

Company: Actiontec Electronics Inc

Test of: WCB6240Q
To: FCC CFR 47 Part 15 Subpart C 15.247 (DTS) +
Industry Canada RSS-247 Issue 1

Report No.: ATEC09-U5a Conducted Rev C

CONDUCTED TEST REPORT



CONDUCTED TEST REPORT

FROM



Test of: Actiontec Electronics Inc WCB6240Q
to

To: FCC CFR 47 Part 15 Subpart C 15.247 (DTS) +
Industry Canada RSS-247 Issue 1

Test Report Serial No.: ATEC09-U5a Conducted Rev C

This report supersedes: ATEC09-U5a Conducted Rev B

Note: this report is one of a set of three reports that together address the requirements for certification purposes

Report Number	Test Report Type
ATEC09-U5a, b	2.4 GHz Conducted & Radiated Test Reports
ATEC09-U8a, b	5 GHz (non-DFS) Conducted, Radiated Test Reports
ATEC09-U11a, b, c	5 GHz (DFS) Conducted, Radiated, DFS Test Reports
ATEC09-U2	FCC Part 15B / ICES-003 Test Report

Applicant: Actiontec Electronics Inc.
760 N Mary Avenue
Sunnyvale California 94085
USA

Product Function: Wireless Access Point and
Ethernet Router

Issue Date: 24th November 2015

This Test Report is Issued Under the Authority of:

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



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>



American Association for Laboratory Accreditation

Accredited Laboratory

A2LA has accredited

MICOM LABS

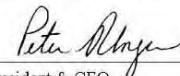
Pleasanton, CA

for technical competence in the field of

Electrical Testing

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

Presented this 28th day of February 2014.



President & CEO
For the Accreditation Council
Certificate Number 2381.01
Valid to November 30, 2015



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

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1.2. RECOGNITION

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

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

EU MRA – European Union Mutual Recognition Agreement.

NB – Notified Body

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

Phase I - recognition for product testing

Phase II – recognition for both product testing and certification

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>



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

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2. DOCUMENT HISTORY

Document History		
Revision	Date	Comments
Draft	13 th October 2015	
Draft #2	19 th October 2015	
Rev A	27 th October 2015	Initial Release
Draft #3	13 th November 2015	The initial program (Rev A) for 802.11n HT-40 only tested mid channel (2437 MHz). As a result of the manufacturer introducing additional frequencies for HT-40 operational mode conducted measurements were required.
Rev B	16 th November 2015	2 nd document release
Rev C	24 th November 2015	Updated HT-40 power settings
.		

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

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Title: Actiontec Electronics Inc WCB6240Q
To: FCC 15.247 (DTS) + IC RSS-247 Issue 1
Serial #: ATEC09-U5a Conducted Rev C
Issue Date: 24th November 2015
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3. TEST RESULT CERTIFICATE

Manufacturer: Actiontec Electronics Inc
760 N Mary Avenue
Sunnyvale California 94085
USA

Tested By: MiCOM Labs, Inc.
575 Boulder Court
Pleasanton
California 94566 USA

Model: WCB6240Q

Telephone: +1 925 462 0304
Fax: +1 925 462 0306

Type Of Equipment: 802.11a/b/g/n/ac Wireless Router

S/N's: GWXA5360700016

Test Date(s): 22nd – 28th September 2015

Website: www.micomlabs.com

STANDARD(S)

TEST RESULTS

**FCC CFR 47 Part 15 Subpart C 15.247 (DTS)
Industry Canada RSS-247 Issue 1**

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.

Approved & Released for MiCOM Labs, Inc. by:

Graeme Grieve
Quality Manager MiCOM Labs, Inc.

Gordon Hurst
President & CEO MiCOM Labs, Inc.



TESTING CERT #2381.01

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4. REFERENCES AND MEASUREMENT UNCERTAINTY

4.1. Normative References

REF.	PUBLICATION	YEAR	TITLE
I	KDB 662911	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 v03r03	9th June 2015	Guidance for performing compliance measurements on Digital Transmission Systems (DTS) operating under section 15.247.
III	A2LA	June 2015	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	2009	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 22	2008	Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement
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	2014	Radio Frequency Devices; Subpart C – Intentional Radiators
IX	ICES-003	Issue 5 2012	Spectrum Management and Telecommunications; Interference-Causing Equipment Standard. Information Technology Equipment (ITE) – Limits and methods of measurement.
X	M 3003	Edition 3 Nov. 2012	Expression of Uncertainty and Confidence in Measurements
XI	RSS-247 Issue 1	May 2015	Digital Transmission Systems (DTSs), Frequency Hopping System (FHSs) and Licence-Exempt Local Area Network (LE-LEN) Devices
XII	RSS-Gen Issue 4	November 2014	General Requirements and Information for the Certification of Radiocommunication Equipment
XIII	KDB 644545 D03 v01	August 14th 2014	Guidance for IEEE 802.11ac New Rules
XIV	FCC 47 CFR Part 2.1033	2014	FCC requirements and rules regarding photographs and test setup diagrams.

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4.2. Test and Uncertainty Procedure

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

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

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

5. PRODUCT DETAILS AND TEST CONFIGURATIONS

5.1. Technical Details

Details	Description
Purpose:	Test of the Actiontec Electronics Inc WCB6240Q to FCC CFR 47 Part 15 Subpart C 15.247 (DTS) and Industry Canada RSS-247 Issue 1
Applicant:	Actiontec Electronics Inc 760 N Mary Avenue Sunnyvale California 94085 USA
Manufacturer:	As Applicant
Laboratory performing the tests:	MiCOM Labs, Inc. 575 Boulder Court Pleasanton California 94566 USA
Test report reference number:	ATEC09-U5a Conducted
Date EUT received:	15 th September 2015
Standard(s) applied:	FCC CFR 47 Part 15 Subpart C 15.247 (DTS) Industry Canada RSS-247 Issue 1
Dates of test (from - to):	22 nd – 28 th September 2015
No of Units Tested:	2
Type of Equipment:	802.11a/b/g/n/ac Wireless Router
Product Family Name:	802.11ac Wireless 4-Port Ethernet Bridge with Optional MoCA
Model(s):	Tested Device: WCB6240Q + WEB6040Q
Location for use:	Indoor
Declared Frequency Range(s):	2400 - 2483.5 MHz
Primary function of equipment:	Wireless Access Point and Ethernet Router
Secondary function of equipment:	Optional Cable MoCA Bridge
Type of Modulation:	Per 802.11 –CCK, BPSK, QPSK, DSSS, OFDM
EUT Modes of Operation:	802.11b/g/HT-20/HT-40;
Declared Nominal Output Power (Ave):	+25 dBm
Transmit/Receive Operation:	Transceiver - Half Duplex
Rated Input Voltage and Current:	AC/ DC adaptor (adaptor sold with unit) 12Vdc, 2A
Operating Temperature Range:	Declared Range 0°C to 40°C
ITU Emission Designator:	802.11b 10M1G1D 802.11g 16M6D1D 802.11n – HT-20 17M5D1D 802.11n – HT-40 36M2D1D
Equipment Dimensions:	9 x 1.5 x 5.75 inches
Weight:	1.1 lbs
Hardware Rev:	AM3
Software Rev:	1.1.01.19ya

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5.2. Scope Of Test Program

Actiontec Electronics Inc WCB6240Q

The scope of the test program was to test the Actiontec Electronics Inc WCB6240Q 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; Subpart C – Intentional Radiators

Industry Canada RSS-247 Issue 1

Digital Transmission Systems (DTSs), Frequency Hopping System (FHSs) and Licence-Exempt Local Area Network (LE-LEN) Devices

Manufacturers Declaration of Similarity

FCC ID: LNQWXB6X40Q

IC ID: 2496A-WXB6X40Q

Actiontec Models: WxB6x40Q

Product Similarities:

Actiontec Models: WCB6240Q and WEB6040Q To whom it may concern: We, Actiontec Electronics, Inc., hereby to declare the mentioned two models have electrically identical Wireless circuitry with the same electromagnetic emissions and electromagnetic compatibility characteristics. Descriptions of the differences between these two models are as follows;

WCB6240Q – 802.11ac Wireless 4-Port Ethernet Bridge with Bonded MoCA

WEB6040Q – 802.11ac Wireless 4-Port Ethernet Bridge without MoCA.

Actiontec Electronics Inc WCB6240Q



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Actiontec Electronics Inc WCB6240Q



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

Type (EUT/ Support)	Equipment Description (Including Brand Name)	Mfr	Model No.	Serial No.
EUT	Wireless Router	Actiontec	WCB6240Q	GWXA5360700016
EUT	Power Adapter 100 - 240Vac 50/60Hz 0.7A 12 Vdc 2.0 A	Actiontec	WA-24Q12FU	DJ87714D14043198400
Support	Laptop PC	IBM	Thinkpad	None

5.4. Antenna Details

Type	Manufacturer	Model	Family	Gain (dBi)	BF Gain	Dir BW	X-Pol	Frequency Band (MHz)
integral	Galtronics	Custom PCB SMT	Dipole	3.1	-	360	-	2400 - 2483.5
integral	Galtronics	Custom Internal Cabled	Dipole	3.1	-	360	-	2400 - 2483.5

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

5.5. Cabling and I/O Ports

Port Type	Max Cable Length	# Of Ports	Screened	Conn Type	Data Type
Ethernet	100m GbE LAN	4	N	RJ45	Packet Data

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				
802.11b	1	2,412.00	2,437.00	2,462.00
802.11g	6	2,412.00	2,437.00	2,462.00
802.11n HT-20	6.5	2,412.00	2,437.00	2,462.00
802.11n HT-40*	13.5	--	2,437.00	--

*Only mid channel was tested for 802.11n HT-40, see Section 5.7 Equipment Modifications

5.7. Equipment Modifications

The following modifications were required to bring the equipment into compliance:

1. Conducted Band-Edge Emissions (802.11n HT-40 only)

Problem: Conducted Band-Edge failed on channels 2422 and 2452 MHz

Solution: 802.11n HT-40 channels 2422 and 2452 MHz were dropped and the equipment can only operate on channel 2437 MHz for HT-40 operational mode.

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
15.247(a)(2) 6 dB & 99% Bandwidth	Complies	View Data
15.247(b), 15.31(e) Conducted Output Power	Complies	View Data
15.247(d) Emissions	Complies	
(1) Conducted Emissions	Complies	
(i) Conducted Spurious Emissions	Complies	View Data
(ii) Conducted Band-Edge Emissions	Complies	View Data
15.247(e) Power Spectral Density	Complies	View Data

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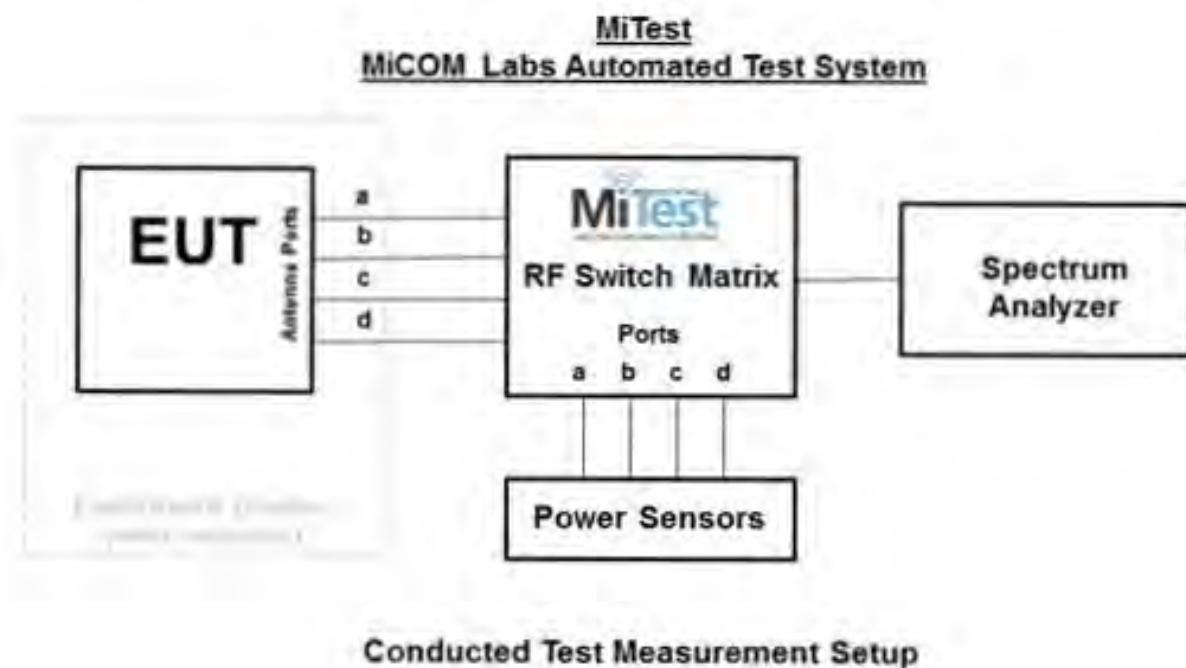
7. TEST EQUIPMENT CONFIGURATION(S)

7.1. Conducted

Conducted RF Emission Test Set-up(s).

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

1. 6 dB & 99% Bandwidth
2. Conducted Output Power
3. Conducted Emissions
4. Power Spectral Density



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

Asset#	Description	Manufacturer	Model#	Serial#	Calibration Due Date
158	Barometer/Termometer	Control Company	4196	E2846	04 Dec 2015
249	Resistance Thermometer	Thermotronics	GR2105-02	9340 #2	30 Oct 2015
287	Rohde & Schwarz 40 GHz Receiver	Rhode & Schwarz	ESIB40	100201	27 Aug 2016
361	Desktop for RF#1, Labview Software installed	Dell	Vostro 220	WS RF#1	Not Required
380	4x4 RF Switch Box	MiCOM Labs	MiTest RF Switch Box	MIC001	20 Dec 2015
390	USB Power Head 50MHz - 24GHz -60 to +20dBm	Agilent	U2002A	MY50000103	17 Oct 2015
398	Test Software	MiCOM	MiTest ATS	Version 3.0.0.16	Not Required
408	USB to GPIB interface	National Instruments	GPIB-USB HS	14C0DE9	Not Required
435	USB Wideband Power Sensor	Boonton	55006	8731	31 Jul 2016
440	USB Wideband Power Sensor	Boonton	55006	8759	25 Sept 2016
441	USB Wideband Power Sensor	Boonton	55006	8731	25 Sept 2016
442	USB Wideband Power Sensor	Boonton	55006	8759	25 Sept 2016
445	PoE Injector	D-Link	DPE-101GL	QTAH1E2000625	Not Required
75	Environmental Chamber	Thermatron	SE-300-2-2	27946	28 Nov 2015
RF#1 GPIB#1	GPIB cable to Power Supply	HP	GPIB	None	Not Required
RF#1 SMA SA #452	Precision SMA Male RG-402 Spectrun Analyzer	Fairview Microwave	Precision SMA Male RG 402 coax	None	20 Dec 2015
RF#1 SMA#1	EUT to Mitest box port 1	Flexco	SMA Cable port1	None	20 Dec 2015
RF#1 SMA#2	EUT to Mitest box port 2	Flexco	SMA Cable port2	None	20 Dec 2015
RF#1 SMA#3	EUT to Mitest box port 3	Flexco	SMA Cable port3	None	20 Dec 2015
RF#1 SMA#4	EUT to Mitest box port 4	Flexco	SMA Cable port4	None	20 Dec 2015
RF#1 USB#1	USB Cable to Mitest Box	Dynex	USB Cable	None	Not Required

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8. MEASUREMENT AND PRESENTATION OF TEST DATA

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

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

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



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

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9. TEST RESULTS

9.1. 6 dB & 99% Bandwidth

Conducted Test Conditions for 6 dB and 99% Bandwidth			
Standard:	FCC CFR 47:15.247	Ambient Temp. (°C):	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.



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Equipment Configuration for 6 dB & 99% Bandwidth

Variant:	802.11b	Duty Cycle (%):	99
Data Rate:	1 MBit/s	Antenna Gain (dBi):	3.1
Modulation:	CCK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
	Port(s)				Highest	Lowest		
MHz	a	b	c	d			KHz	MHz
2412.0	8.096	8.096	--	--	8.096	8.096	≥500.0	-7.60
2437.0	8.096	8.096	--	--	8.096	8.096	≥500.0	-7.60
2462.0	8.096	8.096	--	--	8.096	8.096	≥500.0	-7.60

Test Frequency	Measured 99% Bandwidth (MHz)				Maximum 99% Bandwidth (MHz)		
	Port(s)						
MHz	a	b	c	d			
2412.0	10.100	10.100	--	--	10.100		
2437.0	10.100	10.020	--	--	10.100		
2462.0	10.100	10.100	--	--	10.100		

Traceability to Industry Recognized Test Methodologies

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

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

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Equipment Configuration for 6 dB & 99% Bandwidth

Variant:	802.11g	Duty Cycle (%):	98
Data Rate:	6.00 MBit/s	Antenna Gain (dBi):	3.1
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
	Port(s)				Highest	Lowest		
MHz	a	b	c	d			KHz	MHz
2412.0	16.353	16.353	--	--	16.353	16.353	≥500.0	-15.85
2437.0	16.433	16.433	--	--	16.433	16.433	≥500.0	-15.93
2462.0	16.353	16.353	--	--	16.353	16.353	≥500.0	-15.85

Test Frequency	Measured 99% Bandwidth (MHz)				Maximum 99% Bandwidth (MHz)		
	Port(s)						
MHz	a	b	c	d			
2412.0	16.593	16.593	--	--	16.593		
2437.0	16.593	16.593	--	--	16.593		
2462.0	16.593	16.593	--	--	16.593		

Traceability to Industry Recognized Test Methodologies

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

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

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Equipment Configuration for 6 dB & 99% Bandwidth

Variant:	802.11n HT-20	Duty Cycle (%):	96
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	3.1
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

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

Test Frequency	Measured 99% Bandwidth (MHz)				Maximum 99% Bandwidth (MHz)		
	Port(s)						
MHz	a	b	c	d			
2412.0	17.715	17.715	--	--	17.715		
2437.0	17.715	17.715	--	--	17.715		
2462.0	17.715	17.635	--	--	17.715		

Traceability to Industry Recognized Test Methodologies

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

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

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Equipment Configuration for 6 dB & 99% Bandwidth

Variant:	802.11n HT-40	Duty Cycle (%):	93
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	3
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	JK
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
	Port(s)				Highest	Lowest		
MHz	a	b	c	d			KHz	MHz
2422.0	34.930	34.800			34.930	34.800	≥500.0	-34.30
2437.0	35.591	35.431			35.591	35.431	≥500.0	-34.93
2452.0	34.930	34.930			34.930	34.930	≥500.0	-34.43

Test Frequency	Measured 99% Bandwidth (MHz)				Maximum 99% Bandwidth (MHz)		
	Port(s)						
MHz	a	b	c	d			
2422.0	35.419	35.491			35.491		
2437.0	36.072	36.232			36.232		
2452.0	35.475	35.602			35.602		

Traceability to Industry Recognized Test Methodologies

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

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

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9.2. Conducted Output Power

Conducted Test Conditions for Fundamental Emission Output Power			
Standard:	FCC CFR 47:15.247	Ambient Temp. (°C):	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 [$10 \times \log_{10} (10^{a/10} + 10^{b/10} + 10^{c/10} + 10^{d/10})$]

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

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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.



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Equipment Configuration for Average Output Power

Variant:	802.11b	Duty Cycle (%):	99.0
Data Rate:	1 MBit/s	Antenna Gain (dBi):	3.1
Modulation:	CCK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power + DCCF (+0.04 dB) (dBm)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
	Port(s)							
MHz	a	b	c	d	dBm	dBm	dB	
2412.0	22.28	22.71	--	--	25.51	30.00	-4.49	
2437.0	21.85	22.44	--	--	25.17	30.00	-4.83	
2462.0	21.94	22.25	--	--	25.11	30.00	-4.89	

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	±1.33 dB

DCCF - Duty Cycle Correction Factor

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Equipment Configuration for Average Output Power

Variant:	802.11g	Duty Cycle (%):	97.9
Data Rate:	6 MBit/s	Antenna Gain (dBi):	3.1
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power + DCCF (+0.09 dB) (dBm)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
	Port(s)							
MHz	a	b	c	d	dBm	dBm	dB	
2412.0	21.79	21.93	--	--	24.87	30.00	-5.13	
2437.0	21.52	21.69	--	--	24.62	30.00	-5.38	
2462.0	21.20	21.64	--	--	24.44	30.00	-5.56	

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	±1.33 dB

DCCF - Duty Cycle Correction Factor

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Equipment Configuration for Average Output Power

Variant:	802.11n HT-20	Duty Cycle (%):	96.2
Data Rate:	6 MBit/s	Antenna Gain (dBi):	3.1
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power + DCCF (+0.18 dB) (dBm)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
	Port(s)							
MHz	a	b	c	d	dBm	dBm	dB	
2412.0	20.32	19.59	--	--	22.98	30.00	-7.02	
2437.0	19.78	19.37	--	--	22.59	30.00	-7.41	
2462.0	19.55	19.06	--	--	22.32	30.00	-7.68	

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	±1.33 dB

DCCF - Duty Cycle Correction Factor

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Equipment Configuration for Average Output Power

Variant:	802.11n HT-40	Duty Cycle (%):	93.1
Data Rate:	13.5 Mbit/s	Antenna Gain (dBi):	3.1
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	JK
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power + DCCF (+0.32 dB) (dBm)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
	Port(s)							
MHz	a	b	c	d	dBm	dBm	dB	
2422.0	18.48	20.33	--	--	22.51	30.00	-7.49	
2437.0	20.12	21.26	--	--	22.74	30.00	-7.26	
2452.0	18.20	19.93	--	--	22.16	30.00	-7.84	

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	±1.33 dB

DCCF - Duty Cycle Correction Factor

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9.3. Emissions

9.3.1. Conducted Emissions

9.3.1.1. Conducted Spurious Emissions

Conducted Test Conditions for Transmitter Conducted Spurious and Band-Edge Emissions			
Standard:	FCC CFR 47:15.247	Ambient Temp. (°C):	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)).



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Equipment Configuration for Transmitter Conducted Spurious Emissions

Variant:	802.11b	Duty Cycle (%):	99
Data Rate:	1.00 MBit/s	Antenna Gain (dBi):	3.1
Modulation:	CCK	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Transmitter Conducted Spurious Emissions (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	-60.956	-41.00	-60.956	-41.00	--	--	--	--
2437.0	30.0 - 26000.0	-59.121	-42.00	-58.717	-42.00	--	--	--	--
2462.0	30.0 - 26000.0	-59.990	-42.00	-59.545	-42.00	--	--	--	--

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 Transmitter Conducted Spurious Emissions

Variant:	802.11g	Duty Cycle (%):	98
Data Rate:	6.00 MBit/s	Antenna Gain (dBi):	3.1
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Transmitter Conducted Spurious Emissions (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	-61.483	-41.00	-61.483	-40.00	--	--	--	--
2437.0	30.0 - 26000.0	-59.545	-40.00	-59.121	-40.00	--	--	--	--
2462.0	30.0 - 26000.0	-60.460	-41.00	-59.990	-41.00	--	--	--	--

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 Transmitter Conducted Spurious Emissions

Variant:	802.11n HT-20	Duty Cycle (%):	96
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	3.1
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Transmitter Conducted Spurious Emissions (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	-64.737	-42.00	-63.982	-43.00	--	--	--	--
2437.0	30.0 - 26000.0	-61.483	-42.00	-62.643	-43.00	--	--	--	--
2462.0	30.0 - 26000.0	-60.956	-43.00	-60.460	-43.00	--	--	--	--

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 Transmitter Conducted Spurious Emissions

Variant:	802.11n HT-40	Duty Cycle (%):	93
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	Not Applicable
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable	Tested By:	JK
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Transmitter Conducted Spurious Emissions (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	-63.061	-34.63	-59.499	-32.74	--	--	--	--
2437.0	30.0 - 26000.0	-62.643	-35.00	-60.956	-34.00	--	--	--	--
2452.0	30.0 - 26000.0	-62.940	-34.26	-59.763	-32.54	--	--	--	--

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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9.3.1.2. Conducted Band-Edge Emissions

Equipment Configuration for Conducted Low Band-Edge Emissions - Average

Variant:	802.11b	Duty Cycle (%):	99.0
Data Rate:	1.00 MBit/s	Antenna Gain (dBi):	3.1
Modulation:	CCK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
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)
a	-38.42	-25.00	2405.10	--	--
b	-39.08	-26.00	2405.00	--	--

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 Low Band-Edge Emissions - Average

Variant:	802.11g	Duty Cycle (%):	97.9
Data Rate:	6.00 MBit/s	Antenna Gain (dBi):	3.1
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
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	-32.91	-30.00	2401.70	--	--	-1.700
b	-32.58	-30.00	2401.70	--	--	-1.700

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).

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Equipment Configuration for Conducted Low Band-Edge Emissions - Average

Variant:	802.11n HT-20	Duty Cycle (%):	96.2
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	3.1
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
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	
	M1 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)
a	-34.37	-31.00	2401.70	--	--
b	-34.68	-32.00	2401.70	--	--

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 Low Band-Edge Emissions - Average

Variant:	802.11n HT-40	Duty Cycle (%):	93.1
Data Rate:	13.5 Mbit/s	Antenna Gain (dBi):	3.10
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	JK
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	
	M1 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)
a	-32.20	-30.77	2402.50	--	--
b	-29.04	-28.98	2402.00	--	--

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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Title: Actiontec Electronics Inc WCB6240Q
To: FCC 15.247 (DTS) + IC RSS-247 Issue 1
Serial #: ATEC09-U5a Conducted Rev C
Issue Date: 24th November 2015
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Equipment Configuration for Conducted High Band-Edge Emissions - Average

Variant:	802.11b	Duty Cycle (%):	99.0
Data Rate:	1.00 MBit/s	Antenna Gain (dBi):	3.1
Modulation:	CCK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
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	-58.07	-26.00	2468.90	--	--	-14.600
b	-57.77	-26.00	2468.90	--	--	-14.600

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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Title: Actiontec Electronics Inc WCB6240Q
To: FCC 15.247 (DTS) + IC RSS-247 Issue 1
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Equipment Configuration for Conducted High Band-Edge Emissions - Average

Variant:	802.11g	Duty Cycle (%):	97.9
Data Rate:	6.00 MBit/s	Antenna Gain (dBi):	3.1
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
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	
	M3 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)
a	-52.05	-30.00	2472.10	--	--
b	-50.16	-30.00	2472.10	--	--

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 - Average

Variant:	802.11n HT-20	Duty Cycle (%):	96.2
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	3.1
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
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)
a	-55.79	-32.00	2472.20	--	--
b	-56.94	-32.00	2472.20	--	--

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 - Average

Variant:	802.11n HT-40	Duty Cycle (%):	93.1
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	3.10
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	JK
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	-40.16	-31.23	2471.00	--	--	-12.500
b	-34.59	-29.45	2471.50	--	--	-12.000

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).

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9.4. Power Spectral Density

Conducted Test Conditions for Power Spectral Density			
Standard:	FCC CFR 47:15.247	Ambient Temp. (°C):	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 (â) 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

$A = \text{Total Power Spectral Density} [10 \log_{10} (10^{a/10} + 10^{b/10} + 10^{c/10} + 10^{d/10})]$

$x = \text{Duty Cycle}$

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.



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Equipment Configuration for Power Spectral Density - Average

Variant:	802.11b	Duty Cycle (%):	99.0
Data Rate:	1.00 MBit/s	Antenna Gain (dBi):	3.1
Modulation:	CCK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Amplitude Summation + DCCF (+0.04 dB)	Limit	Margin
	Port(s) (dBm/3KHz)						
MHz	a	b	c	d	dBm/3KHz	dBm/3KHz	dB
2412.0	-9.817	-9.651	--	--	-6.687	8.0	-14.7
2437.0	-10.741	-10.133	--	--	-7.435	8.0	-15.4
2462.0	-10.496	-10.258	--	--	-7.321	8.0	-15.3

Traceability to Industry Recognized Test Methodologies

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

DCCF - Duty Cycle Correction Factor

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

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Title: Actiontec Electronics Inc WCB6240Q
To: FCC 15.247 (DTS) + IC RSS-247 Issue 1
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Equipment Configuration for Power Spectral Density - Average

Variant:	802.11g	Duty Cycle (%):	97.9
Data Rate:	6.00 MBit/s	Antenna Gain (dBi):	3.1
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Amplitude Summation + DCCF (+0.09 dB)	Limit	Margin
	Port(s) (dBm/3KHz)						
MHz	a	b	c	d	dBm/3KHz	dBm/3KHz	dB
2412.0	-13.359	-13.157	--	--	-10.266	8.0	-18.3
2437.0	-13.540	-13.726	--	--	-10.717	8.0	-18.7
2462.0	-13.371	-13.565	--	--	-10.562	8.0	-18.6

Traceability to Industry Recognized Test Methodologies

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

DCCF - Duty Cycle Correction Factor

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

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Equipment Configuration for Power Spectral Density - Average

Variant:	802.11n HT-20	Duty Cycle (%):	96.2
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	3.1
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Amplitude Summation + DCCF (+0.17 dB)	Limit	Margin
	Port(s) (dBm/3KHz)						
MHz	a	b	c	d	dBm/3KHz	dBm/3KHz	dB
2412.0	-15.134	-16.346	--	--	-12.853	8.0	-20.9
2437.0	-15.695	-16.179	--	--	-12.932	8.0	-20.9
2462.0	-16.229	-16.656	--	--	-13.460	8.0	-21.5

Traceability to Industry Recognized Test Methodologies

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

DCCF - Duty Cycle Correction Factor

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

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Equipment Configuration for Power Spectral Density - Average

Variant:	802.11n HT-40	Duty Cycle (%):	93.1
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	3.10
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	JK
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Amplitude Summation + DCCF (+0.31 dB)	Limit	Margin
	Port(s) (dBm/3KHz)						
MHz	a	b	c	d	dBm/3KHz	dBm/3KHz	dB
2422.0	-14.770	-12.174	--	--	-10.269	8.0	-18.3
2437.0	-14.959	-13.814	--	--	-10.887	8.0	-18.9
2452.0	-14.999	-13.398	--	--	-10.804	8.0	-18.8

Traceability to Industry Recognized Test Methodologies

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

DCCF - Duty Cycle Correction Factor

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

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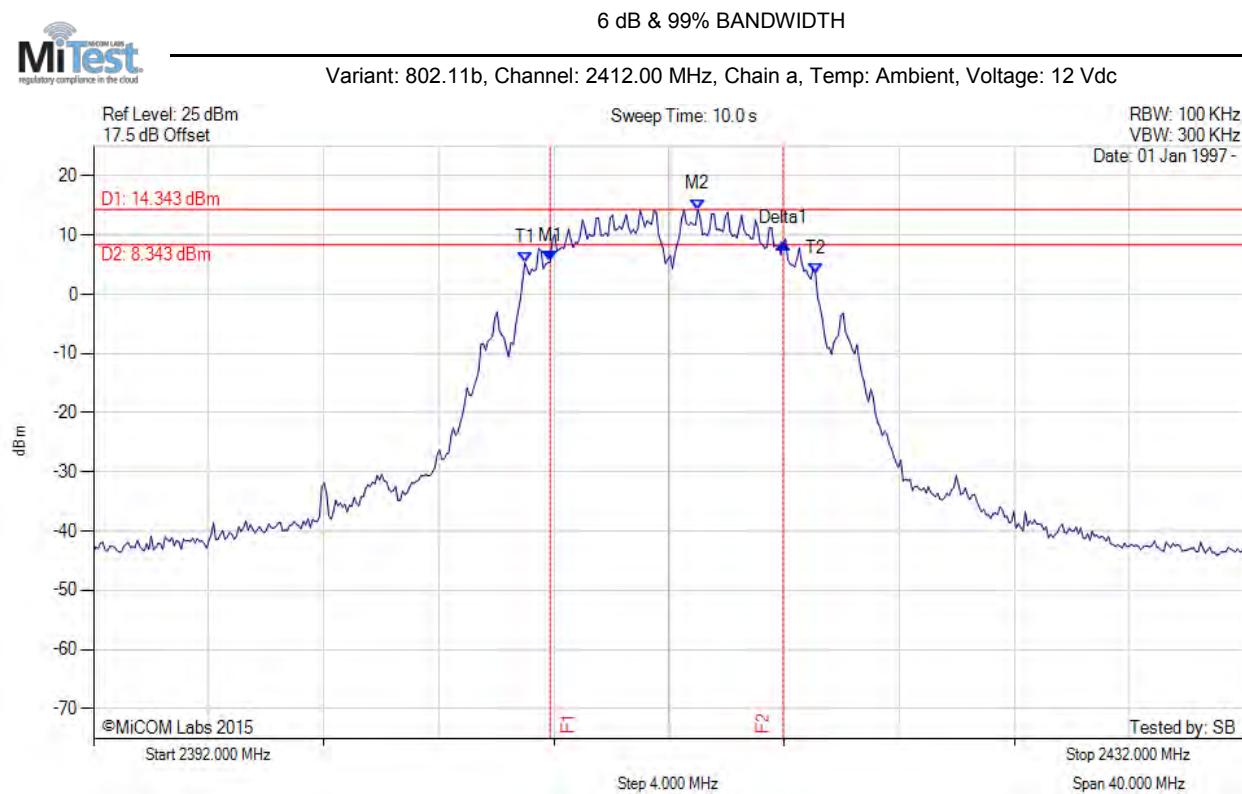


Title: Actiontec Electronics Inc WCB6240Q
To: FCC 15.247 (DTS) + IC RSS-247 Issue 1
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A. APPENDIX - GRAPHICAL IMAGES

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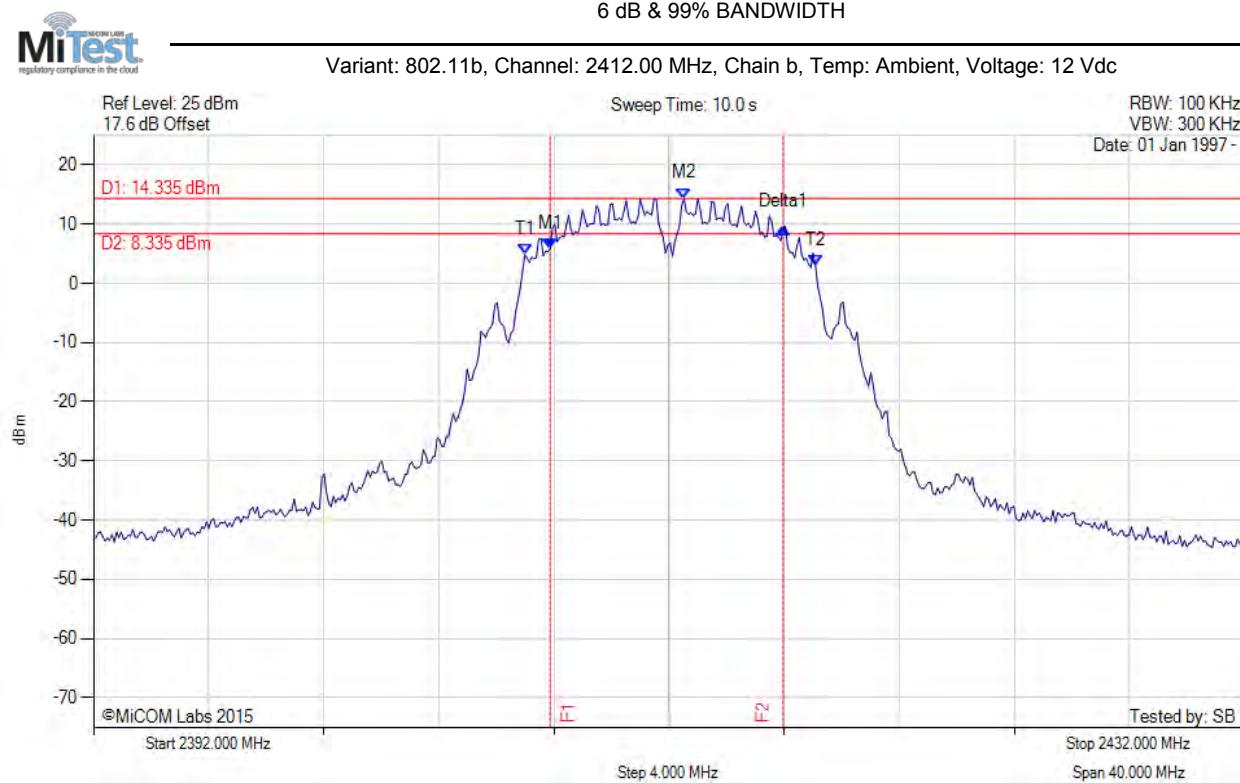
A.1. 6 dB & 99% Bandwidth



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2407.872 MHz : 5.488 dBm M2 : 2413.002 MHz : 14.343 dBm Delta1 : 8.096 MHz : 3.199 dB T1 : 2406.990 MHz : 5.340 dBm T2 : 2417.090 MHz : 3.497 dBm OBW : 10.100 MHz	Measured 6 dB Bandwidth: 8.096 MHz Limit: ≥500.0 kHz Margin: -7.60 MHz

[back to matrix](#)

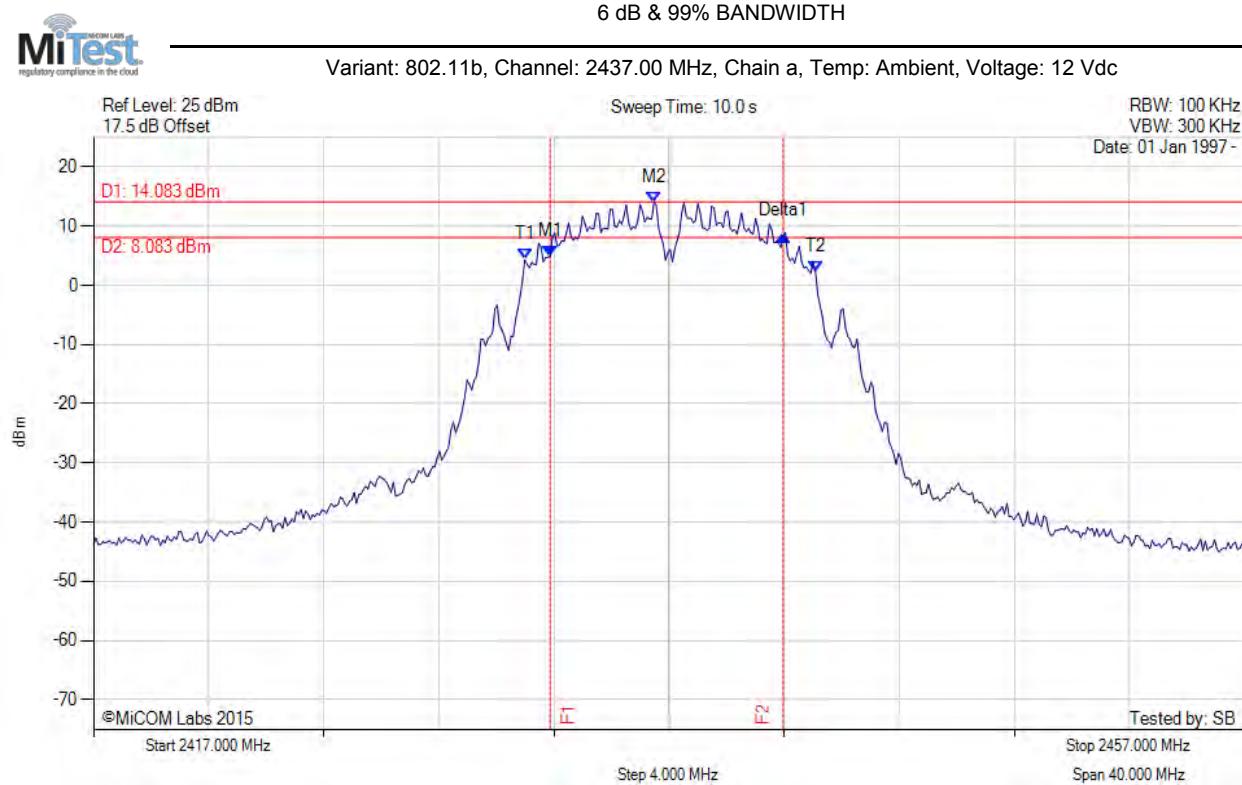
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2407.872 MHz : 5.852 dBm M2 : 2412.521 MHz : 14.335 dBm Delta1 : 8.096 MHz : 3.575 dB T1 : 2406.990 MHz : 4.848 dBm T2 : 2417.090 MHz : 3.068 dBm OBW : 10.100 MHz	Measured 6 dB Bandwidth: 8.096 MHz Limit: \geq 500.0 kHz Margin: -7.60 MHz

[back to matrix](#)

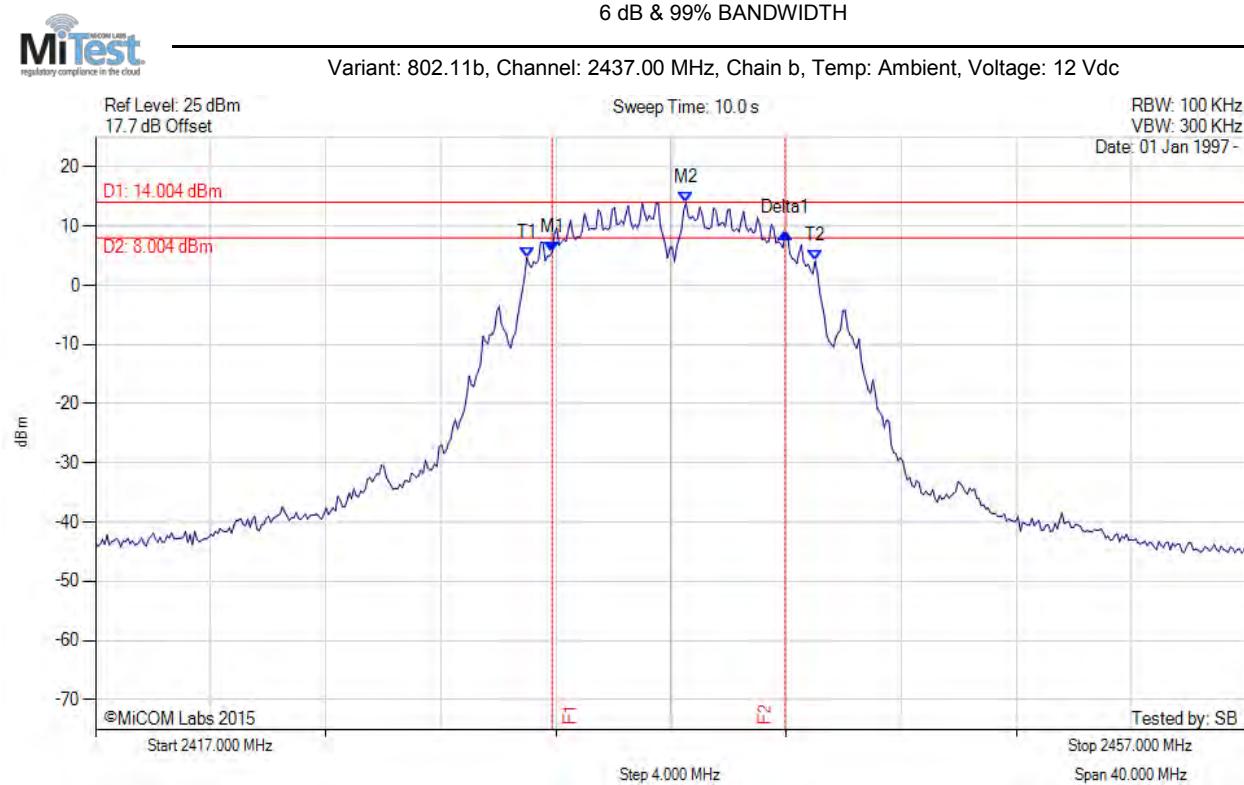
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2432.872 MHz : 4.935 dBm M2 : 2436.479 MHz : 14.083 dBm Delta1 : 8.096 MHz : 3.535 dB T1 : 2431.990 MHz : 4.317 dBm T2 : 2442.090 MHz : 2.381 dBm OBW : 10.100 MHz	Measured 6 dB Bandwidth: 8.096 MHz Limit: ≥500.0 kHz Margin: -7.60 MHz

