

Produkte
Products
Prüfbericht - Nr.: 19660316 001
Seite 1 von 190
Test Report No.:
Page 1 of 190
Auftraggeber: Nokia Solutions and Networks Oy
Client: Karaportti 102610 ESPOO
Finland

Gegenstand der Prüfung: Home Router
Test item:
Bezeichnung: FMHRN0002.00 **Serien-Nr.:** LC163500263
Identification: *Serial No.*
Wareneingangs-Nr.: 1803192751 **Eingangsdatum:** 28.12.2016
Receipt No.: *Date of receipt:*
Prüfört: Refer Page 4 of 190 for test facilities
Testing location:
Prüfgrundlage: FCC Part 15.247
Test specification: ANSI C63.10-2013

Prüfergebnis: Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).
Test Result: The test items passed the test specification(s).

Prüflaboratorium: TÜV Rheinland (India) Pvt. Ltd.
Testing Laboratory: 82/A, 3rd Main, West Wing, Electronic City Phase 1
Hosur Road, Bangalore – 560 100, India
FCC Registration No.: 176555

geprüft / tested by:
kontrolliert / reviewed by:

19.06.2017 Girish Kumar G 
Engineer

23.06.2017 Saibaba Siddapur 
Assistant Manager

Datum **Name/Stellung** **Unterschrift**
Date *Name/Position* *Signature*
Datum **Name/Stellung** **Unterschrift**
Date *Name/Position* *Signature*
Sonstiges / Other Aspects: FCC ID: 2AL7J-FMHRN0002

Abkürzungen: P(ass) = entspricht Prüfgrundlage
F(ail) = entspricht nicht Prüfgrundlage
N/A = nicht anwendbar
N/T = nicht getestet

Abbreviations: P(ass) = passed
F(ail) = failed
N/A = not applicable
N/T = not tested

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.
This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.

TÜV Rheinland India Pvt. Ltd. 82/A, 3rd Main, West Wing Electronic City Phase 1, Hosur Road, Bangalore-560100, India

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Test Result Summary

Clause	Test Item	Result
FCC 15.247(b) (3)	Maximum Average Conducted Output Power	Pass
FCC 15.247(a) (2)	6dB Bandwidth	Pass
FCC 15.247(e)	Maximum Power Spectral Density	Pass
FCC 15.247(d)	Band-edge compliance	Pass
FCC 15.209 / FCC 15.205	Spurious Radiated Emissions and Restricted Bands of Operation	Pass
FCC 15.207	Conducted emission test on a.c Power line	Pass

Note: Conducted measurements are done according to the procedure given in KDB No. **558074 D01 DTS Meas Guidance v04**

Content

List of Test and Measurement Instruments.....	4
General Product Information	5
Product Function and Intended Use	5
Ratings and System Details.....	5
Test Set-up and Operation Mode.....	6
Principle of Configuration Selection	6
Test Operation and Test Software	6
Test Modes – Data Rates and Modulations	6
Test Methodology	7
Radiated Emission Test	7
Conducted Emission Test on A.C. mains line	8
Test Results	9
Maximum Average Conducted Output Power	Section 15.247(b) (3)9
Maximum Power Spectral Density	Section 15.247(e).....52
6 dB Bandwidth	Section 15.247(a) (2).....96
Band-edge Compliance	Section 15.247(d)129
Spurious Radiated Emissions and.....	167
Restricted Bands of Operation	Section 15.209 and 15.205167
Conducted Emission Test on A.C. Power Line	Section 15.207.....186
Appendix 1: Test Setup Photo	
Appendix 2: EUT External Photo	
Appendix 3: EUT Internal Photo	
Appendix 4: FCC Label and Label Location	
Appendix 5: Block Diagram	
Appendix 6: Specification of EUT	
Appendix 7: Schematic Diagrams	
Appendix 8: Bill of Material	
Appendix 9: User Manual	
Appendix 10: Maximum Permissible Exposure Calculation	

List of Test and Measurement Instruments**TUV Rheinland (India) Pvt. Ltd. , Bangalore**

Equipment	Manufacturer	Model	S/N	Calibration Due Date
EMI Test Receiver	Rohde &Schwarz	ESU 40	100288	29.10.2017
Hybrid Log Periodic antenna	ETS Lindgren	3142D	00081354	10.06.2018
Broadband Horn Antenna	Frankonia	HAX-18	HAX18-802	16.03.2018
Double-Ridged Waveguide Horn Antenna	ETS Lindgren	3117	00133356	21.12.2017
Emission Horn Antenna	ETS Lindgren	116706	00107323	02.11.2017
Active Loop Antenna	Frankonia	LAX-10	LAX-10-800	22.12.2017
Spectrum Analyser	Agilent Technologies	E4407B	US41192772	13.02.2018
Anechoic Chamber	Frankonia	-	-	-
LISN	Rohde & Schwarz	ENV216	100022	07.09.2017
EMI Receiver	Rohde & Schwarz	ESR7	101133	10.12.2017

