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Bluestem Brands Inc

TEST REPORT

SCOPE OF WORK
FCC TESTING–NQFEB

REPORT NUMBER
191017021SZN-001

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TEST REPORT

Intertek Report No.: 191017021SZN-001

Bluestem Brands Inc

Application
For
Certification

FCC ID: 2ANXWNQFEB

WIFI Bluetooth speaker

Model: NQFEB

2.4GHz Wi-Fi Transceiver

Report No.: 191017021SZN-001

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 [10-1-18]

Prepared and Checked by:

Ryan Chen
Engineer

Approved by:

Kidd Yang
Technical Supervisor
Date: 04 November 2019

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MEASUREMENT/TECHNICAL REPORT

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 [10-01-18] Edition] provision.

Report prepared by:

Ryan Chen
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1.0 Summary of Test results

Applicant: Bluestem Brands Inc
Applicant Address: 7075 Flying Cloud Dr. Eden Prairie, MN 55344 United States
Manufacturer: SHENZHEN MEIDONG ACOUSTICS CO., LTD
Manufacturer Address: Unit A 3rd, Tower B Hongzhu Yongqi Technology Park, Lezhujiao, Xixiang, Baoan, Shenzhen, Guangdong,

Model: NQFEB
FCC ID: 2ANXWNQFEB

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), 15.209, FCC 15.205	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.

2.0 General Description

2.1 Product Description

The Equipment Under Test (EUT) is a WIFI Bluetooth speaker with Wi-Fi 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 is powered by DC7.4V rechargeable battery or DC 5V through USB port. The USB port is only for charging purpose. Bluetooth and Wi-Fi cannot transmit simultaneously. For more detailed features description, please refer to the user's manual.

Type of Modulation: BPSK, QPSK, 16QAM, 64QAM for OFDM; CCK, DQPSK, DBPSK for DSSS.
Antenna Type: Integral Antenna
Antenna Gain: 0dBi

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

2.2 Related Submittal(s) Grants

This is an application for certification of:
DTS- Part 15 Digital Transmission Systems (2.4GHz Wi-Fi transmitter portion).

Remaining portions are subject to the following procedures:
1. Receiver portion of WiFi: exempt from technical requirement of this Part.
2. Other Digital Function: Subject to 191017021SZN-004.
3. Bluetooth BLE function: subject to 191017021SZN-002.
4. Bluetooth EDR function: subject to 191017021SZN-003

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 v05r02. 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.

2.4 Test Facility

The Semi-anechoic chamber and shielded room used to collect the radiated data and conducted data are **Intertek Testing Services Shenzhen Ltd. Longhua Branch** and located at 101, 201, Building B, No. 308 Wuhe Avenue, Zhangkengjing Community, GuanHu Subdistrict, LongHua District, Shenzhen, P.R. China. This test facility and site measurement data have been fully placed on file with File Number: CN1188.

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 7.4V rechargeable battery which charged by DC 5V through USB port during the test, only the worst data was reported in this report.

On 802.11b/g/n-HT20/n-HT40 mode, only one antenna is used, and all data rate were tested and only the worst case data is shown in the report.

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

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.

Test software: QATool_Dbg.exe (QATool_7688A V2.1)

3.3 Special Accessories

N/A.

3.4 Measurement Uncertainty

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

3.5 Equipment Modification

Any modifications installed previous to testing by Bluestem Brands Inc 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

Description	Manufacturer	Model No.
Adapter	XIAOMI	Model: MDY-08-EO Input: AC100-240V, 50/60Hz, 0.35A Output: DC5V, 2A
iPod	Apple	A1367
Laptop	HP	Compaq 2510p
USB cable	Bluestem Brands Inc	54cm, Unshielded
Audio cable	Bluestem Brands Inc	62cm, Unshielded

Applicant: Bluestem Brands Inc
Date of Test: 29 October 2019 Model: NQFEB

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 has 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).

IEEE 802.11b (Antenna Gain = 0dBi) (CCK, 1Mbps)		
Frequency (MHz)	Output in dBm (Peak Reading)	Output in mWatt
Low Channel: 2412	20.3	107.15
Middle Channel: 2437	20.8	120.23
High Channel: 2462	21.3	134.90

IEEE 802.11g (Antenna Gain = 0dBi) (16QAM, 6Mbps)		
Frequency (MHz)	Output in dBm (Peak Reading)	Output in mWatt
Low Channel: 2412	24.4	275.42
Middle Channel: 2437	24.7	295.12
High Channel: 2462	24.9	309.03

IEEE 802.11n-HT20 (Antenna Gain = 0dBi) (64QAM, 6Mbps)		
Frequency (MHz)	Output in dBm (Peak Reading)	Output in mWatt
Low Channel: 2412	24.4	275.42
Middle Channel: 2437	24.7	295.12
High Channel: 2462	25.0	316.23

IEEE 802.11n-HT40 (Antenna Gain = 0 dBi) (64QAM, 13.5Mbps)		
Frequency (MHz)	Output in dBm (Peak Reading)	Output in mWatt
Low Channel: 2422	24.4	275.42
Middle Channel: 2437	24.6	288.40
High Channel: 2452	24.4	275.42

Cable loss: 0.5 dB External Attenuation: 0 dB

Cable loss, external attenuation has been included in OFFSET function

EUT max. output level = 25.0dBm
EUT max. E.I.R.P = 25.0dBm + 0dBi = 25.0dBm = 316.23mW

For RF Exposure, the test report is saved with filename: 191017021SZN-005.pdf.

Applicant: Bluestem Brands Inc
Date of Test: 29 October 2019 Model: NQFEB

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 v05r02. 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.

IEEE 802.11b (CCK, 1Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2412	10.072
2437	9.986
2462	10.029

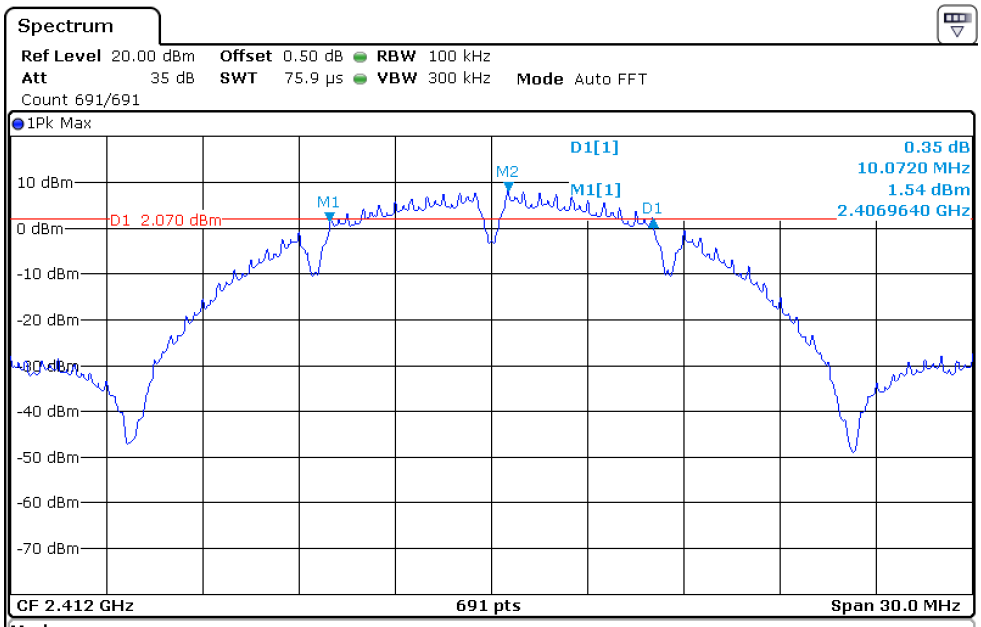
IEEE 802.11g (16QAM, 6Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2412	15.019
2437	15.065
2462	15.022

IEEE 802.11n-HT20 (64QAM, 6Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2412	15.326
2437	15.109
2462	15.109

IEEE 802.11n-HT40 (64QAM, 13.5Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2422	35.166
2437	34.949
2452	34.949

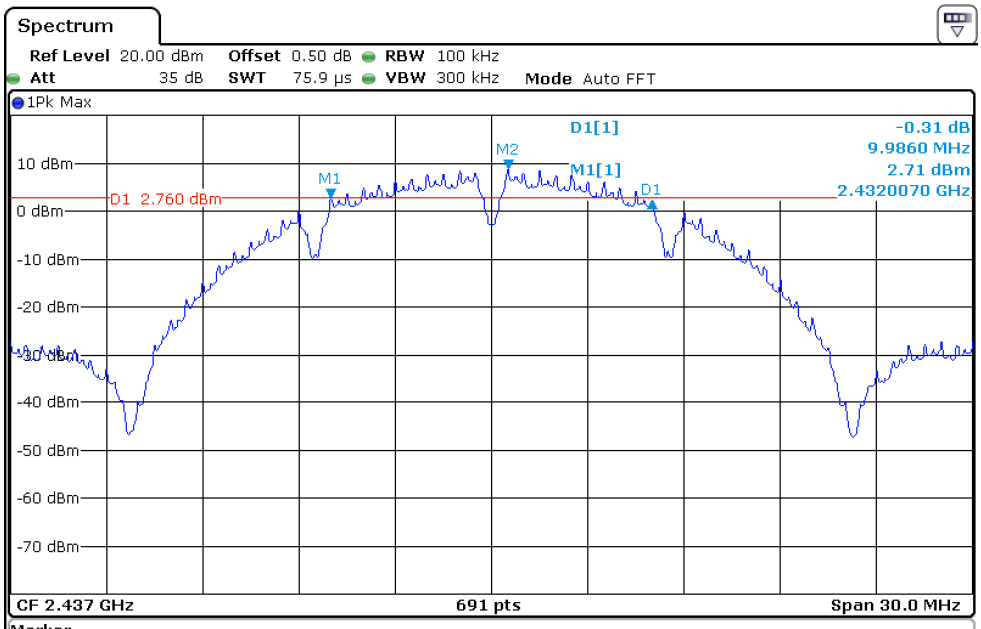
The test plots are attached as below.

802.11b



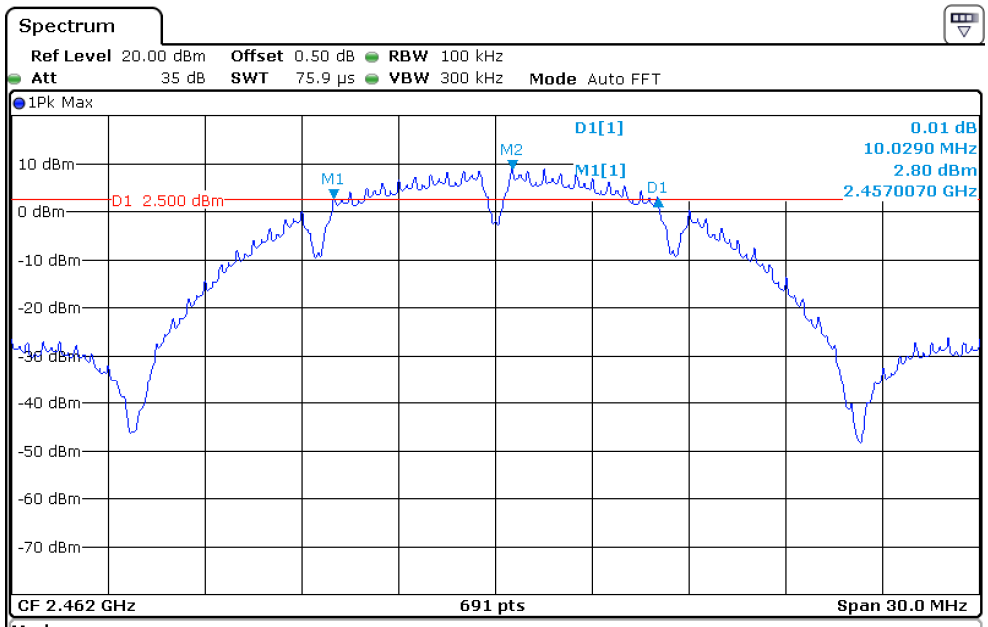
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.406964 GHz	1.54 dBm		
D1	M1	1	10.072 MHz	0.35 dB		
M2		1	2.412521 GHz	8.07 dBm		



Marker

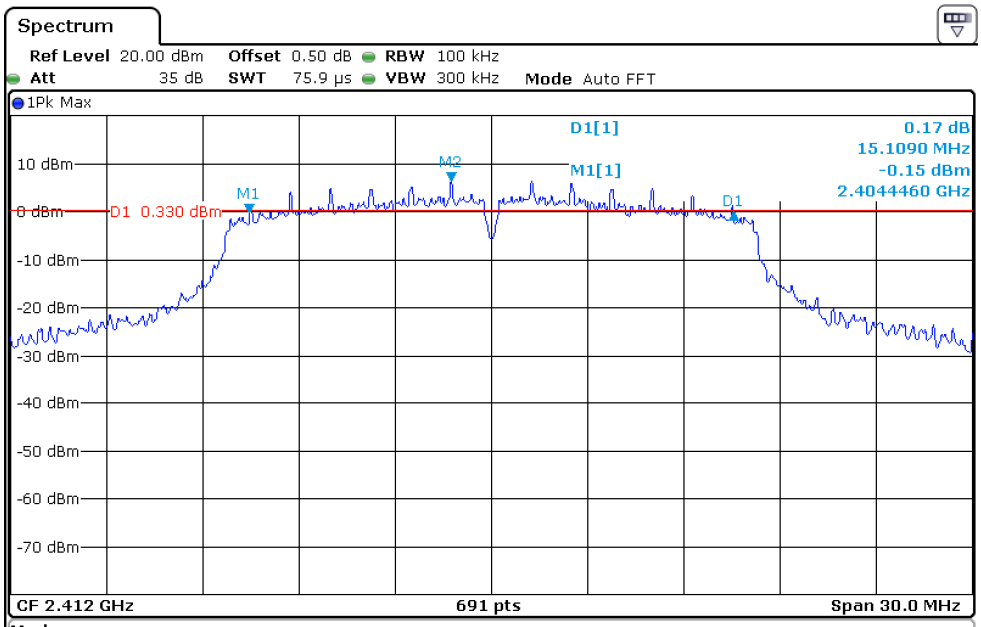
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.432007 GHz	2.71 dBm		
D1	M1	1	9.986 MHz	-0.31 dB		
M2		1	2.437521 GHz	8.76 dBm		



Marker

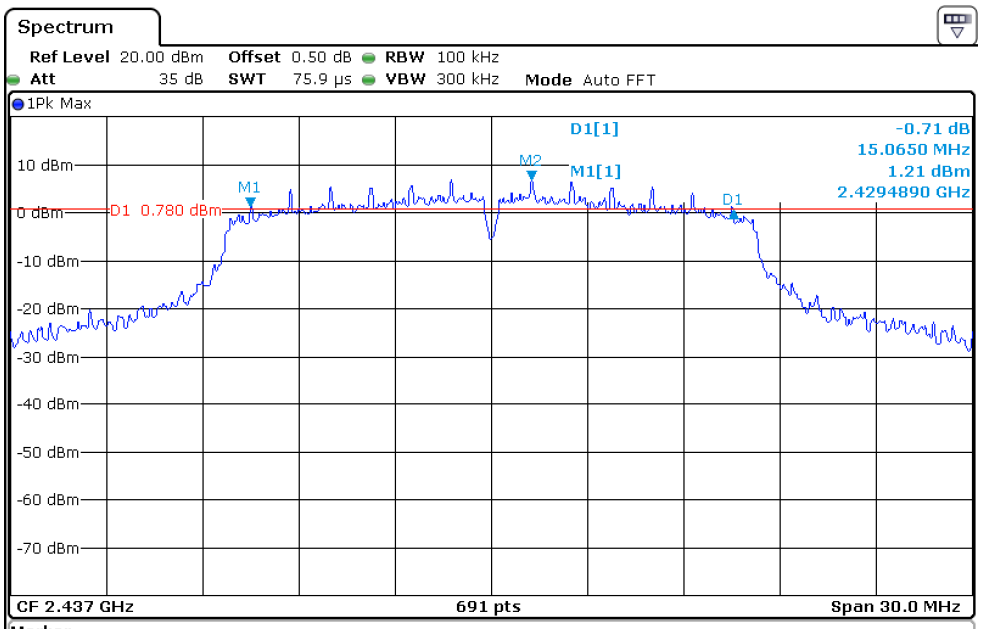
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.457007 GHz	2.80 dBm		
D1	M1	1	10.029 MHz	0.01 dB		
M2		1	2.462521 GHz	8.91 dBm		

802.11g



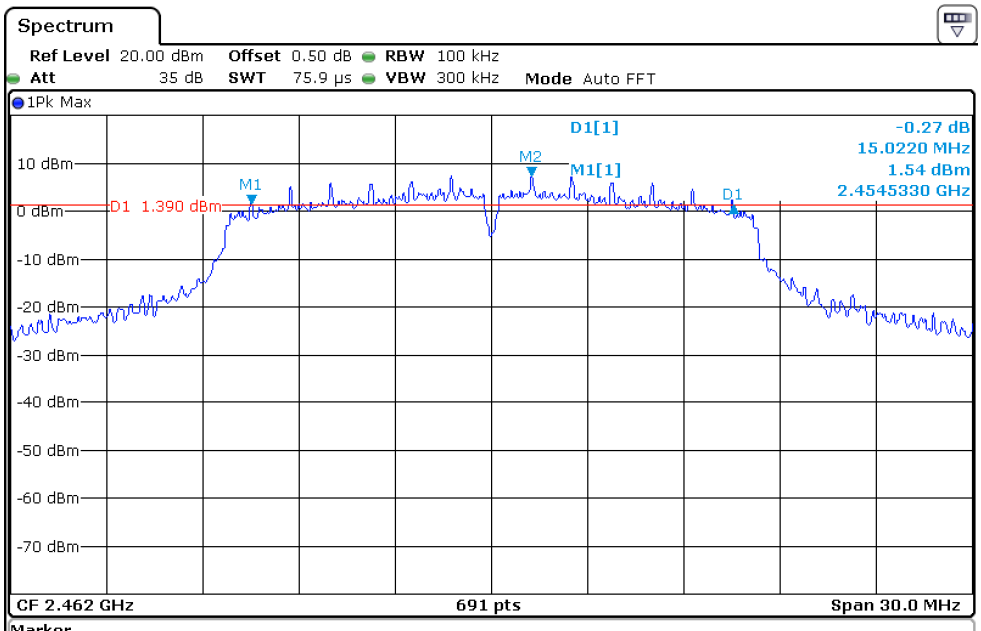
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.404446 GHz	-0.15 dBm		
D1	M1	1	15.109 MHz	0.17 dB		
M2		1	2.410741 GHz	6.33 dBm		



Marker

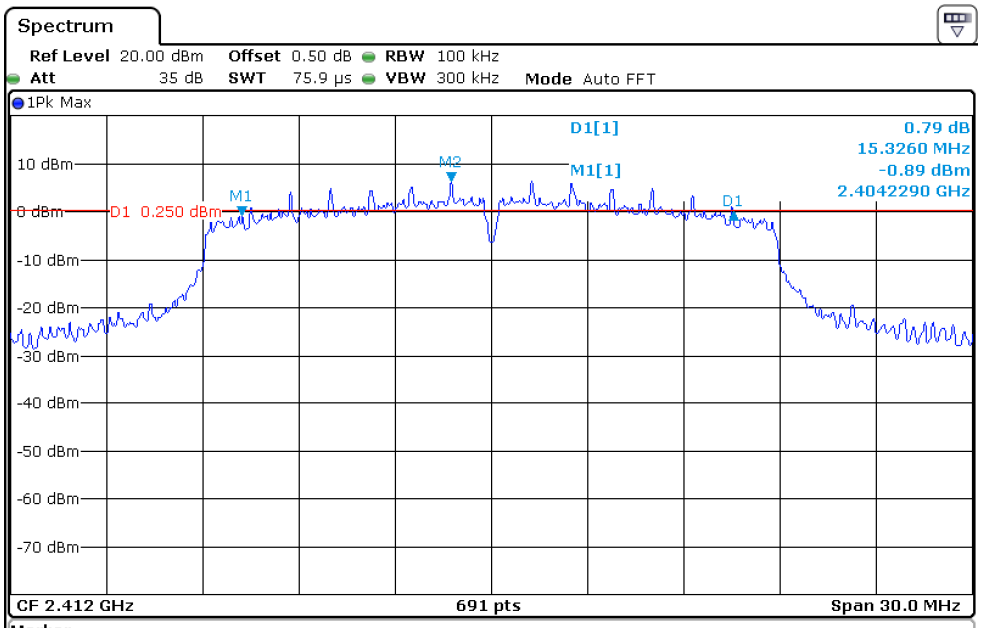
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.429489 GHz	1.21 dBm		
D1	M1	1	15.065 MHz	-0.71 dB		
M2		1	2.438259 GHz	6.78 dBm		



Marker

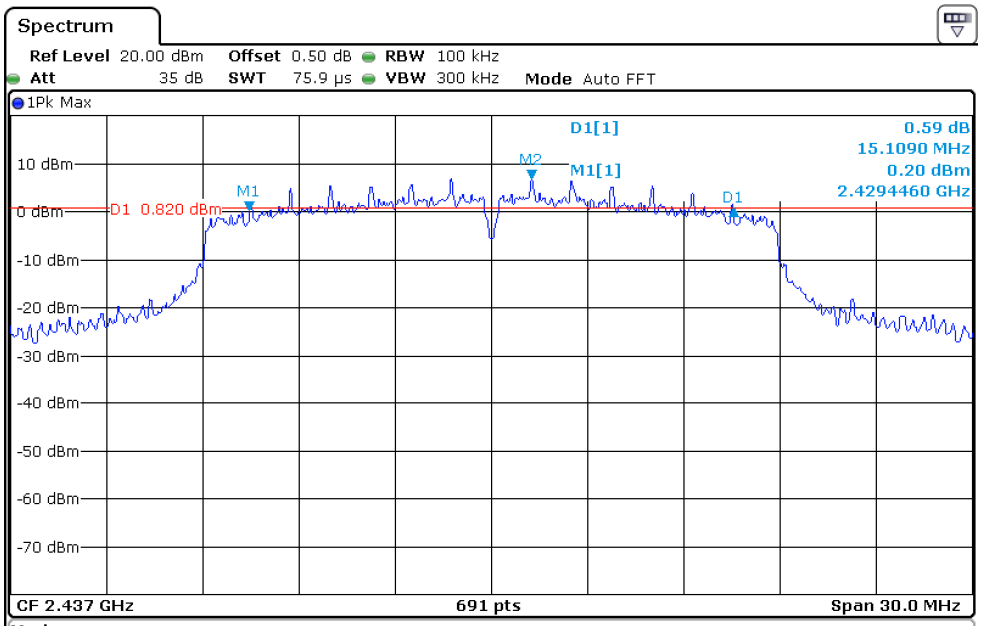
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.454533 GHz	1.54 dBm		
D1	M1	1	15.022 MHz	-0.27 dB		
M2		1	2.463259 GHz	7.39 dBm		

802.11n-HT20



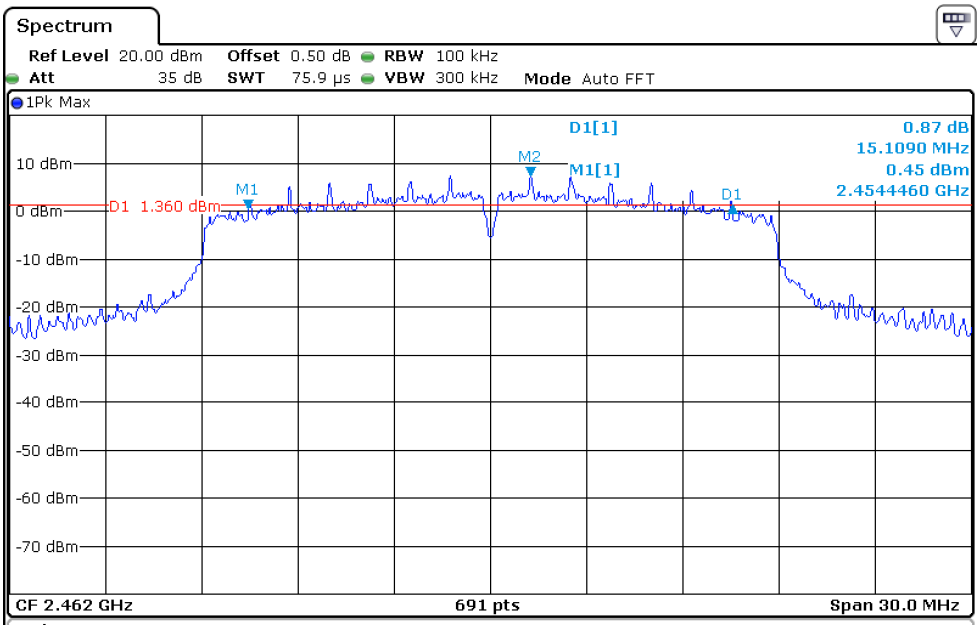
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.404229 GHz	-0.89 dBm		
D1	M1	1	15.326 MHz	0.79 dB		
M2		1	2.410741 GHz	6.28 dBm		