[back to matrix](#)

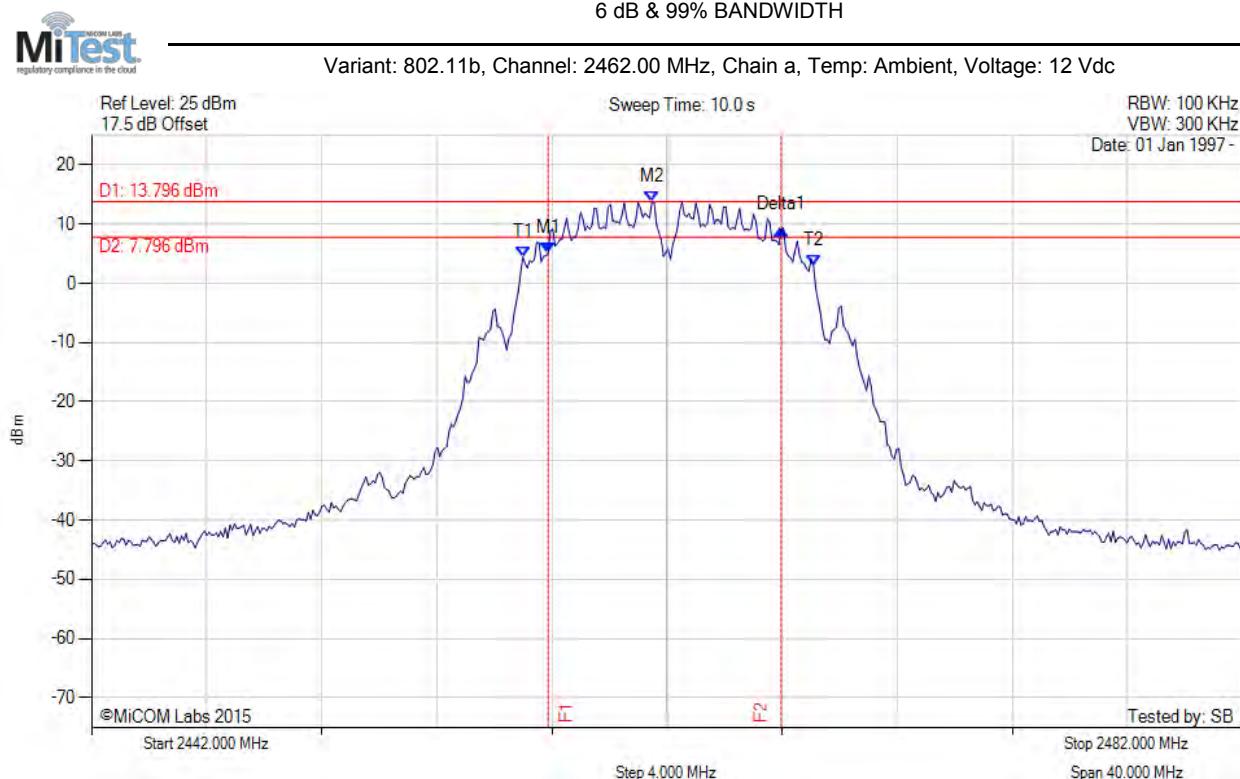
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2432.872 MHz : 5.657 dBm M2 : 2437.521 MHz : 14.004 dBm Delta1 : 8.096 MHz : 3.272 dB T1 : 2431.990 MHz : 4.679 dBm T2 : 2442.010 MHz : 4.089 dBm OBW : 10.020 MHz	Measured 6 dB Bandwidth: 8.096 MHz Limit: \geq 500.0 kHz Margin: -7.60 MHz

[back to matrix](#)

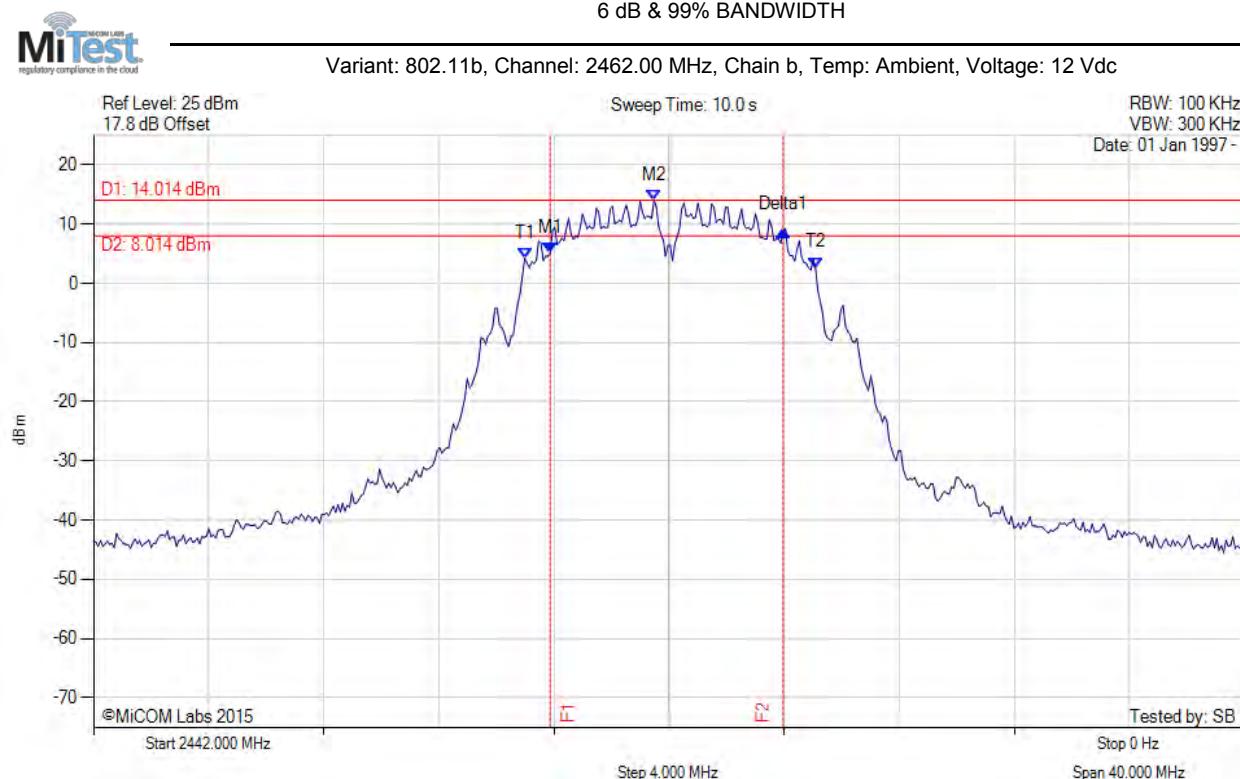
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2457.872 MHz : 5.191 dBm M2 : 2461.479 MHz : 13.796 dBm Delta1 : 8.096 MHz : 3.842 dB T1 : 2456.990 MHz : 4.433 dBm T2 : 2467.090 MHz : 3.062 dBm OBW : 10.100 MHz	Measured 6 dB Bandwidth: 8.096 MHz Limit: \geq 500.0 kHz Margin: -7.60 MHz

[back to matrix](#)

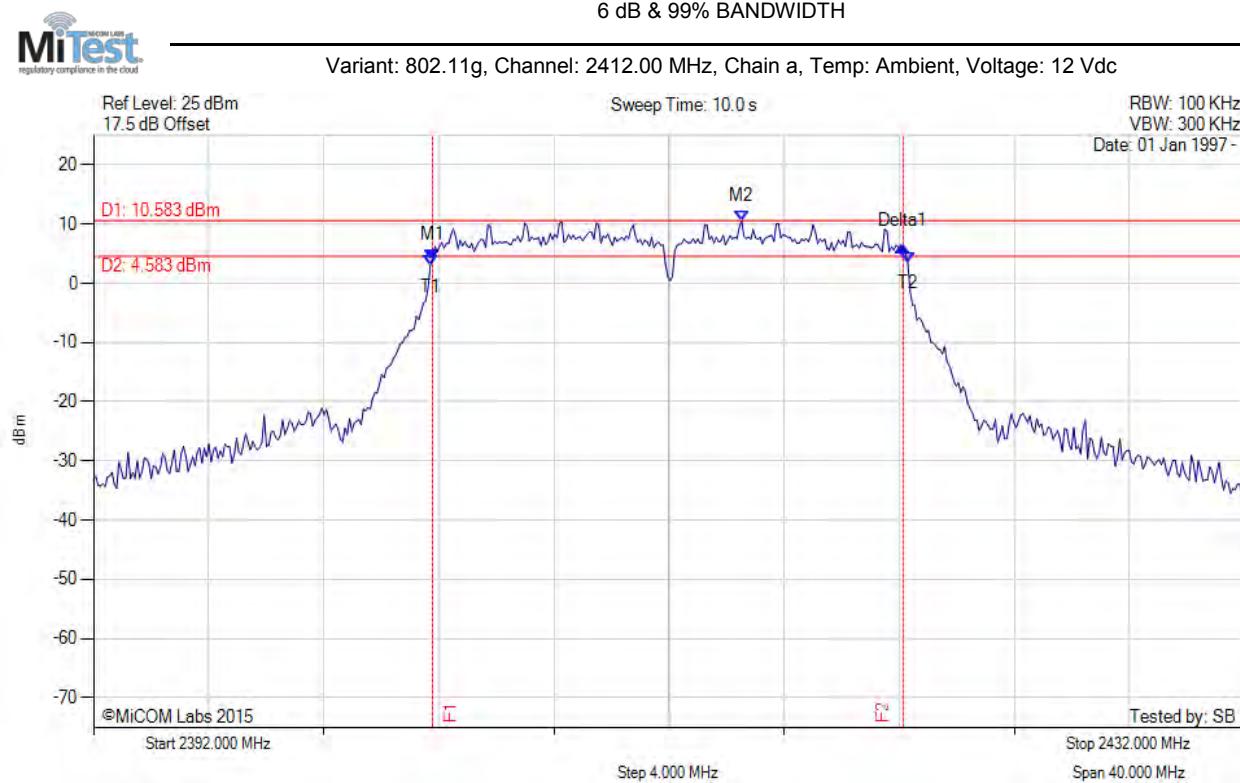
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2457.872 MHz : 5.100 dBm M2 : 2461.479 MHz : 14.014 dBm Delta1 : 8.096 MHz : 3.856 dB T1 : 2456.990 MHz : 4.258 dBm T2 : 2467.090 MHz : 2.653 dBm OBW : 10.100 MHz	Measured 6 dB Bandwidth: 8.096 MHz Limit: ≥500.0 kHz Margin: -7.60 MHz

[back to matrix](#)

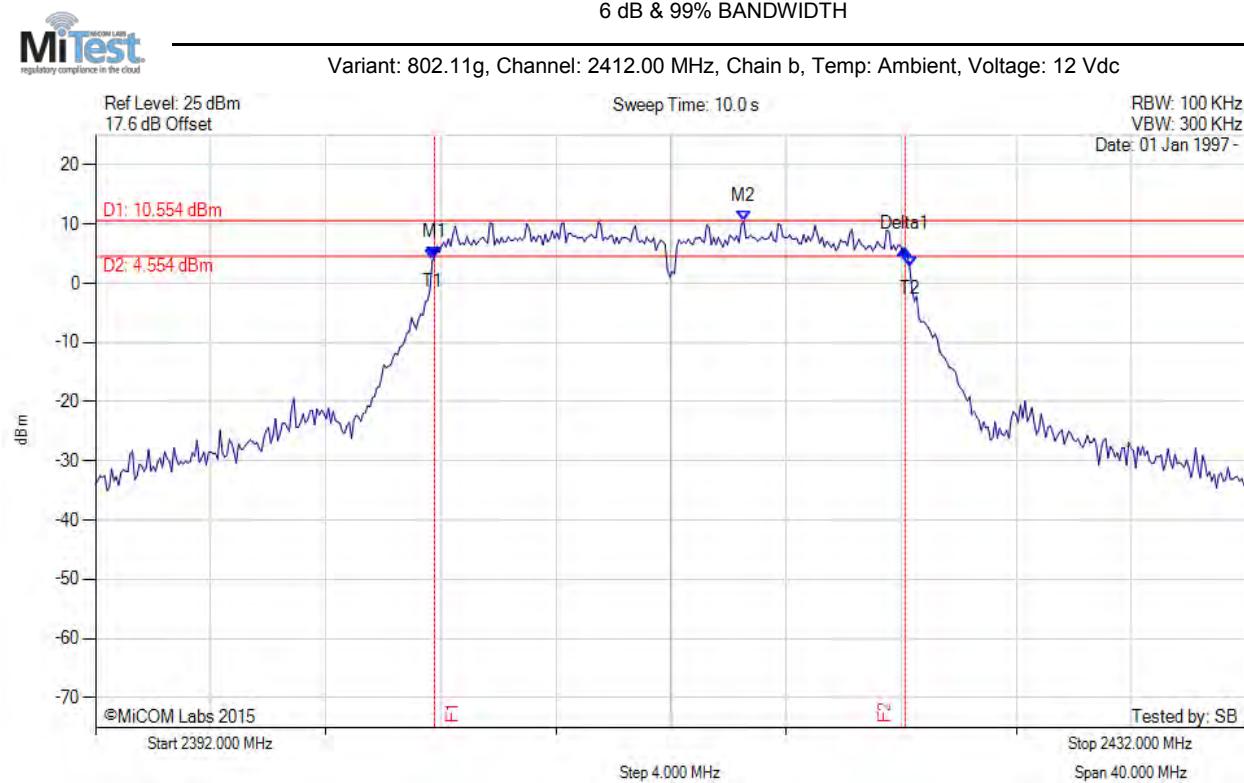
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2403.784 MHz : 3.947 dBm M2 : 2414.525 MHz : 10.583 dBm Delta1 : 16.353 MHz : 2.272 dB T1 : 2403.703 MHz : 2.989 dBm T2 : 2420.297 MHz : 3.554 dBm OBW : 16.593 MHz	Measured 6 dB Bandwidth: 16.353 MHz Limit: \geq 500.0 kHz Margin: -15.85 MHz

[back to matrix](#)

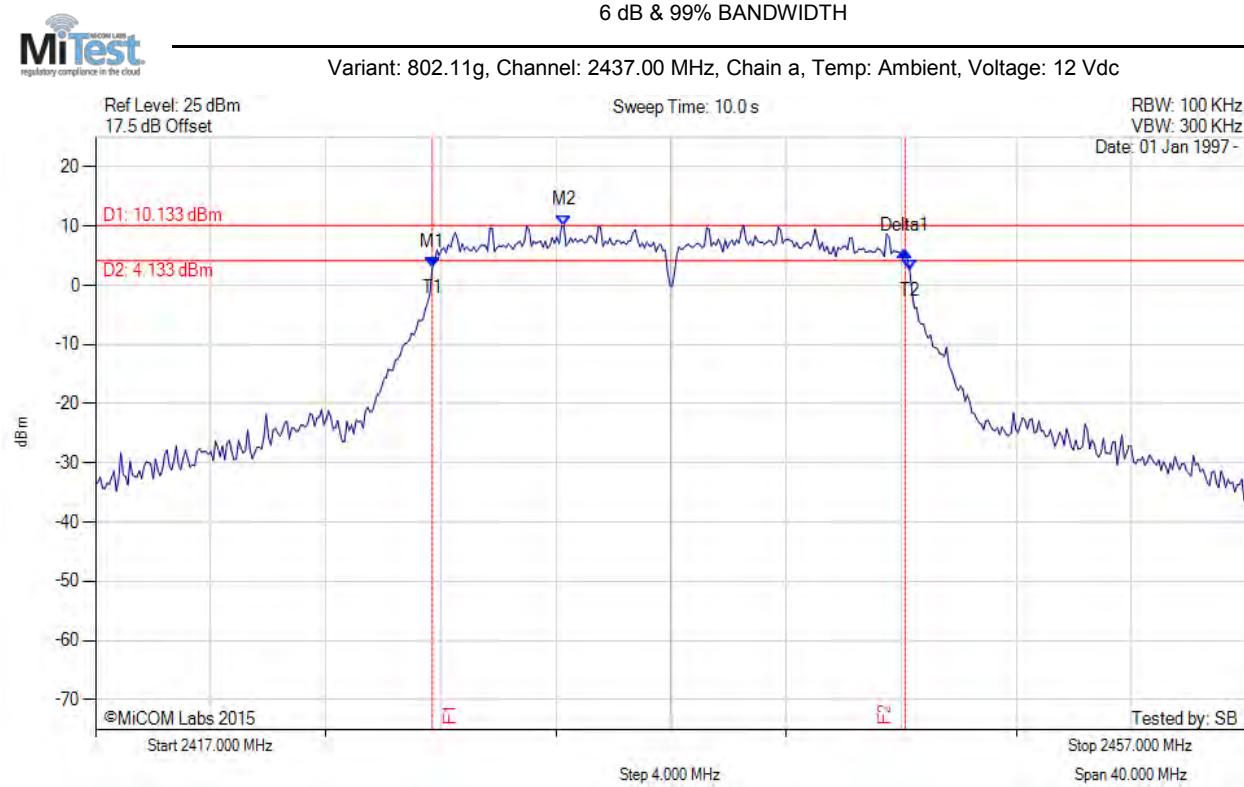
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2403.784 MHz : 4.380 dBm M2 : 2414.525 MHz : 10.554 dBm Delta1 : 16.353 MHz : 1.487 dB T1 : 2403.703 MHz : 3.892 dBm T2 : 2420.297 MHz : 2.680 dBm OBW : 16.593 MHz	Measured 6 dB Bandwidth: 16.353 MHz Limit: \geq 500.0 kHz Margin: -15.85 MHz

[back to matrix](#)

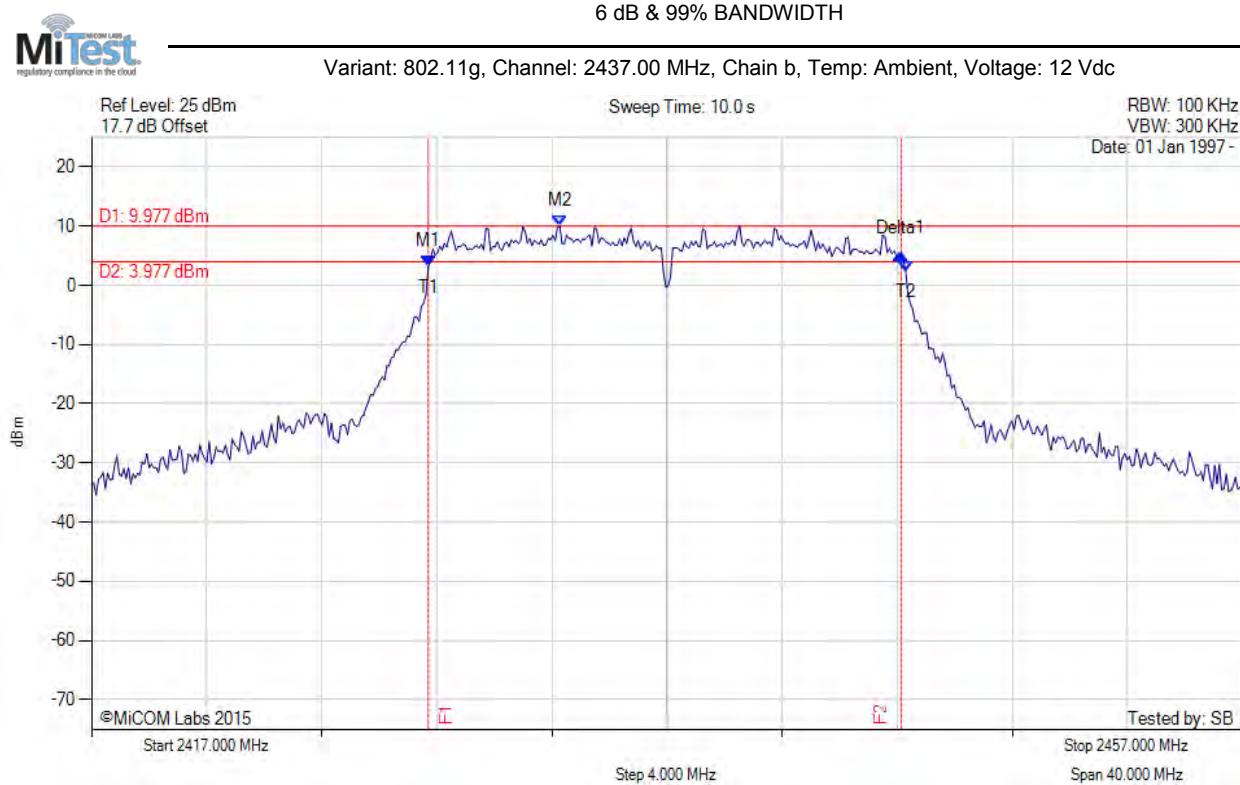
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2428.703 MHz : 3.090 dBm M2 : 2433.273 MHz : 10.133 dBm Delta1 : 16.433 MHz : 2.642 dB T1 : 2428.703 MHz : 3.090 dBm T2 : 2445.297 MHz : 2.576 dBm OBW : 16.593 MHz	Measured 6 dB Bandwidth: 16.433 MHz Limit: \geq 500.0 kHz Margin: -15.93 MHz

[back to matrix](#)

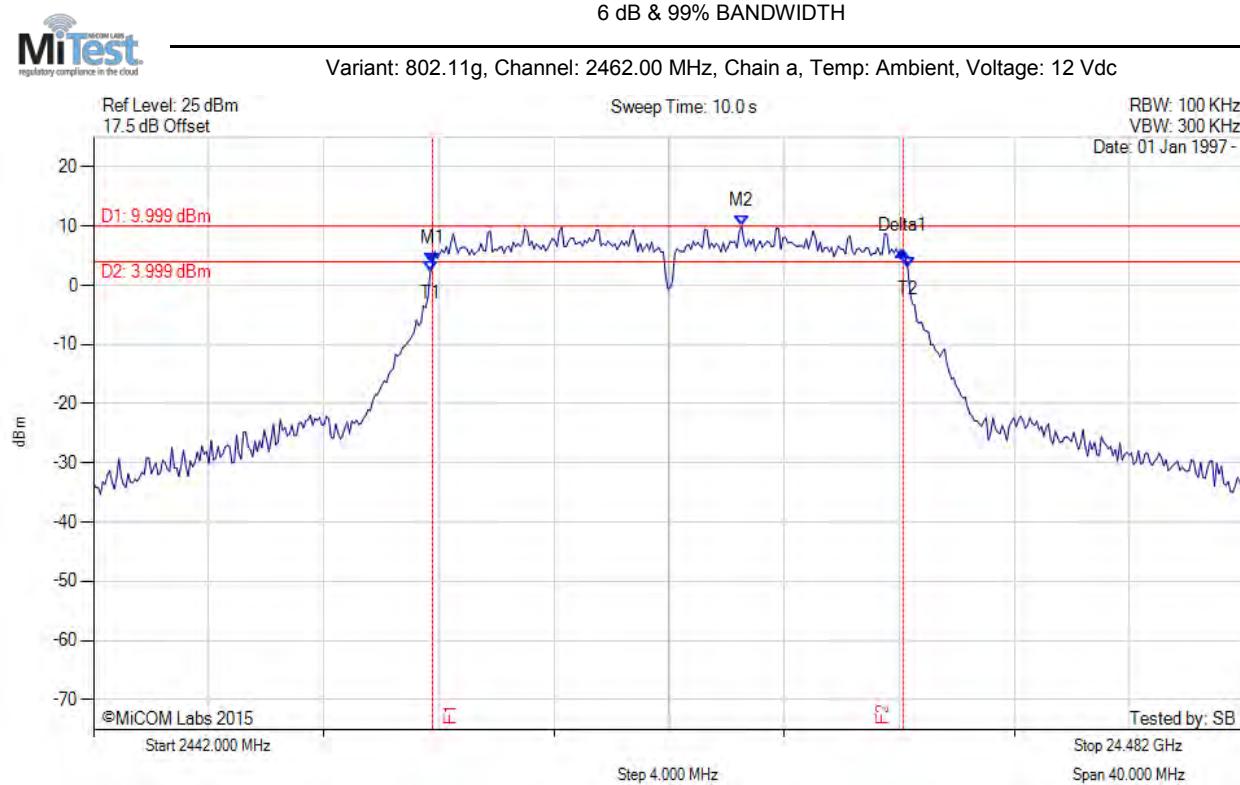
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2428.703 MHz : 3.147 dBm M2 : 2433.273 MHz : 9.977 dBm Delta1 : 16.433 MHz : 2.174 dB T1 : 2428.703 MHz : 3.147 dBm T2 : 2445.297 MHz : 2.419 dBm OBW : 16.593 MHz	Measured 6 dB Bandwidth: 16.433 MHz Limit: \geq 500.0 kHz Margin: -15.93 MHz

[back to matrix](#)

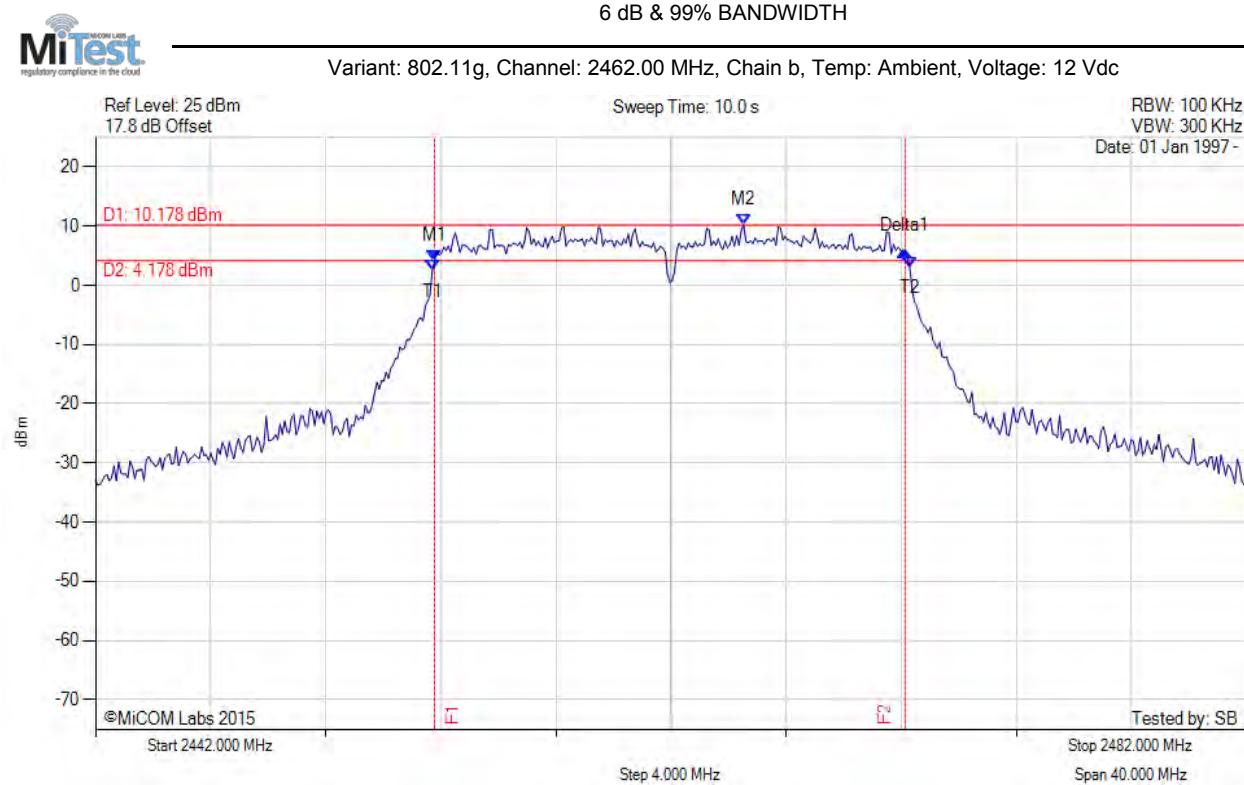
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2453.784 MHz : 3.699 dBm M2 : 2464.525 MHz : 9.999 dBm Delta1 : 16.353 MHz : 2.093 dB T1 : 2453.703 MHz : 2.210 dBm T2 : 2470.297 MHz : 2.958 dBm OBW : 16.593 MHz	Measured 6 dB Bandwidth: 16.353 MHz Limit: \geq 500.0 kHz Margin: -15.85 MHz

[back to matrix](#)

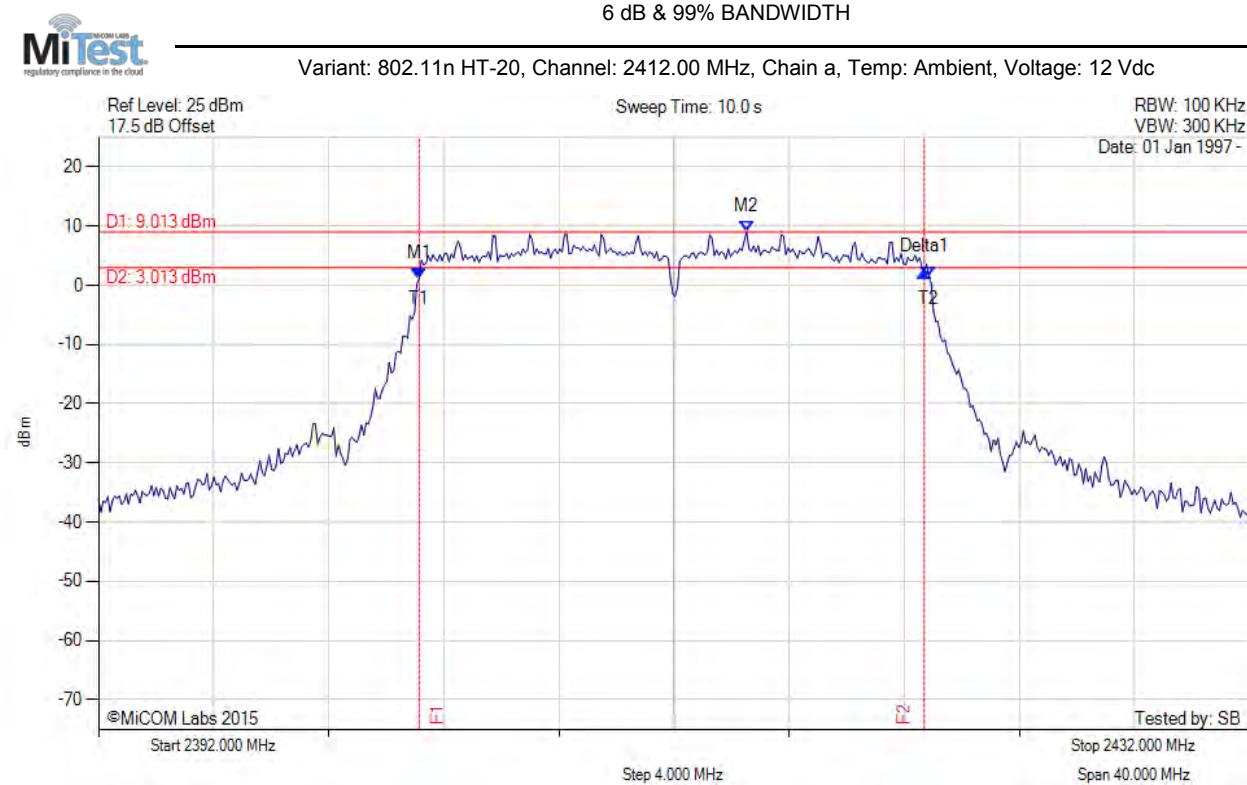
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2453.784 MHz : 4.113 dBm M2 : 2464.525 MHz : 10.178 dBm Delta1 : 16.353 MHz : 1.678 dB T1 : 2453.703 MHz : 2.503 dBm T2 : 2470.297 MHz : 3.095 dBm OBW : 16.593 MHz	Measured 6 dB Bandwidth: 16.353 MHz Limit: \geq 500.0 kHz Margin: -15.85 MHz

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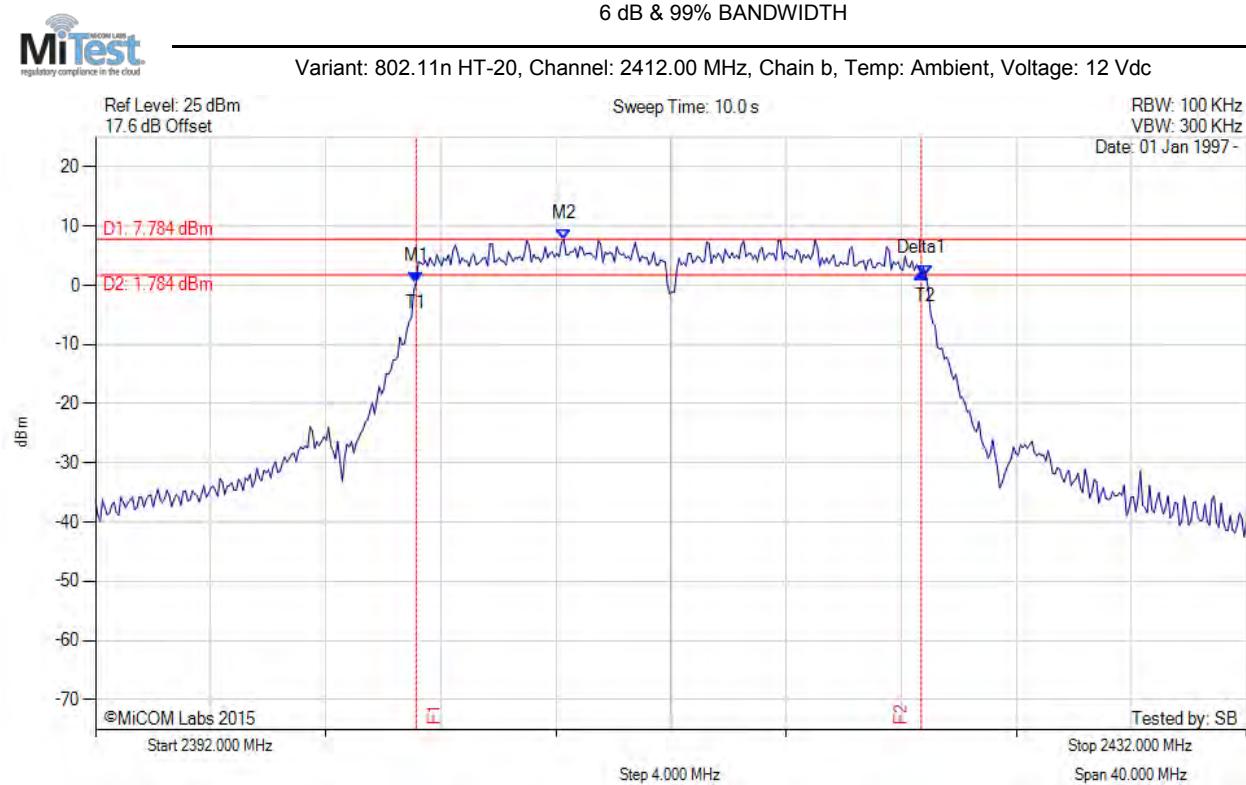
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2403.142 MHz : 1.219 dBm M2 : 2414.525 MHz : 9.013 dBm Delta1 : 17.555 MHz : 1.078 dB T1 : 2403.142 MHz : 1.219 dBm T2 : 2420.858 MHz : 1.335 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.555 MHz Limit: \geq 500.0 kHz Margin: -17.06 MHz

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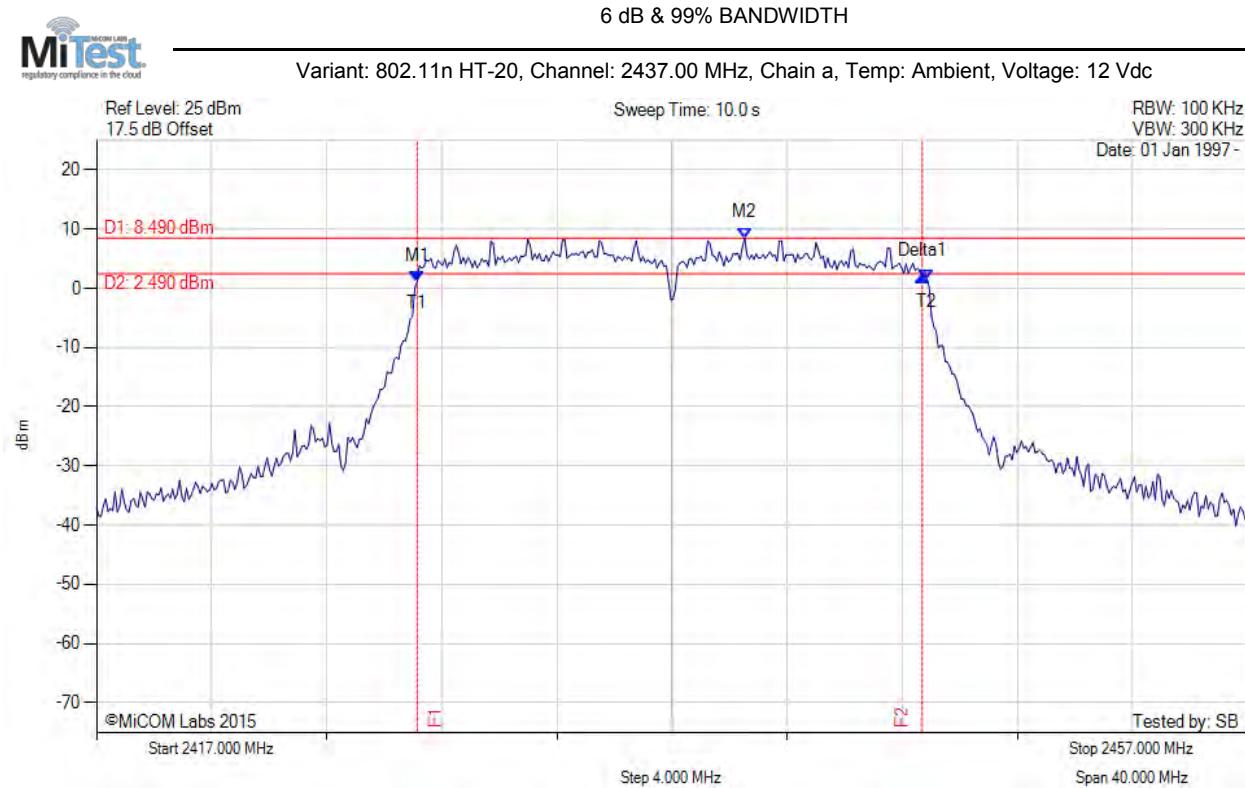
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2403.142 MHz : 0.560 dBm M2 : 2408.273 MHz : 7.784 dBm Delta1 : 17.555 MHz : 1.515 dB T1 : 2403.142 MHz : 0.560 dBm T2 : 2420.858 MHz : 1.653 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.555 MHz Limit: \geq 500.0 kHz Margin: -17.06 MHz

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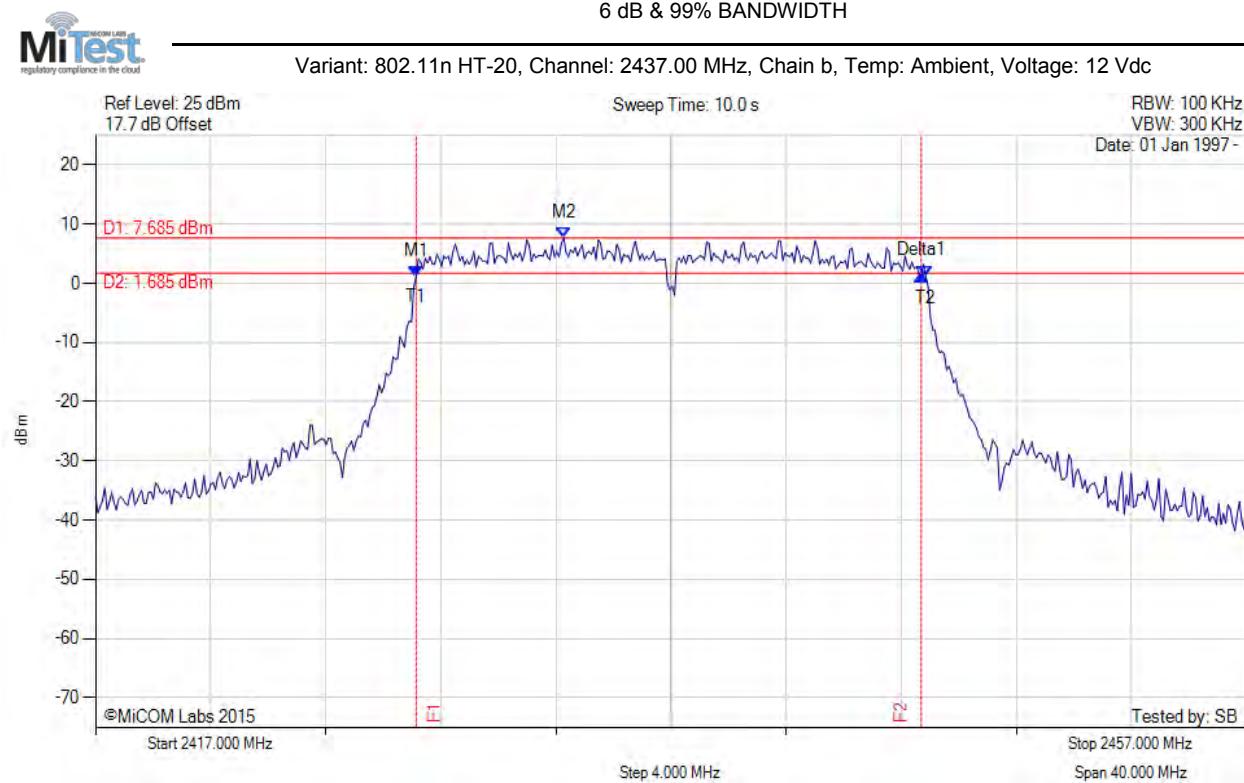
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2428.142 MHz : 1.051 dBm M2 : 2439.525 MHz : 8.490 dBm Delta1 : 17.555 MHz : 0.986 dB T1 : 2428.142 MHz : 1.051 dBm T2 : 2445.858 MHz : 1.335 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.555 MHz Limit: \geq 500.0 kHz Margin: -17.06 MHz