Testing Facilities:

- 1) TUV Rheinland (India) Private Limited
108 , Beside ISBR Business School,
Electronic city Phase I
Bangalore - 560 100

General Product Information

Product Function and Intended Use

IDU is an indoor CPE with multiple user interfaces and LED indications for last mile wireless connectivity to the home in conjunction with LTE outdoor unit. It has 2 Ethernet LAN ports and 1 Ethernet WAN port, which supports PoE+, dual band and dual concurrent Wi-Fi interface supporting 2x2 MIMO and compliant to 802.11 a/b/g/n/ac standards. It is powered by a 54V DC power adapter, reset switch and multi-color LED indicators for status indication. Wi-Fi antennae are internal to the enclosure

Ratings and System Details

Operating Frequency Range	Wi-Fi: 2400 - 2483.5MHz.	
Channel Spacing	5MHz – Wi-Fi	
Transmitted Power	802.11b	17.74 dBm
	802.11g	18.88 dBm
	802.11n	19.81 dBm
Data Rate	802.11b: 1,2, 5.5,11 Mbps 802.11g: 6, 9,12, 18, 24, 36, 48, 54 Mbps 802.11n: 6.5, 14.4, 21.7, 28.9, 39, 57.8, 65Mbps	
Number of antenna	2X2 MIMO	
Antenna Type	Internal mount and cable connection	
Antenna Gain	4.61 and 3.52dBi	
Supply Voltage to Module	54V DC from Power Adaptor	
Environmental	0°C to +40°C	

Test Conditions:

Supply Voltage: 54V DC from Power Adaptor

Environmental conditions:

Temperature: +25.3 °C

RH: 59%

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Test Set-up and Operation Mode

Principle of Configuration Selection

Transmission was enabled with 100% duty cycle duty on low, mid and high channel.

Test Operation and Test Software

Test Tool (QRTC v3.0.174.0 & Tera Term v4.75) used enable the transmission with burst mode, changing channels (low/mid/high) and data rates on the EUT for the tests in this report.

Special Accessories and Auxiliary Equipment

- Ethernet cable was used for interface between EUT and Laptop.

Countermeasures to achieve EMC Compliance

- None

Test Modes – Data Rates and Modulations

For Antenna port/Radiated spurious emissions, the tests were performed for both antenna chains and all data rates and only worst case results are reported in this report.

Mode	Antenna 1	Antenna 2
IEEE802.11b	Yes	Yes
IEEE802.11g	Yes	Yes
IEEE802.11n 20MHz	Yes	Yes
IEEE802.11n 20MHz MIMO	Yes	Yes
IEEE802.11n 40MHz	Yes	Yes
IEEE802.11n 40MHz MIMO	Yes	Yes

Note: Wi-Fi in 802.11b mode and 802.11 g mode and 802.11 n mode MCS0 to MCS7 data rates, only one antenna operates at a time.

Antenna Details:

Manufacturer	Antenna Type
Ethertronics	Internal mount and cable connection

Test Methodology

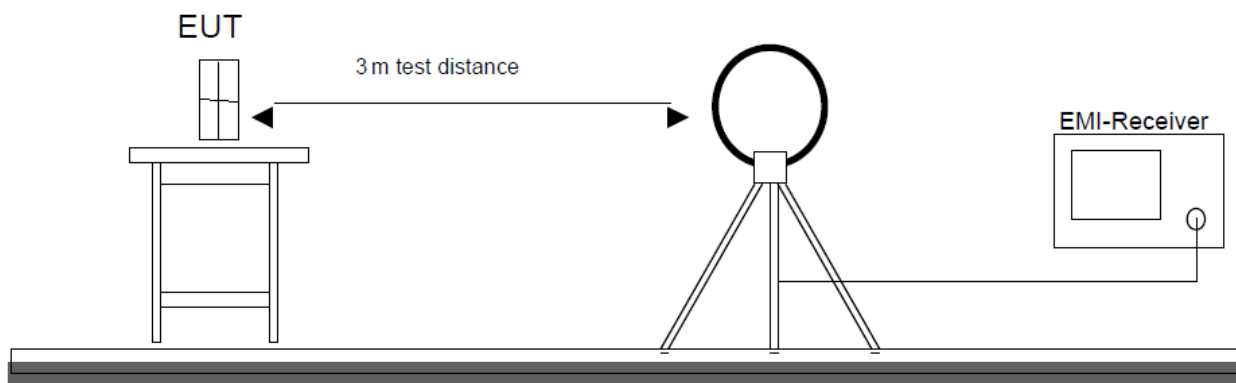
Radiated Emission Test

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.

