Test of Aruba Networks APINR155, APINR15P

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

Test Report Serial No.: ARUB154-U1 Rev A

TEST REPORT

FROM

Test of Aruba Networks APINR155, APINR15P

to

To FCC 47 CFR Part 15.247 & IC RSS-210

Test Report Serial No.: ARUB154-U1 Rev A

Note: this report contains data with regard to the 2400 to 2483.5 MHz and 5725 to 5850 MHz operational modes of the Aruba Networks APINR155 & APINR15P Wireless Access Point. Test data for the 5,150 - 5,250 (non-DFS bands) is reported in MiCOM Labs test report ARUB154-U2

This report supersedes: NONE

Applicant: Aruba Networks
1344 Crossman Avenue
Sunnyvale
California 94089, USA

Product Function: Wireless Remote Access Point

Copy No: pdf Issue Date: 15th May 2013

This Test Report is Issued Under the Authority of;

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ACCREDITED
TEST CERTIFICATE #2381.01

MiCOM Labs is an ISO 17025 Accredited Testing Laboratory

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ACCREDITATION, LISTINGS & RECOGNITION

TESTING ACCREDITATION

MiCOM Labs, Inc. is an accredited Electrical testing laboratory per the international standard 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
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 A	15th May 2013	Initial release.

TEST RESULT CERTIFICATE

Manufacturer:	Aruba Networks 1344 Crossman Avenue Sunnyvale California 94089, USA	Tested By:	MiCOM Labs, Inc. 440 Boulder Court Suite 200 Pleasanton California, 94566, USA
EUT:	802.11a/b/g/n Wireless Remote Access Point	Telephone:	+1 925 462 0304
Model:	APINR155, APINR15P	Fax:	+1 925 462 0306
S/N's:	CC00000002		
Test Date(s):	23rd - 29th March 2013	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
TEST CERTIFICATE #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 Aruba Networks APINR155, APINR15P to FCC Part 15.247 and Industry Canada RSS-210 regulations.
Applicant:	Aruba Networks 1344 Crossman Avenue Sunnyvale California 94089, USA
Manufacturer:	As applicant.
Laboratory performing the tests:	MiCOM Labs, Inc. 440 Boulder Court, Suite 200 Pleasanton, California 94566 USA
Test report reference number:	ARUB154-U1 Rev A
Date EUT received:	22nd March 2013
Standard(s) applied:	FCC 47 CFR Part 15.247 & IC RSS-210
Dates of test (from - to):	23rd - 29th March 2013
No of Units Tested:	One
Type of Equipment:	802.11a/b/g/n Wireless Access Point 2.4 GHz: 2x2, 5 GHz: 3x3 Spatial Multiplexing MIMO configuration
Manufacturers Trade Name:	Wireless Remote Access Point
Model(s):	APINR155, APINR15P
Location for use:	Indoor only
Declared Frequency Range(s):	2400 - 2483.5 MHz; 5725 - 5850 MHz
Hardware Rev	Rev A
Software Rev	armv5teart.ari
Type of Modulation:	Per 802.11 –CCK, BPSK, QPSK, DSSS, OFDM
Declared Nominal Average Output Power:	802.11b: +18 dBm 802.11g:Leg. +18dBm,HT-20 +18 dBm,HT-40 +18 dBm 802.11a:Leg. +18dBm,HT-20 +18 dBm,HT-40 +18 dBm
EUT Modes of Operation:	Legacy 802.11a/b/g, 802.11n HT-20, HT-40
Transmit/Receive Operation:	Time Division Duplex
Rated Input Voltage and Current:	APINR155: 12 Vdc, 1.5 A APINR155: 54 Vdc, 1.0 A
Operating Temperature Range:	Declared range 0° to +40°.
ITU Emission Designator:	2400 – 2483.5 MHz 802.11b 13M9G1D 2400 – 2483.5 MHz 802.11g 16M7D1D 2400 – 2483.5 MHz 802.11n – HT-20 17M9D1D 2400 – 2483.5 MHz 802.11n – HT-40 36M4D1D 5725 – 5850 MHz 802.11a 16M6D1D 5725 – 5850 MHz 802.11n – HT-20 17M7D1D 5725 – 5850 MHz 802.11n – HT-40 36M4D1D
Equipment Dimensions:	185mm (W) x 245mm (H) x 65mm (D)
Weight:	700 g
Primary function of equipment:	Wireless Access Point for transmitting data and voice.

2.2. Scope of Test Program

Aruba Networks APINR155, APINR15P Wireless Access Point

The scope of the test program was to test the Aruba Networks APINR155, APINR15P, 2x2 Spatial Multiplexing MIMO configurations in the frequency ranges 2400 - 2483.5 MHz 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

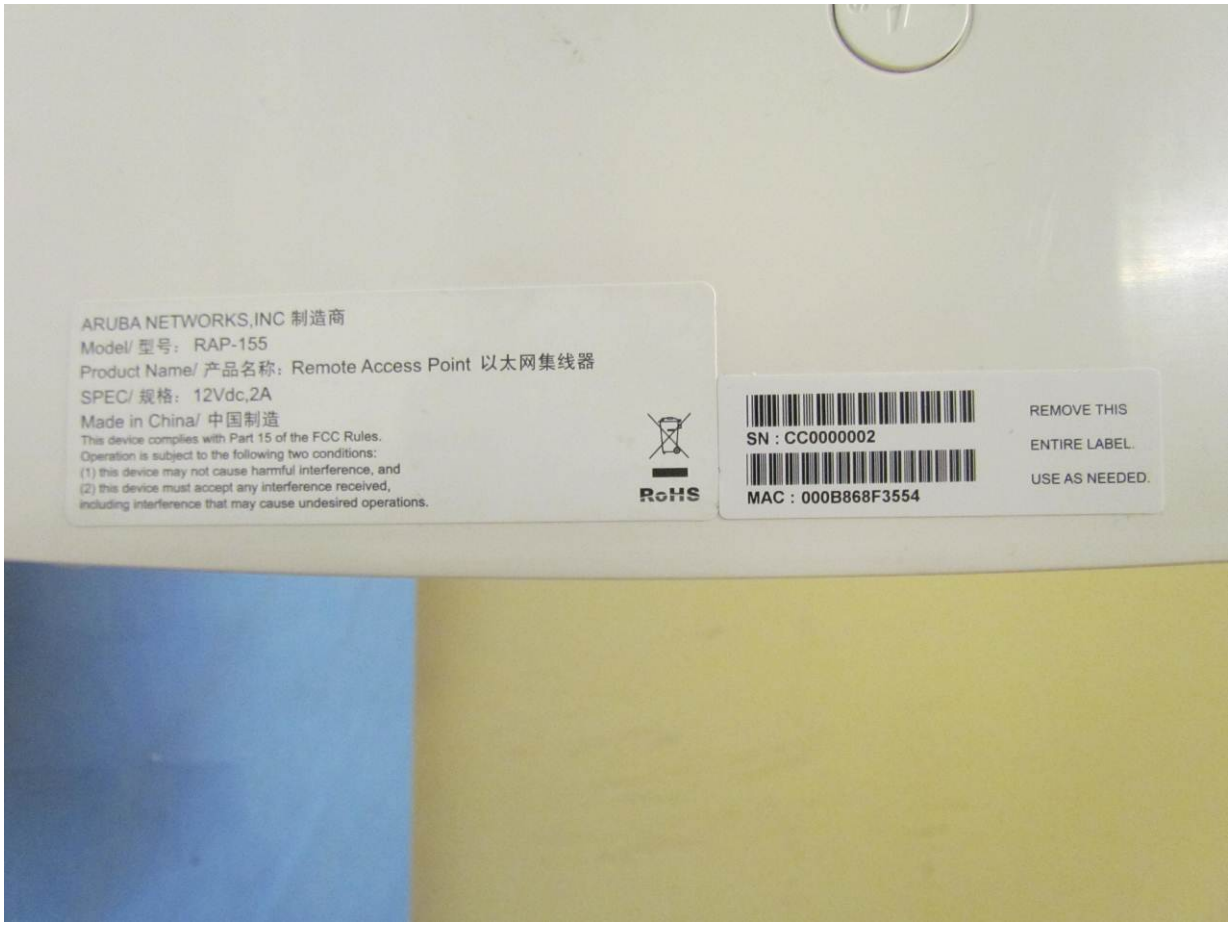
The KDB document provides guidance for measurements of conducted output emissions of devices that employ a single transmitter with multiple outputs in the same band, with the outputs occupying the same or overlapping frequency ranges. It applies to EMC compliance measurements on devices that transmit 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.

APINR155 Wireless LAN Access Point

APINR155 Wireless LAN Access Point

APINR155, APINR15P Wireless LAN Access Point Label	Device has an electronic label



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

Equipment Type	Equipment Description (Including Brand Name)	Mfr	Model No.	Serial No.
EUT	802.11a/b/g/n WLAN	Aruba Networks	APINR155	CC00000002
Support	Laptop PC	IBM	Thinkpad	None

2.4. Antenna Details

Model	Type	Gain (dBi)	Freq. Band (MHz)	Note
Integral	Omni Directional	3.0	2400 - 2500	2x per unit
Integral	Omni Directional	3.0	5150 - 5850	3x per unit

2.5. Cabling and I/O Ports

Number and type of I/O ports

Port Type	Port Description	Qty	Screened (Yes/ No)	Length
Ethernet	Ethernet PoE	1	NO	> 10m
Ethernet	Ethernet	1	NO	3m-10m
Serial RS 323 (RJ45)	Serial Console	1	NO	1m-3m
USB	USB port	1	NO	1m-3m

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/b/g/n)	Variant	Data Rate with Highest Power	Frequencies (MHz)
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
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

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Antenna Test Configurations for Radiated Emissions

Results for the following configurations are provided in this report.

Radiated emissions testing was performed for three different antennas that represent the highest gain for each antenna type intended for use with the EUT;- Integral antenna (As used in APINR109) ; ANT-18 60 degree sector antenna; ANT-19 monopole antenna.

Radiated emissions testing was performed for all possible configurations for antenna ANT-18 which is the highest gain antenna used with the equipment. Radiated emissions testing was performed for the other two antennas in worst case mode (mode with the highest spectral density)

2,400 – 2483.5 MHz

15.247	
802.11b	b SE 2412
	b SE 2437
	b SE 2462
	BE b 2390
	BE b 2483.5
802.11g	g SE 2412
	g SE 2437
	g SE 2462
	BE g 2390
	BE g 2483.5
802.11n HT-20	n HT-20 SE 2412
	n HT-20 SE 2437
	n HT-20 SE 2462
	BE n HT-20 2390
	BE n HT-20 2483.5
802.11n HT-40	n HT-40 SE 2422
	n HT-40 SE 2437
	n HT-40 SE 2452
	BE n HT-40 2390
	BE n HT-40 2483.5

5,725 – 5850 MHz

15.247	
802.11a	a SE 5745
	a SE 5785
	a SE 5825
802.11n HT-20	n HT-20 SE 5745
	n HT-20 SE 5785
	n HT-20 SE 5825
802.11n HT-40	n HT-40 SE 5755
	n HT-40 SE 5795

KEY;-

SE – Spurious Emission
BE – Band-Edge

2.7. Equipment Modifications

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

1. Band-Edge Power Reduction

   All conducted and radiated spurious emission testing was performed with the device set for maximum power at all times. During radiated band-edge emission testing the output power was reduced in order to comply with the Restricted Band limit criteria. At 2.4 GHz restricted bands are 2,310 – 2,390 MHz and 2,483.5 – 2,500 MHz.

   Section 5.1.1.2 Peak Output Power identifies the total conducted power levels measured per antenna port and sums the powers when the device was set for transmitting maximum power. Further the power tables reported in Section 5.1.1.2 reflect the power on a per chain basis for each antenna identified in Section 2.4 Antenna details along with the power reduction are identified below.

			Integral Antenna
		Channel (MHz)	Maximum Power Level
2.4 GHz	b	2412	Target Power
		2437	Target Power
		2462	Target Power
	g	2412	17*
		2437	17*
		2462	17*
	HT-20	2412	17*
		2437	17*
		2462	17*
	HT-40	2422	17*
		2437	17*
		2452	17*

5.8 GHz	a	5745	Target Power
		5785	Target Power
		5825	Target Power
	HT-20	5745	Target Power
		5785	Target Power
		5825	Target Power
	HT-40	5755	Target Power
		5795	Target Power

*Power reduction necessary to meet Peak Output Power limit

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)

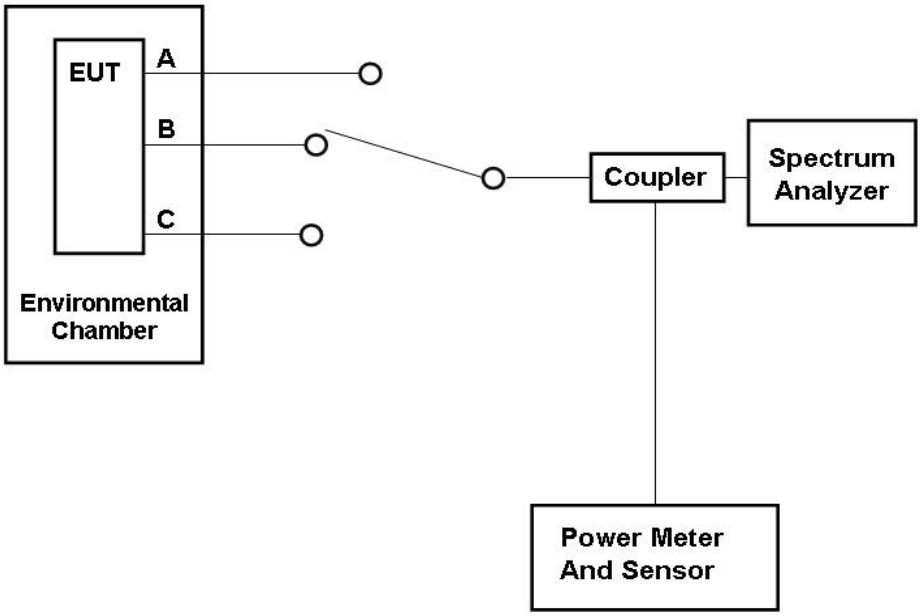
3.1. Conducted RF Emission Test Set-up

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

1. Section 6.1.1.1. 6 dB and 99% Bandwidth
2. Section 6.1.1.2. Peak Output Power
3. Section 6.1.1.3. Power Spectral Density
4. Section 6.1.1.4. Conducted Spurious Emissions

Conducted Test Set-Up Pictorial Representation

3 - Port Test Configuration

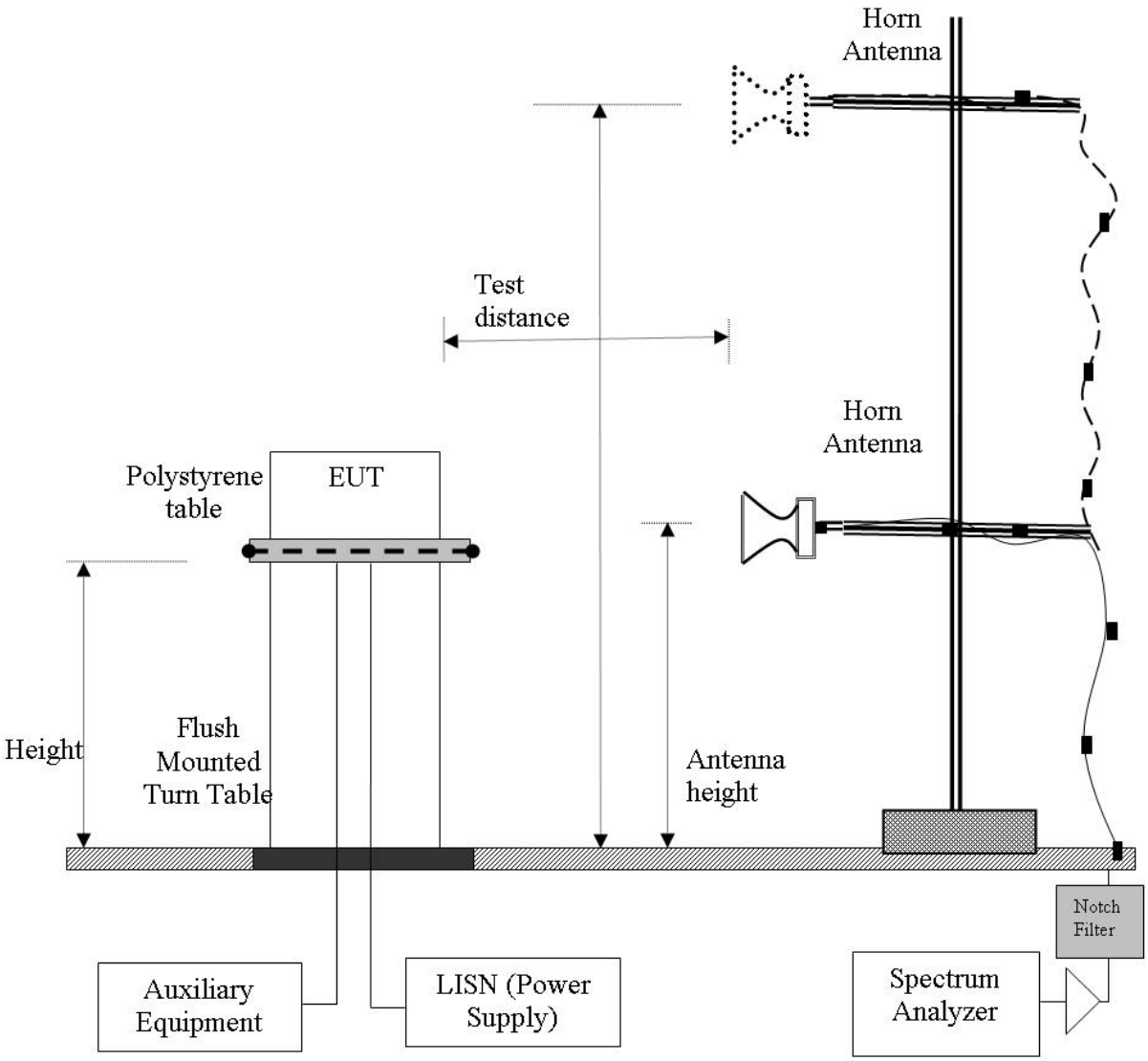


NOTE: 2.4 GHz operation had 2 antenna ports (2x2), 5.8 GHz operation had 3 antenna ports (3x3)

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.

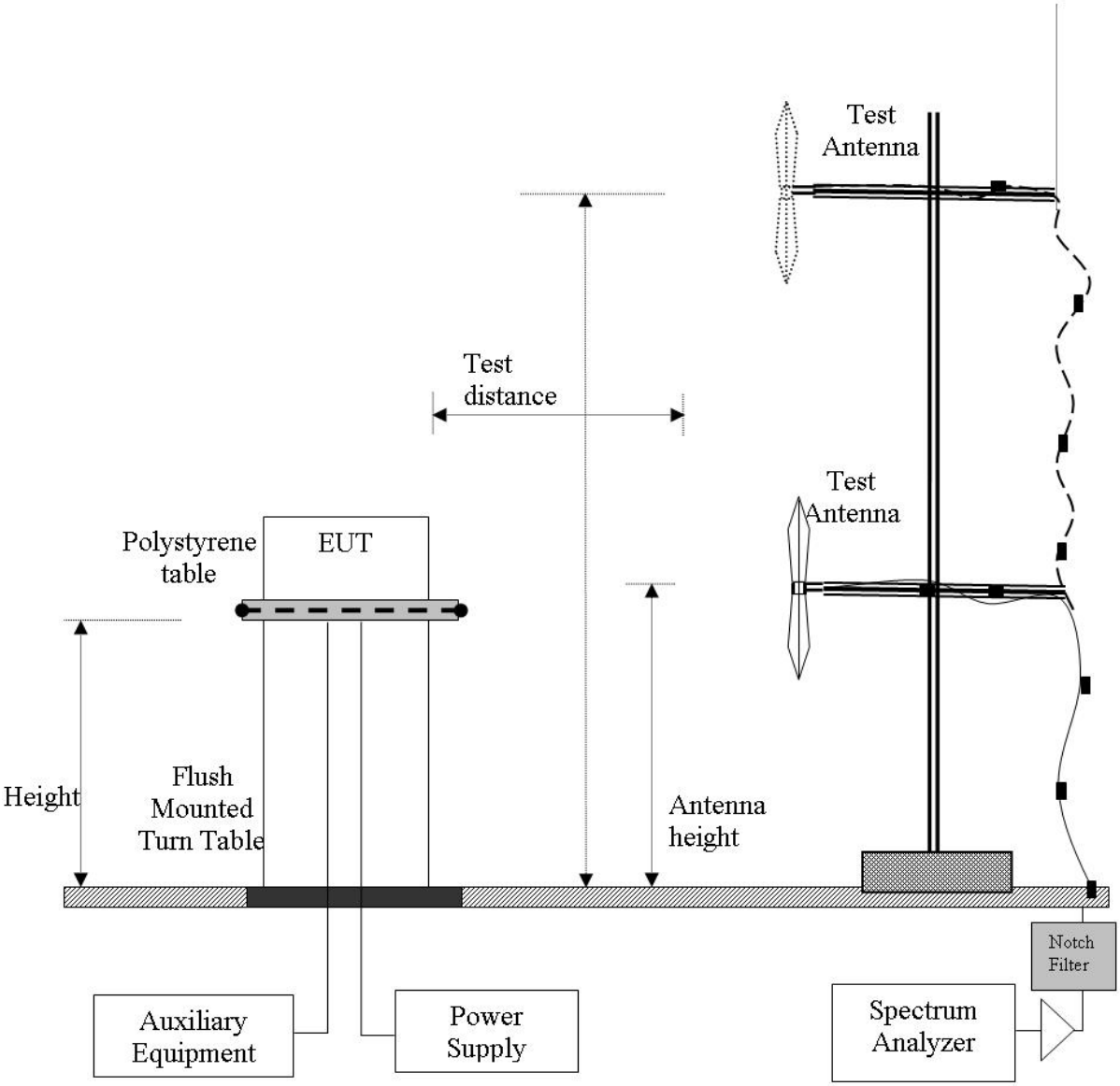
Radiated Emission Measurement Setup – Above 1 GHz



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



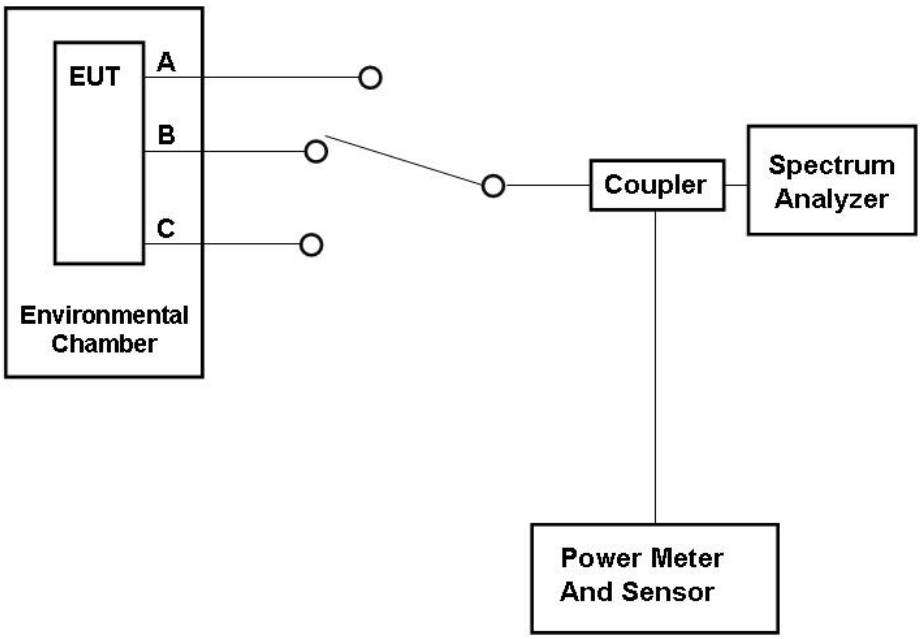
3.4. ac Wireline Emission Test Set-up

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

3 - Port Test Configuration



NOTE: 2.4 GHz operation had 2 antenna ports (2x2), 5.8 GHz operation had 3 antenna ports (3x3)

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 3.7 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 centre frequency.

Equipment Configuration for 6 dB & 99% Bandwidth			
Variant:	802.11b	**Duty Cycle (%):**	100
Data Rate:	1 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	CCK	**Beam Forming Gain (Y):**	Not Applicable
TPC:	N/A		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	KHz	MHz
2412.0	10.180	10.180	--	--	10.180	10.180	≥500.0	-9.68
2437.0	10.261	10.261	--	--	10.261	10.261	≥500.0	-9.76
2462.0	10.261	10.261	--	--	10.261	10.261	≥500.0	-9.76

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				Maximum 99% Bandwidth (MHz)		
MHz	a	b	c	d			
2412.0	13.948	13.948	--	--	13.948		
2437.0	13.868	13.707	--	--	13.868		
2462.0	13.948	13.948	--	--	13.948		

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

Note: click the link in the above results matrix to view the plot

Equipment Configuration for 6 dB & 99% Bandwidth			
Variant:	802.11g	**Duty Cycle (%):**	100
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	KHz	MHz
2412.0	16.754	16.593	--	--	16.754	16.593	≥500.0	-16.09
2437.0	16.754	16.673	--	--	16.754	16.673	≥500.0	-16.17
2462.0	16.673	16.593	--	--	16.673	16.593	≥500.0	-16.09

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				Maximum 99% Bandwidth (MHz)		
MHz	a	b	c	d			
2412.0	16.593	16.593	--	--	16.593		
2437.0	16.593	16.513	--	--	16.593		
2462.0	16.673	16.513	--	--	16.673		

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

Note: click the link in the above results matrix to view the plot

Equipment Configuration for 6 dB & 99% Bandwidth			
Variant:	802.11n HT-20	**Duty Cycle (%):**	100
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	KHz	MHz
2412.0	17.956	17.956	--	--	17.956	17.956	≥500.0	-17.46
2437.0	17.956	17.956	--	--	17.956	17.956	≥500.0	-17.46
2462.0	17.956	17.956	--	--	17.956	17.956	≥500.0	-17.46

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				Maximum 99% Bandwidth (MHz)		
MHz	a	b	c	d			
2412.0	17.876	17.715	--	--	17.876		
2437.0	17.796	17.796	--	--	17.796		
2462.0	17.796	17.796	--	--	17.796		

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

Note: click the link in the above results matrix to view the plot

Equipment Configuration for 6 dB & 99% Bandwidth			
Variant:	802.11n HT-40	**Duty Cycle (%):**	100
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	KHz	MHz
2422.0	37.034	37.034	--	--	37.034	37.034	≥500.0	-36.53
2437.0	37.034	36.874	--	--	37.034	36.874	≥500.0	-36.37
2452.0	37.034	37.034	--	--	37.034	37.034	≥500.0	-36.53

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

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

Note: click the link in the above results matrix to view the plot

Equipment Configuration for 6 dB & 99% Bandwidth			
Variant:	802.11a	**Duty Cycle (%):**	100
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	KHz	MHz
5745.0	16.673	16.754	16.593	--	16.754	16.593	≥500.0	-16.09
5785.0	16.754	16.673	16.593	--	16.754	16.593	≥500.0	-16.09
5825.0	16.673	16.673	16.593	--	16.673	16.593	≥500.0	-16.09

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				Maximum 99% Bandwidth (MHz)		
MHz	a	b	c	d			
5745.0	16.513	16.593	16.433	--	16.593		
5785.0	16.593	16.513	16.433	--	16.593		
5825.0	16.513	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 link in the above results matrix to view the plot

Equipment Configuration for 6 dB & 99% Bandwidth			
Variant:	802.11n HT-20	**Duty Cycle (%):**	100
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	KHz	MHz
5745.0	17.796	17.876	17.876	--	17.876	17.796	≥500.0	-17.30
5785.0	17.796	17.876	17.796	--	17.876	17.796	≥500.0	-17.30
5825.0	17.876	17.876	17.876	--	17.876	17.876	≥500.0	-17.38

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

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

Note: click the link in the above results matrix to view the plot

Equipment Configuration for 6 dB & 99% Bandwidth			
Variant:	802.11n HT-40	**Duty Cycle (%):**	100%
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	KHz	MHz
5755.0	36.713	36.713	36.874	--	36.874	36.713	≥500.0	-36.21
5795.0	36.713	36.874	36.713	--	36.874	36.713	≥500.0	-36.21

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				Maximum 99% Bandwidth (MHz)		
MHz	a	b	c	d			
5755.0	36.232	36.393	36.393	--	36.393		
5795.0	36.232	36.393	36.393	--	36.393		

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

Note: click the link in the above results matrix to view the 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
The transmitter terminal of EUT was connected to the input of the spectrum analyzer set to measure peak power. The resolution filter bandwidth was set to 6 dB, peak detector selected and the analyzer built-in power function was used to integrate peak power over the 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.
If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Uncorrelated Operation

2.4 GHz Uncorrelated Operation (MIMO)

Antenna	Gain	Max. Allowable Conducted Peak Power (dBm)		Maximum EIRP
(dB)	(dBi)	Uncorrelated	Max. Power Per Chain	(dBm)
Integral	3.0	+30.0	+27.00	+33.0

5.8 GHz Uncorrelated Operation (MIMO)

Antenna	Gain	Max. Allowable Conducted Peak Power (dBm)		Maximum EIRP
(dB)	(dBi)	Uncorrelated	Max. Power Per Chain	(dBm)
Integral	3.0	+30.0	+27.00	+33.0

Correlated Operation

2.4 GHz Correlated Operation (Non-MIMO i.e. Legacy)

Antenna	Gain dBi	Antenna Gain Increase V's No. Antenna Ports		Total Gain	Max. Allowable Conducted Peak Power	Maximum EIRP
(dB)		Ports	dB	dBi	∑ (dBm)	(dBm)
Integral	3.0	2	3.00	6.00	+30.00	+36.0

5.8 GHz Correlated Operation (Non-MIMO i.e. Legacy)

Antenna	Gain dBi	Antenna Gain Increase V's No. Antenna Ports		Total Gain	Max. Allowable Conducted Peak Power	Maximum EIRP
(dB)		Ports	dB	dBi	∑ (dBm)	(dBm)
Integral	3.0	2	3.00	6.00	+30.00	+36.0

Equipment Configuration for Peak Output Power			
Variant:	802.11b	**Duty Cycle (%):**	100
Data Rate:	1 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	CCK	**Beam Forming Gain (Y):**	Not Applicable
TPC:	N/A		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power (dBm) Port(s)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	dBm	dBm	dBm	
2412.0	22.53	21.77	--	--	25.18	30.00	-4.82	Target
2437.0	22.23	21.96	--	--	25.11	30.00	-4.89	Target
2462.0	21.75	21.24	--	--	24.51	30.00	-5.49	Target

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

Note: click the link in the above results matrix to view the plot

Equipment Configuration for Peak Output Power			
Variant:	802.11g	**Duty Cycle (%):**	100
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power (dBm) Port(s)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	dBm	dBm	dBm	
2412.0	26.62	26.95	--	--	29.80	30.00	-0.20	17.00*
2437.0	26.20	26.78	--	--	29.51	30.00	-0.49	17.00*
2462.0	26.00	26.54	--	--	29.29	30.00	-0.71	17.00*

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

Note: click the link in the above results matrix to view the plot

*Power reduction required to meet the + 30 dBm limit

Equipment Configuration for Peak Output Power			
Variant:	802.11n HT-20	**Duty Cycle (%):**	100
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power (dBm) Port(s)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	dBm	dBm	dBm	
2412.0	26.64	26.14	--	--	29.41	30.00	-0.59	17.00*
2437.0	26.27	25.90	--	--	29.10	30.00	-0.90	17.00*
2462.0	25.91	25.70	--	--	28.82	30.00	-1.18	17.00*

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

Note: click the link in the above results matrix to view the plot

*Power reduction required to meet the + 30 dBm limit

Equipment Configuration for Peak Output Power			
Variant:	802.11n HT-40	**Duty Cycle (%):**	100
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power (dBm) Port(s)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	dBm	dBm	dBm	
2422.0	26.55	25.91	--	--	29.25	30.00	-0.75	17.00*
2437.0	26.51	26.32	--	--	29.43	30.00	-0.57	17.00*
2452.0	26.41	26.21	--	--	29.32	30.00	-0.68	17.00*

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

Note: click the link in the above results matrix to view the plot

*Power reduction required to meet the + 30 dBm limit

Equipment Configuration for Peak Output Power			
Variant:	802.11a	**Duty Cycle (%):**	100
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power (dBm) Port(s)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	dBm	dBm	dBm	
5745.0	24.06	23.89	23.11	--	28.48	30.00	-1.52	Target
5785.0	23.44	23.72	22.95	--	28.15	30.00	-1.85	Target
5825.0	23.72	23.36	22.54	--	28.01	30.00	-1.99	Target

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

Note: click the link in the above results matrix to view the plot

Equipment Configuration for Peak Output Power			
Variant:	802.11n HT-20	**Duty Cycle (%):**	100
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power (dBm) Port(s)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	dBm	dBm	dBm	
5745.0	23.07	23.00	22.18	--	27.54	30.00	-2.46	Target
5785.0	24.80	24.69	23.65	--	29.18	30.00	-0.82	target
5825.0	24.25	23.53	22.44	--	28.24	30.00	-1.76	target

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

Note: click the link in the above results matrix to view the plot

Equipment Configuration for Peak Output Power			
Variant:	802.11n HT-40	**Duty Cycle (%):**	100%
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	N/A		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power (dBm) Port(s)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	dBm	dBm	dBm	
5755.0	23.46	23.38	22.58	--	27.93	30.00	-2.07	target
5795.0	24.43	23.97	22.74	--	28.54	30.00	-1.46	target

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

Note: click the link in the above results matrix to view the plot

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 level in a 3 kHz bandwidth was measured. A peak value was found over the full emission bandwidth and the frequency span reduced to obtain enhanced resolution. Sweep time ≥ span / 3 kHz with video averaging turned off. The Peak Power Spectral Density is the highest level found across the emission in a 3 kHz resolution bandwidth.

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			
Variant:	802.11b	**Duty Cycle (%):**	100
Data Rate:	1 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	CCK	**Beam Forming Gain (Y):**	Not Applicable
TPC:	N/A		
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)	Conversion to 3 kHz RBW	dBm	dB
2412.0	-0.668	6.586	--	--	7.335	N/A	≤ 8.0	-0.67*
2437.0	6.314	2.554	--	--	7.839	N/A	≤ 8.0	-0.16*
2462.0	-0.825	-2.535	--	--	1.414	N/A	≤ 8.0	-6.59

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

Note: click the link in the above results matrix to view the plot

NOTE: For frequencies 2412 and 2437 MHz at least one of the plots identify that a single antenna chain broke the power spectral density limit (+8 – 10 Log (N) where N = 2)however the Σ of the Port(s) A + B was less than the +8 dBm limit therefore the EUT was found to be compliant.

Equipment Configuration for Power Spectral Density			
Variant:	802.11g	**Duty Cycle (%):**	100
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
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)	Conversion to 3 kHz RBW	dBm	dB
2412.0	-3.389	-4.099	--	--	-0.719	N/A	≤ 8.0	-8.72
2437.0	-2.553	-3.761	--	--	-0.105	N/A	≤ 8.0	-8.10
2462.0	-3.363	-5.301	--	--	-1.214	N/A	≤ 8.0	-9.21

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

Note: click the link in the above results matrix to view the plot

Equipment Configuration for Power Spectral Density			
Variant:	802.11n HT-20	**Duty Cycle (%):**	100
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
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)	Conversion to 3 kHz RBW	dBm	dB
2412.0	-4.739	-4.813	--	--	-1.766	N/A	≤ 8.0	-9.77
2437.0	-4.628	-4.321	--	--	-1.461	N/A	≤ 8.0	-9.46
2462.0	-5.329	-6.328	--	--	-2.790	N/A	≤ 8.0	-10.79

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

Note: click the link in the above results matrix to view the plot

Equipment Configuration for Power Spectral Density			
Variant:	802.11n HT-40	**Duty Cycle (%):**	100
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
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)	Conversion to 3 kHz RBW	dBm	dB
2422.0	-7.084	-8.467	--	--	-4.710	N/A	≤ 8.0	-12.71
2437.0	-6.124	-8.382	--	--	-4.098	N/A	≤ 8.0	-12.10
2452.0	-8.343	-7.863	--	--	-5.086	N/A	≤ 8.0	-13.09

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

Note: click the link in the above results matrix to view the plot

Equipment Configuration for Power Spectral Density			
Variant:	802.11a	**Duty Cycle (%):**	100
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
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)	Conversion to 3 kHz RBW	dBm	dB
5745.0	-7.859	-8.012	-9.305	--	-3.574	N/A	≤ 8.0	-11.57
5785.0	-7.206	-7.473	-7.762	--	-2.703	N/A	≤ 8.0	-10.70
5825.0	-7.204	-8.459	-8.799	--	-3.327	N/A	≤ 8.0	-11.33

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

Note: click the link in the above results matrix to view the plot

Equipment Configuration for Power Spectral Density			
Variant:	802.11n HT-20	**Duty Cycle (%):**	100
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
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)	Conversion to 3 kHz RBW	dBm	dB
5745.0	-7.682	-8.860	-9.980	--	-3.968	N/A	≤ 8.0	-11.97
5785.0	-7.040	-7.308	-7.648	--	-2.554	N/A	≤ 8.0	-10.55
5825.0	-7.263	-8.187	-8.842	--	-3.277	N/A	≤ 8.0	-11.28

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

Note: click the link in the above results matrix to view the plot

Equipment Configuration for Power Spectral Density			
Variant:	802.11n HT-40	**Duty Cycle (%):**	100%
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
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)	Conversion to 3 kHz RBW	dBm	dB
5755.0	-10.914	-10.686	-12.224	--	-6.453	N/A	≤ 8.0	-14.45
5795.0	-10.066	-10.896	-11.563	--	-6.027	N/A	≤ 8.0	-14.03

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

Note: click the link in the above results matrix to view the plot

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 at a limit of 20 dB below the highest in-band spectral density measured with a spectrum analyzer connected to the antenna terminal. Measurements were made while EUT was operating in transmit mode of operation at the appropriate centre frequency closest to the band-edge. Emissions were maximized during the measurement and limits derived from the peak spectral power and drawn on each plot.

Equipment Configuration for Transmitter Conducted Spurious and Band-Edge Emissions			
Variant:	802.11b	**Duty Cycle (%):**	100
Data Rate:	1 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	CCK	**Beam Forming Gain (Y):**	Not Applicable
TPC:	N/A		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Transmitter Conducted Spurious Emissions (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	SE	Limit	SE	Limit	SE	Limit	SE	Limit
2412.0	30.0 - 26000.0	-49.033	-10.10	-38.073	-10.28	--	--	--	--
2437.0	30.0 - 26000.0	-39.043	-9.98	-47.406	-10.36	--	--	--	--
2462.0	30.0 - 26000.0	-47.829	-10.98	-38.891	-11.25	--	--	--	--

SE - Maximum spurious emission found

Test Frequency	Band-Edge Frequency	Transmitter Conducted Band-Edge Emissions (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	BE	Limit	BE	Limit	BE	Limit	BE	Limit
2412.0	2400.0	-42.086	-9.29	-41.854	-9.73	--	--	--	--
2462.0	2483.5	-43.021	-9.89	-44.262	-10.99	--	--	--	--

BE - Maximum band-edge emission found

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 link in the above results matrix to view the plot

Equipment Configuration for Transmitter Conducted Spurious and Band-Edge Emissions			
Variant:	802.11g	**Duty Cycle (%):**	100
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Transmitter Conducted Spurious Emissions (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	SE	Limit	SE	Limit	SE	Limit	SE	Limit
2412.0	30.0 - 26000.0	-48.085	-14.37	-37.799	-14.15	--	--	--	--
2437.0	30.0 - 26000.0	-39.096	-14.79	-47.661	-14.98	--	--	--	--
2462.0	30.0 - 26000.0	-48.734	-14.95	-38.189	-14.55	--	--	--	--

SE - Maximum spurious emission found

Test Frequency	Band-Edge Frequency	Transmitter Conducted Band-Edge Emissions (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	BE	Limit	BE	Limit	BE	Limit	BE	Limit
2412.0	2400.0	-21.531	-13.86	-22.777	-13.71	--	--	--	--
2462.0	2483.5	-38.860	-14.39	-40.939	-13.92	--	--	--	--

BE - Maximum band-edge emission found

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 link in the above results matrix to view the plot

Equipment Configuration for Transmitter Conducted Spurious and Band-Edge Emissions			
Variant:	802.11n HT-20	**Duty Cycle (%):**	100
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Transmitter Conducted Spurious Emissions (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	SE	Limit	SE	Limit	SE	Limit	SE	Limit
2412.0	30.0 - 26000.0	-48.655	-14.29	-37.890	-15.48	--	--	--	--
2437.0	30.0 - 26000.0	-38.173	-15.35	-47.935	-16.23	--	--	--	--
2462.0	30.0 - 26000.0	-48.551	-16.97	-37.756	-16.11	--	--	--	--

SE - Maximum spurious emission found

Test Frequency	Band-Edge Frequency	Transmitter Conducted Band-Edge Emissions (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	BE	Limit	BE	Limit	BE	Limit	BE	Limit
2412.0	2400.0	-23.892	-14.16	-24.146	-15.36	--	--	--	--
2462.0	2483.5	-41.174	-15.19	-40.817	-16.03	--	--	--	--

BE - Maximum band-edge emission found

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 link in the above results matrix to view the plot

Equipment Configuration for Transmitter Conducted Spurious and Band-Edge Emissions			
Variant:	802.11n HT-40	**Duty Cycle (%):**	100
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Transmitter Conducted Spurious Emissions (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	SE	Limit	SE	Limit	SE	Limit	SE	Limit
2422.0	30.0 - 26000.0	-47.849	-18.54	-38.486	-18.38	--	--	--	--
2437.0	30.0 - 26000.0	-38.998	-18.62	-47.901	-18.49	--	--	--	--
2452.0	30.0 - 26000.0	-48.480	-18.99	-38.252	-18.32	--	--	--	--

SE - Maximum spurious emission found

Test Frequency	Band-Edge Frequency	Transmitter Conducted Band-Edge Emissions (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	BE	Limit	BE	Limit	BE	Limit	BE	Limit
2422.0	2400.0	-23.859	-17.49	-24.490	-18.84	--	--	--	--
2452.0	2483.5	-37.170	-18.48	-37.965	-18.42	--	--	--	--

BE - Maximum band-edge emission found

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 link in the above results matrix to view the plot

Equipment Configuration for Transmitter Conducted Spurious and Band-Edge Emissions			
Variant:	802.11a	**Duty Cycle (%):**	100
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Transmitter Conducted Spurious Emissions (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	SE	Limit	SE	Limit	SE	Limit	SE	Limit
5745.0	30.0 - 40000.0	-35.669	-19.58	-35.508	-19.71	-36.275	-20.48	--	--
5785.0	30.0 - 40000.0	-25.601	-18.70	-25.259	-18.44	-25.622	-19.06	--	--
5825.0	30.0 - 40000.0	-26.356	-17.74	-35.813	-19.54	-36.310	-20.52	--	--

SE - Maximum spurious emission found

Test Frequency	Band-Edge Frequency	Transmitter Conducted Band-Edge Emissions (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	BE	Limit	BE	Limit	BE	Limit	BE	Limit
5745.0	5725.0	-36.930	-17.63	-37.397	-18.24	-39.635	-18.52	--	--
5825.0	5850.0	-38.923	-17.36	-38.794	-18.31	-40.943	-19.18	--	--

BE - Maximum band-edge emission found

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 link in the above results matrix to view the plot

Equipment Configuration for Transmitter Conducted Spurious and Band-Edge Emissions			
Variant:	802.11n HT-20	**Duty Cycle (%):**	100
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Transmitter Conducted Spurious Emissions (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	SE	Limit	SE	Limit	SE	Limit	SE	Limit
5745.0	30.0 - 40000.0	-36.251	-19.42	-34.924	-19.77	-35.173	-20.44	--	--
5785.0	30.0 - 40000.0	-25.744	-18.50	-25.306	-18.08	-25.868	-19.75	--	--
5825.0	30.0 - 40000.0	-26.757	-18.14	-35.604	-19.52	-35.987	-20.11	--	--

SE - Maximum spurious emission found

Test Frequency	Band-Edge Frequency	Transmitter Conducted Band-Edge Emissions (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	BE	Limit	BE	Limit	BE	Limit	BE	Limit
5745.0	5725.0	-38.795	-18.16	-37.794	-18.73	-40.435	-19.30	--	--
5825.0	5850.0	-38.705	-17.53	-36.826	-18.22	-38.147	-19.26	--	--

BE - Maximum band-edge emission found

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 link in the above results matrix to view the plot

Equipment Configuration for Transmitter Conducted Spurious and Band-Edge Emissions			
Variant:	802.11n HT-40	**Duty Cycle (%):**	100%
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Transmitter Conducted Spurious Emissions (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	SE	Limit	SE	Limit	SE	Limit	SE	Limit
5755.0	30.0 - 40000.0	-26.065	-21.80	-35.646	-22.85	-36.218	-23.65	--	--
5795.0	30.0 - 40000.0	-25.878	-21.12	-34.971	-22.20	-36.239	-23.31	--	--

SE - Maximum spurious emission found

Test Frequency	Band-Edge Frequency	Transmitter Conducted Band-Edge Emissions (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	BE	Limit	BE	Limit	BE	Limit	BE	Limit
5755.0	5725.0	-36.942	-20.99	-36.382	-21.04	-37.202	-22.05	--	--
5795.0	5850.0	-39.254	-20.19	-38.349	-20.98	-39.407	-21.56	--	--

BE - Maximum band-edge emission found

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 link in the above results matrix to view the 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))

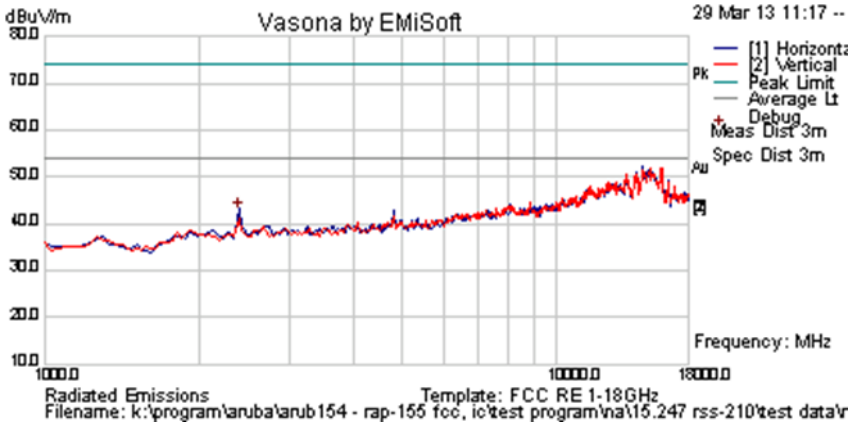
40 dBμV/m = 100 μV/m
48 dBμV/m = 250 μV/m

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

Selection of test modes were operational modes that returned the highest power spectral density during conducted testing.