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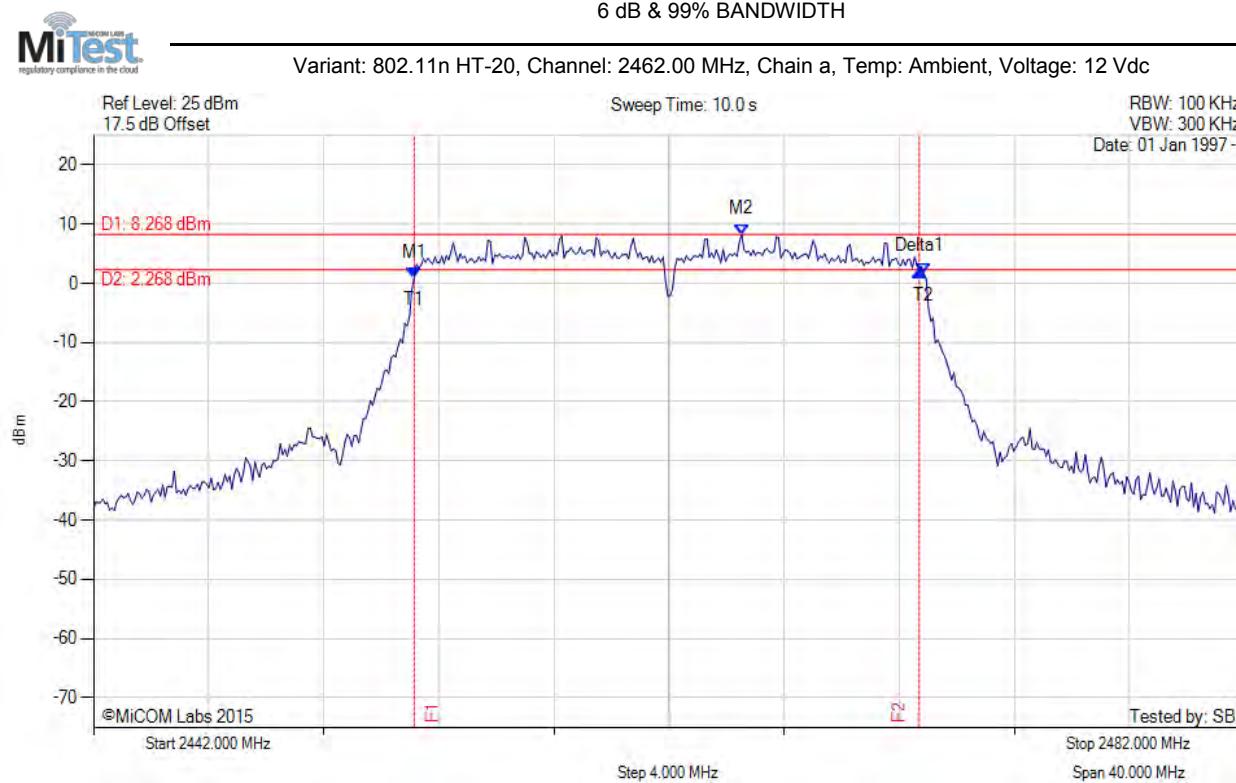
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2428.142 MHz : 1.171 dBm M2 : 2433.273 MHz : 7.685 dBm Delta1 : 17.555 MHz : 0.214 dB T1 : 2428.142 MHz : 1.171 dBm T2 : 2445.858 MHz : 1.103 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.555 MHz Limit: \geq 500.0 kHz Margin: -17.06 MHz

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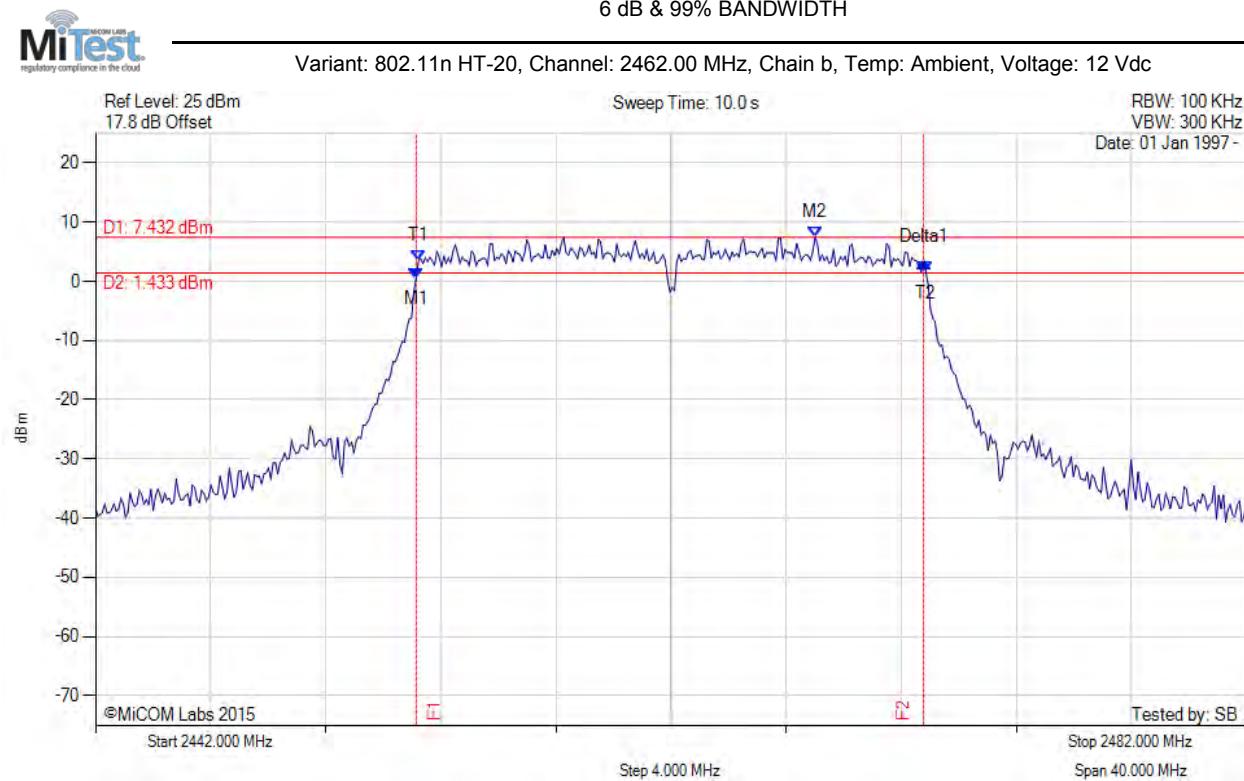
This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2453.142 MHz : 0.833 dBm M2 : 2464.525 MHz : 8.268 dBm Delta1 : 17.555 MHz : 1.180 dB T1 : 2453.142 MHz : 0.833 dBm T2 : 2470.858 MHz : 1.543 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.555 MHz Limit: \geq 500.0 kHz Margin: -17.06 MHz

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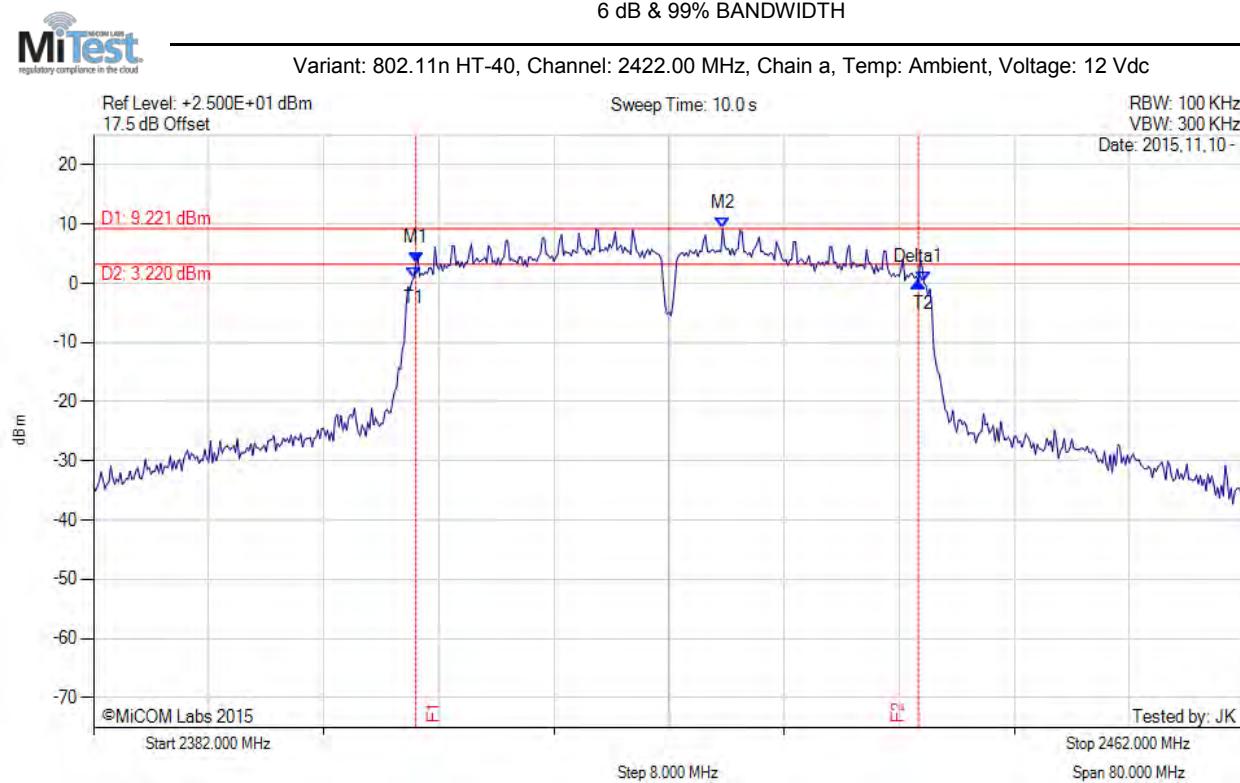
This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2453.142 MHz : 0.554 dBm M2 : 2467.010 MHz : 7.432 dBm Delta1 : 17.635 MHz : 2.752 dB T1 : 2453.222 MHz : 3.406 dBm T2 : 2470.858 MHz : 1.557 dBm OBW : 17.635 MHz	Measured 6 dB Bandwidth: 17.635 MHz Limit: \geq 500.0 kHz Margin: -17.14 MHz

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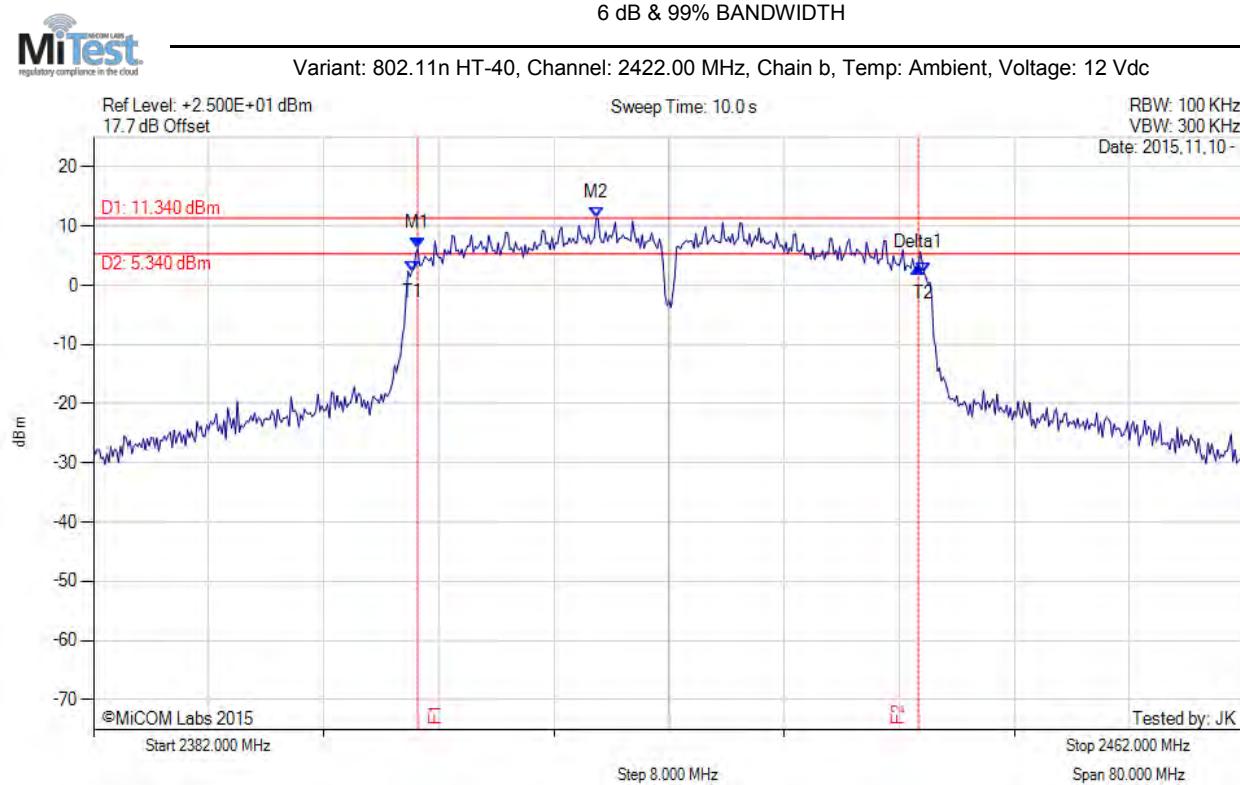
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = POS Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAXH	M1 : 2404.400 MHz : 3.393 dBm M2 : 2425.730 MHz : 9.221 dBm Delta1 : 34.930 MHz : -3.261 dB T1 : 2404.267 MHz : 0.973 dBm T2 : 2439.733 MHz : 0.097 dBm OBW : 35.419 MHz	Measured 6 dB Bandwidth: 34.930 MHz Limit: \geq 500.0 kHz Margin: -34.43 MHz

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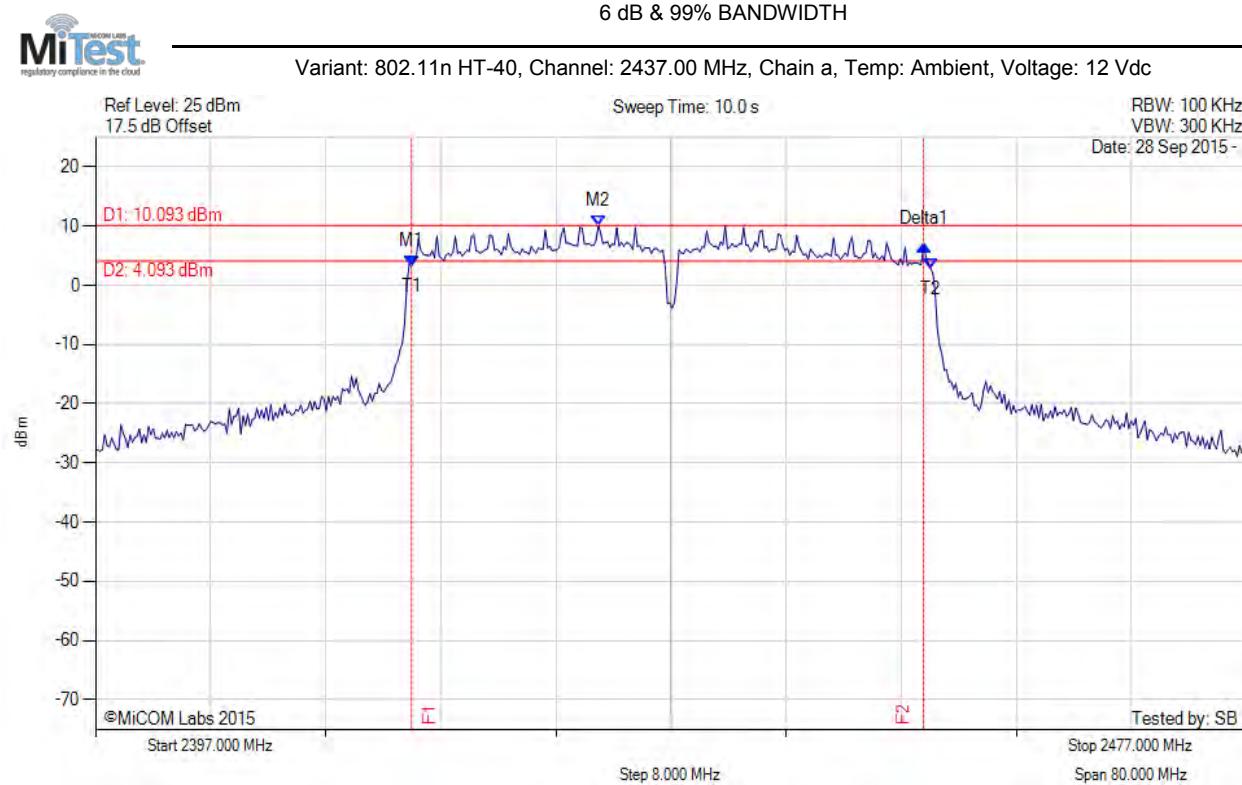
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = POS Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAXH	M1 : 2404.530 MHz : 6.262 dBm M2 : 2416.930 MHz : 11.340 dBm Delta1 : 34.800 MHz : -3.338 dB T1 : 2404.133 MHz : 2.377 dBm T2 : 2439.733 MHz : 2.172 dBm OBW : 35.491 MHz	Measured 6 dB Bandwidth: 34.800 MHz Limit: \geq 500.0 kHz Margin: -34.30 MHz

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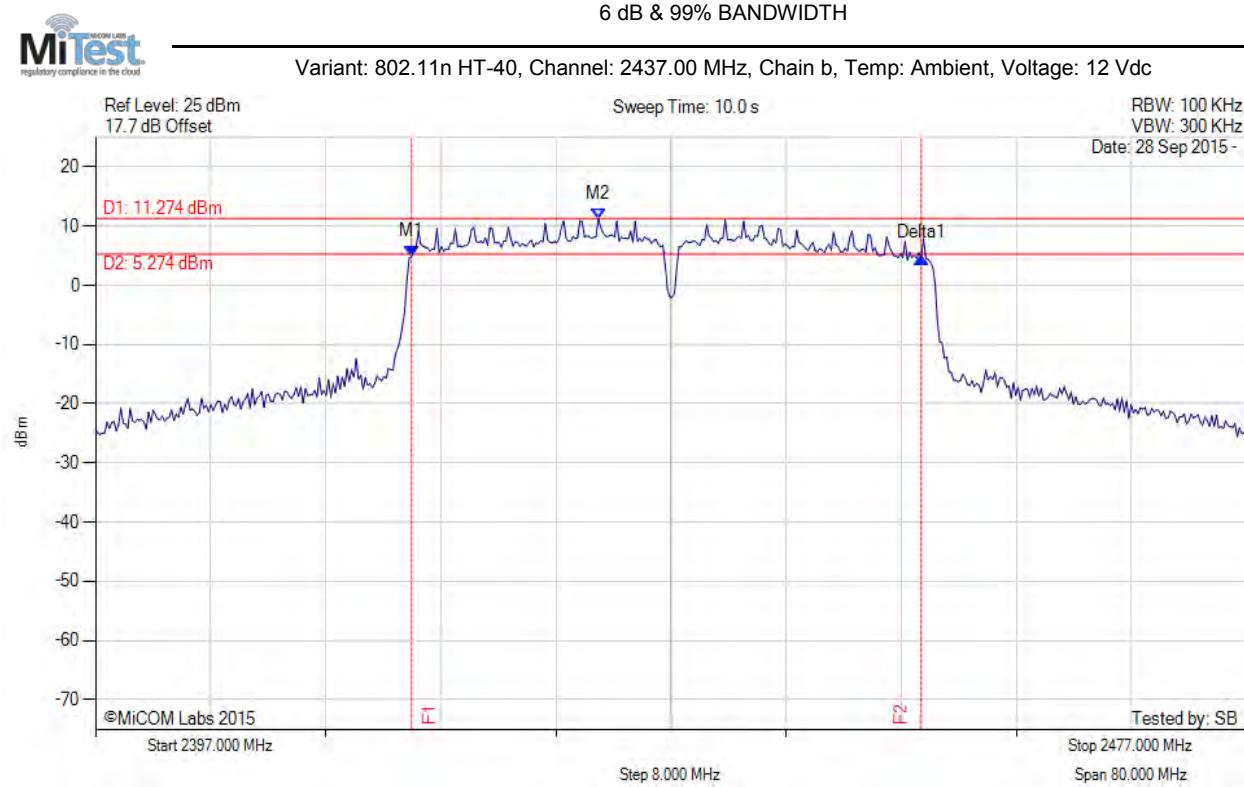
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2418.964 MHz : 3.316 dBm M2 : 2431.950 MHz : 10.093 dBm Delta1 : 35.591 MHz : 3.533 dB T1 : 2418.964 MHz : 3.316 dBm T2 : 2455.036 MHz : 2.869 dBm OBW : 36.072 MHz	Measured 6 dB Bandwidth: 35.591 MHz Limit: \geq 500.0 kHz Margin: -35.09 MHz

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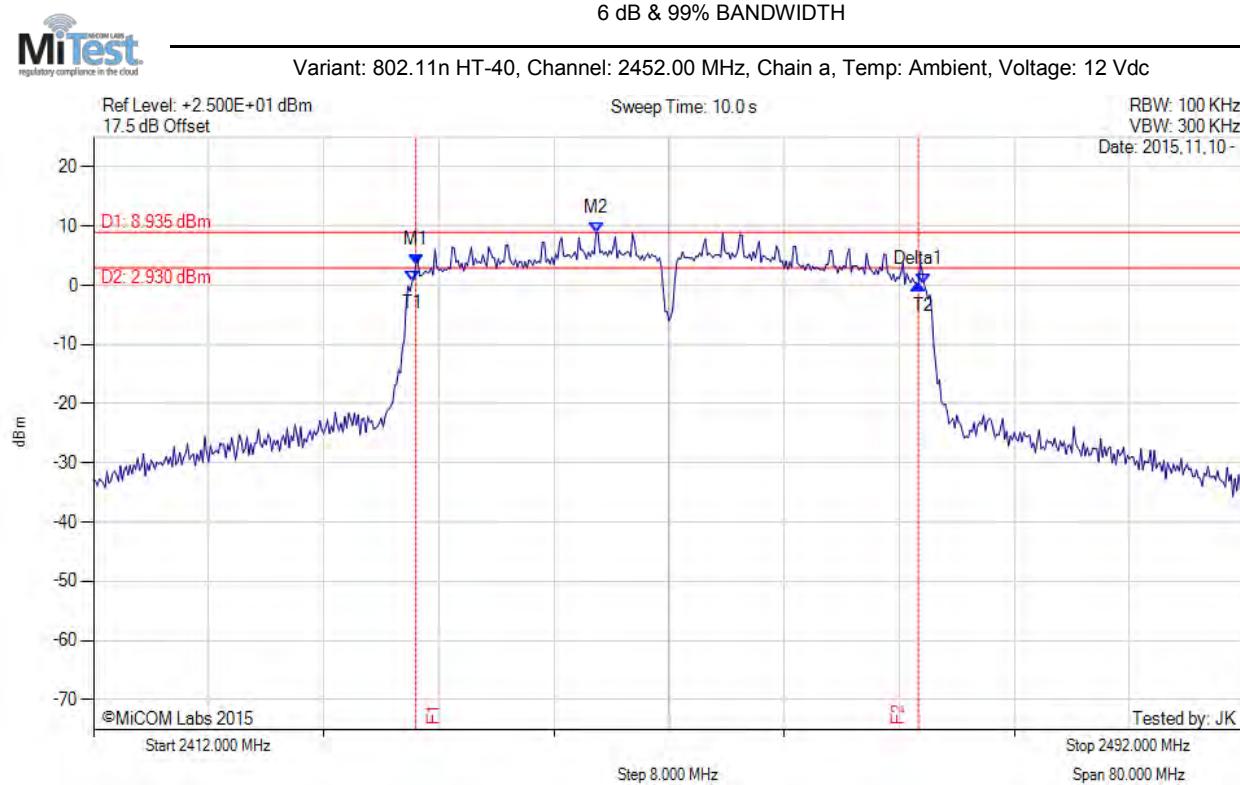
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 2418.964 MHz : 4.962 dBm M2 : 2431.950 MHz : 11.274 dBm Delta1 : 35.431 MHz : -0.244 dB T1 : 0 Hz : 500.000 dBm T2 : 0 Hz : 500.000 dBm OBW : 36.232 MHz	Measured 6 dB Bandwidth: 35.431 MHz Limit: \geq 500.0 kHz Margin: -34.93 MHz

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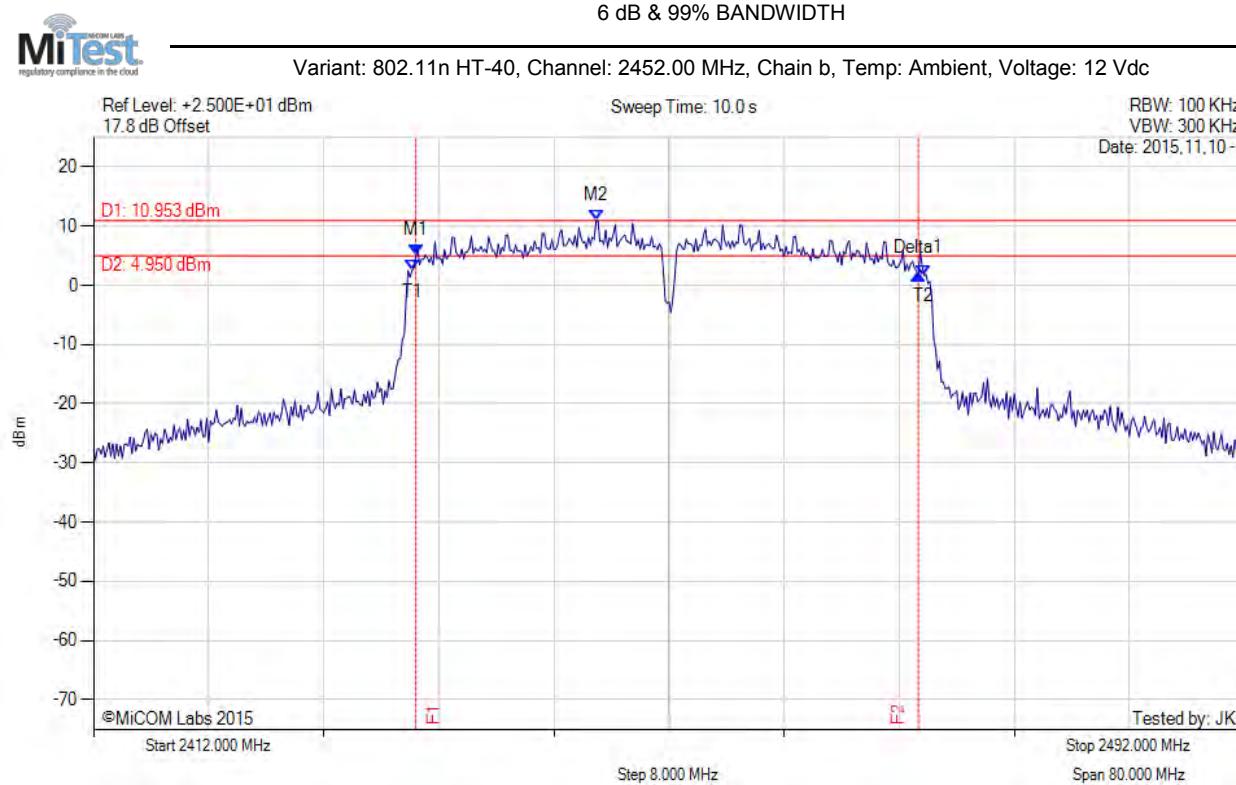
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = POS Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAXH	M1 : 2434.400 MHz : 3.553 dBm M2 : 2446.930 MHz : 8.935 dBm Delta1 : 34.930 MHz : -3.333 dB T1 : 2434.133 MHz : 0.603 dBm T2 : 2469.733 MHz : 0.135 dBm OBW : 35.475 MHz	Measured 6 dB Bandwidth: 34.930 MHz Limit: \geq 500.0 kHz Margin: -34.43 MHz

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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = POS Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAXH	M1 : 2434.400 MHz : 5.005 dBm M2 : 2446.930 MHz : 10.953 dBm Delta1 : 34.930 MHz : -3.066 dB T1 : 2434.133 MHz : 2.514 dBm T2 : 2469.733 MHz : 1.707 dBm OBW : 35.602 MHz	Measured 6 dB Bandwidth: 34.930 MHz Limit: \geq 500.0 kHz Margin: -34.43 MHz

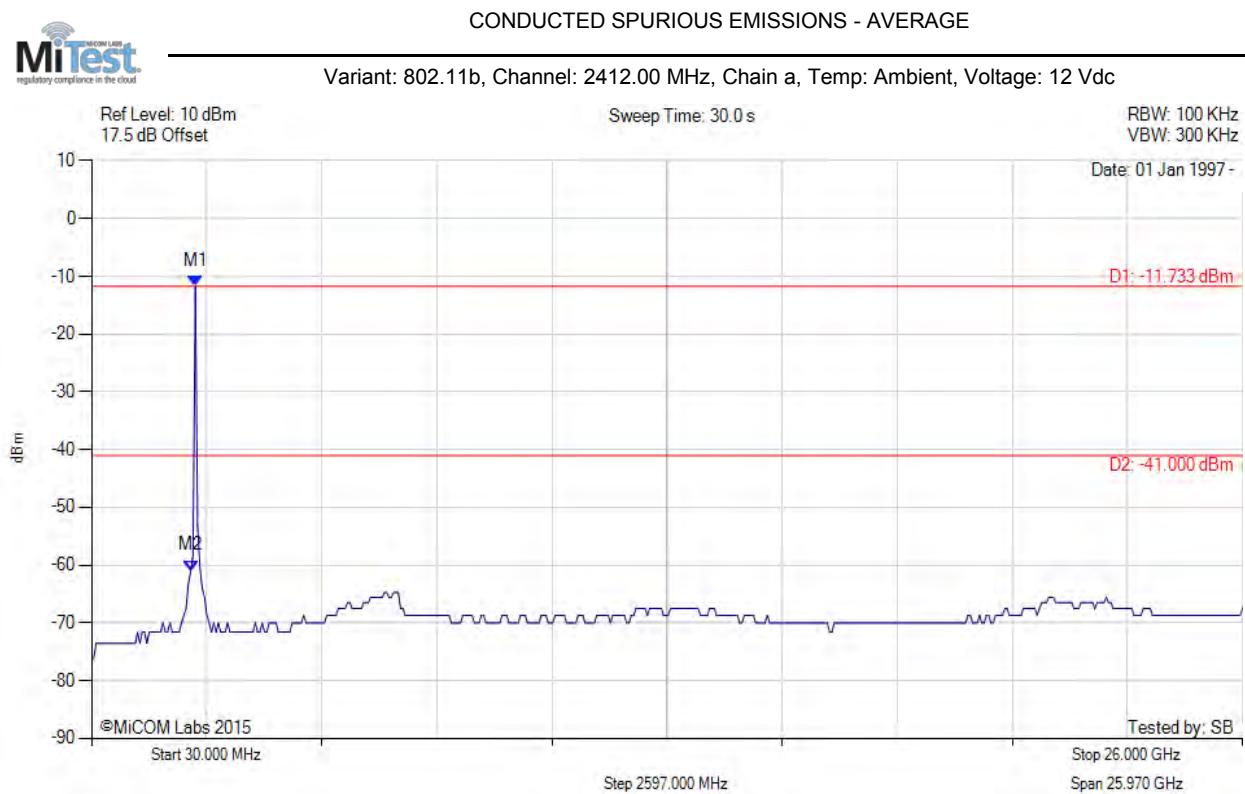
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A.2. Emissions

A.2.1. Conducted Emissions

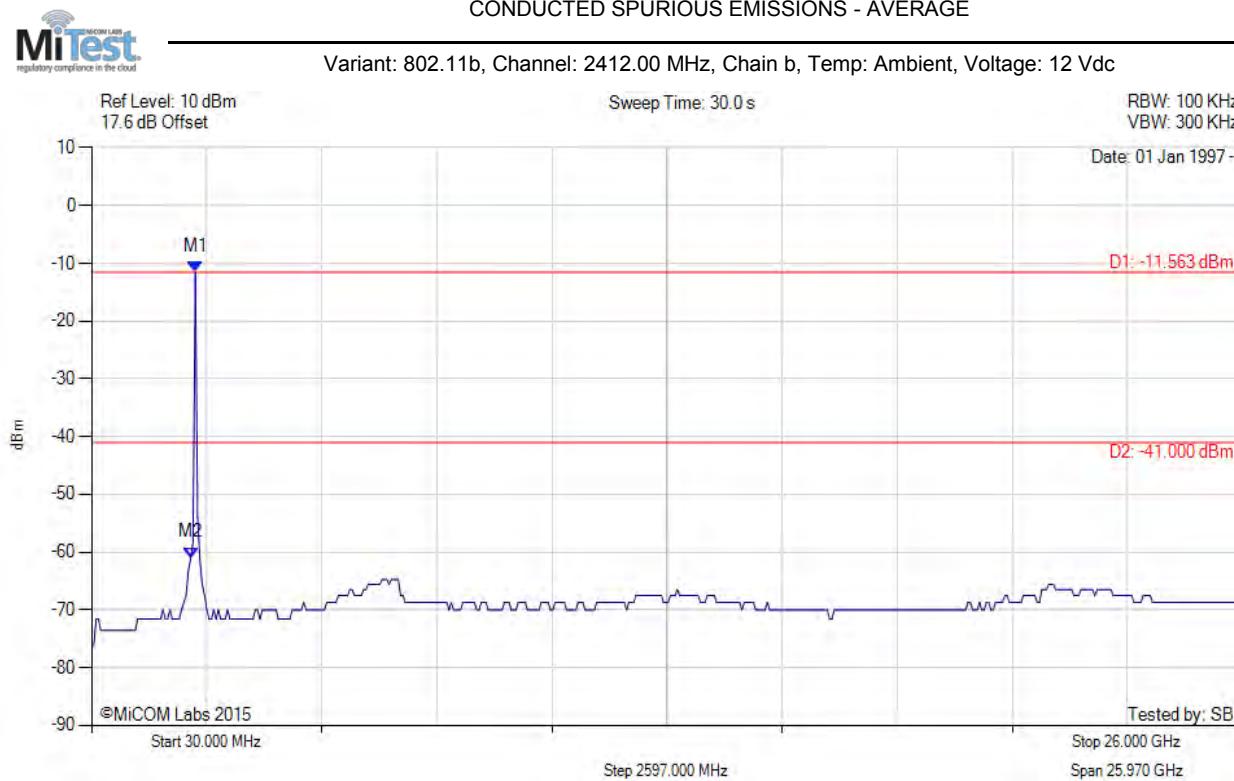
A.2.1.1. Conducted Spurious Emissions



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2371.984 MHz : -11.733 dBm M2 : 2267.896 MHz : -60.956 dBm	Limit: -41.00 dBm Margin: -19.96 dB

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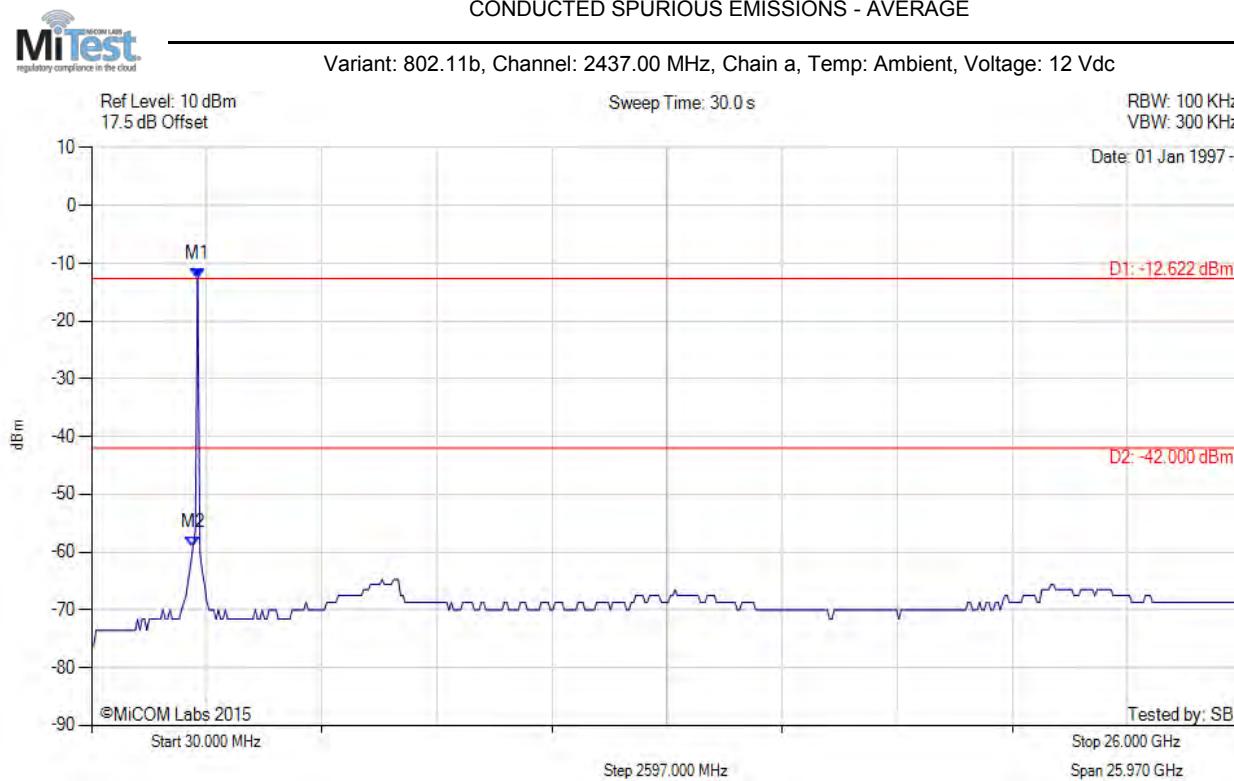
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2371.984 MHz : -11.563 dBm M2 : 2267.896 MHz : -60.956 dBm	Limit: -41.00 dBm Margin: -19.96 dB

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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2424.028 MHz : -12.622 dBm M2 : 2319.940 MHz : -59.121 dBm	Limit: -42.00 dBm Margin: -17.12 dB

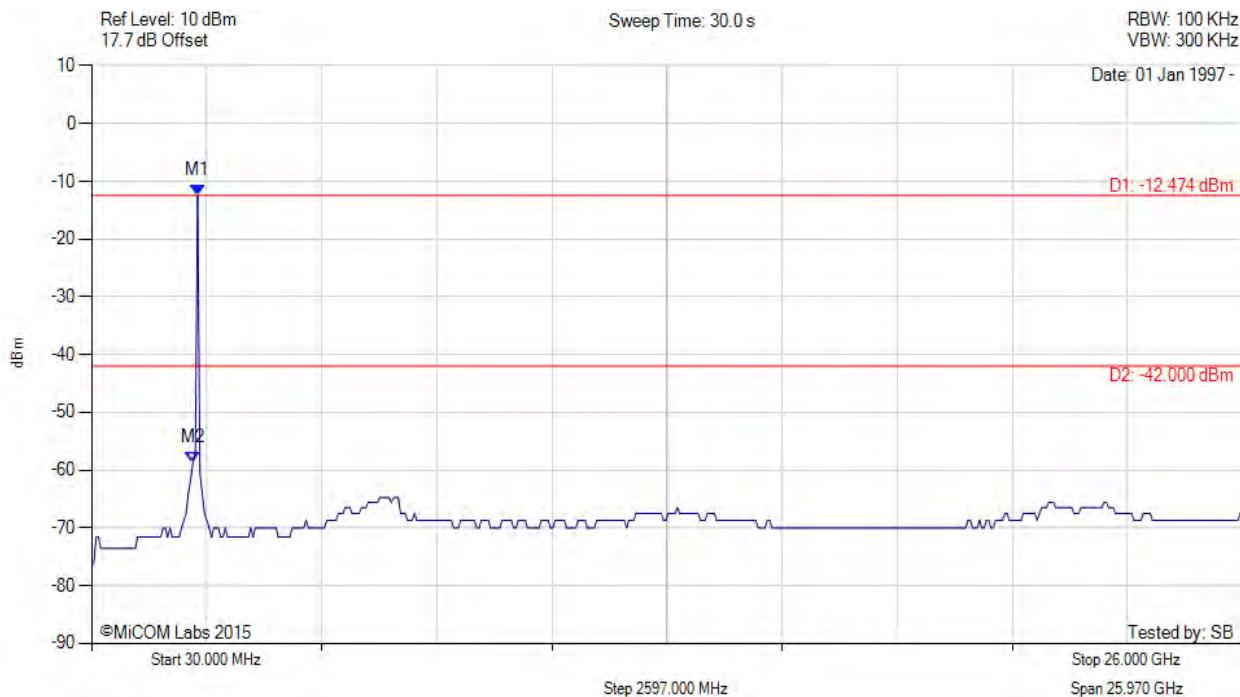
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CONDUCTED SPURIOUS EMISSIONS - AVERAGE

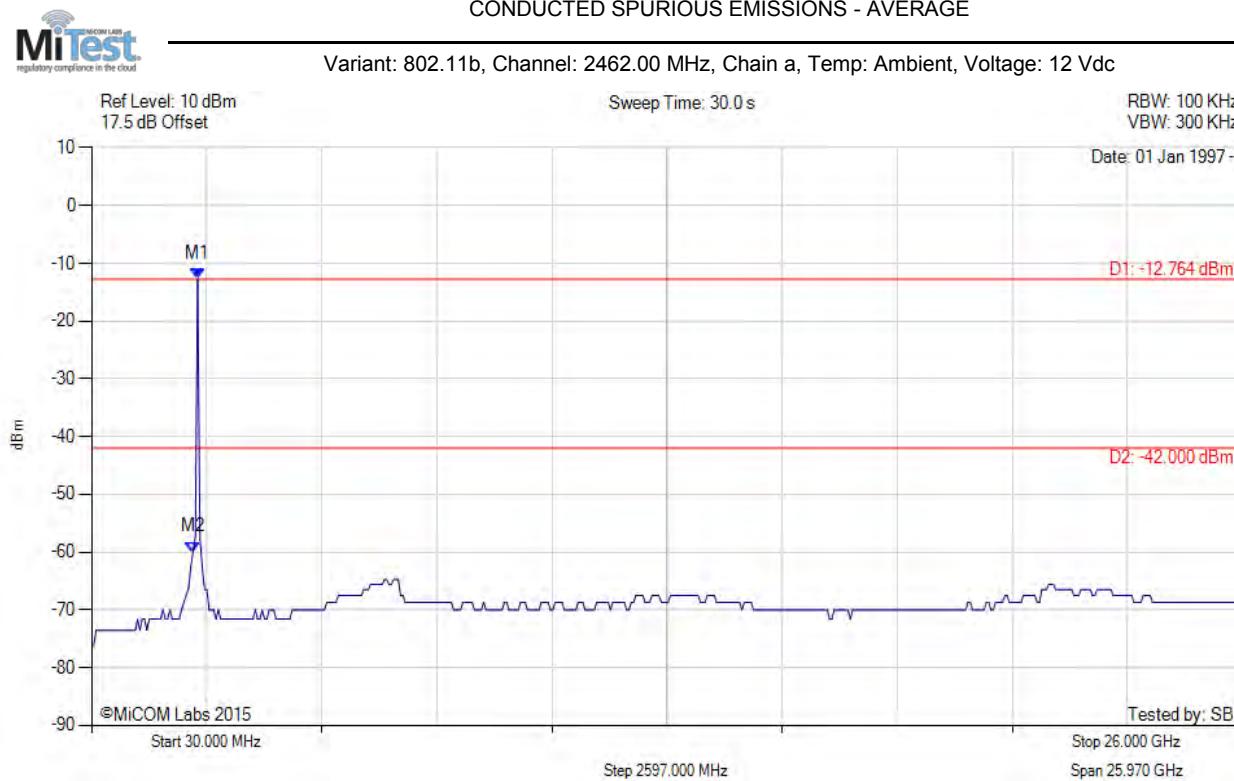
Variant: 802.11b, Channel: 2437.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2424.028 MHz : -12.474 dBm M2 : 2319.940 MHz : -58.717 dBm	Limit: -42.00 dBm Margin: -16.72 dB

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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2424.028 MHz : -12.764 dBm M2 : 2319.940 MHz : -59.990 dBm	Limit: -42.00 dBm Margin: -17.99 dB

