Test of Fluke Networks BCM43460 Enterprise Radio module

To: FCC 47 CFR Part 15.407 & IC RSS-210

Test Report Serial No.: FLUK14-U6 Rev B

MiCOM Labs

opening wireless markets

TEST REPORT

FROM

Test of Fluke Networks BCM43460 Enterprise Radio module

to

To FCC 47 CFR Part 15.407 & IC RSS-210

Test Report Serial No.: FLUK14-U6 Rev B

Note: this report contains data with regard to the 5,150 – 5,350 MHz; 5,250 - 5,350 MHz and 5,470 – 5,725 MHz (DFS) bands. 2.4 GHz and 5.8 GHz test data are reported in MiCOM Labs test report FLUK14-U3

This report supersedes FLUK14-U6 Rev A

Applicant: Fluke Networks
6920 Seaway Blvd
Everett
WA 98203, USA

Product Function: 802.11 a/b/g/n/ac wireless module

Copy No: pdf Issue Date: 6th August 2014

This Test Report is Issued Under the Authority of;

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

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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

American Association for Laboratory Accreditation

Accredited Laboratory

A2LA has accredited

MICOM LABS

Pleasanton, CA

for technical competence in the field of

Electrical Testing

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

Presented this 28th day of February 2014.

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

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

RECOGNITION

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

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

**APEC MRA – Asia Pacific Economic Community Mutual Recognition Agreement.
Is a recognition agreement under which test lab is accredited to regulatory standards of the APEC member countries.
Phase I - recognition for product testing
Phase II – recognition for both product testing and certification
N/A – Not Applicable

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

**NB – Notified Body

PRODUCT CERTIFICATION

MiCOM Labs, Inc. is an accredited Product Certification Body per the international standard EN ISO/IEC 17065. 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

American Association for Laboratory Accreditation

Accredited Product Certification Body

A2LA has accredited

MICOM LABS

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for technical competence as a

Product Certification Body

This product certification body is accredited in accordance with the recognized International Standard ISO/IEC 17065:2012 - *Requirements for bodies certifying products, processes and services*. This accreditation demonstrates technical competence for a defined scope and the operation of a quality management system.

Presented this 28th day of February 2014.

President & CEO
For the Accreditation Council
Certificate Number 2381.02
Valid to November 30, 2015

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

USA Telecommunication Certification Body (TCB) - TCB Identifier – US0159

Industry Canada Certification Body - CAB Identifier – US0159

European Notified Body - Notified Body Identifier - 2280

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

DOCUMENT HISTORY

Document History		
Revision	**Date**	**Comments**
Draft		
Rev A	14th July 2014	Initial release
Rev B	6th August 2014	EUT model number corrected.

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1. TEST RESULT CERTIFICATE

Applicant:	Fluke Networks 6920 Seaway Blvd Everett WA 98203, USA	Tested By:	MiCOM Labs, Inc. 575 Boulder Court Pleasanton California, 94566, USA
EUT:	802.11 a/b/g/n/ac wireless module	Tel:	+1 925 462 0304
Model:	BCM43460	Fax:	+1 925 462 0306
S/N:	000E8E38271E		
Test Date(s):	29th April - 8th July 2014	Website:	www.micomlabs.com

STANDARD(S)	TEST RESULTS
FCC 47 CFR Part 15.407 & 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.

Approved & Released for MiCOM Labs, Inc. by:

ACCREDITED
TESTING CERT #2381.01

Graeme Grieve
Quality Manager MiCOM Labs,

Gordon Hurst
President & CEO MiCOM Labs, Inc.

2. REFERENCES AND MEASUREMENT UNCERTAINTY

2.1. Normative References

Ref.	Publication	Year	Title
(i)	FCC 47 CFR Part 15.407	2014	Code of Federal Regulations
(ii)	FCC 06-96	June 2006	Memorandum Opinion and Order
(iii)	FCC OET KDB 662911	4th April 2011	Emissions Testing of Transmitters with Multiple Outputs in the Same Band
(iv)	Industry Canada RSS-210	2010	Low Power License-Exempt Radiocommunication Devices (All Frequency Bands): Category 1 Equipment
(v)	Industry Canada RSS-Gen	2010	General Requirements and Information for the Certification of Radiocommunication Equipment
(vi)	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
(vii)	CISPR 22/ EN 55022	2008 2006+A1:2007	Limits and Methods of Measurements of Radio Disturbance Characteristics of Information Technology Equipment
(viii)	M 3003	Edition 1 Dec. 1997	Expression of Uncertainty and Confidence in Measurements
(ix)	LAB34	Edition 1 Aug 2002	The expression of uncertainty in EMC Testing
(x)	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
(xi)	A2LA	April 2014	Reference to A2LA Accreditation Status – A2LA Advertising Policy
(xii)	FCC Public Notice – DA 02-2138	2002	Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices

2.2. 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.

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3. PRODUCT DETAILS AND TEST CONFIGURATIONS

3.1. Technical Details

Details	Description
Purpose:	Test of the Fluke Networks BCM43460 Enterprise Radio module in the frequency ranges 5150 – 5250 MHz; 5,250 - 5,350 MHz and 5,470 – 5,725 MHz to FCC Part 15.407 and Industry Canada RSS-210 regulations.
Applicant:	Fluke Networks 6920 Seaway Blvd Everett,WA 98203, USA
Manufacturer:	USI Universal Scientific Industry Ltd, Taiwan.
Laboratory performing the tests:	MiCOM Labs, Inc. 575 Boulder Court, Pleasanton, California 94566 USA
Test report reference number:	FLUK14-U6 Rev B
Date EUT received:	20th April 2014
Standard(s) applied:	FCC 47 CFR Part 15.407 & IC RSS-210
Dates of test (from - to):	29th April - 8th July 2014
No of Units Tested:	One
Type of Equipment:	802.11a/b/g/n/ac Wireless module 3x3 MIMO
Applicants Trade Name:	Fluke Networks
Model(s):	BCM43460
Location for use:	Indoor only
Declared Frequency Range(s):	5150 - 5250 MHz; 5,250 - 5,350 MHz & 5470 – 5725 MHz
Hardware Rev	303
Software Rev	mtool 1.0
Type of Modulation:	Per 802.11 – OFDM
EUT Modes of Operation:	802.11a/n/ac
Declared Nominal Output Power: (Average Power)	5150 – 5250 MHz 802.11a/n/ac: +17 dBm 5250 – 5350 MHz 802.11a/n/ac: +23 dBm 5250 – 5350 MHz 802.11a/n/ac: +23 dBm
Transmit/Receive Operation:	Time Division Duplex
System Beam Forming:	BCM43460 has no capability for antenna beam forming
Rated Input Voltage and Current:	3.3Vdc 1.5 A
Operating Temperature Range:	Declared range 0° to +40ºC
ITU Emission Designator:	802.11a 17M1D1D 802.11n HT-20 18M0D1D 802.11n HT-40 36M3D1D 802.11ac-40 36M4D1D 802.11ac-80 75M8D1D
Equipment Dimensions:	29.9mm x 50.8mm x 3.3mm
Weight:	Less than 12 grams
Primary function of equipment:	Wireless network test

3.2. Scope of Test Program

Fluke Networks BCM43460 RF Testing
The scope of the test program was to test the Fluke Networks BCM43460 Enterprise Radio module, 3x3 Spatial Multiplexing MIMO configurations in the frequency range 5150 – 5250 MHz; 5,250 - 5,350 MHz and 5,470 – 5,725 MHz for compliance against FCC 47 CFR Part 15.407 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.

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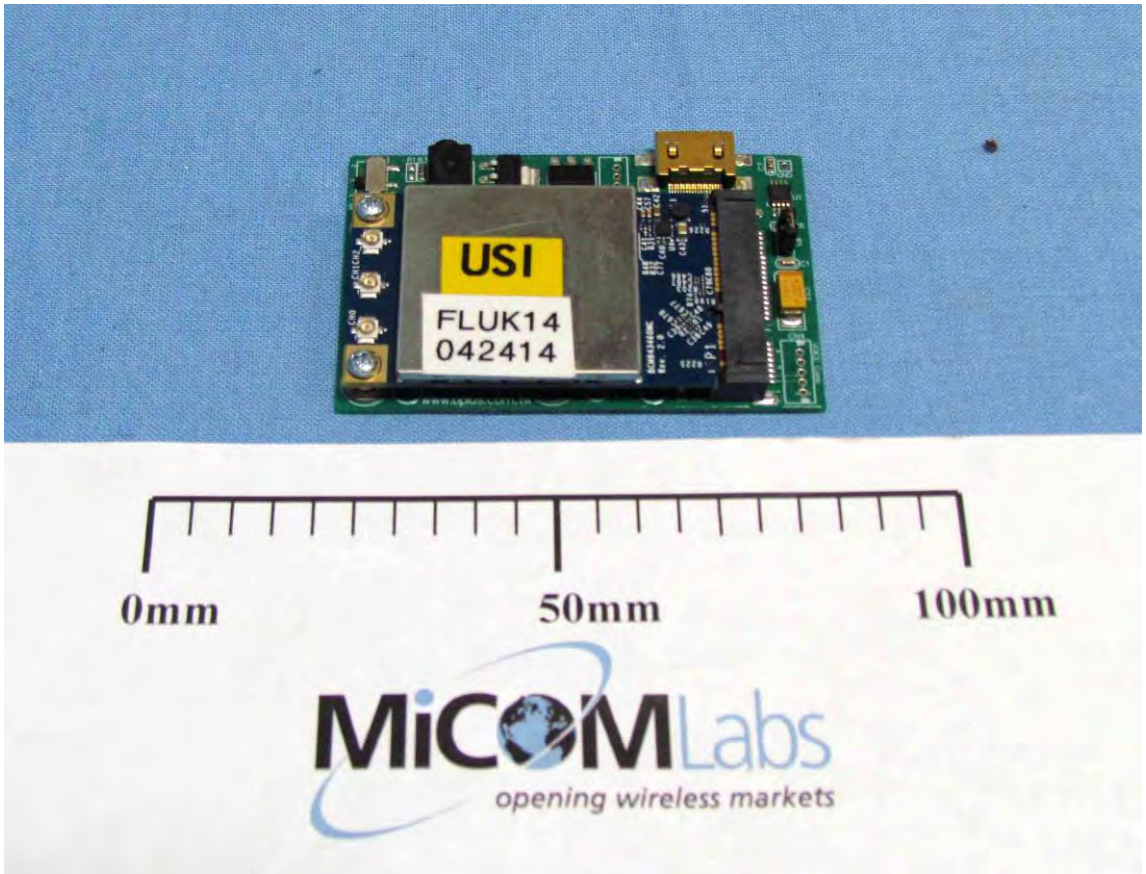
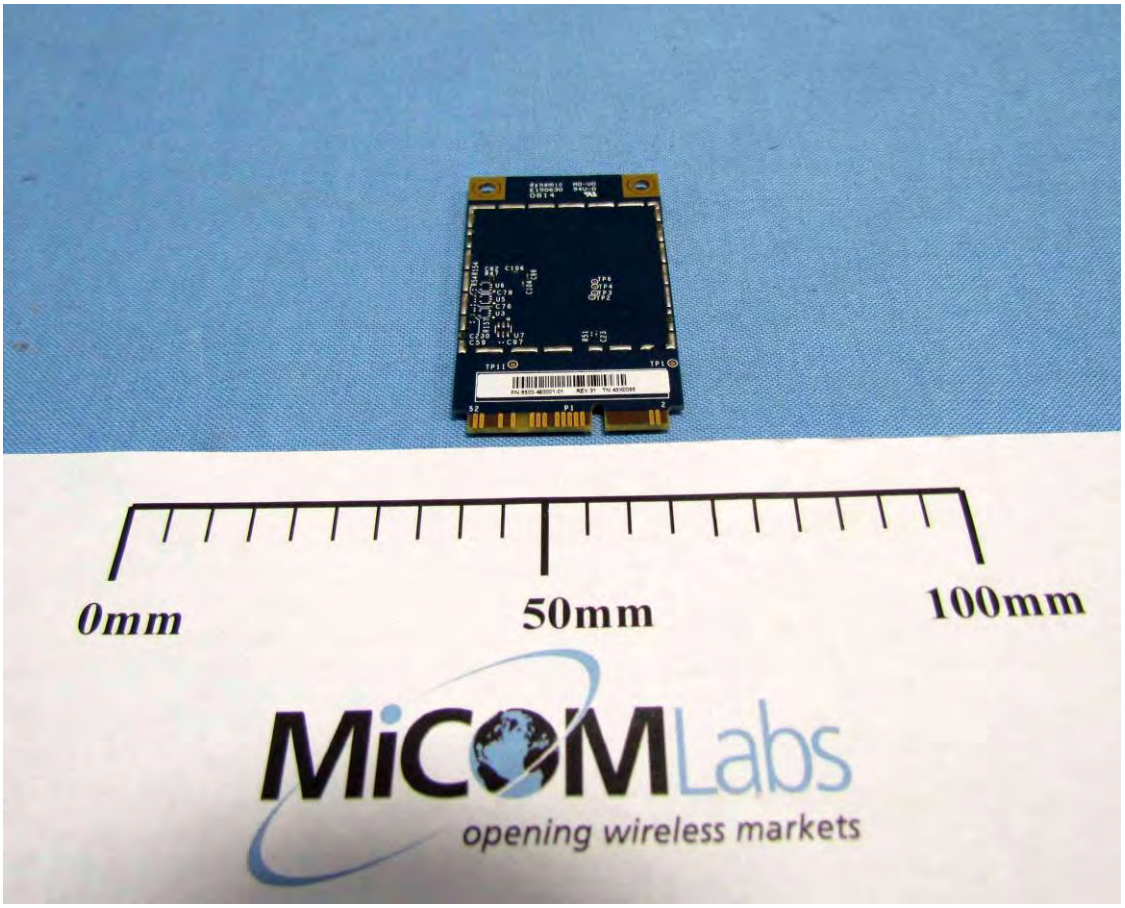
Fluke Networks BCM43460 Enterprise Radio module



Fluke Networks BCM43460 Enterprise Radio module



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

Type (EUT/ Support)	Equipment Description (Including Brand Name)	Mfr	Model No.	Serial No.
EUT	802.11 a/b/g/n/ac wireless module	Fluke Networks	BCM43460	000E8E38271E
Support	Laptop PC	IBM	Thinkpad	None

3.4. Antenna Details

Manufacturer	Model	Type	Gain	Freq. Band
			dBi	MHz
Ethertronics	M830510	Chip – Omni (Internal)	1.1	2400 - 2500
			3.2	4900 - 5875
Centurion	WTS2450RPSMA	Dipole – Omni (External)	2.1	2400 - 2500
			2.6	5150 - 5350
			2.5	5470 - 5875
NanoGreen	IP04	PCB – Omni (Internal)	0.9	2400 - 2500
			3.1	5150 - 5350
			4.8	5470 - 5875
Wanshih Electric Co	WSS013 Dual Band Antenna	Dipole – Omni (External)	2.0	2400 - 2500
			2.0	4900 - 5875

3.5. Cabling and I/O Ports

Number and type of I/O ports

1. Mini PCIe connector
2. RF Antenna Connectors (x3) – UFL

3.6. 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.

Matrix of test configurations

Bands (MHz)	Operational Mode(s) (802.11)	Data Rates with Highest Power	Frequencies (MHz)
5150 - 5250 5250 - 5350 5470 - 5725	Legacy	6 MBit/s	5180, 5200, 5240 5260, 5300, 5320 5500, 5580, 5700
	HT-20, ac-20	6.5 MBit/s	
	HT-40, ac-40	13.5 MBit/s	5190, 5230 5270, 5310 5510, 5550, 5670
	ac-80	29.3 MBit/s	5210, 5290, 5530, 5690

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Test Configurations (continued)

Spurious Emission and Band-Edge Test Strategy,
Bands 5,150 – 5250

11a	11n HT-20	11n HT-40	11n ac-40	11n ac-80
SE 5180	SE 5180	SE 5190	SE 5190	SE 5210
SE 5200	SE 5200			
SE 5240	SE 5240	SE 5230	SE 5230	
BE 5150	BE 5150	BE 5150	BE 5150	BE 5150

Spurious Emission and Band-Edge Test Strategy,
Bands 5,250 – 5250

11a	11n HT-20	11n HT-40	11n ac-40	11n ac-80
SE 5260	SE 5260	SE 5270	SE 5270	SE 5290
SE 5300	SE 5300			
SE 5320	SE 5320	SE 5310	SE 5310	
BE 5350	BE 5350	BE 5350	BE 5350	BE 5350

Spurious Emission and Band-Edge Test Strategy,
Bands 5,470 – 5725

11a	11n HT-20	11n HT-40	11n ac-40	11n ac-80
SE 5500	SE 5500	SE 5510	SE 5510	SE 5530
SE 5580	SE 5580	SE 5550	SE 5550	
SE 5700	SE 5700	SE 5670	SE 5670	SE 5690
BE 5470	BE 5470	BE 5470	BE 5470	BE 5470

KEY:-

SE – Spurious Emissions

BE – Band-Edge

3.7. Equipment Modifications

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

1. NONE

3.8. Deviations from the Test Standard

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

1. NONE

3.9. Subcontracted Testing or Third Party Data

1. NONE

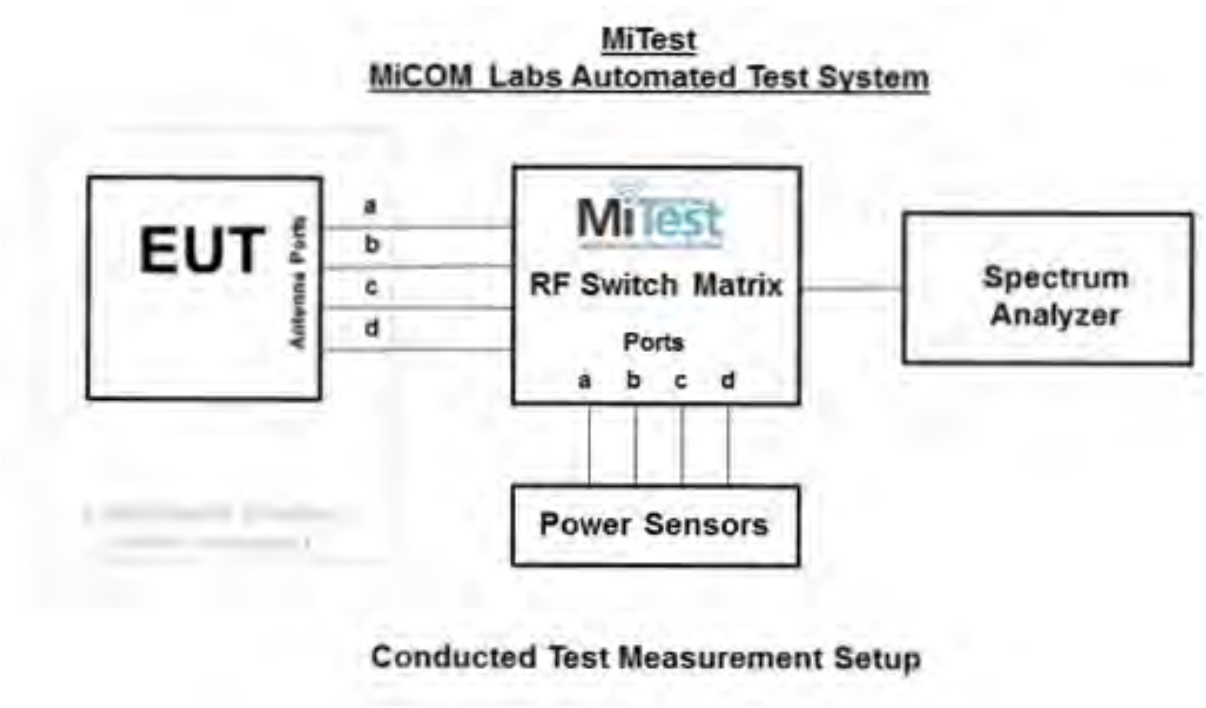
4. TESTING EQUIPMENT CONFIGURATION(S)

4.1. 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. 26 dB and 99% Bandwidth
2. Section 6.1.1.2. Maximum Conducted Output Power
3. Section 6.1.1.3. Peak Power Spectral Density
4. Section 6.1.1.4. Peak Excursion Ratio

Conducted Test Set-Up Pictorial Representation

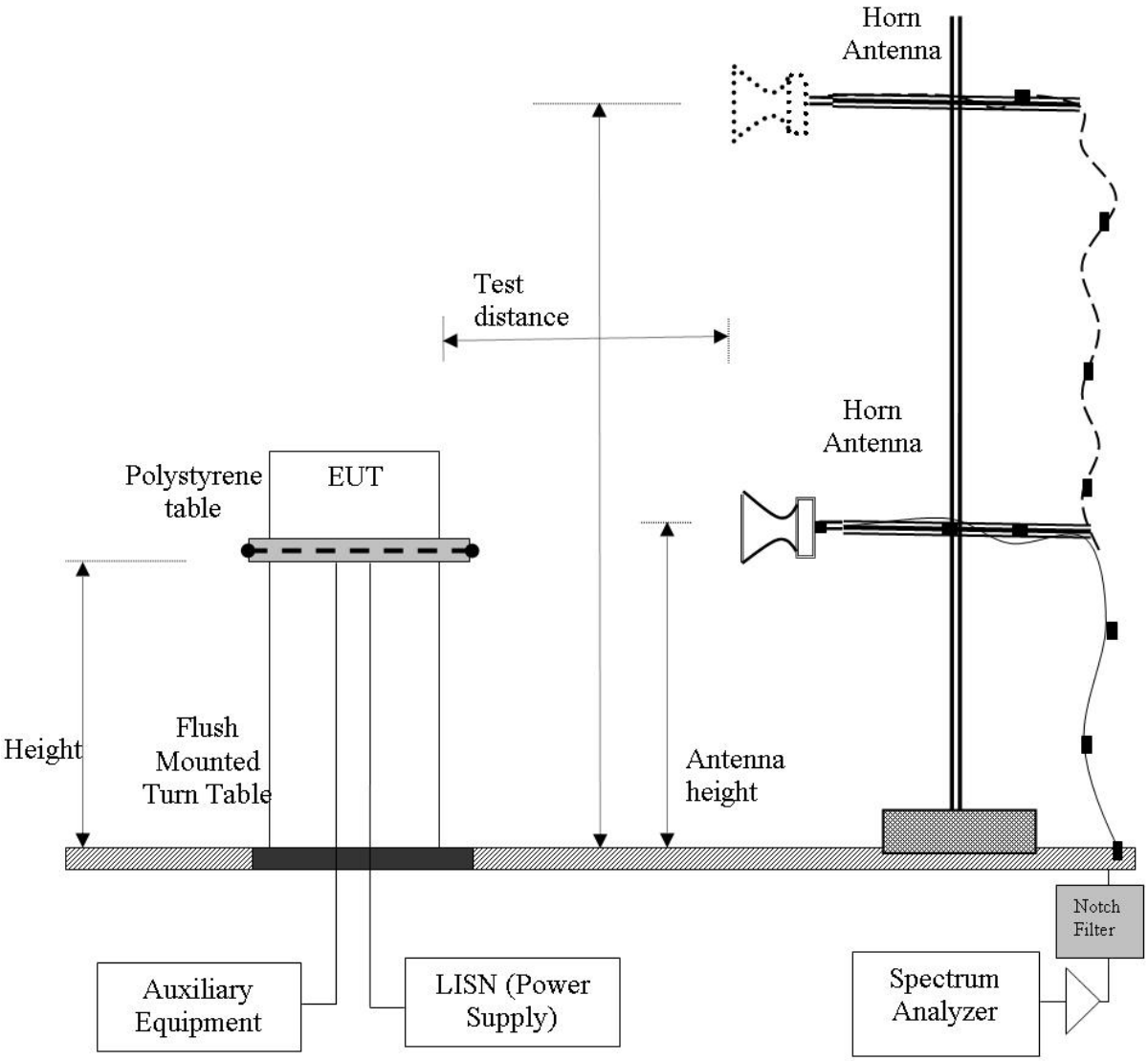


4.2. Radiated Spurious Emission Test Set-up > 1 GHz

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

1. Section 6.1.2.1 through 12

Radiated Emission Measurement Setup – Above 1 GHz

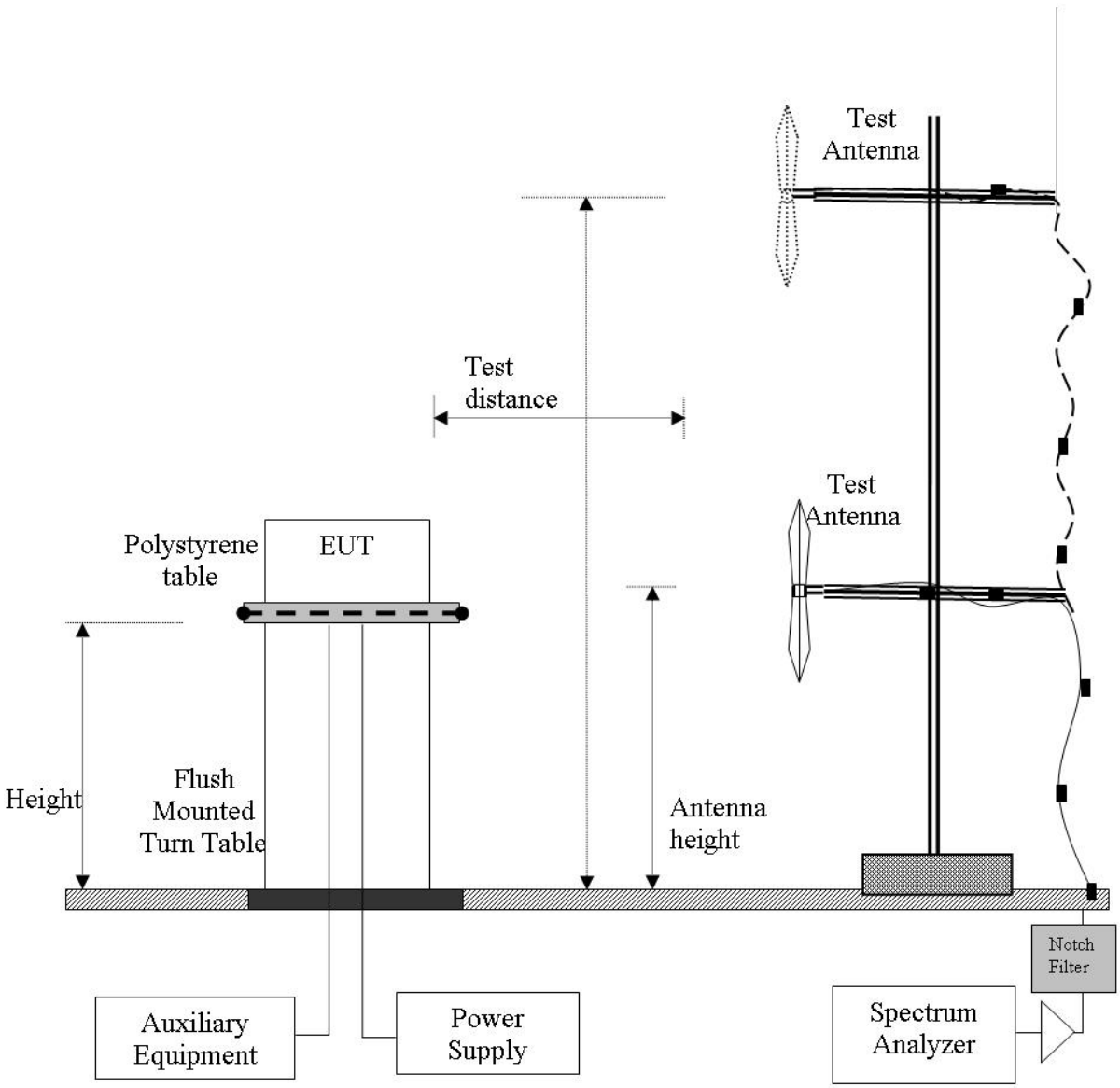


4.3. Digital Emissions Test Set-up (0.03 – 1 GHz)

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

2. Section 6.1.2.13

Digital Emission Measurement Setup – Below 1 GHz

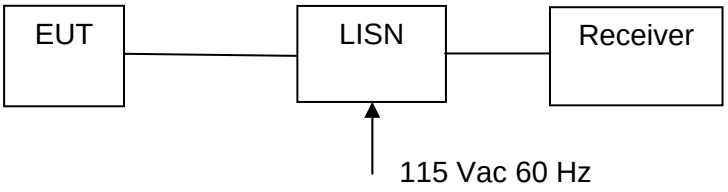


4.4. ac Wireline Emission Test Set-up

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

1. Section 6.1.3 ac Wireline Conducted Emissions

Conducted Test Set-Up Pictorial Representation



Measurement set up for ac Wireline Conducted Emissions Test

5. TEST SUMMARY

List of Measurements

The following table represents the list of measurements required under the **FCC CFR47 Part 15.407** and **Industry Canada RSS-210**.and **Industry Canada RSS-Gen**.

Section(s)	Test Items	Description	Condition	Result	Test Report Section
15.407(a) **A9.2(2)** **4.6**	Maximum Conducted Output Power	Power Measurement	Conducted	Complies	6.1.1.2
15.407(a) **A9.2(2)** **4.4**	26dB and 99% Emission BW	Emission bandwidth measurement	Conducted	Complies	6.1.1.1 A.1.1
15.407(a) **A9.2(2)**	Peak Power Spectral Density	PPSD	Conducted	Complies	6.1.1.3 A.1.2
15.407(a)(6)	Peak Excursion Ratio	<13dB in any 1MHz bandwidth	Conducted	Complies	6.1.1.4 A.1.3
15.407(g) **15.31** **2.1** **4.5**	Frequency Stability	Limits: contained within band of operation at all times.	Applicant declaration	Complies	6.1.1.5

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List of Measurements (continued)

The following table represents the list of measurements required under the **FCC CFR47 Part 15.407** and **Industry Canada RSS-210** and **Industry Canada RSS-Gen**.

Section(s)	Test Items	Description	Condition	Result	Test Report Section
15.407(b)(2) **15.205(a)** **15.209(a)** **2.2** **2.6** **A9.3(2)** **4.7**	Radiated Emissions		Radiated		6.1.2
	Transmitter Radiated Spurious Emissions	Emissions above 1 GHz		Complies	
	Radiated Band Edge	Band edge results		Complies	
15.407(b)(6) **15.205(a)** **15.209(a)** **2.2**	Radiated Emissions	Emissions <1 GHz (30M-1 GHz)		Complies	*6.1.2.4*
15.407(b)(6) **15.207** **7.2.2**	AC Wireline Conducted Emissions 150 kHz–30 MHz	Conducted Emissions	Conducted	Complies	6.1.3

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

List of Measurements (cont'd)

Dynamic Frequency Selection (DFS)
The following table represents the list of measurements required under the **FCC CFR47 Part 15.407(h)(2)** and **FCC Memorandum Opinion and Order FCC 06-96 (Compliance Measurement procedures for Unlicensed National Information Infrastructure devices operating in the 5250-5350 MHz and 5470-5725 MHz bands incorporating dynamic frequency selection).**

Tests performed on Client Device with no radar detection

Section	Test Items	Description	Condition	Result	Test Report Section
	DFS	Dynamic Frequency Selection	Conducted	Complies	6.1.4
7.8.1	Detection Bandwidth	UNII Detection Bandwidth	Conducted	Not Applicable	
7.8.2.1	Performance Requirements Check	Initial Channel Availability Check Time	Conducted	Not Applicable	
7.8.2.2		Radar Burst at the Beginning of the Channel Availability Check Time	Conducted	Not Applicable	
7.8.2.3		Radar Burst at the End of the Channel Availability Check Time	Conducted	Not Applicable	
7.8.3	In-Service Monitoring	In-Service Monitoring for Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period	Conducted	Complies	
7.8.4	Radar Detection	Statistical Performance Check	Conducted	Not Applicable	

6. TEST RESULTS

6.1. Device Characteristics

6.1.1. Conducted Testing

6.1.1.1. Maximum Conducted Output Power

Conducted Test Conditions for Maximum Conducted Output Power			
Standard:	FCC CFR 47:15.407	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Maximum Conducted Output Power	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.407 (a)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	KDB 789033 - D01 DTS General UNII Test Procedures v01		

Test Procedure for Maximum Conducted Output Power Measurement

Method PM (Measurement using an RF average power meter). Section C) 4) of KDB 789033 defines a methodology using an average wideband power meter. Measurements were made while the EUT was operating in a continuous transmission mode (100% duty cycle) at the appropriate center frequency. All cable losses and offsets were taken into consideration in the measured result. All operational modes and frequency bands were measured independently and the resultant calculated. For multiple outputs, the measurements were made simultaneously on each output port and summed in a linear fashion. This technique was used in order to prove compliance.

Antenna Beam and Non-Beam Forming Power Levels

15. 407 (a)(1), (a) (2) 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. Further FCC KDB 662911 D01 Multiple Transmitter Output v01 requires that the gain of antennas transmitting the same data (legacy 802.11a mode) must be increased by 10 * Log (N) when N is the number of antenna elements.

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Equipment Configuration for Peak Transmit Power			
Variant:	802.11a	**Duty Cycle (%):**	94
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	N/A
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm) Port(s)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5180.0	10.62	11.26	10.43		15.56	20.441	17.00	-1.44	46.00
5200.0	10.20	10.98	10.25		15.26	20.441	17.00	-1.74	46.00
5240.0	10.24	10.96	10.10		15.22	20.441	17.00	-1.78	46.00

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

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Equipment Configuration for Peak Transmit Power			
Variant:	802.11ac-40	**Duty Cycle (%):**	94
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	N/A
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm) Port(s)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5190.0	11.32	12.34	11.43		16.49	39.279	17.00	-0.51	50.00
5230.0	11.29	11.29	11.46		16.12	39.479	17.00	-0.88	50.00

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

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Variant:	802.11ac-80	**Duty Cycle (%):**	84
Data Rate:	29.3 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	N/A
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm) Port(s)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5210.0	11.69	12.38	11.45		16.63	80.561	17.00	-0.37	50.00

Traceability to Industry Recognized Test Methodologies

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

Equipment Configuration for Peak Transmit Power			
Variant:	802.11n HT-20	**Duty Cycle (%):**	95
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	N/A
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm) Port(s)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5180.0	10.56	11.35	10.56		15.61	20.441	17.00	-1.39	48.00
5200.0	10.62	11.41	10.37		15.59	20.541	17.00	-1.41	48.00
5240.0	10.36	11.36	10.61		15.56	20.441	17.00	-1.44	48.00

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

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Equipment Configuration for Peak Transmit Power			
Variant:	802.11n HT-40	**Duty Cycle (%):**	87
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	N/A
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm) Port(s)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5190.0	11.30	12.23	11.34		16.42	39.279	17.00	-0.58	50.00
5230.0	11.37	12.02	11.35		16.37	39.279	17.00	-0.63	50.00

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

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Equipment Configuration for Peak Transmit Power			
Variant:	802.11a	**Duty Cycle (%):**	94
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	N/A
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm) Port(s)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5260.0	17.83	17.89	16.96		22.35	41.884	24.00	-1.65	80.00
5300.0	17.96	17.87	17.08		22.43	41.583	24.00	-1.57	80.00
5320.0	18.02	17.76	17.14		22.43	40.982	24.00	-1.57	80.00

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

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Equipment Configuration for Peak Transmit Power			
Variant:	802.11ac-40	**Duty Cycle (%):**	94
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	N/A
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm) Port(s)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5270.0	18.03	18.34	17.82		22.84	90.581	24.00	-1.16	82.00
5310.0	18.28	18.36	17.84		22.94	91.383	24.00	-1.06	82.00

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

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Equipment Configuration for Peak Transmit Power			
Variant:	802.11ac-80	**Duty Cycle (%):**	84
Data Rate:	29.3 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	N/A
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm) Port(s)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5290.0	18.63	18.63	17.14		22.96	195.992	24.00	-1.04	82.00

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

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Equipment Configuration for Peak Transmit Power			
Variant:	802.11n HT-20	**Duty Cycle (%):**	95
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	N/A
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm) Port(s)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5260.0	19.15	17.58	17.95		23.05	42.385	24.00	-0.95	82.00
5300.0	19.59	17.51	17.01		22.95	44.389	24.00	-1.05	80.00
5320.0	19.75	17.58	16.99		23.04	19.940	24.00	-0.96	80.00

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

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Equipment Configuration for Peak Transmit Power			
Variant:	802.11n HT-40	**Duty Cycle (%):**	87
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	N/A
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm) Port(s)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5270.0	19.15	18.35	18.21		23.36	45.691	24.00	-0.64	84.00
5310.0	19.23	18.41	18.12		23.39	45.691	24.00	-0.61	84.00

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

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Equipment Configuration for Peak Transmit Power			
Variant:	802.11a	**Duty Cycle (%):**	94
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	N/A
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm) Port(s)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5500.0	17.82	17.58	18.85		22.89	34.369	24.00	-1.11	80.00
5580.0	17.24	17.49	18.09		22.39	35.972	24.00	-1.61	80.00
5720.0	16.87	16.85	17.52		21.86	36.072	24.00	-2.14	80.00

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

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Equipment Configuration for Peak Transmit Power			
Variant:	802.11ac-40	**Duty Cycle (%):**	94
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	N/A
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm) Port(s)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5510.0	18.20	18.44	17.62		22.87	82.565	24.00	-1.13	82.00
5550.0	17.81	18.41	17.46		22.68	84.970	24.00	-1.32	82.00
5710.0	17.24	18.03	16.78		22.15	82.966	24.00	-1.85	82.00

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

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Equipment Configuration for Peak Transmit Power			
Variant:	802.11ac-80	**Duty Cycle (%):**	84
Data Rate:	29.3 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	N/A
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm) Port(s)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5530.0	17.67	18.28	17.04		22.46	177.154	24.00	-1.54	82.00
5690.0	16.73	17.52	16.30		21.65	187.174	24.00	-2.35	82.00

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

Equipment Configuration for Peak Transmit Power			
Variant:	802.11n HT-20	**Duty Cycle (%):**	95
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	N/A
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm) Port(s)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5500.0	19.29	17.22	18.75		23.27	38.277	24.00	-0.73	80.00
5580.0	18.68	17.11	18.07		22.77	38.377	24.00	-1.23	80.00
5720.0	18.22	16.50	17.79		22.33	37.876	24.00	-1.67	80.00

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

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Equipment Configuration for Peak Transmit Power			
Variant:	802.11n HT-40	**Duty Cycle (%):**	87
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	N/A
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm) Port(s)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5510.0	18.68	18.40	18.05		23.16	89.379	24.00	-0.84	84.00
5550.0	18.43	18.49	18.03		23.10	88.778	24.00	-0.90	84.00
5710.0	17.83	18.15	17.32		22.55	87.375	24.00	-1.45	84.00

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

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Antenna Type V's Power Setting

The following **Antenna Types V's Power Setting** tables consolidate the results of all tests performed on the Fluke Networks BCM43460 module to finalize the power setting for each antenna tested;

M830510 Chip Antenna

Channel	5150 – 5250 MHz					5250 – 5350 MHz				
	a	HT-20	HT-40	ac-40	ac-80	a	HT-20	HT-40	ac-40	ac-80
Low	46	48	50	50		80	82	84	82	
Mid	46	48			50	80	80			60
High	46	48	50	50		80	75	63	63	

Channel	5470 – 5725 MHz				
	a	HT-20	HT-40	ac-40	ac-80
Low	80	80	75	75	60
Mid	80	80	84	82	
High	80	80	84	82	82

NANO PCB Antenna

Channel	5150 – 5250 MHz					5250 – 5350 MHz				
	a	HT-20	HT-40	ac-40	ac-80	a	HT-20	HT-40	ac-40	ac-80
Low	46	48	48	50		80	82	84	82	
Mid	46	48			50	80	80			57
High	46	48	50	50		74	57	54	70	

Channel	5470 – 5725 MHz				
	a	HT-20	HT-40	ac-40	ac-80
Low	66	66	57	62	50
Mid	80	80	84	82	
High	80	80	84	82	82

WSS013 Antenna

Channel	5150 – 5250 MHz					5250 – 5350 MHz				
	a	HT-20	HT-40	ac-40	ac-80	a	HT-20	HT-40	ac-40	ac-80
Low	46	48	50	50		80	82	84	82	
Mid	46	48			50	80	80			50
High	46	48	50	50		74	78	60	60	

Channel	5470 – 5725 MHz				
	a	HT-20	HT-40	ac-40	ac-80
Low	80	80	68	68	57
Mid	80	80	84	82	
High	80	80	84	82	82

WTS2450RPSMA Antenna

Channel	5150 – 5250 MHz					5250 – 5350 MHz				
	a	HT-20	HT-40	ac-40	ac-80	a	HT-20	HT-40	ac-40	ac-80
Low	46	48	50	50		80	82	84	82	
Mid	46	48			50	80	80			60
High	46	48	50	50		78	78	60	78	

Channel	5470 – 5725 MHz				
	a	HT-20	HT-40	ac-40	ac-80
Low	80	80	68	68	56
Mid	80	80	84	82	
High	80	80	84	82	82

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Specification Limits

FCC, Part 15 §15.407 (a)(1), (a)(2) and Industry Canada RSS-210 § A9.2(2)

(a)(1) For the band 5.15-5.25 GHz the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or +4 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed +4 dBm in any 1 megahertz band.

(a)(2) For the 5.25-5.35 and 5470-5725 MHz GHz band the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or +11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed +11 dBm in any 1 megahertz band.

Industry Canada RSS-210 §A9.2(2)
For the band 5150-5250 MHz, the maximum equivalent isotropically radiated power (e.i.r.p.) shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

For the band 5250-5350 MHz and 5470-5725 MHz, the maximum conducted output power shall not exceed 250 mW or 11 + 10 log10 B, dBm, whichever power is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band. The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

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6.1.1.2. Peak Power Spectral Density

Conducted Test Conditions for Power Spectral Density			
Standard:	FCC CFR 47:15.407	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Power Spectral Density	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.247 (a)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	KDB 789033 - D01 DTS General UNII Test Procedures v01		

Test Procedure for Power Spectral Density

The In-Band power spectral density was measured using the measure and sum approach per FCC KDB 662911 (D01 Multiple Transmitter Output v01.)

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

NOTE:

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

Supporting Information

Calculated Power = A + 10 log (1/x) dBm

A = Total Power Spectral Density [10 Log10 (10a/10 + 10 b/10 + 10c/10 + 10d/10)]

x = Duty Cycle

Equipment Configuration for Peak Power Spectral Density			
Variant:	802.11a	**Duty Cycle (%):**	94.0
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Amplitude Summation	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5180.0	-0.923	-0.136	-0.668		3.200	4.0	-0.8
5200.0	-1.224	-0.081	-0.856		3.275	4.0	-0.7
5240.0	-0.415	-1.005	-1.517		3.139	4.0	-0.9

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

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

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Equipment Configuration for Peak Power Spectral Density			
Variant:	802.11ac-40	**Duty Cycle (%):**	93.9
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Amplitude Summation	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5190.0	-1.977	-1.060	-1.768		2.750	4.0	-1.3
5230.0	-2.558	-1.362	-2.383		2.032	4.0	-2.0

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

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

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Equipment Configuration for Peak Power Spectral Density			
Variant:	802.11ac-80	**Duty Cycle (%):**	83.8
Data Rate:	29.3 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Amplitude Summation	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5210.0	-5.378	-4.445	-5.431		-1.535	4.0	-5.5

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

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

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Equipment Configuration for Peak Power Spectral Density			
Variant:	802.11n HT-20	**Duty Cycle (%):**	94.5
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Amplitude Summation	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5180.0	-0.994	0.133	-0.745		3.362	4.0	-0.6
5200.0	-1.035	0.056	-0.780		3.073	4.0	-0.9
5240.0	-0.882	0.039	-1.171		3.247	4.0	-0.8

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

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

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Equipment Configuration for Peak Power Spectral Density			
Variant:	802.11n HT-40	**Duty Cycle (%):**	86.6
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Amplitude Summation	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5190.0	-2.881	-1.974	-3.338		1.227	4.0	-2.8
5230.0	-4.263	-3.219	-4.158		-0.553	4.0	-4.6

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

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Equipment Configuration for Peak Power Spectral Density			
Variant:	802.11a	**Duty Cycle (%):**	94.0
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Amplitude Summation	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5260.0	6.909	6.864	6.067		10.378	11.0	-0.6
5300.0	6.735	6.906	5.717		9.888	11.0	-1.1
5320.0	6.502	6.542	6.087		10.309	11.0	-0.7

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

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Equipment Configuration for Peak Power Spectral Density			
Variant:	802.11ac-40	**Duty Cycle (%):**	93.9
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Amplitude Summation	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5270.0	4.506	4.773	4.011		8.597	11.0	-2.4
5310.0	4.597	4.641	3.969		8.685	11.0	-2.3

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

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Equipment Configuration for Peak Power Spectral Density			
Variant:	802.11ac-80	**Duty Cycle (%):**	83.8
Data Rate:	29.3 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Amplitude Summation	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5290.0	1.250	1.168	-0.290		4.117	11.0	-6.9

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

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Equipment Configuration for Peak Power Spectral Density			
Variant:	802.11n HT-20	**Duty Cycle (%):**	94.5
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Amplitude Summation	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5260.0	7.458	6.058	6.436		10.175	11.0	-0.8
5300.0	8.559	6.326	6.267		10.813	11.0	-0.2
5320.0	7.847	6.708	5.126		10.730	11.0	-0.3

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

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Equipment Configuration for Peak Power Spectral Density			
Variant:	802.11n HT-40	**Duty Cycle (%):**	86.6
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Amplitude Summation	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5270.0	3.249	4.326	2.685		6.483	11.0	-4.5
5310.0	3.919	3.116	2.504		6.521	11.0	-4.5

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

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Equipment Configuration for Peak Power Spectral Density			
Variant:	802.11a	**Duty Cycle (%):**	94.0
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Amplitude Summation	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5500.0	6.664	6.183	7.629		10.455	11.0	-0.5
5580.0	6.293	7.016	6.746		10.607	11.0	-0.4
5720.0	6.046	6.150	6.669		9.557	11.0	-1.4

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

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Equipment Configuration for Peak Power Spectral Density			
Variant:	802.11ac-40	**Duty Cycle (%):**	93.9
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Amplitude Summation	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5510.0	4.421	4.937	4.084		8.619	11.0	-2.4
5550.0	3.914	4.436	3.745		8.366	11.0	-2.6
5710.0	3.103	4.109	3.277		7.615	11.0	-3.4

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

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Equipment Configuration for Peak Power Spectral Density			
Variant:	802.11ac-80	**Duty Cycle (%):**	83.8
Data Rate:	29.3 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Amplitude Summation	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5530.0	0.612	1.313	-0.005		4.150	11.0	-6.9
5690.0	-0.559	0.172	-0.927		2.986	11.0	-8.0

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

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

Equipment Configuration for Peak Power Spectral Density			
Variant:	802.11n HT-20	**Duty Cycle (%):**	94.5
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Amplitude Summation	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5500.0	7.697	6.229	8.138		10.843	11.0	-0.2
5580.0	7.509	6.036	6.506		10.853	11.0	-0.1
5720.0	7.128	5.059	6.228		10.055	11.0	-0.9

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

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Equipment Configuration for Peak Power Spectral Density			
Variant:	802.11n HT-40	**Duty Cycle (%):**	86.6
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	2.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Amplitude Summation	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5510.0	3.141	3.207	3.931		6.675	11.0	-4.3
5550.0	2.511	3.009	2.739		6.002	11.0	-5.0
5710.0	2.558	3.001	2.437		6.004	11.0	-5.0

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

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Specification

FCC, Part 15 §15.407 (a)(1), (a)(2)
5150 – 5250 MHz
(a)(1) The peak power spectral density shall not exceed +4 dBm in any 1 megahertz band.

5250 – 5350 MHz & 5470 – 5725 MHz
(a)(2) The peak power spectral density shall not exceed +11 dBm in any 1 megahertz band.

Industry Canada RSS-210 § **A9.2(1), A9.2(2)**
5150 – 5250 MHz
§ **A9.2(1)** The eirp spectral density shall not exceed +10 dBm in any 1 MHz band

5250 – 5350 MHz & 5470 – 5725 MHz
§ **A9.2(2)** The power spectral density shall not exceed +11 dBm in any 1 MHz band

Traceability

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

6.1.1.3. 26 dB and 99 % Bandwidth

Conducted Test Conditions for 26 dB and 99% Bandwidth			
Standard:	FCC CFR 47:15.407	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	26 dB and 99 % Bandwidth	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.407 (a)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	KDB 789033 - D01 DTS General UNII Test Procedures v01		

Test Procedure for 26 dB and 99% Bandwidth Measurement

The bandwidth at 26 dB and 99 % is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency. KDB 789033 Section 5.1 Emission Bandwidth was used in order to prove compliance. The Resolution Bandwidth was set to approximately 1% of the emission bandwidth.

Equipment Configuration for 26 dB & 99% Occupied Bandwidth			
Variant:	802.11a	**Duty Cycle (%):**	94
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5180.0	20.641	20.441	20.441		20.641	20.441		
5200.0	20.441	20.541	20.441		20.541	20.441		
5240.0	20.641	20.441	20.441		20.641	20.441		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5180.0	17.836	17.635	17.735		17.836	17.635		
5200.0	17.836	17.735	17.836		17.836	17.735		
5240.0	17.836	17.735	17.836		17.836	17.735		

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

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

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Equipment Configuration for 26 dB & 99% Occupied Bandwidth			
Variant:	802.11ac-40	**Duty Cycle (%):**	94
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5190.0	39.679	39.279	39.479		39.679	39.279		
5230.0	39.679	39.479	39.479		39.679	39.479		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5190.0	36.273	36.273	36.273		36.273	36.273		
5230.0	36.273	36.273	36.273		36.273	36.273		

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

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

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Equipment Configuration for 26 dB & 99% Occupied Bandwidth			
Variant:	802.11ac-80	**Duty Cycle (%):**	84
Data Rate:	29.3 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5210.0	80.962	80.561	80.561		80.962	80.561		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5210.0	75.752	75.752	75.752		75.752	75.752		

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

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Equipment Configuration for 26 dB & 99% Occupied Bandwidth			
Variant:	802.11n HT-20	**Duty Cycle (%):**	95
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5180.0	20.541	20.441	20.441		20.541	20.441		
5200.0	20.641	20.541	20.541		20.641	20.541		
5240.0	20.541	20.441	20.441		20.541	20.441		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5180.0	17.836	17.735	17.735		17.836	17.735		
5200.0	17.836	17.735	17.735		17.836	17.735		
5240.0	17.836	17.735	17.735		17.836	17.735		

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

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

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Equipment Configuration for 26 dB & 99% Occupied Bandwidth			
Variant:	802.11n HT-40	**Duty Cycle (%):**	87
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5190.0	39.479	39.279	39.479		39.479	39.279		
5230.0	39.679	39.279	39.279		39.679	39.279		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5190.0	36.273	36.273	36.273		36.273	36.273		
5230.0	36.273	36.273	36.273		36.273	36.273		

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

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Equipment Configuration for 26 dB & 99% Occupied Bandwidth			
Variant:	802.11a	**Duty Cycle (%):**	94
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5260.0	44.188	44.389	41.884		44.389	41.884		
5300.0	43.587	43.487	41.583		43.587	41.583		
5320.0	42.285	41.784	40.982		42.285	40.982		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5260.0	28.557	27.555	26.954		28.557	26.954		
5300.0	27.555	26.954	25.852		27.555	25.852		
5320.0	27.355	26.453	26.653		27.355	26.453		

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

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Equipment Configuration for 26 dB & 99% Occupied Bandwidth			
Variant:	802.11ac-40	**Duty Cycle (%):**	94
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5270.0	93.788	90.581	92.385		93.788	90.581		
5310.0	92.385	91.383	92.786		92.786	91.383		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5270.0	65.932	64.729	64.930		65.932	64.729		
5310.0	65.331	63.928	64.128		65.331	63.928		

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

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

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Equipment Configuration for 26 dB & 99% Occupied Bandwidth			
Variant:	802.11ac-80	**Duty Cycle (%):**	84
Data Rate:	29.3 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5290.0	195.992	195.992	195.992		195.992	195.992		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5290.0	127.455	121.042	107.014		127.455	107.014		

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

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

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Equipment Configuration for 26 dB & 99% Occupied Bandwidth			
Variant:	802.11n HT-20	**Duty Cycle (%):**	95
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5260.0	43.988	43.487	42.385		43.988	42.385		
5300.0	43.487	41.884	41.683		43.487	41.683		
5320.0	41.884	43.788	42.986		43.788	41.884		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5260.0	27.956	27.555	27.154		27.956	27.154		
5300.0	25.651	26.152	25.752		26.152	25.651		
5320.0	25.952	27.054	26.353		27.054	25.952		

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

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Equipment Configuration for 26 dB & 99% Occupied Bandwidth			
Variant:	802.11n HT-40	**Duty Cycle (%):**	87
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5270.0	91.383	92.585	89.178		92.585	89.178		
5310.0	89.178	90.581	87.976		90.581	87.976		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5270.0	63.327	63.727	63.727		63.727	63.327		
5310.0	62.725	62.525	62.124		62.725	62.124		

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

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

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Equipment Configuration for 26 dB & 99% Occupied Bandwidth			
Variant:	802.11a	**Duty Cycle (%):**	94
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5500.0	35.972	34.369	38.577		38.577	34.369		
5580.0	36.072	35.972	38.778		38.778	35.972		
5720.0	36.072	36.072	37.776		37.776	36.072		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5500.0	21.643	21.042	28.156		28.156	21.042		
5580.0	21.944	20.541	28.056		28.056	20.541		
5720.0	22.144	21.443	27.255		27.255	21.443		

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

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

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Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11ac-40	**Duty Cycle (%):**	94
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5510.0	86.774	88.176	82.565		88.176	82.565		
5550.0	86.573	90.982	84.970		90.982	84.970		
5710.0	84.569	84.970	82.966		84.970	82.966		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5510.0	61.924	64.329	58.517		64.329	58.517		
5550.0	61.723	64.329	58.918		64.329	58.918		
5710.0	58.717	62.325	57.515		62.325	57.515		

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

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Equipment Configuration for 26 dB & 99% Occupied Bandwidth			
Variant:	802.11ac-80	**Duty Cycle (%):**	84
Data Rate:	29.3 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5530.0	195.992	195.992	177.154		195.992	177.154		
5690.0	187.174	187.174	187.174		187.174	187.174		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5530.0	104.609	111.824	96.994		111.824	96.994		
5690.0	95.391	105.010	93.788		105.010	93.788		

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

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Equipment Configuration for 26 dB & 99% Occupied Bandwidth			
Variant:	802.11n HT-20	**Duty Cycle (%):**	95
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5500.0	46.593	38.277	43.687		46.593	38.277		
5580.0	45.992	38.377	44.790		45.992	38.377		
5720.0	45.291	37.876	44.489		45.291	37.876		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5500.0	31.663	24.048	30.661		31.663	24.048		
5580.0	30.962	23.347	30.862		30.962	23.347		
5720.0	30.661	23.246	30.261		30.661	23.246		

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

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Equipment Configuration for 26 dB & 99% Occupied Bandwidth			
Variant:	802.11n HT-40	**Duty Cycle (%):**	87
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5510.0	91.182	91.182	89.379		91.182	89.379		
5550.0	91.784	88.778	89.379		91.784	88.778		
5710.0	89.780	87.375	89.780		89.780	87.375		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5510.0	66.733	65.731	66.132		66.733	65.731		
5550.0	65.731	65.731	65.331		65.731	65.331		
5710.0	64.729	65.731	64.729		65.731	64.729		

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

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Specification

Limits

FCC, Part 15 §15.407 (a)(1), (a)(2) and Industry Canada RSS-210 § A9.2(2)

(a)(1) For the band 5.15-5.25 GHz the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or +4 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed +4 dBm in any 1 megahertz band.

(a)(2) For the 5.25-5.35 GHz band the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or +11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed +11 dBm in any 1 megahertz band.

Industry Canada RSS-Gen 4.4

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.

Traceability

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

6.1.1.4. Peak Excursion Ratio

Conducted Test Conditions for Peak Excursion Ratio			
Standard:	FCC CFR 47:15.407	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Peak Excursion Ratio	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.407 (a)(6)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	KDB 789033 - D01 DTS General UNII Test Procedures v01		

Test Procedure for Peak Excursion Ratio

Compliance with the peak excursion requirement is demonstrated by confirming the ratio of the maximum of the peak-hold spectrum to the maximum of the average spectrum during continuous transmission. Section F) of KDB 789033 was used in order to prove compliance. This is a conducted measurement using a spectrum analyzer using dual traces. Peak Excursion Ratio is the difference in amplitude (dB) between both traces; The following identifies two spectrum traces on the same plot. Trace 1 is the max hold Peak detector, and Trace 2 is the recalled trace data from Peak Power Spectral Density measurements. Each frequency and operational mode is recalled in order to prove compliance.

Equipment Configuration for Peak Excursion Ratio			
Variant:	802.11a	**Duty Cycle (%):**	94
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB) Port(s)				Ratio (dB)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	dB	MHz
5180.0	9.72				9.72	9.72	13.0	-3.28

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

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

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Equipment Configuration for Peak Excursion Ratio			
Variant:	802.11ac-40	**Duty Cycle (%):**	94
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB) Port(s)				Ratio (dB)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	dB	MHz
5190.0	9.53				9.53	9.53	13.0	-3.47

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

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

Equipment Configuration for Peak Excursion Ratio			
Variant:	802.11n HT-20	**Duty Cycle (%):**	95
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB) Port(s)				Ratio (dB)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	dB	MHz
5180.0	9.83				9.83	9.83	13.0	-3.17

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

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Equipment Configuration for Peak Excursion Ratio			
Variant:	802.11n HT-40	**Duty Cycle (%):**	87
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB) Port(s)				Ratio (dB)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	dB	MHz
5190.0	10.53				10.53	10.53	13.0	-2.47

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

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

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Equipment Configuration for Peak Excursion Ratio			
Variant:	802.11a	**Duty Cycle (%):**	94
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB) Port(s)				Ratio (dB)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	dB	MHz
5260.0	9.44				9.44	9.44	13.0	-3.56

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

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

Equipment Configuration for Peak Excursion Ratio			
Variant:	802.11ac-40	**Duty Cycle (%):**	94
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB) Port(s)				Ratio (dB)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	dB	MHz
5270.0	9.31				9.31	9.31	13.0	-3.69

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

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

Equipment Configuration for Peak Excursion Ratio			
Variant:	802.11ac-80	**Duty Cycle (%):**	84
Data Rate:	29.3 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB) Port(s)				Ratio (dB)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	dB	MHz
5290.0	9.70				9.70	9.70	13.0	-3.30

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

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Equipment Configuration for Peak Excursion Ratio			
Variant:	802.11n HT-20	**Duty Cycle (%):**	95
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB) Port(s)				Ratio (dB)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	dB	MHz
5260.0	10.46				10.46	10.46	13.0	-2.54

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

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

Equipment Configuration for Peak Excursion Ratio			
Variant:	802.11n HT-40	**Duty Cycle (%):**	87
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB) Port(s)				Ratio (dB)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	dB	MHz
5270.0	12.43				12.43	12.43	13.0	-0.57

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

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

Equipment Configuration for Peak Excursion Ratio			
Variant:	802.11a	**Duty Cycle (%):**	94
Data Rate:	6 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB) Port(s)				Ratio (dB)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	dB	MHz
5500.0	9.85				9.85	9.85	13.0	-3.15

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

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

Equipment Configuration for Peak Excursion Ratio			
Variant:	802.11ac-40	**Duty Cycle (%):**	94
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB) Port(s)				Ratio (dB)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	dB	MHz
5510.0	9.41				9.41	9.41	13.0	-3.59

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

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Equipment Configuration for Peak Excursion Ratio			
Variant:	802.11ac-80	**Duty Cycle (%):**	84
Data Rate:	29.3 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB) Port(s)				Ratio (dB)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	dB	MHz
5530.0	9.37				9.37	9.37	13.0	-3.63

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

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Equipment Configuration for Peak Excursion Ratio			
Variant:	802.11n HT-20	**Duty Cycle (%):**	95
Data Rate:	6.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB) Port(s)				Ratio (dB)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	dB	MHz
5500.0	10.60				10.60	10.60	13.0	-2.40

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

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

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Equipment Configuration for Peak Excursion Ratio			
Variant:	802.11n HT-40	**Duty Cycle (%):**	87
Data Rate:	13.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	CC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB) Port(s)				Ratio (dB)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	dB	MHz
5510.0	12.12				12.12	12.12	13.0	-0.88

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

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

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Specification

Limits

§15.407 (a)(6) The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified in this paragraph) shall not exceed 13dB across any 1MHz bandwidth or the emission bandwidth whichever is less

Traceability

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

6.1.1.5. Frequency Stability

FCC, Part 15 Subpart C §15.407(g)
Industry Canada RSS-210 §2.1

Test Procedure

The manufacturer of the equipment is responsible for ensuring that the frequency stability is such that emissions are always maintained within the band of operation under all conditions.

Manufacturer Declaration

The frequency stability of the reference oscillator sets the frequency stability of the RF transceiver signals. Therefore all of the RF signals should have ±20ppm stability.
This stability accounts for room temp tolerance of the crystal oscillator circuit, frequency variation across temperature, and crystal ageing.

±20ppm at 5.250 GHz translates to a maximum frequency shift of ±105 KHz. As the edge of the channels is at least one MHz from either of the band edges, ±105 KHz is more than sufficient to guarantee that the intentional emission will remain in the band over the entire operating range of the EUT.

Specification

Limits

§15.407 (g) Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

6.1.2. Radiated Emission Testing

FCC, Part 15 Subpart C §15.407(b)(2), §15.205(a)/15.209(a)
Industry Canada RSS-210 §A9.3(2); §2.2; §2.6; RSS-Gen §4.7

Test Procedure
Testing was performed in a 3-meter anechoic chamber. Preliminary radiated emissions were measured on every azimuth and with the receiving antenna in both horizontal and vertical polarizations. Preliminary emissions were recorded with in Spectrum Analyzer mode, using a maximum peak detector while in peak hold mode. Depending on the frequency band spanned a notch filter and/or waveguide filter was used to remove the fundamental frequency.

Emissions nearest the limits were chosen for maximization and formal measurement using a CISPR compliant receiver. Emissions above 1000 MHz are measured utilizing a CISPR compliant average detector with a tuned receiver, using a bandwidth of 1 MHz. Emissions from 30 MHz – 1000 MHz are measured utilizing a CISPR compliant quasi-peak detector with a tuned receiver, using a bandwidth of 120 kHz. Only the highest emissions relative to the limit are listed.

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

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

Field Strength Calculation 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

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

$$E = 1000000 \times \sqrt{30P} / 3 \ \mu V/m$$

where P is the EIRP in Watts

Therefore: -27 dBm/MHz = 68.23 dBuV/m

Note: The data in this Section identifies that the EUT is in compliance with the -27dBm/MHz EIRP limit (68.23 dBµV/m) for out of band emissions. All out of band emissions are less than 68.23 dB µV/m.

Specification

Radiated Spurious Emissions

15.407 (b)(2). All emissions outside of the 5,150-5,350MHz band shall not exceed an EIRP of -27dBm/MHz.

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.

RSS-210 §A9.3(2) For transmitters operating in the 5250-5350 MHz band, all emissions outside the 5150-5350 MHz band shall not exceed -27 dBm/MHz e.i.r.p. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band shall not exceed out of band emission limit of 27 dBm/MHz e.i.r.p. in the 5150-5250 MHz band in order to operate indoor/outdoor, or alternatively shall comply with the spectral power density for operation within the 5150-5250 MHz band and shall be labeled “for indoor use only”.

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.

RSS-Gen §6 Receiver Spurious Emission Standard
If a radiated measurement is made, all spurious emissions shall comply with the limits of the following Table. The resolution bandwidth of the spectrum analyzer shall be 100 kHz for spurious emission measurements below 1.0 GHz and 1.0 MHz for measurements above 1.0 GHz

Table 1: FCC 15.209 Spurious Emissions Limits

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

Traceability:

Test Equipment Used
0088, 0158, 0134, 0304, 0311, 0315, 0310, 0312

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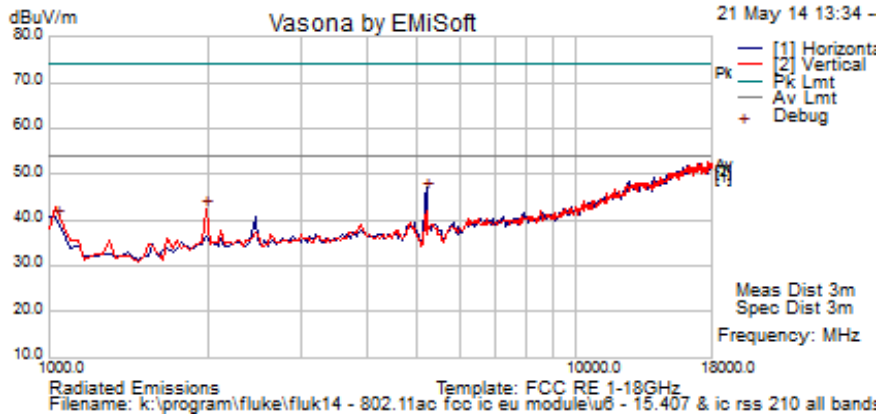
6.1.2.1. M830510 Chip antenna – Spurious and Band-Edge Emissions

Test Freq.	5180 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	46
Power Setting	46	**Press. (mBars)**	1001
Antenna	BT Dongle	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

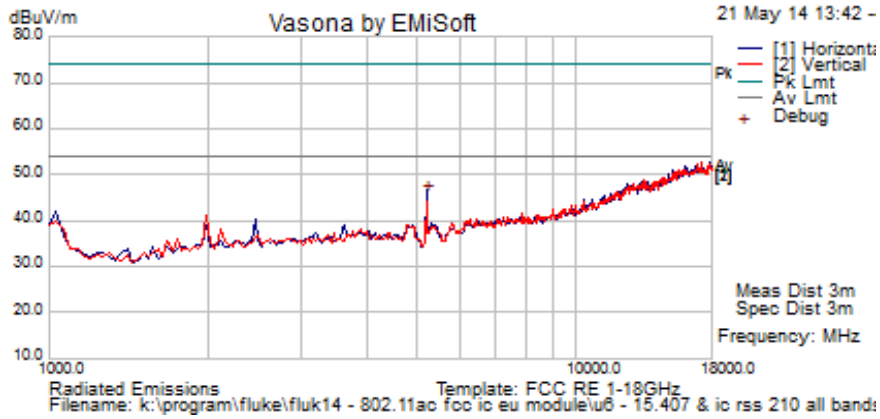


Formally measured emission peaks

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
5174.792	42.4	5.9	-2.4	45.9	Peak [Scan]	H	98					FUND
1039.791	46.9	2.5	-9.4	40.1	Peak [Scan]	V	98	361	54.0	-13.9	Pass	RB
1987.247	44.7	3.5	-6.1	42.2	Peak [Scan]	V	98					NRB

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

Test Freq.	5200 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	46
Power Setting	46	**Press. (mBars)**	1001
Antenna	BT Dongle	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

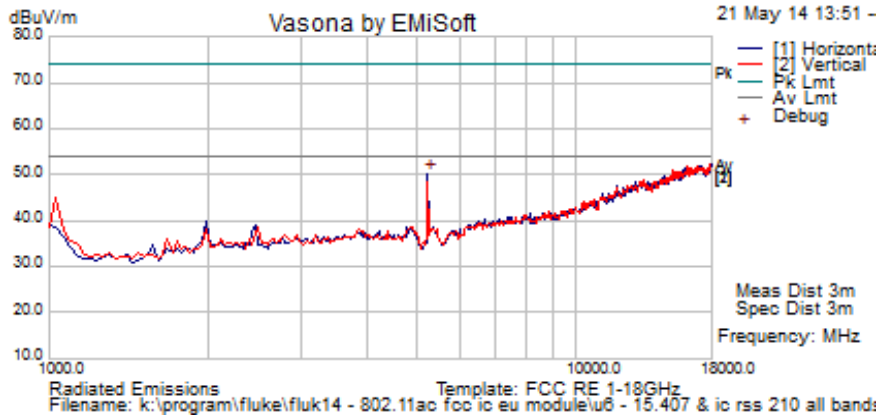


Formally measured emission peaks

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
5187.735	42.2	5.9	-2.3	45.7	Peak [Scan]	V	98					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.	5240 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	46
Power Setting	46	**Press. (mBars)**	1001
Antenna	BT Dongle	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

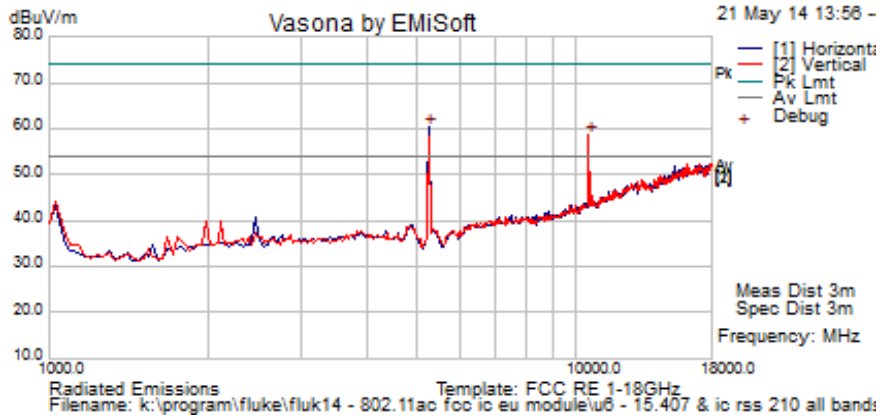


Formally measured emission peaks

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
5224.449	46.6	5.9	-2.3	50.2	Peak [Scan]	H	100					FUND

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

Test Freq.	5260 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	46
Power Setting	80	**Press. (mBars)**	1001
Antenna	BT Dongle	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

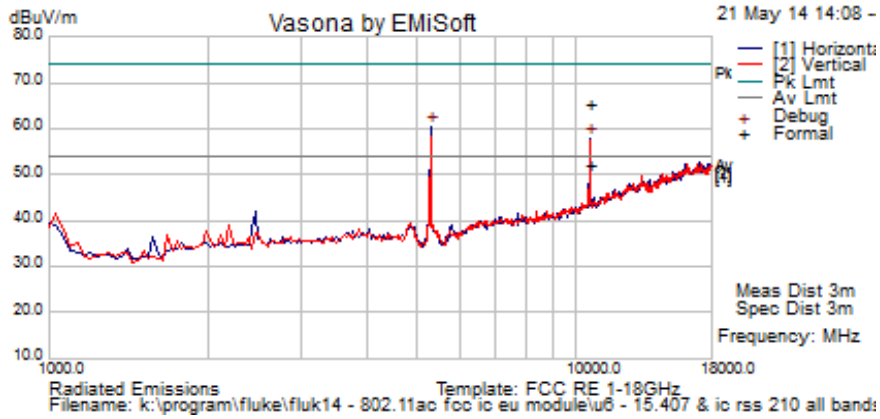


Formally measured emission peaks

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
5258.517	56.7	5.9	-2.2	60.4	Peak [Scan]	H	150					FUND
10539.078	45.9	9.0	3.7	58.7	Peak [Scan]	V	150					NRB

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

Test Freq.	5300 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	46
Power Setting	80	**Press. (mBars)**	1001
Antenna	BT Dongle	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

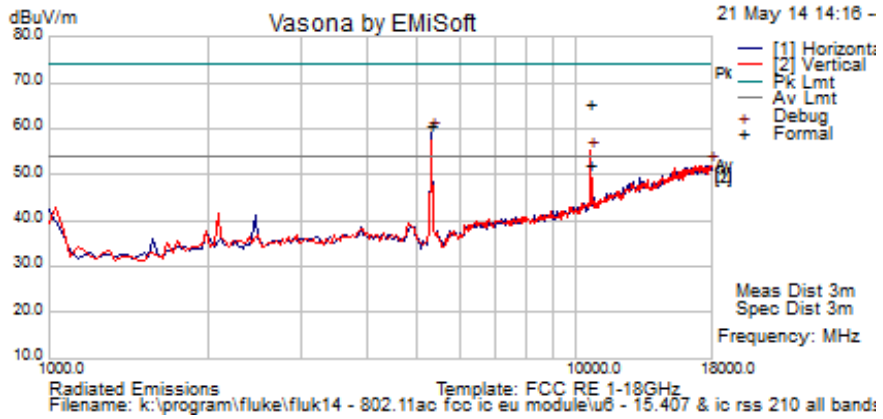


Formally measured emission peaks

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
10602.955	52.5	9.0	3.9	65.4	Peak Max	H	112	308	74.0	-8.6	Pass	RB
10602.955	39.0	9.0	3.9	51.9	Average Max	H	112	308	54.0	-2.1	Pass	RB
5292.585	56.8	6.0	-2.1	60.6	Peak [Scan]	H	150					FUND

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

Test Freq.	5320 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	46
Power Setting	80	**Press. (mBars)**	1001
Antenna	BT Dongle	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

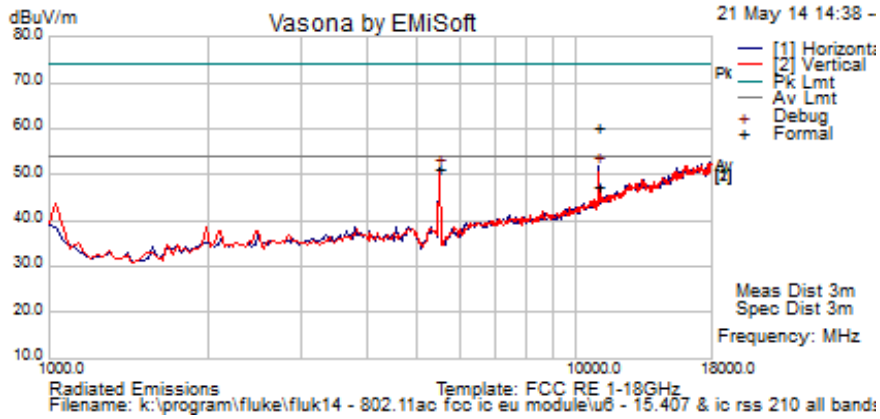


Formally measured emission peaks

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
10639.529	48.1	9.0	4.0	61.1	Peak Max	V	99	284	74.0	-12.9	Pass	RB
10639.529	35.1	9.0	4.0	48.1	Average Max	V	99	284	54.0	-5.9	Pass	RB
5326.653	55.2	6.0	-1.9	59.2	Peak [Scan]	H	150					FUND

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

Test Freq.	5500 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	46
Power Setting	80	**Press. (mBars)**	1001
Antenna	BT Dongle	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

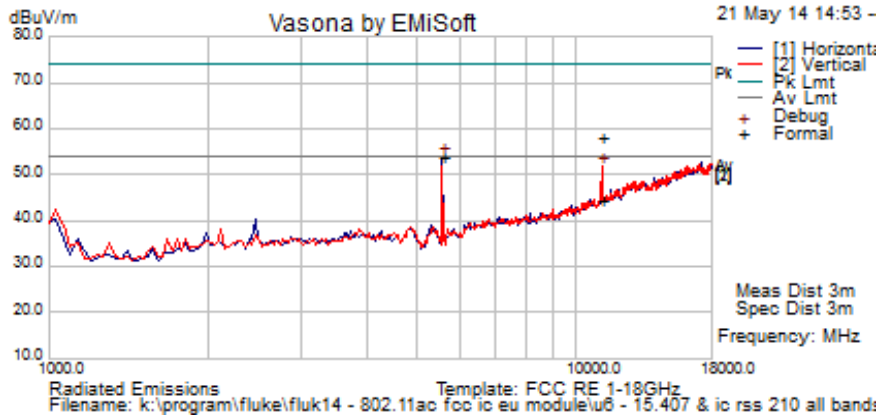


Formally measured emission peaks

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
10996.743	46.8	9.1	4.1	60.0	Peak Max	H	162	302	74.0	-14.0	Pass	
10996.743	33.9	9.1	4.1	47.2	Average Max	H	162	302	54.0	-6.9	Pass	
5496.994	47.2	6.1	-2.0	51.3	Peak [Scan]	H	150					FUND

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

Test Freq.	5580 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	46
Power Setting	80	**Press. (mBars)**	1001
Antenna	BT Dongle	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

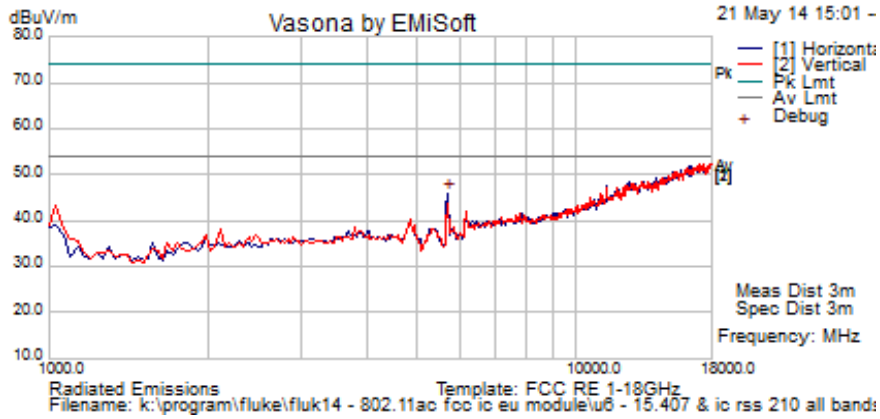


Formally measured emission peaks

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
11152.305	44.4	9.2	4.4	58.1	Peak Max	V	183	162	74	-15.9	Pass	RB
11152.305	30.5	9.2	4.4	44.1	Average Max	V	183	162	54.0	-9.9	Pass	RB
5565.130	49.8	6.1	-2.1	53.9	Peak [Scan]	H	100					FUND

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

Test Freq.	5700 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	46
Power Setting	80	**Press. (mBars)**	1001
Antenna	BT Dongle	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
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
5701.704	41.6	6.2	-2.0	45.9	Peak [Scan]	H	98					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

Band-Edge Results - M830510 Chip Antenna

Equipment Configuration for Radiated High Band-Edge Emissions

Variant:	802.11a, HT20,HT40,AC40,AC80	**Duty Cycle (%):**	100
Data Rate:	6-28.5 Mbit/s	**Antenna Gain (dBi):**	3.2
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Antenna:	BT Dongle		
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	5180, 5190, 5210 MHz
Band-Edge Frequency:	5150 MHz
Test Frequency Range:	4500 - 5150 MHz

modes	Band-Edge Markers and Limit								
	Peak Amplitude (dBuV)	Peak Limit (dBuV)	Peak Margin dB	Peak Frequency (MHz)	AVG Amplitude (dBuV)	AVG Limit (dBuV)	AVG Margin dB	AVG Frequency (MHz)	Power Setting
a	52.53	74	-21.47	5101.8	41.34	54	-12.66	5099.19	46
HT20	52.83	74	-21.17	5101.18	41.58	54	-12.42	5099.19	48
HT40	58.15	74	-15.85	5147.39	41.21	54	-12.79	5150	50
AC40	58.57	74	-15.43	5148.69	41.58	54	-12.42	5150	50
AC80	60.8	74	-13.2	5150	44.86	54	-9.14	5146.09	50

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

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Equipment Configuration for Radiated High Band-Edge Emissions

Variant:	802.11a, HT20,HT40,AC40,AC80	**Duty Cycle (%):**	100
Data Rate:	6-28.5 Mbit/s	**Antenna Gain (dBi):**	3.2
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Antenna:	BT Dongle		
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	5320, 5310, 5290 MHz
Band-Edge Frequency:	5350 MHz
Test Frequency Range:	5350 - 5460 MHz

modes	Band-Edge Markers and Limit								
	Peak Amplitude (dBuV)	Peak Limit (dBuV)	Peak Margin dB	Peak Frequency (MHz)	AVG Amplitude (dBuV)	AVG Limit (dBuV)	AVG Margin dB	AVG Frequency (MHz)	Power Setting
a	71.81	74	-2.19	5351.54	53.4	54	-0.6	5350	80
HT20	72.99	74	-1.01	5350.44	48.74	54	-5.26	5350	75
HT40	73.65	74	-0.35	5350.44	53.85	54	-0.15	5350.44	63
AC40	73.91	74	-0.09	5350.88	53.27	54	-0.73	5350	63
AC80	71.03	74	-2.97	5351.54	53.46	54	-0.54	5353.52	60

