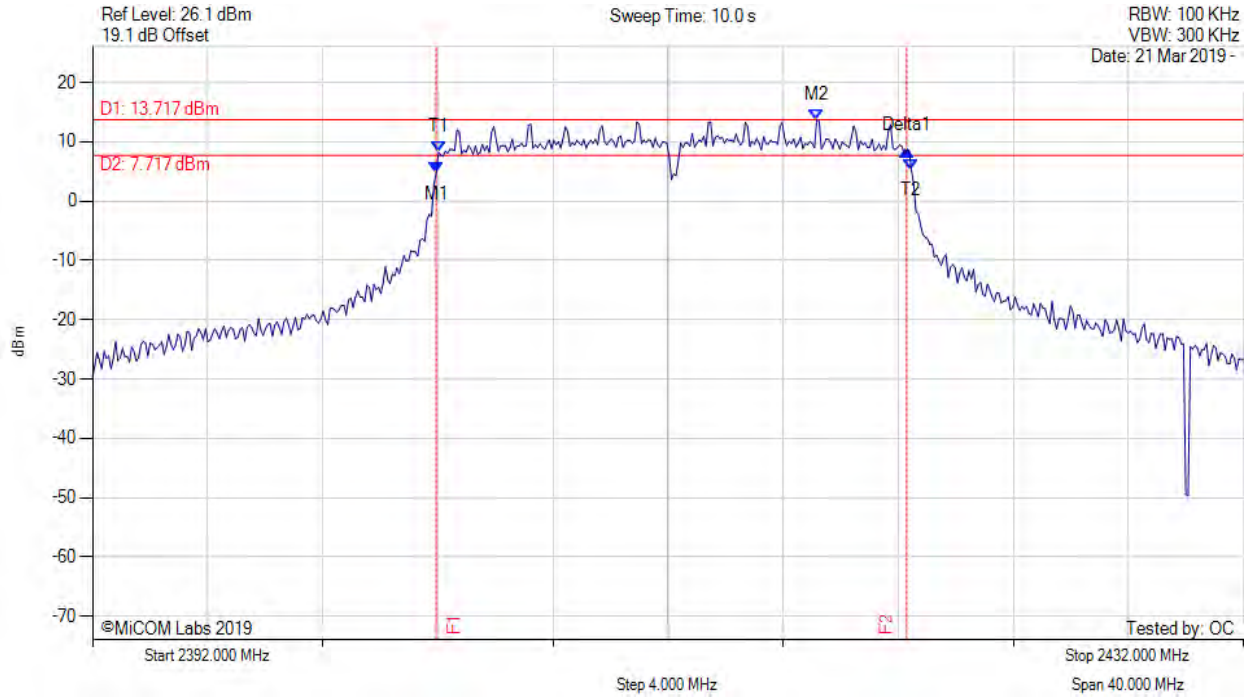


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2457.631 MHz : 9.576 dBm M2 : 2461.719 MHz : 15.958 dBm Delta1 : 8.016 MHz : 0.795 dB T1 : 2455.467 MHz : -1.284 dBm T2 : 2468.453 MHz : -0.192 dBm OBW : 12.986 MHz	Measured 6 dB Bandwidth: 8.016 MHz Limit: ≥500.0 kHz Margin: -7.52 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11g, Channel: 2412.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

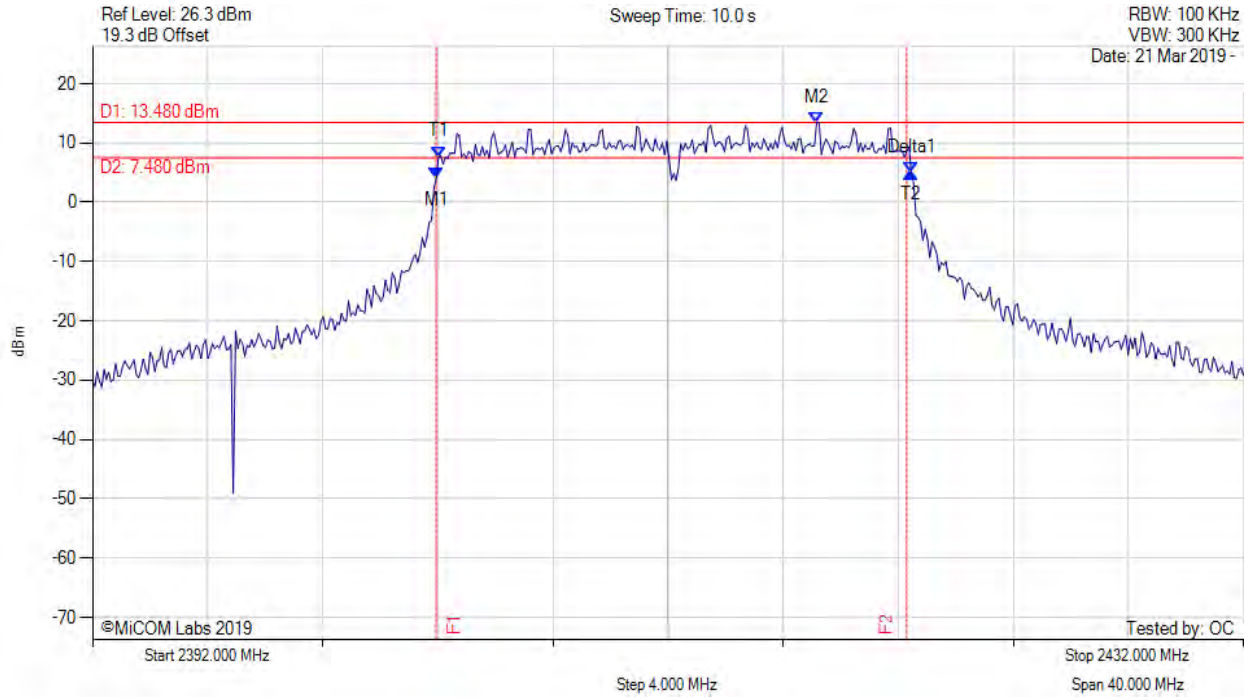


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2403.944 MHz : 4.707 dBm M2 : 2417.170 MHz : 13.717 dBm Delta1 : 16.353 MHz : 3.889 dB T1 : 2404.024 MHz : 8.242 dBm T2 : 2420.457 MHz : 5.366 dBm OBW : 16.433 MHz	Measured 6 dB Bandwidth: 16.353 MHz Limit: ≥500.0 kHz Margin: -15.85 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11g, Channel: 2412.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

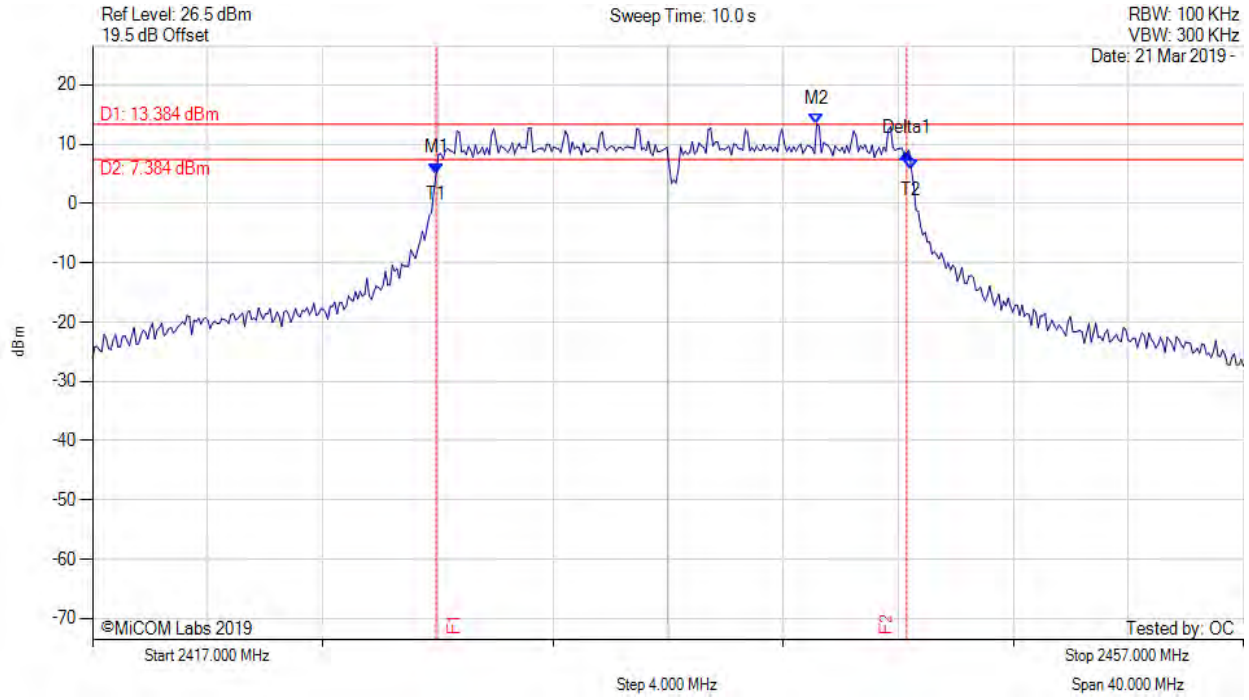


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2403.944 MHz : 4.026 dBm M2 : 2417.170 MHz : 13.475 dBm Delta1 : 16.513 MHz : 1.001 dB T1 : 2404.024 MHz : 7.701 dBm T2 : 2420.457 MHz : 5.027 dBm OBW : 16.433 MHz	Measured 6 dB Bandwidth: 16.513 MHz Limit: ≥500.0 kHz Margin: -16.01 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11g, Channel: 2437.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

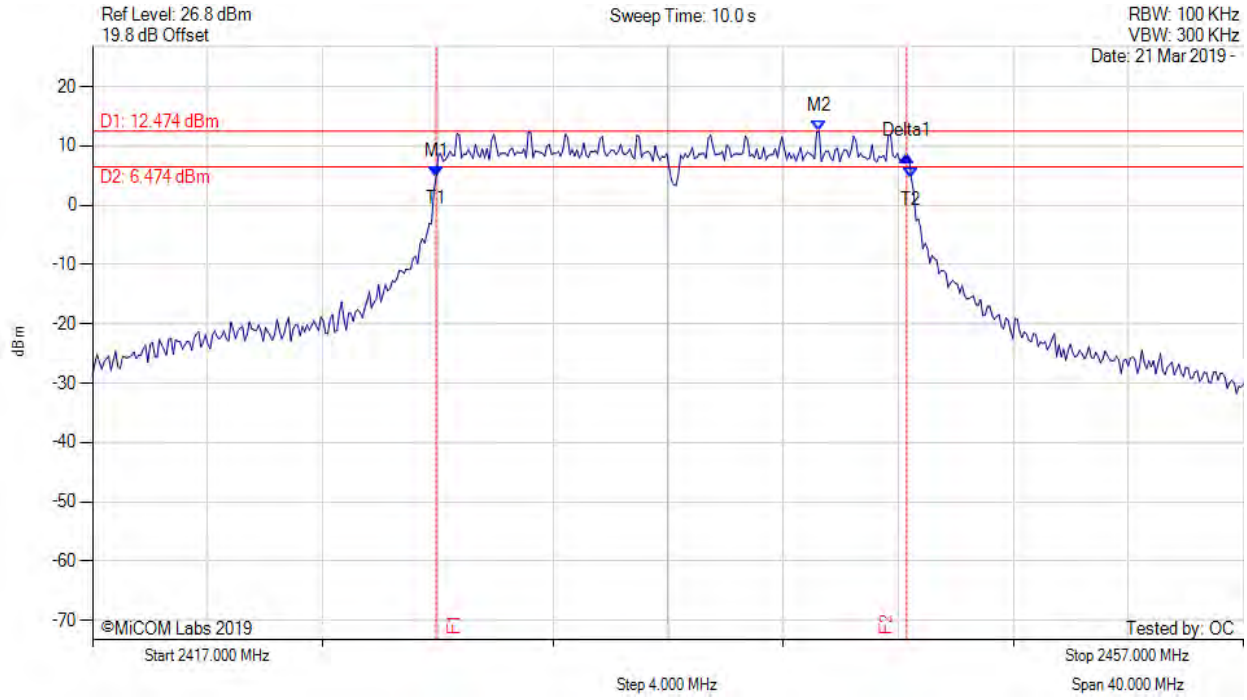


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2428.944 MHz : 5.077 dBm M2 : 2442.170 MHz : 13.384 dBm Delta1 : 16.353 MHz : 3.427 dB T1 : 2428.944 MHz : 5.077 dBm T2 : 2445.457 MHz : 5.792 dBm OBW : 16.513 MHz	Measured 6 dB Bandwidth: 16.353 MHz Limit: ≥500.0 kHz Margin: -15.85 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11g, Channel: 2437.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

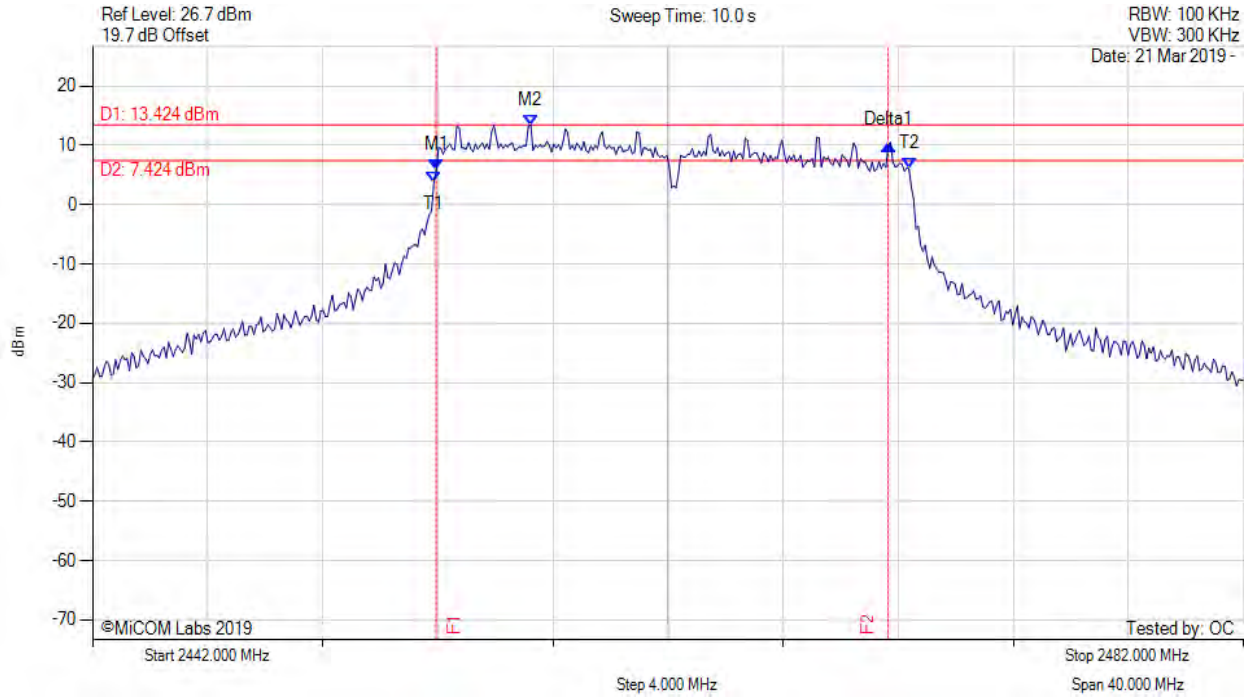


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2428.944 MHz : 4.838 dBm M2 : 2442.251 MHz : 12.474 dBm Delta1 : 16.353 MHz : 3.419 dB T1 : 2428.944 MHz : 4.838 dBm T2 : 2445.457 MHz : 4.533 dBm OBW : 16.513 MHz	Measured 6 dB Bandwidth: 16.353 MHz Limit: ≥500.0 kHz Margin: -15.85 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11g, Channel: 2462.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

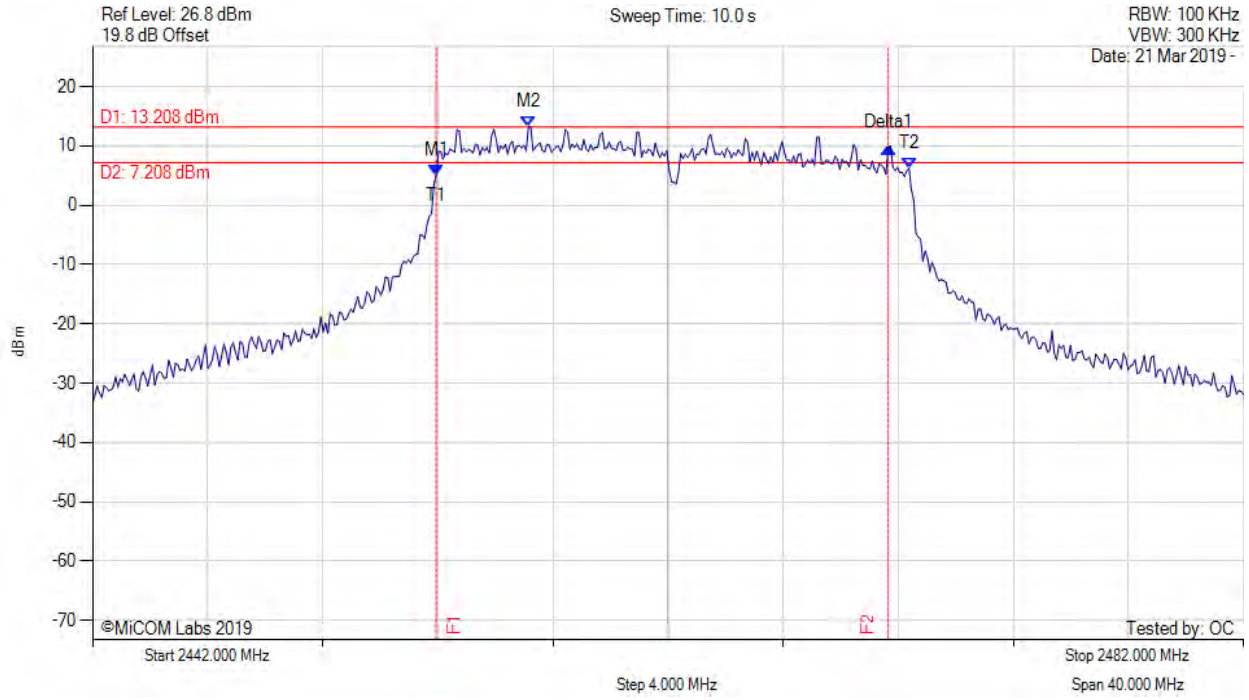


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2453.944 MHz : 5.818 dBm M2 : 2457.230 MHz : 13.424 dBm Delta1 : 15.711 MHz : 4.248 dB T1 : 2453.864 MHz : 3.792 dBm T2 : 2470.377 MHz : 6.043 dBm OBW : 16.513 MHz	Measured 6 dB Bandwidth: 15.711 MHz Limit: ≥500.0 kHz Margin: -15.21 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11g, Channel: 2462.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

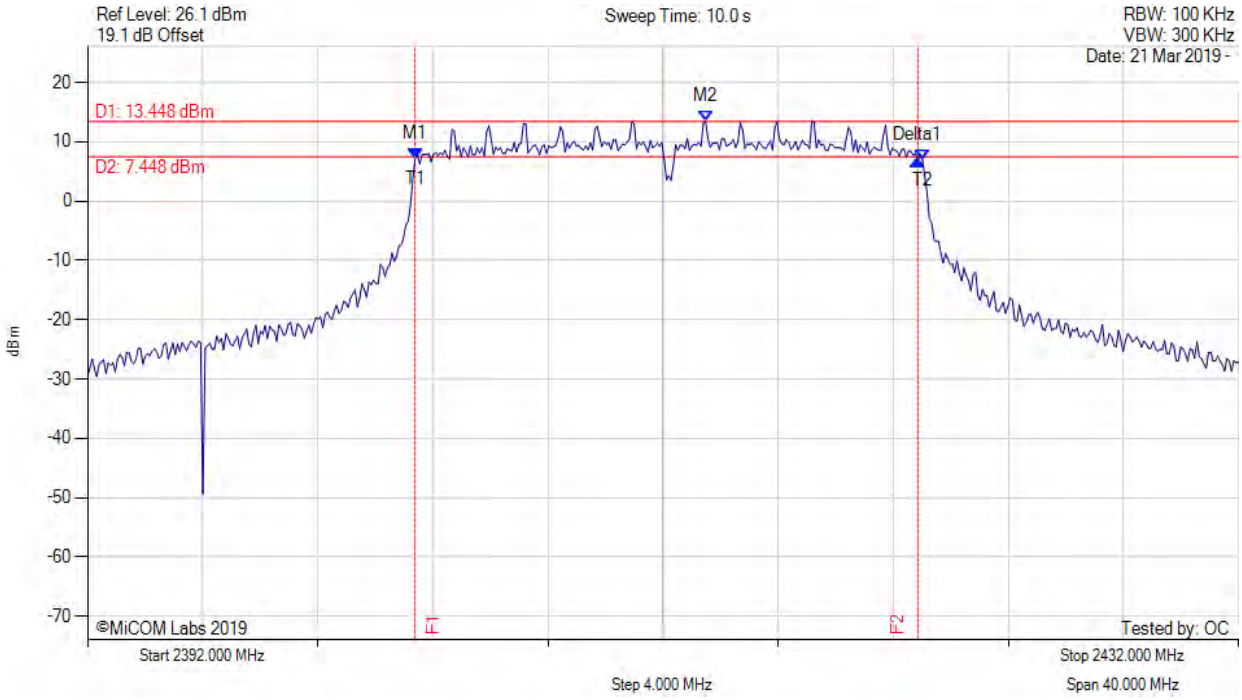


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2453.944 MHz : 5.116 dBm M2 : 2457.150 MHz : 13.208 dBm Delta1 : 15.711 MHz : 4.661 dB T1 : 2453.944 MHz : 5.116 dBm T2 : 2470.377 MHz : 6.249 dBm OBW : 16.433 MHz	Measured 6 dB Bandwidth: 15.711 MHz Limit: ≥500.0 kHz Margin: -15.21 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 2412.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

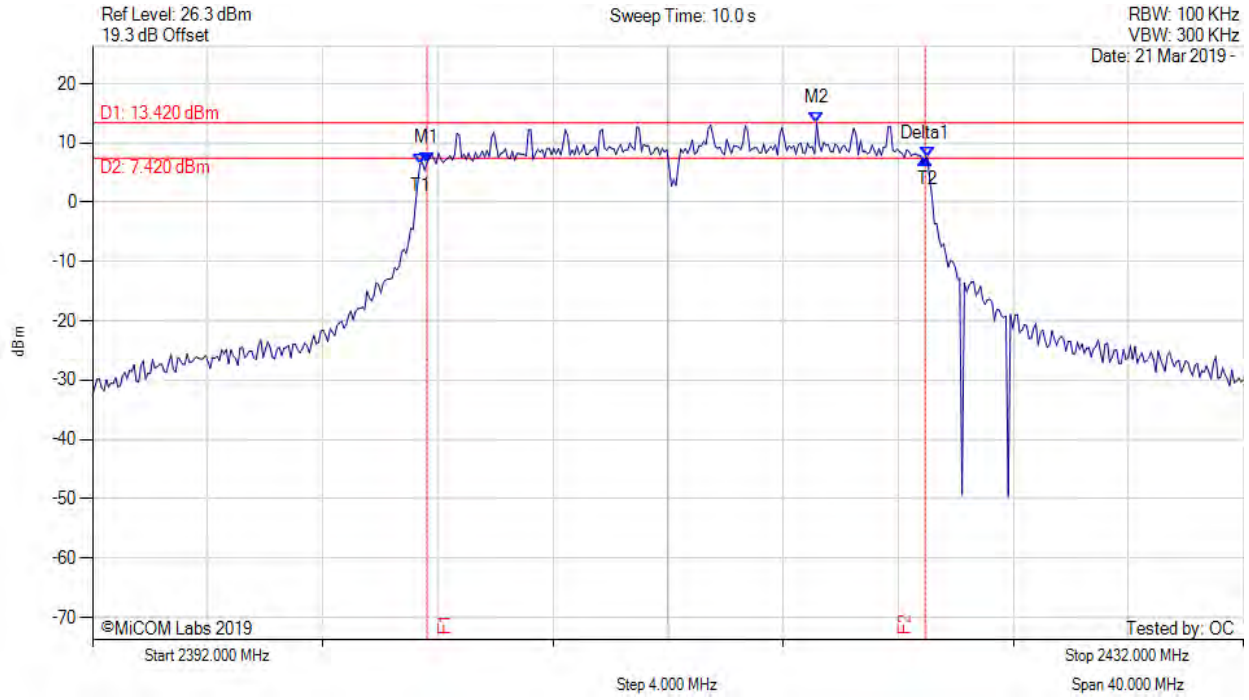


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2403.383 MHz : 7.213 dBm M2 : 2413.483 MHz : 13.448 dBm Delta1 : 17.475 MHz : -0.317 dB T1 : 2403.383 MHz : 7.213 dBm T2 : 2421.018 MHz : 6.991 dBm OBW : 17.635 MHz	Measured 6 dB Bandwidth: 17.475 MHz Limit: ≥500.0 kHz Margin: -16.98 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 2412.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

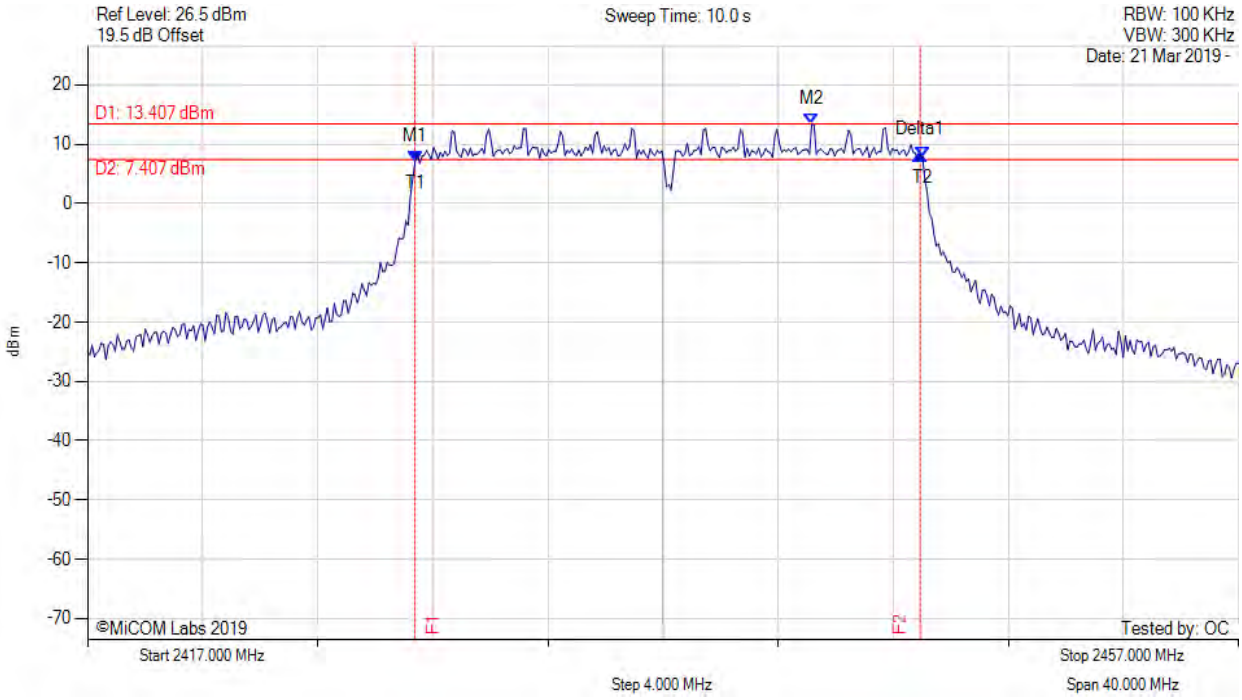


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2403.623 MHz : 6.670 dBm M2 : 2417.170 MHz : 13.420 dBm Delta1 : 17.315 MHz : 0.712 dB T1 : 2403.383 MHz : 6.400 dBm T2 : 2421.018 MHz : 7.545 dBm OBW : 17.635 MHz	Measured 6 dB Bandwidth: 17.315 MHz Limit: ≥500.0 kHz Margin: -16.82 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 2437.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

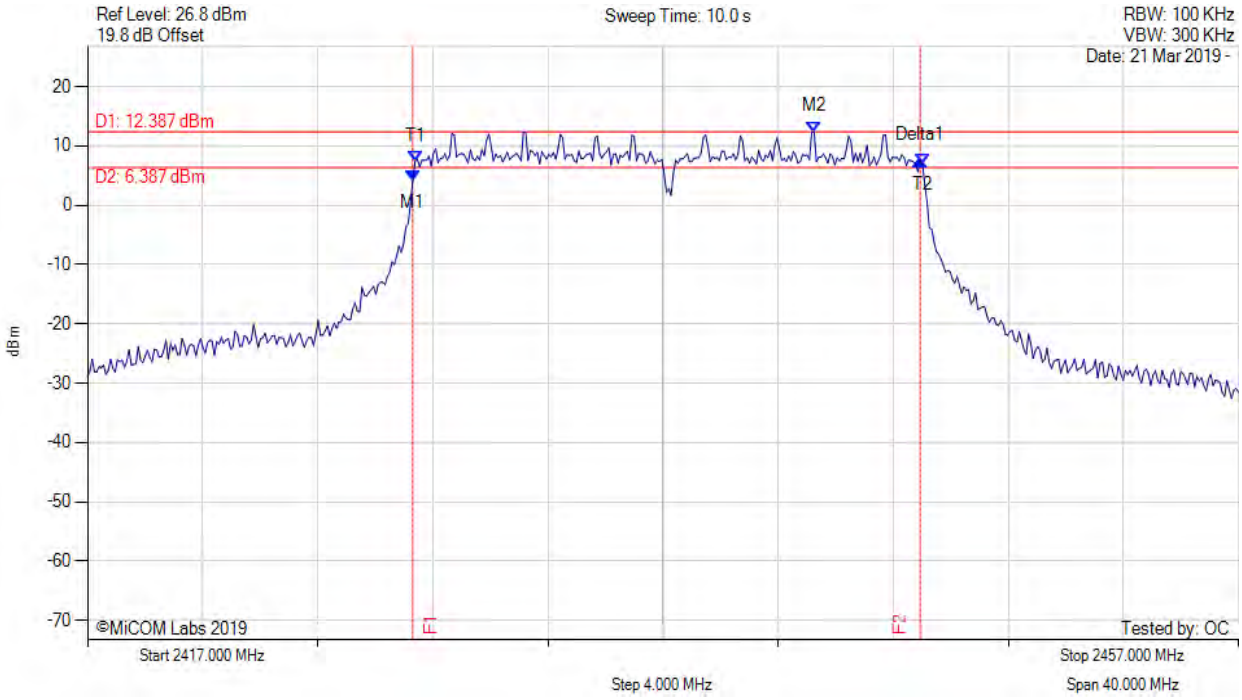


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2428.383 MHz : 7.096 dBm M2 : 2442.170 MHz : 13.407 dBm Delta1 : 17.555 MHz : 1.123 dB T1 : 2428.383 MHz : 7.096 dBm T2 : 2446.018 MHz : 7.877 dBm OBW : 17.635 MHz	Measured 6 dB Bandwidth: 17.555 MHz Limit: ≥500.0 kHz Margin: -17.06 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 2437.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

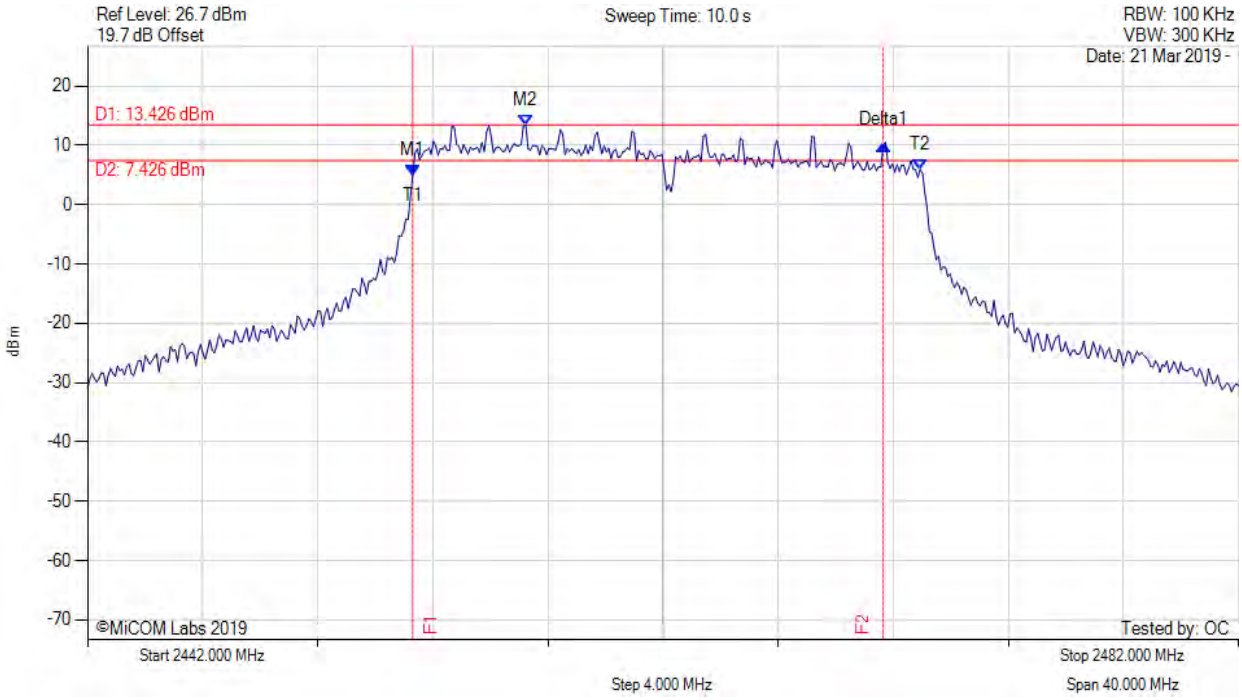


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2428.303 MHz : 4.044 dBm M2 : 2442.251 MHz : 12.387 dBm Delta1 : 17.635 MHz : 3.524 dB T1 : 2428.383 MHz : 7.435 dBm T2 : 2446.018 MHz : 6.947 dBm OBW : 17.635 MHz	Measured 6 dB Bandwidth: 17.635 MHz Limit: ≥500.0 kHz Margin: -17.14 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 2462.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

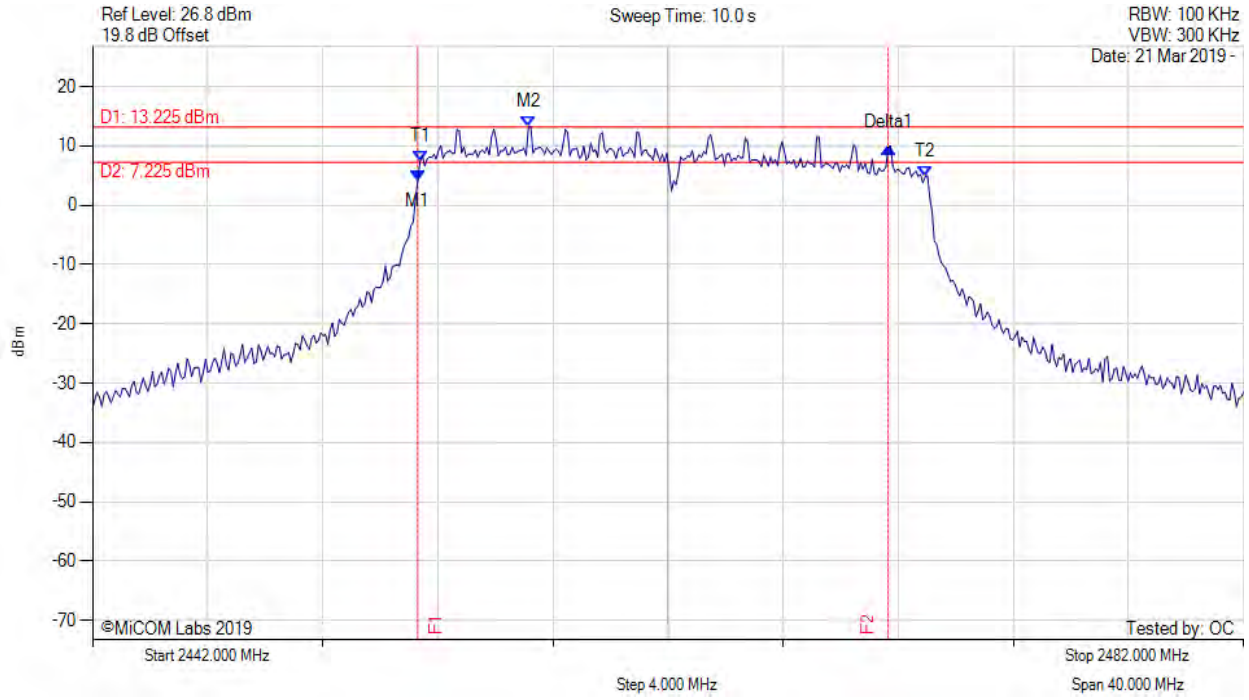


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2453.303 MHz : 4.990 dBm M2 : 2457.230 MHz : 13.426 dBm Delta1 : 16.353 MHz : 5.056 dB T1 : 2453.303 MHz : 4.990 dBm T2 : 2470.938 MHz : 5.952 dBm OBW : 17.635 MHz	Measured 6 dB Bandwidth: 16.353 MHz Limit: ≥500.0 kHz Margin: -15.85 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 2462.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

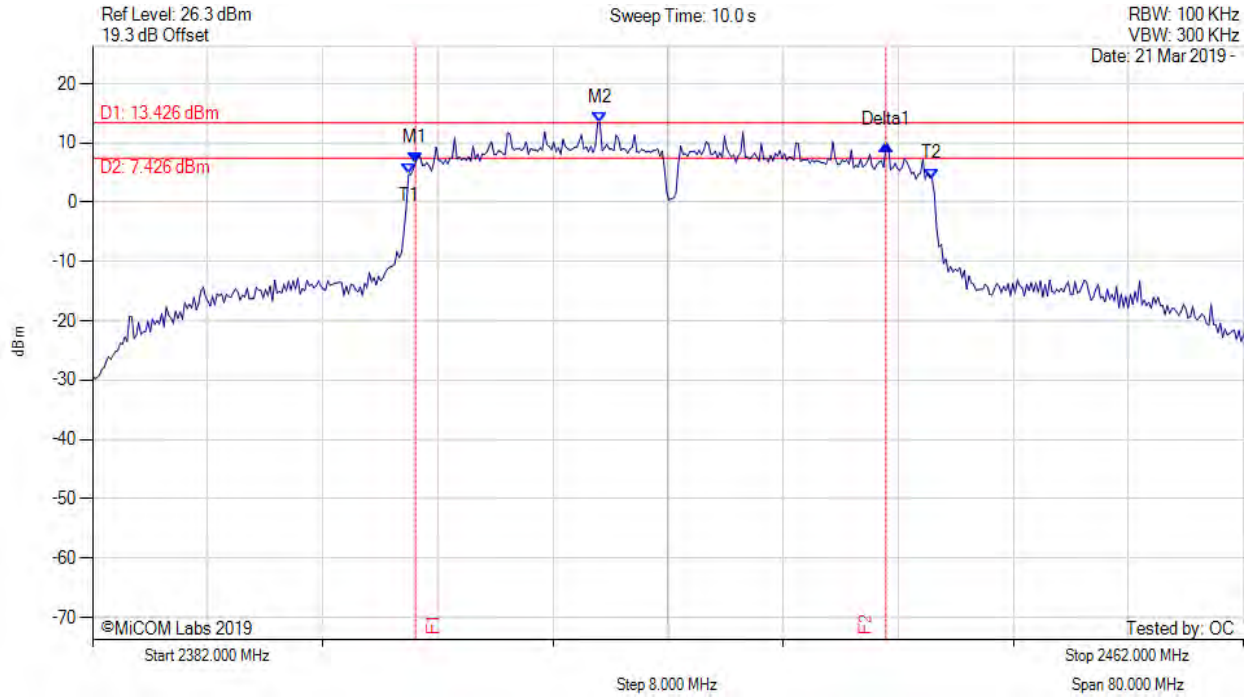


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2453.303 MHz : 4.183 dBm M2 : 2457.150 MHz : 13.225 dBm Delta1 : 16.353 MHz : 5.577 dB T1 : 2453.383 MHz : 7.384 dBm T2 : 2470.938 MHz : 4.803 dBm OBW : 17.555 MHz	Measured 6 dB Bandwidth: 16.353 MHz Limit: ≥500.0 kHz Margin: -15.85 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 2422.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