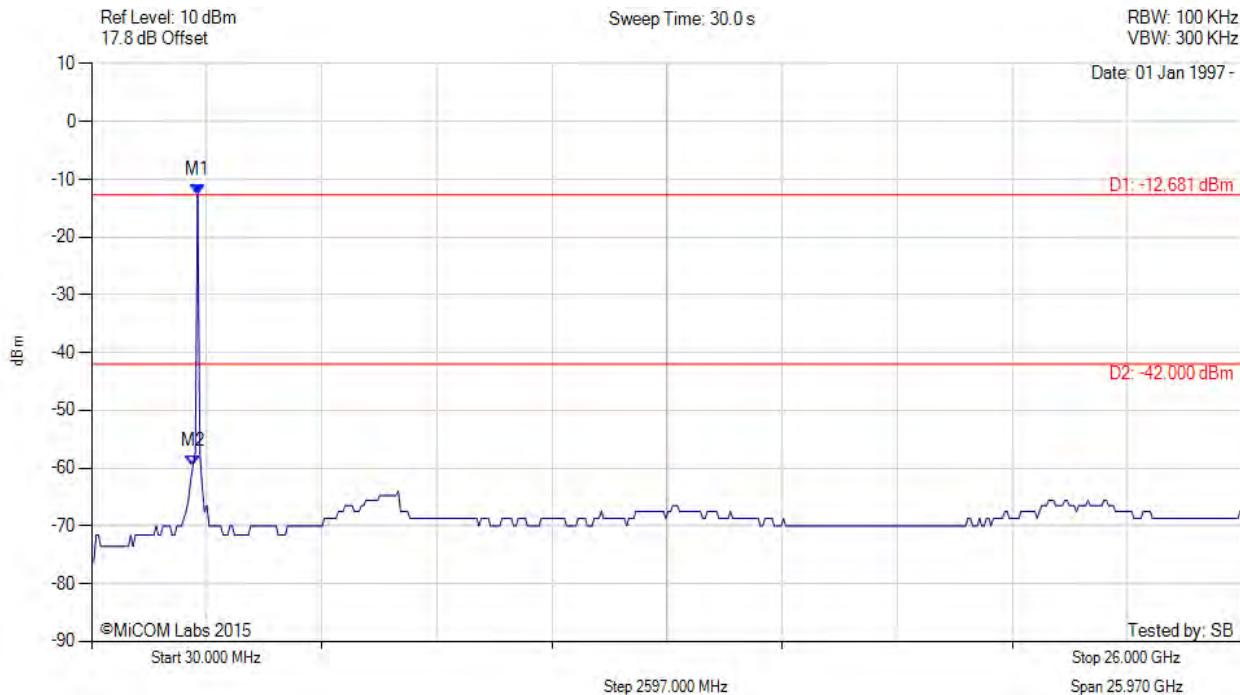
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CONDUCTED SPURIOUS EMISSIONS - AVERAGE

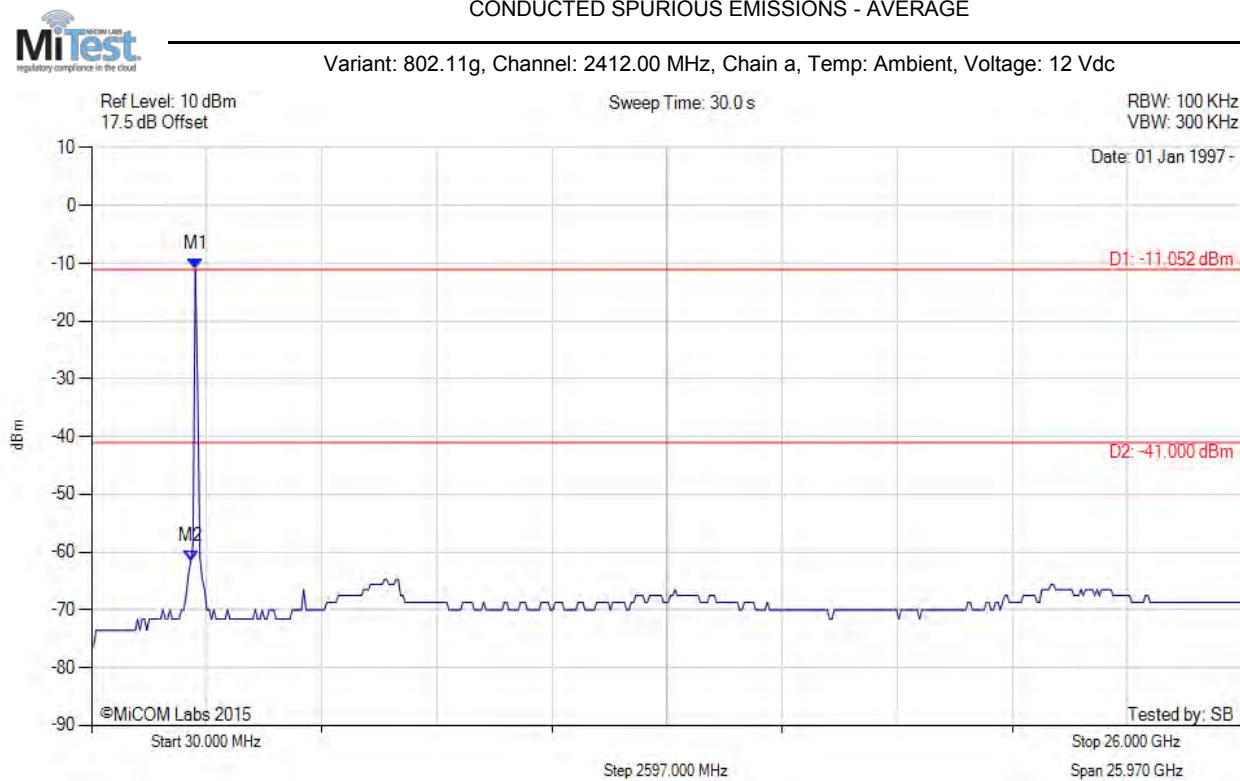
Variant: 802.11b, Channel: 2462.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2424.028 MHz : -12.681 dBm M2 : 2319.940 MHz : -59.545 dBm	Limit: -42.00 dBm Margin: -17.55 dB

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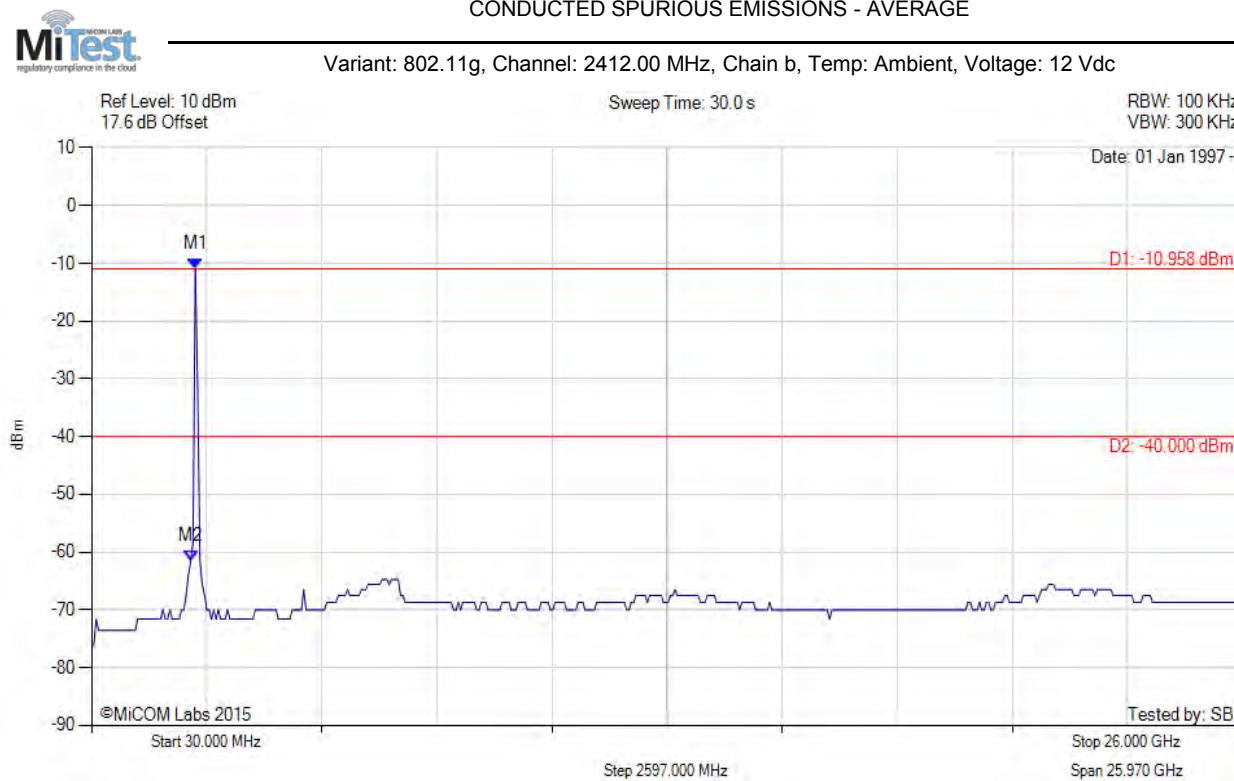
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2371.984 MHz : -11.052 dBm M2 : 2267.896 MHz : -61.483 dBm	Limit: -41.00 dBm Margin: -20.48 dB

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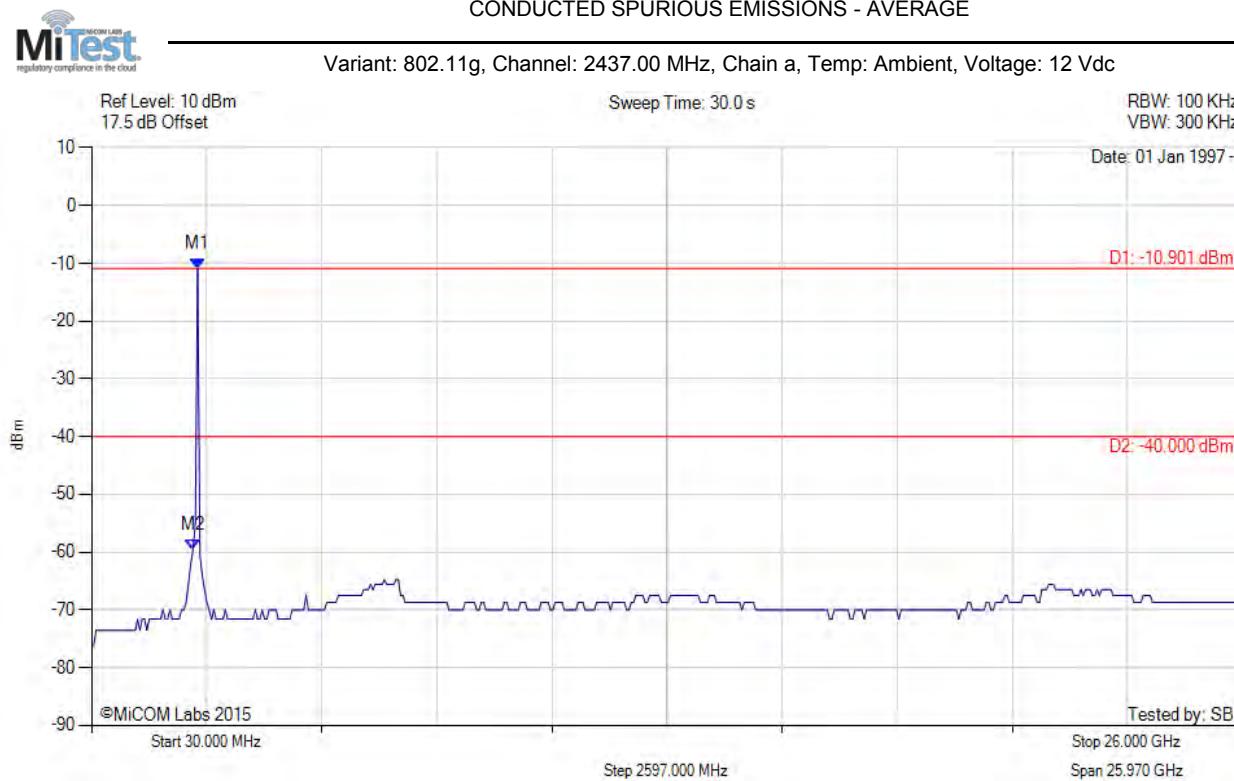
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2371.984 MHz : -10.958 dBm M2 : 2267.896 MHz : -61.483 dBm	Limit: -40.00 dBm Margin: -21.48 dB

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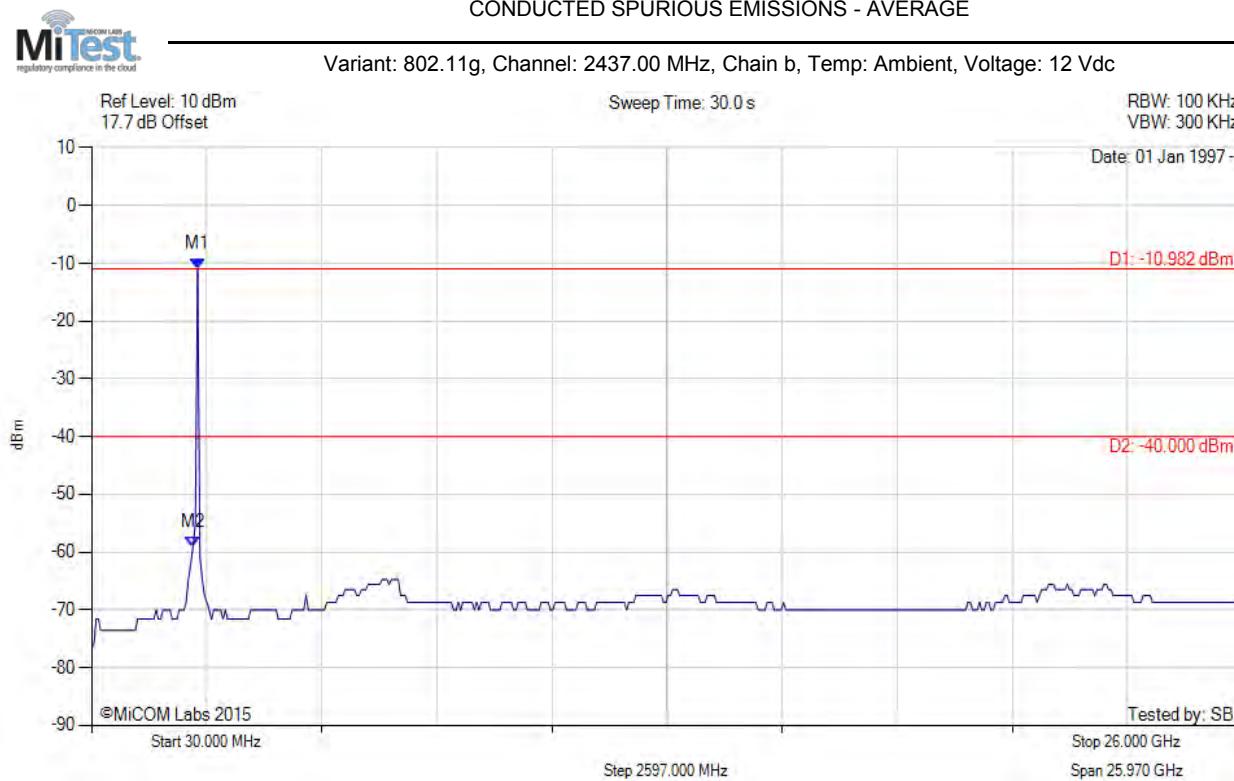
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2424.028 MHz : -10.901 dBm M2 : 2319.940 MHz : -59.545 dBm	Limit: -40.00 dBm Margin: -19.55 dB

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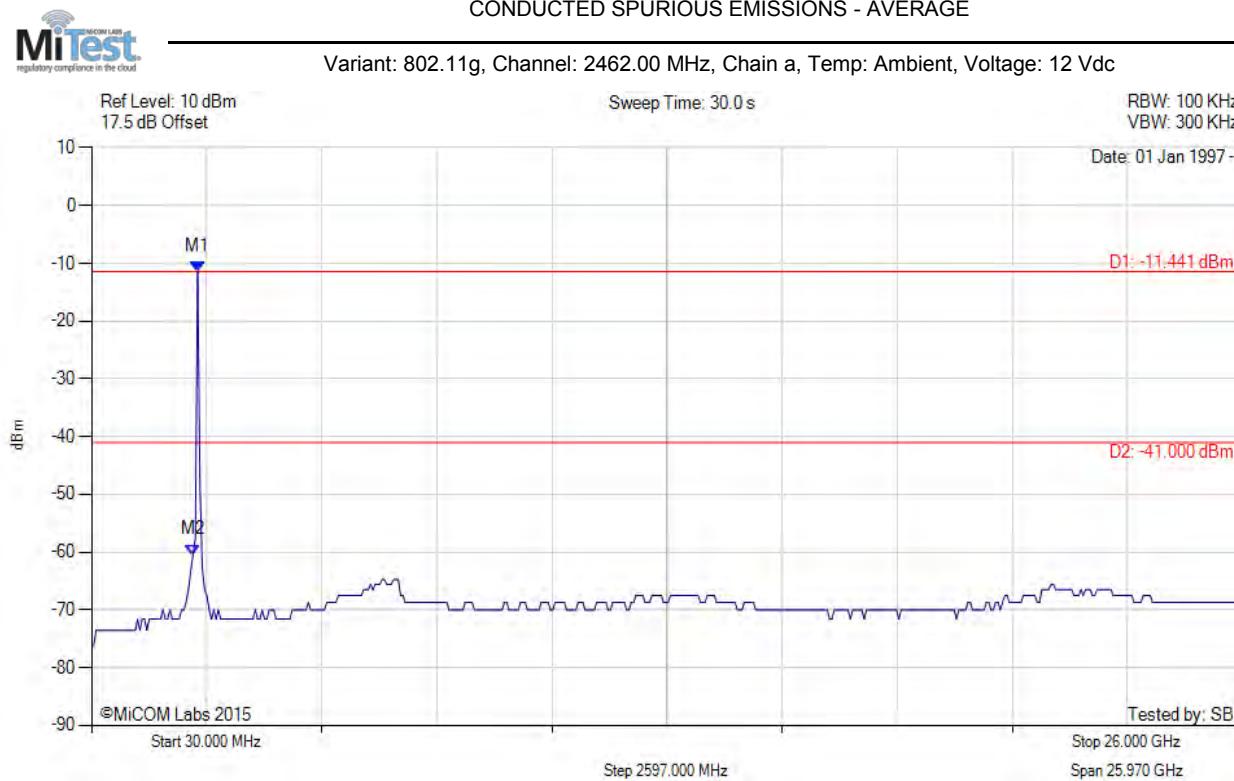
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2424.028 MHz : -10.982 dBm M2 : 2319.940 MHz : -59.121 dBm	Limit: -40.00 dBm Margin: -19.12 dB

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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2424.028 MHz : -11.441 dBm M2 : 2319.940 MHz : -60.460 dBm	Limit: -41.00 dBm Margin: -19.46 dB

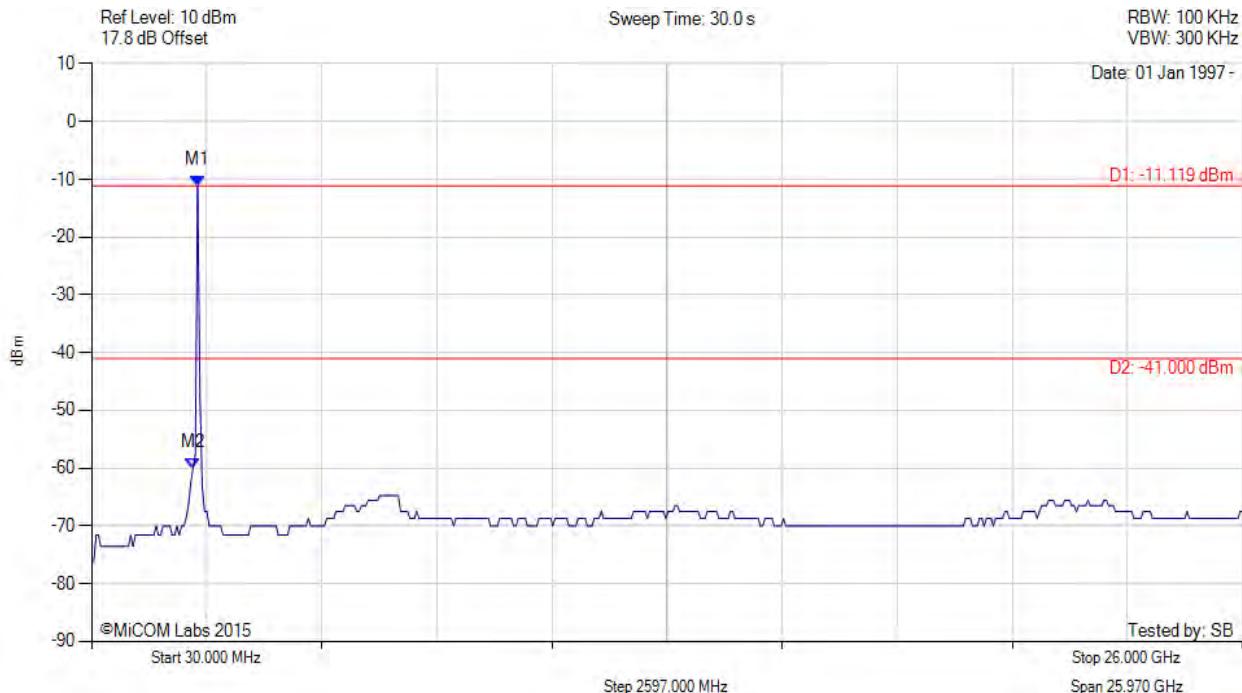
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CONDUCTED SPURIOUS EMISSIONS - AVERAGE

Variant: 802.11g, Channel: 2462.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2424.028 MHz : -11.119 dBm M2 : 2319.940 MHz : -59.990 dBm	Limit: -41.00 dBm Margin: -18.99 dB

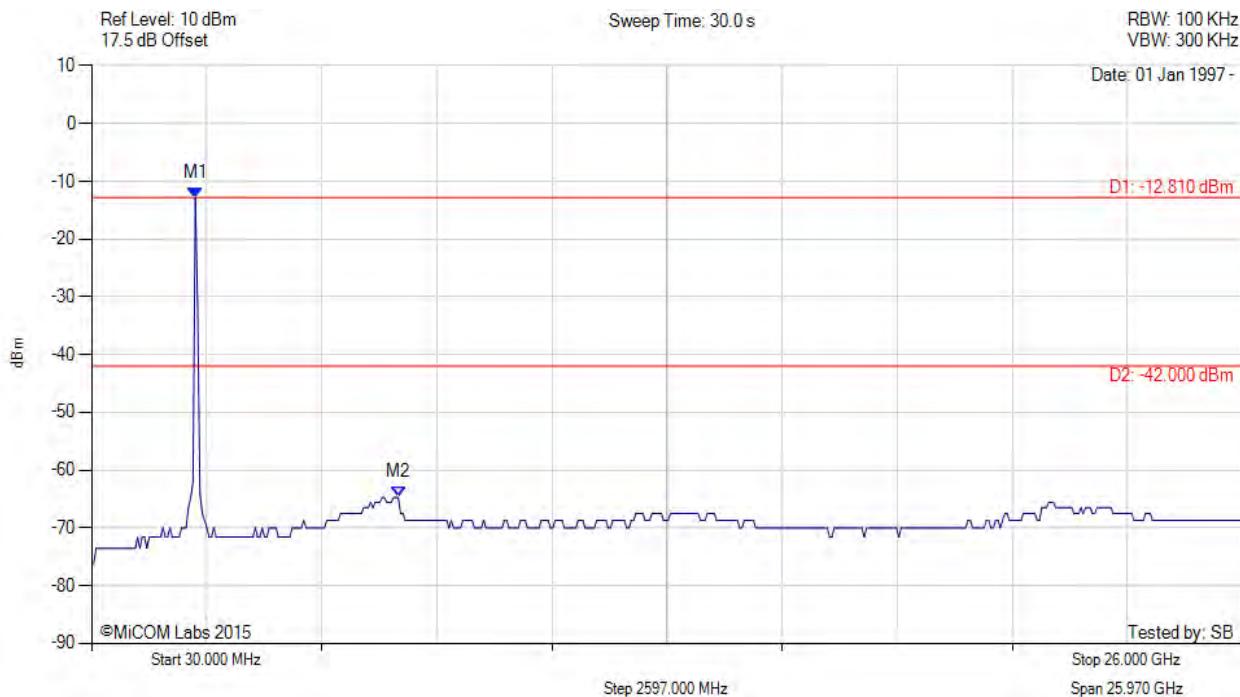
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CONDUCTED SPURIOUS EMISSIONS - AVERAGE

Variant: 802.11n HT-20, Channel: 2412.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2371.984 MHz : -12.810 dBm M2 : 6951.864 MHz : -64.737 dBm	Limit: -42.00 dBm Margin: -22.74 dB

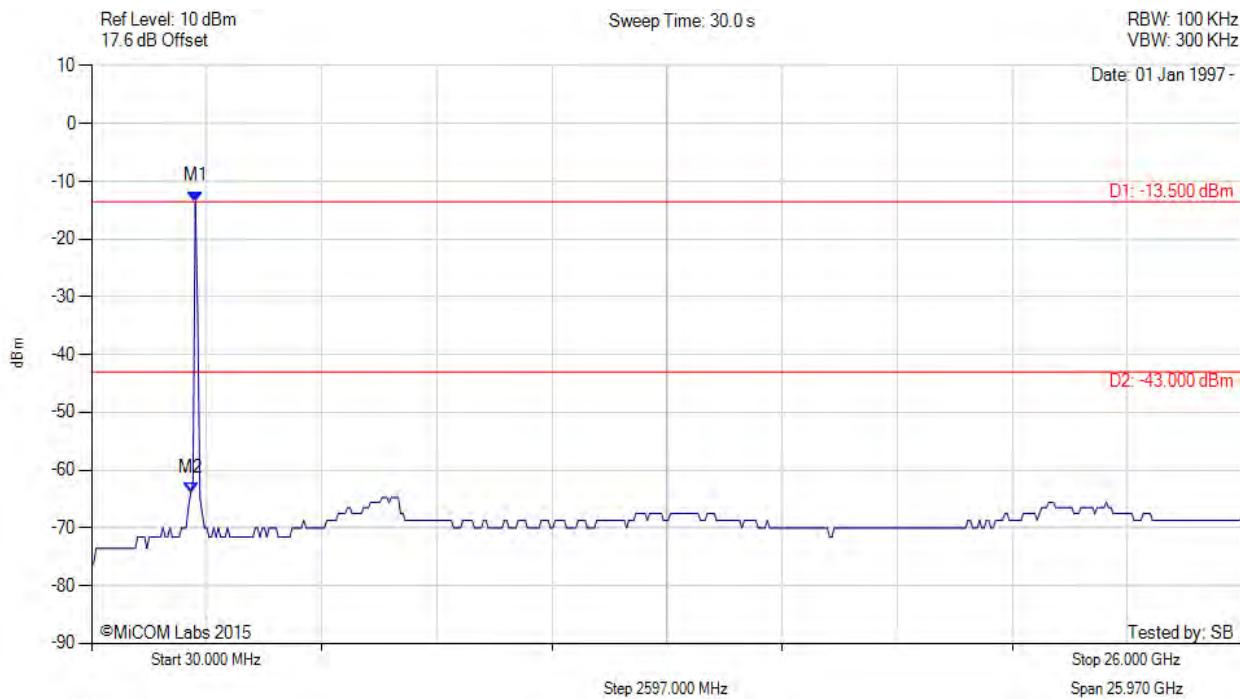
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CONDUCTED SPURIOUS EMISSIONS - AVERAGE

Variant: 802.11n HT-20, Channel: 2412.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2371.984 MHz : -13.500 dBm M2 : 2267.896 MHz : -63.982 dBm	Limit: -43.00 dBm Margin: -20.98 dB

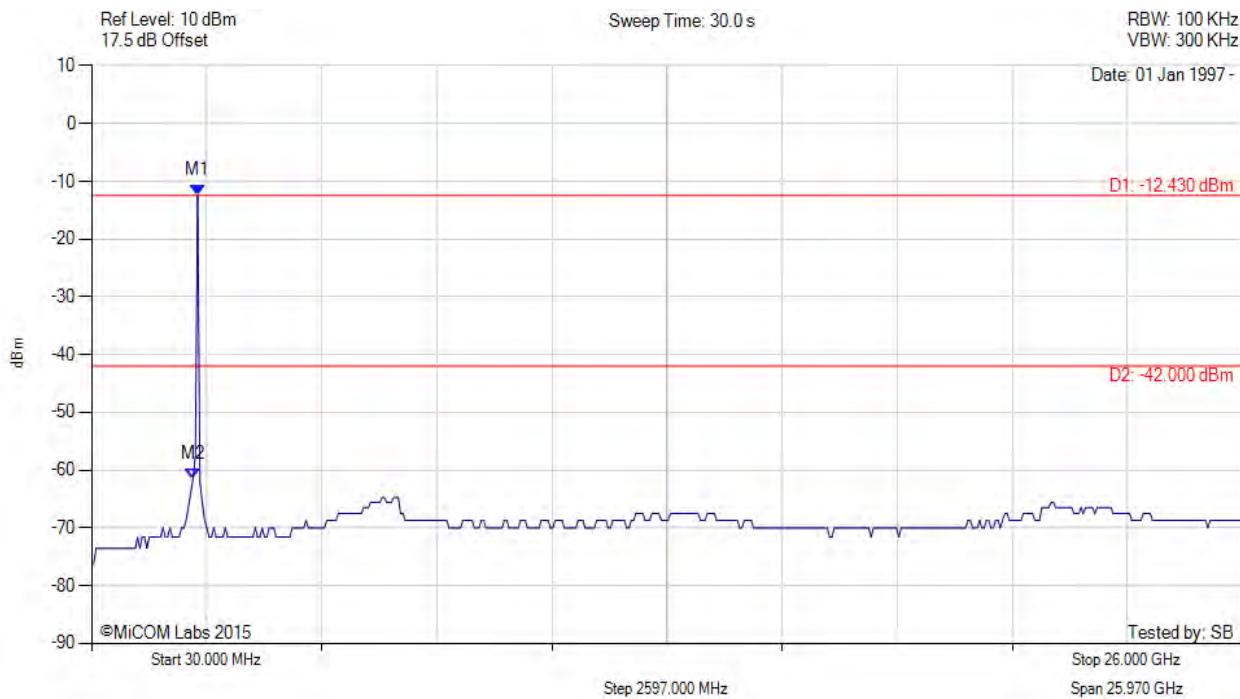
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CONDUCTED SPURIOUS EMISSIONS - AVERAGE

Variant: 802.11n HT-20, Channel: 2437.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2424.028 MHz : -12.430 dBm M2 : 2319.940 MHz : -61.483 dBm	Limit: -42.00 dBm Margin: -19.48 dB

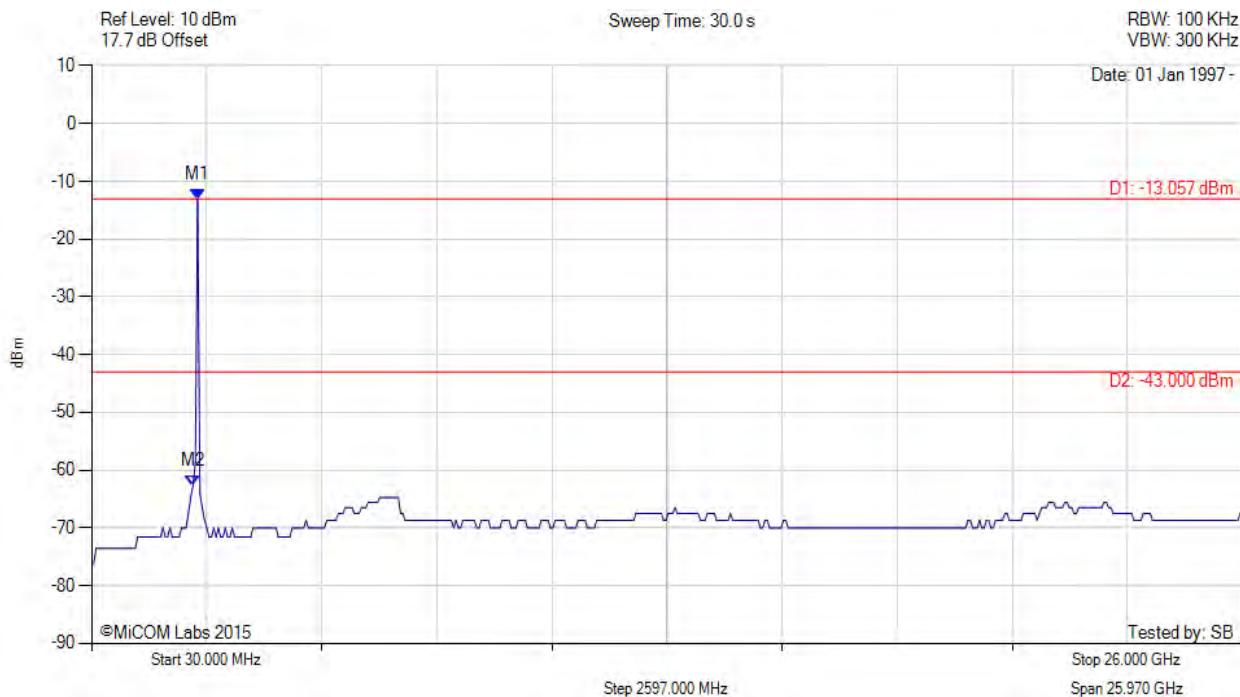
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CONDUCTED SPURIOUS EMISSIONS - AVERAGE

Variant: 802.11n HT-20, Channel: 2437.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



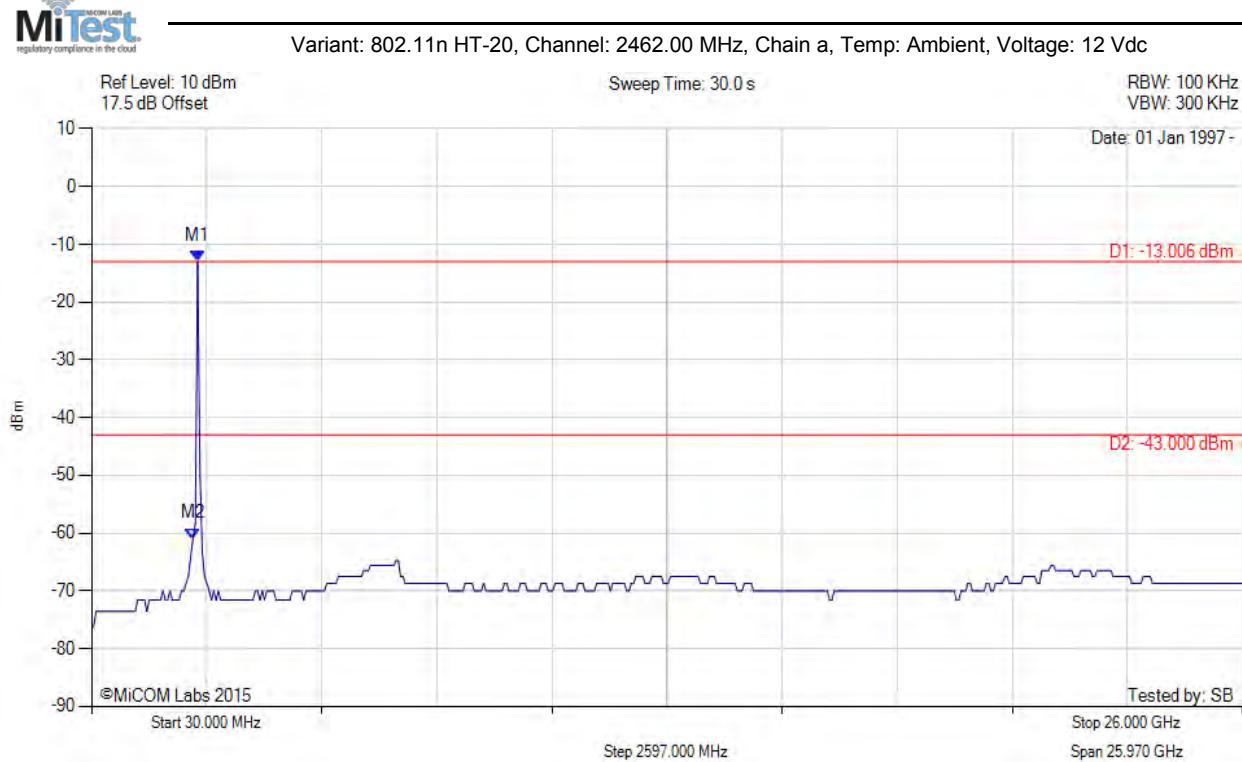
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2424.028 MHz : -13.057 dBm M2 : 2319.940 MHz : -62.643 dBm	Limit: -43.00 dBm Margin: -19.64 dB

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CONDUCTED SPURIOUS EMISSIONS - AVERAGE



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2424.028 MHz : -13.006 dBm M2 : 2319.940 MHz : -60.956 dBm	Limit: -43.00 dBm Margin: -17.96 dB

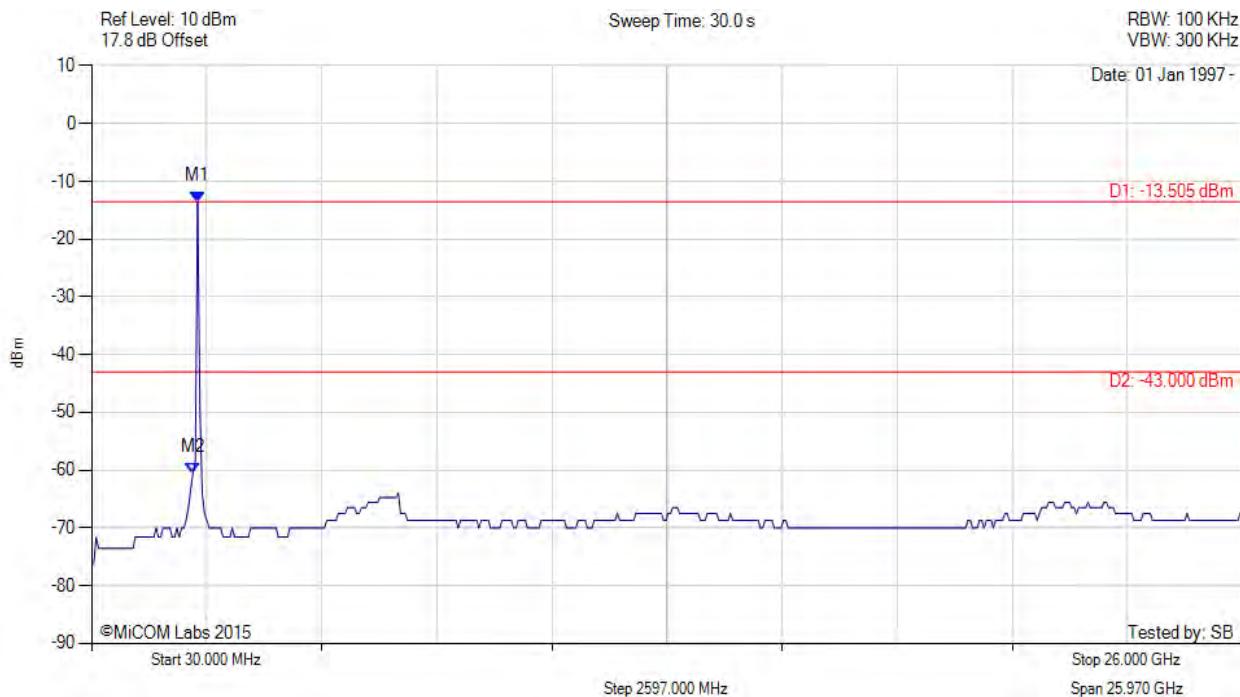
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CONDUCTED SPURIOUS EMISSIONS - AVERAGE

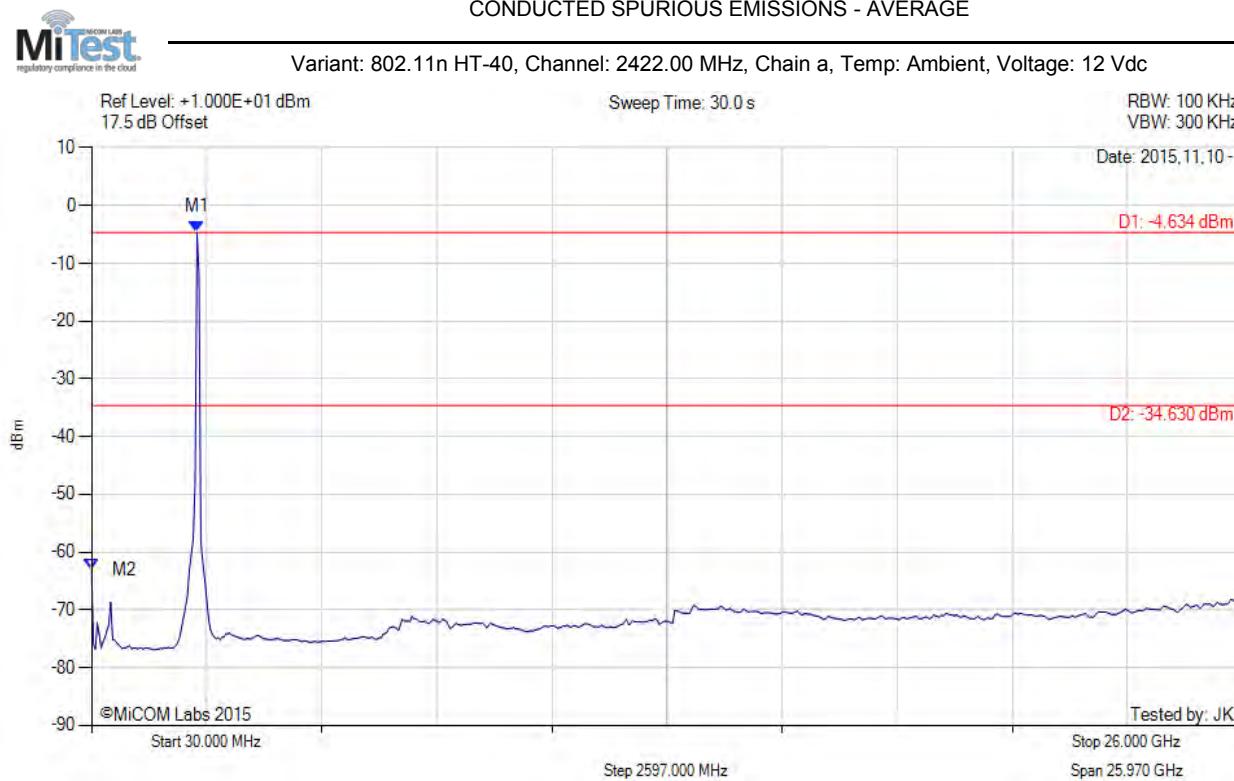
Variant: 802.11n HT-20, Channel: 2462.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2424.028 MHz : -13.505 dBm M2 : 2319.940 MHz : -60.460 dBm	Limit: -43.00 dBm Margin: -17.46 dB

