Huawei Technologies Co., Ltd.

TEST REPORT

SCOPE OF WORK
FCC TESTING–X22C

REPORT NUMBER
190124006SZN-003

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TEST REPORT

Intertek Report No.: 190124006SZN-003

Huawei Technologies Co., Ltd.

Application
For
Certification

FCC ID: QIS-X22C

Huawei STB/Huawei BOX

Model: X22C

Brand Name: HUAWEI

2.4GHz Transceiver

Report No.: 190124006SZN-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 [10-1-17]

Prepared and Checked by:

Rui Zhou
Project Engineer

Approved by:

Kidd Yang
Technical Supervisor
Date: 13 March 2019

LIST OF EXHIBITS

MEASUREMENT/TECHNICAL REPORT

Huawei Technologies Co., Ltd.

Model: X22C

FCC ID: QIS-X22C

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

Equipment Type: DTS - Part 15 Digital Transmission Systems (Wi-Fi 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 [10-1-17] Edition] provision.

Report prepared by:

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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

Huawei STB/Huawei BOX

Model: X22C

FCC ID: QIS-X22C

TEST ITEM	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 Equipment Under Test (EUT) is a Huawei STB/Huawei BOX with WIFI function operating at 2412-2462MHz for 802.11b/g/n-HT20, 11 channels with 5MHz channel spacing and 2422-2452MHz for 802.11n-HT40, 7 channels with 5MHz channel spacing. The EUT can be powered by DC 12V/1A through adapter. For more detailed features description, please refer to the user's manual.

Antenna Type: Integral antenna
Type of Modulation: BPSK, QPSK, 16QAM, 64QAM, CCK, DQPSK, DBPSK.
Antenna Gain: Antenna 1: 0 dBi Max for 2.4G WIFI
Antenna 2: 0 dBi Max for 2.4G WIFI

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

The Huawei STB/Huawei BOX, Model: X22C has six designing schemes. It would be placed on the market with two different adapters, Partly tests are required to both designing schemes, and show the worst case in report.

Adapter	Model	Manufacture	Electrical parameters
Adapter 1	HW-120100U0W	Shenzhen TOPOW Electronics Co.,Ltd.	Input: AC 100-240V, 50/60Hz, 0.5A Output: DC 12V 1A
Adapter 2	HW-120100U0W	Shenzhen Huntkey Electronic Co.,Ltd.	Input: AC 100-240V, 50/60Hz, 0.5A Output: DC 12V 1A
Adapter 3	HW-120100U0W	Dongguan Phitek Electronics Co.,Ltd.	Input: AC 100-240V, 50/60Hz, 0.5A Output: DC 12V 1A
Adapter 4	HW-120100U2W	Shenzhen TOPOW Electronics Co.,Ltd.	Input: AC 100-150V, 60Hz, 500mA Output: DC 12V 1A
Adapter 5	HW-120100U2W	Dongguan Shilong Fuhua Electronic Co.,Ltd.	Input: AC 100-150V, 60Hz, 500mA Output: DC 12V 1A
Adapter 6	HW-120100U2W	Dongguan Phitek Electronics Co.,Ltd.	Input: AC 100-150V, 60Hz, 500mA Output: DC 12V 1A

2.2 Related Submittal(s) Grants

This is an application for certification of DTS- Part 15 Digital Transmission Systems (2.4GHz Wi-Fi transmitter portion).
For the BT classic function was tested and demonstrated in report 190124006SZN-001.
For the BT BLE function was tested and demonstrated in report 190124006SZN-002.
For the 5GHz WiFi function was tested and demonstrated in report 190124006SZN-004.
For other functions were reported in the SDOC report: 190124005SZN-001.

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 v05r01. 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 DC 12V/1A through adapter and the adapter was powered by AC 120V, 60Hz during the test, only the worst data was reported in this 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.

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.

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

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 Huawei Technologies 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

Refer List:

Description	Manufacturer	Model No.
Laptop (Provided by Intertek)	Lenovo	T420
Test TV (Provided by Intertek)	SONY	KDL-24EX520
Wireless Route (Provided by Intertek)	NETGEAR	R7800
USB Memory (Provided by Intertek)	SanDisk	SDCZ36-002G-P36
Optical cable (Provided by Intertek)	/	unshielded, 130cm
Dummy Load (Provided by Intertek)	/	/
HDMI Cable (Provided by Applicant)	/	unshielded, 150cm
AV out Cable (Provided by Applicant)	/	unshielded, 150cm
RJ45 Cable (Provided by Applicant)	/	unshielded, 150cm
Remote control	/	/

EXHIBIT 4

MEASUREMENT RESULTS

Applicant: Huawei Technologies Co., Ltd.
Date of Test: March 05, 2019 Model: X22C

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: 0 dBi. In MIMO (2Tx), Ant1+Ant2 Directional gain = GANT + 10 log(N) dBi = 0 + 10 log(2) = 3.0 dBi< 6 dBi, so the Power limit is 30.0dBm(1W) for conducted TX power.

SISO Mode, Ant1：

IEEE 802.11b (Antenna Gain = 0dBi) (1Mbps)		
Frequency (MHz)	Output in dBm (Peak Reading)	Output in mWatt
Low Channel: 2412	16.15	41.21
Middle Channel: 2437	16.46	44.26
High Channel: 2462	16.20	41.69

IEEE 802.11g (Antenna Gain = 0dBi) (6Mbps)		
Frequency (MHz)	Output in dBm (Peak Reading)	Output in mWatt
Low Channel: 2412	22.15	168.06
Middle Channel: 2437	22.56	180.30
High Channel: 2462	20.75	118.85

IEEE 802.11n-HT20 (Antenna Gain = 0dBi) (6.5Mbps)		
Frequency (MHz)	Output in dBm (Peak Reading)	Output in mWatt
Low Channel: 2412	20.83	121.06
Middle Channel: 2437	22.74	187.93
High Channel: 2462	20.57	114.02

IEEE 802.11n-HT40 (Antenna Gain = 0dBi) (13.5Mbps)		
Frequency (MHz)	Output in dBm (Peak Reading)	Output in mWatt
Low Channel: 2422	18.92	77.98
Middle Channel: 2437	21.47	140.28
High Channel: 2452	20.83	121.06

SISO Mode, Ant2：

IEEE 802.11b (Antenna Gain = 0dBi) (1Mbps)		
Frequency (MHz)	Output in dBm (Peak Reading)	Output in mWatt
Low Channel: 2412	17.17	52.12
Middle Channel: 2437	16.75	47.32
High Channel: 2462	16.52	44.87

IEEE 802.11g (Antenna Gain = 0dBi) (6Mbps)		
Frequency (MHz)	Output in dBm (Peak Reading)	Output in mWatt
Low Channel: 2412	22.05	160.32
Middle Channel: 2437	23.72	235.50
High Channel: 2462	21.42	138.67

IEEE 802.11n-HT20 (Antenna Gain = 0dBi) (6.5Mbps)		
Frequency (MHz)	Output in dBm (Peak Reading)	Output in mWatt
Low Channel: 2412	20.55	113.50
Middle Channel: 2437	24.26	266.68
High Channel: 2462	21.83	152.41

IEEE 802.11n-HT40 (Antenna Gain = 0dBi) (13.5Mbps)		
Frequency (MHz)	Output in dBm (Peak Reading)	Output in mWatt
Low Channel: 2422	18.71	74.30
Middle Channel: 2437	22.09	161.81
High Channel: 2452	21.29	134.59

MIMO Mode：

IEEE 802.11n-HT20 (MIMO, Antenna Gain = 3dBi) (6.5Mbps)				
Frequency (MHz)	Output in dBm(Peak Reading)			Total Output in mWatt
	Ant 1	Ant 2	Total	
Low Channel: 2412	18.34	18.75	21.56	143.22
Middle Channel: 2437	21.21	22.21	24.75	298.54
High Channel: 2462	18.89	19.65	22.30	169.82

IEEE 802.11n-HT40 (MIMO, Antenna Gain = 3dBi) (13.5Mbps)				
Frequency (MHz)	Output in dBm(Peak Reading)			Total Output in mWatt
	Ant 1	Ant 2	Total	
Low Channel: 2422	17.33	18.53	20.98	125.36
Middle Channel: 2437	20.06	21.40	23.79	239.43
High Channel: 2452	19.43	20.14	22.81	190.98

Cable loss: 1.4 dB External Attenuation: 0 dB
Cable loss, external attenuation has been included in OFFSET function

EUT max. output level = 24.75 dBm
For RF Exposure, the information is saved with filename: RF exposure.pdf.

Applicant: Huawei Technologies Co., Ltd.
Date of Test: March 05, 2019 Model: X22C

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 v05r01. 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 (1Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2412	10.029
2437	10.029
2462	10.029

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

IEEE 802.11n-HT20 (6.5Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2412	17.149
2437	17.149
2462	17.149

IEEE 802.11n-HT40 (13.5Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2422	36.295
2437	36.295
2452	36.295

SISO Mode, Ant2:

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

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

IEEE 802.11n-HT20 (6.5Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2412	17.149
2437	17.149
2462	17.149

IEEE 802.11n-HT40 (13.5Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2422	36.295
2437	36.295
2452	36.295

MIMO Mode, Ant1:

IEEE 802.11n-HT20 (6.5Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2412	17.149
2437	17.149
2462	17.149

IEEE 802.11n-HT40 (13.5Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2422	36.295
2437	35.295
2452	36.382

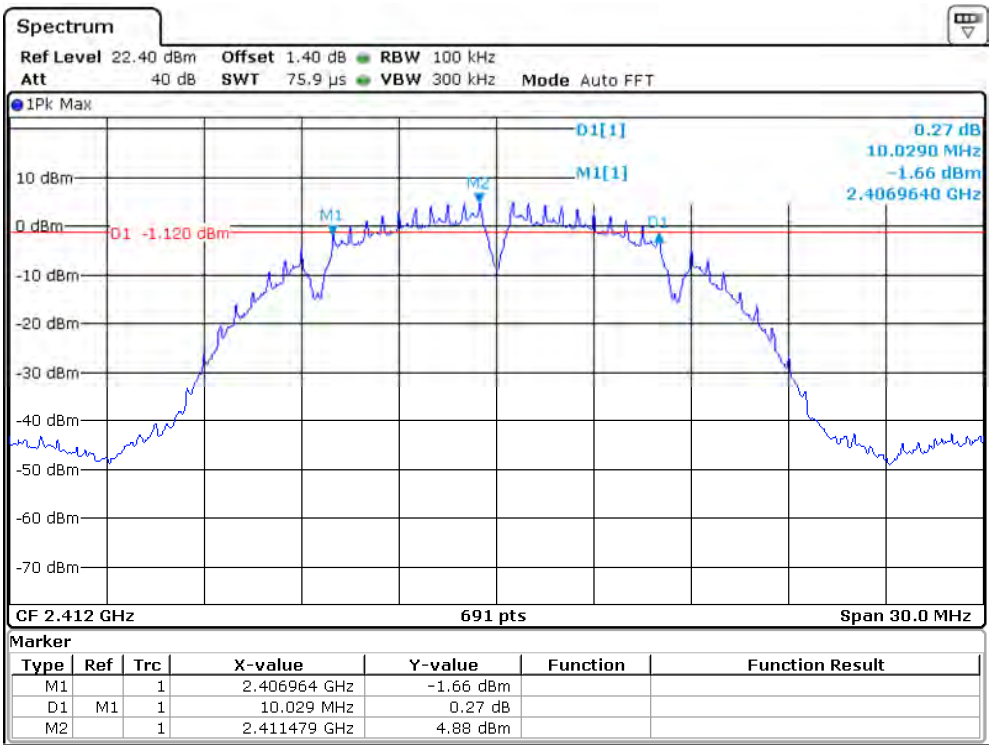
MIMO Mode, Ant2:

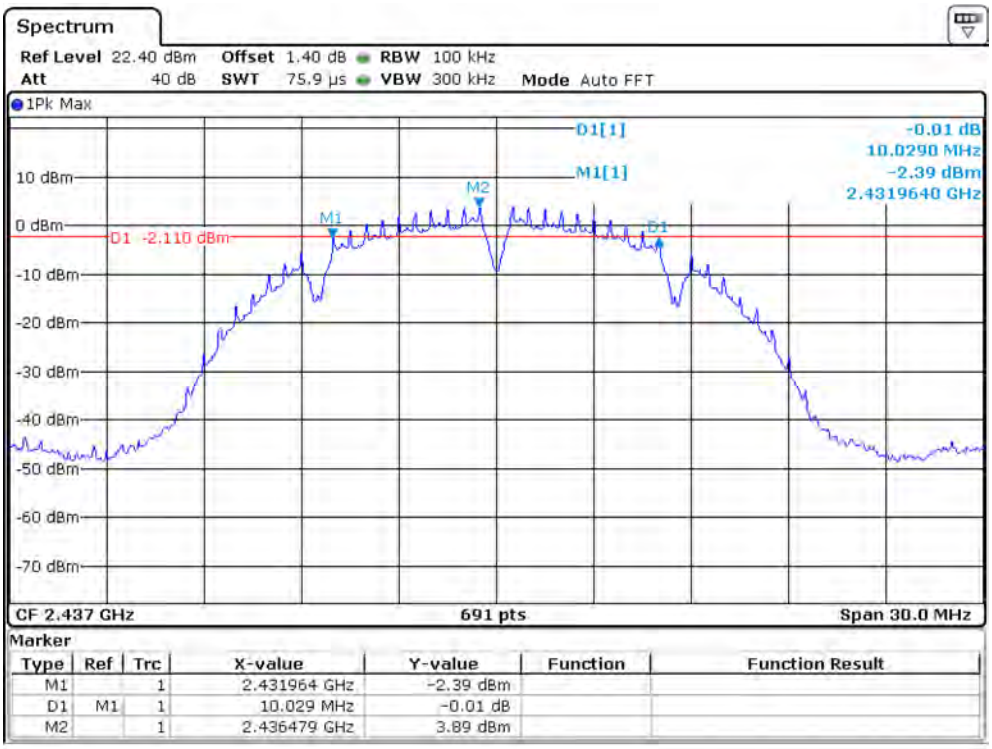
IEEE 802.11n-HT20 (6.5Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2412	17.149
2437	17.149
2462	17.149

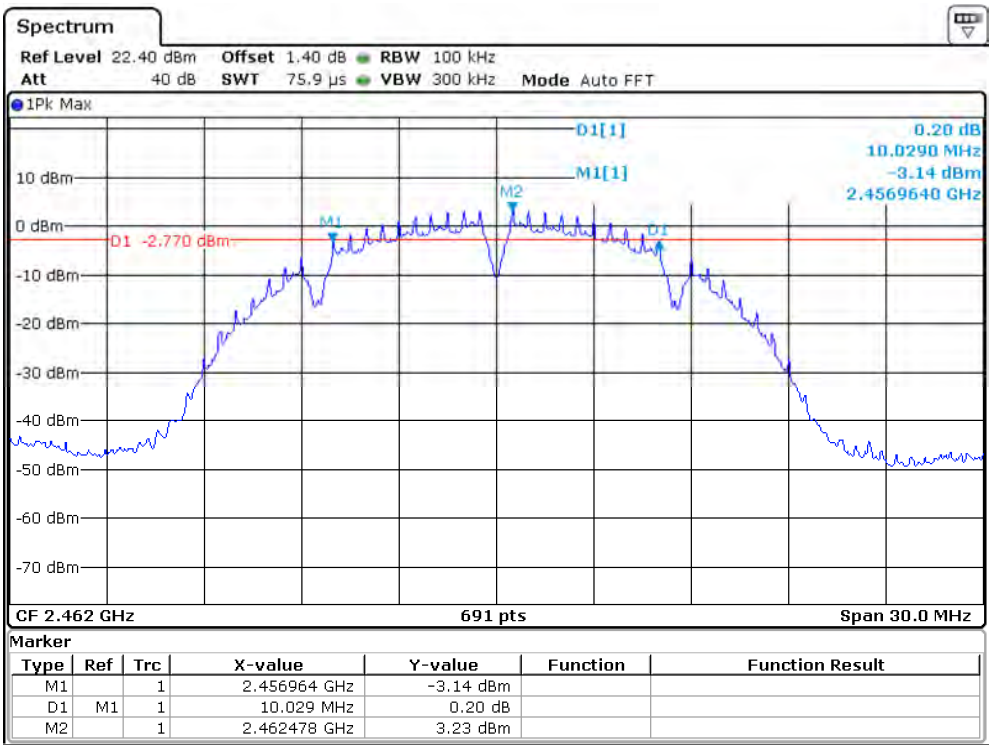
IEEE 802.11n-HT40 (13.5Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2422	36.295
2437	36.295
2452	36.295

The test plots are attached as below.

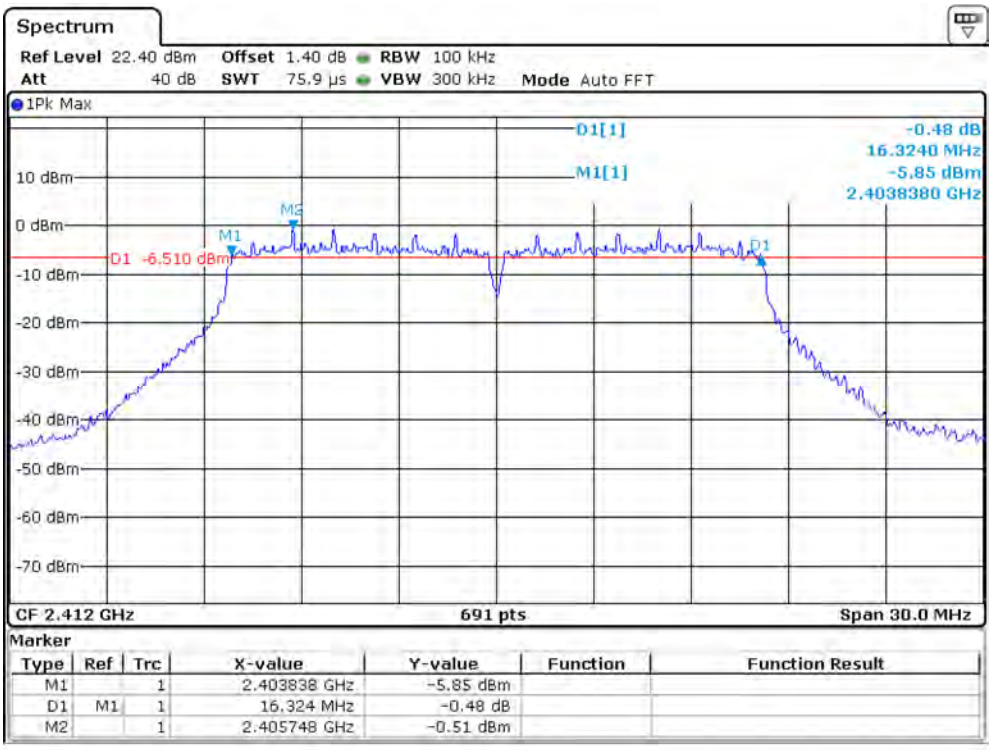
SISO Mode, Ant1:
802.11b

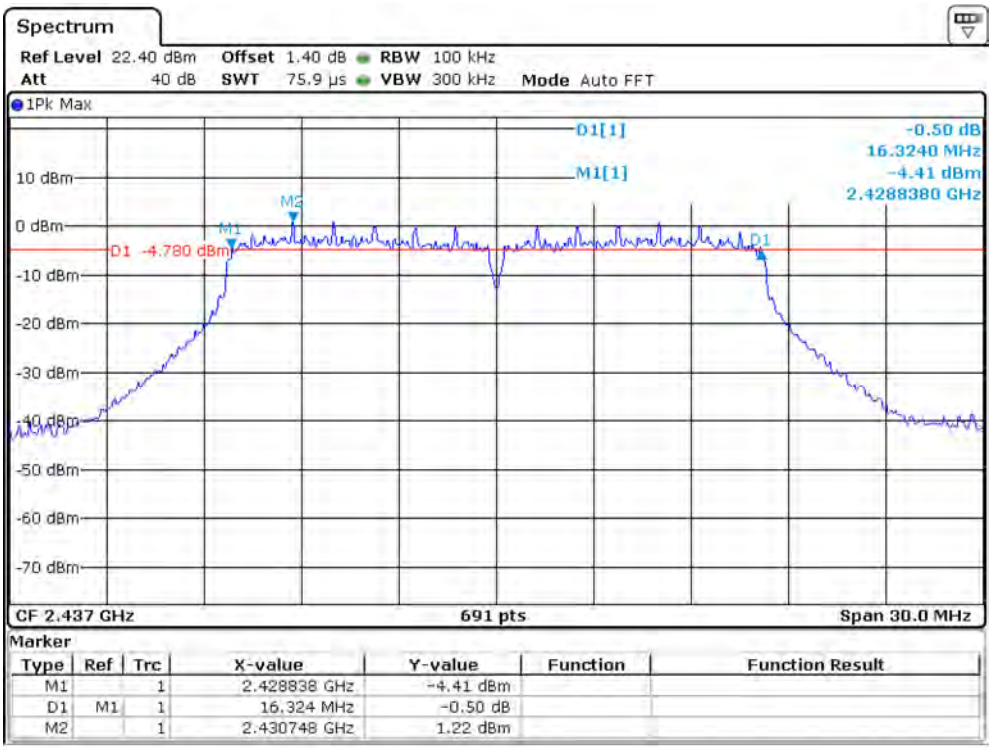


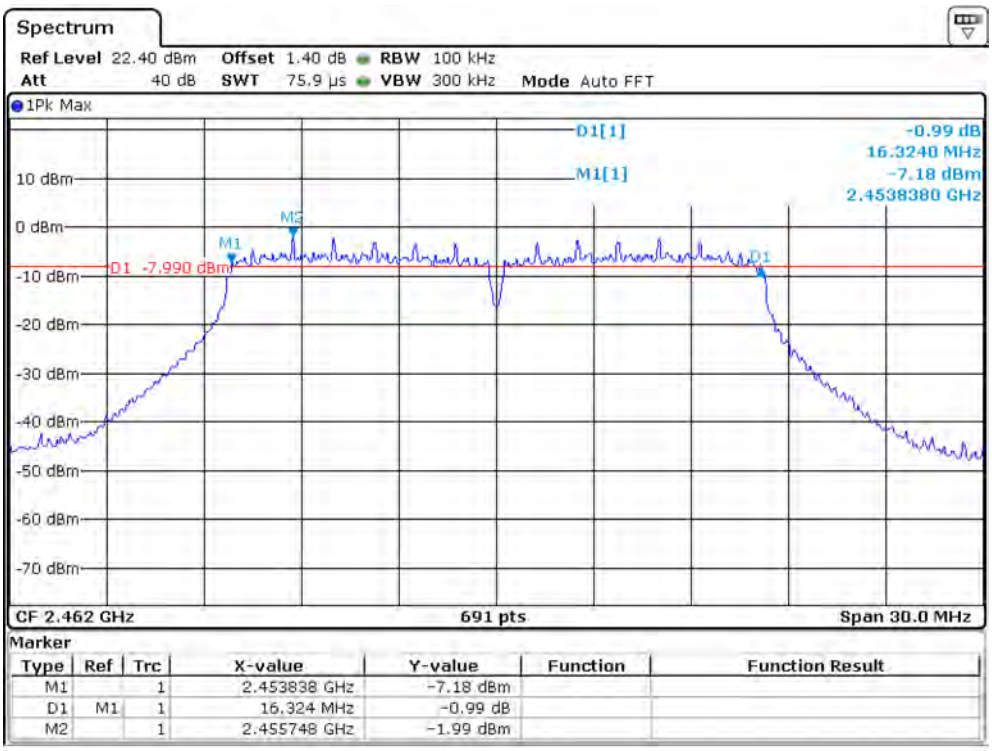



Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 0.20 dB
10.0290 MHz
M1[1] -3.14 dBm
2.4569640 GHz
10 dBm
0 dBm
D1 -2.770 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.462 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.456964 GHz -3.14 dBm
D1 M1 1 10.029 MHz 0.20 dB
M2 1 2.462478 GHz 3.23 dBm

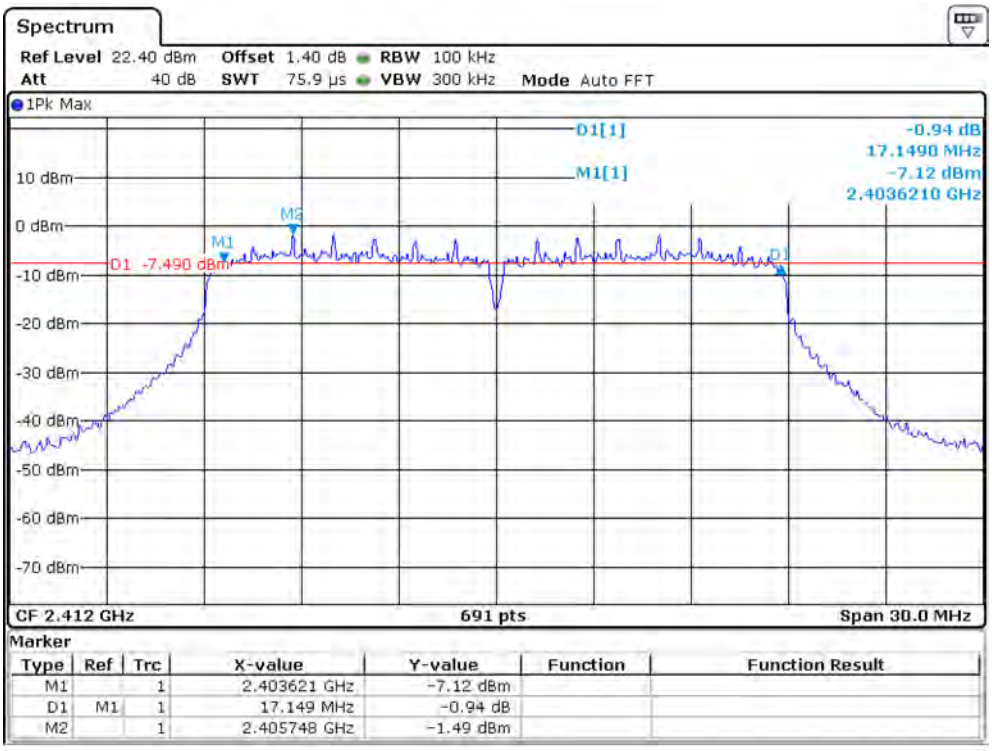
802.11g

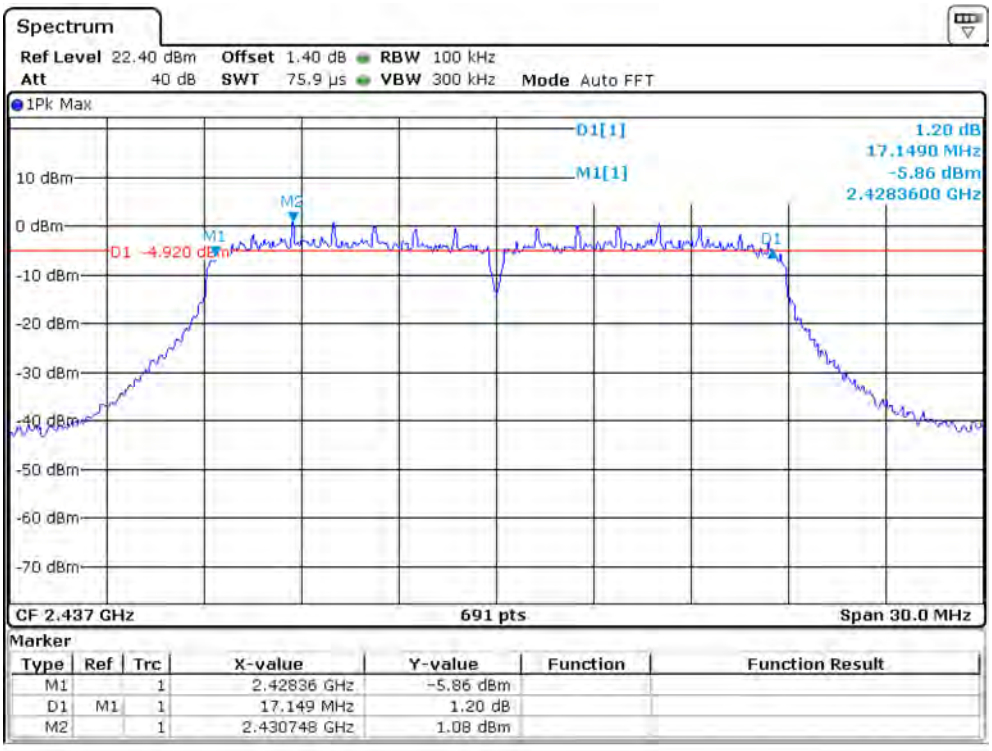

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -0.48 dB
16.3240 MHz
M1[1] -5.85 dBm
2.4038380 GHz
10 dBm
0 dBm
D1 -6.510 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.412 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.403838 GHz -5.85 dBm
D1 M1 1 16.324 MHz -0.48 dB
M2 1 2.405748 GHz -0.51 dBm

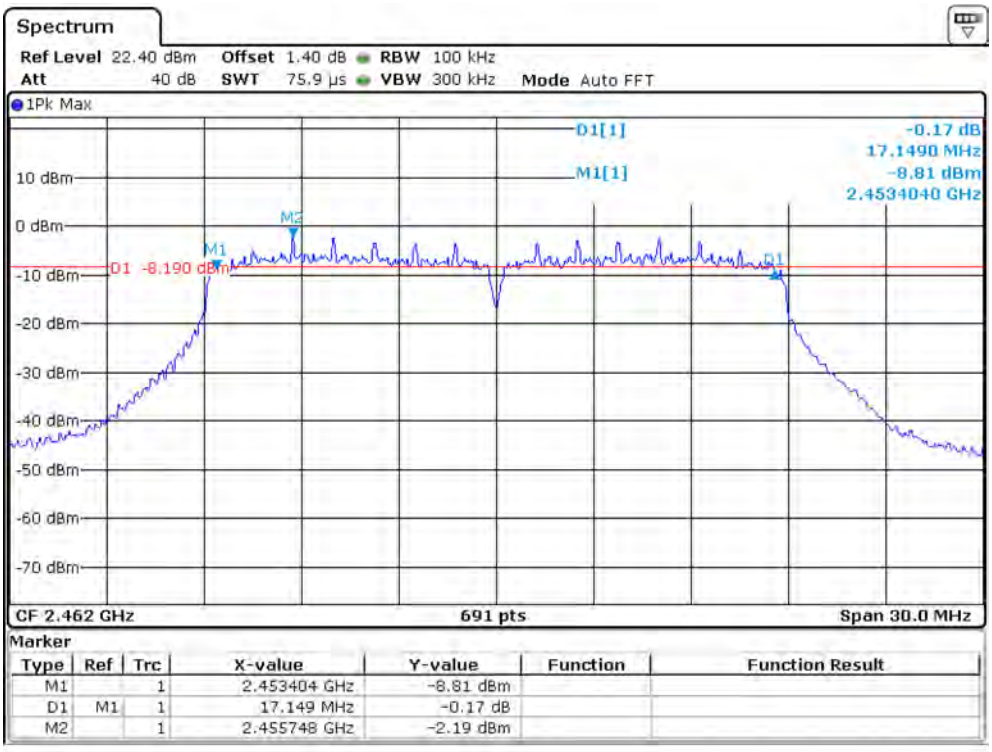

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -0.50 dB
16.3240 MHz
M1[1] -4.41 dBm
2.4288380 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -4.780 dBm
M1
M2
D1
CF 2.437 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.428838 GHz -4.41 dBm
D1 M1 1 16.324 MHz -0.50 dB
M2 1 2.430748 GHz 1.22 dBm


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -0.99 dB
16.3240 MHz
M1[1] -7.18 dBm
2.4538380 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -7.990 dBm
M1
M2
D1
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 -7.18 dBm
D1 M1 1 16.324 MHz -0.99 dB
M2 1 2.455748 GHz -1.99 dBm

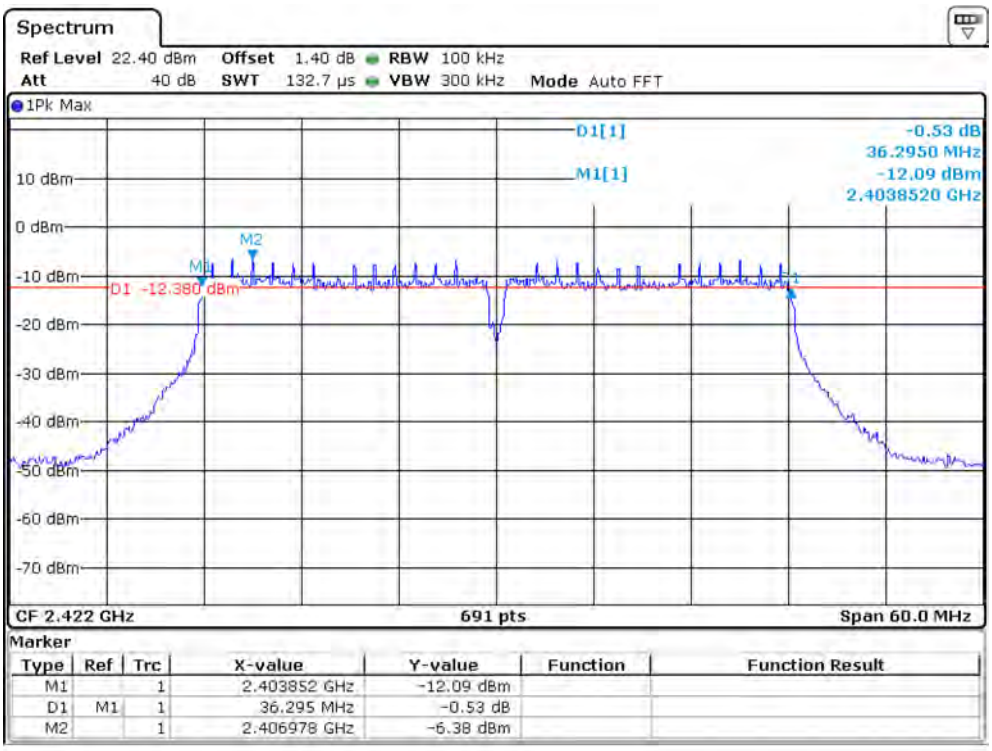
802.11n-HT20

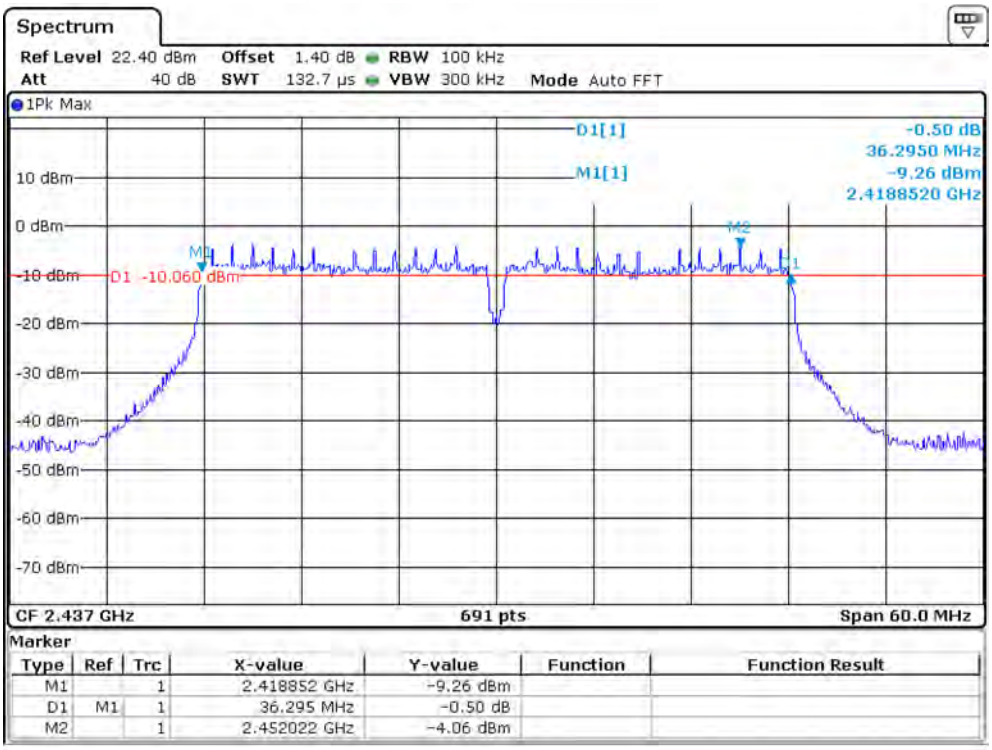

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -0.94 dB
17.1490 MHz
M1[1] -7.12 dBm
2.4036210 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -7.490 dBm
M1
M2
D1
CF 2.412 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.403621 GHz -7.12 dBm
D1 M1 1 17.149 MHz -0.94 dB
M2 1 2.405748 GHz -1.49 dBm

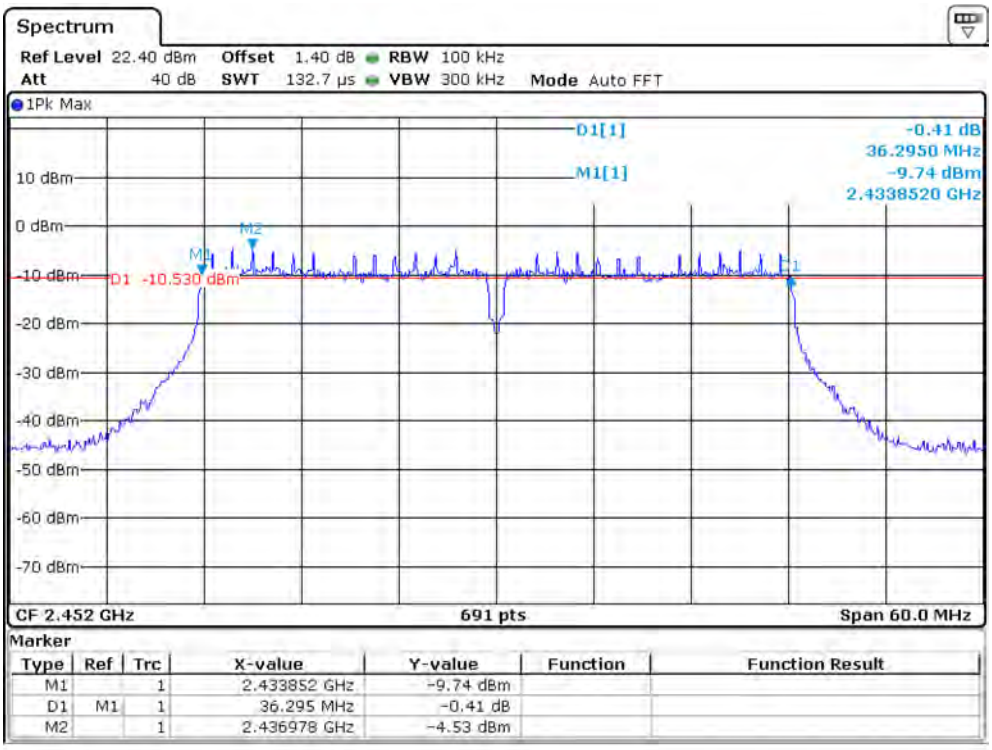

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 1.20 dB
17.1490 MHz
M1[1] -5.86 dBm
2.4283600 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -4.920 dBm
M1
M2
D1
CF 2.437 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.42836 GHz -5.86 dBm
D1 M1 1 17.149 MHz 1.20 dB
M2 1 2.430748 GHz 1.08 dBm


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -0.17 dB
17.1490 MHz
M1[1] -8.81 dBm
2.4534040 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -8.190 dBm
M1
M2
D1
CF 2.462 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.453404 GHz -8.81 dBm
D1 M1 1 17.149 MHz -0.17 dB
M2 1 2.455748 GHz -2.19 dBm

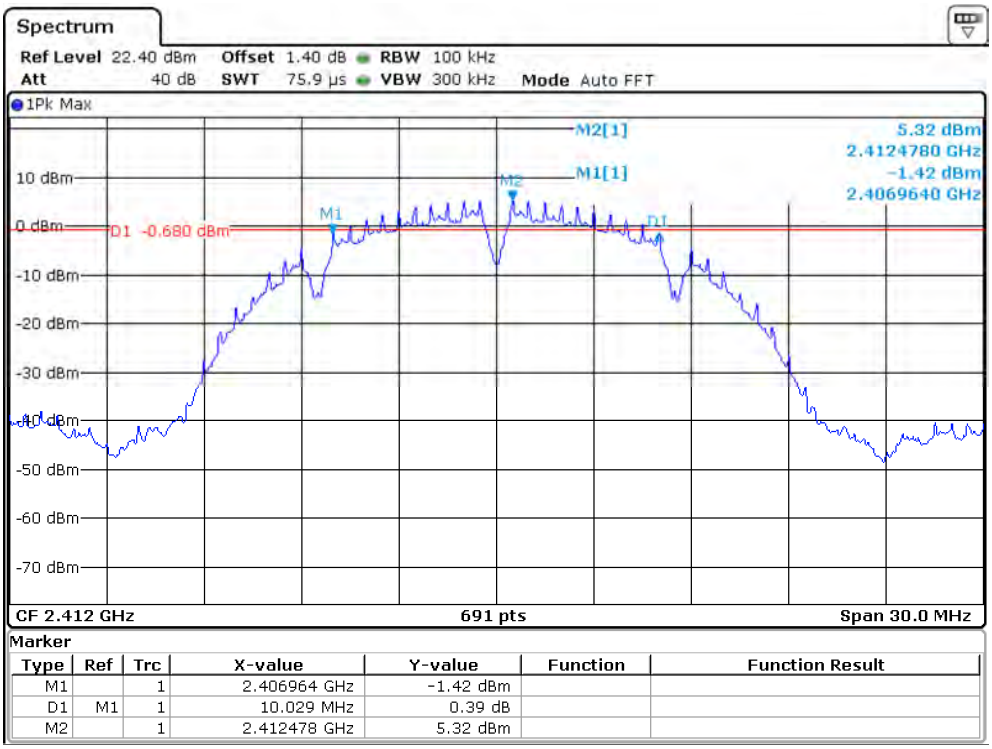
802.11n-HT40

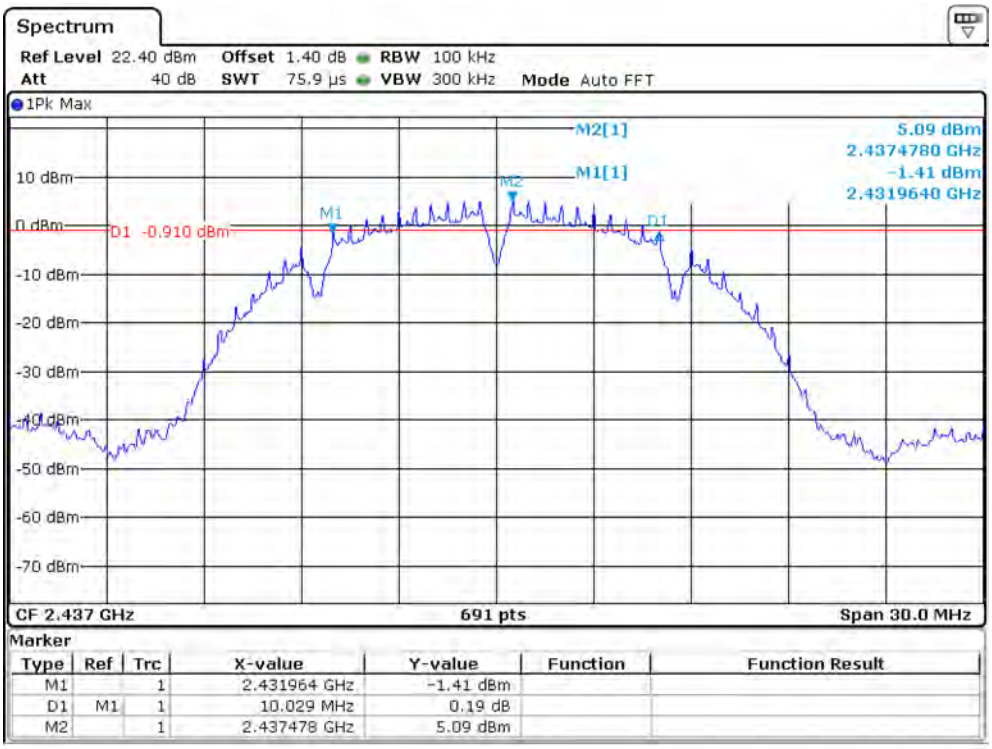

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -0.53 dB
36.2950 MHz
M1[1] -12.09 dBm
2.4038520 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -12.380 dBm
M1
M2
D1
CF 2.422 GHz
691 pts
Span 60.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.403852 GHz -12.09 dBm
D1 M1 1 36.295 MHz -0.53 dB
M2 1 2.406978 GHz -6.38 dBm

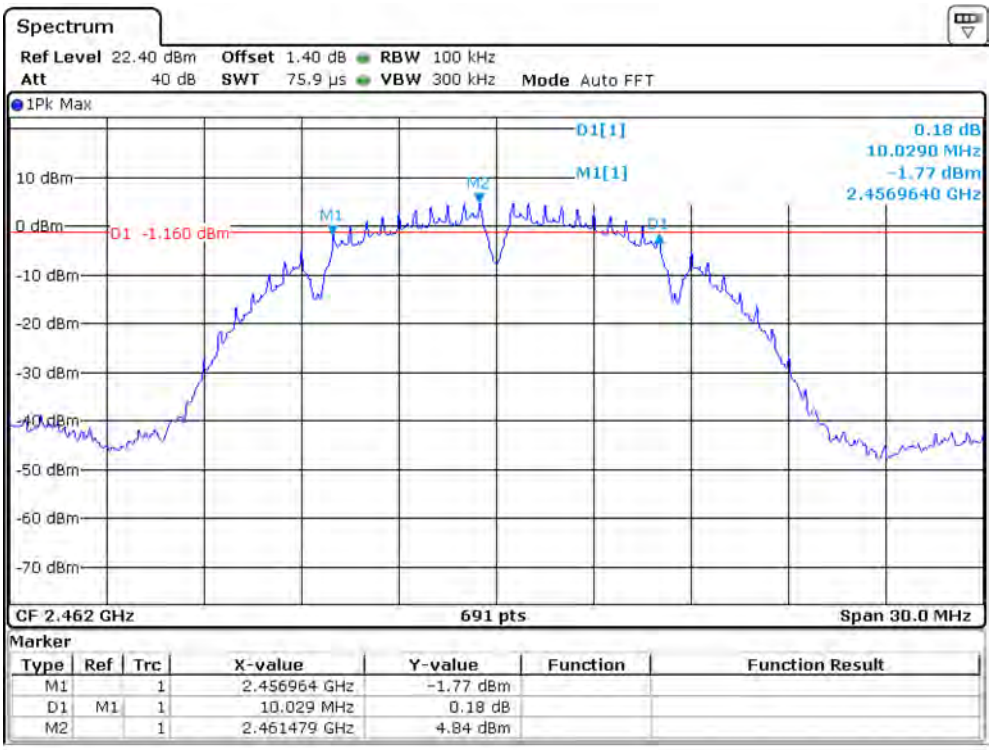

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -0.50 dB
36.2950 MHz
M1[1] -9.26 dBm
2.4188520 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
D1 -10.060 dBm
M2
CF 2.437 GHz
691 pts
Span 60.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.418852 GHz -9.26 dBm
D1 M1 1 36.295 MHz -0.50 dB
M2 1 2.452022 GHz -4.06 dBm


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -0.41 dB
36.2950 MHz
M1[1] -9.74 dBm
2.4338520 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
D1 -10.530 dBm
M2
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 -9.74 dBm
D1 M1 1 36.295 MHz -0.41 dB
M2 1 2.436978 GHz -4.53 dBm

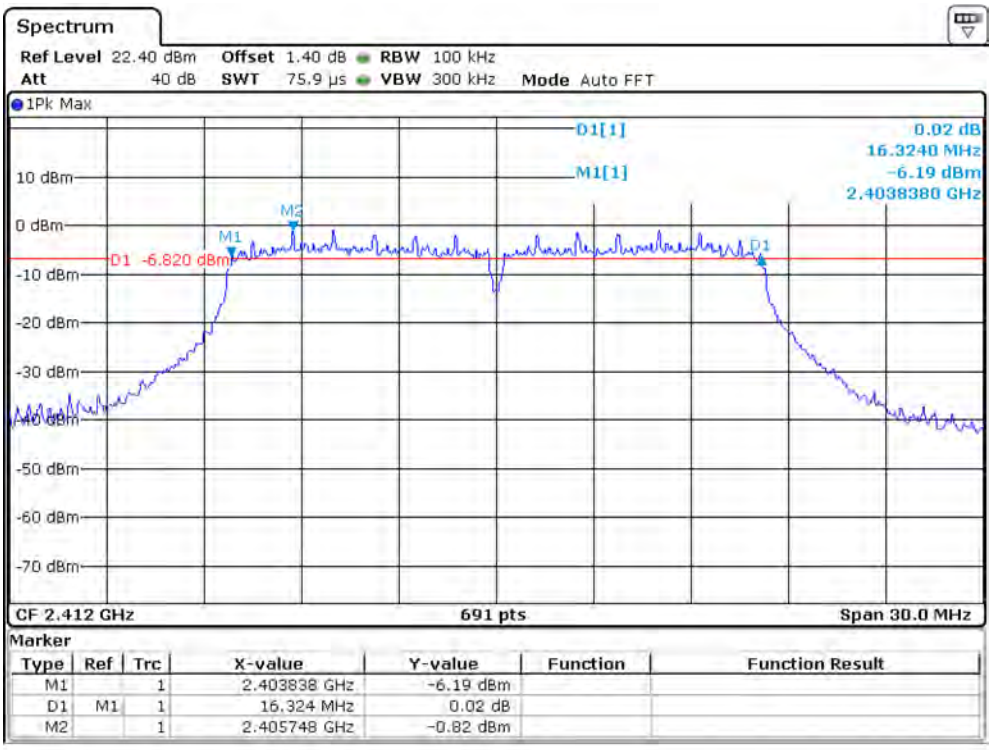
SISO Mode, Ant2:
802.11b

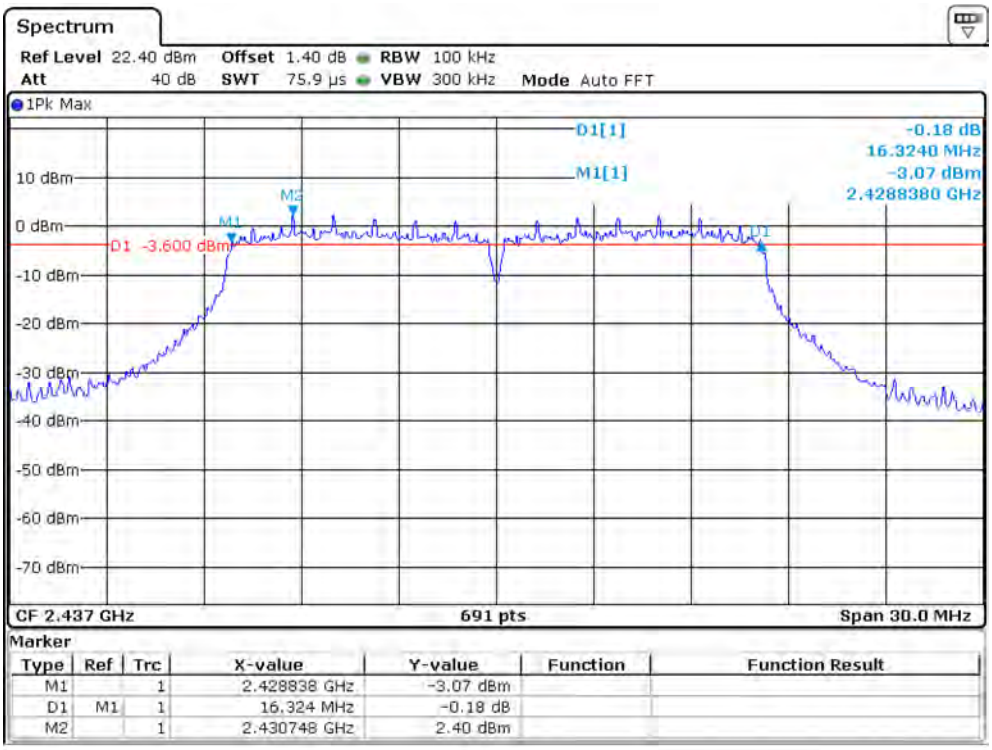


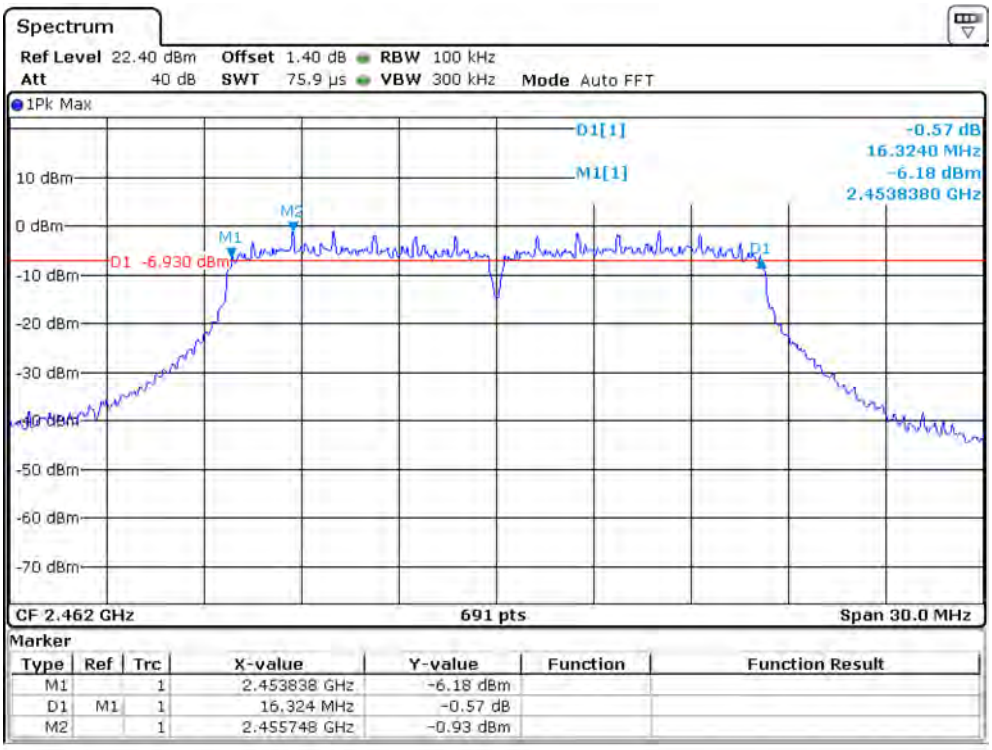



Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 0.18 dB
10.0290 MHz
M1[1] -1.77 dBm
2.4569640 GHz
D1 -1.160 dBm
CF 2.462 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.456964 GHz -1.77 dBm
D1 M1 1 10.029 MHz 0.18 dB
M2 1 2.461479 GHz 4.84 dBm

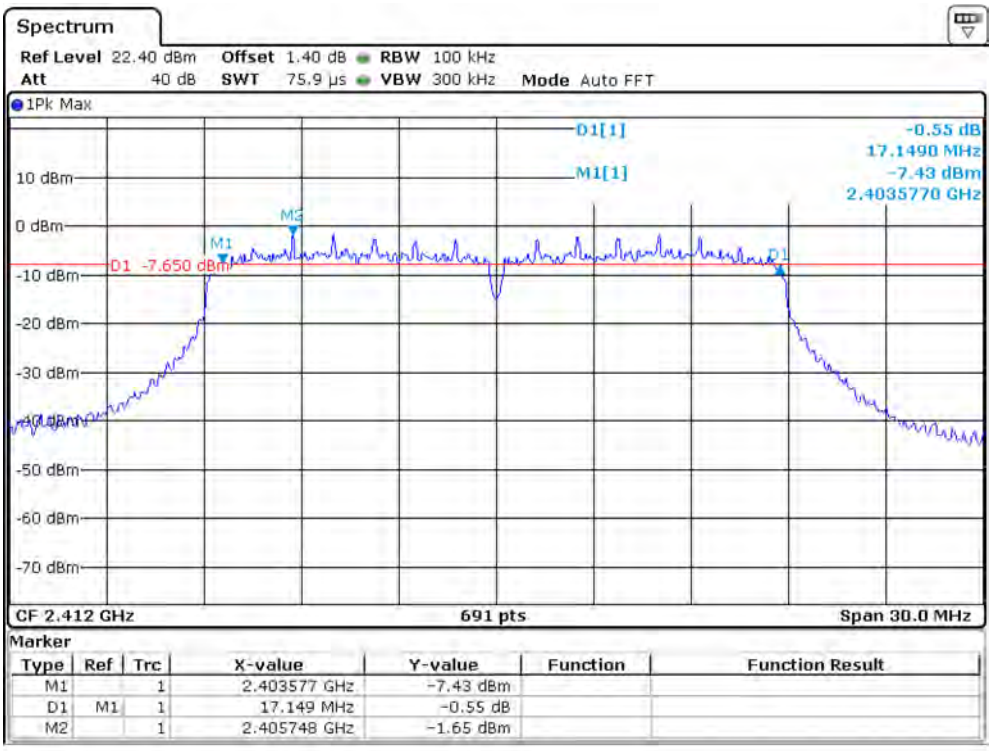
802.11g

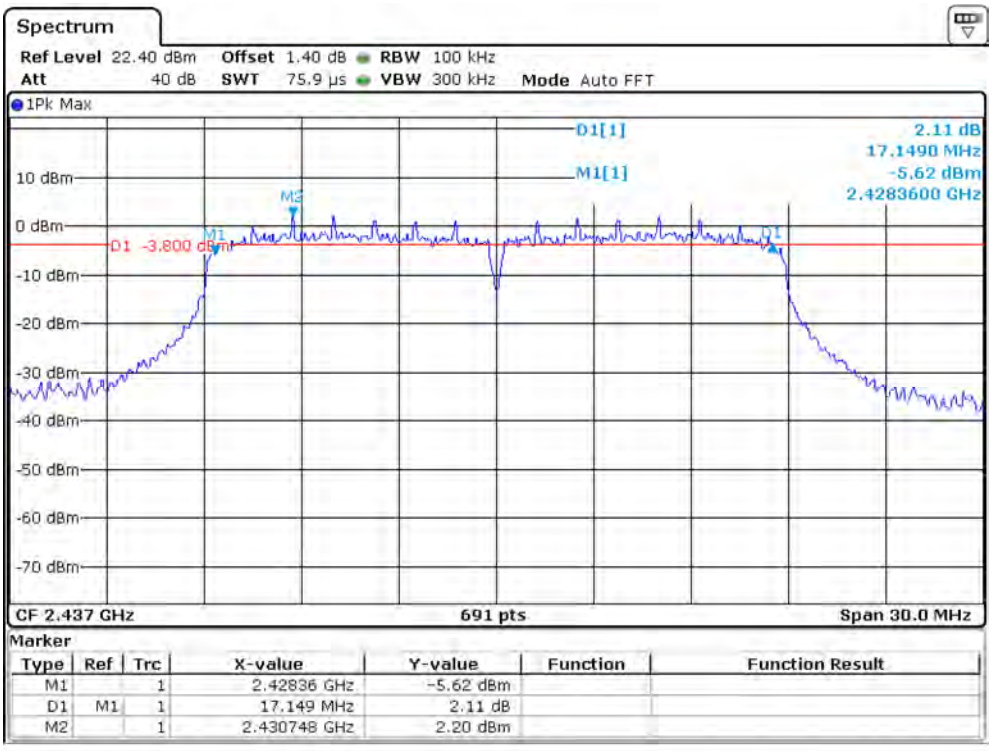

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 0.02 dB
16.3240 MHz
M1[1] -6.19 dBm
2.4038380 GHz
D1 -6.820 dBm
CF 2.412 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.403838 GHz -6.19 dBm
D1 M1 1 16.324 MHz 0.02 dB
M2 1 2.405748 GHz -0.82 dBm