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

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Equipment Configuration for Radiated High Band-Edge Emissions

Variant:	802.11a, HT20,HT40,AC40,AC80	**Duty Cycle (%):**	100
Data Rate:	6-28.5 Mbit/s	**Antenna Gain (dBi):**	3.2
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Antenna:	BT Dongle		
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	5500, 5510, 5530 MHz
Band-Edge Frequency:	5460 MHz
Test Frequency Range:	5350 - 5460 MHz

modes	Band-Edge Markers and Limit								
	Peak Amplitude (dBuV)	Peak Limit (dBuV)	Peak Margin dB	Peak Frequency (MHz)	AVG Amplitude (dBuV)	AVG Limit (dBuV)	AVG Margin dB	AVG Frequency (MHz)	Power Setting
g	61.02	74	-12.98	5414.14	50.6	54	-3.4	5418.55	80
HT20	65.1	74	-8.9	5457.57	50.28	54	-3.72	5418.55	80
HT40	72.89	74	-1.11	5459.77	53.94	54	-0.06	5460	75
AC40	73.48	74	-0.52	5459.77	54	54	0	5460	75
AC80	69.26	74	-4.74	5460	53.17	54	-0.83	5458.89	60

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

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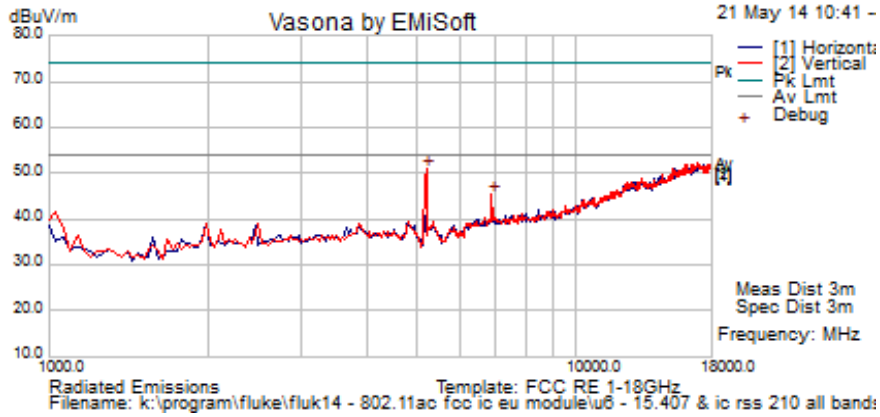
6.1.2.2. Nano PCB antenna – Spurious and Band-Edge Emissions

Test Freq.	5180 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	46
Power Setting	46	**Press. (mBars)**	1001
Antenna	Nano PCB	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

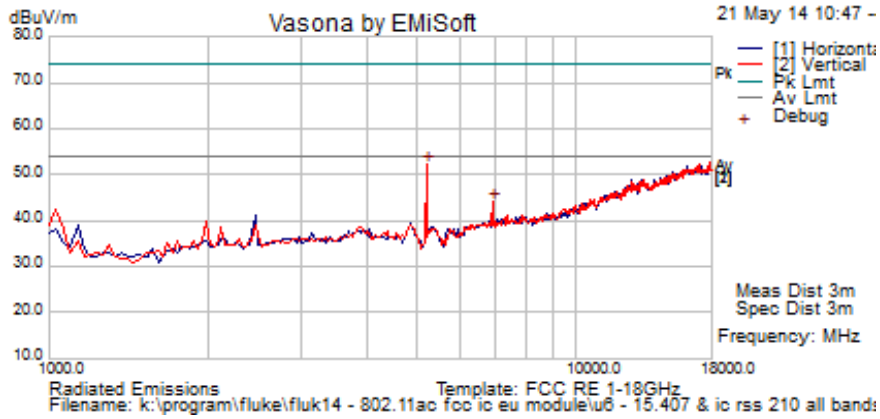


Formally measured emission peaks

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
1068.738	45.6	2.6	-9.4	38.7	Peak [Scan]	V	98	-1	54.0	-15.3	Pass	RB
1753.629	41.4	3.3	-7.8	37.0	Peak [Scan]	V	98					NRB
1989.583	40.8	3.5	-6.1	38.3	Peak [Scan]	V	98					NRB
5190.381	47.4	5.9	-2.3	50.9	Peak [Scan]	V	150					FUND

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

Test Freq.	5200 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	46
Power Setting	46	**Press. (mBars)**	1001
Antenna	Nano PCB	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

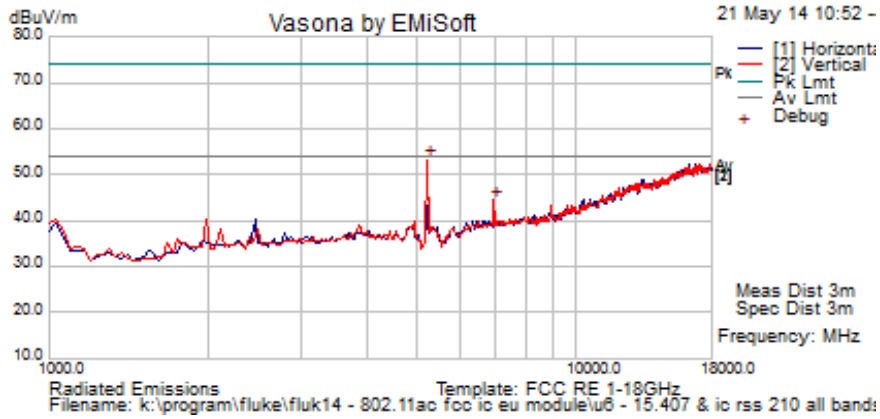


Formally measured emission peaks

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
5190.381	48.5	5.9	-2.3	52.1	Peak [Scan]	V	150					FUND
6929.93	37.3	7.0	-0.4	43.9	Peak [Scan]	V	100					NRB

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

Test Freq.	5240 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	46
Power Setting	46	**Press. (mBars)**	1001
Antenna	Nano PCB	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

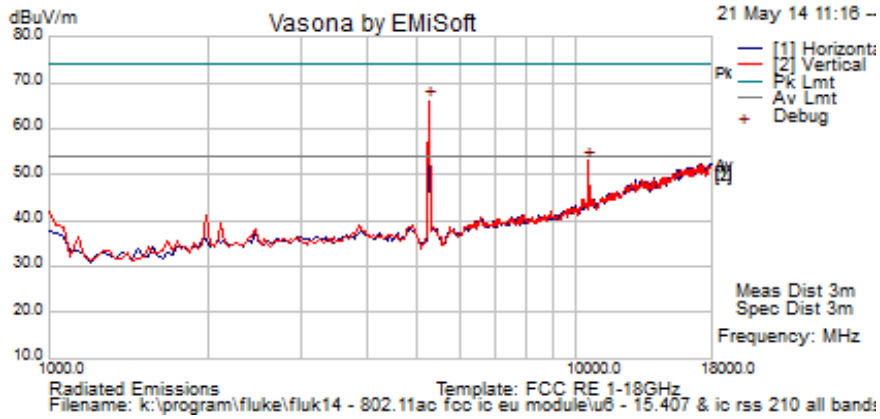


Formally measured emission peaks

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
5234.449	49.6	5.9	-2.3	53.2	Peak [Scan]	V	100					FUND
6963.951	37.7	7.0	-0.4	44.3	Peak [Scan]	V	98					NRB

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

Test Freq.	5260 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	46
Power Setting	80	**Press. (mBars)**	1001
Antenna	Nano PCB	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

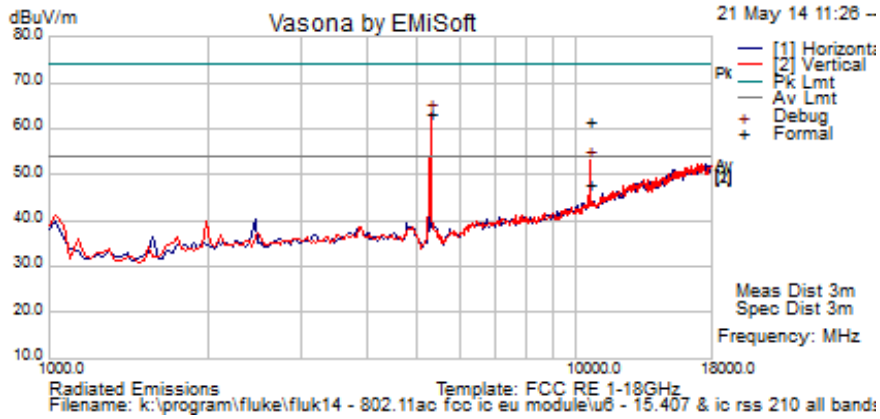


Formally measured emission peaks

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
5258.517	62.4	5.9	-2.2	66.1	Peak [Scan]	V	150					FUND
10505.01	40.5	9.0	3.7	53.2	Peak [Scan]	V	150					NRB

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

Test Freq.	5300 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	46
Power Setting	80	**Press. (mBars)**	1001
Antenna	Nano PCB	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

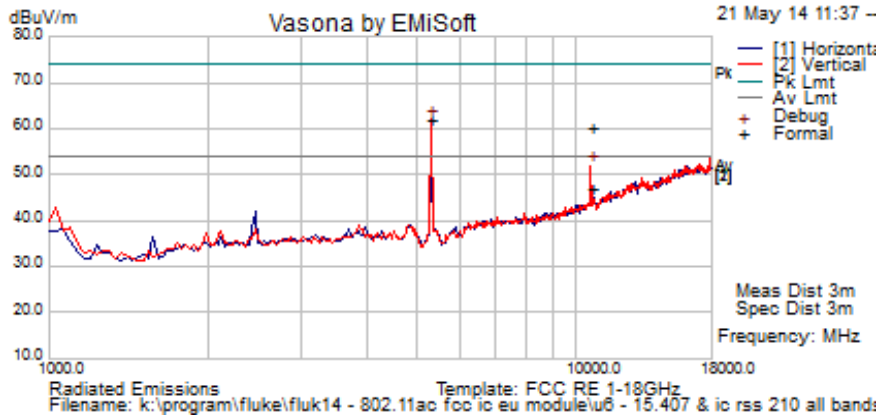


Formally measured emission peaks

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
10601.953	48.4	9.0	3.9	61.3	Peak Max	V	160	137	74.0	-12.7	Pass	RB
10601.953	35.0	9.0	3.9	47.9	Average Max	V	160	137	54.0	-6.2	Pass	RB
5292.585	59.5	6.0	-2.1	63.4	Peak [Scan]	V	150					FUND

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

Test Freq.	5320 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	46
Power Setting	80	**Press. (mBars)**	1001
Antenna	Nano PCB	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

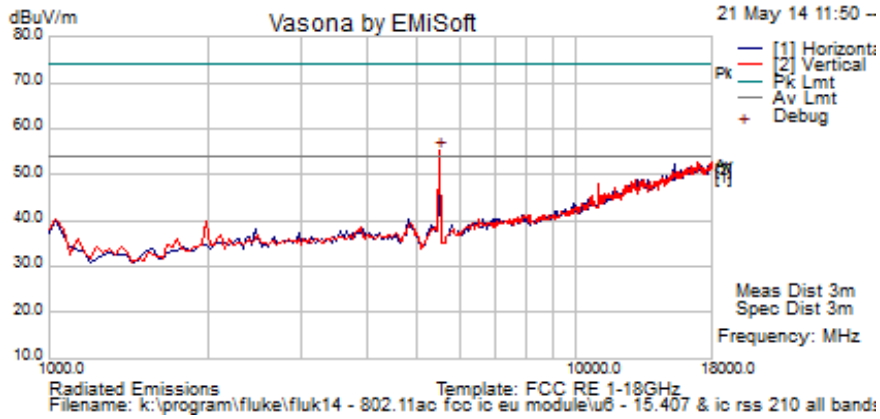


Formally measured emission peaks

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
10640.531	47.4	9.0	4.0	60.4	Peak Max	V	200	17	74.0	-13.6	Pass	RB
10640.531	33.8	9.0	4.0	46.8	Average Max	V	200	17	54.0	-7.2	Pass	RB
5292.585	58.2	6.0	-2.1	62.1	Peak [Scan]	V	150					FUND

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

Test Freq.	5500 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	46
Power Setting	80	**Press. (mBars)**	1001
Antenna	Nano PCB	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

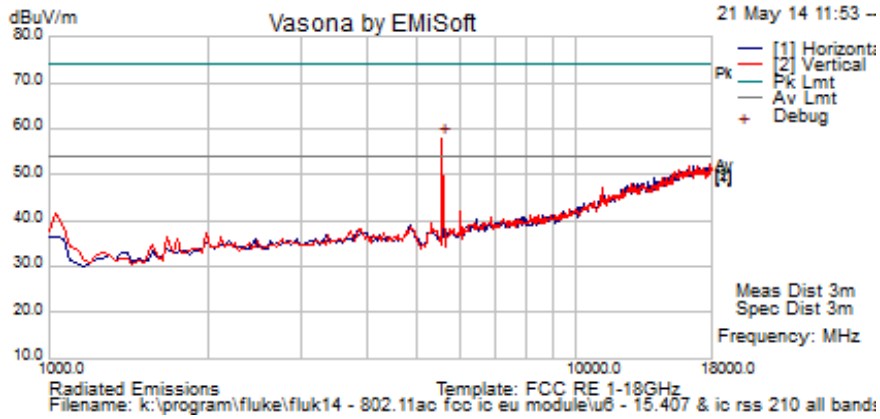


Formally measured emission peaks

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
5496.994	51.2	6.1	-2.0	55.3	Peak [Scan]	V	100					FUND

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

Test Freq.	5580 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	46
Power Setting	80	**Press. (mBars)**	1001
Antenna	Nano PCB	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

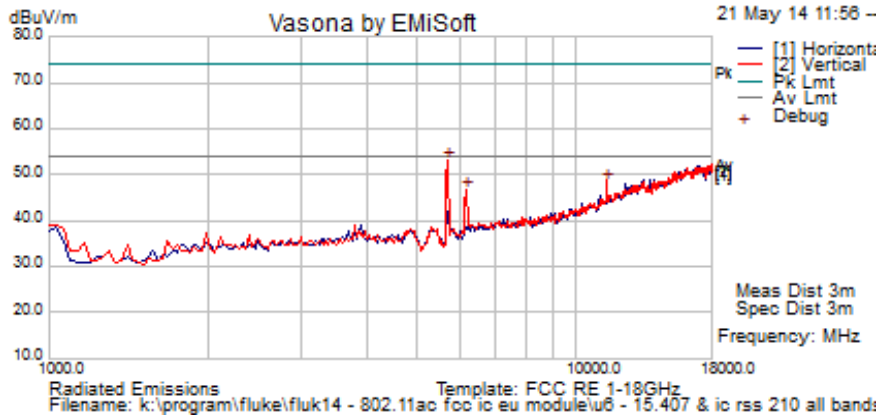


Formally measured emission peaks

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
5565.130	54.0	6.1	-2.1	58.0	Peak [Scan]	V	100					FUND

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

Test Freq.	5700 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	46
Power Setting	80	**Press. (mBars)**	1001
Antenna	Nano PCB	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
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
11863.099	42.6	9.4	5.5	57.6	Peak Max	V	172	355	74.0	-16.4	Pass	RB
11863.099	29.5	9.4	5.5	44.4	Average Max	V	172	355	54.0	-9.6	Pass	RB
5701.403	48.8	6.2	-2.0	53.0	Peak [Scan]	V	100					FUND
6176.337	40.8	6.5	-0.8	46.6	Peak [Scan]	V	98					NRB

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

Band-Edge Results – NANO PCB Antenna

Equipment Configuration for Radiated High Band-Edge Emissions

Variant:	802.11a, HT20,HT40,AC40,AC80	**Duty Cycle (%):**	100
Data Rate:	6-28.5 Mbit/s	**Antenna Gain (dBi):**	3.1
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Antenna:	Nano Green PCB		
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	5180, 5190, 5210 MHz
Band-Edge Frequency:	5150 MHz
Test Frequency Range:	4500 - 5150 MHz

modes	Band-Edge Markers and Limit								
	Peak Amplitude (dBuV)	Peak Limit (dBuV)	Peak Margin dB	Peak Frequency (MHz)	AVG Amplitude (dBuV)	AVG Limit (dBuV)	AVG Margin dB	AVG Frequency (MHz)	Power Setting
a	56.7	74	-17.3	5103.1	46.28	54	-7.72	5418.55	46
HT20	57.56	74	-16.44	5100.5	46.28	54	-7.72	5099.19	48
HT40	64.91	74	-9.09	5146.09	45.8	54	-8.2	5150	48
AC40	64.91	74	-9.09	5146.09	45.8	54	-8.2	5150	50
AC80	66.73	74	-7.27	5143.48	50.04	54	-3.96	5143.48	50

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

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Equipment Configuration for Radiated High Band-Edge Emissions

Variant:	802.11a, HT20,HT40,AC40,AC80	**Duty Cycle (%):**	100
Data Rate:	6-28.5 Mbit/s	**Antenna Gain (dBi):**	3.1
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Antenna:	Nano Green PCB		
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	5320, 5310, 5290 MHz
Band-Edge Frequency:	5350 MHz
Test Frequency Range:	5350 - 5460 MHz

modes	Band-Edge Markers and Limit								
	Peak Amplitude (dBuV)	Peak Limit (dBuV)	Peak Margin dB	Peak Frequency (MHz)	AVG Amplitude (dBuV)	AVG Limit (dBuV)	AVG Margin dB	AVG Frequency (MHz)	Power Setting
a	69.72	74	-4.28	5351.54	53.53	54	-0.47	5401.36	74
HT20	73.18	74	-0.82	5350	52.53	54	-1.47	5402.02	57
HT40	72.79	74	-1.21	5350.22	50.37	54	-3.63	5350	54
AC40	71.82	74	-2.18	5350.22	50.54	54	-3.46	5350	70
AC80	71.75	74	-2.25	5351.32	52.43	54	-1.57	5352.2	57

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

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Equipment Configuration for Radiated High Band-Edge Emissions

Variant:	802.11a, HT20,HT40,AC40,AC80	**Duty Cycle (%):**	100
Data Rate:	6-28.5 Mbit/s	**Antenna Gain (dBi):**	3.1
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Antenna:	Nano Green PCB		
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	5500, 5510, 5530 MHz
Band-Edge Frequency:	5460 MHz
Test Frequency Range:	5350 - 5460 MHz

modes	Band-Edge Markers and Limit								
	Peak Amplitude (dBuV)	Peak Limit (dBuV)	Peak Margin dB	Peak Frequency (MHz)	AVG Amplitude (dBuV)	AVG Limit (dBuV)	AVG Margin dB	AVG Frequency (MHz)	Power Setting
a	63.68	74	-10.32	5418.11	53.22	54	-0.78	5418.77	66
HT20	64.13	74	-9.87	5417.67	53.83	54	-0.17	5418.55	66
HT40	72.66	74	-1.34	5459.77	50.8	54	-3.2	5460	57
AC40	71.58	74	-2.42	5460	51	54	-3	5460	62
AC80	70.11	74	-3.89	5452.94	53.03	54	-0.97	5458.67	50

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

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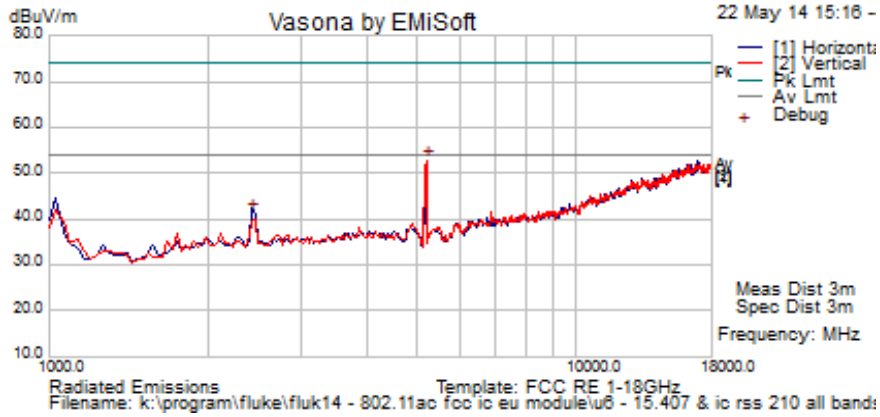
6.1.2.3. WSS013 Dual band antenna – Spurious and Band-Edge Emissions

Test Freq.	5180 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	45
Power Setting	46	**Press. (mBars)**	1000
Antenna	WSS013	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

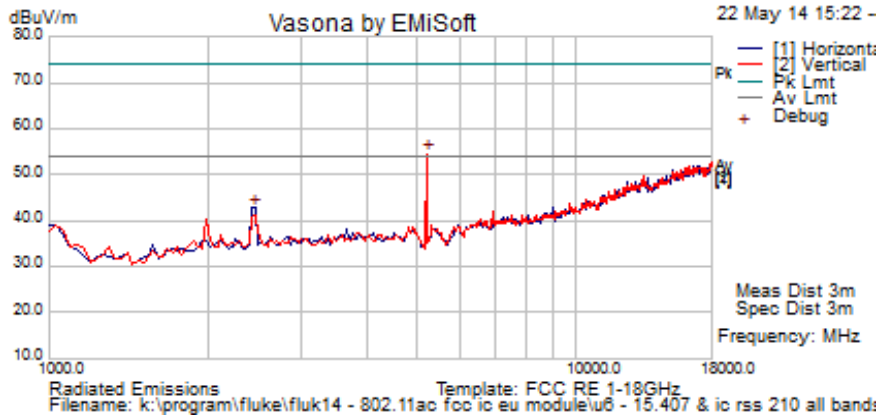


Formally measured emission peaks

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
5190.381	49.3	5.9	-2.3	52.8	Peak [Scan]	V	100					FUND
2425.163	42.7	3.9	-5.3	41.3	Peak [Scan]	V	100					NRB

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

Test Freq.	5200 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	45
Power Setting	46	**Press. (mBars)**	1000
Antenna	WSS013	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

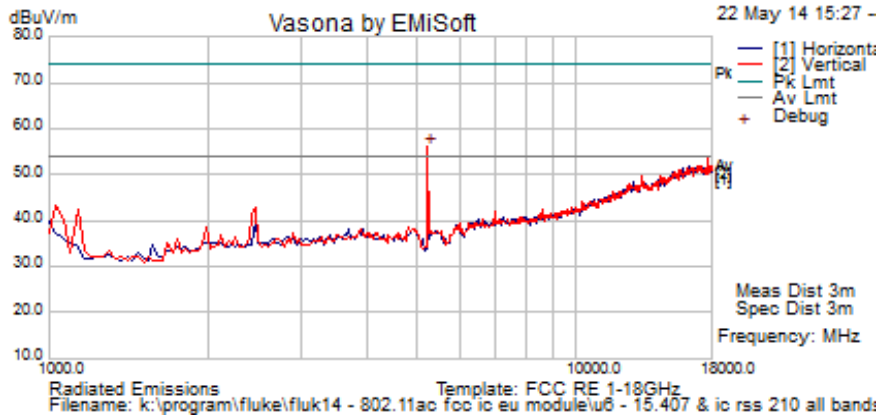


Formally measured emission peaks

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
5190.381	50.9	5.9	-2.3	54.5	Peak [Scan]	V	150					FUND
2446.284	44.0	4.0	-5.2	42.8	Peak [Scan]	V	98					NRB

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

Test Freq.	5240 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	45
Power Setting	46	**Press. (mBars)**	1000
Antenna	WSS013	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

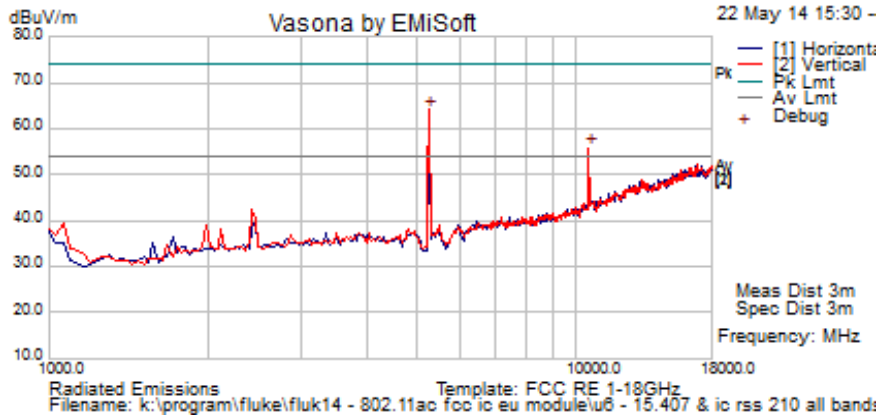


Formally measured emission peaks

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
5224.449	52.3	5.9	-2.3	55.9	Peak [Scan]	V	150					FUND

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

Test Freq.	5260 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	45
Power Setting	80	**Press. (mBars)**	1000
Antenna	WTS2450RPSMA	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

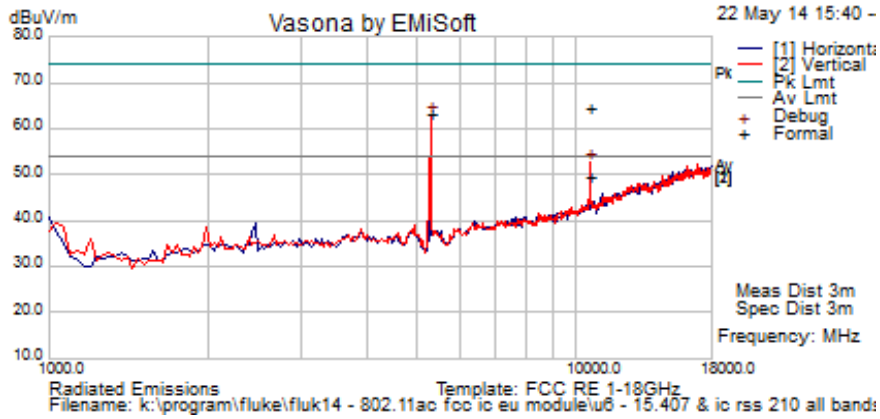


Formally measured emission peaks

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
5258.517	60.4	5.9	-2.2	64.1	Peak [Scan]	V	100					FUND
10539.078	43.0	9.0	3.7	55.7	Peak [Scan]	V	100					NRB

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

Test Freq.	5300 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	45
Power Setting	80	**Press. (mBars)**	1000
Antenna	WTS2450RPSMA	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

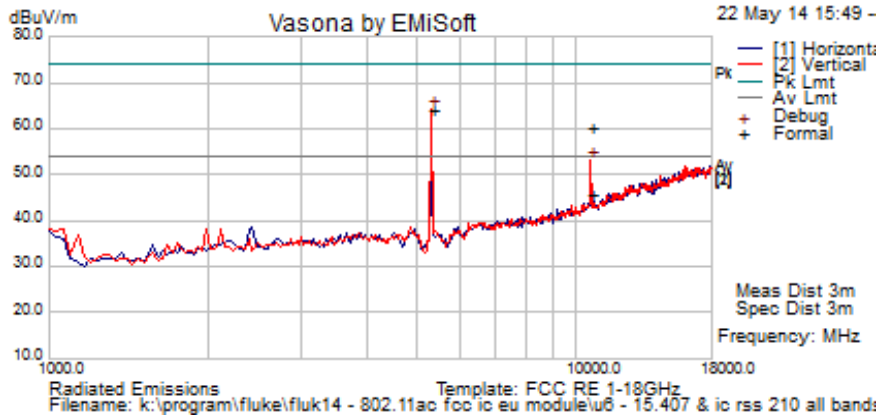


Formally measured emission peaks

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
10602.955	51.7	9.0	3.9	64.6	Peak Max	V	106	197	74.0	-9.4	Pass	RB
10602.955	36.7	9.0	3.9	49.6	Average Max	V	106	197	54.0	-4.4	Pass	RB
5292.585	59.1	6.0	-2.1	63.0	Peak [Scan]	V	100					NRB

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

Test Freq.	5320 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	45
Power Setting	80	**Press. (mBars)**	1000
Antenna	WTS2450RPSMA	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

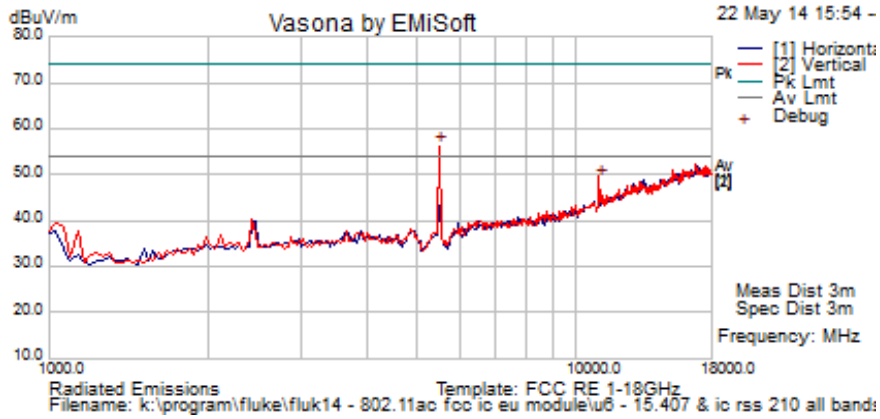


Formally measured emission peaks

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
10638.527	47.1	9.0	4.0	60.1	Peak Max	V	99	337	74.0	-13.9	Pass	RB
10638.527	32.7	9.0	4.0	45.7	Average Max	V	99	337	54.0	-8.3	Pass	RB
5326.653	60.0	6.0	-1.9	64.1	Peak [Scan]	V	100					FUND

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

Test Freq.	5500 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	45
Power Setting	80	**Press. (mBars)**	1000
Antenna	WTS2450RPSMA	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

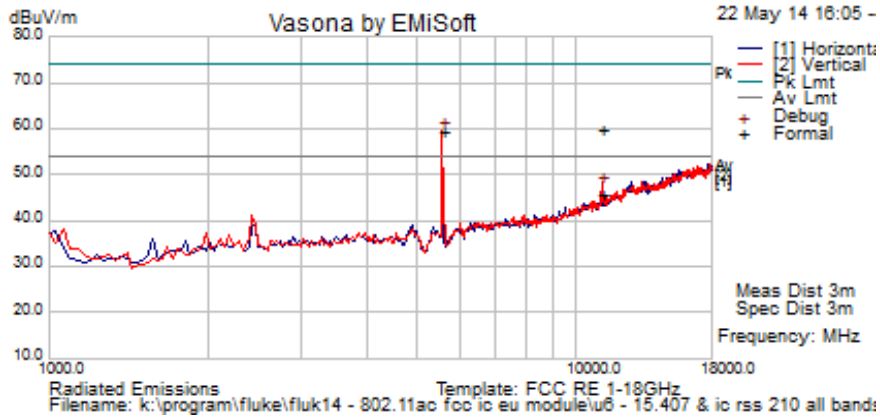


Formally measured emission peaks

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
10999.737	47.8	9.1	4.2	61.0	Peak Max	V	99	361	74.0	-13.0	Pass	RB
10999.737	33.6	9.1	4.2	46.8	Average Max	V	99	361	54.0	-7.2	Pass	RB
5496.994	52.2	6.1	-2.0	56.2	Peak [Scan]	V	100					FUND

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

Test Freq.	5580 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	45
Power Setting	80	**Press. (mBars)**	1000
Antenna	WTS2450RPSMA	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

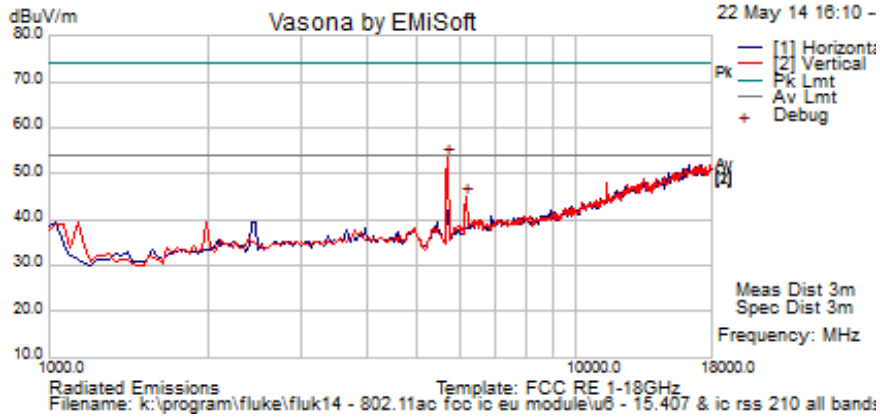


Formally measured emission peaks

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
11160.559	46.3	9.2	4.5	60.0	Peak Max	V	112	46	74.0	-14.0	Pass	RB
11160.559	32.1	9.2	4.5	45.8	Average Max	V	112	46	54.0	-8.3	Pass	RB
5565.130	55.4	6.1	-2.1	59.4	Peak [Scan]	V	100					FUND

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

Test Freq.	5700 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	45
Power Setting	80	**Press. (mBars)**	1000
Antenna	WTS2450RPSMA	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
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
5701.403	49.3	6.2	-2.0	53.5	Peak [Scan]	V	100					FUND
6174.725	38.9	6.5	-0.8	44.7	Peak [Scan]	V	98					NRB

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

Band-Edge Results – WSS013 Antenna

Equipment Configuration for Radiated High Band-Edge Emissions

Variant:	802.11a, HT20,HT40,AC40,AC80	**Duty Cycle (%):**	100
Data Rate:	6-28.5 Mbit/s	**Antenna Gain (dBi):**	2
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Antenna:	WSS013 Dual Band Antenna		
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	5180, 5190, 5210 MHz
Band-Edge Frequency:	5150 MHz
Test Frequency Range:	4500 - 5150 MHz

modes	Band-Edge Markers and Limit								
	Peak Amplitude (dBuV)	Peak Limit (dBuV)	Peak Margin dB	Peak Frequency (MHz)	AVG Amplitude (dBuV)	AVG Limit (dBuV)	AVG Margin dB	AVG Frequency (MHz)	Power Setting
a	61.85	74	-12.15	5093.98	49.18	54	-4.82	5101.8	46
HT20	61.48	74	-12.52	4708.41	48.96	54	-5.04	5092.68	48
HT40	61.9	74	-12.1	5100.5	49.39	54	-4.61	5148.69	50
AC40	63.86	74	-10.14	5150	49.6	54	-4.4	5150	50
AC80	66.02	74	-7.98	5147.39	50.76	54	-3.24	5142.18	50

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

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Equipment Configuration for Radiated High Band-Edge Emissions			
Variant:	802.11a, HT20,HT40,AC40,AC80	**Duty Cycle (%):**	100
Data Rate:	6-28.5 Mbit/s	**Antenna Gain (dBi):**	2
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Antenna:	WSS013 Dual Band Antenna		
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	5320, 5310, 5290 MHz
Band-Edge Frequency:	5350 MHz
Test Frequency Range:	5350 - 5460 MHz

modes	Band-Edge Markers and Limit								
	Peak Amplitude (dBuV)	Peak Limit (dBuV)	Peak Margin dB	Peak Frequency (MHz)	AVG Amplitude (dBuV)	AVG Limit (dBuV)	AVG Margin dB	AVG Frequency (MHz)	Power Setting
a	73.02	74	-0.98	5350.22	50.3	54	-3.7	5350	74
HT20	66.64	74	-7.36	5351.54	49	54	-5	5350	78
HT40	73.44	74	-0.56	5350.88	52.9	54	-1.1	5350	60
AC40	72.54	74	-1.46	5350.66	53.34	54	-0.66	5350	60
AC80	70.98	74	-3.02	5351.32	52.9	54	-1.1	5350	50

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

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Equipment Configuration for Radiated High Band-Edge Emissions

Variant:	802.11a, HT20,HT40,AC40,AC80	**Duty Cycle (%):**	100
Data Rate:	6-28.5 Mbit/s	**Antenna Gain (dBi):**	2
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Antenna:	WSS013 Dual Band Antenna		
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	5500, 5510, 5530 MHz
Band-Edge Frequency:	5460 MHz
Test Frequency Range:	5350 - 5460 MHz

modes	Band-Edge Markers and Limit								
	Peak Amplitude (dBuV)	Peak Limit (dBuV)	Peak Margin dB	Peak Frequency (MHz)	AVG Amplitude (dBuV)	AVG Limit (dBuV)	AVG Margin dB	AVG Frequency (MHz)	Power Setting
a	62.14	74	-11.86	5460	51.61	54	-2.39	5417.23	80
HT20	69.09	74	-4.91	5456.91	51.44	54	-2.56	5417.23	80
HT40	73.04	74	-0.96	5460	52.44	54	-1.56	5460	68
AC40	71.82	74	-2.18	5460	53.05	54	-0.95	5460	68
AC80	69.54	74	-4.46	5456.47	53.62	54	-0.38	5459.11	57

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

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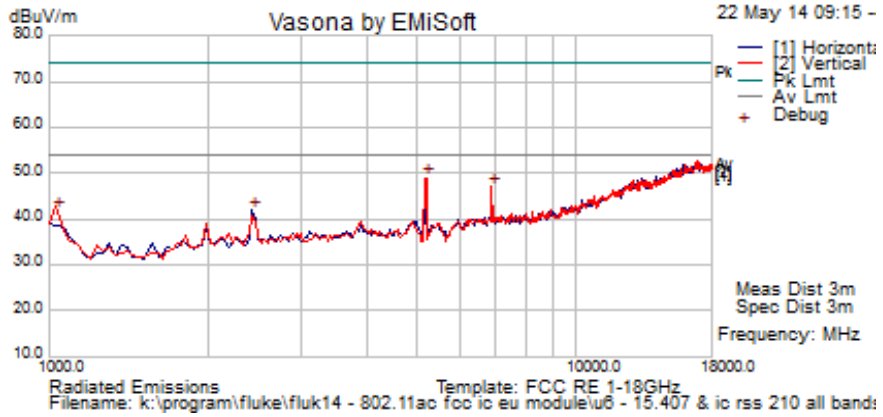
6.1.2.4. WTS2450RPSMA antenna – Spurious and Band-Edge Emissions

Test Freq.	5180 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	45
Power Setting	46	**Press. (mBars)**	1000
Antenna	WTS2450RPSMA	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

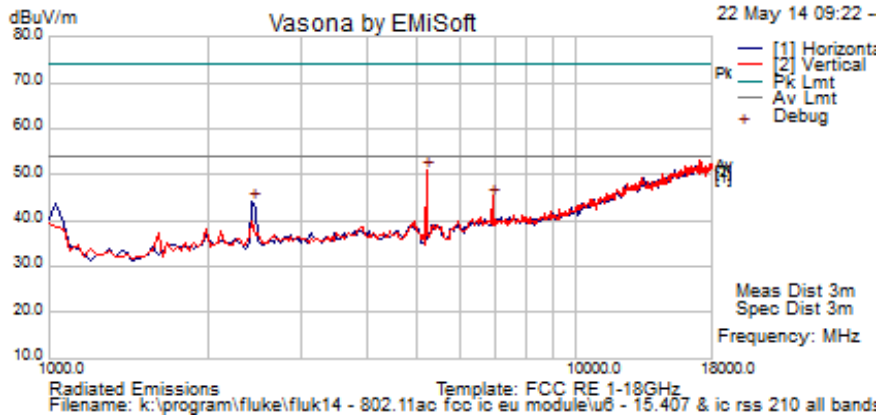


Formally measured emission peaks

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
5190.381	45.5	5.9	-2.3	49.0	Peak [Scan]	V	150					FUND
2434.188	43.0	3.9	-5.3	41.6	Peak [Scan]	H	98					NRB
6894.211	40.3	7.0	-0.3	47.0	Peak [Scan]	V	98					NRB
1039.791	48.9	2.5	-9.4	42.0	Peak [Scan]	V	98	361	54	-12.0	Pass	RB

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.	5200 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	45
Power Setting	46	**Press. (mBars)**	1000
Antenna	WTS2450RPSMA	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

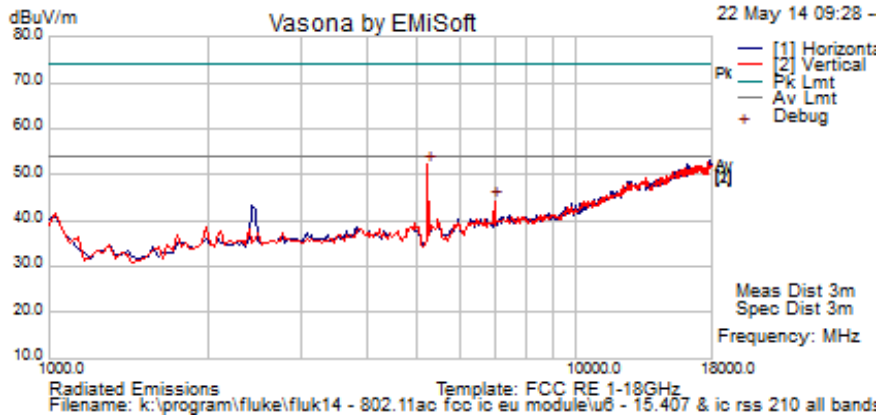


Formally measured emission peaks

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
5190.381	47.5	5.9	-2.3	51.0	Peak [Scan]	V	100					FUND
6930.273	38.3	7.0	-0.4	44.9	Peak [Scan]	V	98					NRB
2432.830	45.3	3.9	-5.3	44.0	Peak [Scan]	H	98					NRB

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

Test Freq.	5240 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	45
Power Setting	46	**Press. (mBars)**	1000
Antenna	WTS2450RPSMA	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

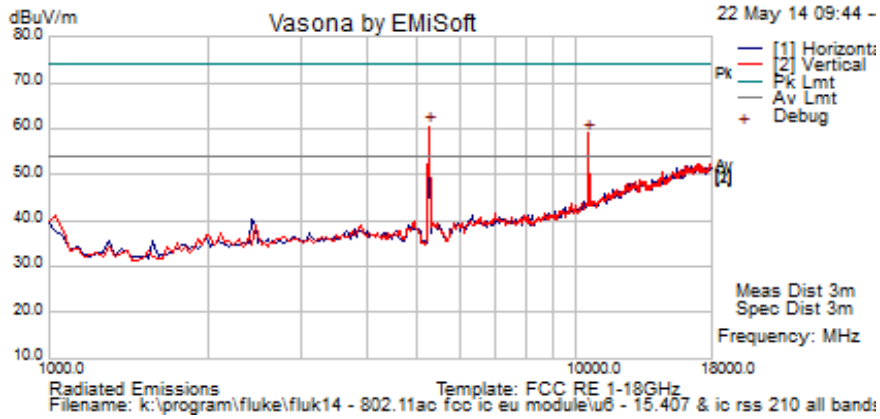


Formally measured emission peaks

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
5224.449	48.6	5.9	-2.3	52.3	Peak [Scan]	V	150					FUND
6994.802	37.5	7.0	-0.4	44.2	Peak [Scan]	V	98					NRB

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

Test Freq.	5260 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	45
Power Setting	80	**Press. (mBars)**	1000
Antenna	WTS2450RPSMA	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

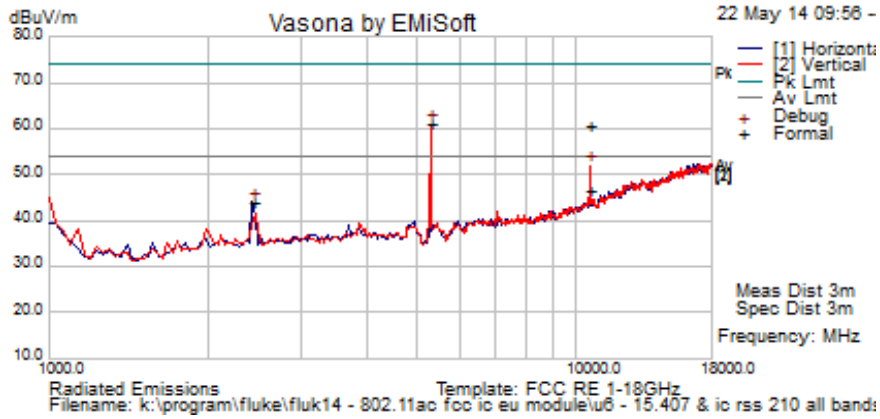


Formally measured emission peaks

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
5258.517	56.8	5.9	-2.2	60.6	Peak [Scan]	V	100					FUND
10518.788	46.3	9.0	3.7	59.0	Peak [Scan]	V	150					NRB

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

Test Freq.	5300 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	45
Power Setting	80	**Press. (mBars)**	1000
Antenna	WTS2450RPSMA	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

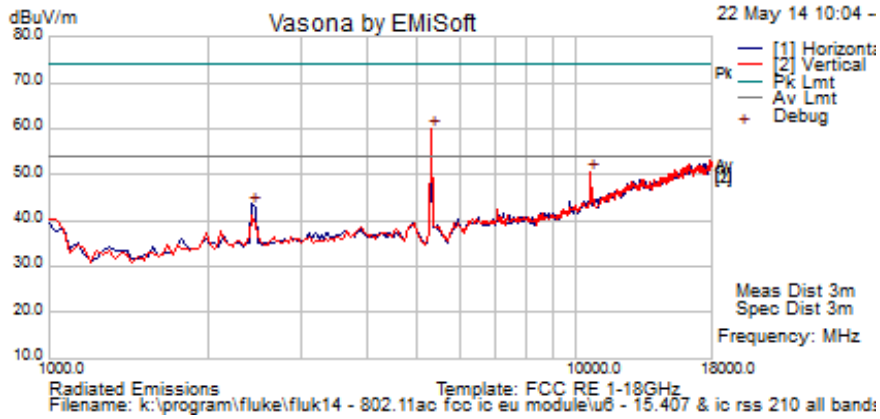


Formally measured emission peaks

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
10603.456	47.8	9.0	3.9	60.7	Peak Max	V	99	101	74.0	-13.3	Pass	RB
10603.456	33.6	9.0	3.9	46.6	Average Max	V	99	101	54.0	-7.5	Pass	RB
5292.585	57.1	6.0	-2.1	60.9	Peak [Scan]	V	100					FUND
2433.443	45.1	3.9	-5.3	43.8	Peak [Scan]	H	98					NRB

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

Test Freq.	5320 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	45
Power Setting	80	**Press. (mBars)**	1000
Antenna	WTS2450RPSMA	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

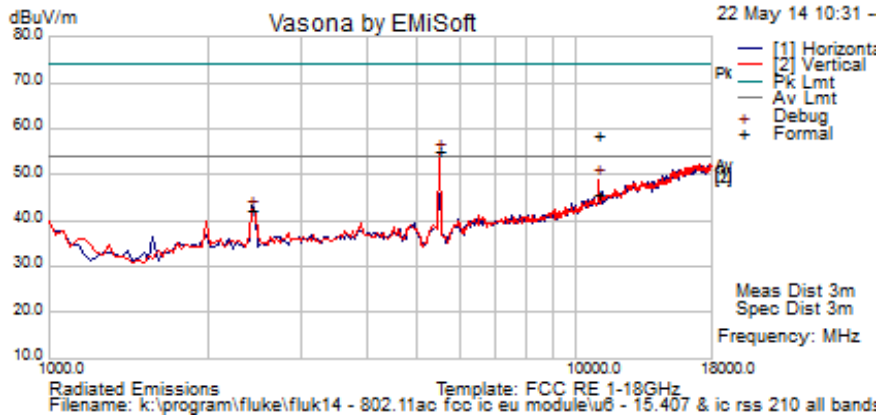


Formally measured emission peaks

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
10641.283	46.6	9.0	4.0	59.6	Peak Max	V	112	165	74.0	-14.4	Pass	RB
10641.283	33.3	9.0	4.0	46.3	Average Max	V	112	165	54.0	-7.7	Pass	RB
5326.653	56.7	6.0	-1.9	60.8	Peak [Scan]	V	100					FUND

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

Test Freq.	5500 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	45
Power Setting	80	**Press. (mBars)**	1000
Antenna	WTS2450RPSMA	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

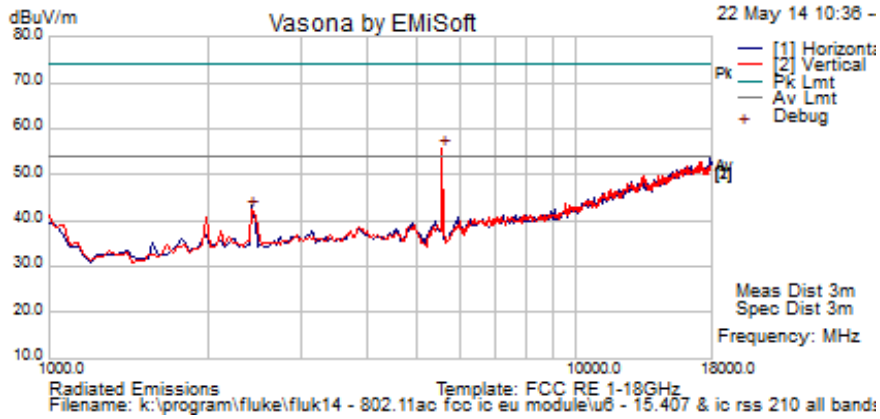


Formally measured emission peaks

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
11001.270	45.3	9.1	4.2	58.6	Peak Max	V	105	124	74.0	-15.4	Pass	RB
11001.27	32.2	9.1	4.2	45.4	Average Max	V	105	124	54.0	-8.6	Pass	RB
5496.994	50.8	6.1	-2.0	54.9	Peak [Scan]	V	100					FUND
2425.163	43.5	3.9	-5.3	42.1	Peak [Scan]	V	98					NRB

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

Test Freq.	5580 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	45
Power Setting	80	**Press. (mBars)**	1000
Antenna	WTS2450RPSMA	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
Test Notes 2			

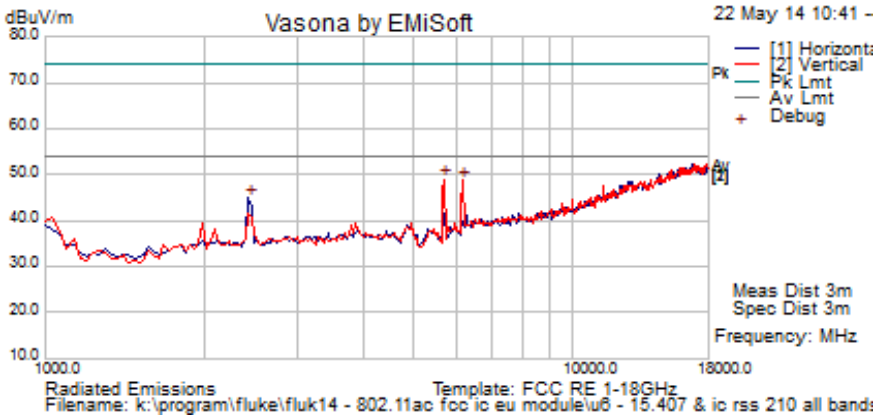


Formally measured emission peaks

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
5565.130	51.7	6.1	-2.1	55.7	Peak [Scan]	V	100					FUND
2425.163	43.5	3.9	-5.3	42.1	Peak [Scan]	V	98					NRB

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

Test Freq.	5700 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	45
Power Setting	80	**Press. (mBars)**	1000
Antenna	WTS2450RPSMA	**Duty Cycle (%)**	100
Test Notes 1	Laptop w/ PCMCIA Adapter mini HDMI cable to radio module;		
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
5701.403	44.7	6.2	-2.0	49.0	Peak [Scan]	V	100					FUND
6178.356713	43.1	6.5	-0.8	48.8	Peak [Scan]	V	100					NRB
2430.170	46.3	3.9	-5.3	44.9	Peak [Scan]	V	98					NRB

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

Band-Edge Results – WTS2450RPSMA Antenna

Equipment Configuration for Radiated High Band-Edge Emissions			
Variant:	802.11a, HT20,HT40,AC40,AC80	**Duty Cycle (%):**	100
Data Rate:	6-28.5 Mbit/s	**Antenna Gain (dBi):**	2.6
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Antenna:	WTS2450RPSMA		
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	5180, 5190, 5210 MHz
Band-Edge Frequency:	5150 MHz
Test Frequency Range:	4500 - 5150 MHz

modes	Band-Edge Markers and Limit								
	Peak Amplitude (dBuV)	Peak Limit (dBuV)	Peak Margin dB	Peak Frequency (MHz)	AVG Amplitude (dBuV)	AVG Limit (dBuV)	AVG Margin dB	AVG Frequency (MHz)	Power Setting
a	55.41	74	-18.59	5101.8	44.37	54	-9.63	5093.98	46
HT20	55.52	74	-18.48	5104.4	44.37	54	-9.63	5097.89	48
HT40	60.77	74	-13.23	5148.69	42.71	54	-11.29	5150	50
AC40	57.96	74	-16.04	5147.39	42.71	54	-11.29	5105.71	50
AC80	61.54	74	-12.46	5139.57	45.08	54	-8.92	5139.57	50

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

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Equipment Configuration for Radiated High Band-Edge Emissions

Variant:	802.11a, HT20,HT40,AC40,AC80	**Duty Cycle (%):**	100
Data Rate:	6-28.5 Mbit/s	**Antenna Gain (dBi):**	2.6
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Antenna:	WTS2450RPSMA		
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	5320, 5310, 5290 MHz
Band-Edge Frequency:	5350 MHz
Test Frequency Range:	5350 - 5460 MHz

modes	Band-Edge Markers and Limit								
	Peak Amplitude (dBuV)	Peak Limit (dBuV)	Peak Margin dB	Peak Frequency (MHz)	AVG Amplitude (dBuV)	AVG Limit (dBuV)	AVG Margin dB	AVG Frequency (MHz)	Power Setting
a	70.12	74	-3.88	5351.76	51.79	54	-2.21	5350	78
HT20	72.81	74	-1.19	5350.22	50.3	54	-3.7	5350	78
HT40	72.93	74	-1.07	5350.44	51.79	54	-2.21	5350	60
AC40	72.54	74	-1.46	5351.1	51.95	54	-2.05	5350	78
AC80	70.54	74	-3.46	5351.32	52.12	54	-1.88	5343.3	60

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

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Equipment Configuration for Radiated High Band-Edge Emissions

Variant:	802.11a, HT20,HT40,AC40,AC80	**Duty Cycle (%):**	100
Data Rate:	6-28.5 Mbit/s	**Antenna Gain (dBi):**	2.6
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Antenna:	WTS2450RPSMA		
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	5500, 5510, 5530 MHz
Band-Edge Frequency:	5460 MHz
Test Frequency Range:	5350 - 5460 MHz

modes	Band-Edge Markers and Limit								
	Peak Amplitude (dBuV)	Peak Limit (dBuV)	Peak Margin dB	Peak Frequency (MHz)	AVG Amplitude (dBuV)	AVG Limit (dBuV)	AVG Margin dB	AVG Frequency (MHz)	Power Setting
a	63.12	74	-10.88	5426.71	52.44	54	-1.56	5418.55	80
HT20	66.73	74	-7.27	5458.67	52.44	54	-1.56	5418.77	80
HT40	70.89	74	-3.11	5460	51.44	54	-2.56	5460	68
AC40	70.22	74	-3.78	5459.77	51.26	54	-2.74	5460	68
AC80	68.16	74	-5.84	5450.96	51.79	54	-2.21	5457.57	56

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

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6.1.2.5. Digital Emissions (30M-1 GHz)

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

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

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

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

$$FS = R + AF + CORR$$

where:

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

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

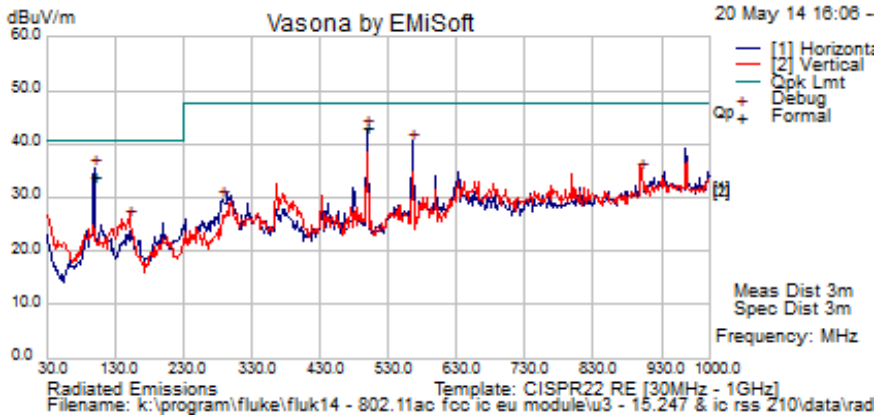
$$FS = 51.5 + 8.5 + 1.3 - 26.0 + 1 = 36.3 dB\mu V/m$$

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

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

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

Test Freq.	N/A	**Engineer**	SB
Variant	Digital Emissions	**Temp (ºC)**	21.5
Freq. Range	30 MHz - 1000 MHz	**Rel. Hum.(%)**	41
Power Setting	90	**Press. (mBars)**	1002
Antenna	Nano Green PCB		
Test Notes 1	Laptop on battery;		
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
99.875	50.6	4.1	-20.9	33.9	Quasi Max	H	168	346	40.5	-6.6	Pass	
498.753	49.8	5.8	-12.7	42.9	Quasi Max	H	176	329	47.5	-4.6	Pass	
288.020	41.9	5.0	-17.2	29.6	Peak [Scan]	H	148	361	47.5	-17.9	Pass	
565.626	45.8	6.1	-11.6	40.3	Peak [Scan]	H	148	361	47.5	-7.2	Pass	
151.735	39.9	4.4	-18.5	25.8	Peak [Scan]	V	148	361	40.5	-14.7	Pass	
901.060	34.7	7.1	-7.2	34.6	Peak [Scan]	V	148	361	47.5	-12.9	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

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

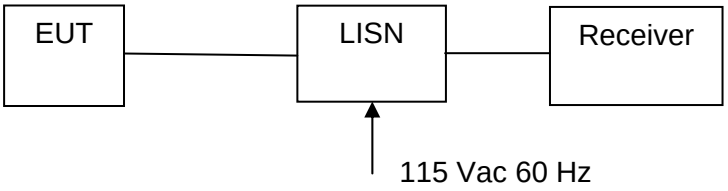
FCC, Part 15 Subpart C §15.207
Industry Canada RSS-Gen §7.2.2

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.

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

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

Test Measurement Set up



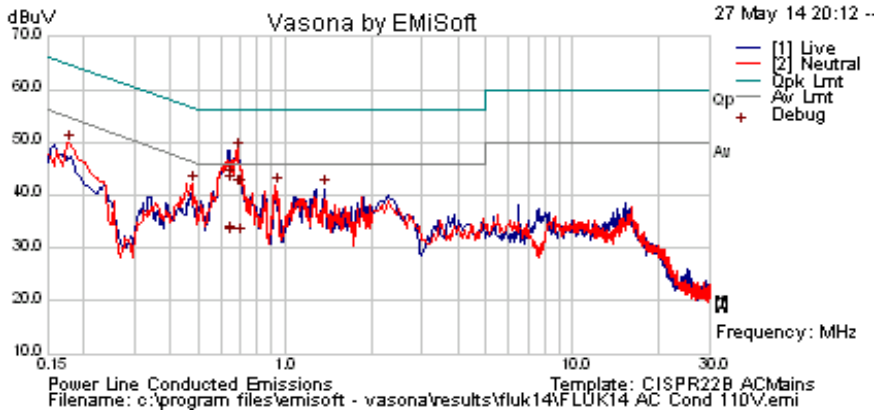
Measurement set up for AC Wireline Conducted Emissions Test

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

ac/dc Adaptor Wireline Emissions

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



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	Factors dB	Level dBuV	Measurement Type	Line	Limit dBuV	Margin dB	Pass /Fail	Comments
0.643	32.1	10.0	0.1	42.2	Quasi Peak	Neutral	56	-13.8	Pass	
0.643	22.3	10.0	0.1	32.3	Average	Neutral	46	-13.7	Pass	
0.645	33.1	10.0	0.1	43.1	Quasi Peak	Live	56	-12.9	Pass	
0.645	22.5	10.0	0.1	32.5	Average	Live	46	-13.5	Pass	
0.685	31.4	10.0	0.1	41.4	Average	Live	46	-4.6	Pass	
0.685	38.1	10.0	0.1	48.1	Quasi Peak	Live	56	-7.9	Pass	
0.699	22.2	10.0	0.1	32.3	Average	Neutral	46	-13.7	Pass	
0.699	31.4	10.0	0.1	41.4	Quasi Peak	Neutral	56	-14.6	Pass	
0.476	32.2	9.9	0.1	42.2	Peak [Scan]	Neutral	46.4	-4.2	Pass	
0.929	31.6	9.9	0.1	41.7	Peak [Scan]	Neutral	46	-4.4	Pass	
1.373	31.2	10.0	0.1	41.3	Peak [Scan]	Live	46	-4.8	Pass	
0.176	39.9	9.9	0.1	49.9	Peak [Scan]	Neutral	54.67	-4.8	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

6.1.4. Dynamic Frequency Selection (DFS)

FCC, Part 15 Subpart C §15.407(h)
FCC 06-96 Memorandum Opinion and Order
Industry Canada RSS-210 A9.4

6.1.4.1. Interference Threshold values, Master or Client incorporating In-Service Monitoring

Maximum Transmit Power	**Value (see note)**
≥ 200 milliwatt	-64 dBm
< 200 milliwatt	-62 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna	

DFS Response requirement values

Parameter	**Value**
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 80% of the 99% power bandwidth See Note 3.

Note 1: The instant that the *Channel Move Time* and the *Channel Closing Transmission Time* begins is as follows:

- For the Short pulse radar Test Signals this instant is the end of the *Burst*.
- For the Frequency Hopping radar Test Signal, this instant is the end of the last radar *Burst* generated.
- For the Long Pulse radar Test Signal this instant is the end of the 12 second period defining the radar transmission.

Note 2: The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate *Channel* changes (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the *U-NII Detection Bandwidth* detection test, radar type 1 is used and for each frequency step the minimum percentage of detection is 90%. Measurements are performed with no data traffic.

6.1.4.2. Radar Test Waveforms

This section provides the parameters for required test waveforms, minimum percentage of successful detections, and the minimum number of trials that must be used for determining DFS conformance. Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Trials
1	1	1428	18	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

A minimum of 30 unique waveforms are required for each of the short pulse radar types 2 through 4. For short pulse radar type 1, the same waveform is used a minimum of 30 times. If more than 30 waveforms are used for short pulse radar types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. The aggregate is the average of the percentage of successful detections of short pulse radar types 1-4.

Long Pulse Radar Test Waveform

Radar Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Number of Pulses per *Burst*	Number of *Bursts*	Minimum Percentage of Successful Detection	Minimum Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

The parameters for this waveform are randomly chosen. Thirty unique waveforms are required for the Long Pulse radar test signal. If more than 30 waveforms are used for the Long Pulse radar test signal, then each additional waveform must also be unique and not repeated from the previous waveforms.

Each waveform is defined as follows:

1) The transmission period for the Long Pulse Radar test signal is 12 seconds.
2) There are a total of 8 to 20 *Bursts* in the 12 second period, with the number of *Bursts* being randomly chosen. This number is *Burst Count*.
3) Each *Burst* consists of 1 to 3 pulses, with the number of pulses being randomly chosen. Each *Burst* within the 12 second sequence may have a different number of pulses.
4) The pulse width is between 50 and 100 microseconds, with the pulse width being randomly chosen. Each pulse within a *Burst* will have the same pulse width. Pulses in different *Bursts* may have different pulse widths.
5) Each pulse has a linear FM chirp between 5 and 20 MHz, with the chirp width being randomly chosen. Each pulse within a *Burst* will have the same chirp width. Pulses in different *Bursts* may have different chirp widths. The chirp is centered on the pulse. For example, with a radar frequency of 5300 MHz and a 20 MHz chirped signal, the chirp starts at 5290 MHz and ends at 5310 MHz.
6) If more than one pulse is present in a *Burst*, the time between the pulses will be between 1000 and 2000 microseconds, with the time being randomly chosen. If three pulses are present in a *Burst*, the time between the first and second pulses is chosen independently of the time between the second and third pulses.
7) The 12 second transmission period is divided into even intervals. The number of intervals is equal to *Burst_Count*. Each interval is of length (12,000,000 / *Burst_Count*) microseconds. Each interval contains one *Burst*. The start time for the *Burst*, relative to the beginning of the interval, is between 1 and [(12,000,000 / *Burst_Count*) – (Total *Burst* Length) + (One Random PRI Interval)] microseconds, with the start time being randomly chosen. The step interval for the start time is 1 microsecond. The start time for each *Burst* is chosen independently.

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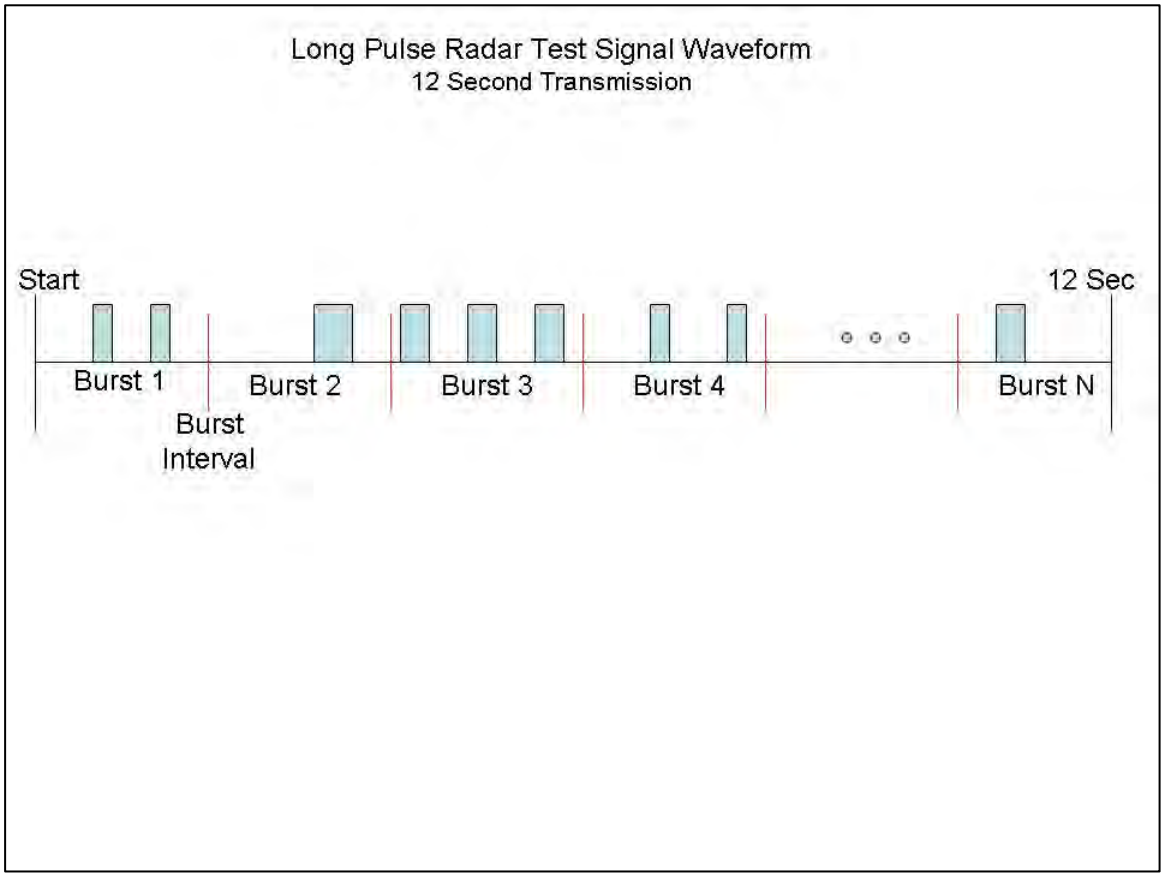
A representative example of a Long Pulse radar test waveform:

1) The total test signal length is 12 seconds.
2) 8 *Bursts* are randomly generated for the *Burst_Count*.
3) *Burst* 1 has 2 randomly generated pulses.
4) The pulse width (for both pulses) is randomly selected to be 75 microseconds.
5) The PRI is randomly selected to be at 1213 microseconds.
6) *Bursts* 2 through 8 are generated using steps 3 – 5.
7) Each *Burst* is contained in even intervals of 1,500,000 microseconds. The starting location for Pulse 1, *Burst* 1 is randomly generated (1 to 1,500,000 minus the total *Burst* 1 length + 1 random PRI interval) at the 325,001 microsecond step. *Bursts* 2 through 8 randomly fall in successive 1,500,000 microsecond intervals (i.e. *Burst* 2 falls in the 1,500,001 – 3,000,000 microsecond range).

Graphical representation of the Long Pulse radar Test Waveform.



6.1.4.3. Frequency Hopping Radar Test Waveform

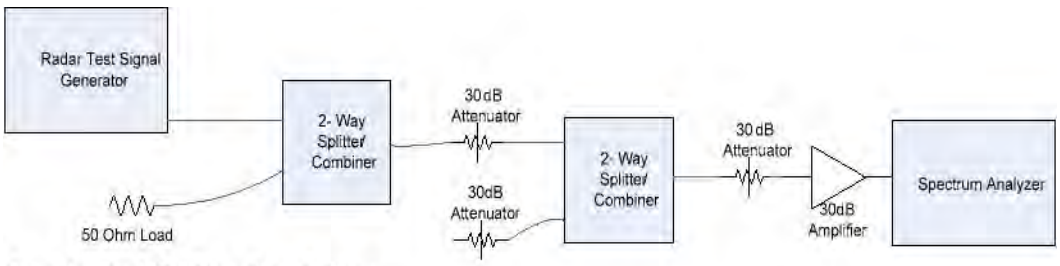
Frequency Hopping Radar Test Waveform

Radar Type	Pulse Width (µsec)	PRI (µsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Trials
6	1	333	9	.333	300	70%	30

For the Frequency Hopping Radar Type, the same *Burst* parameters are used for each waveform. The hopping sequence is different for each waveform and a 100-length segment is selected from the hopping sequence defined by the following algorithm:

6.1.4.4. Radar Waveform Calibration

The following equipment setup was used to calibrate the conducted Radar Waveform. A spectrum analyzer was used to establish the test signal level for each radar type. During this process there were no transmissions by either the Master or Client Device. The spectrum analyzer was switched to the zero span (Time Domain) mode at the frequency of the Radar Waveform generator. Peak detection was utilized. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3 MHz.
The signal generator amplitude was set so that the power level measured at the spectrum analyzer was -61dBm (Ref Section 5.1). The 30dB amplifier gain was entered as an amplitude offset on the spectrum analyzer.

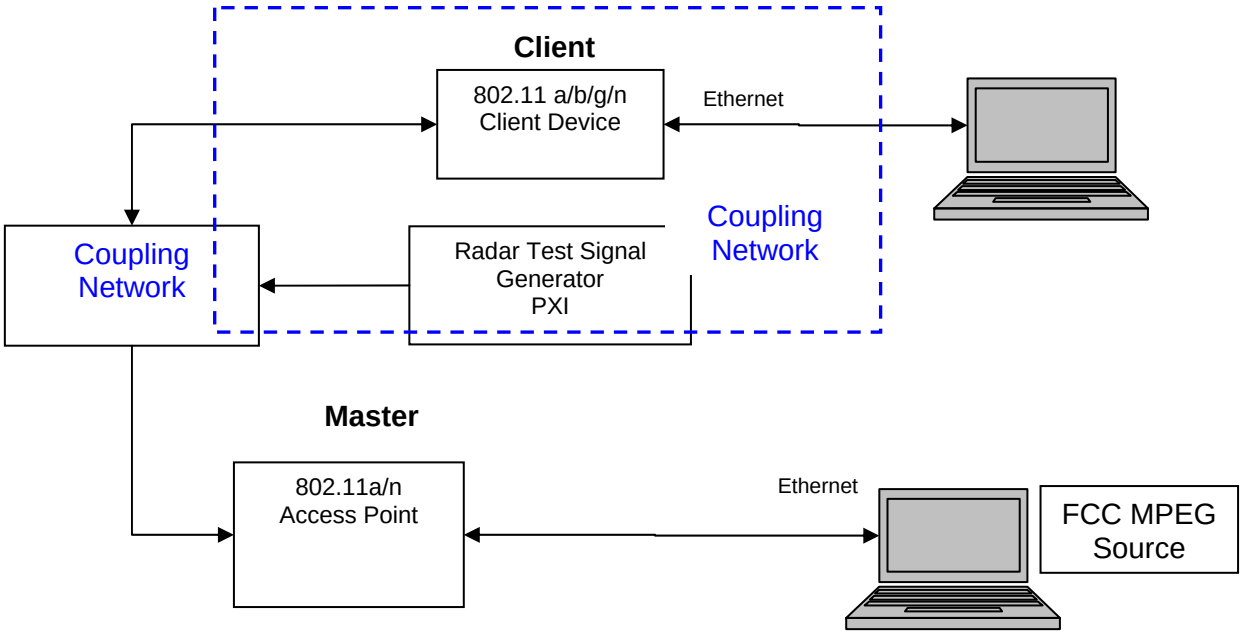


Conducted Calibration Setup

6.1.4.5. DFS Test Set Up

Setup for Conducted Measurements where the EUT is the Client device with injection of Radar Test Waveforms at the Master.

Support Equipment Configuration



The EUT is a Client Device without radar detection.

Applicability of DFS Requirements Prior to Use of a Channel

(Ref Table 1 of FCC 06-96)

Requirement	**Operational Mode**		
	Master	**Client Without Radar Detection**	**Client With Radar Detection**
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
Uniform Spreading	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Applicability of DFS requirements during normal operation

(Ref Table 2 of FCC 06-96)

Requirement	**Operational Mode**		
	Master	**Client Without Radar Detection**	**Client With Radar Detection**
DFS Detection Threshold	Yes	Not required	Yes
Channel Closing Transmission Time	Yes	Yes	Yes
Channel Move Time	Yes	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required	Yes

6.1.4.6. DFS Test Results

6.1.4.6.1. In-Service Monitoring for Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period

FCC §15.407(h)(2)(iii)

The steps below define the procedure to determine the above mentioned parameters when a radar Burst with a level equal to the DFS Detection Threshold is generated on the Operating Channel of the U-NII device.

A U-NII device operating as a Client Device will associate with the EUT (Master). The requisite MPEG video file ("TestFile.mpg" available on the NTIA website at the following link http://ntiacsd.ntia.doc.gov/dfs/) is streamed from the master device (AP) to the client.

Channel Closing Transmission Time - Measurement

The test system was set-up to capture all transmission data for access point events above a threshold level of -50 dBm. The test equipment time stamps all captured events.

A Type 1 waveform was introduced to the EUT, from which a 12 second transmission record was digitally captured. The start of the Type 1 radar waveform is indicated in the test result plot as "Start Waveform", the end of the waveform is indicated as "End waveform".

Channel Closing Transmission Time, and the Channel Move Time start immediately after the last radar pulse is transmitted.

The aggregate of all pulses seen after the end of the radar injection are measured as the "Channel Closing Transmission time".

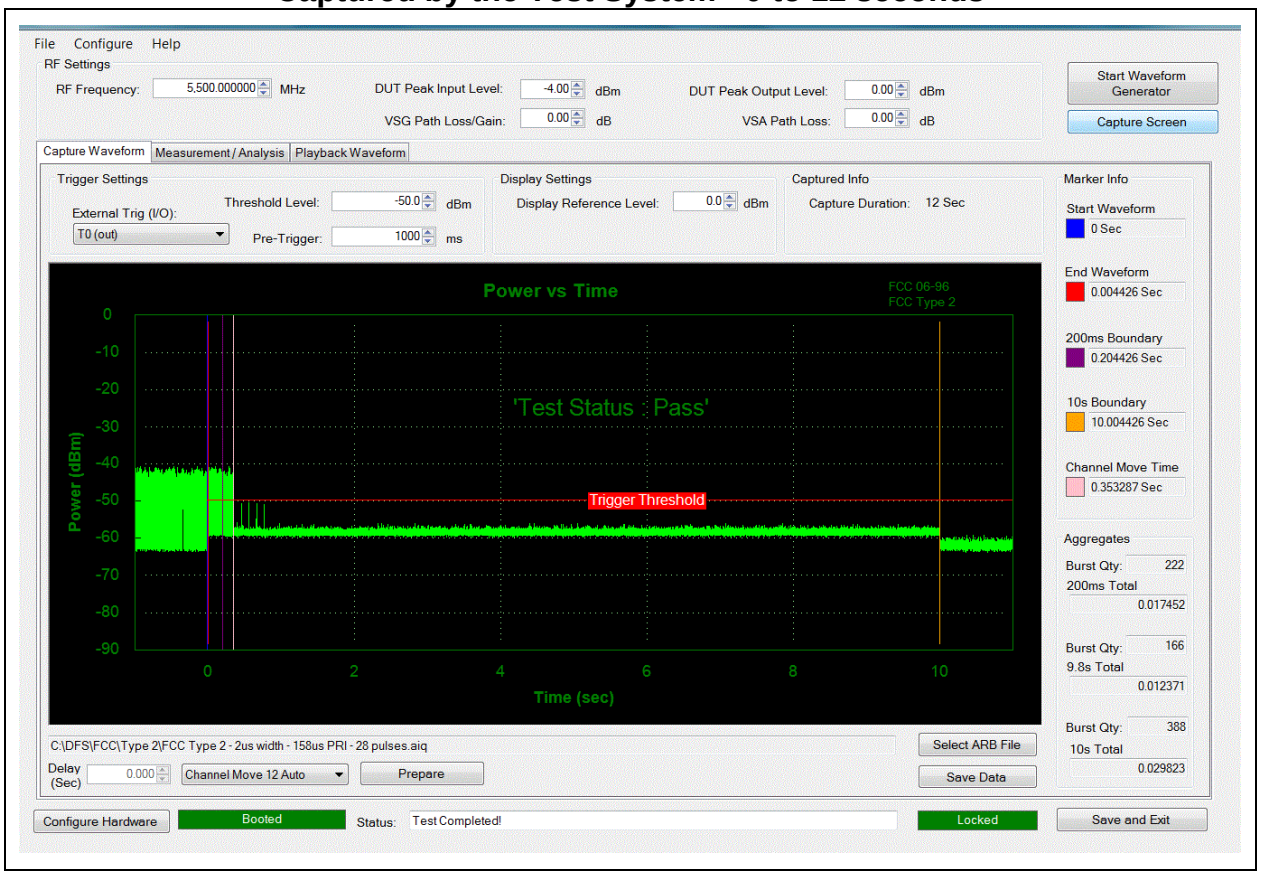
The last EUT activity after the end of the radar pulse is identified and used to determine the "Channel Mode Time"

5,500 MHz (802.11a)

Channel Closing Transmission Time = <u>29.83 mSecs (limit 260 mSecs)</u>

Channel Move Time = <u>353.28 mSecs (limit 10 Secs)</u>

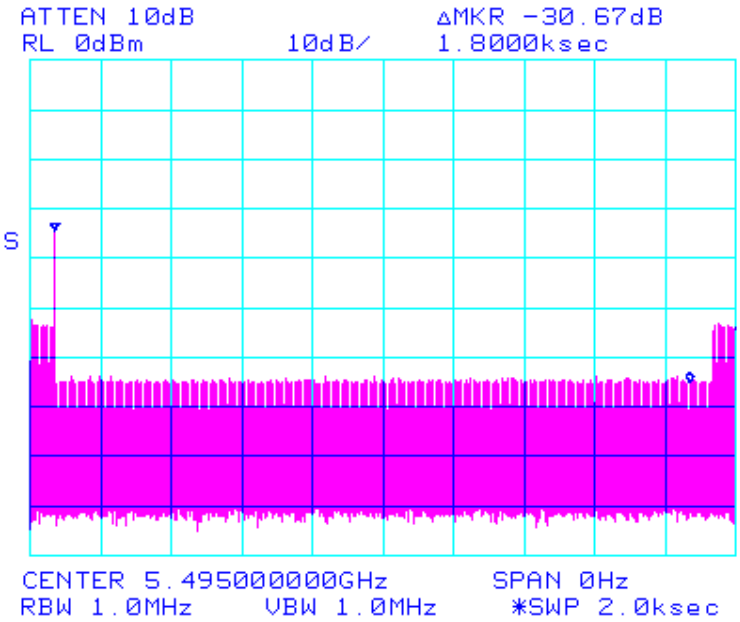
Channel Move Time, Channel Closing Transmission Time for Type 1 Radar Captured by the Test System - 0 to 12 seconds



6.1.5. 30 Minute Non-Occupancy Period

The EUT is monitored for more than 30 minutes following the channel close/move time to verify no transmissions resume on this Channel.