Marker

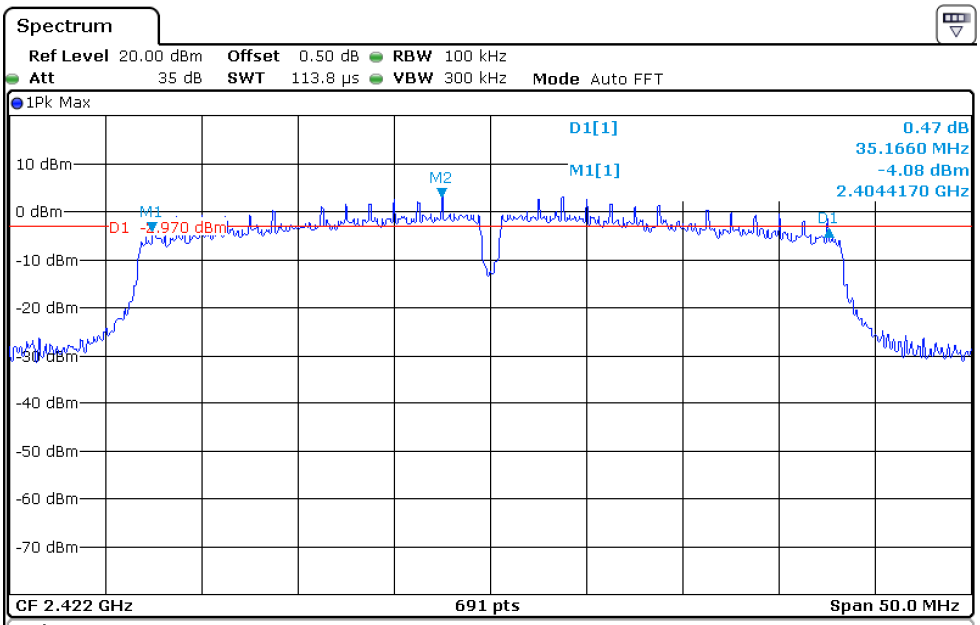
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.429446 GHz	0.20 dBm		
D1	M1	1	15.109 MHz	0.59 dB		
M2		1	2.438259 GHz	6.82 dBm		



Marker

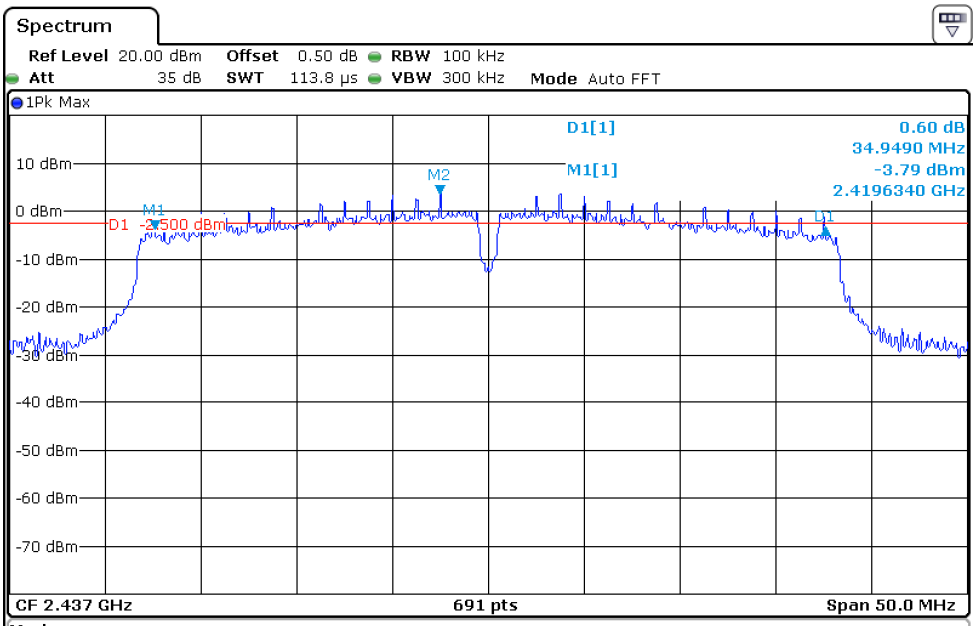
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.454446 GHz	0.45 dBm		
D1	M1	1	15.109 MHz	0.87 dB		
M2		1	2.463259 GHz	7.36 dBm		

802.11n-HT40



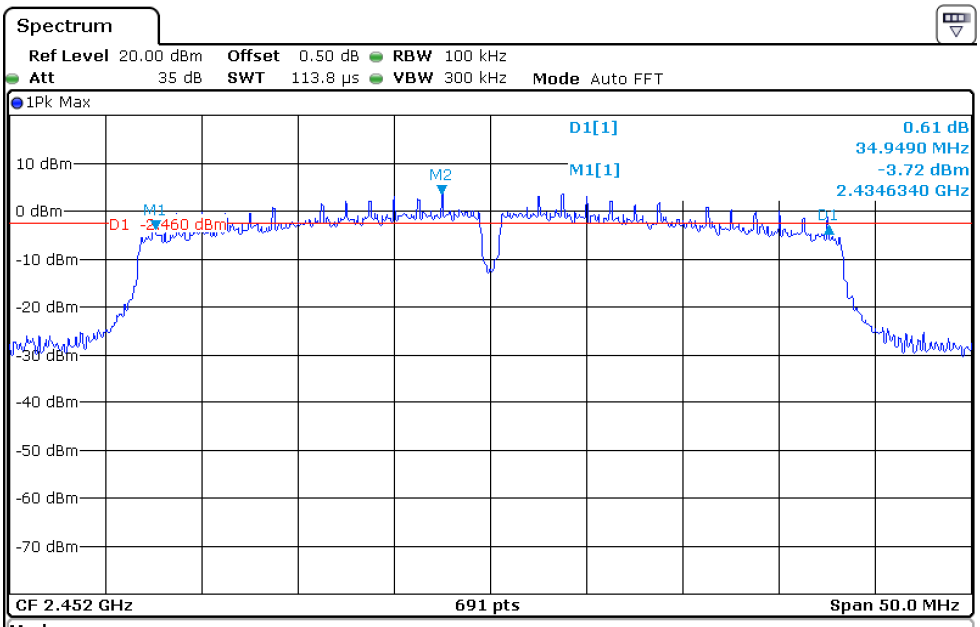
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.404417 GHz	-4.08 dBm		
D1	M1	1	35.166 MHz	0.47 dB		
M2		1	2.419467 GHz	3.03 dBm		



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.419634 GHz	-3.79 dBm		
D1	M1	1	34.949 MHz	0.60 dB		
M2		1	2.434467 GHz	3.50 dBm		



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.434634 GHz	-3.72 dBm		
D1	M1	1	34.949 MHz	0.61 dB		
M2		1	2.449467 GHz	3.54 dBm		

Applicant: Bluestem Brands Inc
Date of Test: 29 October 2019 Model: NQFEB

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

The Measurement Procedure PKPSD was set according to the FCC KDB 558074 D01 v05r02.

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.

IEEE 802.11b (CCK, 1Mbps)	
Frequency (MHz)	Power Density with RBW 3KHz
2412	6.56
2437	7.10
2462	7.43

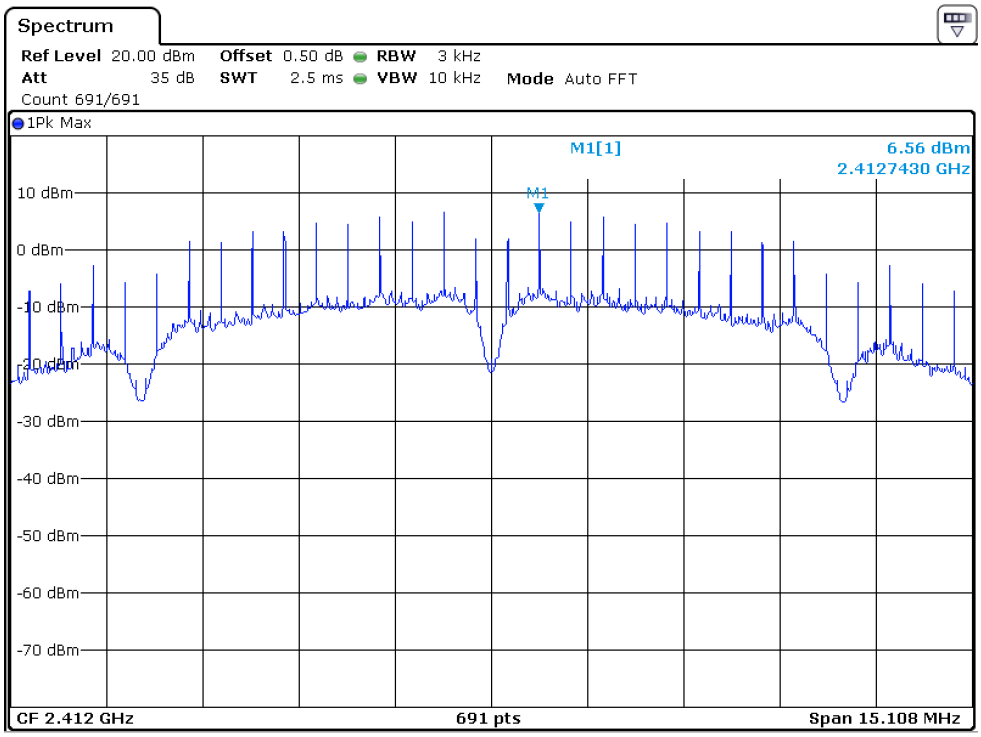
IEEE 802.11g (16QAM, 6Mbps)	
Frequency (MHz)	Power Density with RBW 3KHz
2412	-9.52
2437	-8.55
2462	-8.52

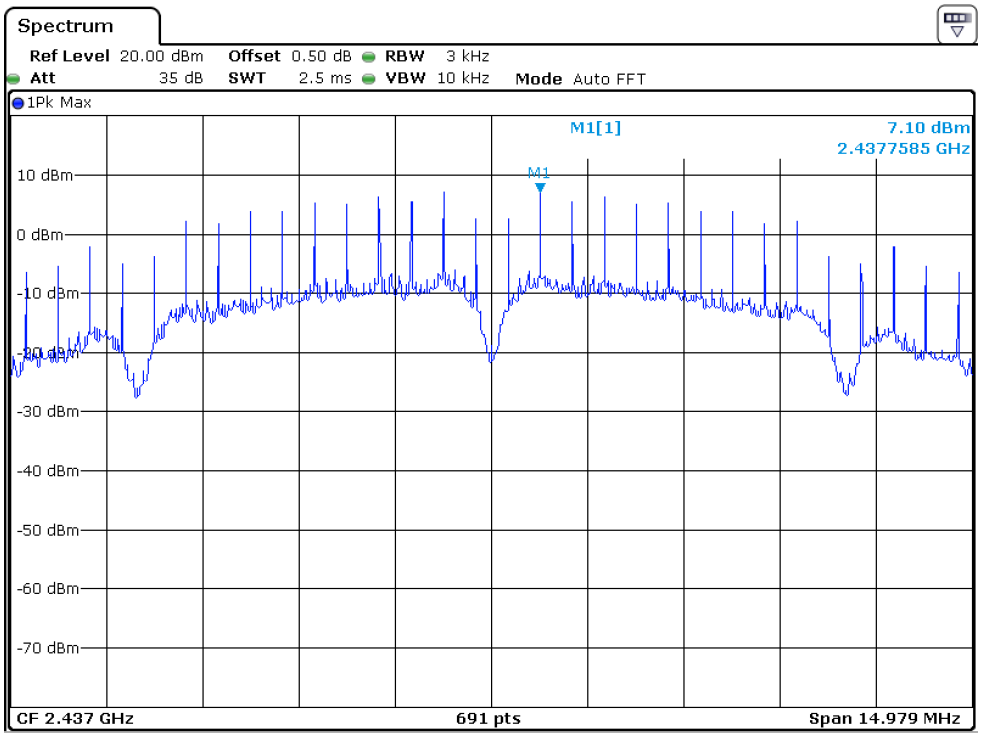
IEEE 802.11n-HT20 (64QAM, 6Mbps)	
Frequency (MHz)	Power Density with RBW 3KHz
2412	-8.70
2437	-8.68
2462	-7.61

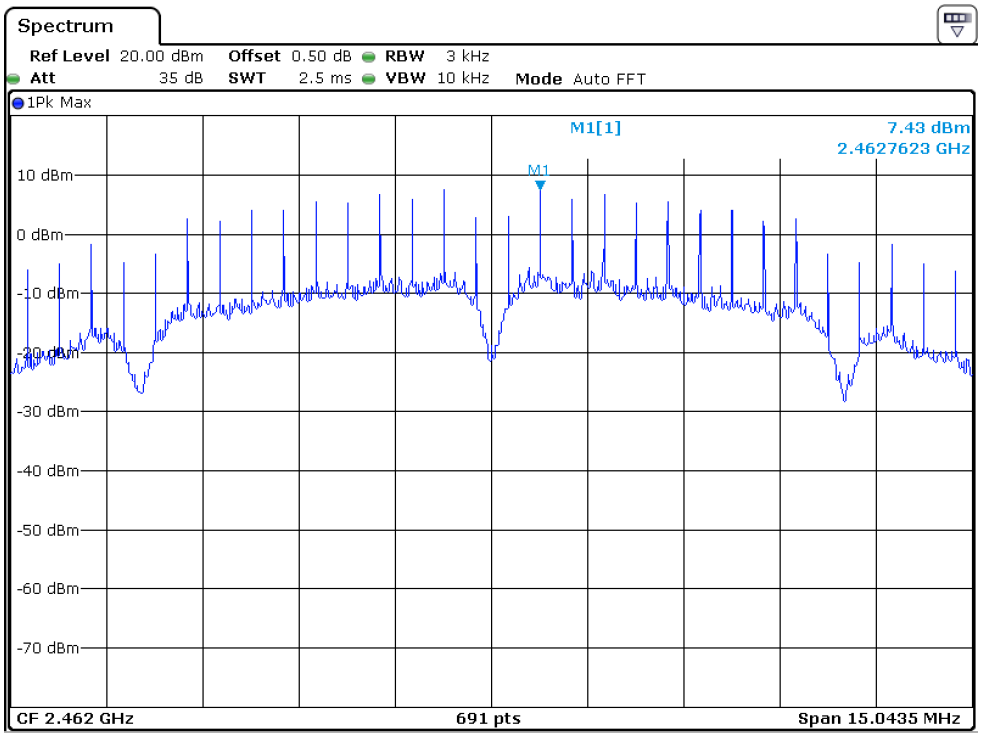
IEEE 802.11n-HT40 (64QAM, 13.5Mbps)	
Frequency (MHz)	Power Density with RBW 3KHz
2422	-11.94
2437	-11.61
2452	-10.88

The test plots are attached as below.

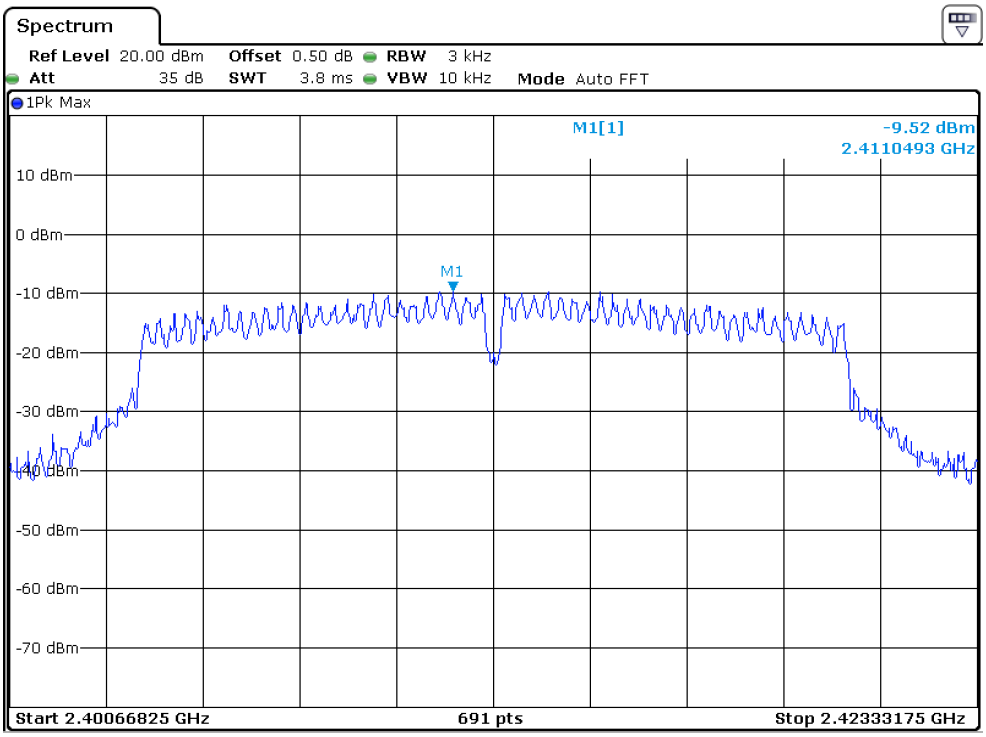
802.11b

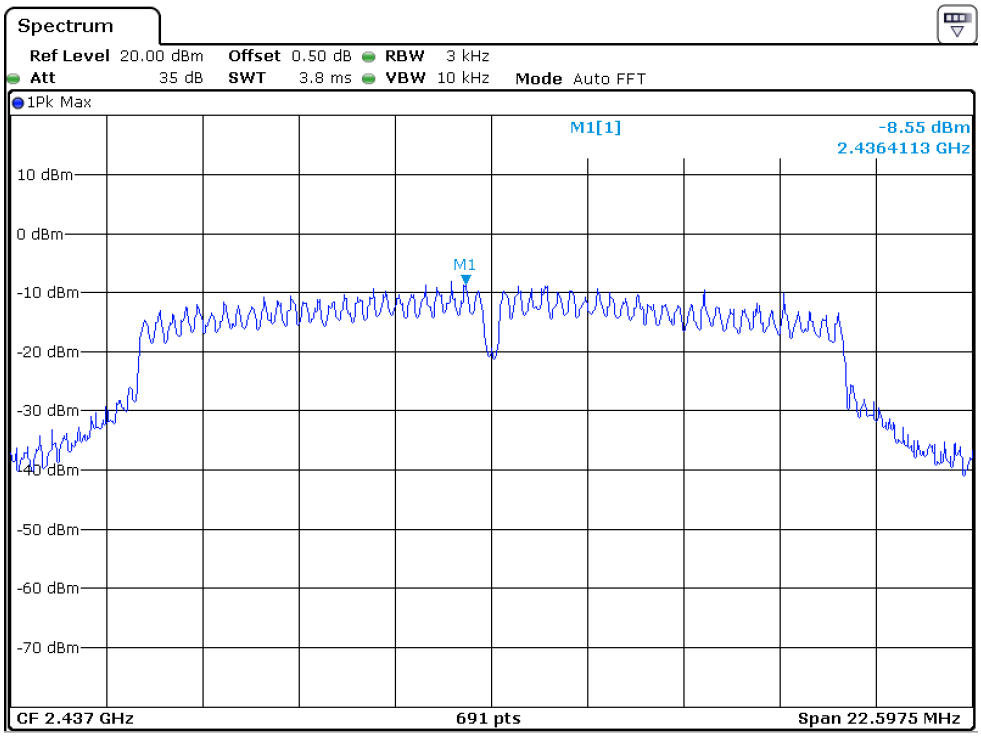

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 3 kHz
Att 35 dB SWT 2.5 ms VBW 10 kHz Mode Auto FFT
Count 691/691
1Pk Max
M1[1] 6.56 dBm
2.4127430 GHz
M1
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.412 GHz
691 pts
Span 15.108 MHz

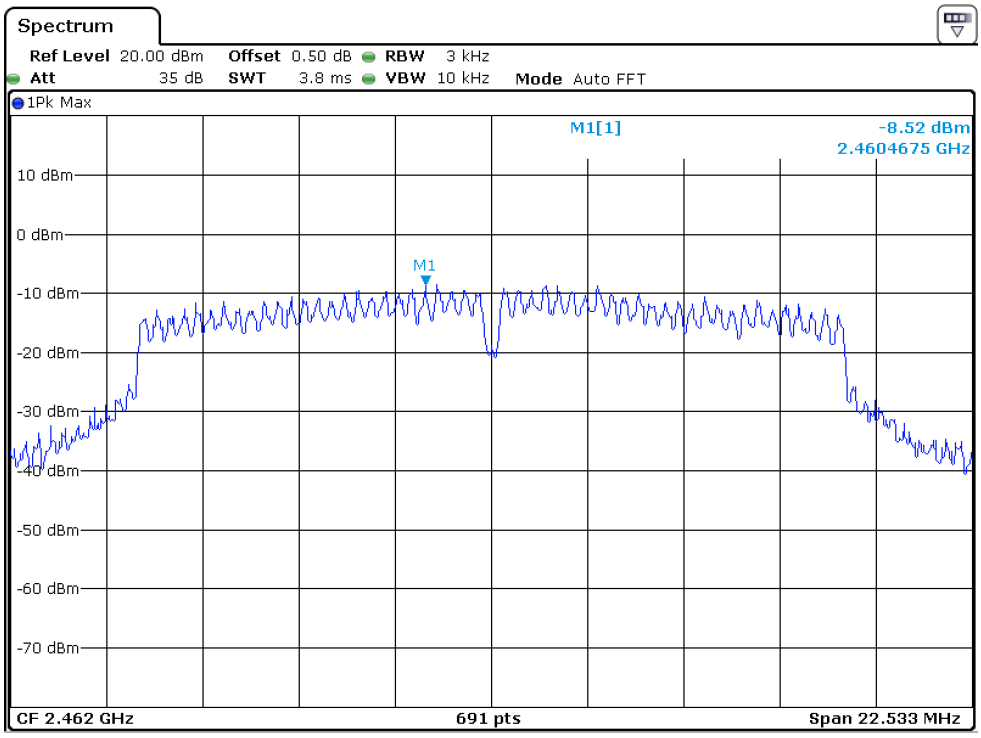

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 3 kHz
Att 35 dB SWT 2.5 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] 7.10 dBm
2.4377585 GHz
M1
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.437 GHz
691 pts
Span 14.979 MHz


Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 3 kHz
Att 35 dB SWT 2.5 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] 7.43 dBm
2.4627623 GHz
M1
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