5.1.2.1. Integral antenna – Spurious Emissions

Test Freq.	2412 MHz	**Engineer**	SB
Variant	802.11b; 1 Mbs	**Temp (ºC)**	22.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	36
Power Setting	Target	**Press. (mBars)**	1005
Antenna	Integral	**Duty Cycle (%)**	100
Test Notes 1	EUT Position = Vertical; AC/DC Adapter on table; Ethernet cables plugged into EUT;		
Test Notes 2			

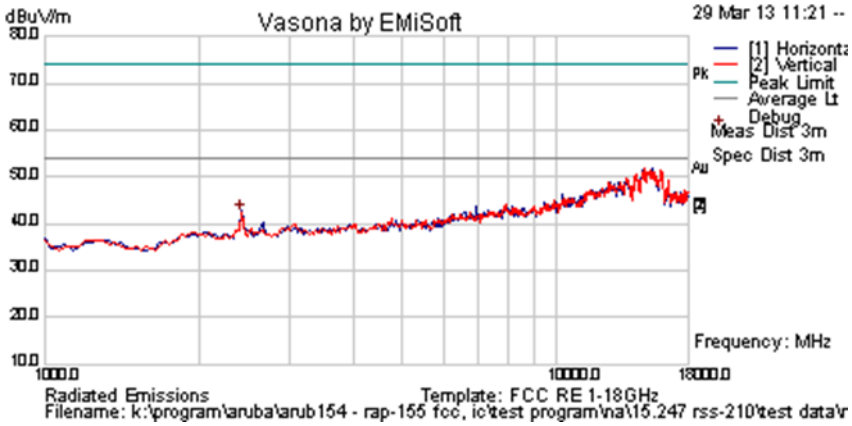


Formally measured emission peaks

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
2400.753	51.2	3.2	-11.6	42.7	Peak [Scan]	V	98	0				FUND

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	2437 MHz	**Engineer**	SB
Variant	802.11b; 1 Mbs	**Temp (ºC)**	22.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	36
Power Setting	Target	**Press. (mBars)**	1005
Antenna	Integral	**Duty Cycle (%)**	100
Test Notes 1	EUT Position = Vertical; AC/DC Adapter on table; Ethernet cables plugged into EUT;		
Test Notes 2			

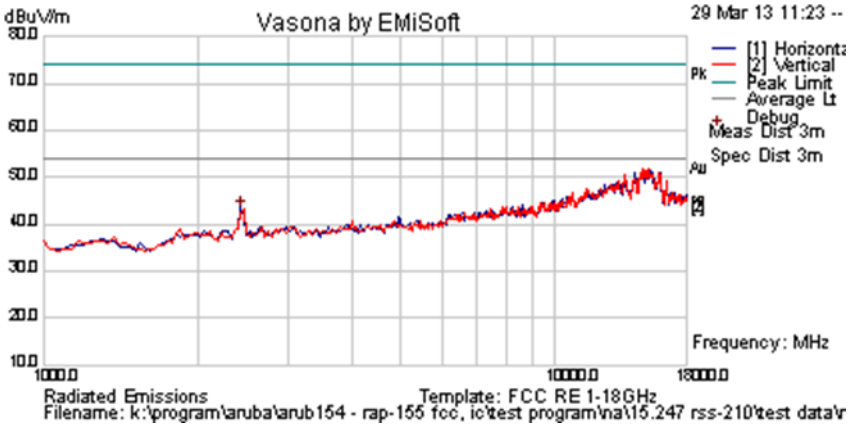


Formally measured emission peaks

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
2425.163	50.6	3.2	-11.6	42.3	Peak [Scan]	V	98	0				FUND

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	2462 MHz	**Engineer**	SB
Variant	802.11b; 1 Mbs	**Temp (ºC)**	22.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	36
Power Setting	Target	**Press. (mBars)**	1005
Antenna	Integral	**Duty Cycle (%)**	100
Test Notes 1	EUT Position = Vertical; AC/DC Adapter on table; Ethernet cables plugged into EUT;		
Test Notes 2			

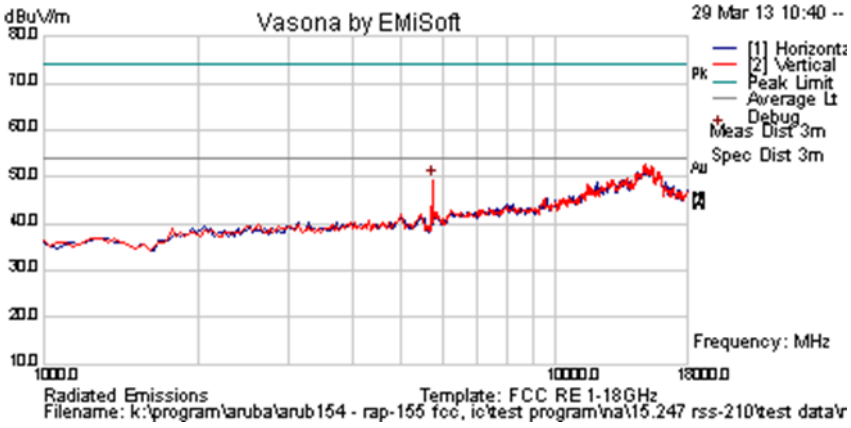


Formally measured emission peaks

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
2446.284	51.3	3.2	-11.5	43.0	Peak [Scan]	V	98	0				FUND

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5745 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	22.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	36
Power Setting	Target	**Press. (mBars)**	1005
Antenna	Integral	**Duty Cycle (%)**	100
Test Notes 1	EUT Position = Vertical; AC/DC Adapter on table; Ethernet cables plugged into EUT;		
Test Notes 2			

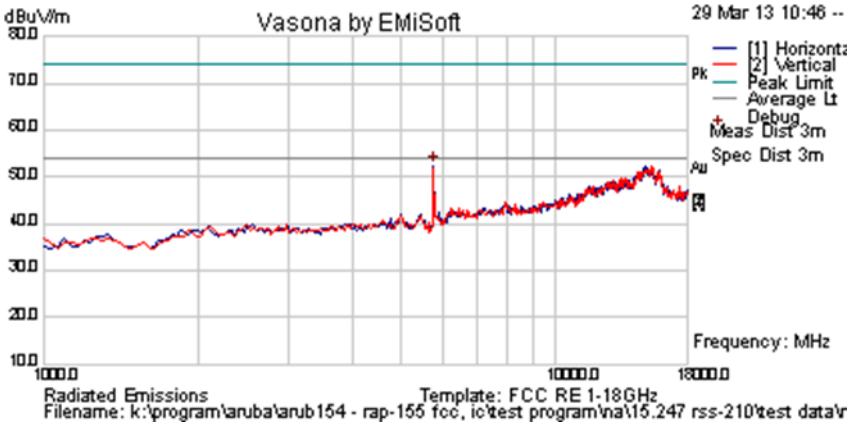


Formally measured emission peaks

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
5735.471	53.9	5.0	-9.5	49.3	Peak [Scan]	V	150	0				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 Mbs	**Temp (ºC)**	22.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	36
Power Setting	Target	**Press. (mBars)**	1005
Antenna	Integral	**Duty Cycle (%)**	100
Test Notes 1	EUT Position = Vertical; AC/DC Adapter on table; Ethernet cables plugged into EUT;		
Test Notes 2			

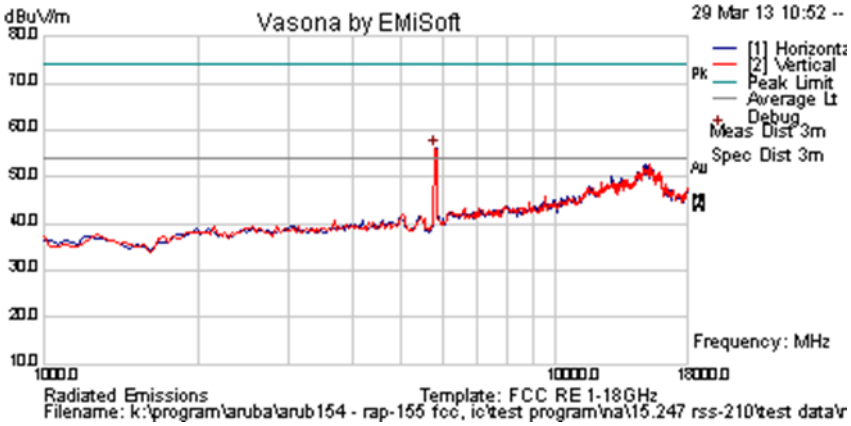


Formally measured emission peaks

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
5769.539	56.9	5.0	-9.5	52.4	Peak [Scan]	H	200	0				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 Mbs	**Temp (ºC)**	22.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	36
Power Setting	Target	**Press. (mBars)**	1005
Antenna	Integral	**Duty Cycle (%)**	100
Test Notes 1	EUT Position = Vertical; AC/DC Adapter on table; Ethernet cables plugged into EUT;		
Test Notes 2			



Formally measured emission peaks

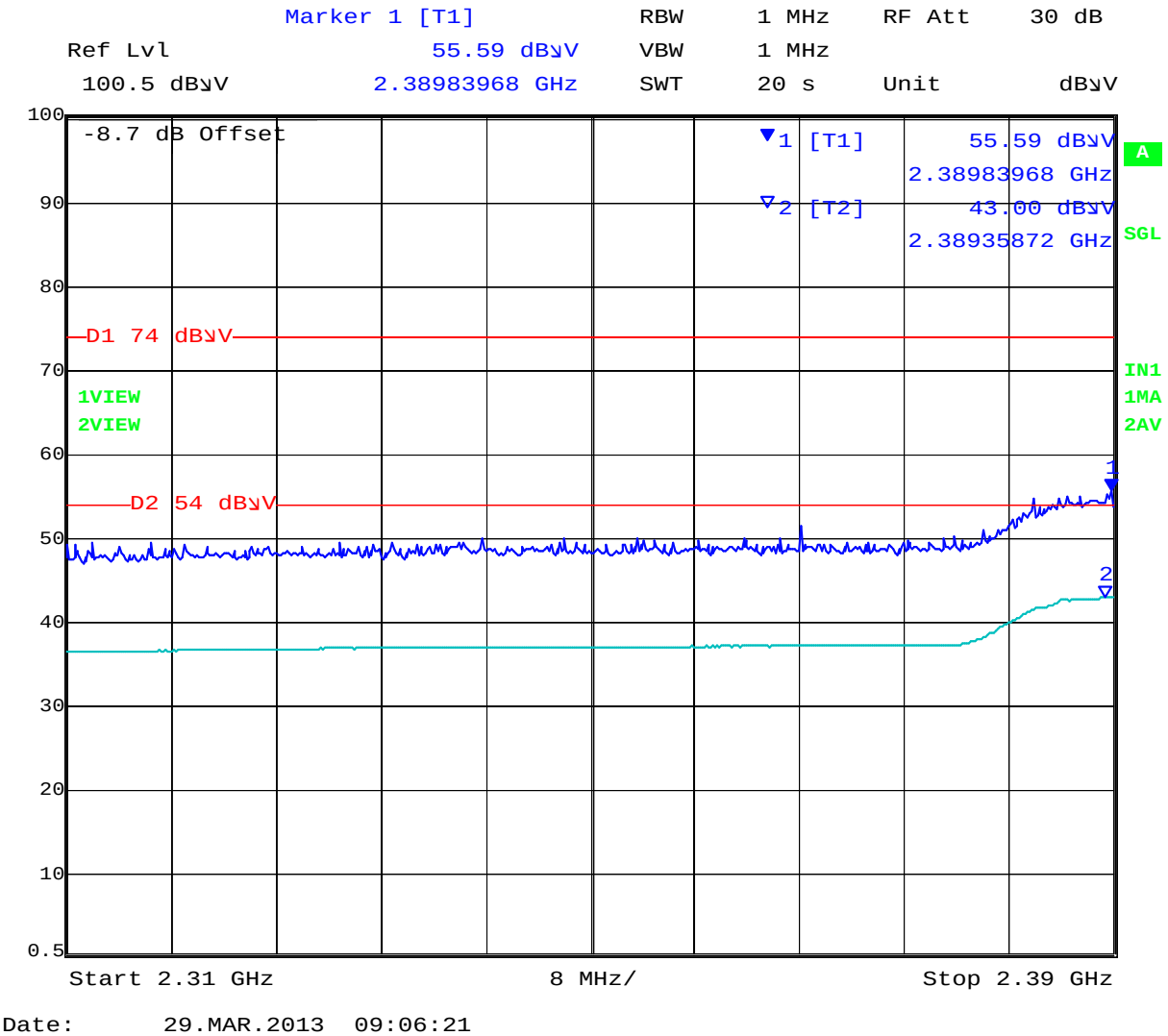
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5803.607	60.4	5.1	-9.4	56.1	Peak [Scan]	V	100	0				FUND

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. Integral antenna – Radiated Band-Edge

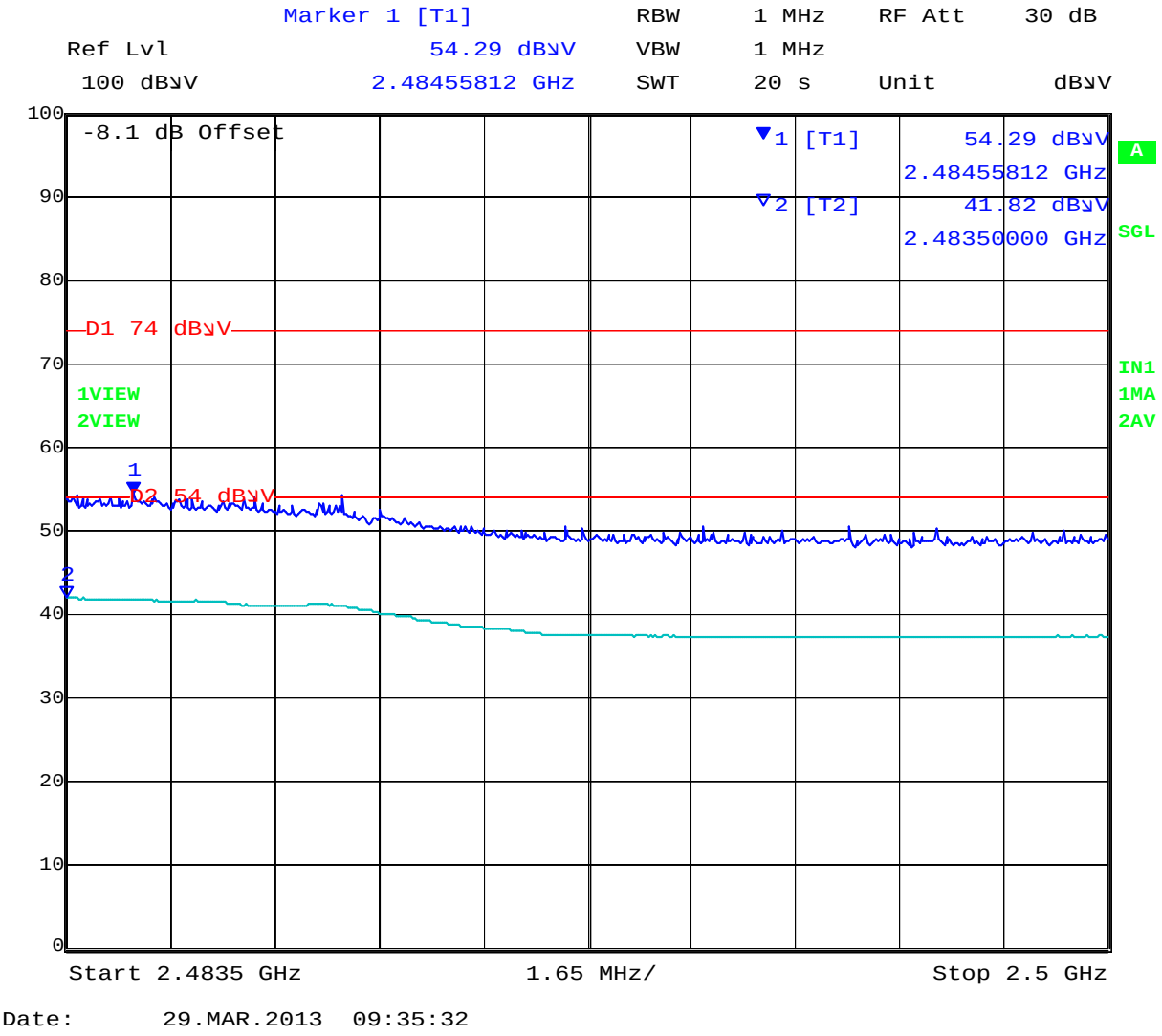
11b 2390 MHz Band Edge

Target Power



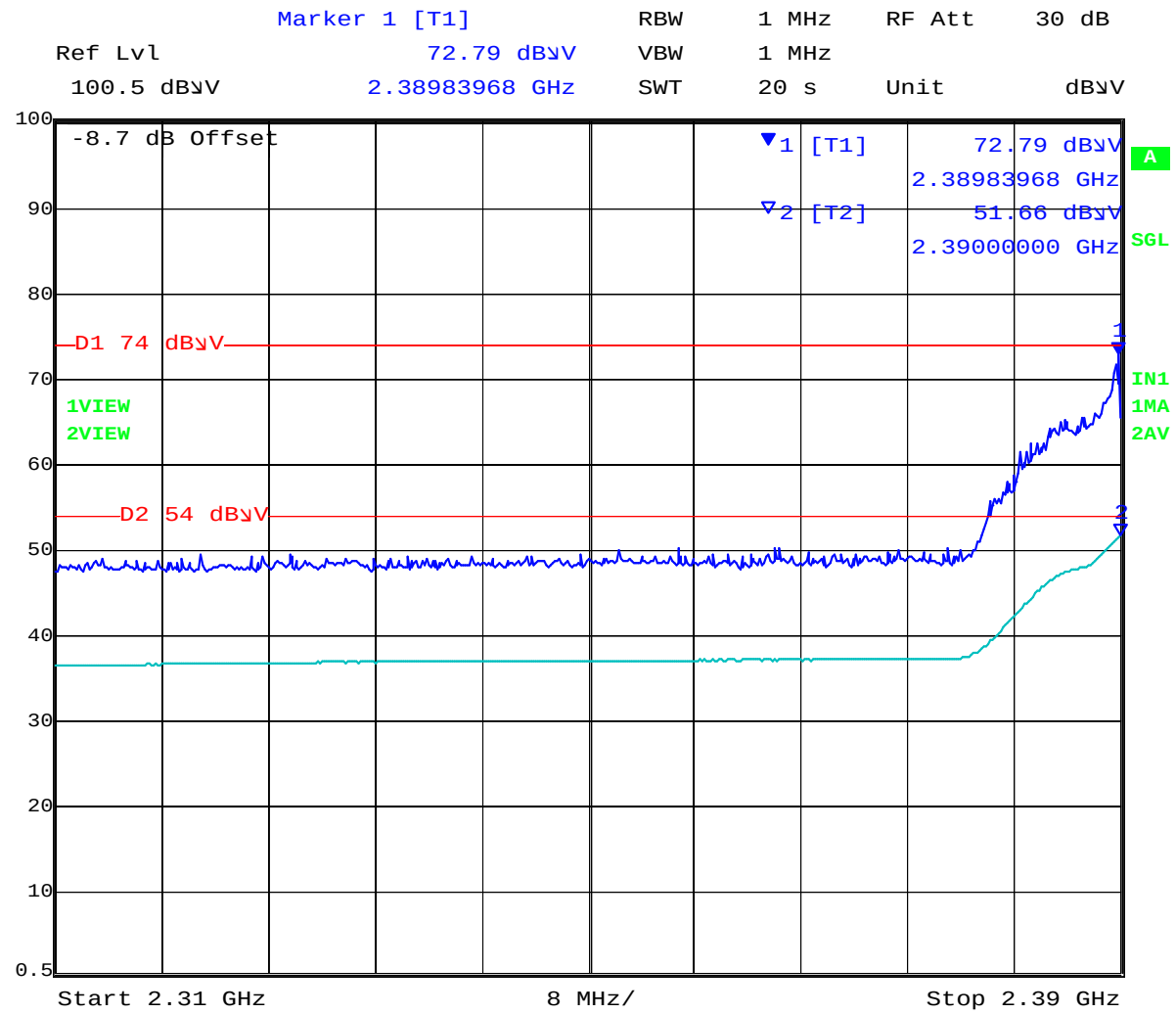
11b 2483.5 MHz Band Edge

Target Power



11g 2390 MHz Band Edge

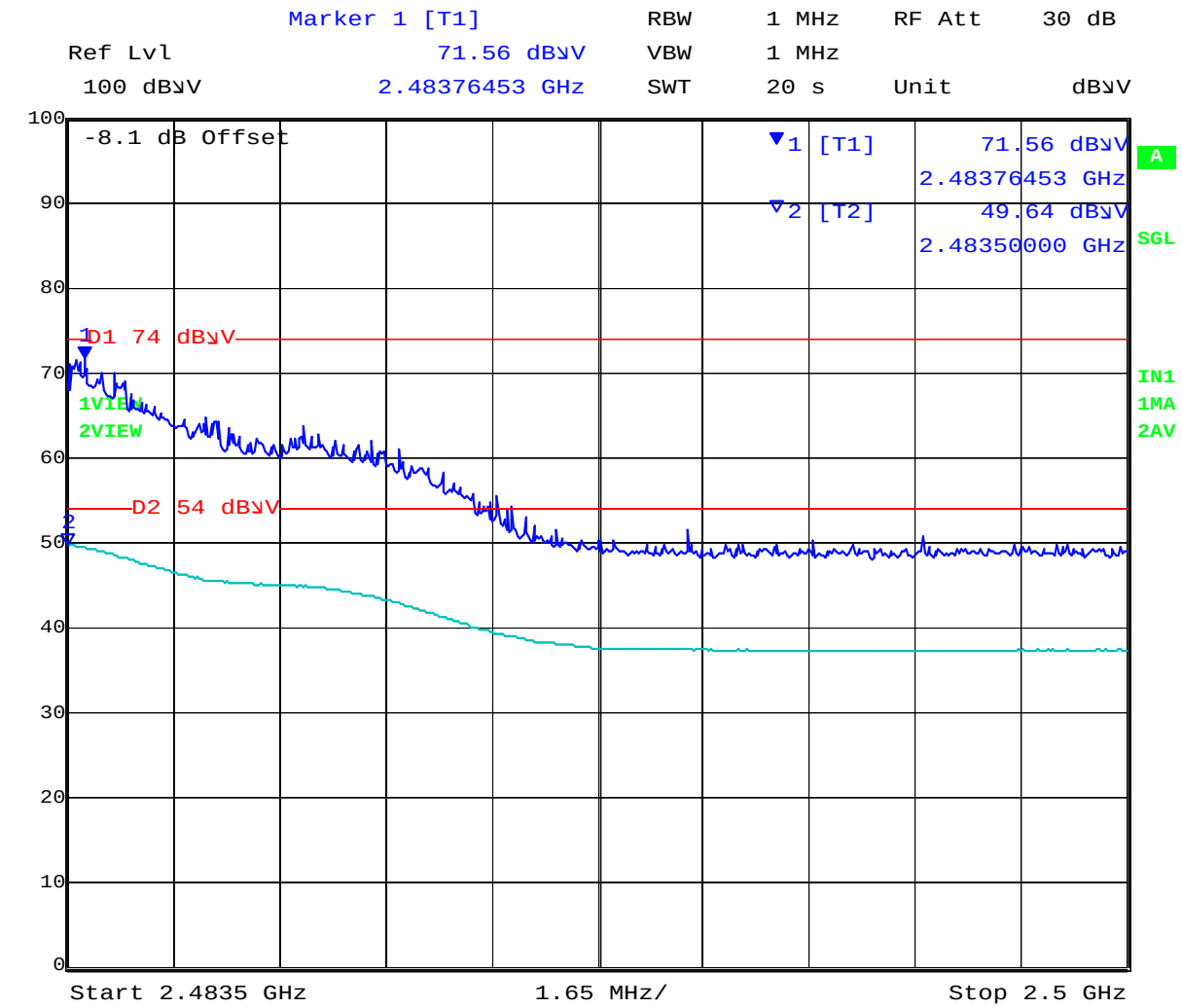
Power Reduction Power Setting = 17



Date: 29.MAR.2013 09:08:44

11g 2483.5 MHz Band Edge

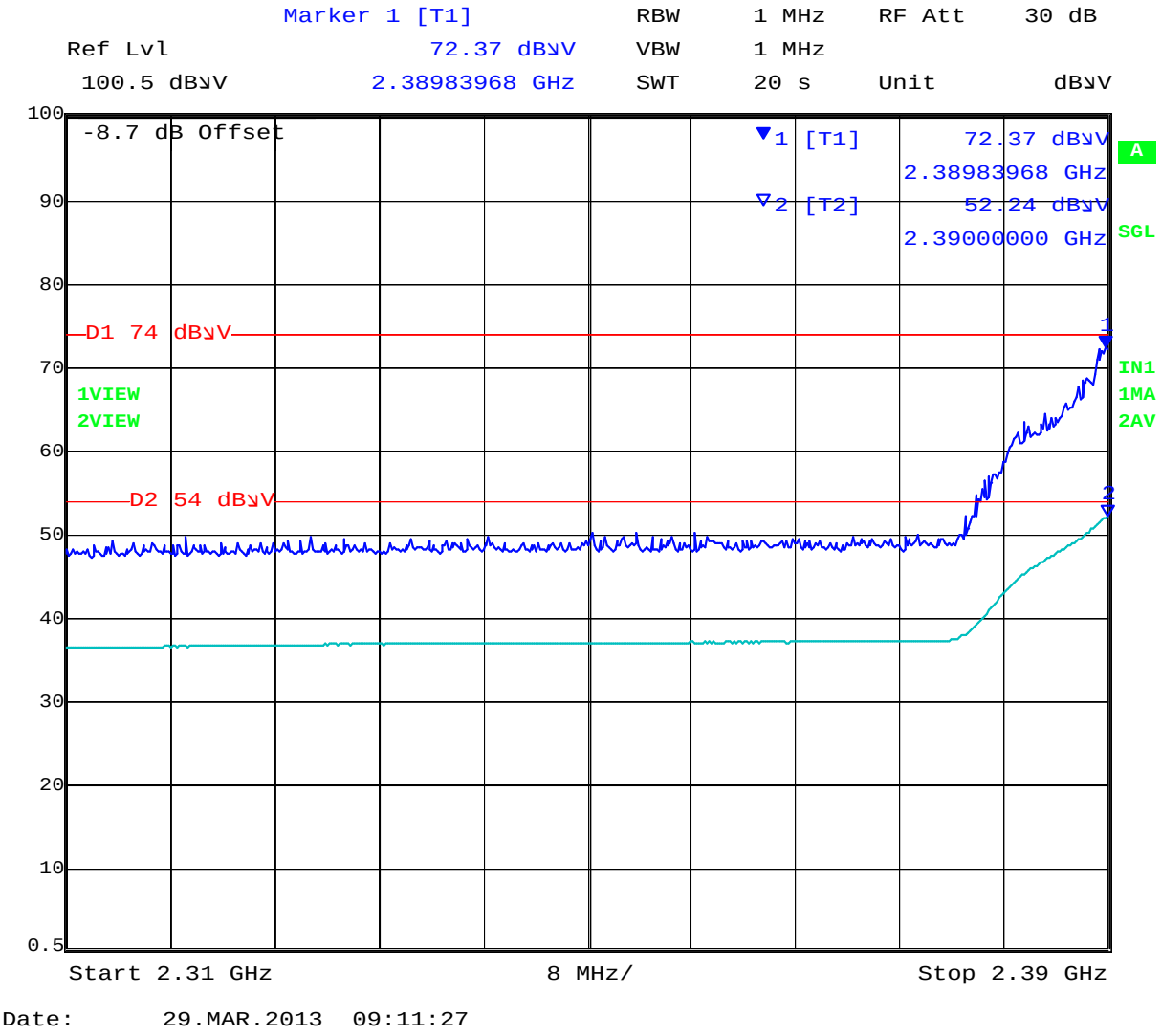
Power Reduction Power Setting = 17



Date: 29.MAR.2013 09:34:08

11n HT-20 2390 MHz Band Edge

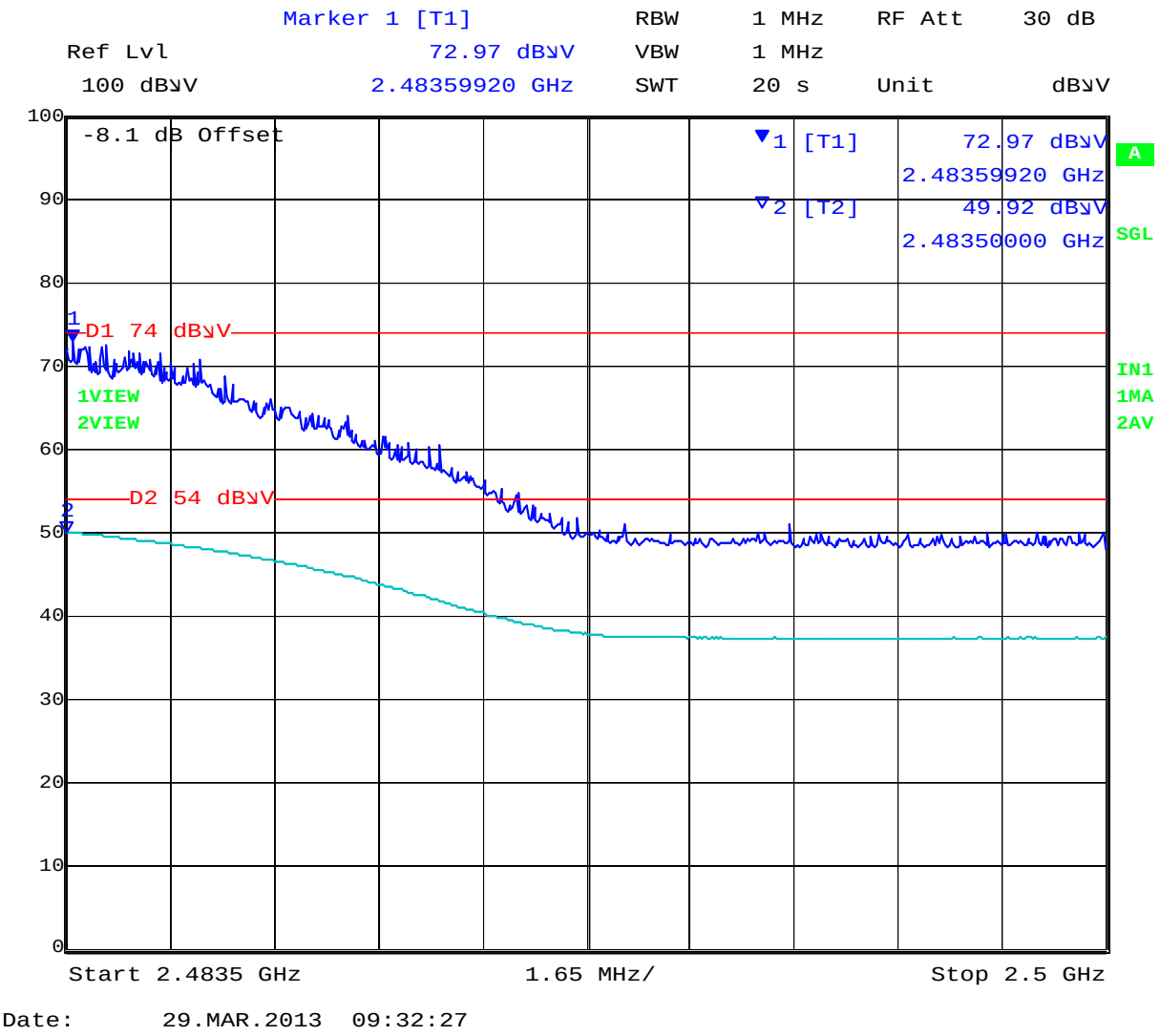
Power Reduction Power Setting = 17



Date: 29.MAR.2013 09:11:27

11n HT20 2483.5 MHz Band Edge

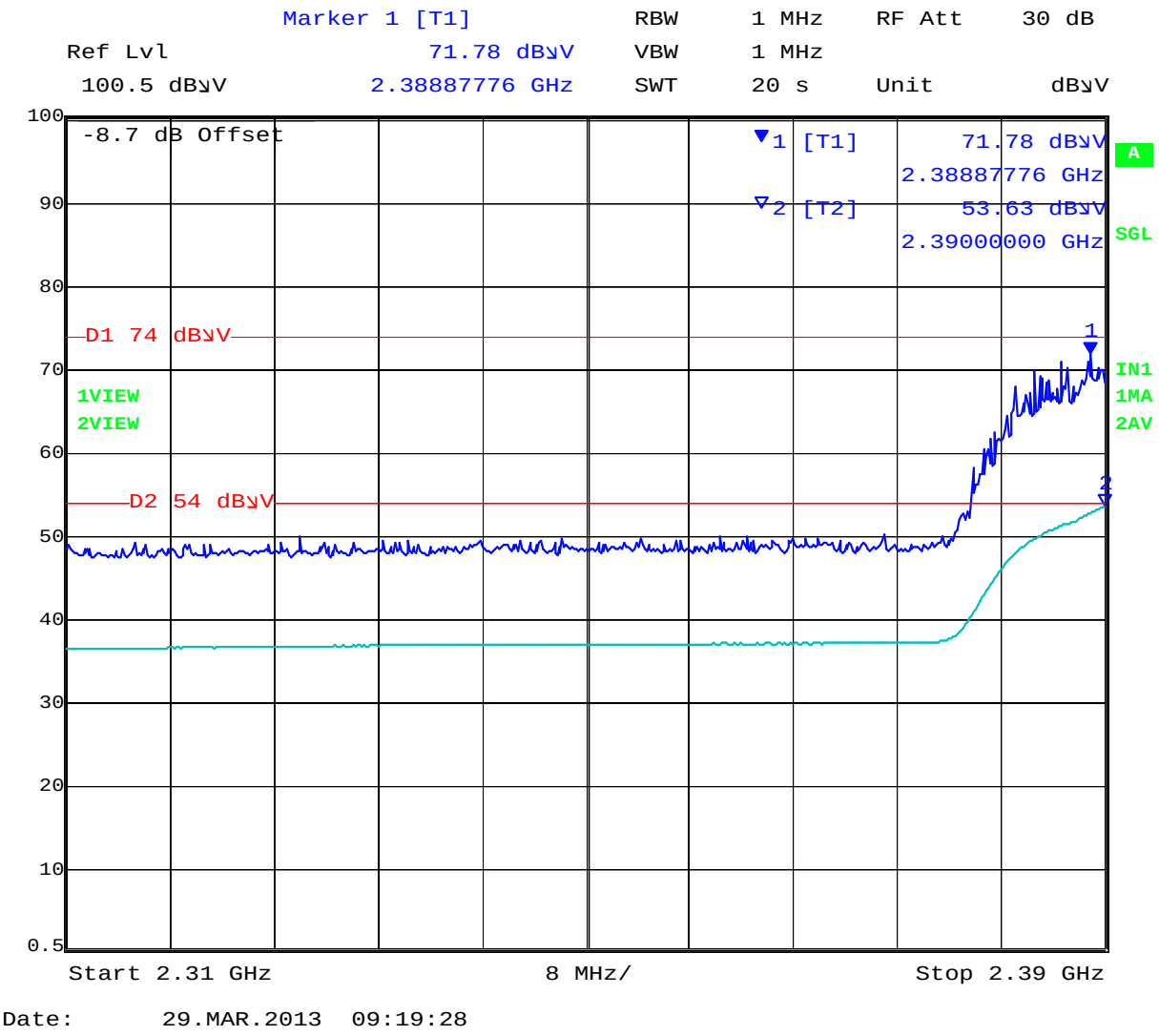
Power Reduction Power Setting = 17



Date: 29.MAR.2013 09:32:27

11n HT-40 2390 MHz Band Edge

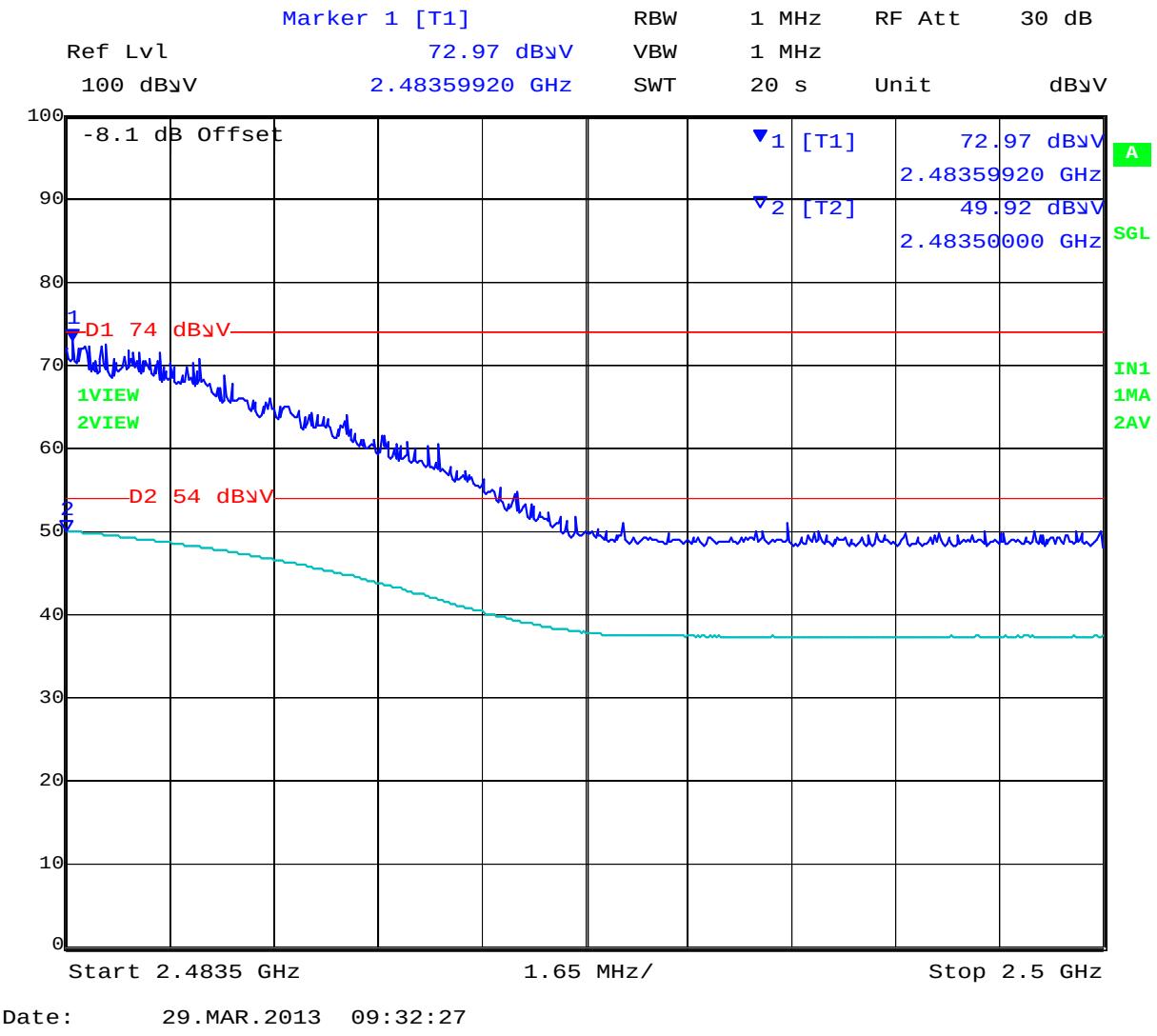
Power Reduction Power Setting = 17



Date: 29.MAR.2013 09:19:28

11n HT-40 2483.5 MHz Band Edge

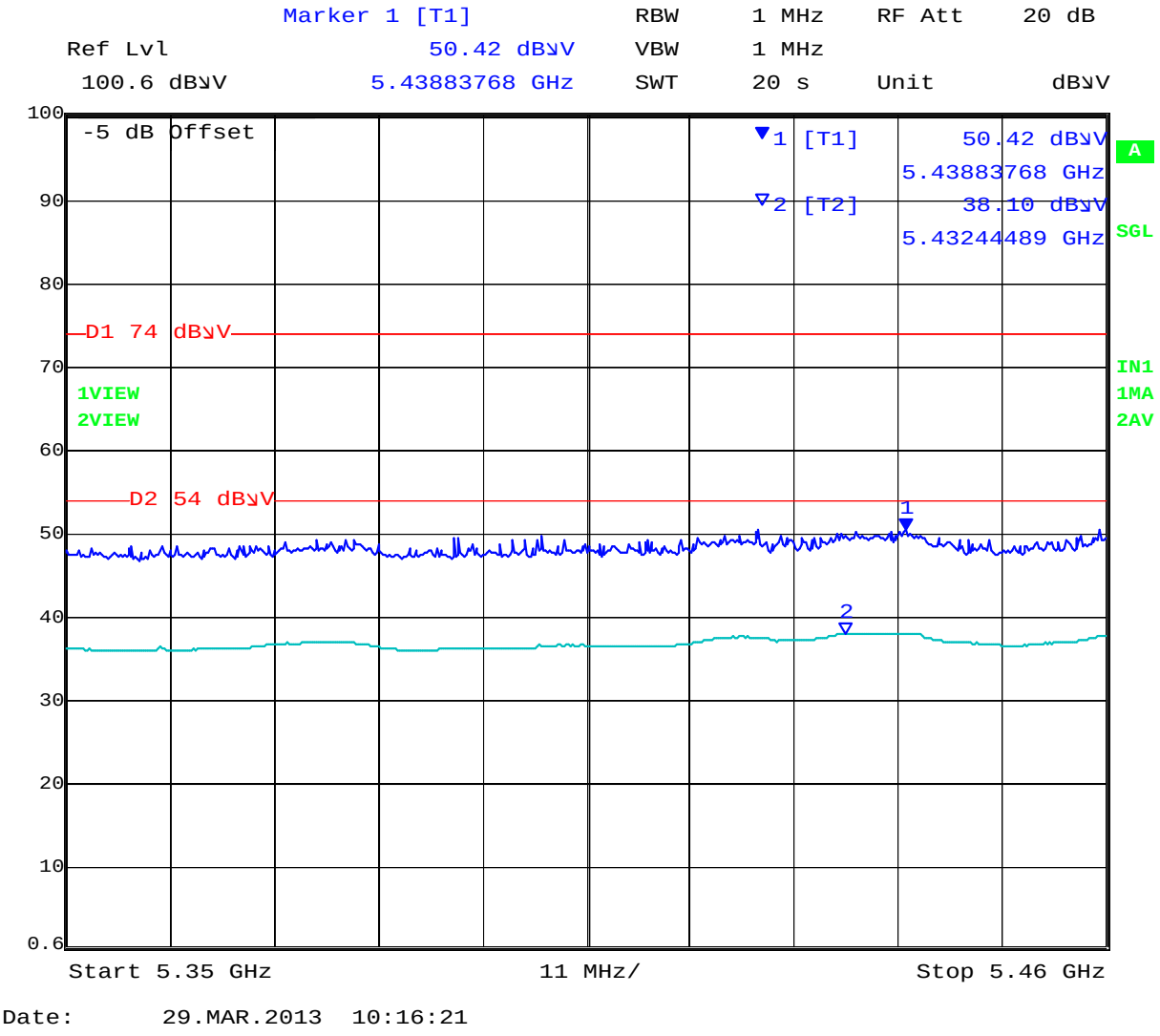
Power Reduction Power Setting = 17



Date: 29.MAR.2013 09:32:27

11a 5460 MHz Band Edge

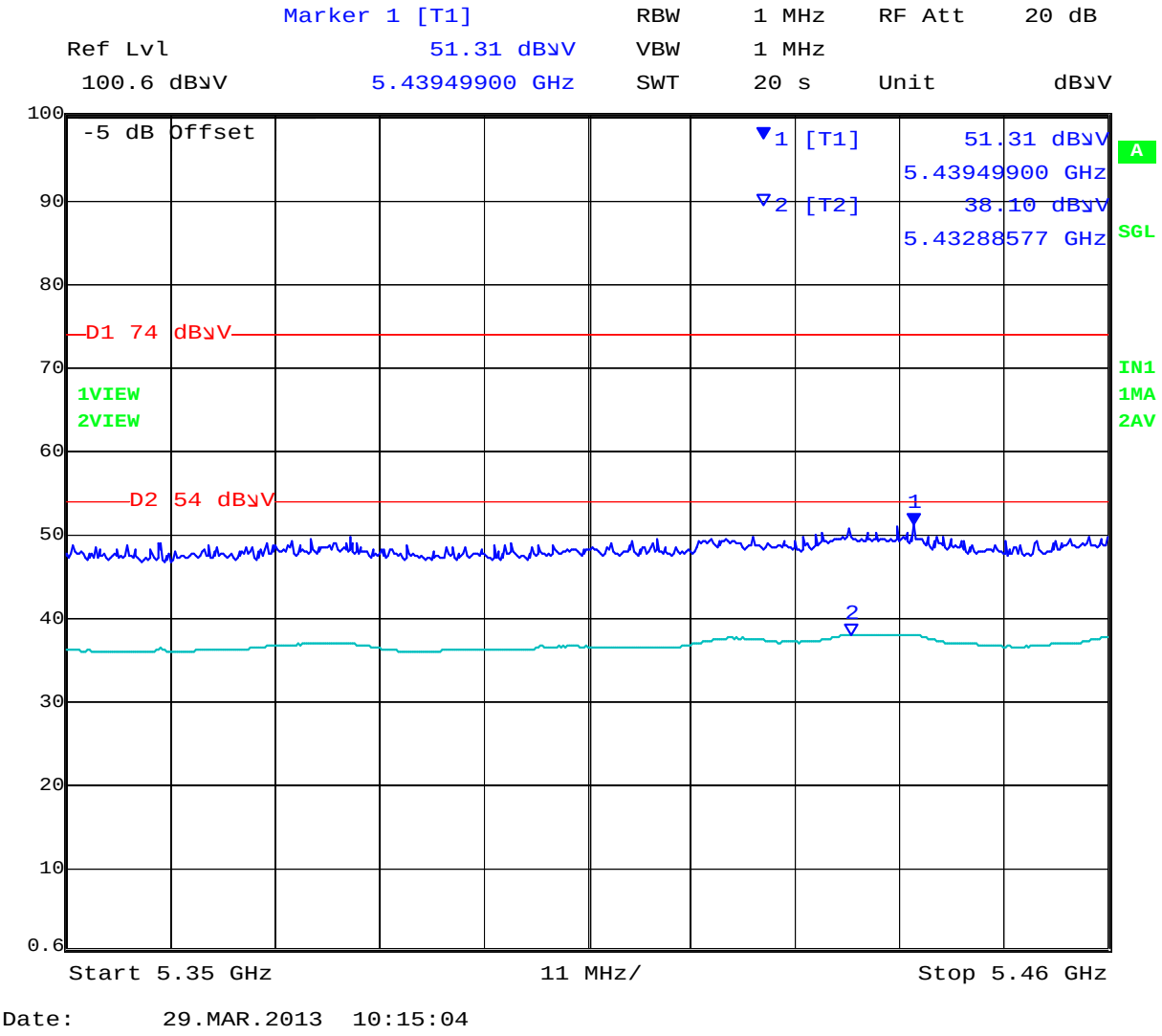
Target Power



Date: 29.MAR.2013 10:16:21

11n HT-20 5460 MHz Band Edge

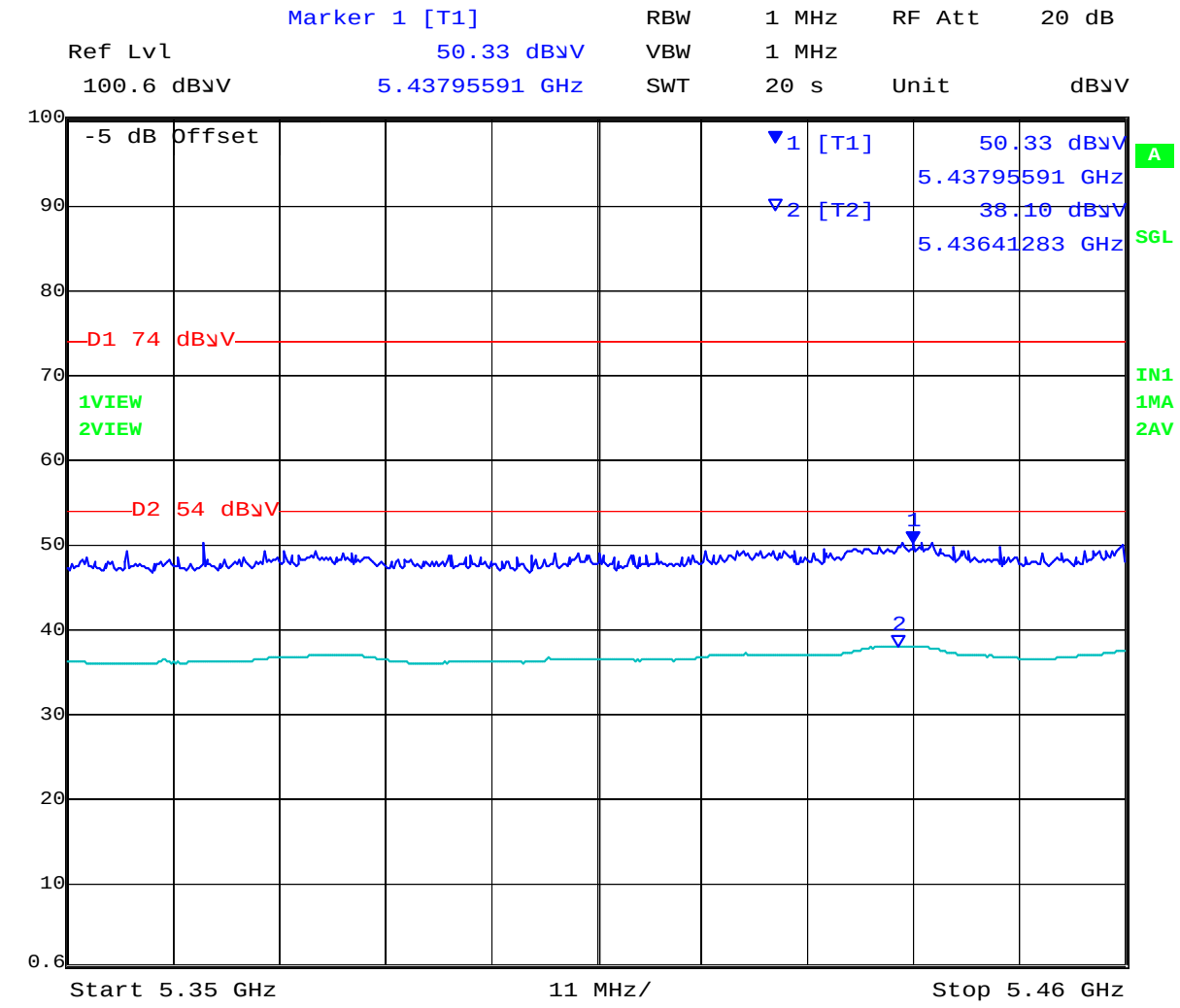
Target Power



Date: 29.MAR.2013 10:15:04

11n HT-40 5460 MHz Band Edge

Target Power



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 5^{th} 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:

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

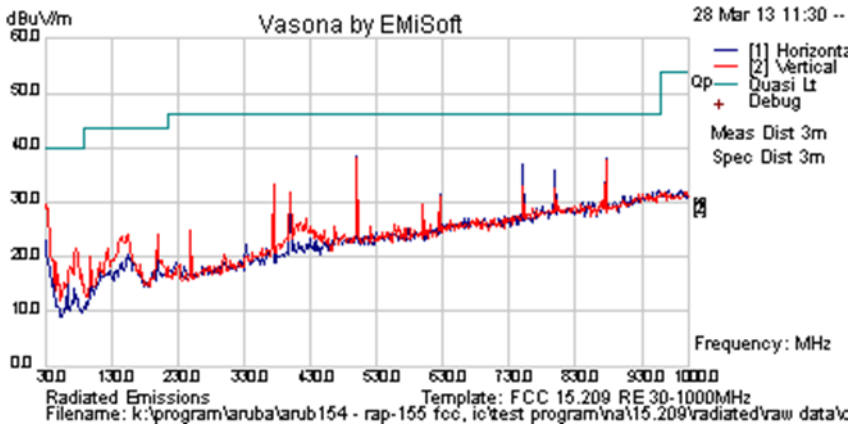
Conversion between dBμV/m (or dBμV) and μV/m (or μV) are done as:

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

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

EUT APINR155

Test Freq.	2437 MHz	**Engineer**	SB
Variant	Digital Emissions	**Temp (ºC)**	22
Freq. Range	30 MHz - 1000 MHz	**Rel. Hum.(%)**	33
Power Setting	Target	**Press. (mBars)**	1003
Antenna	Integral		
Test Notes 1	EUT Position = Vertical; AC/DC Power Supply 120VAC/12VDC.		
Test Notes 2			



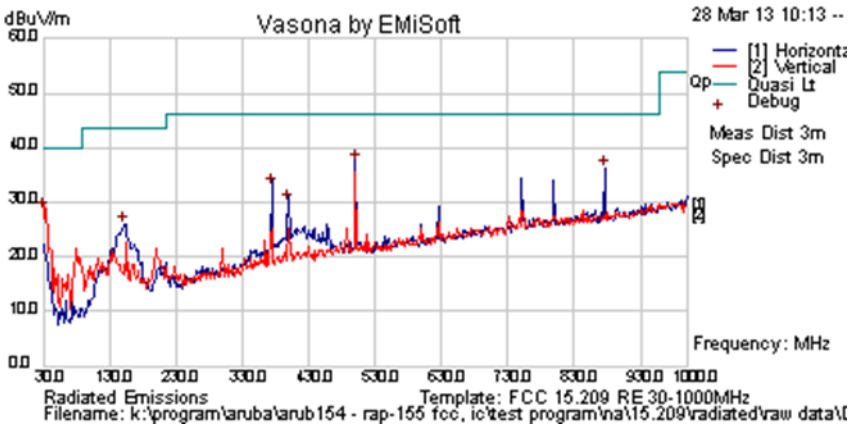
Formally measured emission peaks

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
500.368	44.8	5.8	-12.8	37.8	Peak [Scan]	V	98	360	46	-8.2	Pass	
799.846	37.7	6.9	-8.9	35.7	Peak [Scan]	H	98	360	46	-10.3	Pass	
32.563	37.6	3.5	-11.7	29.4	Peak [Scan]	V	98	360	40	-10.6	Pass	
751.531	37.8	6.7	-9.4	35.2	Peak [Scan]	H	98	360	46	-10.9	Pass	
373.966	42.5	5.4	-15.3	32.6	Peak [Scan]	V	98	360	46	-13.4	Pass	
154.782	38.7	4.4	-18.9	24.2	Peak [Scan]	V	98	360	43.5	-19.3	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