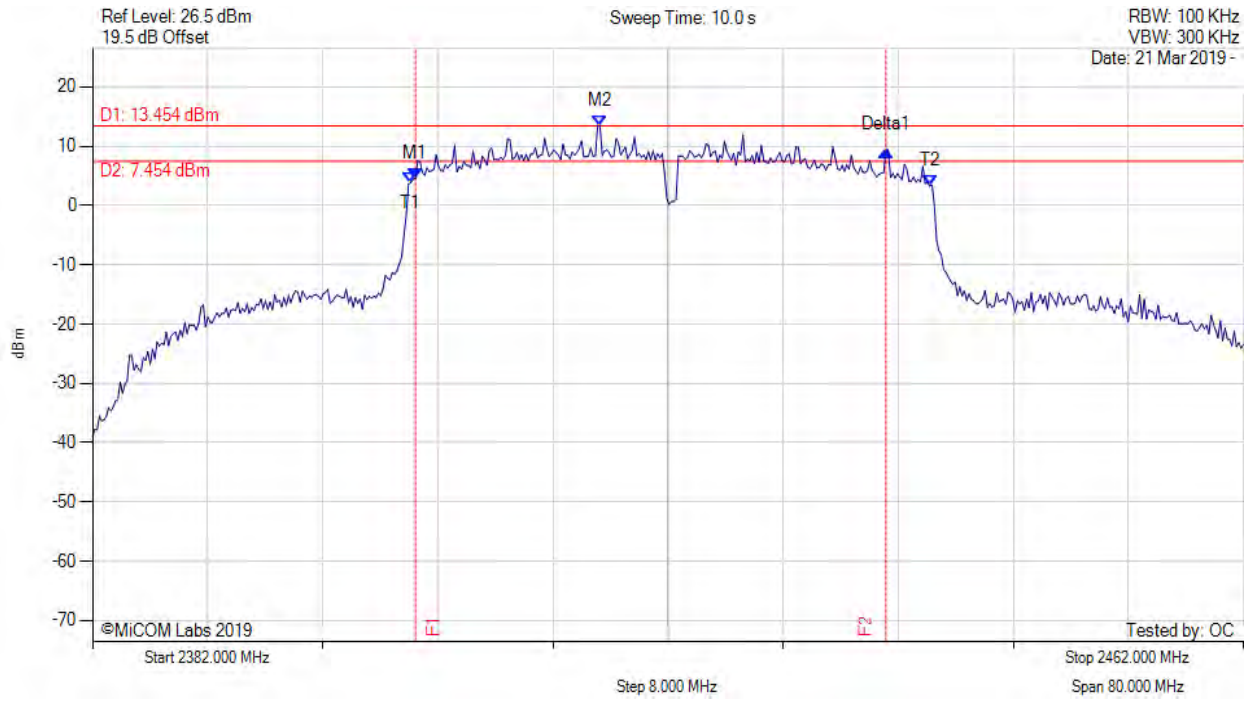


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2404.445 MHz : 6.674 dBm M2 : 2417.271 MHz : 13.426 dBm Delta1 : 32.705 MHz : 2.935 dB T1 : 2403.964 MHz : 4.685 dBm T2 : 2440.357 MHz : 3.947 dBm OBW : 36.393 MHz	Measured 6 dB Bandwidth: 32.705 MHz Limit: ≥500.0 kHz Margin: -32.20 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 2422.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

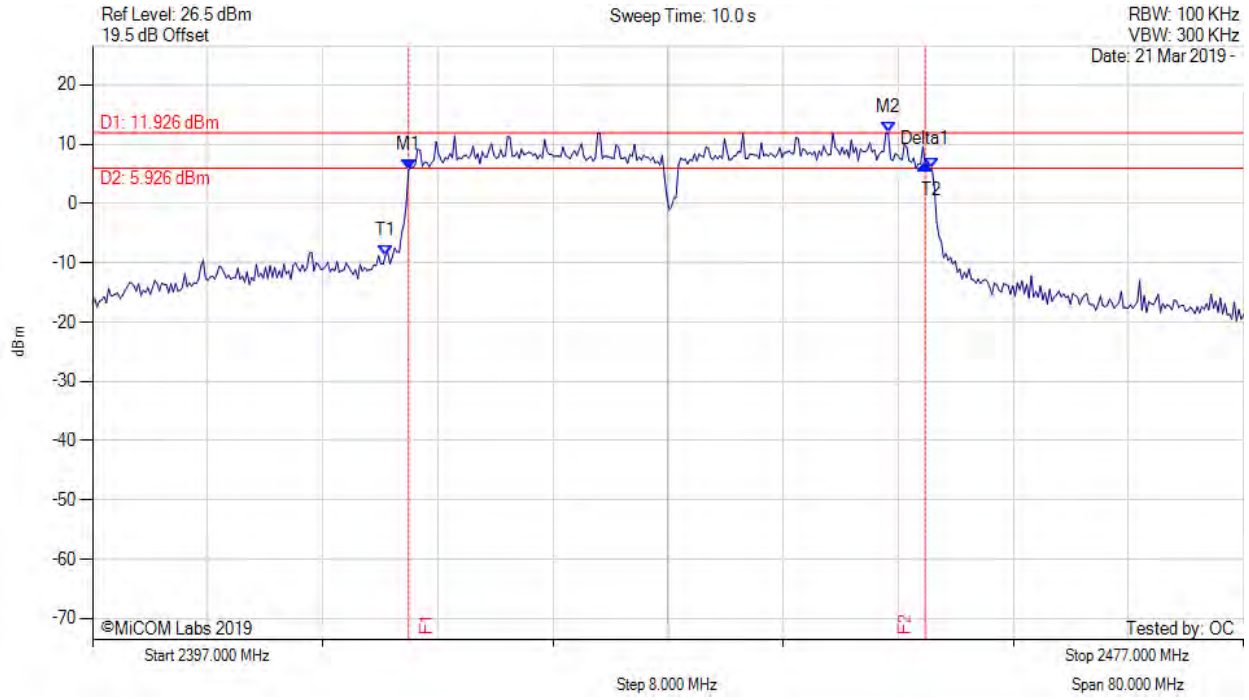


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2404.445 MHz : 4.572 dBm M2 : 2417.271 MHz : 13.454 dBm Delta1 : 32.705 MHz : 4.720 dB T1 : 2404.124 MHz : 3.868 dBm T2 : 2440.196 MHz : 3.271 dBm OBW : 36.072 MHz	Measured 6 dB Bandwidth: 32.705 MHz Limit: ≥500.0 kHz Margin: -32.20 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 2437.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

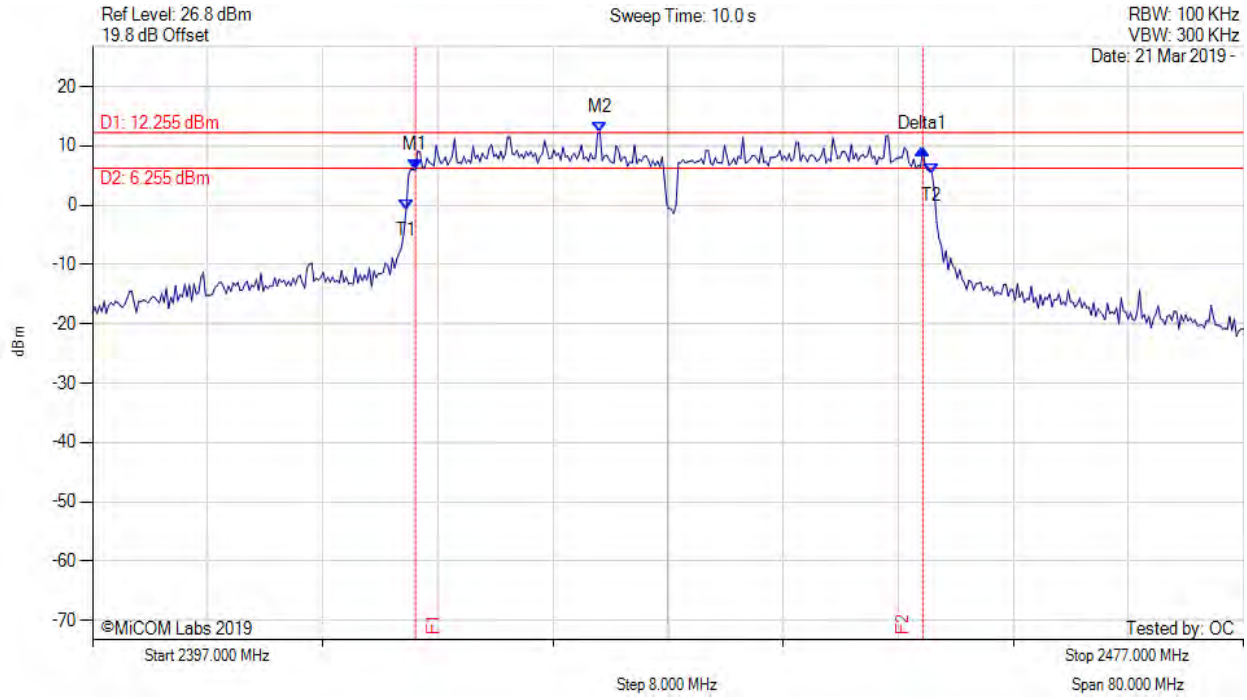


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2418.964 MHz : 5.693 dBm M2 : 2452.311 MHz : 11.926 dBm Delta1 : 35.912 MHz : 0.834 dB T1 : 2417.361 MHz : -8.733 dBm T2 : 2455.357 MHz : 5.807 dBm OBW : 37.996 MHz	Measured 6 dB Bandwidth: 35.912 MHz Limit: ≥500.0 kHz Margin: -35.41 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 2437.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

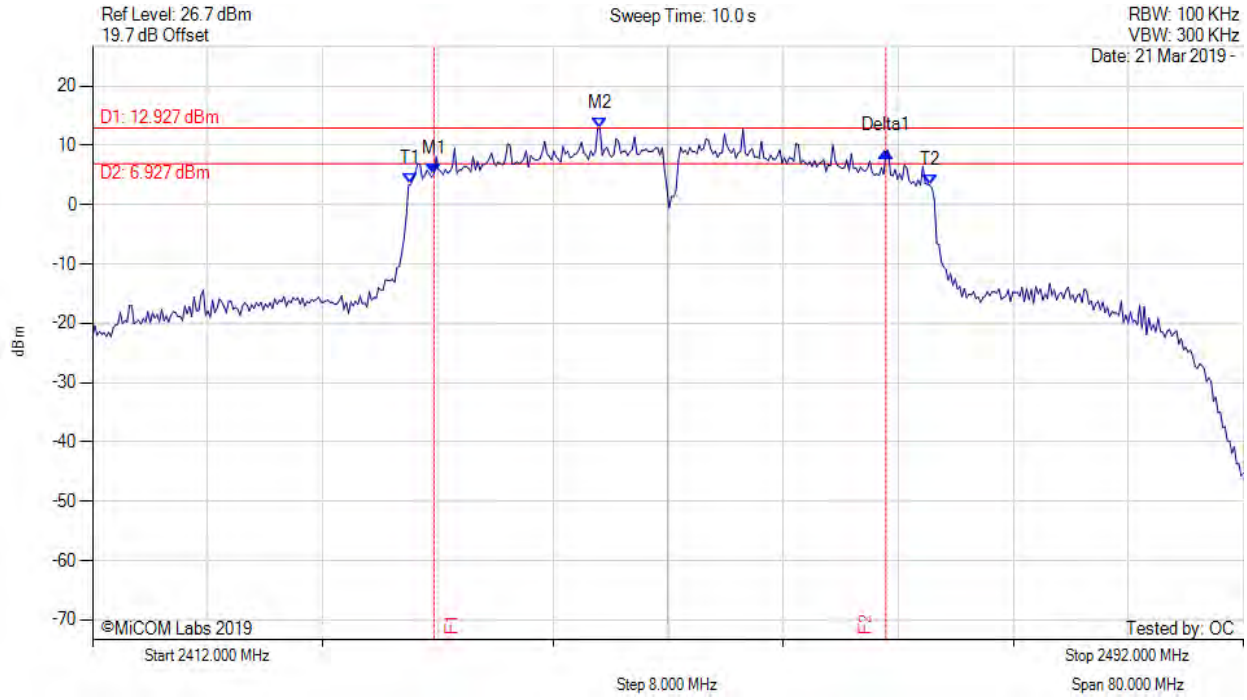


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2419.445 MHz : 6.017 dBm M2 : 2432.271 MHz : 12.255 dBm Delta1 : 35.271 MHz : 3.518 dB T1 : 2418.804 MHz : -0.682 dBm T2 : 2455.357 MHz : 5.305 dBm OBW : 36.553 MHz	Measured 6 dB Bandwidth: 35.271 MHz Limit: ≥500.0 kHz Margin: -34.77 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 2452.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

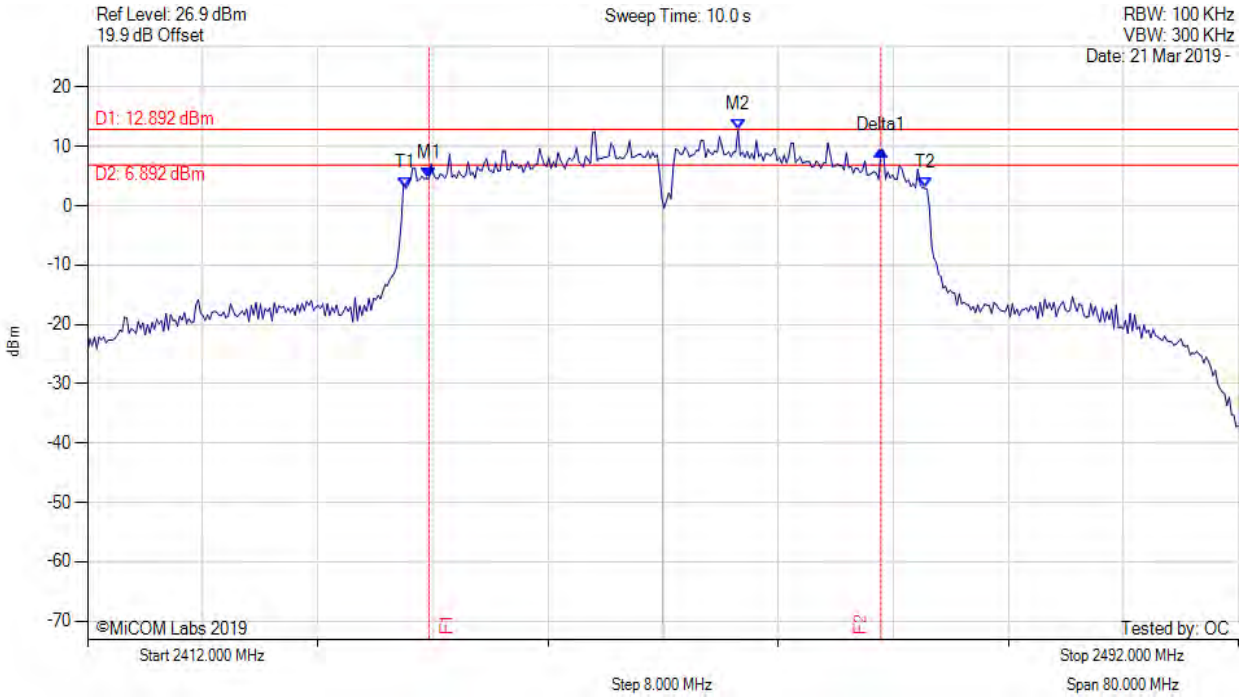


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2435.727 MHz : 5.130 dBm M2 : 2447.271 MHz : 12.927 dBm Delta1 : 31.423 MHz : 3.889 dB T1 : 2434.124 MHz : 3.448 dBm T2 : 2470.196 MHz : 3.281 dBm OBW : 36.072 MHz	Measured 6 dB Bandwidth: 31.423 MHz Limit: ≥500.0 kHz Margin: -30.92 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 2452.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc



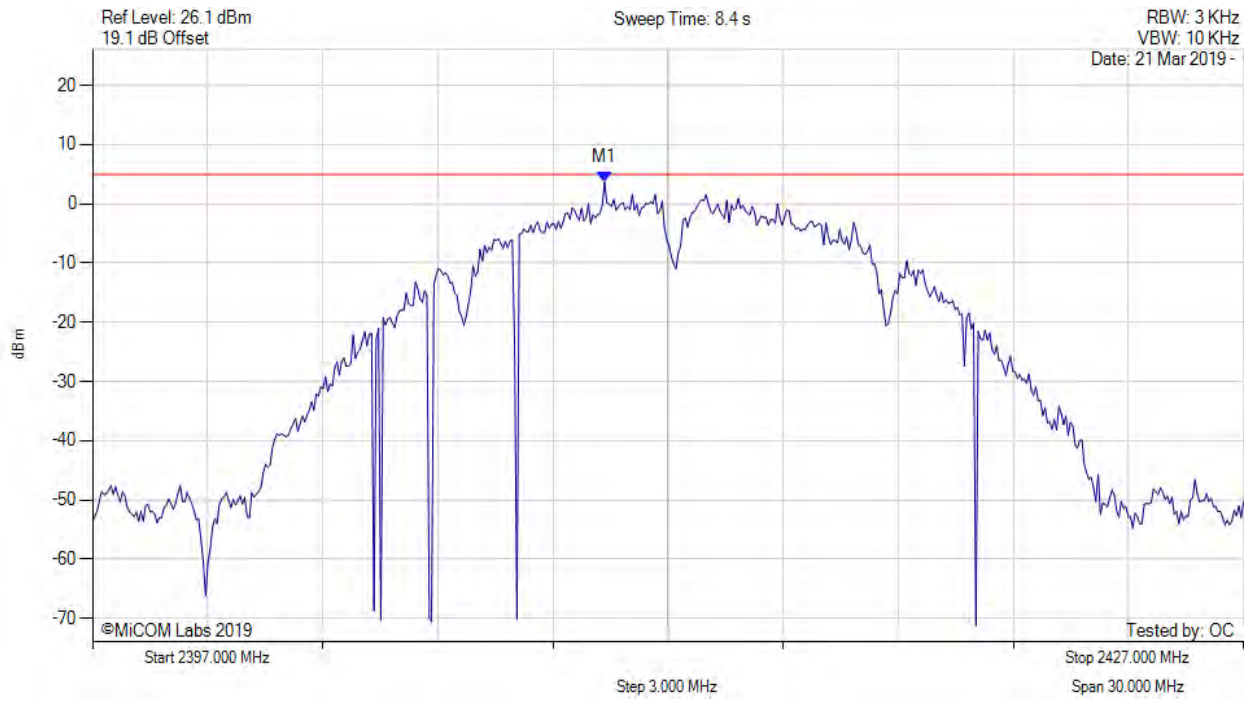
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2435.727 MHz : 4.572 dBm M2 : 2457.210 MHz : 12.892 dBm Delta1 : 31.423 MHz : 4.722 dB T1 : 2434.124 MHz : 2.932 dBm T2 : 2470.196 MHz : 2.932 dBm OBW : 36.072 MHz	Measured 6 dB Bandwidth: 31.423 MHz Limit: ≥500.0 kHz Margin: -30.92 MHz

back to matrix

A.2. Power Spectral Density

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11b, Channel: 2412.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

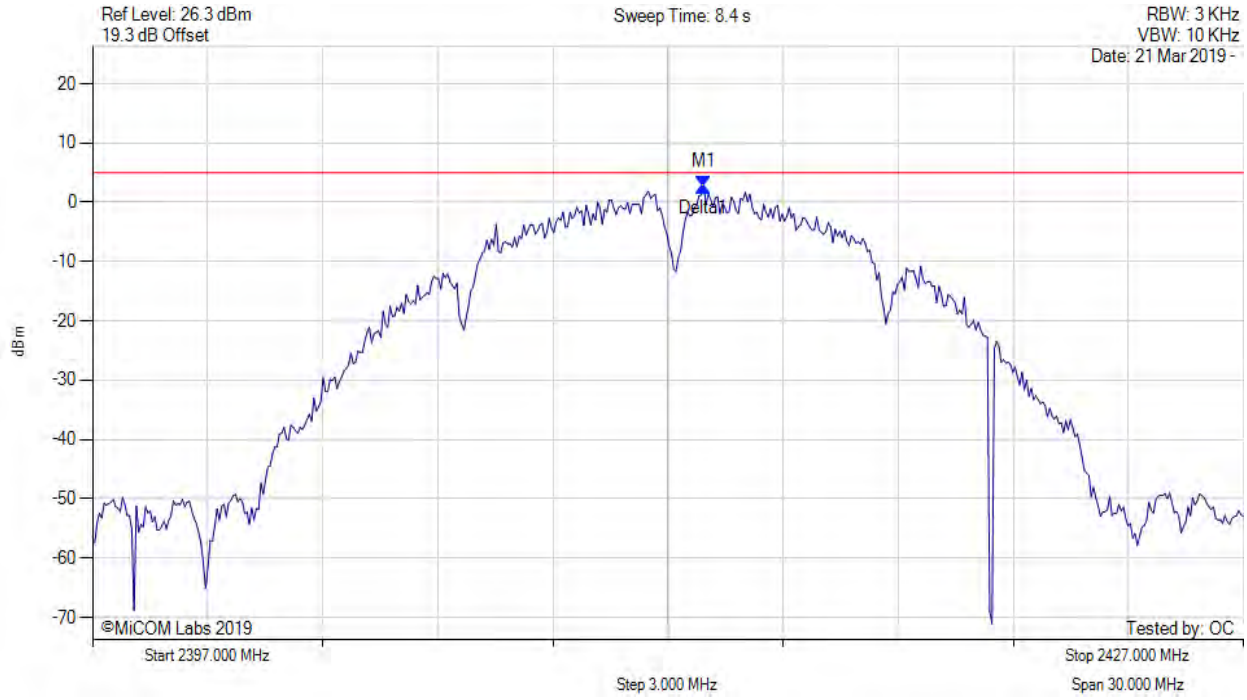


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2410.347 MHz : 3.660 dBm	Limit: ≤ 4.990 dBm Margin: -1.33 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11b, Channel: 2412.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

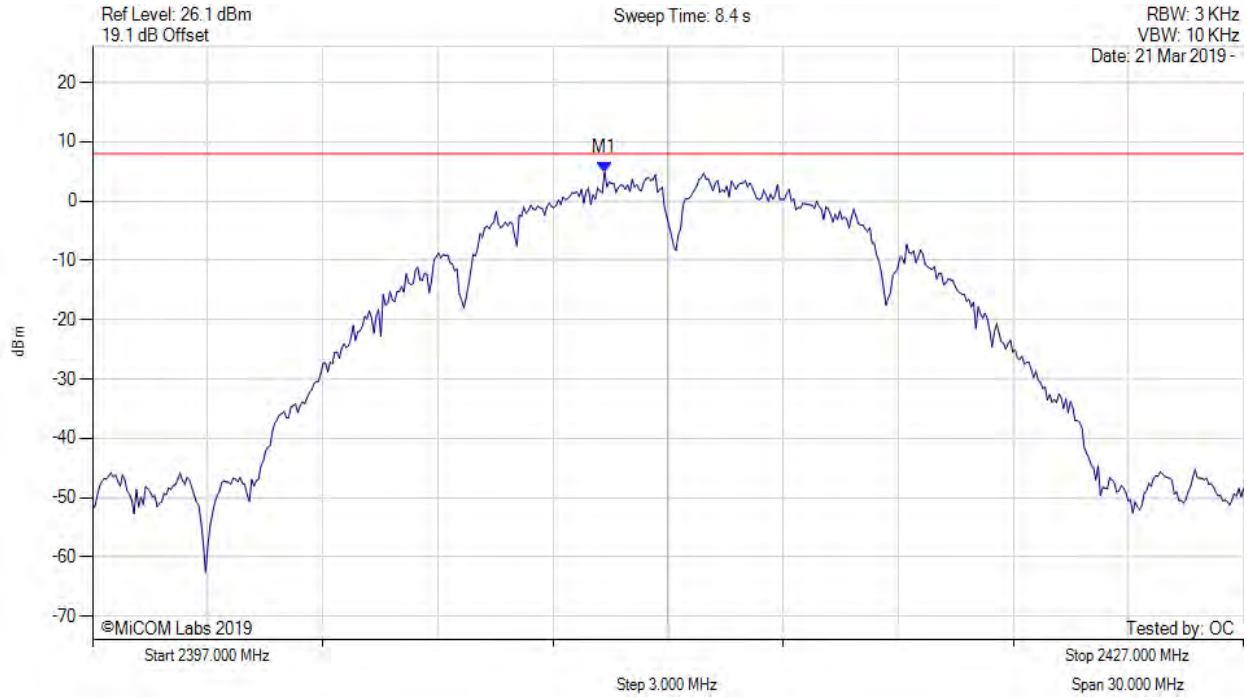


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2412.932 MHz : 2.593 dBm Delta1 : 0 Hz : 0.000 dB	Limit: ≤ 4.990 dBm Margin: -2.40 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11b, Channel: 2412.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

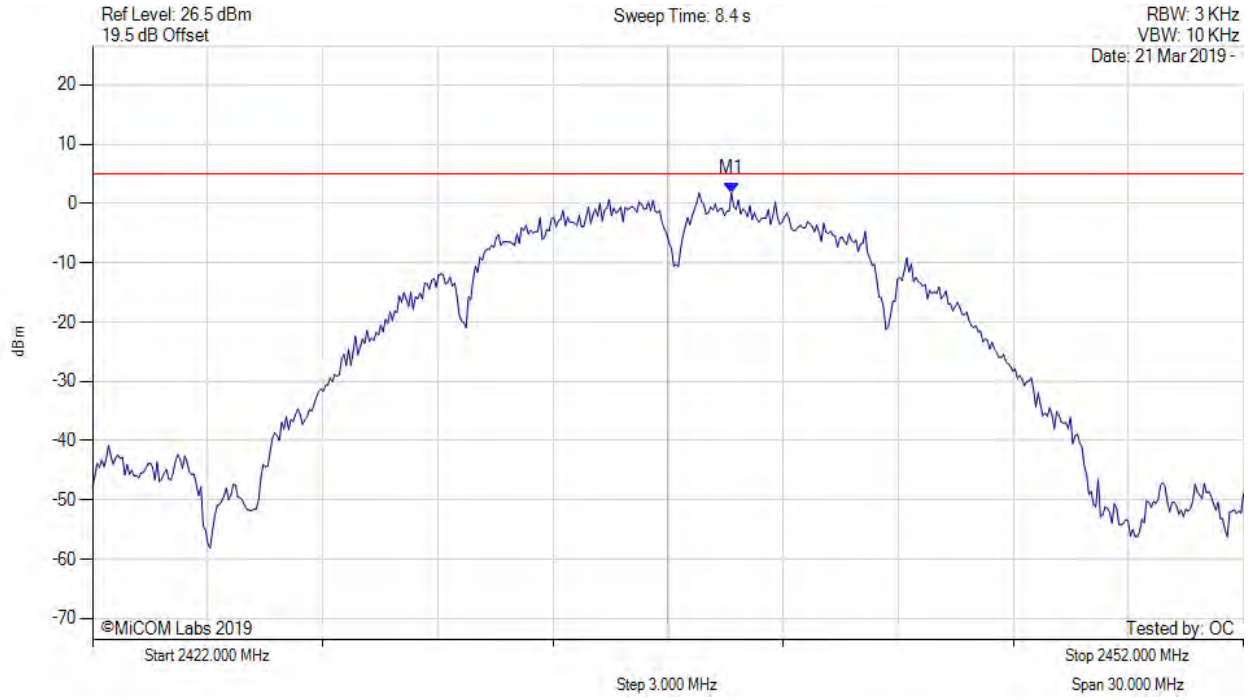


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2410.347 MHz : 4.867 dBm	Limit: ≤ 8.0 dBm Margin: -3.1 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11b, Channel: 2437.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

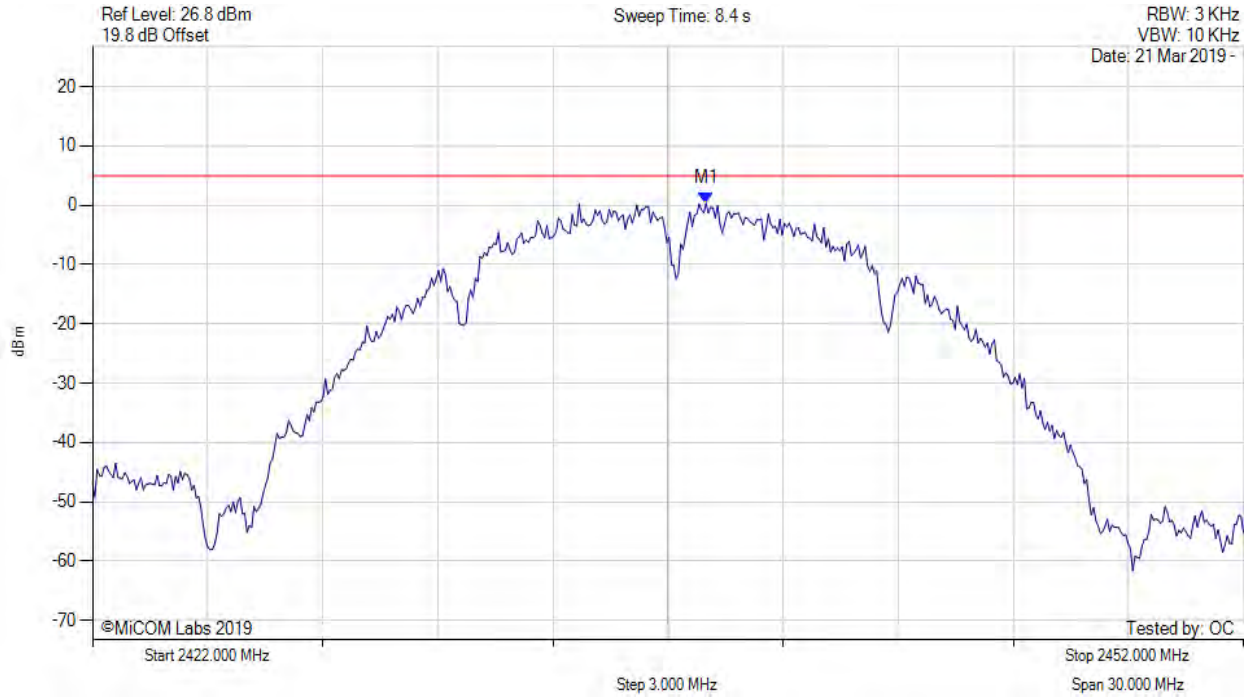


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2438.653 MHz : 1.794 dBm	Limit: ≤ 4.990 dBm Margin: -3.20 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11b, Channel: 2437.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

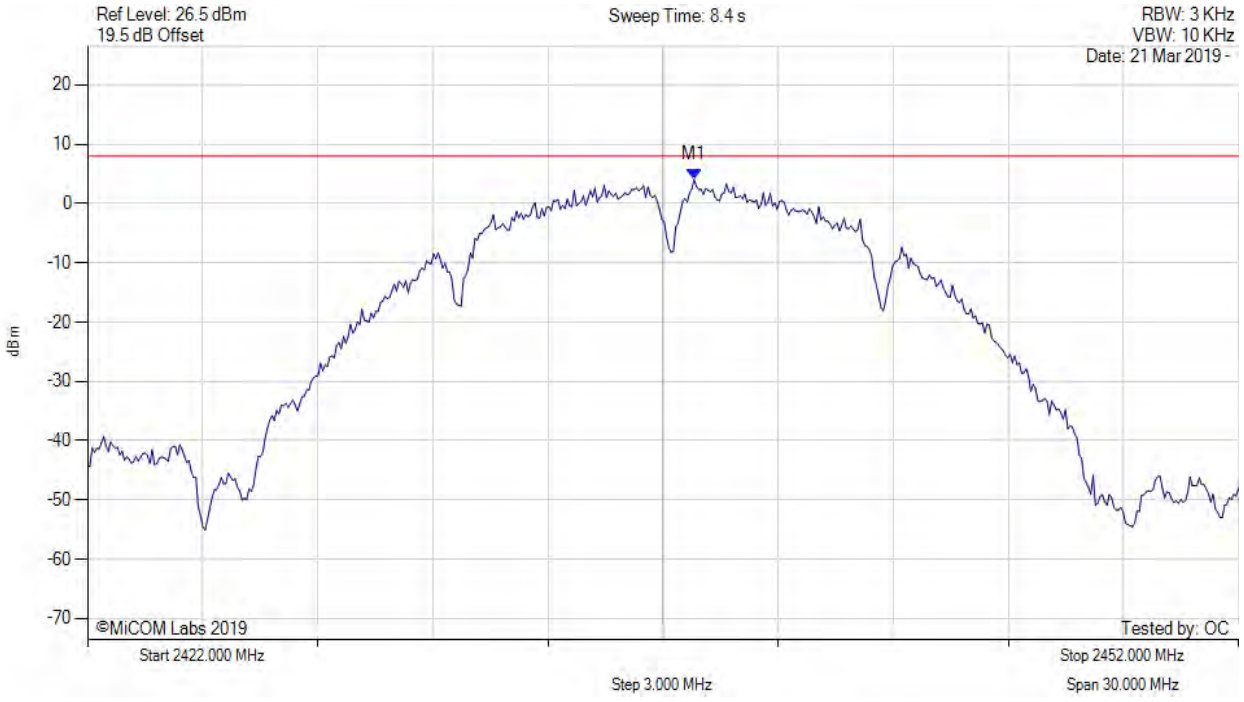


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2437.992 MHz : 0.310 dBm	Limit: ≤ 4.990 dBm Margin: -4.68 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11b, Channel: 2437.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

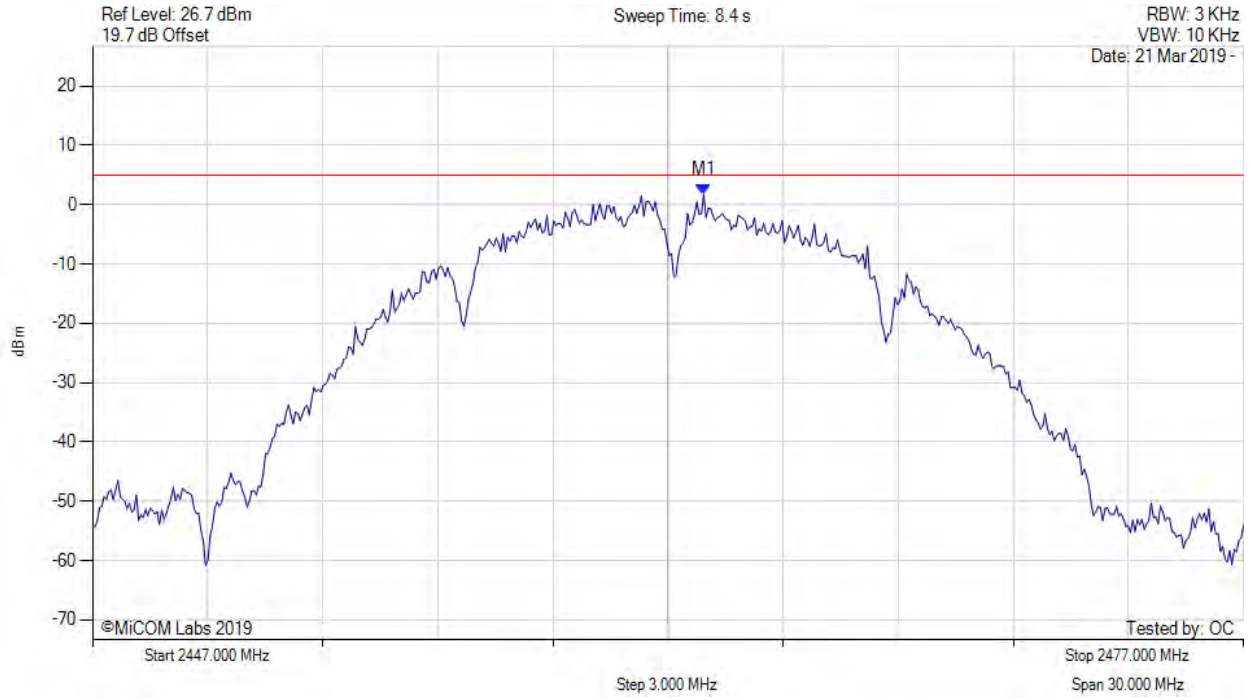


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2437.812 MHz : 4.063 dBm	Limit: ≤ 8.0 dBm Margin: -3.9 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11b, Channel: 2462.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

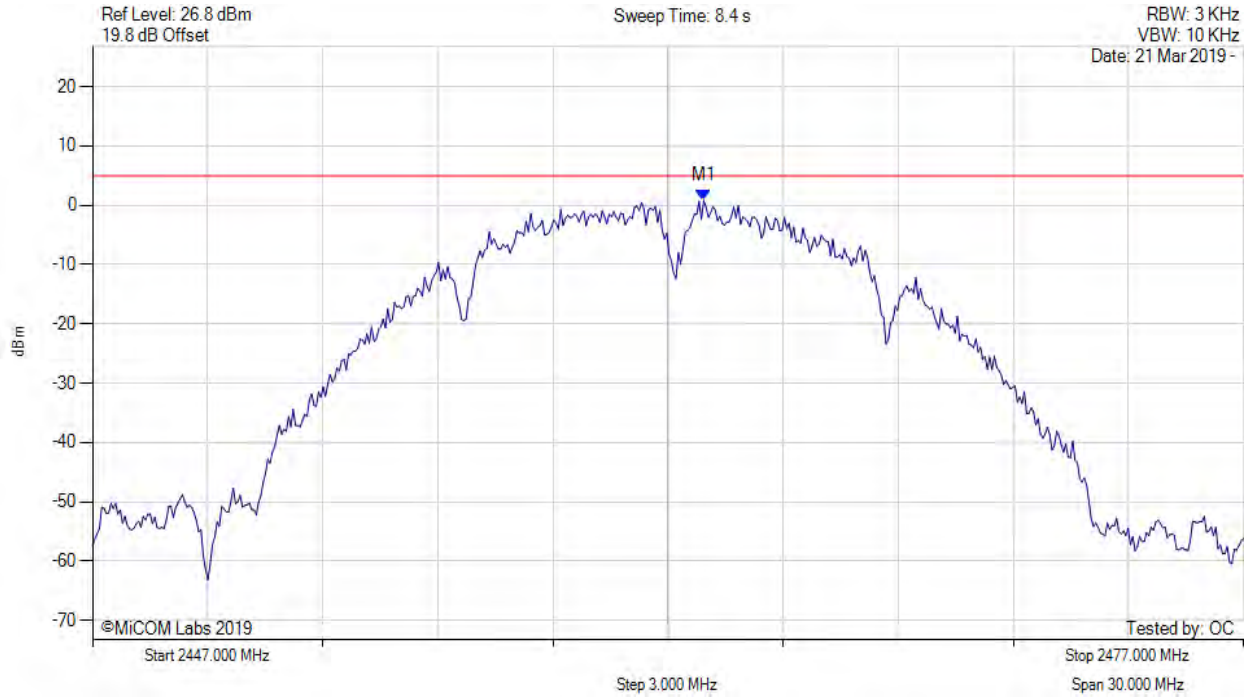


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2462.932 MHz : 1.750 dBm	Limit: ≤ 4.990 dBm Margin: -3.24 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11b, Channel: 2462.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