30 Minute Non-Occupancy Period Type 1 Radar
5,500MHz 802.11a



Measurement Uncertainty Time/Power

Measurement uncertainty	
- Time	4%
- Power	1.33dB

Traceability

Test Equipment Used
0072, 0083, 0098, 0116, 0132, 0158, 0313, 0314, 0193, 0223, 0252, 0253, 0251, 0256, 0328, 0329

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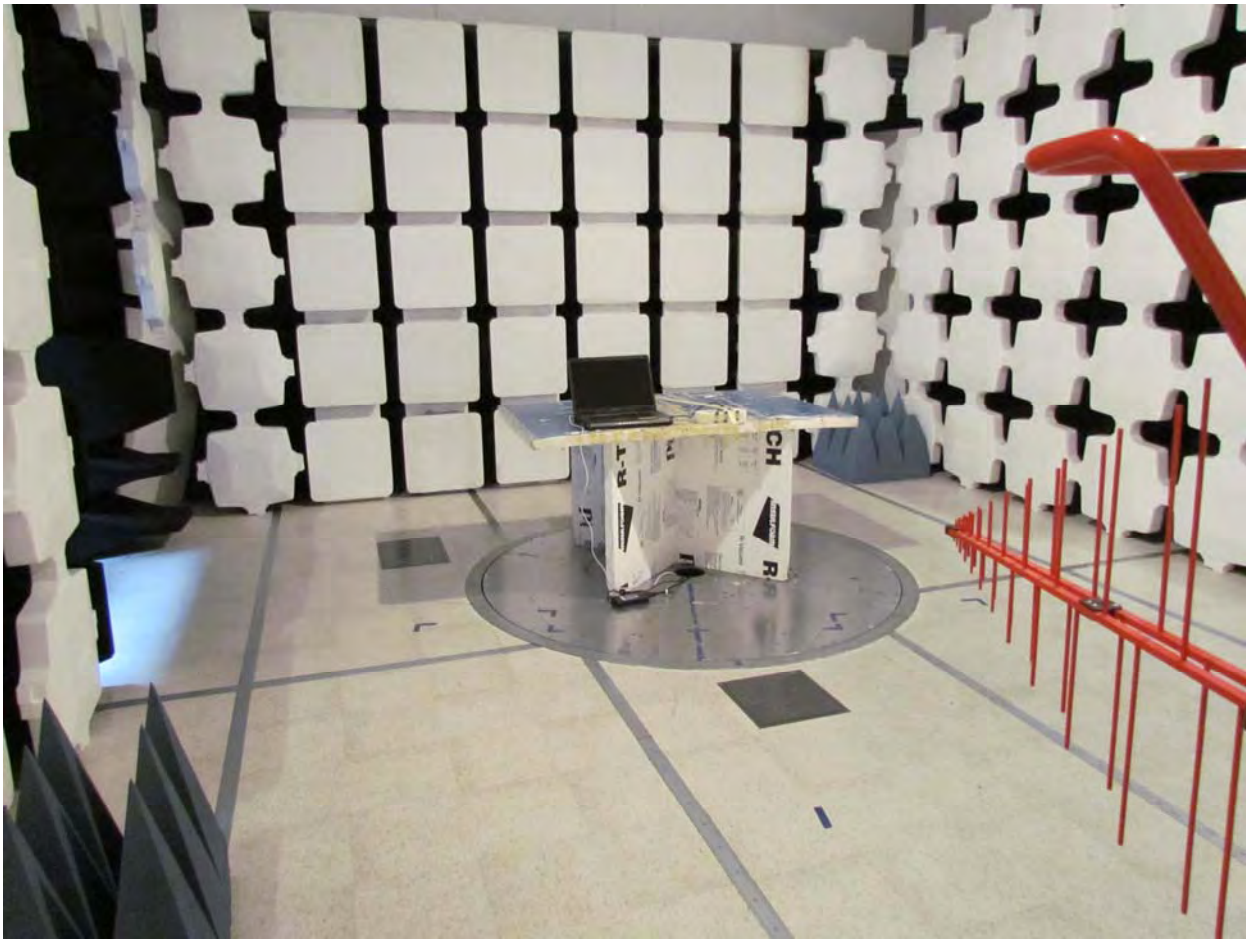
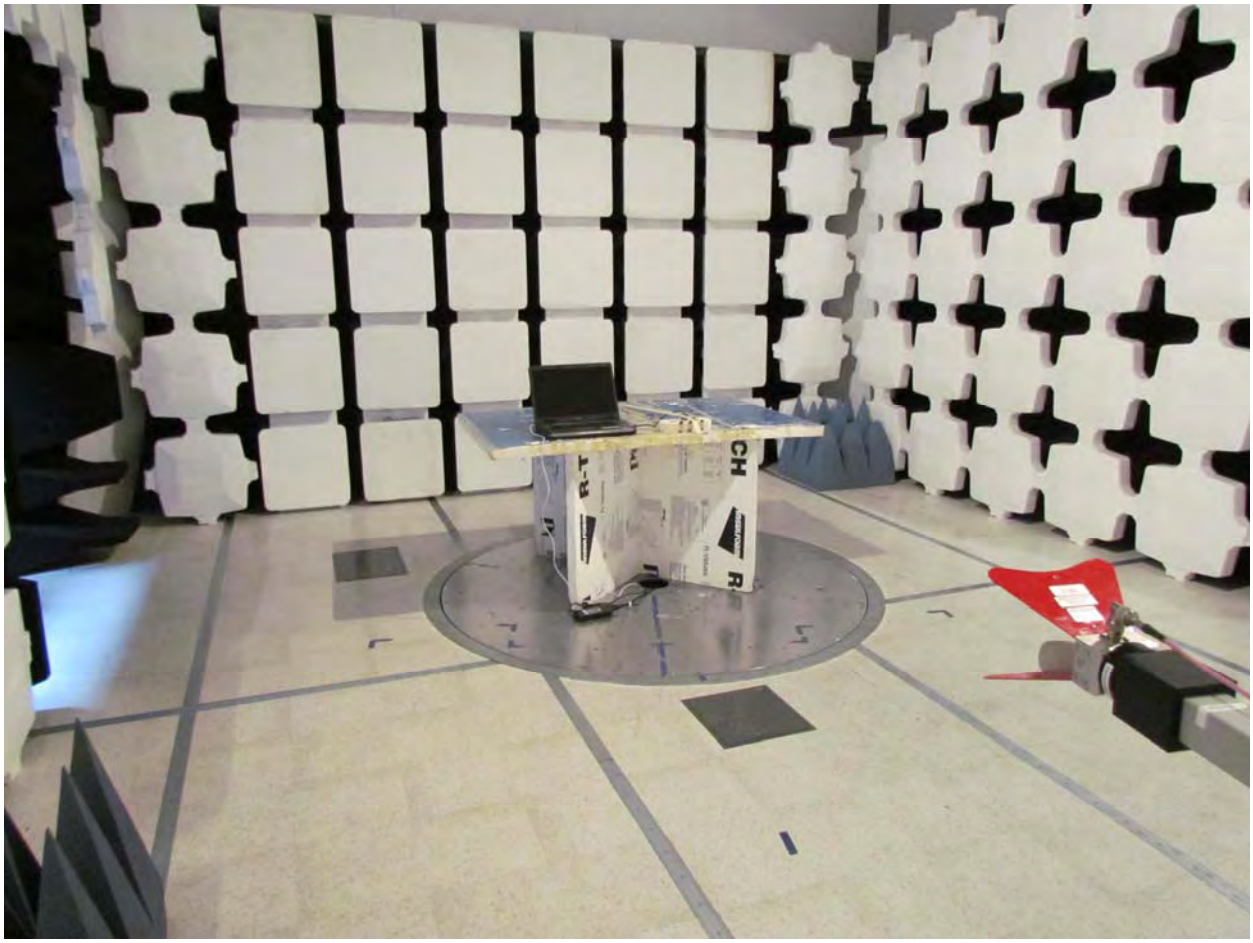
7. PHOTOGRAPHS

7.1. Conducted Test Setup

7.2. Radiated Emissions < 1 GHz

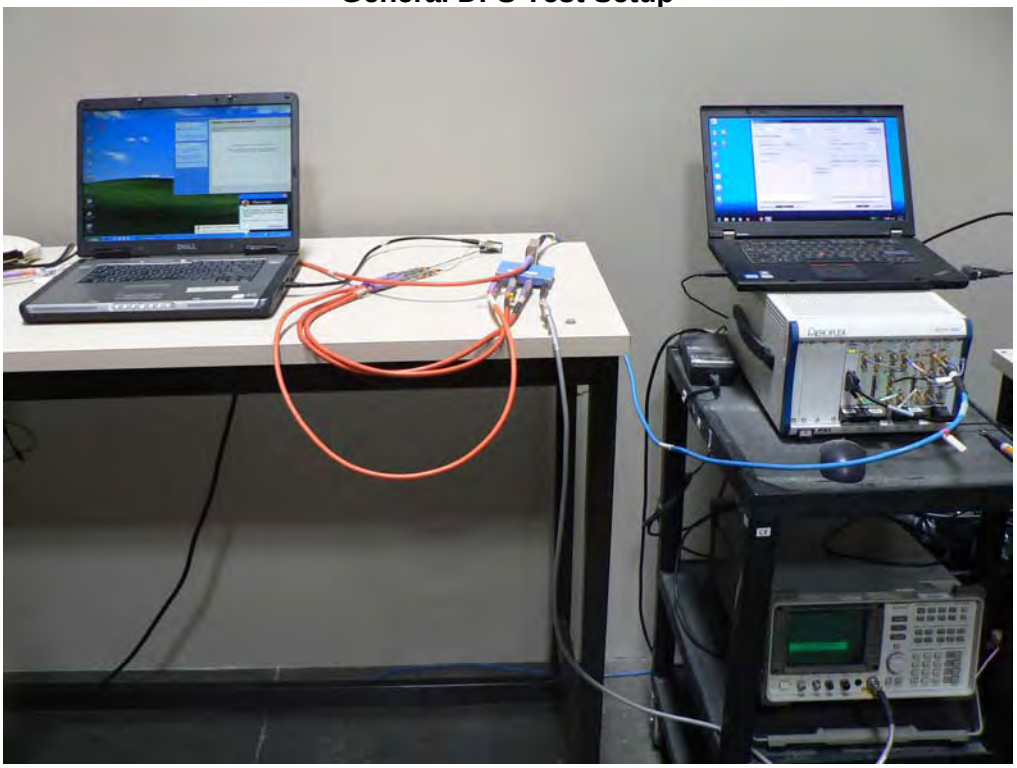


7.3. Radiated Emissions > 1 GHz



7.4. Dynamic Frequency Selection Test Set-Up

General DFS Test Setup



8. TEST EQUIPMENT

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

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APPENDIX

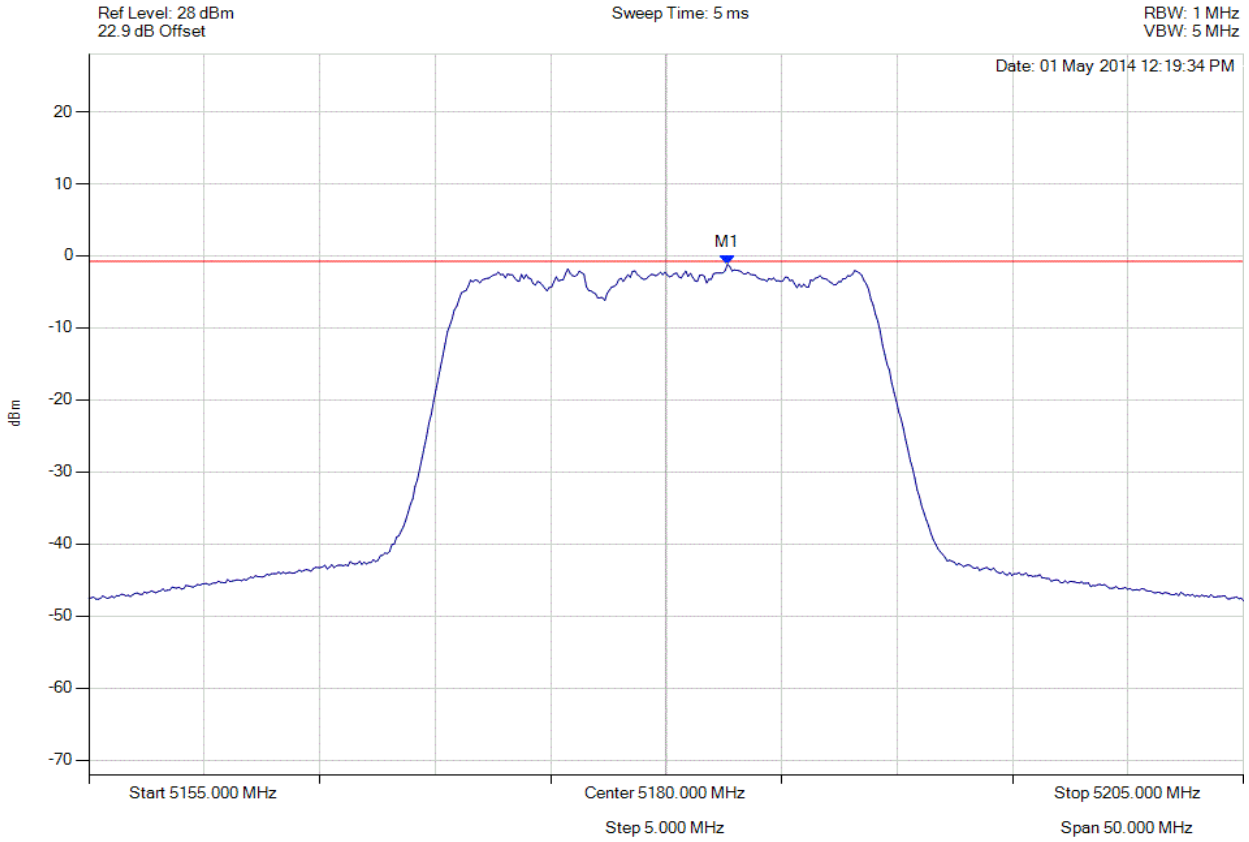
A. SUPPORTING INFORMATION

A.1. CONDUCTED TEST PLOTS

A.1.1. Peak Power Spectral Density

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5180.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

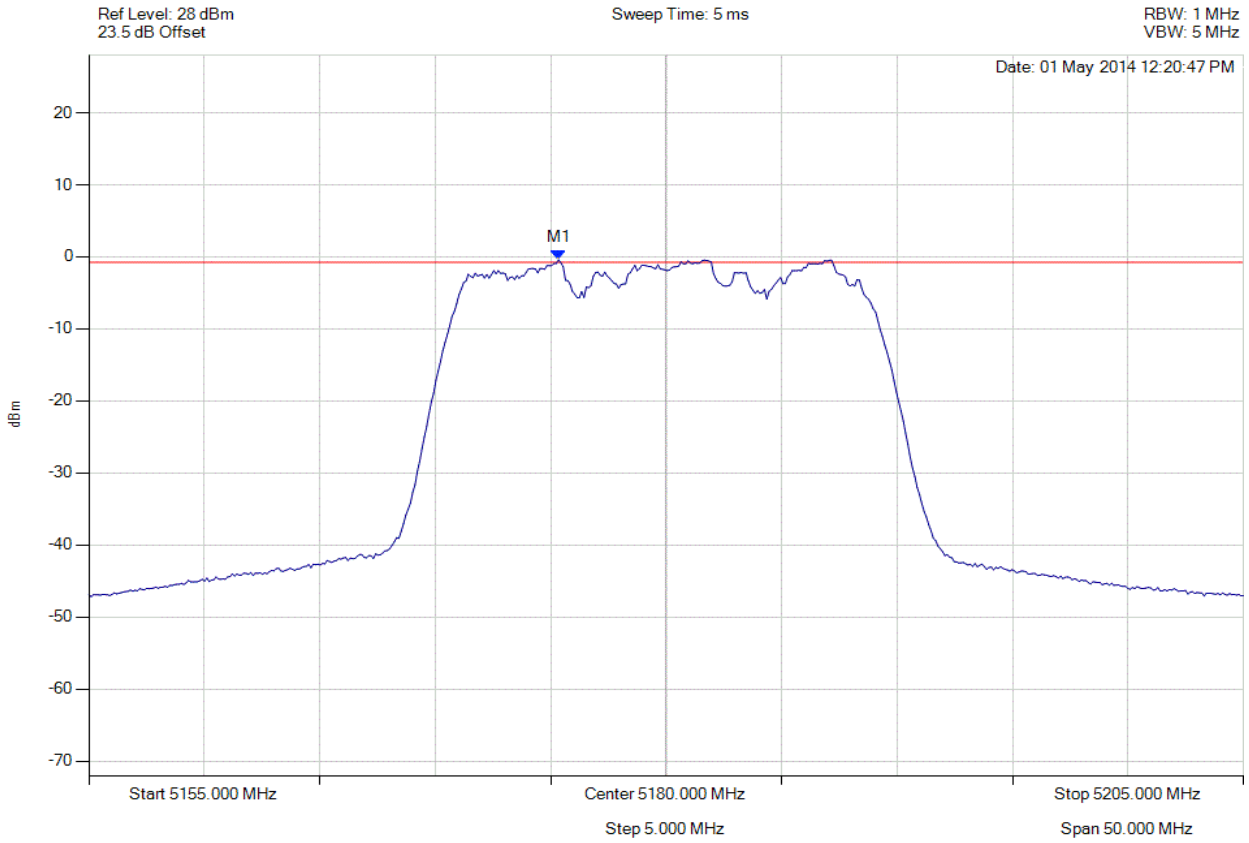


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5182.655 MHz : -1.193 dBm	Limit: ≤ -0.771 dBm Margin: 0.15 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5180.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

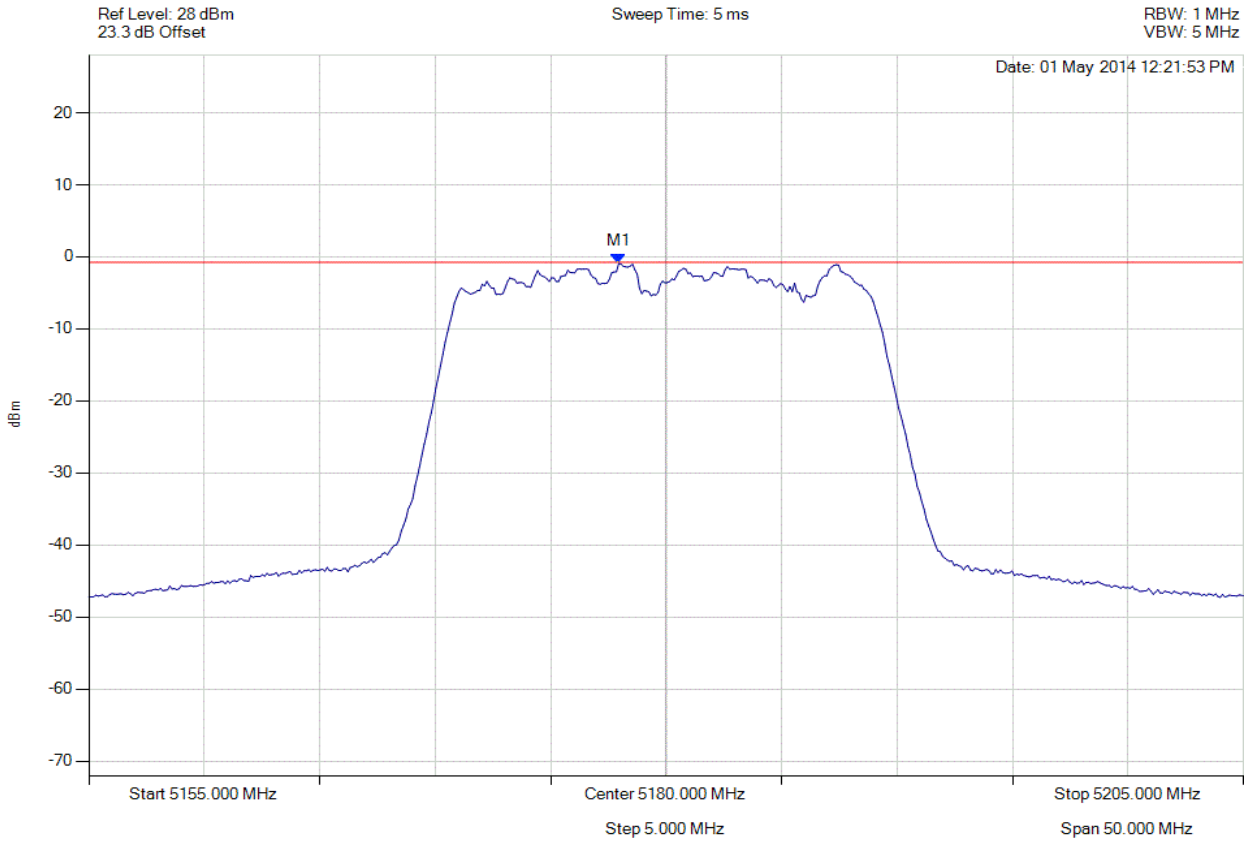


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5175.341 MHz : -0.406 dBm	Limit: ≤ -0.771 dBm Margin: -0.63 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5180.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

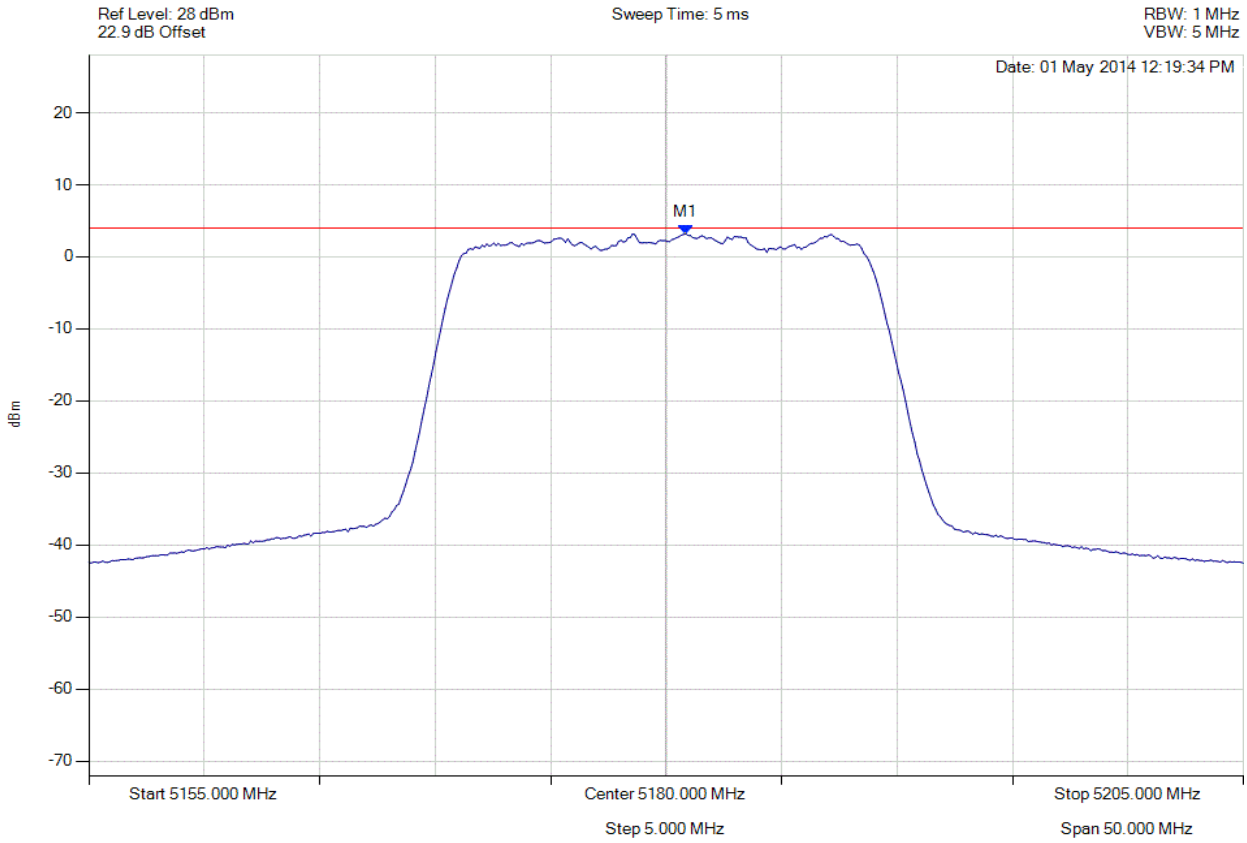


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5177.946 MHz : -0.938 dBm	Limit: ≤ -0.771 dBm Margin: -0.10 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5180.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

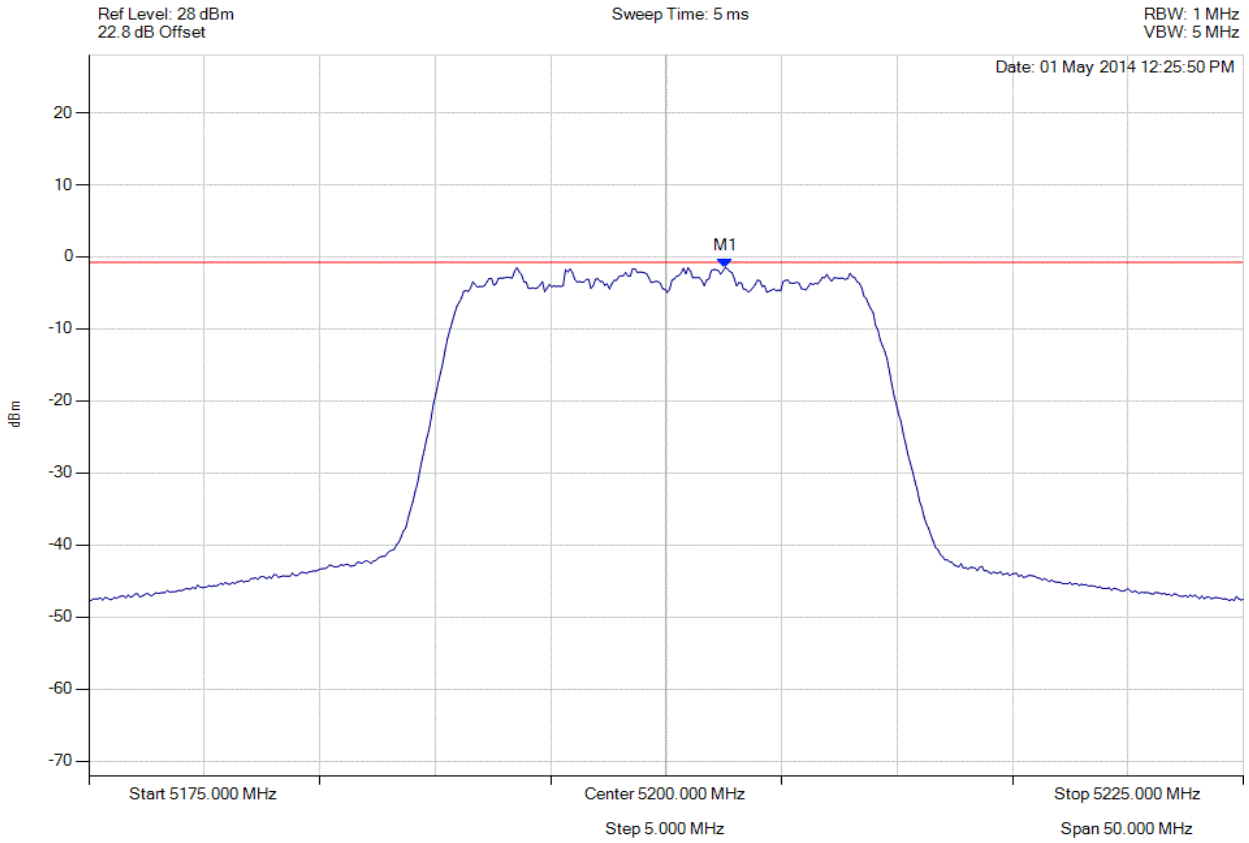


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5180.852 MHz : 3.200 dBm	Limit: ≤ 4.0 dBm Margin: -0.8 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5200.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

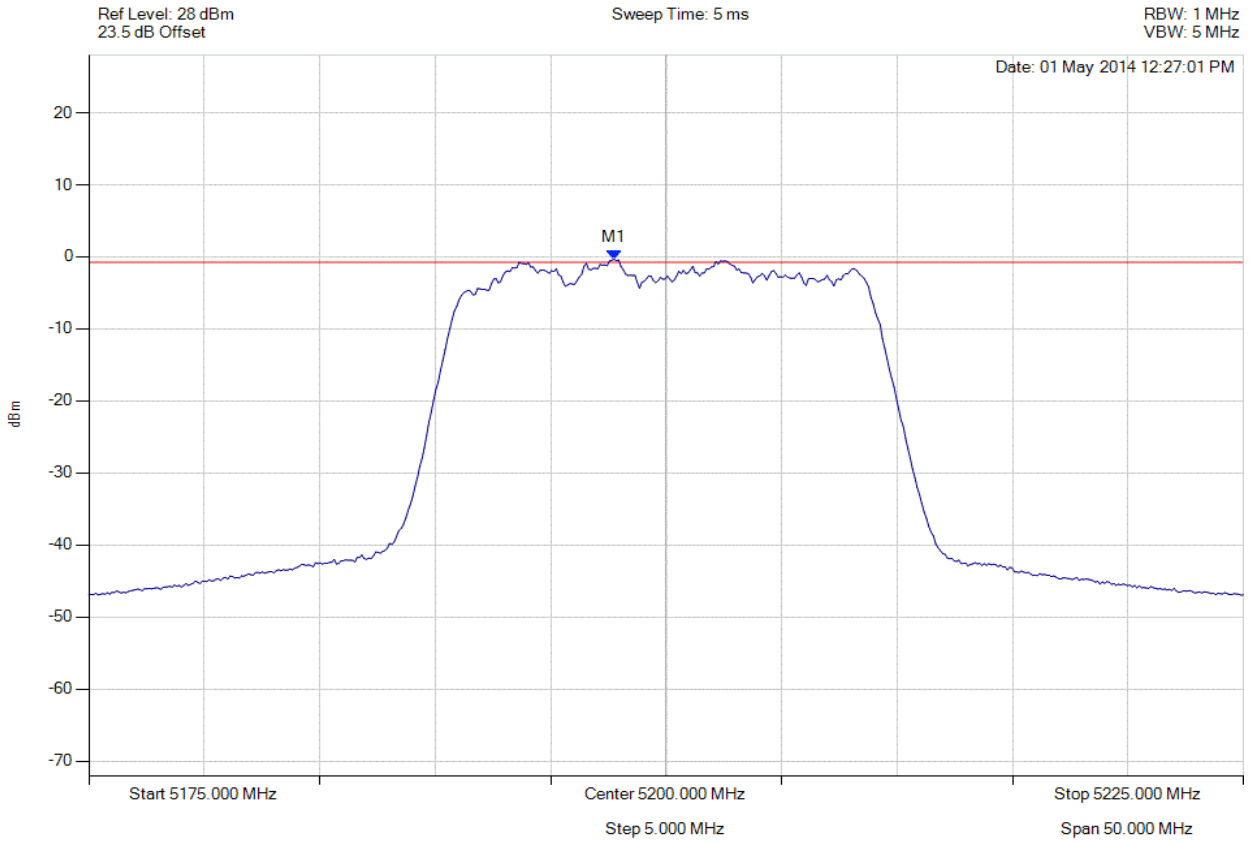


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5202.555 MHz : -1.494 dBm	Limit: ≤ -0.771 dBm Margin: 0.45 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5200.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

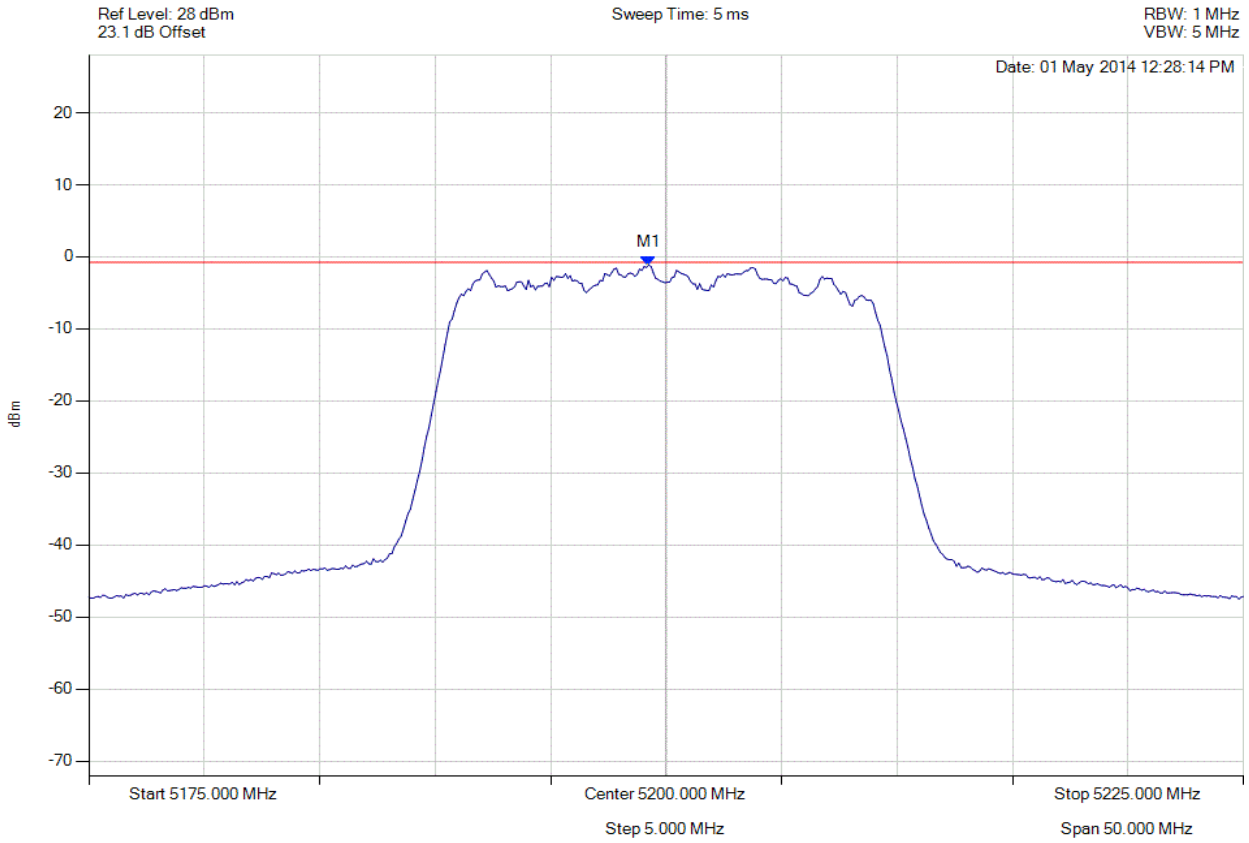


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5197.745 MHz : -0.351 dBm	Limit: ≤ -0.771 dBm Margin: -0.69 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5200.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

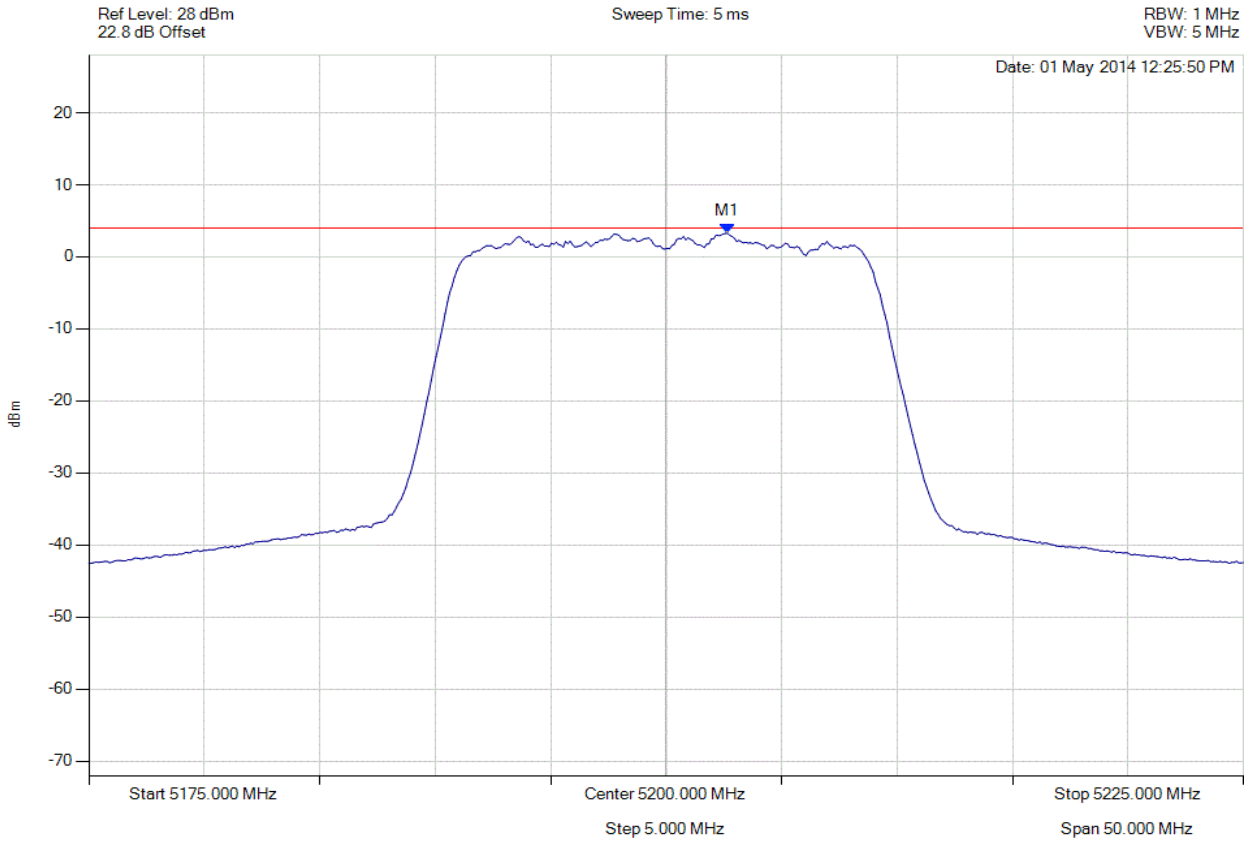


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5199.248 MHz : -1.126 dBm	Limit: ≤ -0.771 dBm Margin: 0.09 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5200.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

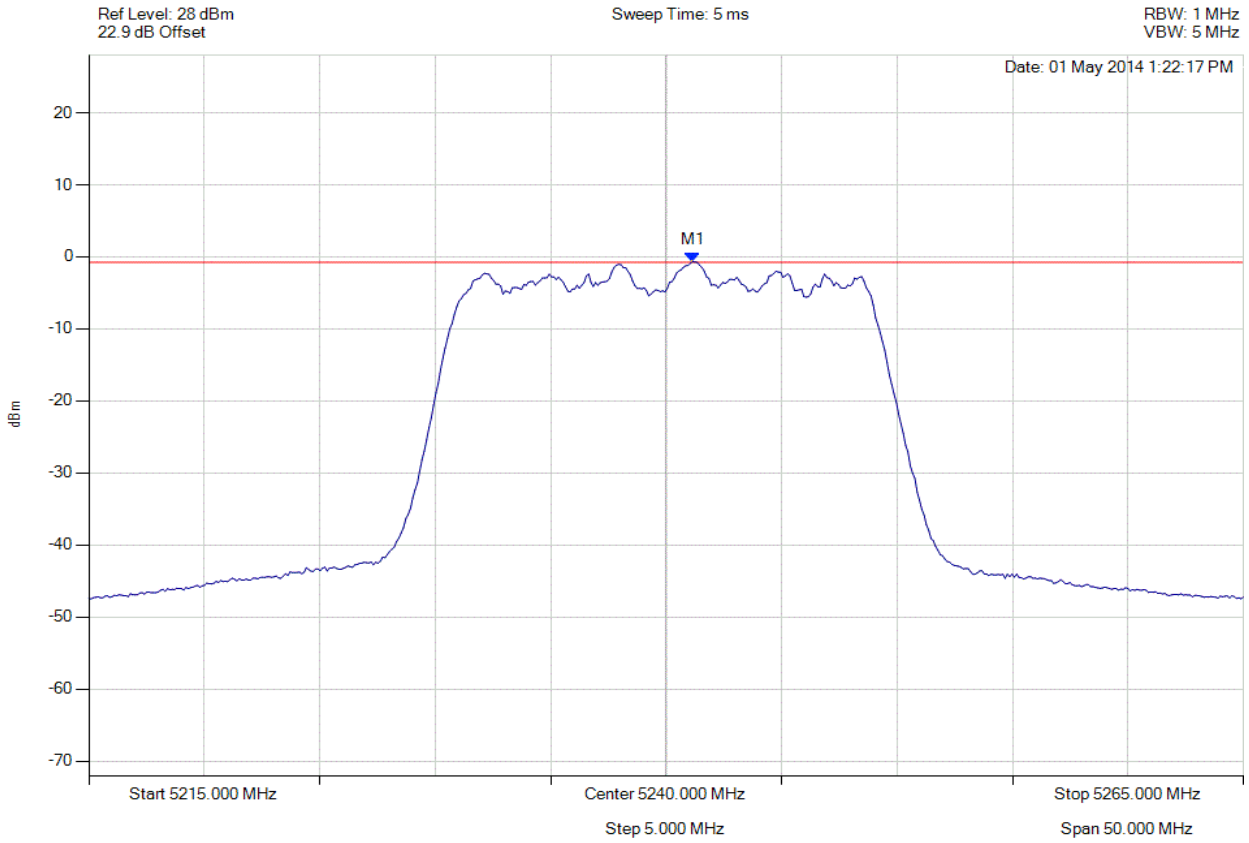


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5202.655 MHz : 3.275 dBm	Limit: ≤ 4.0 dBm Margin: -0.7 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5240.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

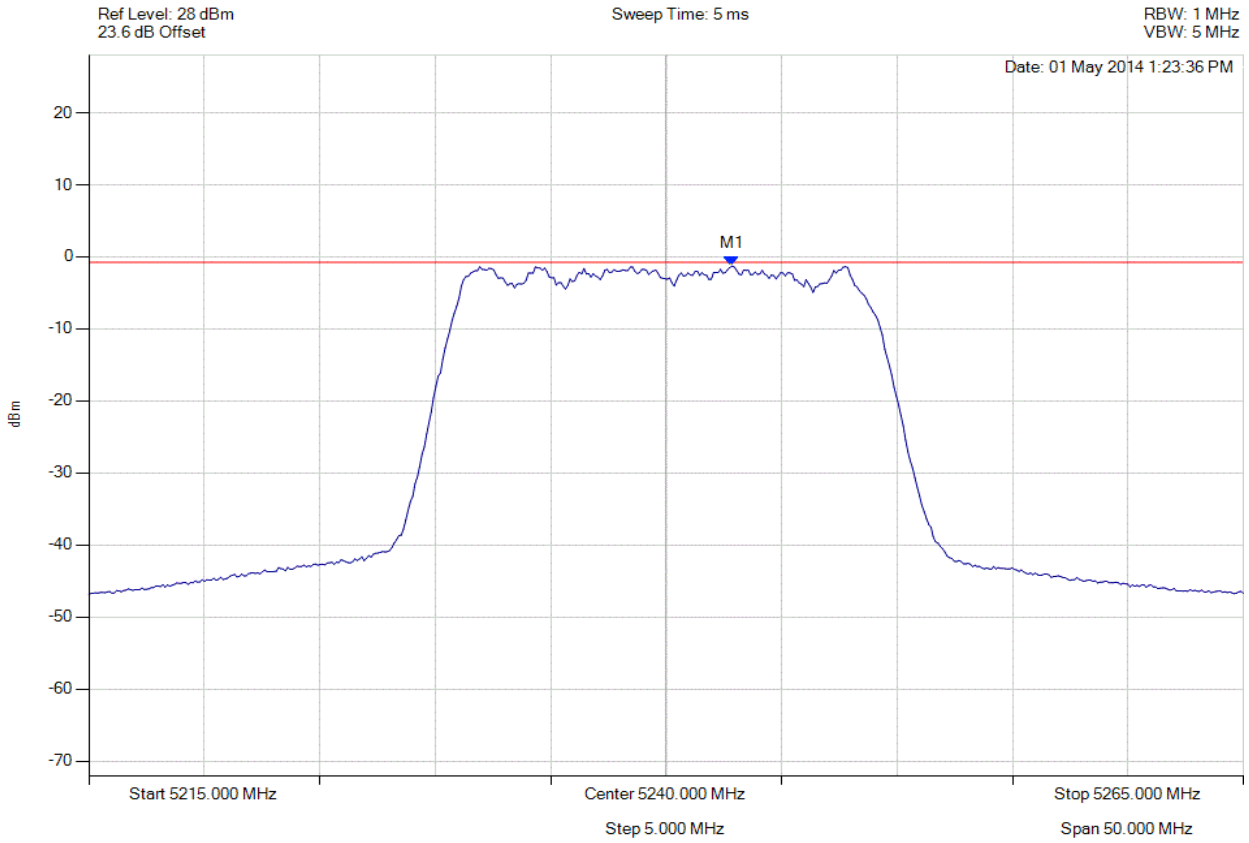


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5241.152 MHz : -0.685 dBm	Limit: ≤ -0.771 dBm Margin: -0.36 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5240.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

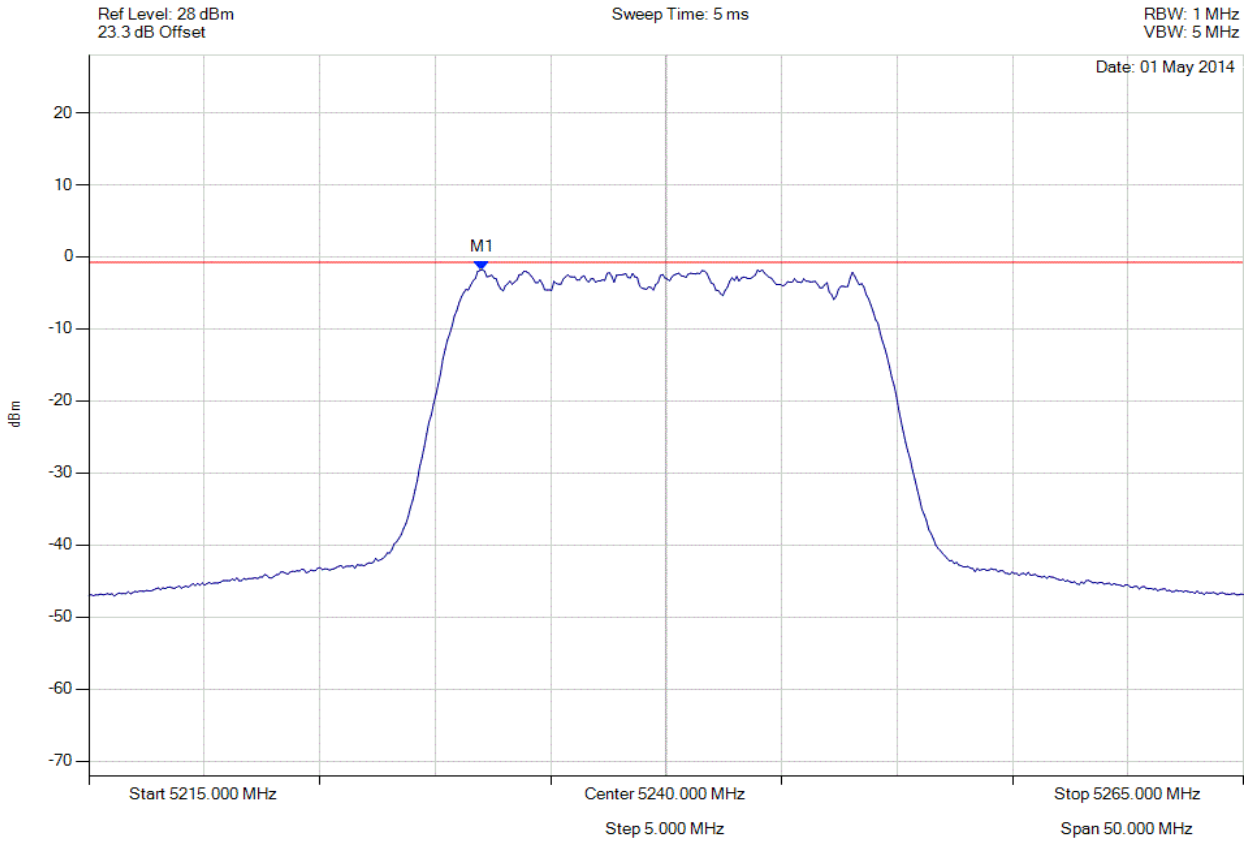


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5242.856 MHz : -1.275 dBm	Limit: ≤ -0.771 dBm Margin: 0.23 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5240.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

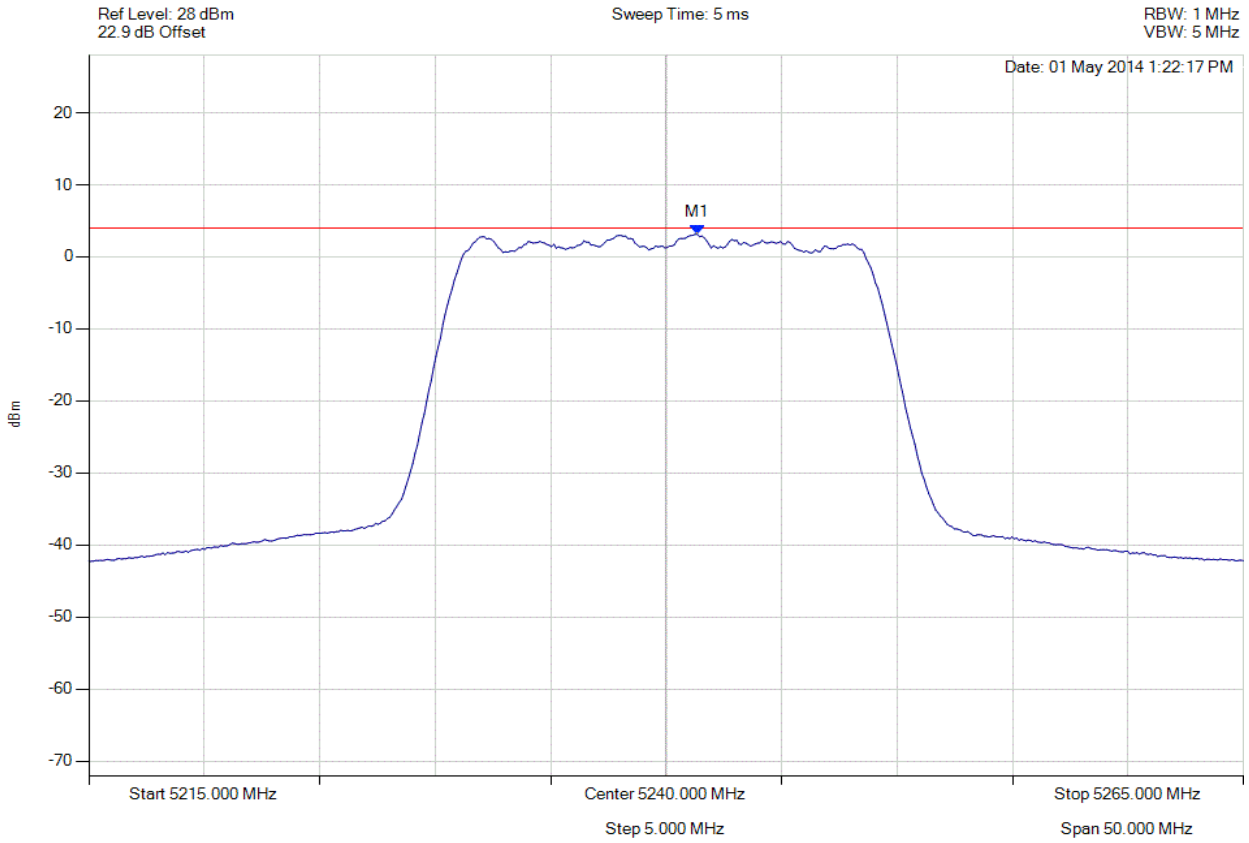


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5232.034 MHz : -1.787 dBm	Limit: ≤ -0.771 dBm Margin: 0.75 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5240.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

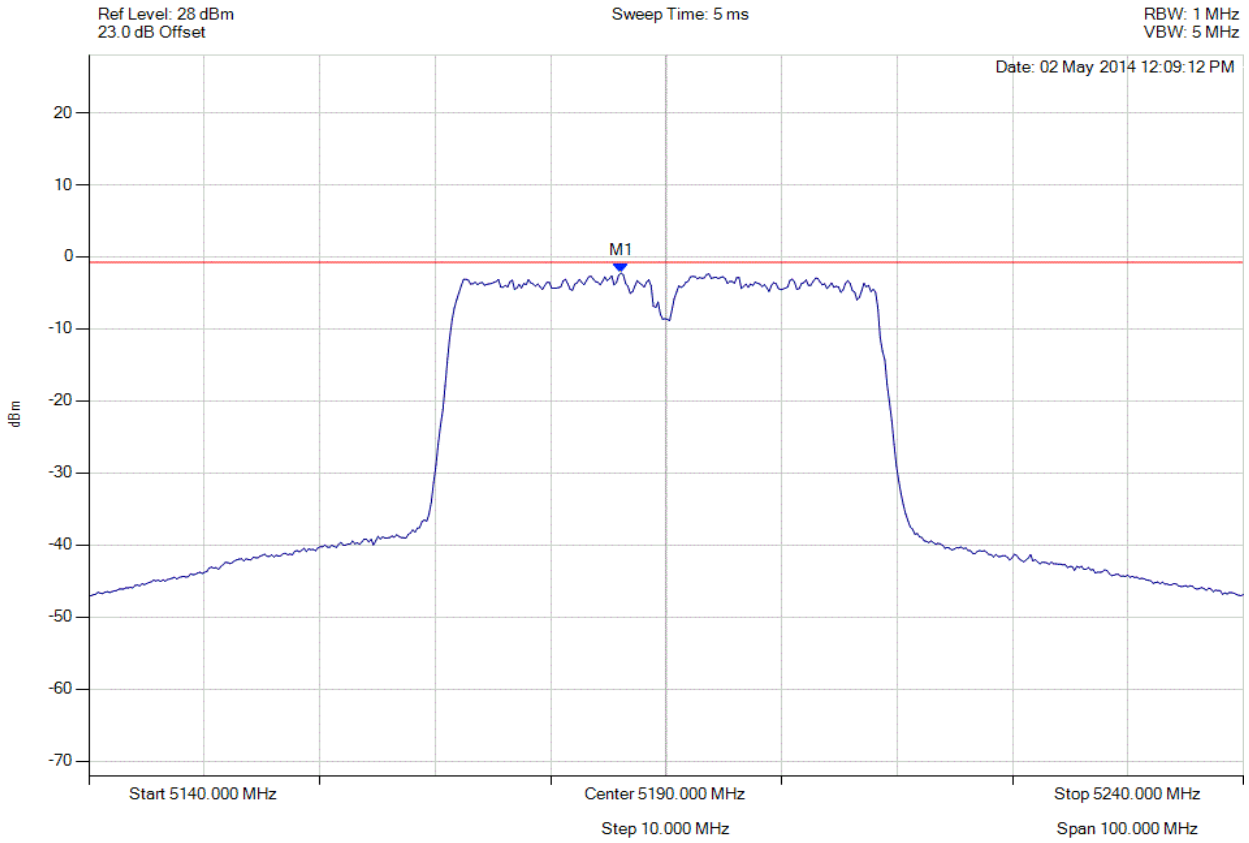


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5241.353 MHz : 3.139 dBm	Limit: ≤ 4.0 dBm Margin: -0.9 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5190.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

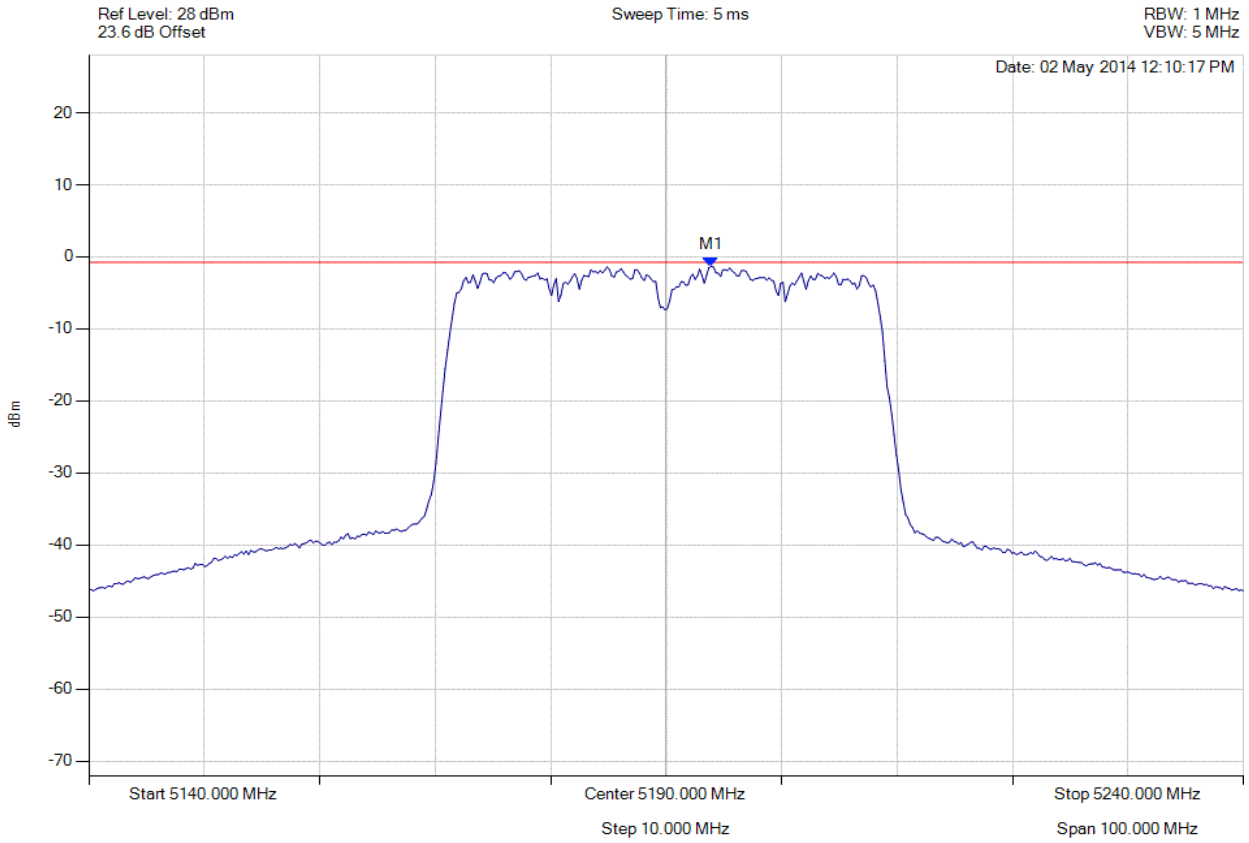


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5186.092 MHz : -2.248 dBm	Limit: ≤ -0.771 dBm Margin: 1.21 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5190.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

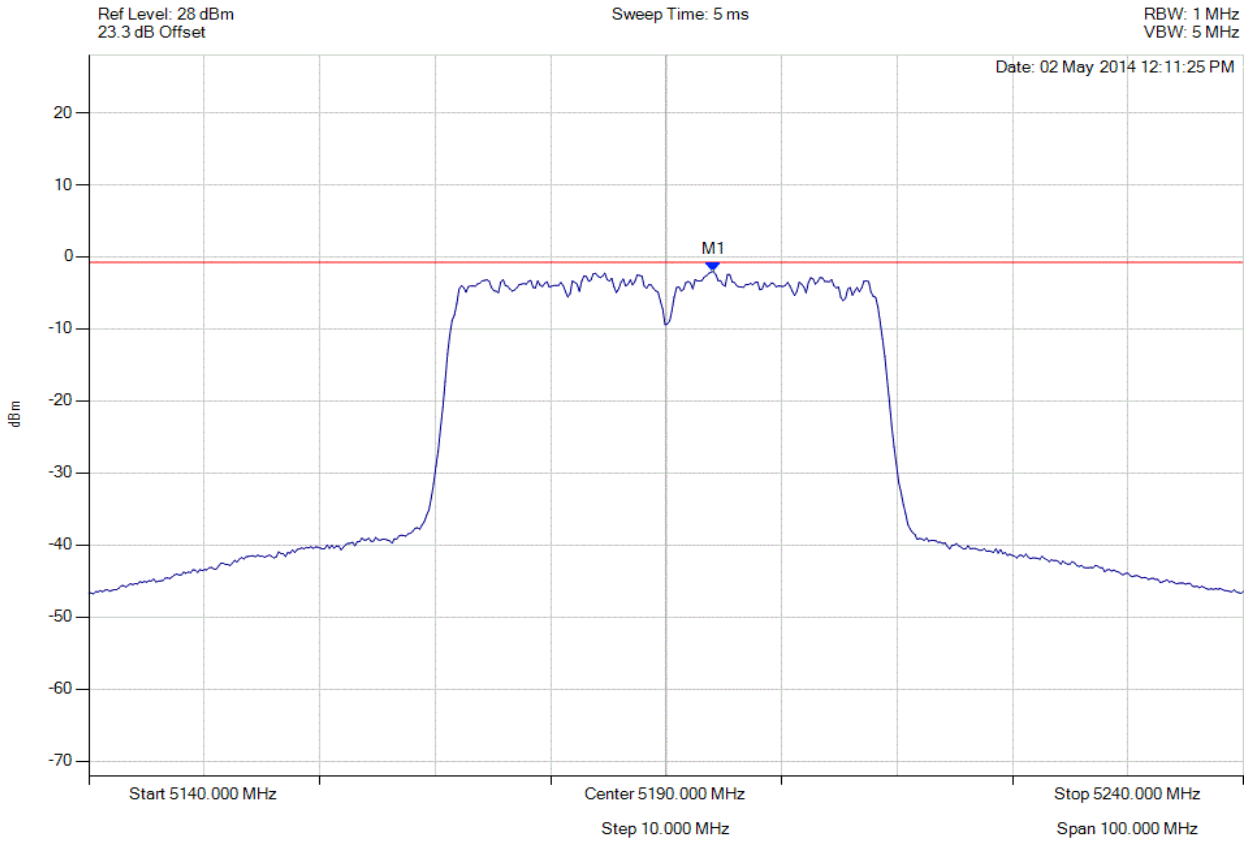


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5193.908 MHz : -1.331 dBm	Limit: ≤ -0.771 dBm Margin: 0.29 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5190.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

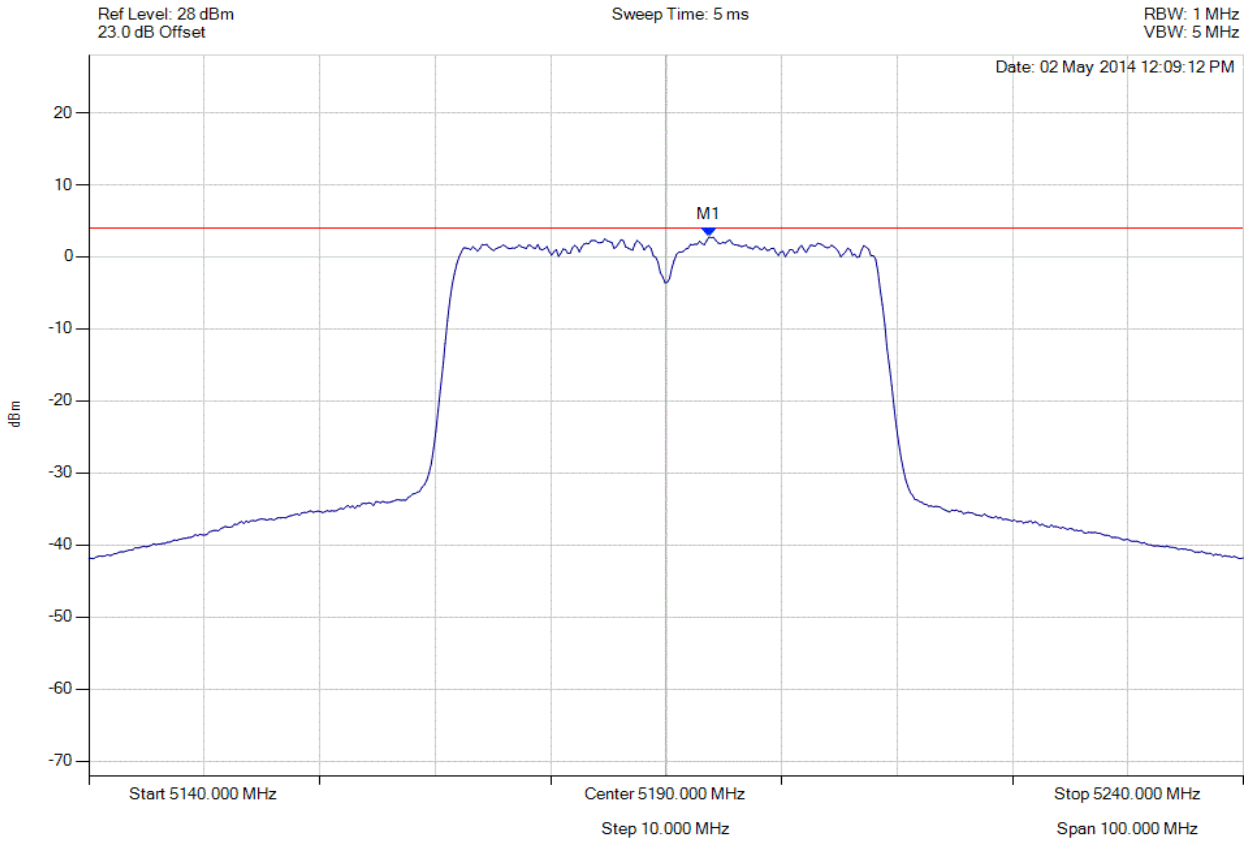


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5194.108 MHz : -2.039 dBm	Limit: ≤ -0.771 dBm Margin: 1.00 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5190.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

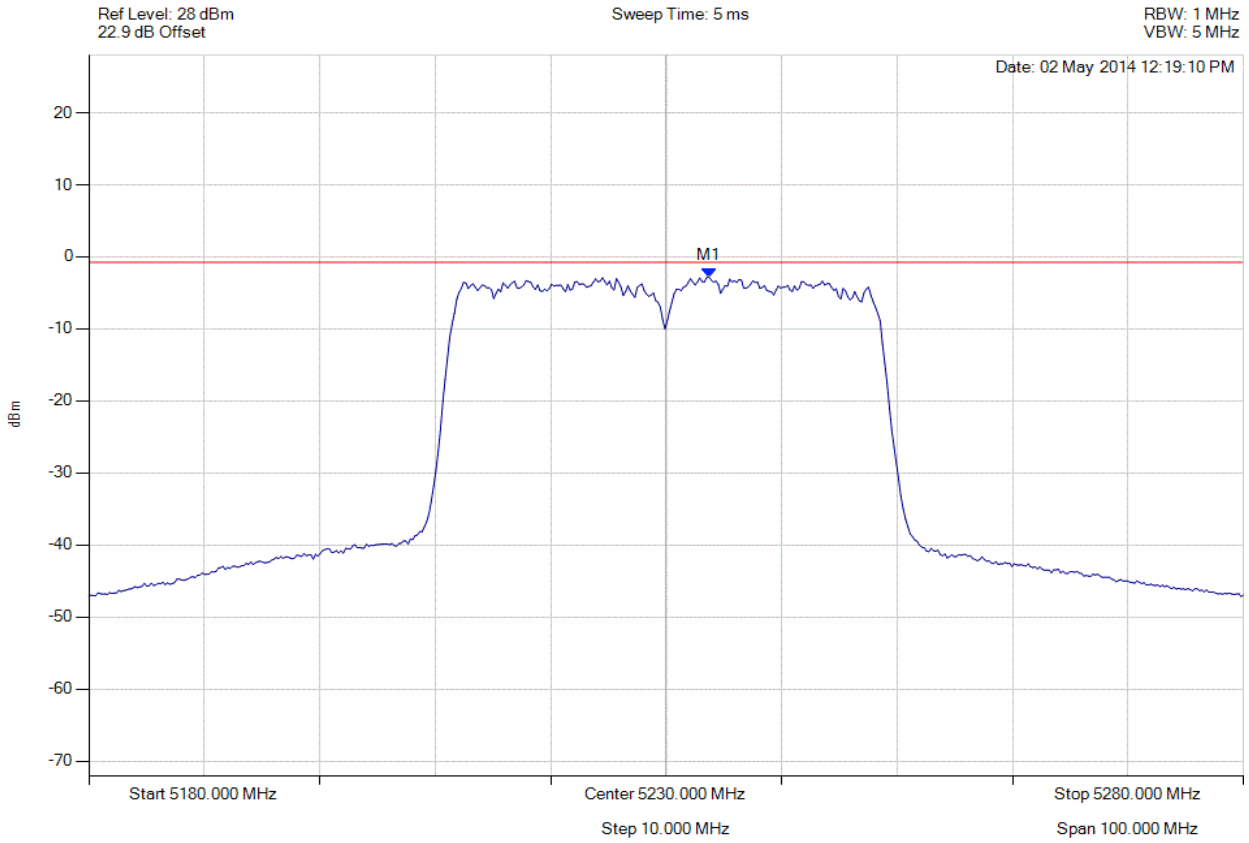


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5193.707 MHz : 2.750 dBm	Limit: ≤ 4.0 dBm Margin: -1.3 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5230.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

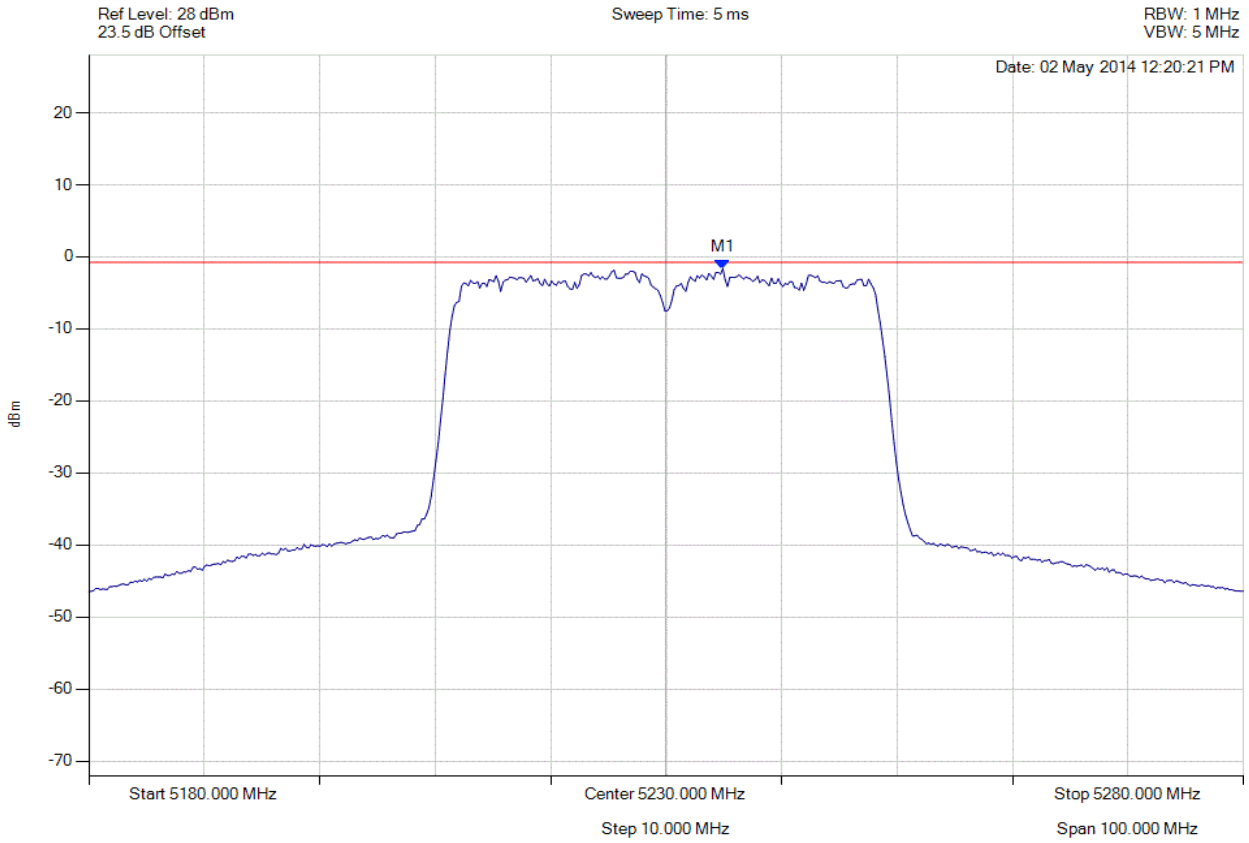


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5233.707 MHz : -2.829 dBm	Limit: ≤ -0.771 dBm Margin: 1.79 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5230.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

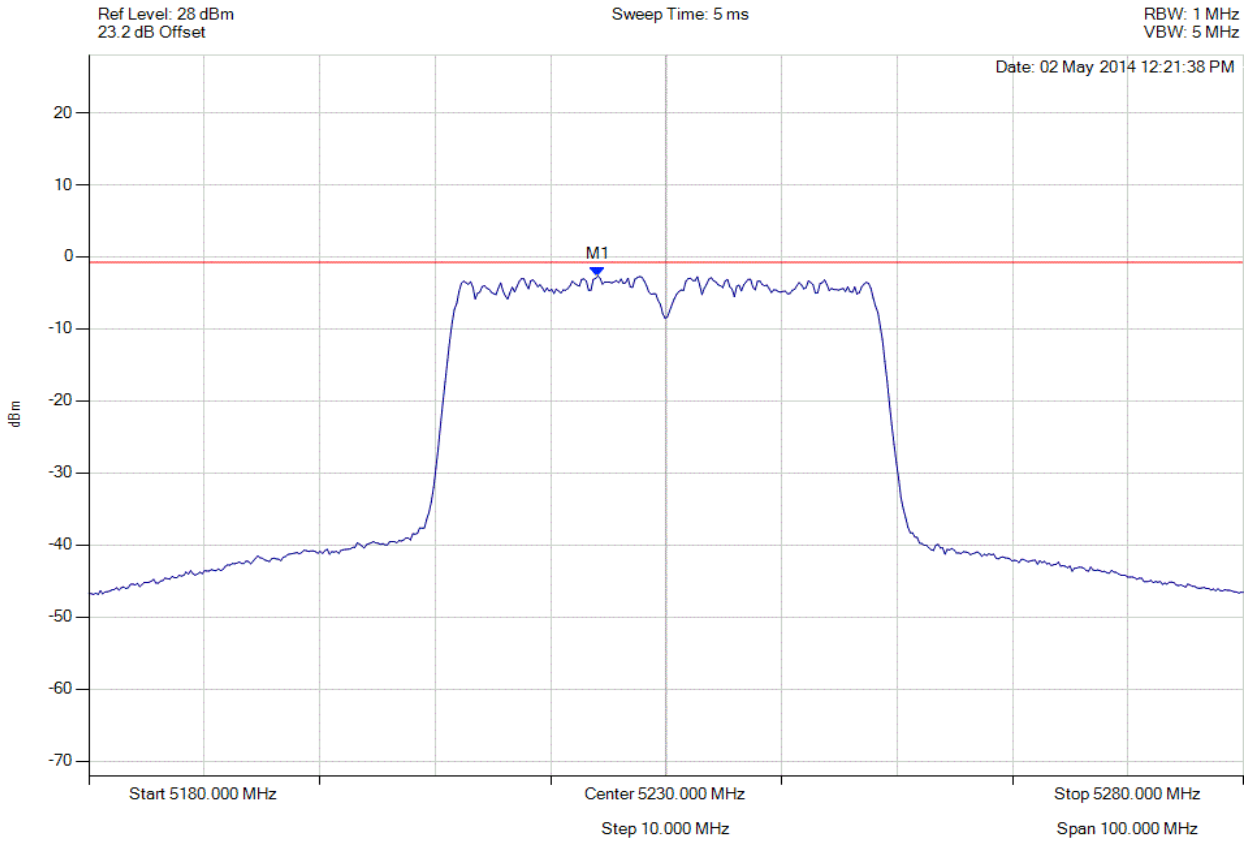


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5234.910 MHz : -1.633 dBm	Limit: ≤ -0.771 dBm Margin: 0.59 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5230.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

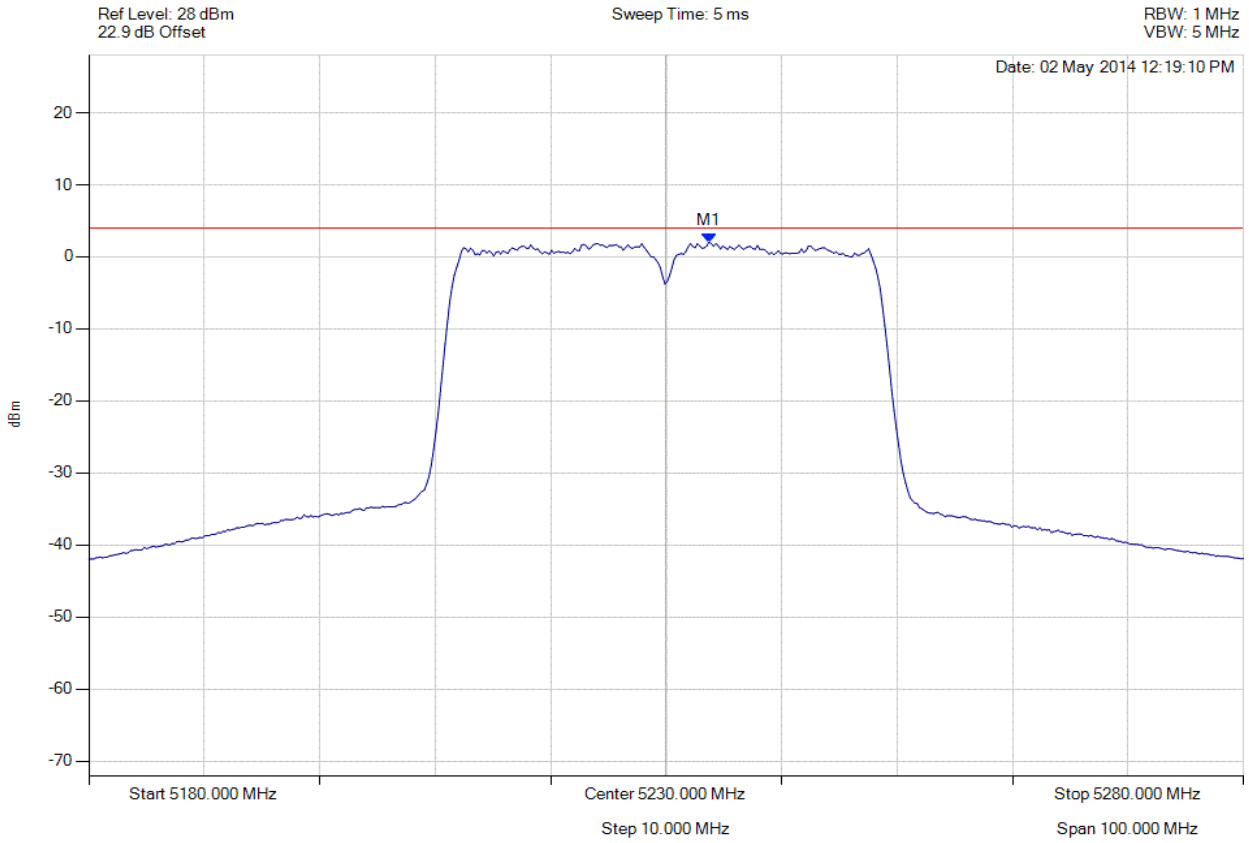


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5224.088 MHz : -2.654 dBm	Limit: ≤ -0.771 dBm Margin: 1.61 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5230.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