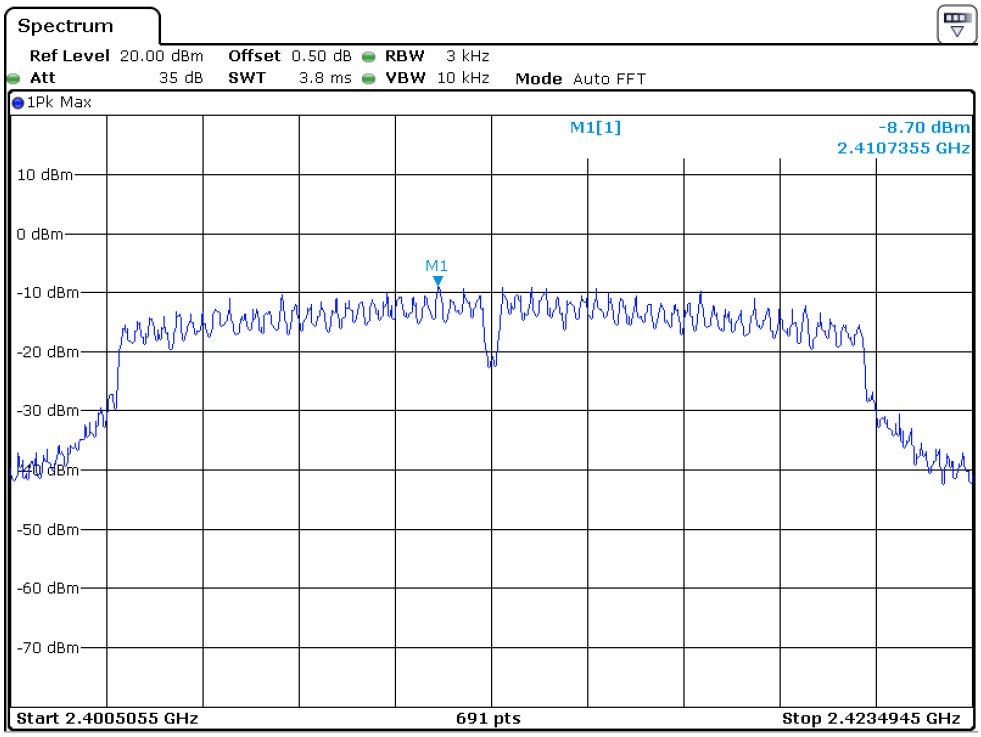
802.11g

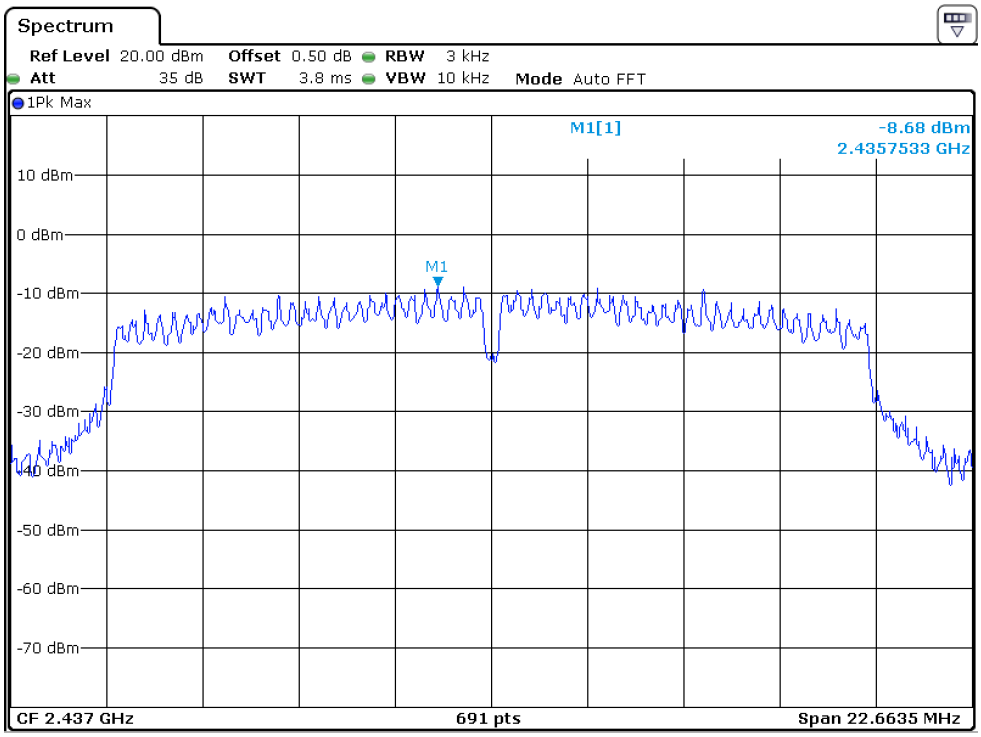

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 3 kHz
Att 35 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -9.52 dBm
2.4110493 GHz
M1
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.40066825 GHz
691 pts
Stop 2.42333175 GHz

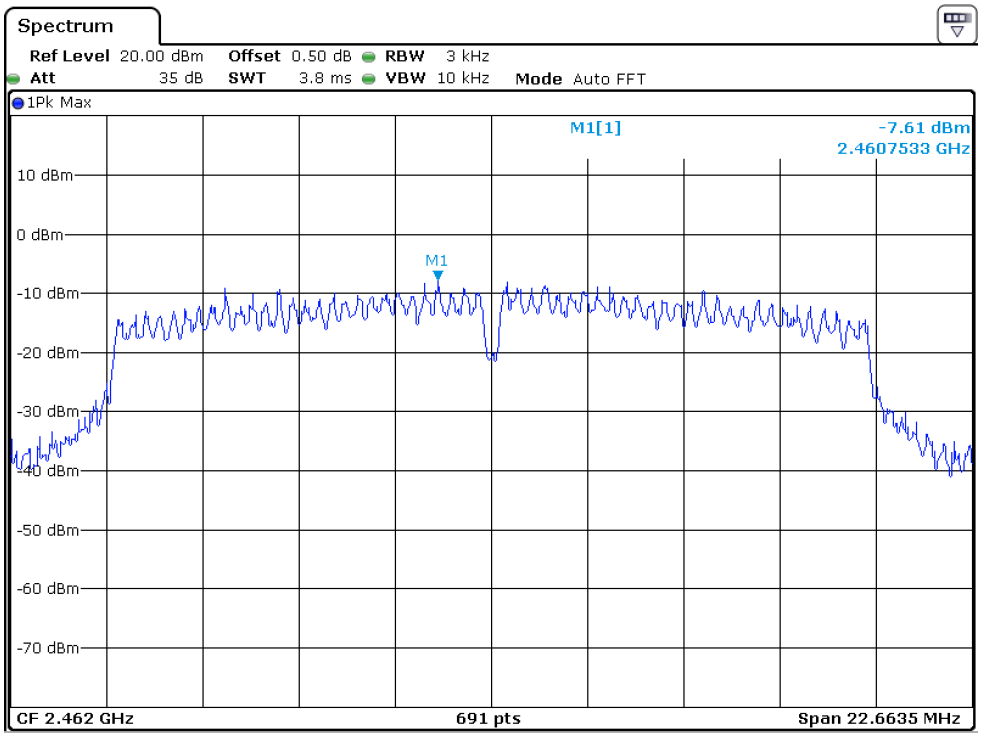

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 3 kHz
Att 35 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -8.55 dBm
2.4364113 GHz
M1
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.437 GHz
691 pts
Span 22.5975 MHz


Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 3 kHz
Att 35 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -8.52 dBm
2.4604675 GHz
M1
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 22.533 MHz

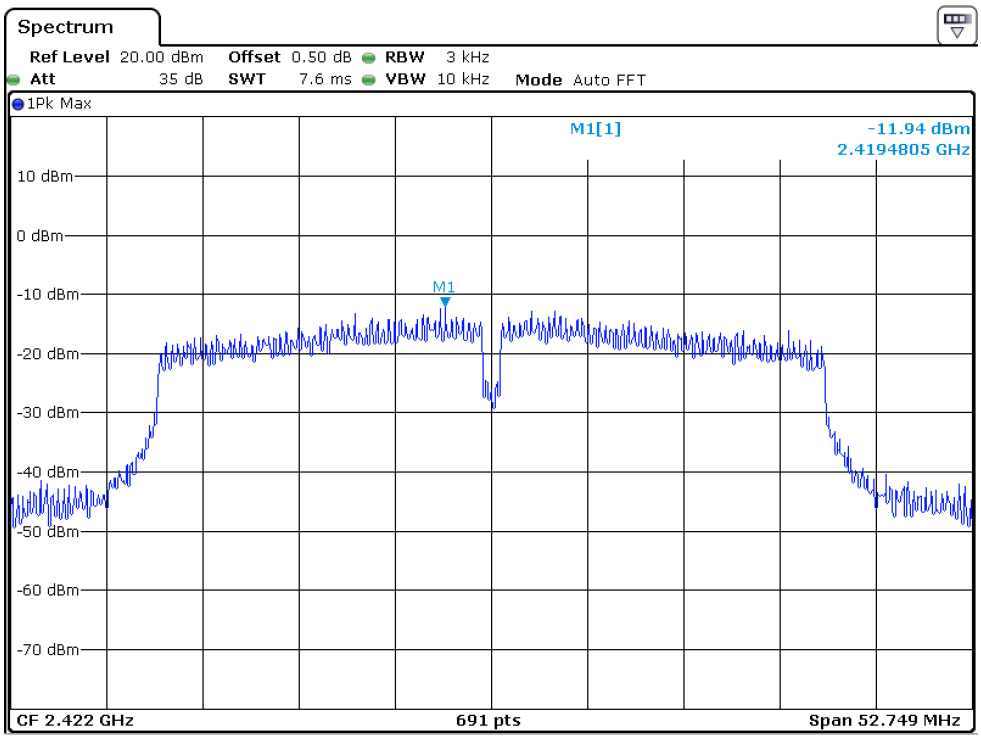
802.11n-HT20

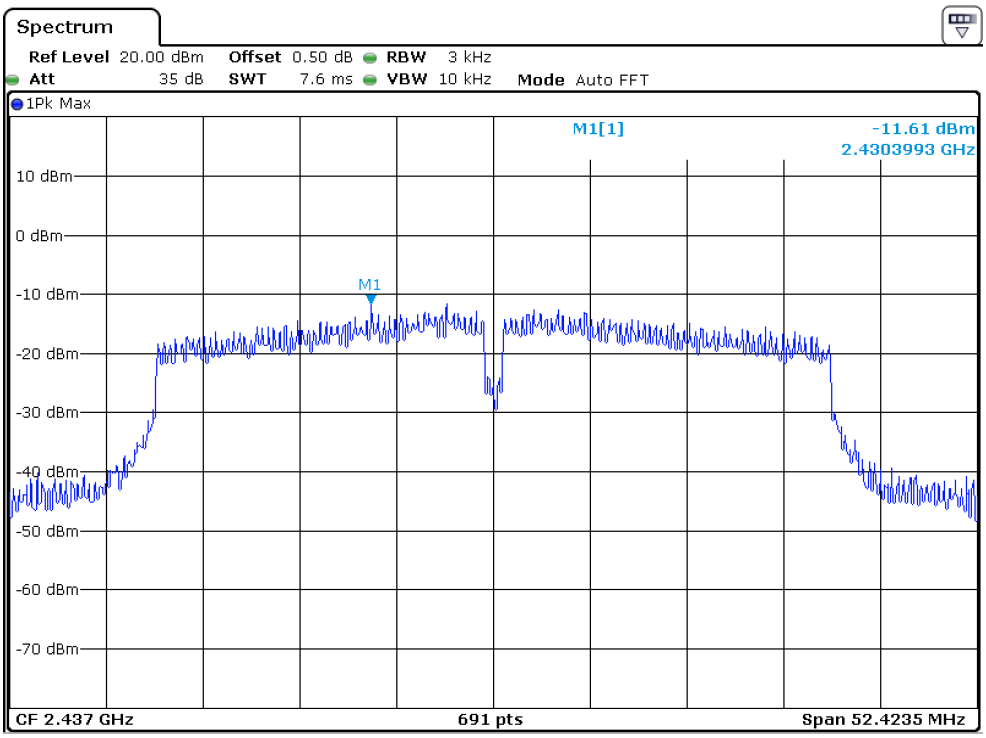

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 3 kHz
Att 35 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -8.70 dBm
2.4107355 GHz
M1
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4005055 GHz 691 pts Stop 2.4234945 GHz

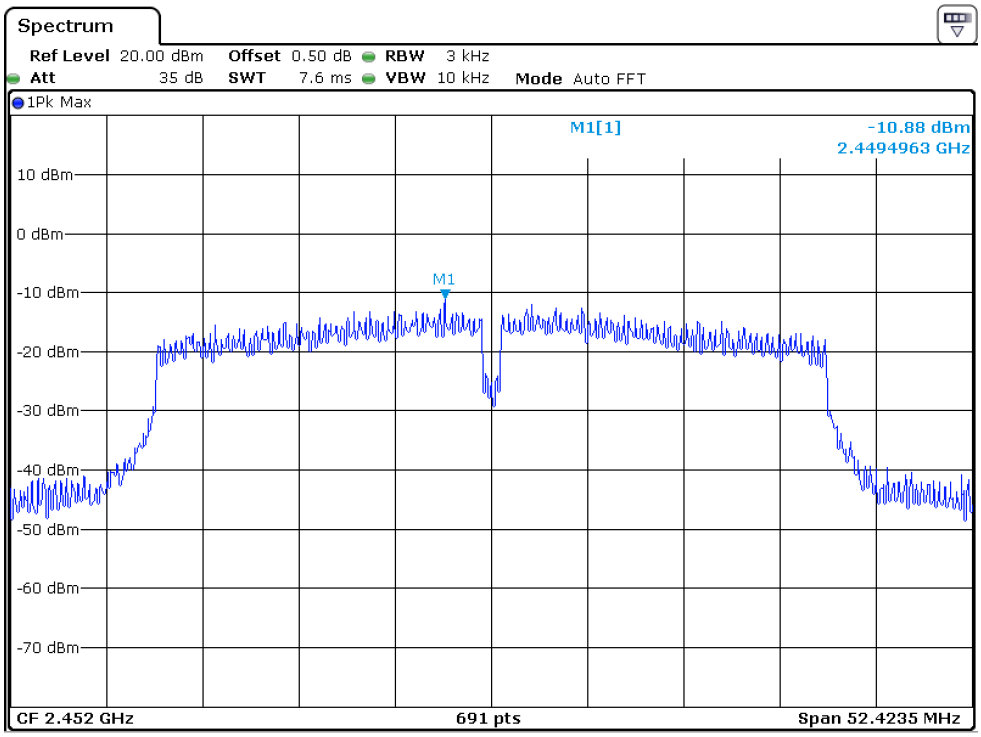

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 3 kHz
Att 35 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -8.68 dBm
2.4357533 GHz
M1
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.437 GHz 691 pts Span 22.6635 MHz


Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 3 kHz
Att 35 dB SWT 3.8 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -7.61 dBm
2.4607533 GHz
M1
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 22.6635 MHz

802.11n-HT40


Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 3 kHz
Att 35 dB SWT 7.6 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -11.94 dBm
2.4194805 GHz
M1
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 52.749 MHz


Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 3 kHz
Att 35 dB SWT 7.6 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -11.61 dBm
2.4303993 GHz
M1
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 52.4235 MHz


Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 3 kHz
Att 35 dB SWT 7.6 ms VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] -10.88 dBm
2.4494963 GHz
M1
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.452 GHz
691 pts
Span 52.4235 MHz

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 v05r02.

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

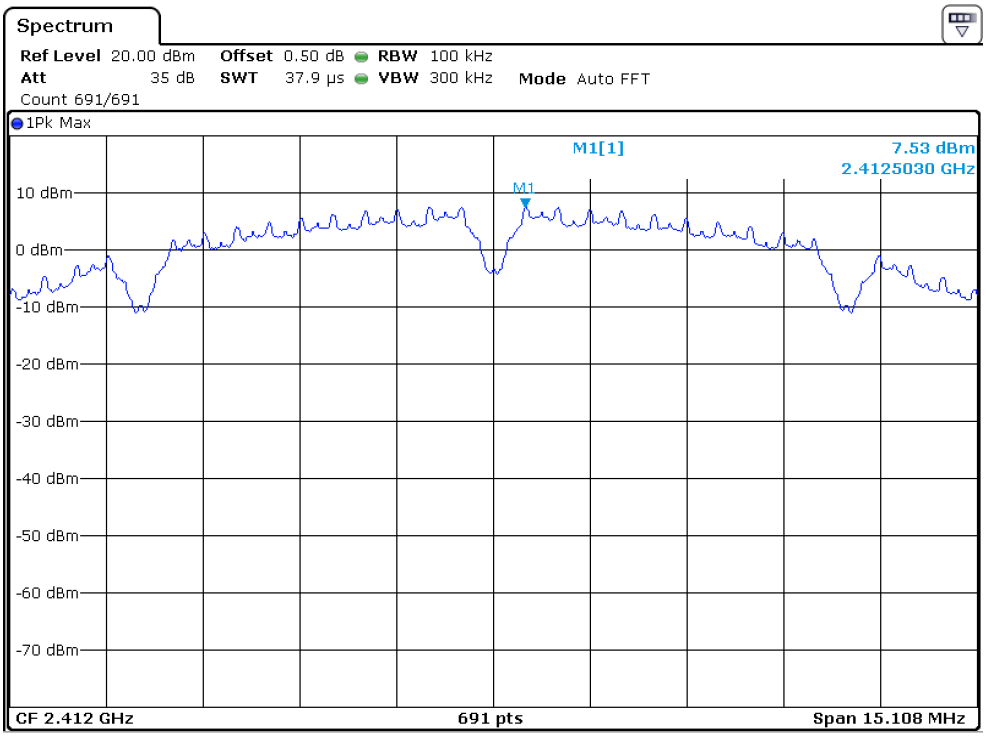
Refer to the attached test plots for out of band conducted emissions data with rate of 1Mbps for 802.11b and 6Mbps for 802.11g and 6Mbps for 802.11n-HT20 and 13.5Mbps for 802.11n-HT40.

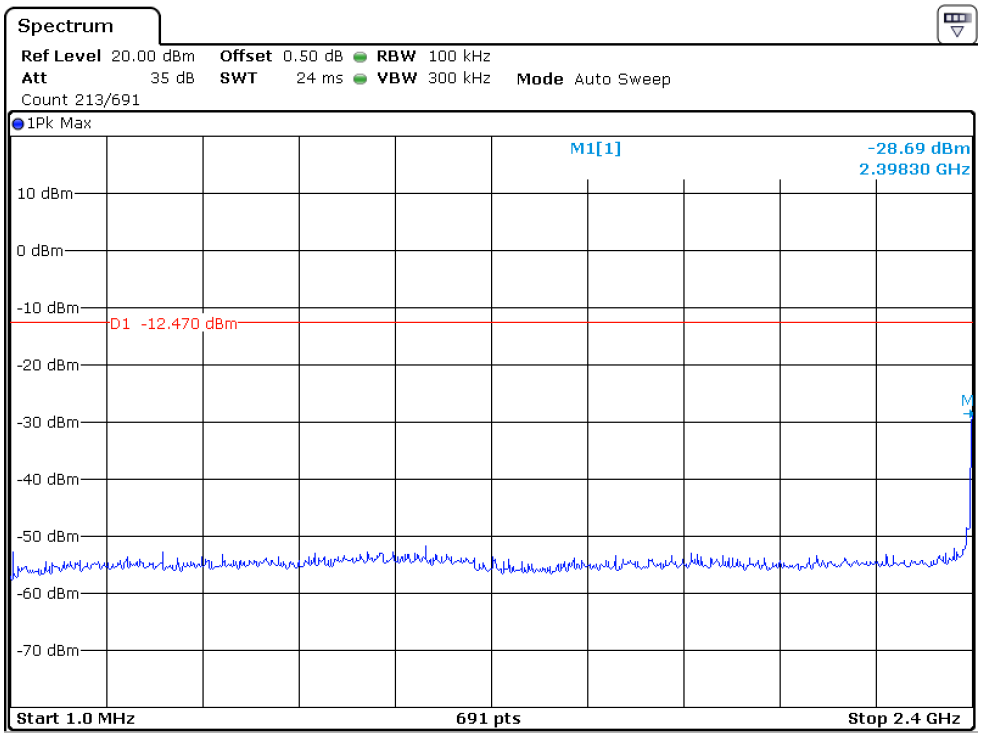
The test plots showed all spurious emission up to the tenth harmonic were measured and they were found to be at least 20 dB below the highest level of the desired power in the passband.

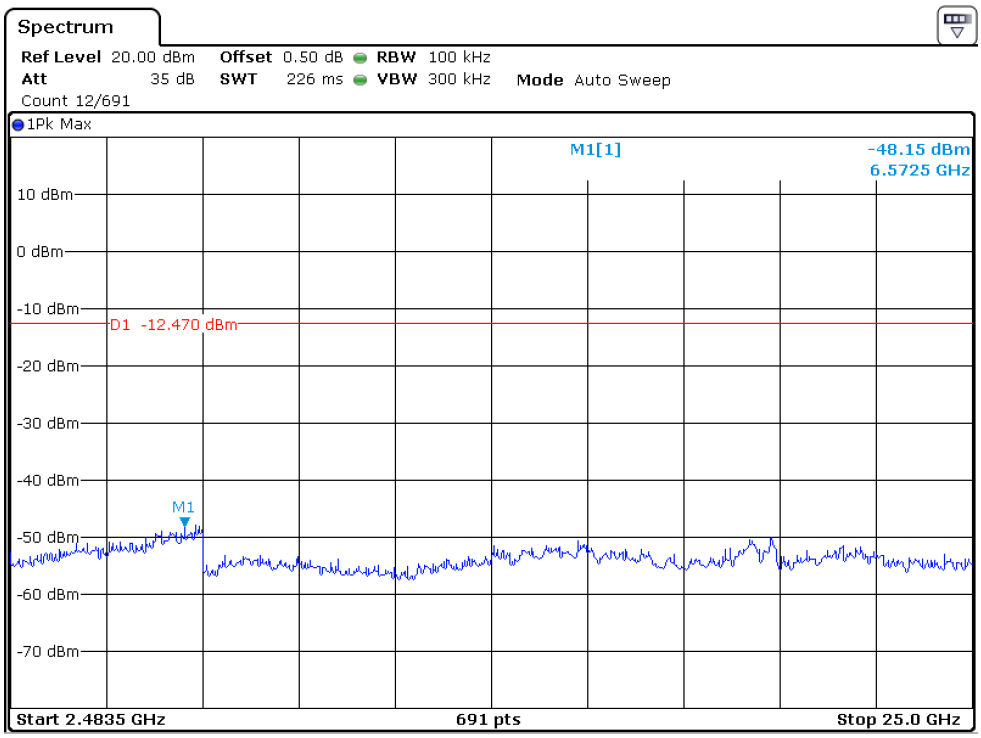
The test plots are attached as below.

