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Prüfbericht - Nr.: *Test Report No.:*	**19660218 001**		**Seite 1 von 115** *Page 1 of 115*
Auftraggeber: *Client:*	**Blaze Automation Inc.** **2050, Brunswick Plaza-1** **State Highway 27, Suite #201,** **North Brunswick,** **New Jersey - 08902**		
Gegenstand der Prüfung: *Test item:*	**B.One**		
Bezeichnung: *Identification:*	**B.One Hub**	**Serien-Nr.:** *Serial No.*	**Engineering Sample**
Wareneingangs-Nr.: *Receipt No.:*	**1803129254**	**Eingangsdatum:** *Date of receipt:*	**05.10.2017**
Prüfort: *Testing location:*	**Refer Page 4 of 115 for test facilities**		
Prüfgrundlage: *Test specification:*	**FCC Part 15 Subpart C 15.247** **RSS 247 Issue 2** **RSS-Gen issue 4** **ANSI C63.10-2013**		
Prüfergebnis: *Test Result:*	**Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).** *The test items passed the test specification(s).*		
Prüflaboratorium: *Testing Laboratory:*	**TÜV Rheinland (India) Pvt. Ltd.** 82/A, 3rd Main, West Wing, Electronic City Phase 1 Hosur Road, Bangalore – 560 100. India **FCC Test site Registration No.: 496599 and IC Registration: 3466E**		

geprüft / *tested by:*

Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*
01.11.2017	Girish Kumar G Engineer	

kontrolliert / *reviewed by:*

Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*
10.11.2017	Saibaba Siddapur Assistant Manager	

Sonstiges /*Other Aspects:* **FCC ID:2AHV7-B-ONEHUB**
IC:21793-B1HUB

Abkürzungen:				***Abbreviations:***			
	P(ass)	=	***entspricht Prüfgrundlage***		***P(ass)***	=	***passed***
	F(ail)	=	***entspricht nicht Prüfgrundlage***		***F(ail)***	=	***failed***
	N/A	=	***nicht anwendbar***		***N/A***	=	***not applicable***
	N/T	=	***nicht getestet***		***N/T***	=	***not tested***

Test Result Summary

FCC Clause	IC Clause	Test Item	Result
FCC 15.247(b) (3)	RSS-247 Issue 2 5.4(d)	Maximum Average Conducted Output Power	Pass
FCC 15.247(a) (2)	RSS-247 Issue 2 5.2(a)	6dB Bandwidth	Pass
FCC 15.247(e)	RSS-247 Issue 2 5.2(b)	Maximum Power Spectral Density	Pass
FCC 15.247(d)	RSS-247 Issue 2 5.5	Band-edge compliance	Pass
FCC 15.209 / FCC 15.205	RSS- Gen Issue 4 Section 8.9/8.10	Spurious Radiated Emissions and Restricted Bands of Operation	Pass
FCC 15.207	RSS- Gen Issue 4 Section 8.8	Conducted emission test on a.c Power line	Pass

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Appendix 1: Test Setup Photo

Appendix 2: EUT External Photo

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List of Test and Measurement Instruments

TUV Rheinland (India) Pvt. Ltd. , Bangalore

Equipment	Manufacturer	Model Name	Serial Number	Calibration Due Date	Periodicity	Used for Test Items
EMI Test Receiver	Rohde & Schwarz	ESU 40	100288	24.10.2018	Yearly	Spurious Radiated Emissions
Broadband Antenna	Frankonia	ALX-4000	ALX-4000-806	10.06.2018	Yearly	
Active Loop Antenna	Frankonia	LAX-10	LAX-10-800	22.12.2017	Yearly	
Broadband Horn Antenna	Frankonia	HAX-18	HAX18-802	16.03.2018	Yearly	
Double-Ridged Waveguide Horn Antenna	ETS Lindgren	116706	00107323	02.10.2018	Yearly	
Anechoic Chamber	Frankonia	-	-		-	
Spectrum Analyser	Agilent Technologies	E4407B	US41192772	13.02.2018	Yearly	Antenna - Port Conducted Tests
Signal Analyzer	Rohde & Schwarz	FSV7	101644	01.12.2017	Yearly	
LISN	Rohde & Schwarz	ENV216	100022	07.09.2018	Yearly	Conducted Emission on AC power lines
EMI Receiver	Rohde & Schwarz	ESR7	101133	10.12.2017	Yearly	

Testing Facilities:

1) TUV Rheinland (India) Private Limited
No. 108, West Wing
Electronic city Phase I
Bangalore – 560100

Measurement Uncertainty

Parameter	Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power	±1,5 dB
Power Spectral Density	±3 dB
Unwanted Emissions, conducted	±3 dB
All emissions, radiated	±6 dB

General Product Information

Product Function and Intended Use

B.One is the most advanced, powerful and intuitive smart home system that gives the user complete control over his household's security, ambience, entertainment and much more from a single hub and a single app. The hub also sports a Universal IR Remote control along with learning capabilities. With several processors working in tandem, B.One ensures that no alarm or notification is missed, the proprietary self-learning algorithm adapts to the needs of the user making it versatile, smart and unbelievably easy to use.

Ratings and System Details

Operating Frequency Range	Wi-Fi, BTLE & ZigBee : 2400 - 2483.5MHz	
Channel Spacing	5MHz – Wi-Fi, ZigBee 2MHz – BT LE	
Antenna Gain	Wi-Fi	1.9 dBi
	ZigBee	0.77 dBi
	BLE	0 dBi
Transmitted Power	802.11b	16.75 dBm
	802.11g	19.58 dBm
	802.11n	19.54 dBm
	Bluetooth LE	04.45 dBm
	ZigBee	12.48 dBm
Supply Voltage to Module	5V DC from Power Adaptor	
Environmental	Operational Temperature: -30ºC to 70º C	

Test Conditions:

Supply Voltage: 5V DC from Power Adaptor

Environmental conditions:

Temperature: +24.8 º C RH: 62%

Test Set-up and Operation Mode

Principle of Configuration Selection

Transmission was enabled with continuous transmission on low, mid and high channel.

Test Operation and Test Software

Radio GUI, HyperTerminal and BG Script code was used to enable the continuous transmission, changing channels (low/mid/high) and data rates on the EUT for Licence free bands.

Special Accessories and Auxiliary Equipment

- None

Countermeasures to achieve EMC Compliance

- None

Test Modes – Data Rates and Modulations

For Radiated spurious emissions, the tests were performed in both simultaneous and independent operating mode and worst case test results are mentioned in this report.

For Conducted emission, the tests were performed in both simultaneous and independent operating mode and worst case test results are mentioned in this report.

Power Settings:

ZigBee: The output power setting on channel 26 was changed from -2 to -26 to meet the radiated band edge requirement at 2483.5 MHz restricted band edge.

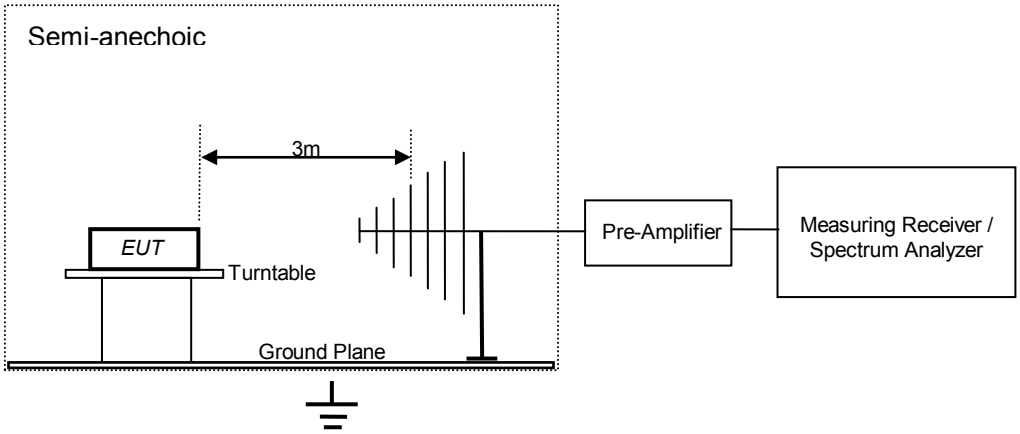
The Output power setting on channel 25 was changed from -2 to -6 to meet the radiated band edge requirement at 2483.5 MHz restricted band edge.

Test Methodology

Radiated Emission Test

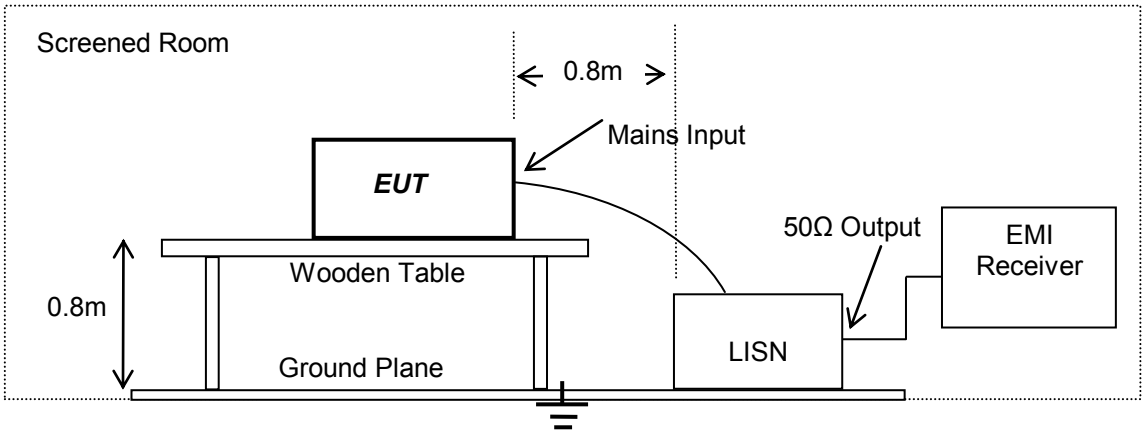
The radiated emission measurement was performed according to the procedures in ANSI C63.10-2013. The equipment under test (EUT) was placed at the middle of the 80 cm high turntable for below 1GHz & 1.5m height for above 1GHz measurement, and the EUT is 3 meters far from the measuring antenna. The turntable was rotated 360° for obtaining the maximum emission. The height of the measuring antennas was scanned between 1m and 4m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained. The measurement above 1000MHz was performed by horn antenna. The measurement below 30MHz was performed by loop antenna.

The EUT was rotated around the X-, Y-, and Z-Axis and the results from worst case axis are recorded.



Conducted Emission Test on A.C. mains line

The equipment under test (EUT) was placed on a wooden table 80cm above the ground plane, the LISN was place 80cm away from the EUT. The test was performed in accordance with ANSI C63.10 - 2013, with the following: an initial measurement was performed in peak and average detection mode on the live and neutral lines. The pre-scan was performed by peak detection on both live and neutral conductors. Any emissions recorded within 20dB of the relevant limit line were re-measured using quasi-peak and average detections, the 6 worst cases was recorded in the table of results.



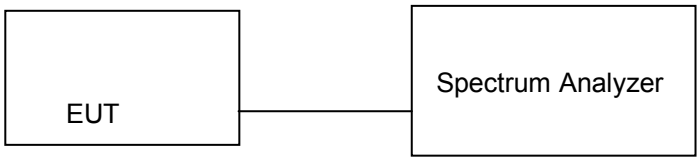
Test Results

Maximum Peak Conducted Output Power

Result **Pass**

Test Specification	FCC Part 15 Subpart C
Measurement Bandwidth (RBW)	300 kHz/1MHz
Requirement	<1 watt (30dBm).

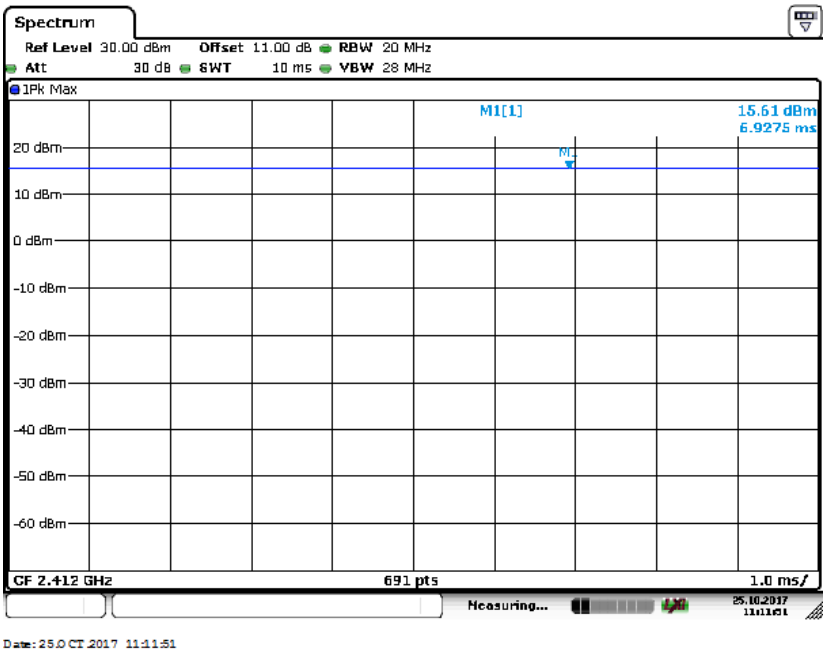
Test Method:



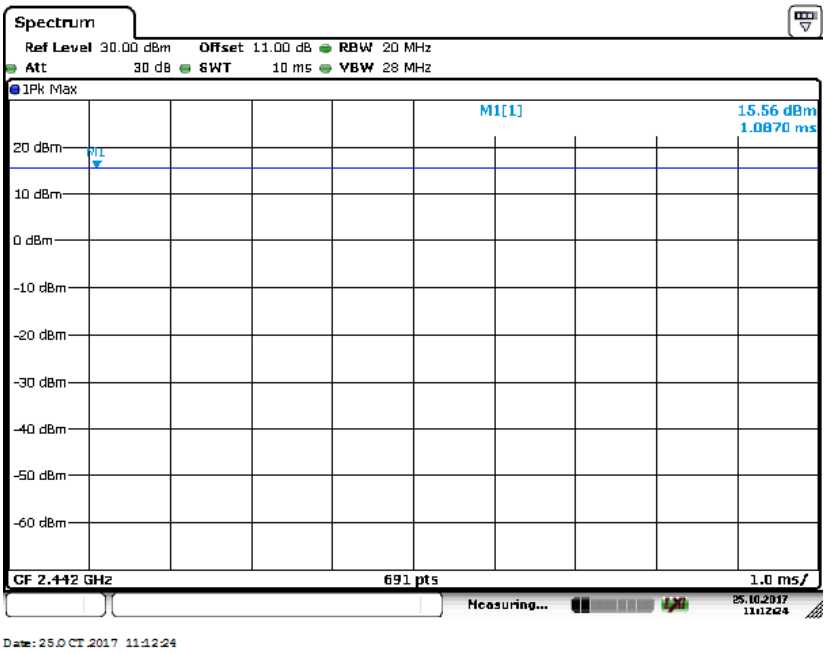
Test Result: Wi-Fi

Note: Offset value is added in the final measurement value.

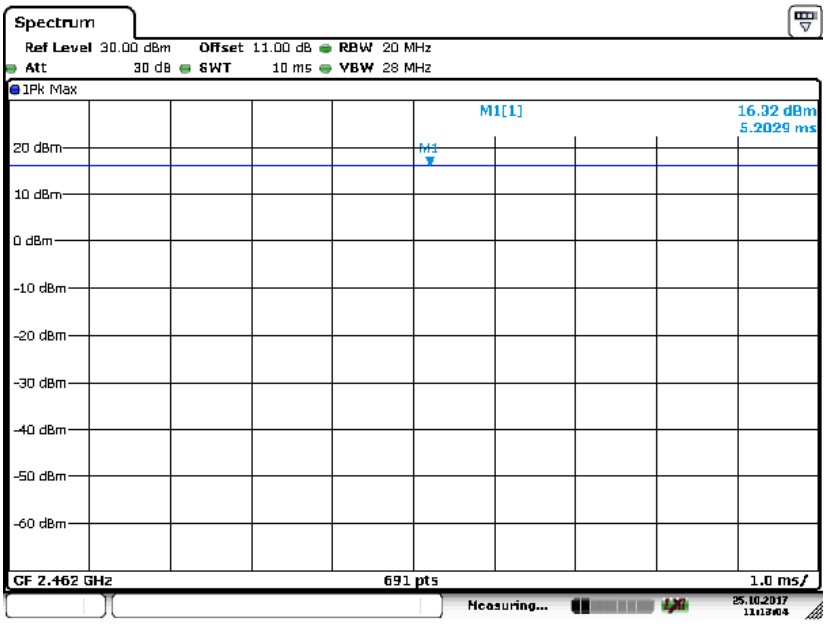
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Total Power (dBm)	Limit (dBm)	Margin (dB)
b	1	2412	15.61	30	-14.39
		2442	15.56	30	-14.44
		2462	16.32	30	-13.68
	11	2412	16.04	30	-13.96
		2442	15.93	30	-14.07
		2462	16.75	30	-13.25



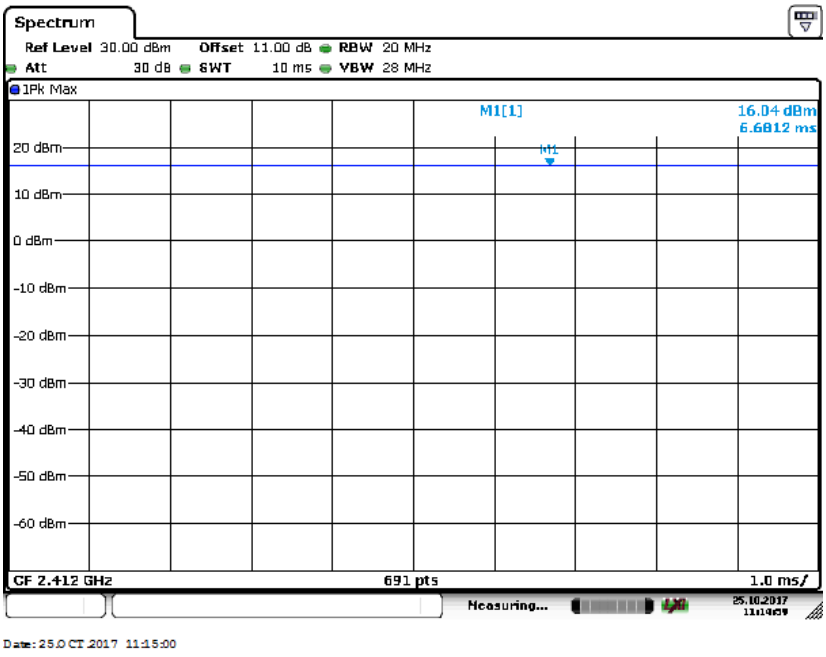
Data rate: 1 Mbps **Channel Frequency: 2412 MHz**



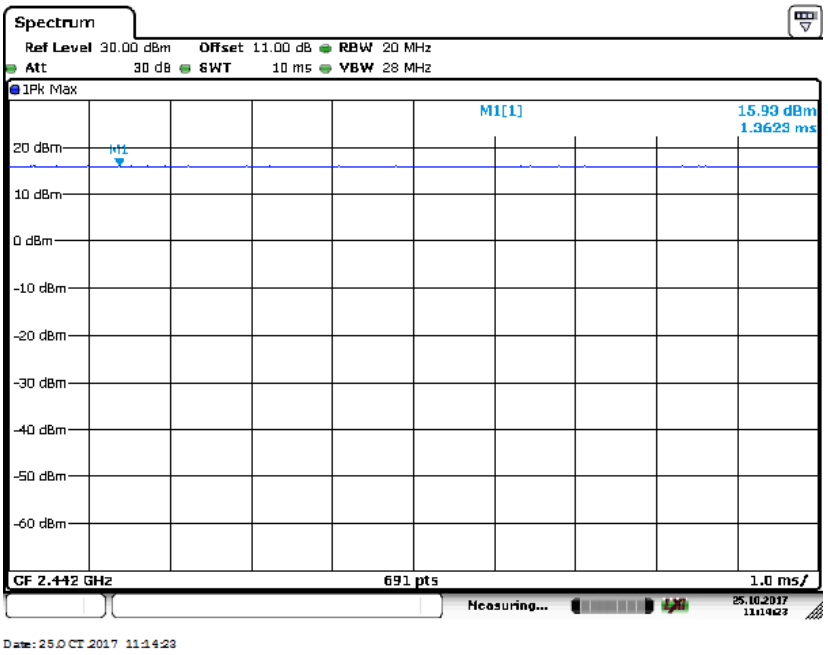
Data rate: 1 Mbps **Channel Frequency: 2442 MHz**



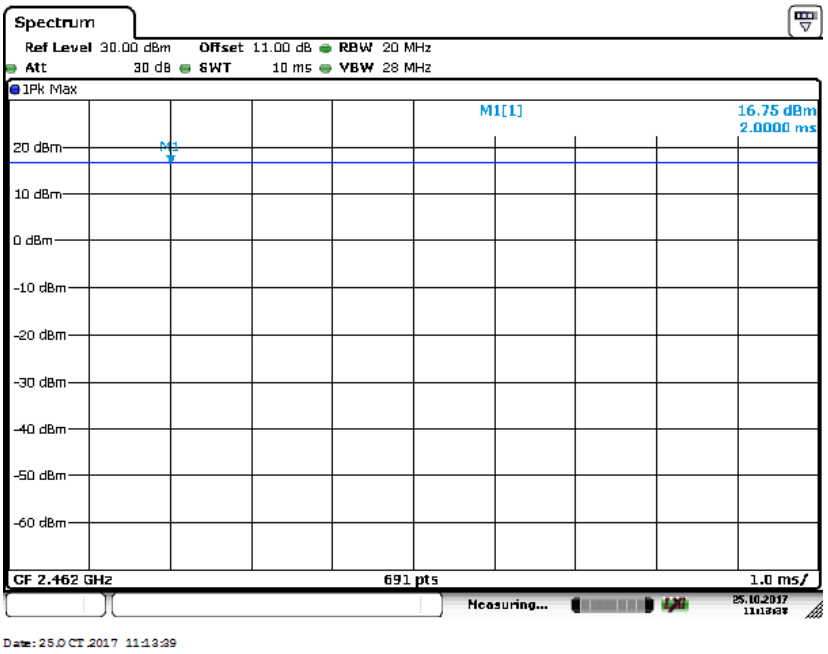
Data rate: 1 Mbps **Channel Frequency: 2462 MHz**



Data rate: 11 Mbps **Channel Frequency: 2412 MHz**

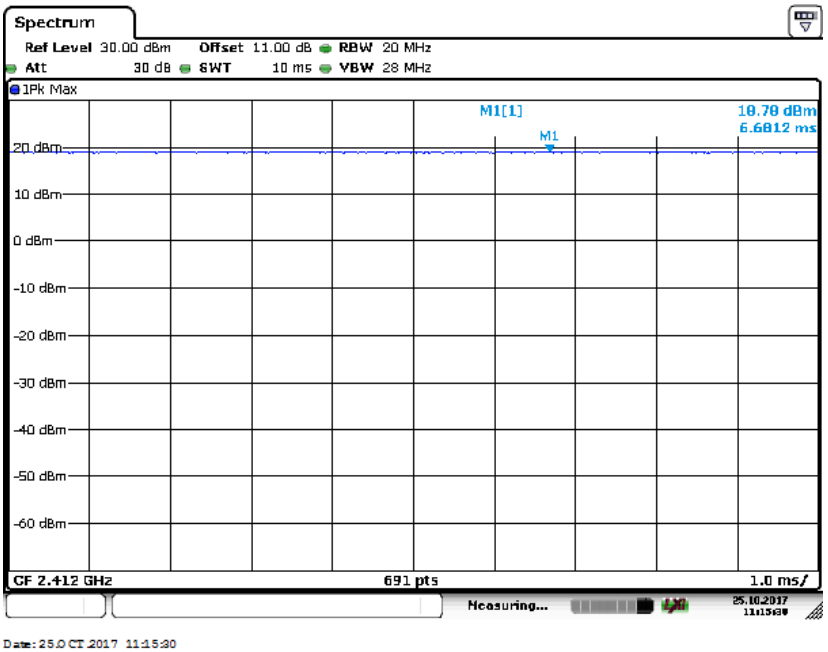


Data rate: 11 Mbps **Channel Frequency: 2442 MHz**

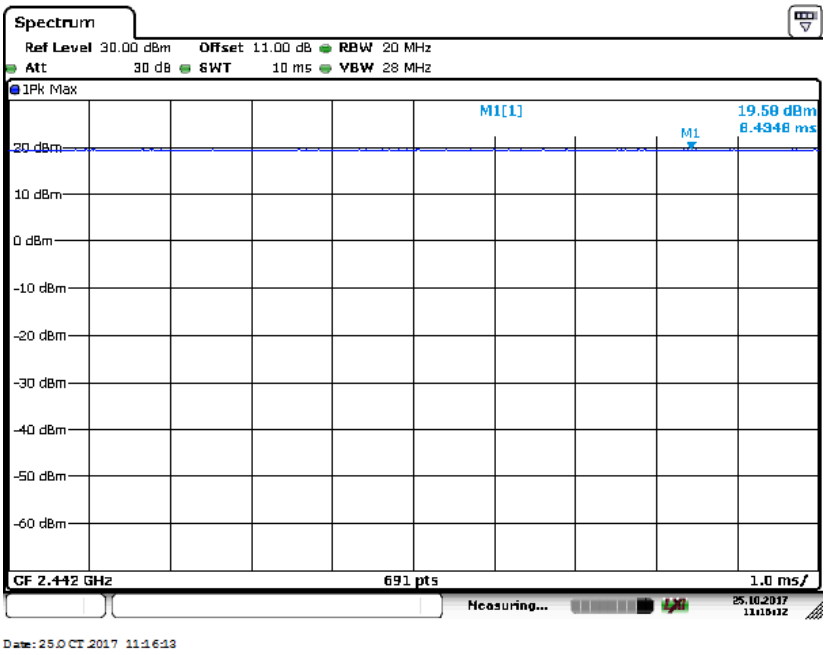


Data rate: 11 Mbps **Channel Frequency: 2462 MHz**

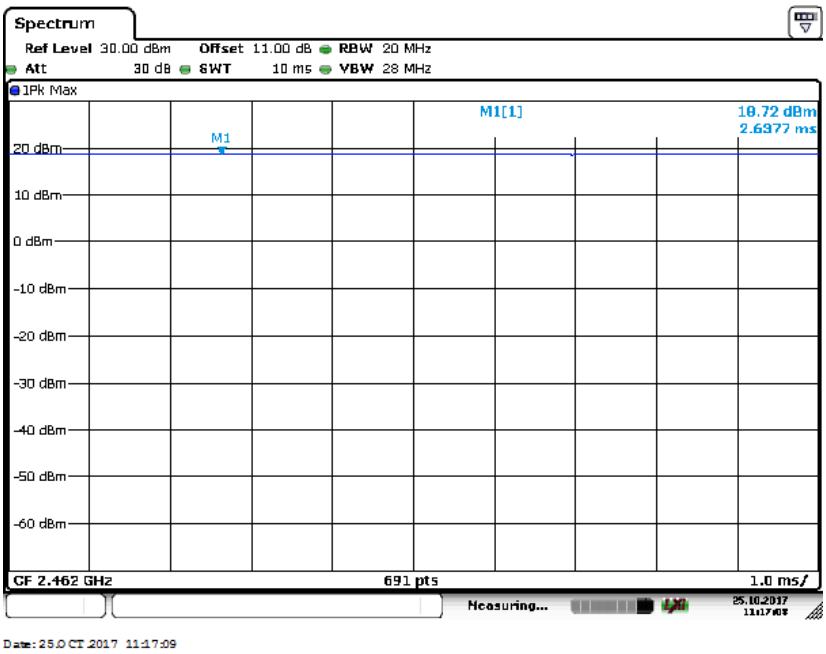
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Total Power (dBm)	Limit (dBm)	Margin (dB)
g	6	2412	18.78	30	-11.22
		2442	19.58	30	-10.42
		2462	18.72	30	-11.28
	24	2412	18.91	30	-11.09
		2442	19.26	30	-10.74
		2462	18.74	30	-11.26
	54	2412	19.31	30	-10.69
		2442	19.55	30	-10.45
		2462	19.12	30	-10.88



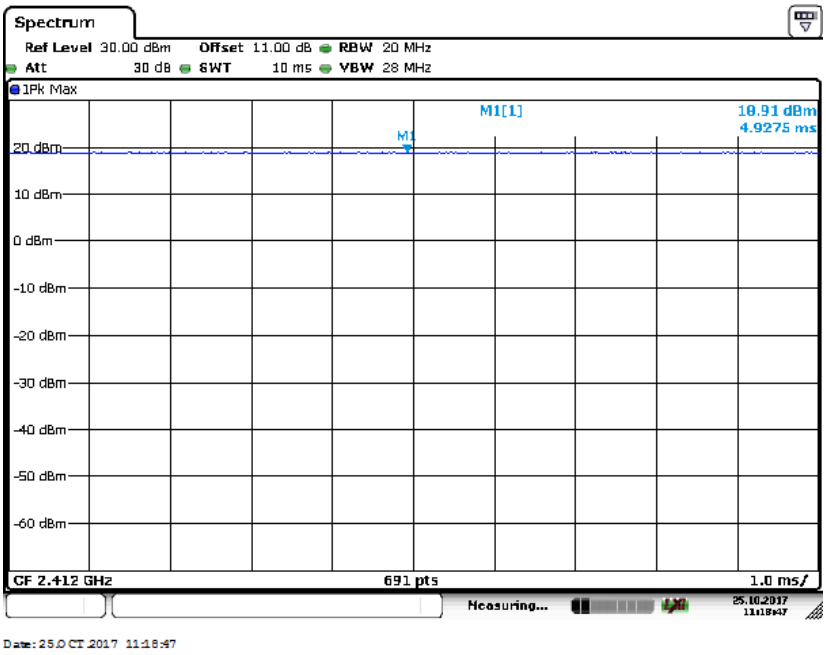
Data rate: 6 Mbps **Channel Frequency: 2412 MHz**



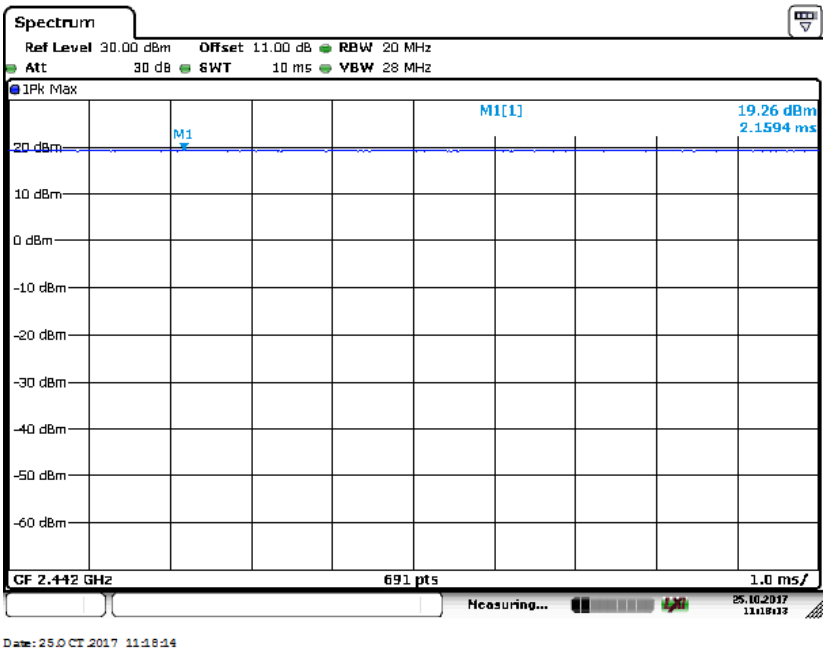
Data rate: 6 Mbps **Channel Frequency: 2442 MHz**



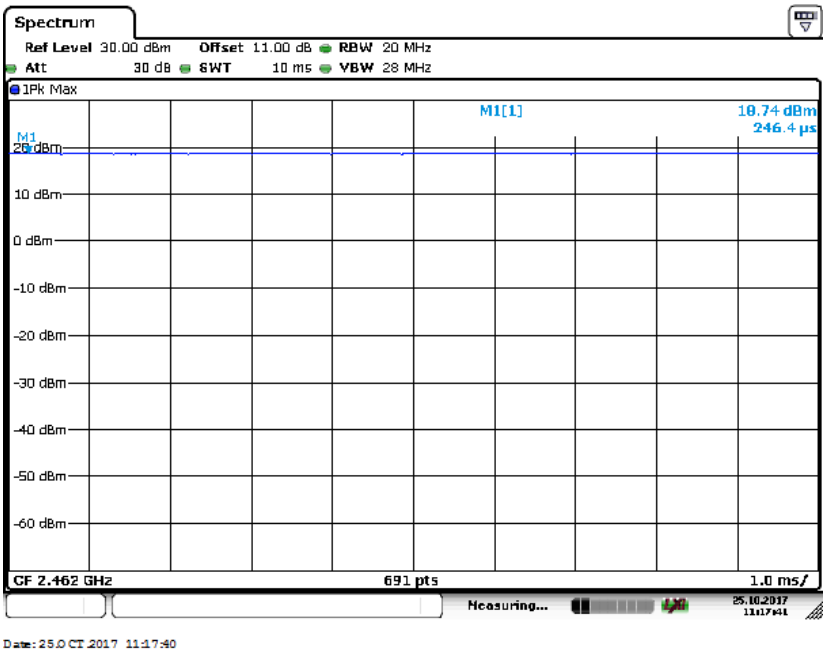
Data rate: 6 Mbps **Channel Frequency: 2462 MHz**



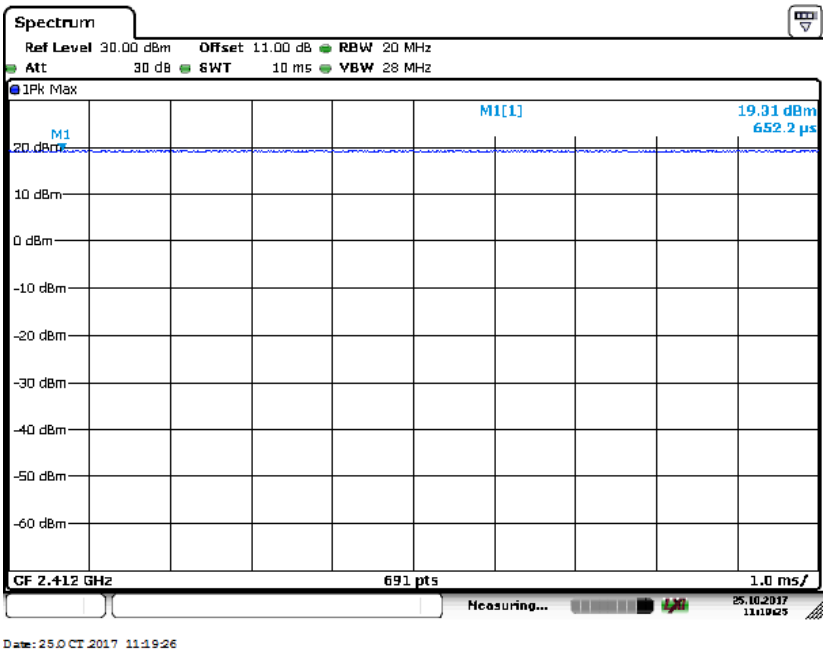
Data rate: 24 Mbps **Channel Frequency: 2412 MHz**



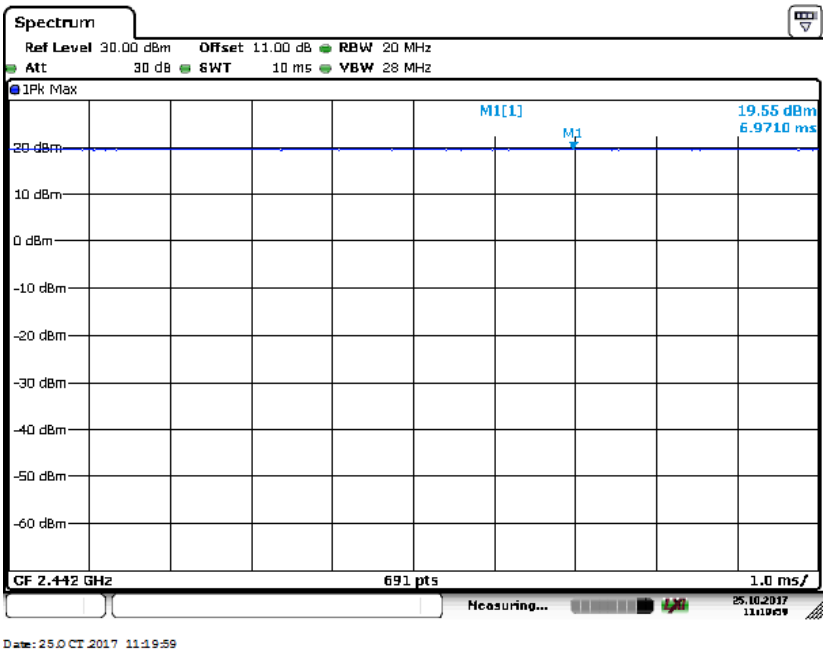
Data rate: 24 Mbps **Channel Frequency: 2442 MHz**



Data rate: 24 Mbps **Channel Frequency: 2462 MHz**

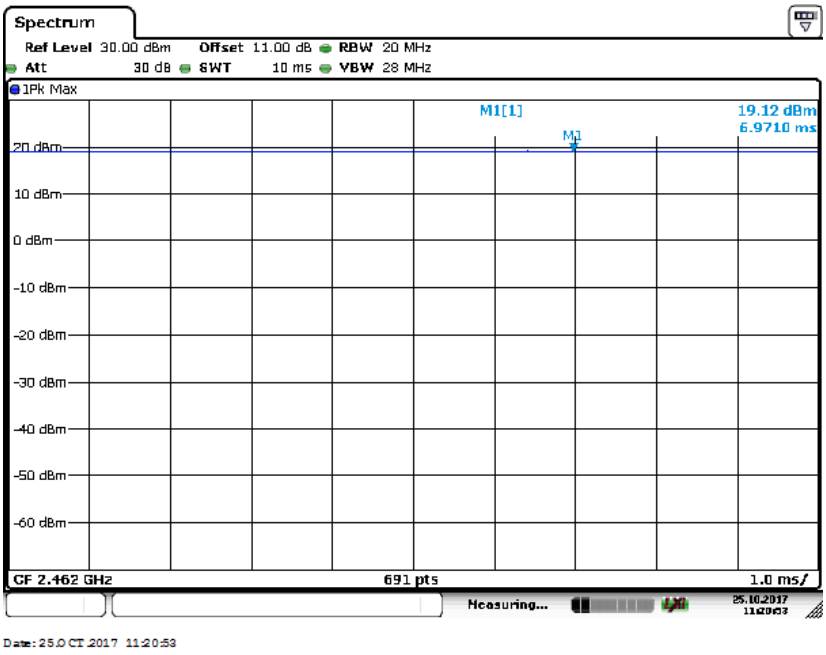


Data rate: 54 Mbps **Channel Frequency: 2412 MHz**



Date: 25.OCT.2017 11:19:59

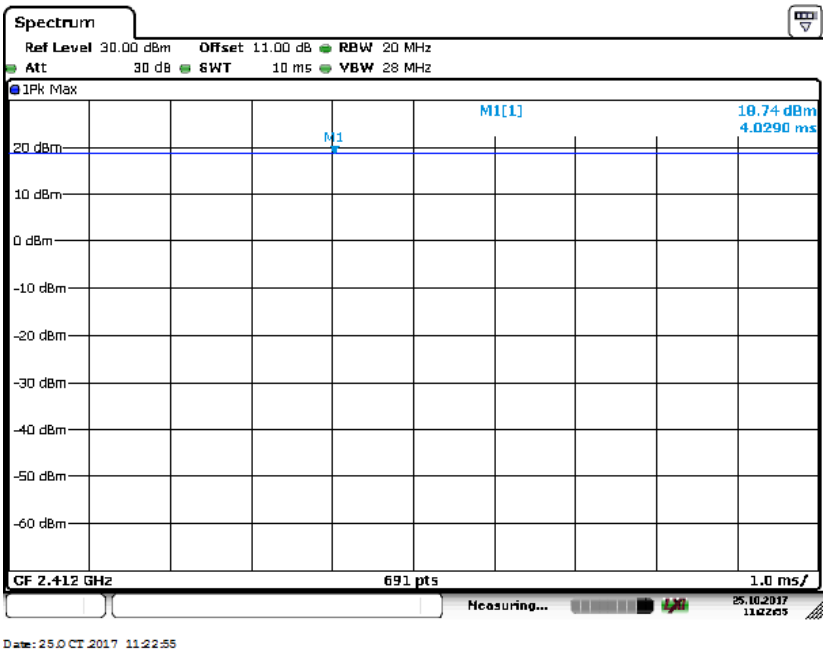
Data rate: 54 Mbps **Channel Frequency: 2442 MHz**



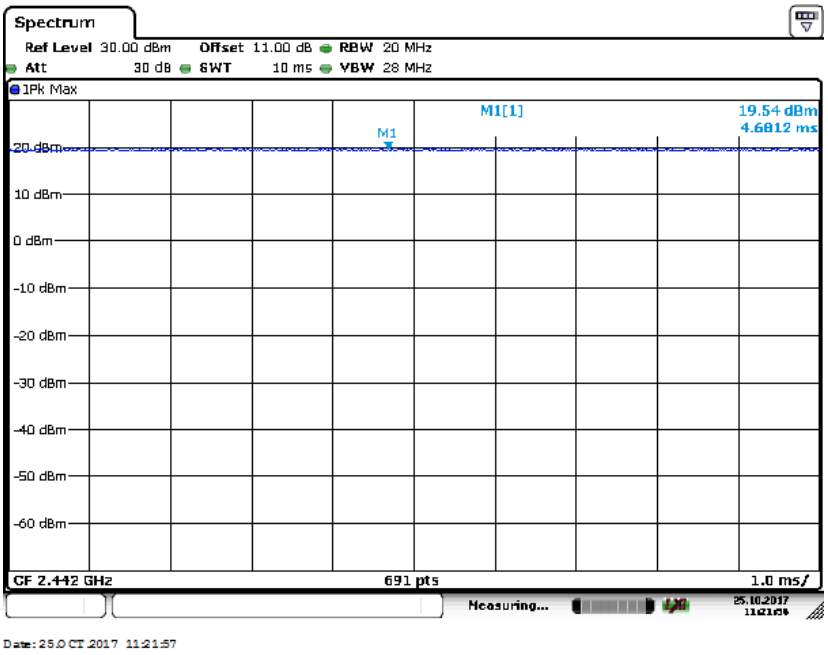
Date: 25.OCT.2017 11:20:53

Data rate: 54 Mbps **Channel Frequency: 2462 MHz**

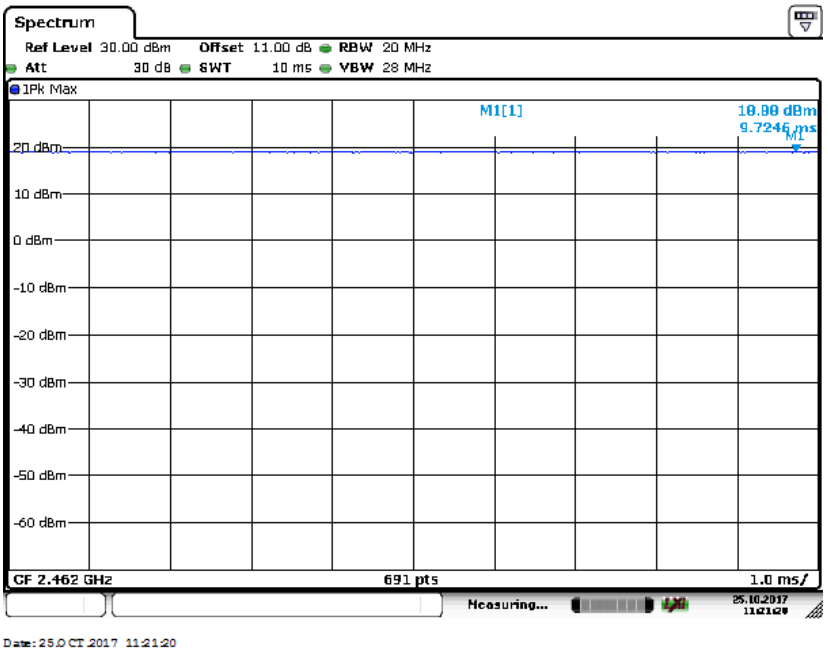
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Total Power (dBm)	Limit (dBm)	Margin (dB)
n	6.5	2412	18.74	30	-11.26
		2442	19.54	30	-10.46
		2462	18.88	30	-11.12
	39	2412	18.50	30	-11.5
		2442	19.44	30	-10.56
		2462	18.56	30	-11.44
	65	2412	19.29	30	-10.71
		2442	19.23	30	-10.77
		2462	19.14	30	-10.86