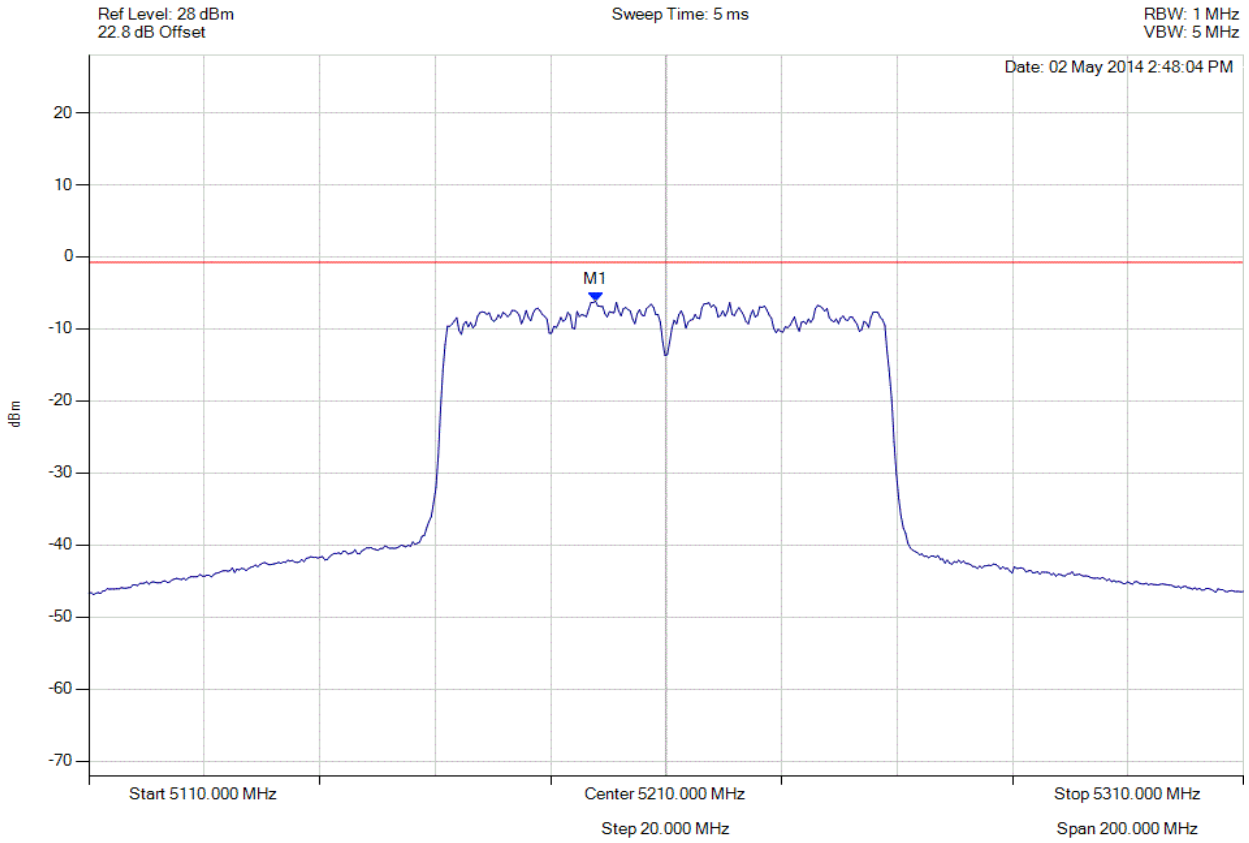


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5233.707 MHz : 2.032 dBm	Limit: ≤ 4.0 dBm Margin: -2.0 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5210.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

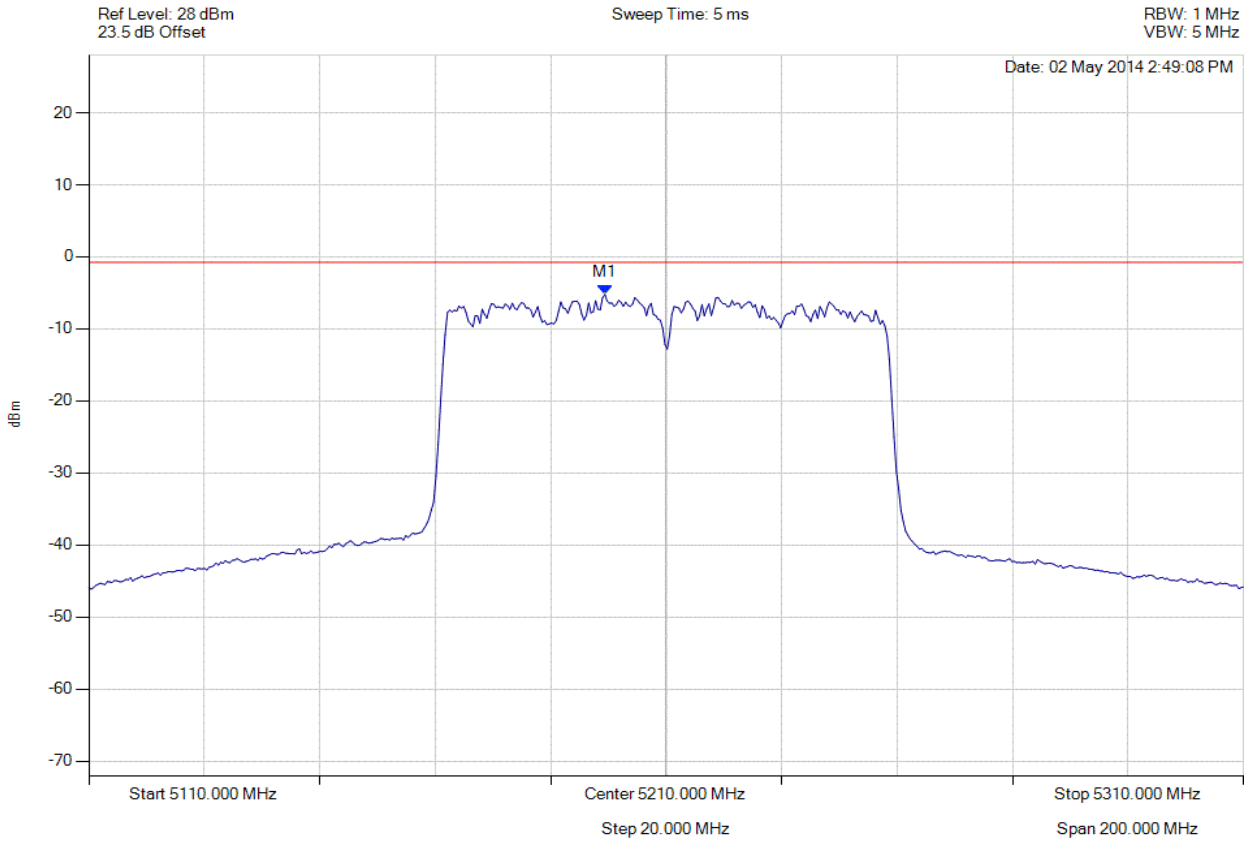


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5197.776 MHz : -6.144 dBm	Limit: ≤ -0.771 dBm Margin: 4.61 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5210.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

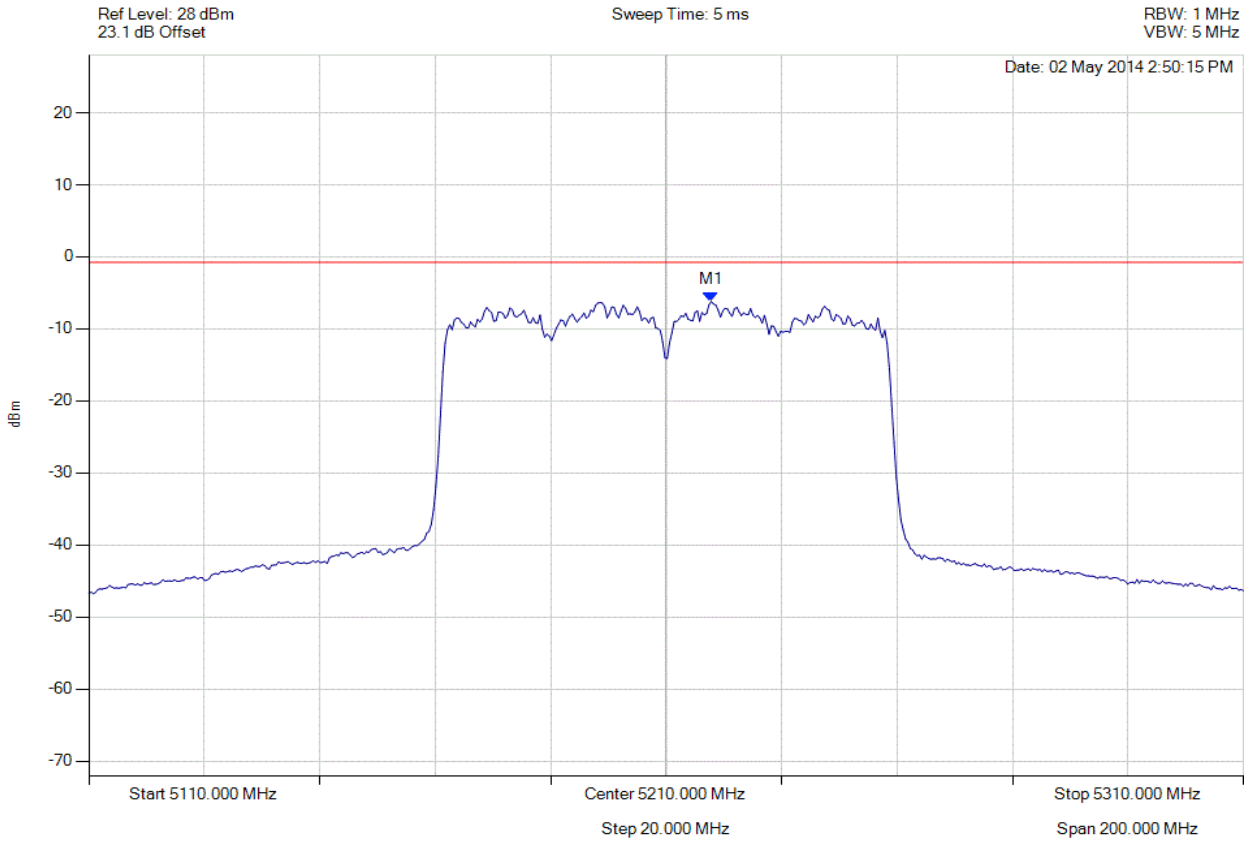


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5199.379 MHz : -5.211 dBm	Limit: ≤ -0.771 dBm Margin: 3.67 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5210.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

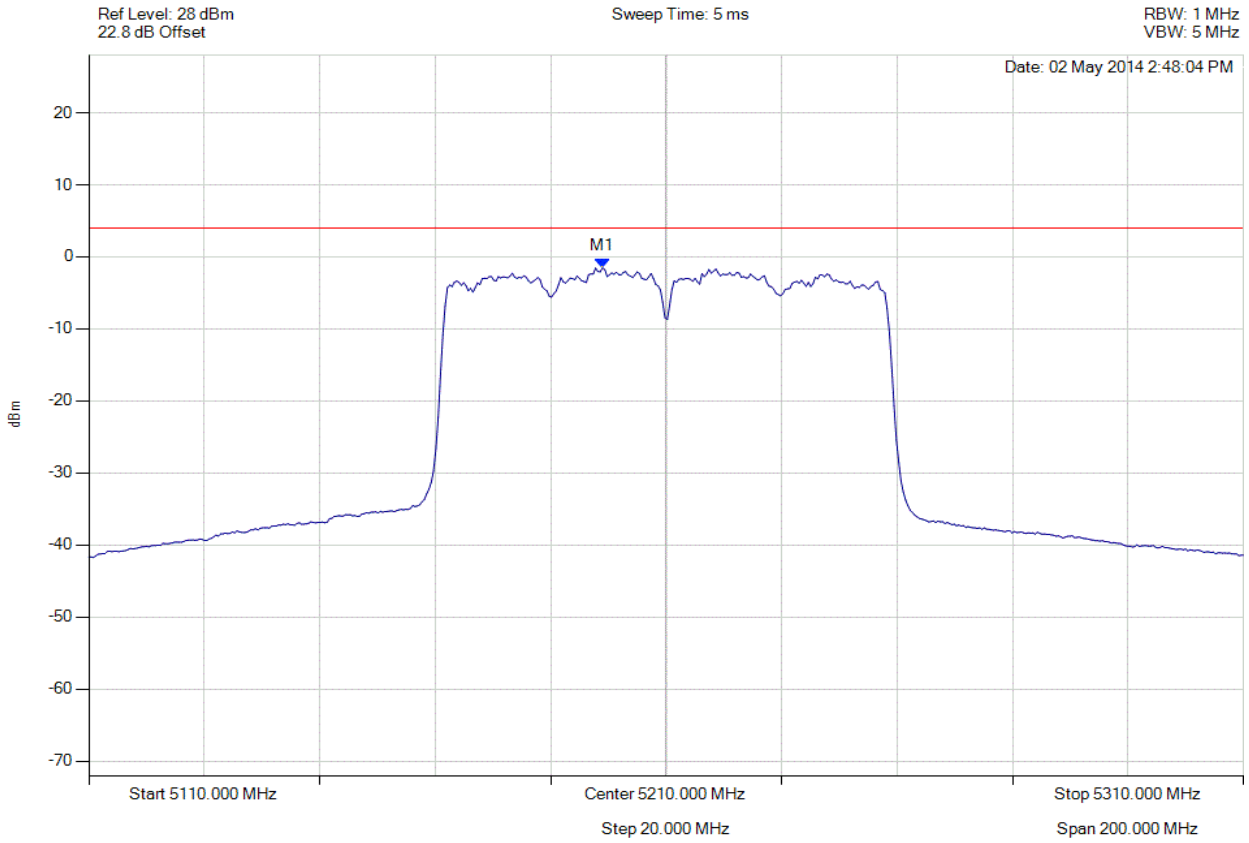


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5217.816 MHz : -6.197 dBm	Limit: ≤ -0.771 dBm Margin: 4.66 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5210.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

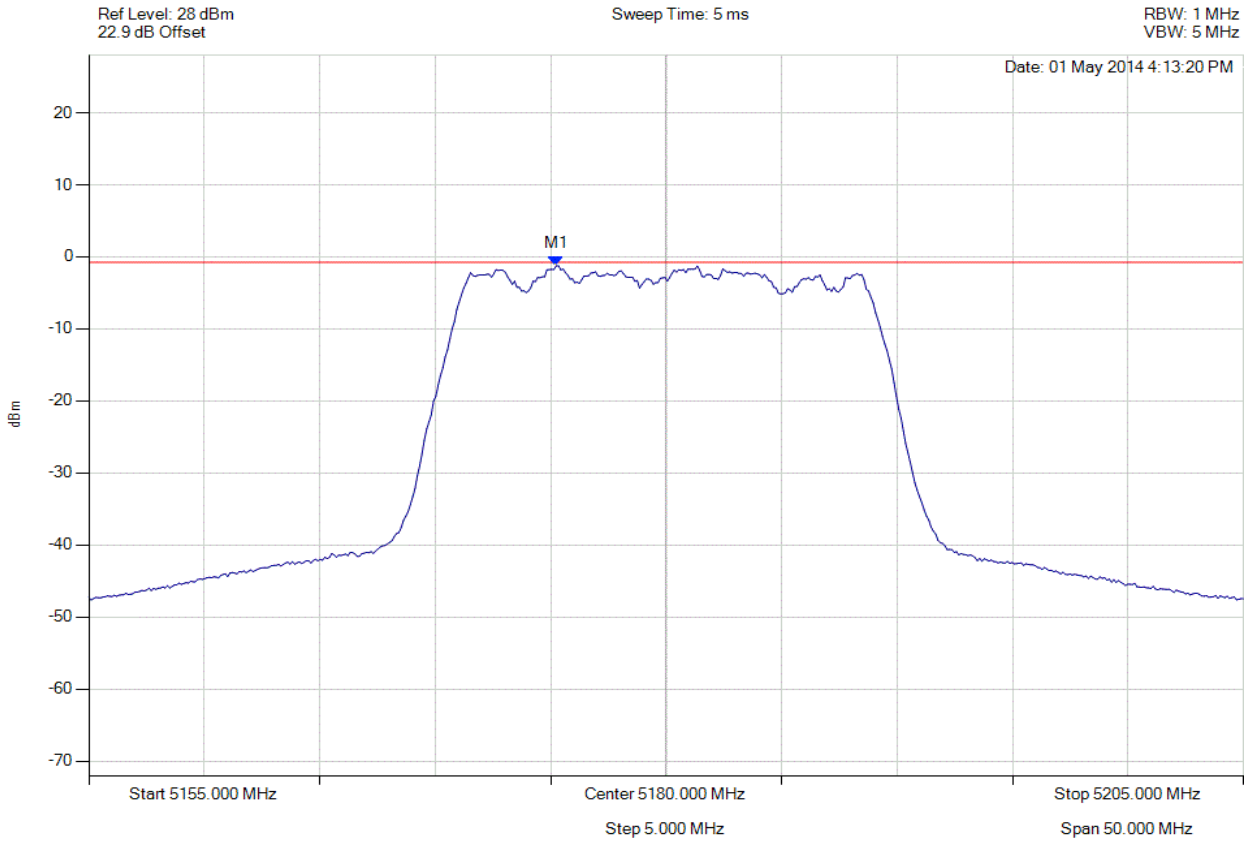


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5198.978 MHz : -1.535 dBm	Limit: ≤ 4.0 dBm Margin: -5.5 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5180.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

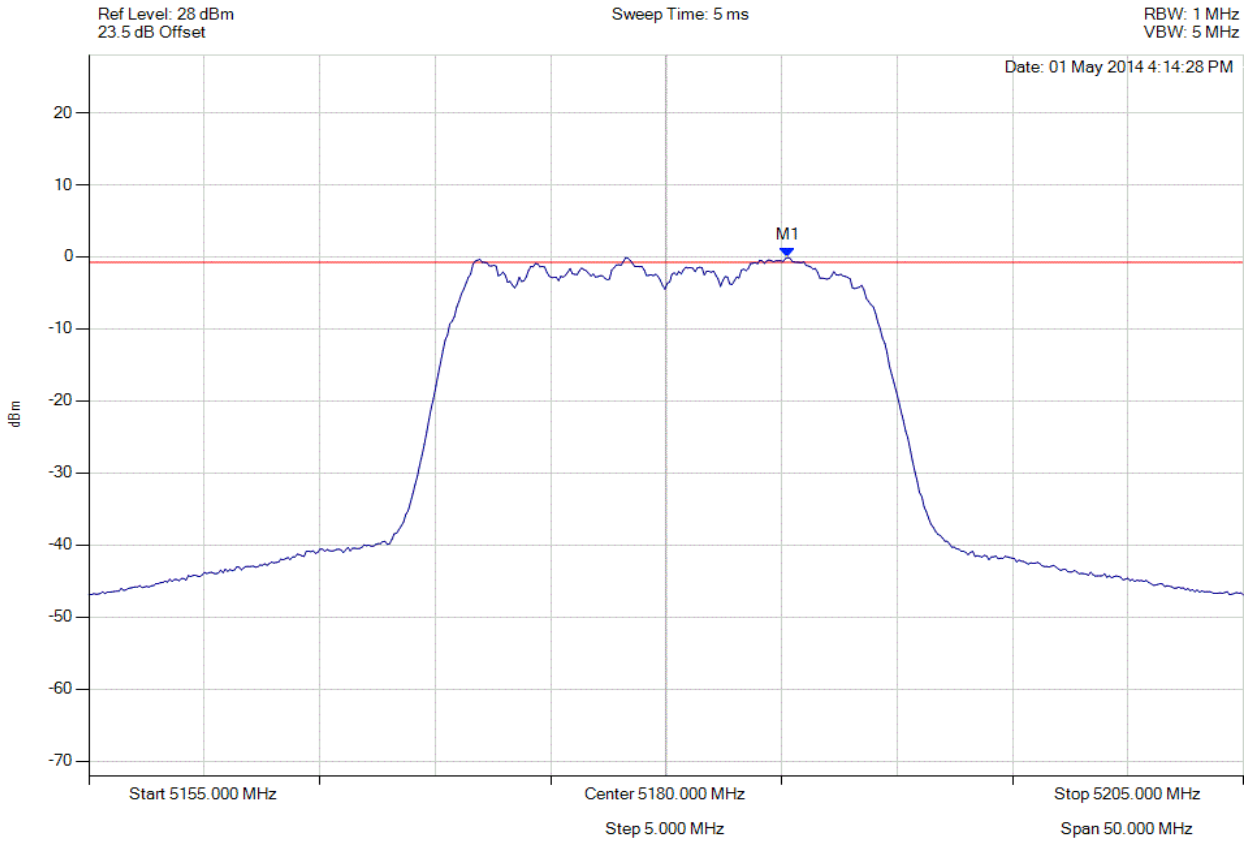


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5175.240 MHz : -1.239 dBm	Limit: ≤ -0.771 dBm Margin: 0.22 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5180.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

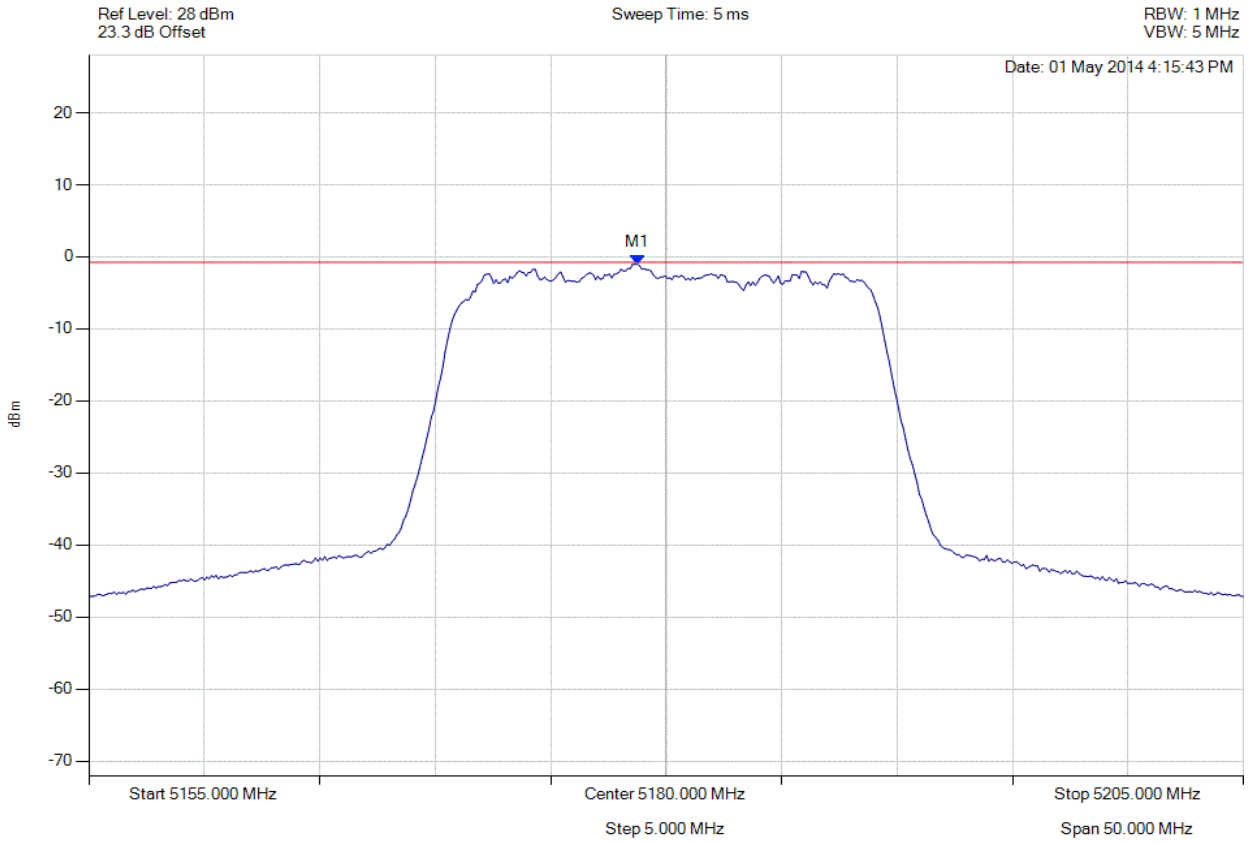


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5185.261 MHz : -0.112 dBm	Limit: ≤ -0.771 dBm Margin: 0.90 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5180.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

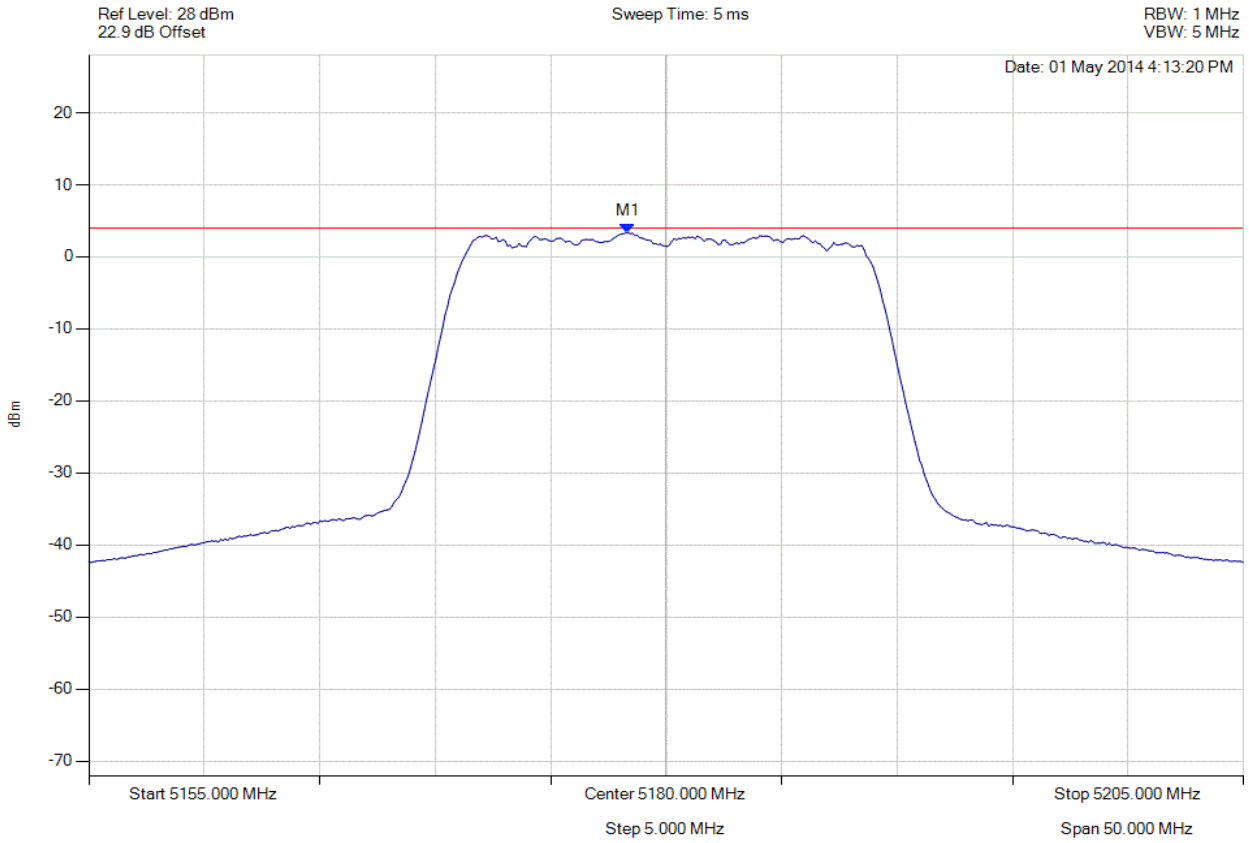


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5178.747 MHz : -0.990 dBm	Limit: ≤ -0.771 dBm Margin: -0.03 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5180.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

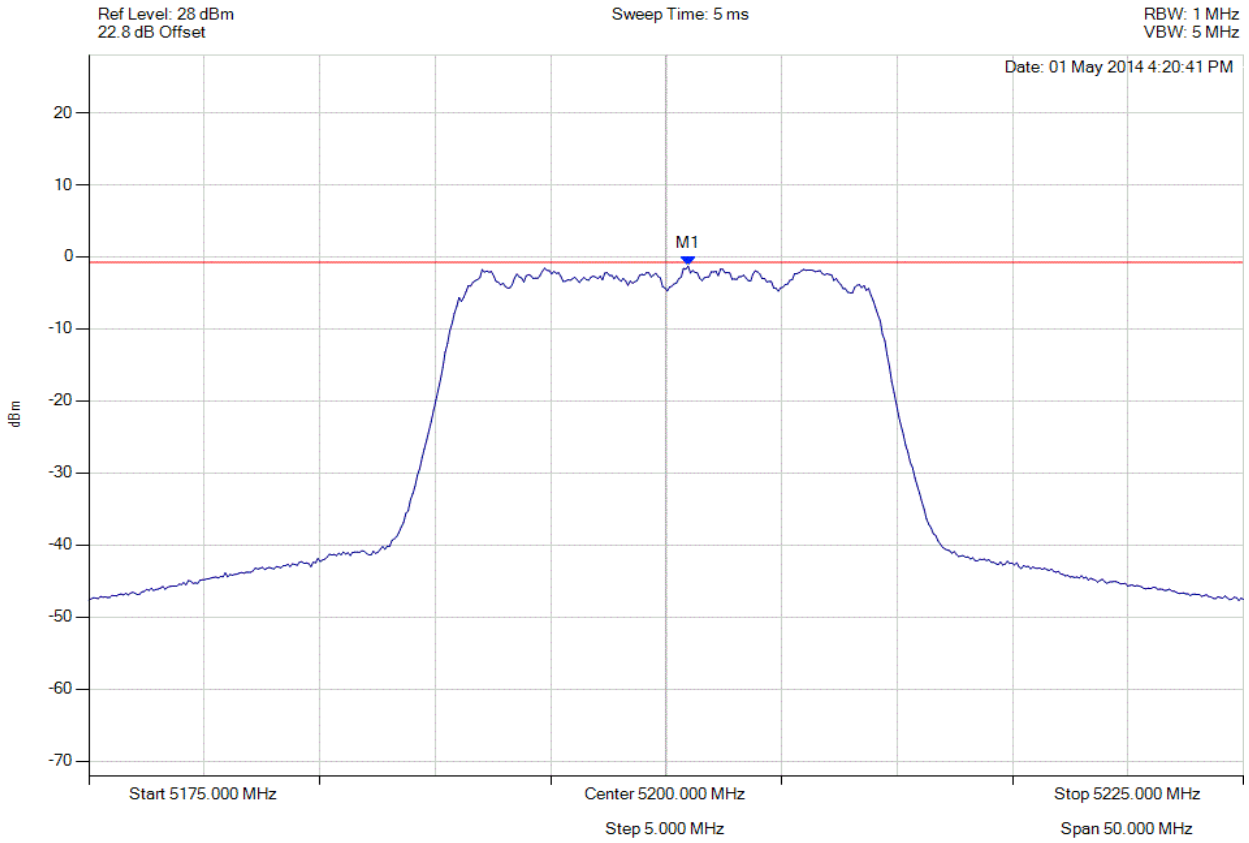


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5178.347 MHz : 3.362 dBm	Limit: ≤ 4.0 dBm Margin: -0.6 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5200.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

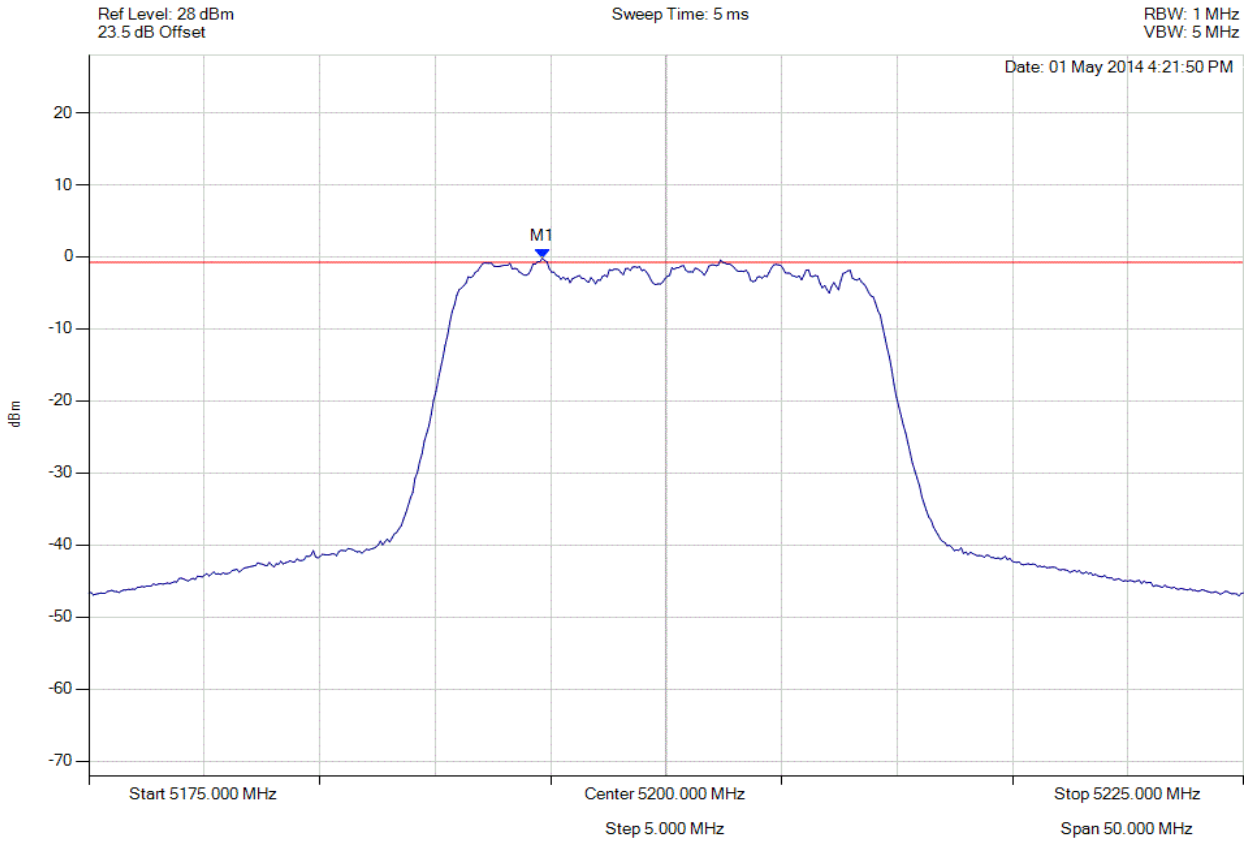


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5200.952 MHz : -1.280 dBm	Limit: ≤ -0.771 dBm Margin: 0.26 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5200.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

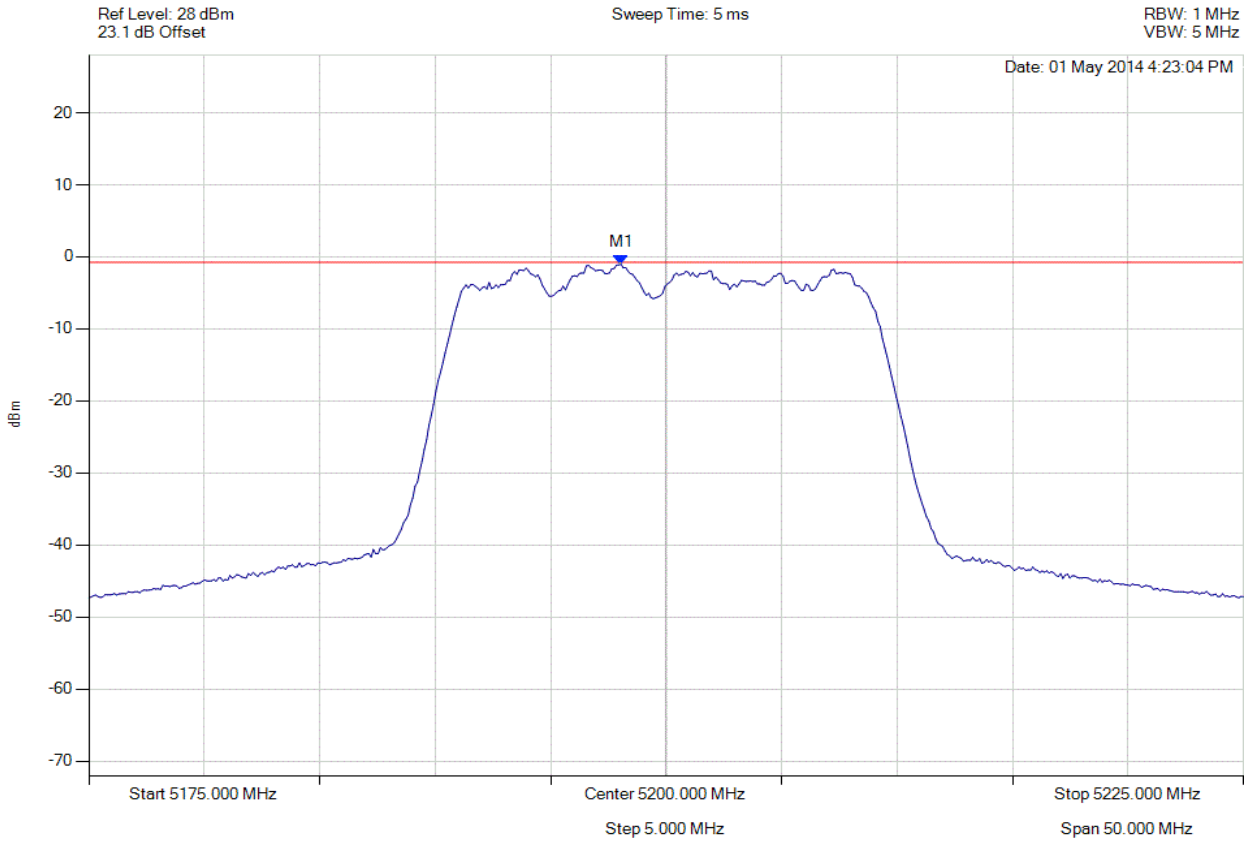


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5194.639 MHz : -0.189 dBm	Limit: ≤ -0.771 dBm Margin: 0.83 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5200.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

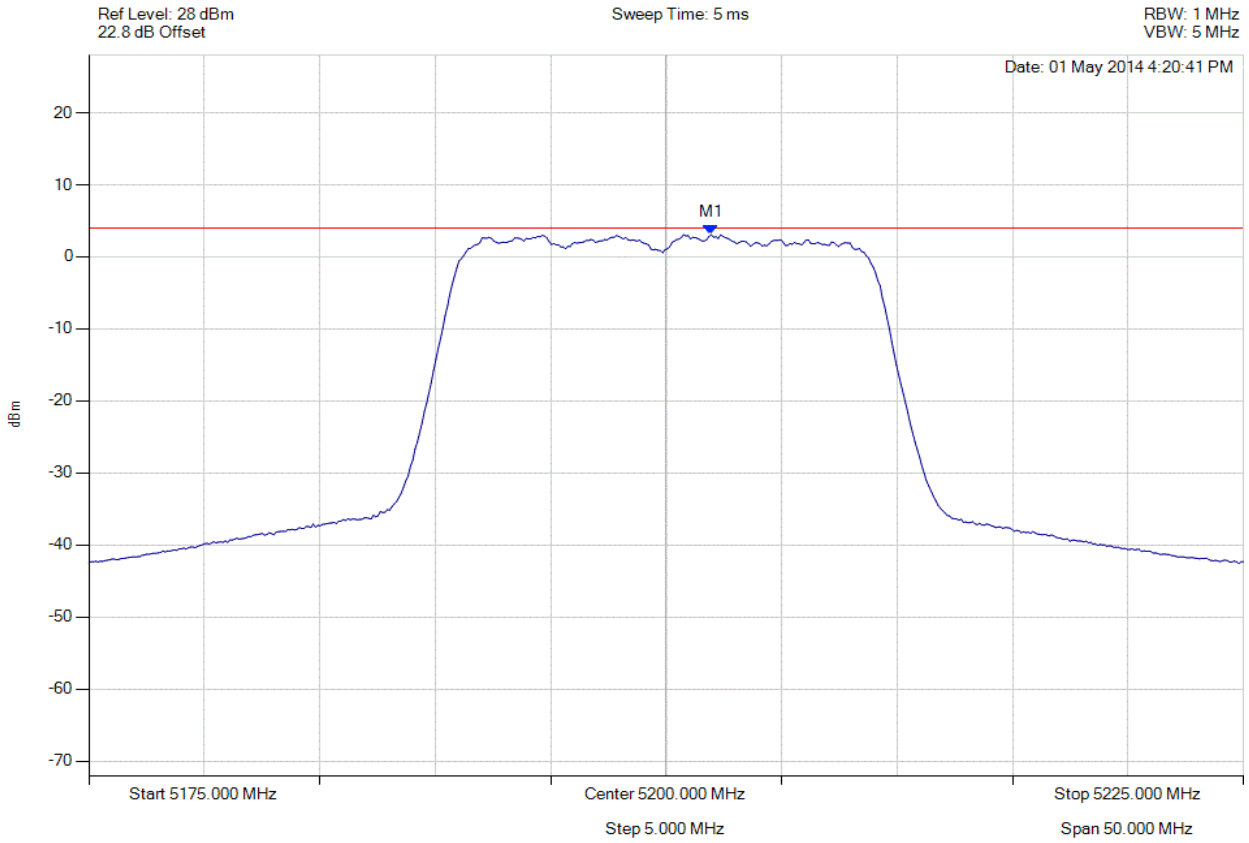


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5198.046 MHz : -1.025 dBm	Limit: ≤ -0.771 dBm Margin: 0.01 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5200.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

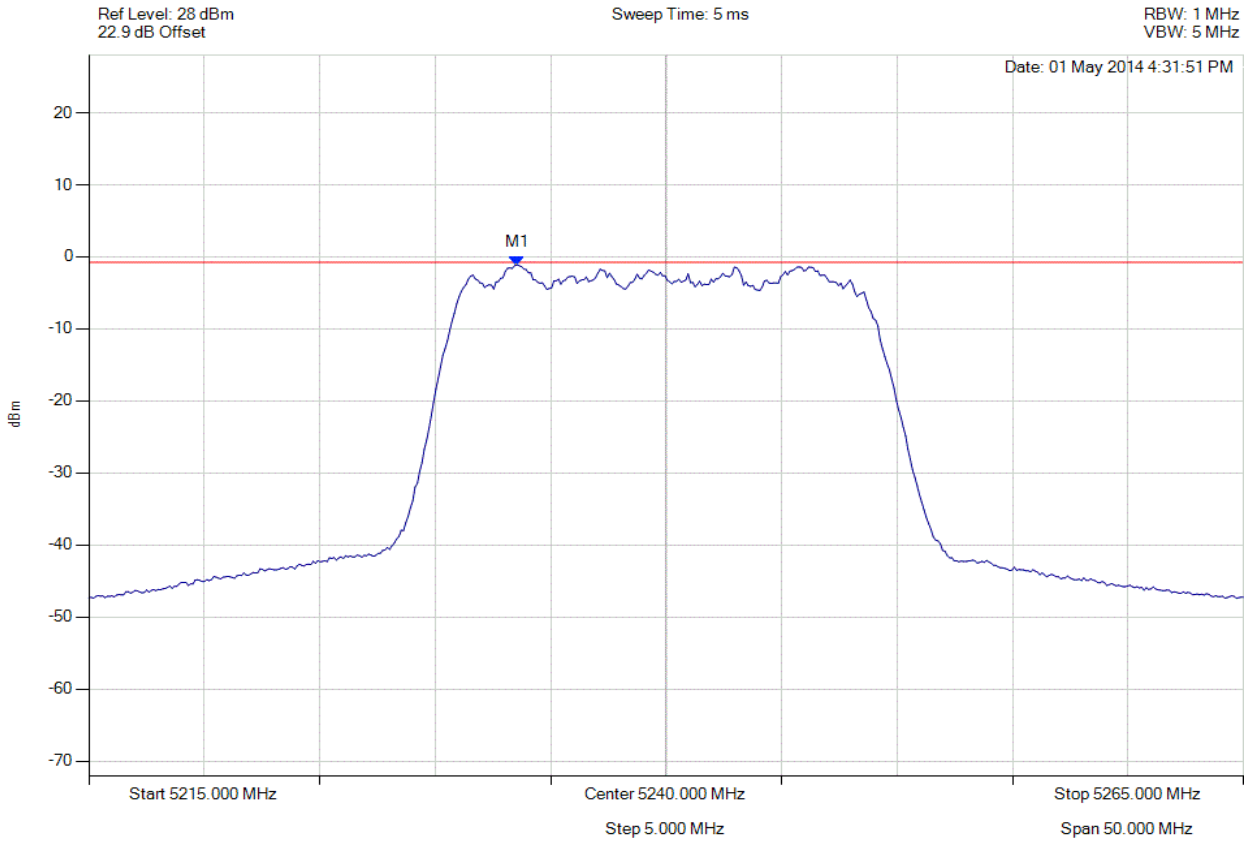


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5201.954 MHz : 3.073 dBm	Limit: ≤ 4.0 dBm Margin: -0.9 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5240.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

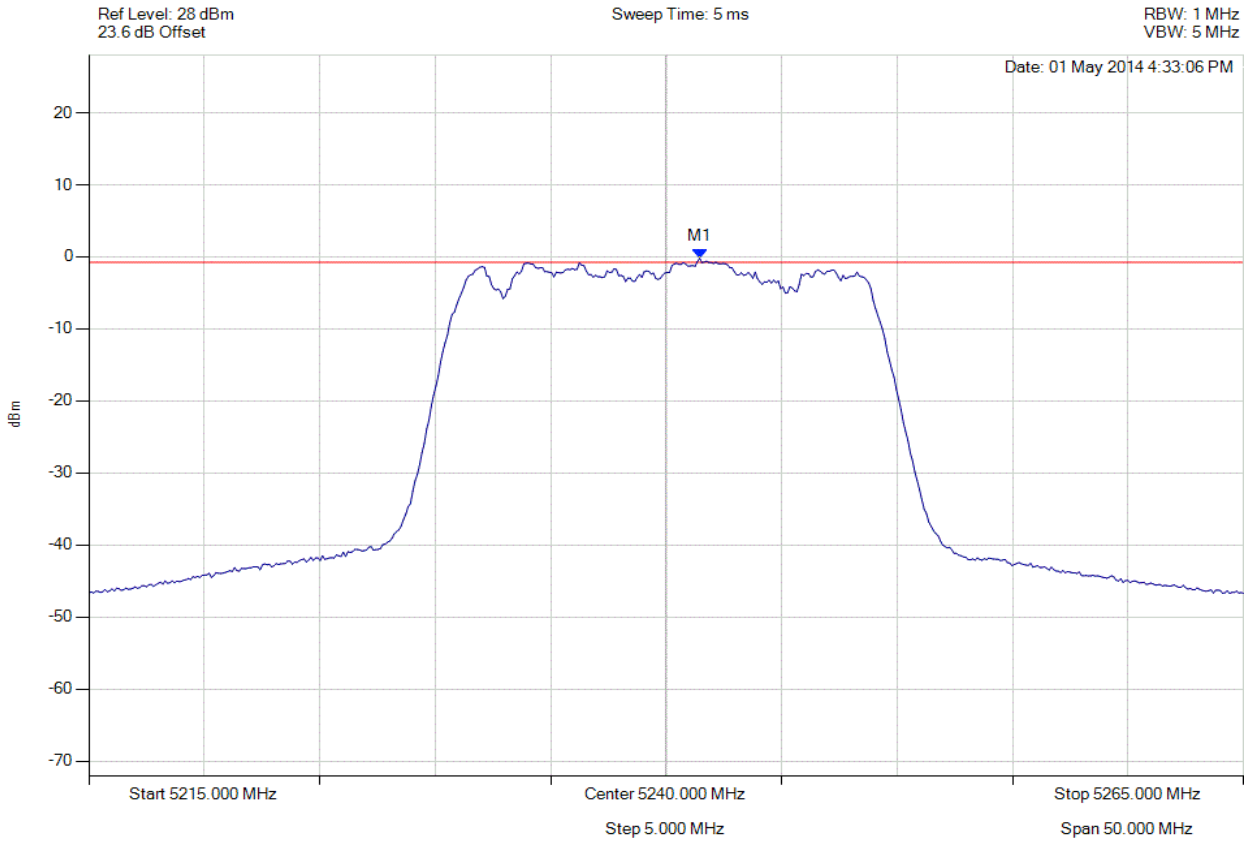


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5233.537 MHz : -1.127 dBm	Limit: ≤ -0.771 dBm Margin: 0.11 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5240.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

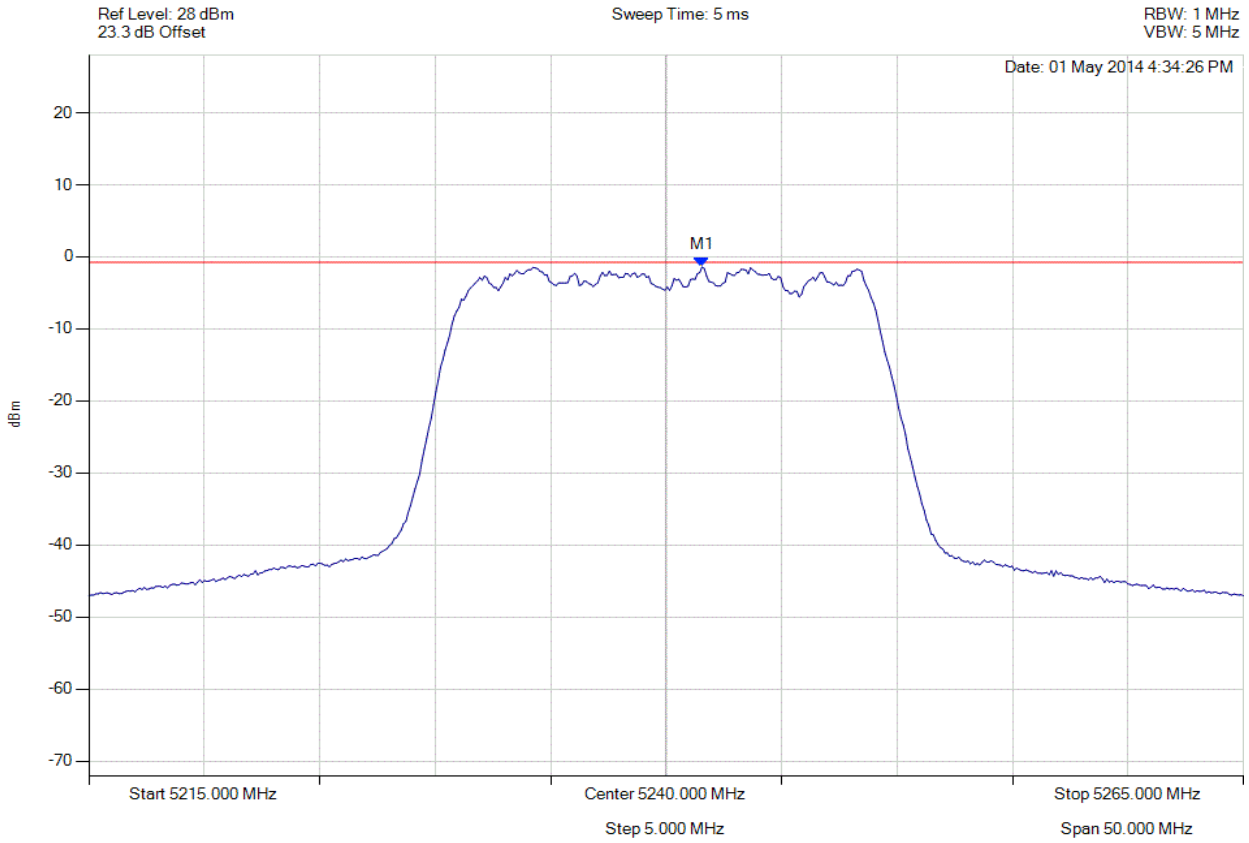


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5241.453 MHz : -0.206 dBm	Limit: ≤ -0.771 dBm Margin: 0.81 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5240.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

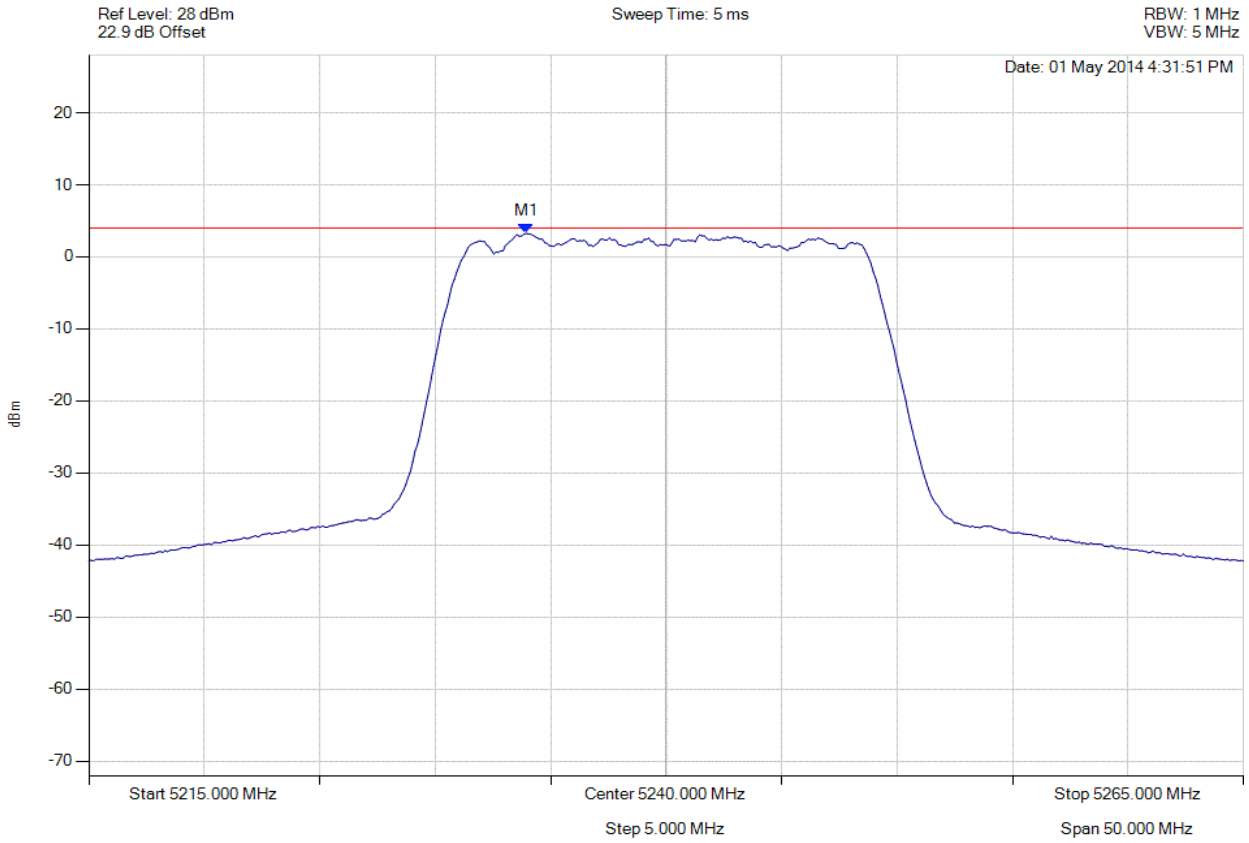


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5241.553 MHz : -1.416 dBm	Limit: ≤ -0.771 dBm Margin: 0.40 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5240.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

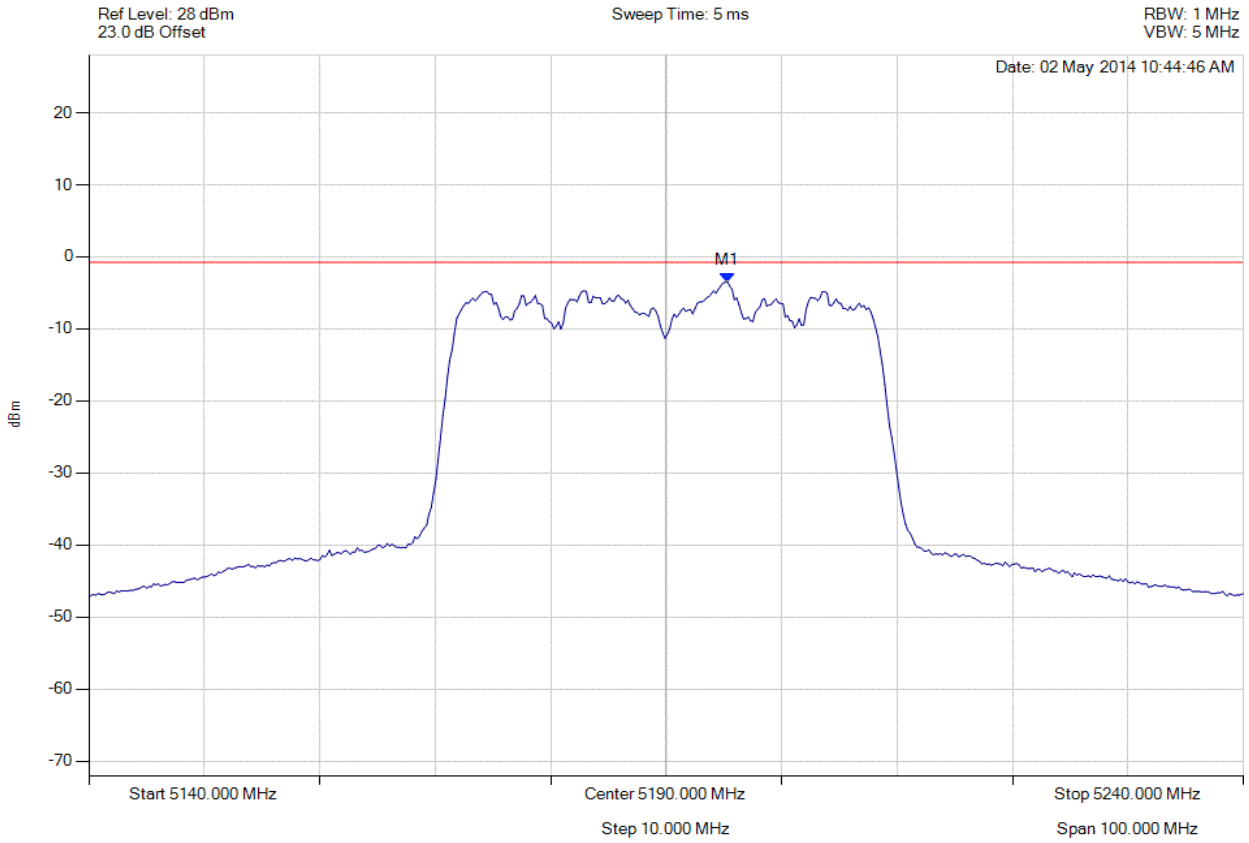


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5233.938 MHz : 3.247 dBm	Limit: ≤ 4.0 dBm Margin: -0.8 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5190.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

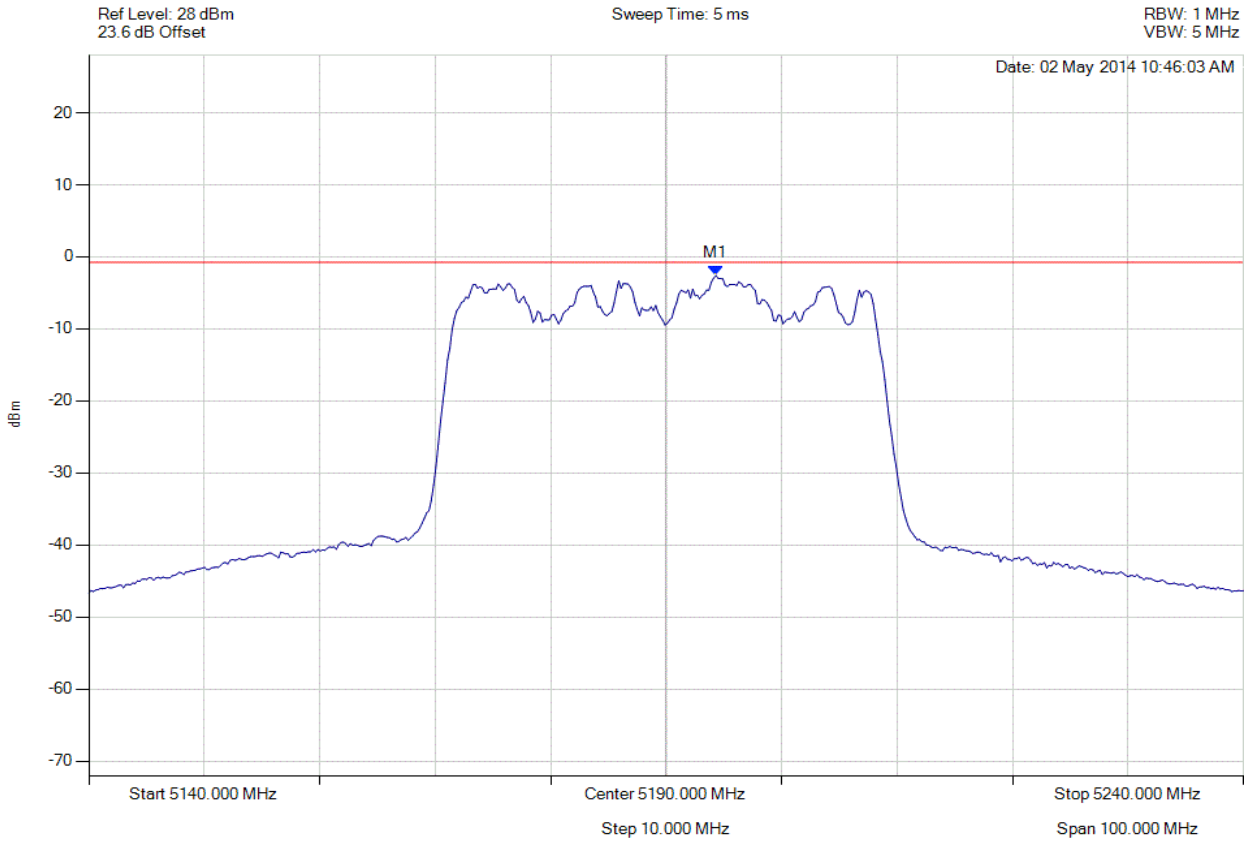


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5195.311 MHz : -3.504 dBm	Limit: ≤ -0.771 dBm Margin: 2.11 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5190.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

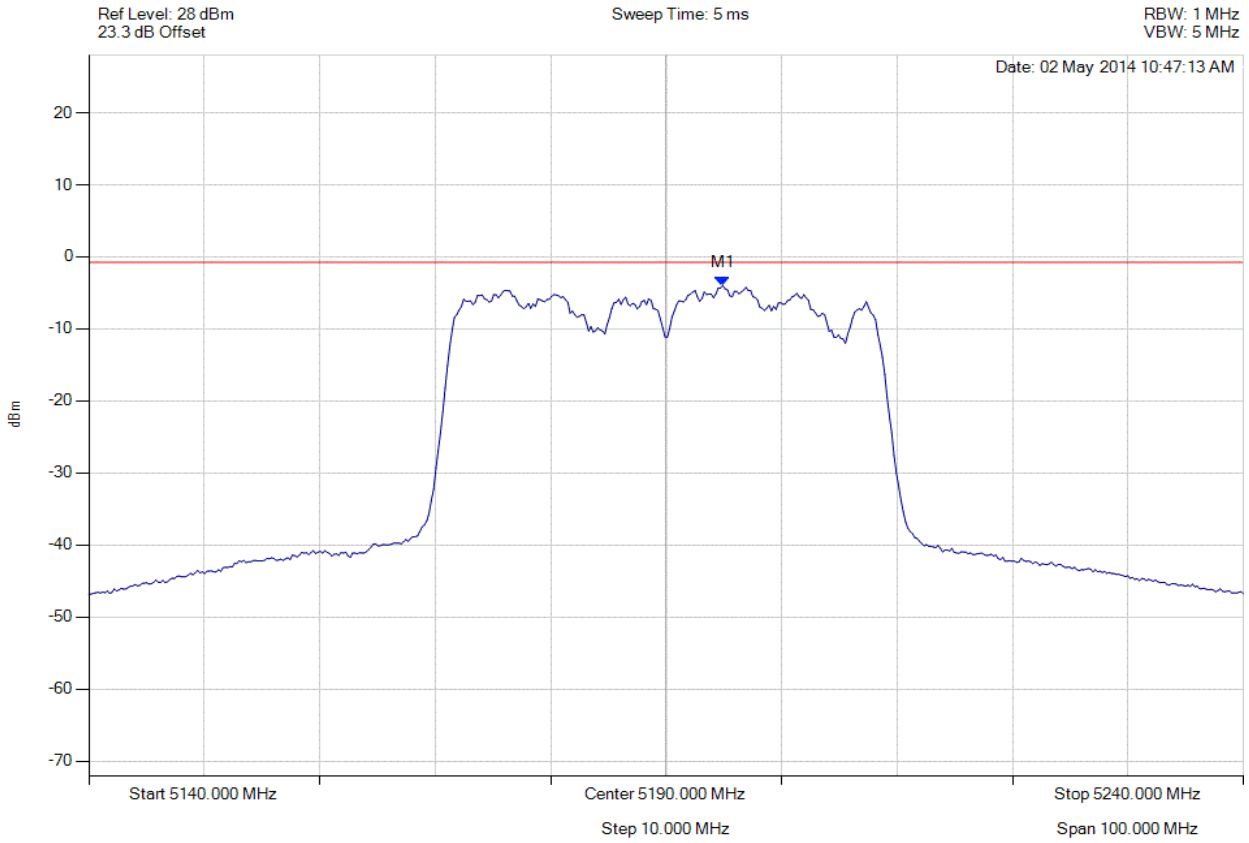


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5194.309 MHz : -2.597 dBm	Limit: ≤ -0.771 dBm Margin: 1.20 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5190.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

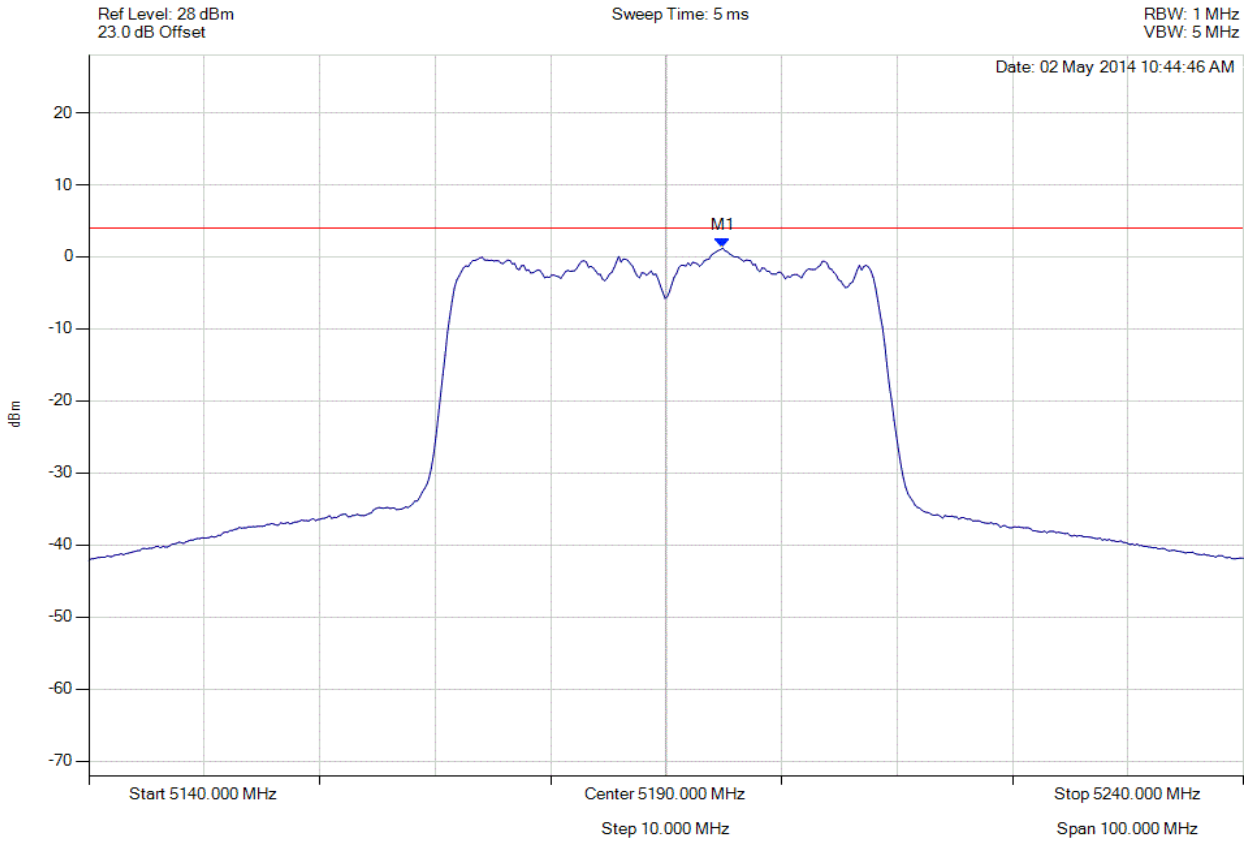


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5194.910 MHz : -3.961 dBm	Limit: ≤ -0.771 dBm Margin: 2.57 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5190.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

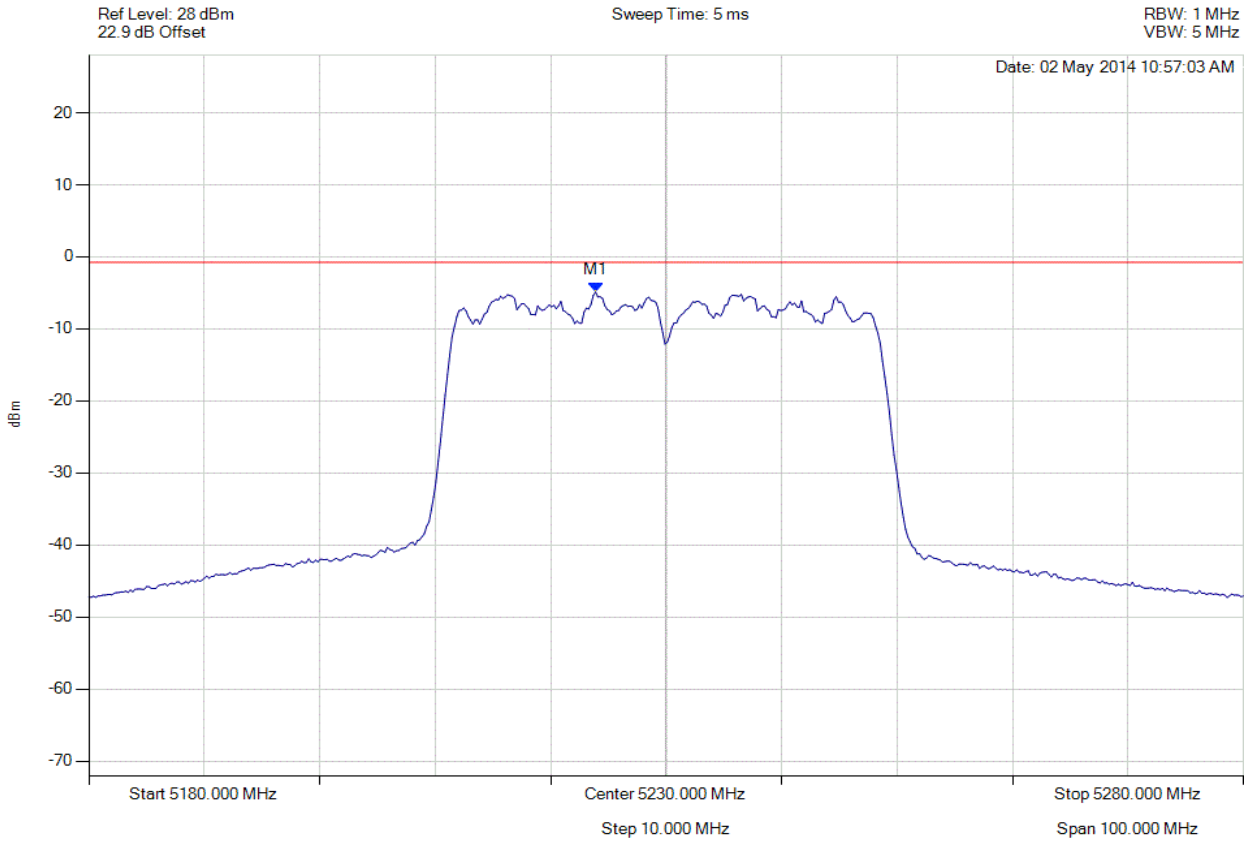


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5194.910 MHz : 1.227 dBm	Limit: ≤ 4.0 dBm Margin: -2.8 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5230.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

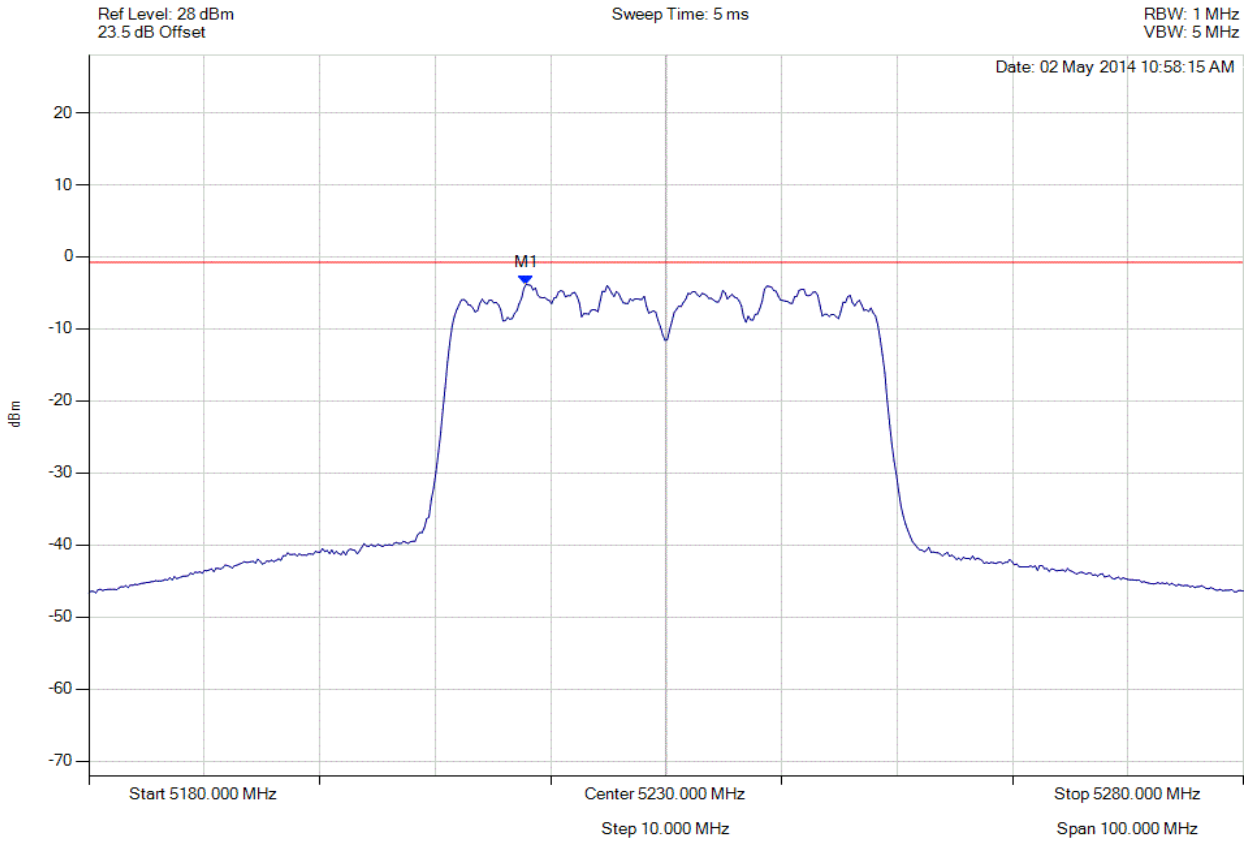


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5223.888 MHz : -4.886 dBm	Limit: ≤ -0.771 dBm Margin: 3.49 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5230.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

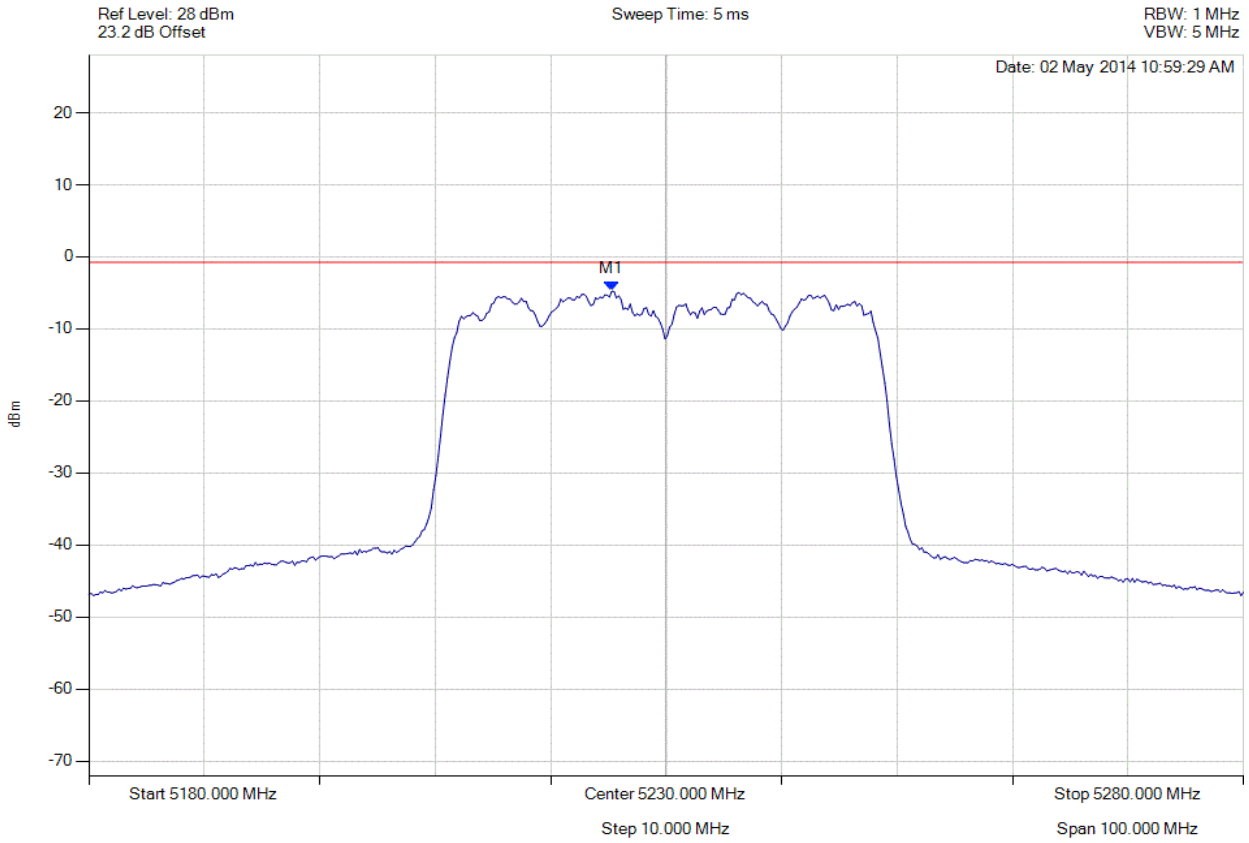


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5217.876 MHz : -3.842 dBm	Limit: ≤ -0.771 dBm Margin: 2.45 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5230.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

