Shenzhen Chuangwei-RGB Electronics Co., Ltd.

Application
For
Certification

FCC ID: 2ANM3NTUDB10

WIFI USB DONGLE

Model: NTUD-B10

Brand name: Skyworth

2.4GHz WiFi Transceiver

Report No.: 170830013SZN-003

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 15, Subpart C for Intentional Radiator, mention 47 CFR [10-1-16]

Prepared and Checked by:	Approved by:
Sign on file	 Digitally signed by Kidd Yang Location: Intertek Testing Services
Leo Li Engineer	Kidd Yang Senior Project Engineer Date: October 28, 2017

- The test results reported in this test report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
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TRF no.: FCC 15C_Tx_c

Intertek Testing Services Shenzhen Ltd. Longhua Branch
1F/2F, Building B, QiaoAn Scientific Technology Park, ShangKeng Community, GuanHu Subdistrict, LongHua District, ShenZhen
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LIST OF EXHIBITS

MEASUREMENT/TECHNICAL REPORT

WIFI USB DONGLE

Model: NTUD-B10

FCC ID: 2ANM3NTUDB10

This report concerns (check one) Original Grant ___X___ Class II Change ____

Equipment Type: DTS - Part 15 Digital Transmission Systems (WiFi transmitter portion)

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes _____ No ___X___

If yes, defer until : _____ date

Company Name agrees to notify the Commission by: _____ date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes _____ No ___X___

If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [10-01-16] Edition] provision.

Report prepared by:

Leo Li
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Table of Contents

List of attached file

Exhibit type	File Description	Filename
Test Report	Test Report	report.pdf
Test Setup Photo	Radiated Emission	radiated photos.pdf
Test Setup Photo	Conducted Emission	conducted photos.pdf
External Photo	External Photo	external photos.pdf
Internal Photo	Internal Photo	internal photos.pdf
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
Operation Description	Technical Description	descri.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
Cover Letter	Confidentiality Letter	request.pdf
Cover Letter	Letter of Agency	agency.pdf

EXHIBIT 1

SUMMARY OF TEST RESULTS

1.0 Summary of Test results

WIFI USB DONGLE

Model: NTUD-B10

FCC ID: 2ANM3NTUDB10

TEST	REFERENCE	RESULTS
Max. Output power	15.247(b)(3)	Pass
6 dB Bandwidth	15.247(a)(2)	Pass
Max. Power Density	15.247(e)	Pass
Out of Band Antenna Conducted Emission	15.247(d)	Pass
Radiated Emission in Restricted Bands	15.247(d)	Pass
AC Conducted Emission	15.207	Pass
Antenna Requirement	15.203	Pass (See Notes)

Notes: The EUT uses an Integral Antenna which in accordance to Section 15.203 is considered sufficient to comply with the provisions of this section.

EXHIBIT 2

GENERAL DESCRIPTION

2.0 General Description

2.1 Product Description

The EUT is a WiFi USB DONGLE with 2 Antennas operated at 2412-2462MHz for 802.11b/g/n-HT20, 11 channels with 5MHz channel spacing and 2422-2452MHz for 802.11n-HT40, 9 channels with 5MHz channel spacing; 5180 MHz - 5240 MHz for 802.11a/n/ac-HT20 with 4 channels, 5190 MHz ~ 5230 MHz for 802.11n/ac-HT40 with 2 channels and 5210 MHz for 802.11ac-HT80 with 1 channel. The EUT was powered by USB port(DC 5V). For more detailed features description, please refer to the user's manual.

Type of Modulation: BPSK, QPSK, 16QAM, 64QAM, CCK, DQPSK, DBPSK.

Antenna Type: Integral Antenna.

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

2.2 Related Submittal(s) Grants

This is an application for certification of:
DTS- Part 15 Digital Transmission Systems (WiFi transmitter portion).
For the BT 3.0, 2.1+EDR mode was tested and demonstrated in report 170830013SZN-001.
For the BT 4.0 BLE mode was tested and demonstrated in report 170830013SZN-002.
For the 5GHz WiFi function was tested and demonstrated in report 170830013SZN-004.
For other digital functions were tested and demonstrated in report 170830013SZN-005.

2.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.10: 2013 and KDB 558074 D01 v04. Radiated emission measurement was performed in semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application. All other measurements were made in accordance with the procedures in part 2 of CFR 47.

2.4 Test Facility

The Semi-Anechoic chamber and shield room used to collect the radiated data and conducted data are **Intertek Testing Services Shenzhen Ltd. Longhua Branch** and located at 1F/2F, Building B, QiaoAn Scientific Technology Park, Shangkeng Community, Guanhu Subdistrict, Longhua District, Shenzhen, P.R. China. This test facility and site measurement data have been fully placed on file with the FCC (Registration Number: CN1188).

EXHIBIT 3

SYSTEM TEST CONFIGURATION

3.0 System Test Configuration

3.1 Justification

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables were manipulated to produce worst case emissions. The EUT was powered by USB port(DC 5V) through laptop with 120V/60Hz input during the test. Only the worst case data was reported.

On 802.11b, g, n (20MHz and 40MHz) mode, Both antennas are used, and all data rate were tested and only the worst case data is shown in the report.

For maximizing emissions, the EUT was rotated through 360°, the EUT was placed on the styrene turntable with 0.8m up to 1GHz and 1.5 m above 1GHz. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

The rear of unit was flushed with the rear of the table.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

3.2 EUT Exercising Software

The EUT exercise program (provided by client) used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The worst case configuration is used in all specified testing.

The parameters of test software setting:
During the test, Channel and power controlling software provided by the applicant was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the application and is going to be fixed on the firmware of the end product.

3.3 Special Accessories

N/A.

3.4 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

Uncertainty and Compliance – Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value.

3.5 Equipment Modification

Any modifications installed previous to testing by Shenzhen Chuangwei-RGB Electronics Co., Ltd. will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd. Longhua Branch.

3.6 Support Equipment List and Description

This product was tested in the following configuration:

Refer List:

Description	Manufacturer	Model No.
Laptop (Provided by Intertek)	Lenovo	T420
USB Cable (Provided by Chuangwei)	N/A	Unshielded, Length 13cm
Extended USB Cable (Provided by Intertek)	N/A	Unshielded, Length 80cm

EXHIBIT 4

MEASUREMENT RESULTS

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10

4.0 **Measurement Results**

4.1 Maximum Conducted Output Power at Antenna Terminals, FCC Rules 15.247(b)(3):

The antenna power of the EUT was connected to the input of a broadband peak RF power meter. The power meter have a video bandwidth that is greater than DTS bandwidth and utilize a fast-responding diode detector. Power was read directly at the EUT antenna terminals with cable loss added.

For antennas with gains of 6 dBi or less, maximum allowed Transmitter output is 1 watt (+30 dBm). 2.4G band Ant gain: 2.0dBi. In MIMO (2Tx), Ant1+Ant2 Directional gain = GANT + 10 log(N) dBi = 2.0 + 10 log(2) = 5.0 dBi< 6 dBi, so the Power limit is 30.0dBm(1W) for conducted TX power.

SISO Mode, Ant1：

IEEE 802.11b (Antenna Gain = 2.0dBi) (CCK, 1Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2412	19.14	82.0
Middle Channel: 2437	18.84	76.6
High Channel: 2462	18.75	75.0

IEEE 802.11g (Antenna Gain = 2.0dBi) (16QAM, 6Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2412	18.11	64.7
Middle Channel: 2437	17.98	62.8
High Channel: 2462	18.14	65.2

IEEE 802.11n-HT20 (Antenna Gain = 2.0dBi) (16QAM, 6.5Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2412	16.98	49.9
Middle Channel: 2437	17.13	51.6
High Channel: 2462	17.18	52.2

IEEE 802.11n-HT40 (Antenna Gain = 2.0dBi) (64QAM, 13.5Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2422	17.07	50.9
Middle Channel: 2437	16.77	47.5
High Channel: 2452	16.97	49.8

SISO Mode, Ant2：

IEEE 802.11b (Antenna Gain = 2.0dBi) (CCK, 1Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2412	18.11	64.7
Middle Channel: 2437	19.17	82.6
High Channel: 2462	19.22	83.6

IEEE 802.11g (Antenna Gain = 2.0dBi) (16QAM, 6Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2412	17.45	55.6
Middle Channel: 2437	18.38	68.9
High Channel: 2462	18.46	70.1

IEEE 802.11n-HT20 (Antenna Gain = 2.0dBi) (16QAM, 6.5Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2412	16.04	40.2
Middle Channel: 2437	17.25	53.1
High Channel: 2462	16.72	47.0

IEEE 802.11n-HT40 (Antenna Gain = 2.0dBi) (64QAM, 13.5Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2422	16.16	41.3
Middle Channel: 2437	17.54	56.8
High Channel: 2452	17.23	52.8

MIMO Mode：

IEEE 802.11n-HT20 (MIMO, Antenna Gain = 5dBi) (16QAM, 6.5Mbps)				
Frequency (MHz)	Output in dBm			Total Output in mWatt
	Ant 1	Ant 2	Total	
Low Channel: 2412	16.62	14.62	18.7	74.9
Middle Channel: 2437	16.65	15.73	19.2	83.6
High Channel: 2462	16.68	15.85	19.3	85.0

IEEE 802.11n-HT40 (MIMO, Antenna Gain = 5dBi) (64QAM, 13.5Mbps)				
Frequency (MHz)	Output in dBm			Total Output in mWatt
	Ant 1	Ant 2	Total	
Low Channel: 2422	16.50	14.74	18.7	74.5
Middle Channel: 2437	16.61	15.50	19.1	81.3
High Channel: 2452	16.44	15.60	19.1	80.4

Cable loss: 1.0 dB External Attenuation: 0 dB

Cable loss, external attenuation has been included in OFFSET function

EUT max output power = 19.3dBm
EUT max E.I.R.P = 19.3dBm + 5dBi = 24.3dBm

For RF Exposure, the information is saved with filename: RF exposure.pdf.

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10

4.2 Minimum 6 dB RF Bandwidth, FCC Rule 15.247(a)(2):

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 100 KHz according to FCC KDB 558074 D01 v04. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was taken, a DISPLAY line was drawn 6 dB lower than PEAK level. The 6dB bandwidth was determined from where the channel output spectrum intersected the display line.

Limit: The 6 dB Bandwidth is at least 500 kHz.

SISO Mode, Ant1:

IEEE 802.11b (CCK, 1Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2412	10.072
2437	10.072
2462	10.029

IEEE 802.11g (16QAM, 6Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2412	16.324
2437	16.324
2462	16.324

IEEE 802.11n-HT20 (16QAM, 6.5Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2412	17.323
2437	17.323
2462	17.540

IEEE 802.11n-HT40 (64QAM, 13.5Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2422	35.687
2437	35.687
2452	35.601

SISO Mode, Ant2:

IEEE 802.11b (CCK, 1Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2412	10.072
2437	10.072
2462	10.072

IEEE 802.11g (16QAM, 6Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2412	16.324
2437	16.324
2462	16.324

IEEE 802.11n-HT20 (16QAM, 6.5Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2412	17.540
2437	17.323
2462	17.540

IEEE 802.11n-HT40 (64QAM, 13.5Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2422	35.601
2437	35.687
2452	35.427

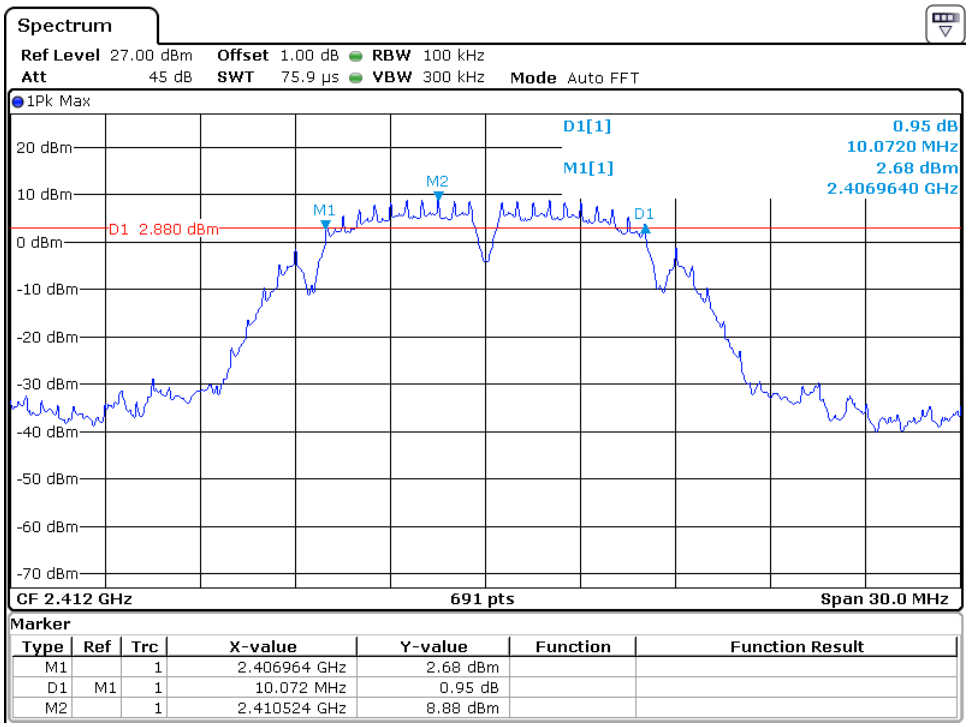
MIMO Mode：

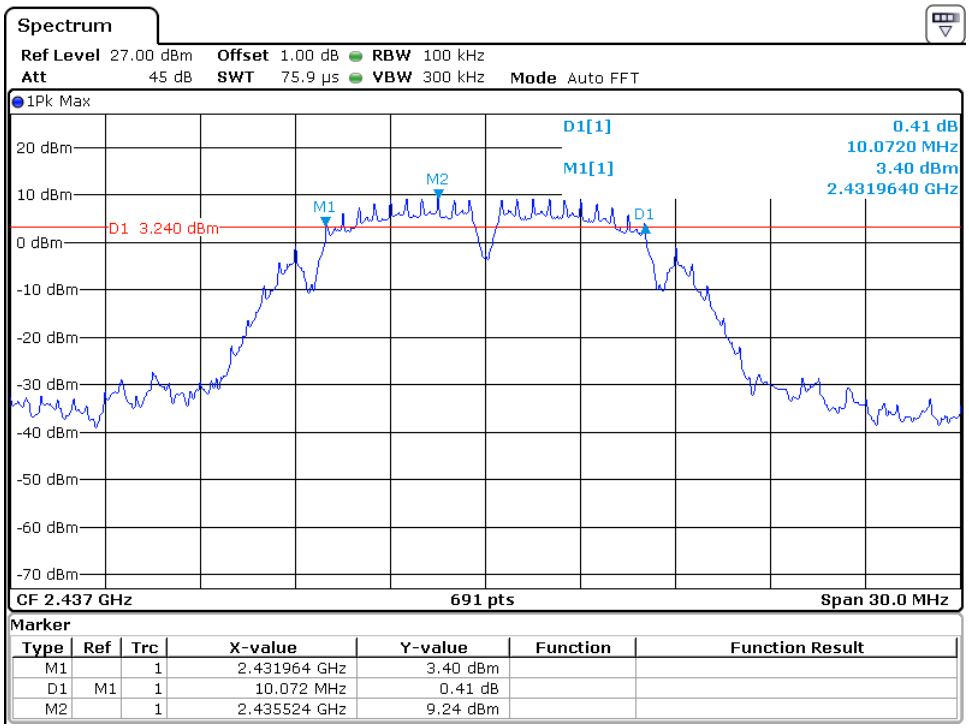
IEEE 802.11n-HT20 (16QAM, 6.5Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2412	17.583
2437	17.583
2462	17.549

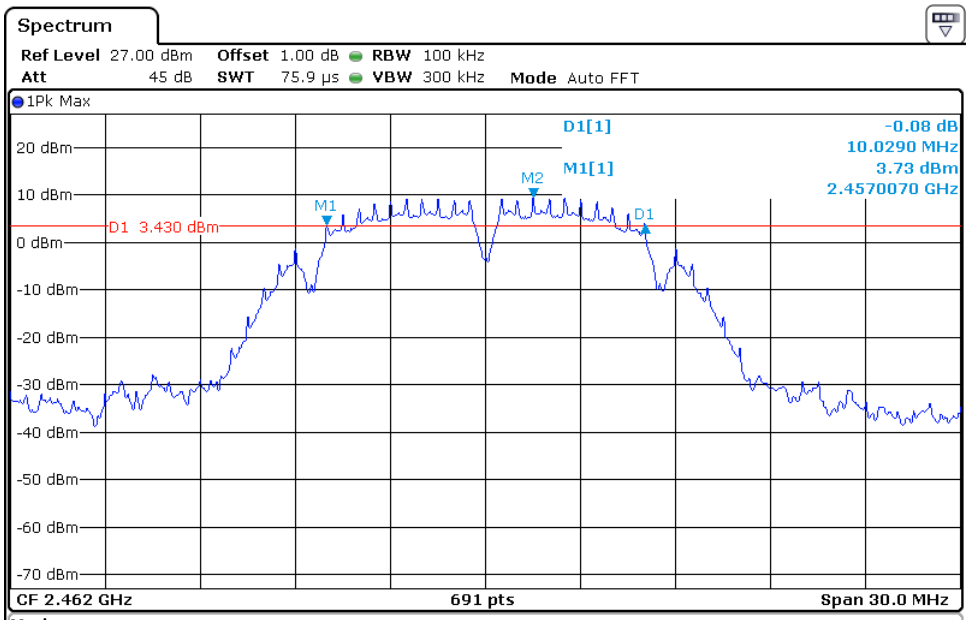
IEEE 802.11n-HT40 (64QAM, 13.5Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2422	36.035
2437	35.687
2452	36.035

The test plots are attached as below.

SISO Mode, Ant1:
802.11b

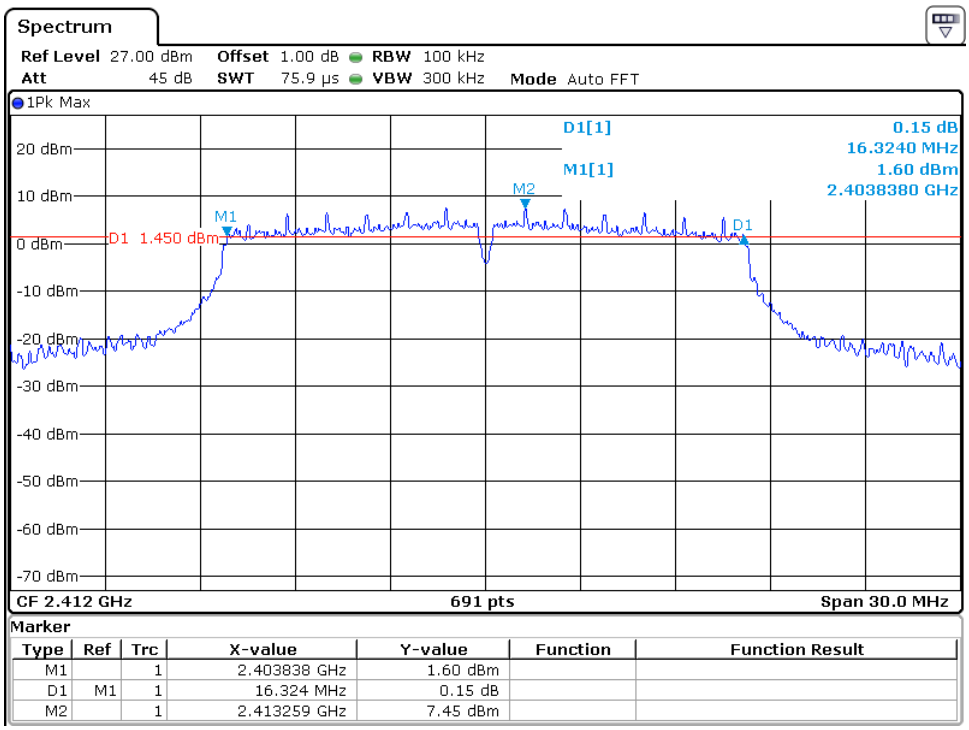


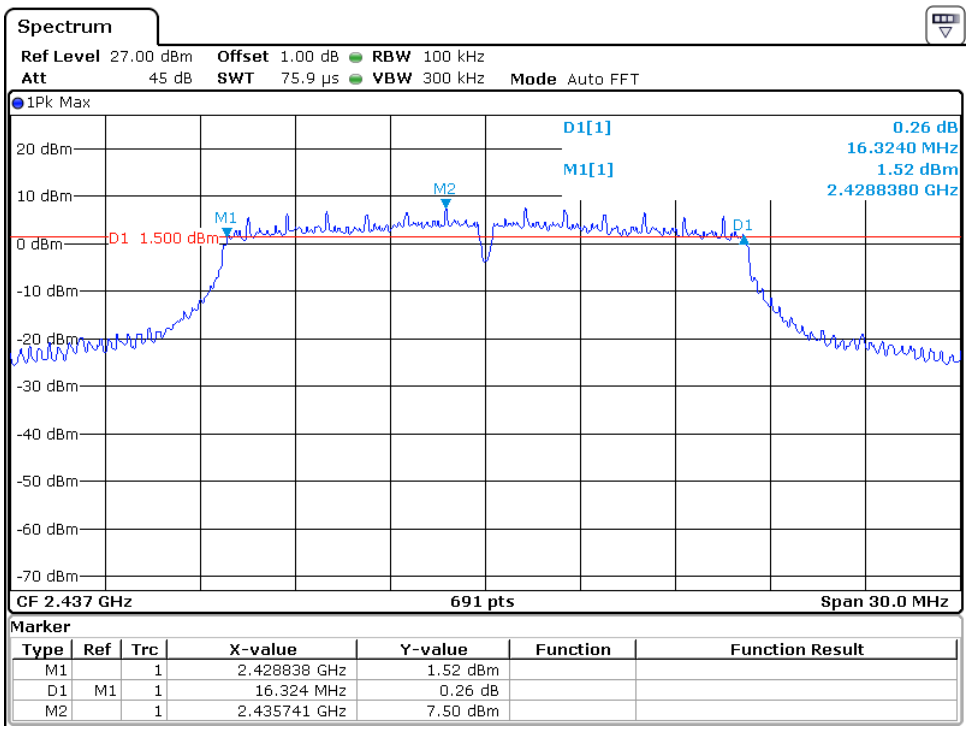


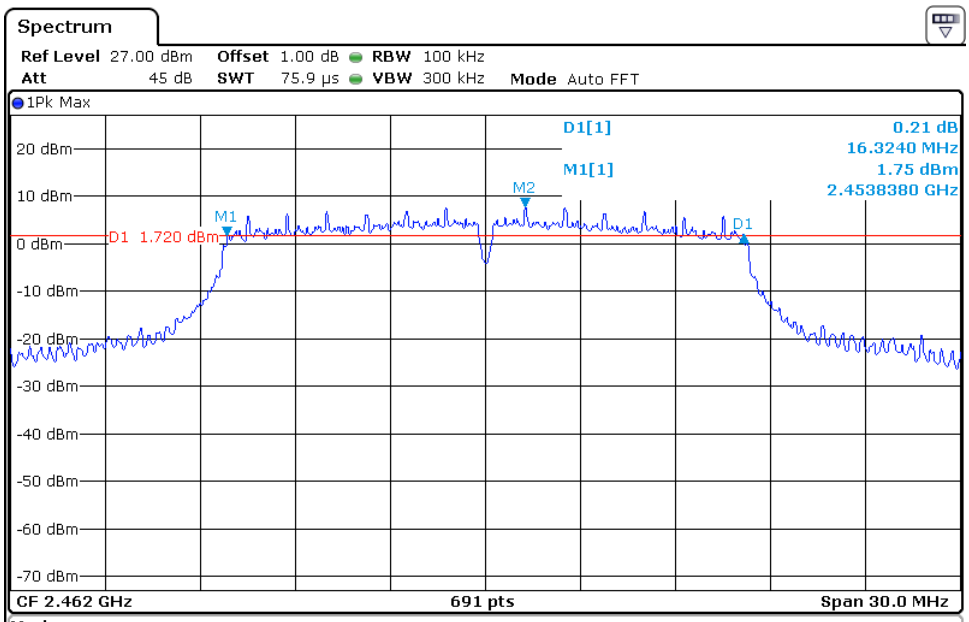


Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.457007 GHz	3.73 dBm		
D1	M1	1	10.029 MHz	-0.08 dB		
M2		1	2.46352 GHz	9.43 dBm		

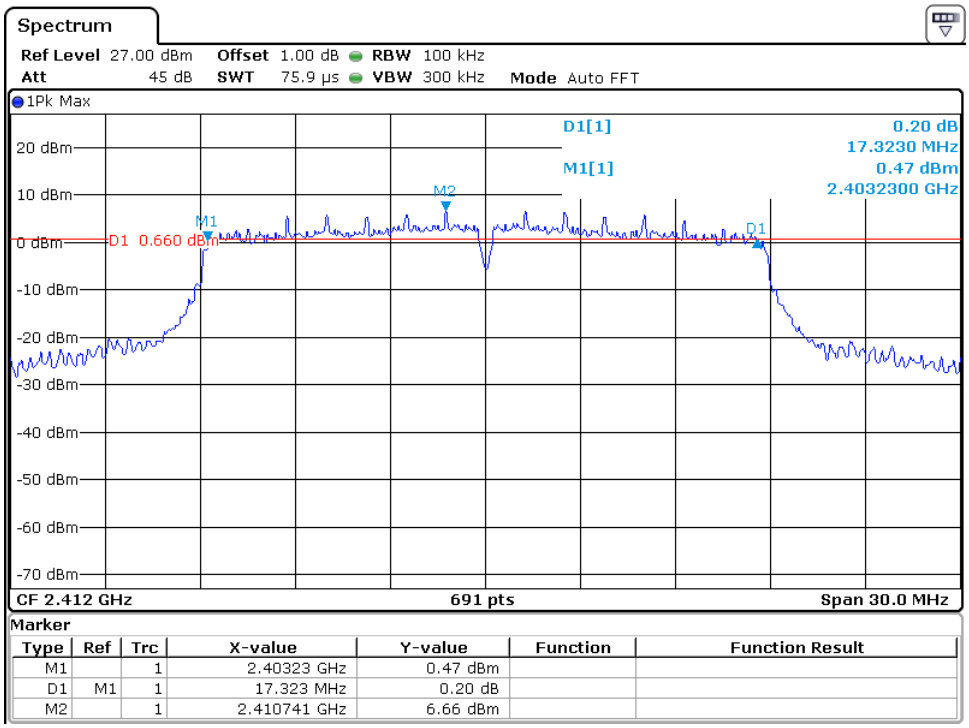
802.11g

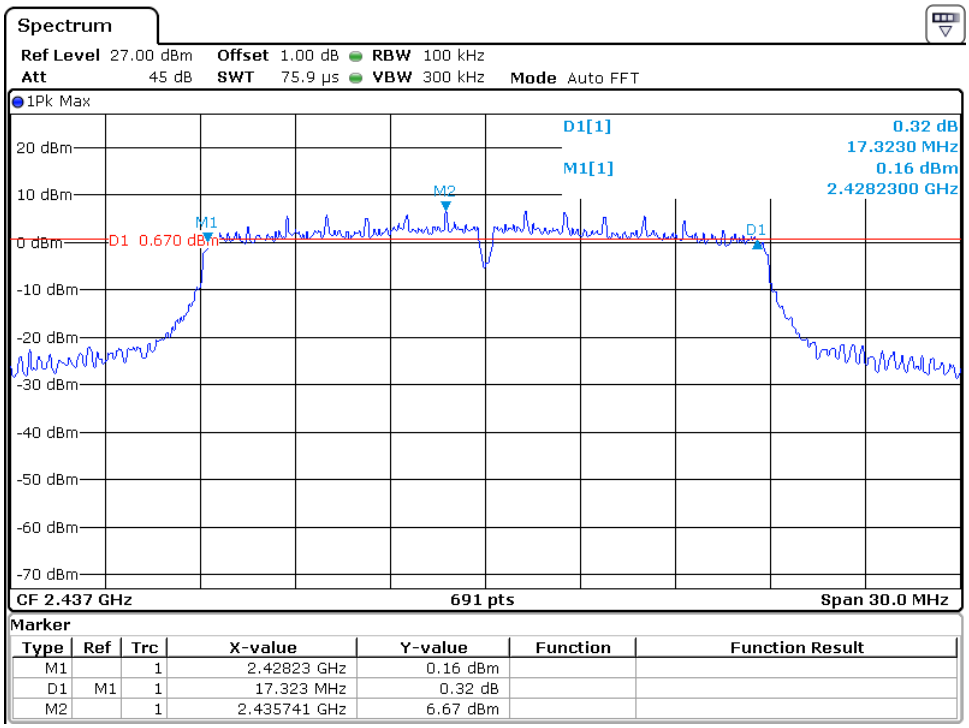

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 0.15 dB
16.3240 MHz
M1[1] 1.60 dBm
2.4038380 GHz
D1 1.450 dBm
CF 2.412 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.403838 GHz 1.60 dBm
D1 M1 1 16.324 MHz 0.15 dB
M2 1 2.413259 GHz 7.45 dBm

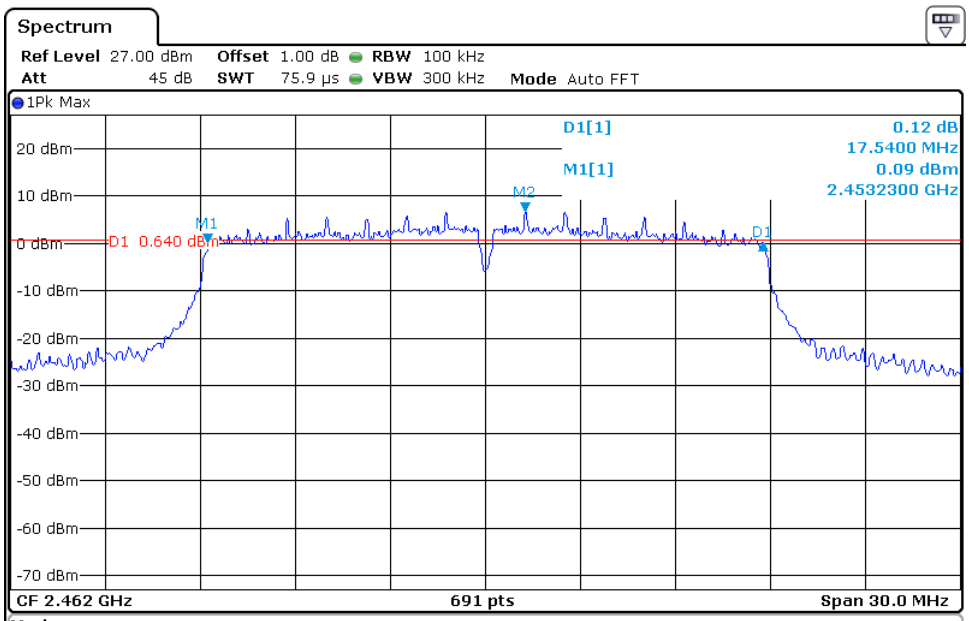

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 0.26 dB
16.3240 MHz
M1[1] 1.52 dBm
2.4288380 GHz
D1 1.500 dBm
CF 2.437 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.428838 GHz 1.52 dBm
D1 M1 1 16.324 MHz 0.26 dB
M2 1 2.435741 GHz 7.50 dBm


Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 0.21 dB
16.3240 MHz
M1[1] 1.75 dBm
2.4538380 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
M2
D1
D1 1.720 dBm
CF 2.462 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.453838 GHz 1.75 dBm
D1 M1 1 16.324 MHz 0.21 dB
M2 1 2.463259 GHz 7.72 dBm

802.11n-HT20

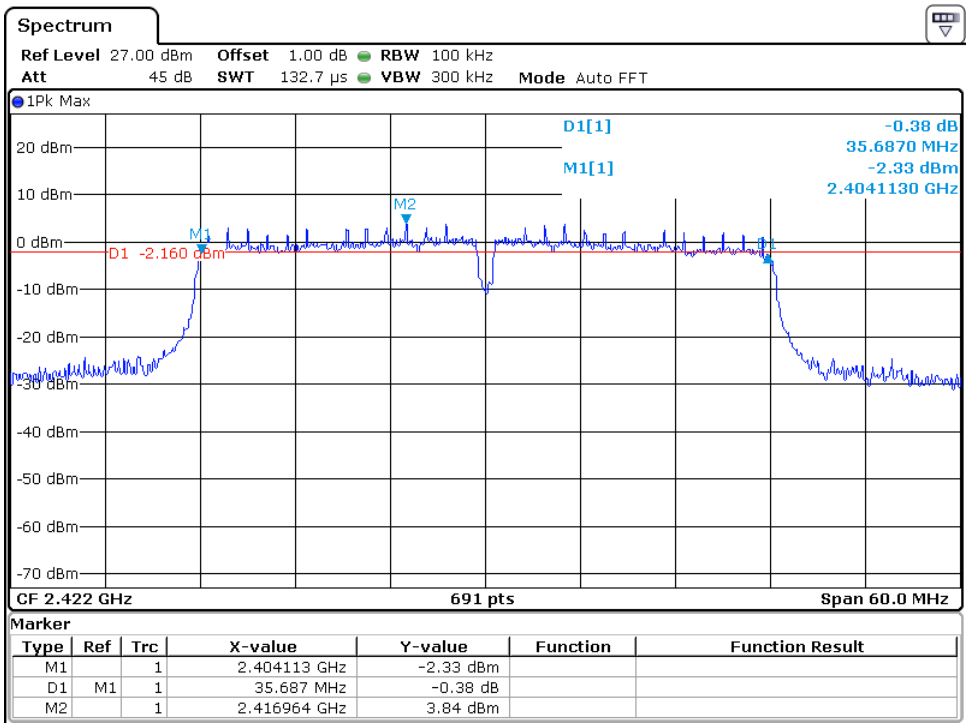

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 0.20 dB
17.3230 MHz
M1[1] 0.47 dBm
2.4032300 GHz
D1 0.660 dBm
CF 2.412 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.40323 GHz 0.47 dBm
D1 M1 1 17.323 MHz 0.20 dB
M2 1 2.410741 GHz 6.66 dBm

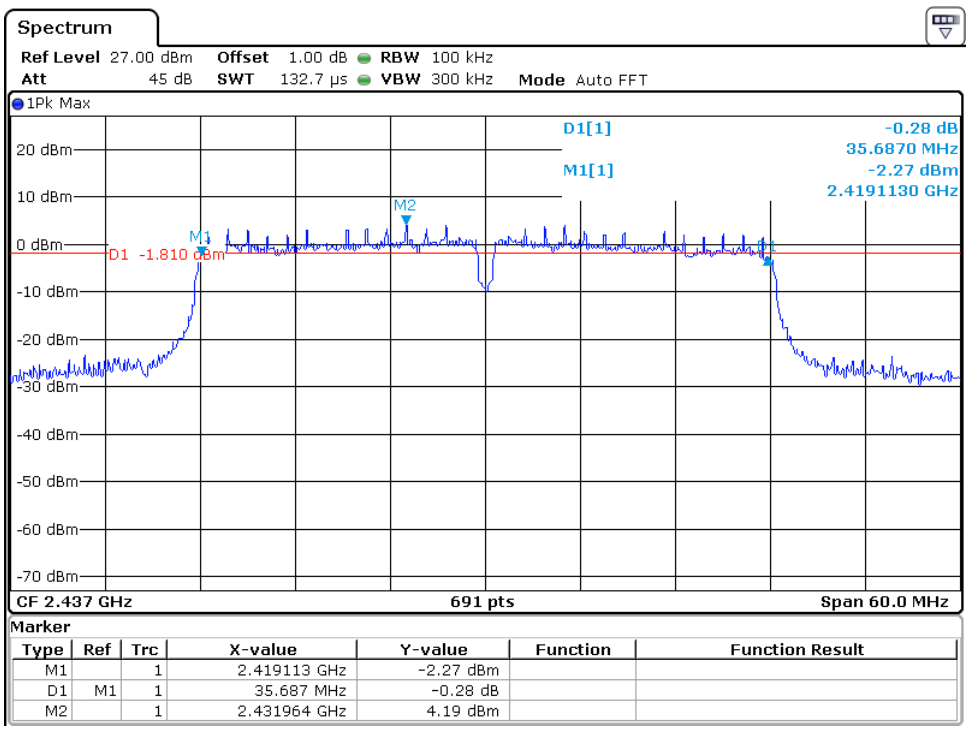

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 0.32 dB
17.3230 MHz
M1[1] 0.16 dBm
2.4282300 GHz
D1 0.670 dBm
CF 2.437 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.42823 GHz 0.16 dBm
D1 M1 1 17.323 MHz 0.32 dB
M2 1 2.435741 GHz 6.67 dBm

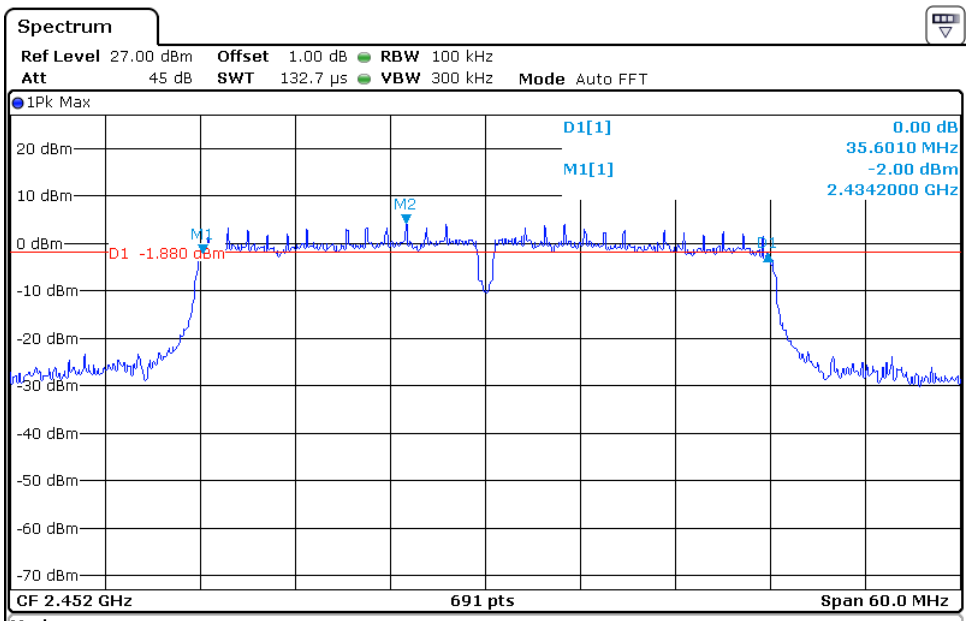


Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.45323 GHz	0.09 dBm		
D1	M1	1	17.54 MHz	0.12 dB		
M2		1	2.463259 GHz	6.64 dBm		

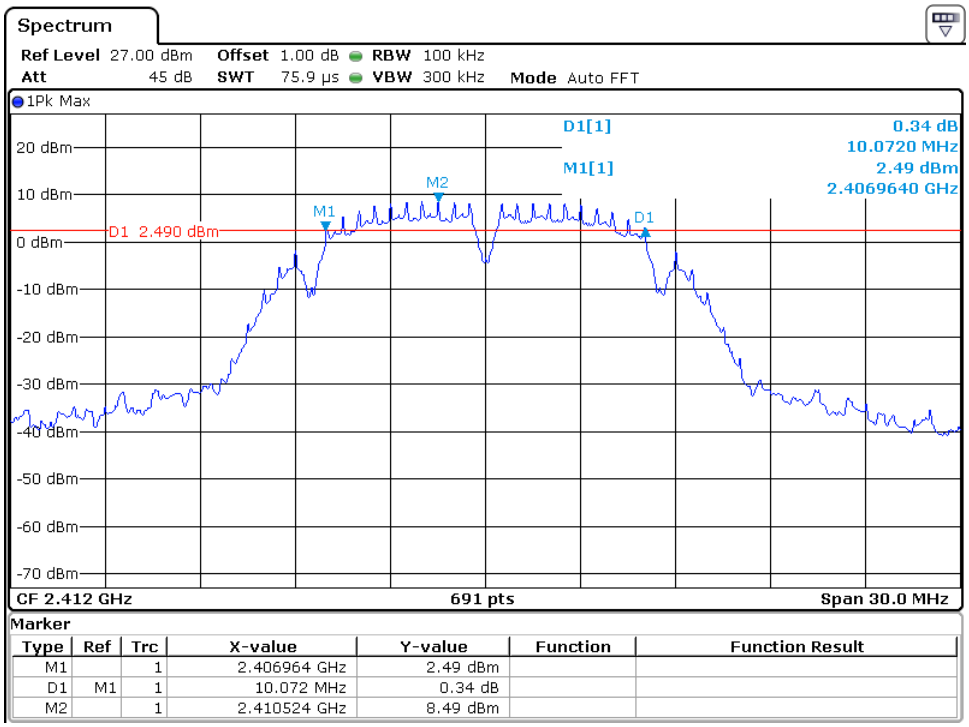
802.11n-HT40

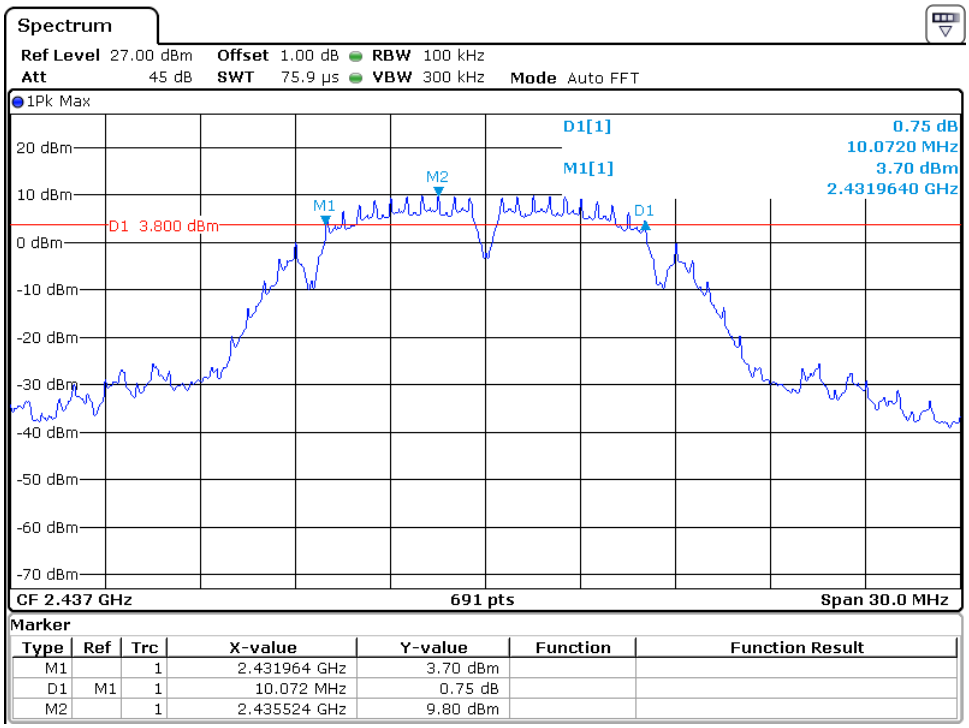

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -0.38 dB
35.6870 MHz
M1[1] -2.33 dBm
2.4041130 GHz
D1 -2.160 dBm
CF 2.422 GHz
691 pts
Span 60.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.404113 GHz -2.33 dBm
D1 M1 1 35.687 MHz -0.38 dB
M2 1 2.416964 GHz 3.84 dBm

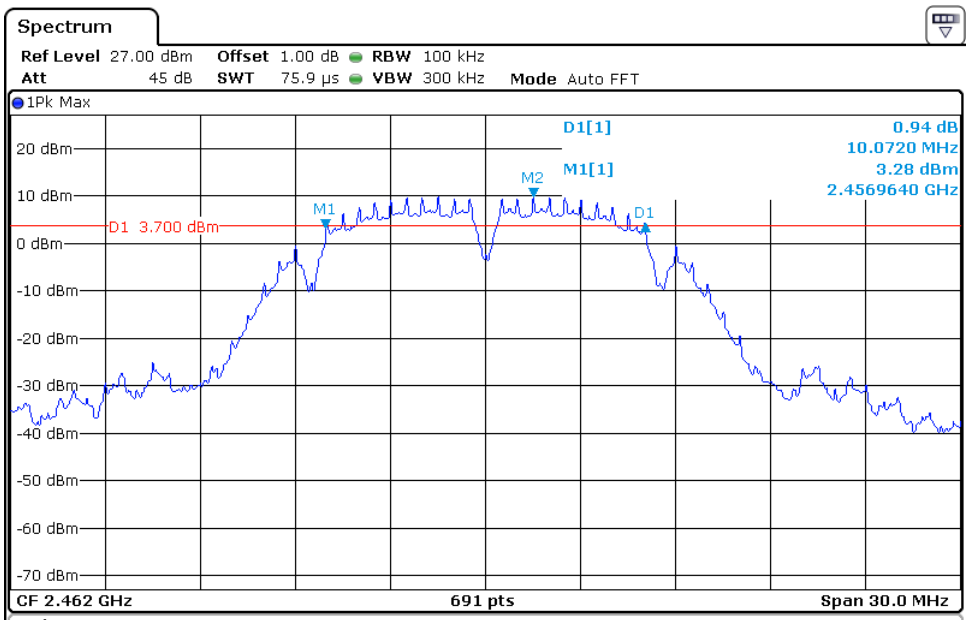

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -0.28 dB
35.6870 MHz
M1[1] -2.27 dBm
2.4191130 GHz
D1 -1.810 dBm
CF 2.437 GHz
691 pts
Span 60.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.419113 GHz -2.27 dBm
D1 M1 1 35.687 MHz -0.28 dB
M2 1 2.431964 GHz 4.19 dBm


Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 0.00 dB
35.6010 MHz
M1[1] -2.00 dBm
2.4342000 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
M2
D1 -1.880 dBm
CF 2.452 GHz
691 pts
Span 60.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.4342 GHz -2.00 dBm
D1 M1 1 35.601 MHz 0.00 dB
M2 1 2.446964 GHz 4.12 dBm

SISO Mode, Ant2:
802.11b



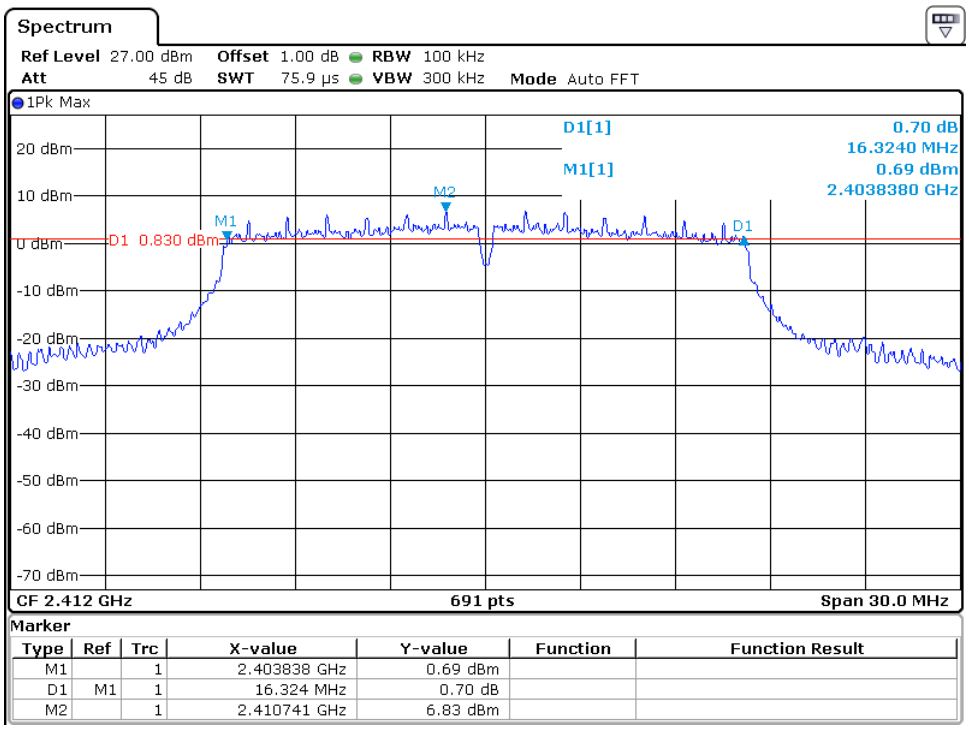


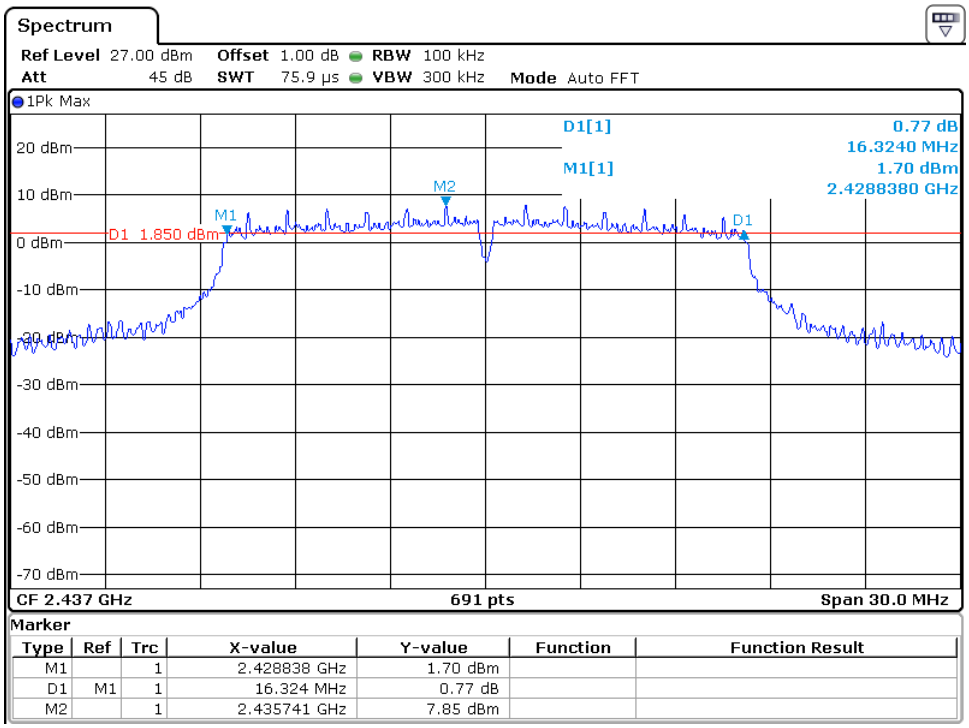


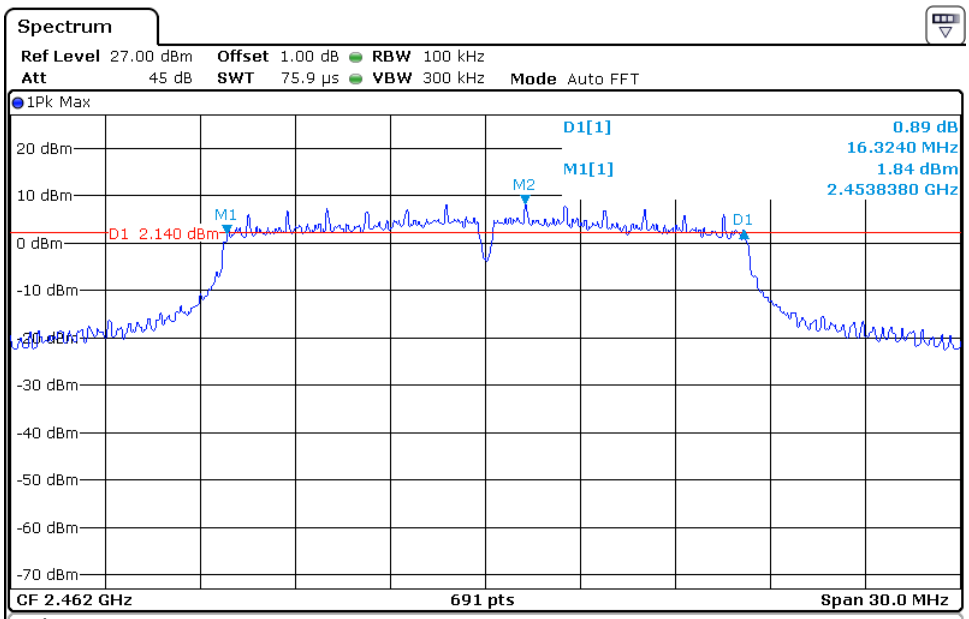
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.456964 GHz	3.28 dBm		
D1	M1	1	10.072 MHz	0.94 dB		
M2		1	2.46352 GHz	9.70 dBm		