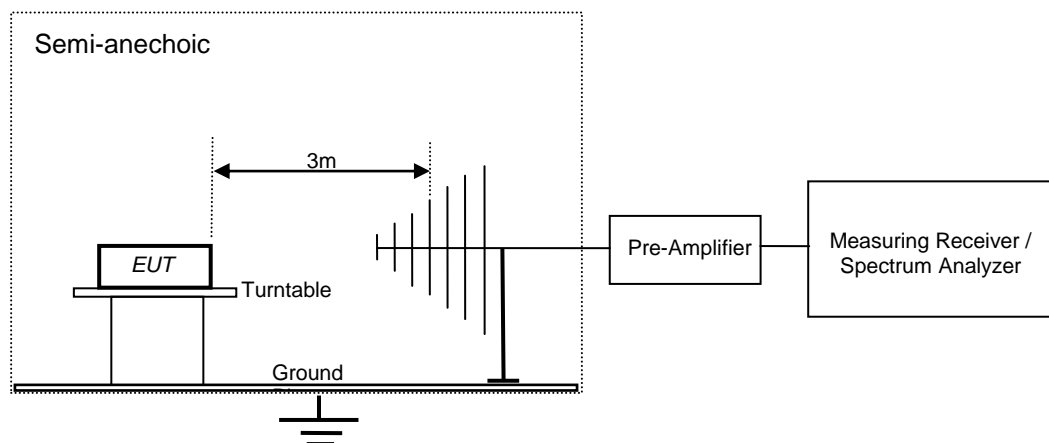
The EUT was rotated around the X-, Y-, and Z-Axis and the results from worst case axis are recorded.