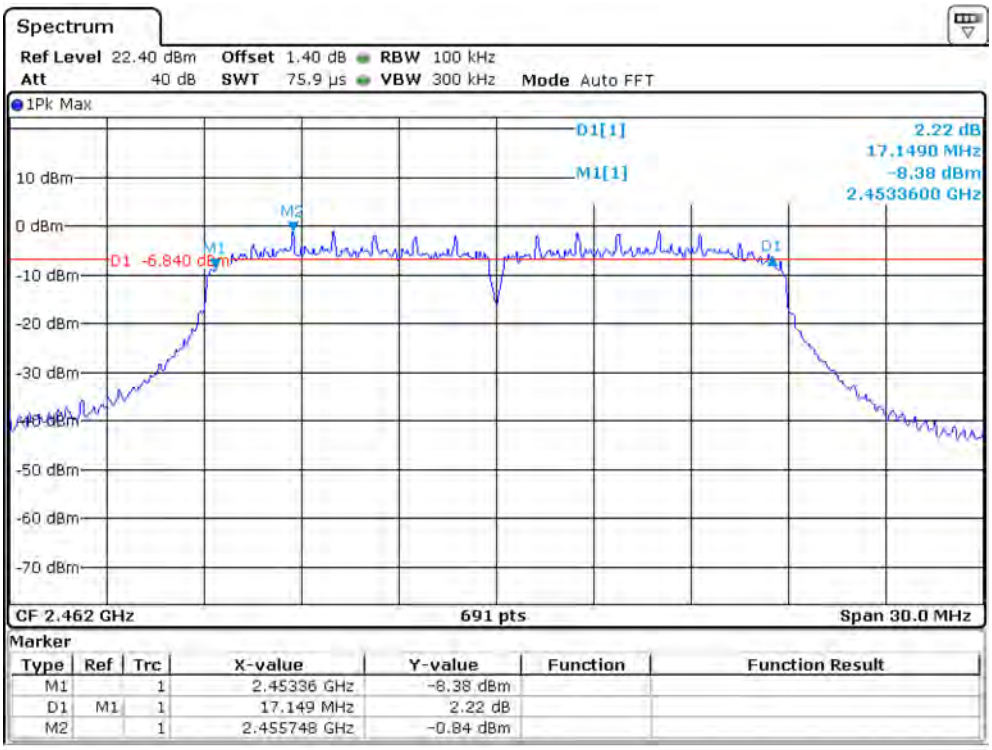

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -0.18 dB
16.3240 MHz
M1[1] -3.07 dBm
2.4288380 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -3.600 dBm
M1
M2
D1
CF 2.437 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.428838 GHz -3.07 dBm
D1 M1 1 16.324 MHz -0.18 dB
M2 1 2.430748 GHz 2.40 dBm


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -0.57 dB
16.3240 MHz
M1[1] -6.18 dBm
2.4538380 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -6.930 dBm
M1
M2
D1
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 -6.18 dBm
D1 M1 1 16.324 MHz -0.57 dB
M2 1 2.455748 GHz -0.93 dBm

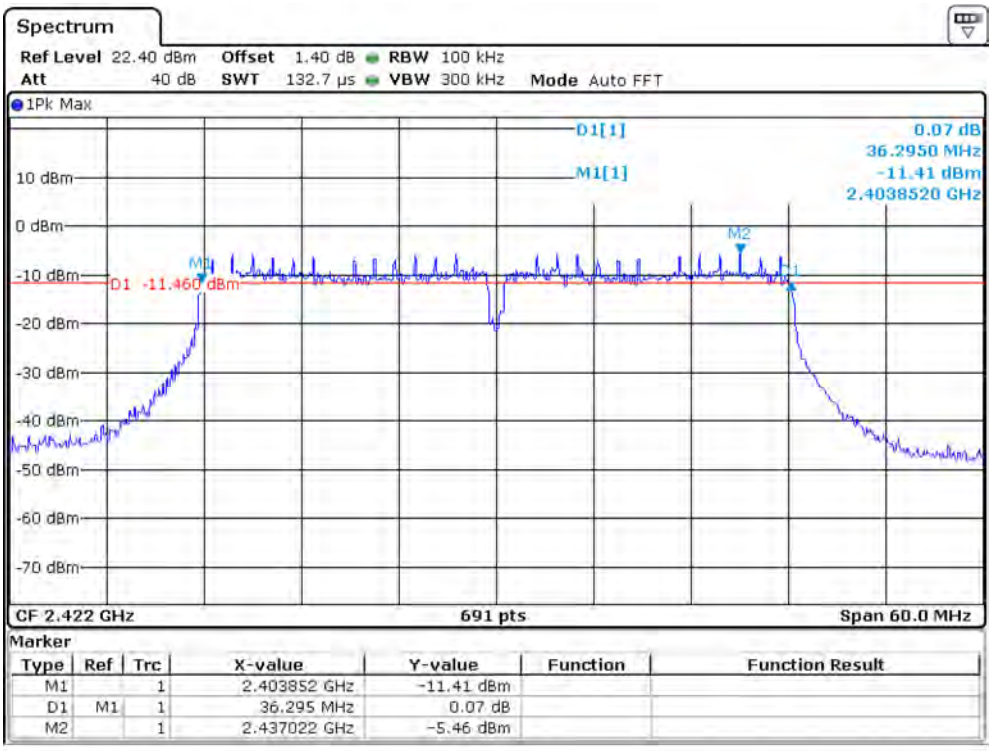
802.11n-HT20

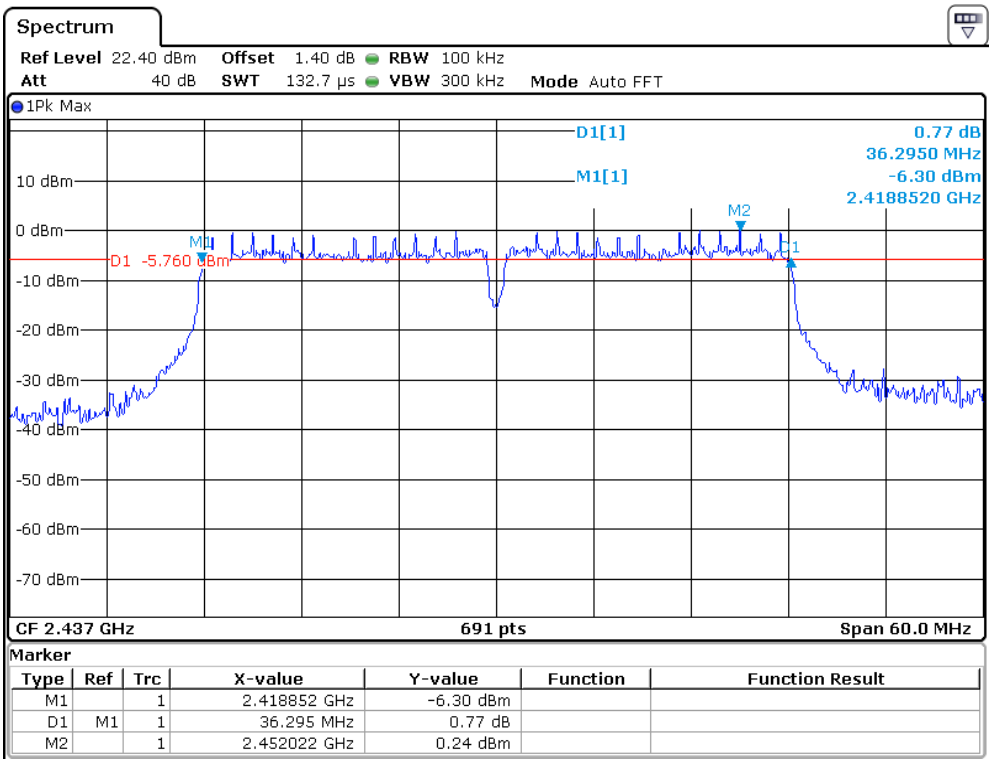

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -0.55 dB
17.1490 MHz
M1[1] -7.43 dBm
2.4035770 GHz
D1 -7.650 dBm
CF 2.412 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.403577 GHz -7.43 dBm
D1 M1 1 17.149 MHz -0.55 dB
M2 1 2.405748 GHz -1.65 dBm

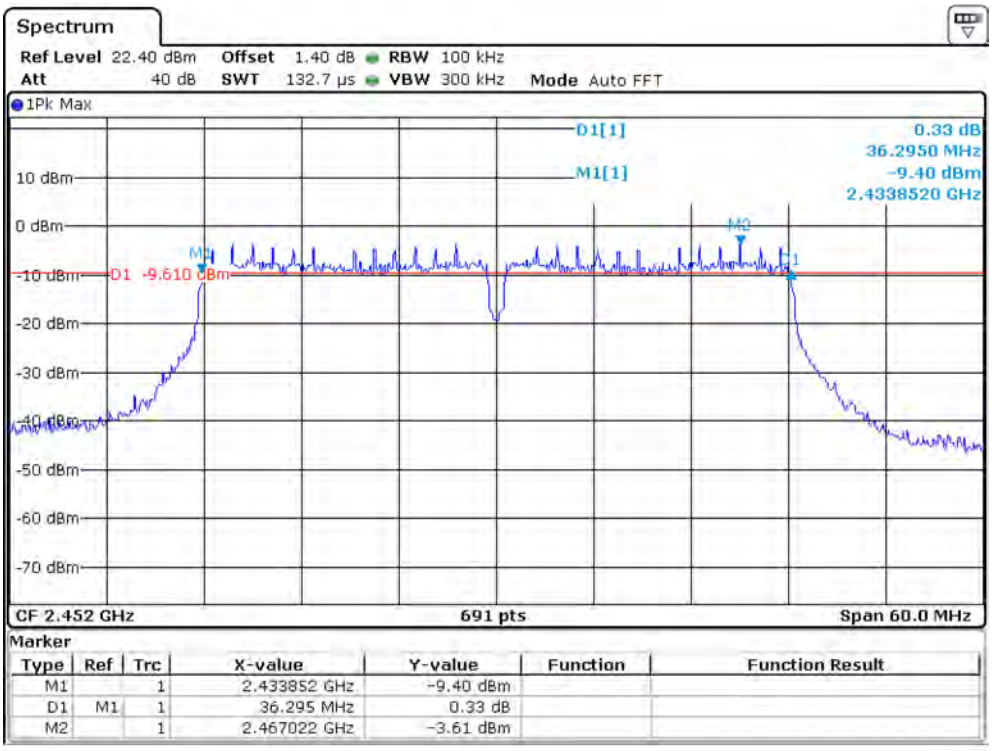

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 2.11 dB
17.1490 MHz
M1[1] -5.62 dBm
2.4283600 GHz
D1 -3.800 dBm
CF 2.437 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.42836 GHz -5.62 dBm
D1 M1 1 17.149 MHz 2.11 dB
M2 1 2.430748 GHz 2.20 dBm


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 2.22 dB
17.1490 MHz
M1[1] -8.38 dBm
2.4533600 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -6.840 dBm
M1
M2
D1
CF 2.462 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.45336 GHz -8.38 dBm
D1 M1 1 17.149 MHz 2.22 dB
M2 1 2.455748 GHz -0.84 dBm

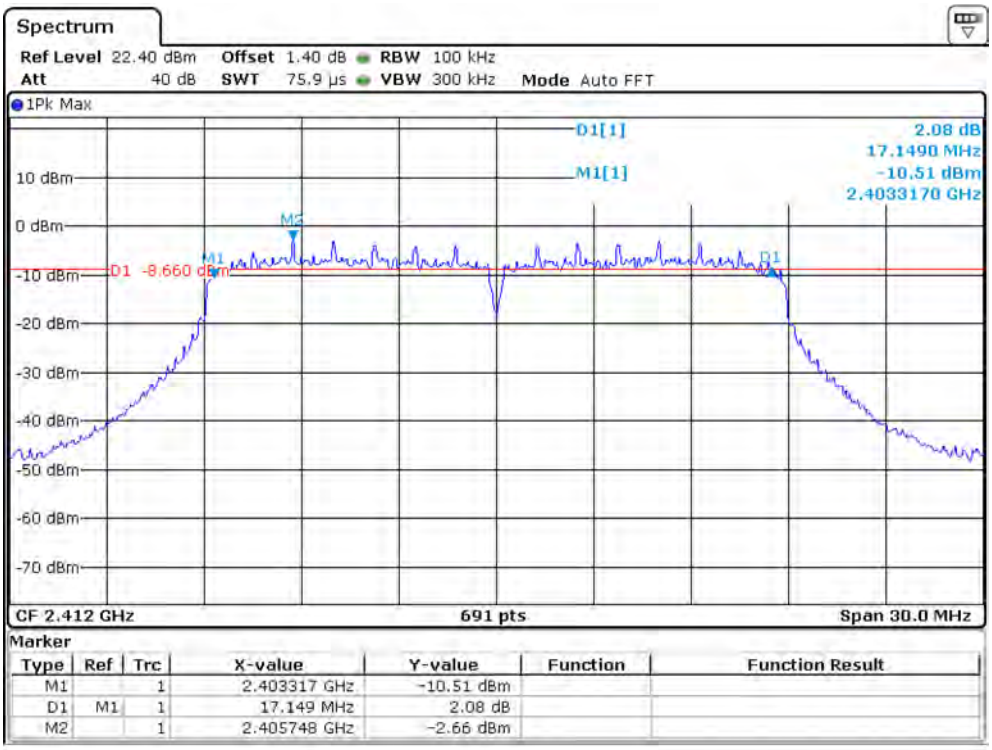
802.11n-HT40

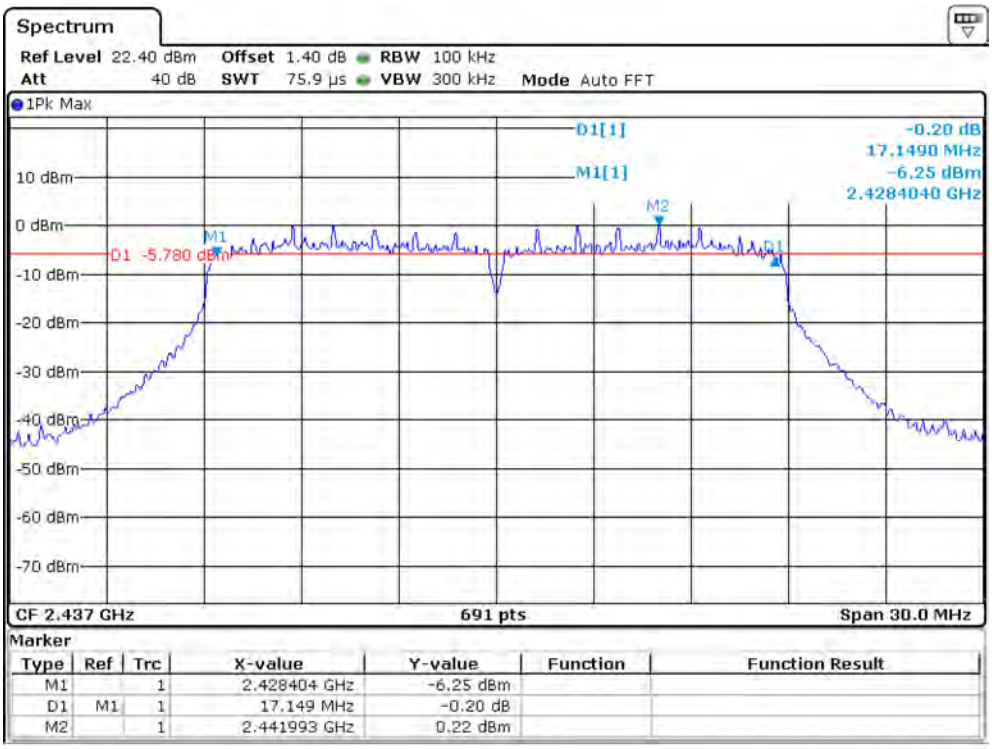

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 0.07 dB
36.2950 MHz
M1[1] -11.41 dBm
2.4038520 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -11.460 dBm
M1
M2
D1
CF 2.422 GHz
691 pts
Span 60.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.403852 GHz -11.41 dBm
D1 M1 1 36.295 MHz 0.07 dB
M2 1 2.437022 GHz -5.46 dBm

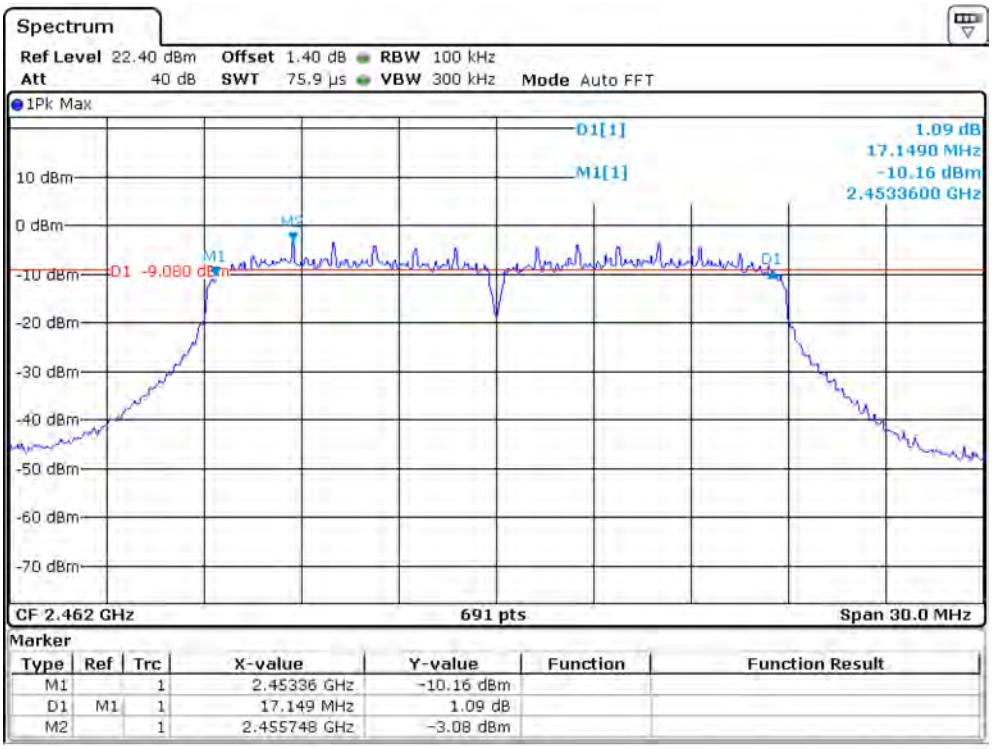

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 0.77 dB
36.2950 MHz
M1[1] -6.30 dBm
2.4188520 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
D1 -5.760 dBm
M2
CF 2.437 GHz
691 pts
Span 60.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.418852 GHz -6.30 dBm
D1 M1 1 36.295 MHz 0.77 dB
M2 1 2.452022 GHz 0.24 dBm


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 0.33 dB
36.2950 MHz
M1[1] -9.40 dBm
2.4338520 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
D1 -9.610 dBm
M2
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 -9.40 dBm
D1 M1 1 36.295 MHz 0.33 dB
M2 1 2.467022 GHz -3.61 dBm

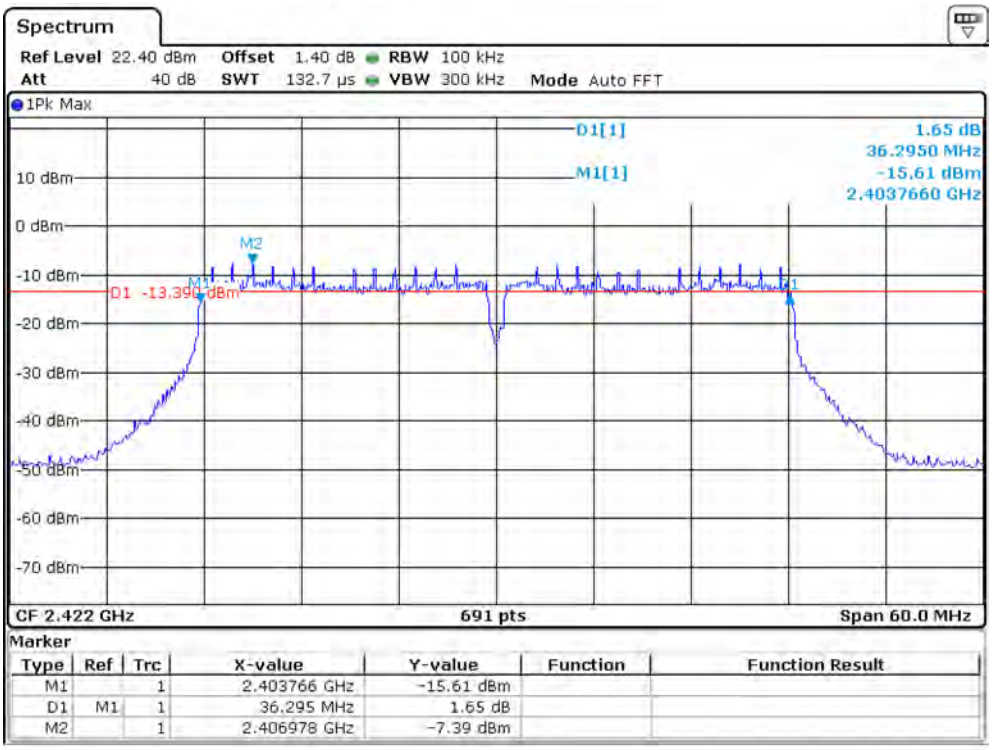
MIMO Mode, Ant1:
802.11n-HT20

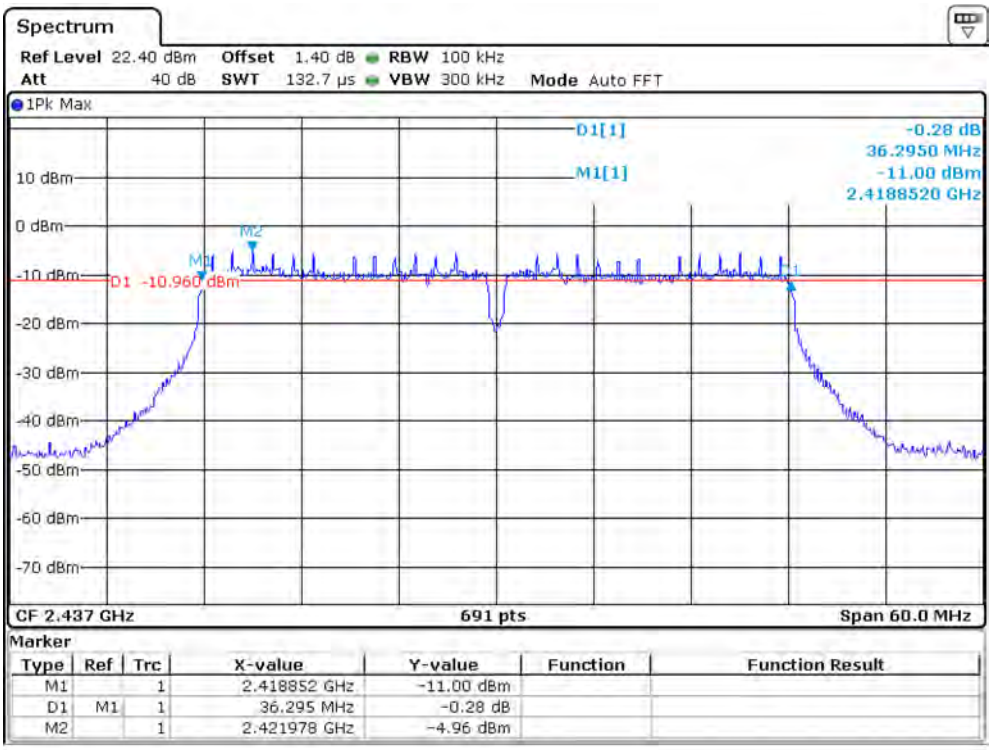


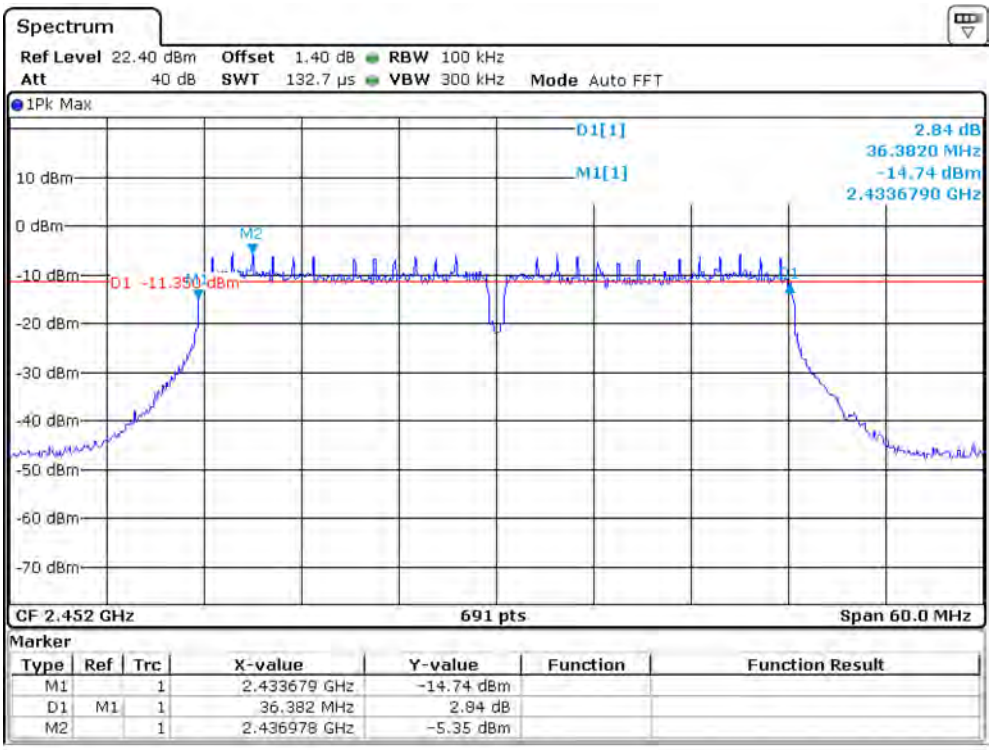



Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 1.09 dB
17.1490 MHz
M1[1] -10.16 dBm
2.4533600 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -9.080 dBm
M1
M2
D1
CF 2.462 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.45336 GHz -10.16 dBm
D1 M1 1 17.149 MHz 1.09 dB
M2 1 2.455748 GHz -3.08 dBm

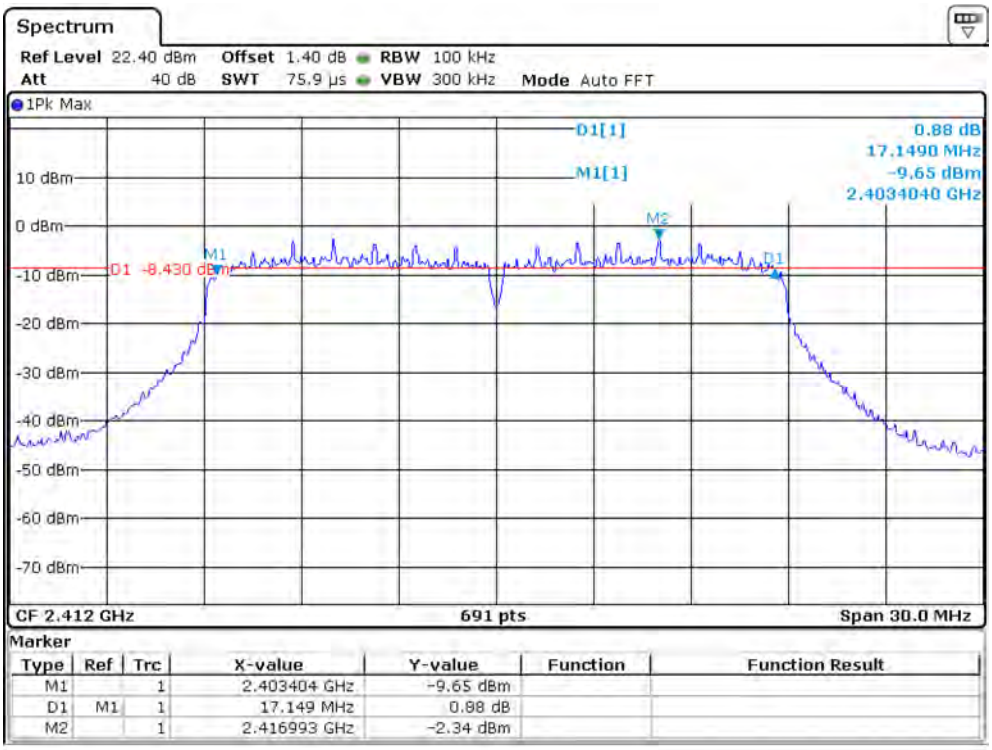
802.11n-HT40

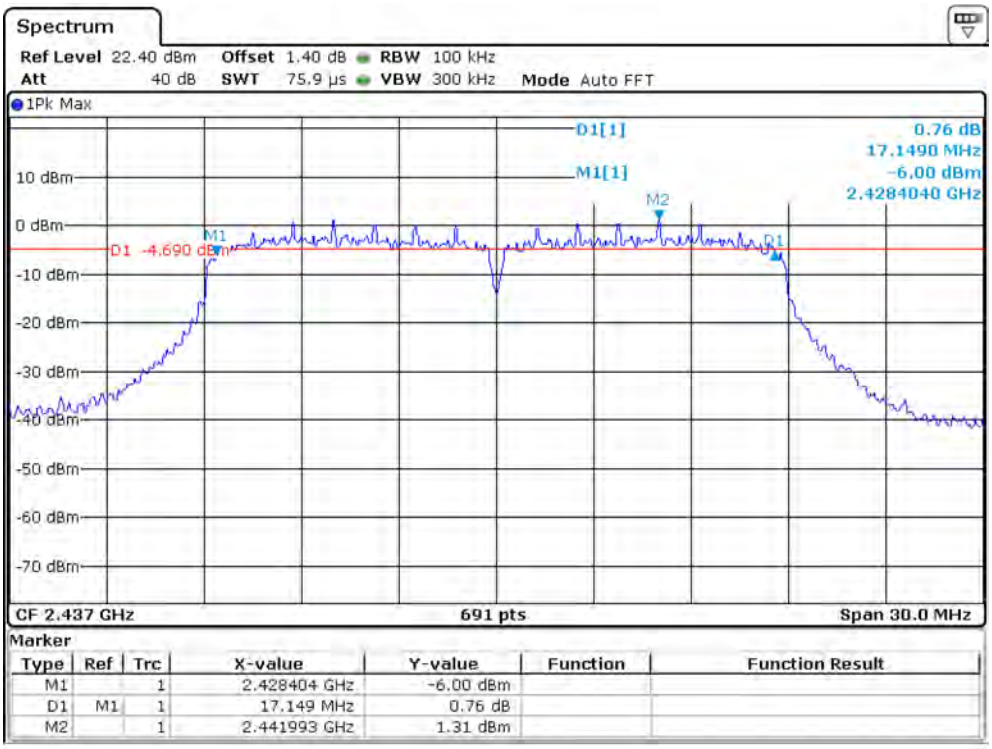

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 1.65 dB
36.2950 MHz
M1[1] -15.61 dBm
2.4037660 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -13.390 dBm
M1
M2
CF 2.422 GHz
691 pts
Span 60.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.403766 GHz -15.61 dBm
D1 M1 1 36.295 MHz 1.65 dB
M2 1 2.406978 GHz -7.39 dBm

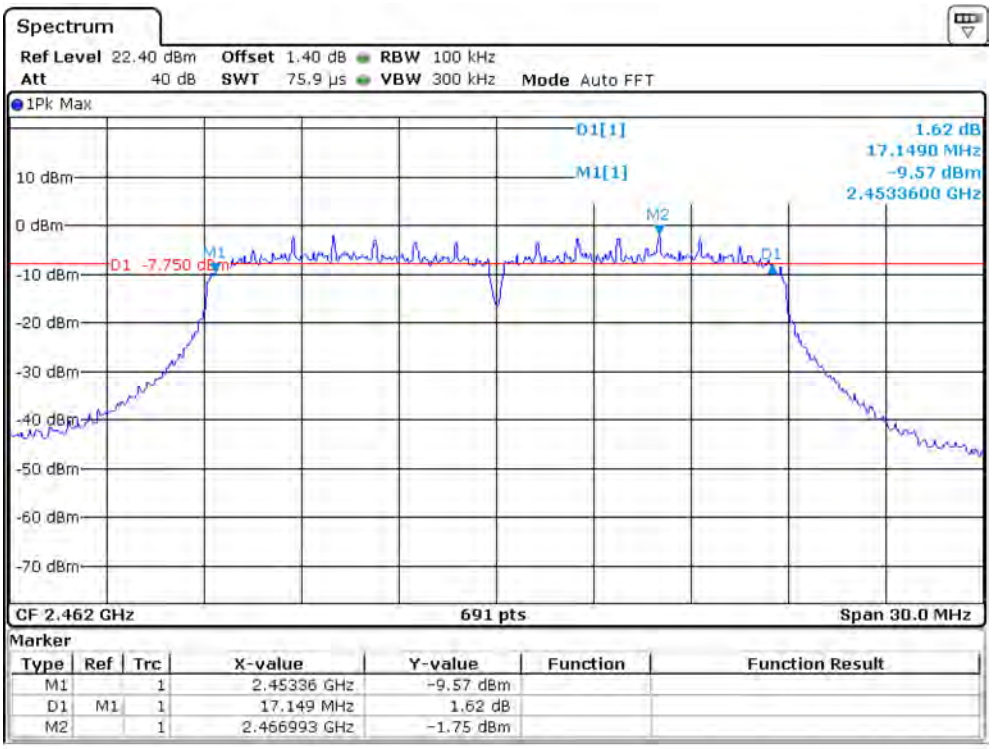

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -0.28 dB
36.2950 MHz
M1[1] -11.00 dBm
2.4188520 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -10.960 dBm
M1
M2
CF 2.437 GHz
691 pts
Span 60.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.418852 GHz -11.00 dBm
D1 M1 1 36.295 MHz -0.28 dB
M2 1 2.421978 GHz -4.96 dBm


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 2.84 dB
36.3820 MHz
M1[1] -14.74 dBm
2.4336790 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -11.350 dBm
M2
CF 2.452 GHz
691 pts
Span 60.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.433679 GHz -14.74 dBm
D1 M1 1 36.382 MHz 2.84 dB
M2 1 2.436978 GHz -5.35 dBm

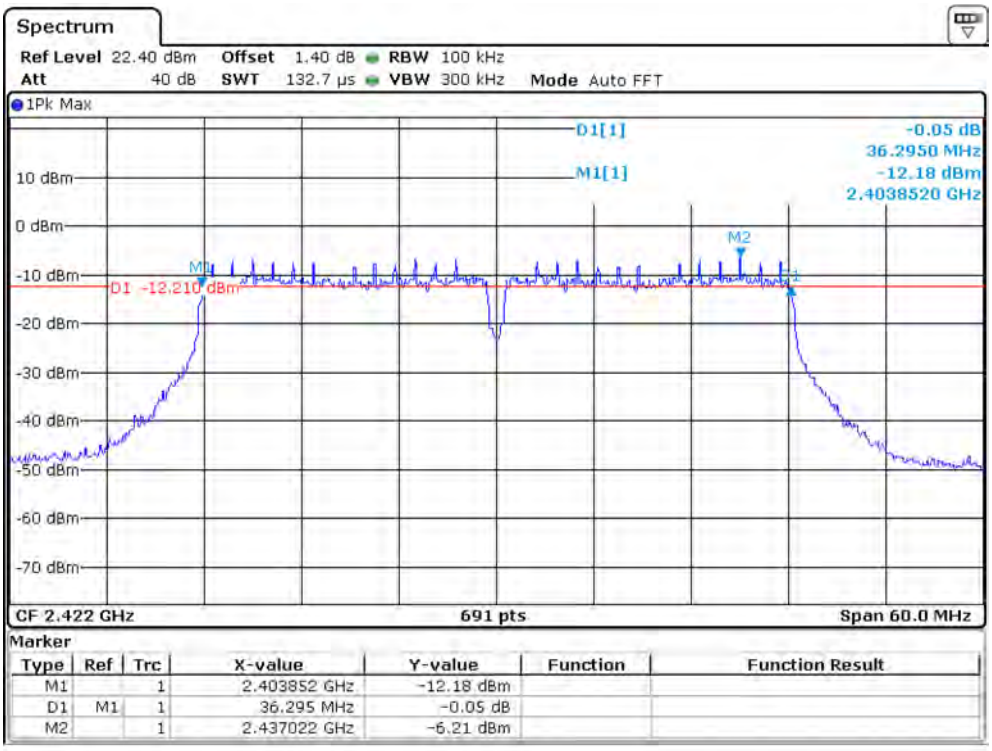
MIMO Mode, Ant2:
802.11n-HT20

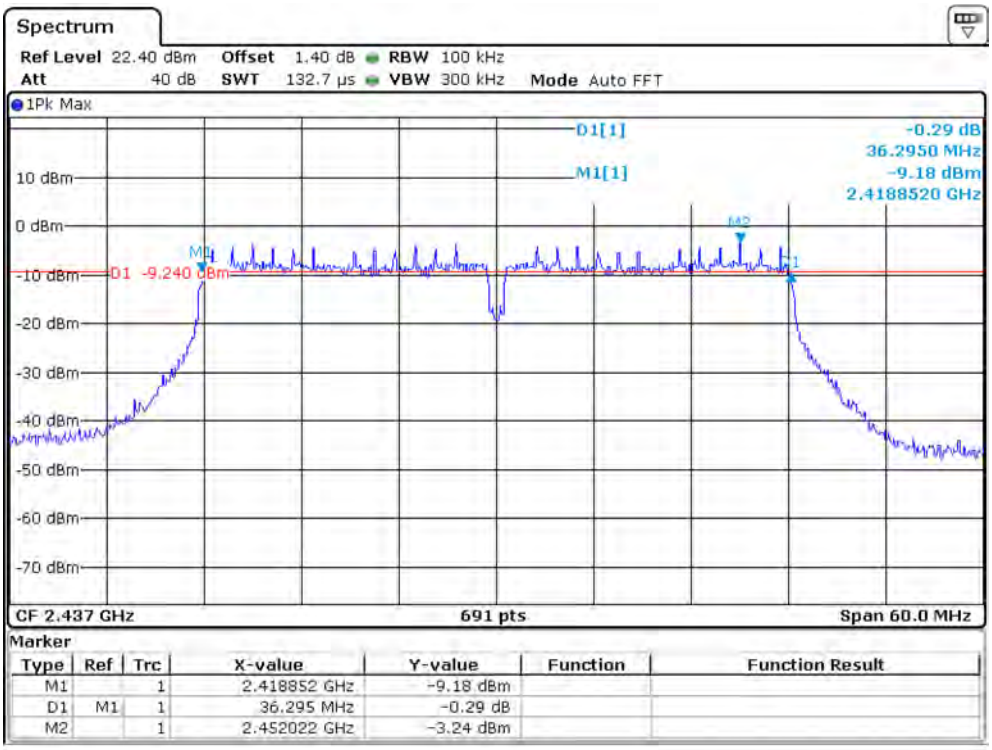


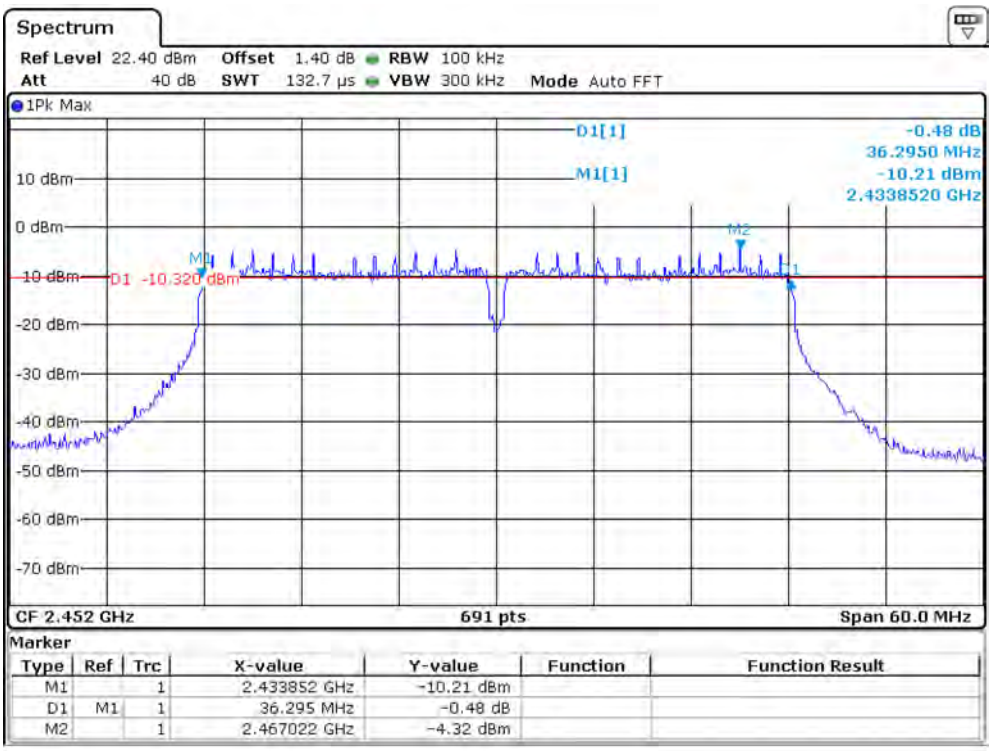



Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] 1.62 dB
17.1490 MHz
M1[1] -9.57 dBm
2.4533600 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -7.750 dBm
M1
M2
D1
CF 2.462 GHz
691 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.45336 GHz -9.57 dBm
D1 M1 1 17.149 MHz 1.62 dB
M2 1 2.466993 GHz -1.75 dBm

802.11n-HT40


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -0.05 dB
36.2950 MHz
M1[1] -12.18 dBm
2.4038520 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -12.210 dBm
M1
M2
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 -12.18 dBm
D1 M1 1 36.295 MHz -0.05 dB
M2 1 2.437022 GHz -6.21 dBm


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -0.29 dB
36.2950 MHz
M1[1] -9.18 dBm
2.4188520 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -9.240 dBm
CF 2.437 GHz
691 pts
Span 60.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.418852 GHz -9.18 dBm
D1 M1 1 36.295 MHz -0.29 dB
M2 1 2.452022 GHz -3.24 dBm


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -0.48 dB
36.2950 MHz
M1[1] -10.21 dBm
2.4338520 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -10.320 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 -10.21 dBm
D1 M1 1 36.295 MHz -0.48 dB
M2 1 2.467022 GHz -4.32 dBm

Applicant: Huawei Technologies Co., Ltd.
Date of Test: March 5, 2019 Model: X22C

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

The Measurement Procedure PKPSD was set according to the FCC KDB 558074 D01 v05r01.

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 (1Mbps)	
Frequency (MHz)	Power Density with RBW 3KHz
2412	-8.21
2437	-9.67
2462	-9.79

IEEE 802.11g (6Mbps)	
Frequency (MHz)	Power Density with RBW 3KHz
2412	-15.28
2437	-12.35
2462	-16.90

IEEE 802.11n-HT20 (6.5Mbps)	
Frequency (MHz)	Power Density with RBW 3KHz
2412	-16.53
2437	-14.25
2462	-15.91

IEEE 802.11n-HT40 (13.5Mbps)	
Frequency (MHz)	Power Density with RBW 3KHz
2422	-20.94
2437	-18.32
2452	-19.28

SISO Mode, Ant2：

IEEE 802.11b (1Mbps)	
Frequency (MHz)	Power Density with RBW 3KHz
2412	-7.88
2437	-7.86
2462	-8.42

IEEE 802.11g (6Mbps)	
Frequency (MHz)	Power Density with RBW 3KHz
2412	-14.20
2437	-10.83
2462	-15.07

IEEE 802.11n-HT20 (6.5Mbps)	
Frequency (MHz)	Power Density with RBW 3KHz
2412	-16.23
2437	-11.10
2462	-15.36

IEEE 802.11n-HT40 (13.5Mbps)	
Frequency (MHz)	Power Density with RBW 3KHz
2422	-20.15
2437	-16.29
2452	-15.66

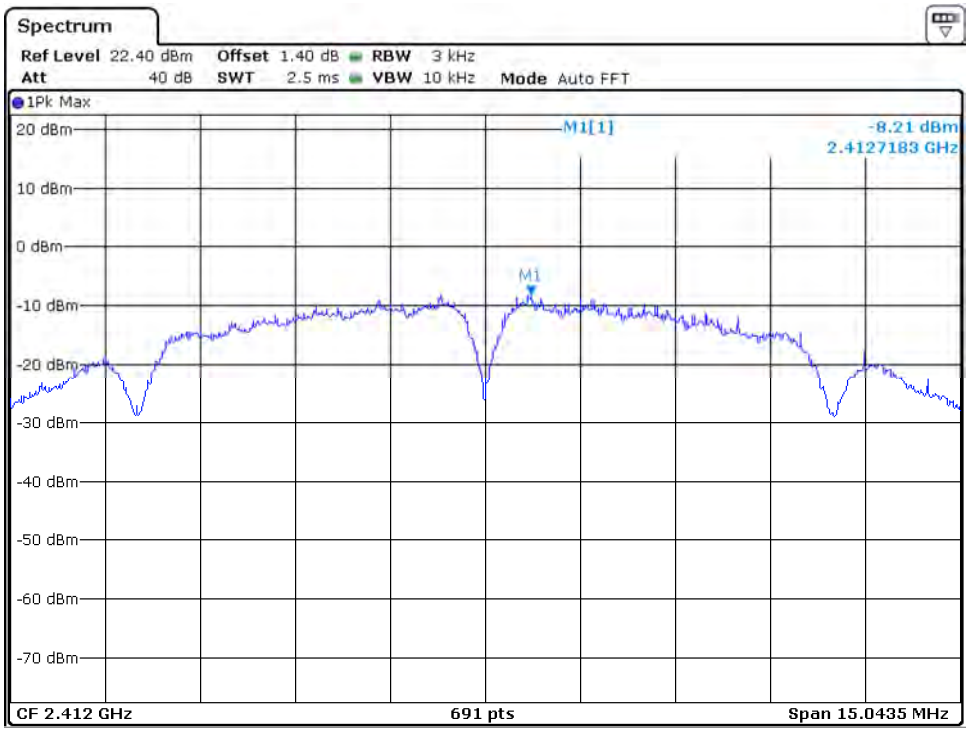
MIMO Mode：

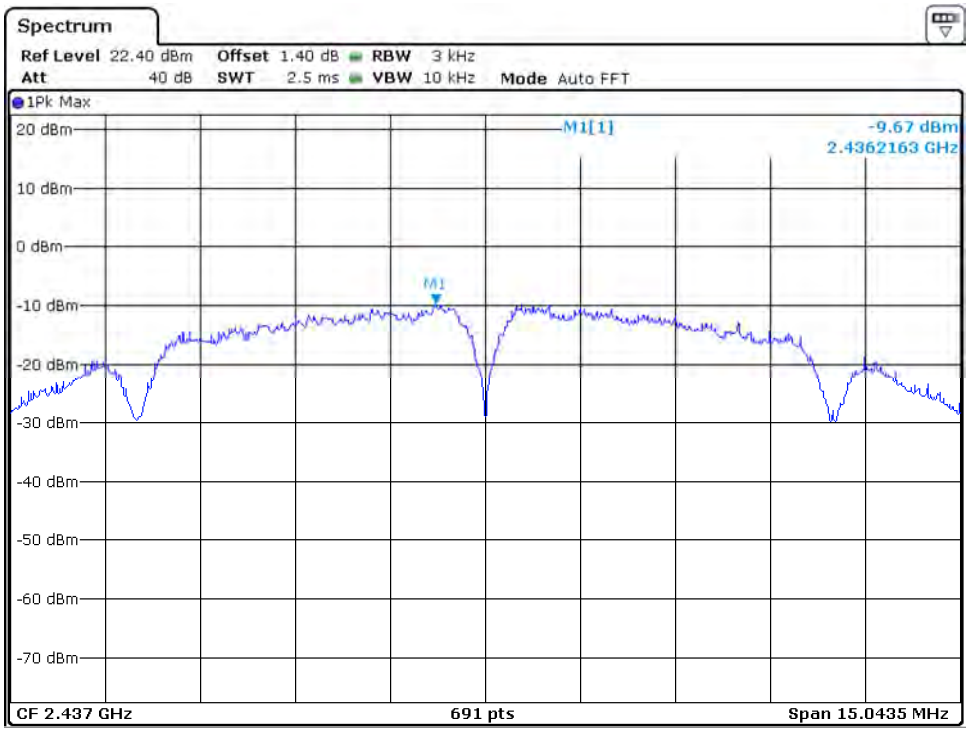
IEEE 802.11n-HT20 (6.5Mbps)			
Frequency (MHz)	Power Density with RBW 3KHz		Power Density with RBW 3KHz
	Ant1	Ant2	Total
2412	-17.15	-16.99	-14.06
2437	-14.27	-13.09	-10.63
2462	-17.50	-15.5	-13.38

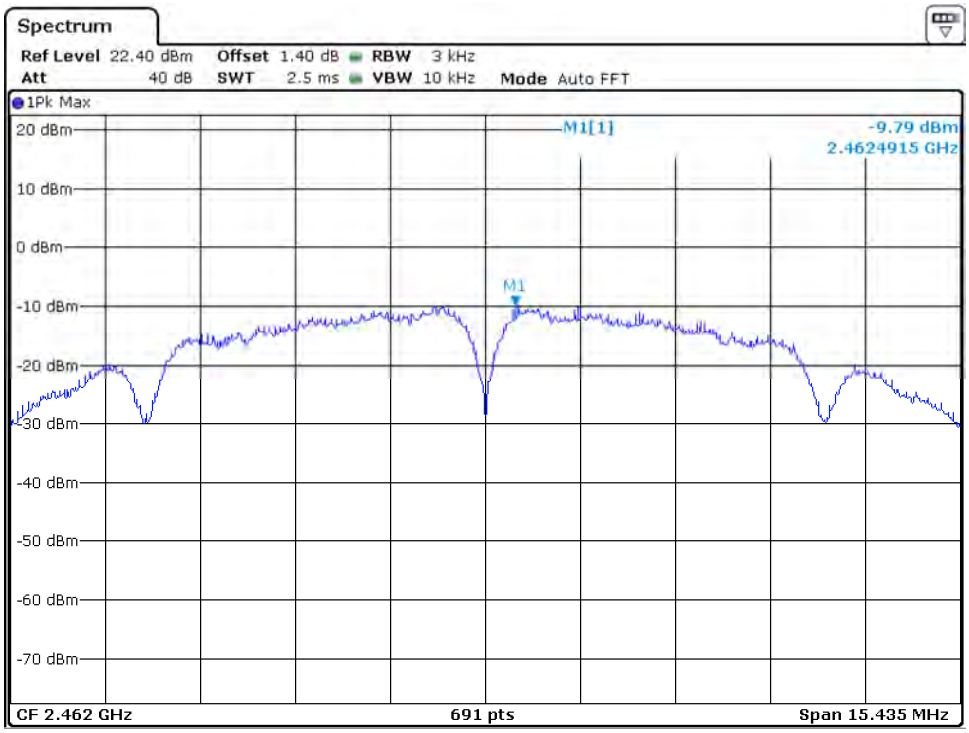
IEEE 802.11n-HT40 (13.5Mbps)			
Frequency (MHz)	Power Density with RBW 3KHz		Power Density with RBW 3KHz
	Ant1	Ant2	Total
2422	-22.17	-20.94	-18.50
2437	-18.82	-18.11	-15.44
2452	-20.53	-20.42	-17.46

The test plots are attached as below.