802.11g


Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 0.70 dB
16.3240 MHz
M1[1] 0.69 dBm
2.4038380 GHz
D1 0.830 dBm
CF 2.412 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.403838 GHz 0.69 dBm
D1 M1 1 16.324 MHz 0.70 dB
M2 1 2.410741 GHz 6.83 dBm

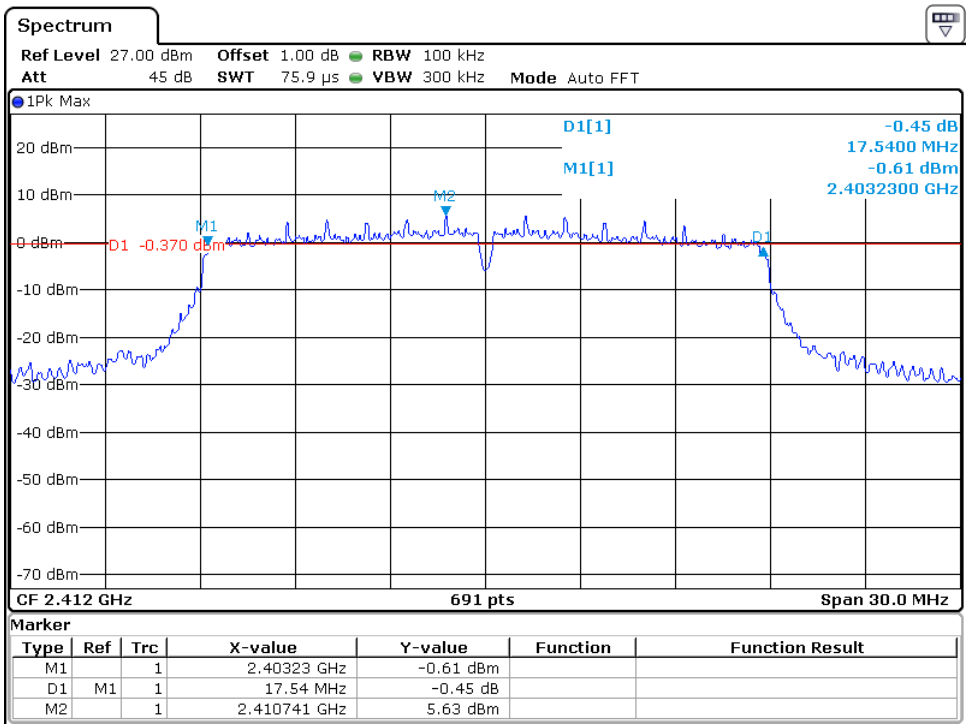

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 0.77 dB
16.3240 MHz
M1[1] 1.70 dBm
2.4288380 GHz
D1 1.850 dBm
CF 2.437 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.428838 GHz 1.70 dBm
D1 M1 1 16.324 MHz 0.77 dB
M2 1 2.435741 GHz 7.85 dBm

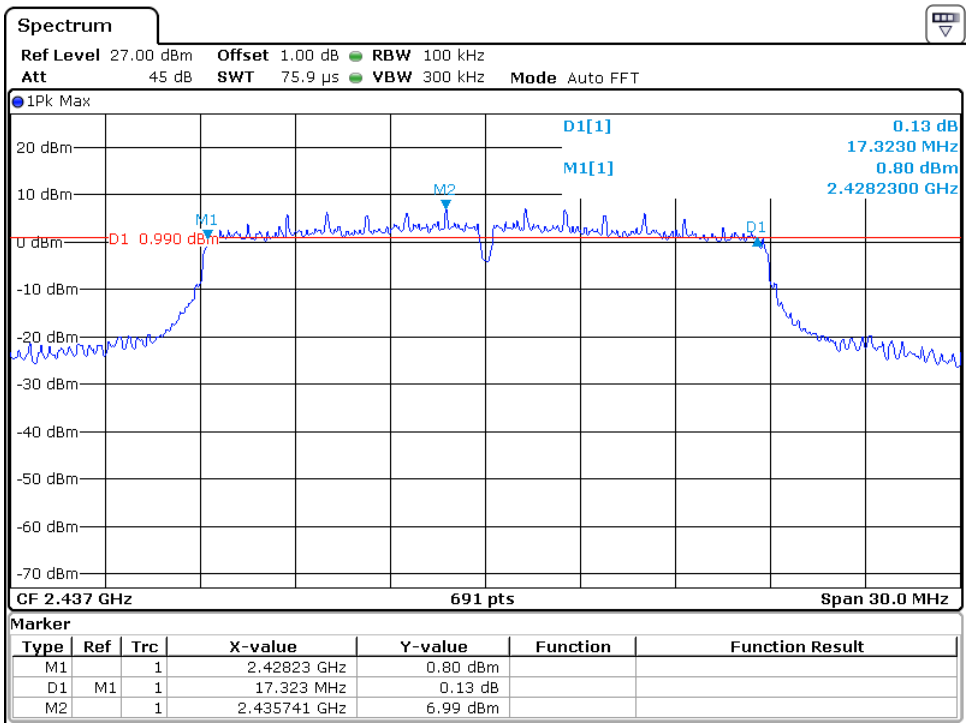


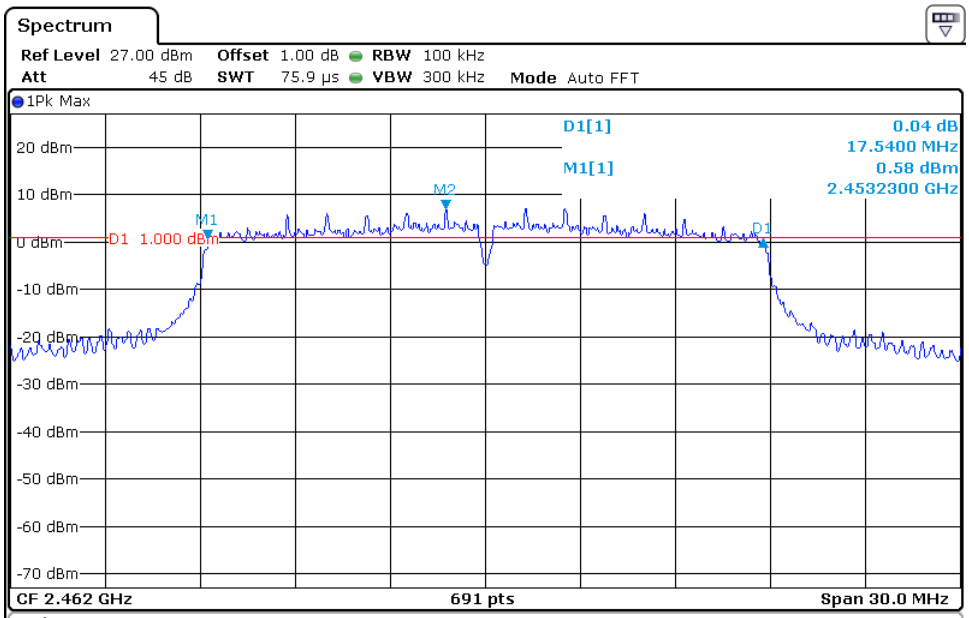
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.453838 GHz	1.84 dBm		
D1	M1	1	16.324 MHz	0.89 dB		
M2		1	2.463259 GHz	8.14 dBm		

802.11n-HT20


Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -0.45 dB
17.5400 MHz
M1[1] -0.61 dBm
2.4032300 GHz
D1 -0.370 dBm
CF 2.412 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.40323 GHz -0.61 dBm
D1 M1 1 17.54 MHz -0.45 dB
M2 1 2.410741 GHz 5.63 dBm

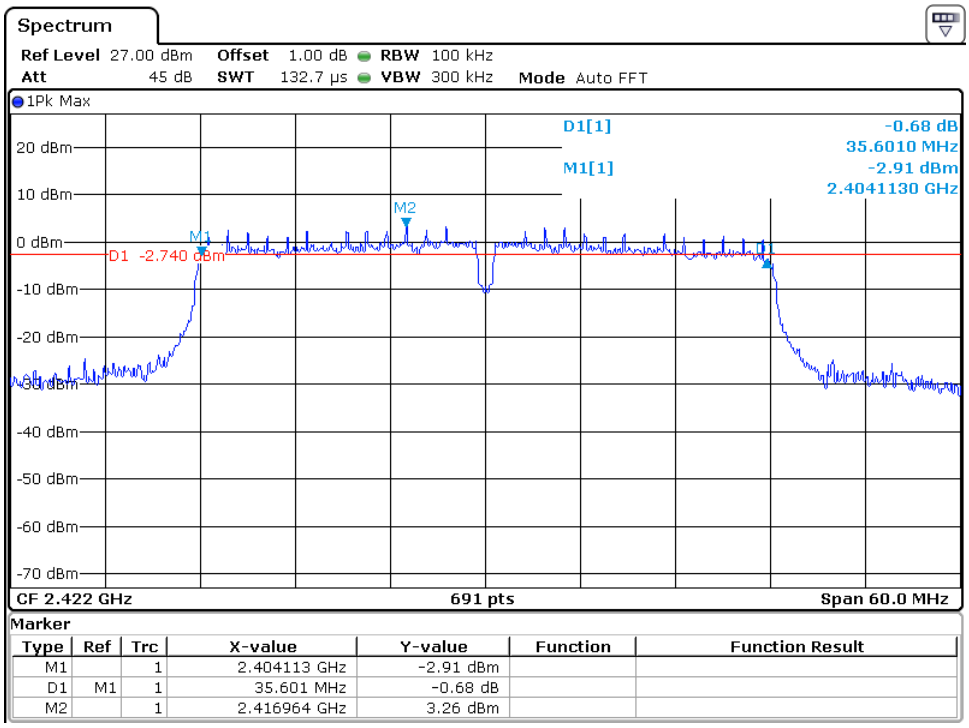

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 0.13 dB
17.3230 MHz
M1[1] 0.80 dBm
2.4282300 GHz
D1 0.990 dBm
CF 2.437 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.42823 GHz 0.80 dBm
D1 M1 1 17.323 MHz 0.13 dB
M2 1 2.435741 GHz 6.99 dBm

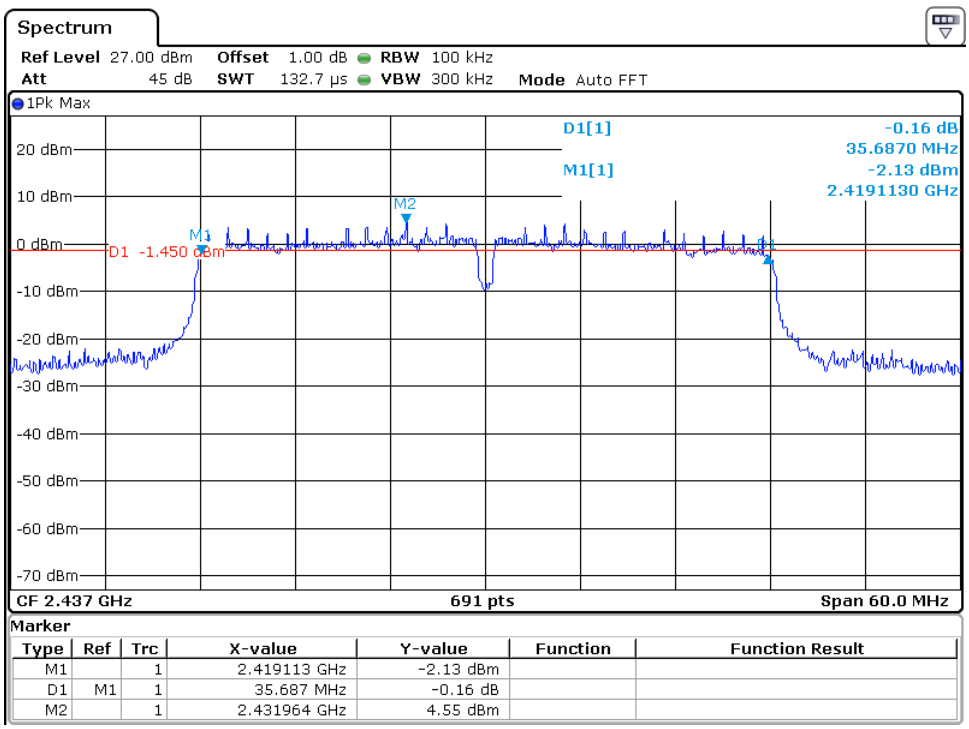


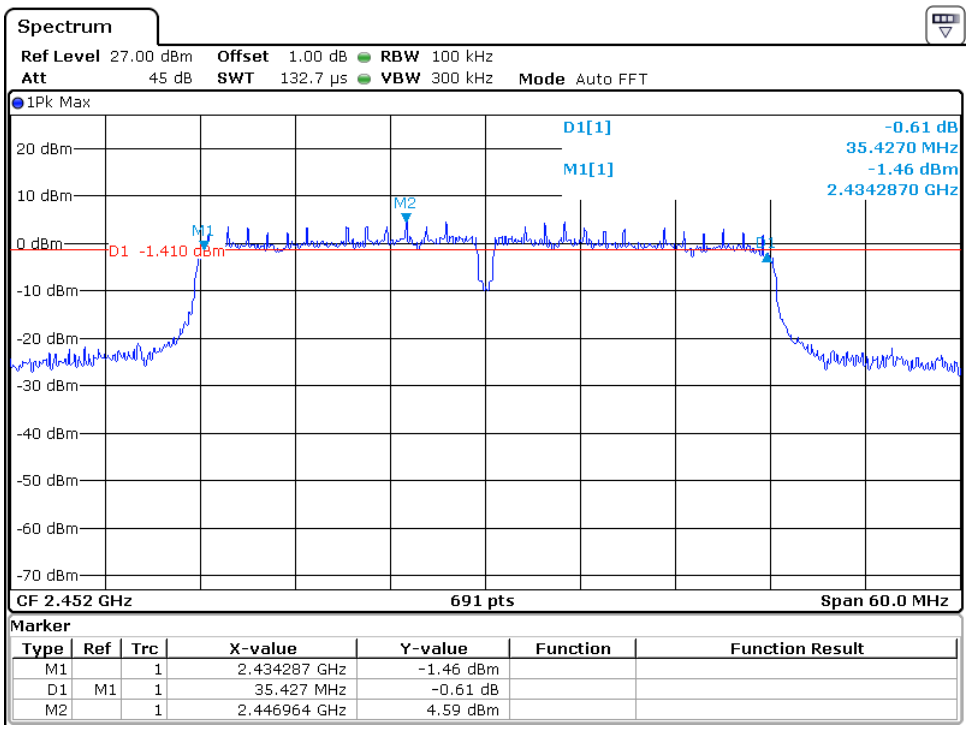
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.45323 GHz	0.58 dBm		
D1	M1	1	17.54 MHz	0.04 dB		
M2		1	2.460741 GHz	7.00 dBm		

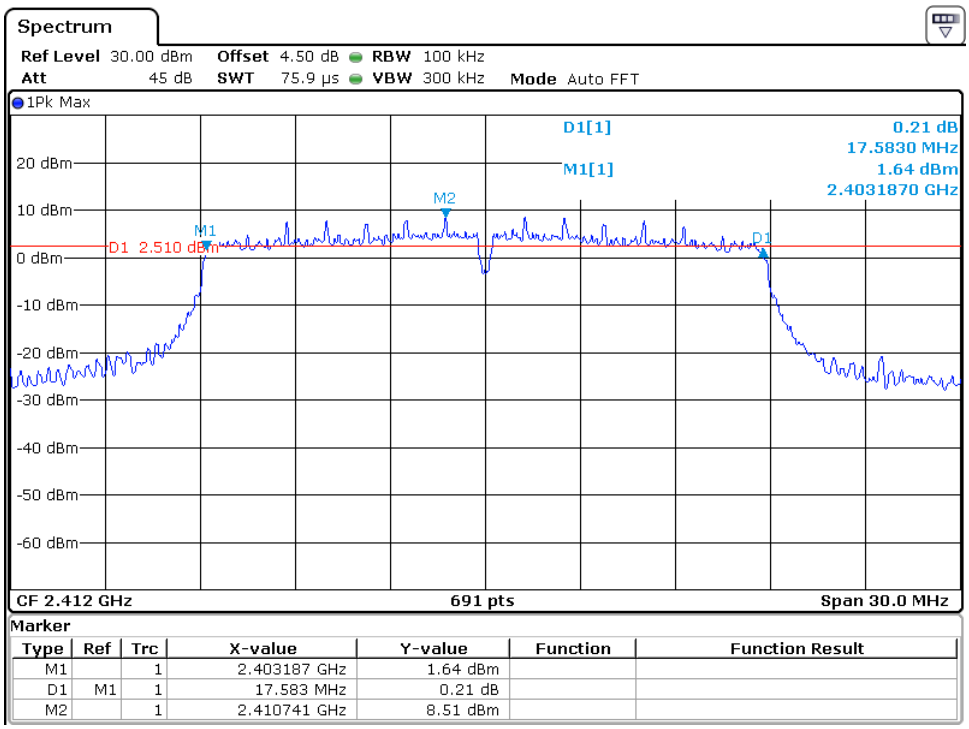
802.11n-HT40


Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -0.68 dB
35.6010 MHz
M1[1] -2.91 dBm
2.4041130 GHz
D1 -2.740 dBm
CF 2.422 GHz
691 pts
Span 60.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.404113 GHz -2.91 dBm
D1 M1 1 35.601 MHz -0.68 dB
M2 1 2.416964 GHz 3.26 dBm


Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -0.16 dB
35.6870 MHz
M1[1] -2.13 dBm
2.4191130 GHz
D1 -1.450 dBm
CF 2.437 GHz
691 pts
Span 60.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.419113 GHz -2.13 dBm
D1 M1 1 35.687 MHz -0.16 dB
M2 1 2.431964 GHz 4.55 dBm

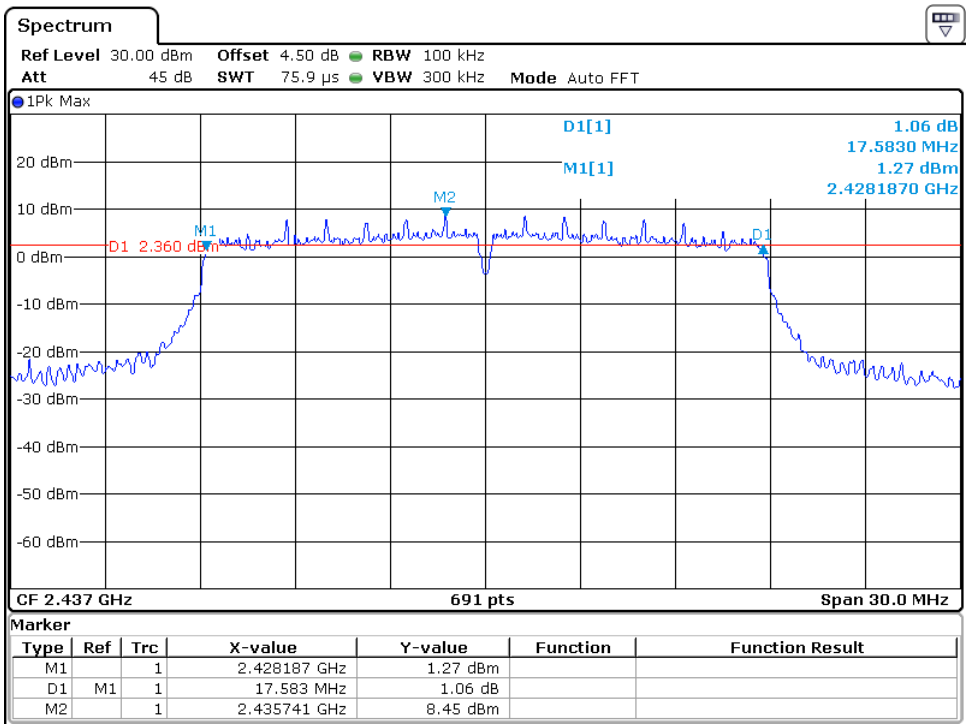

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -0.61 dB
35.4270 MHz
M1[1] -1.46 dBm
2.4342870 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
M2
D1 -1.410 dBm
CF 2.452 GHz
691 pts
Span 60.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.434287 GHz -1.46 dBm
D1 M1 1 35.427 MHz -0.61 dB
M2 1 2.446964 GHz 4.59 dBm

MIMO Mode：
802.11n-HT20



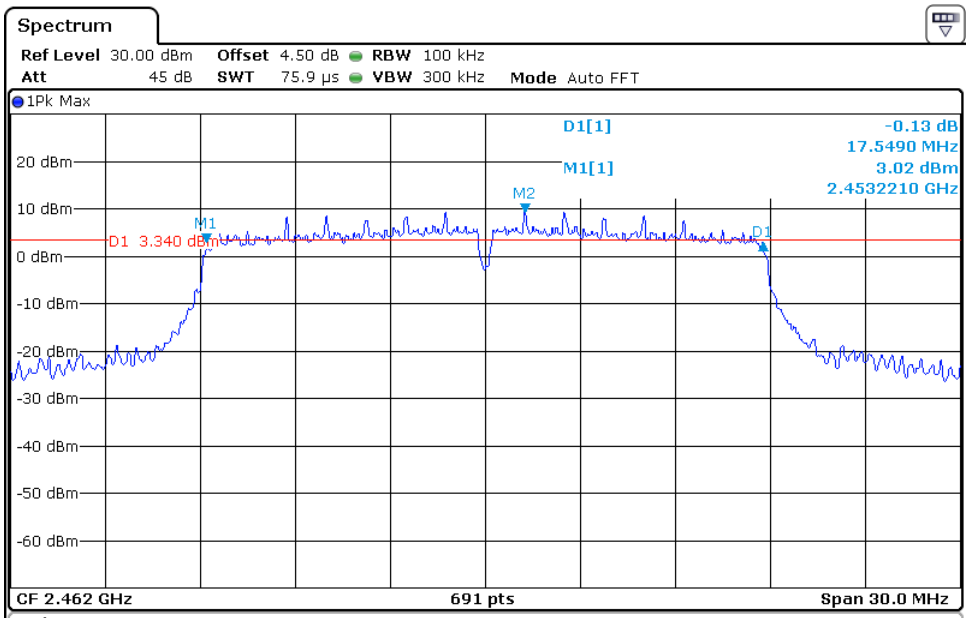
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.403187 GHz	1.64 dBm		
D1	M1	1	17.583 MHz	0.21 dB		
M2		1	2.410741 GHz	8.51 dBm		



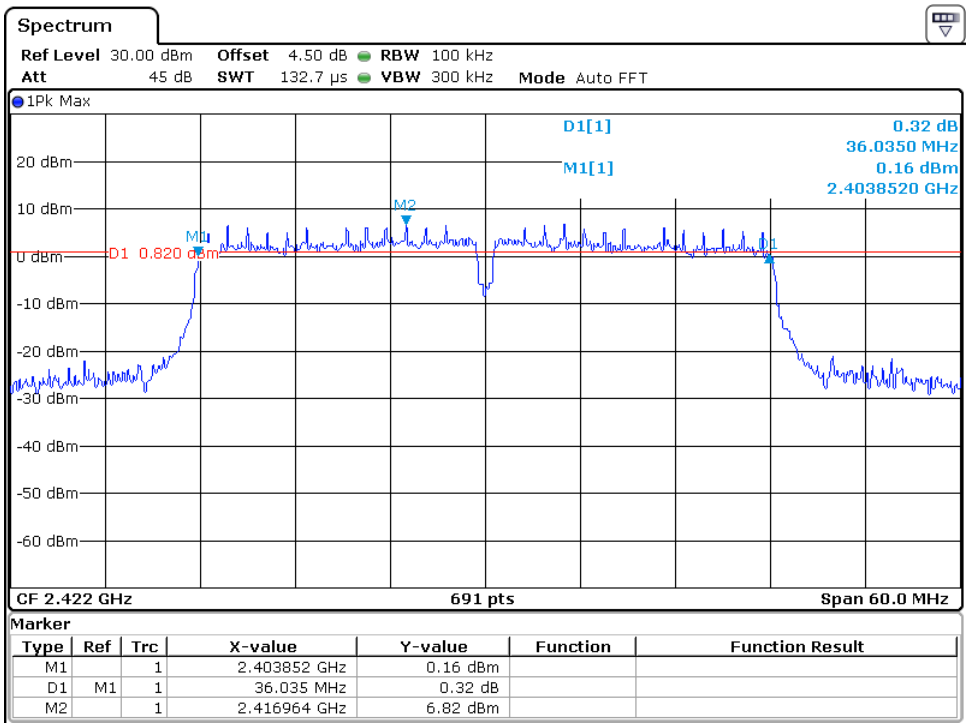
Marker

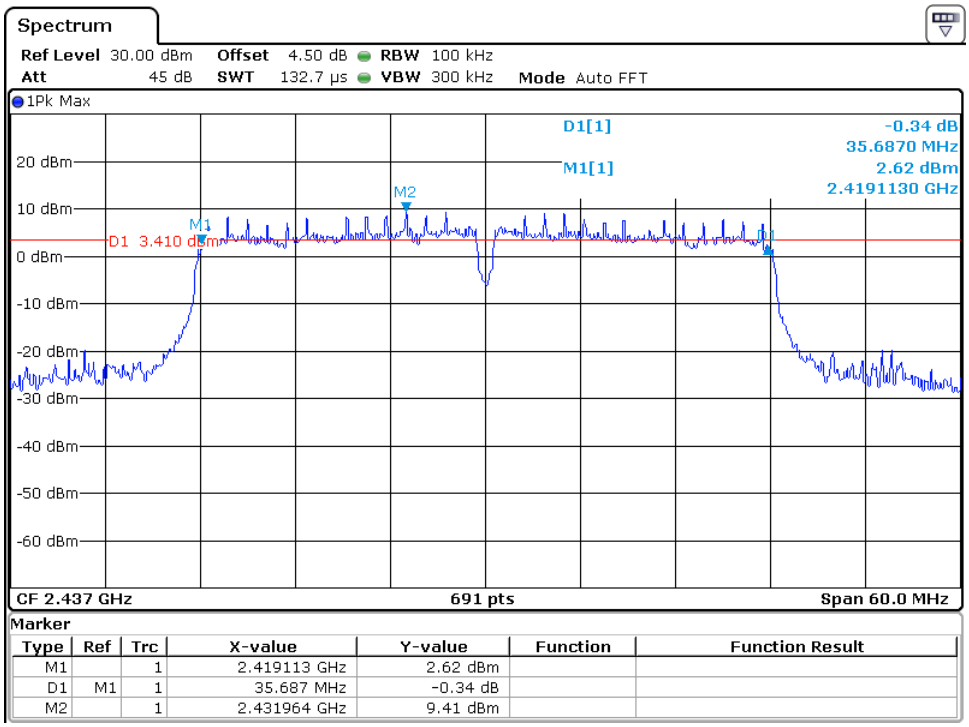
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.428187 GHz	1.27 dBm		
D1	M1	1	17.583 MHz	1.06 dB		
M2		1	2.435741 GHz	8.45 dBm		

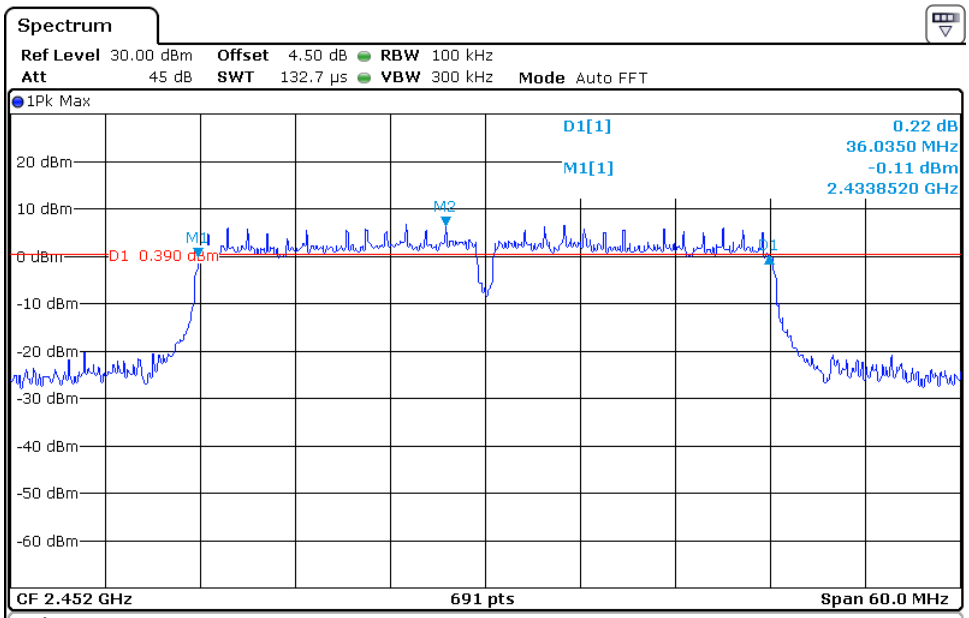


Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.453221 GHz	3.02 dBm		
D1	M1	1	17.549 MHz	-0.13 dB		
M2		1	2.463259 GHz	9.34 dBm		

802.11n-HT40


Spectrum
Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz
Att 45 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 0.32 dB
36.0350 MHz
M1[1] 0.16 dBm
2.4038520 GHz
D1 0.820 dBm
CF 2.422 GHz
691 pts
Span 60.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.403852 GHz 0.16 dBm
D1 M1 1 36.035 MHz 0.32 dB
M2 1 2.416964 GHz 6.82 dBm


Spectrum
Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz
Att 45 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -0.34 dB
35.6870 MHz
M1[1] 2.62 dBm
2.4191130 GHz
D1 3.410 dBm
CF 2.437 GHz
691 pts
Span 60.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.419113 GHz 2.62 dBm
D1 M1 1 35.687 MHz -0.34 dB
M2 1 2.431964 GHz 9.41 dBm


Spectrum
Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz
Att 45 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 0.22 dB
36.0350 MHz
M1[1] -0.11 dBm
2.4338520 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
M1
M2
D1 0.390 dBm
CF 2.452 GHz
691 pts
Span 60.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.433852 GHz -0.11 dBm
D1 M1 1 36.035 MHz 0.22 dB
M2 1 2.449482 GHz 6.39 dBm

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10

4.3 Maximum Power Density Reading, FCC Rule 15.247(e):

The Measurement Procedure PKPSD was set according to the FCC KDB 558074 D01 v04.

Antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

Limit: The Power Density does not exceed 8dBm/3 kHz.

SISO Mode, Ant1：

IEEE 802.11b (CCK, 1Mbps)	
Frequency (MHz)	Power Density with RBW 3KHz
2412	-3.77
2437	-3.50
2462	-3.21

IEEE 802.11g (16QAM, 6Mbps)	
Frequency (MHz)	Power Density with RBW 3KHz
2412	-5.27
2437	-5.55
2462	-5.38

IEEE 802.11n-HT20 (16QAM, 6.5Mbps)	
Frequency (MHz)	Power Density with RBW 3KHz
2412	-6.77
2437	-6.26
2462	-5.72

IEEE 802.11n-HT40 (64QAM, 13.5Mbps)	
Frequency (MHz)	Power Density with RBW 3KHz
2422	-9.60
2437	-9.33
2452	-9.73

SISO Mode, Ant2：

IEEE 802.11b (CCK, 1Mbps)	
Frequency (MHz)	Power Density with RBW 3KHz
2412	-4.38
2437	-4.86
2462	-4.90

IEEE 802.11g (16QAM, 6Mbps)	
Frequency (MHz)	Power Density with RBW 3KHz
2412	-6.41
2437	-5.50
2462	-6.09

IEEE 802.11n-HT20 (16QAM, 6.5Mbps)	
Frequency (MHz)	Power Density with RBW 3KHz
2412	-6.29
2437	-5.67
2462	-5.43

IEEE 802.11n-HT40 (64QAM, 13.5Mbps)	
Frequency (MHz)	Power Density with RBW 3KHz
2422	-9.63
2437	-9.83
2452	-10.28

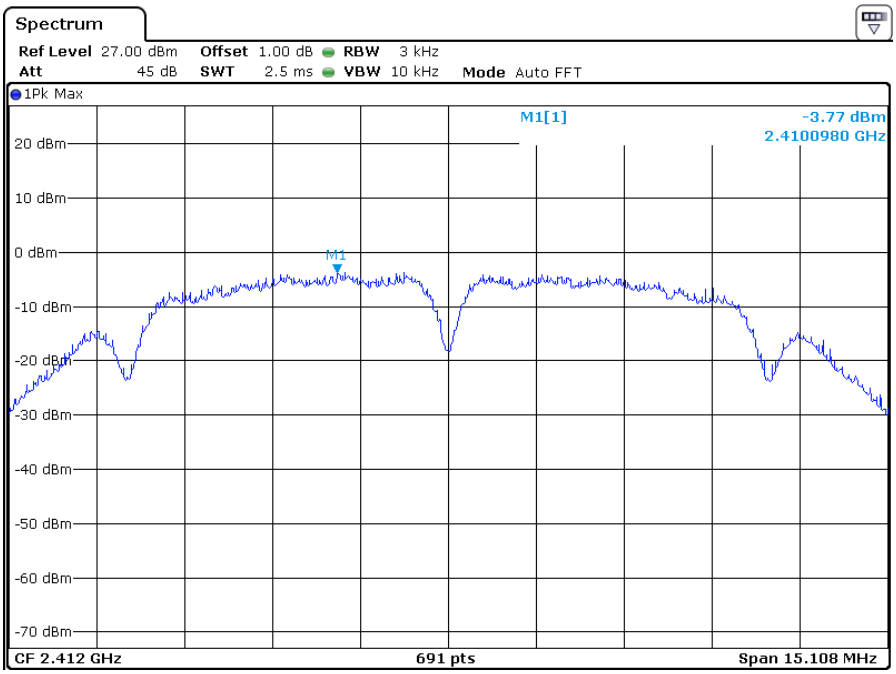
MIMO Mode：

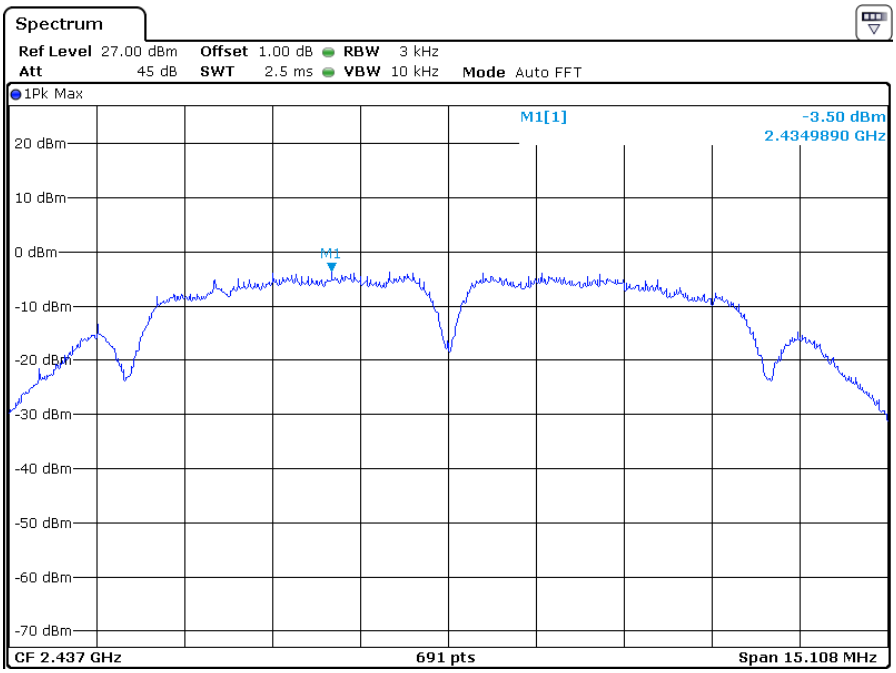
IEEE 802.11n-HT20 (16QAM, 6.5Mbps)			
Frequency (MHz)	Power Density with RBW 3KHz		Power Density with RBW 3KHz
	Ant1	Ant2	Total
2412	-6.86	-8.92	-4.76
2437	-5.88	-7.14	-3.45
2462	-6.43	-7.61	-3.97

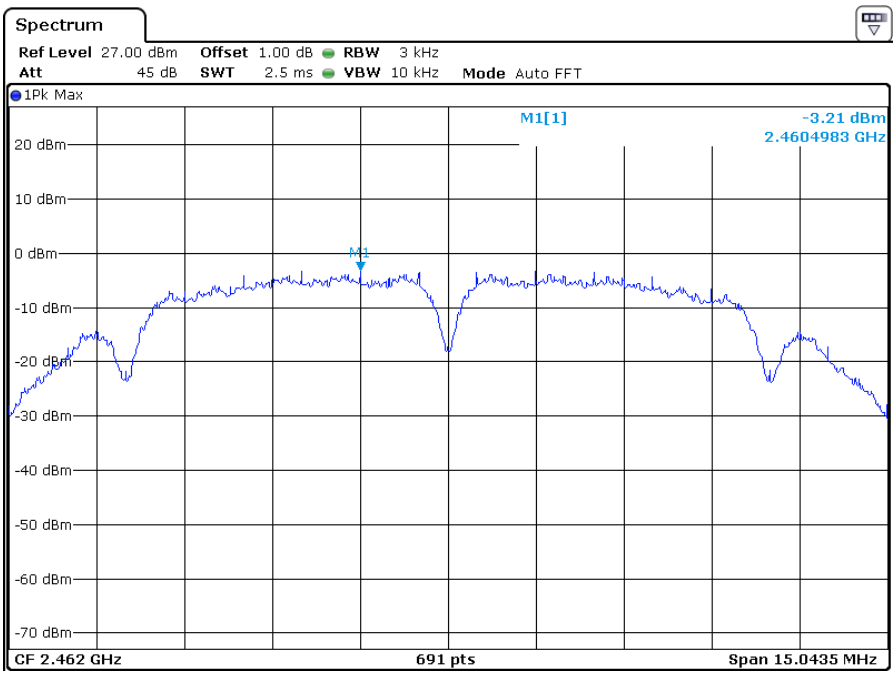
IEEE 802.11n-HT40 (64QAM, 13.5Mbps)			
Frequency (MHz)	Power Density with RBW 3KHz		Power Density with RBW 3KHz
	Ant1	Ant2	Total
2422	-9.48	-11.71	-7.44
2437	-8.26	-8.52	-5.38
2452	-9.10	-9.25	-6.16

The test plots are attached as below.

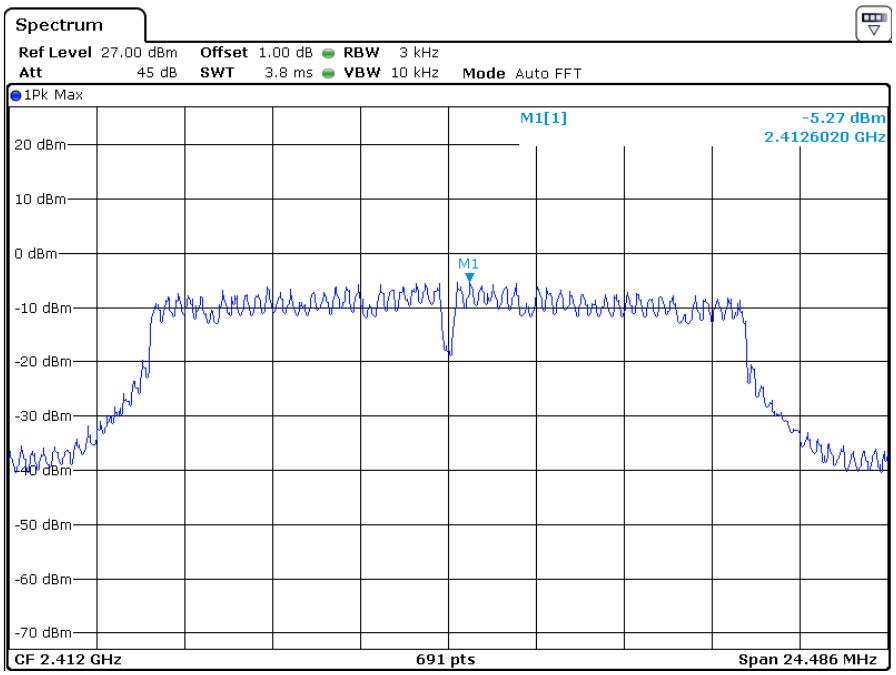
SISO Mode, Ant1:
802.11b

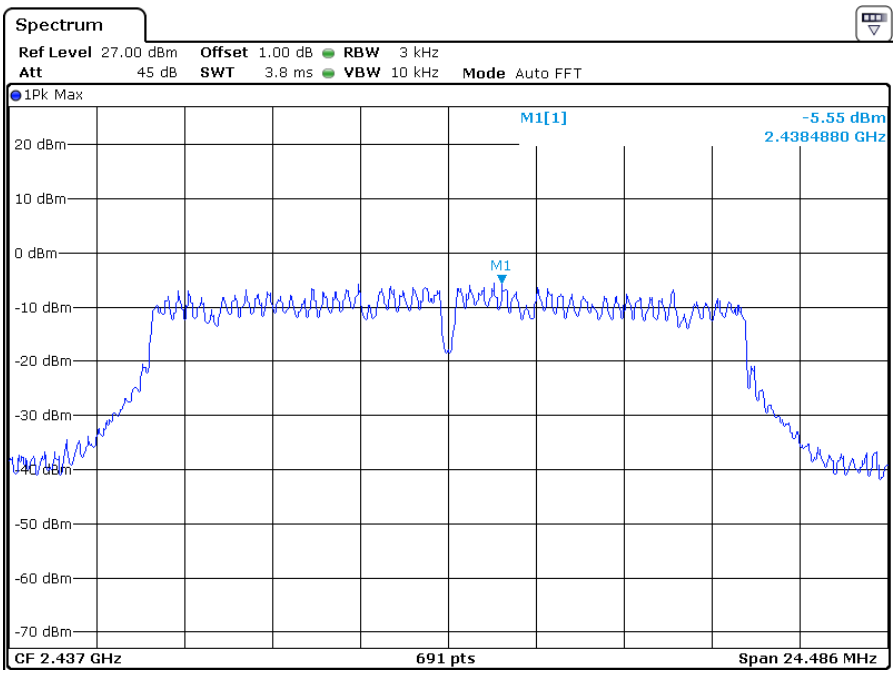


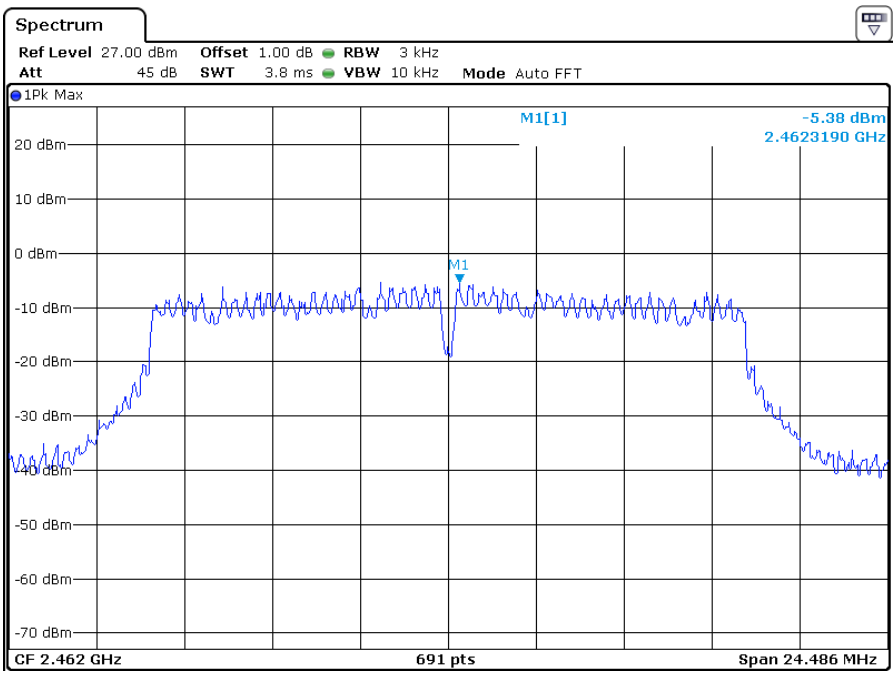

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 3 kHz
Att 45 dB SWT 2.5 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -3.50 dBm
2.4349890 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.437 GHz
691 pts
Span 15.108 MHz


Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 3 kHz
Att 45 dB SWT 2.5 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -3.21 dBm
2.4604983 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.462 GHz
691 pts
Span 15.0435 MHz

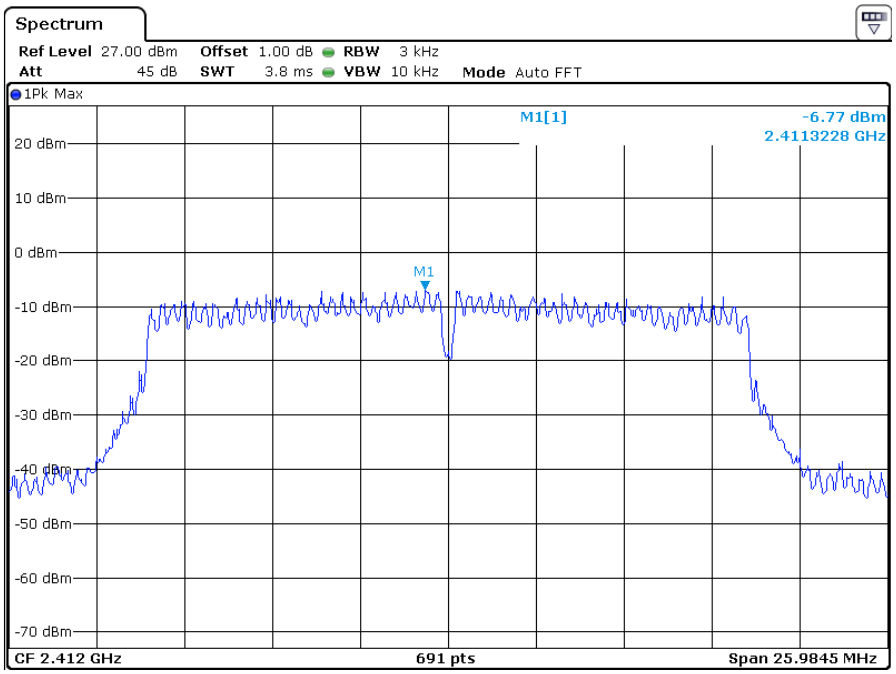
802.11g

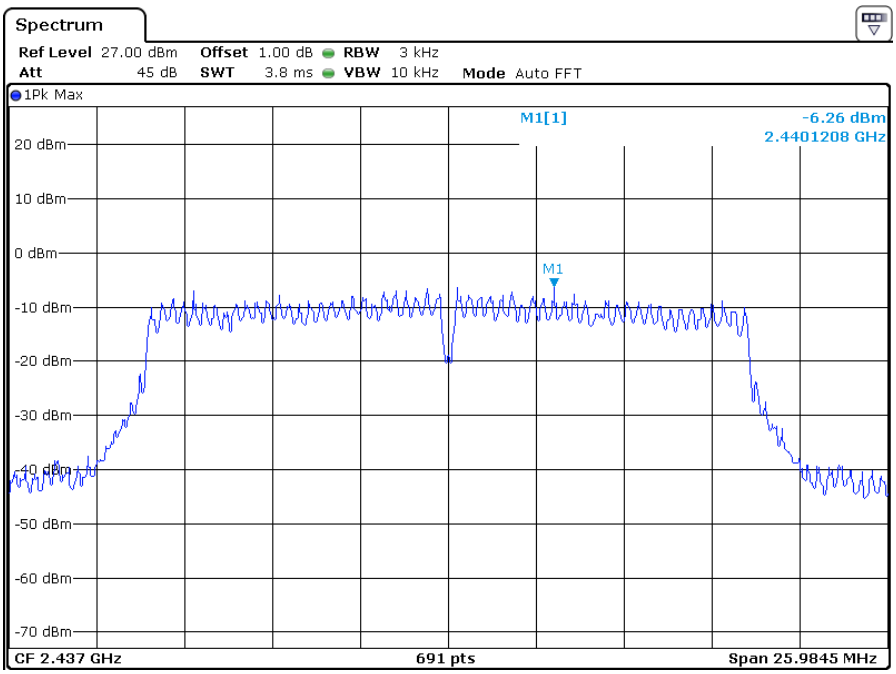

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 3 kHz
Att 45 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -5.27 dBm
2.4126020 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.412 GHz
691 pts
Span 24.486 MHz