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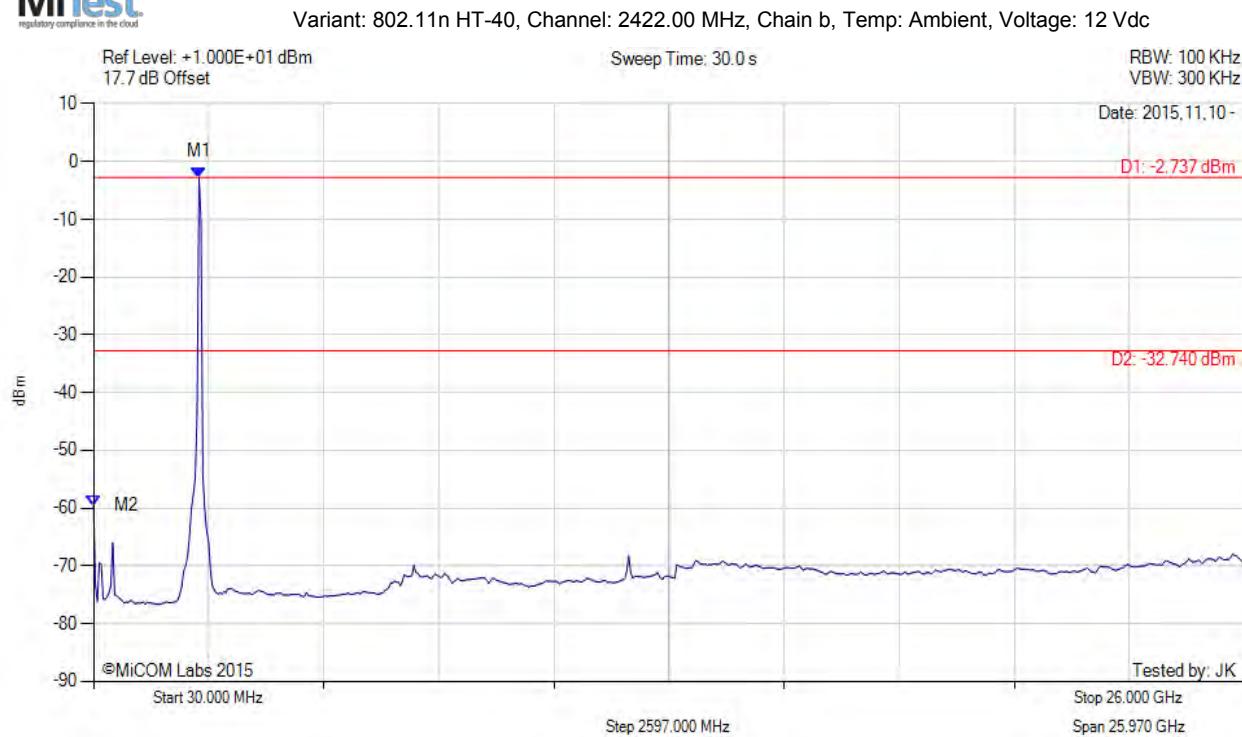
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2410.000 MHz : -4.634 dBm M2 : 30.000 MHz : -63.061 dBm	Limit: -34.63 dBm Margin: -28.43 dB

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CONDUCTED SPURIOUS EMISSIONS - AVERAGE



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2410.000 MHz : -2.737 dBm M2 : 30.000 MHz : -59.499 dBm	Limit: -32.74 dBm Margin: -26.76 dB

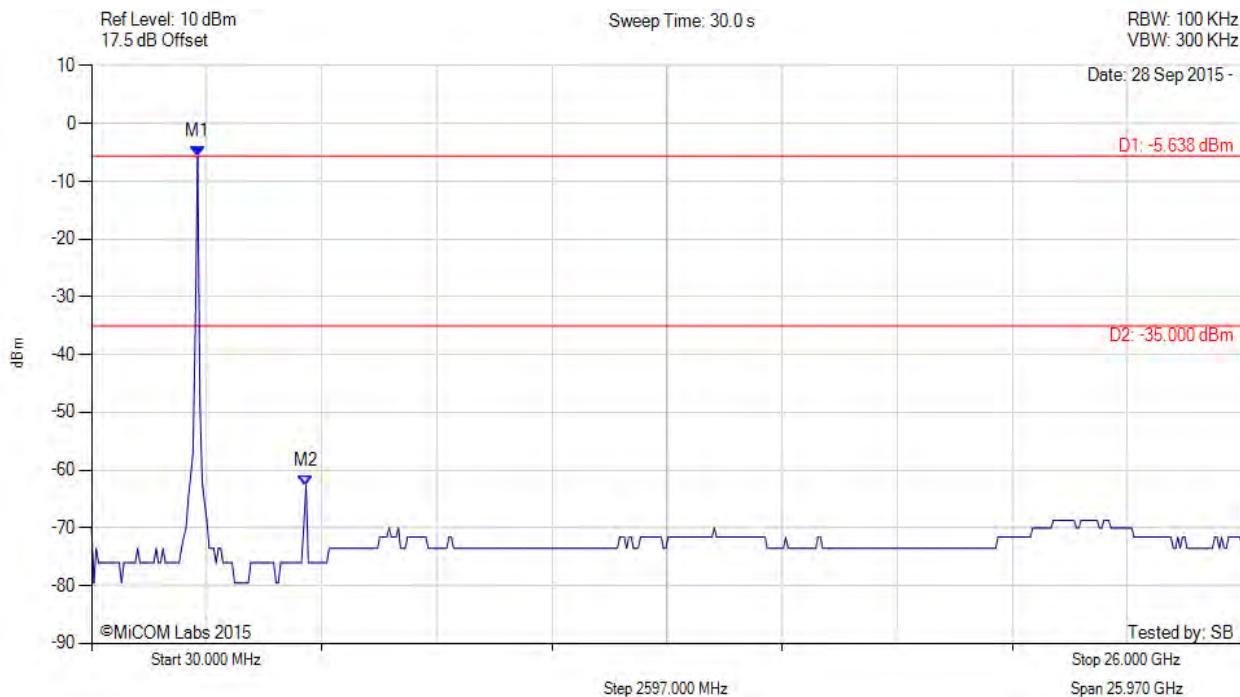
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CONDUCTED SPURIOUS EMISSIONS - AVERAGE

Variant: 802.11n HT-40, Channel: 2437.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2424.028 MHz : -5.638 dBm M2 : 4870.100 MHz : -62.643 dBm	Limit: -35.00 dBm Margin: -27.64 dB

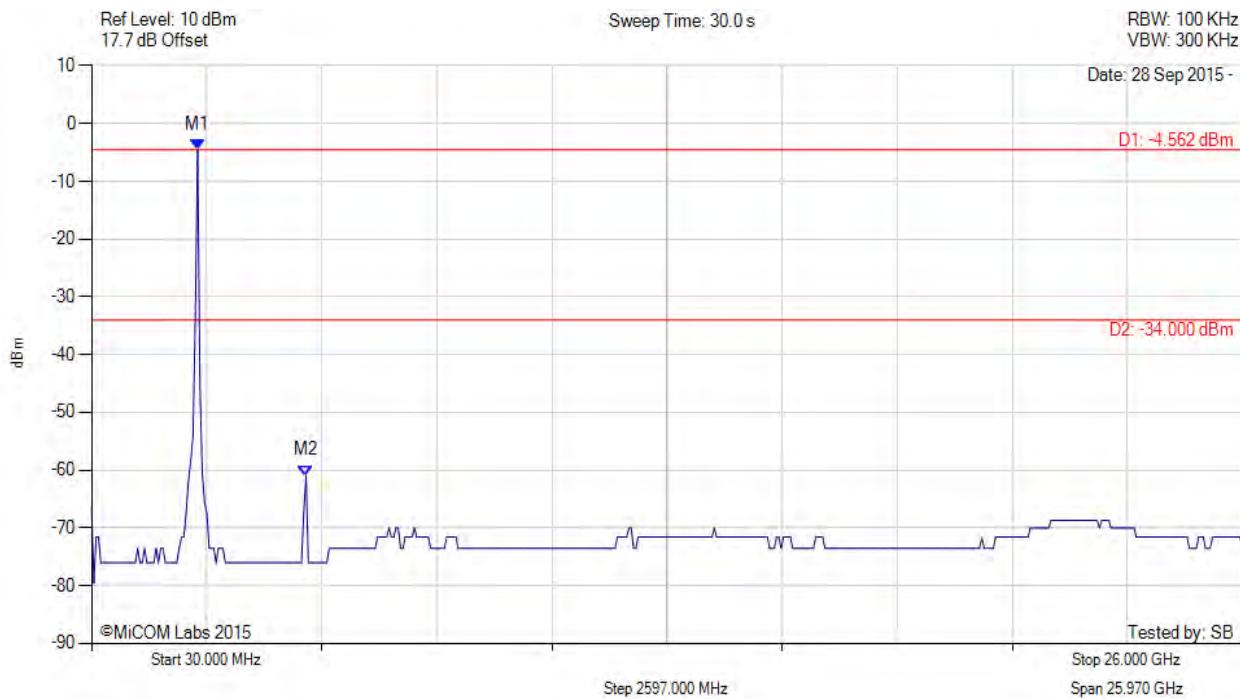
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CONDUCTED SPURIOUS EMISSIONS - AVERAGE

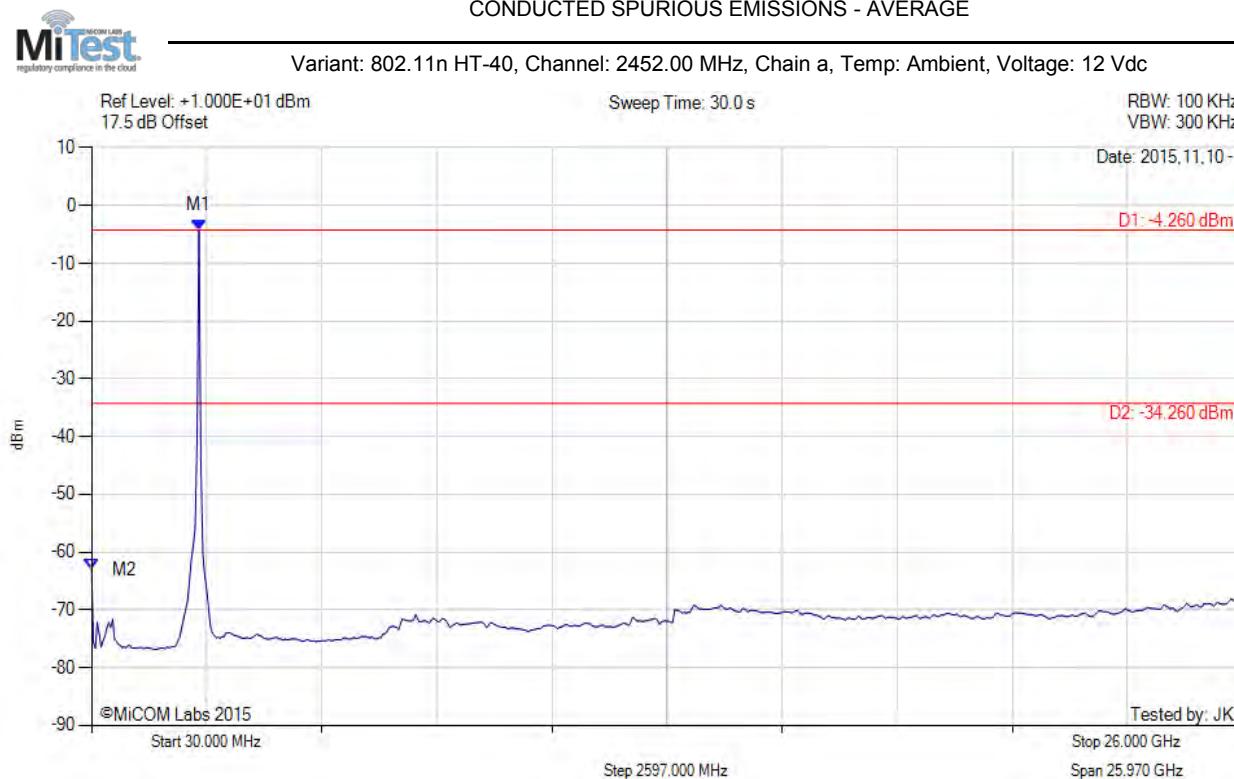
Variant: 802.11n HT-40, Channel: 2437.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2424.028 MHz : -4.562 dBm M2 : 4870.100 MHz : -60.956 dBm	Limit: -34.00 dBm Margin: -26.96 dB

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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2450.000 MHz : -4.260 dBm M2 : 30.000 MHz : -62.940 dBm	Limit: -34.26 dBm Margin: -28.68 dB

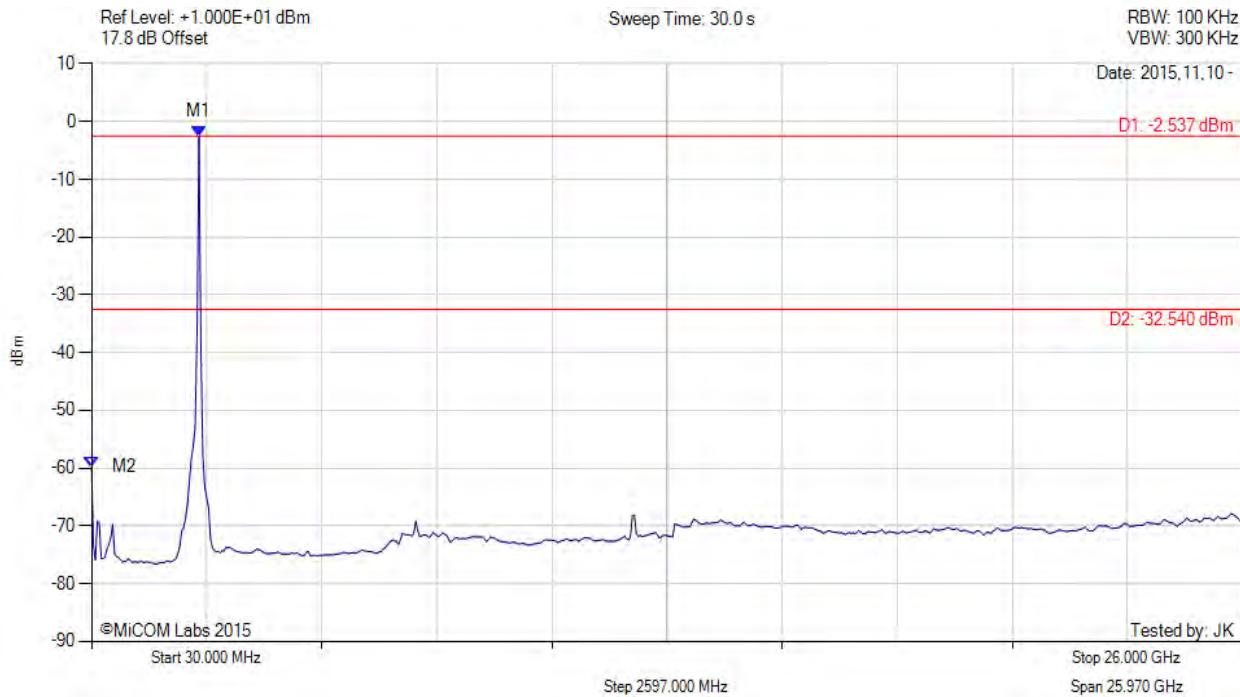
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CONDUCTED SPURIOUS EMISSIONS - AVERAGE

Variant: 802.11n HT-40, Channel: 2452.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2450.000 MHz : -2.537 dBm M2 : 30.000 MHz : -59.763 dBm	Limit: -32.54 dBm Margin: -27.22 dB

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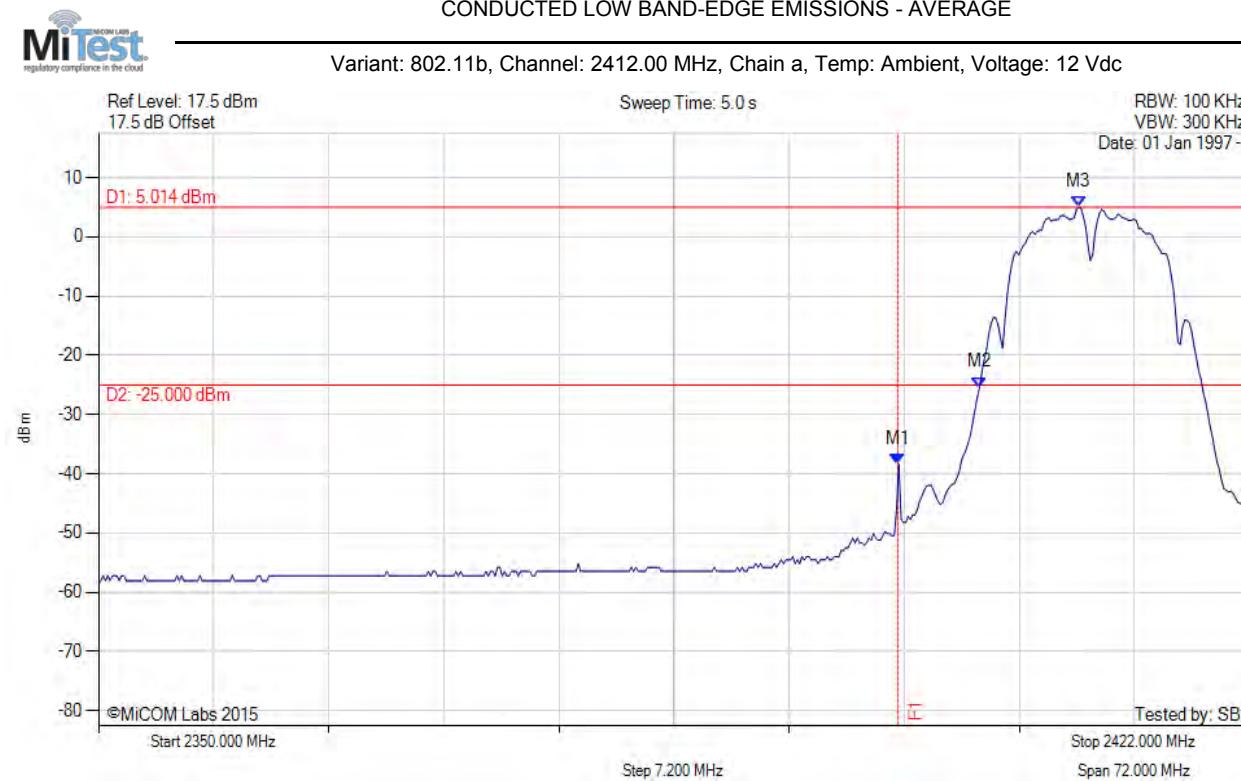
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Title: Actiontec Electronics Inc WCB6240Q
To: FCC 15.247 (DTS) + IC RSS-247 Issue 1
Serial #: ATEC09-U5a Conducted Rev C
Issue Date: 24th November 2015
Page: 99 of 152

A.2.1.2. Conducted Band-Edge Emissions

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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2400.000 MHz : -38.420 dBm M2 : 2405.118 MHz : -25.416 dBm M3 : 2411.323 MHz : 5.014 dBm	Channel Frequency: 2412.00 MHz

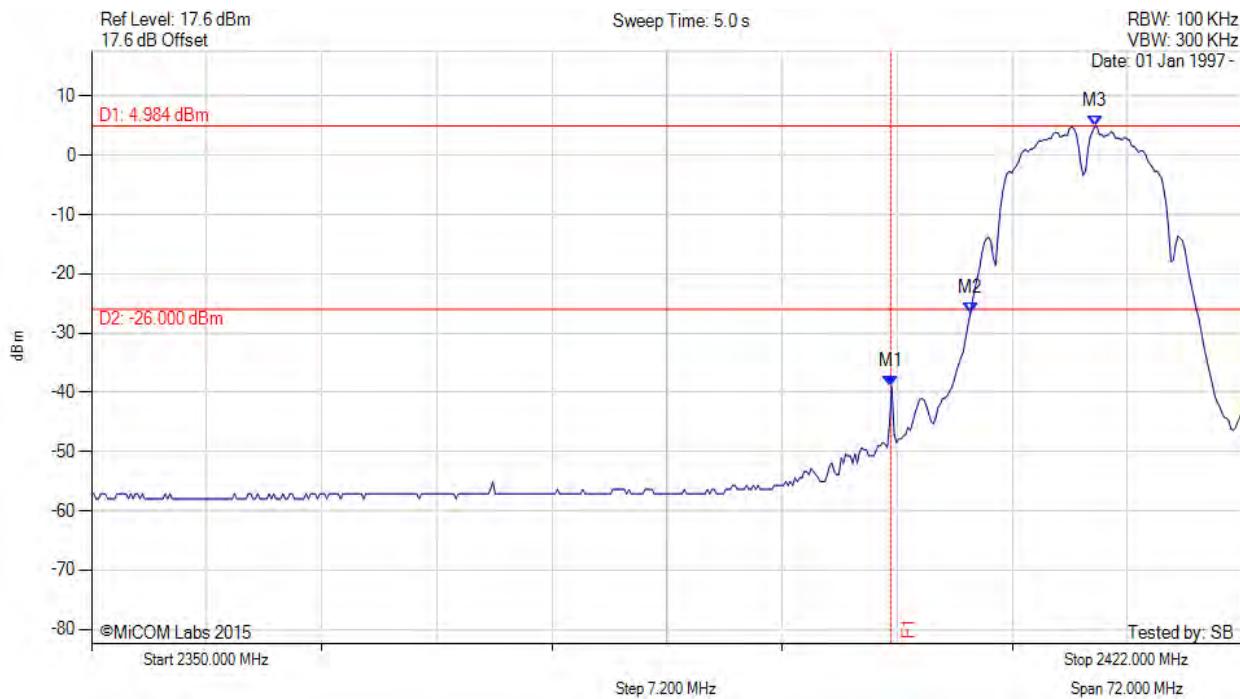
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CONDUCTED LOW BAND-EDGE EMISSIONS - AVERAGE

Variant: 802.11b, Channel: 2412.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2400.000 MHz : -39.076 dBm M2 : 2404.974 MHz : -26.696 dBm M3 : 2412.766 MHz : 4.984 dBm	Channel Frequency: 2412.00 MHz

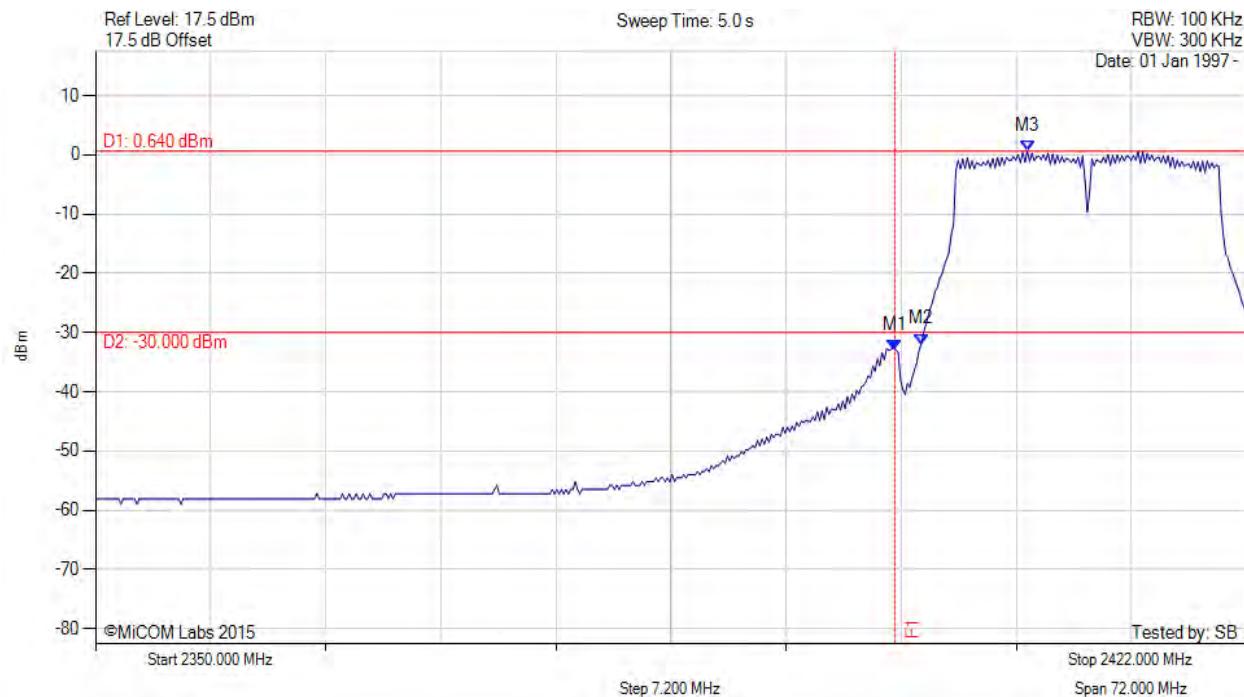
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CONDUCTED LOW BAND-EDGE EMISSIONS - AVERAGE

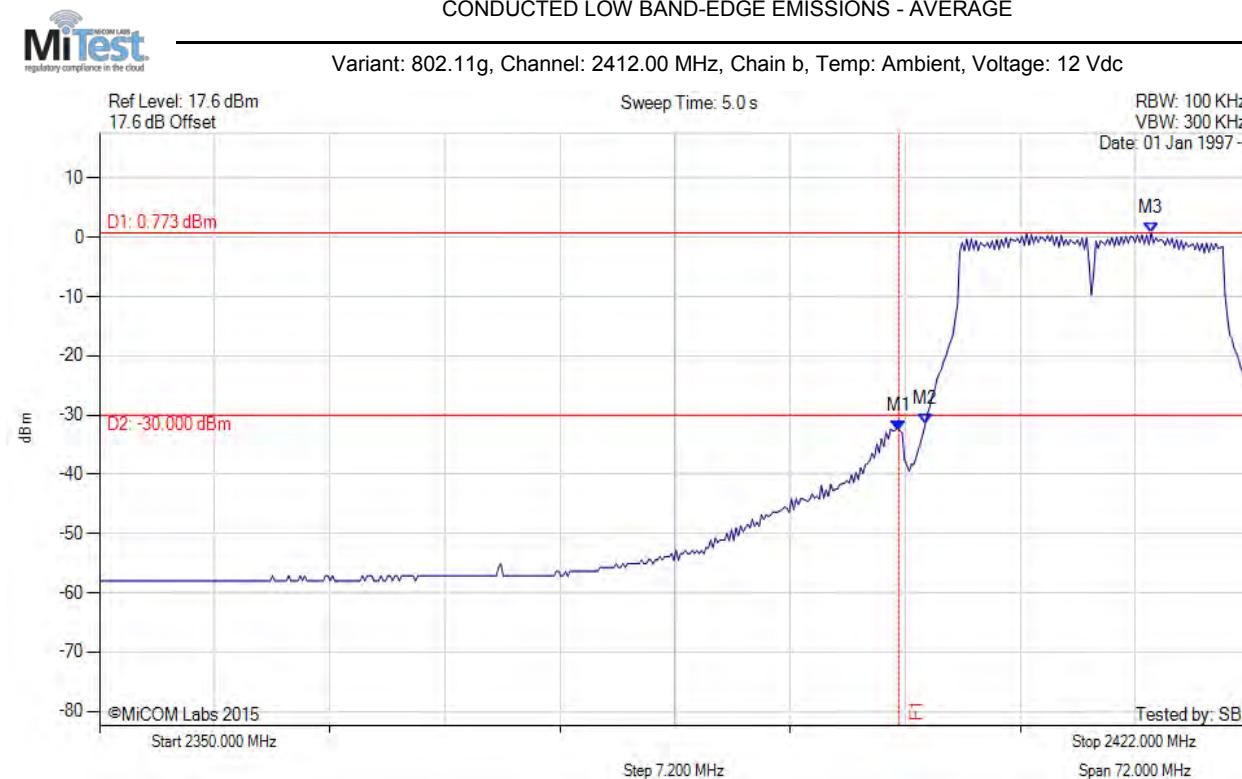
Variant: 802.11g, Channel: 2412.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2400.000 MHz : -32.912 dBm M2 : 2401.655 MHz : -31.958 dBm M3 : 2408.293 MHz : 0.640 dBm	Channel Frequency: 2412.00 MHz

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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2400.000 MHz : -32.575 dBm M2 : 2401.655 MHz : -31.480 dBm M3 : 2415.796 MHz : 0.773 dBm	Channel Frequency: 2412.00 MHz

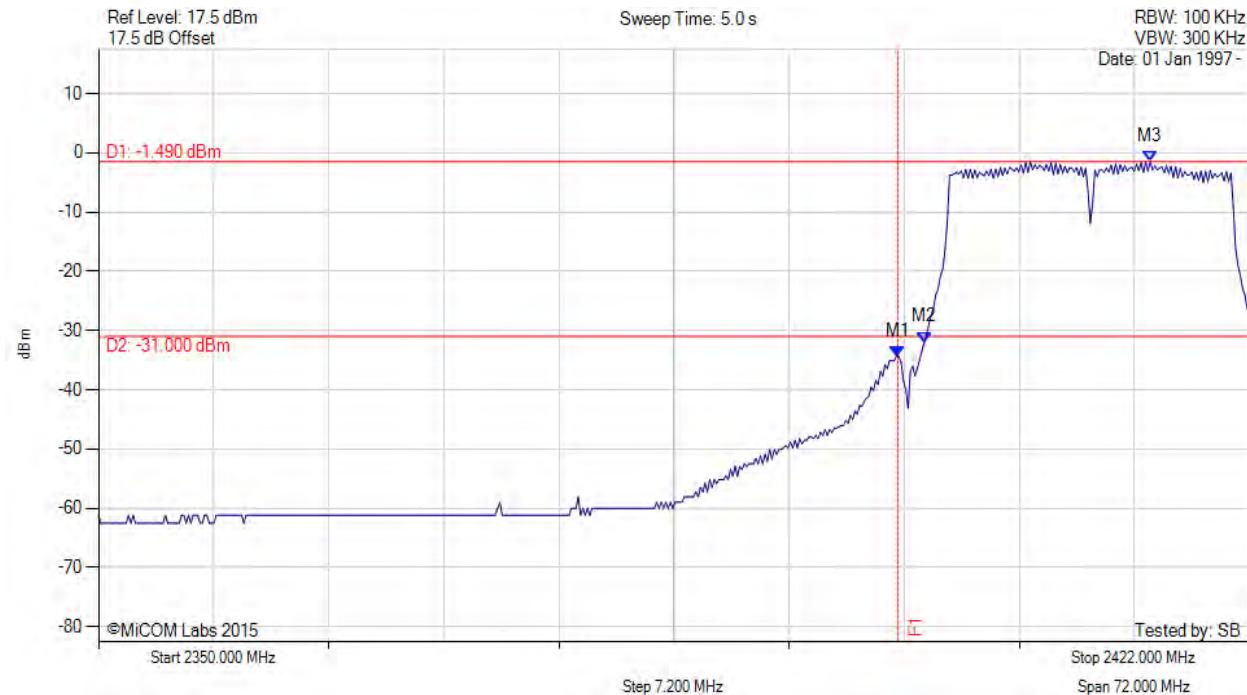
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CONDUCTED LOW BAND-EDGE EMISSIONS - AVERAGE

Variant: 802.11n HT-20, Channel: 2412.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2400.000 MHz : -34.372 dBm M2 : 2401.655 MHz : -31.958 dBm M3 : 2415.796 MHz : -1.490 dBm	Channel Frequency: 2412.00 MHz

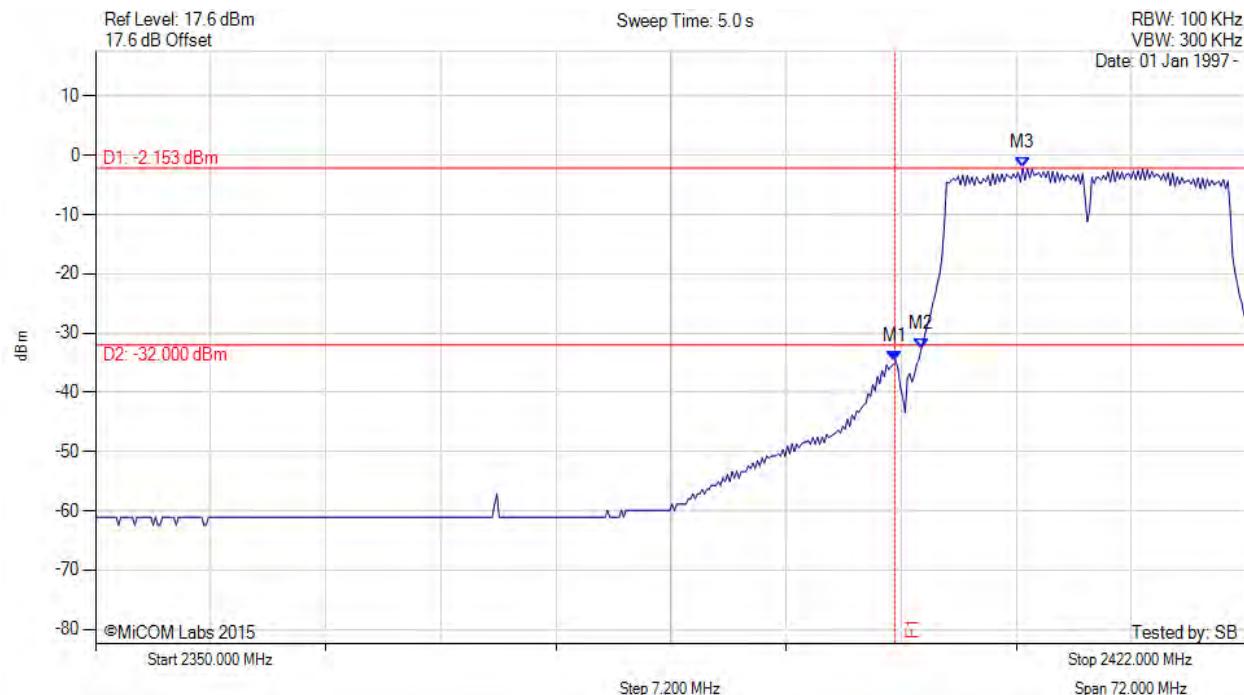
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CONDUCTED LOW BAND-EDGE EMISSIONS - AVERAGE



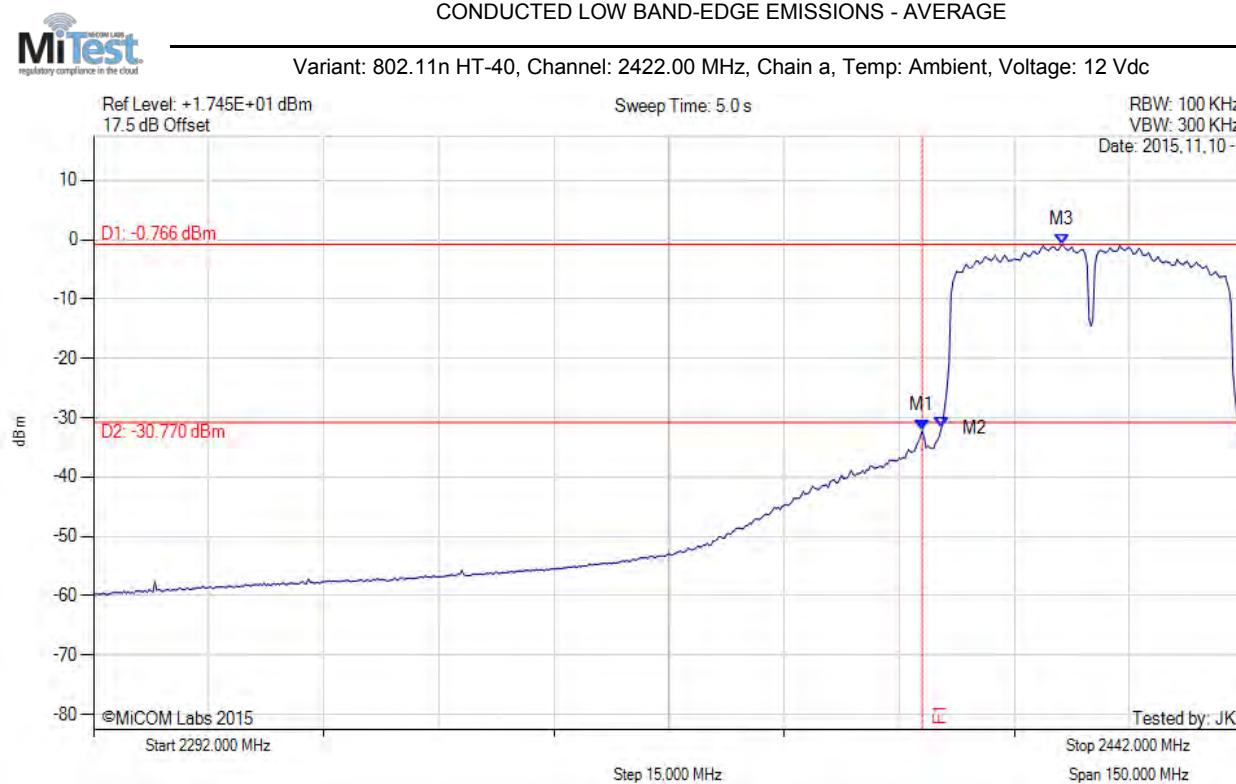
Variant: 802.11n HT-20, Channel: 2412.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2400.000 MHz : -34.678 dBm M2 : 2401.655 MHz : -32.716 dBm M3 : 2408.004 MHz : -2.153 dBm	Channel Frequency: 2412.00 MHz

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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2400.000 MHz : -32.204 dBm M2 : 2402.500 MHz : -31.721 dBm M3 : 2418.250 MHz : -0.766 dBm	Channel Frequency: 2422.00 MHz

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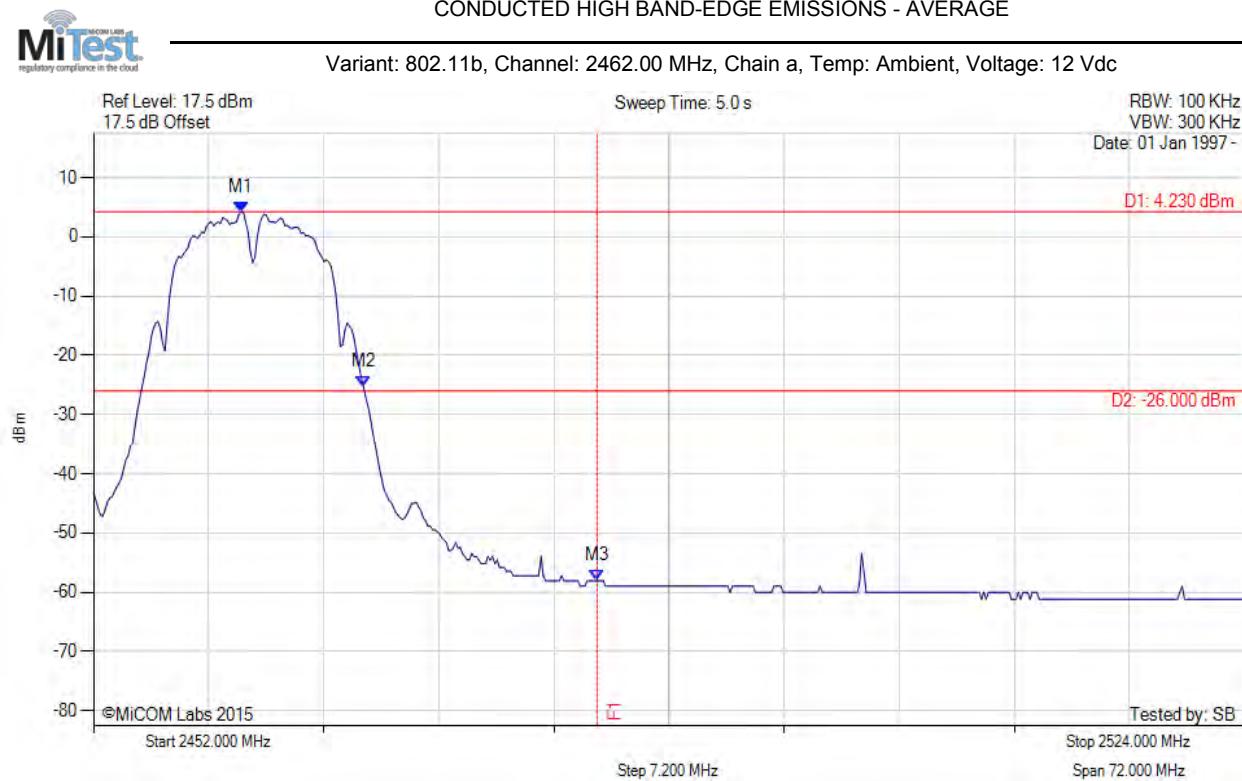
CONDUCTED LOW BAND-EDGE EMISSIONS - AVERAGE



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2400.000 MHz : -29.039 dBm M2 : 2402.000 MHz : -29.434 dBm M3 : 2418.250 MHz : 1.022 dBm	Channel Frequency: 2422.00 MHz

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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2461.234 MHz : 4.230 dBm M2 : 2468.882 MHz : -25.236 dBm M3 : 2483.500 MHz : -58.065 dBm	Channel Frequency: 2462.00 MHz

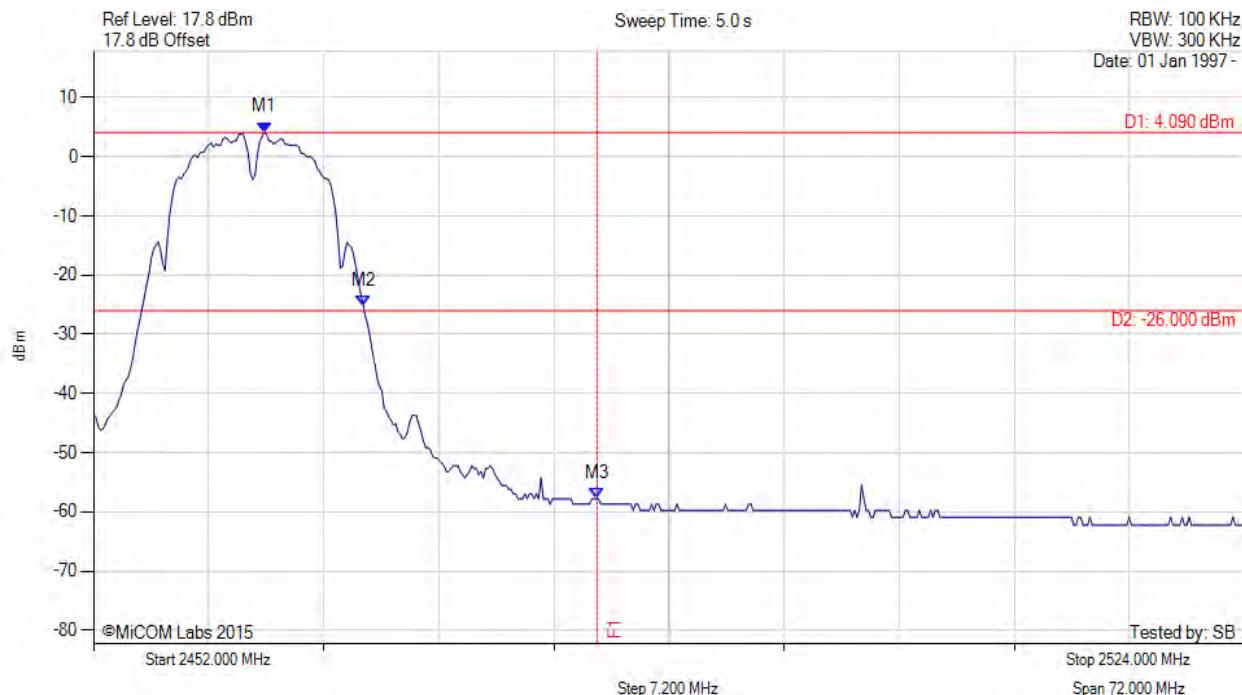
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CONDUCTED HIGH BAND-EDGE EMISSIONS - AVERAGE