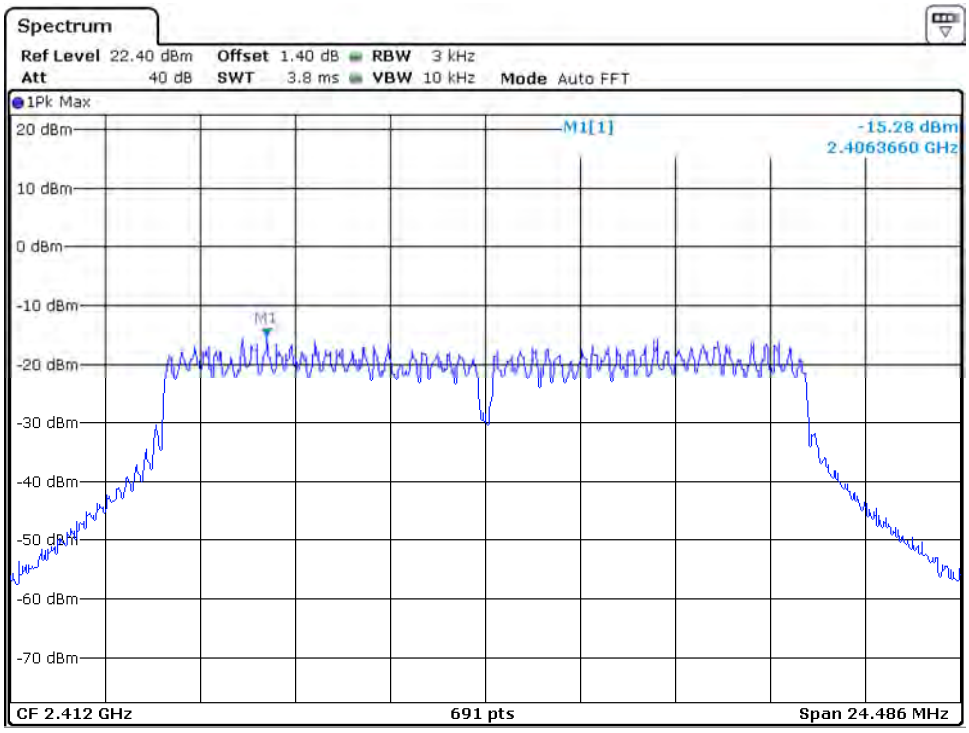
SISO Mode, Ant1:
802.11b

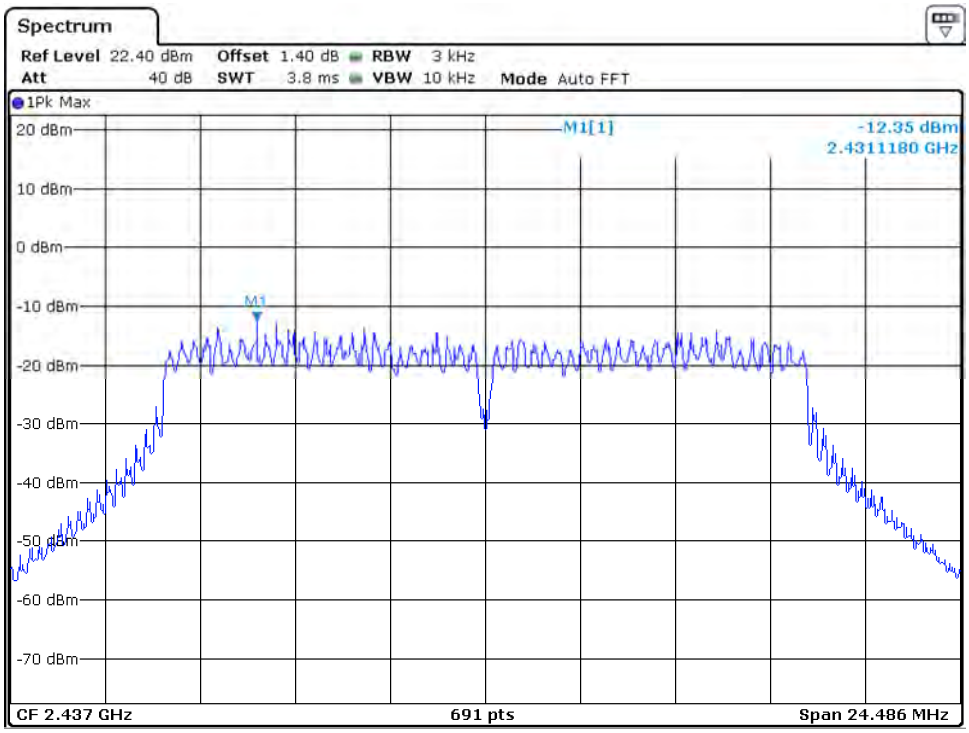


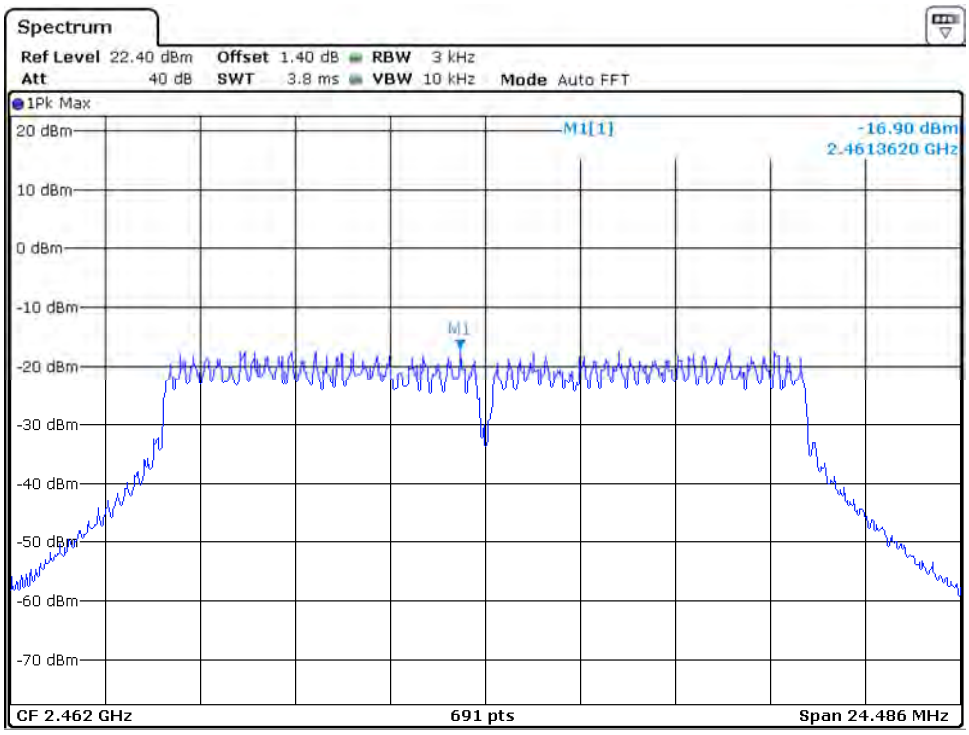

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 2.5 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -9.67 dBm
2.4362163 GHz
M1
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.437 GHz
691 pts
Span 15.0435 MHz


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 2.5 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -9.79 dBm
2.4624915 GHz
M1
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.462 GHz
691 pts
Span 15.435 MHz

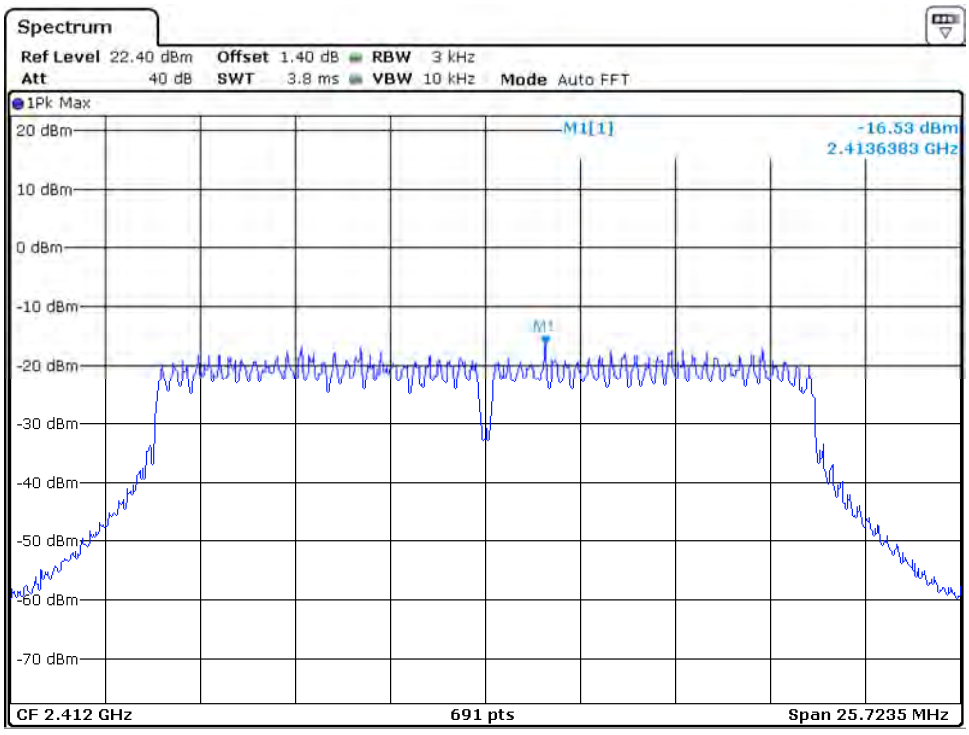
802.11g

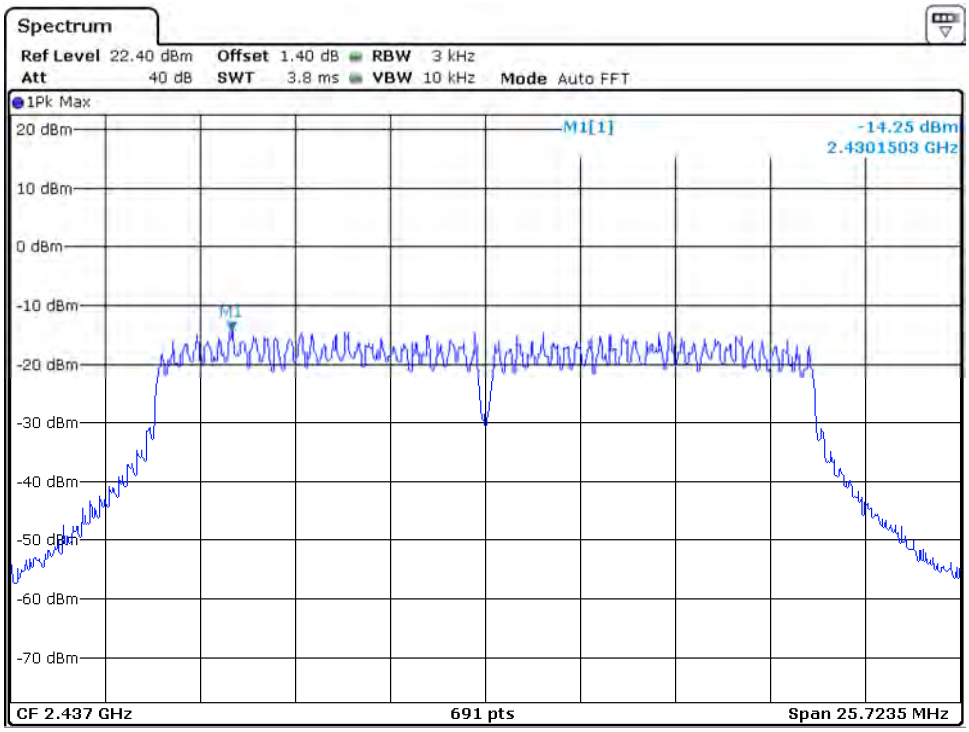

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -15.28 dBm
2.4063660 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.412 GHz
691 pts
Span 24.486 MHz

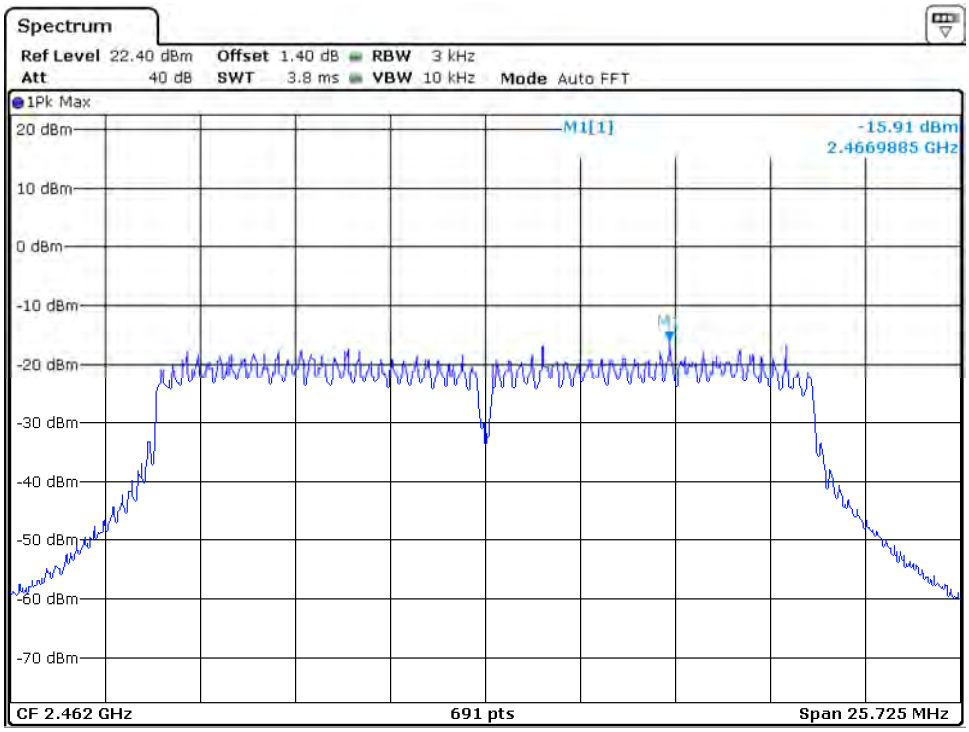

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -12.35 dBm
2.4311180 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.437 GHz
691 pts
Span 24.486 MHz


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -16.90 dBm
2.4613620 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

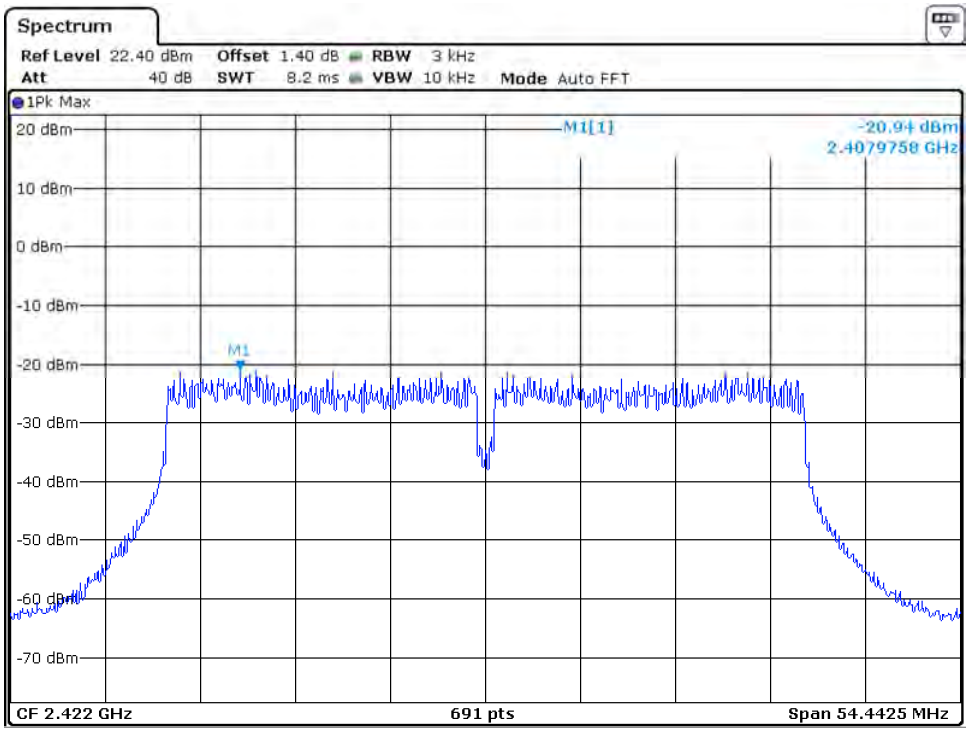
802.11n-HT20

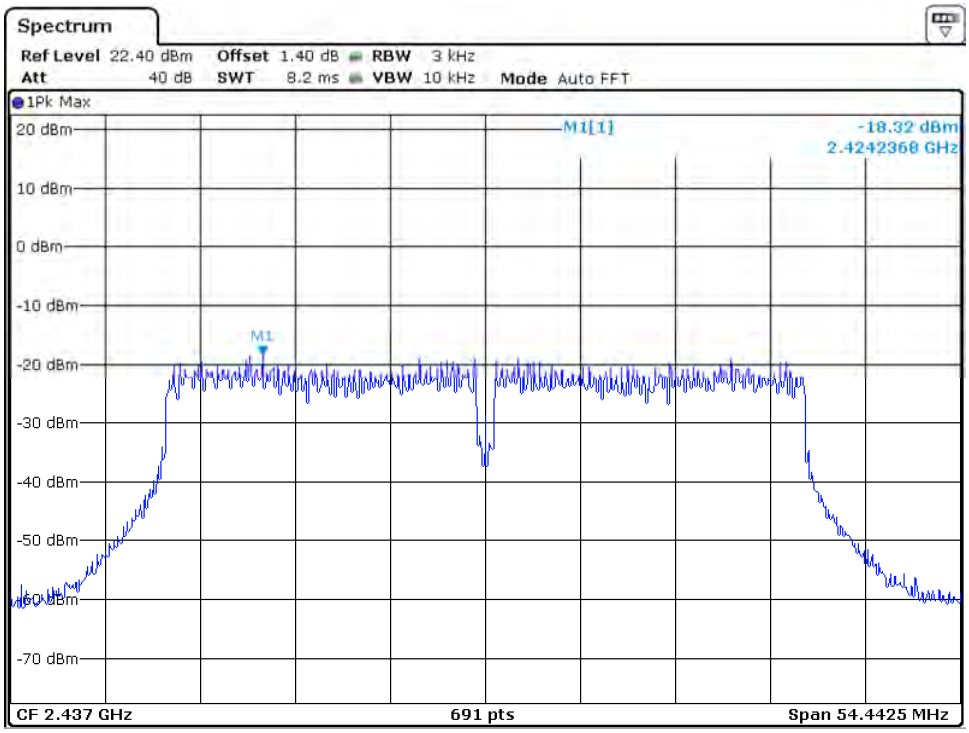

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -16.53 dBm
2.4136383 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.412 GHz
691 pts
Span 25.7235 MHz

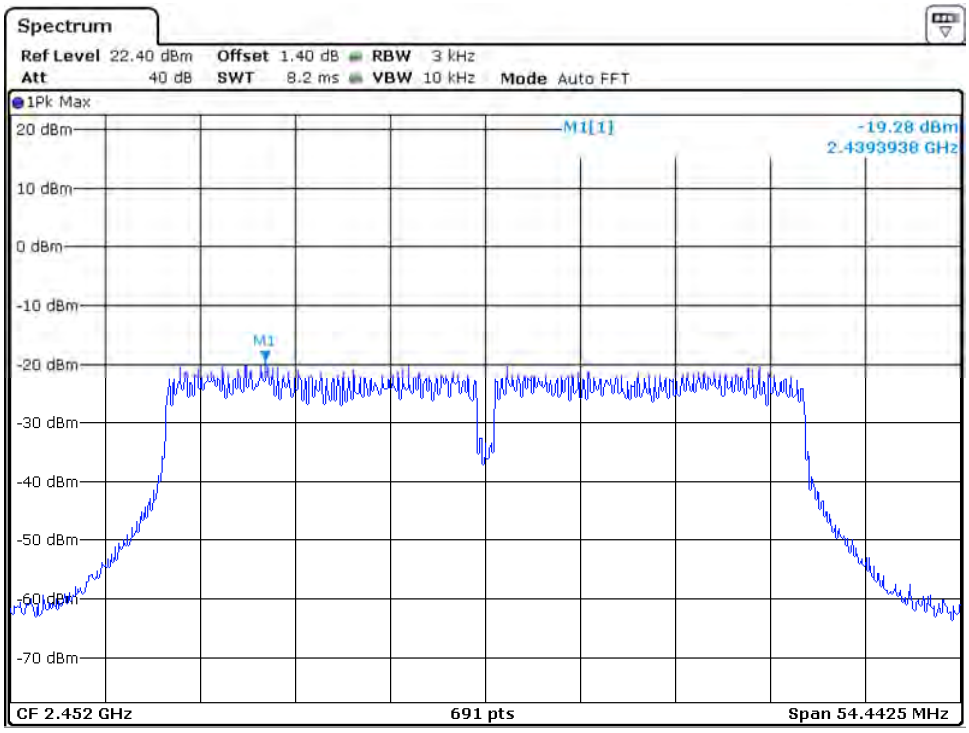

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -14.25 dBm
2.4301503 GHz
M1
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.437 GHz
691 pts
Span 25.7235 MHz


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -15.91 dBm
2.4669885 GHz
M1
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.462 GHz
691 pts
Span 25.725 MHz

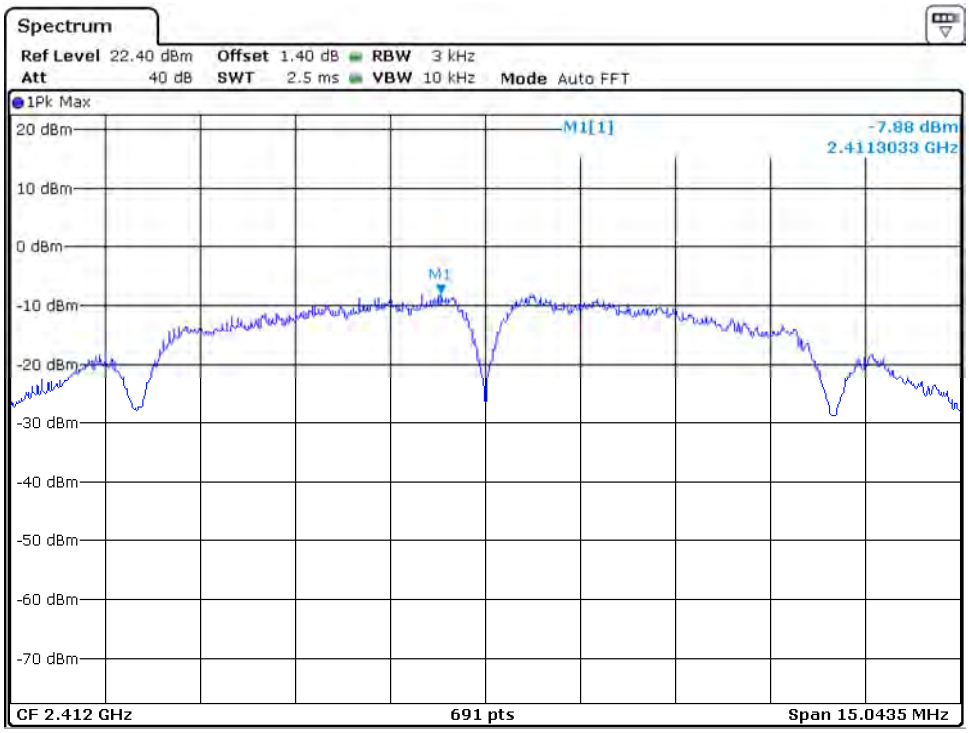
802.11n-HT40

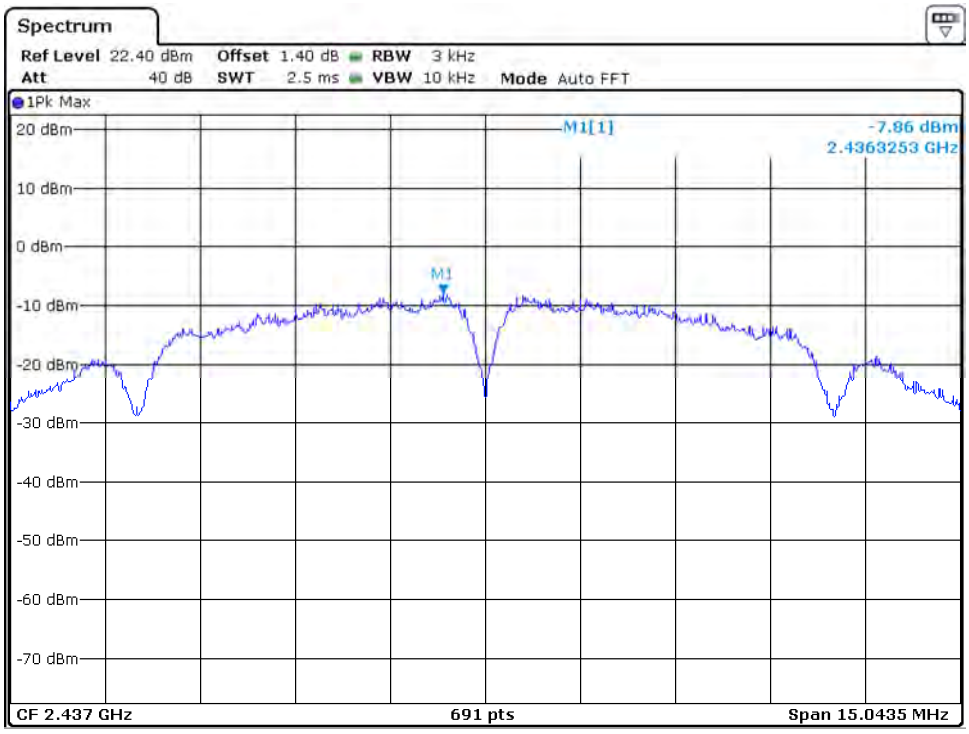

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 8.2 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -20.94 dBm
2.4079758 GHz
M1
CF 2.422 GHz
691 pts
Span 54.4425 MHz

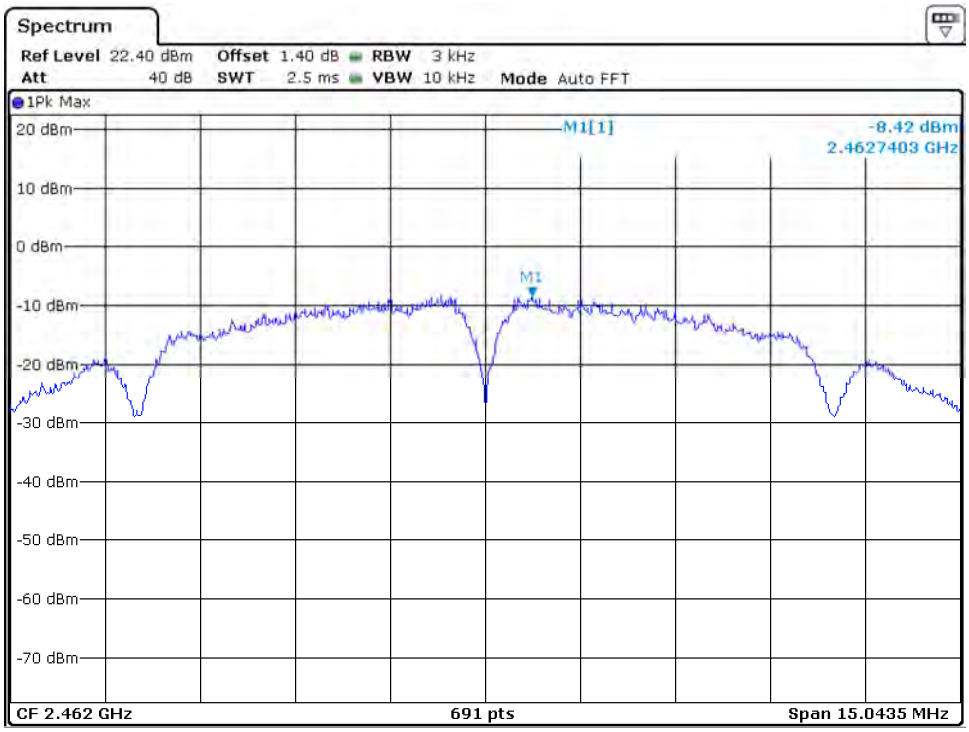

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 8.2 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -18.32 dBm
2.4242368 GHz
M1
CF 2.437 GHz
691 pts
Span 54.4425 MHz



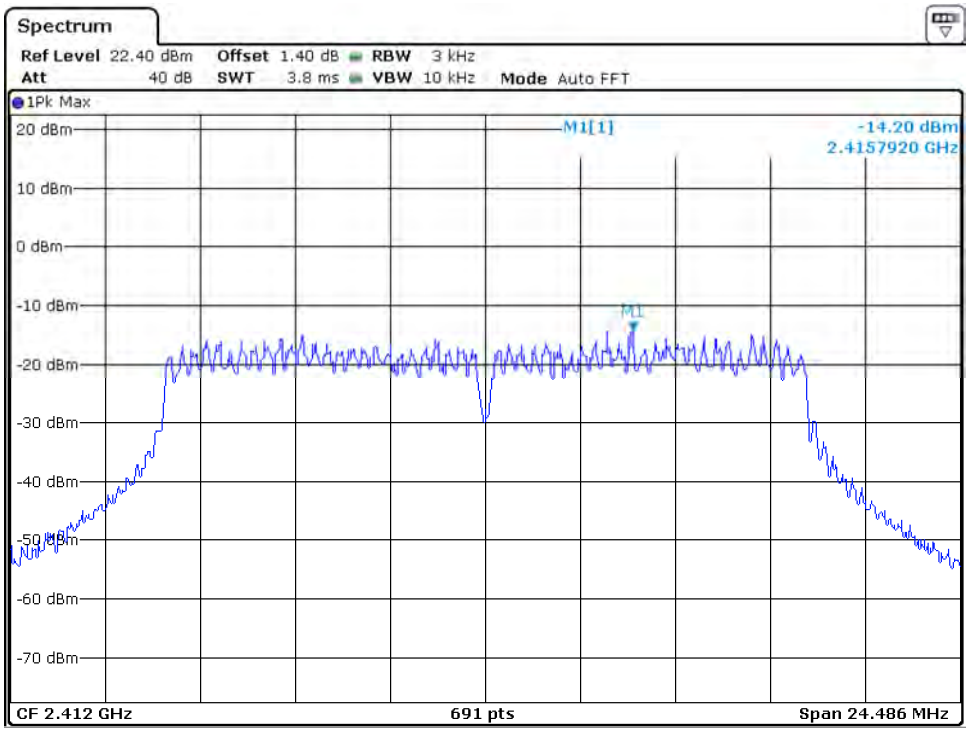
SISO Mode, Ant2:
802.11b

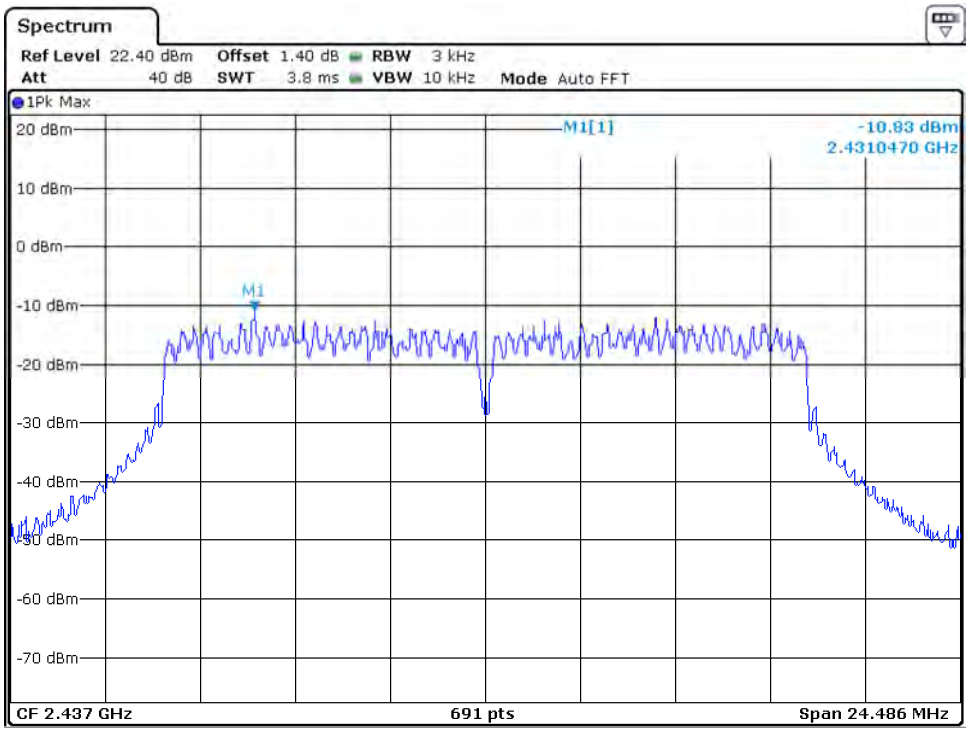


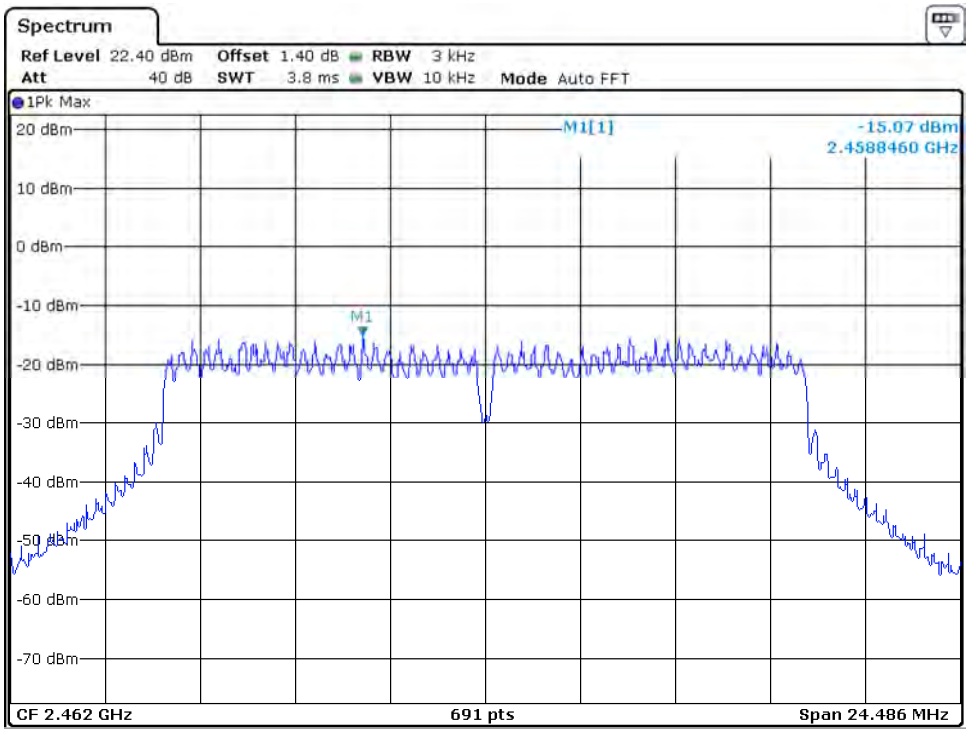

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 2.5 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -7.86 dBm
2.4363253 GHz
M1
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.437 GHz
691 pts
Span 15.0435 MHz


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 2.5 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -8.42 dBm
2.4627403 GHz
M1
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.462 GHz
691 pts
Span 15.0435 MHz

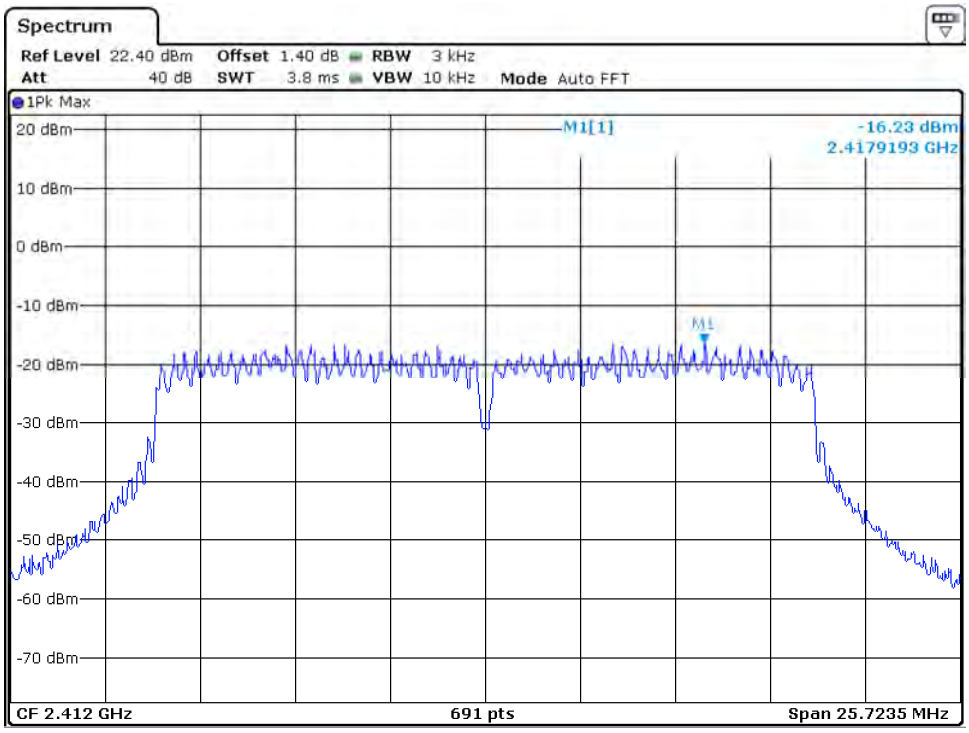
802.11g

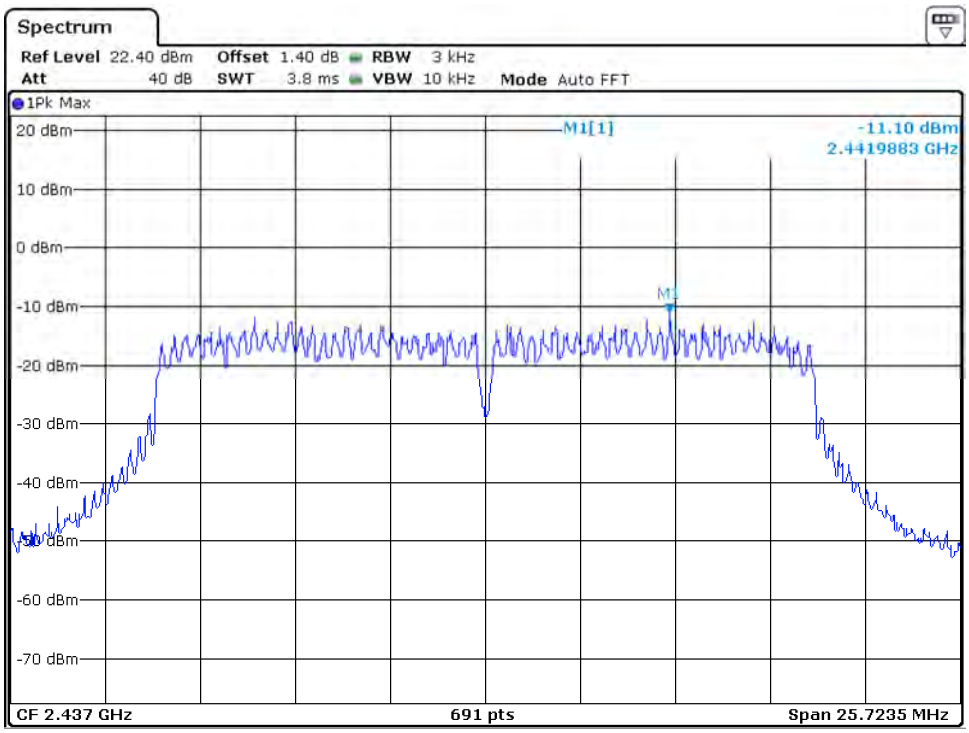

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -14.20 dBm
2.4157920 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.412 GHz
691 pts
Span 24.486 MHz

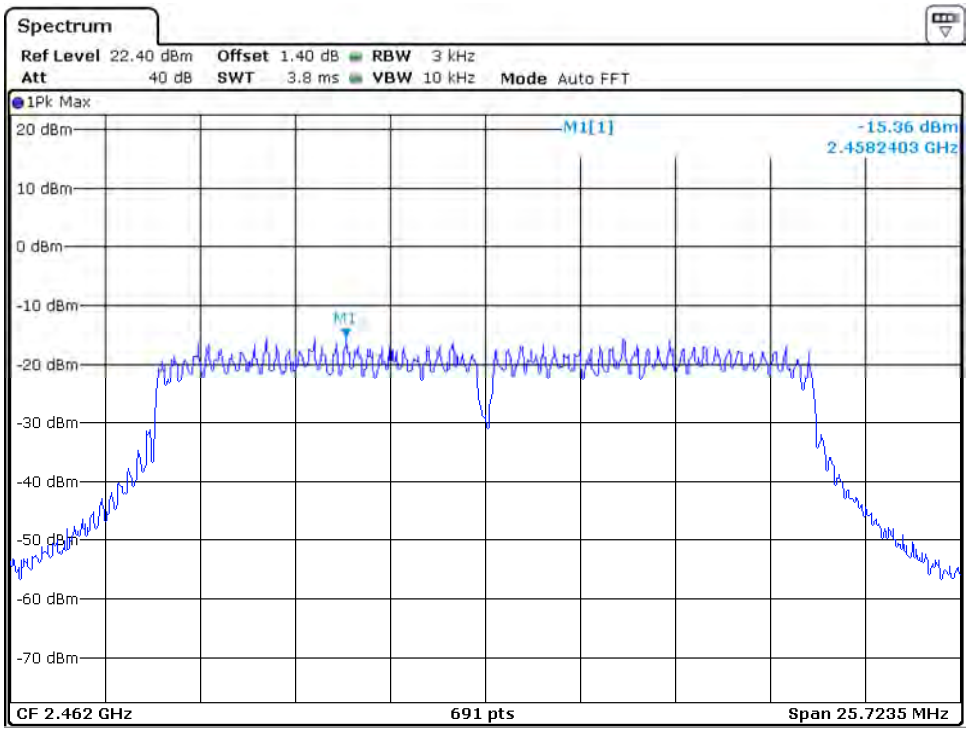

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -10.83 dBm
2.4310470 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.437 GHz
691 pts
Span 24.486 MHz


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -15.07 dBm
2.4588460 GHz
M1
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.462 GHz
691 pts
Span 24.486 MHz

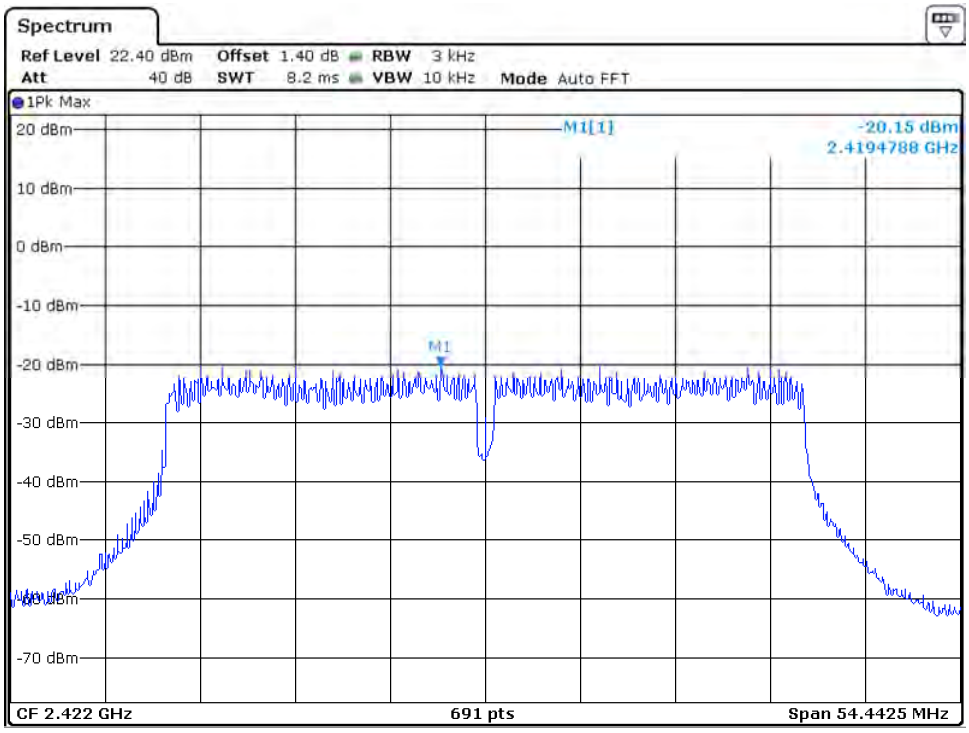
802.11n-HT20

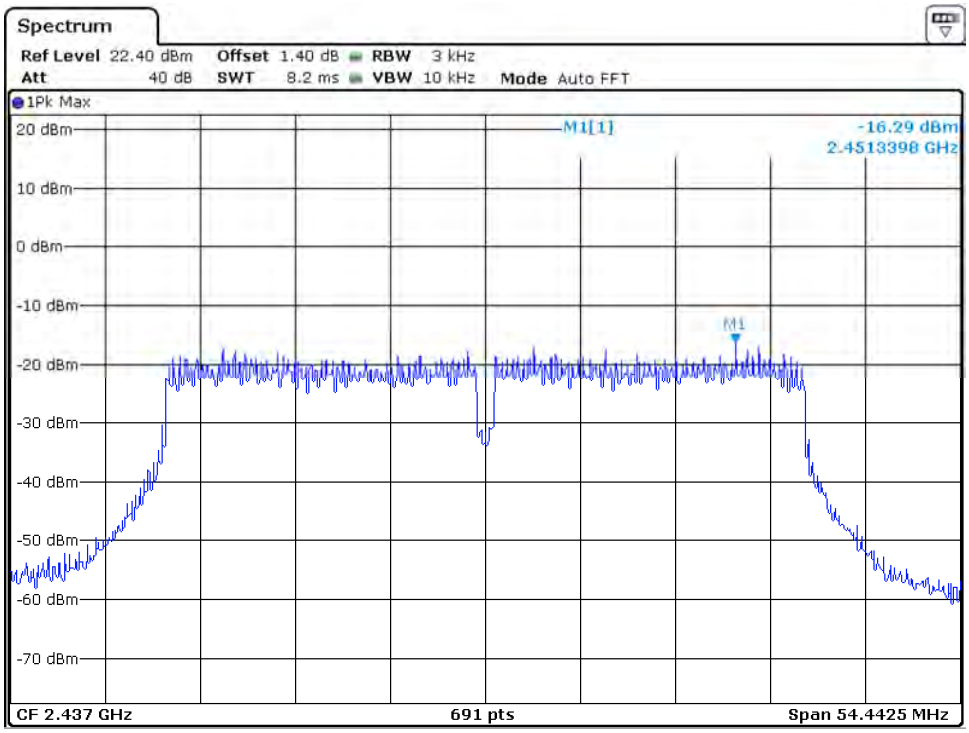

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -16.23 dBm
2.4179193 GHz
M1
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.412 GHz
691 pts
Span 25.7235 MHz

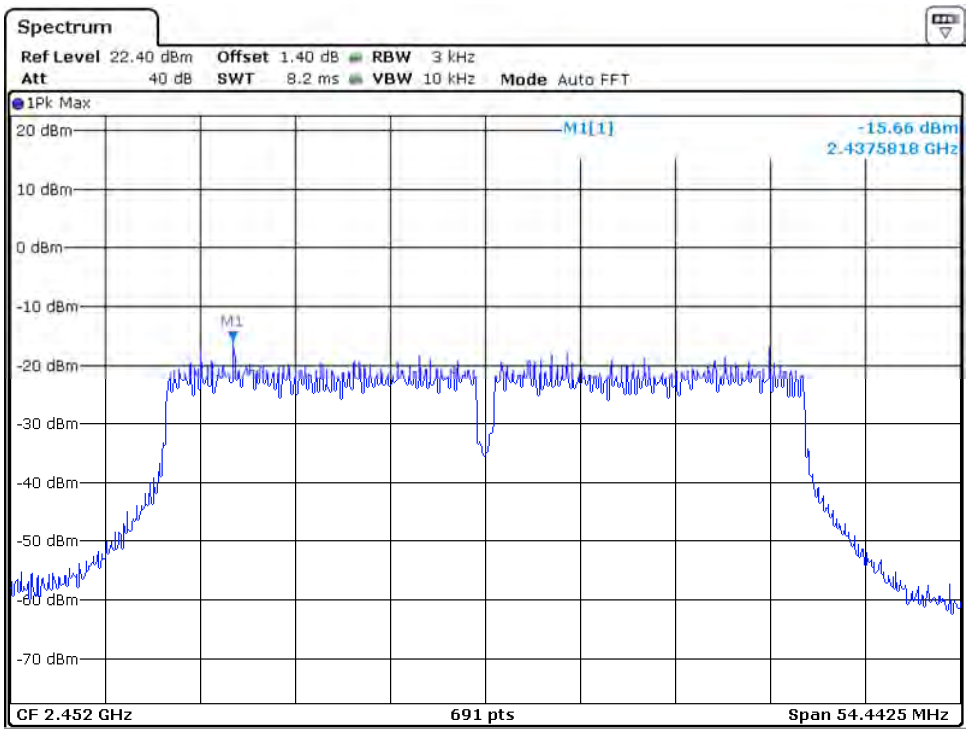

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -11.10 dBm
2.4419883 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.437 GHz
691 pts
Span 25.7235 MHz


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -15.36 dBm
2.4582403 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 25.7235 MHz

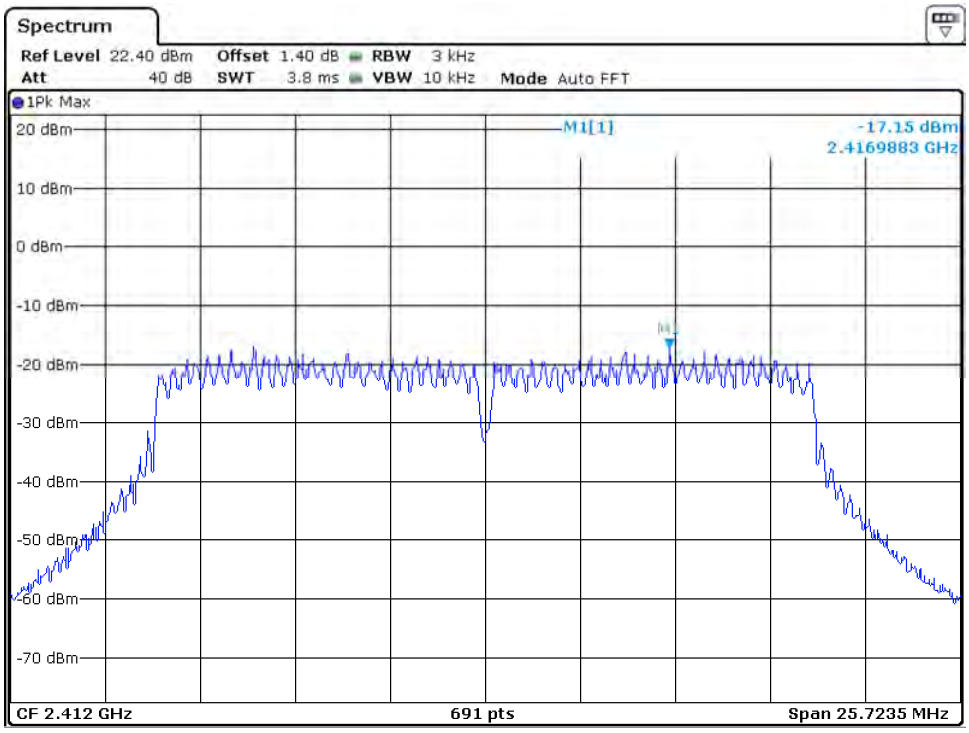
802.11n-HT40

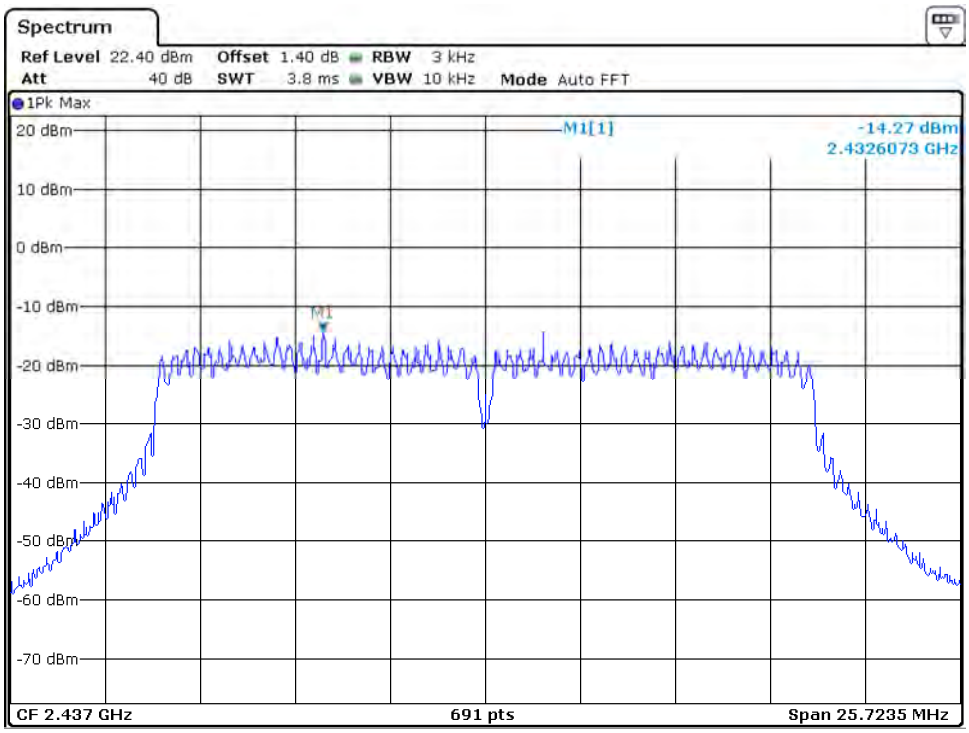

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 8.2 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -20.15 dBm
2.4194788 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-70 dBm
M1
CF 2.422 GHz
691 pts
Span 54.4425 MHz

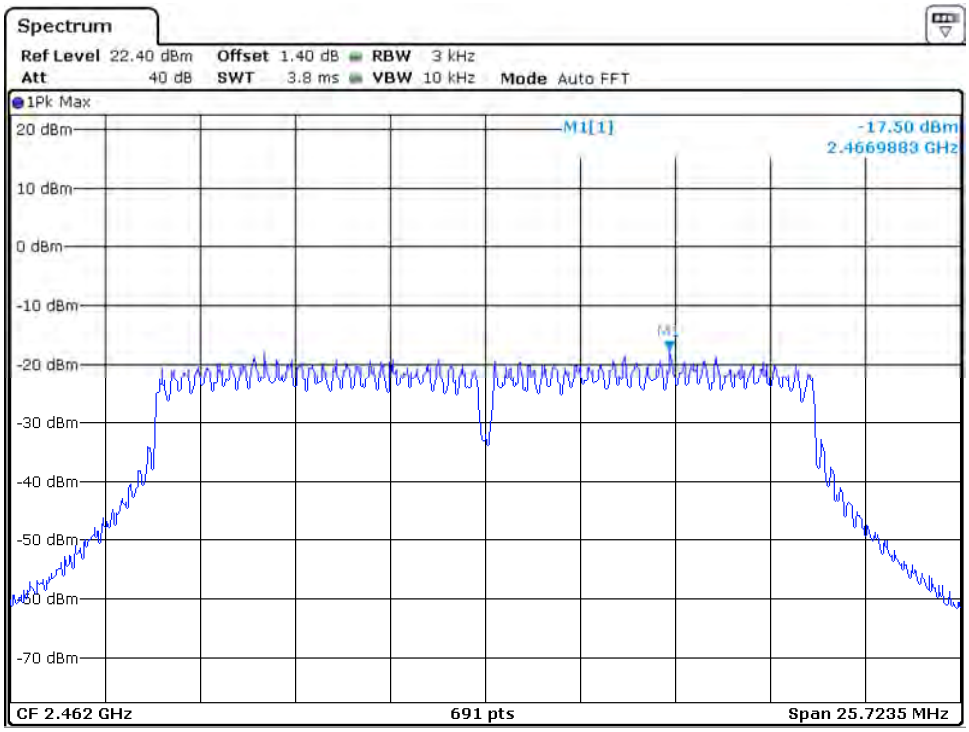

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 8.2 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -16.29 dBm
2.4513398 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.437 GHz
691 pts
Span 54.4425 MHz



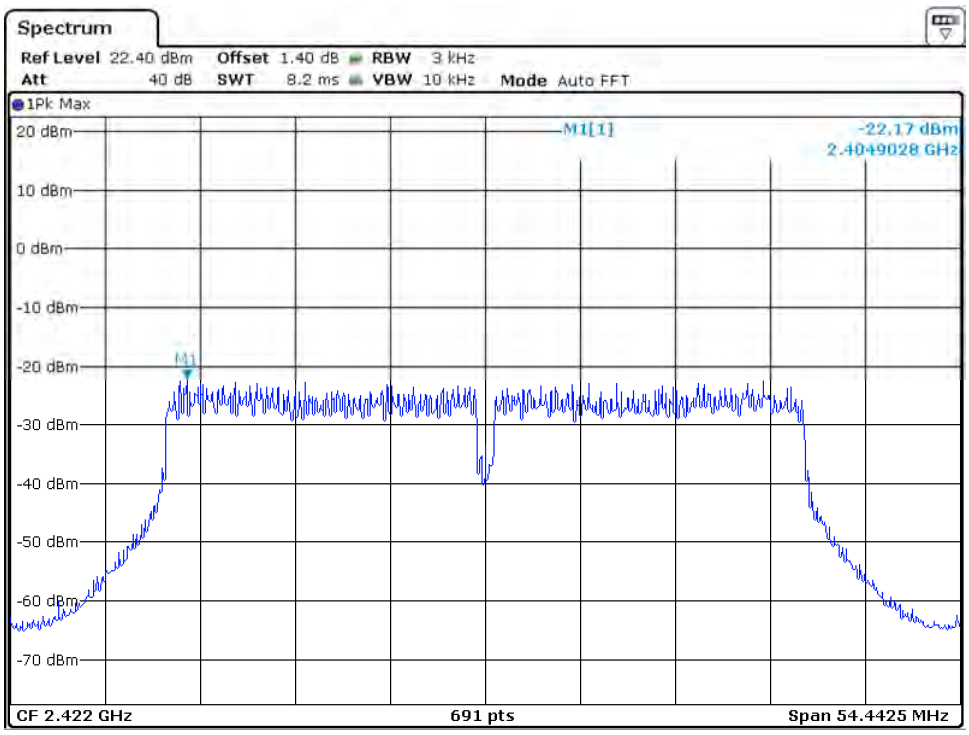
MIMO Mode, Ant1：
802.11n-HT20

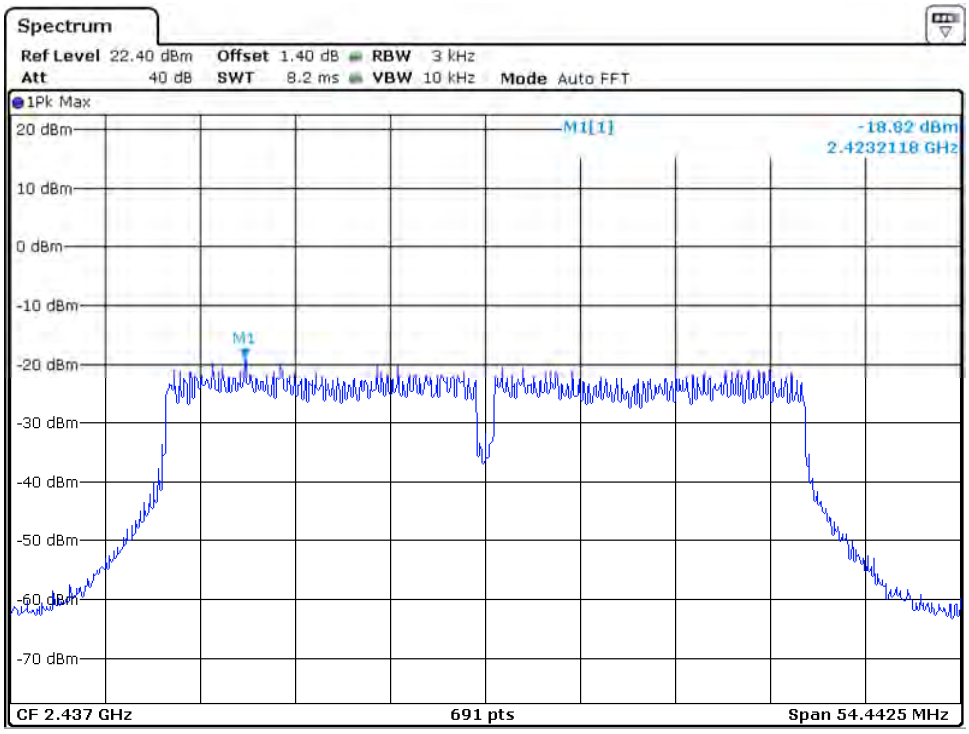


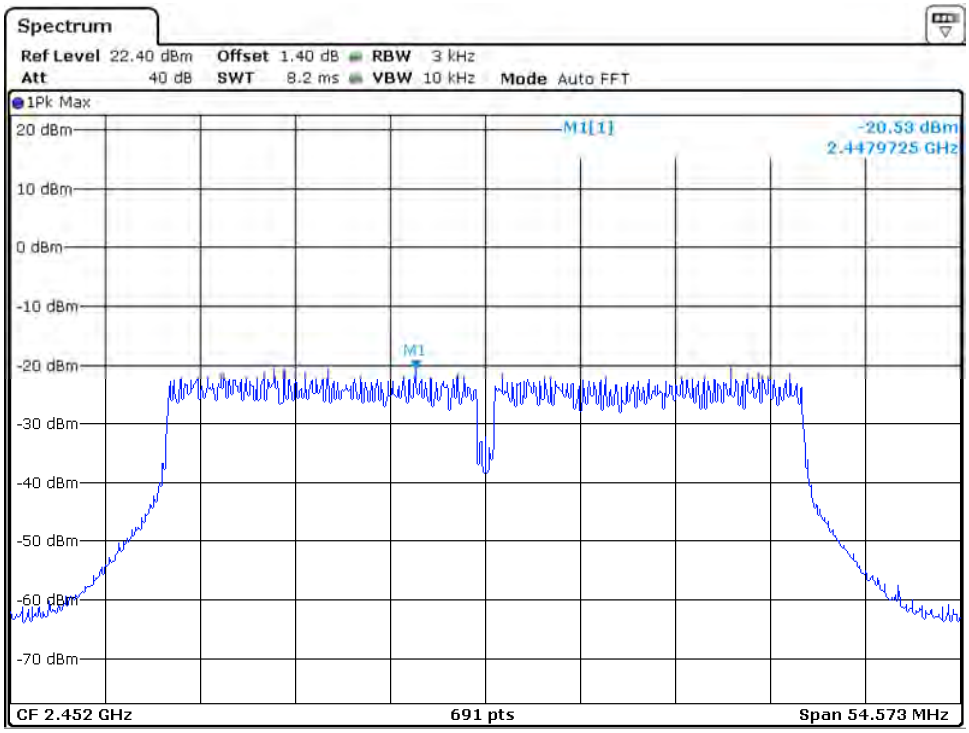

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -14.27 dBm
2.4326073 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.437 GHz
691 pts
Span 25.7235 MHz


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -17.50 dBm
2.4669883 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 25.7235 MHz

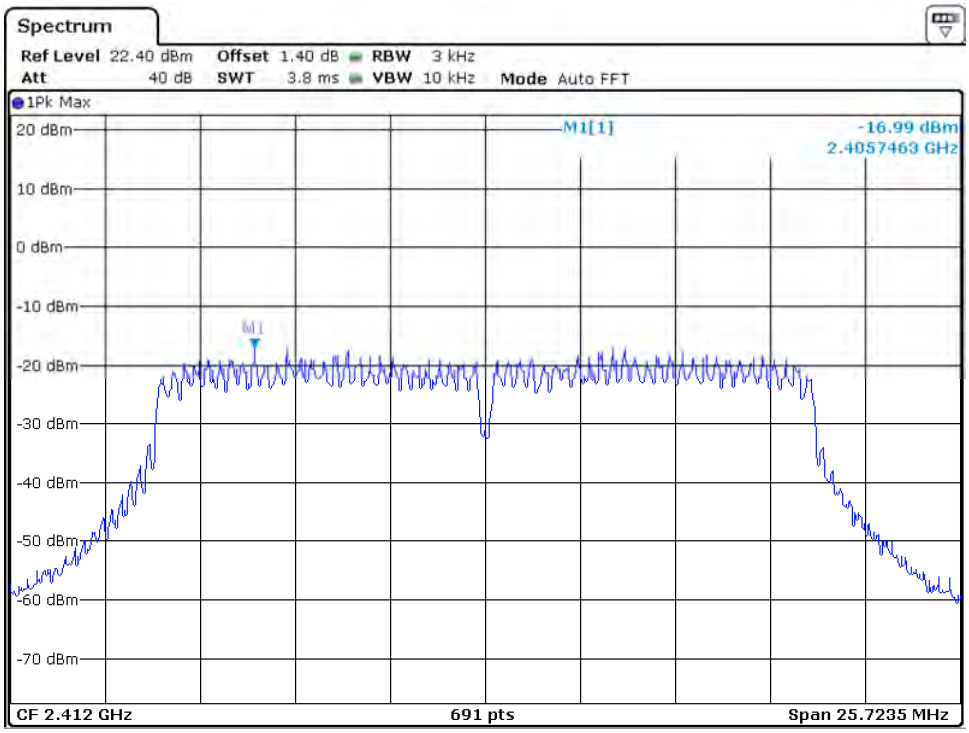
802.11n-HT40

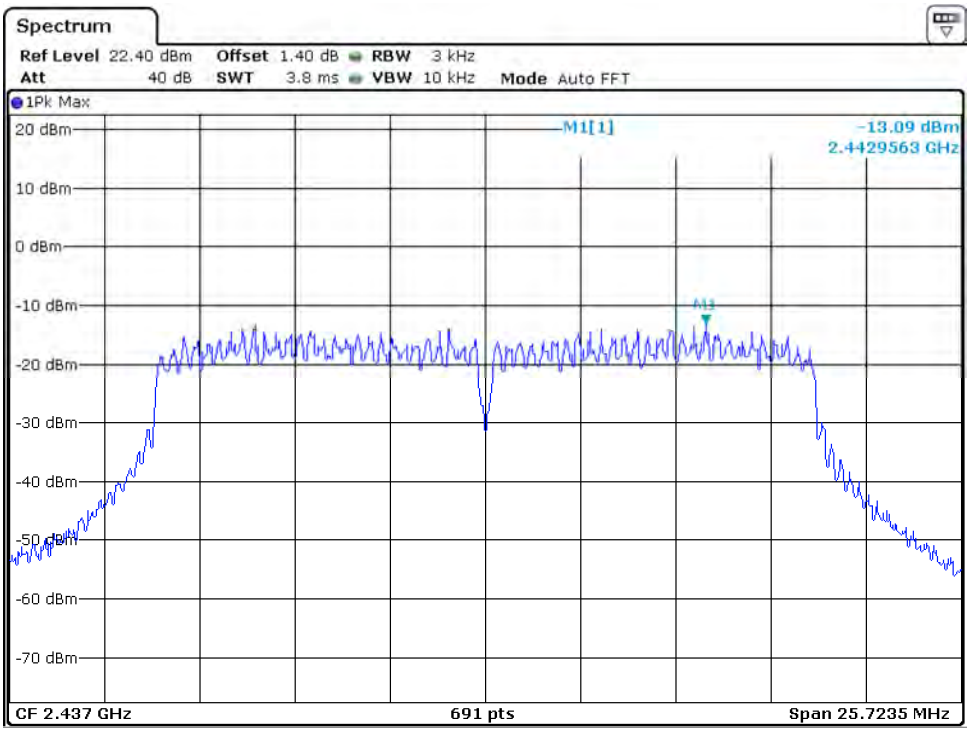

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 8.2 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -22.17 dBm
2.4049028 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.422 GHz
691 pts
Span 54.4425 MHz

