Test of GoNet Systems, GoBeam8000F (3x3)

To: FCC 47 CFR Part 15.247 & IC RSS-210

Test Report Serial No.: GNET08-U3 (3x3) Rev B

TEST REPORT

FROM

Test of GoNet Systems, GoBeam8000F (3x3)

to

To FCC 47 CFR Part 15.247 & IC RSS-210

Test Report Serial No.: GNET08-U3 (3x3) Rev B

This report supersedes: GNET08-U3 (3x3) Rev A

Applicant: GoNet Systems
34 Habarzel Street
Tel Aviv 69710
Israel

Product Function: Wireless Access Point

Copy No: pdf Issue Date: 3rd March 2014

This Test Report is Issued Under the Authority of;

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ACCREDITED
TESTING CERT #2381.01

MiCOM Labs is an ISO 17025 Accredited Testing Laboratory

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ACCREDITATION, LISTINGS & RECOGNITION

ACCREDITATION & LISTINGS

MiCOM Labs, Inc. an accredited laboratory complies with the international standard BS EN ISO/IEC 17025. 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

RECOGNITION

MiCOM Labs, Inc has widely recognized Electrical testing capabilities. Our international recognition includes Conformity Assessment Body designation by APEC MRA** countries. Our test reports are widely accepted for global type approvals.

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	

**APEC MRA – Asia Pacific Economic Community Mutual Recognition Agreement.
Is a 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
N/A – Not Applicable

**EU MRA – European Union Mutual Recognition Agreement.
Is a recognition agreement under which test lab is accredited to regulatory standards of the EU member countries.

**NB – Notified Body

PRODUCT CERTIFICATION

MiCOM Labs, Inc. is an accredited Product Certification Body per the international standard EN ISO/IEC Guide 65. 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)
TCB Identifier – US0159

Industry Canada – Certification Body
CAB Identifier – US0159

Europe – Notified Body
Notified Body Identifier - 2280

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

DOCUMENT HISTORY

Document History		
Revision	Date	Comments
Draft		
Rev B	3rd March 2014	Implemented different FCC Section for Output Power limits, Section 15.247 (c) (2) (ii)
Rev A	27th February 2014	Initial release.

TEST RESULT CERTIFICATE

Manufacturer:	Go Net Systems Ltd 34 Habarzel Street Tel Aviv 69710 Israel	Tested By:	MiCOM Labs, Inc. 575 Boulder Court Pleasanton California, 94566, USA
EUT:	802.11a/b/g/n Wireless Access Point	Telephone:	+1 925 462 0304
Model:	GoBeam8000F (3x3)	Fax:	+1 925 462 0306
S/N's:	Not Available		
Test Date(s):	25th Nov 2013 - 10th Feb 2014	Website:	www.micomlabs.com

STANDARD(S)	TEST RESULTS
FCC 47 CFR Part 15.247 & IC RSS-210	EQUIPMENT COMPLIES

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

Notes:

1. This document reports conditions under which testing was conducted and the results of testing performed.
2. Details of test methods used have been recorded and kept on file by the laboratory.
3. Test results apply only to the item(s) tested.

ACCREDITED
TESTING CERT #2381.01

Approved & Released for MiCOM Labs, Inc. by:

Graeme Grieve
Quality Manager MiCOM Labs,

Gordon Hurst
President & CEO MiCOM Labs, Inc.

1. REFERENCES AND MEASUREMENT UNCERTAINTY

1.1. Normative References

REF.	PUBLICATION	YEAR	TITLE
i.	FCC 47 CFR Part 15, Subpart C	2010	Title 47: Telecommunication PART 15—RADIO FREQUENCY DEVICES Subpart C—Intentional Radiators
ii.	RSS-210 Annex 8	2010	Radio Standards Specification 210, Issue 8, Low-power License-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment
iii.	FCC OET KDB 662911	4th April 2011	Emissions Testing of Transmitters with Multiple Outputs in the Same Band
iv.	DA 00-705	2000	FCC DA 00-705 "Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems" released March 30, 2000
v.	RSS-GEN	2010	Radio Standards Specification-Gen, Issue 3, General Requirements and Information for the Certification of Radiocommunication Equipment
vi.	FCC 47 CFR Part 15, Subpart B	2010	47 CFR Part 15, SubPart B; Unintentional Radiators
vii.	ICES-003	2004	Spectrum Management and Telecommunications Policy Interference-Causing Equipment Standard Digital Apparatus; Issue 4
viii.	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
ix.	CISPR 22/ EN 55022	2008 2006+A1:2007	Limits and Methods of Measurements of Radio Disturbance Characteristics of Information Technology Equipment
x.	M 3003	Edition 1 Dec. 1997	Expression of Uncertainty and Confidence in Measurements
xi.	LAB34	Edition 1 Aug 2002	The expression of uncertainty in EMC Testing
xii.	ETSI TR 100 028	2001	Parts 1 and 2 Electromagnetic compatibility and Radio Spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics
xiii.	A2LA	July 2012	Reference to A2LA Accreditation Status – A2LA Advertising Policy

1.2. Test and Uncertainty Procedures

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.

2. PRODUCT DETAILS AND TEST CONFIGURATIONS

2.1. Technical Details

Details	Description
Purpose:	Test of the GoNet Systems, GoBeam8000F (3x3) to FCC Part 15.247 and Industry Canada RSS-210 regulations.
Applicant:	Go Net Systems Ltd 34 Habarzel Street Tel Aviv 69710 Israel
Manufacturer:	**Manufacturer #1** Joy Technology (Shen Zhen) Co Ltd Shiyan Town, Shenzhen, China **Manufacturer #2** Accton Technology Corp 1 Creation 3rd Rd, Science-Based Industrial Park Hsinchu 300, Taiwan **Manufacturer #3** USR Electronic Systems 19 Napach St, Karmiel 21617 Israel **Manufacturer #4** RH Technologies 5 Ha'tzoref St., Har Yona Industrial Area Nazareth Ilite 17000 Israel
Laboratory performing the tests:	MiCOM Labs, Inc. 575 Boulder Court Pleasanton, California 94566 USA
Test report reference number:	GNET08-U3 (3x3) Rev B
Date EUT received:	25th November 2013
Standard(s) applied:	FCC 47 CFR Part 15.247 & IC RSS-210
Dates of test (from - to):	25th Nov 2013 - 10th Feb 2014
No of Units Tested:	One
Type of Equipment:	802.11a/b/g/n Wireless Access Point 3x3 Spatial Multiplexing MIMO configuration
Manufacturers Trade Name:	Wireless Access Point
Model(s):	GoBeam8000F
Location for use:	Outdoor
Declared Frequency Range(s):	2,400 – 2483.5, 5725 - 5850 MHz
Hardware Rev	1.0
Software Rev	4.17
EUT Modes of Operation:	Legacy 802.11a/b/g 802.11n HT-20, HT-40
Type of Modulation:	Per 802.11 – CCK, BPSK, QPSK, DSSS, OFDM
Declared NomOP Power (Ave):	+30 dBm
Transmit/Receive Operation:	Time Division Duplex

Technical Details Cont'd

Details	Description
System Beam Forming:	GoBeam8000F has antenna beam-forming capability
Rated Input Voltage and Current:	POE 56 Vdc, 1 A (Transmission mode)
Operating Temperature Range:	Declared range -40º to +55ºC
ITU Emission Designator:	802.11b 14M0G1D 802.11g 16M5D1D 802.11n HT-20 17M9D1D 802.11n HT-40 36M5D1D 802.11a 16M5D1D
Equipment Dimensions:	34.3 x 34.7 x 8.9 cm
Weight:	5 kg
Primary function of equipment:	Wireless Access Point for transmitting data and voice.

2.2. Scope of Test Program

GoBeam8000F 802.11 a/b/g/n Wireless Access Point

Operation of the GoBeam8000F
The GoBeam8000F can be used in multiple operational modes namely;

3x3 Spatial Multiplexing MIMO
2x2 Spatial Multiplexing MIMO
1x1 Single Chain

Through software control the same device can operate in any of the above operational modes. The GoBeam8000F will adjust the total output power depending on which mode is selected. It is for this reason that each of the above operational modes were tested against the standard. There are three test reports one for each mode;

MiCOM Labs Test Report GNET08-U3 (3x3)
MiCOM Labs Test Report GNET08-U3 (2x2)
MiCOM Labs Test Report GNET08-U3 (1x1)

The scope of the test program was to test the GoNet Systems, GoBeam8000F (3x3), configuration 2x2 Spatial Multiplexing MIMO in the frequency range 2400 – 2483.5 and 5725 – 5850 MHz for compliance against FCC 47 CFR Part 15.247 and Industry Canada RSS-210 specifications.

FCC OET KDB Implementation
This test program implements the following FCC KDB – 662911 4/4/2011;
Emissions Testing of Transmitters with Multiple Outputs in the Same Band

The KDB document provides guidance for measurements of conducted output emissions of devices that employ a single transmitter with multiple outputs in the same band, with the outputs occupying the same or overlapping frequency ranges. It applies to EMC compliance measurements on devices that transmit on multiple antennas simultaneously in the same or overlapping frequency ranges through a coordinated process. Examples include, but are not limited to, devices employing beam forming or multiple-input and multiple-output (MIMO.) This guidance applies to both licensed and unlicensed devices wherever the FCC rules call for conducted output measurements. Guidance is provided for in-band, out-of-band and spurious emission measurements.

This guidance does not apply to the multiple transmitters included in a composite device, such as a device that combines an 802.11 modem with a cell phone in one enclosure with each driving its own antenna.

GoNet Systems, GoBeam8000F (3x3)

GoNet Systems, GoBeam8000F (3x3)

GoNet Systems, GoBeam8000F (3x3)

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

Type (EUT/ Support)	Equipment Description (Including Brand Name)	Mfr	Model No.	Serial No.
EUT	802.11a/b/g/n Wireless Access Point	GoNet Systems	GoBeam8000F	Unknown
Support	Power Over Ethernet	--	--	--
Support	Laptop PC	--	--	--

2.4. Antenna Details

Antenna Type:	Manufacturer	Model	Gain (dBi)	Frequency Range (MHz)
Patch (Sector)	GoNet Systems	AN000801	8.0	2400-2500
Directional Beam	GoNet Systems	AN000802	13.0	2400-2500
Patch (Sector)	GoNet Systems	AN000803	9.0	5725-5850
Directional Beam	GoNet Systems	AN000804	14.0	5725-5850

Beam forming Gain:	6 dB, applies to both 2.4 and 5.8 GHz frequency bands

2.5. Cabling and I/O Ports

Number and type of I/O ports

1. 1 x 100/1000 POE Ethernet
2. 1 x 100/1000 Ethernet
3. 1 x Serial Control
4. 1 x Ground Connection

2.6. Test Configurations

Testing was performed to determine the highest power level versus bit rate. The variant with the highest power was used to exercise the product.

Operational Mode(s) (802.11a/n/ac)	Variant	Data Rate with Highest Power	Frequencies (MHz)
2.4 GHz			
b	Legacy	1 MBit/s	2,412 2,437 2,462
g	Legacy	6 MBit/s	
n	HT-20	6.5 (MCS 0)	
	HT-40	13.5 (MCS 0)	2,422 2,437 2,452
5.8 GHz			
a	Legacy	6 MBit/s	5,745 5,785 5,825
n	HT-20	6.5 (MCS 0)	
	HT-40	13.5 (MCS 0)	5,755 5,795

Legacy – data rates for 802.11abg products
Results for the above configurations are provided in this report

2.4 GHz Intended System Deployment

ANT1 Gain [dBi]	ANT2 Gain [dBi]	ANT3 Gain [dBi]	# Tx Channels	Correlated Array Gain [dBi]	Remarks
13.0	NA	NA	1	13.00	Single Antenna
8.0	8.0	NA	2	8.00	1. ANT1 & ANT2 are cross-polarized. 2. Signals can be either correlated or uncorrelated.
13.0	13.0	NA	2	13.00	1. ANT1 & ANT2 are cross-polarized. 2. Signals can be either correlated or uncorrelated.
13.0	13.0	8.0	3	13.00	1. Correlated signals 2. ANT1 & ANT2 are cross-polarized. 3. ANT2 & ANT3 are unequal antenna gains with equal transmit powers.
13.0	13.0	13.0	3	13.00	1. Correlated Signals 2. ANT1 & ANT2 are cross-polarized.
13.0	13.0	8.0	3	13.00	Uncorrelated signals
13.0	13.0	13.0	3	13.00	Uncorrelated signals

5.8 GHz Intended System Deployment

ANT1 Gain [dBi]	ANT2 Gain [dBi]	ANT3 Gain [dBi]	# Tx Channels	Correlated Array Gain [dBi]	Remarks
14.0	NA	NA	1	14.00	Single Antenna
9.0	9.0	NA	2	9.00	1. ANT1 & ANT2 are cross-polarized. 2. Signals can be either correlated or uncorrelated.
14.0	14.0	NA	2	14.00	1. ANT1 & ANT2 are cross-polarized. 2. Signals can be either correlated or uncorrelated.
14.0	14.0	9.0	3	14.00	1. Correlated signals 2. ANT1 & ANT2 are cross-polarized. 3. ANT2 & ANT3 are unequal antenna gains with equal transmit powers.
14.0	14.0	14.0	3	14.00	1. Correlated Signals 2. ANT1 & ANT2 are cross-polarized.
14.0	14.0	9.0	3	14.00	Uncorrelated signals
14.0	14.0	14.0	3	14.00	Uncorrelated signals
16.0	16.0	NA	2	16.00	1. ANT1 & ANT2 are cross-polarized. 2. Signals can be either correlated or uncorrelated. 3. Point to point application.

2.7. Equipment Modifications

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

1. NONE

2.8. Deviations from the Test Standard

The following deviations from the test standard were required in order to complete the test program:

1. NONE

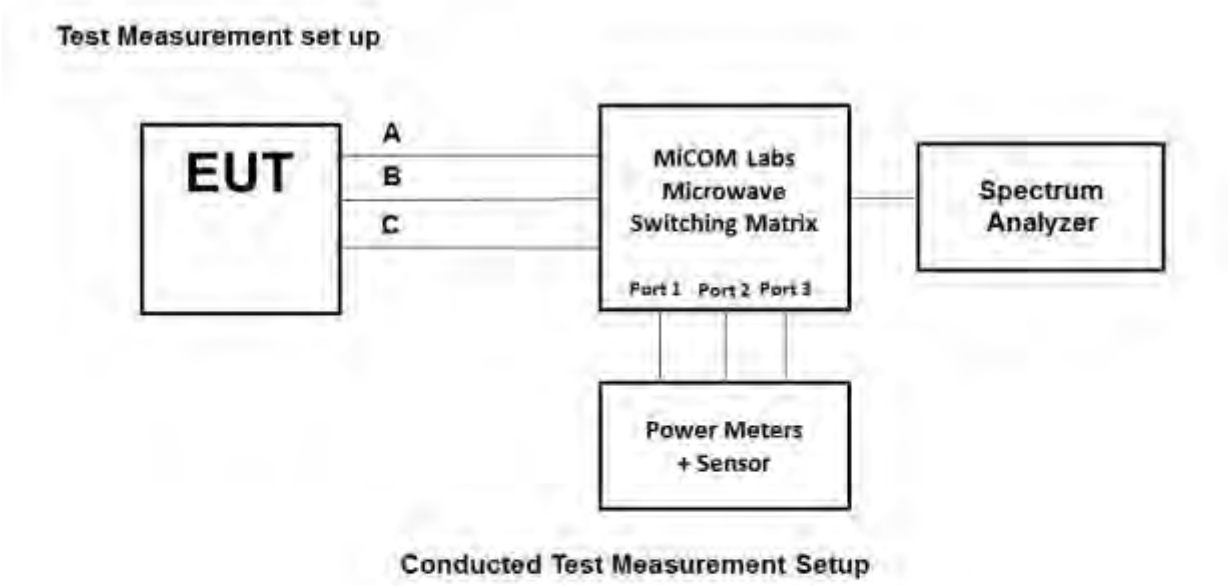
3. TEST EQUIPMENT CONFIGURATION(S)

3.1. Conducted RF Emission Test Set-up

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

1. Section 5.1.1.1. 6 dB and 99% Bandwidth
2. Section 5.1.1.2. Peak Output Power
3. Section 5.1.1.3. Power Spectral Density
4. Section 5.1.1.4. Conducted Spurious Emissions

Conducted Test Set-Up Pictorial Representation

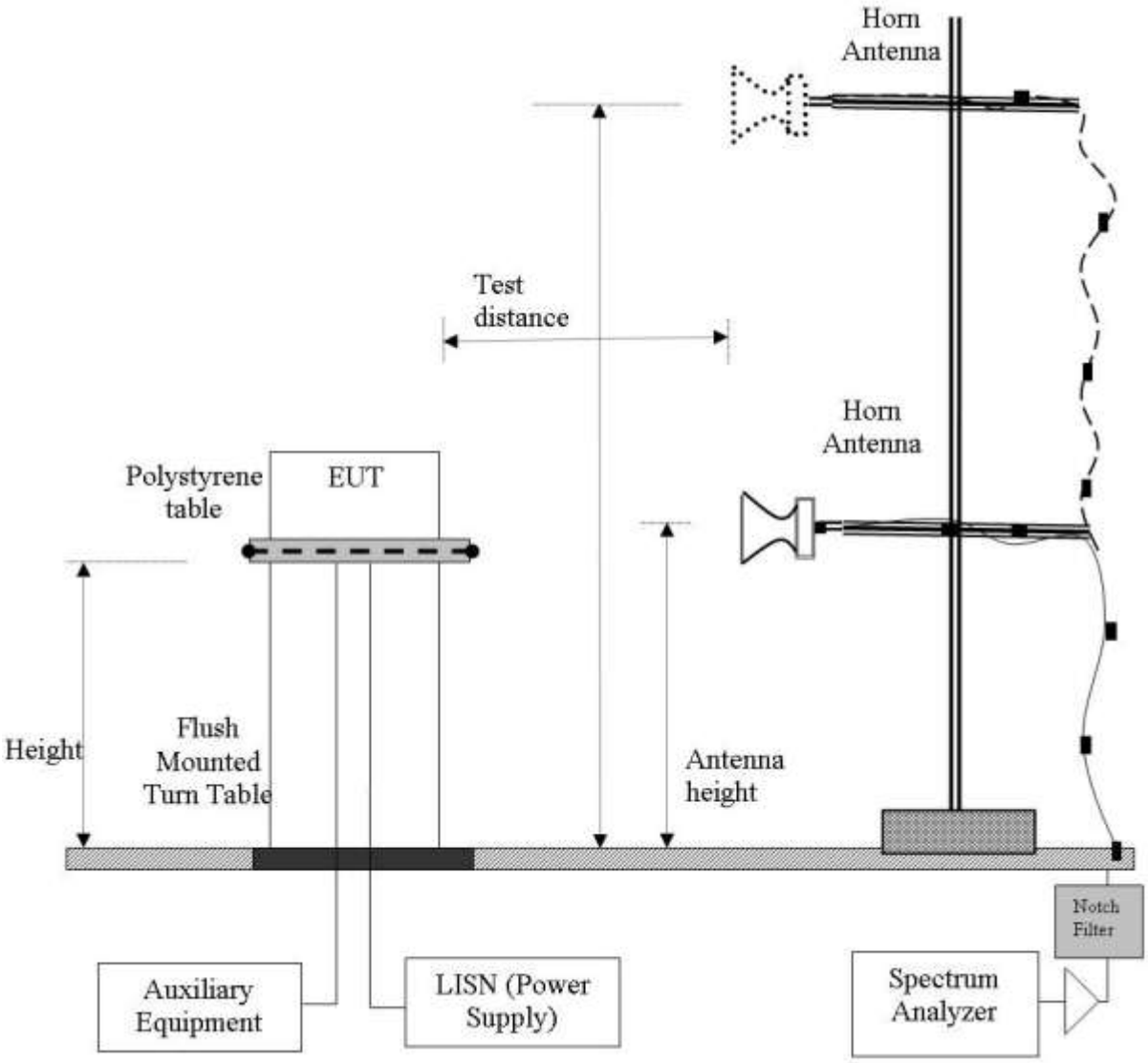


Conducted Test Measurement Setup

3.2. Radiated Spurious Emission Test Set-up > 1 GHz

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

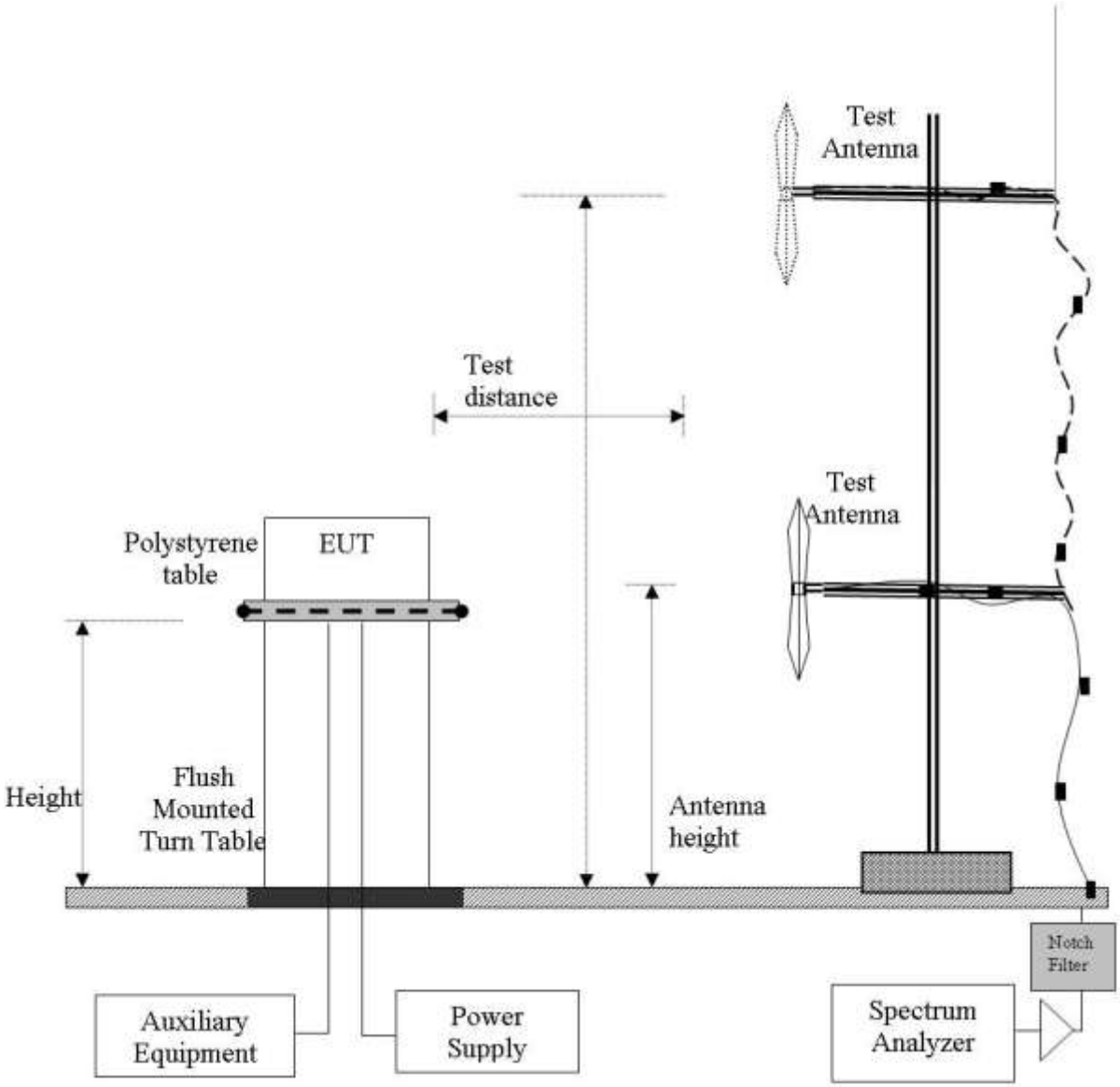
Radiated Emission Measurement Setup – Above 1 GHz



3.3. Digital Emissions Test Set-up (0.03 – 1 GHz)

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

Digital Emission Measurement Setup – Below 1 GHz

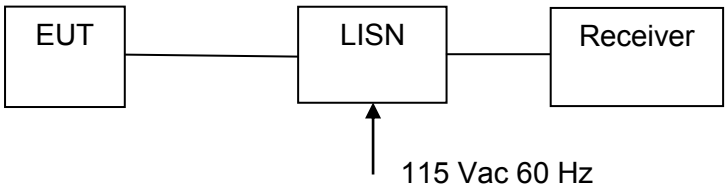


3.4. ac Wireline Emission Test Set-up

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

1. Section 5.1.3 ac Wireline Conducted Emissions

Conducted Test Set-Up Pictorial Representation



4. TEST SUMMARY

List of Measurements

The following table represents the list of measurements required under the **FCC CFR47 Part 15.247** and **Industry Canada RSS-210** and **Industry Canada RSS-Gen.**

Section(s)	Test Items	Description	Condition	Result	Test Report Section
15.247(a)(2) **A8.2(1)** **4.4**	6 dB and 99 % Bandwidths	≥500 kHz	Conducted	Complies	5.1.1.1
15.247(b)(3) **15.31(e)** **A8.4(4)**	Peak Output Power Voltage Variation	Shall not exceed 1W Variation of supply voltage 85 % -115 %	Conducted	Complies	5.1.1.2
15.247(e) **A8.2**	Peak Power Spectral Density	Shall not be greater than +8 dBm in any 3 kHz band	Conducted	Complies	5.1.1.3
15.247(d) **15.205 / 15.209** **A8.5** **2.2** **4.7**	Spurious Emissions (30MHz - 26 GHz b/g and 30 MHz – 40 GHz a)	The radiated emission in any 100 kHz of out-band shall be at least 20 dB below the highest in-band spectral density	Conducted	Complies	5.1.1.4

List of Measurements (continued)

The following table represents the list of measurements required under the **FCC CFR47 Part 15.247, Industry Canada RSS-210,** and **Industry Canada RSS-Gen.**

Section(s)	Test Items	Description	Condition	Result	Test Report Section
15.247(d) **15.205 /** **15.209** **A8.5** **2.2** **2.6** **4.7**	Radiated Emissions	Restricted Bands	Radiated	Complies	5.1.2
	Transmitter Radiated Spurious Emissions	Emissions above 1 GHz		Complies	
	Radiated Band Edge	Band-edge results Peak Emissions		Complies	
15.205 / **15.209** **2.2**	Radiated Spurious Emissions	Emissions <1 GHz (30M-1 GHz)	Radiated	Complies	*5.1.2.4*
15.207 **7.2.2**	AC Wireline Conducted Emissions 150 kHz–30 MHz	Conducted Emissions	Conducted	Complies	*5.1.3*

Note 1: *Test results reported in this document relate only to the items tested*
Note 2: *The required tests demonstrated compliance as per client declaration of test configuration, monitoring methodology and associated pass/fail criteria*
Note 3: *Section 2.7 Equipment Modifications highlights the equipment modifications that were required to bring the product into compliance with the above test matrix*

5. TEST RESULTS

5.1. Device Characteristics

5.1.1. Conducted Testing

5.1.1.1. 6 dB and 99 % Bandwidth

Conducted Test Conditions for 6 dB and 99% Bandwidth			
Standard:	FCC CFR 47:15.247	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	6 dB and 99 % Bandwidth	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.247 (a)(2)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	KDB 558074 - D01 DTS Measurement Guidance v01: Section 5.1 Emission Bandwidth		

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.

Equipment Configuration for 6 dB & 99% Bandwidth			
Variant:	802.11b	**Duty Cycle (%):**	99
Data Rate:	1 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	CCK	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	KHz	MHz
2412.0	9.780	10.180	10.261	--	10.261	9.780	≥500.0	-9.28
2437.0	10.180	10.261	10.180	--	10.261	10.180	≥500.0	-9.68
2462.0	9.218	10.180	10.180	--	10.180	9.218	≥500.0	-8.72

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				Maximum 99% Bandwidth (MHz)		
MHz	a	b	c	d			
2412.0	13.307	13.627	13.627	--	13.627		
2437.0	14.028	13.788	13.868	--	14.028		
2462.0	13.146	13.707	13.547	--	13.707		

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

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

Equipment Configuration for 6 dB & 99% Bandwidth

Variant:	802.11g	**Duty Cycle (%):**	96
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	KHz	MHz
2412.0	15.792	15.952	15.952	--	15.952	15.792	≥500.0	-15.29
2437.0	16.513	16.513	16.513	--	16.513	16.513	≥500.0	-16.01
2462.0	14.669	16.273	15.952	--	16.273	14.669	≥500.0	-14.17

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				Maximum 99% Bandwidth (MHz)		
MHz	a	b	c	d			
2412.0	16.353	16.433	16.513	--	16.513		
2437.0	16.593	16.513	16.513	--	16.593		
2462.0	16.192	16.513	16.433	--	16.513		

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

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

Equipment Configuration for 6 dB & 99% Bandwidth

Variant:	802.11n HT-20	**Duty Cycle (%):**	96
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	KHz	MHz
2412.0	16.433	16.513	17.074	--	17.074	16.433	≥500.0	-15.93
2437.0	17.715	17.715	17.715	--	17.715	17.715	≥500.0	-17.22
2462.0	16.513	16.834	16.673	--	16.834	16.513	≥500.0	-16.01

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				Maximum 99% Bandwidth (MHz)		
MHz	a	b	c	d			
2412.0	17.395	17.635	17.715	--	17.715		
2437.0	17.876	17.715	17.715	--	17.876		
2462.0	17.315	17.635	17.635	--	17.635		

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

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

Equipment Configuration for 6 dB & 99% Bandwidth			
Variant:	802.11n HT-40	**Duty Cycle (%):**	94
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	KHz	MHz
2422.0	36.072	36.072	36.072	--	36.072	36.072	≥500.0	-35.57
2437.0	36.713	36.713	36.874	--	36.874	36.713	≥500.0	-36.21
2452.0	34.790	36.072	36.553	--	36.553	34.790	≥500.0	-34.29

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				Maximum 99% Bandwidth (MHz)		
MHz	a	b	c	d			
2422.0	35.912	36.072	36.232	--	36.232		
2437.0	36.553	36.393	36.553	--	36.553		
2452.0	35.752	36.232	36.232	--	36.232		

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

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

Equipment Configuration for 6 dB & 99% Bandwidth

Variant:	802.11a	**Duty Cycle (%):**	96
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	KHz	MHz
5745.0	16.112	16.433	16.513	--	16.513	16.112	≥500.0	-15.61
5785.0	16.513	16.192	16.513	--	16.513	16.192	≥500.0	-15.69
5825.0	16.513	16.513	16.513	--	16.513	16.513	≥500.0	-16.01

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				Maximum 99% Bandwidth (MHz)		
MHz	a	b	c	d			
5745.0	16.513	16.433	16.433	--	16.513		
5785.0	16.513	16.433	16.433	--	16.513		
5825.0	16.513	16.513	16.513	--	16.513		

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

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

Equipment Configuration for 6 dB & 99% Bandwidth			
Variant:	802.11n HT-20	**Duty Cycle (%):**	97
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	KHz	MHz
5745.0	17.074	16.754	17.475	--	17.475	16.754	≥500.0	-16.25
5785.0	17.475	16.914	17.715	--	17.715	16.914	≥500.0	-16.41
5825.0	17.475	17.475	17.475	--	17.475	17.475	≥500.0	-16.98

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				Maximum 99% Bandwidth (MHz)		
MHz	a	b	c	d			
5745.0	17.715	17.555	17.635	--	17.715		
5785.0	17.635	17.555	17.635	--	17.635		
5825.0	17.635	17.635	17.635	--	17.635		

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

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

Equipment Configuration for 6 dB & 99% Bandwidth			
Variant:	802.11n HT-40	**Duty Cycle (%):**	94
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	KHz	MHz
5755.0	36.072	35.591	36.393	--	36.393	35.591	≥500.0	-35.09
5795.0	35.752	35.591	36.393	--	36.393	35.591	≥500.0	-35.09

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				Maximum 99% Bandwidth (MHz)		
MHz	a	b	c	d			
5755.0	36.232	35.912	36.232	--	36.232		
5795.0	36.072	36.232	36.232	--	36.232		

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).

Specification

Limits

§15.247 (a)(2) & RSS-210 §A8.2(1)
The minimum 6 dB bandwidth shall be at least 500 kHz.

§ IC RSS-Gen 4.4.1 Occupied Bandwidth When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.

§ IC RSS-Gen 4.4.2 6 dB Bandwidth Where indicated, the 6 dB bandwidth is measured at the points when the spectral density of the signal is 6 dB down from the in –band spectral density of the modulated signal, with the transmitter modulated by a representative signal.

Traceability

Test Equipment Used
0158, 0287, 0252, 0313, 0314, 0070, 0116, 0117

5.1.1.2. Peak Output Power

Conducted Test Conditions for Fundamental Emission Output Power			
Standard:	FCC CFR 47:15.247	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Emission Output Power	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.247 (a)(2)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	KDB 558074 - D01 DTS Measurement Guidance v01: Section 5.2 Fundamental Emission Output Power KDB 662911 was implemented for In-band power measurements. The measure and sum technique was implemented in all cases.		

Test Procedure for Fundamental Emission Output Power Measurement

Selection of the detector type is determined by the client, either a peak detector or average power detector can be selected however the same detector type **must** be used for each of the following tests;

A). Output Power

B).. Power Density

C).. Conducted Spurious Emissions

Average Power
To measure average power a power meter measuring average power is implemented

Peak Detector
To measure peak power a spectrum analyser is used with the peak detector selected. The transmitter terminal of EUT was connected to the input of the spectrum analyser. The resolution filter bandwidth was set for 6 dB and the analyzers built-in power function used to integrate peak power over the EUT's 20 dB bandwidth.

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

15.247 (C) Operation with directional antenna gains greater than 6 dBi.

(2) In addition to the provisions in paragraphs (b)(1), (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.

Equipment Configuration for Average Output Power

Variant:	802.11b	**Duty Cycle (%):**	99.0
Data Rate:	1 MBit/s	**Antenna Gain (dBi):**	13.00
Modulation:	CCK	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

Test Measurement Results

Test Frequency	Measured Output Power (dBm) Port(s)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	dBm	dBm	dBm	
2412.0	19.18	16.79	16.12	--	22.34	25.99	-3.65	12.00
2437.0	18.70	17.39	16.66	--	22.44	25.99	-3.55	11.50
2462.0	19.36	16.83	17.72	--	22.87	25.99	-3.12	12.00

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

NOTE: the antenna gain (dBi) includes beamforming gain

Limits - 15.247 (C) (2) (ii) (A) Operation with directional antenna gains greater than 6 dBi.

Equipment Configuration for Average Output Power

Variant:	802.11g	**Duty Cycle (%):**	96.1
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	13.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

Test Measurement Results

Test Frequency	Measured Output Power (dBm) Port(s)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	dBm	dBm	dBm	
2412.0	18.57	16.92	16.13	--	22.10	25.99	-3.89	12.00
2437.0	18.15	16.75	16.35	--	21.93	25.99	-4.06	10.50
2462.0	18.13	16.48	16.94	--	22.01	25.99	-3.98	11.00

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

NOTE: the antenna gain (dBi) includes beamforming gain

Limits - 15.247 (C) (2) (ii) (A) Operation with directional antenna gains greater than 6 dBi.

Equipment Configuration for Average Output Power			
Variant:	802.11n HT-20	**Duty Cycle (%):**	95.9
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	13.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

Test Measurement Results

Test Frequency	Measured Output Power (dBm) Port(s)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	dBm	dBm	dBm	
2412.0	19.44	17.42	16.72	--	22.79	25.99	-3.20	11.50
2437.0	18.92	17.58	17.30	--	22.76	25.99	-3.23	10.50
2462.0	19.01	17.48	17.71	--	22.89	25.99	-3.10	11.00

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

NOTE: the antenna gain (dBi) includes beamforming gain

Limits - 15.247 (C) (2) (ii) (A) Operation with directional antenna gains greater than 6 dBi.

Equipment Configuration for Average Output Power			
Variant:	802.11n HT-40	**Duty Cycle (%):**	94.0
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	13.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

Test Measurement Results

Test Frequency	Measured Output Power (dBm) Port(s)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	dBm	dBm	dBm	
2422.0	18.04	17.11	16.53	--	22.04	25.99	-3.95	10.50
2437.0	18.03	16.92	16.63	--	22.01	25.99	-3.98	10.00
2452.0	18.36	16.13	15.92	--	21.72	25.99	-4.27	10.00

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

NOTE: the antenna gain (dBi) includes beamforming gain

Limits - 15.247 (C) (2) (ii) (A) Operation with directional antenna gains greater than 6 dBi.

Equipment Configuration for Average Output Power

Variant:	802.11a	**Duty Cycle (%):**	96.4
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	14.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

Test Measurement Results

Test Frequency	Measured Output Power (dBm) Port(s)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	dBm	dBm	dBm	
5745.0	15.93	17.59	16.68	--	21.56	22.00	-0.44	13.50
5785.0	15.54	18.45	16.41	--	21.75	22.00	-0.25	11.50
5825.0	15.67	19.21	15.36	--	21.89	22.00	-0.11	11.50

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

NOTE: the antenna gain (dBi) includes beamforming gain

Equipment Configuration for Average Output Power

Variant:	802.11n HT-20	**Duty Cycle (%):**	97.4
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	14.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

Test Measurement Results

Test Frequency	Measured Output Power (dBm) Port(s)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	dBm	dBm	dBm	
5745.0	16.29	17.81	17.22	--	21.92	22.00	-0.08	14.5
5785.0	15.08	18.45	16.18	--	21.57	22.00	-0.43	13.5
5825.0	15.44	19.14	15.32	--	21.79	22.00	-0.21	12.0

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

NOTE: the antenna gain (dBi) includes beamforming gain

Equipment Configuration for Average Output Power

Variant:	802.11n HT-40	**Duty Cycle (%):**	93.7
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	14.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

Test Measurement Results

Test Frequency	Measured Output Power (dBm) Port(s)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	dBm	dBm	dBm	
5755.0	15.68	16.85	17.25	--	21.41	22.00	-0.59	14.00
5795.0	16.10	18.08	16.47	--	21.74	22.00	-0.26	13.50

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

NOTE: the antenna gain (dBi) includes beamforming gain

Specification

Limits

§15.247 (b) The maximum peak output power of the intentional radiator shall not exceed the following:

§15.247 (b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz bands: 1.0 watt.

15.247 (b) (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)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

15.247 (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.

(ii) Systems operating in the 5725–5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted output power.

§15.31 (e) For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

§ RSS-210 A8.4(4) For systems employing digital modulation techniques operating in the 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz bands the maximum peak conducted power shall not exceed 1 watt.

Traceability

Method	Test Equipment Used
Measurements were made per work instruction WI-01 'Measuring RF Output Power'	0158, 0287, 0252, 0313, 0314, 0070, 0116, 0117

5.1.1.3. Power Spectral Density

Conducted Test Conditions for Power Spectral Density			
Standard:	FCC CFR 47:15.247	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Power Spectral Density	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.247 (e)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	KDB 558074 - D01 DTS Measurement Guidance v01: Section 5.3 Maximum Power Spectral Density Level in the Emission Bandwidth		

Test Procedure for Power Spectral Density

The transmitter output was connected to a spectrum analyzer and the maximum spectral emission was measured in a 30 kHz bandwidth for each antenna chain. Sweep time was auto selected by the analyzer which was set for max hold. Once the maximum emission was found the emission(s) were summed for each chain.

As the FCC limit is provided for a 3 kHz resolution bandwidth the measured data required to be converted.

Spectral Density Conversion Factor

10 * Log (3 kHz / measurement bandwidth) = 10 * Log (3/30) = -10dB

Detector Selection

Selection of the analyzer detector is determined by the client, however the same detector type **must** be used for each of the following tests;

A). Output Power
B).. Power Density
C).. Conducted Spurious Emissions

Supporting Information

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

Limit Line: KDB 662911 was implemented for In-band power spectral density (PSD) measurements - Option (2) measure and subtract 10 log (N) dB from the limit for devices with multiple RF ports.