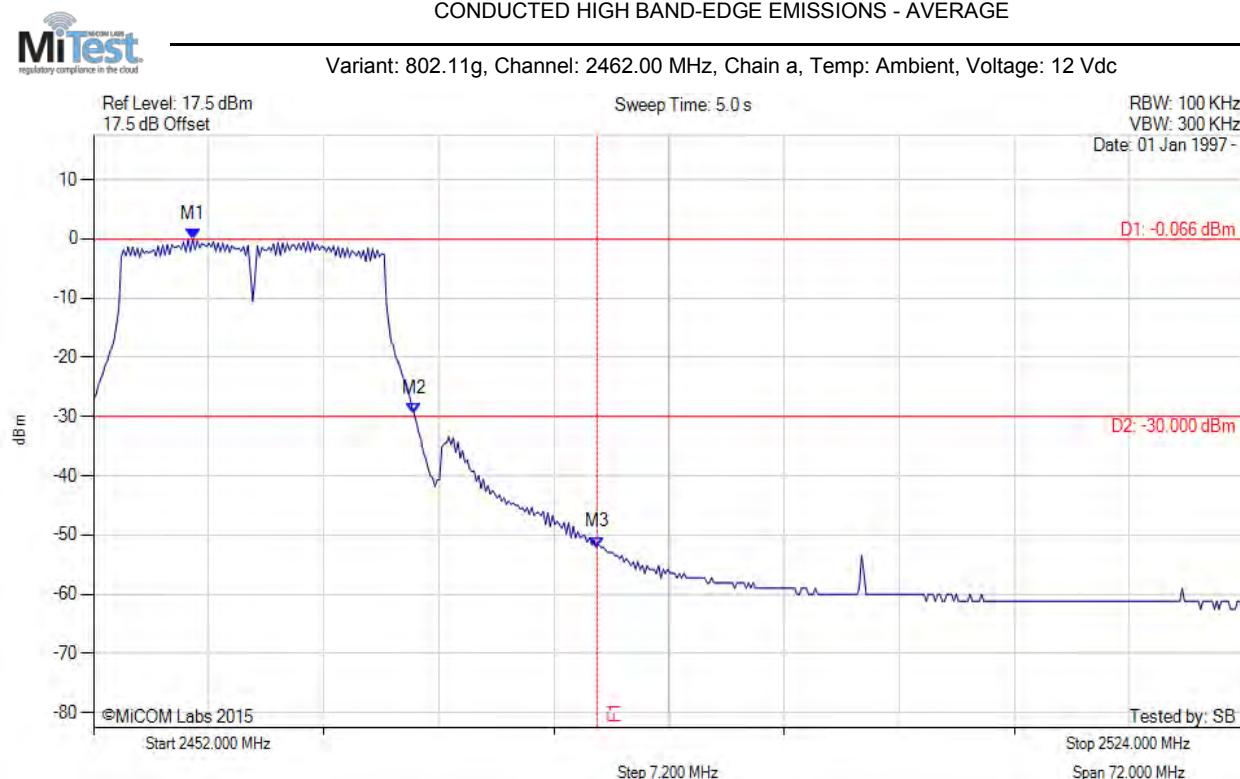
Variant: 802.11b, Channel: 2462.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2462.677 MHz : 4.090 dBm M2 : 2468.882 MHz : -25.239 dBm M3 : 2483.500 MHz : -57.765 dBm	Channel Frequency: 2462.00 MHz

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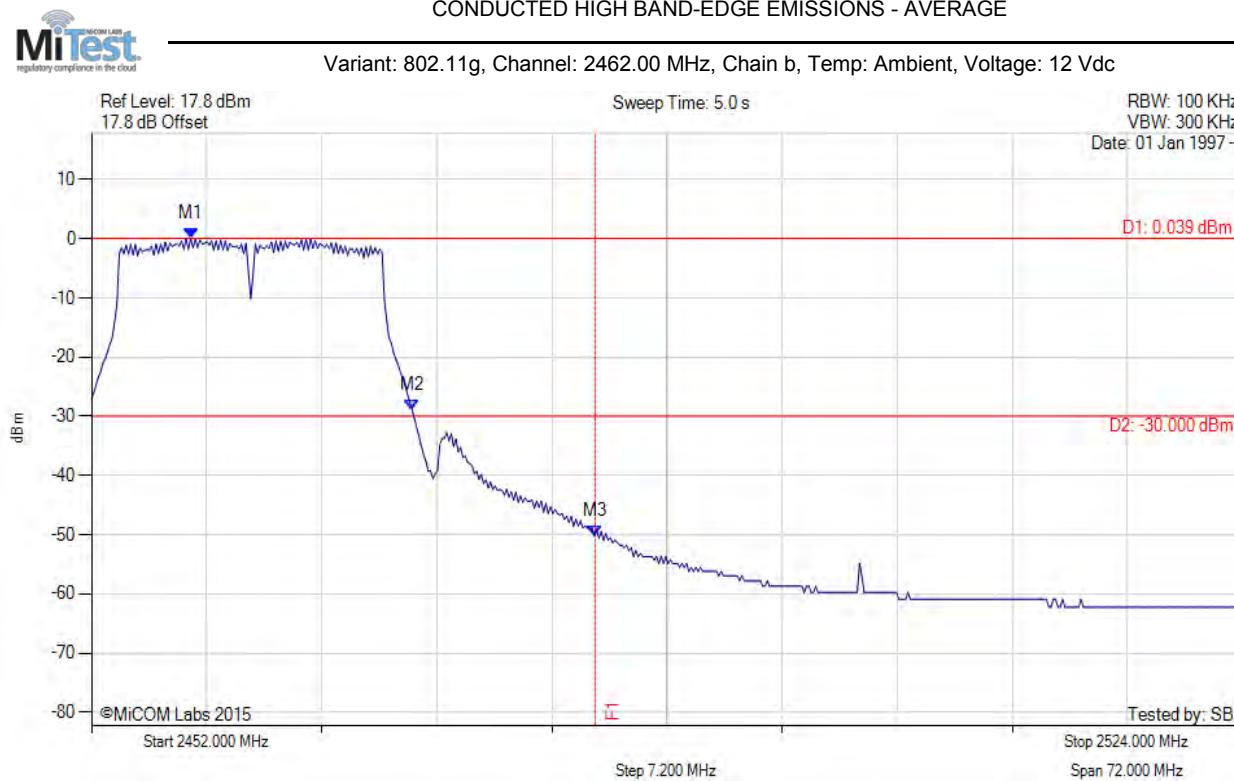
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2458.204 MHz : -0.066 dBm M2 : 2472.056 MHz : -29.568 dBm M3 : 2483.500 MHz : -52.045 dBm	Channel Frequency: 2462.00 MHz

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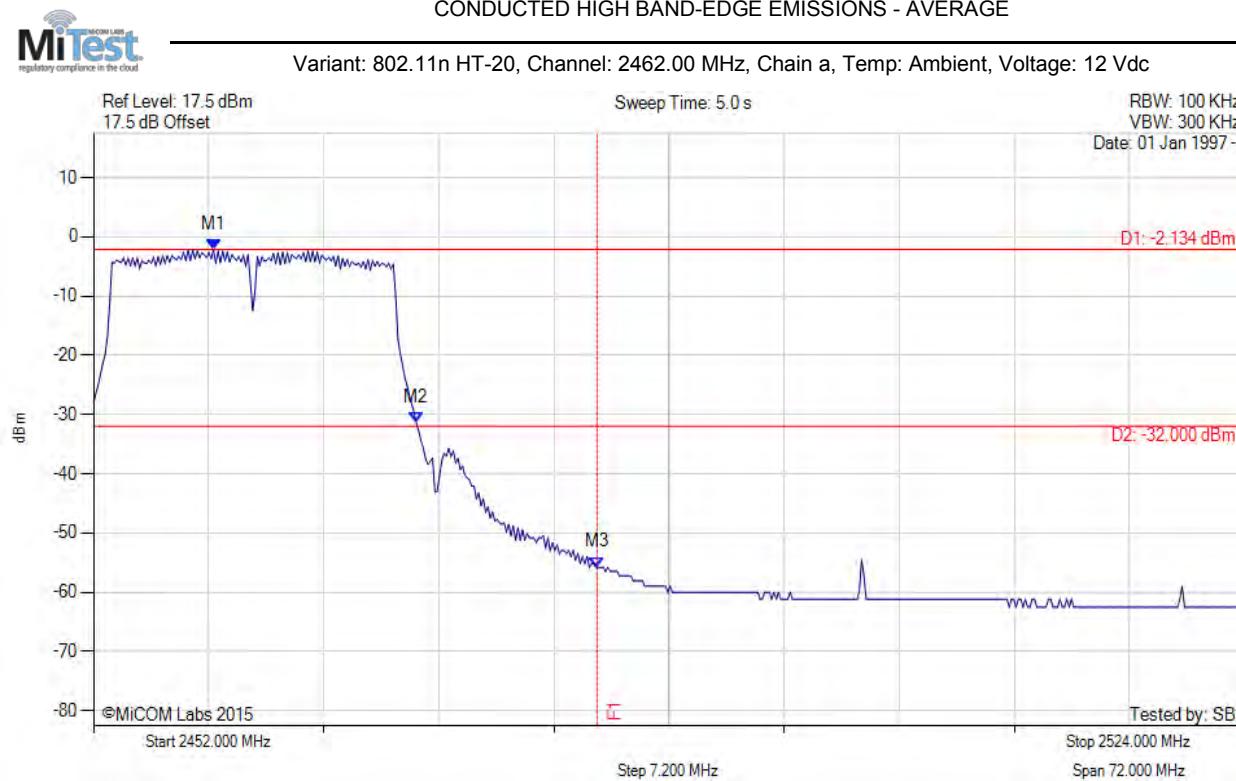
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2458.204 MHz : 0.039 dBm M2 : 2472.056 MHz : -28.884 dBm M3 : 2483.500 MHz : -50.161 dBm	Channel Frequency: 2462.00 MHz

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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2459.503 MHz : -2.134 dBm M2 : 2472.200 MHz : -31.457 dBm M3 : 2483.500 MHz : -55.786 dBm	Channel Frequency: 2462.00 MHz

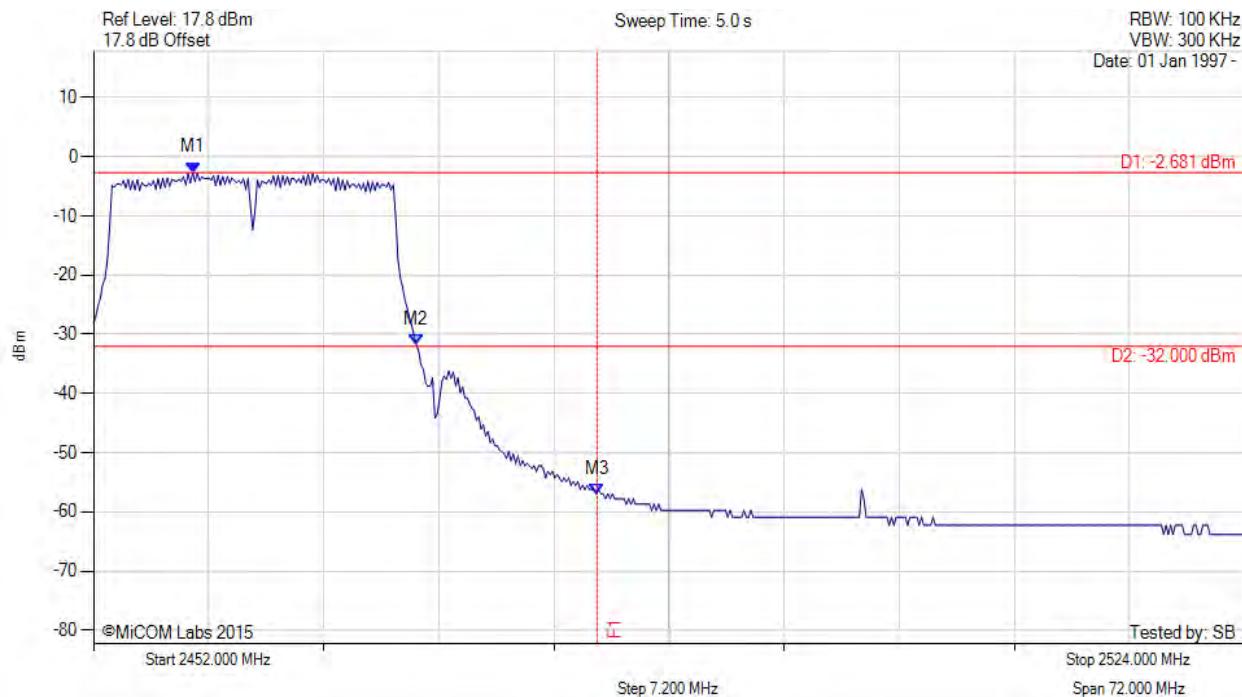
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CONDUCTED HIGH BAND-EDGE EMISSIONS - AVERAGE

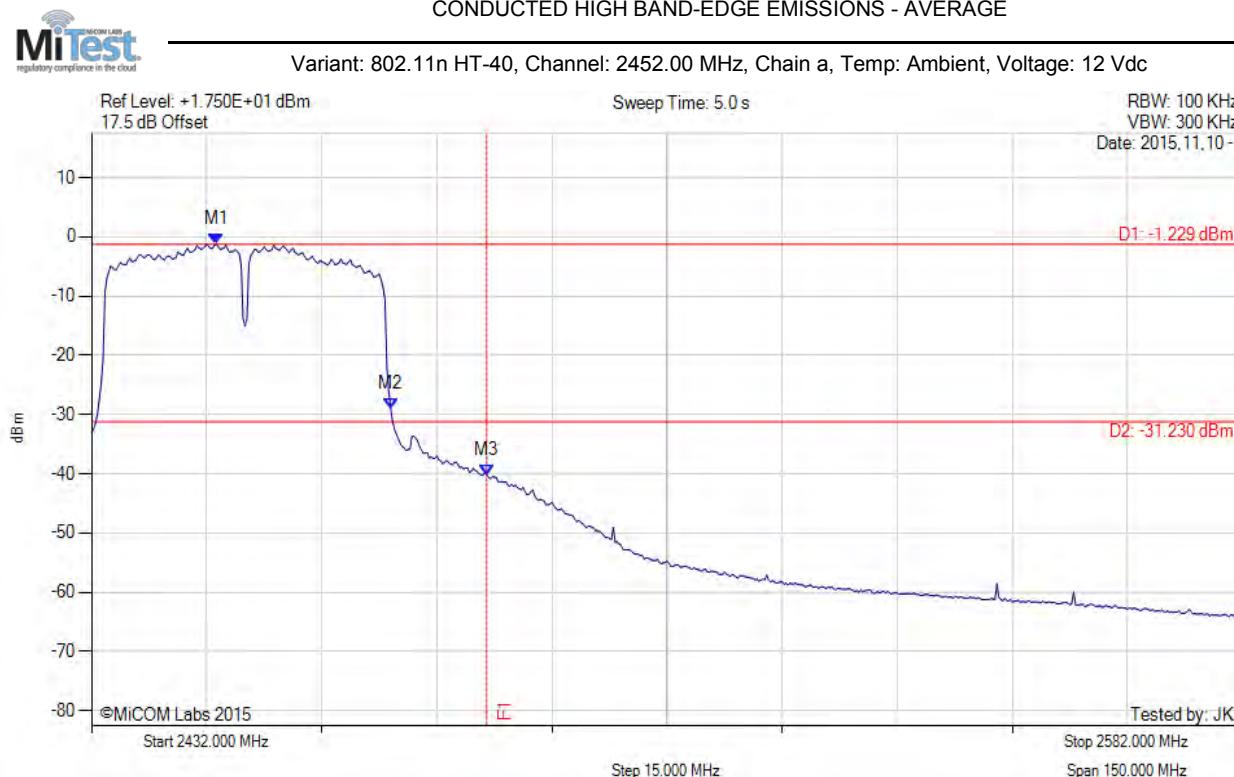
Variant: 802.11n HT-20, Channel: 2462.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2458.204 MHz : -2.681 dBm M2 : 2472.200 MHz : -31.701 dBm M3 : 2483.500 MHz : -56.937 dBm	Channel Frequency: 2462.00 MHz

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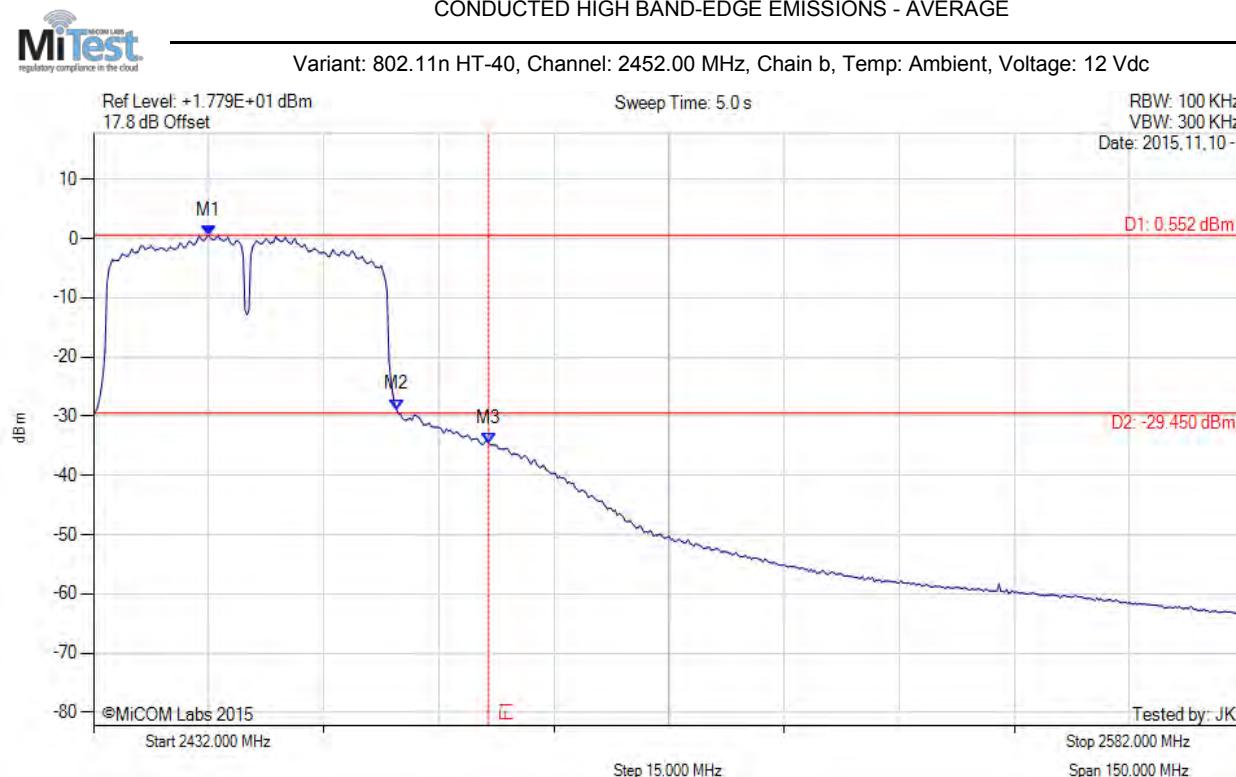
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2448.250 MHz : -1.229 dBm M2 : 2471.000 MHz : -29.028 dBm M3 : 2483.500 MHz : -40.156 dBm	Channel Frequency: 2452.00 MHz

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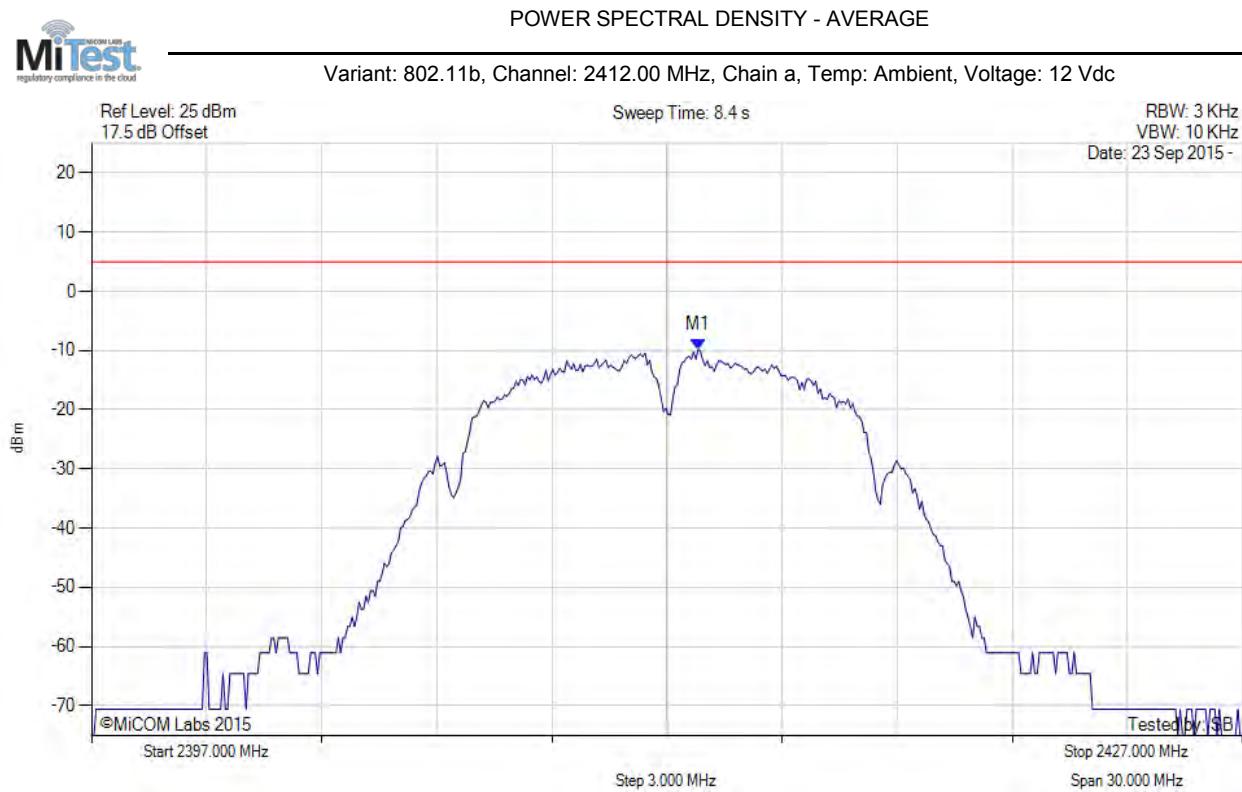


Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 2447.000 MHz : 0.552 dBm M2 : 2471.500 MHz : -28.867 dBm M3 : 2483.500 MHz : -34.587 dBm	Channel Frequency: 2452.00 MHz

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A.3. Power Spectral Density



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2412.812 MHz : -9.817 dBm	Limit: ≤ 4.990 dBm

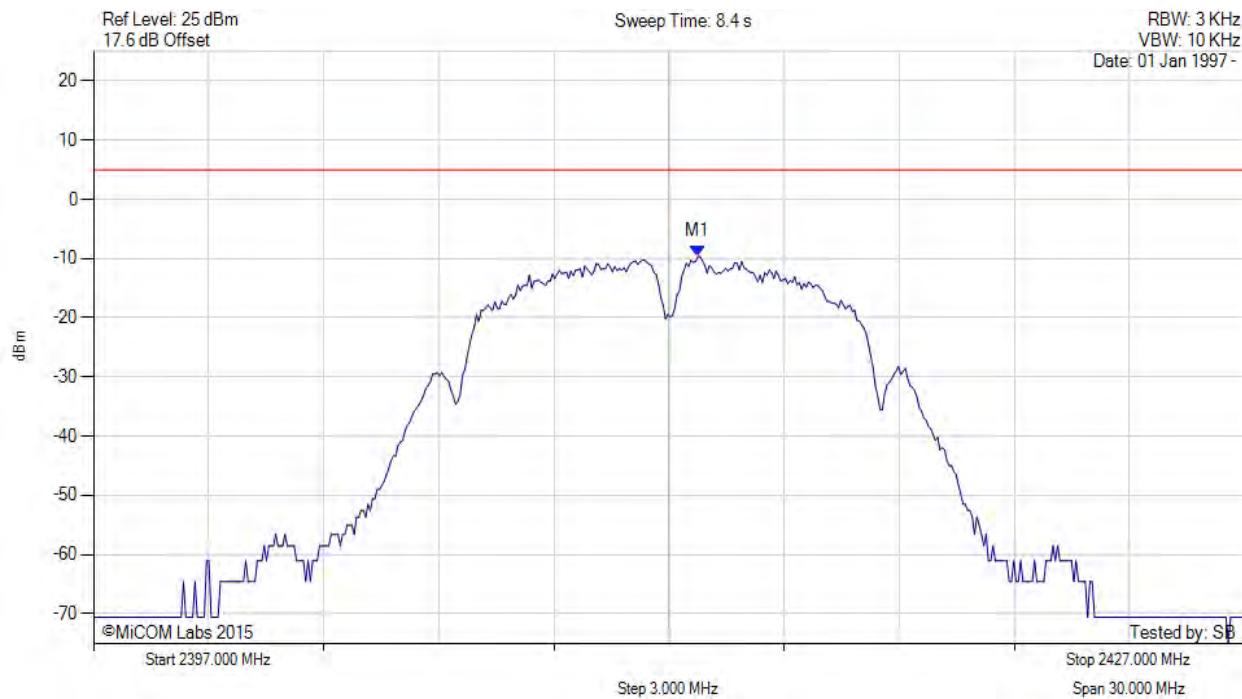
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POWER SPECTRAL DENSITY - AVERAGE

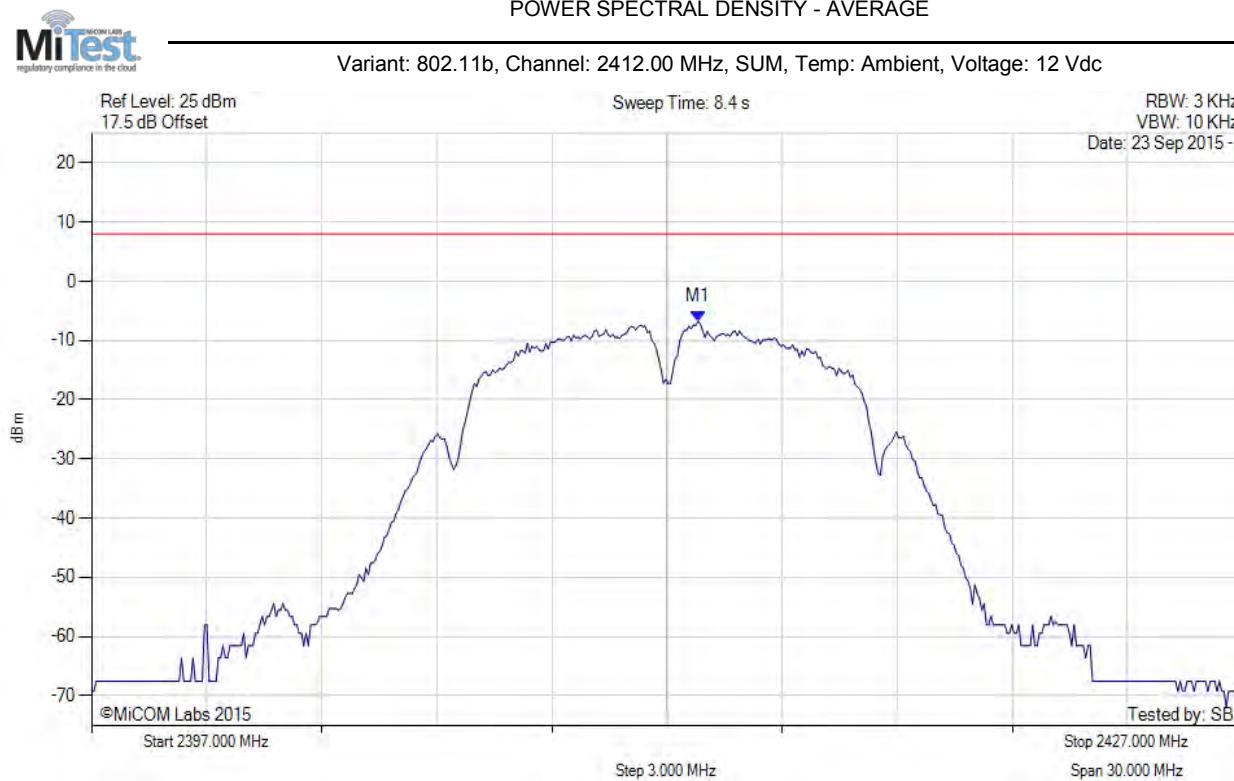
Variant: 802.11b, Channel: 2412.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2412.752 MHz : -9.651 dBm	Limit: ≤ 4.990 dBm

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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2412.800 MHz : -6.731 dBm M1 + DCCF : 2412.800 MHz : -6.687 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 8.0 dBm Margin: -14.7 dB

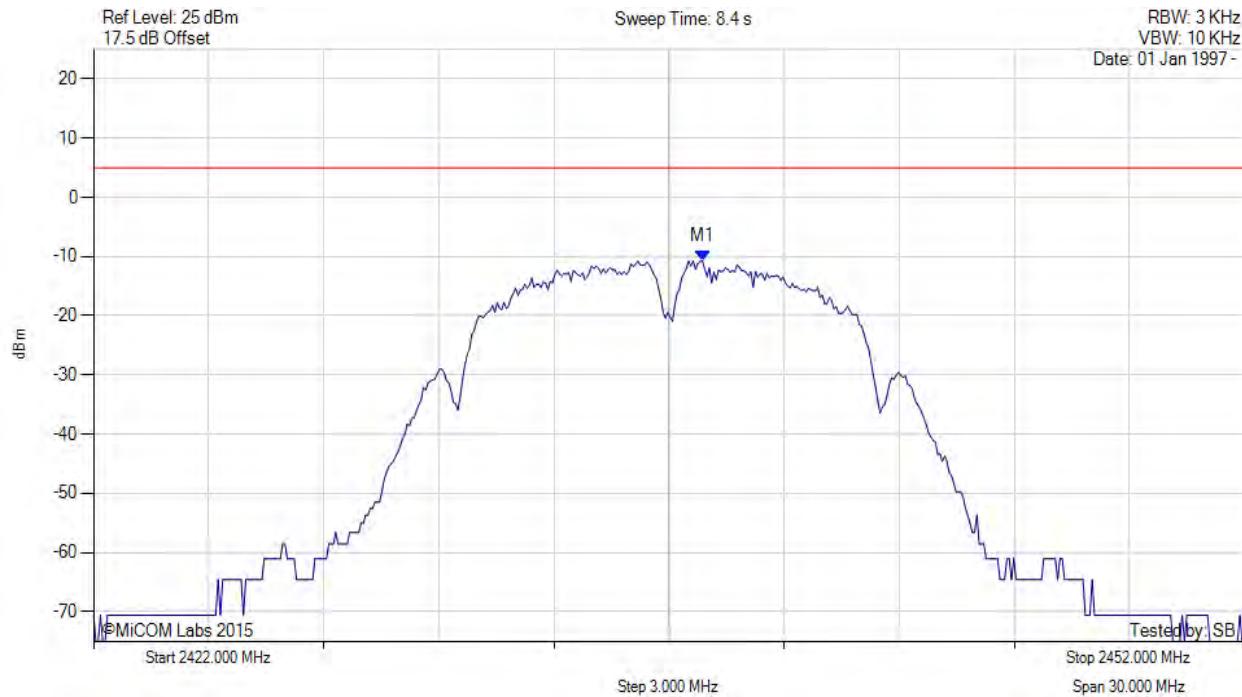
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POWER SPECTRAL DENSITY - AVERAGE

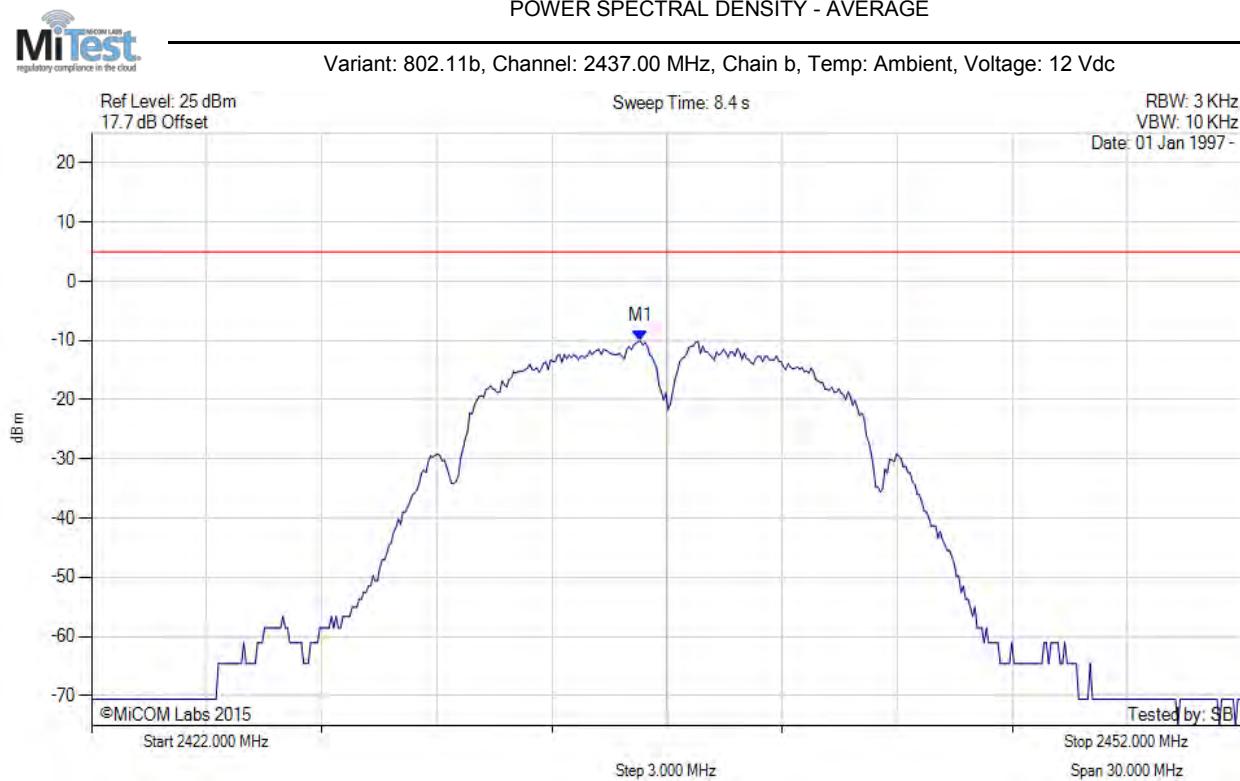
Variant: 802.11b, Channel: 2437.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2437.872 MHz : -10.741 dBm	Limit: ≤ 4.990 dBm

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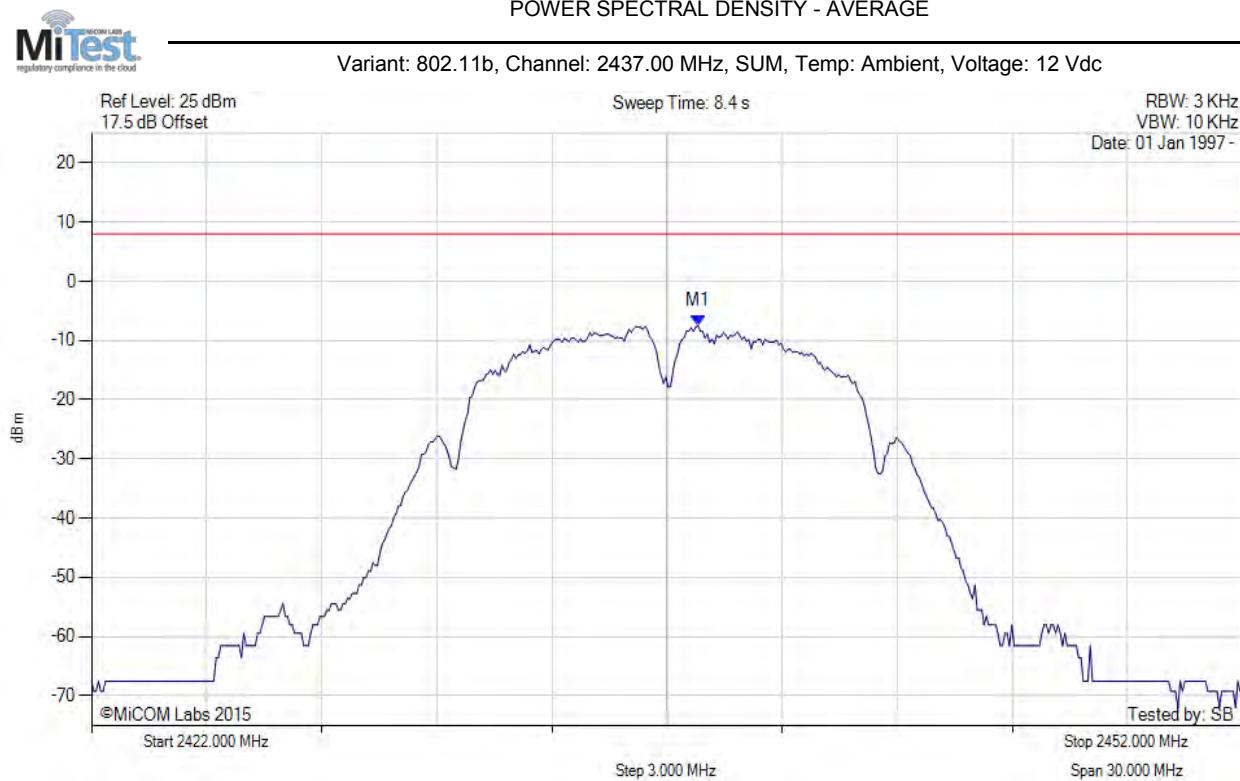
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2436.309 MHz : -10.133 dBm	Limit: ≤ 4.990 dBm

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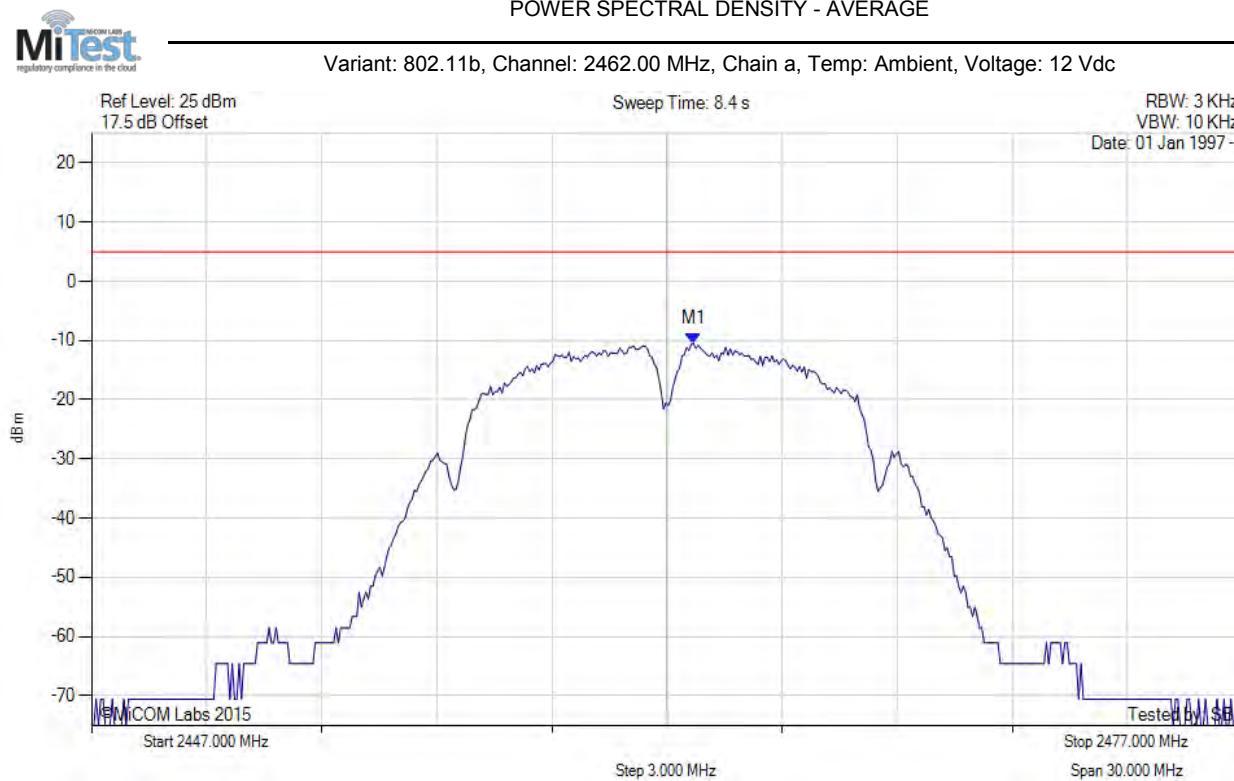
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2437.800 MHz : -7.479 dBm M1 + DCCF : 2437.800 MHz : -7.435 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 8.0 dBm Margin: -15.4 dB

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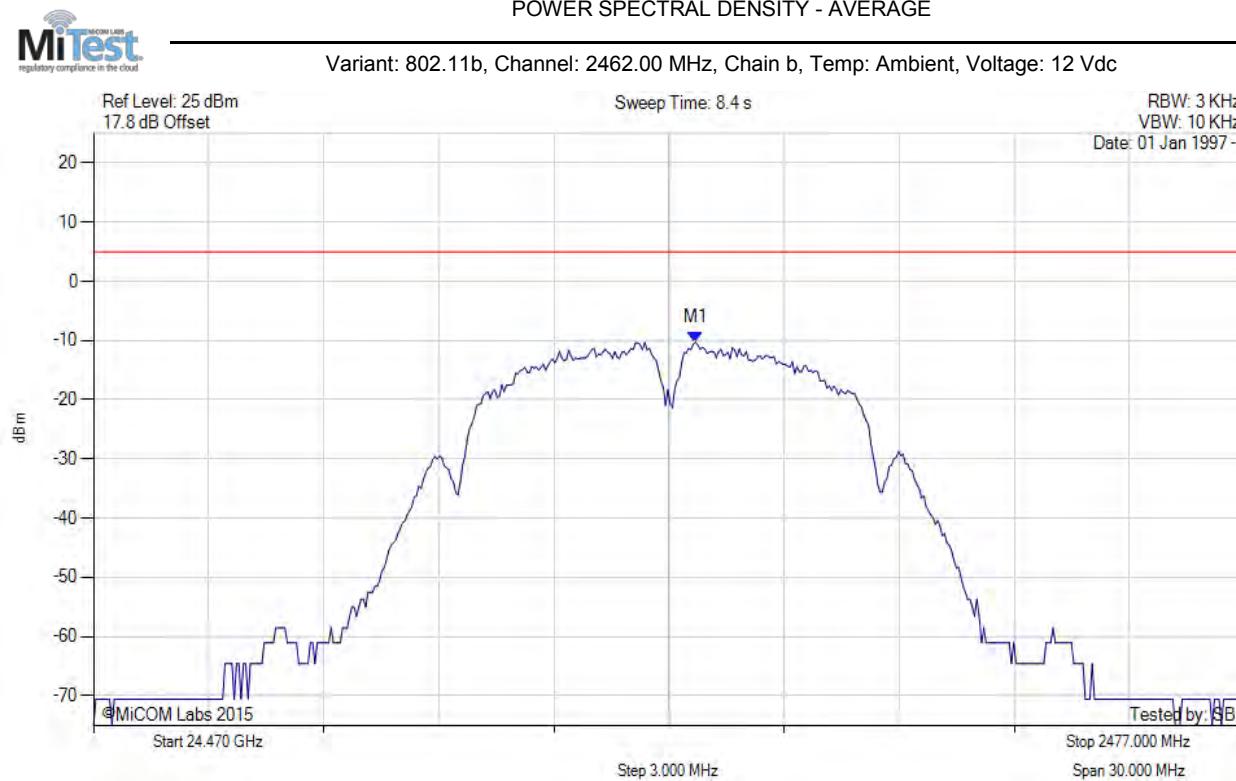
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2462.691 MHz : -10.496 dBm	Limit: ≤ 4.990 dBm