EUT APINR155

Test Freq.	2437 MHz	**Engineer**	SB
Variant	Digital Emissions	**Temp (ºC)**	22
Freq. Range	30 MHz - 1000 MHz	**Rel. Hum.(%)**	33
Power Setting	Target	**Press. (mBars)**	1003
Antenna	Integral		
Test Notes 1	EUT Position = Horizontal; AC/DC Power Supply 120VAC/12VDC.		
Test Notes 2			

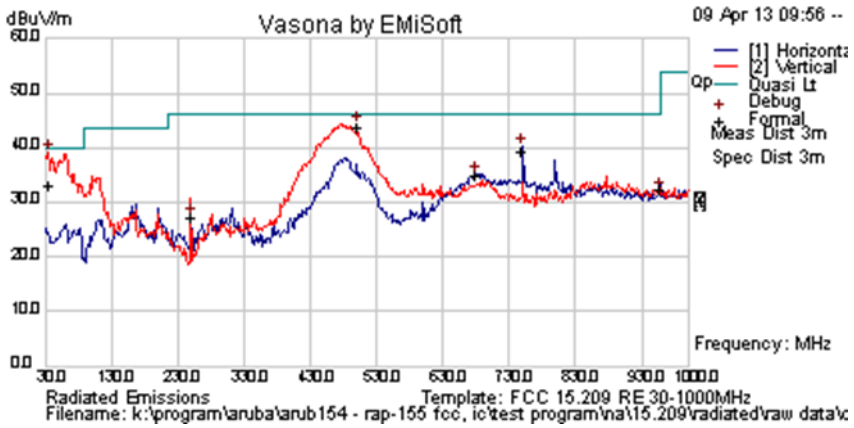


Formally measured emission peaks

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
500.585	44.1	5.8	-12.8	37.0	Peak [Scan]	H	98	360	46.0	-9.0	Pass	
875.546	37.2	7.1	-8.1	36.2	Peak [Scan]	H	98	360	46.0	-9.8	Pass	
30.970	35.5	3.5	-10.6	28.4	Peak [Scan]	V	98	360	40.0	-11.6	Pass	
374.341	42.6	5.4	-15.4	32.6	Peak [Scan]	H	98	360	46.0	-13.4	Pass	
399.644	39.1	5.5	-14.8	29.8	Peak [Scan]	H	98	360	46.0	-16.2	Pass	
151.735	40.2	4.4	-18.9	25.8	Peak [Scan]	H	98	360	43.5	-17.7	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											

EUT APINR15P

Test Freq.	2437 MHz	**Engineer**	SB
Variant	Digital Emissions	**Temp (ºC)**	22
Freq. Range	30 MHz - 1000 MHz	**Rel. Hum.(%)**	33
Power Setting	Target	**Press. (mBars)**	1003
Antenna	Integral		
Test Notes 1	EUT Position = Vert; AC/DC Power Supply 120VAC/54VDC (Sunny Switching Adapter SYS1443-5454-T3)		
Test Notes 2	POE Port 1 & 2 active (two separate units powered up under turn table); Port 3 & 4 active via ENET		



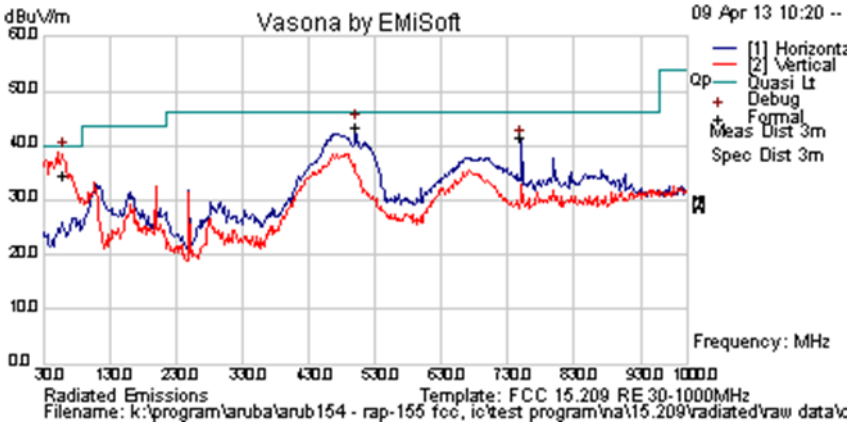
Formally measured emission peaks

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
35.118	43.3	3.6	-13.7	33.3	Quasi Max	V	138	271	40	-6.7	Pass	
499.999	49.3	5.8	-12.8	42.3	Quasi Peak	H	173	322	46	-3.7	Pass	
750.008	42.0	6.7	-9.4	39.2	Quasi Max	H	98	165	46	-6.8	Pass	
680.385	38.9	6.5	-10.4	34.9	Peak [Scan]	H	98	165	46	-11.1	Pass	
958.290	32.0	7.3	-7.1	32.2	Peak [Scan]	H	98	165	46	-13.8	Pass	
250.078	41.2	4.9	-19.0	27.1	Peak [Scan]	V	98	165	46	-18.9	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

EUT APINR15P

Test Freq.	2437 MHz	**Engineer**	SB
Variant	Digital Emissions	**Temp (ºC)**	22
Freq. Range	30 MHz - 1000 MHz	**Rel. Hum.(%)**	33
Power Setting	Target	**Press. (mBars)**	1003
Antenna	Integral		
Test Notes 1	EUT Position = Hor.; AC/DC Power Supply 120VAC/54VDC (Sunny Switching Adapter SYS1443-5454-T3)		
Test Notes 2	POE Port 1 & 2 active (two separate units powered up under turn table); Port 3 & 4 active via ENET		



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
58.934	54.8	3.8	-24.1	34.4	Quasi Max	V	112	309	40.0	-5.6	Pass	
499.999	49.3	5.8	-12.8	42.3	Quasi Peak	H	173	322	46	-3.7	Pass	
750.015	44.2	6.7	-9.4	41.5	Quasi Max	H	119	0	46.0	-4.5	Pass	
680.385	38.9	6.5	-10.4	34.9	Peak [Scan]	H	98	165	46.0	-11.1	Pass	
958.290	32.0	7.3	-7.1	32.2	Peak [Scan]	H	98	165	46.0	-13.8	Pass	
250.078	41.2	4.9	-19.0	27.1	Peak [Scan]	V	98	165	46.0	-18.9	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

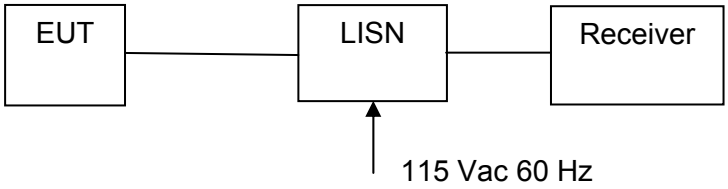
Method	Test Equipment Used
Measurements were made per work instruction WI-03 'Measurement of Radiated Emissions'	0088, 0158, 0134, 0304, 0311, 0315, 0310, 0312

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



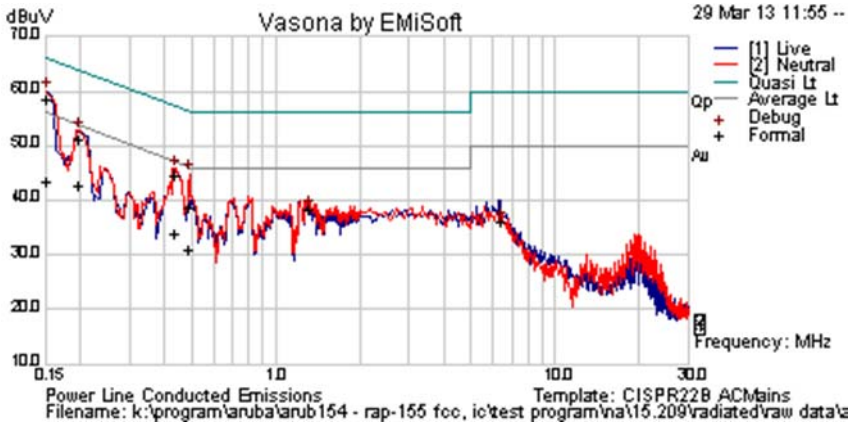
Measurement set up for AC Wireline Conducted Emissions Test

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

APINR155

Test Freq.	N/A	**Engineer**	SB
Variant	AC Line Emissions	**Temp (ºC)**	23
Freq. Range	0.150 MHz - 30 MHz	**Rel. Hum.(%)**	36
Power Setting	Target	**Press. (mBars)**	1005
Antenna	Integral		
Test Notes 1	EUT Position = Vertical; AC/DC Adapter on table; Ethernet cables plugged into EUT;		
Test Notes 2			



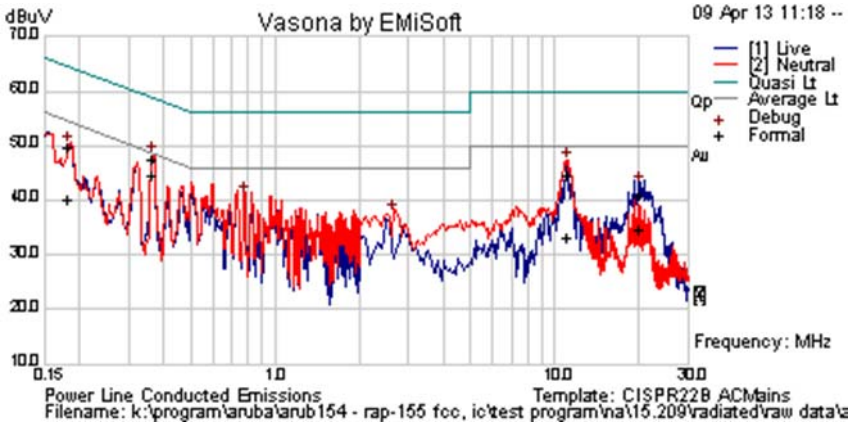
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	Factors dB	Level dBuV	Measurement Type	Line	Limit dBuV	Margin dB	Pass /Fail	Comments
0.152	48.7	9.9	0.1	58.7	Quasi Peak	Neutral	65.9	-7.3	Pass	
0.199	41.3	9.9	0.1	51.3	Quasi Peak	Neutral	63.65	-12.4	Pass	
0.492	28.5	9.9	0.1	38.5	Quasi Peak	Neutral	56.13	-17.6	Pass	
0.437	34.6	9.9	0.1	44.6	Quasi Peak	Neutral	57.12	-12.6	Pass	
0.152	33.5	9.9	0.1	43.5	Average	Neutral	55.9	-12.4	Pass	
0.199	32.7	9.9	0.1	42.7	Average	Neutral	53.65	-11.0	Pass	
0.492	20.9	9.9	0.1	30.9	Average	Neutral	46.13	-15.3	Pass	
0.437	23.8	9.9	0.1	33.7	Average	Neutral	47.12	-13.4	Pass	
1.331	28.3	10.0	0.1	38.3	Peak [Scan]	Neutral	46	-7.7	Pass	
6.488	25.6	10.2	0.3	36.1	Peak [Scan]	Neutral	50	-13.9	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

APINR15P

Test Freq.	N/A	**Engineer**	SB
Variant	AC Line Emissions	**Temp (ºC)**	23
Freq. Range	0.150 MHz - 30 MHz	**Rel. Hum.(%)**	36
Power Setting	Target	**Press. (mBars)**	1005
Antenna	Integral		
Test Notes 1	EUT Position = Hor; AC/DC Pwr Supply 120VAC/54VDC (Sunny Switching Adapter SYS1443-5454-T3)		
Test Notes 2	POE Port 1 & 2 active (two separate units powered up under turn table); Port 3 & 4 active via ENET		



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	Factors dB	Level dBuV	Measurement Type	Line	Limit dBuV	Margin dB	Pass /Fail	Comments
20.033	29.7	10.5	0.7	41.0	Quasi Peak	Live	60	-19.1	Pass	
0.368	37.5	9.9	0.1	47.5	Quasi Peak	Neutral	58.55	-11.1	Pass	
11.170	34.0	10.3	0.4	44.7	Quasi Peak	Neutral	60	-15.3	Pass	
0.184	39.8	9.9	0.1	49.8	Quasi Peak	Neutral	64.3	-14.5	Pass	
20.033	23.3	10.5	0.7	34.6	Average	Live	50	-15.4	Pass	
0.368	34.6	9.9	0.1	44.5	Average	Neutral	48.55	-4.0	Pass	
11.170	22.5	10.3	0.4	33.2	Average	Neutral	50	-16.8	Pass	
0.184	30.2	9.9	0.1	40.2	Average	Neutral	54.3	-14.1	Pass	
0.184	40.2	9.9	0.1	50.2	Peak [Scan]	Neutral	54.3	-4.1	Pass	
0.786	30.8	10.0	0.1	40.9	Peak [Scan]	Neutral	46	-5.2	Pass	
2.664	27.5	10.1	0.1	37.7	Peak [Scan]	Neutral	46	-8.3	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

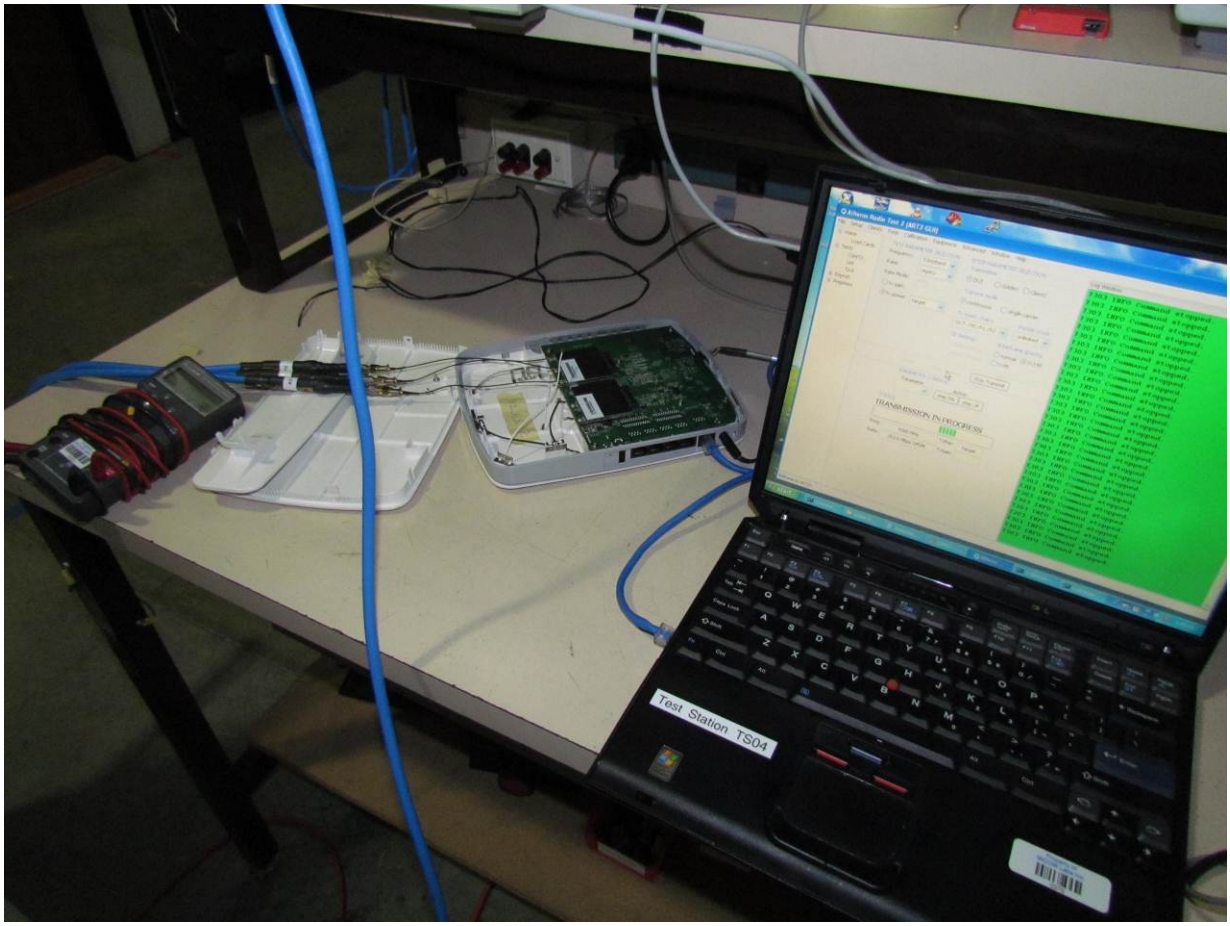
Measurement uncertainty	±2.64 dB

Traceability

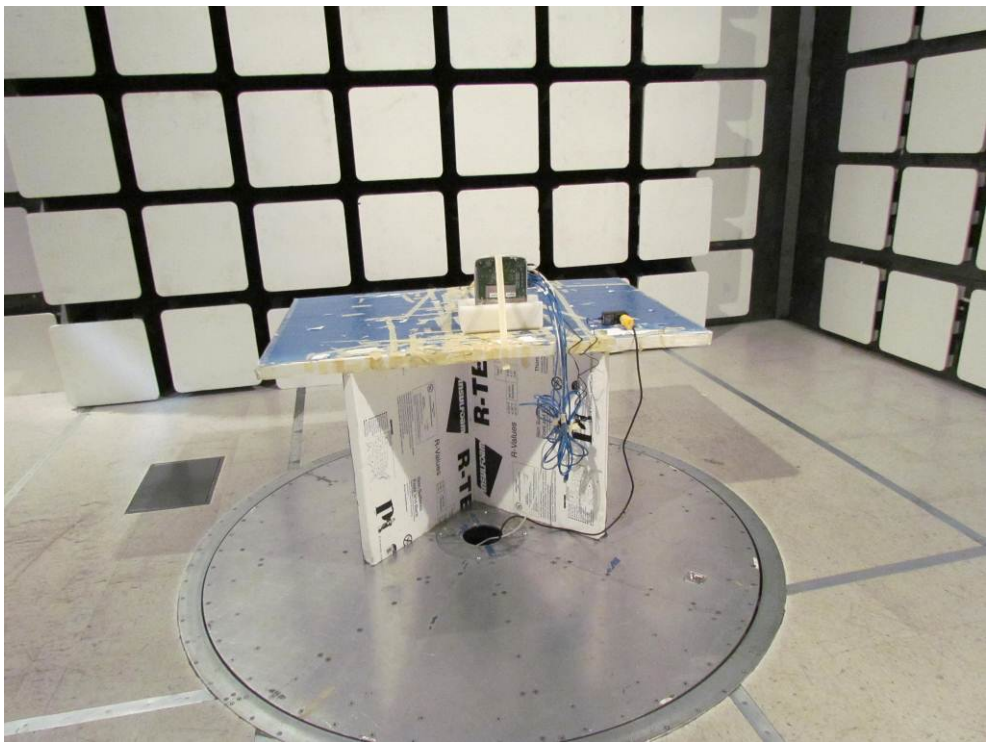
Method	Test Equipment Used
Measurements were made per work instruction WI-EMC-01 'Measurement of Conducted Emissions'	0158, 0184, 0287, 0190, 0293, 0307

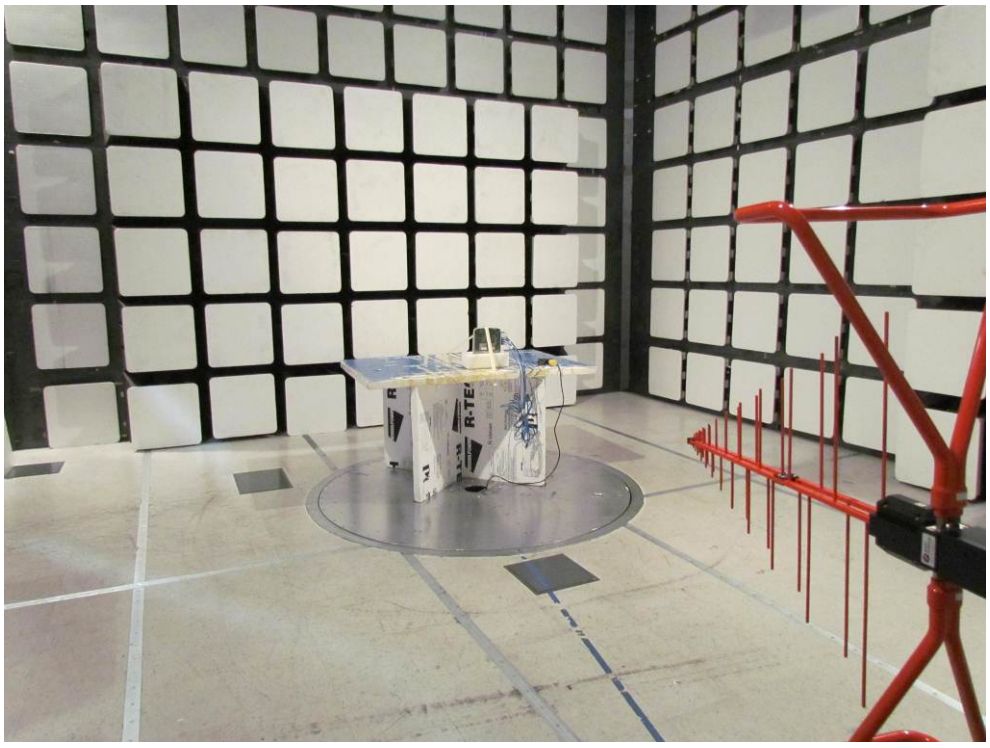
6. PHOTOGRAPHS

6.1. Conducted Test Setup

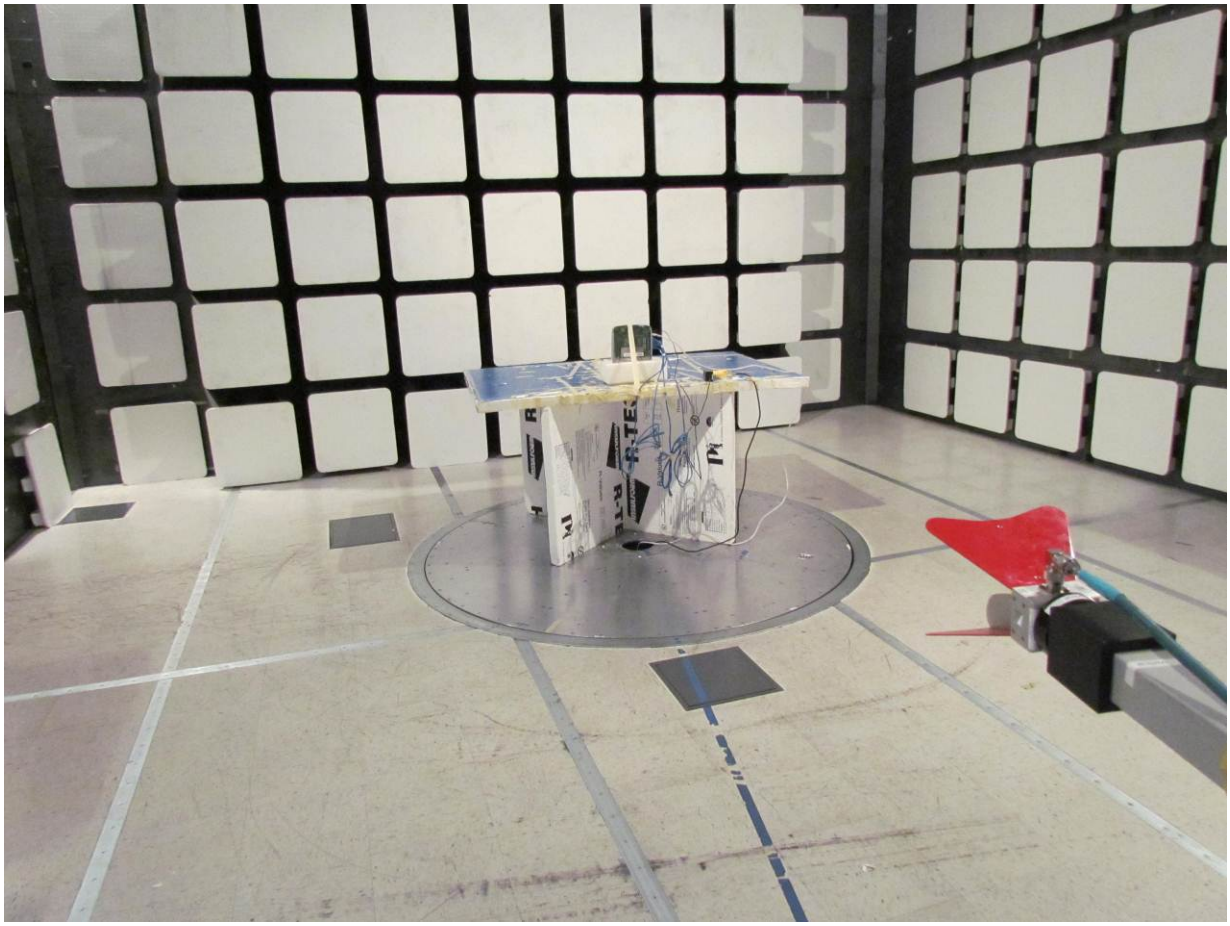


6.2. Test Setup - Digital Emissions below 1 GHz





6.3. Radiated Emissions Test Setup >1 GHz



7. TEST EQUIPMENT

Asset #	Instrument	Manufacturer	Part #	Serial #	Calibration Due Date
0070	Power Meter	Hewlett Packard	437B	3125U11552	28th Nov 13
0117	Power Sensor	Hewlett Packard	8487D	3318A00371	15th Nov 13
0223	Power Meter	Hewlett Packard	EPM-442A	US37480256	15th Nov 13
0374	Power Sensor	Hewlett Packard	8485A	3318A19694	29th Nov 13
0158	Barometer /Thermometer	Control Co.	4196	E2846	8th Dec 13
0193	EMI Receiver	Rhode & Schwartz	ESI 7	838496/007	2nd Dec 13
0287	EMI Receiver	Rhode & Schwartz	ESIB40	100201	16th Nov 13
0338	30 - 3000 MHz Antenna	Sunol	JB3	A052907	8th Nov 13
0335	1-18 GHz Horn Antenna	EMCO	3117	00066580	7th Nov 13
0252	SMA Cable	Megaphase	Sucoflex 104	None	N/A
0293	BNC Cable	Megaphase	1689 1GVT4	15F50B001	N/A
0307	BNC Cable	Megaphase	1689 1GVT4	15F50B002	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
	EMC Test Software	EMISoft	Vasona	5.0051	N/A
	RF Conducted Test Software	National Instruments	Labview	Version 8.2	N/A
	RF Conducted Test Software	MiCOM Labs ATS		Version 1.5	N/A

APPENDIX

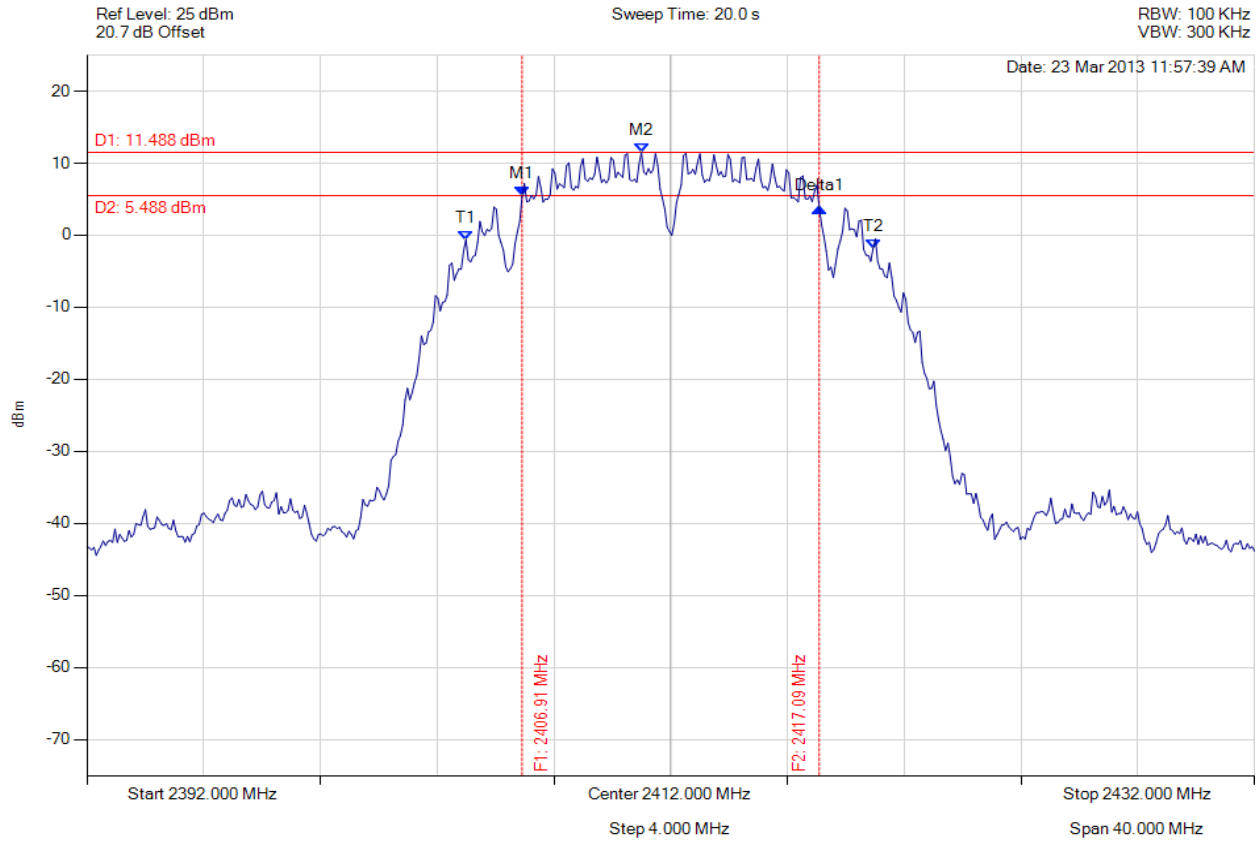
A. SUPPORTING INFORMATION

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: 12 Vdc

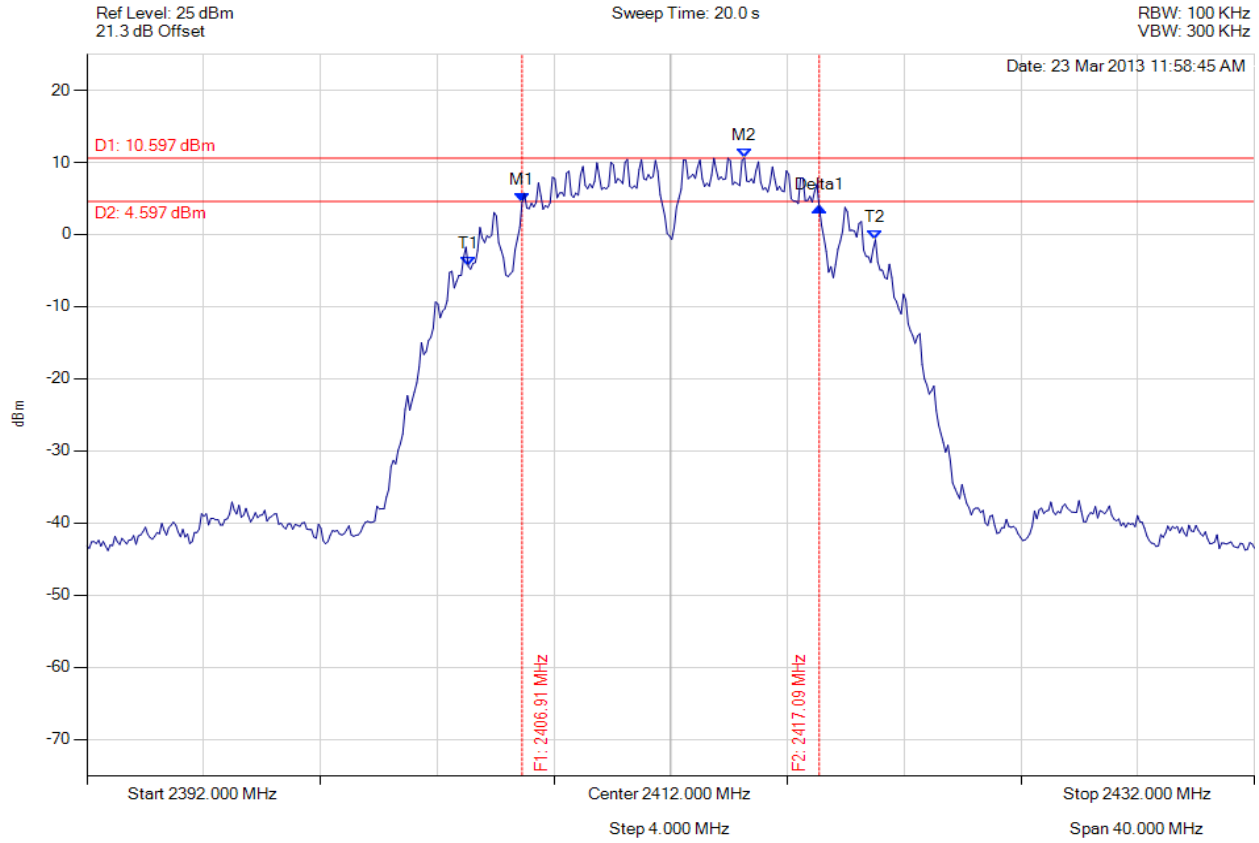


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2406.910 MHz : 5.397 dBm M2 : 2410.998 MHz : 11.488 dBm Delta1 : 10.180 MHz : -1.590 dB T1 : 2404.986 MHz : -0.635 dBm T2 : 2418.934 MHz : -1.852 dBm OBW : 13.948 MHz	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 b, Temp: Ambient, Voltage: 12 Vdc

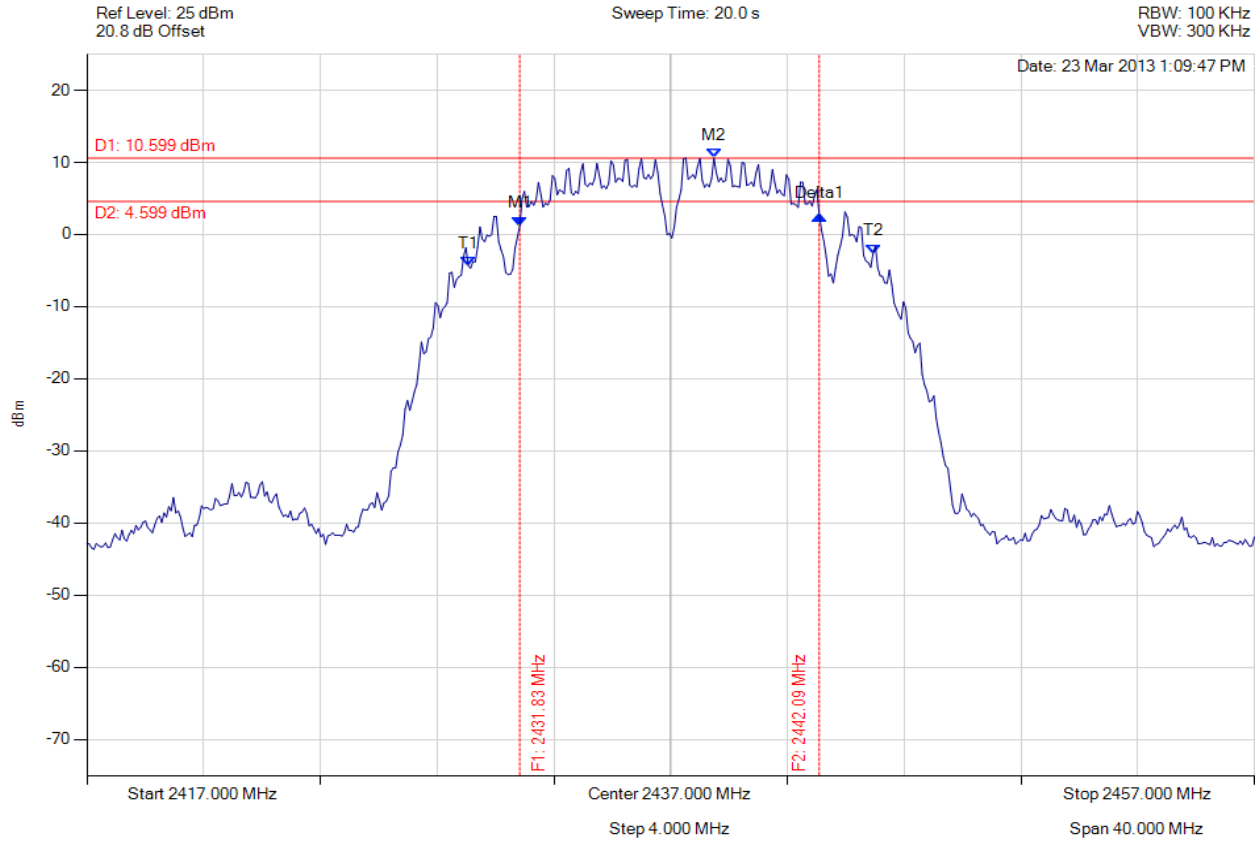


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2406.910 MHz : 4.439 dBm M2 : 2414.525 MHz : 10.597 dBm Delta1 : 10.180 MHz : -0.665 dB T1 : 2405.066 MHz : -4.418 dBm T2 : 2419.014 MHz : -0.725 dBm OBW : 13.948 MHz	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 a, Temp: Ambient, Voltage: 12 Vdc

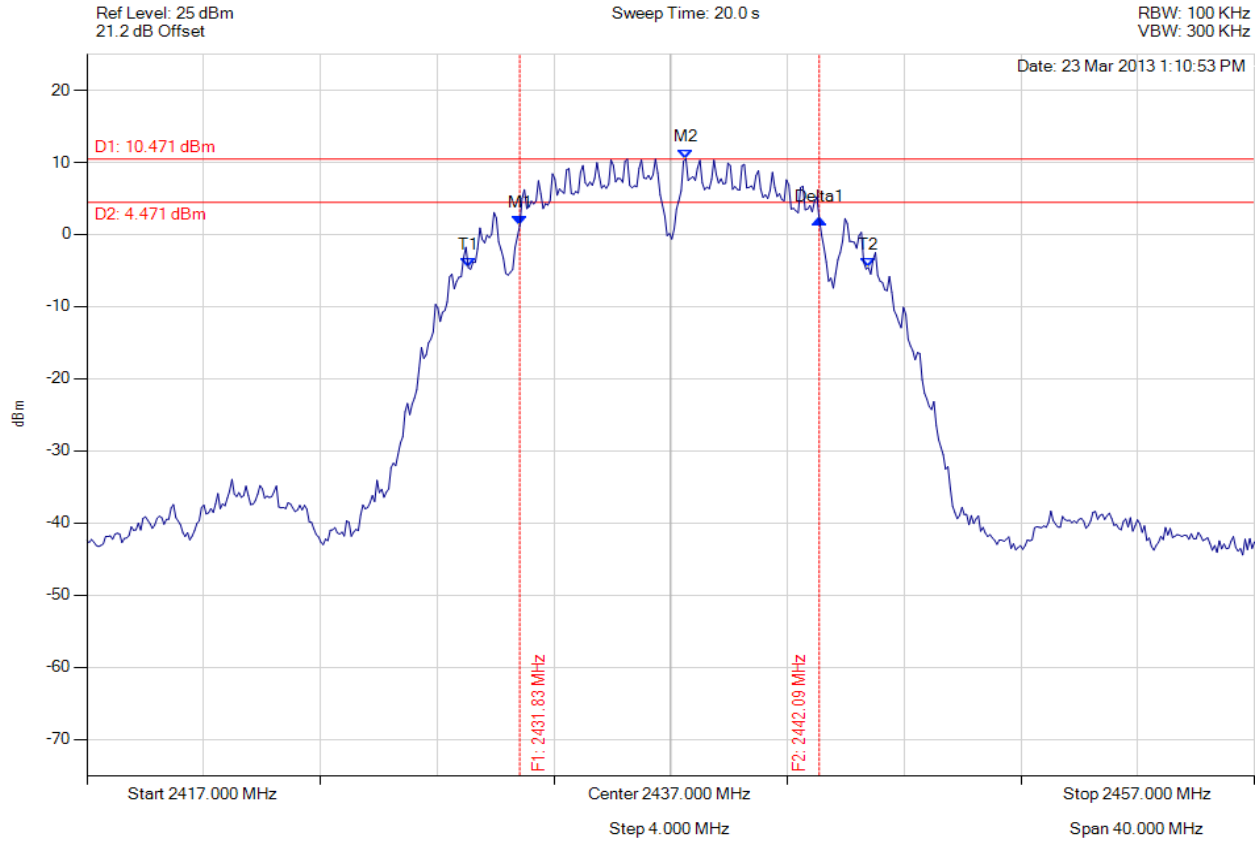


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2431.830 MHz : 1.209 dBm M2 : 2438.483 MHz : 10.599 dBm Delta1 : 10.261 MHz : 1.415 dB T1 : 2430.066 MHz : -4.349 dBm T2 : 2443.934 MHz : -2.626 dBm OBW : 13.868 MHz	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 b, Temp: Ambient, Voltage: 12 Vdc

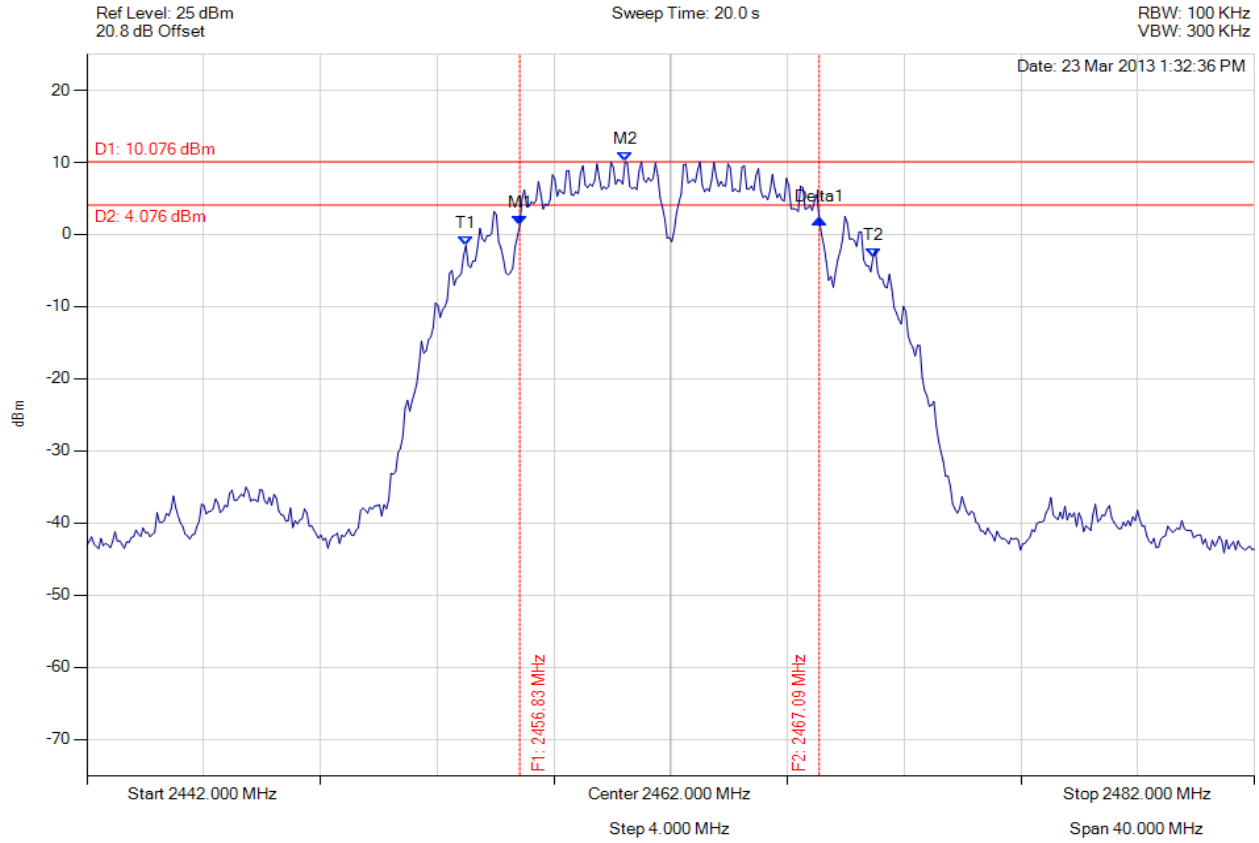


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2431.830 MHz : 1.228 dBm M2 : 2437.521 MHz : 10.471 dBm Delta1 : 10.261 MHz : 0.899 dB T1 : 2430.066 MHz : -4.595 dBm T2 : 2443.774 MHz : -4.577 dBm OBW : 13.707 MHz	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: 2462.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc

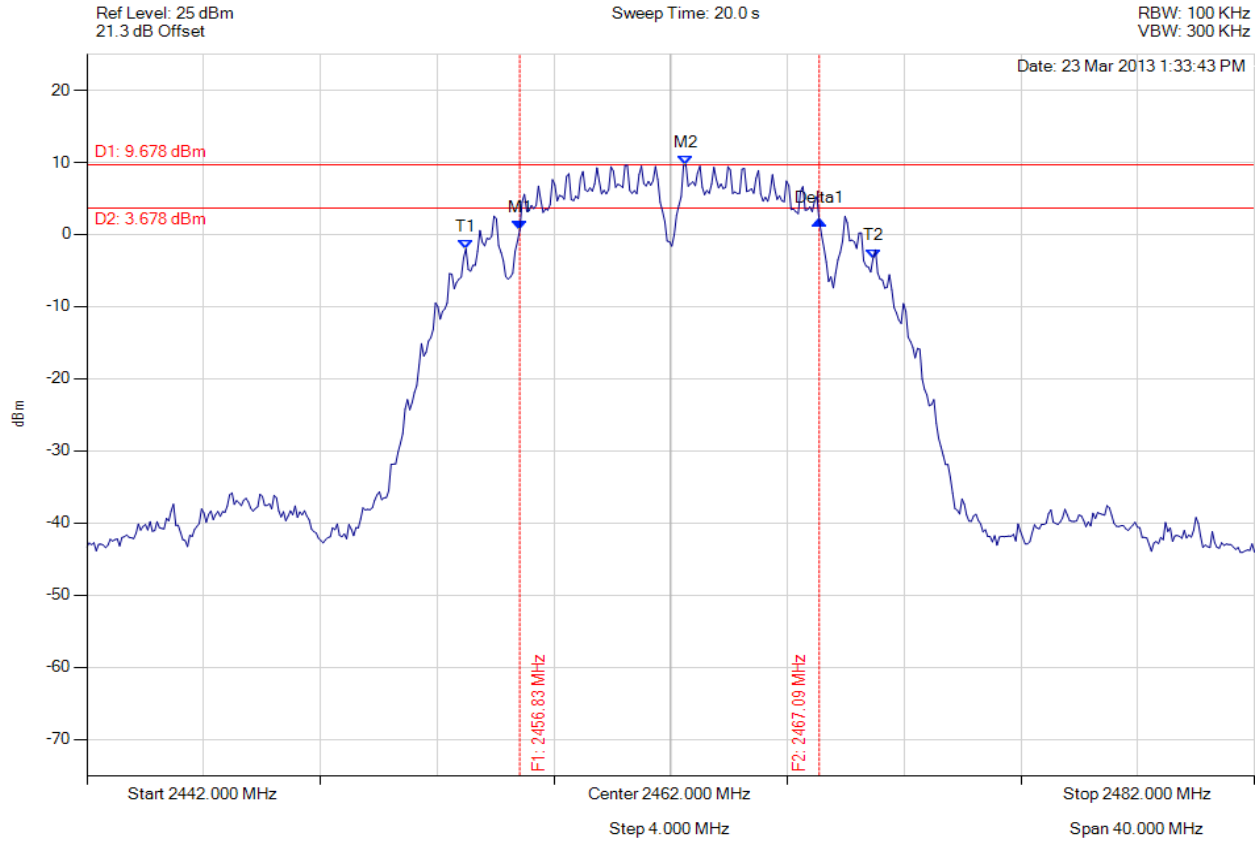


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2456.830 MHz : 1.282 dBm M2 : 2460.437 MHz : 10.076 dBm Delta1 : 10.261 MHz : 0.872 dB T1 : 2454.986 MHz : -1.516 dBm T2 : 2468.934 MHz : -3.167 dBm OBW : 13.948 MHz	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: 2462.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc

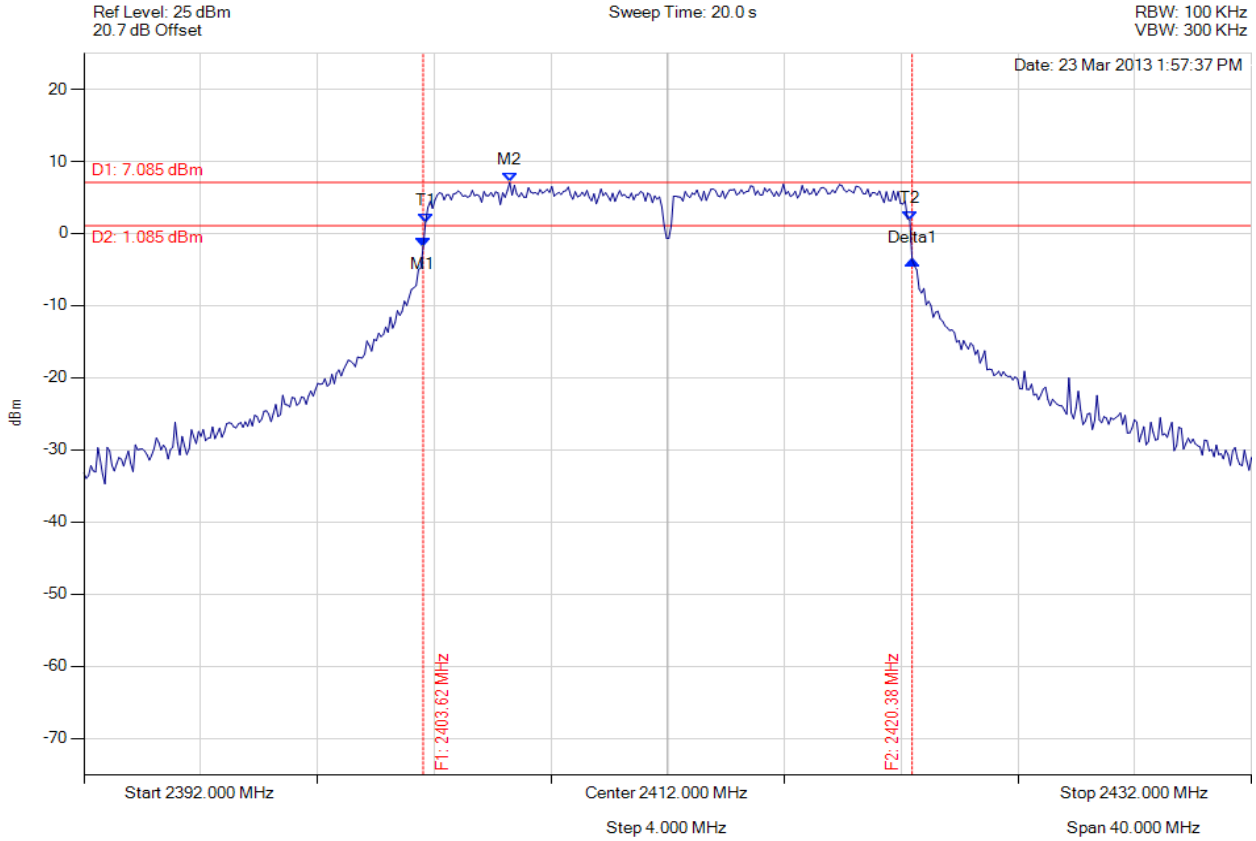


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2456.830 MHz : 0.591 dBm M2 : 2462.521 MHz : 9.678 dBm Delta1 : 10.261 MHz : 1.312 dB T1 : 2454.986 MHz : -1.996 dBm T2 : 2468.934 MHz : -3.281 dBm OBW : 13.948 MHz	Measured 6 dB Bandwidth: 10.261 MHz Limit: ≥500.0 kHz Margin: -9.76 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