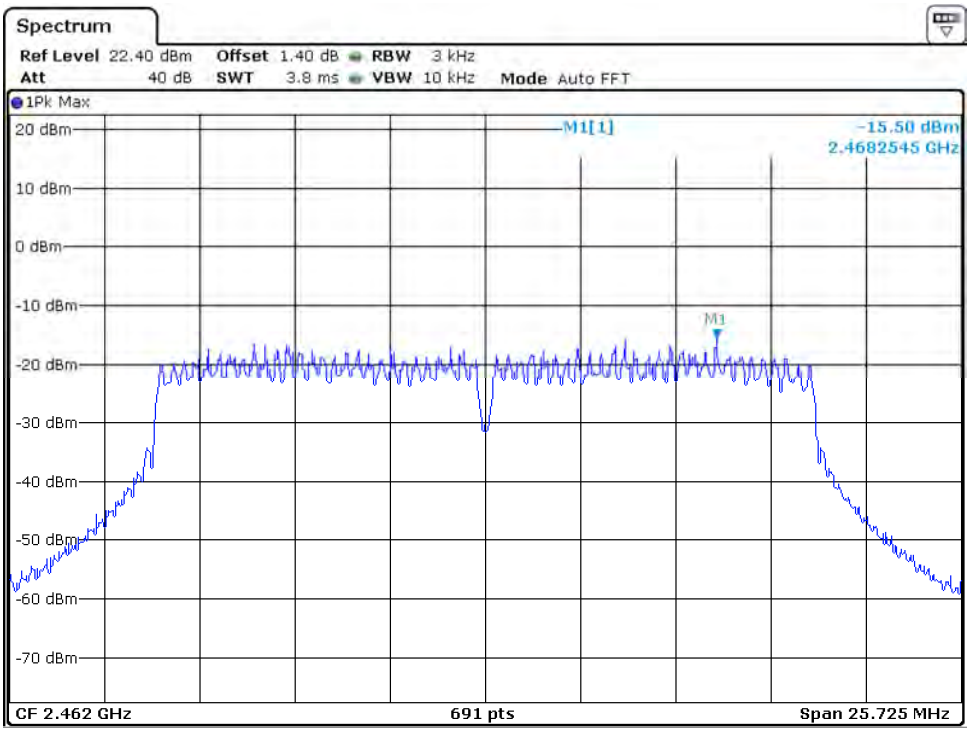

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 8.2 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -18.82 dBm
2.4232118 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.437 GHz
691 pts
Span 54.4425 MHz



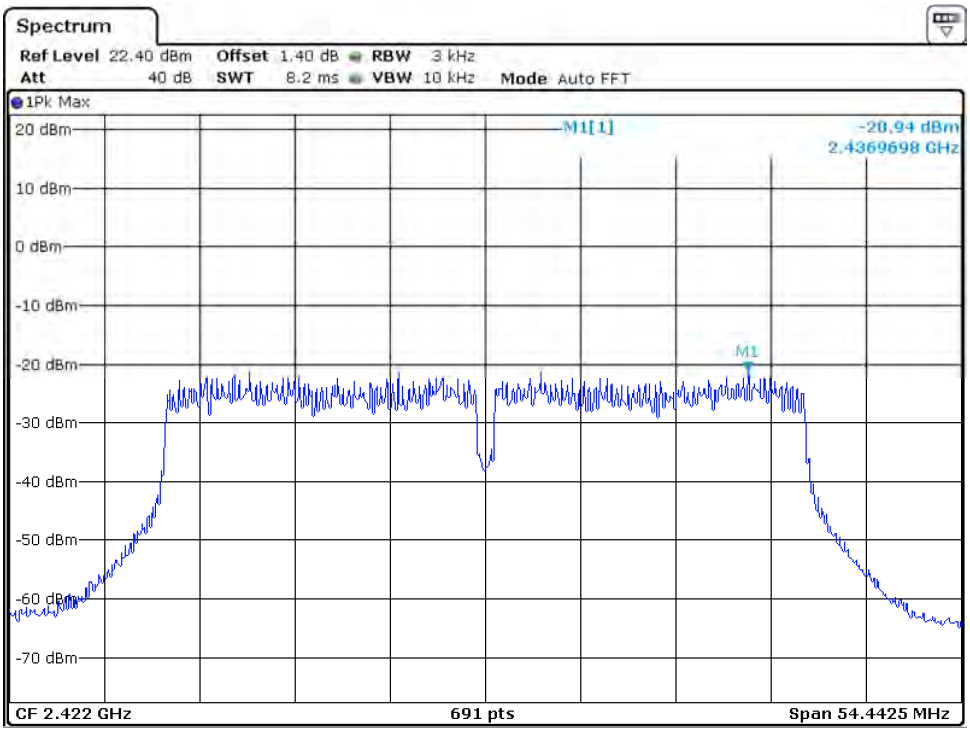
MIMO Mode, Ant2:
802.11n-HT20

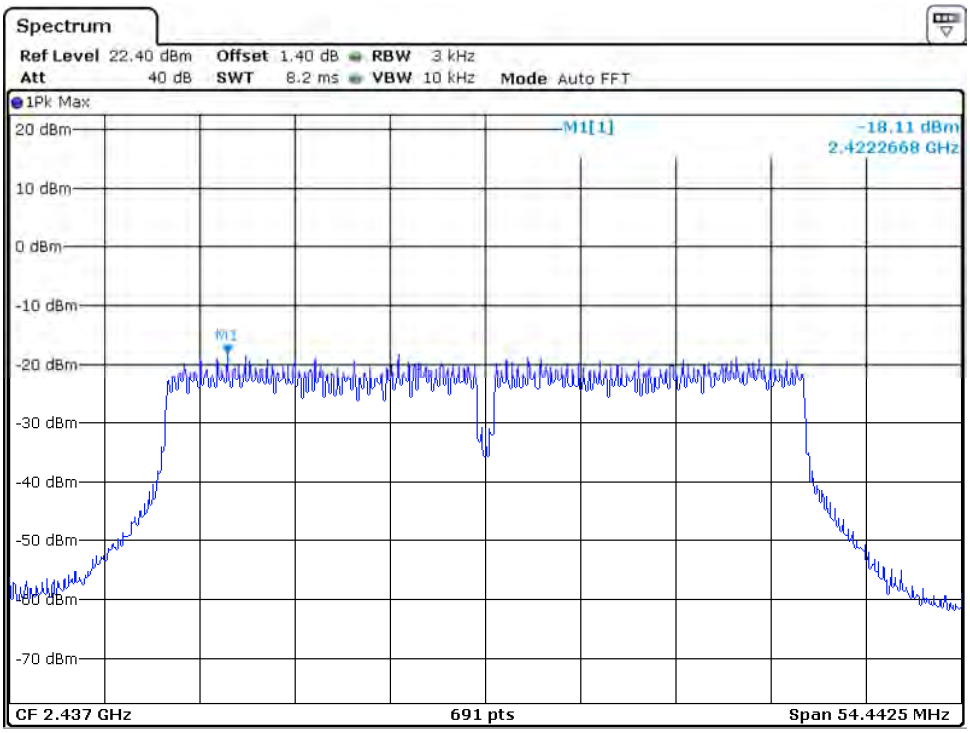


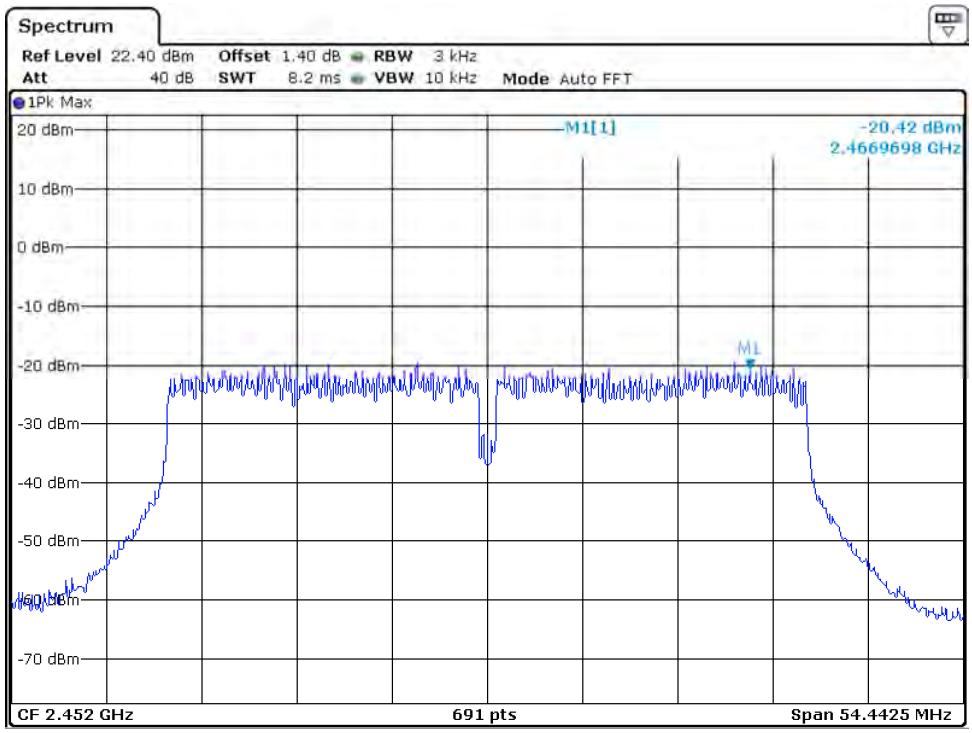

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -13.09 dBm
2.4429563 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.437 GHz
691 pts
Span 25.7235 MHz


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -15.50 dBm
2.4682545 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.462 GHz
691 pts
Span 25.725 MHz

802.11n-HT40


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 8.2 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -28.94 dBm
2.4369698 GHz
M1
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.422 GHz
691 pts
Span 54.4425 MHz


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 8.2 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -18.11 dBm
2.4222668 GHz
M1
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.437 GHz
691 pts
Span 54.4425 MHz


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 3 kHz
Att 40 dB SWT 8.2 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -20.42 dBm
2.4669698 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 54.4425 MHz

Applicant: Huawei Technologies Co., Ltd.
Date of Test: March 5, 2019 Model: X22C

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 v05r01.

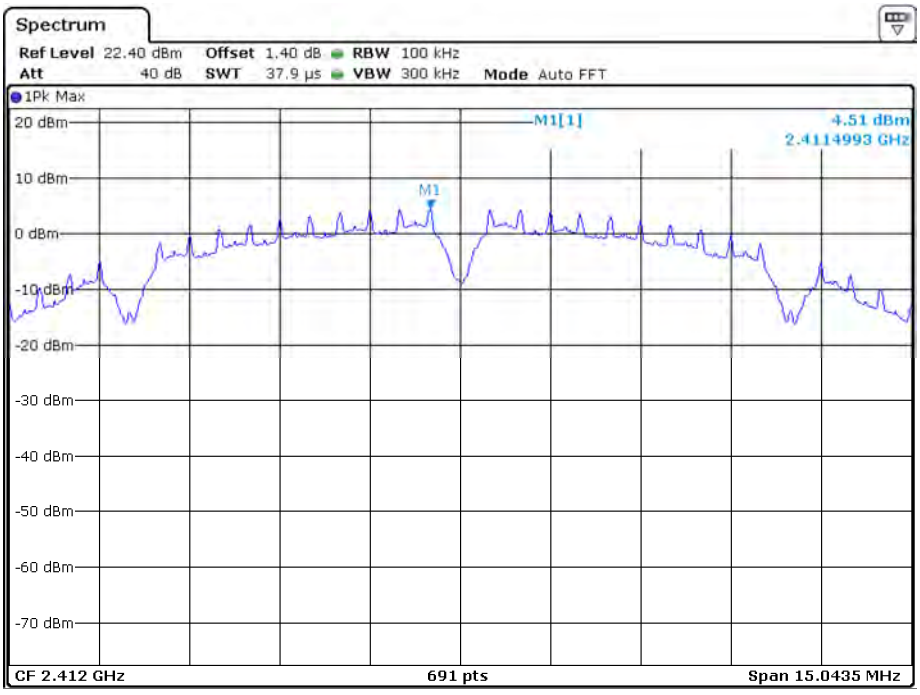
All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the passband.

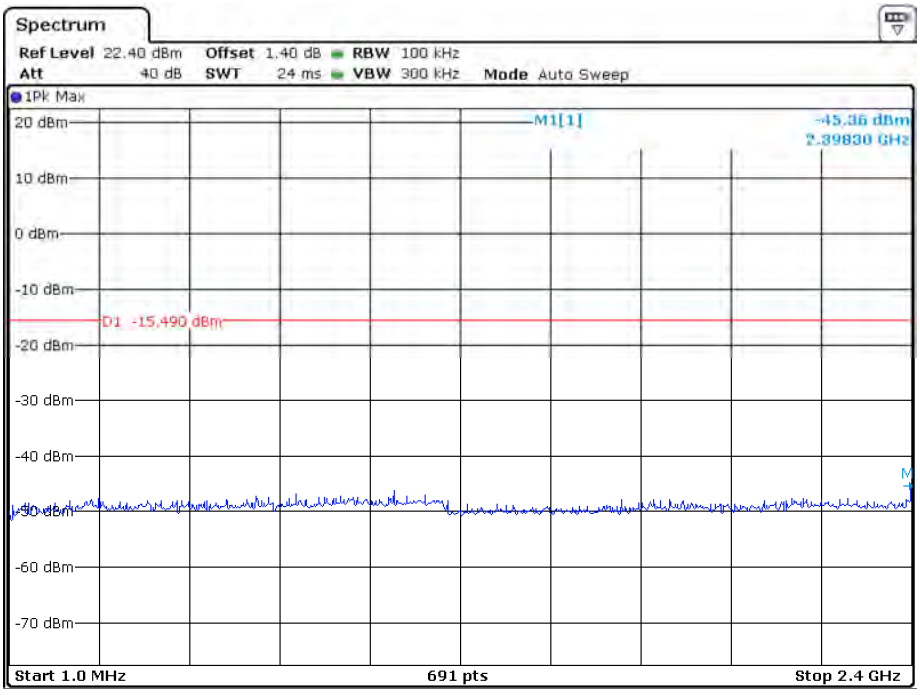
Refer to the attached test plots for out of band conducted emissions data.

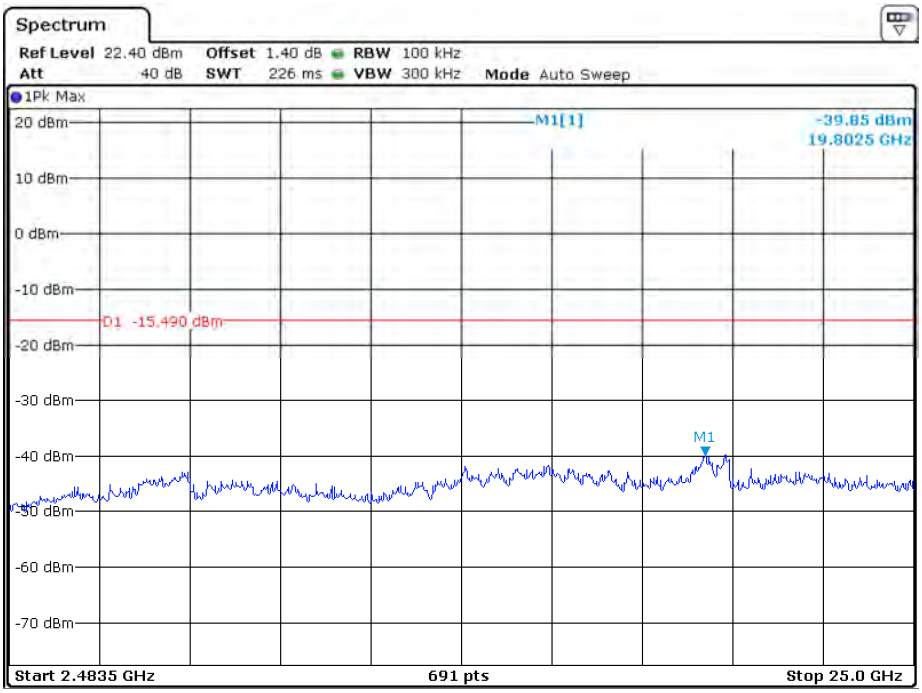
The test plots showed all spurious emission up to the tenth harmonic were measured and they were found to be at least 20 dB below the highest level of the desired power in the passband.

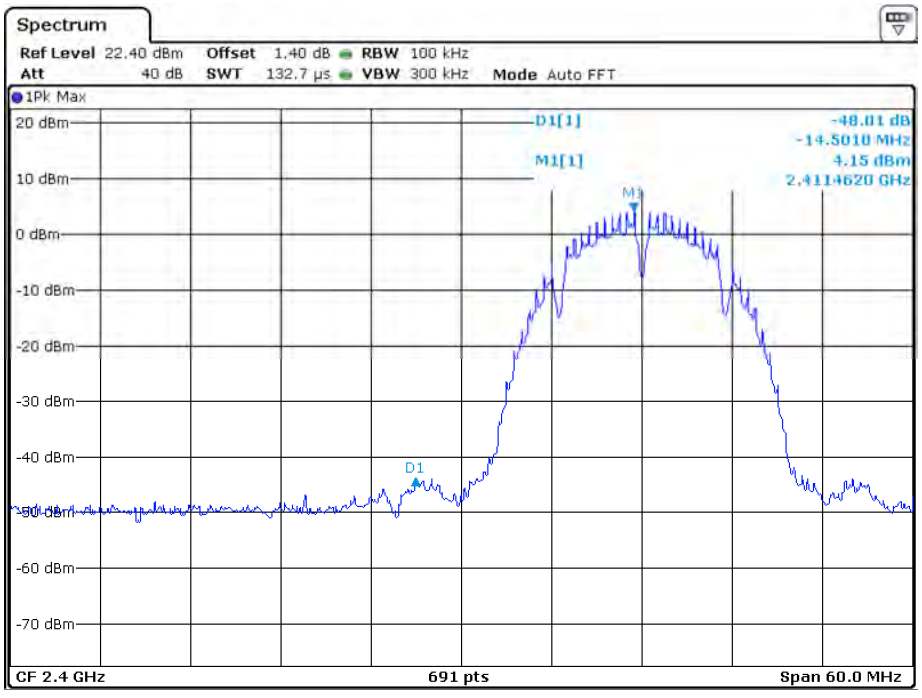
The test plots are attached as below.

SISO Mode, Ant1:
802.11b:
Channel 01 (2412MHz) Reference Level: 4.51dBm

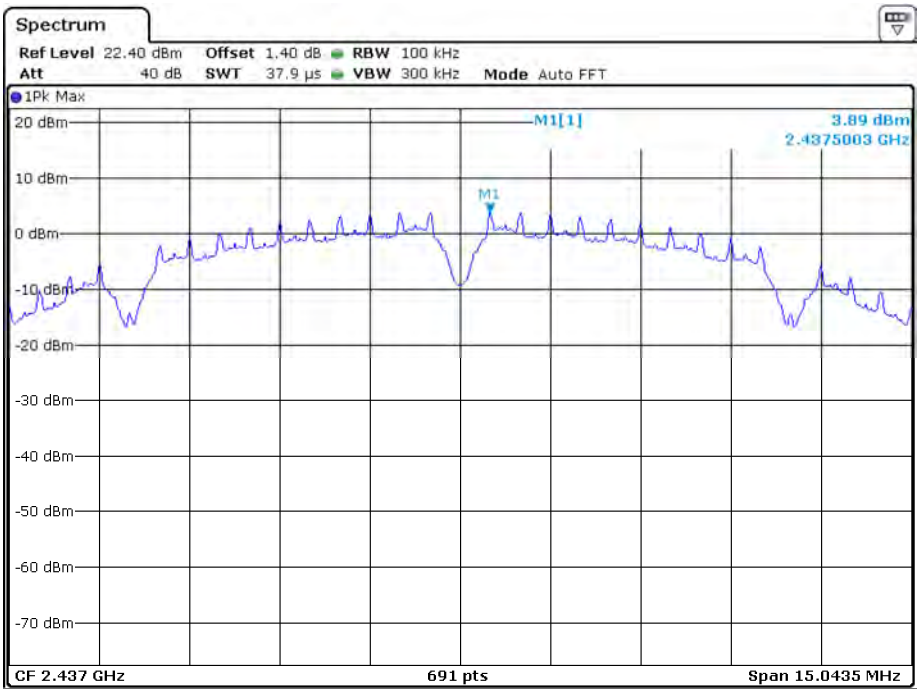


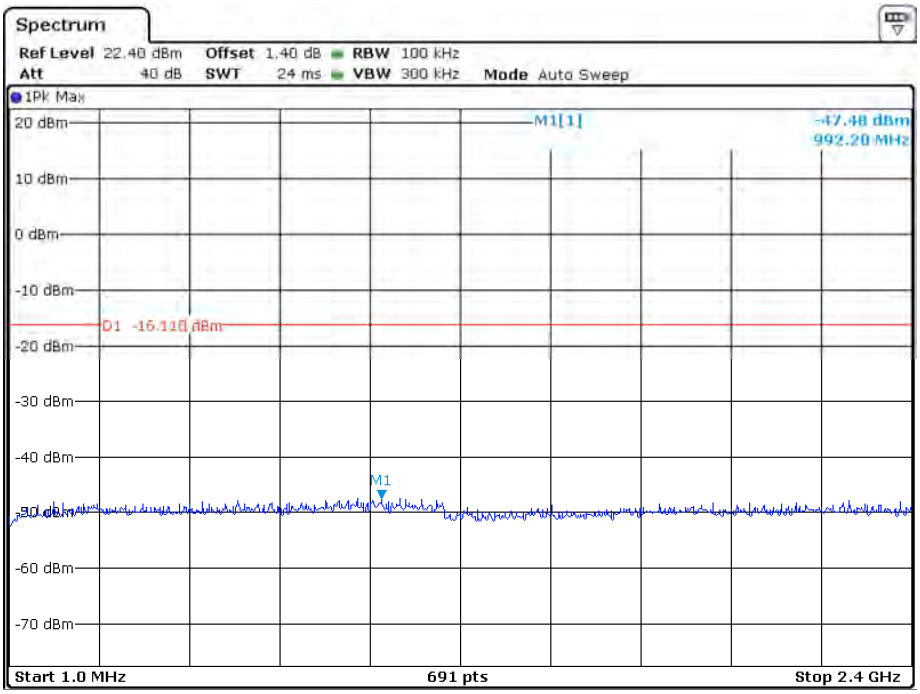


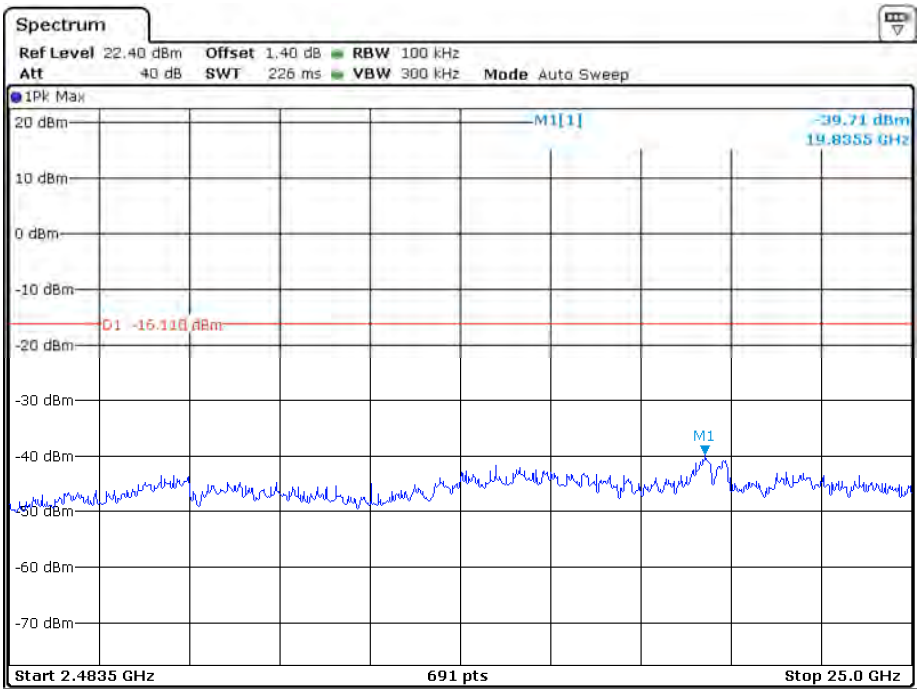

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -39.85 dBm
19.8025 GHz
D1 -15.490 dBm
M1
Start 2.4835 GHz
691 pts
Stop 25.0 GHz


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -48.01 dB
-14.5010 MHz
M1[1] 4.15 dBm
2.4114620 GHz
M1
D1
CF 2.4 GHz
691 pts
Span 60.0 MHz

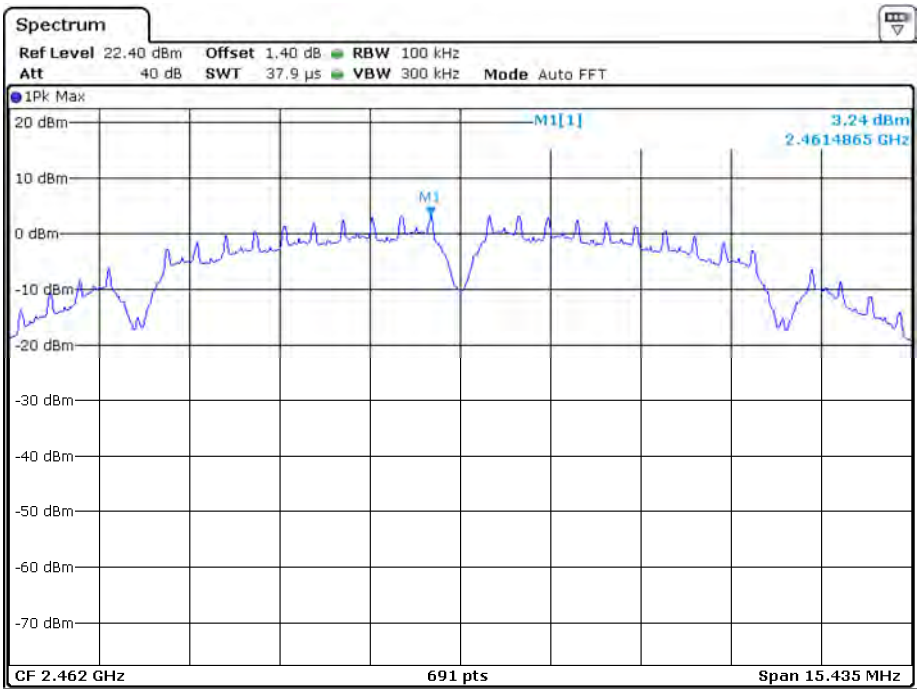
Channel 06 (2437MHz) Reference Level: 3.89dBm

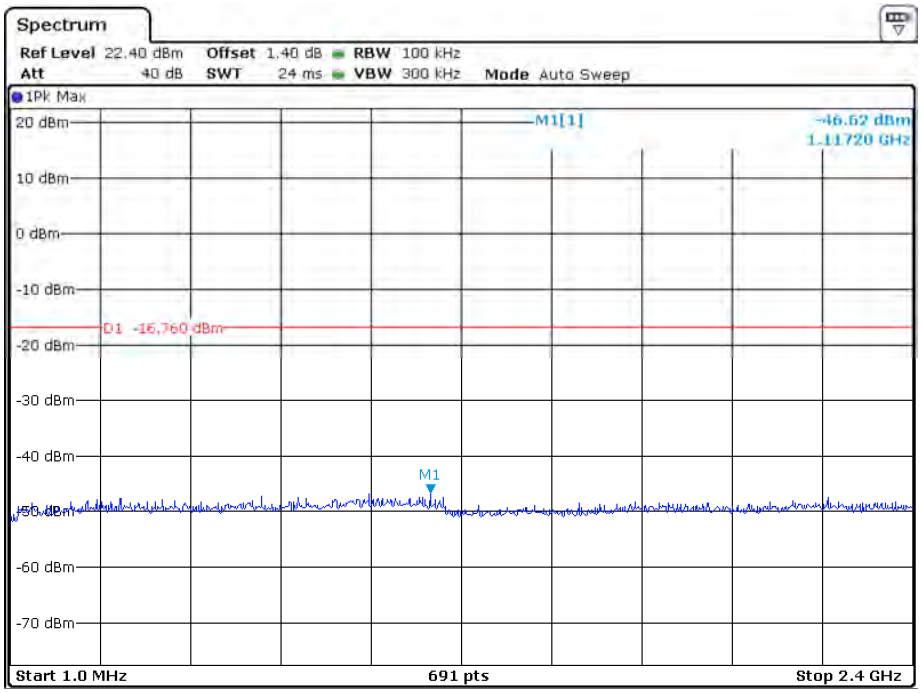


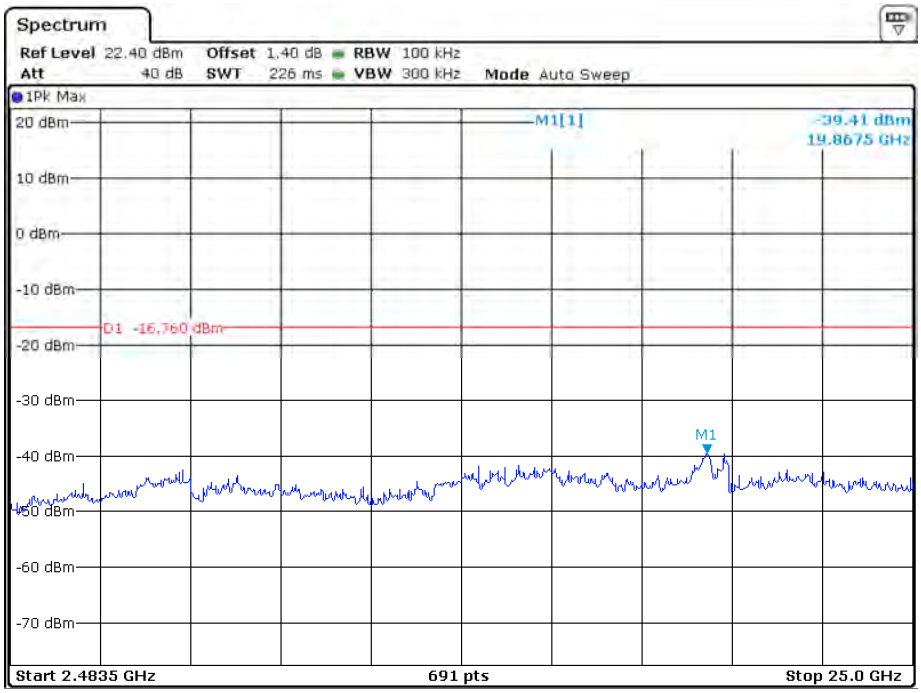


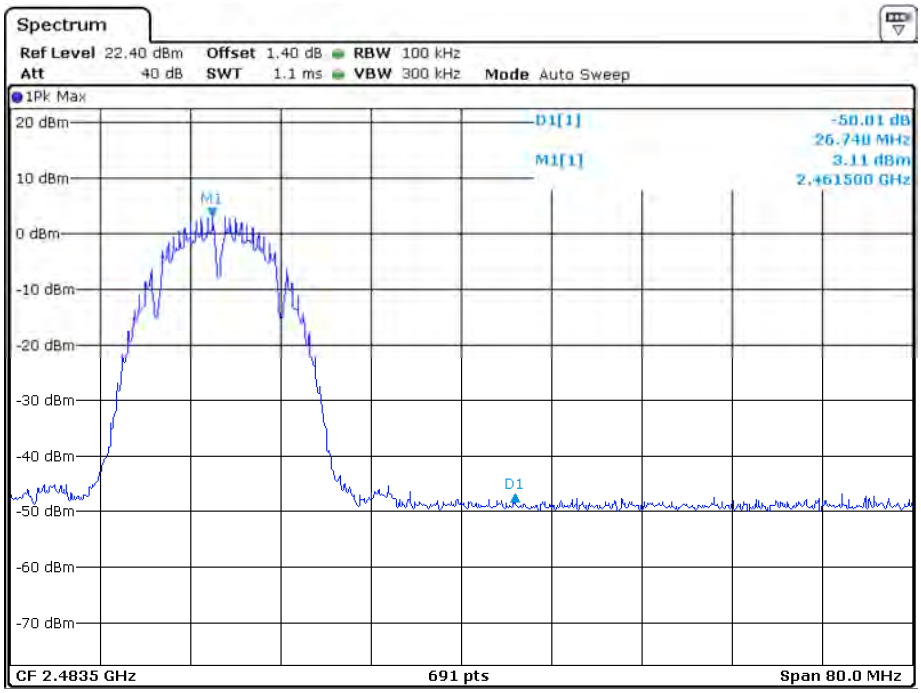


Channel 11 (2462MHz) Reference Level: 3.24dBm

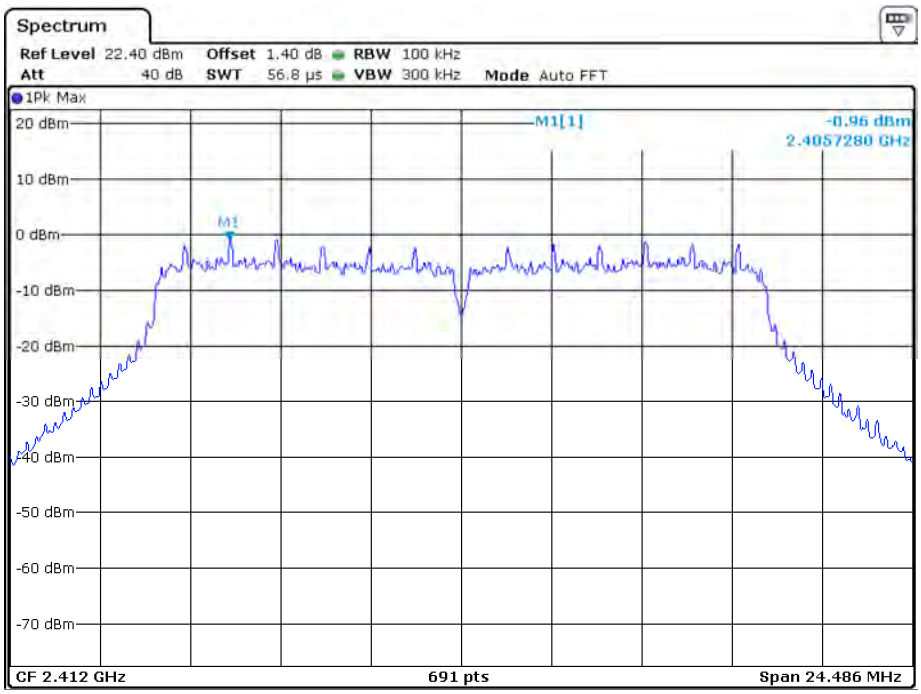


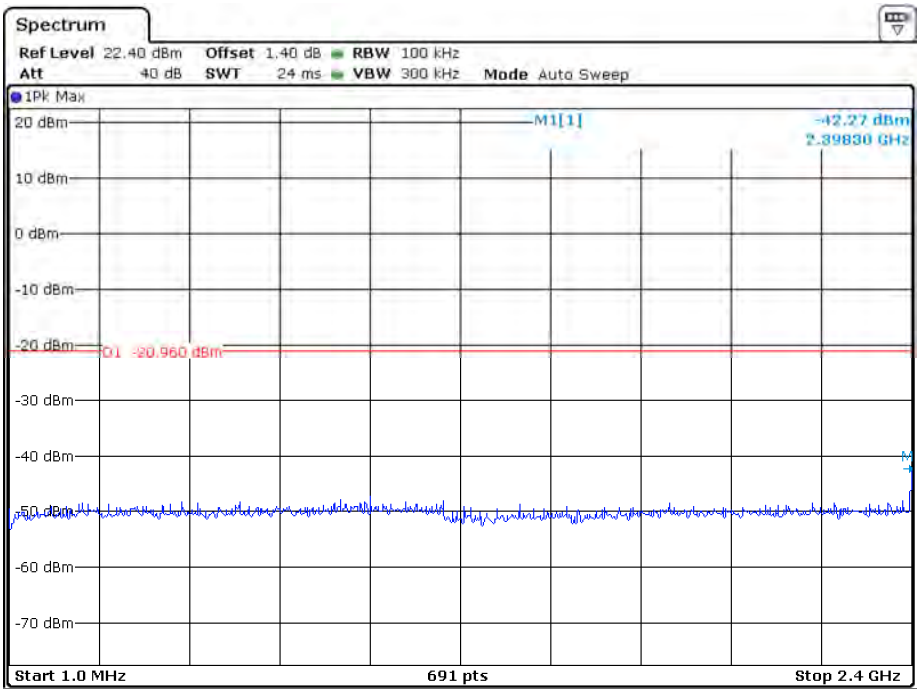

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -46.62 dBm
1.11720 GHz
D1 -16.760 dBm
M1
Start 1.0 MHz 691 pts Stop 2.4 GHz

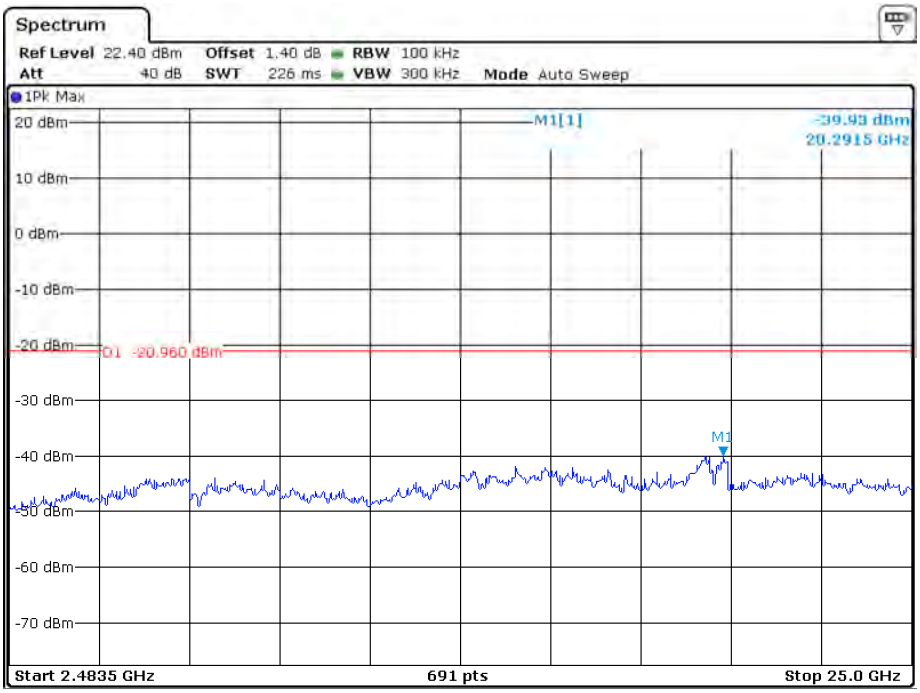

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -39.41 dBm
19.8675 GHz
D1 -16.760 dBm
M1
Start 2.4835 GHz 691 pts Stop 25.0 GHz

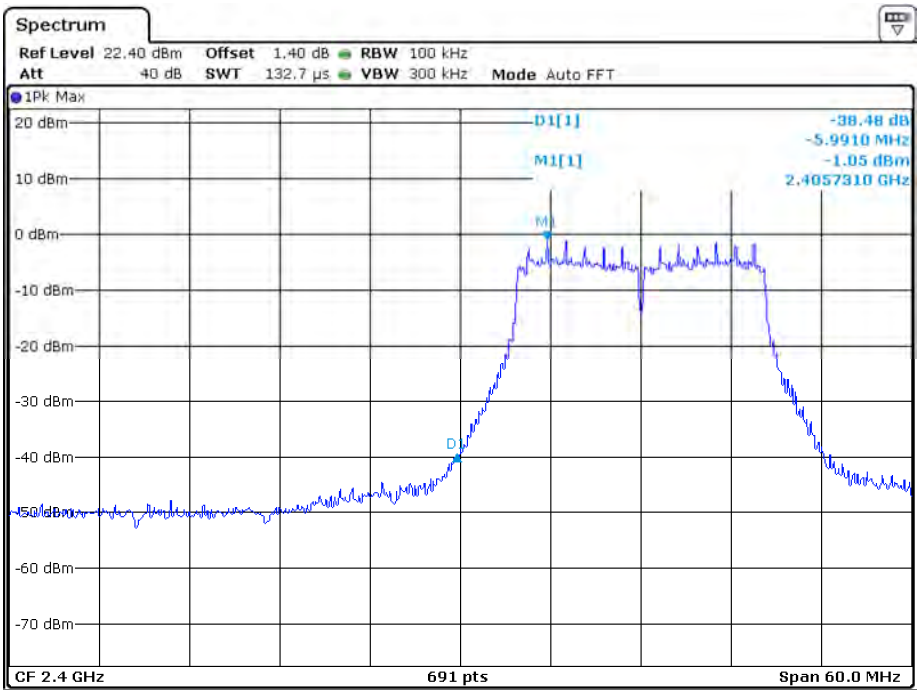


802.11g
Channel 01 (2412MHz) Reference Level: -0.96dBm

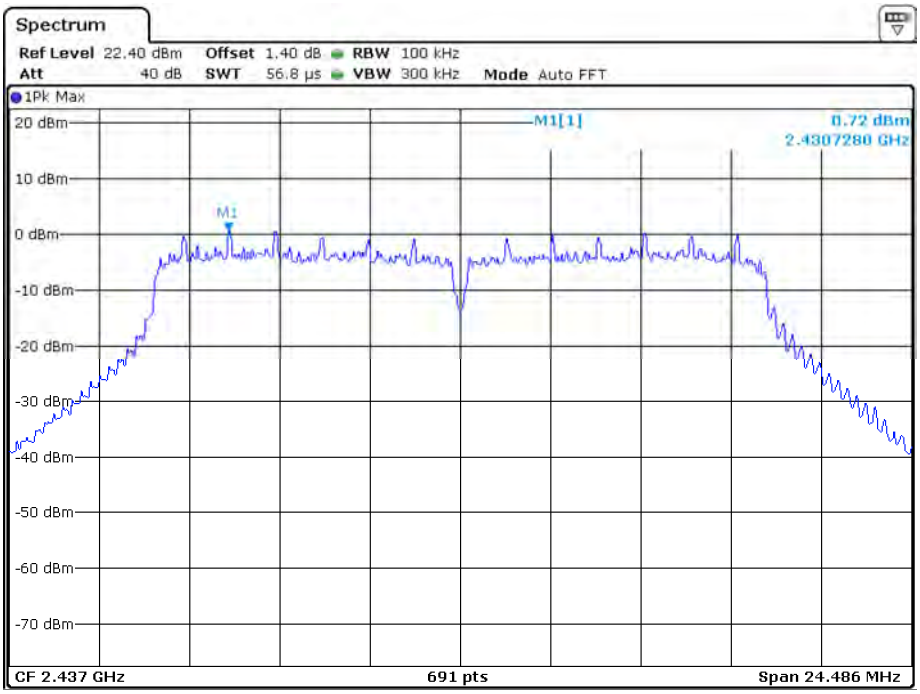


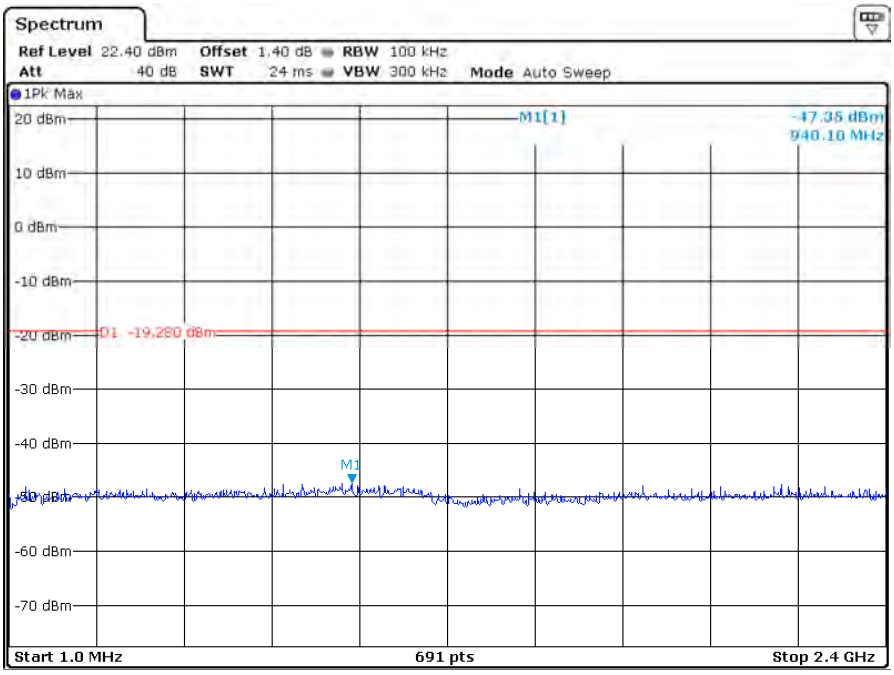

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -42.27 dBm
2.39830 GHz
D1 -20.960 dBm
Start 1.0 MHz 691 pts Stop 2.4 GHz

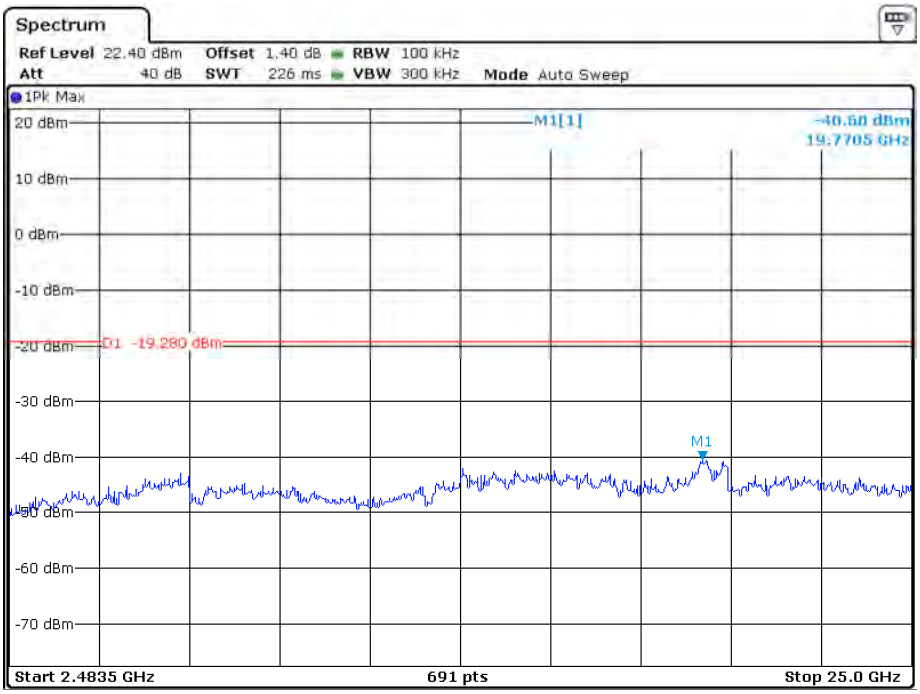

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -39.93 dBm
20.2915 GHz
D1 -20.960 dBm
Start 2.4835 GHz 691 pts Stop 25.0 GHz



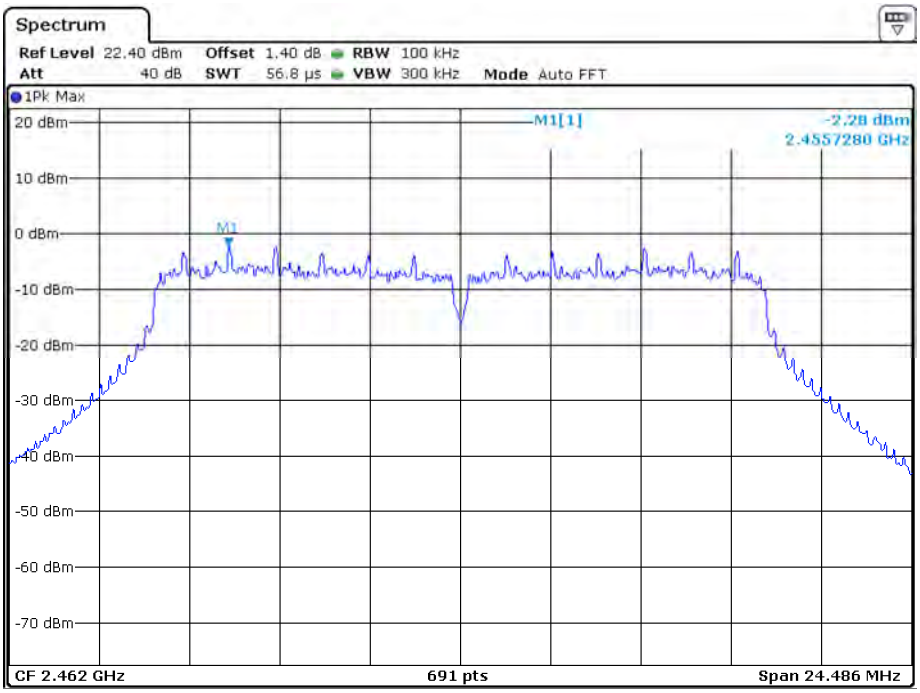
Channel 06 (2437MHz) Reference Level: 0.72dBm

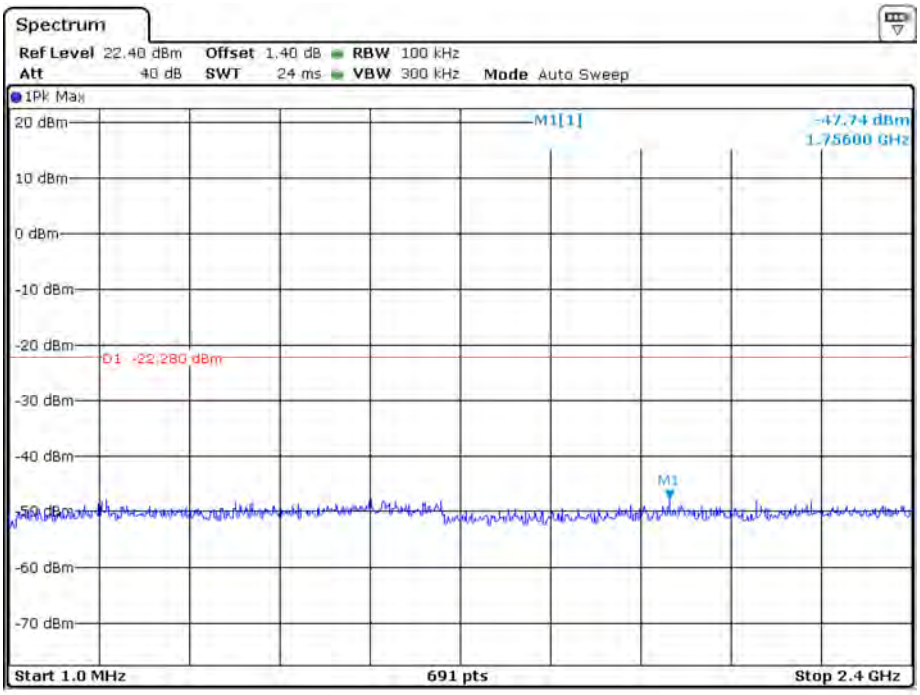


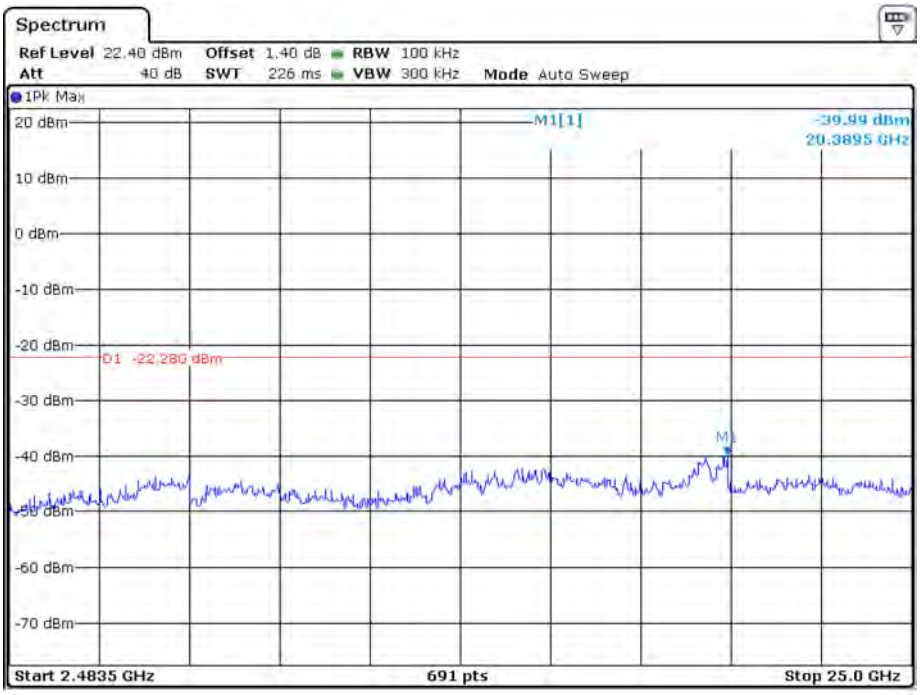

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -47.35 dBm
940.10 MHz
D1 -19.280 dBm
Start 1.0 MHz 691 pts Stop 2.4 GHz

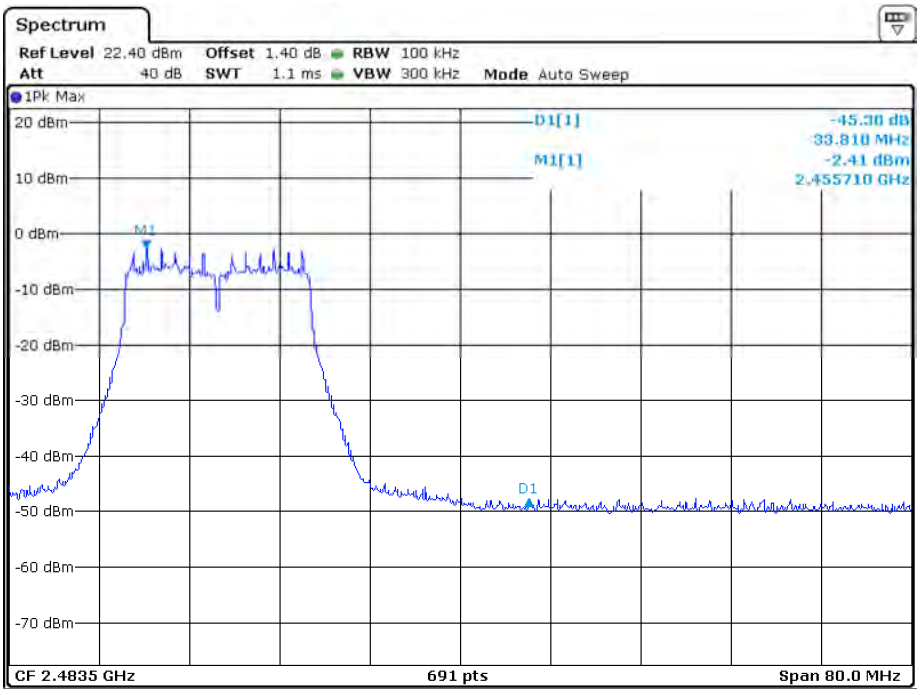

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -40.60 dBm
19.7705 GHz
D1 -19.280 dBm
Start 2.4835 GHz 691 pts Stop 25.0 GHz

Channel 11 (2462MHz) Reference Level: -2.28dBm

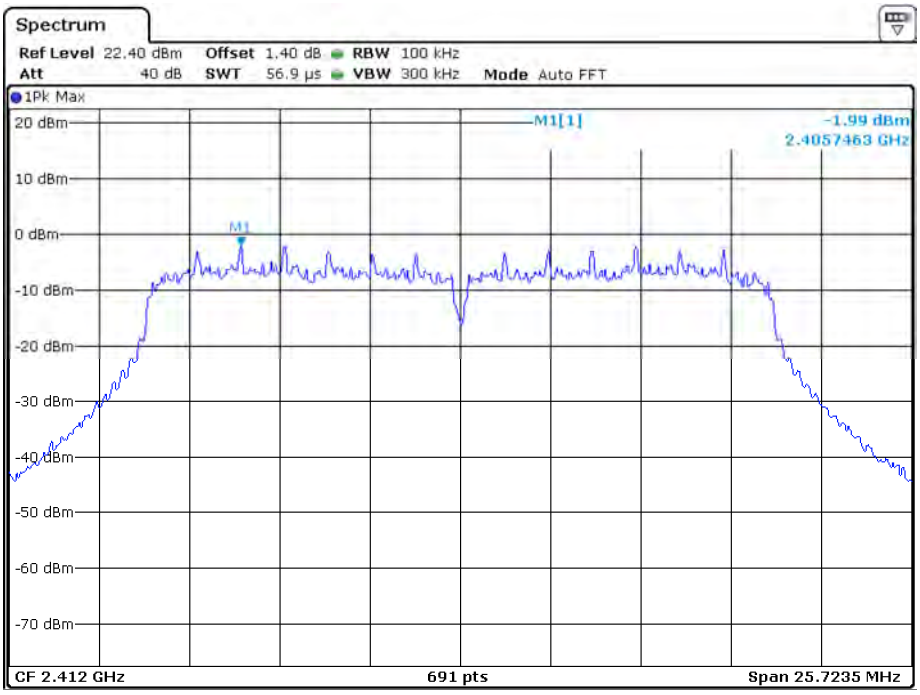


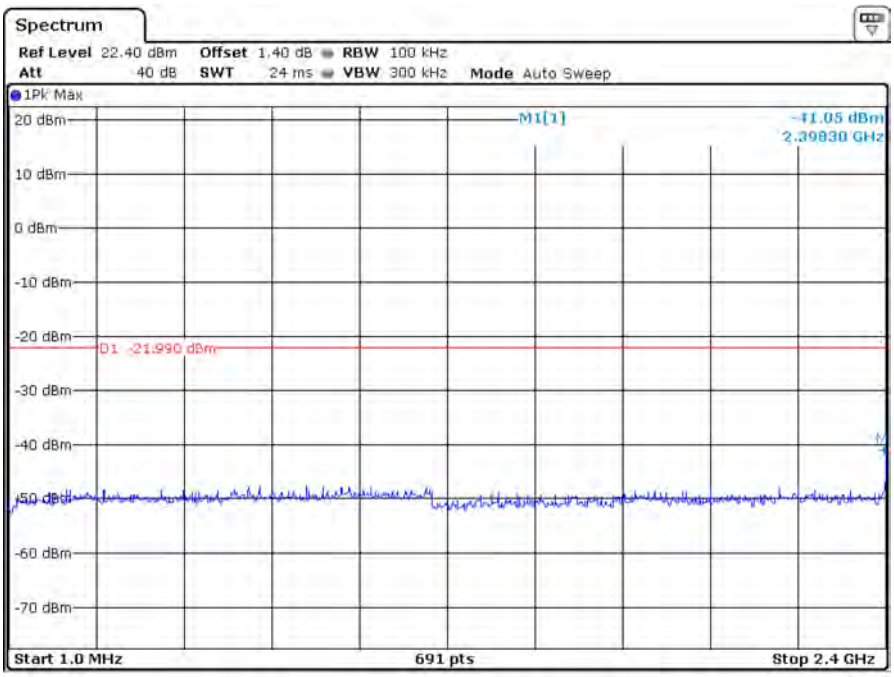


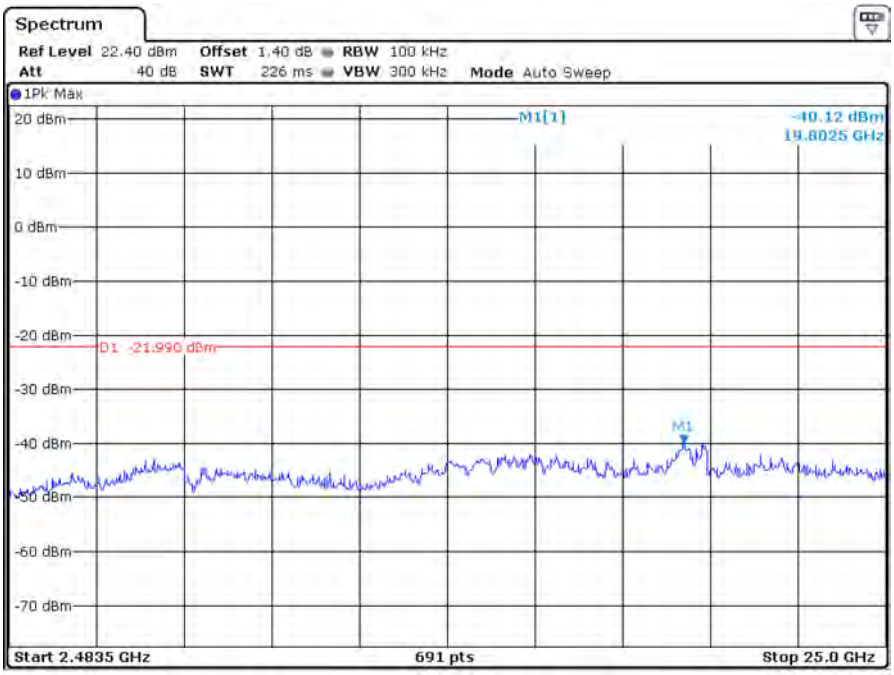

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -39.99 dBm
20.3895 GHz
D1 -22.280 dBm
M1
Start 2.4835 GHz 691 pts Stop 25.0 GHz