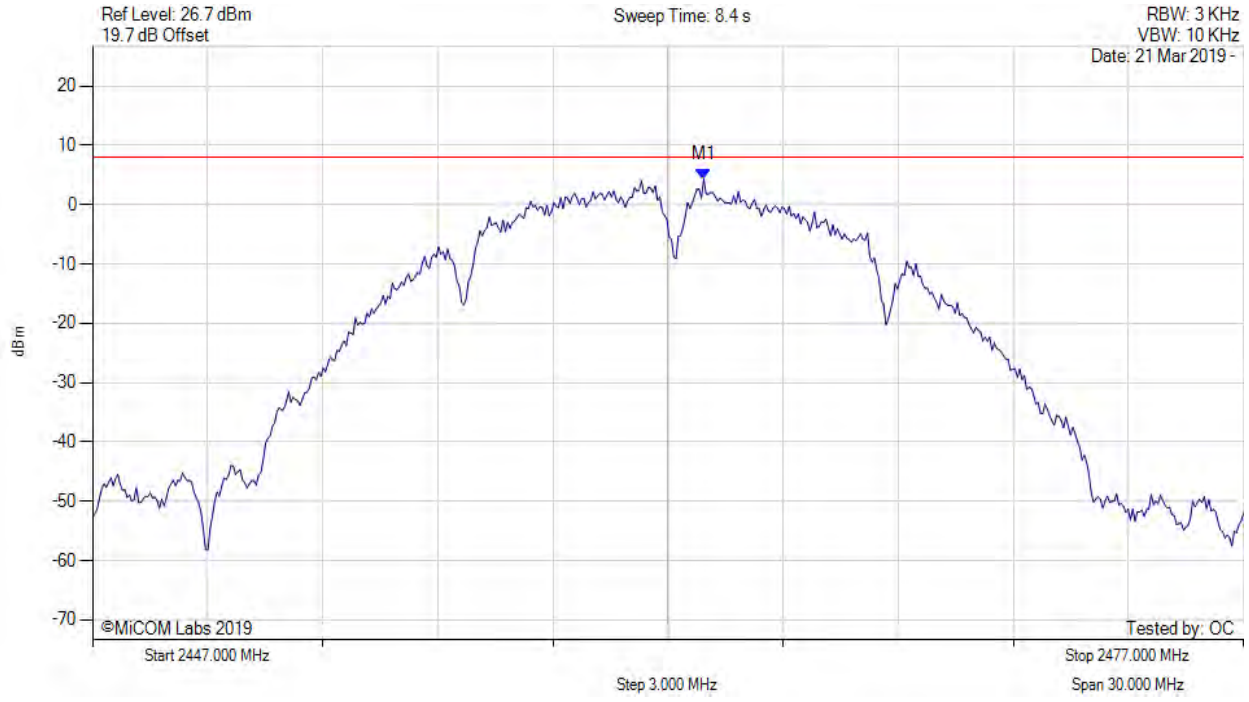


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2462.932 MHz : 0.784 dBm	Limit: ≤ 4.990 dBm Margin: -4.21 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11b, Channel: 2462.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

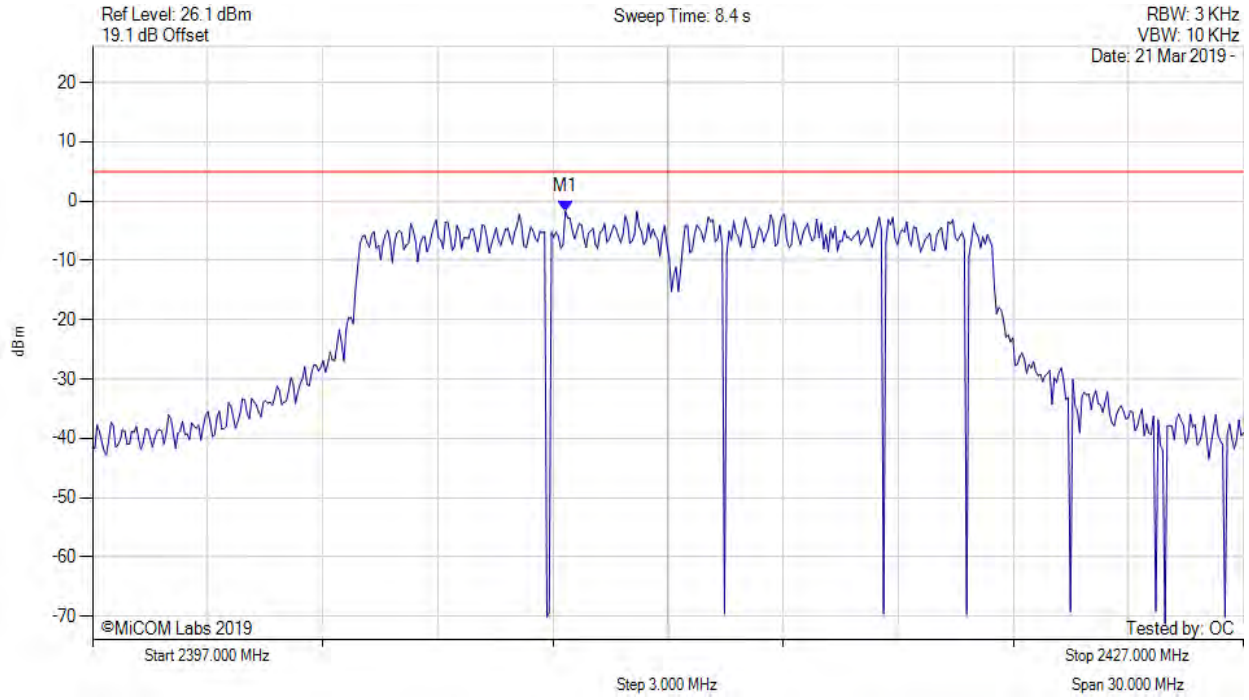


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2462.932 MHz : 4.304 dBm	Limit: ≤ 8.0 dBm Margin: -3.7 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11g, Channel: 2412.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

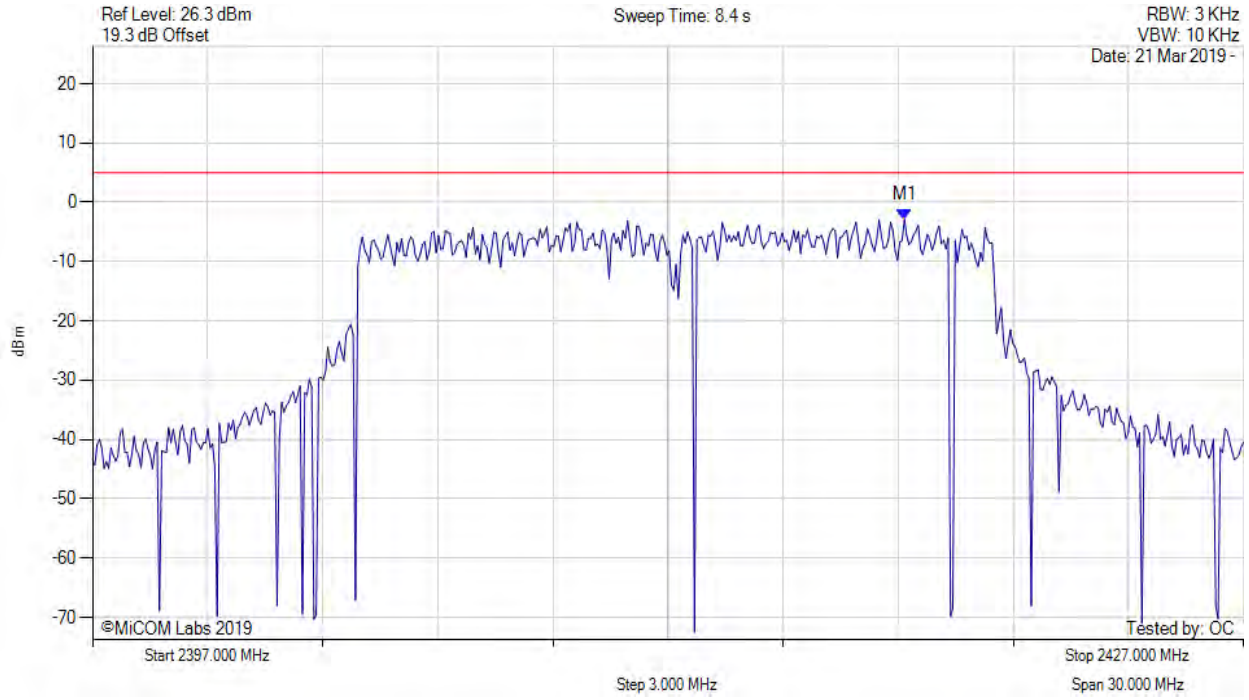


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2409.325 MHz : -1.679 dBm	Limit: ≤ 4.990 dBm Margin: 6.67 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11g, Channel: 2412.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

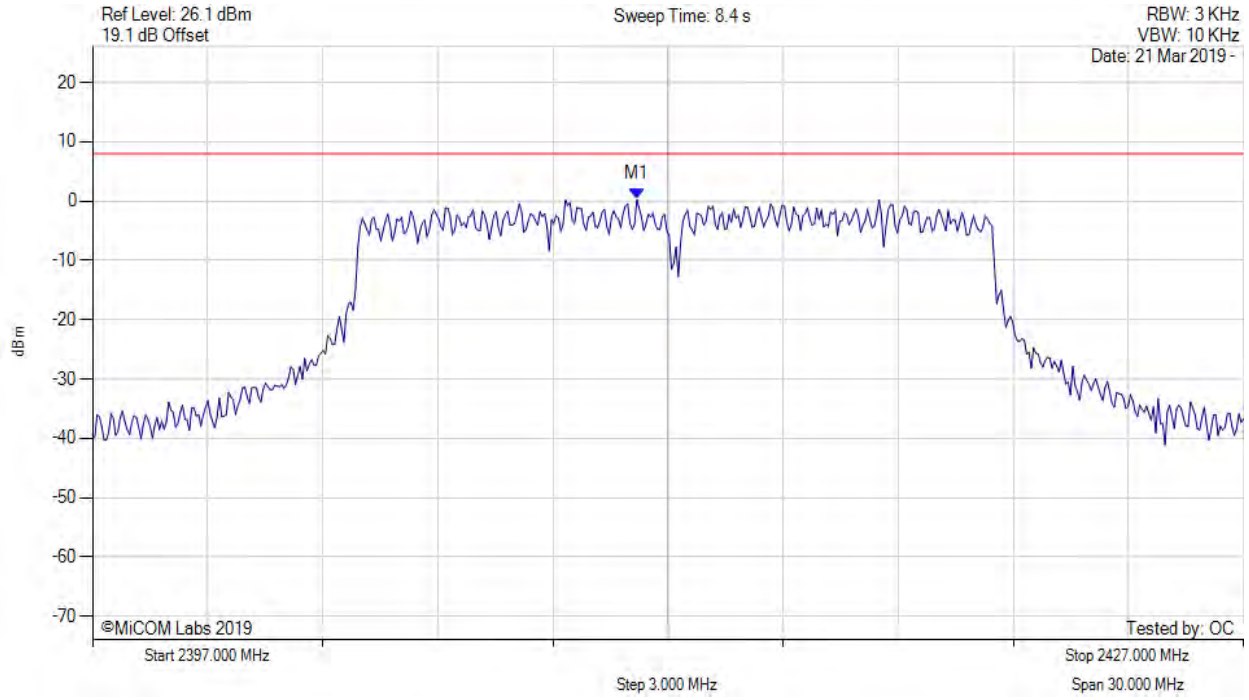


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2418.162 MHz : -2.909 dBm	Limit: ≤ 4.990 dBm Margin: 7.90 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11g, Channel: 2412.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

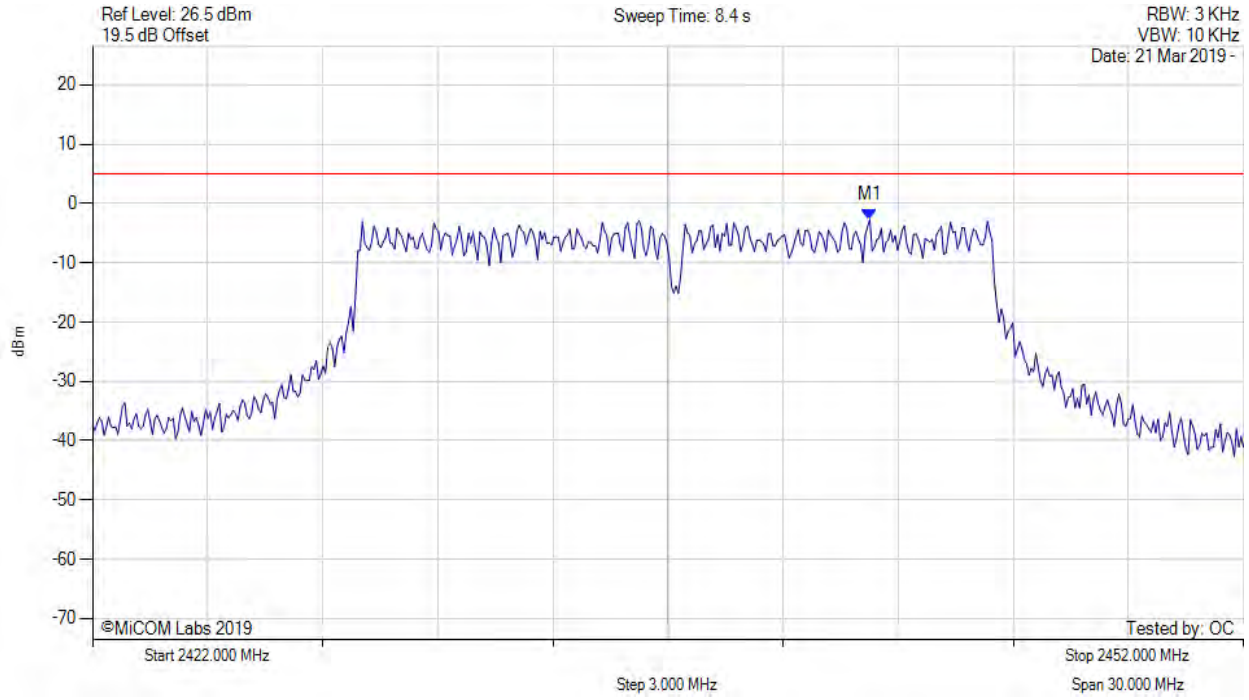


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2411.188 MHz : 0.265 dBm	Limit: ≤ 8.0 dBm Margin: -7.7 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11g, Channel: 2437.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

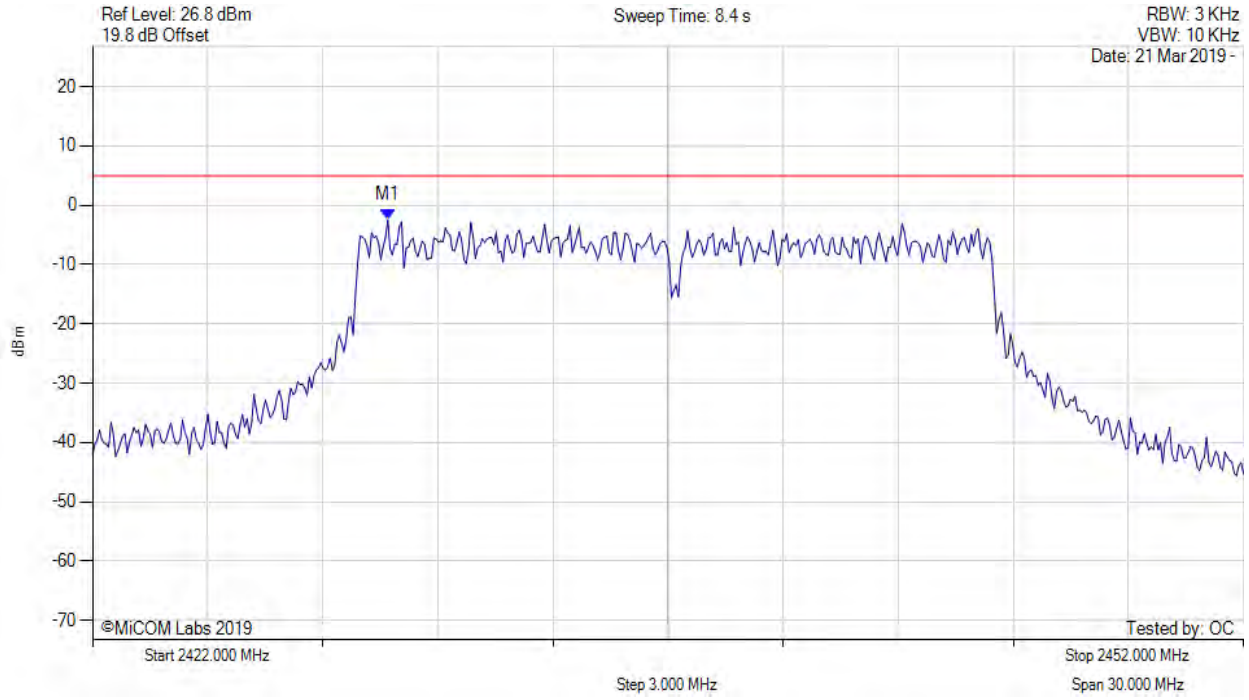


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2442.261 MHz : -2.705 dBm	Limit: ≤ 4.990 dBm Margin: 7.70 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11g, Channel: 2437.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

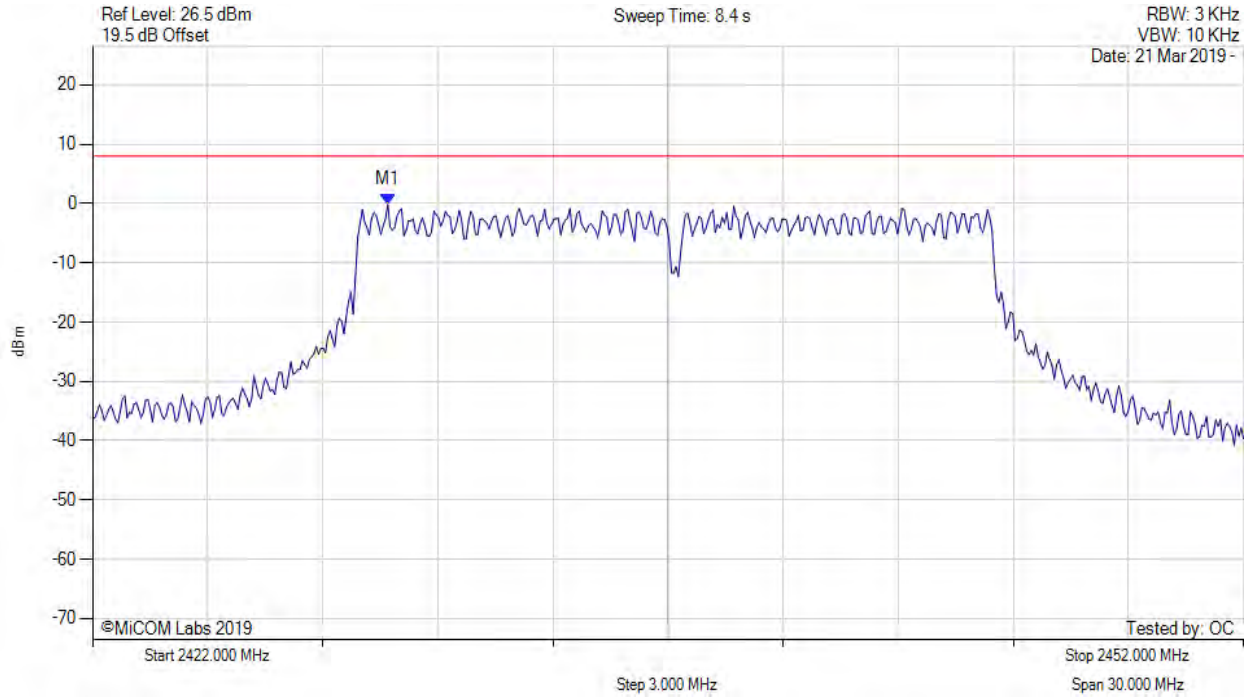


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2429.695 MHz : -2.480 dBm	Limit: ≤ 4.990 dBm Margin: 7.47 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11g, Channel: 2437.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

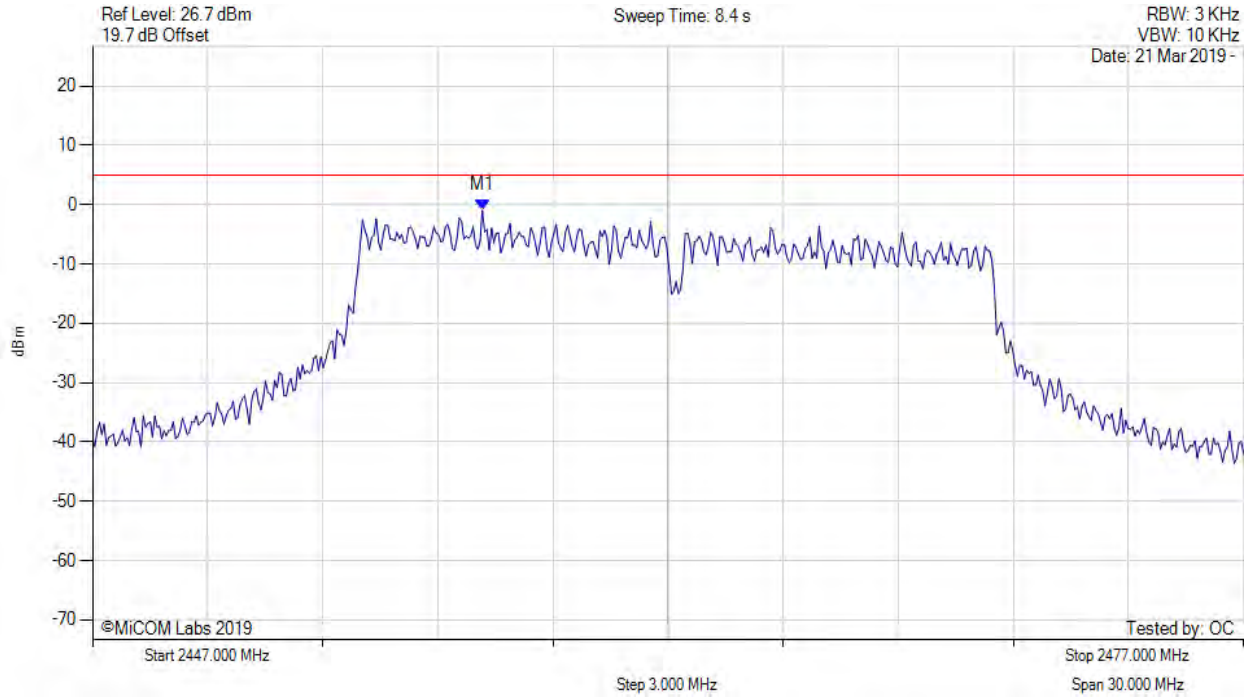


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2429.695 MHz : -0.179 dBm	Limit: ≤ 8.0 dBm Margin: -8.2 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11g, Channel: 2462.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

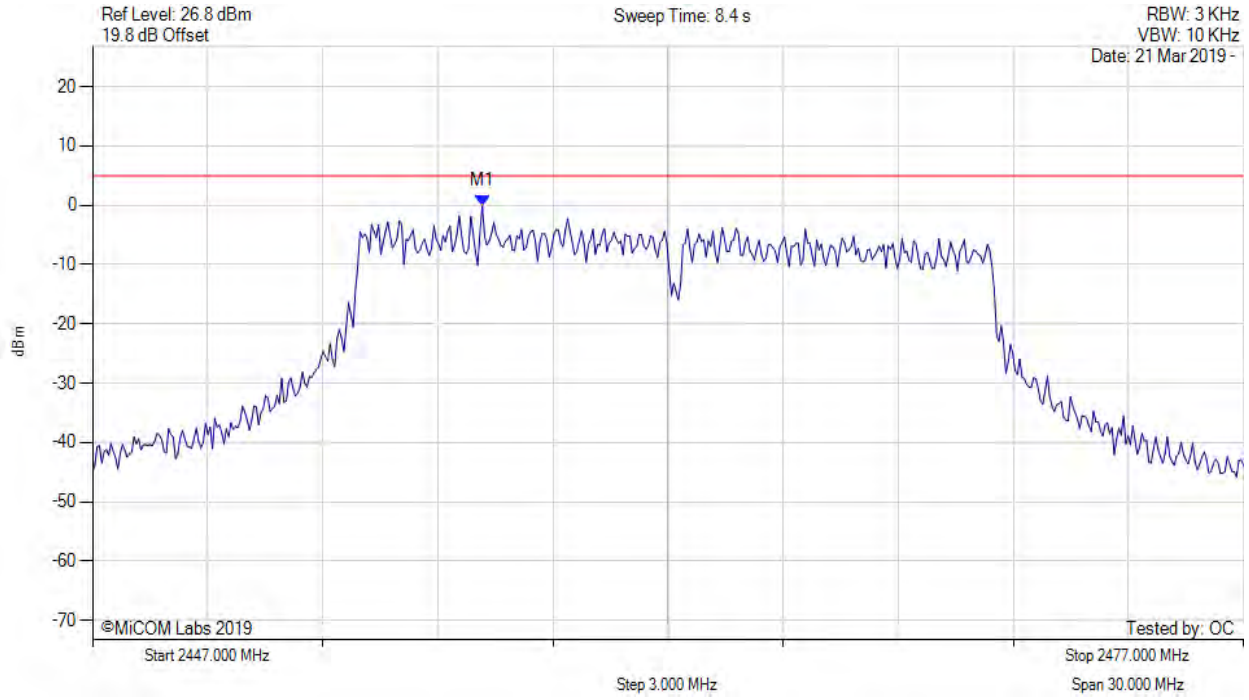


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2457.160 MHz : -0.991 dBm	Limit: ≤ 4.990 dBm Margin: 5.98 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11g, Channel: 2462.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

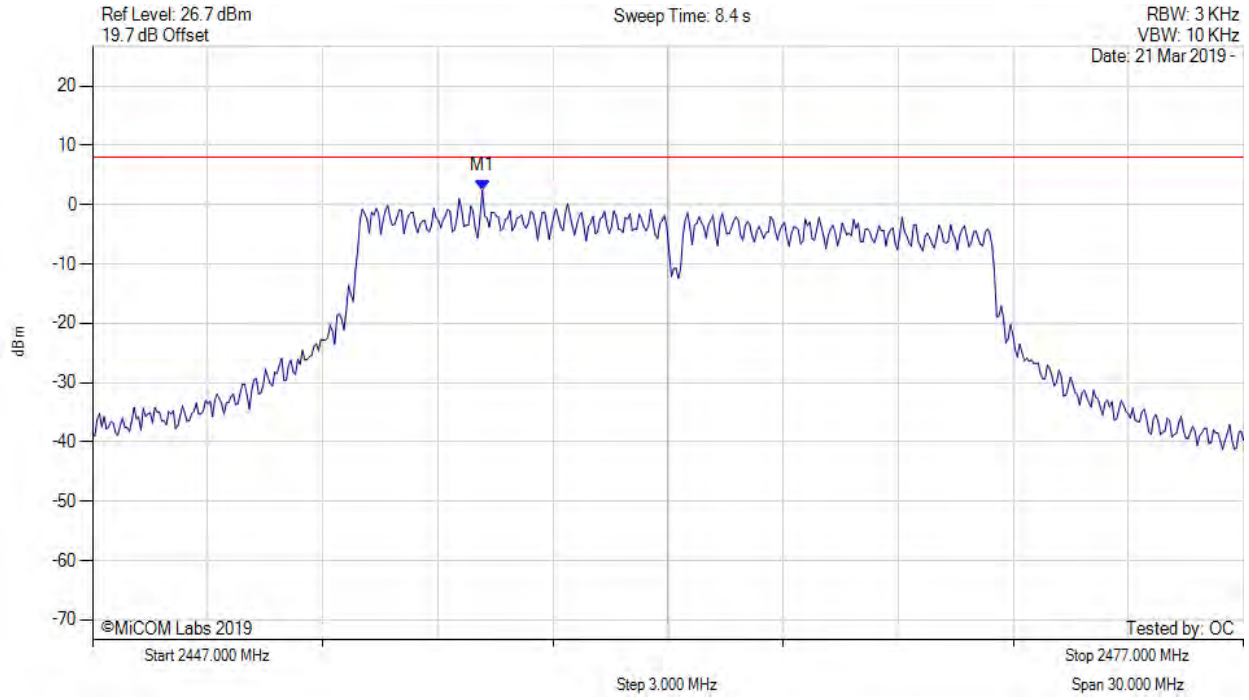


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2457.160 MHz : -0.139 dBm	Limit: ≤ 4.990 dBm Margin: 5.13 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11g, Channel: 2462.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

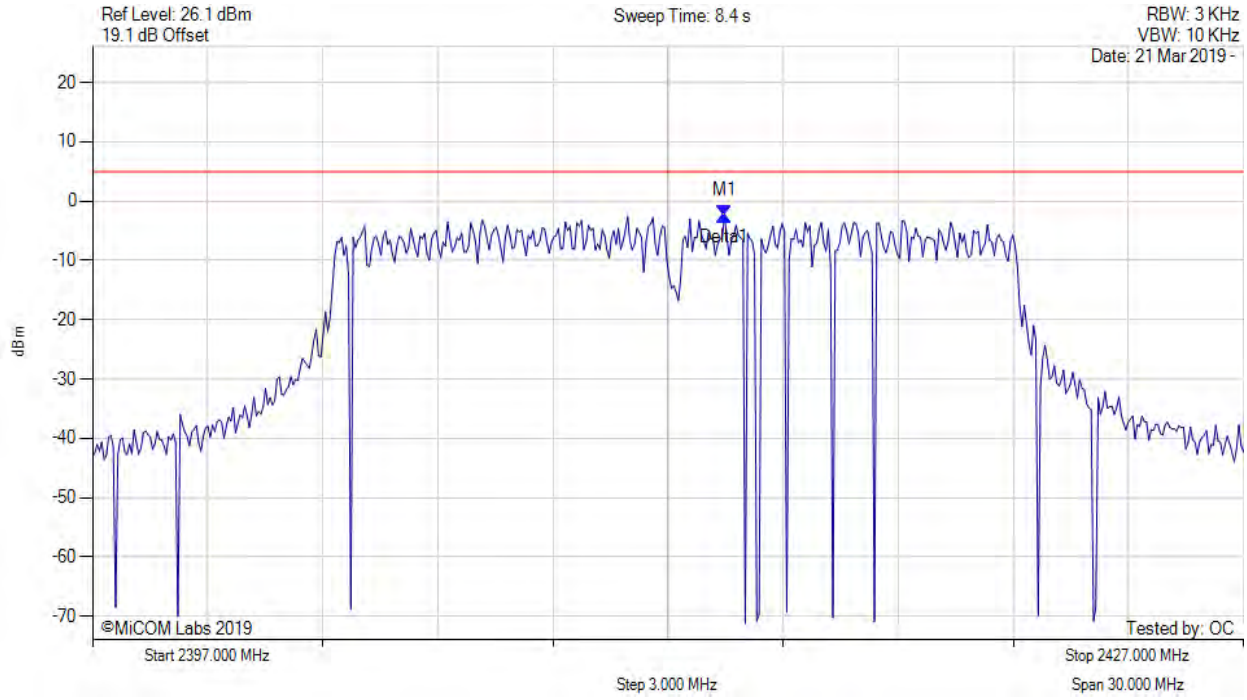


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2457.160 MHz : 2.466 dBm	Limit: ≤ 8.0 dBm Margin: -5.5 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11n HT-20, Channel: 2412.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

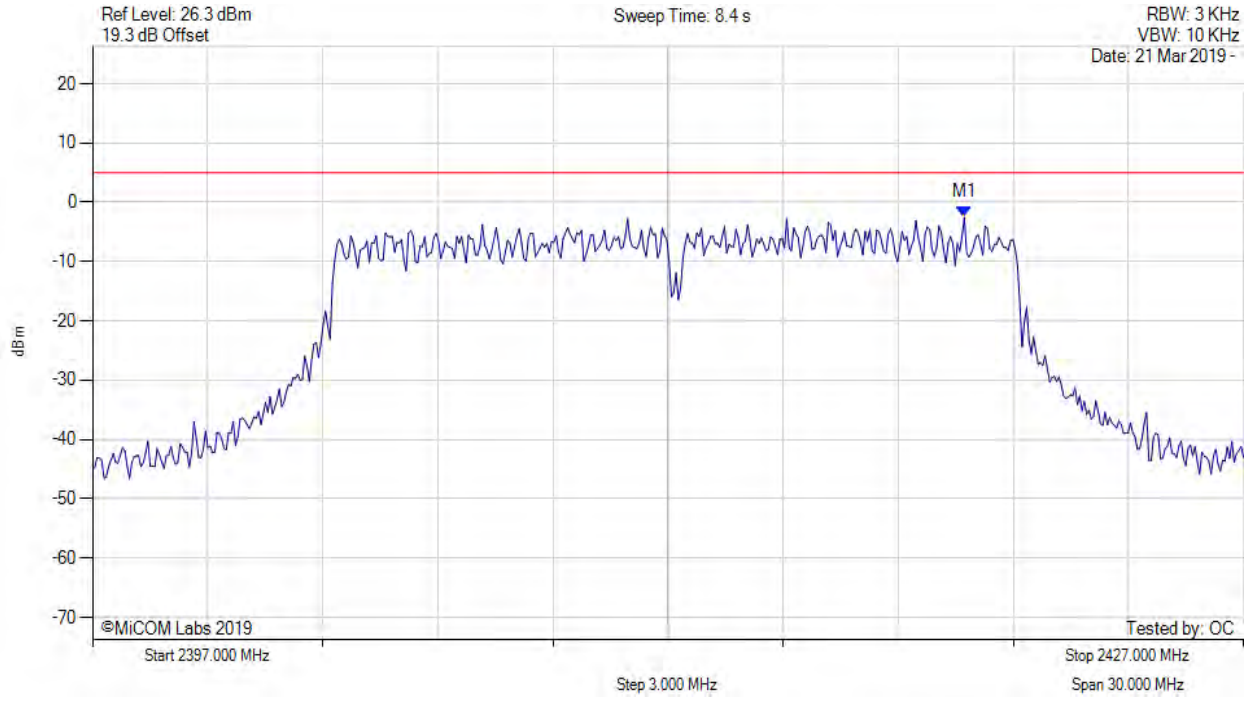


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2413.473 MHz : -2.513 dBm Delta1 : 0 Hz : 0.000 dB	Limit: ≤ 4.990 dBm Margin: 7.50 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11n HT-20, Channel: 2412.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

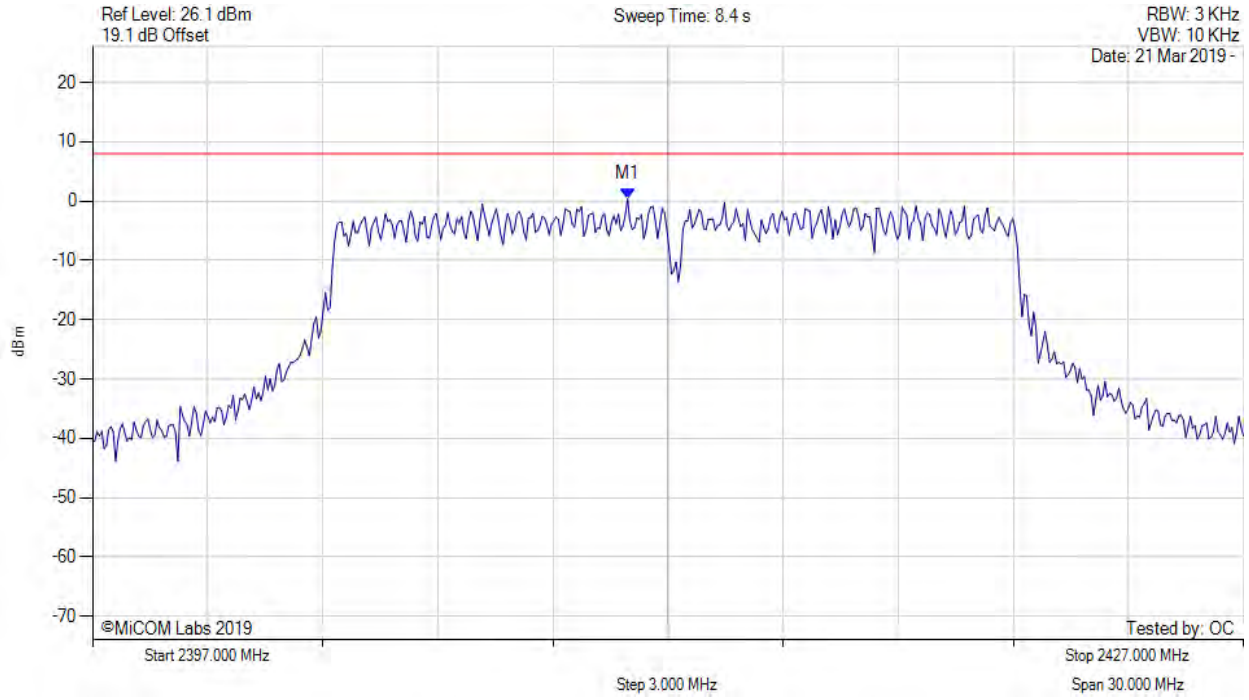


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2419.725 MHz : -2.534 dBm	Limit: ≤ 4.990 dBm Margin: 7.52 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11n HT-20, Channel: 2412.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