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

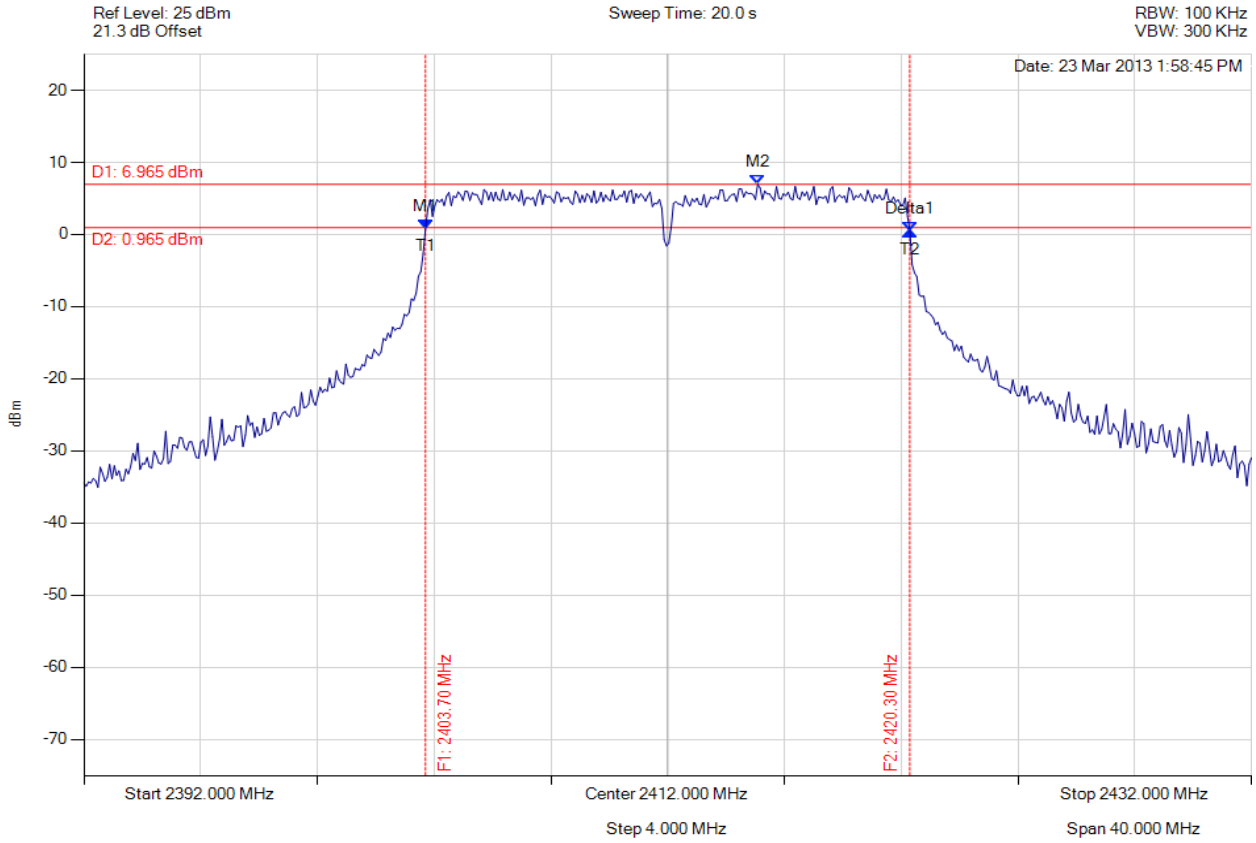


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2403.623 MHz : -1.839 dBm M2 : 2406.589 MHz : 7.085 dBm Delta1 : 16.754 MHz : -1.873 dB T1 : 2403.703 MHz : 1.529 dBm T2 : 2420.297 MHz : 1.850 dBm OBW : 16.593 MHz	Measured 6 dB Bandwidth: 16.754 MHz Limit: ≥500.0 kHz Margin: -16.25 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

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

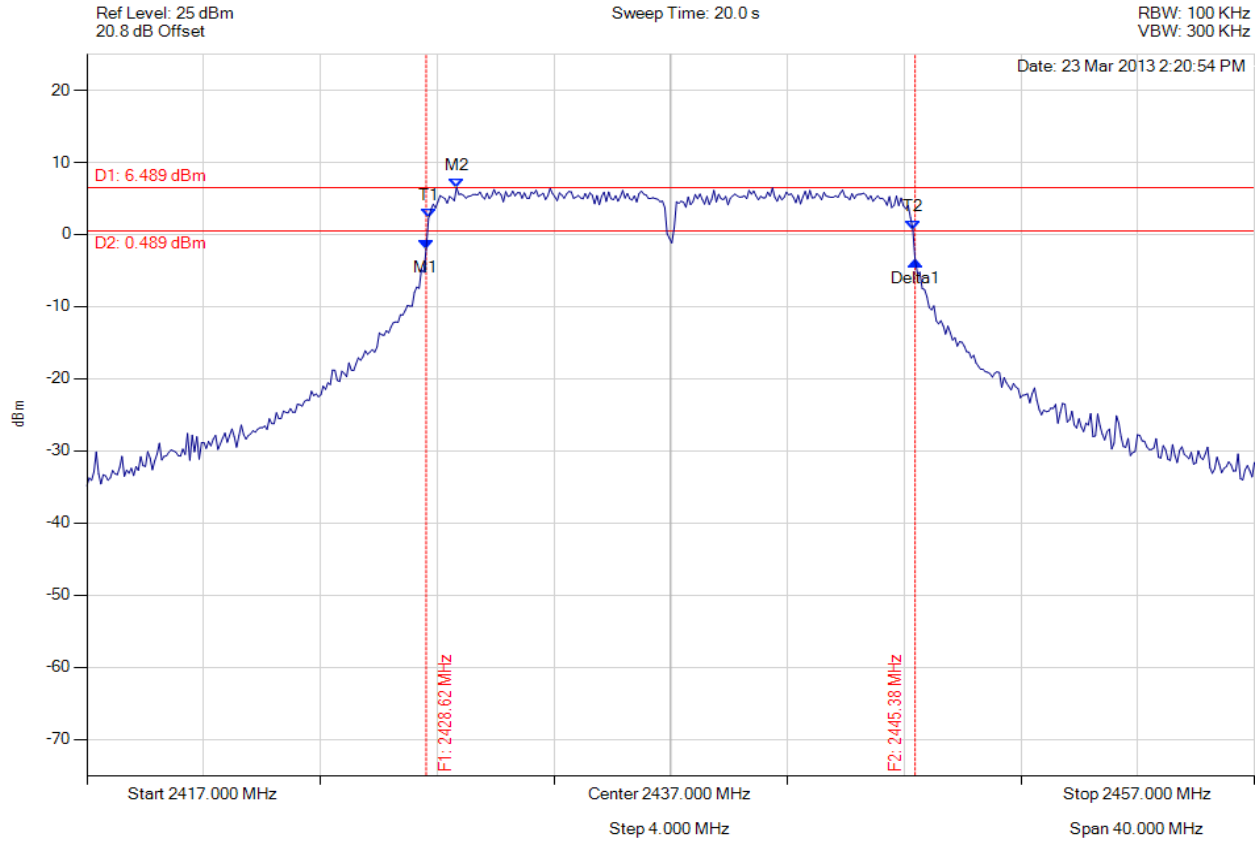


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2403.703 MHz : 0.837 dBm M2 : 2415.086 MHz : 6.965 dBm Delta1 : 16.593 MHz : -0.366 dB T1 : 2403.703 MHz : 0.837 dBm T2 : 2420.297 MHz : 0.471 dBm OBW : 16.593 MHz	Measured 6 dB Bandwidth: 16.593 MHz Limit: ≥500.0 kHz Margin: -16.09 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

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

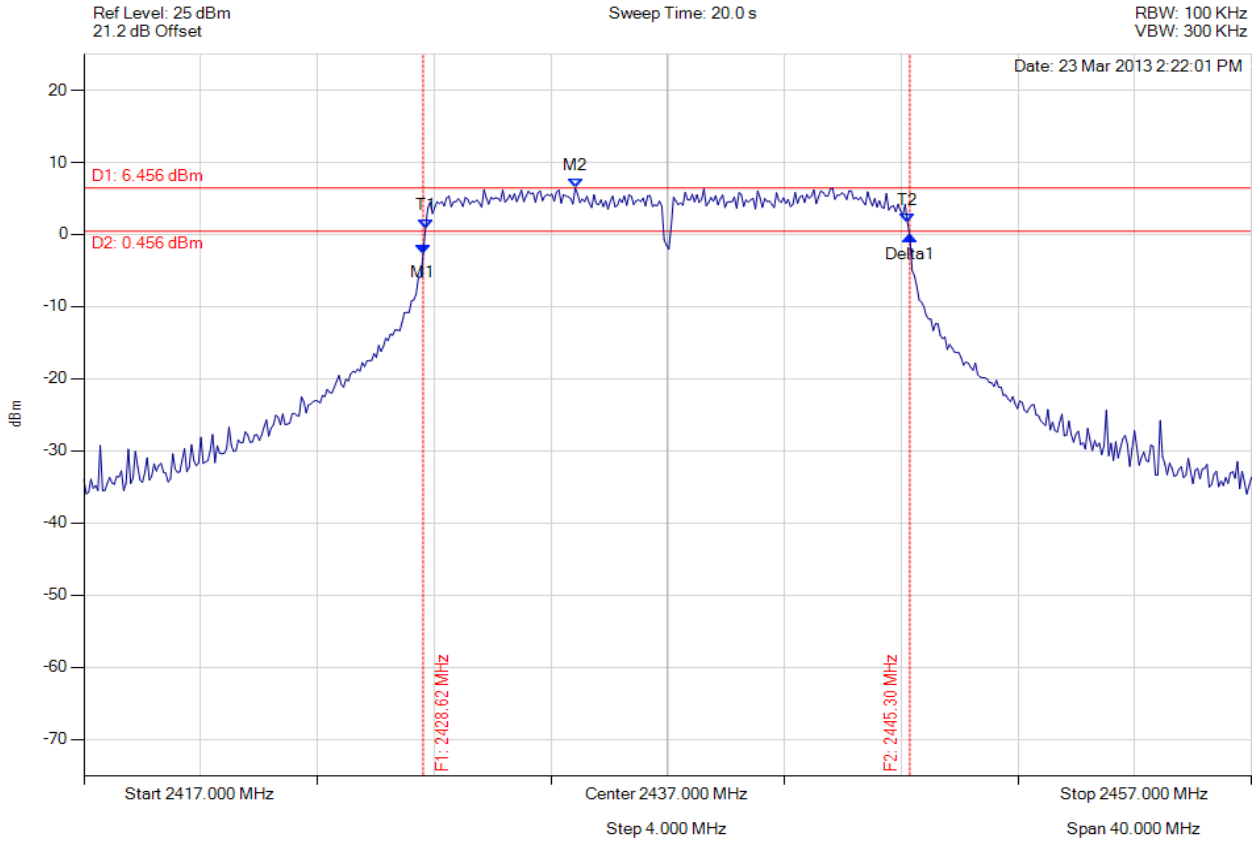


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2428.623 MHz : -2.016 dBm M2 : 2429.665 MHz : 6.489 dBm Delta1 : 16.754 MHz : -1.607 dB T1 : 2428.703 MHz : 2.226 dBm T2 : 2445.297 MHz : 0.709 dBm OBW : 16.593 MHz	Measured 6 dB Bandwidth: 16.754 MHz Limit: ≥500.0 kHz Margin: -16.25 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

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

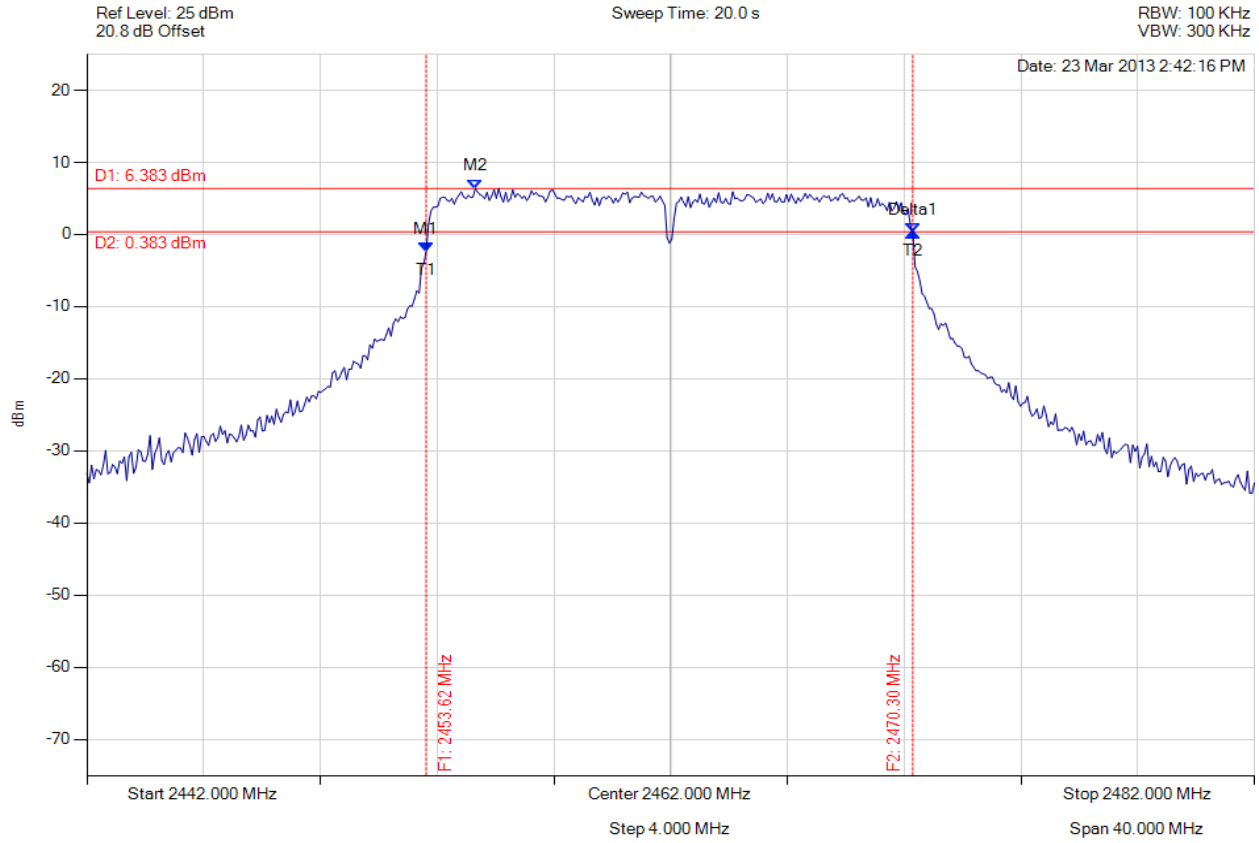


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2428.623 MHz : -2.714 dBm M2 : 2433.834 MHz : 6.456 dBm Delta1 : 16.673 MHz : 2.467 dB T1 : 2428.703 MHz : 0.884 dBm T2 : 2445.216 MHz : 1.657 dBm OBW : 16.513 MHz	Measured 6 dB Bandwidth: 16.673 MHz Limit: ≥500.0 kHz Margin: -16.17 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

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

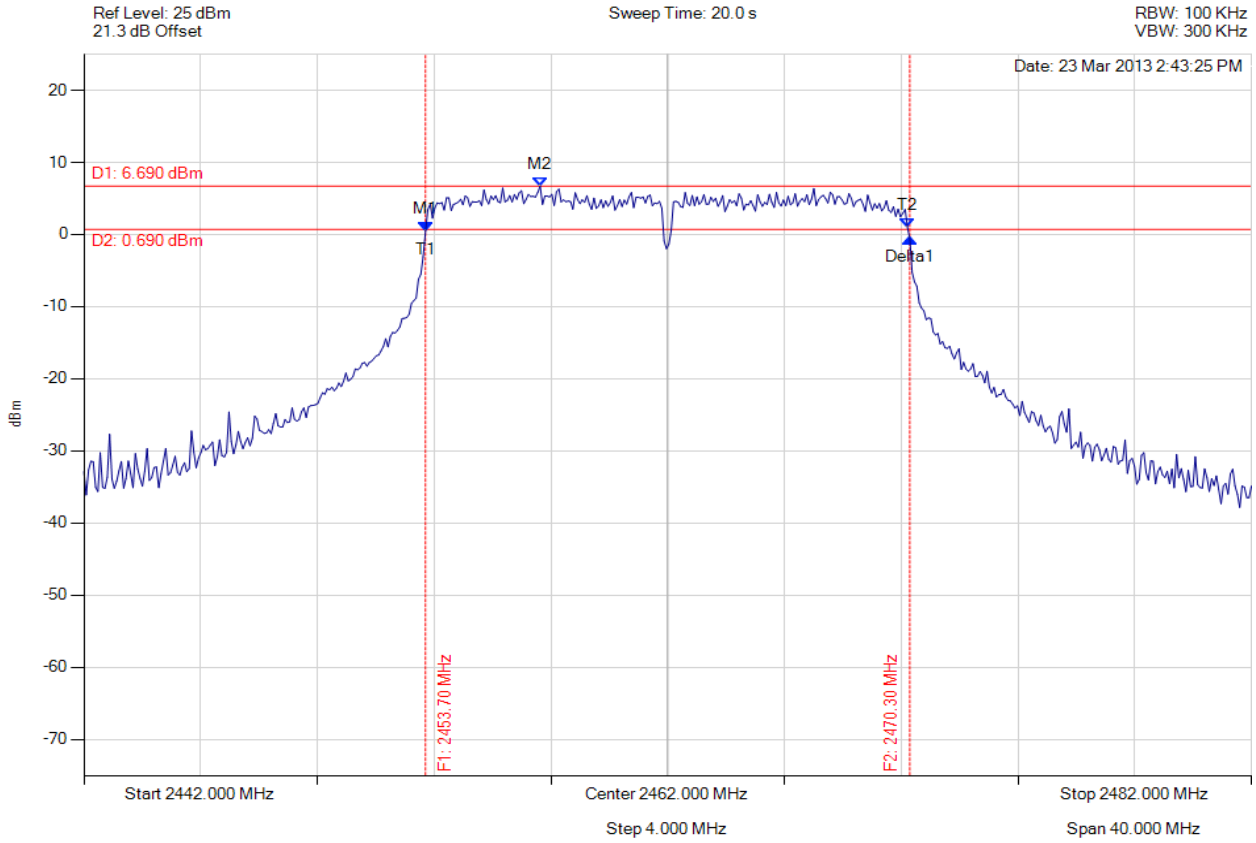


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2453.623 MHz : -2.413 dBm M2 : 2455.307 MHz : 6.383 dBm Delta1 : 16.673 MHz : 2.656 dB T1 : 2453.623 MHz : -2.413 dBm T2 : 2470.297 MHz : 0.243 dBm OBW : 16.673 MHz	Measured 6 dB Bandwidth: 16.673 MHz Limit: ≥500.0 kHz Margin: -16.17 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

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

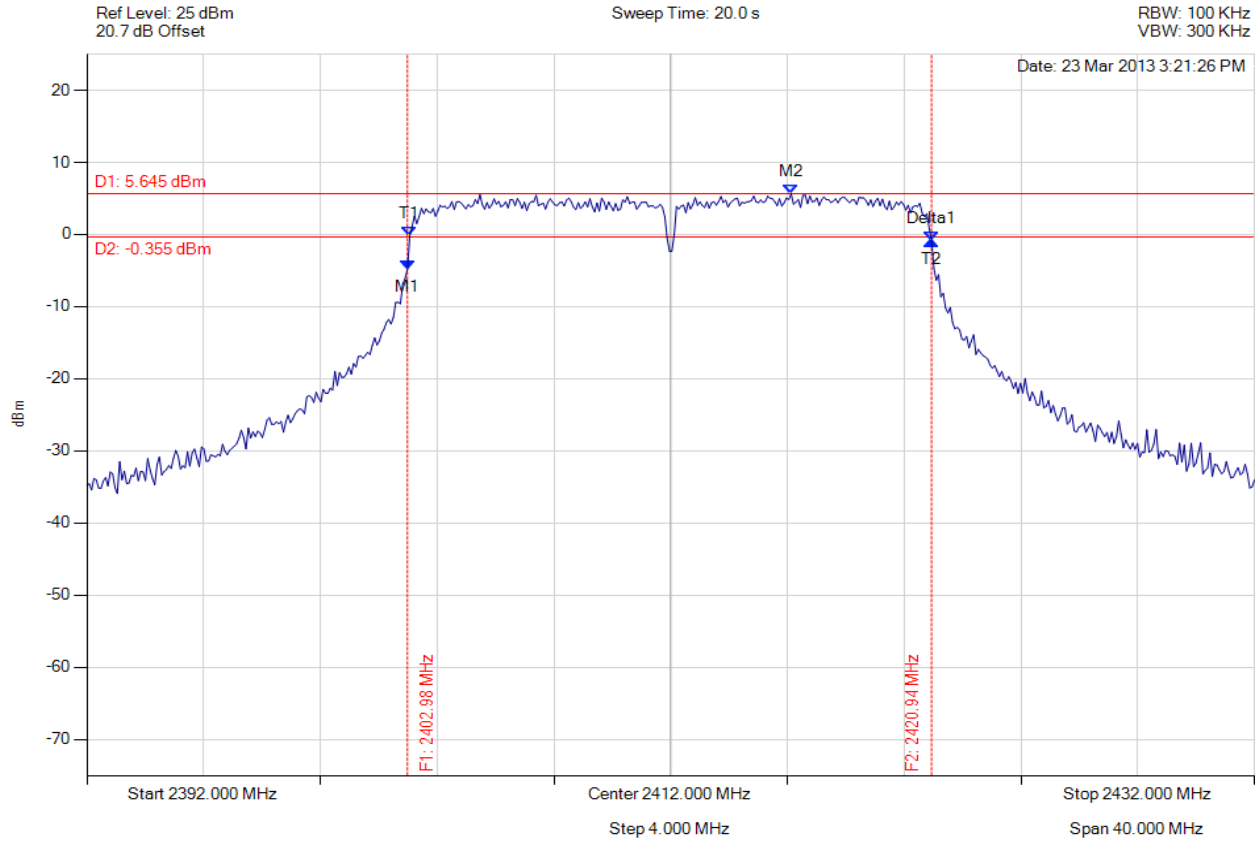


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2453.703 MHz : 0.461 dBm M2 : 2457.631 MHz : 6.690 dBm Delta1 : 16.593 MHz : -1.047 dB T1 : 2453.703 MHz : 0.461 dBm T2 : 2470.216 MHz : 0.914 dBm OBW : 16.513 MHz	Measured 6 dB Bandwidth: 16.593 MHz Limit: ≥500.0 kHz Margin: -16.09 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

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

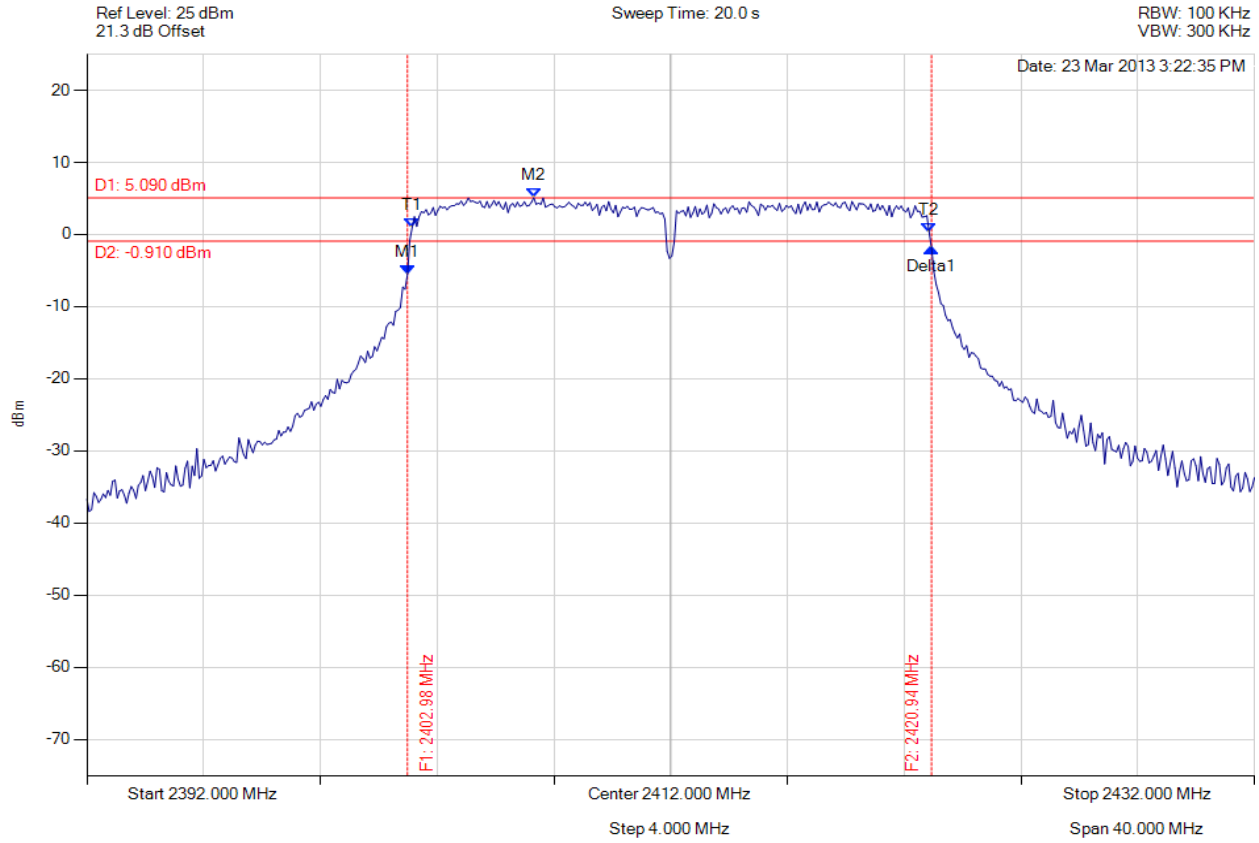


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2402.982 MHz : -4.786 dBm M2 : 2416.128 MHz : 5.645 dBm Delta1 : 17.956 MHz : 3.893 dB T1 : 2403.062 MHz : -0.192 dBm T2 : 2420.938 MHz : -0.894 dBm OBW : 17.876 MHz	Measured 6 dB Bandwidth: 17.956 MHz Limit: ≥500.0 kHz Margin: -17.46 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

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

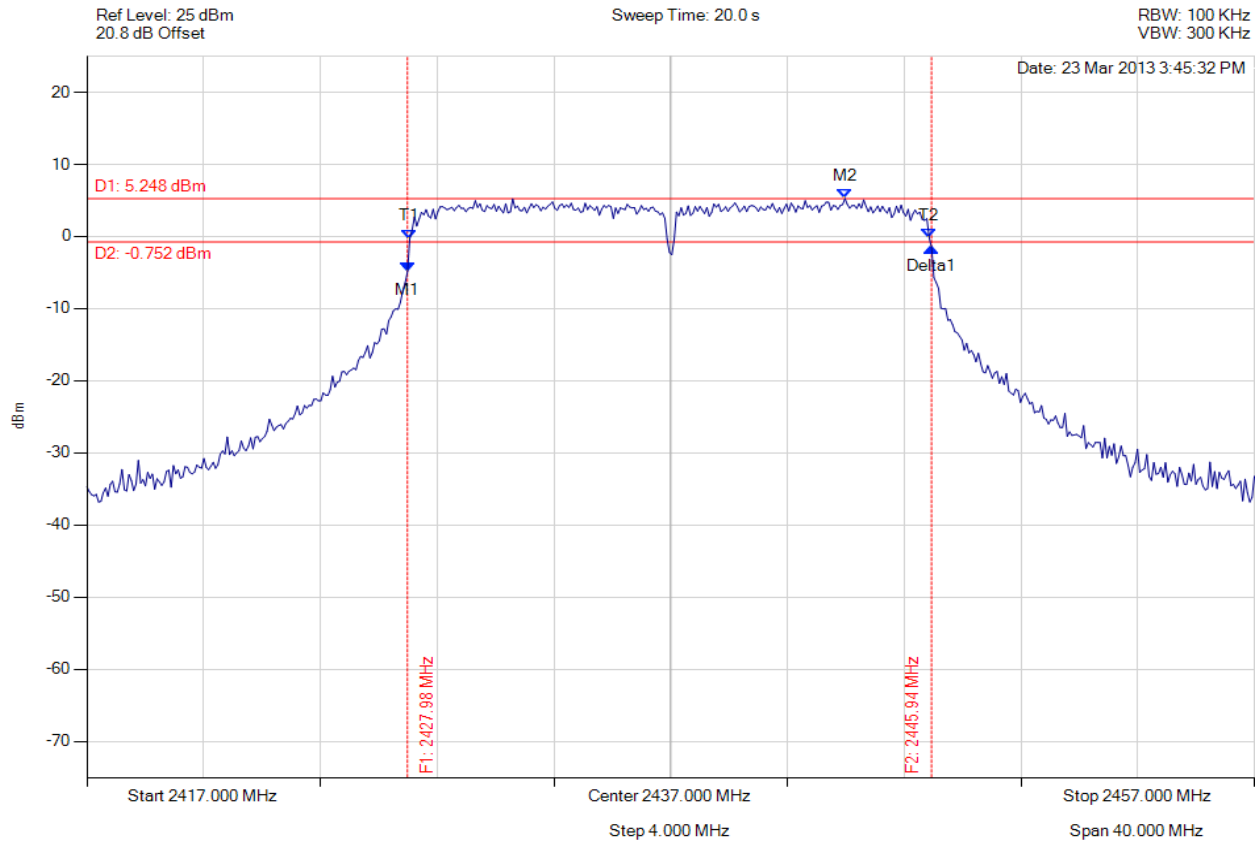


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2402.982 MHz : -5.518 dBm M2 : 2407.311 MHz : 5.090 dBm Delta1 : 17.956 MHz : 3.602 dB T1 : 2403.142 MHz : 0.979 dBm T2 : 2420.858 MHz : 0.266 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.956 MHz Limit: ≥500.0 kHz Margin: -17.46 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

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

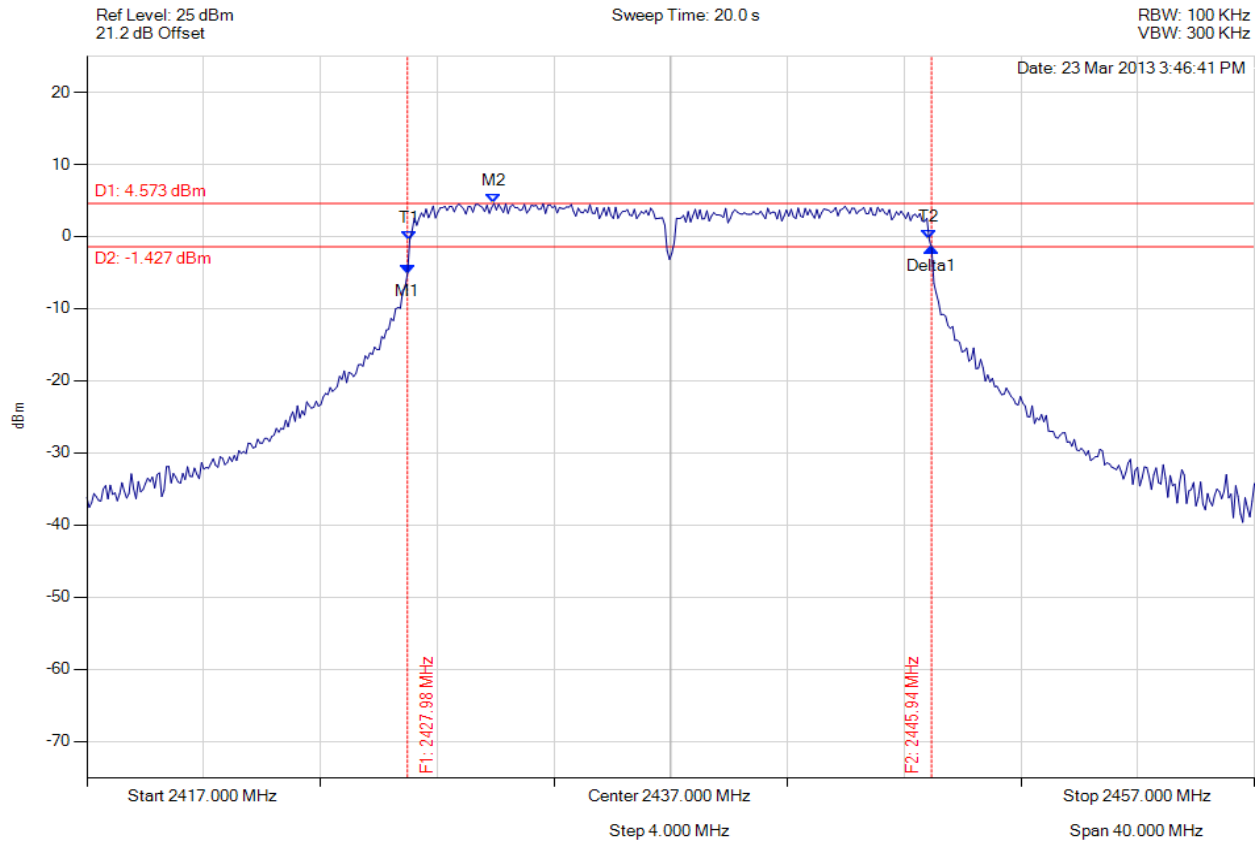


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2427.982 MHz : -4.912 dBm M2 : 2442.972 MHz : 5.248 dBm Delta1 : 17.956 MHz : 3.335 dB T1 : 2428.062 MHz : -0.286 dBm T2 : 2445.858 MHz : -0.153 dBm OBW : 17.796 MHz	Measured 6 dB Bandwidth: 17.956 MHz Limit: ≥500.0 kHz Margin: -17.46 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

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

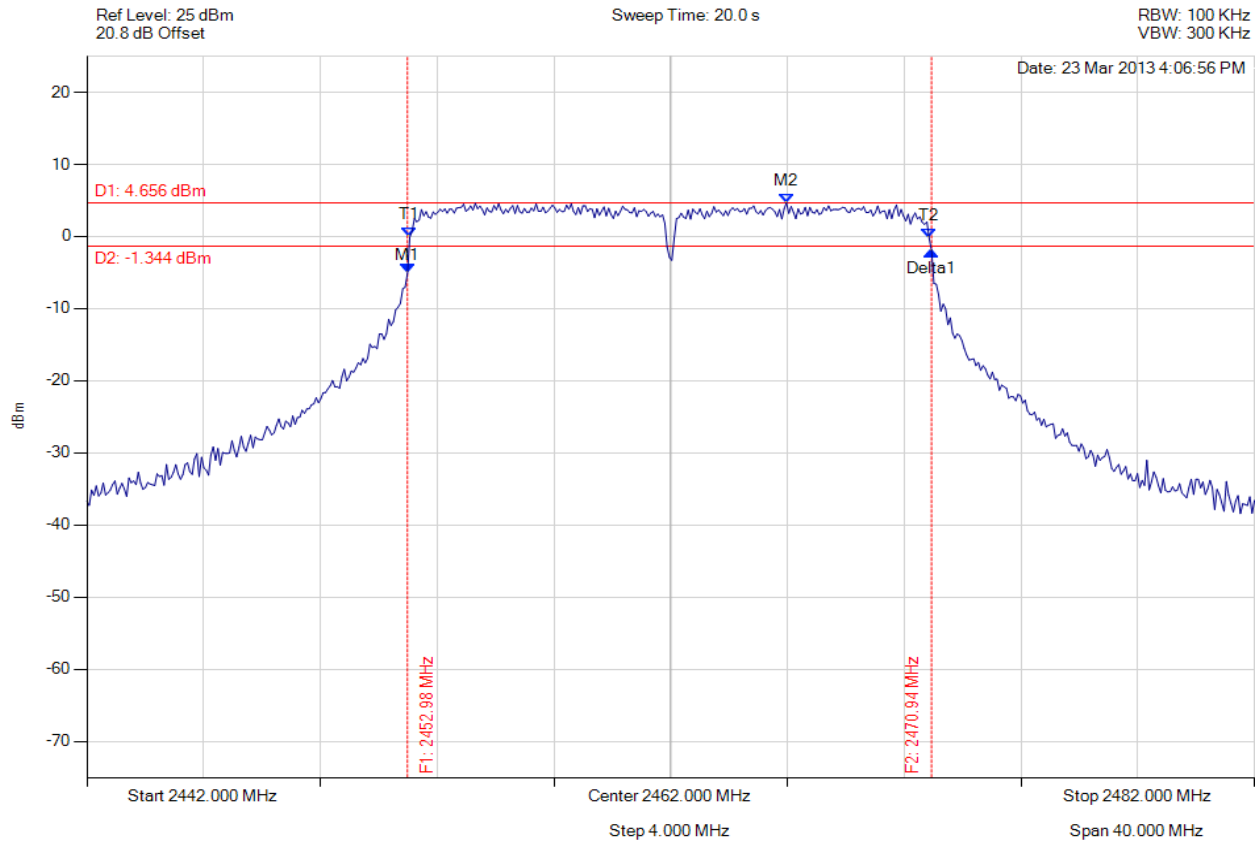


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2427.982 MHz : -5.116 dBm M2 : 2430.948 MHz : 4.573 dBm Delta1 : 17.956 MHz : 3.541 dB T1 : 2428.062 MHz : -0.465 dBm T2 : 2445.858 MHz : -0.440 dBm OBW : 17.796 MHz	Measured 6 dB Bandwidth: 17.956 MHz Limit: ≥500.0 kHz Margin: -17.46 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

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

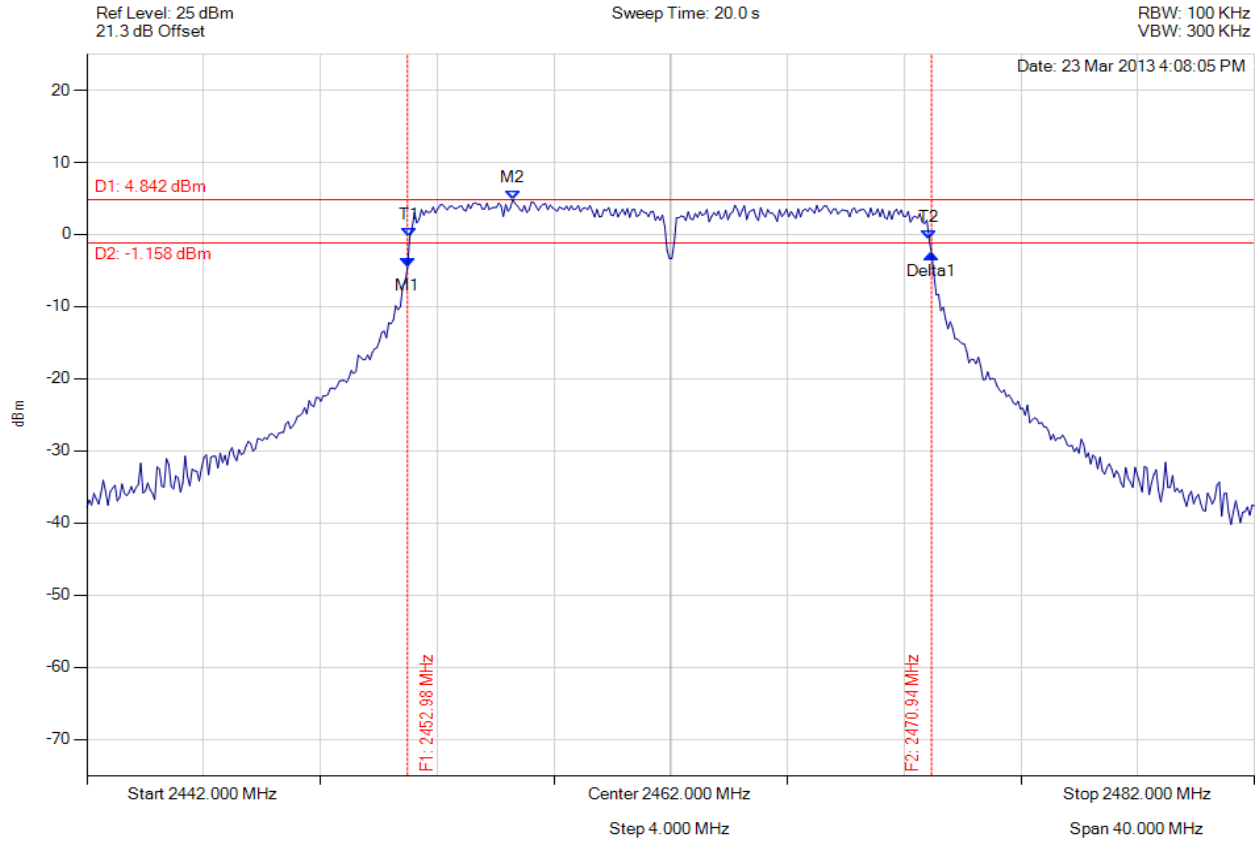


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2452.982 MHz : -5.106 dBm M2 : 2465.968 MHz : 4.656 dBm Delta1 : 17.956 MHz : 3.114 dB T1 : 2453.062 MHz : -0.111 dBm T2 : 2470.858 MHz : -0.273 dBm OBW : 17.796 MHz	Measured 6 dB Bandwidth: 17.956 MHz Limit: ≥500.0 kHz Margin: -17.46 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

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

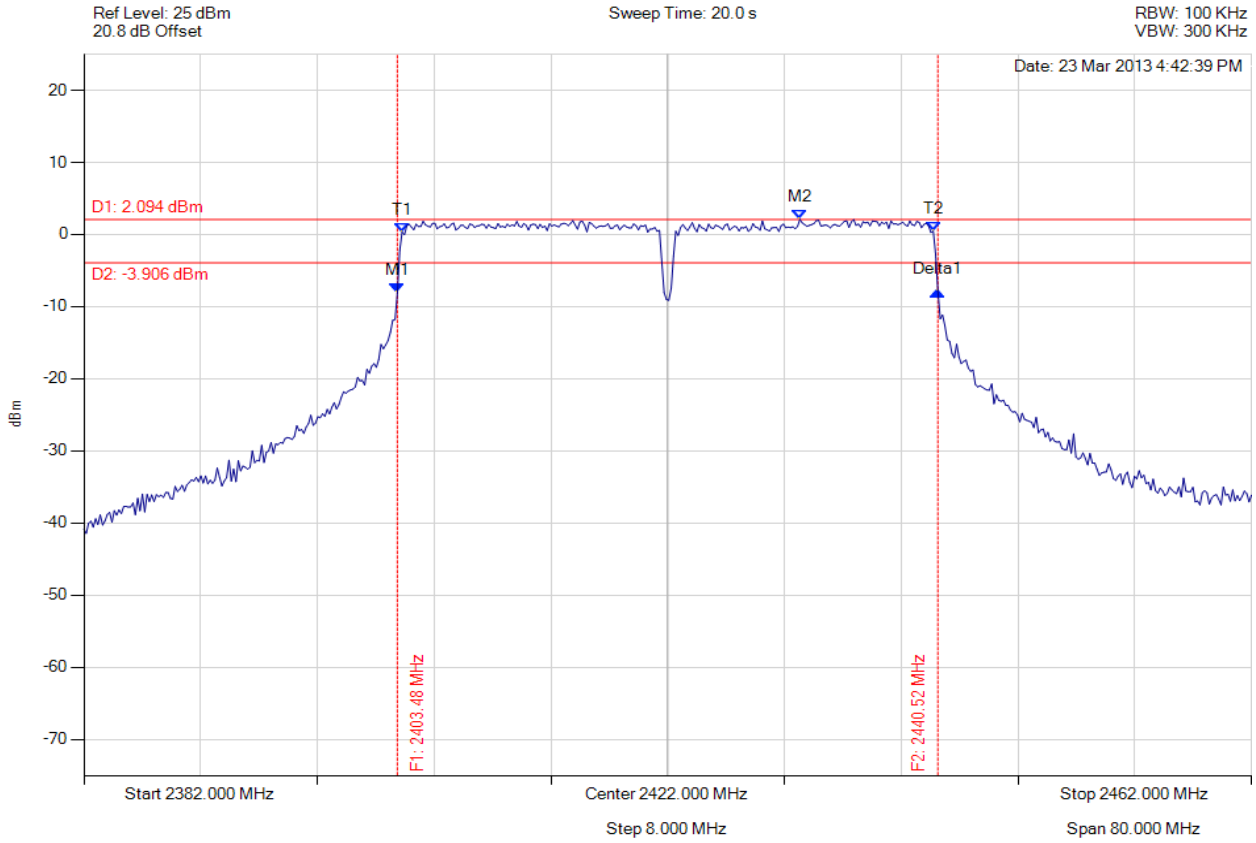


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2452.982 MHz : -4.575 dBm M2 : 2456.589 MHz : 4.842 dBm Delta1 : 17.956 MHz : 1.926 dB T1 : 2453.062 MHz : -0.328 dBm T2 : 2470.858 MHz : -0.678 dBm OBW : 17.796 MHz	Measured 6 dB Bandwidth: 17.956 MHz Limit: ≥500.0 kHz Margin: -17.46 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 2422.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc

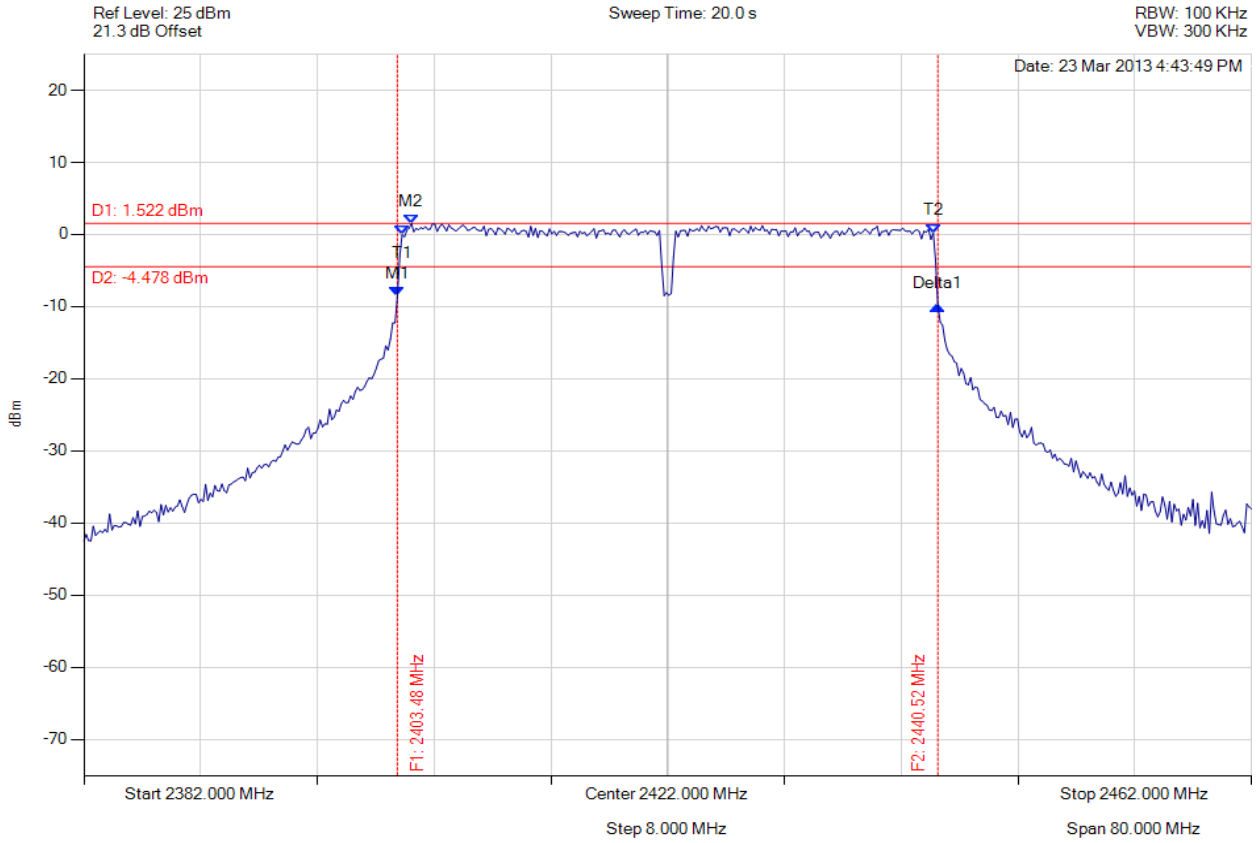


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2403.483 MHz : -8.048 dBm M2 : 2431.058 MHz : 2.094 dBm Delta1 : 37.034 MHz : 0.238 dB T1 : 2403.804 MHz : 0.341 dBm T2 : 2440.196 MHz : 0.457 dBm OBW : 36.393 MHz	Measured 6 dB Bandwidth: 37.034 MHz Limit: ≥500.0 kHz Margin: -36.53 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 2422.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc

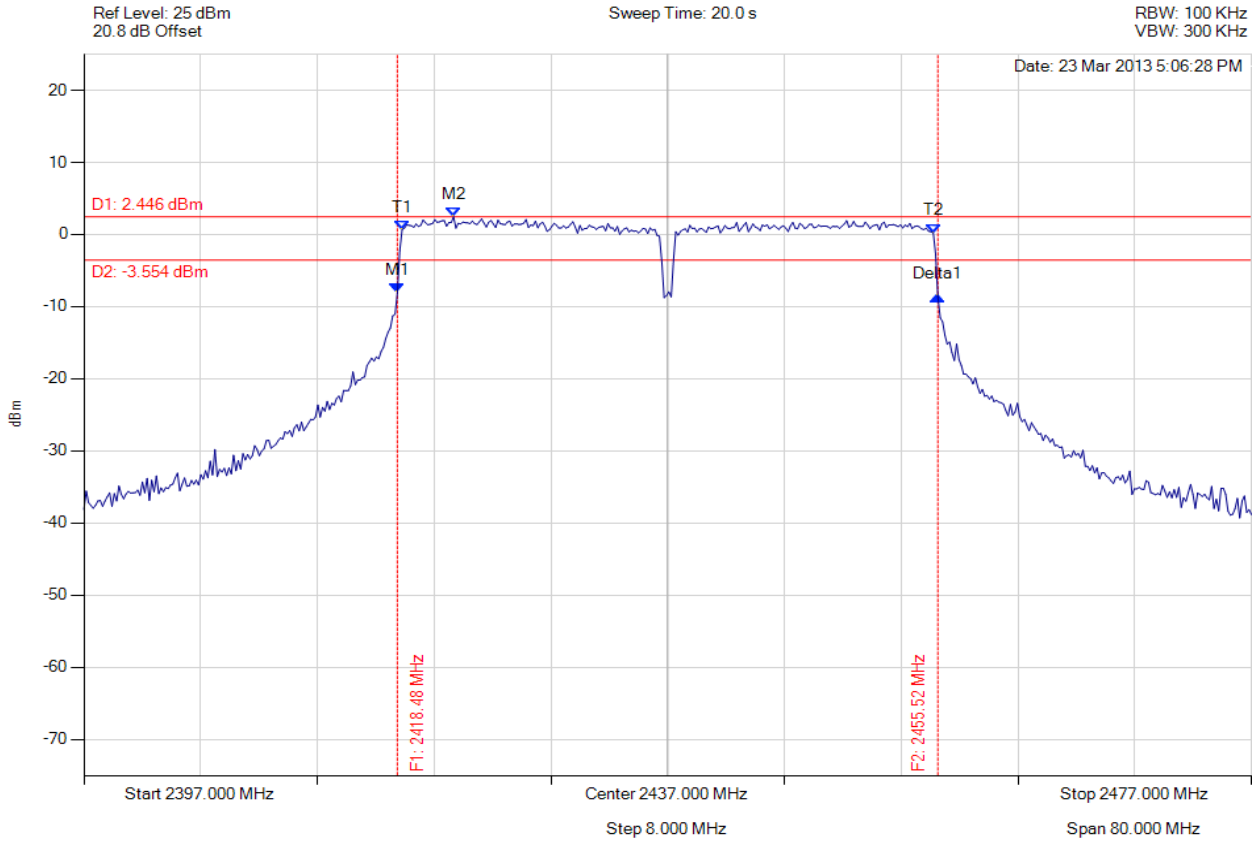


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2403.483 MHz : -8.502 dBm M2 : 2404.445 MHz : 1.522 dBm Delta1 : 37.034 MHz : -1.389 dB T1 : 2403.804 MHz : -0.031 dBm T2 : 2440.196 MHz : 0.221 dBm OBW : 36.393 MHz	Measured 6 dB Bandwidth: 37.034 MHz Limit: ≥500.0 kHz Margin: -36.53 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

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

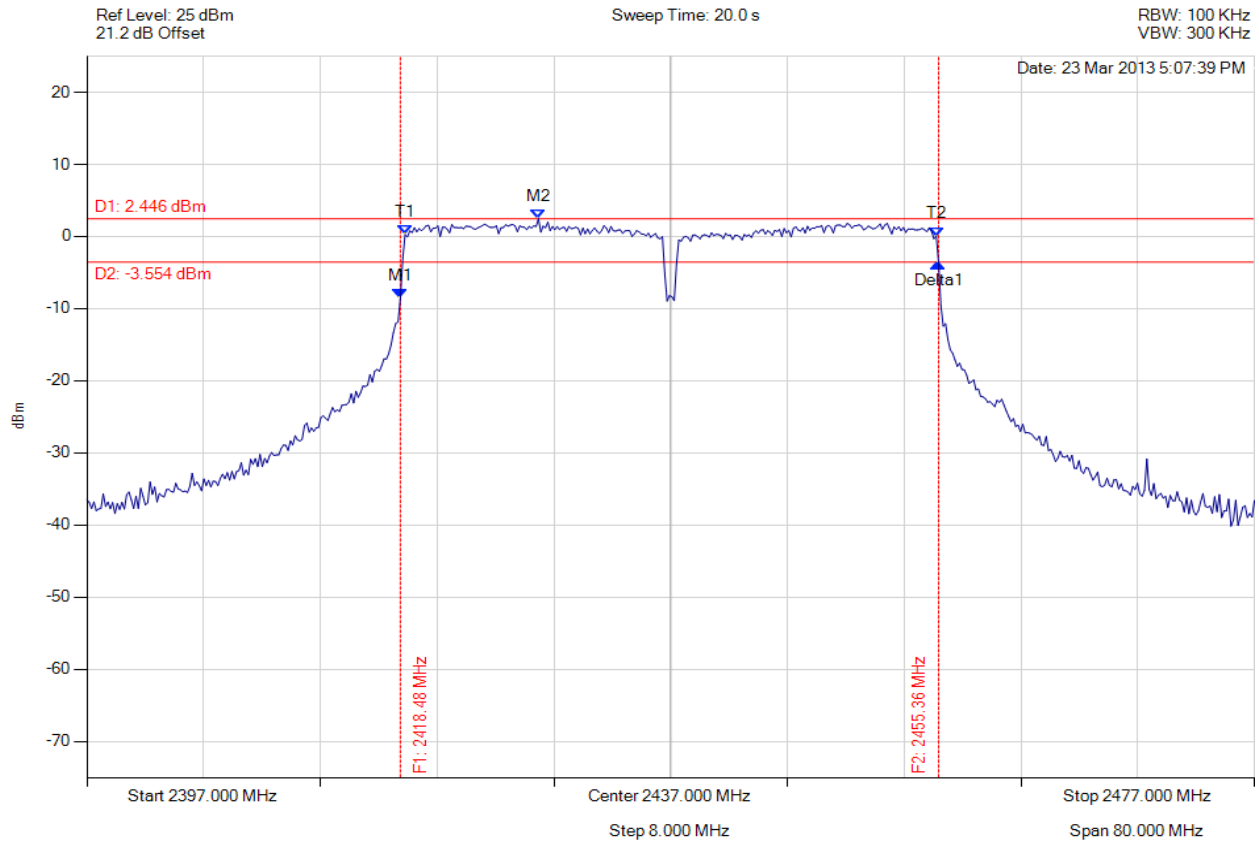


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2418.483 MHz : -8.040 dBm M2 : 2422.331 MHz : 2.446 dBm Delta1 : 37.034 MHz : -0.569 dB T1 : 2418.804 MHz : 0.660 dBm T2 : 2455.196 MHz : 0.217 dBm OBW : 36.393 MHz	Measured 6 dB Bandwidth: 37.034 MHz Limit: ≥500.0 kHz Margin: -36.53 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

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

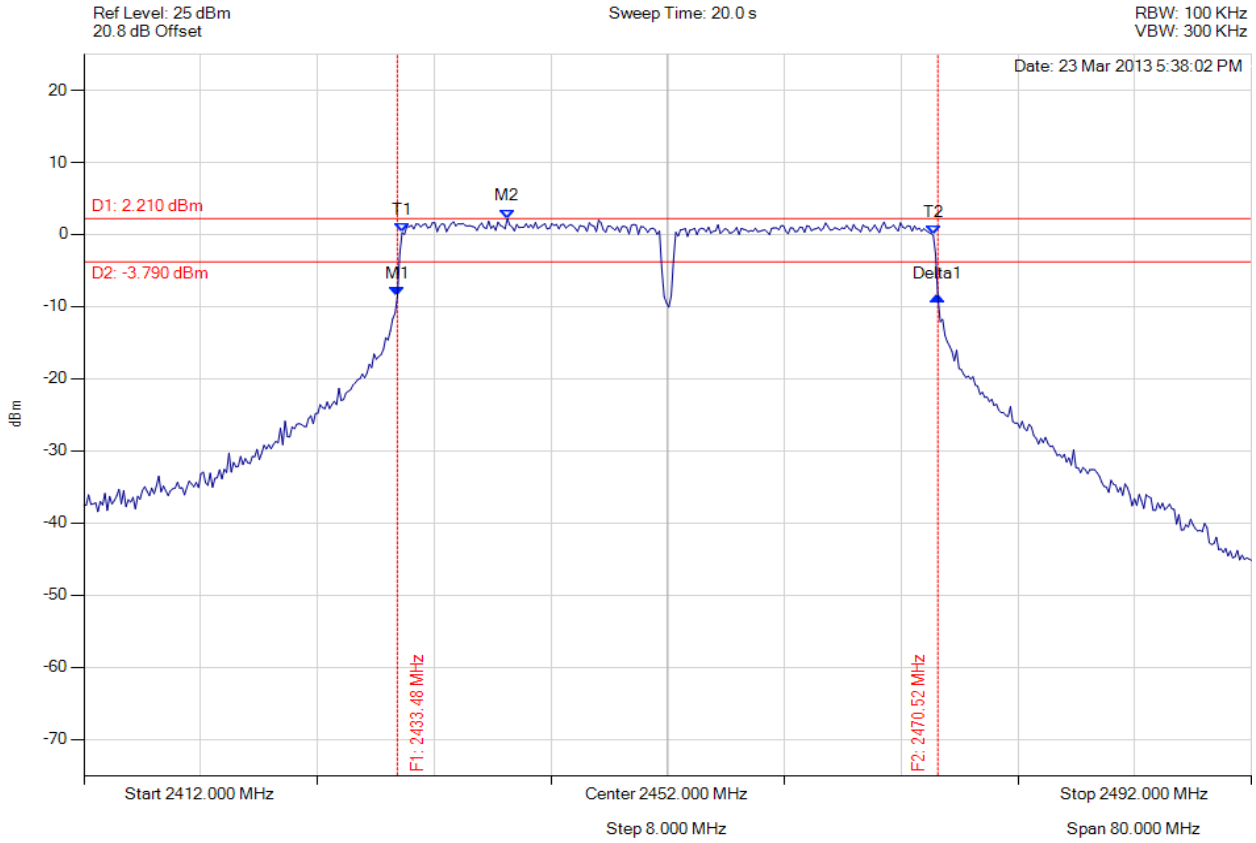


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2418.483 MHz : -8.541 dBm M2 : 2427.942 MHz : 2.446 dBm Delta1 : 36.874 MHz : 4.922 dB T1 : 2418.804 MHz : 0.257 dBm T2 : 2455.196 MHz : 0.044 dBm OBW : 36.393 MHz	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: 12 Vdc

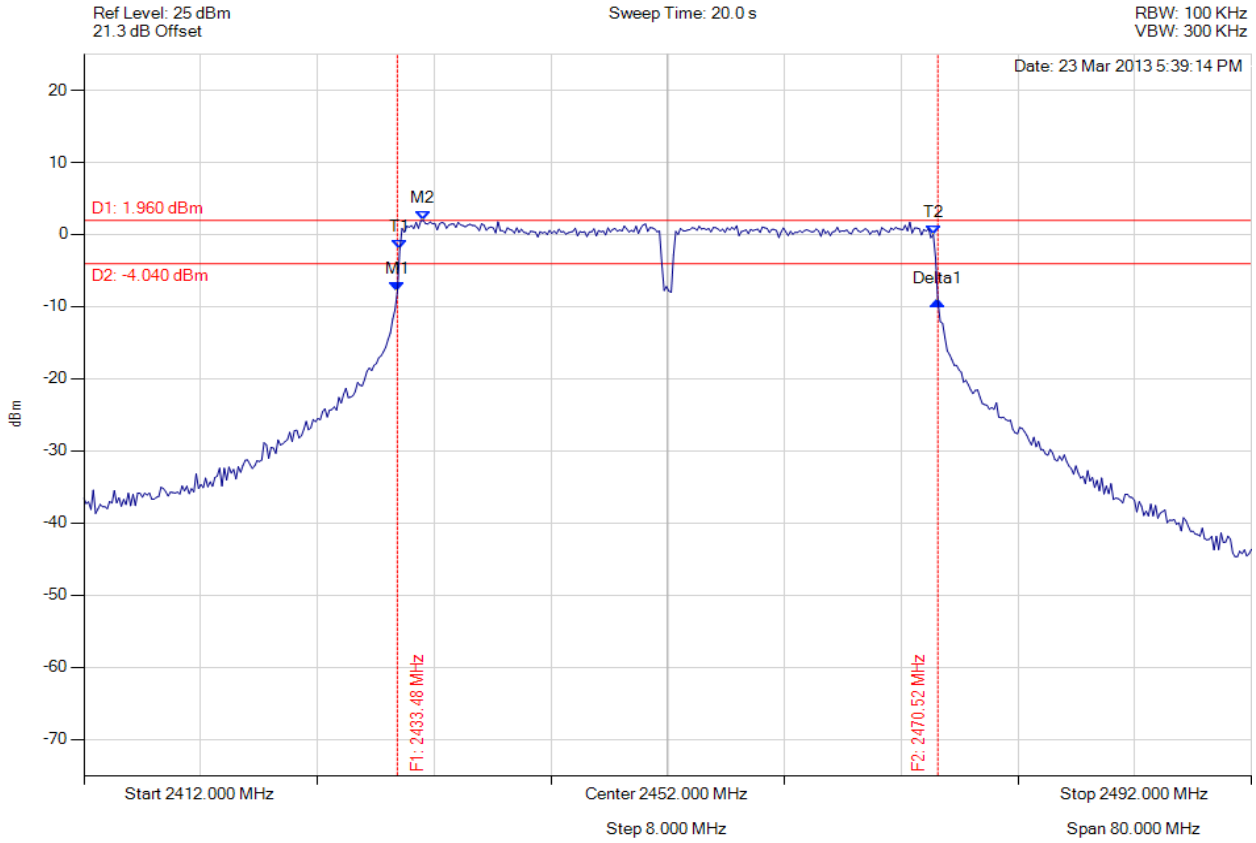


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2433.483 MHz : -8.581 dBm M2 : 2441.018 MHz : 2.210 dBm Delta1 : 37.034 MHz : -0.024 dB T1 : 2433.804 MHz : 0.255 dBm T2 : 2470.196 MHz : -0.103 dBm OBW : 36.393 MHz	Measured 6 dB Bandwidth: 37.034 MHz Limit: ≥500.0 kHz Margin: -36.53 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

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

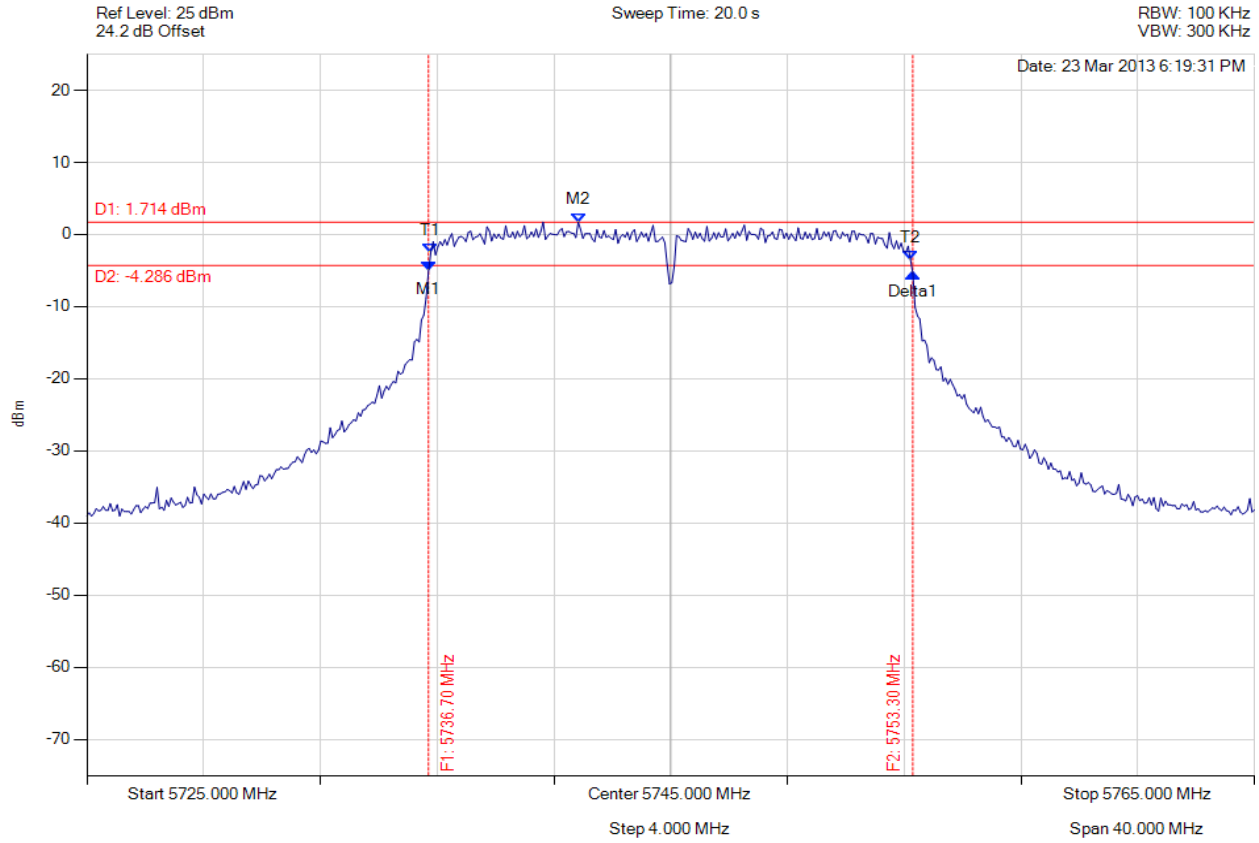


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2433.483 MHz : -7.873 dBm M2 : 2435.246 MHz : 1.960 dBm Delta1 : 37.034 MHz : -1.354 dB T1 : 2433.643 MHz : -2.047 dBm T2 : 2470.196 MHz : -0.007 dBm OBW : 36.553 MHz	Measured 6 dB Bandwidth: 37.034 MHz Limit: ≥500.0 kHz Margin: -36.53 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5745.00 MHz, Chain c, Temp: Ambient, Voltage: 12 Vdc

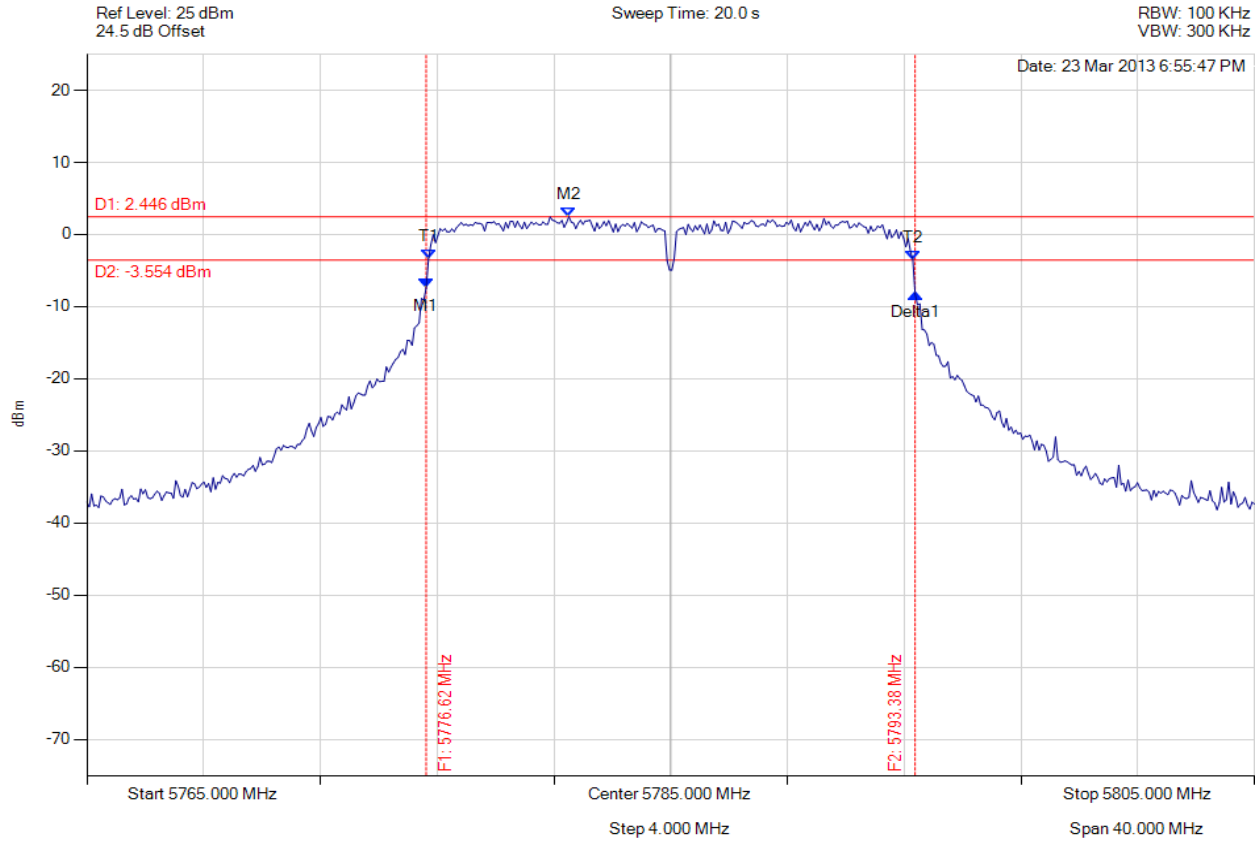


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5736.703 MHz : -5.071 dBm M2 : 5741.834 MHz : 1.714 dBm Delta1 : 16.593 MHz : -0.342 dB T1 : 5736.784 MHz : -2.486 dBm T2 : 5753.216 MHz : -3.525 dBm OBW : 16.433 MHz	Measured 6 dB Bandwidth: 16.593 MHz Limit: ≥500.0 kHz Margin: -16.09 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5785.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc

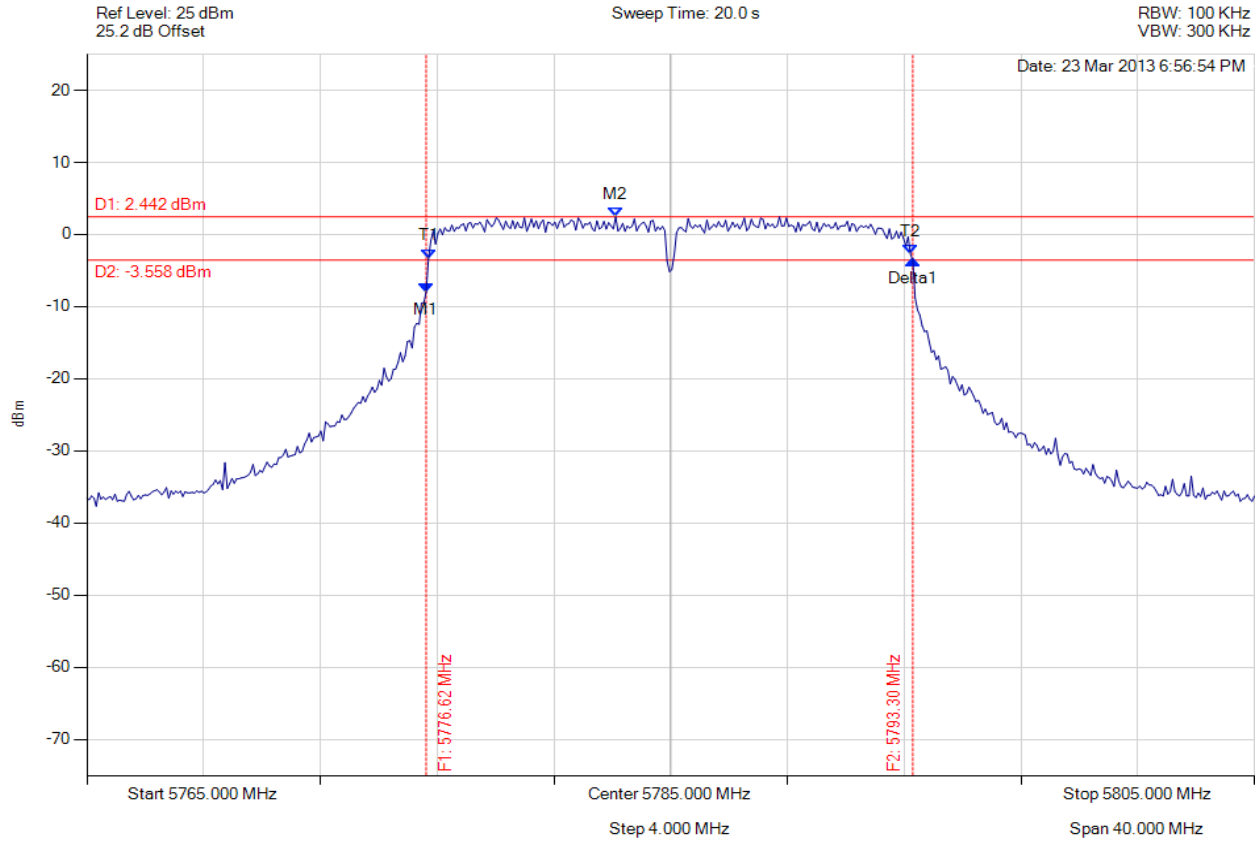


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5776.623 MHz : -7.438 dBm M2 : 5781.513 MHz : 2.446 dBm Delta1 : 16.754 MHz : -0.834 dB T1 : 5776.703 MHz : -3.381 dBm T2 : 5793.297 MHz : -3.483 dBm OBW : 16.593 MHz	Measured 6 dB Bandwidth: 16.754 MHz Limit: ≥500.0 kHz Margin: -16.25 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5785.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5776.623 MHz : -7.981 dBm M2 : 5783.116 MHz : 2.442 dBm Delta1 : 16.673 MHz : 4.383 dB T1 : 5776.703 MHz : -3.287 dBm T2 : 5793.216 MHz : -2.744 dBm OBW : 16.513 MHz	Measured 6 dB Bandwidth: 16.673 MHz Limit: ≥500.0 kHz Margin: -16.17 MHz

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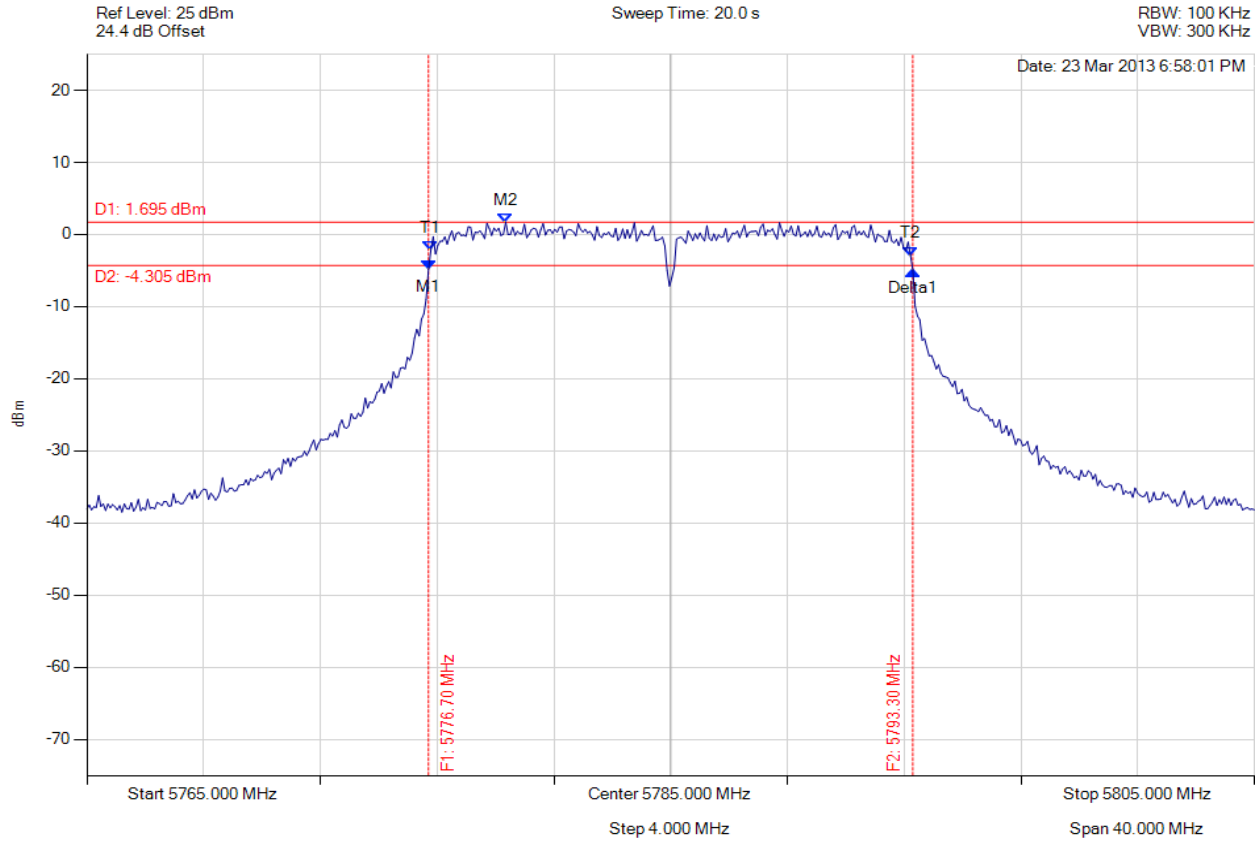
6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5785.00 MHz, Chain c, Temp: Ambient, Voltage: 12 Vdc

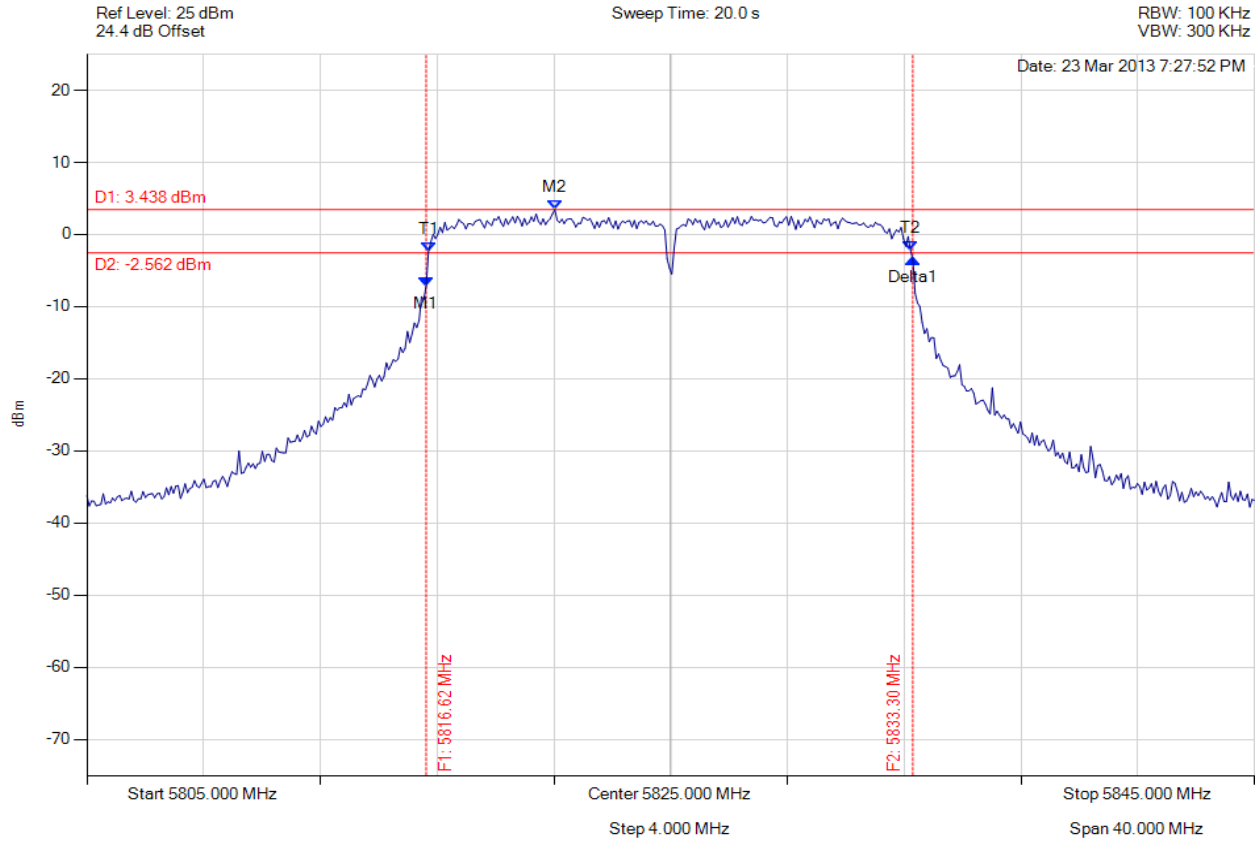


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5776.703 MHz : -4.794 dBm M2 : 5779.349 MHz : 1.695 dBm Delta1 : 16.593 MHz : -0.167 dB T1 : 5776.784 MHz : -2.224 dBm T2 : 5793.216 MHz : -2.956 dBm OBW : 16.433 MHz	Measured 6 dB Bandwidth: 16.593 MHz Limit: ≥500.0 kHz Margin: -16.09 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5825.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc

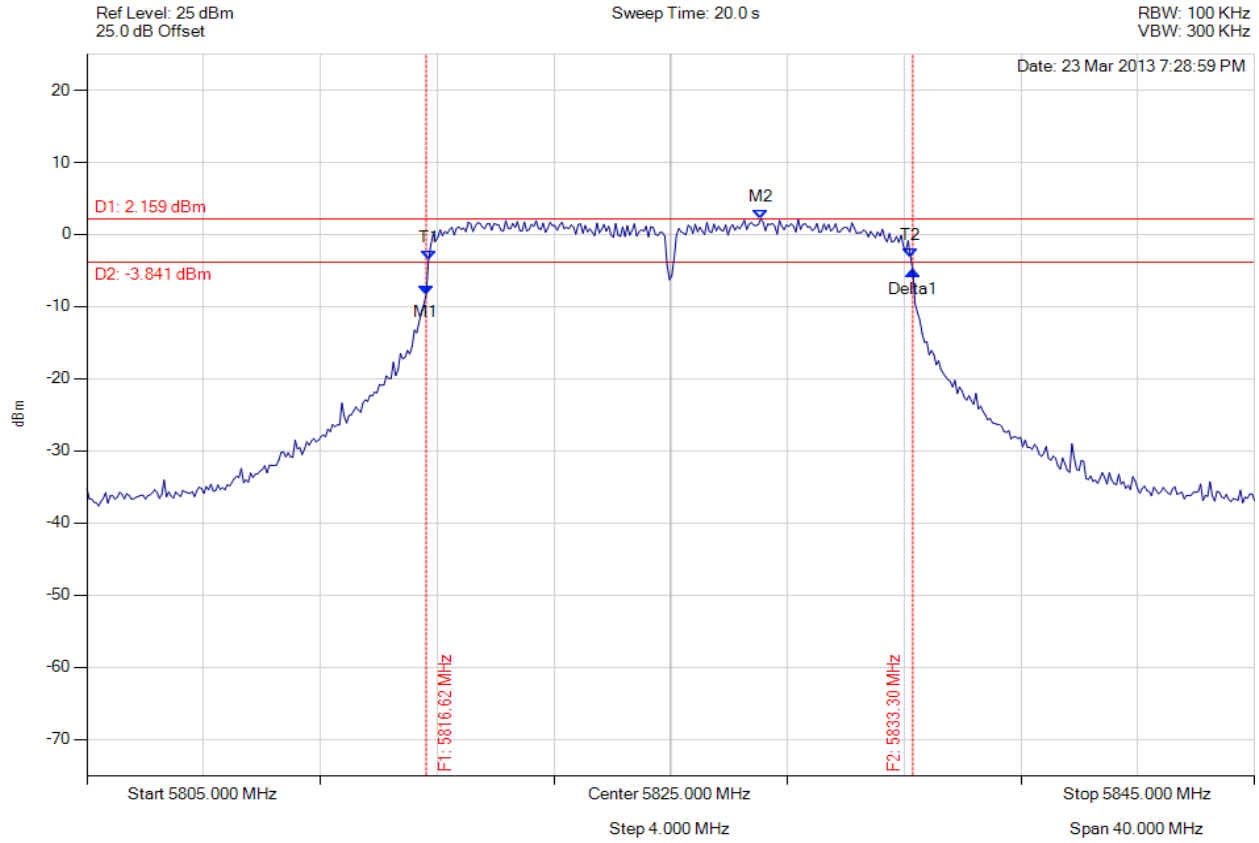


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5816.623 MHz : -7.143 dBm M2 : 5821.032 MHz : 3.438 dBm Delta1 : 16.673 MHz : 3.699 dB T1 : 5816.703 MHz : -2.303 dBm T2 : 5833.216 MHz : -2.203 dBm OBW : 16.513 MHz	Measured 6 dB Bandwidth: 16.673 MHz Limit: ≥500.0 kHz Margin: -16.17 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5825.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5816.623 MHz : -8.301 dBm M2 : 5828.086 MHz : 2.159 dBm Delta1 : 16.673 MHz : 3.264 dB T1 : 5816.703 MHz : -3.603 dBm T2 : 5833.216 MHz : -3.178 dBm OBW : 16.513 MHz	Measured 6 dB Bandwidth: 16.673 MHz Limit: ≥500.0 kHz Margin: -16.17 MHz

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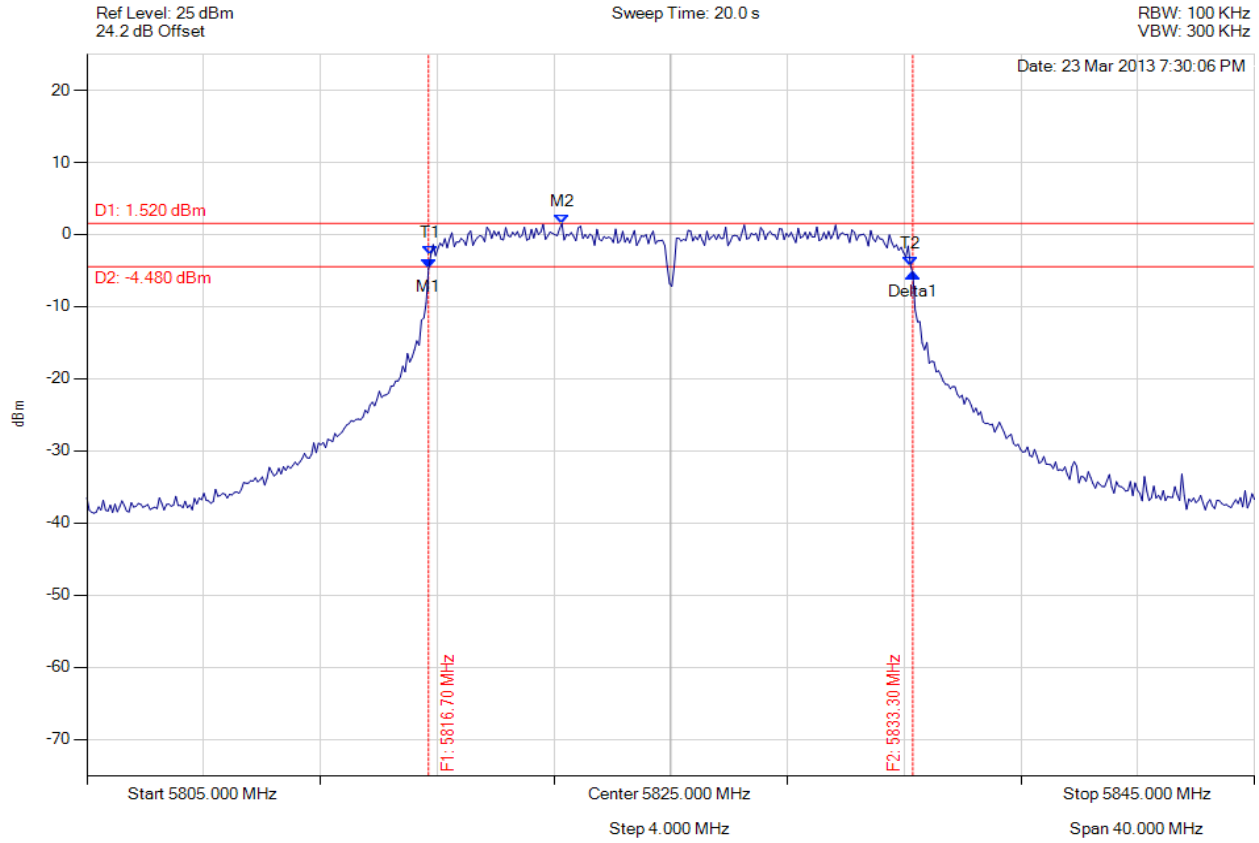
6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5825.00 MHz, Chain c, Temp: Ambient, Voltage: 12 Vdc

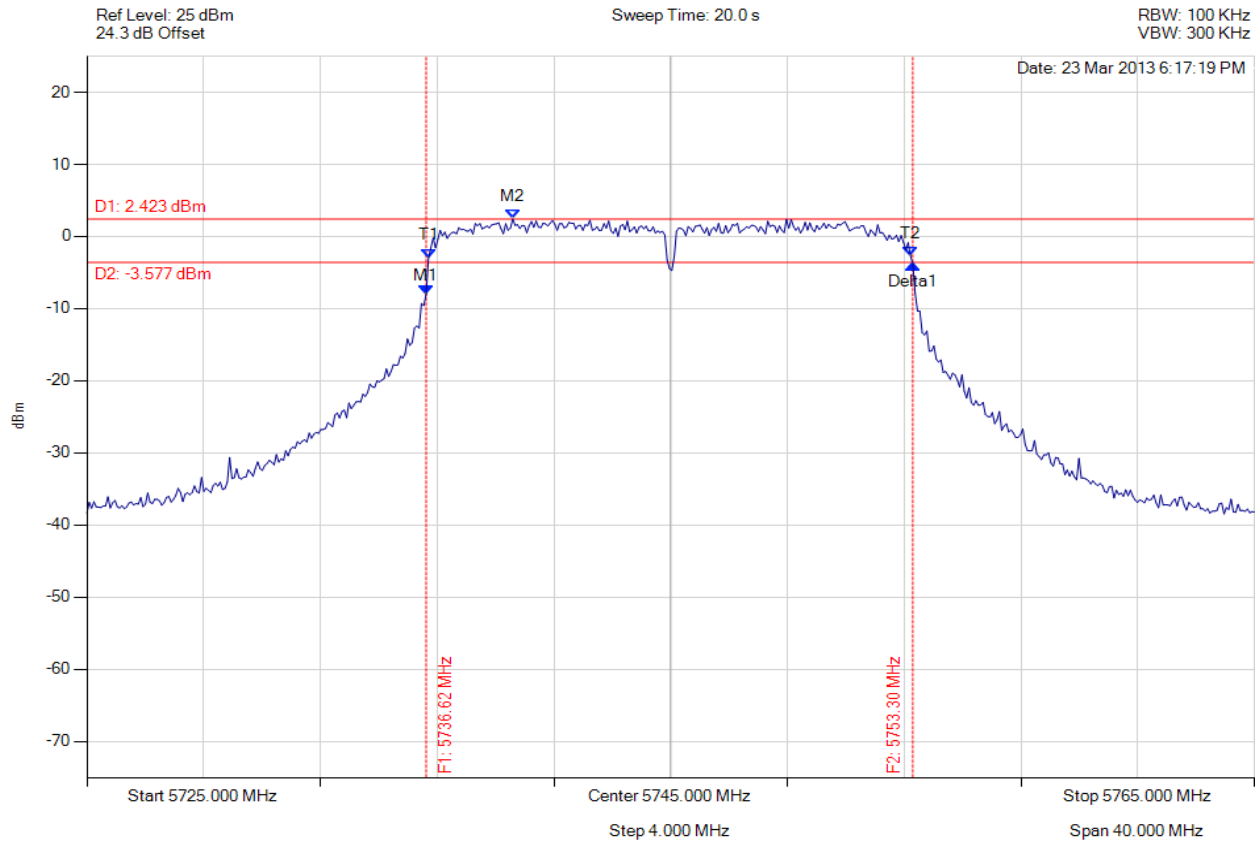


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5816.703 MHz : -4.756 dBm M2 : 5821.273 MHz : 1.520 dBm Delta1 : 16.593 MHz : -0.647 dB T1 : 5816.784 MHz : -2.850 dBm T2 : 5833.216 MHz : -4.304 dBm OBW : 16.433 MHz	Measured 6 dB Bandwidth: 16.593 MHz Limit: ≥500.0 kHz Margin: -16.09 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5745.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5736.623 MHz : -7.975 dBm M2 : 5739.589 MHz : 2.423 dBm Delta1 : 16.673 MHz : 4.139 dB T1 : 5736.703 MHz : -2.952 dBm T2 : 5753.216 MHz : -2.710 dBm OBW : 16.513 MHz	Measured 6 dB Bandwidth: 16.673 MHz Limit: ≥500.0 kHz Margin: -16.17 MHz

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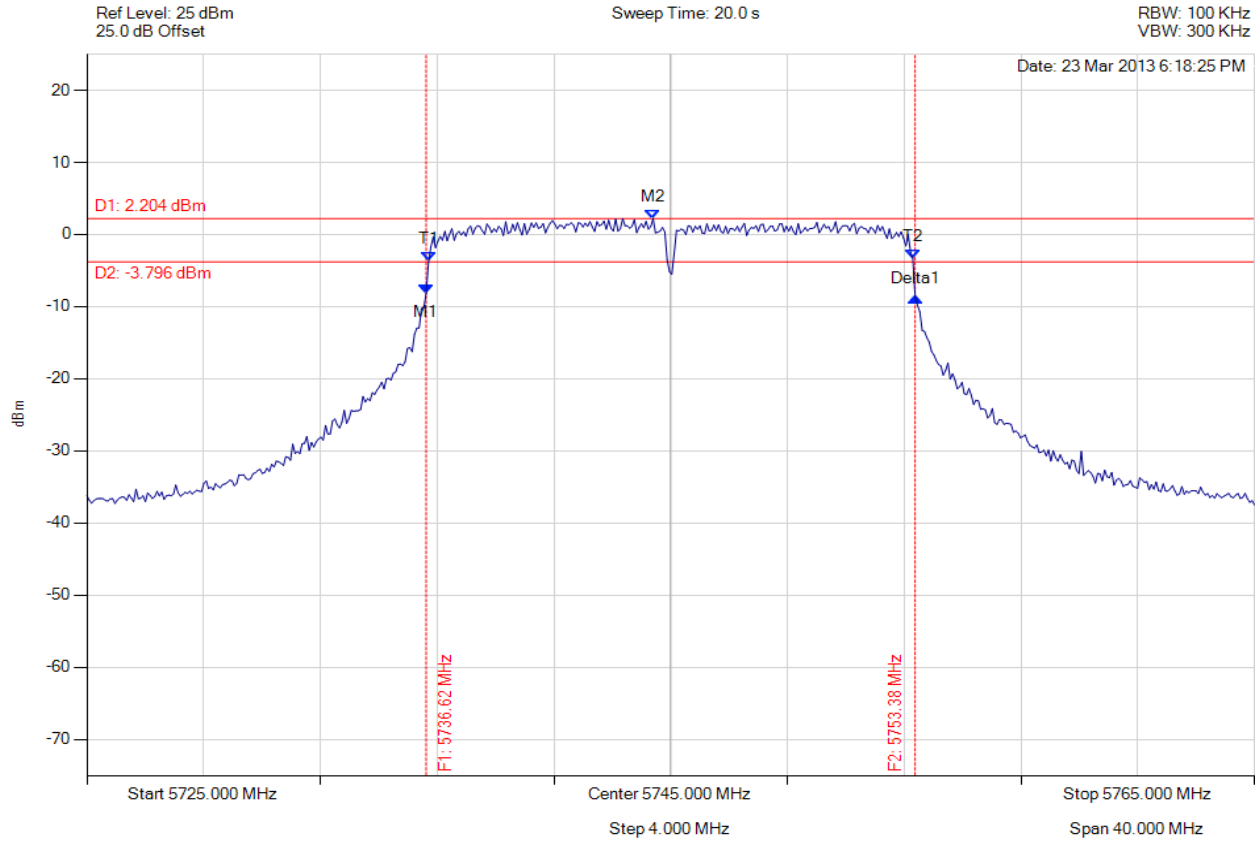
6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5745.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5736.623 MHz : -8.181 dBm M2 : 5744.399 MHz : 2.204 dBm Delta1 : 16.754 MHz : -0.472 dB T1 : 5736.703 MHz : -3.761 dBm T2 : 5753.297 MHz : -3.359 dBm OBW : 16.593 MHz	Measured 6 dB Bandwidth: 16.754 MHz Limit: ≥500.0 kHz Margin: -16.25 MHz

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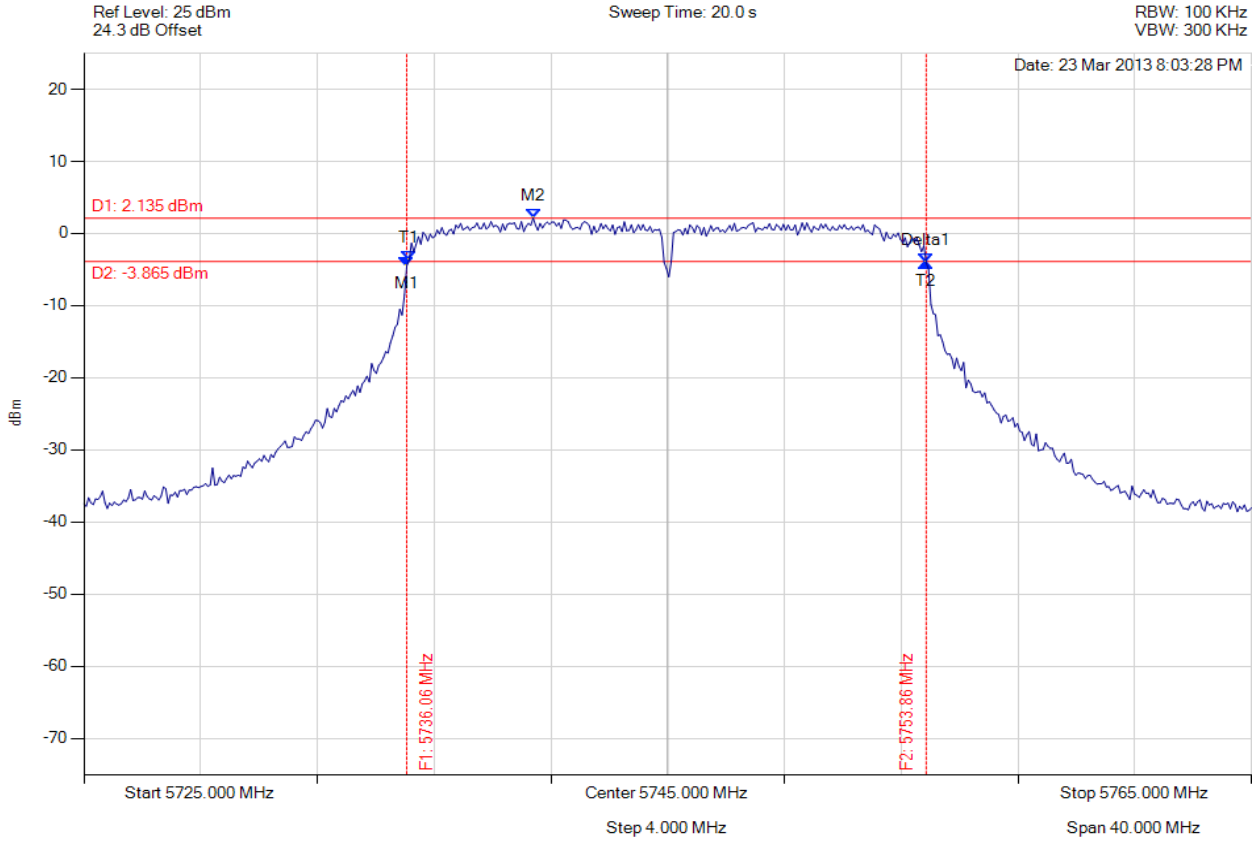
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5745.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5736.062 MHz : -4.489 dBm M2 : 5740.391 MHz : 2.135 dBm Delta1 : 17.796 MHz : 0.423 dB T1 : 5736.142 MHz : -3.696 dBm T2 : 5753.858 MHz : -4.066 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.796 MHz Limit: ≥500.0 kHz Margin: -17.30 MHz