Equipment Configuration for Power Spectral Density - Average			
Variant:	802.11b	**Duty Cycle (%):**	99
Data Rate:	1 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	CCK	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density (dBm)				Calculated Total Power Spectral Density		Limit	Margin
	Port(s)				dBm			
MHz	a	b	c	d	Σ Port(s) per 30kHz RBW	Conversion to 3 kHz RBW	dBm	dB
2412.0	2.485	0.549	-1.072	--	5.668	-4.332	8.00	-12.33
2437.0	1.920	1.294	0.461	--	6.037	-3.963	8.00	-11.96
2462.0	2.901	-0.438	0.869	--	6.102	-3.898	8.00	-11.90

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

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

Equipment Configuration for Power Spectral Density - Average			
Variant:	802.11g	**Duty Cycle (%):**	96
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density (dBm)				Calculated Total Power Spectral Density		Limit	Margin
	Port(s)				dBm			
MHz	a	b	c	d	Σ Port(s) per 30kHz RBW	Conversion to 3 kHz RBW	dBm	dB
2412.0	2.100	-0.427	-1.017	--	5.211	-4.789	8.00	-12.79
2437.0	-0.328	-0.248	-1.314	--	4.168	-5.832	8.00	-13.83
2462.0	1.128	-1.279	-0.572	--	4.651	-5.349	8.00	-13.35

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

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

Equipment Configuration for Power Spectral Density - Average			
Variant:	802.11n HT-20	**Duty Cycle (%):**	96
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density (dBm)				Calculated Total Power Spectral Density		Limit	Margin
	Port(s)				dBm			
MHz	a	b	c	d	Σ Port(s) per 30kHz RBW	Conversion to 3 kHz RBW	dBm	dB
2412.0	1.603	-1.029	-1.450	--	4.701	-5.299	8.00	-13.30
2437.0	1.017	-0.333	-0.894	--	4.777	-5.223	8.00	-13.22
2462.0	0.961	-0.871	-1.302	--	4.482	-5.518	8.00	-13.52

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

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

Equipment Configuration for Power Spectral Density - Average			
Variant:	802.11n HT-40	**Duty Cycle (%):**	94
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density (dBm)				Calculated Total Power Spectral Density		Limit	Margin
	Port(s)				dBm			
MHz	a	b	c	d	Σ Port(s) per 30kHz RBW	Conversion to 3 kHz RBW	dBm	dB
2422.0	-4.420	-3.693	-5.013	--	0.430	-9.570	8.00	-17.57
2437.0	-3.880	-5.059	-5.388	--	0.045	-9.955	8.00	-17.96
2452.0	-3.908	-6.080	-5.749	--	-0.365	-10.365	8.00	-18.37

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

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

Equipment Configuration for Power Spectral Density - Average			
Variant:	802.11a	**Duty Cycle (%):**	96
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density (dBm)				Calculated Total Power Spectral Density		Limit	Margin
	Port(s)				dBm			
MHz	a	b	c	d	Σ Port(s) per 30kHz RBW	Conversion to 3 kHz RBW	dBm	dB
5745.0	-2.479	-1.760	-1.874	--	2.745	-7.255	8.00	-15.26
5785.0	-2.510	0.120	-3.464	--	3.095	-6.905	8.00	-14.91
5825.0	-4.301	-0.948	-4.899	--	1.758	-8.242	8.00	-16.24

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

Equipment Configuration for Power Spectral Density - Average			
Variant:	802.11n HT-20	**Duty Cycle (%):**	97
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density (dBm)				Calculated Total Power Spectral Density		Limit	Margin
	Port(s)				dBm			
MHz	a	b	c	d	Σ Port(s) per 30kHz RBW	Conversion to 3 kHz RBW	dBm	dB
5745.0	-3.100	-1.779	-2.972	--	2.196	-7.804	8.00	-15.81
5785.0	-4.514	-1.131	-3.768	--	1.887	-8.113	8.00	-16.11
5825.0	-3.384	-0.624	-4.154	--	2.328	-7.672	8.00	-15.67

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

Equipment Configuration for Power Spectral Density - Average			
Variant:	802.11n HT-40	**Duty Cycle (%):**	94
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density (dBm) Port(s)				Calculated Total Power Spectral Density dBm		Limit	Margin
MHz	a	b	c	d	Σ Port(s) per 30kHz RBW	Conversion to 3 kHz RBW	dBm	dB
5755.0	-8.010	-6.174	-7.160	--	-2.279	-12.279	8.00	-20.28
5795.0	-7.780	-5.293	-7.959	--	-2.060	-12.060	8.00	-20.06

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

Specification

Peak Power Spectral Density Limits

§15.247(e) 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 **RSS-210** §**A8.2(2)** The transmitter power spectral density (into the antenna) shall not be greater than +8 dBm in any 3 kHz band during any time interval of continuous transmission or over 1.0 second if the transmission exceeds 1.0 second duration.

Traceability

Method	Test Equipment Used
Measurements were made per work instruction WI-01 'Measuring RF Output Power'	0158, 0287, 0252, 0313, 0314, 0070, 0116, 0117

5.1.1.4. Conducted Spurious Emissions

Conducted Test Conditions for Transmitter Conducted Spurious and Band-Edge Emissions			
Standard:	FCC CFR 47:15.247	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Max Unwanted Emission Levels	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.247 (d)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	KDB 558074 - D01 DTS Measurement Guidance v01: Section 5.4 Maximum Unwanted Emission Levels		

Test Procedure for Transmitter Conducted Spurious and Band-Edge Emissions Measurement
Transmitter Conducted Spurious and Band-Edge emissions were measured with a spectrum analyzer connected to the antenna terminal using one of the following limits;

1).. Peak Detector - 20 dB below the highest in-band spectral density (i.e. 20 dBc)

2).. Average Detector – 30 dB below the highest in-band spectral density (i.e. 30 dBc)

Selection of the analyzer detector is determined by the client, however the same detector type **must** be used for each of the following tests;

A). Output Power

B).. Power Density

C).. Conducted Spurious Emissions

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.

Equipment Configuration for Conducted Low Band-Edge Emissions - Average			
Variant:	802.11b	**Duty Cycle (%):**	99
Data Rate:	1 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	CCK	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

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			Amended Limit		Margin
	M1 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-59.70	-26.24	2403.70	--	--	-3.700
b	-57.96	-28.60	2403.50	--	--	-3.500
c	-58.26	-29.34	2403.50	--	--	-3.500

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

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

Equipment Configuration for Conducted High Band-Edge Emissions - Average			
Variant:	802.11b	**Duty Cycle (%):**	99
Data Rate:	1 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	CCK	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

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			Amended Limit		Margin
	M3 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-59.90	-25.92	2470.30	--	--	-13.200
b	-69.15	-28.72	2470.80	--	--	-12.700
c	-59.80	-27.67	2470.60	--	--	-12.900

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

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

Equipment Configuration for Transmitter Conducted Spurious Emissions			
Variant:	802.11b	**Duty Cycle (%):**	99
Data Rate:	1 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	CCK	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

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	-63.982	-41.68	-63.286	-43.51	-63.982	-44.33	--	--
2437.0	30.0 - 26000.0	-63.982	-40.87	-63.982	-42.29	-63.982	-42.80	--	--
2462.0	30.0 - 26000.0	-63.982	-41.53	-63.982	-43.52	-63.982	-42.68	--	--

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

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

Equipment Configuration for Conducted Low Band-Edge Emissions - Average			
Variant:	802.11g	**Duty Cycle (%):**	96
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

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			Amended Limit		Margin
	M1 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-39.85	-27.24	2402.70	--	--	-2.700
b	-38.88	-29.08	2402.20	--	--	-2.200
c	-38.52	-29.67	2401.90	--	--	-1.900

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

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

Equipment Configuration for Conducted High Band-Edge Emissions - Average			
Variant:	802.11g	**Duty Cycle (%):**	96
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

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			Amended Limit		Margin
	M3 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-59.90	-28.76	2471.20	--	--	-12.300
b	-69.15	-30.56	2472.20	--	--	-11.300
c	-59.80	-30.42	2472.10	--	--	-11.400

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

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

Equipment Configuration for Transmitter Conducted Spurious Emissions

Variant:	802.11g	**Duty Cycle (%):**	96
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

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	-63.982	-40.16	-63.982	-41.75	-63.982	-42.51	--	--
2437.0	30.0 - 26000.0	-63.982	-39.92	-63.982	-41.00	-63.982	-41.63	--	--
2462.0	30.0 - 26000.0	-63.982	-40.61	-63.982	-41.92	-63.982	-41.59	--	--

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

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

Equipment Configuration for Conducted Low Band-Edge Emissions - Average			
Variant:	802.11n HT-20	**Duty Cycle (%):**	96
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

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			Amended Limit		Margin
	M1 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-39.85	-27.39	2402.40	--	--	-2.400
b	-38.61	-30.32	2401.70	--	--	-1.700
c	-37.78	-30.78	2401.50	--	--	-1.500

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

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

Equipment Configuration for Conducted High Band-Edge Emissions - Average			
Variant:	802.11n HT-20	**Duty Cycle (%):**	96
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

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			Amended Limit		Margin
	M3 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-59.90	-28.34	2471.80	--	--	-11.700
b	-69.15	-30.76	2472.60	--	--	-10.900
c	-59.80	-30.05	2472.30	--	--	-11.200

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

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

Equipment Configuration for Transmitter Conducted Spurious Emissions			
Variant:	802.11n HT-20	**Duty Cycle (%):**	96
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

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	-63.982	-40.63	-63.286	-42.11	-63.982	-42.84	--	--
2437.0	30.0 - 26000.0	-63.982	-38.94	-63.982	-39.97	-63.982	-40.27	--	--
2462.0	30.0 - 26000.0	-63.982	-40.15	-63.982	-41.65	-63.982	-41.18	--	--

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

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

Equipment Configuration for Conducted Low Band-Edge Emissions - Average			
Variant:	802.11n HT-40	**Duty Cycle (%):**	94
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

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			Amended Limit		Margin
	M1 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-41.21	-32.25	2402.00	--	--	-2.000
b	-39.75	-31.99	2402.00	--	--	-2.000
c	-38.77	-33.29	2401.40	--	--	-1.400

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

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

Equipment Configuration for Conducted High Band-Edge Emissions - Average			
Variant:	802.11n HT-40	**Duty Cycle (%):**	94
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

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			Amended Limit		Margin
	M3 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-59.90	-32.09	2471.70	--	--	-11.800
b	-65.62	-33.97	2472.90	--	--	-10.600
c	-59.80	-34.28	2472.90	--	--	-10.600

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).

Equipment Configuration for Transmitter Conducted Spurious Emissions			
Variant:	802.11n HT-40	**Duty Cycle (%):**	94
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

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	-63.982	-40.49	-63.286	-41.15	-63.982	-41.78	--	--
2437.0	30.0 - 26000.0	-63.982	-36.28	-63.982	-37.43	-63.982	-37.67	--	--
2452.0	30.0 - 26000.0	-63.982	-36.53	-63.982	-38.19	-63.982	-38.05	--	--

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

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

Equipment Configuration for Conducted Low Band-Edge Emissions - Average			
Variant:	802.11a	**Duty Cycle (%):**	96
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

Test Measurement Results

Channel Frequency:	5745.0 MHz					
Band-Edge Frequency:	5725.0 MHz					
Test Frequency Range:	5683.0 - 5755.0 MHz					
Port(s)	**Band-Edge Markers and Limit**			**Amended Limit**		**Margin**
	M1 Amplitude (dBm)	**Plot Limit (dBm)**	**M2 Frequency (MHz)**	**Amplitude (dBm)**	**M2A Frequency (MHz)**	**(MHz)**
a	-50.08	-31.91	5733.90	--	--	-8.900
b	-47.64	-30.93	5734.20	--	--	-9.200
c	-50.84	-32.03	5733.90	--	--	-8.900

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

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

Equipment Configuration for Conducted High Band-Edge Emissions - Average			
Variant:	802.11a	**Duty Cycle (%):**	96
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

Test Measurement Results

Channel Frequency:	5825.0 MHz					
Band-Edge Frequency:	5850.0 MHz					
Test Frequency Range:	5815.0 - 5887.0 MHz					
Port(s)	**Band-Edge Markers and Limit**			**Amended Limit**		**Margin**
	M3 Amplitude (dBm)	**Plot Limit (dBm)**	**M2 Frequency (MHz)**	**Amplitude (dBm)**	**M2A Frequency (MHz)**	**(MHz)**
a	-52.38	-33.49	5836.10	--	--	-13.900
b	-51.88	-30.25	5836.10	--	--	-13.900
c	-61.72	-34.09	5836.10	--	--	-13.900

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

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

Equipment Configuration for Transmitter Conducted Spurious Emissions			
Variant:	802.11a	**Duty Cycle (%):**	96
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

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
5745.0	30.0 - 26000.0	-59.990	-48.23	-57.961	-46.94	-59.990	-47.63	--	--
5785.0	30.0 - 26000.0	-58.331	-43.94	-57.607	-41.07	-59.545	-43.15	--	--
5825.0	30.0 - 26000.0	-59.121	-44.74	-57.607	-41.26	-59.545	-45.03	--	--

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

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

Equipment Configuration for Conducted Low Band-Edge Emissions - Average			
Variant:	802.11n HT-20	**Duty Cycle (%):**	97
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

Test Measurement Results

Channel Frequency:	5745.0 MHz					
Band-Edge Frequency:	5725.0 MHz					
Test Frequency Range:	5683.0 - 5755.0 MHz					
Port(s)	**Band-Edge Markers and Limit**			**Amended Limit**		**Margin**
	M1 Amplitude (dBm)	**Plot Limit (dBm)**	**M2 Frequency (MHz)**	**Amplitude (dBm)**	**M2A Frequency (MHz)**	**(MHz)**
a	-49.39	-32.36	5733.80	--	--	-8.800
b	-46.06	-31.19	5733.80	--	--	-8.800
c	-50.08	-32.30	5733.60	--	--	-8.600

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).

Equipment Configuration for Conducted High Band-Edge Emissions - Average			
Variant:	802.11n HT-20	**Duty Cycle (%):**	97
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

Test Measurement Results

Channel Frequency:	5825.0 MHz					
Band-Edge Frequency:	5850.0 MHz					
Test Frequency Range:	5815.0 - 5887.0 MHz					
Port(s)	**Band-Edge Markers and Limit**			**Amended Limit**		**Margin**
	M3 Amplitude (dBm)	**Plot Limit (dBm)**	**M2 Frequency (MHz)**	**Amplitude (dBm)**	**M2A Frequency (MHz)**	**(MHz)**
a	-52.38	-32.63	5836.50	--	--	-13.500
b	-50.14	-29.63	5836.60	--	--	-13.400
c	-61.72	-33.03	5836.50	--	--	-13.500

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

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

Equipment Configuration for Transmitter Conducted Spurious Emissions			
Variant:	802.11n HT-20	**Duty Cycle (%):**	97
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

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
5745.0	30.0 - 26000.0	-59.990	-47.77	-57.961	-47.05	-59.990	-47.27	--	--
5785.0	30.0 - 26000.0	-59.121	-44.81	-57.607	-41.77	-59.545	-43.85	--	--
5825.0	30.0 - 26000.0	-58.717	-43.67	-57.607	-40.03	-59.545	-43.68	--	--

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

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

Equipment Configuration for Conducted Low Band-Edge Emissions - Average			
Variant:	802.11n HT-40	**Duty Cycle (%):**	94
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

Test Measurement Results

Channel Frequency:	5755.0 MHz					
Band-Edge Frequency:	5725.0 MHz					
Test Frequency Range:	5625.0 - 5775.0 MHz					
Port(s)	**Band-Edge Markers and Limit**			**Amended Limit**		**Margin**
	M1 Amplitude (dBm)	**Plot Limit (dBm)**	**M2 Frequency (MHz)**	**Amplitude (dBm)**	**M2A Frequency (MHz)**	**(MHz)**
a	-47.78	-36.52	5733.20	--	--	-8.200
b	-44.03	-35.21	5732.90	--	--	-7.900
c	-45.65	-35.35	5732.90	--	--	-7.900

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

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

Equipment Configuration for Conducted High Band-Edge Emissions - Average			
Variant:	802.11n HT-40	**Duty Cycle (%):**	94
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

Test Measurement Results

Channel Frequency:	5795.0 MHz					
Band-Edge Frequency:	5850.0 MHz					
Test Frequency Range:	5775.0 - 5925.0 MHz					
Port(s)	**Band-Edge Markers and Limit**			**Amended Limit**		**Margin**
	M3 Amplitude (dBm)	**Plot Limit (dBm)**	**M2 Frequency (MHz)**	**Amplitude (dBm)**	**M2A Frequency (MHz)**	**(MHz)**
a	-52.48	-36.14	5816.80	--	--	-33.200
b	-59.02	-33.47	5817.40	--	--	-32.600
c	-61.92	-36.26	5817.10	--	--	-32.900

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

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

Equipment Configuration for Transmitter Conducted Spurious Emissions			
Variant:	802.11n HT-40	**Duty Cycle (%):**	94
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	RF Beam Forming pcb swapped out, bad solder joint on filter		

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
5755.0	30.0 - 26000.0	-59.990	-42.87	-59.545	-41.94	-59.990	-41.63	--	--
5795.0	30.0 - 26000.0	-59.545	-46.23	-59.545	-44.00	-59.545	-46.35	--	--

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).

Specification

Limits Band-Edge

Lower Limit Band-edge	Upper Limit Band-edge	Limit below highest level of desired power
2,400 MHz	2,483.5 MHz	≥ 20 dB
5725 MHz	5850 MHz	

§15.247(d) and RSS-210 §A8.5 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 radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

§15.247(d)
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 §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section §15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(a)).

RSS-210 §A8.5 If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 2 and 3 is not required. In addition, radiated emissions which fall in the restricted bands of Table 1 must also comply with the radiated emission limits specified in Tables 2 and 3.

RSS-Gen §4.7
The search for unwanted emissions shall be from the lowest frequency internally generated or used in the device (local oscillator, intermediate of carrier frequency), or from 30 MHz , whichever is the lowest frequency, to the 5th harmonic of the highest frequency generated without exceeding 40 GHz.

Laboratory Measurement Uncertainty for Conducted Spurious Emissions

Measurement uncertainty	±2.37 dB

Traceability

Method	Test Equipment Used
Measurements were made per work instruction WI-05 'Measurement of Spurious Emissions'	0088, 0158, 0287, 0252, 0313, 0314, 0070, 0116, 0117.

5.1.2. Radiated Emission Testing

Transmitter Radiated Spurious Emissions (above 1 GHz); Peak Field Strength Measurements; and Radiated Band Edge Measurements – Restricted Bands

FCC, Part 15 Subpart C §15.247(d) 15.205; 15.209
Industry Canada RSS-210 §A8.5, §2.2, §2.6
Industry Canada RSS-Gen §4.7

Test Procedure

Radiated emissions above 1 GHz are measured in the anechoic chamber at a 3-meter distance on every azimuth in both horizontal and vertical polarities. The emissions are recorded and maximized as a function of azimuth by rotation through 360° with a spectrum analyzer in peak hold mode. Depending on the frequency band spanned a notch filter and waveguide filter was used to remove the fundamental frequency. The highest emissions relative to the limit are listed for each frequency spanned.

All measurements on any frequency or frequencies over 1 MHz are based on the use of measurement instrumentation employing an average detector function. All measurements above 1 GHz were performed using a minimum resolution bandwidth of 1 MHz.

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Loss, and subtracting Amplifier Gain from the measured reading. All factors are included in the reported data.

FS = R + AF + CORR - FO

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

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

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

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

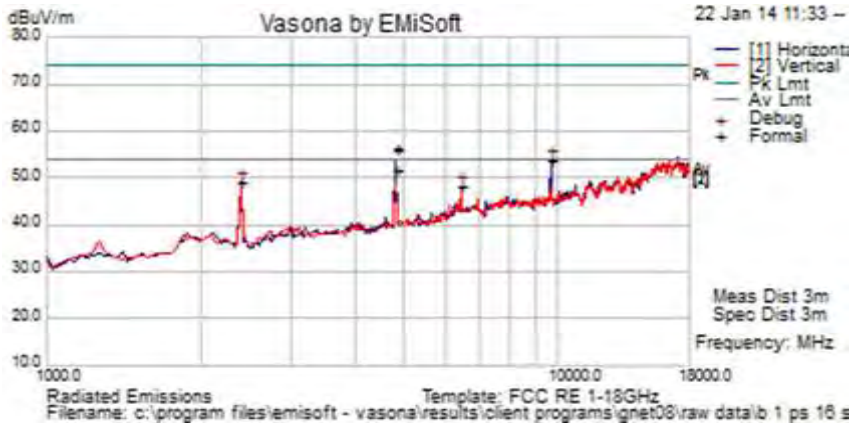
Level (dBμV/m) = 20 * Log (level (μV/m))

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

NOTE: KDB 662911 was implemented for Out-of-Band measurements. Where necessary Option (2) Measure and add 10 log (N) dB was implemented

5.1.2.1. Integral antenna – Spurious Emissions

Test Freq.	2412 MHz	**Engineer**	SB
Variant	802.11b; 1 Mbit/s	**Temp (ºC)**	17.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	16	**Press. (mBars)**	1009
Antenna	Integral	**Duty Cycle (%)**	100
Test Notes 1	EUT w/ POE no external Antenna; 3x3 configuration setup;		
Test Notes 2			

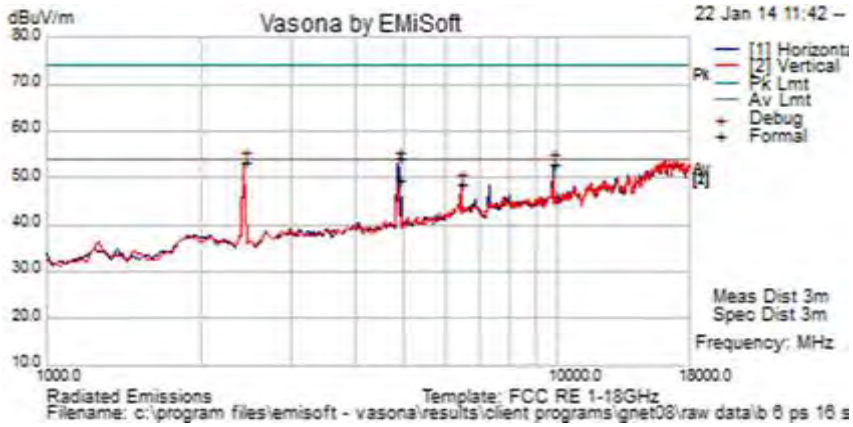


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
4824.098	60.3	5.7	-9.7	56.3	Peak Max	H	133	78	74	-17.72	Pass	RB
4824.098	55.7	5.7	-9.7	51.7	Average Max	H	133	78	54	-2.27	Pass	RB
9653.307	49	8.5	-3.5	53.7	Peak [Scan]	H						NRB
2396.794	56.9	3.9	-11.7	49.2	Peak [Scan]	H						FUND
6450.902	48.5	6.7	-7.1	48.1	Peak [Scan]	V						NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

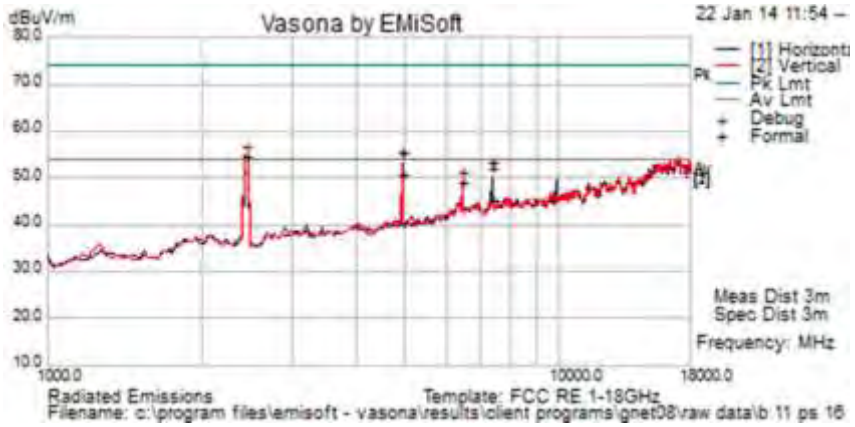
Test Freq.	2437 MHz	**Engineer**	SB
Variant	802.11b; 1 Mbit/s	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	32
Power Setting	16	**Press. (mBars)**	1009
Antenna	Integral	**Duty Cycle (%)**	100
Test Notes 1	EUT w/ POE no external Antenna; 3x3 configuration setup;		
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
4874.048	58.4	5.7	-9.7	54.4	Peak Max	H	100	39	74	-19.6	Pass	RB
4874.048	53.4	5.7	-9.7	49.4	Average Max	H	100	39	54	-4.63	Pass	RB
2430.862	60.9	3.9	-11.6	53.2	Peak [Scan]	V						FUND
9755.51102	48.0	8.6	-3.7	52.8	Peak [Scan]	H						NRB
6450.902	49.1	6.7	-7.1	48.7	Peak [Scan]	V						NRB
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission											
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205											

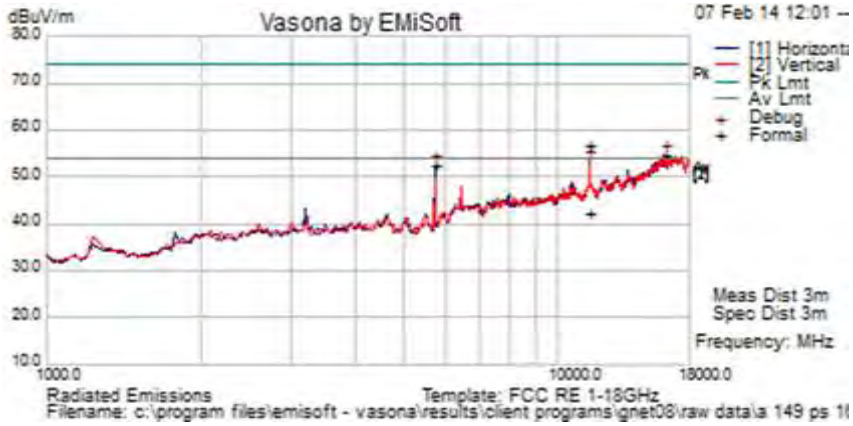
Test Freq.	2462 MHz	**Engineer**	SB
Variant	802.11b; 1 Mbit/s	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	23
Power Setting	16	**Press. (mBars)**	1009
Antenna	Integral	**Duty Cycle (%)**	100
Test Notes 1	EUT w/ POE no external Antenna; 3x3 configuration setup;		
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
4924.098	59.6	5.7	-9.8	55.6	Peak Max	H	107	59	74	-18.42	Pass	RB
7385.371	51.5	7.3	-5.5	53.3	Peak Max	H	119	298	74	-20.67	Pass	RB
4924.098	54.6	5.7	-9.8	50.6	Average Max	H	107	59	54	-3.43	Pass	RB
7385.371	43.6	7.3	-5.5	45.4	Average Max	H	119	298	54	-8.65	Pass	RB
2430.862	62.3	3.9	-11.6	54.6	Peak [Scan]	V						FUND
6450.902	49.5	6.7	-7.1	49.1	Peak [Scan]	V						NRB
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission											
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205											

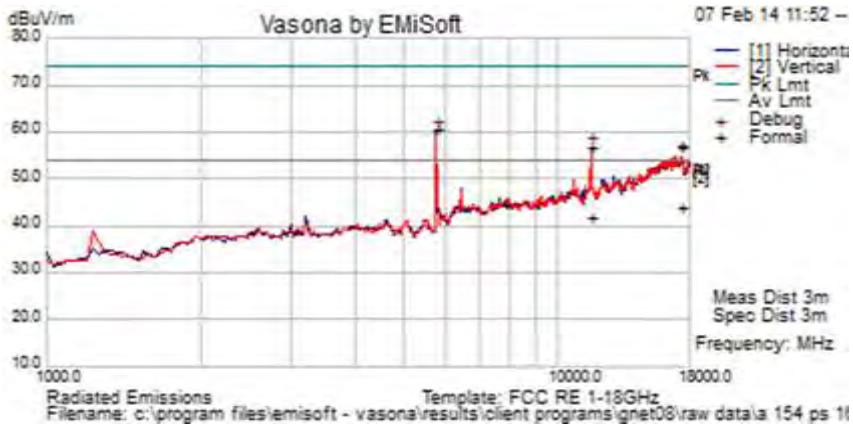
Test Freq.	5745 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbit/s	**Temp (ºC)**	17.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	16	**Press. (mBars)**	1009
Antenna	Integral	**Duty Cycle (%)**	100
Test Notes 1	EUT w/ POE no external Antenna; 3x3 configuration setup;		
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
11483.216	49.4	9.4	-2.0	56.8	Peak Max	H	99	64	74	-17.21	Pass	RB
11483.216	34.9	9.4	-2.0	42.3	Average Max	H	99	64	54	-11.69	Pass	RB
16092.184	43.1	12.4	1.3	56.8	Peak Max	V	169	238	74	-17.22	Pass	Noise Floor
16092.184	30.3	12.4	1.3	44.0	Average Max	V	169	238	54	-10.01	Pass	Noise Floor
5735.471	55.8	6.2	-9.5	52.5	Peak [Scan]	H	150					FUND
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission											
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205											

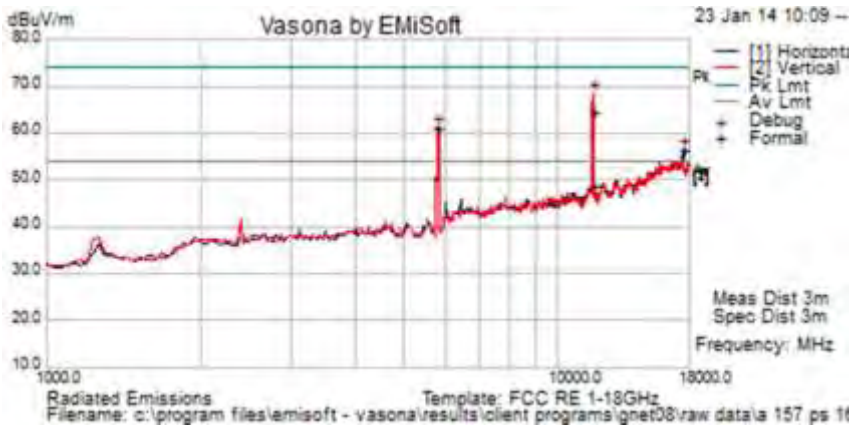
Test Freq.	5785 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbit/s	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	32
Power Setting	16	**Press. (mBars)**	1009
Antenna	Integral	**Duty Cycle (%)**	100
Test Notes 1	EUT w/ POE no external Antenna; 3x3 configuration setup;		
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
11564.88	49.3	9.4	-2.0	56.7	Peak Max	V	120	325	74	-17.33	Pass	RB
17352.705	43.1	12.4	1.3	56.8	Peak Max	V	169	238	74	-17.22	Pass	Noise Floor
11564.880	34.3	9.4	-2.0	41.7	Average Max	V	120	325	54	-12.33	Pass	RB
17352.705	30.3	12.4	1.3	44.0	Average Max	V	169	238	54	-10.01	Pass	Noise Floor
5769.539	63.6	6.3	-9.5	60.4	Peak [Scan]	H	100					FUND
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission											
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205											

Test Freq.	5825 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbit/s	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	23
Power Setting	16	**Press. (mBars)**	1009
Antenna	Integral	**Duty Cycle (%)**	100
Test Notes 1	EUT w/ POE no external Antenna; 3x3 configuration setup;		
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
11648.046	57.4	9.4	-2.3	64.6	Peak Max	V	133	-1	74	-9.41	Pass	RB
17488.978	44.3	12.0	0.3	56.6	Peak Max	H	195	342	74	-17.38	Pass	Noise Floor
11648.046	41.7	9.4	-2.3	48.8	Average Max	V	133	-1	54	-5.19	Pass	RB
17488.978	44.3	12.0	0.3	56.6	Peak Max	H	195	342	74	-17.38	Pass	Noise Floor
5803.607	64.2	6.3	-9.4	61.1	Peak [Scan]	H	100					FUND
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission											
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205											

5.1.2.2. Band-Edge - Spurious Emissions

2.4 GHz Frequency Band

Peak Limit 74.0 dBµV, Peak Limit 54.0 dBµV

Integral Antenna

	Band-Edge 2390 MHz			Band-Edge 2483.5 MHz		
	dBµV		Power Setting	dBµV		Power Setting
Operational Mode	Peak	Average		Peak	Average	
b	45.34	34.34	16.0	45.71	32.80	15.0
g	57.74	39.09	16.0	57.19	35.86	14.0
n HT-20	63.60	42.46	16.0	62.84	37.90	14.0
n HT-40	67.75	48.69	16.0	70.94	51.00	14.0

5.8 GHz Frequency Band – Restricted Band-edge @ 5460 MHz

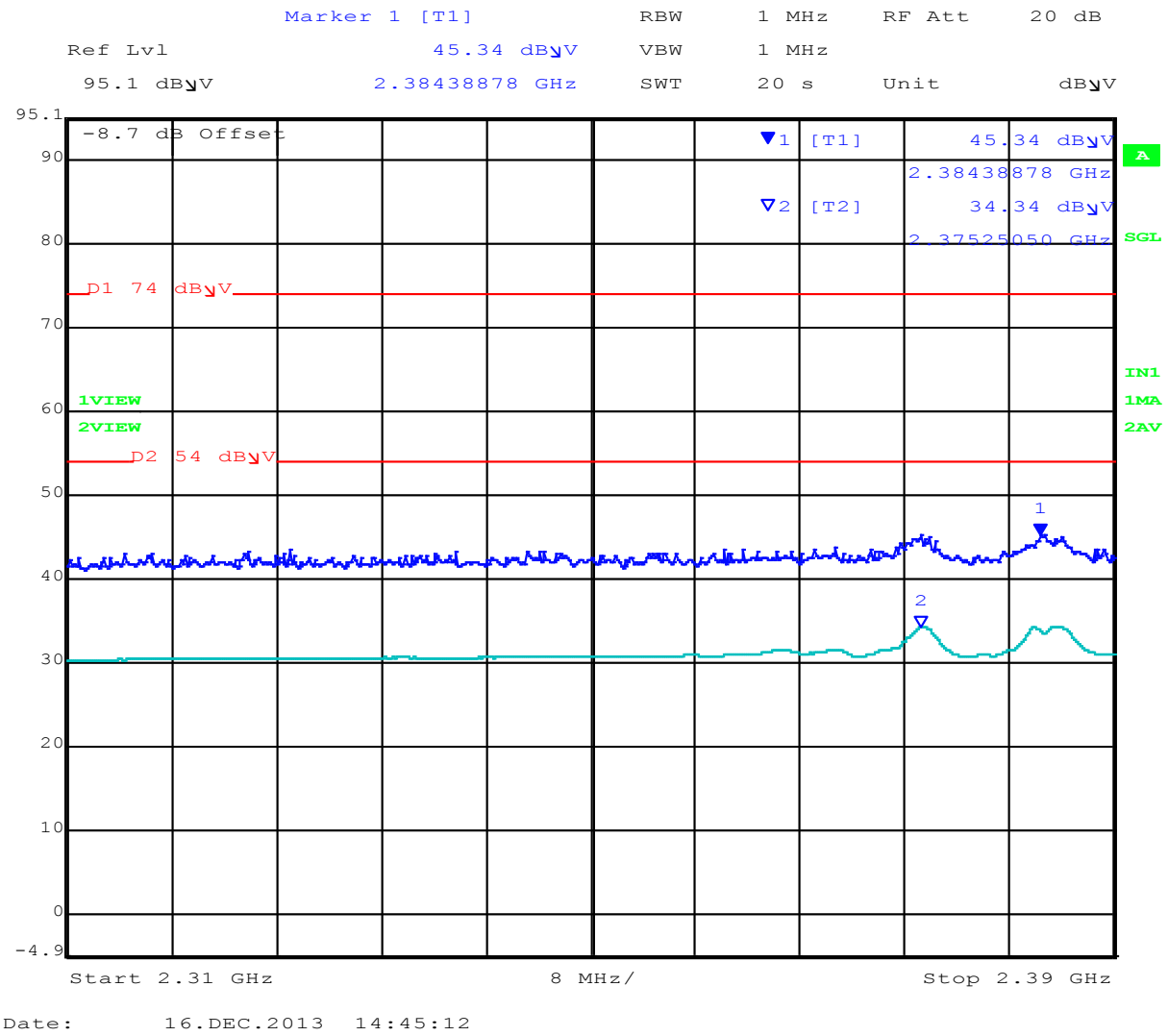
Peak Limit 74.0 dBµV, Peak Limit 54.0 dBµV

Integral Antenna

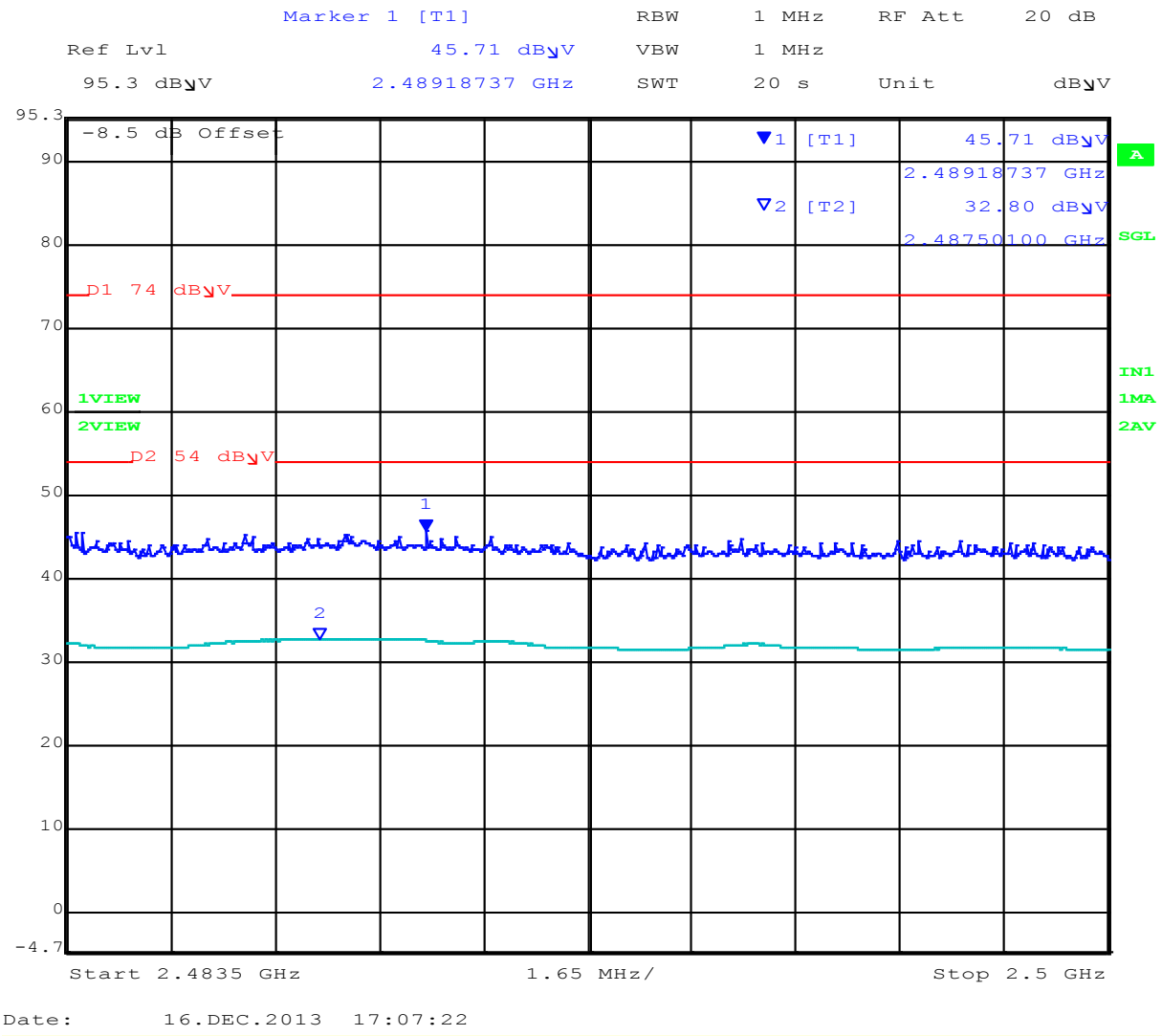
	5460 MHz		
	dBµV		Power Setting
Operational Mode	Peak	Average	
a	49.60	37.04	24.0
n HT-20	49.96	36.86	24.0
n HT-40	50.39	36.86	24.0