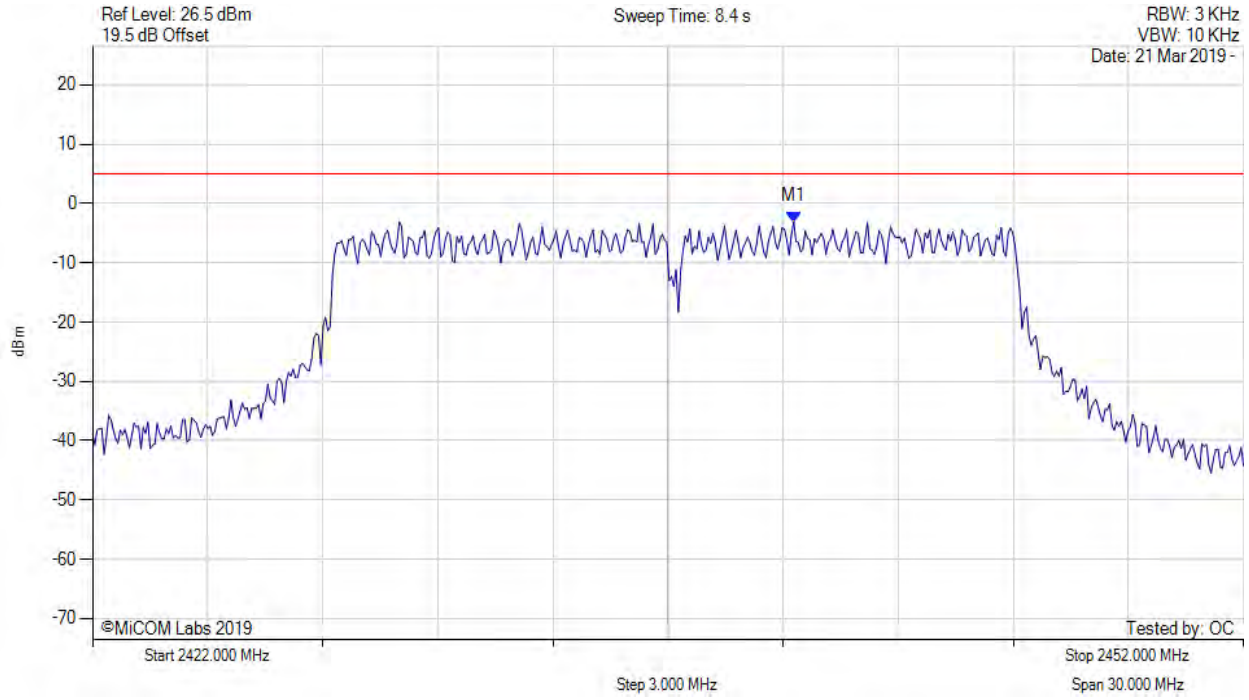


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2410.948 MHz : 0.362 dBm	Limit: ≤ 8.0 dBm Margin: -7.6 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11n HT-20, Channel: 2437.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

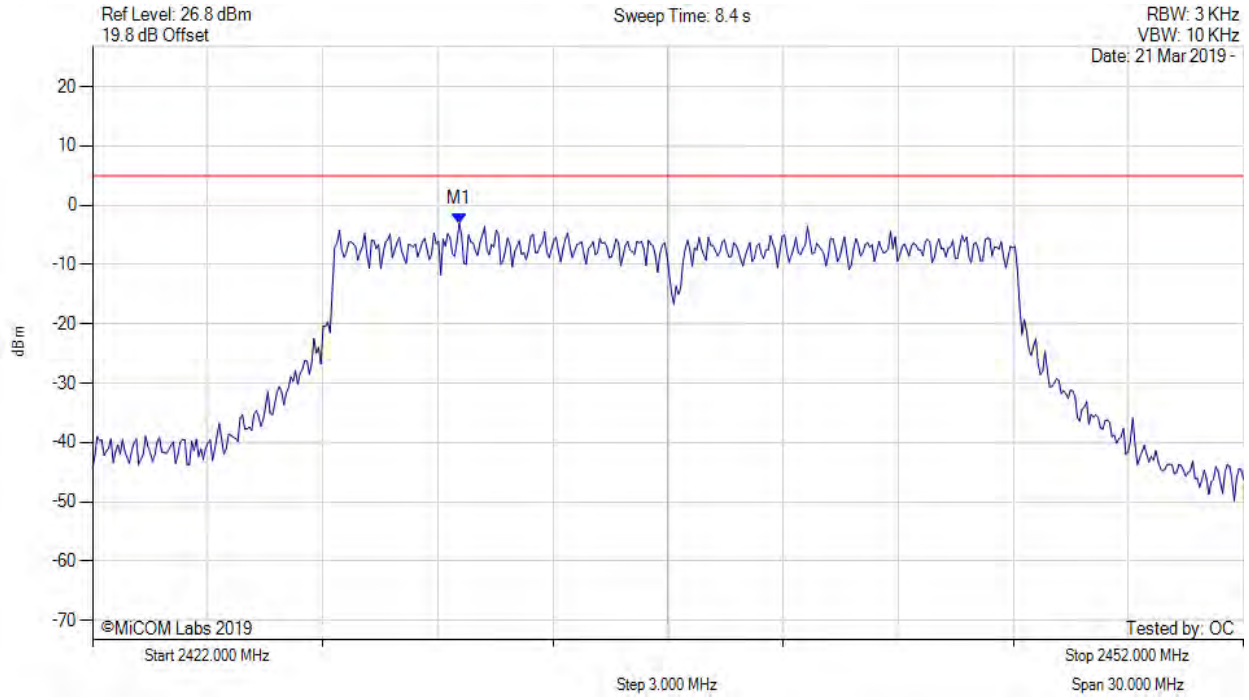


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2440.277 MHz : -3.085 dBm	Limit: ≤ 4.990 dBm Margin: 8.07 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11n HT-20, Channel: 2437.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

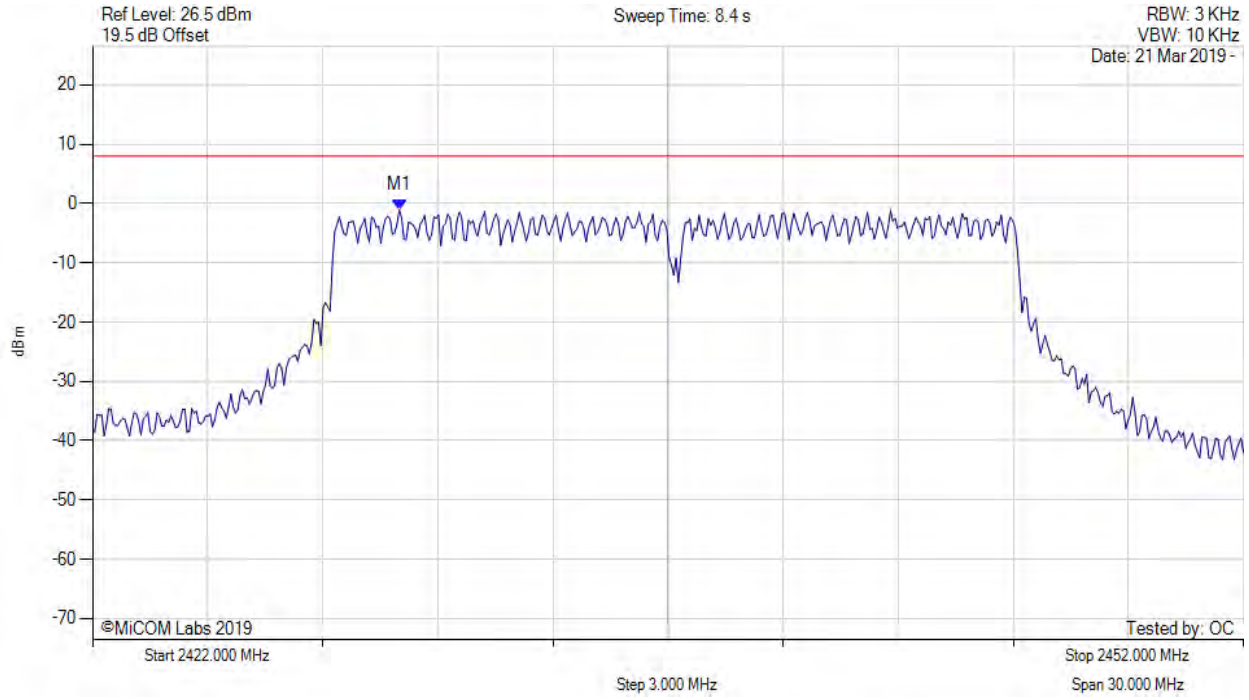


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2431.559 MHz : -3.078 dBm	Limit: ≤ 4.990 dBm Margin: 8.07 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11n HT-20, Channel: 2437.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

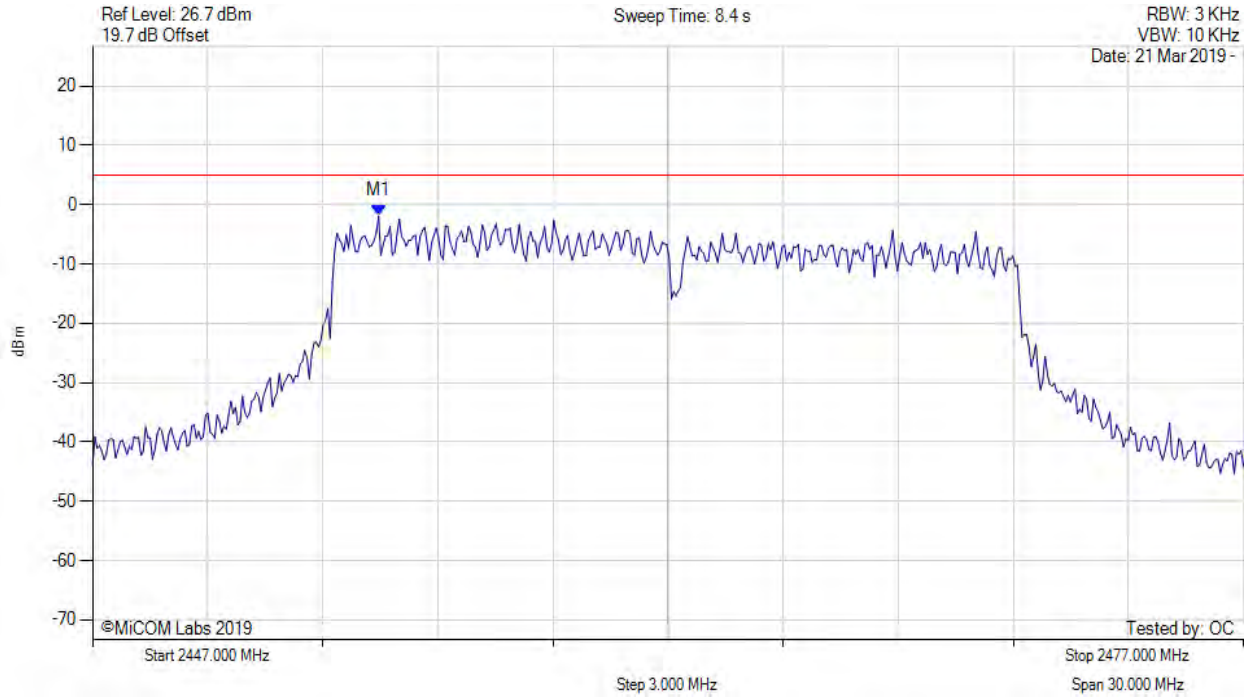


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2429.996 MHz : -1.101 dBm	Limit: ≤ 8.0 dBm Margin: -9.1 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11n HT-20, Channel: 2462.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

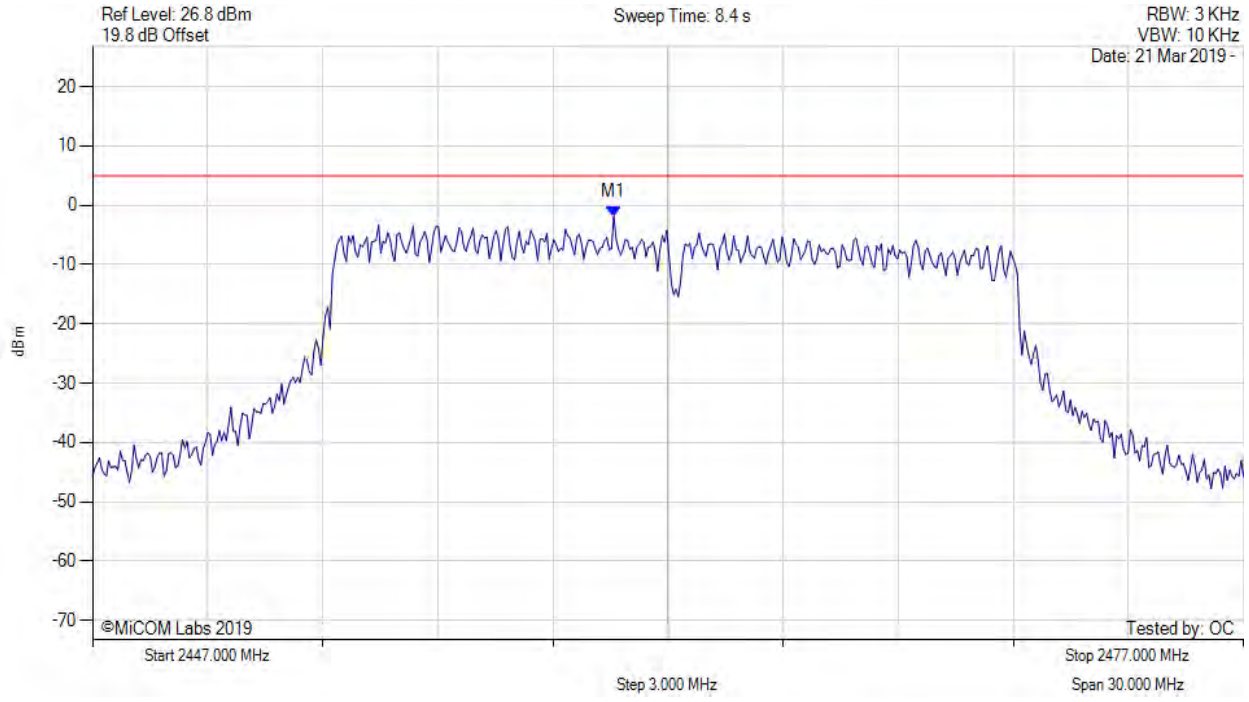


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2454.455 MHz : -1.919 dBm	Limit: ≤ 4.990 dBm Margin: 6.91 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11n HT-20, Channel: 2462.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

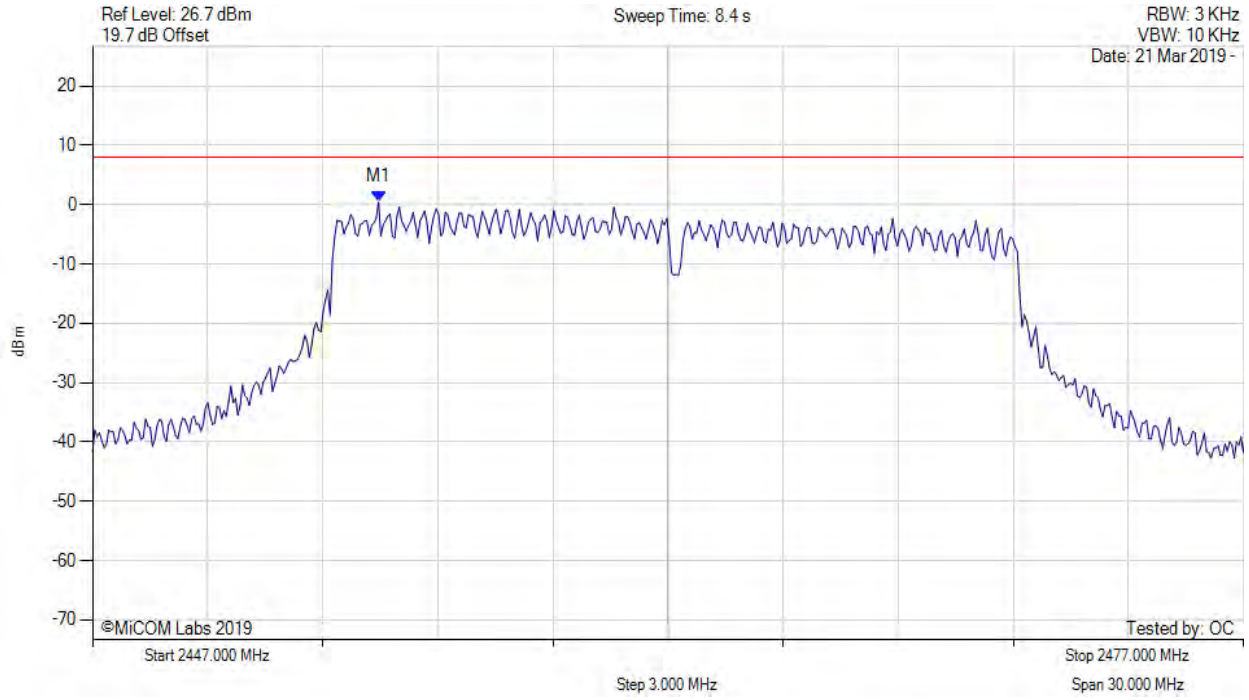


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2460.587 MHz : -1.880 dBm	Limit: ≤ 4.990 dBm Margin: 6.87 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11n HT-20, Channel: 2462.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

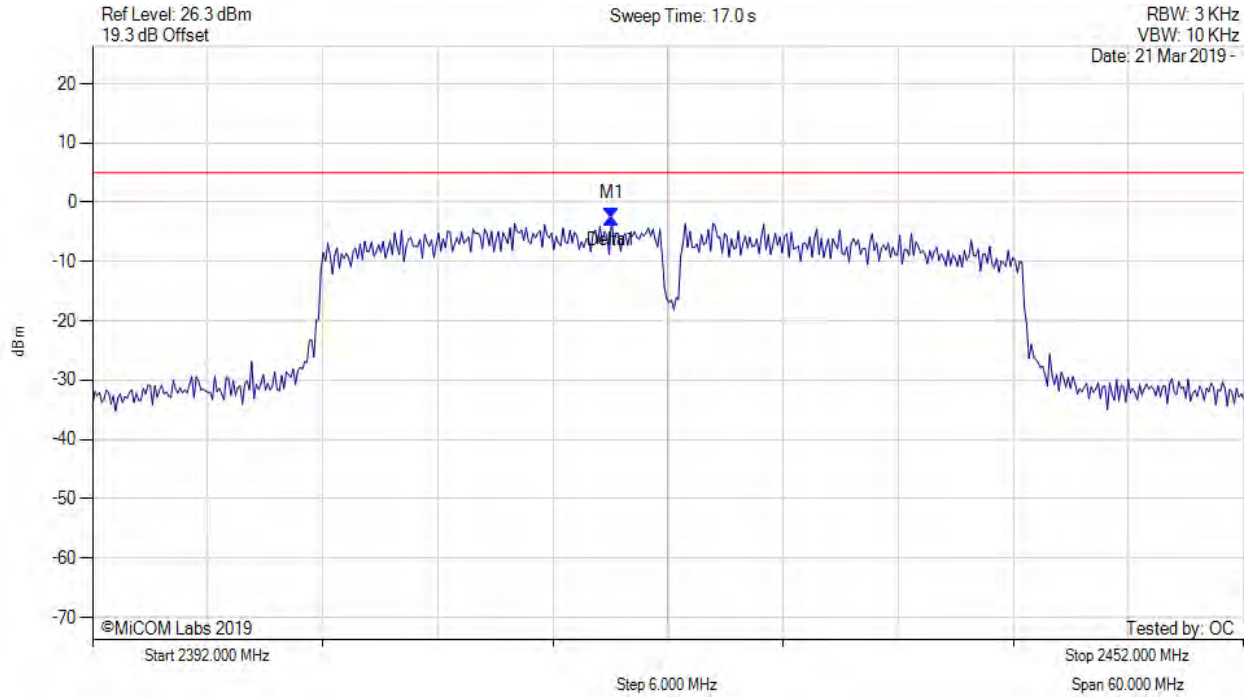


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2454.455 MHz : 0.429 dBm	Limit: ≤ 8.0 dBm Margin: -7.6 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11n HT-40, Channel: 2422.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

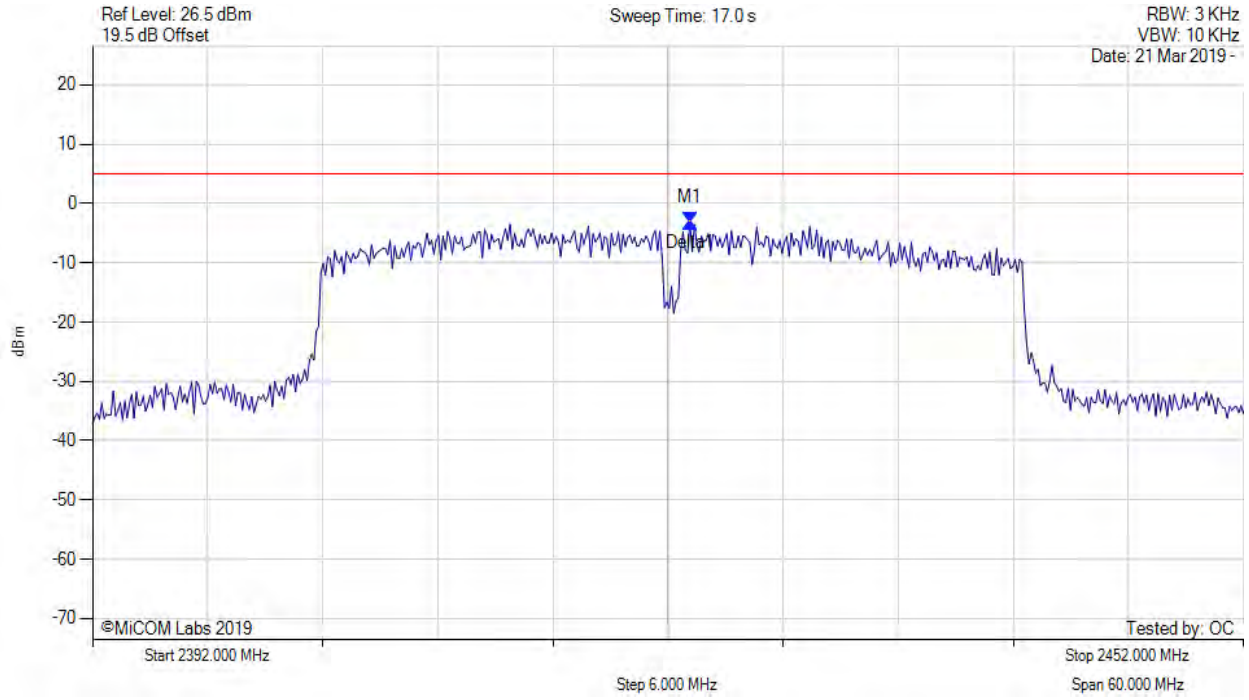


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2419.054 MHz : -2.807 dBm Delta1 : 0 Hz : 0.000 dB	Limit: ≤ 4.990 dBm Margin: 7.80 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11n HT-40, Channel: 2422.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

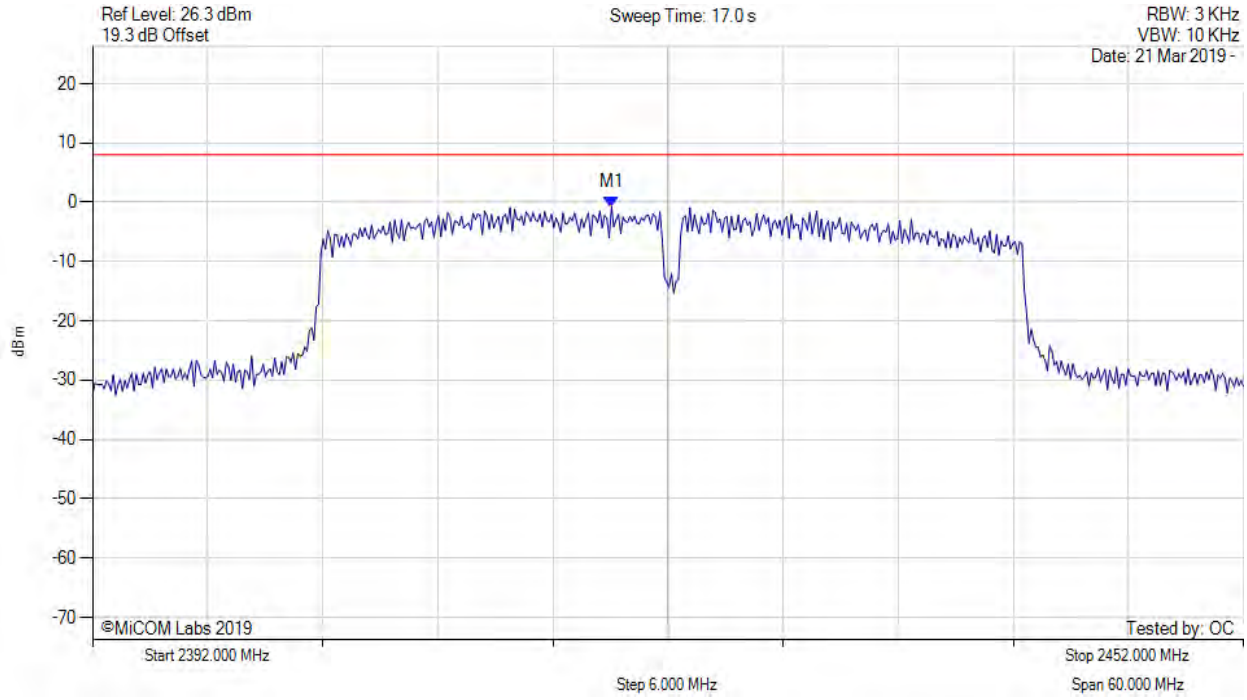


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2423.142 MHz : -3.152 dBm Delta1 : 0 Hz : 0.000 dB	Limit: ≤ 4.990 dBm Margin: 8.14 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11n HT-40, Channel: 2422.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

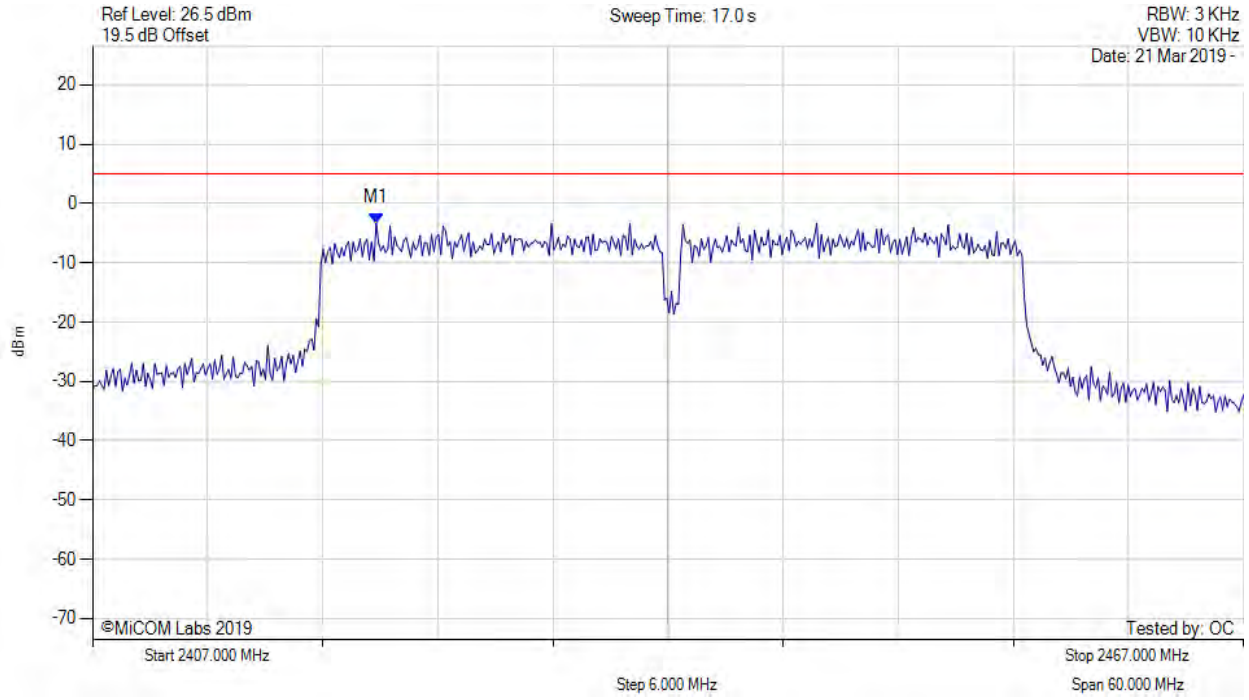


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2419.054 MHz : -0.773 dBm	Limit: ≤ 8.0 dBm Margin: -8.8 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11n HT-40, Channel: 2437.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

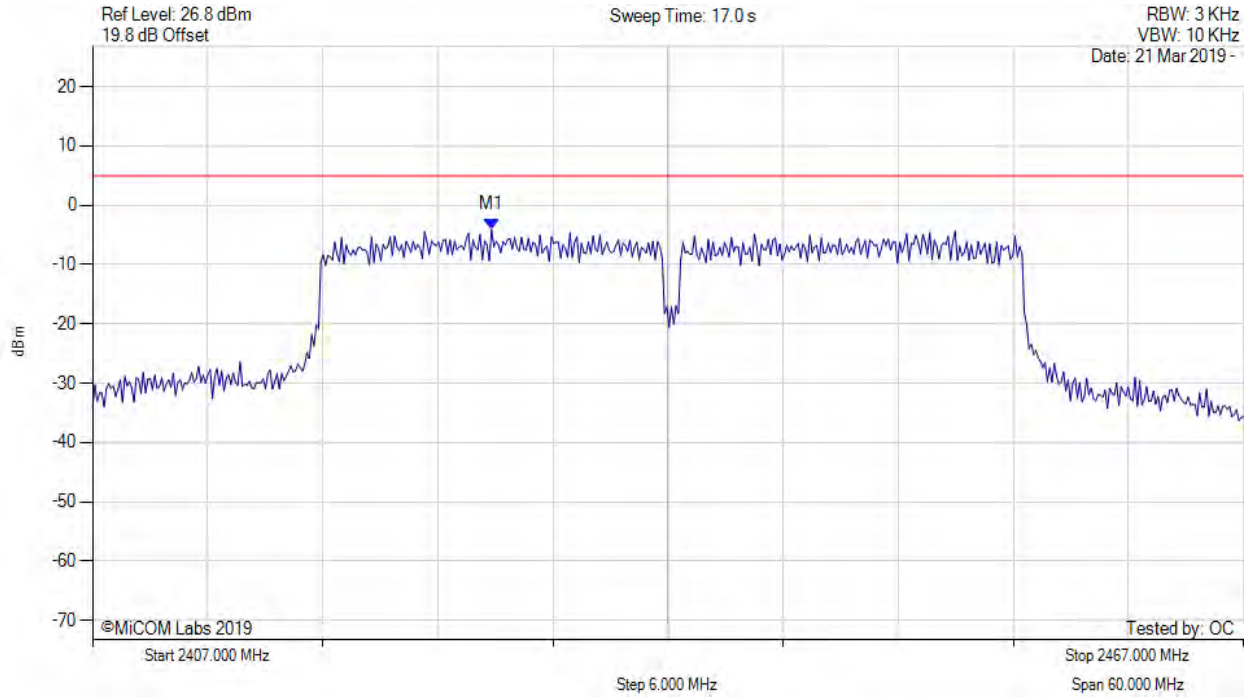


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2421.790 MHz : -3.321 dBm	Limit: ≤ 4.990 dBm Margin: 8.31 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11n HT-40, Channel: 2437.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

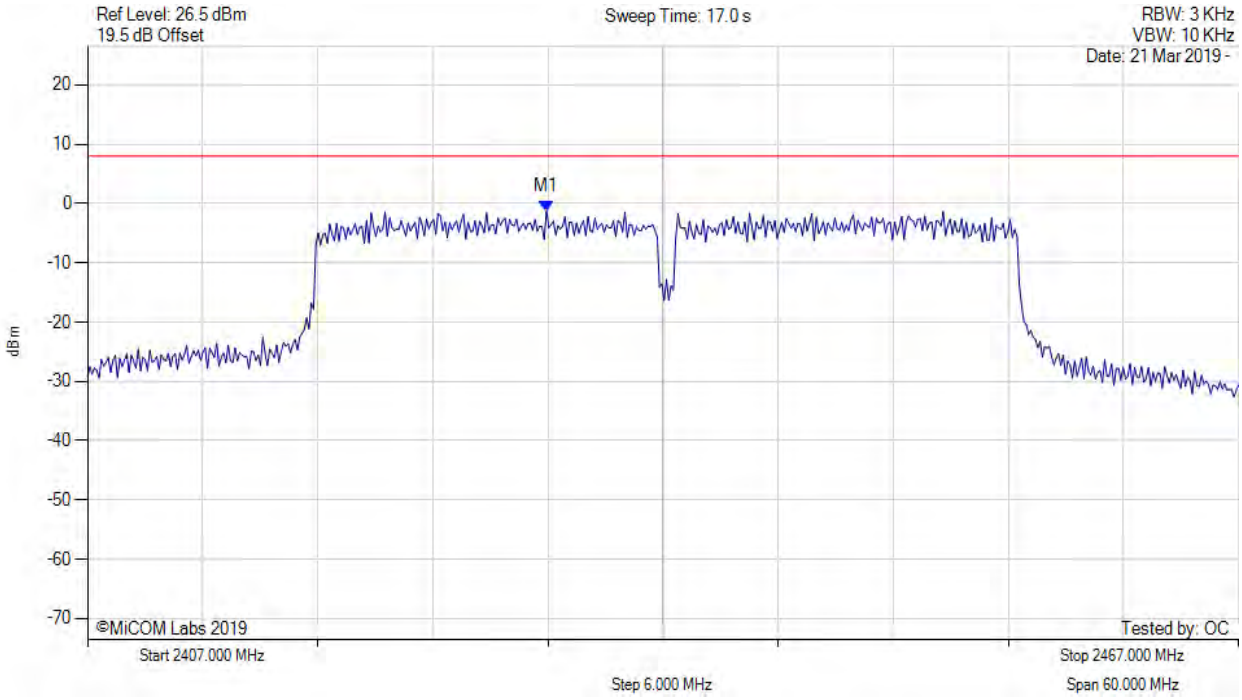


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2427.802 MHz : -4.099 dBm	Limit: ≤ 4.990 dBm Margin: 9.09 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11n HT-40, Channel: 2437.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc

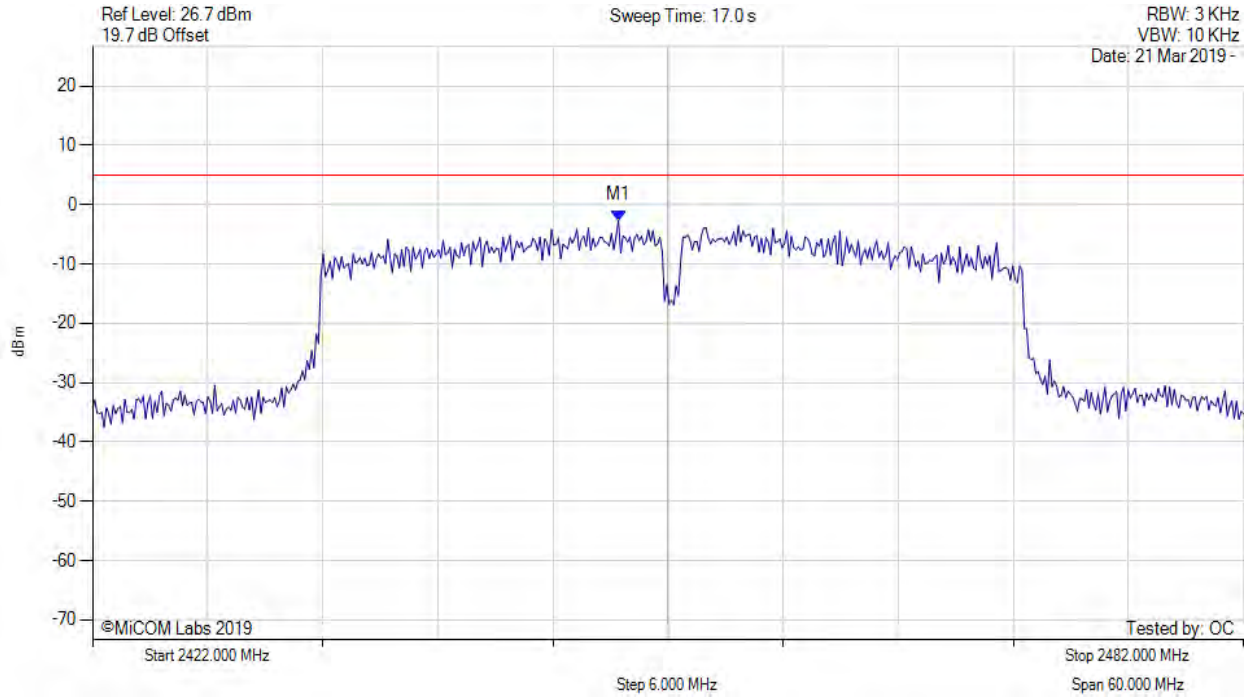


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2430.928 MHz : -1.240 dBm	Limit: ≤ 8.0 dBm Margin: -9.3 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11n HT-40, Channel: 2452.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

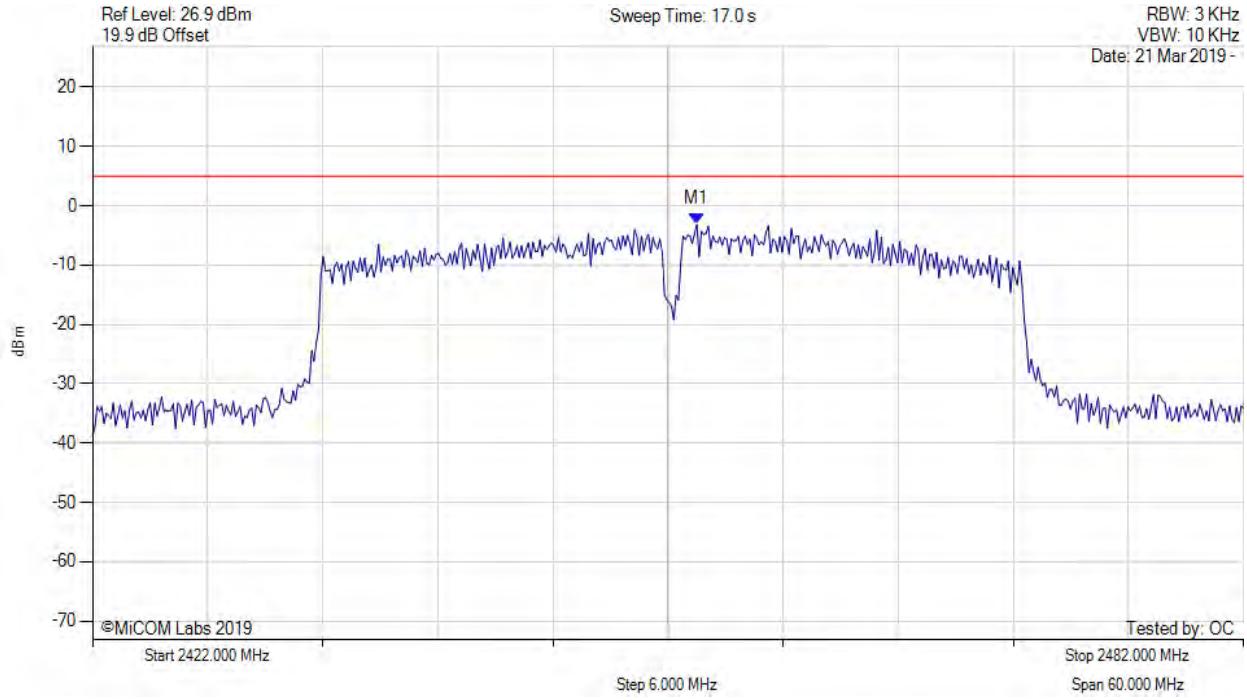


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2449.415 MHz : -2.665 dBm	Limit: ≤ 4.990 dBm Margin: 7.66 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11n HT-40, Channel: 2452.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