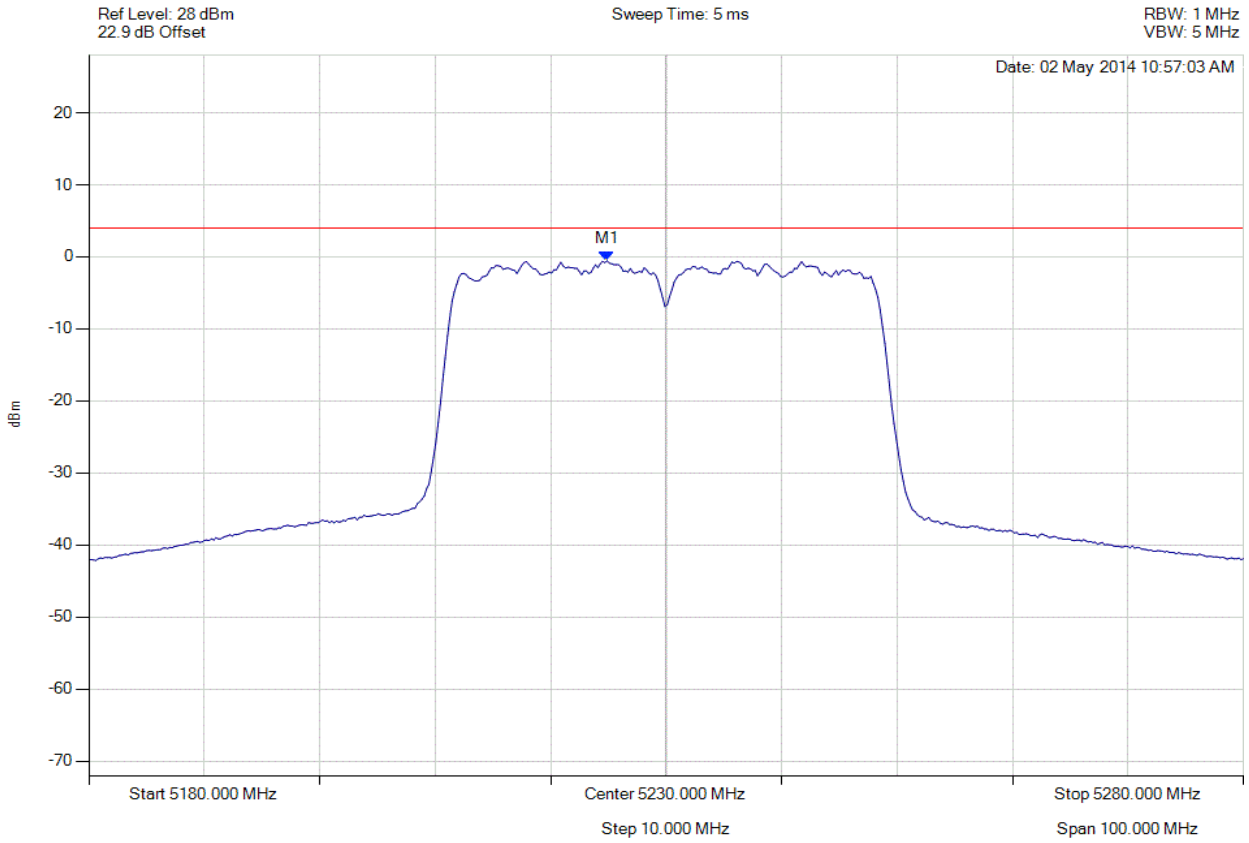


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5225.291 MHz : -4.781 dBm	Limit: ≤ -0.771 dBm Margin: 3.39 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5230.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

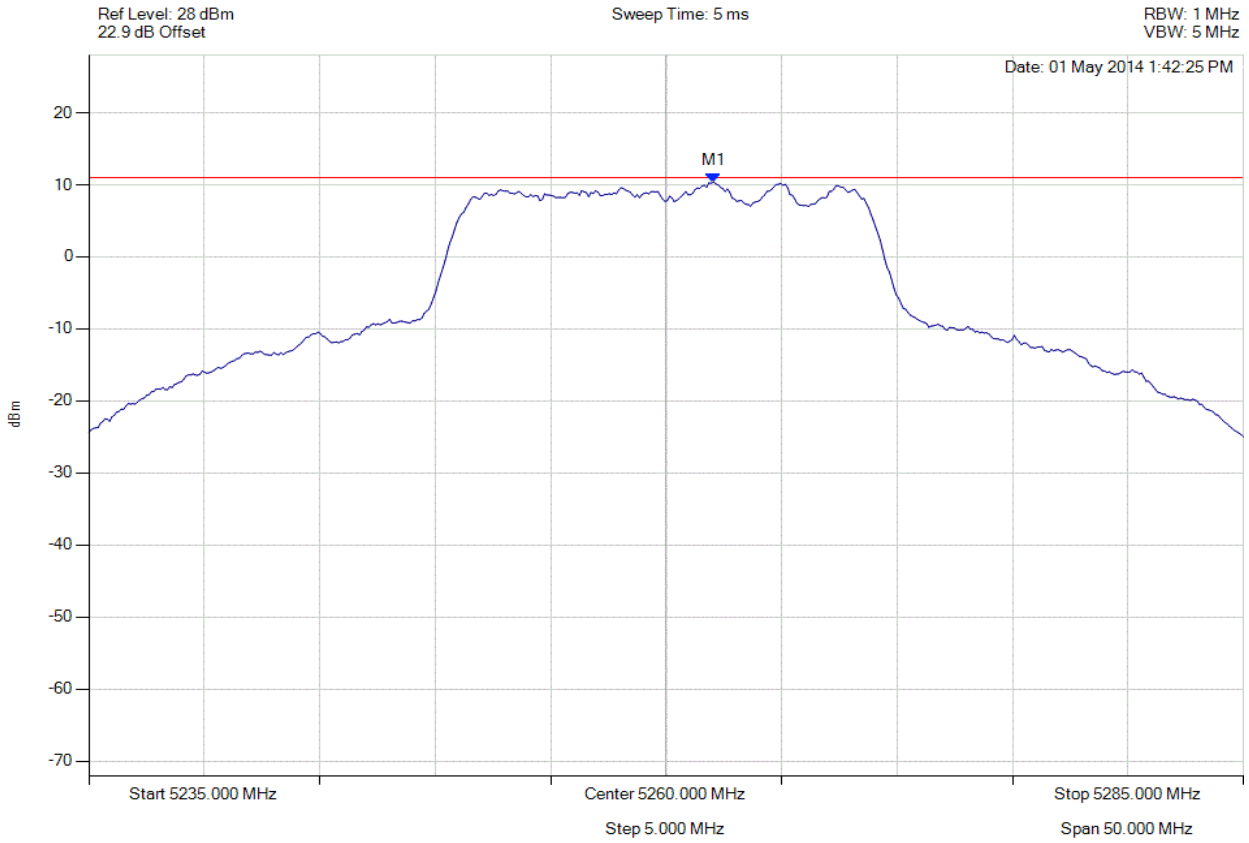


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5224.890 MHz : -0.553 dBm	Limit: ≤ 4.0 dBm Margin: -4.6 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5260.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

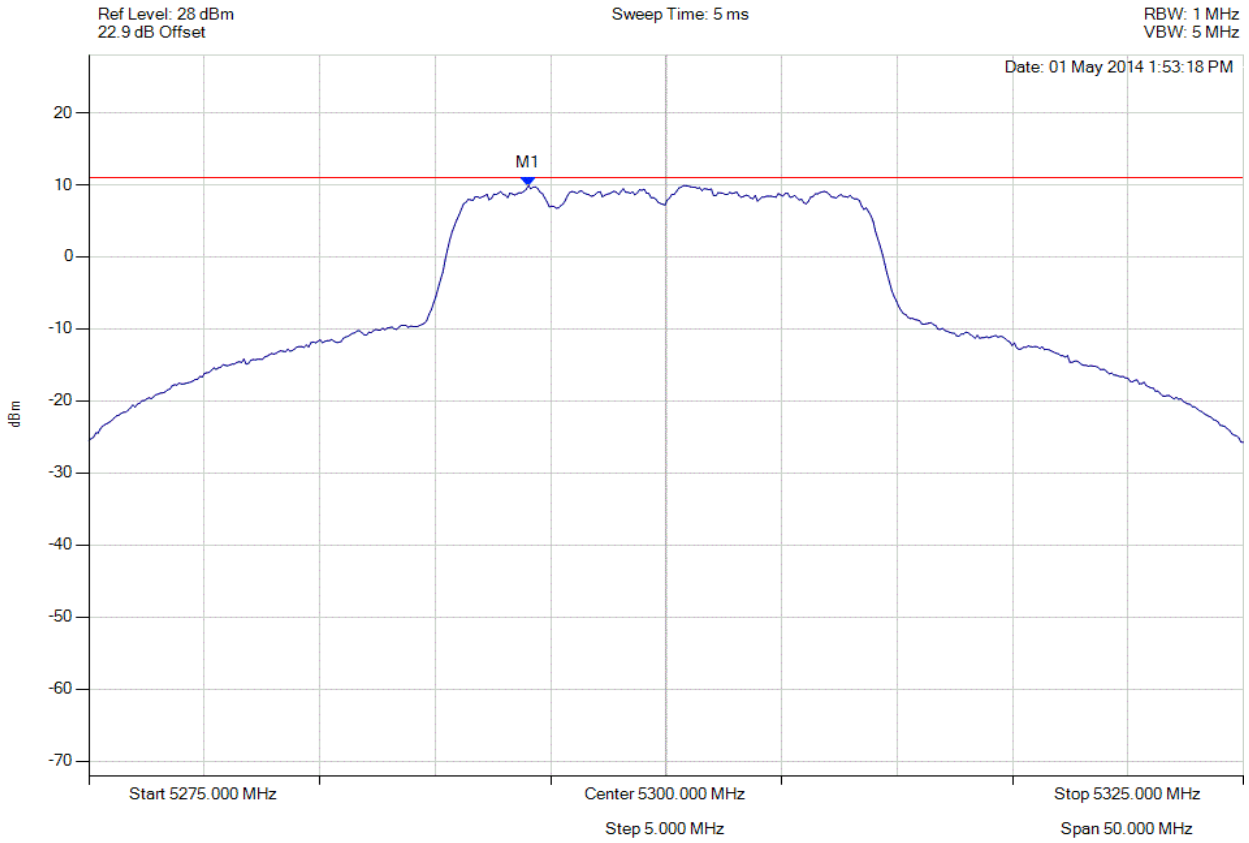


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5262.054 MHz : 10.378 dBm	Limit: ≤ 11.0 dBm Margin: -0.6 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5300.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

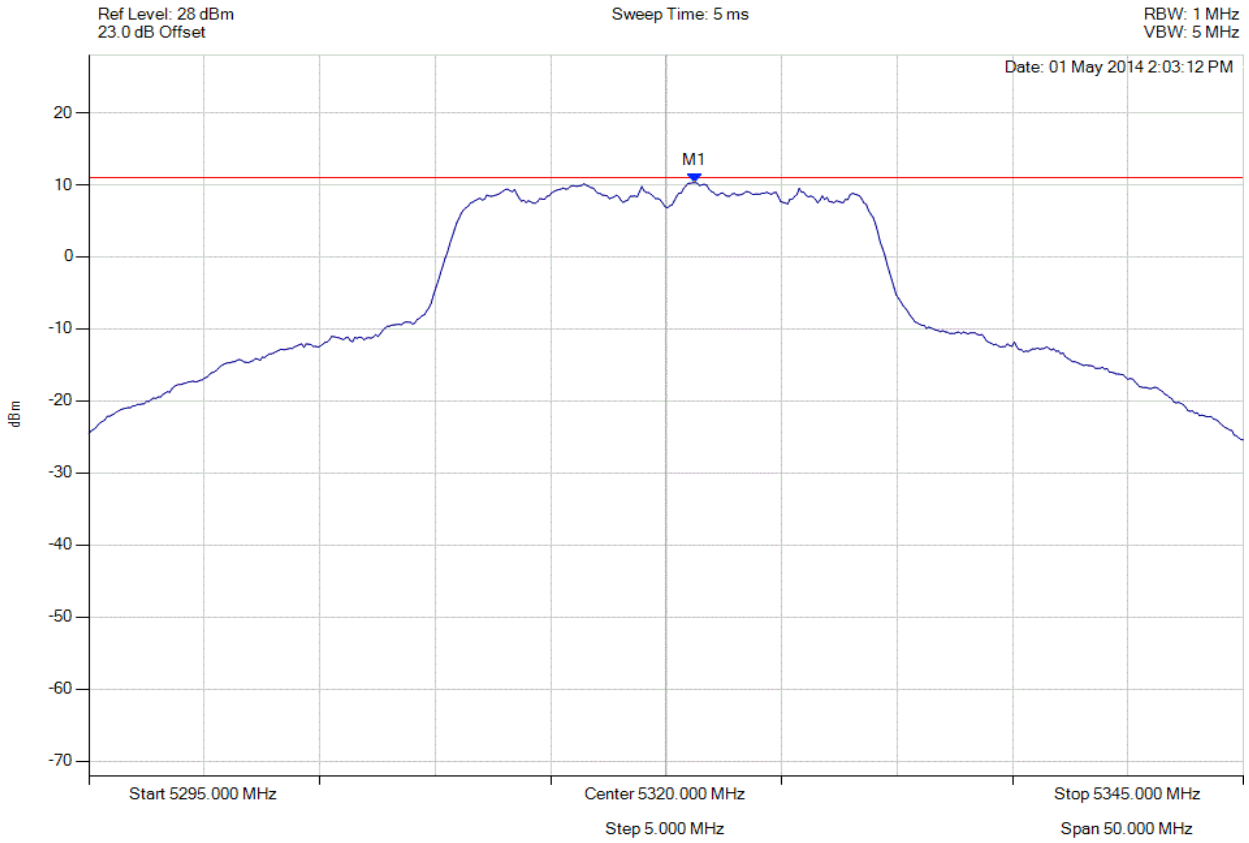


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5294.038 MHz : 9.888 dBm	Limit: ≤ 11.0 dBm Margin: -1.1 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5320.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

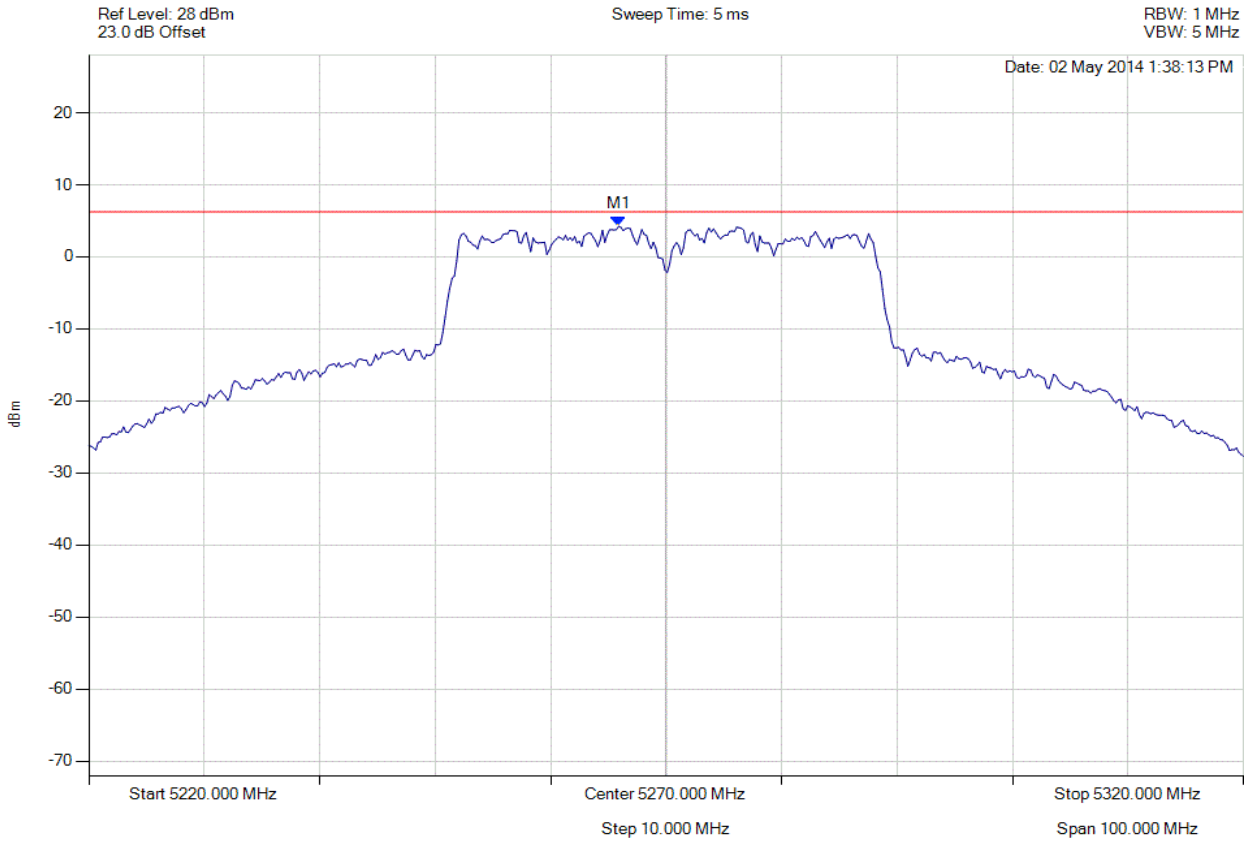


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5321.253 MHz : 10.309 dBm	Limit: ≤ 11.0 dBm Margin: -0.7 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5270.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

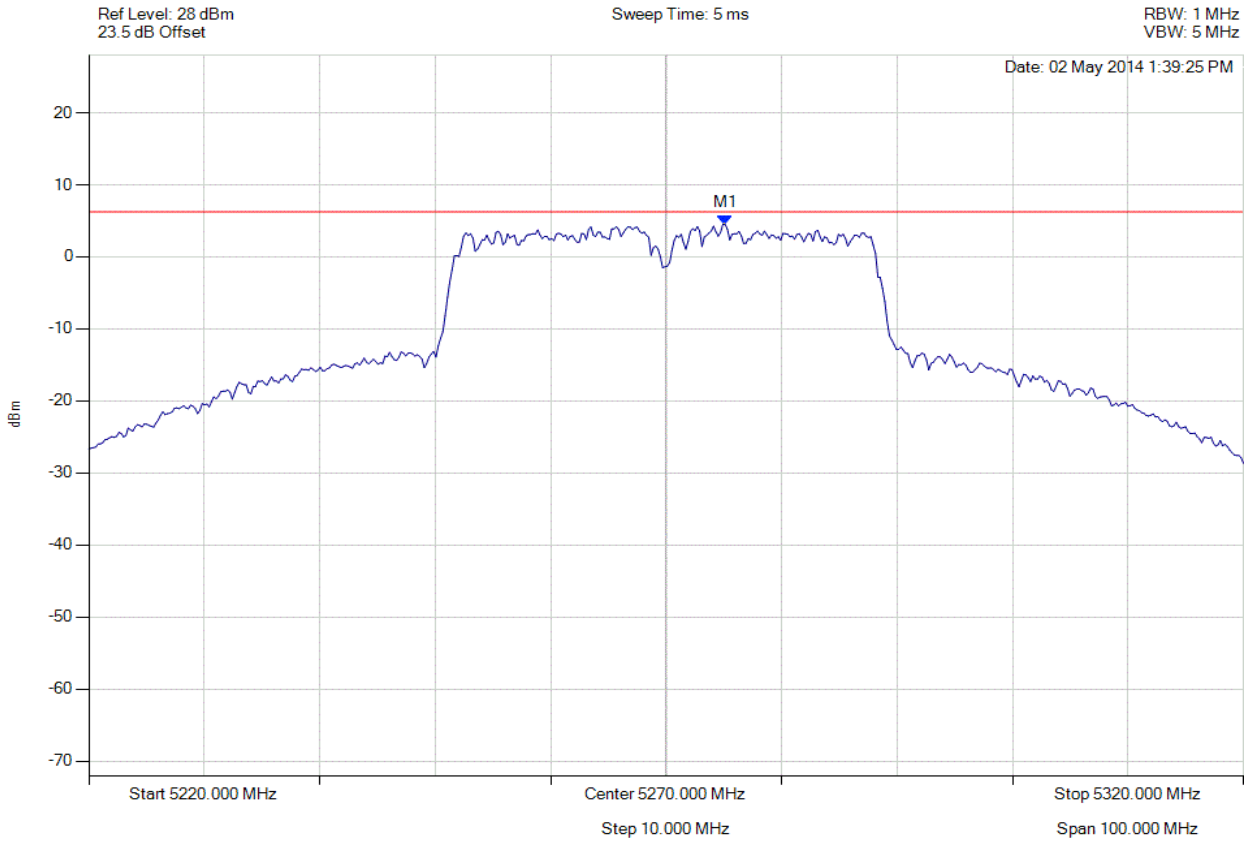


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5265.892 MHz : 4.235 dBm	Limit: ≤ 6.229 dBm Margin: -1.72 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5270.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

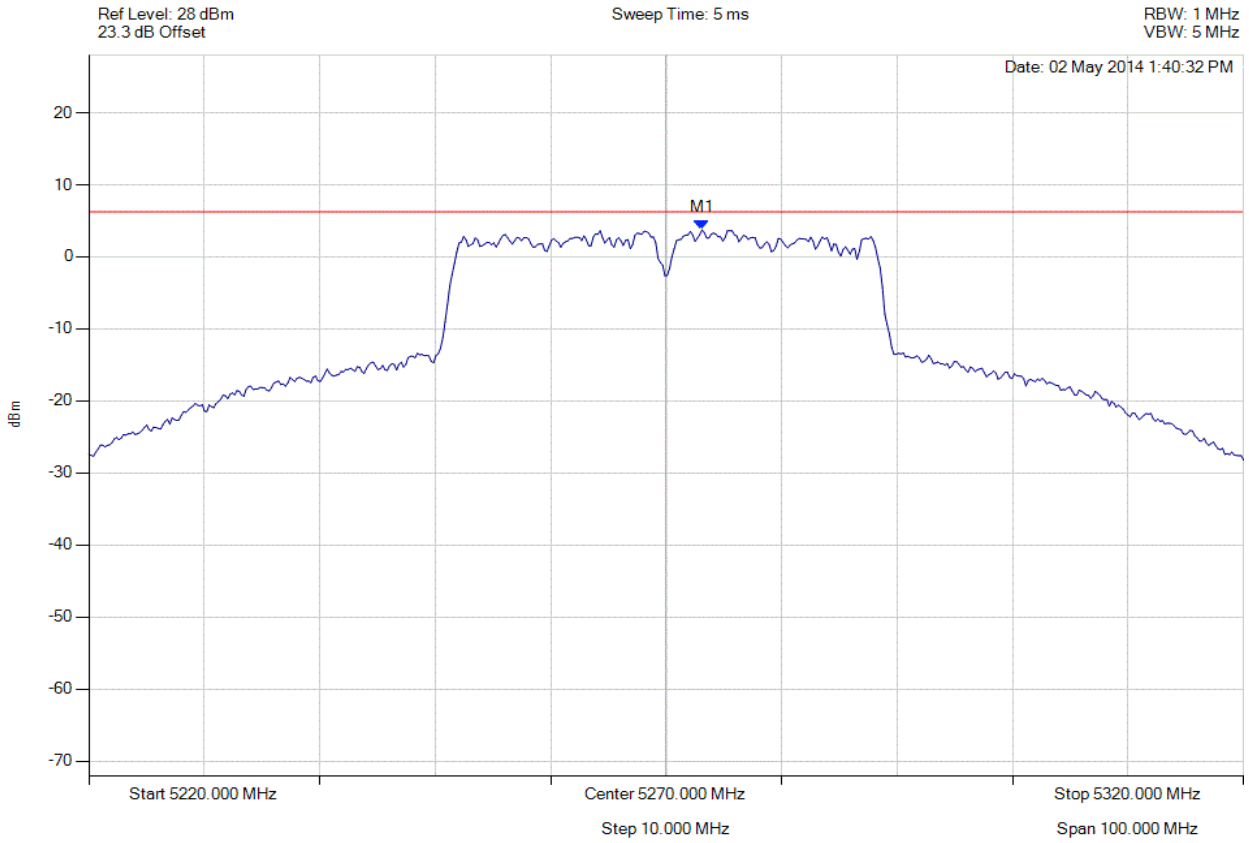


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5275.110 MHz : 4.502 dBm	Limit: ≤ 6.229 dBm Margin: -1.46 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5270.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

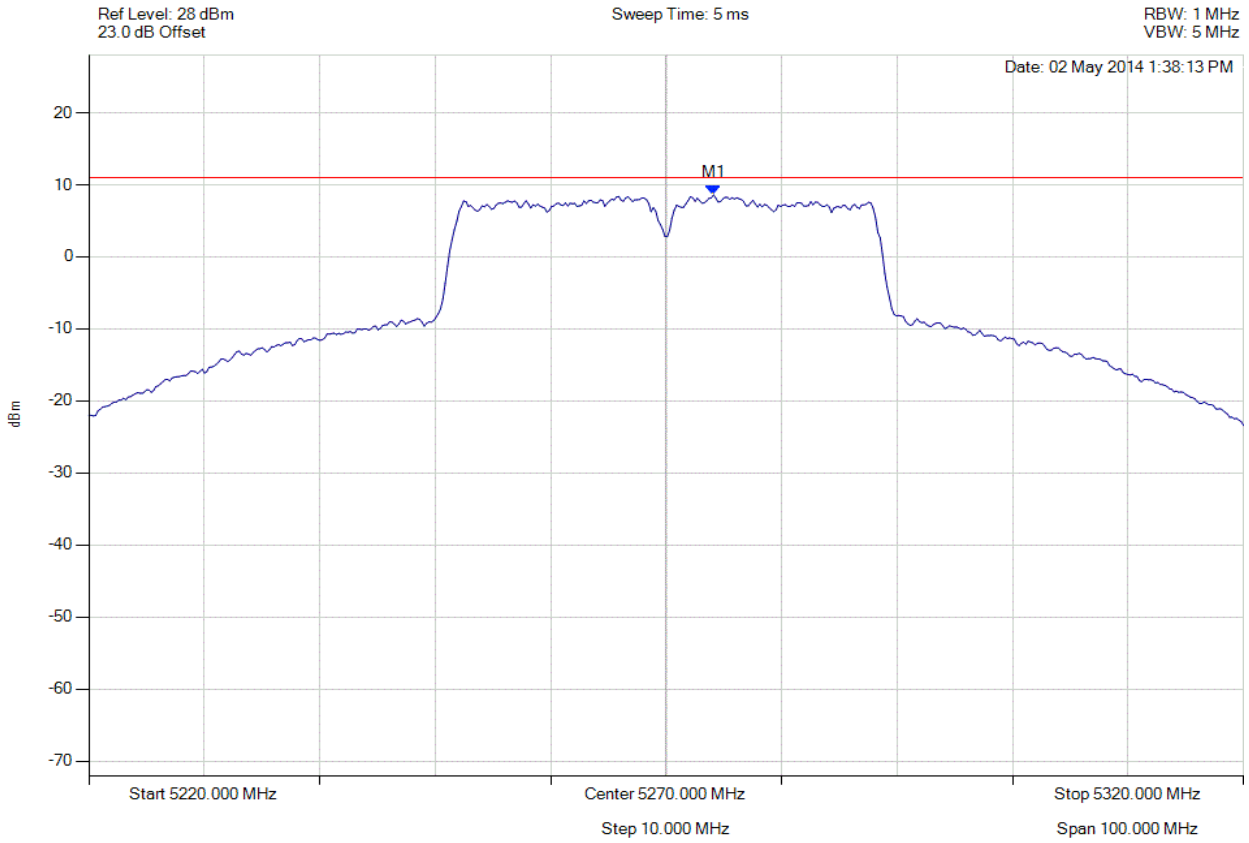


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5273.106 MHz : 3.740 dBm	Limit: ≤ 6.229 dBm Margin: -2.22 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5270.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5274.108 MHz : 8.597 dBm	Limit: ≤ 11.0 dBm Margin: -2.4 dB

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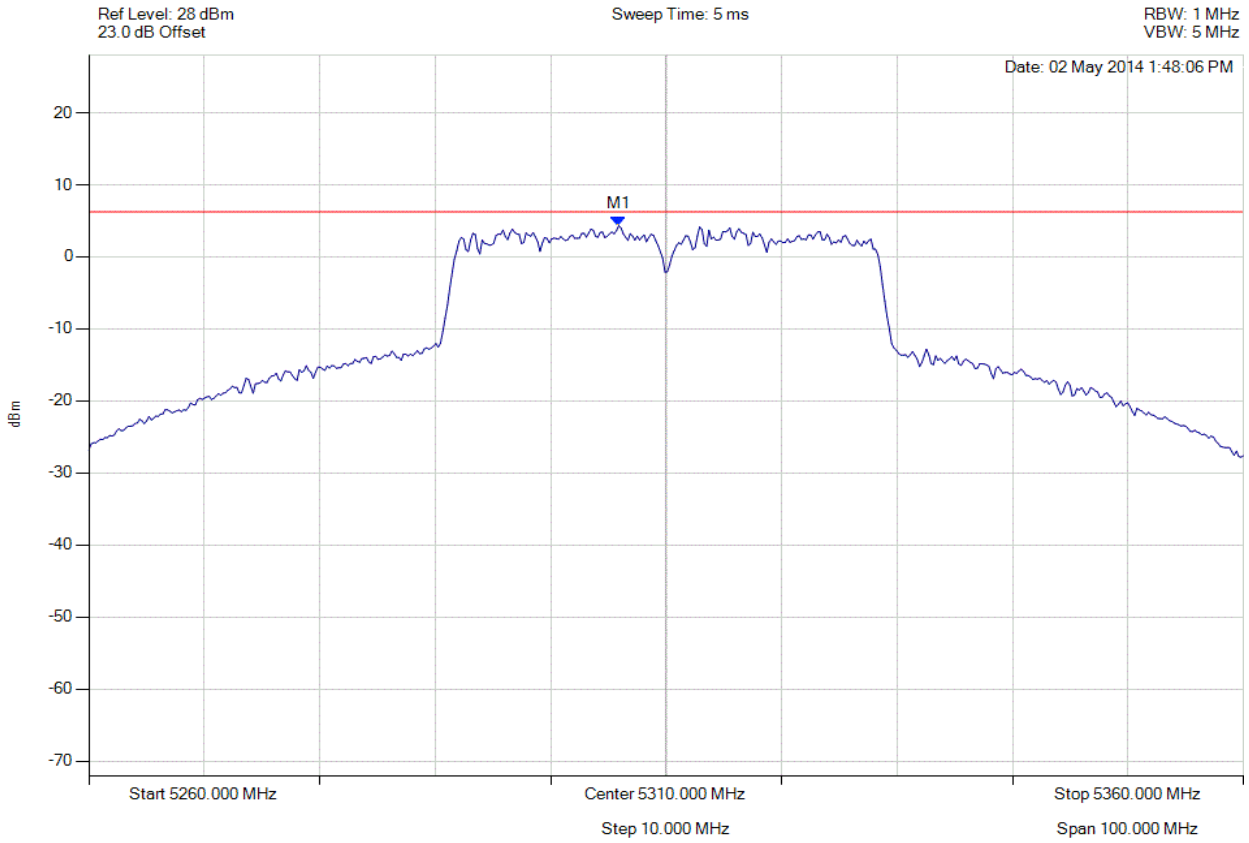
PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5310.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

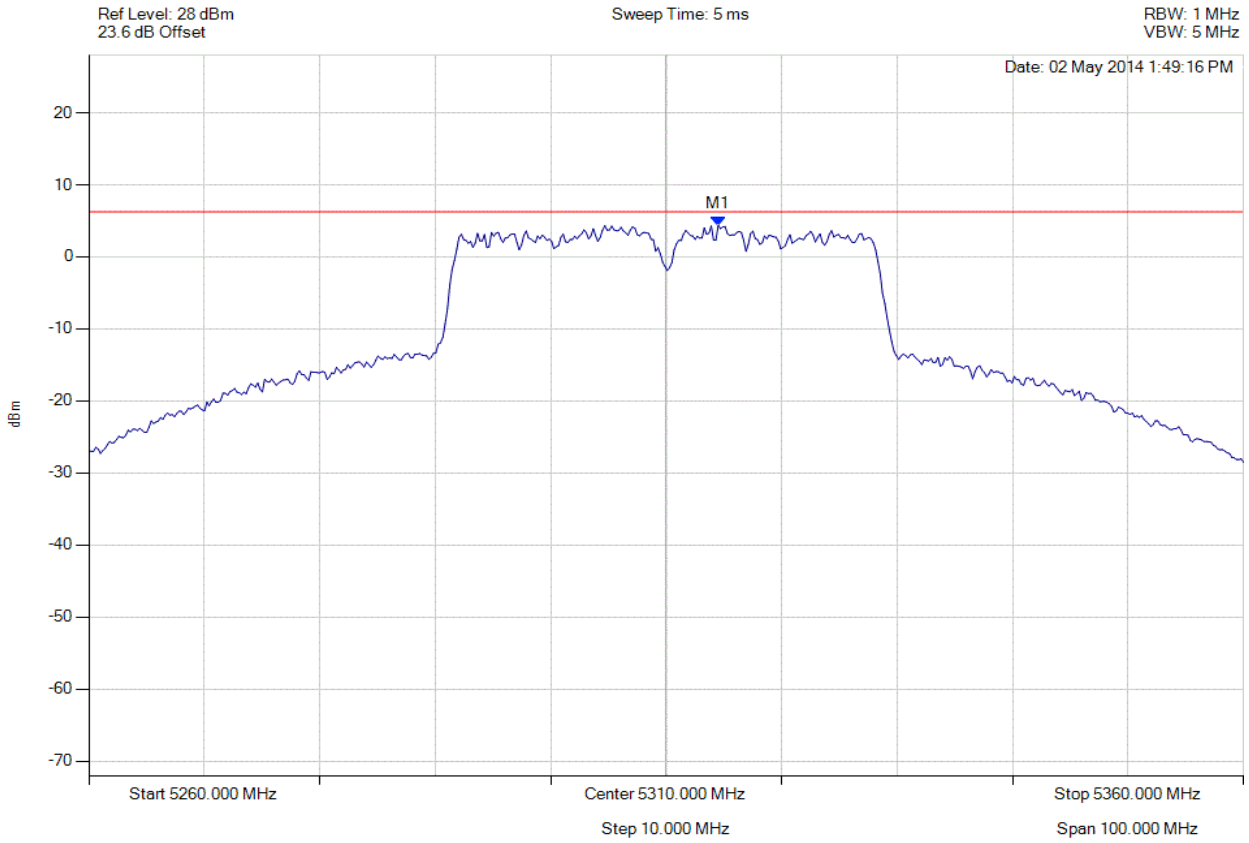


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5305.892 MHz : 4.326 dBm	Limit: ≤ 6.229 dBm Margin: -1.63 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5310.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

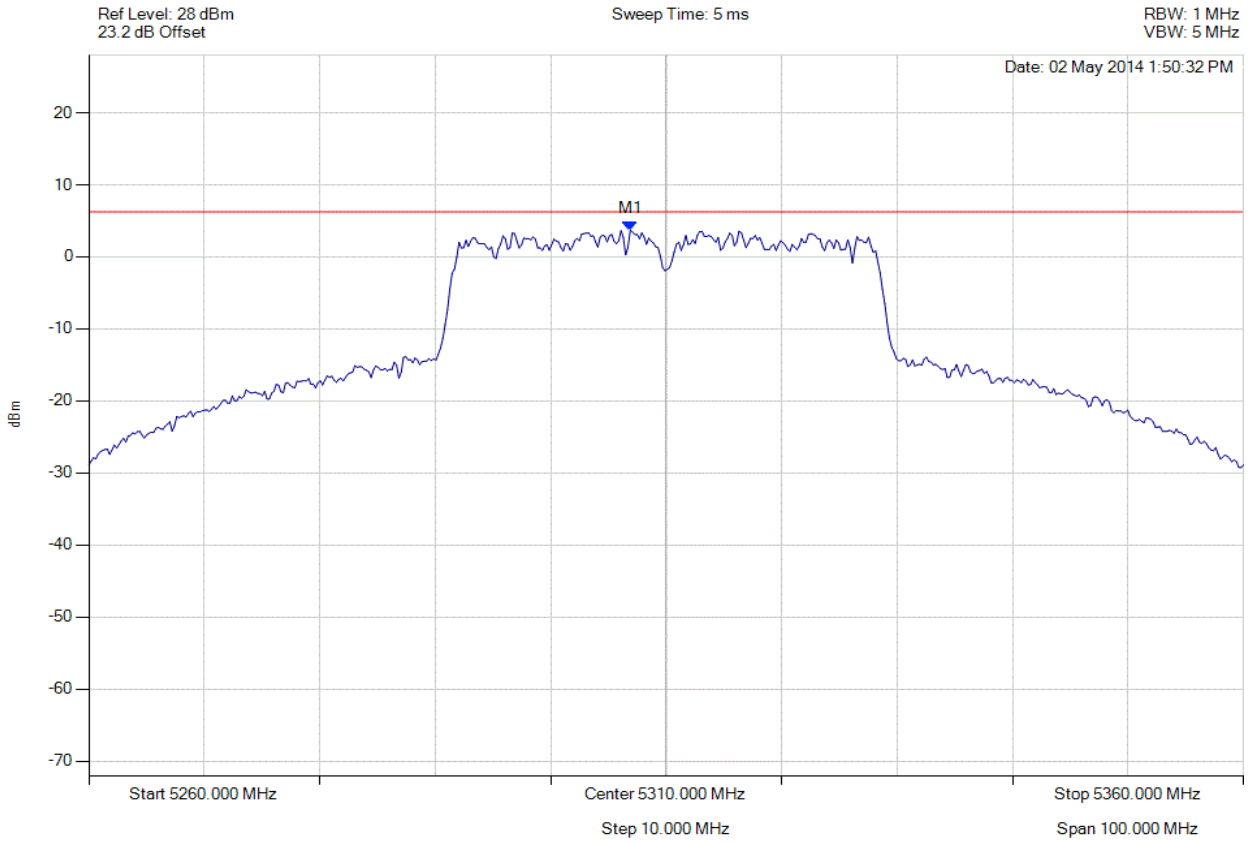


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5314.509 MHz : 4.370 dBm	Limit: ≤ 6.229 dBm Margin: -1.59 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5310.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

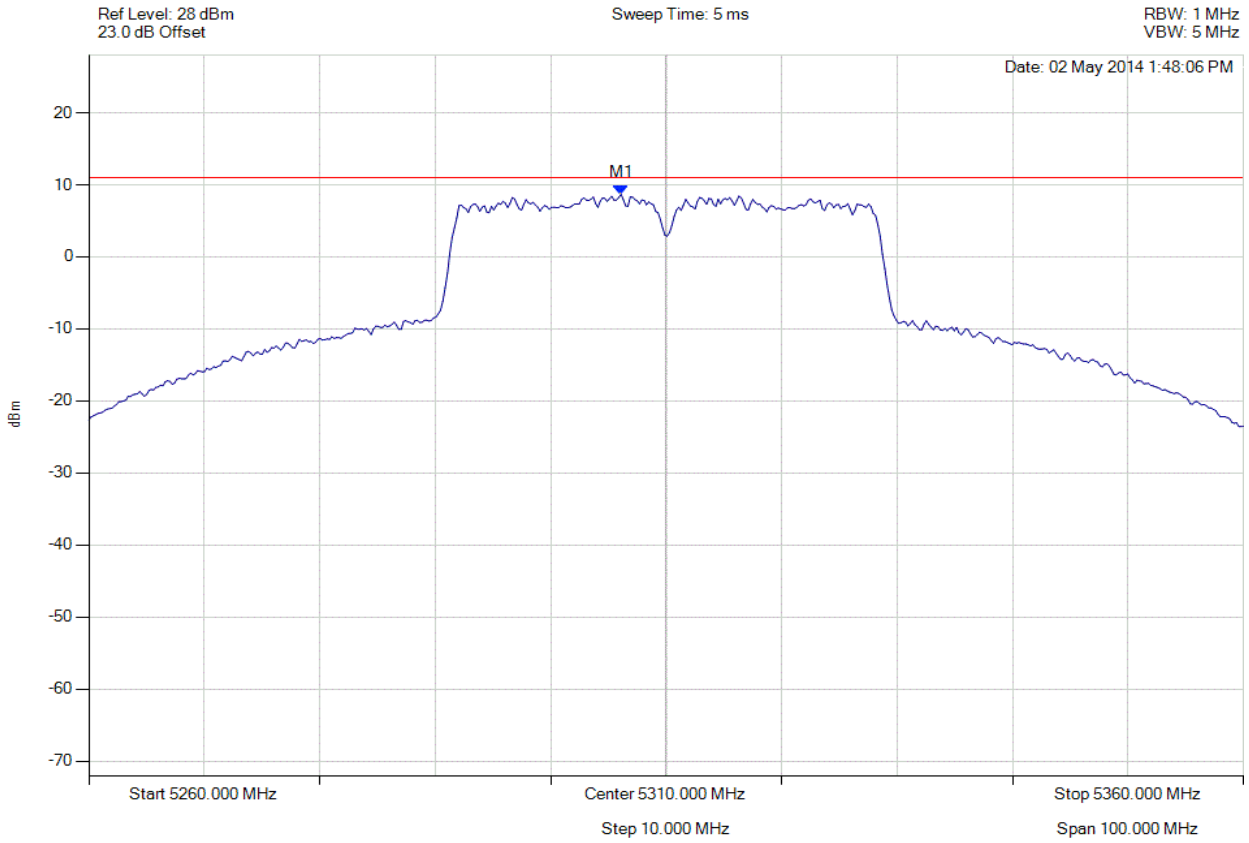


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5306.894 MHz : 3.698 dBm	Limit: ≤ 6.229 dBm Margin: -2.26 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5310.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

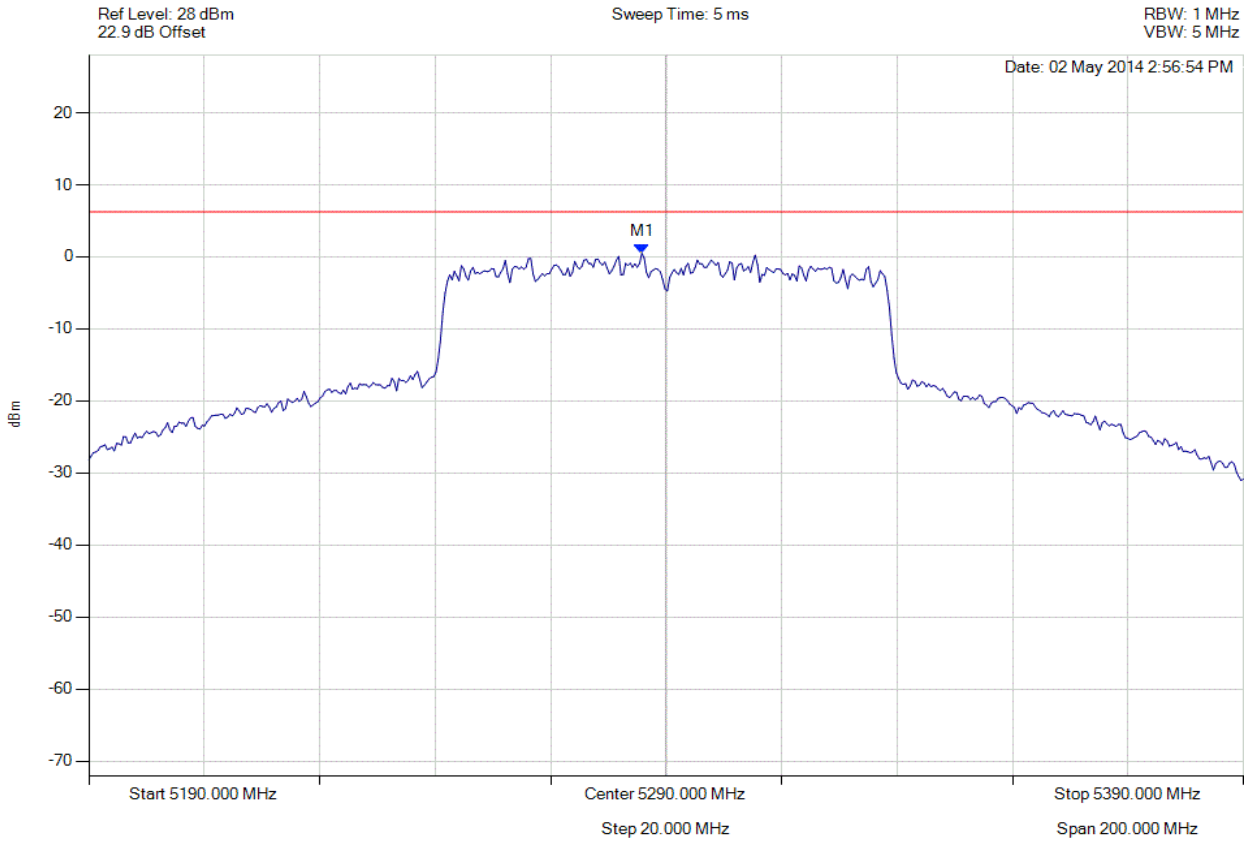


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5306.092 MHz : 8.685 dBm	Limit: ≤ 11.0 dBm Margin: -2.3 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5290.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

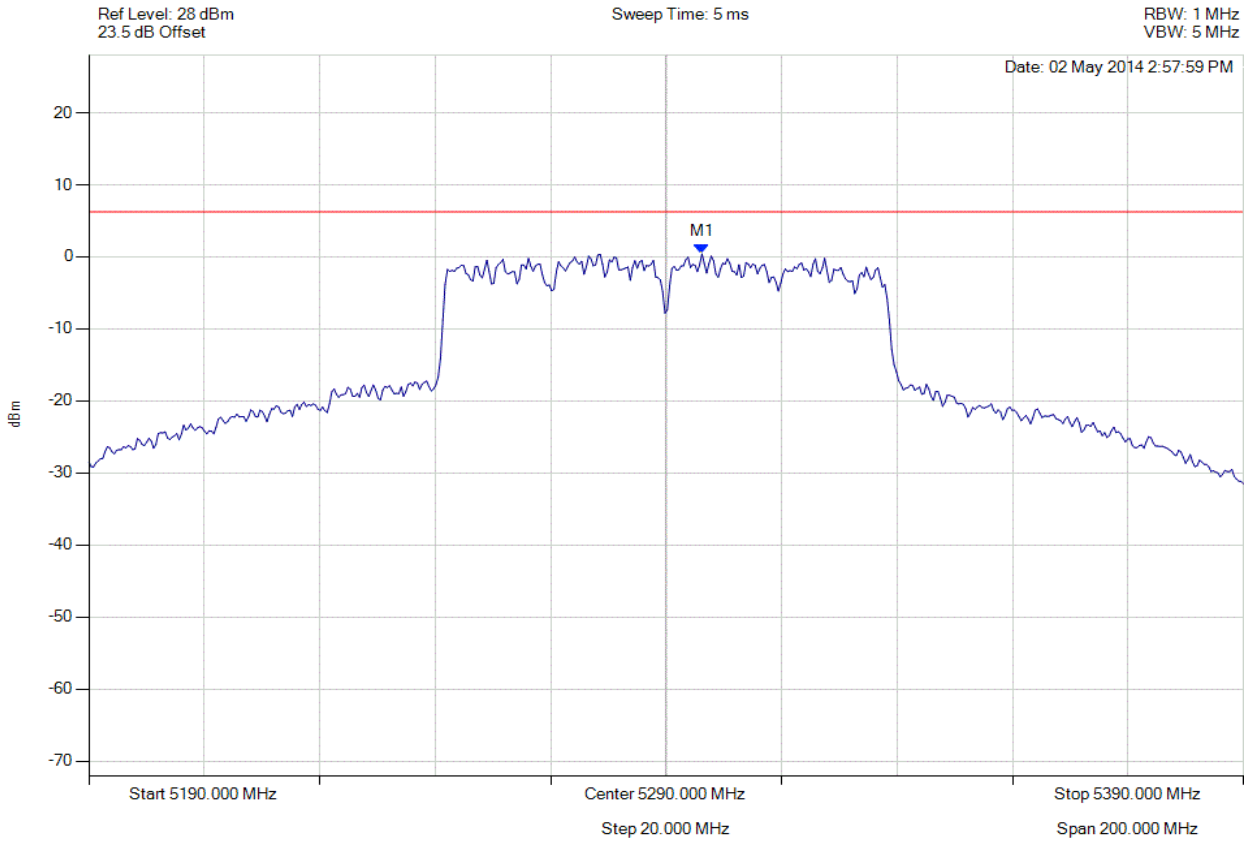


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5285.792 MHz : 0.484 dBm	Limit: ≤ 6.229 dBm Margin: -4.98 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5290.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

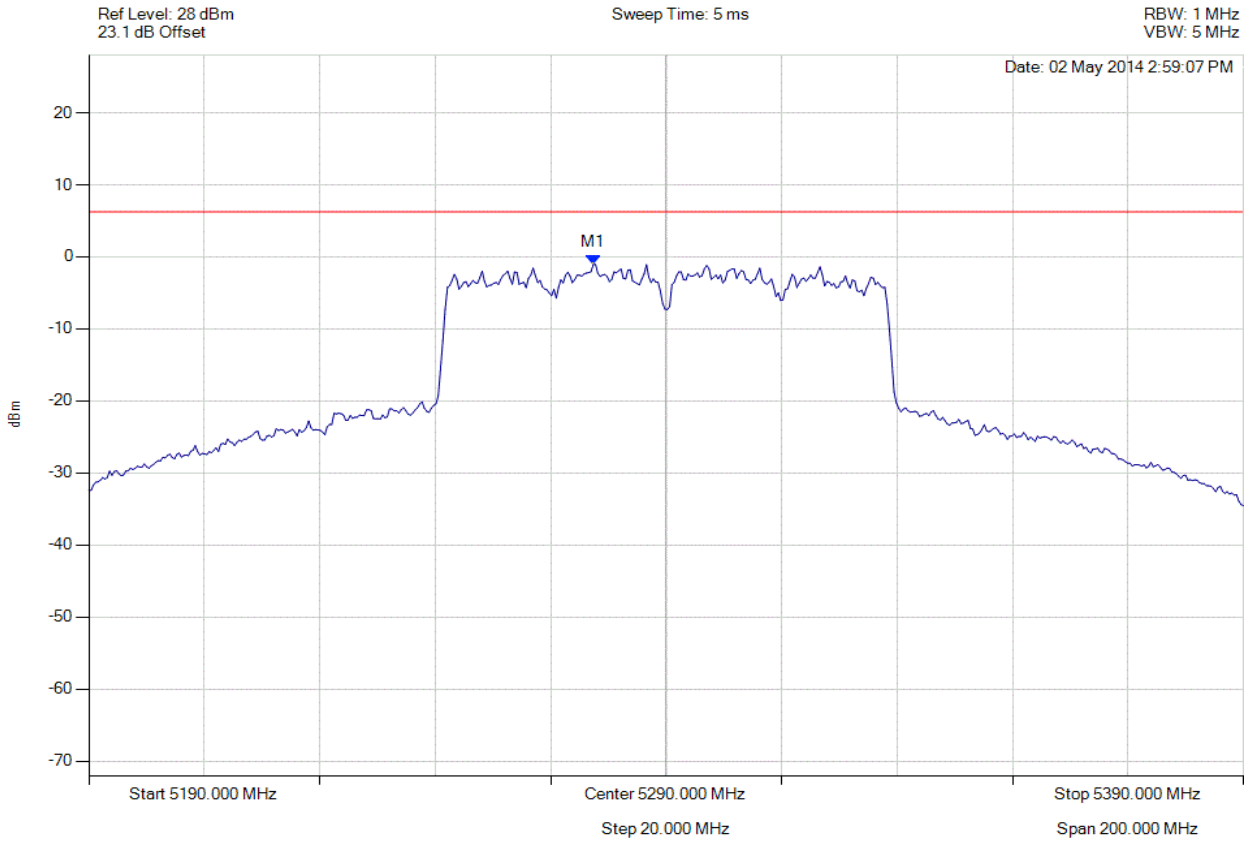


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5296.212 MHz : 0.402 dBm	Limit: ≤ 6.229 dBm Margin: -5.06 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5290.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

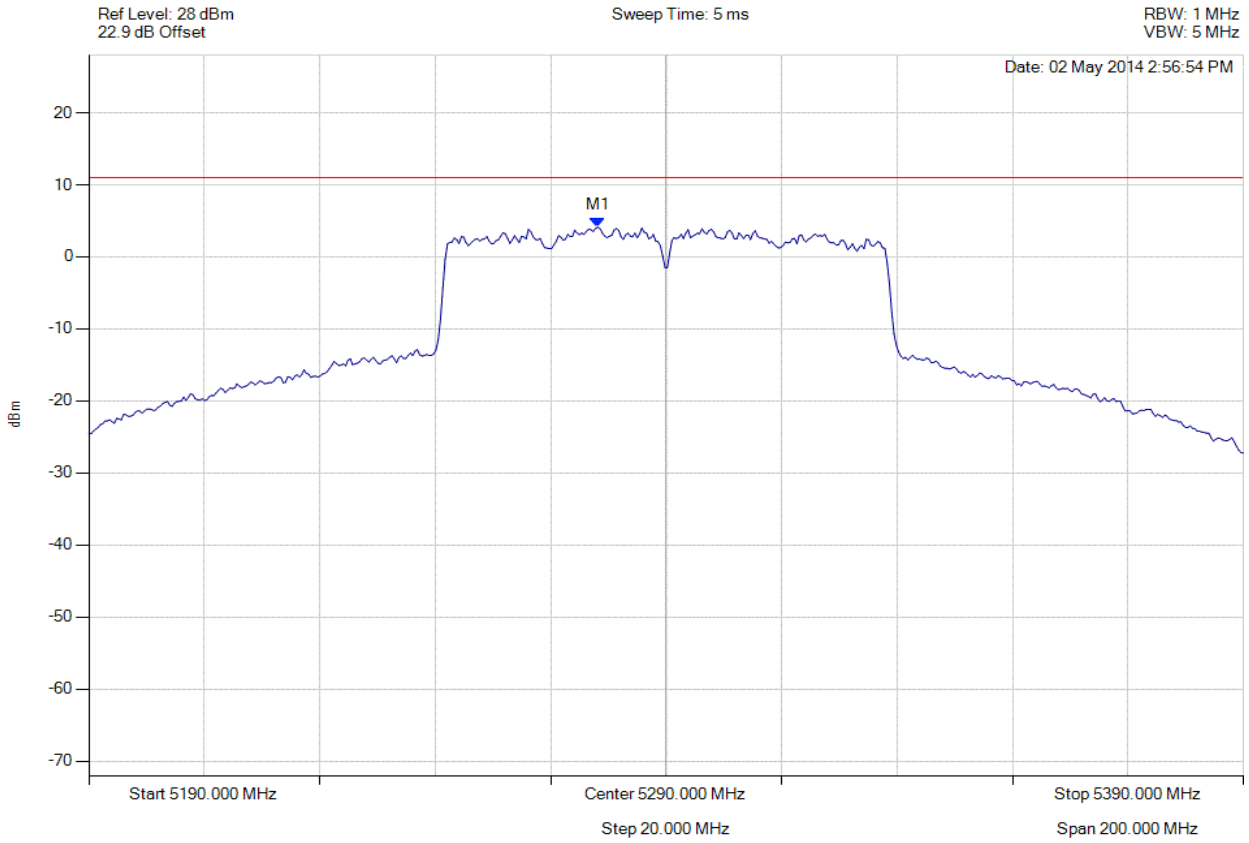


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5277.375 MHz : -1.056 dBm	Limit: ≤ 6.229 dBm Margin: 6.52 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5290.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

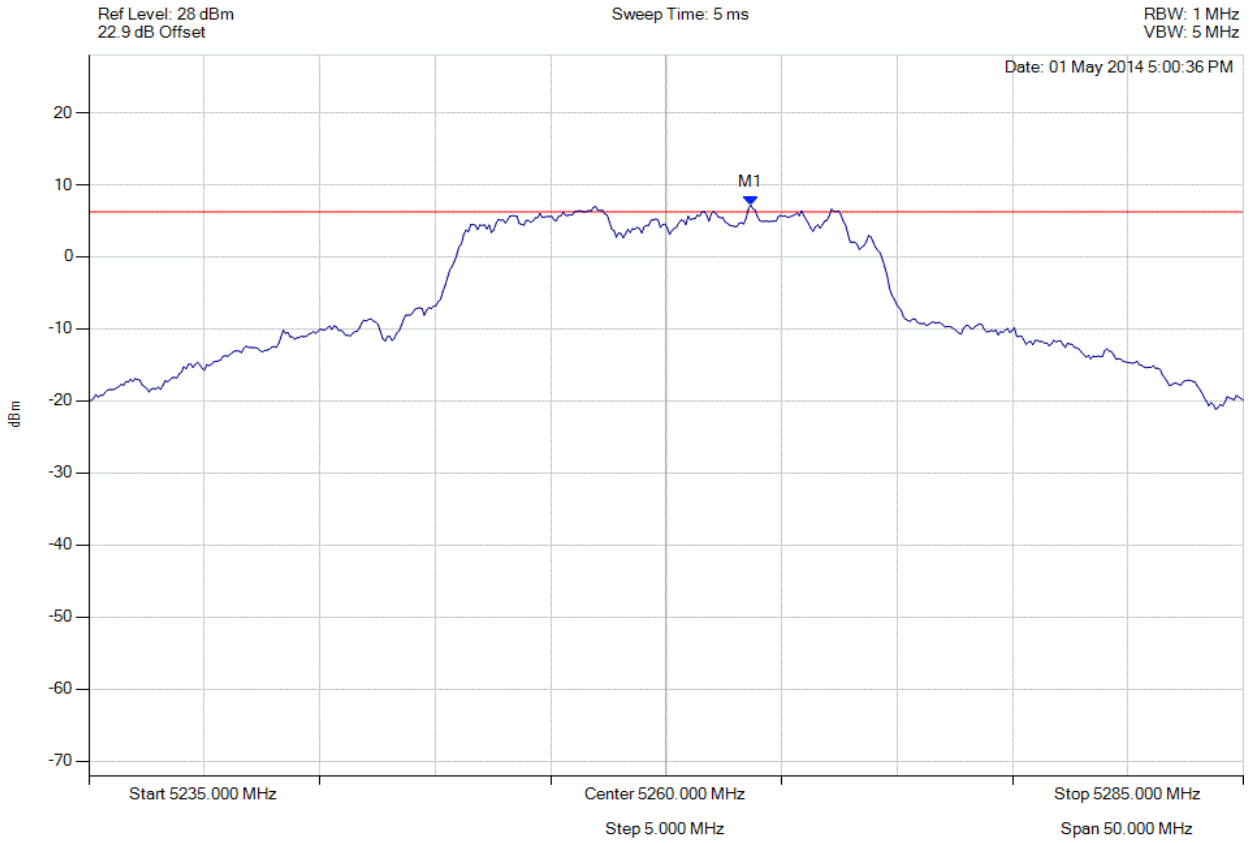


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5278.176 MHz : 4.117 dBm	Limit: ≤ 11.0 dBm Margin: -6.9 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5260.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

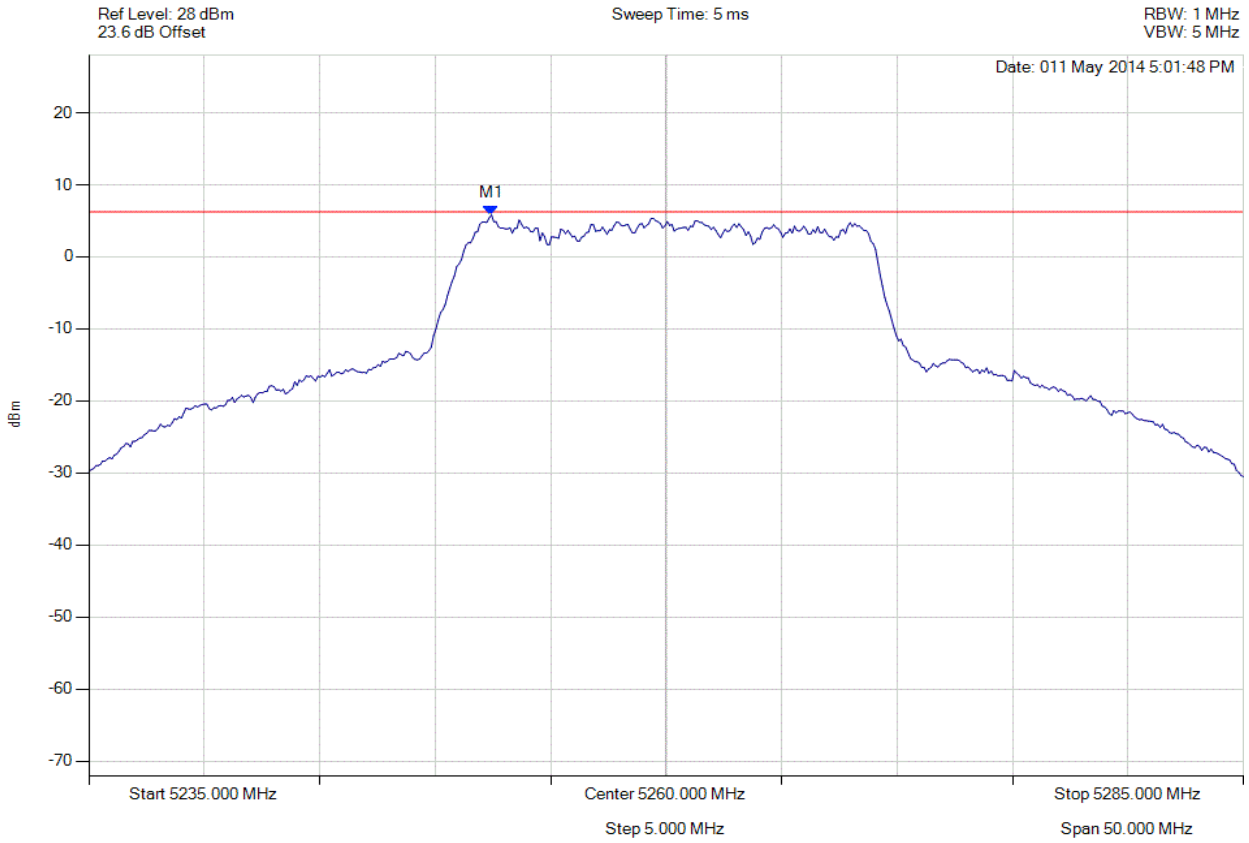


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5263.657 MHz : 7.213 dBm	Limit: ≤ 6.229 dBm Margin: 1.23 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5260.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

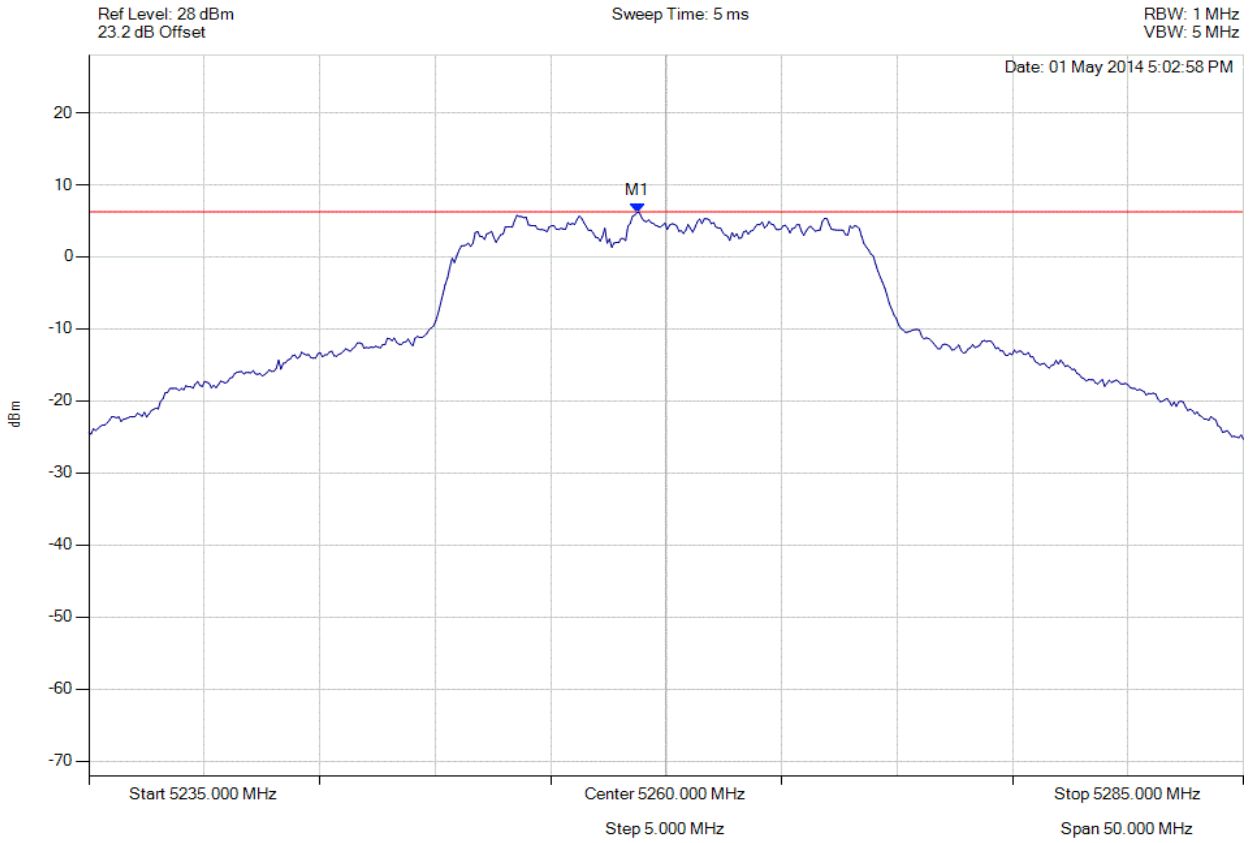


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5252.435 MHz : 5.813 dBm	Limit: ≤ 6.229 dBm Margin: -0.17 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5260.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5258.747 MHz : 6.191 dBm	Limit: ≤ 6.229 dBm Margin: 0.21 dB

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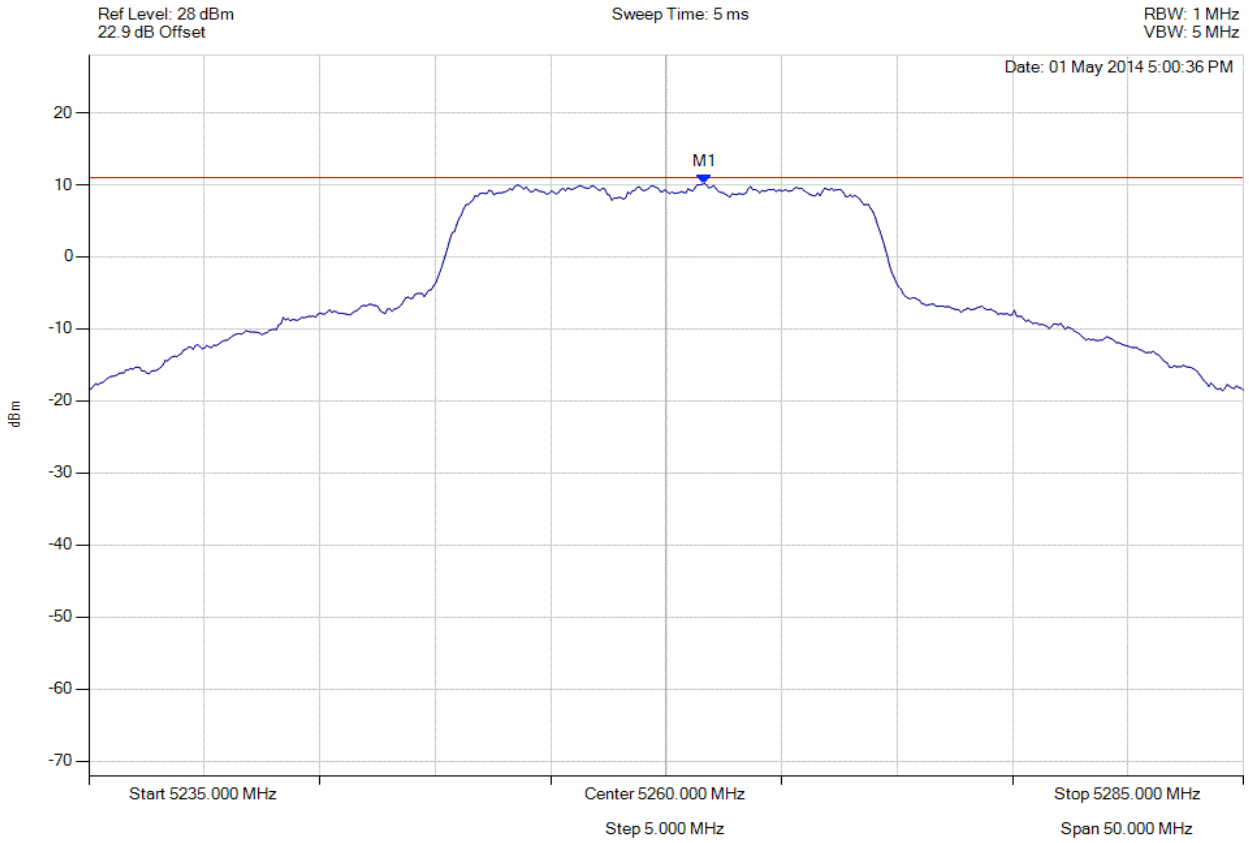
PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5260.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

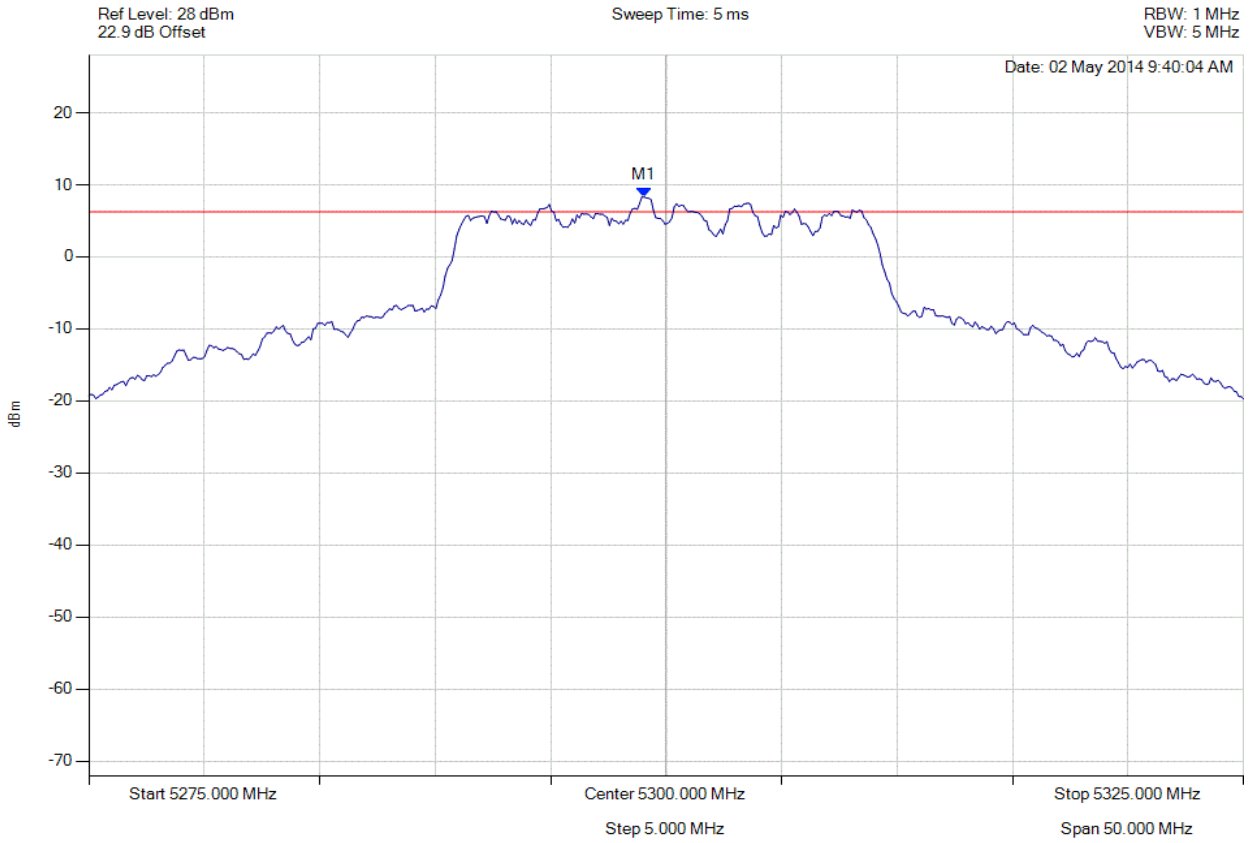


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5261.653 MHz : 10.175 dBm	Limit: ≤ 11.0 dBm Margin: -0.8 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5300.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

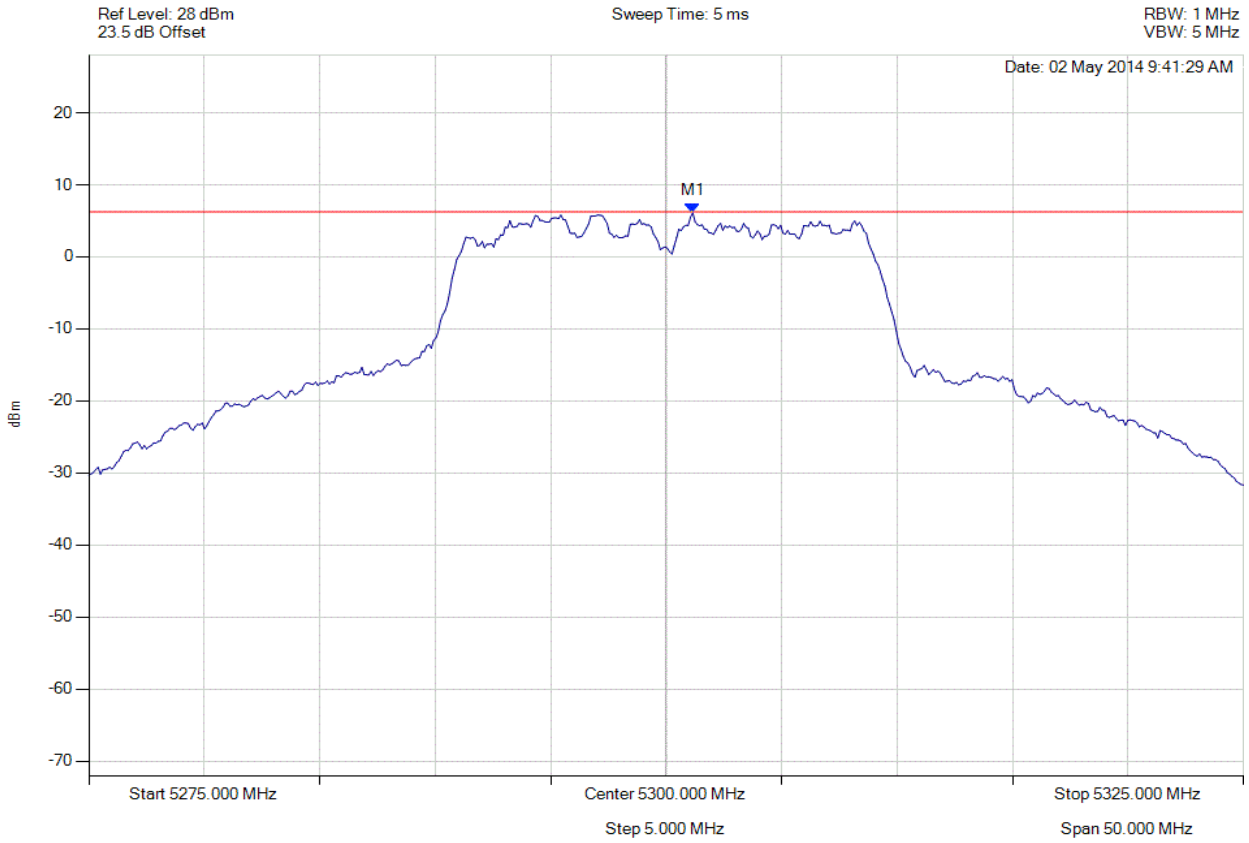


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5299.048 MHz : 8.314 dBm	Limit: ≤ 6.229 dBm Margin: 2.33 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5300.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

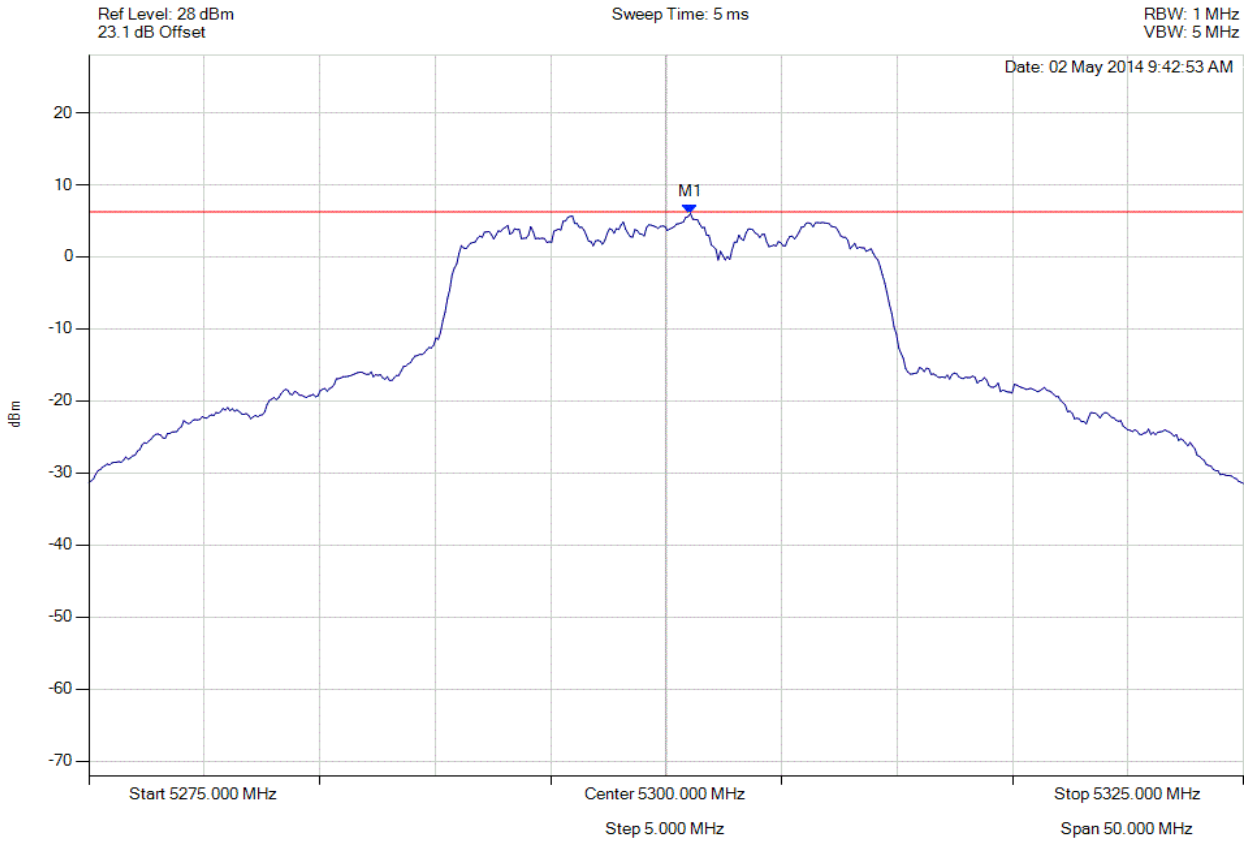


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5301.152 MHz : 6.081 dBm	Limit: ≤ 6.229 dBm Margin: 0.10 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5300.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