2.4 GHz Band-Edge

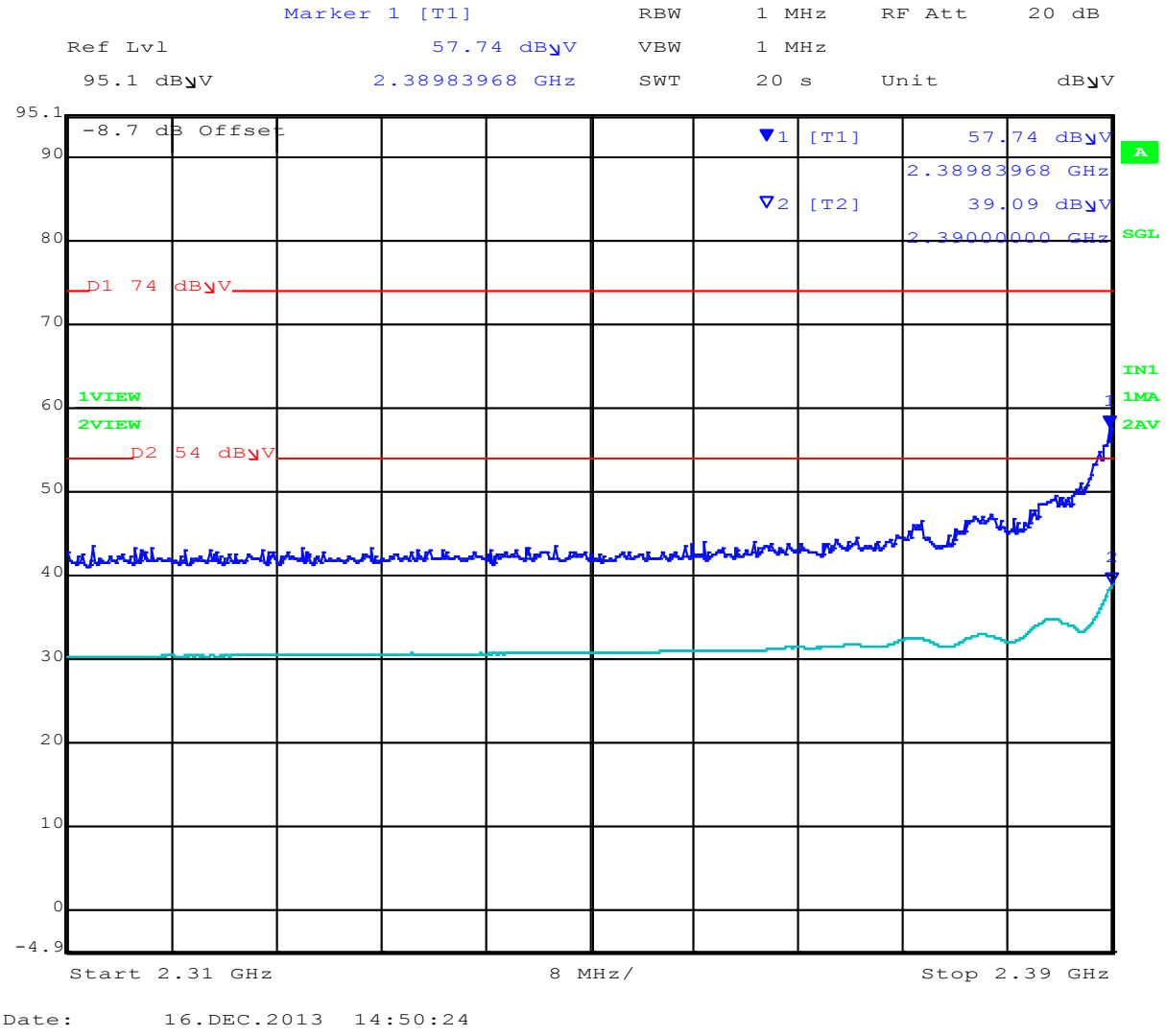
802.11b 2390 MHz Band-Edge



802.11b 2483.5 MHz Band-Edge



802.11g 2390 MHz Band-Edge



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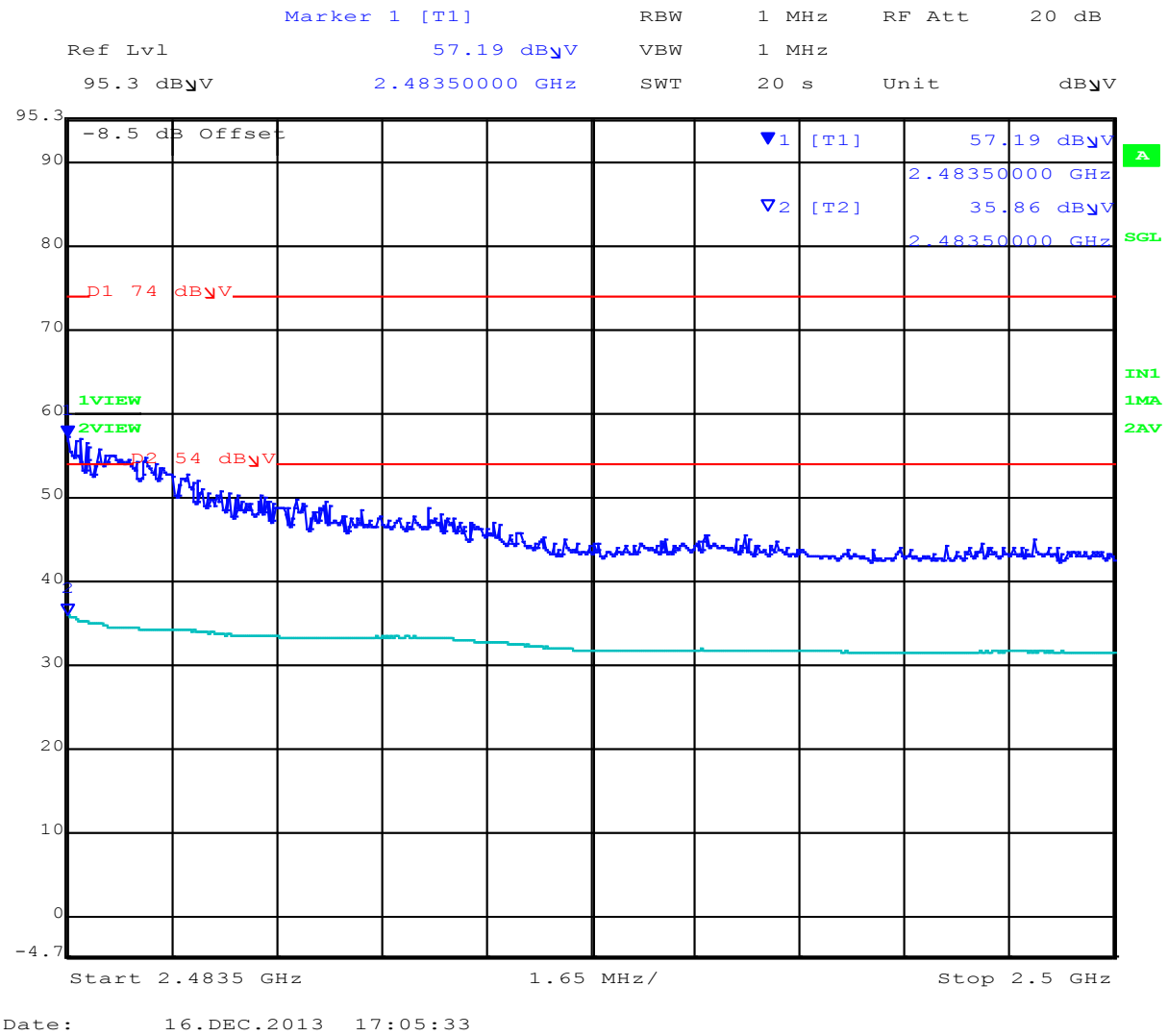
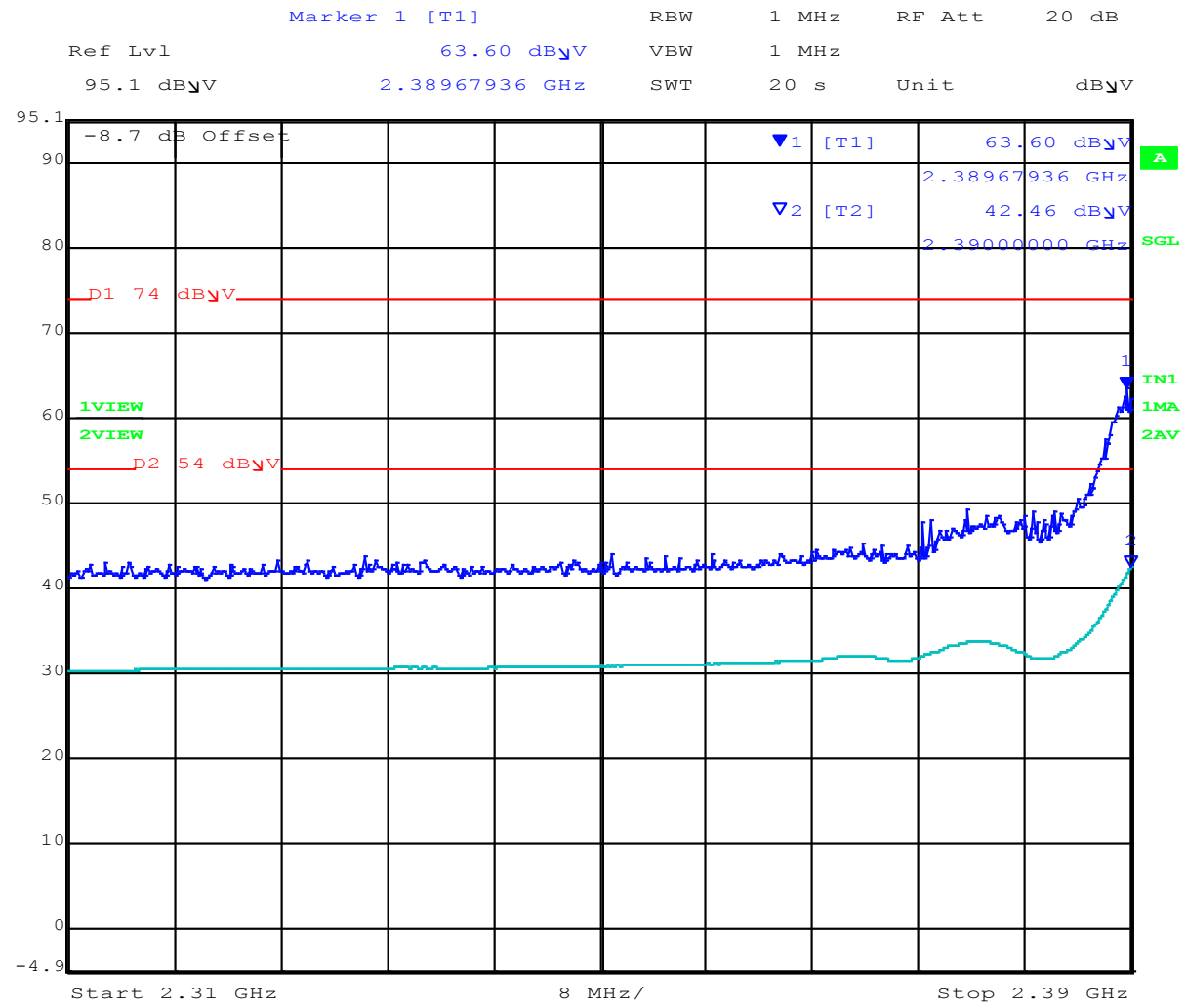
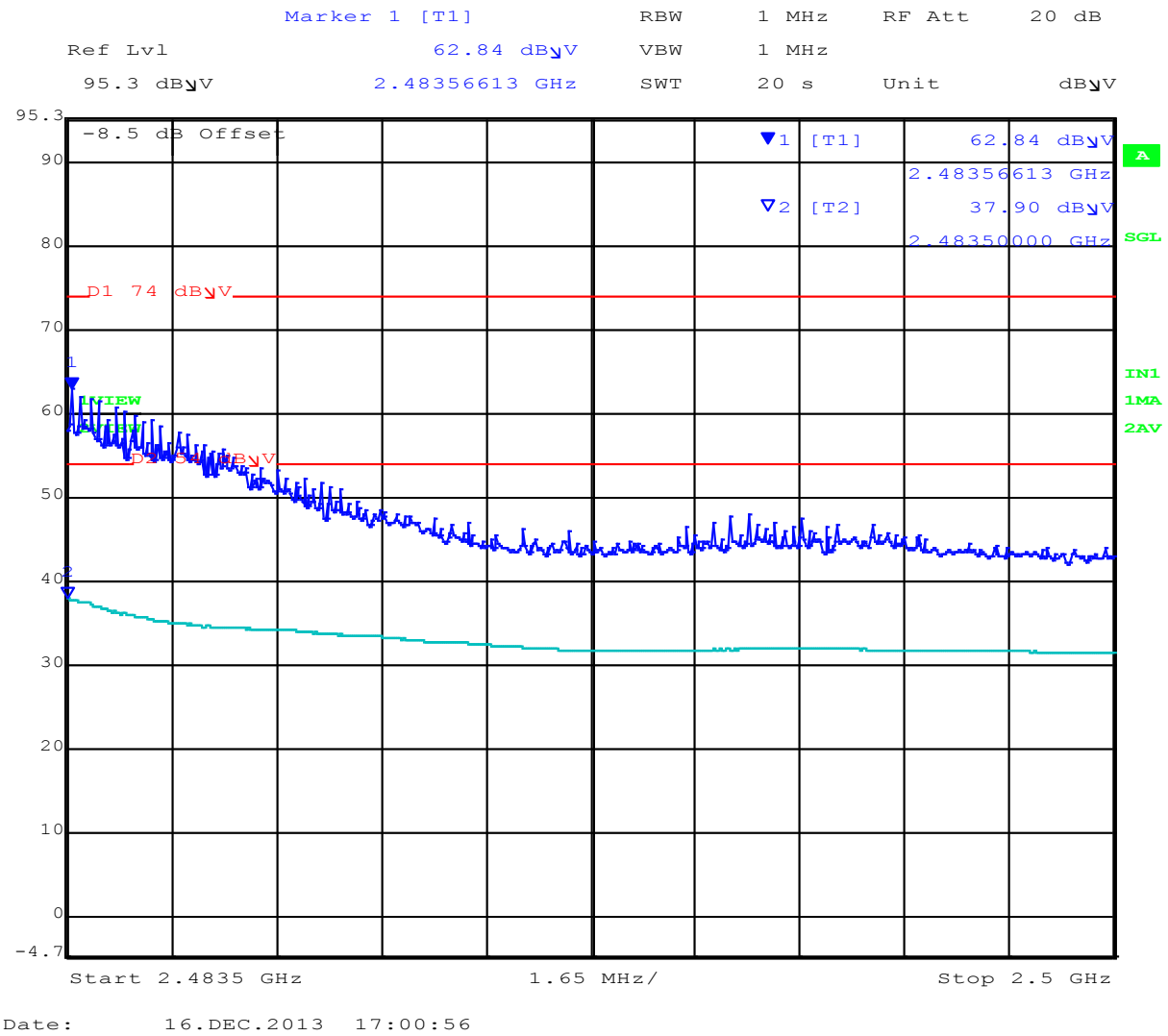
802.11g 2483.5 MHz Band-Edge



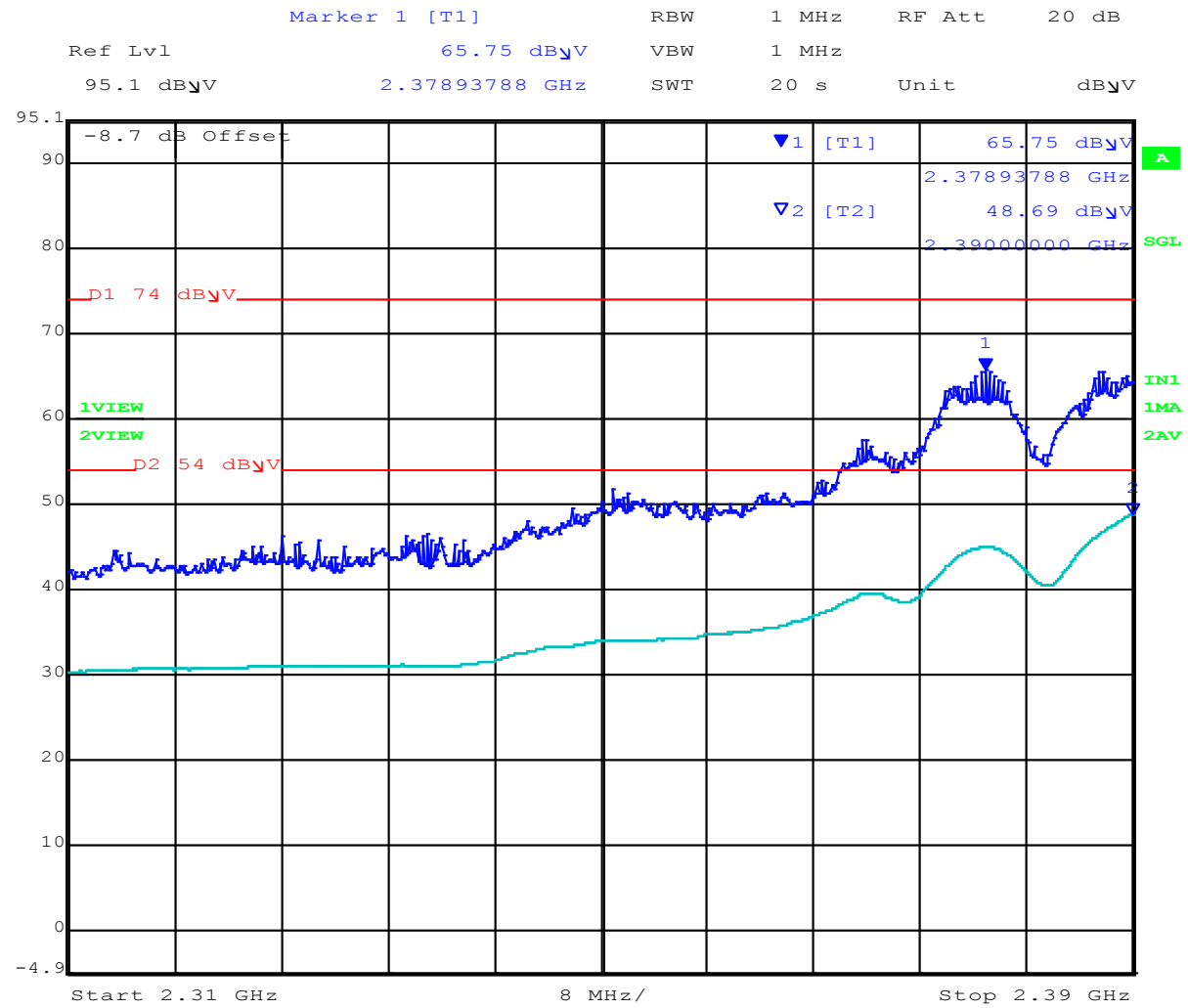
802.11n HT-20 2390 MHz Band-Edge



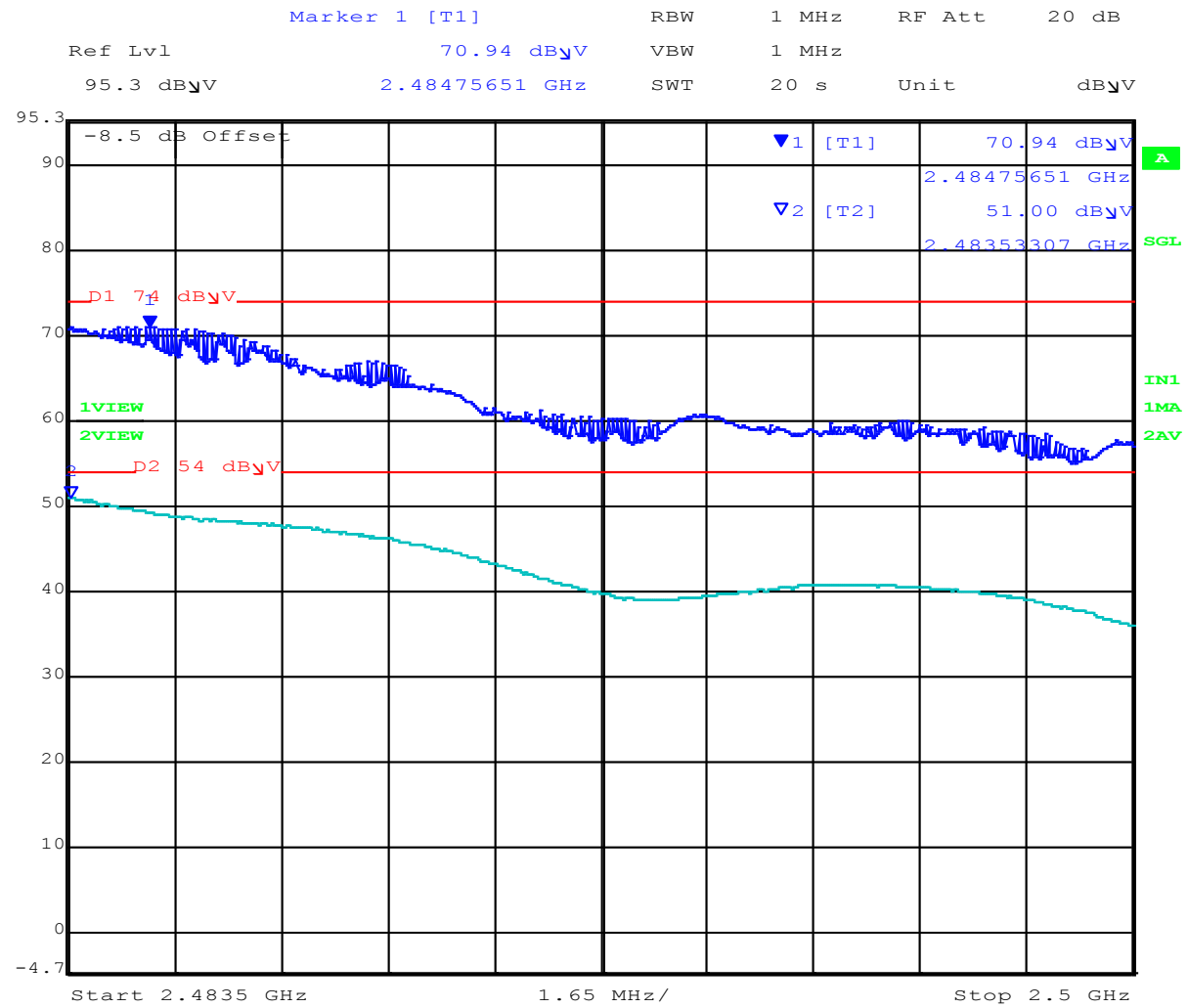
802.11n HT-20 2483.5 MHz Band-Edge



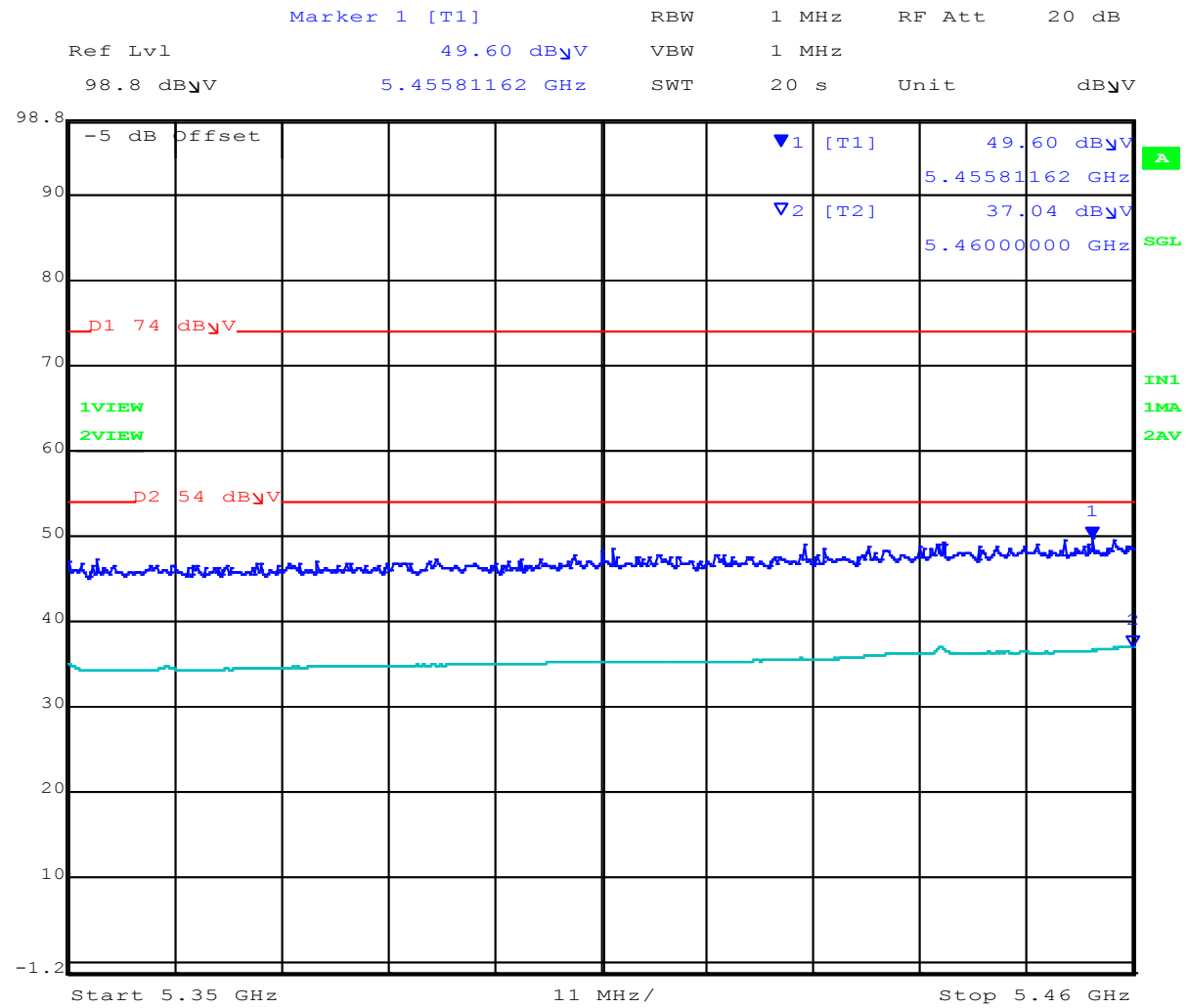
802.11n HT-40 2390 MHz Band-Edge



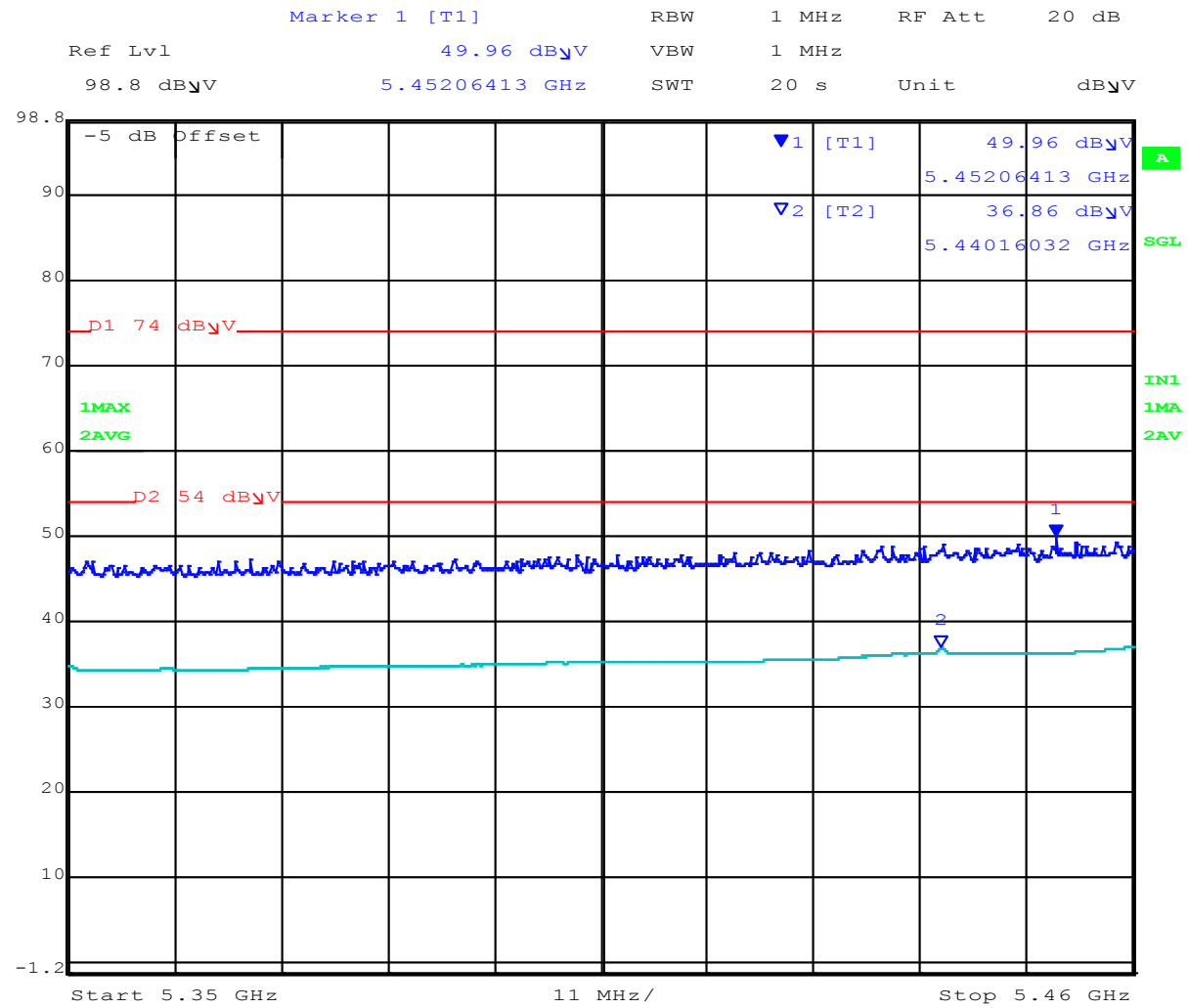
802.11n HT-40 2483.5 MHz Band-Edge



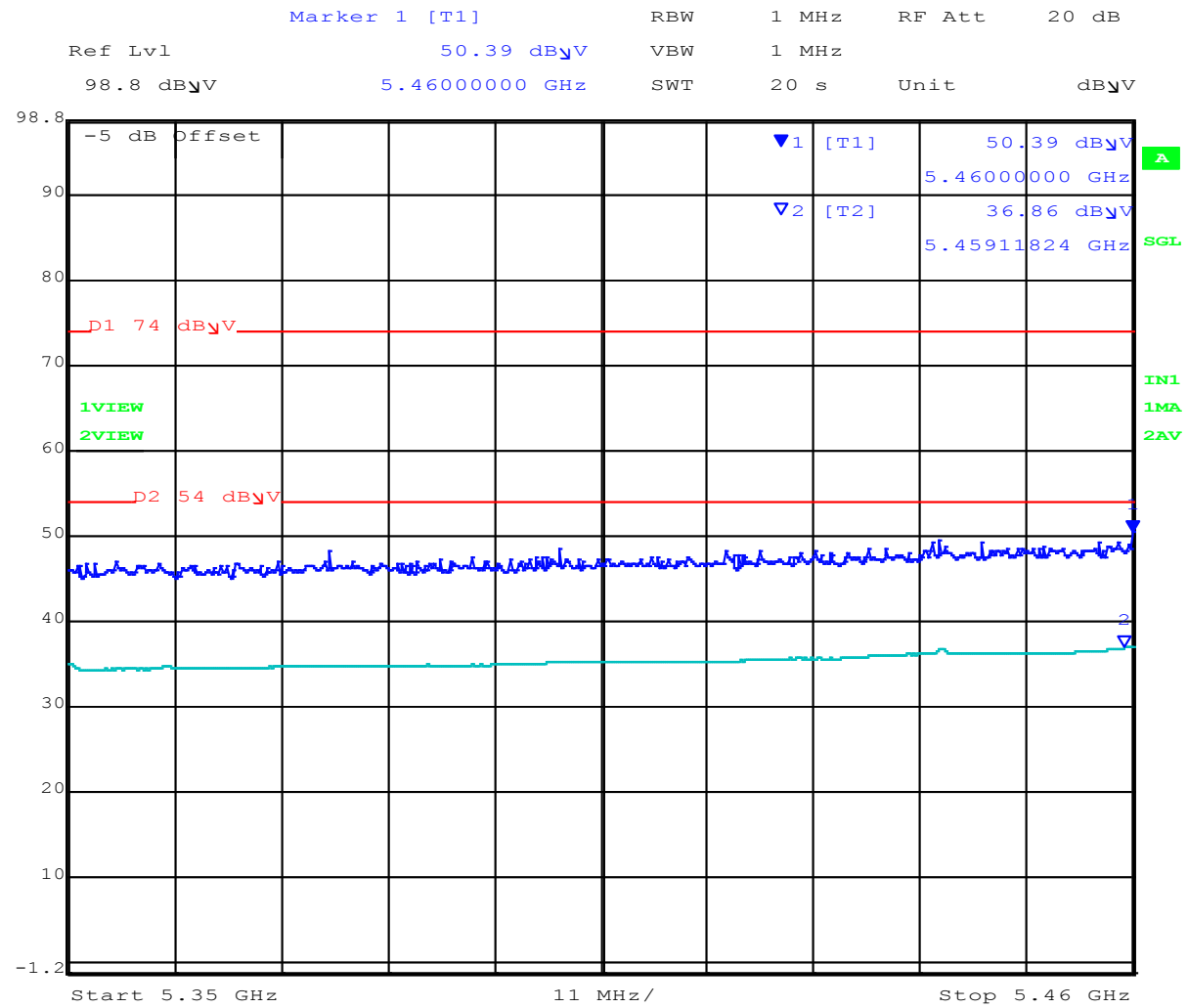
802.11a 5460 MHz Band-Edge (Tranmission Channel 5745 MHz)



802.11n HT-20 5460 MHz Band-Edge (Tranmission Channel 5745 MHz)



802.11n HT-40 5460 MHz Band-Edge (Tranmission Channel 5755 MHz)



Specification Limits

FCC §15.247(d) and RSS-210 §A8.5 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 radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

FCC §15.247(d)
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 §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section §15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(a)).

IC RSS-210 §A8.5 If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 2 and 3 is not required. In addition, radiated emissions which fall in the restricted bands of Table 1 must also comply with the radiated emission limits specified in Tables 2 and 3.

IC RSS-Gen §4.7
The search for unwanted emissions shall be from the lowest frequency internally generated or used in the device (local oscillator, intermediate of carrier frequency), or from 30 MHz , whichever is the lowest frequency, to the 5th harmonic of the highest frequency generated without exceeding 40 GHz.

FCC §15.205 (a) Except as shown in paragraph (d) of 15.205 (a), only spurious emissions are permitted in any of the frequency bands listed.

FCC §15.205 (a) Except as shown in paragraphs (d) and (e) of this section, the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

FCC §15.209 (a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table.

§15.209 (a) Limit Matrix

Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance (meters)
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Laboratory Measurement Uncertainty for Radiated Emissions

Measurement uncertainty	+5.6/ -4.5 dB

Traceability

Method	Test Equipment Used
Measurements were made per work instruction WI-03 'Measurement of Radiated Emissions'	0088, 0158, 0134, 0304, 0311, 0315, 0310, 0312

5.1.2.3. Digital Emissions (0.03-1 GHz)

FCC, Part 15 Subpart C §15.205/ §15.209
Industry Canada RSS-210 §2.2

Test Procedure

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

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

Field Strength Calculation

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

$$FS = R + AF + CORR$$

where:

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

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

$$FS = 51.5 + 8.5 + 1.3 - 26.0 + 1 = 36.3 dB\mu V/m$$

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

$$Level\ (dB\mu V/m) = 20 * Log\ (level\ (\mu V/m))$$

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

Test Freq.	5745 MHz	**Engineer**	SB
Variant	Digital Emissions	**Temp (ºC)**	17.5
Freq. Range	30 MHz - 1000 MHz	**Rel. Hum.(%)**	33
Power Setting	18	**Press. (mBars)**	1011
Antenna	Integral		
Test Notes 1	Integral antenna used however, external antenna with cables setup for worse case.		
Test Notes 2			

Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
46.785	57.8	3.7	-21.8	39.8	Quasi Max	V	114	218	40	-0.2	Pass	
30.123	46.3	3.5	-9.8	39.9	Quasi Max	V	98	164	40	-0.1	Pass	
106.919	57.9	4.1	-19.4	42.6	Quasi Max	V	106	-1	43.5	-0.9	Pass	
147.074	53.9	4.4	-18.8	39.5	Quasi Max	H	148	4	43.5	-4.0	Pass	
625.009	45.6	6.3	-11.0	41.0	Quasi Max	V	102	361	46	-5.1	Pass	

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

Specification

Limits

§15.205 (a) Except as shown in paragraph (d) of 15.205 (a), only spurious emissions are permitted in any of the frequency bands listed.

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

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

§15.209 (a) and **RSS-Gen §2.2** Limit Matrix

Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance (meters)
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Laboratory Measurement Uncertainty for Radiated Emissions

Measurement uncertainty	+5.6/ -4.5 dB

Traceability

Method	Test Equipment Used
Measurements were made per work instruction WI-03 'Measurement of Radiated Emissions'	0088, 0158, 0134, 0304, 0311, 0315, 0310, 0312

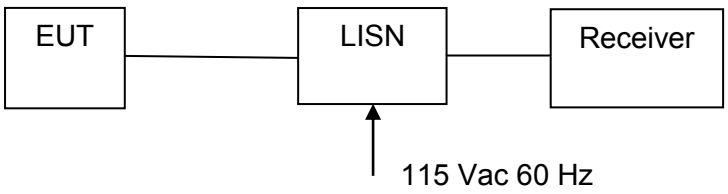
5.1.3. AC Wireline Conducted Emissions (150 kHz – 30 MHz)

FCC, Part 15 Subpart C §15.207
Industry Canada RSS-Gen §7.2.2

Test Procedure

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

Test Measurement Set up

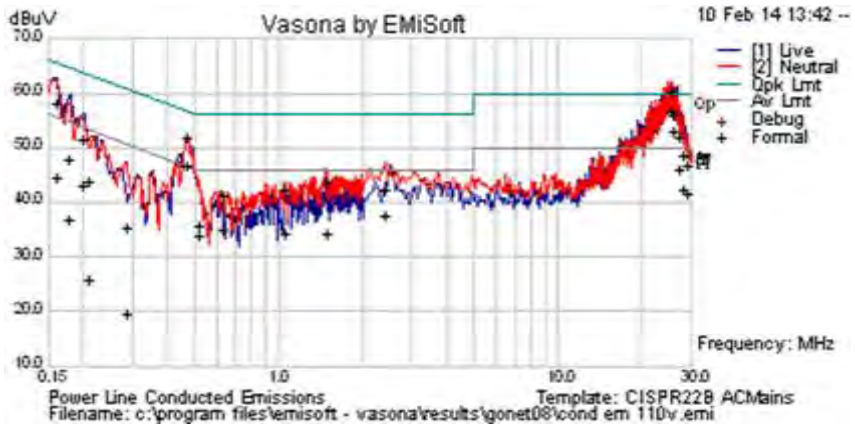


Measurement set up for AC Wireline Conducted Emissions Test

Measurement Results for AC Wireline Conducted Emissions (150 kHz – 30 MHz)

Ambient conditions.
Temperature: 17 to 23 °C Relative humidity: 31 to 57 % Pressure: 999 to 1012 mbar

Test Freq.	N/A	**Engineer**	JMH
Variant	AC Line Emissions	**Temp (ºC)**	18
Freq. Range	0.150 MHz - 30 MHz	**Rel. Hum.(%)**	54
Power Setting	Not Applicable	**Press. (mBars)**	1011
Antenna	Not Applicable		
Test Notes 1	110V 60 Hz		
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	Factors dB	Level dBuV	Measurement Type	Line	Limit dBuV	Margin dB	Pass /Fail	Comments
0.158	40.9	9.9	0.1	50.9	Peak [Scan]	Live	55.57	-4.7	Pass	
0.471	30.9	9.9	0.1	40.9	Quasi Peak	Live	56.5	-15.6	Pass	
0.471	29.0	9.9	0.1	39.0	Average	Live	46.5	-7.5	Pass	
21.867	34.9	10.6	0.8	46.3	Quasi Peak	Live	60	-13.8	Pass	
21.867	31.9	10.6	0.8	43.3	Average	Live	50	-6.8	Pass	
24.332	38.8	10.6	0.9	50.3	Quasi Peak	Live	60	-9.7	Pass	
24.332	37.1	10.6	0.9	48.6	Average	Live	50	-1.4	Pass	
24.945	35.5	10.6	0.9	47.0	Average	Live	50	-3.0	Pass	
24.945	37.5	10.6	0.9	49.0	Quasi Peak	Live	60	-11.0	Pass	
25.564	37.3	10.6	0.9	48.8	Quasi Peak	Neutral	60	-11.2	Pass	
25.564	33.1	10.6	0.9	44.6	Average	Neutral	50	-5.4	Pass	
26.177	34.9	10.7	0.9	46.5	Quasi Peak	Live	60	-13.5	Pass	
26.177	32.4	10.7	0.9	44.0	Average	Live	50	-6.1	Pass	
27.104	34.3	10.7	0.9	45.9	Quasi Peak	Live	60	-14.1	Pass	
27.104	31.6	10.7	0.9	43.2	Average	Live	50	-6.8	Pass	
26.796	33.4	10.7	0.9	45.0	Peak [Scan]	Live	50	-5.0	Pass	

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

Specification

Limit

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

RSS-Gen §7.2.2
The radio frequency voltage that is conducted back into the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in the table below. The tighter limit applies at the frequency range boundaries.