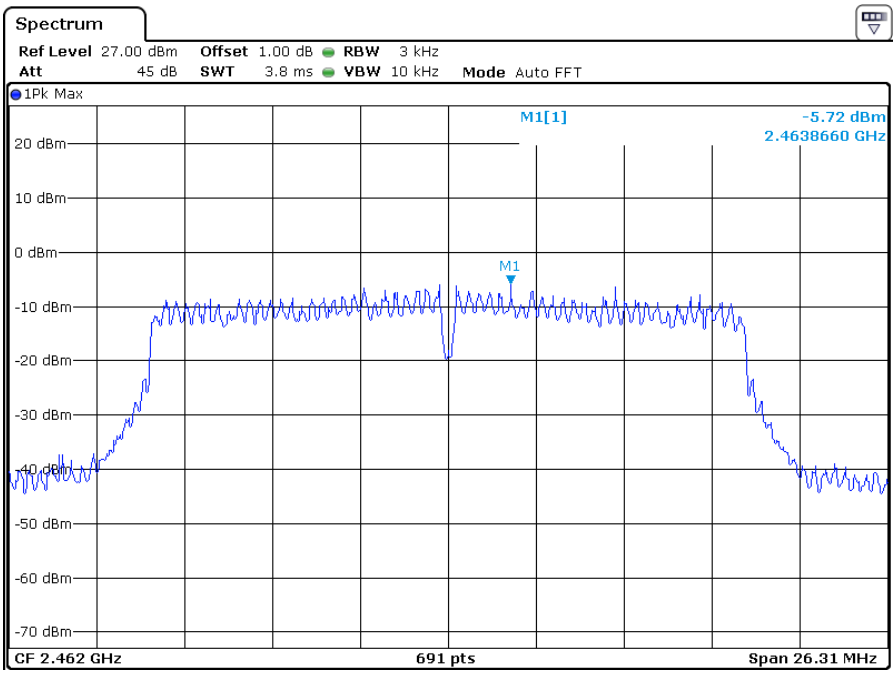

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 3 kHz
Att 45 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -5.55 dBm
2.4384880 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.437 GHz
691 pts
Span 24.486 MHz


Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 3 kHz
Att 45 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -5.38 dBm
2.4623190 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.462 GHz
691 pts
Span 24.486 MHz

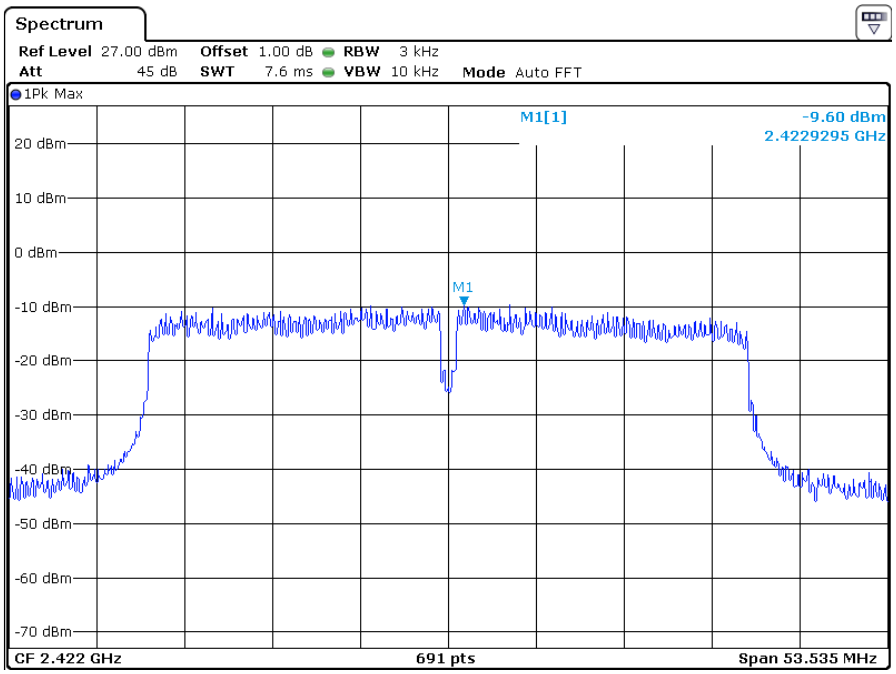
802.11n-HT20

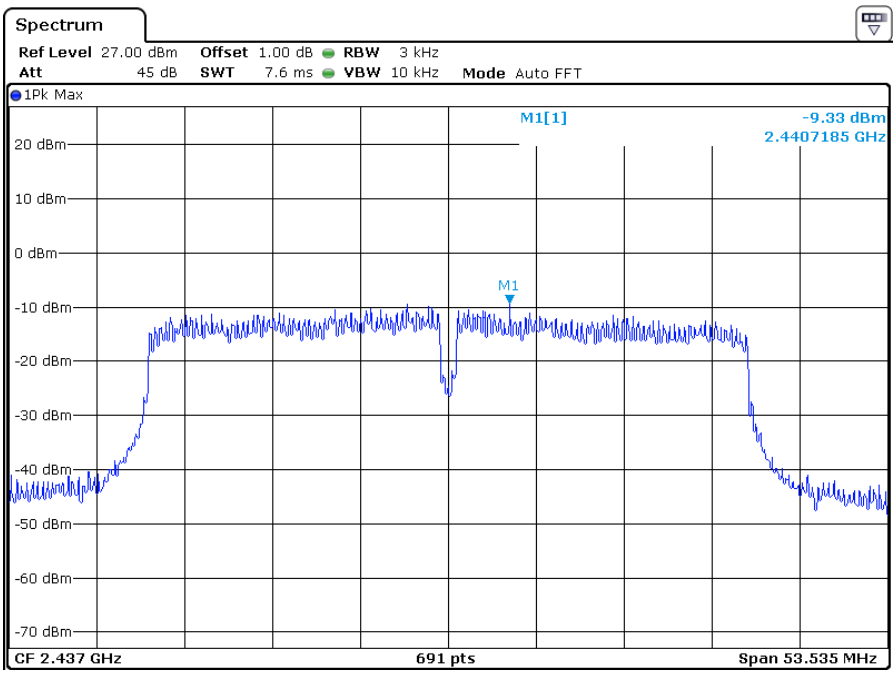

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 3 kHz
Att 45 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -6.77 dBm
2.4113228 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.412 GHz
691 pts
Span 25.9845 MHz

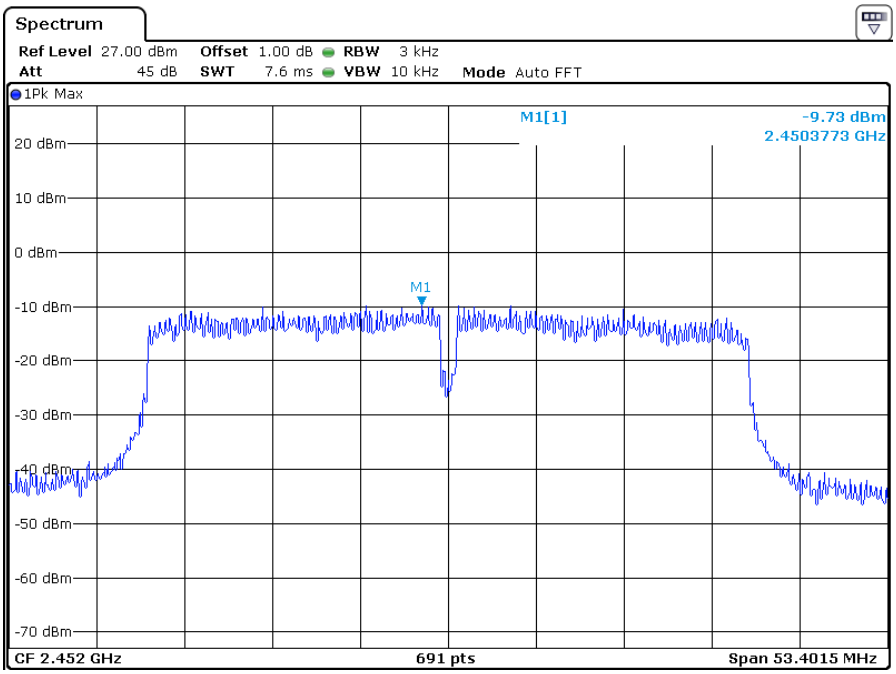

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 3 kHz
Att 45 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -6.26 dBm
2.4401208 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.437 GHz
691 pts
Span 25.9845 MHz


Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 3 kHz
Att 45 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1]
-5.72 dBm
2.4638660 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.462 GHz
691 pts
Span 26.31 MHz

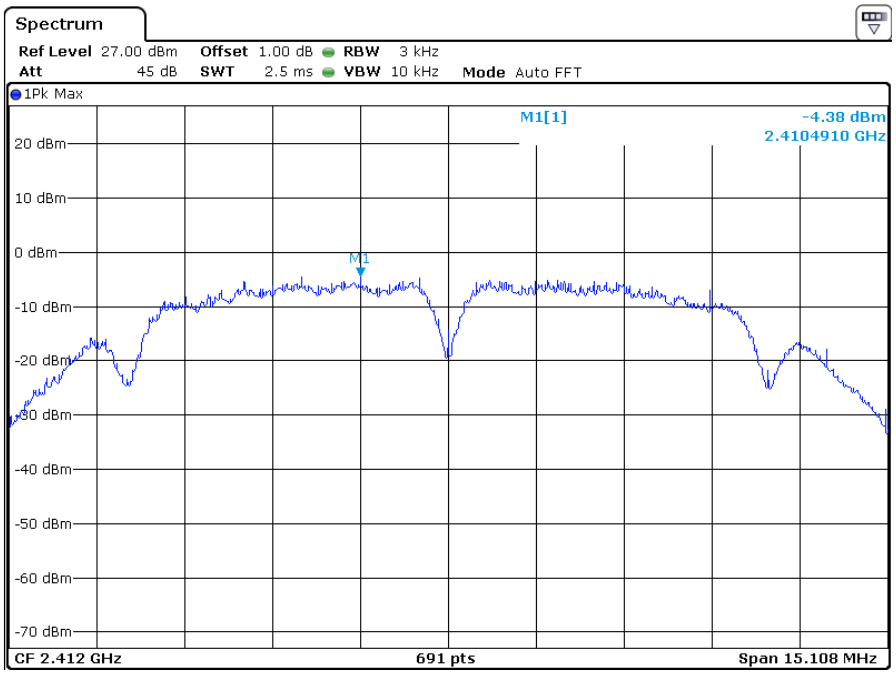
802.11n-HT40

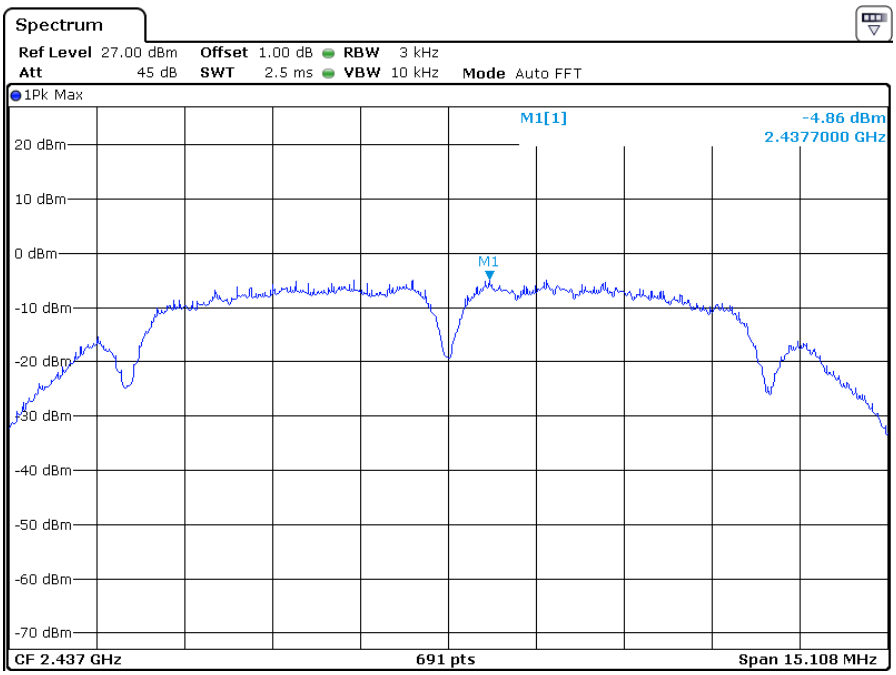

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 3 kHz
Att 45 dB SWT 7.6 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -9.60 dBm
2.4229295 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.422 GHz
691 pts
Span 53.535 MHz

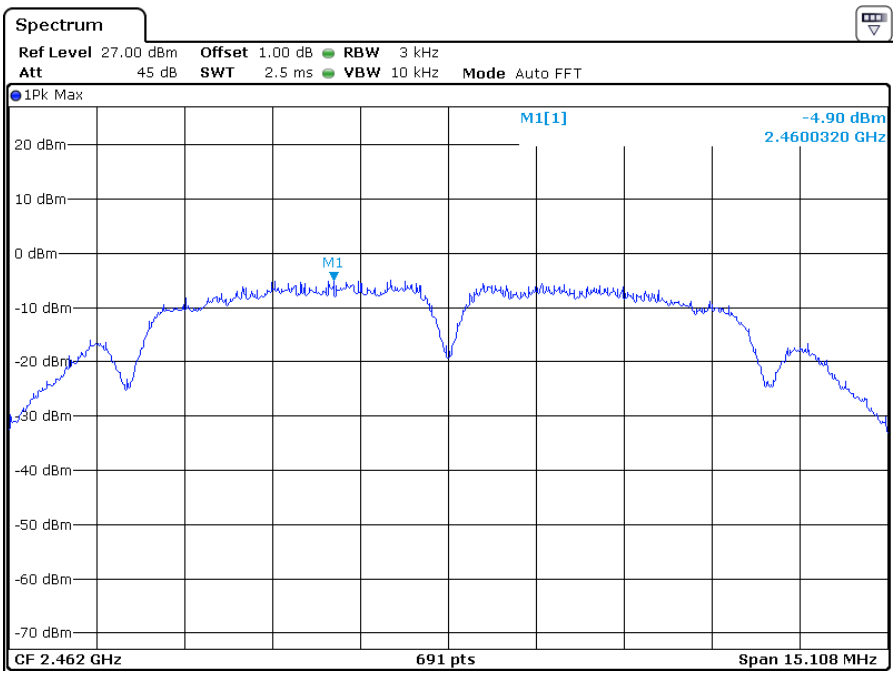

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 3 kHz
Att 45 dB SWT 7.6 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -9.33 dBm
2.4407185 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.437 GHz
691 pts
Span 53.535 MHz


Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 3 kHz
Att 45 dB SWT 7.6 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1]
-9.73 dBm
2.4503773 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.452 GHz
691 pts
Span 53.4015 MHz

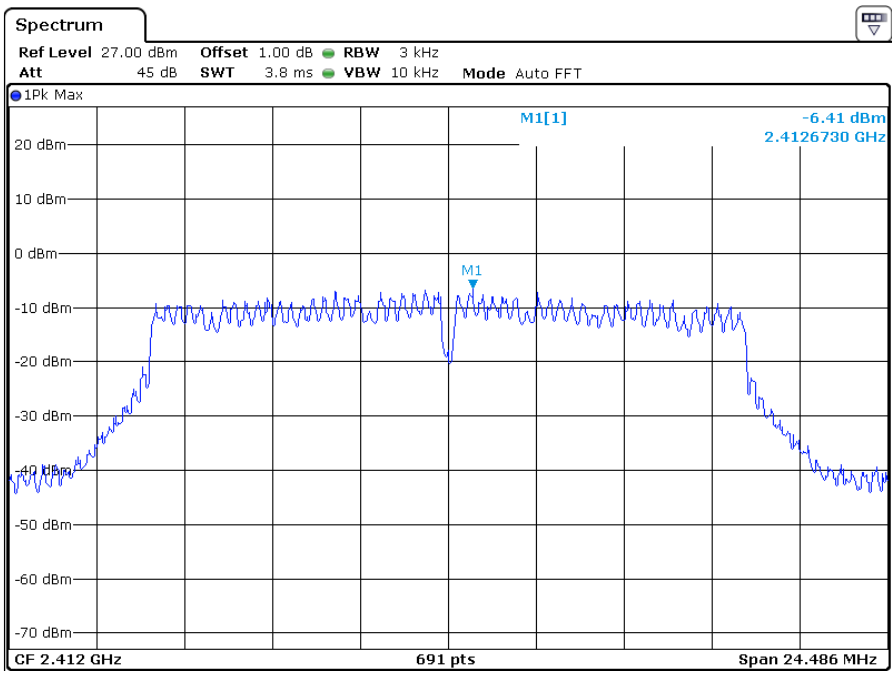
SISO Mode, Ant2:
802.11b

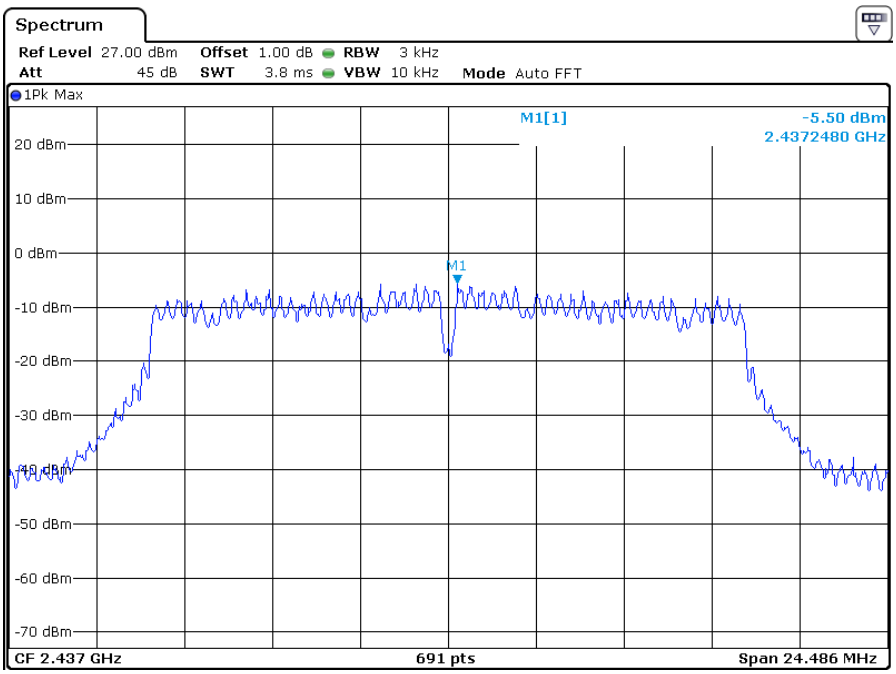


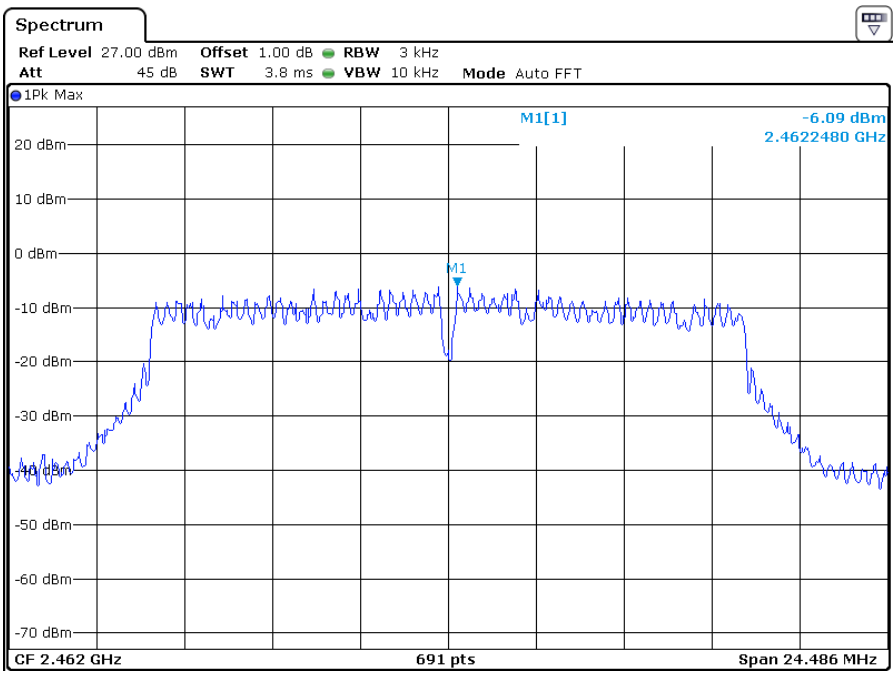



Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 3 kHz
Att 45 dB SWT 2.5 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1]
-4.90 dBm
2.4600320 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.462 GHz
691 pts
Span 15.108 MHz

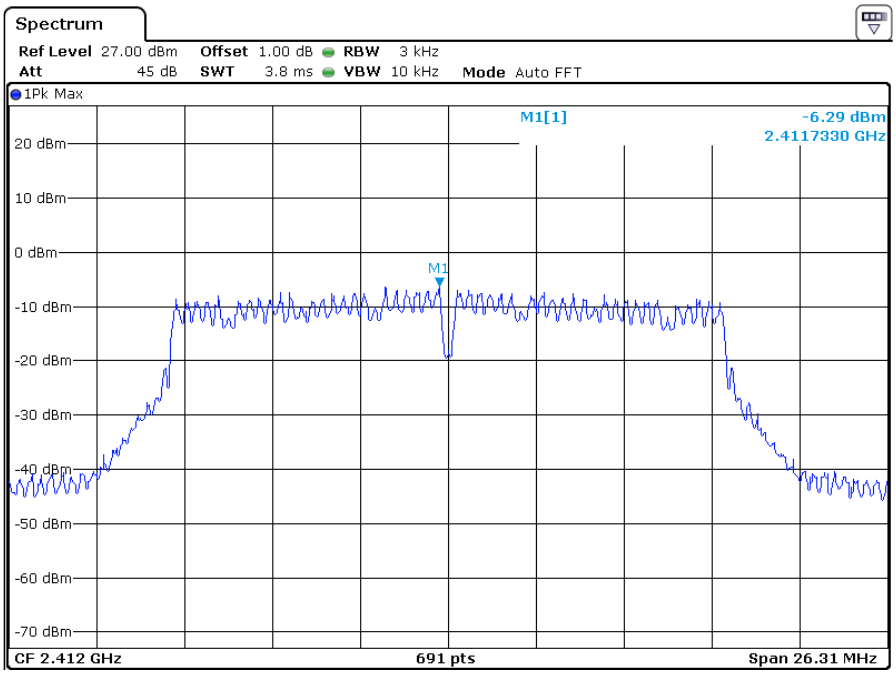
802.11g

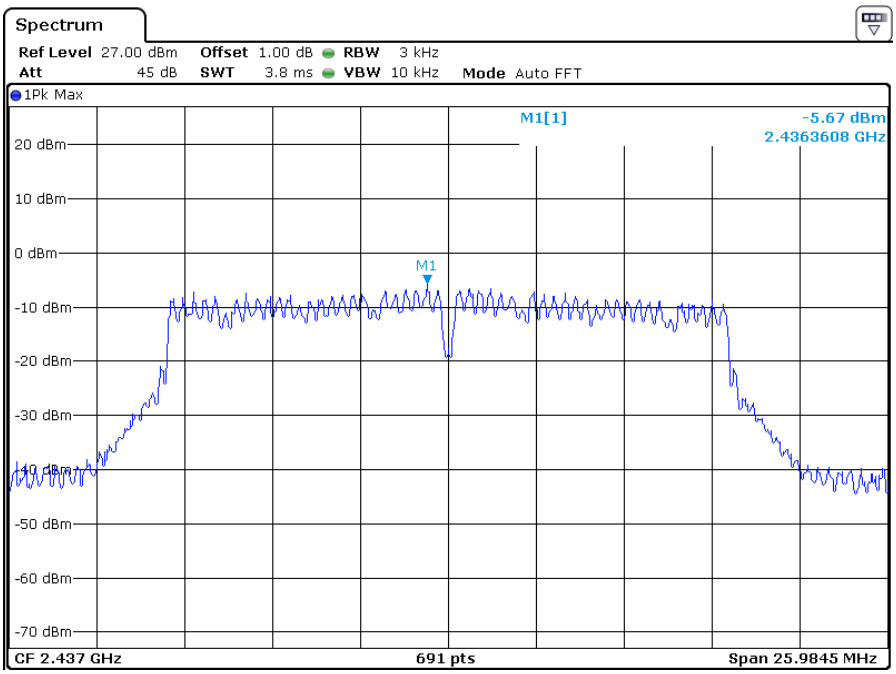

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 3 kHz
Att 45 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -6.41 dBm
2.4126730 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.412 GHz
691 pts
Span 24.486 MHz

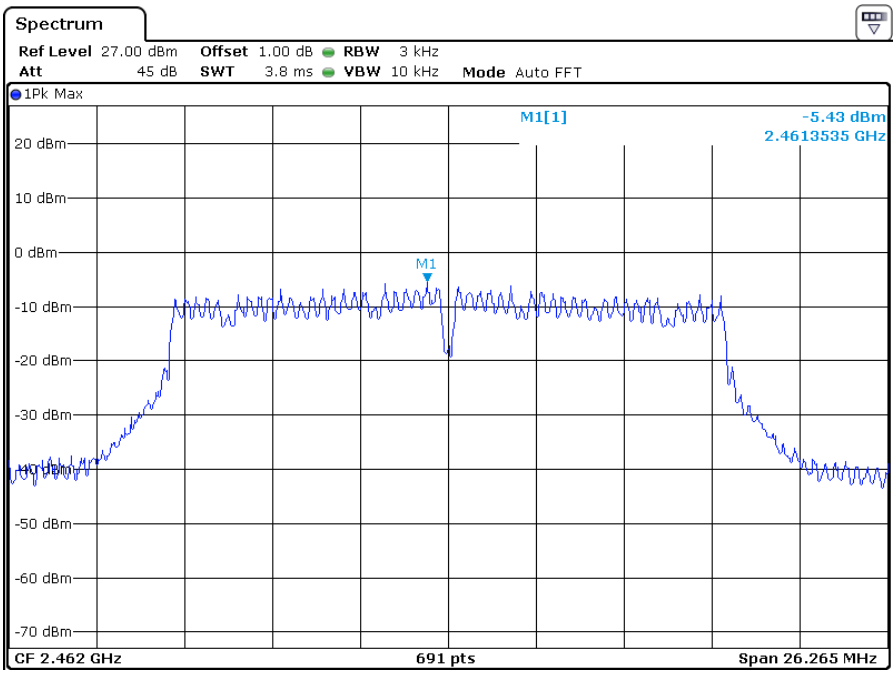

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 3 kHz
Att 45 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -5.50 dBm
2.4372480 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.437 GHz
691 pts
Span 24.486 MHz


Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 3 kHz
Att 45 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1]
-6.09 dBm
2.4622480 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.462 GHz
691 pts
Span 24.486 MHz

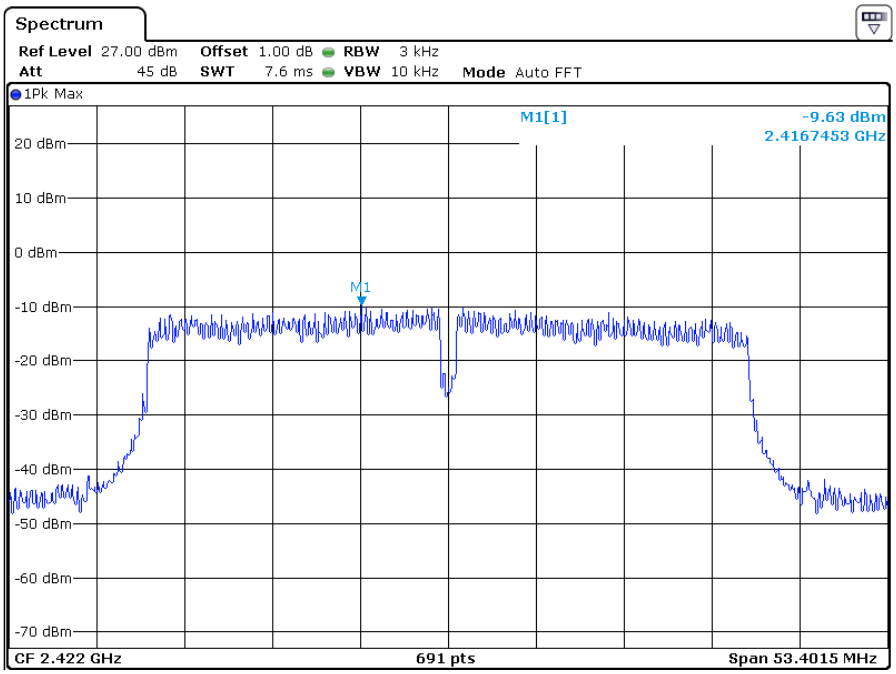
802.11n-HT20

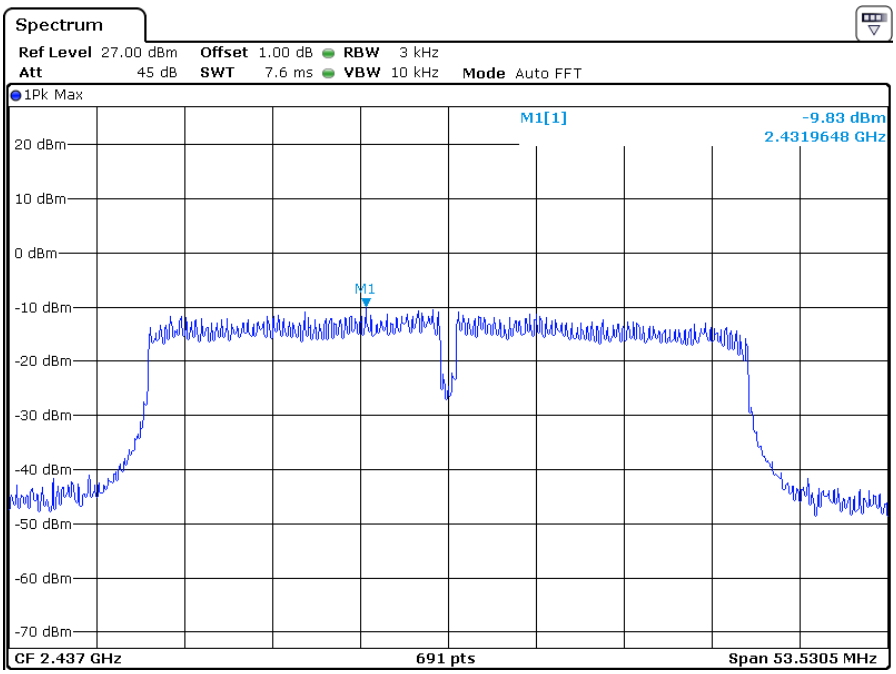

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 3 kHz
Att 45 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -6.29 dBm
2.4117330 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.412 GHz
691 pts
Span 26.31 MHz

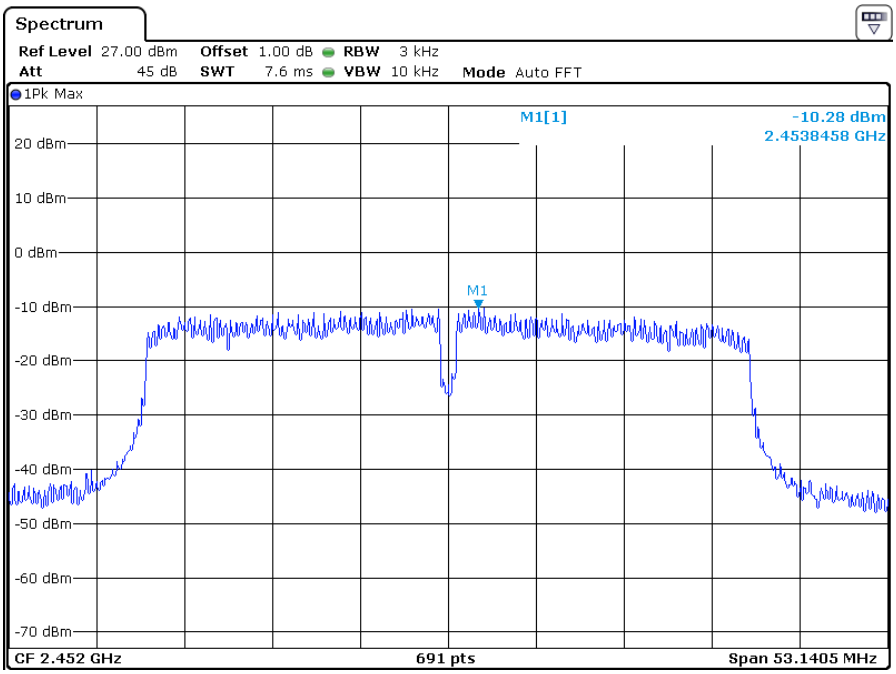

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 3 kHz
Att 45 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -5.67 dBm
2.4363608 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.437 GHz
691 pts
Span 25.9845 MHz


Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 3 kHz
Att 45 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1]
-5.43 dBm
2.4613535 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.462 GHz
691 pts
Span 26.265 MHz

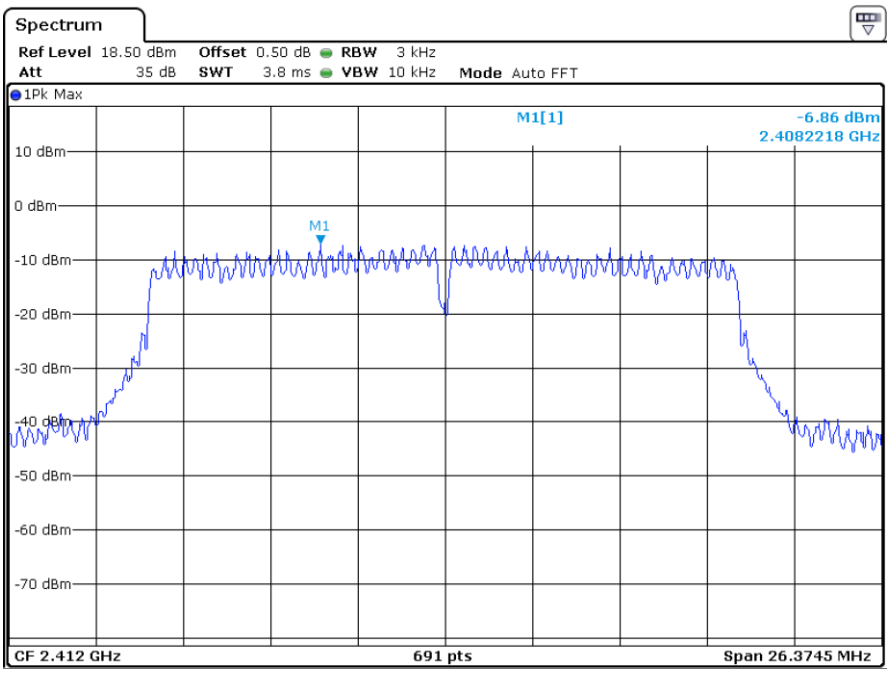
802.11n-HT40

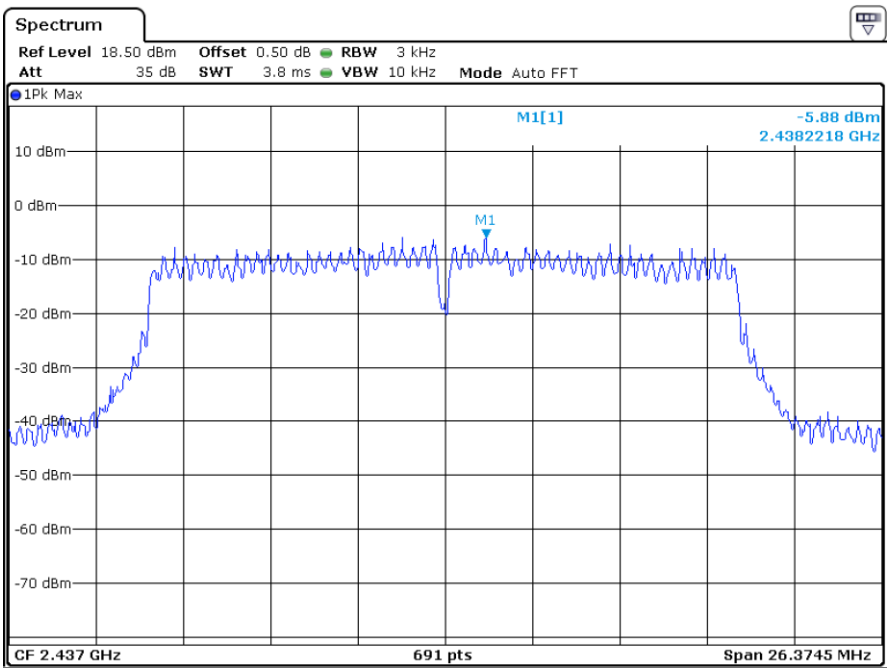

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 3 kHz
Att 45 dB SWT 7.6 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1]
-9.63 dBm
2.4167453 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.422 GHz
691 pts
Span 53.4015 MHz

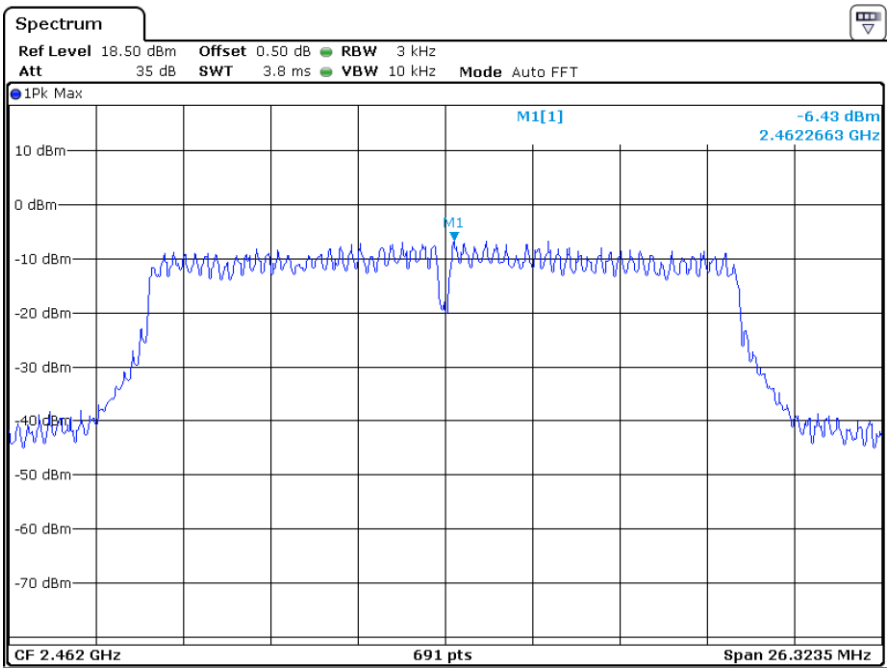

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 3 kHz
Att 45 dB SWT 7.6 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1]
-9.83 dBm
2.4319648 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.437 GHz
691 pts
Span 53.5305 MHz


Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 3 kHz
Att 45 dB SWT 7.6 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1]
-10.28 dBm
2.4538458 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.452 GHz
691 pts
Span 53.1405 MHz

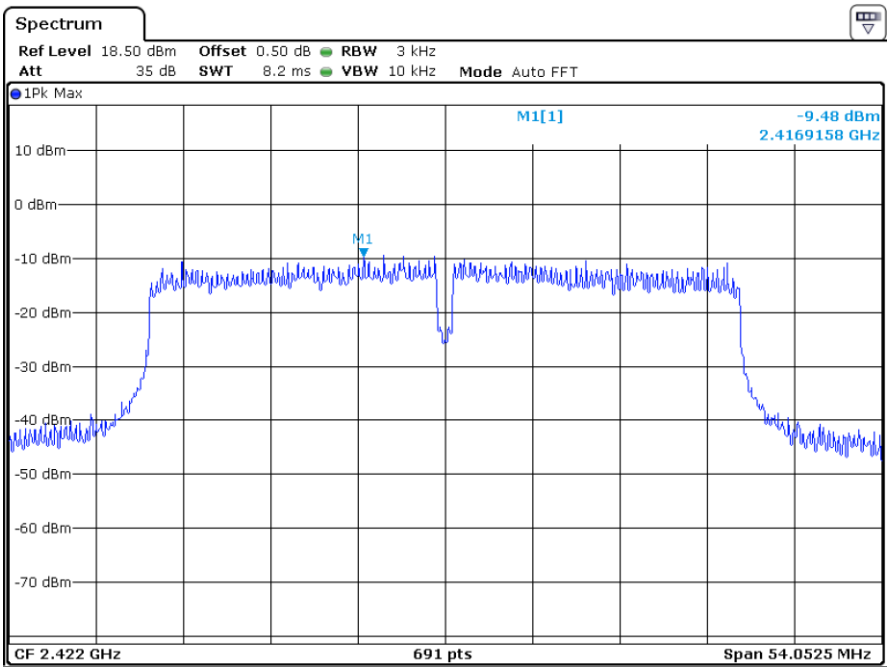
MIMO Mode, Ant1：
802.11n-HT20

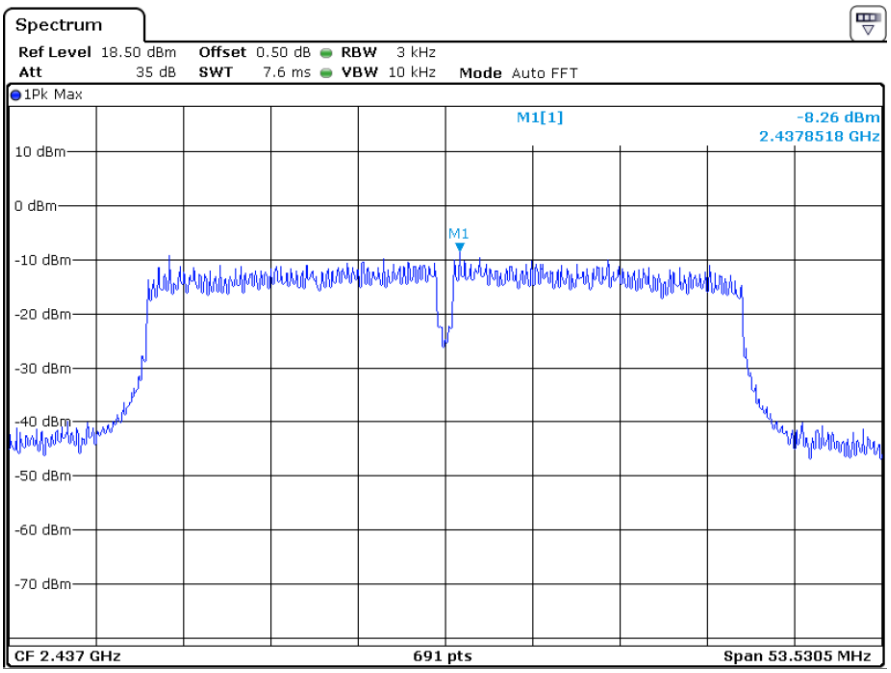


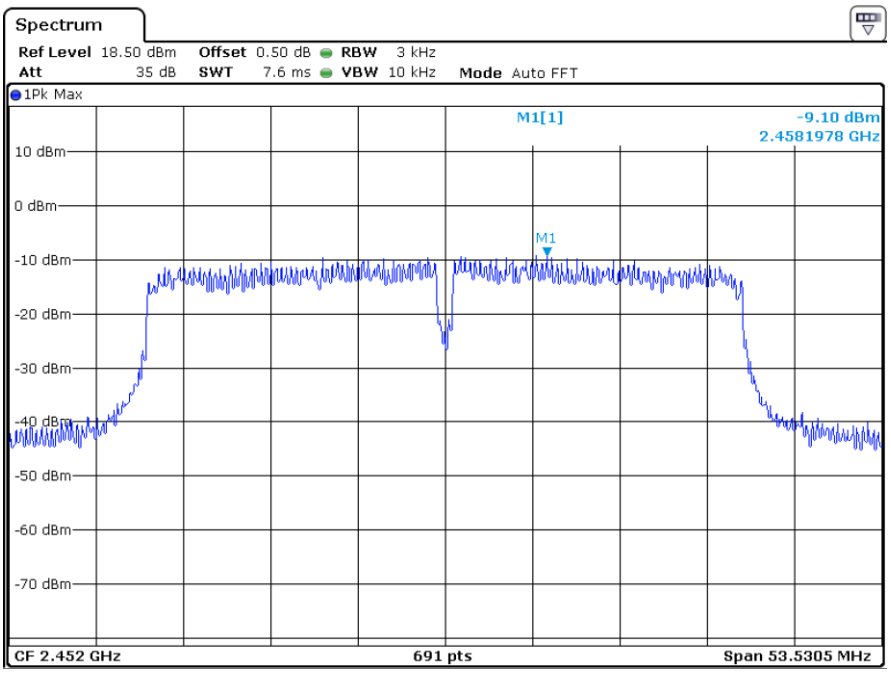



Spectrum
Ref Level 18.50 dBm Offset 0.50 dB RBW 3 kHz
Att 35 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1]
-6.43 dBm
2.4622663 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.462 GHz
691 pts
Span 26.3235 MHz

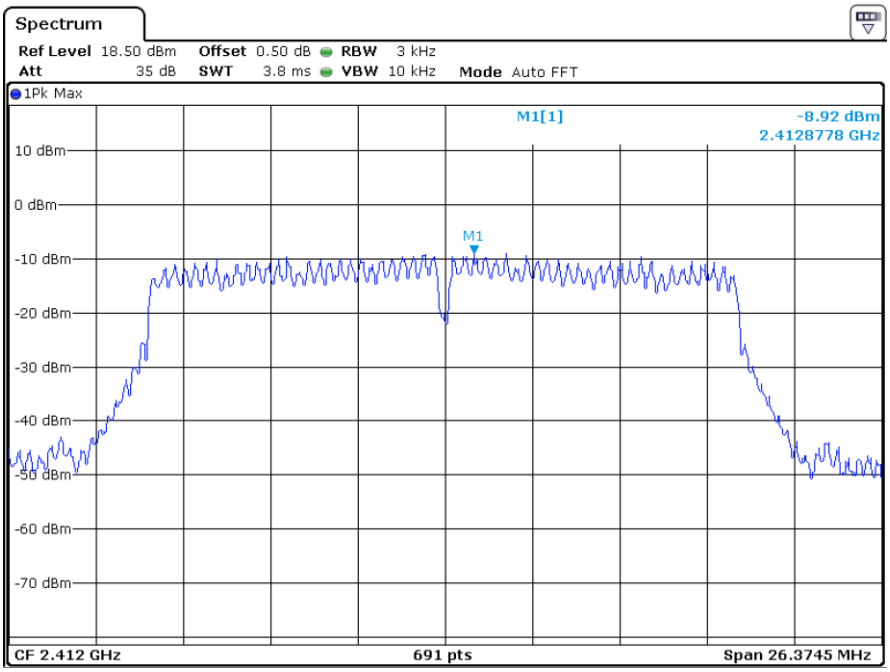
802.11n-HT40

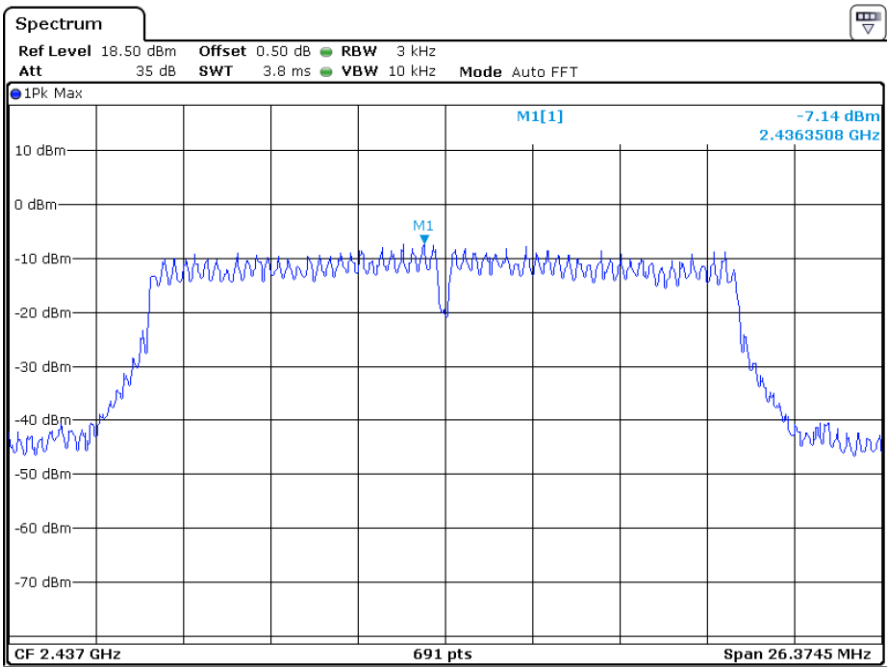

Spectrum
Ref Level 18.50 dBm Offset 0.50 dB RBW 3 kHz
Att 35 dB SWT 8.2 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -9.48 dBm
2.4169158 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.422 GHz
691 pts
Span 54.0525 MHz