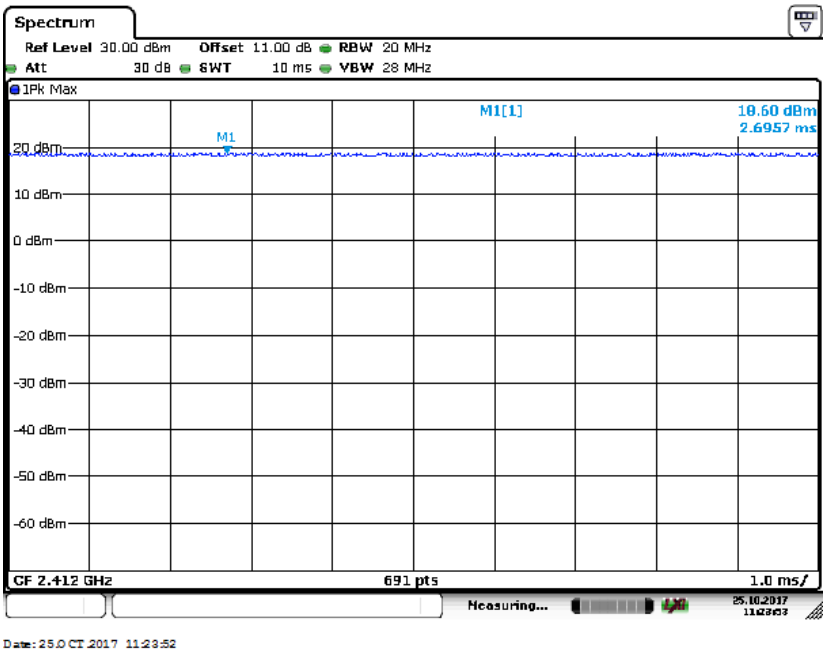
Data Rate: 6.5 Mbps **Channel Frequency: 2412 MHz**



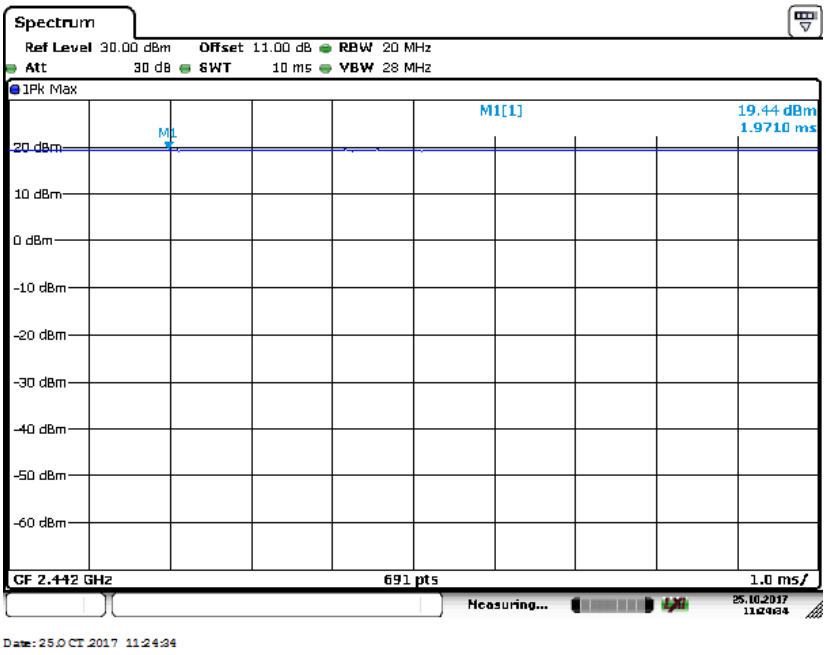
Data Rate: 6.5 Mbps **Channel Frequency: 2442 MHz**



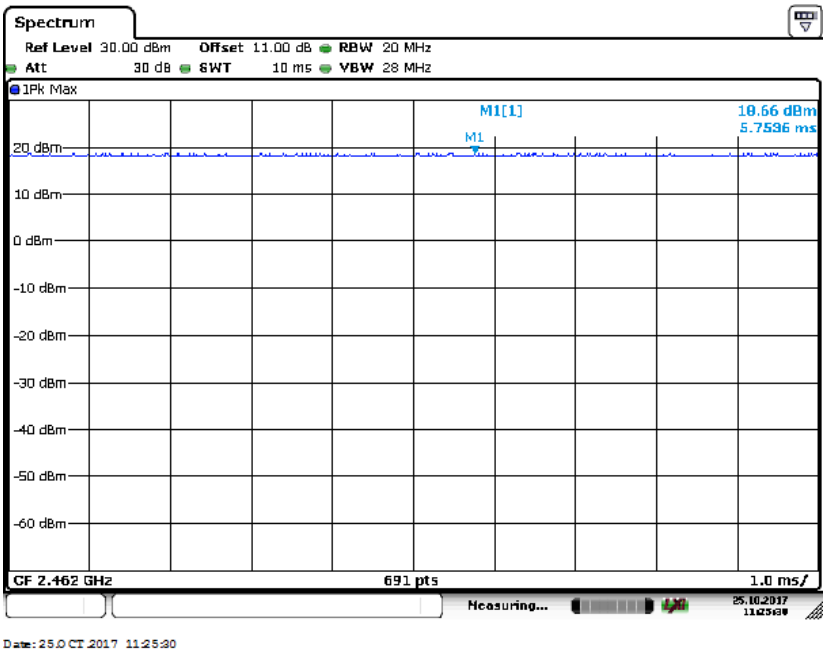
Data Rate: 6.5 Mbps **Channel Frequency: 2462 MHz**



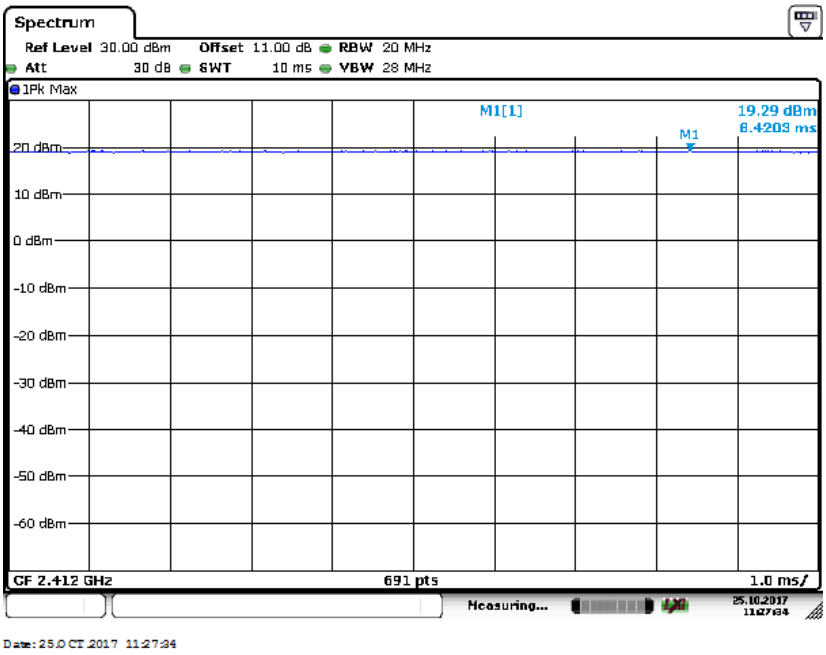
Data Rate: 39 Mbps **Channel Frequency: 2412 MHz**



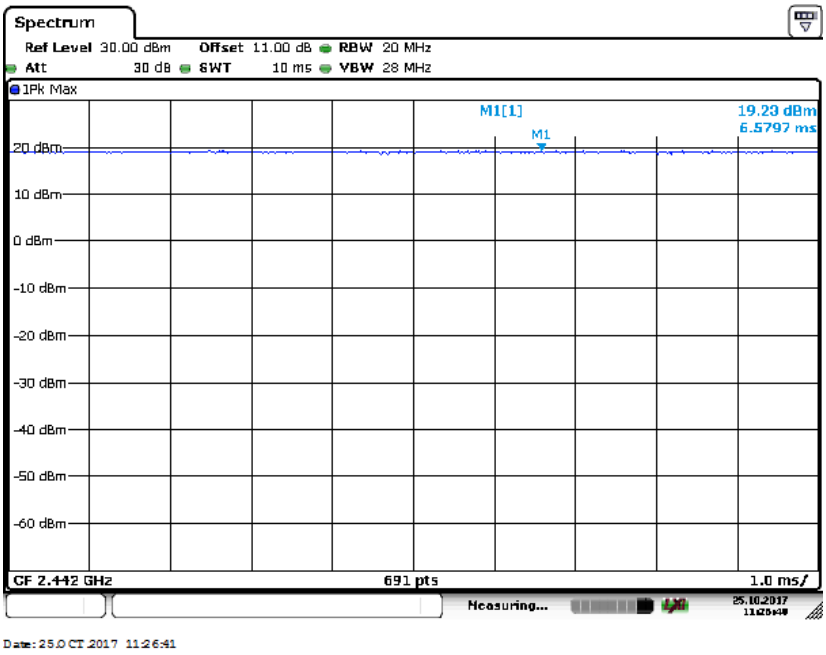
Data Rate: 39 Mbps **Channel Frequency: 2442 MHz**



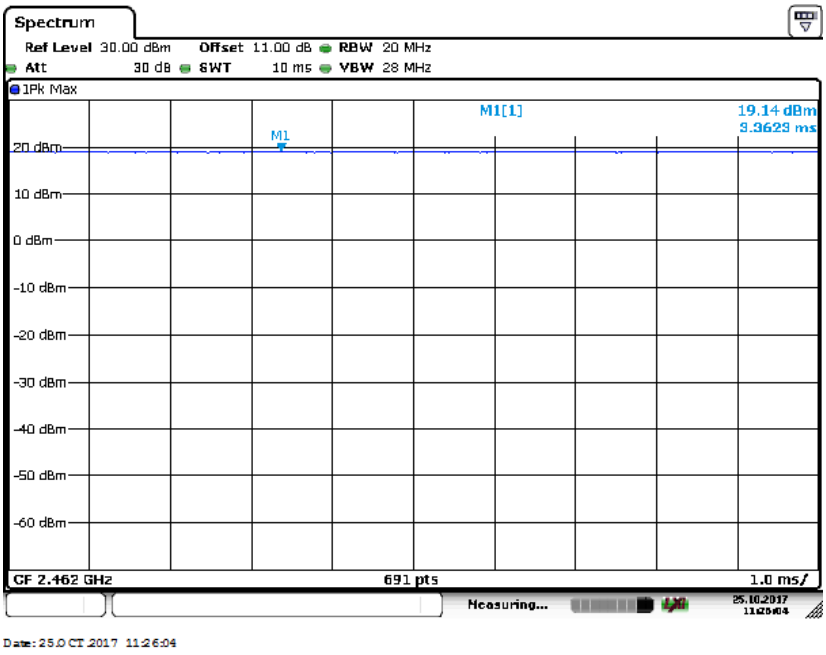
Data Rate: 39 Mbps **Channel Frequency: 2462 MHz**



Data Rate: 65 Mbps **Channel Frequency: 2412 MHz**



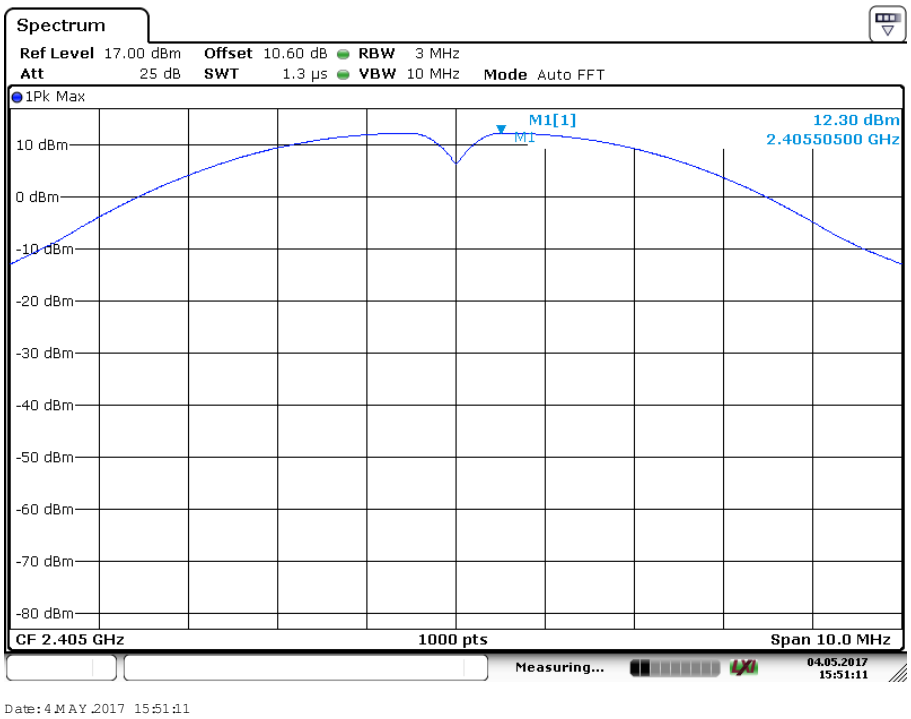
Data Rate: 65 Mbps **Channel Frequency: 2442 MHz**



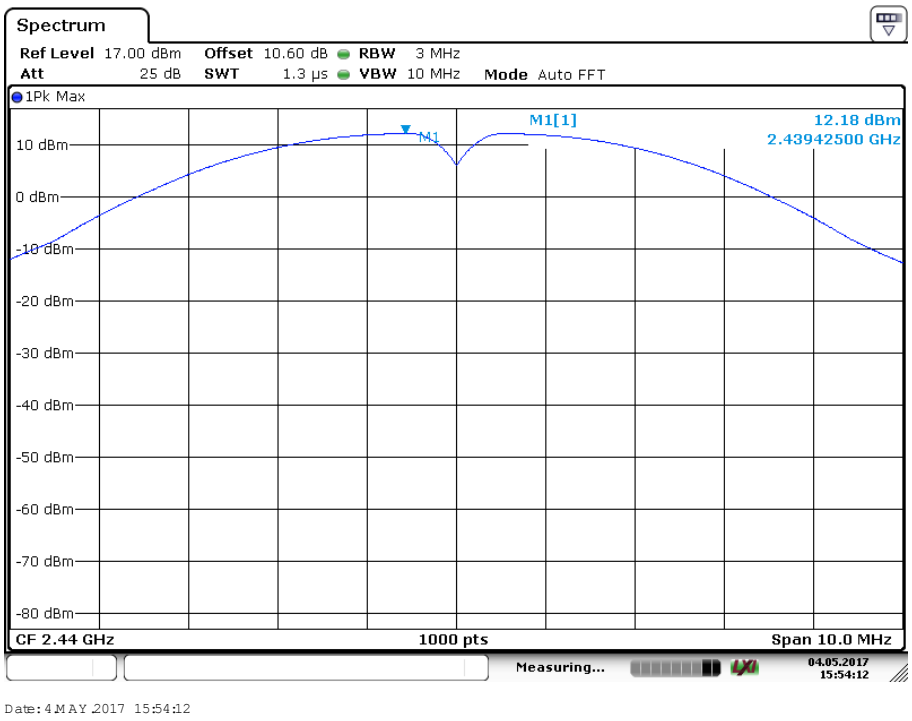
Data Rate: 65 Mbps **Channel Frequency: 2462 MHz**

Note: For measurement of Maximum Peak conducted output power method was used

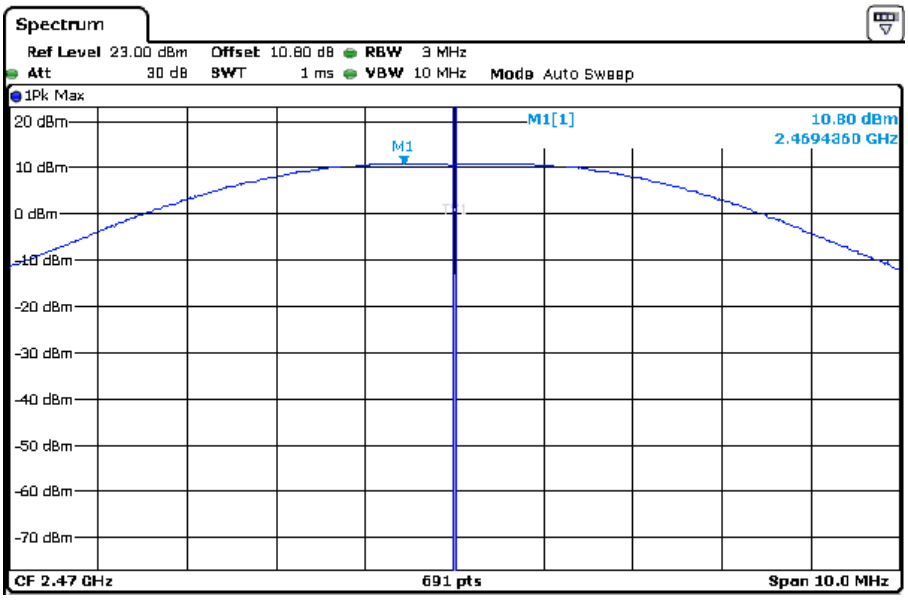
Channel Frequency (MHz)	Total Power (dBm)	Limit (dBm)	Margin (dB)
2405.00	12.30	30.00	-17.70
2440.00	12.18	30.00	-17.82
2470.00	10.80	30.00	-19.2
2475.00	09.02	30.00	-20.98
2480.00	-09.13	30.00	-39.13



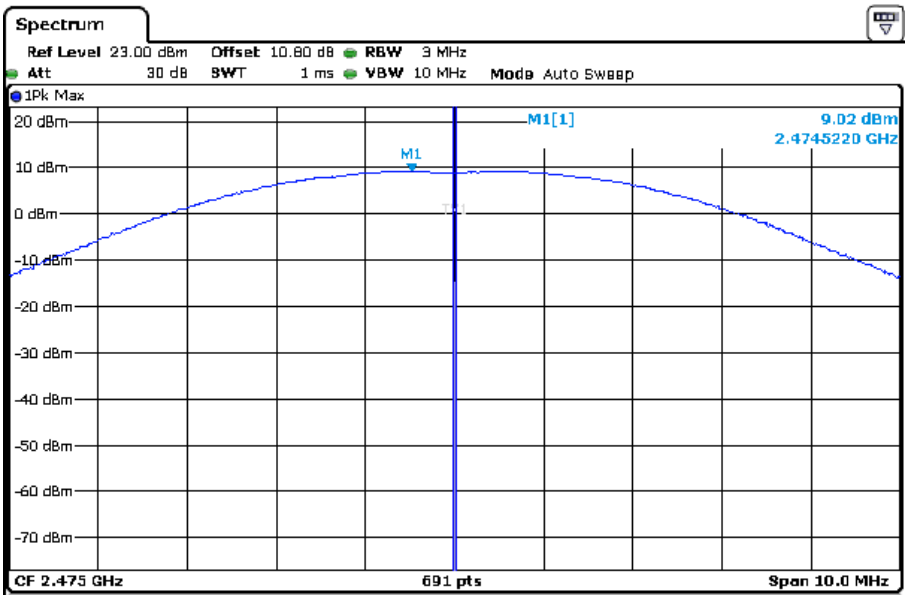
Channel Frequency: 2405 MHz



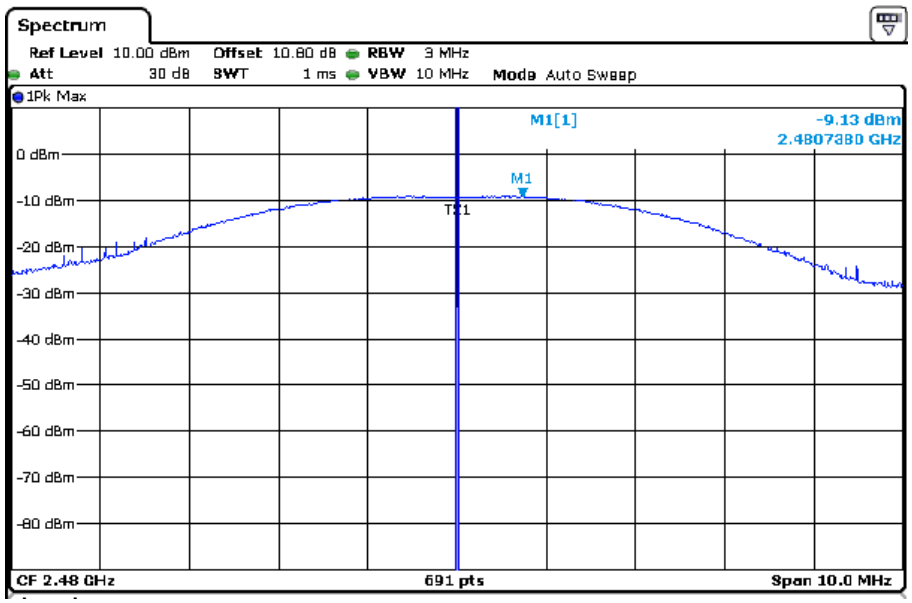
Channel Frequency: 2440 MHz



Channel Frequency: 2470 MHz



Channel Frequency: 2475 MHz

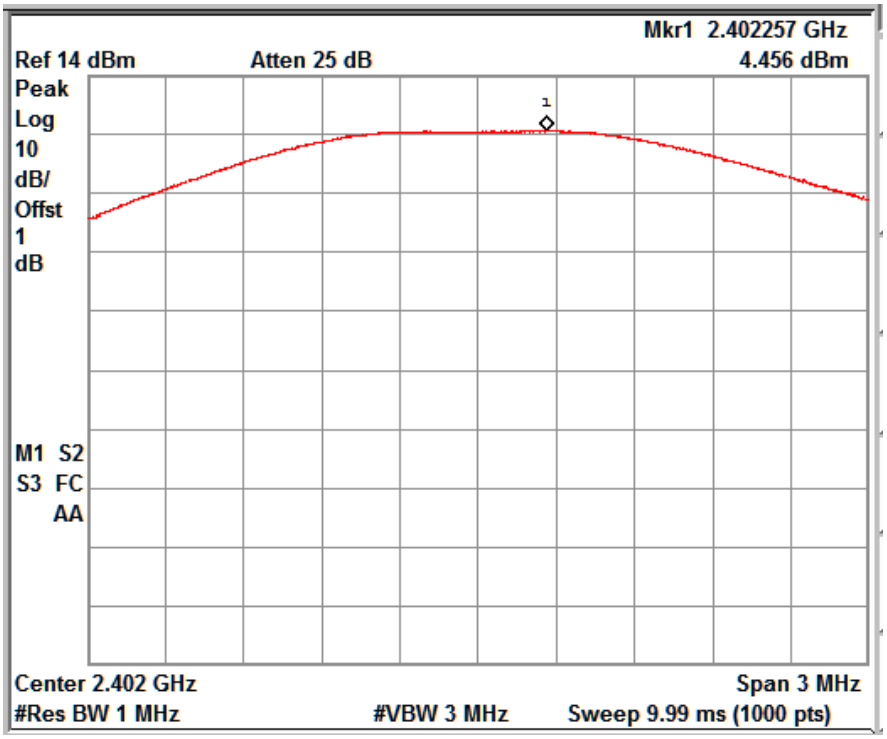


Channel Frequency: 2480 MHz

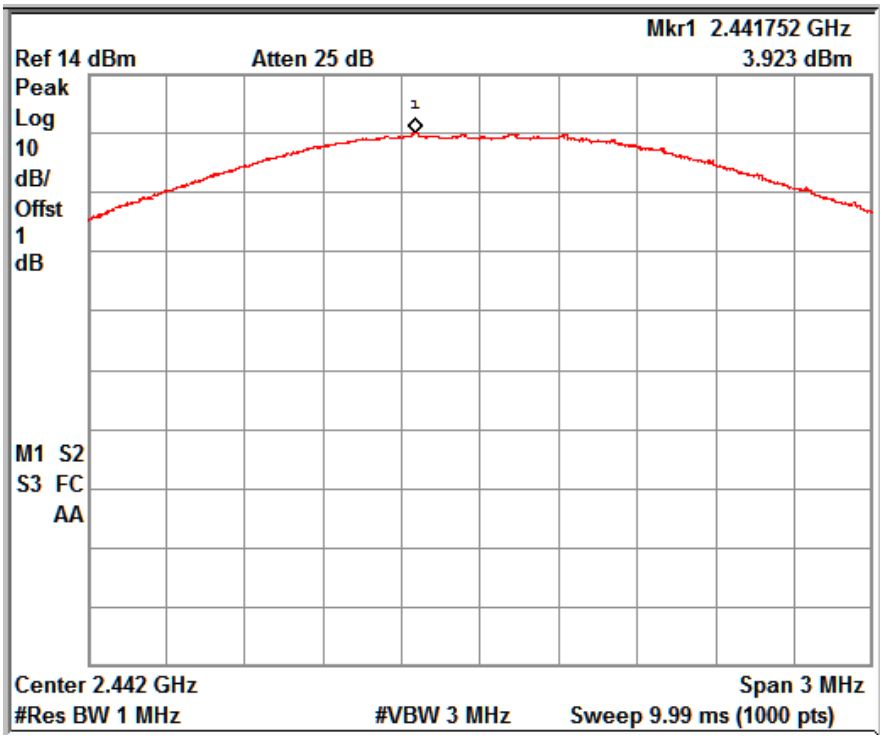
Test Result: Bluetooth LE

Note: For measurement of Maximum Peak conducted output power method was used

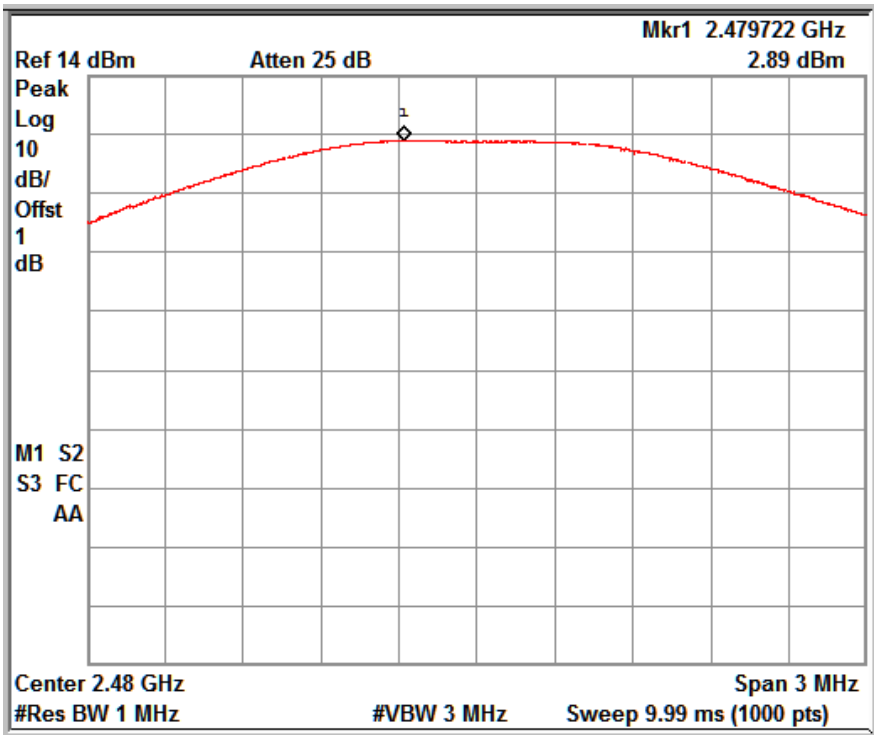
Channel Frequency (MHz)	Total Power (dBm)	Limit (dBm)	Margin (dB)
2402.00	04.45	30.00	-25.55
2442.00	03.92	30.00	-26.08
2480.00	02.89	30.00	-27.11



Channel Frequency: 2402 MHz



Channel Frequency: 2440 MHz



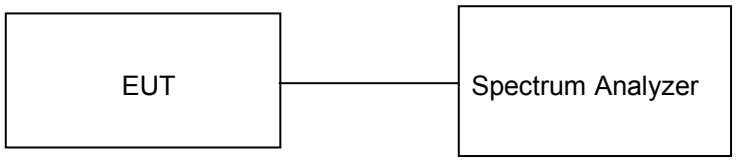
Channel Frequency: 2480 MHz

Maximum Power Spectral Density

Result **Pass**

Test Specification	FCC Part 15 Section 15.247 (e)
Detector Function	Peak
Requirement	For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm.

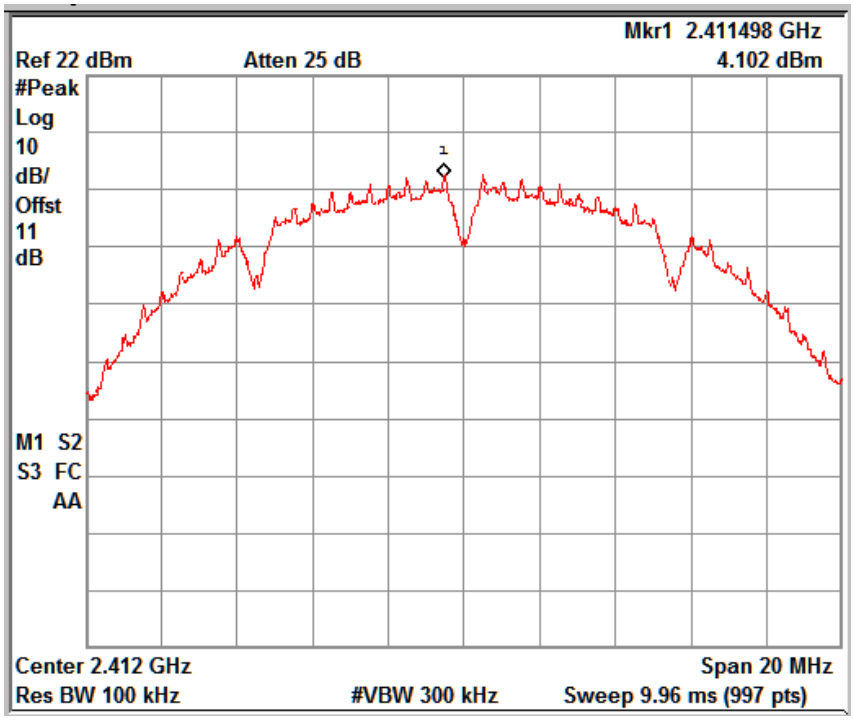
Test Method:



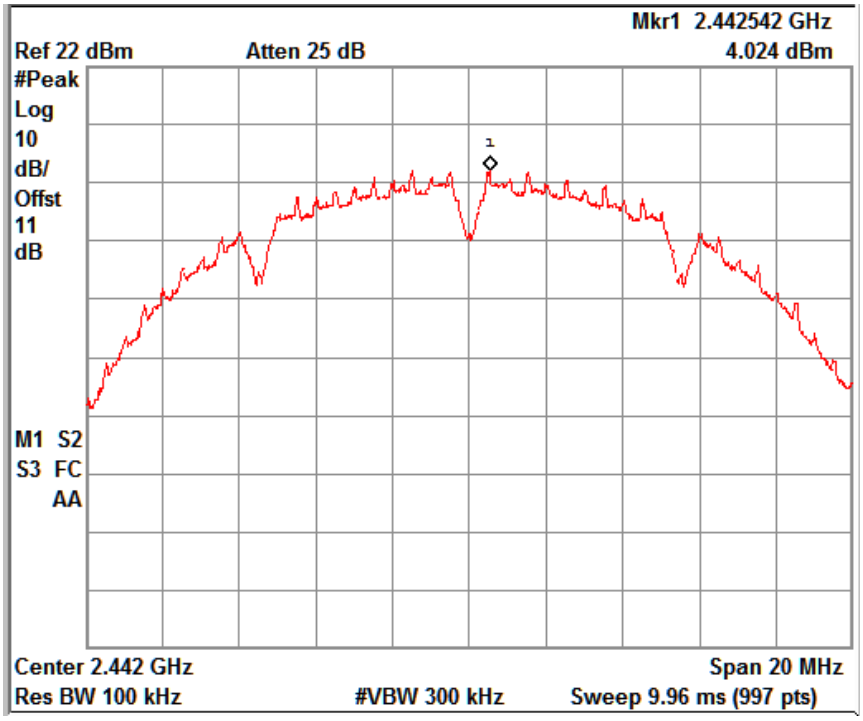
Test Result: Wi-Fi

Note: Offset value is added in the final measurement value.

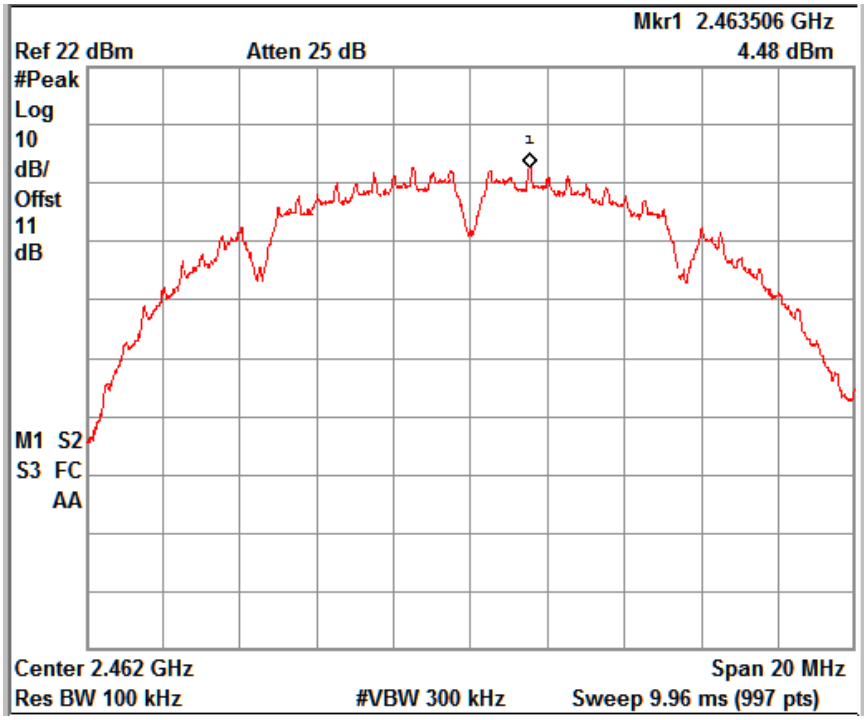
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
b	1	2412	4.102	8	-3.898
		2442	4.024	8	-3.976
		2462	4.48	8	-3.52
	11	2412	4.818	8	-3.182
		2442	4.701	8	-3.299
		2462	5.402	8	-2.598



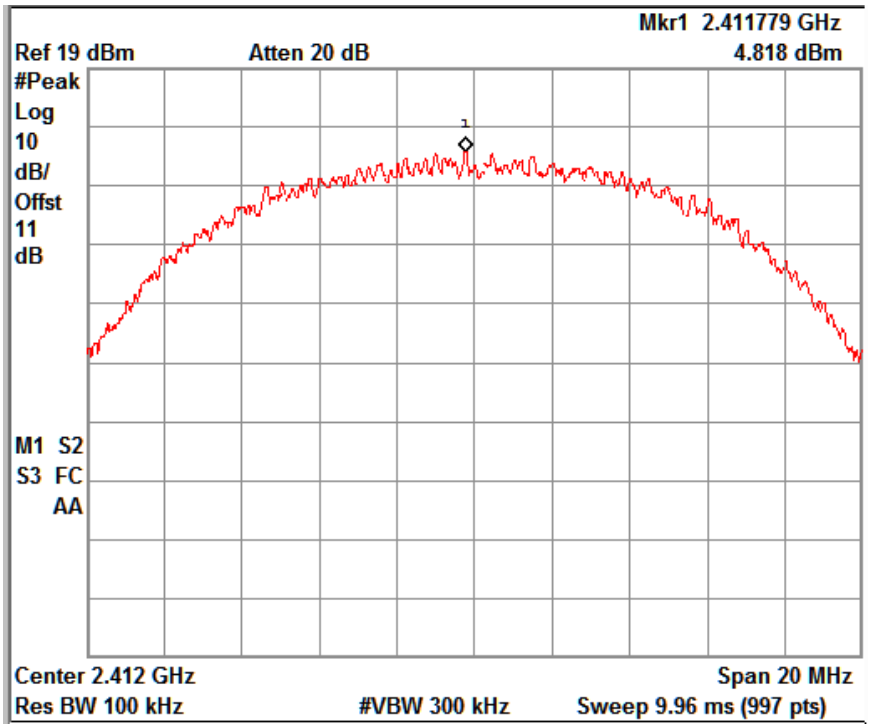
Data rate: 1 Mbps **Channel Frequency: 2412 MHz**



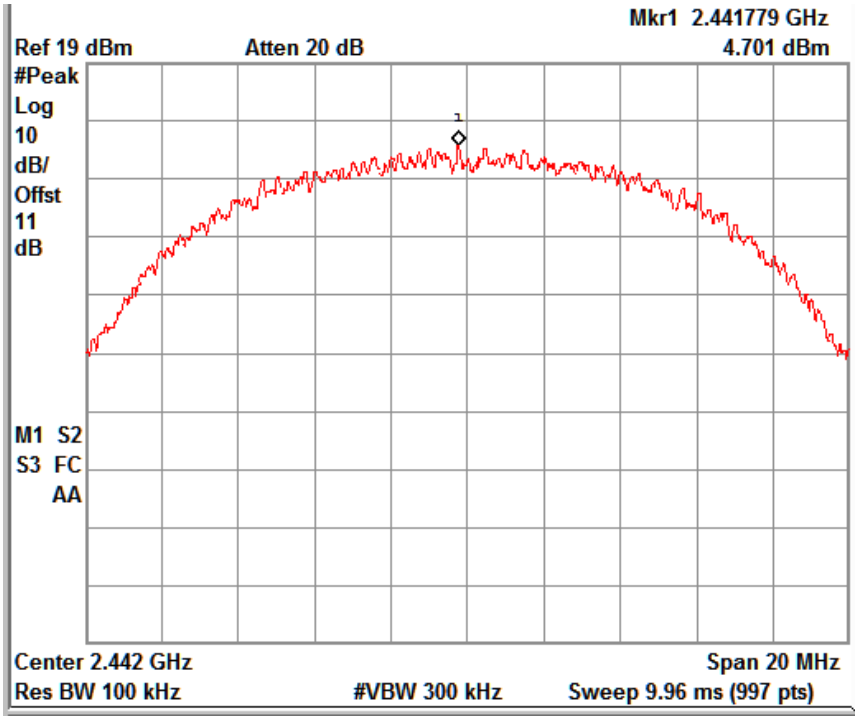
Data rate: 1 Mbps **Channel Frequency: 2442 MHz**



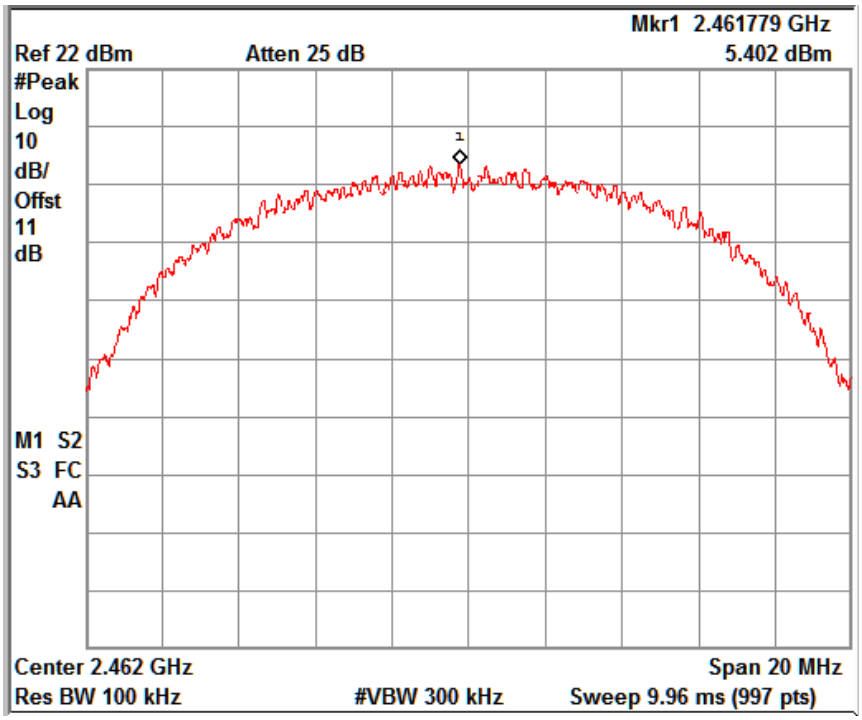
Data rate: 1 Mbps **Channel Frequency: 2462 MHz**