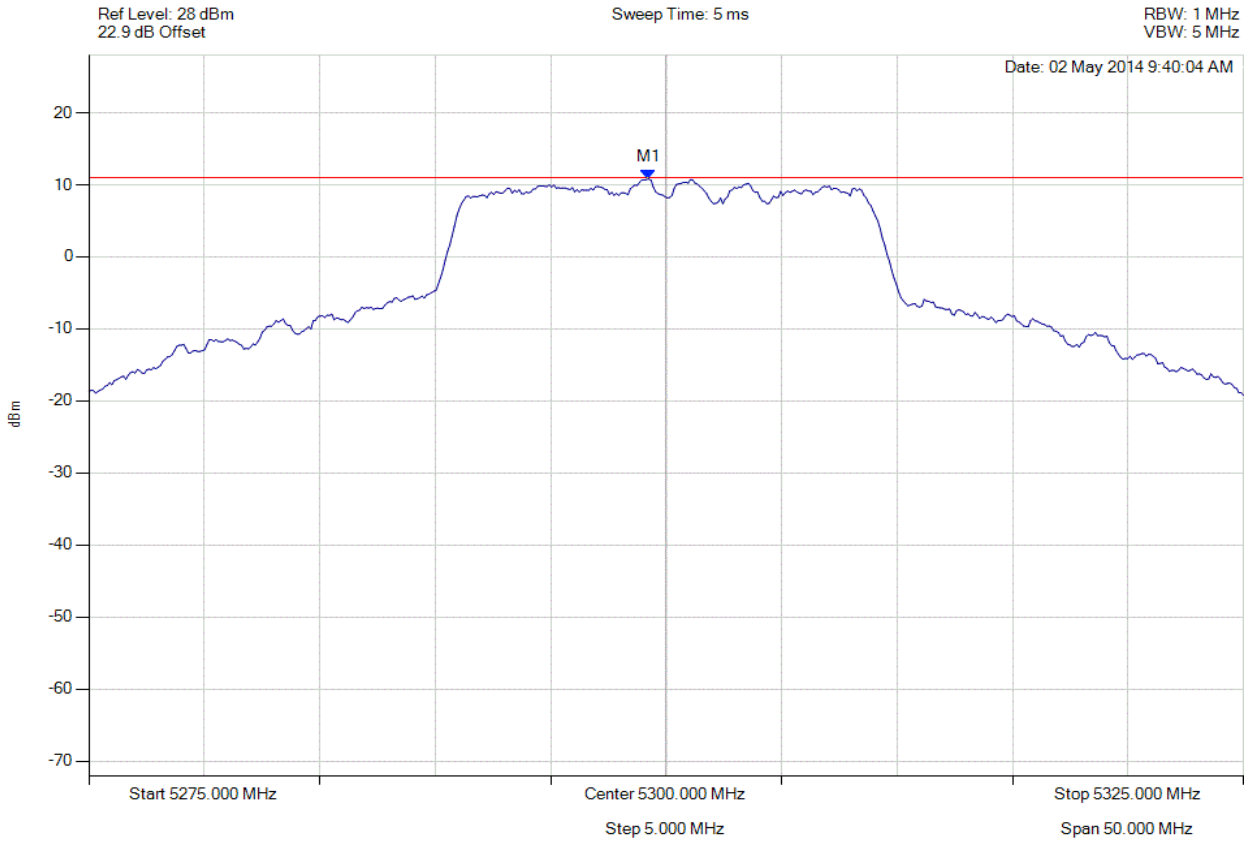


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5301.052 MHz : 6.022 dBm	Limit: ≤ 6.229 dBm Margin: 0.04 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5300.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5299.248 MHz : 10.813 dBm	Limit: ≤ 11.0 dBm Margin: -0.2 dB

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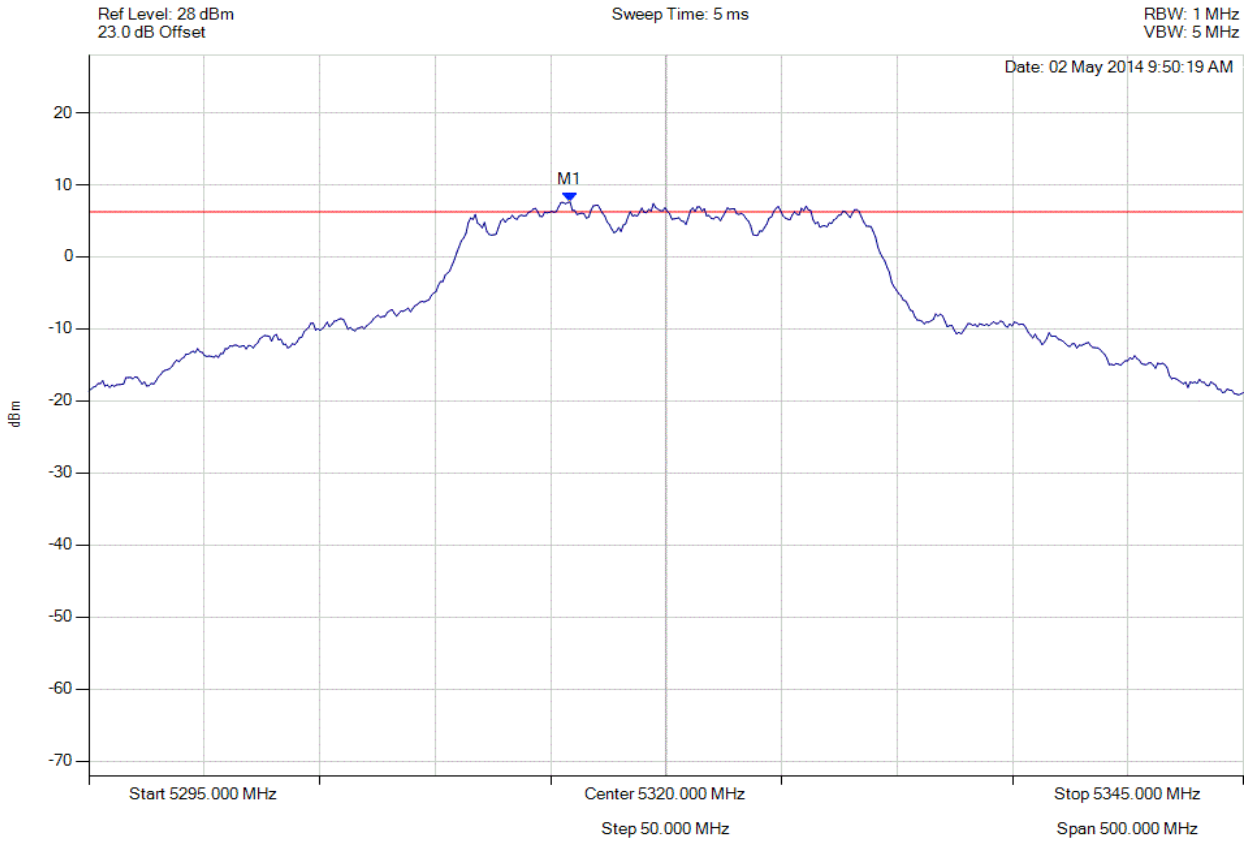
PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5320.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5315.842 MHz : 7.602 dBm	Limit: ≤ 6.229 dBm Margin: 1.62 dB

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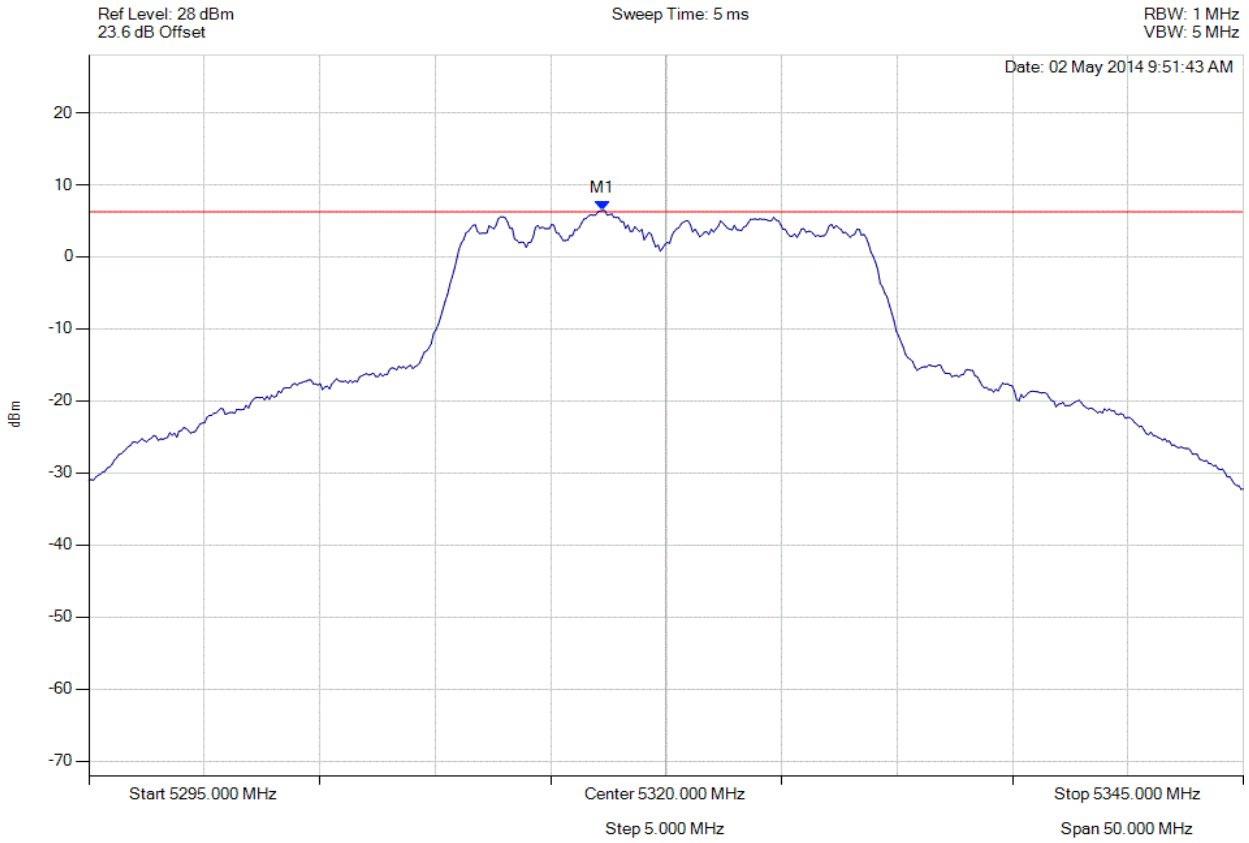
PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5320.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5317.244 MHz : 6.463 dBm	Limit: ≤ 6.229 dBm Margin: 0.48 dB

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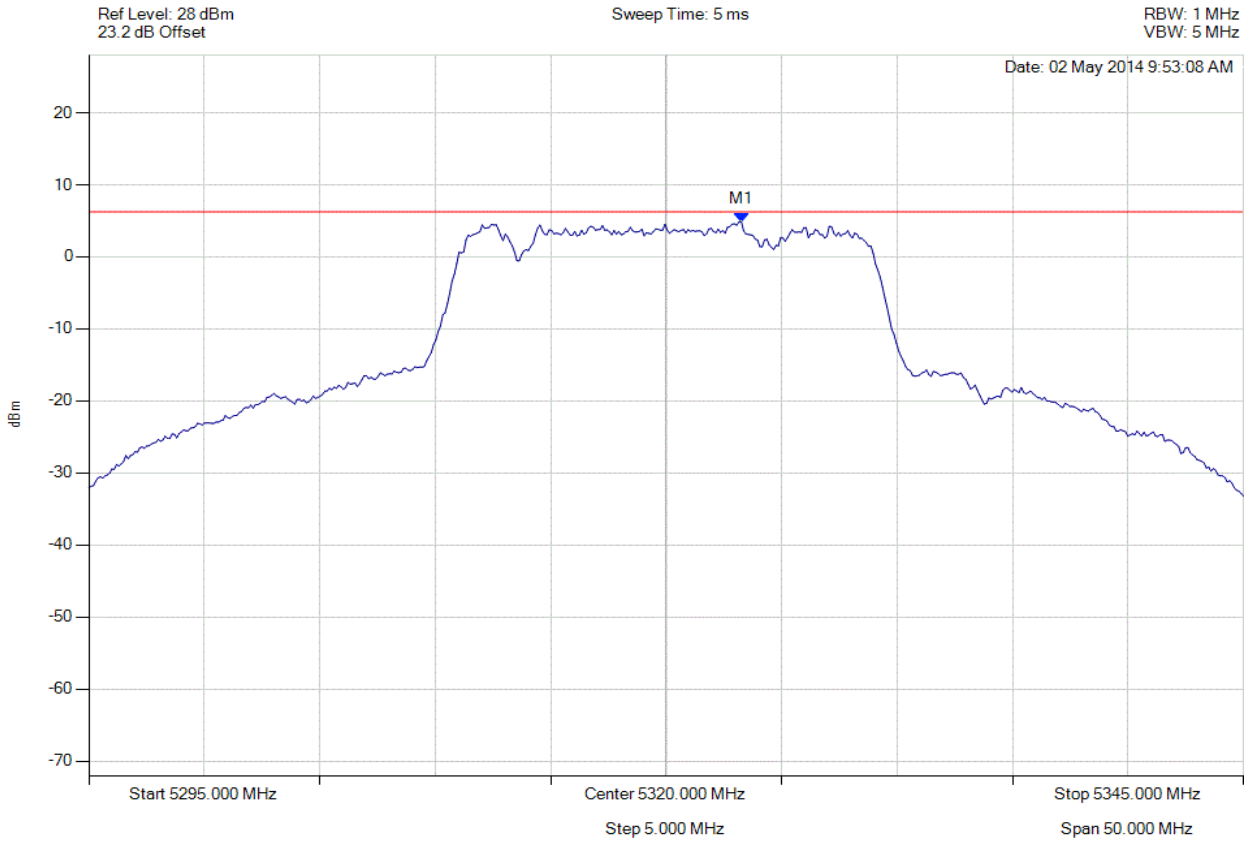
PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5320.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

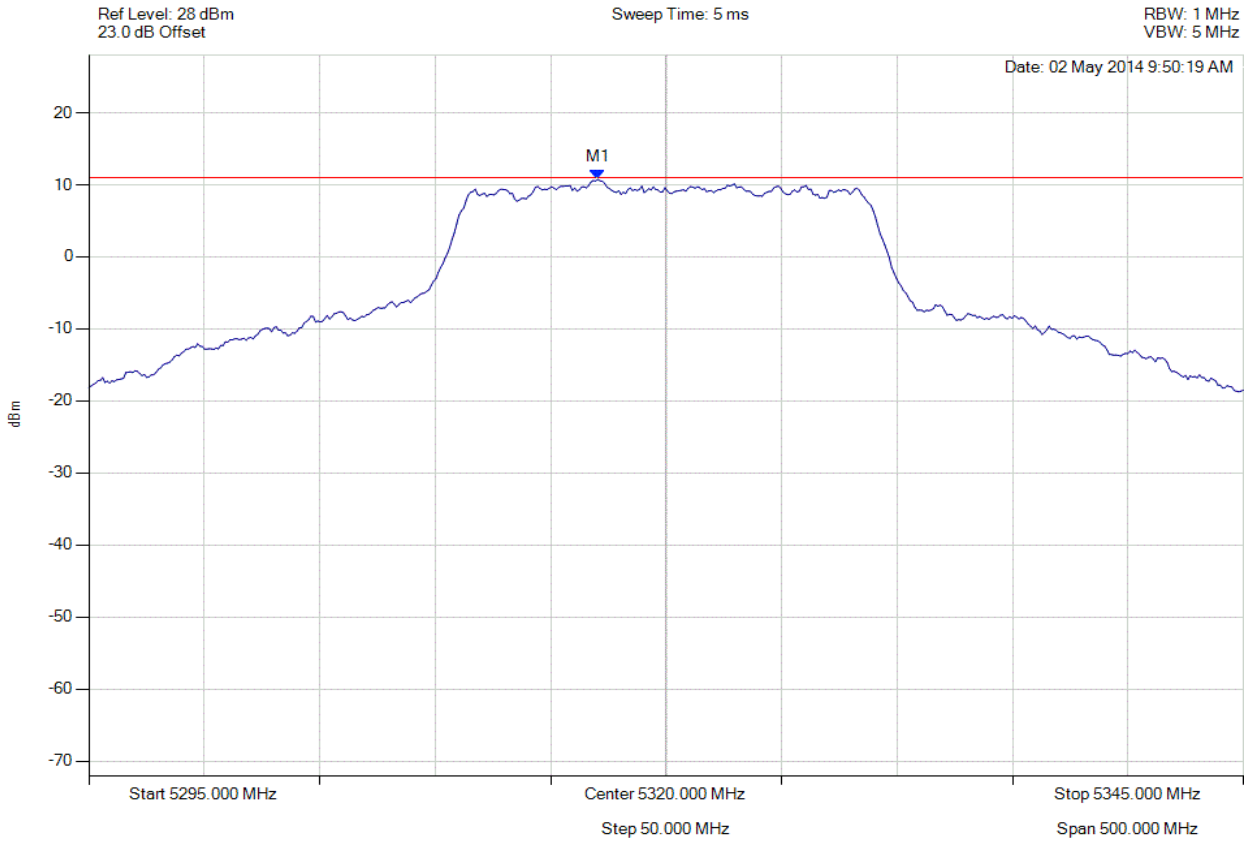


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5323.257 MHz : 4.881 dBm	Limit: ≤ 6.229 dBm Margin: -1.10 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5320.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

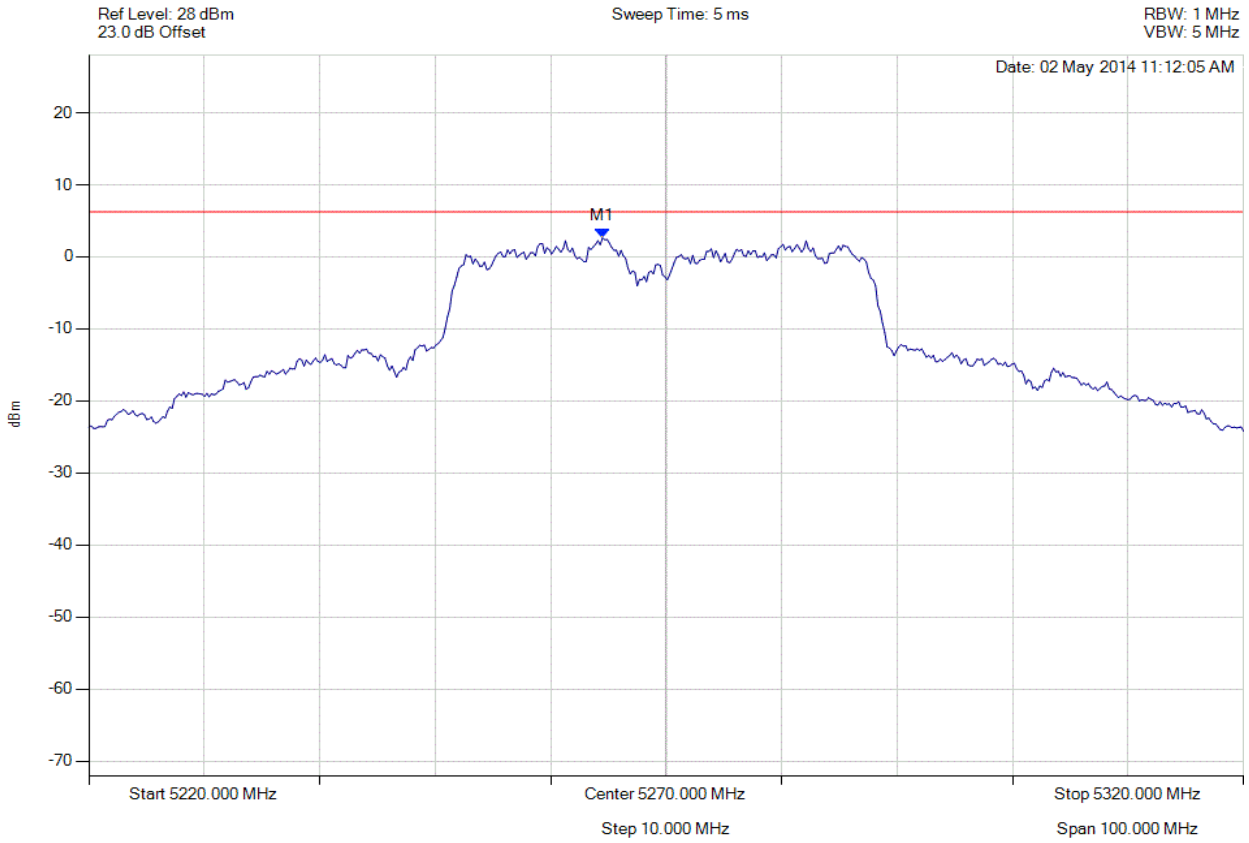


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5317.044 MHz : 10.730 dBm	Limit: ≤ 11.0 dBm Margin: -0.3 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5270.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

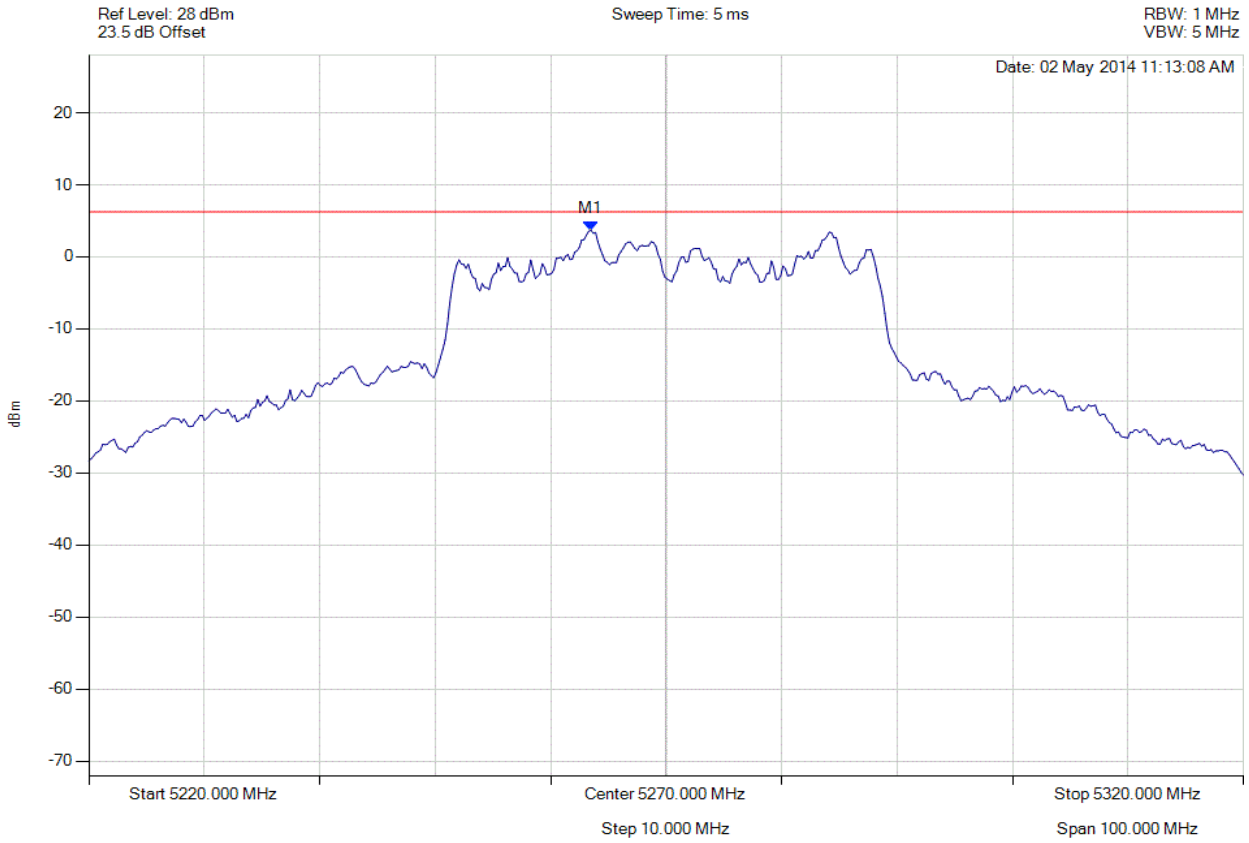


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5264.489 MHz : 2.626 dBm	Limit: ≤ 6.229 dBm Margin: -2.98 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5270.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

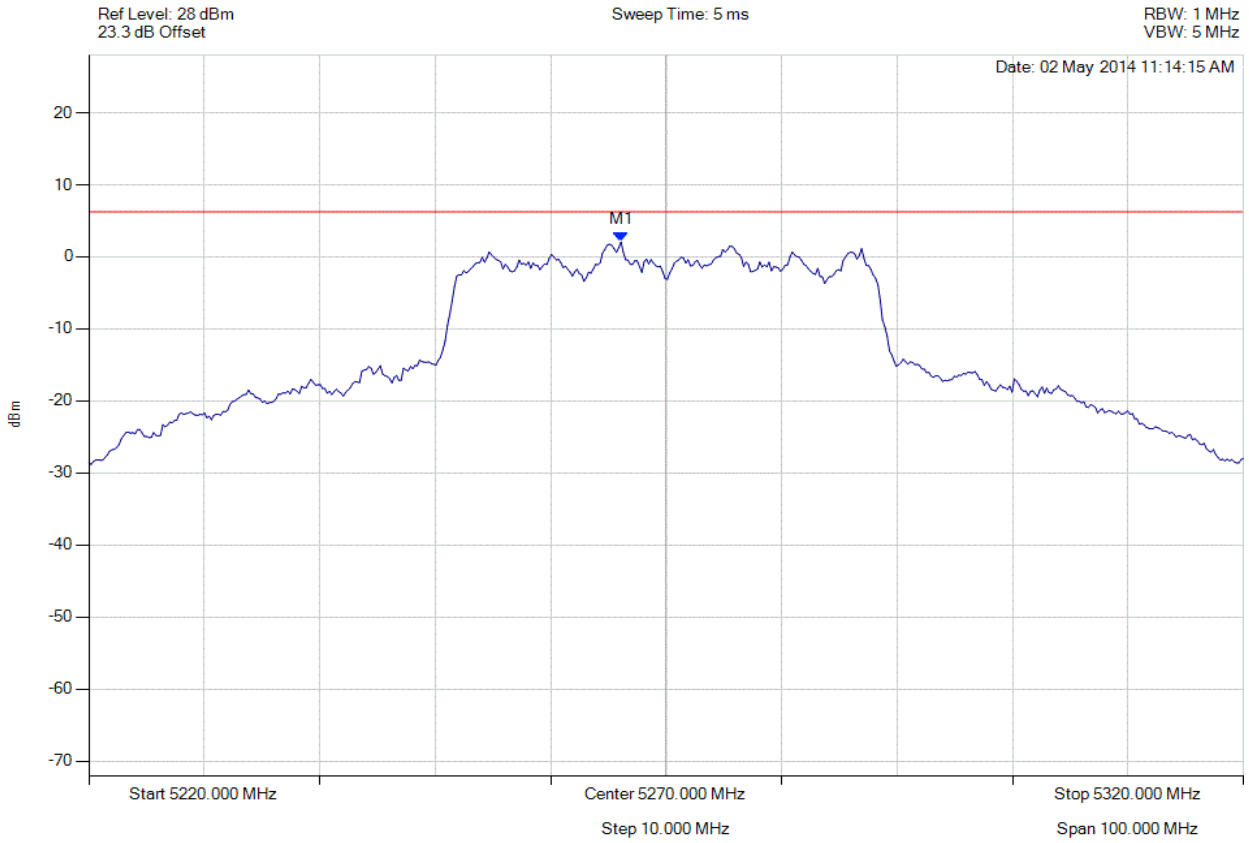


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5263.487 MHz : 3.703 dBm	Limit: ≤ 6.229 dBm Margin: -1.90 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5270.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5266.092 MHz : 2.062 dBm	Limit: ≤ 6.229 dBm Margin: -3.54 dB

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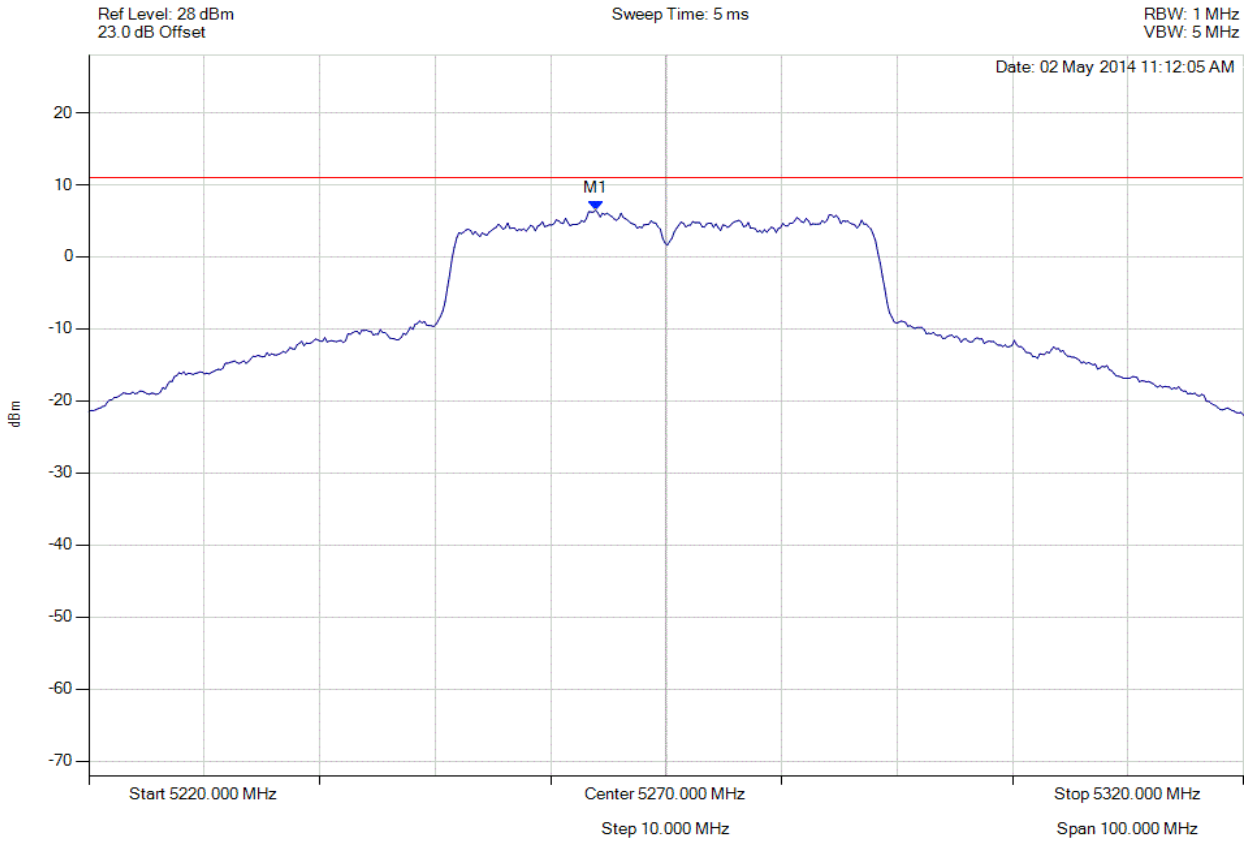
PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5270.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

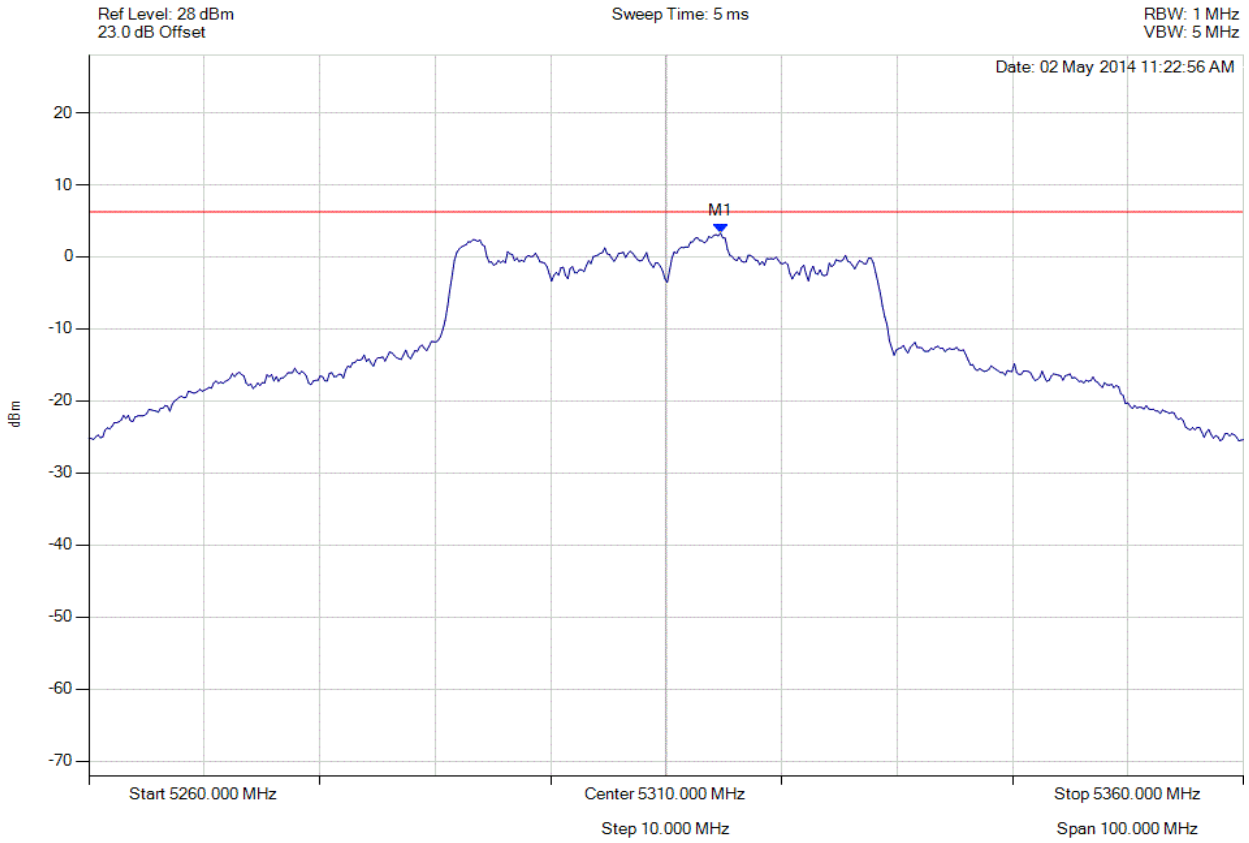


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5263.888 MHz : 6.483 dBm	Limit: ≤ 11.0 dBm Margin: -4.5 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5310.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

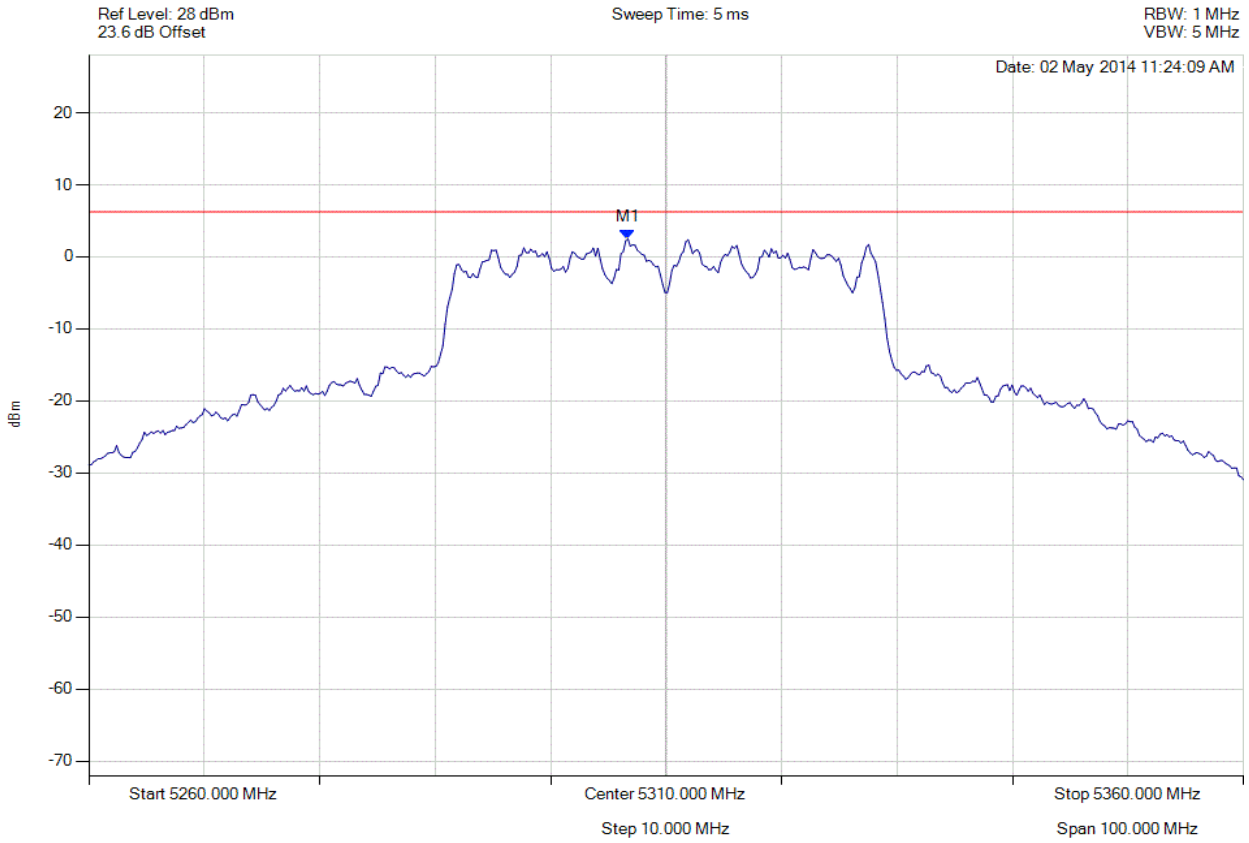


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5314.709 MHz : 3.296 dBm	Limit: ≤ 6.229 dBm Margin: -2.31 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5310.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5306.693 MHz : 2.493 dBm	Limit: ≤ 6.229 dBm Margin: -3.11 dB

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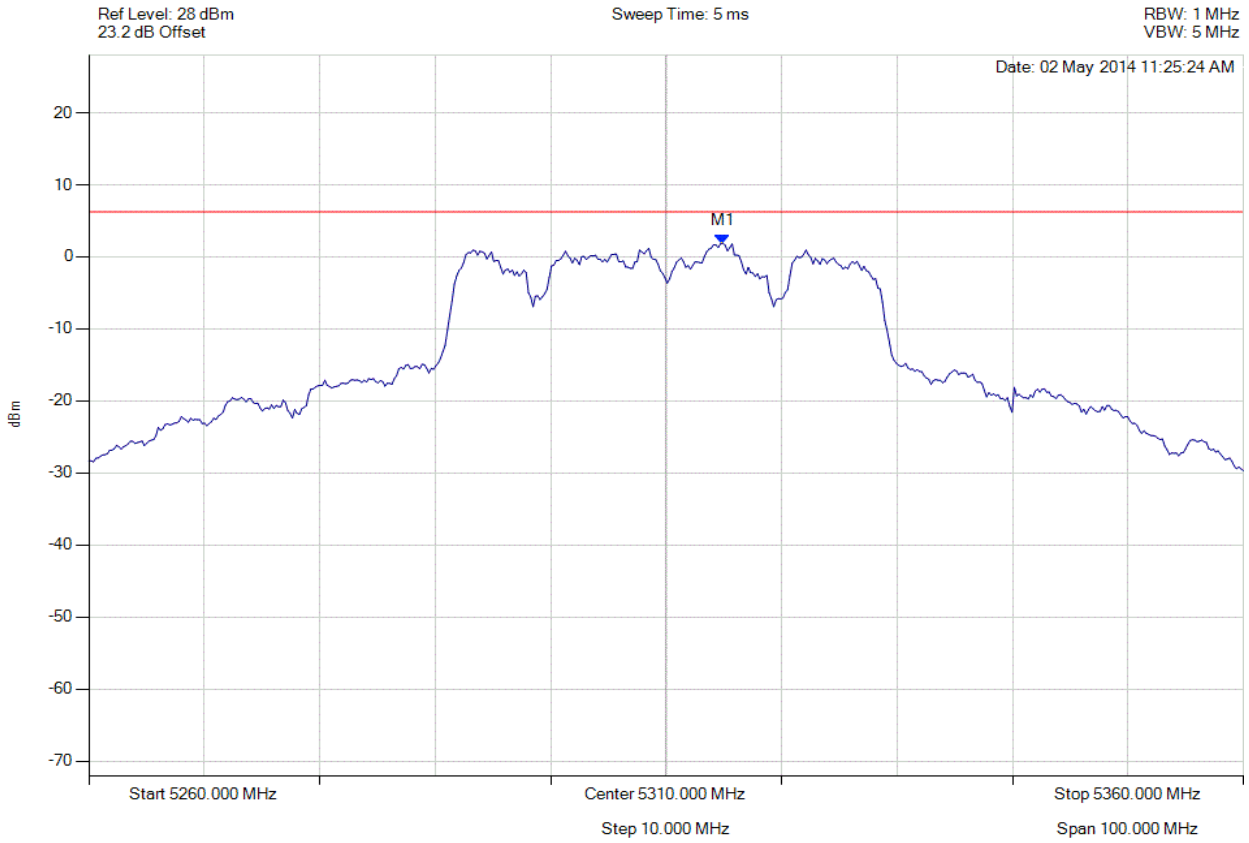
PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5310.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

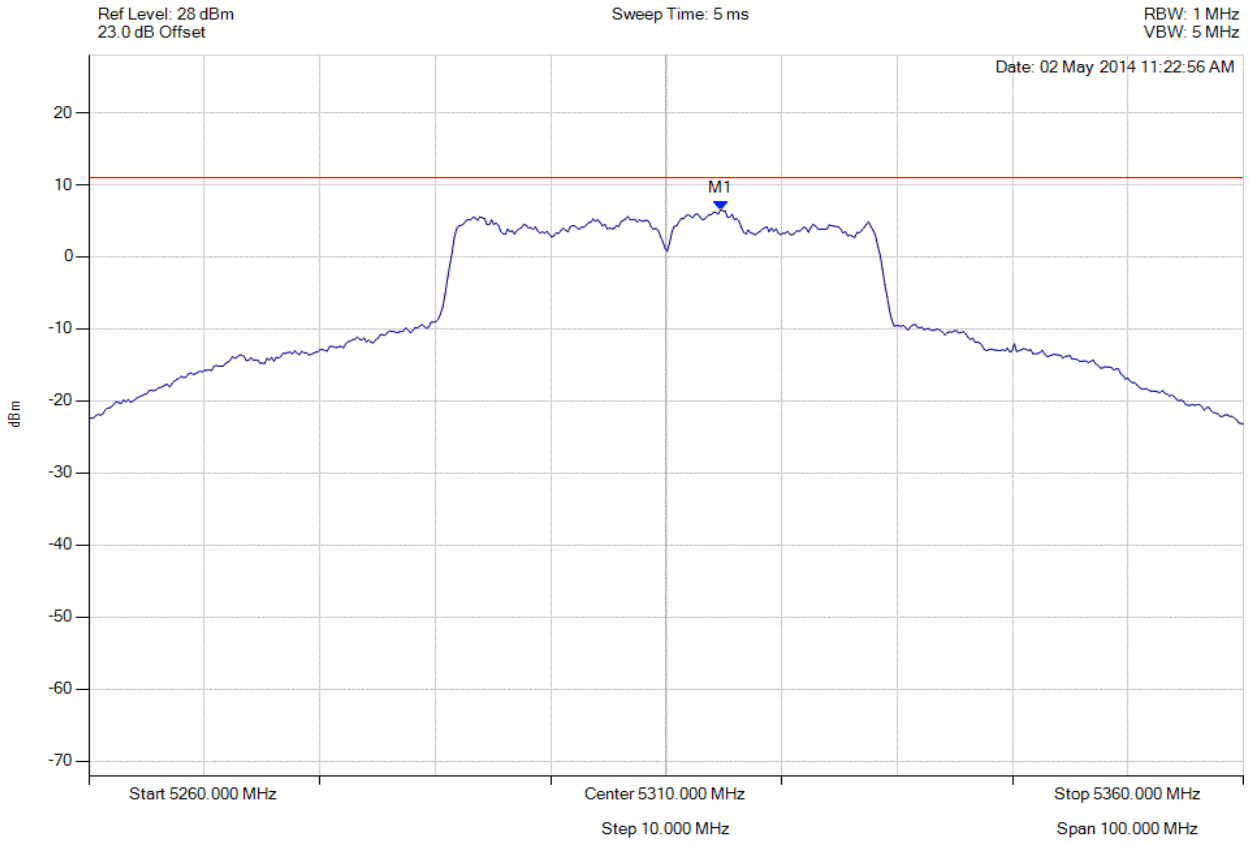


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5314.910 MHz : 1.881 dBm	Limit: ≤ 6.229 dBm Margin: -3.72 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5310.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5314.709 MHz : 6.521 dBm	Limit: ≤ 11.0 dBm Margin: -4.5 dB

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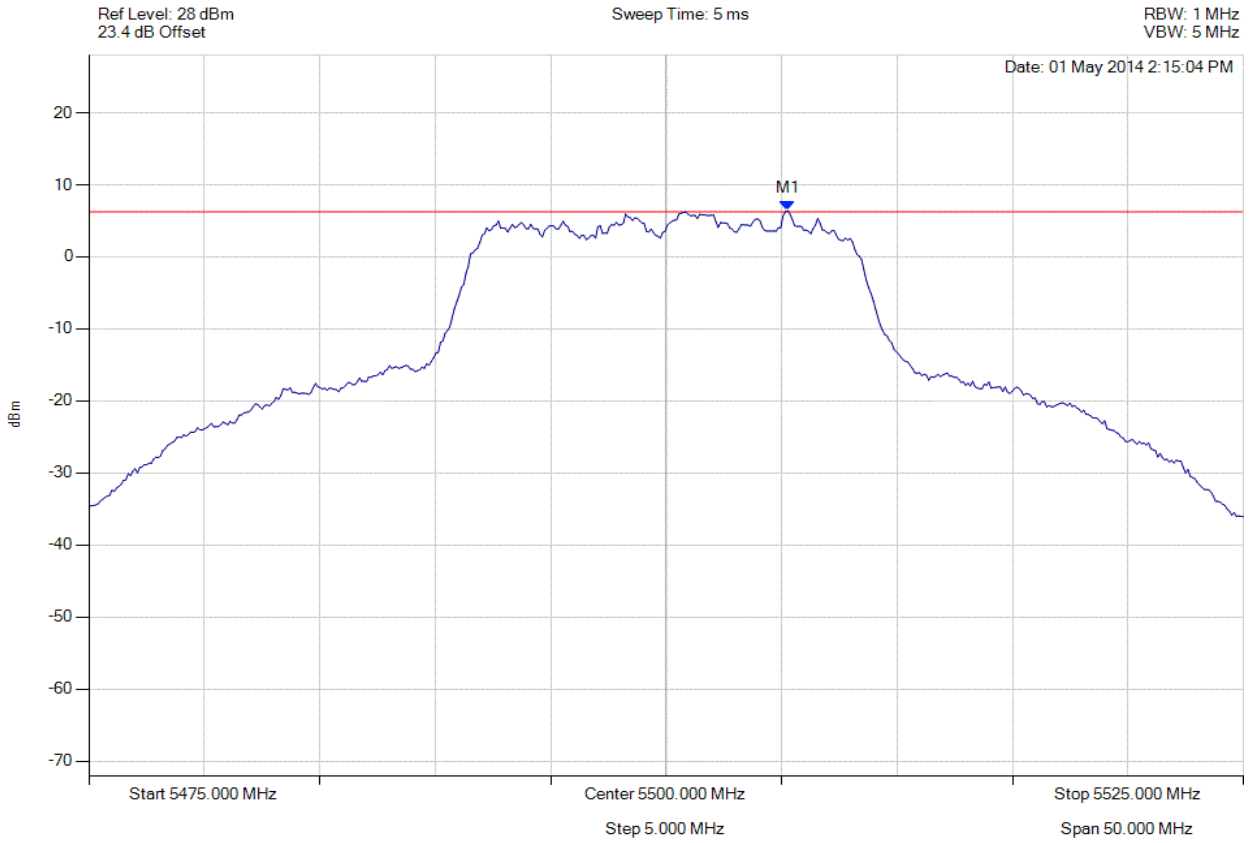
PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5500.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5505.261 MHz : 6.394 dBm	Limit: ≤ 6.229 dBm Margin: 0.43 dB

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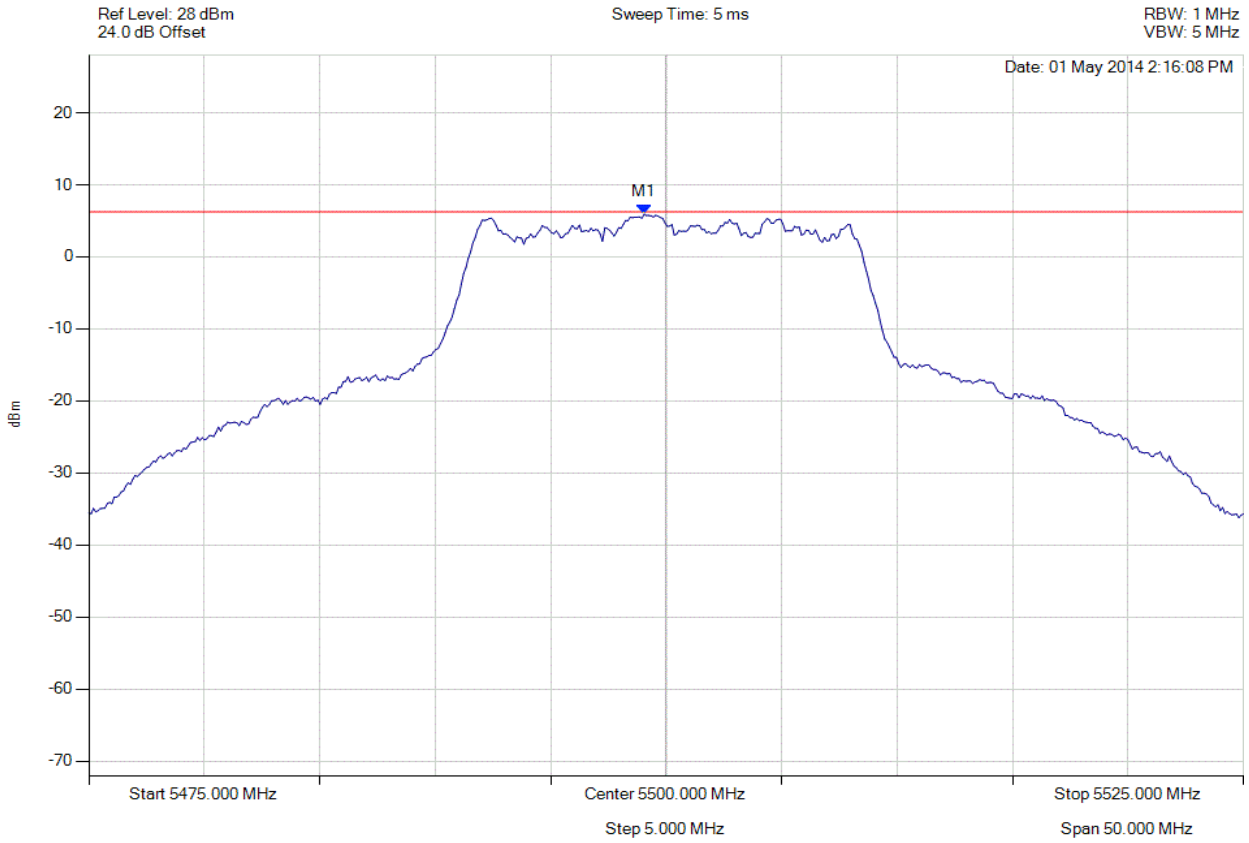
PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5500.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5499.048 MHz : 5.913 dBm	Limit: ≤ 6.229 dBm Margin: -0.05 dB

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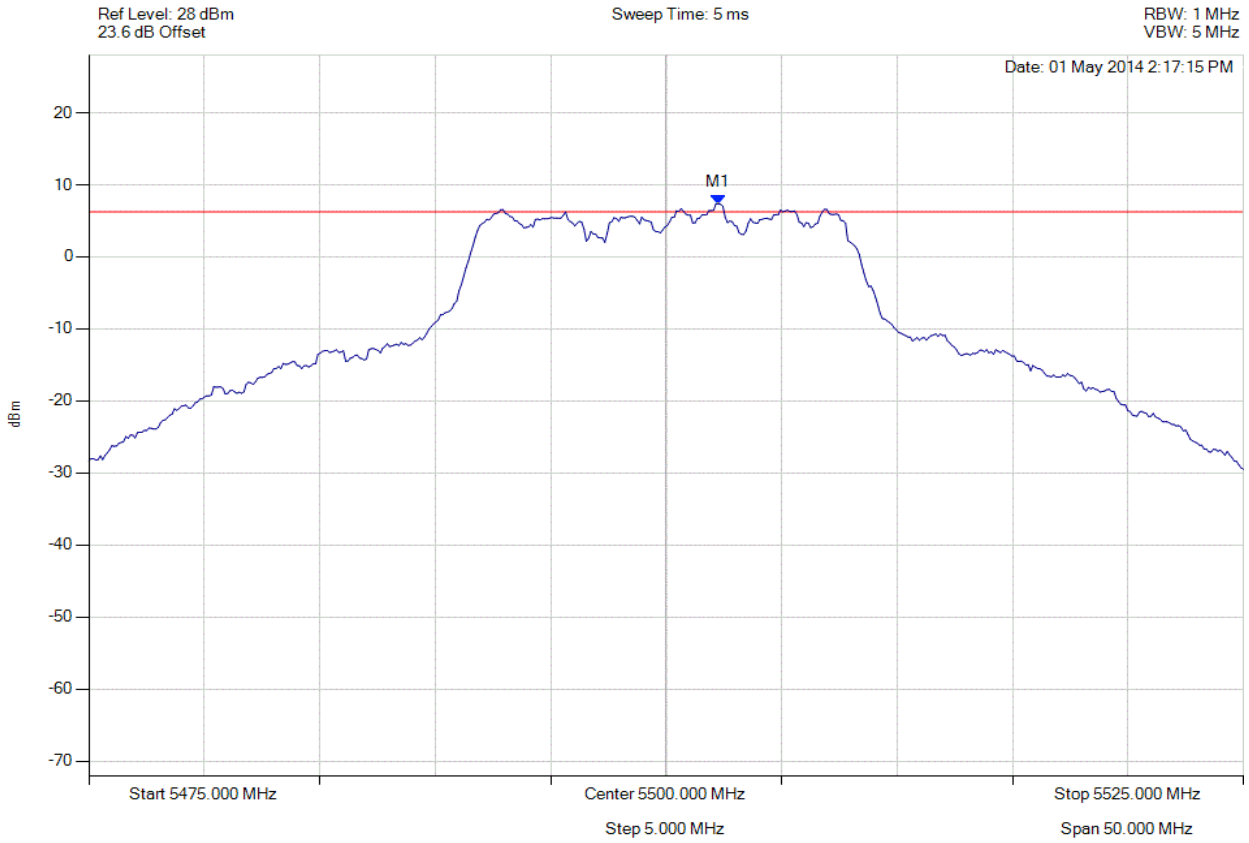
PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5500.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

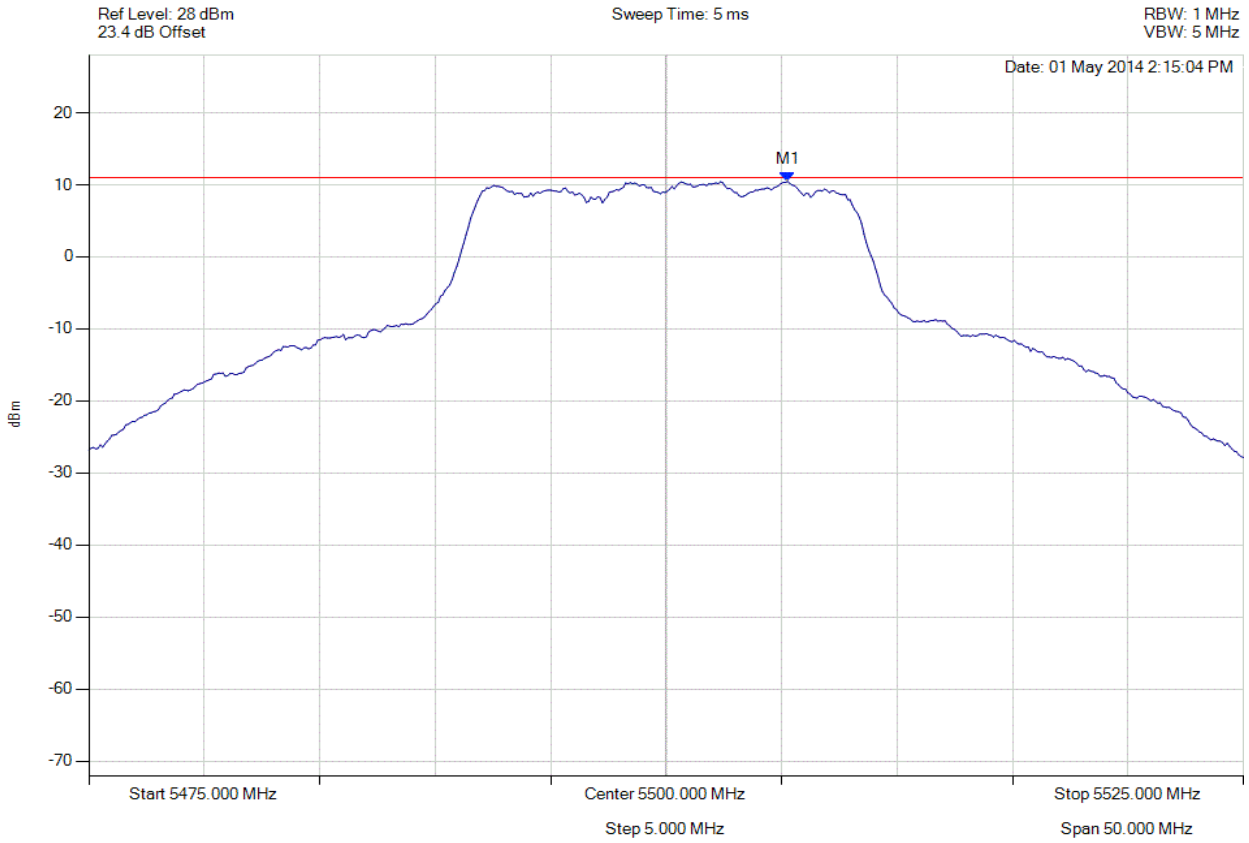


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5502.255 MHz : 7.359 dBm	Limit: ≤ 6.229 dBm Margin: 1.40 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5500.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

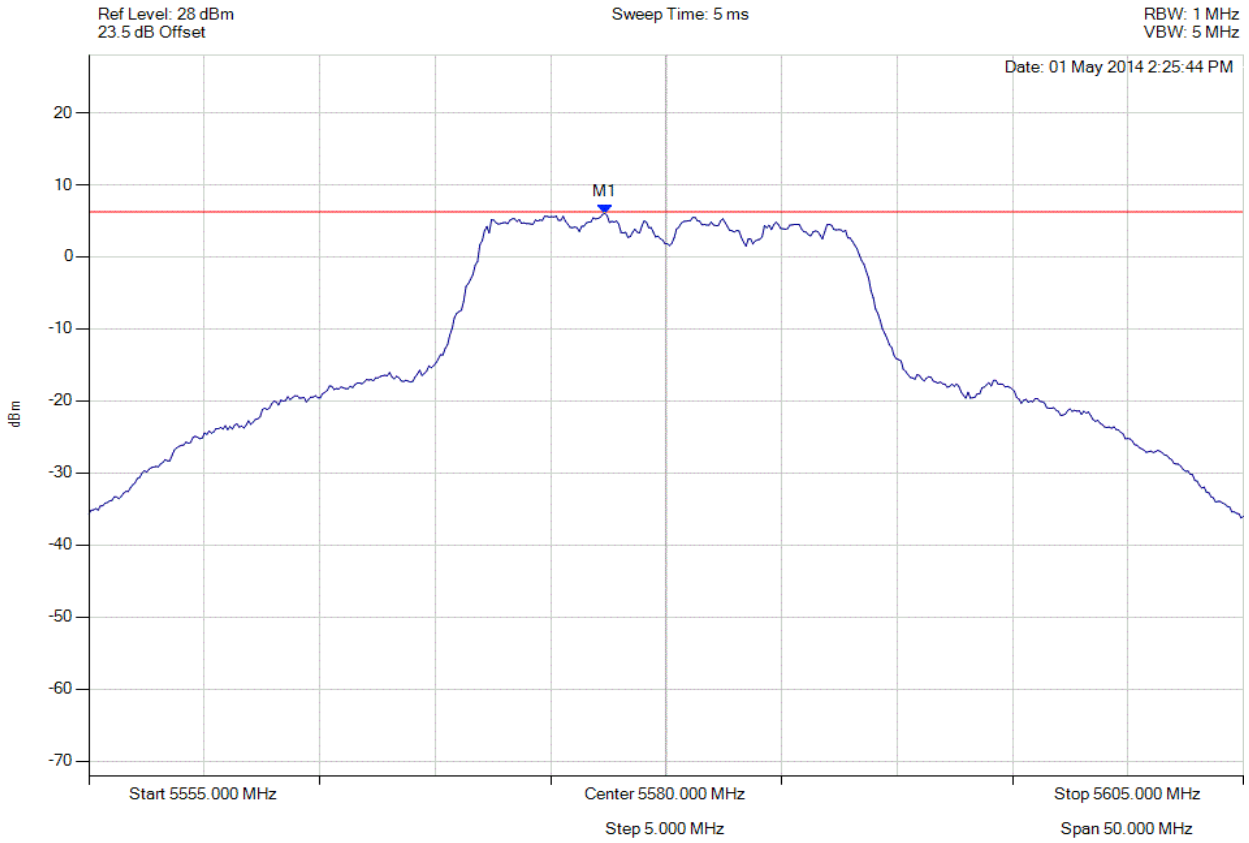


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5505.261 MHz : 10.455 dBm	Limit: ≤ 11.0 dBm Margin: -0.5 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5580.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

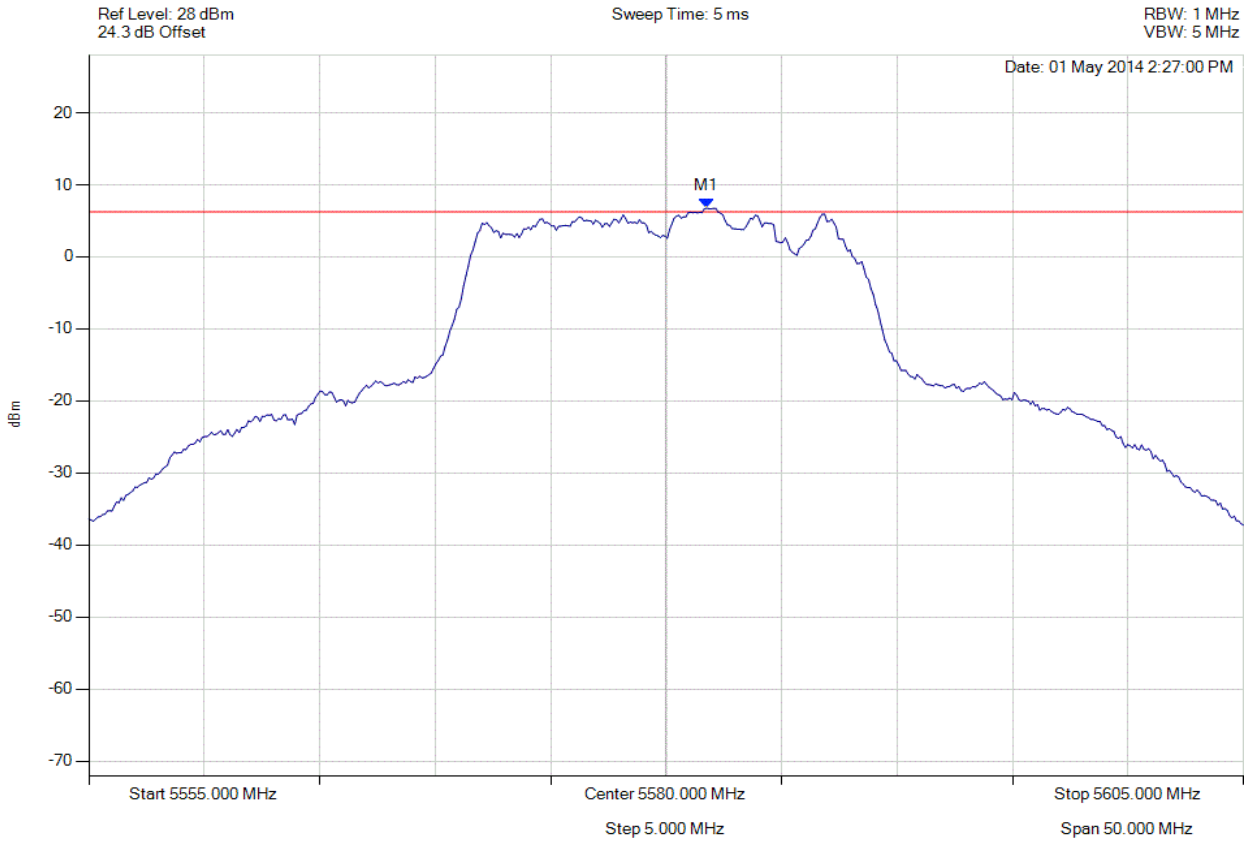


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5577.345 MHz : 6.023 dBm	Limit: ≤ 6.229 dBm Margin: 0.06 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5580.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

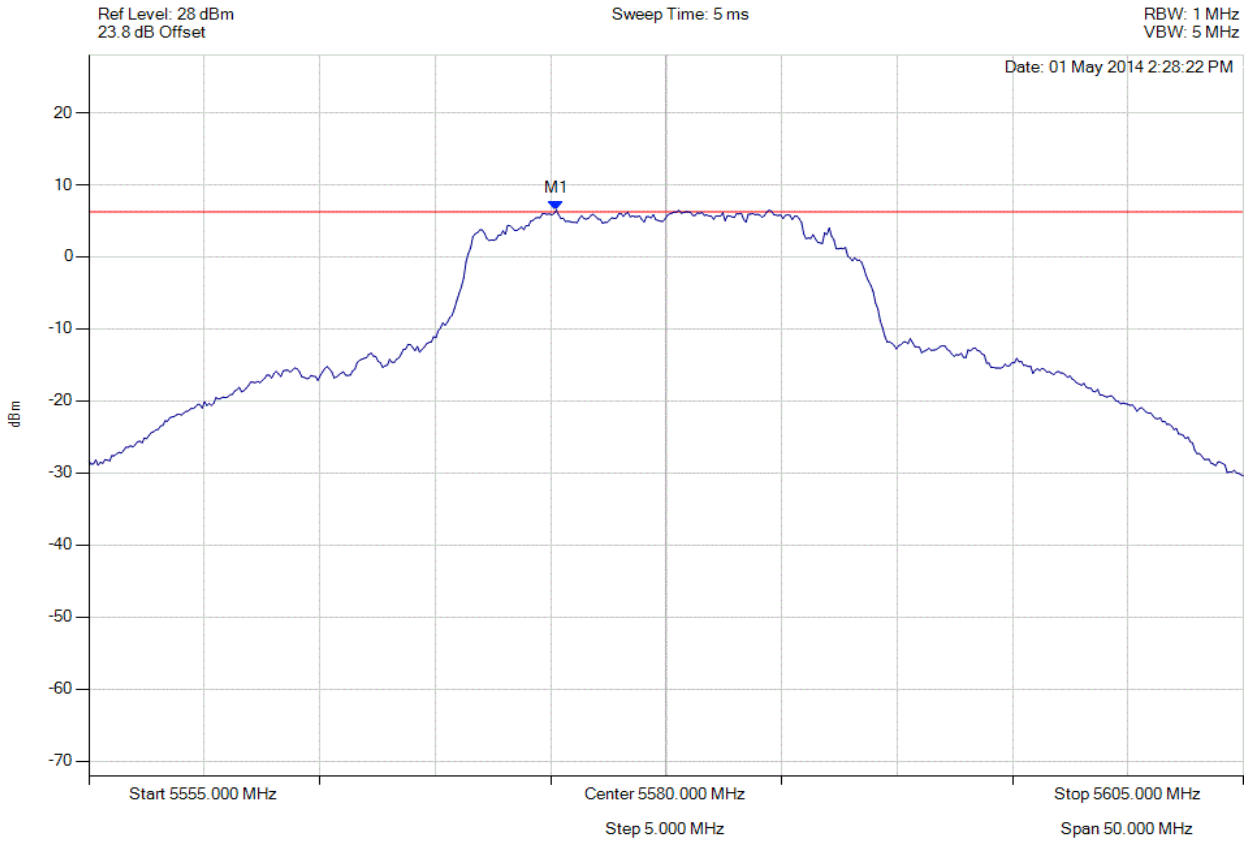


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5581.754 MHz : 6.746 dBm	Limit: ≤ 6.229 dBm Margin: 0.79 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5580.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

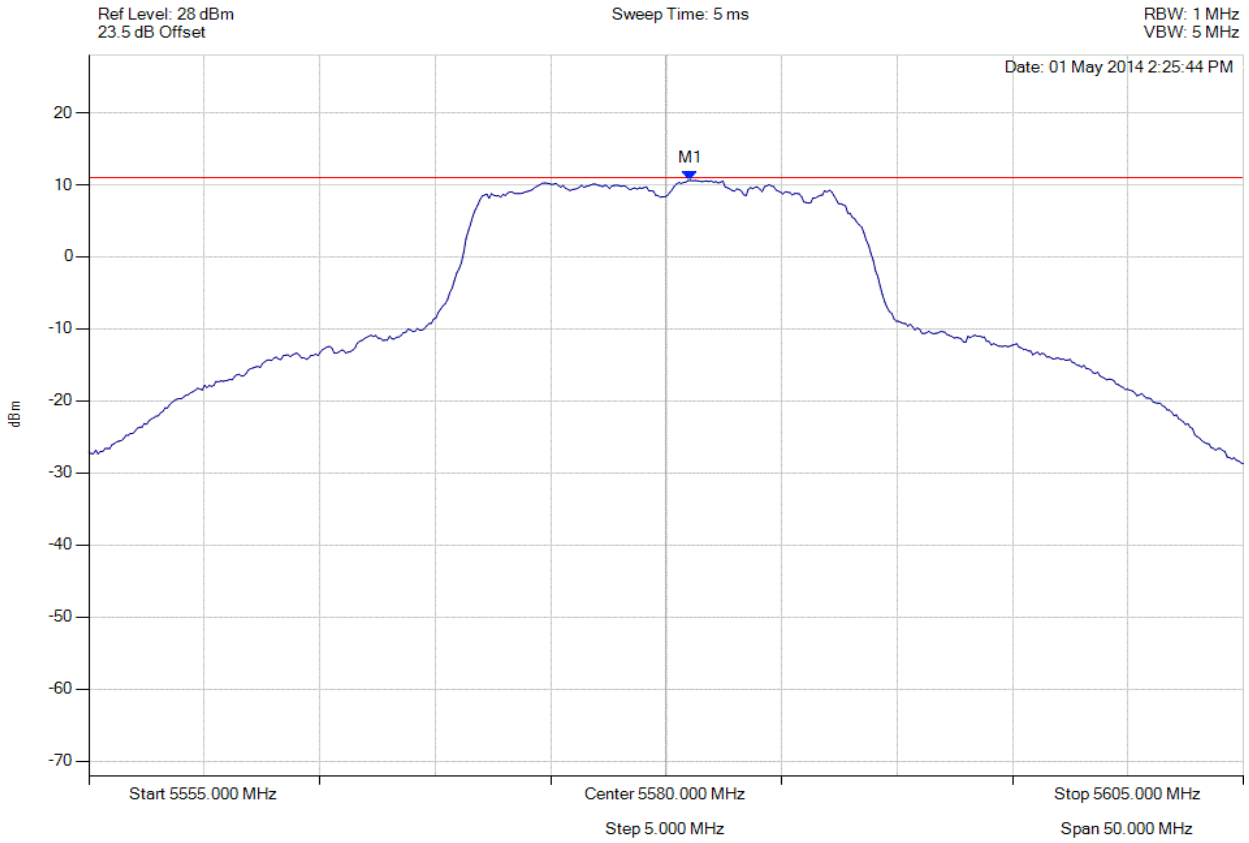


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5575.240 MHz : 6.476 dBm	Limit: ≤ 6.229 dBm Margin: 0.52 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5580.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

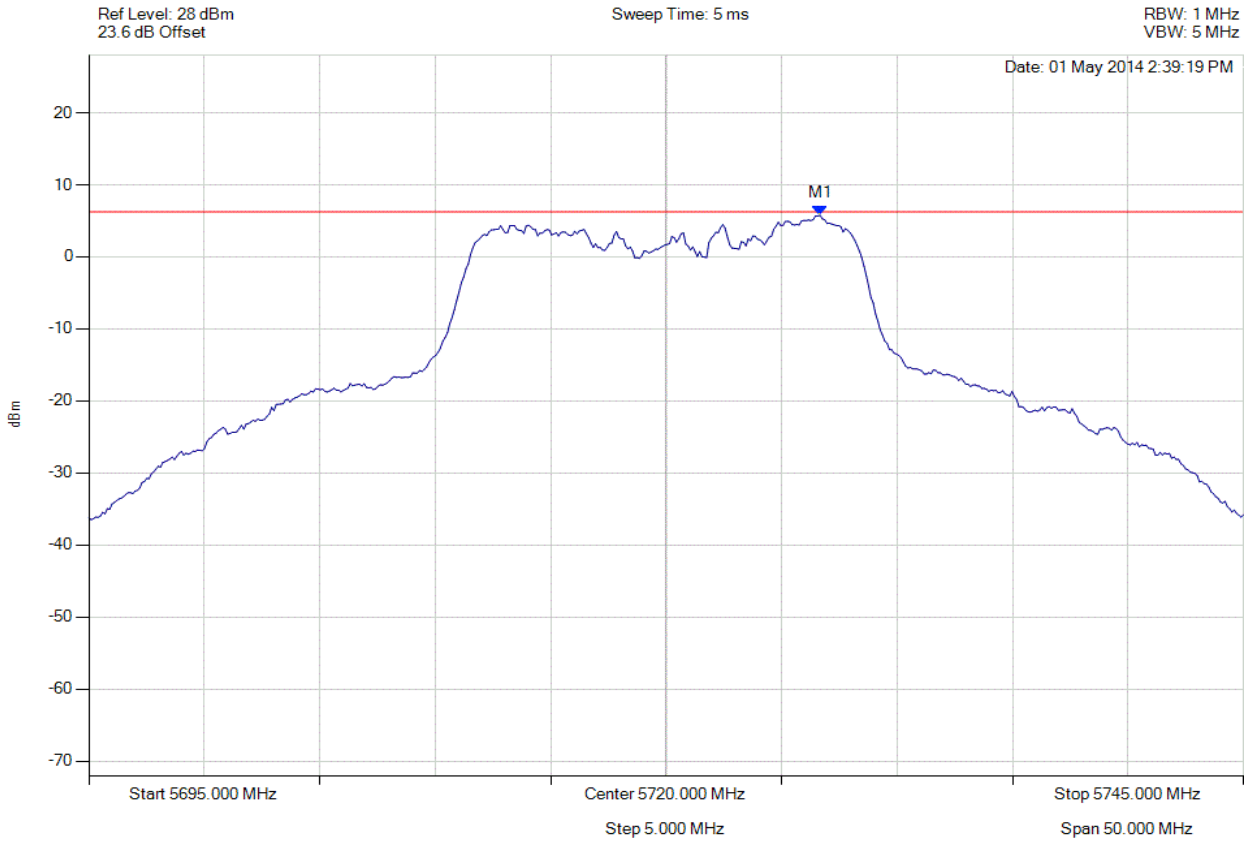


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5581.052 MHz : 10.607 dBm	Limit: ≤ 11.0 dBm Margin: -0.4 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5720.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

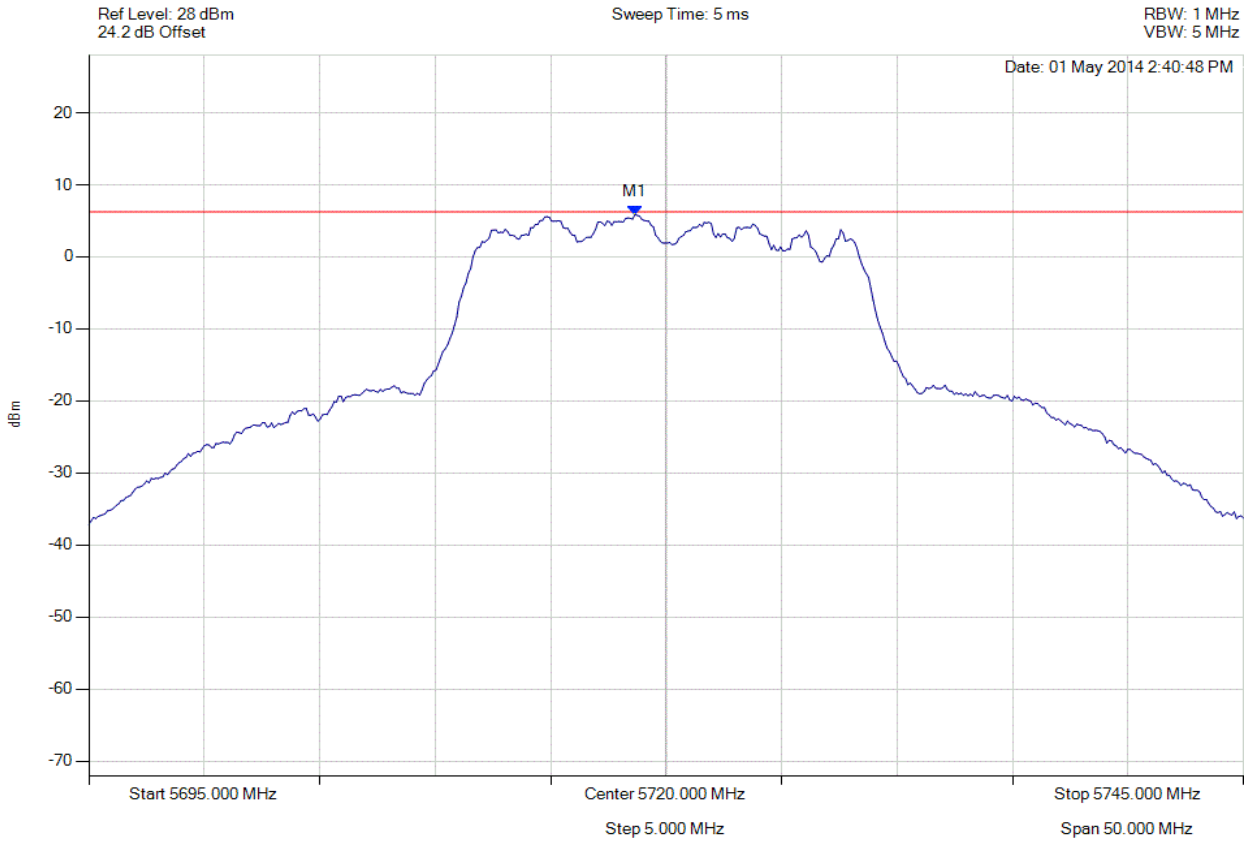


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5726.663 MHz : 5.776 dBm	Limit: ≤ 6.229 dBm Margin: -0.18 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5720.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