§15.207 (a) and **RSS-Gen §7.2.2** Limit Matrix
The lower limit applies at the boundary between frequency ranges

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

* Decreases with the logarithm of the frequency

Laboratory Measurement Uncertainty for Conducted Emissions

Measurement uncertainty	±2.64 dB

Traceability

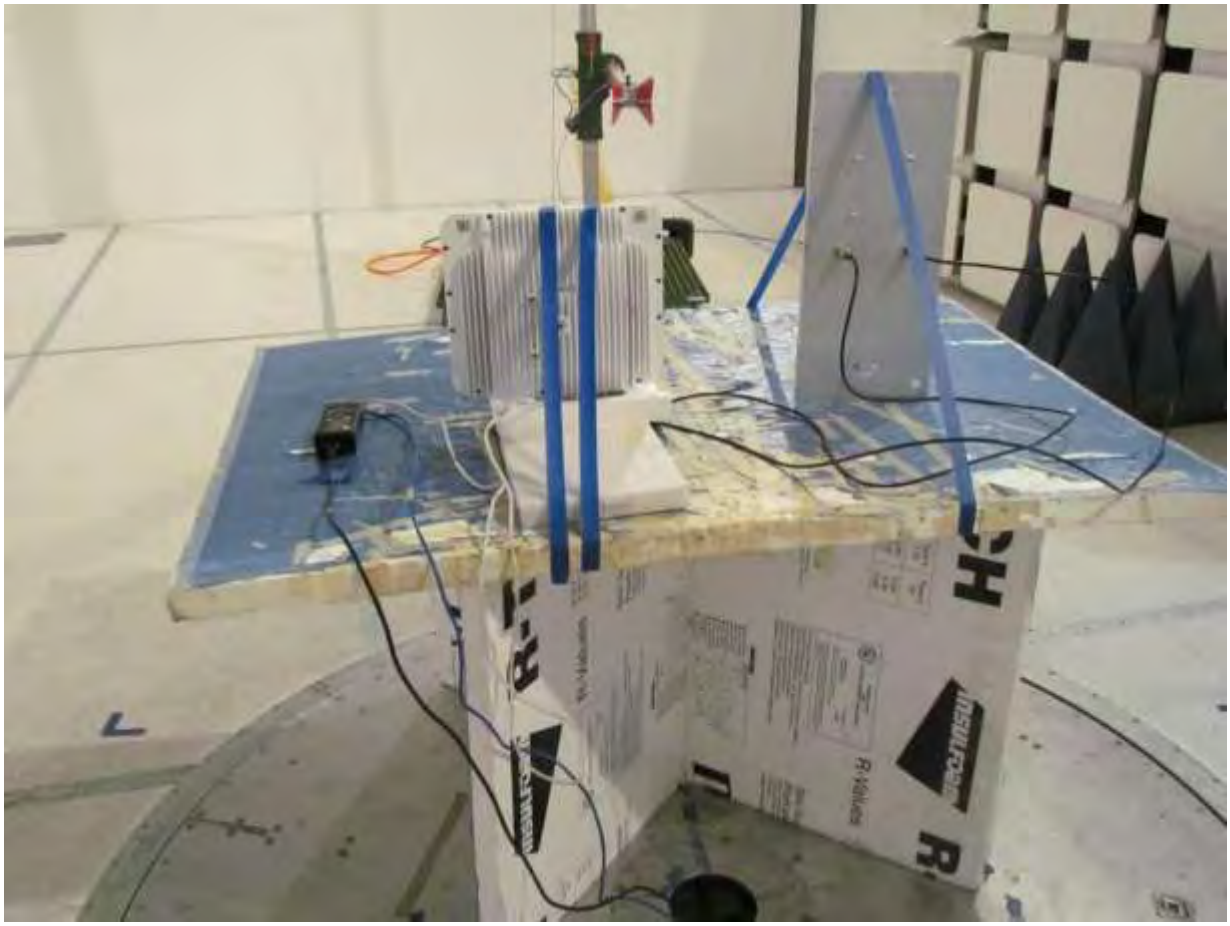
Method	Test Equipment Used
Measurements were made per work instruction WI-EMC-01 'Measurement of Conducted Emissions'	0158, 0184, 0287, 0190, 0293, 0307

6. PHOTOGRAPHS

6.1. Conducted Test Setup

6.2. Test Setup - Digital Emissions <1 GHz

6.3. Test Setup - Digital Emissions >1 GHz



6.4. ac Wireline Test Setup

7. TEST EQUIPMENT

Asset #	Instrument	Manufacturer	Part #	Serial #	Calibration Due Date
0117	Power Sensor	Hewlett Packard	8487D	3318A00371	18th Oct 14
0223	Power Meter	Hewlett Packard	EPM-442A	US37480256	18th Oct 14
0376	Power Sensor	Agilent	U2000A	MY51440005	28th Oct 14
0390	Power Sensor	Agilent	U2002A	MY50000103	17th Oct 14
0158	Barometer /Thermometer	Control Co.	4196	E2846	6th Dec 14
0193	EMI Receiver	Rhode & Schwartz	ESI 7	838496/007	2nd Dec 13
0287	EMI Receiver	Rhode & Schwartz	ESIB40	100201	31st Jul 14
0378	EMI Receiver	Rhode & Schwartz	ESIB40	100107/040	17th Jul 14
0338	30 - 3000 MHz Antenna	Sunol	JB3	A052907	14th Aug 14
0399	1-18 GHz Horn Antenna	EMCO	3117	00154575	10th Oct 14
0252	SMA Cable	Megaphase	Sucoflex 104	None	N/A
0310	2m SMA Cable	Micro-Coax	UFA210A-0-0787-3G03G0	209089-001	N/A
0312	3m SMA Cable	Micro-Coax	UFA210A-1-1181-3G0300	209092-001	N/A
0314	30dB N-Type Attenuator	ARRA	N9444-30	1623	N/A
0359	DFS Test System	Aeroflex	PXI-1042	300001/004	21st Oct 14
0299	DFS Test Software	Aeroflex	PXIModule	Version 7.1.0	N/A
0502	EMC Test Software	EMISoft	Vasona	5.0051	N/A
0503	RF Conducted Test Software	National Instruments	Labview	Version 8.2	N/A
0398	RF Conducted Test Software	MiCOM Labs ATS	--	Version 1.8	N/A
0380	RF Switch	MiCOM Labs	MIC001	MIC001	20th March 14

APPENDIX

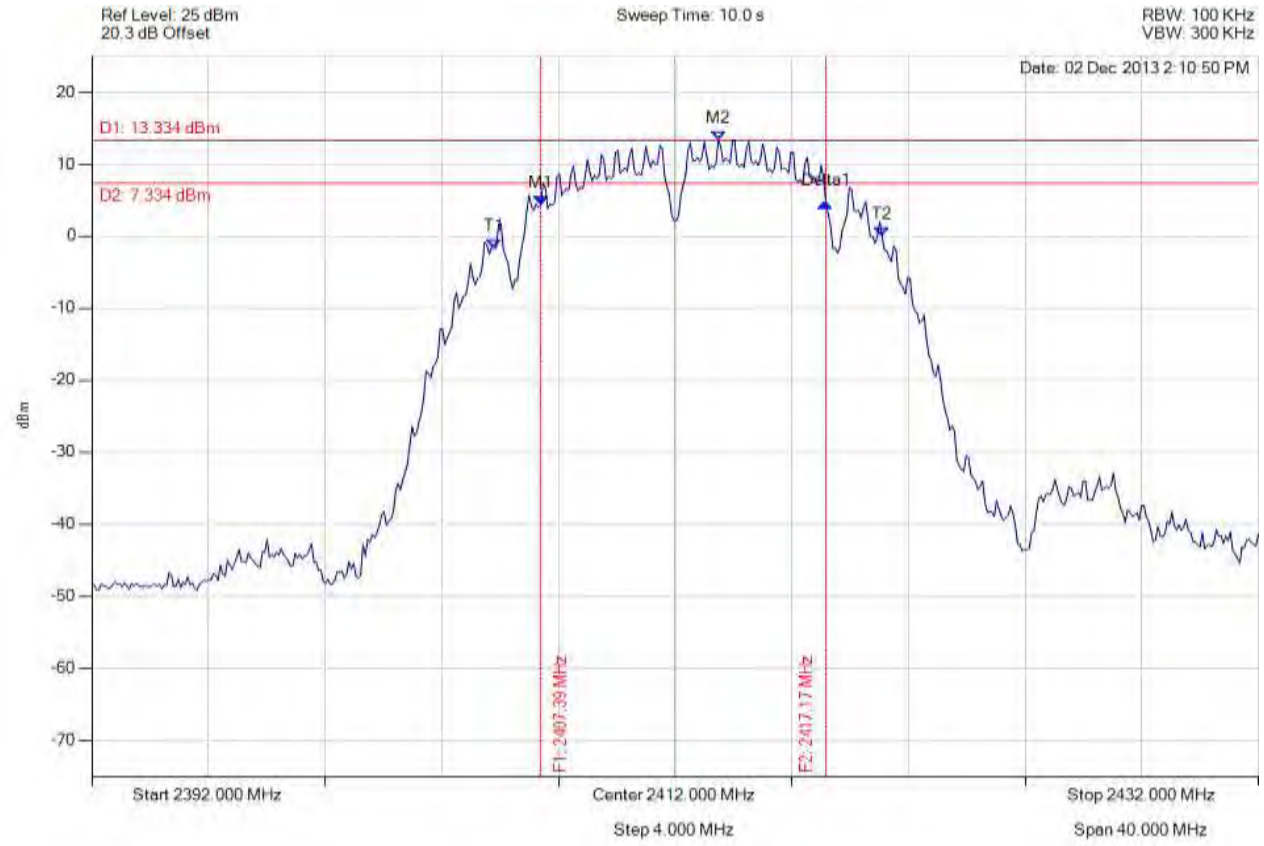
A. SUPPORTING INFORMATION

A.1. CONDUCTED TEST PLOTS

A.1.1. 6 dB & 99% Bandwidth

6 dB & 99% BANDWIDTH

Variant: 802.11b, Channel: 2412.00 MHz, Chain a, Temp: Ambient, Voltage: 48 Vdc

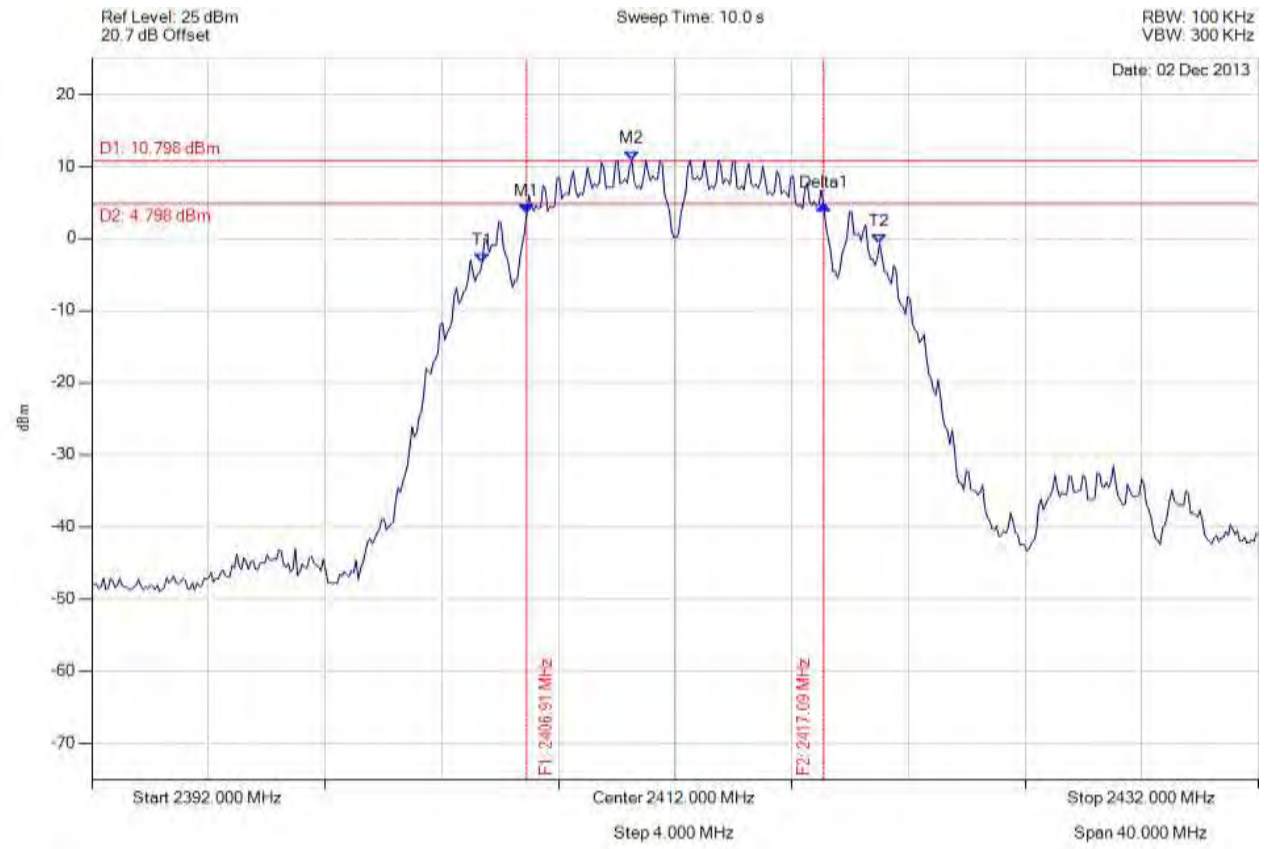


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2407.391 MHz : 4.329 dBm M2 : 2413.483 MHz : 13.334 dBm Delta1 : 9.780 MHz : 0.362 dB T1 : 2405.788 MHz : -1.660 dBm T2 : 2419.094 MHz : 0.032 dBm OBW : 13.307 MHz	Measured 6 dB Bandwidth: 9.780 MHz Limit: ≥500.0 kHz Margin: -9.28 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11b, Channel: 2412.00 MHz, Chain b, Temp: Ambient, Voltage: 48 Vdc

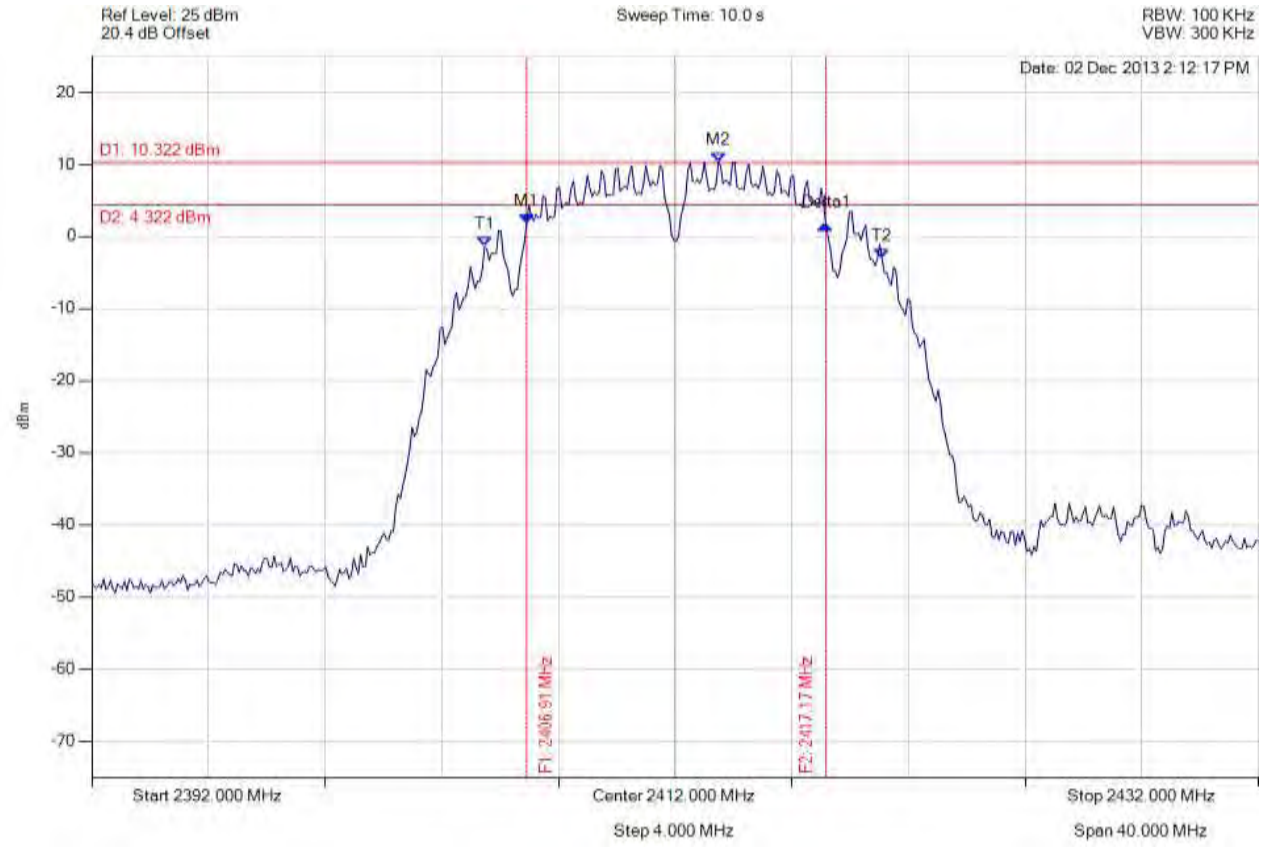


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2406.910 MHz : 3.473 dBm M2 : 2410.517 MHz : 10.798 dBm Delta1 : 10.180 MHz : 1.216 dB T1 : 2405.387 MHz : -3.367 dBm T2 : 2419.014 MHz : -0.692 dBm OBW : 13.627 MHz	Measured 6 dB Bandwidth: 10.180 MHz Limit: ≥500.0 kHz Margin: -9.68 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11b, Channel: 2412.00 MHz, Chain c, Temp: Ambient, Voltage: 48 Vdc

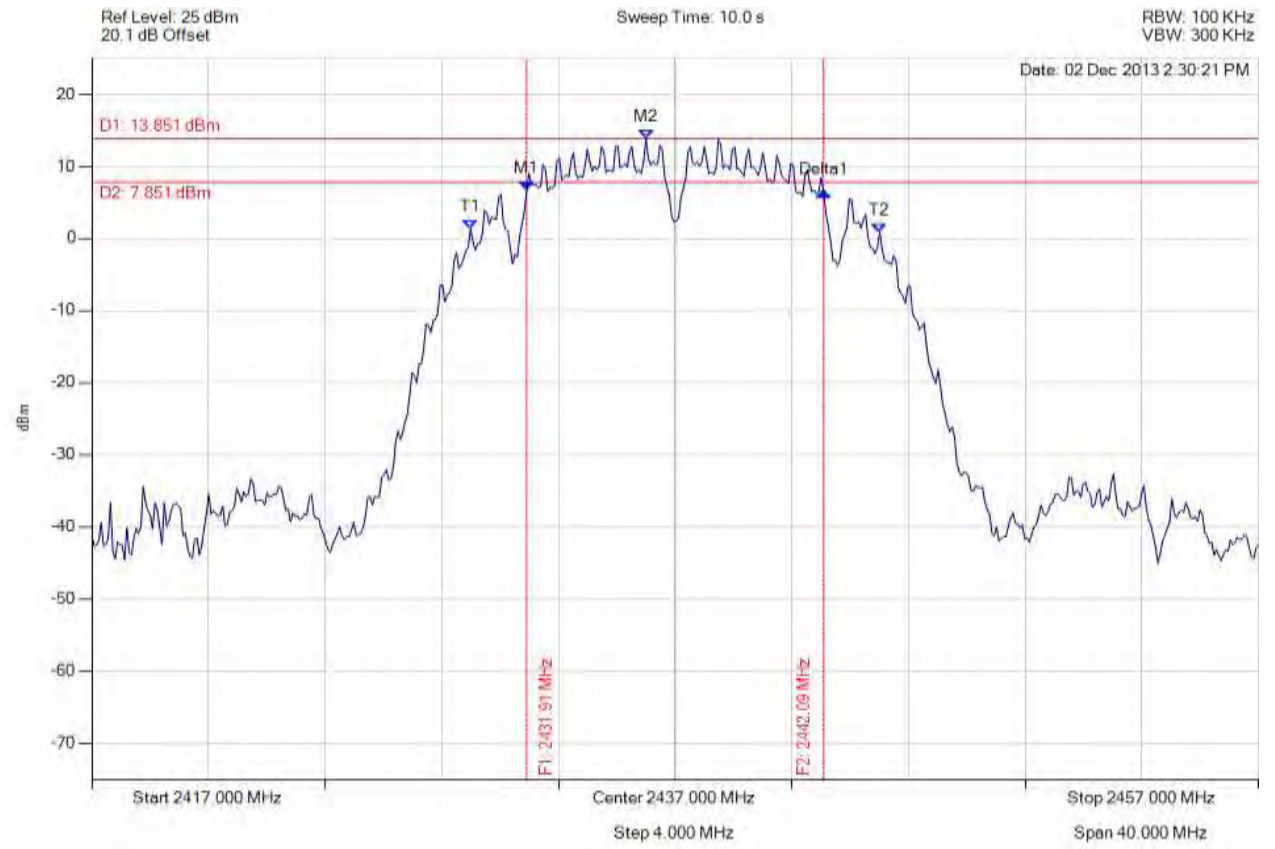


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2406.910 MHz : 1.858 dBm M2 : 2413.483 MHz : 10.322 dBm Delta1 : 10.261 MHz : -0.285 dB T1 : 2405.467 MHz : -1.435 dBm T2 : 2419.094 MHz : -3.035 dBm OBW : 13.627 MHz	Measured 6 dB Bandwidth: 10.261 MHz Limit: ≥500.0 kHz Margin: -9.76 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11b, Channel: 2437.00 MHz, Chain a, Temp: Ambient, Voltage: 48 Vdc

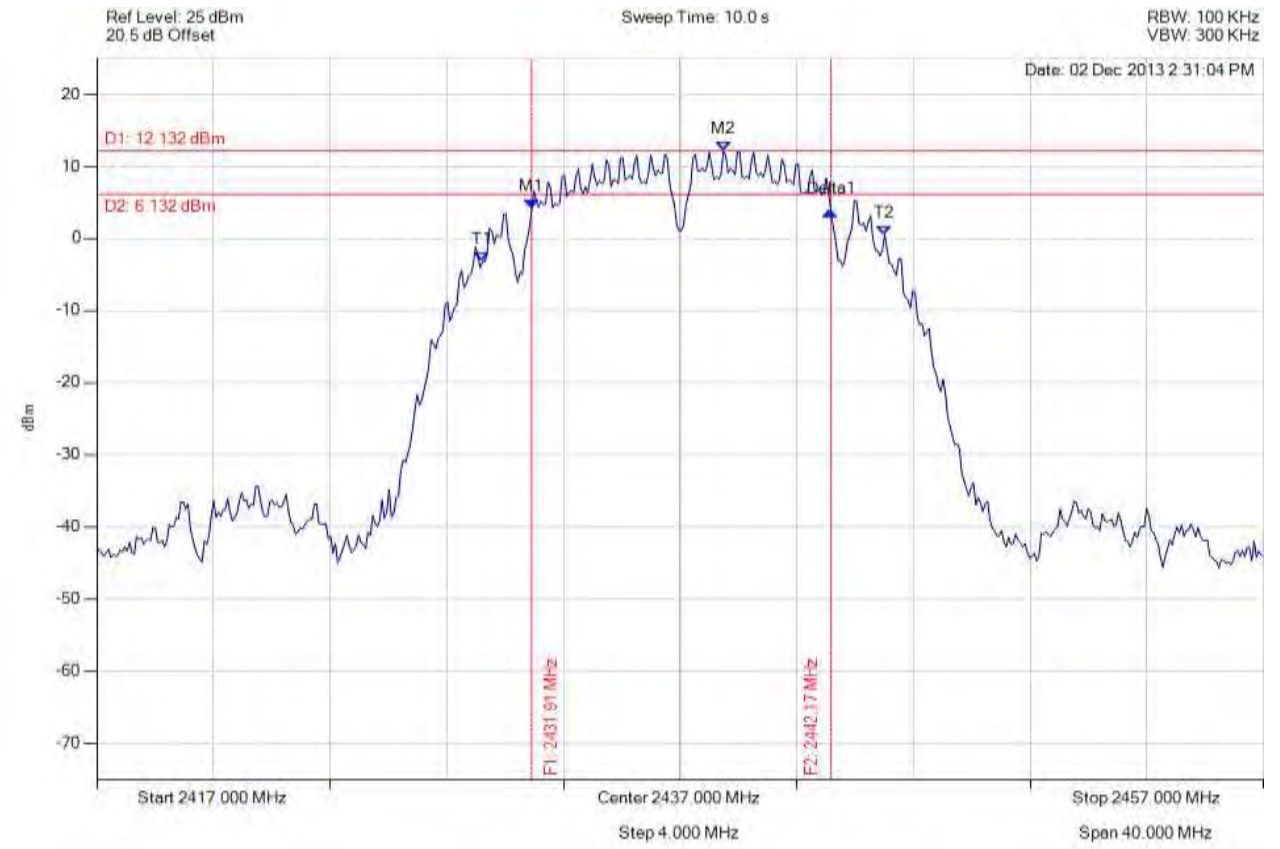


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2431.910 MHz : 6.595 dBm M2 : 2435.998 MHz : 13.851 dBm Delta1 : 10.180 MHz : -0.191 dB T1 : 2429.986 MHz : 1.339 dBm T2 : 2444.014 MHz : 0.823 dBm OBW : 14.028 MHz	Measured 6 dB Bandwidth: 10.180 MHz Limit: ≥500.0 kHz Margin: -9.68 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11b, Channel: 2437.00 MHz, Chain b, Temp: Ambient, Voltage: 48 Vdc

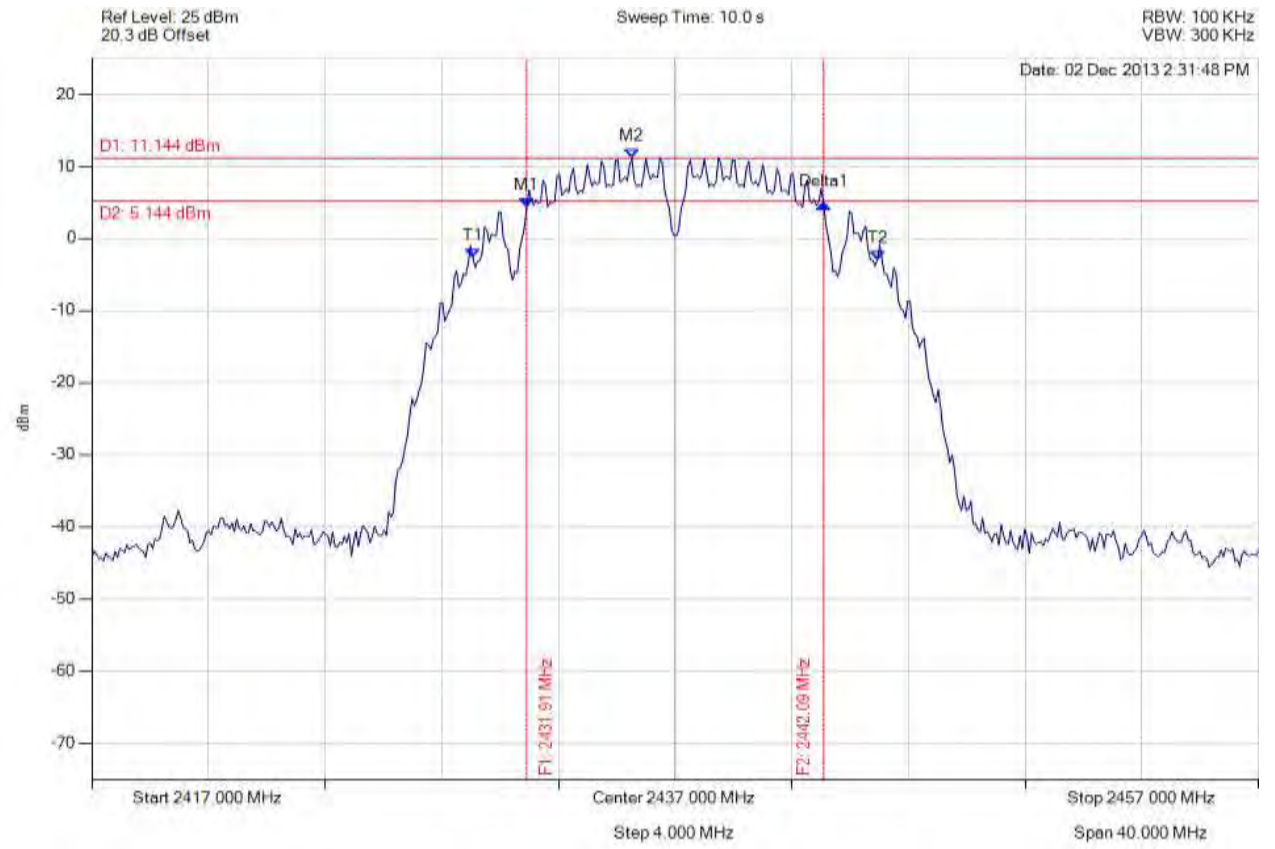


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2431.910 MHz : 4.091 dBm M2 : 2438.483 MHz : 12.132 dBm Delta1 : 10.261 MHz : -0.268 dB T1 : 2430.226 MHz : -3.251 dBm T2 : 2444.014 MHz : 0.538 dBm OBW : 13.788 MHz	Measured 6 dB Bandwidth: 10.261 MHz Limit: ≥500.0 kHz Margin: -9.76 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11b, Channel: 2437.00 MHz, Chain c, Temp: Ambient, Voltage: 48 Vdc

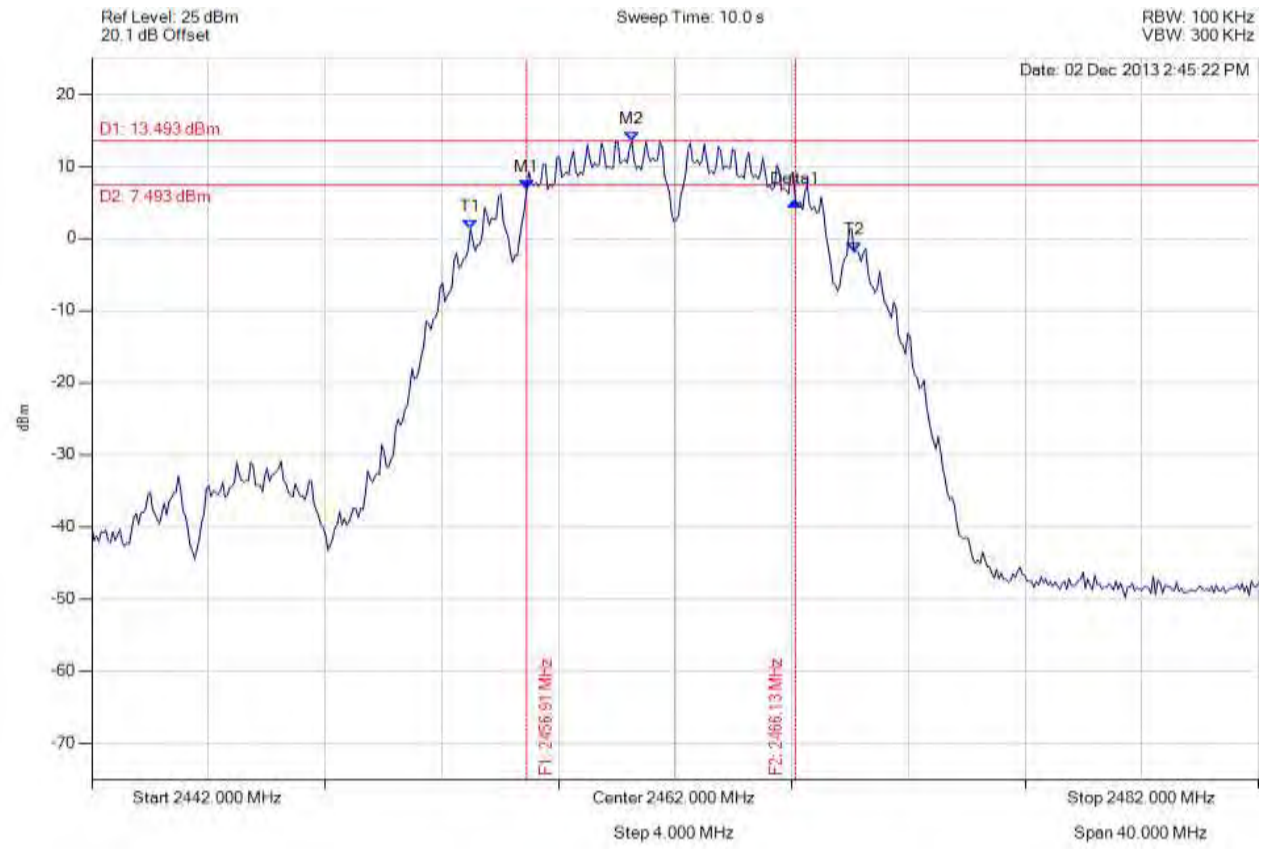


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2431.910 MHz : 4.309 dBm M2 : 2435.517 MHz : 11.144 dBm Delta1 : 10.180 MHz : 0.492 dB T1 : 2430.066 MHz : -2.748 dBm T2 : 2443.934 MHz : -2.976 dBm OBW : 13.868 MHz	Measured 6 dB Bandwidth: 10.180 MHz Limit: ≥500.0 kHz Margin: -9.68 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11b, Channel: 2462.00 MHz, Chain a, Temp: Ambient, Voltage: 48 Vdc

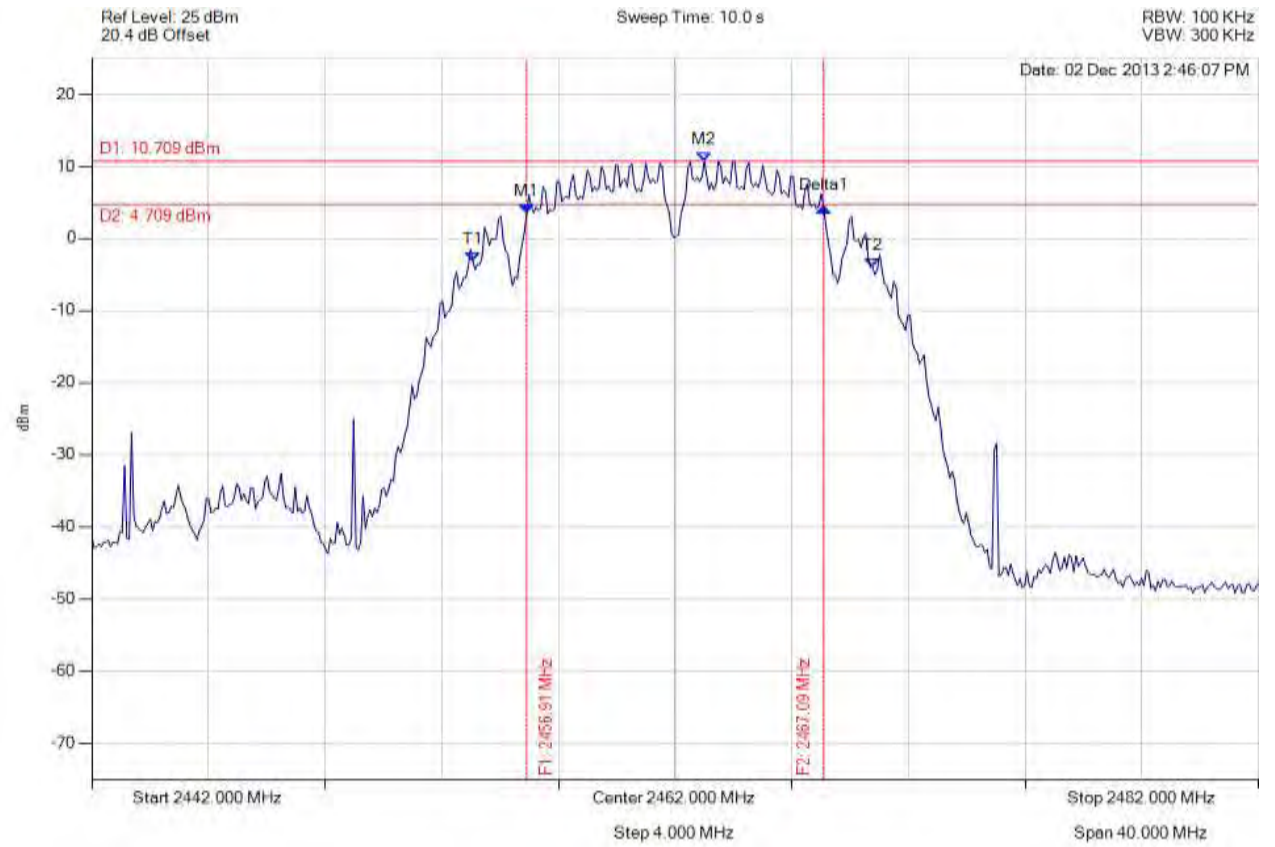


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2456.910 MHz : 6.865 dBm M2 : 2460.517 MHz : 13.493 dBm Delta1 : 9.218 MHz : -1.743 dB T1 : 2454.986 MHz : 1.287 dBm T2 : 2468.132 MHz : -1.929 dBm OBW : 13.146 MHz	Measured 6 dB Bandwidth: 9.218 MHz Limit: ≥500.0 kHz Margin: -8.72 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11b, Channel: 2462.00 MHz, Chain b, Temp: Ambient, Voltage: 48 Vdc

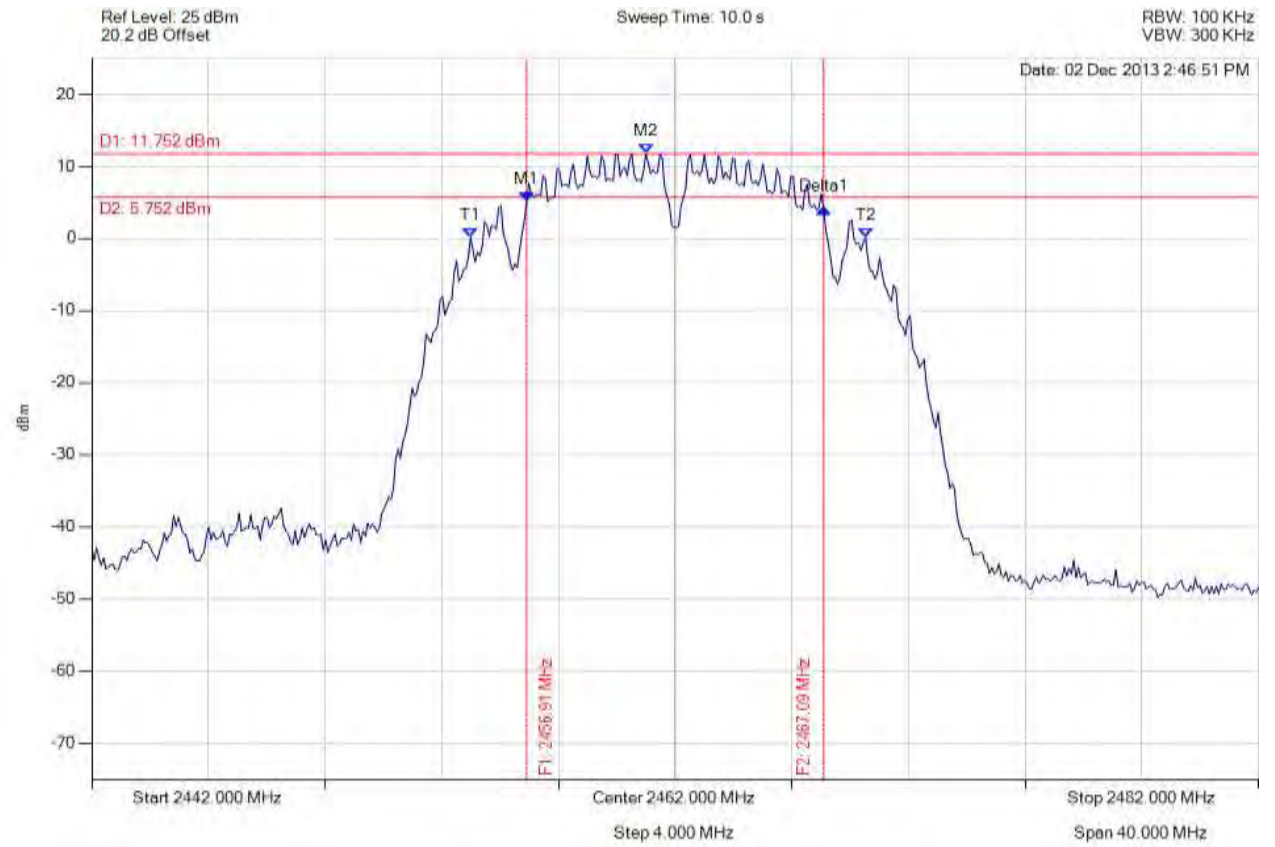


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2456.910 MHz : 3.505 dBm M2 : 2463.002 MHz : 10.709 dBm Delta1 : 10.180 MHz : 0.816 dB T1 : 2455.066 MHz : -3.245 dBm T2 : 2468.774 MHz : -4.032 dBm OBW : 13.707 MHz	Measured 6 dB Bandwidth: 10.180 MHz Limit: ≥500.0 kHz Margin: -9.68 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11b, Channel: 2462.00 MHz, Chain c, Temp: Ambient, Voltage: 48 Vdc