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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2462.691 MHz : -10.258 dBm	Limit: ≤ 4.990 dBm

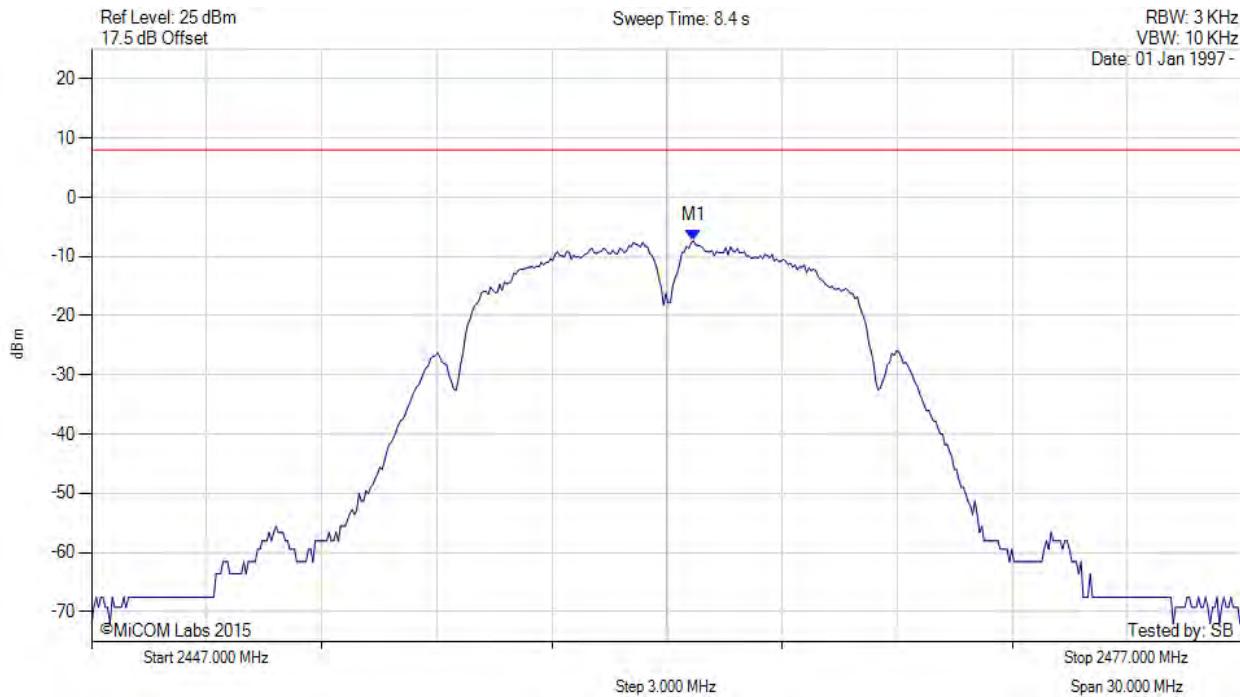
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POWER SPECTRAL DENSITY - AVERAGE

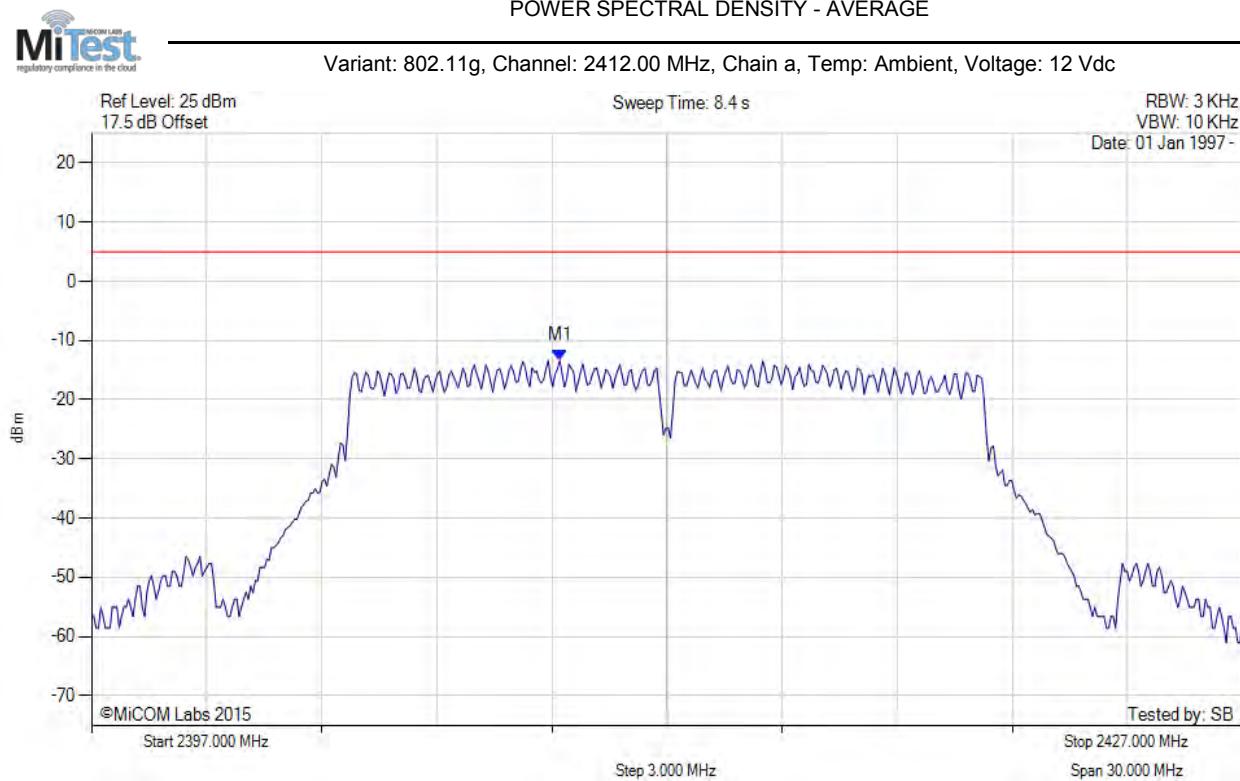
Variant: 802.11b, Channel: 2462.00 MHz, SUM, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2462.700 MHz : -7.365 dBm M1 + DCCF : 2462.700 MHz : -7.321 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 8.0 dBm Margin: -15.3 dB

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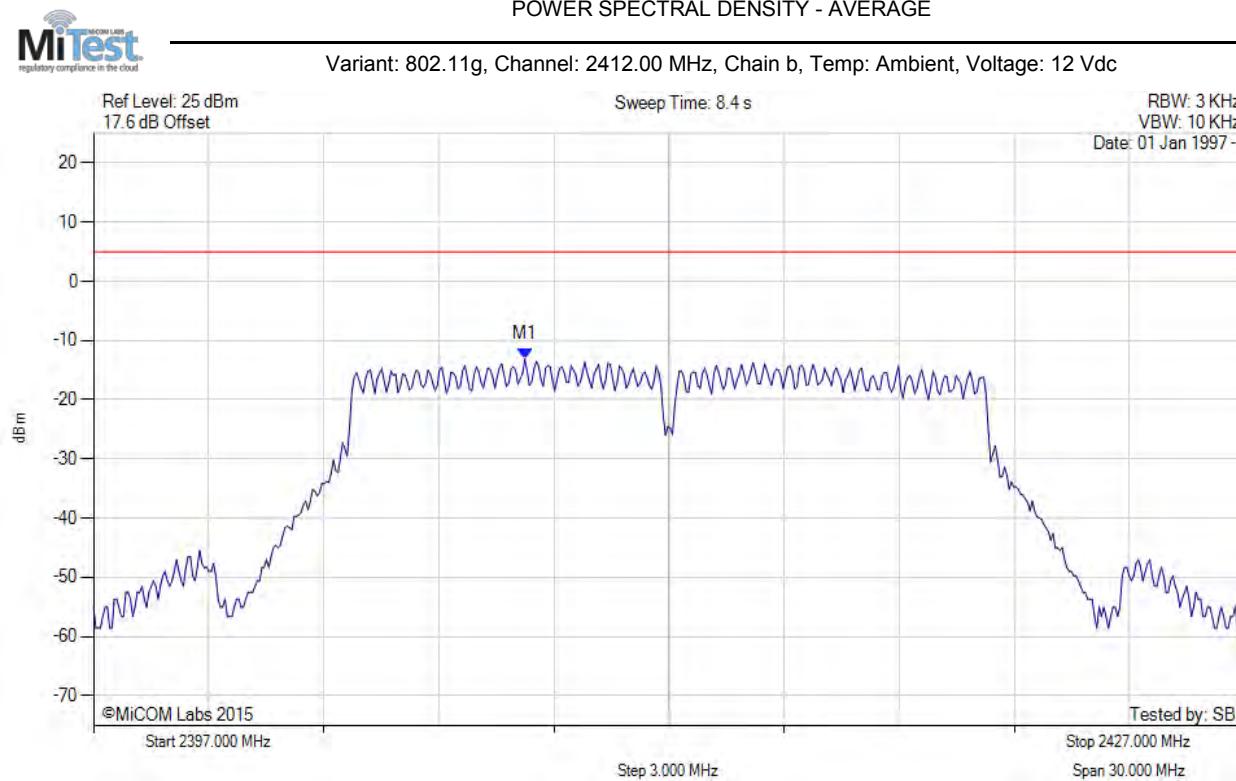
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2409.204 MHz : -13.359 dBm	Limit: ≤ 4.990 dBm

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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2408.242 MHz : -13.157 dBm	Limit: ≤ 4.990 dBm

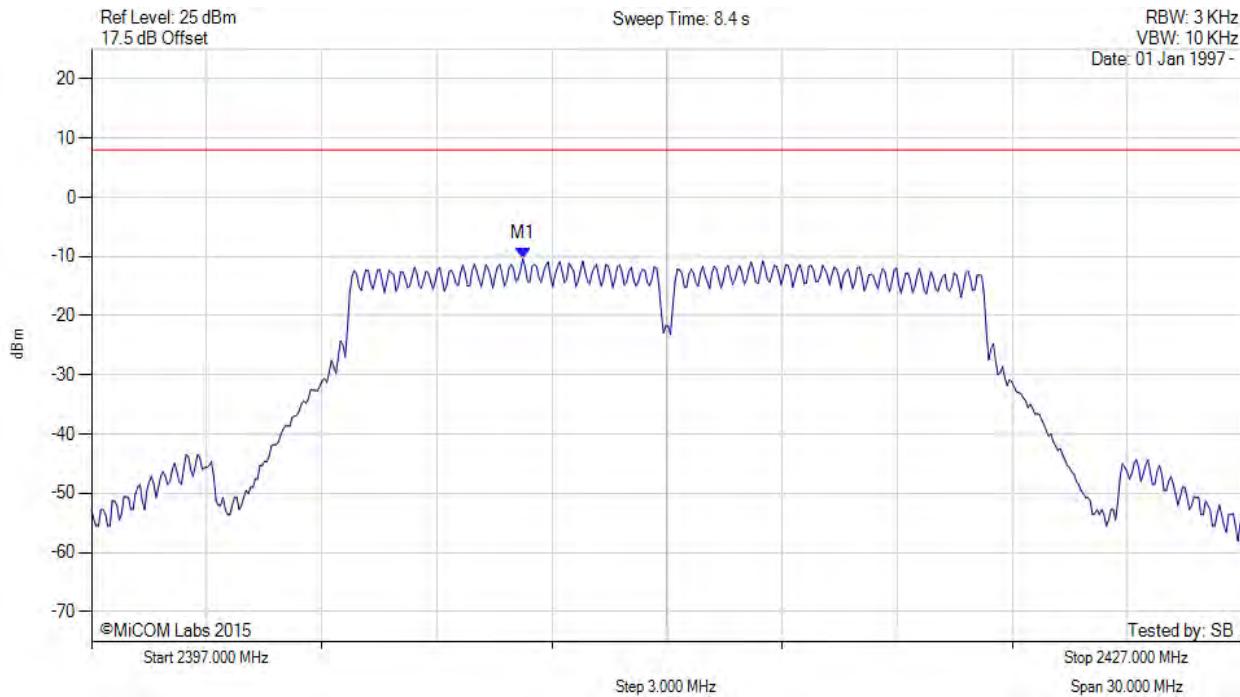
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POWER SPECTRAL DENSITY - AVERAGE

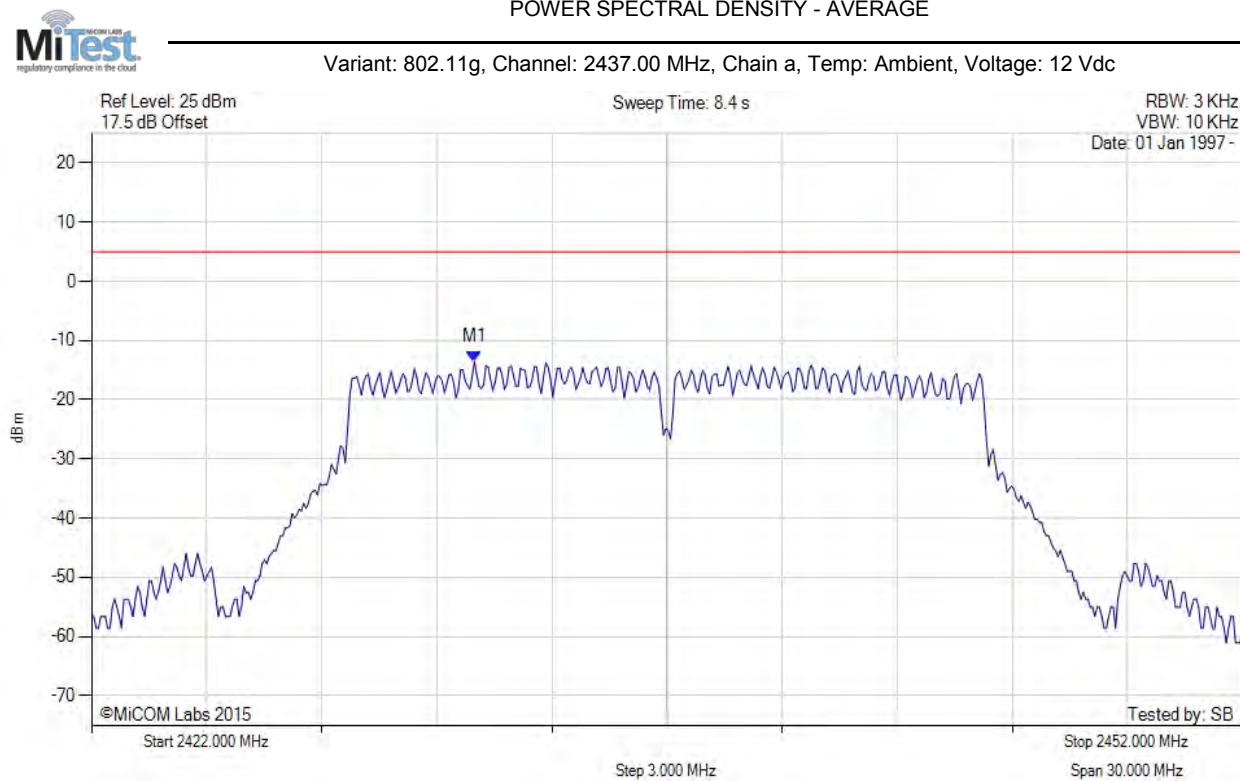
Variant: 802.11g, Channel: 2412.00 MHz, SUM, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2408.200 MHz : -10.358 dBm M1 + DCCF : 2408.200 MHz : -10.266 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 8.0 dBm Margin: -18.3 dB

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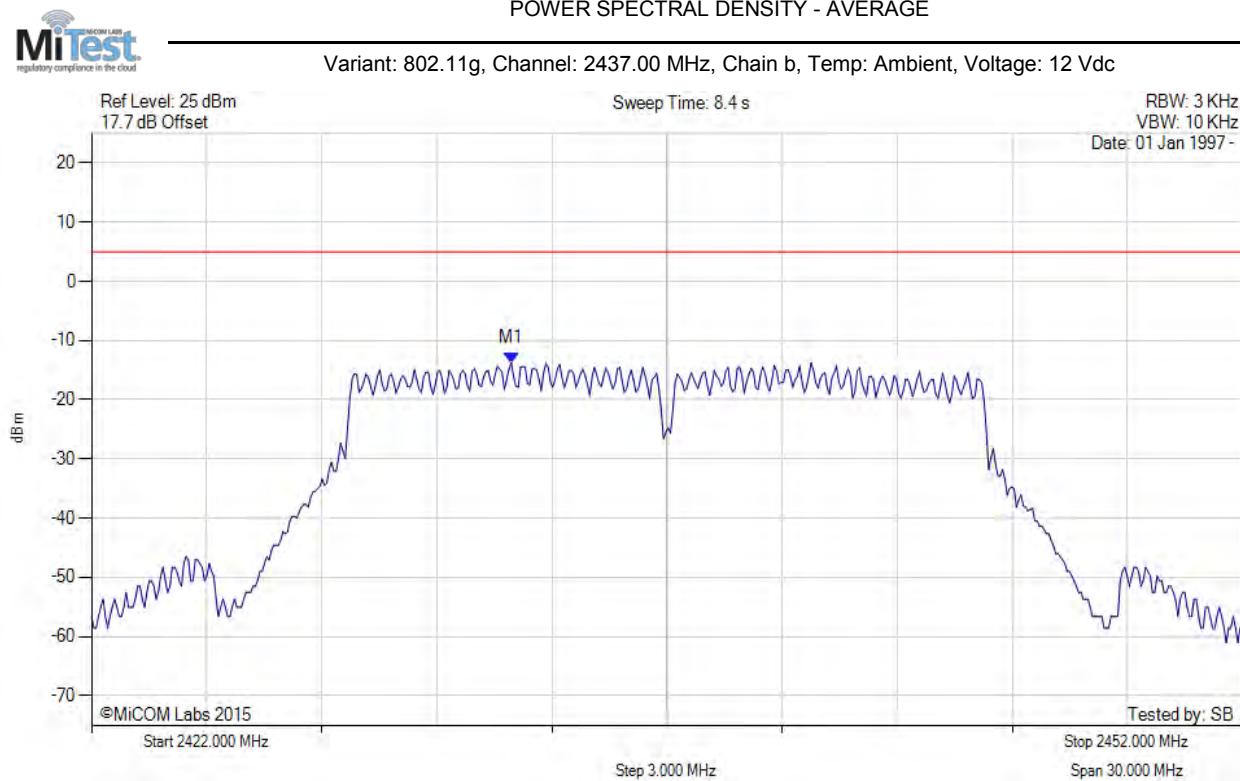
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2431.980 MHz : -13.540 dBm	Limit: ≤ 4.990 dBm

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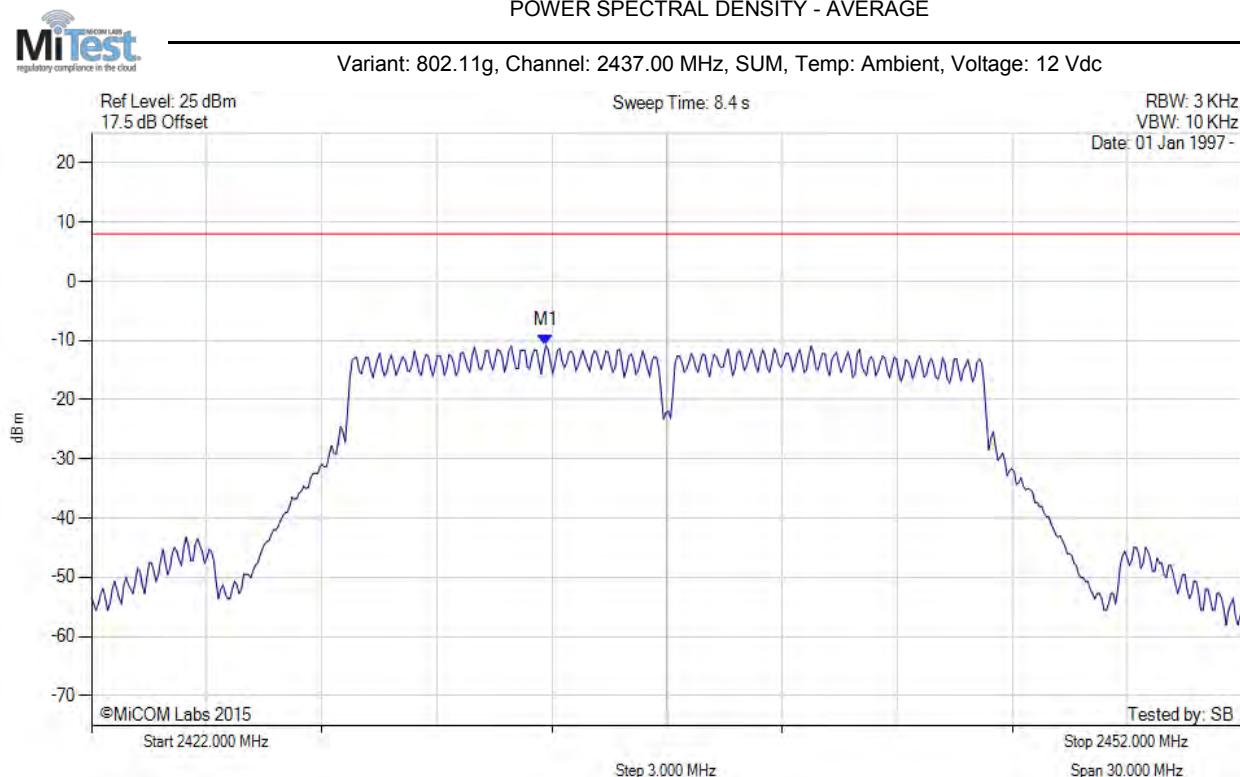
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2432.942 MHz : -13.726 dBm	Limit: ≤ 4.990 dBm

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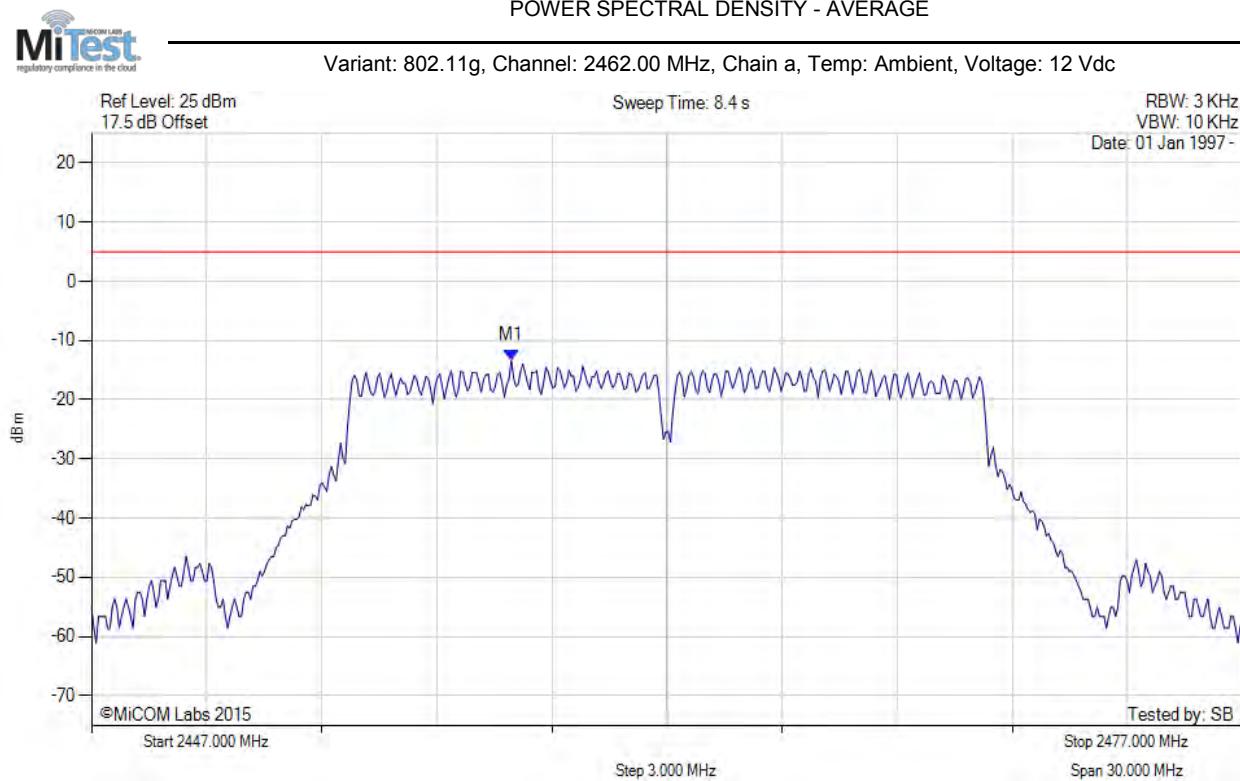
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2433.800 MHz : -10.809 dBm M1 + DCCF : 2433.800 MHz : -10.717 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 8.0 dBm Margin: -18.7 dB

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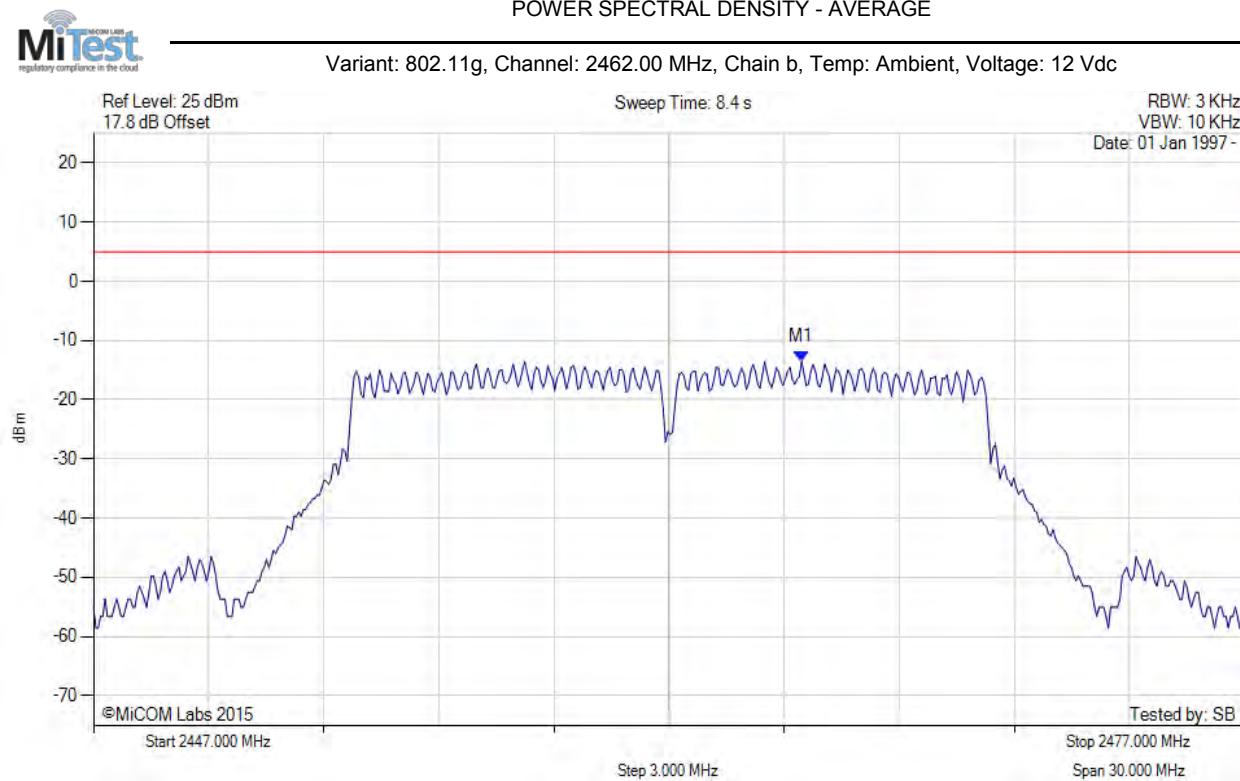
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2457.942 MHz : -13.371 dBm	Limit: ≤ 4.990 dBm

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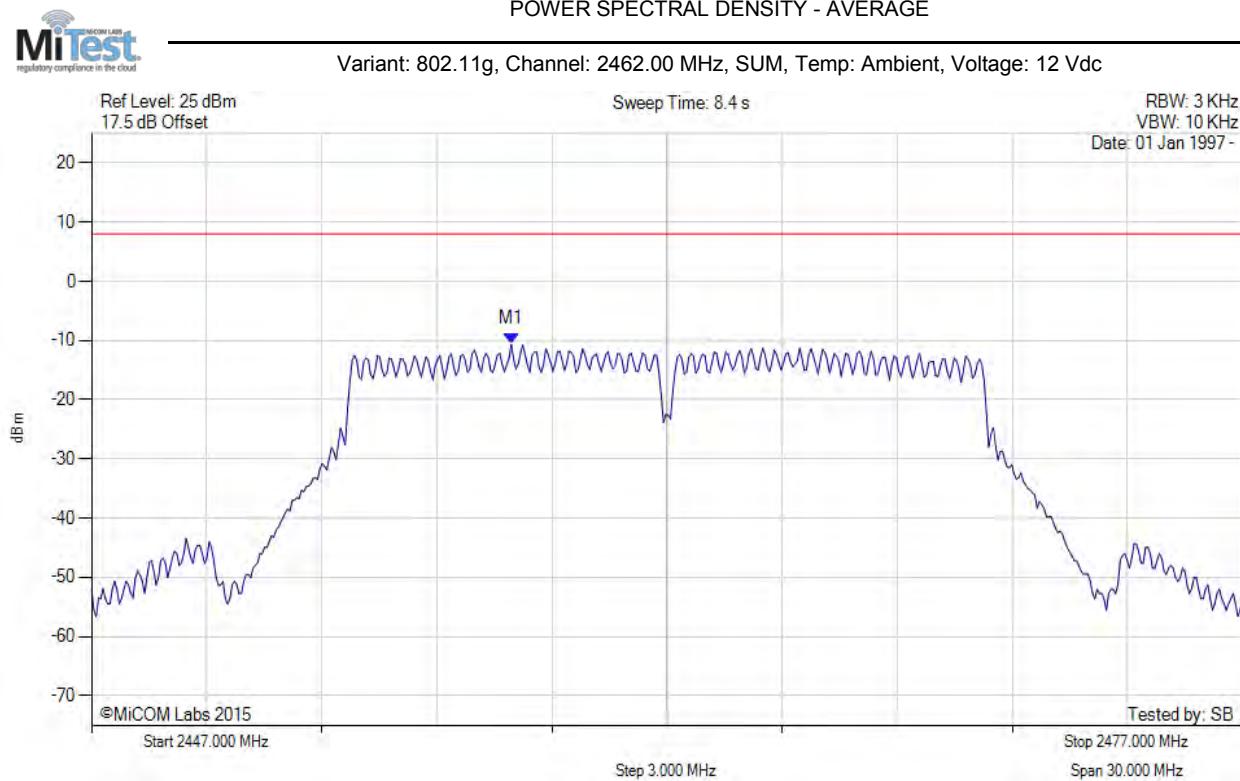
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2465.457 MHz : -13.565 dBm	Limit: ≤ 4.990 dBm

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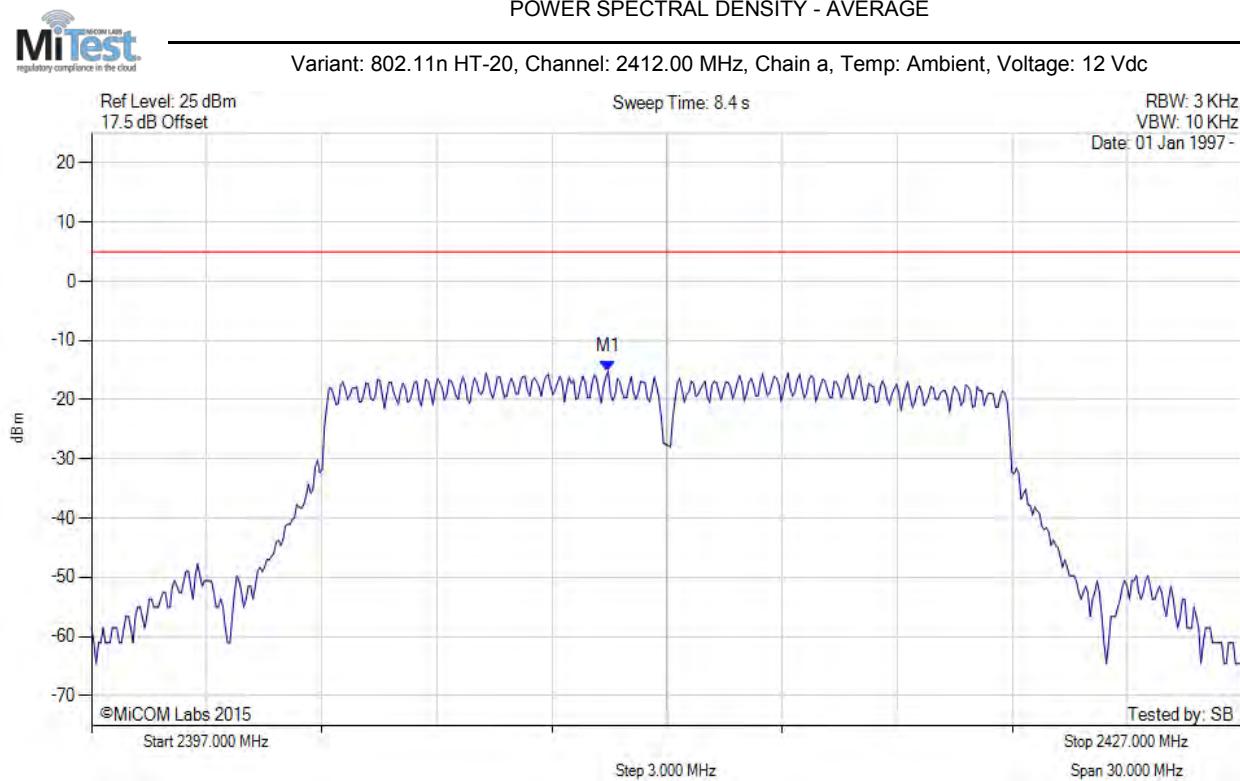
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2457.900 MHz : -10.654 dBm M1 + DCCF : 2457.900 MHz : -10.562 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 8.0 dBm Margin: -18.6 dB

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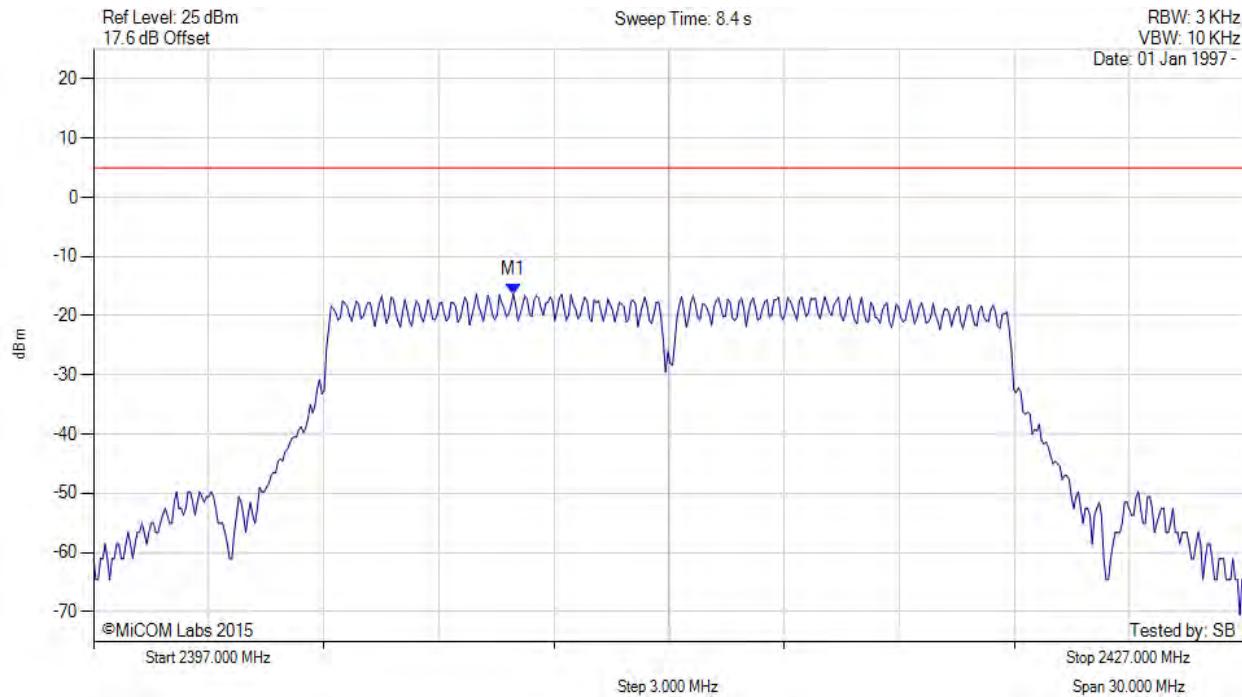
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2410.467 MHz : -15.134 dBm	Limit: ≤ 4.990 dBm

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POWER SPECTRAL DENSITY - AVERAGE

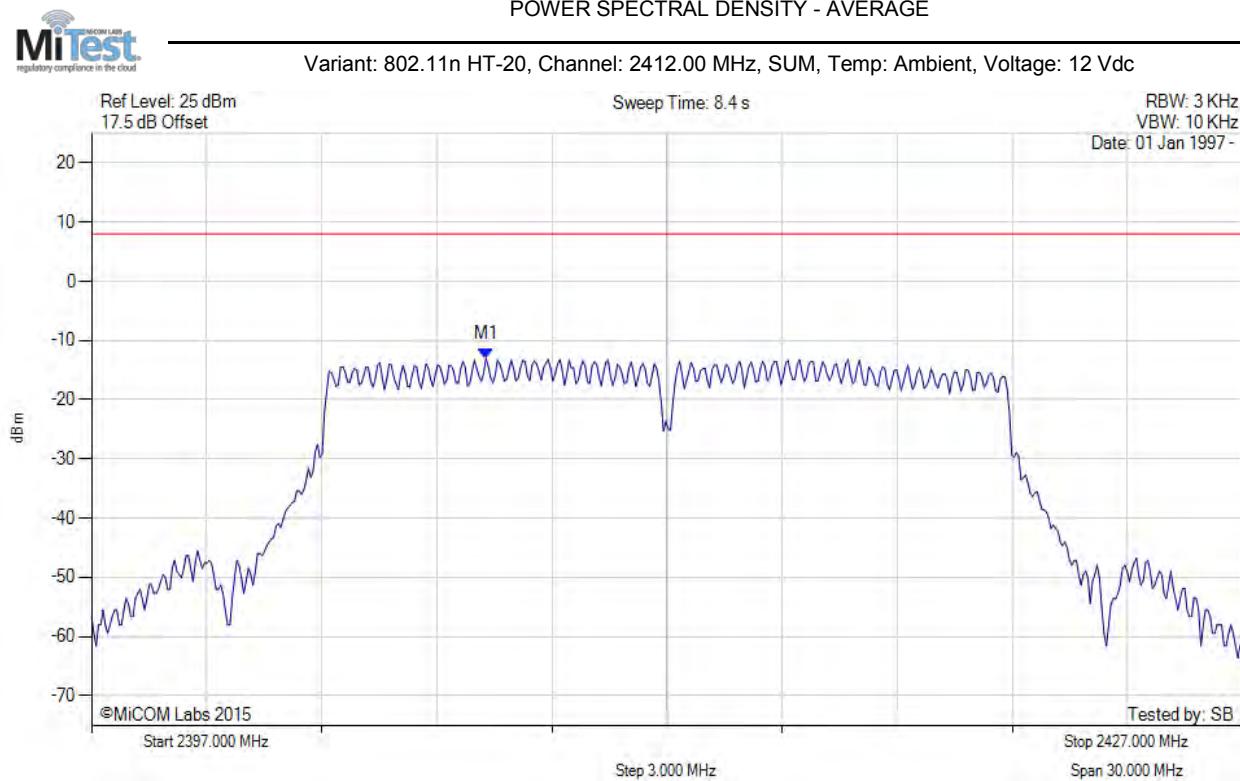
Variant: 802.11n HT-20, Channel: 2412.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2407.942 MHz : -16.346 dBm	Limit: ≤ 4.990 dBm

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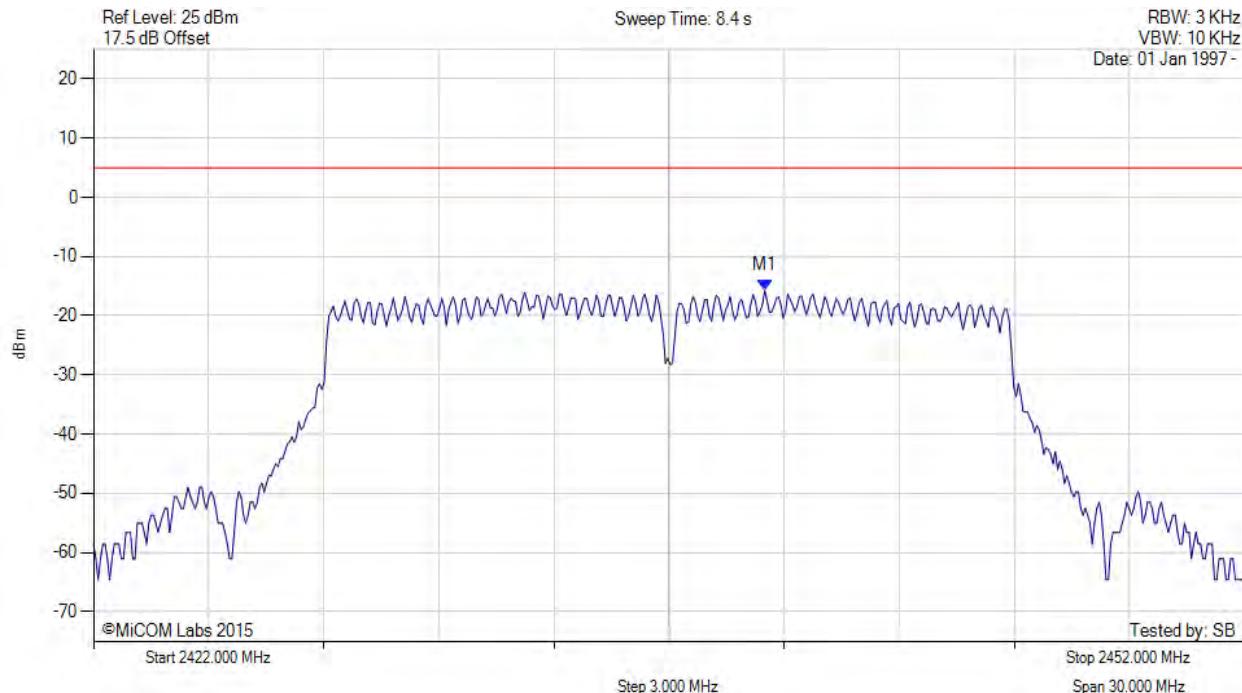
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2407.300 MHz : -13.021 dBm M1 + DCCF : 2407.300 MHz : -12.853 dBm Duty Cycle Correction Factor : +0.17 dB	Limit: ≤ 8.0 dBm Margin: -20.9 dB