Data rate: 11 Mbps **Channel Frequency: 2412 MHz**

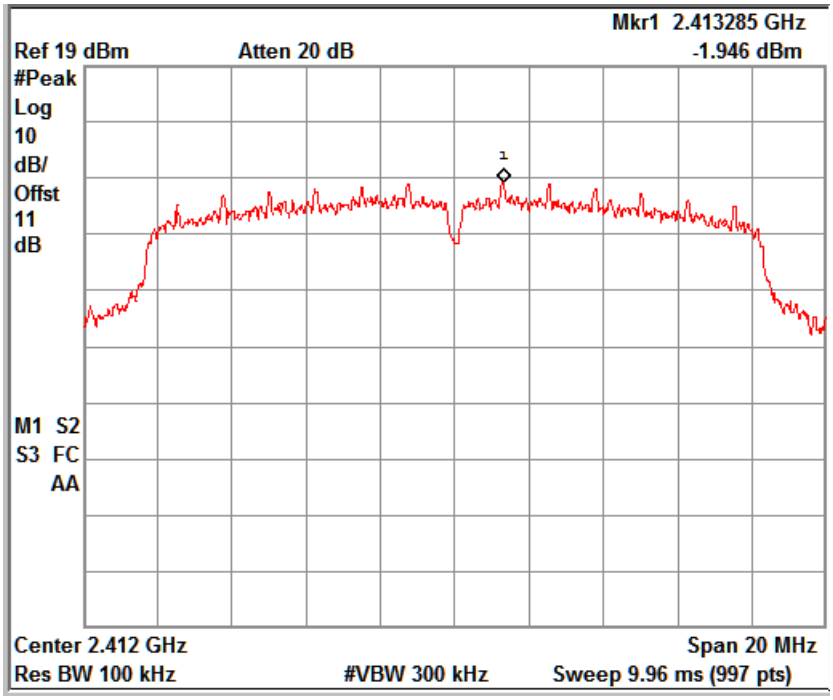


Data rate: 11 Mbps **Channel Frequency: 2442 MHz**

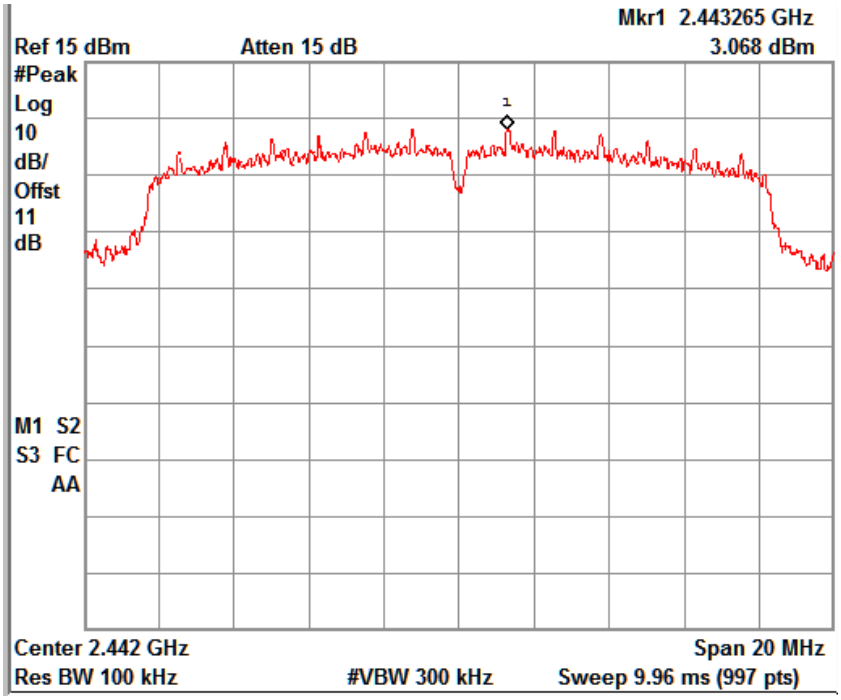


Data rate: 11 Mbps **Channel Frequency: 2462 MHz**

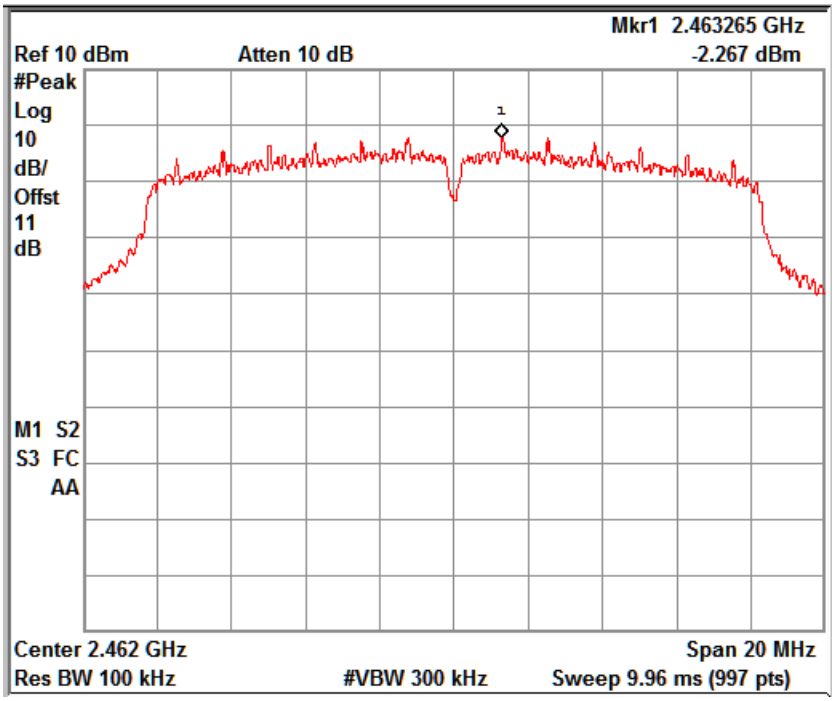
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
g	6	2412	-1.946	8	-9.946
		2442	3.068	8	-4.932
		2462	-2.267	8	-10.267
	24	2412	-2.977	8	-10.977
		2442	-1.344	8	-9.344
		2462	-3.157	8	-11.157
	54	2412	-2.751	8	-10.751
		2442	-2.566	8	-10.566
		2462	-2.806	8	-10.806



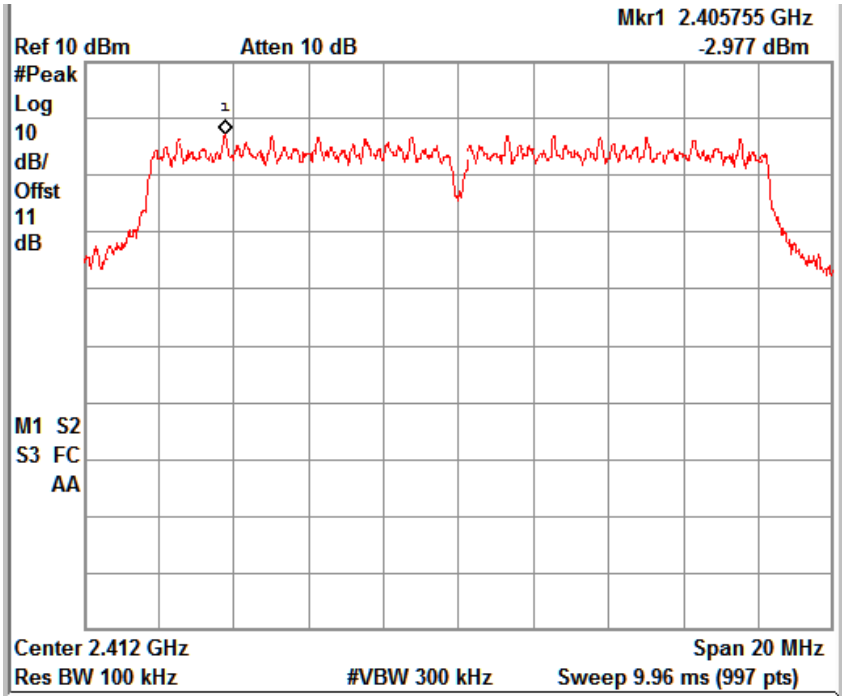
Data rate: 6 Mbps **Channel Frequency: 2412 MHz**



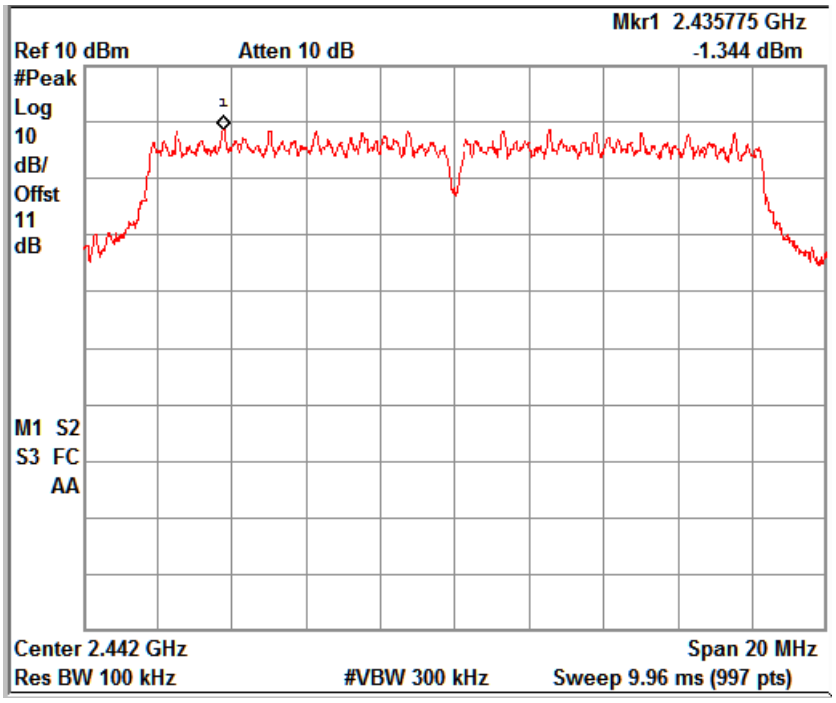
Data rate: 6 Mbps **Channel Frequency: 2442 MHz**



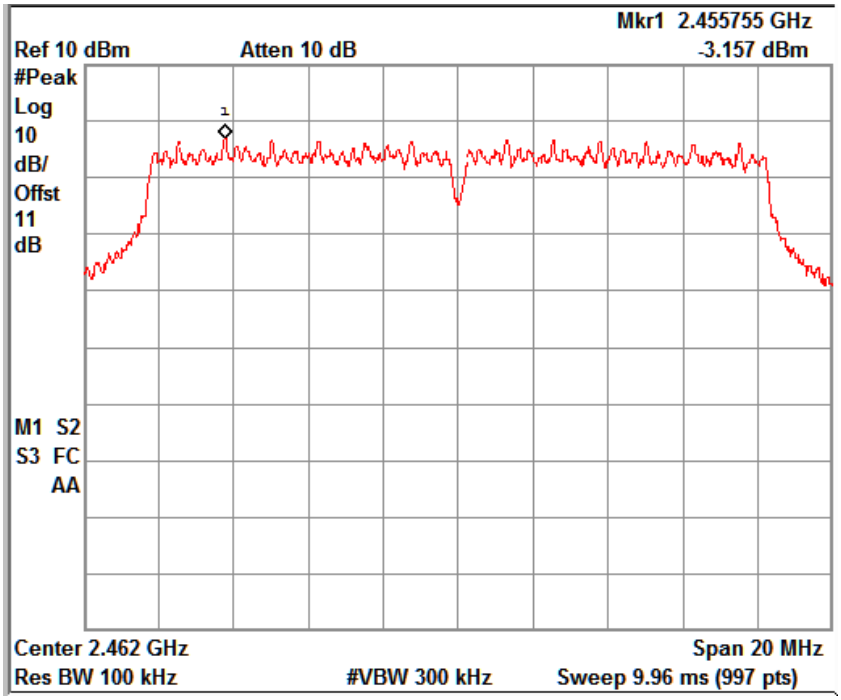
Data rate: 6 Mbps **Channel Frequency: 2462 MHz**



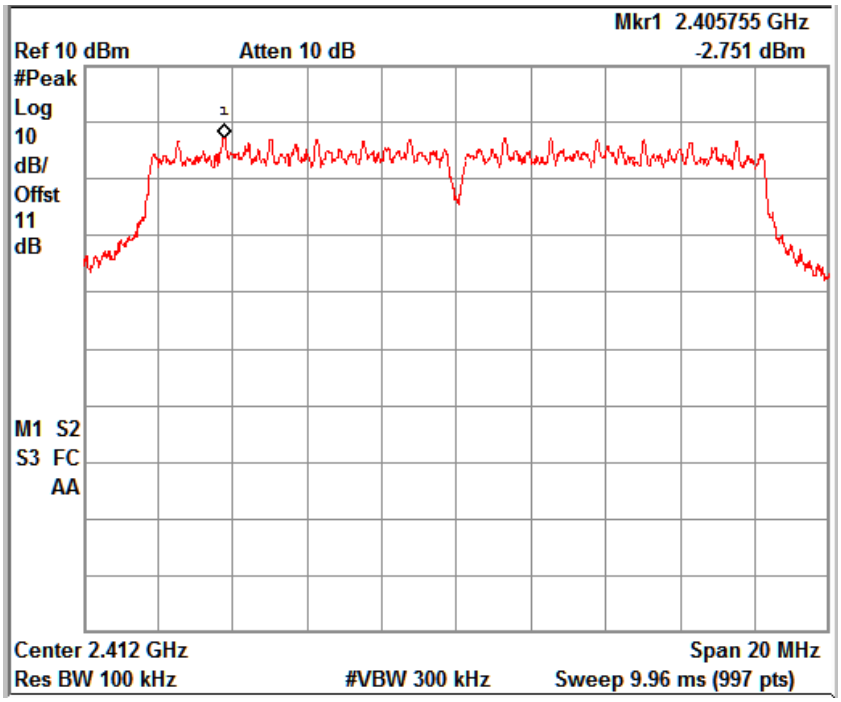
Data rate: 24 Mbps **Channel Frequency: 2412 MHz**



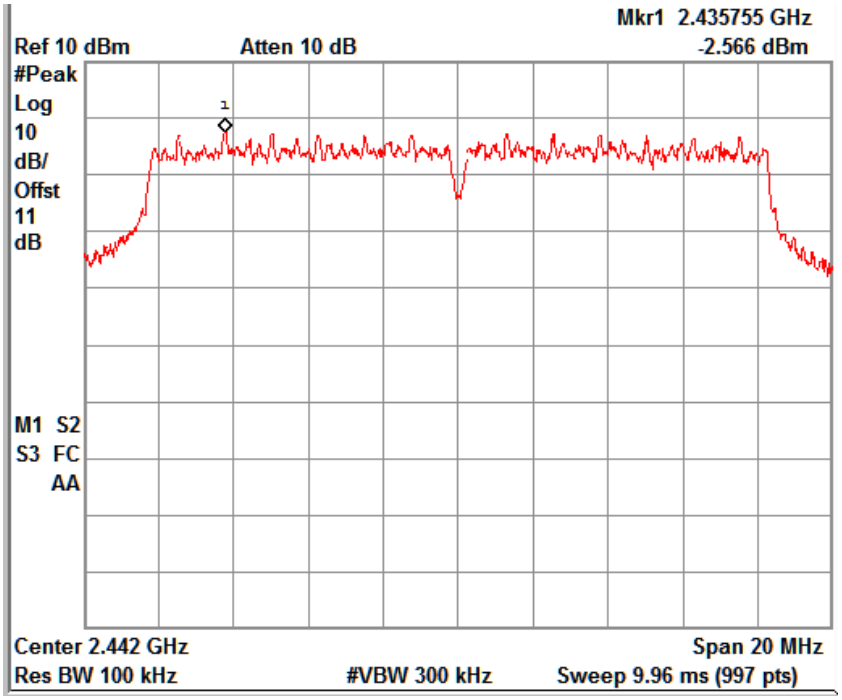
Data rate: 24 Mbps **Channel Frequency: 2442 MHz**



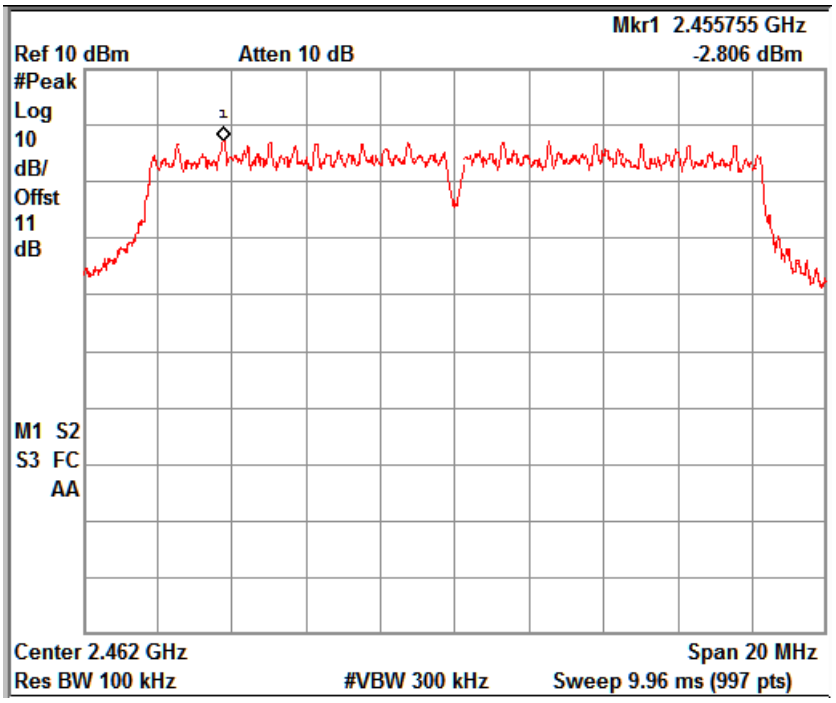
Data rate: 24 Mbps **Channel Frequency: 2462 MHz**



Data rate: 54 Mbps **Channel Frequency: 2412 MHz**

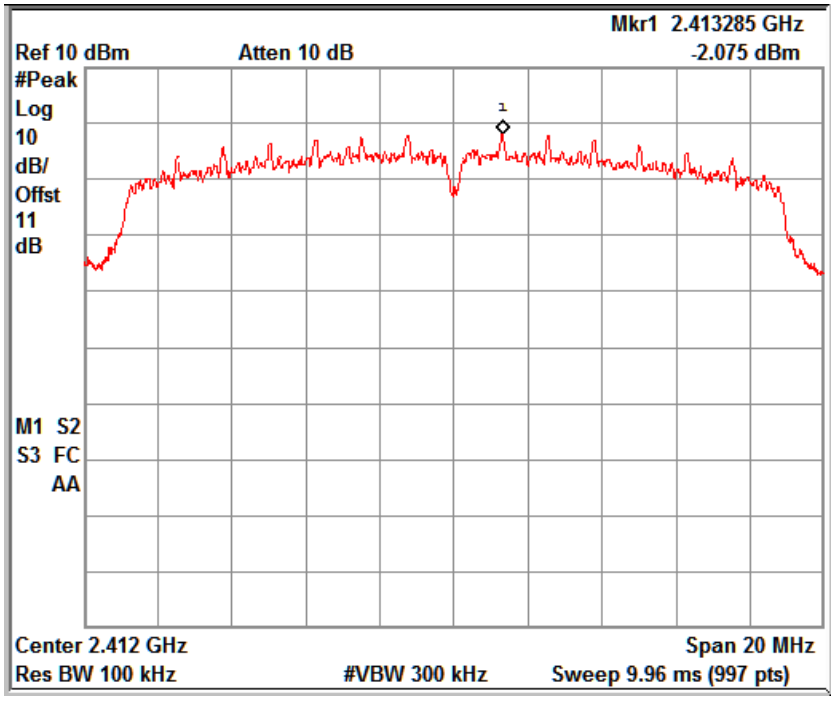


Data rate: 54 Mbps **Channel Frequency: 2442 MHz**

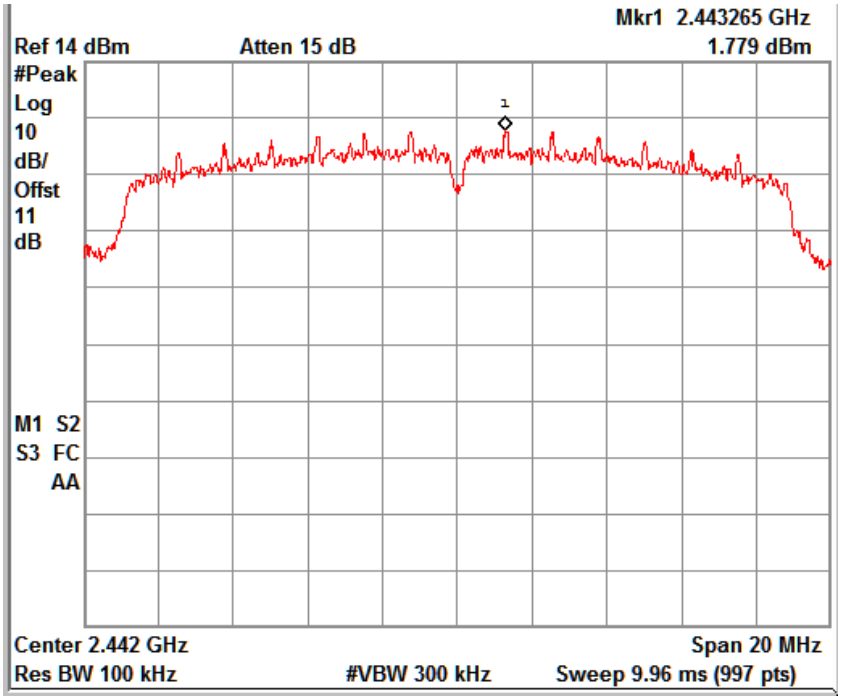


Data rate: 54 Mbps **Channel Frequency: 2462 MHz**

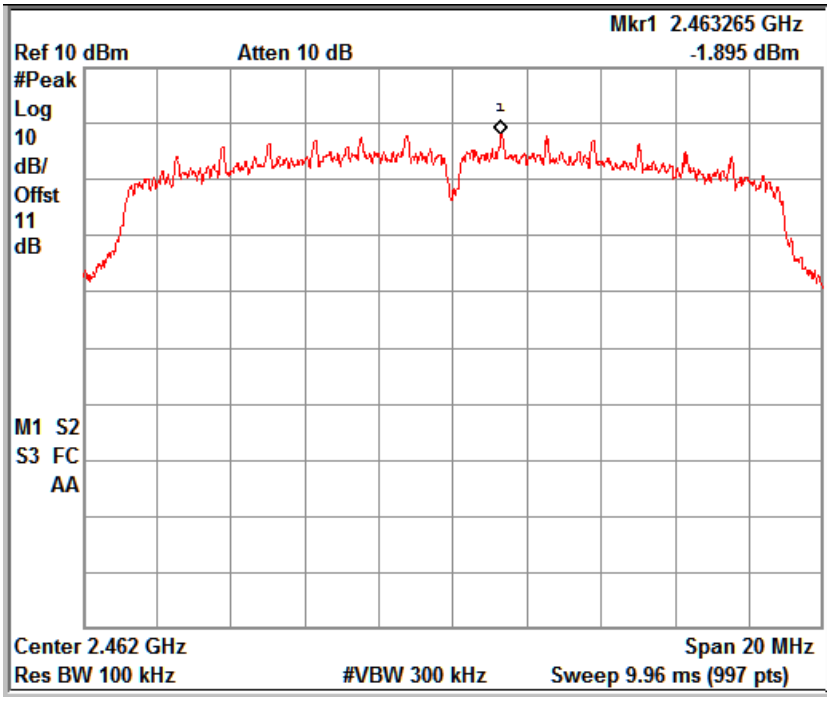
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
n	6.5	2412	-2.075	8	-10.075
		2442	1.779	8	-6.221
		2462	-1.895	8	-9.895
	39	2412	-2.908	8	-10.908
		2442	-1.213	8	-9.213
		2462	-2.985	8	-10.985
	65	2412	-3.61	8	-11.61
		2442	-4.077	8	-12.077
		2462	-3.746	8	-11.746



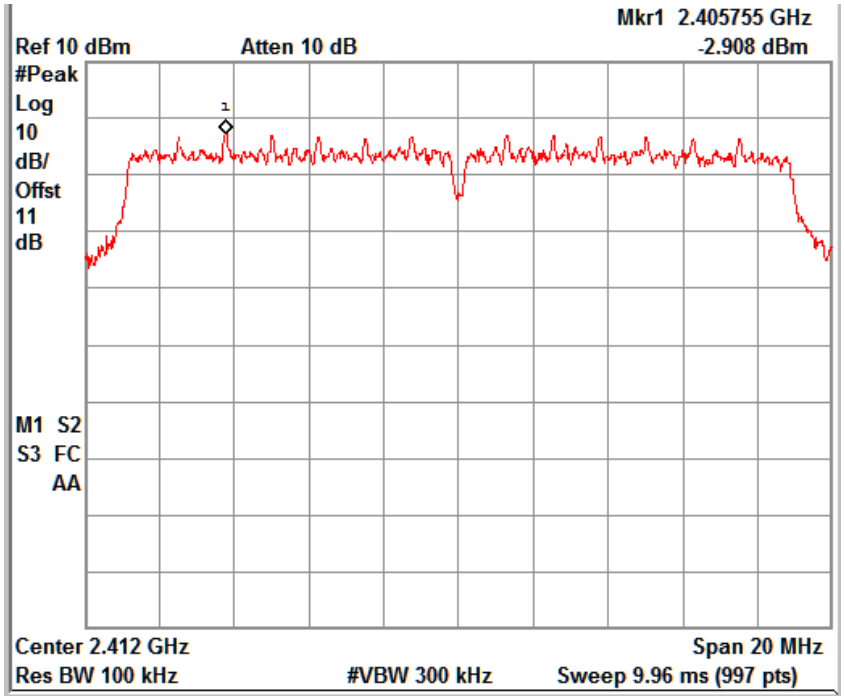
Data rate: 6.5 Mbps **Channel Frequency: 2412 MHz**



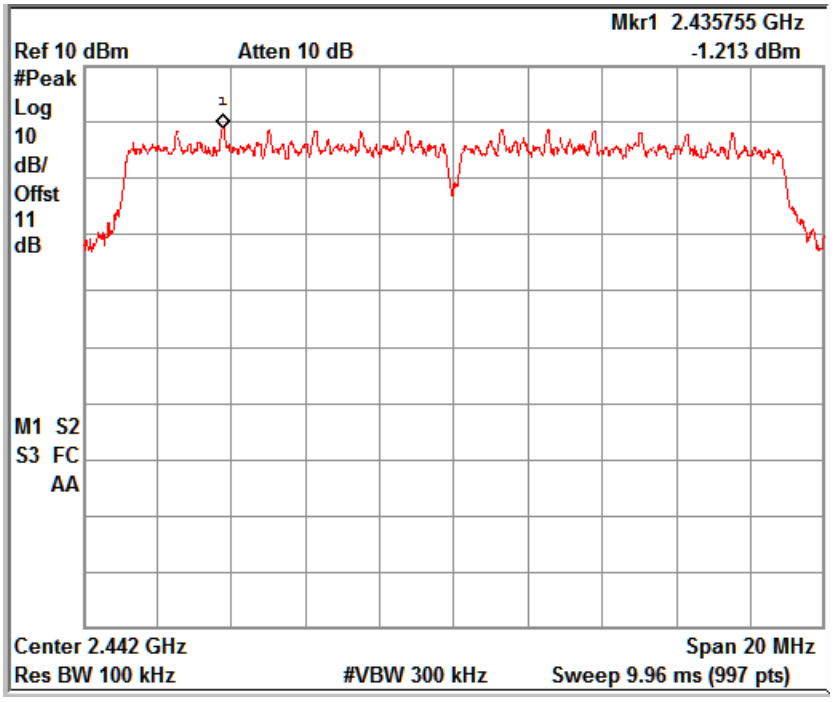
Data rate: 6.5 Mbps **Channel Frequency: 2442 MHz**



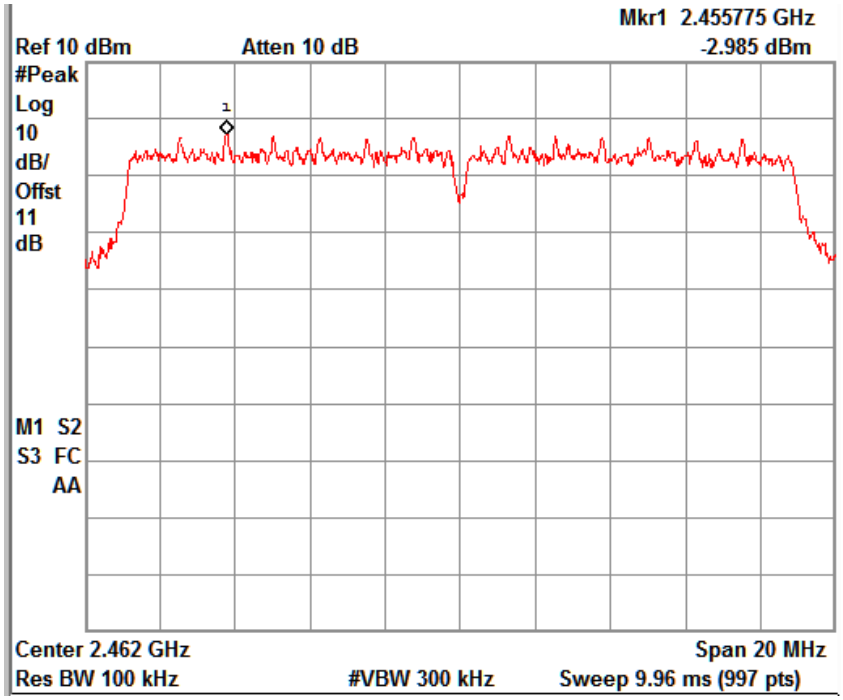
Data rate: 6.5 Mbps **Channel Frequency: 2462 MHz**



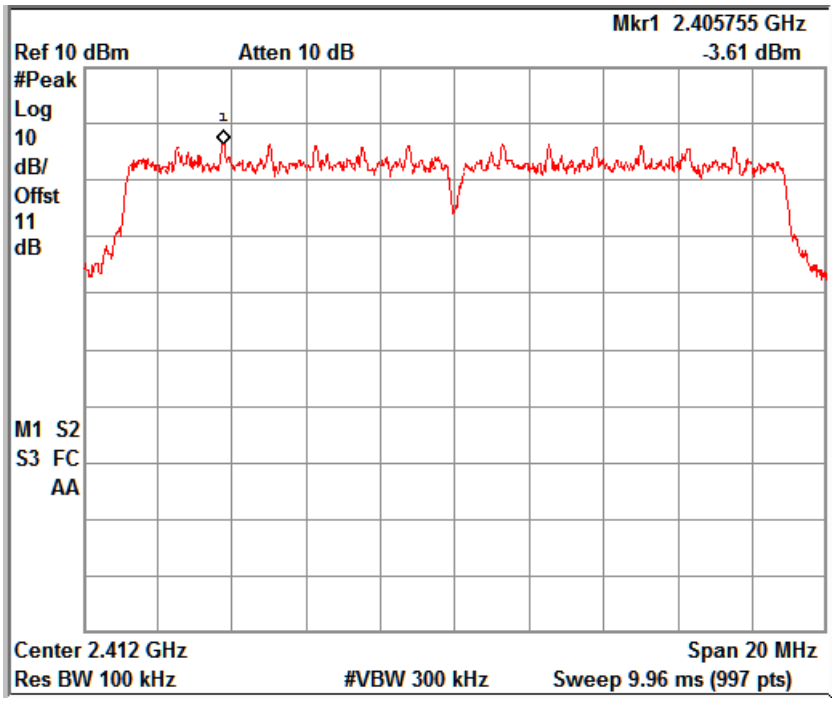
Data rate: 39 Mbps **Channel Frequency: 2412 MHz**



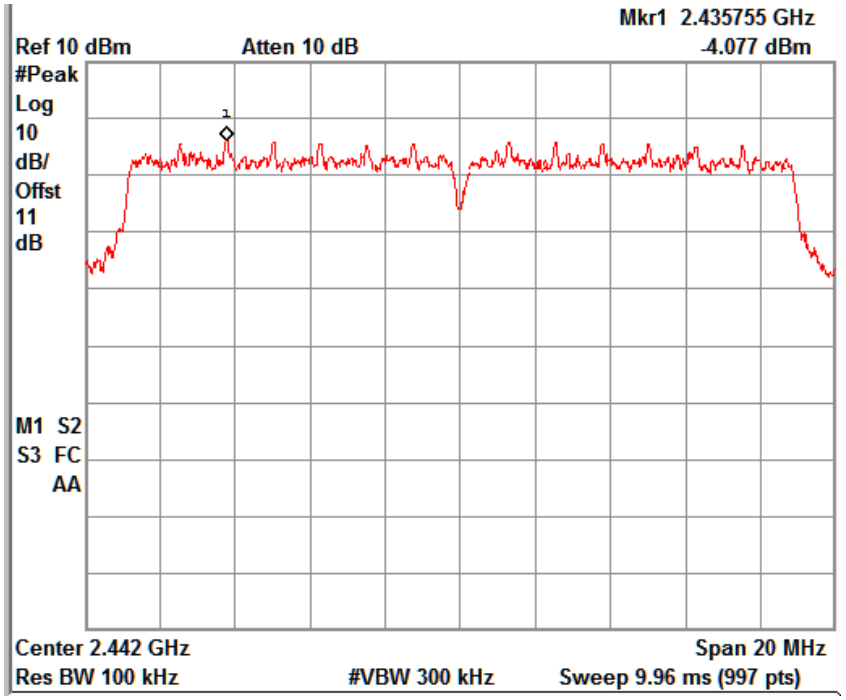
Data rate: 39 Mbps **Channel Frequency: 2442 MHz**



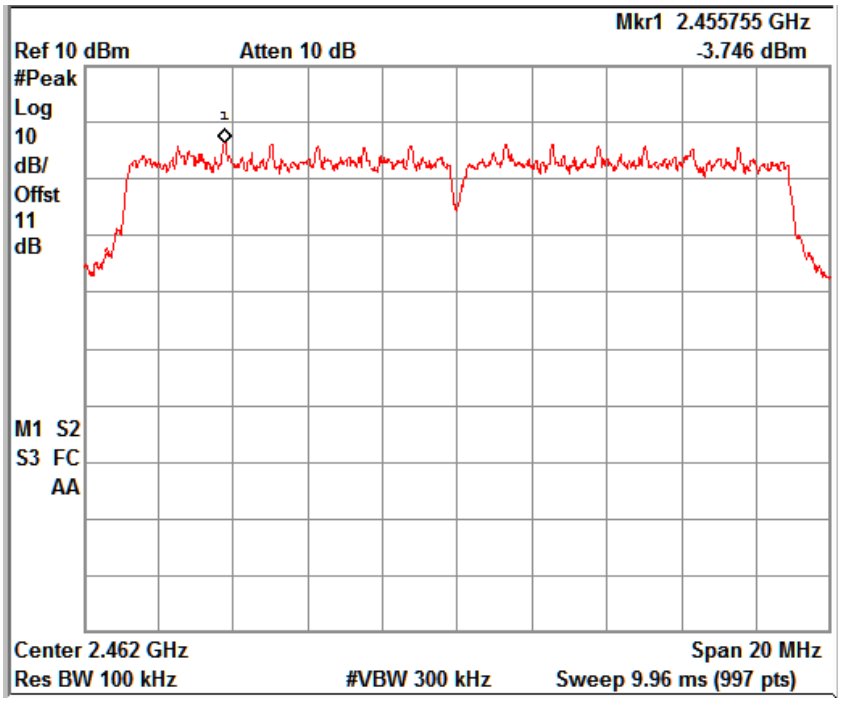
Data rate: 39 Mbps **Channel Frequency: 2462 MHz**



Data rate: 65 Mbps **Channel Frequency: 2412 MHz**



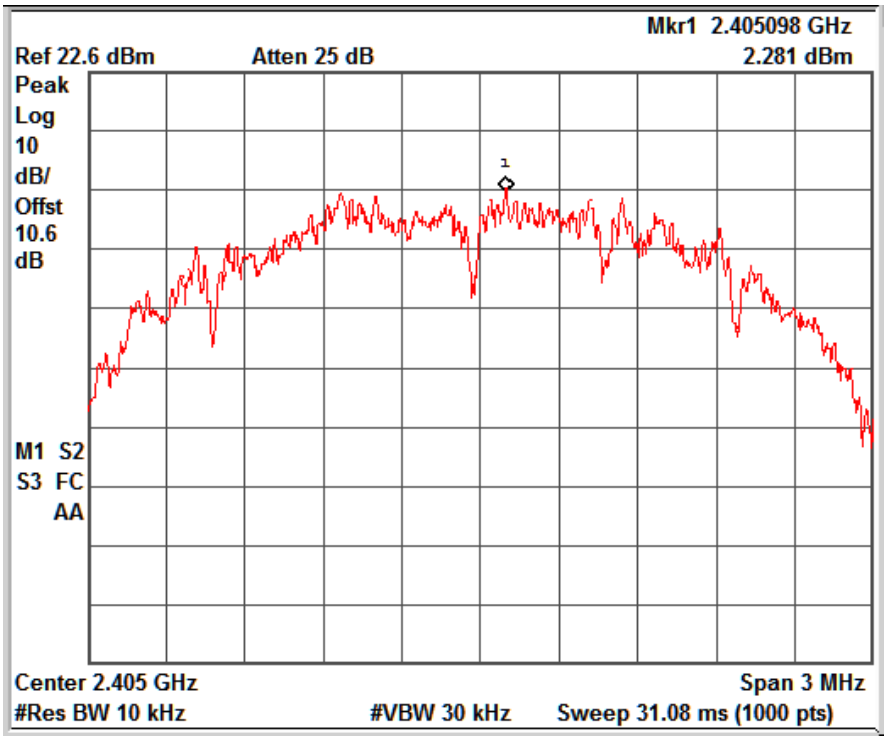
Data rate: 65 Mbps **Channel Frequency: 2442 MHz**



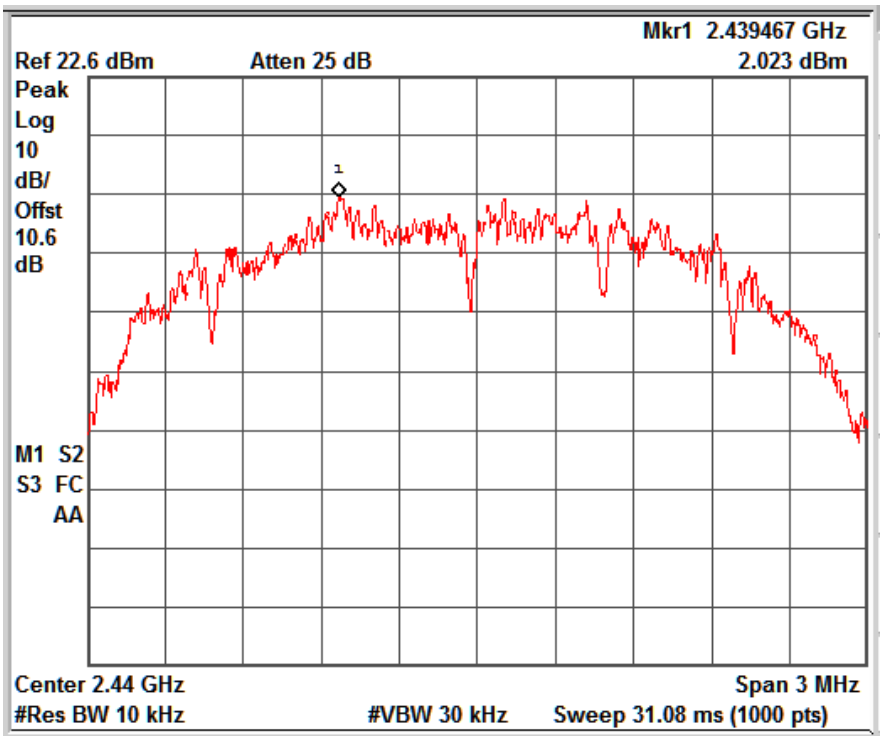
Data rate: 65 Mbps **Channel Frequency: 2462 MHz**

Test Result: ZigBee

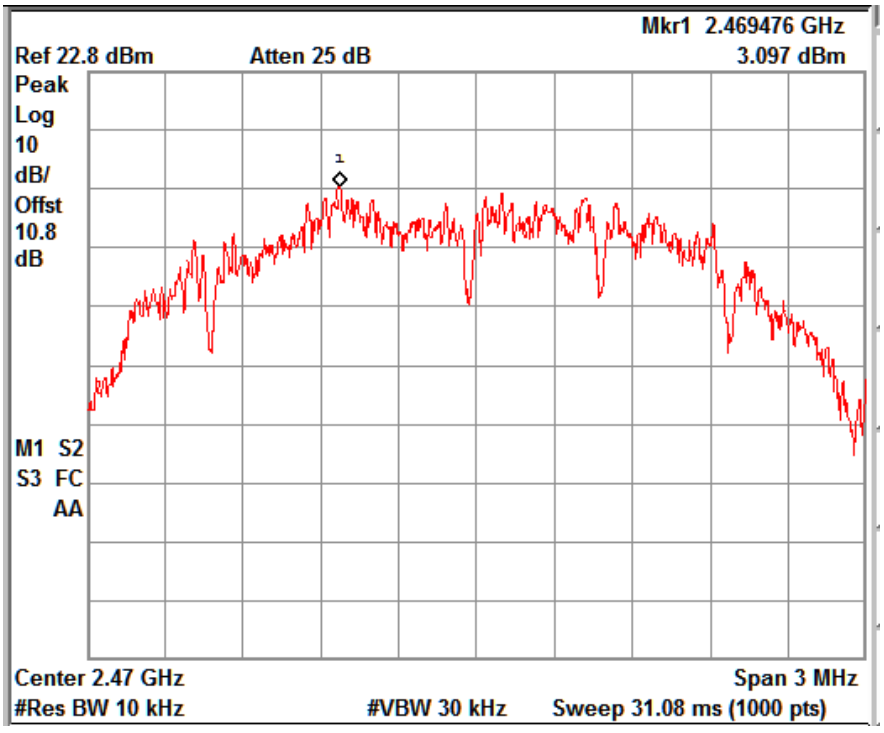
Channel Frequency (MHz)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
2405.00	02.28	8.00	-05.72
2440.00	02.02	8.00	-05.98
2470.00	3.097	8.00	-04.90
2475.00	-3.817	8.00	-11.81
2480.00	-19.52	8.00	-27.52