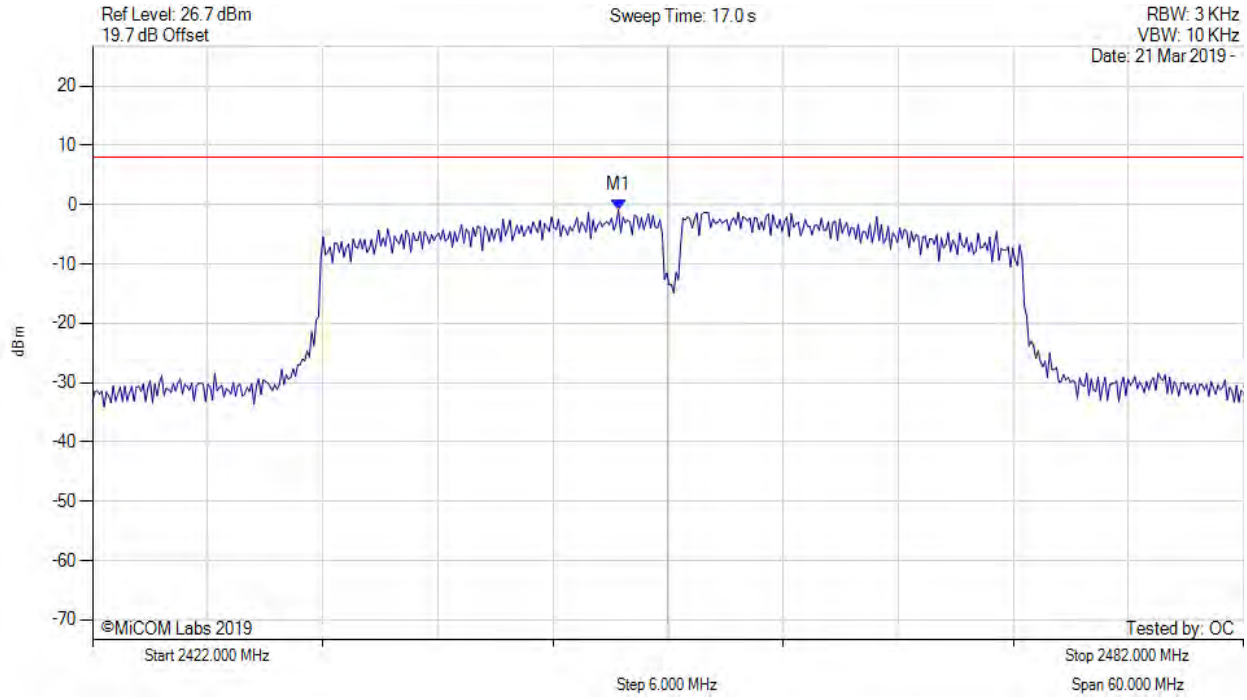


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2453.503 MHz : -3.138 dBm	Limit: ≤ 4.990 dBm Margin: 8.13 dB

back to matrix

POWER SPECTRAL DENSITY - PEAK

Variant: 802.11n HT-40, Channel: 2452.00 MHz, SUM, Temp: 20, Voltage: 24 Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2449.415 MHz : -0.808 dBm	Limit: ≤ 8.0 dBm Margin: -8.8 dB

back to matrix

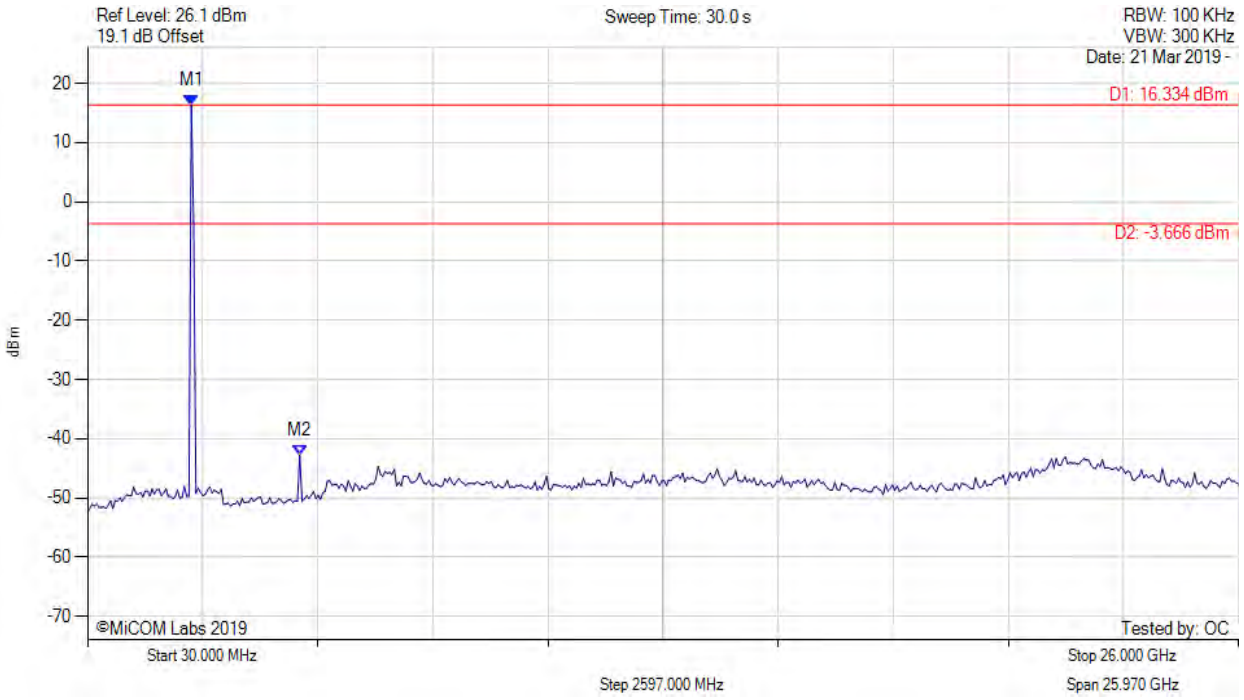
A.3. Emissions

A.3.1. Conducted Emissions

A.3.1.1. Conducted Spurious Emissions

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11b, Channel: 2412.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

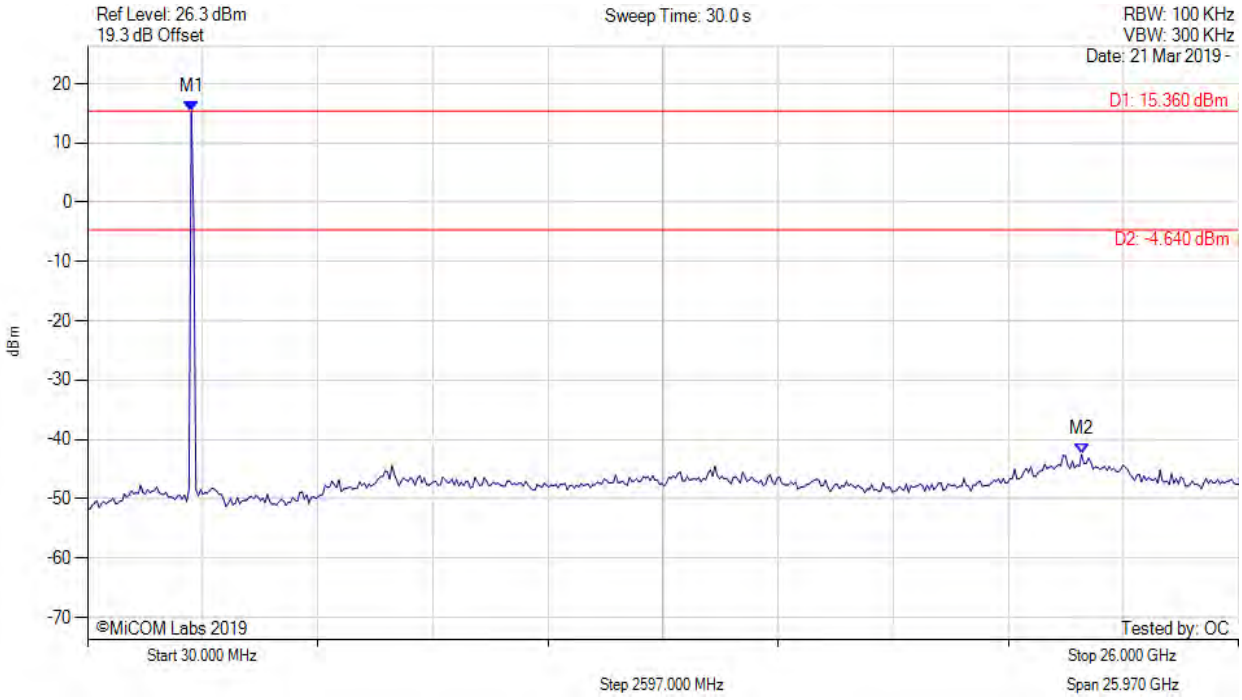


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2371.984 MHz : 16.334 dBm M2 : 4818.056 MHz : -42.795 dBm	Limit: -3.67 dBm Margin: -39.13 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11b, Channel: 2412.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

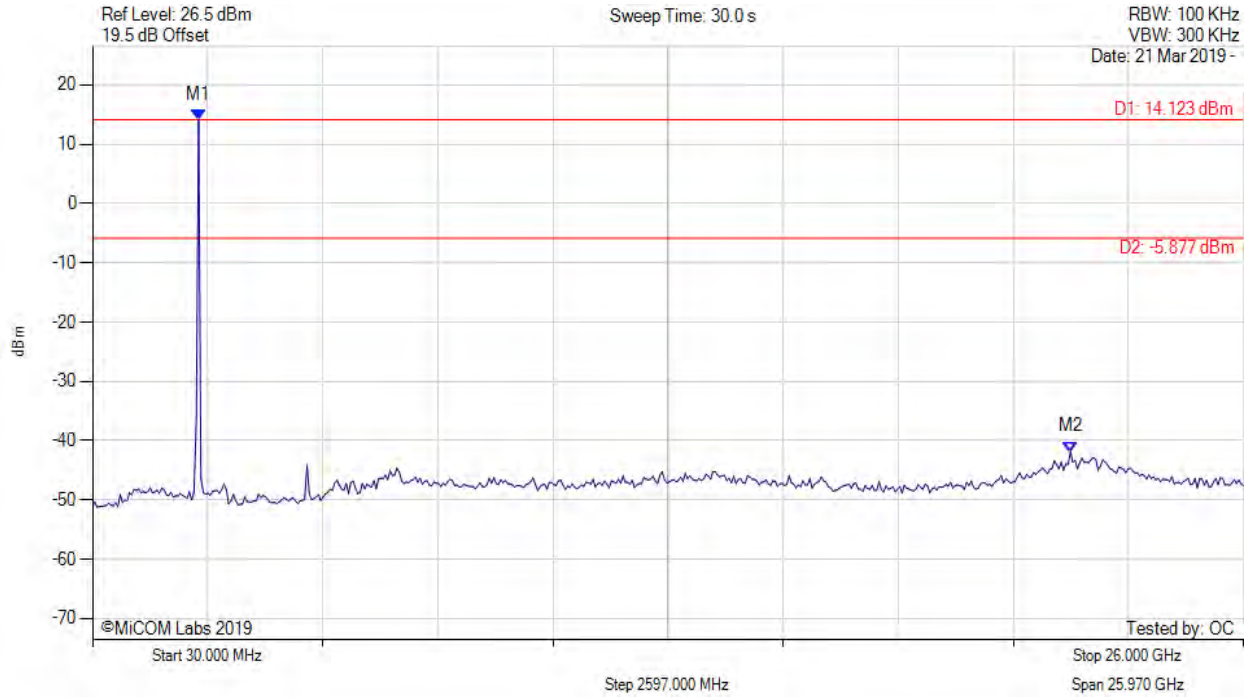


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2371.984 MHz : 15.360 dBm M2 : 22.461 GHz : -42.514 dBm	Limit: -4.64 dBm Margin: -37.87 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11b, Channel: 2437.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

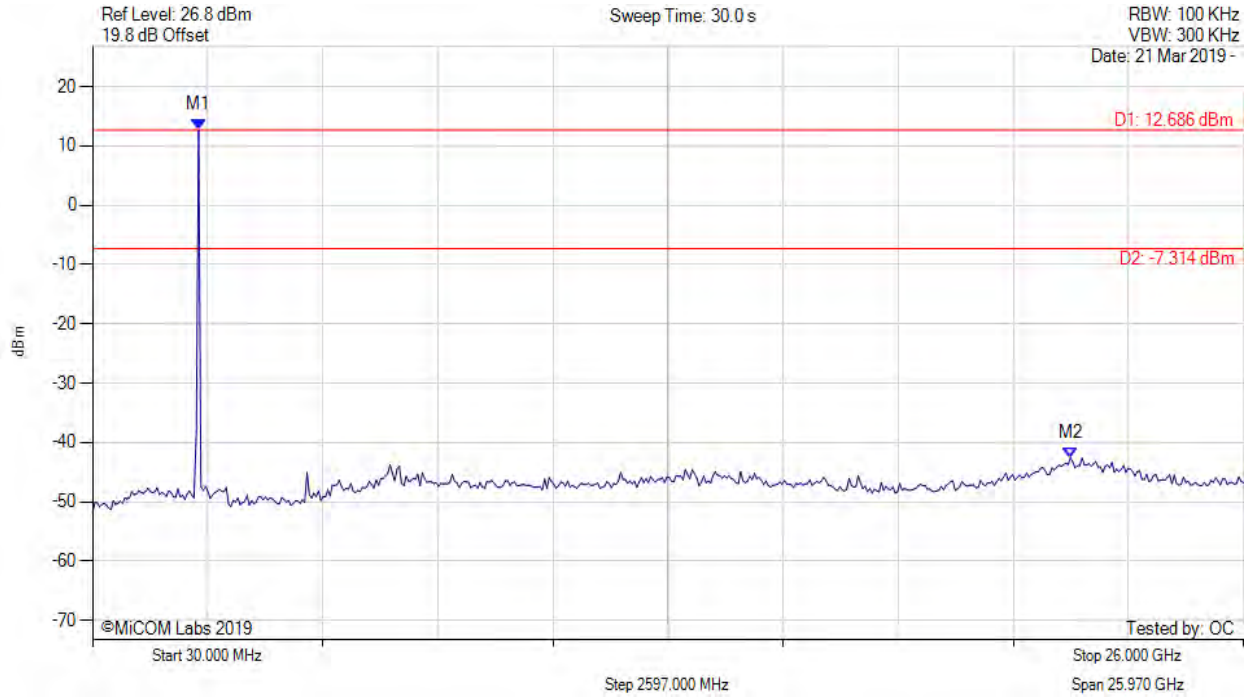


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2424.028 MHz : 14.123 dBm M2 : 22.097 GHz : -41.885 dBm	Limit: -5.88 dBm Margin: -36.00 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11b, Channel: 2437.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

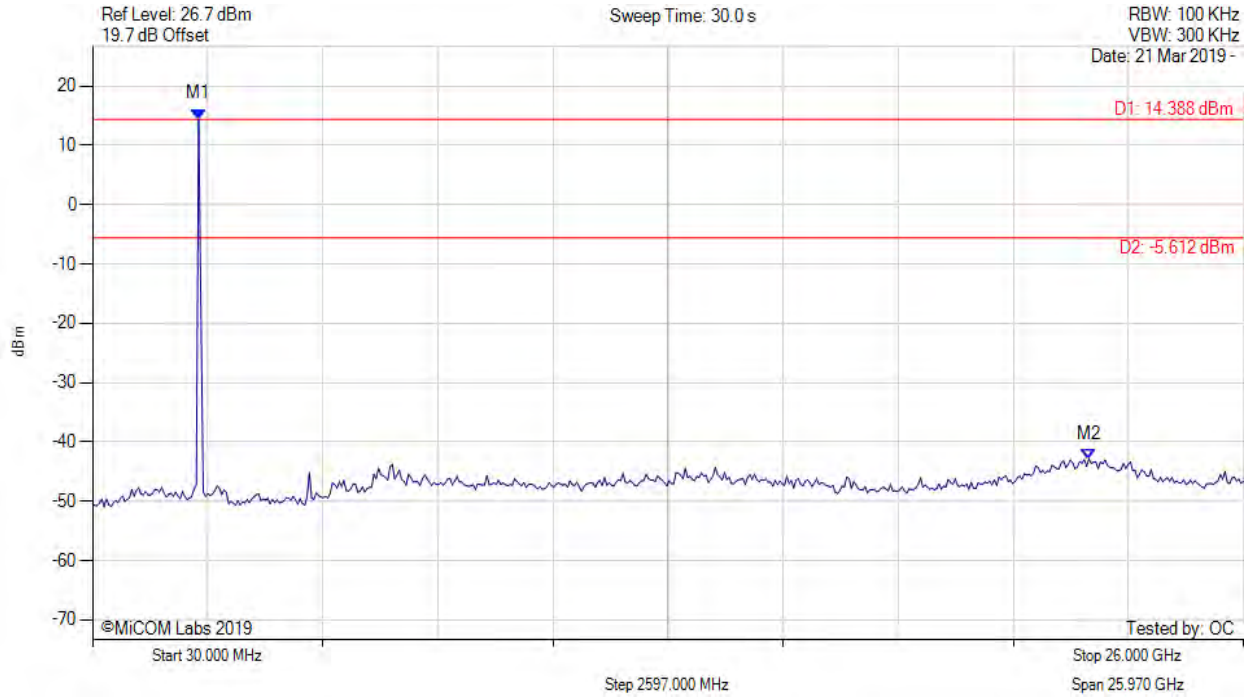


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2424.028 MHz : 12.686 dBm M2 : 22.097 GHz : -42.602 dBm	Limit: -7.31 dBm Margin: -35.29 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11b, Channel: 2462.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

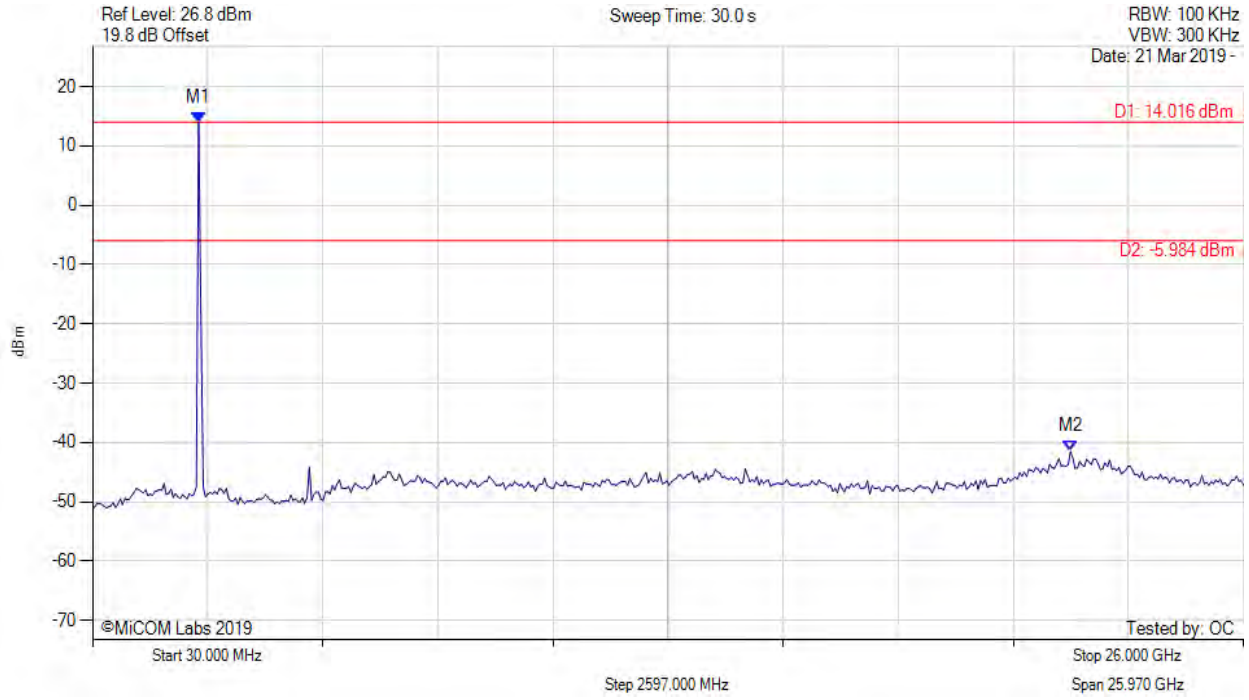


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2424.028 MHz : 14.388 dBm M2 : 22.513 GHz : -42.895 dBm	Limit: -5.61 dBm Margin: -37.29 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11b, Channel: 2462.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

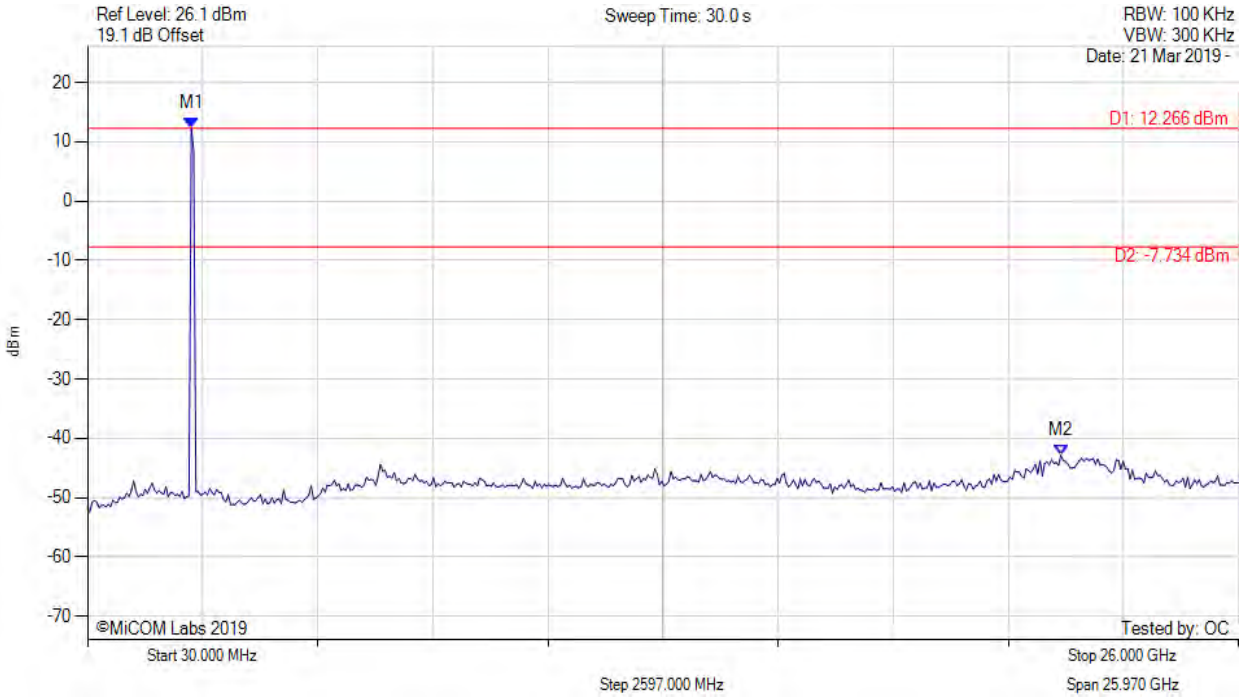


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2424.028 MHz : 14.016 dBm M2 : 22.097 GHz : -41.554 dBm	Limit: -5.98 dBm Margin: -35.57 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11g, Channel: 2412.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

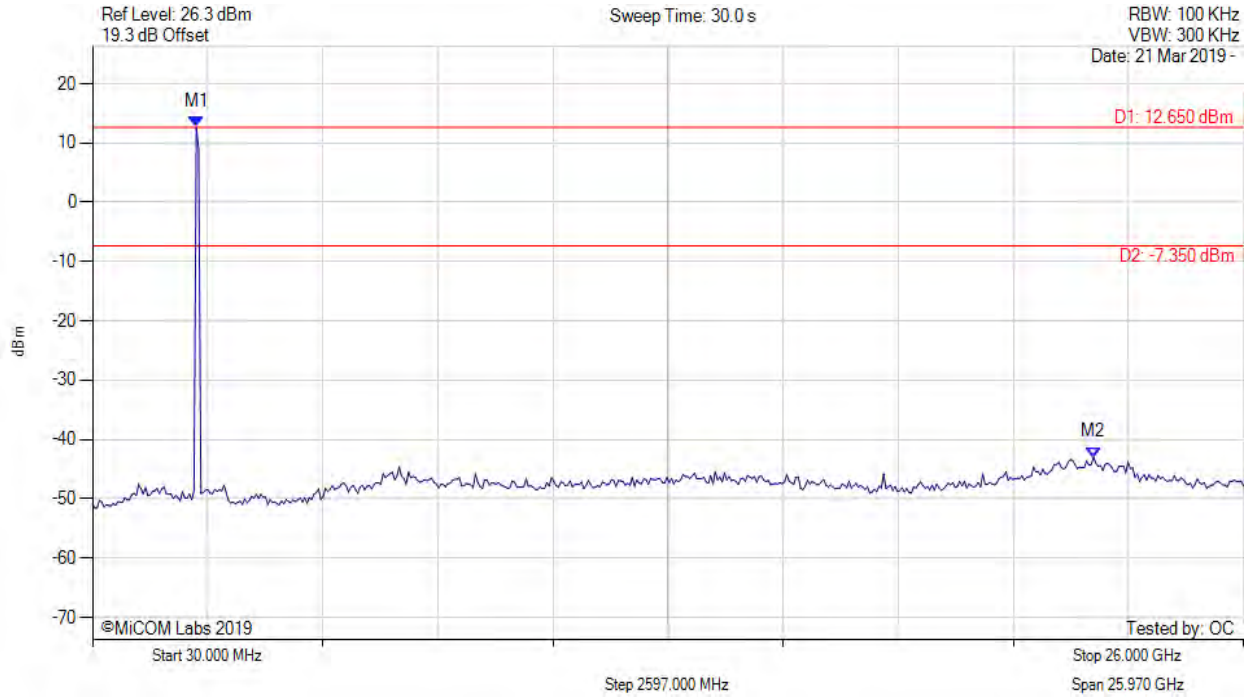


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2371.984 MHz : 12.266 dBm M2 : 21.993 GHz : -42.868 dBm	Limit: -7.73 dBm Margin: -35.14 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11g, Channel: 2412.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

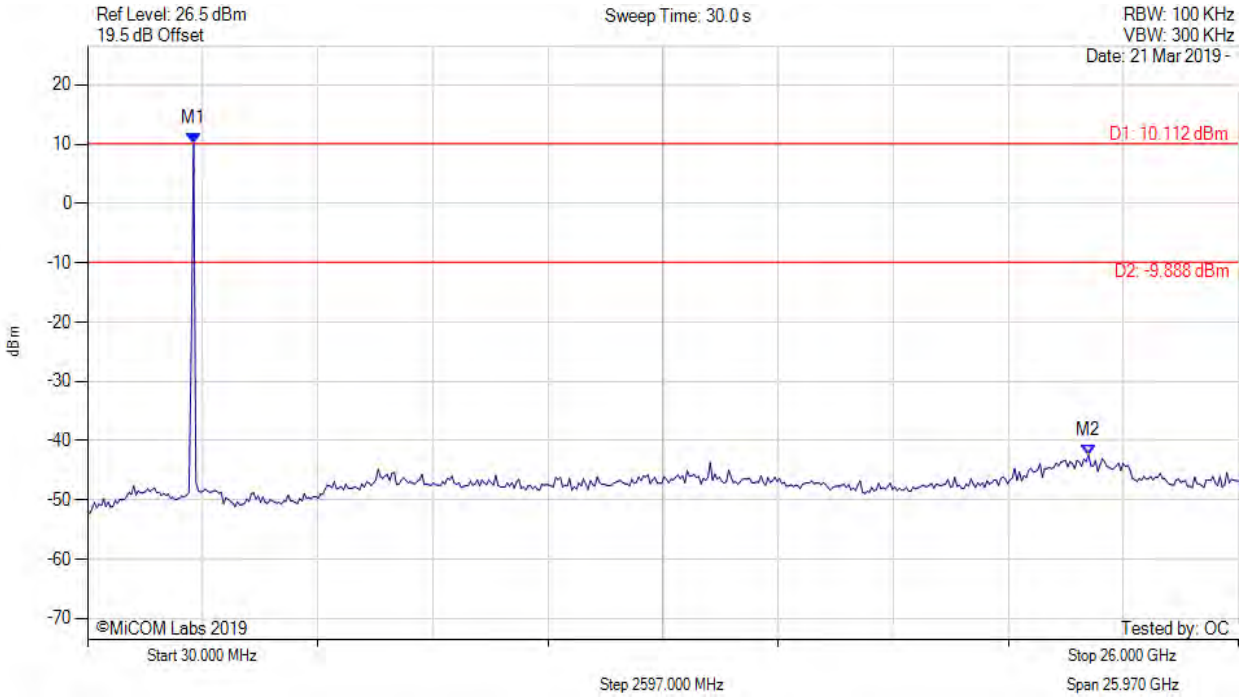


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2371.984 MHz : 12.650 dBm M2 : 22.617 GHz : -43.016 dBm	Limit: -7.35 dBm Margin: -35.67 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11g, Channel: 2437.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

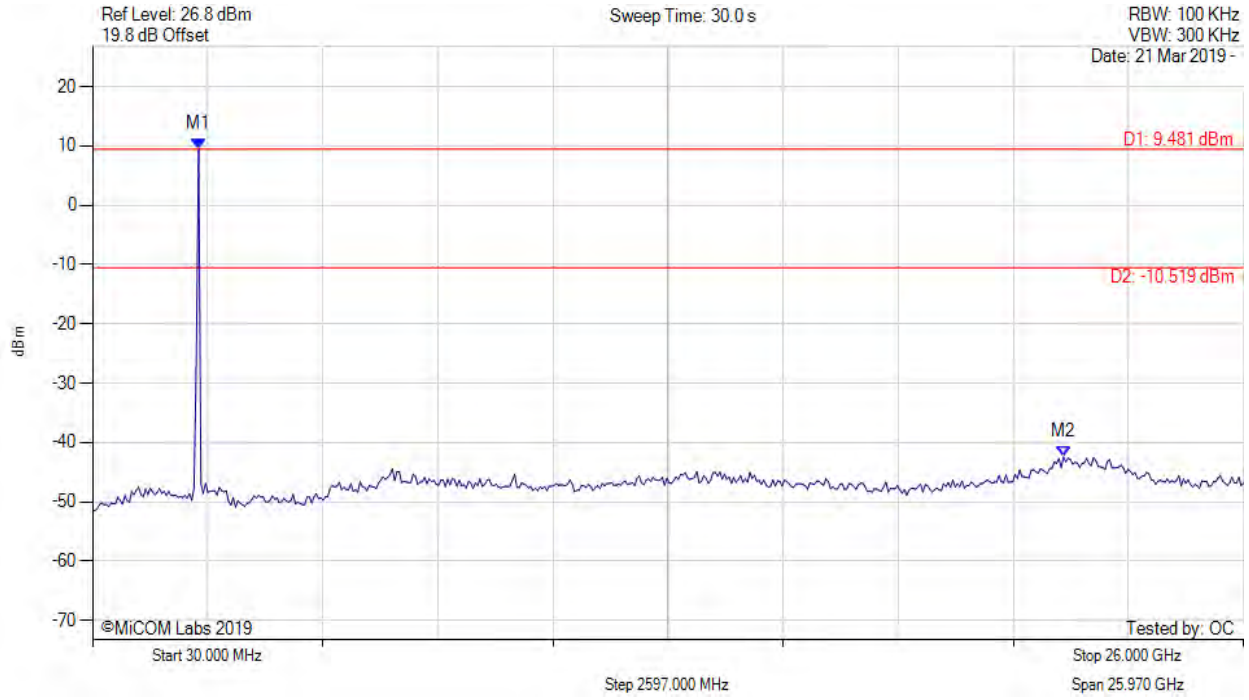


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2424.028 MHz : 10.112 dBm M2 : 22.617 GHz : -42.399 dBm	Limit: -9.89 dBm Margin: -32.51 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11g, Channel: 2437.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

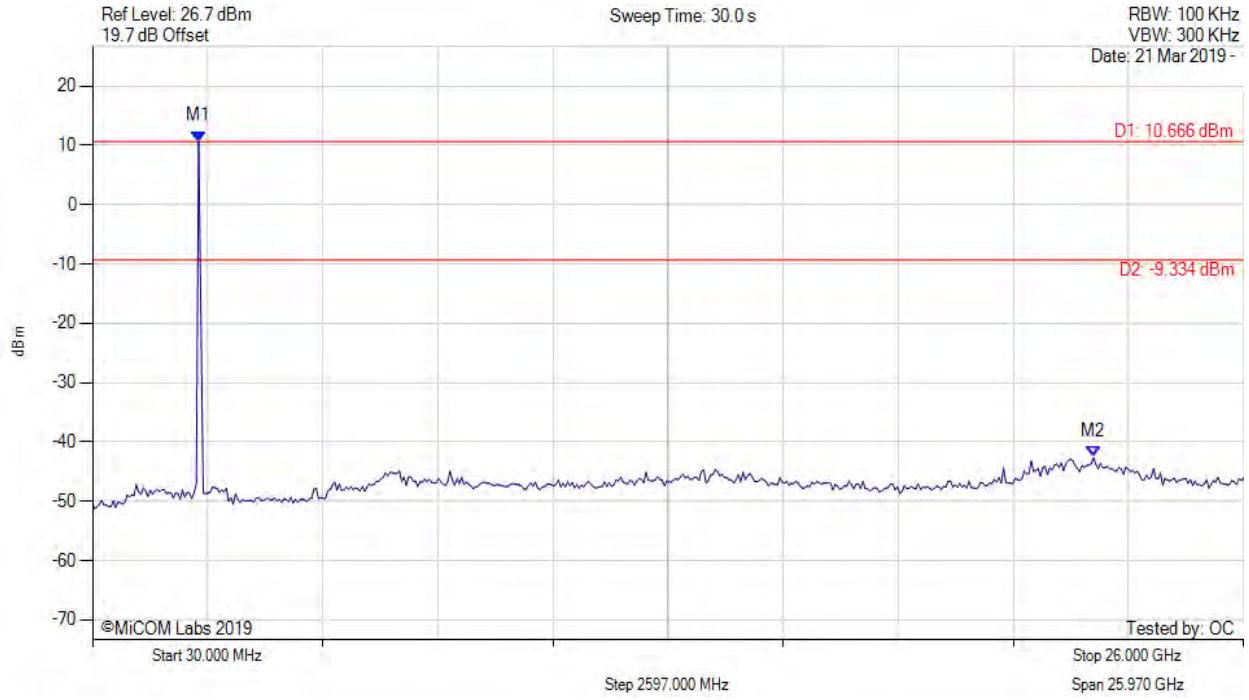


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2424.028 MHz : 9.481 dBm M2 : 21.941 GHz : -42.433 dBm	Limit: -10.52 dBm Margin: -31.91 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11g, Channel: 2462.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

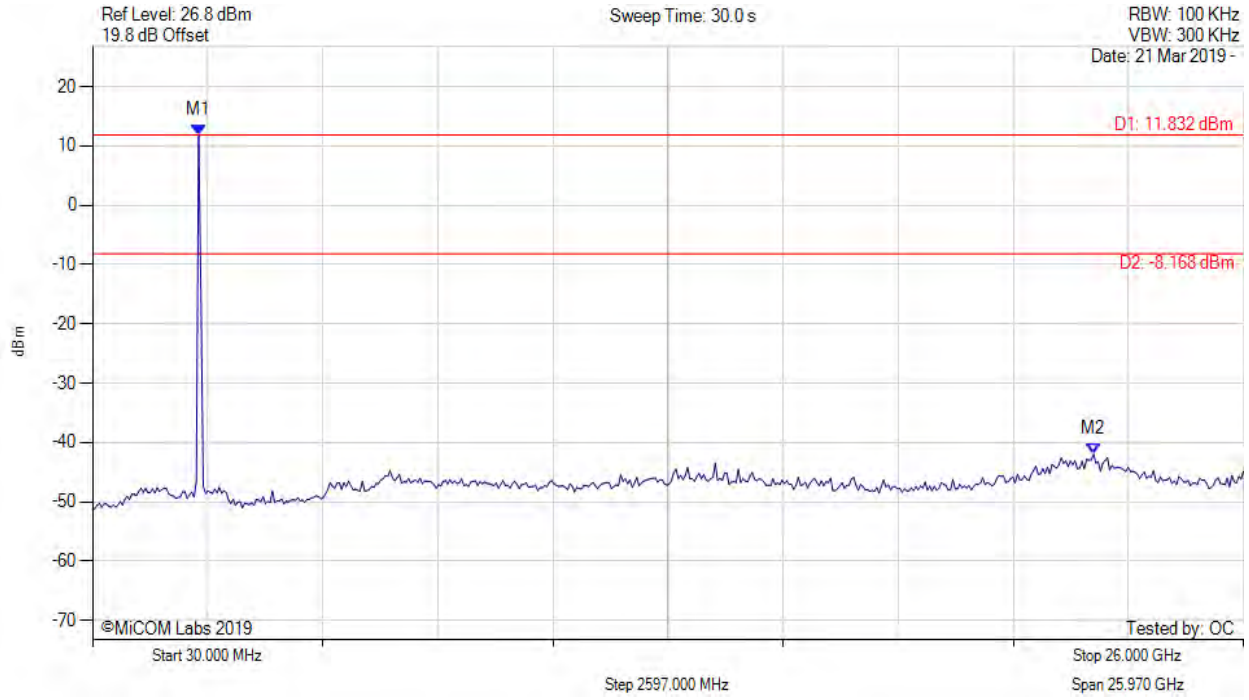


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2424.028 MHz : 10.666 dBm M2 : 22.617 GHz : -42.604 dBm	Limit: -9.33 dBm Margin: -33.27 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11g, Channel: 2462.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

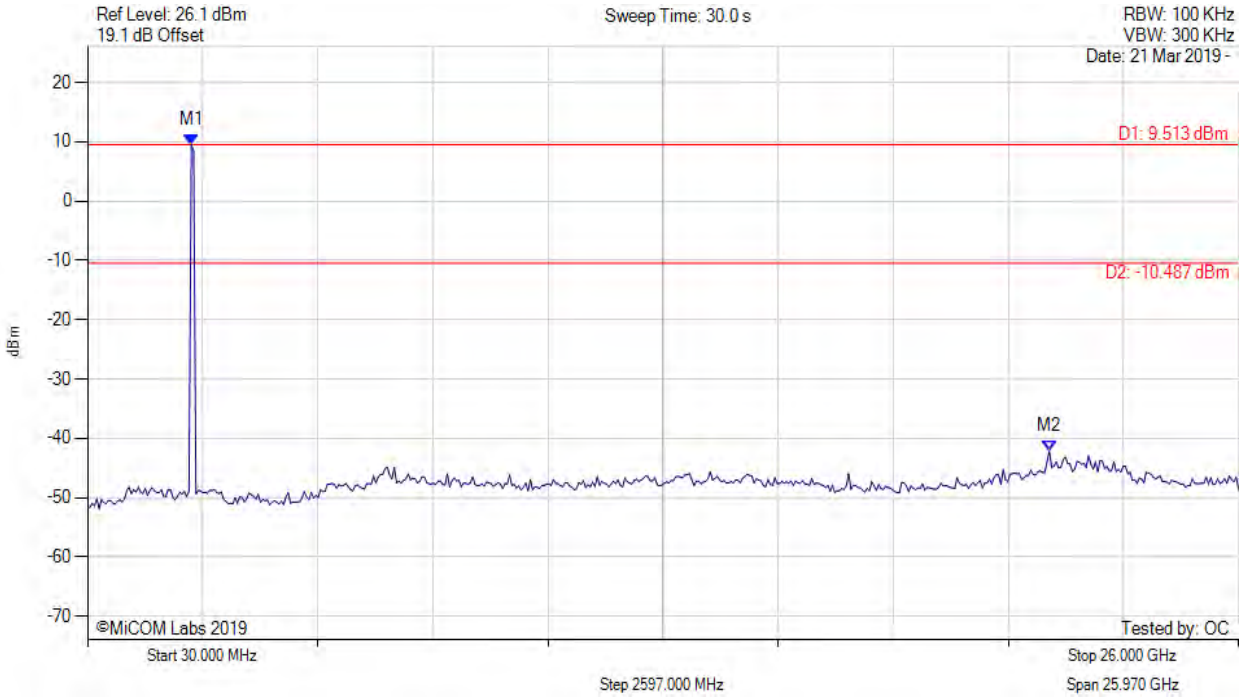


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2424.028 MHz : 11.832 dBm M2 : 22.617 GHz : -41.977 dBm	Limit: -8.17 dBm Margin: -33.81 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11n HT-20, Channel: 2412.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