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POWER SPECTRAL DENSITY - AVERAGE

Variant: 802.11n HT-20, Channel: 2437.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2439.495 MHz : -15.695 dBm	Limit: ≤ 4.990 dBm

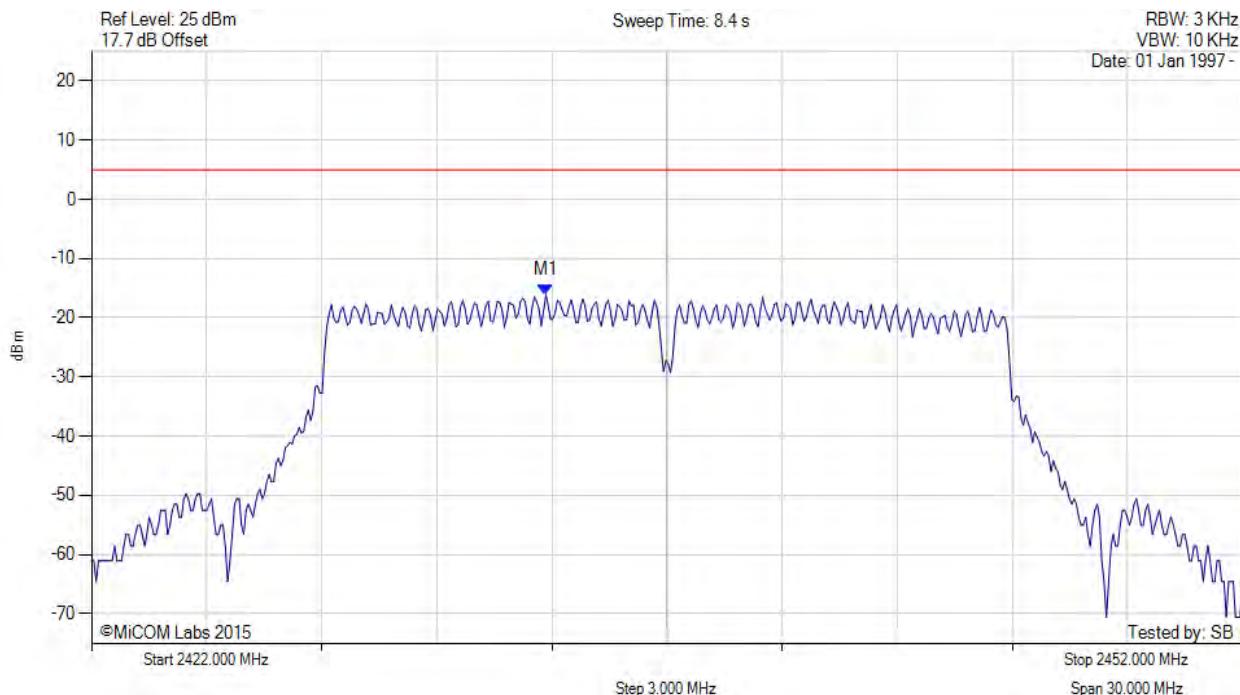
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POWER SPECTRAL DENSITY - AVERAGE

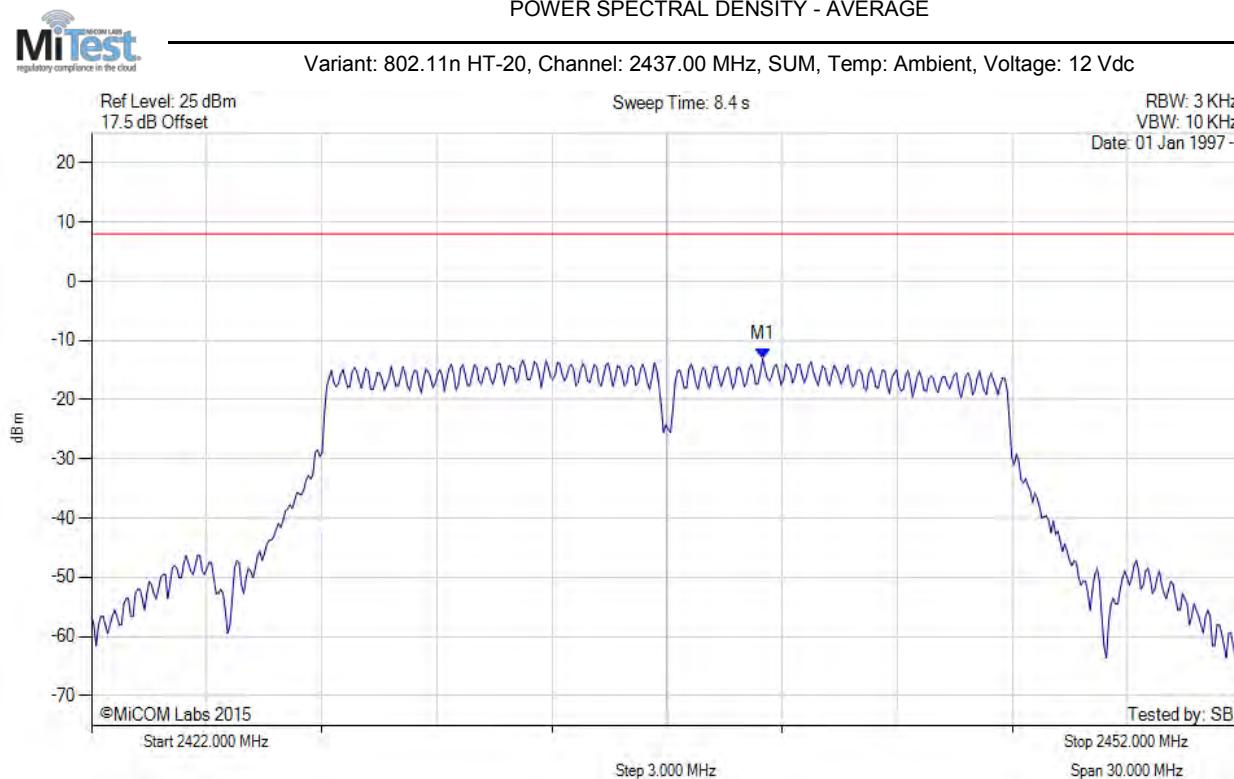
Variant: 802.11n HT-20, Channel: 2437.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2433.844 MHz : -16.179 dBm	Limit: ≤ 4.990 dBm

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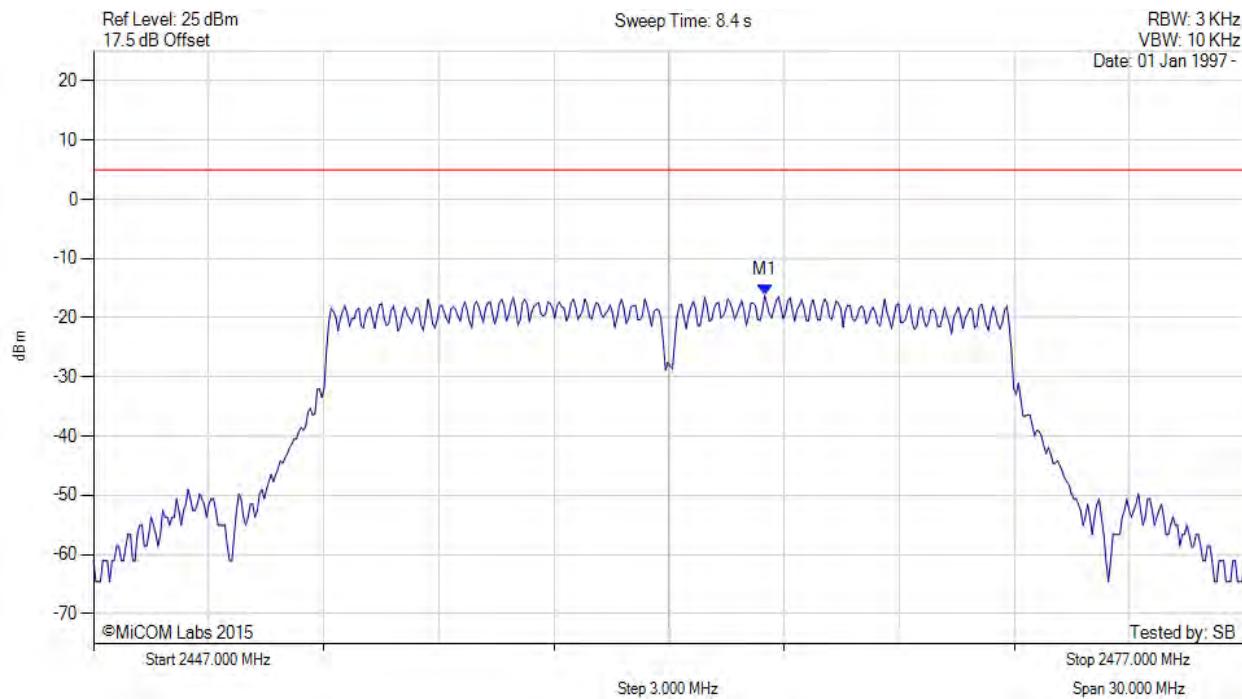
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2439.500 MHz : -13.100 dBm M1 + DCCF : 2439.500 MHz : -12.932 dBm Duty Cycle Correction Factor : +0.17 dB	Limit: ≤ 8.0 dBm Margin: -20.9 dB

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POWER SPECTRAL DENSITY - AVERAGE

Variant: 802.11n HT-20, Channel: 2462.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2464.495 MHz : -16.229 dBm	Limit: ≤ 4.990 dBm

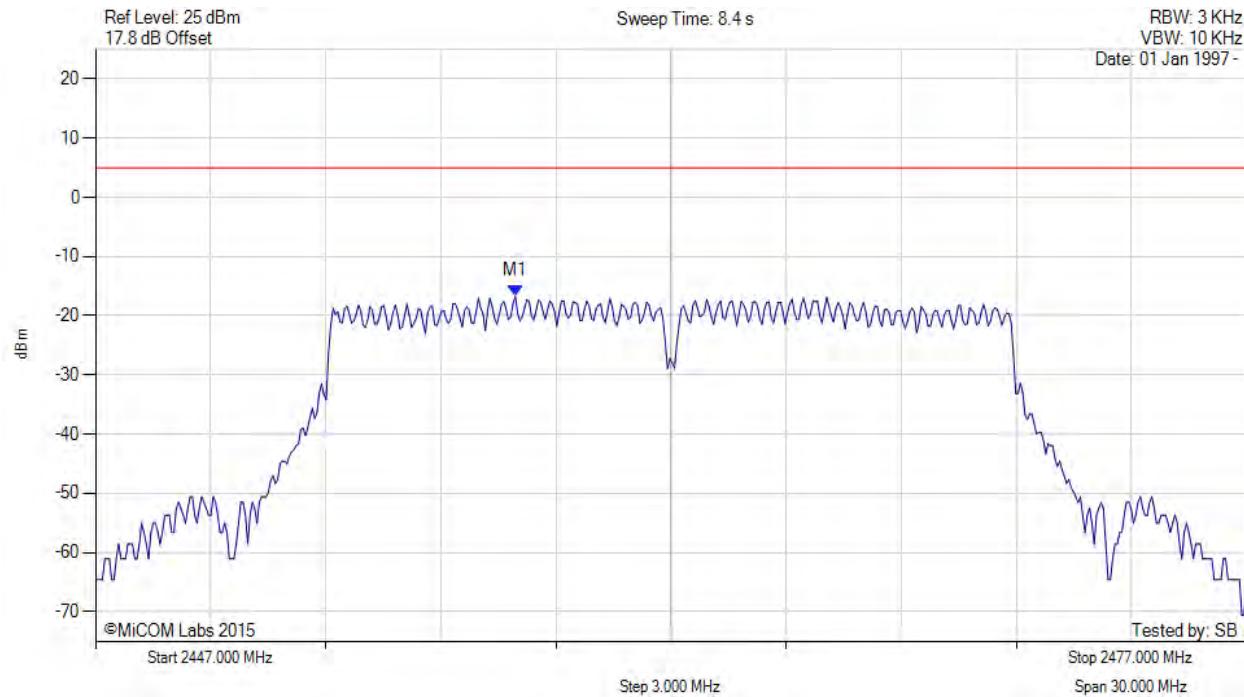
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POWER SPECTRAL DENSITY - AVERAGE

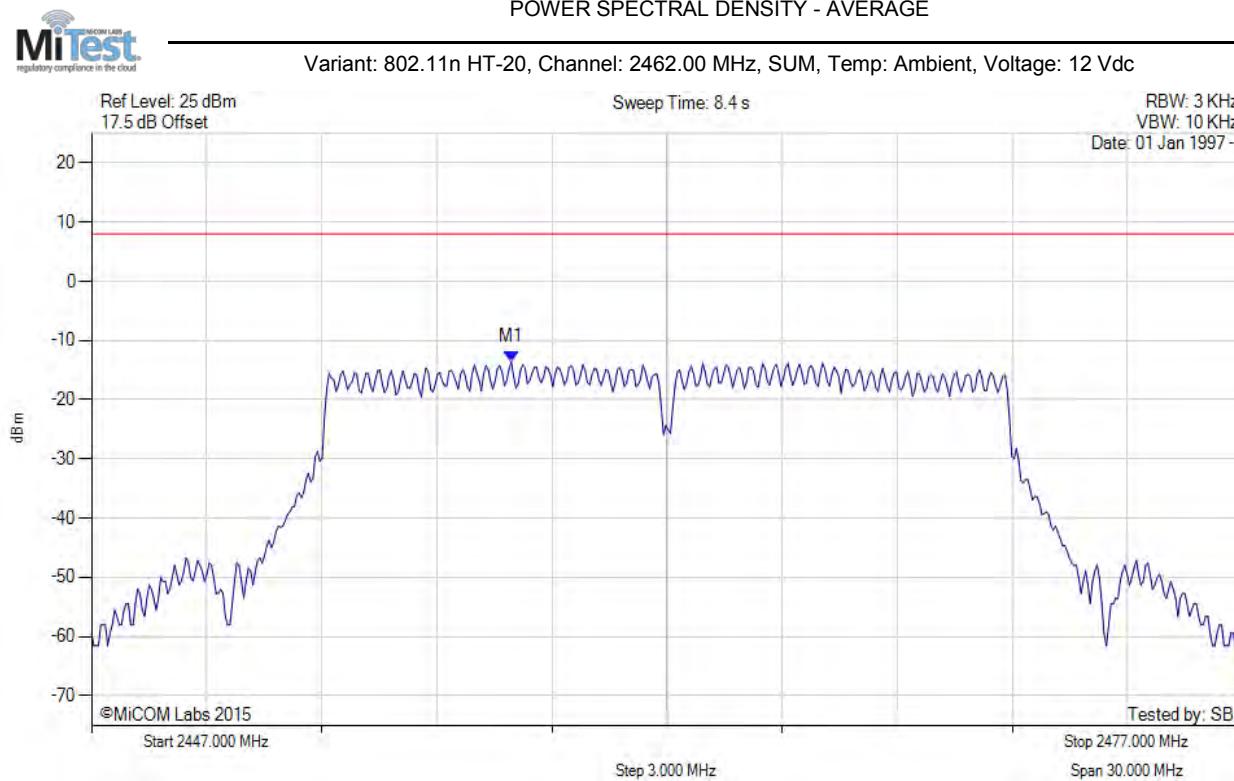
Variant: 802.11n HT-20, Channel: 2462.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2457.942 MHz : -16.656 dBm	Limit: ≤ 4.990 dBm

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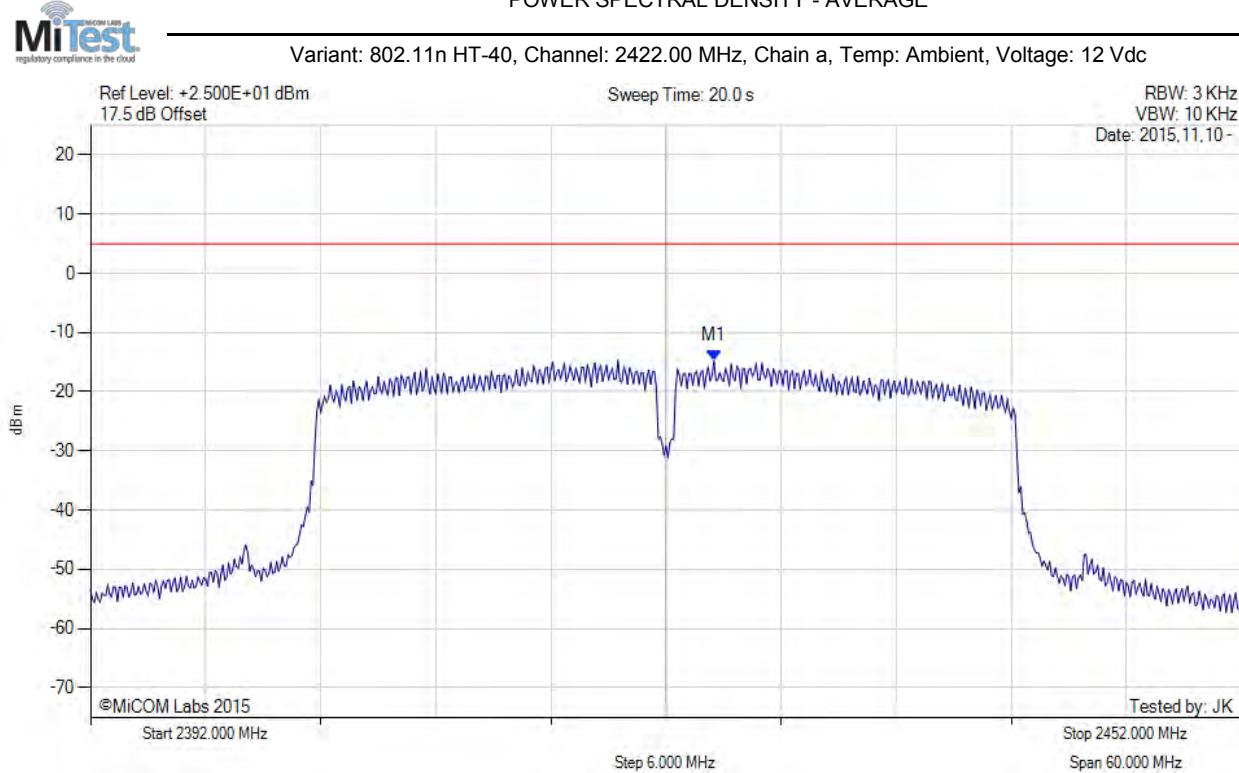


Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2457.900 MHz : -13.628 dBm M1 + DCCF : 2457.900 MHz : -13.460 dBm Duty Cycle Correction Factor : +0.17 dB	Limit: ≤ 8.0 dBm Margin: -21.5 dB

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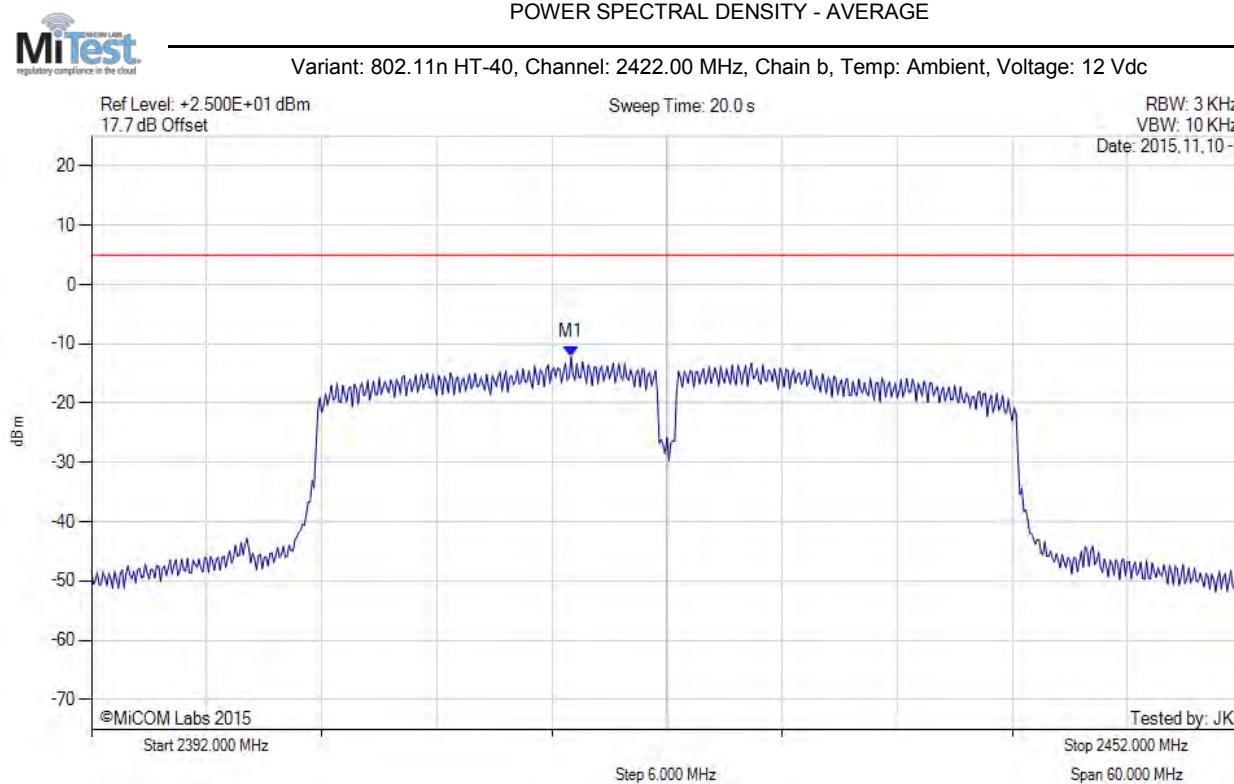
POWER SPECTRAL DENSITY - AVERAGE



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2424.500 MHz : -14.770 dBm	Limit: ≤ 4.990 dBm

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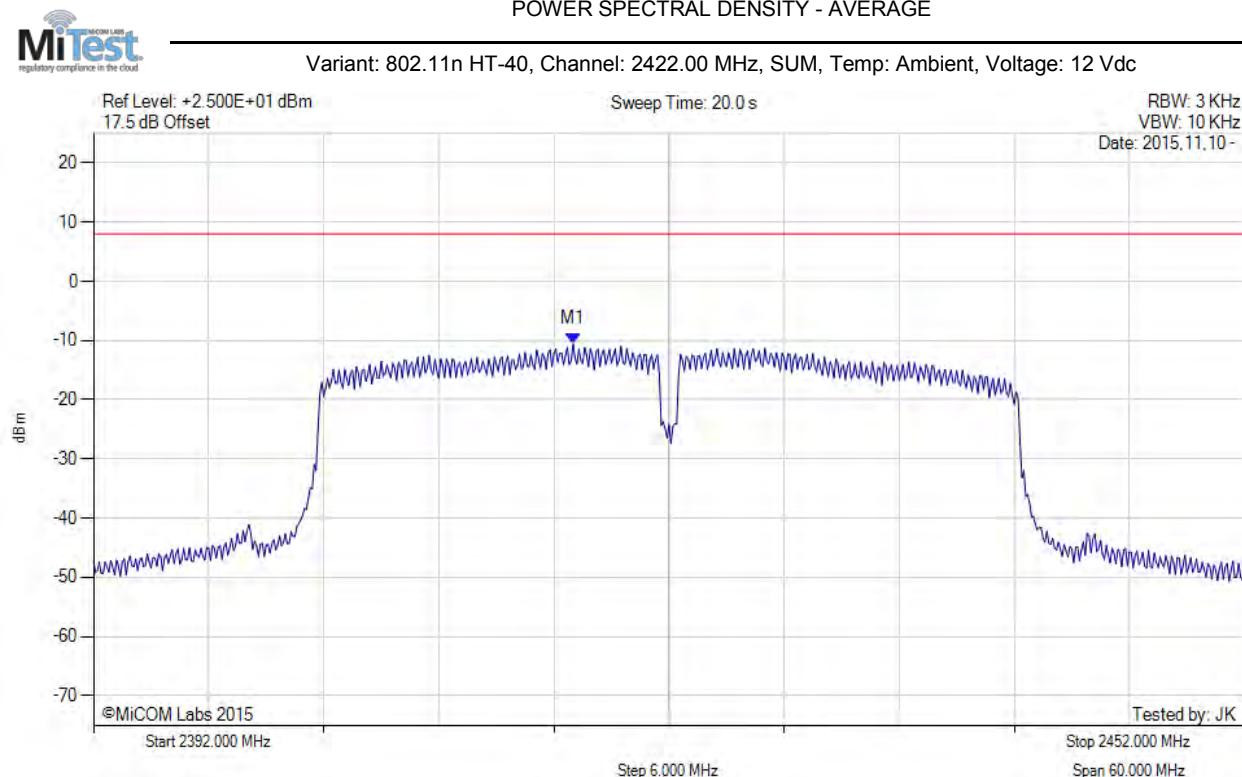
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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2417.000 MHz : -12.174 dBm	Limit: ≤ 4.990 dBm

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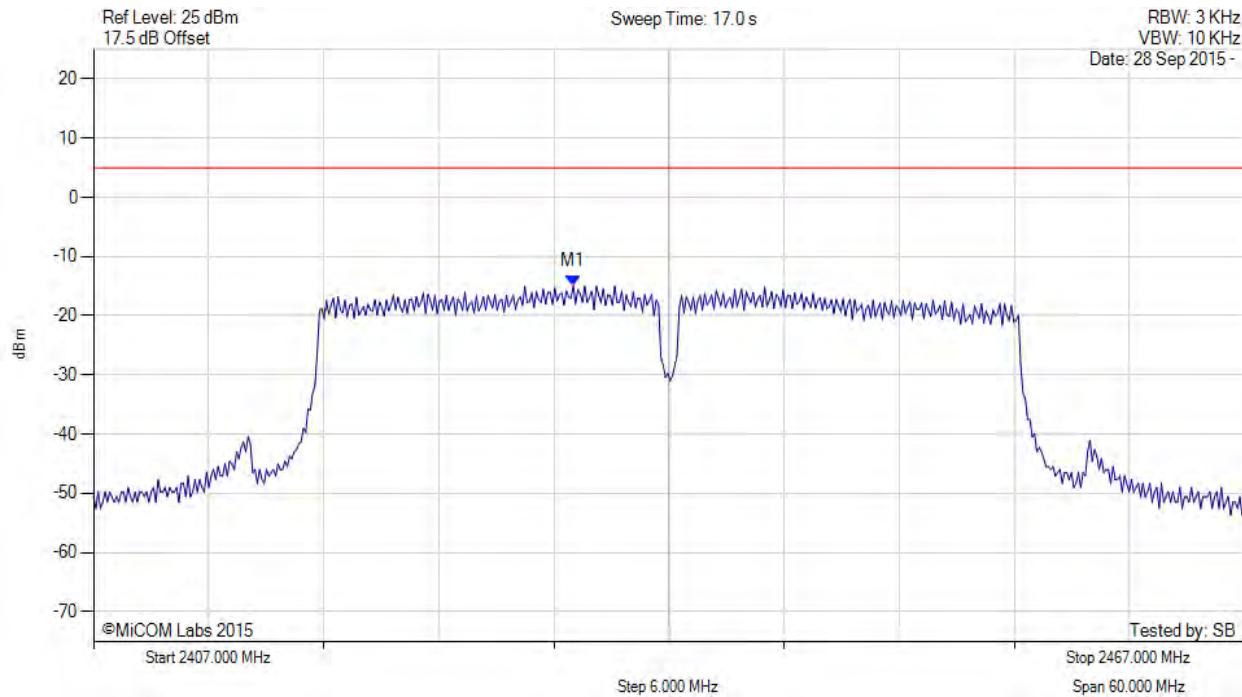
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2417.000 MHz : -10.580 dBm M1 + DCCF : 2417.000 MHz : -10.269 dBm Duty Cycle Correction Factor : +0.31 dB	Limit: ≤ 8.0 dBm Margin: -18.3 dB

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POWER SPECTRAL DENSITY - AVERAGE

Variant: 802.11n HT-40, Channel: 2437.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2432.010 MHz : -14.959 dBm	Limit: ≤ 4.990 dBm

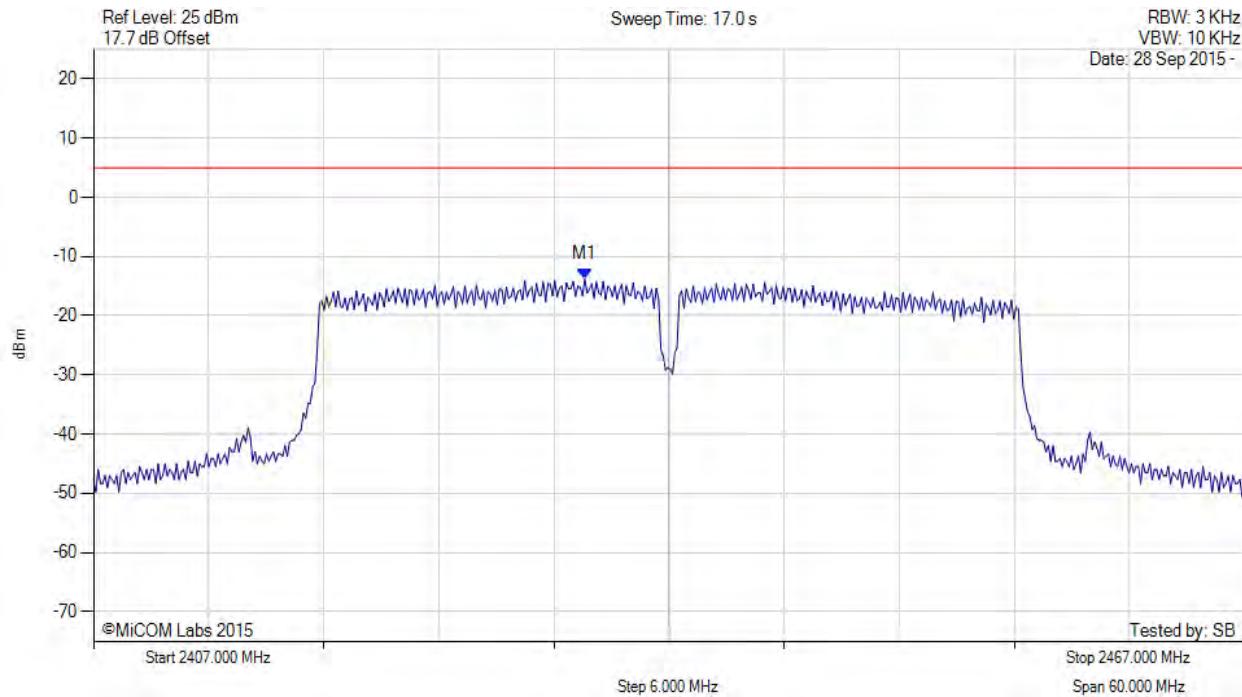
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POWER SPECTRAL DENSITY - AVERAGE

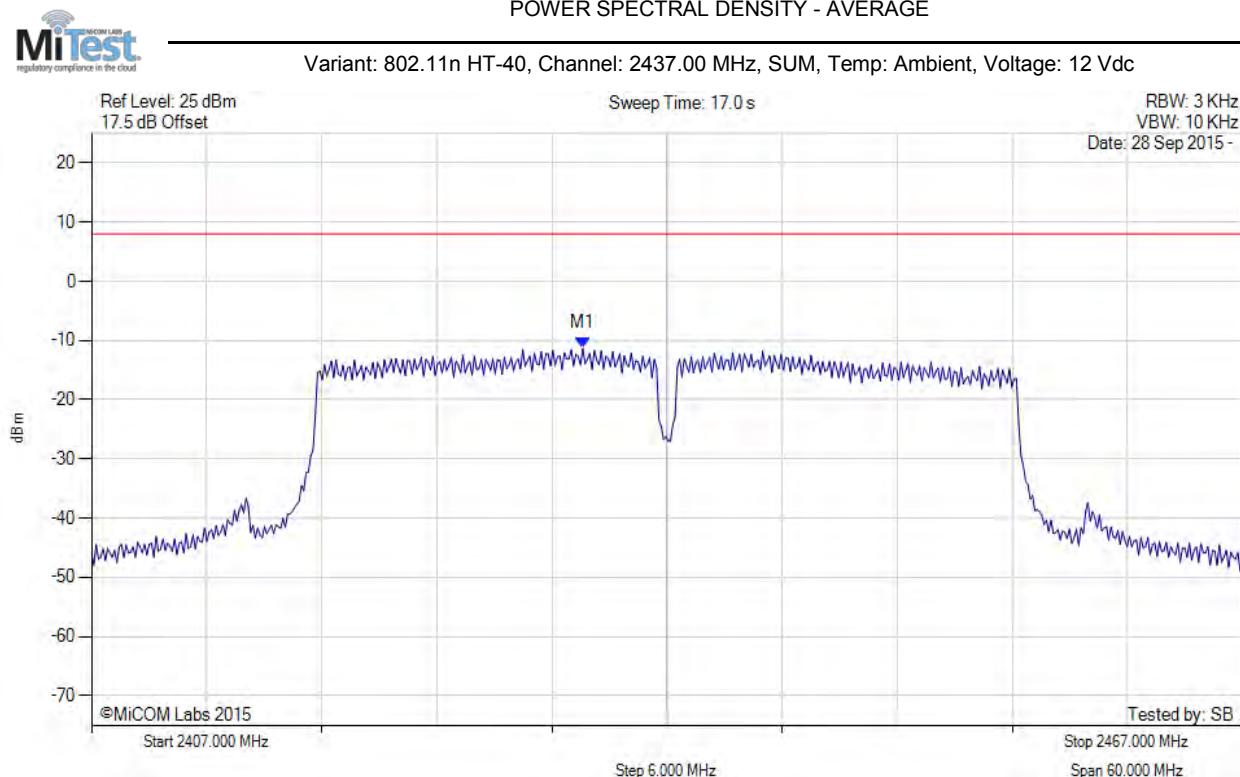
Variant: 802.11n HT-40, Channel: 2437.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2432.611 MHz : -13.814 dBm	Limit: ≤ 4.990 dBm

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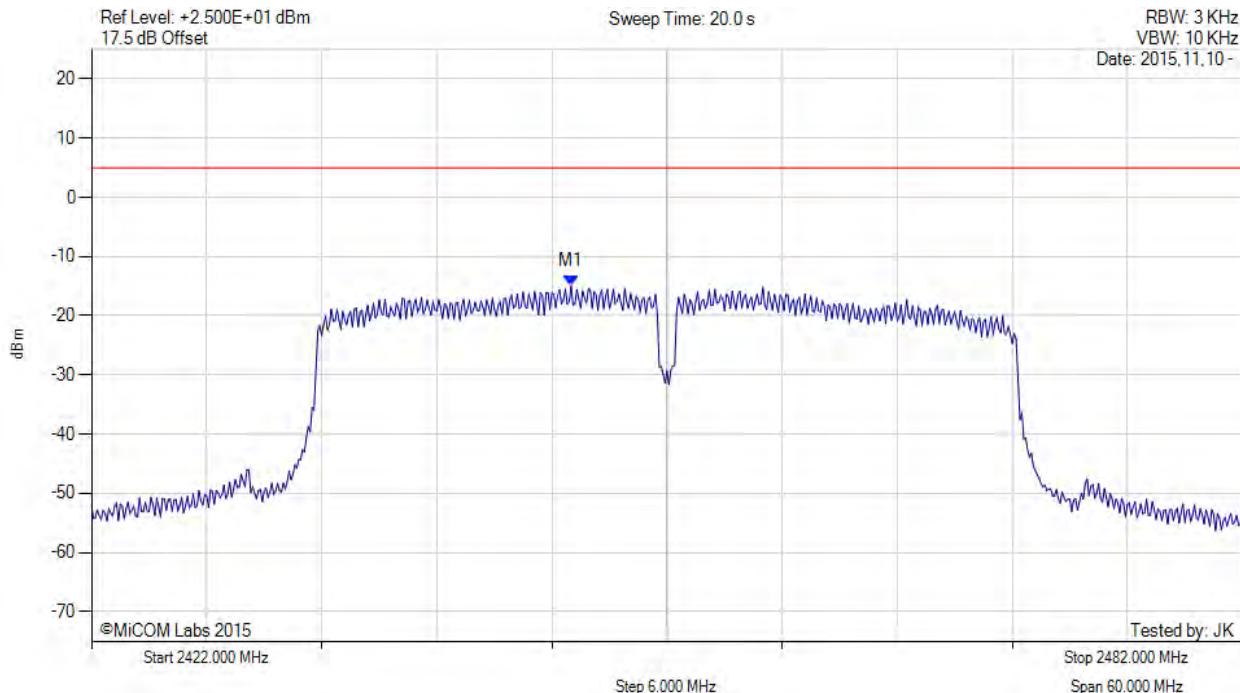
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVERAGE Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2432.600 MHz : -11.345 dBm M1 + DCCF : 2432.600 MHz : -10.887 dBm Duty Cycle Correction Factor : +0.31 dB	Limit: ≤ 8.0 dBm Margin: -18.9 dB

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POWER SPECTRAL DENSITY - AVERAGE

Variant: 802.11n HT-40, Channel: 2452.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc

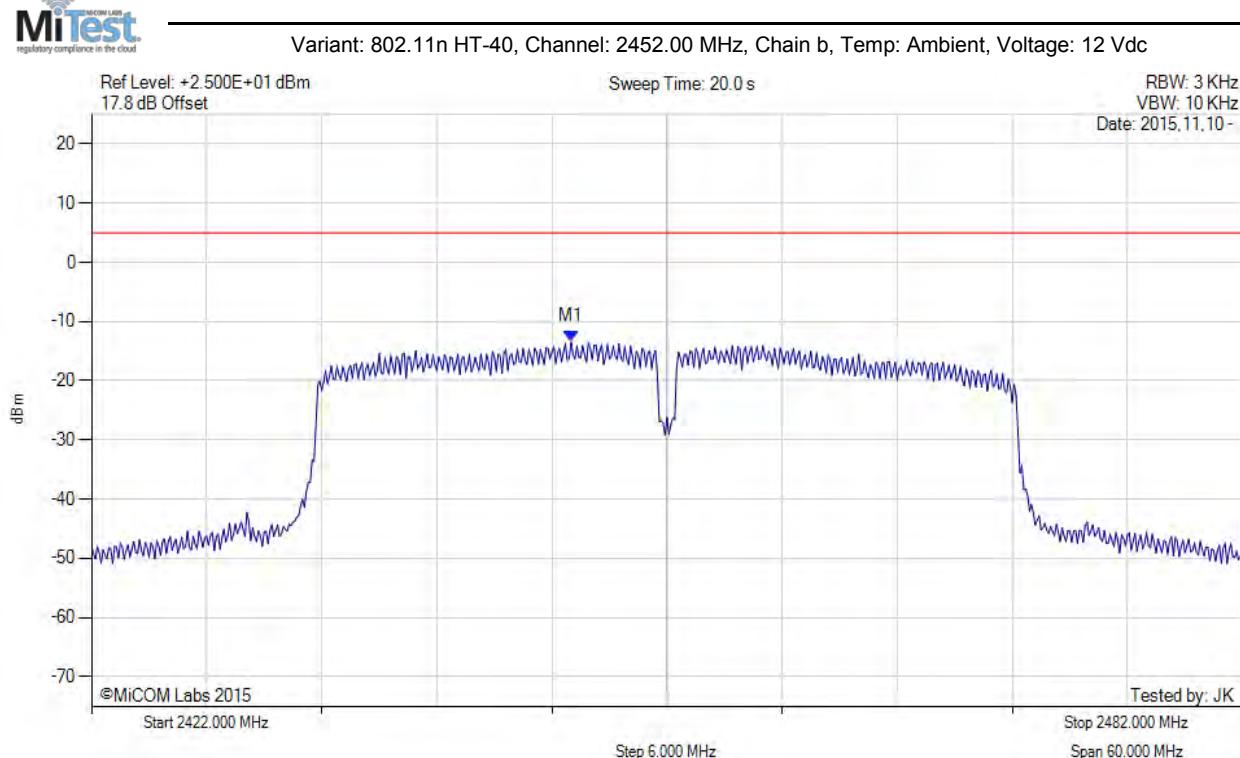


Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2447.000 MHz : -14.999 dBm	Limit: ≤ 4.990 dBm

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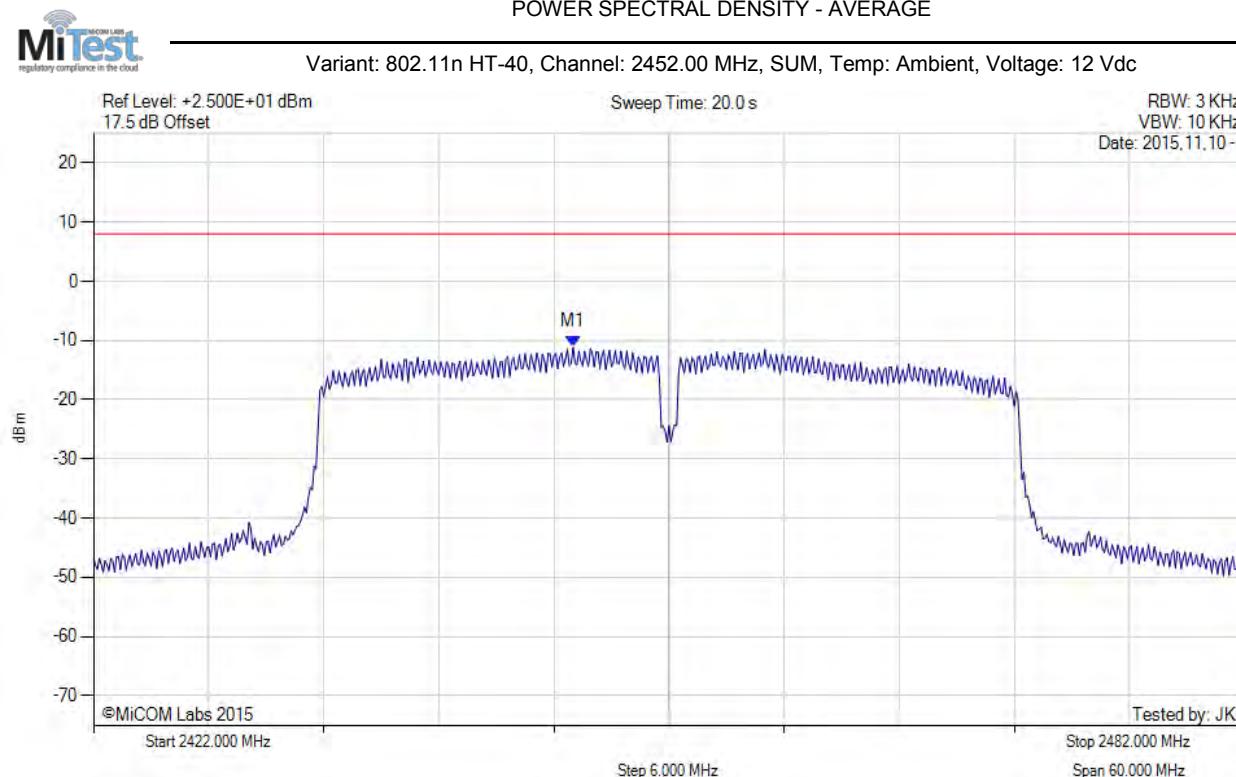
POWER SPECTRAL DENSITY - AVERAGE



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2447.000 MHz : -13.398 dBm	Limit: ≤ 4.990 dBm

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Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2447.000 MHz : -11.115 dBm M1 + DCCF : 2447.000 MHz : -10.804 dBm Duty Cycle Correction Factor : +0.31 dB	Limit: ≤ 8.0 dBm Margin: -18.8 dB

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