Test Setup Configuration

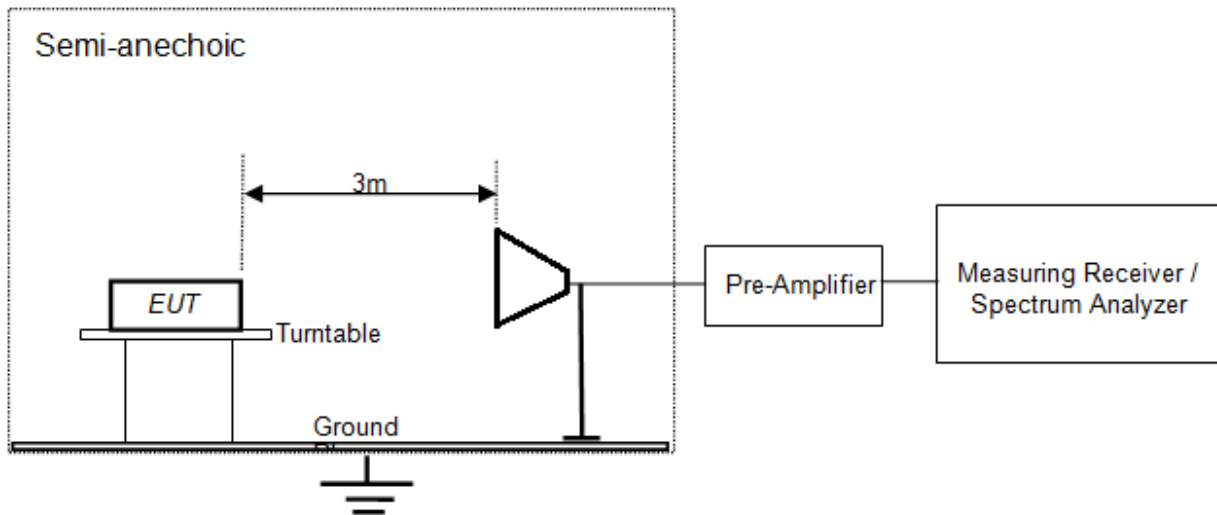
Frequency Range 9 kHz -30 MHz



Frequency Range 30MHz -1GHz

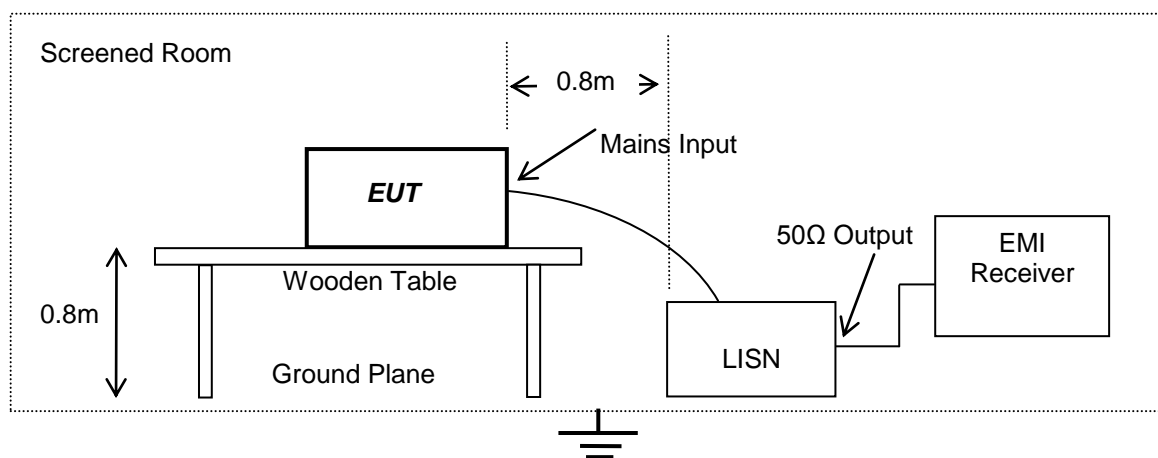


Frequency above 1GHz



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 placed 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 were recorded in the table of results.



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Test Results

Maximum Average Conducted Output Power

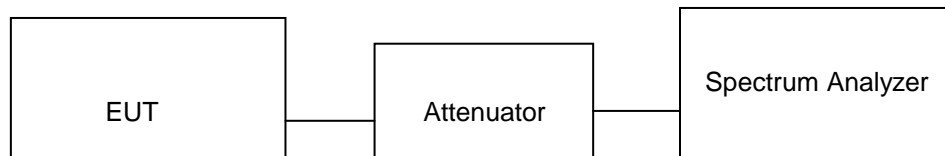
Section 15.247(b) (3)

Result

Pass

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

Test Method:



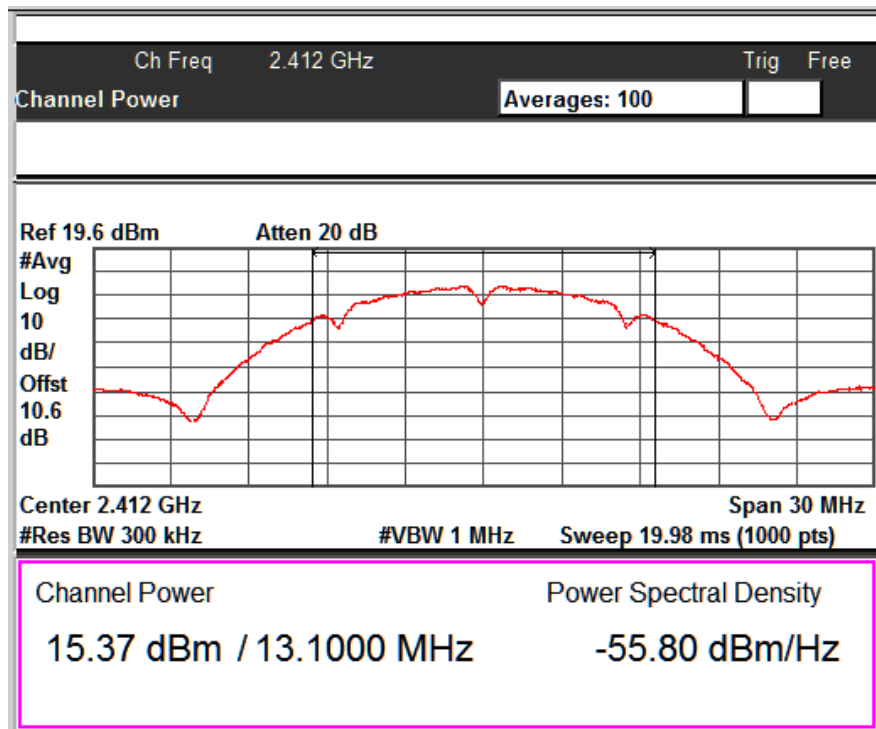
Offset value 10.6dB is added in the final measurement value.