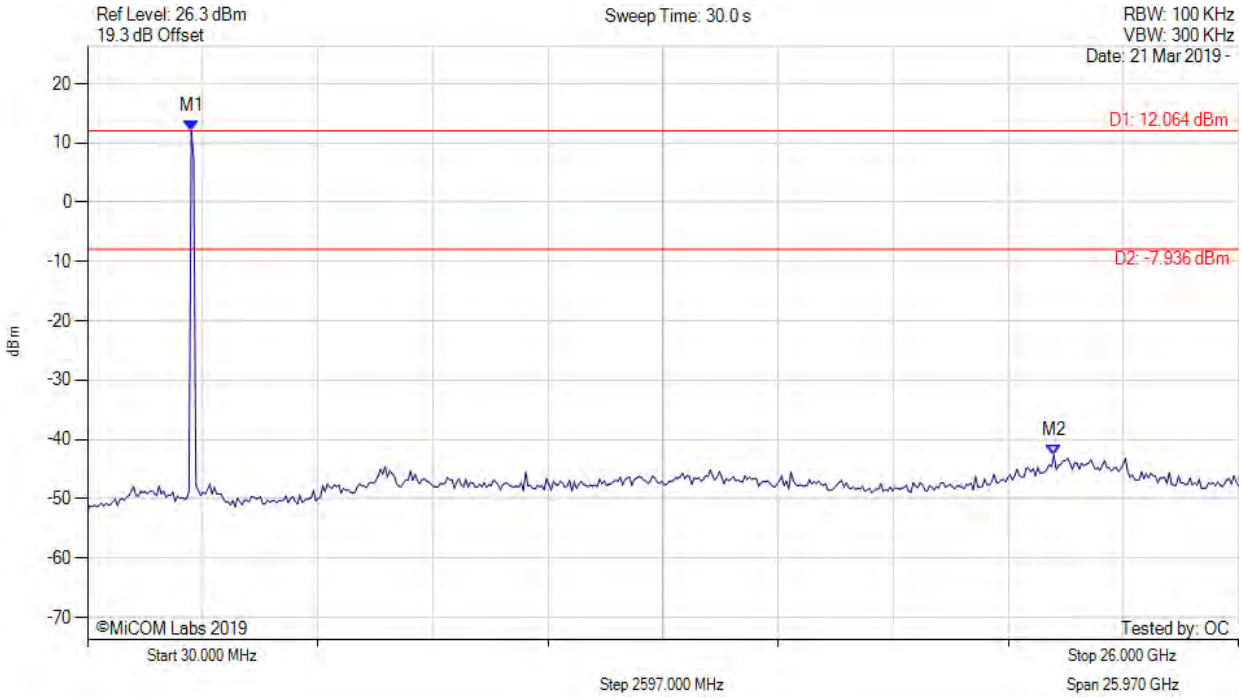


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2371.984 MHz : 9.513 dBm M2 : 21.732 GHz : -42.163 dBm	Limit: -10.49 dBm Margin: -31.67 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11n HT-20, Channel: 2412.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

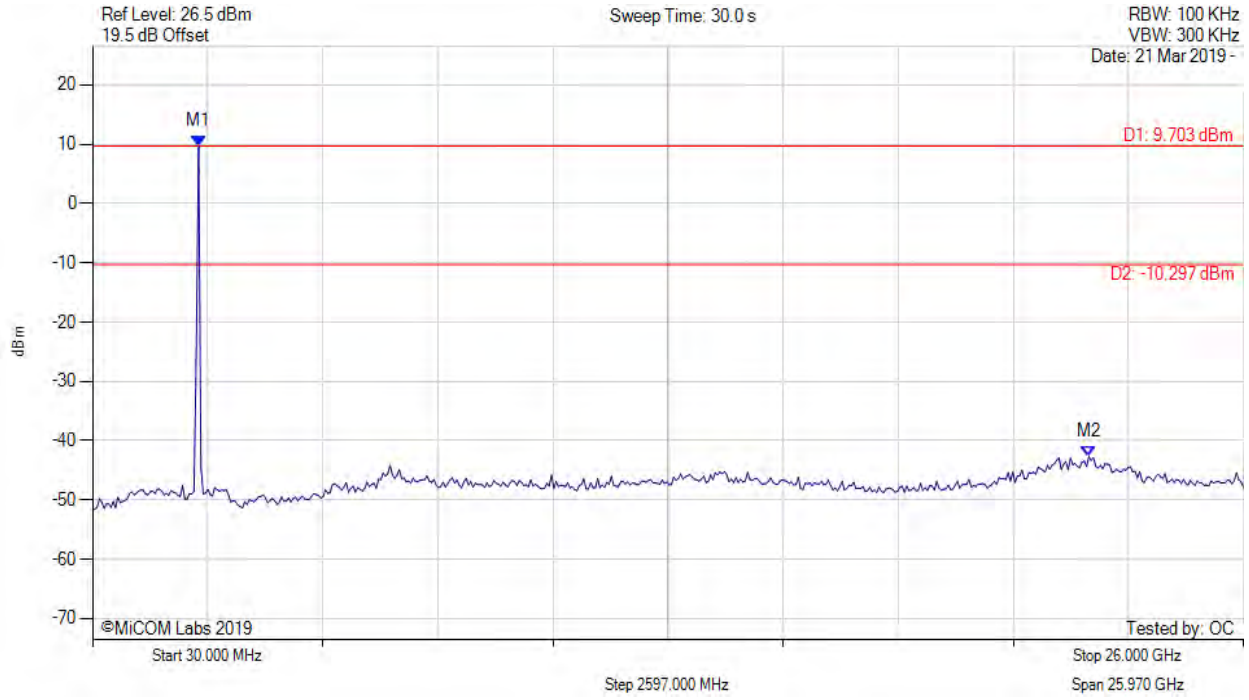


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2371.984 MHz : 12.064 dBm M2 : 21.836 GHz : -42.603 dBm	Limit: -7.94 dBm Margin: -34.66 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11n HT-20, Channel: 2437.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

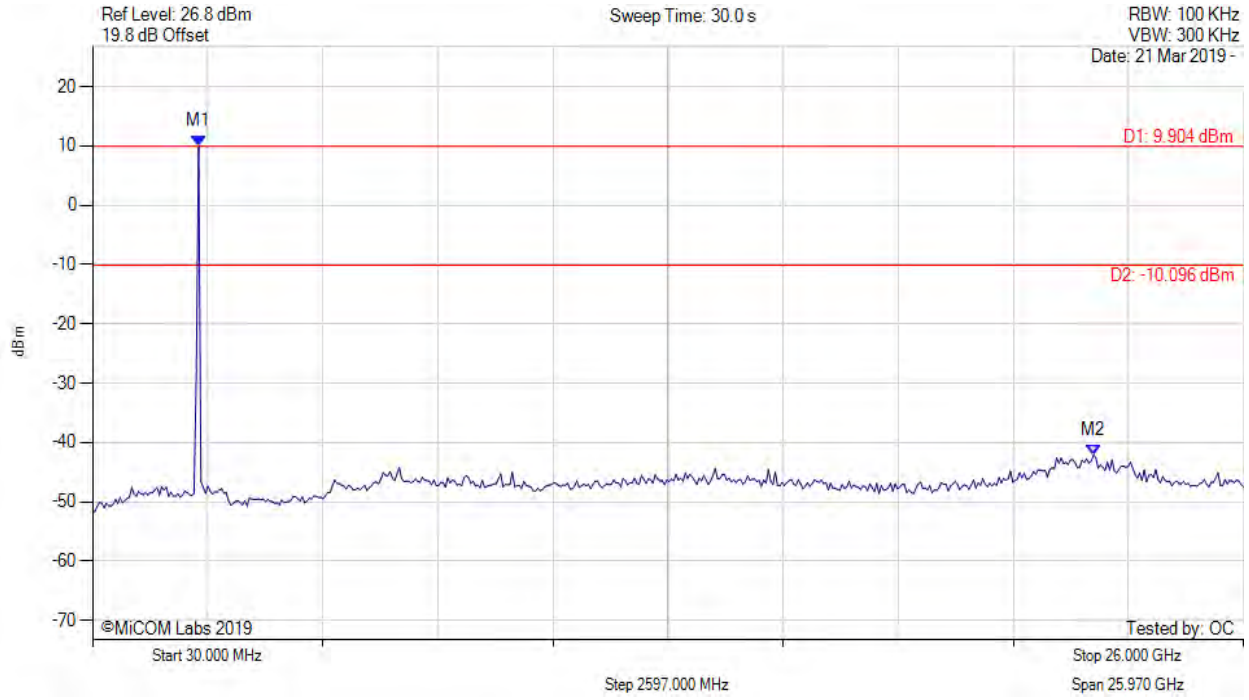


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2424.028 MHz : 9.703 dBm M2 : 22.513 GHz : -42.664 dBm	Limit: -10.30 dBm Margin: -32.36 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11n HT-20, Channel: 2437.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

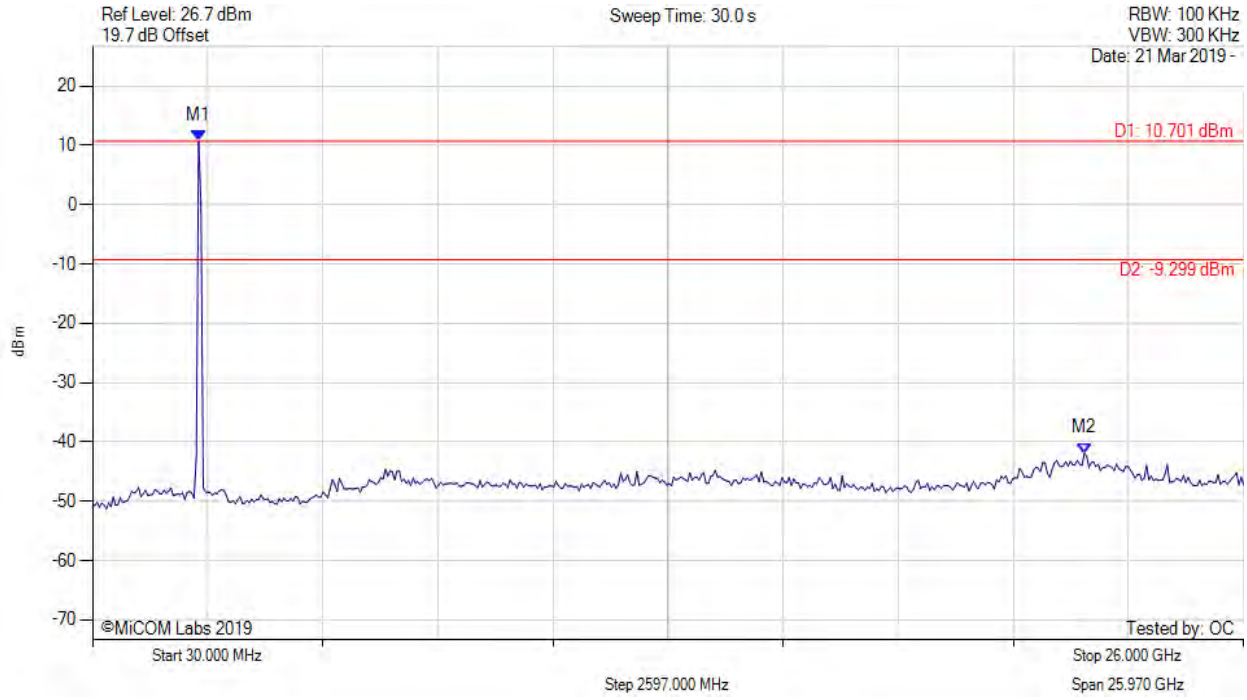


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2424.028 MHz : 9.904 dBm M2 : 22.617 GHz : -42.122 dBm	Limit: -10.10 dBm Margin: -32.02 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11n HT-20, Channel: 2462.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

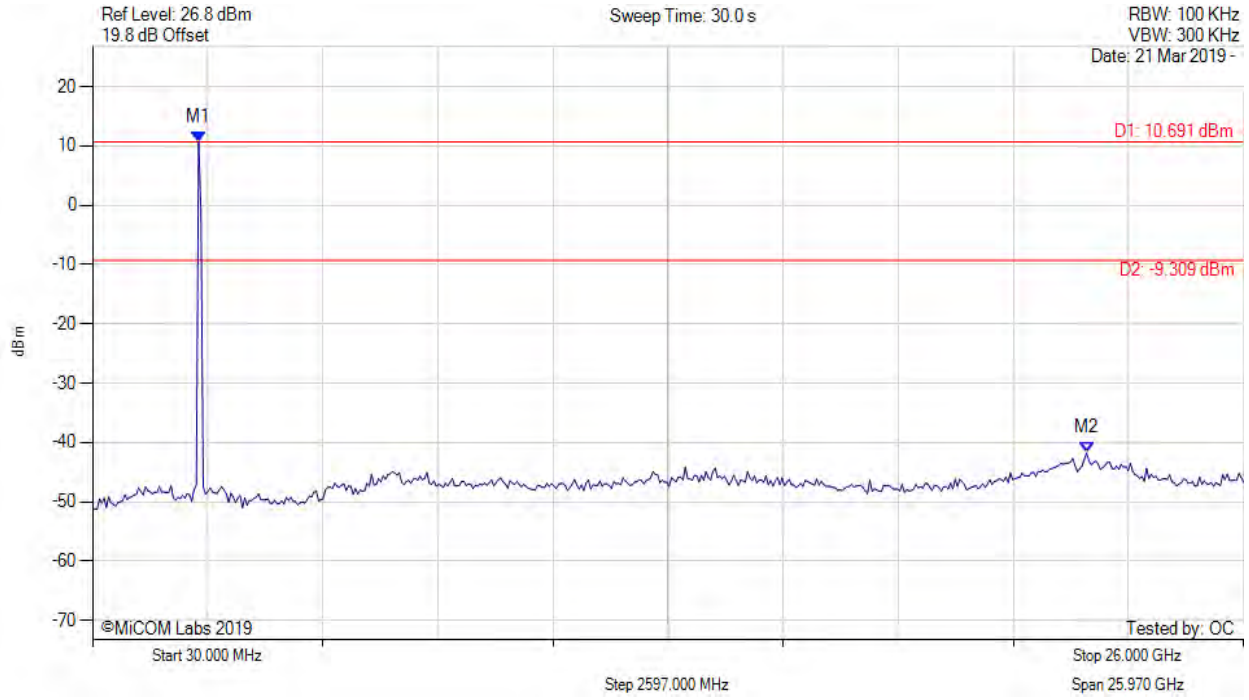


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2424.028 MHz : 10.701 dBm M2 : 22.409 GHz : -41.917 dBm	Limit: -9.30 dBm Margin: -32.62 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11n HT-20, Channel: 2462.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

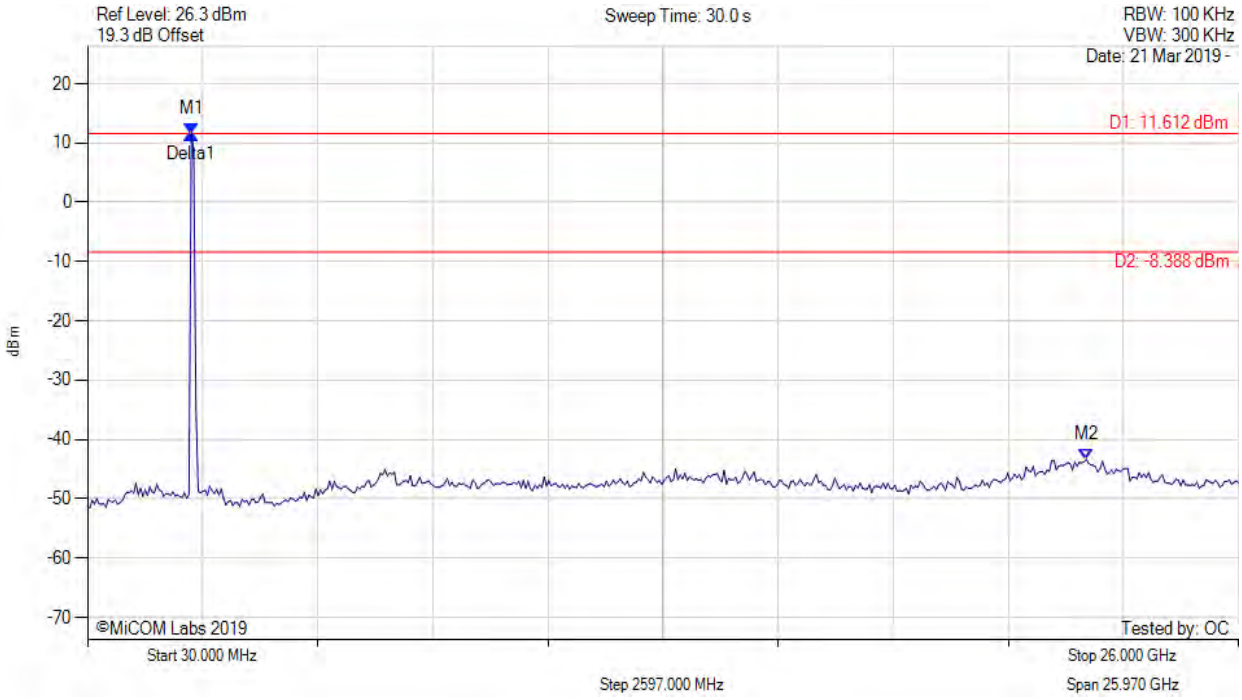


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2424.028 MHz : 10.691 dBm M2 : 22.461 GHz : -41.741 dBm	Limit: -9.31 dBm Margin: -32.43 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11n HT-40, Channel: 2422.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

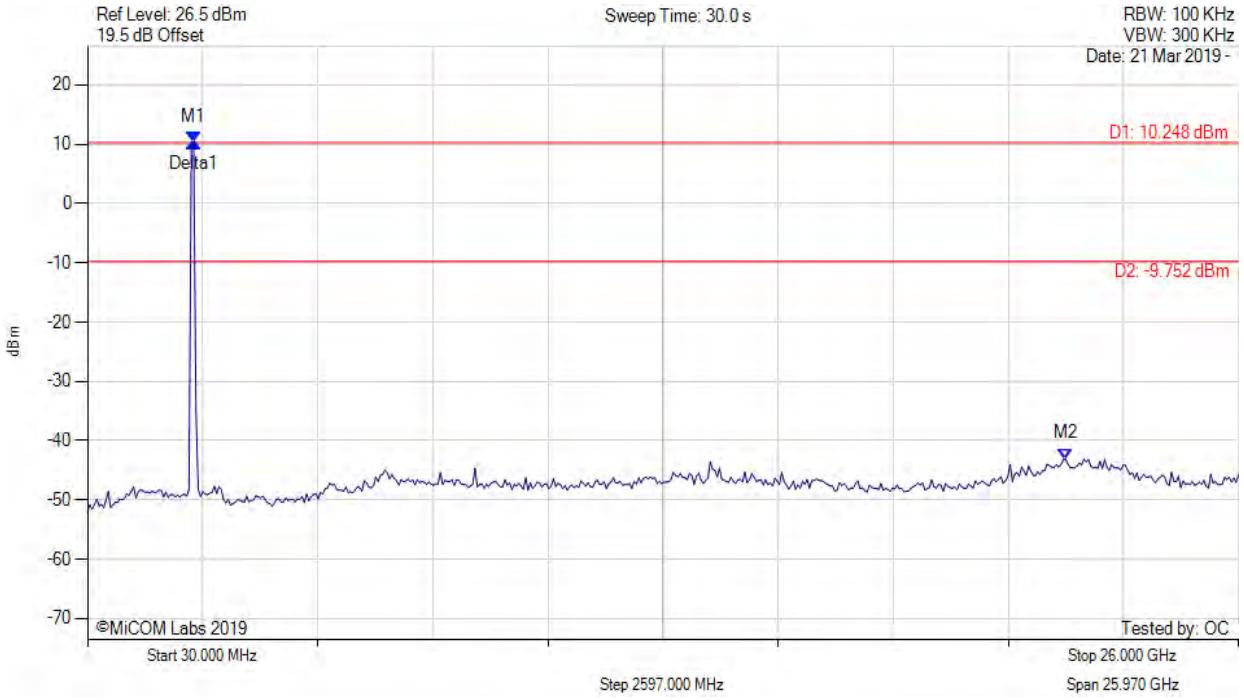


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2371.984 MHz : 11.612 dBm M2 : 22.565 GHz : -43.344 dBm Delta1 : 0 Hz : 0.000 dB	Limit: -8.39 dBm Margin: -34.95 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11n HT-40, Channel: 2422.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

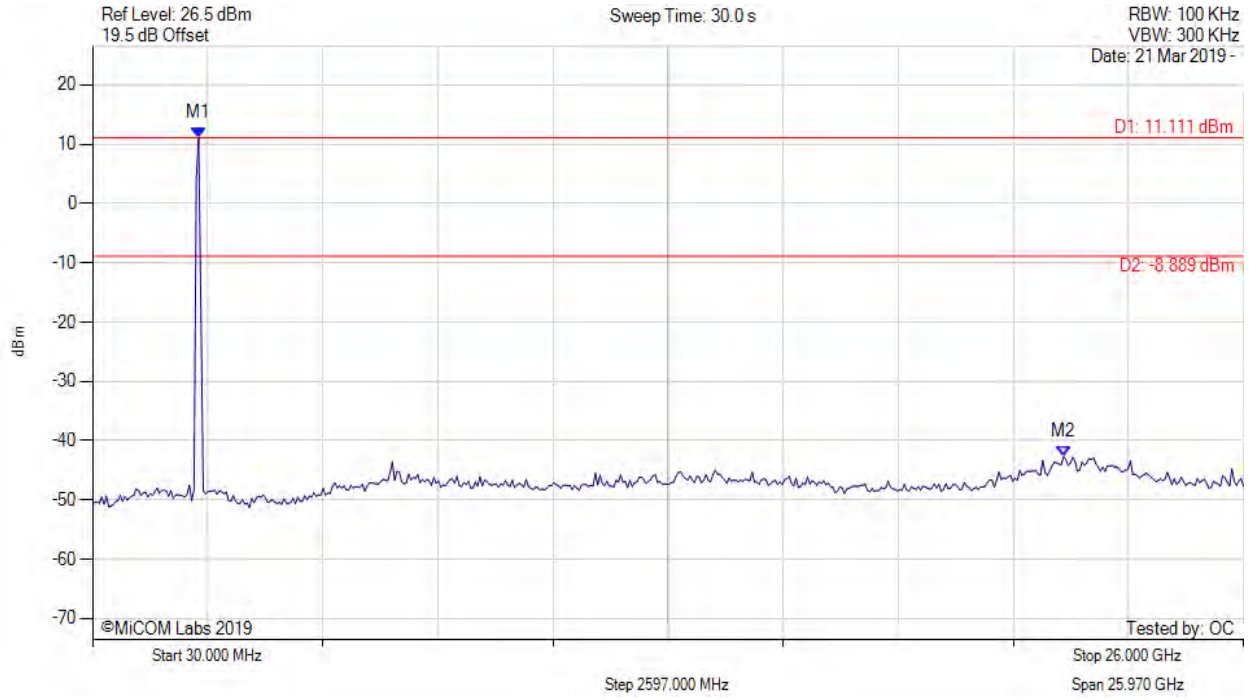


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2424.028 MHz : 10.248 dBm M2 : 22.097 GHz : -43.056 dBm Delta1 : 0 Hz : 0.000 dB	Limit: -9.75 dBm Margin: -33.31 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11n HT-40, Channel: 2437.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

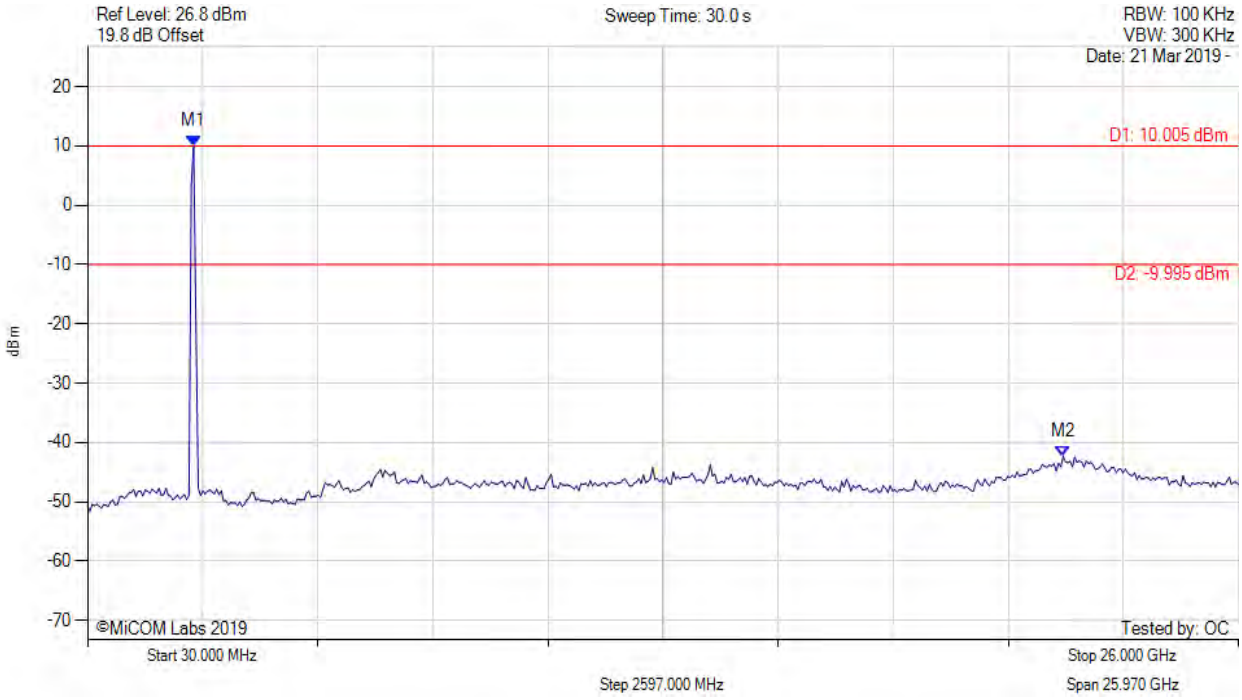


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2424.028 MHz : 11.111 dBm M2 : 21.941 GHz : -42.690 dBm	Limit: -8.89 dBm Margin: -33.80 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11n HT-40, Channel: 2437.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

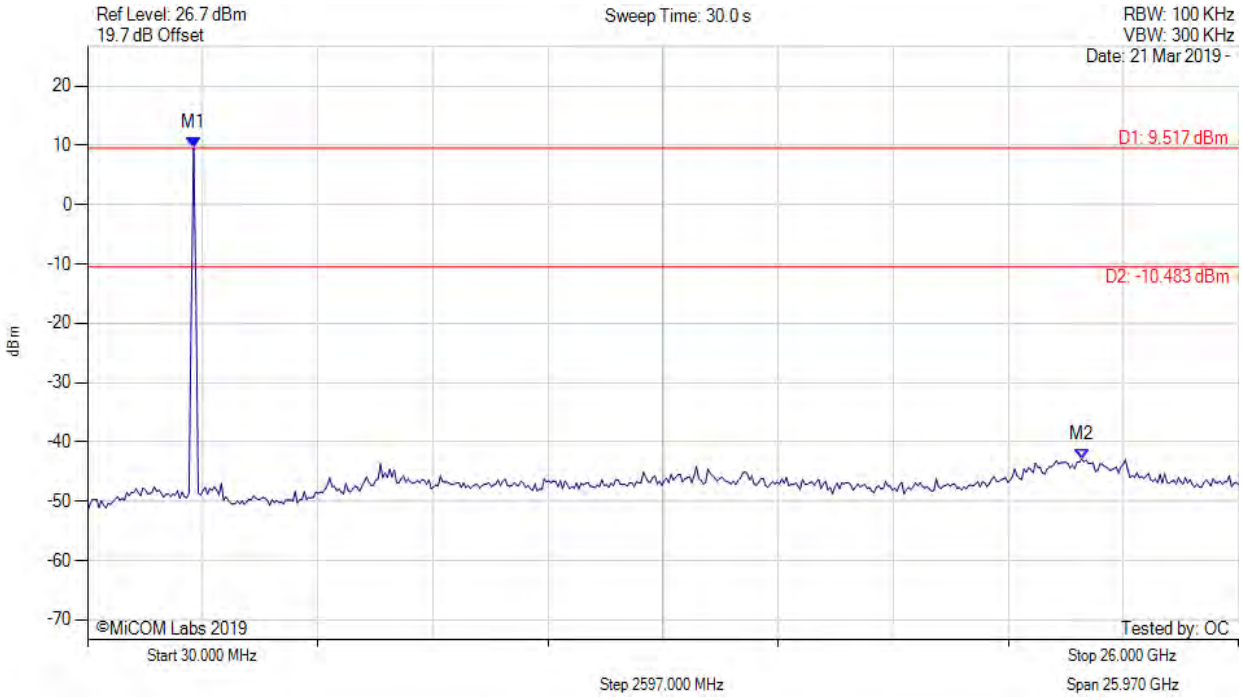


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2424.028 MHz : 10.005 dBm M2 : 22.045 GHz : -42.351 dBm	Limit: -10.00 dBm Margin: -32.35 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11n HT-40, Channel: 2452.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

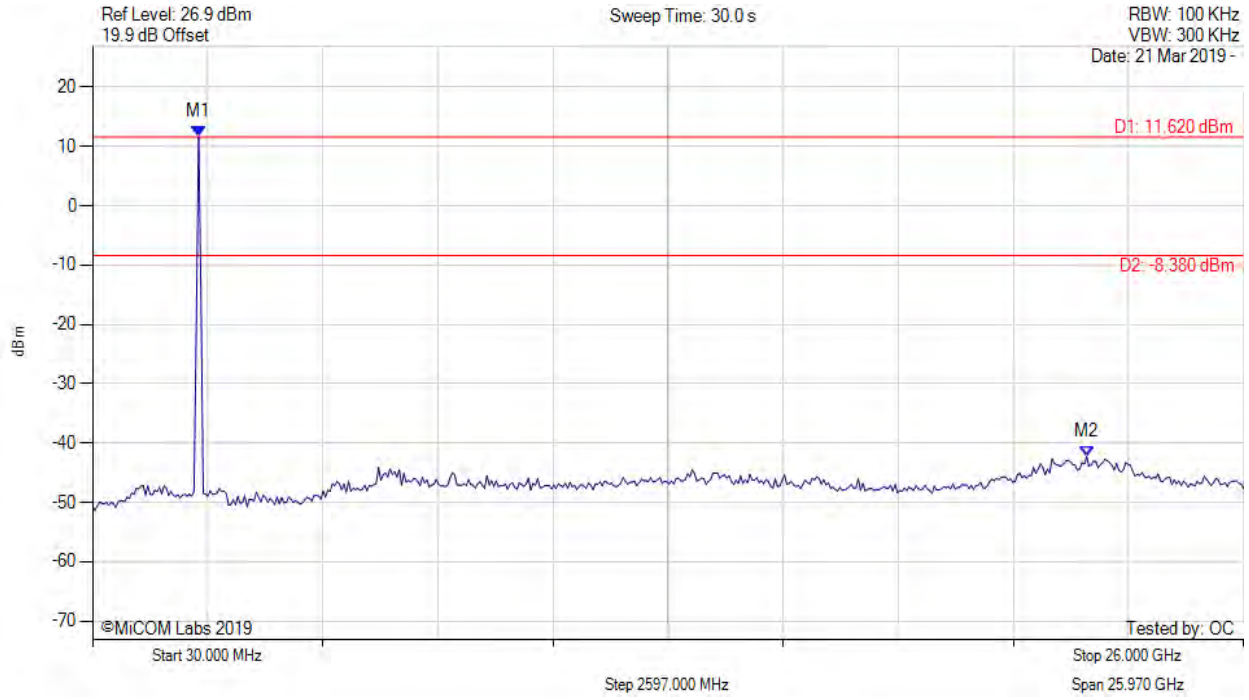


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2424.028 MHz : 9.517 dBm M2 : 22.461 GHz : -42.876 dBm	Limit: -10.48 dBm Margin: -32.40 dB

back to matrix

CONDUCTED SPURIOUS EMISSIONS - PEAK

Variant: 802.11n HT-40, Channel: 2452.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc



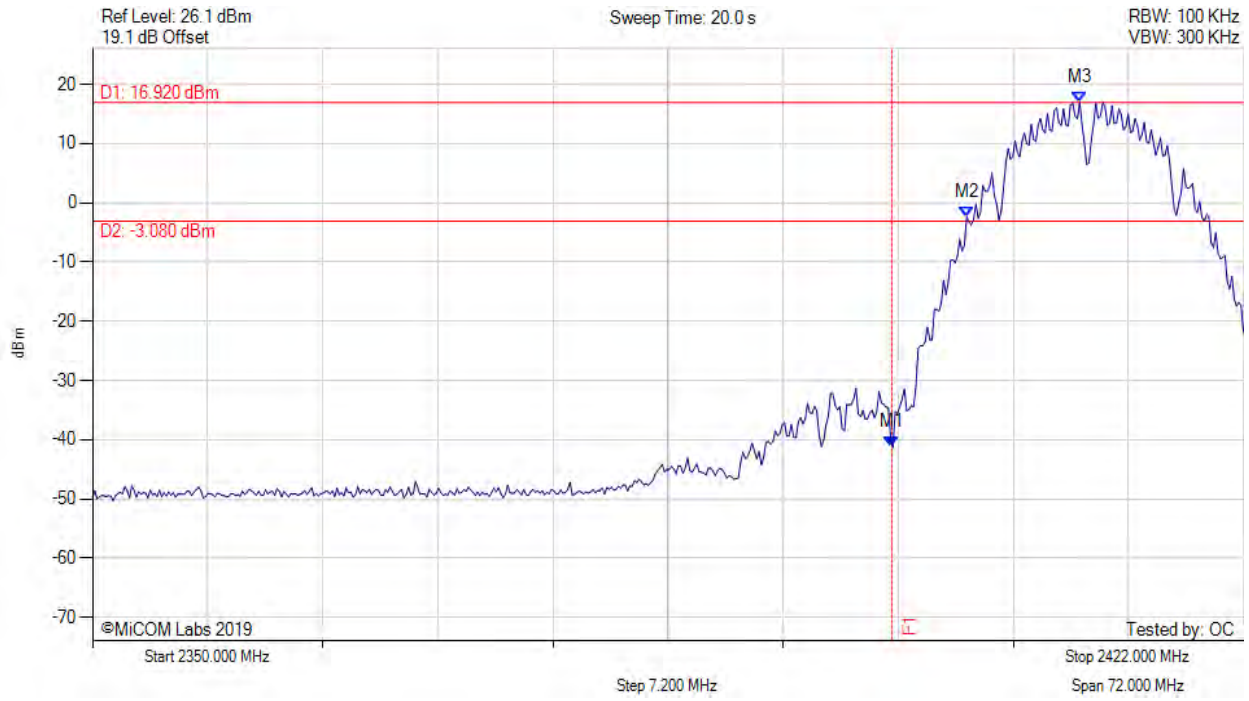
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2424.028 MHz : 11.620 dBm M2 : 22.461 GHz : -42.280 dBm	Limit: -8.38 dBm Margin: -33.90 dB

back to matrix

A.3.1.2. Conducted Band-Edge Emissions

CONDUCTED LOW BAND-EDGE EMISSION - PEAK

Variant: 802.11b, Channel: 2412.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

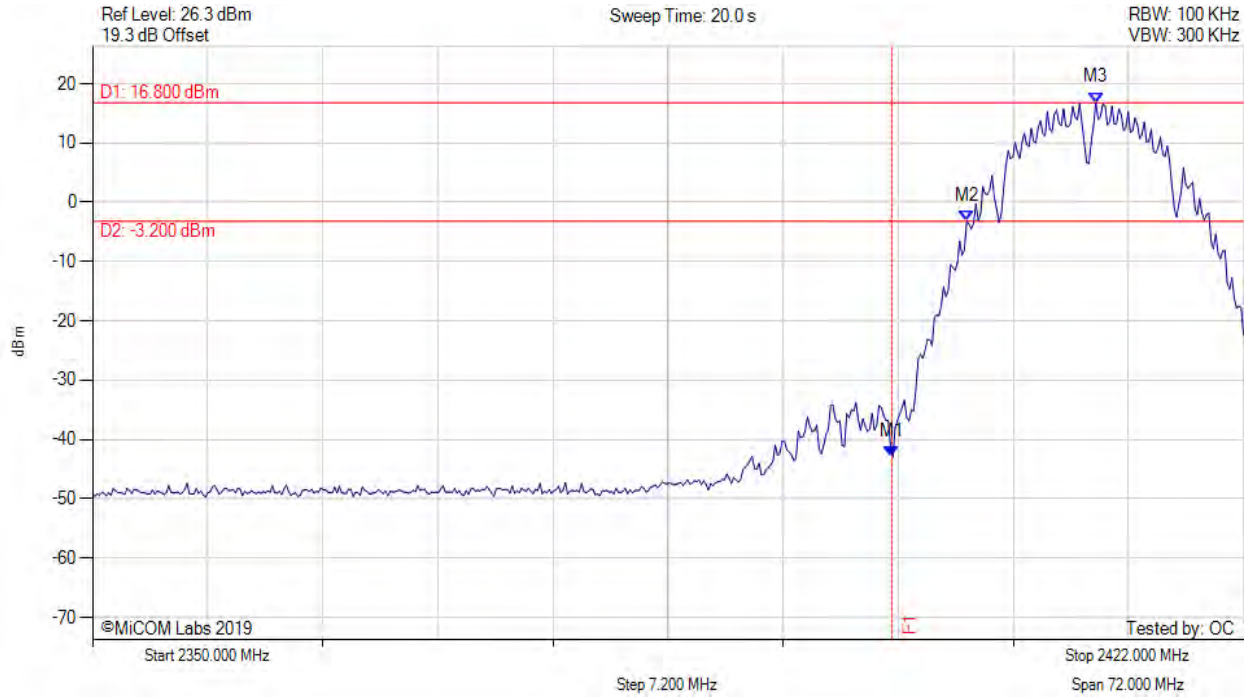


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2400.000 MHz : -41.319 dBm M2 : 2404.685 MHz : -2.401 dBm M3 : 2411.756 MHz : 16.914 dBm	Channel Frequency: 2412.00 MHz

back to matrix

CONDUCTED LOW BAND-EDGE EMISSION - PEAK

Variant: 802.11b, Channel: 2412.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