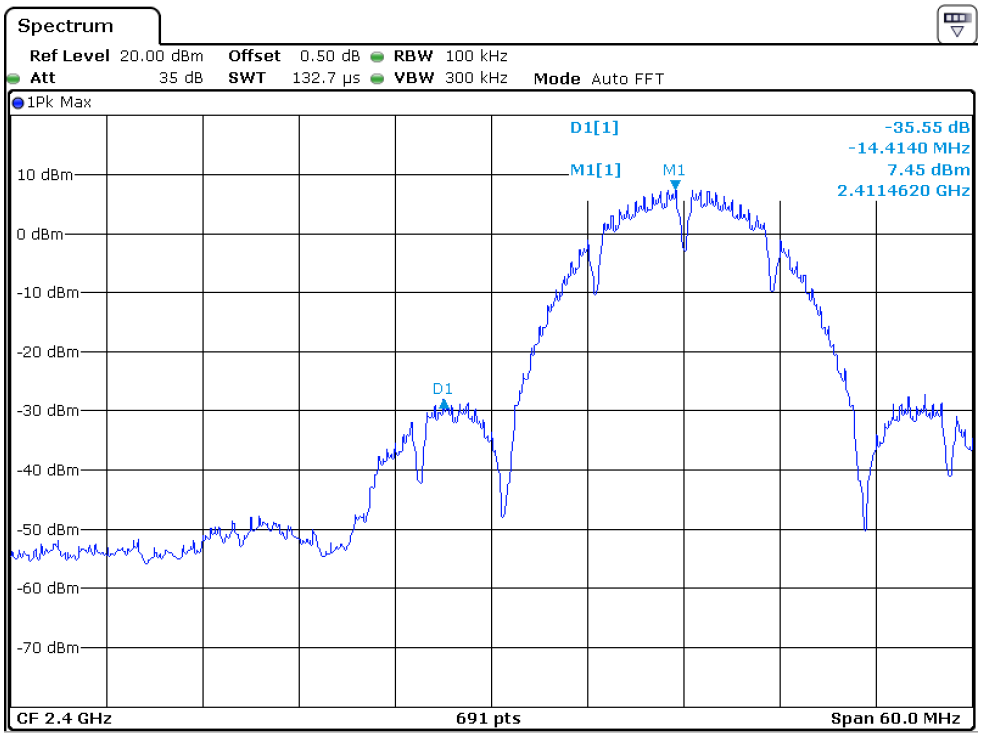
802.11b

Channel 01 (2412MHz) Reference Level: 7.53dBm

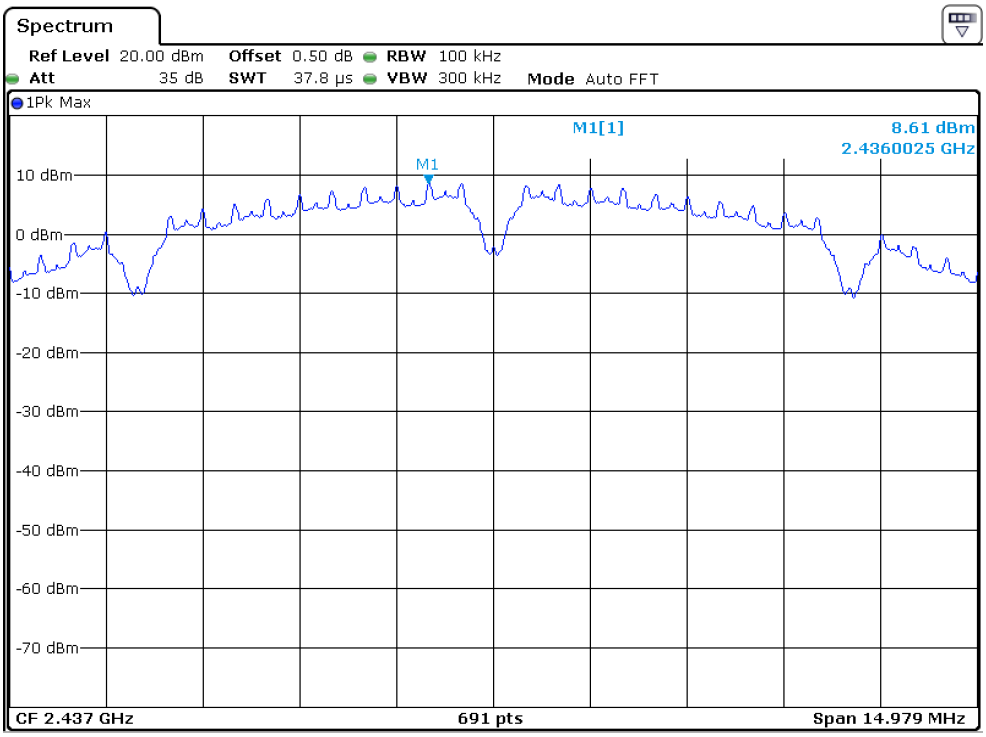


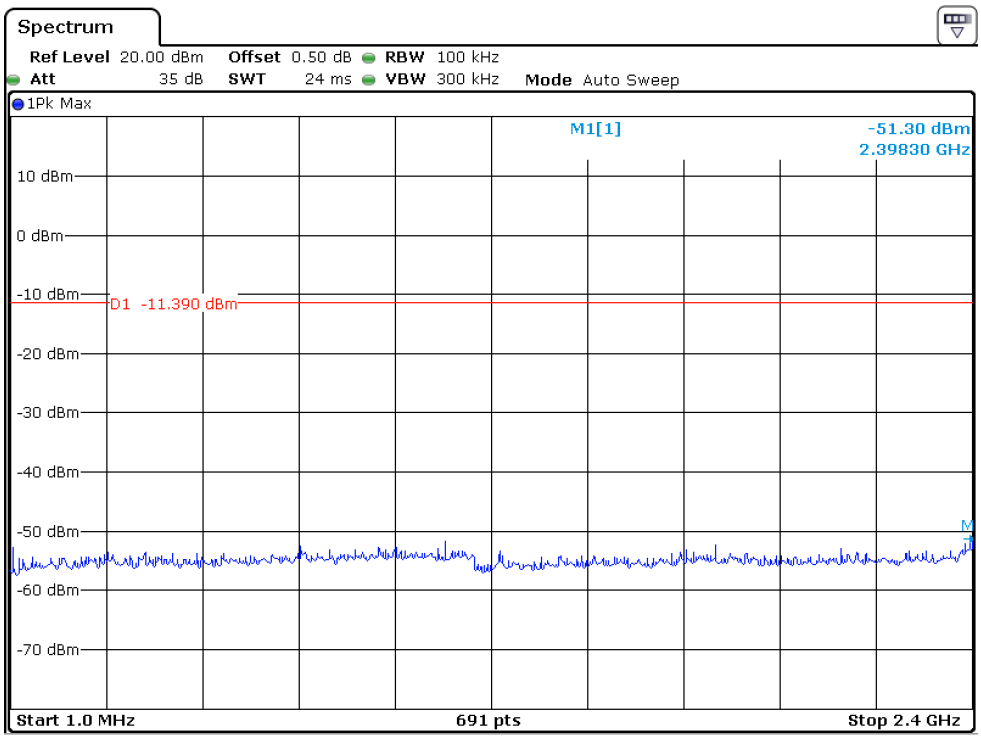


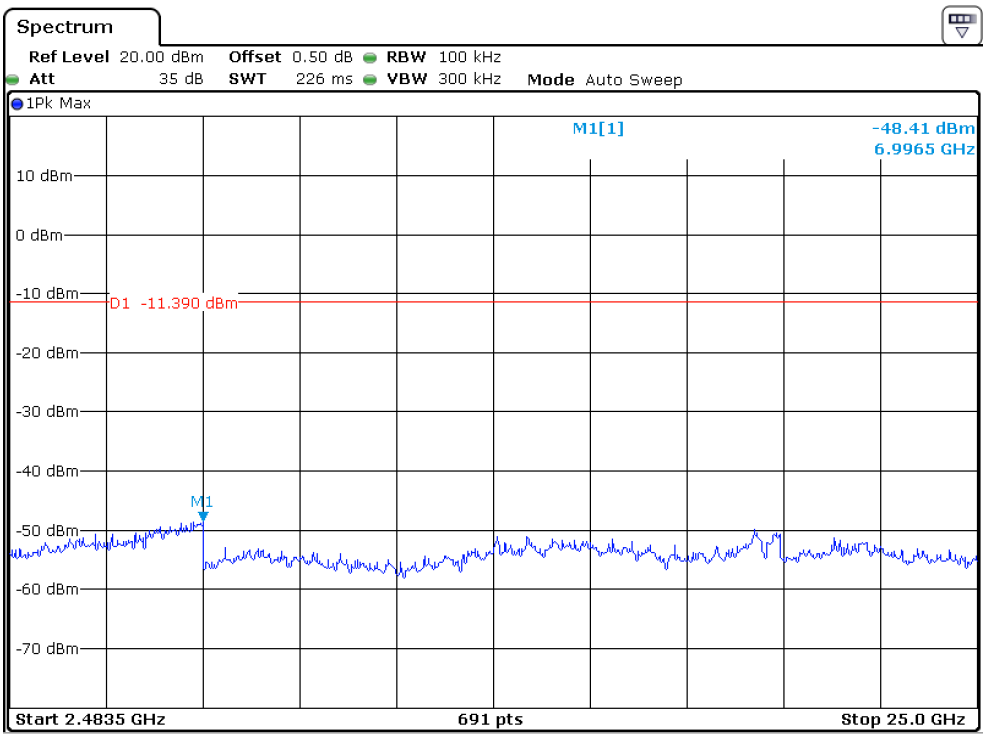

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz
Att 35 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
Count 12/691
1Pk Max
M1[1] -48.15 dBm
6.5725 GHz
10 dBm
0 dBm
-10 dBm
D1 -12.470 dBm
-20 dBm
-30 dBm
-40 dBm
M1
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz


Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz
Att 35 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -35.55 dB
-14.4140 MHz
M1[1] M1 7.45 dBm
2.4114620 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
D1
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.4 GHz
691 pts
Span 60.0 MHz

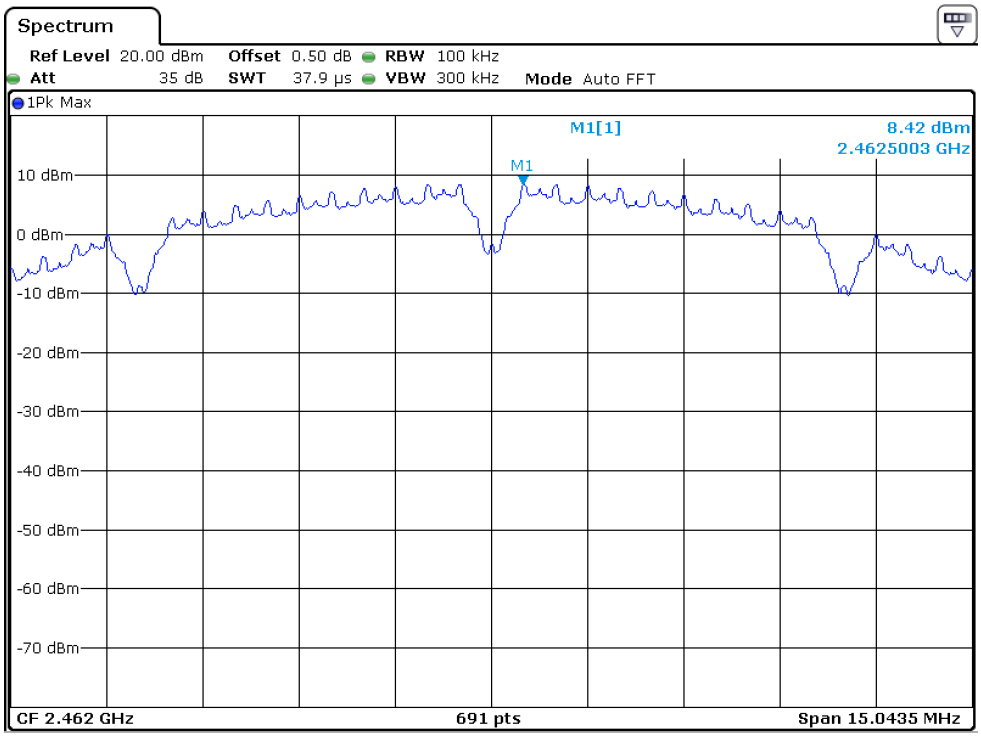
Channel 06 (2437MHz) Reference Level: 8.61dBm

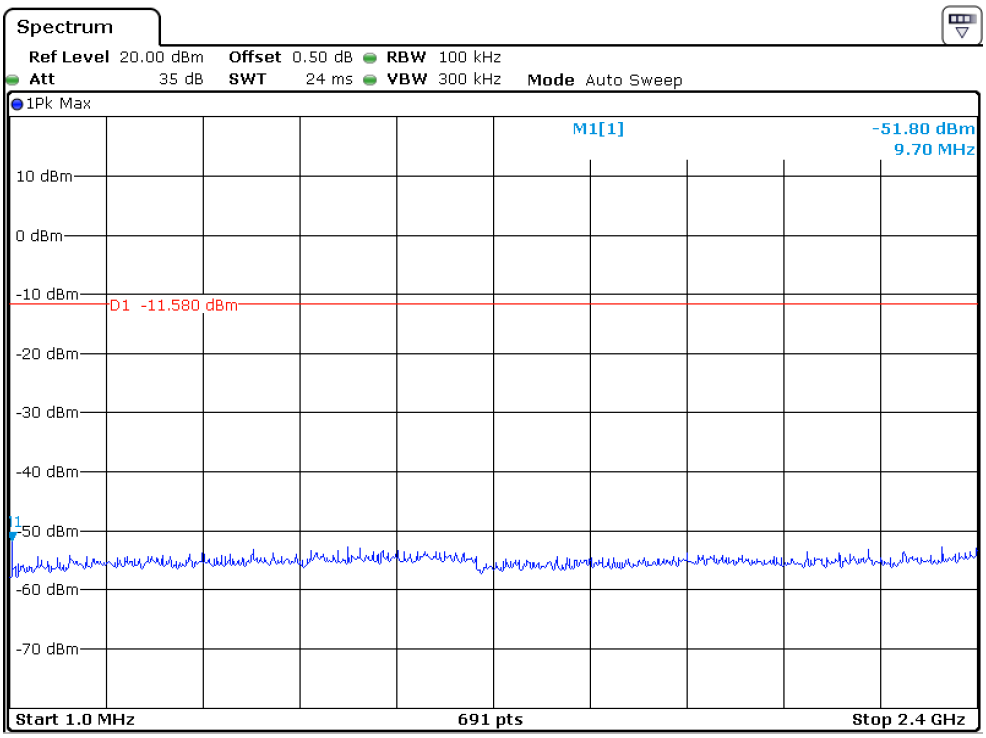


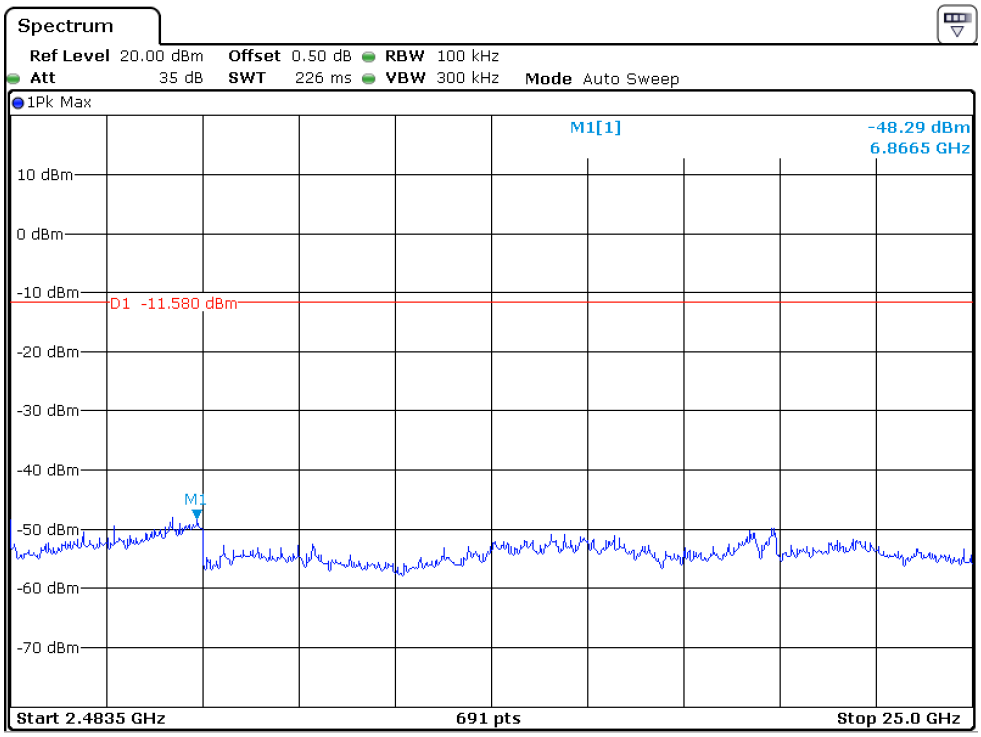


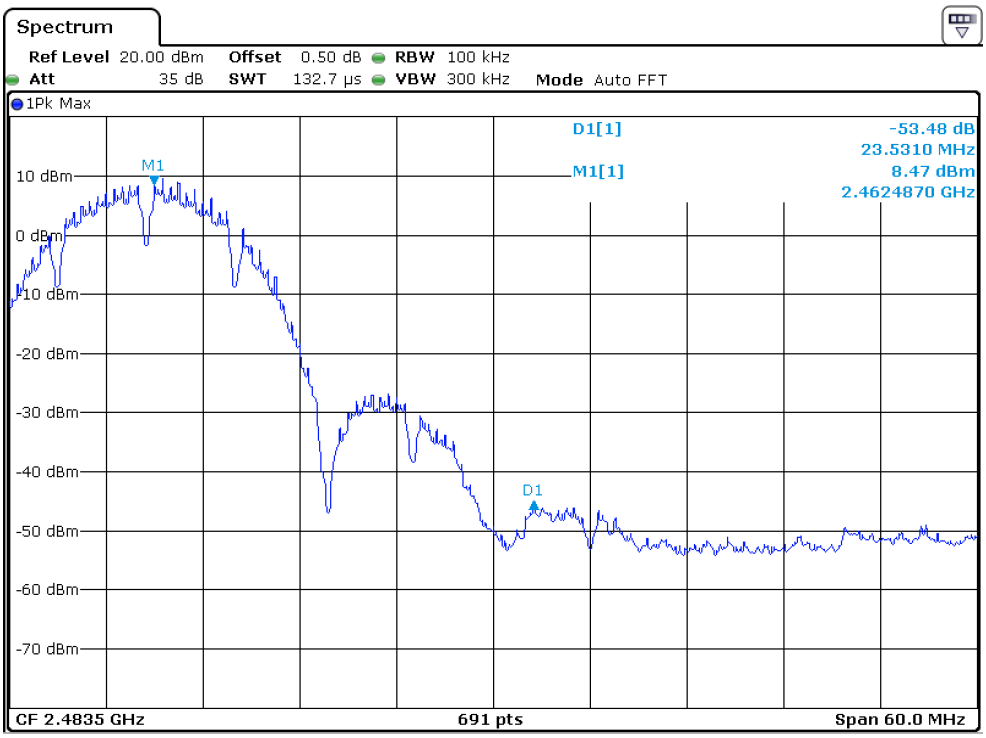


Channel 11 (2462MHz) Reference Level: 8.42dBm

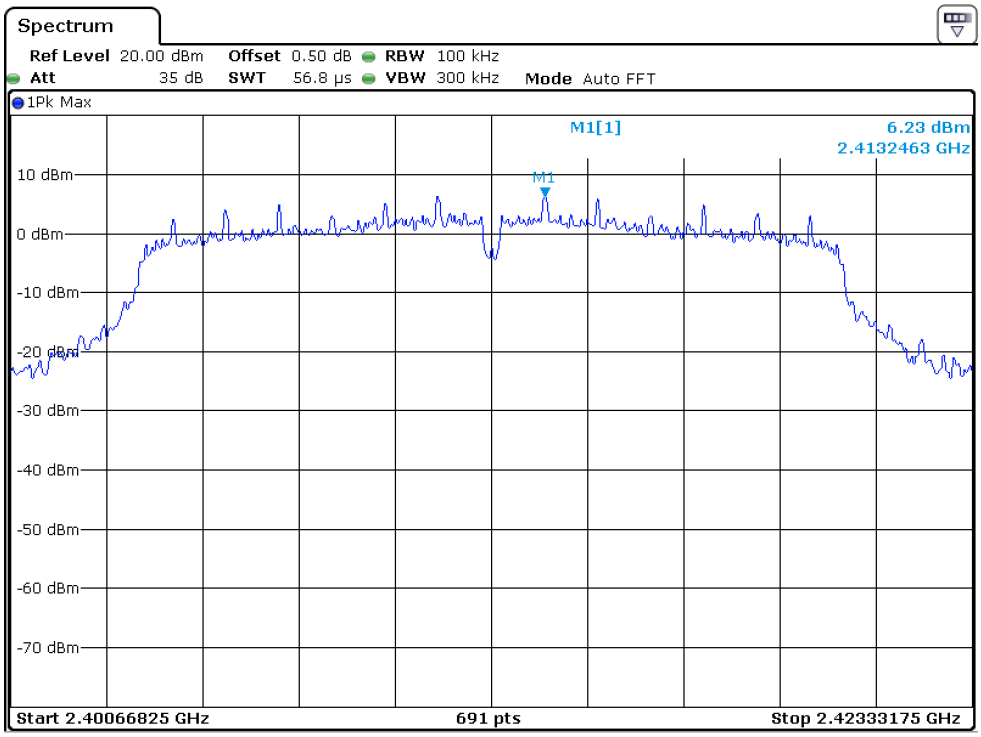


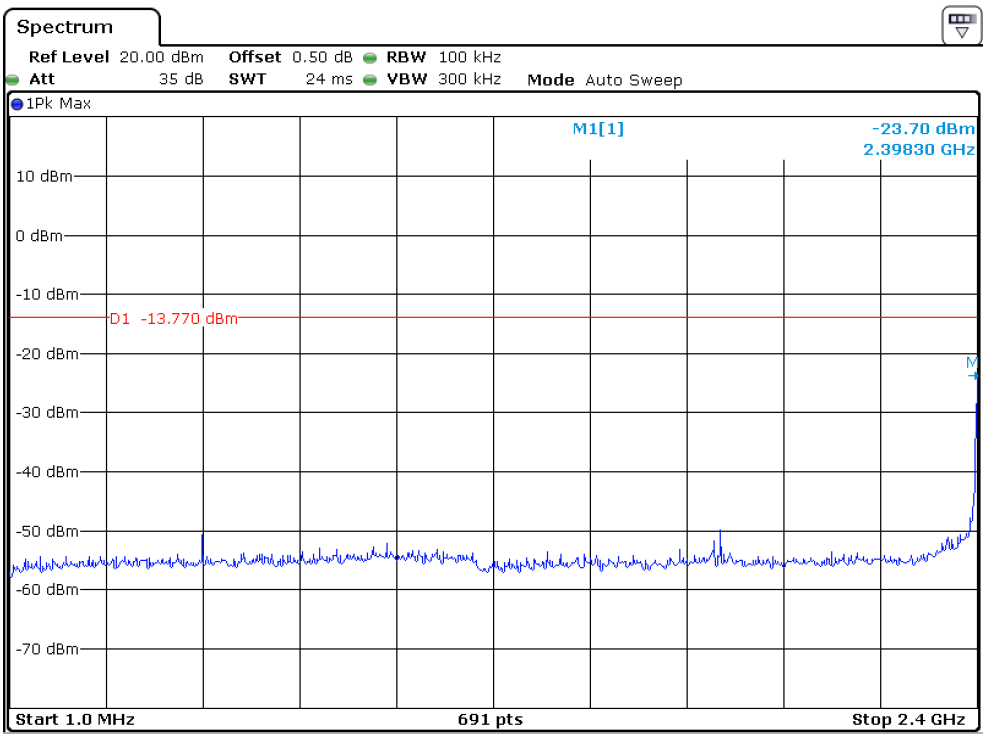

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz
Att 35 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -51.80 dBm
9.70 MHz
10 dBm
0 dBm
-10 dBm
D1 -11.580 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 1.0 MHz
691 pts
Stop 2.4 GHz

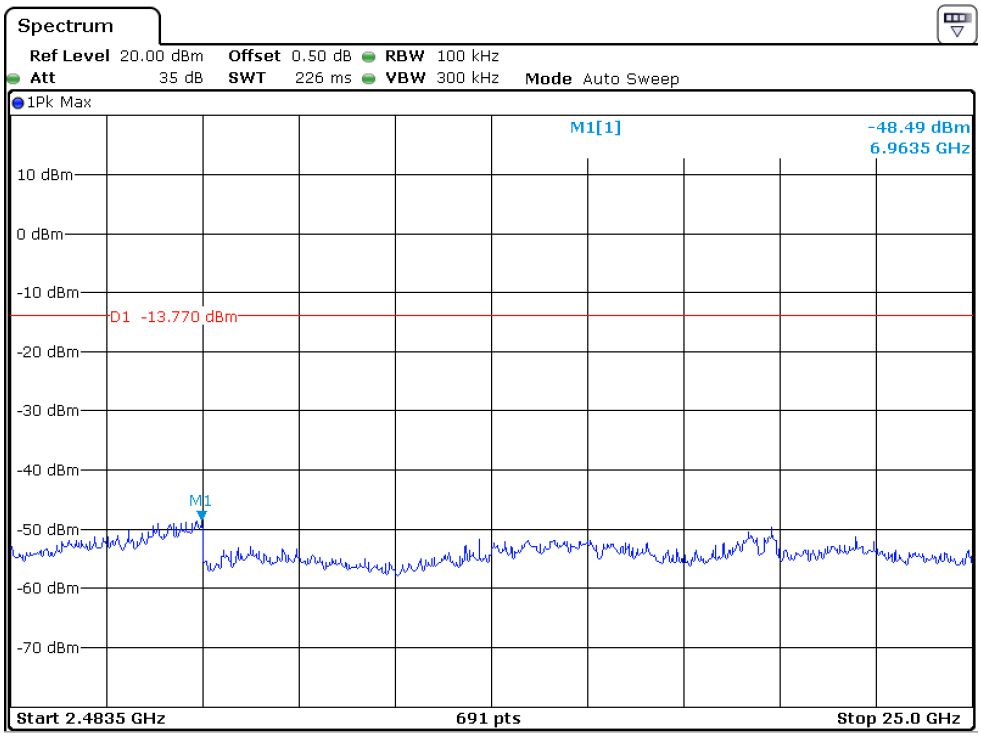

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz
Att 35 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -48.29 dBm
6.8665 GHz
10 dBm
0 dBm
-10 dBm
D1 -11.580 dBm
-20 dBm
-30 dBm
-40 dBm
M1
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz

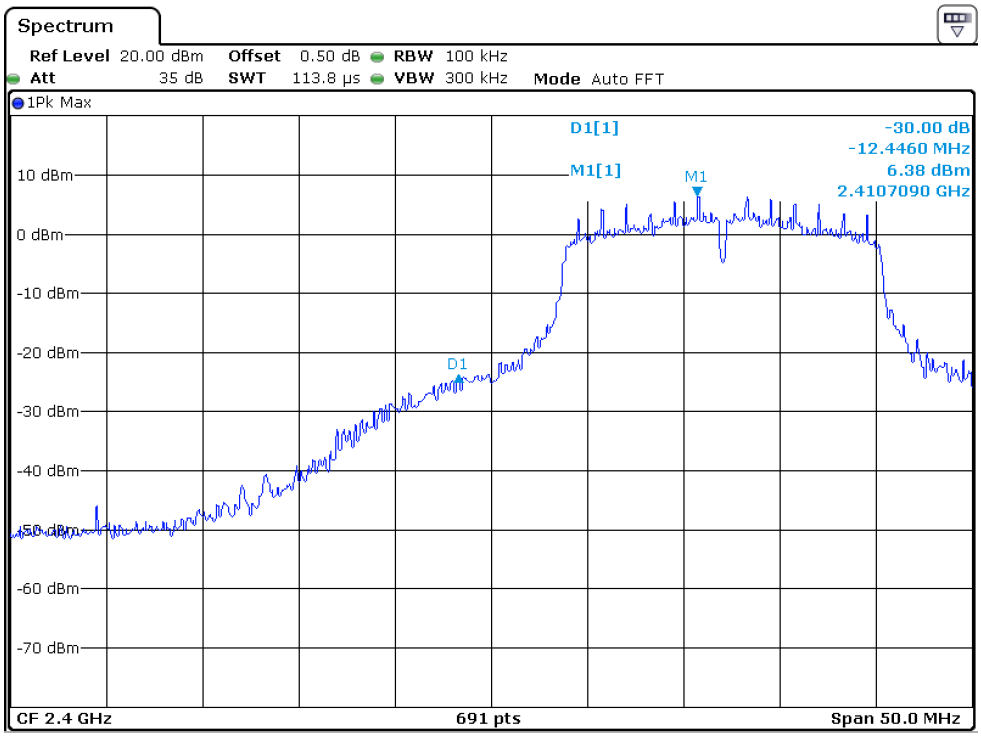


802.11g
Channel 01 (2412MHz) Reference Level: 6.23dBm

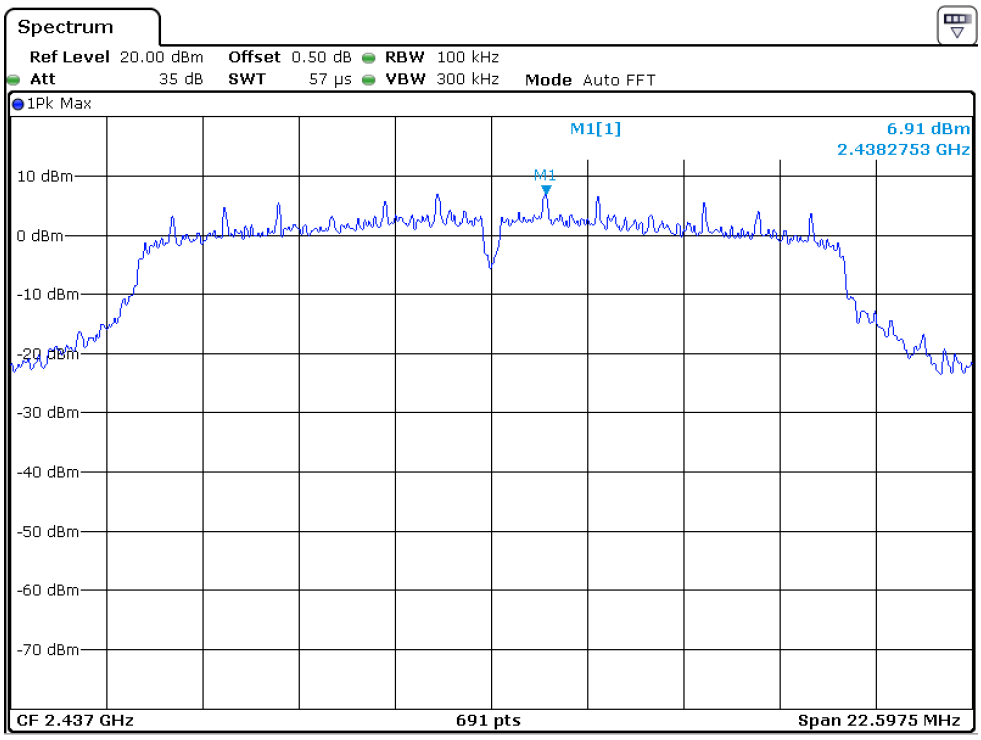


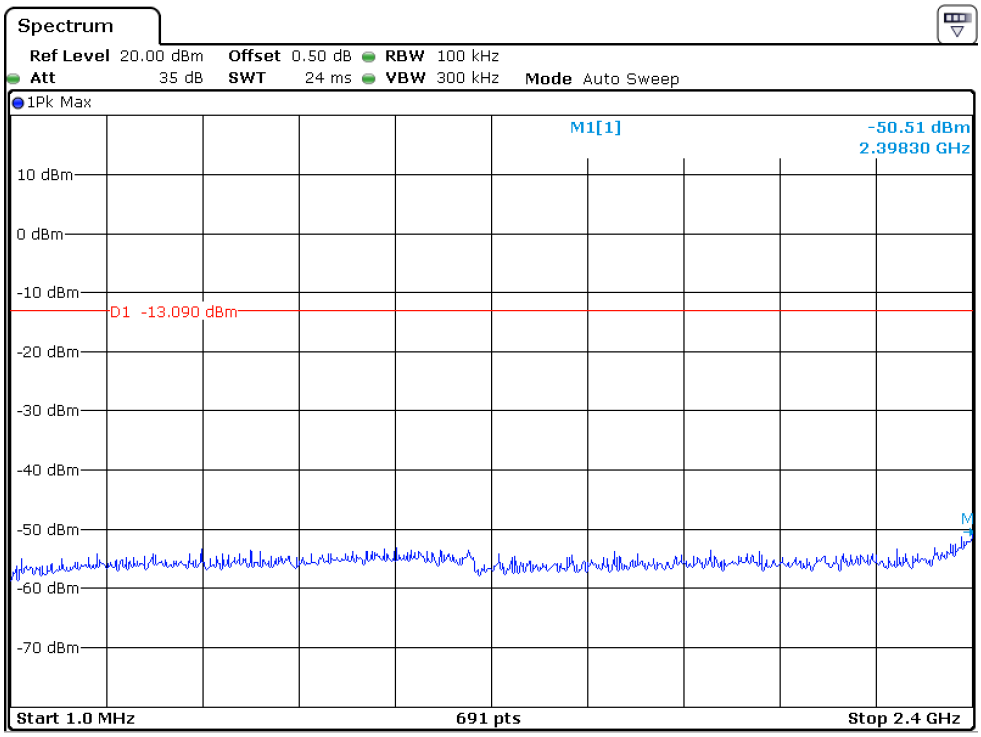

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz
Att 35 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -23.70 dBm
2.39830 GHz
10 dBm
0 dBm
-10 dBm
D1 -13.770 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 1.0 MHz
691 pts
Stop 2.4 GHz

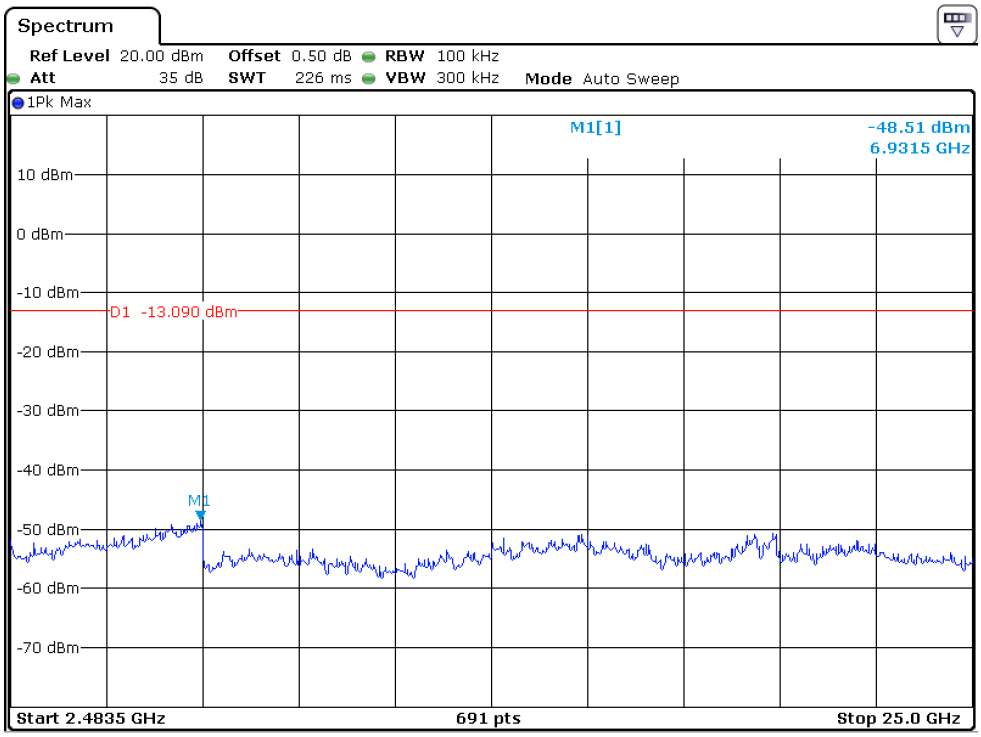

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz
Att 35 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -48.49 dBm
6.9635 GHz
10 dBm
0 dBm
-10 dBm
D1 -13.770 dBm
-20 dBm
-30 dBm
-40 dBm
M1
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz



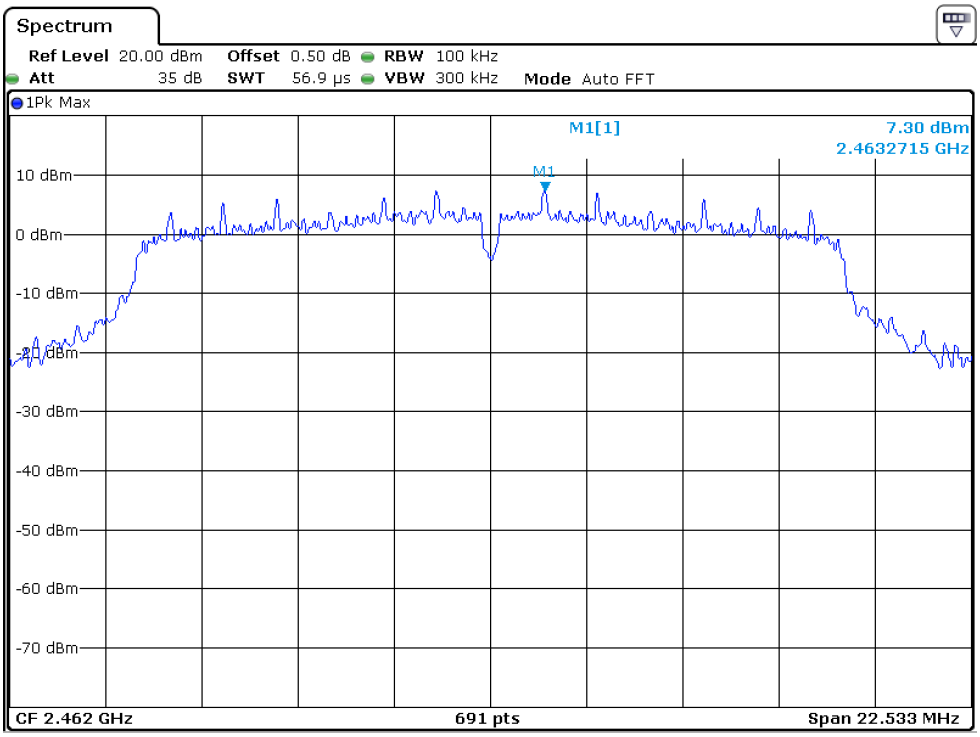
Channel 06 (2437MHz) Reference Level: 6.91dBm

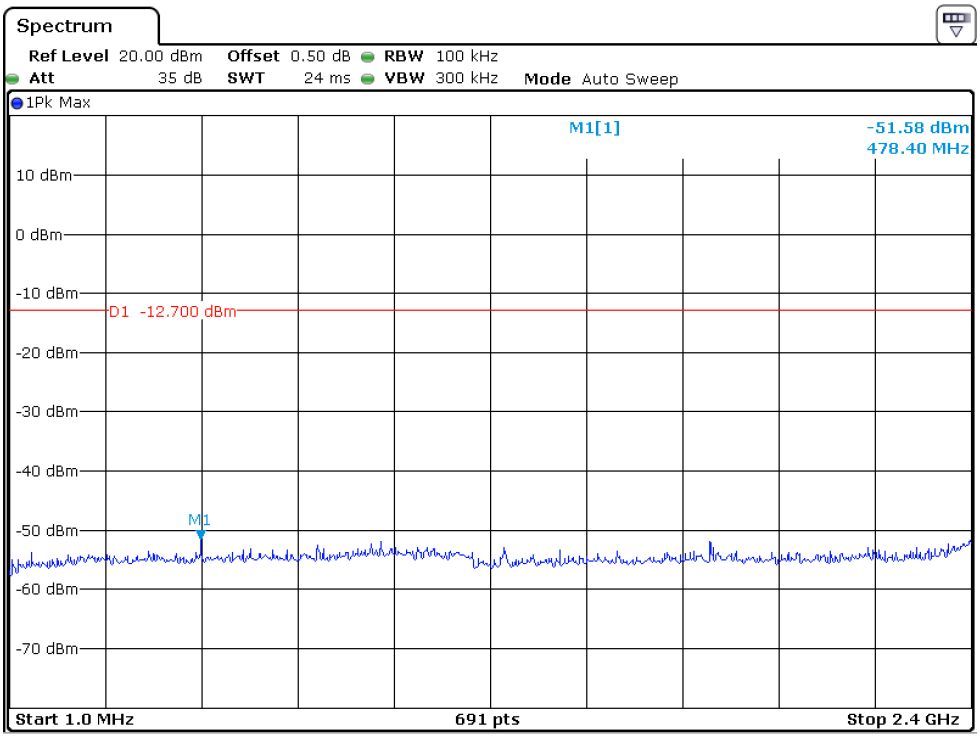


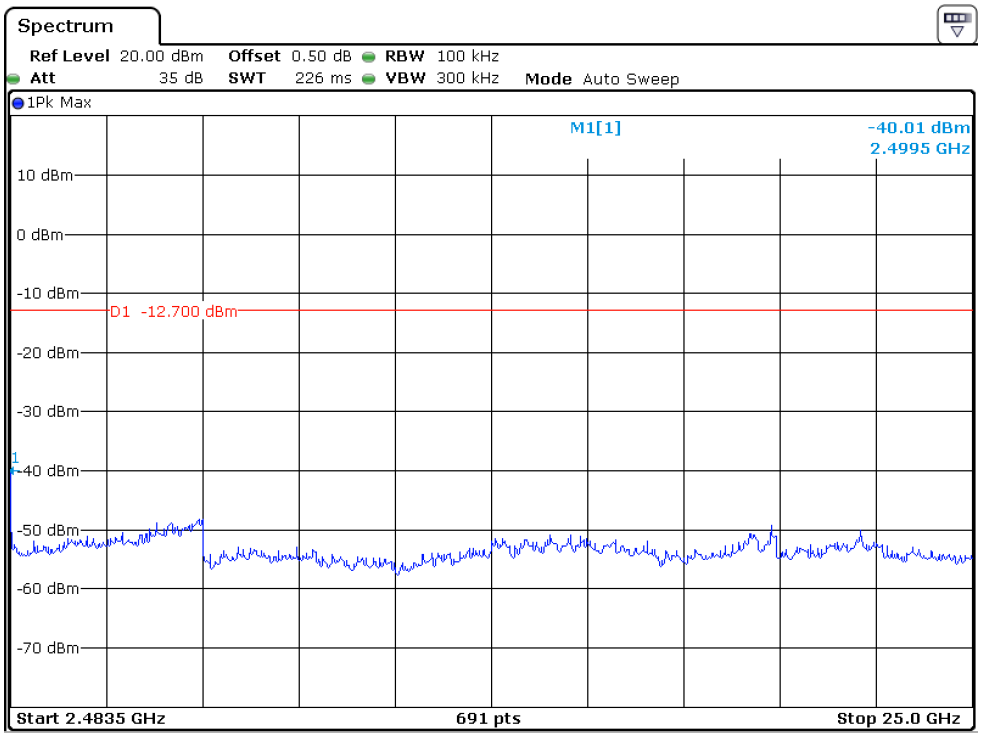

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz
Att 35 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -50.51 dBm
2.39830 GHz
10 dBm
0 dBm
-10 dBm
D1 -13.090 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 1.0 MHz
691 pts
Stop 2.4 GHz

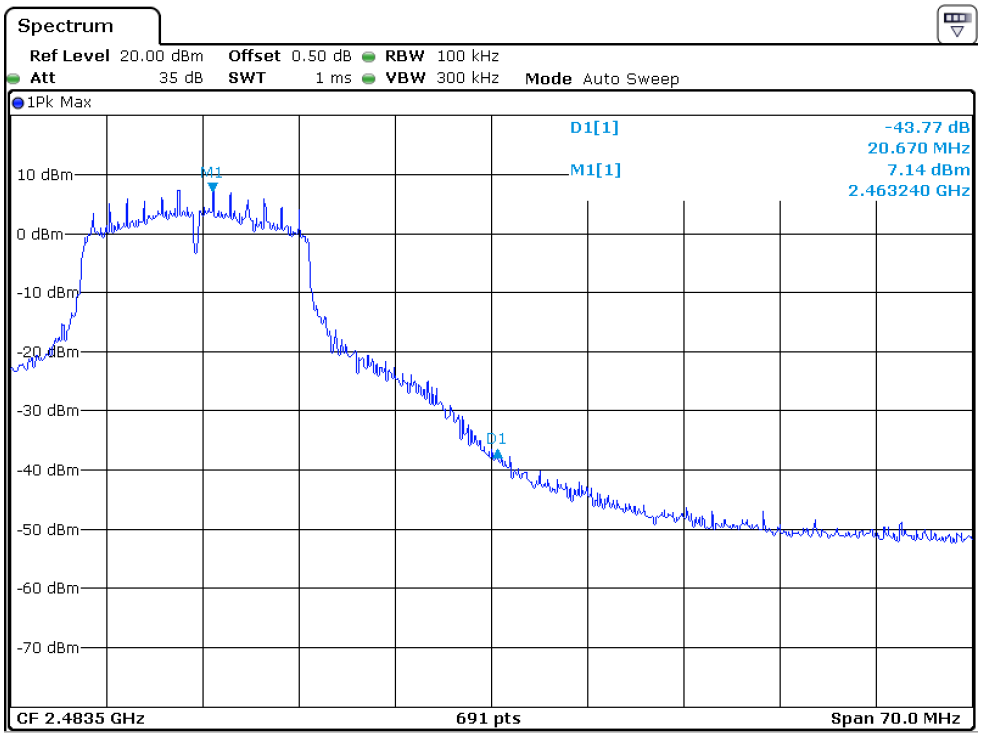

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz
Att 35 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -48.51 dBm
6.9315 GHz
10 dBm
0 dBm
-10 dBm
D1 -13.090 dBm
-20 dBm
-30 dBm
-40 dBm
M1
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz

Channel 11 (2462MHz) Reference Level: 7.30dBm

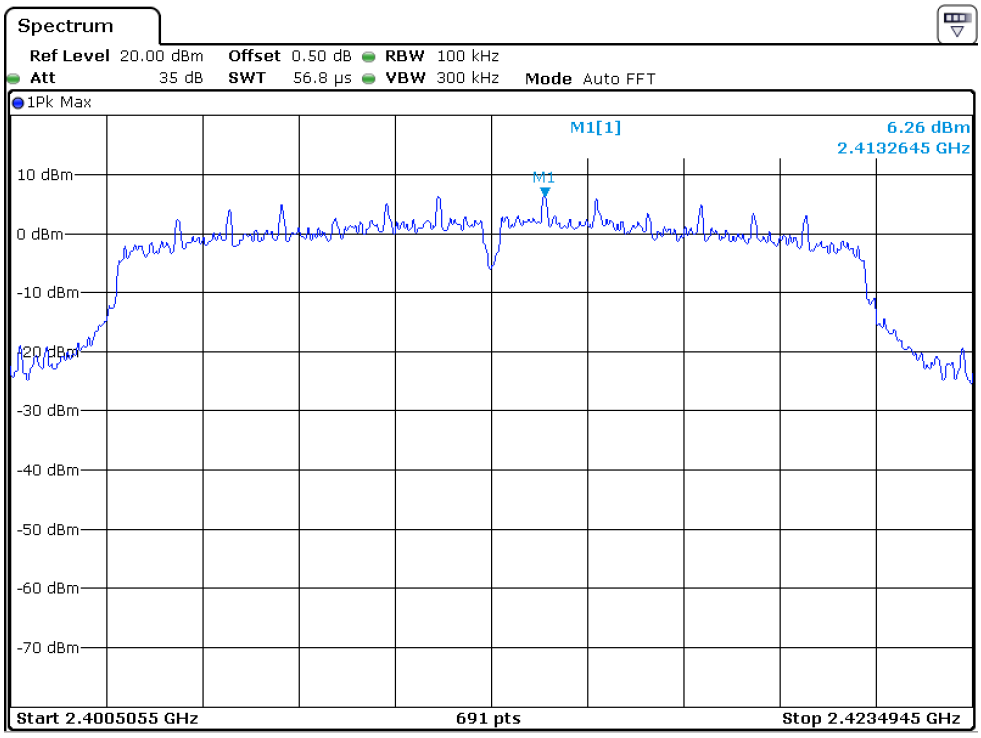


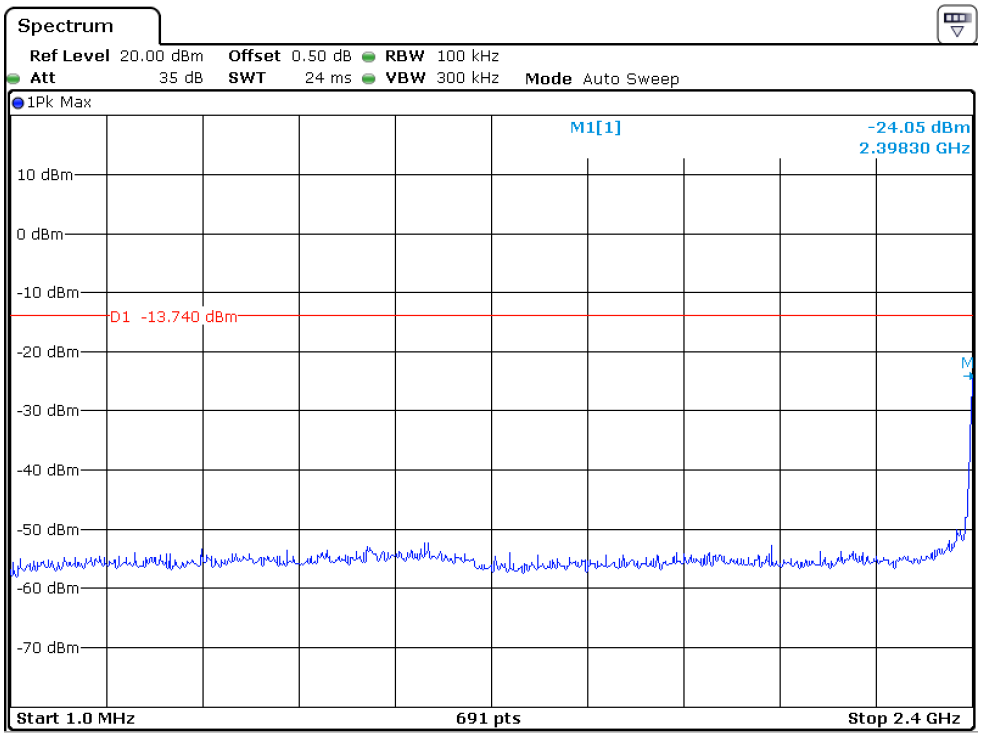


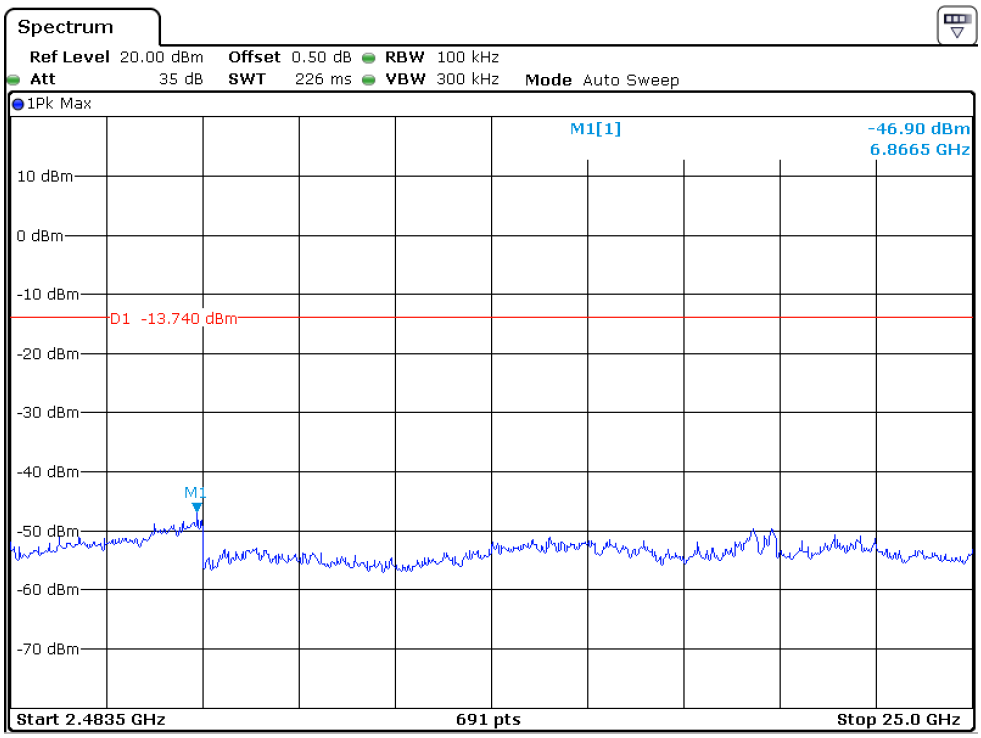

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz
Att 35 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -40.01 dBm
2.4995 GHz
10 dBm
0 dBm
-10 dBm
D1 -12.700 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz