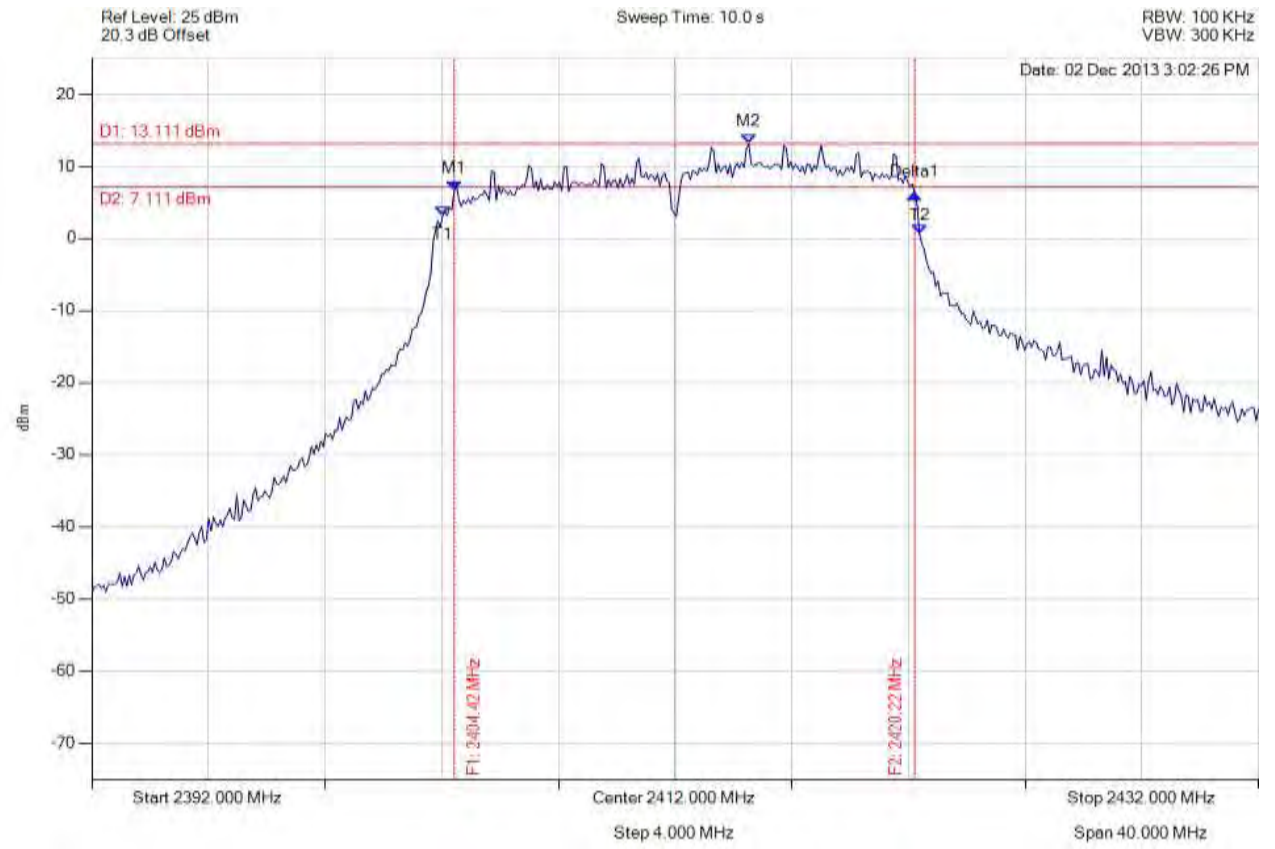


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2456.910 MHz : 5.128 dBm M2 : 2460.998 MHz : 11.752 dBm Delta1 : 10.180 MHz : -1.051 dB T1 : 2454.986 MHz : 0.146 dBm T2 : 2468.533 MHz : 0.178 dBm OBW : 13.547 MHz	Measured 6 dB Bandwidth: 10.180 MHz Limit: ≥500.0 kHz Margin: -9.68 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11g, Channel: 2412.00 MHz, Chain a, Temp: Ambient, Voltage: 48 Vdc

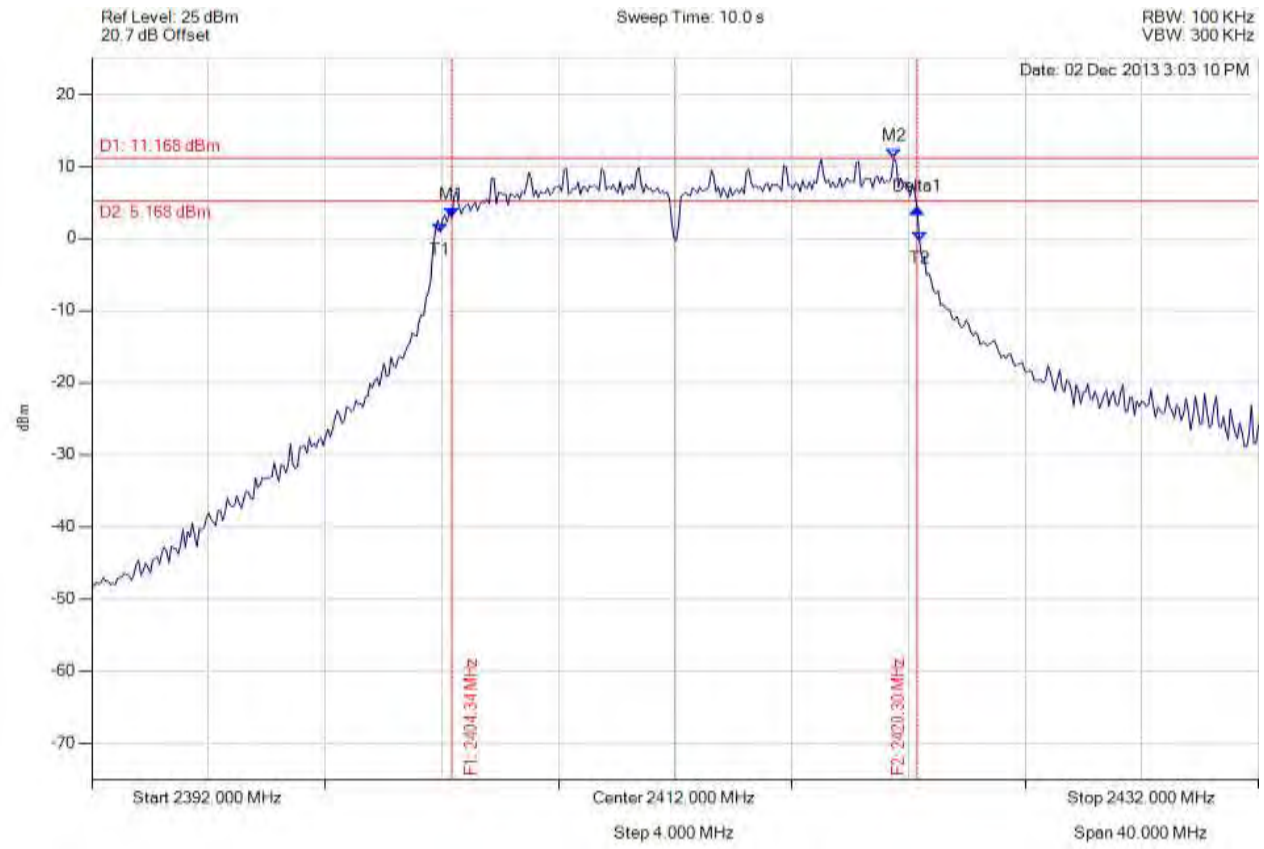


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2404.425 MHz : 6.609 dBm M2 : 2414.525 MHz : 13.111 dBm Delta1 : 15.792 MHz : -0.537 dB T1 : 2404.024 MHz : 3.099 dBm T2 : 2420.377 MHz : 0.685 dBm OBW : 16.353 MHz	Measured 6 dB Bandwidth: 15.792 MHz Limit: ≥500.0 kHz Margin: -15.29 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11g, Channel: 2412.00 MHz, Chain b, Temp: Ambient, Voltage: 48 Vdc

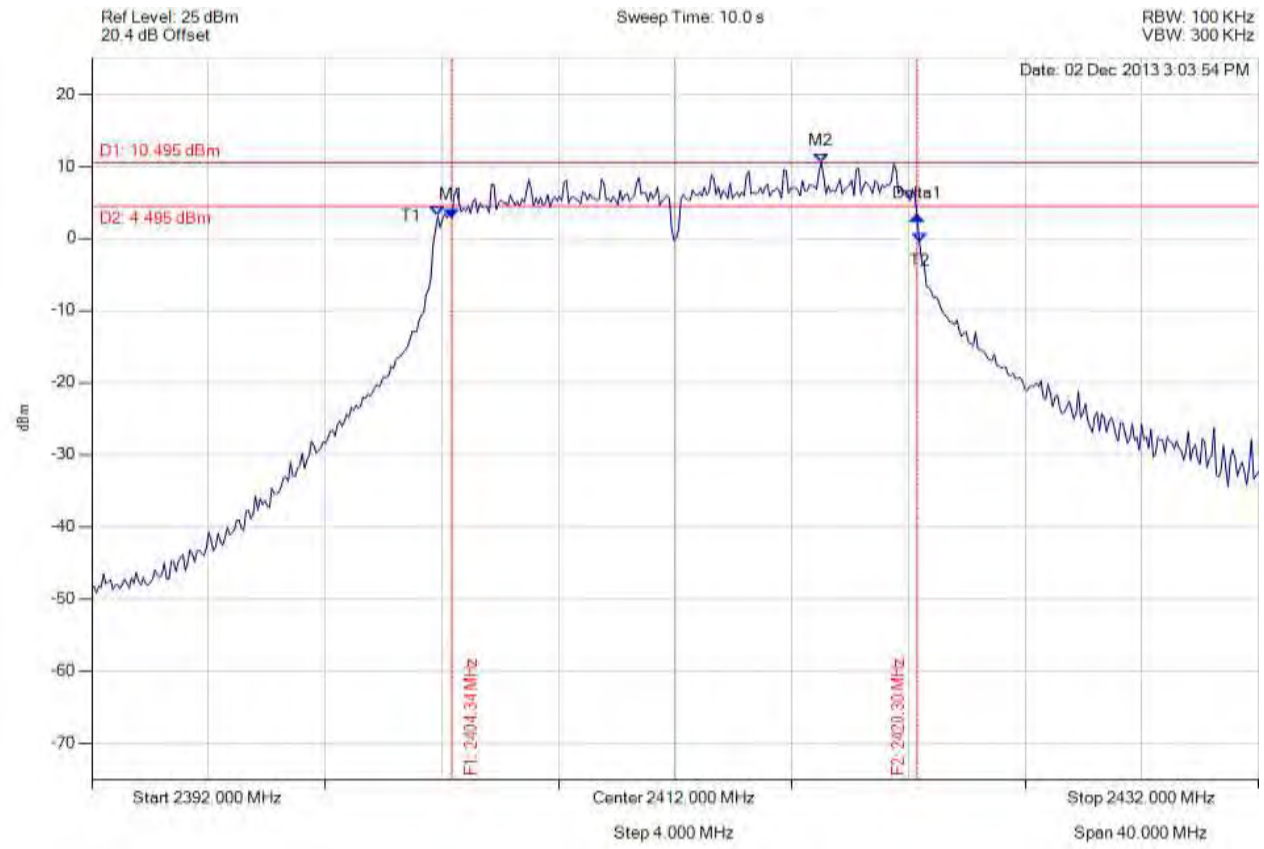


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2404.345 MHz : 2.897 dBm M2 : 2419.495 MHz : 11.168 dBm Delta1 : 15.952 MHz : 1.186 dB T1 : 2403.944 MHz : 0.884 dBm T2 : 2420.377 MHz : -0.310 dBm OBW : 16.433 MHz	Measured 6 dB Bandwidth: 15.952 MHz Limit: ≥500.0 kHz Margin: -15.45 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11g, Channel: 2412.00 MHz, Chain c, Temp: Ambient, Voltage: 48 Vdc

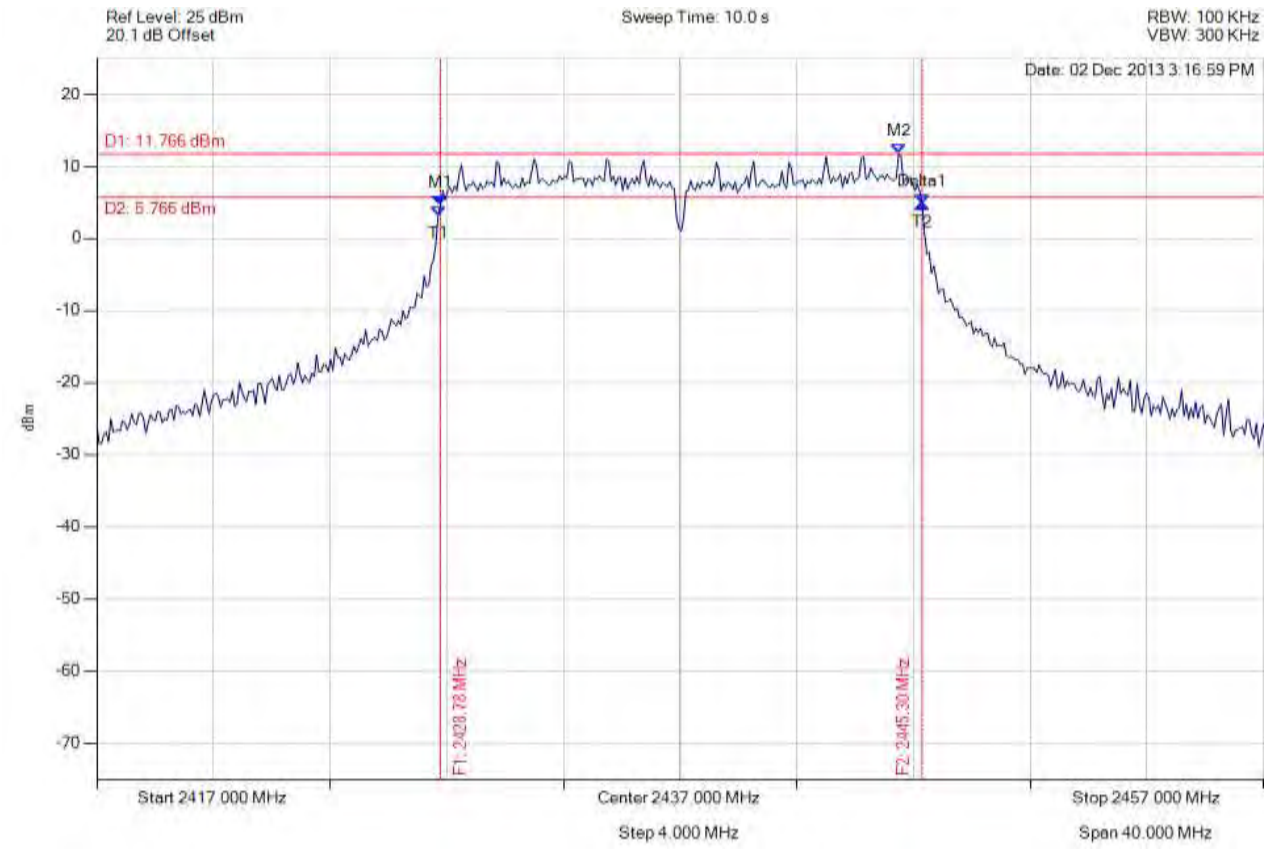


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2404.345 MHz : 2.887 dBm M2 : 2417.010 MHz : 10.495 dBm Delta1 : 15.952 MHz : 0.262 dB T1 : 2403.864 MHz : 3.088 dBm T2 : 2420.377 MHz : -0.548 dBm OBW : 16.513 MHz	Measured 6 dB Bandwidth: 15.952 MHz Limit: ≥500.0 kHz Margin: -15.45 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11g, Channel: 2437.00 MHz, Chain a, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2428.784 MHz : 4.575 dBm M2 : 2444.495 MHz : 11.766 dBm Delta1 : 16.513 MHz : 0.236 dB T1 : 2428.703 MHz : 3.186 dBm T2 : 2445.297 MHz : 4.811 dBm OBW : 16.593 MHz	Measured 6 dB Bandwidth: 16.513 MHz Limit: ≥500.0 kHz Margin: -16.01 MHz

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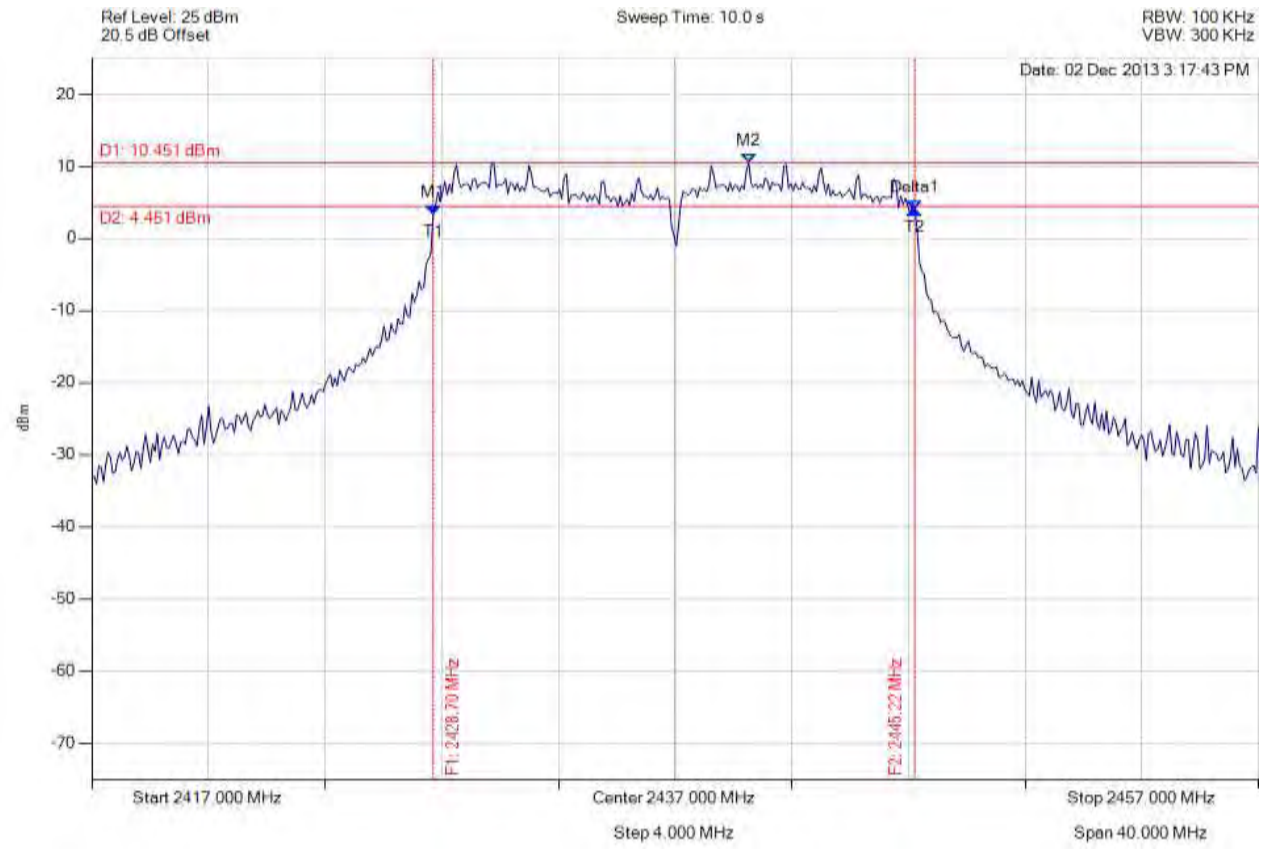
6 dB & 99% BANDWIDTH

Variant: 802.11g, Channel: 2437.00 MHz, Chain b, Temp: Ambient, Voltage: 48 Vdc

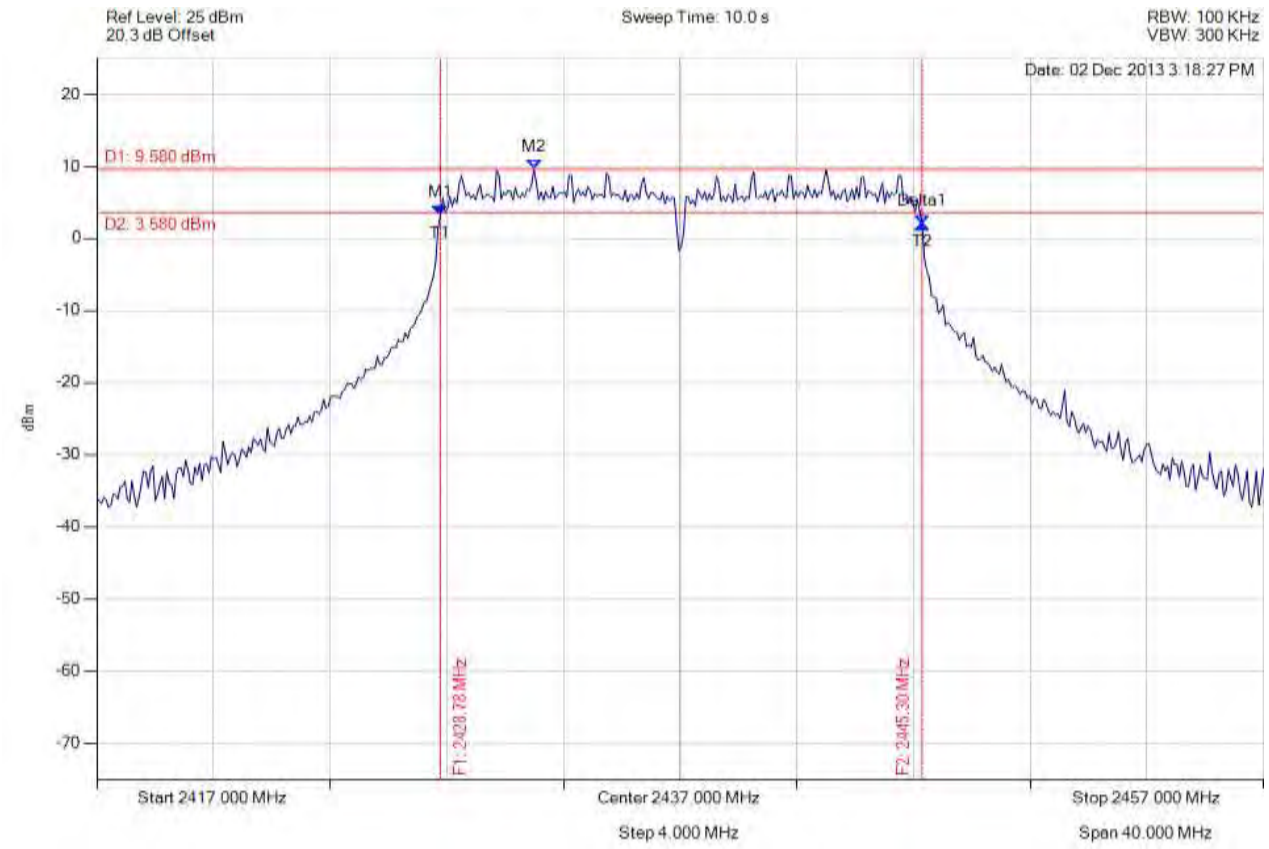


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2428.703 MHz : 3.365 dBm M2 : 2439.525 MHz : 10.451 dBm Delta1 : 16.513 MHz : 0.647 dB T1 : 2428.703 MHz : 3.365 dBm T2 : 2445.216 MHz : 4.012 dBm OBW : 16.513 MHz	Measured 6 dB Bandwidth: 16.513 MHz Limit: ≥500.0 kHz Margin: -16.01 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11g, Channel: 2437.00 MHz, Chain c, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2428.784 MHz : 3.245 dBm M2 : 2431.990 MHz : 9.580 dBm Delta1 : 16.513 MHz : -1.192 dB T1 : 2428.784 MHz : 3.245 dBm T2 : 2445.297 MHz : 2.053 dBm OBW : 16.513 MHz	Measured 6 dB Bandwidth: 16.513 MHz Limit: ≥500.0 kHz Margin: -16.01 MHz

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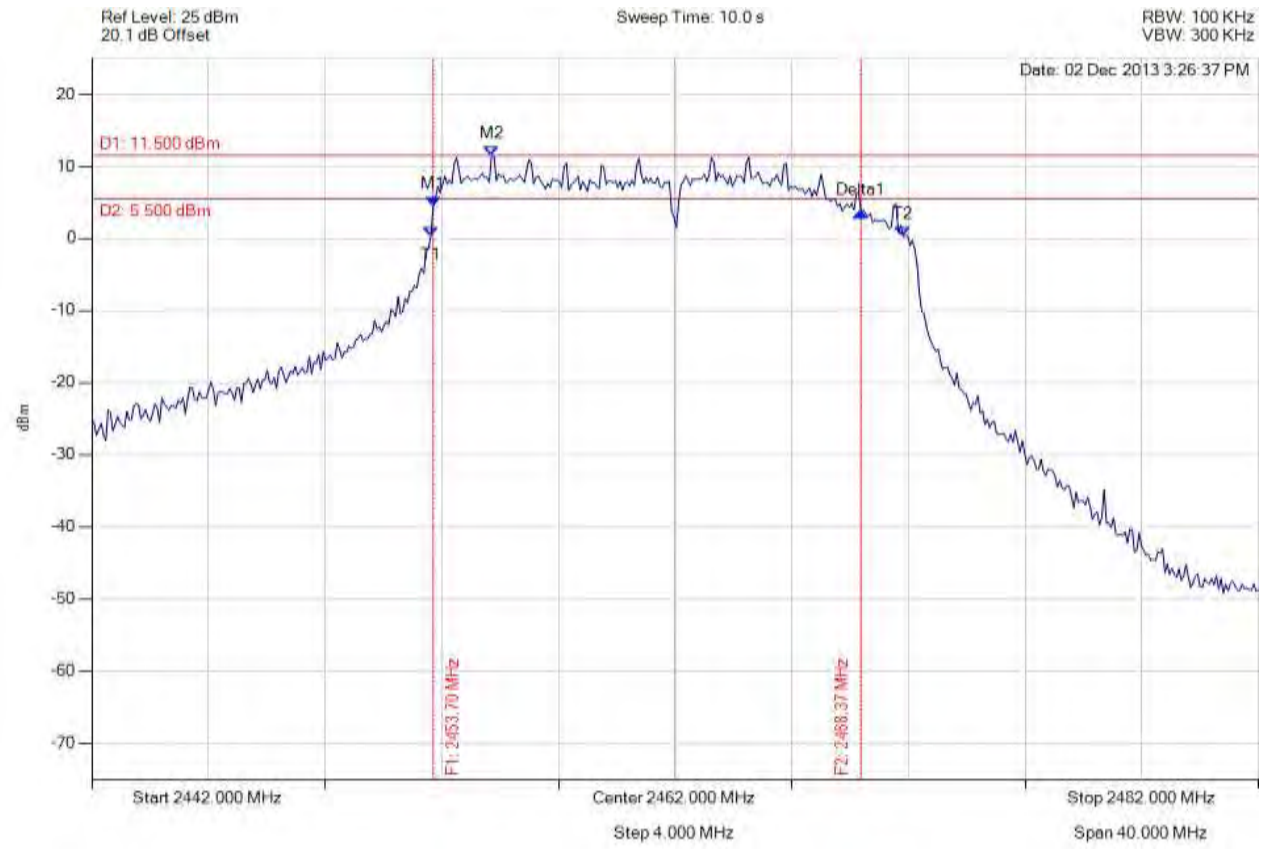
6 dB & 99% BANDWIDTH

Variant: 802.11g, Channel: 2462.00 MHz, Chain a, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2453.703 MHz : 4.418 dBm M2 : 2455.707 MHz : 11.500 dBm Delta1 : 14.669 MHz : -0.714 dB T1 : 2453.623 MHz : 0.255 dBm T2 : 2469.816 MHz : 0.361 dBm OBW : 16.192 MHz	Measured 6 dB Bandwidth: 14.669 MHz Limit: ≥500.0 kHz Margin: -14.17 MHz

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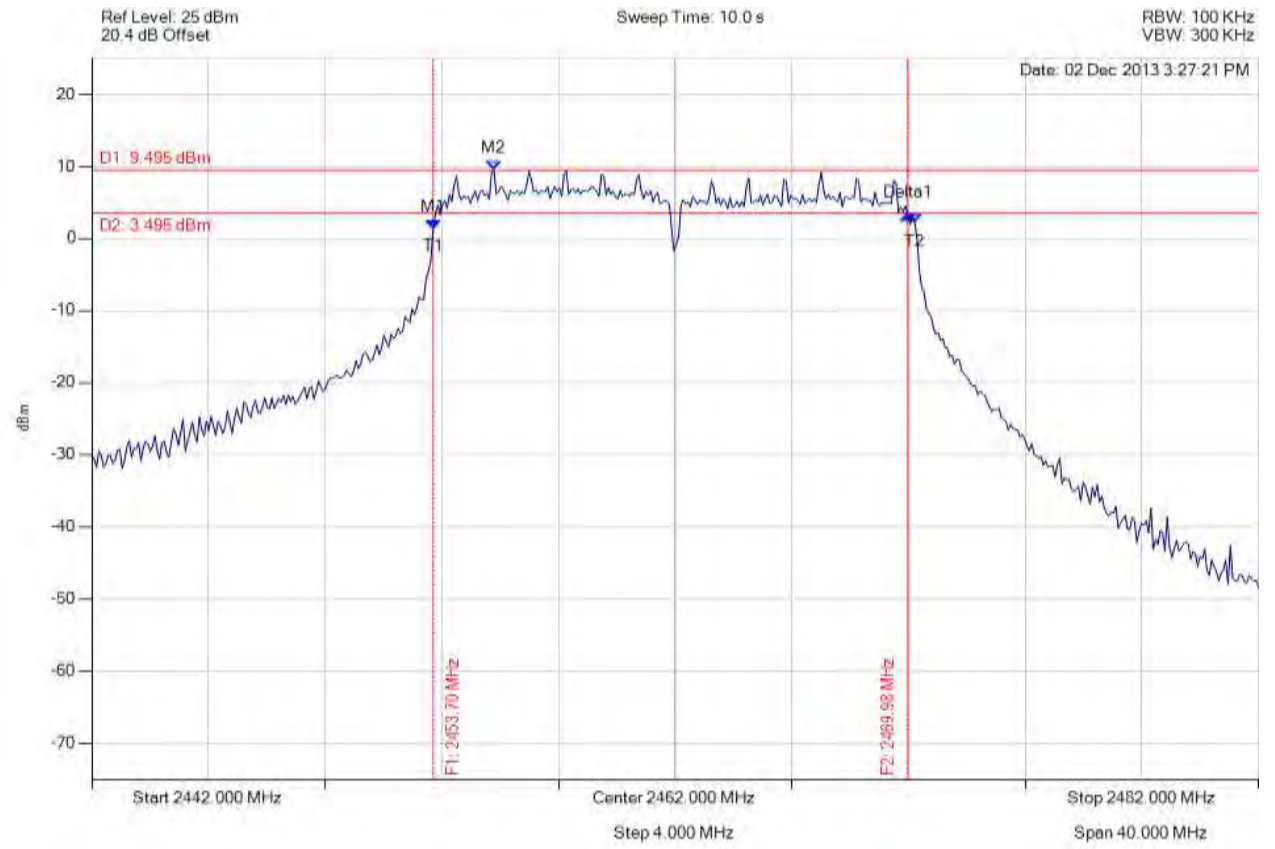
6 dB & 99% BANDWIDTH

Variant: 802.11g, Channel: 2462.00 MHz, Chain b, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2453.703 MHz : 1.333 dBm M2 : 2455.788 MHz : 9.495 dBm Delta1 : 16.273 MHz : 1.961 dB T1 : 2453.703 MHz : 1.333 dBm T2 : 2470.216 MHz : 2.120 dBm OBW : 16.513 MHz	Measured 6 dB Bandwidth: 16.273 MHz Limit: ≥500.0 kHz Margin: -15.77 MHz

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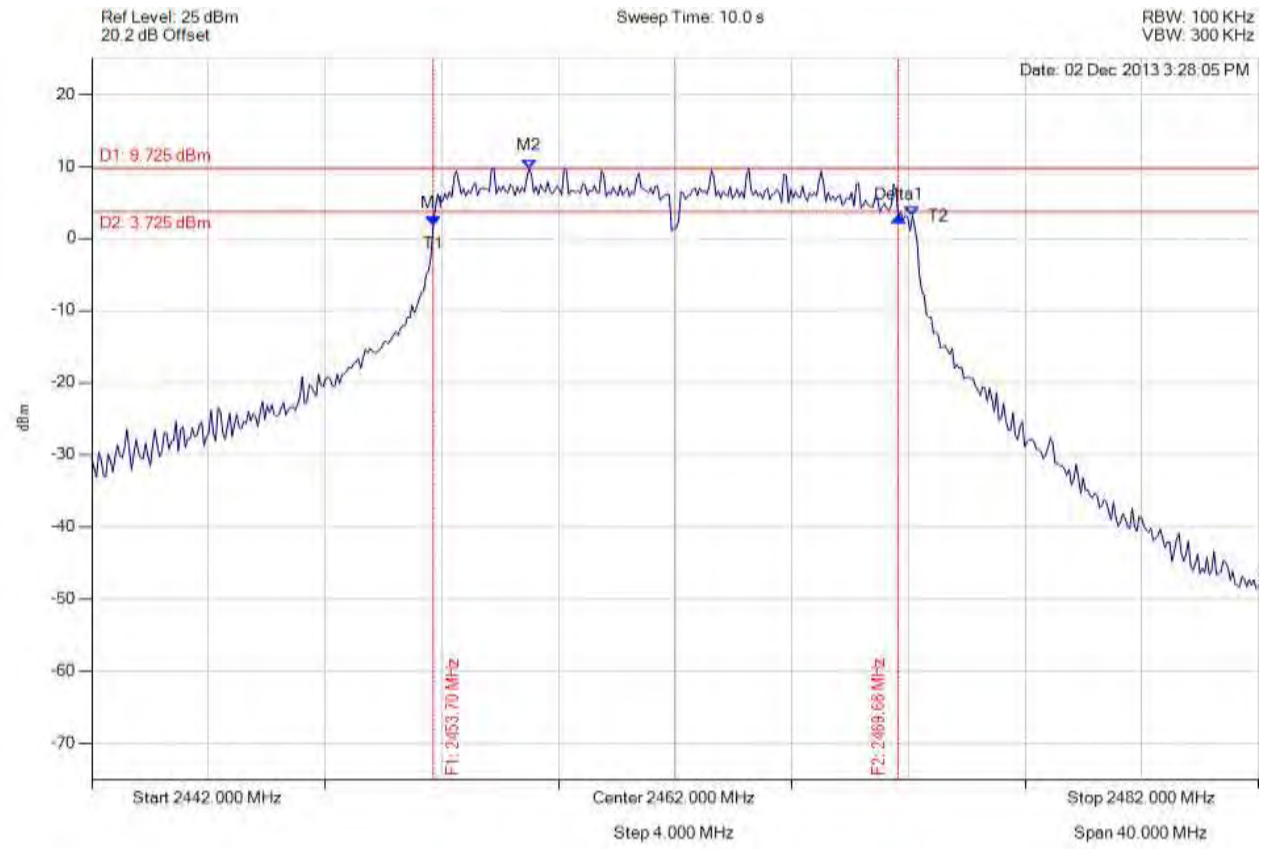
6 dB & 99% BANDWIDTH

Variant: 802.11g, Channel: 2462.00 MHz, Chain c, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2453.703 MHz : 1.736 dBm M2 : 2456.990 MHz : 9.725 dBm Delta1 : 15.952 MHz : 1.176 dB T1 : 2453.703 MHz : 1.736 dBm T2 : 2470.136 MHz : 3.133 dBm OBW : 16.433 MHz	Measured 6 dB Bandwidth: 15.952 MHz Limit: ≥500.0 kHz Margin: -15.45 MHz

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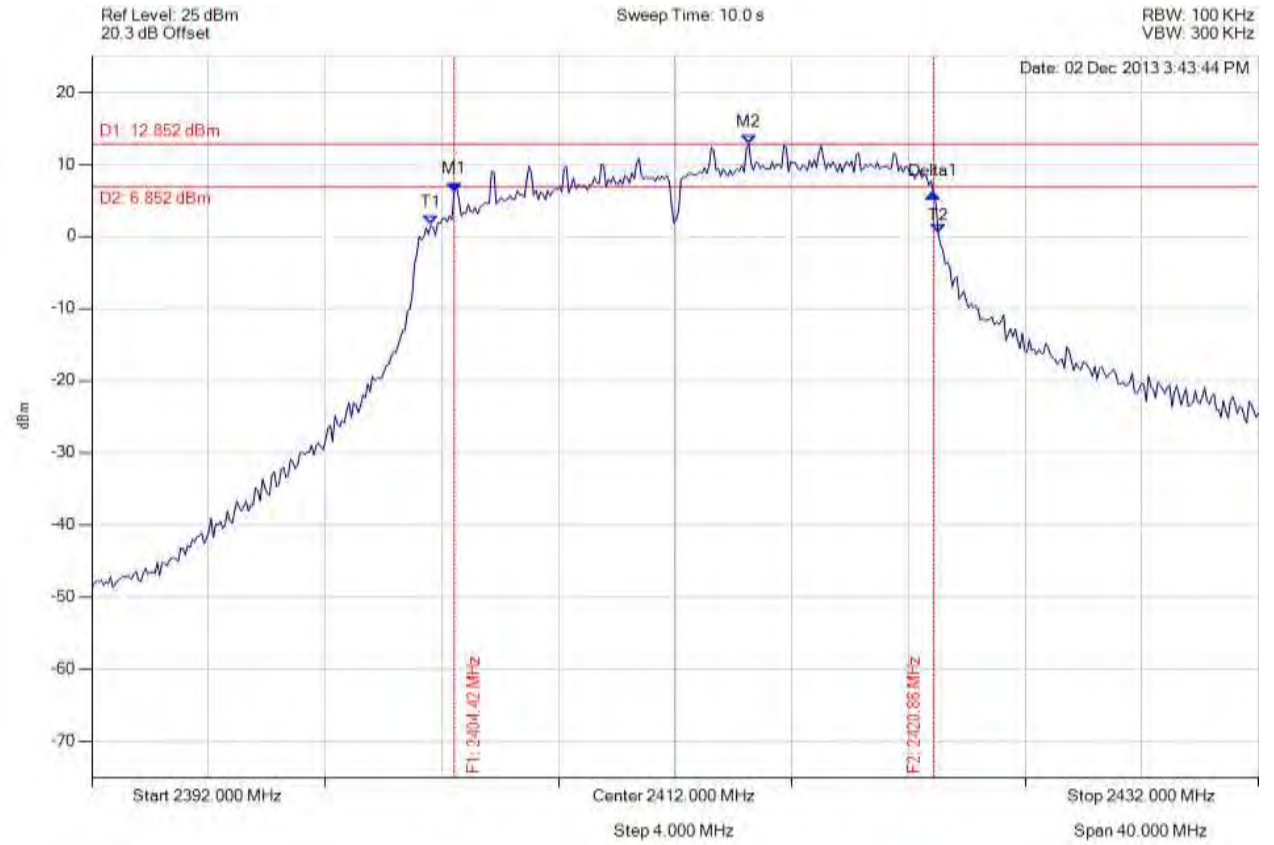
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 2412.00 MHz, Chain a, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2404.425 MHz : 6.224 dBm M2 : 2414.525 MHz : 12.852 dBm Delta1 : 16.433 MHz : -0.293 dB T1 : 2403.623 MHz : 1.559 dBm T2 : 2421.018 MHz : 0.465 dBm OBW : 17.395 MHz	Measured 6 dB Bandwidth: 16.433 MHz Limit: ≥500.0 kHz Margin: -15.93 MHz

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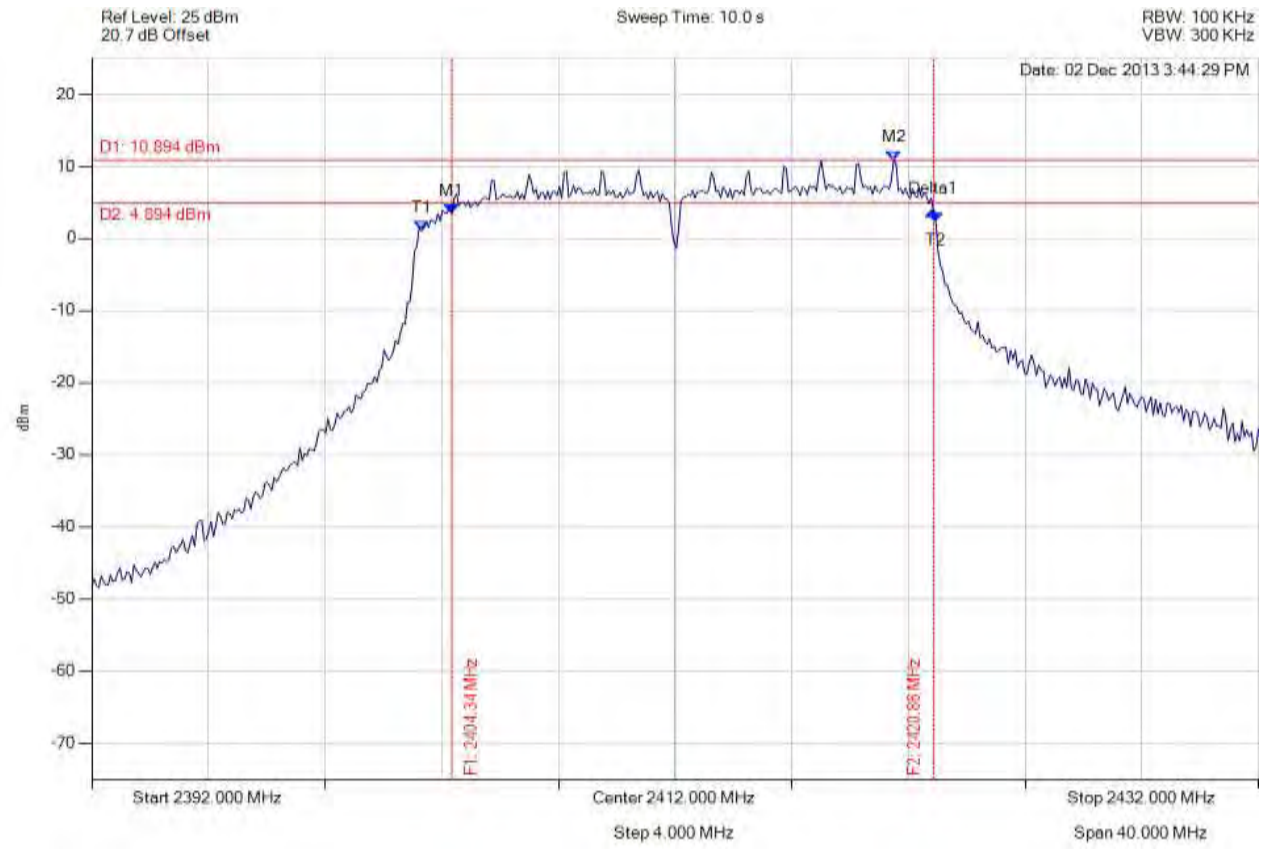
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 2412.00 MHz, Chain b, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2404.345 MHz : 3.520 dBm M2 : 2419.495 MHz : 10.894 dBm Delta1 : 16.513 MHz : 0.236 dB T1 : 2403.303 MHz : 1.067 dBm T2 : 2420.938 MHz : 2.295 dBm OBW : 17.635 MHz	Measured 6 dB Bandwidth: 16.513 MHz Limit: ≥500.0 kHz Margin: -16.01 MHz