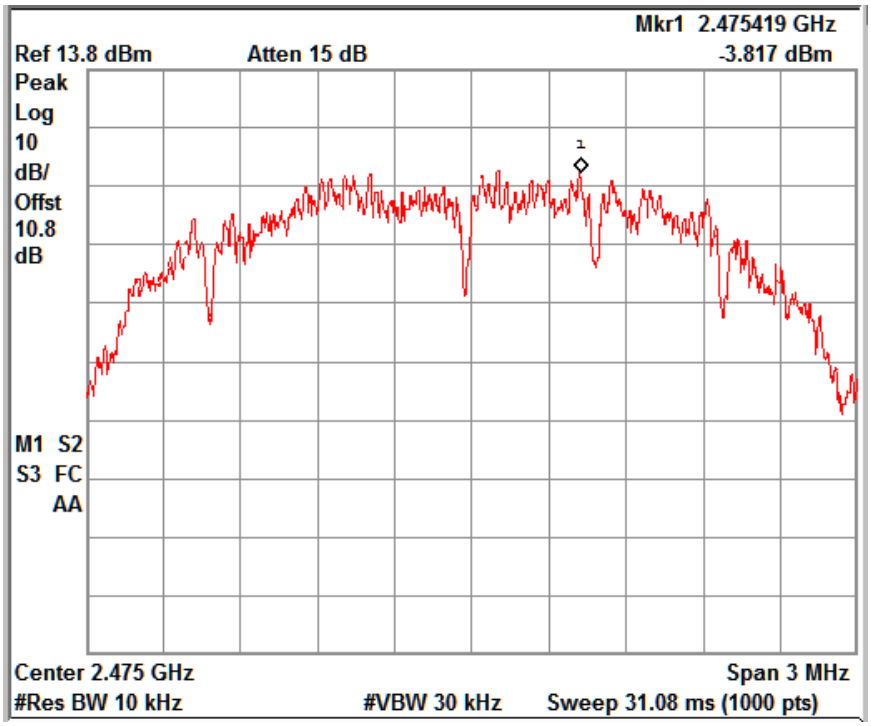
Channel Frequency: 2405 MHz



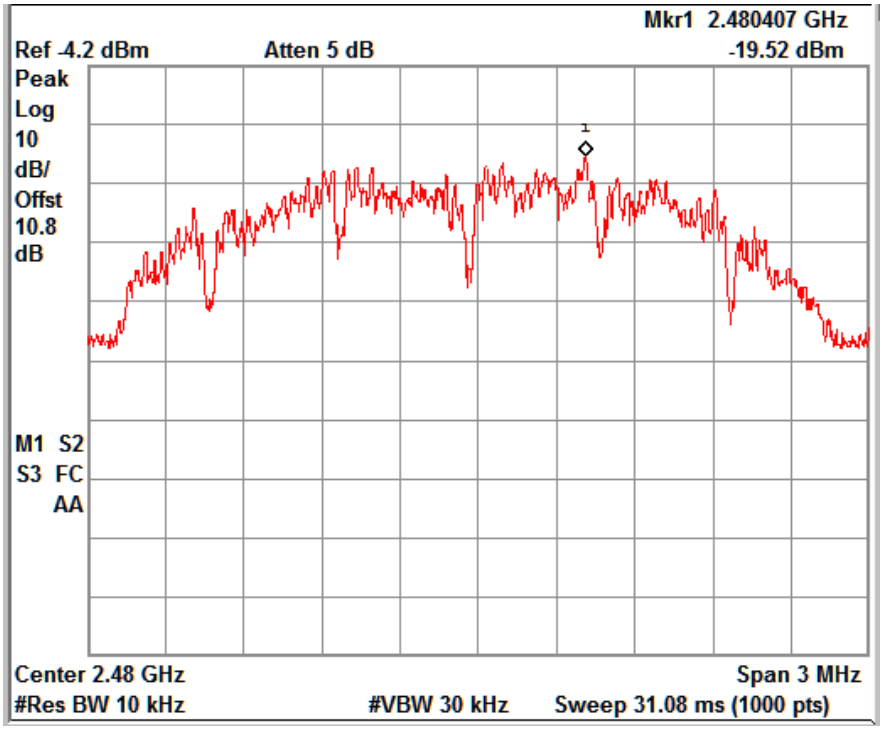
Channel Frequency: 2440 MHz



Channel Frequency: 2470 MHz



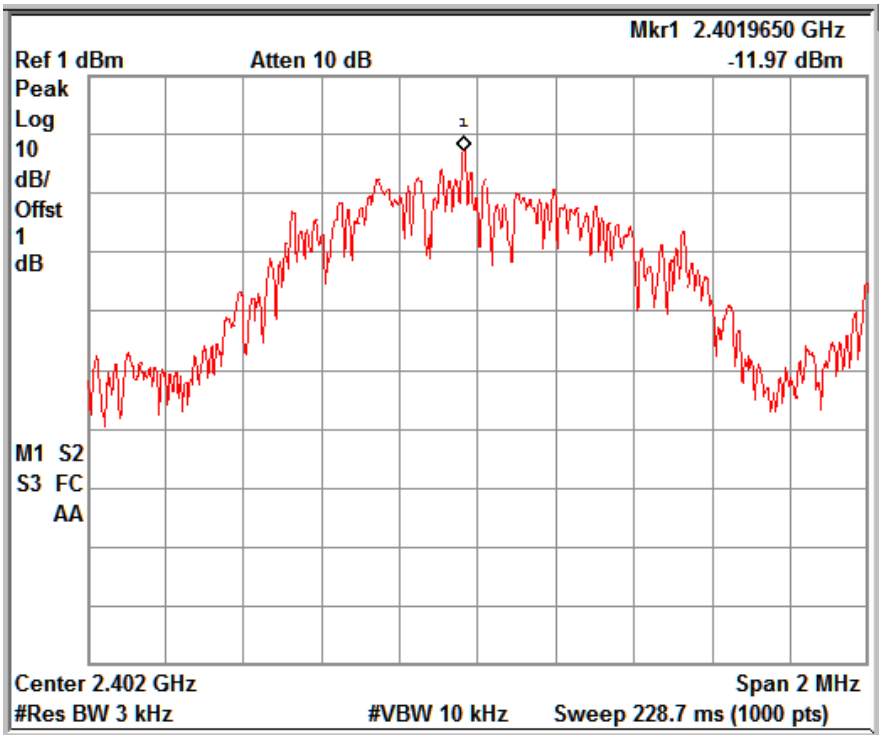
Channel Frequency: 2475 MHz



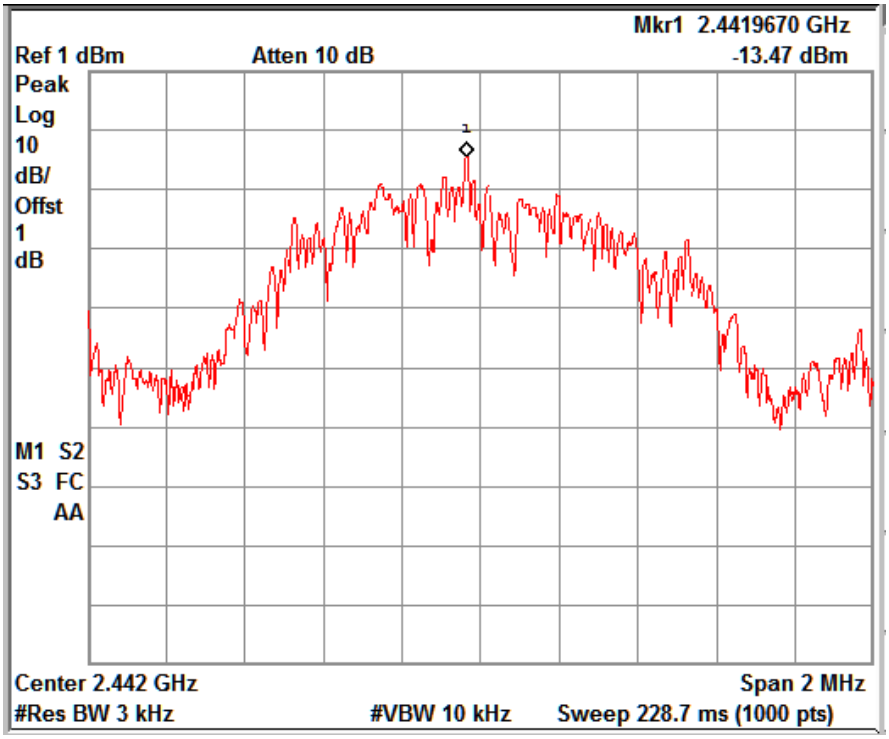
Channel Frequency: 2480 MHz

Test Result: Bluetooth LE

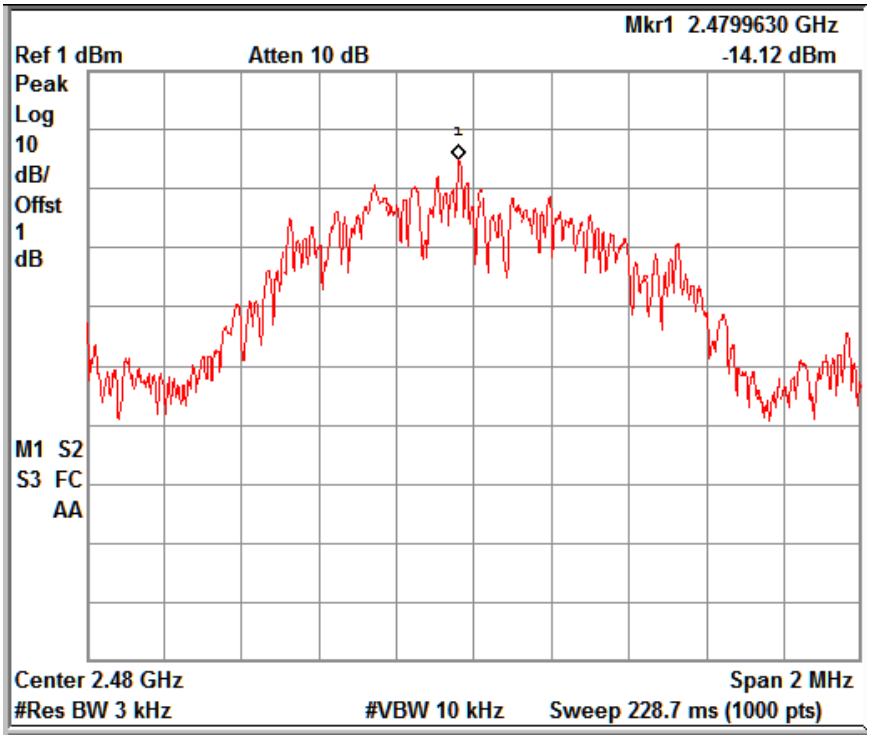
Channel Frequency (MHz)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
2402.00	-11.97	8.00	-19.97
2442.00	-13.47	8.00	-21.47
2480.00	-14.12	8.00	-22.12



Channel Frequency: 2402 MHz



Channel Frequency: 2442 MHz



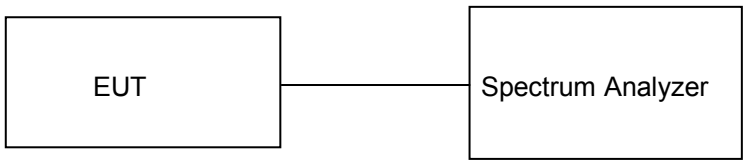
Channel Frequency: 2480 MHz

6 dB Bandwidth

Result **Pass**

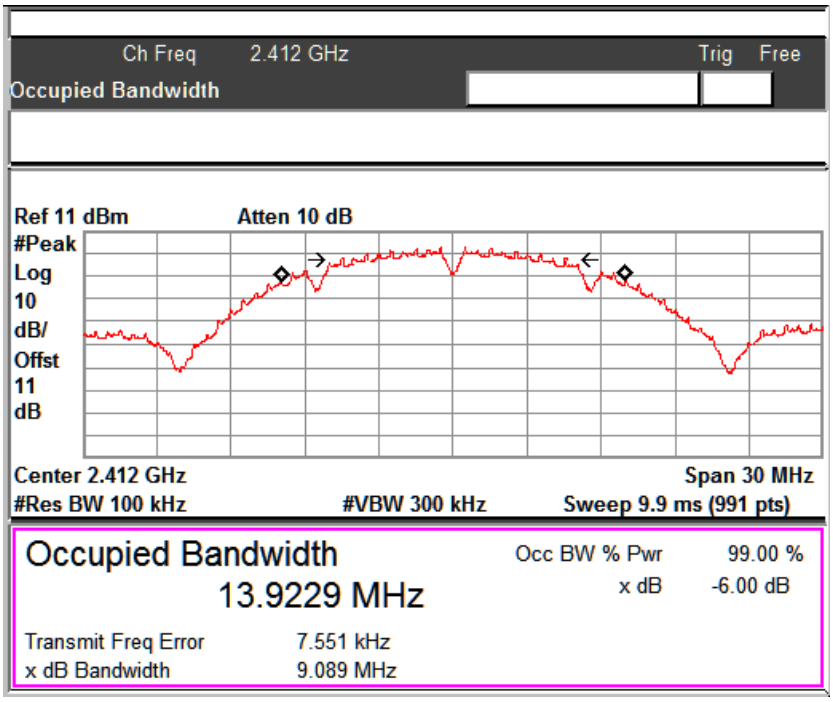
Test Specification FCC Part 15 Section 15.247 (a) (2)
Requirement The minimum 6 dB bandwidth shall be at least 500 kHz.

Test Method:

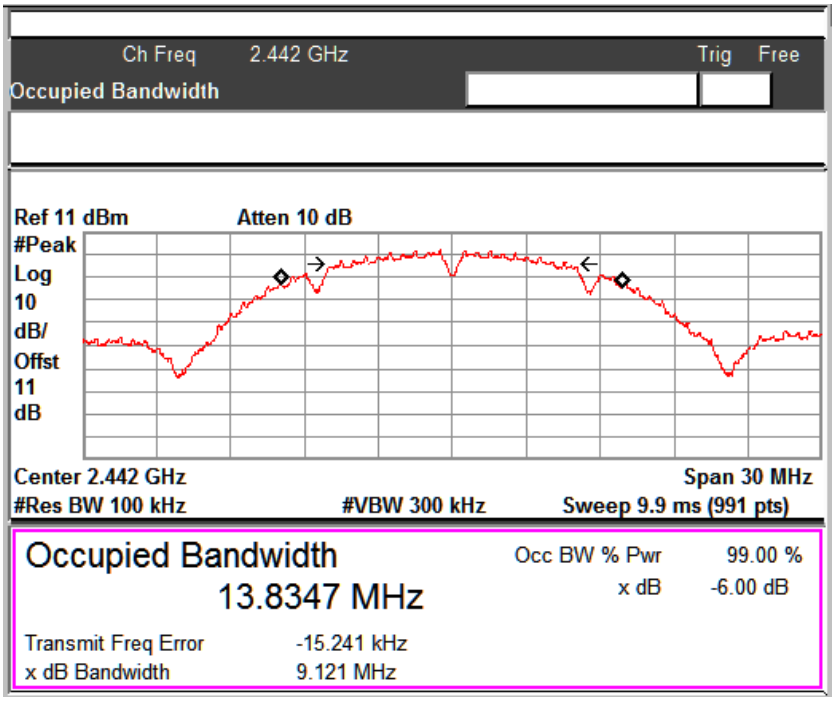


Test Result: Wi-Fi

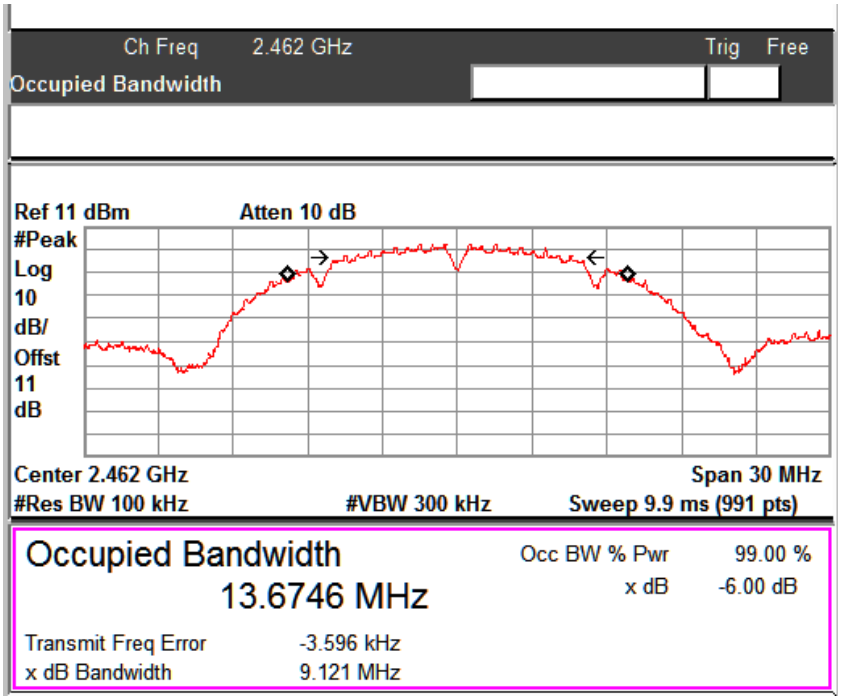
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	6 dB Bandwidth (MHz)	99% OBW (MHz)
b	1	2412	9.089	13.9229
		2442	9.121	13.8347
		2462	9.121	13.6746
	11	2412	9.50	14.4125
		2442	9.527	14.3264
		2462	9.538	14.2242



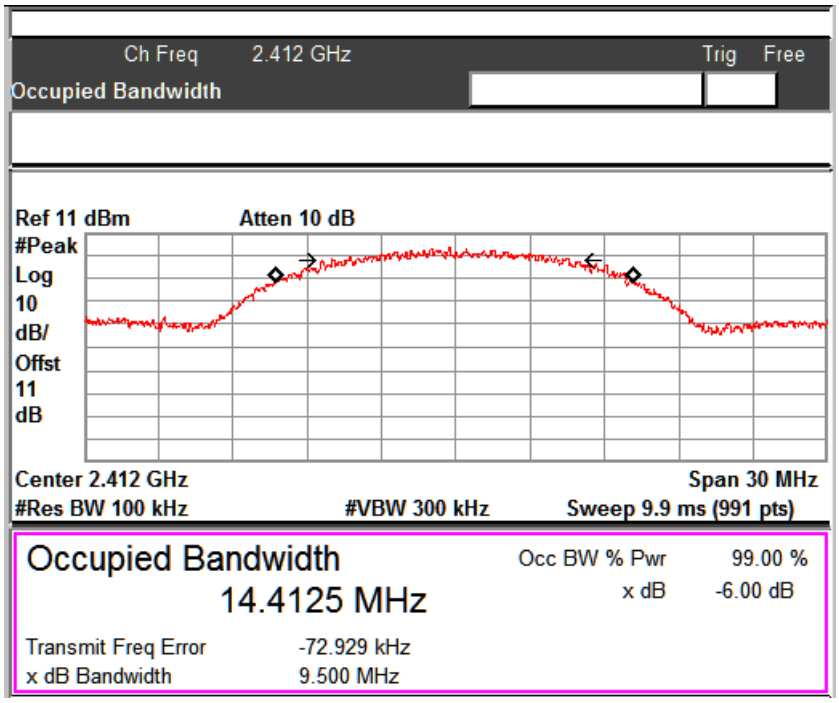
Data Rate: 1 Mbps **Channel frequency: 2412 MHz**



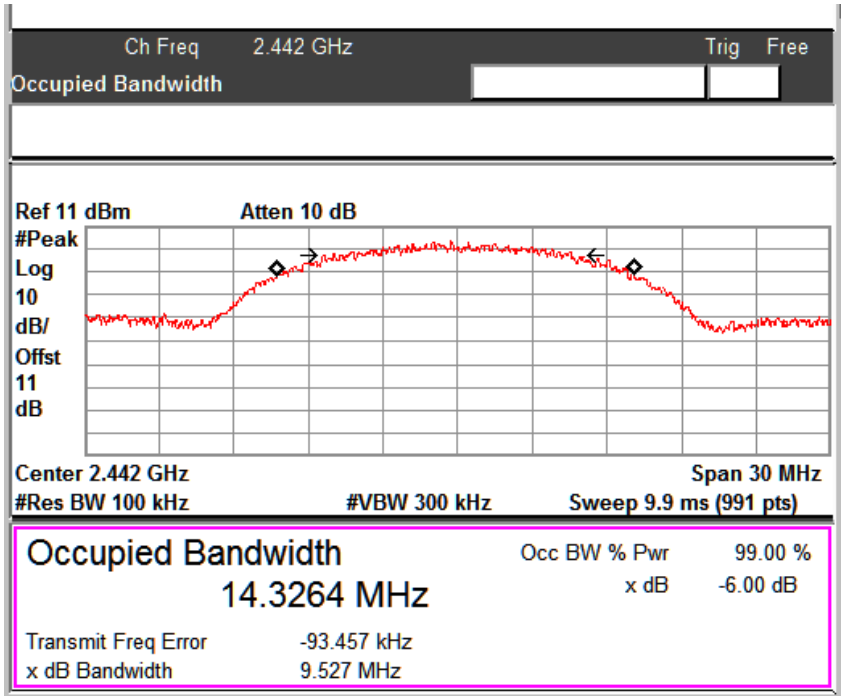
Data Rate: 1 Mbps **Channel frequency: 2442 MHz**



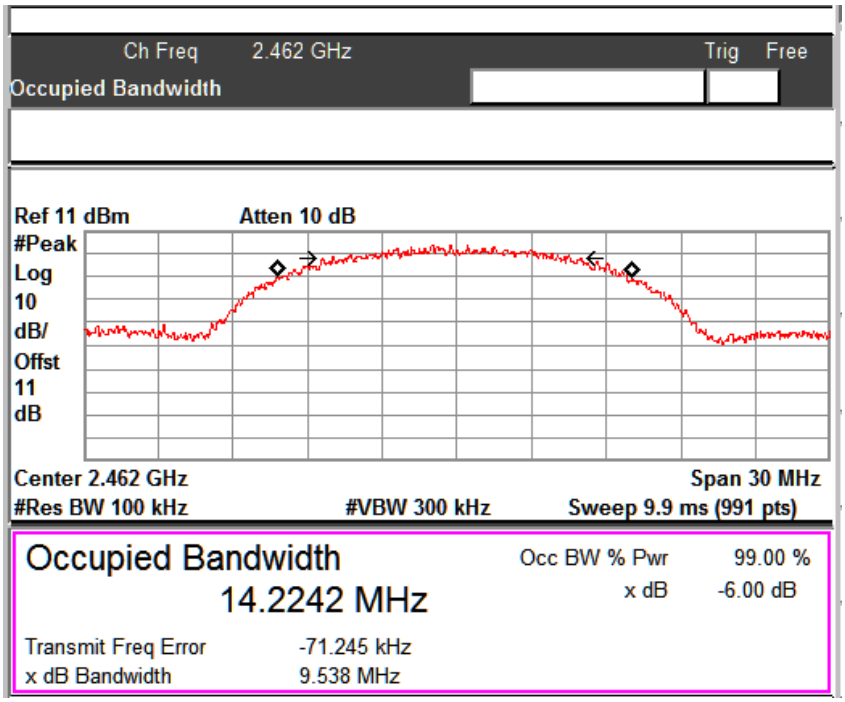
Data Rate: 1 Mbps **Channel frequency: 2462 MHz**



Data Rate: 11 Mbps **Channel frequencies: 2412 MHz**

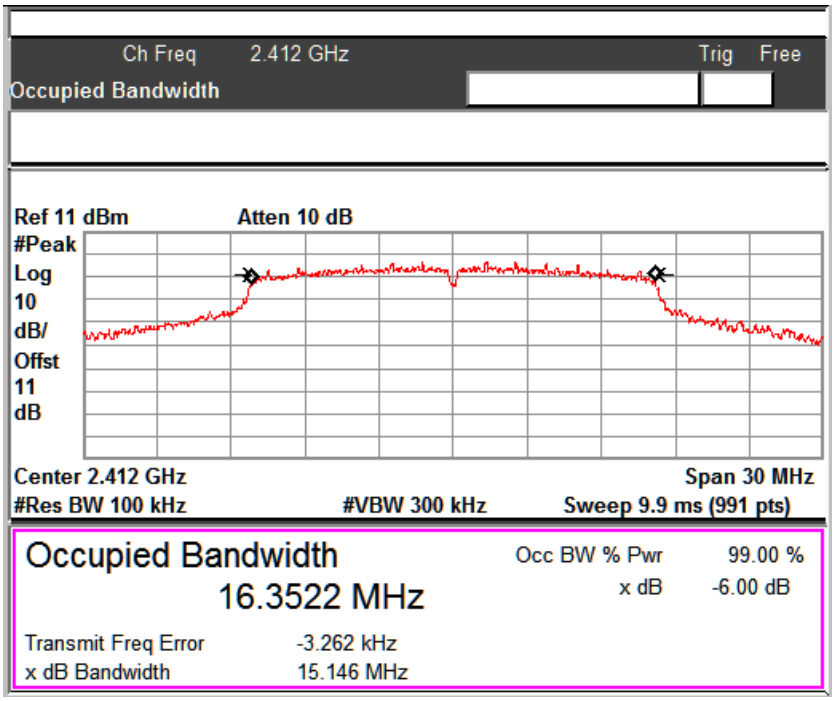


Data Rate: 11 Mbps **Channel frequency: 2442 MHz**

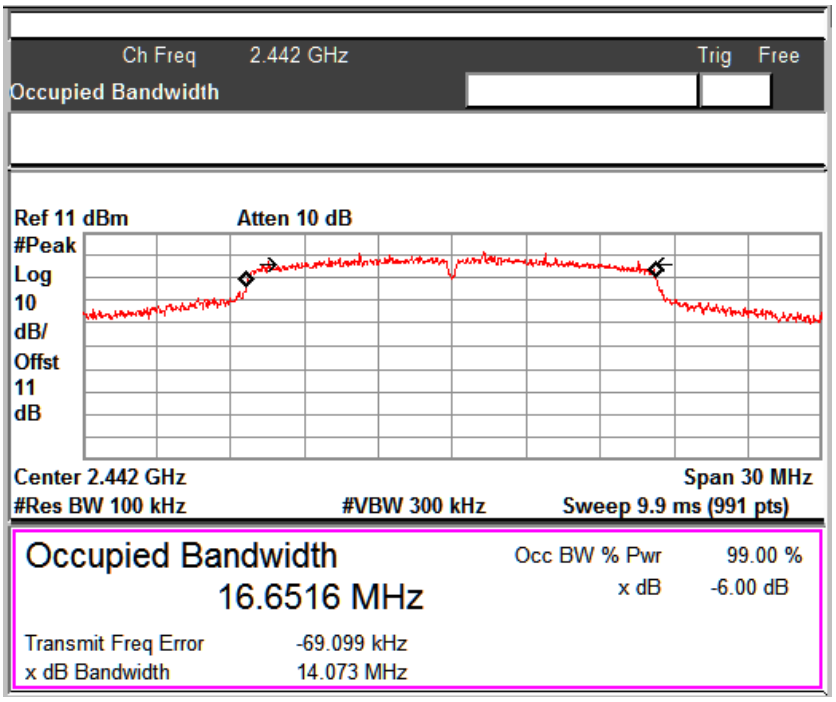


Data Rate: 11 Mbps **Channel frequency: 2462 MHz**

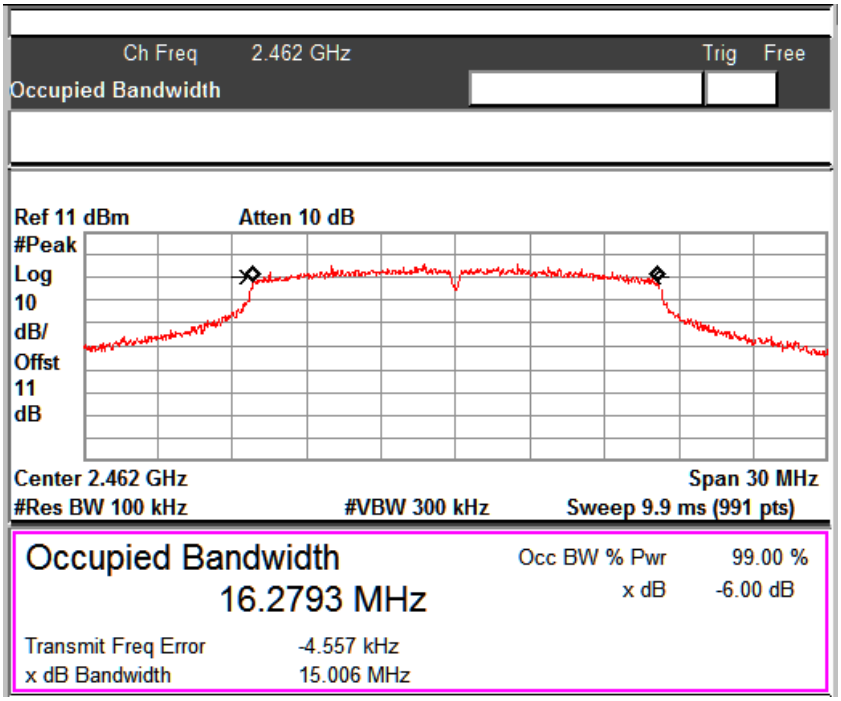
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	6 dB Bandwidth (MHz)	99% OBW (MHz)
g	6	2412	15.146	16.3522
		2442	14.073	16.6516
		2462	15.006	16.2793
	24	2412	16.494	16.5352
		2442	16.484	16.6264
		2462	16.492	16.4712
	54	2412	16.462	16.4816
		2442	16.503	16.5176
		2462	16.476	16.4543



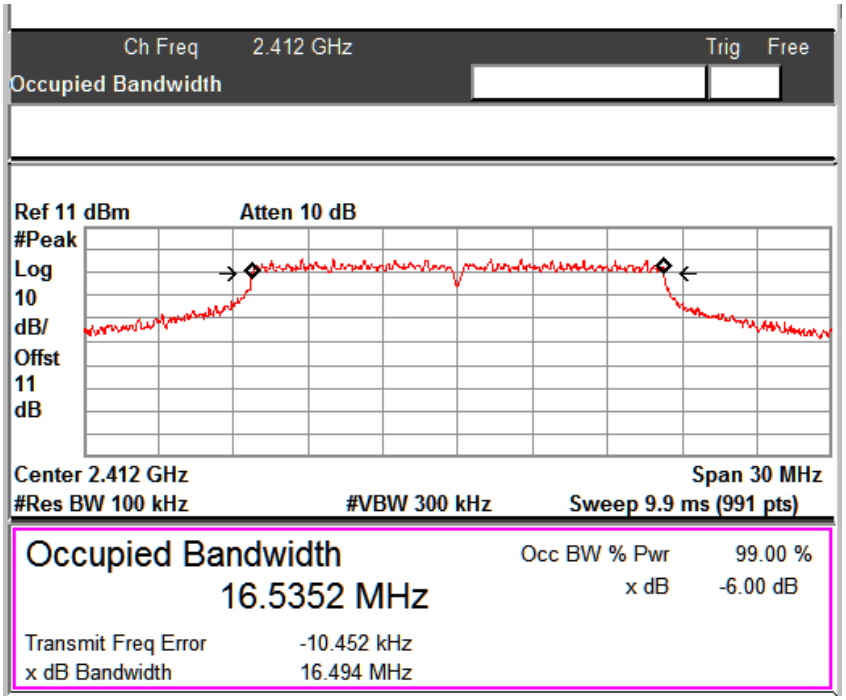
Data Rate: 6 Mbps **Channel frequencies: 2412 MHz**



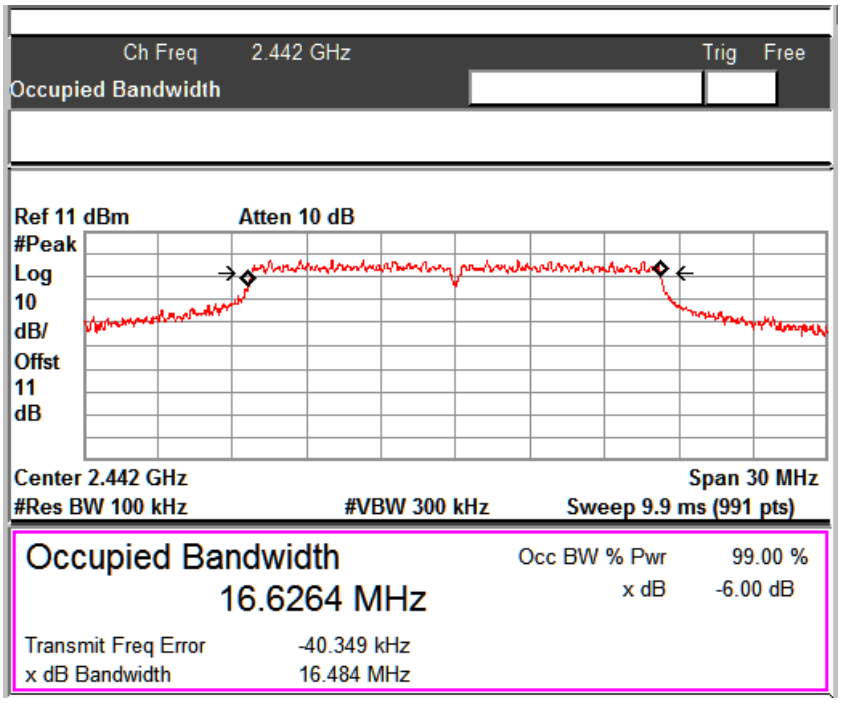
Data Rate: 6 Mbps **Channel frequencies: 2442 MHz**



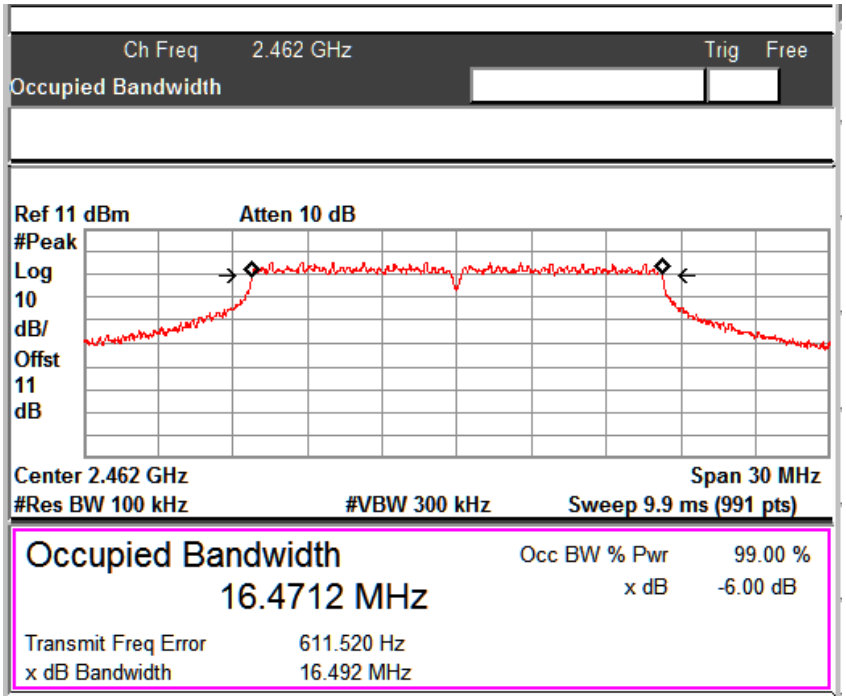
Data Rate: 6 Mbps **Channel frequencies: 2462 MHz**



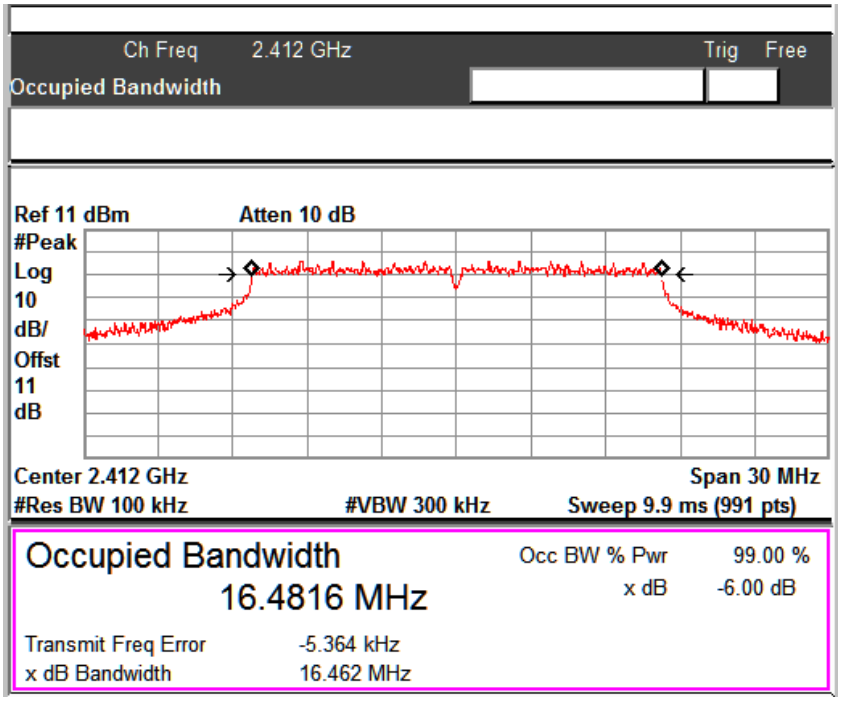
Data Rate: 24 Mbps **Channel frequencies: 2412 MHz**



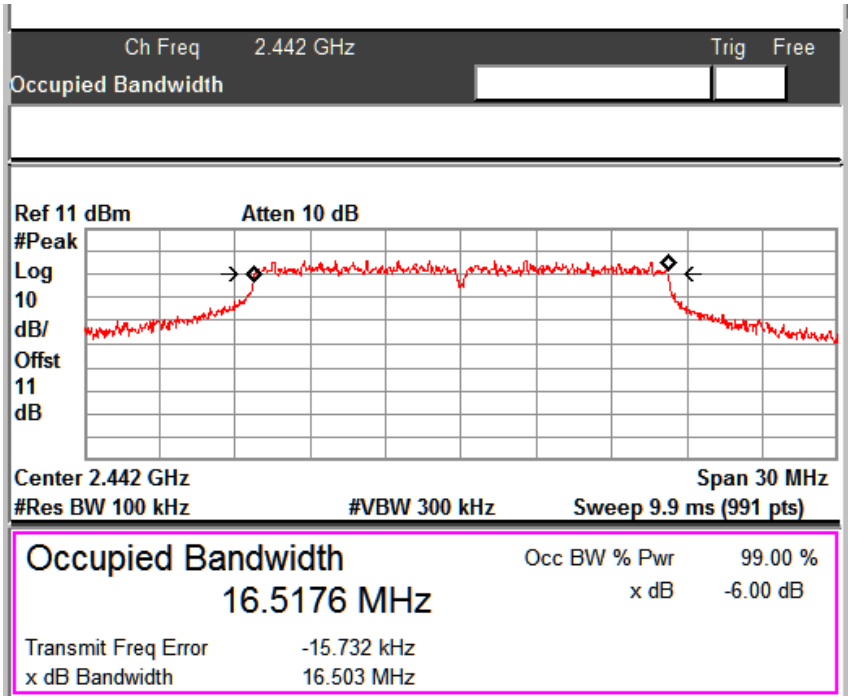
Data Rate: 24 Mbps **Channel frequencies: 2442 MHz**



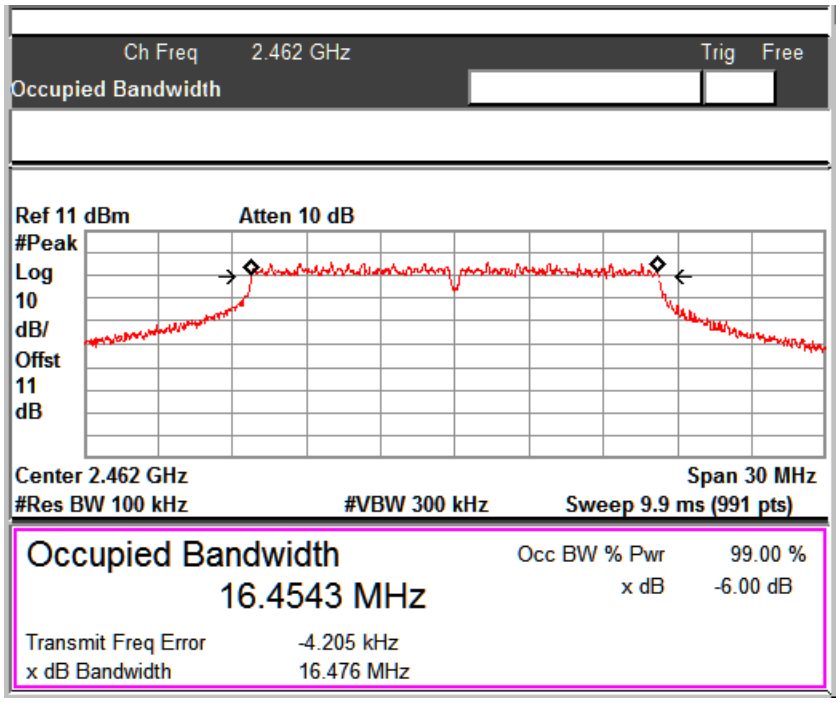
Data Rate: 24 Mbps **Channel frequencies: 2462 MHz**