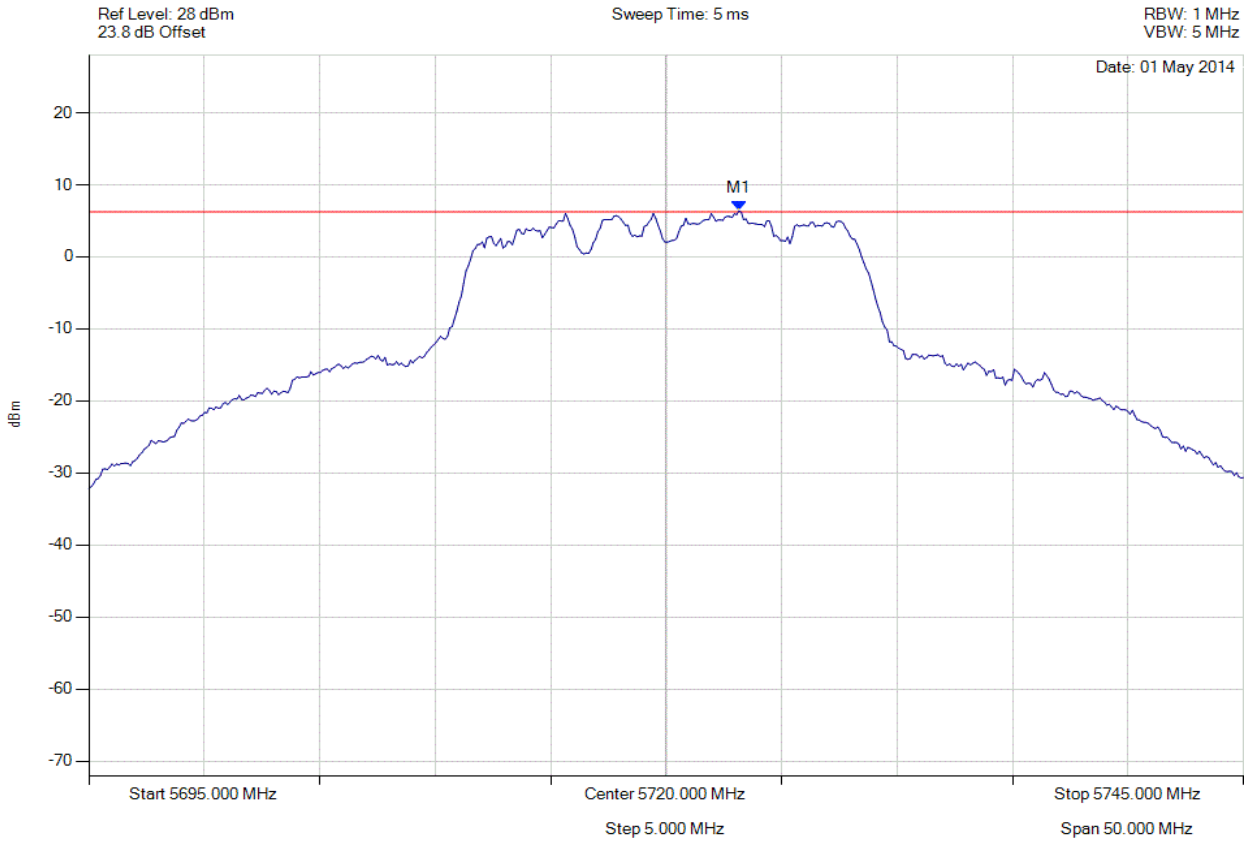


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5718.647 MHz : 5.880 dBm	Limit: ≤ 6.229 dBm Margin: -0.08 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5720.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

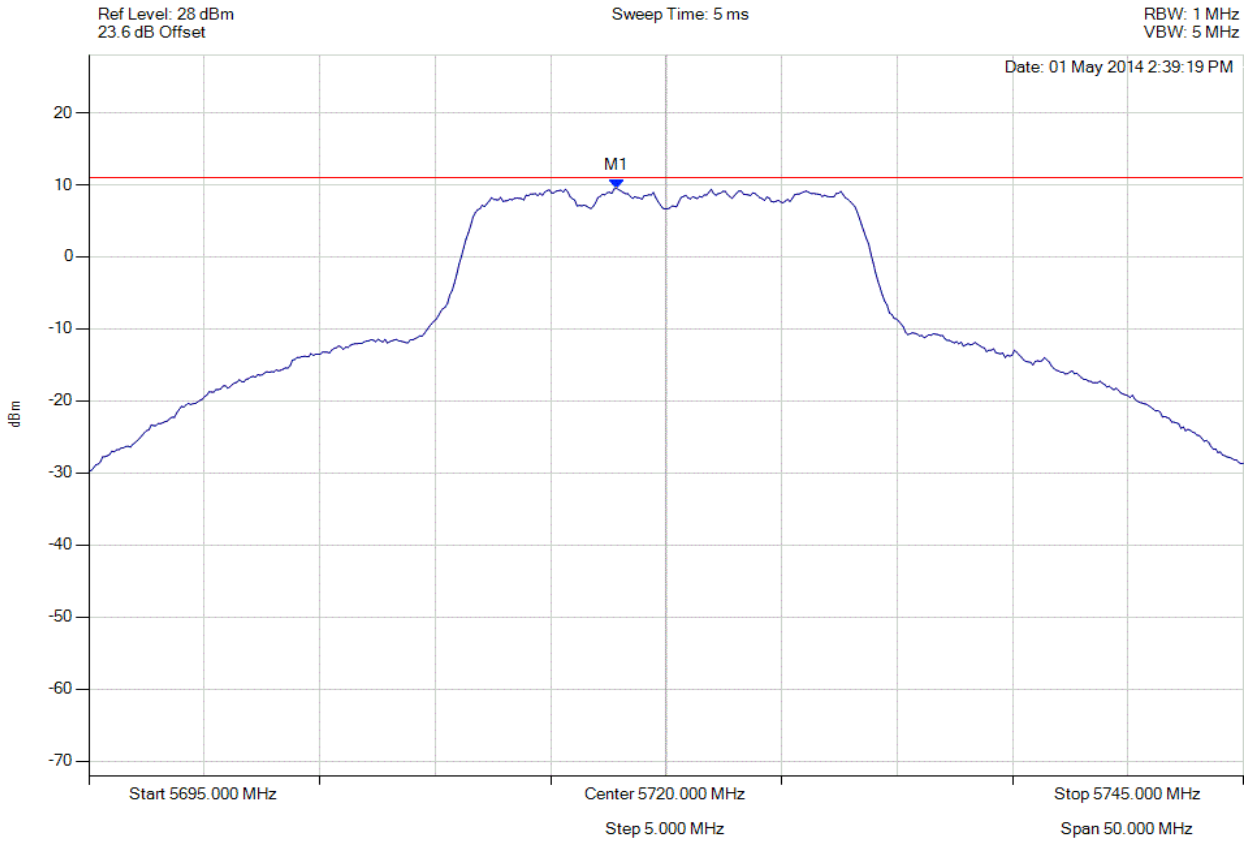


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5723.156 MHz : 6.399 dBm	Limit: ≤ 6.229 dBm Margin: 0.44 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5720.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

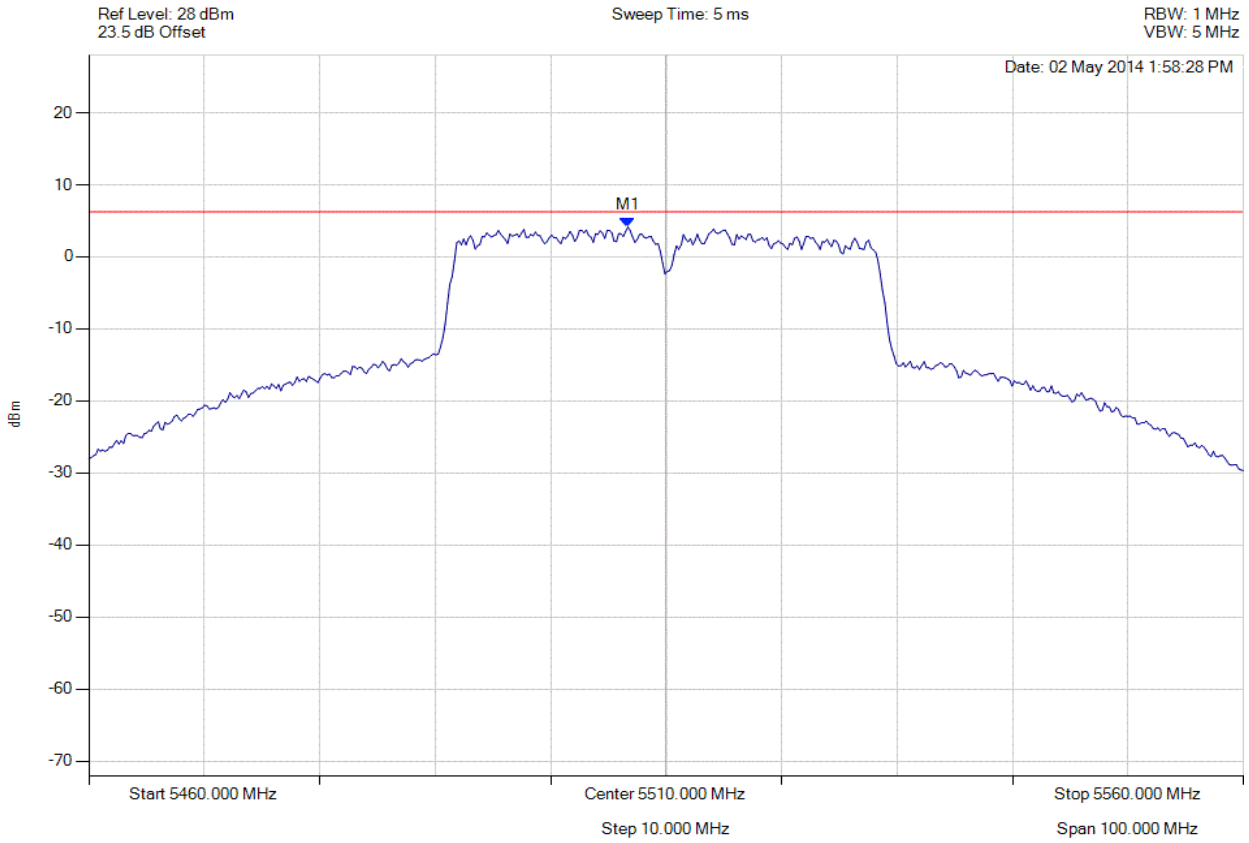


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5717.846 MHz : 9.557 dBm	Limit: ≤ 11.0 dBm Margin: -1.4 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5510.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

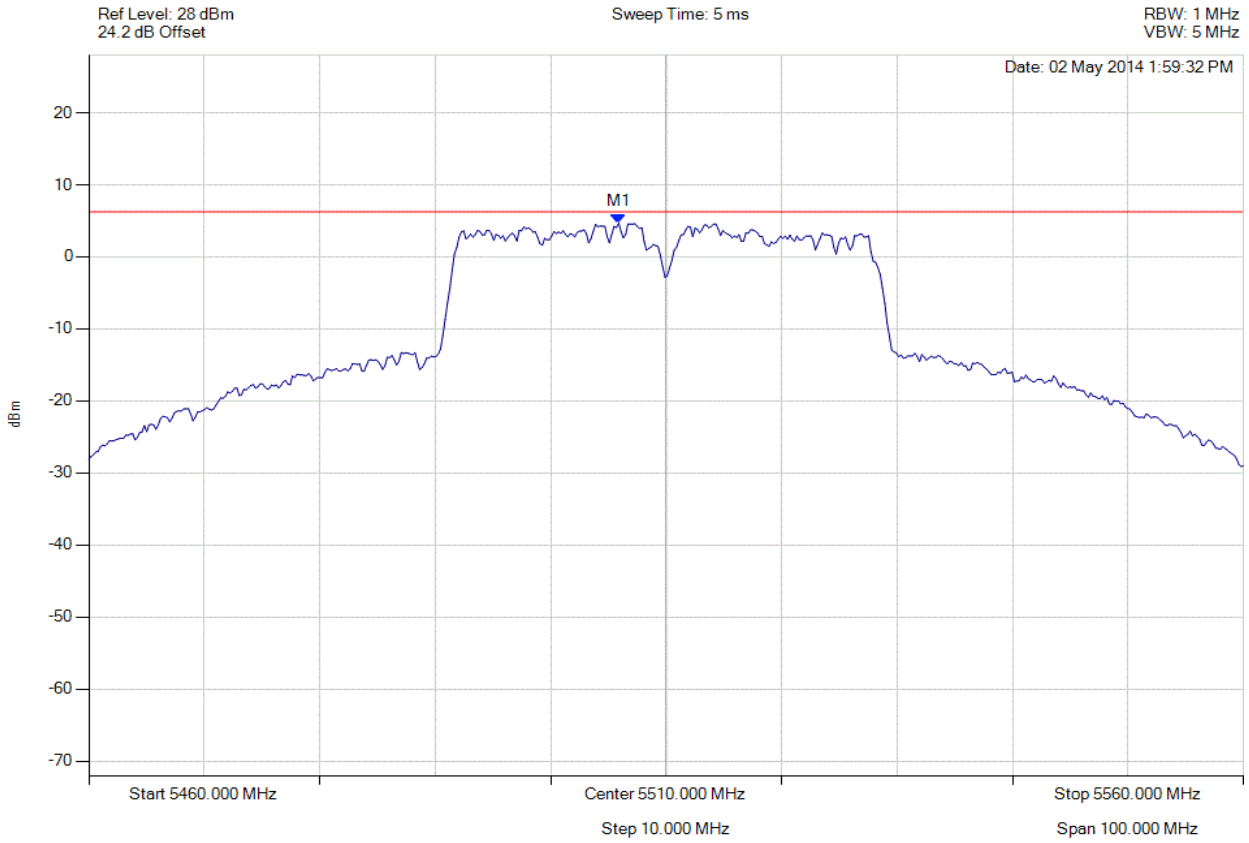


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5506.693 MHz : 4.150 dBm	Limit: ≤ 6.229 dBm Margin: -1.81 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5510.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

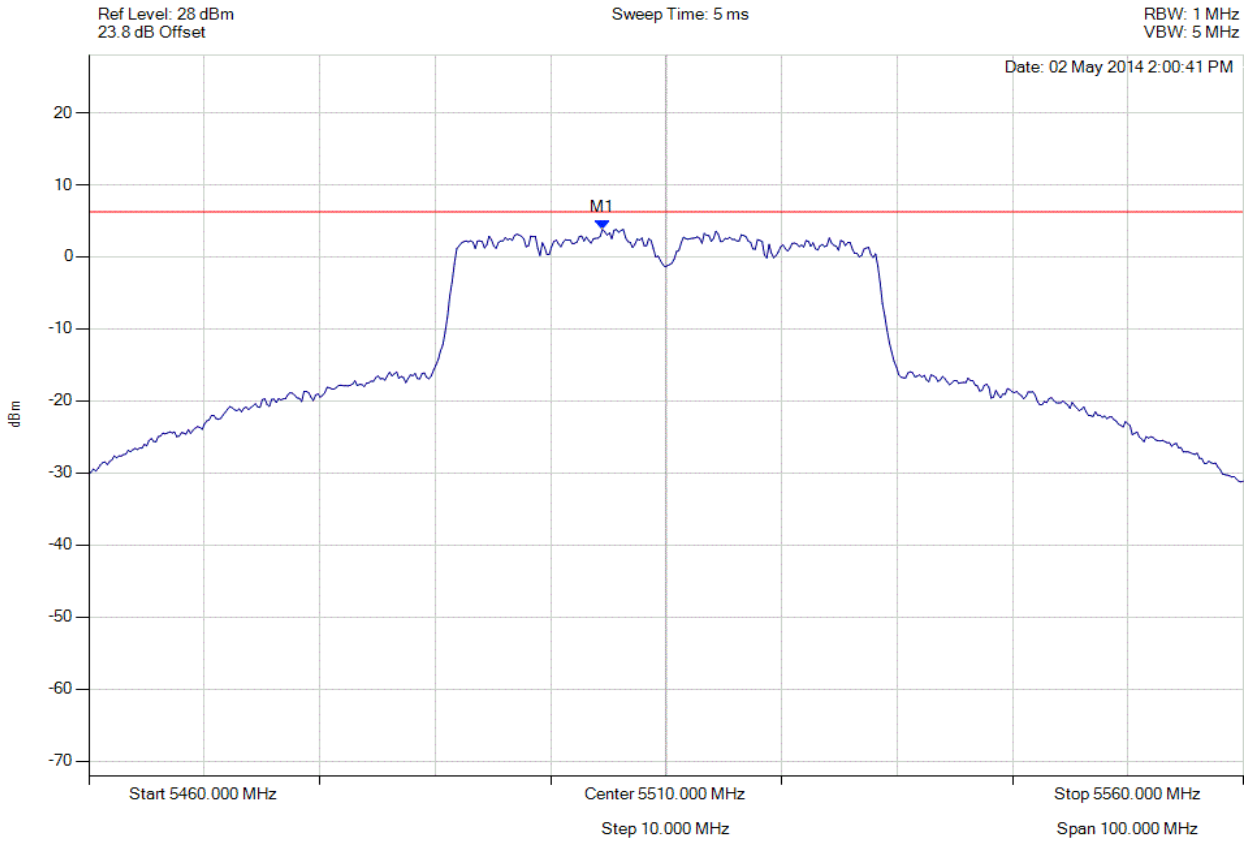


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5505.892 MHz : 4.666 dBm	Limit: ≤ 6.229 dBm Margin: -1.29 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5510.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

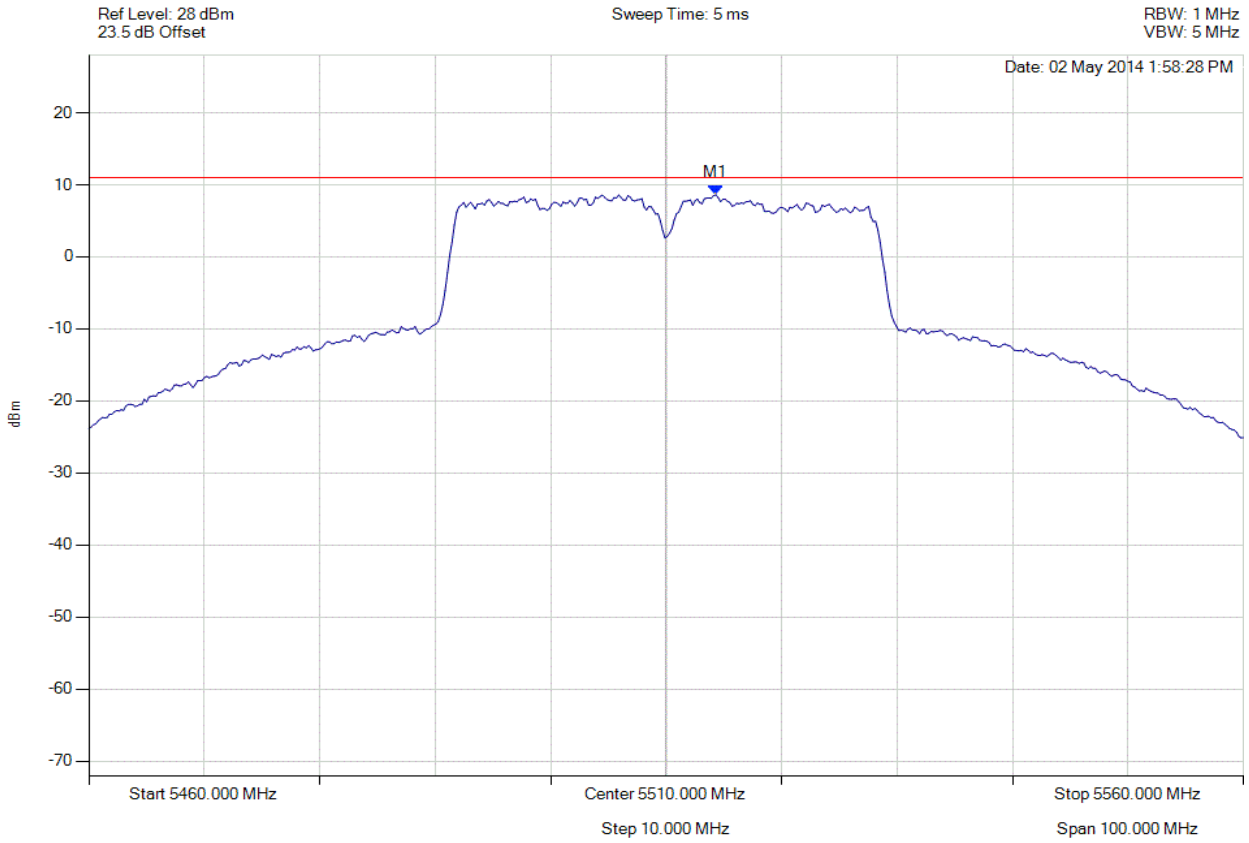


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5504.489 MHz : 3.813 dBm	Limit: ≤ 6.229 dBm Margin: -2.14 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5510.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

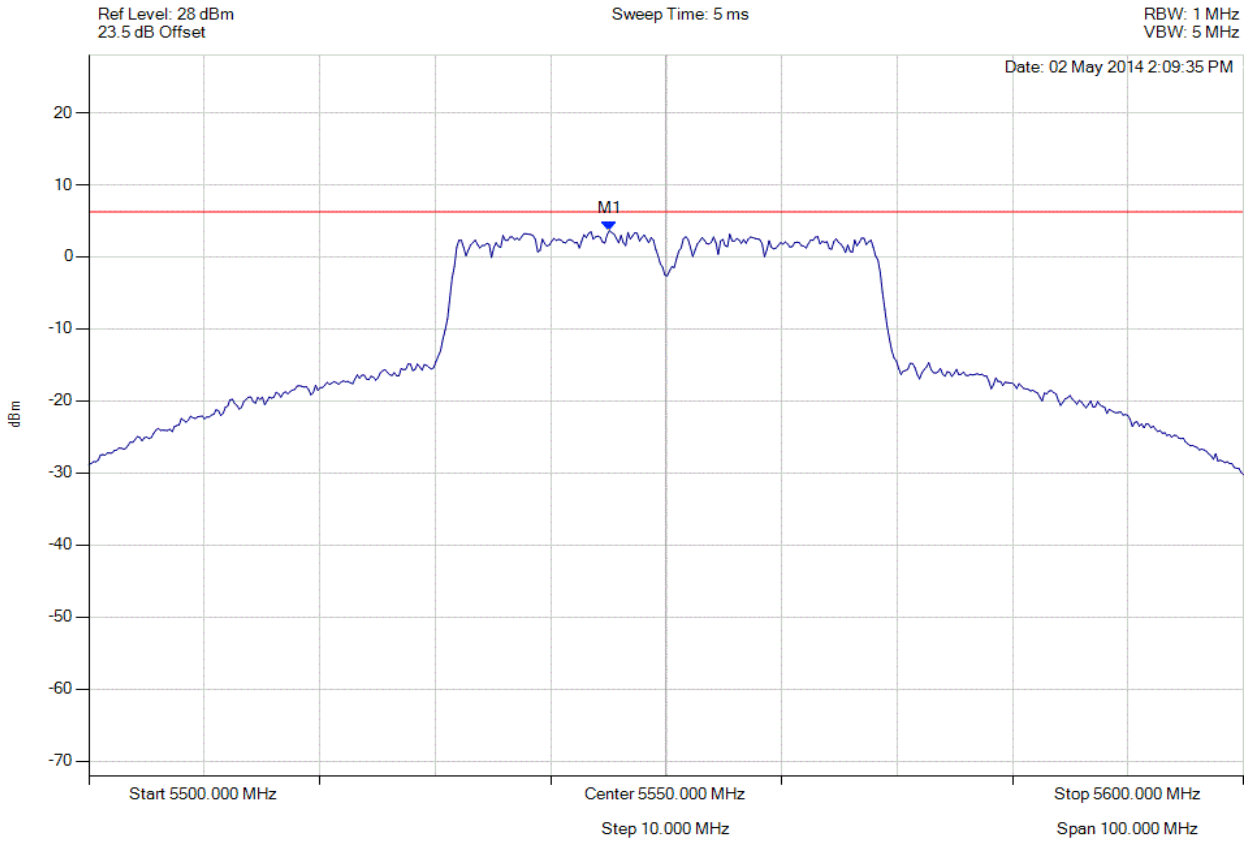


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5514.309 MHz : 8.619 dBm	Limit: ≤ 11.0 dBm Margin: -2.4 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5550.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

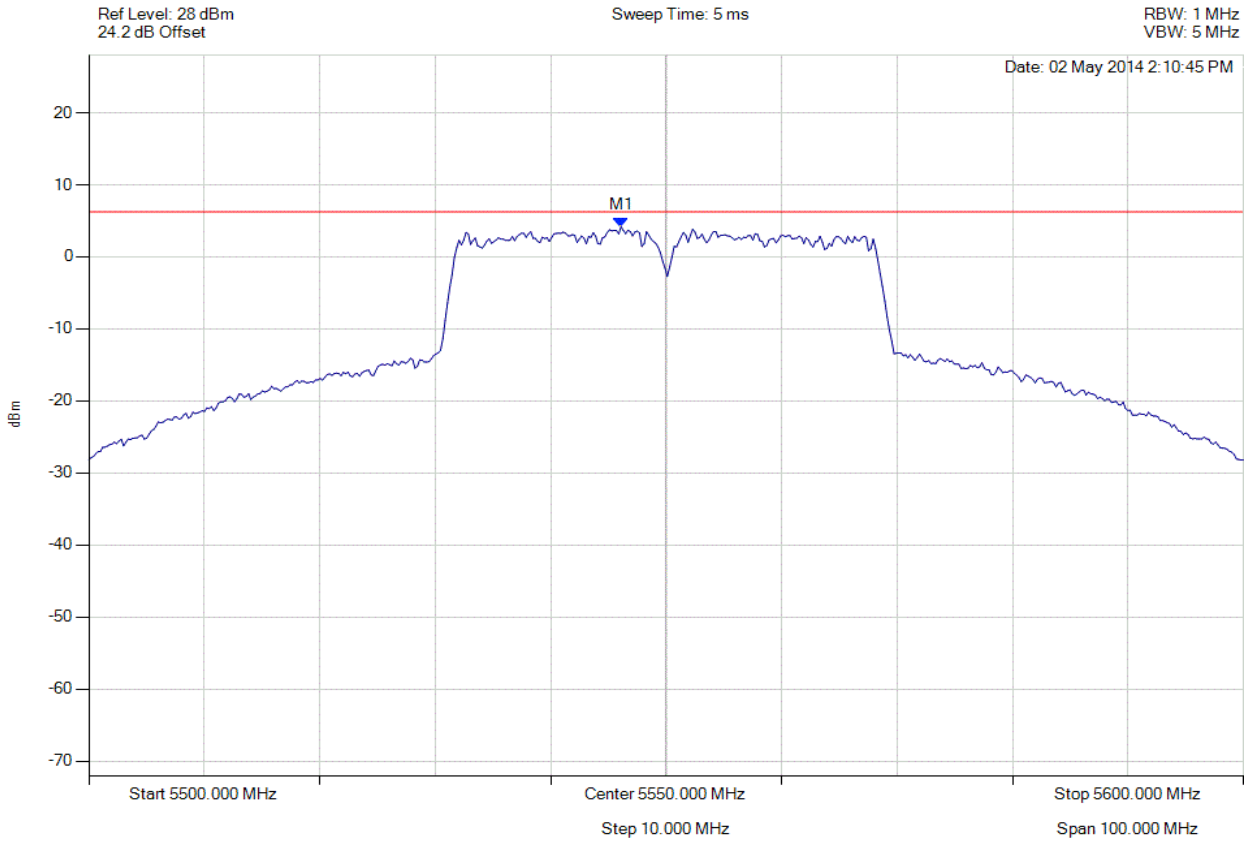


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5545.090 MHz : 3.643 dBm	Limit: ≤ 6.229 dBm Margin: -2.31 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5550.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

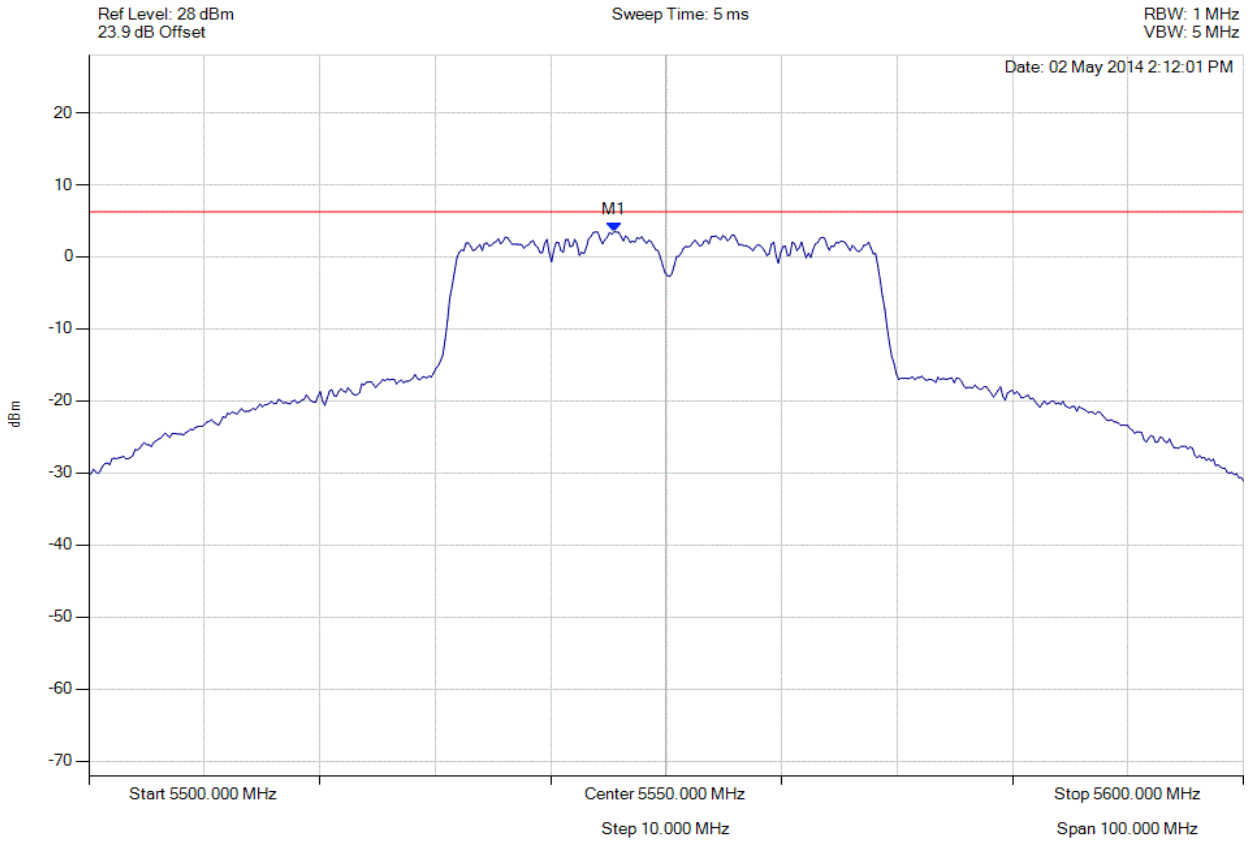


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5546.092 MHz : 4.165 dBm	Limit: ≤ 6.229 dBm Margin: -1.79 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5550.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

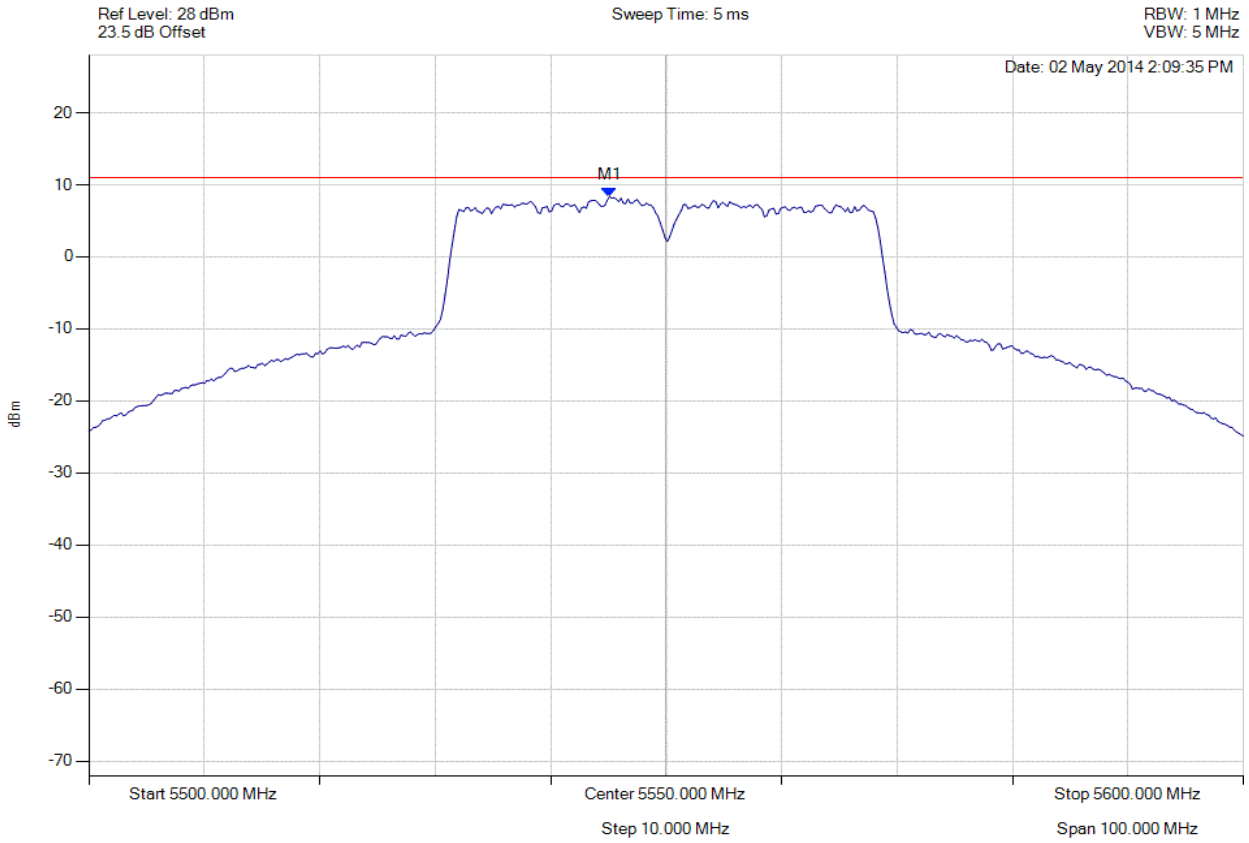


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5545.491 MHz : 3.474 dBm	Limit: ≤ 6.229 dBm Margin: -2.48 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5550.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

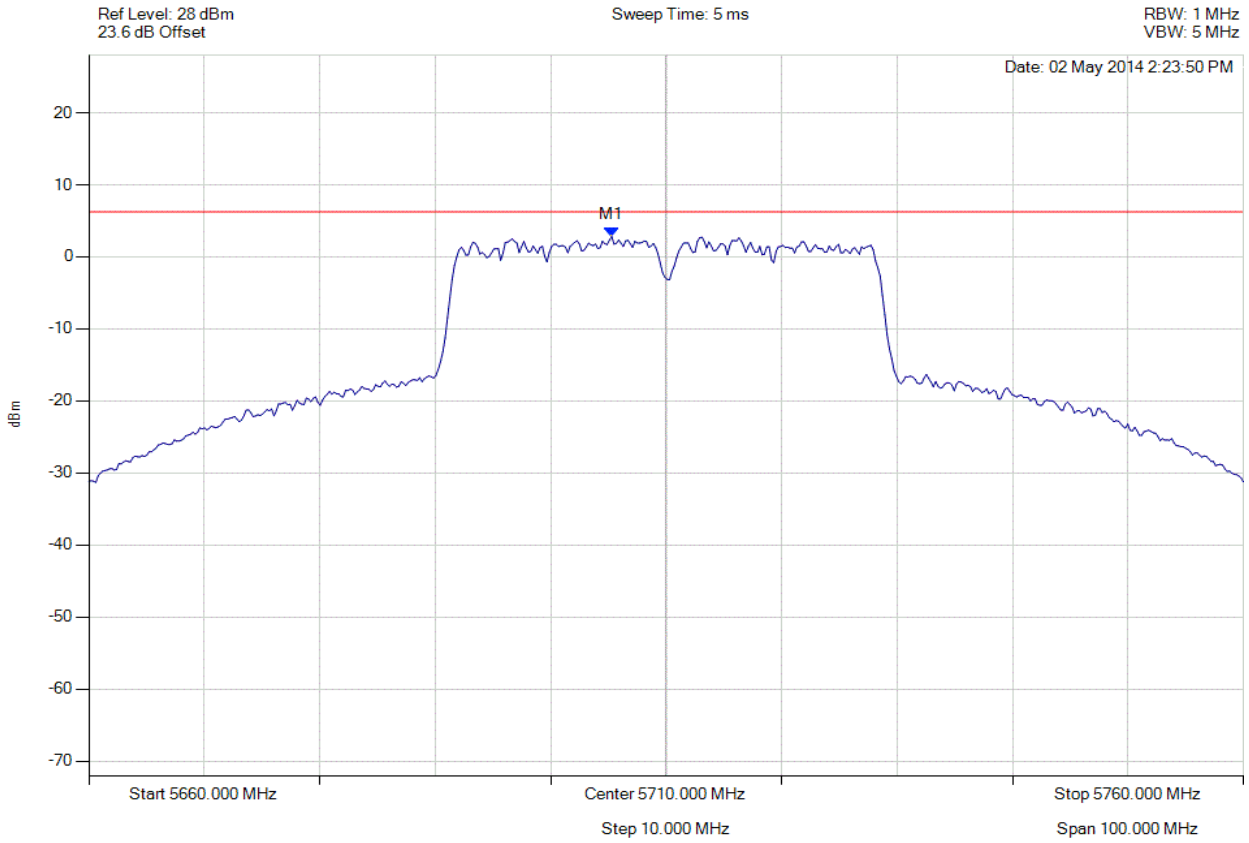


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5545.090 MHz : 8.366 dBm	Limit: ≤ 11.0 dBm Margin: -2.6 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5710.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

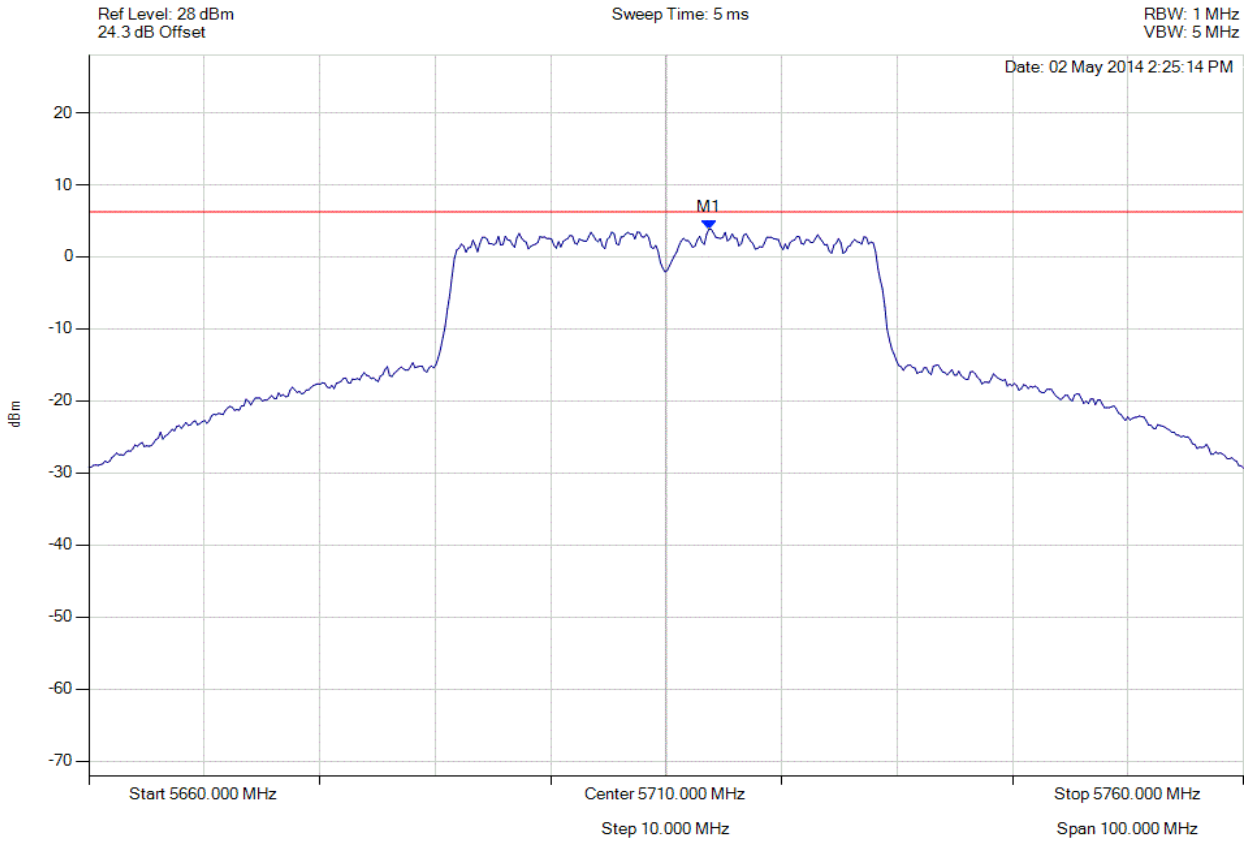


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5705.291 MHz : 2.832 dBm	Limit: ≤ 6.229 dBm Margin: -3.13 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5710.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

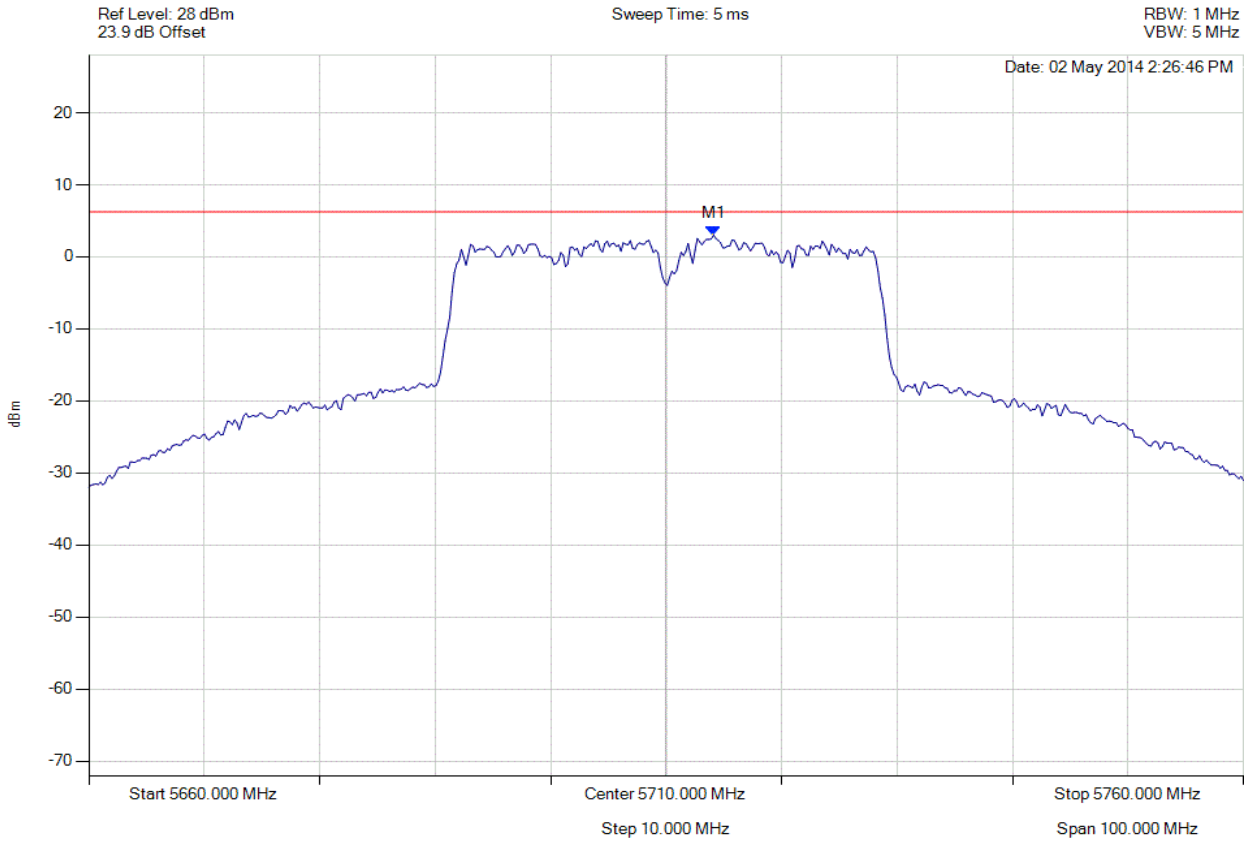


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5713.707 MHz : 3.838 dBm	Limit: ≤ 6.229 dBm Margin: -2.12 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5710.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

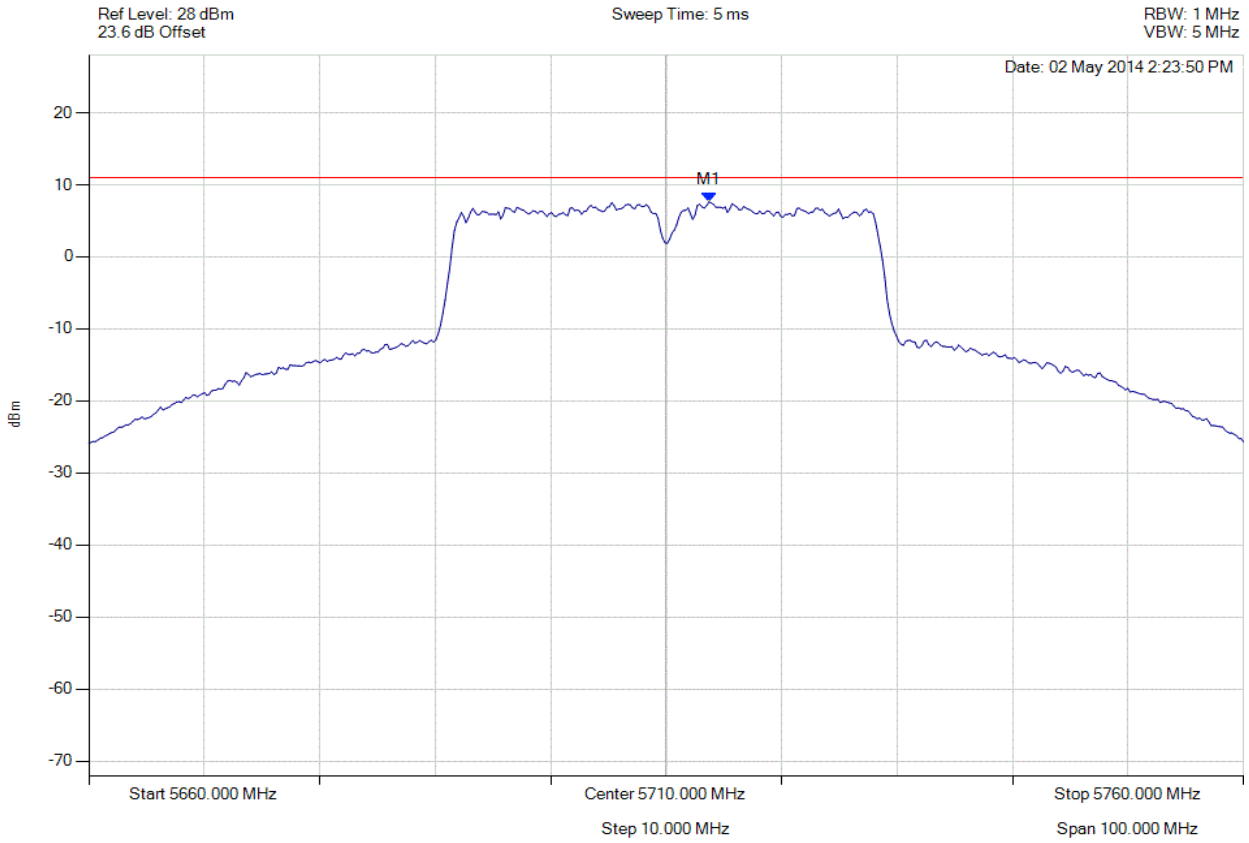


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5714.108 MHz : 3.006 dBm	Limit: ≤ 6.229 dBm Margin: -2.95 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-40, Channel: 5710.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc

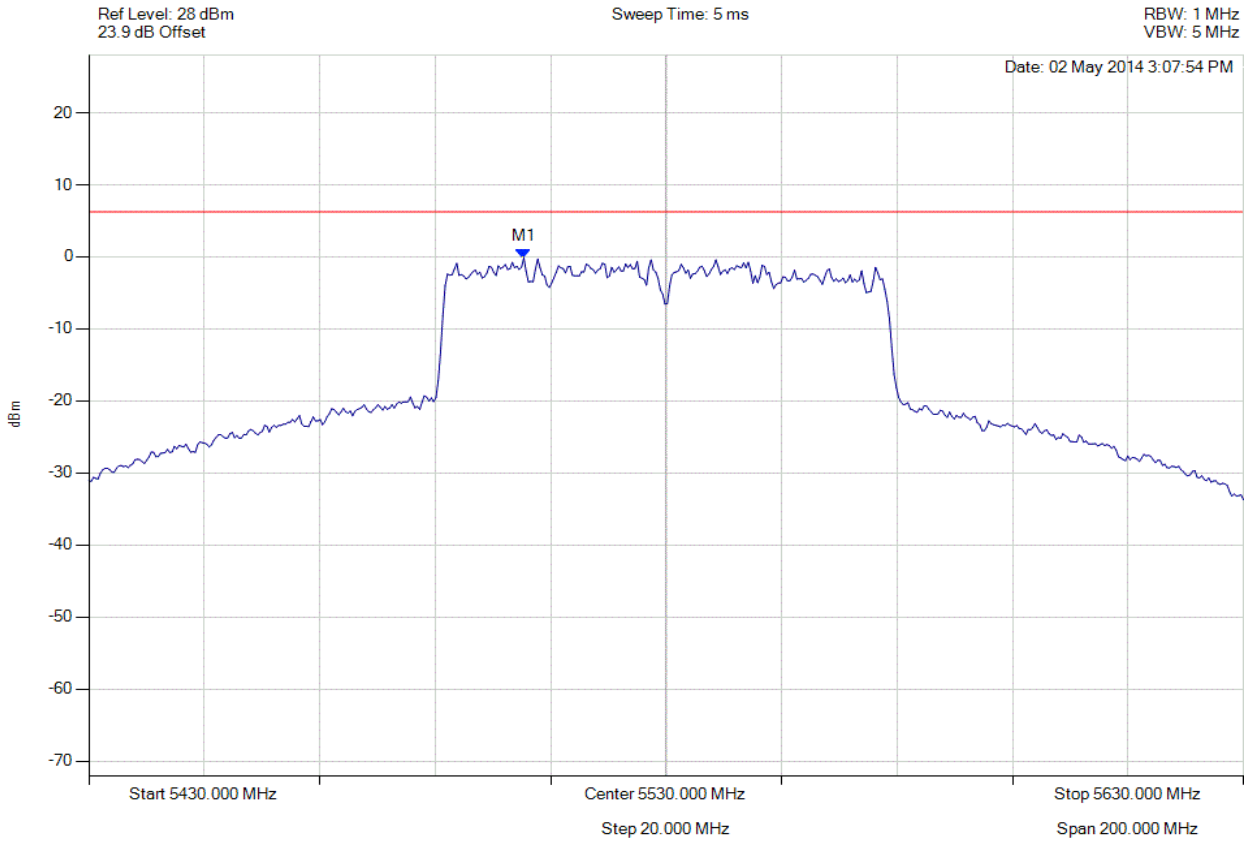


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5713.707 MHz : 7.615 dBm	Limit: ≤ 11.0 dBm Margin: -3.4 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5530.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

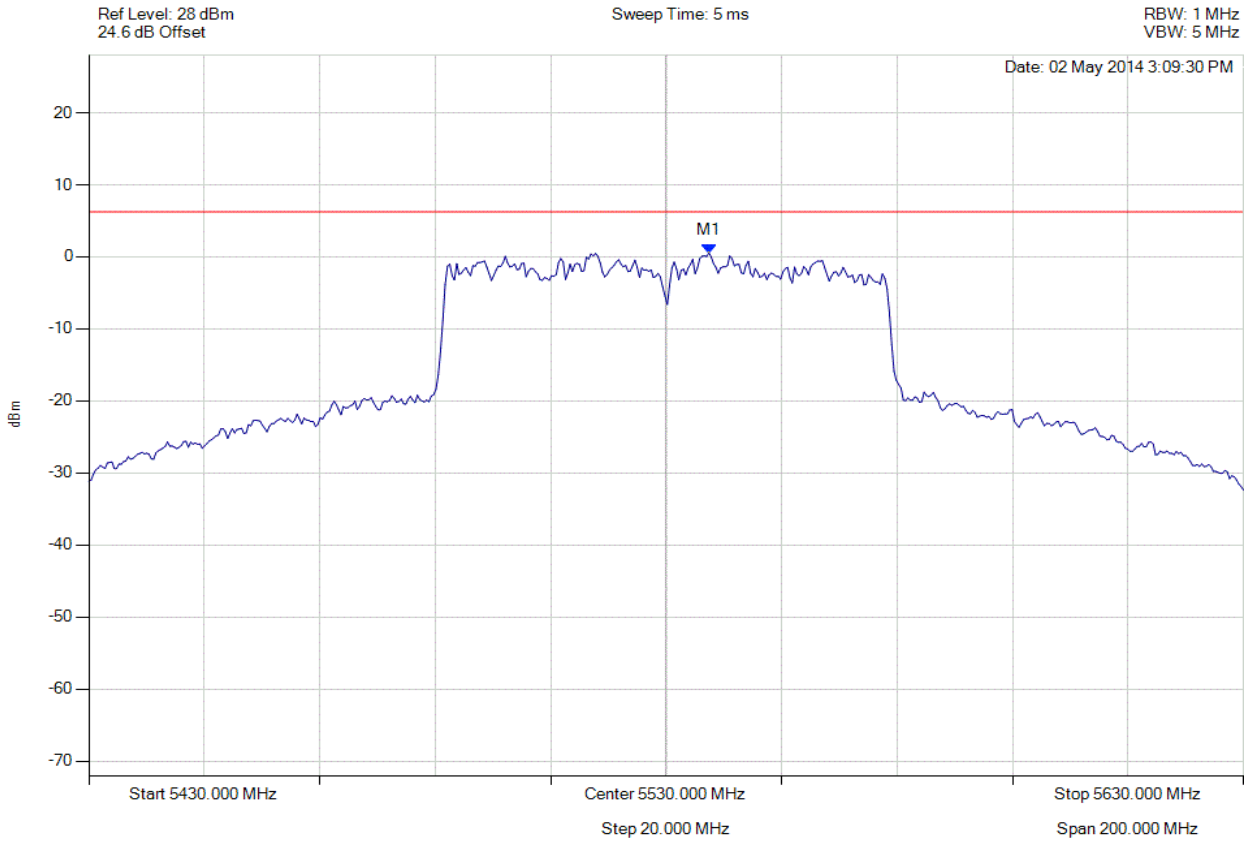


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5505.351 MHz : -0.154 dBm	Limit: ≤ 6.229 dBm Margin: -5.62 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5530.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

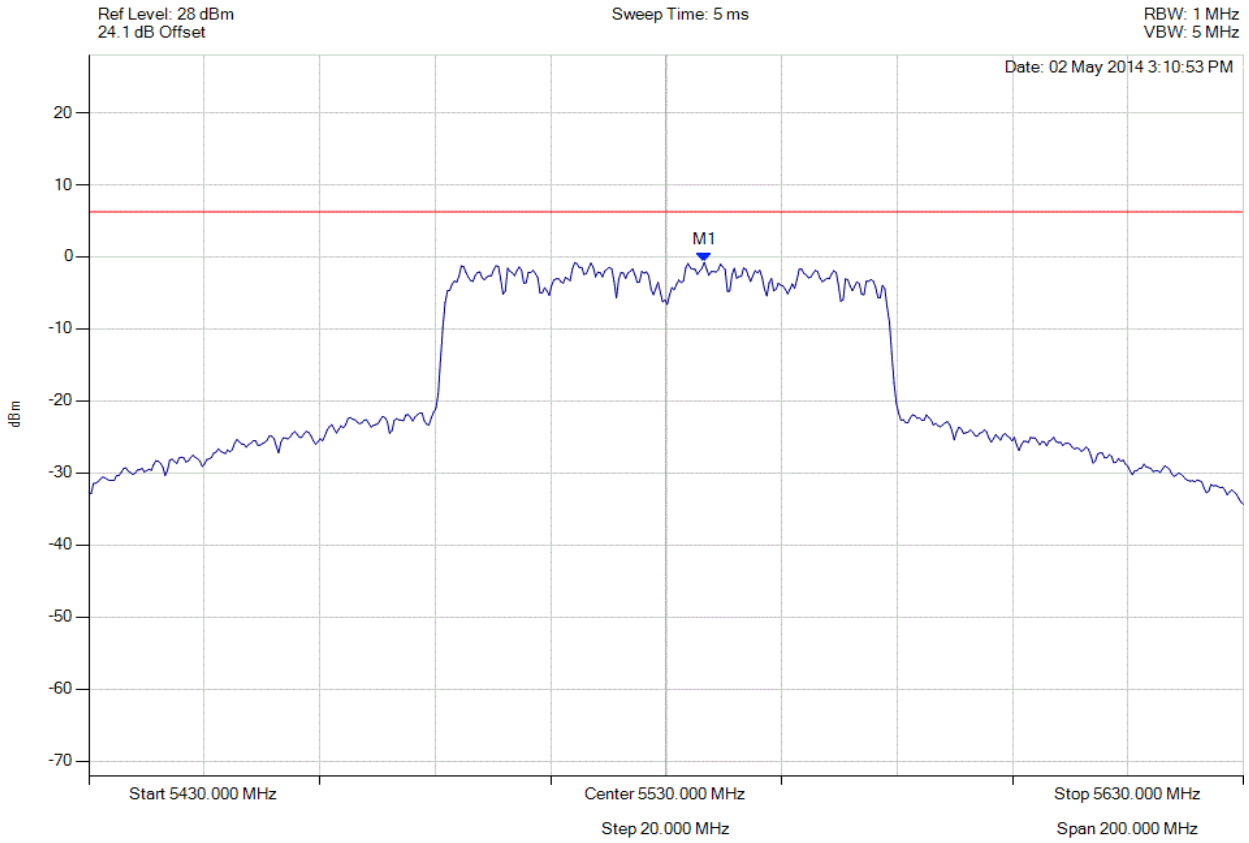


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5537.415 MHz : 0.547 dBm	Limit: ≤ 6.229 dBm Margin: -4.92 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5530.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

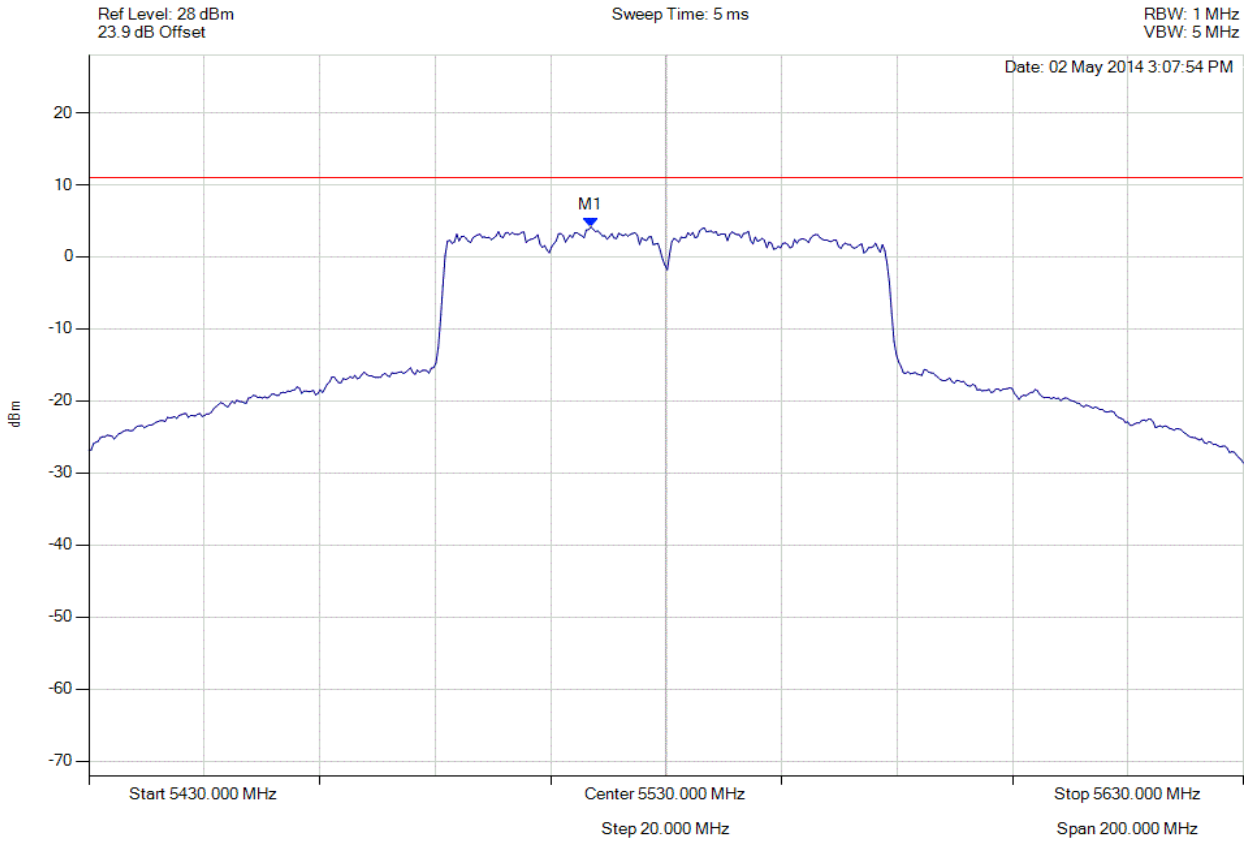


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5536.613 MHz : -0.771 dBm	Limit: ≤ 6.229 dBm Margin: 6.23 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5530.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5516.974 MHz : 4.150 dBm	Limit: ≤ 11.0 dBm Margin: -6.9 dB

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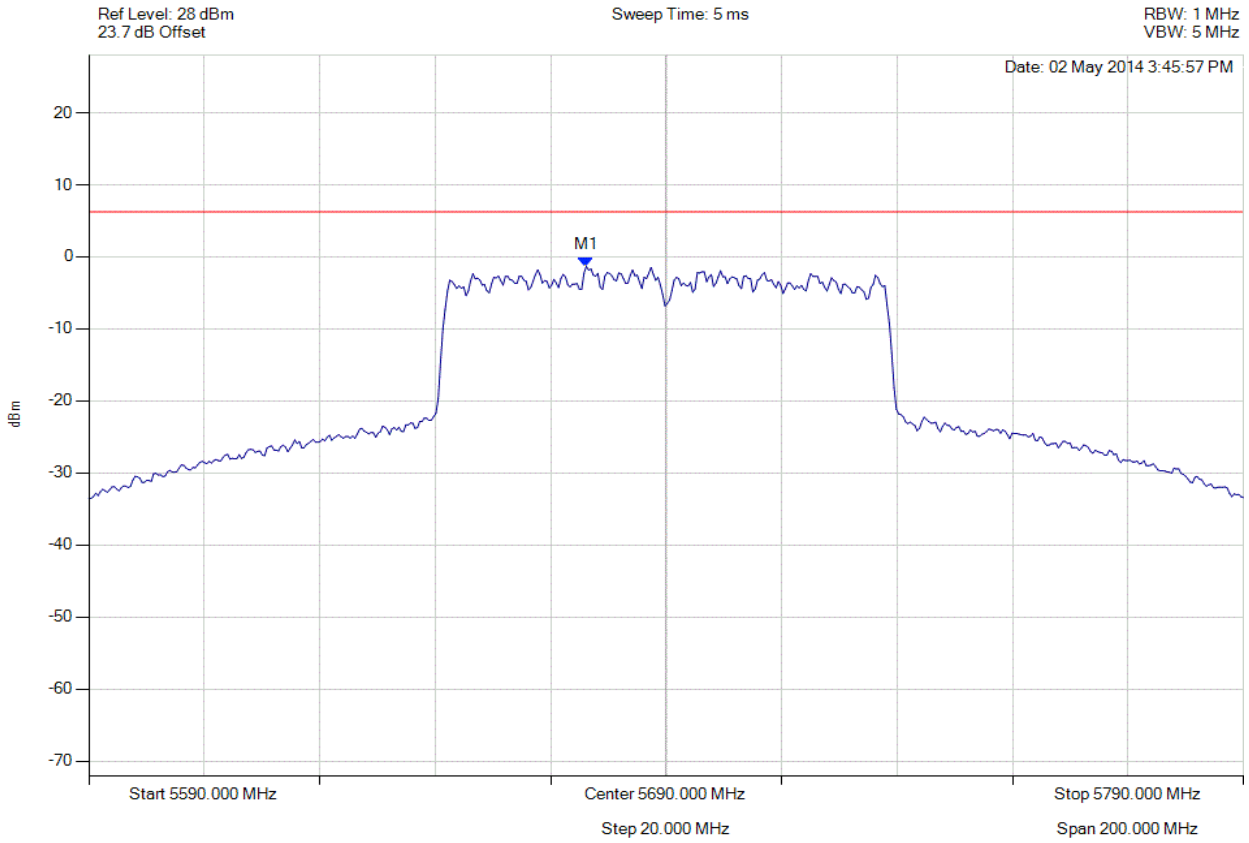
PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5690.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

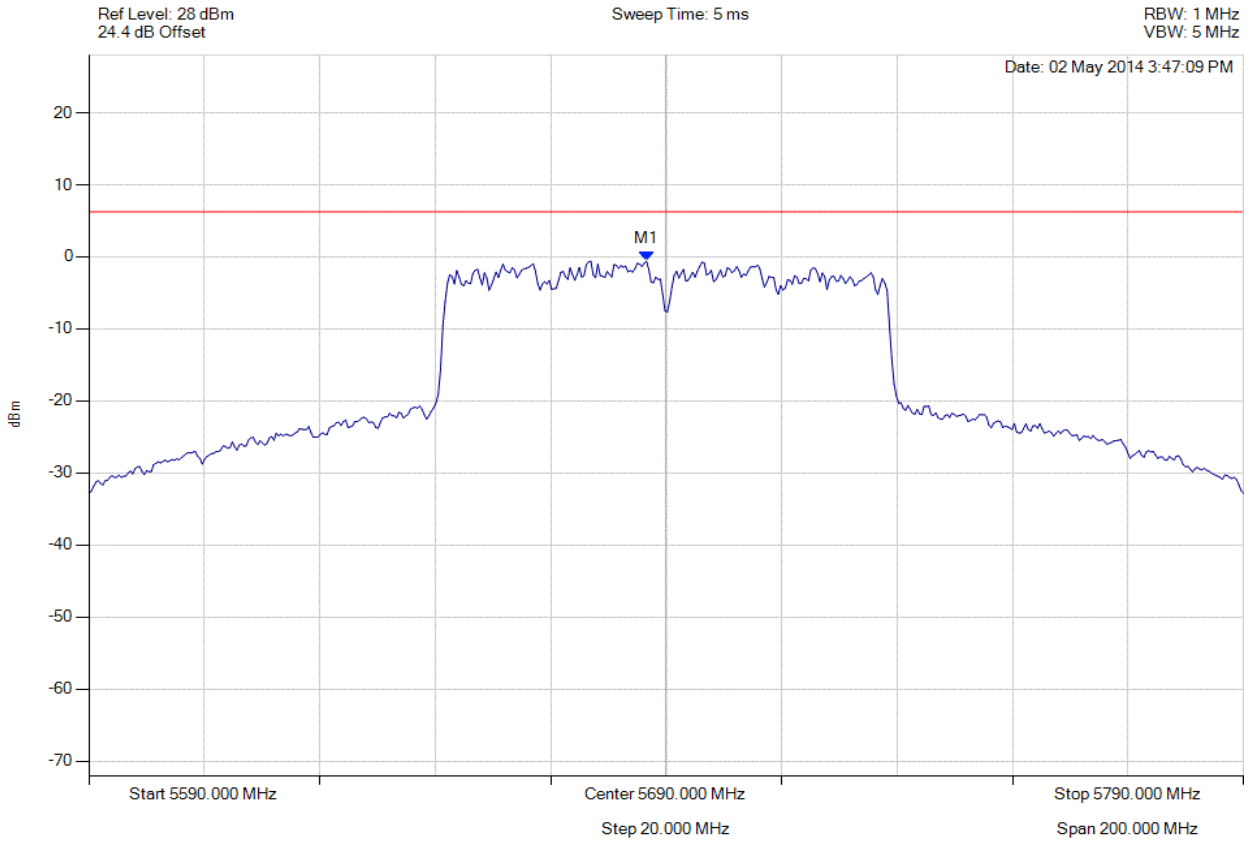


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5676.172 MHz : -1.325 dBm	Limit: ≤ 6.229 dBm Margin: 6.79 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5690.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

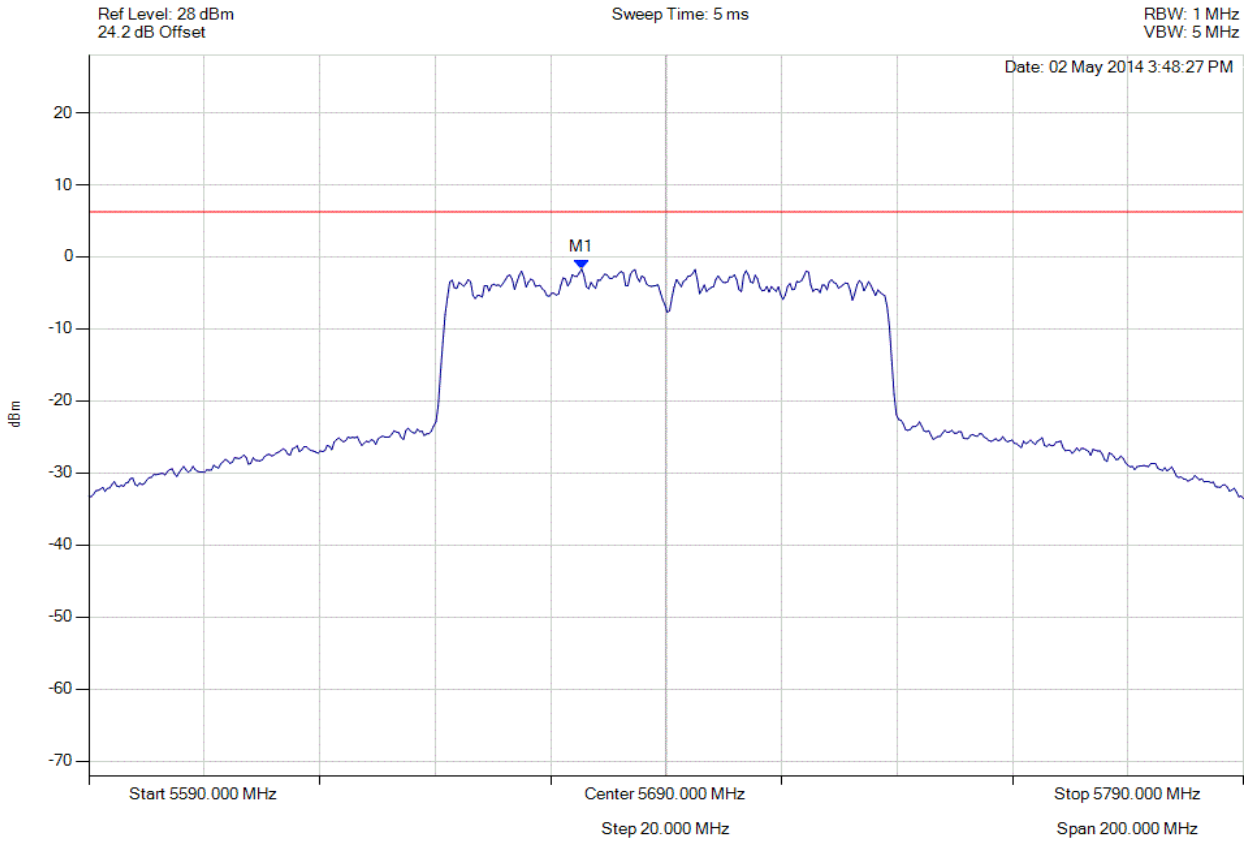


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5686.593 MHz : -0.594 dBm	Limit: ≤ 6.229 dBm Margin: -6.06 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5690.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5675.371 MHz : -1.693 dBm	Limit: ≤ 6.229 dBm Margin: 7.16 dB

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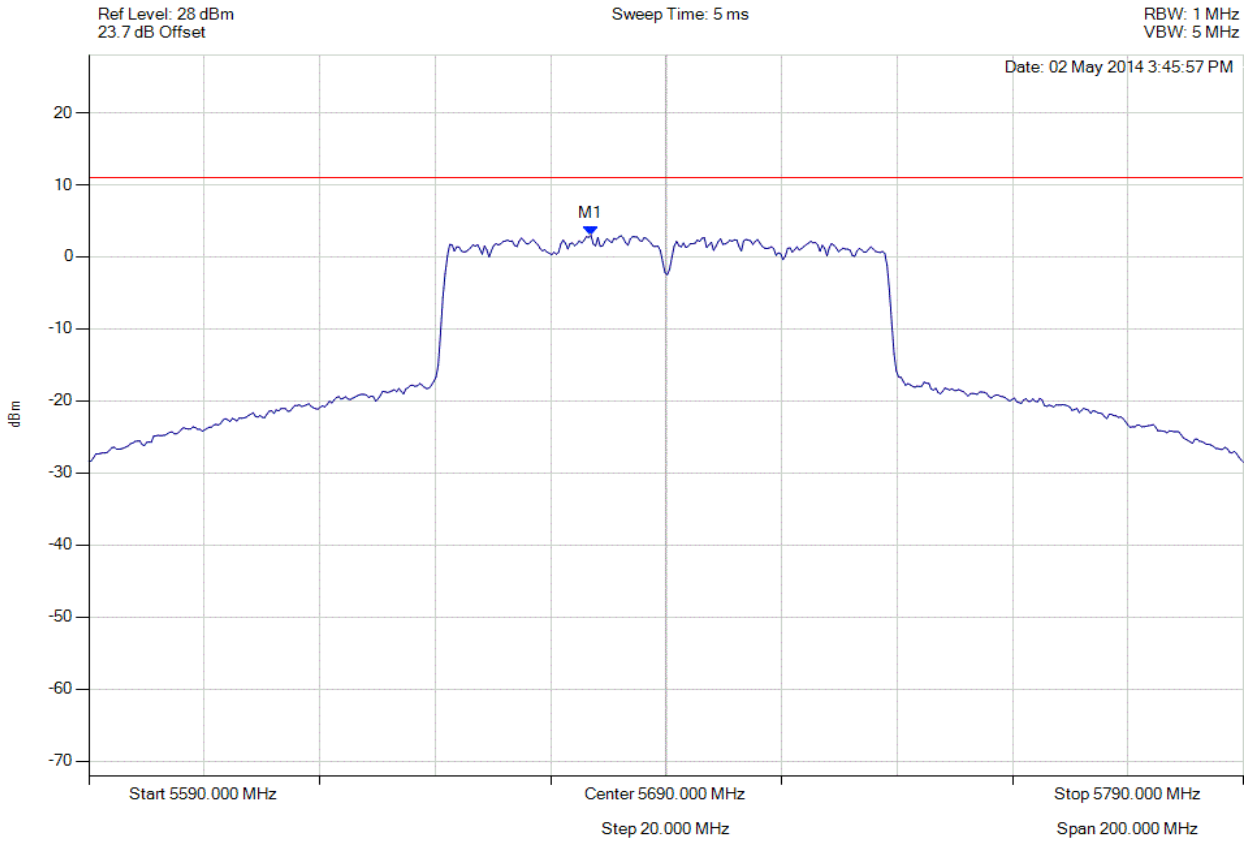
PEAK POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5690.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5676.974 MHz : 2.986 dBm	Limit: ≤ 11.0 dBm Margin: -8.0 dB

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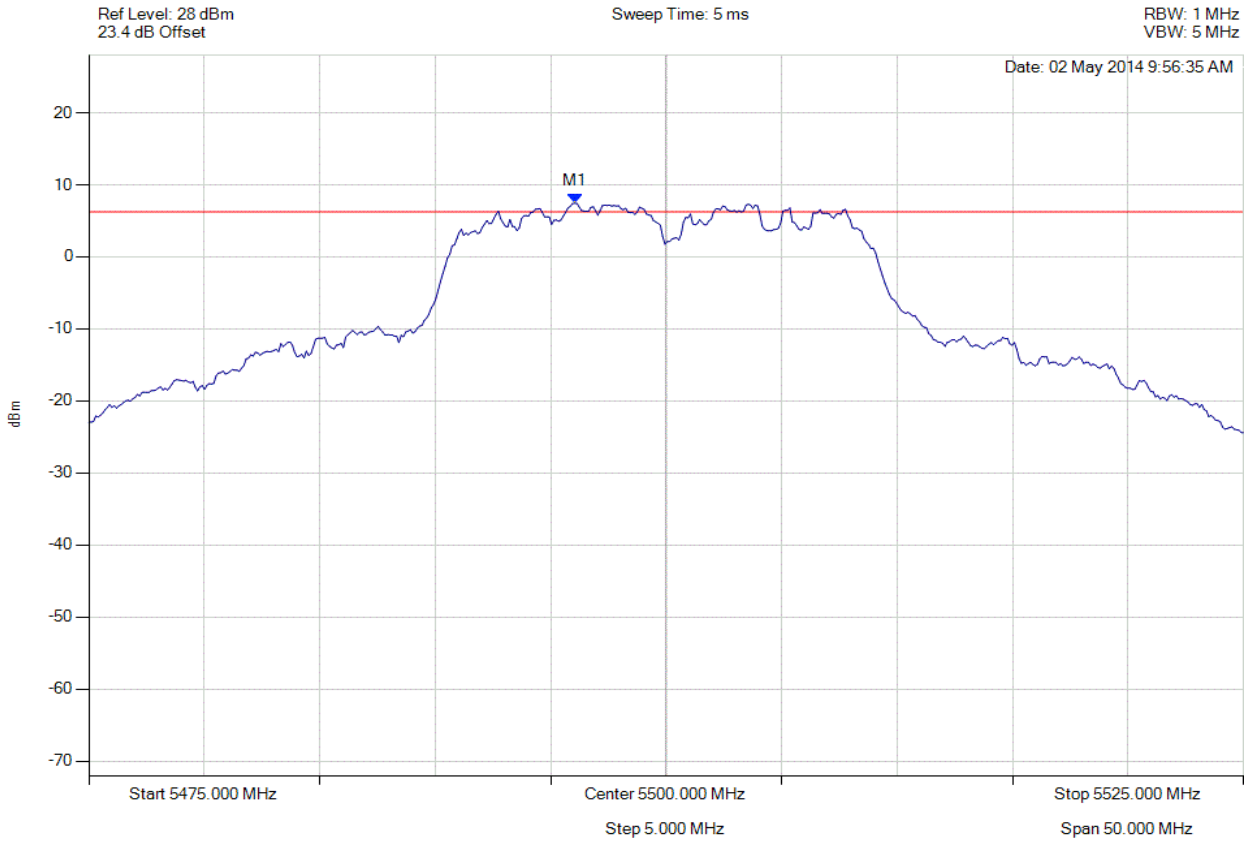
PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5500.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