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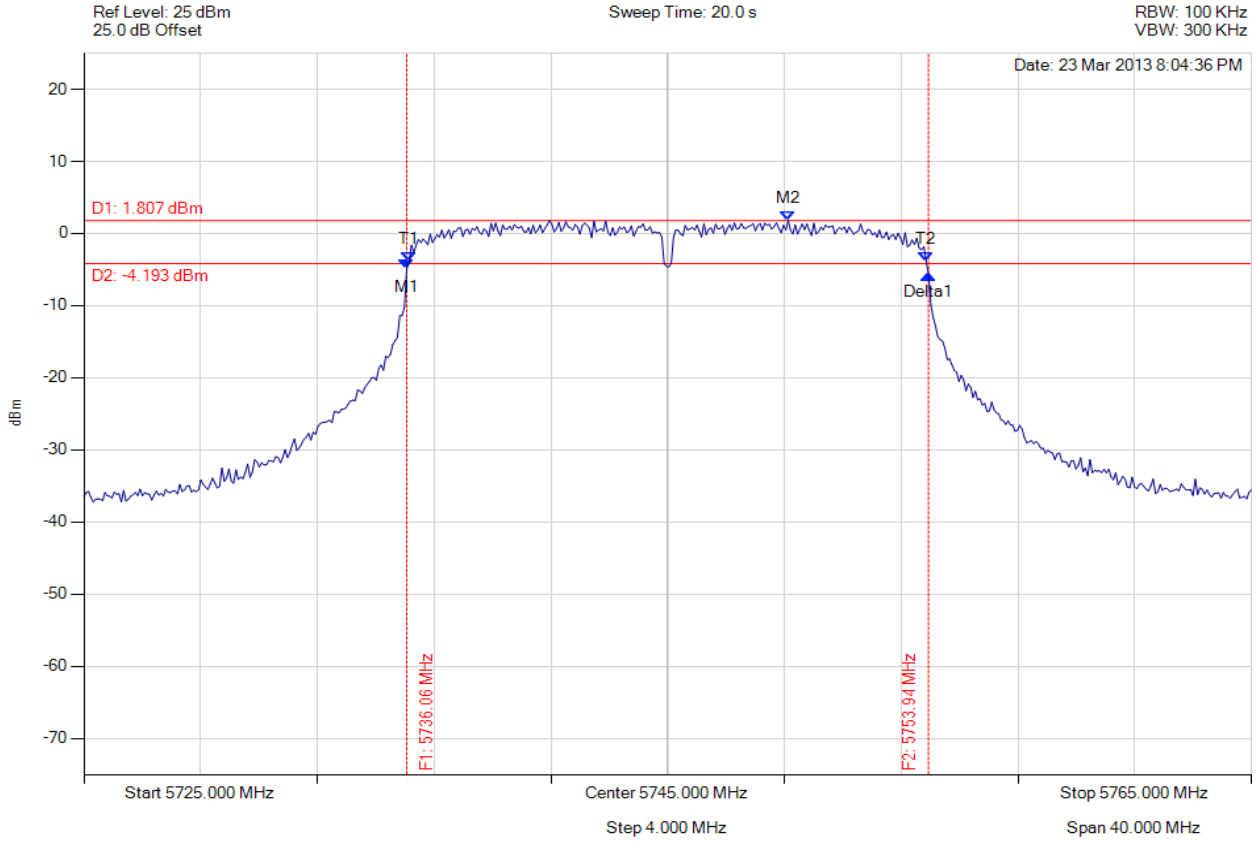
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5745.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5736.062 MHz : -4.880 dBm M2 : 5749.128 MHz : 1.807 dBm Delta1 : 17.876 MHz : -0.769 dB T1 : 5736.142 MHz : -3.932 dBm T2 : 5753.858 MHz : -3.920 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.876 MHz Limit: ≥500.0 kHz Margin: -17.38 MHz

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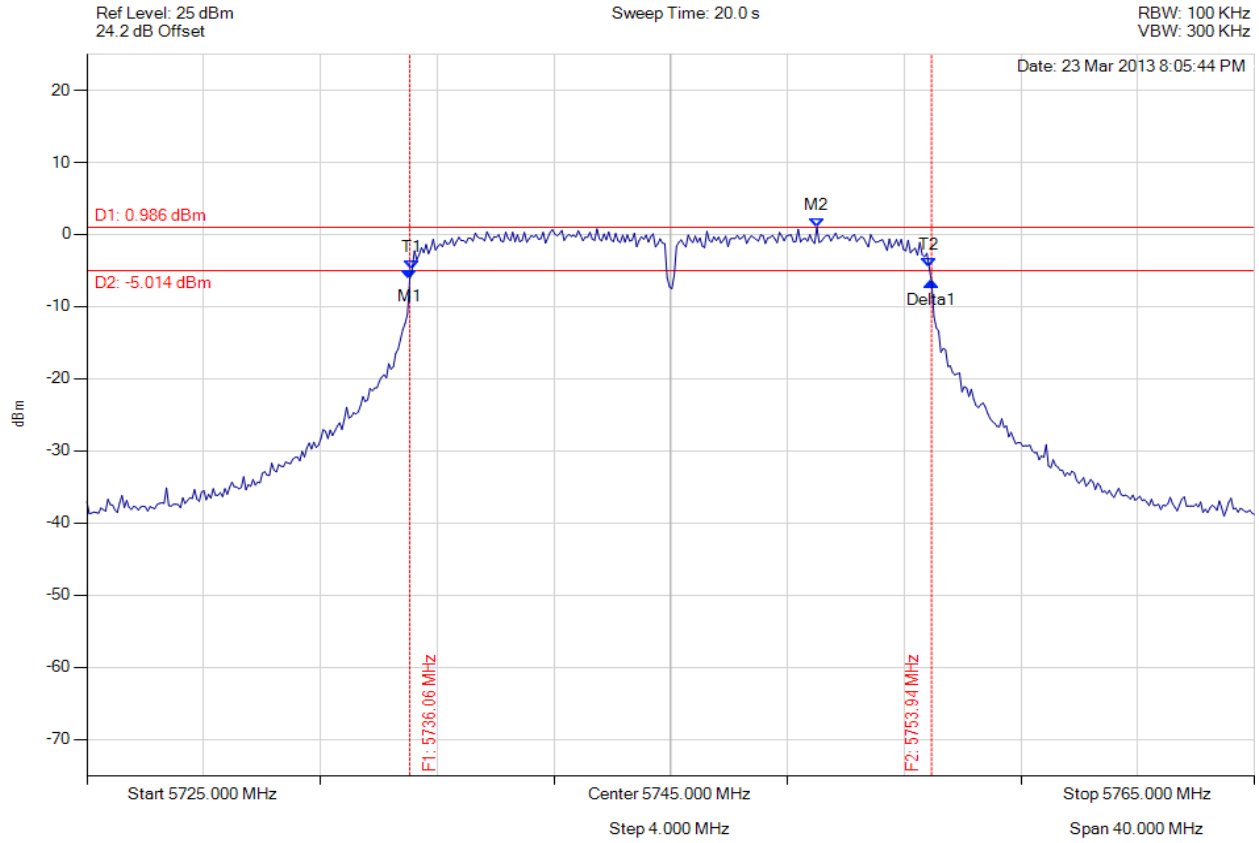
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5745.00 MHz, Chain c, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5736.062 MHz : -6.175 dBm M2 : 5750.010 MHz : 0.986 dBm Delta1 : 17.876 MHz : -0.340 dB T1 : 5736.142 MHz : -4.849 dBm T2 : 5753.858 MHz : -4.599 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.876 MHz Limit: ≥500.0 kHz Margin: -17.38 MHz

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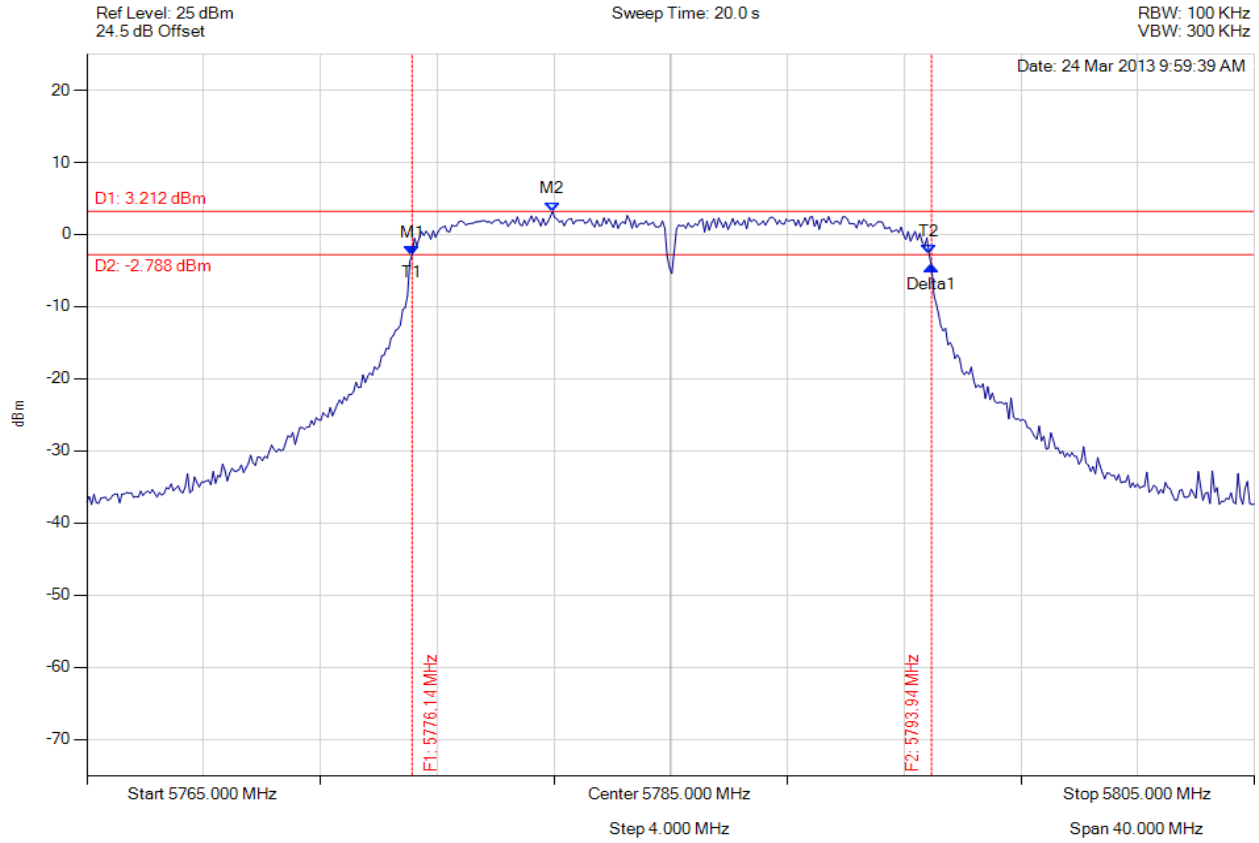
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5785.00 MHz, Chain a, Temp: Ambient, Voltage: 12 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 : -2.807 dBm M2 : 5780.952 MHz : 3.212 dBm Delta1 : 17.796 MHz : -1.637 dB T1 : 5776.142 MHz : -2.807 dBm T2 : 5793.858 MHz : -2.775 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.796 MHz Limit: ≥500.0 kHz Margin: -17.30 MHz

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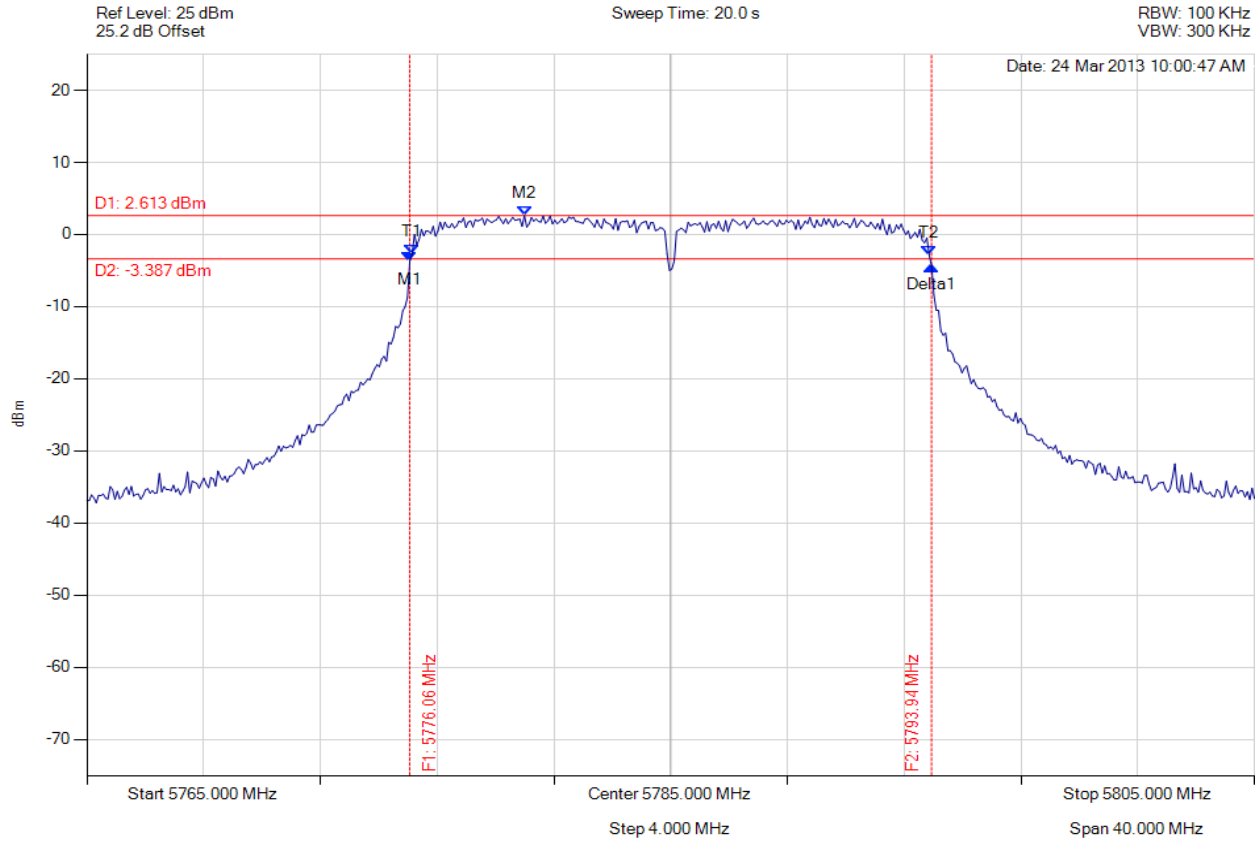
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5785.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5776.062 MHz : -3.733 dBm M2 : 5779.990 MHz : 2.613 dBm Delta1 : 17.876 MHz : -0.641 dB T1 : 5776.142 MHz : -2.736 dBm T2 : 5793.858 MHz : -2.872 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.876 MHz Limit: ≥500.0 kHz Margin: -17.38 MHz

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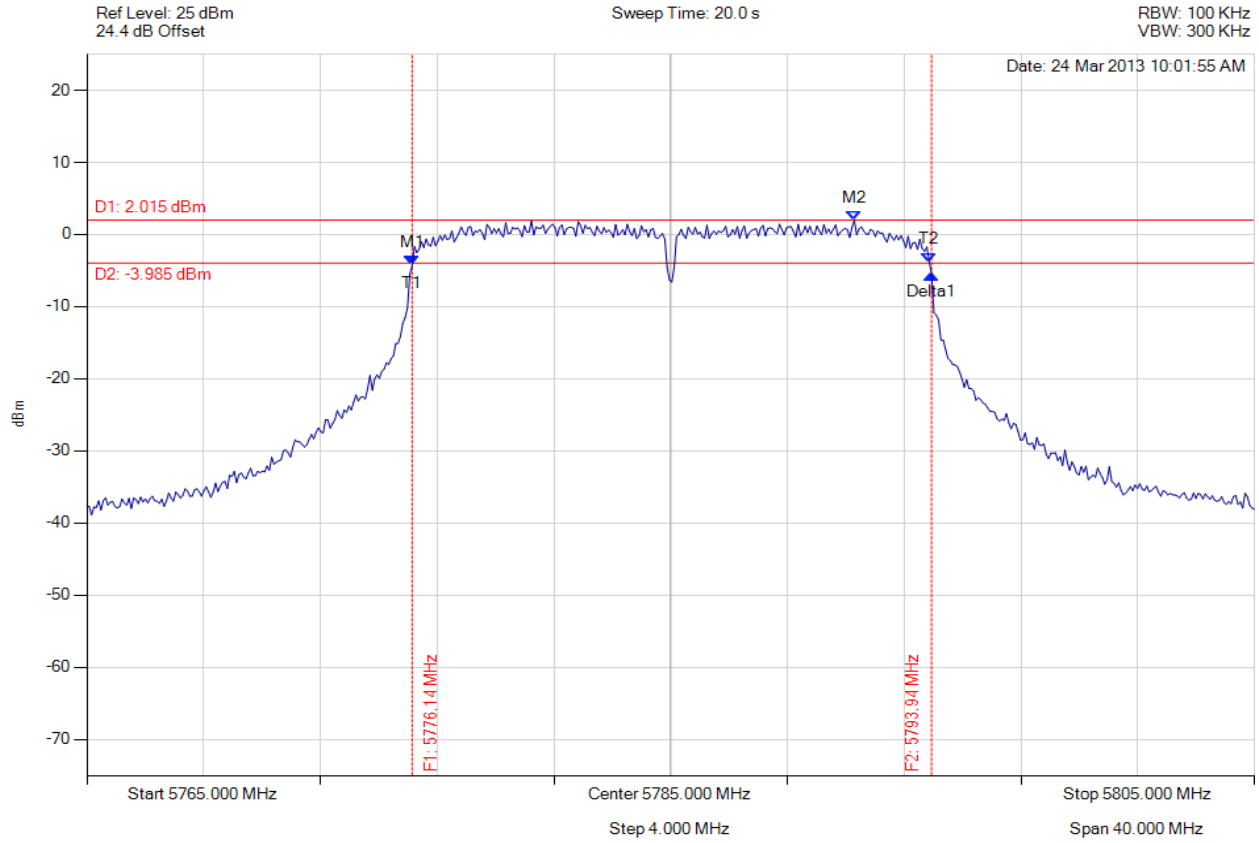
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5785.00 MHz, Chain c, Temp: Ambient, Voltage: 12 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 : -4.280 dBm M2 : 5791.293 MHz : 2.015 dBm Delta1 : 17.796 MHz : -1.216 dB T1 : 5776.142 MHz : -4.280 dBm T2 : 5793.858 MHz : -3.784 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.796 MHz Limit: ≥500.0 kHz Margin: -17.30 MHz

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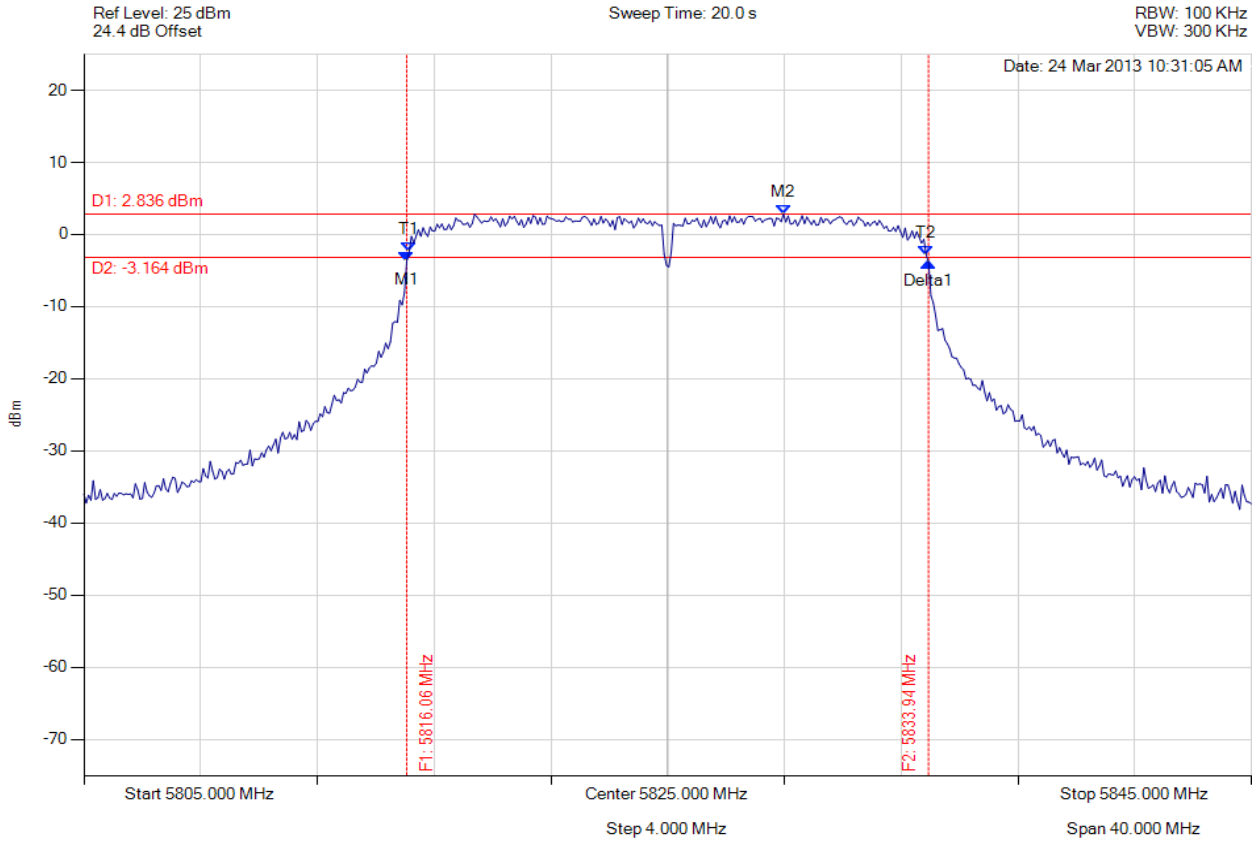
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5825.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5816.062 MHz : -3.692 dBm M2 : 5828.968 MHz : 2.836 dBm Delta1 : 17.876 MHz : -0.150 dB T1 : 5816.142 MHz : -2.380 dBm T2 : 5833.858 MHz : -2.832 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.876 MHz Limit: ≥500.0 kHz Margin: -17.38 MHz

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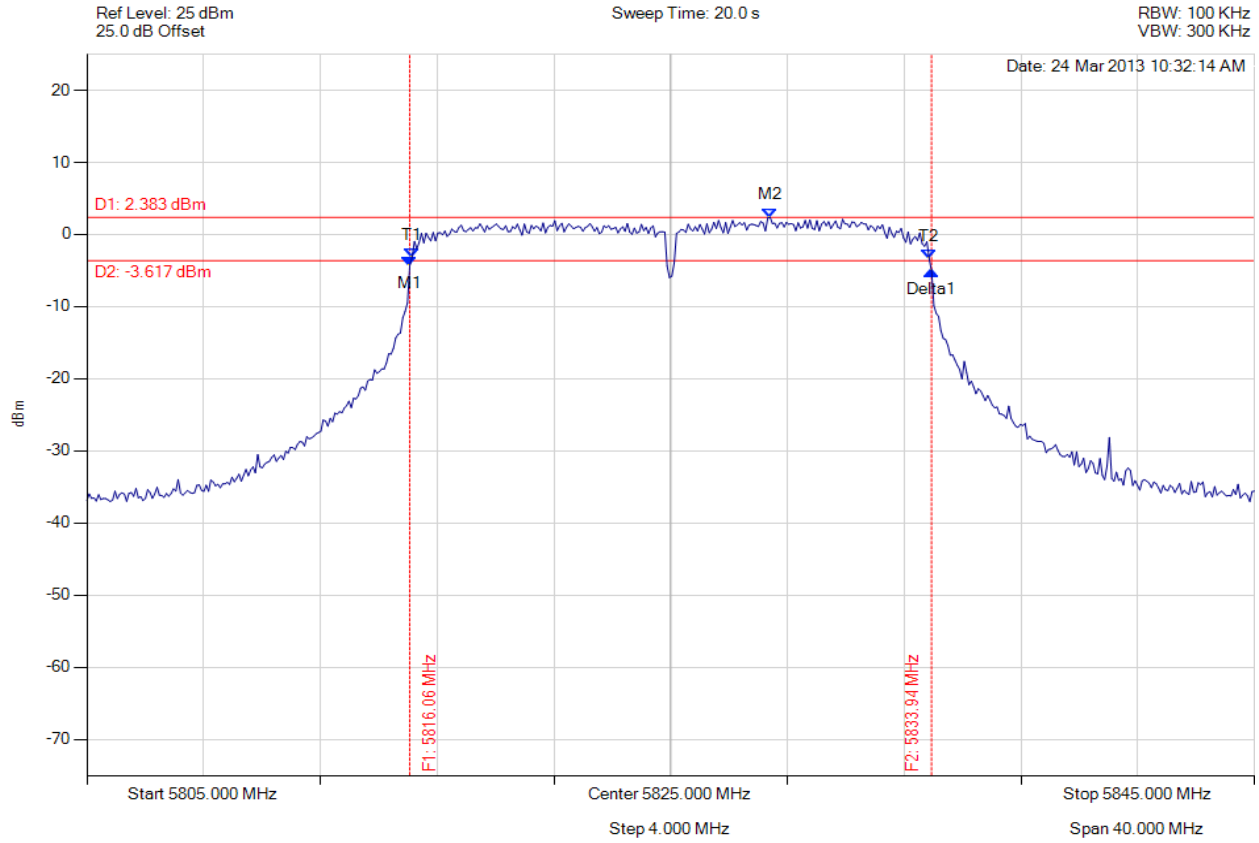
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5825.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5816.062 MHz : -4.314 dBm M2 : 5828.407 MHz : 2.383 dBm Delta1 : 17.876 MHz : -0.777 dB T1 : 5816.142 MHz : -3.129 dBm T2 : 5833.858 MHz : -3.371 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.876 MHz Limit: ≥500.0 kHz Margin: -17.38 MHz

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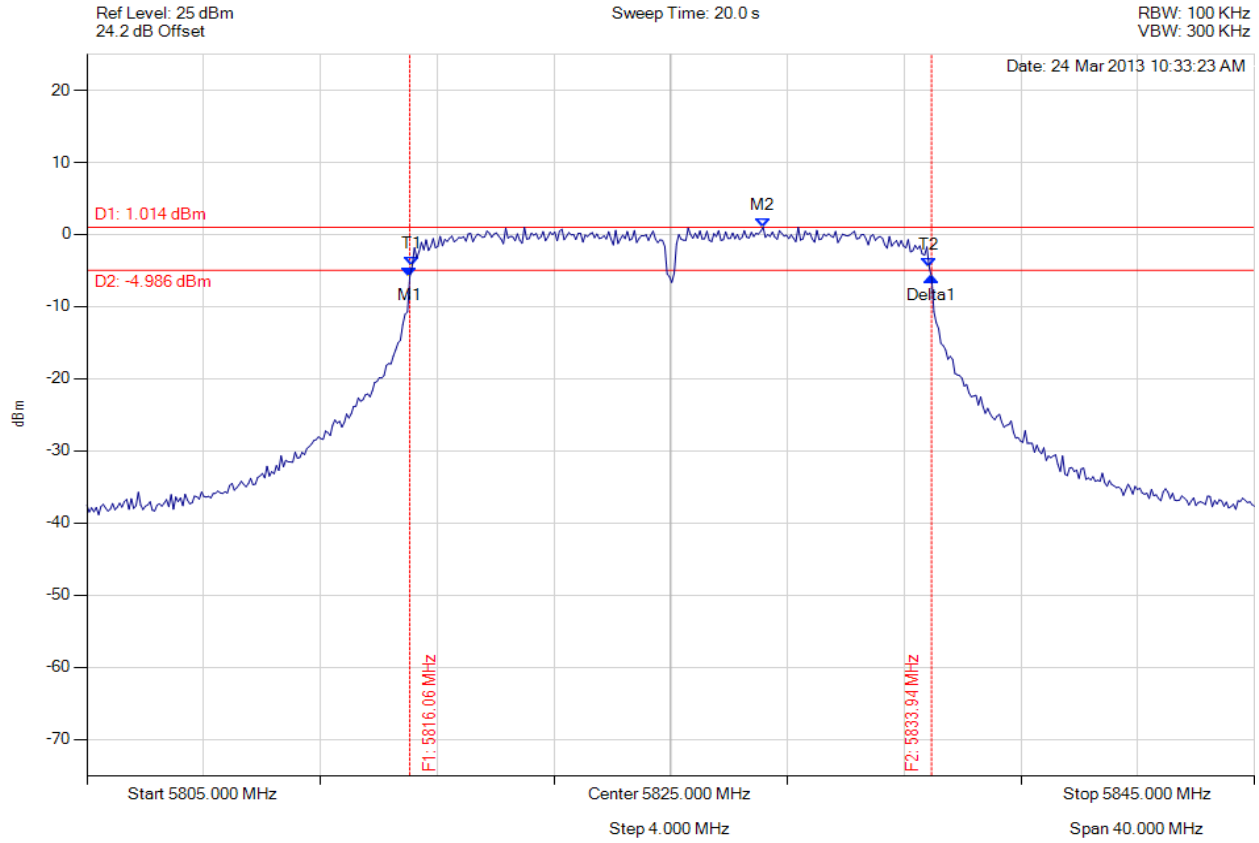
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5825.00 MHz, Chain c, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5816.062 MHz : -5.903 dBm M2 : 5828.166 MHz : 1.014 dBm Delta1 : 17.876 MHz : 0.018 dB T1 : 5816.142 MHz : -4.394 dBm T2 : 5833.858 MHz : -4.550 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.876 MHz Limit: ≥500.0 kHz Margin: -17.38 MHz

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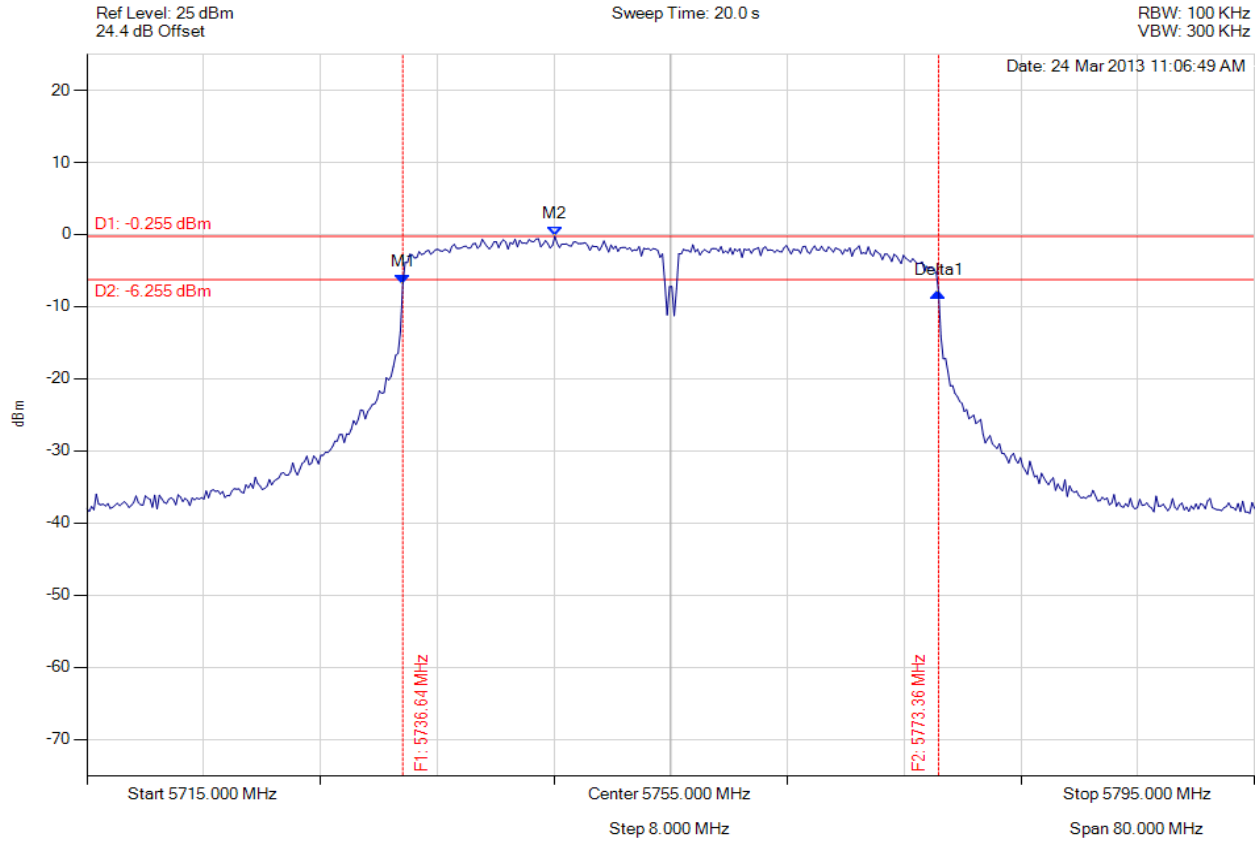
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5755.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5736.643 MHz : -6.912 dBm M2 : 5747.064 MHz : -0.255 dBm Delta1 : 36.713 MHz : -1.098 dB T1 : 0 Hz : 500.000 dBm T2 : 0 Hz : 500.000 dBm OBW : 36.232 MHz	Measured 6 dB Bandwidth: 36.713 MHz Limit: ≥500.0 kHz Margin: -36.21 MHz

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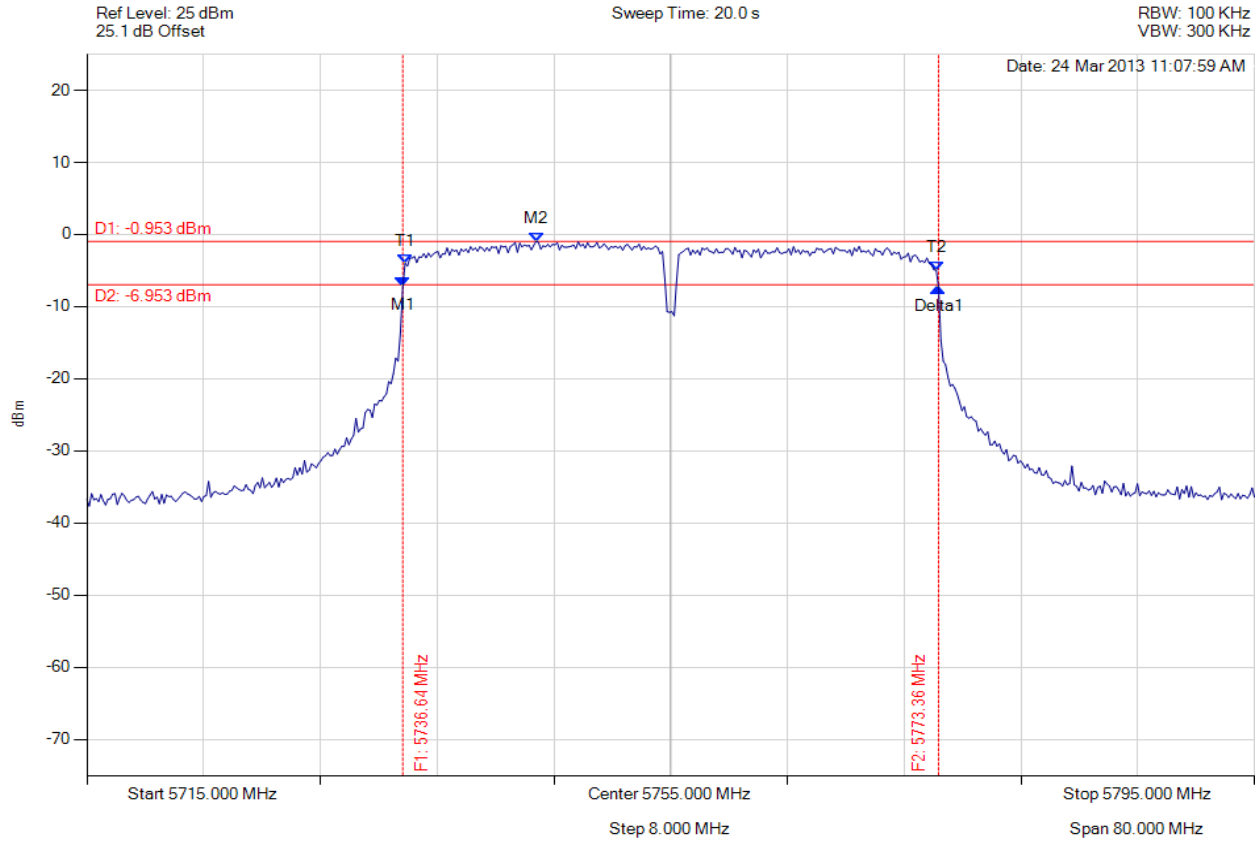
6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5755.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc

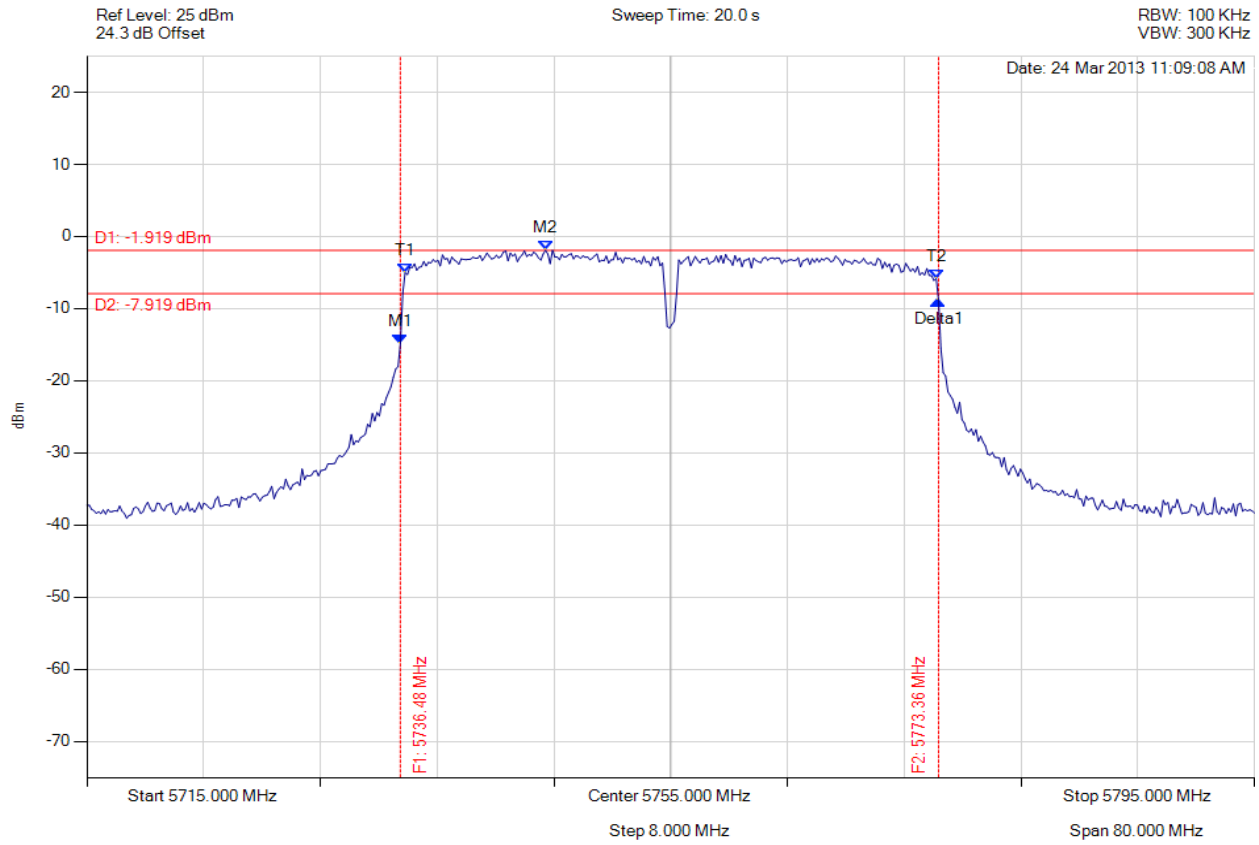


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5736.643 MHz : -7.255 dBm M2 : 5745.782 MHz : -0.953 dBm Delta1 : 36.713 MHz : -0.118 dB T1 : 5736.804 MHz : -3.983 dBm T2 : 5773.196 MHz : -4.955 dBm OBW : 36.393 MHz	Measured 6 dB Bandwidth: 36.713 MHz Limit: ≥500.0 kHz Margin: -36.21 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5755.00 MHz, Chain c, Temp: Ambient, Voltage: 12 Vdc

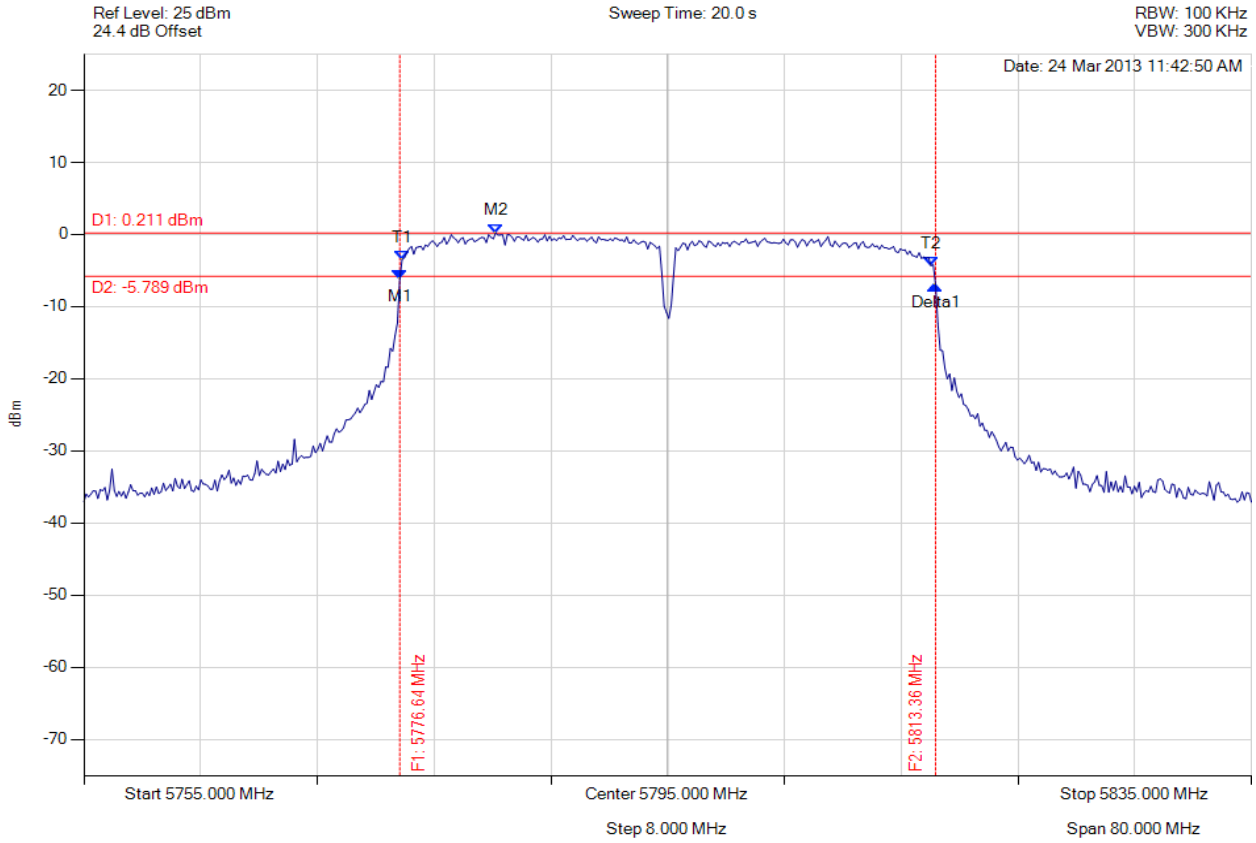


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5736.483 MHz : -14.809 dBm M2 : 5746.423 MHz : -1.919 dBm Delta1 : 36.874 MHz : 5.865 dB T1 : 5736.804 MHz : -5.032 dBm T2 : 5773.196 MHz : -5.856 dBm OBW : 36.393 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: 5795.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc

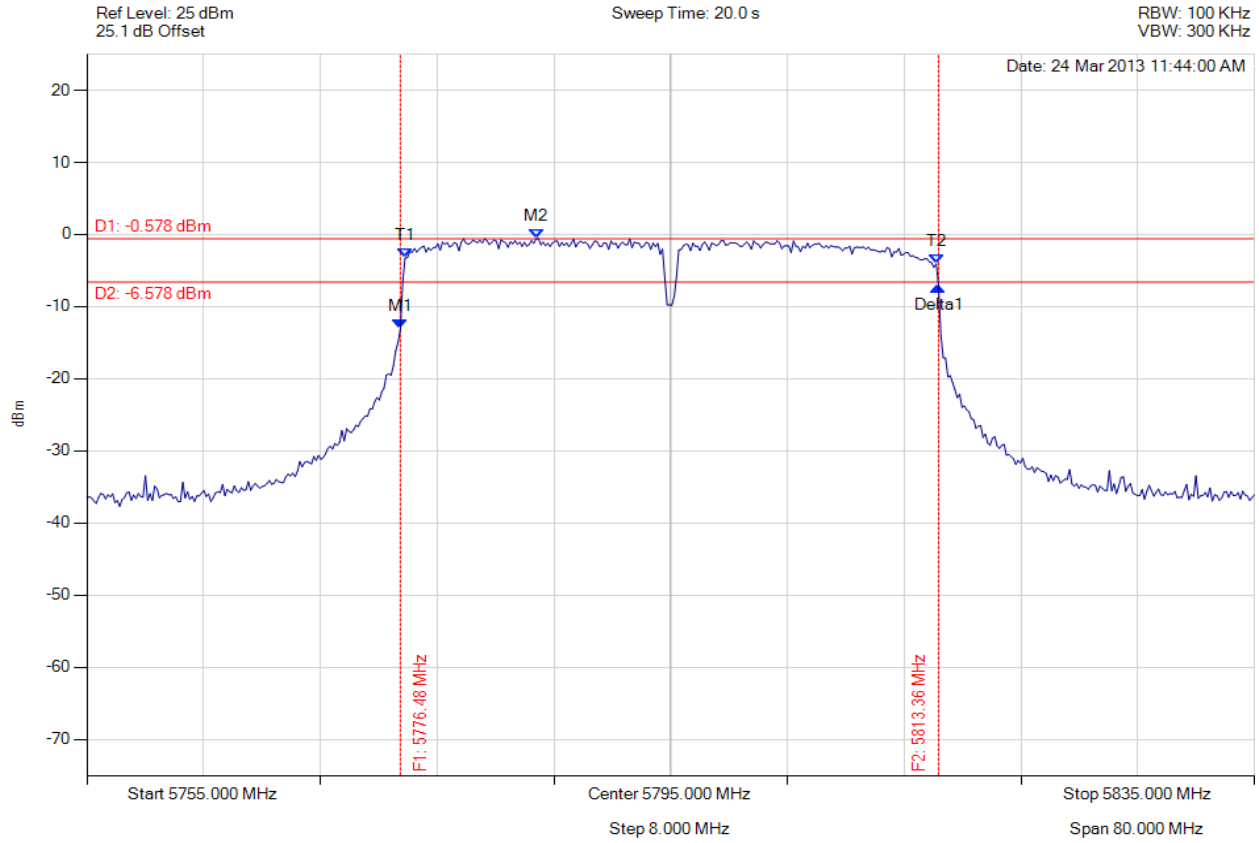


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5776.643 MHz : -6.153 dBm M2 : 5783.216 MHz : 0.211 dBm Delta1 : 36.713 MHz : -0.834 dB T1 : 5776.804 MHz : -3.474 dBm T2 : 5813.036 MHz : -4.329 dBm OBW : 36.232 MHz	Measured 6 dB Bandwidth: 36.713 MHz Limit: ≥500.0 kHz Margin: -36.21 MHz

Back to the Matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5795.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc