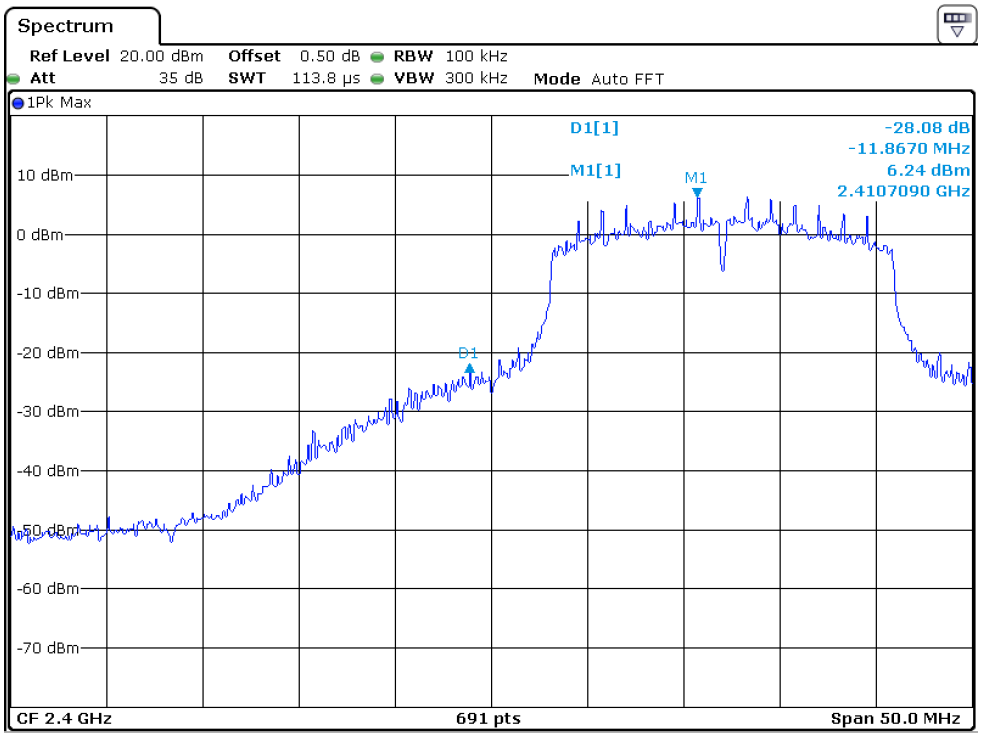

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz
Att 35 dB SWT 1 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
D1[1] -43.77 dB
20.670 MHz
M1[1] 7.14 dBm
2.463240 GHz
M1
D1
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.4835 GHz
691 pts
Span 70.0 MHz

802.11n-HT20
Channel 01 (2412MHz) Reference Level: 6.26dBm

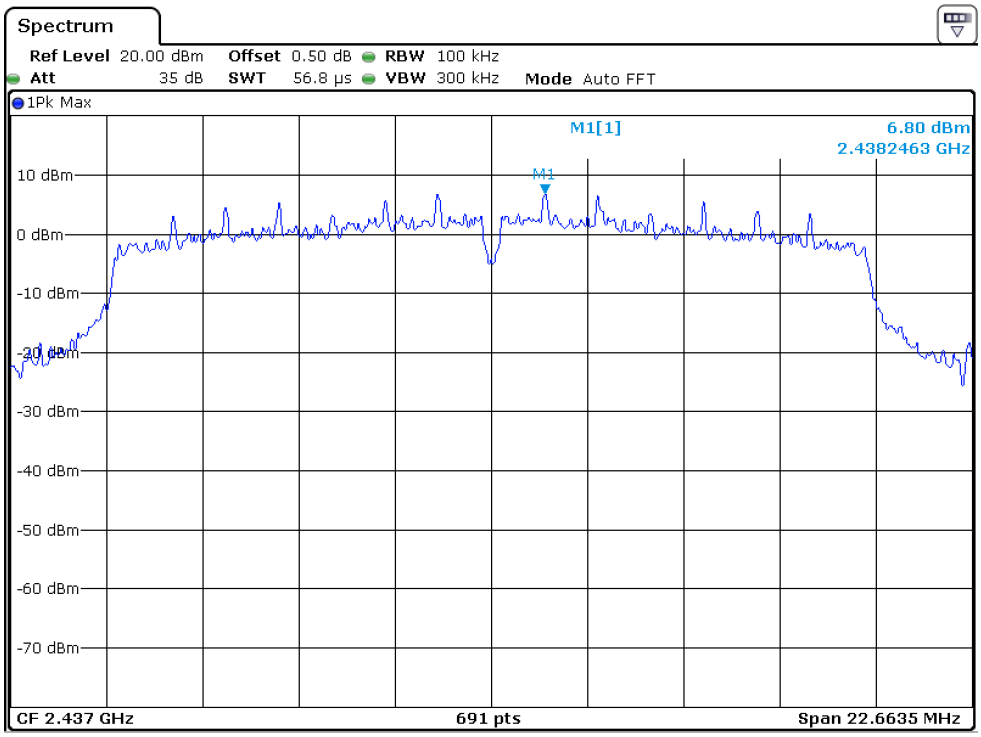


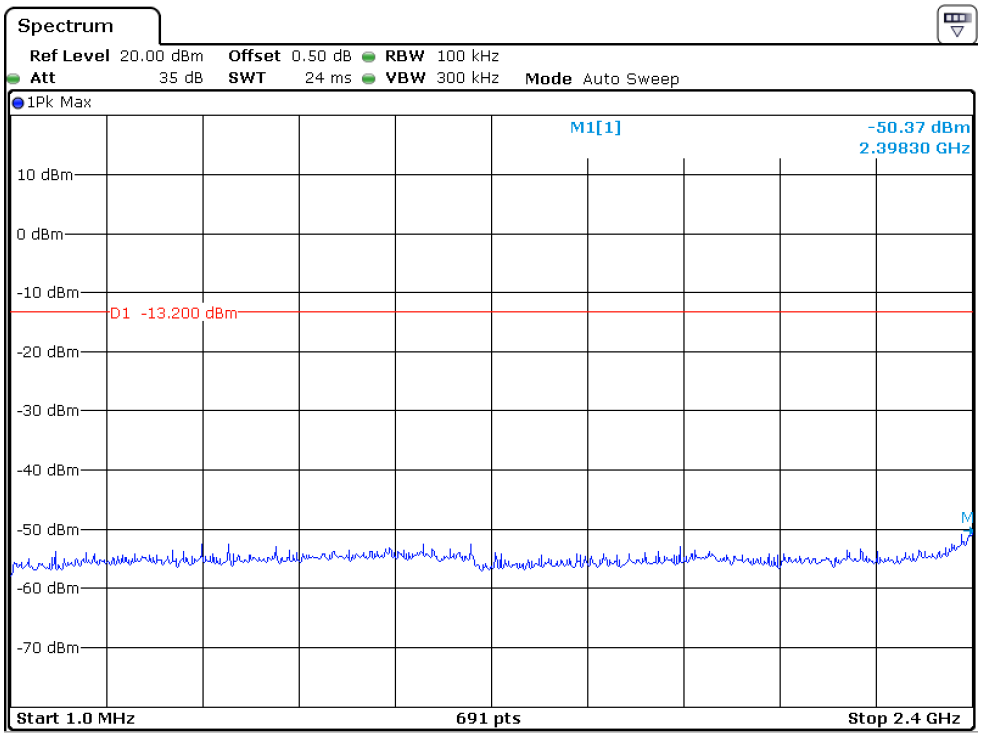


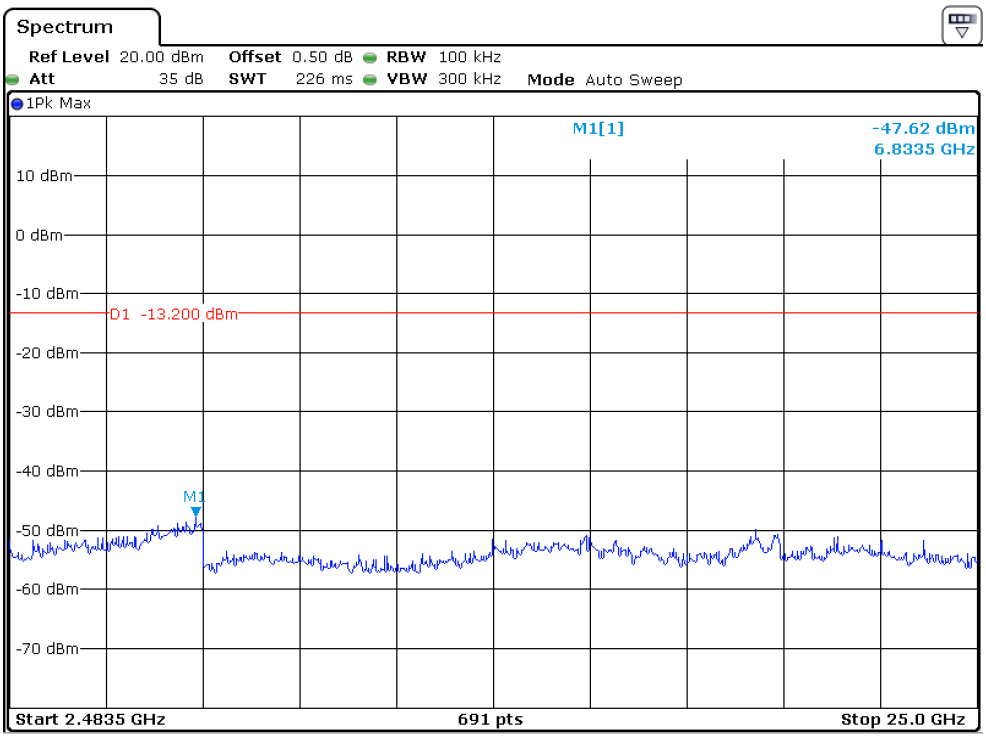

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz
Att 35 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -46.90 dBm
6.8665 GHz
10 dBm
0 dBm
-10 dBm
D1 -13.740 dBm
-20 dBm
-30 dBm
-40 dBm
M1
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz


Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz
Att 35 dB SWT 113.8 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -28.08 dB
-11.8670 MHz
M1[1] 6.24 dBm
2.4107090 GHz
M1
10 dBm
0 dBm
-10 dBm
-20 dBm
D1
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.4 GHz
691 pts
Span 50.0 MHz

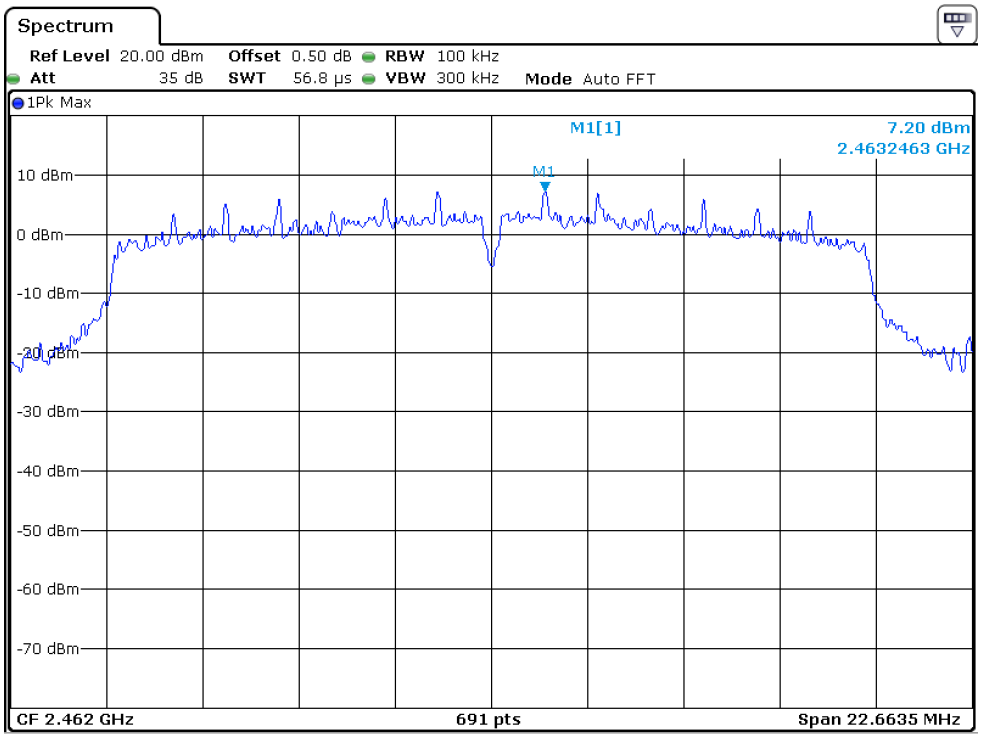
Channel 06 (2437MHz) Reference Level: 6.80dBm

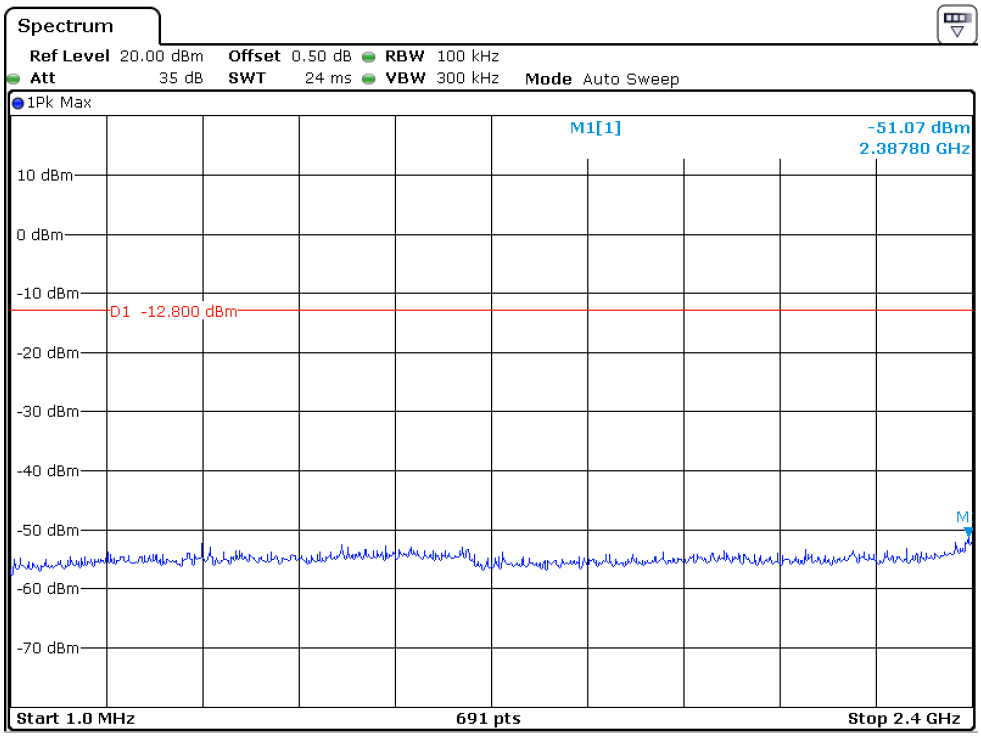


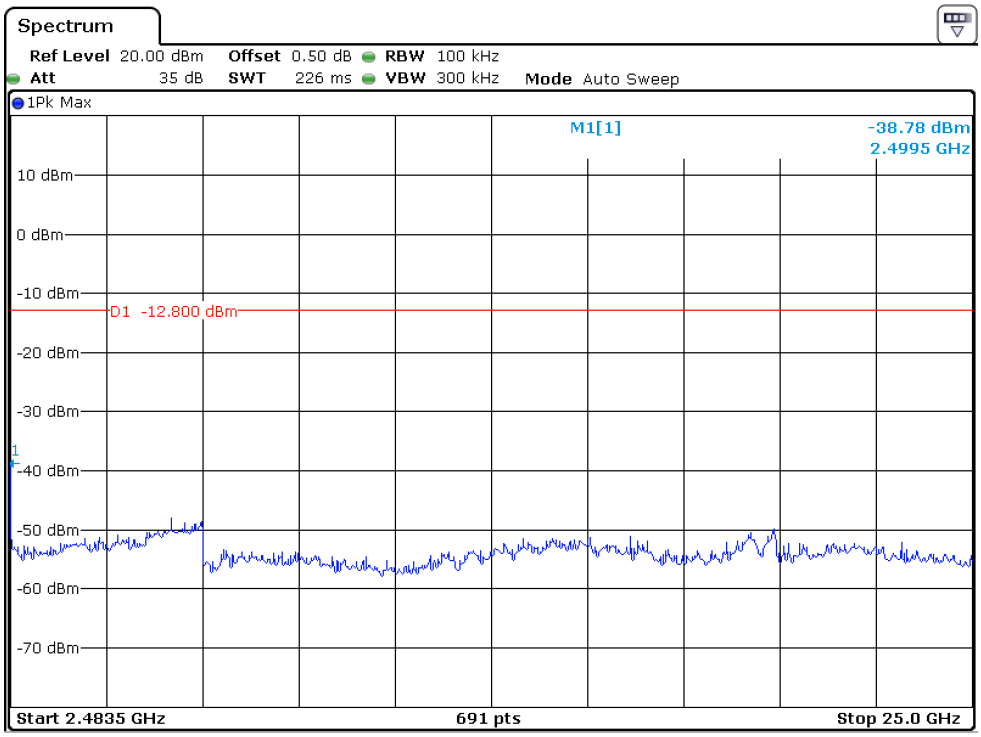


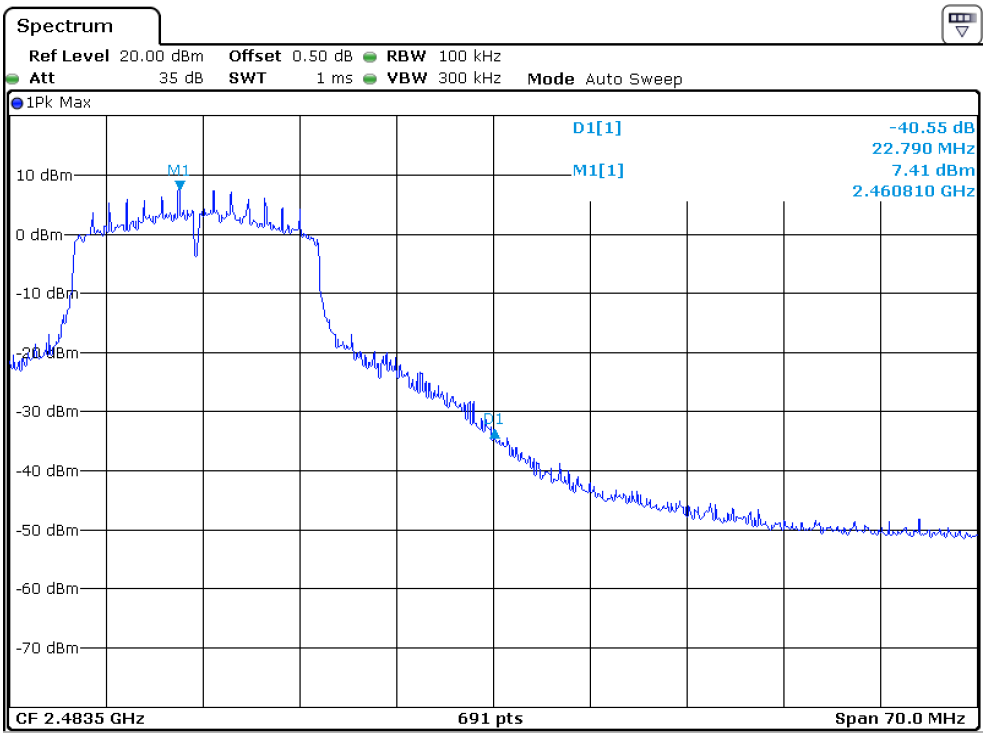


Channel 11 (2462MHz) Reference Level: 7.20dBm

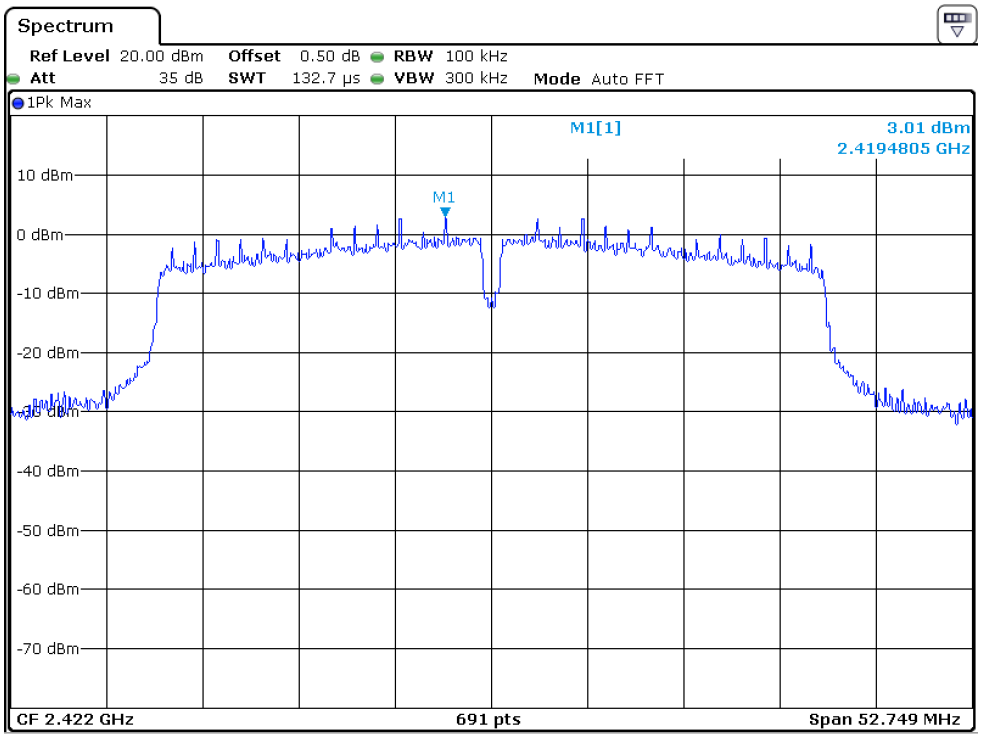


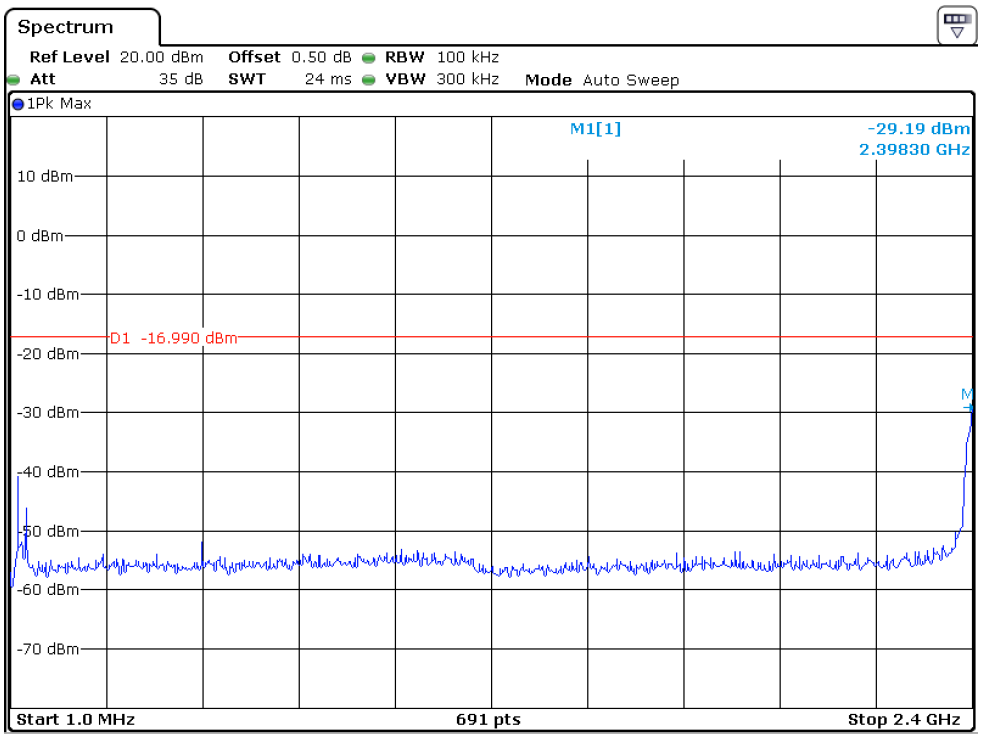

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz
Att 35 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -51.07 dBm
2.38780 GHz
10 dBm
0 dBm
-10 dBm
D1 -12.800 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 1.0 MHz
691 pts
Stop 2.4 GHz