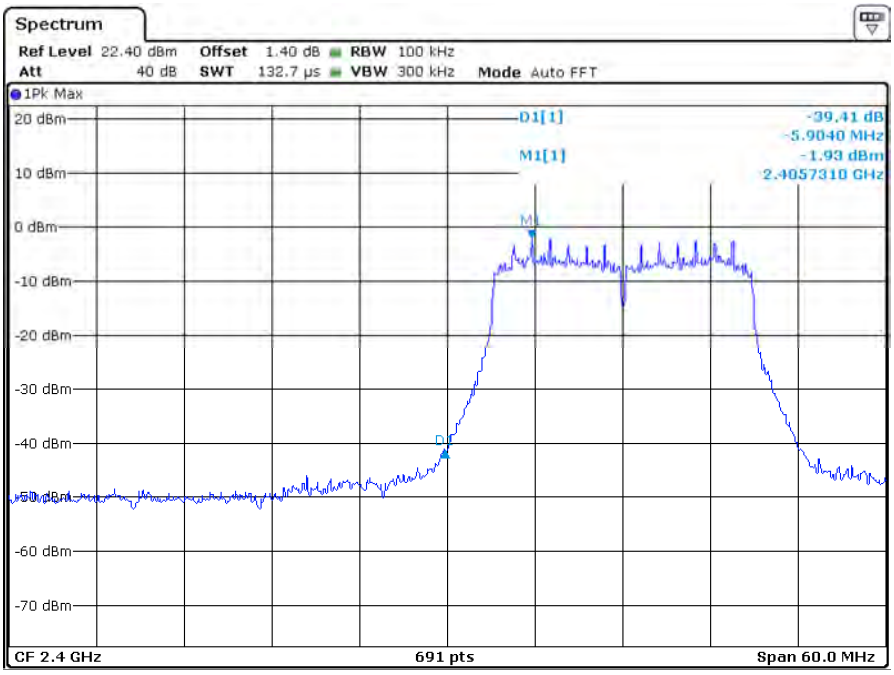

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 1.1 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
D1[1] -45.30 dB
33.810 MHz
M1[1] -2.41 dBm
2.455710 GHz
M1
D1
CF 2.4835 GHz 691 pts Span 80.0 MHz

802.11n-HT20
Channel 01 (2412MHz) Reference Level: -1.99dBm

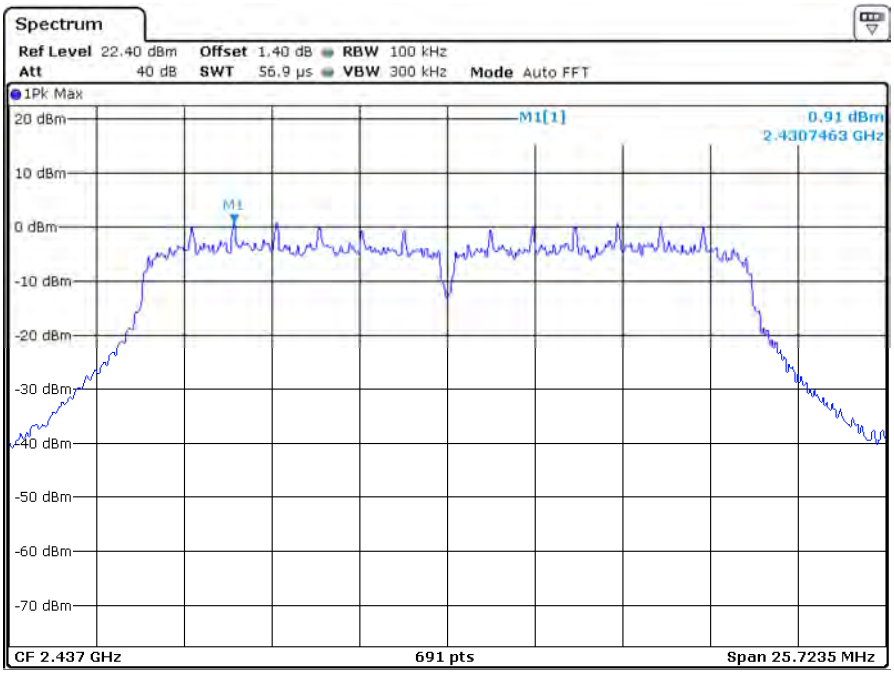


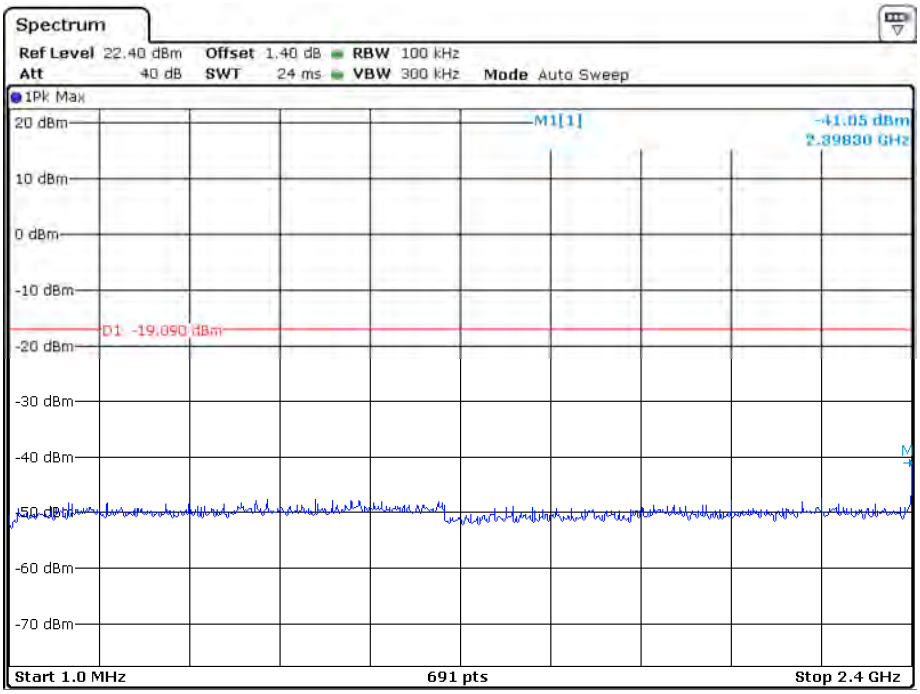


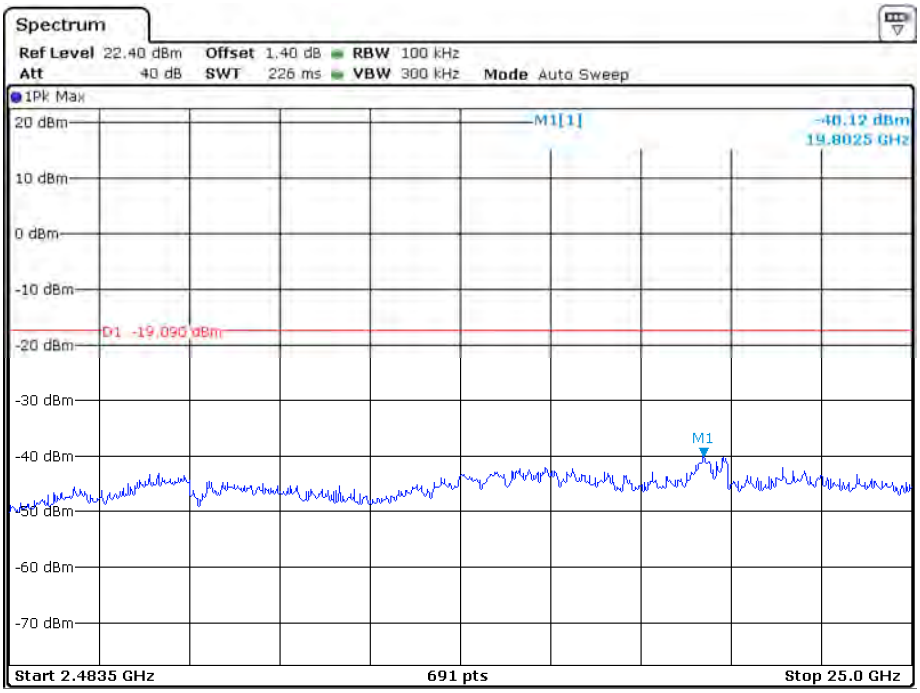

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -40.12 dBm
19.8025 GHz
D1 -21.990 dBm
M1
Start 2.4835 GHz
691 pts
Stop 25.0 GHz


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -39.41 dB
-5.9040 MHz
M1[1] -1.93 dBm
2.4057310 GHz
M1
D1
CF 2.4 GHz
691 pts
Span 60.0 MHz

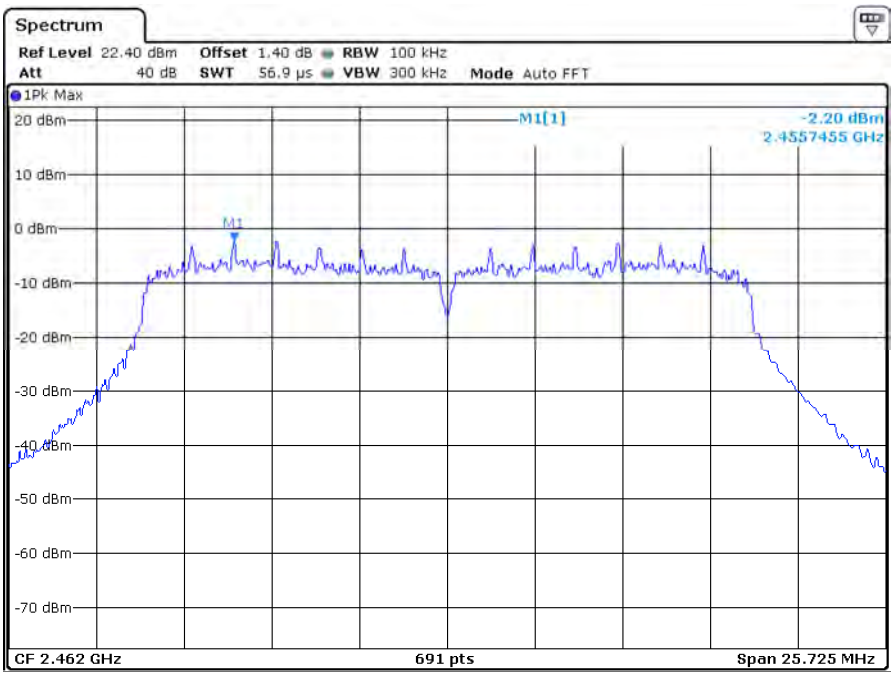
Channel 06 (2437MHz) Reference Level: 0.91dBm

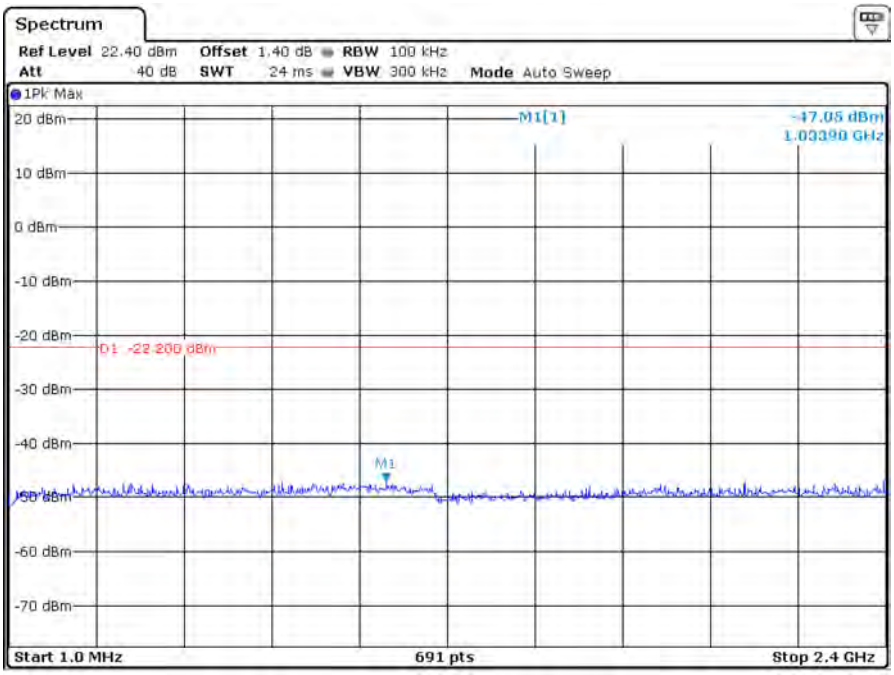


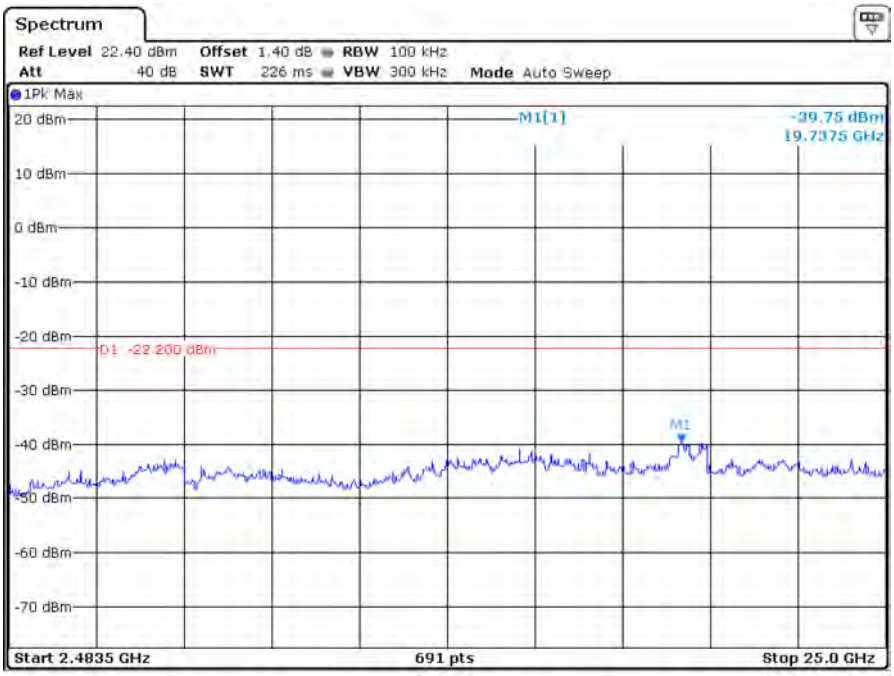


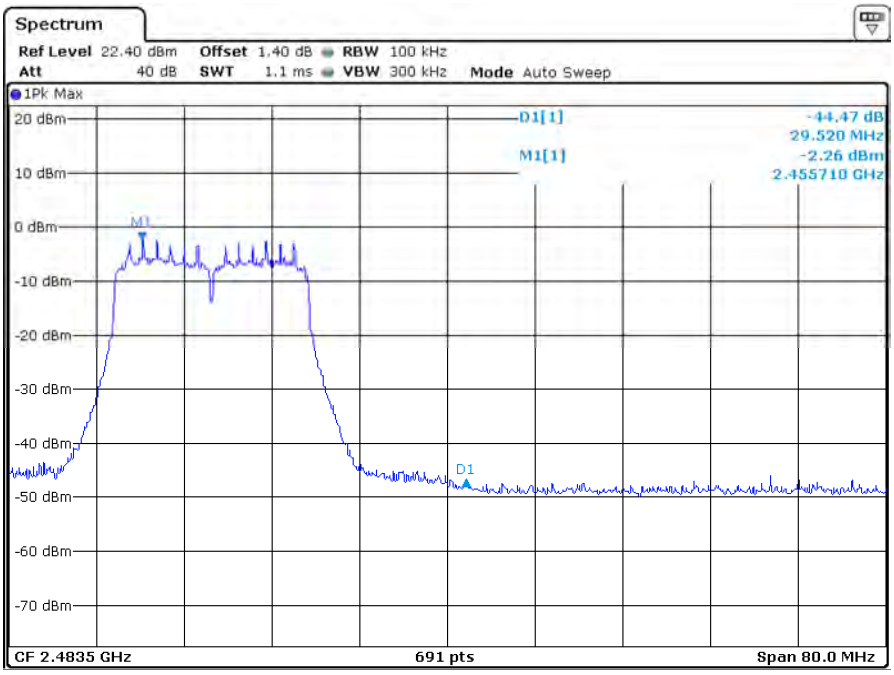


Channel 11 (2462MHz) Reference Level: -2.20dBm

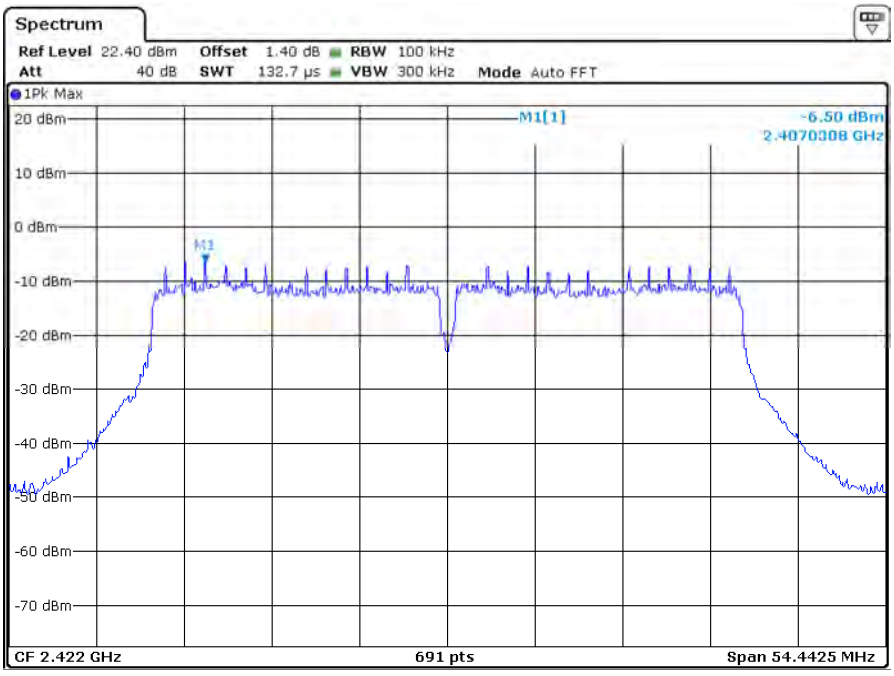


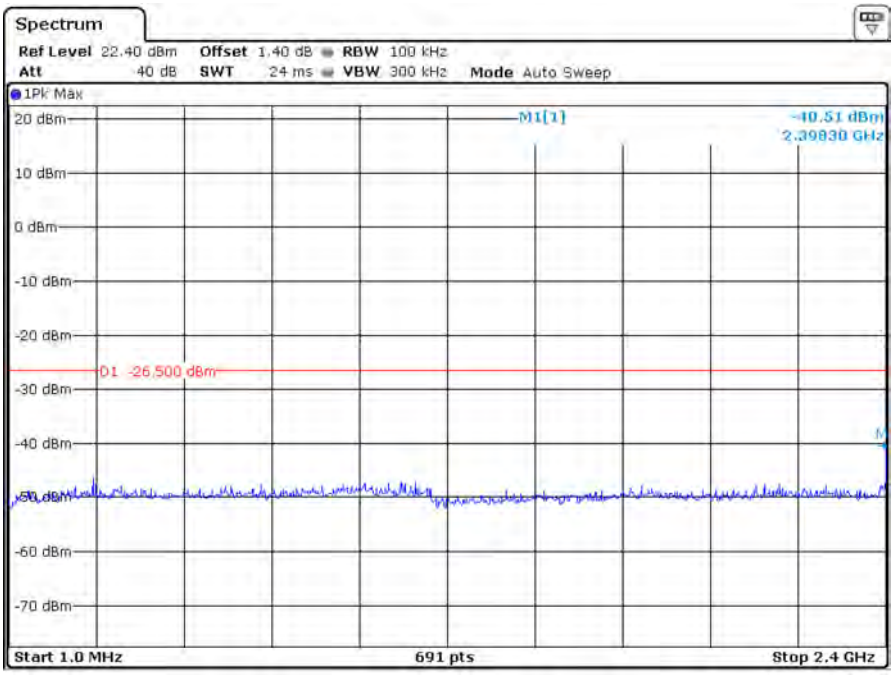

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -47.05 dBm
1.03390 GHz
D1 -22.200 dBm
M1
Start 1.0 MHz 691 pts Stop 2.4 GHz

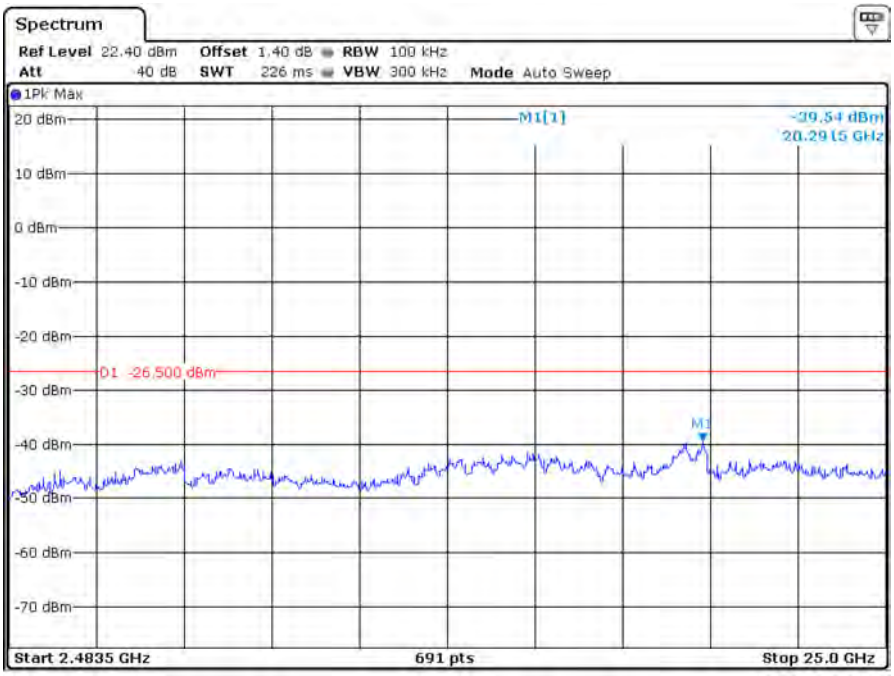

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -39.75 dBm
19.7375 GHz
D1 -22.200 dBm
M1
Start 2.4835 GHz 691 pts Stop 25.0 GHz

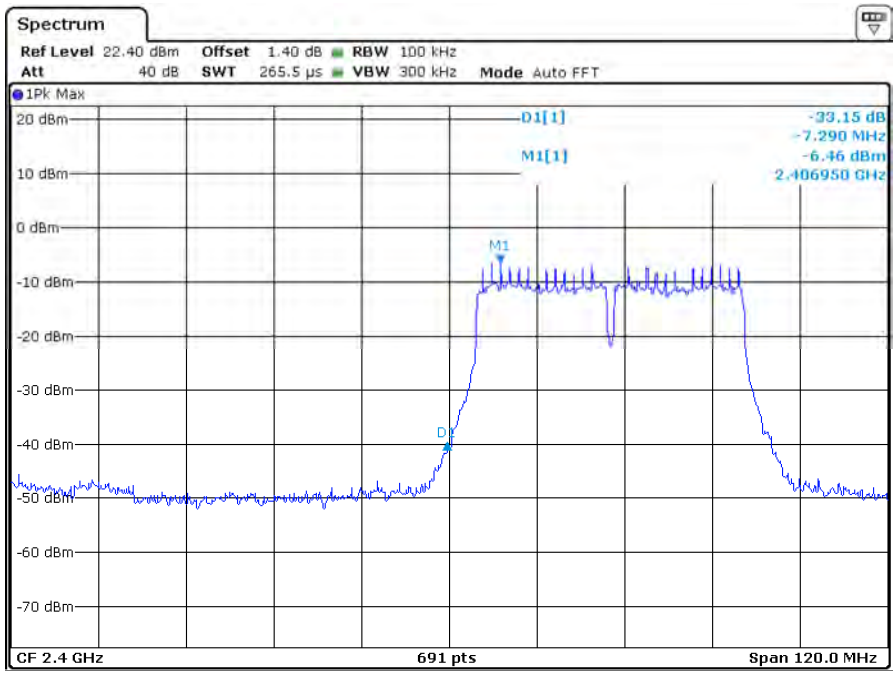


802.11n-HT40
Channel 03 (2422MHz) Reference Level: -6.50dBm

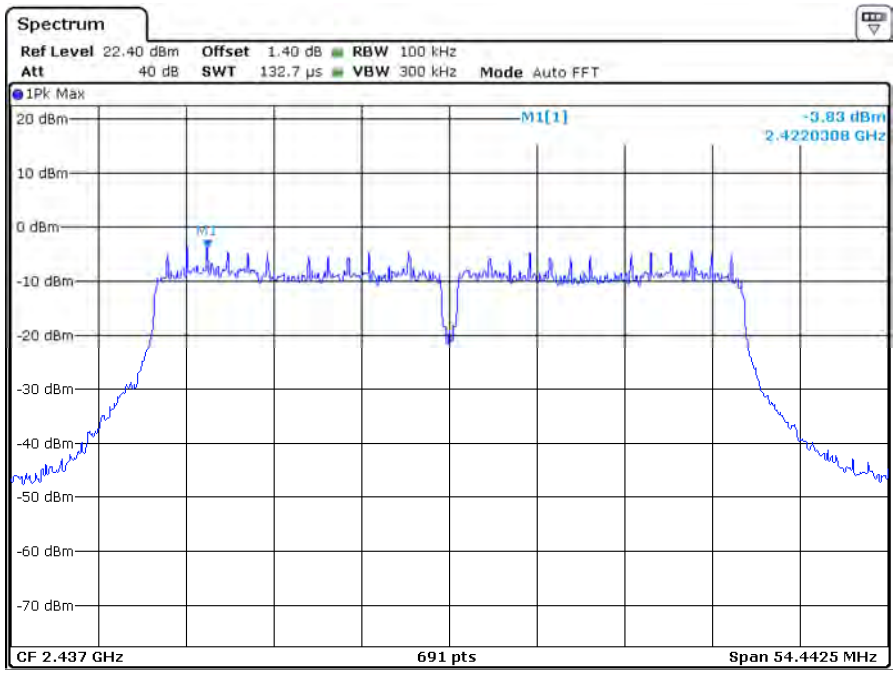


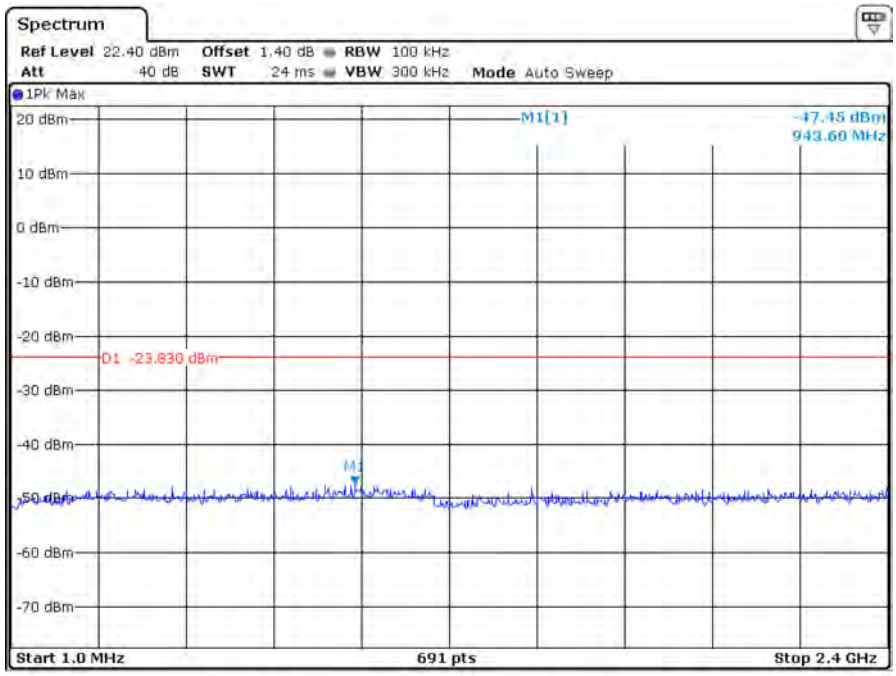

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -40.51 dBm
2.39830 GHz
D1 -26.500 dBm
Start 1.0 MHz 691 pts Stop 2.4 GHz

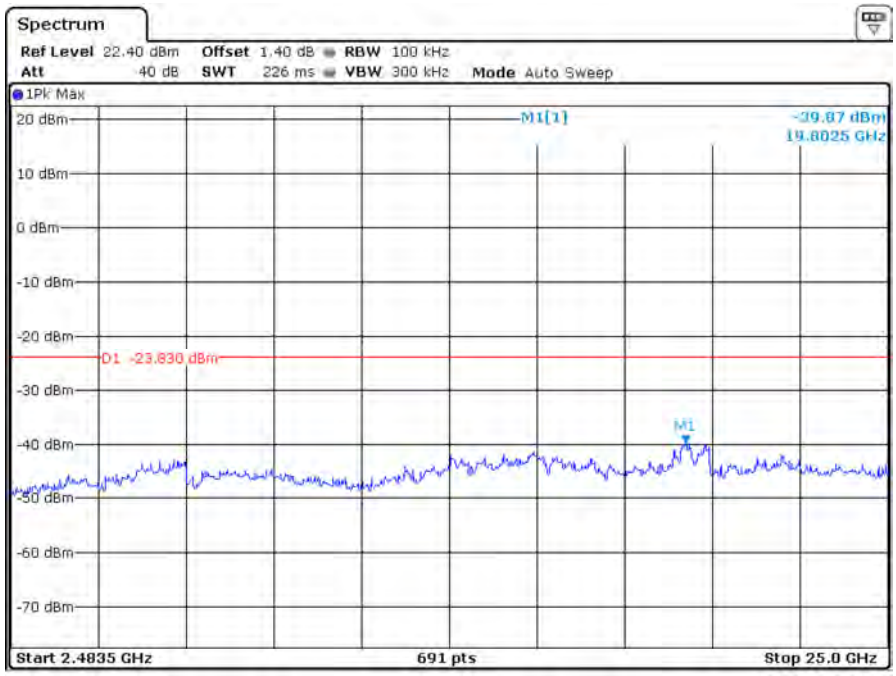

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -39.54 dBm
20.29 15 GHz
D1 -26.500 dBm
Start 2.4835 GHz 691 pts Stop 25.0 GHz



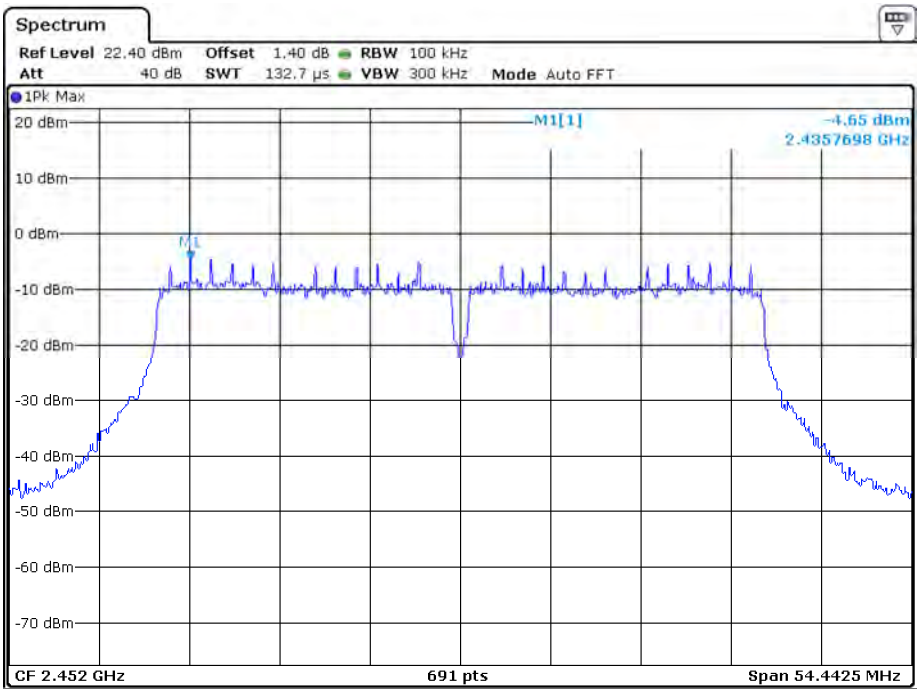
Channel 06 (2437MHz) Reference Level: -3.83dBm

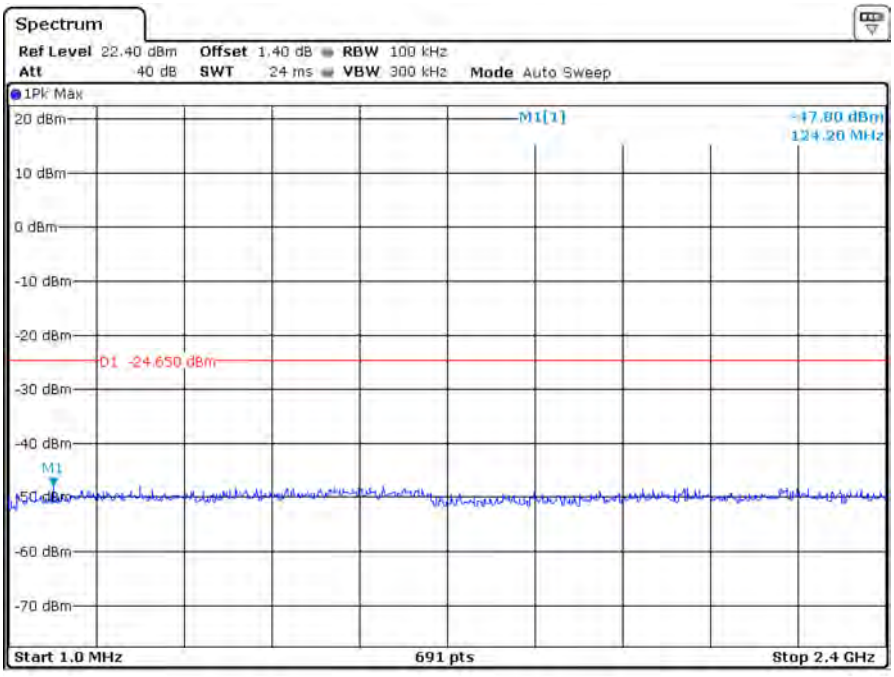


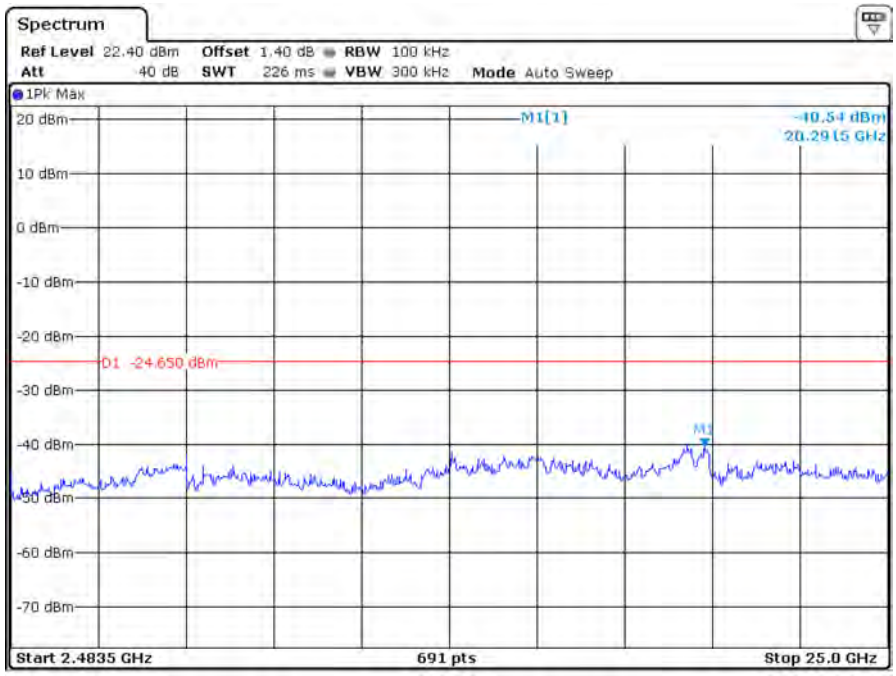

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -47.45 dBm
943.60 MHz
D1 -23.830 dBm
M1
Start 1.0 MHz 691 pts Stop 2.4 GHz

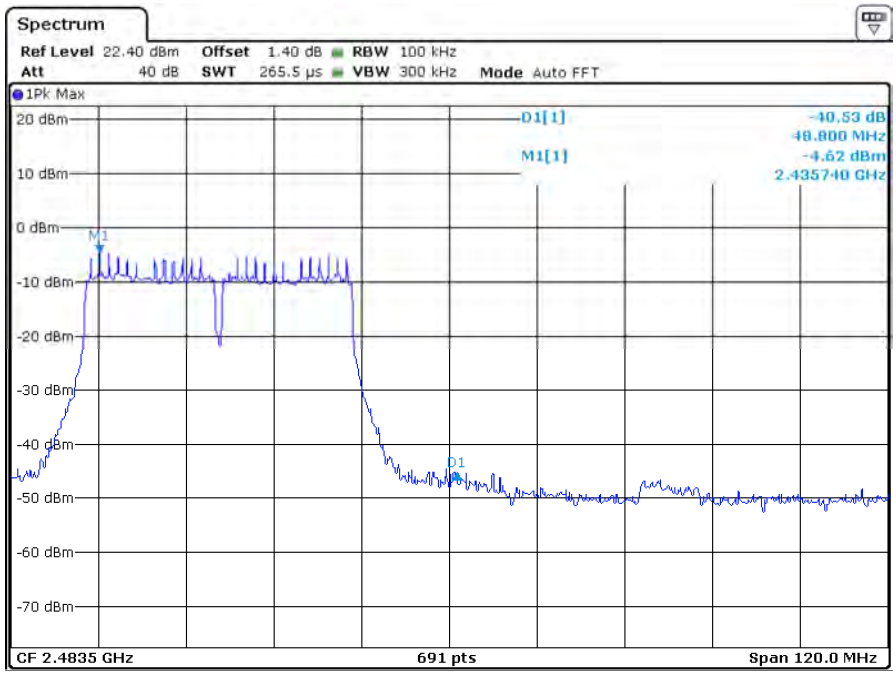

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -39.87 dBm
19.8025 GHz
D1 -23.830 dBm
M1
Start 2.4835 GHz 691 pts Stop 25.0 GHz

Channel 09 (2452MHz) Reference Level: -4.65dBm



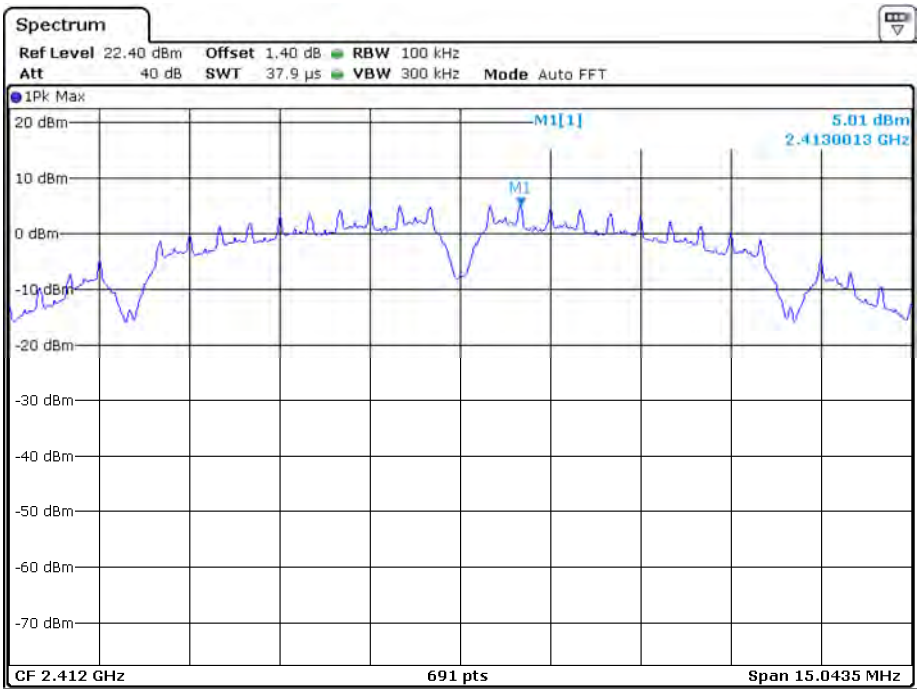


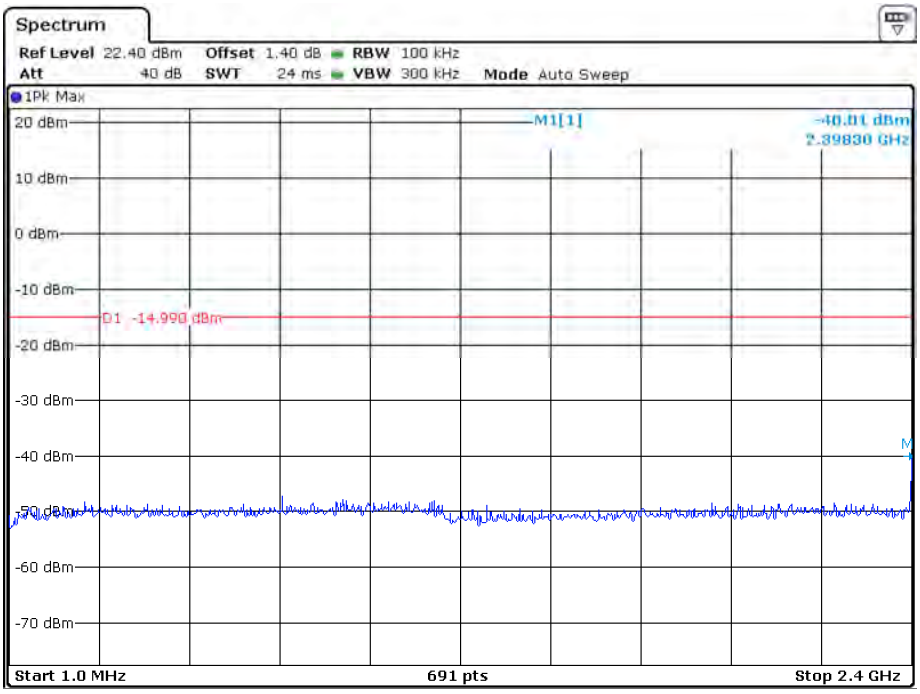

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -40.54 dBm
20.29 15 GHz
D1 -24.650 dBm
Start 2.4835 GHz 691 pts Stop 25.0 GHz

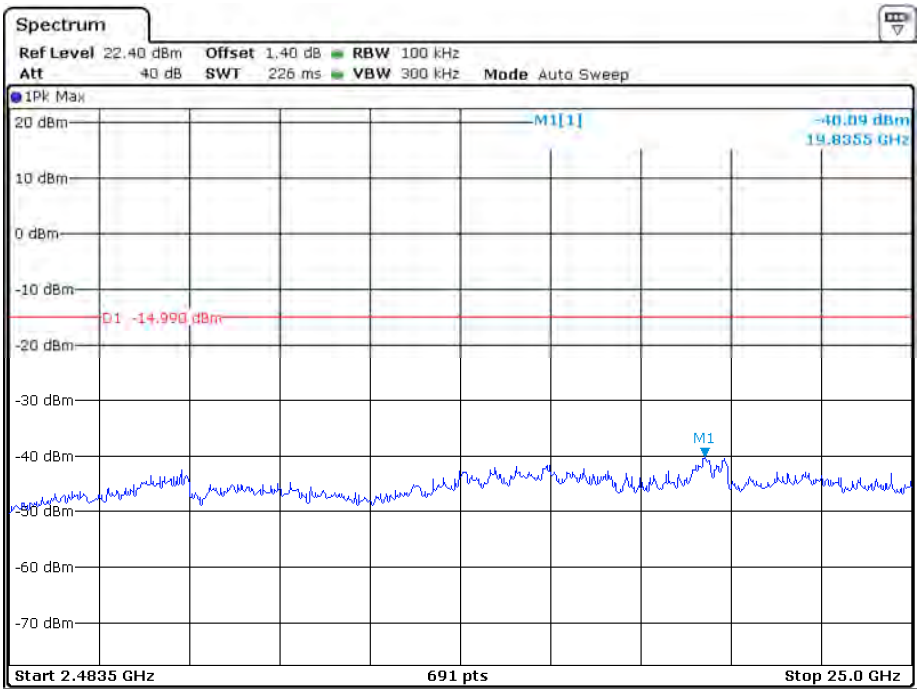

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 265.5 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -40.53 dB
48.800 MHz
M1[1] -4.62 dBm
2.435740 GHz
CF 2.4835 GHz 691 pts Span 120.0 MHz

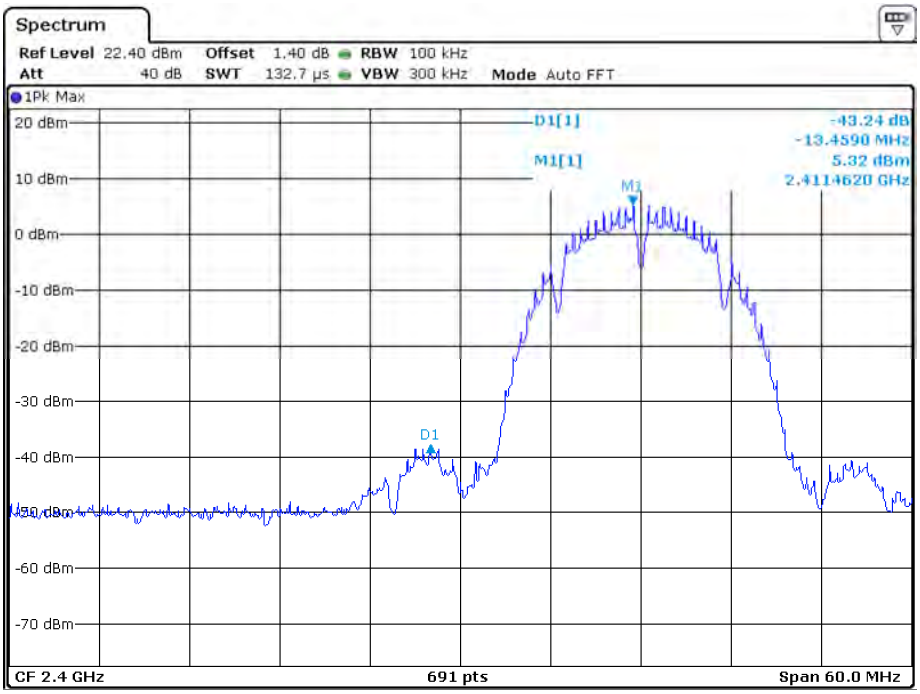
SISO Mode, Ant2:

802.11b
Channel 01 (2412MHz) Reference Level: 5.01dBm

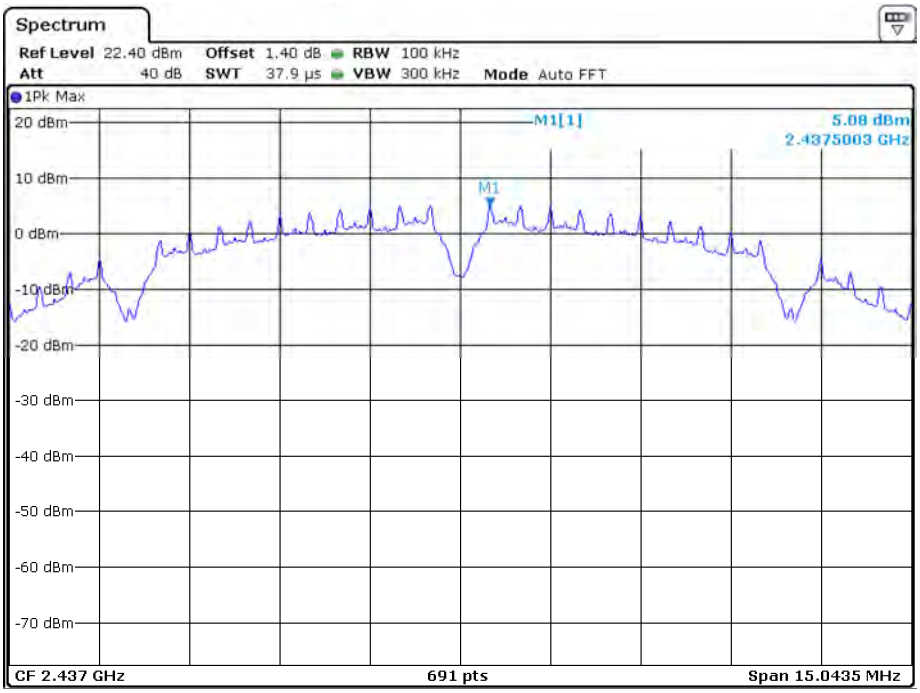


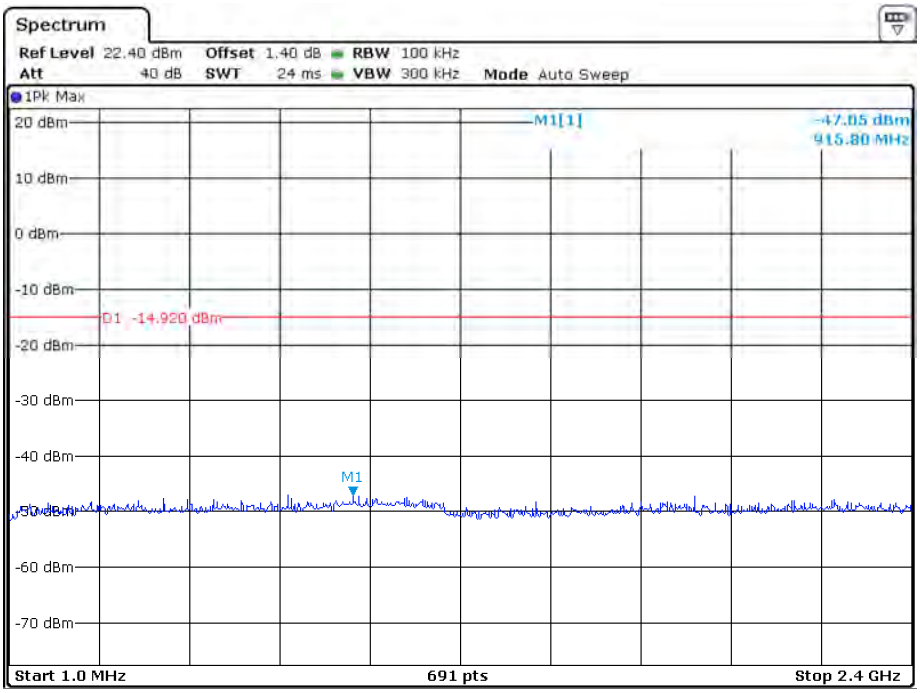


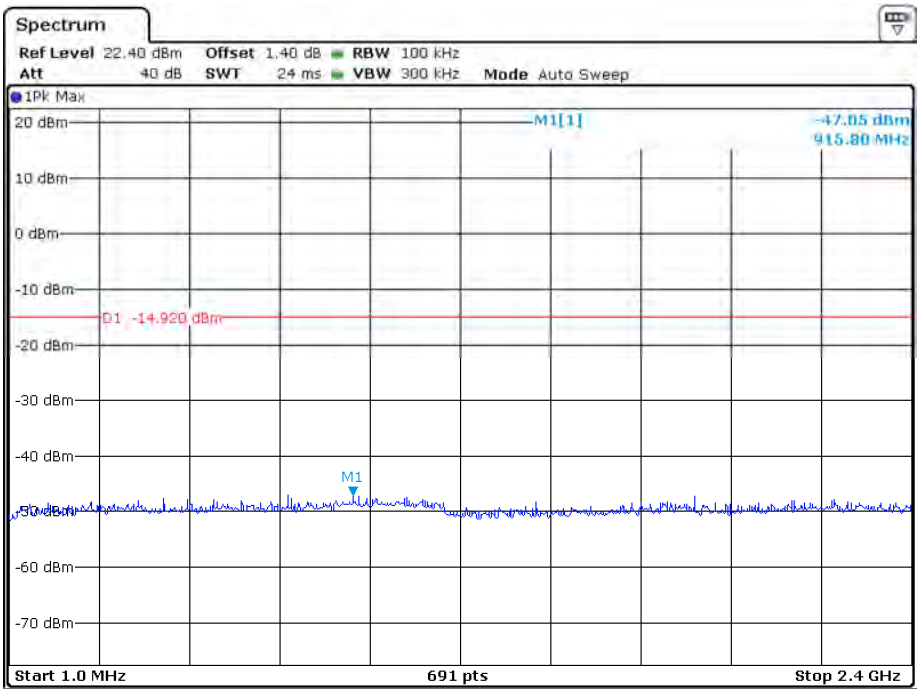

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -40.89 dBm
19.8355 GHz
D1 -14.990 dBm
M1
Start 2.4835 GHz
691 pts
Stop 25.0 GHz


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -43.24 dB
-13.4590 MHz
M1[1] 5.32 dBm
2.4114620 GHz
M1
D1
CF 2.4 GHz
691 pts
Span 60.0 MHz

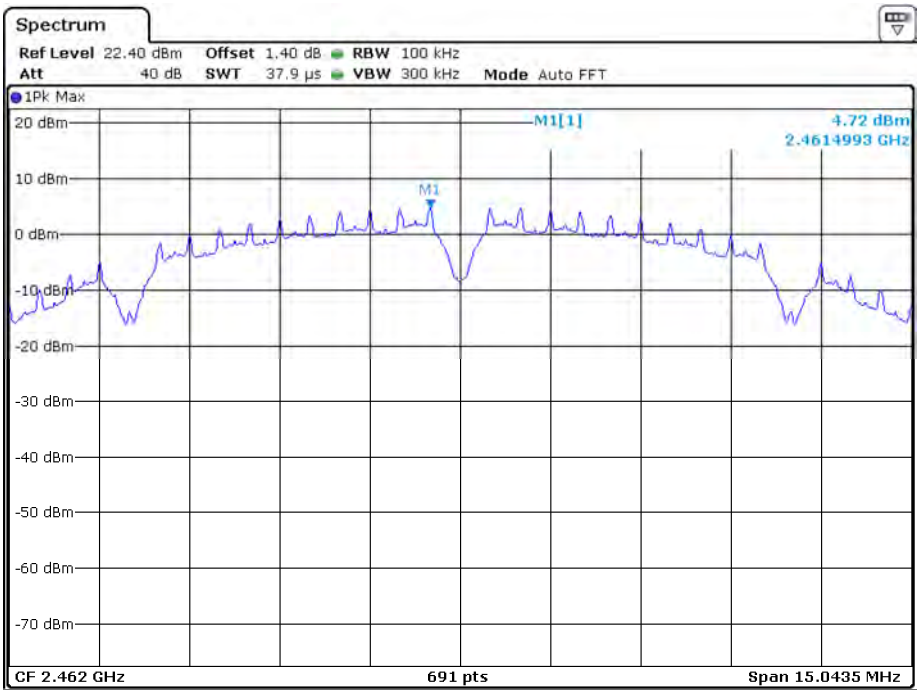
Channel 06 (2437MHz) Reference Level: 5.08dBm