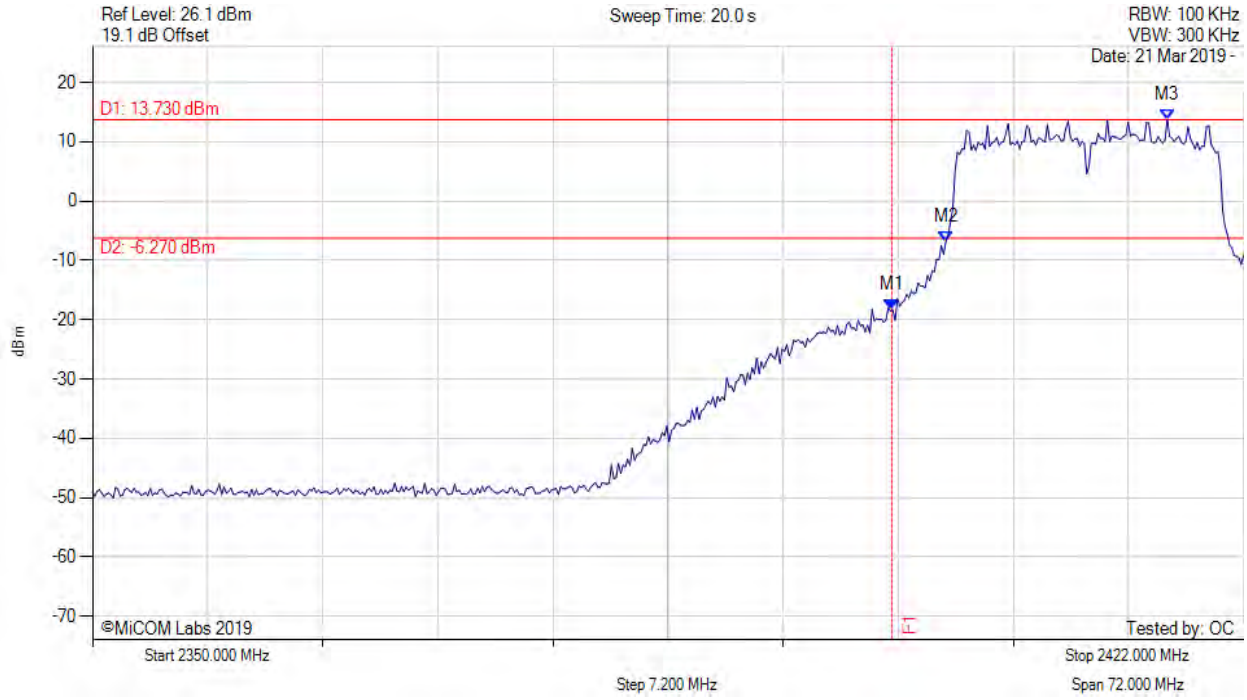


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2400.000 MHz : -42.935 dBm M2 : 2404.685 MHz : -3.197 dBm M3 : 2412.766 MHz : 16.796 dBm	Channel Frequency: 2412.00 MHz

back to matrix

CONDUCTED LOW BAND-EDGE EMISSION - PEAK

Variant: 802.11g, Channel: 2412.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

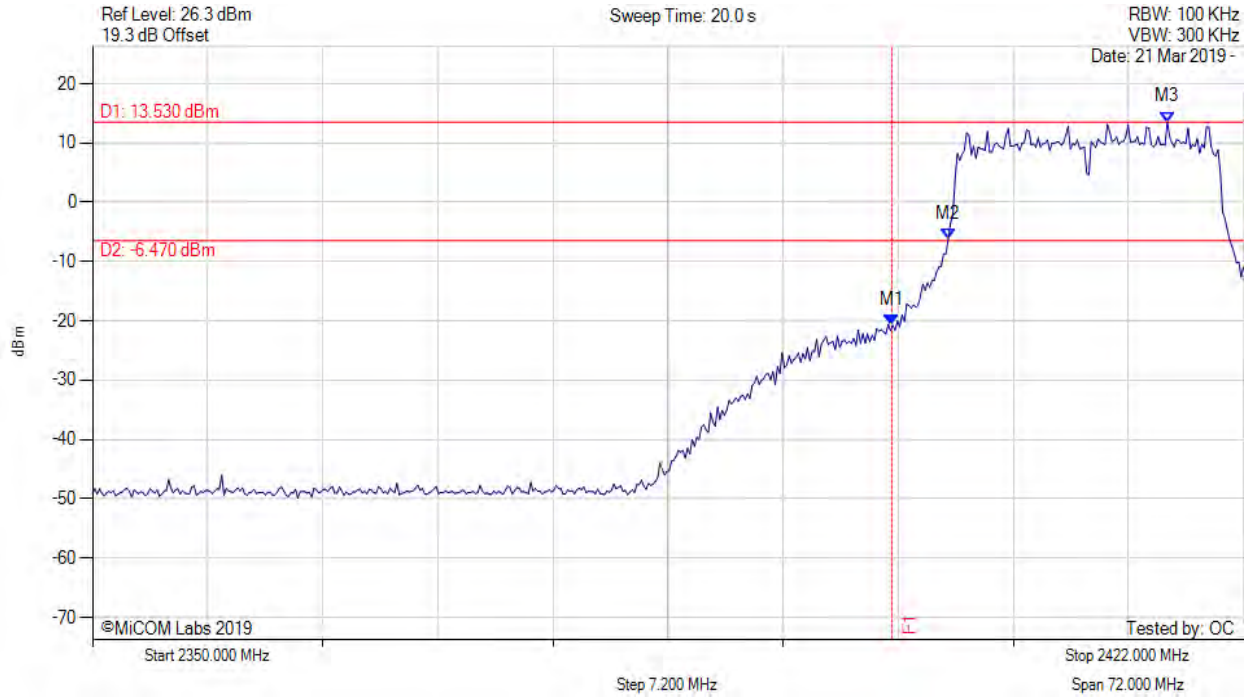


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2400.000 MHz : -18.378 dBm M2 : 2403.387 MHz : -6.790 dBm M3 : 2417.238 MHz : 13.735 dBm	Channel Frequency: 2412.00 MHz

back to matrix

CONDUCTED LOW BAND-EDGE EMISSION - PEAK

Variant: 802.11g, Channel: 2412.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

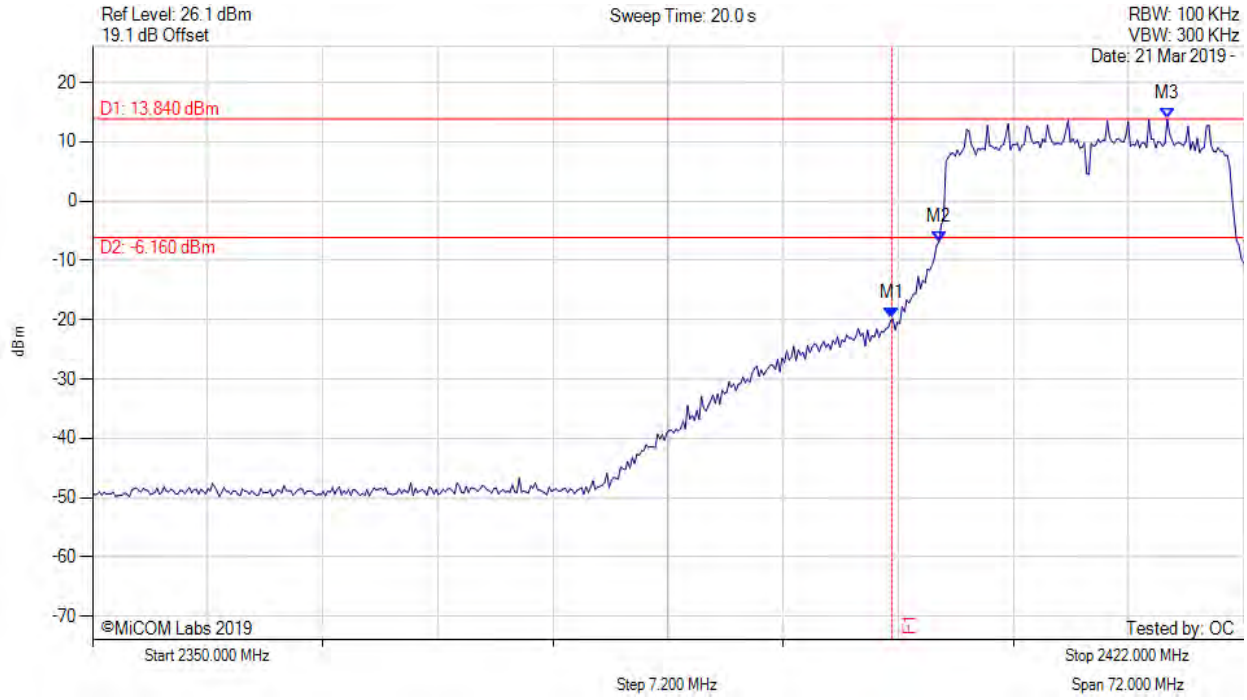


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2400.000 MHz : -20.761 dBm M2 : 2403.531 MHz : -6.238 dBm M3 : 2417.238 MHz : 13.528 dBm	Channel Frequency: 2412.00 MHz

back to matrix

CONDUCTED LOW BAND-EDGE EMISSION - PEAK

Variant: 802.11n HT-20, Channel: 2412.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

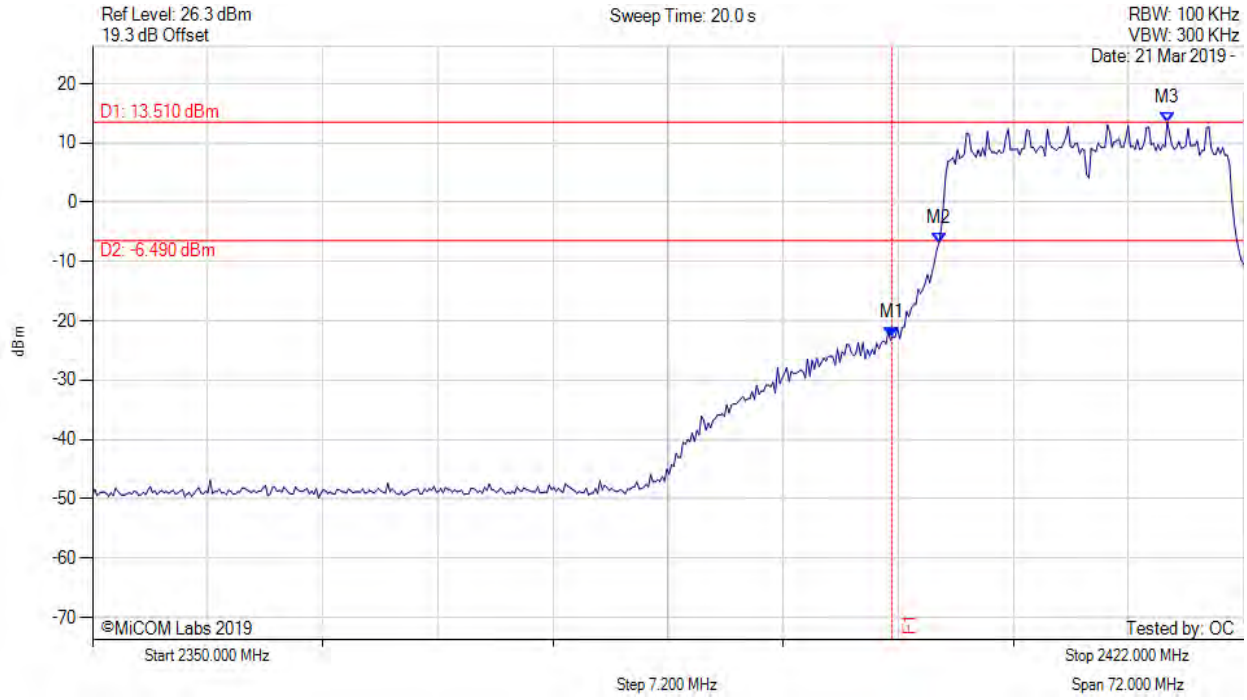


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2400.000 MHz : -19.826 dBm M2 : 2402.954 MHz : -6.816 dBm M3 : 2417.238 MHz : 13.841 dBm	Channel Frequency: 2412.00 MHz

back to matrix

CONDUCTED LOW BAND-EDGE EMISSION - PEAK

Variant: 802.11n HT-20, Channel: 2412.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

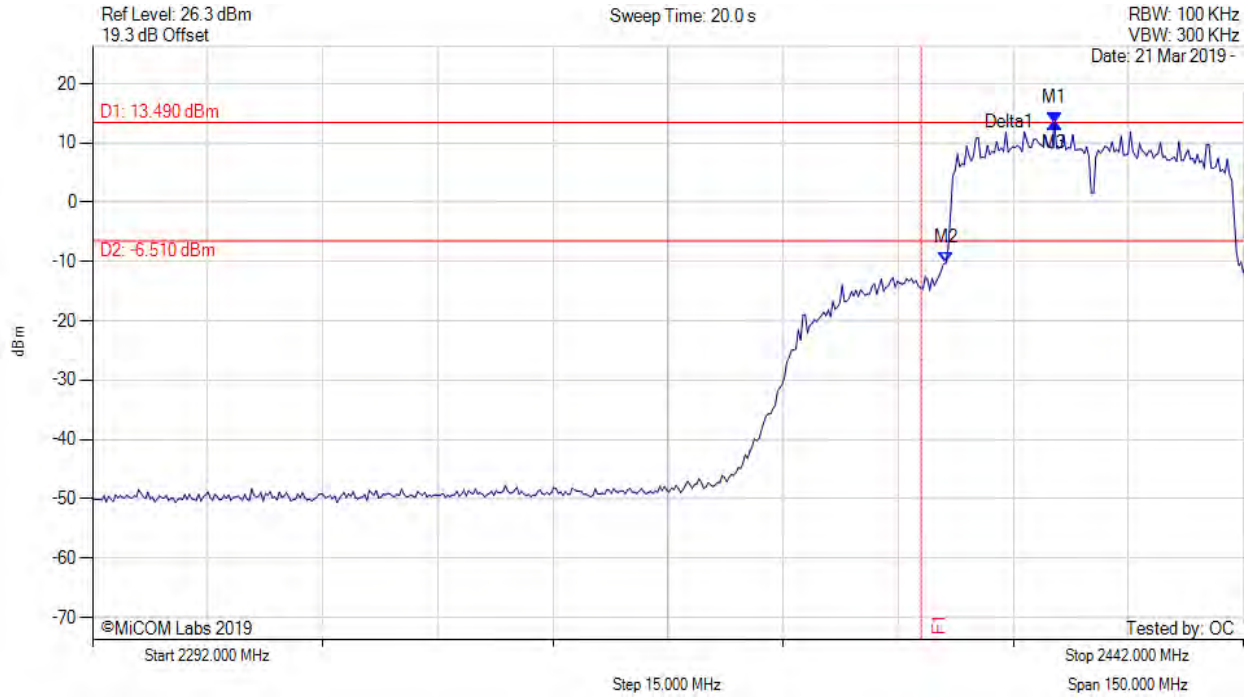


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2400.000 MHz : -22.723 dBm M2 : 2402.954 MHz : -6.929 dBm M3 : 2417.238 MHz : 13.512 dBm	Channel Frequency: 2412.00 MHz

back to matrix

CONDUCTED LOW BAND-EDGE EMISSION - PEAK

Variant: 802.11n HT-40, Channel: 2422.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

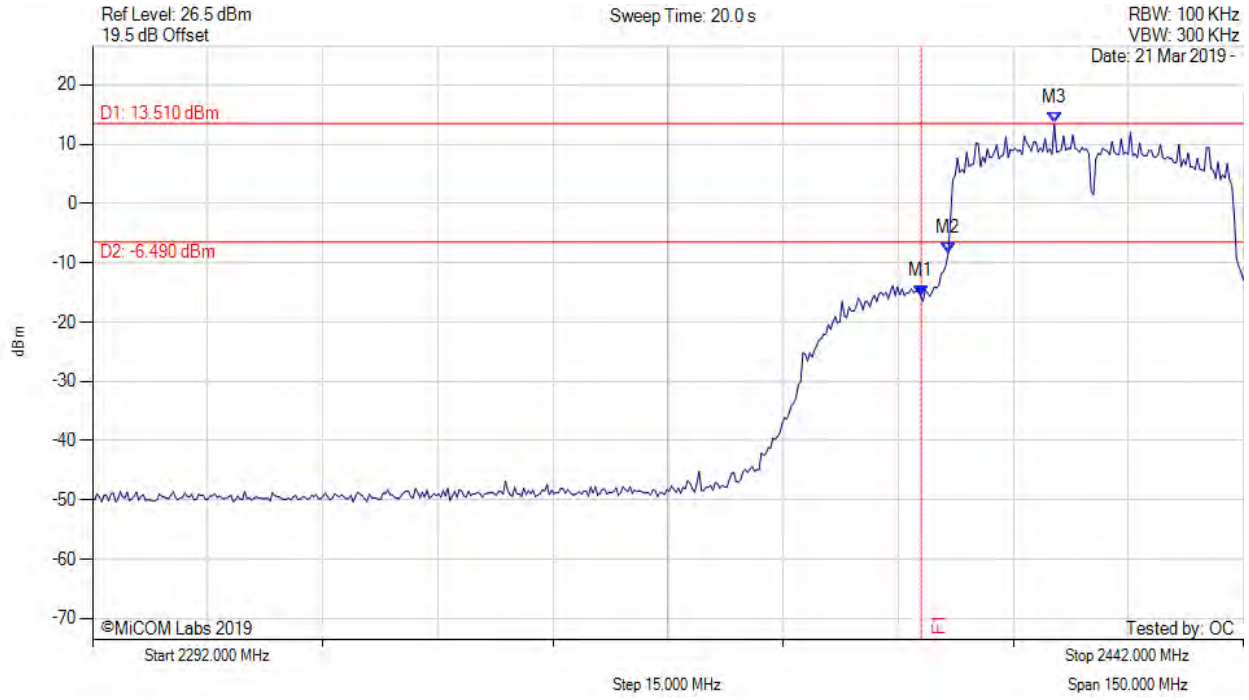


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2417.351 MHz : 13.485 dBm M2 : 2403.222 MHz : -10.234 dBm M3 : 2417.351 MHz : 13.485 dBm Delta1 : 0 Hz : 0.000 dB	Channel Frequency: 2422.00 MHz

back to matrix

CONDUCTED LOW BAND-EDGE EMISSION - PEAK

Variant: 802.11n HT-40, Channel: 2422.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

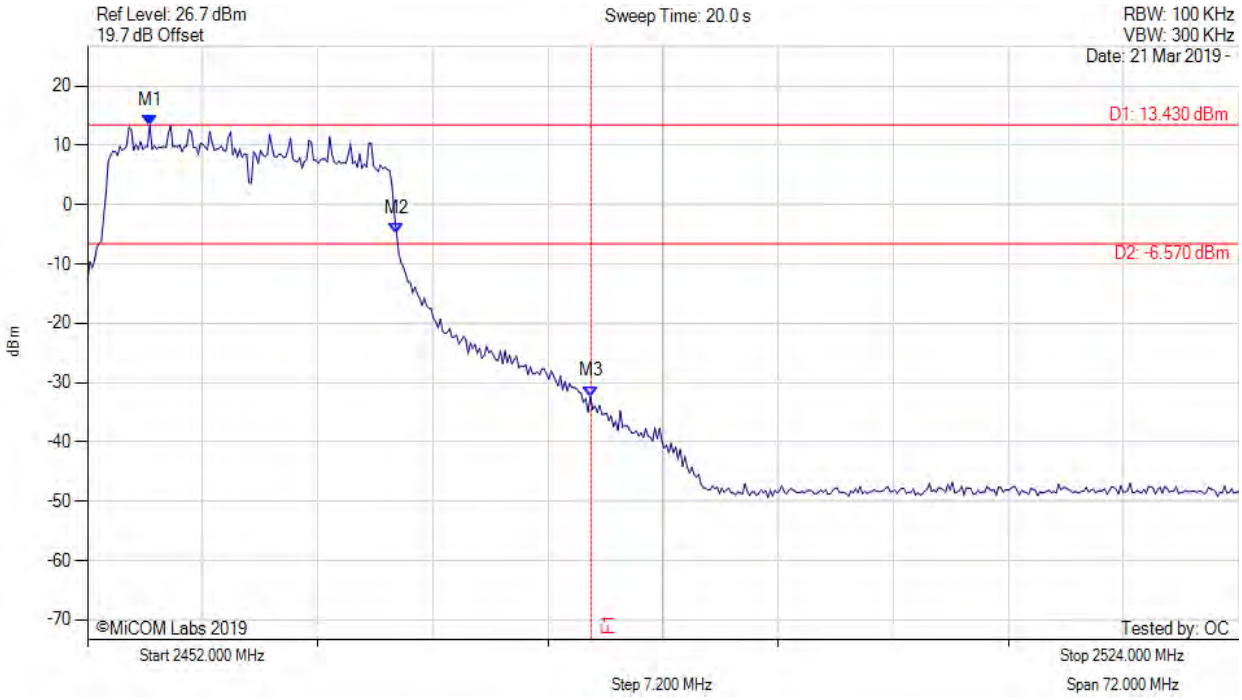


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2400.000 MHz : -15.629 dBm M2 : 2403.523 MHz : -8.299 dBm M3 : 2417.351 MHz : 13.515 dBm	Channel Frequency: 2422.00 MHz

back to matrix

CONDUCTED HIGH BAND-EDGE EMISSION - PEAK

Variant: 802.11b, Channel: 2462.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

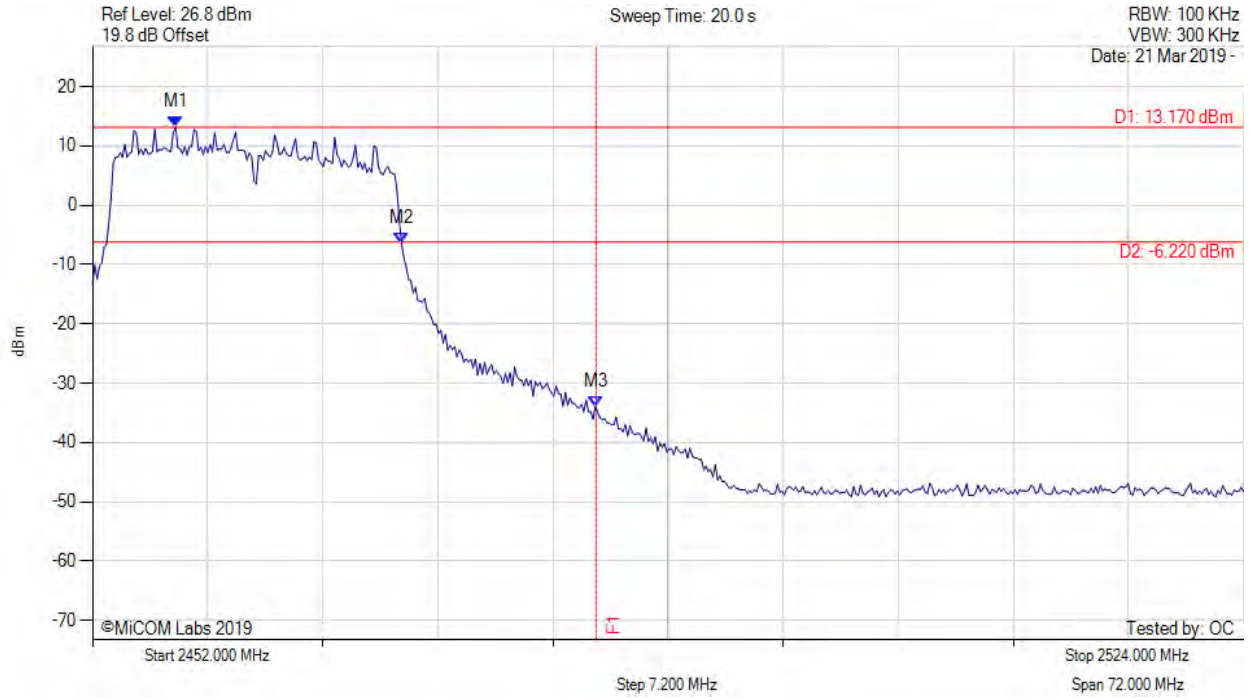


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2455.896 MHz : 13.434 dBm M2 : 2471.335 MHz : -4.874 dBm M3 : 2483.500 MHz : -32.332 dBm	Channel Frequency: 2462.00 MHz

back to matrix

CONDUCTED HIGH BAND-EDGE EMISSION - PEAK

Variant: 802.11b, Channel: 2462.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

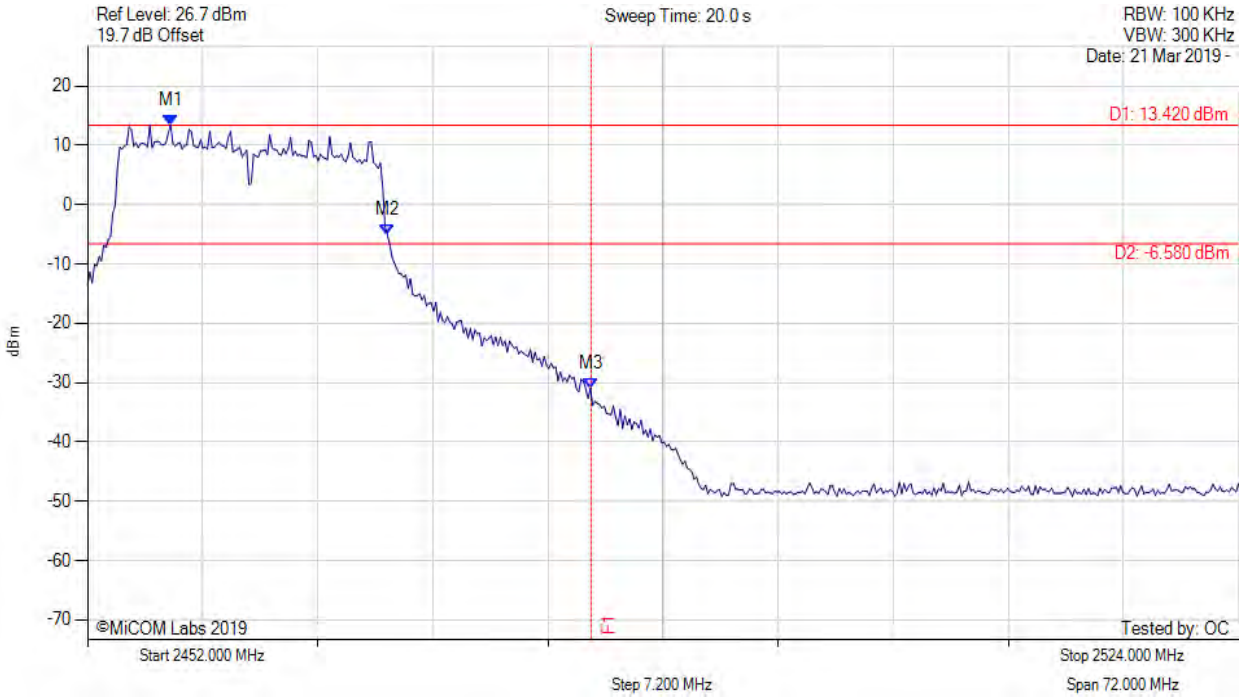


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2457.194 MHz : 13.168 dBm M2 : 2471.335 MHz : -6.395 dBm M3 : 2483.500 MHz : -33.932 dBm	Channel Frequency: 2462.00 MHz

back to matrix

CONDUCTED HIGH BAND-EDGE EMISSION - PEAK

Variant: 802.11g, Channel: 2462.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

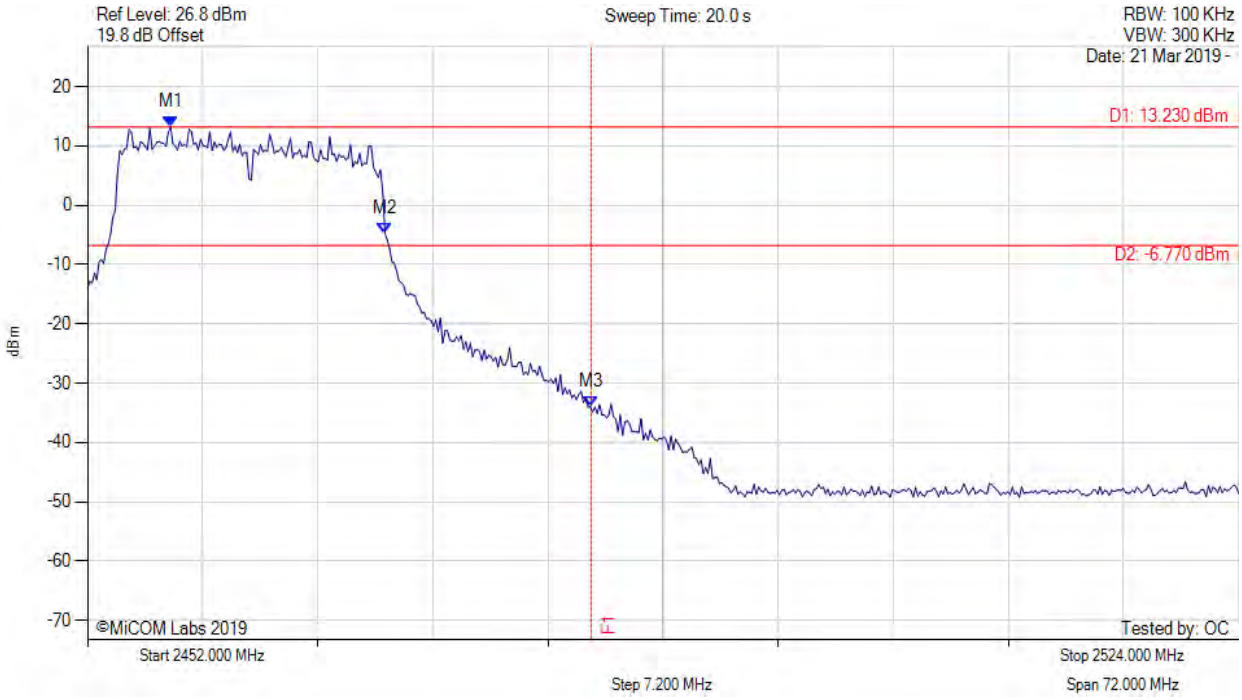


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2457.194 MHz : 13.424 dBm M2 : 2470.758 MHz : -5.059 dBm M3 : 2483.500 MHz : -30.965 dBm	Channel Frequency: 2462.00 MHz

back to matrix

CONDUCTED HIGH BAND-EDGE EMISSION - PEAK

Variant: 802.11g, Channel: 2462.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc

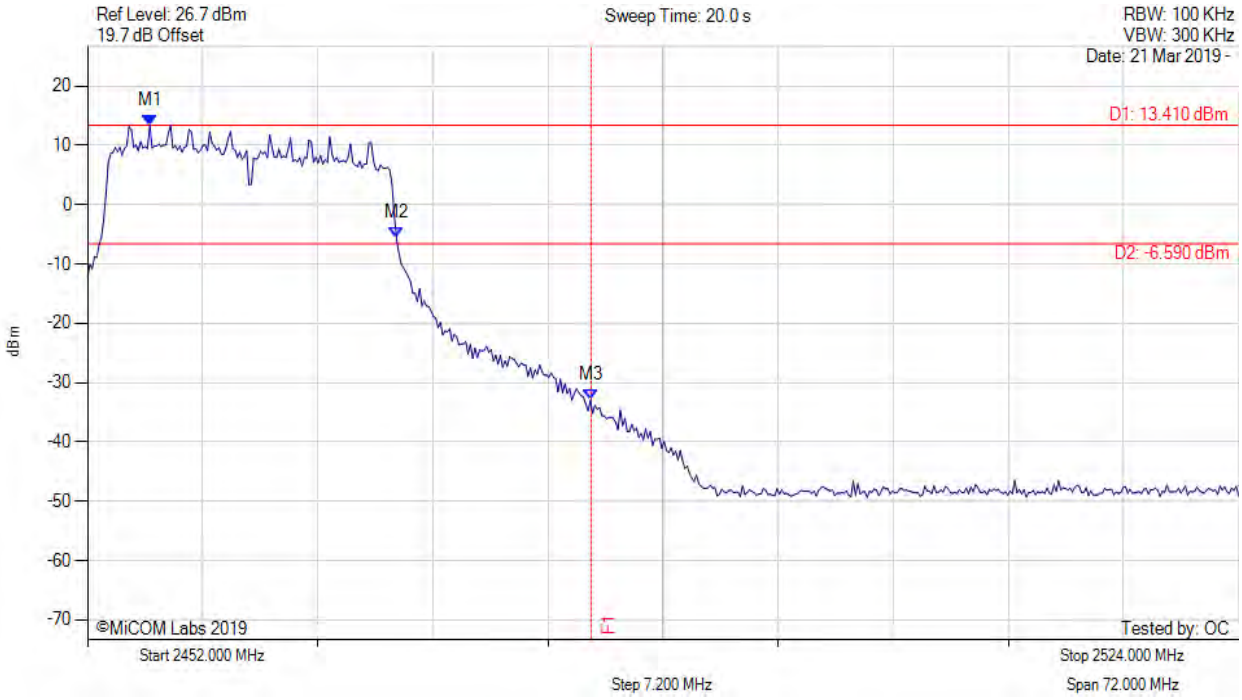


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2457.194 MHz : 13.231 dBm M2 : 2470.613 MHz : -4.774 dBm M3 : 2483.500 MHz : -34.015 dBm	Channel Frequency: 2462.00 MHz

back to matrix

CONDUCTED HIGH BAND-EDGE EMISSION - PEAK

Variant: 802.11n HT-20, Channel: 2462.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc

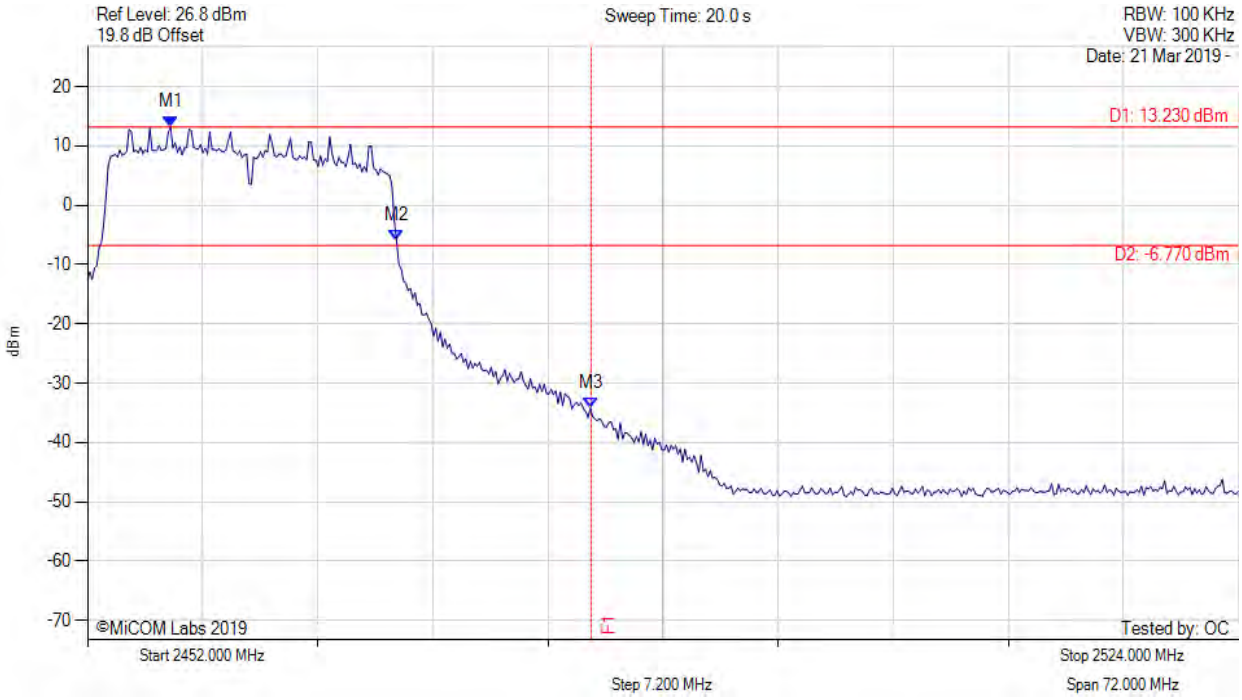


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2455.896 MHz : 13.414 dBm M2 : 2471.335 MHz : -5.681 dBm M3 : 2483.500 MHz : -33.023 dBm	Channel Frequency: 2462.00 MHz

back to matrix

CONDUCTED HIGH BAND-EDGE EMISSION - PEAK

Variant: 802.11n HT-20, Channel: 2462.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2457.194 MHz : 13.231 dBm M2 : 2471.335 MHz : -6.004 dBm M3 : 2483.500 MHz : -34.251 dBm	Channel Frequency: 2462.00 MHz

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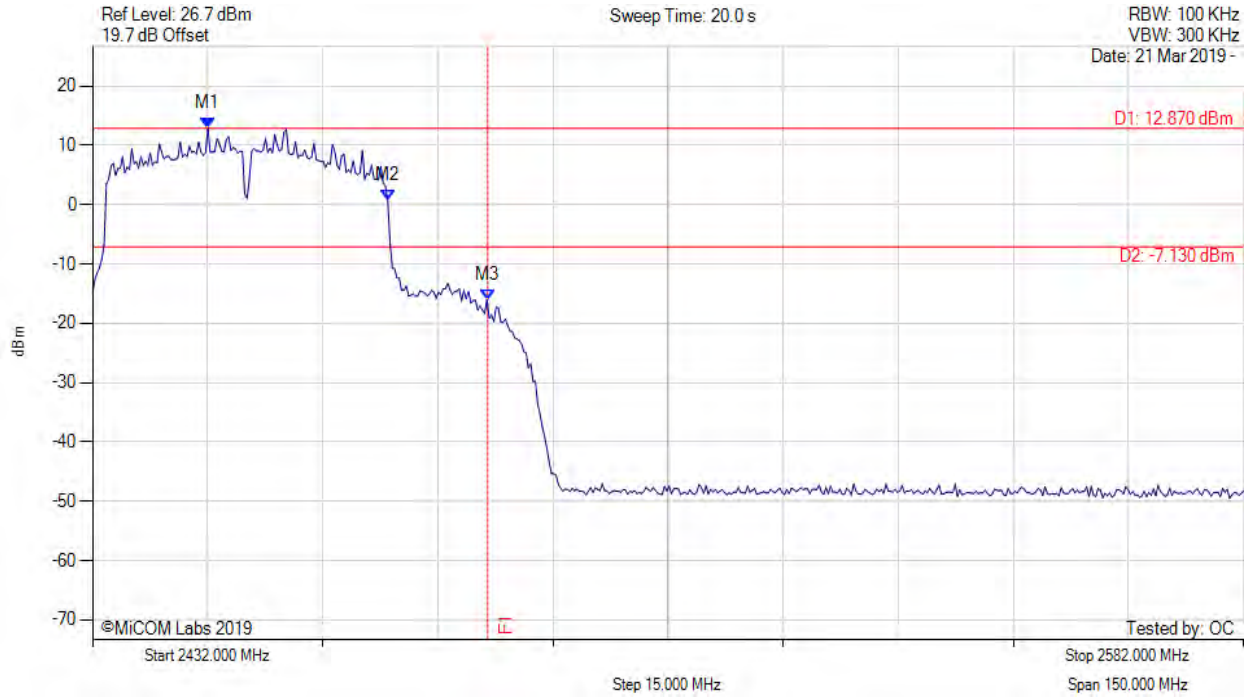
CONDUCTED HIGH BAND-EDGE EMISSION - PEAK

Variant: 802.11n HT-40, Channel: 2452.00 MHz, Chain a, Temp: 20, Voltage: 24 Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2447.030 MHz : 12.866 dBm M2 : 2470.477 MHz : 0.633 dBm M3 : 2483.500 MHz : -16.021 dBm	Channel Frequency: 2452.00 MHz