Data Rate: 54 Mbps **Channel frequencies: 2412 MHz**

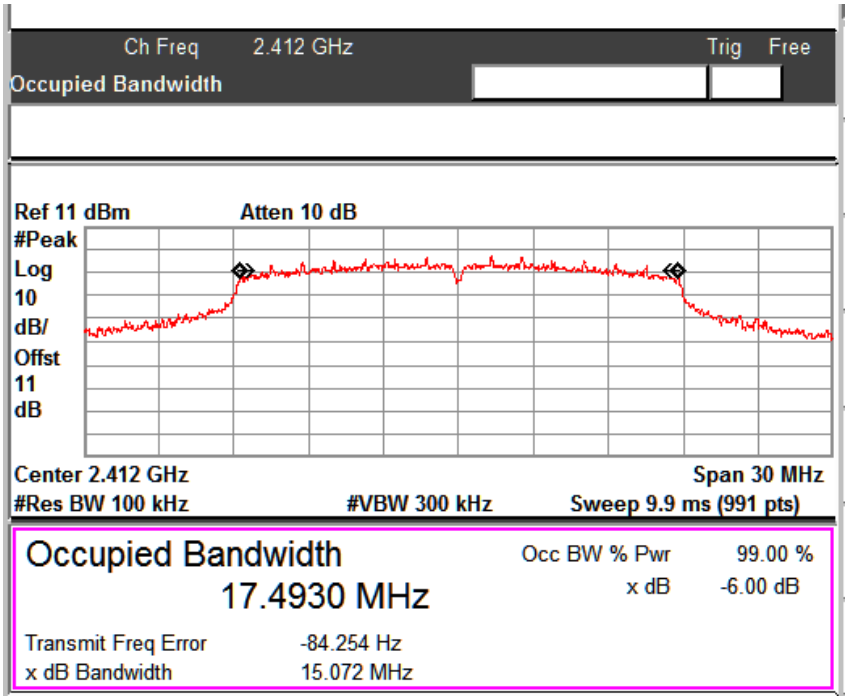


Data Rate: 54 Mbps **Channel frequencies: 2442MHz**

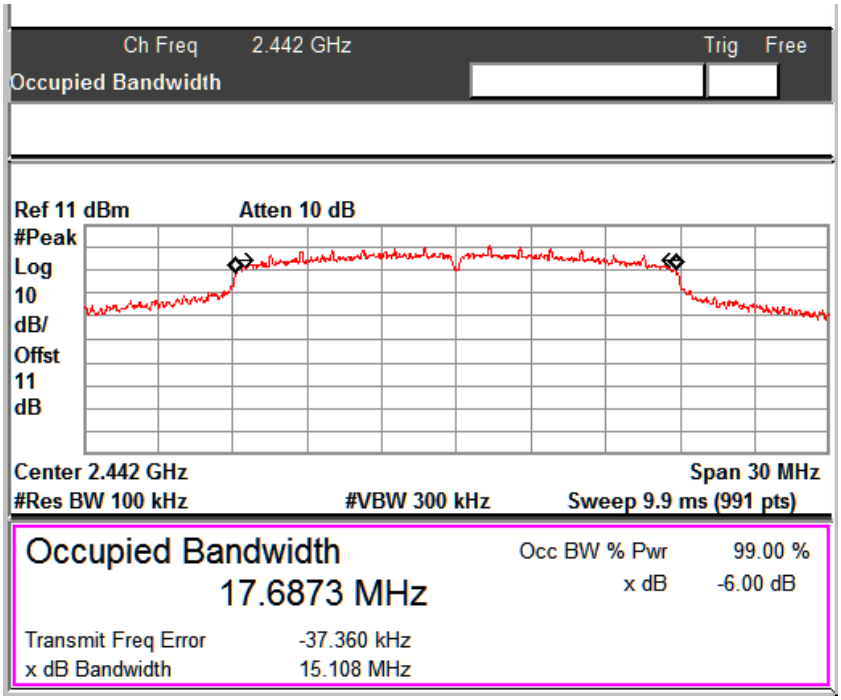


Data Rate: 54 Mbps **Channel frequencies: 2462 MHz**

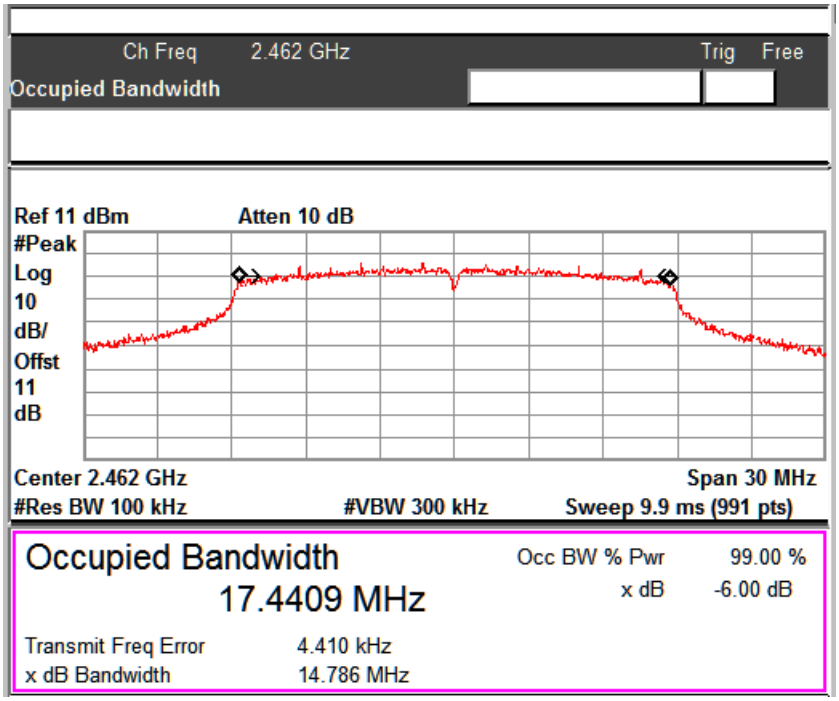
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	6 dB Bandwidth (MHz)	99% OBW (MHz)
n	6.5	2412	15.072	17.493
		2442	15.108	17.6873
		2462	14.786	17.4409
	39	2412	17.684	17.7292
		2442	17.697	17.784
		2462	17.694	17.6831
	65	2412	17.698	17.6725
		2442	17.596	17.6698
		2462	17.626	17.6568



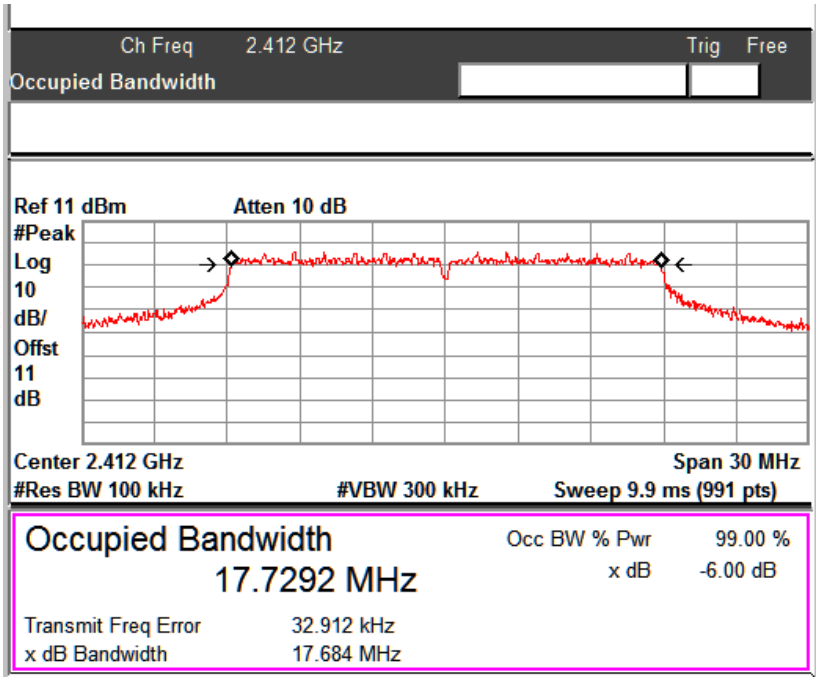
Data Rate: 6.5 Mbps **Channel: 2412 MHz**



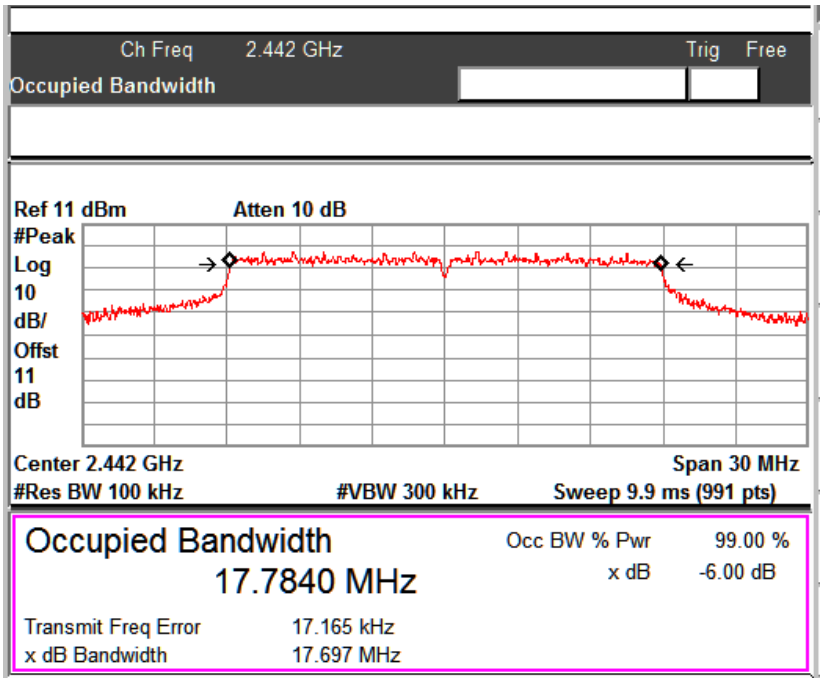
Data Rate: 6.5 Mbps **Channel: 2442 MHz**



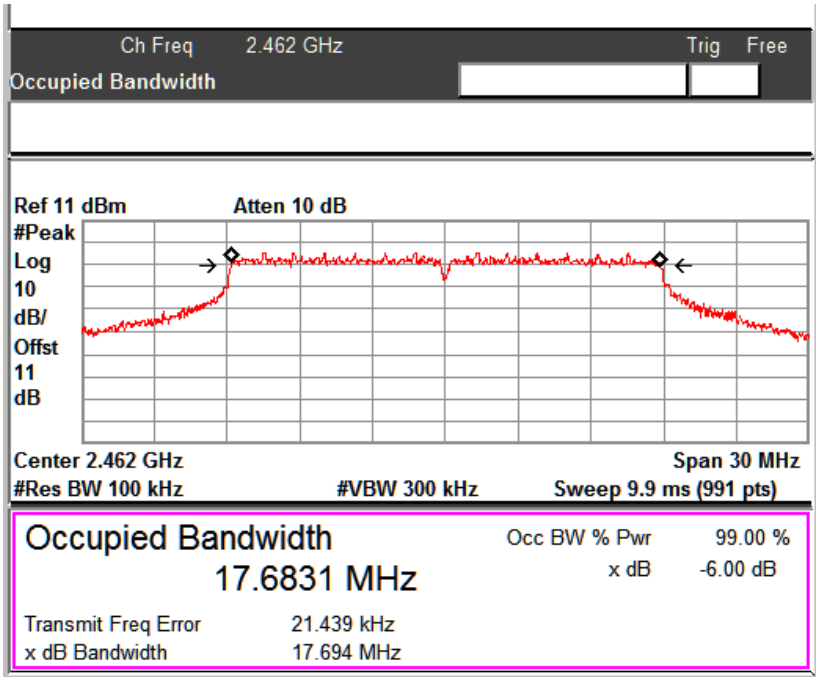
Data Rate: 6.5 Mbps **Channel: 2462 MHz**



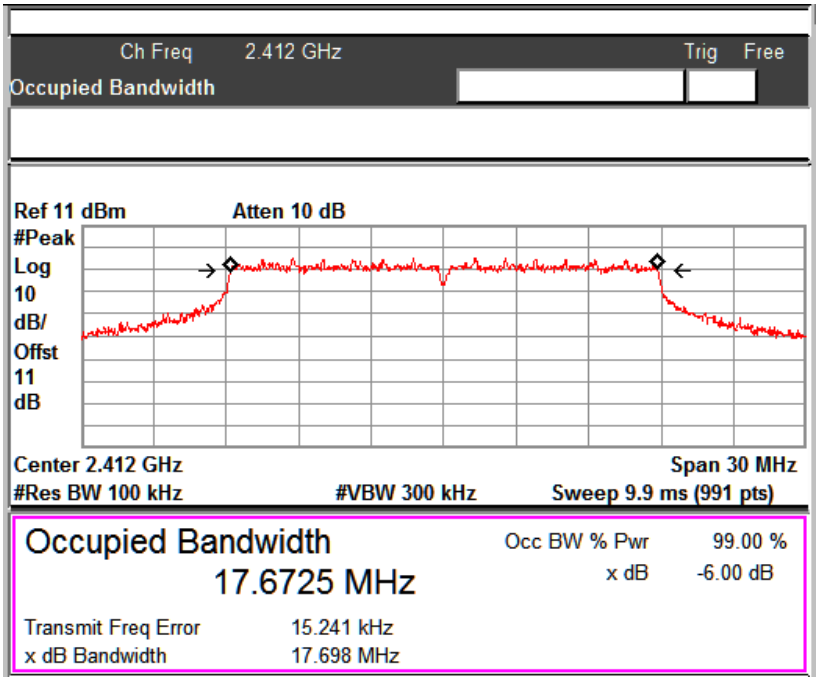
Data Rate: 39 Mbps **Channel: 2412 MHz**



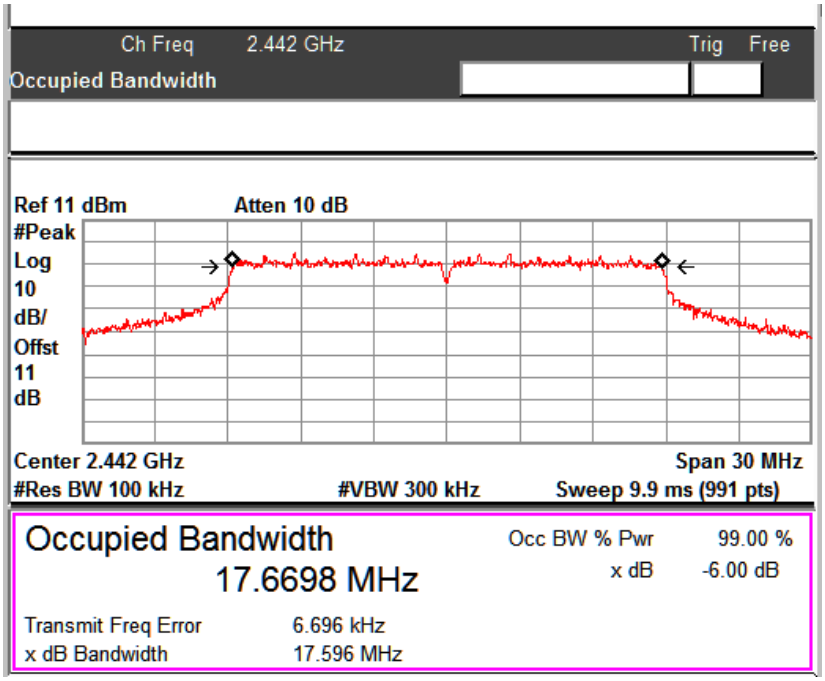
Data Rate: 39 Mbps **Channel: 2442 MHz**



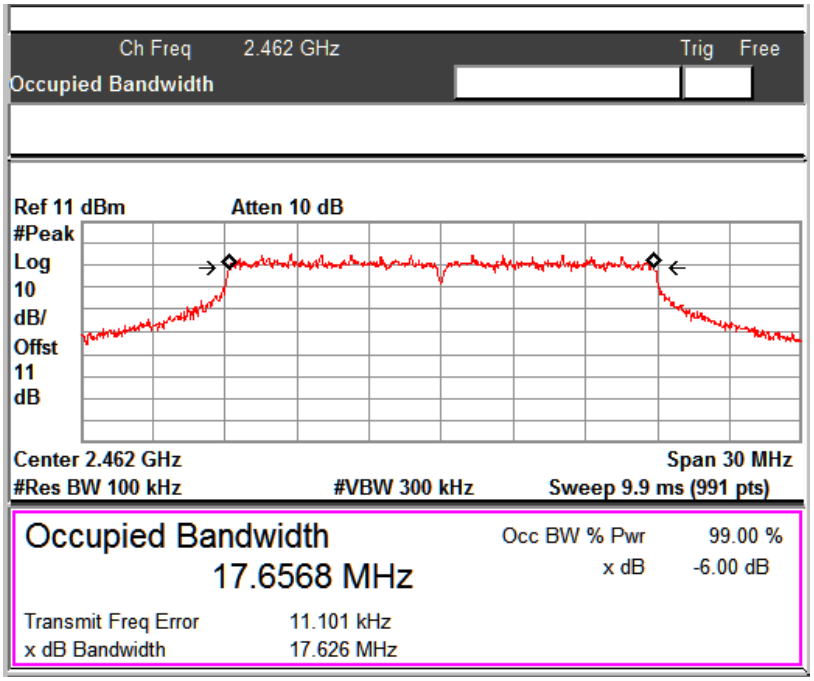
Data Rate: 39 Mbps **Channel: 2462 MHz**



Data Rate: 65 Mbps **Channel: 2412 MHz**



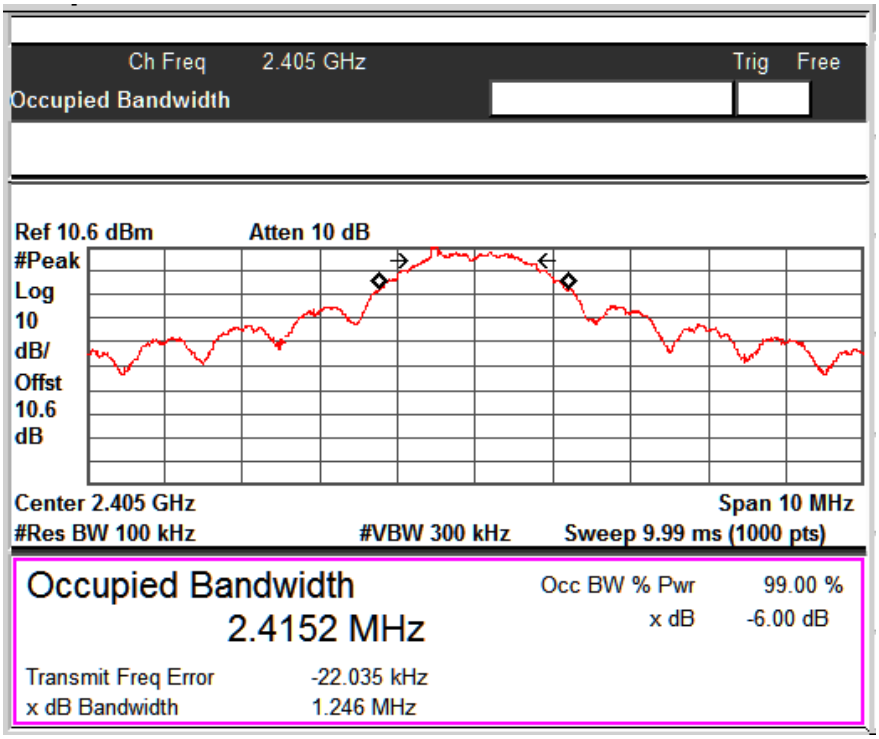
Data Rate: 65 Mbps **Channel: 2442MHz**



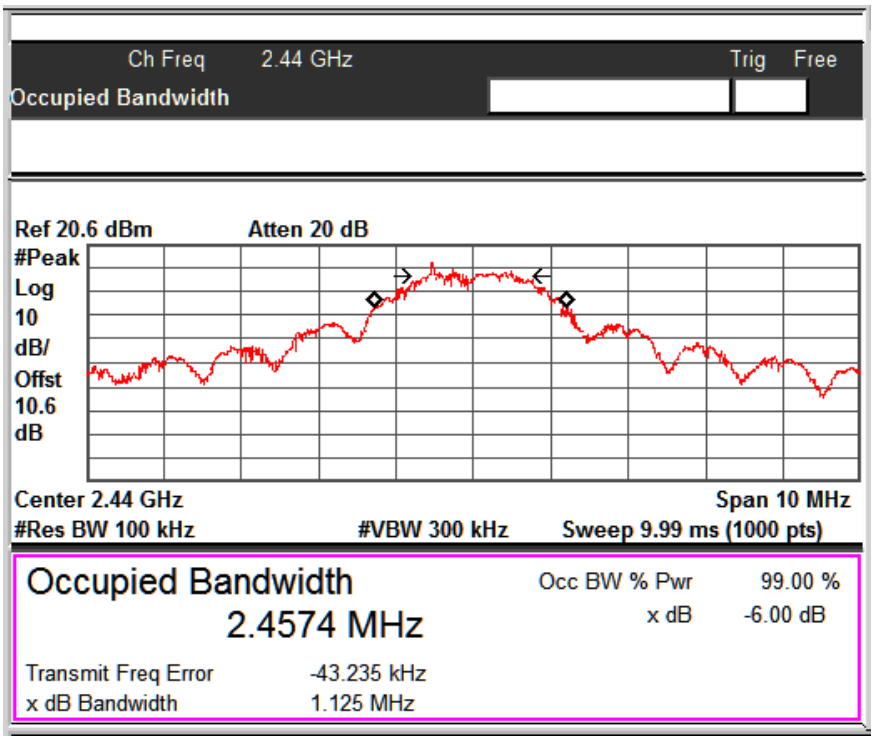
Data Rate: 65 Mbps **Channel: 2462 MHz**

Test Result: ZigBee

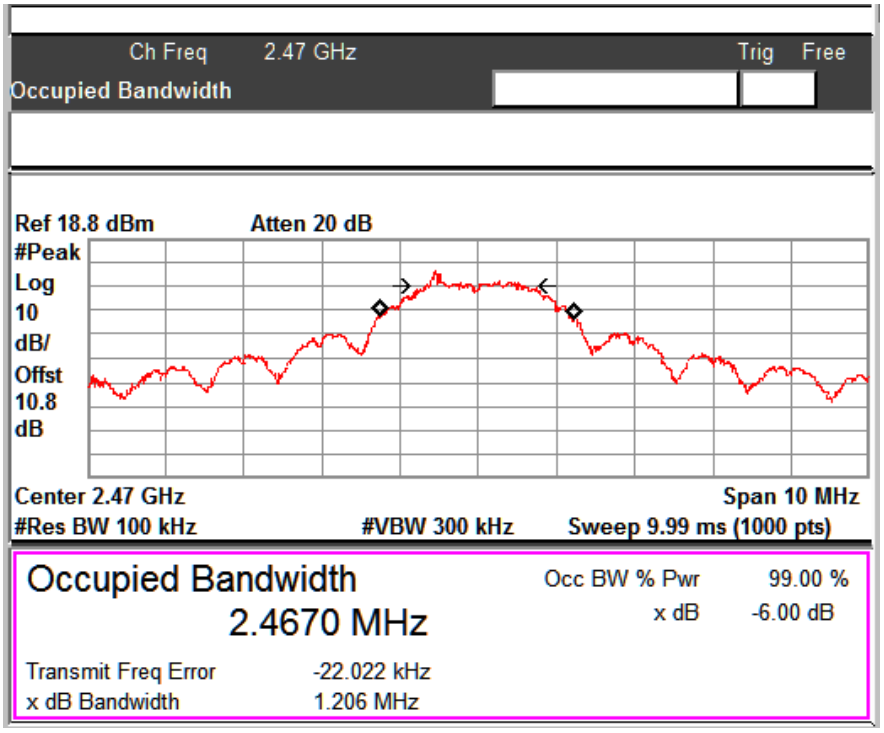
Channel Frequency (MHz)	6 dB Bandwidth (MHz)	99% OBW (MHz)
2405.00	01.24	02.41
2440.00	01.12	02.45
2470.00	01.20	02.46
2475.00	01.53	02.51
2480.00	01.60	03.91



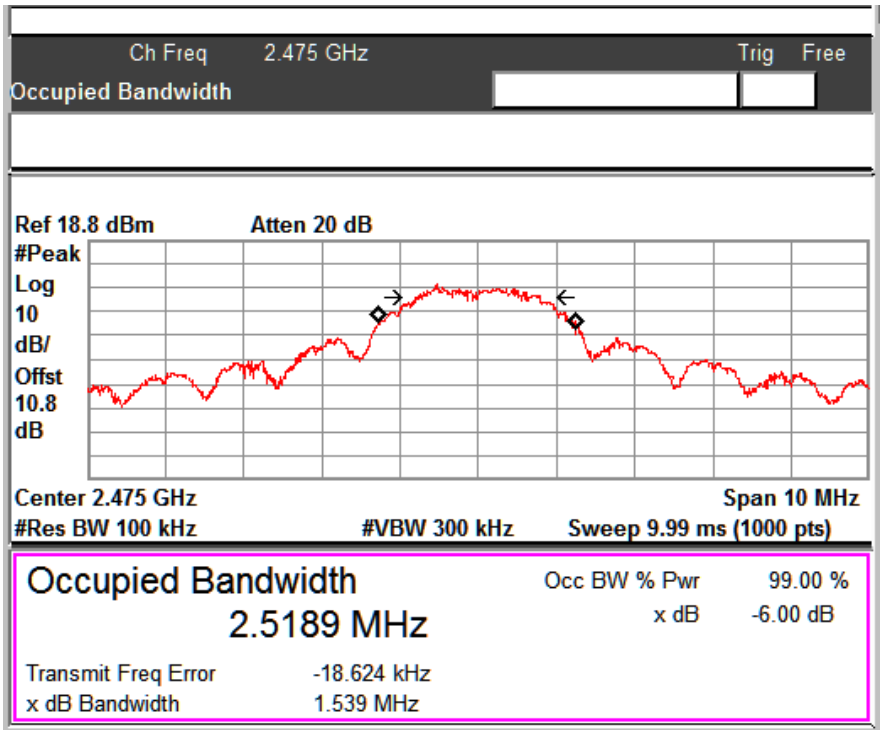
Channel Frequency: 2405 MHz



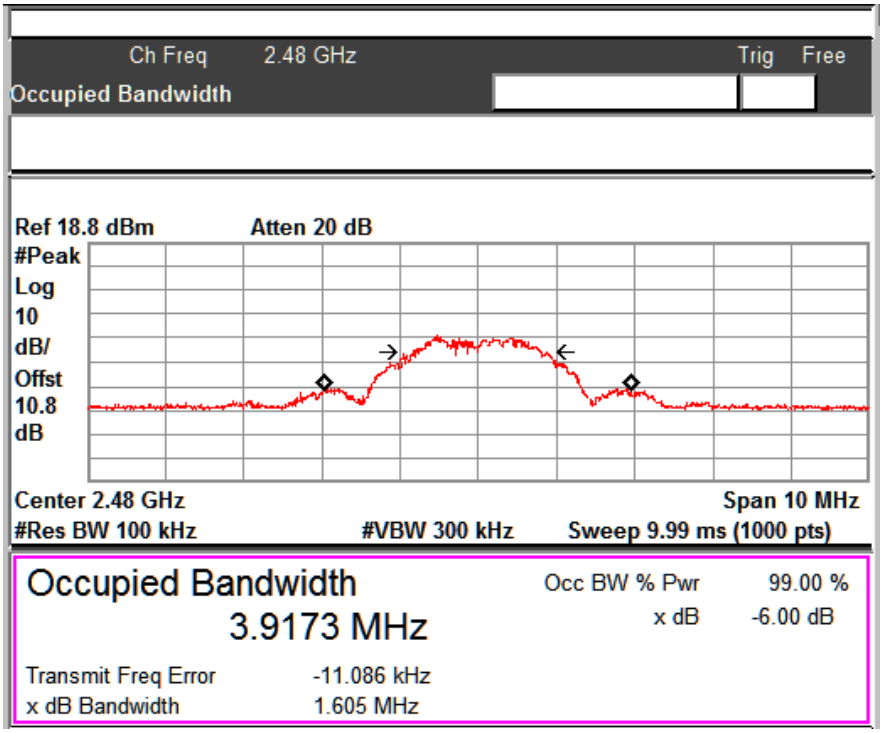
Channel Frequency: 2440 MHz



Channel Frequency: 2470 MHz



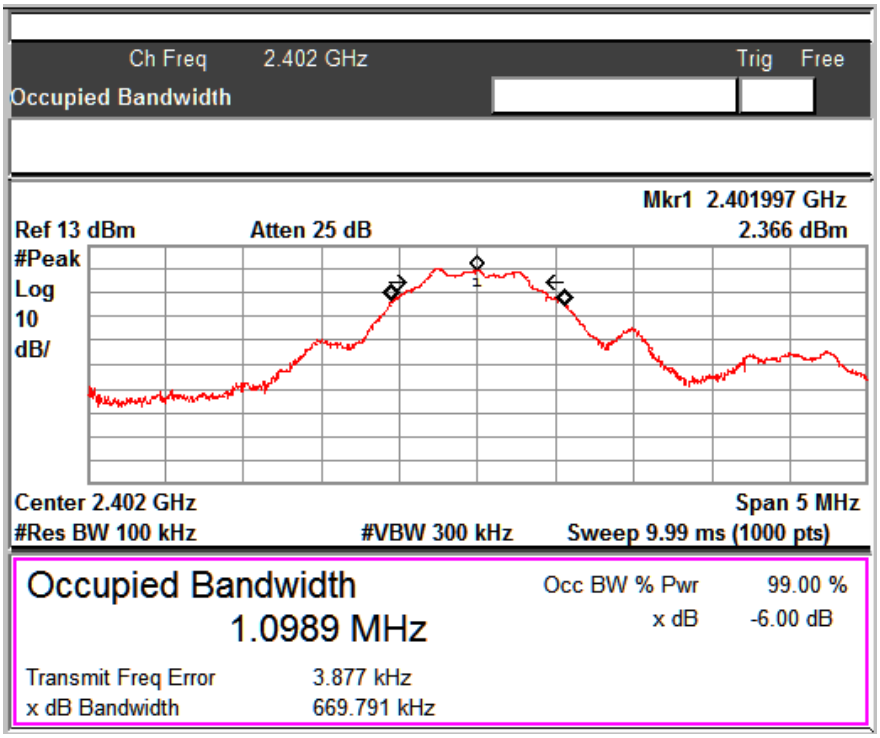
Channel Frequency: 2475 MHz



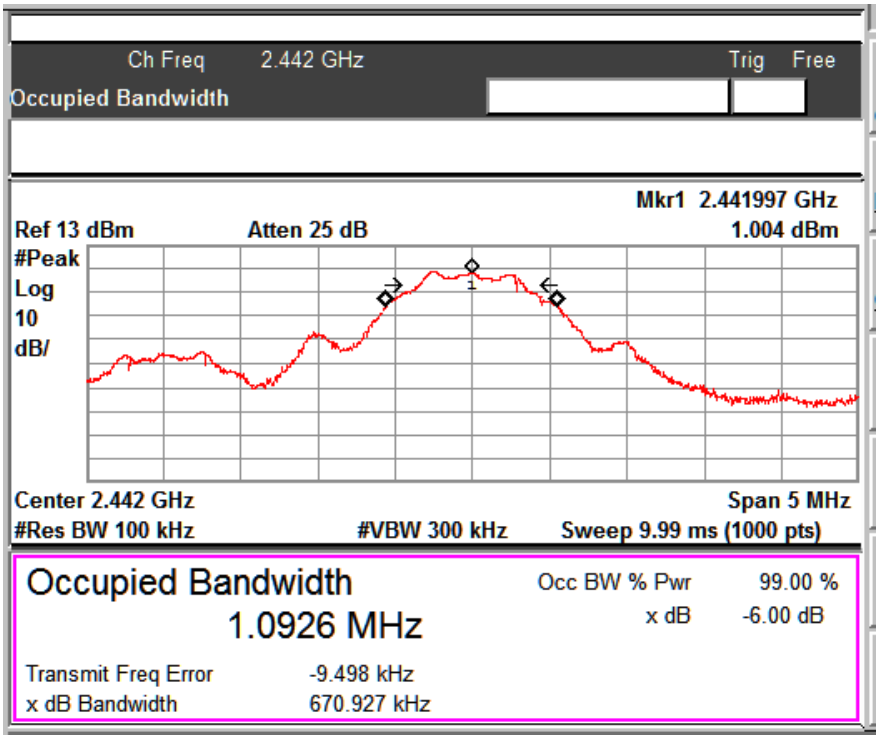
Channel Frequency: 2480 MHz

Test Result: Bluetooth LE

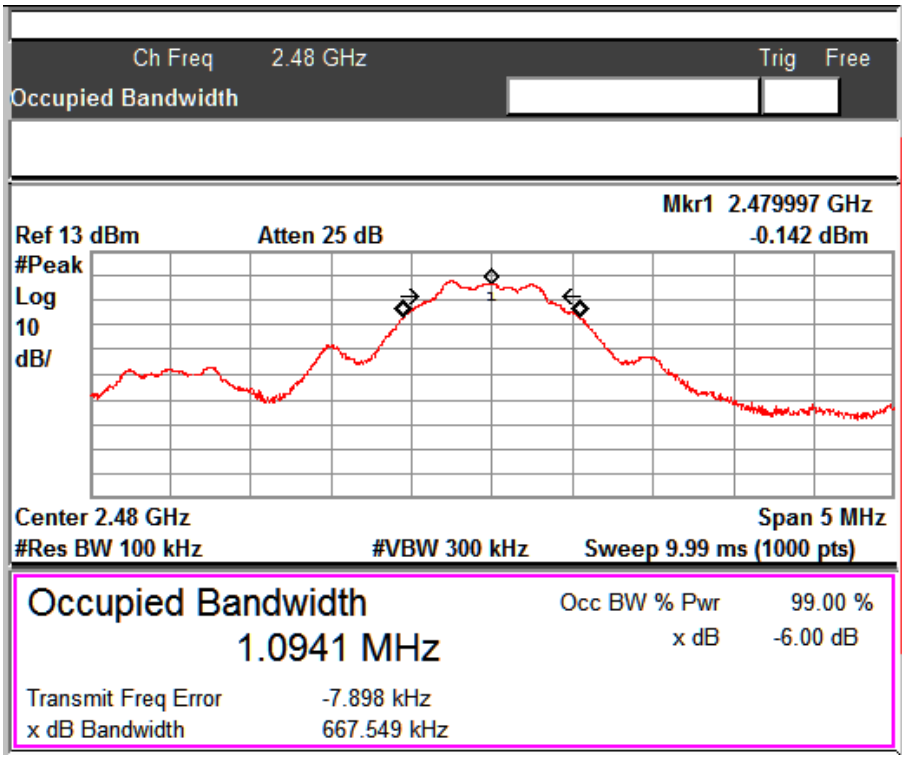
Channel Frequency (MHz)	6 dB Bandwidth (MHz)	99% OBW (MHz)
2402.00	00.66	01.09
2442.00	00.67	01.09
2480.00	00.67	01.09



Channel Frequency: 2402 MHz



Channel Frequency: 2442 MHz



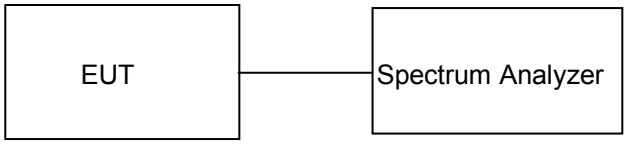
Channel Frequency: 2480 MHz

Band-edge Compliance

Result **Pass**

Test Specification	FCC Part 15 Section 15.247(d)
Detector Function	Peak
Requirement	In any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

Test Method:

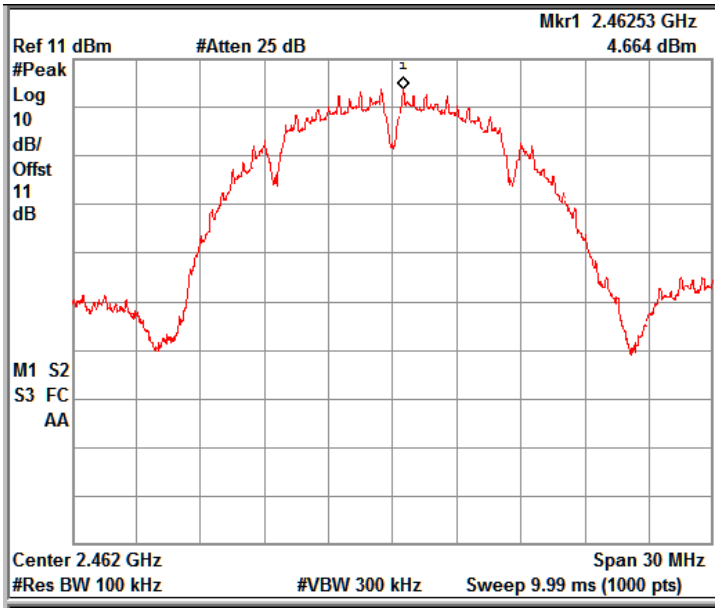


Offset value is added in the final measurement value.

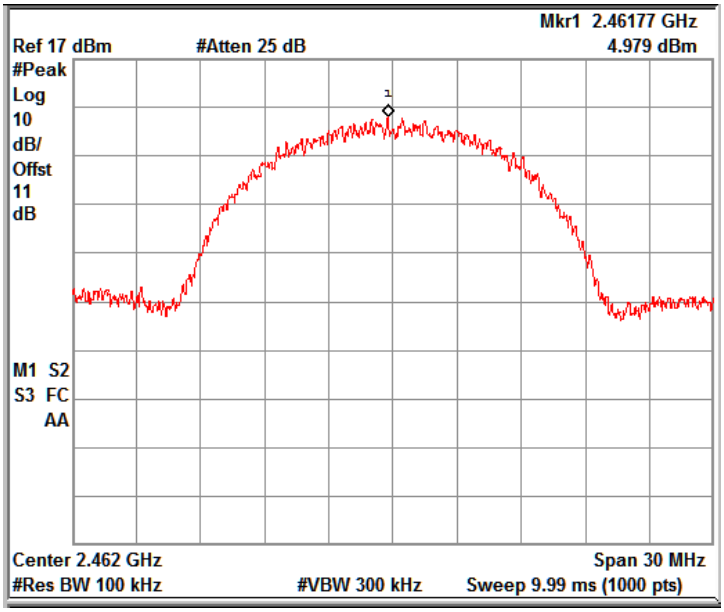
Test Result: Wi-Fi

802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Value at Band Edge		Reference Value B (dBm)	Band Edge Value A~B (dBc)	Limit (dBc)
			Frequency (MHz)	Value A (dBm)			
b	1	2412	2398.53	-32.09	4.66	36.75	20
		2462	2483.5	-44.71	4.66	49.37	20
	11	2412	2397.03	-25.56	4.97	30.53	20
		2462	2483.5	-45.24	4.97	50.21	20

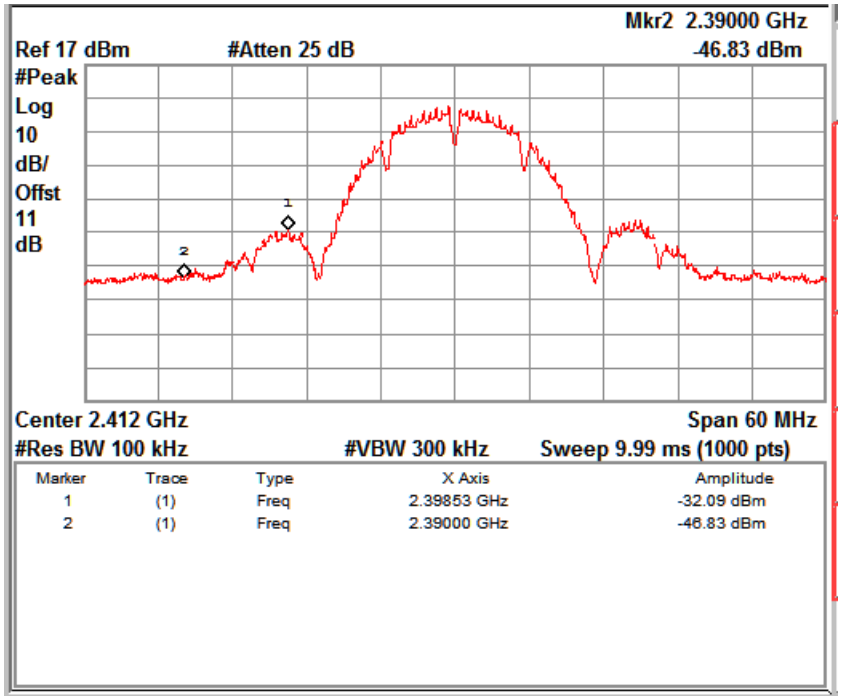
Note: The channel no. 11 (2462 MHz) found to contain the maximum PSD level and is used to establish the reference level.