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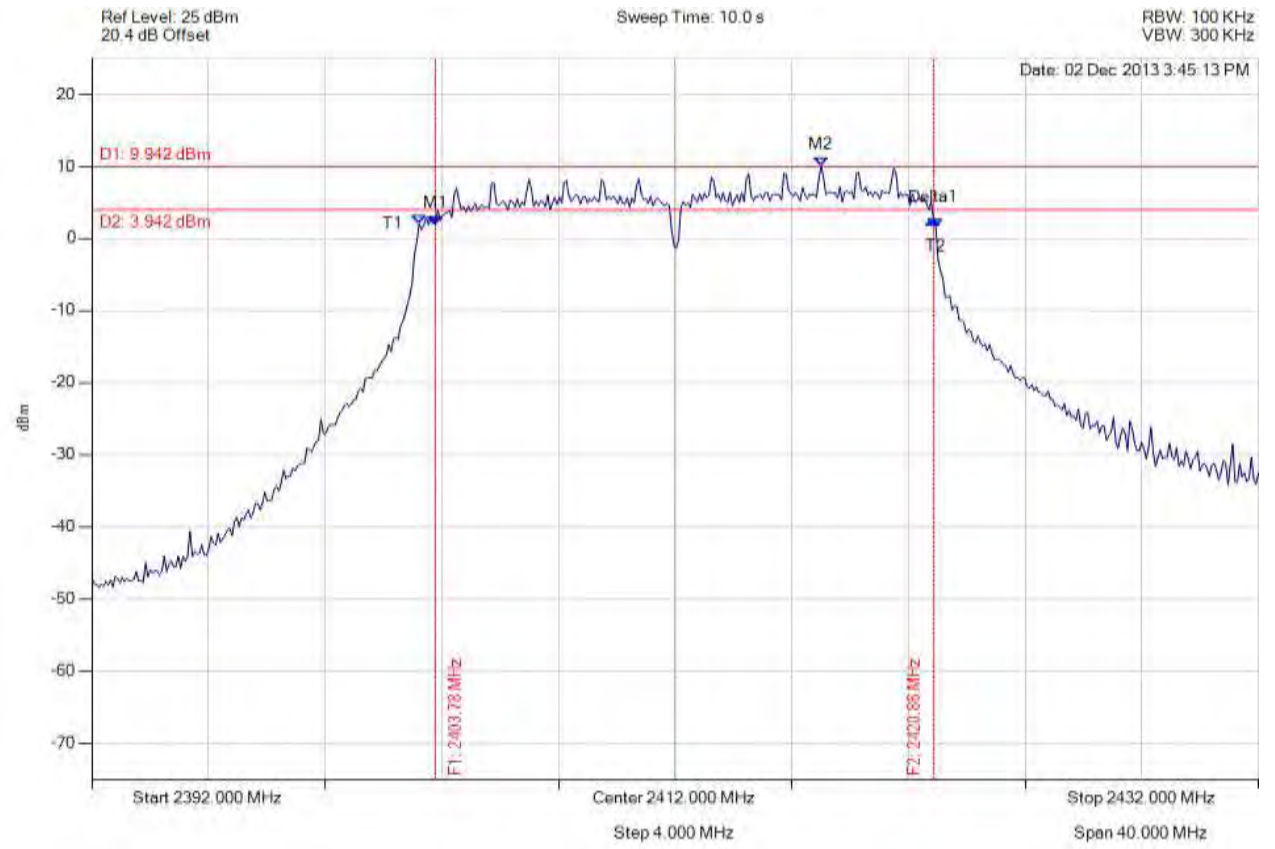
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 2412.00 MHz, Chain c, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2403.784 MHz : 1.848 dBm M2 : 2417.010 MHz : 9.942 dBm Delta1 : 17.074 MHz : 0.813 dB T1 : 2403.222 MHz : 2.053 dBm T2 : 2420.938 MHz : 1.449 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.074 MHz Limit: ≥500.0 kHz Margin: -16.57 MHz

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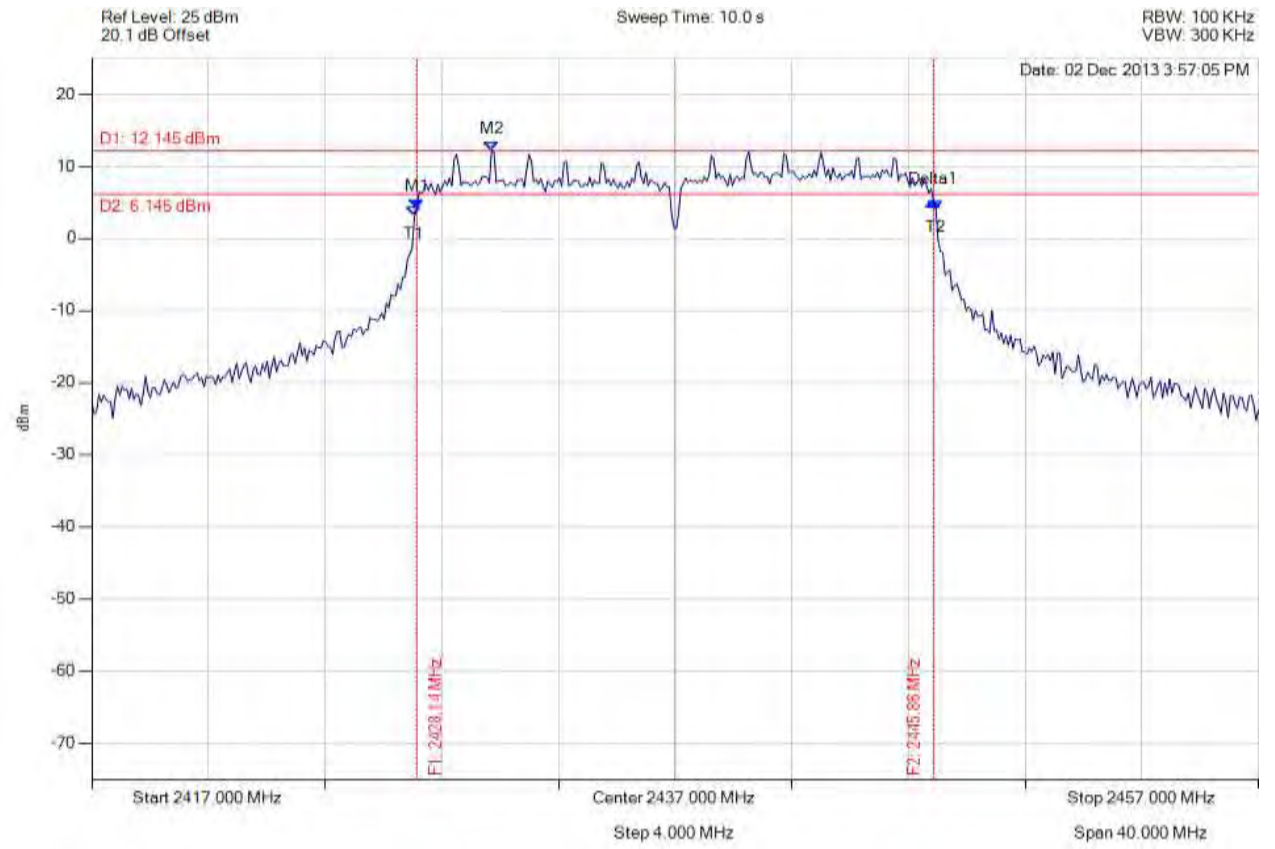
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 2437.00 MHz, Chain a, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2428.142 MHz : 4.079 dBm M2 : 2430.707 MHz : 12.145 dBm Delta1 : 17.715 MHz : 1.112 dB T1 : 2428.062 MHz : 3.074 dBm T2 : 2445.938 MHz : 4.028 dBm OBW : 17.876 MHz	Measured 6 dB Bandwidth: 17.715 MHz Limit: ≥500.0 kHz Margin: -17.22 MHz

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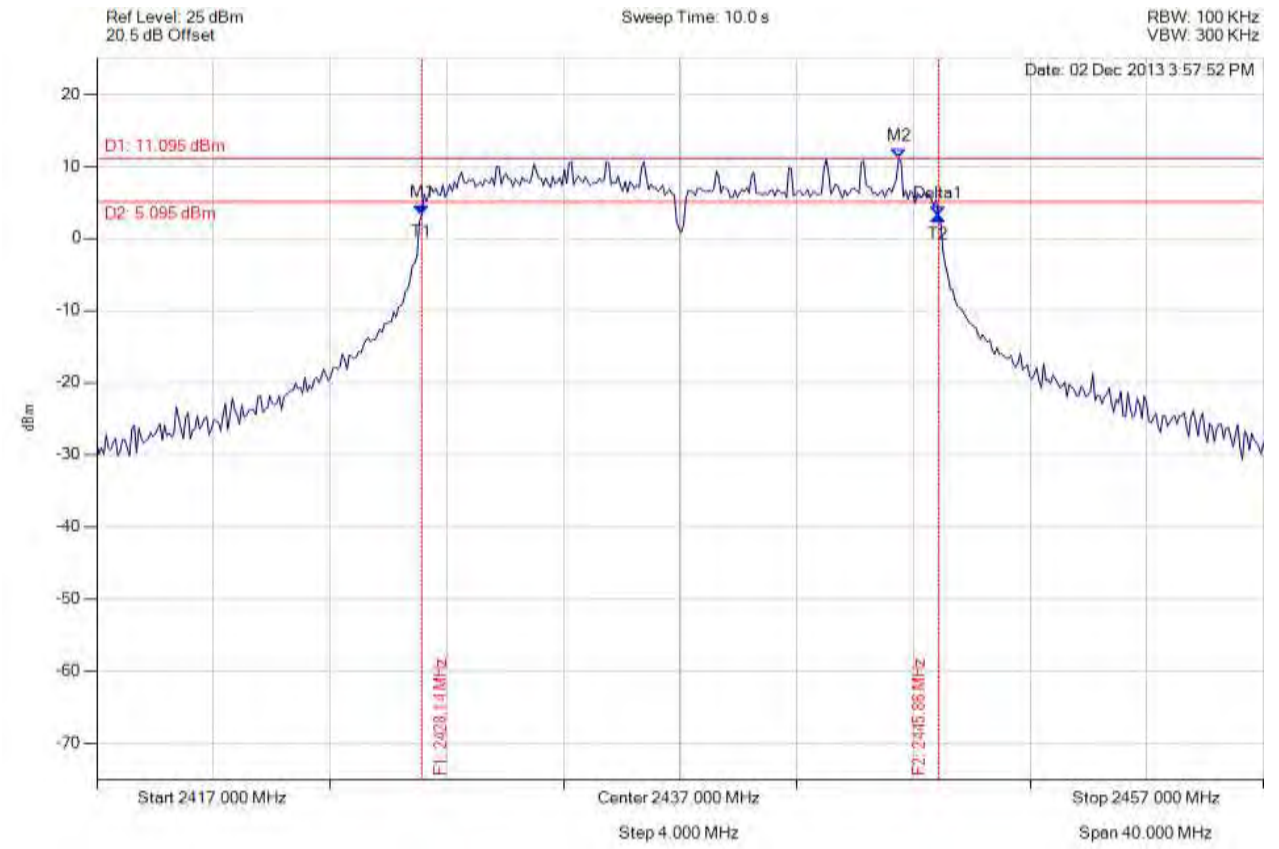
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 2437.00 MHz, Chain b, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2428.142 MHz : 3.343 dBm M2 : 2444.495 MHz : 11.095 dBm Delta1 : 17.715 MHz : -0.232 dB T1 : 2428.142 MHz : 3.343 dBm T2 : 2445.858 MHz : 3.111 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.715 MHz Limit: ≥500.0 kHz Margin: -17.22 MHz

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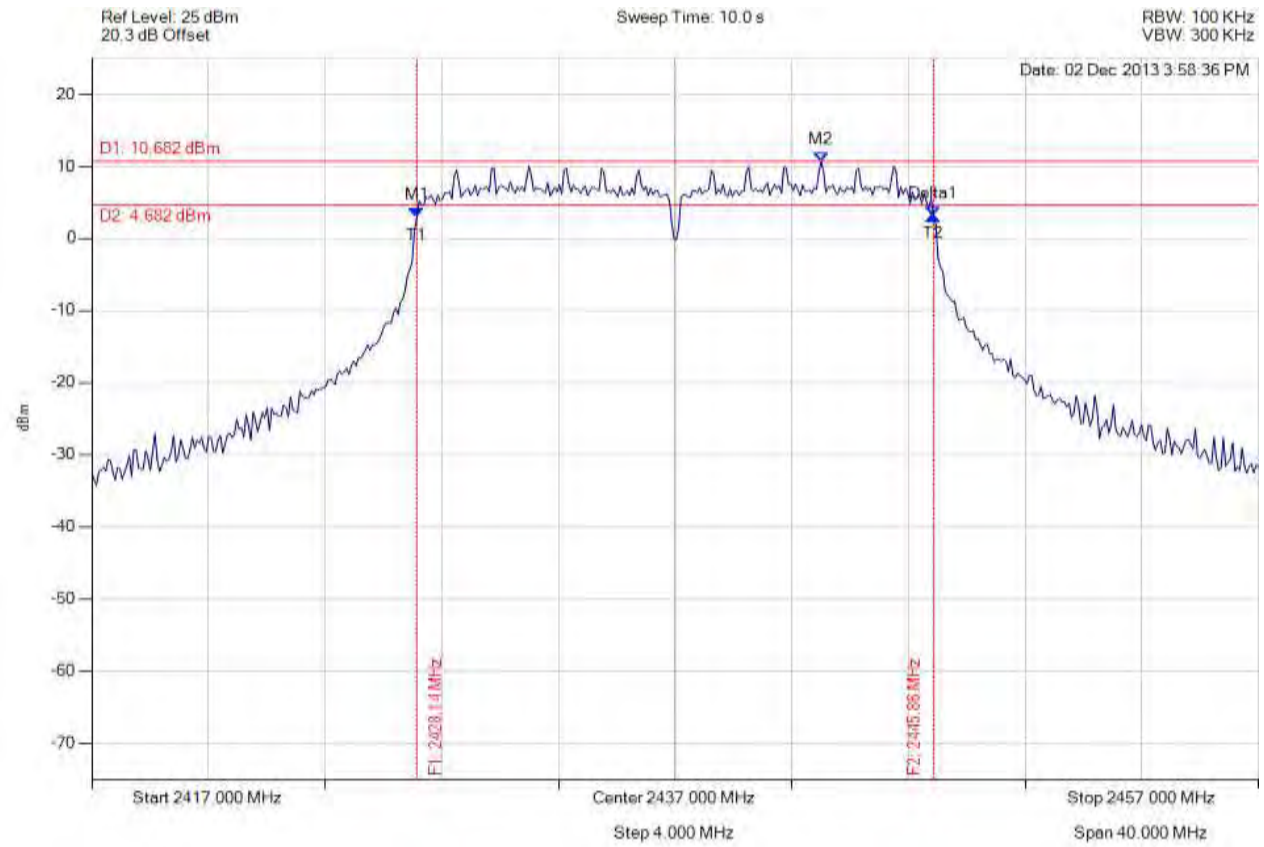
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 2437.00 MHz, Chain c, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2428.142 MHz : 2.930 dBm M2 : 2442.010 MHz : 10.682 dBm Delta1 : 17.715 MHz : 0.234 dB T1 : 2428.142 MHz : 2.930 dBm T2 : 2445.858 MHz : 3.164 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.715 MHz Limit: ≥500.0 kHz Margin: -17.22 MHz

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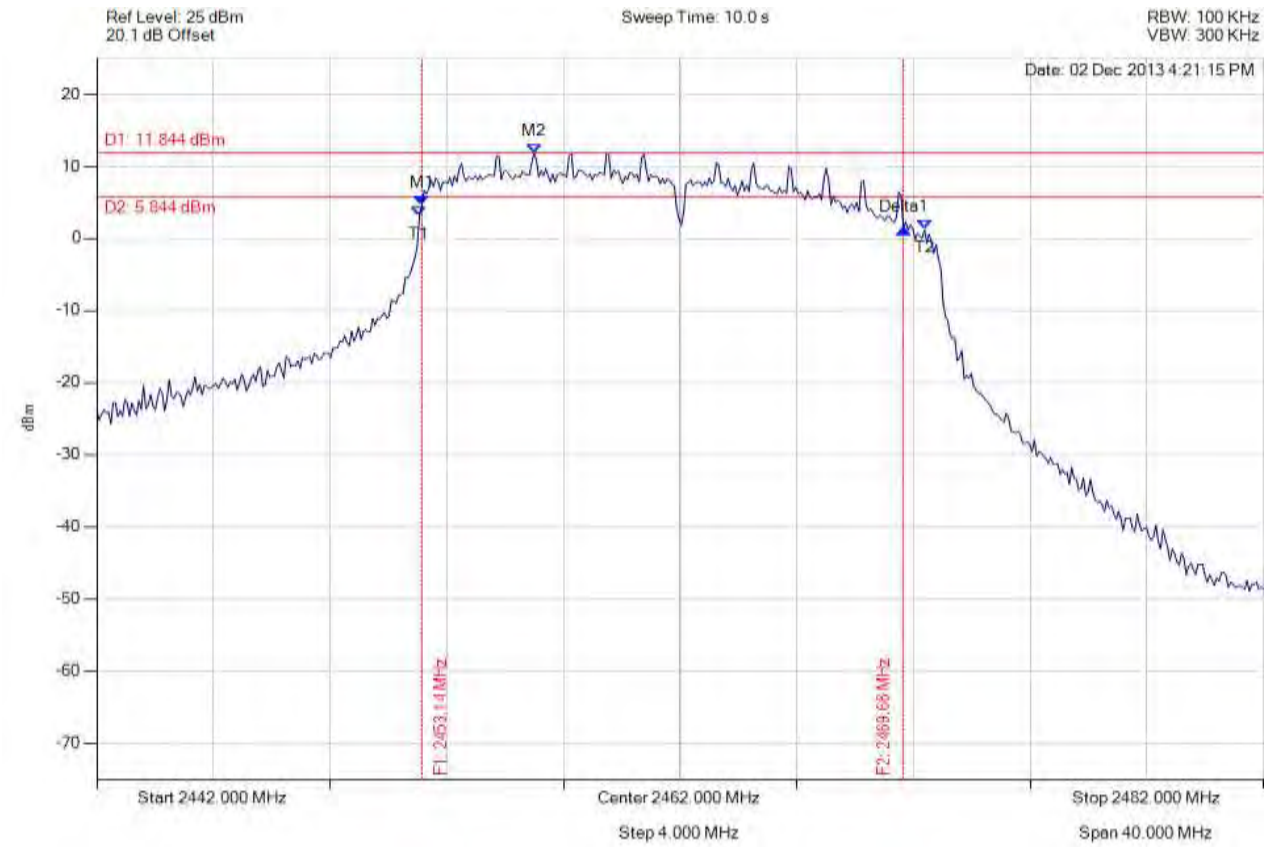
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 2462.00 MHz, Chain a, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2453.142 MHz : 4.567 dBm M2 : 2456.990 MHz : 11.844 dBm Delta1 : 16.513 MHz : -3.240 dB T1 : 2453.062 MHz : 3.090 dBm T2 : 2470.377 MHz : 1.228 dBm OBW : 17.315 MHz	Measured 6 dB Bandwidth: 16.513 MHz Limit: ≥500.0 kHz Margin: -16.01 MHz

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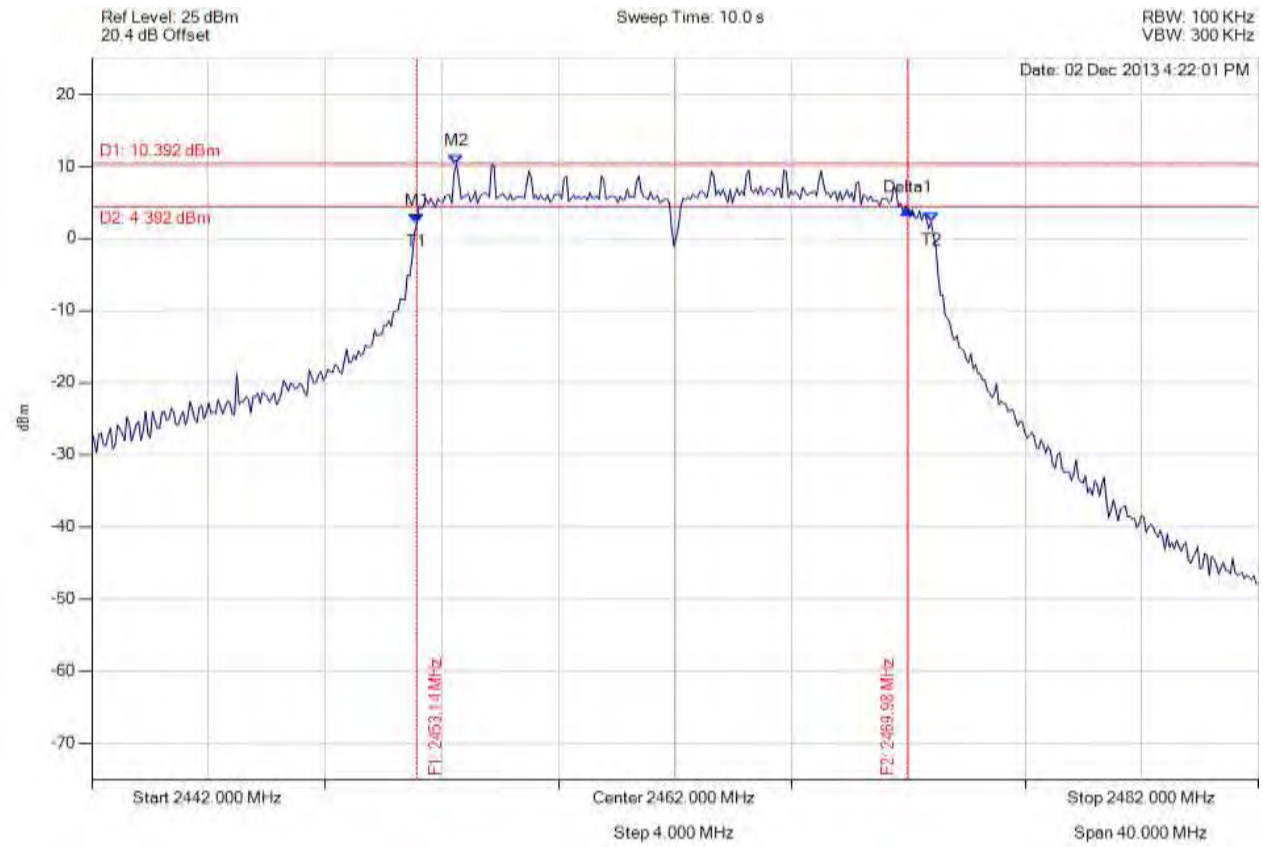
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 2462.00 MHz, Chain b, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2453.142 MHz : 2.141 dBm M2 : 2454.505 MHz : 10.392 dBm Delta1 : 16.834 MHz : 1.790 dB T1 : 2453.142 MHz : 2.141 dBm T2 : 2470.778 MHz : 2.283 dBm OBW : 17.635 MHz	Measured 6 dB Bandwidth: 16.834 MHz Limit: ≥500.0 kHz Margin: -16.33 MHz

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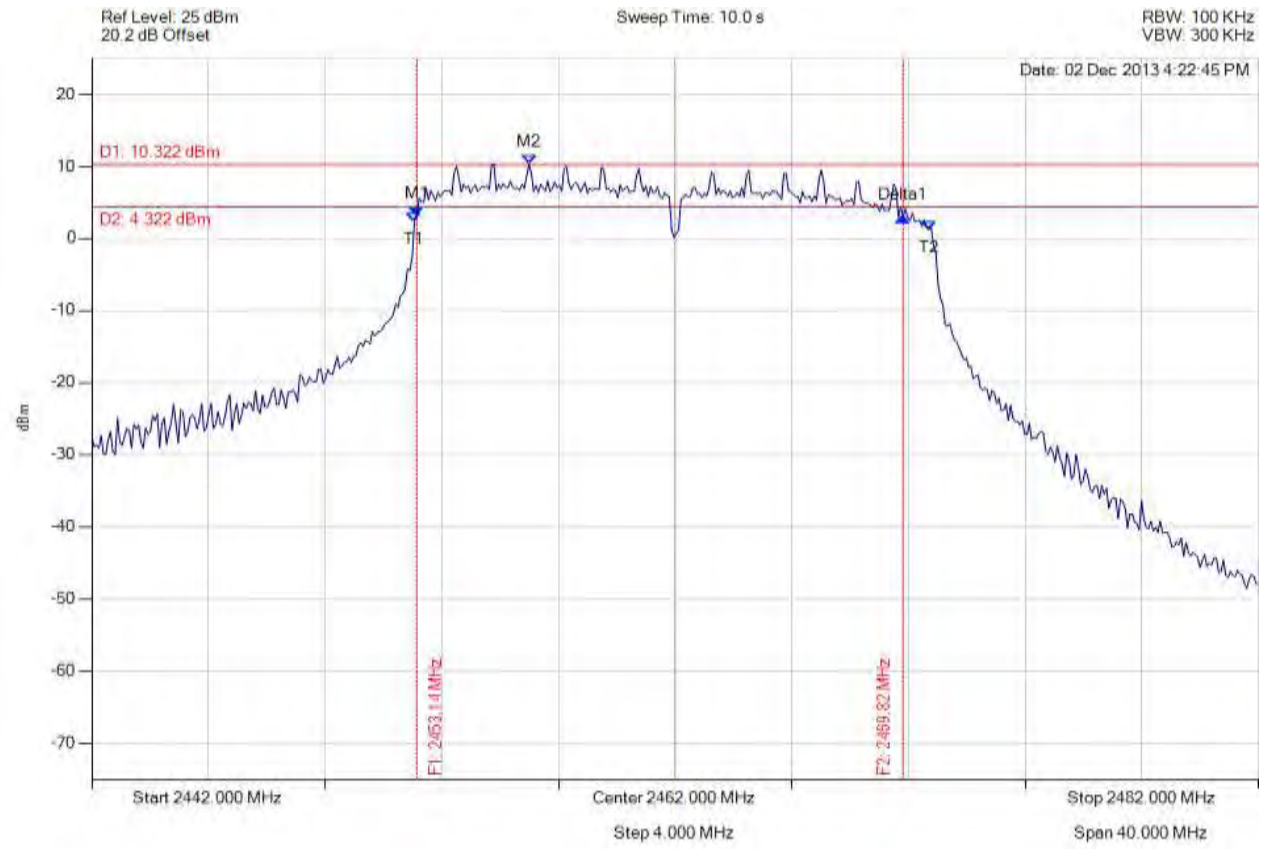
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 2462.00 MHz, Chain c, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2453.142 MHz : 3.156 dBm M2 : 2456.990 MHz : 10.322 dBm Delta1 : 16.673 MHz : -0.146 dB T1 : 2453.062 MHz : 2.381 dBm T2 : 2470.697 MHz : 1.205 dBm OBW : 17.635 MHz	Measured 6 dB Bandwidth: 16.673 MHz Limit: ≥500.0 kHz Margin: -16.17 MHz

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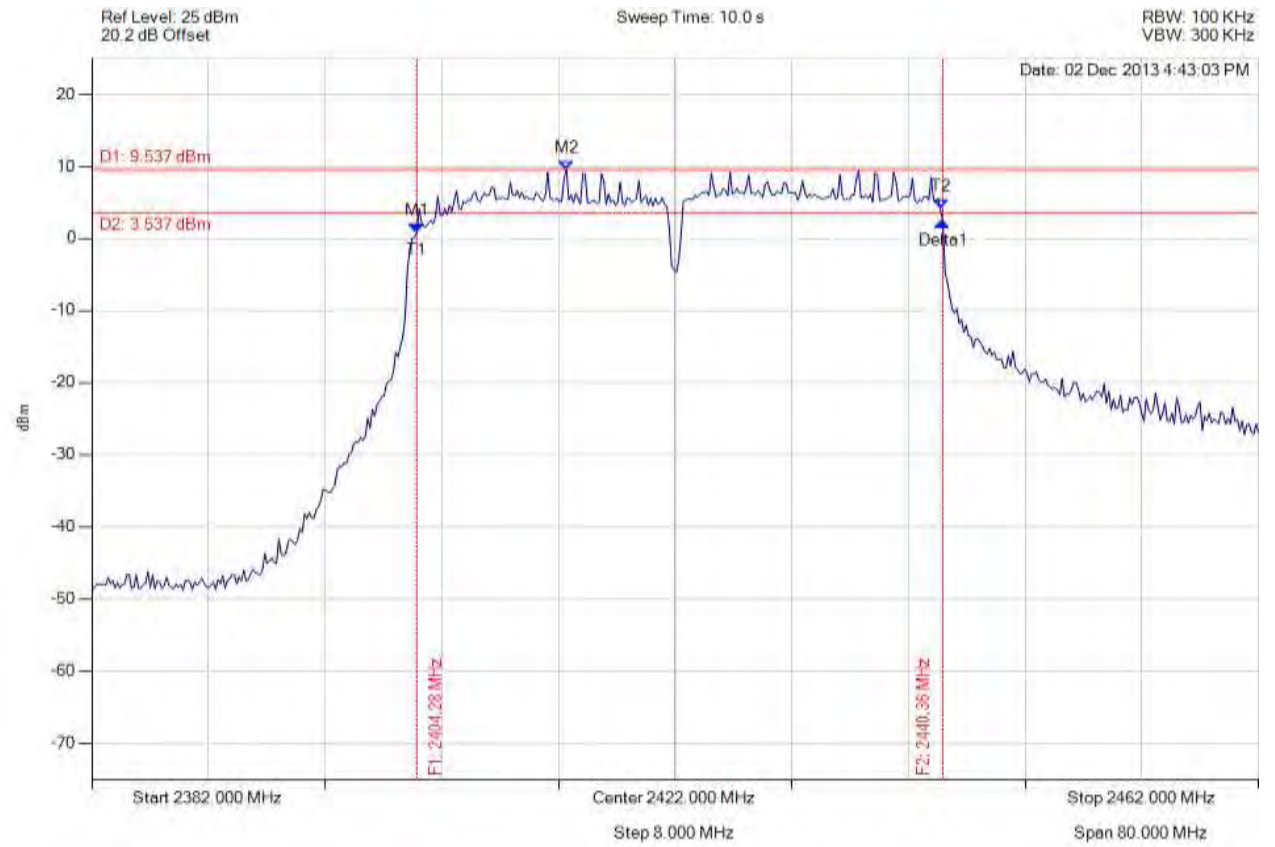
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 2422.00 MHz, Chain a, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2404.285 MHz : 0.851 dBm M2 : 2414.545 MHz : 9.537 dBm Delta1 : 36.072 MHz : 1.452 dB T1 : 2404.285 MHz : 0.851 dBm T2 : 2440.196 MHz : 4.059 dBm OBW : 35.912 MHz	Measured 6 dB Bandwidth: 36.072 MHz Limit: ≥500.0 kHz Margin: -35.57 MHz

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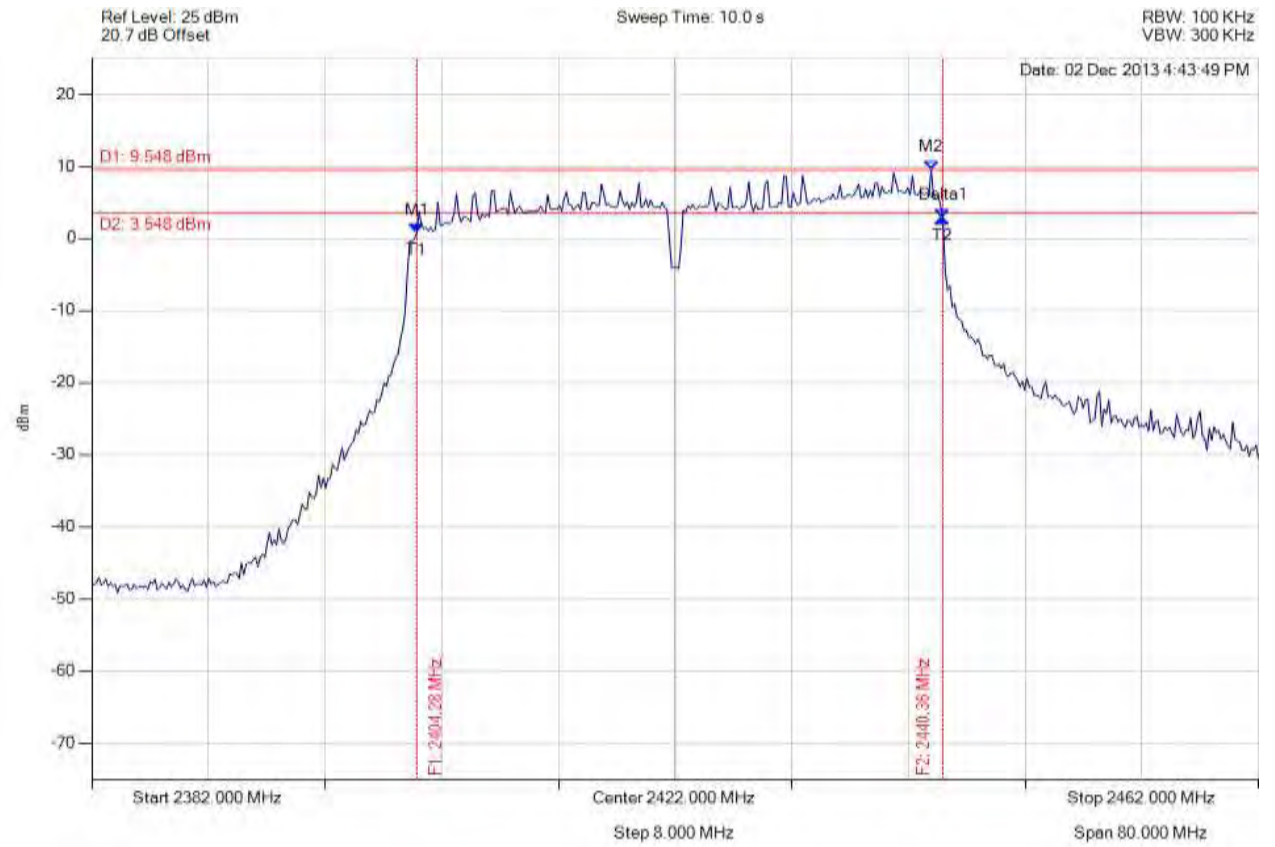
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 2422.00 MHz, Chain b, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2404.285 MHz : 0.859 dBm M2 : 2439.555 MHz : 9.548 dBm Delta1 : 36.072 MHz : 2.022 dB T1 : 2404.285 MHz : 0.859 dBm T2 : 2440.357 MHz : 2.881 dBm OBW : 36.072 MHz	Measured 6 dB Bandwidth: 36.072 MHz Limit: ≥500.0 kHz Margin: -35.57 MHz

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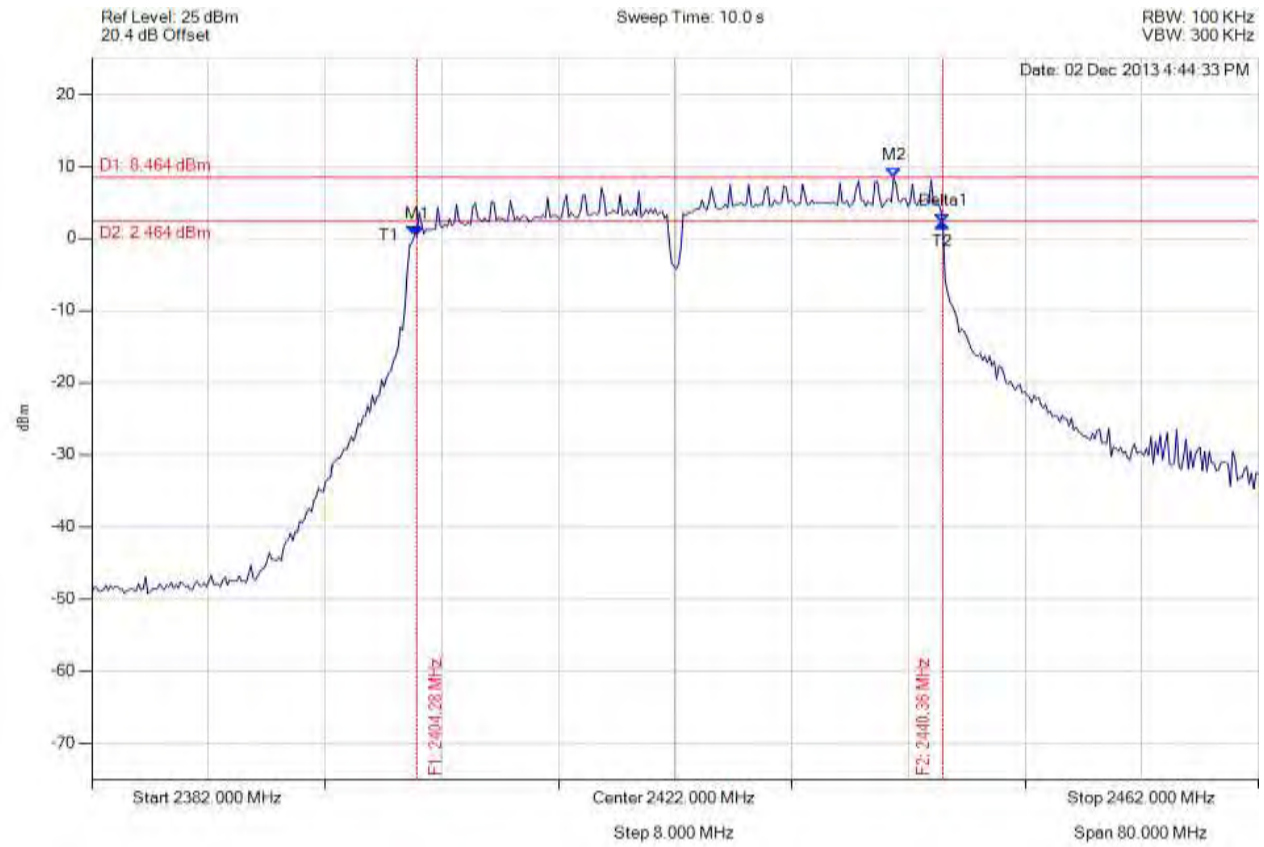
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 2422.00 MHz, Chain c, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2404.285 MHz : 0.266 dBm M2 : 2436.990 MHz : 8.464 dBm Delta1 : 36.072 MHz : 1.816 dB T1 : 2404.124 MHz : 0.443 dBm T2 : 2440.357 MHz : 2.082 dBm OBW : 36.232 MHz	Measured 6 dB Bandwidth: 36.072 MHz Limit: ≥500.0 kHz Margin: -35.57 MHz

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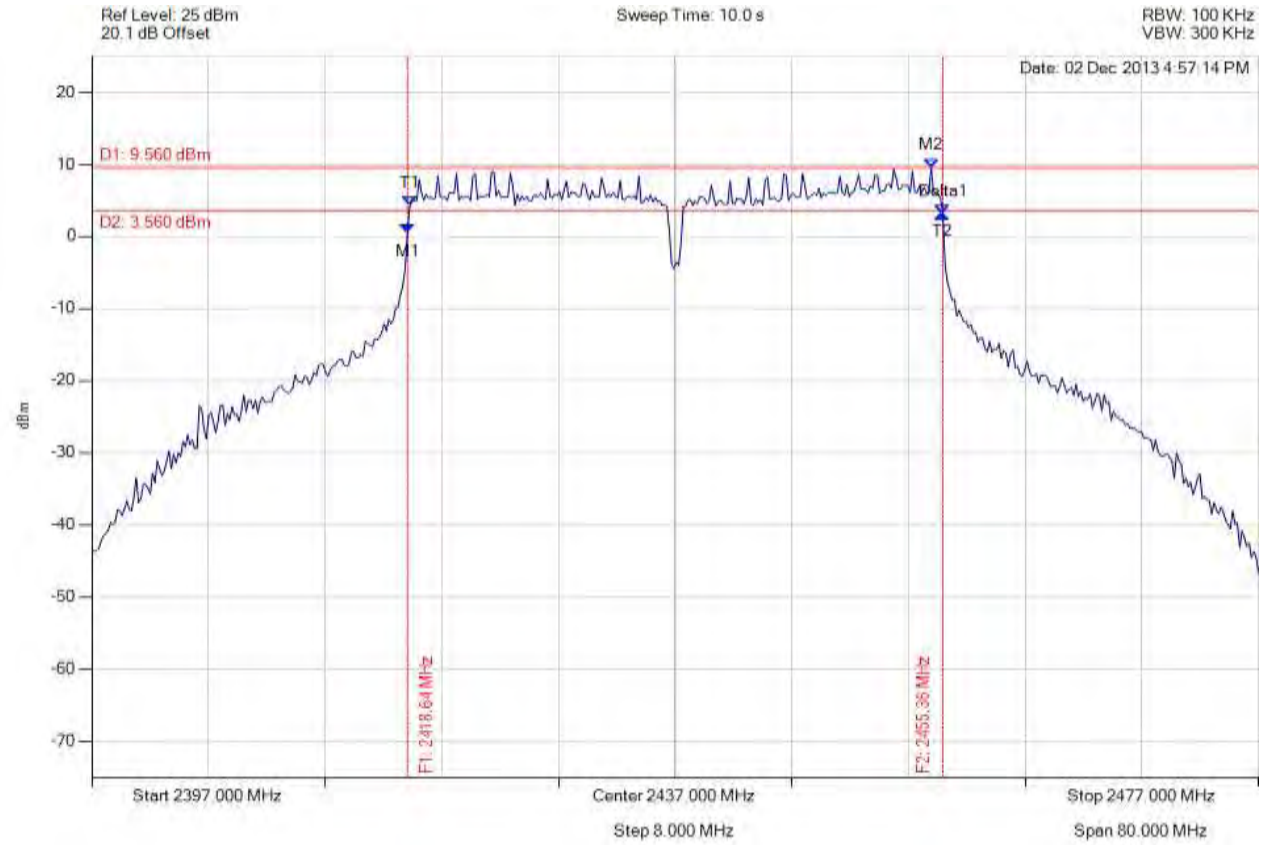
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 2437.00 MHz, Chain a, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2418.643 MHz : 0.422 dBm M2 : 2454.555 MHz : 9.560 dBm Delta1 : 36.713 MHz : 2.782 dB T1 : 2418.804 MHz : 4.260 dBm T2 : 2455.357 MHz : 3.204 dBm OBW : 36.553 MHz	Measured 6 dB Bandwidth: 36.713 MHz Limit: ≥500.0 kHz Margin: -36.21 MHz