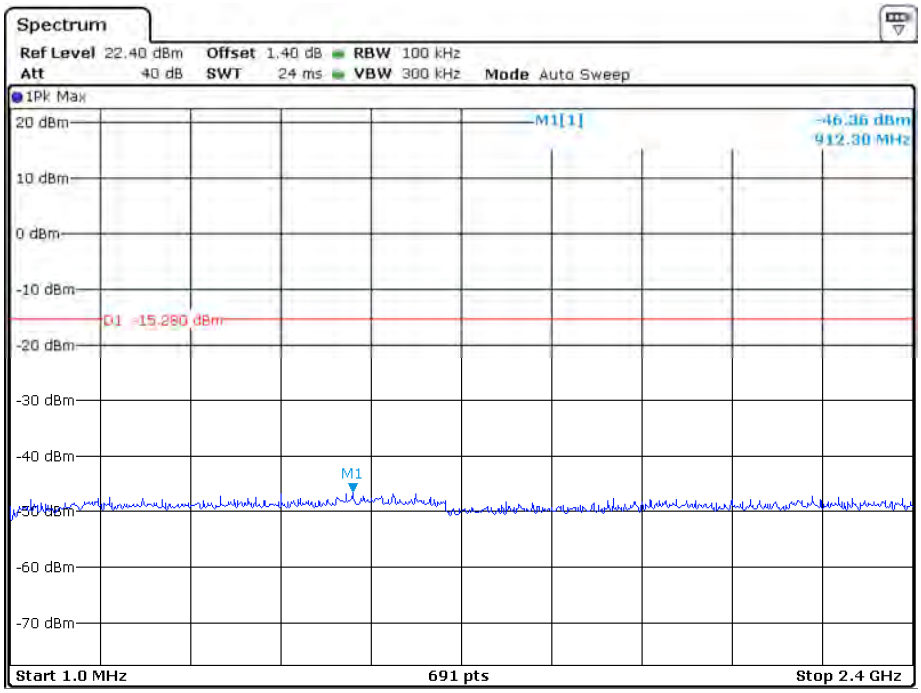


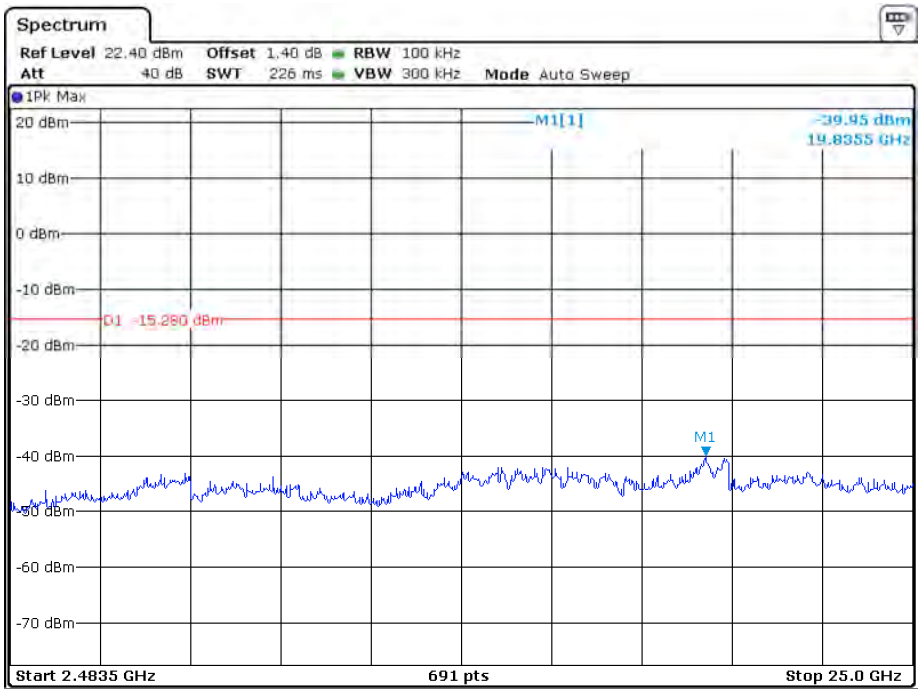


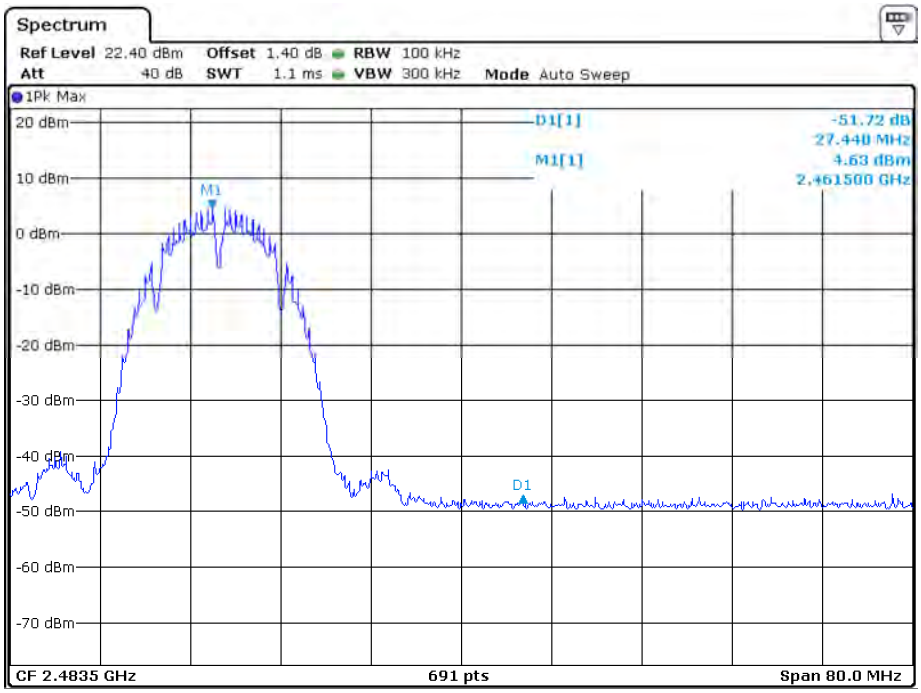


Channel 11 (2462MHz) Reference Level: 4.72dBm

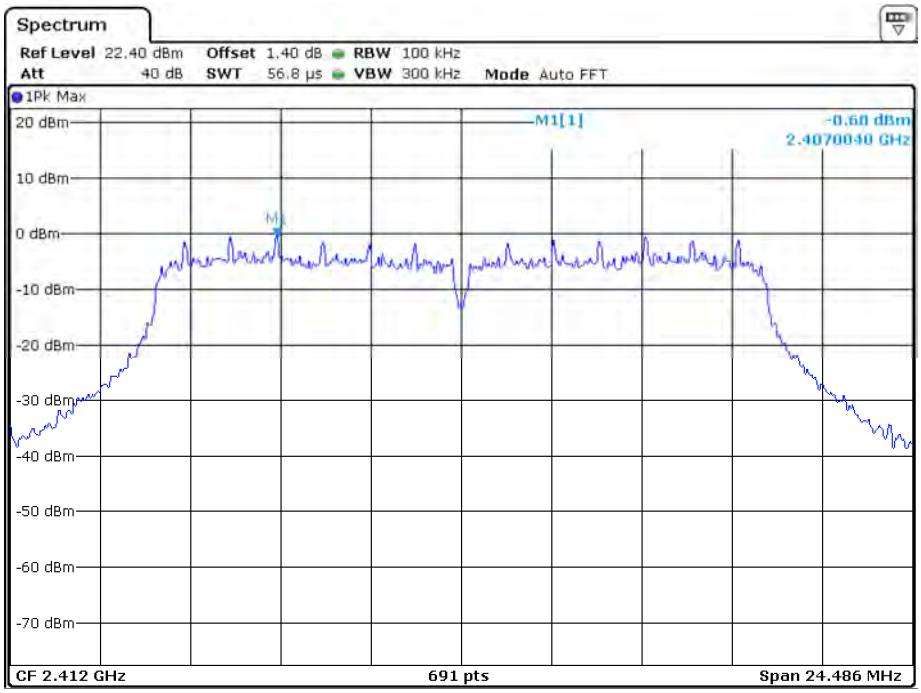


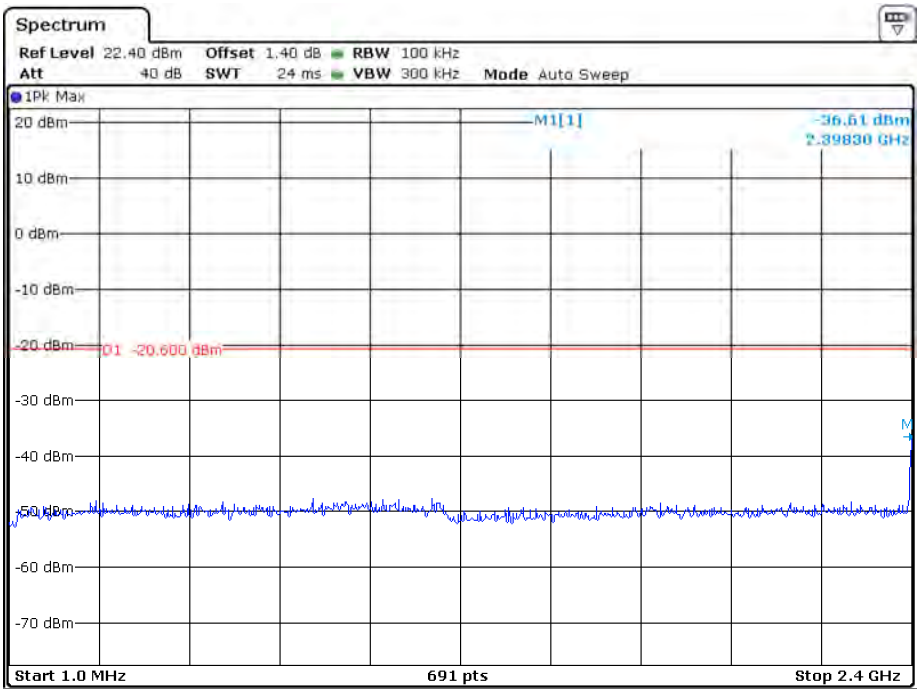

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -46.36 dBm
912.30 MHz
D1 -15.280 dBm
M1
Start 1.0 MHz 691 pts Stop 2.4 GHz

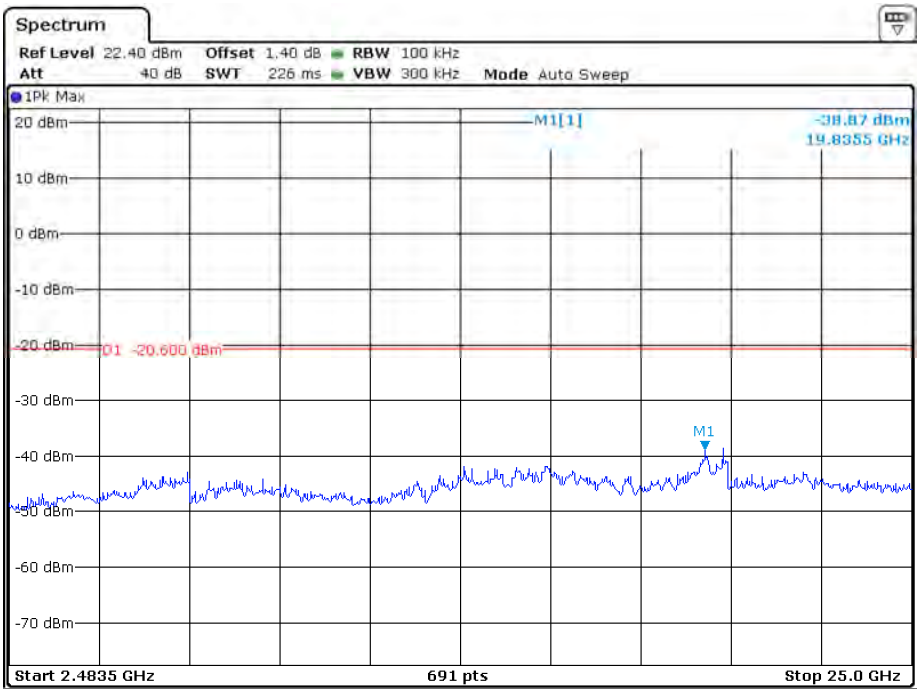

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -39.95 dBm
19.8355 GHz
D1 -15.280 dBm
M1
Start 2.4835 GHz 691 pts Stop 25.0 GHz

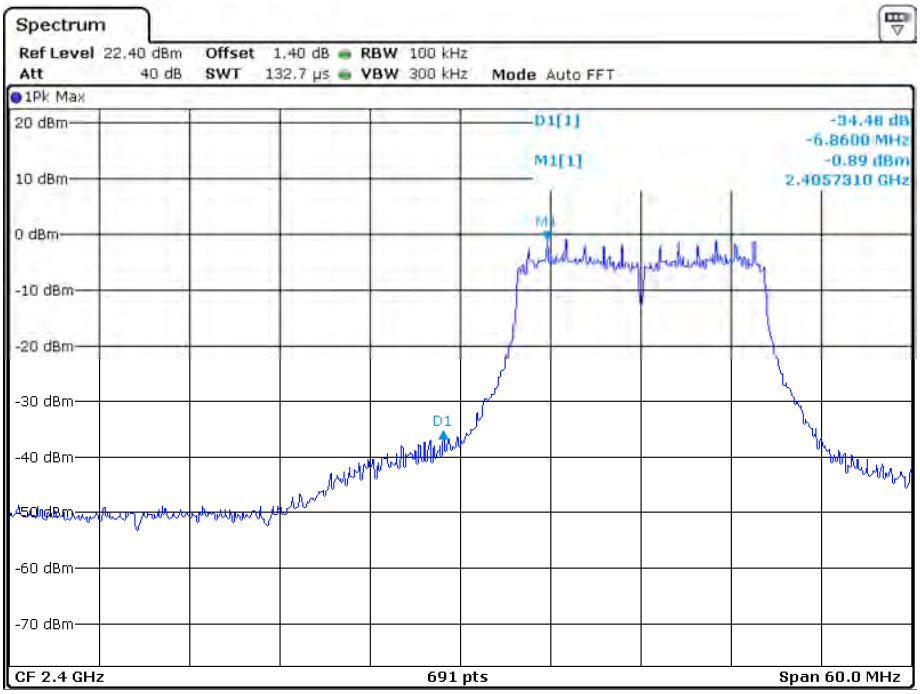


802.11g
Channel 01 (2412MHz) Reference Level: -0.60dBm

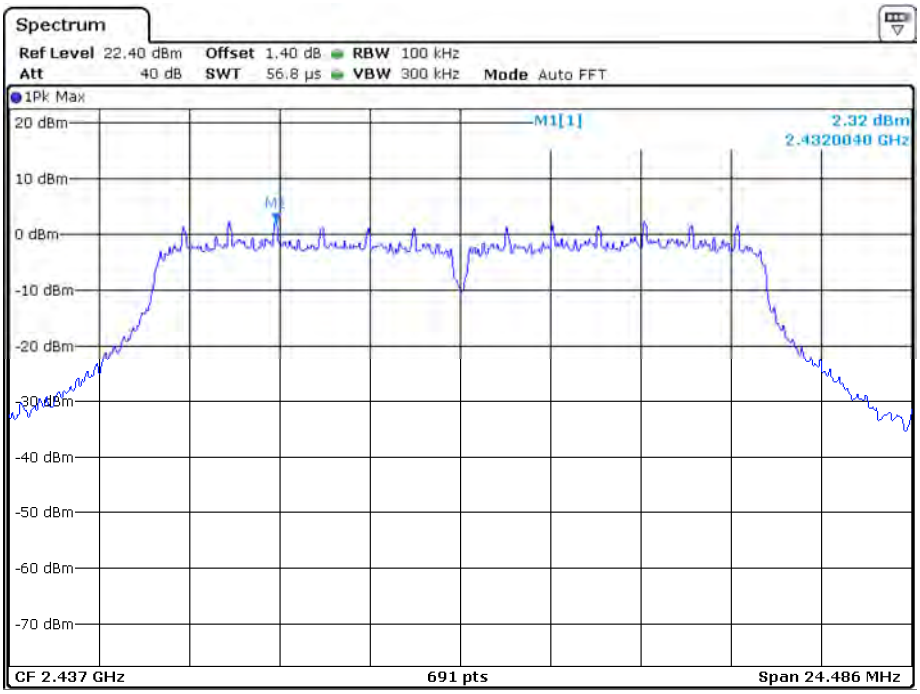


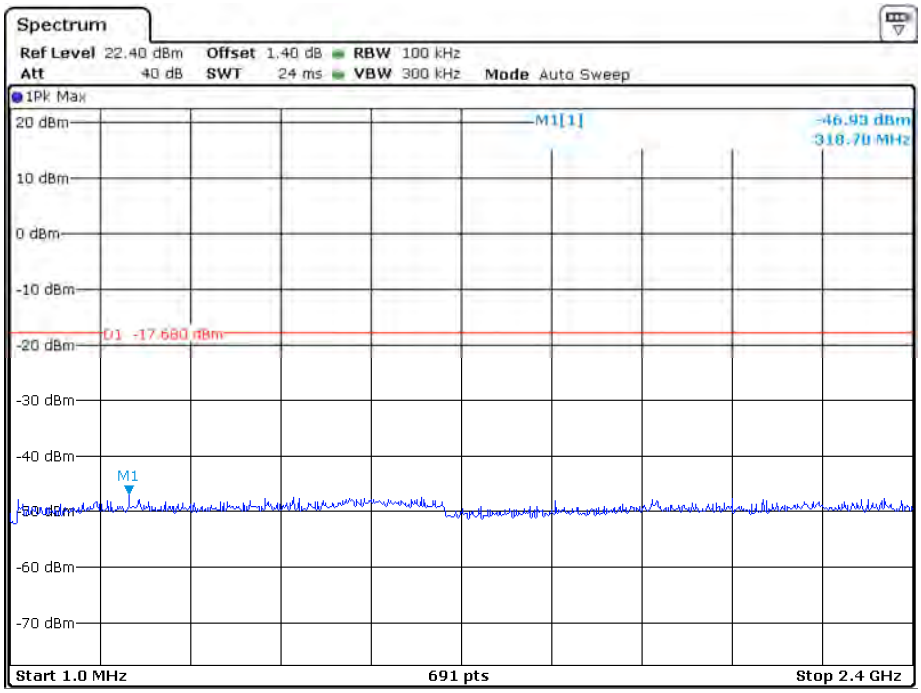

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -36.61 dBm
2.39830 GHz
D1 -20.600 dBm
Start 1.0 MHz 691 pts Stop 2.4 GHz

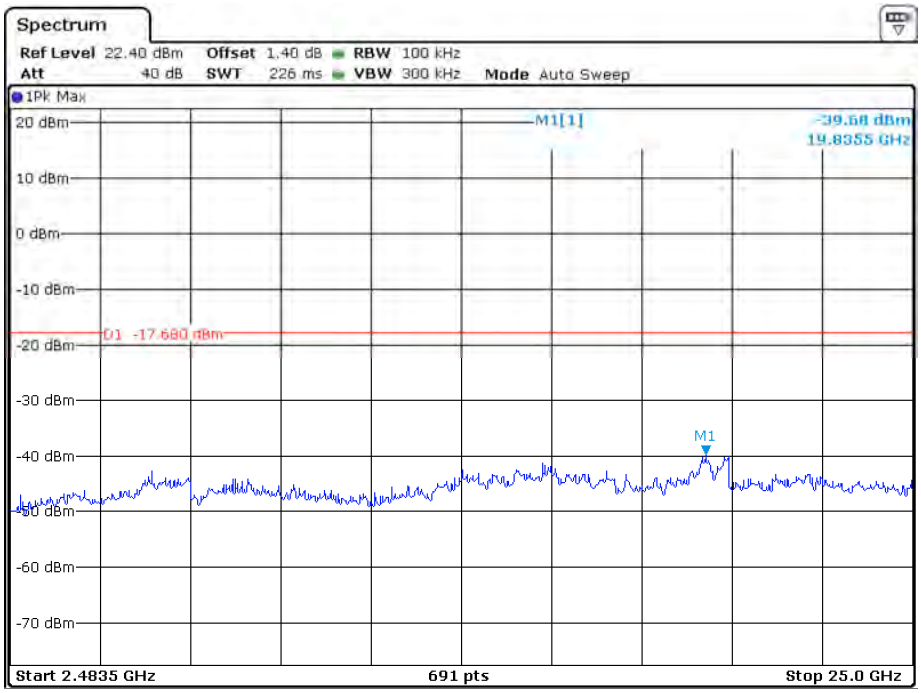

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -38.87 dBm
19.8355 GHz
D1 -20.600 dBm
M1
Start 2.4835 GHz 691 pts Stop 25.0 GHz



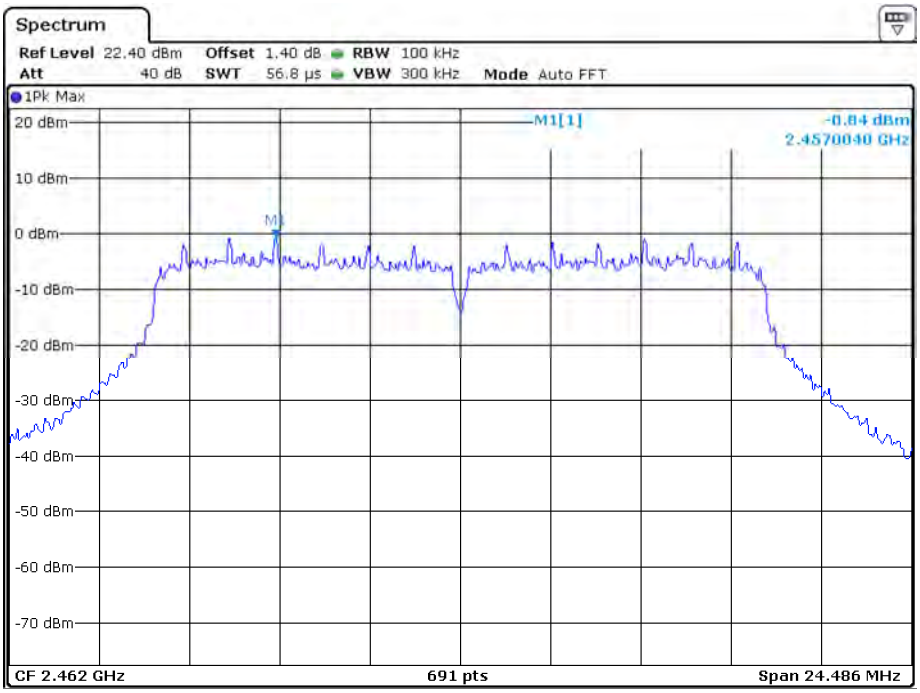
Channel 06 (2437MHz) Reference Level: 2.32dBm

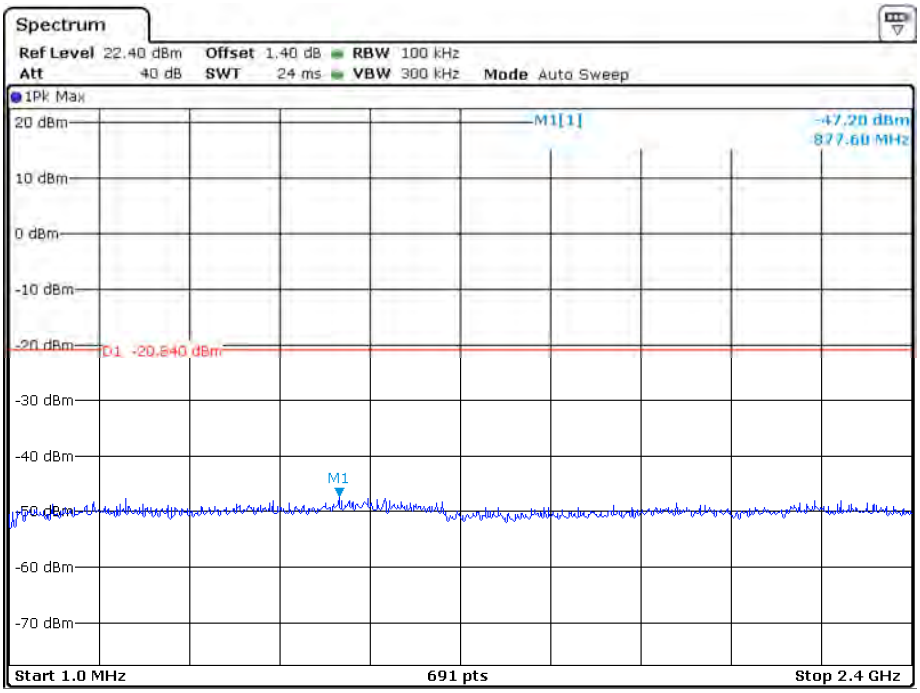


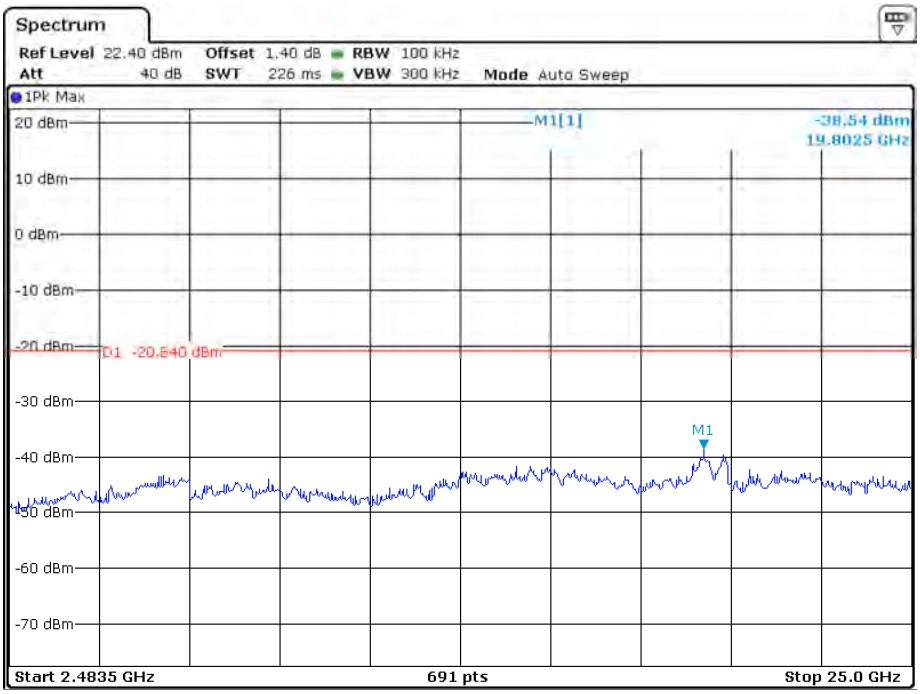

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -46.93 dBm
318.70 MHz
D1 -17.680 dBm
M1
Start 1.0 MHz 691 pts Stop 2.4 GHz

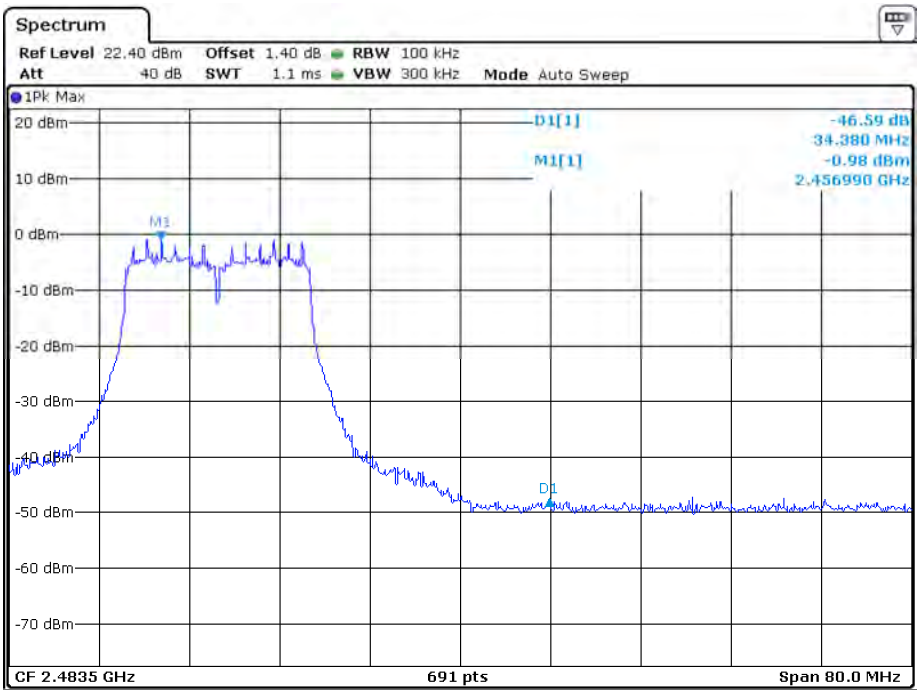

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -39.58 dBm
19.8355 GHz
D1 -17.680 dBm
M1
Start 2.4835 GHz 691 pts Stop 25.0 GHz

Channel 11 (2462MHz) Reference Level: -0.84dBm

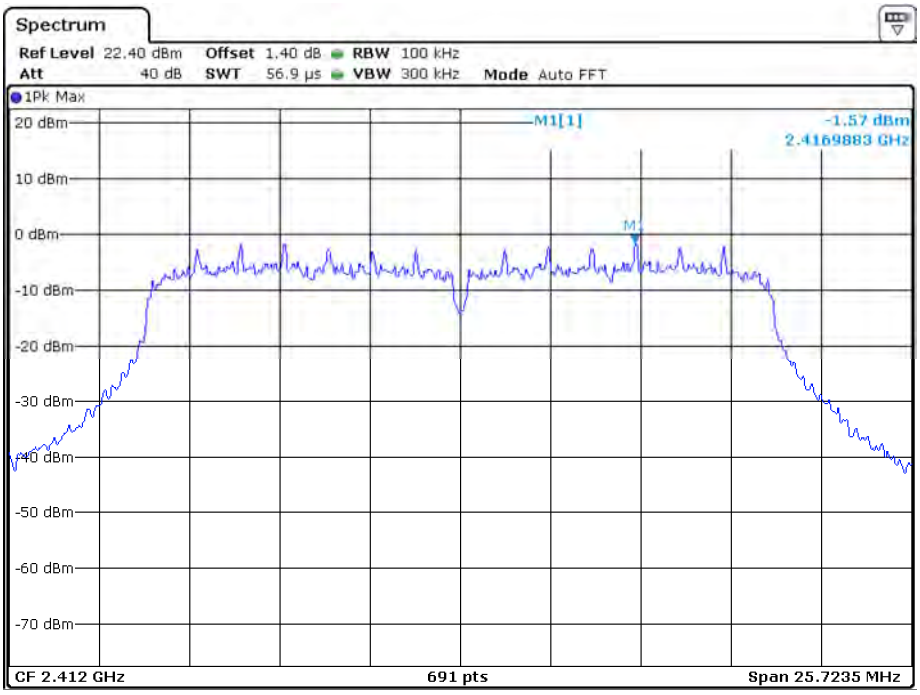


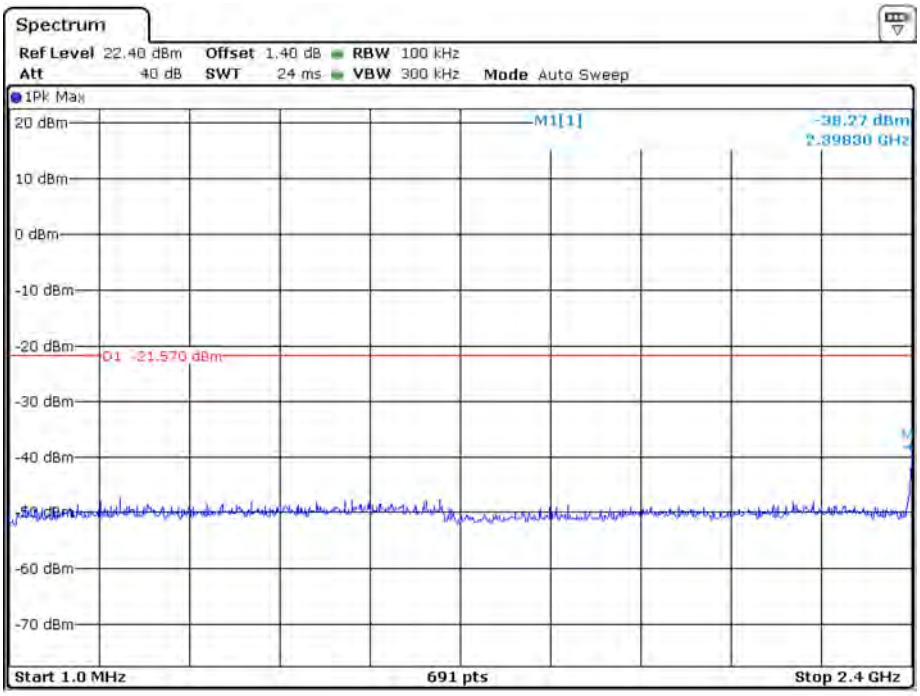


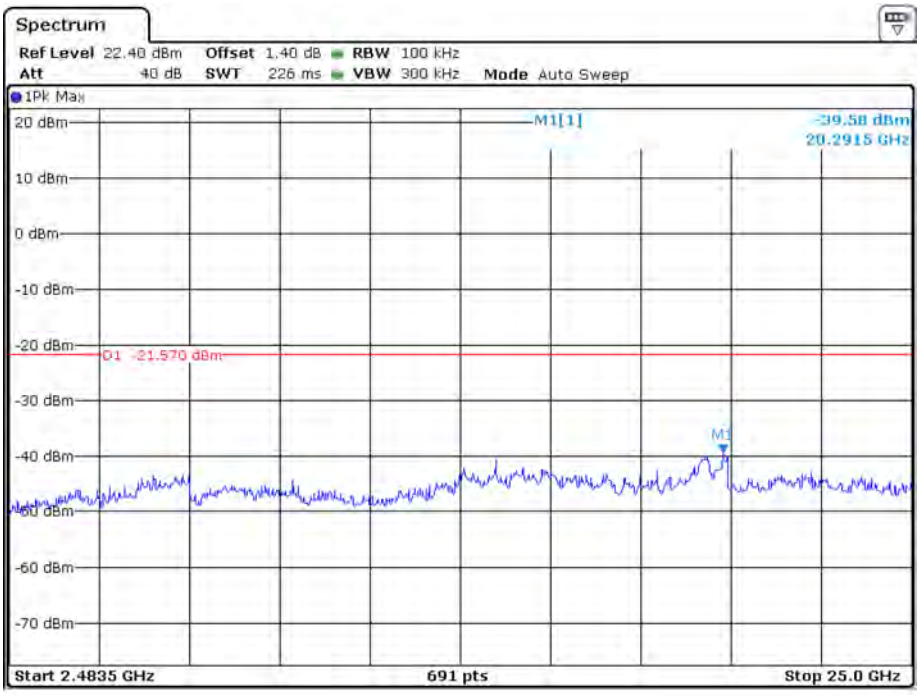

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -38.54 dBm
19.8025 GHz
D1 -20.640 dBm
M1
Start 2.4835 GHz
691 pts
Stop 25.0 GHz

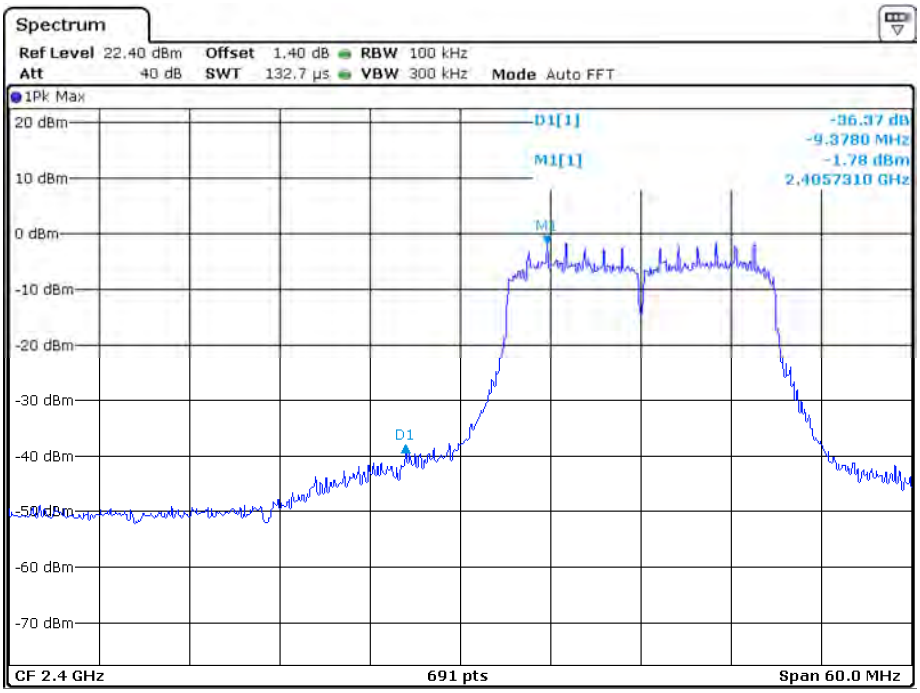

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 1.1 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
D1[1] -46.59 dB
34.380 MHz
M1[1] -0.98 dBm
2.456990 GHz
M1
D1
CF 2.4835 GHz
691 pts
Span 80.0 MHz

802.11n-HT20
Channel 01 (2412MHz) Reference Level: -1.57dBm

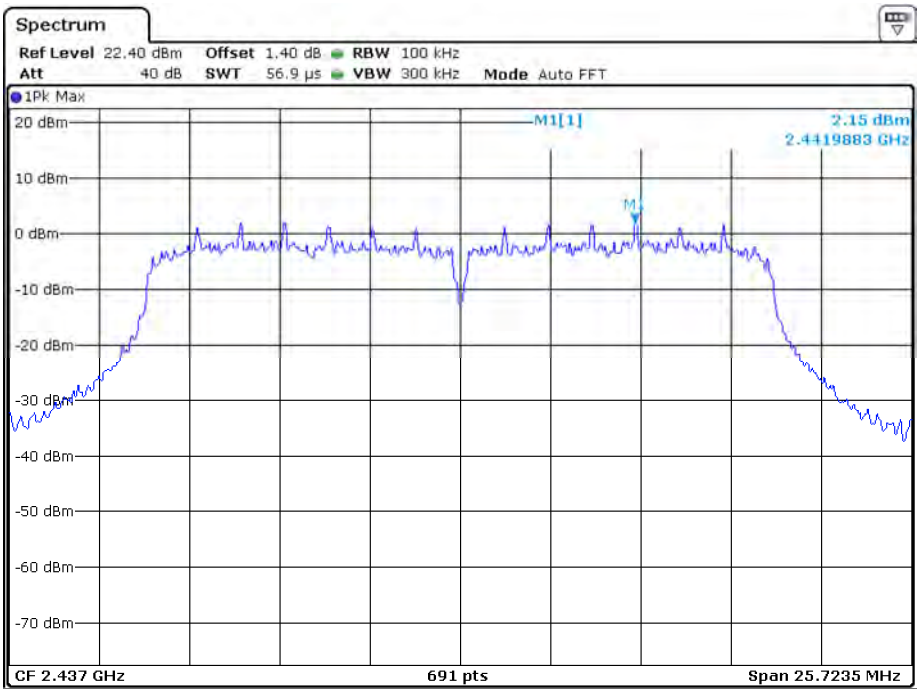


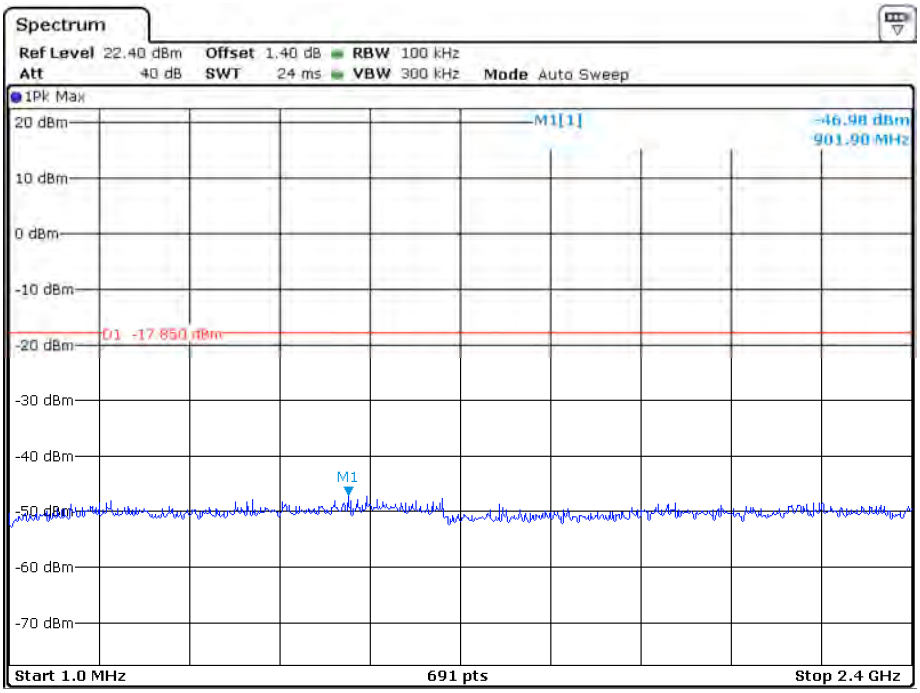


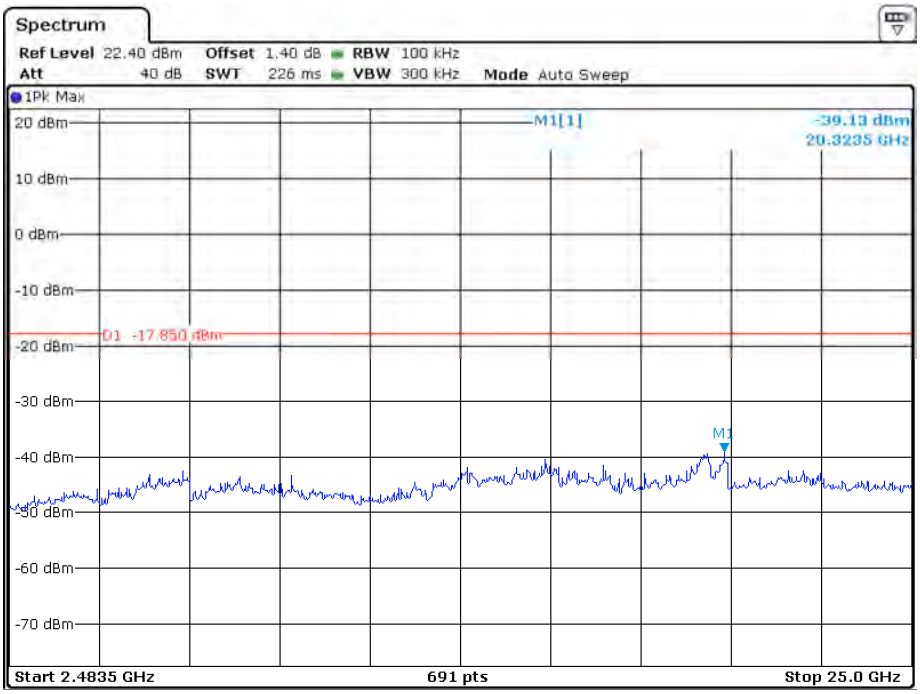

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -39.58 dBm
20.2915 GHz
D1 -21.570 dBm
Start 2.4835 GHz 691 pts Stop 25.0 GHz


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -36.37 dB
-9.3780 MHz
M1[1] -1.78 dBm
2.4057310 GHz
CF 2.4 GHz 691 pts Span 60.0 MHz

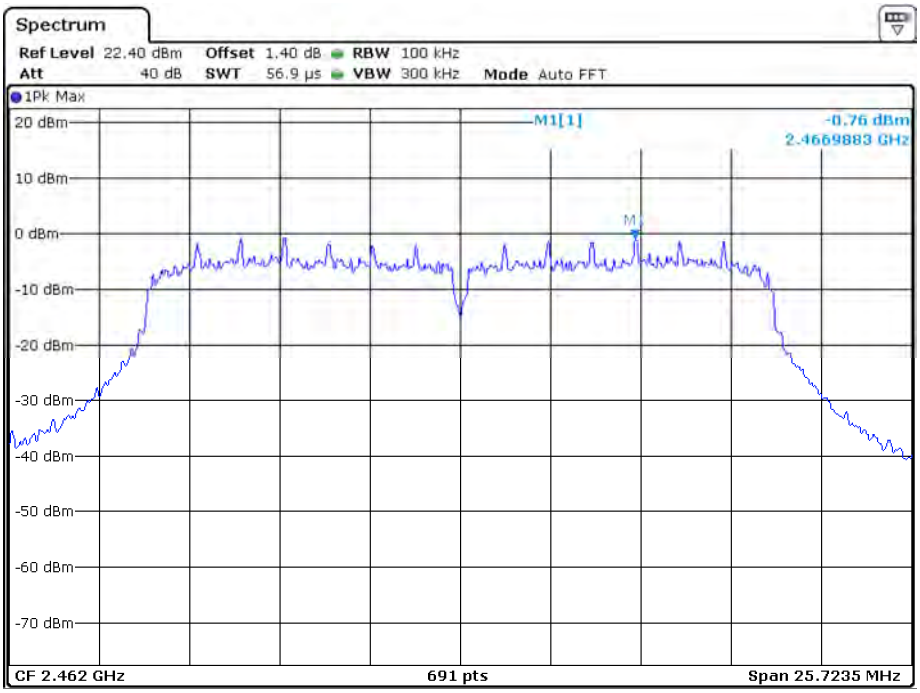
Channel 06 (2437MHz) Reference Level: 2.15dBm

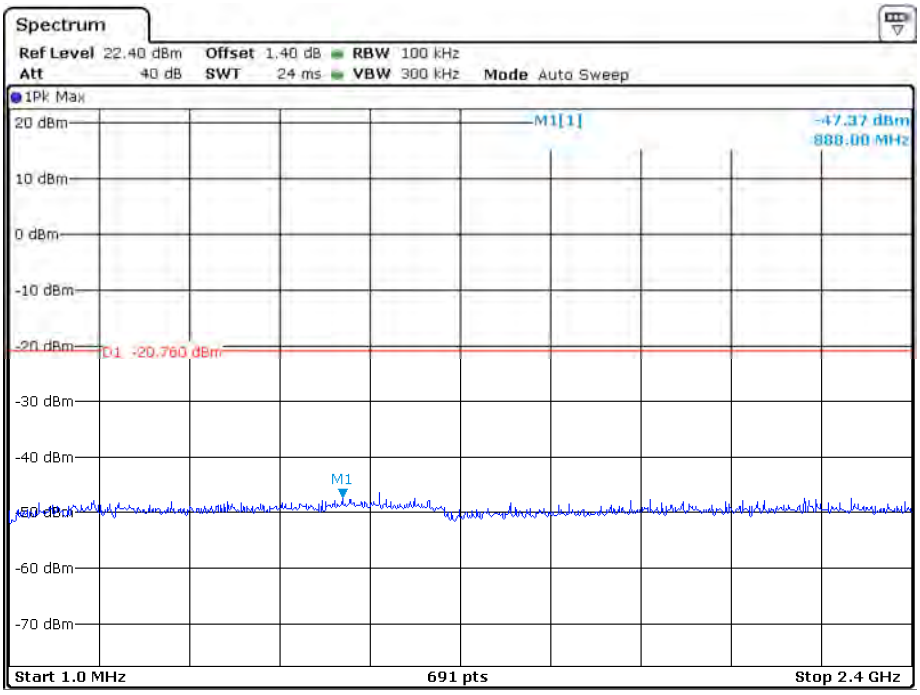


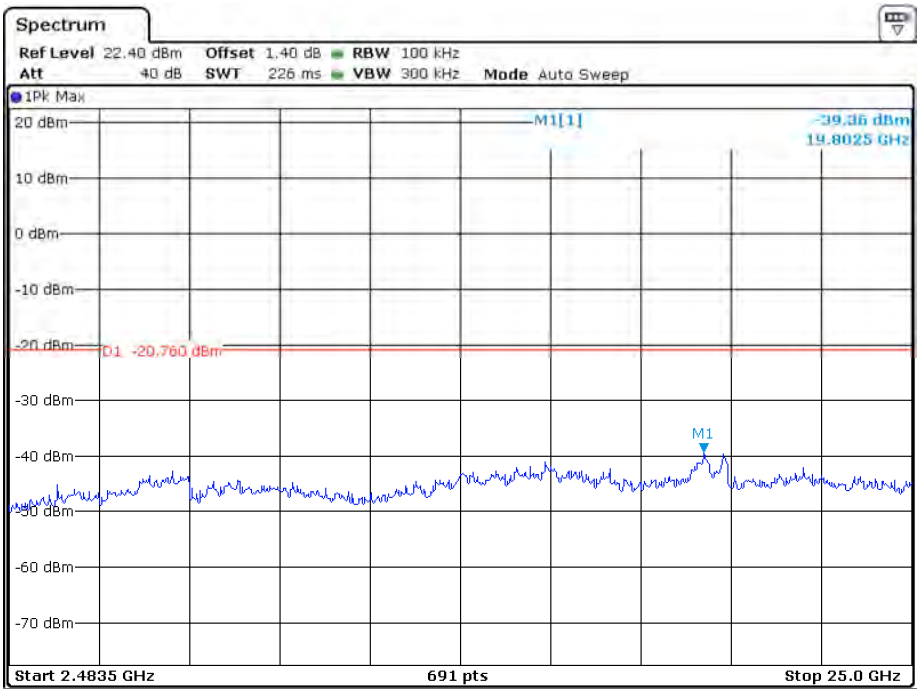


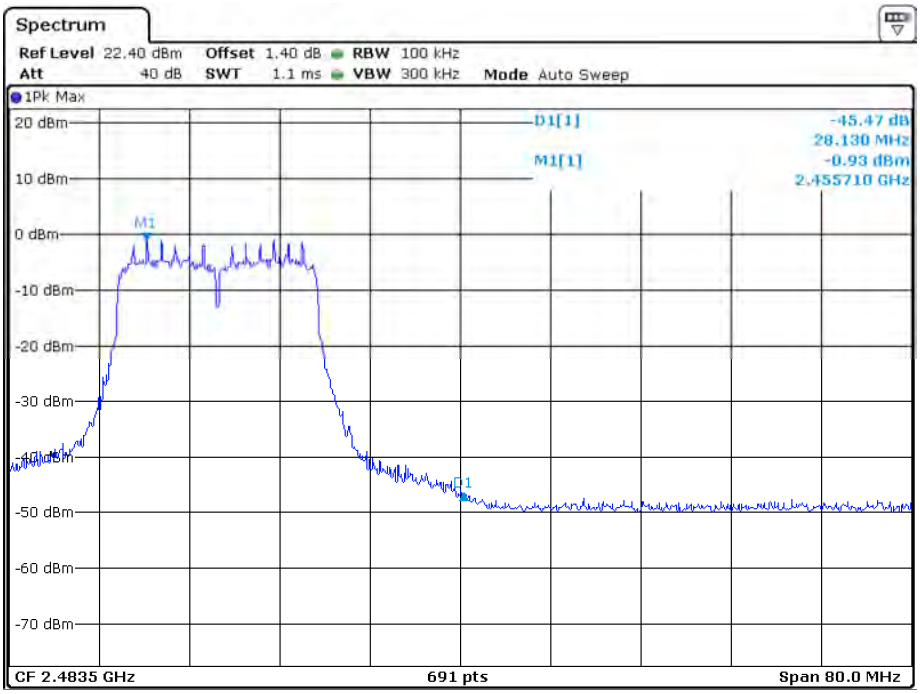


Channel 11 (2462MHz) Reference Level: -0.76dBm

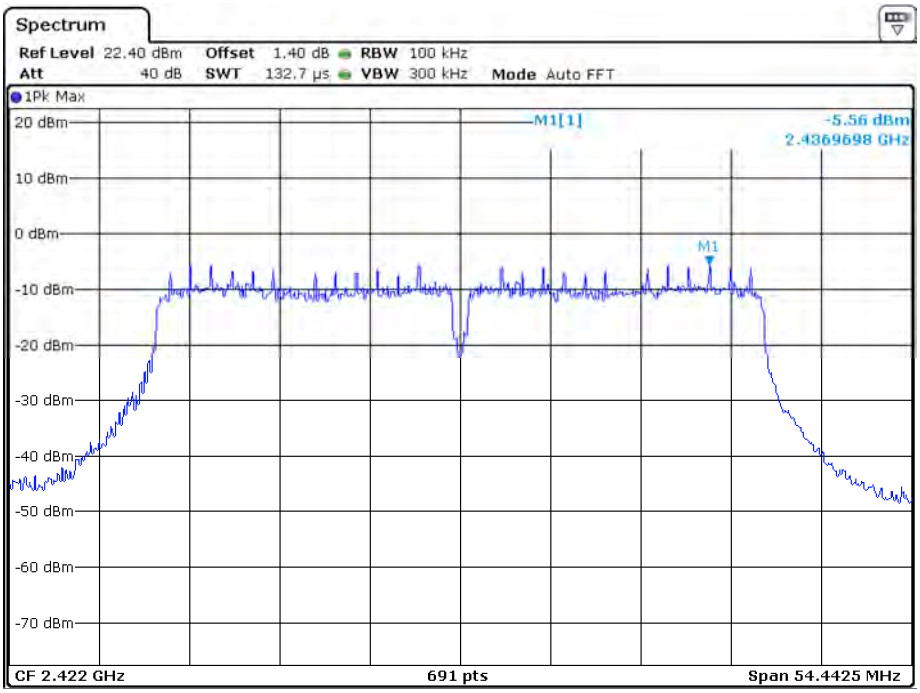


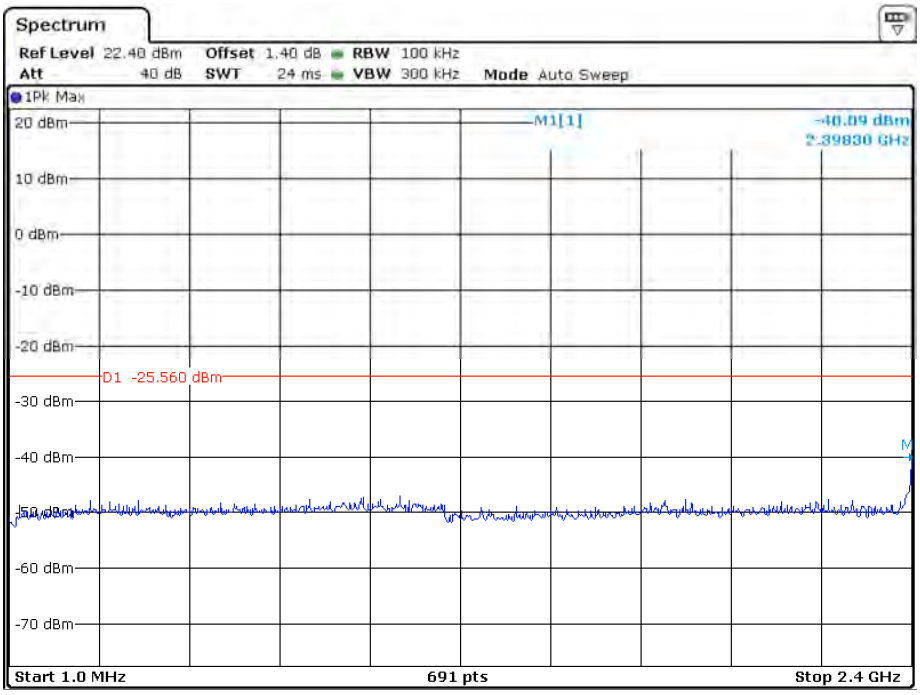

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -47.37 dBm
888.00 MHz
D1 -20.760 dBm
M1
Start 1.0 MHz
691 pts
Stop 2.4 GHz

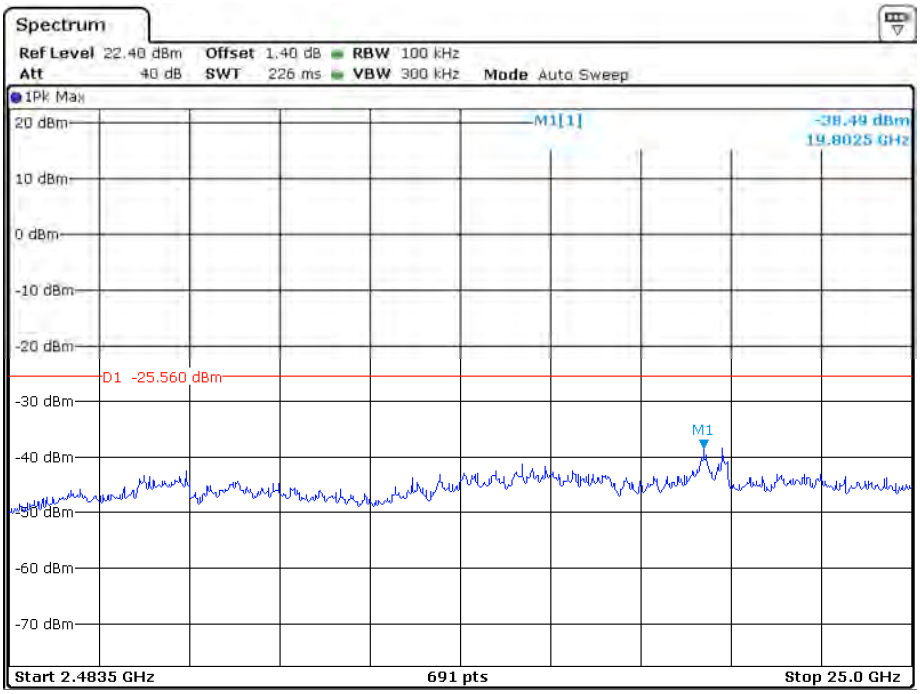

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -39.36 dBm
19.8025 GHz
D1 -20.760 dBm
M1
Start 2.4835 GHz
691 pts
Stop 25.0 GHz

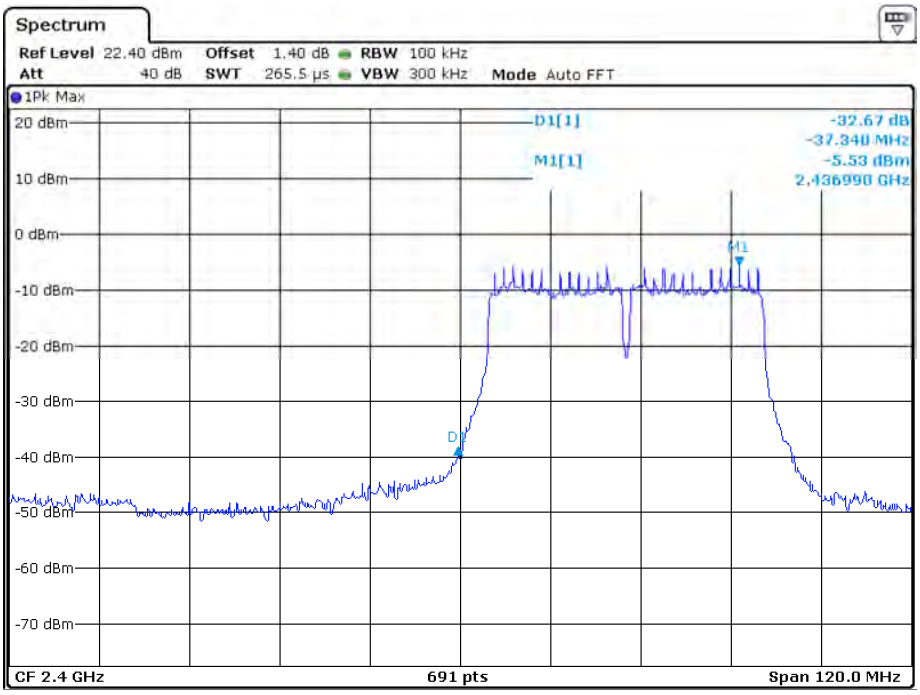


802.11n-HT40
Channel 03 (2422MHz) Reference Level: -5.56dBm

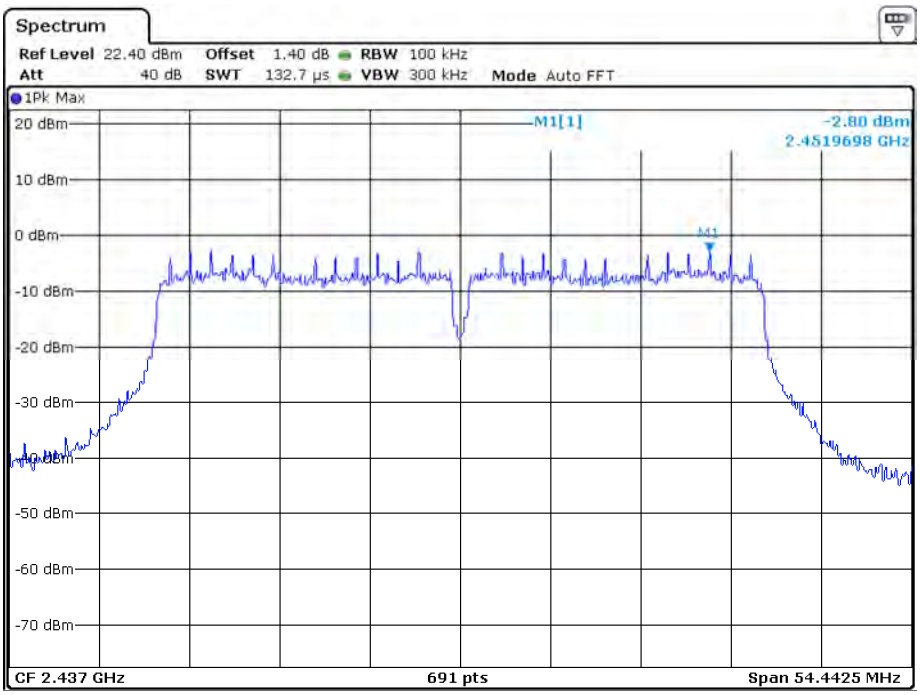


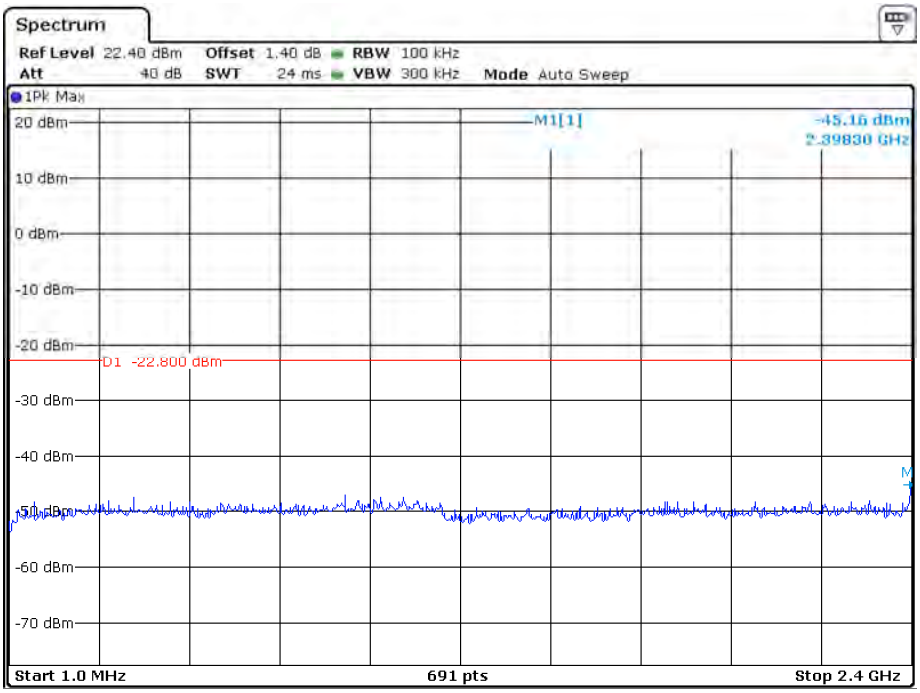

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -40.09 dBm
2.39830 GHz
D1 -25.560 dBm
Start 1.0 MHz 691 pts Stop 2.4 GHz