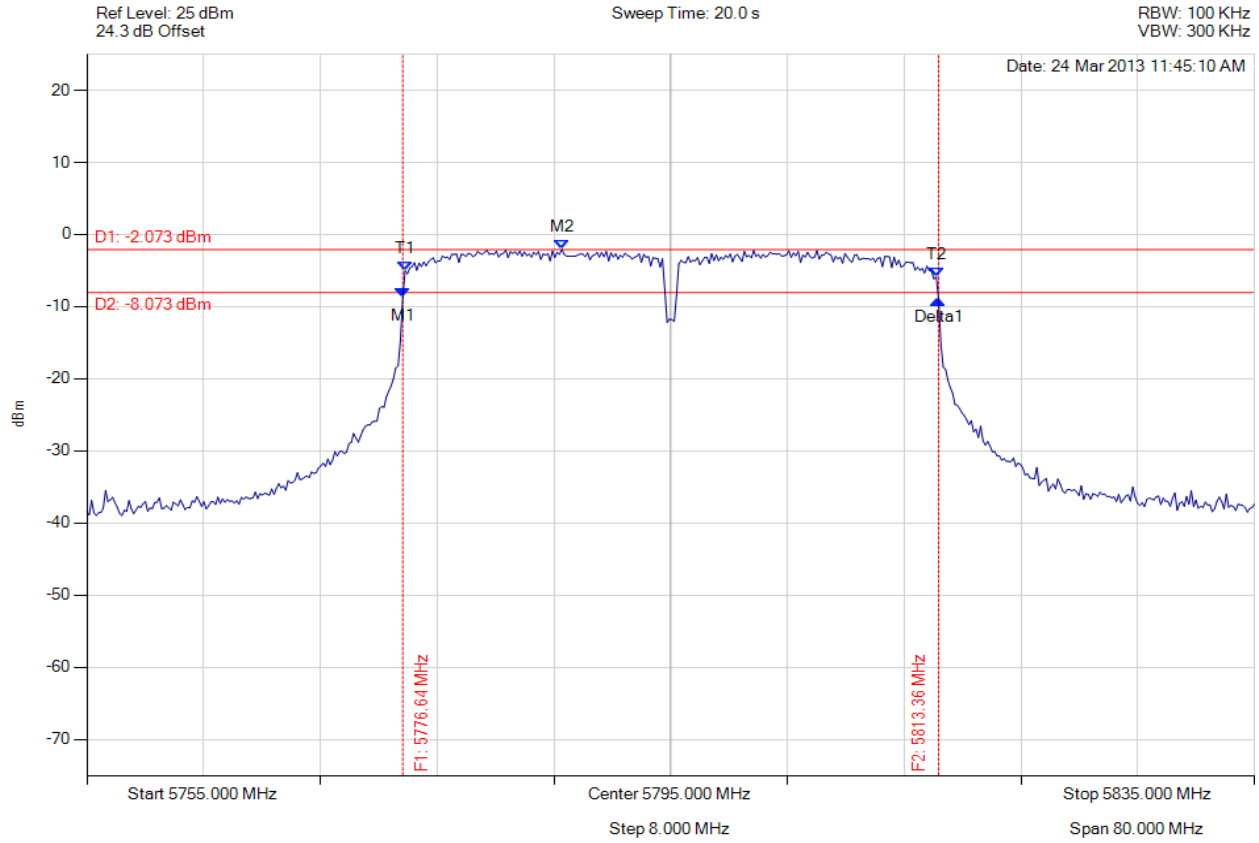


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5776.483 MHz : -13.082 dBm M2 : 5785.782 MHz : -0.578 dBm Delta1 : 36.874 MHz : 5.859 dB T1 : 5776.804 MHz : -3.241 dBm T2 : 5813.196 MHz : -4.068 dBm OBW : 36.393 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: 5795.00 MHz, Chain c, Temp: Ambient, Voltage: 12 Vdc



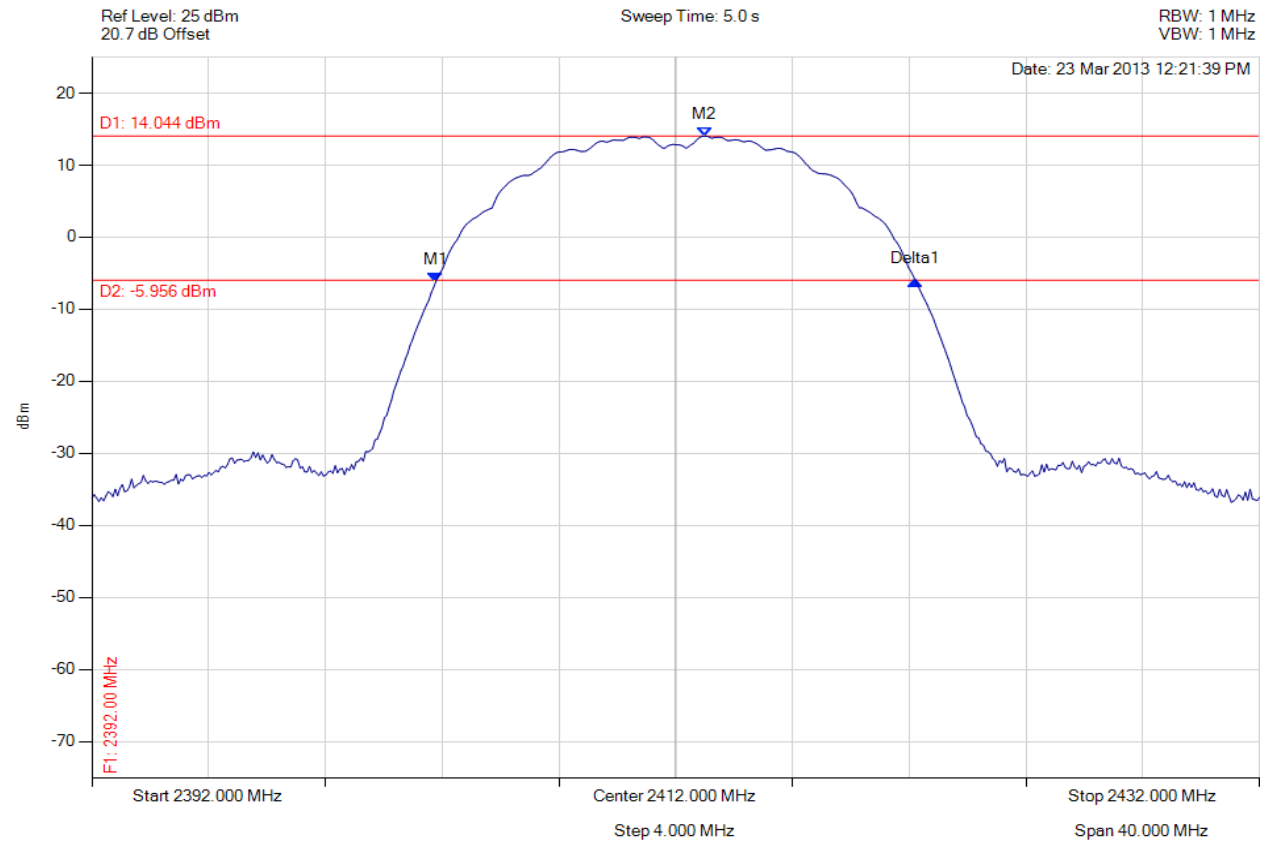
Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5776.643 MHz : -8.746 dBm M2 : 5787.545 MHz : -2.073 dBm Delta1 : 36.713 MHz : -0.244 dB T1 : 5776.804 MHz : -5.024 dBm T2 : 5813.196 MHz : -5.856 dBm OBW : 36.393 MHz	Measured 6 dB Bandwidth: 36.713 MHz Limit: ≥500.0 kHz Margin: -36.21 MHz

Back to the Matrix

A.1.2. Peak Output Power

PEAK OUTPUT POWER

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

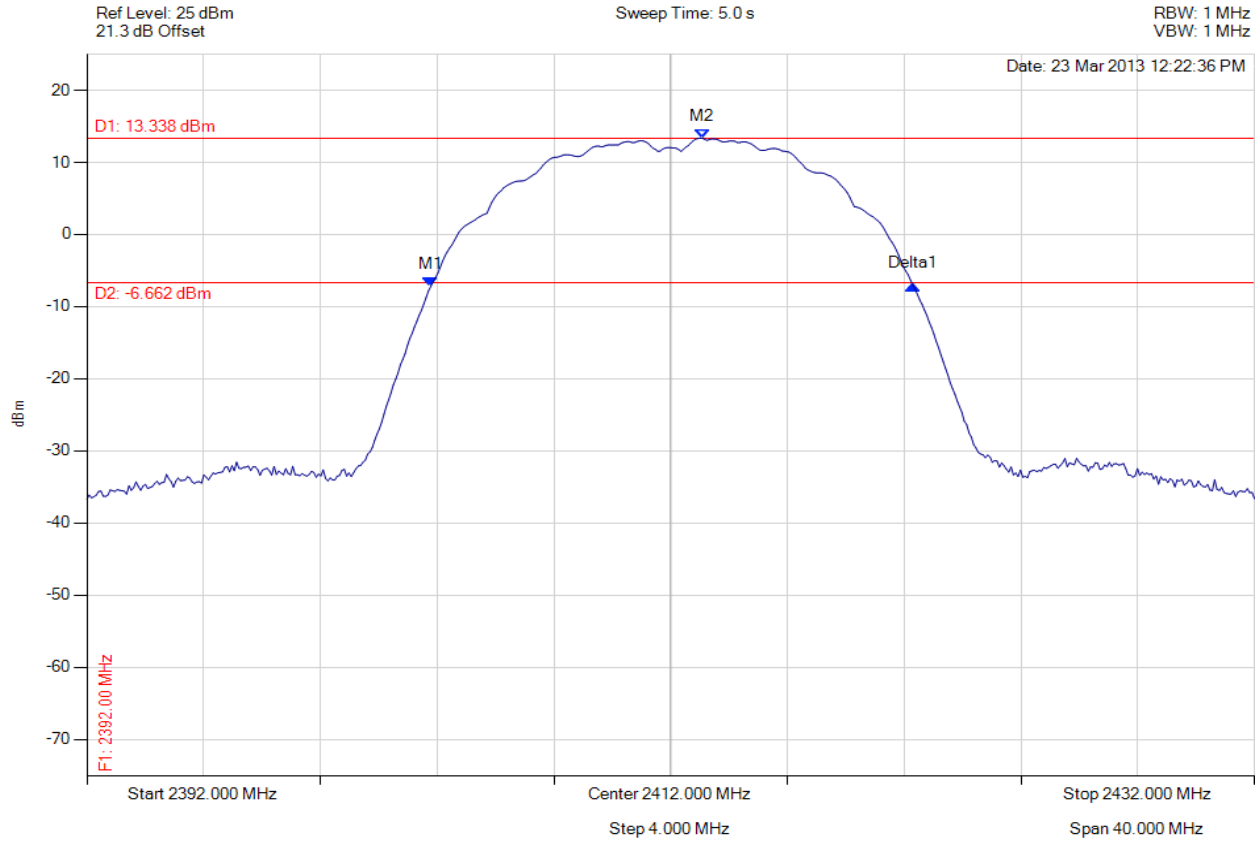


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2403.784 MHz : -6.161 dBm M2 : 2413.002 MHz : 14.044 dBm Delta1 : 16.433 MHz : 0.144 dB	Channel Power: 22.53 dBm Limit: 26.99 dBm Margin: -4.46 dB

Back to the Matrix

PEAK OUTPUT POWER

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

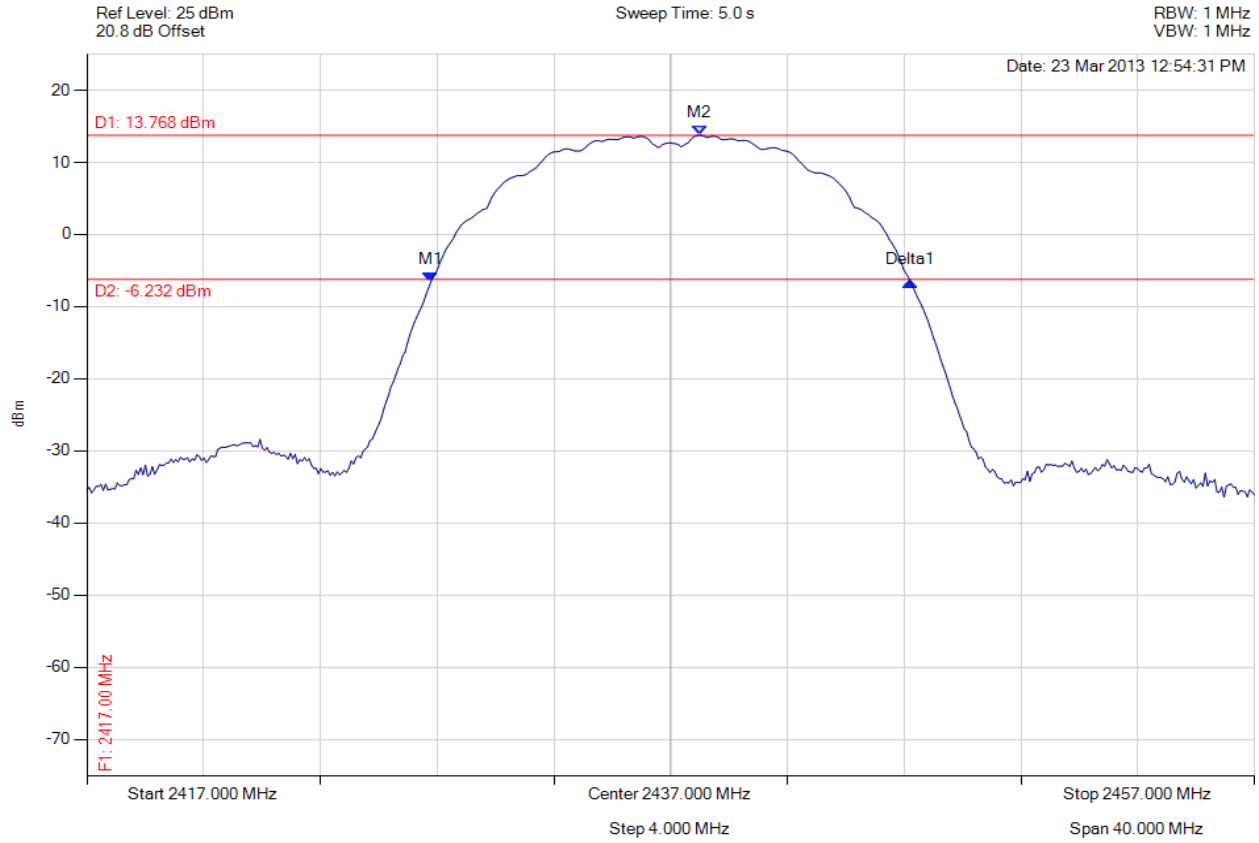


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2403.784 MHz : -7.196 dBm M2 : 2413.082 MHz : 13.338 dBm Delta1 : 16.513 MHz : 0.207 dB	Channel Power: 21.77 dBm Limit: 26.99 dBm Margin: -5.22 dB

Back to the Matrix

PEAK OUTPUT POWER

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

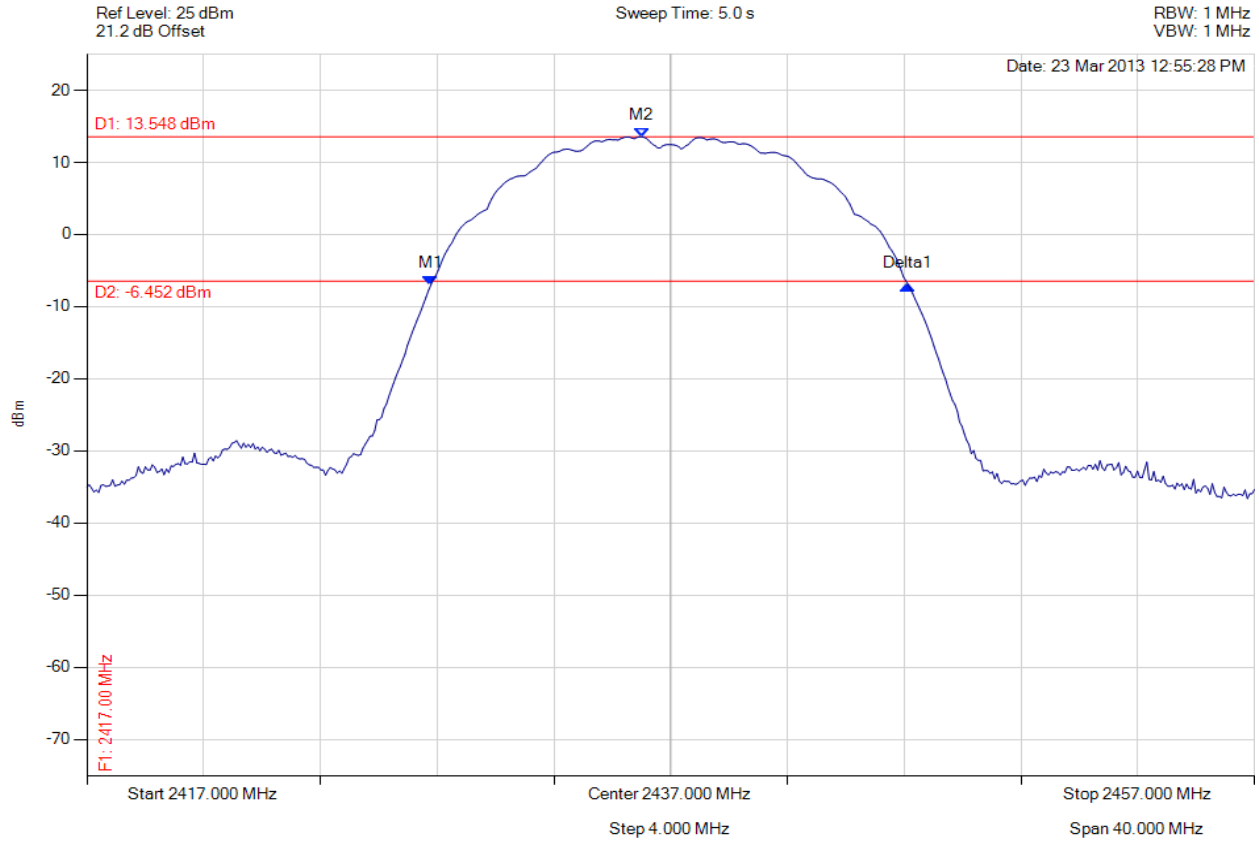


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2428.784 MHz : -6.604 dBm M2 : 2438.002 MHz : 13.768 dBm Delta1 : 16.433 MHz : 0.059 dB	Channel Power: 22.23 dBm Limit: 26.99 dBm Margin: -4.76 dB

Back to the Matrix

PEAK OUTPUT POWER

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

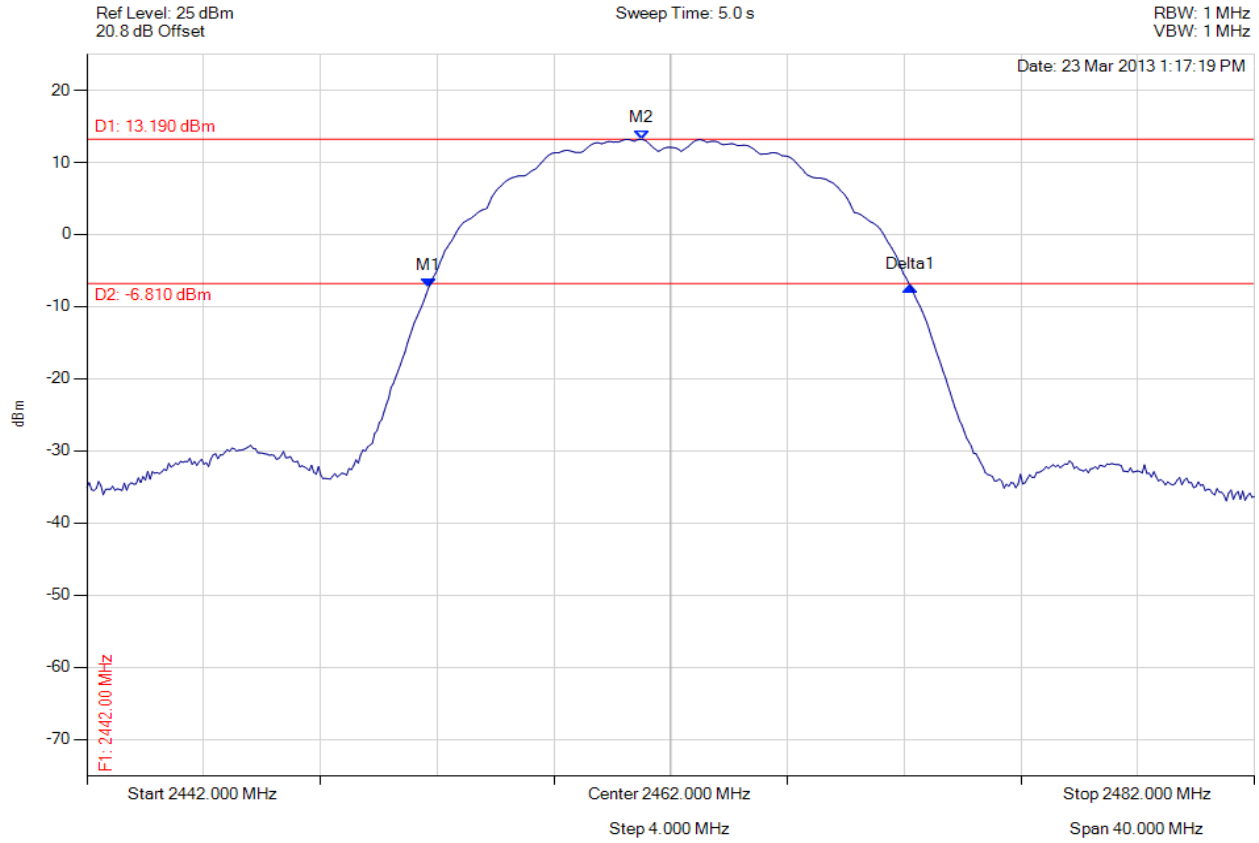


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2428.784 MHz : -7.029 dBm M2 : 2435.998 MHz : 13.548 dBm Delta1 : 16.353 MHz : 0.039 dB	Channel Power: 21.96 dBm Limit: 26.99 dBm Margin: -5.03 dB

Back to the Matrix

PEAK OUTPUT POWER

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

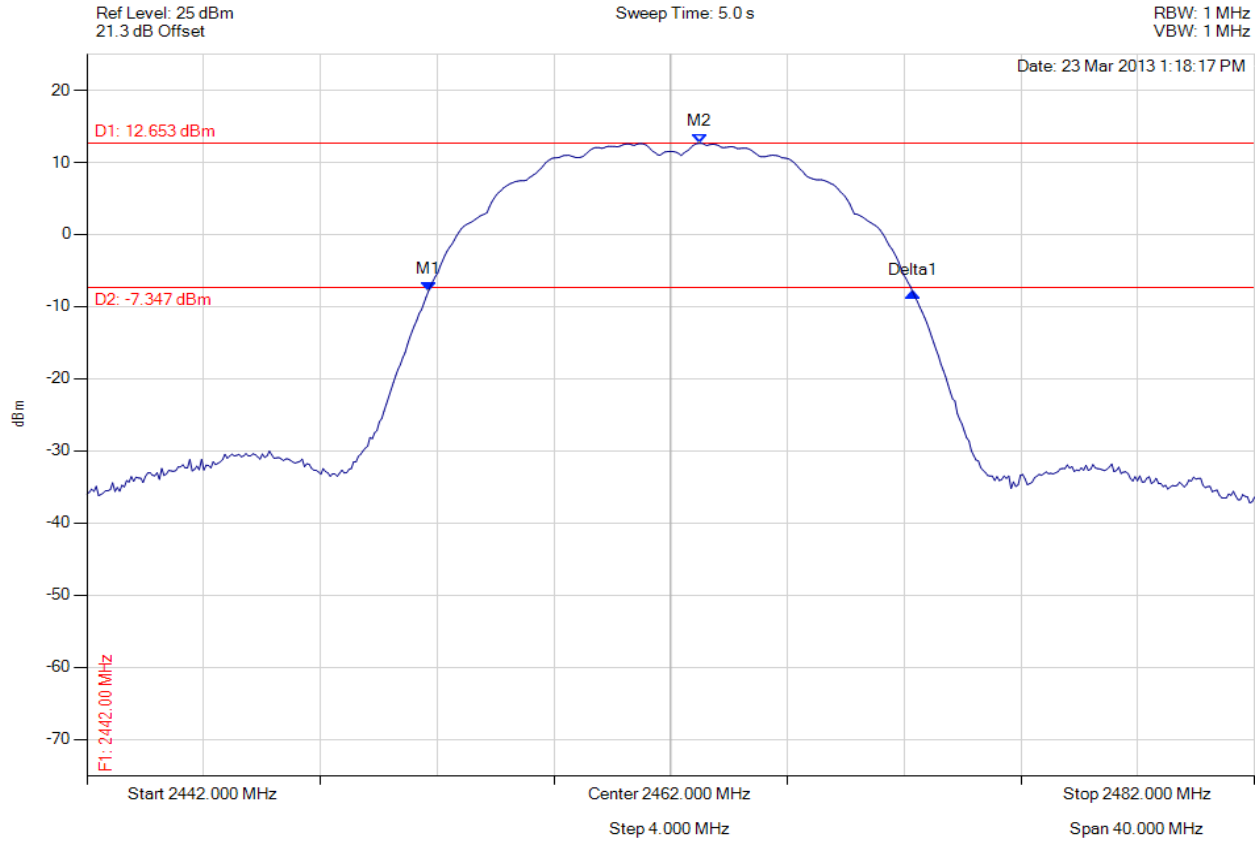


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2453.703 MHz : -7.402 dBm M2 : 2460.998 MHz : 13.190 dBm Delta1 : 16.513 MHz : 0.240 dB	Channel Power: 21.75 dBm Limit: 26.99 dBm Margin: -5.24 dB

Back to the Matrix

PEAK OUTPUT POWER

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

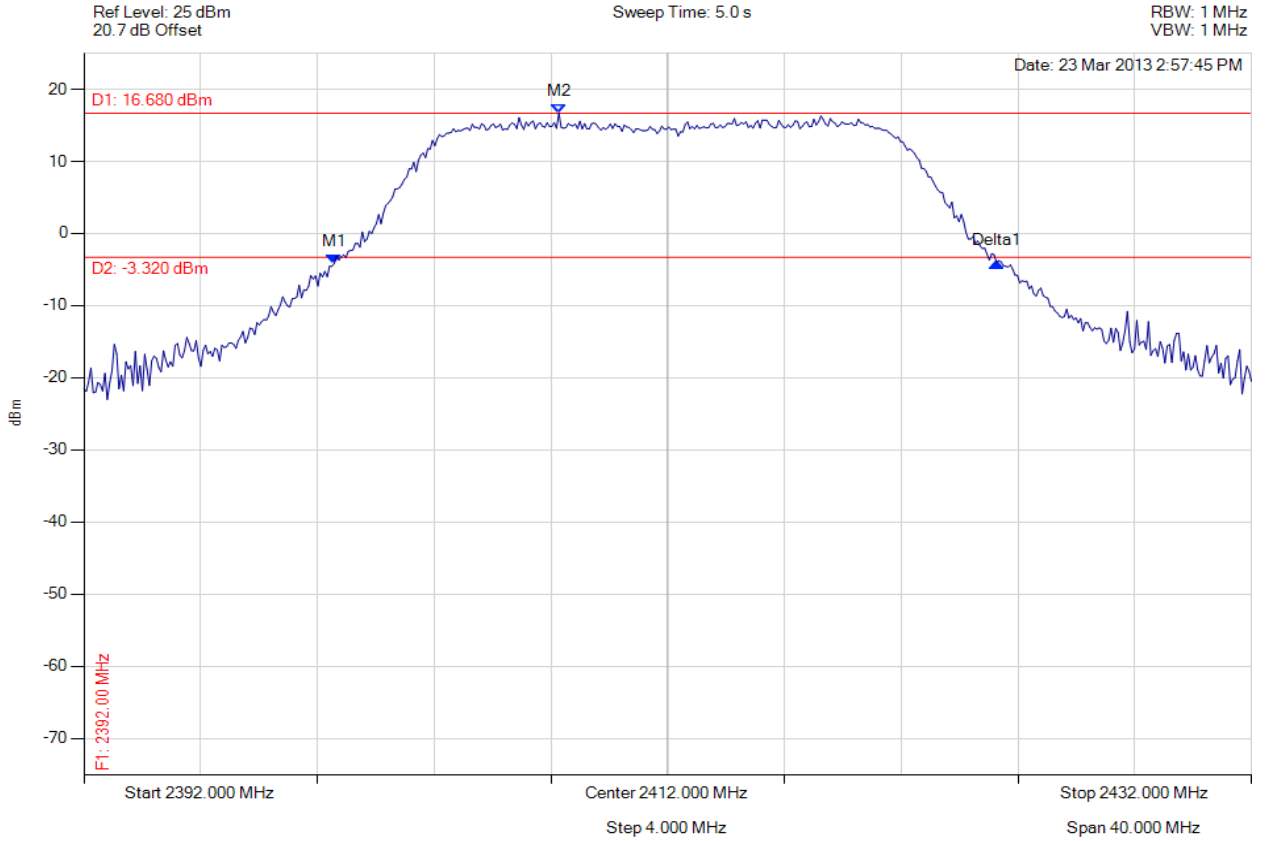


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2453.703 MHz : -7.841 dBm M2 : 2463.002 MHz : 12.653 dBm Delta1 : 16.593 MHz : -0.130 dB	Channel Power: 21.24 dBm Limit: 26.99 dBm Margin: -5.75 dB

Back to the Matrix

PEAK OUTPUT POWER

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

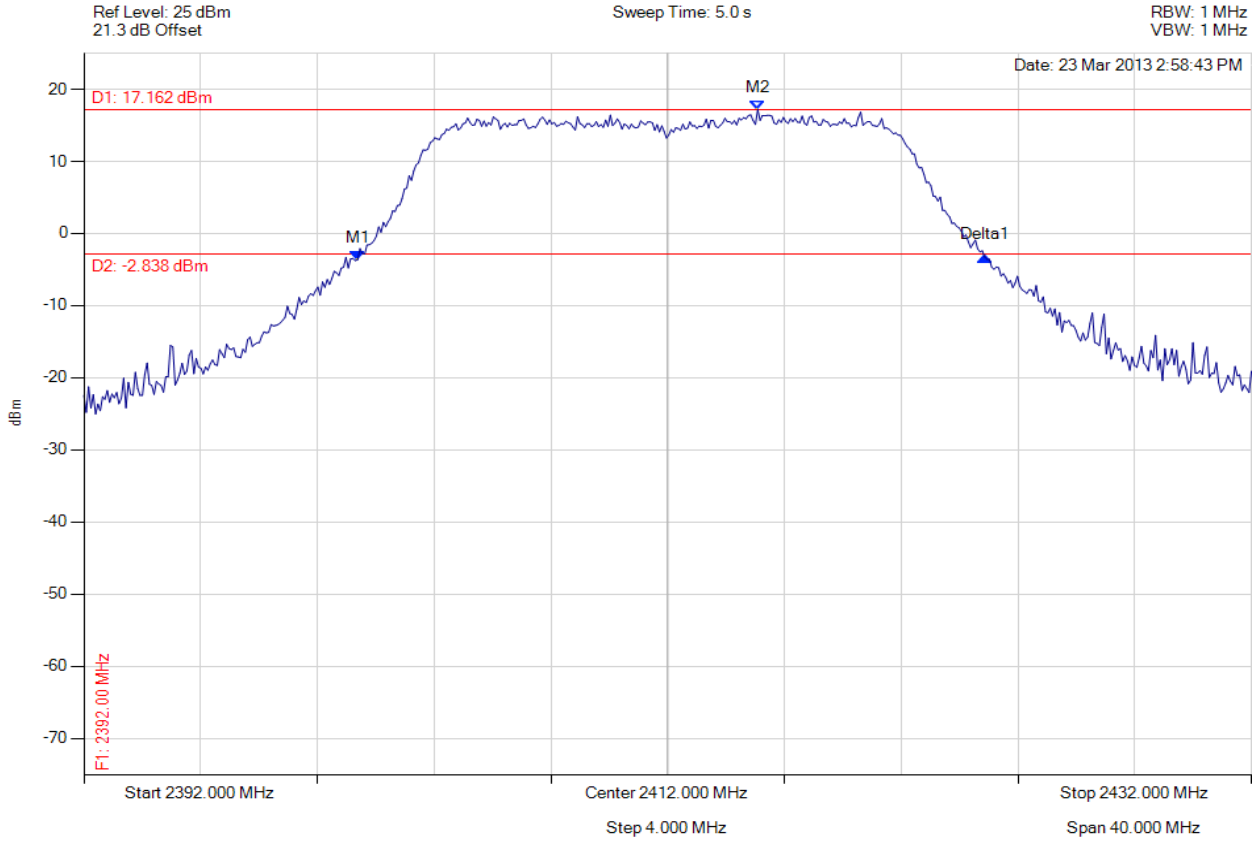


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2400.577 MHz : -4.144 dBm M2 : 2408.273 MHz : 16.680 dBm Delta1 : 22.685 MHz : 0.169 dB	Channel Power: 26.62 dBm Limit: 26.99 dBm Margin: -0.37 dB

Back to the Matrix

PEAK OUTPUT POWER

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

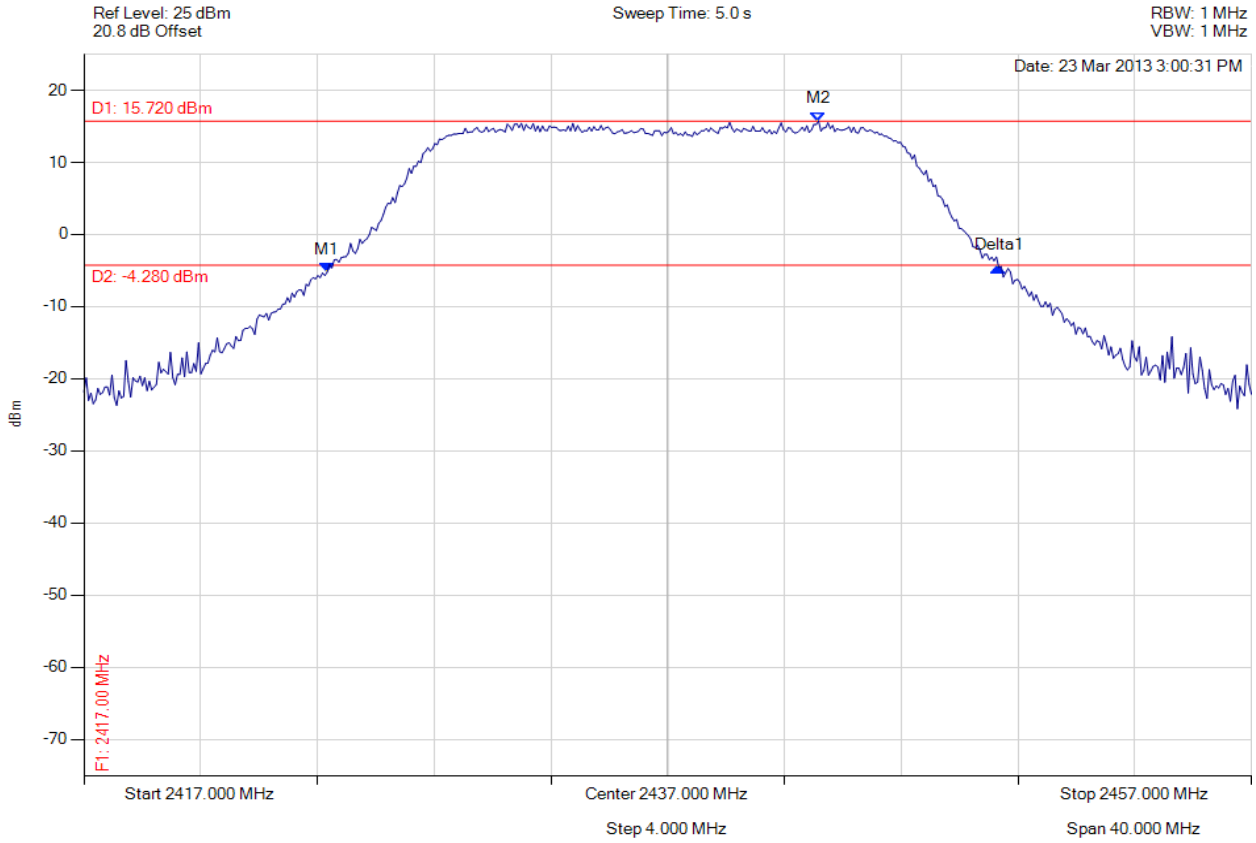


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2401.379 MHz : -3.629 dBm M2 : 2415.086 MHz : 17.162 dBm Delta1 : 21.483 MHz : 0.352 dB	Channel Power: 26.95 dBm Limit: 26.99 dBm Margin: -0.04 dB

Back to the Matrix

PEAK OUTPUT POWER

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

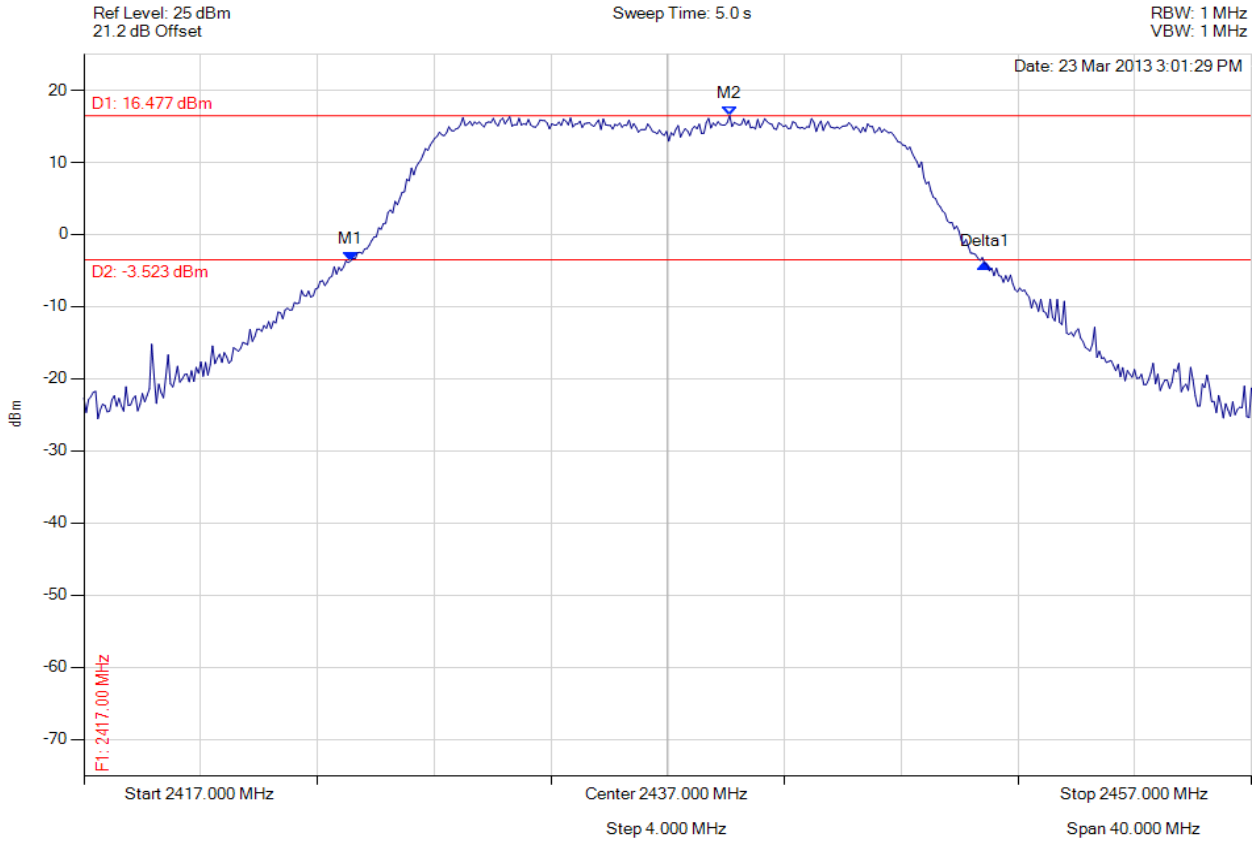


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2425.337 MHz : -5.203 dBm M2 : 2442.170 MHz : 15.720 dBm Delta1 : 23.006 MHz : 0.635 dB	Channel Power: 26.20 dBm Limit: 26.99 dBm Margin: -0.79 dB

Back to the Matrix

PEAK OUTPUT POWER

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

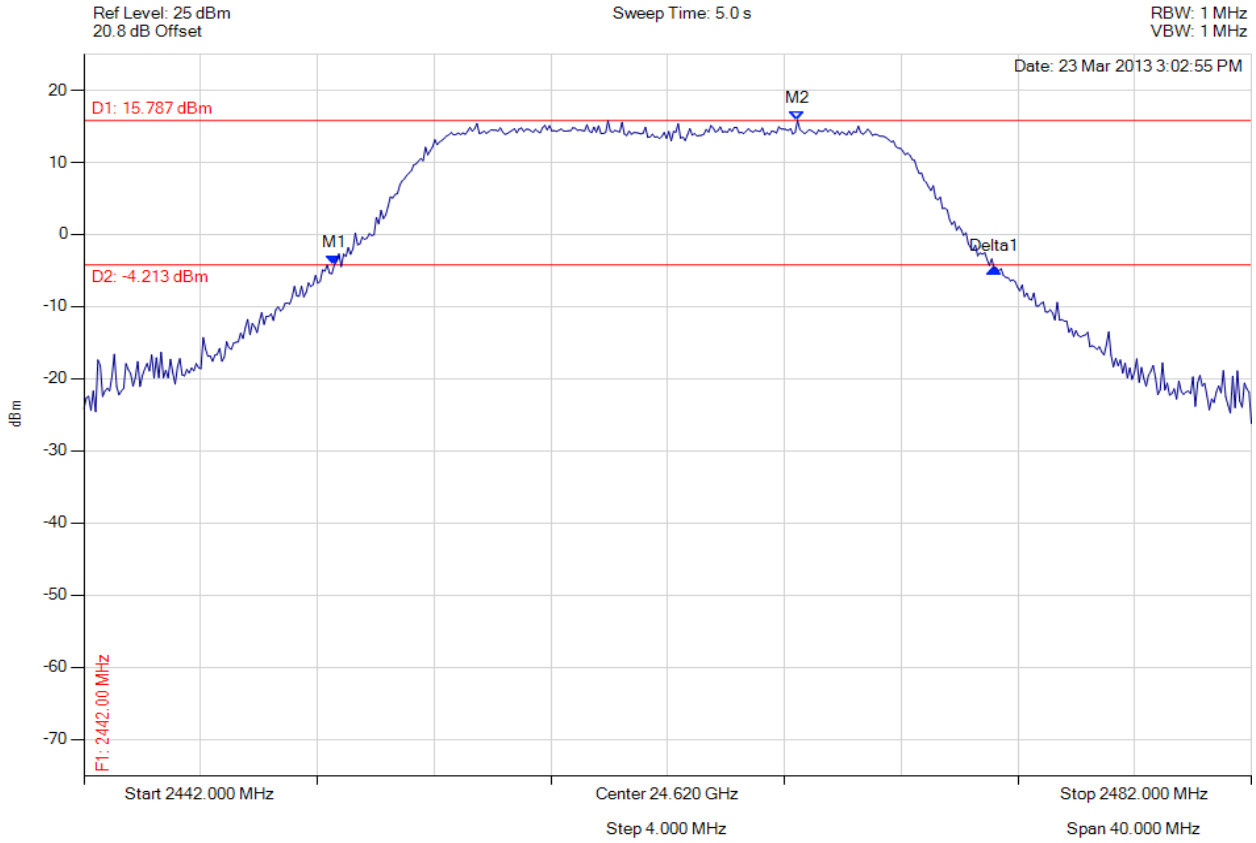


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2426.138 MHz : -3.662 dBm M2 : 2439.124 MHz : 16.477 dBm Delta1 : 21.723 MHz : -0.382 dB	Channel Power: 26.78 dBm Limit: 26.99 dBm Margin: -0.21 dB

Back to the Matrix

PEAK OUTPUT POWER

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



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2450.577 MHz : -4.239 dBm M2 : 2466.449 MHz : 15.787 dBm Delta1 : 22.605 MHz : -0.397 dB	Channel Power: 26.00 dBm Limit: 26.99 dBm Margin: -0.99 dB

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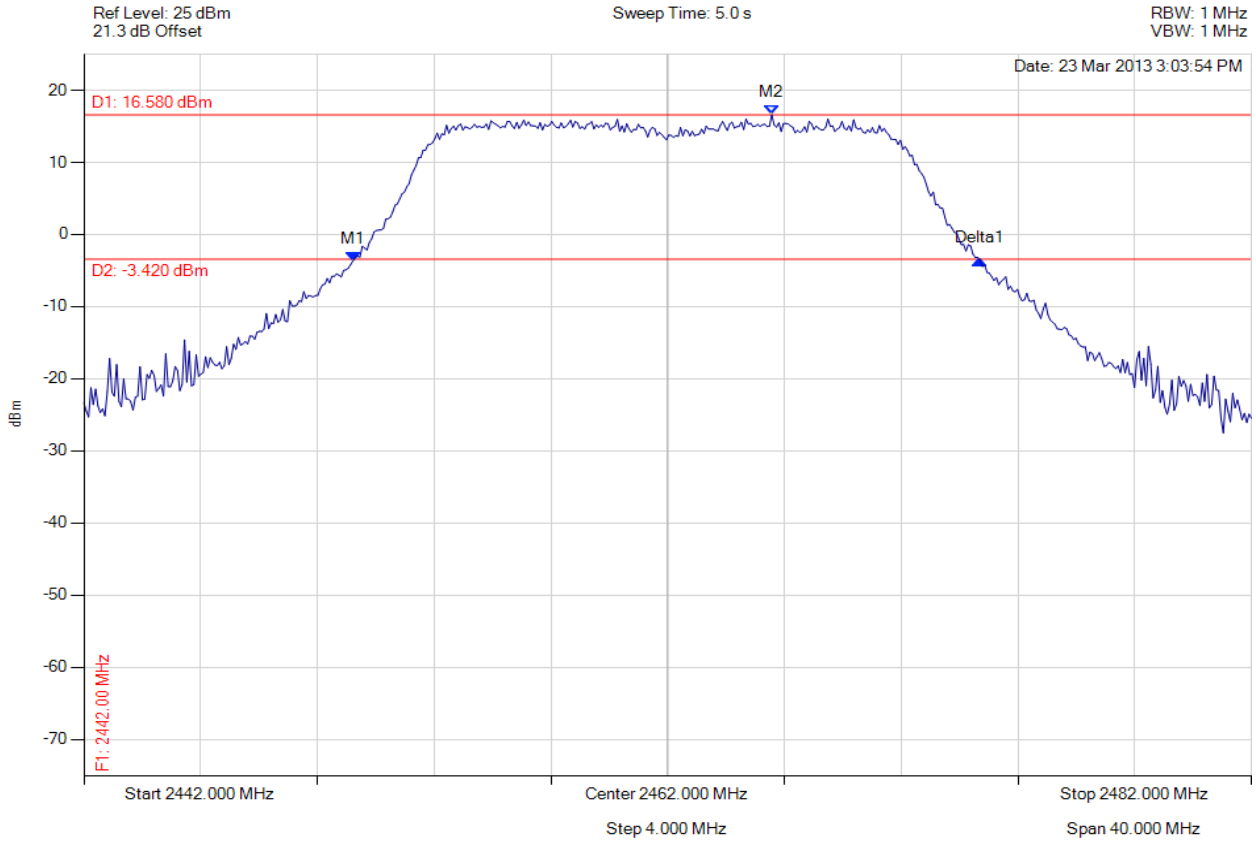
PEAK OUTPUT POWER

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

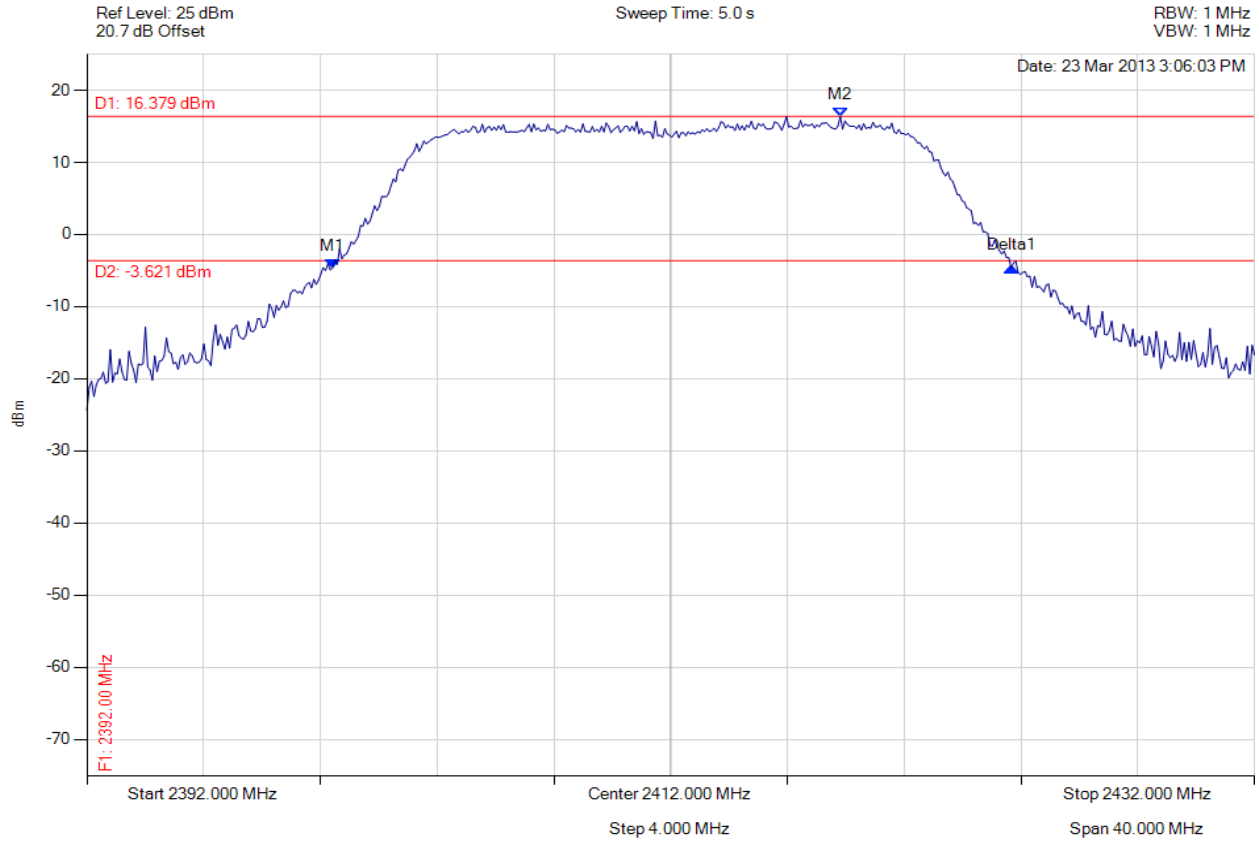


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2451.218 MHz : -3.639 dBm M2 : 2465.567 MHz : 16.580 dBm Delta1 : 21.483 MHz : 0.096 dB	Channel Power: 26.54 dBm Limit: 26.99 dBm Margin: -0.45 dB