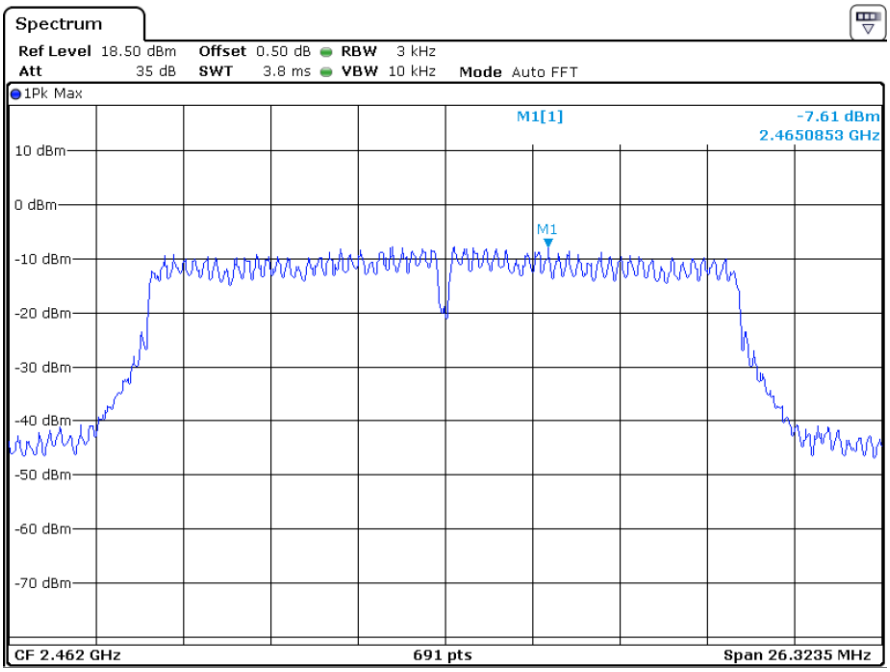

Spectrum
Ref Level 18.50 dBm Offset 0.50 dB RBW 3 kHz
Att 35 dB SWT 7.6 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -8.26 dBm
2.4378518 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.437 GHz
691 pts
Span 53.5305 MHz


Spectrum
Ref Level 18.50 dBm Offset 0.50 dB RBW 3 kHz
Att 35 dB SWT 7.6 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1]
-9.10 dBm
2.4581978 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.452 GHz
691 pts
Span 53.5305 MHz

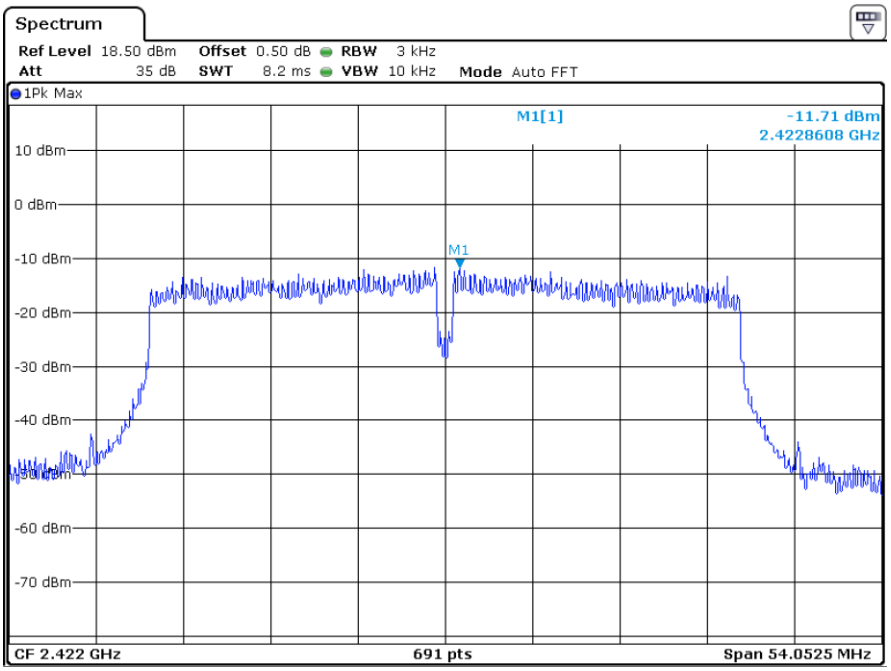
MIMO Mode, Ant2:
802.11n-HT20

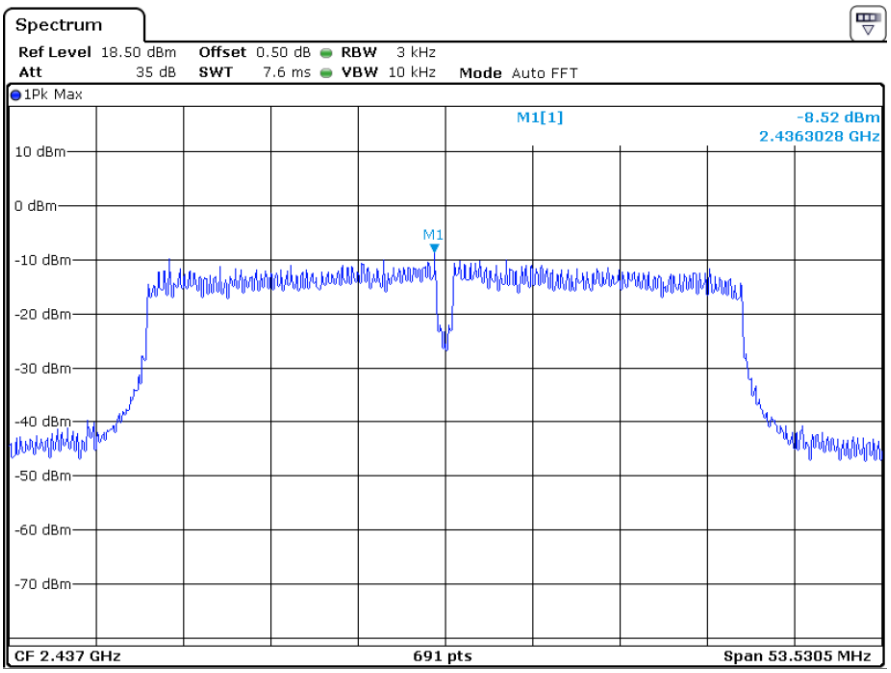


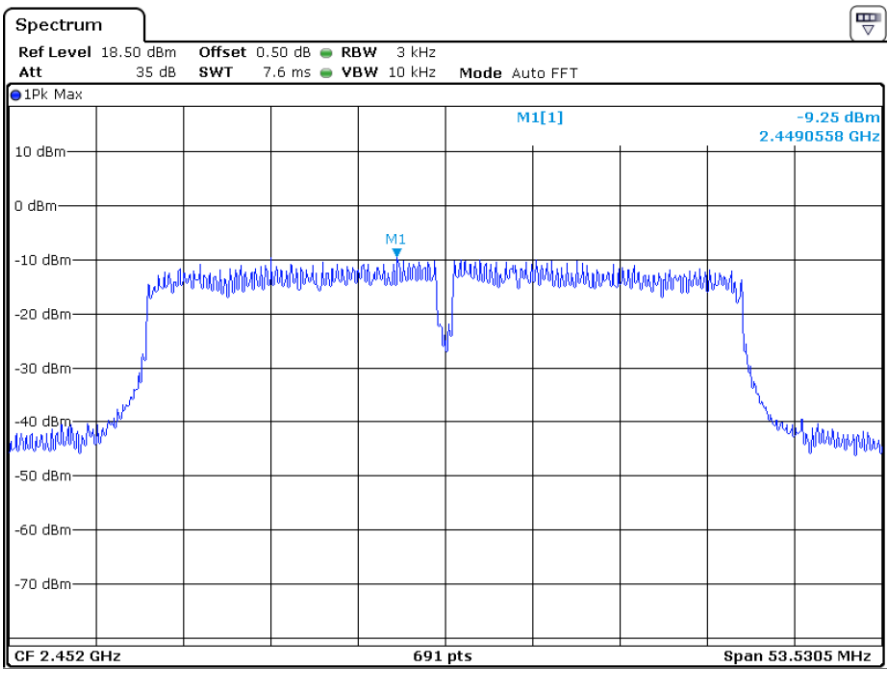



Spectrum
Ref Level 18.50 dBm Offset 0.50 dB RBW 3 kHz
Att 35 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1]
-7.61 dBm
2.4650853 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.462 GHz
691 pts
Span 26.3235 MHz

802.11n-HT40


Spectrum
Ref Level 18.50 dBm Offset 0.50 dB RBW 3 kHz
Att 35 dB SWT 8.2 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -11.71 dBm
2.4228608 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-60 dBm
-70 dBm
M1
CF 2.422 GHz
691 pts
Span 54.0525 MHz


Spectrum
Ref Level 18.50 dBm Offset 0.50 dB RBW 3 kHz
Att 35 dB SWT 7.6 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -8.52 dBm
2.4363028 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.437 GHz
691 pts
Span 53.5305 MHz


Spectrum
Ref Level 18.50 dBm Offset 0.50 dB RBW 3 kHz
Att 35 dB SWT 7.6 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1]
-9.25 dBm
2.4490558 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.452 GHz
691 pts
Span 53.5305 MHz

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10

4.4 Out of Band Conducted Emissions, FCC Rule 15.247(d)

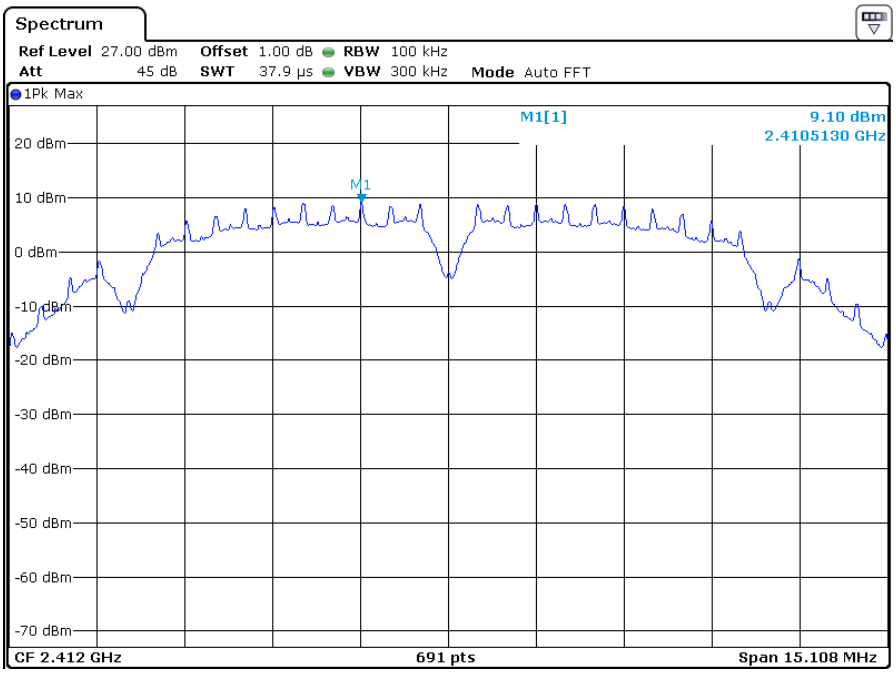
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. The Measurement Procedure was set according to the FCC KDB 558074 D01 v04.

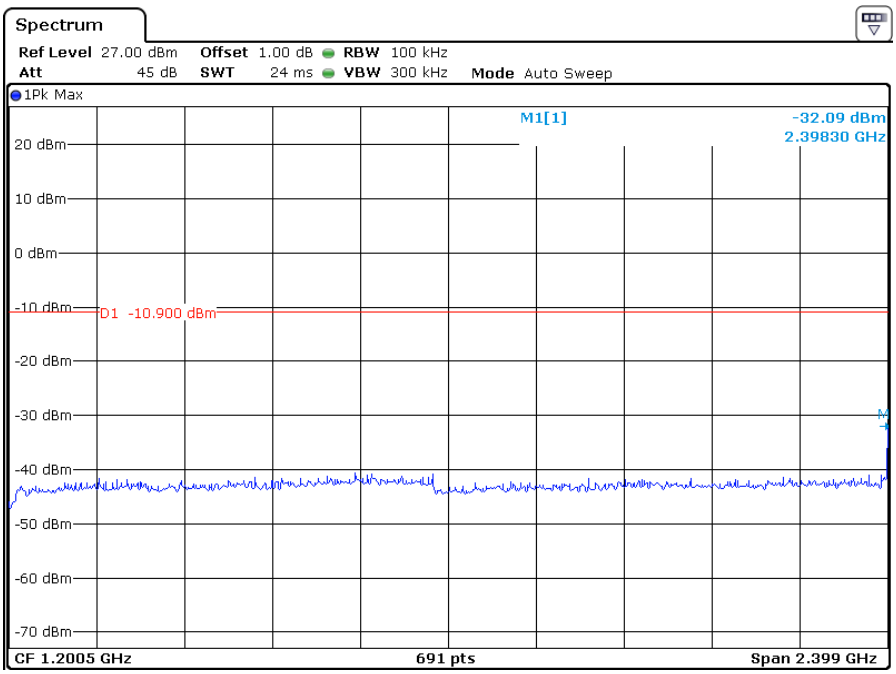
All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the passband.

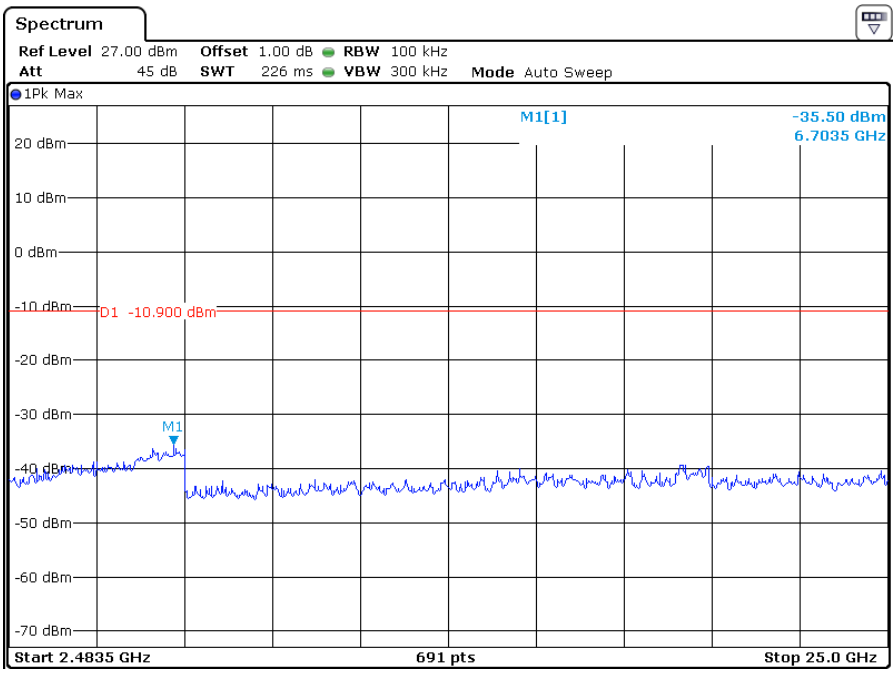
Refer to the attached test plots for out of band conducted emissions data with rate of 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11n-HT20 and 13.5Mbps for 802.11n-HT40.

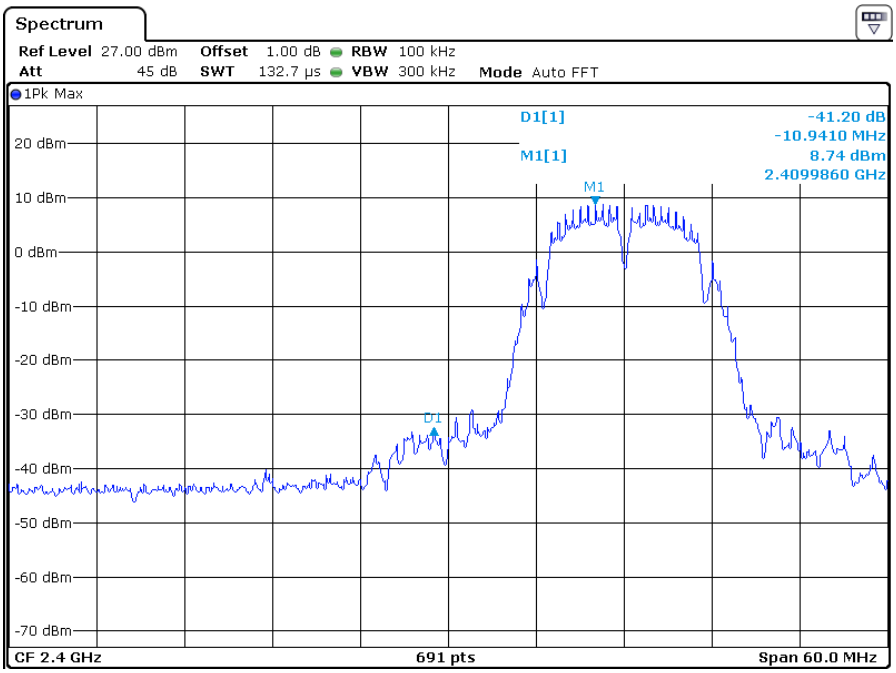
The test plots are attached as below.

SISO Mode, Ant1:
802.11b
Channel 01 (2412MHz) Reference Level: 9.10dBm

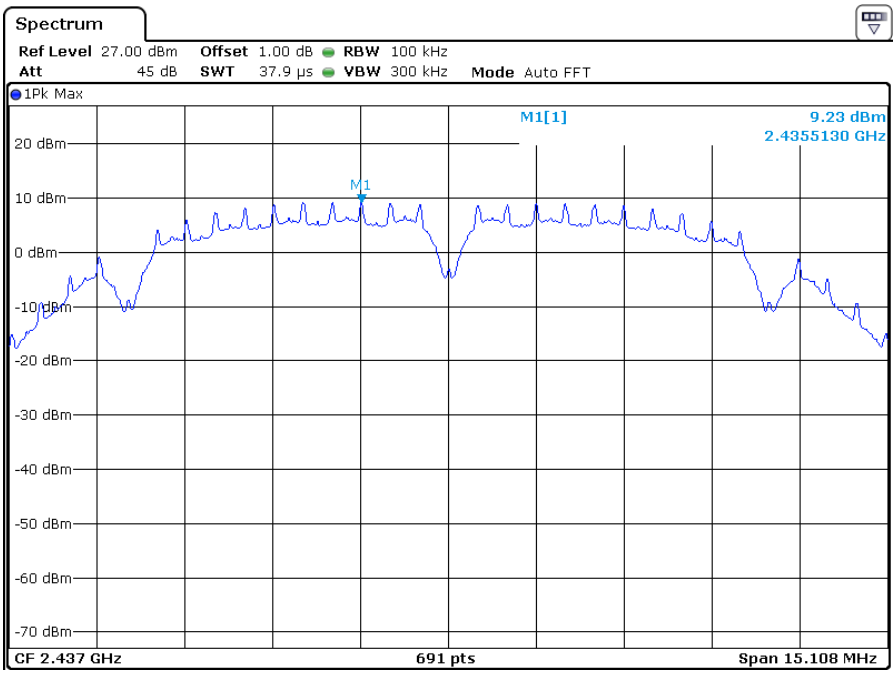


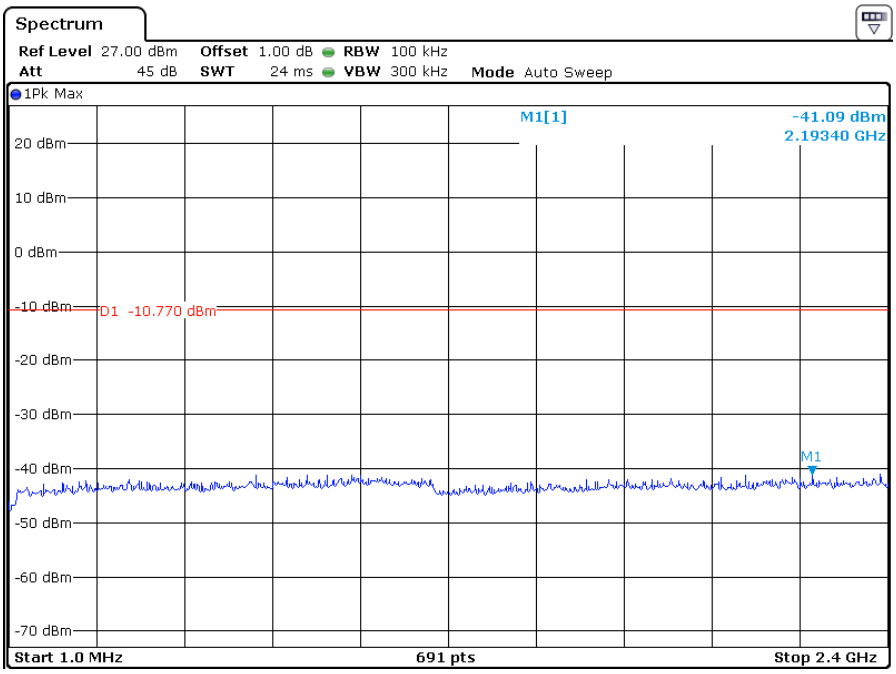


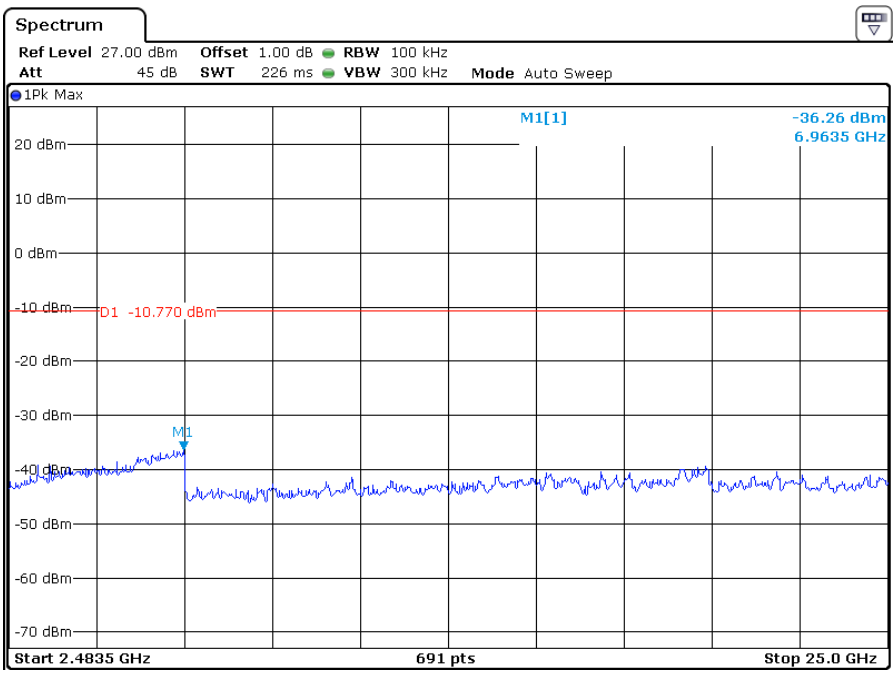

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -35.50 dBm
6.7035 GHz
D1 -10.900 dBm
M1
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz


Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -41.20 dB
-10.9410 MHz
M1[1] 8.74 dBm
2.4099860 GHz
M1
D1
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.4 GHz
691 pts
Span 60.0 MHz

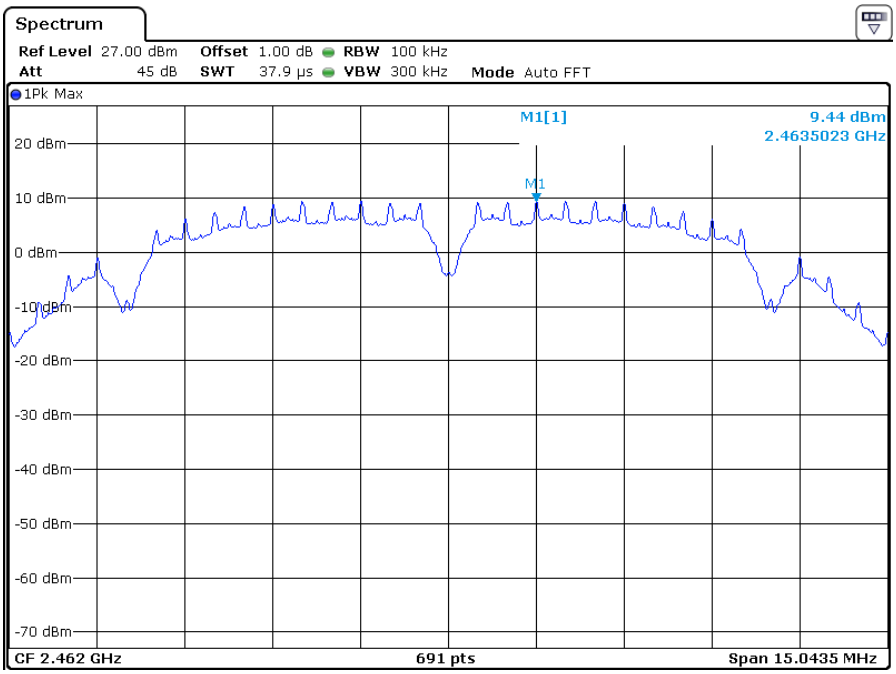
Channel 06 (2437MHz) Reference Level: 9.23dBm

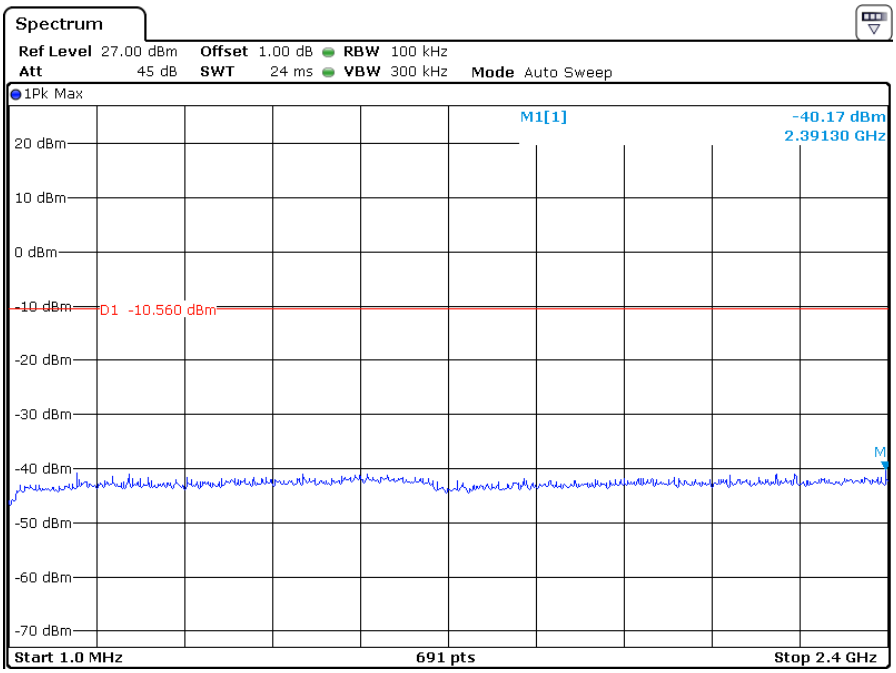


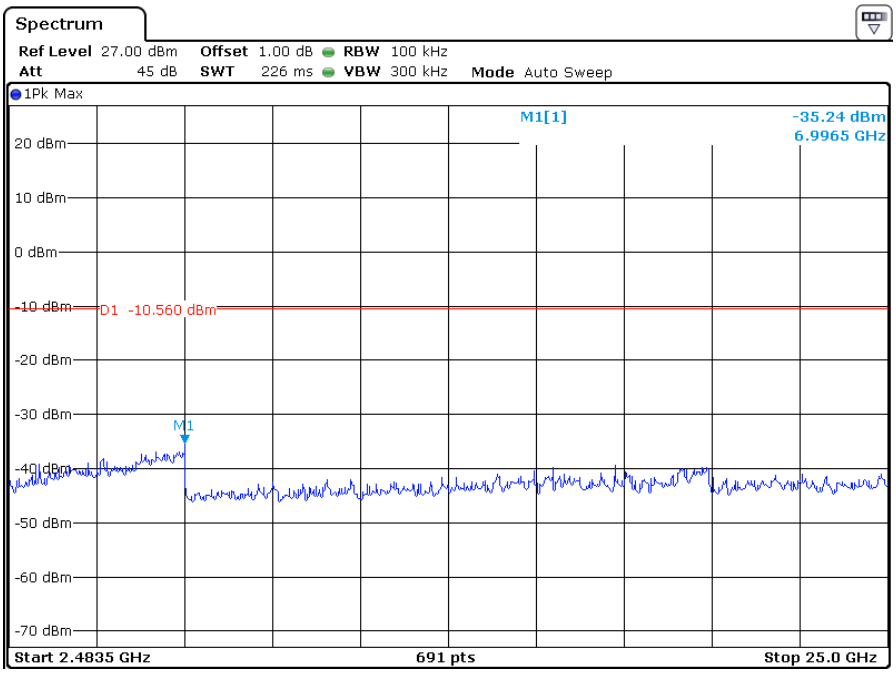


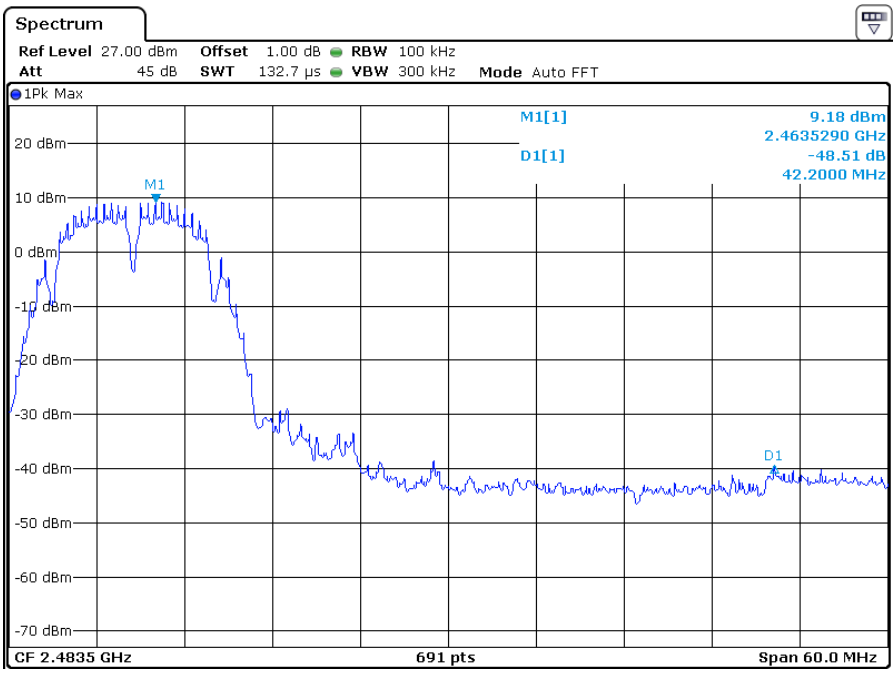


Channel 11 (2462MHz) Reference Level: 9.44dBm

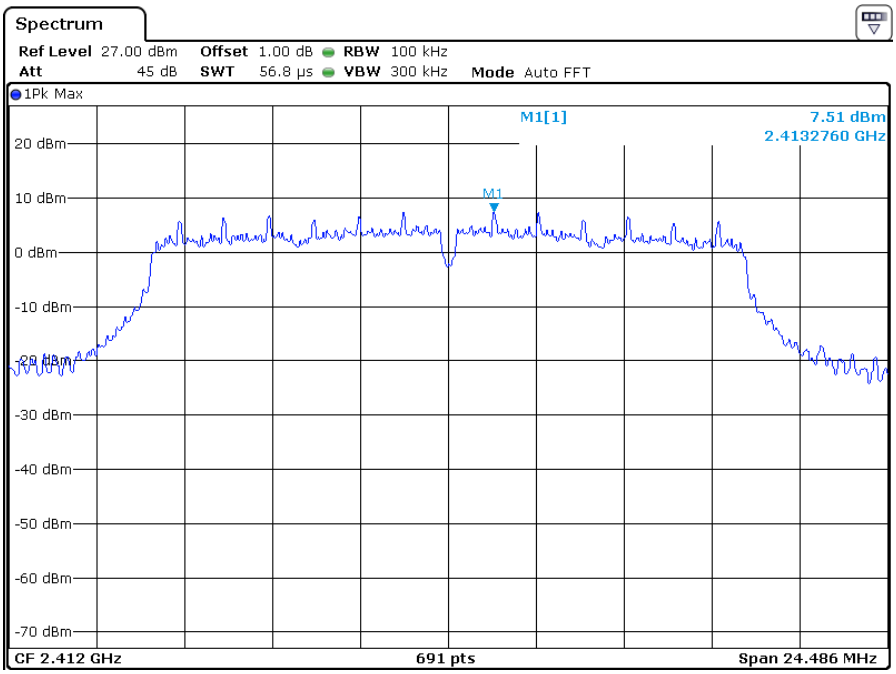


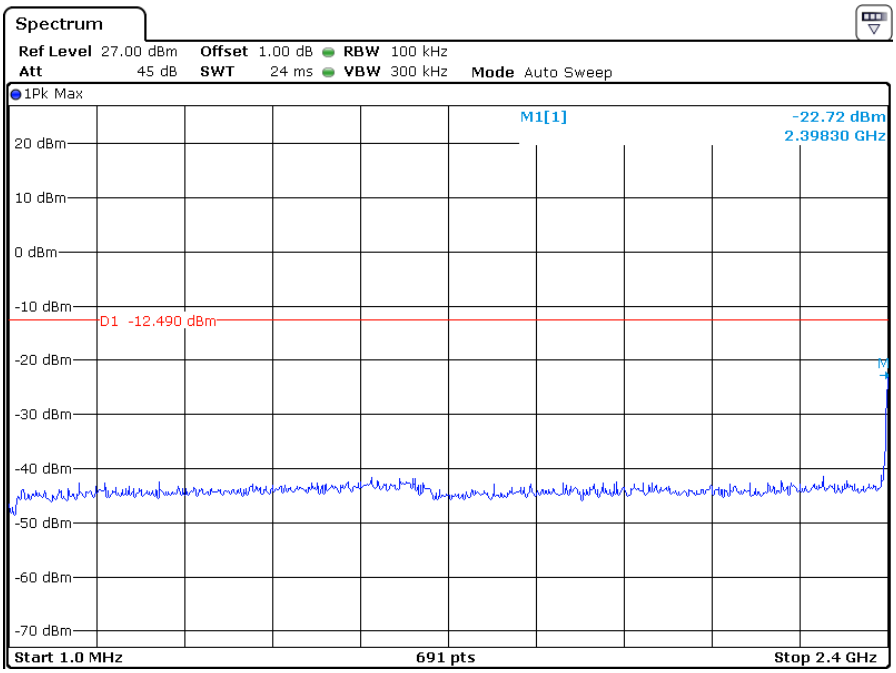

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -40.17 dBm
2.39130 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -10.560 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M
Start 1.0 MHz
691 pts
Stop 2.4 GHz

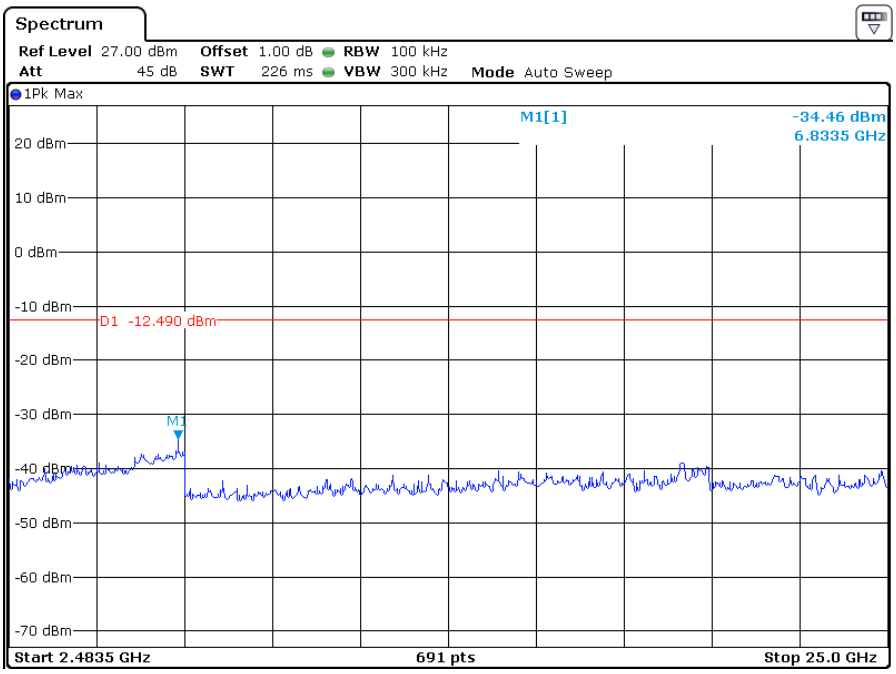

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -35.24 dBm
6.9965 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -10.560 dBm
-20 dBm
-30 dBm
M1
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz

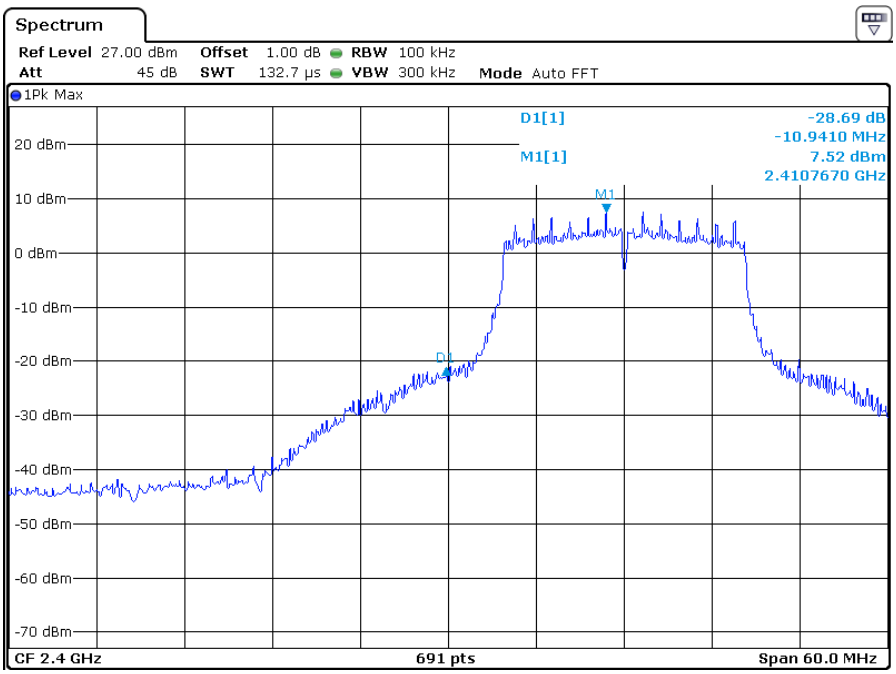


802.11g
Channel 01 (2412MHz) Reference Level: 7.51dBm

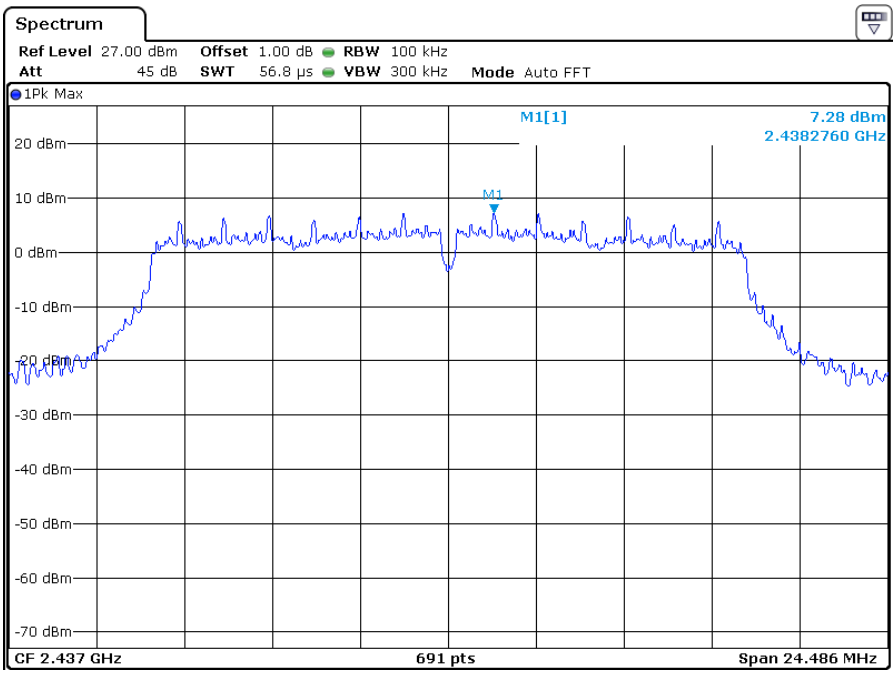


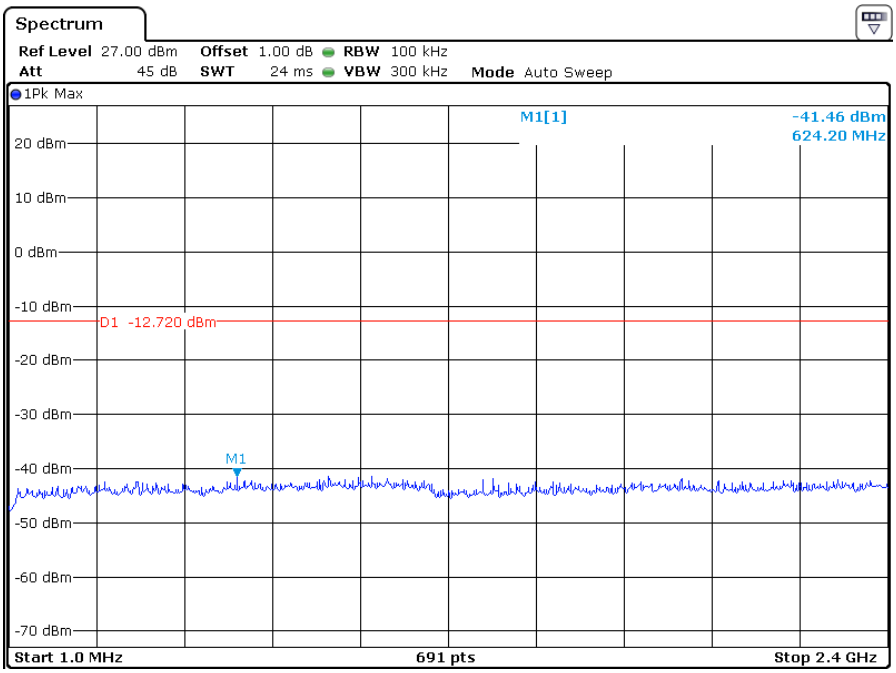

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -22.72 dBm
2.39830 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -12.490 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 1.0 MHz
691 pts
Stop 2.4 GHz

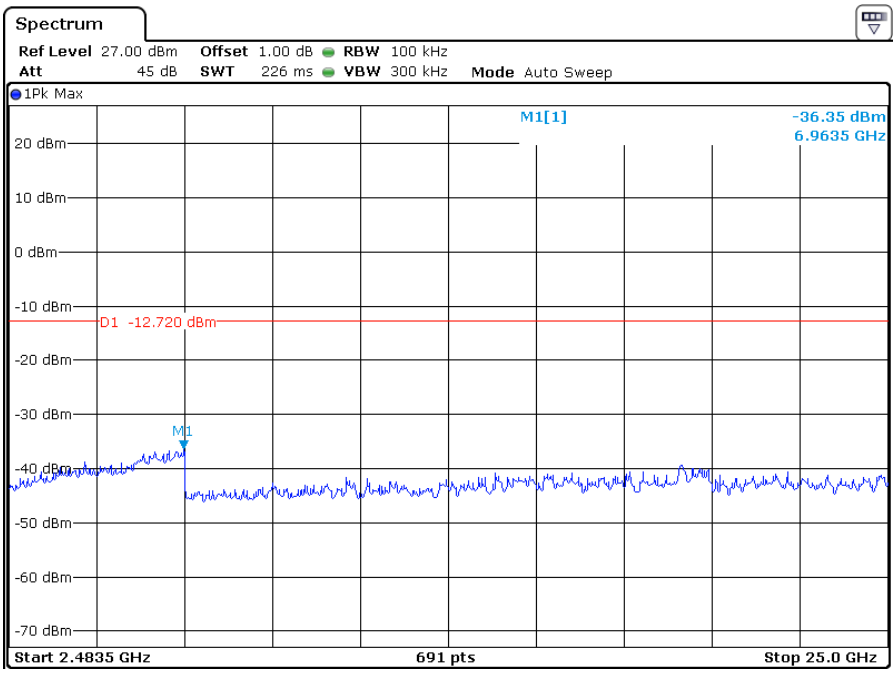

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -34.46 dBm
6.8335 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -12.490 dBm
-20 dBm
-30 dBm
M1
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz



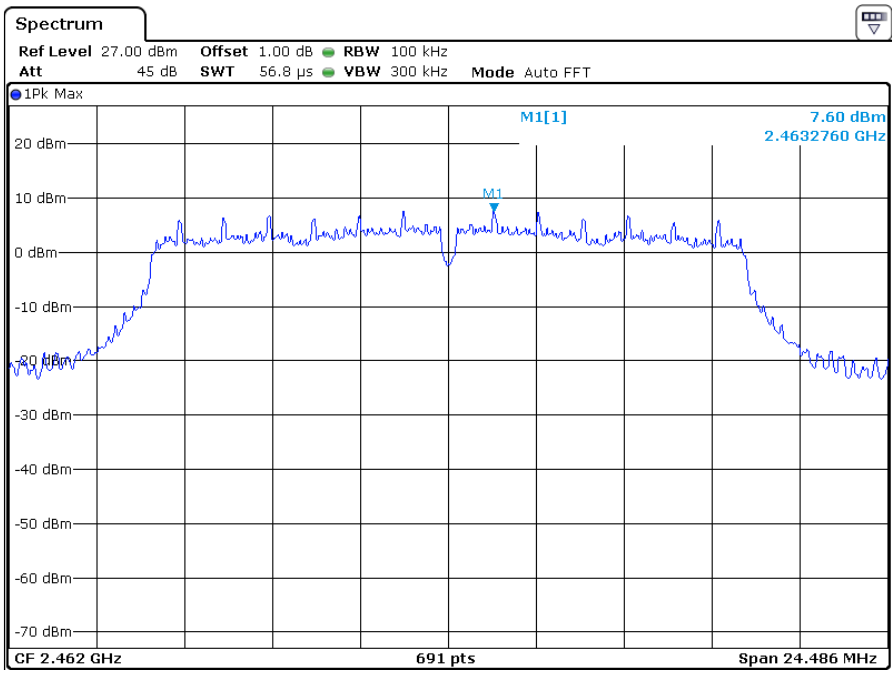
Channel 06 (2437MHz) Reference Level: 7.28dBm

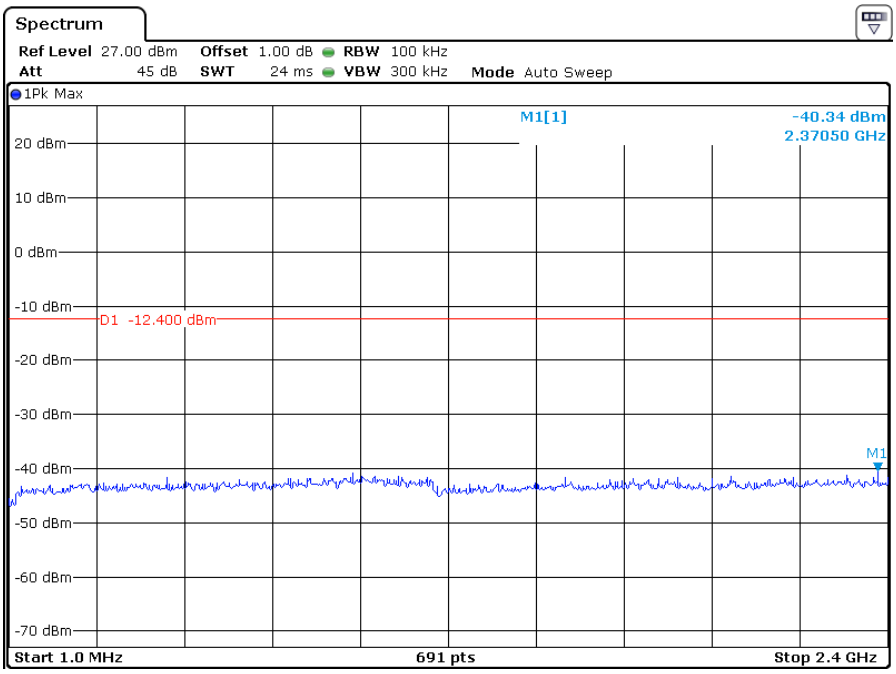


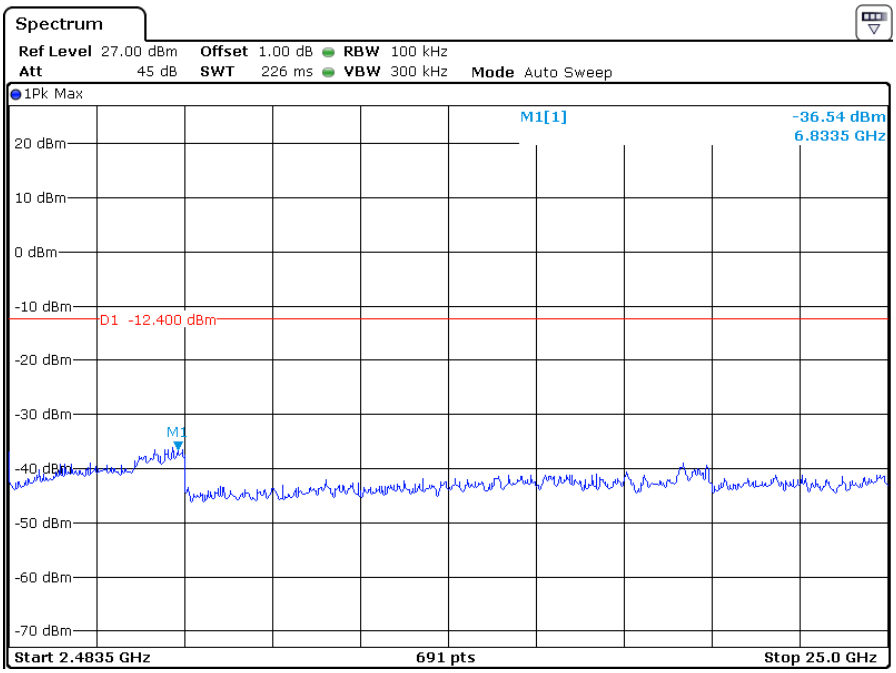

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -41.46 dBm
624.20 MHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -12.720 dBm
-20 dBm
-30 dBm
-40 dBm
M1
-50 dBm
-60 dBm
-70 dBm
Start 1.0 MHz
691 pts
Stop 2.4 GHz