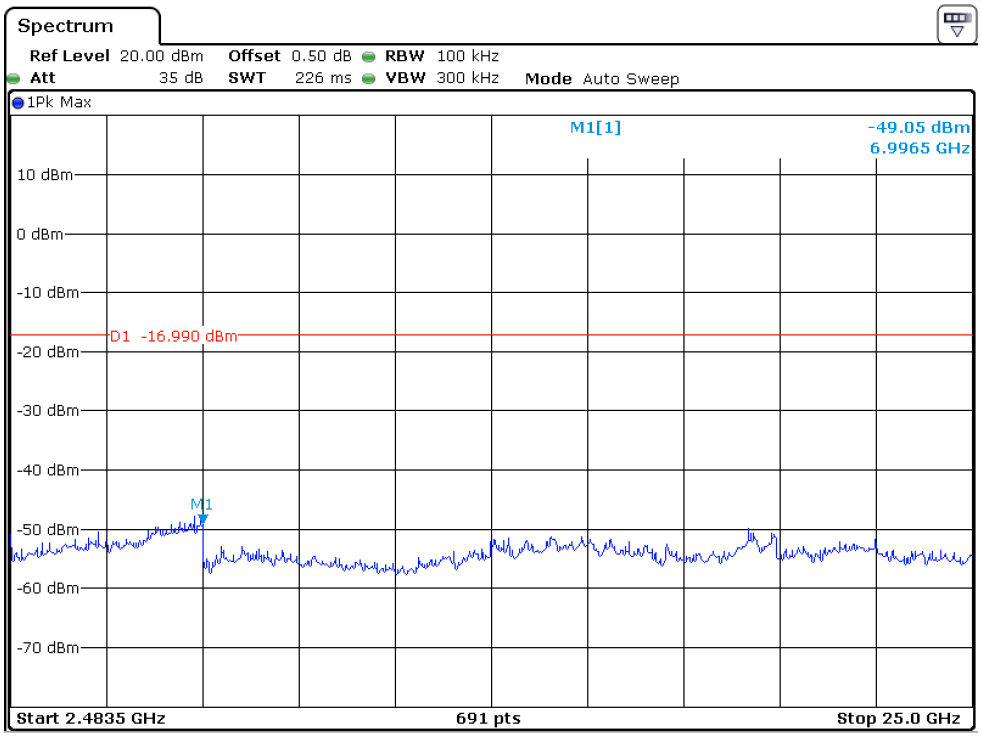

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz
Att 35 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -38.78 dBm
2.4995 GHz
10 dBm
0 dBm
-10 dBm
D1 -12.800 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz

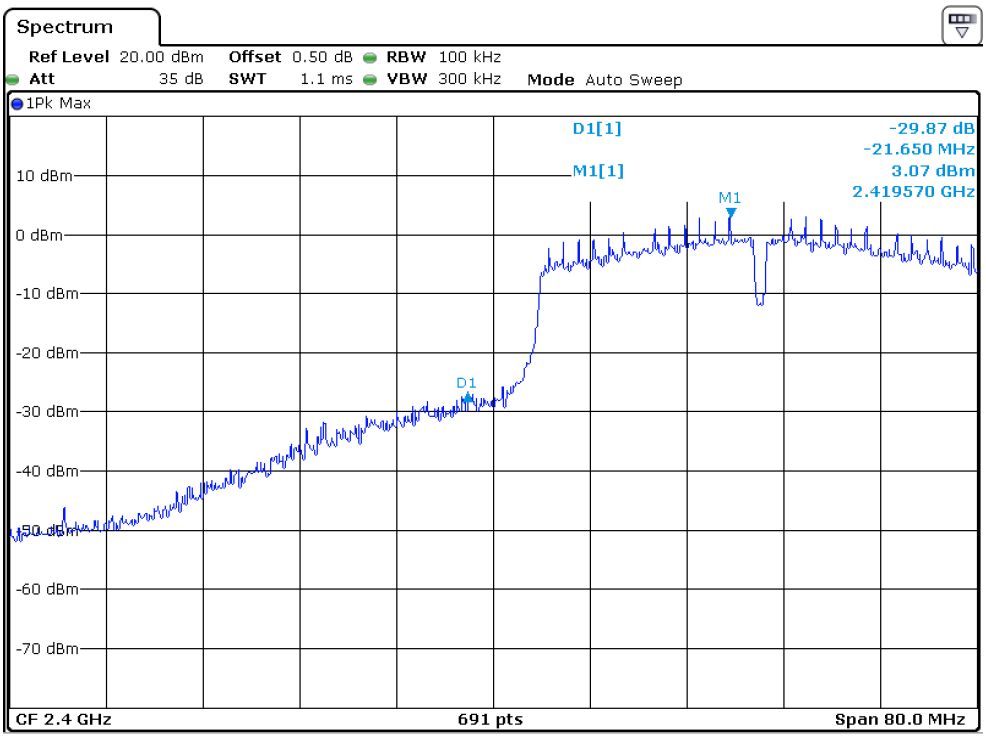


802.11n-HT40
Channel 01 (2422MHz) Reference Level: 3.01dBm

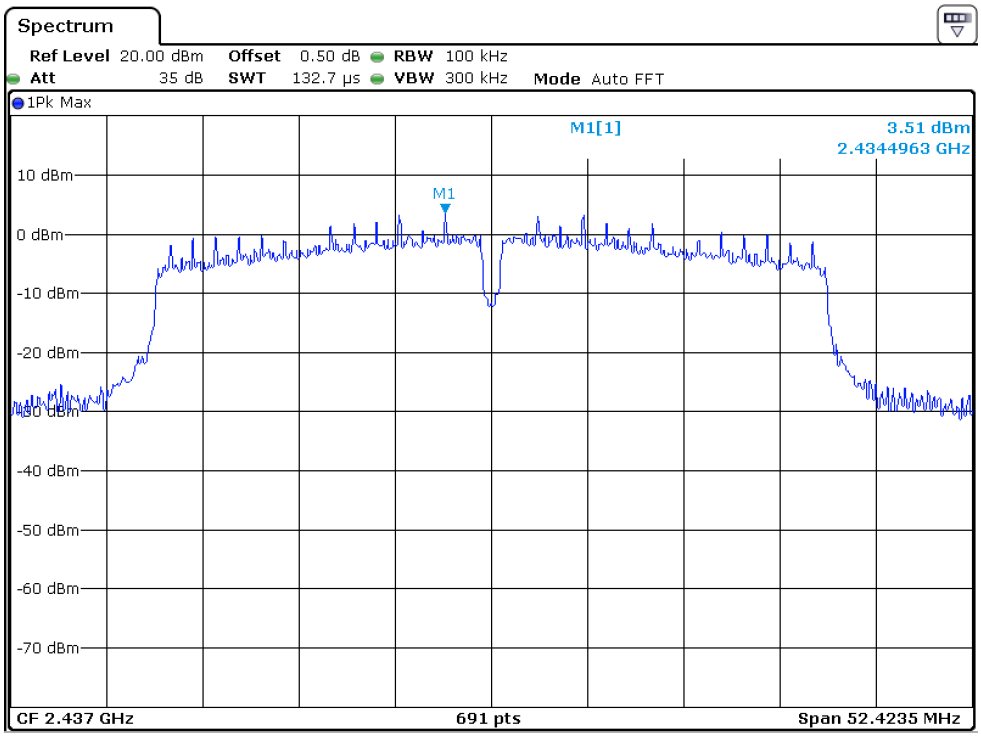


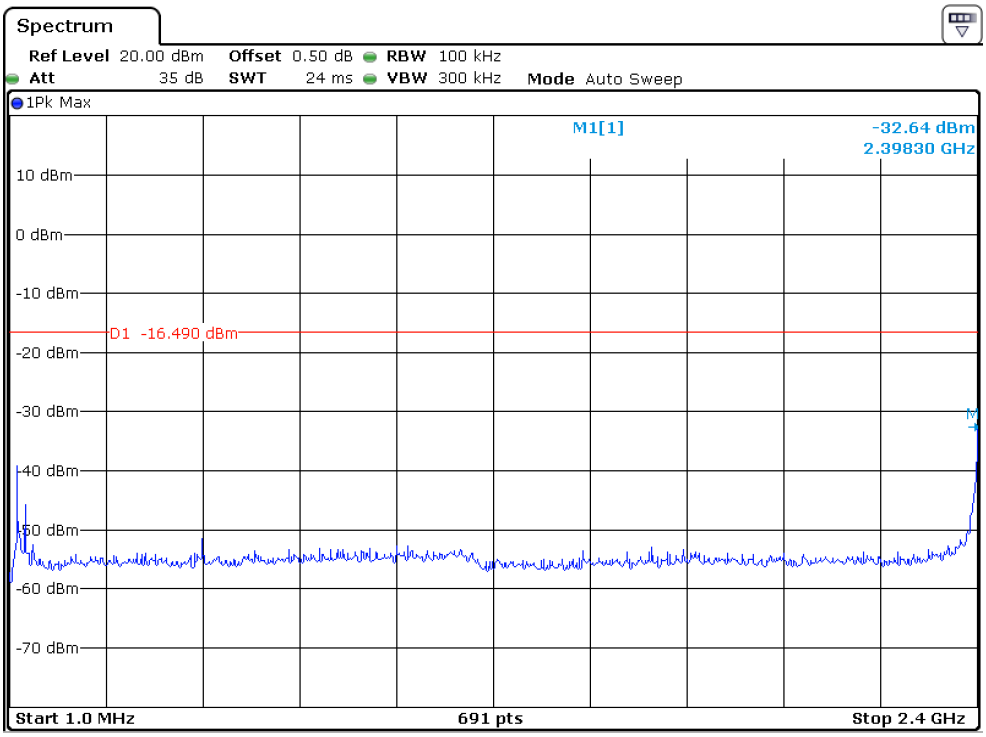

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz
Att 35 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -29.19 dBm
2.39830 GHz
10 dBm
0 dBm
-10 dBm
D1 -16.990 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 1.0 MHz
691 pts
Stop 2.4 GHz

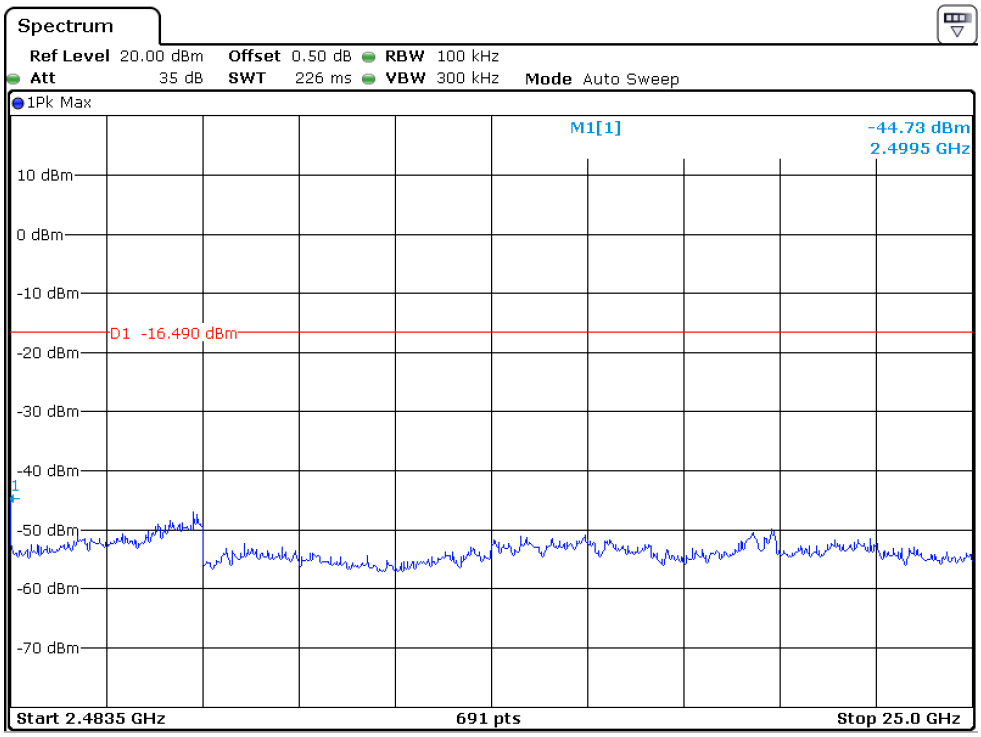

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz
Att 35 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -49.05 dBm
6.9965 GHz
10 dBm
0 dBm
-10 dBm
D1 -16.990 dBm
-20 dBm
-30 dBm
-40 dBm
M1
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz



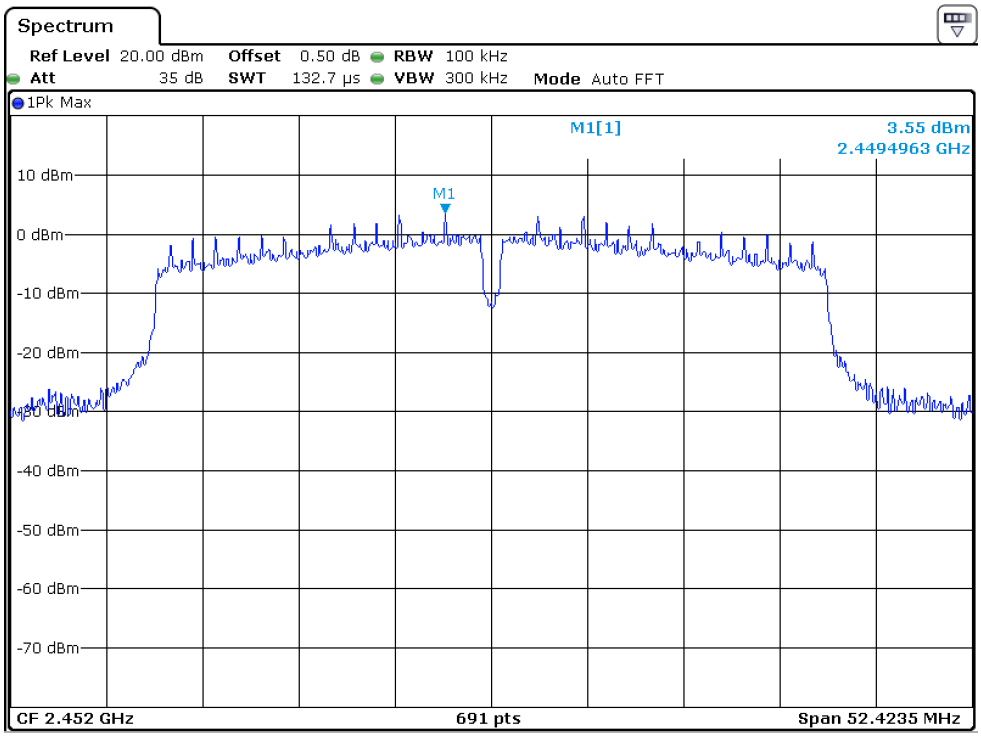
Channel 06 (2437MHz) Reference Level: 3.51dBm

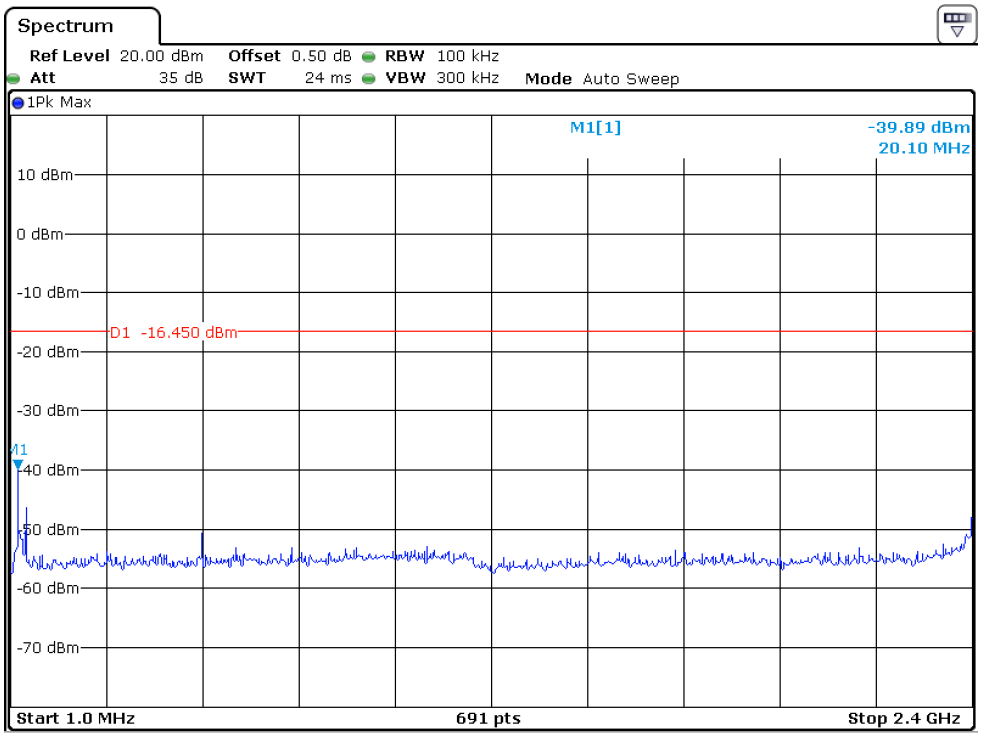


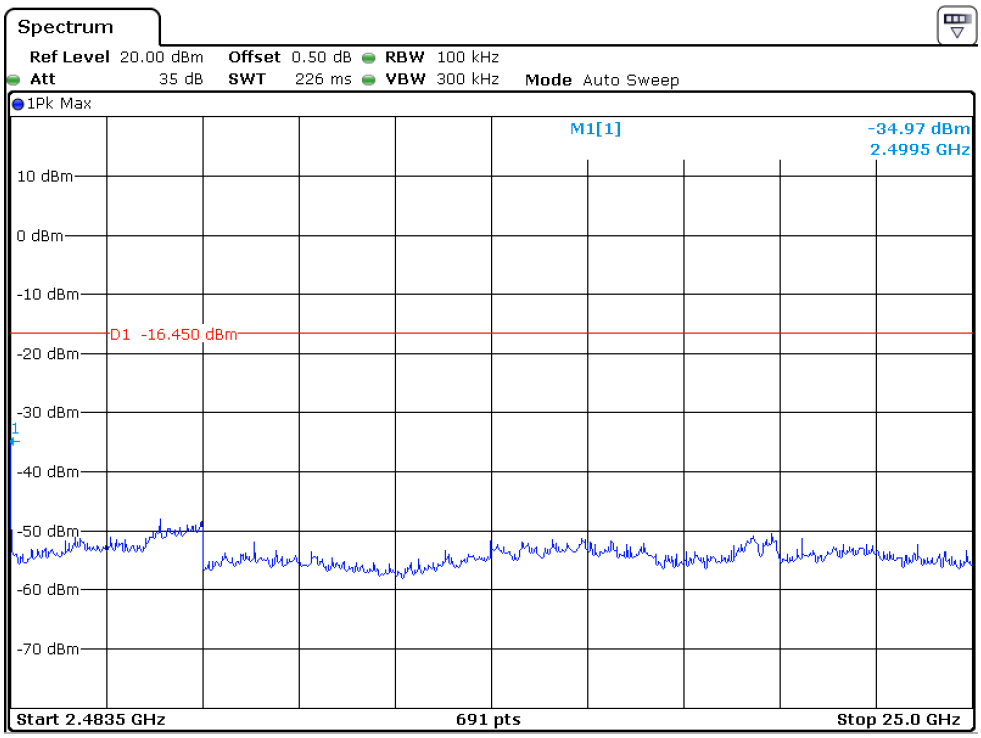

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz
Att 35 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -32.64 dBm
2.39830 GHz
10 dBm
0 dBm
-10 dBm
D1 -16.490 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 1.0 MHz
691 pts
Stop 2.4 GHz

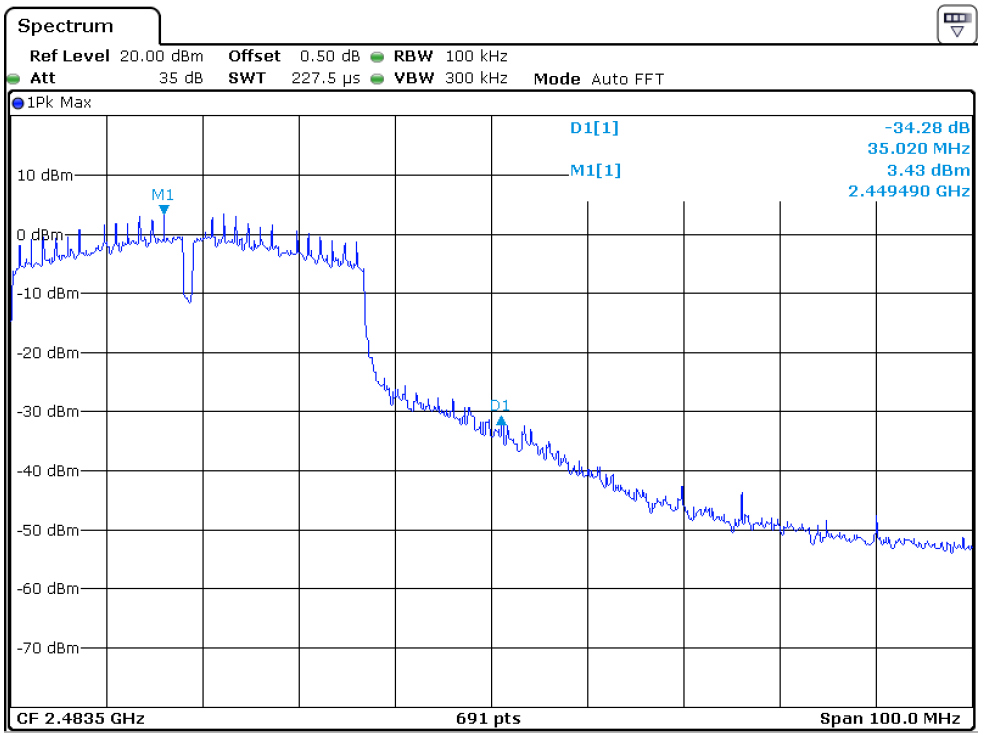

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz
Att 35 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -44.73 dBm
2.4995 GHz
10 dBm
0 dBm
-10 dBm
D1 -16.490 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz

Channel 11 (2452MHz) Reference Level: 3.55dBm






Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz
Att 35 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -34.97 dBm
2.4995 GHz
10 dBm
0 dBm
-10 dBm
D1 -16.450 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz


Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz
Att 35 dB SWT 227.5 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -34.28 dB
35.020 MHz
M1[1] 3.43 dBm
2.449490 GHz
M1
D1
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.4835 GHz
691 pts
Span 100.0 MHz

Applicant: Bluestem Brands Inc
Date of Test: 29 October 2019 Model: NQFEB

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

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

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

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

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

<u>Example</u>
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: Bluestem Brands Inc
Date of Test: 29 October 2019 Model: NQFEB

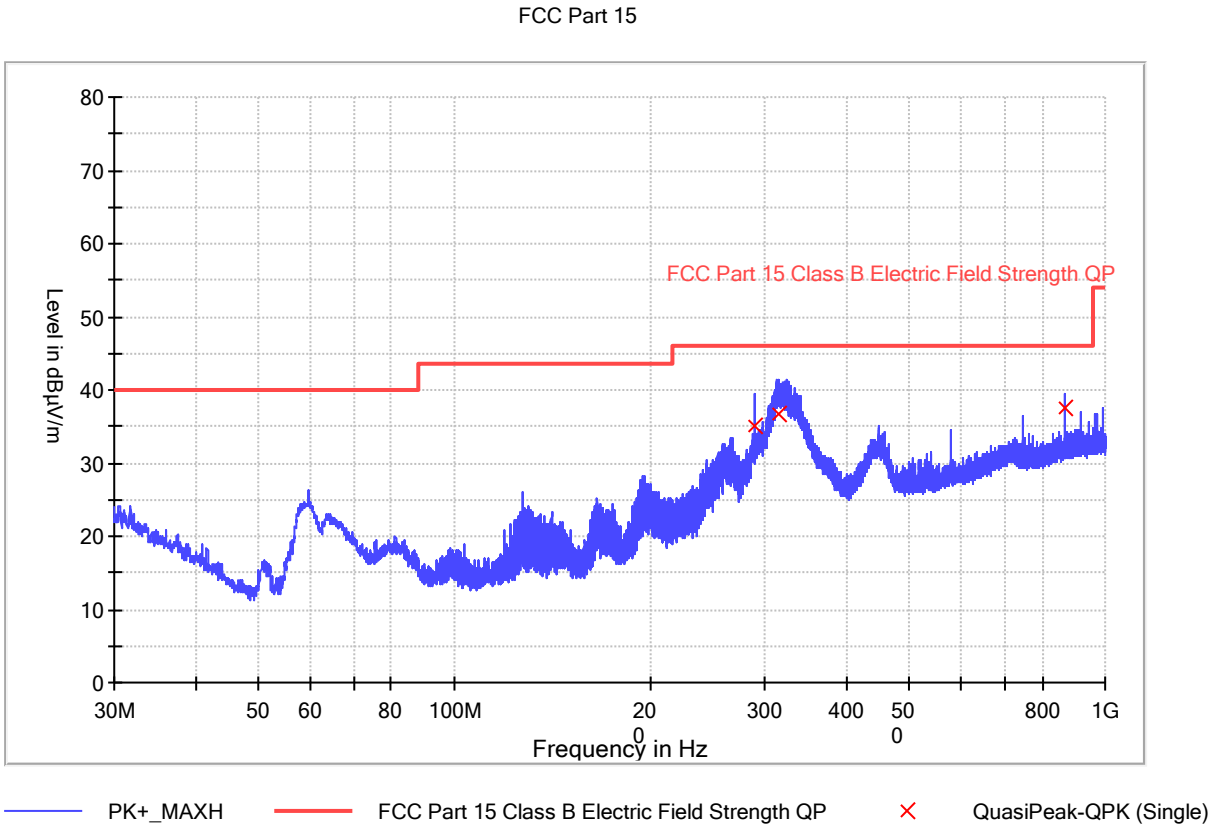
4.8 Radiated Spurious Emission

Worst Case Radiated Spurious Emission (802.11b-Channel 11)
at 7386.0MHz
is passed by 4.0dB margin.

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

Applicant: Bluestem Brands Inc
Date of Test: 29 October 2019 Model: NQFEB
Worst Case Operating Mode: Transmitting (802.11b-Channel 01)

ANT Polarity: Horizontal



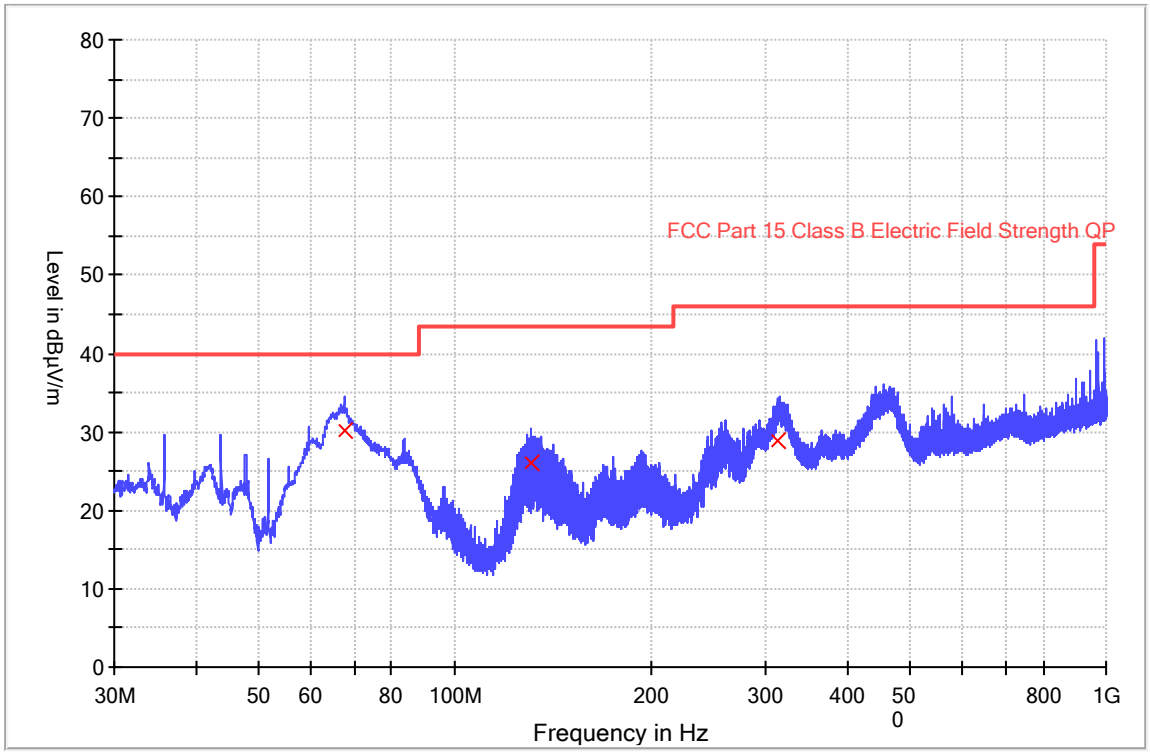
Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
289.992333	35.0	1000.0	120.000	0.0	H	16.2	11.0	46.0
315.859000	36.7	1000.0	120.000	0.0	H	17.1	9.3	46.0
869.987667	37.6	1000.0	120.000	0.0	H	27.2	8.4	46.0

Remark:
1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. QuasiPeak (dBµV/m)= Corr. (dB/m)+ Read Level (dBµV)
3. Margin (dB) = Limit Line(dBµV/m) – Level (dBµV/m)

Applicant: Bluestem Brands Inc
Date of Test: 29 October 2019
Model: NQFEB
Worst Case Operating Mode:
Transmitting (802.11b-Channel 01)

ANT Polarity: Vertical

FCC Part 15



Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
67.636000	30.1	1000.0	120.000	0.0	V	8.7	9.9	40.0
131.235667	26.0	1000.0	120.000	0.0	V	10.3	17.5	43.5
313.498667	29.0	1000.0	120.000	0.0	V	17.0	17.0	46.0

Remark:
1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. QuasiPeak (dBµV/m)= Corr. (dB/m)+ Read Level (dBµV)
3. Margin (dB) = Limit Line(dBµV/m) – Level (dBµV/m)

Applicant: Bluestem Brands Inc
Date of Test: 29 October 2019 Model: NQFEB
Worst Case Operating Mode: Transmitting (802.11b-Channel 01)

Radiated Emissions (above 1GHz)

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	59.2	36.8	33.5	55.9	74.0	-18.1
Horizontal	*2390.000	55.1	36.4	29.1	47.8	74.0	-26.2

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	53.1	36.8	33.5	49.8	54.0	-4.2
Horizontal	*2390.000	45.8	36.4	29.1	38.5	54.0	-15.5

NOTES:

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

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

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

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

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

Applicant: Bluestem Brands Inc
Date of Test: 29 October 2019 Model: NQFEB
Worst Case Operating Mode: Transmitting (802.11b-Channel 06)

Radiated Emissions (above 1GHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	59.4	36.7	33.4	56.1	74.0	-17.9
Horizontal	*7311.000	61.1	36.6	35.8	60.3	74.0	-13.7

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	47.4	36.7	33.4	44.1	54.0	-9.9
Horizontal	*7311.000	47.2	36.6	35.8	46.4	54.0	-7.6

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: Bluestem Brands Inc
Date of Test: 29 October 2019 Model: NQFEB
Worst Case Operating Mode: Transmitting (802.11b-Channel 11)

Radiated Emissions (above 1GHz)

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	59.1	36.8	33.3	55.6	74.0	-18.4
Horizontal	*7386.000	64.3	36.5	29.3	57.1	74.0	-16.9
Horizontal	*2487.064	57.1	36.4	27.5	48.2	74.0	-25.8

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	53.2	36.8	33.3	49.7	54.0	-4.3
Horizontal	*7386.000	57.2	36.5	29.3	50.0	54.0	-4.0
Horizontal	*2487.064	48.6	36.4	27.5	39.7	54.0	-14.3

NOTES:

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

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

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

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

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

Applicant: Bluestem Brands Inc
Date of Test: 29 October 2019 Model: NQFEB
Worst Case Operating Mode: Transmitting (802.11g-Channel 01)

Radiated Emissions (above 1GHz)

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	58.0	36.8	33.5	54.7	74.0	-19.3
Horizontal	*2390.000	53.8	36.4	29.1	46.5	74.0	-27.5

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	43.0	36.8	33.5	39.7	54.0	-14.3
Horizontal	*2390.000	44.1	36.4	29.1	36.8	54.0	-17.2

NOTES:

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

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

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

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

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

Applicant: Bluestem Brands Inc
Date of Test: 29 October 2019 Model: NQFEB
Worst Case Operating Mode: Transmitting (802.11g-Channel 06)

Radiated Emissions (above 1GHz)

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	57.3	36.7	33.4	54.0	74.0	-20.0
Horizontal	*7311.000	56.6	36.6	35.8	55.8	74.0	-18.2

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	42.3	36.7	33.4	39.0	54.0	-15.0
Horizontal	*7311.000	42.2	36.6	35.8	41.4	54.0	-12.6

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: Bluestem Brands Inc
Date of Test: 29 October 2019 Model: NQFEB
Worst Case Operating Mode: Transmitting (802.11g-Channel 11)

Radiated Emissions (above 1GHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4924.000	57.3	36.8	33.3	53.8	74.0	-20.2
Horizontal	*7386.000	61.7	36.5	29.3	54.5	74.0	-19.5
Horizontal	*2485.100	56.6	36.4	27.5	47.7	74.0	-26.3

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4924.000	42.7	36.8	33.3	39.2	54.0	-14.8
Horizontal	*7386.000	49.2	36.5	29.3	42.0	54.0	-12.0
Horizontal	*2485.100	47.5	36.4	27.5	38.6	54.0	-15.4

NOTES:

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

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

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

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

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

Applicant: Bluestem Brands Inc
Date of Test: 29 October 2019 Model: NQFEB
Worst Case Operating Mode: Transmitting (802.11n20-Channel 01)

Radiated Emissions (above 1GHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	55.4	36.8	33.5	52.1	74.0	-21.9
Horizontal	*2390.000	51.1	36.4	29.1	43.8	74.0	-30.2

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	42.4	36.8	33.5	39.1	54.0	-14.9
Horizontal	*2390.000	45.4	36.4	29.1	38.1	54.0	-15.9

NOTES:

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

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

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

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

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

Applicant: Bluestem Brands Inc
Date of Test: 29 October 2019 Model: NQFEB
Worst Case Operating Mode: Transmitting (802.11n20-Channel 06)

Radiated Emissions (above 1GHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	55.3	36.7	33.4	52.0	74.0	-22.0
Horizontal	*7311.000	54.5	36.6	35.8	53.7	74.0	-20.3

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	42.3	36.7	33.4	39.0	54.0	-15.0
Horizontal	*7311.000	42.6	36.6	35.8	41.8	54.0	-12.2

NOTES:

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

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

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

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

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

Applicant: Bluestem Brands Inc
Date of Test: 29 October 2019 Model: NQFEB
Worst Case Operating Mode: Transmitting (802.11n20-Channel 11)

Radiated Emissions (above 1GHz)

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	55.3	36.8	33.3	51.8	74.0	-22.2
Horizontal	*7386.000	60.5	36.5	29.3	53.3	74.0	-20.7
Horizontal	*2486.055	53.4	36.4	27.5	44.5	74.0	-29.5

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4924.000	42.7	36.8	33.3	39.2	54.0	-14.8
Horizontal	*7386.000	50.3	36.5	29.3	43.1	54.0	-10.9
Horizontal	*2486.055	44.8	36.4	27.5	35.9	54.0	-18.1

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: Bluestem Brands Inc
Date of Test: 29 October 2019 Model: NQFEB
Worst Case Operating Mode: Transmitting (802.11n40-Channel 03)

Radiated Emissions (above 1GHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4844.000	55.4	36.8	33.5	52.1	74.0	-21.9
Horizontal	*2389.100	53.0	36.4	29.1	45.7	74.0	-28.3

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4844.000	41.4	36.8	33.5	38.1	54.0	-15.9
Horizontal	*2389.100	44.4	36.4	29.1	37.1	54.0	-16.9

NOTES:

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

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

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

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

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

Applicant: Bluestem Brands Inc
Date of Test: 29 October 2019 Model: NQFEB
Worst Case Operating Mode: Transmitting (802.11n40-Channel 06)

Radiated Emissions (above 1GHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	55.5	36.7	33.4	52.2	74.0	-21.8
Horizontal	*7311.000	55.3	36.6	35.8	54.5	74.0	-19.5

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	41.4	36.7	33.4	38.1	54.0	-15.9
Horizontal	*7311.000	42.4	36.6	35.8	41.6	54.0	-12.4

NOTES:

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

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

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

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

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

Applicant: Bluestem Brands Inc
Date of Test: 29 October 2019 Model: NQFEB
Worst Case Operating Mode: Transmitting (802.11n40-Channel 09)

Radiated Emissions (above 1GHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4904.000	55.5	36.8	33.3	52.0	74.0	-22.0
Horizontal	*7356.000	61.6	36.5	29.3	54.4	74.0	-19.6
Horizontal	*2488.000	50.4	36.4	27.5	41.5	74.0	-32.5

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4904.000	41.5	36.8	33.3	38.0	54.0	-16.0
Horizontal	*7356.000	48.2	36.5	29.3	41.0	54.0	-13.0
Horizontal	*2488.000	43.9	36.4	27.5	35.0	54.0	-19.0

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: Bluestem Brands Inc
Date of Test: 22 October 2019
Model: NQFEB

4.9 Conducted Emission

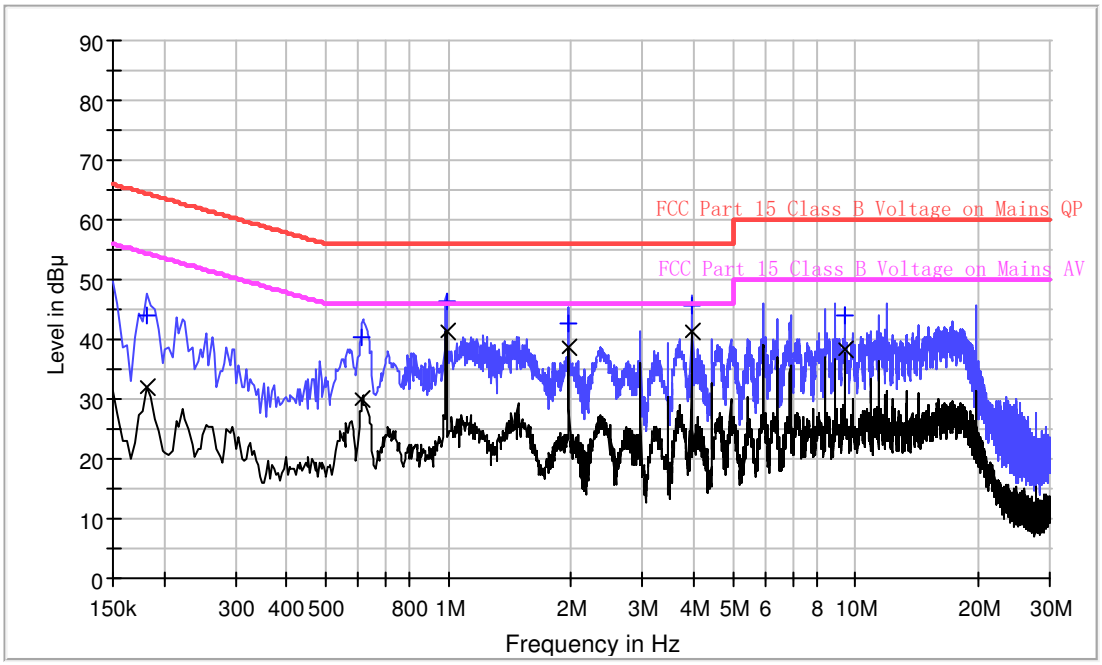
Worst Case Conducted Emission (802.11b-Channel 01)
at 0.988MHz
is passed by 4.5dB margin.

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

Applicant: Bluestem Brands Inc
Date of Test: 22 October 2019
Model: NQFEB
Worst Case Operating Mode: Transmitting (802.11b-Channel 01)
Phase: Live

Graphic / Data Table

Conducted Emissions
Pursuant to FCC 15.207: Emissions Requirement



Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.182000	44.1	9.000	L1	9.7	20.3	64.4
0.614000	40.5	9.000	L1	9.7	15.5	56.0
0.988000	46.3	9.000	L1	9.7	9.7	56.0
1.974000	42.7	9.000	L1	9.7	13.3	56.0
3.950000	45.6	9.000	L1	9.8	10.4	56.0
9.386000	44.0	9.000	L1	9.9	16.0	60.0

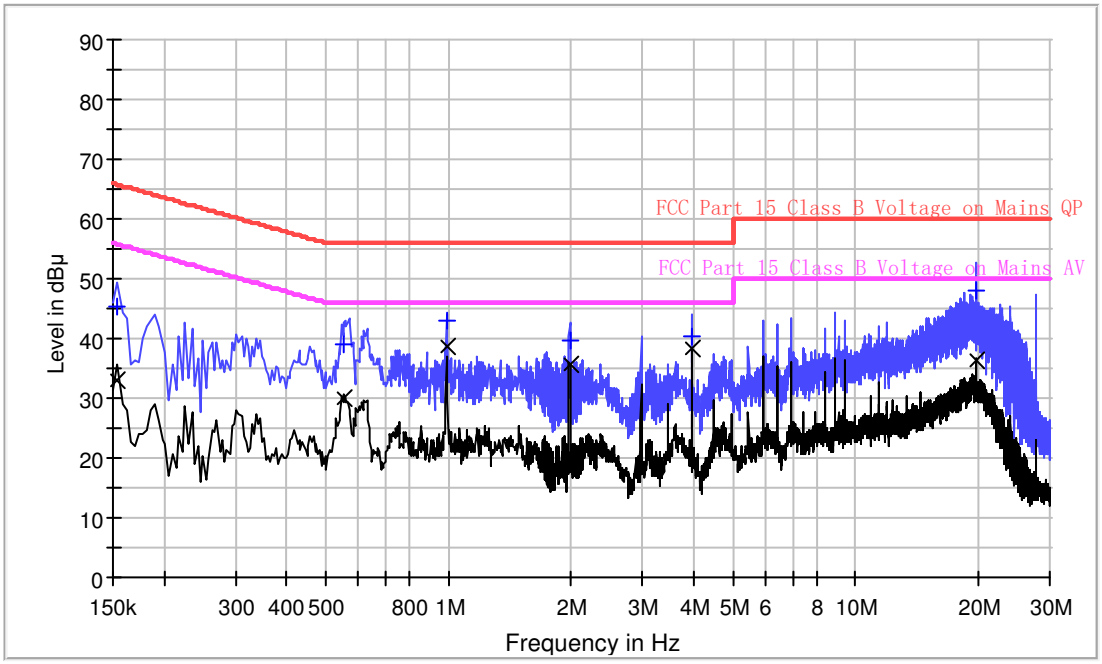
Limit and Margin AV

Frequency (MHz)	Average (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.182000	32.1	9.000	L1	9.7	22.3	54.4
0.614000	29.9	9.000	L1	9.7	16.1	46.0
0.988000	41.5	9.000	L1	9.7	4.5	46.0
1.974000	38.8	9.000	L1	9.7	7.2	46.0
3.950000	41.2	9.000	L1	9.8	4.8	46.0
9.386000	38.4	9.000	L1	9.9	11.6	50.0

Applicant: Bluestem Brands Inc
Date of Test: 22 October 2019
Model: NQFEB
Worst Case Operating Mode: Transmitting (802.11b-Channel 01)
Phase: Neutral

Graphic / Data Table

Conducted Emissions
Pursuant to FCC 15.207: Emissions Requirement



Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.154000	45.4	9.000	N	9.7	20.4	65.8
0.554000	38.9	9.000	N	9.7	17.1	56.0
0.992000	42.9	9.000	N	9.7	13.1	56.0
1.984000	39.7	9.000	N	9.8	16.3	56.0
3.966000	40.4	9.000	N	9.8	15.6	56.0
19.882000	47.9	9.000	N	10.5	12.1	60.0

Limit and Margin AV

Frequency (MHz)	Average (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.154000	33.2	9.000	N	9.7	22.6	55.8
0.554000	29.9	9.000	N	9.7	16.1	46.0
0.992000	38.5	9.000	N	9.7	7.5	46.0
1.984000	35.8	9.000	N	9.8	10.2	46.0
3.966000	38.3	9.000	N	9.8	7.7	46.0
19.882000	36.4	9.000	N	10.5	13.6	50.0

Applicant: Bluestem Brands Inc
Date of Test: 29 October 2019
Model: NQFEB

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: Bluestem Brands Inc
Date of Test: 29 October 2019
Model: NQFEB

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.

5.0 Equipment Photographs

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

6.0 Product Labeling

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

7.0 Technical Specifications

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

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.

9.0 Confidentiality Request

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

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.

11.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ182-01-01	Power Sensor	ESE	51011	--	15-Jan-2019	15-Jan-2020
SZ182-01	Power Meter	ESE	4232A	--	15-Jan-2019	15-Jan-2020
SZ061-12	Biconilog Antenna	ETS	3142E	00166158	14-Sep-2018	14-Sep-2020
SZ061-06	Active Loop Antenna	Electro-Metrics	EM-6876	217	24-May-2019	24-May-2020
SZ061-08	Horn Antenna	ETS	3115	00092346	07-Sep-2018	07-Sep-2021
SZ061-07	Pyramidal Horn Antenna	ETS	3160-09	00083067	10-Mar-2019	10-Mar-2020
SZ056-03	Spectrum Analyzer	R&S	FSP30	101148	28-May-2019	28-May-2020
SZ185-01	EMI Receiver	R & S	ESCI	100547	04-Jan-2019	04-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	--	19-Jun-2019	19-Dec-2019
SZ062-05	RF Cable	RADIALL	0.04-26.5GHz	--	14-Aug-2019	14-Feb-2020
SZ062-12	RF Cable	RADIALL	0.04-26.5GHz	--	14-Aug-2019	14-Feb-2020
SZ067-04	Notch Filter	Micro-Tronics	BRM50702-02	--	28-May-2019	28-May-2020
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	28-Oct-2018 29-Oct-2019	28-Oct-2019 29-Oct-2020
SZ187-02	Two-Line V-Network	R&S	ENV216	100073	28-May-2019	28-May-2020
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	28-Oct-2018 29-Oct-2019	28-Oct-2019 29-Oct-2020

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