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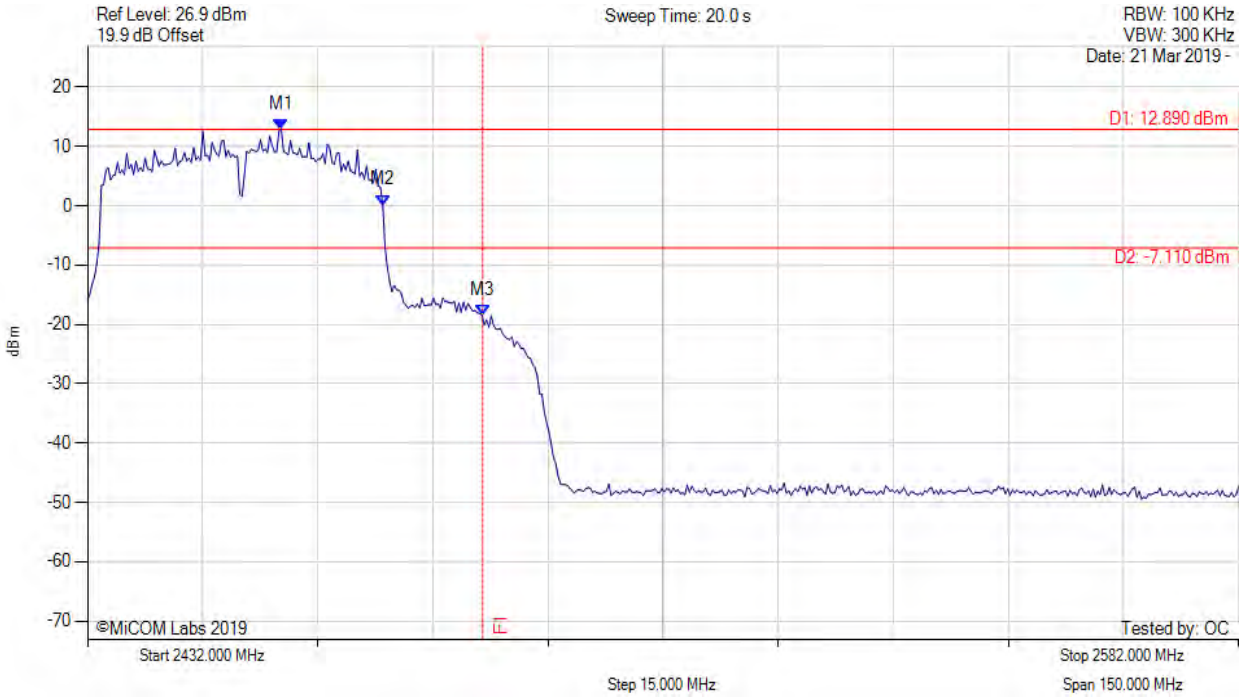
CONDUCTED HIGH BAND-EDGE EMISSION - PEAK

Variant: 802.11n HT-40, Channel: 2452.00 MHz, Chain b, Temp: 20, Voltage: 24 Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2457.251 MHz : 12.885 dBm M2 : 2470.477 MHz : 0.103 dBm M3 : 2483.500 MHz : -18.396 dBm	Channel Frequency: 2452.00 MHz

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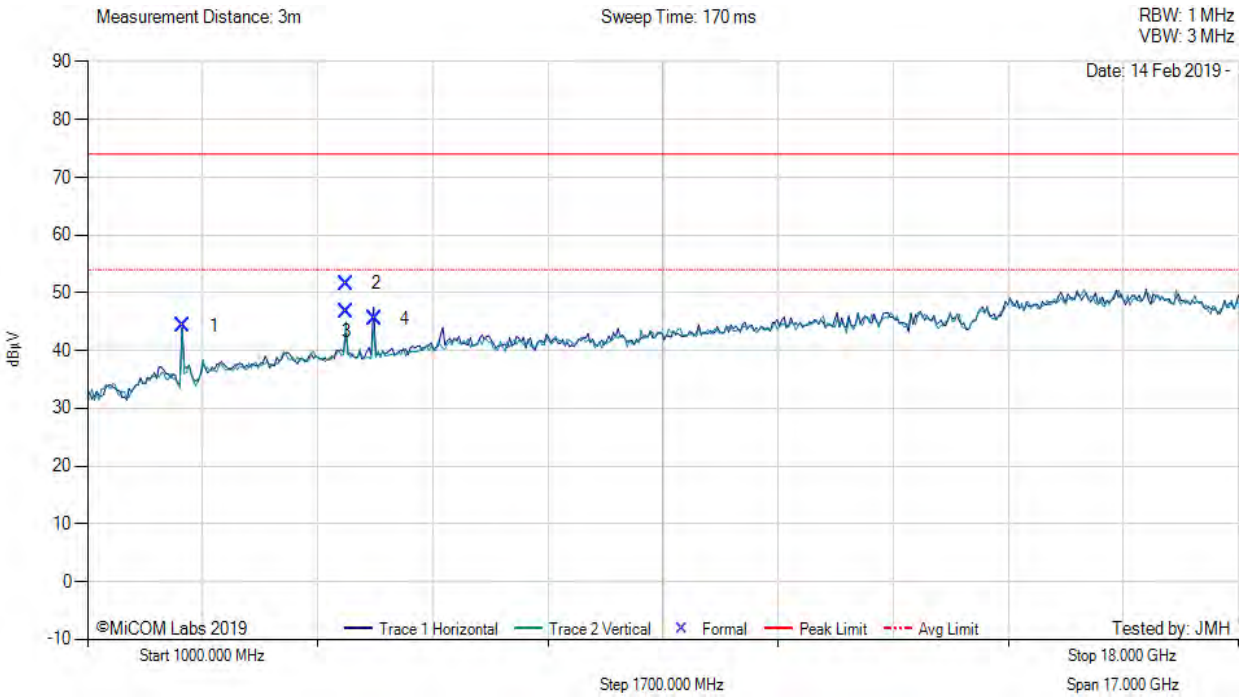
A.3.2. Radiated Emissions

A.3.2.3. TX Spurious & Restricted Band Emissions

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11b, Test Freq: 2412.00 MHz, Antenna: integral integral, Power Setting: 30, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	2413.93	58.35	-1.77	-12.29	44.29	Fundamental	Horizontal	100	0	--	--	
2	4824.02	66.52	-2.53	-12.42	51.57	Max Peak	Vertical	99	328	74.0	-22.4	Pass
3	4824.02	61.77	-2.53	-12.42	46.82	Max Avg	Vertical	99	328	54.0	-7.2	Pass
4	5239.89	60.40	-2.62	-12.24	45.54	Peak (NRB)	Horizontal	100	0	--	--	Pass

Test Notes: EUT Powered by power supply, connected to laptop outside chamber. 2.4GHz notch in front of amp to prevent overloads.

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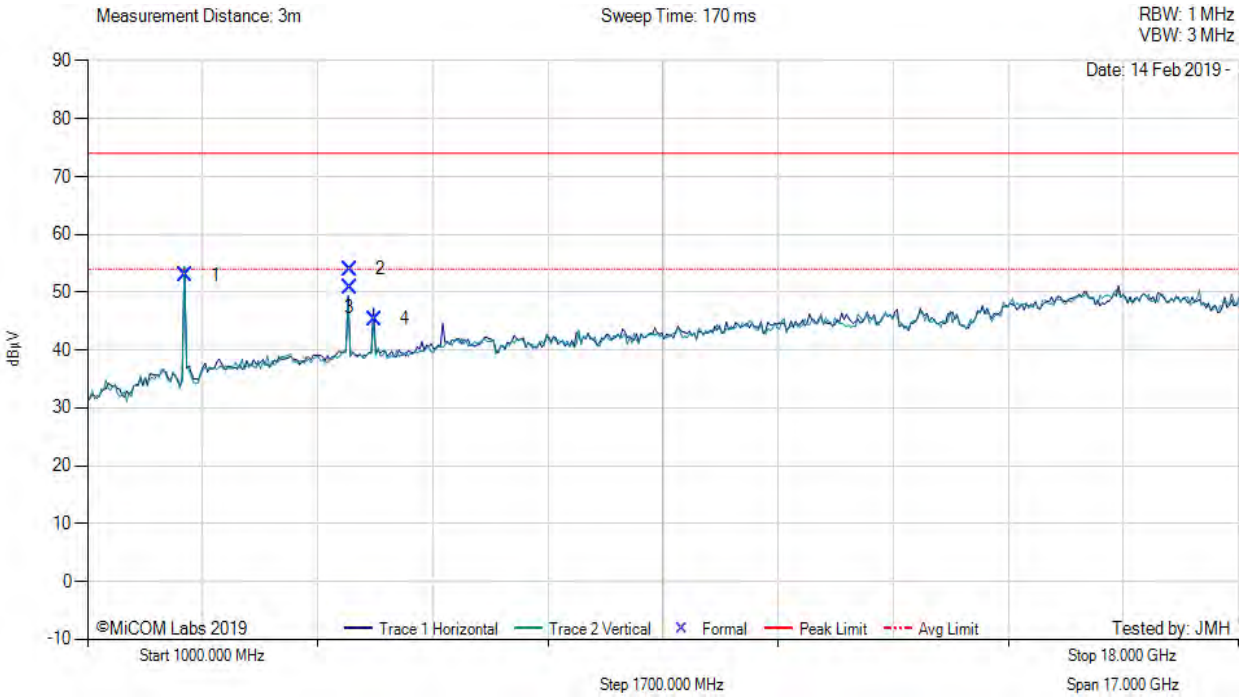
TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11b, Test Freq: 2437.00 MHz, Antenna: integral integral, Power Setting: 30, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	2436.21	66.81	-1.78	-12.13	52.90	Fundamental	Vertical	100	0	--	--	
2	4873.98	69.10	-2.51	-12.61	53.98	Max Peak	Horizontal	101	333	74.0	-20.0	Pass
3	4873.98	66.04	-2.51	-12.61	50.92	Max Avg	Horizontal	101	333	54.0	-3.1	Pass
4	5239.98	60.21	-2.62	-12.24	45.35	Peak (NRB)	Horizontal	100	0	--	--	Pass

Test Notes: EUT Powered by power supply, connected to laptop outside chamber. 2.4GHz notch in front of amp to prevent overloads.

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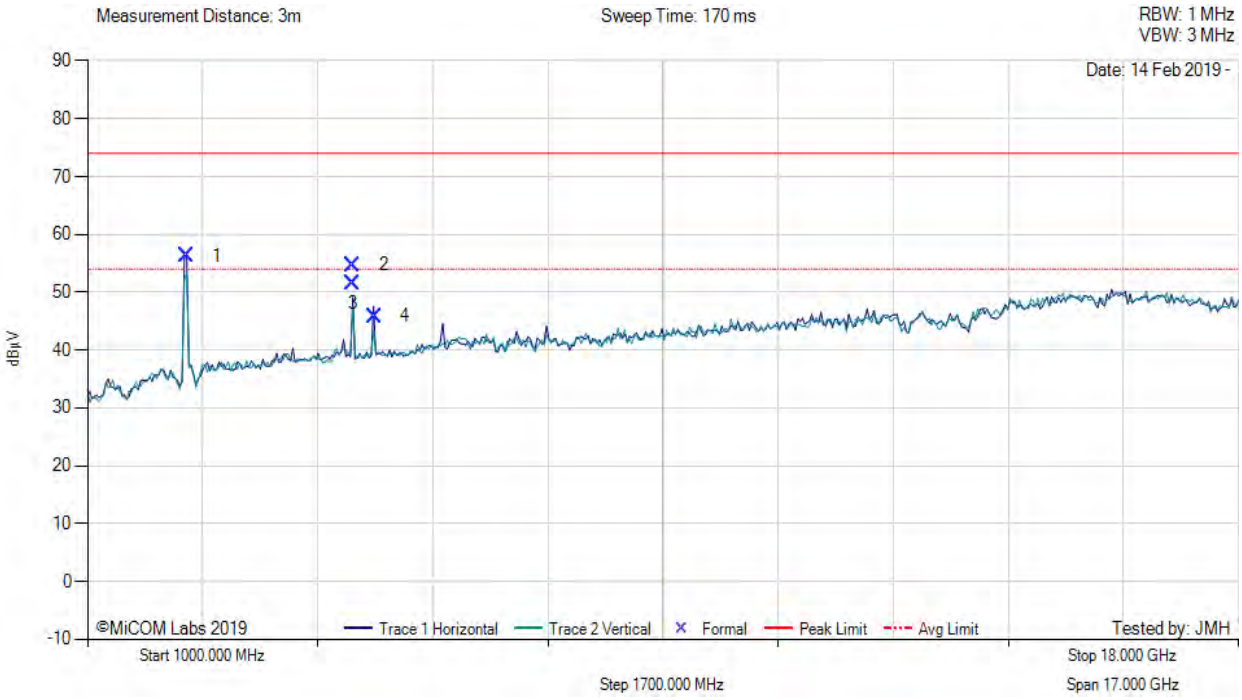
TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11b, Test Freq: 2462.00 MHz, Antenna: integral integral, Power Setting: 29, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	2462.73	70.09	-1.79	-11.96	56.34	Fundamental	Horizontal	100	0	--	--	
2	4923.99	69.61	-2.56	-12.35	54.70	Max Peak	Horizontal	150	335	74.0	-19.3	Pass
3	4923.99	66.48	-2.56	-12.35	51.57	Max Avg	Horizontal	150	335	54.0	-2.4	Pass
4	5239.95	60.72	-2.62	-12.24	45.86	Peak (NRB)	Horizontal	100	0	--	--	Pass

Test Notes: EUT Powered by power supply, connected to laptop outside chamber. 2.4GHz notch in front of amp to prevent overloads.

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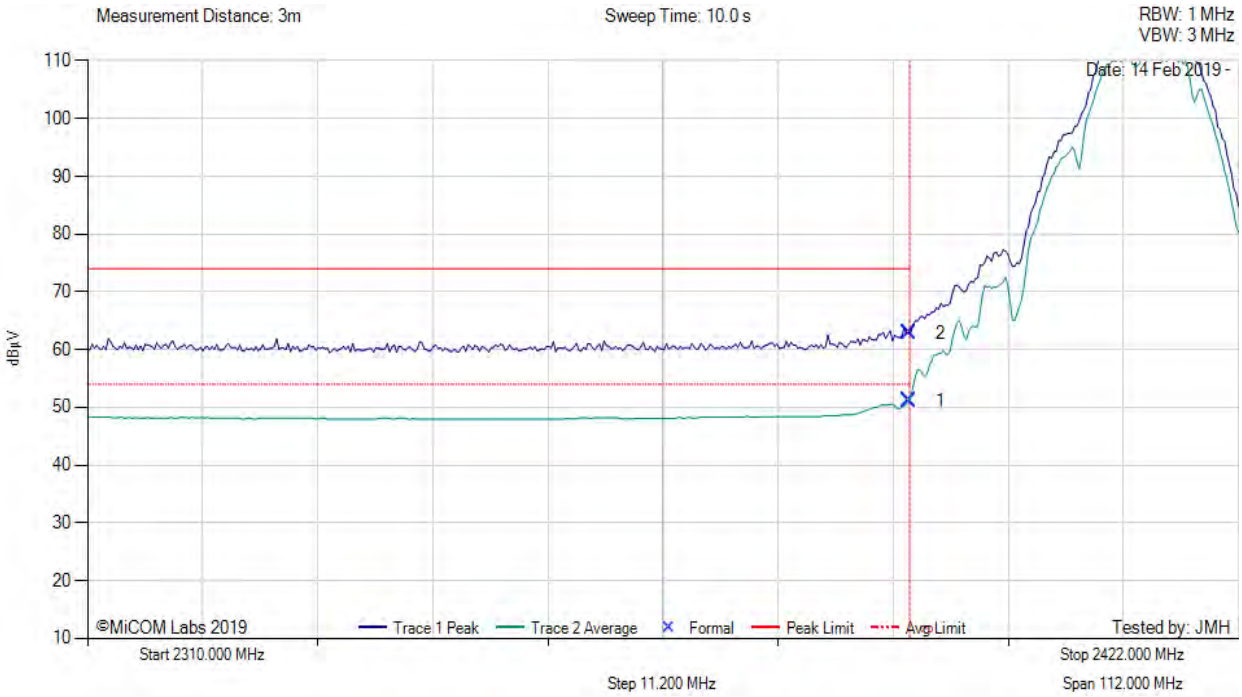
A.3.2.4. Restricted Edge & Band-Edge Emissions

RADIATED - LOWER RESTRICTED BAND-EDGE EMISSIONS

Variant: 802.11b, Test Freq: 2412.00 MHz, Antenna: integral integral, Power Setting: 30, Duty Cycle (%): 99



2310.00 - 2422.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	2390.00	20.87	-1.77	31.96	51.06	Max Avg	Horizontal	155	253	54.0	-2.9	Pass
2	2390.00	32.69	-1.77	31.96	62.88	Max Peak	Horizontal	155	253	74.0	-11.1	Pass
3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

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

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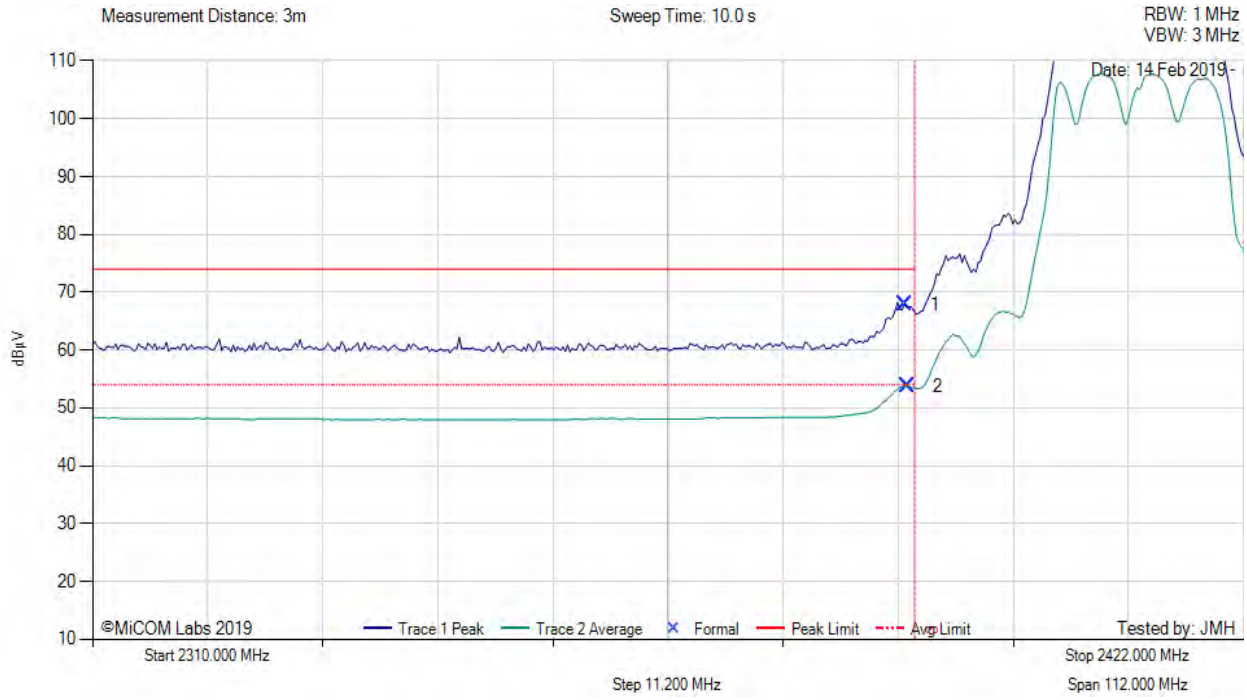
RADIATED - LOWER RESTRICTED BAND-EDGE EMISSIONS

Variant: 802.11g, Test Freq: 2412.00 MHz, Antenna: integral integral, Power Setting: 28, Duty Cycle (%): 99



2310.00 - 2422.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	2389.01	37.71	-1.77	31.95	67.89	Max Peak	Horizontal	155	253	74.0	-6.1	Pass
2	2389.33	23.62	-1.77	31.95	53.80	Max Avg	Horizontal	155	253	54.0	-0.2	Pass
3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

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

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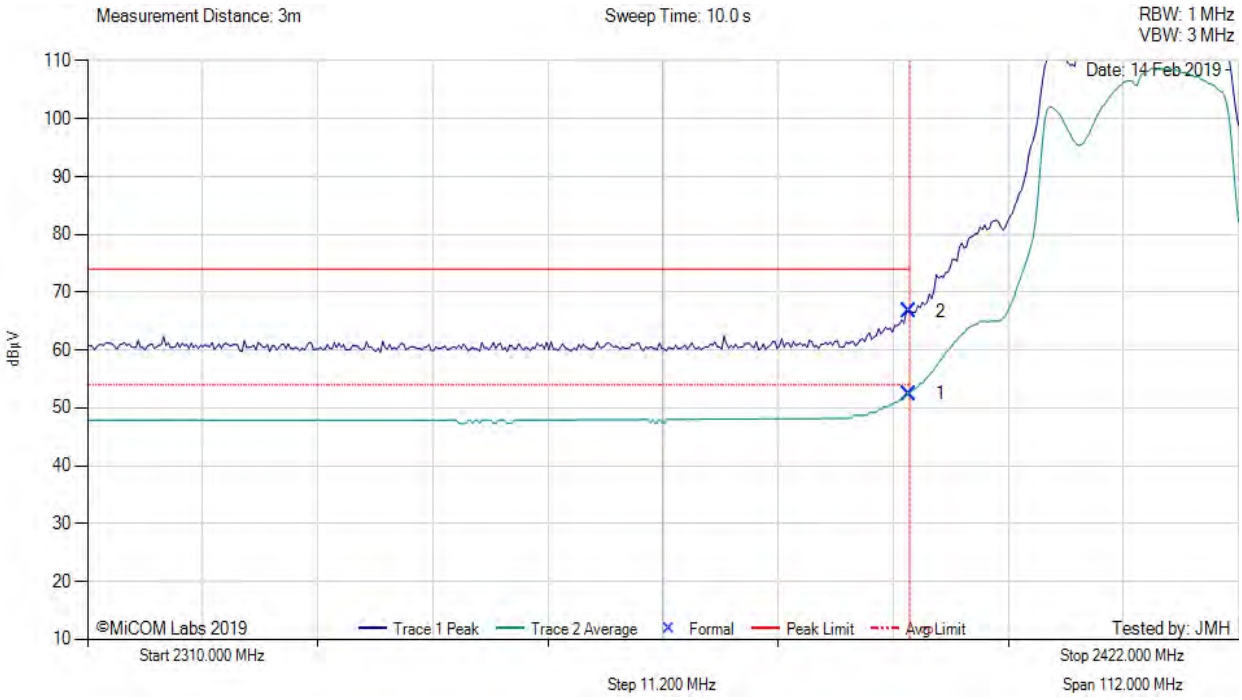
RADIATED - LOWER RESTRICTED BAND-EDGE EMISSIONS

Variant: 802.11n HT-20, Test Freq: 2412.00 MHz, Antenna: integral integral, Power Setting: 28, Duty Cycle (%): 99



2310.00 - 2422.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	2390.00	22.27	-1.77	31.96	52.46	Max Avg	Horizontal	155	253	54.0	-1.5	Pass
2	2390.00	36.45	-1.77	31.96	66.64	Max Peak	Horizontal	155	253	74.0	-7.4	Pass
3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

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

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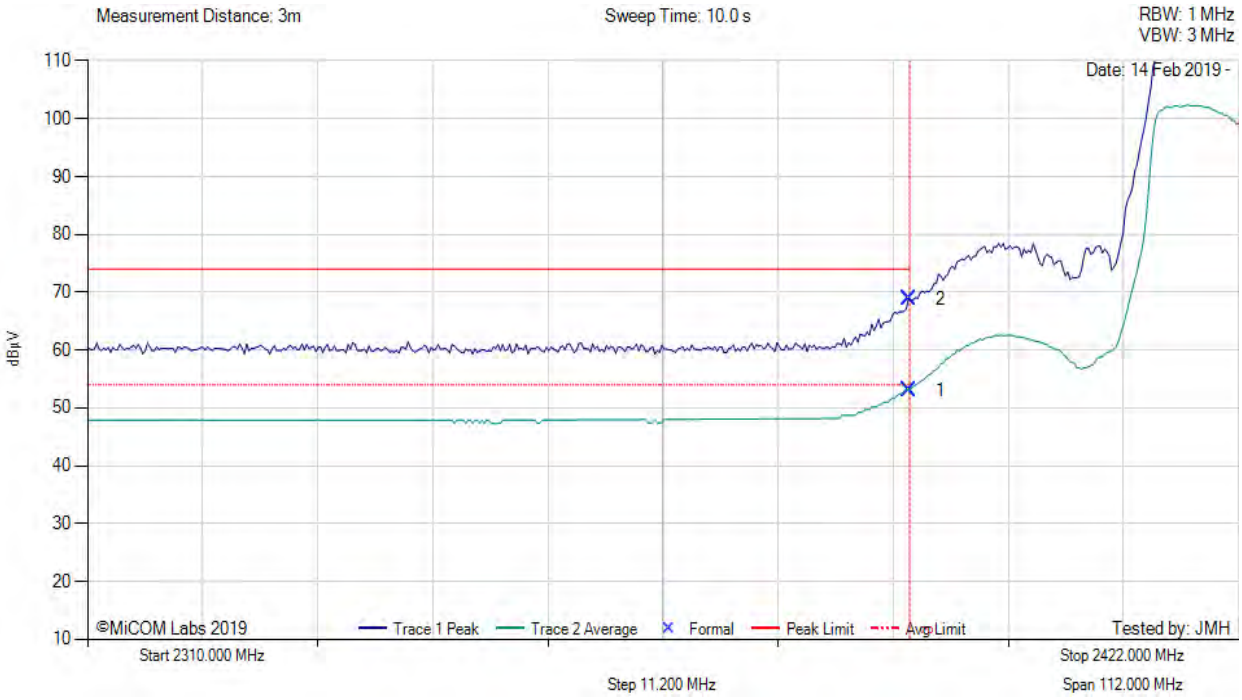
RADIATED - LOWER RESTRICTED BAND-EDGE EMISSIONS

Variant: 802.11n HT-40, Test Freq: 2422.00 MHz, Antenna: integral integral, Power Setting: 25, Duty Cycle (%): 99



2310.00 - 2422.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	2390.00	22.91	-1.77	31.96	53.10	Max Avg	Horizontal	155	253	54.0	-0.9	Pass
2	2390.00	38.68	-1.77	31.96	68.87	Max Peak	Horizontal	155	253	74.0	-5.1	Pass
3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

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

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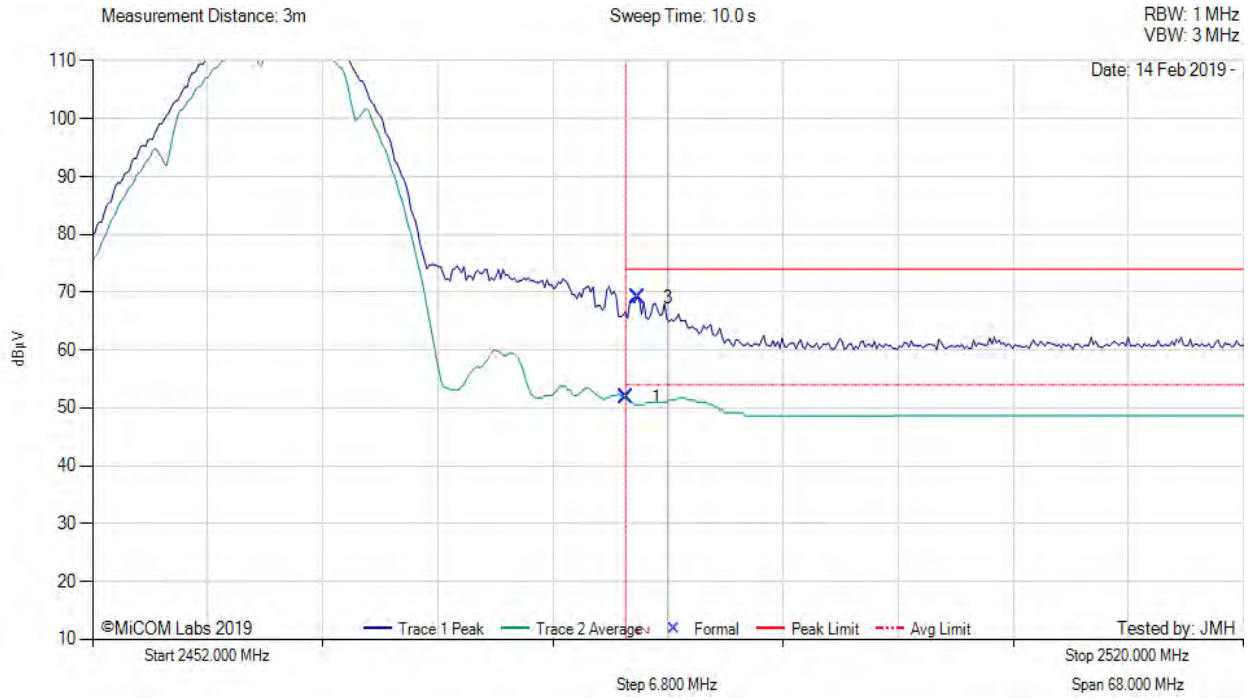
RADIATED - UPPER RESTRICTED BAND-EDGE EMISSIONS

Variant: 802.11b, Test Freq: 2462.00 MHz, Antenna: integral integral, Power Setting: 29, Duty Cycle (%): 99



2452.00 - 2520.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	2483.50	21.22	-1.78	32.33	51.77	Max Avg	Horizontal	155	253	54.0	-2.2	Pass
3	2484.18	38.55	-1.78	32.33	69.10	Max Peak	Horizontal	155	253	74.0	-4.9	Pass
2	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--

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

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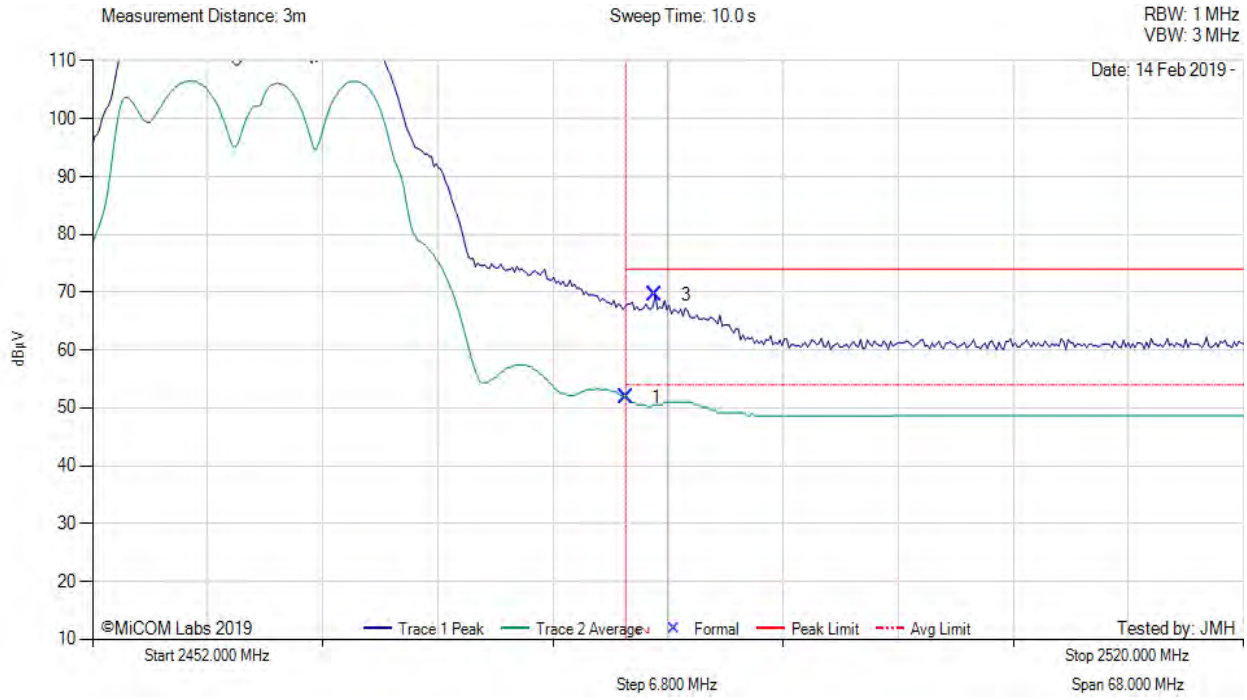
RADIATED - UPPER RESTRICTED BAND-EDGE EMISSIONS

Variant: 802.11g, Test Freq: 2462.00 MHz, Antenna: integral integral, Power Setting: 27, Duty Cycle (%): 99



2452.00 - 2520.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	2483.50	21.22	-1.78	32.33	51.77	Max Avg	Horizontal	155	253	54.0	-2.2	Pass
3	2485.25	38.95	-1.78	32.33	69.50	Max Peak	Horizontal	155	253	74.0	-4.5	Pass
2	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--

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

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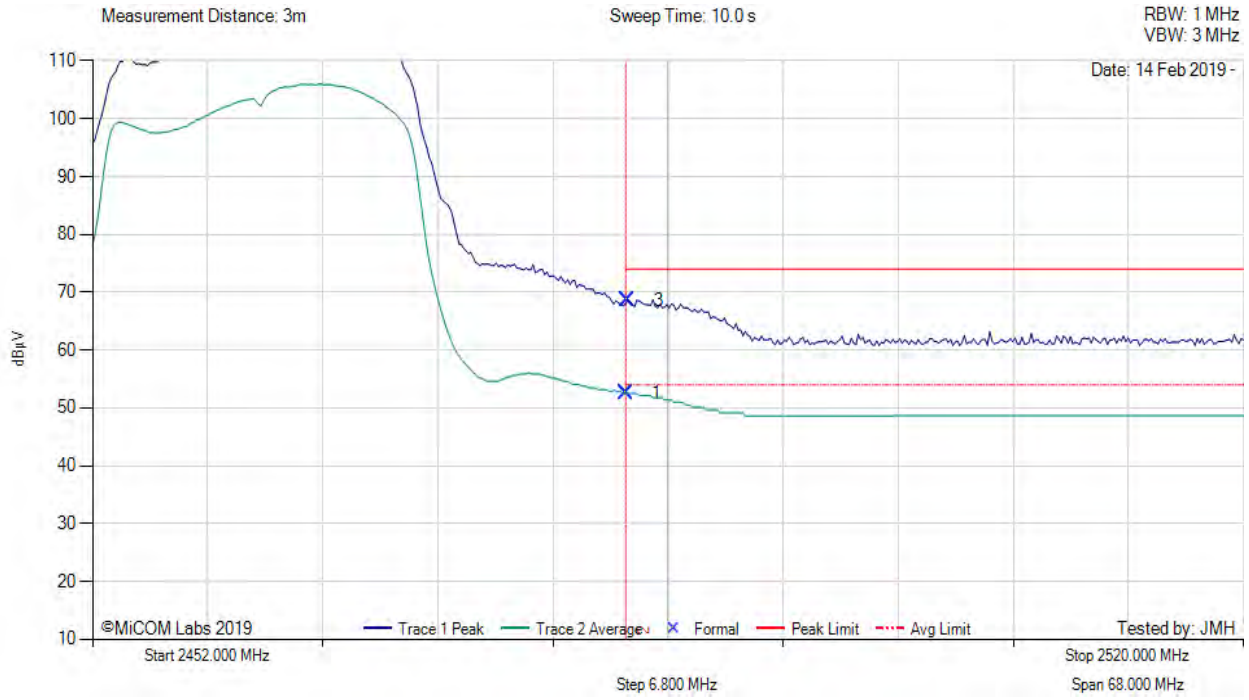
RADIATED - UPPER RESTRICTED BAND-EDGE EMISSIONS

Variant: 802.11n HT-20, Test Freq: 2462.00 MHz, Antenna: integral integral, Power Setting: 27, Duty Cycle (%): 99



2452.00 - 2520.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	2483.50	21.95	-1.78	32.33	52.50	Max Avg	Horizontal	155	253	54.0	-1.5	Pass
3	2483.64	38.02	-1.78	32.33	68.57	Max Peak	Horizontal	155	253	74.0	-5.4	Pass
2	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--

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

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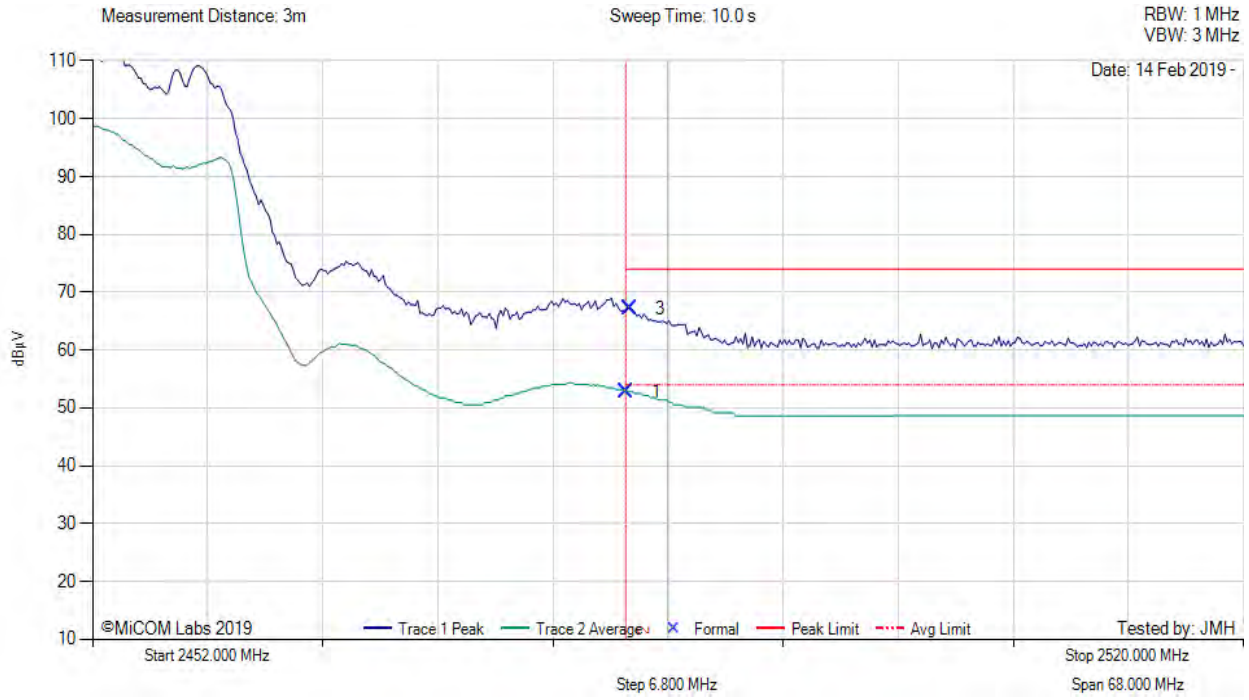
RADIATED - UPPER RESTRICTED BAND-EDGE EMISSIONS

Variant: 802.11n HT-40, Test Freq: 2452.00 MHz, Antenna: integral integral, Power Setting: 24, Duty Cycle (%): 99



2452.00 - 2520.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	2483.50	22.29	-1.78	32.33	52.84	Max Avg	Horizontal	155	253	54.0	-1.2	Pass
3	2483.77	36.66	-1.78	32.33	67.21	Max Peak	Horizontal	155	253	74.0	-6.8	Pass
2	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--

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

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