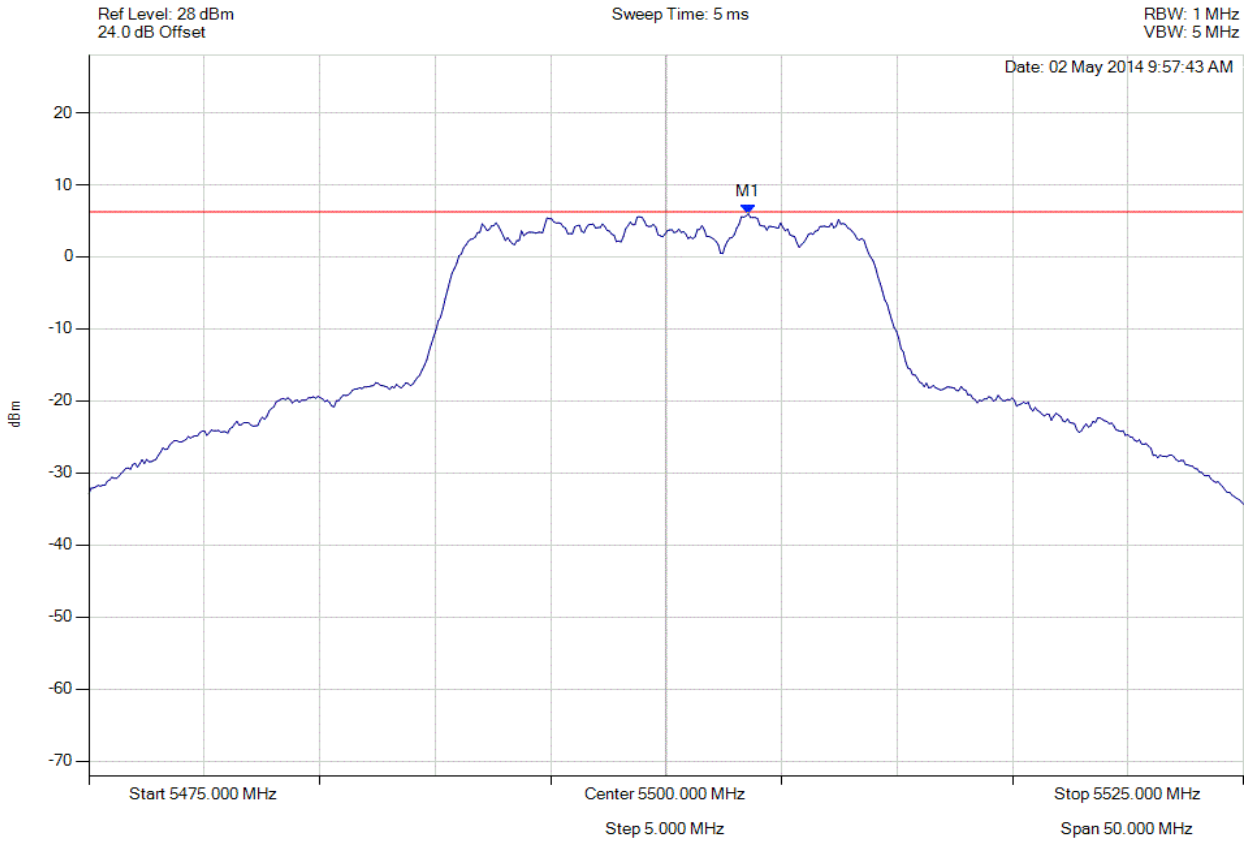


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5496.042 MHz : 7.452 dBm	Limit: ≤ 6.229 dBm Margin: 1.47 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5500.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

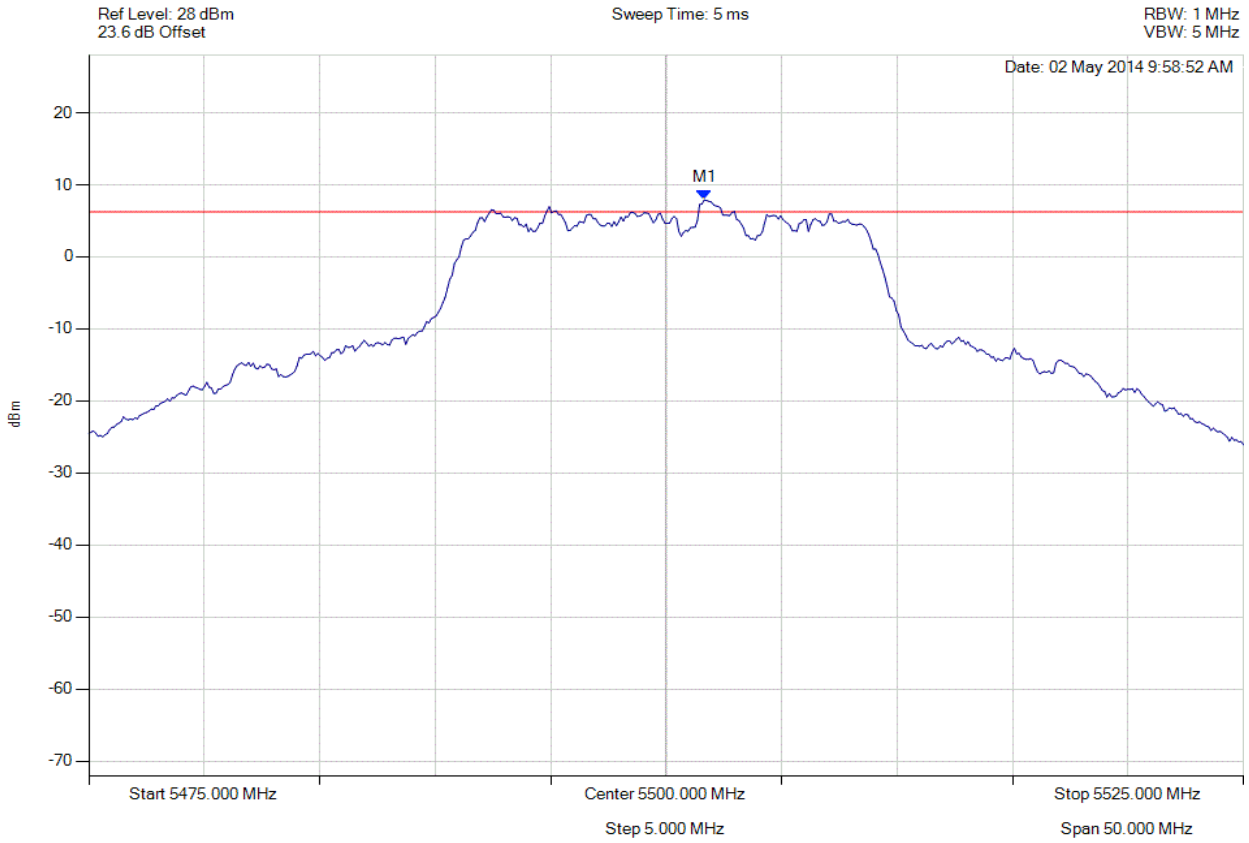


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5503.557 MHz : 5.984 dBm	Limit: ≤ 6.229 dBm Margin: 0.00 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5500.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

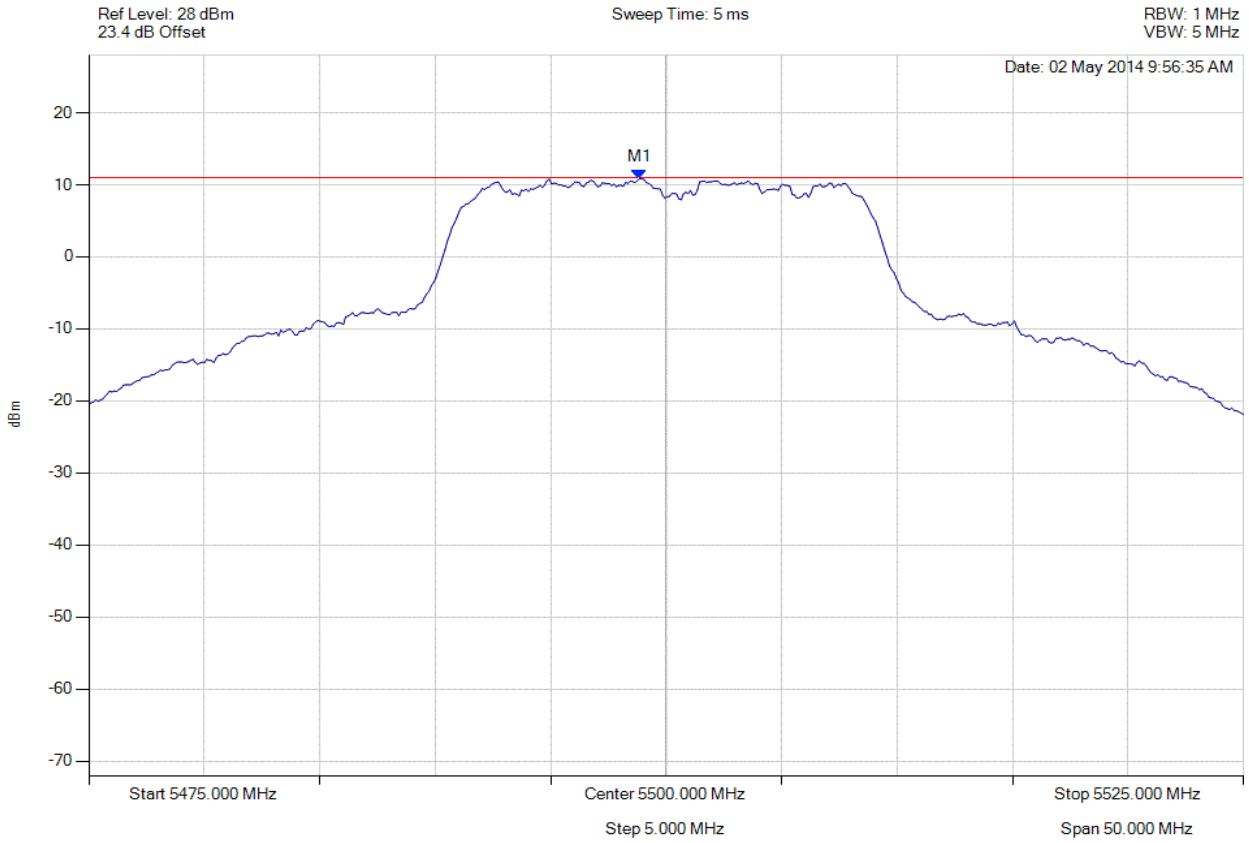


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5501.653 MHz : 7.893 dBm	Limit: ≤ 6.229 dBm Margin: 1.91 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5500.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5498.848 MHz : 10.843 dBm	Limit: ≤ 11.0 dBm Margin: -0.2 dB

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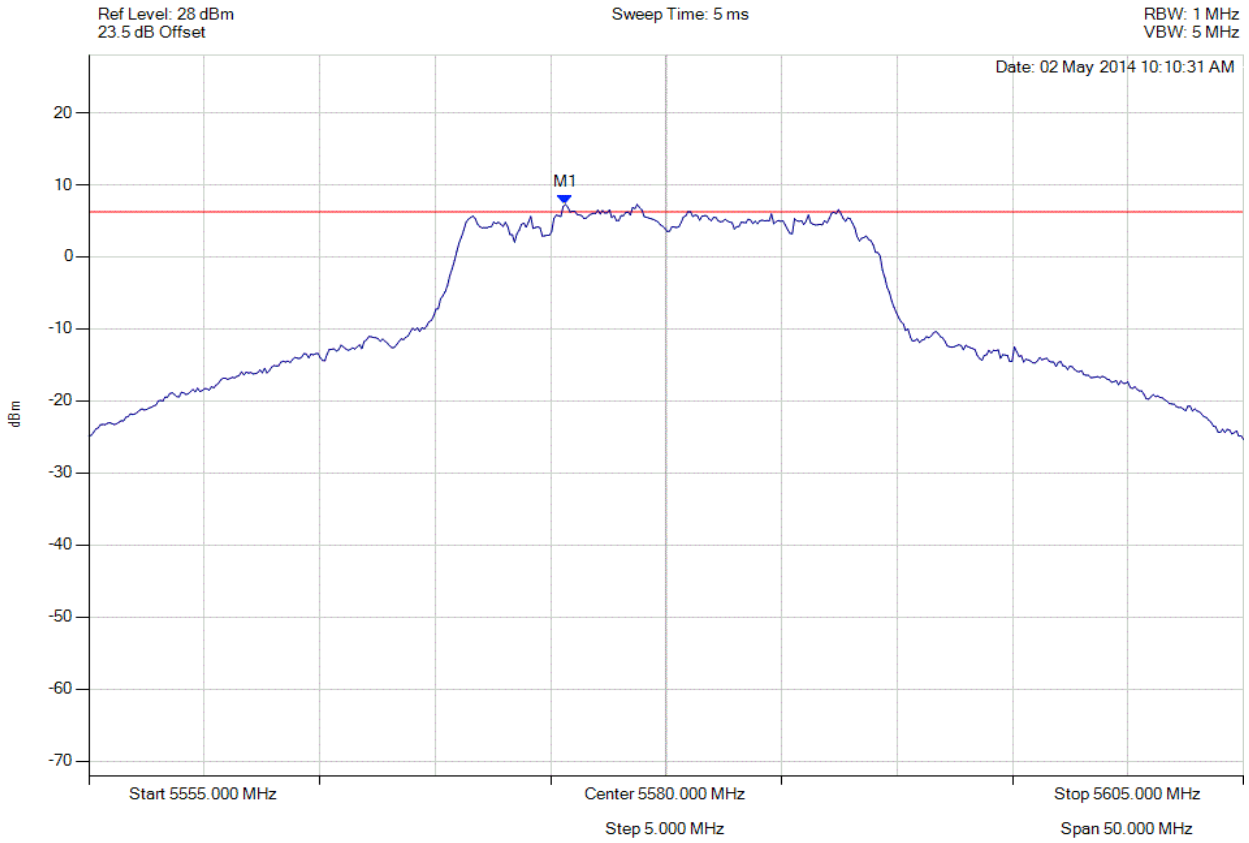
PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5580.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

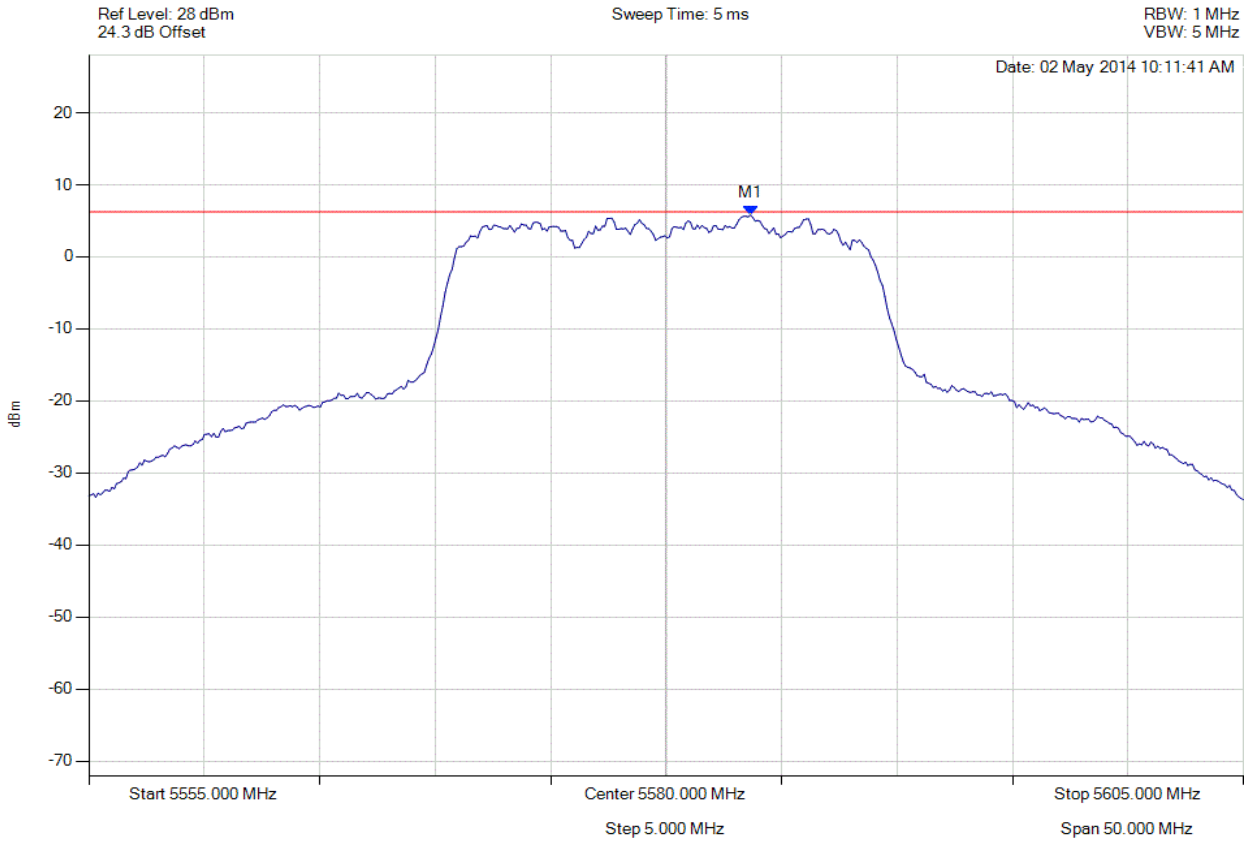


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5575.641 MHz : 7.264 dBm	Limit: ≤ 6.229 dBm Margin: 1.28 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5580.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

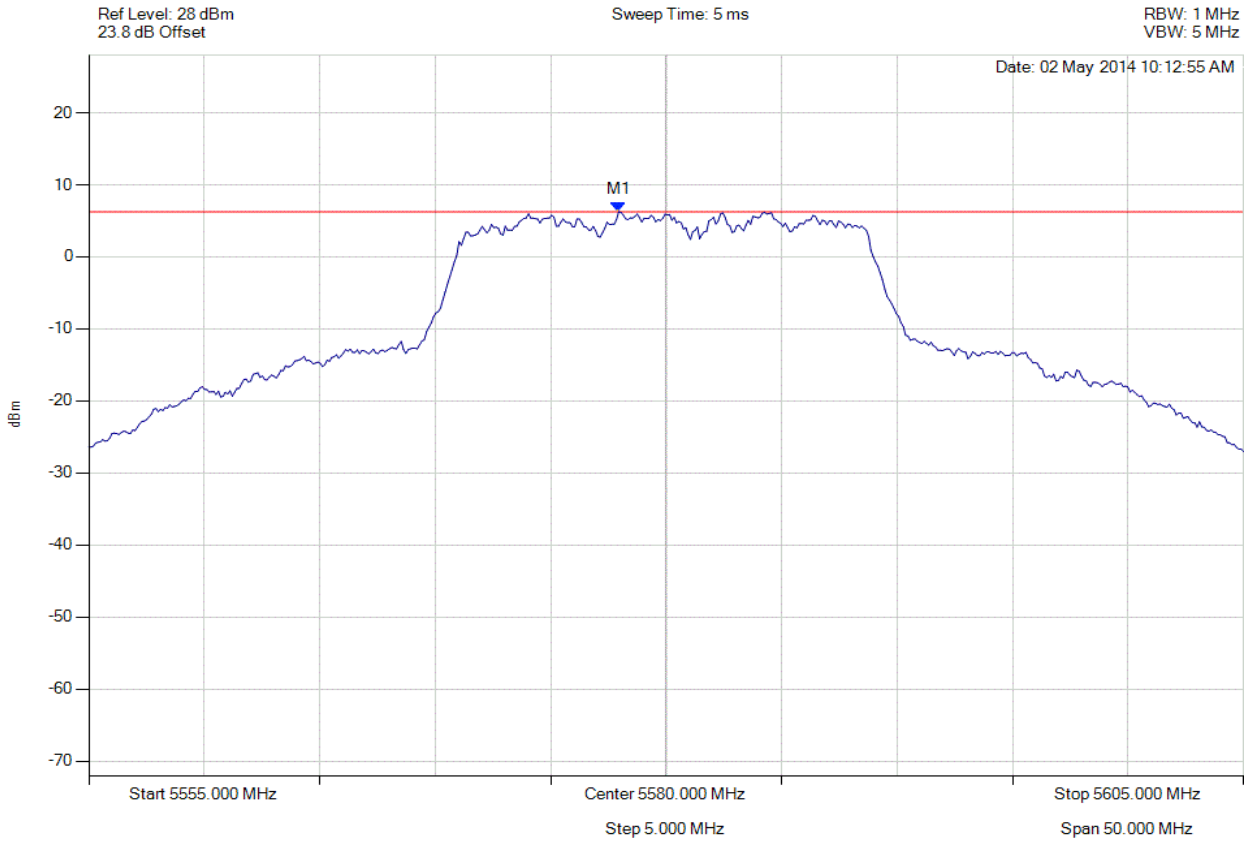


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5583.657 MHz : 5.791 dBm	Limit: ≤ 6.229 dBm Margin: -0.19 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5580.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

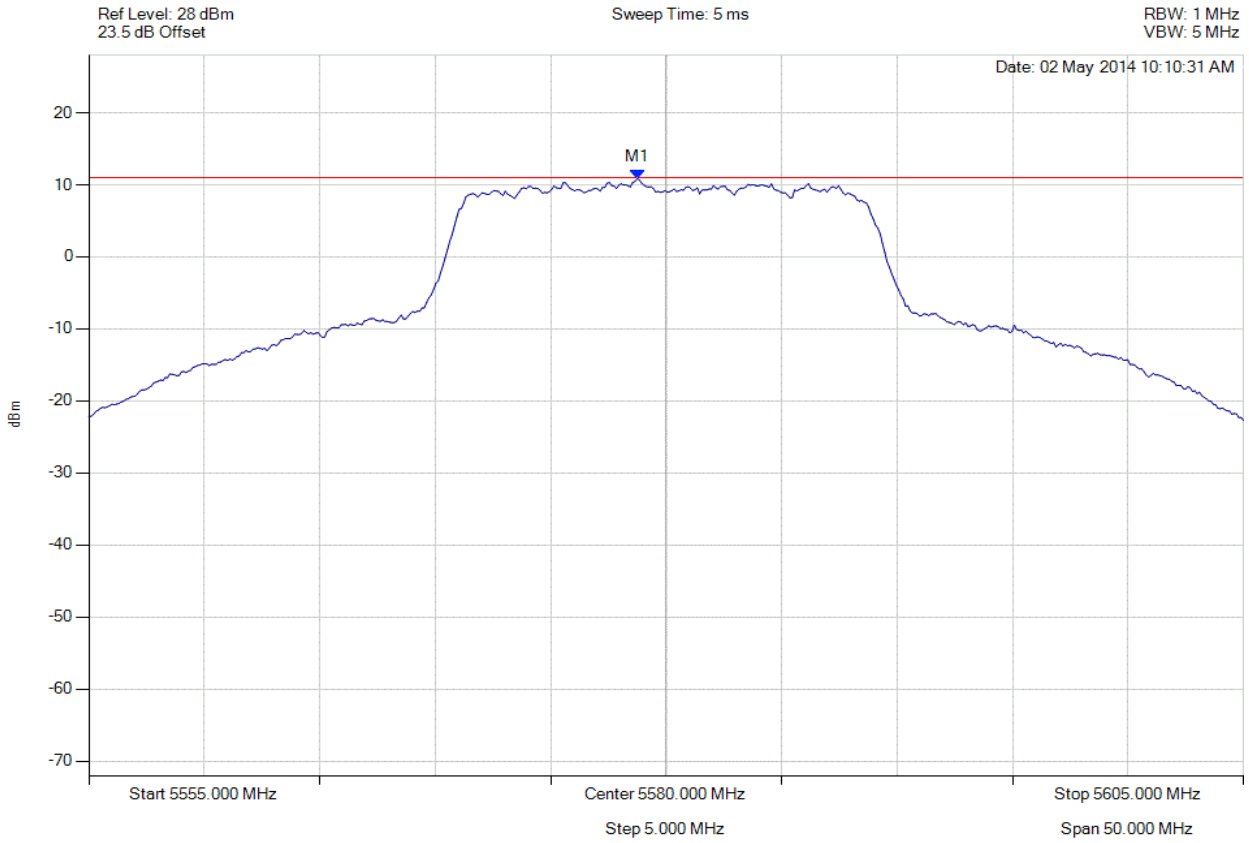


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5577.946 MHz : 6.261 dBm	Limit: ≤ 6.229 dBm Margin: 0.28 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5580.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5578.747 MHz : 10.853 dBm	Limit: ≤ 11.0 dBm Margin: -0.1 dB

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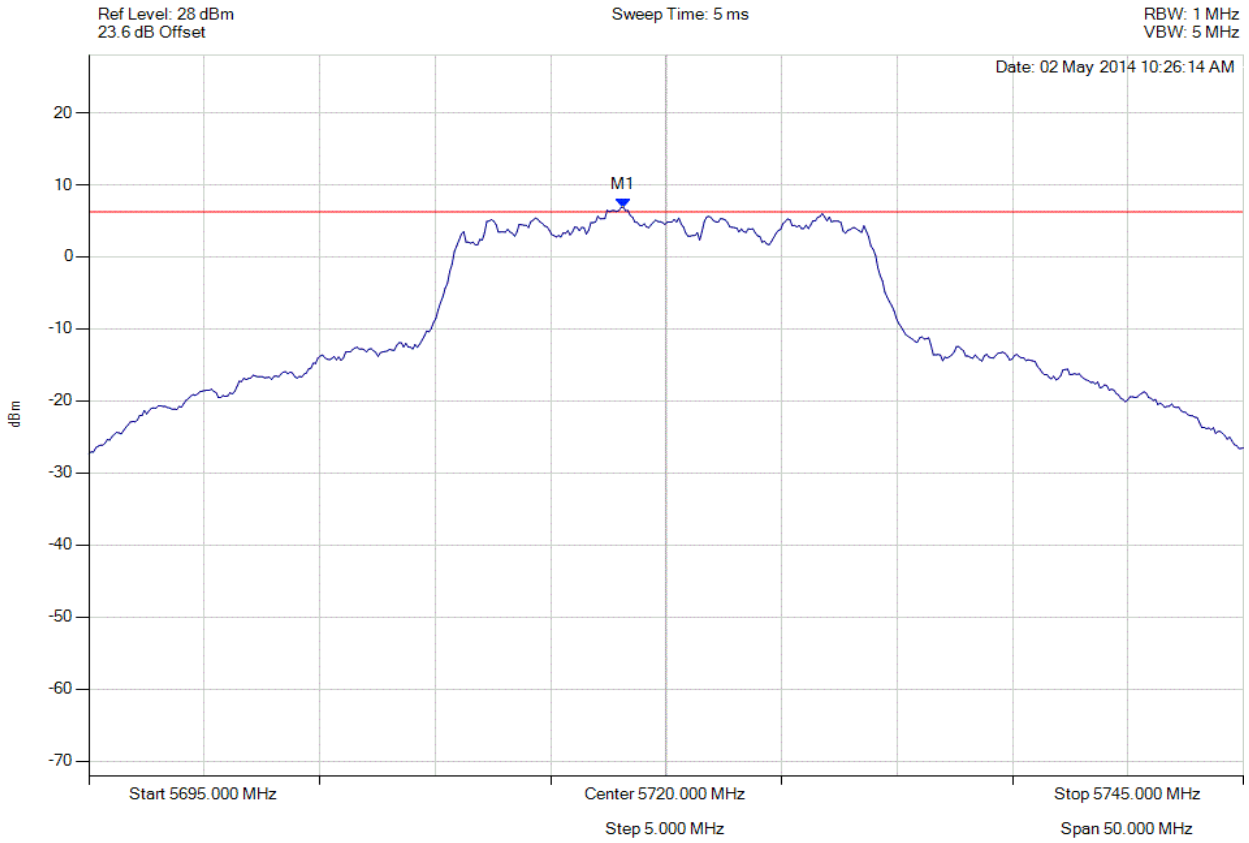
PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5720.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

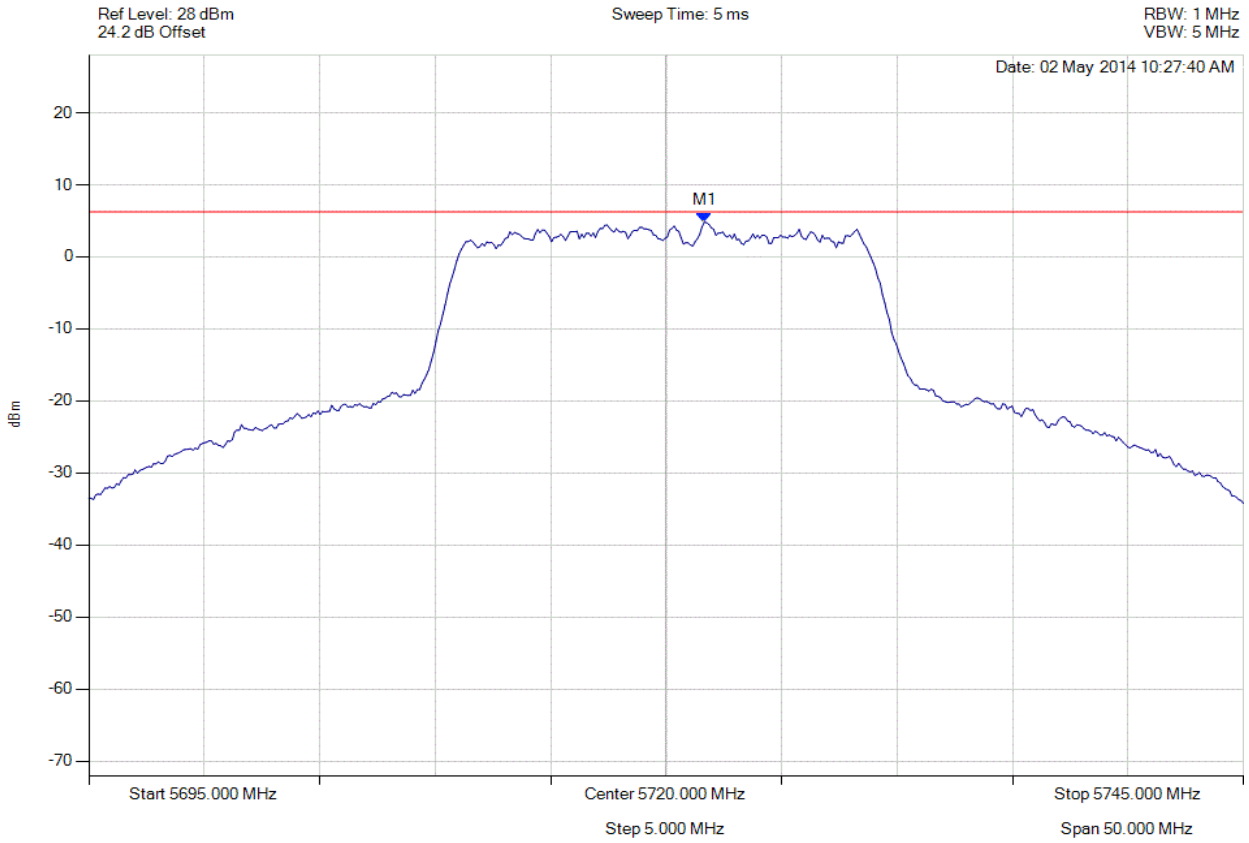


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5718.146 MHz : 6.883 dBm	Limit: ≤ 6.229 dBm Margin: 0.90 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5720.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

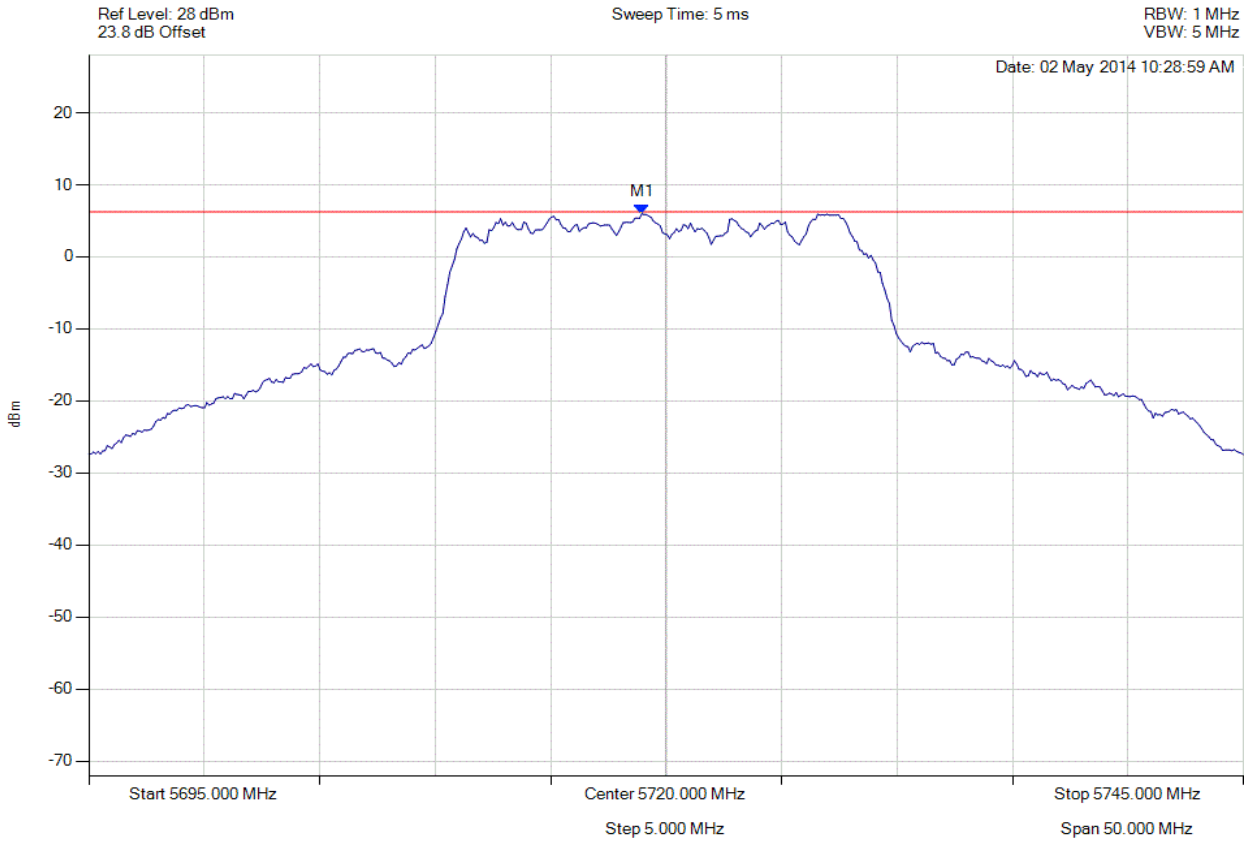


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5721.653 MHz : 4.814 dBm	Limit: ≤ 6.229 dBm Margin: -1.17 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5720.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc

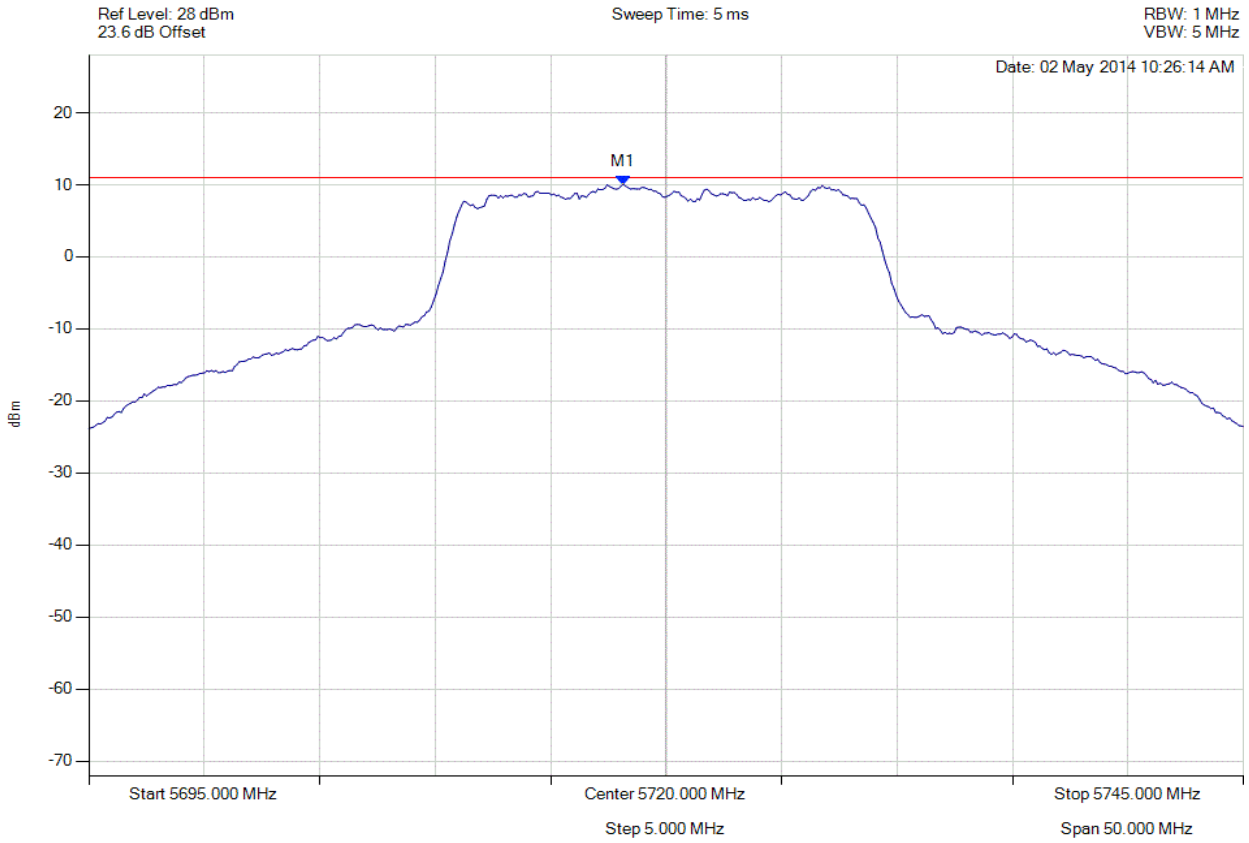


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5718.948 MHz : 5.983 dBm	Limit: ≤ 6.229 dBm Margin: 0.00 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5720.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5718.146 MHz : 10.055 dBm	Limit: ≤ 11.0 dBm Margin: -0.9 dB

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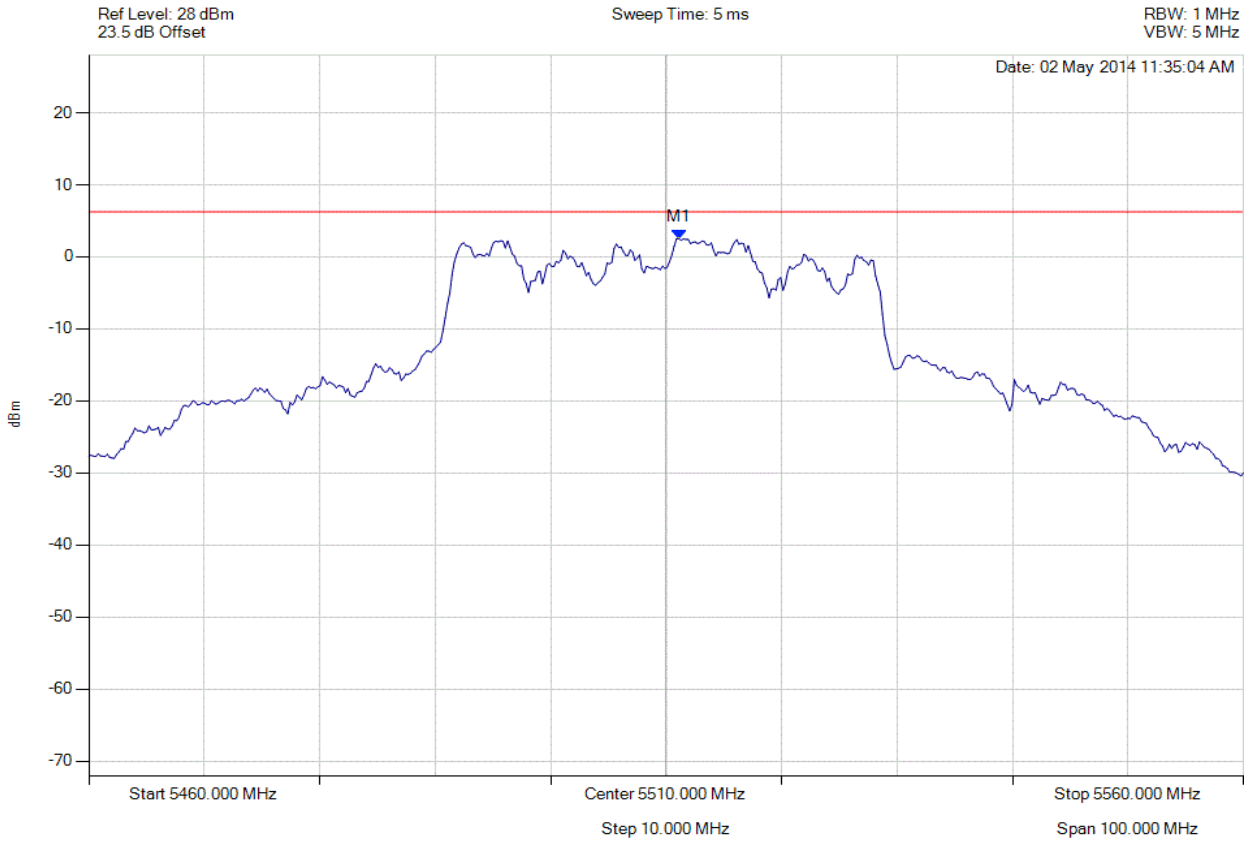
PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5510.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc

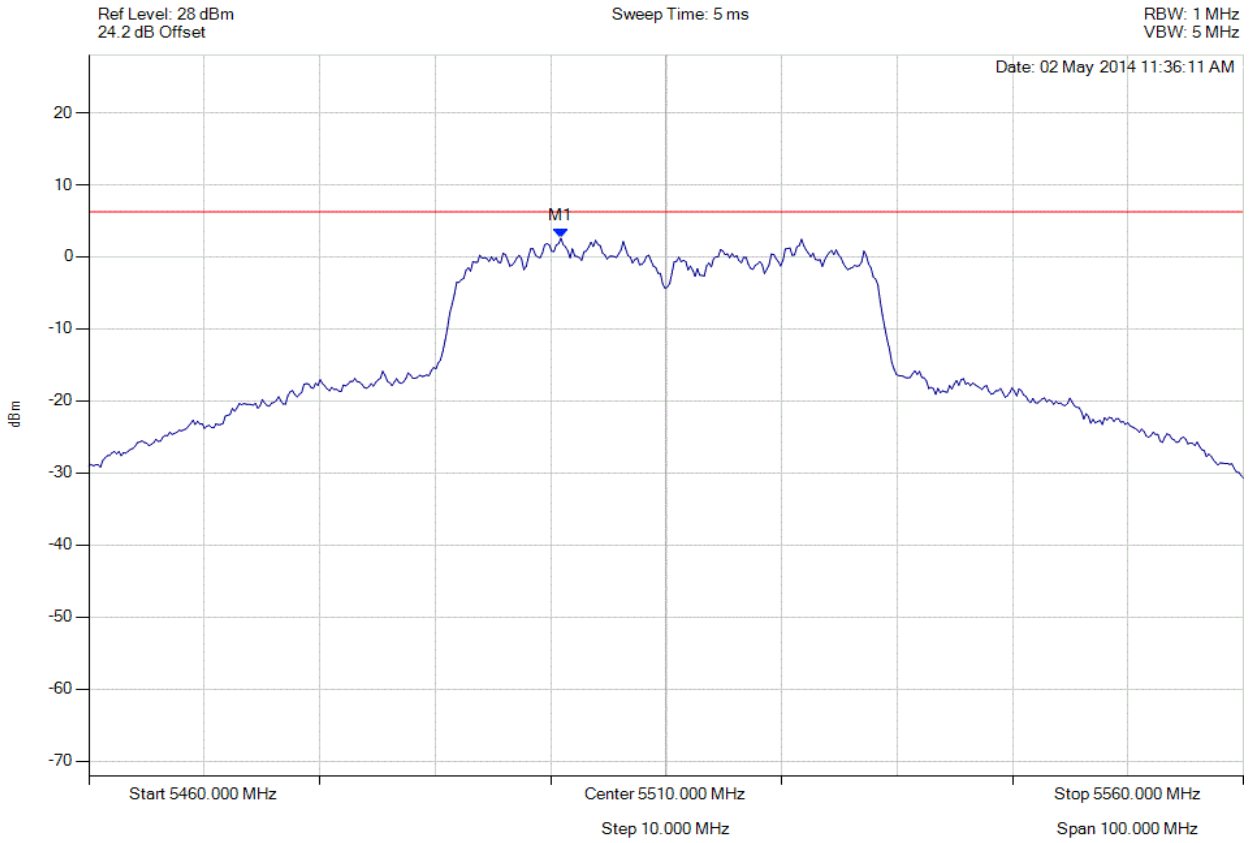


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5511.102 MHz : 2.518 dBm	Limit: ≤ 6.229 dBm Margin: -3.09 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5510.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc

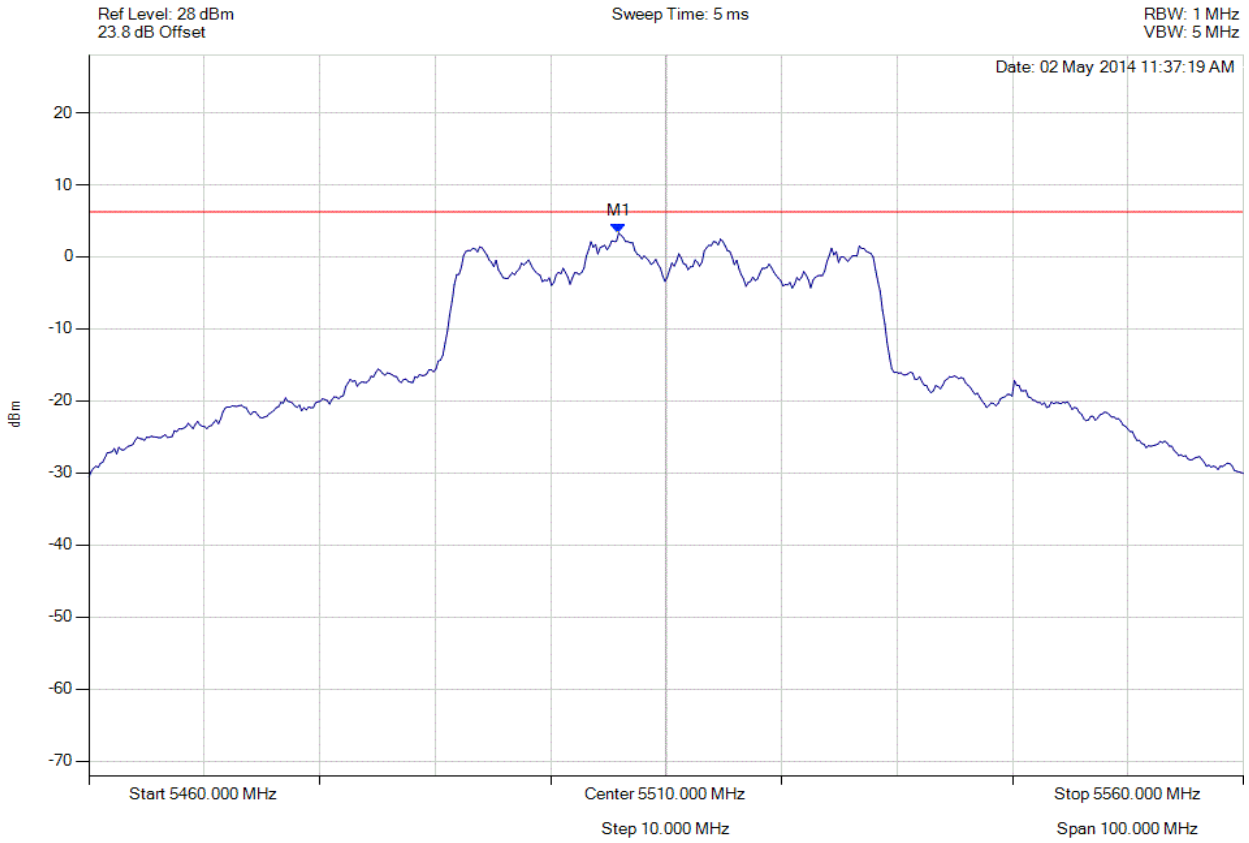


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5500.882 MHz : 2.584 dBm	Limit: ≤ 6.229 dBm Margin: -3.02 dB

Back to the Matrix

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5510.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5505.892 MHz : 3.308 dBm	Limit: ≤ 6.229 dBm Margin: -2.30 dB

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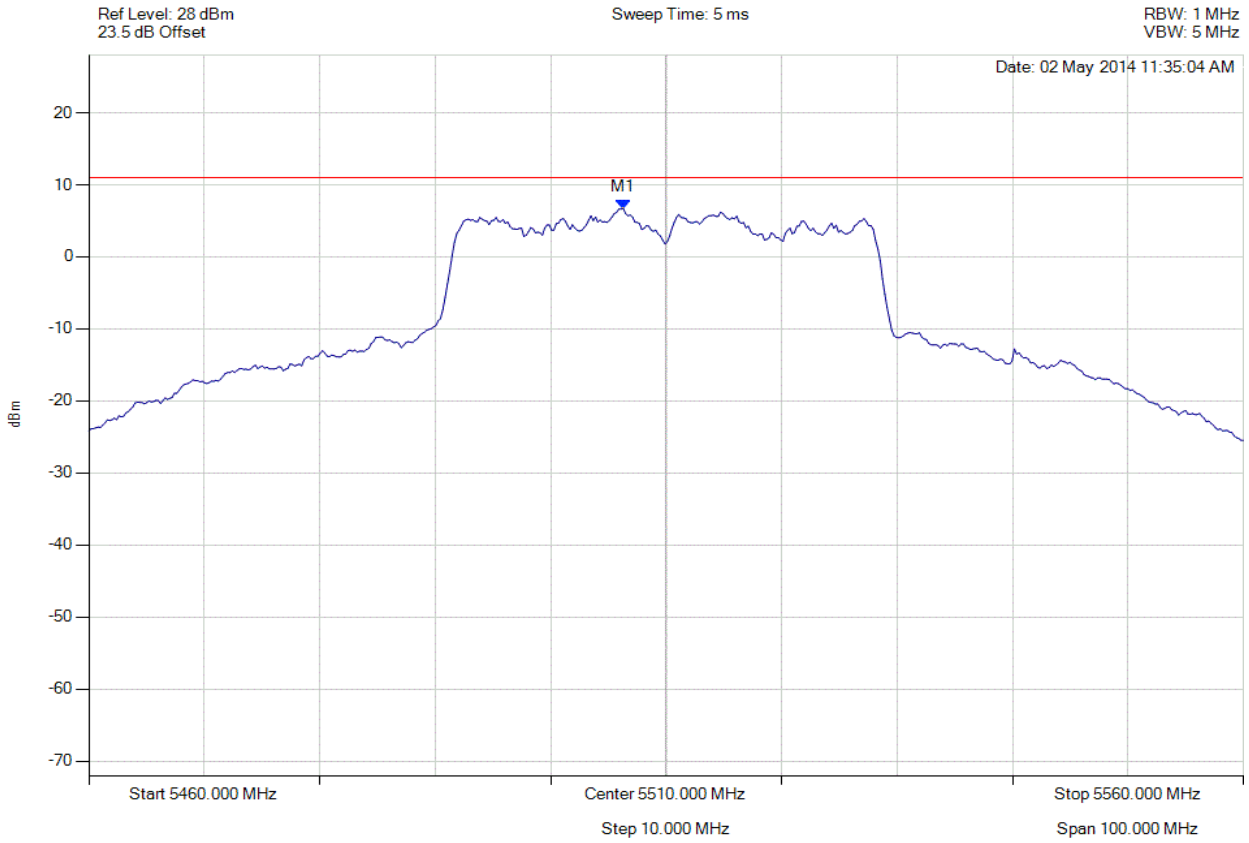
PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5510.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5506.293 MHz : 6.675 dBm	Limit: ≤ 11.0 dBm Margin: -4.3 dB

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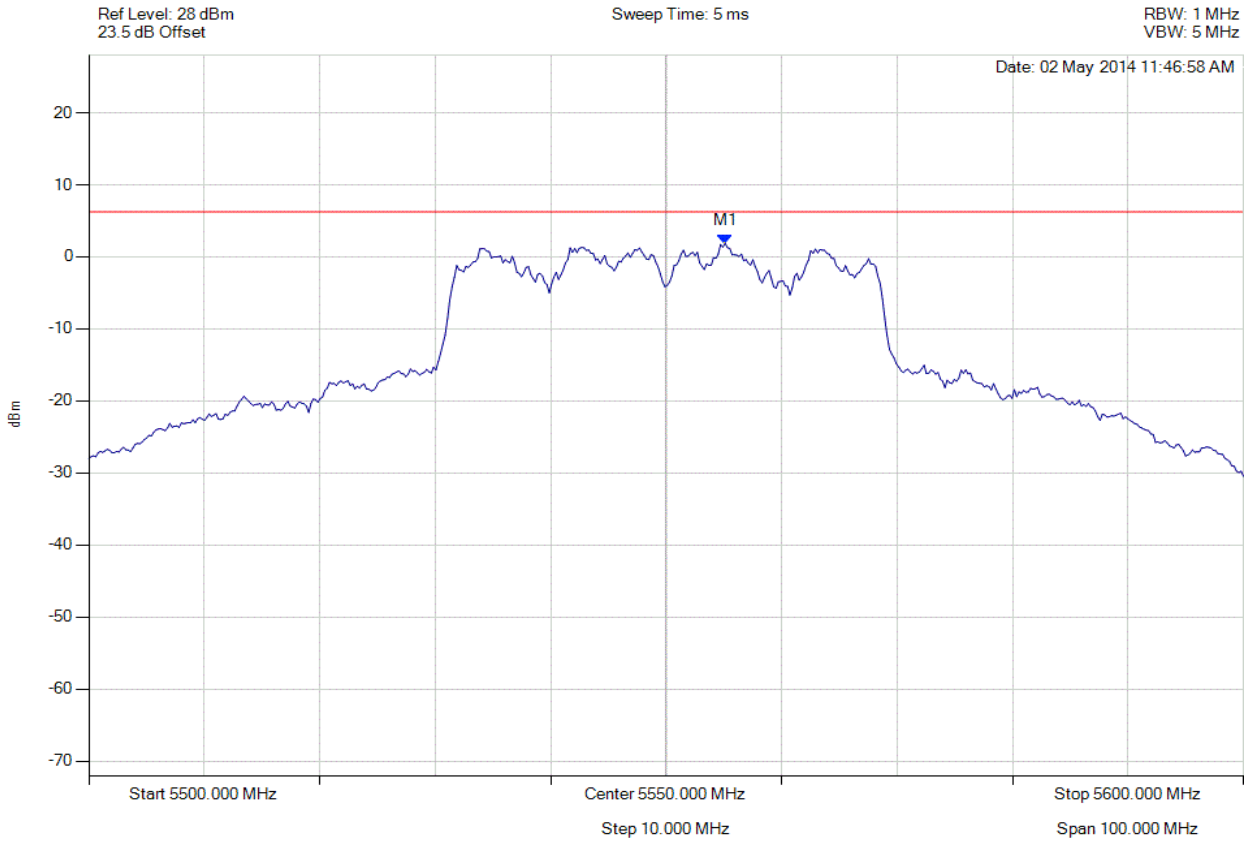
PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5550.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5555.110 MHz : 1.888 dBm	Limit: ≤ 6.229 dBm Margin: -3.72 dB

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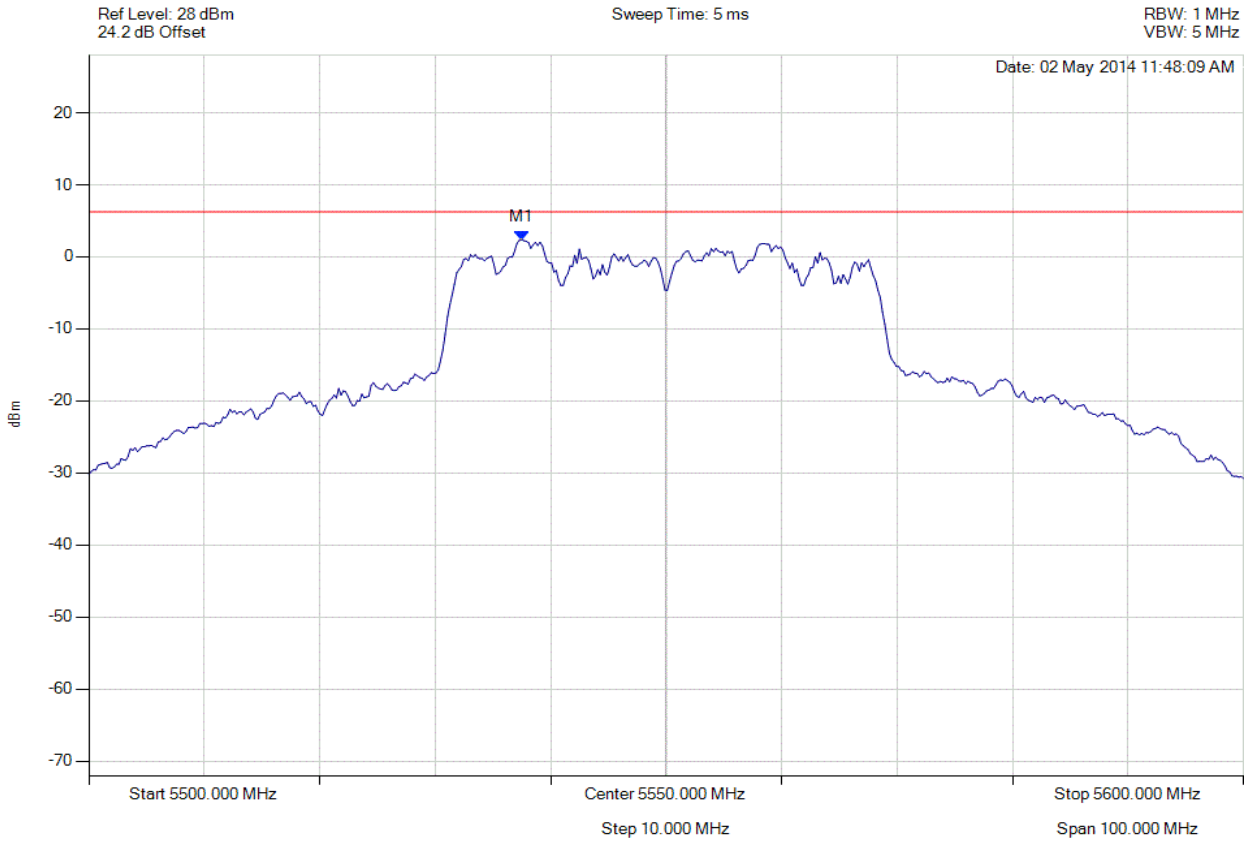
PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5550.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5537.475 MHz : 2.386 dBm	Limit: ≤ 6.229 dBm Margin: -3.22 dB

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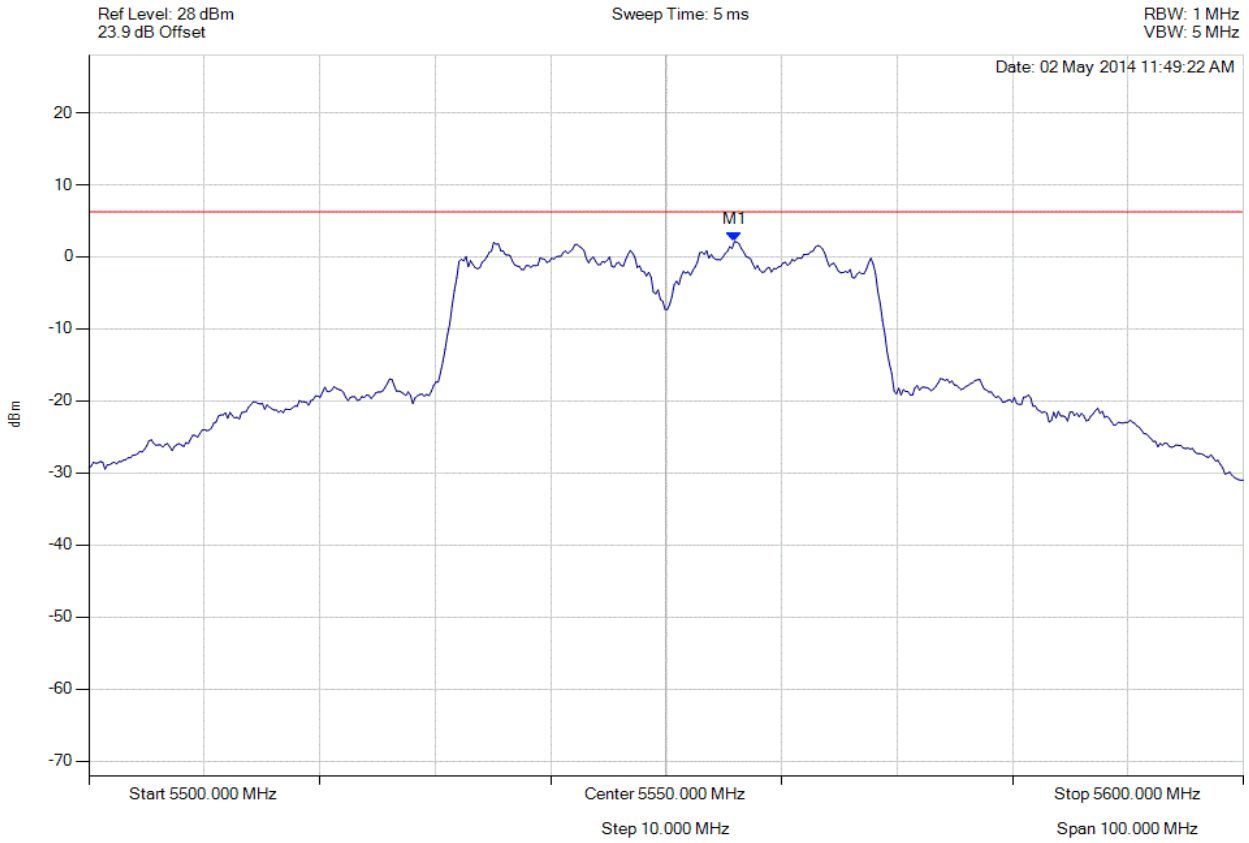
PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5550.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5555.912 MHz : 2.116 dBm	Limit: ≤ 6.229 dBm Margin: -3.49 dB

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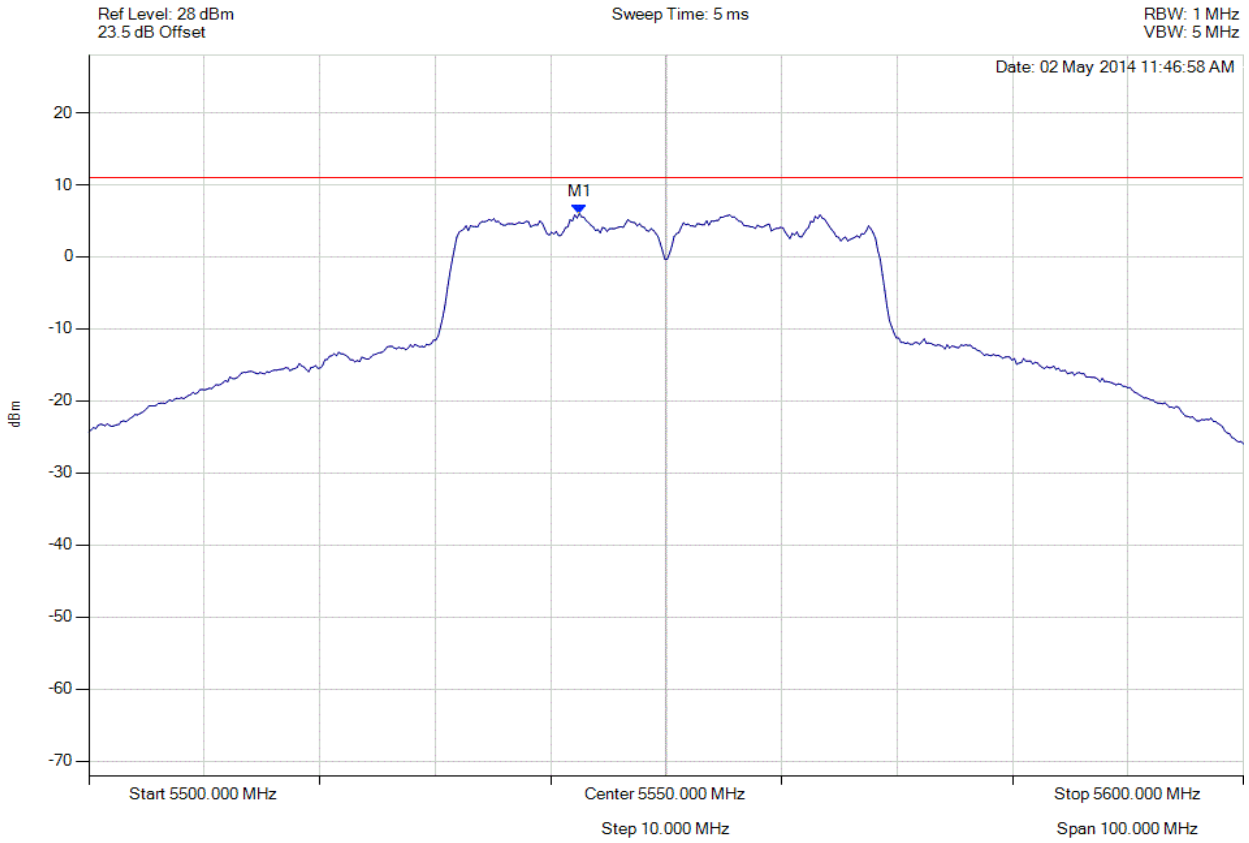
PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5550.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5542.485 MHz : 6.002 dBm	Limit: ≤ 11.0 dBm Margin: -5.0 dB

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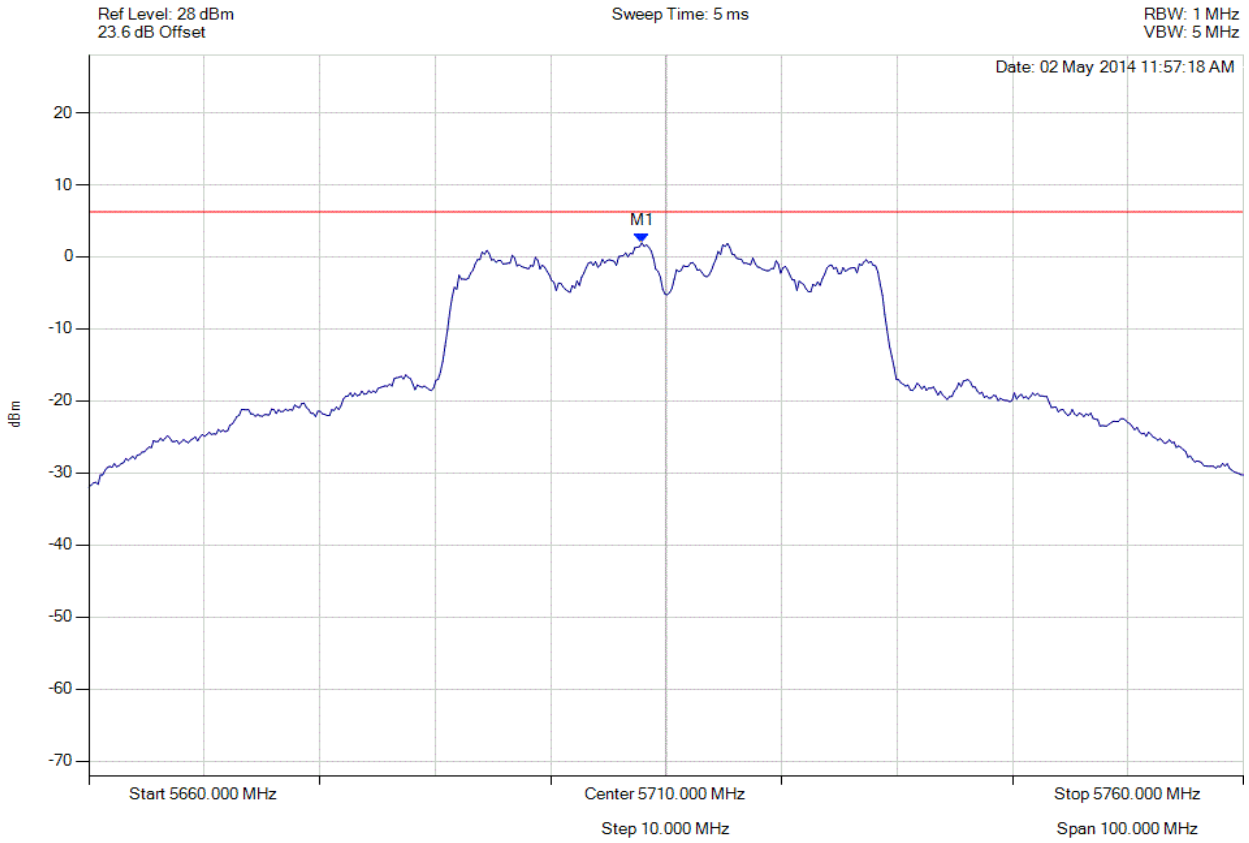
PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5710.00 MHz, Chain a, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5707.896 MHz : 1.935 dBm	Limit: ≤ 6.229 dBm Margin: -3.67 dB

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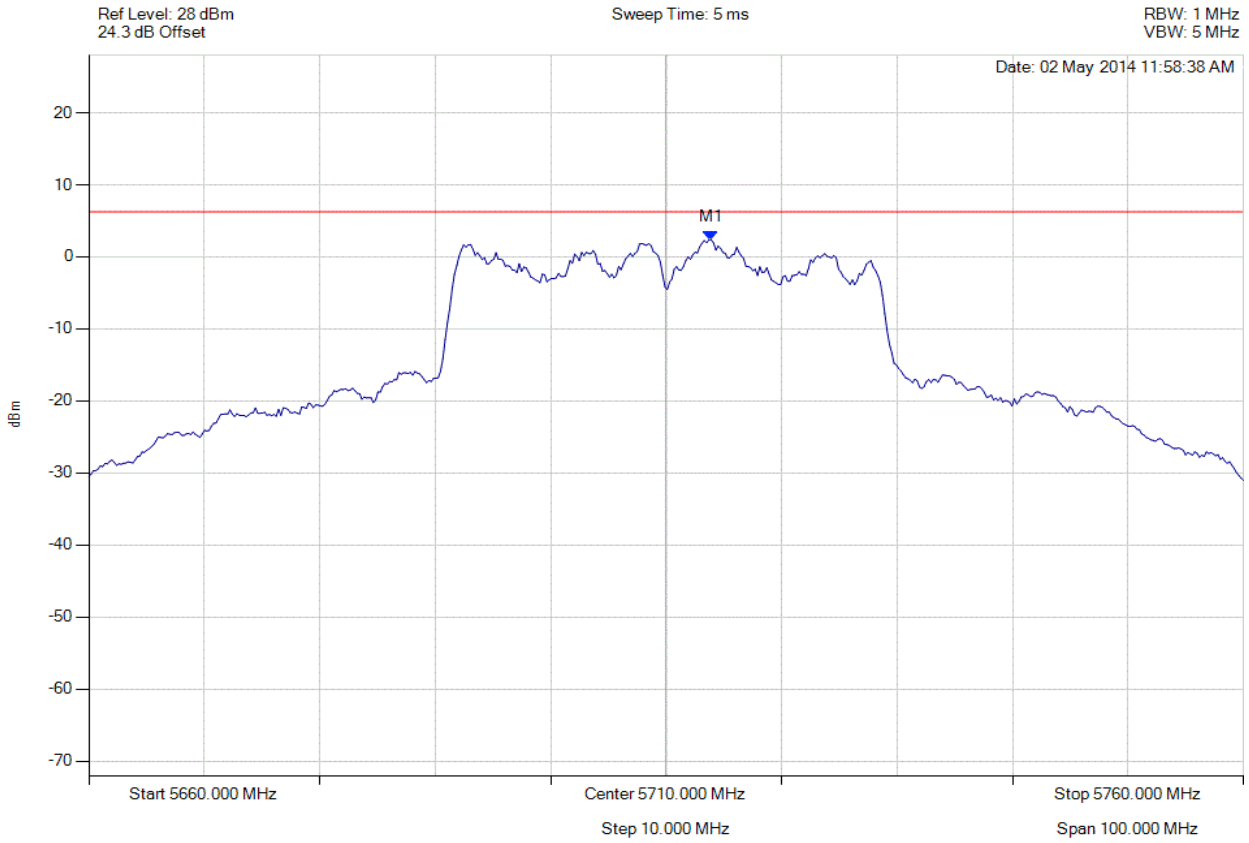
PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5710.00 MHz, Chain b, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5713.908 MHz : 2.378 dBm	Limit: ≤ 6.229 dBm Margin: -3.23 dB

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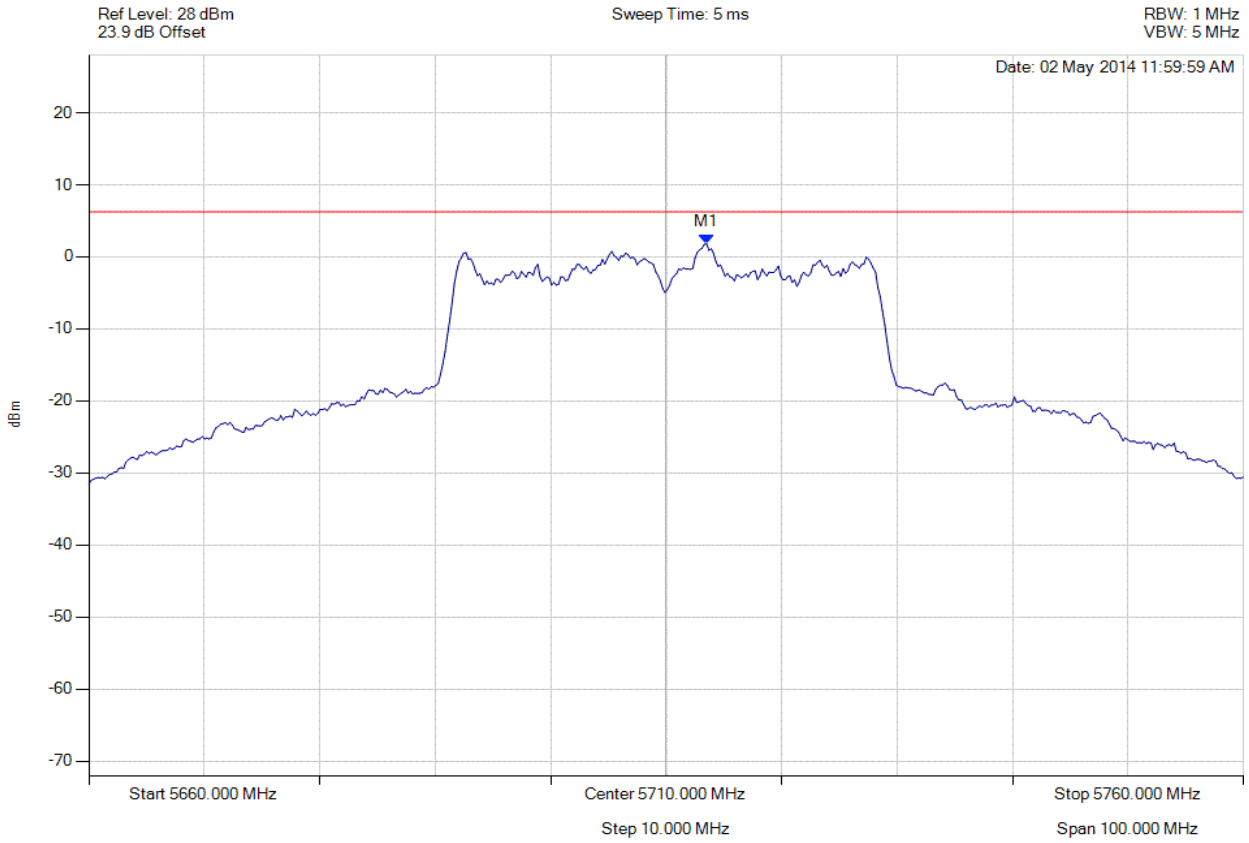
PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5710.00 MHz, Chain c, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5713.507 MHz : 1.814 dBm	Limit: ≤ 6.229 dBm Margin: -3.79 dB

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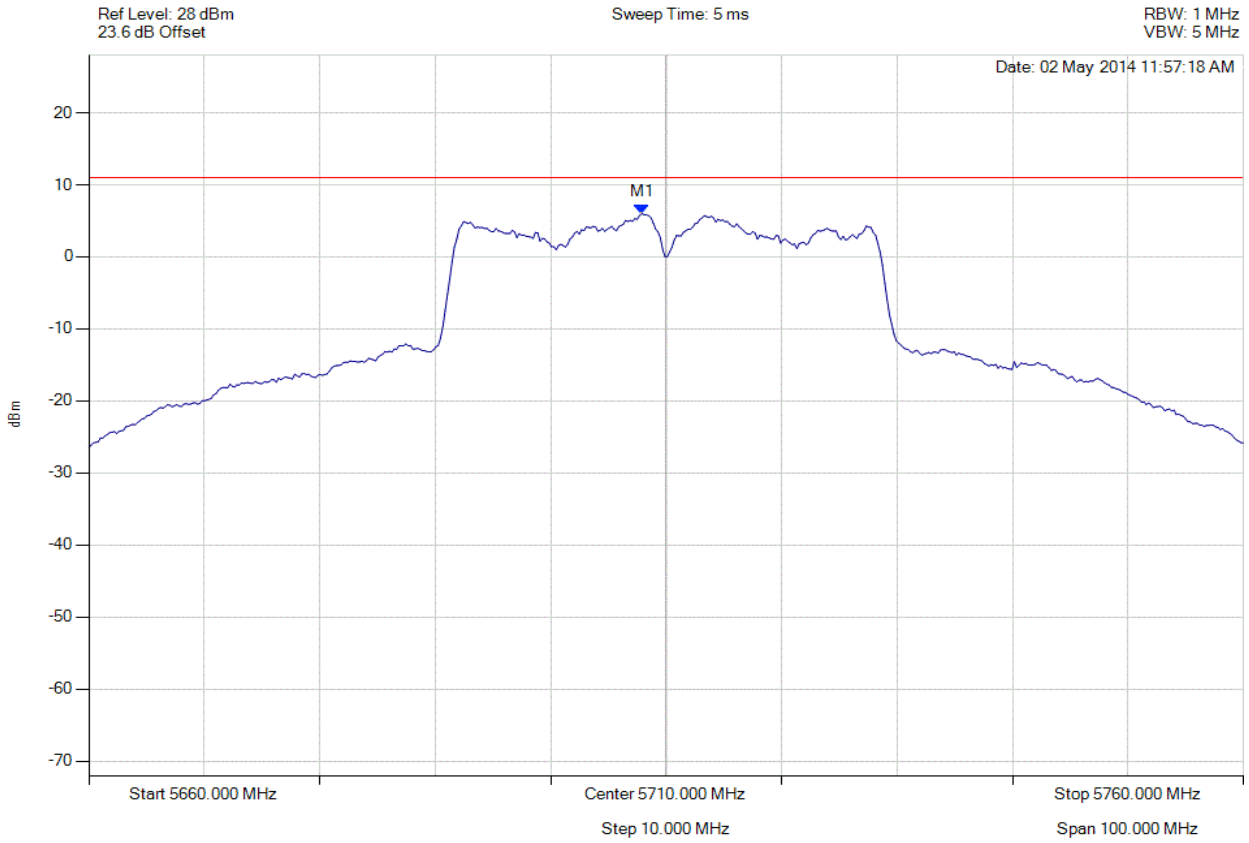
PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5710.00 MHz, SUM, Temp: Ambient, Voltage: 3.3 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5707.896 MHz : 6.004 dBm	Limit: ≤ 11.0 dBm Margin: -5.0 dB

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