Back to the Matrix

PEAK OUTPUT POWER

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

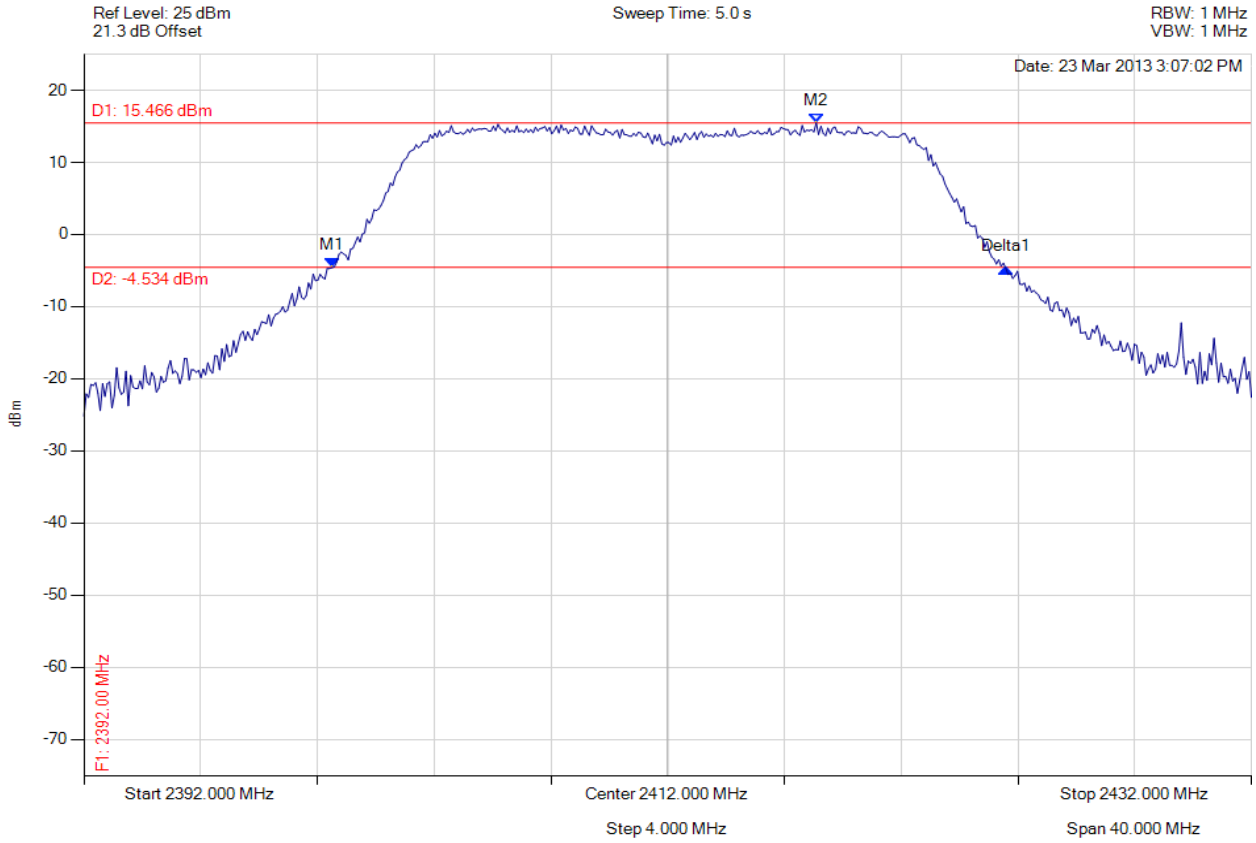


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2400.417 MHz : -4.630 dBm M2 : 2417.812 MHz : 16.379 dBm Delta1 : 23.246 MHz : 0.022 dB	Channel Power: 26.64 dBm Limit: 26.99 dBm Margin: -0.35 dB

Back to the Matrix

PEAK OUTPUT POWER

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

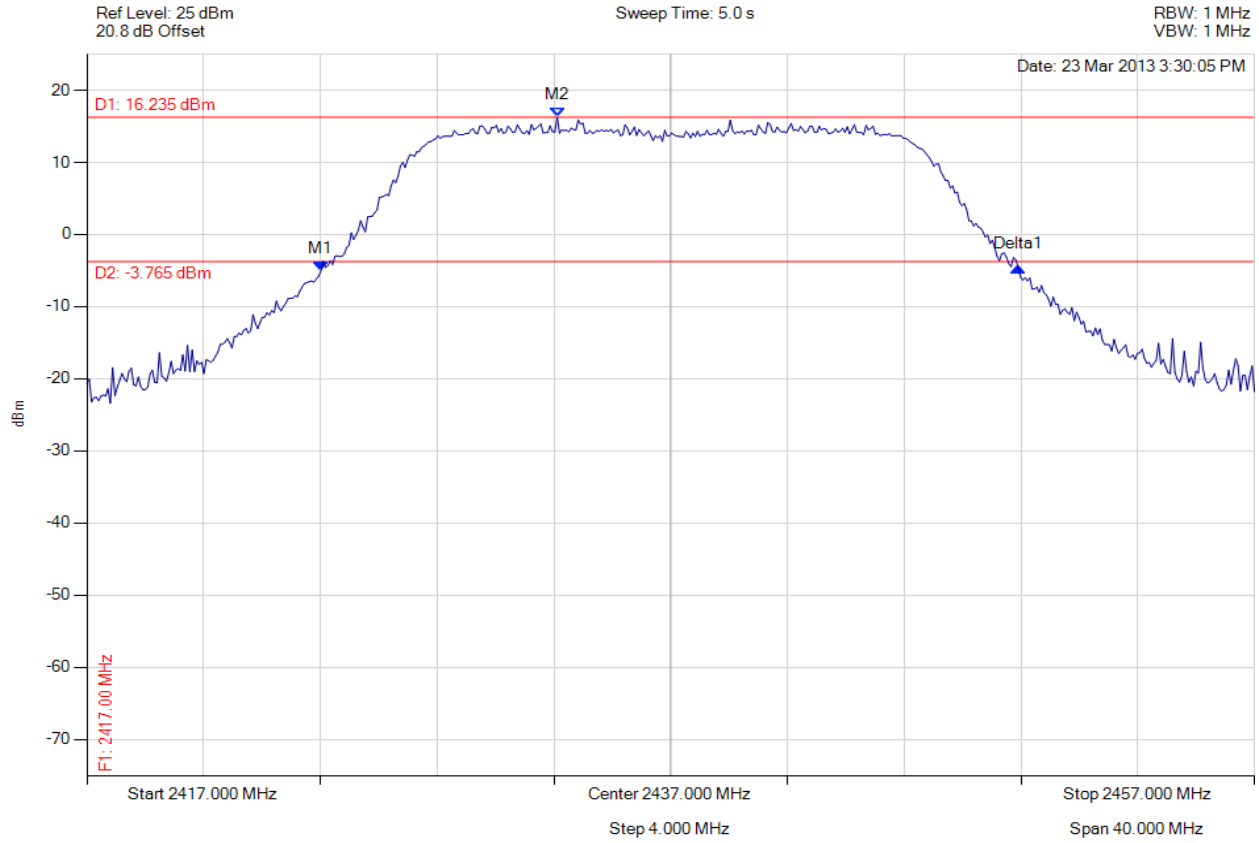


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2400.497 MHz : -4.599 dBm M2 : 2417.090 MHz : 15.466 dBm Delta1 : 23.086 MHz : -0.043 dB	Channel Power: 26.14 dBm Limit: 26.99 dBm Margin: -0.85 dB

Back to the Matrix

PEAK OUTPUT POWER

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

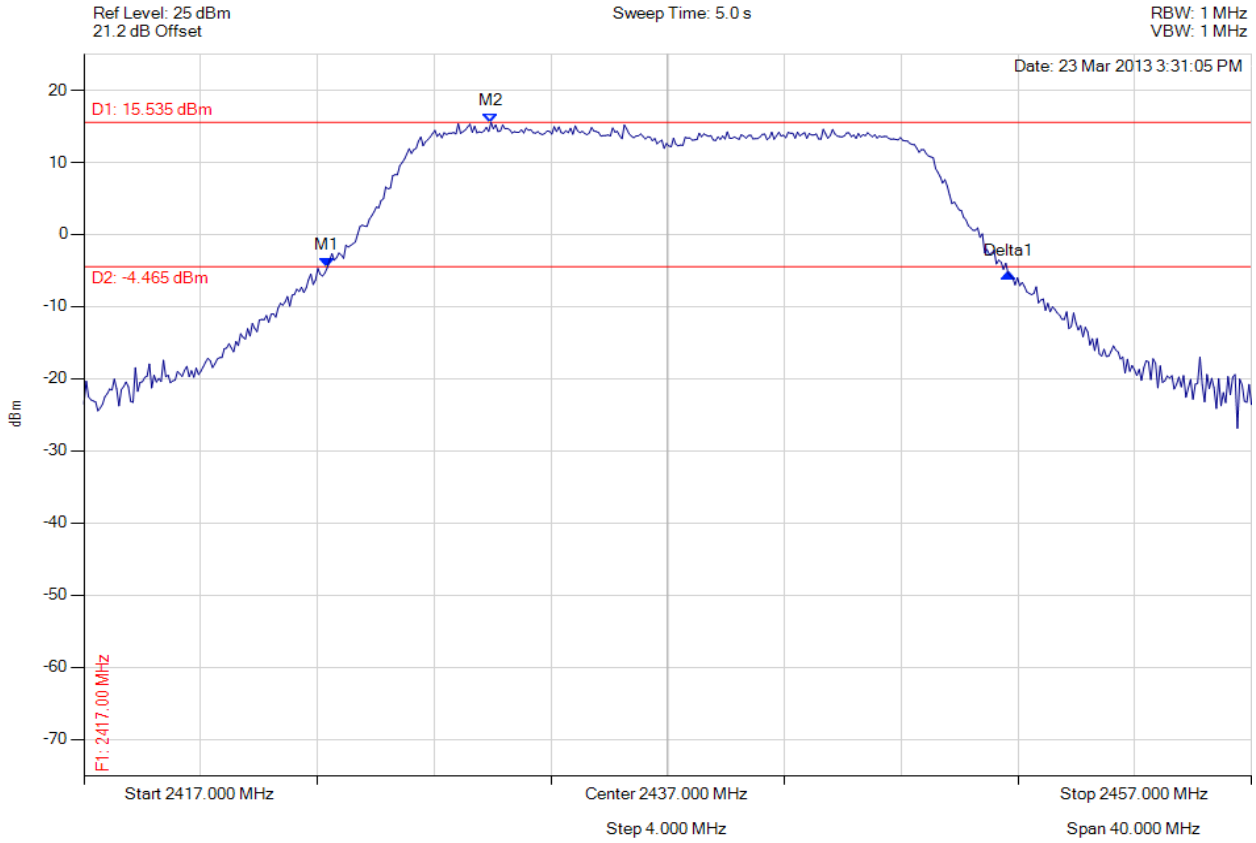


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2425.016 MHz : -5.045 dBm M2 : 2433.112 MHz : 16.235 dBm Delta1 : 23.888 MHz : 0.586 dB	Channel Power: 26.27 dBm Limit: 26.99 dBm Margin: -0.72 dB

Back to the Matrix

PEAK OUTPUT POWER

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

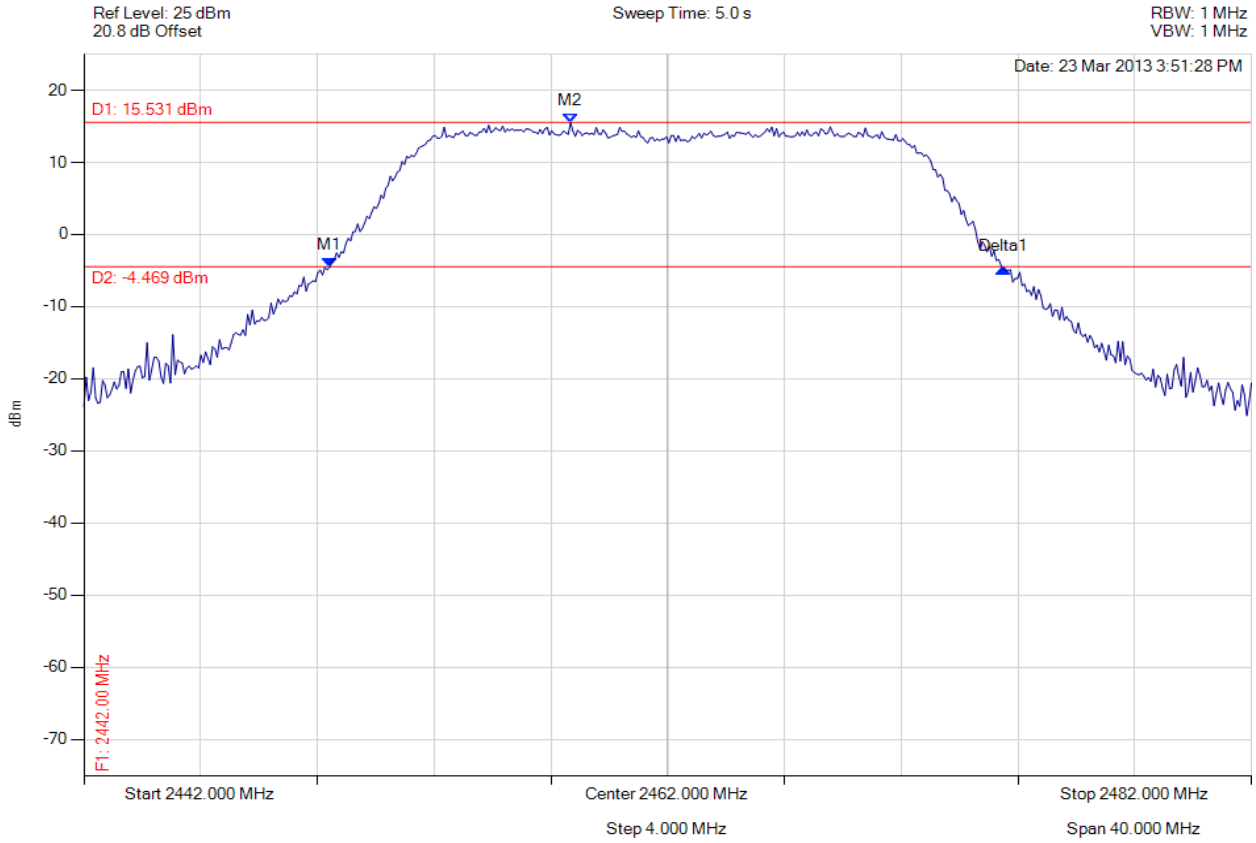


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2425.337 MHz : -4.591 dBm M2 : 2430.948 MHz : 15.535 dBm Delta1 : 23.327 MHz : -0.757 dB	Channel Power: 25.90 dBm Limit: 26.99 dBm Margin: -1.09 dB

Back to the Matrix

PEAK OUTPUT POWER

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



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2450.417 MHz : -4.556 dBm M2 : 2458.673 MHz : 15.531 dBm Delta1 : 23.086 MHz : -0.140 dB	Channel Power: 25.91 dBm Limit: 26.99 dBm Margin: -1.08 dB

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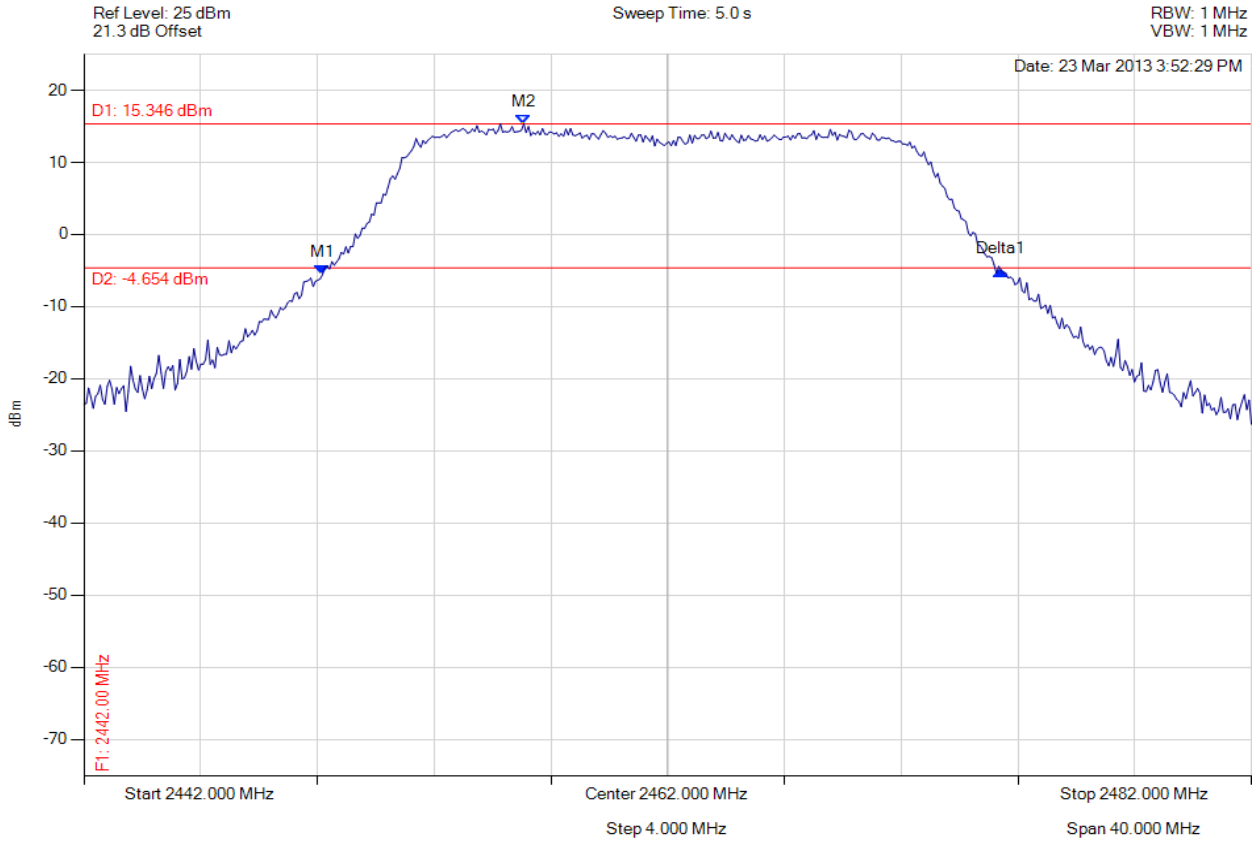
PEAK OUTPUT POWER

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



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2450.176 MHz : -5.547 dBm M2 : 2457.070 MHz : 15.346 dBm Delta1 : 23.246 MHz : 0.557 dB	Channel Power: 25.70 dBm Limit: 26.99 dBm Margin: -1.29 dB

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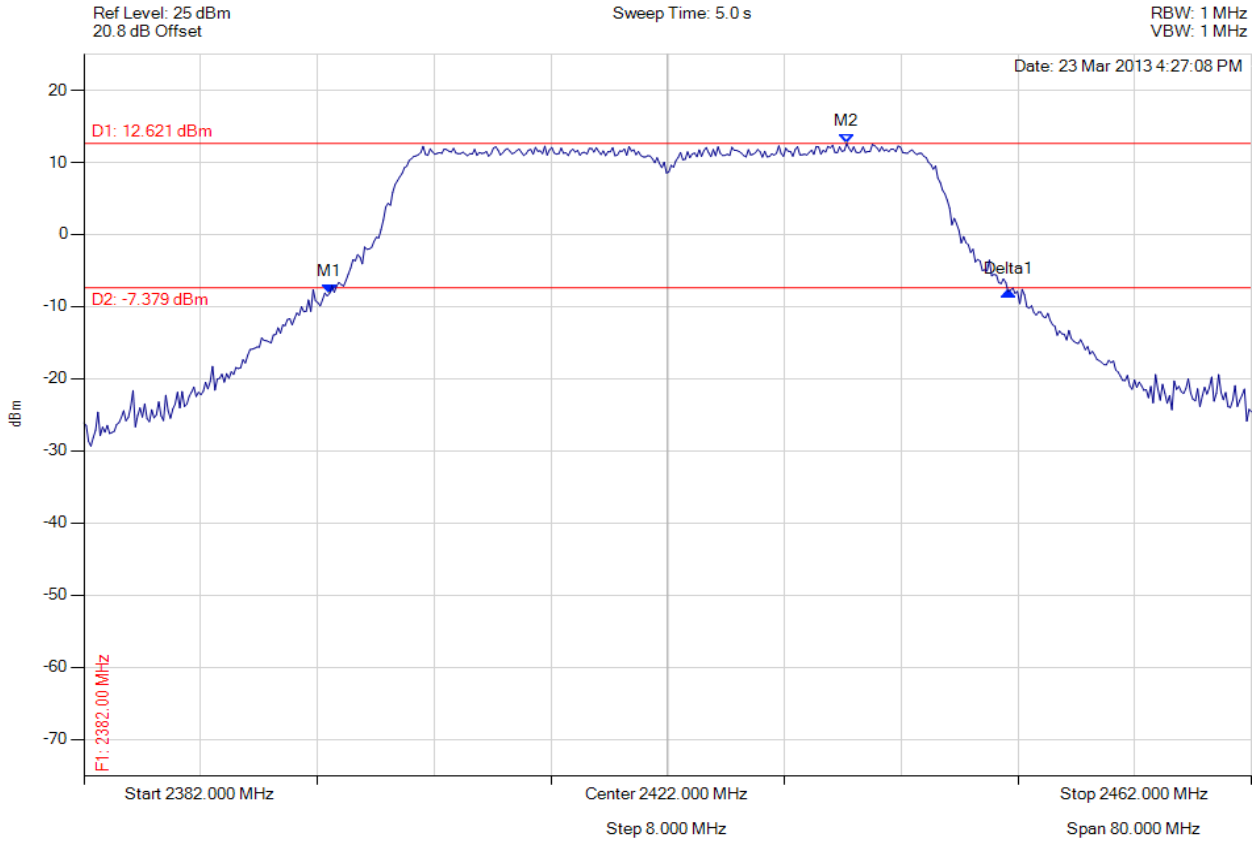
PEAK OUTPUT POWER

Variant: 802.11n HT-40, Channel: 2422.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2398.834 MHz : -8.168 dBm M2 : 2434.265 MHz : 12.621 dBm Delta1 : 46.493 MHz : 0.275 dB	Channel Power: 26.55 dBm Limit: 26.99 dBm Margin: -0.44 dB

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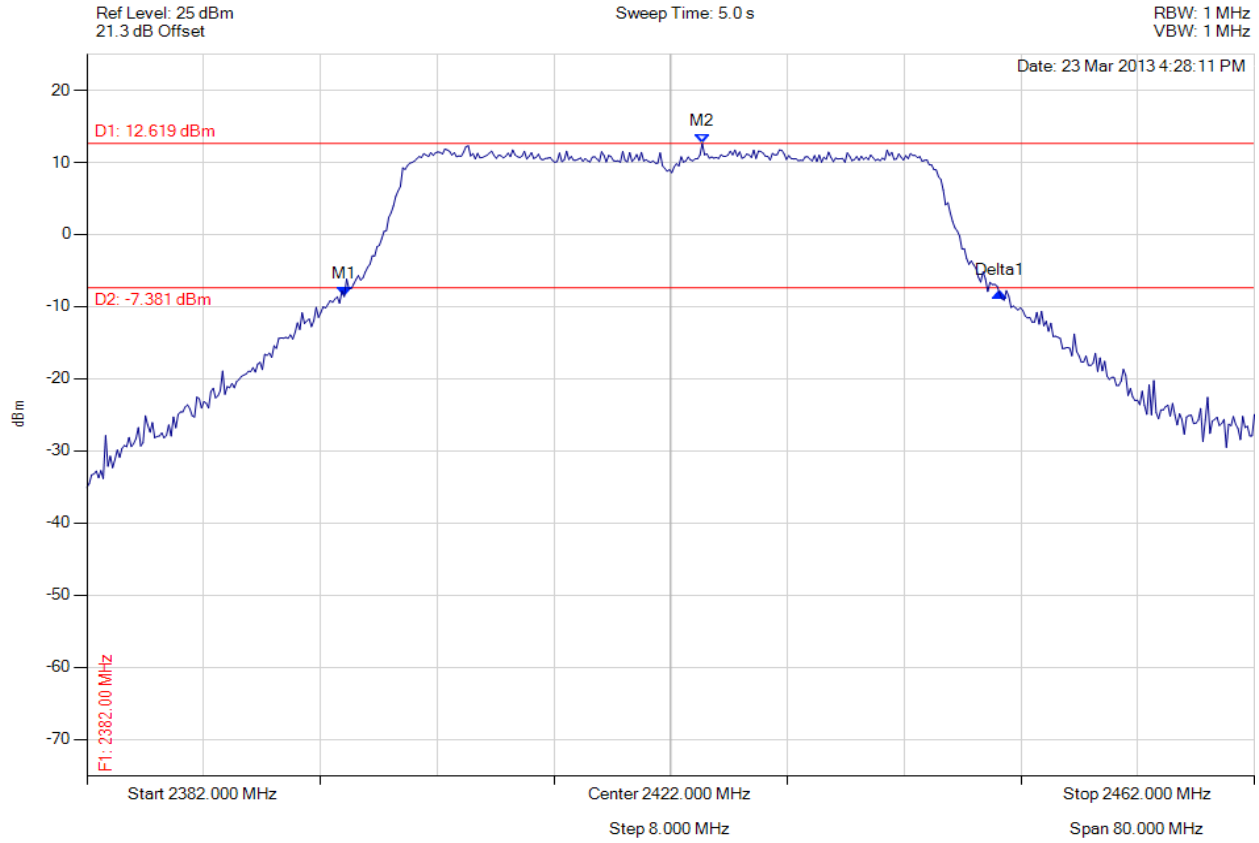
PEAK OUTPUT POWER

Variant: 802.11n HT-40, Channel: 2422.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc

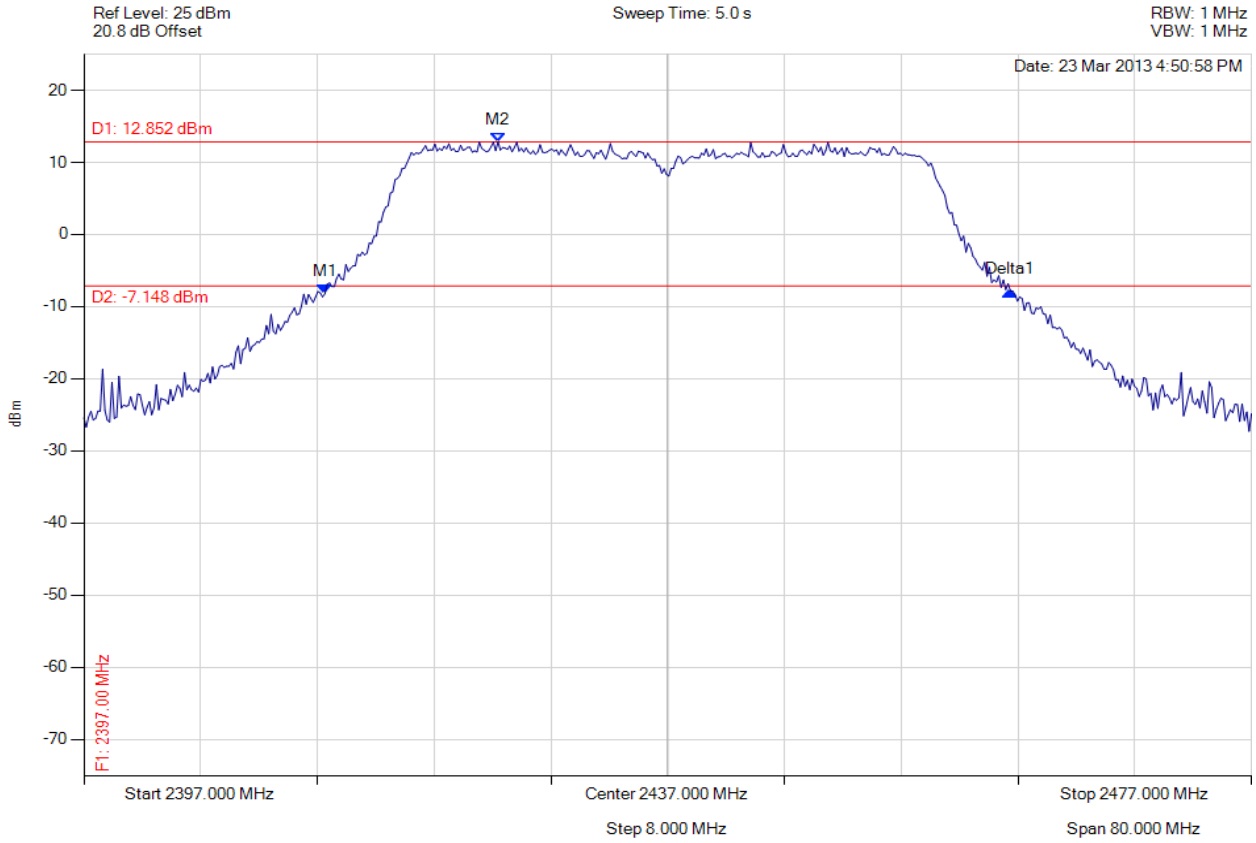


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2399.635 MHz : -8.610 dBm M2 : 2424.164 MHz : 12.619 dBm Delta1 : 44.890 MHz : 0.574 dB	Channel Power: 25.91 dBm Limit: 26.99 dBm Margin: -1.08 dB

Back to the Matrix

PEAK OUTPUT POWER

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



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2413.513 MHz : -8.221 dBm M2 : 2425.377 MHz : 12.852 dBm Delta1 : 46.974 MHz : 0.370 dB	Channel Power: 26.51 dBm Limit: 26.99 dBm Margin: -0.48 dB

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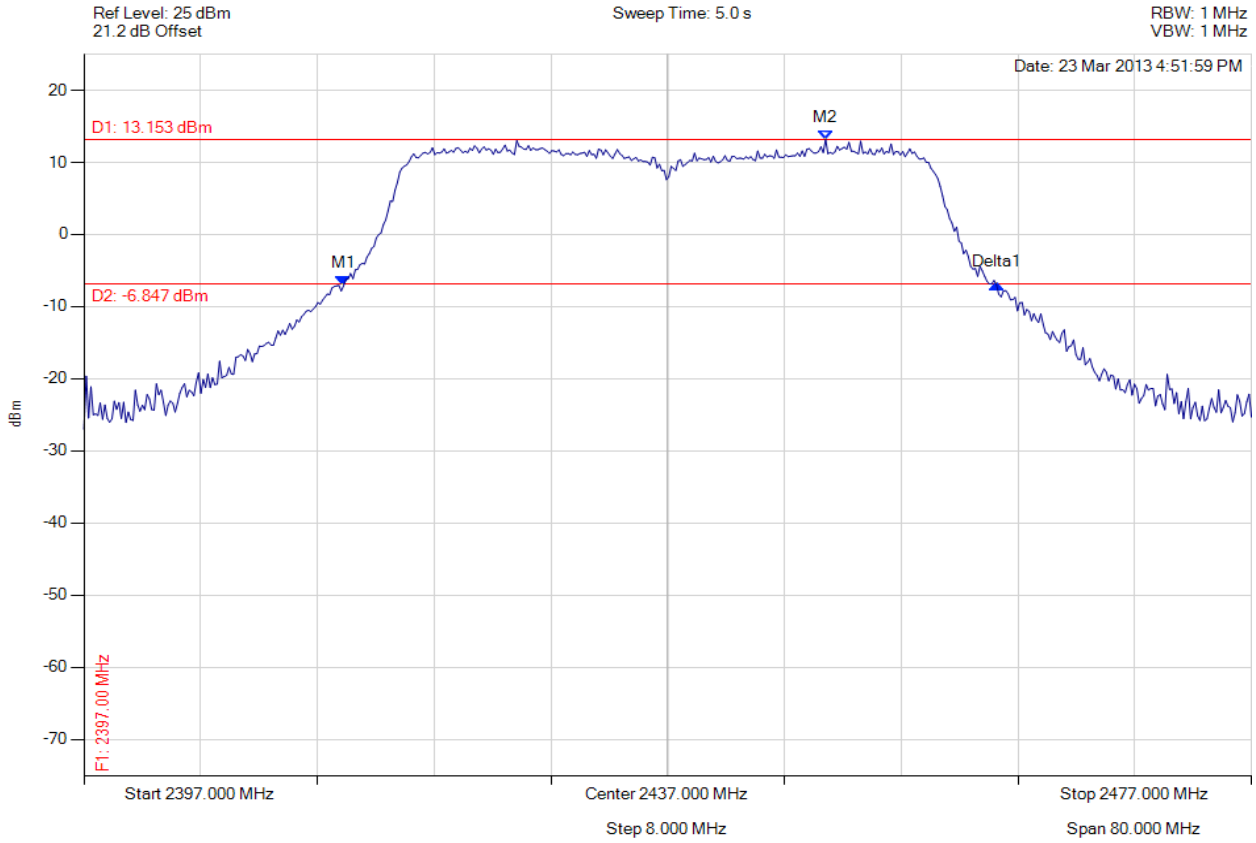
PEAK OUTPUT POWER

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



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2414.796 MHz : -7.097 dBm M2 : 2447.822 MHz : 13.153 dBm Delta1 : 44.729 MHz : 0.175 dB	Channel Power: 26.32 dBm Limit: 26.99 dBm Margin: -0.67 dB

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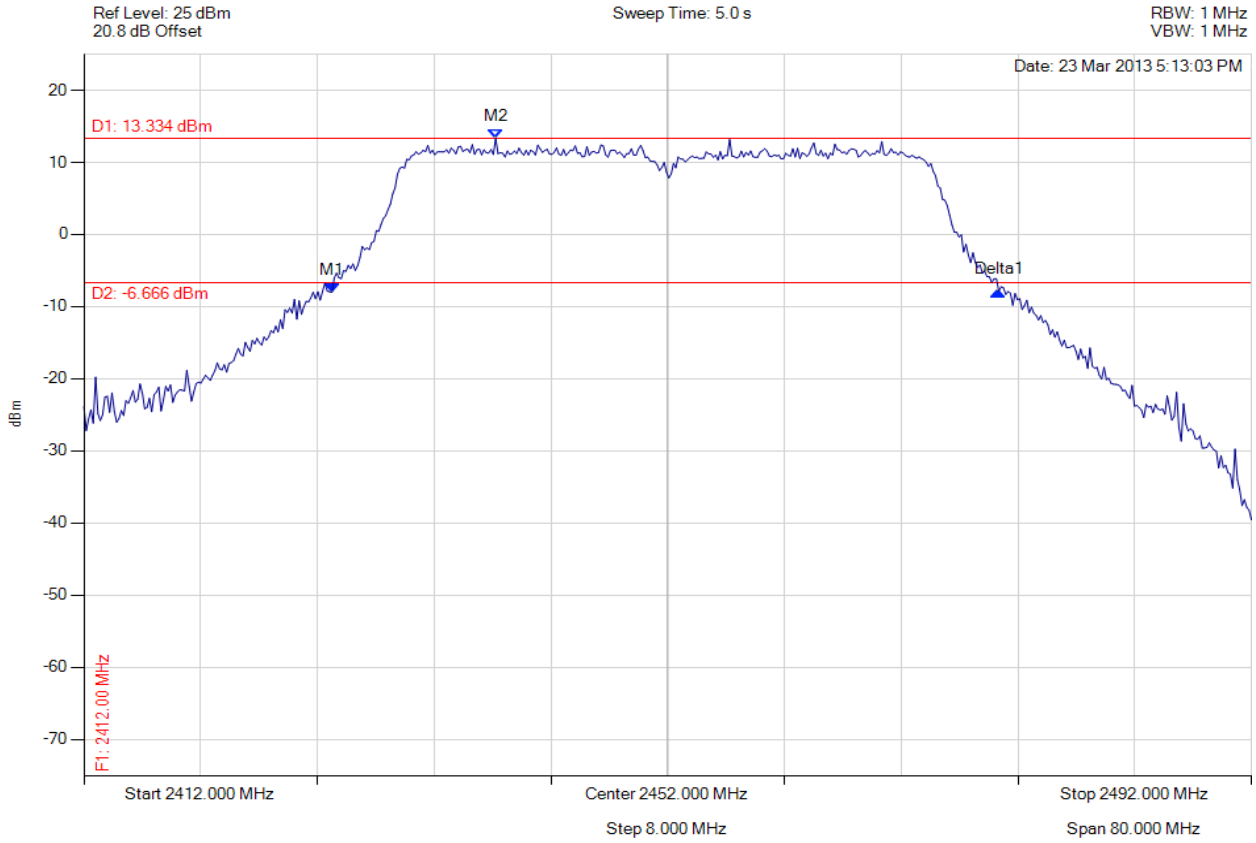
PEAK OUTPUT POWER

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



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2428.994 MHz : -8.014 dBm M2 : 2440.216 MHz : 13.334 dBm Delta1 : 45.691 MHz : 0.171 dB	Channel Power: 26.41 dBm Limit: 26.99 dBm Margin: -0.58 dB

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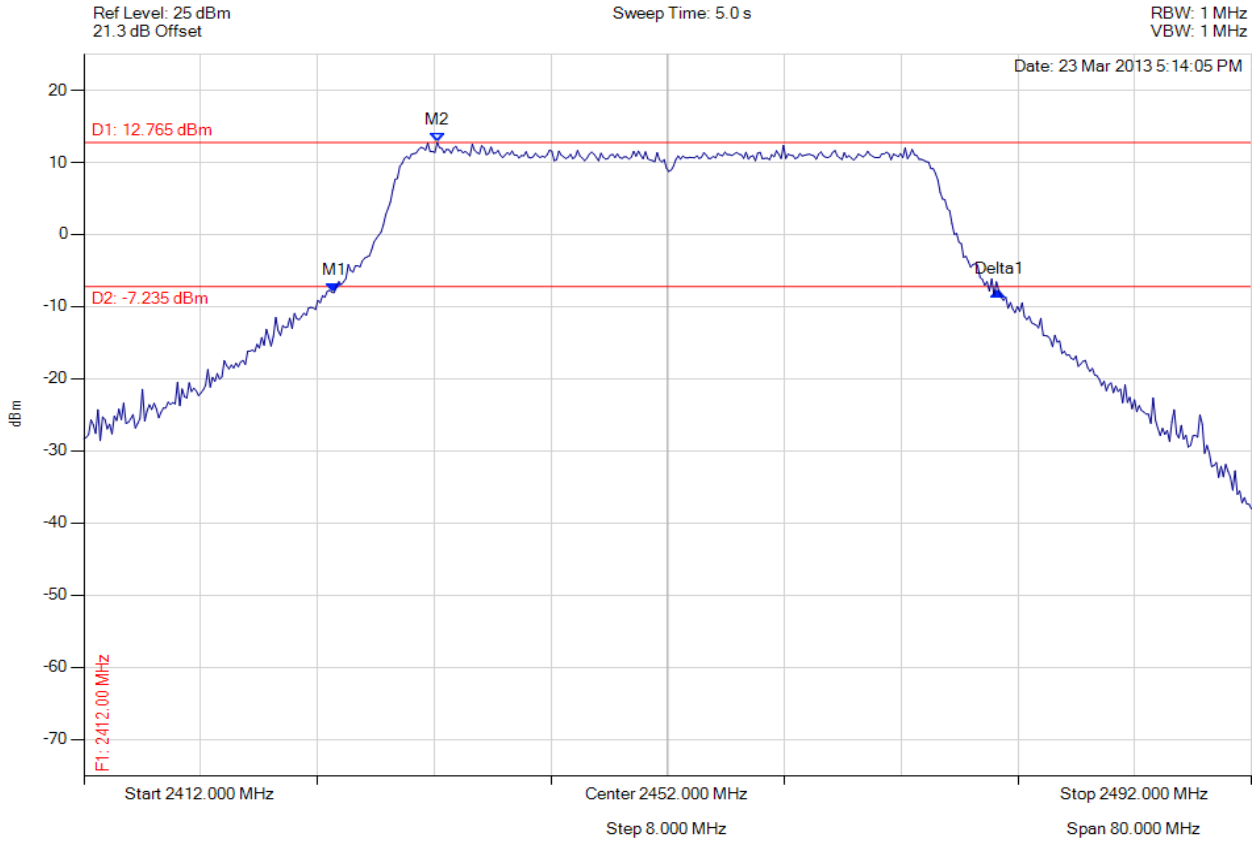
PEAK OUTPUT POWER

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



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 2429.154 MHz : -8.054 dBm M2 : 2436.208 MHz : 12.765 dBm Delta1 : 45.531 MHz : 0.256 dB	Channel Power: 26.21 dBm Limit: 26.99 dBm Margin: -0.78 dB

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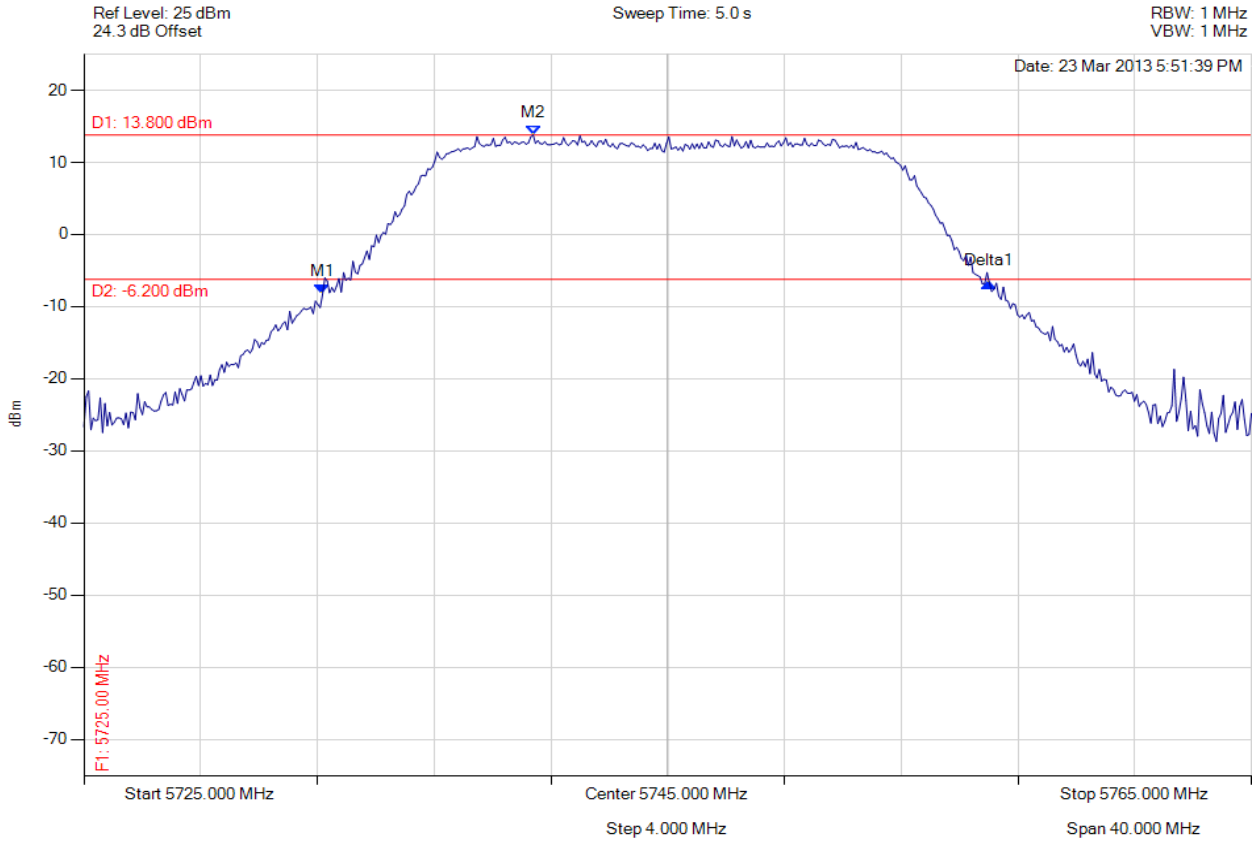
PEAK OUTPUT POWER

Variant: 802.11a, Channel: 5745.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5733.176 MHz : -8.278 dBm M2 : 5740.391 MHz : 13.800 dBm Delta1 : 22.846 MHz : 1.562 dB	Channel Power: 24.06 dBm Limit: 25.23 dBm Margin: -1.17 dB

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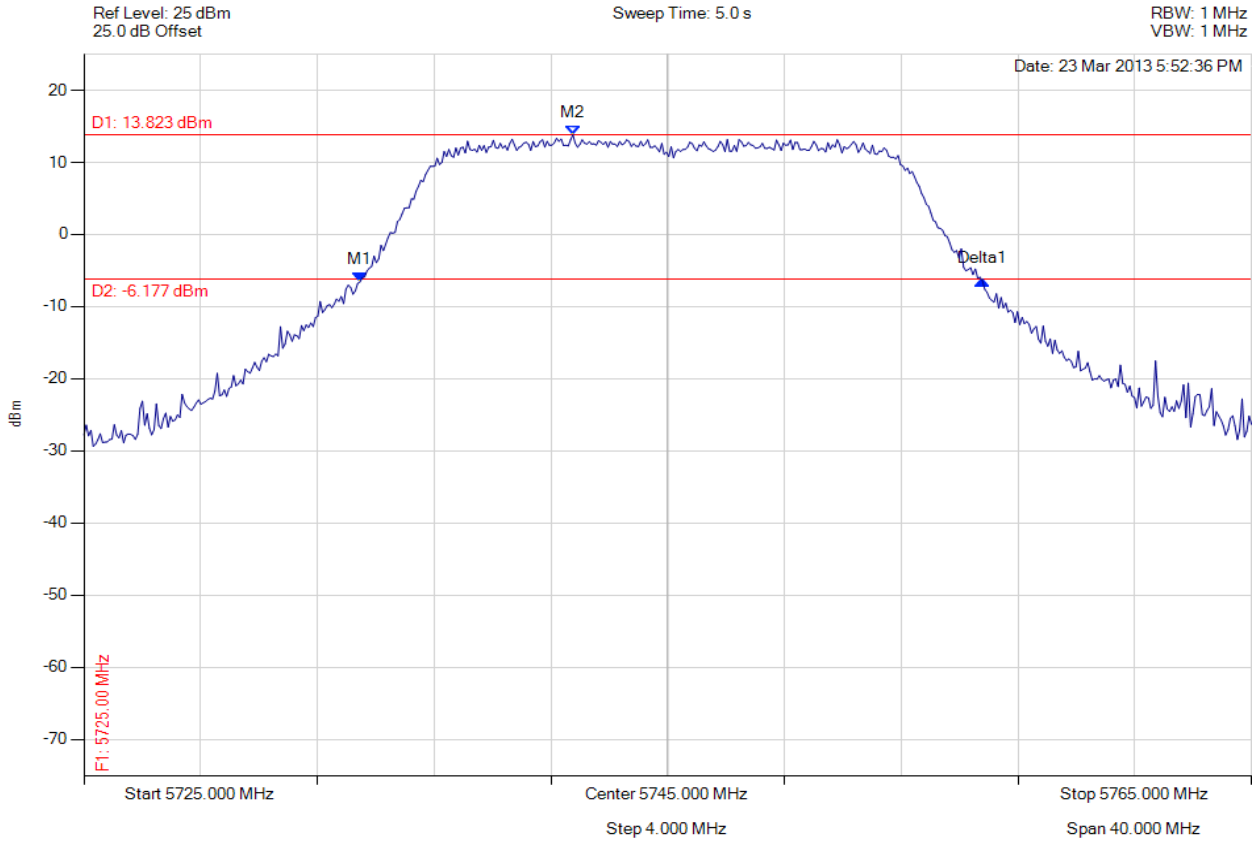
PEAK OUTPUT POWER

Variant: 802.11a, Channel: 5745.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5734.459 MHz : -6.580 dBm M2 : 5741.754 MHz : 13.823 dBm Delta1 : 21.323 MHz : 0.191 dB	Channel Power: 23.89 dBm Limit: 25.23 dBm Margin: -1.34 dB

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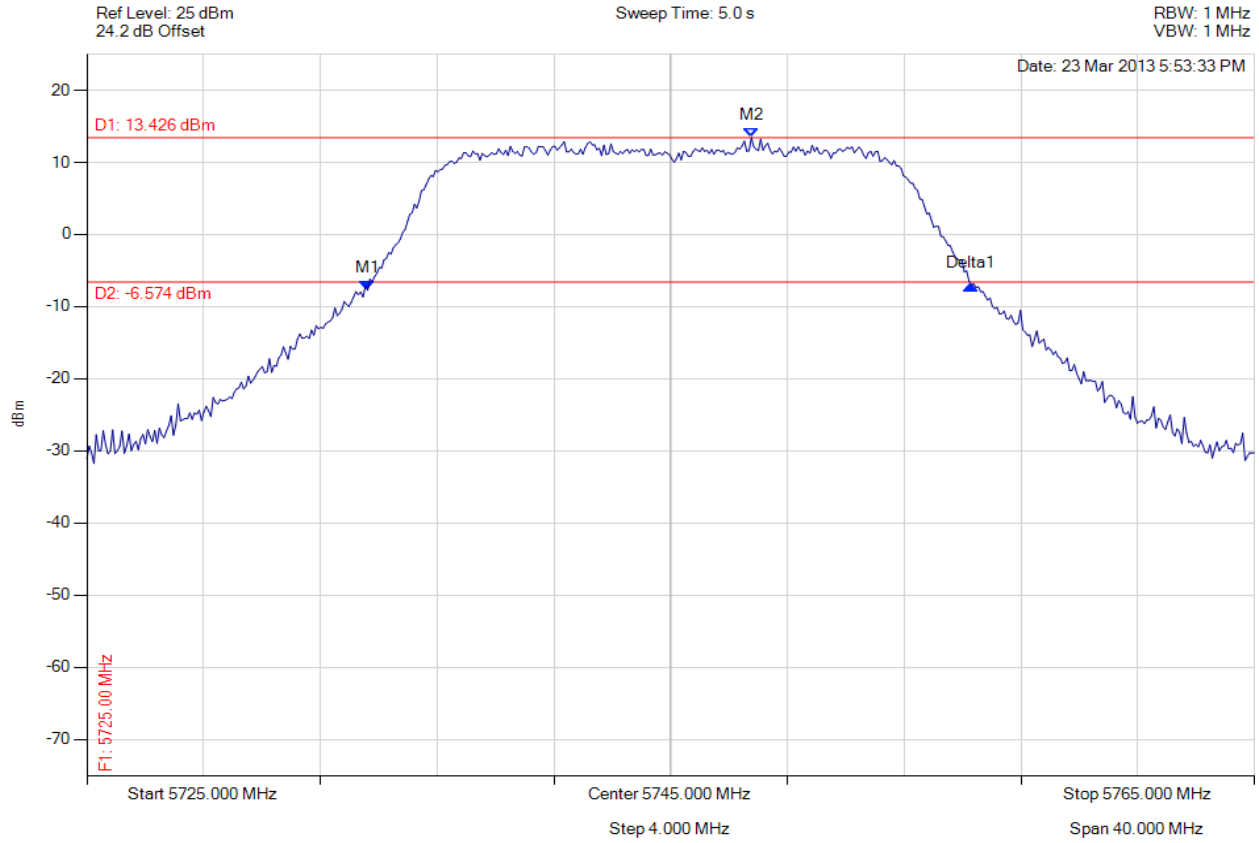
PEAK OUTPUT POWER

Variant: 802.11a, Channel: 5745.00 MHz, Chain c, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5734.619 MHz : -7.737 dBm M2 : 5747.766 MHz : 13.426 dBm Delta1 : 20.681 MHz : 0.710 dB	Channel Power: 23.11 dBm Limit: 25.23 dBm Margin: -2.12 dB

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