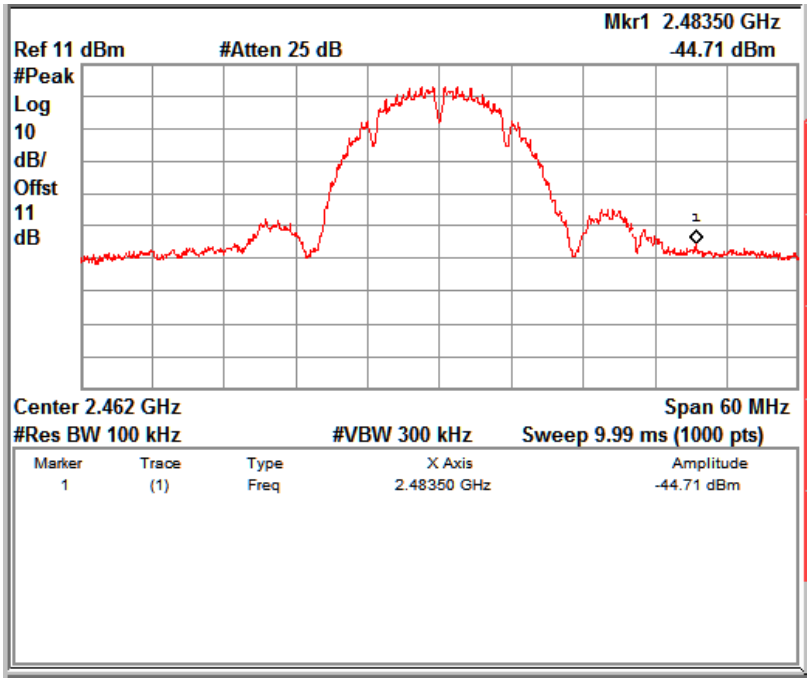
Reference Level Plot: 1Mbps



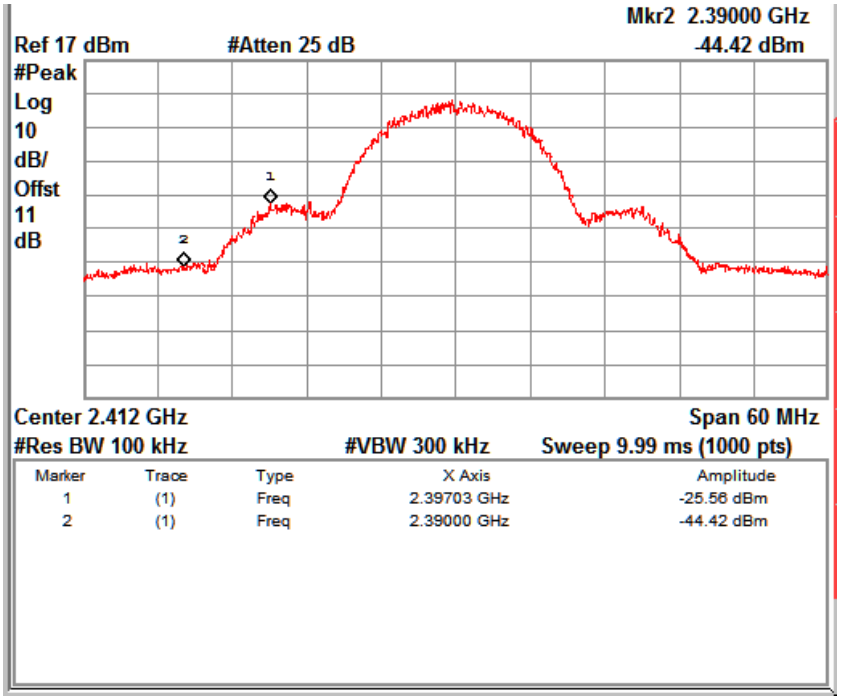
Reference Level Plot: 11Mbps



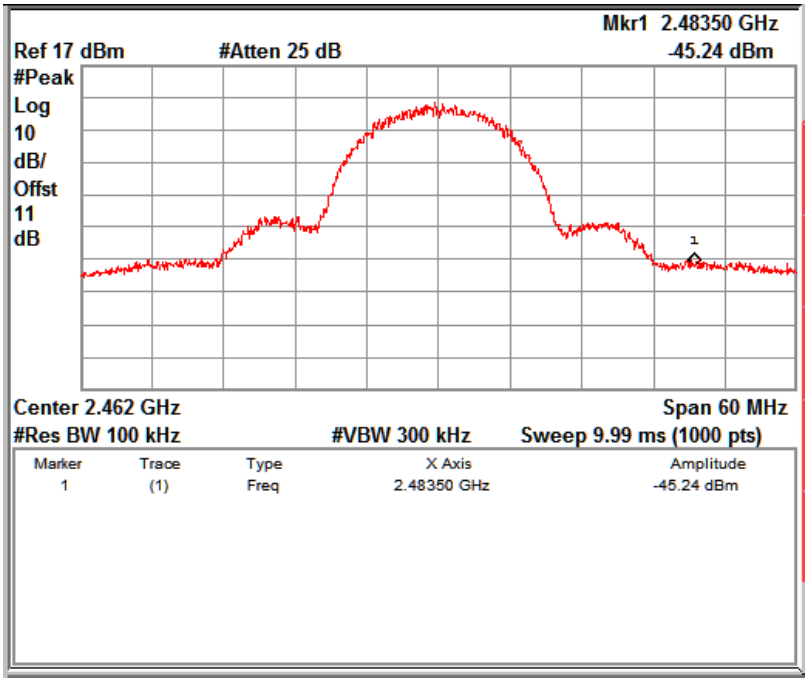
Data Rate: 1 Mbps **Channel frequency: 2412 MHz**



Data Rate: 1 Mbps **Channel frequency: 2462 MHz**



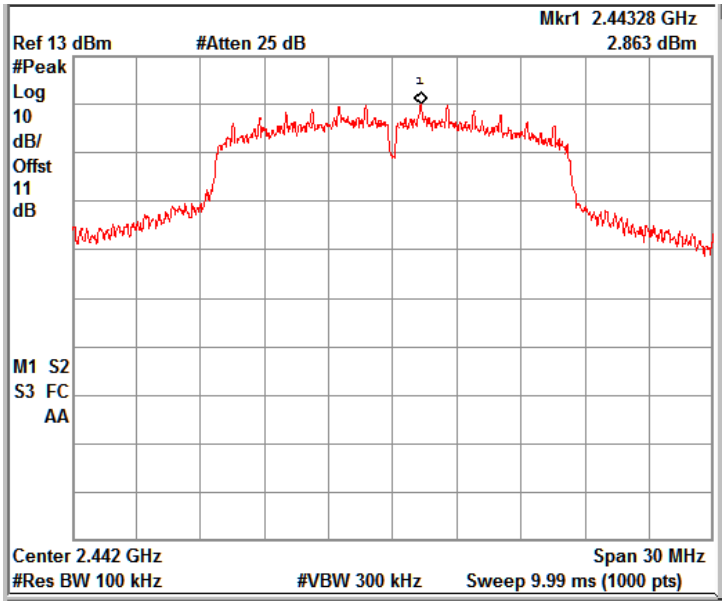
Data Rate: 11 Mbps **Channel frequency: 2412 MHz**



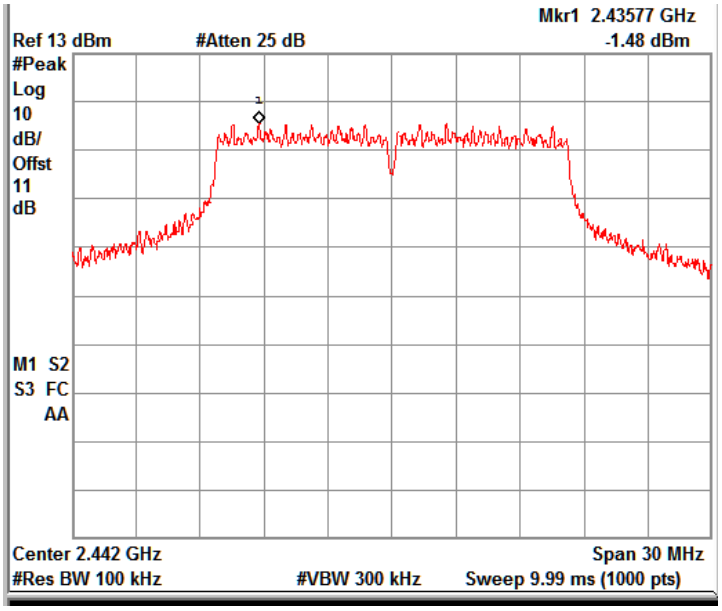
Data Rate: 11 Mbps **Channel frequency: 2462 MHz**

802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Value at Band Edge		Reference Value B (dBm)	Band Edge Value A~B (dBc)	Limit (dBc)
			Frequency (MHz)	Value A (dBm)			
g	6	2412	2400	-30.19	2.86	33.05	20
		2462	2483.5	-46.08	2.86	48.94	20
	24	2412	2400	-29.99	-1.48	28.51	20
		2462	2483.5	-46.34	-1.48	44.86	20
	54	2412	2400	-29.75	-2.65	27.1	20
		2462	2483.5	-47.77	-2.65	45.12	20

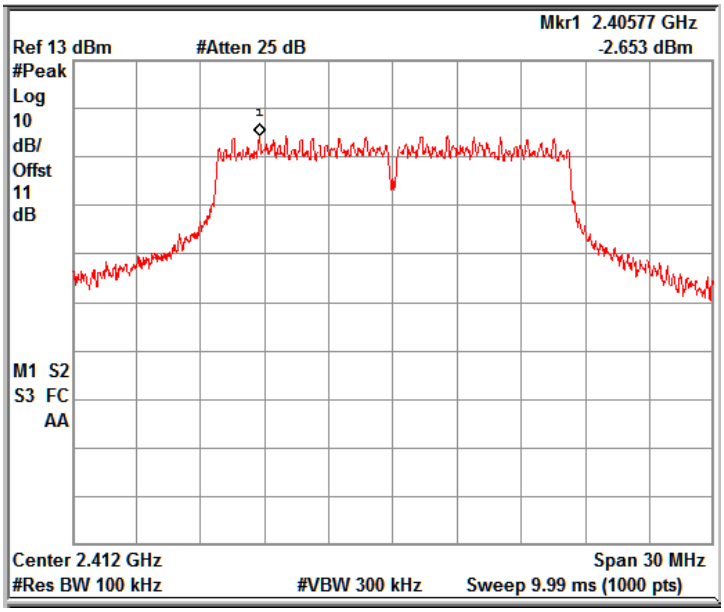
Note: The channel no. 7 (2442 MHz) found to contain the maximum PSD level and is used to establish the reference level.



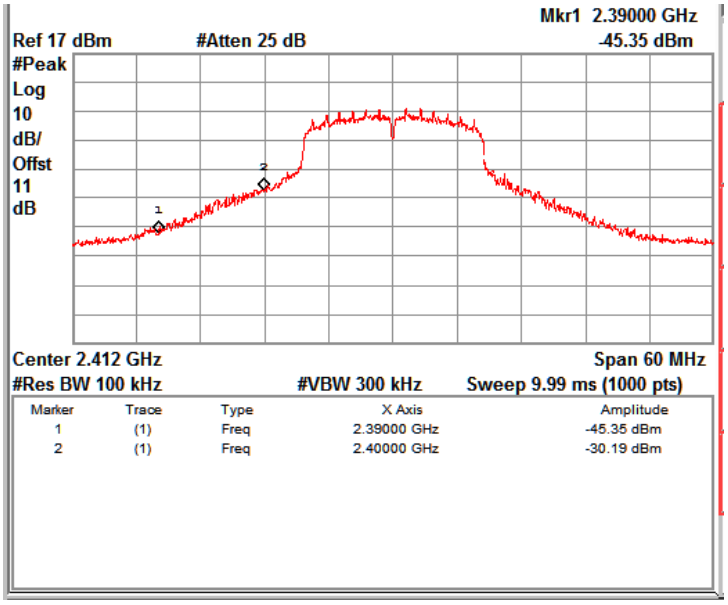
Reference Level Plot: 6 Mbps



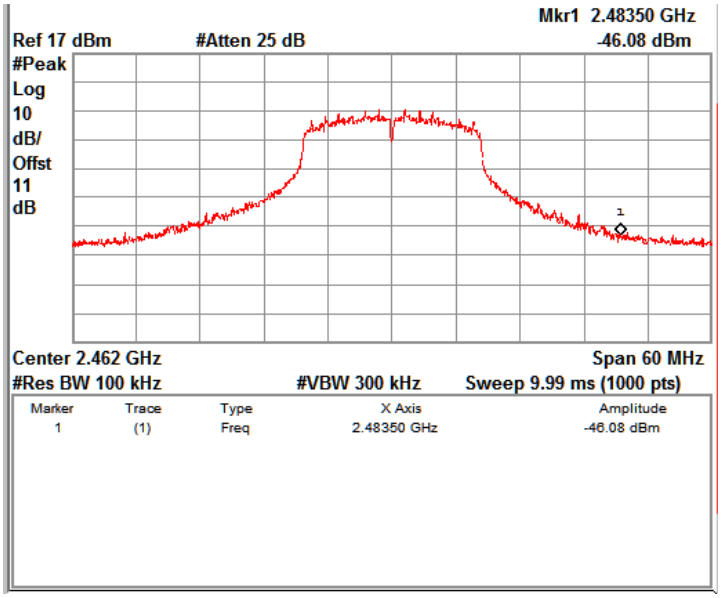
Reference Level Plot: 24 Mbps



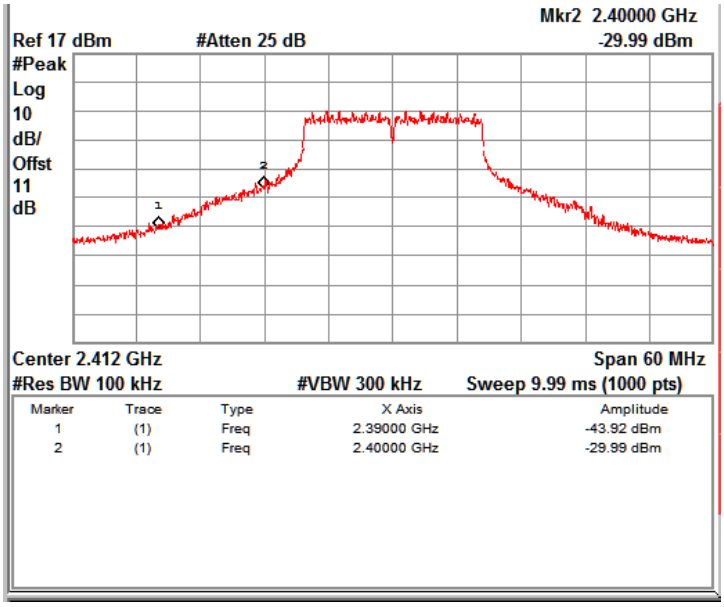
Reference Level Plot: 54 Mbps



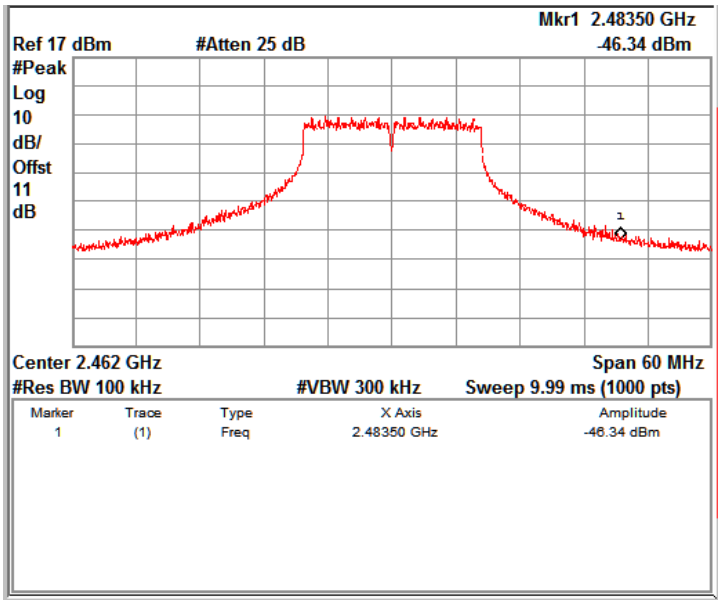
Data Rate: 6 Mbps **Channel frequency: 2412 MHz**



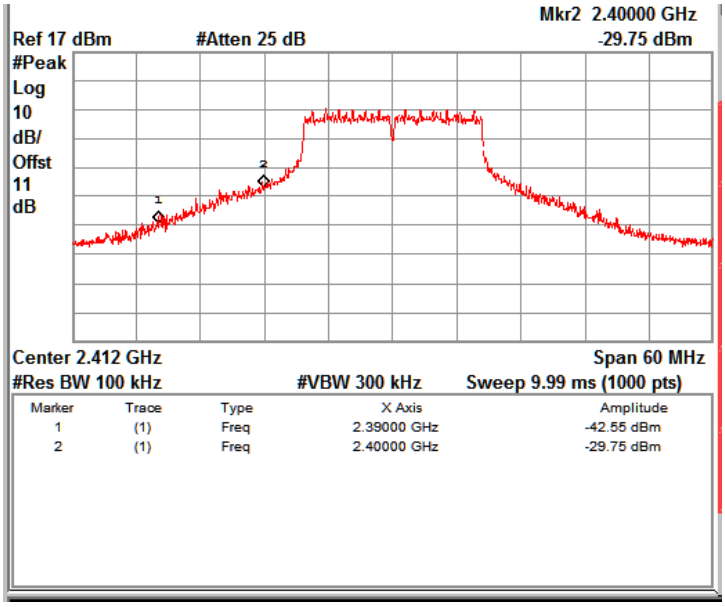
Data Rate: 6 Mbps **Channel frequency: 2462 MHz**



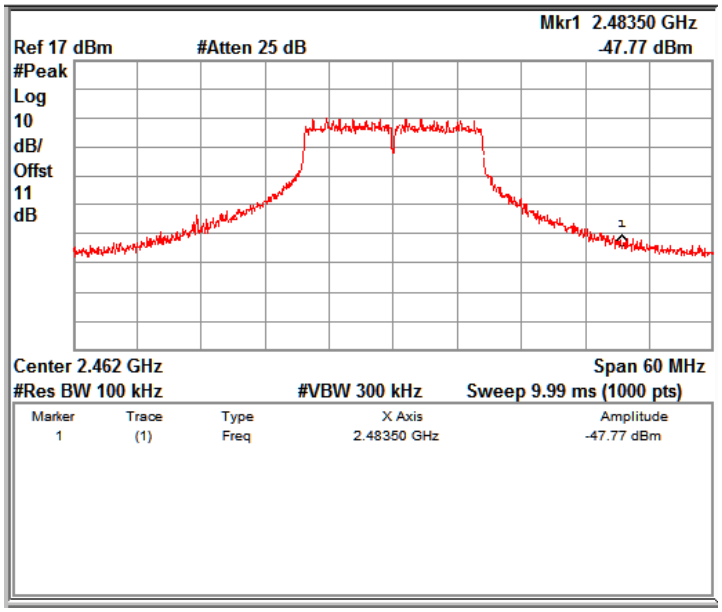
Data Rate: 24 Mbps **Channel frequency: 2412 MHz**



Data Rate: 24 Mbps **Channel frequency: 2462 MHz**



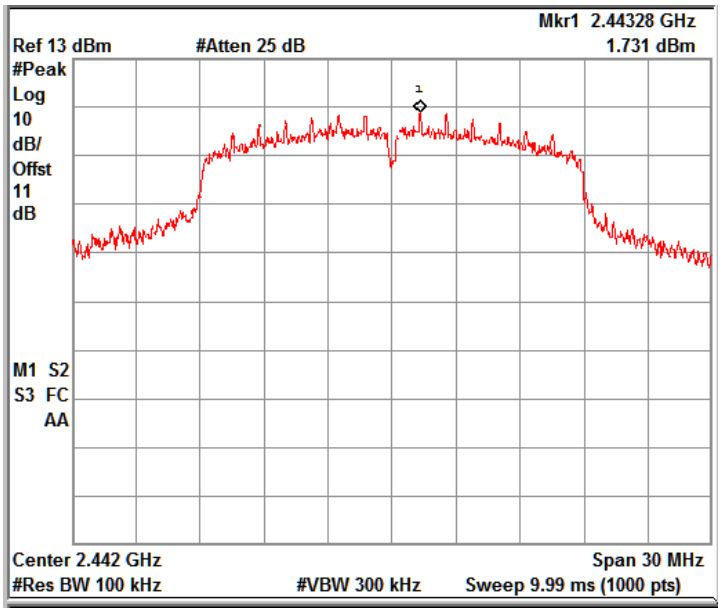
Data Rate: 54 Mbps **Channel frequency: 2412 MHz**



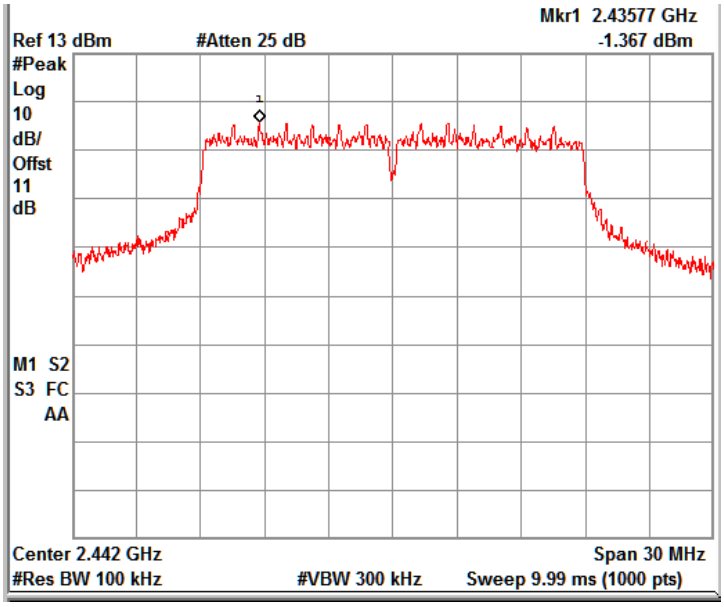
Data Rate: 54 Mbps **Channel frequency: 2462 MHz**

802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Value at Band Edge		Reference Value B (dBm)	Band Edge Value A-B (dBc)	Limit (dBc)
			Frequency (MHz)	Value A (dBm)			
n	MCS0 (6.5)	2412	2400	-31.53	1.73	33.26	20
		2462	2483.5	-47.31	1.73	49.04	20
	MCS4 (39)	2412	2400	-31.15	-1.36	29.79	20
		2462	2483.5	-46.7	-1.36	45.34	20
	MCS7 (65)	2412	2400	-28.38	-3.66	24.72	20
		2462	2483.5	-44.56	-3.66	40.9	20

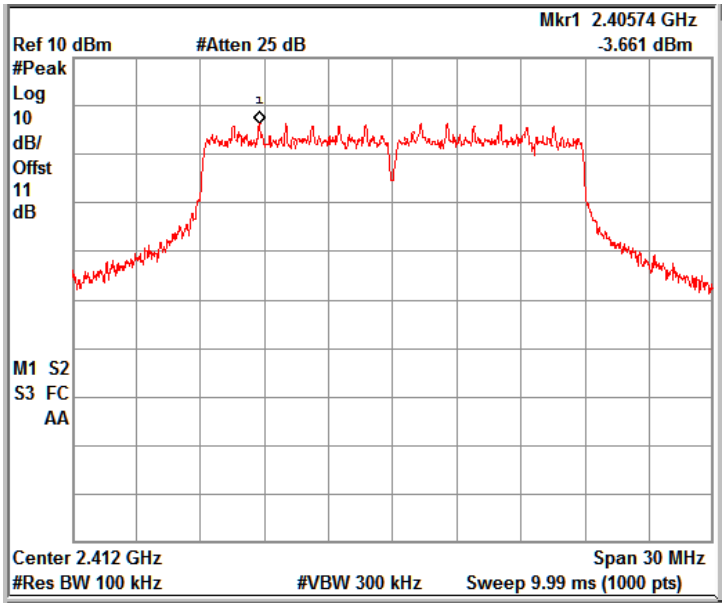
Note: The channel no. 7 (2442 MHz) found to contain the maximum PSD level and is used to establish the reference level.



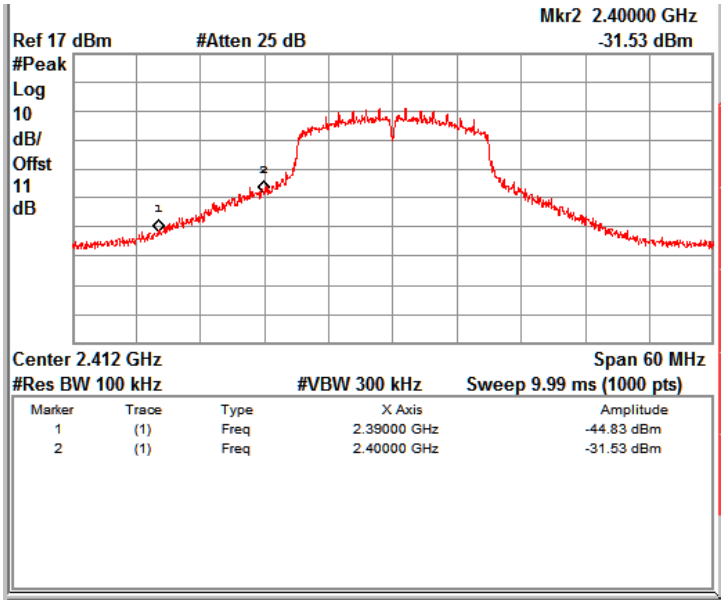
Reference Level Plot: 6.5 Mbps



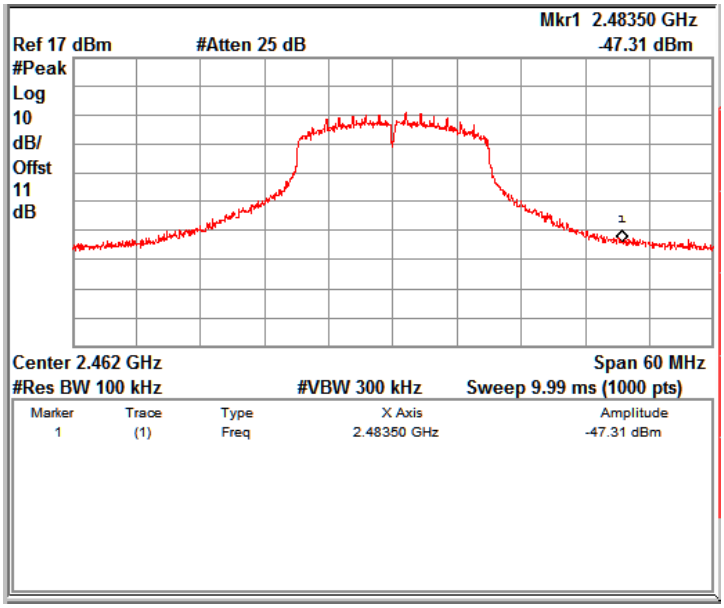
Reference Level Plot: 39 Mbps



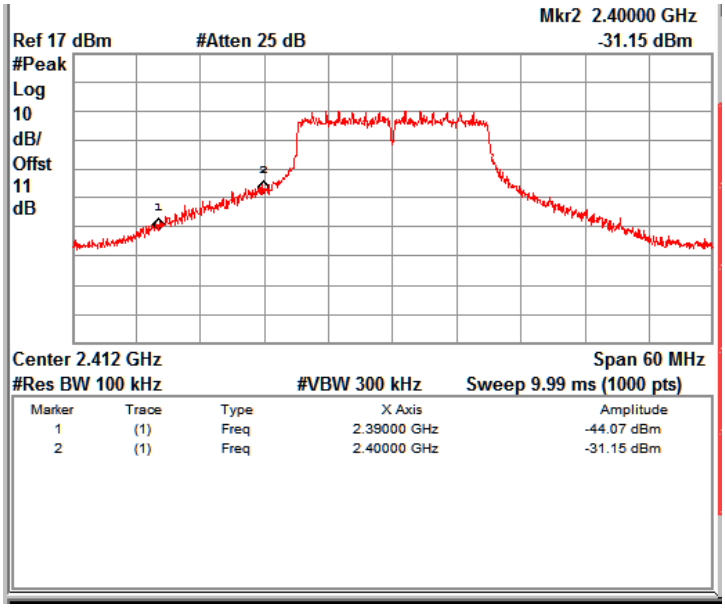
Reference Level Plot: 65 Mbps



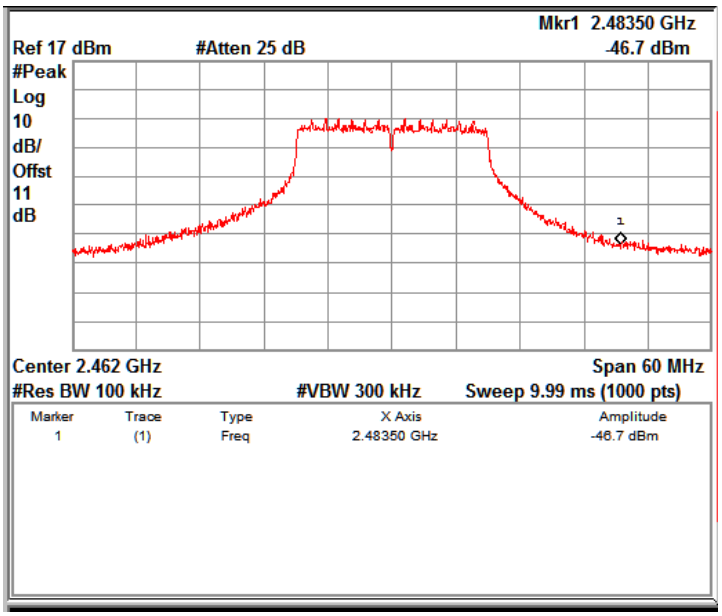
Data Rate: 6.5 Mbps **Channel frequency: 2412 MHz**



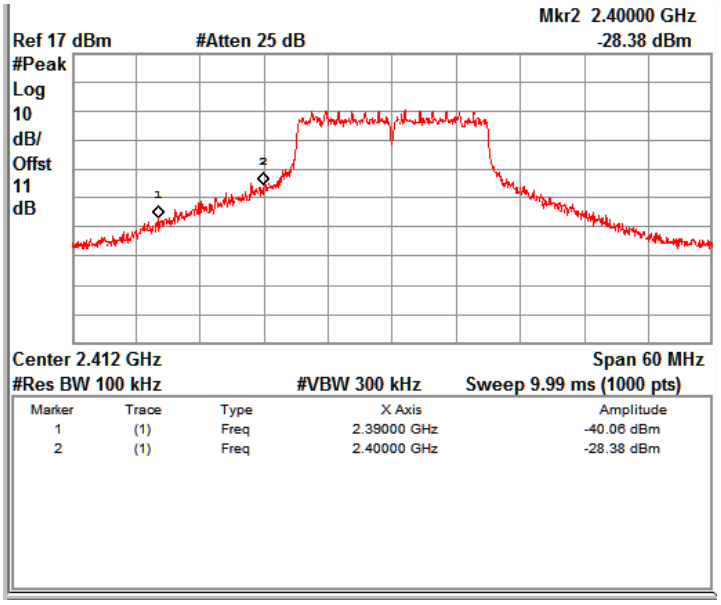
Data Rate: 6.5 Mbps **Channel frequency: 2462 MHz**



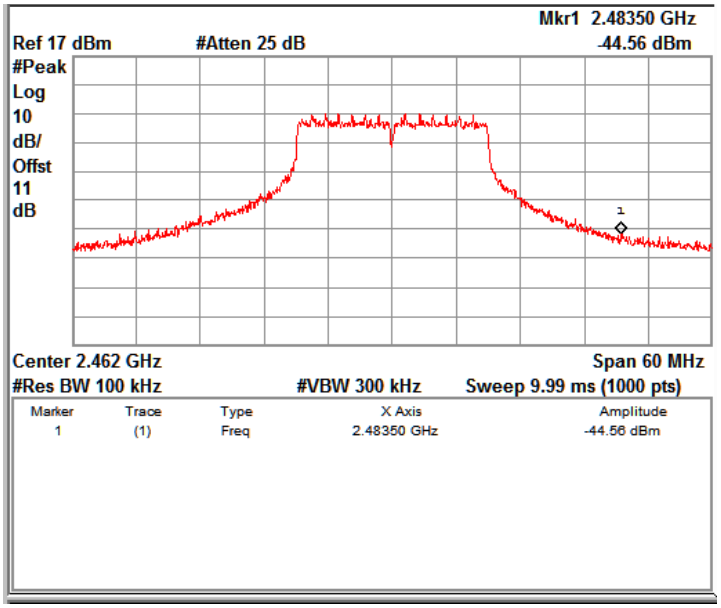
Data Rate: 39 Mbps **Channel frequency: 2412 MHz**



Data Rate: 39 Mbps **Channel frequency: 2462 MHz**



Data Rate: 65 Mbps **Channel frequency: 2412 MHz**

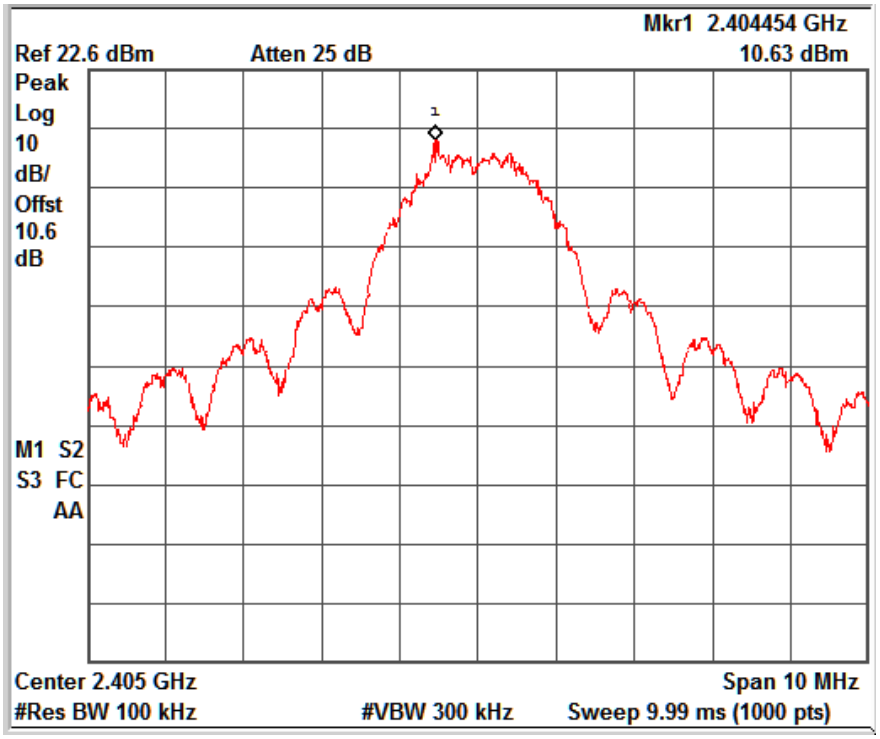


Data Rate: 65 Mbps **Channel frequency: 2462 MHz**

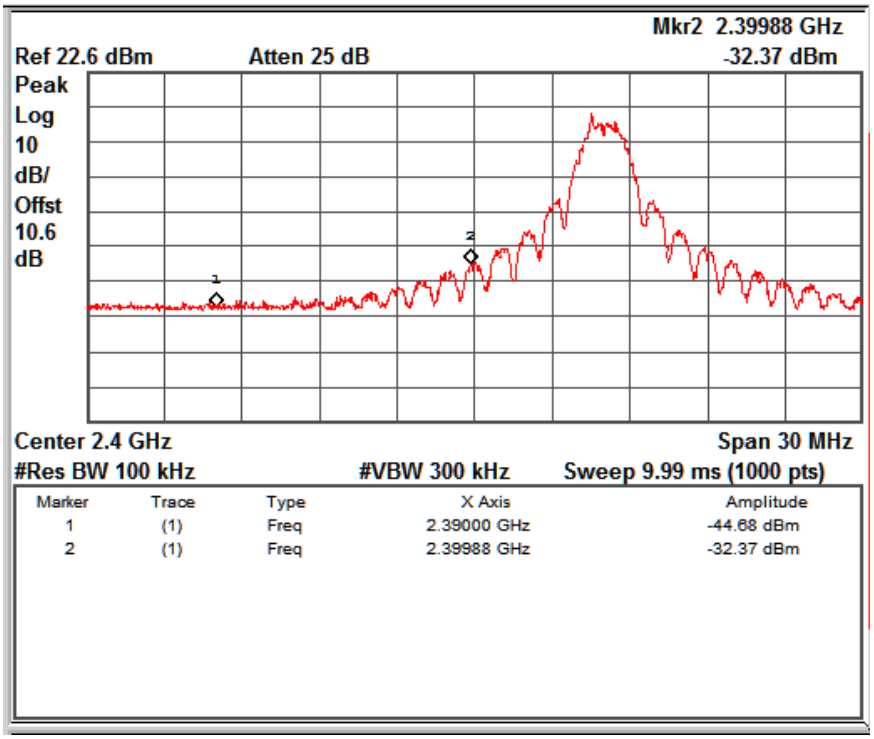
Test Result: ZigBee

Channel Frequency (MHz)	Value at Band Edge		Reference PSD Value B (dBm)	Band Edge Value A~B (dBc)	Limit (dBc)
	Frequency (MHz)	Value A (dBm)			
2405	2399.88	-29.66	10.63	40.29	20.00
2470	2483.50	-45.18	10.63	55.81	20.00
2475	2483.50	-49.9	10.63	60.53	20.00
2480	2483.50	-54.38	10.63	65.01	20.00

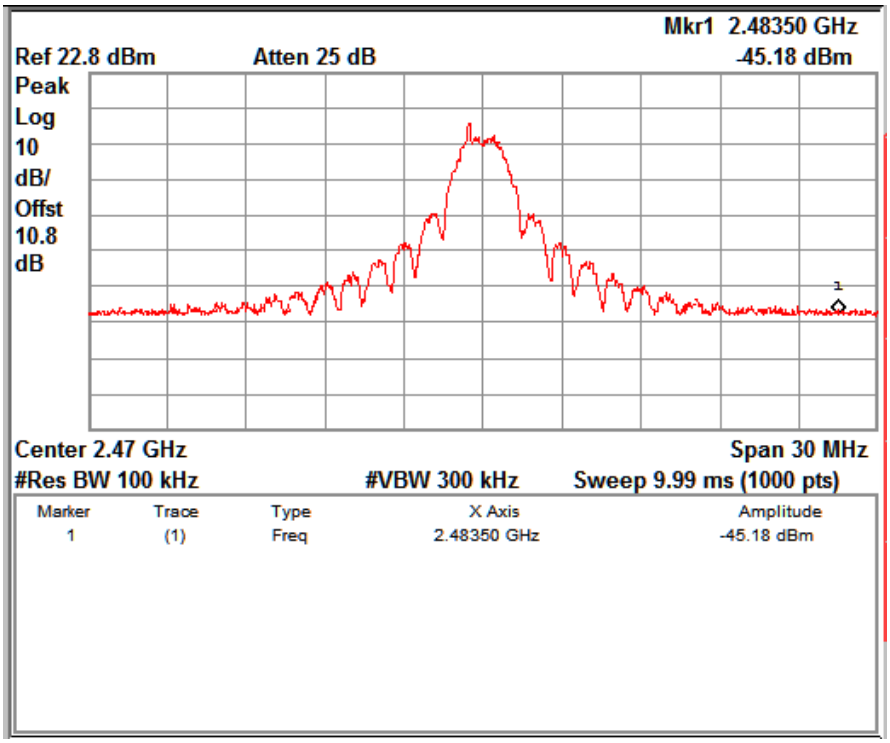
Note: The channel no. 11 (2405MHz) found to contain the maximum Peak level and is used to establish the reference level.



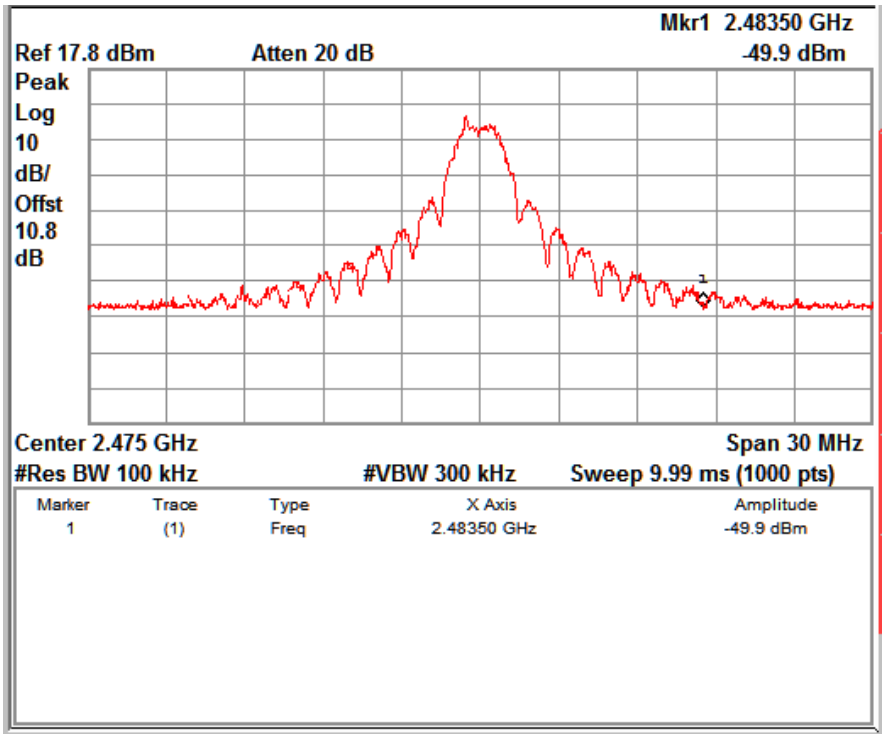
Reference Level Plot



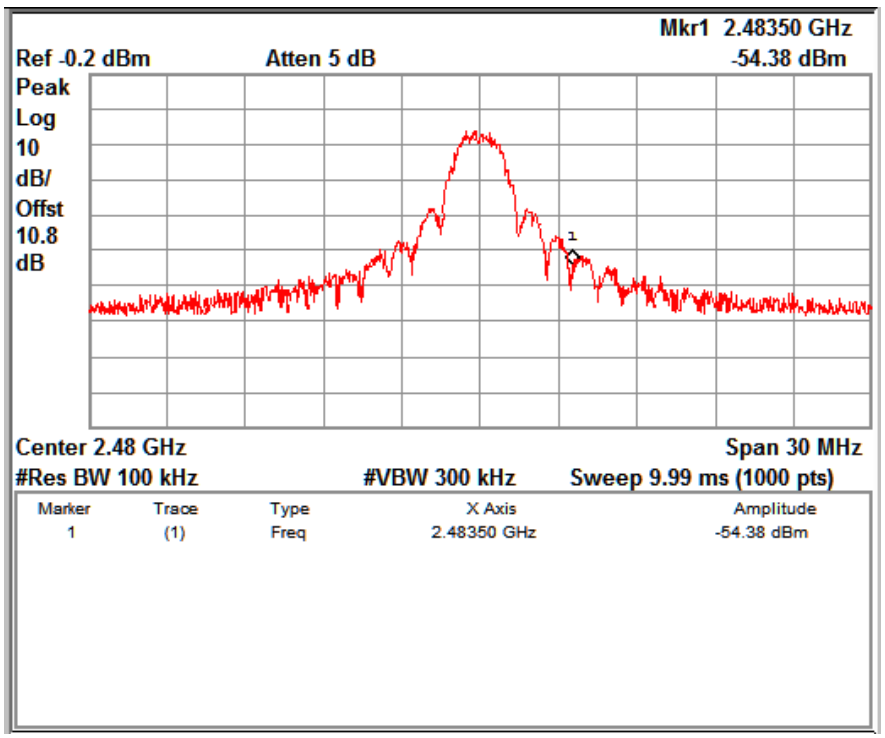
Channel Frequency 2405 MHz



Channel Frequency 2470 MHz



Channel Frequency 2475 MHz

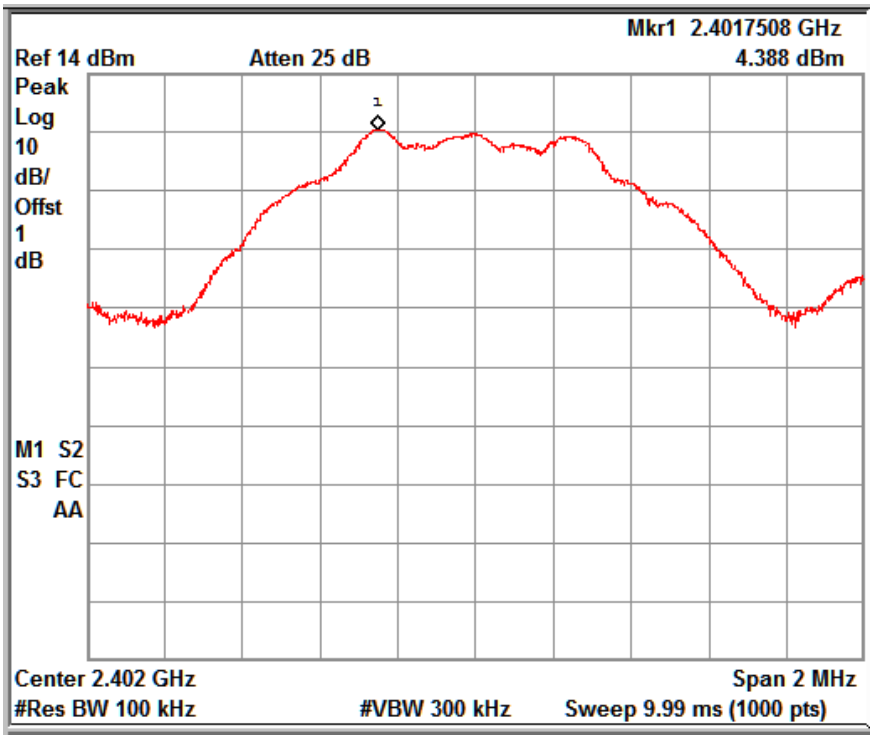


Channel Frequency 2480 MHz

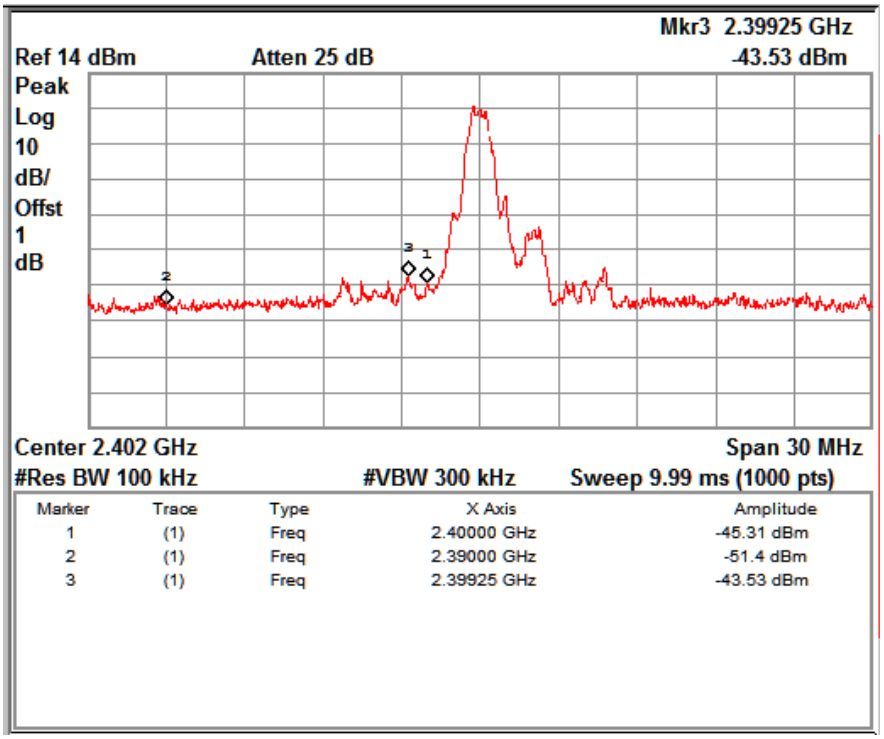
Test Result: Bluetooth LE

Channel Frequency (MHz)	Value at Band Edge		Reference PSD Value B (dBm)	Band Edge Value A~B (dBc)	Limit (dBc)
	Frequency (MHz)	Value A (dBm)			
2402	2399.25	-43.53	04.38	47.91	20.00
2480	2483.50	-50.60	04.38	54.98	20.00

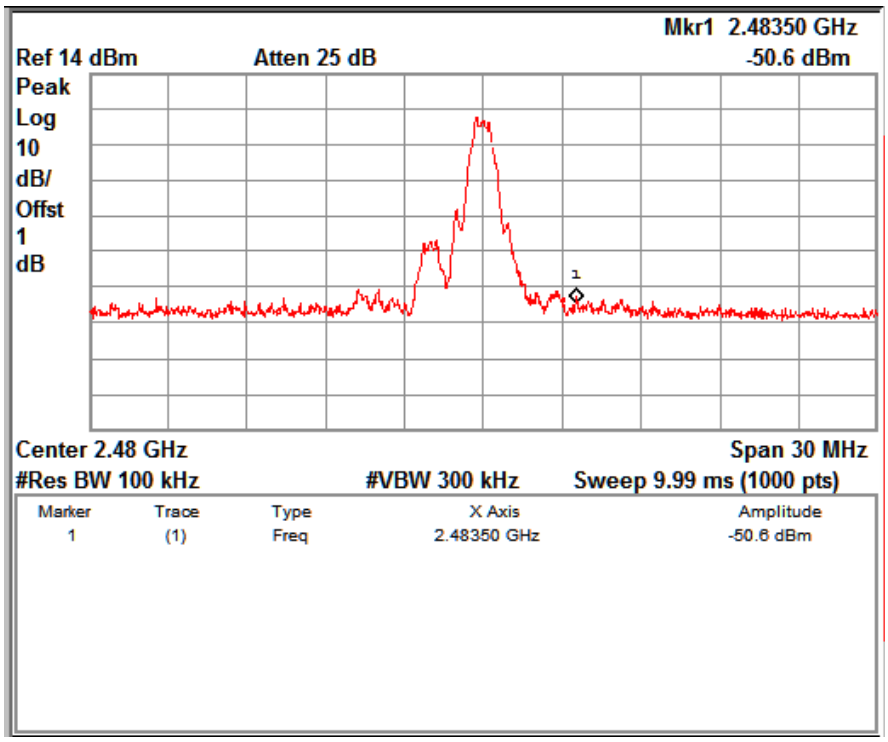
Note: The channel no.1 (2402MHz) found to contain the maximum Peak level and is used to establish the reference level.