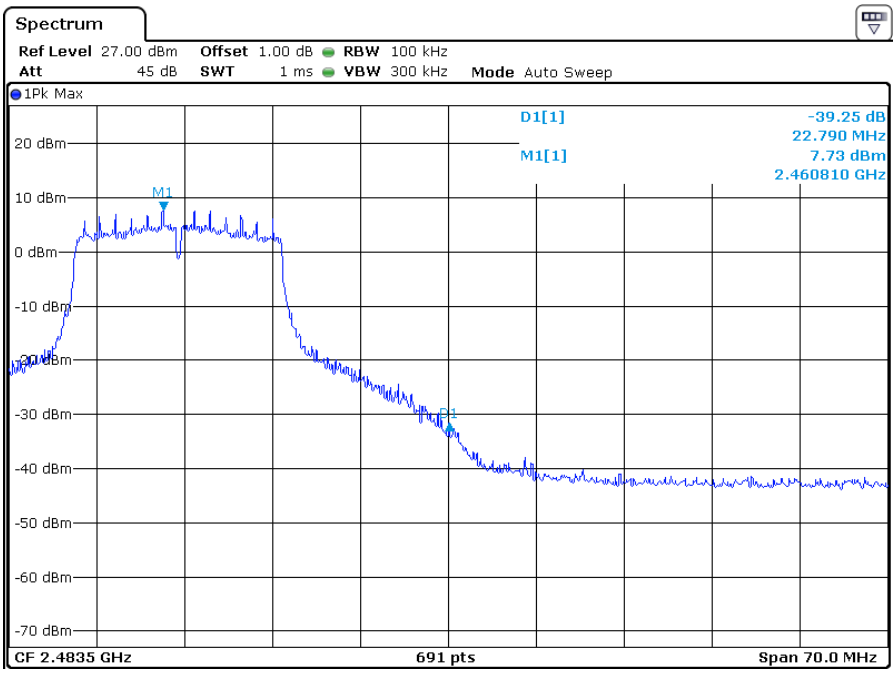

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -36.35 dBm
6.9635 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -12.720 dBm
-20 dBm
-30 dBm
M1
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz

Channel 11 (2462MHz) Reference Level: 7.60dBm

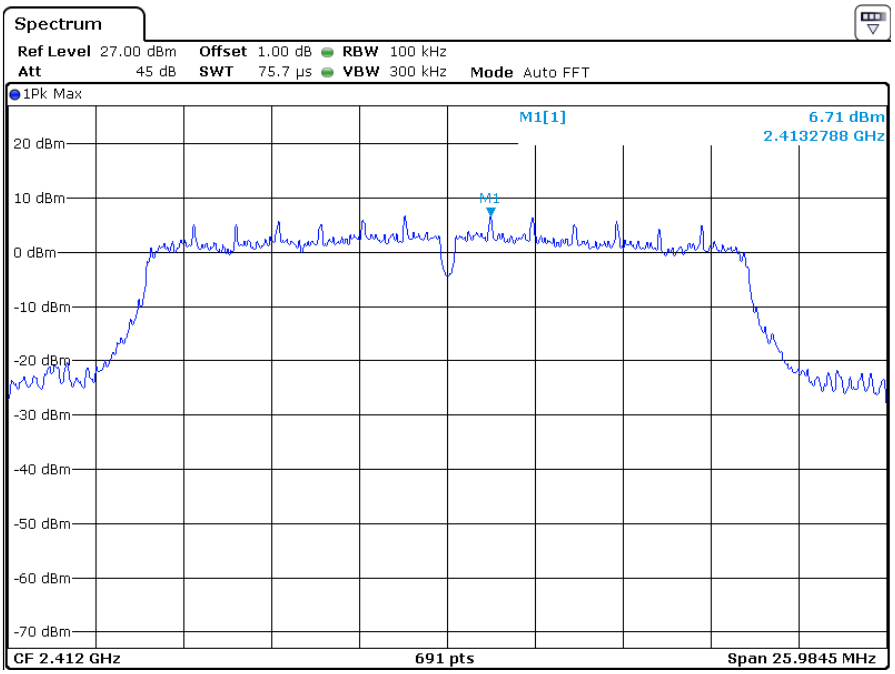


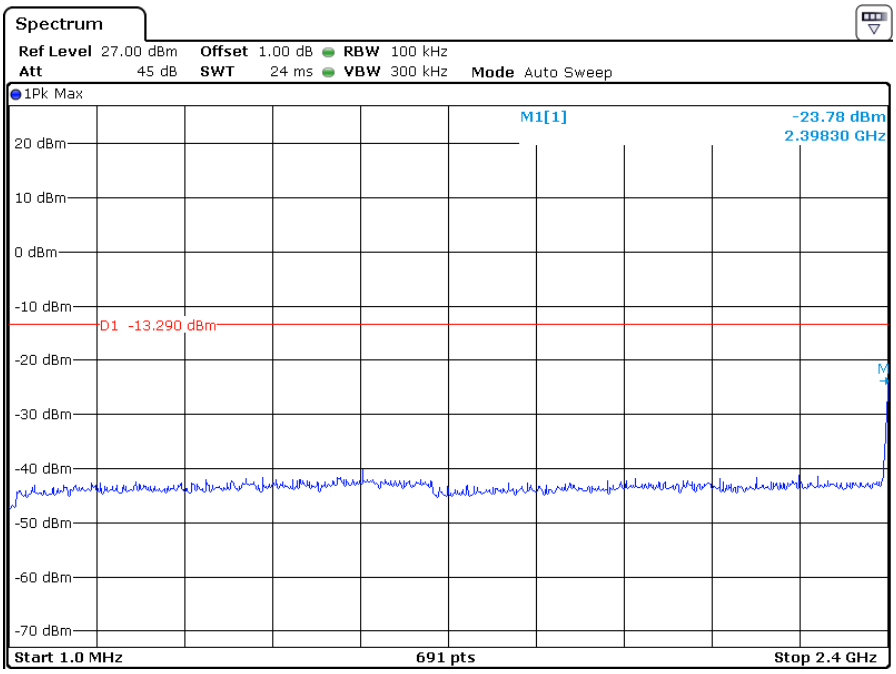


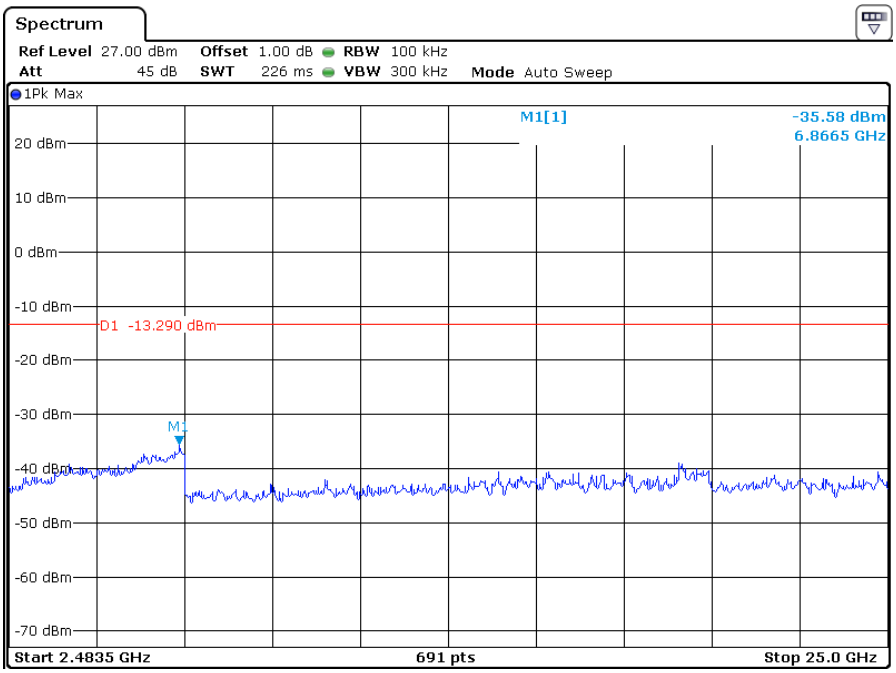

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -36.54 dBm
6.8335 GHz
D1 -12.400 dBm
M1
Start 2.4835 GHz 691 pts Stop 25.0 GHz

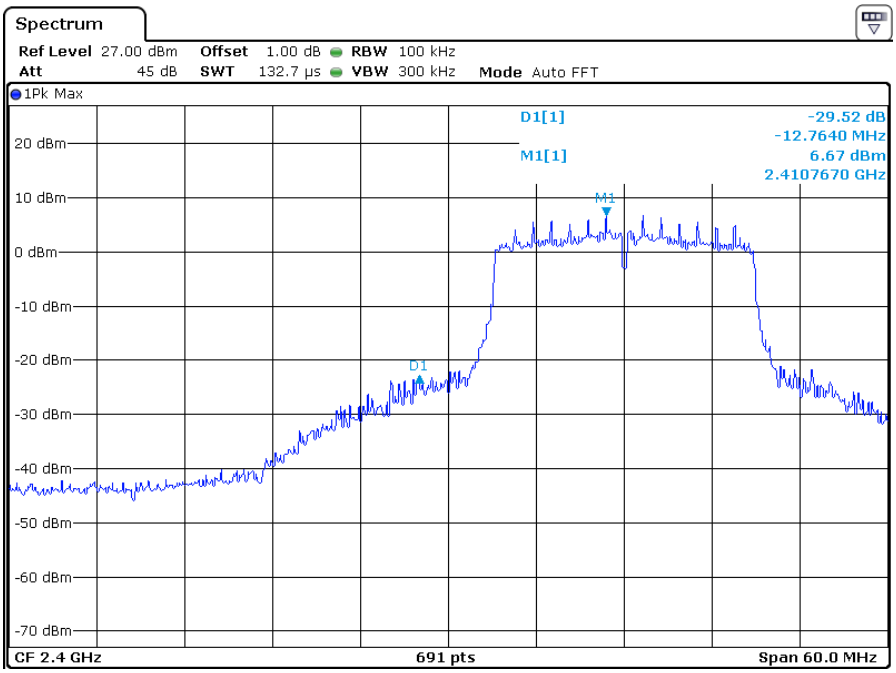

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 1 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
D1[1] -39.25 dB
22.790 MHz
M1[1] 7.73 dBm
2.460810 GHz
M1
D1
CF 2.4835 GHz 691 pts Span 70.0 MHz

802.11n-HT20
Channel 01 (2412MHz) Reference Level: 6.71dBm

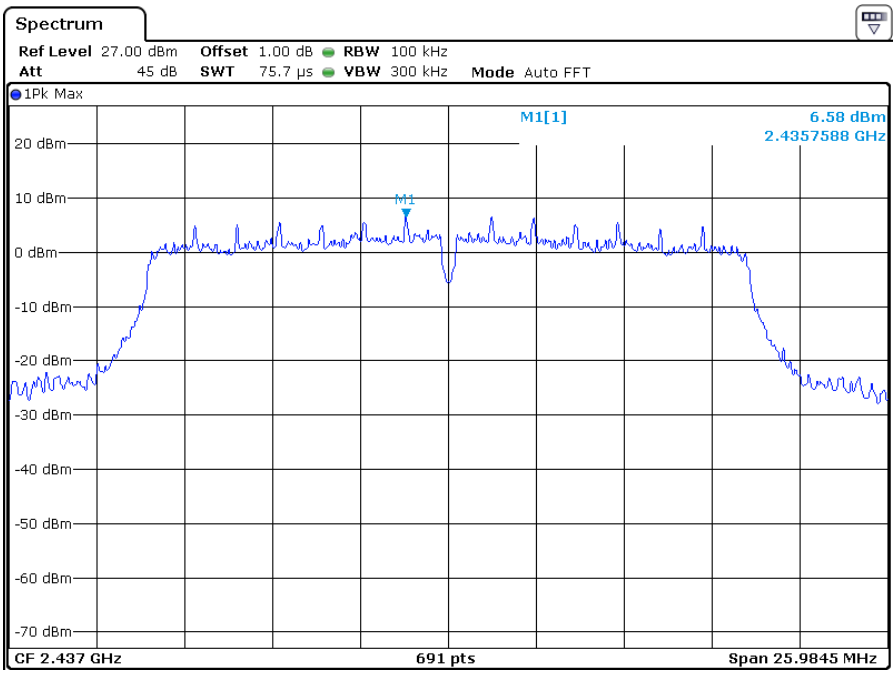


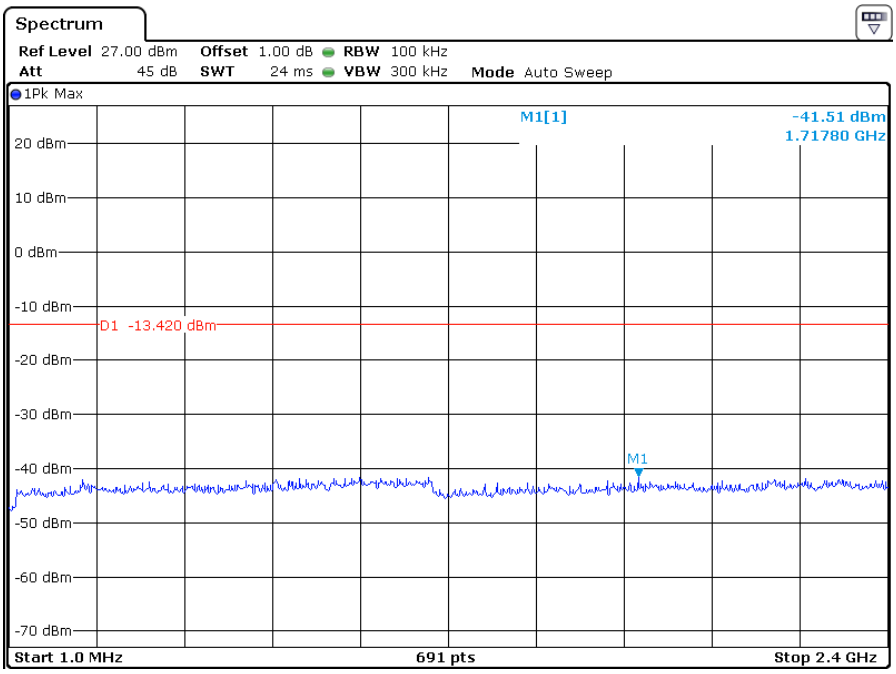


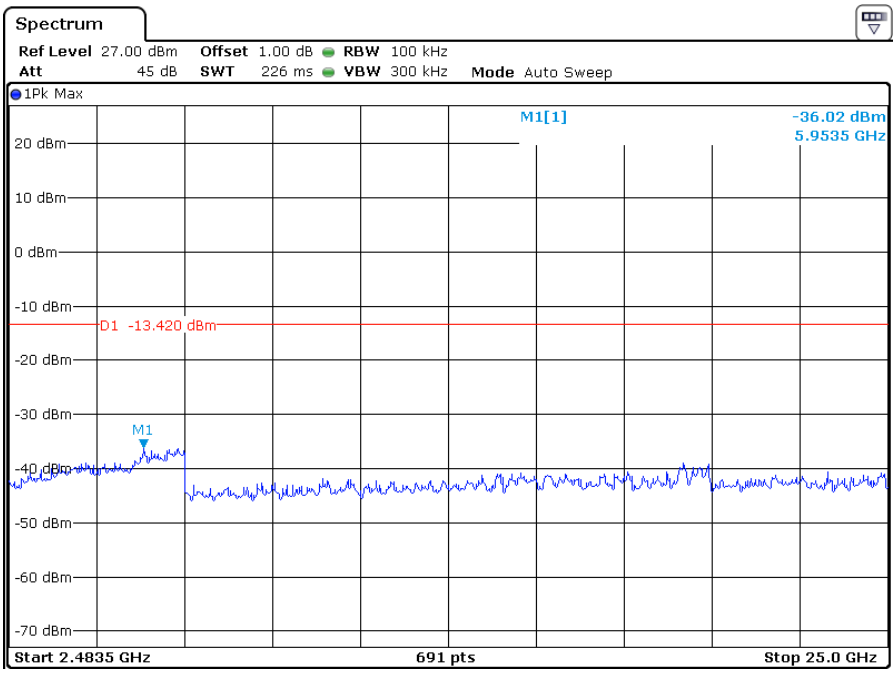

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -35.58 dBm
6.8665 GHz
D1 -13.290 dBm
Start 2.4835 GHz 691 pts Stop 25.0 GHz


Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -29.52 dB
-12.7640 MHz
M1[1] 6.67 dBm
2.4107670 GHz
CF 2.4 GHz 691 pts Span 60.0 MHz

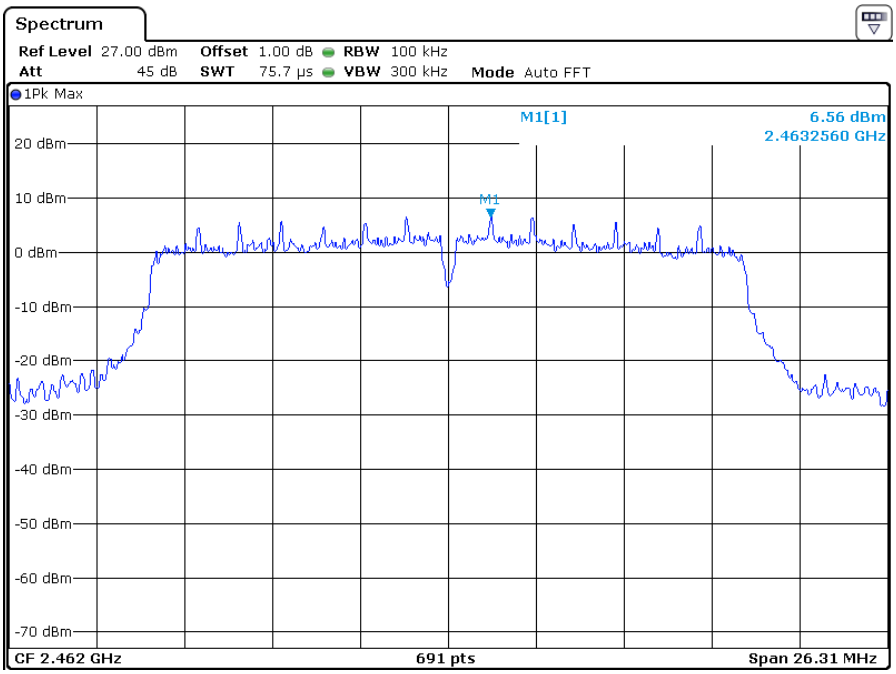
Channel 06 (2437MHz) Reference Level: 6.58dBm

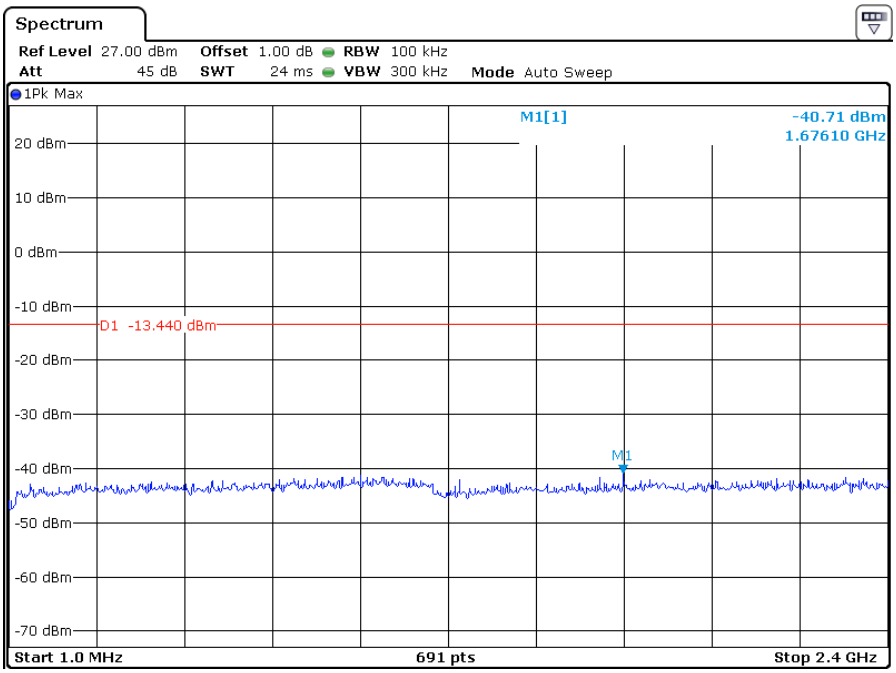


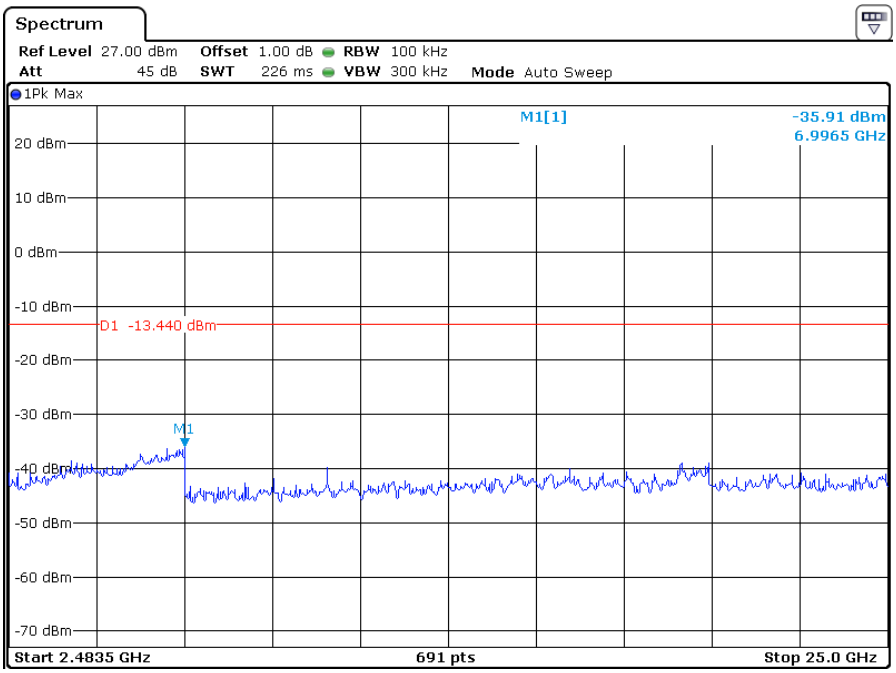


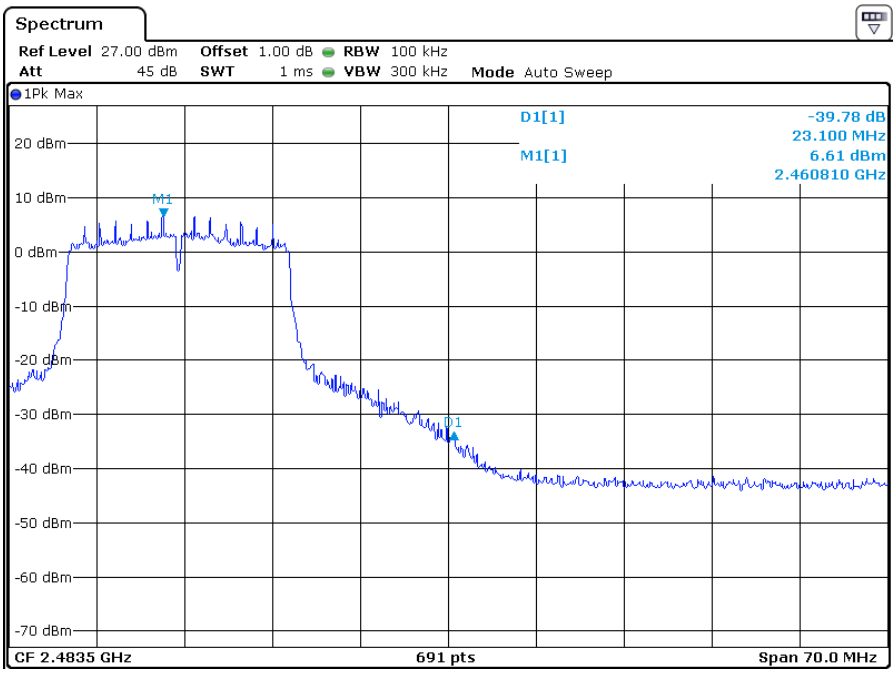


Channel 11 (2462MHz) Reference Level: 6.56dBm

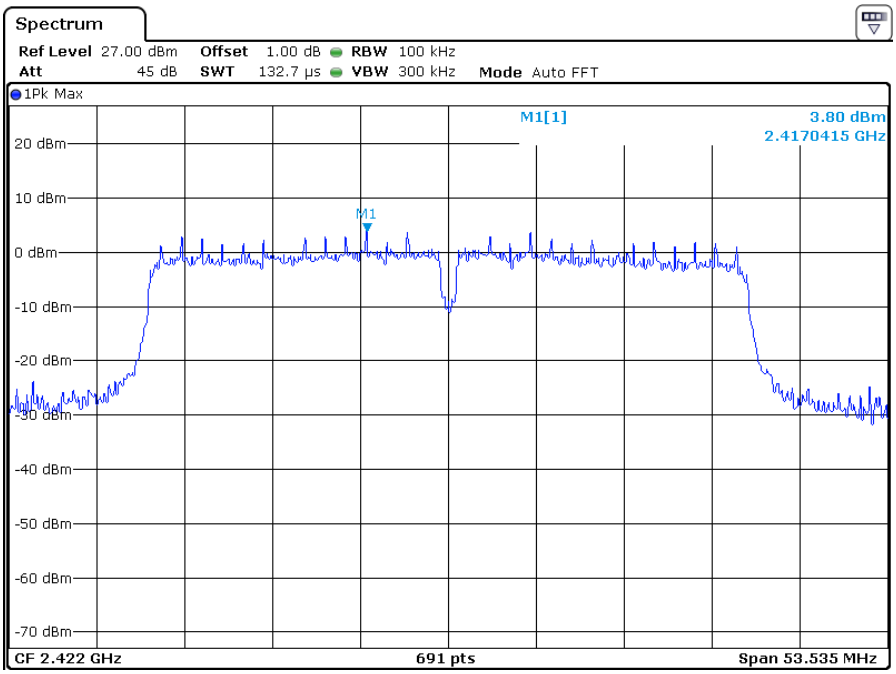


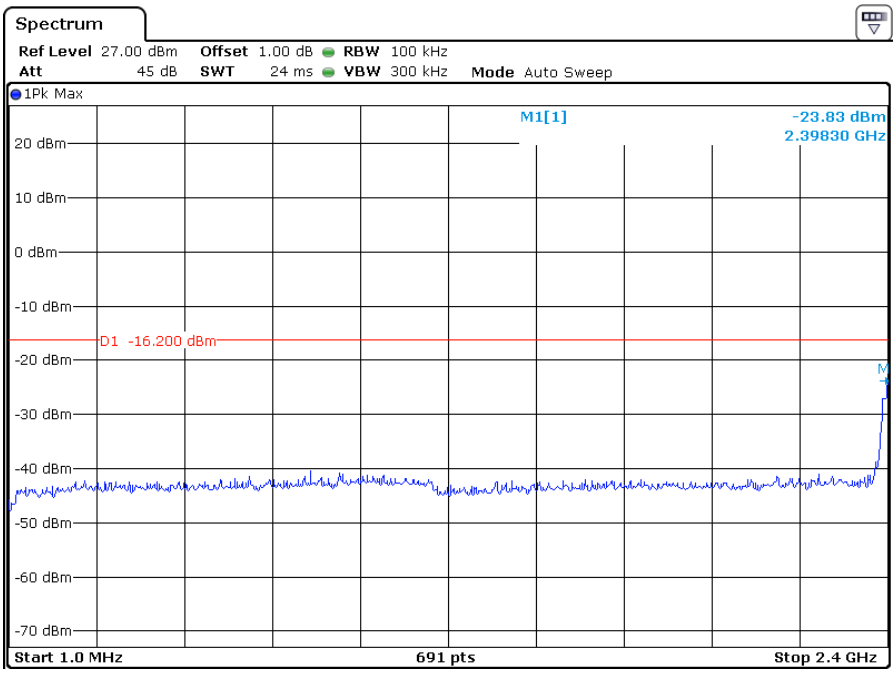

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -40.71 dBm
1.67610 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -13.440 dBm
-20 dBm
-30 dBm
-40 dBm
M1
-50 dBm
-60 dBm
-70 dBm
Start 1.0 MHz
691 pts
Stop 2.4 GHz

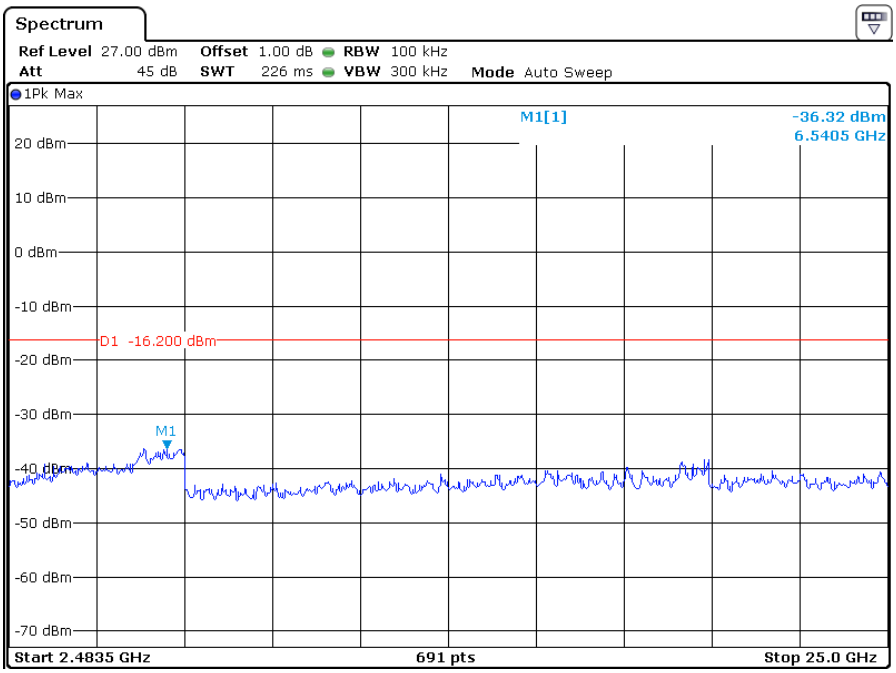

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -35.91 dBm
6.9965 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -13.440 dBm
-20 dBm
-30 dBm
M1
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz

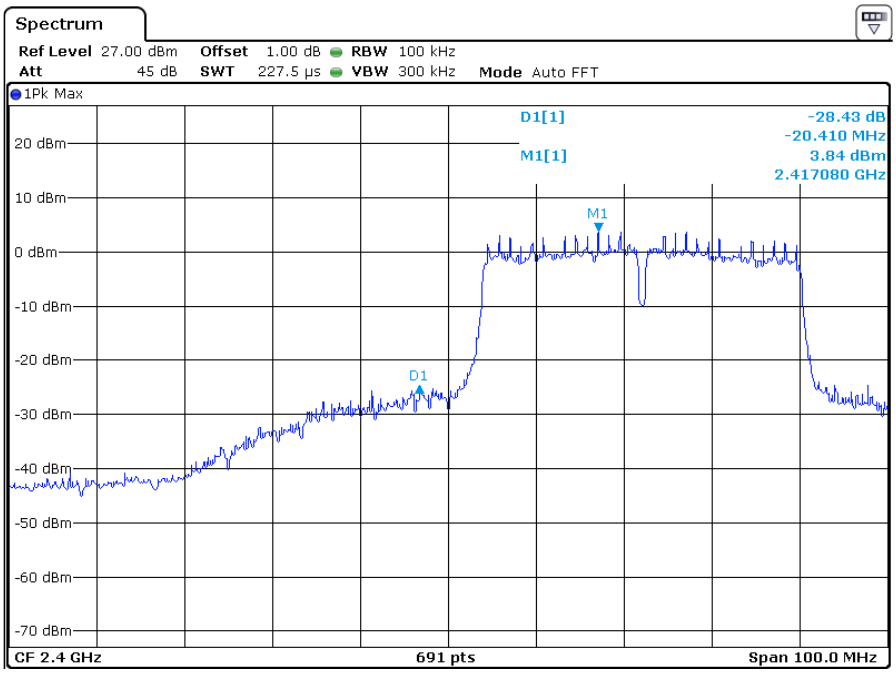


802.11n-HT40
Channel 03 (2422MHz) Reference Level: 3.80dBm

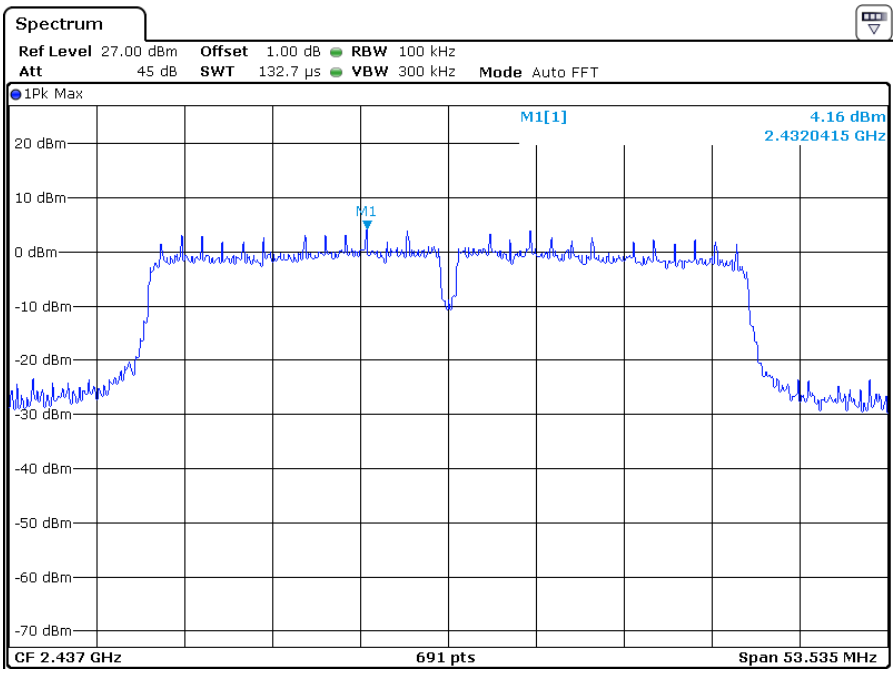


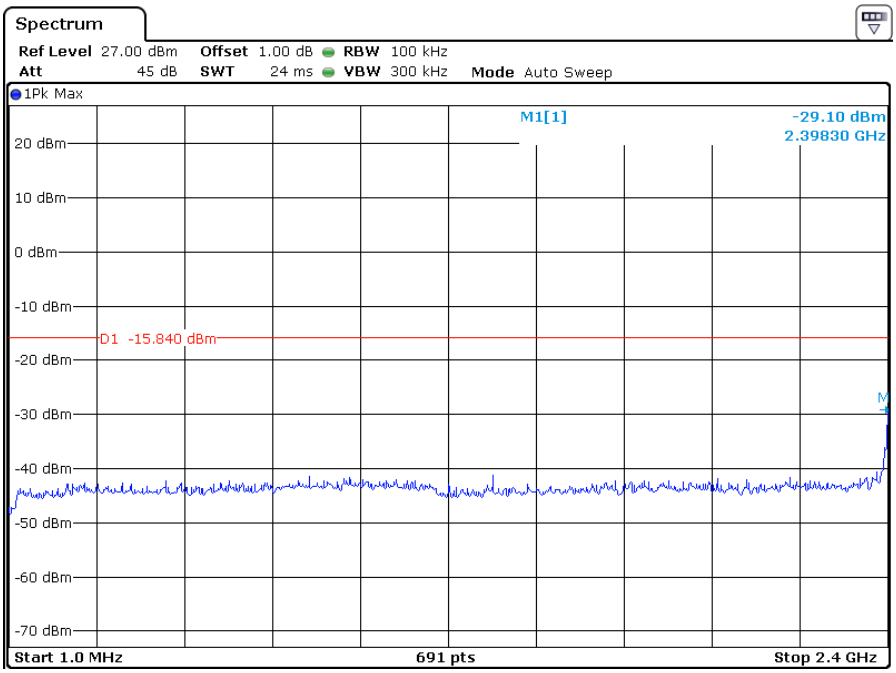

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -23.83 dBm
2.39830 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -16.200 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 1.0 MHz
691 pts
Stop 2.4 GHz

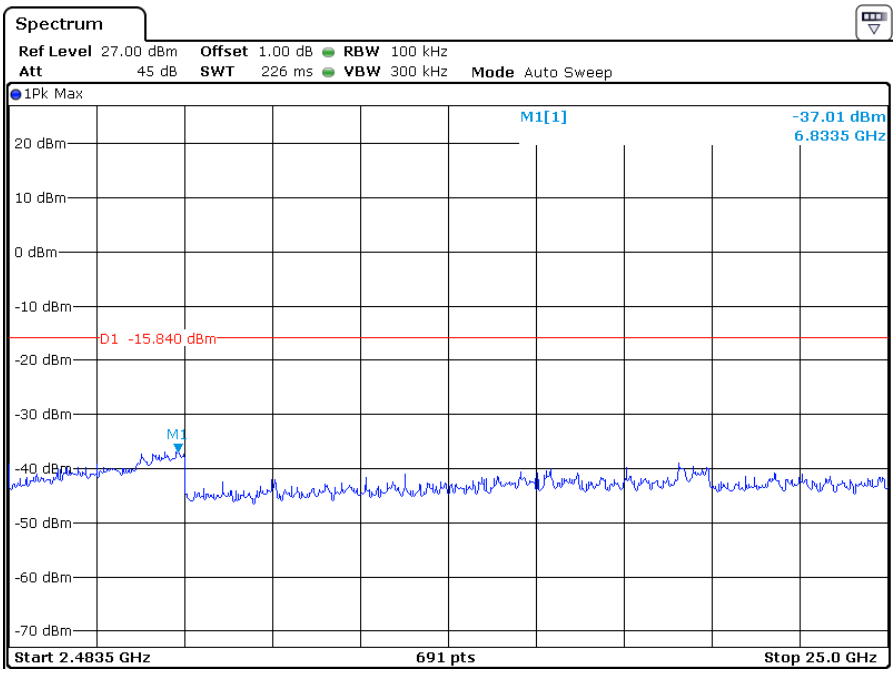

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -36.32 dBm
6.5405 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -16.200 dBm
-20 dBm
-30 dBm
M1
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz



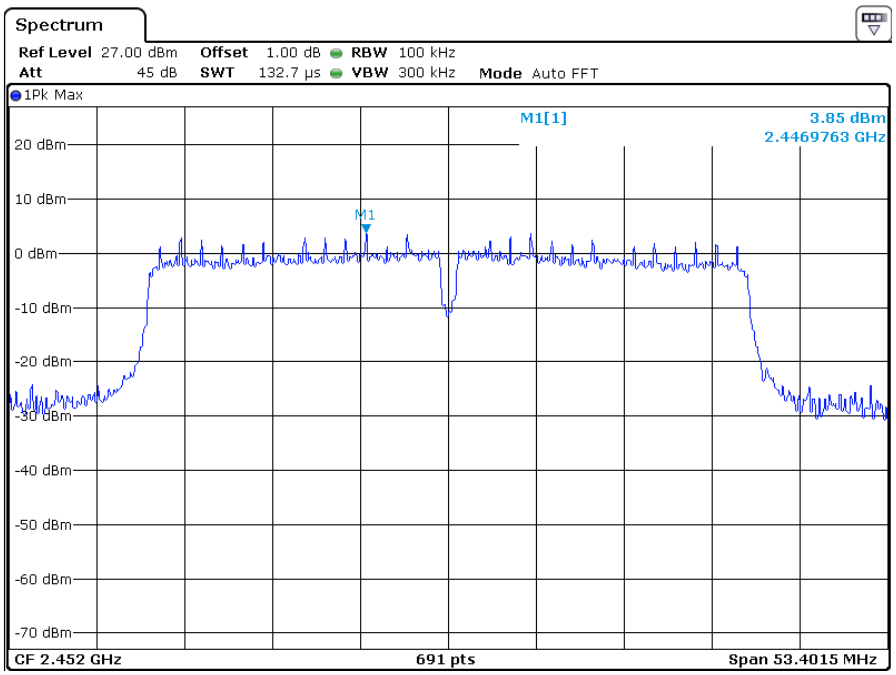
Channel 06 (2437MHz) Reference Level: 4.16dBm

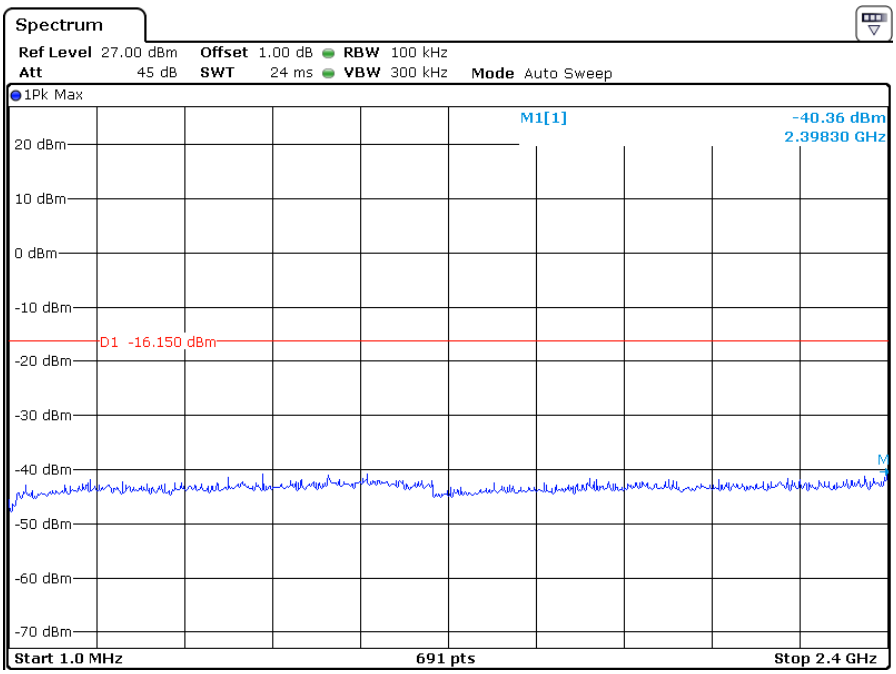


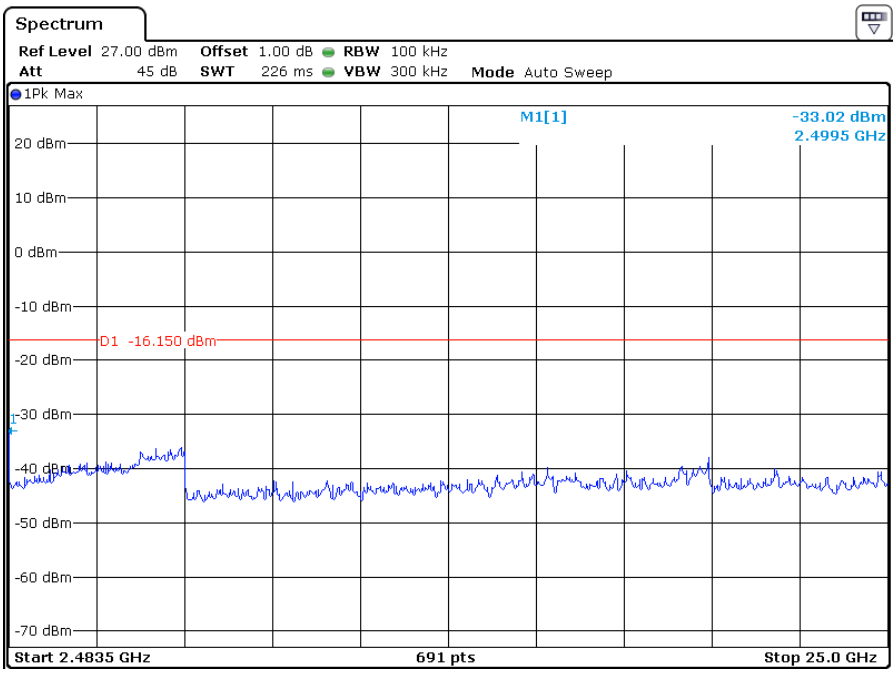

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -29.10 dBm
2.39830 GHz
D1 -15.840 dBm
Start 1.0 MHz 691 pts Stop 2.4 GHz

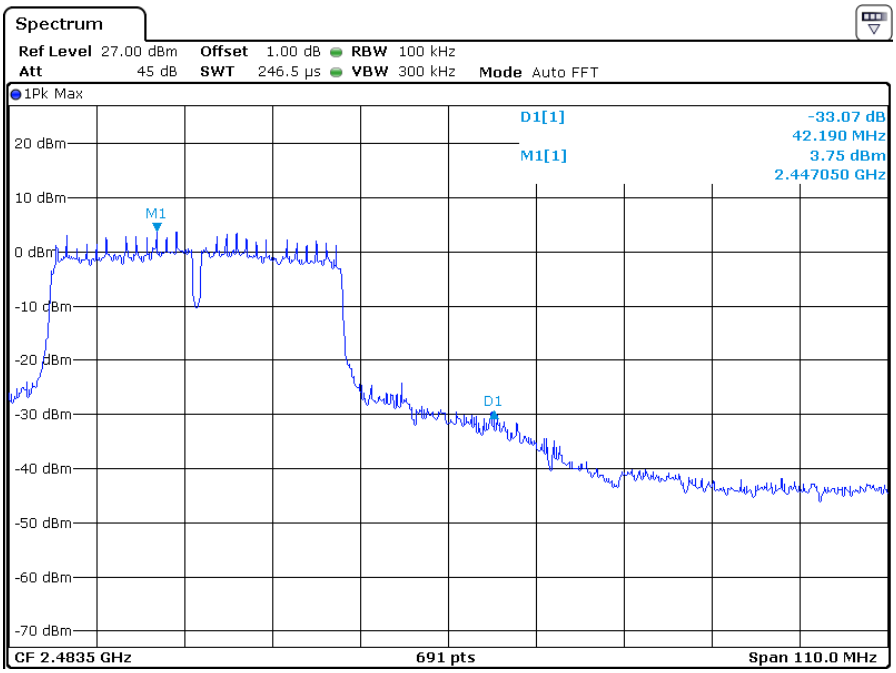

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -37.01 dBm
6.8335 GHz
D1 -15.840 dBm
Start 2.4835 GHz 691 pts Stop 25.0 GHz

Channel 09 (2452MHz) Reference Level: 3.85dBm



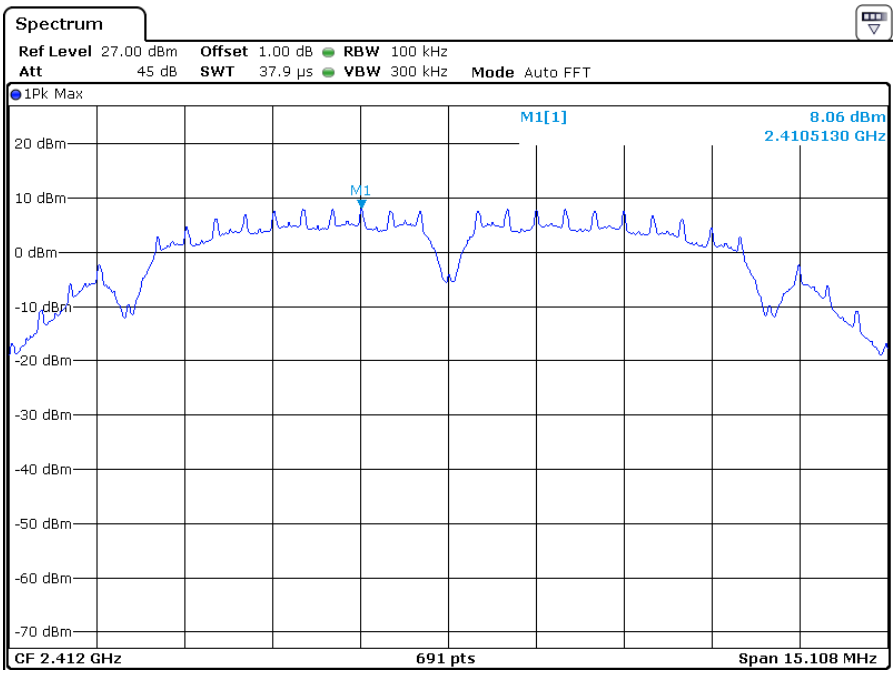


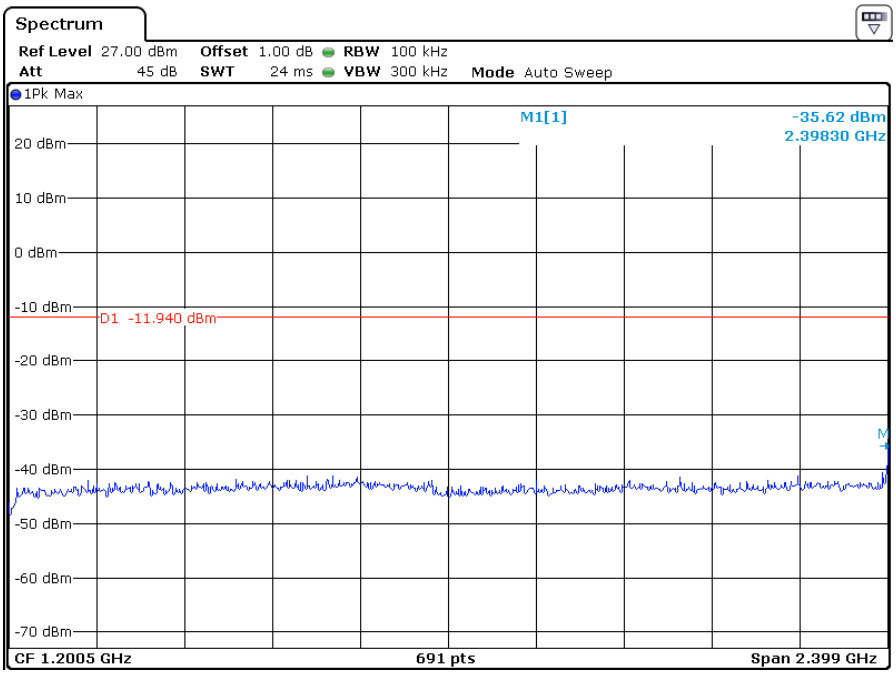

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -33.02 dBm
2.4995 GHz
D1 -16.150 dBm
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz

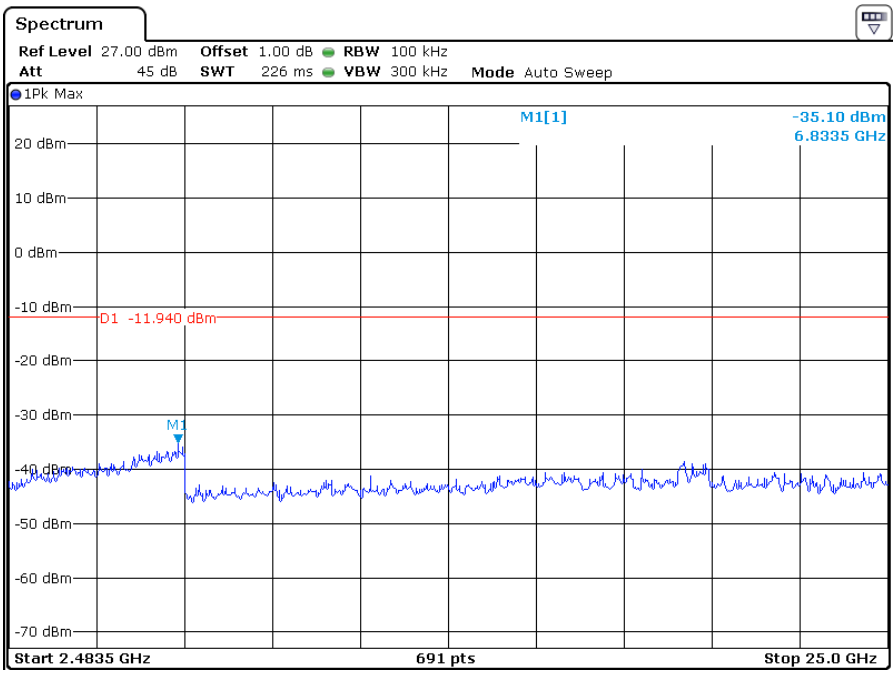

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 246.5 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -33.07 dB
42.190 MHz
M1[1] 3.75 dBm
2.447050 GHz
M1
D1
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.4835 GHz
691 pts
Span 110.0 MHz

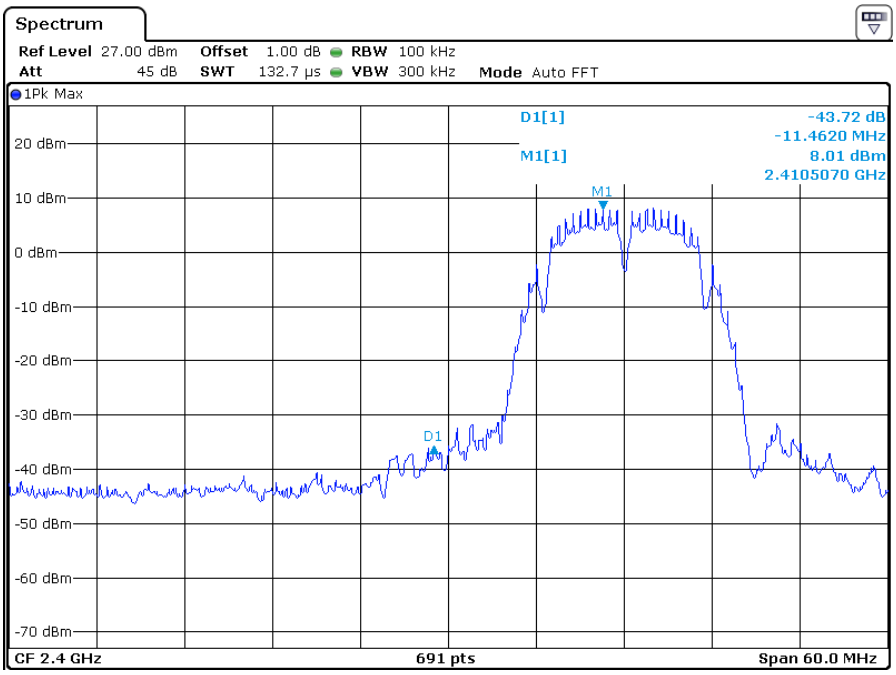
SISO Mode, Ant2:

802.11b
Channel 01 (2412MHz) Reference Level: 8.06dBm

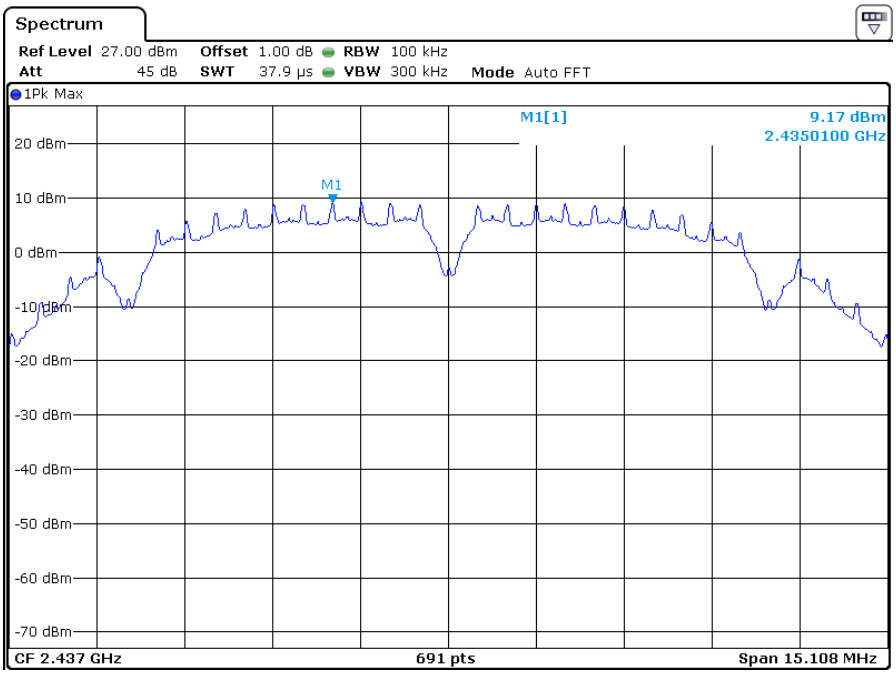


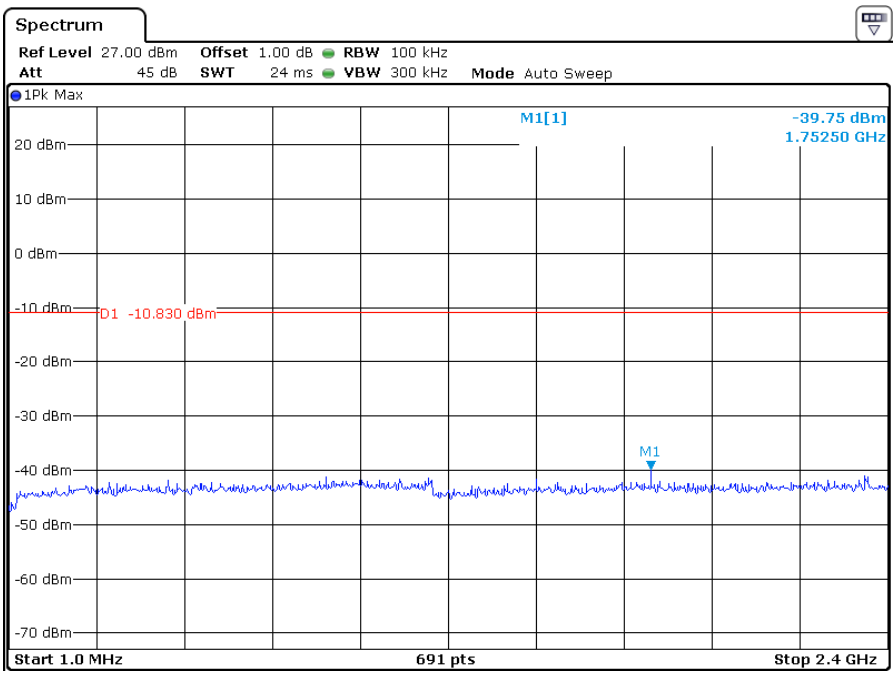


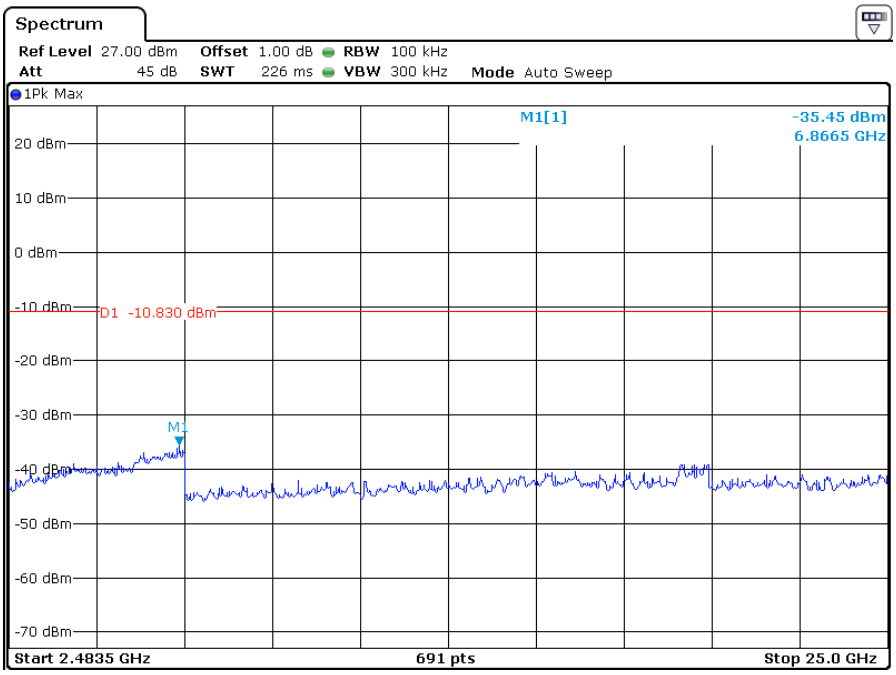

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -35.10 dBm
6.8335 GHz
D1 -11.940 dBm
M1
Start 2.4835 GHz 691 pts Stop 25.0 GHz


Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -43.72 dB
-11.4620 MHz
M1[1] 8.01 dBm
2.4105070 GHz
M1
D1
CF 2.4 GHz 691 pts Span 60.0 MHz

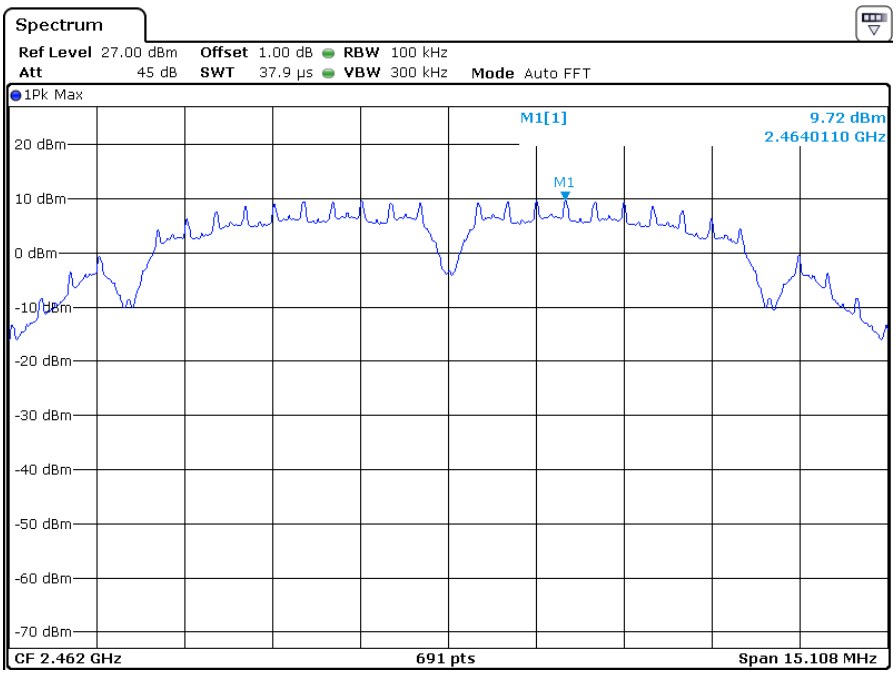
Channel 06 (2437MHz) Reference Level: 9.17dBm

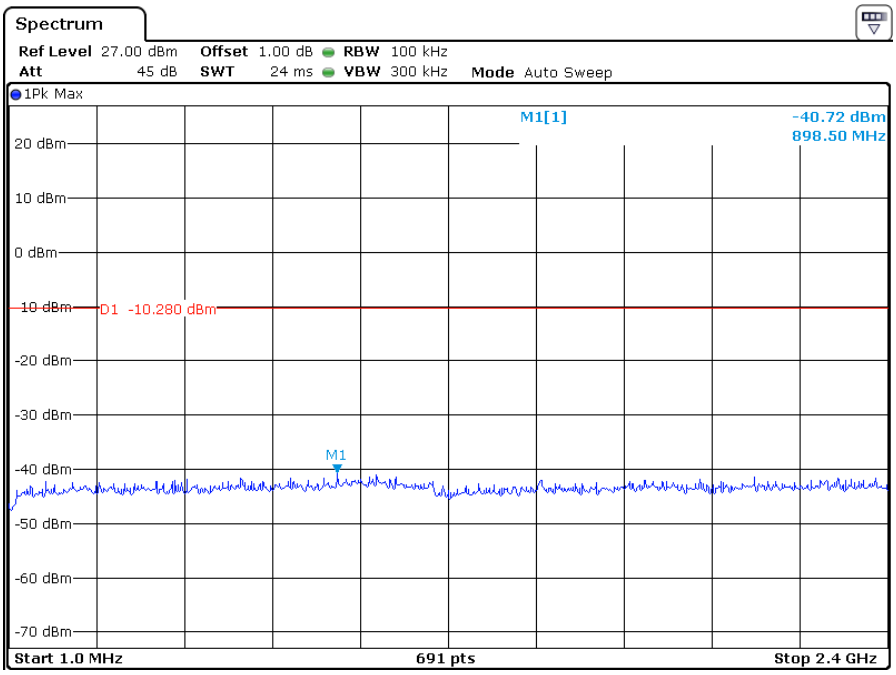


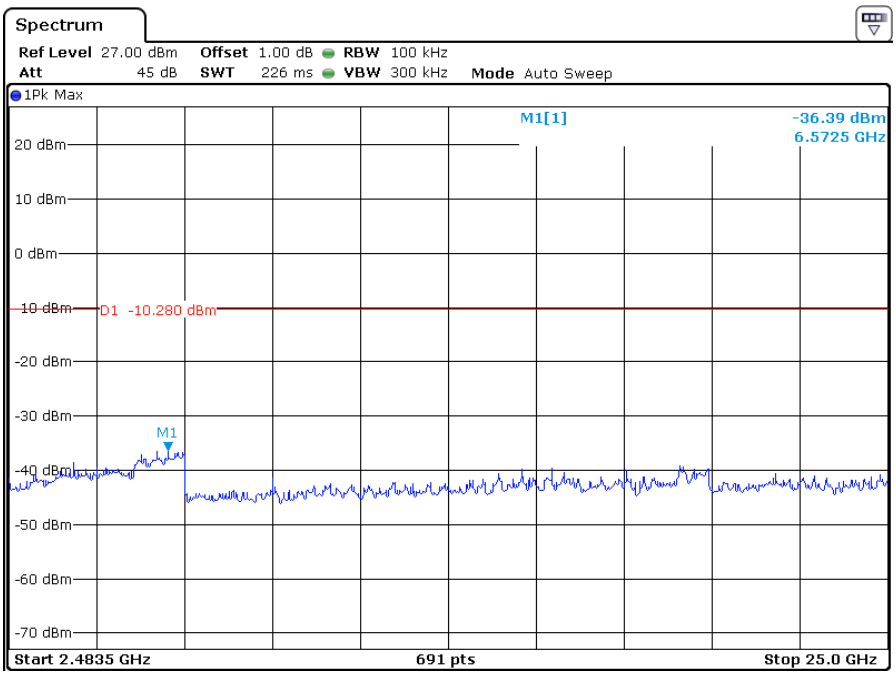


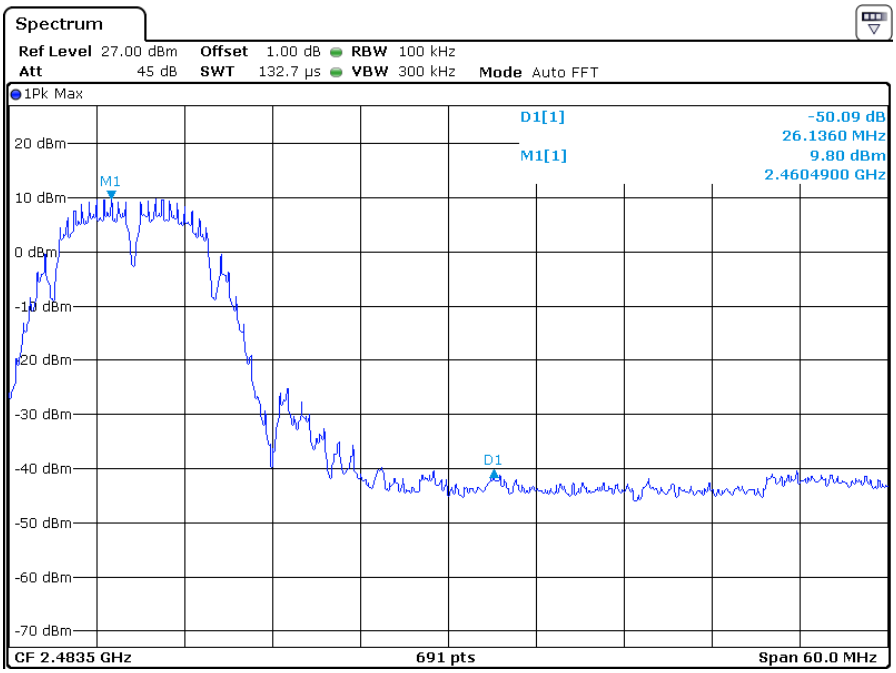


Channel 11 (2462MHz) Reference Level: 9.72dBm

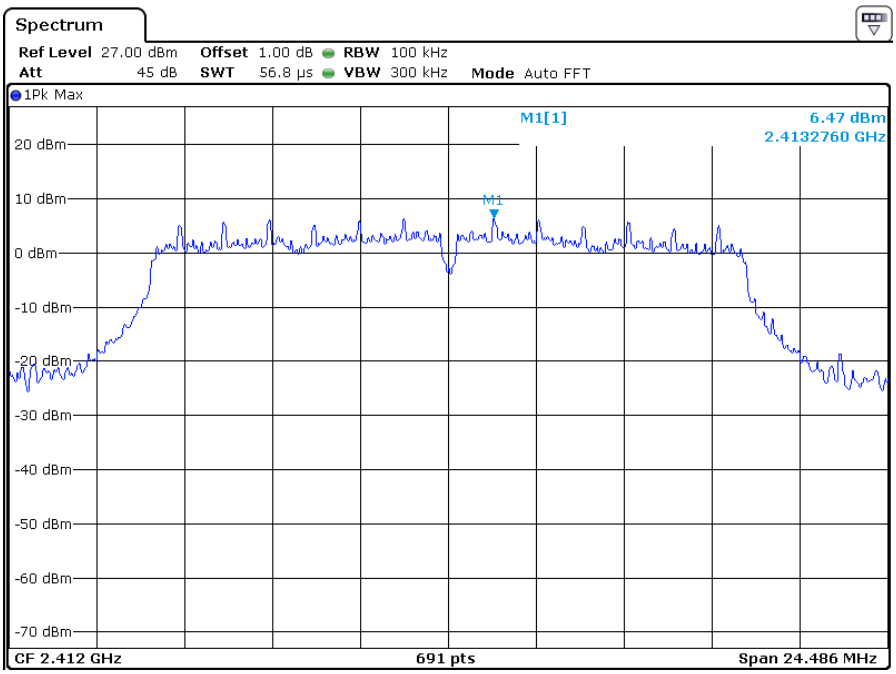


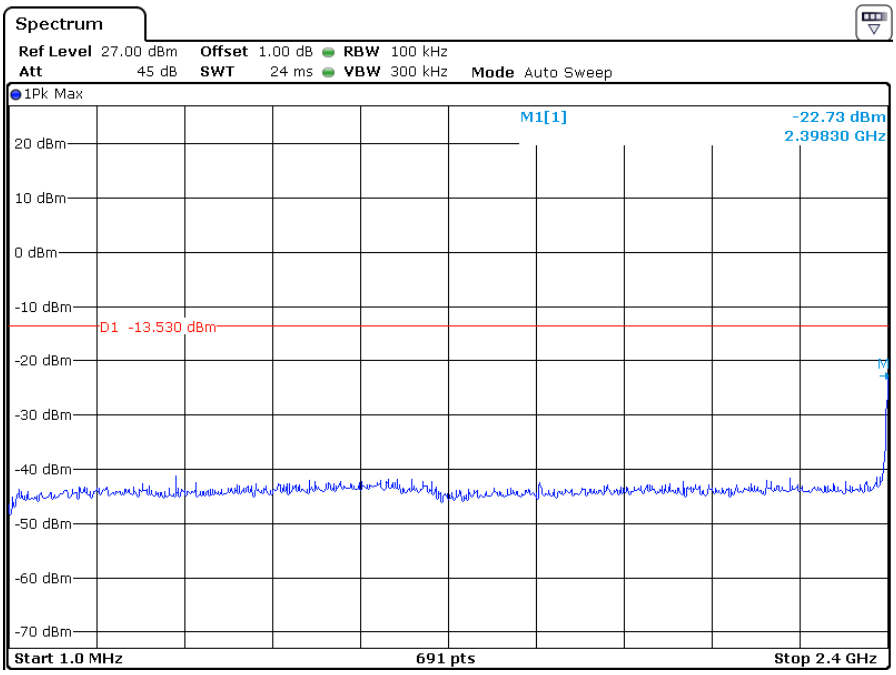

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -40.72 dBm
898.50 MHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -10.280 dBm
-20 dBm
-30 dBm
-40 dBm
M1
-50 dBm
-60 dBm
-70 dBm
Start 1.0 MHz
691 pts
Stop 2.4 GHz

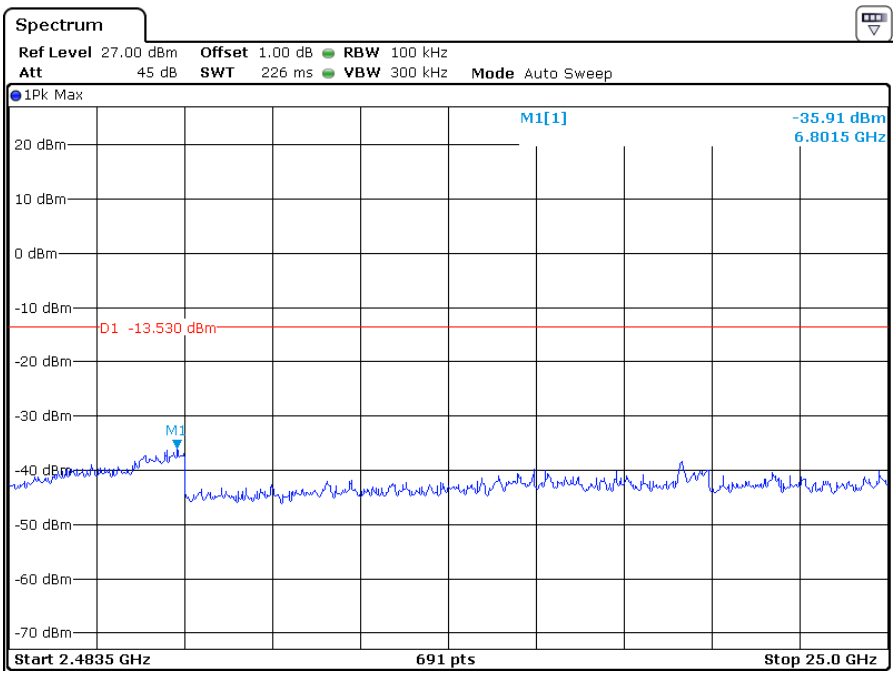

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -36.39 dBm
6.5725 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -10.280 dBm
-20 dBm
-30 dBm
M1
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz

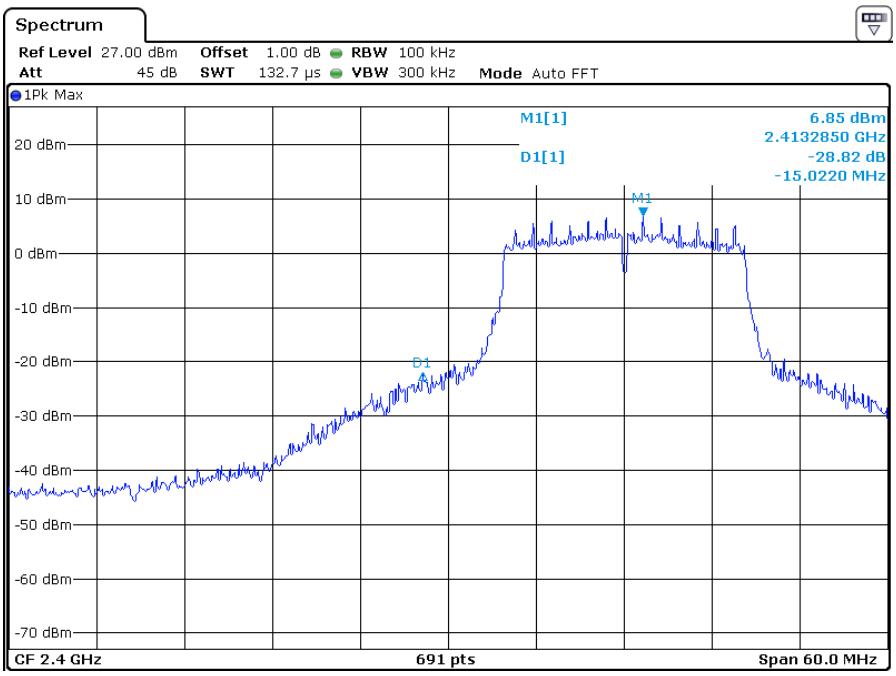


802.11g
Channel 01 (2412MHz) Reference Level: 6.47dBm

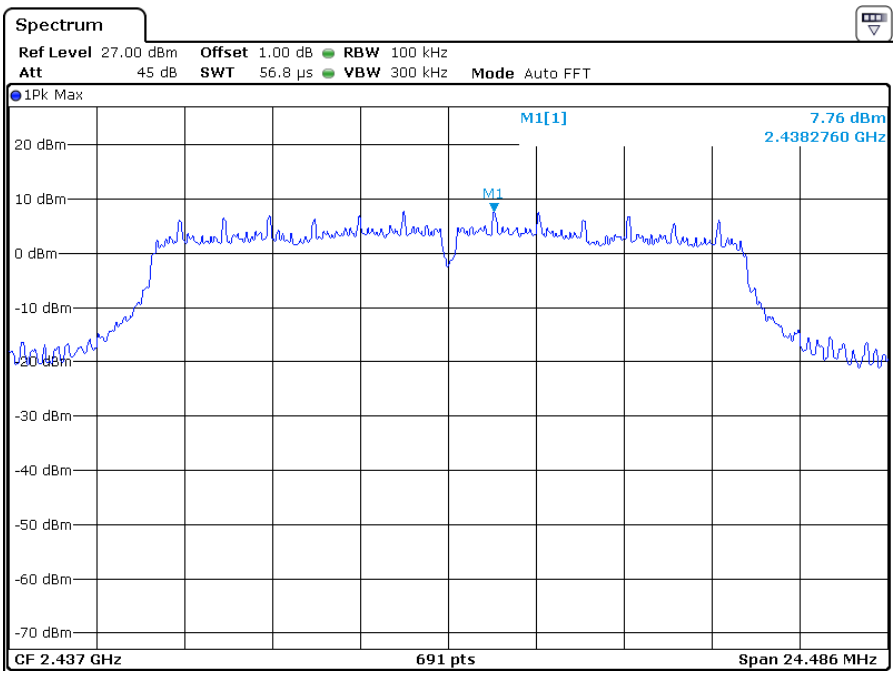


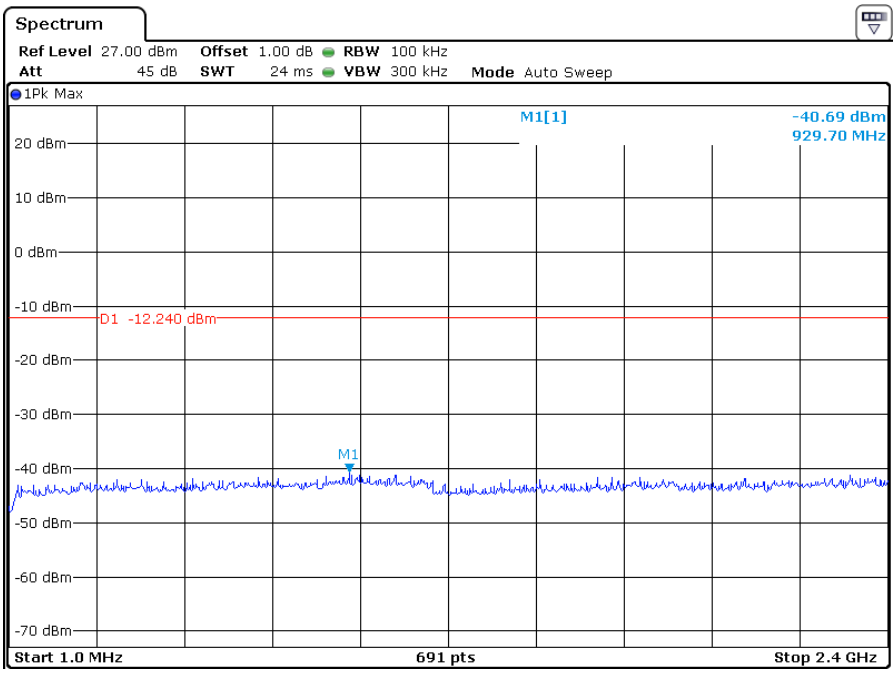

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -22.73 dBm
2.39830 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -13.530 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 1.0 MHz
691 pts
Stop 2.4 GHz

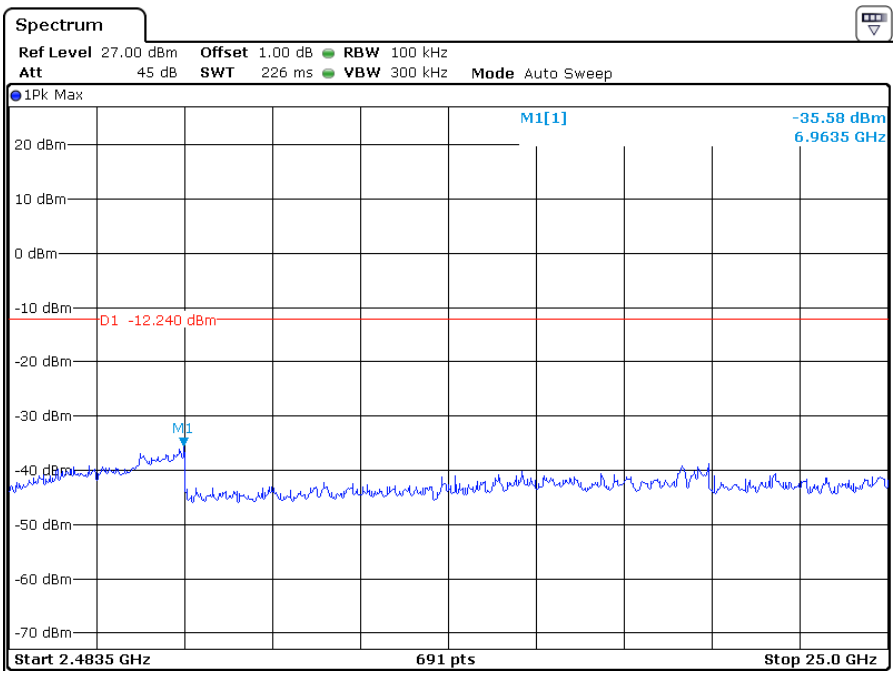

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -35.91 dBm
6.8015 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -13.530 dBm
-20 dBm
-30 dBm
M1
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz



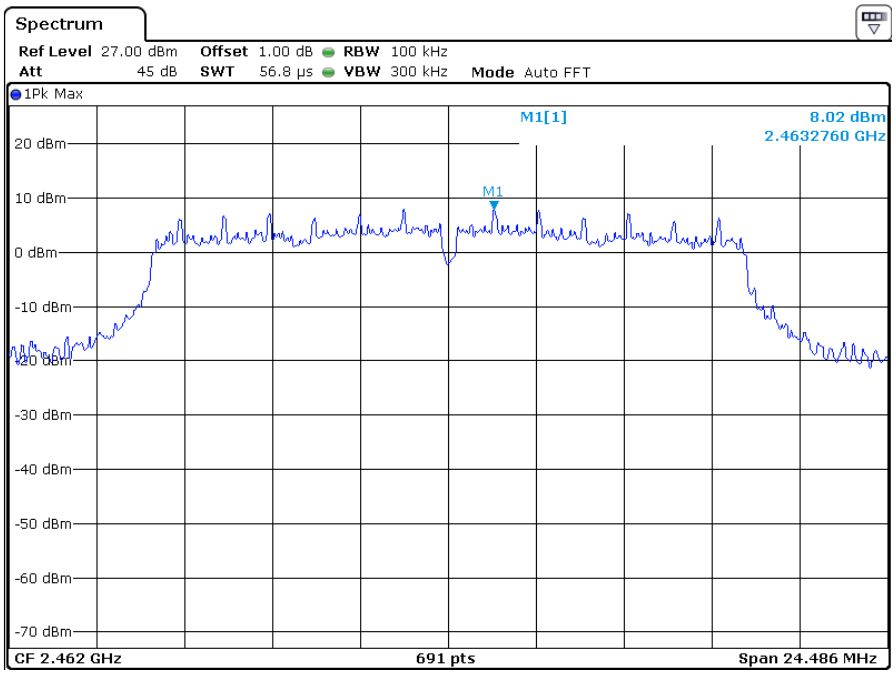
Channel 06 (2437MHz) Reference Level: 7.76dBm

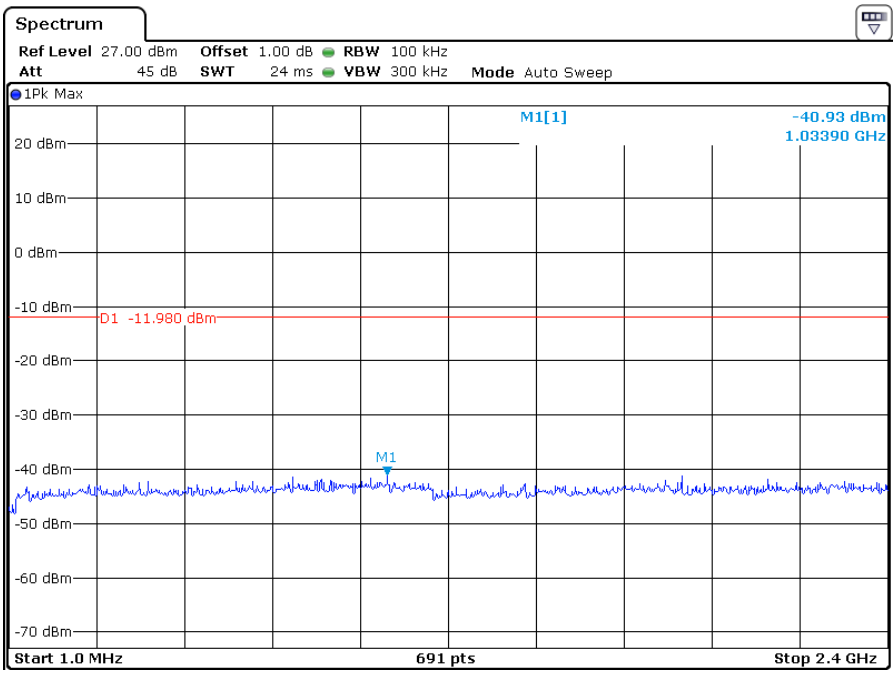


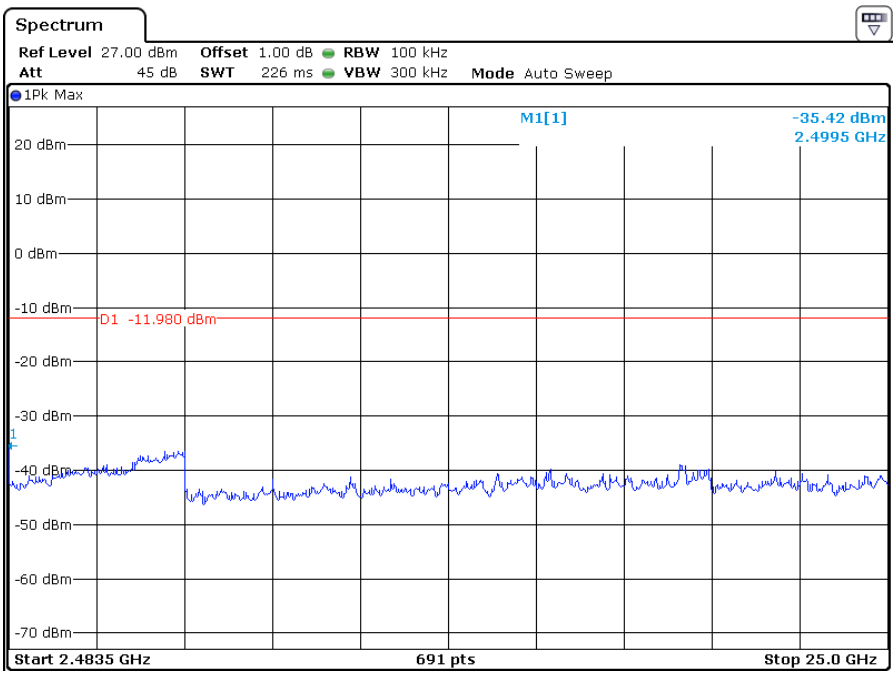

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -40.69 dBm
929.70 MHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -12.240 dBm
-20 dBm
-30 dBm
M1
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 1.0 MHz
691 pts
Stop 2.4 GHz

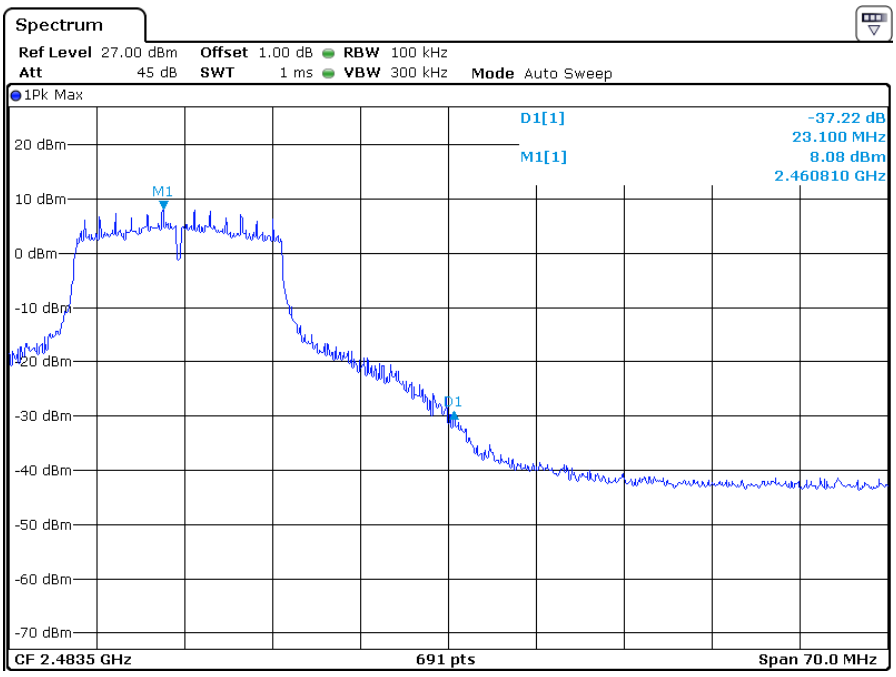

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -35.58 dBm
6.9635 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -12.240 dBm
-20 dBm
-30 dBm
M1
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz

Channel 11 (2462MHz) Reference Level: 8.02dBm

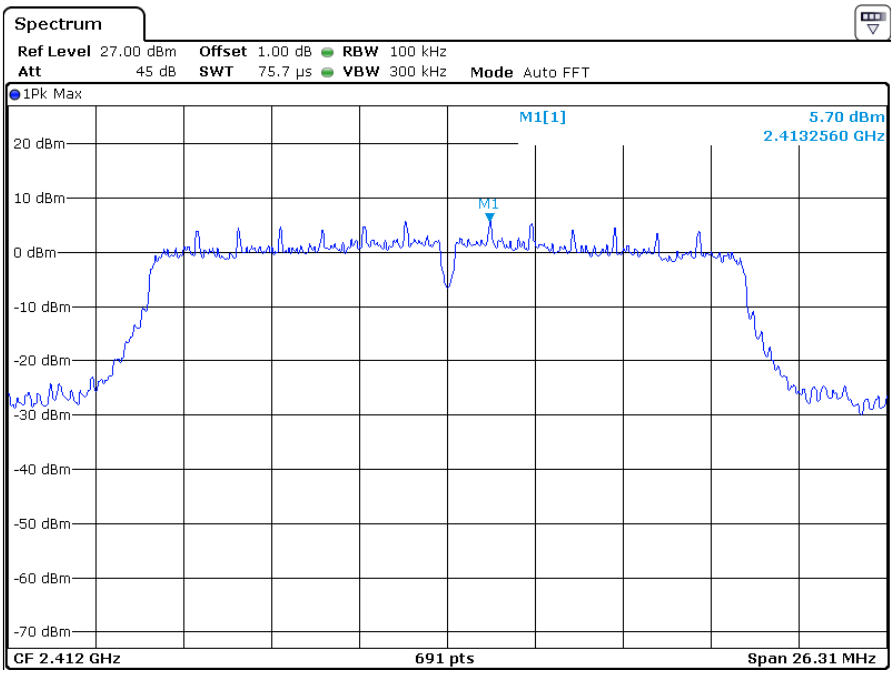


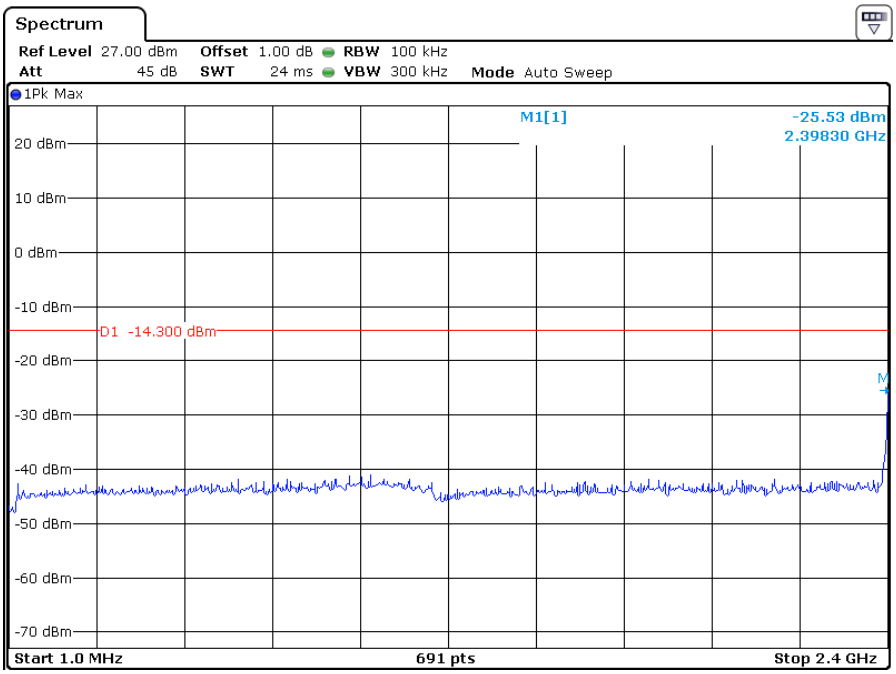


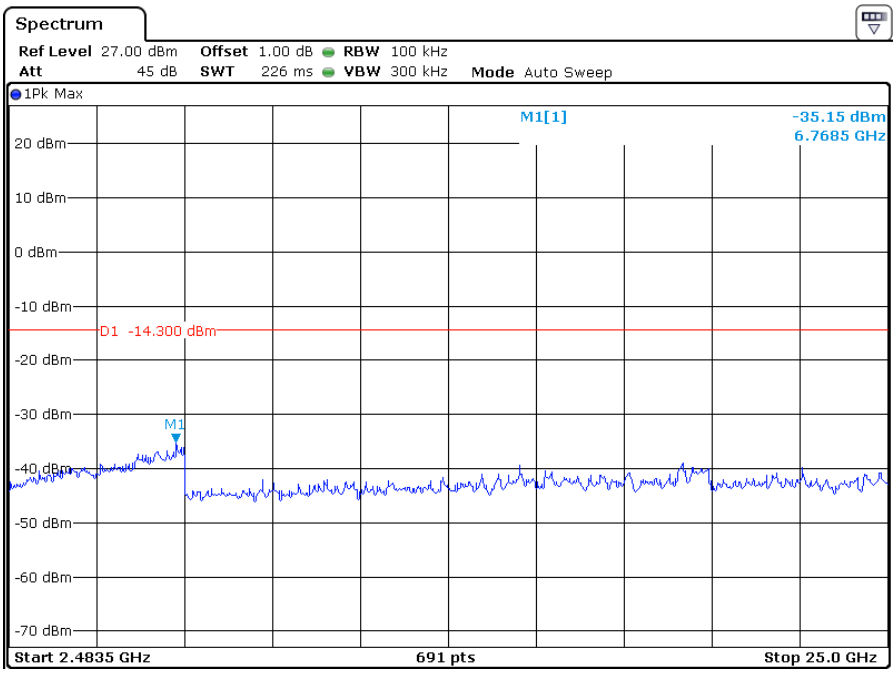

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -35.42 dBm
2.4995 GHz
D1 -11.980 dBm
Start 2.4835 GHz 691 pts Stop 25.0 GHz

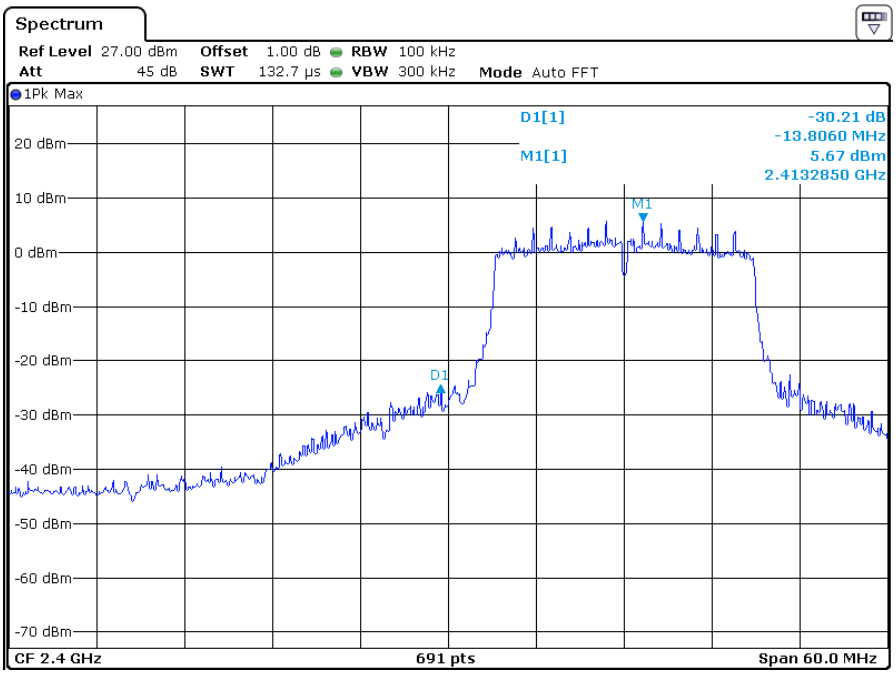

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 1 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
D1[1] -37.22 dB
23.100 MHz
M1[1] 8.08 dBm
2.460810 GHz
CF 2.4835 GHz 691 pts Span 70.0 MHz