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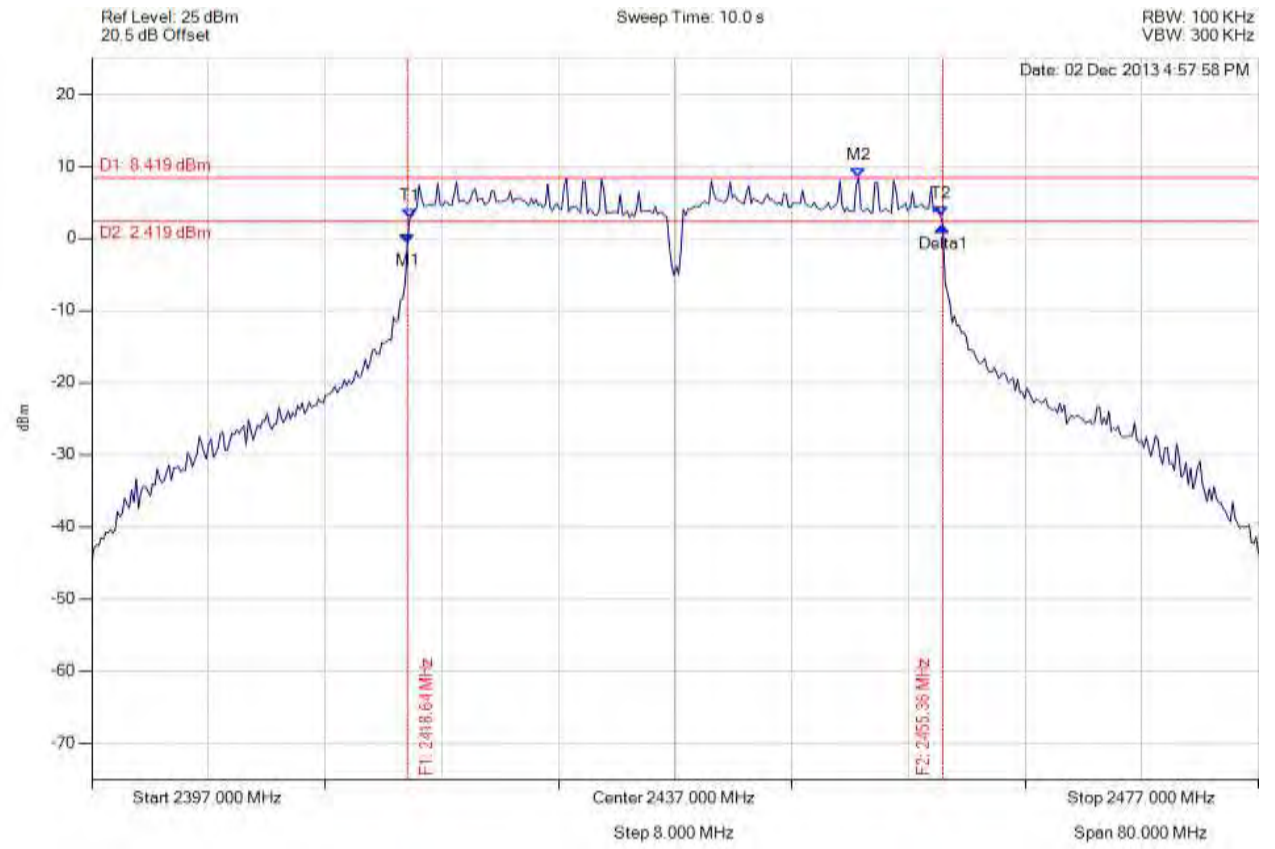
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 2437.00 MHz, Chain b, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2418.643 MHz : -0.656 dBm M2 : 2449.585 MHz : 8.419 dBm Delta1 : 36.713 MHz : 2.347 dB T1 : 2418.804 MHz : 2.865 dBm T2 : 2455.196 MHz : 3.202 dBm OBW : 36.393 MHz	Measured 6 dB Bandwidth: 36.713 MHz Limit: ≥500.0 kHz Margin: -36.21 MHz

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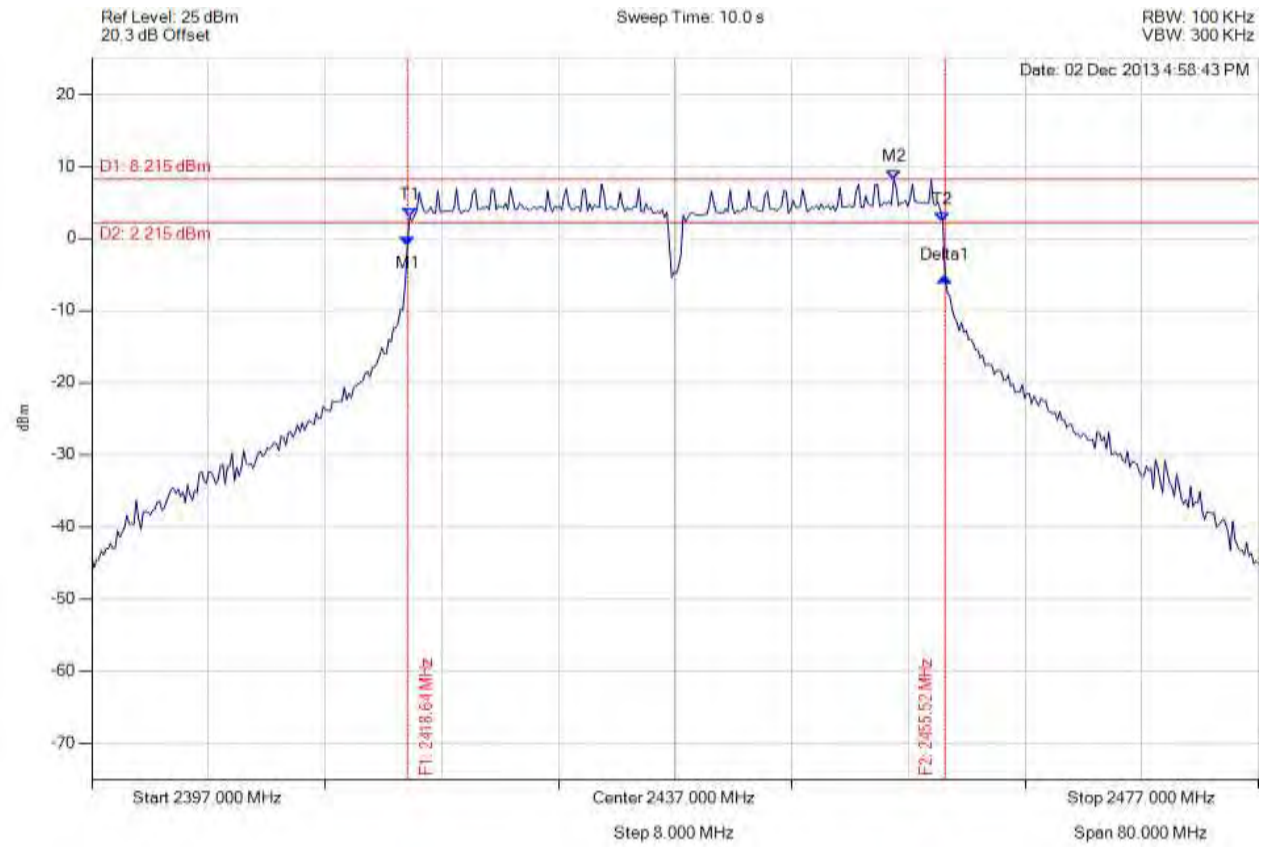
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 2437.00 MHz, Chain c, Temp: Ambient, Voltage: 48 Vdc

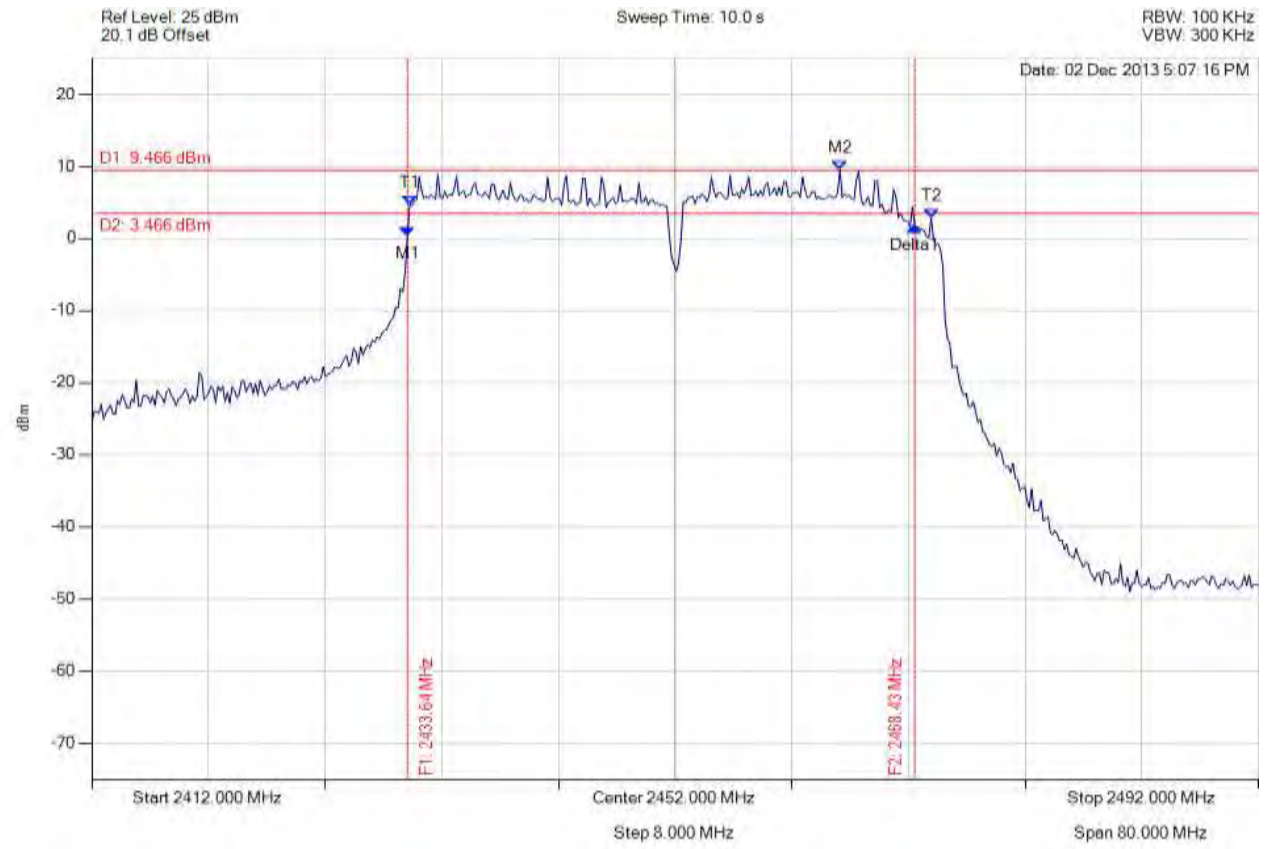


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2418.643 MHz : -0.973 dBm M2 : 2451.990 MHz : 8.215 dBm Delta1 : 36.874 MHz : -4.385 dB T1 : 2418.804 MHz : 3.029 dBm T2 : 2455.357 MHz : 2.281 dBm OBW : 36.553 MHz	Measured 6 dB Bandwidth: 36.874 MHz Limit: ≥500.0 kHz Margin: -36.37 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 2452.00 MHz, Chain a, Temp: Ambient, Voltage: 48 Vdc

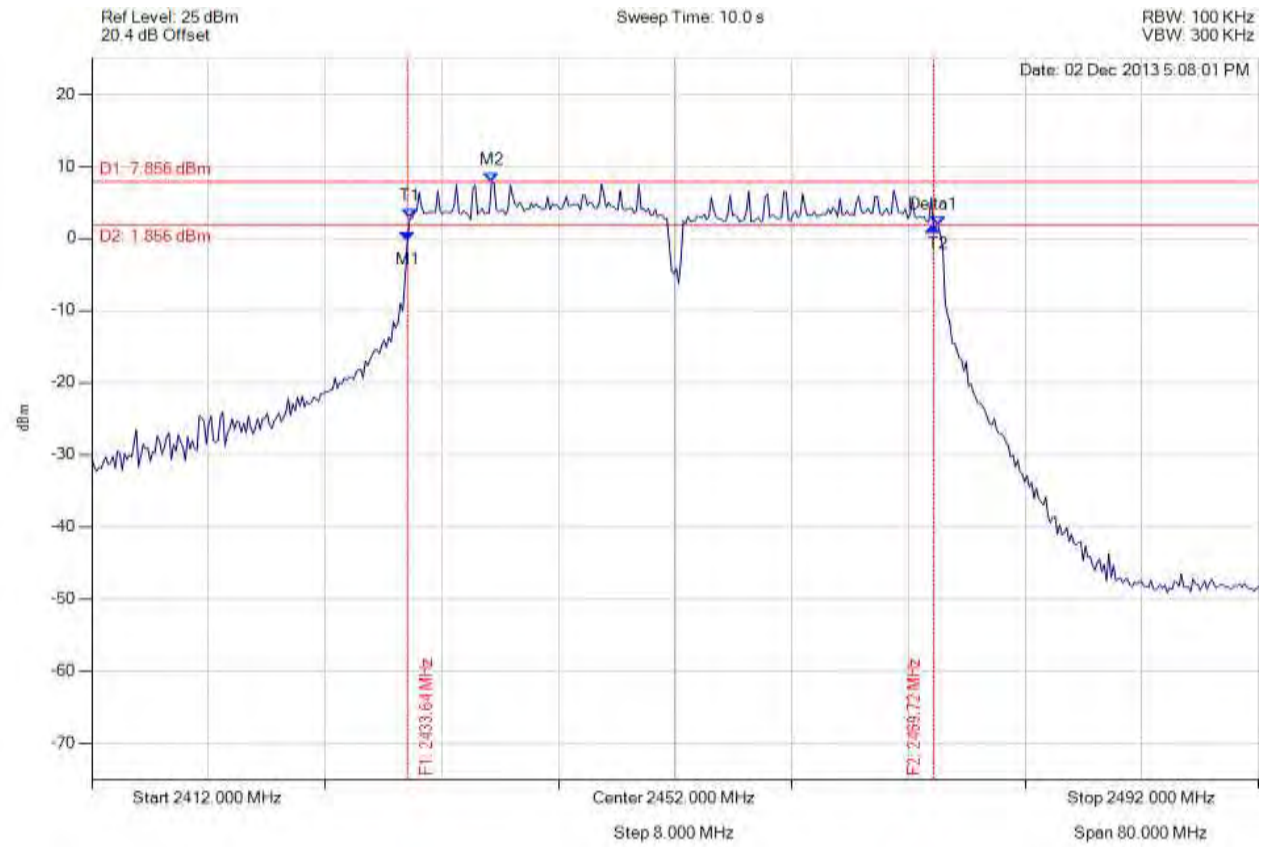


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2433.643 MHz : 0.363 dBm M2 : 2463.303 MHz : 9.466 dBm Delta1 : 34.790 MHz : 1.241 dB T1 : 2433.804 MHz : 4.638 dBm T2 : 2469.555 MHz : 2.865 dBm OBW : 35.752 MHz	Measured 6 dB Bandwidth: 34.790 MHz Limit: ≥500.0 kHz Margin: -34.29 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 2452.00 MHz, Chain b, Temp: Ambient, Voltage: 48 Vdc

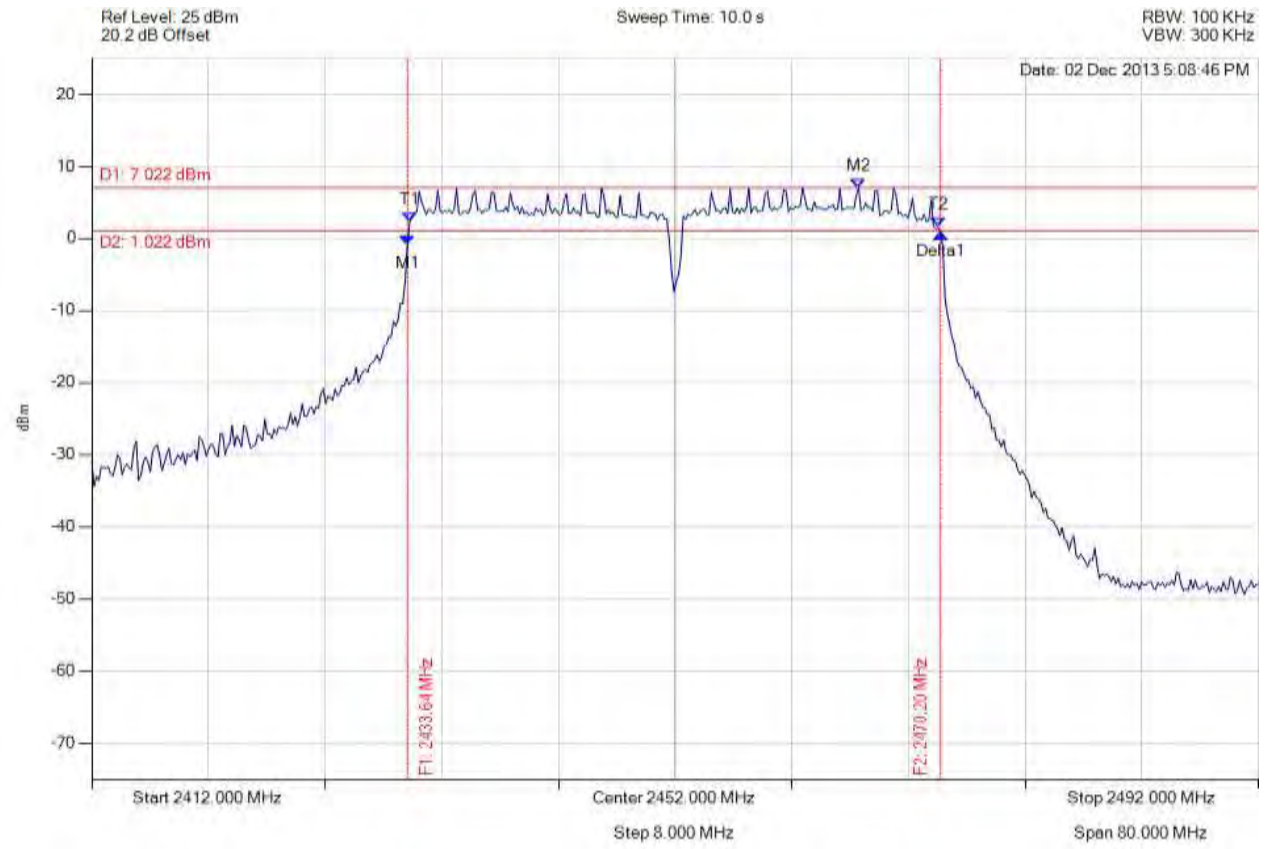


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2433.643 MHz : -0.408 dBm M2 : 2439.415 MHz : 7.856 dBm Delta1 : 36.072 MHz : 2.005 dB T1 : 2433.804 MHz : 2.743 dBm T2 : 2470.036 MHz : 1.750 dBm OBW : 36.232 MHz	Measured 6 dB Bandwidth: 36.072 MHz Limit: ≥500.0 kHz Margin: -35.57 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 2452.00 MHz, Chain c, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2433.643 MHz : -0.912 dBm M2 : 2464.585 MHz : 7.022 dBm Delta1 : 36.553 MHz : 1.631 dB T1 : 2433.804 MHz : 2.314 dBm T2 : 2470.036 MHz : 1.561 dBm OBW : 36.232 MHz	Measured 6 dB Bandwidth: 36.553 MHz Limit: ≥500.0 kHz Margin: -36.05 MHz

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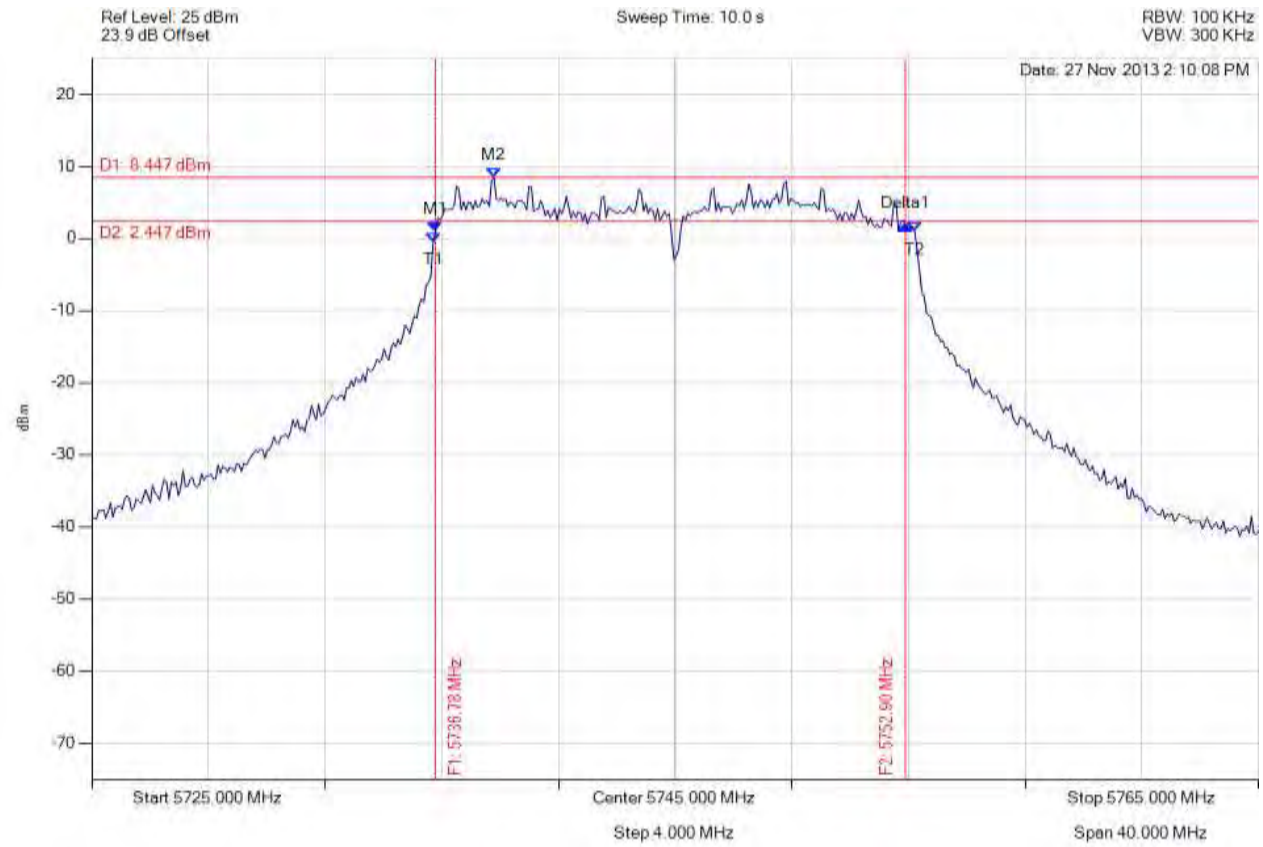
6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5745.00 MHz, Chain a, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5736.784 MHz : 1.026 dBm M2 : 5738.788 MHz : 8.447 dBm Delta1 : 16.112 MHz : 0.844 dB T1 : 5736.703 MHz : -0.491 dBm T2 : 5753.216 MHz : 0.953 dBm OBW : 16.513 MHz	Measured 6 dB Bandwidth: 16.112 MHz Limit: ≥500.0 kHz Margin: -15.61 MHz

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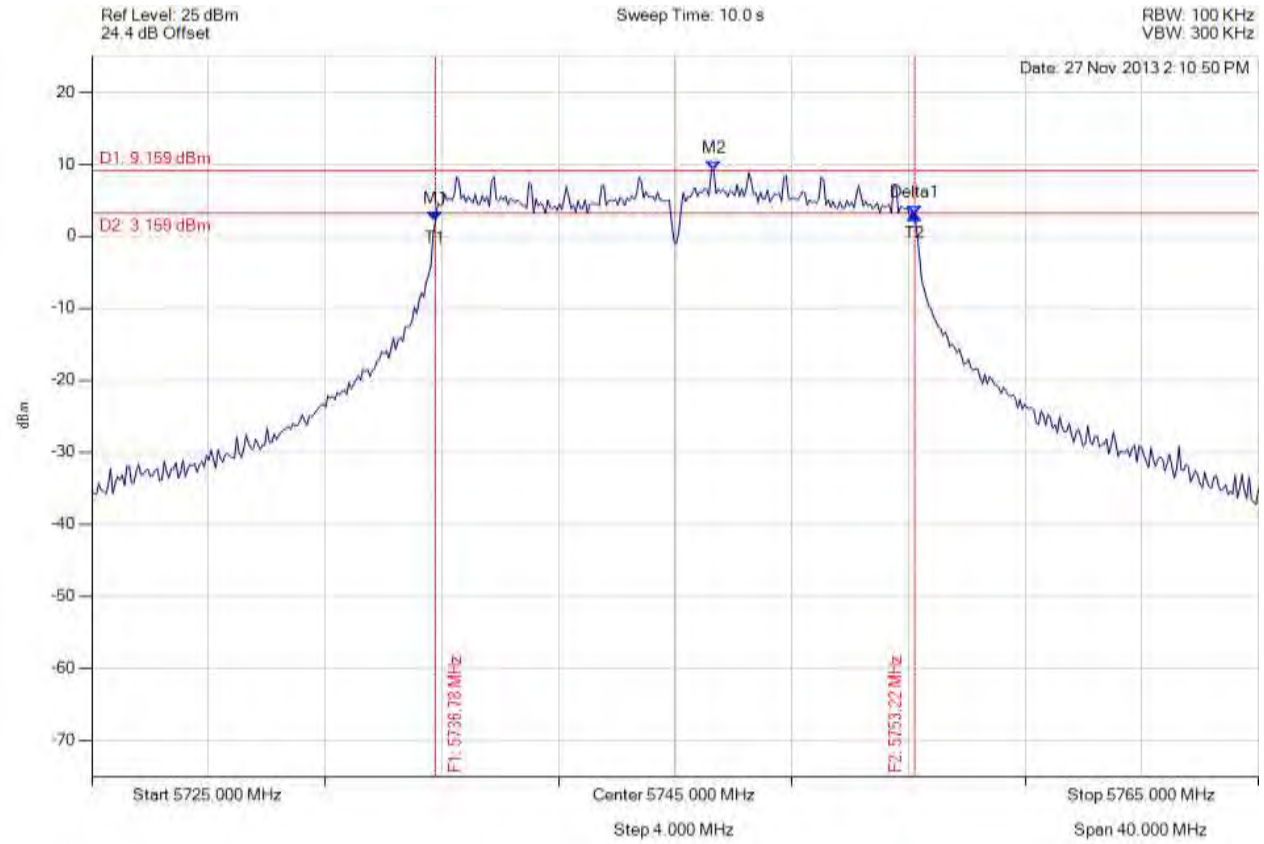
6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5745.00 MHz, Chain b, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5736.784 MHz : 2.208 dBm M2 : 5746.323 MHz : 9.159 dBm Delta1 : 16.433 MHz : 0.775 dB T1 : 5736.784 MHz : 2.208 dBm T2 : 5753.216 MHz : 2.983 dBm OBW : 16.433 MHz	Measured 6 dB Bandwidth: 16.433 MHz Limit: ≥500.0 kHz Margin: -15.93 MHz

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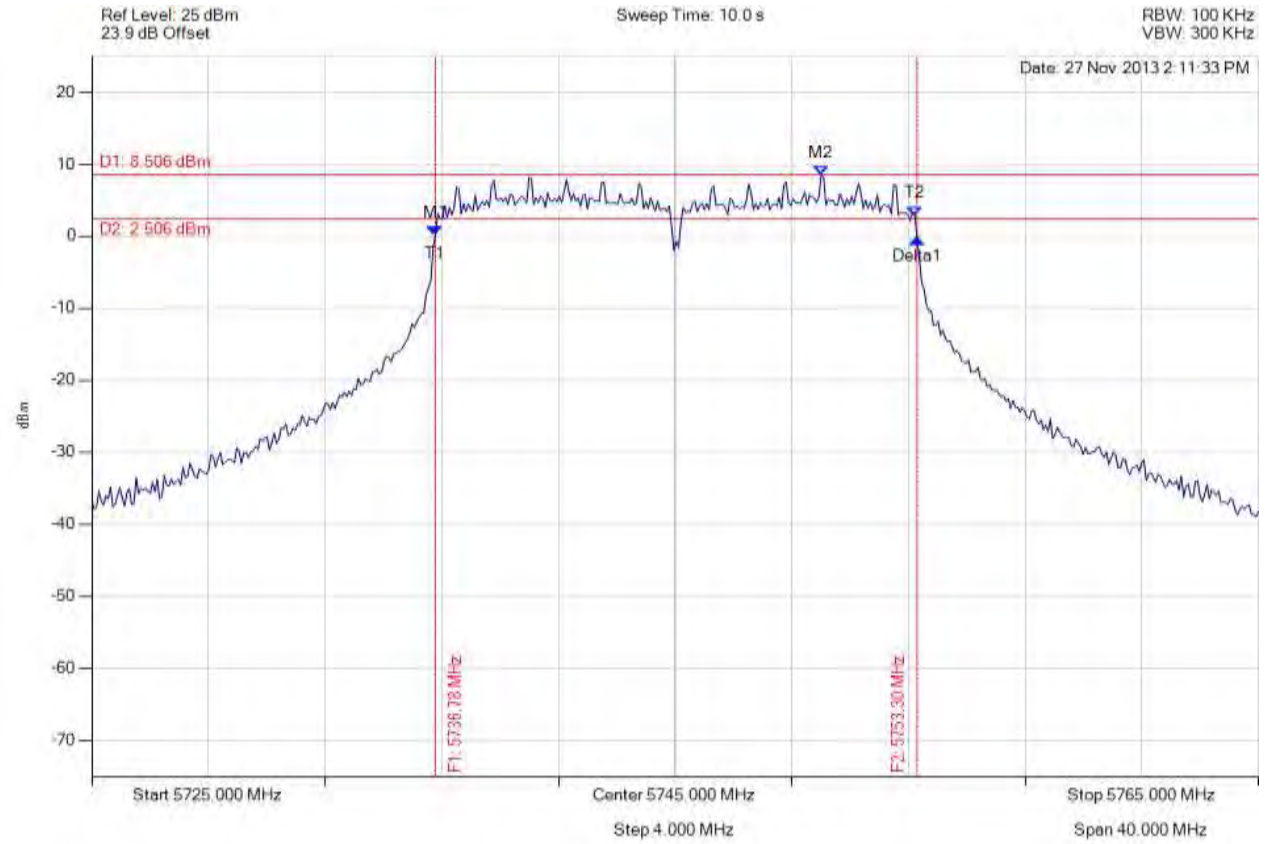
6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5745.00 MHz, Chain c, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5736.784 MHz : 0.148 dBm M2 : 5750.010 MHz : 8.506 dBm Delta1 : 16.513 MHz : -0.486 dB T1 : 5736.784 MHz : 0.148 dBm T2 : 5753.216 MHz : 2.879 dBm OBW : 16.433 MHz	Measured 6 dB Bandwidth: 16.513 MHz Limit: ≥500.0 kHz Margin: -16.01 MHz

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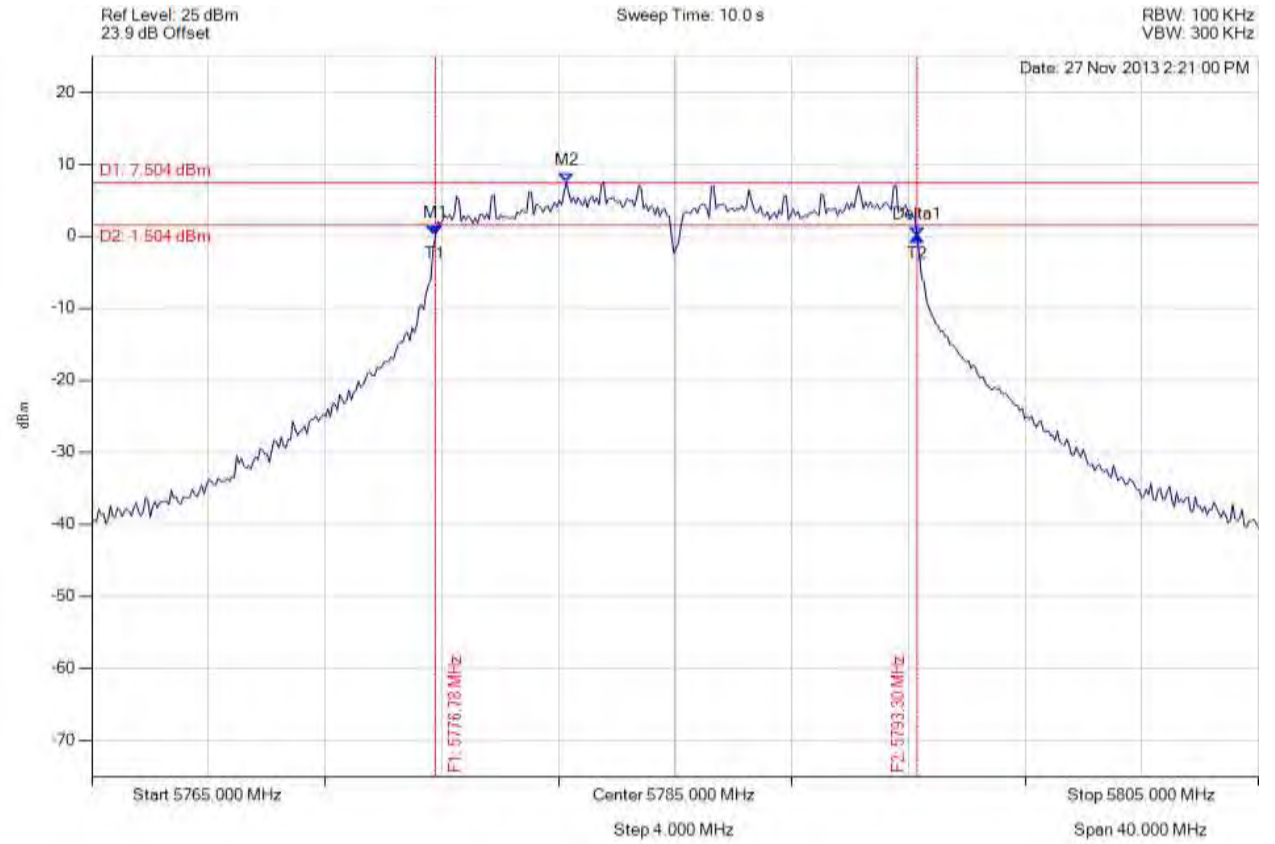
6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5785.00 MHz, Chain a, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5776.784 MHz : 0.115 dBm M2 : 5781.273 MHz : 7.504 dBm Delta1 : 16.513 MHz : -0.106 dB T1 : 5776.784 MHz : 0.115 dBm T2 : 5793.297 MHz : 0.009 dBm OBW : 16.513 MHz	Measured 6 dB Bandwidth: 16.513 MHz Limit: ≥500.0 kHz Margin: -16.01 MHz

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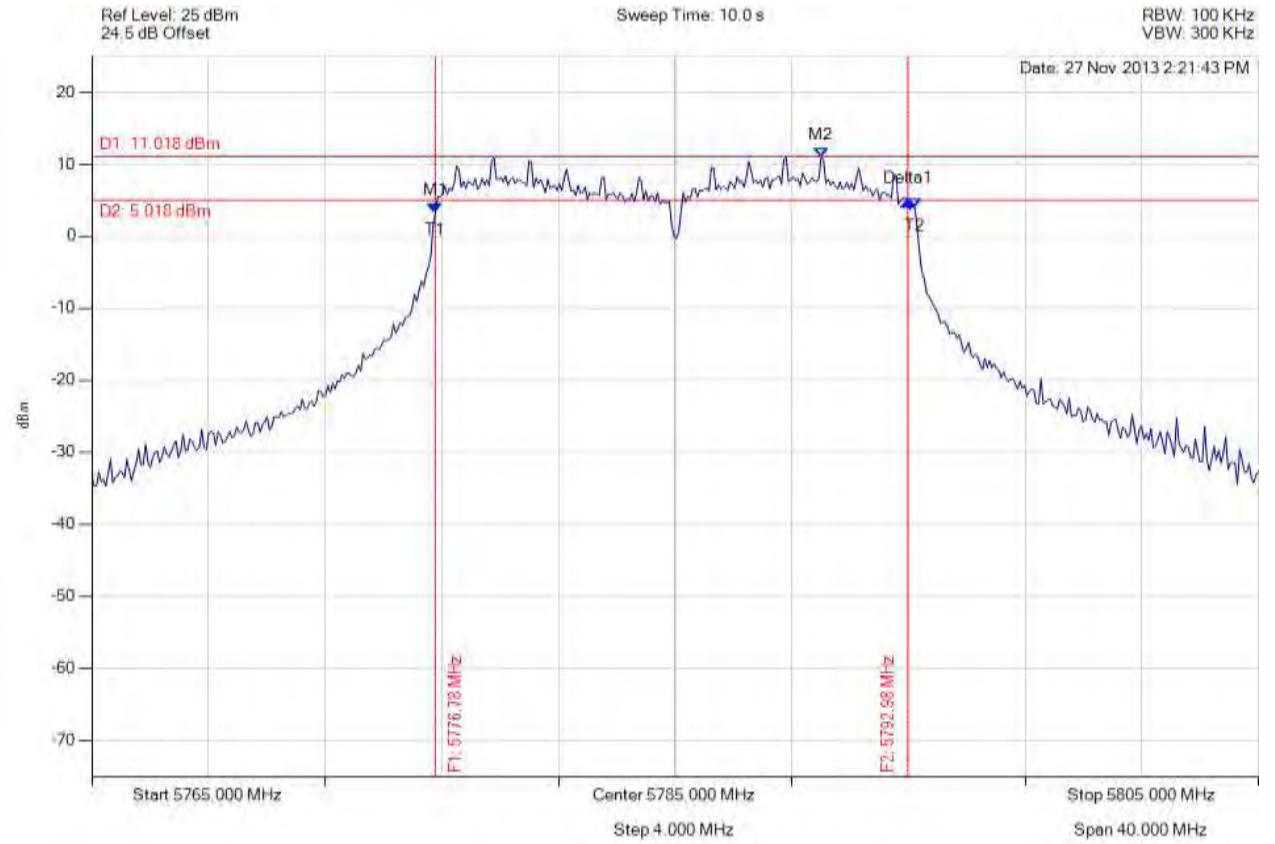
6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5785.00 MHz, Chain b, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5776.784 MHz : 3.357 dBm M2 : 5790.010 MHz : 11.018 dBm Delta1 : 16.192 MHz : 1.527 dB T1 : 5776.784 MHz : 3.357 dBm T2 : 5793.216 MHz : 3.902 dBm OBW : 16.433 MHz	Measured 6 dB Bandwidth: 16.192 MHz Limit: ≥500.0 kHz Margin: -15.69 MHz