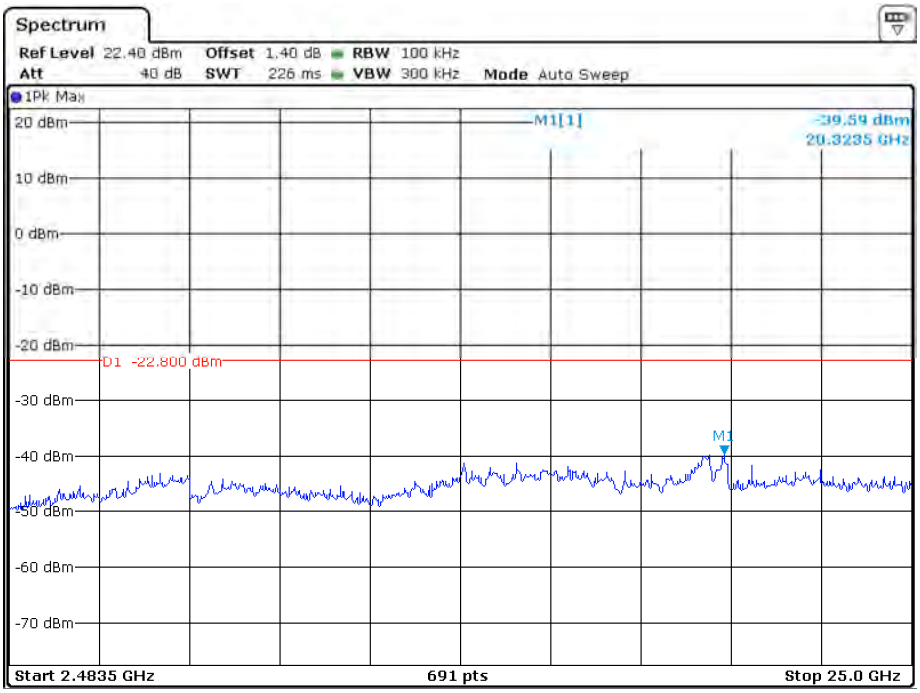

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -38.49 dBm
19.8025 GHz
D1 -25.560 dBm
M1
Start 2.4835 GHz 691 pts Stop 25.0 GHz



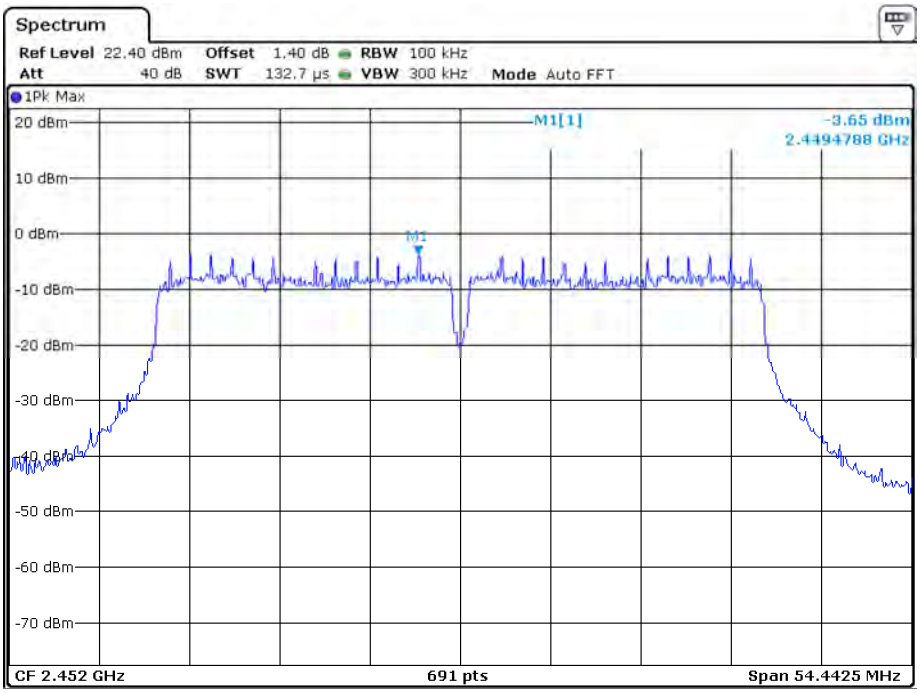
Channel 06 (2437MHz) Reference Level: -2.80dBm

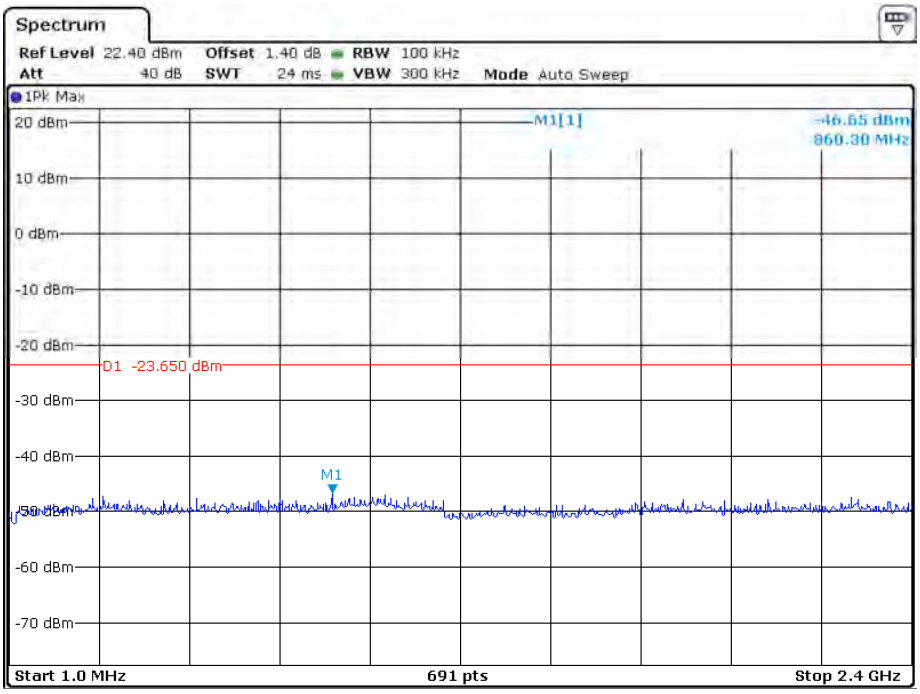


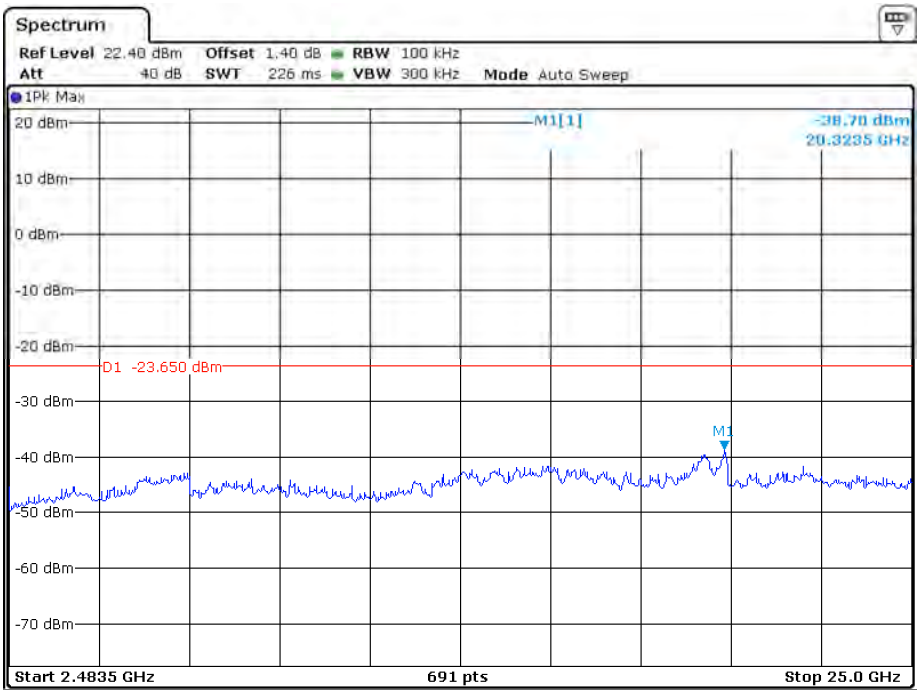

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -45.16 dBm
2.39830 GHz
D1 -22.800 dBm
Start 1.0 MHz 691 pts Stop 2.4 GHz

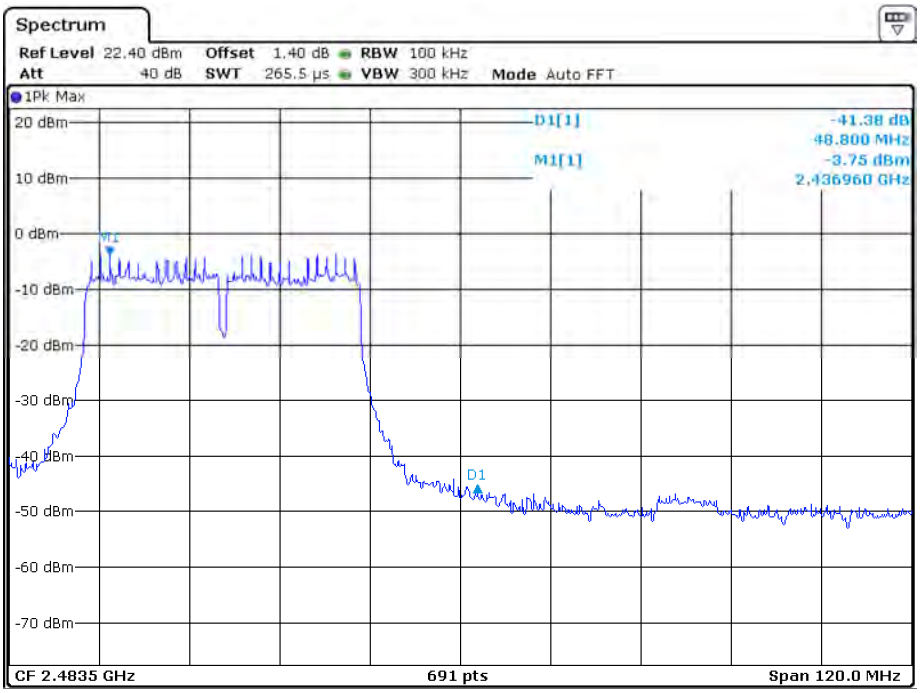

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -39.59 dBm
20.3235 GHz
D1 -22.800 dBm
Start 2.4835 GHz 691 pts Stop 25.0 GHz

Channel 09 (2452MHz) Reference Level: -3.65dBm

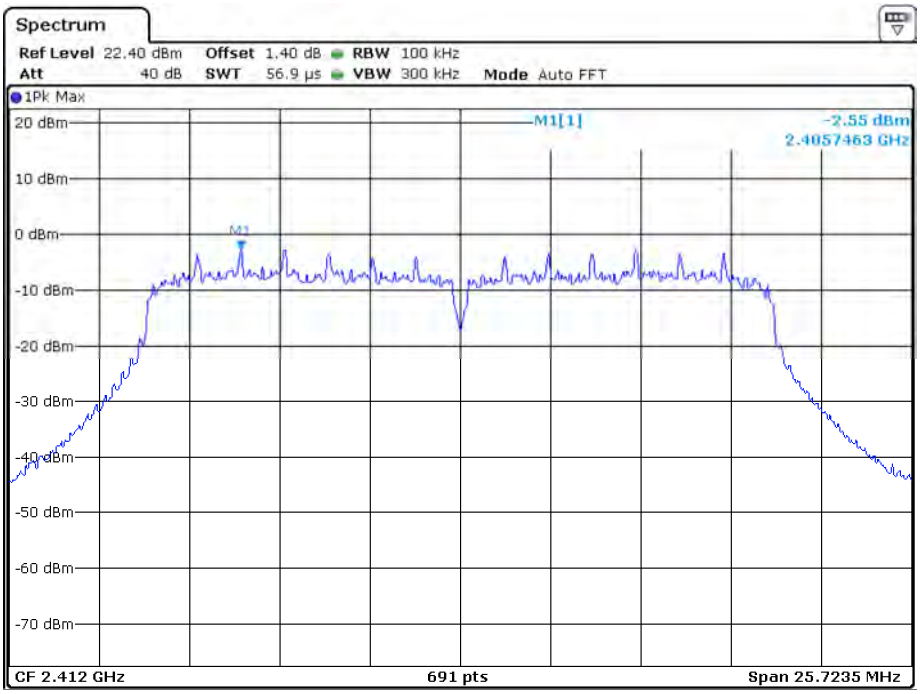


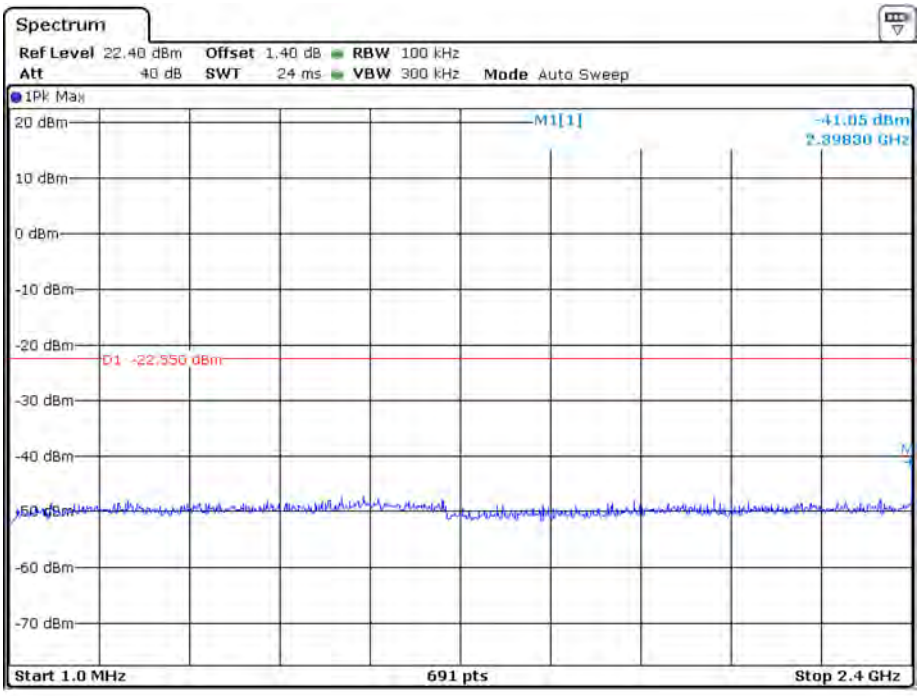


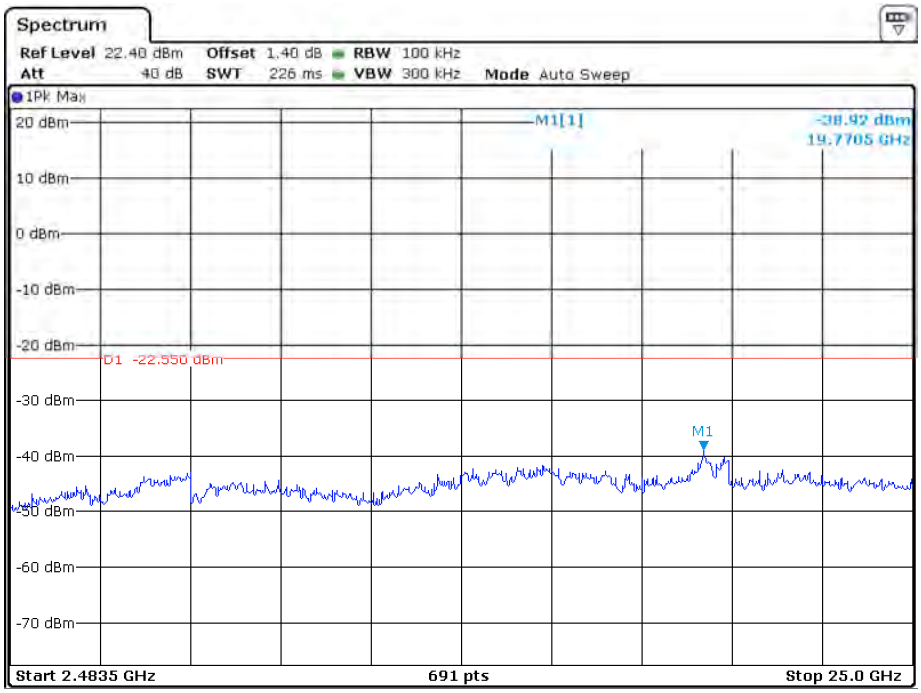

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -38.70 dBm
20.3235 GHz
D1 -23.650 dBm
M1
Start 2.4835 GHz
691 pts
Stop 25.0 GHz

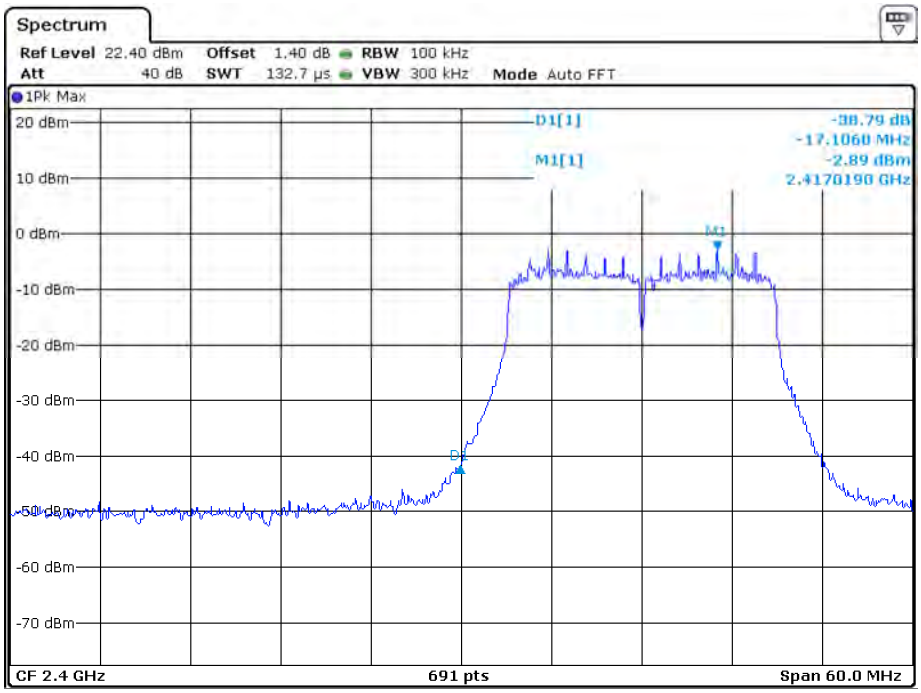

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 265.5 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -41.38 dB
48.800 MHz
M1[1] -3.75 dBm
2.436960 GHz
M1
D1
CF 2.4835 GHz
691 pts
Span 120.0 MHz

MIMO Mode, Ant1：
802.11n-HT20
Channel 01 (2412MHz) Reference Level: -2.55dBm

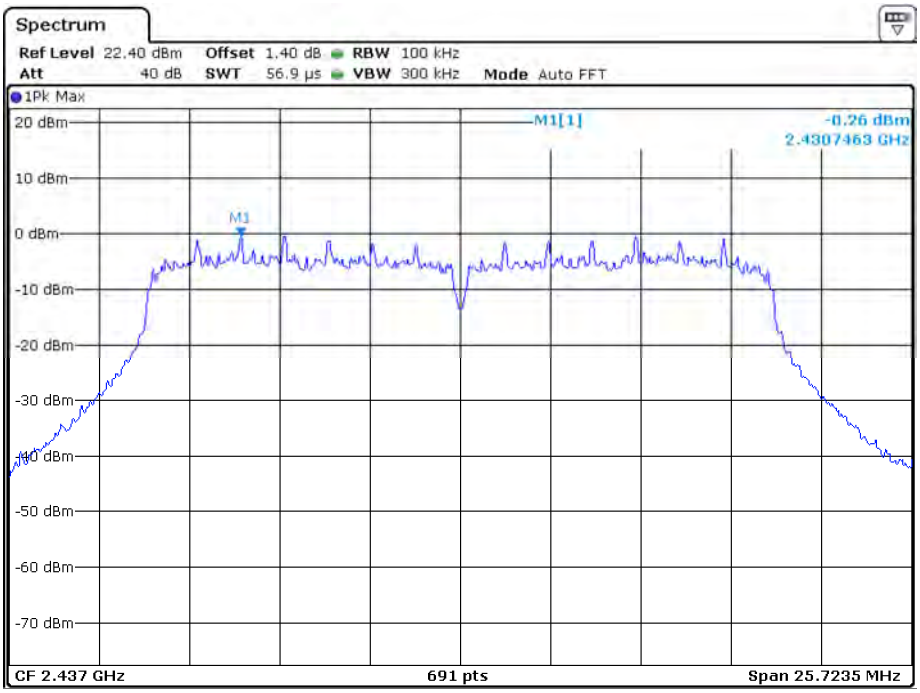


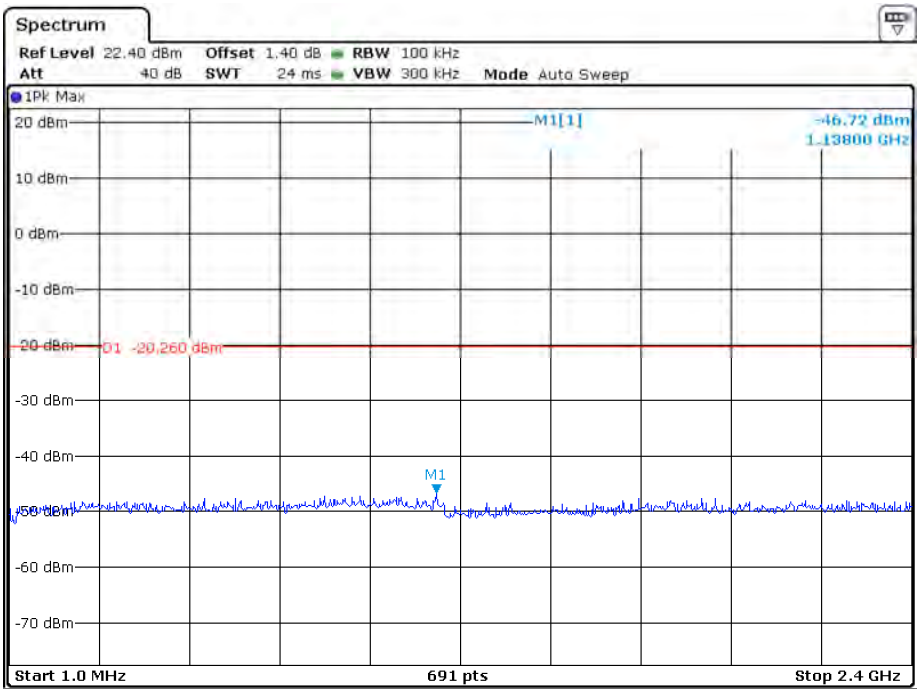


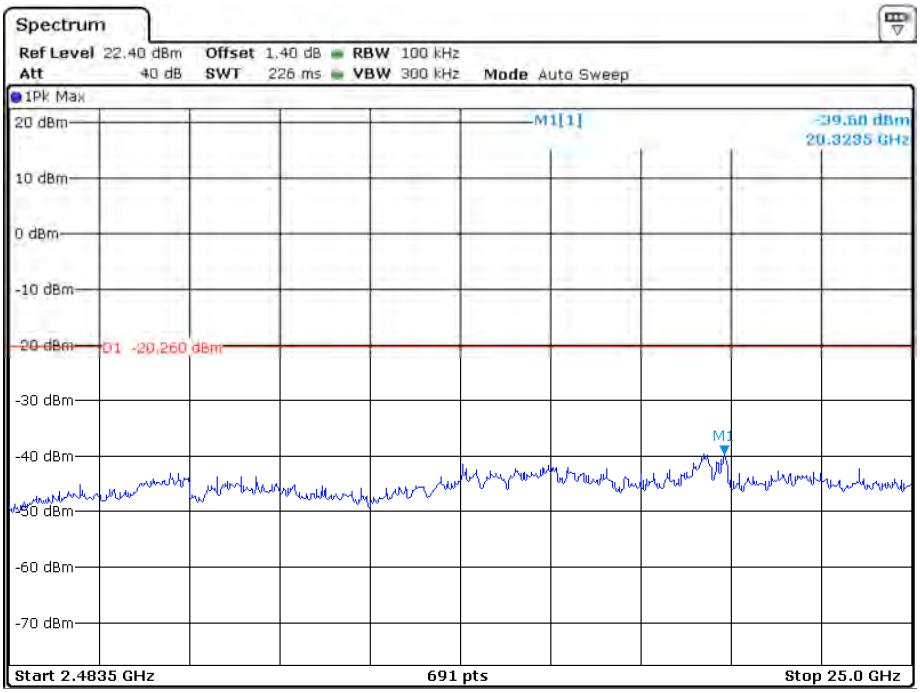

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -38.92 dBm
19.7705 GHz
D1 -22.550 dBm
M1
Start 2.4835 GHz 691 pts Stop 25.0 GHz


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -38.79 dB
-17.1060 MHz
M1[1] -2.89 dBm
2.4170190 GHz
CF 2.4 GHz 691 pts Span 60.0 MHz

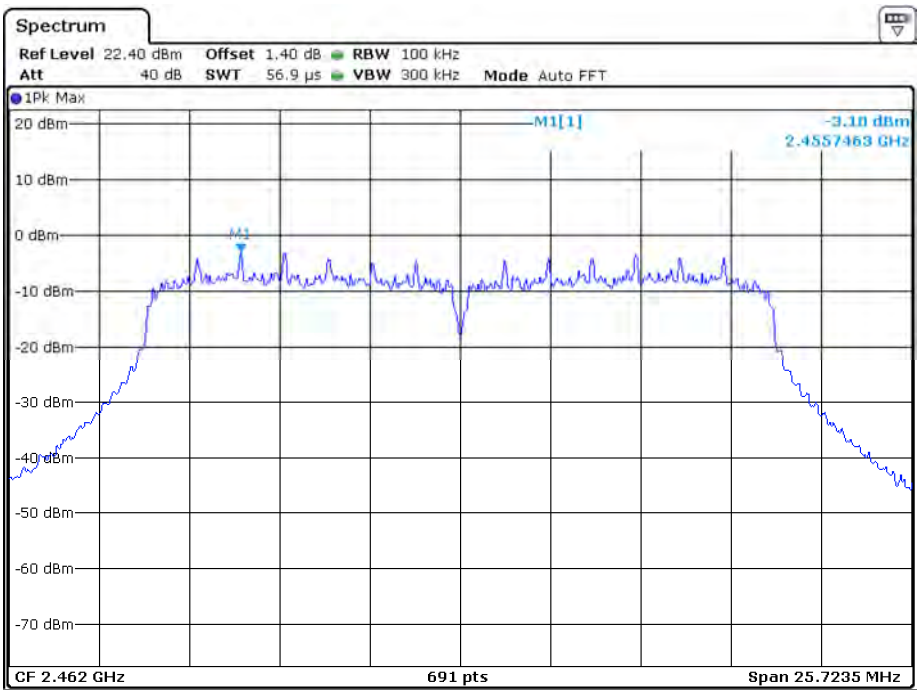
Channel 06 (2437MHz) Reference Level: -0.26dBm

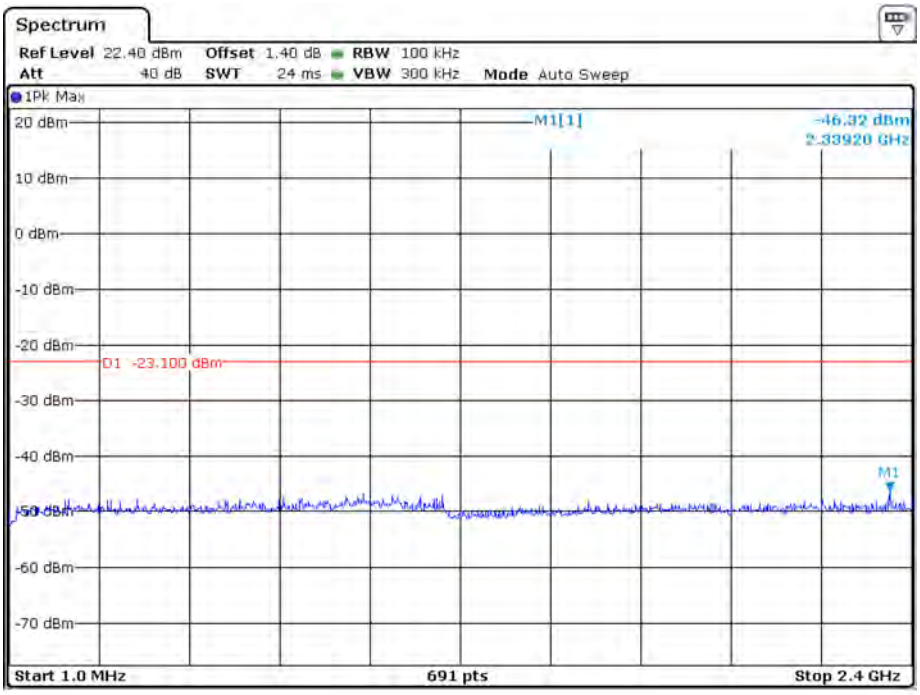


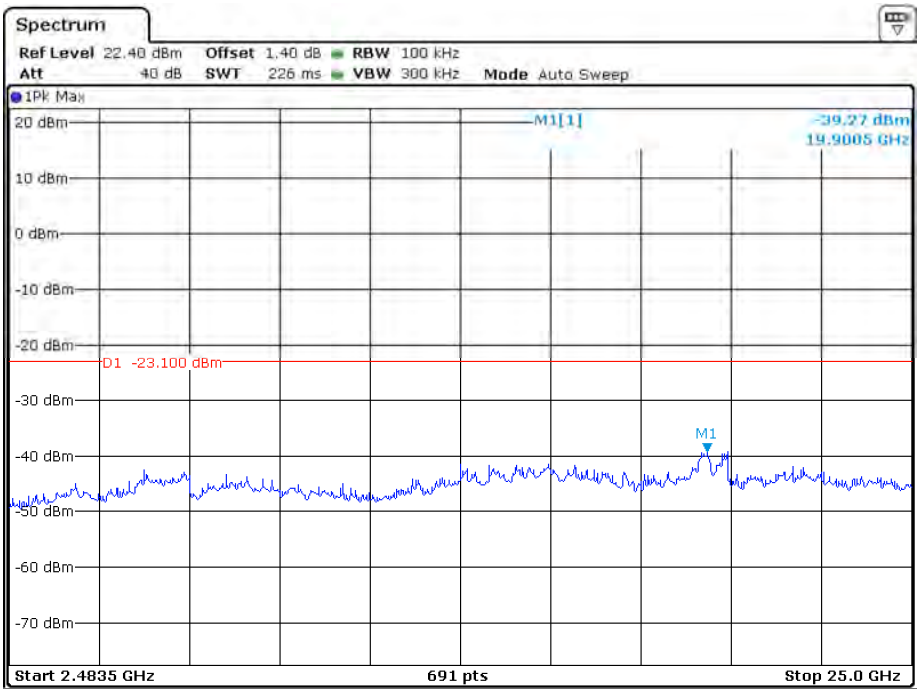


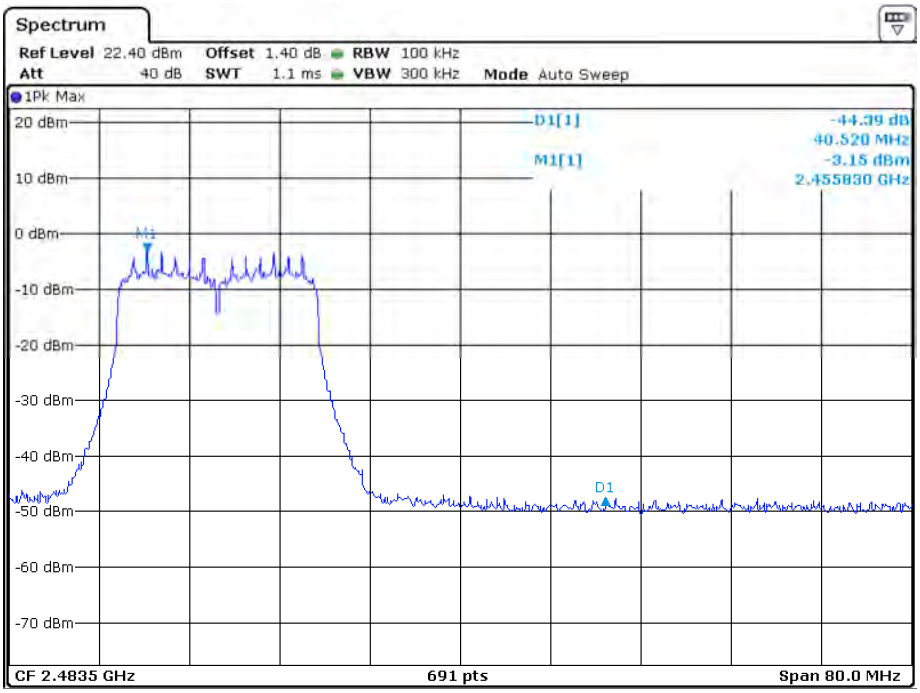


Channel 11 (2462MHz) Reference Level: -3.10dBm

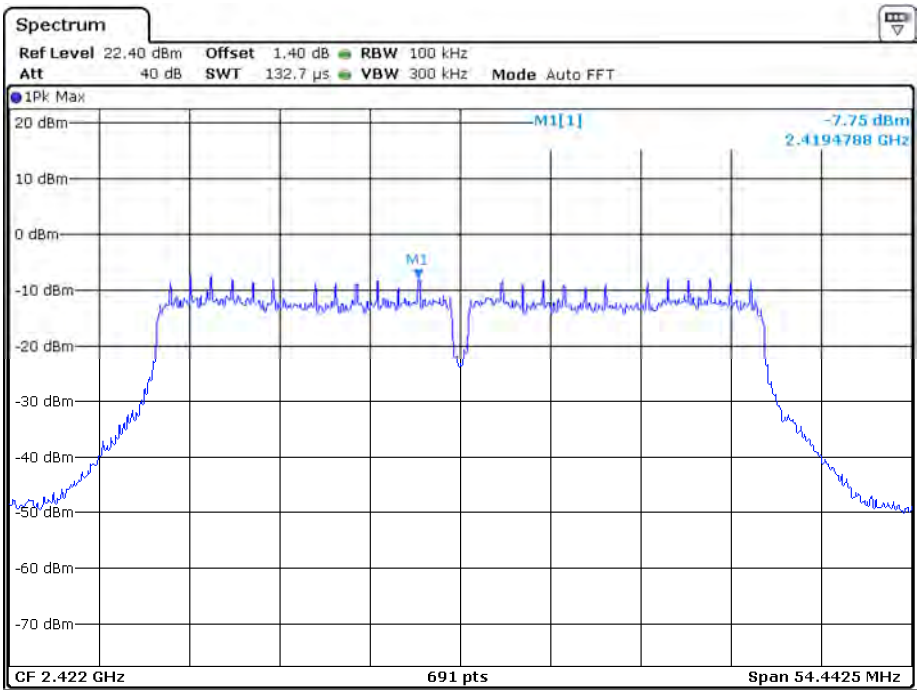


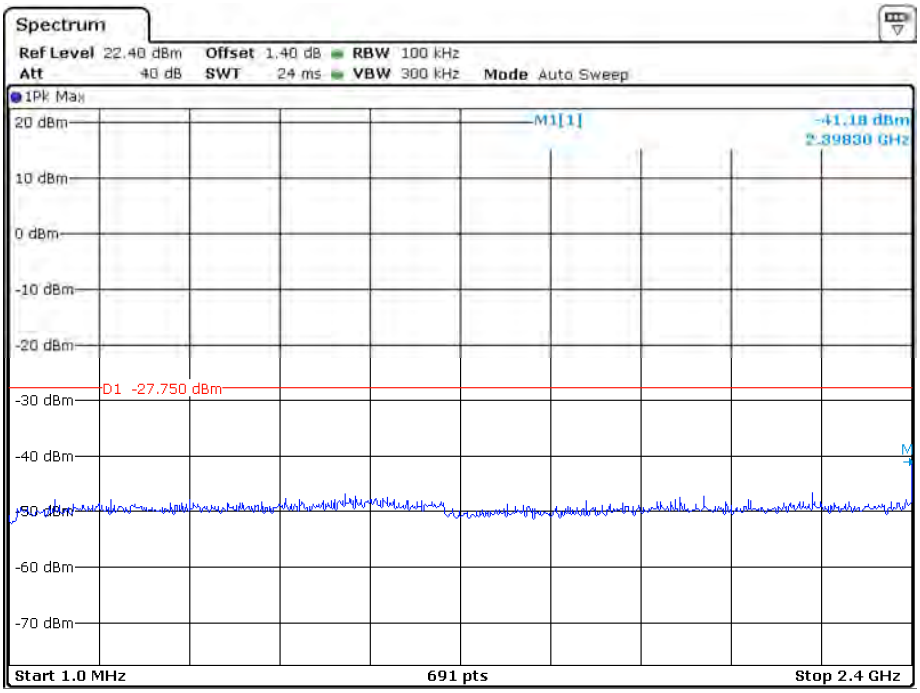

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -46.32 dBm
2.33920 GHz
D1 -23.100 dBm
M1
Start 1.0 MHz 691 pts Stop 2.4 GHz

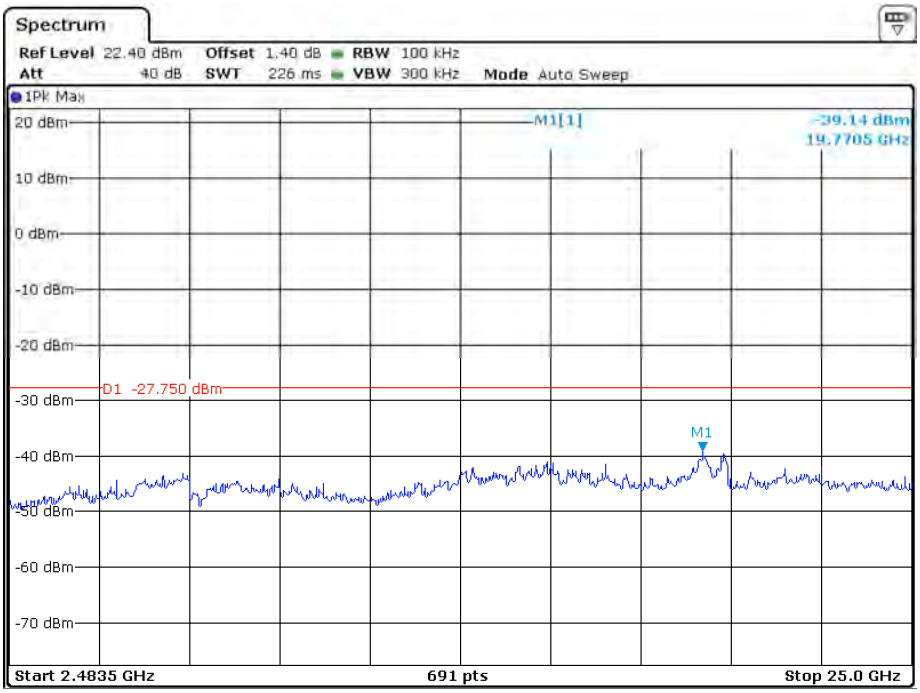

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -39.27 dBm
19.9005 GHz
D1 -23.100 dBm
M1
Start 2.4835 GHz 691 pts Stop 25.0 GHz

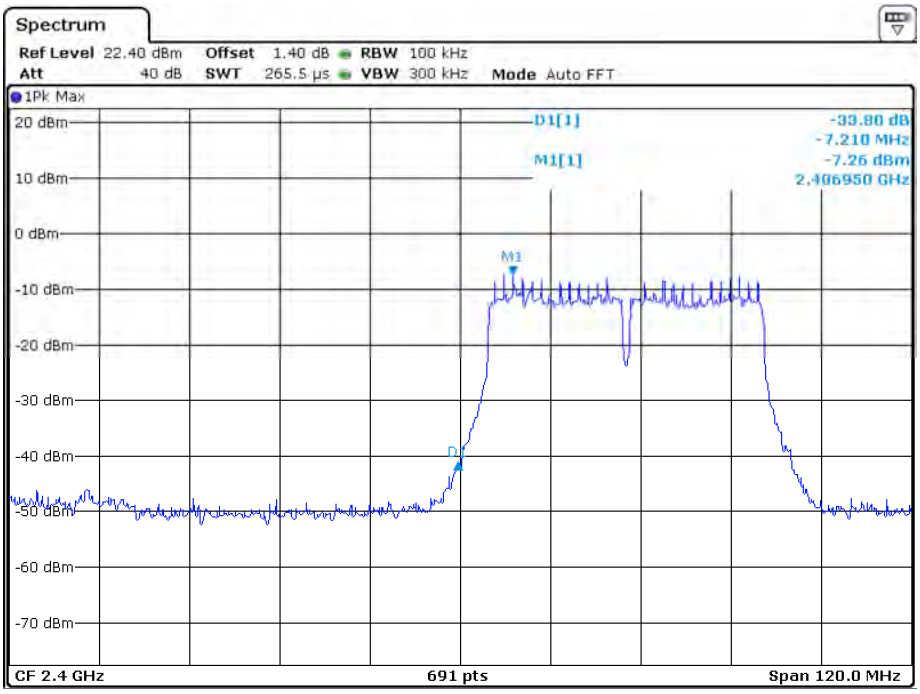


802.11n-HT40
Channel 03 (2422MHz) Reference Level: -7.75dBm

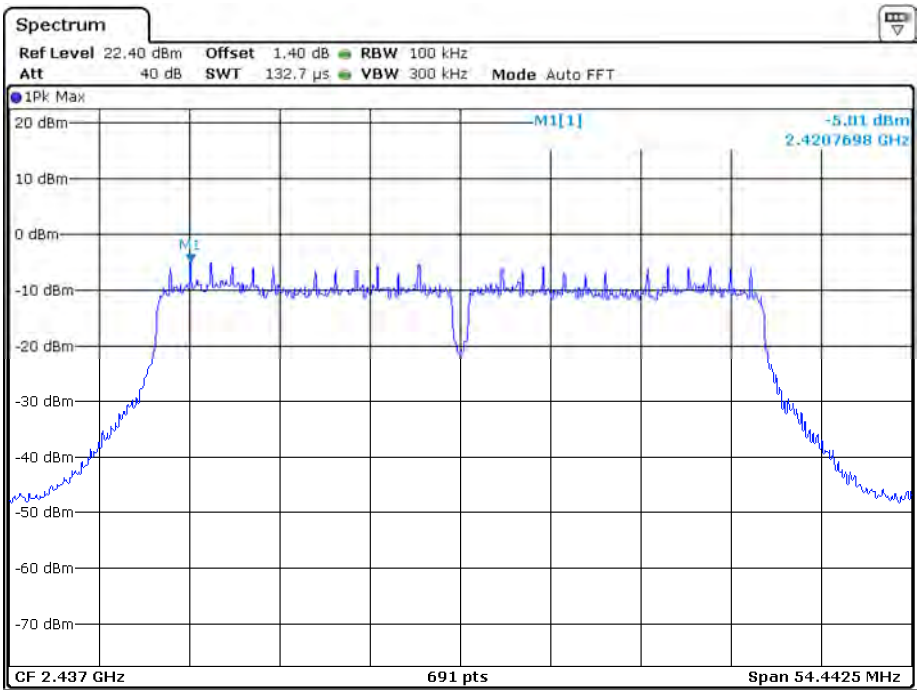


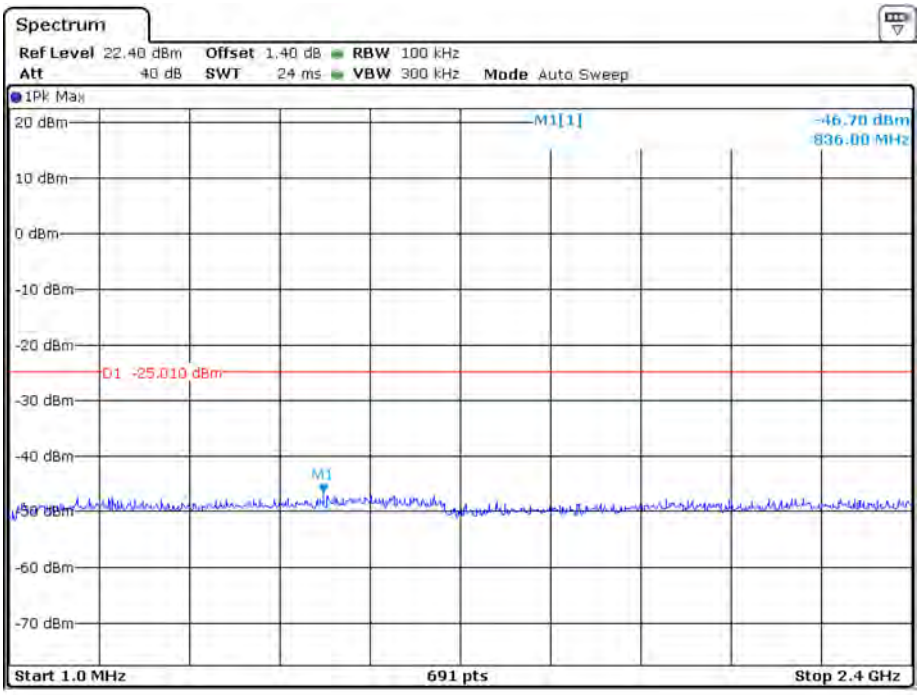

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -41.18 dBm
2.39830 GHz
D1 -27.750 dBm
Start 1.0 MHz 691 pts Stop 2.4 GHz

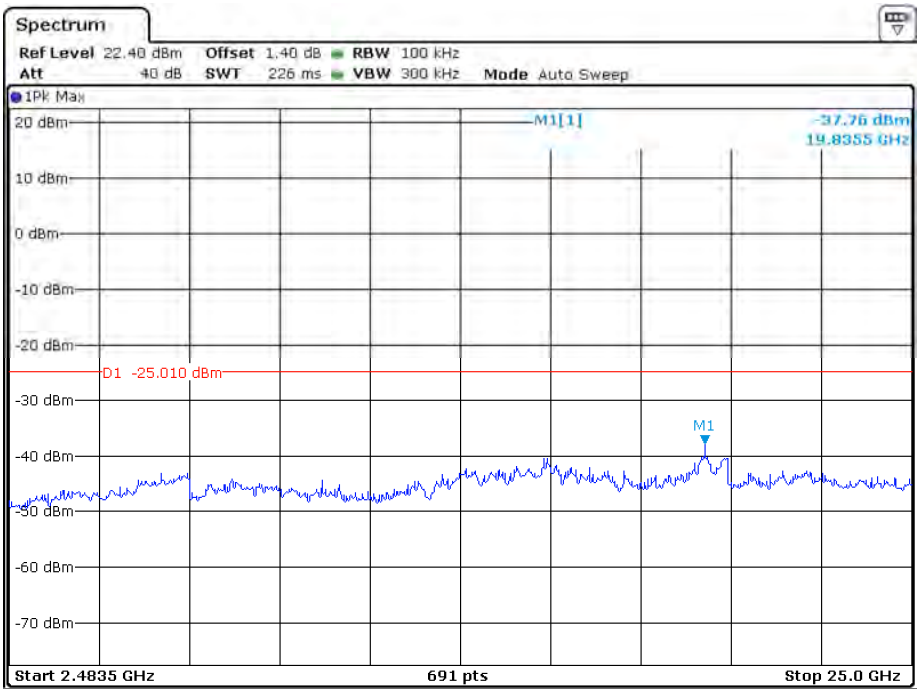

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -39.14 dBm
19.7705 GHz
D1 -27.750 dBm
M1
Start 2.4835 GHz 691 pts Stop 25.0 GHz



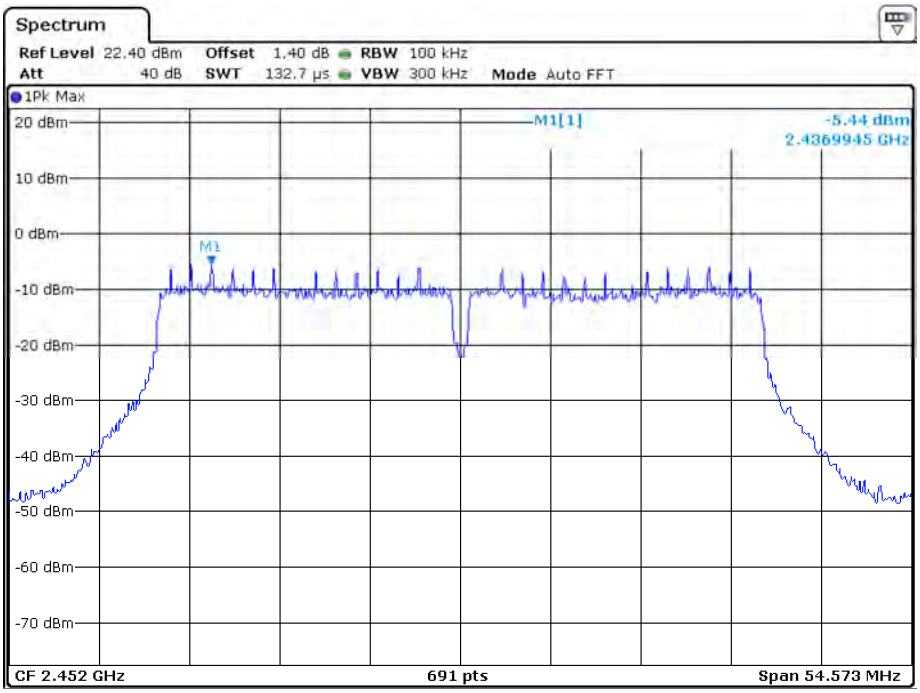
Channel 06 (2437MHz) Reference Level: -5.01dBm

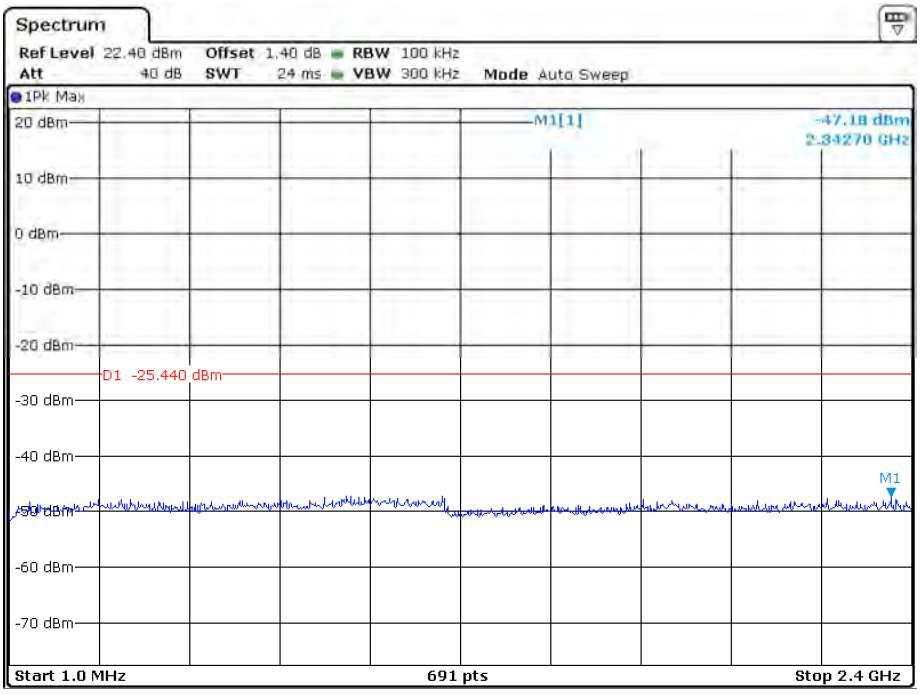


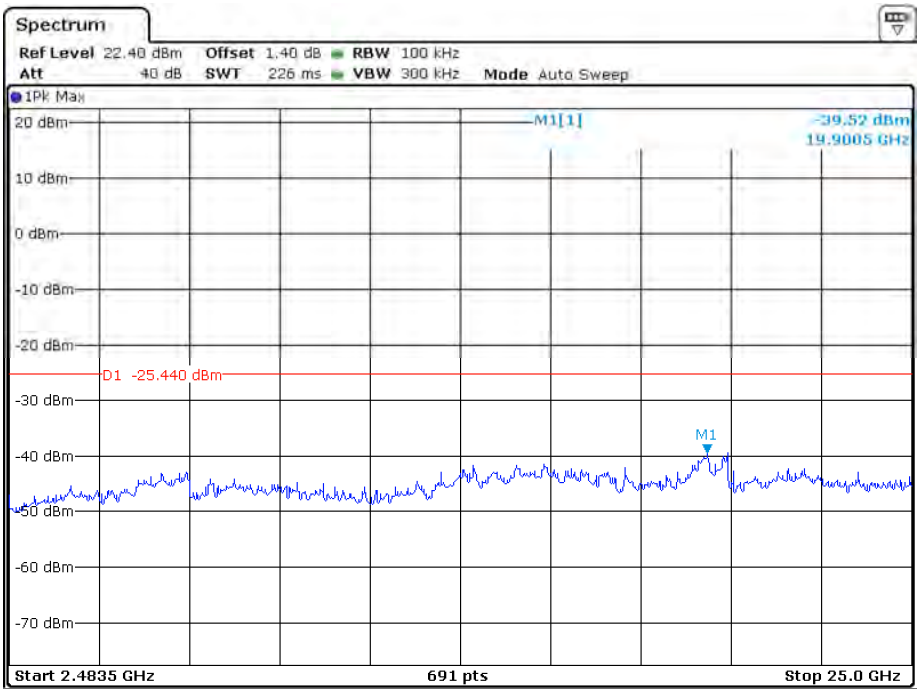

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -46.70 dBm
836.00 MHz
D1 -25.010 dBm
M1
Start 1.0 MHz 691 pts Stop 2.4 GHz

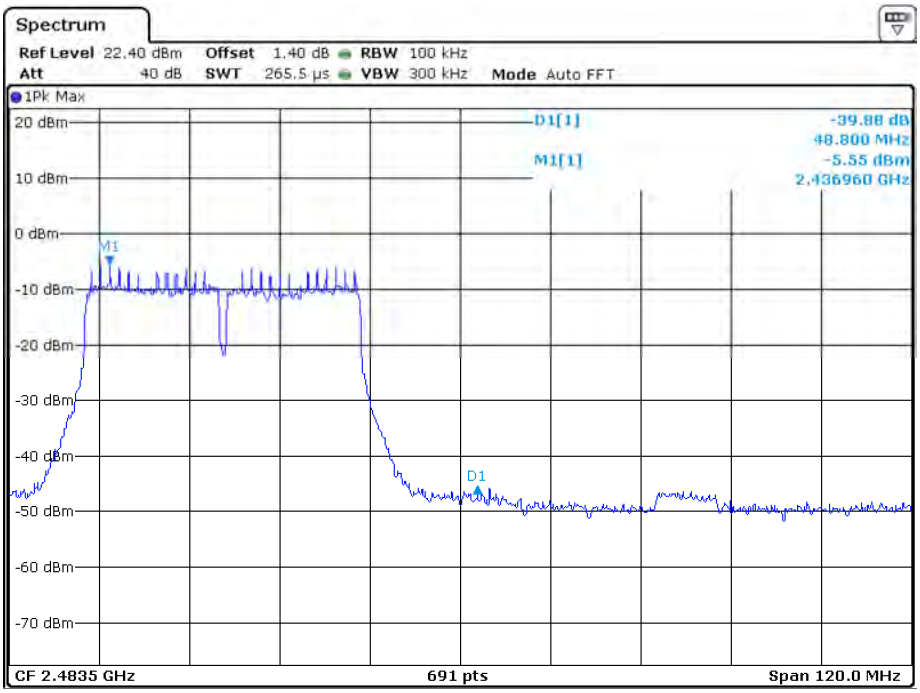

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -37.76 dBm
19.8355 GHz
D1 -25.010 dBm
M1
Start 2.4835 GHz 691 pts Stop 25.0 GHz