Reference Level Plot **Channel Frequency: 2402MHz**



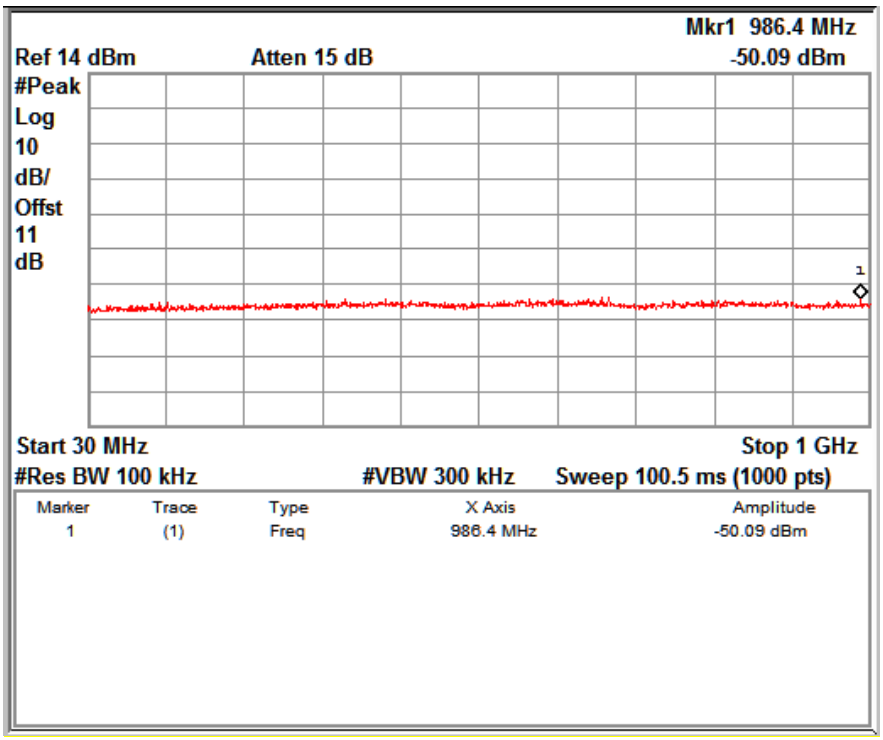
Channel Frequency 2402 MHz



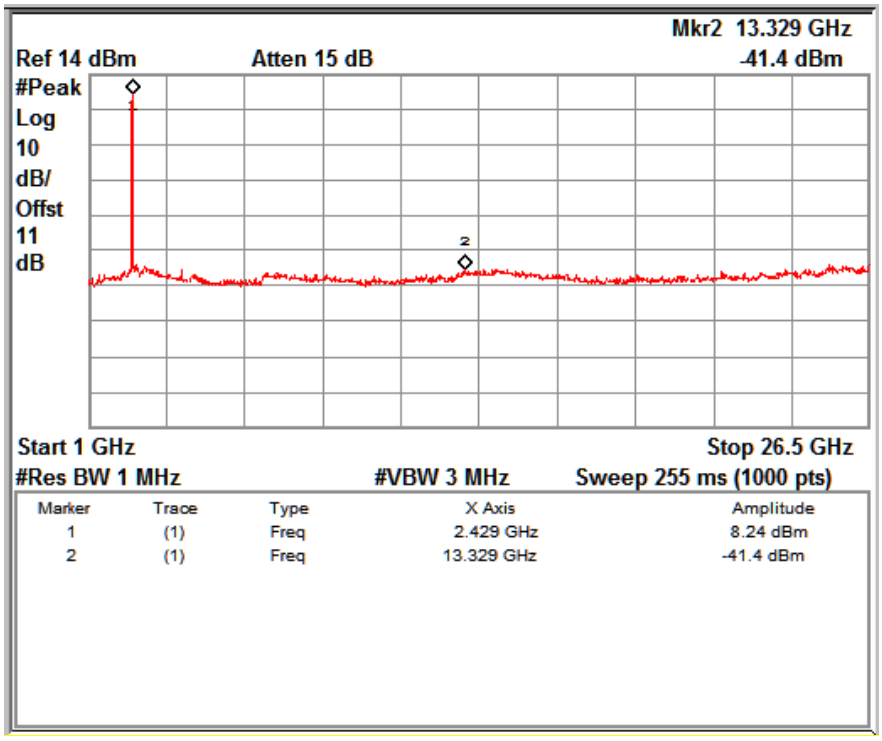
Channel Frequency 2480 MHz

Conducted Spurious Emission

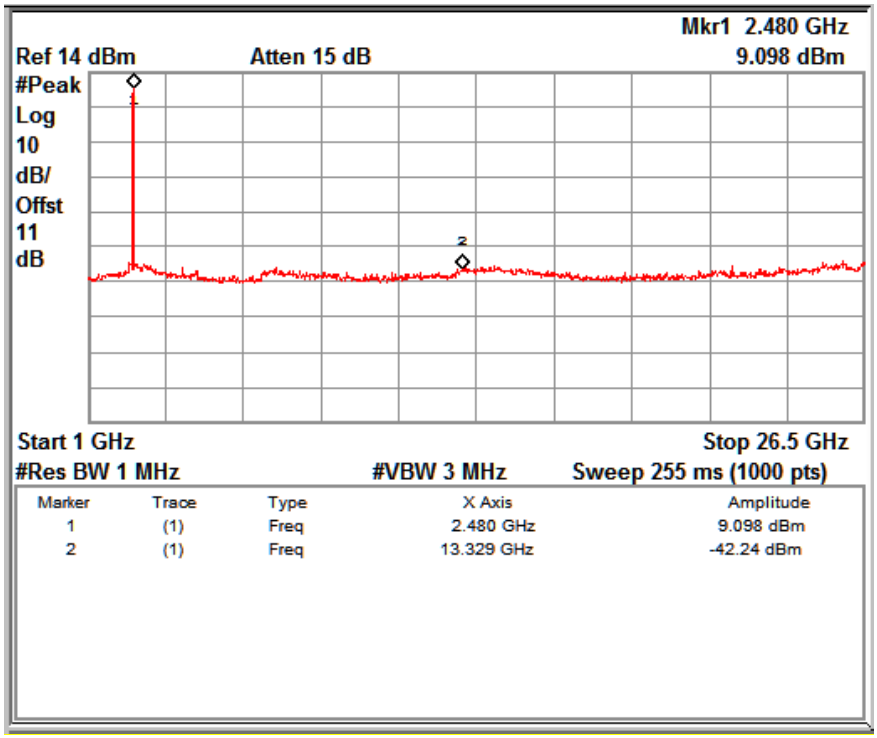
Wi-Fi



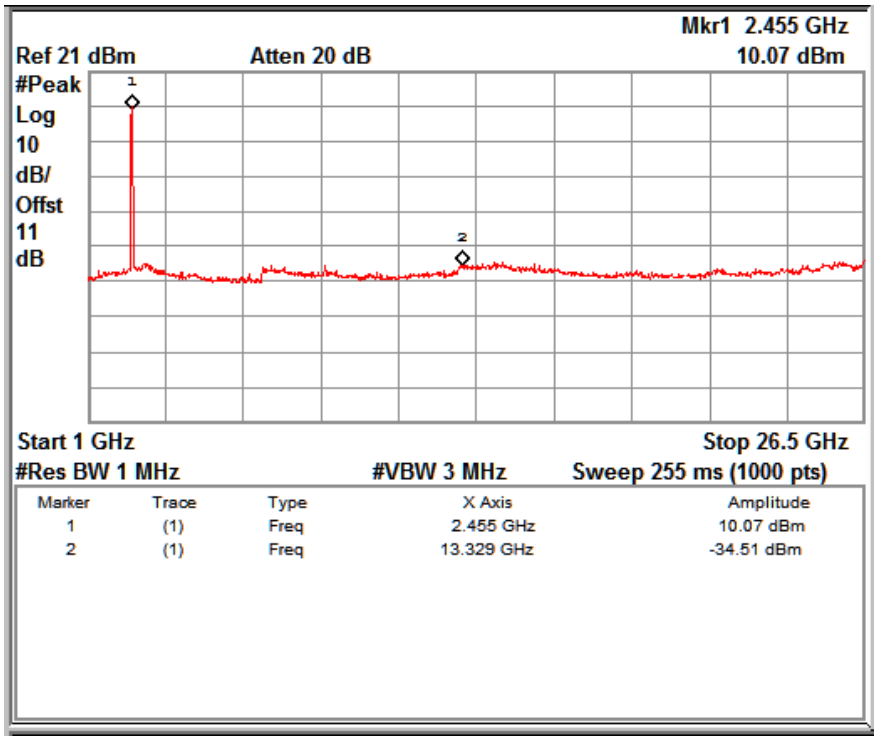
Below 1GHz



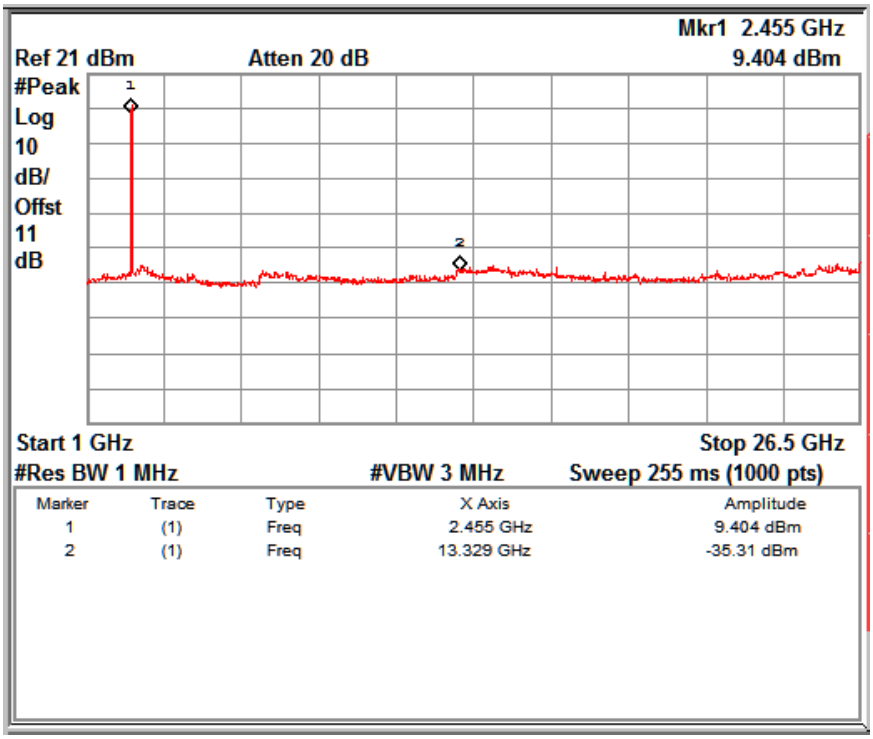
Data Rate: 1Mbps **Channel frequency: 2412 MHz**



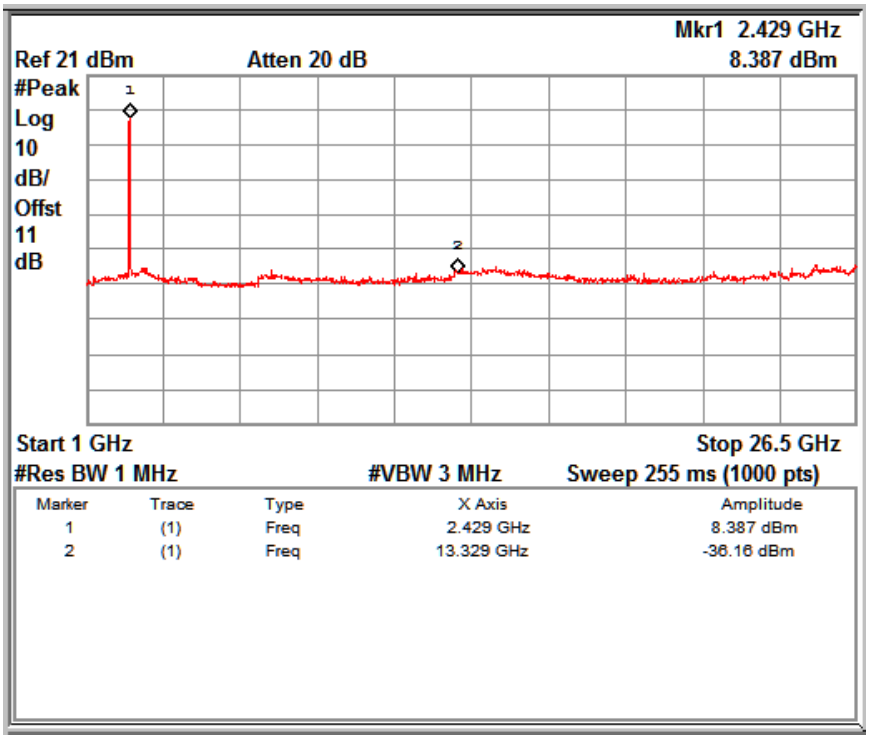
Data Rate: 1Mbps **Channel frequency: 2462 MHz**



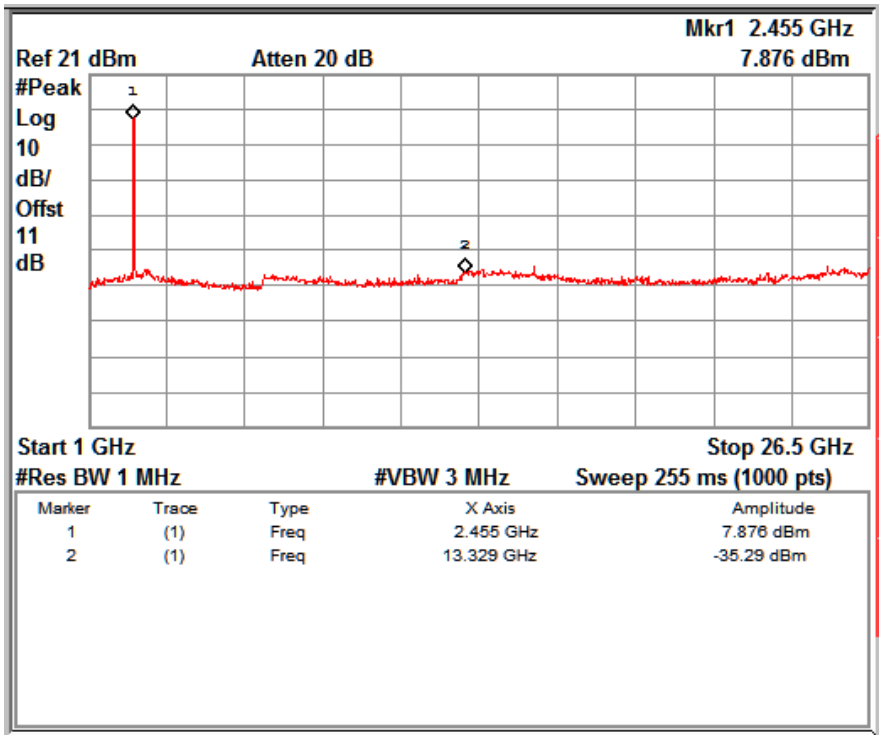
Data Rate: 11Mbps **Channel frequency: 2412 MHz**



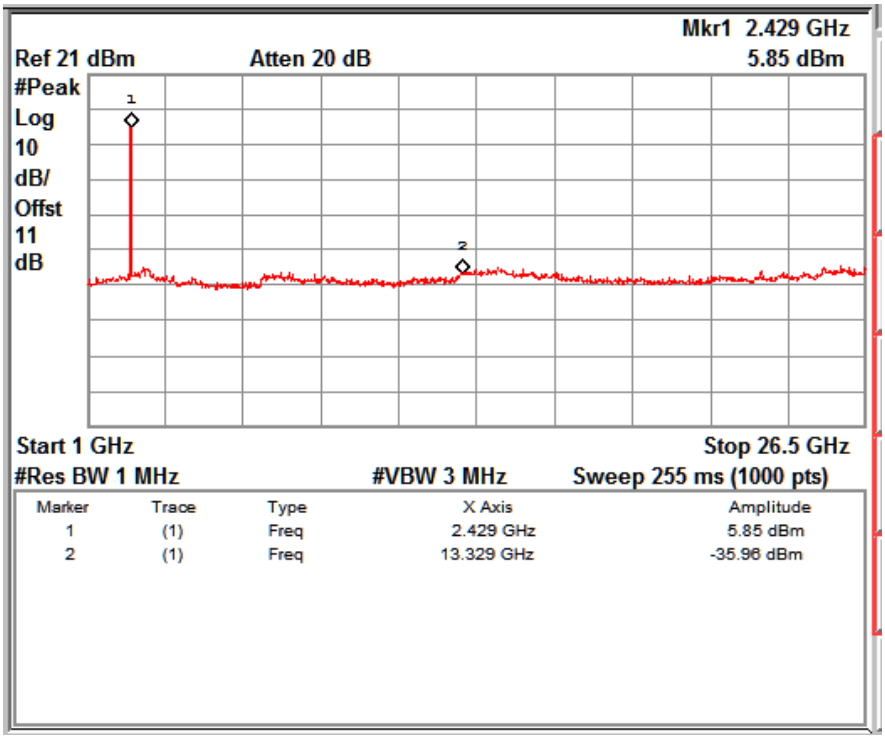
Data Rate: 11Mbps **Channel frequency: 2462 MHz**



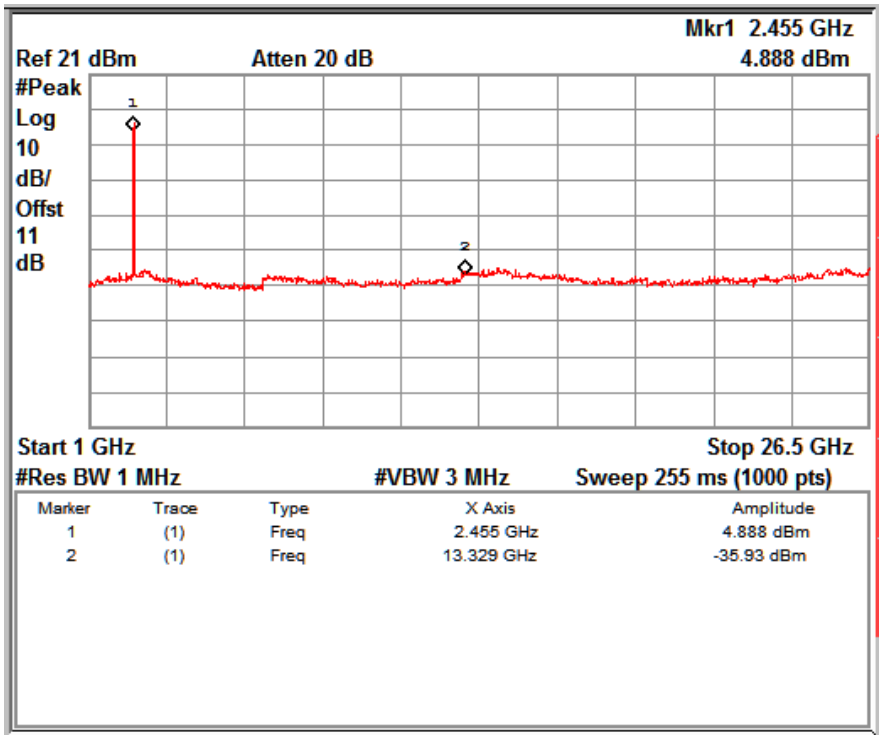
Data Rate: 6Mbps **Channel frequency: 2412 MHz**



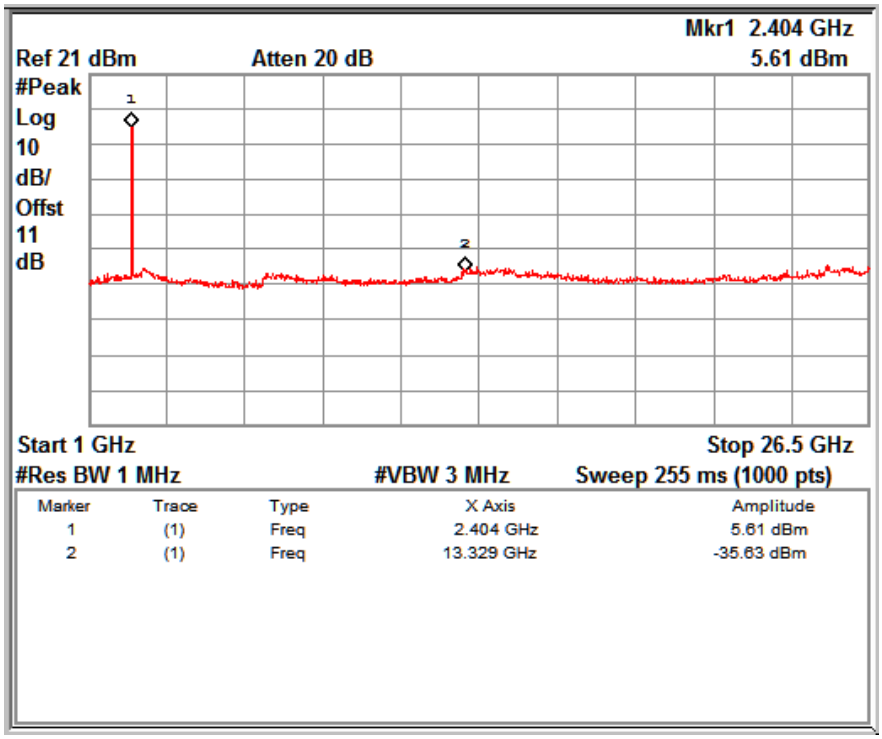
Data Rate: 6Mbps **Channel frequency: 2462 MHz**



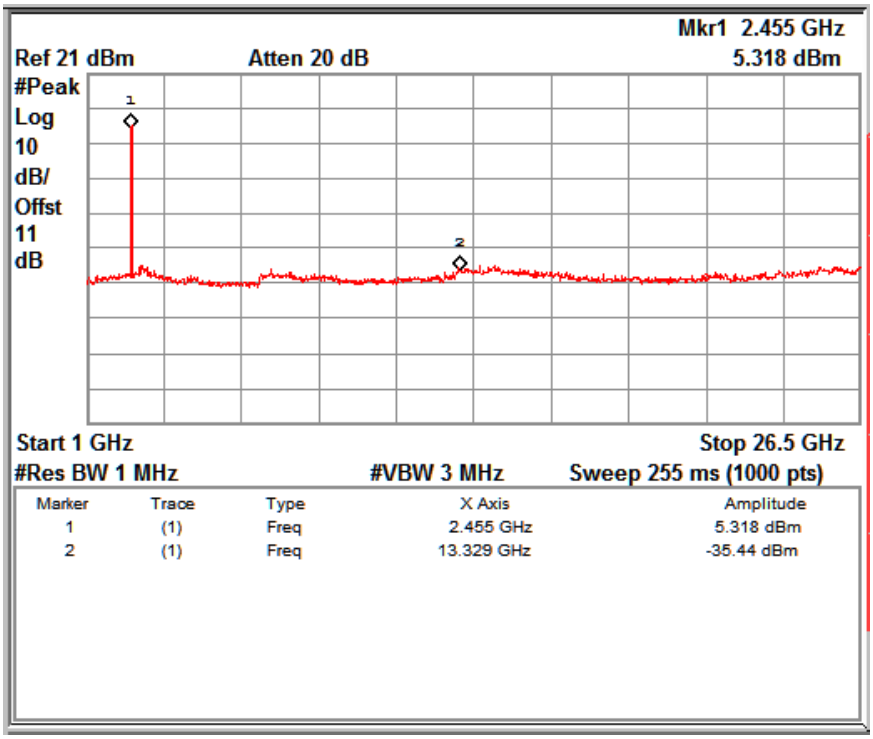
Data Rate: 24Mbps **Channel frequency: 2412 MHz**



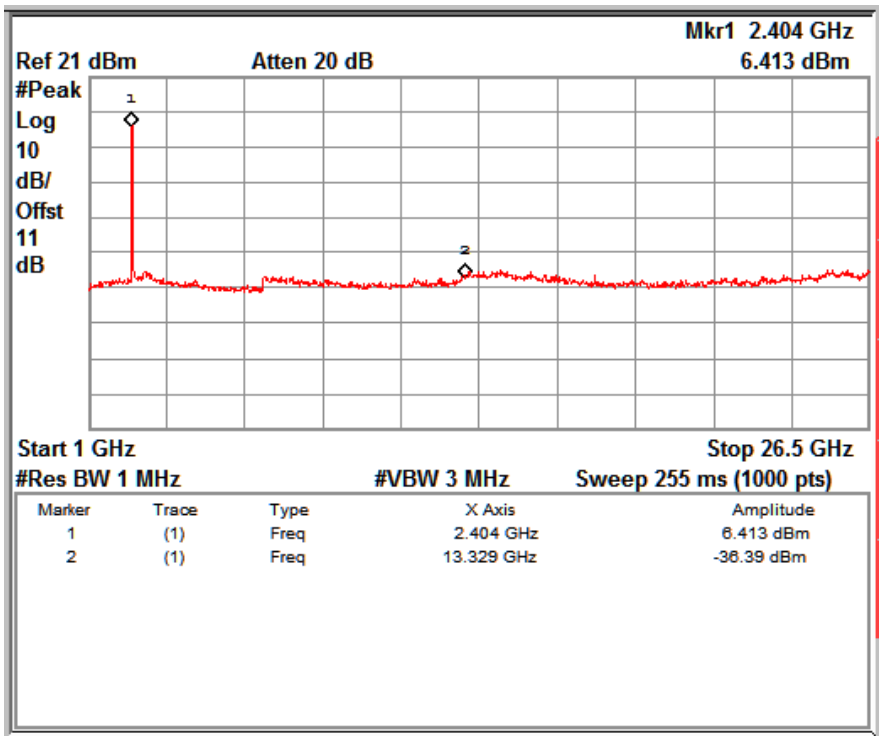
Data Rate: 24Mbps **Channel frequency: 2462 MHz**



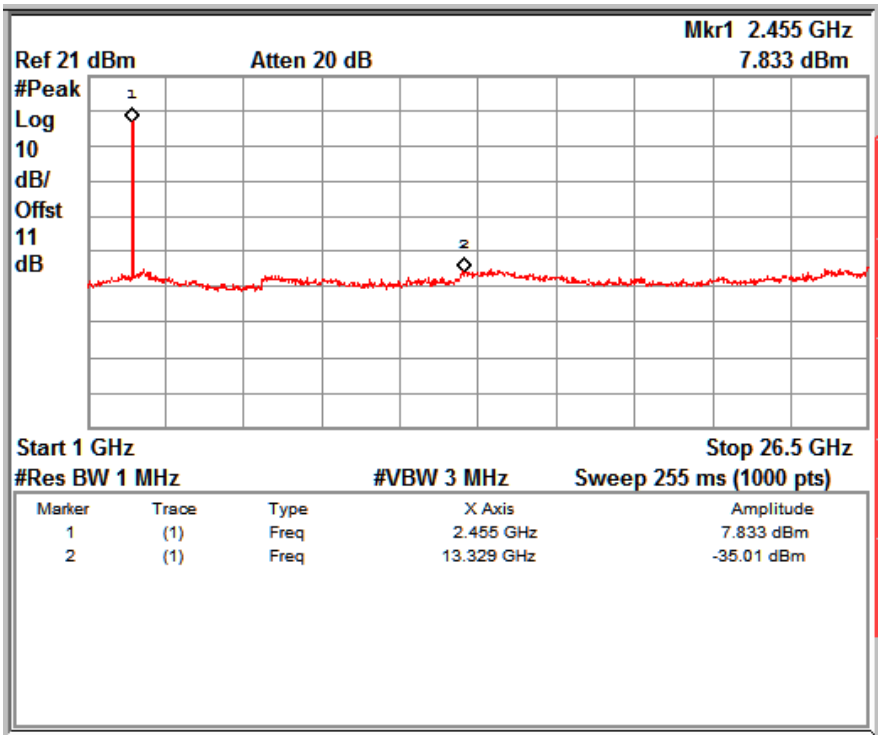
Data Rate: 54Mbps **Channel frequency: 2412 MHz**



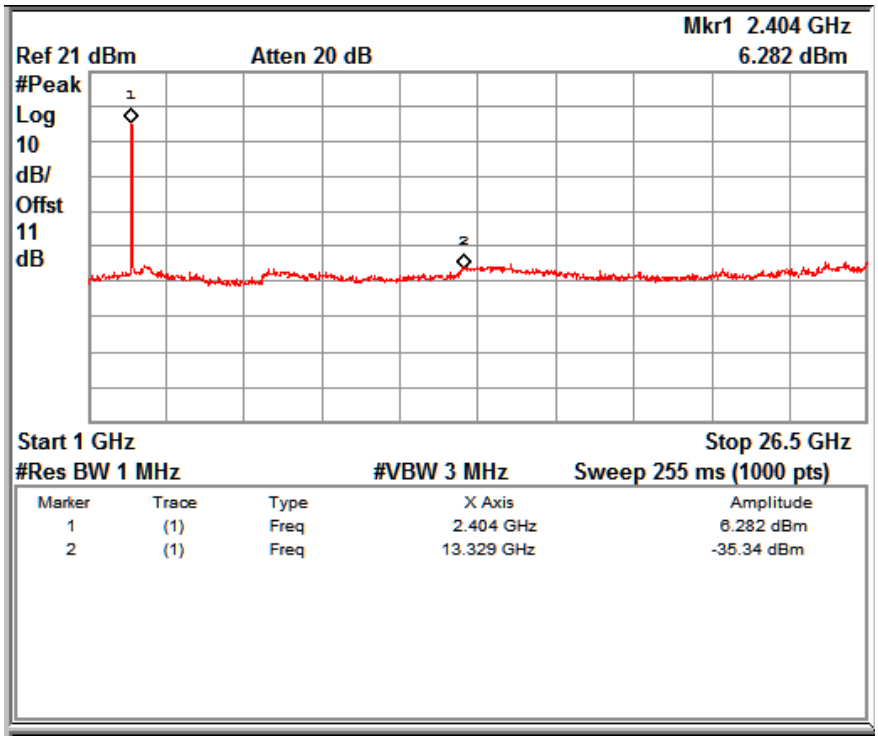
Data Rate: 54Mbps **Channel frequency: 2462 MHz**



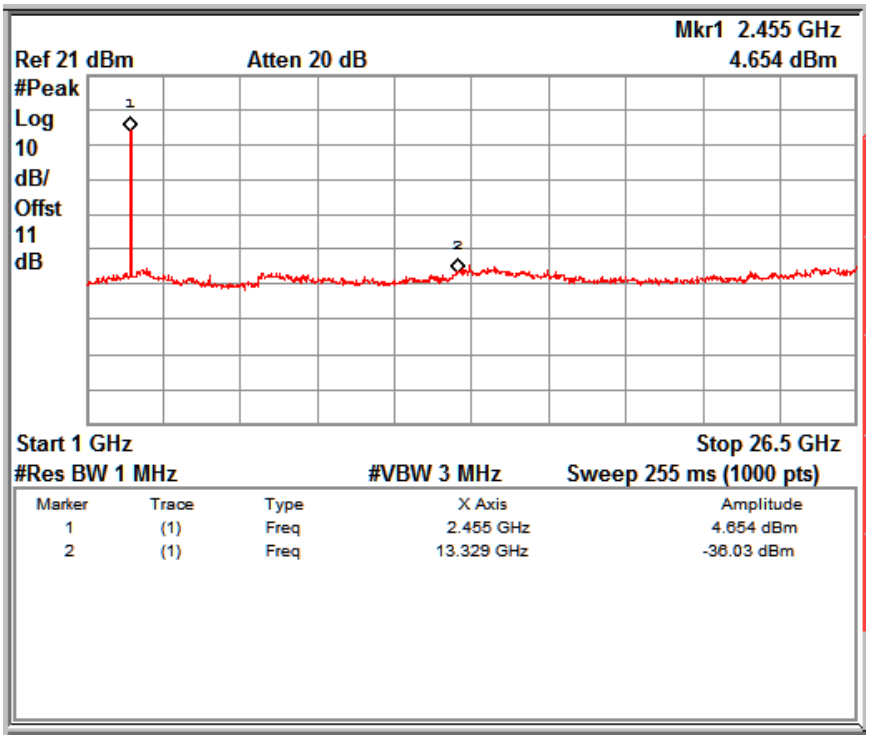
Data Rate: 6.5 Mbps **Channel frequency: 2412 MHz**



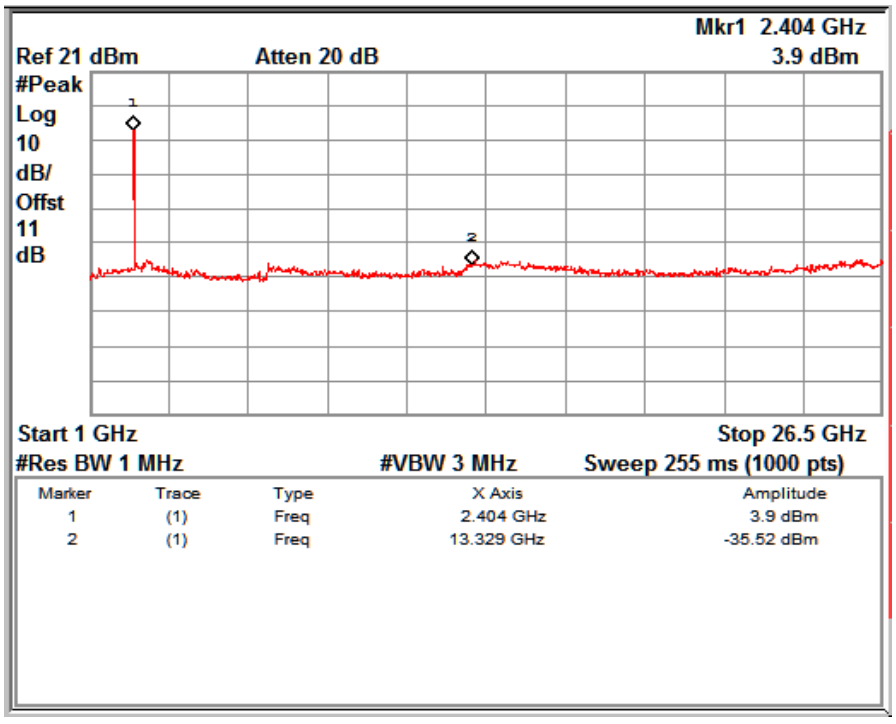
Data Rate: 6.5 Mbps **Channel frequency: 2462 MHz**



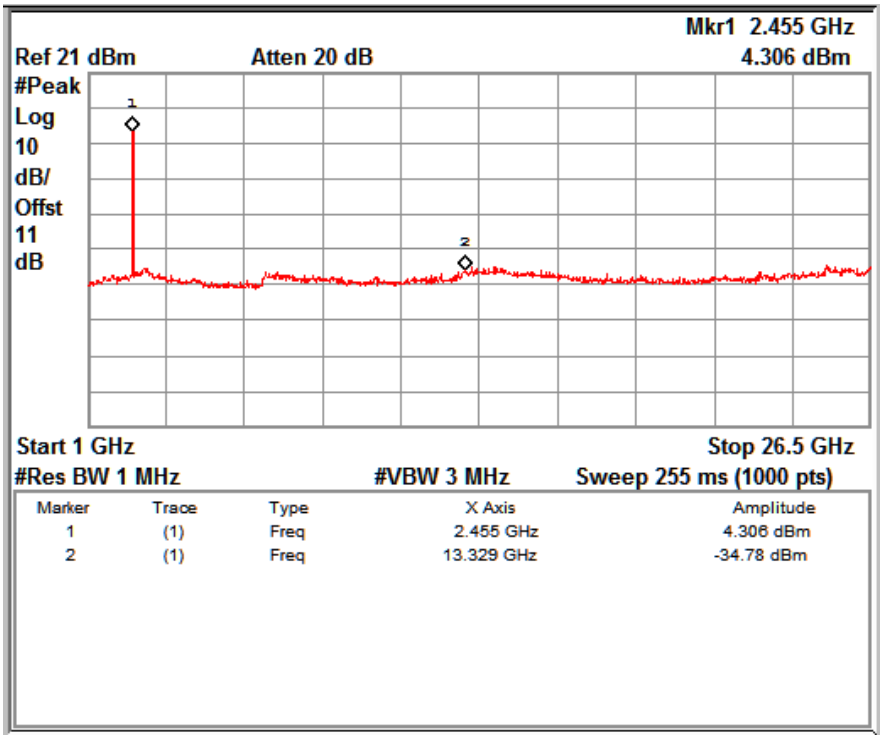
Data Rate: 39 Mbps **Channel frequency: 2412 MHz**



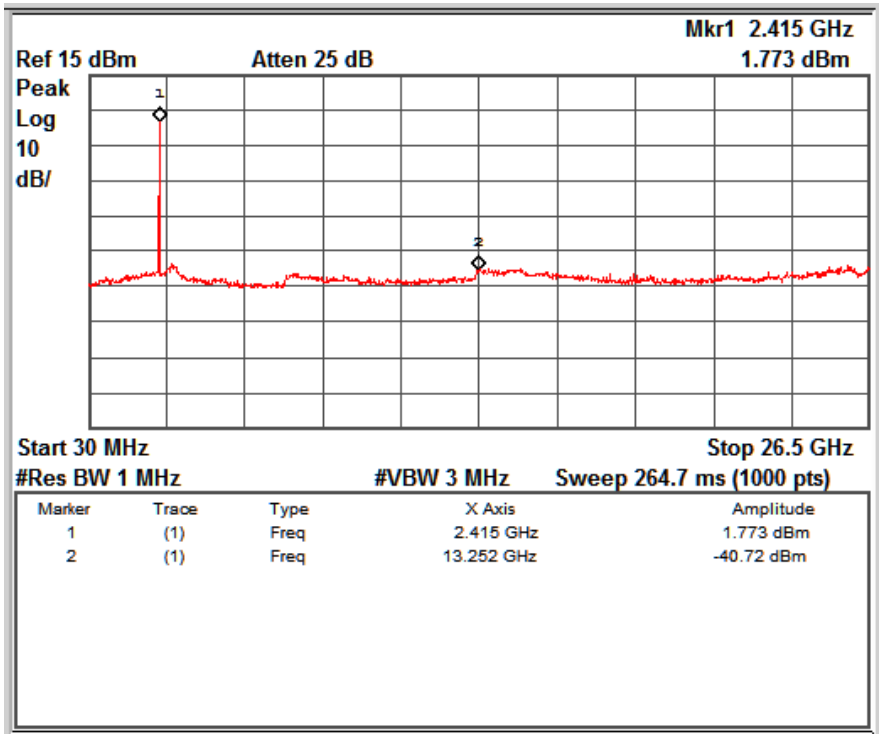
Data Rate: 39 Mbps **Channel frequency: 2462 MHz**



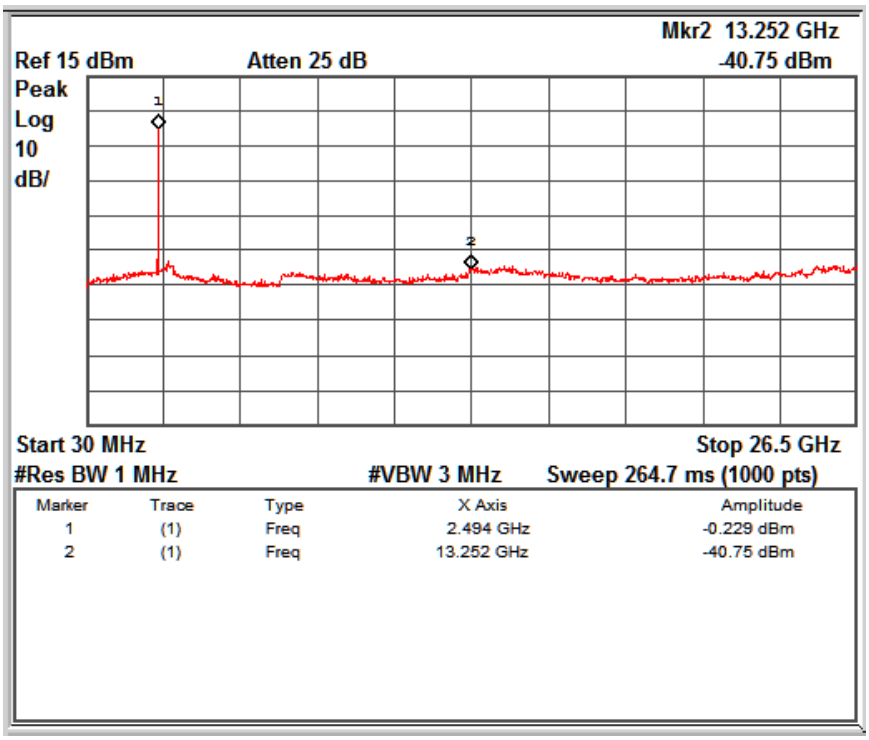
Data Rate: 65 Mbps **Channel frequency: 2412 MHz**