802.11n-HT20
Channel 01 (2412MHz) Reference Level: 5.70dBm

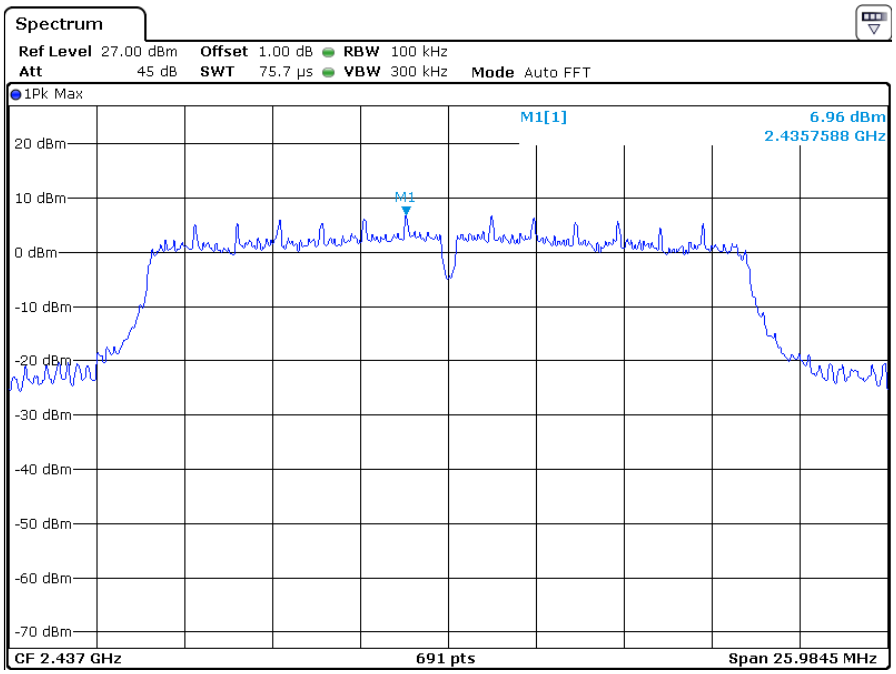


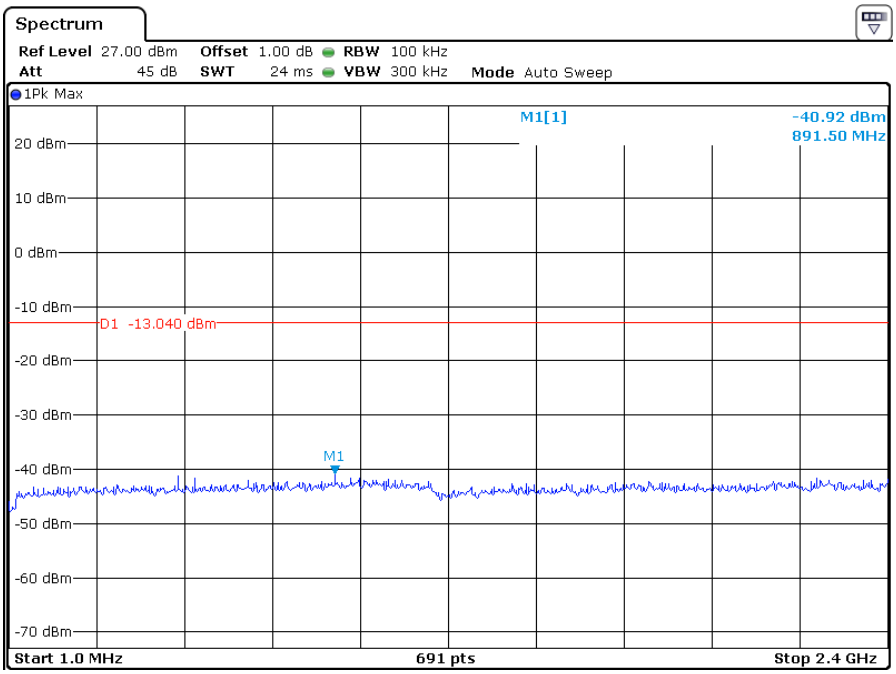


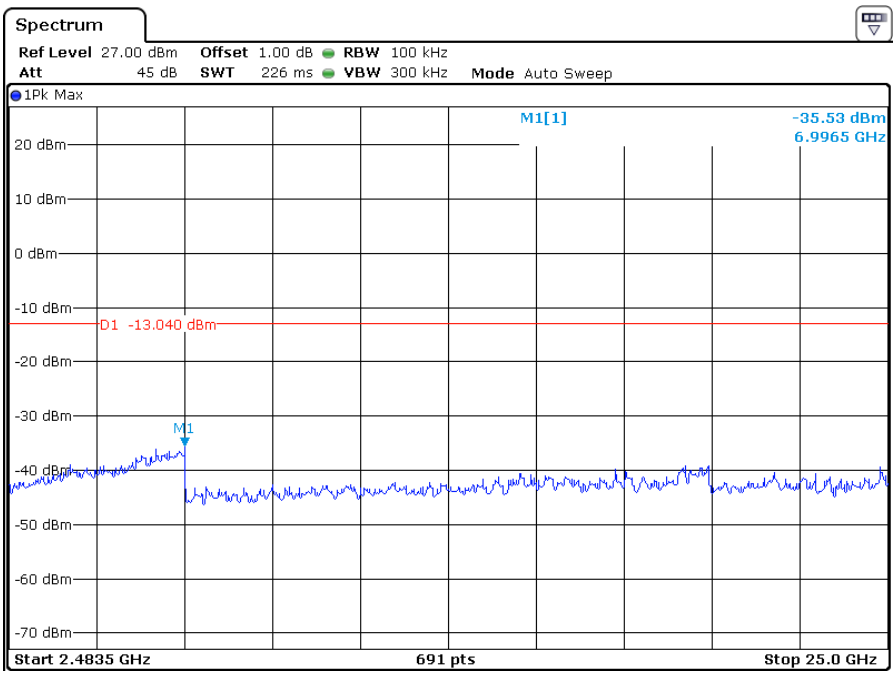

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -35.15 dBm
6.7685 GHz
D1 -14.300 dBm
M1
Start 2.4835 GHz 691 pts Stop 25.0 GHz


Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -30.21 dB
-13.8060 MHz
M1[1] 5.67 dBm
2.4132850 GHz
M1
D1
CF 2.4 GHz 691 pts Span 60.0 MHz

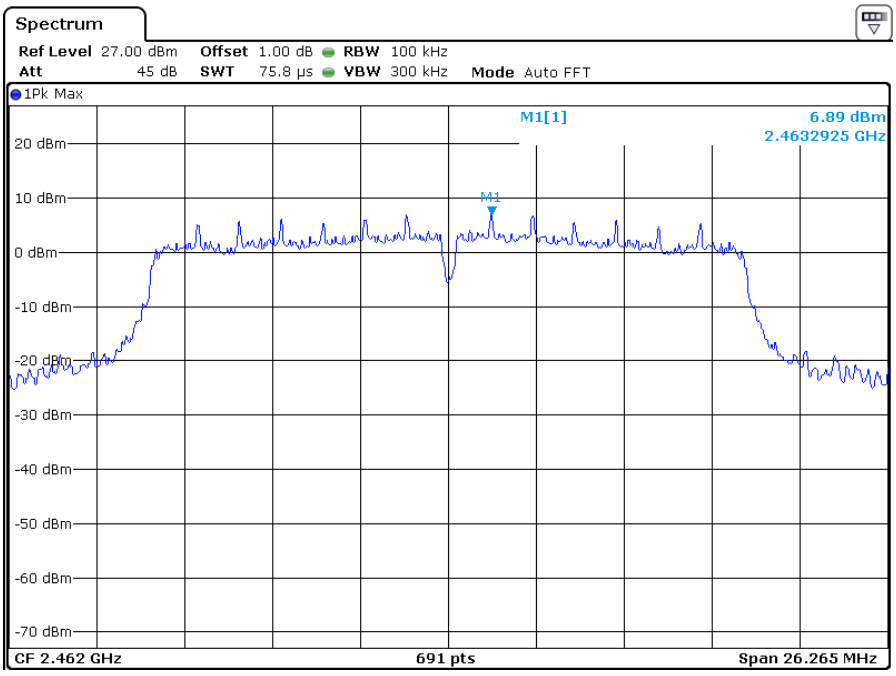
Channel 06 (2437MHz) Reference Level: 6.96dBm

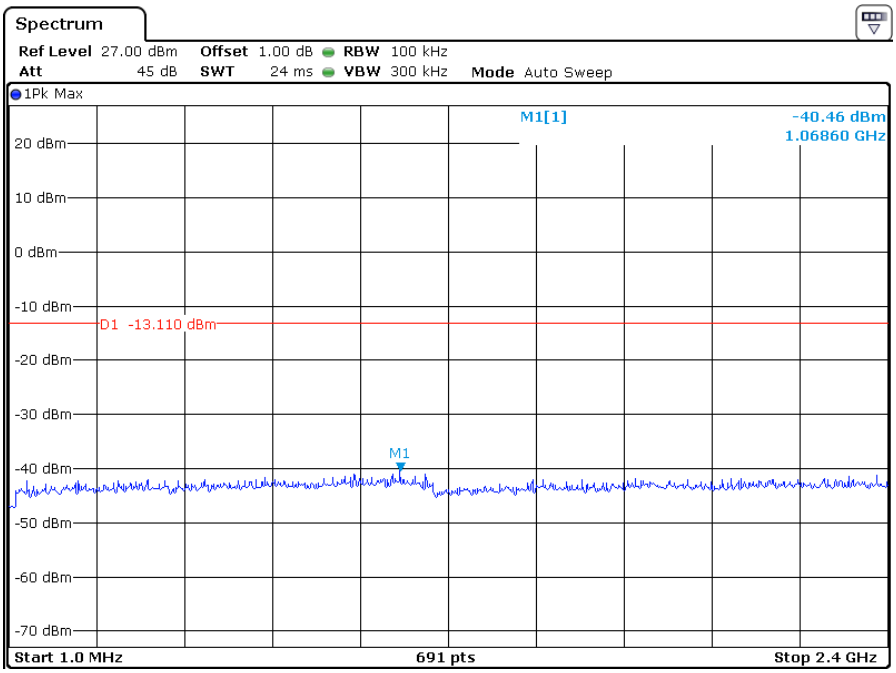


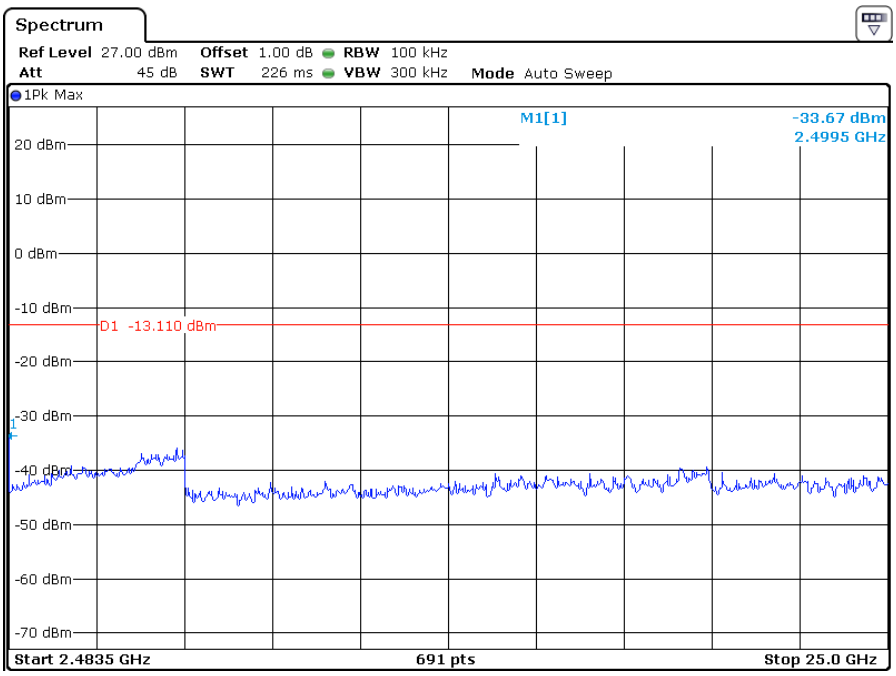


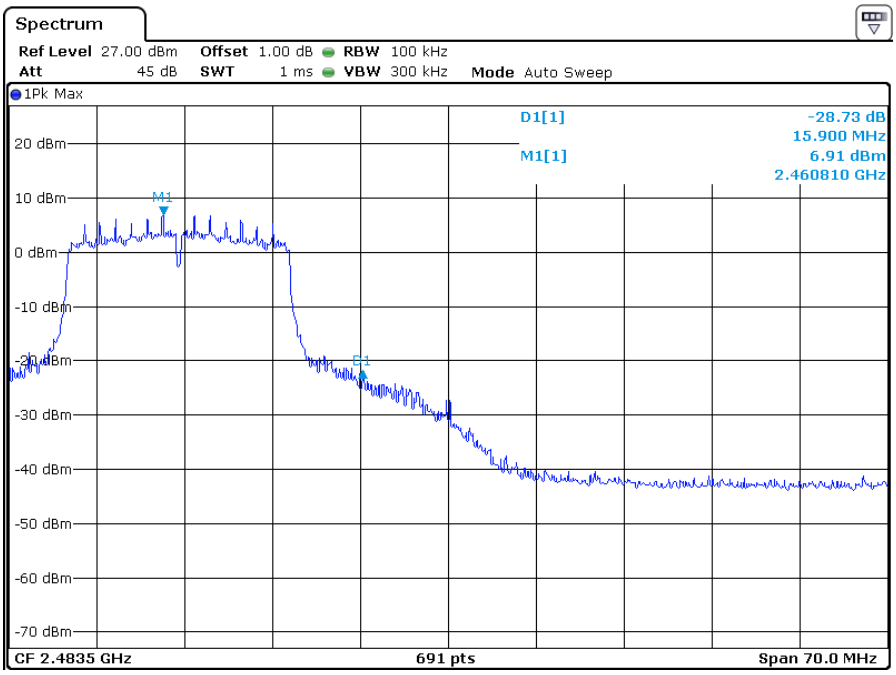


Channel 11 (2462MHz) Reference Level: 6.89dBm

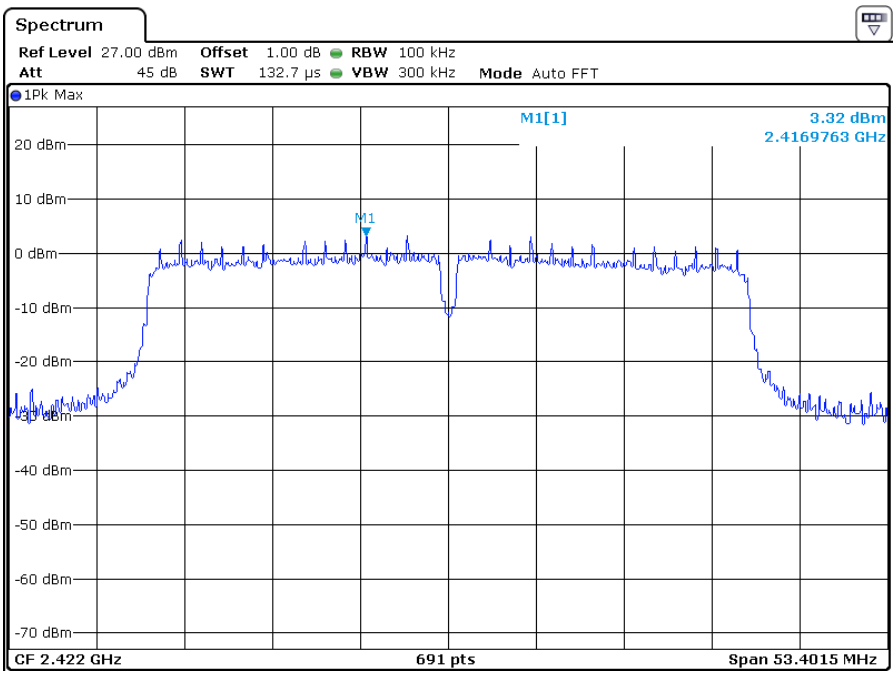


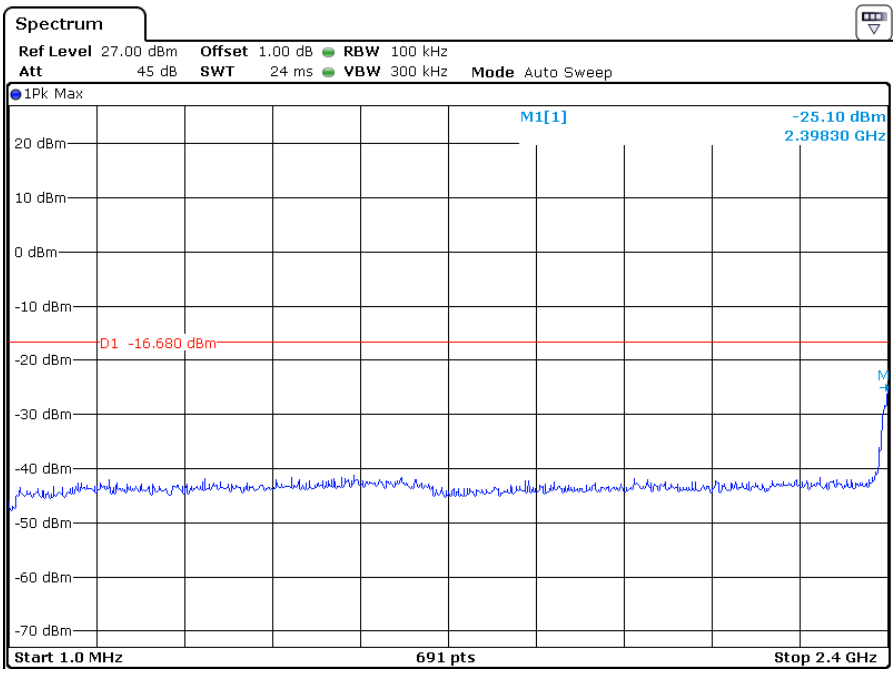

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -40.46 dBm
1.06860 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -13.110 dBm
-20 dBm
-30 dBm
M1
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 1.0 MHz
691 pts
Stop 2.4 GHz

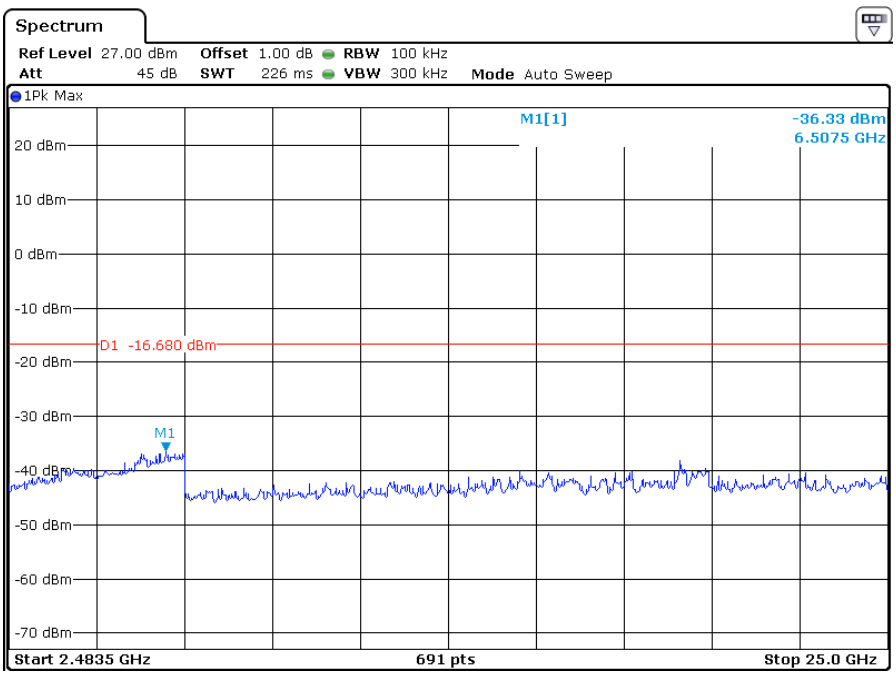

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -33.67 dBm
2.4995 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -13.110 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz

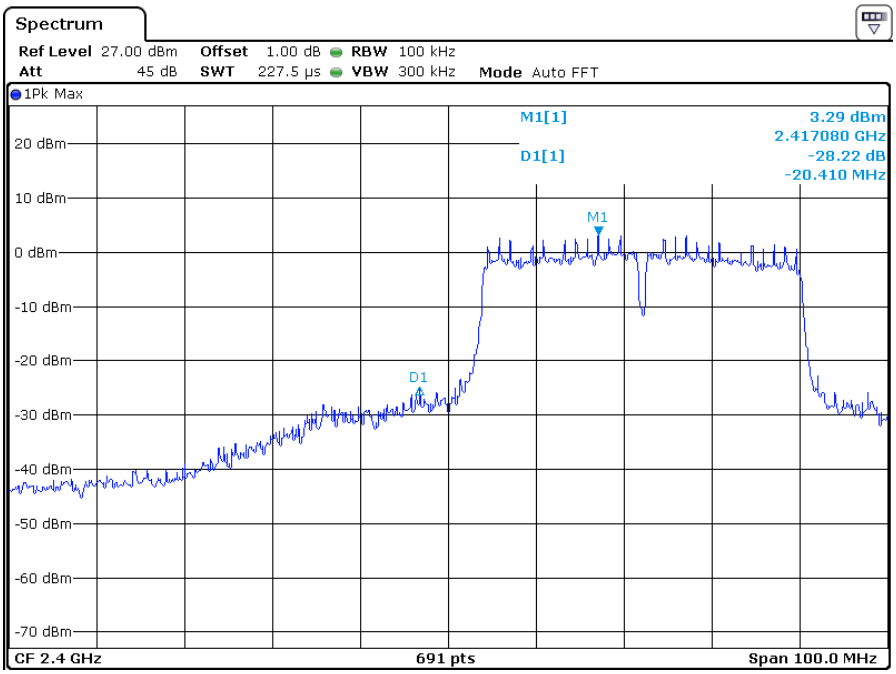


802.11n-HT40
Channel 03 (2422MHz) Reference Level: 3.32dBm

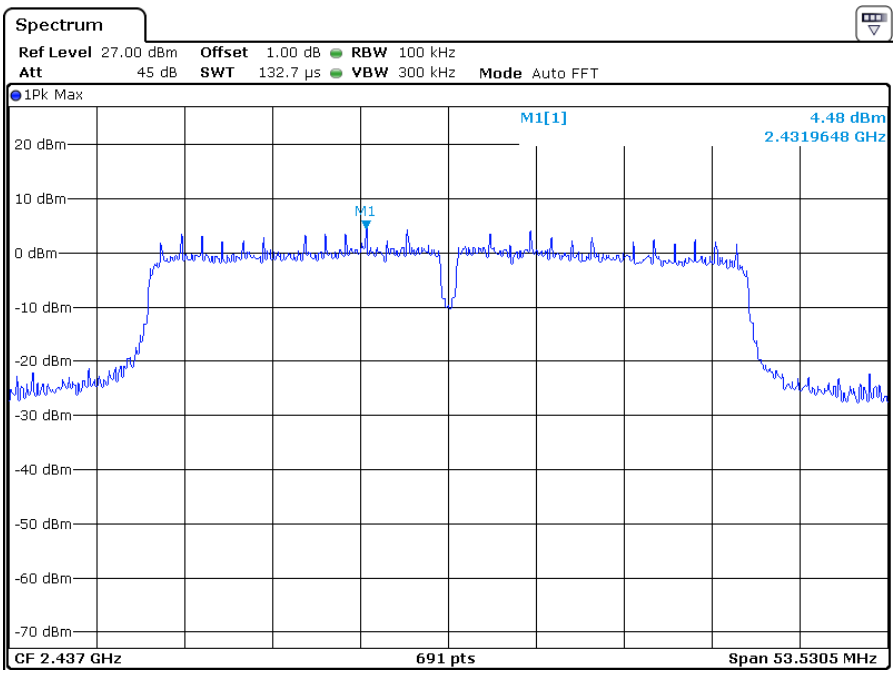


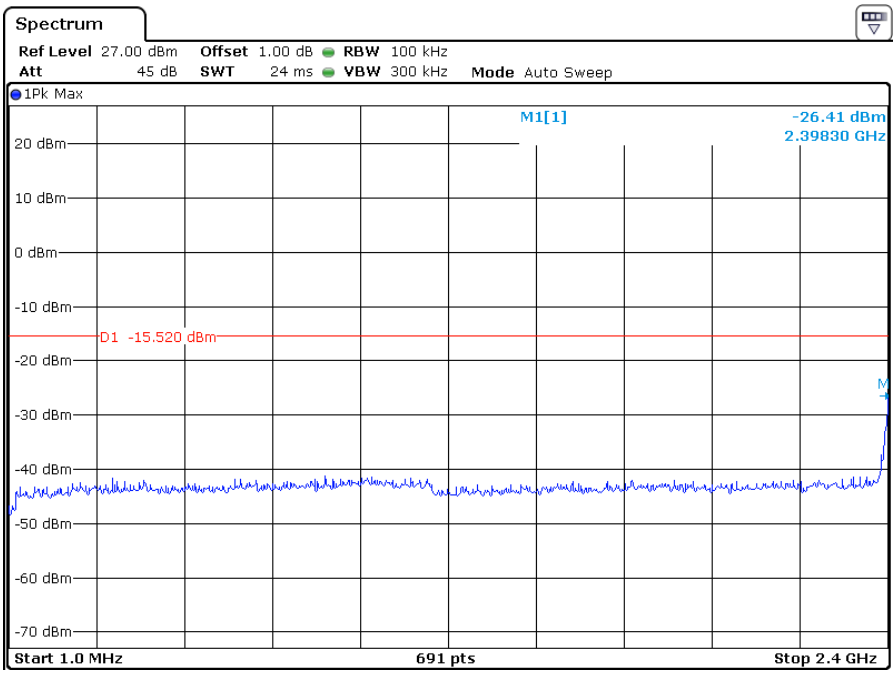

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1]
-25.10 dBm
2.39830 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -16.680 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 1.0 MHz
691 pts
Stop 2.4 GHz

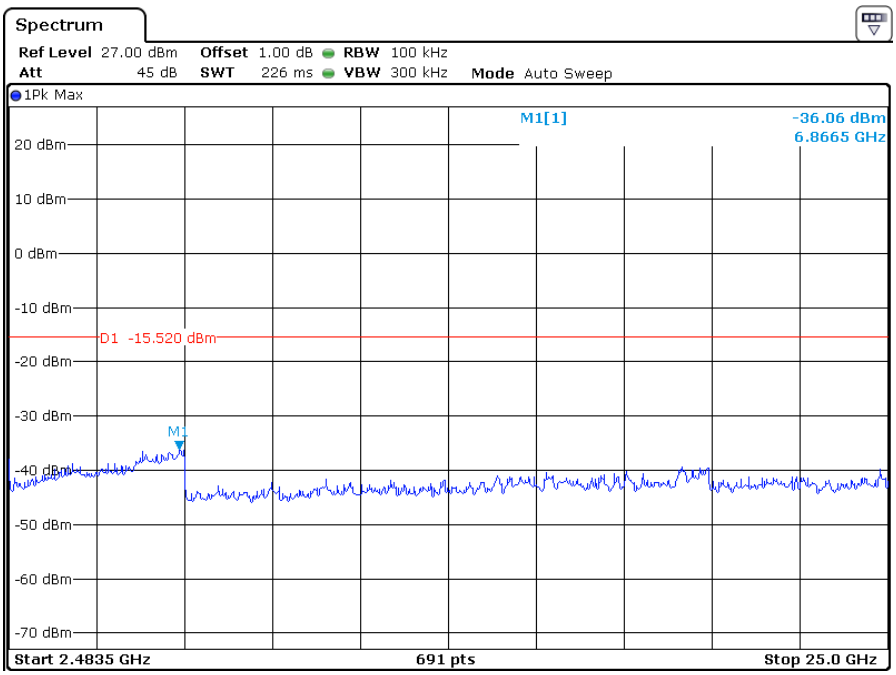

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1]
-36.33 dBm
6.5075 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -16.680 dBm
-20 dBm
-30 dBm
M1
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz



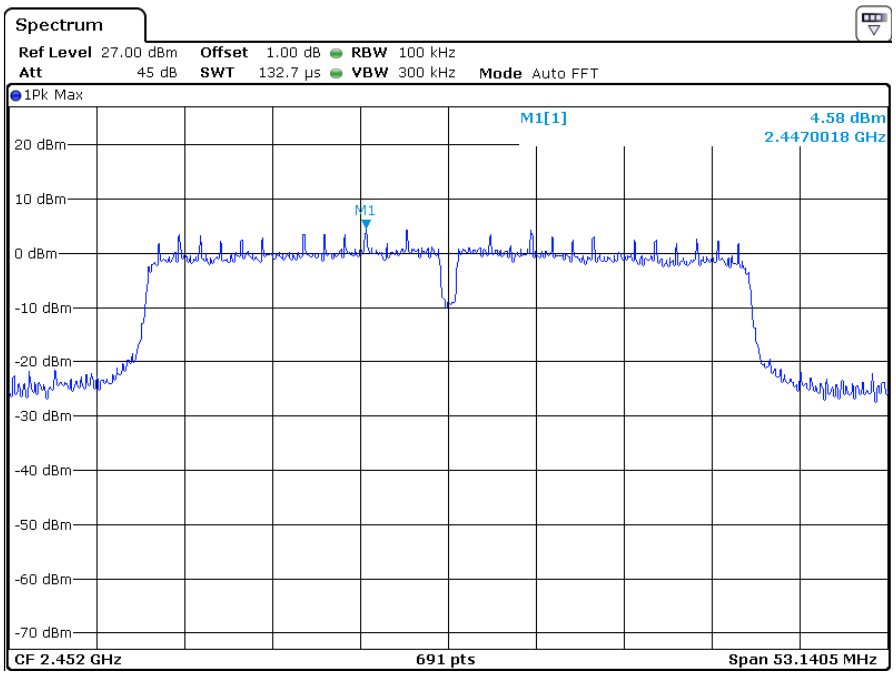
Channel 06 (2437MHz) Reference Level: 4.48dBm

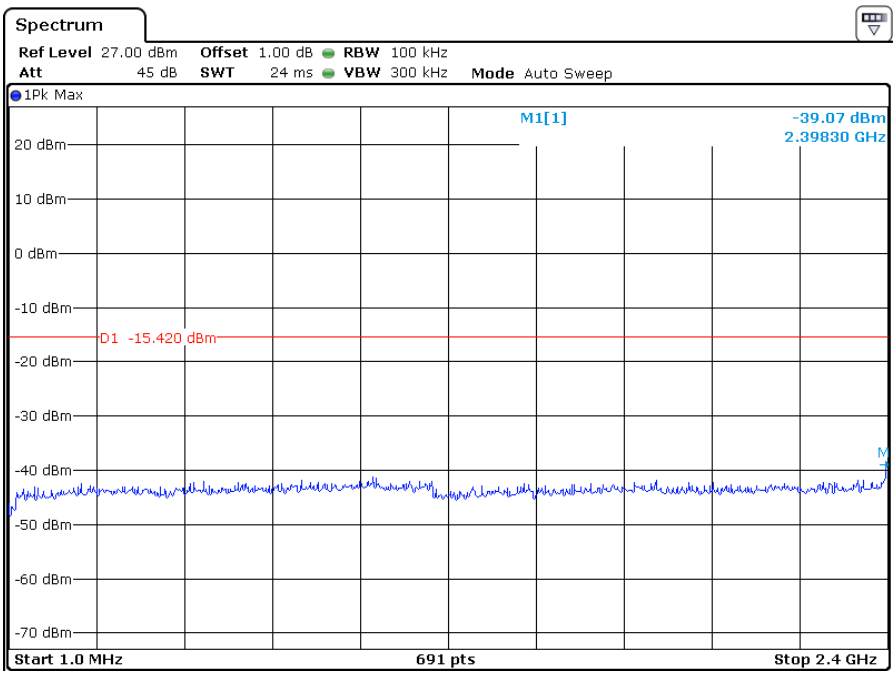


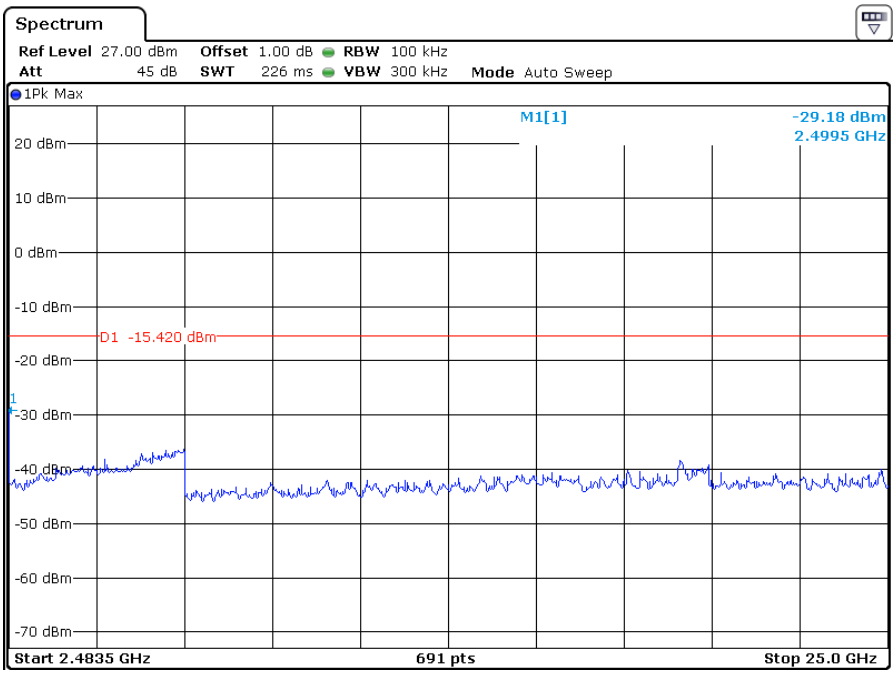

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -26.41 dBm
2.39830 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -15.520 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 1.0 MHz
691 pts
Stop 2.4 GHz

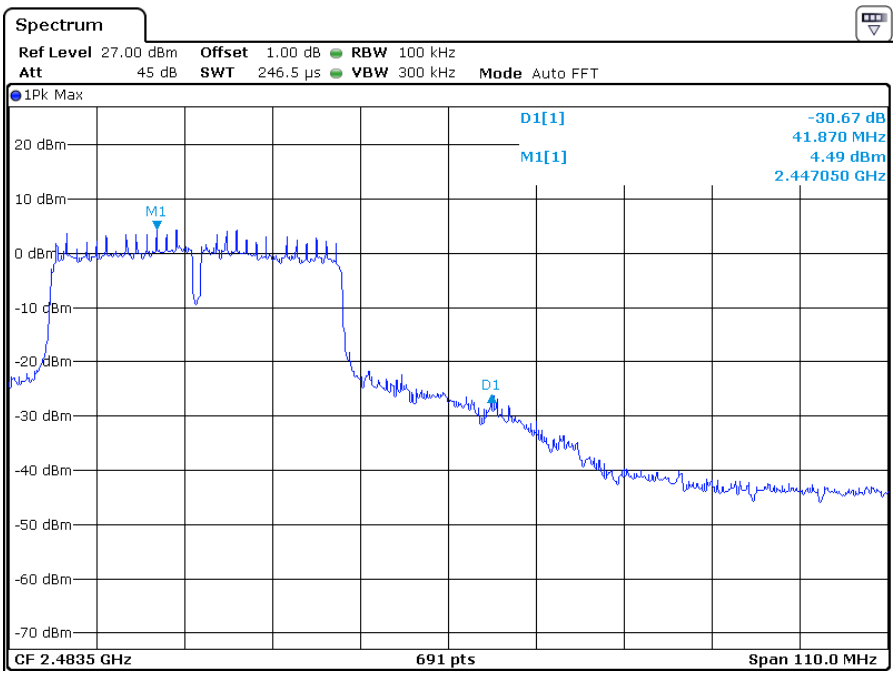

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -36.06 dBm
6.8665 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -15.520 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz

Channel 09 (2452MHz) Reference Level: 4.58dBm

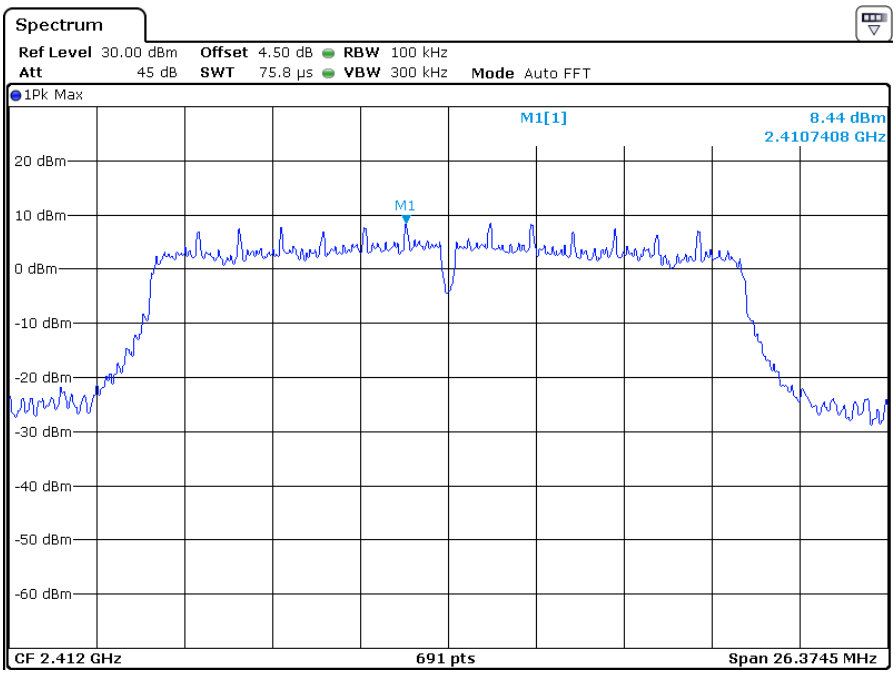


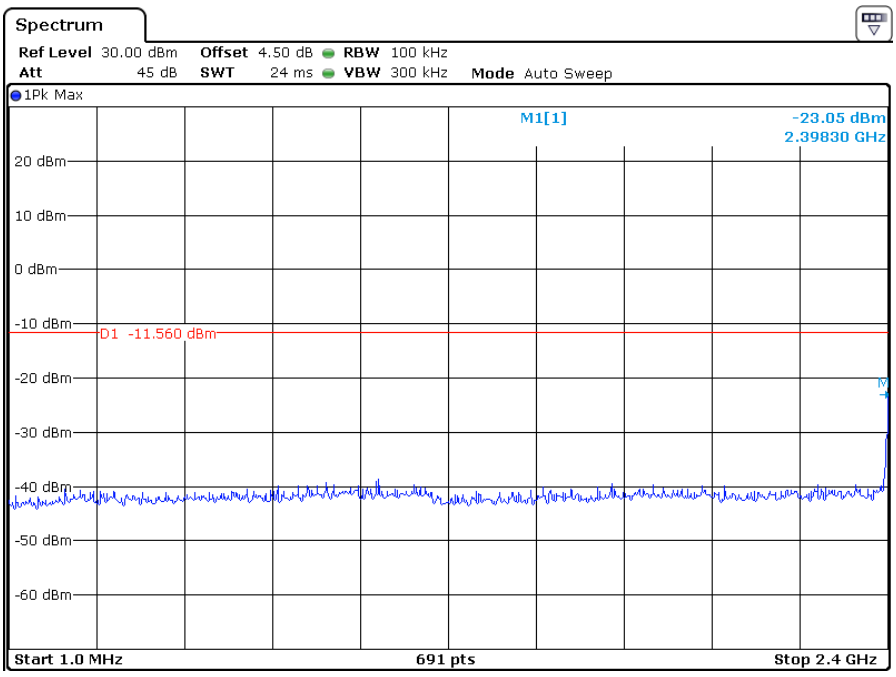


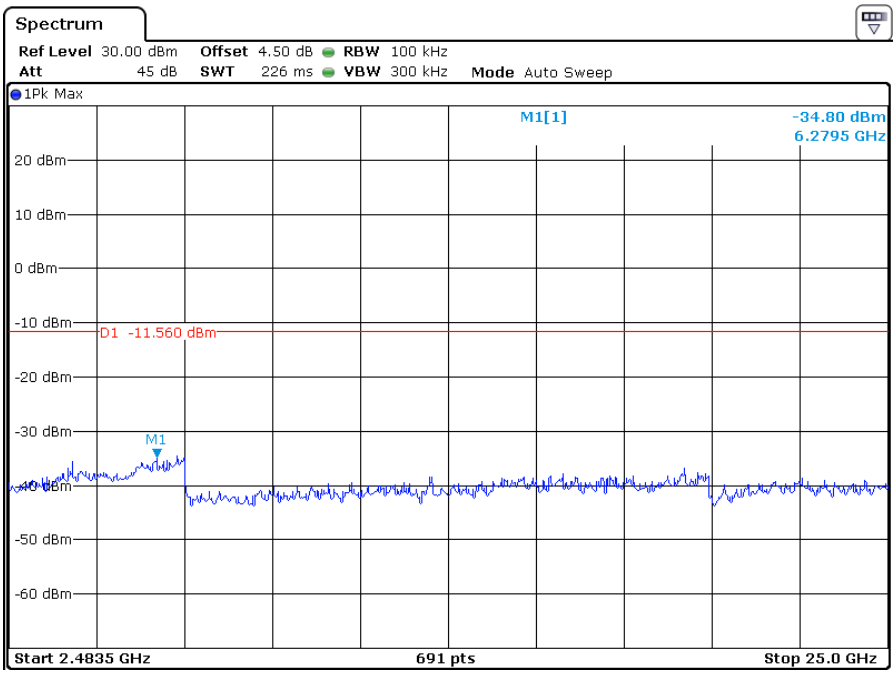

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -29.18 dBm
2.4995 GHz
D1 -15.420 dBm
Start 2.4835 GHz 691 pts Stop 25.0 GHz

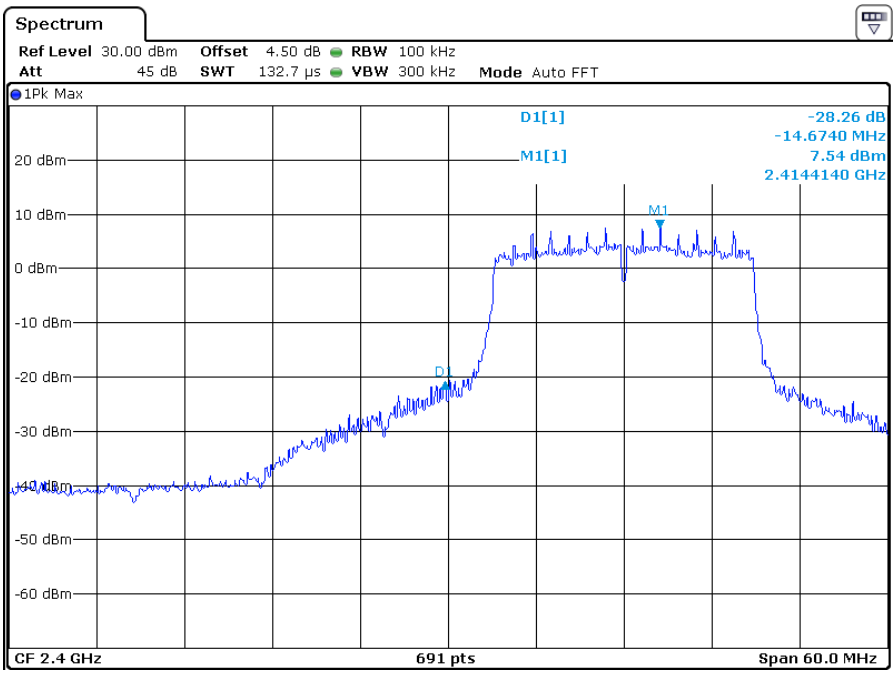

Spectrum
Ref Level 27.00 dBm Offset 1.00 dB RBW 100 kHz
Att 45 dB SWT 246.5 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -30.67 dB
41.870 MHz
M1[1] 4.49 dBm
2.447050 GHz
CF 2.4835 GHz 691 pts Span 110.0 MHz

MIMO Mode, Ant1+ Ant2：
802.11n-HT20
Channel 01 (2412MHz) Reference Level: 8.44dBm

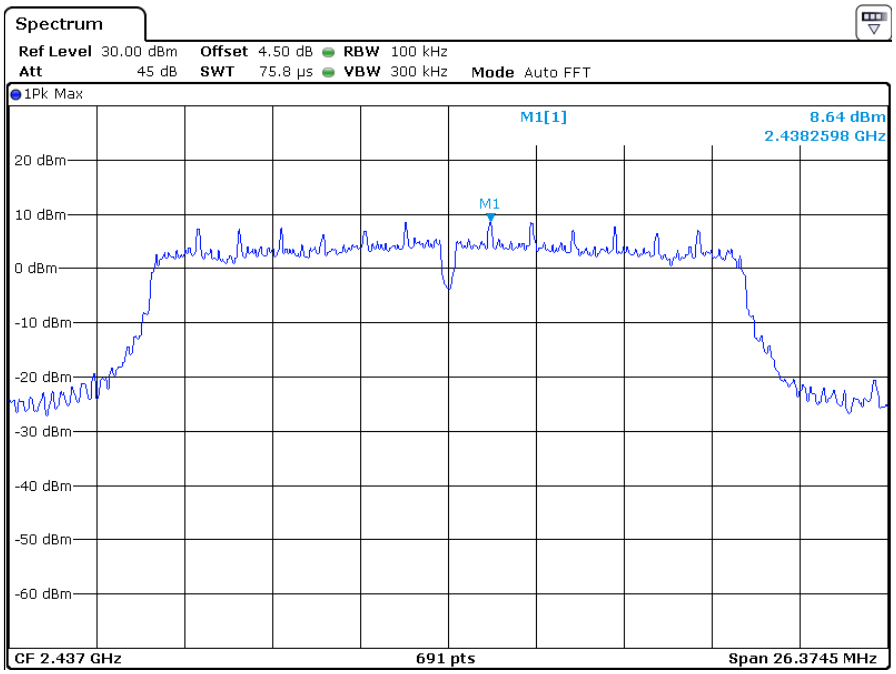


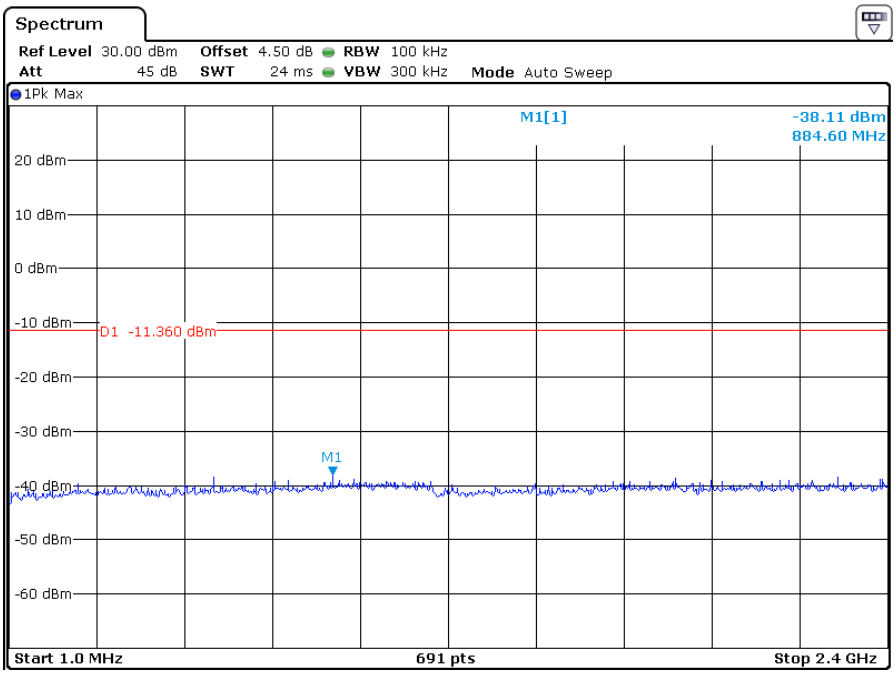


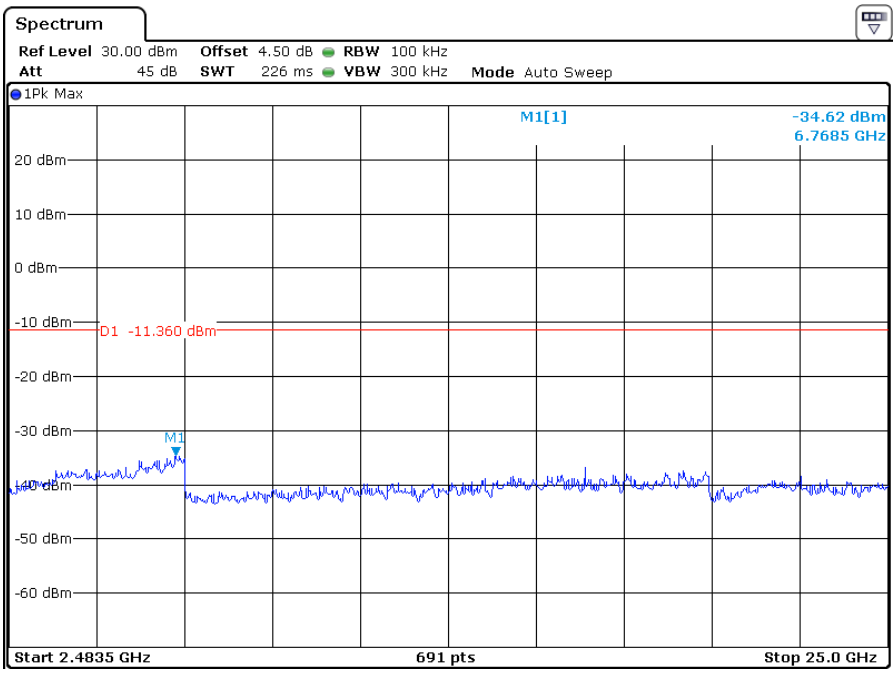

Spectrum
Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -34.80 dBm
6.2795 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -11.560 dBm
-20 dBm
-30 dBm
M1
-40 dBm
-50 dBm
-60 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz


Spectrum
Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz
Att 45 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -28.26 dB
-14.6740 MHz
M1[1] 7.54 dBm
2.4144140 GHz
20 dBm
10 dBm
M1
0 dBm
-10 dBm
-20 dBm
D1
-30 dBm
-40 dBm
-50 dBm
-60 dBm
CF 2.4 GHz
691 pts
Span 60.0 MHz

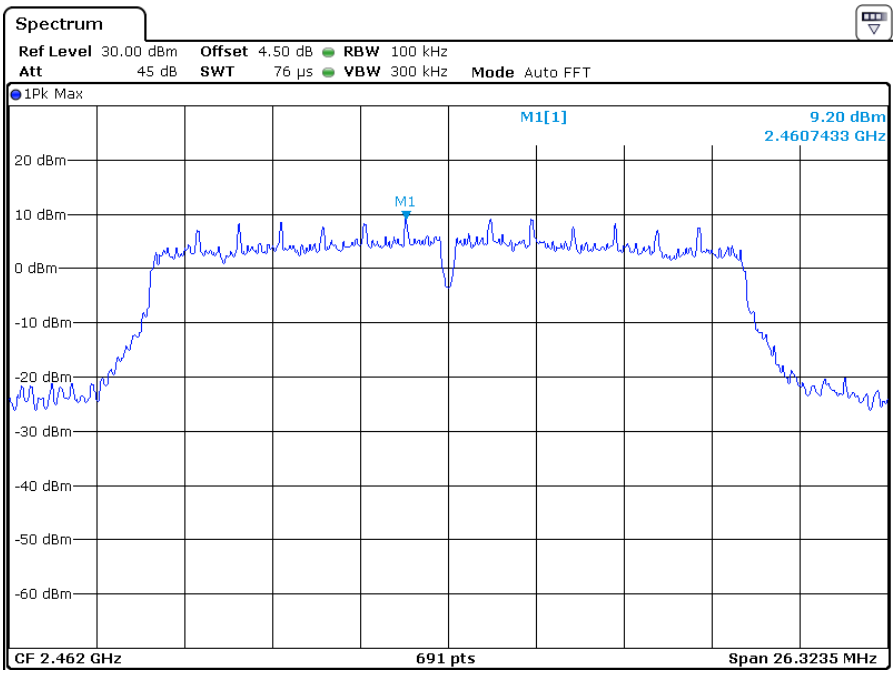
Channel 06 (2437MHz) Reference Level: 8.64dBm

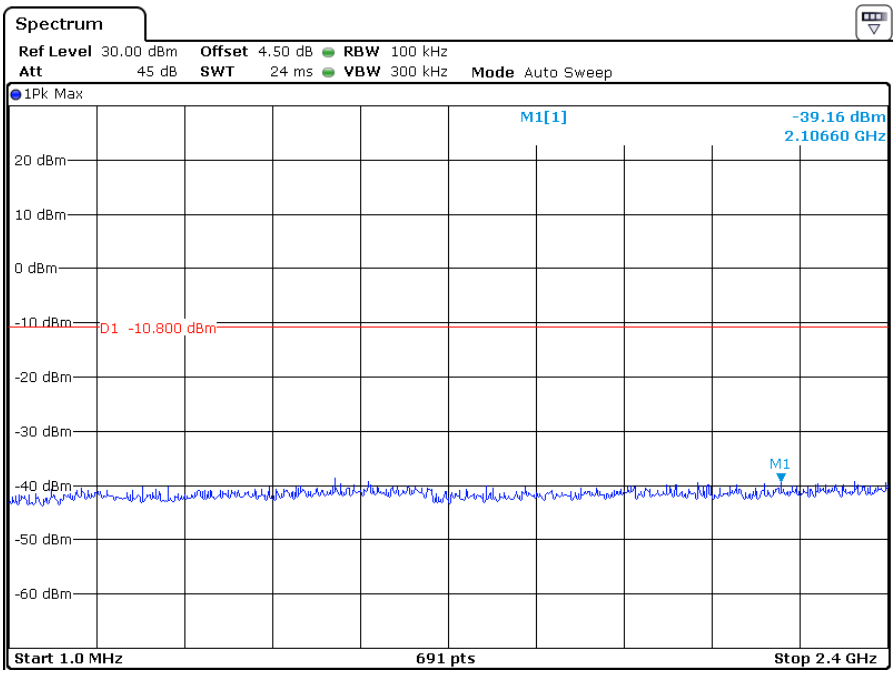


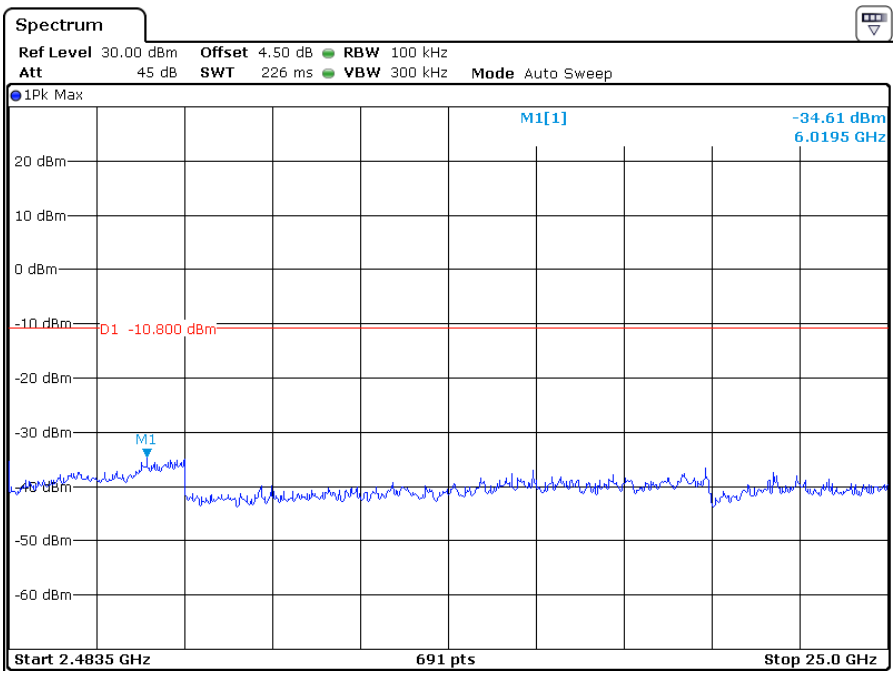


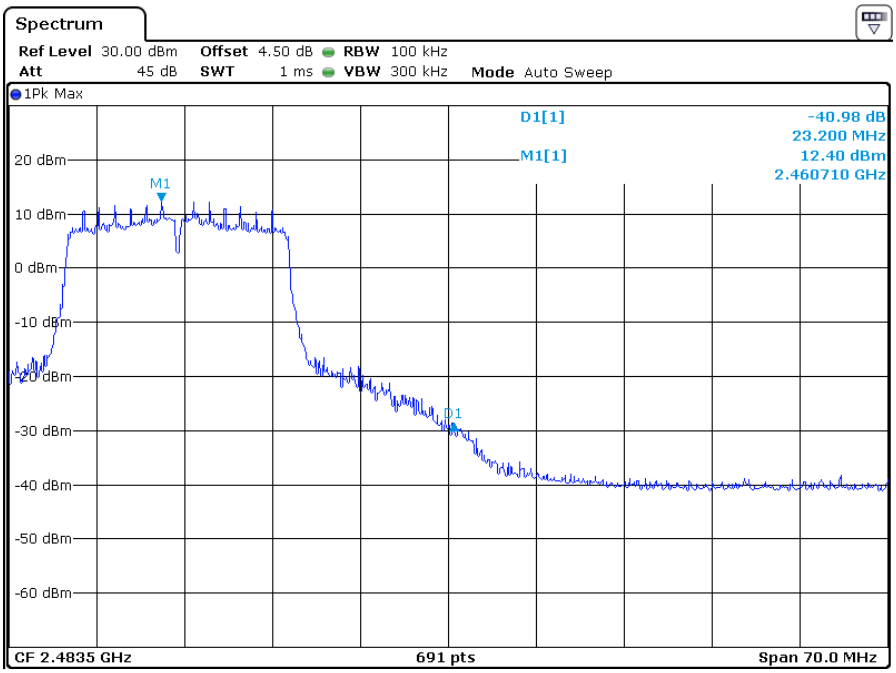


Channel 11 (2462MHz) Reference Level: 9.20dBm

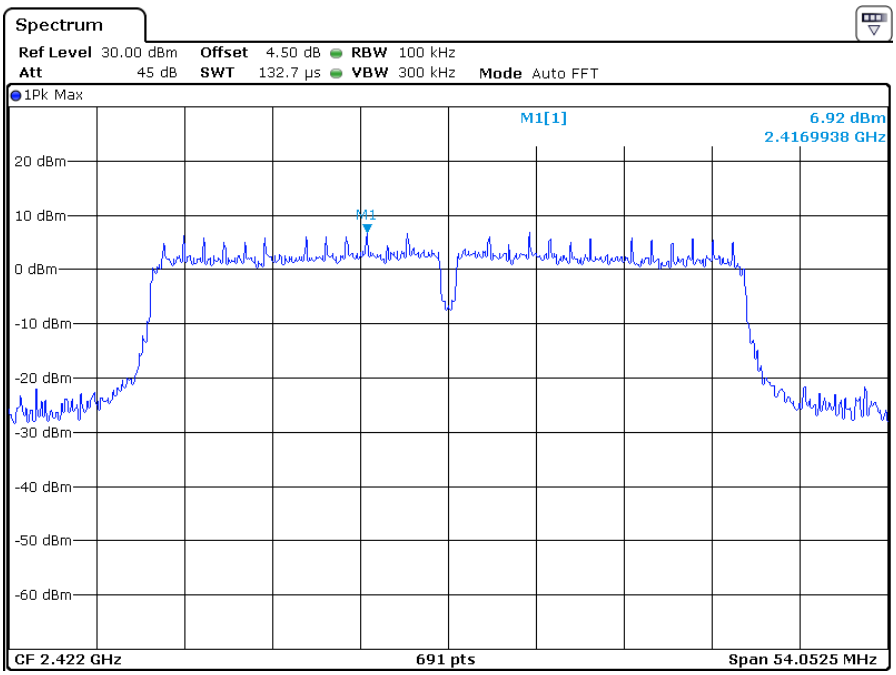


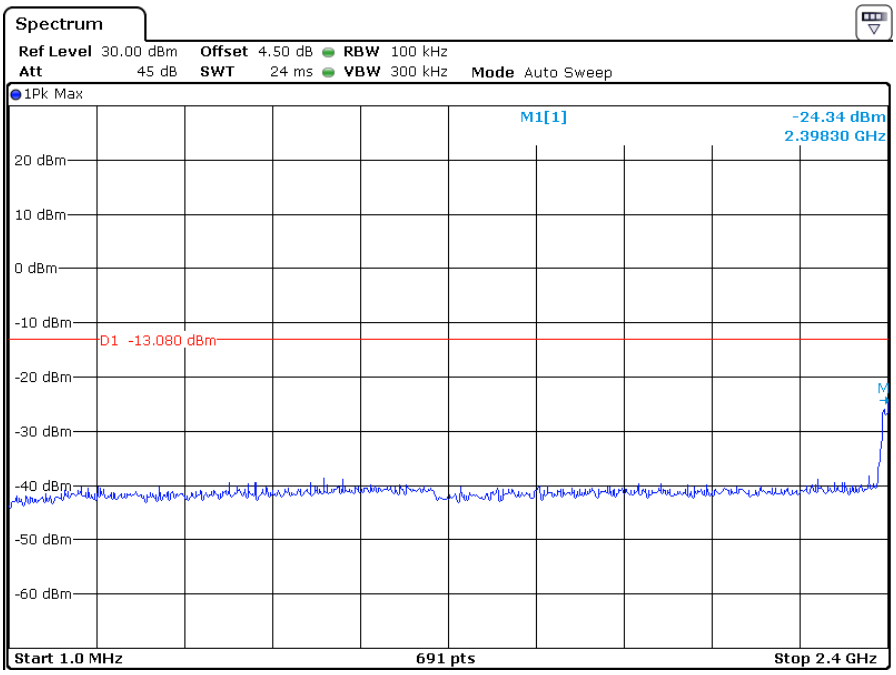

Spectrum
Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz
Att 45 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -39.16 dBm
2.10660 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -10.800 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
M1
Start 1.0 MHz
691 pts
Stop 2.4 GHz

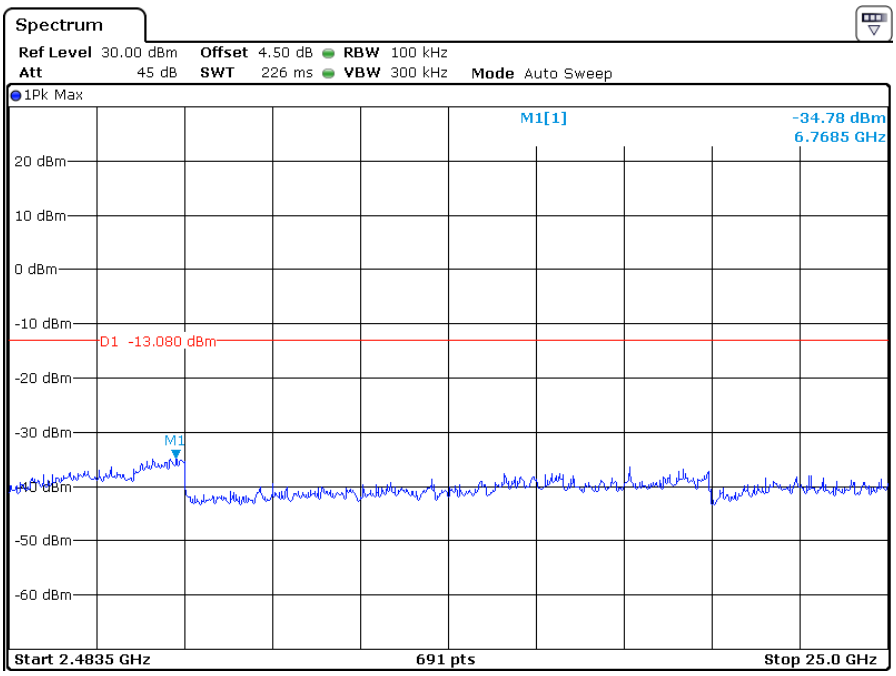

Spectrum
Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -34.61 dBm
6.0195 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -10.800 dBm
-20 dBm
-30 dBm
M1
-40 dBm
-50 dBm
-60 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz

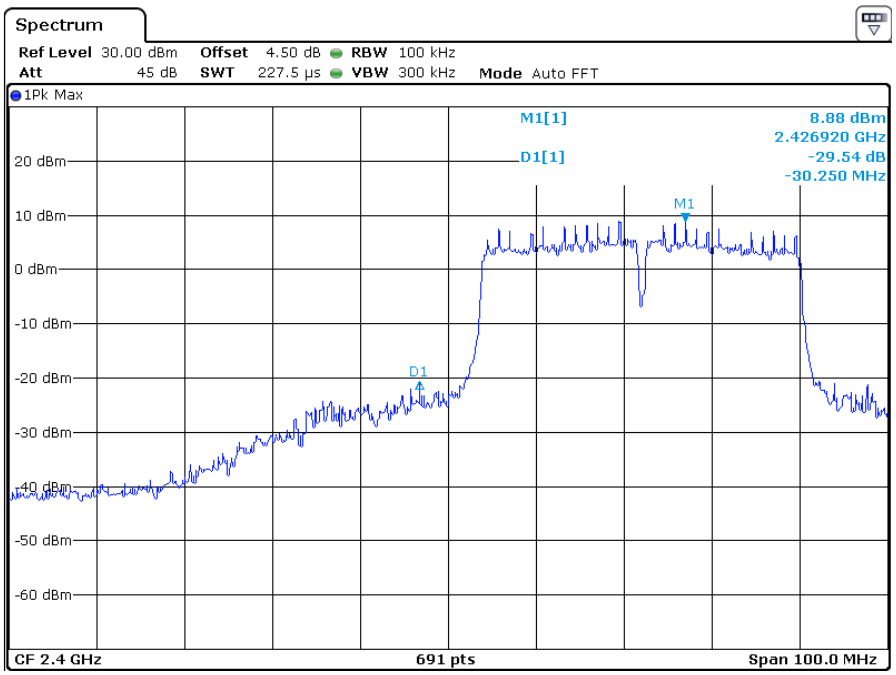


MIMO Mode, Ant1+ Ant2：
802.11n-HT40
Channel 03 (2422MHz) Reference Level: 6.92dBm

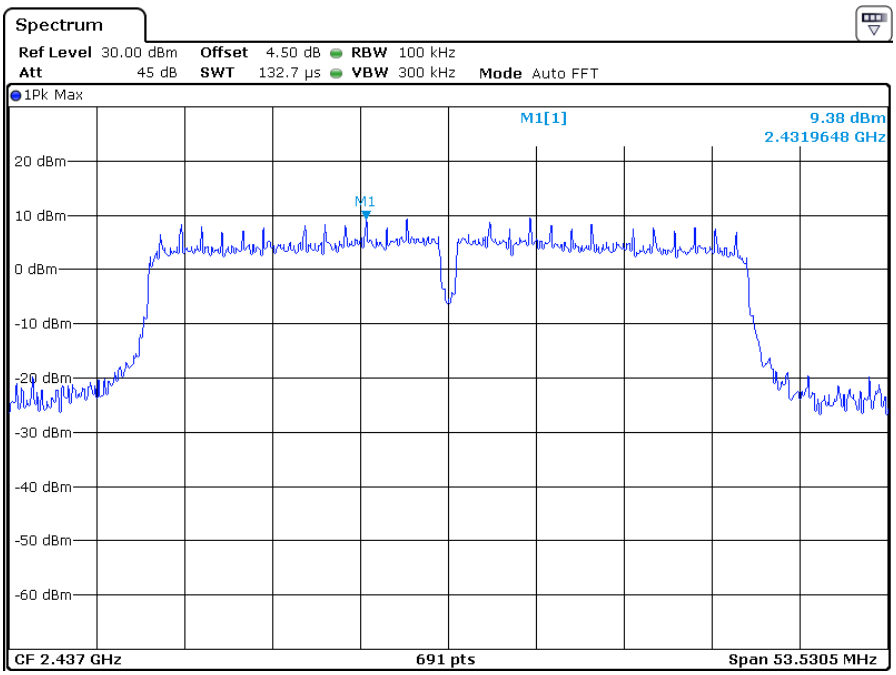


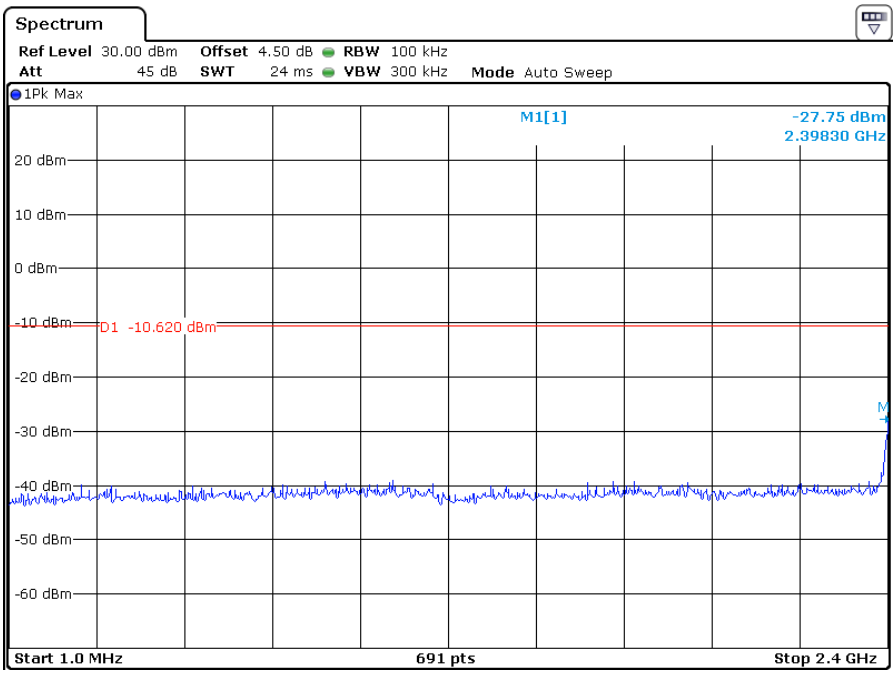

Spectrum
Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz
Att 45 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -24.34 dBm
2.39830 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -13.080 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
Start 1.0 MHz
691 pts
Stop 2.4 GHz

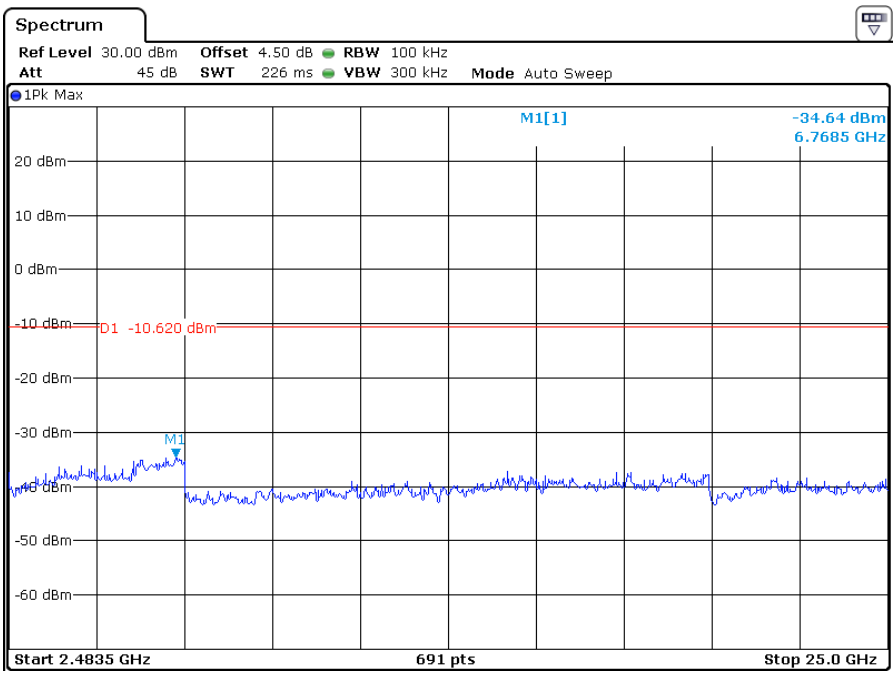

Spectrum
Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -34.78 dBm
6.7685 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -13.080 dBm
-20 dBm
-30 dBm
M1
-40 dBm
-50 dBm
-60 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz



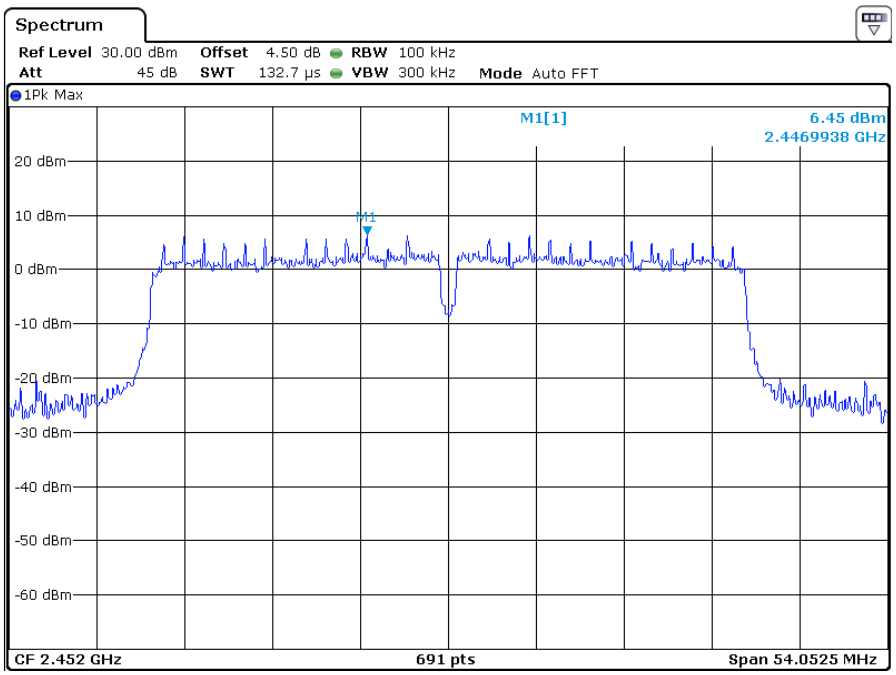
Channel 06 (2437MHz) Reference Level: 9.38dBm

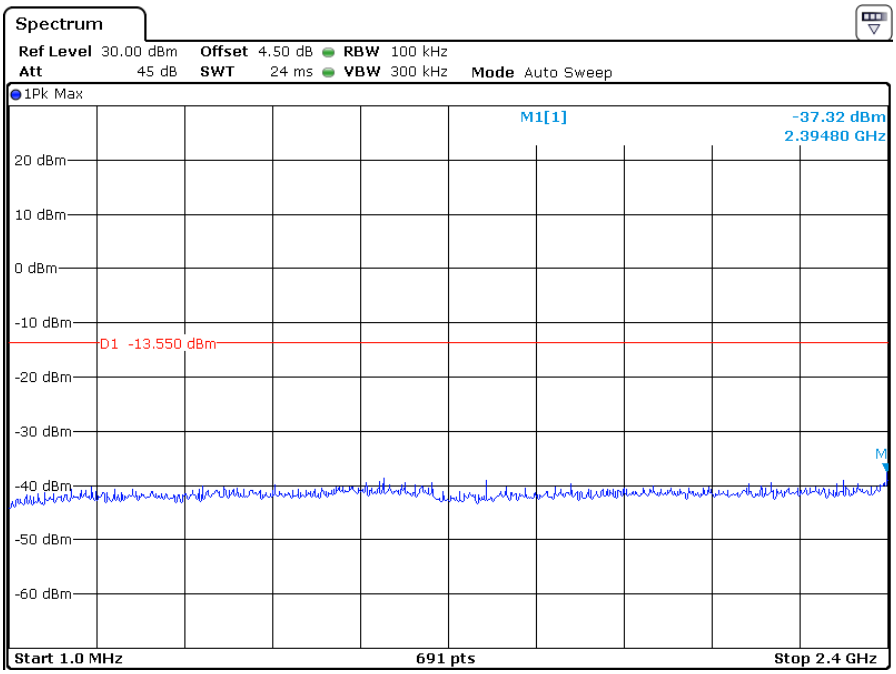


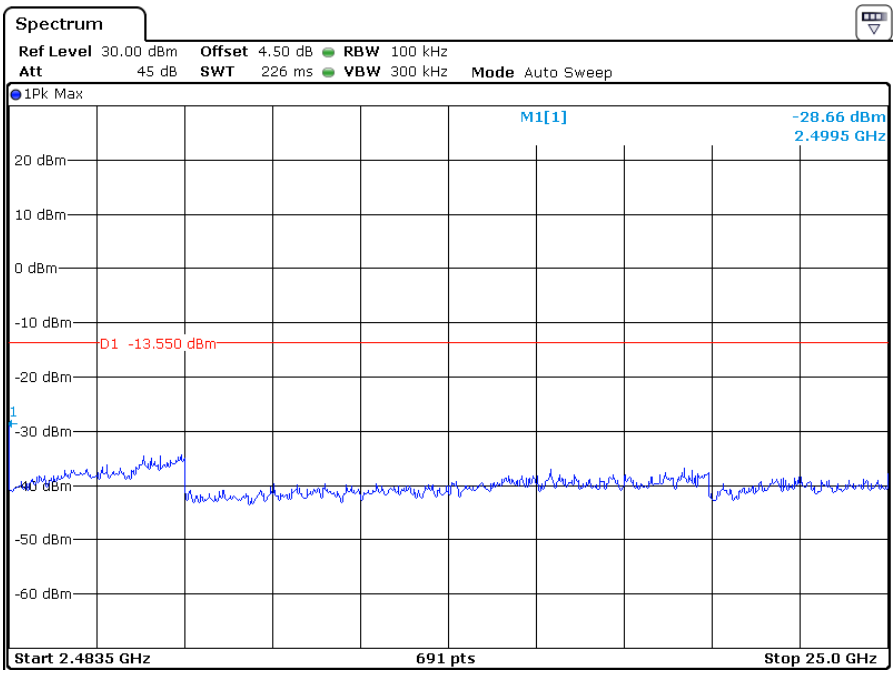

Spectrum
Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz
Att 45 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -27.75 dBm
2.39830 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -10.620 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
Start 1.0 MHz
691 pts
Stop 2.4 GHz

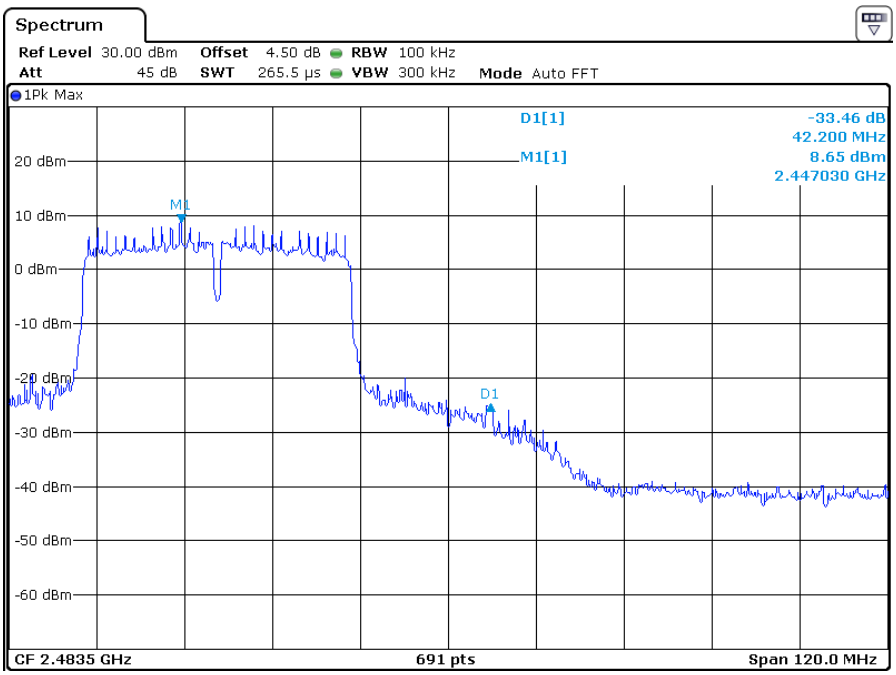

Spectrum
Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -34.64 dBm
6.7685 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -10.620 dBm
-20 dBm
-30 dBm
M1
-40 dBm
-50 dBm
-60 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz

Channel 09 (2452MHz) Reference Level: 6.45dBm






Spectrum
Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz
Att 45 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -28.66 dBm
2.4995 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
D1 -13.550 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz


Spectrum
Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz
Att 45 dB SWT 265.5 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -33.46 dB
42.200 MHz
M1[1] 8.65 dBm
2.447030 GHz
20 dBm
10 dBm
M1
0 dBm
-10 dBm
-20 dBm
D1
-30 dBm
-40 dBm
-50 dBm
-60 dBm
CF 2.4835 GHz
691 pts
Span 120.0 MHz

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10

4.5 Out of Band Radiated Emissions (for emissions in 4.4 above that are less than 20dB below carrier), FCC Rule 15.247(d):

For out of band emissions that are close to or that exceed the 20dB attenuation requirement described in the specification, radiated measurements were performed at a 3m separation distance to determine whether these emissions complied with the general radiated emission requirement.

[×] Not required, since all emissions are more than 20dB below fundamental
[ ] See attached data sheet

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10

4.6 Transmitter Radiated Emissions in Restricted Bands, FCC Rule 15.35(b), (c):

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included. All measurements were performed with peak detection unless otherwise specified.

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10

4.7 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

FS = RA + AF + CF - AG + PD

Where FS = Field Strength in dBμV/m
RA = Receiver Amplitude (including preamplifier) in dBμV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB
PD = Pulse Desensitization in dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

FS = RA + AF + CF - AG + PD

Example
Assume a receiver reading of 62.0 dBμV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB. The net field strength for comparison to the appropriate emission limit is 42 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 62.0 dBμV
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
PD = 0 dB
FS = 62 + 7.4 + 1.6 - 29 + 0 = 42 dBμV/m

Level in mV/m = Common Antilogarithm [(42 dBμV/m)/20] = 125.9 μV/m

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10

4.8 Radiated Spurious Emission

All mode had been tested, but only the worst-case is recorded in the following graph and table. Simultaneous transmission was considered.

Worst Case Radiated Spurious Emission (802.11n-HT20 MIMO) at 480.000MHz is passed by 5.0dB margin.

For the electronic filing, the worst case radiated emission configuration photographs are saved with filename: radiated photos.pdf.

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10
Worst Case Operating Mode: 802.11n-HT20 MIMO (TX-Channel 11)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	124.000	45.1	20.0	8.4	33.5	43.5	-10.0
Horizontal	480.000	41.7	20.0	18.4	40.1	46.0	-5.9
Horizontal	960.000	33.2	20.0	25.0	38.2	54.0	-15.8
Vertical	124.000	38.9	20.0	8.4	27.3	43.5	-16.2
Vertical	480.000	42.6	20.0	18.4	41.0	46.0	-5.0
Vertical	960.000	33.7	20.0	25.0	38.7	54.0	-15.3

NOTES: 1. Quasi-Peak detector is used for frequency below 1GHz.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10
Worst Case Operating Mode: 802.11b SISO-Ant 1(TX-Channel 01)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	56.6	36.2	32.9	53.3	74.0	-20.7
Horizontal	*2347.58	55.3	36.3	37.8	56.8	74.0	-17.2

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	42.2	36.2	32.9	38.9	54.0	-15.1
Horizontal	*2347.58	41.3	36.3	37.8	42.8	54.0	-11.2

NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10
Worst Case Operating Mode: 802.11b SISO-Ant 1(TX-Channel 06)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	59.8	36.2	33.5	57.1	74.0	-16.9
Horizontal	*7311.000	55.3	36.3	37.9	56.9	74.0	-17.1

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	44.4	36.2	33.5	41.7	54.0	-12.3
Horizontal	*7311.000	40.2	36.3	37.9	41.8	54.0	-12.2

NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10
Worst Case Operating Mode: 802.11b SISO-Ant 1(TX-Channel 11)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4924.000	61.1	36.2	33.6	58.5	74.0	-15.5
Horizontal	*7386.000	54.8	36.3	38.0	56.5	74.0	-17.5
Horizontal	*2491.160	58.3	36.7	28.1	49.7	74.0	-24.3

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4924.000	46.5	36.2	33.6	43.9	54.0	-10.1
Horizontal	*7386.000	40.5	36.3	38.0	42.2	54.0	-11.8
Horizontal	*2491.160	50.7	36.7	28.1	42.1	54.0	-11.9

NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10
Worst Case Operating Mode: 802.11g SISO-Ant 1(TX-Channel 01)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	55.5	36.2	32.9	52.2	74.0	-21.8
Horizontal	*2372.48	55.0	36.3	37.8	56.5	74.0	-17.5

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	40.5	36.2	32.9	37.2	54.0	-16.8
Horizontal	*2372.48	40.0	36.3	37.8	41.5	54.0	-12.5

NOTES:
1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10
Worst Case Operating Mode: 802.11g SISO-Ant 1(TX-Channel 06)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	58.8	36.2	33.5	56.1	74.0	-17.9
Horizontal	*7311.000	55.0	36.3	37.9	56.6	74.0	-17.4

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	42.6	36.2	33.5	39.9	54.0	-14.1
Horizontal	*7311.000	40.1	36.3	37.9	41.7	54.0	-12.3

NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10
Worst Case Operating Mode: 802.11g SISO-Ant 1(TX-Channel 11)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4924.000	57.6	36.2	33.6	55.0	74.0	-19.0
Horizontal	*7386.000	55.0	36.3	38.0	56.7	74.0	-17.3
Horizontal	*2484.370	63.5	36.7	28.0	54.8	74.0	-19.2

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4924.000	42.3	36.2	33.6	39.7	54.0	-14.3
Horizontal	*7386.000	40.6	36.3	38.0	42.3	54.0	-11.7
Horizontal	*2484.370	52.4	36.7	28.0	43.7	54.0	-10.3

NOTES:
1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10
Worst Case Operating Mode: 802.11n-HT20 MIMO (TX-Channel 01)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	56.4	36.2	32.9	53.1	74.0	-20.9
Horizontal	*2342.690	55.0	36.3	37.8	56.5	74.0	-17.5

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	40.3	36.2	32.9	37.0	54.0	-17.0
Horizontal	*2342.690	40.0	36.3	37.8	41.5	54.0	-12.5

NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10
Worst Case Operating Mode: 802.11n-HT20 MIMO (TX-Channel 06)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	55.9	36.2	33.5	53.2	74.0	-20.8
Horizontal	*7311.000	55.1	36.3	37.9	56.7	74.0	-17.3

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	39.2	36.2	33.5	36.5	54.0	-17.5
Horizontal	*7311.000	40.0	36.3	37.9	41.6	54.0	-12.4

NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10
Worst Case Operating Mode: 802.11n-HT20 MIMO (TX-Channel 11)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4924.000	53.8	36.2	33.6	51.2	74.0	-22.8
Horizontal	*7386.000	54.7	36.3	38.0	56.4	74.0	-17.6
Horizontal	*2486.320	67.4	36.7	28.0	58.7	74.0	-15.3

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4924.000	39.1	36.2	33.6	36.5	54.0	-17.5
Horizontal	*7386.000	39.9	36.3	38.0	41.6	54.0	-12.4
Horizontal	*2486.320	53.2	36.7	28.0	44.5	54.0	-9.5

NOTES:
1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10
Worst Case Operating Mode: 802.11n-HT40 MIMO (TX-Channel 03)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4844.000	54.3	36.2	32.6	50.7	74.0	-23.3
Horizontal	*2359.78	53.7	36.3	37.7	55.1	74.0	-18.9

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4844.000	40.5	36.2	32.6	36.9	54.0	-17.1
Horizontal	*2359.78	40.1	36.3	37.7	41.5	54.0	-12.5

NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10
Worst Case Operating Mode: 802.11n-HT40 MIMO (TX-Channel 06)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	53.5	36.2	33.5	50.8	74.0	-23.2
Horizontal	*7311.000	53.7	36.3	37.9	55.3	74.0	-18.7

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	39.8	36.2	33.5	37.1	54.0	-16.9
Horizontal	*7311.000	40.0	36.3	37.9	41.6	54.0	-12.4

NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10
Worst Case Operating Mode: 802.11n-HT40 MIMO (TX-Channel 09)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4904.000	53.4	36.2	33.5	50.7	74.0	-23.3
Horizontal	*7356.000	53.8	36.3	37.7	55.2	74.0	-18.8
Horizontal	*2485.190	65.5	36.7	28.0	56.8	74.0	-17.2

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4904.000	39.9	36.2	33.5	37.2	54.0	-16.8
Horizontal	*7356.000	40.4	36.3	37.7	41.8	54.0	-12.2
Horizontal	*2485.190	51.9	36.7	28.0	43.2	54.0	-10.8

NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna used for the emission over 1000MHz.

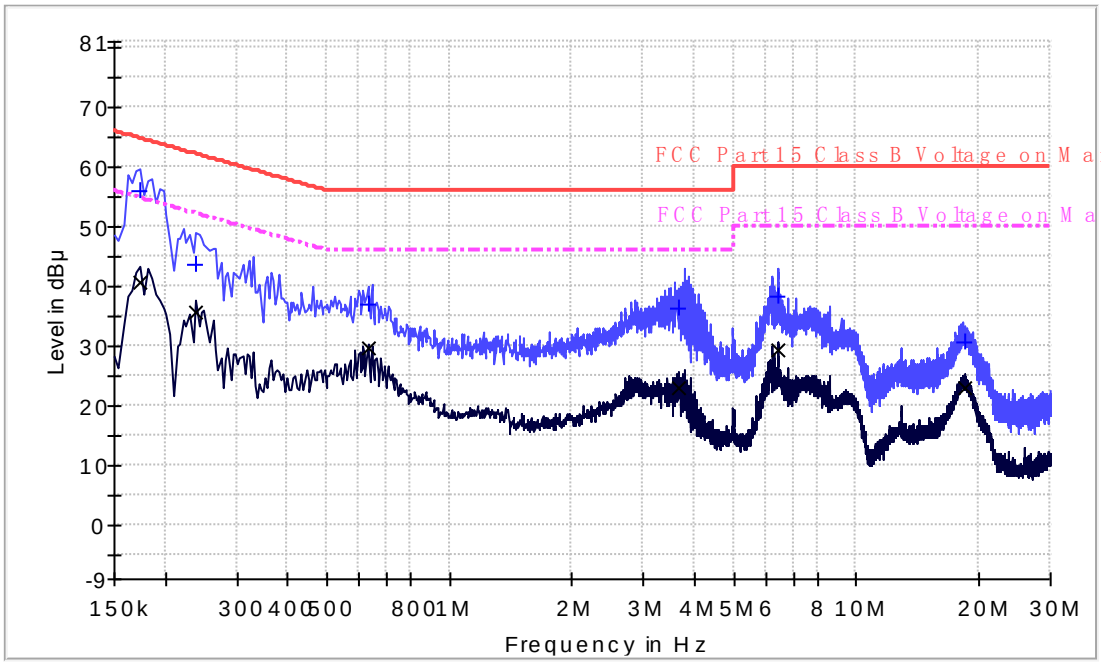
* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

4.9 Conducted Emission

Worst Case Conducted emission at 0.174MHz is Passed by 8.9dB margin

For electronic filing, the worst case conducted emission configuration photograph is saved with filename: conducted photos.pdf.

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10
Worst Case Operating Mode: 802.11n-HT20 (TX-Channel 01)
Line: Live
Conducted Emission Test - FCC



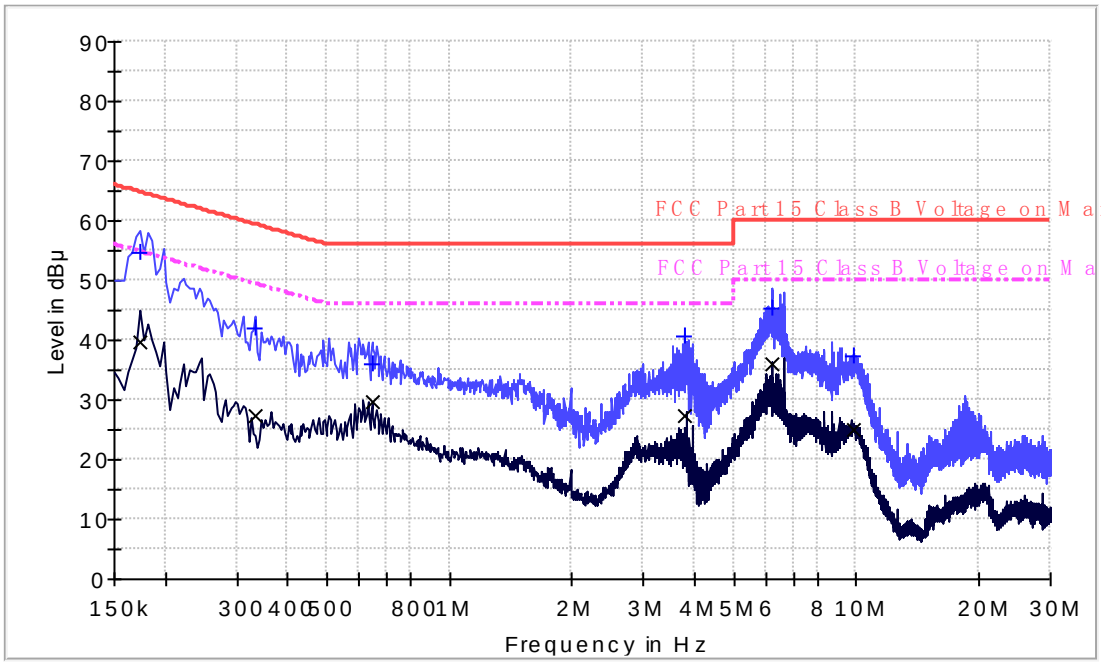
Result Table QP

Frequency (MHz)	QuasiPeak (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.174000	55.9	L1	9.7	8.9	64.8
0.238000	43.8	L1	9.7	18.4	62.2
0.630000	37.0	L1	9.7	19.0	56.0
3.646000	36.3	L1	9.8	19.7	56.0
6.422000	38.4	L1	9.8	21.6	60.0
18.422000	30.7	L1	10.3	29.3	60.0

Result Table AV

Frequency (MHz)	Average (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.174000	40.8	L1	9.7	14.0	54.8
0.238000	35.6	L1	9.7	16.6	52.2
0.630000	29.7	L1	9.7	16.3	46.0
3.646000	22.9	L1	9.8	23.1	46.0
6.422000	29.5	L1	9.8	20.5	50.0
18.422000	23.0	L1	10.3	27.0	50.0

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10
Worst Case Operating Mode: 802.11n-HT20 (TX-Channel 01)
Line: Neutral
Conducted Emission Test - FCC



Result Table QP

Frequency (MHz)	QuasiPeak (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.174000	54.8	N	9.7	10.0	64.8
0.334000	42.1	N	9.7	17.3	59.4
0.646000	36.2	N	9.7	19.8	56.0
3.790000	40.6	N	9.8	15.4	56.0
6.230000	45.4	N	9.8	14.6	60.0
9.820000	37.3	N	9.9	22.7	60.0

Result Table AV

Frequency (MHz)	Average (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.174000	39.6	N	9.7	15.2	54.8
0.334000	27.2	N	9.7	22.2	49.4
0.646000	29.8	N	9.7	16.2	46.0
3.790000	27.5	N	9.8	18.5	46.0
6.230000	36.1	N	9.8	13.9	50.0
9.820000	25.1	N	9.9	24.9	50.0

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10

4.10 Radiated Emissions from Digital Section of Transceiver, FCC Ref: 15.109

[ ] Not required - No digital part

[ ] Test results are attached

[x] Included in the separated report.

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.
Date of Test: September 10, 2017
Model: NTUD-B10

4.11 Transmitter Duty Cycle Calculation and Measurements, FCC Rule 15.35(b), (c)

The EUT antenna output port was connected to the input of the spectrum analyzer. The analyzer center frequency was set to EUT RF channel carrier. The SWEP function on the analyzer was set to ZERO SPAN. The Transmitter ON time was determined from the resultant time-amplitude display:

	See attached spectrum analyzer chart (s) for Transmitter timing
	See Transmitter timing diagram provided by manufacturer
x	Not applicable, duty cycle was not used.

EXHIBIT 5

EQUIPMENT PHOTOGRAPHS

5.0 Equipment Photographs

For electronic filing, the photographs are saved with filename: external photos.pdf & internal photos.pdf.

EXHIBIT 6

PRODUCT LABELLING

6.0 **Product Labeling**

For electronic filing, the FCC ID label artwork and location is saved with filename: label.pdf.

EXHIBIT 7

TECHNICAL SPECIFICATIONS

7.0 Technical Specifications

For electronic filing, the block diagram and circuit diagram are saved with filename: block.pdf and circuit.pdf respectively.

EXHIBIT 8

INSTRUCTION MANUAL

8.0 **Instruction Manual**

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States.

EXHIBIT 9

CONFIDENTIALITY REQUEST

9.0 **Confidentiality Request**

For electronic filing, the confidentiality request of the tested EUT is saved with filename: request.pdf.

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EXHIBIT 10

MISCELLANEOUS INFORMATION

10.0 **Discussion of Pulse Desensitization**

The determination of pulse desensitivity was made in accordance with Hewlett Packard Application Note 150-2, *Spectrum Analysis ... Pulsed RF.*

Pulse desensitivity is not applicable for this device since the transmitter transmits the RF signal continuously.

EXHIBIT 11

TEST EQUIPMENT LIST

11.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ182-02	RF Power Meter	Anritsu	ML2496A	1302005	1-Jun-2017	1-Jun-2018
SZ182-02-01	Power Sensor	Anritsu	MA2411B	1207429	1-Jun-2017	1-Jun-2018
SZ185-01	EMI Receiver	R&S	ESCI	100547	9-Feb-2017	9-Feb-2018
SZ061-08	Horn Antenna	ETS	3115	00092346	27-Sep-2016	27-Sep-2017
SZ061-06	Active Loop Antenna	Electro-Metrics	EM-6876	217	26-May-2017	26-May-2018
SZ056-03	Spectrum Analyzer	R&S	FSP 30	101148	1-Jun-2017	1-Jun-2018
SZ056-06	Signal Analyzer	R&S	FSV 40	101101	7-Jul-2017	7-Jul-2018
SZ181-04	Preamplifier	Agilent	8449B	3008A02474	9-Feb-2017	9-Feb-2018
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	4102	16-Jan-2017	16-Jan-2019
SZ062-02	RF Cable	RADIALL	RG 213U	--	30-Jun-2017	30-Dec-2017
SZ062-05	RF Cable	RADIALL	0.04-26.5GHz	--	6-Apr-2017	6-Oct-2017
SZ062-12	RF Cable	RADIALL	0.04-26.5GHz	--	6-Apr-2017	6-Oct-2017
SZ067-04	Notch Filter	Micro-Tronics	BRM50702-02	--	14-Jun-2017	14-Jun-2018
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	1-Nov-2016	1-Nov-2017
SZ187-01	Two-Line V-Network	R&S	ENV216	100072	1-Nov-2016	1-Nov-2017
SZ188-03	Shielding Room	ETS	RFD-100	4100	16-Jan-2017	16-Jan-2019
SZ061-03	BiConiLog Antenna	ETS	3142C	00078828	12-Oct-2016	12-Oct-2017