Channel 09 (2452MHz) Reference Level: -5.44dBm

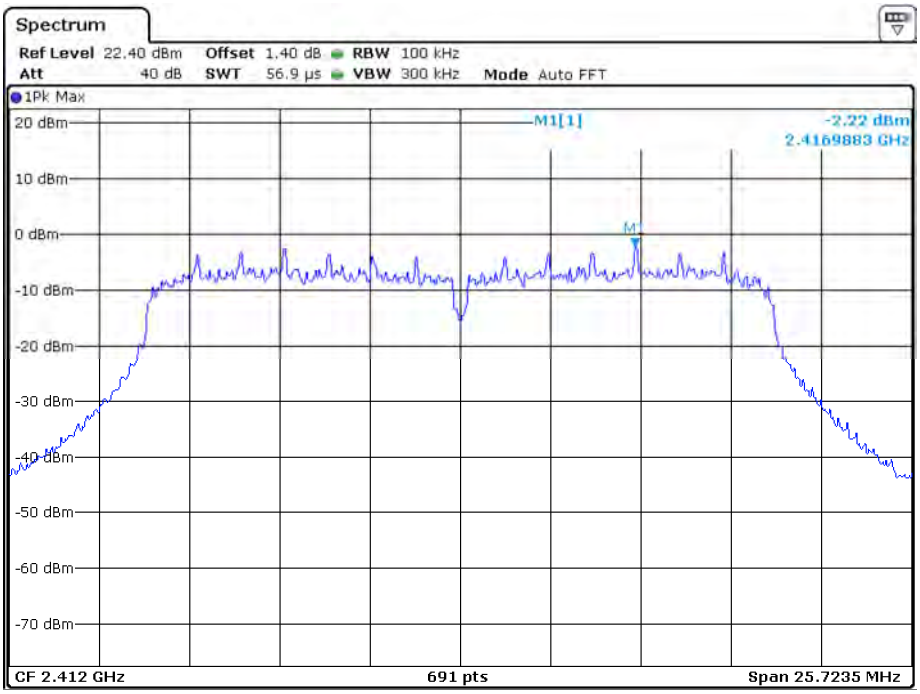


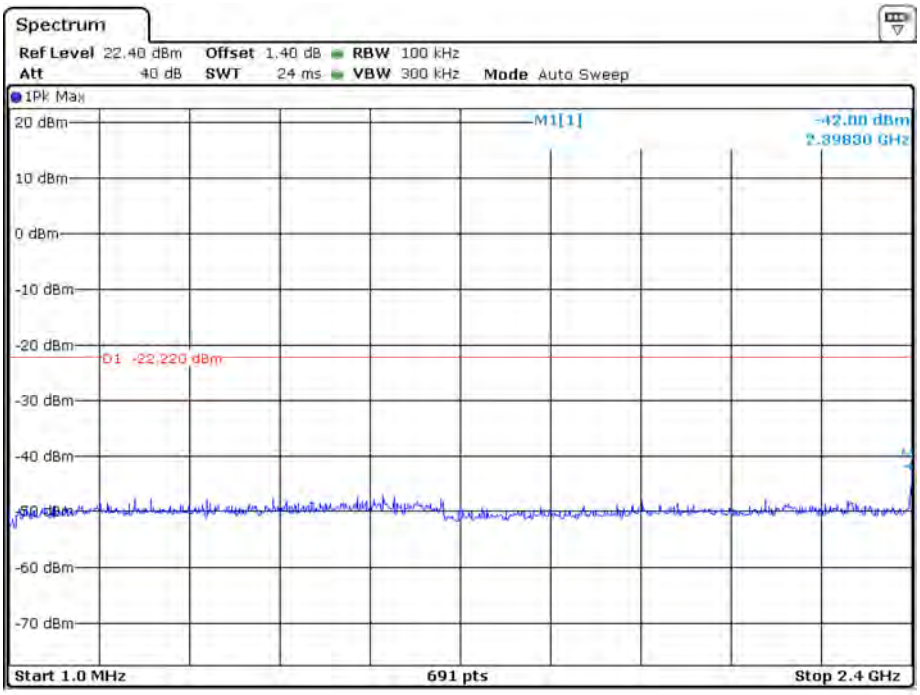


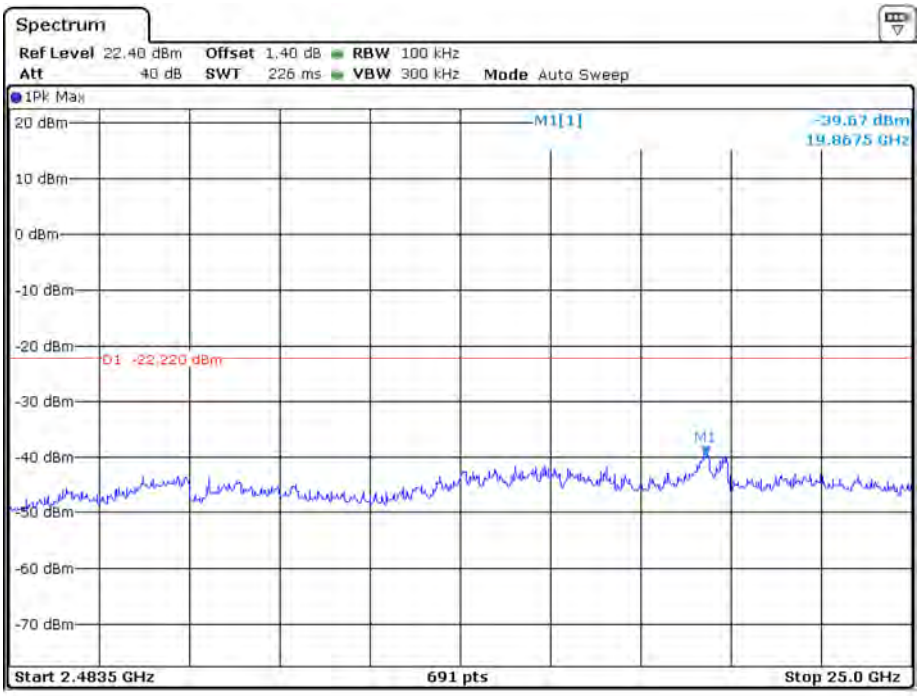

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -39.52 dBm
19.9005 GHz
D1 -25.440 dBm
M1
Start 2.4835 GHz
691 pts
Stop 25.0 GHz

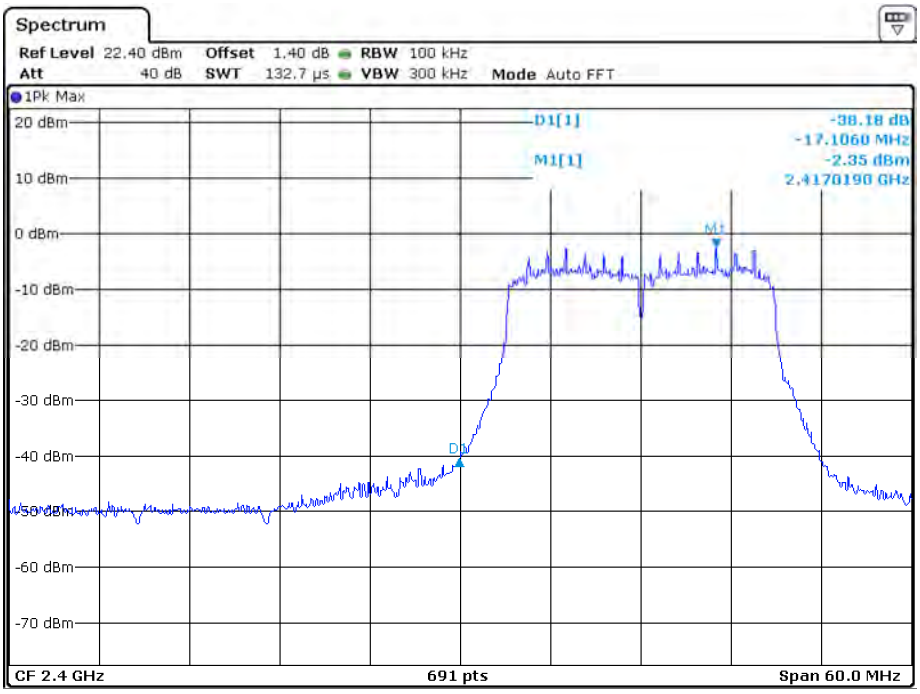

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 265.5 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -39.88 dB
48.800 MHz
M1[1] -5.55 dBm
2.436960 GHz
M1
D1
CF 2.4835 GHz
691 pts
Span 120.0 MHz

MIMO Mode, Ant2：
802.11n-HT20
Channel 01 (2412MHz) Reference Level: -2.22dBm

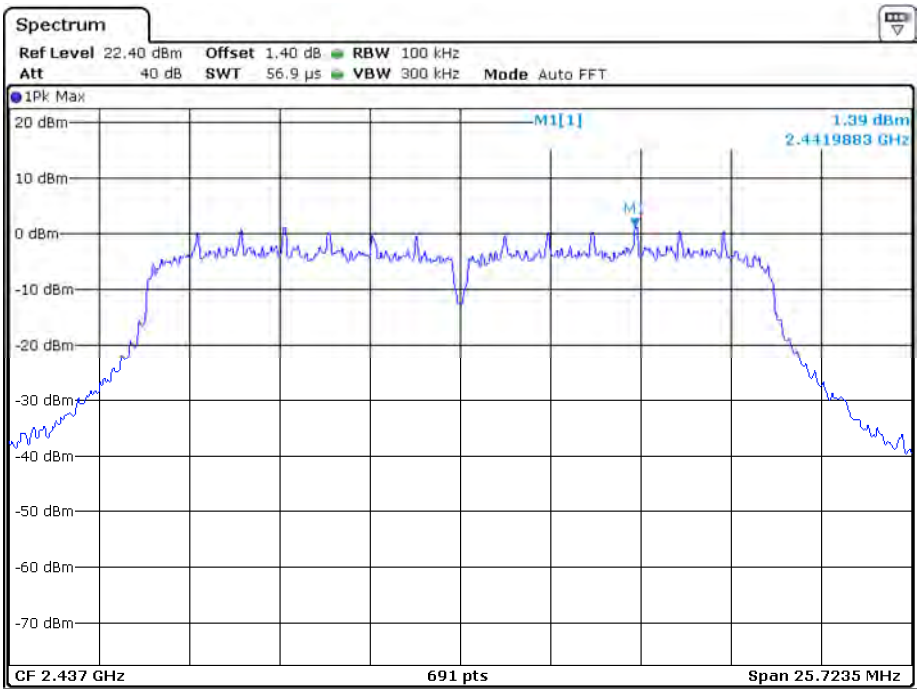


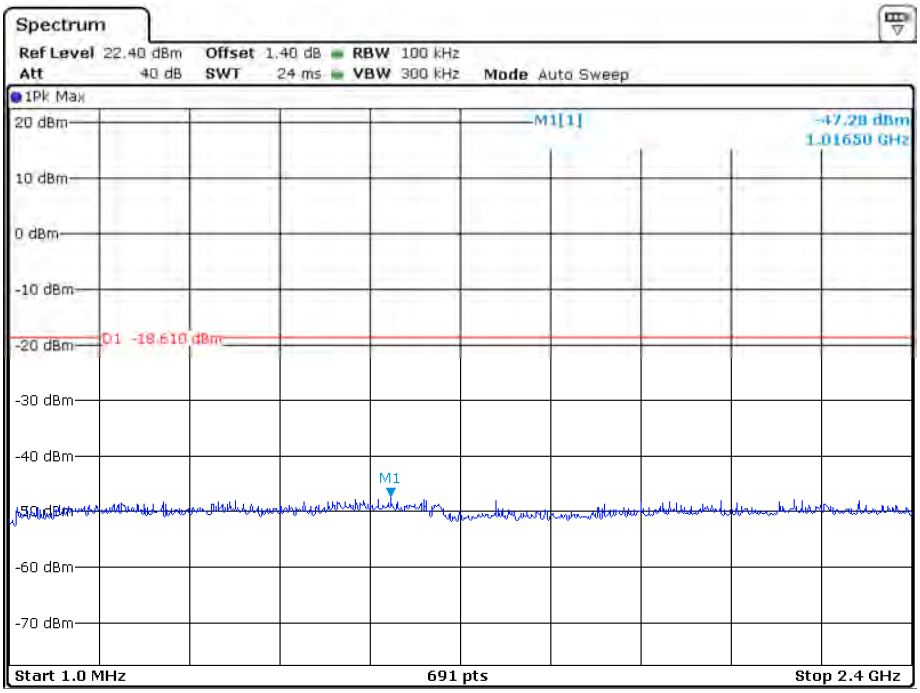


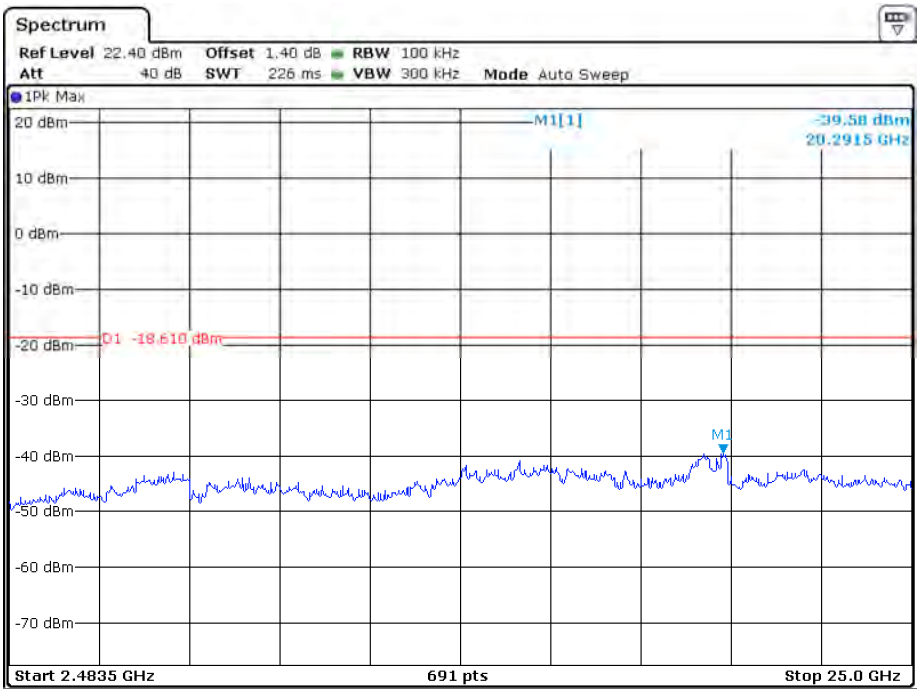

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -39.67 dBm
19.8675 GHz
D1 -22.220 dBm
M1
Start 2.4835 GHz
691 pts
Stop 25.0 GHz


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -38.18 dB
-17.1060 MHz
M1[1] -2.35 dBm
2.4178190 GHz
CF 2.4 GHz
691 pts
Span 60.0 MHz

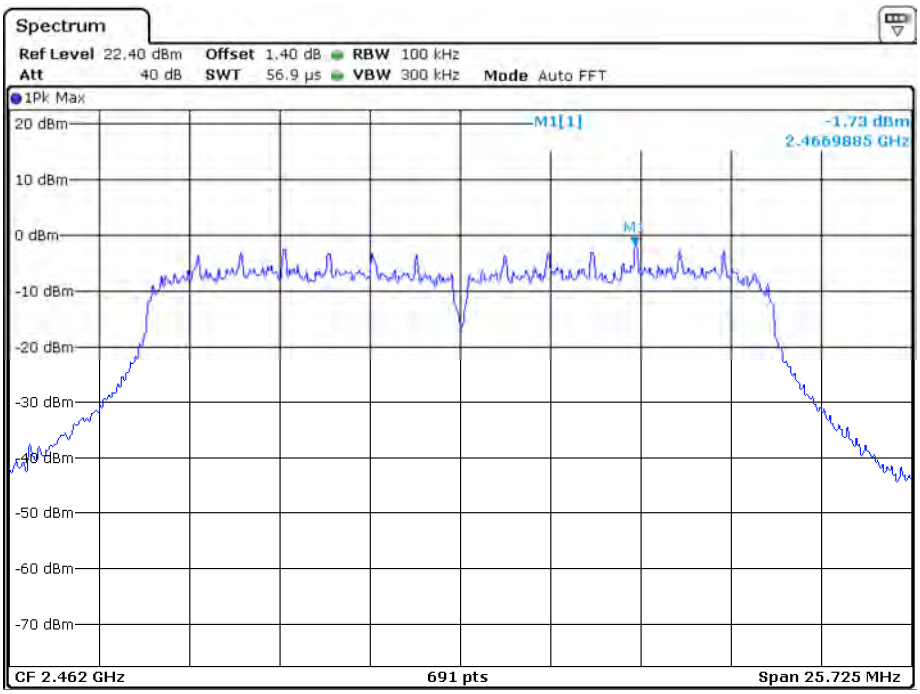
Channel 06 (2437MHz) Reference Level: 1.39dBm

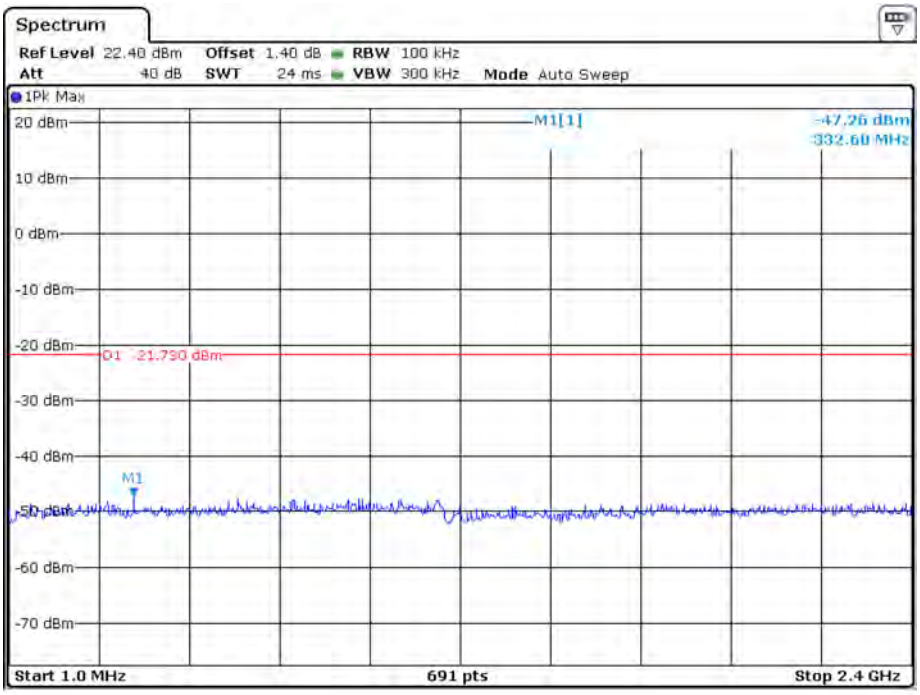


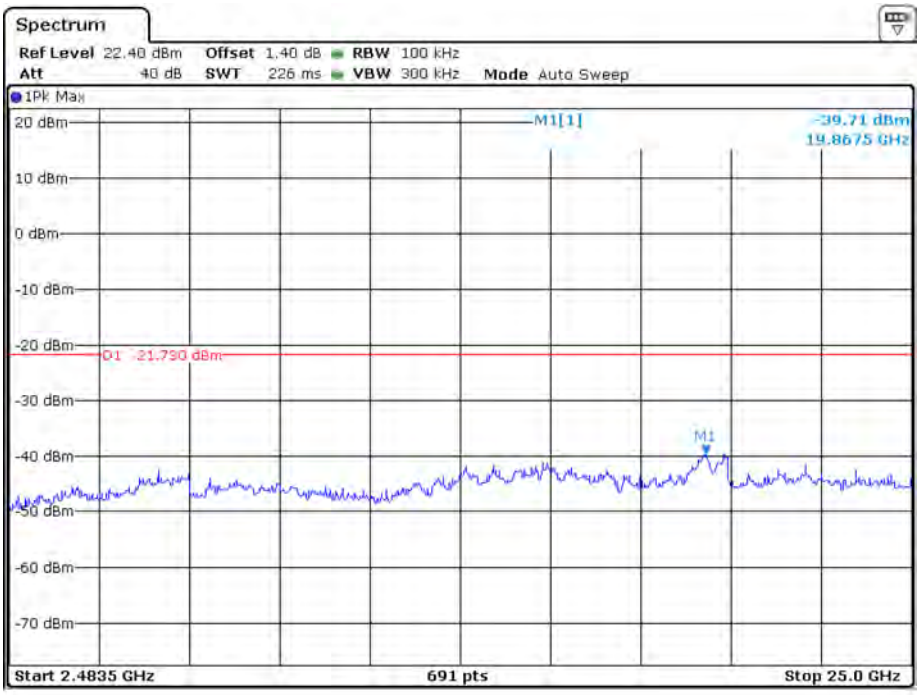


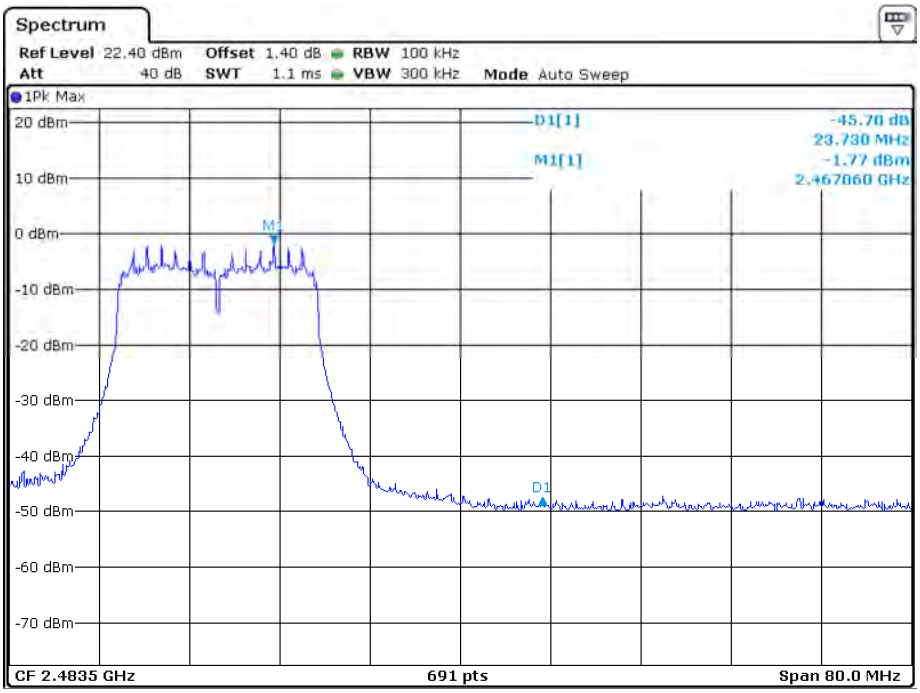


Channel 11 (2462MHz) Reference Level: -1.73dBm

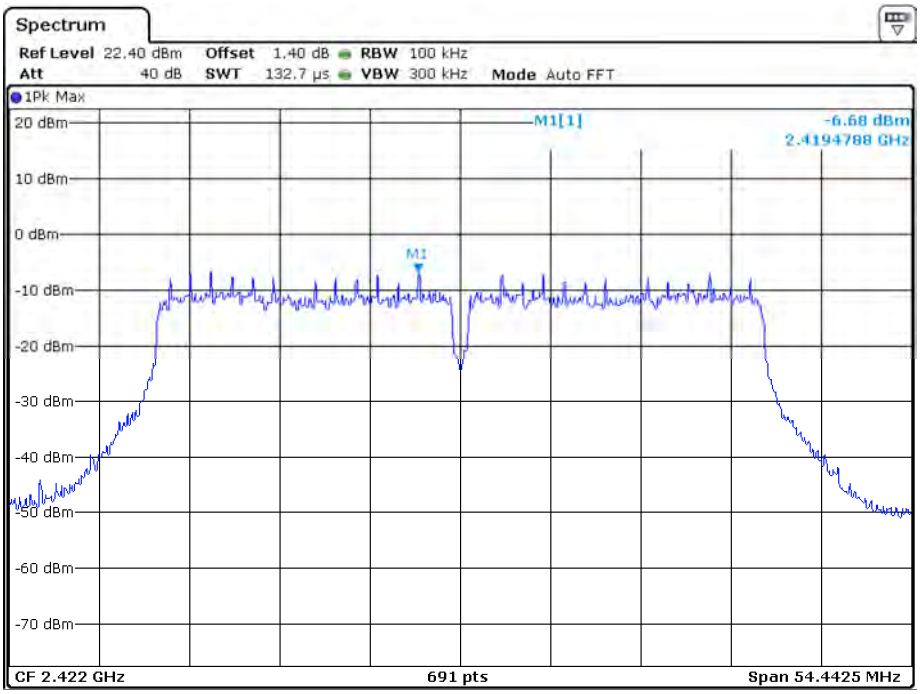


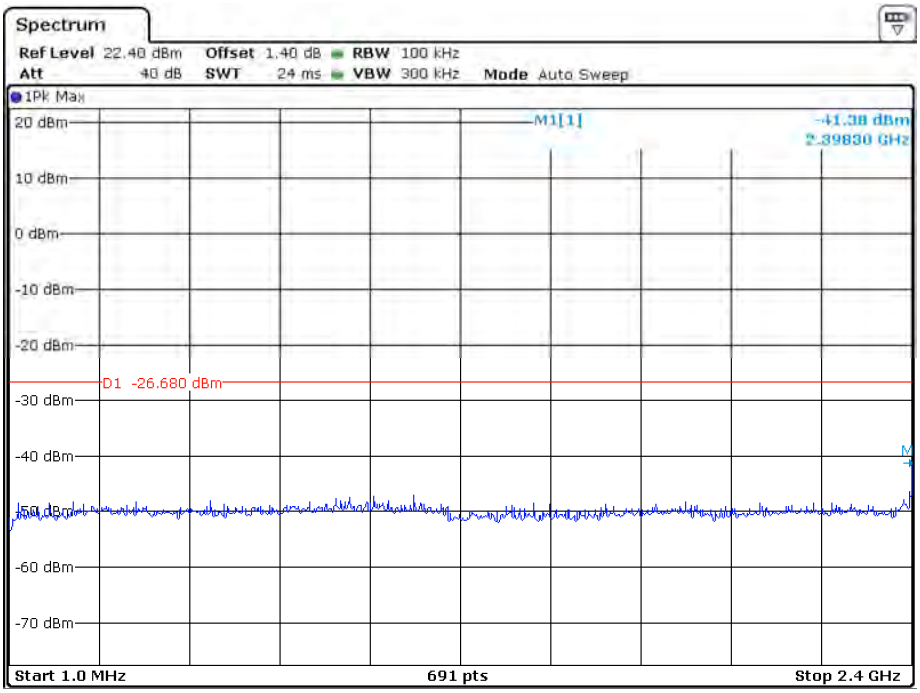

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -47.26 dBm
332.60 MHz
D1 -21.790 dBm
M1
Start 1.0 MHz
691 pts
Stop 2.4 GHz

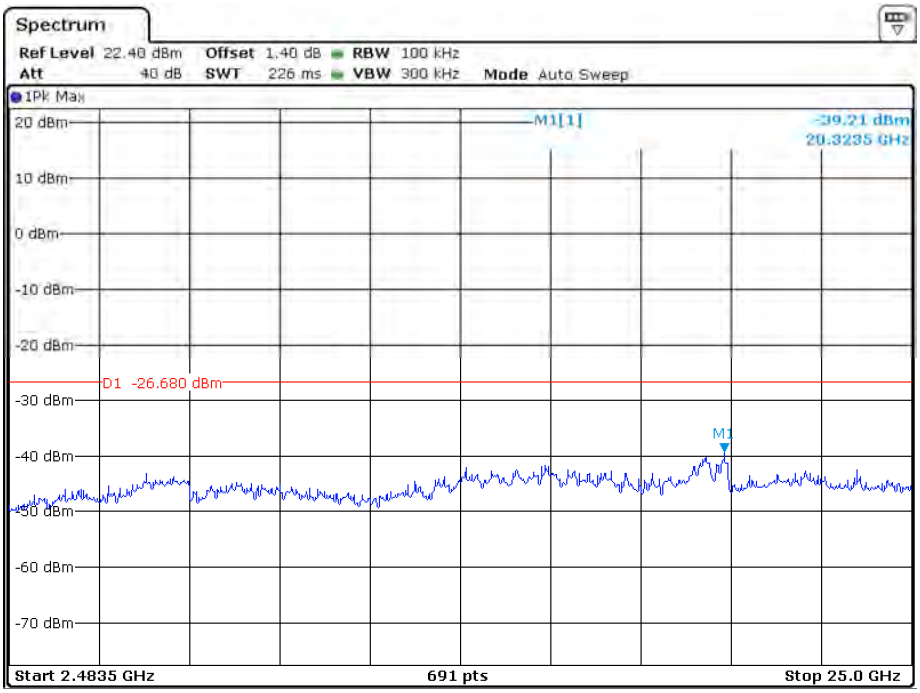

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -39.71 dBm
19.8675 GHz
D1 -21.790 dBm
M1
Start 2.4835 GHz
691 pts
Stop 25.0 GHz

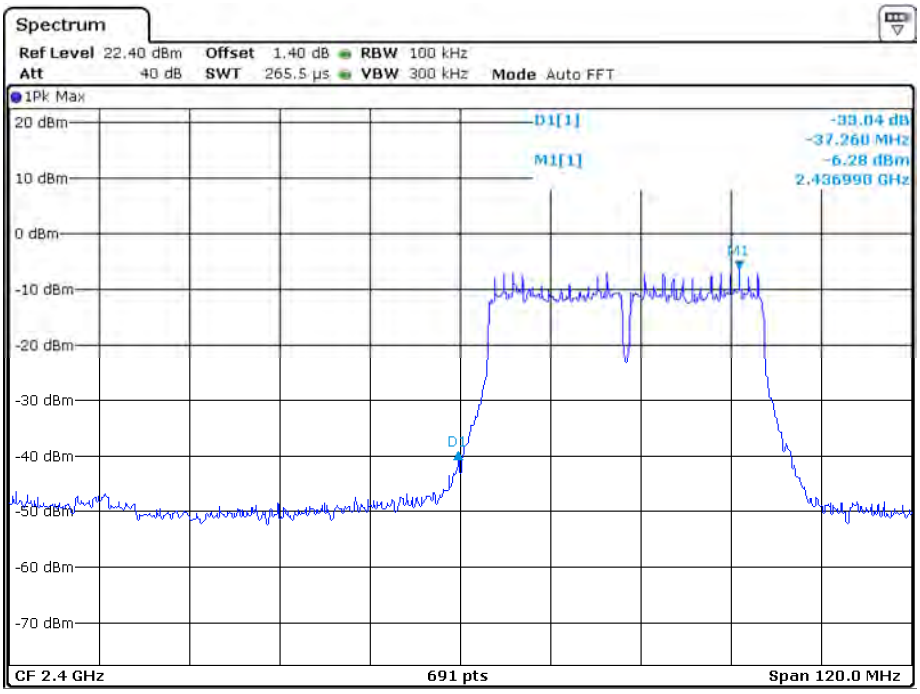


802.11n-HT40
Channel 03 (2422MHz) Reference Level: -6.68dBm

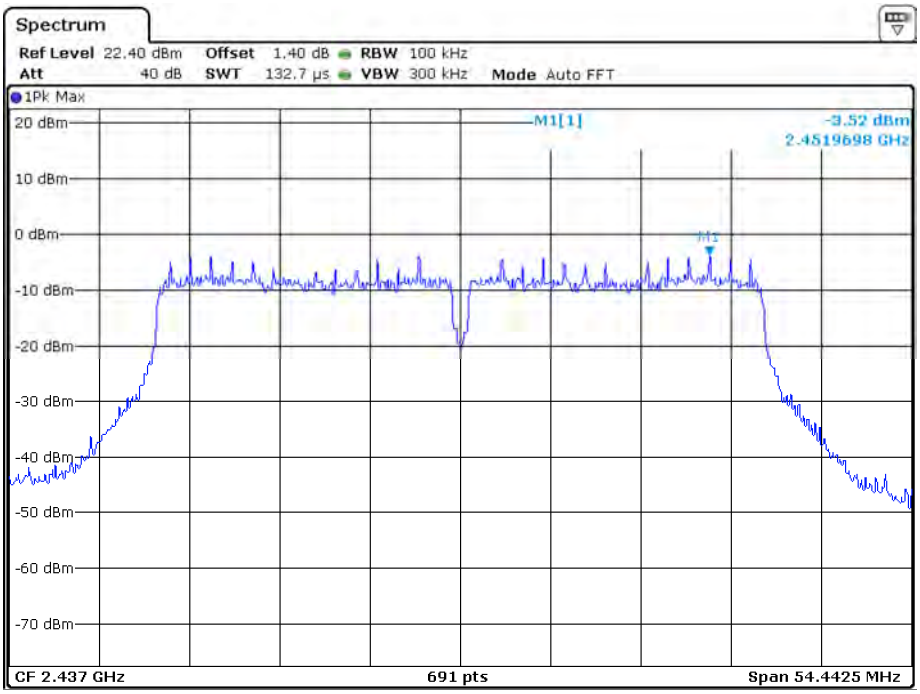


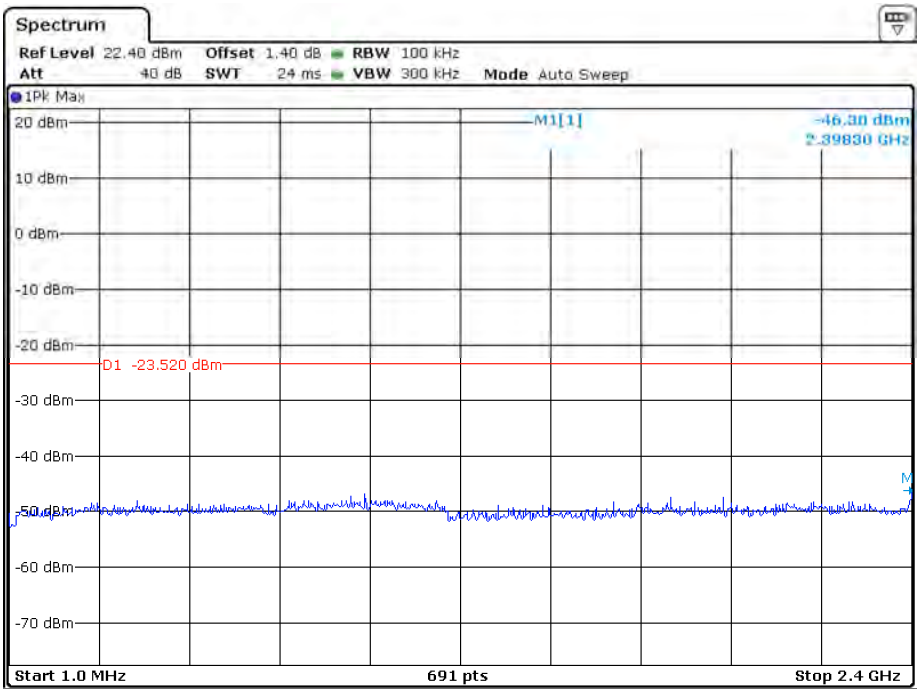

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -41.38 dBm
2.39830 GHz
D1 -26.680 dBm
Start 1.0 MHz 691 pts Stop 2.4 GHz

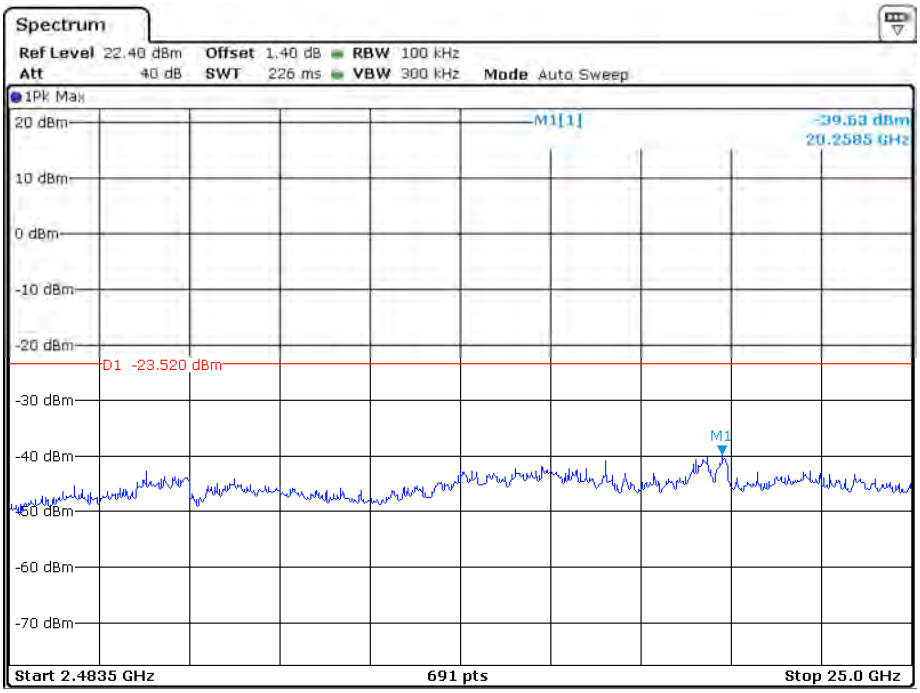

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -39.21 dBm
20.3235 GHz
D1 -26.680 dBm
Start 2.4835 GHz 691 pts Stop 25.0 GHz



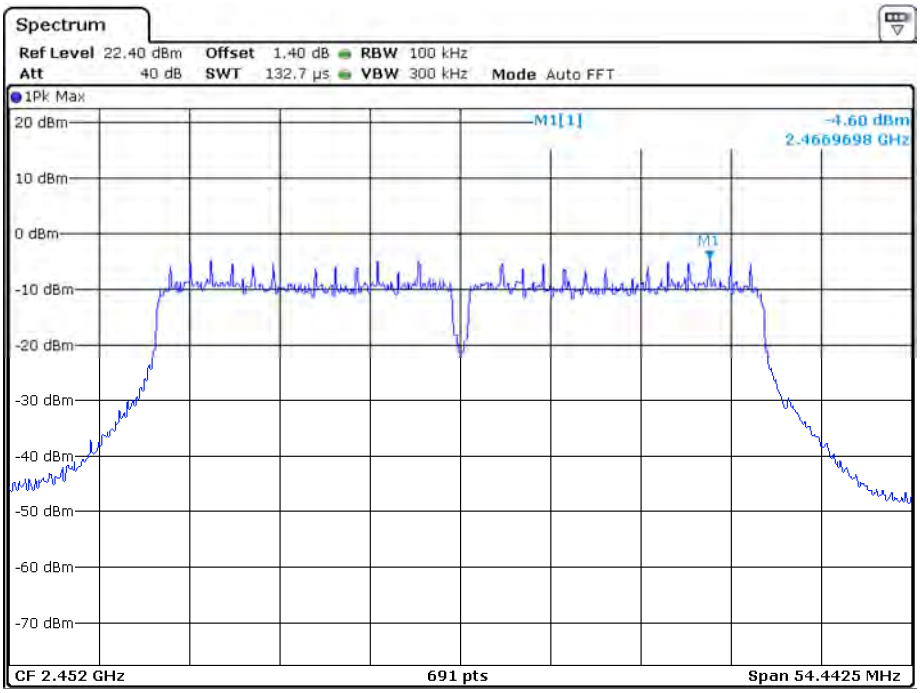
Channel 06 (2437MHz) Reference Level: -3.52dBm

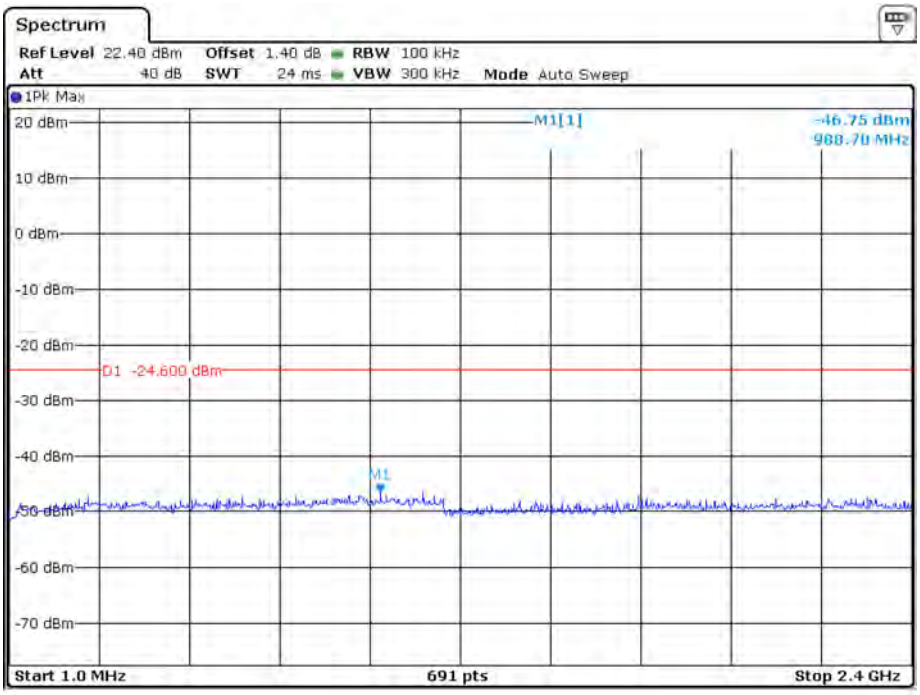


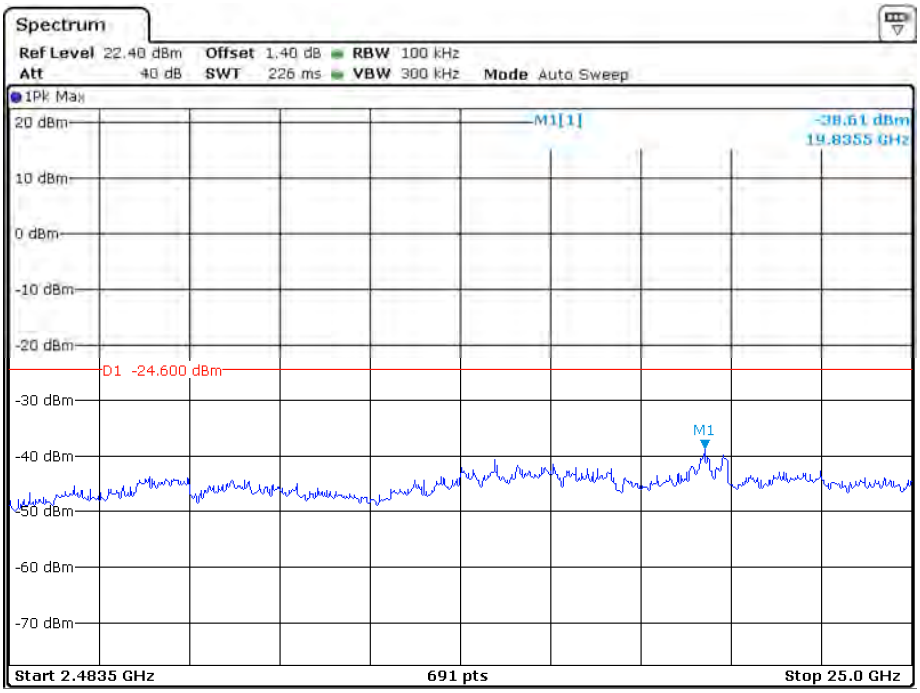

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -46.30 dBm
2.39830 GHz
D1 -23.520 dBm
Start 1.0 MHz 691 pts Stop 2.4 GHz

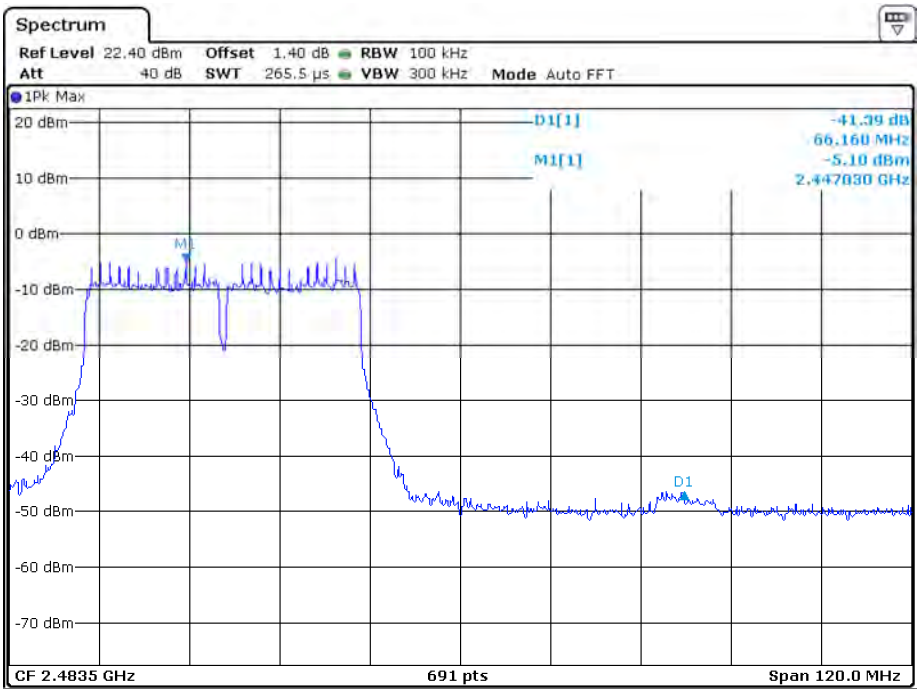

Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -39.63 dBm
20.2585 GHz
D1 -23.520 dBm
Start 2.4835 GHz 691 pts Stop 25.0 GHz

Channel 09 (2452MHz) Reference Level: -4.60dBm






Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -38.61 dBm
19.8355 GHz
D1 -24.600 dBm
M1
Start 2.4835 GHz 691 pts Stop 25.0 GHz


Spectrum
Ref Level 22.40 dBm Offset 1.40 dB RBW 100 kHz
Att 40 dB SWT 265.5 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -41.39 dB
66.160 MHz
M1[1] -5.10 dBm
2.447030 GHz
M1
D1
CF 2.4835 GHz 691 pts Span 120.0 MHz

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: Huawei Technologies Co., Ltd.
Date of Test: January 31, 2019 Model: X22C

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. Simultaneous transmission was considered during the test.

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

Applicant: Huawei Technologies Co., Ltd.
Date of Test: January 31, 2019 Model: X22C

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: Huawei Technologies Co., Ltd.
Date of Test: January 31, 2019 Model: X22C

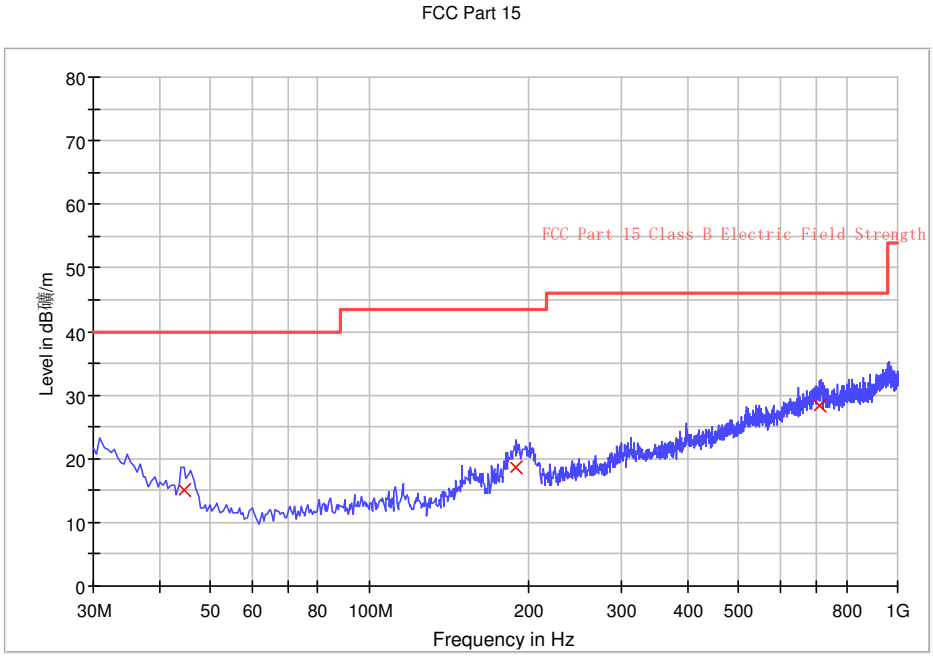
4.8 Radiated Spurious Emission

Worst Case Radiated Spurious Emission
at 7386MHz
is passed by 9.99dB margin.

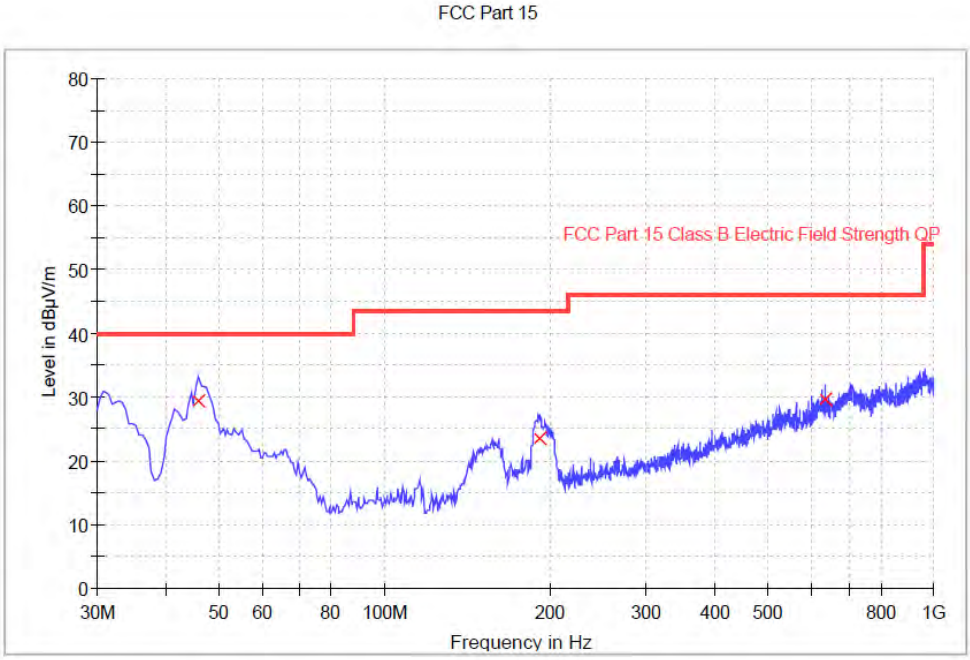
For the electronic filing, the worst case radiated emission configuration photographs are saved with filename: radiated photos.pdf.

Applicant: Huawei Technologies Co., Ltd.
Date of Test: January 31, 2019 Model: X22C
Worst Case Operating Mode: Transmitting (11b-2412MHz)
Worst Case Adapter: Adapter1

ANT Polarity: Horizontal



ANT Polarity: Vertical



Applicant: Huawei Technologies Co., Ltd.
Date of Test: January 31, 2019 Model: X22C
Worst Case Operating Mode: Transmitting (11b-2412MHz)
Worst Case Adapter: Adapter 1

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	44.550000	24.3	20.0	10.9	15.2	40.0	-24.8
Horizontal	189.565000	27.3	20.0	11.3	18.6	43.5	-24.9
Horizontal	712.880000	23.3	20.0	25.1	28.4	46.0	-17.6
Vertical	45.003000	38.8	20.0	10.3	29.1	40.0	-10.9
Vertical	189.250000	31.9	20.0	11.3	23.2	43.5	-20.3
Vertical	703.100000	26.8	20.0	23.9	30.7	46.0	-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.
4. All emissions are below the QP limit.

Applicant: Huawei Technologies Co., Ltd.
Date of Test: January 31, 2019 Model: X22C
Worst Case Operating Mode: Transmitting (11b-2412MHz)

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	50.1	36.3	33.5	47.30	74.0	-26.70
Horizontal	*2383.590	48.9	36.4	27.3	39.77	74.0	-34.23

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	40.1	36.3	33.5	37.29	54.0	-16.71
Horizontal	*2383.590	41.6	36.4	27.3	32.51	54.0	-21.49

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: Huawei Technologies Co., Ltd.
Date of Test: January 31, 2019 Model: X22C
Worst Case Operating Mode: Transmitting (11b-2437MHz)

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	50.4	36.3	33.6	47.69	74.0	-26.31
Horizontal	*7311.000	51.2	36.3	37.8	52.74	74.0	-21.26

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	40.1	36.3	33.6	37.38	54.0	-16.62
Horizontal	*7311.000	41.6	36.3	37.8	43.13	54.0	-10.87

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: Huawei Technologies Co., Ltd.
Date of Test: January 31, 2019 Model: X22C
Worst Case Operating Mode: Transmitting (11b-2462MHz)

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	50.2	36.3	33.6	47.53	74.0	-26.47
Horizontal	*7386.000	52.8	36.3	37.8	54.34	74.0	-19.66

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	39.9	36.3	33.6	37.18	54.0	-16.82
Horizontal	*7386.000	42.5	36.3	37.8	44.01	54.0	-9.99

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 at Mains Terminal

4.9.1 Conducted Emissions Configuration Photograph

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

4.9.2 Conducted Emissions

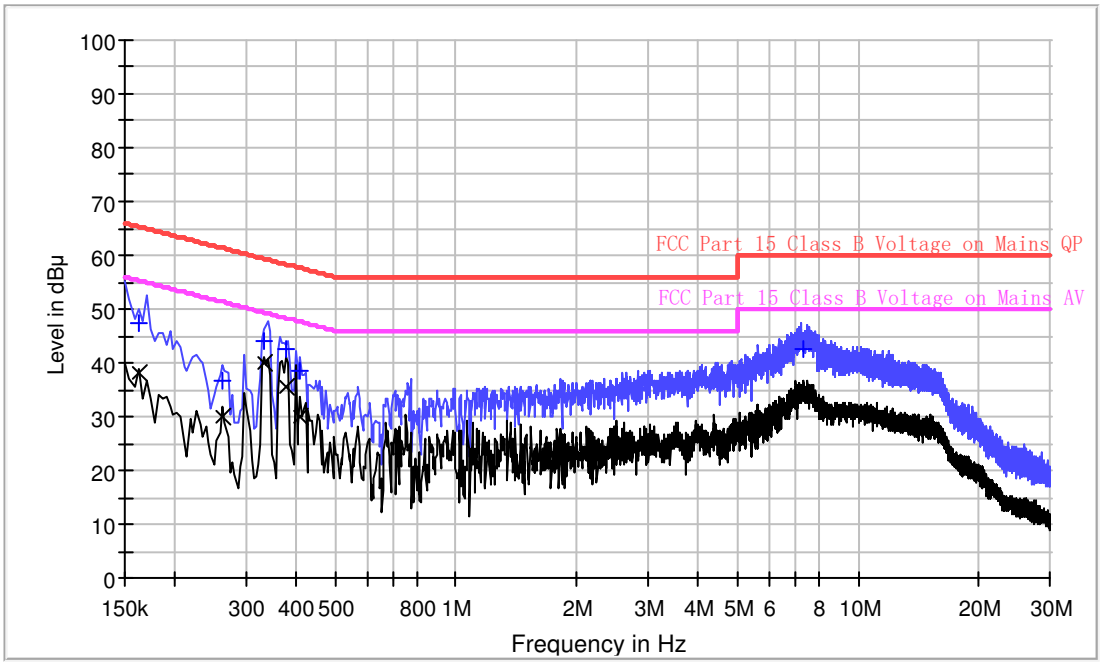
Worst Case Live-Conducted Configuration
At

0.334 MHz

Judgement: Passed by 9.4 dB margin

Applicant: Huawei Technologies Co., Ltd.
Date of Test: 18 February 2019 Model: X22C
Worst Case Operating Mode: WIFI Link
Worst Case Adapter: Adapter 5
Phase: Live

Conducted Emission Test - FCC



Result Table QP

Frequency (MHz)	QuasiPeak (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.162000	47.5	L	9.6	17.9	65.4
0.262000	36.8	L	9.6	24.6	61.4
0.334000	44.2	L	9.6	15.2	59.4
0.378000	42.5	L	9.6	15.8	58.3
0.410000	38.5	L	9.6	19.1	57.6
7.330000	42.5	L	9.8	17.5	60.0

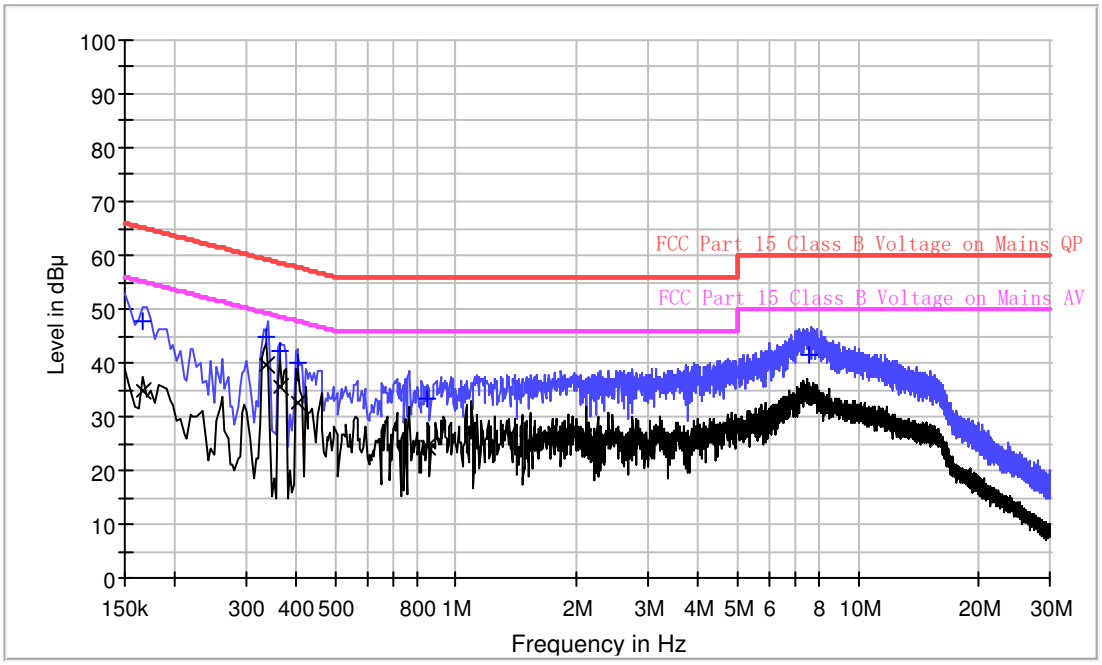
Result Table AV

Frequency (MHz)	Average (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.162000	38.0	L	9.6	17.4	55.4
0.262000	29.9	L	9.6	21.5	51.4
0.334000	40.0	L	9.6	9.4	49.4
0.378000	35.7	L	9.6	12.6	48.3
0.410000	30.0	L	9.6	17.6	47.6
7.330000	34.4	L	9.8	15.6	50.0

Remark:
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Limit (dBuV) – Level (dBuV)

Applicant: Huawei Technologies Co., Ltd.
Date of Test: 18 February 2019 Model: X22C
Worst Case Operating Mode: WIFI Link
Worst Case Adapter: Adapter 5
Phase: Neutral

Conducted Emission Test - FCC



Result Table QP

Frequency (MHz)	QuasiPeak (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.166000	47.7	N	9.6	17.5	65.2
0.338000	45.0	N	9.6	14.3	59.3
0.366000	42.1	N	9.6	16.5	58.6
0.406000	39.9	N	9.6	17.8	57.7
0.850000	33.2	N	9.7	22.8	56.0
7.558000	41.6	N	9.8	18.4	60.0

Result Table AV

Frequency (MHz)	Average (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.166000	34.9	N	9.6	20.3	55.2
0.338000	39.7	N	9.6	9.6	49.3
0.366000	35.7	N	9.6	12.9	48.6
0.406000	32.4	N	9.6	15.3	47.7
0.850000	24.6	N	9.7	21.4	46.0
7.558000	34.5	N	9.8	15.5	50.0

Remark:
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Limit (dBuV) – Level (dBuV)

Applicant: Huawei Technologies Co., Ltd.
Model: X22C

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: Huawei Technologies Co., Ltd.
Model: X22C

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.

.

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	5-Jun-2018	5-Jun-2019
SZ182-02-01	Power Sensor	Anritsu	MA2411B	1207429	5-Jun-2018	5-Jun-2019
SZ061-06	Active Loop Antenna	Electro-Metrics	EM-6876	217	11-May-2018	11-May-2019
SZ067-04	Notch Filter	Micro-Tronics	BRM50702-02	--	5-Jun-2018	5-Jun-2019
SZ061-03	Biconilog Antenna	ETS	3142C	00078828	16-Oct-2018	16-Oct-2019
SZ061-08	Horn Antenna	ETS	3115	00092346	14-Sep-2018	14-Sep-2019
SZ061-07	Pyramidal Horn Antenna	ETS	3160-09	00083067	17-Mar-2018	17-Mar-2019
SZ056-03	Spectrum Analyzer	R&S	FSP30	101148	05-Jun-2018	05-Jun-2019
SZ185-01	EMI Receiver	R & S	ESCI	100547	4-Jan-2019	4-Jan-2020
SZ181-04	Preamplifier	Agilent	8449B	3008A02474	15-Jan-2019	15-Jan-2020
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	4102	15-Dec-2018	15-Dec-2020
SZ062-02	RF Cable	RADIALL	RG 213U	--	02-Jul-2018	02-Jul-2019
SZ062-05	RF Cable	RADIALL	0.04-26.5GHz	--	09-Mar-2018	09-Sep-2018
SZ062-12	RF Cable	RADIALL	0.04-26.5GHz	--	09-Mar-2018	09-Sep-2018
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	30-Oct-2017	30-Oct-2018
SZ187-01	Two-Line V-Network	R&S	ENV216	100072	30-Oct-2017	30-Oct-2018
SZ187-02	Two-Line V-Network	R&S	ENV216	100073	04-Jul-2018	04-Jul-2019
SZ188-03	Shielding Room	ETS	RFD-100	4100	16-Jan-2017	16-Jan-2020
SZ062-16	RF Cable	HUBER+SUHNER	CBL2-BN-1m	110127-2231000	29-Oct-2018	29-Oct-2019

********** End of Report**********