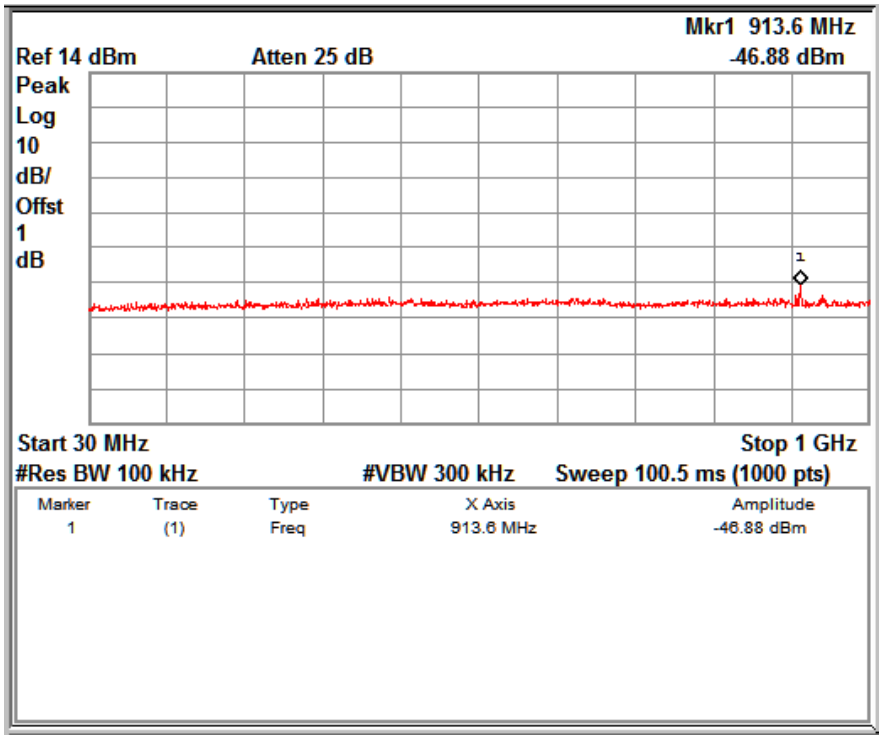
Data Rate: 65 Mbps **Channel frequency: 2462 MHz**



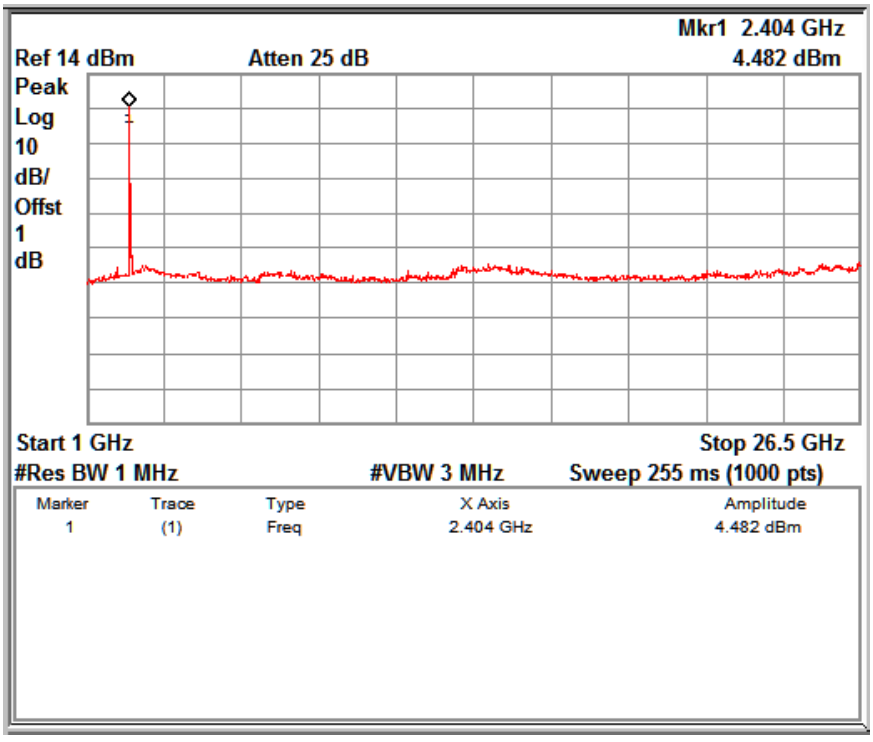
Channel Frequency 2405 MHz



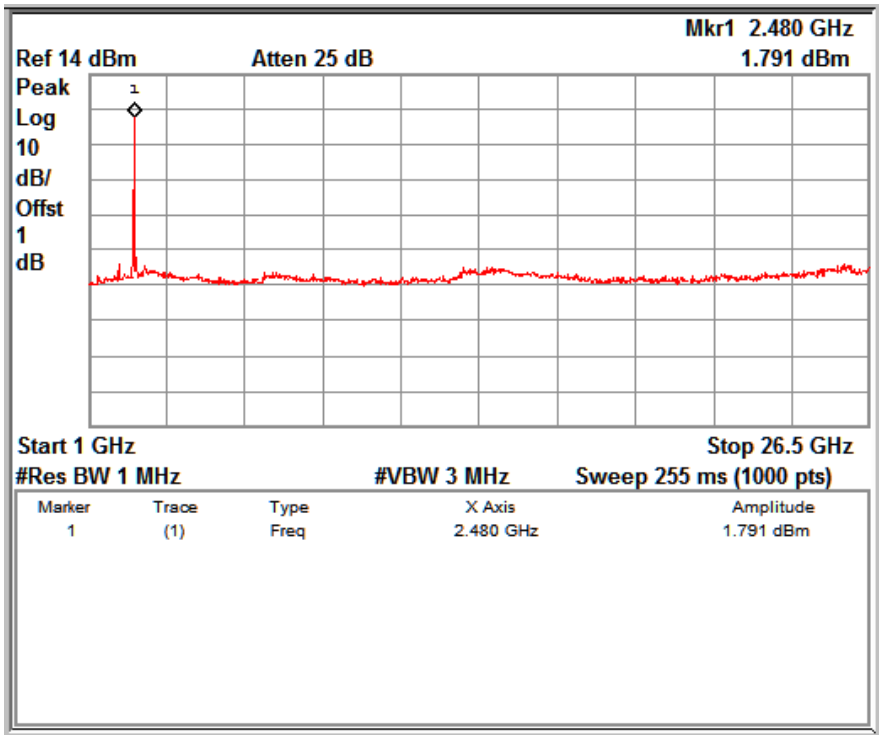
Channel Frequency 2480 MHz



Below 1GHz



Channel Frequency 2402 MHz



Channel Frequency 2480 MHz

Spurious Radiated Emissions and Restricted Bands of Operation

Result **Pass**

Test Specification	FCC Part 15 Section 15.209 and 15.205
Test Method	ANSI C63.10-2013
Measurement Location	Semi Anechoic Chamber
Measuring Distance	3m
Detection	QP for frequency below 1GHz, Average for frequency above 1GHz
Requirement	As per the limits mentioned in the bellow table

Limit for Radiated Emission of Section 15.209:

Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Distance of Measurement (m)
0.009 – 0.490	2400/F(kHz)	48.50 – 13.80	300*
0.490 – 1.705	24000/F(kHz)	33.80 – 23.00	30*
1.705 -30	30	29.54	30*
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Remark: * The limit shows in the table above of frequency range 0.009 – 0.490, 0.490 – 1.705 MHz and 1.705-30MHz is at 300 meter, 30 meter and 30 meter range respectively, which corresponds to 88.50 – 53.80, 53.80 – 43.00 and 49.5dBμV/m at 3m range by extrapolation calculation and the measurement of loop antenna.

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz Radiated emission limits in these three bands are based on measurements employing an average detector.

Test results:

Frequency Range: 9 kHz – 30MHz

No emissions found in this frequency range.

Frequency range: 30MHz -1GHz

Polarization	Frequency (MHz)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
V	99.50	32.83	43.50	-10.67
	192.72	36.85	43.50	-06.65
	322.98	27.08	46.00	-18.92
H	99.44	41.80	43.50	-01.70
	161.49	27.38	43.50	-16.12
	192.79	35.72	43.50	-07.78
	266.76	37.49	46.00	-08.51
	322.60	37.38	46.00	-08.62

Frequency range: Above 1GHz

Wi-Fi Test Results:

b mode: 1Mbps

Channel	Polarization	Frequency (MHz)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2390 (Pk)	38.98	74.00	-35.02
		2390 (Av)	26.79	54.00	-27.21
		2412 (Pk)	84.23	-	*
		2412 (Av)	81.72	-	*
		4824 (Pk)	53.45	74.00	-20.55
		4824 (Av)	48.21	54.00	-05.79
		7236 (Pk)	57.05	74.00	-16.95
		7236 (Av)	44.27	54.00	-09.73
	H	2390 (Pk)	39.34	74.00	-34.66
		2390 (Av)	27.20	54.00	-26.80
		2412 (Pk)	85.53	-	*
		2412 (Av)	82.94	-	*
		4824 (Pk)	55.40	74.00	-18.60
		4824 (Av)	51.33	54.00	-02.67
		7236 (Pk)	57.98	74.00	-16.02
		7236 (Av)	44.43	54.00	-09.57
Mid	V	2442 (Pk)	87.03	-	*
		2442 (Av)	84.90	-	*

		4884 (Pk)	54.80	74.00	-19.20
		4884 (Av)	50.79	54.00	-03.21
		7326 (Pk)	57.05	74.00	-16.95
		7326 (Av)	44.85	54.00	-09.15
	H	2442 (Pk)	85.58	-	*
		2442 (Av)	82.87	-	*
		4884 (Pk)	55.51	74.00	-18.49
		4884 (Av)	52.08	54.00	-01.92
		7326 (Pk)	60.36	74.00	-13.64
		7326 (Av)	44.83	54.00	-09.17
High	V	2462 (Pk)	84.46	-	*
		2462 (Av)	82.47	-	*
		2483.5 (Pk)	38.50	74.00	-35.50
		2483.5 (Av)	27.58	54.00	-26.42
		4924 (Pk)	56.21	74.00	-17.79
		4924 (Av)	52.50	54.00	-01.50
		7386 (Pk)	58.64	74.00	-15.36
		7386 (Av)	45.50	54.00	-08.50
	H	2462 (Pk)	84.38	-	*
		2462 (Av)	82.15	-	*
		2483.5 (Pk)	38.75	74.00	-35.25
		2483.5 (Av)	27.31	54.00	-26.69
		4924 (Pk)	55.67	74.00	-18.33
		4924 (Av)	50.90	54.00	-03.10
		7386 (Pk)	59.67	74.00	-14.33
		7386 (Av)	45.50	54.00	-08.50

b mode: 11Mbps

Channel	Polarization	Frequency (MHz)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2390 (Pk)	41.66	74.00	-32.34
		2390 (Av)	27.81	54.00	-26.19
		2412 (Pk)	89.25	-	*
		2412 (Av)	81.35	-	*
		4824 (Pk)	55.01	74.00	-18.99
		4824 (Av)	42.14	54.00	-11.86
		7236 (Pk)	57.89	74.00	-16.11
		7236 (Av)	44.44	54.00	-09.56
	H	2390 (Pk)	41.26	74.00	-32.74
		2390 (Av)	27.76	54.00	-26.24
		2412 (Pk)	89.95	-	*
		2412 (Av)	81.94	-	*
		4824 (Pk)	57.40	74.00	-16.60

		4824 (Av)	45.10	54.00	-08.90
		7236 (Pk)	57.93	74.00	-16.07
		7236 (Av)	44.38	54.00	-09.62
Mid	V	2442 (Pk)	91.66	-	*
		2442 (Av)	83.96	-	*
		4884 (Pk)	55.16	74.00	-18.84
		4884 (Av)	42.75	54.00	-11.25
		7326 (Pk)	58.58	74.00	-15.42
		7326 (Av)	44.96	54.00	-09.04
	H	2442 (Pk)	89.26	-	*
		2442 (Av)	81.25	-	*
		4884 (Pk)	56.24	74.00	-17.76
		4884 (Av)	44.24	54.00	-09.76
		7326 (Pk)	57.08	74.00	-16.92
		7326 (Av)	44.93	54.00	-09.07
High	V	2462 (Pk)	88.53	-	*
		2462 (Av)	80.70	-	*
		2483.5 (Pk)	40.59	74.00	-33.41
		2483.5 (Av)	28.20	54.00	-25.80
		4924 (Pk)	56.08	74.00	-17.92
		4924 (Av)	44.52	54.00	-09.48
		7386 (Pk)	59.52	74.00	-14.48
		7386 (Av)	45.60	54.00	-08.40
	H	2462 (Pk)	88.57	-	*
		2462 (Av)	80.79	-	*
		2483.5 (Pk)	40.65	74.00	-33.35
		2483.5 (Av)	27.64	54.00	-26.36
		4924 (Pk)	56.85	74.00	-17.15
		4924 (Av)	44.53	54.00	-09.47
		7386 (Pk)	59.74	74.00	-14.26
		7386 (Av)	45.63	54.00	-08.37

g mode: 6Mbps

Channel	Polarization	Frequency (MHz)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2390 (Pk)	48.65	74.00	-25.35
		2390 (Av)	29.53	54.00	-24.47
		2412 (Pk)	88.68	-	*
		2412 (Av)	73.21	-	*
		4824 (Pk)	61.80	74.00	-12.20
		4824 (Av)	42.89	54.00	-11.11
		7236 (Pk)	58.43	74.00	-15.57

		7236 (Av)	44.39	54.00	-09.61
	H	2390 (Pk)	51.94	74.00	-22.06
		2390 (Av)	32.54	54.00	-21.46
		2412 (Pk)	91.47	-	*
		2412 (Av)	76.32	-	*
		4824 (Pk)	59.72	74.00	-14.28
		4824 (Av)	40.68	54.00	-13.32
		7236 (Pk)	56.70	74.00	-17.30
		7236 (Av)	44.35	54.00	-09.65
Mid	V	2442 (Pk)	89.61	-	*
		2442 (Av)	75.18	-	*
		4884 (Pk)	52.75	74.00	-21.25
		4884 (Av)	37.37	54.00	-16.63
	H	2442 (Pk)	93.69	-	*
		2442 (Av)	78.57	-	*
		4884 (Pk)	51.90	74.00	-22.10
		4884 (Av)	37.43	54.00	-16.57
High	V	2462 (Pk)	84.72	-	*
		2462 (Av)	71.17	-	*
		2483.5 (Pk)	42.35	74.00	-31.65
		2483.5 (Av)	27.41	54.00	-26.59
		4924 (Pk)	52.73	74.00	-21.27
		4924 (Av)	37.65	54.00	-16.35
		7386 (Pk)	58.30	74.00	-15.70
		7386 (Av)	45.53	54.00	-08.47
	H	2462 (Pk)	90.23	-	*
		2462 (Av)	75.28	-	*
		2483.5 (Pk)	48.31	74.00	-25.69
		2483.5 (Av)	30.14	54.00	-23.86
		4924 (Pk)	52.38	74.00	-21.62
		4924 (Av)	37.65	54.00	-16.35
		7386 (Pk)	59.25	74.00	-14.75
		7386 (Av)	45.60	54.00	-08.40

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g mode: 24Mbps

Channel	Polarization	Frequency (MHz)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2390 (Pk)	47.70	74.00	-26.30
		2390 (Av)	27.36	54.00	-26.64
		2412 (Pk)	85.98	-	*
		2412 (Av)	67.38	-	*
		4824 (Pk)	56.78	74.00	-17.22
		4824 (Av)	37.14	54.00	-16.86
		7236 (Pk)	57.82	74.00	-16.18
		7236 (Av)	44.36	54.00	-09.64
	H	2390 (Pk)	51.58	74.00	-22.42
		2390 (Av)	29.00	54.00	-25.00
		2412 (Pk)	89.00	-	*
		2412 (Av)	70.27	-	*
		4824 (Pk)	56.10	74.00	-17.90
		4824 (Av)	37.05	54.00	-16.95
		7236 (Pk)	56.36	74.00	-17.64
		7236 (Av)	44.41	54.00	-09.59
Mid	V	2442 (Pk)	86.73	-	*
		2442 (Av)	67.10	-	*
		4884 (Pk)	51.88	74.00	-22.12
		4884 (Av)	36.81	54.00	-17.19
	H	2442 (Pk)	89.95	-	*
		2442 (Av)	71.08	-	*
		4884 (Pk)	50.59	74.00	-23.41
		4884 (Av)	36.76	54.00	-17.24
High	V	2462 (Pk)	83.37	-	*
		2462 (Av)	63.74	-	*
		2483.5 (Pk)	41.10	74.00	-32.90
		2483.5 (Av)	26.97	54.00	-27.03
		4924 (Pk)	51.06	74.00	-22.94
		4924 (Av)	36.89	54.00	-17.11
	H	2462 (Pk)	87.81	-	*
		2462 (Av)	67.90	-	*
		2483.5 (Pk)	44.87	74.00	-29.13
		2483.5 (Av)	26.99	54.00	-27.01
		4924 (Pk)	49.95	74.00	-24.05
		4924 (Av)	37.05	54.00	-16.95

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g mode: 54Mbps

Channel	Polarization	Frequency (MHz)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2390 (Pk)	44.33	74.00	-29.67
		2390 (Av)	26.92	54.00	-27.08
		2412 (Pk)	85.17	-	*
		2412 (Av)	63.40	-	*
		4824 (Pk)	50.75	74.00	-23.25
		4824 (Av)	36.60	54.00	-17.40
		7236 (Pk)	57.24	74.00	-16.76
		7236 (Av)	44.36	54.00	-09.64
	H	2390 (Pk)	46.08	74.00	-27.92
		2390 (Av)	26.73	54.00	-27.27
		2412 (Pk)	88.20	-	*
		2412 (Av)	66.51	-	*
		4824 (Pk)	51.60	74.00	-22.40
		4824 (Av)	36.96	54.00	-17.04
		7236 (Pk)	57.20	74.00	-16.80
		7236 (Av)	44.42	54.00	-09.58
Mid	V	2442 (Pk)	85.29	-	*
		2442 (Av)	64.07	-	*
		4884 (Pk)	51.74	74.00	-22.26
		4884 (Av)	37.41	54.00	-16.59
		7326 (Pk)	58.69	74.00	-15.31
		7326 (Av)	44.89	54.00	-09.11
	H	2442 (Pk)	88.43	-	*
		2442 (Av)	66.72	-	*
		4884 (Pk)	52.94	74.00	-21.06
		4884 (Av)	37.68	54.00	-16.32
		7326 (Pk)	58.18	74.00	-15.82
		7326 (Av)	44.90	54.00	-09.10
High	V	2462 (Pk)	82.76	-	*
		2462 (Av)	60.87	-	*
		2483.5 (Pk)	39.12	74.00	-34.88
		2483.5 (Av)	26.67	54.00	-27.33
		4924 (Pk)	51.93	74.00	-22.07
		4924 (Av)	37.49	54.00	-16.51
		7386 (Pk)	58.30	74.00	-15.70
		7386 (Av)	44.04	54.00	-09.96
	H	2462 (Pk)	88.25	-	*
		2462 (Av)	66.42	-	*
		2483.5 (Pk)	40.60	74.00	-33.40

		2483.5 (Av)	27.02	54.00	-26.98
		4924 (Pk)	52.41	74.00	-21.59
		4924 (Av)	37.56	54.00	-16.44
		7386 (Pk)	56.94	74.00	-17.06
		7386 (Av)	44.02	54.00	-09.98

n mode: MCS 0

Channel	Polarization	Frequency (MHz)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2390 (Pk)	47.83	74.00	-26.17
		2390 (Av)	31.60	54.00	-22.40
		2412 (Pk)	86.01	-	*
		2412 (Av)	77.91	-	*
		4824 (Pk)	54.20	74.00	-19.80
		4824 (Av)	40.06	54.00	-13.94
		7236 (Pk)	56.15	74.00	-17.85
		7236 (Av)	42.68	54.00	-11.32
	H	2390 (Pk)	49.18	74.00	-24.82
		2390 (Av)	32.36	54.00	-21.64
		2412 (Pk)	86.66	-	*
		2412 (Av)	78.54	-	*
		4824 (Pk)	56.31	74.00	-17.69
		4824 (Av)	41.30	54.00	-12.70
		7236 (Pk)	56.87	74.00	-17.13
		7236 (Av)	42.74	54.00	-11.26
Mid	V	2442 (Pk)	88.40	-	*
		2442 (Av)	80.16	-	*
		4884 (Pk)	55.07	74.00	-18.93
		4884 (Av)	40.46	54.00	-13.54
		7326 (Pk)	56.67	74.00	-17.33
		7326 (Av)	43.25	54.00	-10.75
	H	2442 (Pk)	85.86	-	*
		2442 (Av)	77.57	-	*
		4884 (Pk)	54.32	74.00	-19.68
		4884 (Av)	40.13	54.00	-13.87
		7326 (Pk)	56.72	74.00	-17.28
		7326 (Av)	43.31	54.00	-10.69
High	V	2462 (Pk)	85.22	-	*
		2462 (Av)	77.13	-	*
		2483.5 (Pk)	47.09	74.00	-26.91
		2483.5 (Av)	30.55	54.00	-23.45
		4924 (Pk)	54.95	74.00	-19.05
		4924 (Av)	40.86	54.00	-13.14
		7386 (Pk)	57.45	74.00	-16.55
		7386 (Av)	44.10	54.00	-09.90
	H	2462 (Pk)	84.78	-	*
		2462 (Av)	76.56	-	*
		2483.5 (Pk)	47.71	74.00	-26.29

		2483.5 (Av)	30.17	54.00	-23.83
		4924 (Pk)	54.66	74.00	-19.34
		4924 (Av)	40.44	54.00	-13.56
		7386 (Pk)	57.28	74.00	-16.72
		7386 (Av)	44.10	54.00	-09.90

n mode: MCS4

Channel	Polarization	Frequency (MHz)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2390 (Pk)	44.86	74.00	-29.14
		2390 (Av)	28.31	54.00	-25.69
		2412 (Pk)	85.48	-	*
		2412 (Av)	70.50	-	*
		4824 (Pk)	50.79	74.00	-23.21
		4824 (Av)	37.11	54.00	-16.89
		7236 (Pk)	56.77	74.00	-17.23
		7236 (Av)	42.69	54.00	-11.31
	H	2390 (Pk)	45.90	74.00	-28.10
		2390 (Av)	28.05	54.00	-25.95
		2412 (Pk)	86.70	-	*
		2412 (Av)	71.03	-	*
		4824 (Pk)	52.00	74.00	-22.00
		4824 (Av)	37.52	54.00	-16.48
		7236 (Pk)	55.43	74.00	-18.57
		7236 (Av)	42.74	54.00	-11.26
Mid	V	2442 (Pk)	88.11	-	*
		2442 (Av)	73.15	-	*
		4884 (Pk)	52.70	74.00	-21.30
		4884 (Av)	38.00	54.00	-16.00
		7326 (Pk)	56.88	74.00	-17.12
		7326 (Av)	43.31	54.00	-10.69
	H	2442 (Pk)	85.52	-	*
		2442 (Av)	70.95	-	*
		4884 (Pk)	51.94	74.00	-22.06
		4884 (Av)	37.87	54.00	-16.13
		7326 (Pk)	56.77	74.00	-17.23
		7326 (Av)	43.32	54.00	-10.68
High	V	2462 (Pk)	85.00	-	*
		2462 (Av)	69.74	-	*
		2483.5 (Pk)	44.94	74.00	-29.06
		2483.5 (Av)	27.88	54.00	-26.12

		4924 (Pk)	52.04	74.00	-21.96
		4924 (Av)	37.78	54.00	-16.22
		7386 (Pk)	57.87	74.00	-16.13
		7386 (Av)	44.10	54.00	-09.90
	H	2462 (Pk)	84.55	-	*
		2462 (Av)	69.24	-	*
		2483.5 (Pk)	45.45	74.00	-28.55
		2483.5 (Av)	28.08	54.00	-25.92
		4924 (Pk)	51.80	74.00	-22.20
		4924 (Av)	37.71	54.00	-16.29
		7386 (Pk)	57.95	74.00	-16.05
		7386 (Av)	44.10	54.00	-09.90

n mode: MCS7

Channel	Polarization	Frequency (MHz)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2390 (Pk)	39.99	74.00	-34.01
		2390 (Av)	26.59	54.00	-27.41
		2412 (Pk)	81.89	-	*
		2412 (Av)	64.53	-	*
		4824 (Pk)	49.78	74.00	-24.22
		4824 (Av)	36.00	54.00	-18.00
		7236 (Pk)	56.57	74.00	-17.43
		7236 (Av)	42.75	54.00	-11.25
	H	2390 (Pk)	39.67	74.00	-34.33
		2390 (Av)	26.36	54.00	-27.64
		2412 (Pk)	82.63	-	*
		2412 (Av)	65.12	-	*
		4824 (Pk)	50.63	74.00	-23.37
		4824 (Av)	36.12	54.00	-17.88
		7236 (Pk)	56.03	74.00	-17.97
		7236 (Av)	42.79	54.00	-11.21
Mid	V	2442 (Pk)	84.63	-	*
		2442 (Av)	67.09	-	*
		4884 (Pk)	49.62	74.00	-24.38
		4884 (Av)	36.47	54.00	-17.53
		7326 (Pk)	57.45	74.00	-16.55
		7326 (Av)	43.38	54.00	-10.62
	H	2442 (Pk)	82.36	-	*
		2442 (Av)	64.95	-	*
		4884 (Pk)	49.64	74.00	-24.36

		4884 (Av)	36.47	54.00	-17.53
		7326 (Pk)	57.05	74.00	-16.95
		7326 (Av)	43.35	54.00	-10.65
High	V	2462 (Pk)	81.68	-	*
		2462 (Av)	64.33	-	*
		2483.5 (Pk)	39.44	74.00	-34.56
		2483.5 (Av)	26.84	54.00	-27.16
		4924 (Pk)	49.90	74.00	-24.10
		4924 (Av)	36.46	54.00	-17.54
		7386 (Pk)	57.77	74.00	-16.23
		7386 (Av)	44.16	54.00	-09.84
	H	2462 (Pk)	81.32	-	*
		2462 (Av)	63.46	-	*
		2483.5 (Pk)	40.81	74.00	-33.19
		2483.5 (Av)	26.87	54.00	-27.13
		4924 (Pk)	50.50	74.00	-23.50
		4924 (Av)	36.54	54.00	-17.46
		7386 (Pk)	58.54	74.00	-15.46
		7386 (Av)	44.12	54.00	-09.88

Bluetooth Low Energy Test Results:

Channel	Polarization	Frequency (MHz)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2390 (Pk)	54.09	74.00	-19.91
		2390 (Av)	47.82	54.00	-06.18
		2402 (Pk)	95.72	-	*
		2402 (Av)	91.17	-	*
		4804 (Pk)	50.62	74.00	-23.38
		4804 (Av)	38.90	54.00	-15.10
		7206 (Pk)	57.23	74.00	-16.77
		7206 (Av)	44.58	54.00	-09.42
	H	2390 (Pk)	56.50	74.00	-17.50
		2390 (Av)	50.35	54.00	-03.65
		2402 (Pk)	98.10	-	*
		2402 (Av)	94.59	-	*
		4804 (Pk)	50.81	74.00	-23.19
		4804 (Av)	39.81	54.00	-14.19
		7206 (Pk)	57.27	74.00	-16.73
		7206 (Av)	44.47	54.00	-09.53
Mid	V	2442 (Pk)	94.47	-	*
		2442 (Av)	90.06	-	*
		4884 (Pk)	52.27	74.00	-21.73
		4884 (Av)	40.90	54.00	-13.10
		7326 (Pk)	58.53	74.00	-15.47
		7326 (Av)	45.24	54.00	-08.76
	H	2442 (Pk)	96.24	-	*
		2442 (Av)	92.45	-	*
		4884 (Pk)	51.19	74.00	-22.81
		4884 (Av)	40.78	54.00	-13.22
		7326 (Pk)	58.40	74.00	-15.60
		7326 (Av)	45.02	54.00	-08.98
High	V	2480 (Pk)	94.27	-	*
		2480 (Av)	90.27	-	*
		2483.5 (Pk)	49.08	74.00	-24.92
		2483.5 (Av)	35.61	54.00	-18.39
		4960 (Pk)	52.41	74.00	-21.59
		4960 (Av)	39.78	54.00	-14.22
		7440 (Pk)	54.86	74.00	-19.14
		7440 (Av)	45.32	54.00	-08.68
	H	2480 (Pk)	96.04	-	*
		2480 (Av)	92.33	-	*
		2483.5 (Pk)	51.01	74.00	-22.99
		2483.5 (Av)	36.94	54.00	-17.06
		4960 (Pk)	51.17	74.00	-22.83
		4960 (Av)	39.46	54.00	-14.54
		7440 (Pk)	53.28	74.00	-20.72
		7440 (Av)	40.12	54.00	-13.88

ZigBee Test Results:

Channel	Polarization	Frequency (MHz)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2390 (Pk)	50.84	74.00	-23.16
		2390 (Av)	34.05	54.00	-19.95
		2405 (Pk)	101.80	-	*
		2405 (Av)	95.30	-	*
		4810 (Pk)	57.21	74.00	-16.79
		4810 (Av)	40.41	54.00	-13.59
		7215 (Pk)	60.06	74.00	-13.94
		7215 (Av)	45.78	54.00	-8.22
	H	2390 (Pk)	53.30	74.00	-20.70
		2390 (Av)	34.63	54.00	-19.37
		2405 (Pk)	102.24	-	*
		2405 (Av)	96.57	-	*
		4810 (Pk)	55.66	74.00	-18.34
		4810 (Av)	39.47	54.00	-14.53
		7215 (Pk)	58.50	74.00	-15.50
		7215 (Av)	44.85	54.00	-09.15
Mid	V	2440 (Pk)	99.08	-	*
		2440 (Av)	91.65	-	*
		4880 (Pk)	56.70	74.00	-17.30
		4880 (Av)	40.36	54.00	-13.64
		7320 (Pk)	64.19	74.00	-09.81
		7320 (Av)	47.97	54.00	-06.03
	H	2440 (Pk)	101.83	-	*
		2440 (Av)	94.87	-	*
		4880 (Pk)	55.84	74.00	-18.16
		4880 (Av)	39.35	54.00	-14.65
		7320 (Pk)	60.51	74.00	-13.49
		7320 (Av)	45.96	54.00	-08.04
High	V	2470 (Pk)	101.11	-	*
		2470 (Av)	95.34	-	*
		2483.5 (Pk)	48.46	74.00	-25.54
		2483.5 (Av)	34.81	54.00	-19.19
		2475 (Pk)	100.97	-	*
		2475 (Av)	97.38	-	*
		2483.5 (Pk)	62.40	74.00	-11.60
		2483.5 (Av)	51.00	54.00	-03.00
		2480 (Pk)	81.79	-	*
		2480 (Av)	74.13	-	*
		2483.5 (Pk)	48.46	74.00	-25.54

		2483.5 (Av)	34.81	54.00	-19.19
		4960 (Pk)	55.27	74.00	-18.73
		4960 (Av)	39.55	54.00	-14.45
		7440 (Pk)	67.80	74.00	-06.20
		7440 (Av)	49.91	54.00	-04.09
	H	2470 (Pk)	101.42	-	*
		2470 (Av)	94.26	-	*
		2483.5 (Pk)	49.27	74.00	-24.73
		2483.5 (Av)	37.10	54.00	-16.90
		2475 (Pk)	105.6	-	*
		2475 (Av)	97.79	-	*
		2483.5 (Pk)	62.60	74.00	-11.40
		2483.5 (Av)	50.90	54.00	-03.10
		2480 (Pk)	87.67	-	*
		2480 (Av)	77.29	-	*
		2483.5 (Pk)	49.27	74.00	-24.73
		2483.5 (Av)	37.10	54.00	-16.90
		4960 (Pk)	54.12	74.00	-19.88
		4960 (Av)	39.12	54.00	-14.88
		7440 (Pk)	64.17	74.00	-09.83
		7440 (Av)	48.14	54.00	-05.86

Simultaneous Transmission

All radio modules operating at channel low.

Note: Only the worst test case has been updated

Channel	Polarization	Frequency (MHz)	Protocol	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	902.00(QP)	Z-Wave	37.75	46.00	-08.25
		908.40(QP)		92.85	94.00	-01.15
		2390 (Pk)	-	55.29	74.00	-18.71
		2390 (Av)		47.88	54.00	-06.12
		2402 (Pk)	BLE	95.34	-	*
		2402 (Av)		90.89	-	*
		2405 (Pk)	ZigBee	102.37	-	*
		2405 (Av)		96.2	-	*
		2412 (Pk)	Wi-Fi	85.76	-	*
		2412 (Av)		66.81	-	*
		1816.80(Pk)	Z-Wave	36.98	74.00	-37.02
		1816.80(Av)		24.09	54.00	-29.91
		4804 (Pk)	BLE	50.49	74.00	-23.51
		4804 (Pk)		38.6	54.00	-15.4
		4810 (Pk)	ZigBee	57.25	74.00	-16.75
		4810 (Pk)		40.49	54.00	-13.51
		4824 (Pk)	Wi-Fi	56.32	74.00	-17.68
		4824 (Pk)		36.79	54.00	-17.21
	H	902.00(QP)	Z-Wave	37.88	46.00	-08.12
		908.40(QP)		93.15	94.00	-00.85
		2390 (Pk)	-	56.78	74.00	-17.22
		2390 (Av)		50.33	54.00	-03.67
		2402 (Pk)	BLE	98.87	-	*
		2402 (Av)		95.63	-	*
		2405 (Pk)	ZigBee	101.65	-	*
		2405 (Av)		96.77	-	*
		2412 (Pk)	Wi-Fi	88.74	-	*
		2412 (Av)		70.32	-	*
		1816.80(Pk)	Z-Wave	36.55	74.00	-37.45
		1816.80(Av)		24.16	54.00	-29.84
		4804 (Pk)	BLE	50.51	74.00	-23.49
		4804 (Pk)		39.66	54.00	-14.34
		4810 (Pk)	ZigBee	55.36	74.00	-18.64
		4810 (Pk)		39.67	54.00	-14.33
		4824 (Pk)	Wi-Fi	56.23	74.00	-17.77
		4824 (Pk)		36.69	54.00	-17.31

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All radio modules operating at channel high.

Note: Only the worst test case has been updated.

Channel	Polarization	Frequency (MHz)	Protocol	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
High	V	928.00 (QP)	Z-Wave	33.89	46.00	-12.11
		916.00 (QP)		90.95	94.00	-03.05
		2480 (Pk)	BLE	94.77	-	*
		2480 (Av)		89.99	-	*
		2480(Pk)	ZigBee	82.81	-	*
		2480(Av)		73.53	-	*
		2462 (Pk)	Wi-Fi	82.67	-	*
		2462 (Av)		63.56	-	*
		1832.00 (Pk)	Z-Wave	37.69	74.00	-36.31
		1832.00 (Av)		23.69	54.00	-30.31
		4960 (Pk)	BLE	51.85	74.00	-22.15
		4960 (Av)		40.23	54.00	-13.77
		4960 (Pk)	ZigBee	55.97	74.00	-18.03
		4960 (Av)		40.02	54.00	-13.98
		4924 (Pk)	Wi-Fi	50.87	74.00	-23.13
		4924 (Pk)		36.53	54.00	-17.47
		2483.5 (Pk)	-	49.41	74.00	-24.59
		2483.5 (Av)		35.86	54.00	-18.14
	H	928.00 (QP)	Z-Wave	34.41	46.00	-11.59
		916.00 (QP)		92.25	94.00	-01.75
		2480 (Pk)	BLE	95.87	-	*
		2480 (Av)		91.97	-	*
		2480(Pk)	ZigBee	86.57	-	*
		2480(Av)		76.9	-	*
		2462 (Pk)	Wi-Fi	87.65	-	*
		2462 (Av)		67.78	-	*
		1832.00 (Pk)	Z-Wave	37.05	74.00	-36.95
		1832.00 (Av)		23.77	54.00	-30.23
		4960 (Pk)	BLE	52.07	74.00	-21.93
		4960 (Av)		38.88	54.00	-15.12
		4960 (Pk)	ZigBee	55.72	74.00	-18.28
		4960 (Av)		40.12	54.00	-13.88
		4924 (Pk)	Wi-Fi	49.51	74.00	-24.49
		4924 (Pk)		36.75	54.00	-17.25
		2483.5 (Pk)	-	52.13	74.00	-21.87
		2483.5 (Av)		37.32	54.00	-16.68

Conducted Emission Test on A.C. Power Line

Result **Pass**

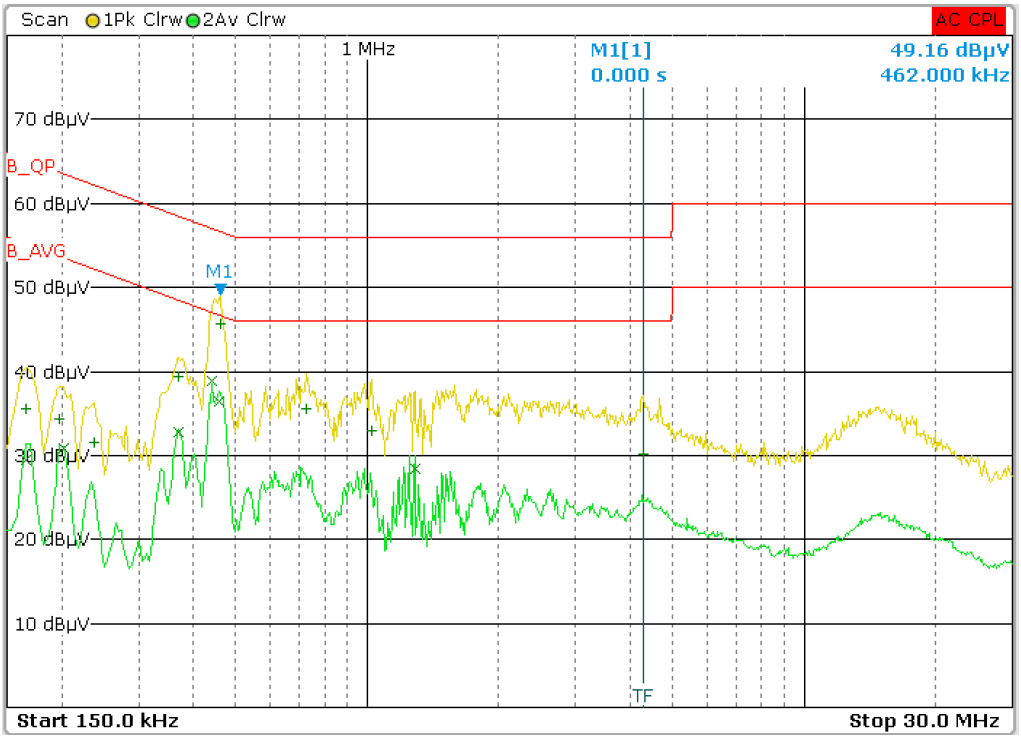
Test Specification	:	FCC Part 15 Section 15.207
Test Method	:	ANSI C63.10-2013
Testing Location	:	Screened room
Measurement Bandwidth	:	9kHz
Frequency Range	:	150kHz – 30MHz
Supply Voltage	:	120VAC,60Hz

Limit of section 15.207

Frequency of emission (MHz)	QP Limit (dBµV)	AV Limit (dBµV/m)
0.15 – 0.5	66 – 56*	56 – 46*
0.5 – 5	56	46
5 – 30	60	50

* Decreases with the logarithm of the frequency

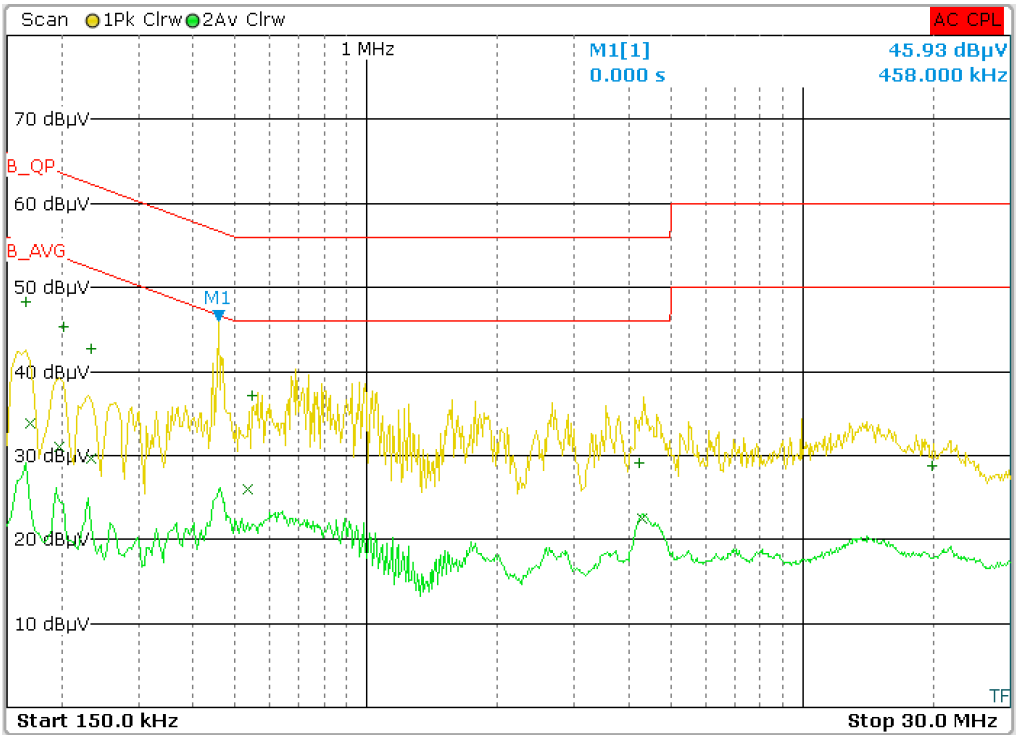
Test Result:



Line Graph

Frequency [MHz]	Emission Level [dBµV]	Limit [dBµV]	Detector
0.462	45.65	56.66	Quasi Peak
0.370	39.45	58.50	Quasi Peak
0.726	35.48	56.00	Quasi Peak
0.198	34.40	63.69	Quasi Peak
1.02	33.01	56.00	Quasi Peak
4.28	30.18	56.00	Quasi Peak
0.442	38.93	47.02	Average
0.458	36.34	46.73	Average
0.370	32.77	48.50	Average
1.28	28.47	46.00	Average
0.202	30.79	53.53	Average
0.166	29.44	55.16	Average

Line: Table



Neutral Graph

Frequency [MHz]	Emission Level [dBµV]	Limit [dBµV]	Detector
0.166	48.20	65.16	Quasi Peak
0.202	45.39	63.53	Quasi Peak
0.546	37.16	56.00	Quasi Peak
0.234	42.62	62.31	Quasi Peak
4.222	29.04	56.00	Quasi Peak
19.85	28.79	60.00	Quasi Peak
0.534	26.02	46.00	Average
0.170	33.87	54.96	Average
0.198	31.09	53.69	Average
0.234	29.58	52.31	Average
4.286	22.52	46.00	Average

Neutral: Table

**********END of Test Report**********