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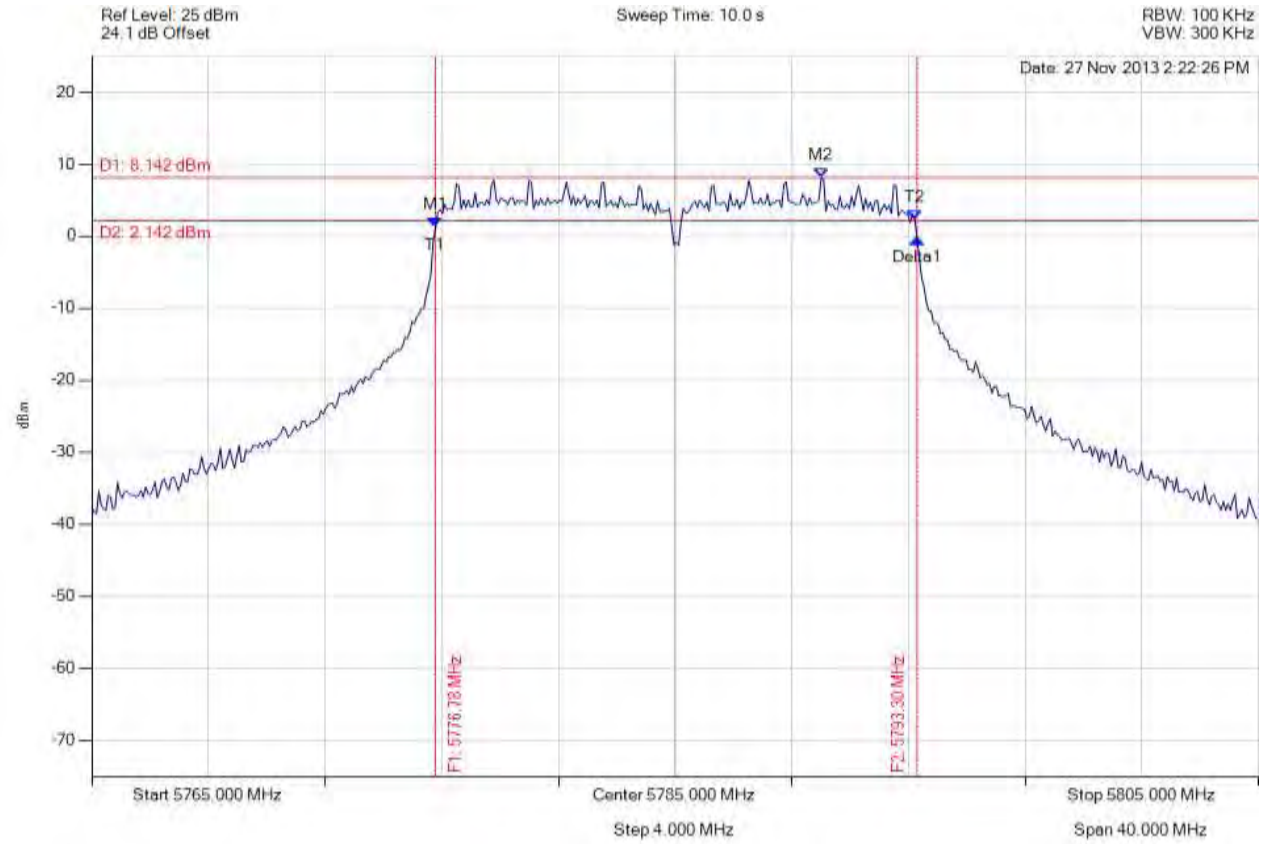
6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5785.00 MHz, Chain c, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5776.784 MHz : 1.252 dBm M2 : 5790.010 MHz : 8.142 dBm Delta1 : 16.513 MHz : -1.680 dB T1 : 5776.784 MHz : 1.252 dBm T2 : 5793.216 MHz : 2.307 dBm OBW : 16.433 MHz	Measured 6 dB Bandwidth: 16.513 MHz Limit: ≥500.0 kHz Margin: -16.01 MHz

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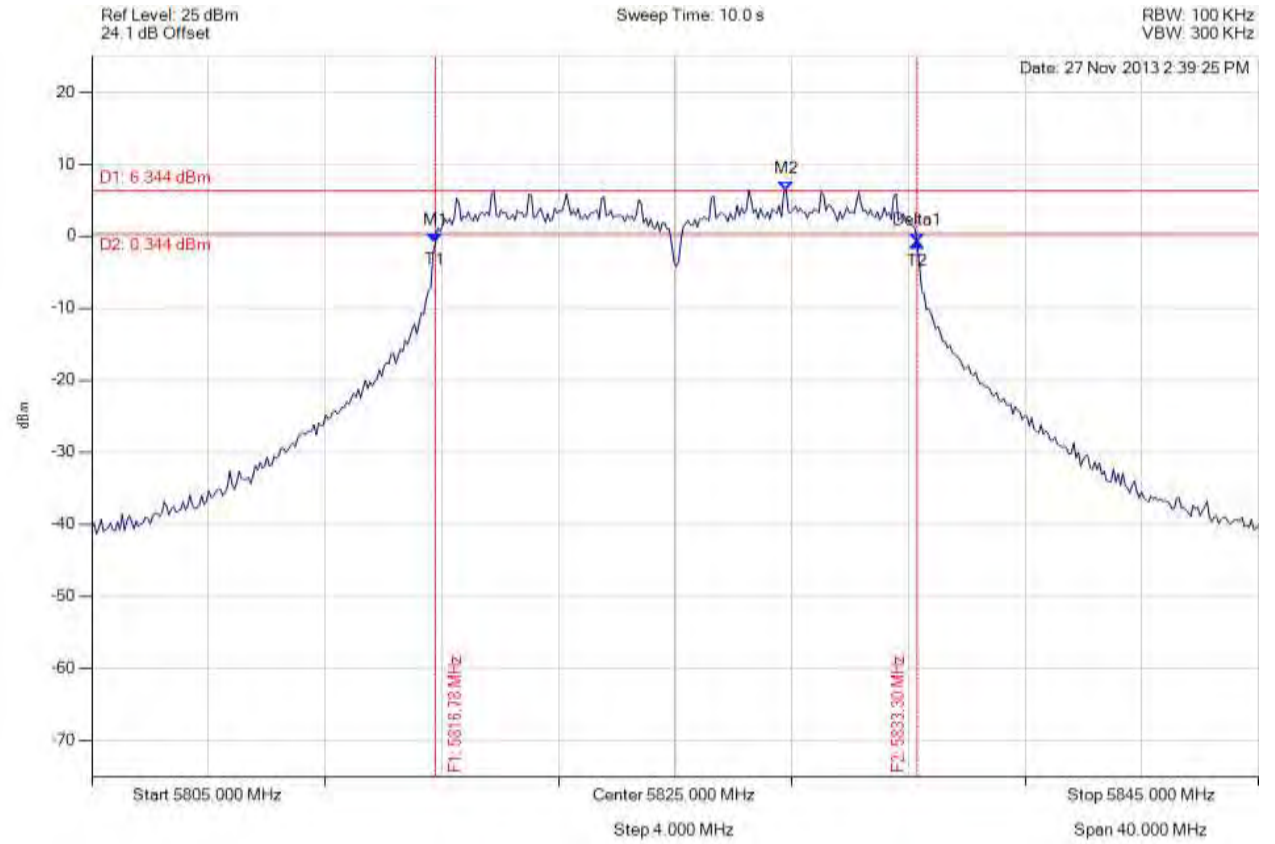
6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5825.00 MHz, Chain a, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5816.784 MHz : -0.810 dBm M2 : 5828.808 MHz : 6.344 dBm Delta1 : 16.513 MHz : -0.128 dB T1 : 5816.784 MHz : -0.810 dBm T2 : 5833.297 MHz : -0.938 dBm OBW : 16.513 MHz	Measured 6 dB Bandwidth: 16.513 MHz Limit: ≥500.0 kHz Margin: -16.01 MHz

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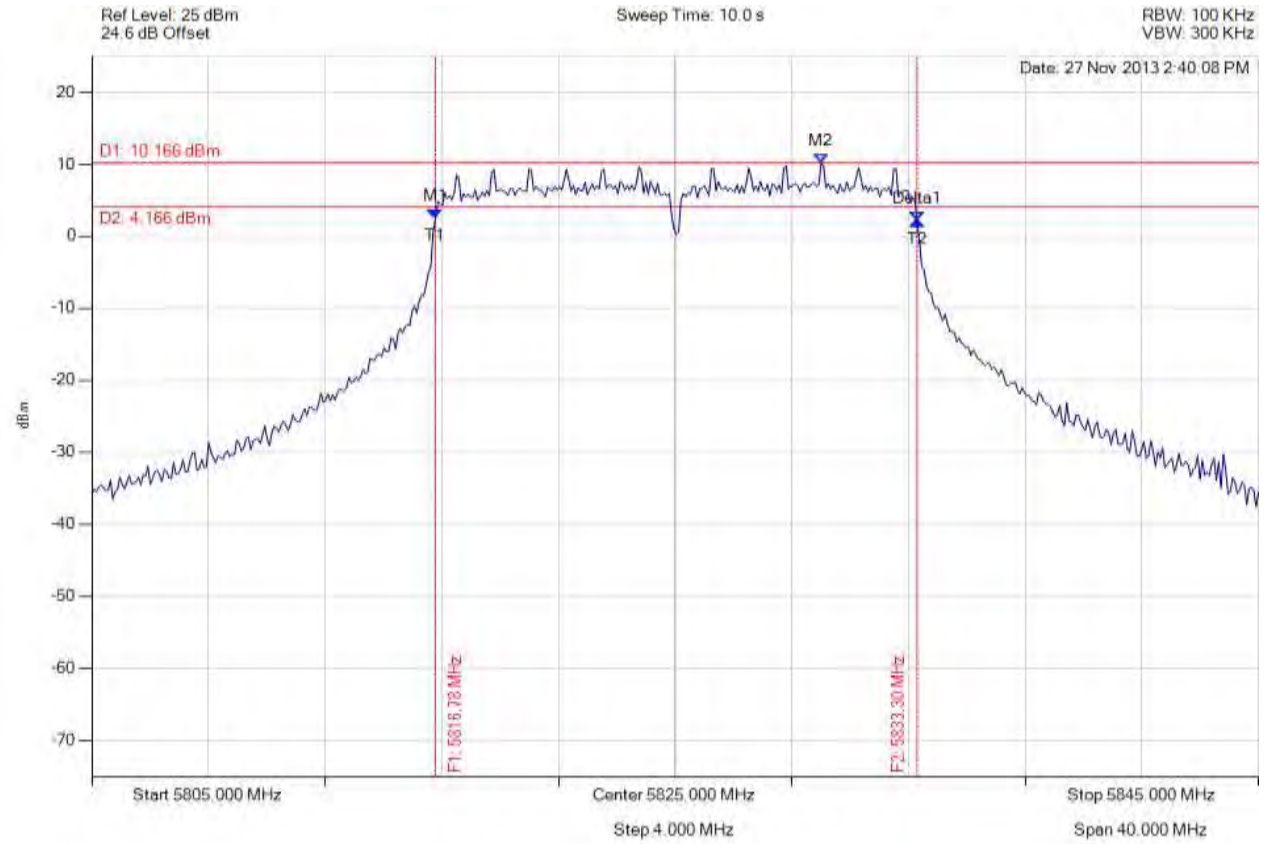
6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5825.00 MHz, Chain b, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5816.784 MHz : 2.511 dBm M2 : 5830.010 MHz : 10.166 dBm Delta1 : 16.513 MHz : -0.421 dB T1 : 5816.784 MHz : 2.511 dBm T2 : 5833.297 MHz : 2.090 dBm OBW : 16.513 MHz	Measured 6 dB Bandwidth: 16.513 MHz Limit: ≥500.0 kHz Margin: -16.01 MHz

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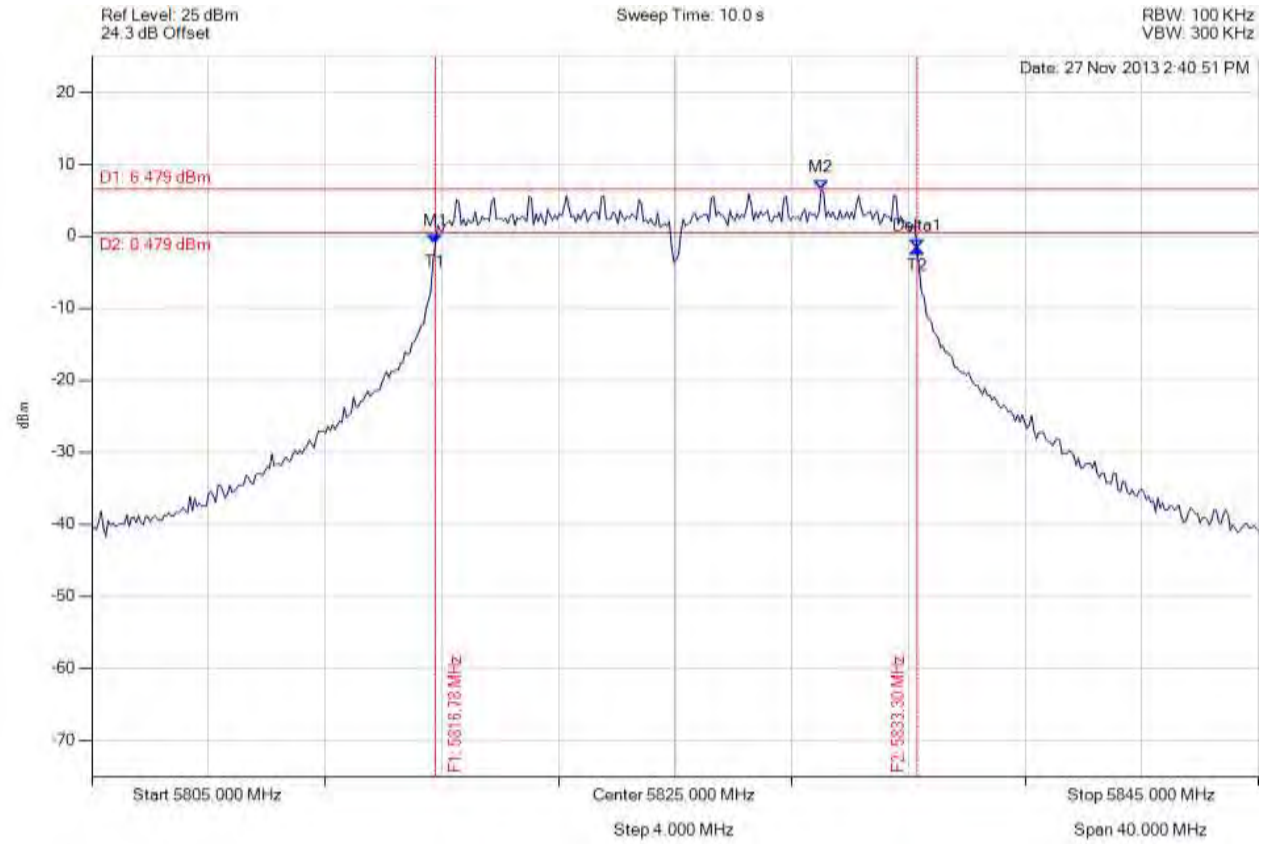
6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5825.00 MHz, Chain c, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5816.784 MHz : -1.054 dBm M2 : 5830.010 MHz : 6.479 dBm Delta1 : 16.513 MHz : -0.576 dB T1 : 5816.784 MHz : -1.054 dBm T2 : 5833.297 MHz : -1.630 dBm OBW : 16.513 MHz	Measured 6 dB Bandwidth: 16.513 MHz Limit: ≥500.0 kHz Margin: -16.01 MHz

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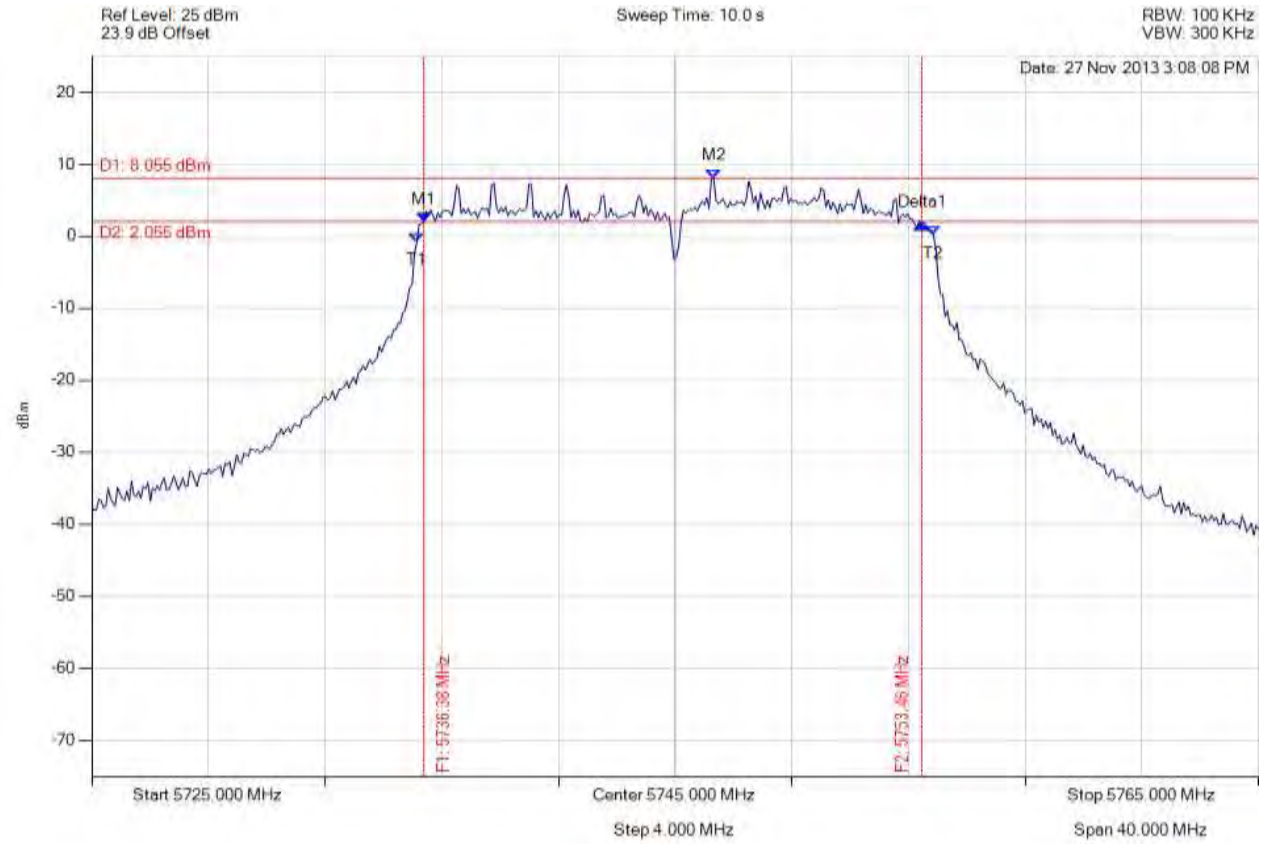
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5745.00 MHz, Chain a, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5736.383 MHz : 1.980 dBm M2 : 5746.323 MHz : 8.055 dBm Delta1 : 17.074 MHz : -0.350 dB T1 : 5736.142 MHz : -0.808 dBm T2 : 5753.858 MHz : 0.121 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.074 MHz Limit: ≥500.0 kHz Margin: -16.57 MHz

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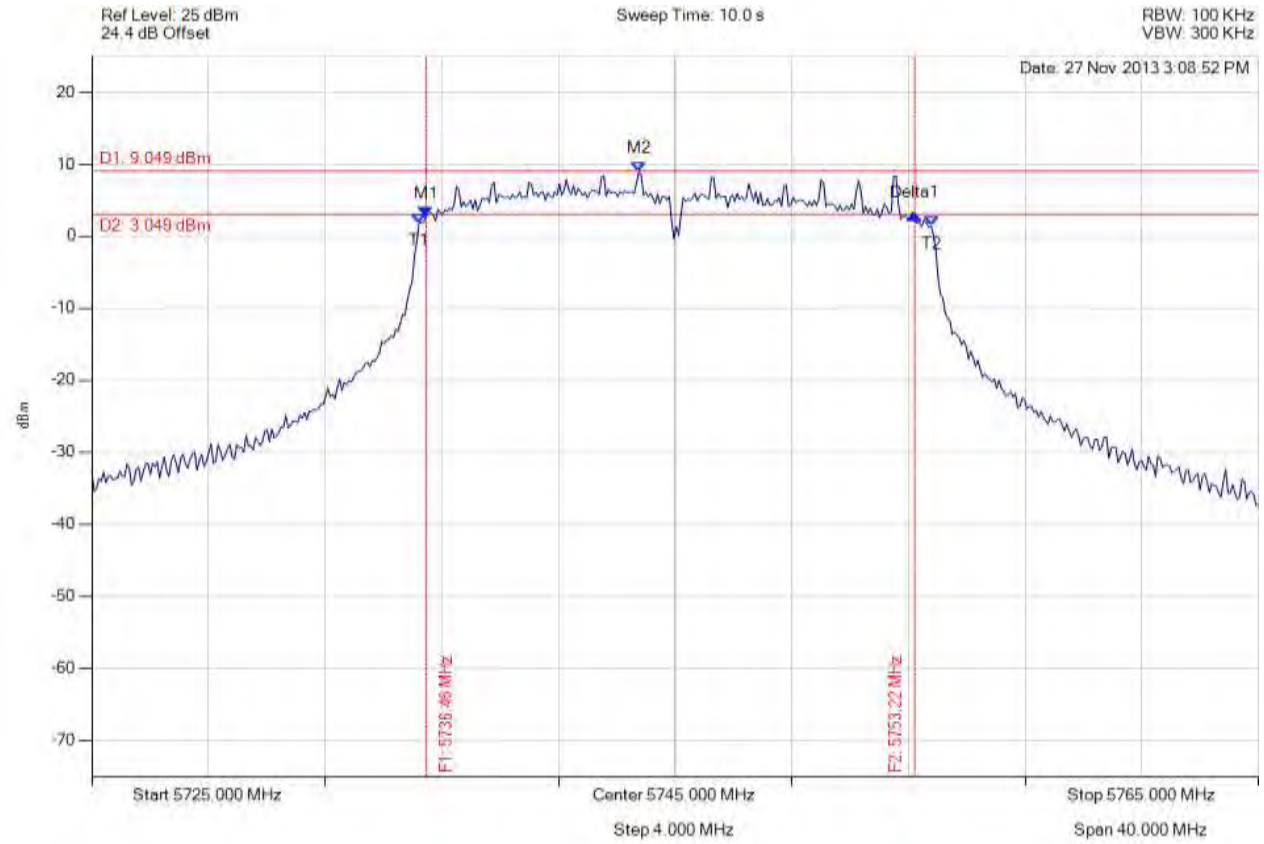
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5745.00 MHz, Chain b, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5736.463 MHz : 2.834 dBm M2 : 5743.758 MHz : 9.049 dBm Delta1 : 16.754 MHz : 0.155 dB T1 : 5736.222 MHz : 1.850 dBm T2 : 5753.778 MHz : 1.413 dBm OBW : 17.555 MHz	Measured 6 dB Bandwidth: 16.754 MHz Limit: ≥500.0 kHz Margin: -16.25 MHz

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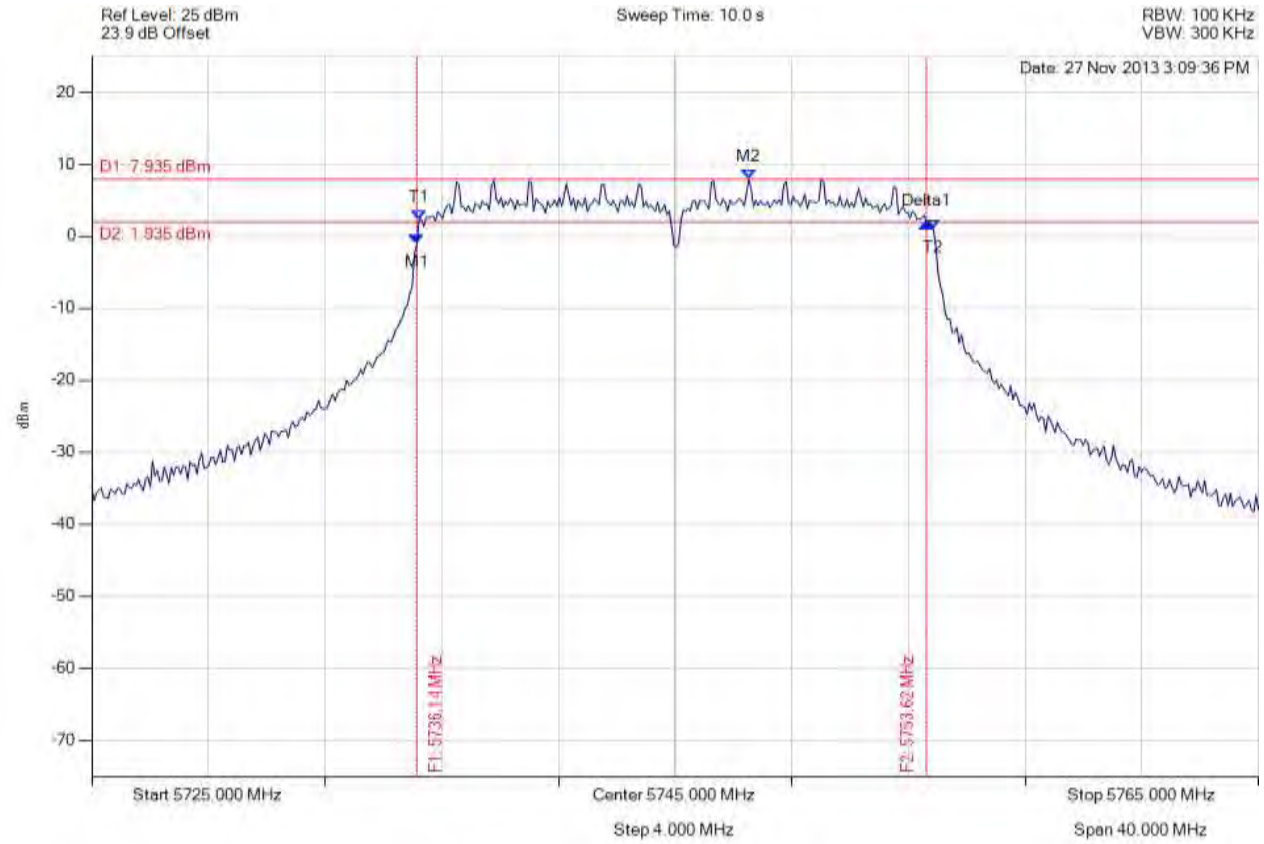
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5745.00 MHz, Chain c, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5736.142 MHz : -1.103 dBm M2 : 5747.525 MHz : 7.935 dBm Delta1 : 17.475 MHz : 2.922 dB T1 : 5736.222 MHz : 2.283 dBm T2 : 5753.858 MHz : 0.910 dBm OBW : 17.635 MHz	Measured 6 dB Bandwidth: 17.475 MHz Limit: ≥500.0 kHz Margin: -16.98 MHz

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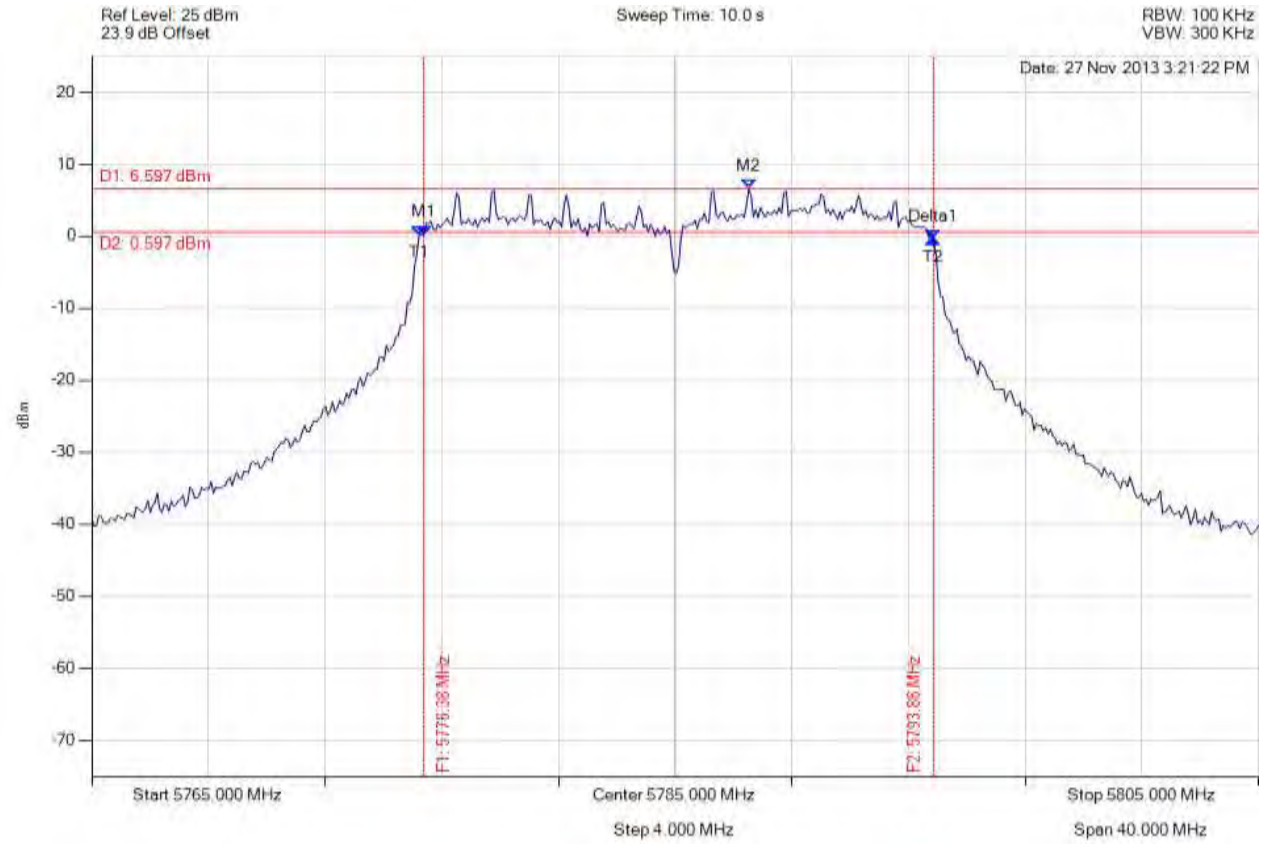
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5785.00 MHz, Chain a, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5776.383 MHz : 0.211 dBm M2 : 5787.525 MHz : 6.597 dBm Delta1 : 17.475 MHz : -0.649 dB T1 : 5776.222 MHz : 0.176 dBm T2 : 5793.858 MHz : -0.438 dBm OBW : 17.635 MHz	Measured 6 dB Bandwidth: 17.475 MHz Limit: ≥500.0 kHz Margin: -16.98 MHz

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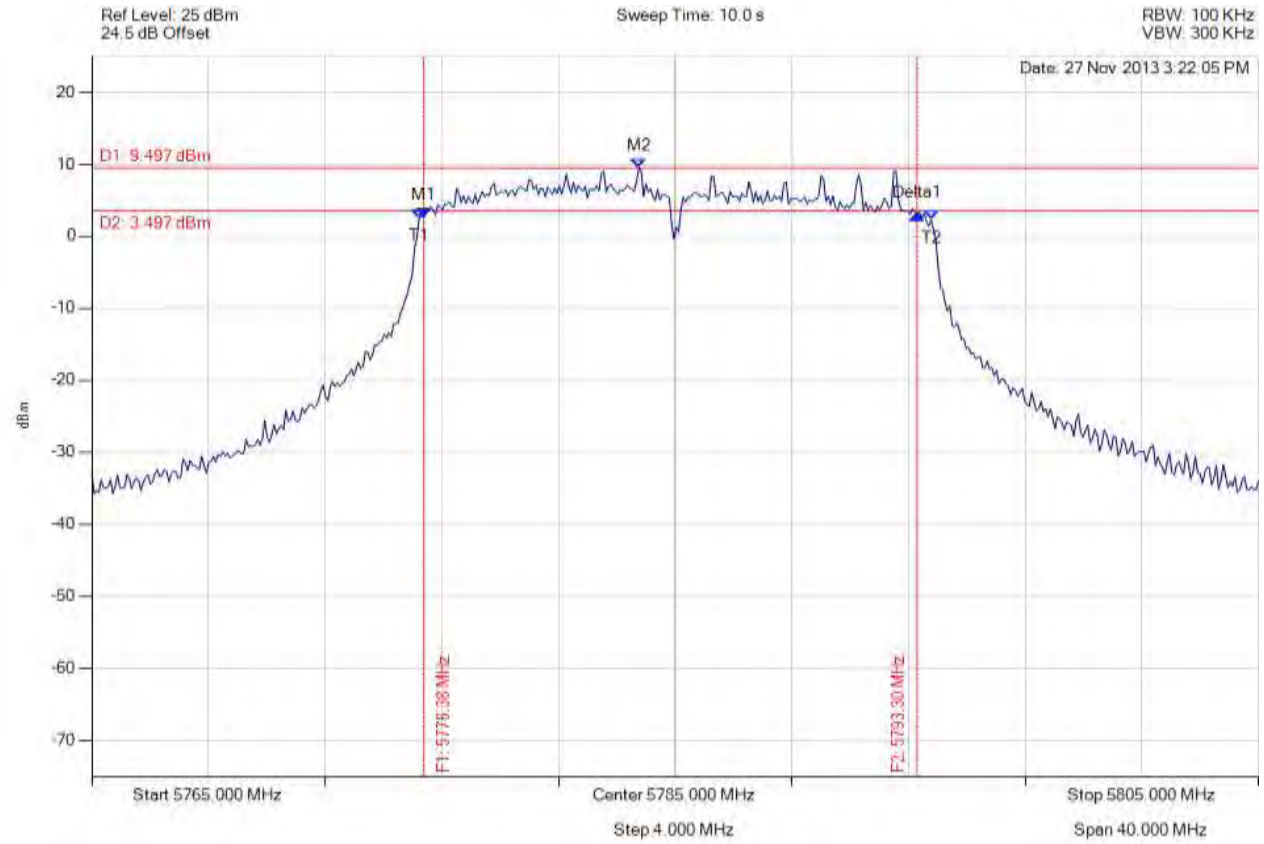
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5785.00 MHz, Chain b, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5776.383 MHz : 2.592 dBm M2 : 5783.758 MHz : 9.497 dBm Delta1 : 16.914 MHz : 0.370 dB T1 : 5776.222 MHz : 2.497 dBm T2 : 5793.778 MHz : 2.301 dBm OBW : 17.555 MHz	Measured 6 dB Bandwidth: 16.914 MHz Limit: ≥500.0 kHz Margin: -16.41 MHz

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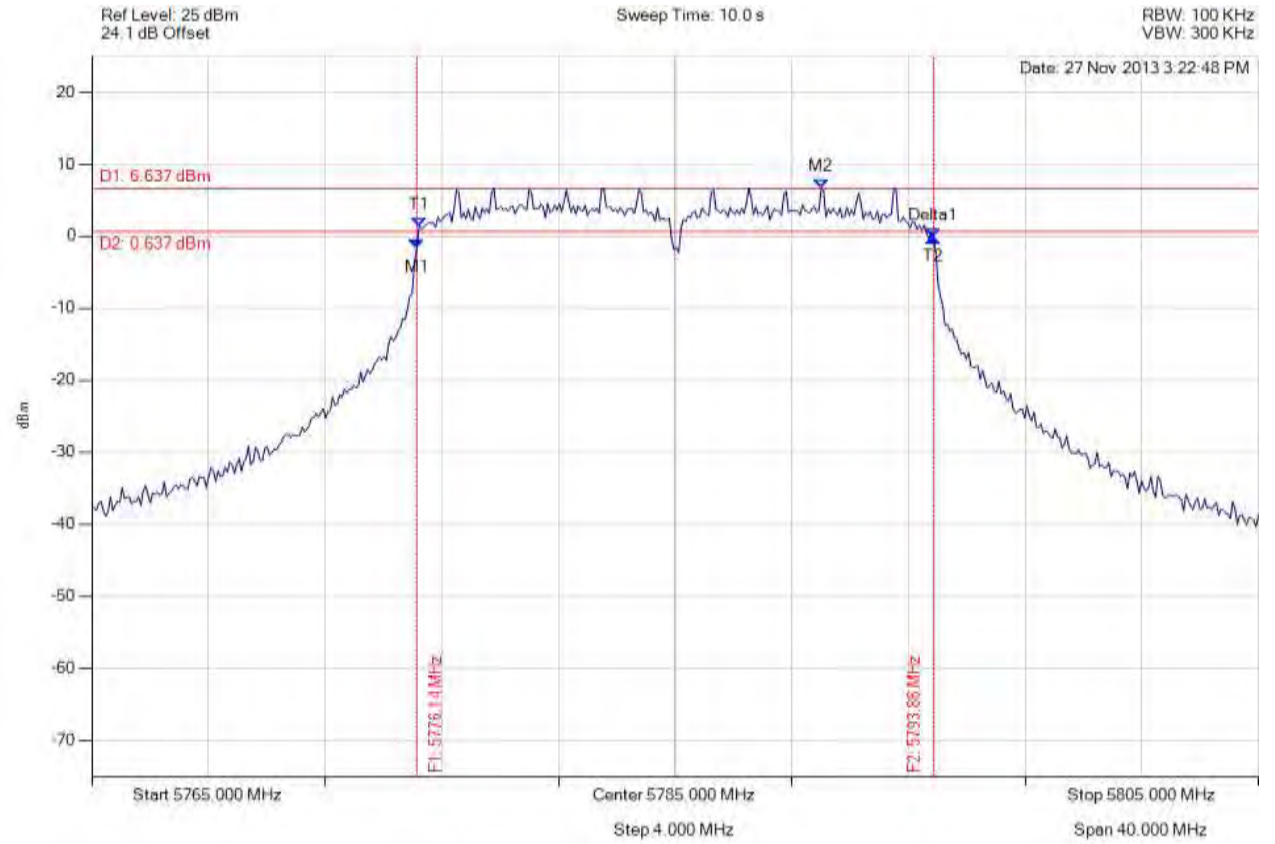
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5785.00 MHz, Chain c, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5776.142 MHz : -1.681 dBm M2 : 5790.010 MHz : 6.637 dBm Delta1 : 17.715 MHz : 1.493 dB T1 : 5776.222 MHz : 1.370 dBm T2 : 5793.858 MHz : -0.188 dBm OBW : 17.635 MHz	Measured 6 dB Bandwidth: 17.715 MHz Limit: ≥500.0 kHz Margin: -17.22 MHz

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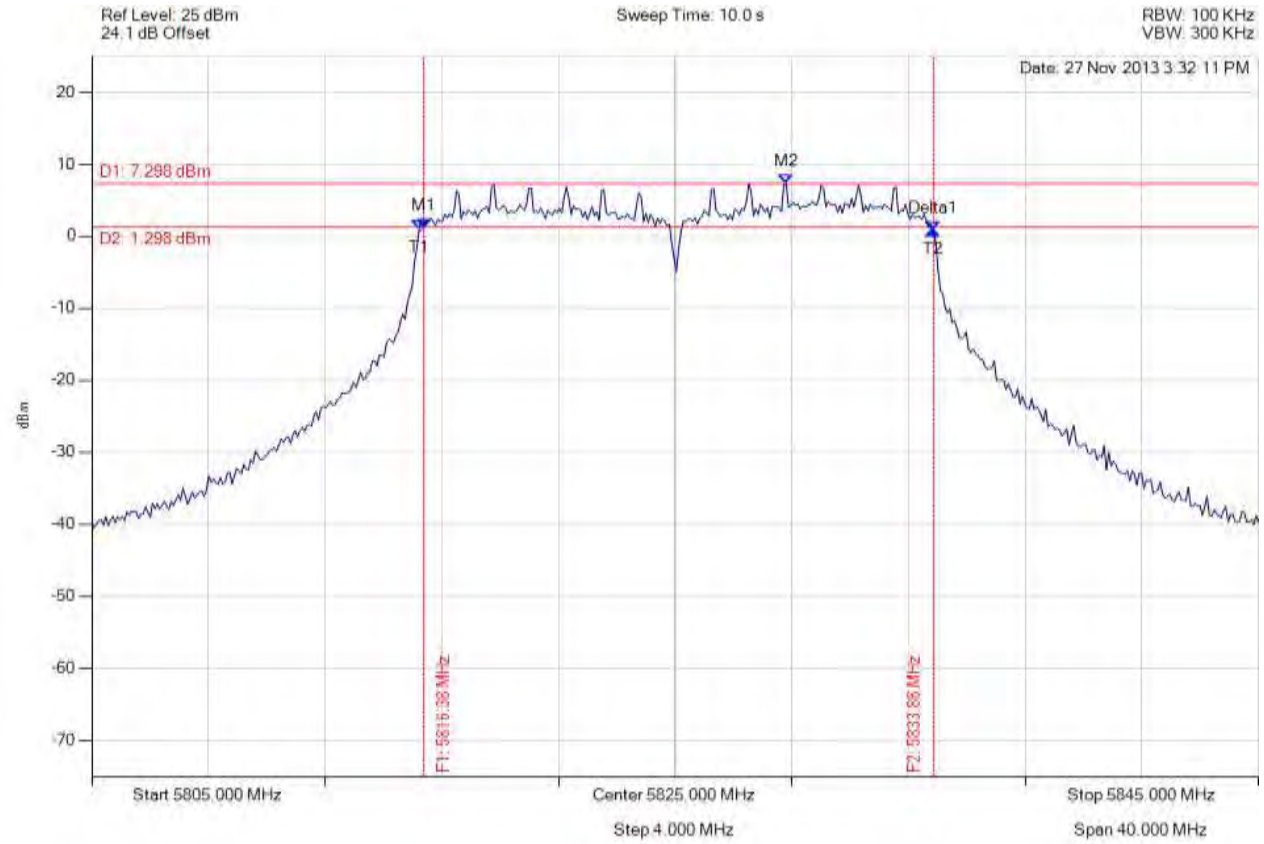
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5825.00 MHz, Chain a, Temp: Ambient, Voltage: 48 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5816.383 MHz : 1.179 dBm M2 : 5828.808 MHz : 7.298 dBm Delta1 : 17.475 MHz : -0.364 dB T1 : 5816.222 MHz : 0.937 dBm T2 : 5833.858 MHz : 0.815 dBm OBW : 17.635 MHz	Measured 6 dB Bandwidth: 17.475 MHz Limit: ≥500.0 kHz Margin: -16.98 MHz

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