Test Result:

Note: For measurement of Maximum Average conducted output power method AVGSA-1 was used

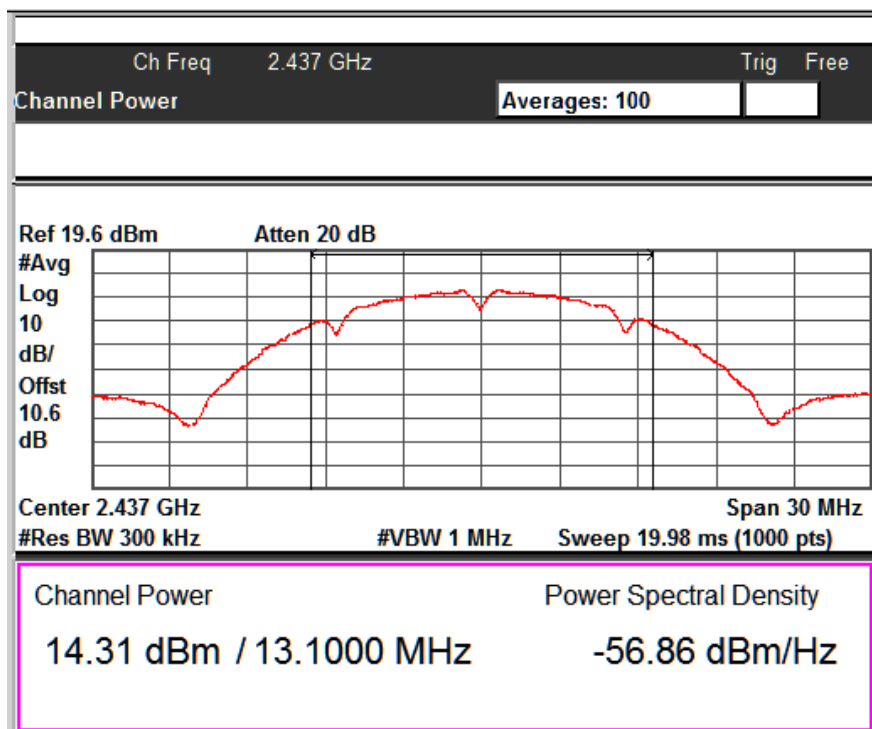
Note: Test was performed on both the transmit chains and worst case results were from chain 0 and the respective results has been reported.

802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Total Power (dBm)	Limit (dBm)	Margin (dB)
b	1	2412.00	15.37	30.00	-14.63
		2437.00	14.31	30.00	-15.69
		2462.00	15.76	30.00	-14.24
	11	2412.00	16.75	30.00	-13.25
		2437.00	17.74	30.00	-12.26
		2462.00	17.26	30.00	-12.74



Data rate: 1 Mbps

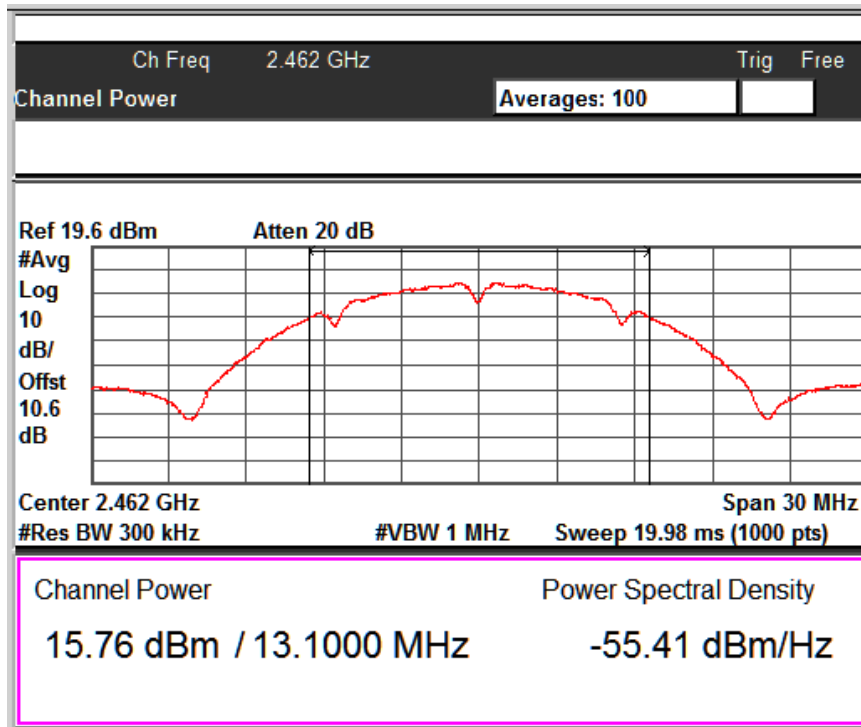
Channel Frequency: 2412 MHz



Data rate: 1 Mbps

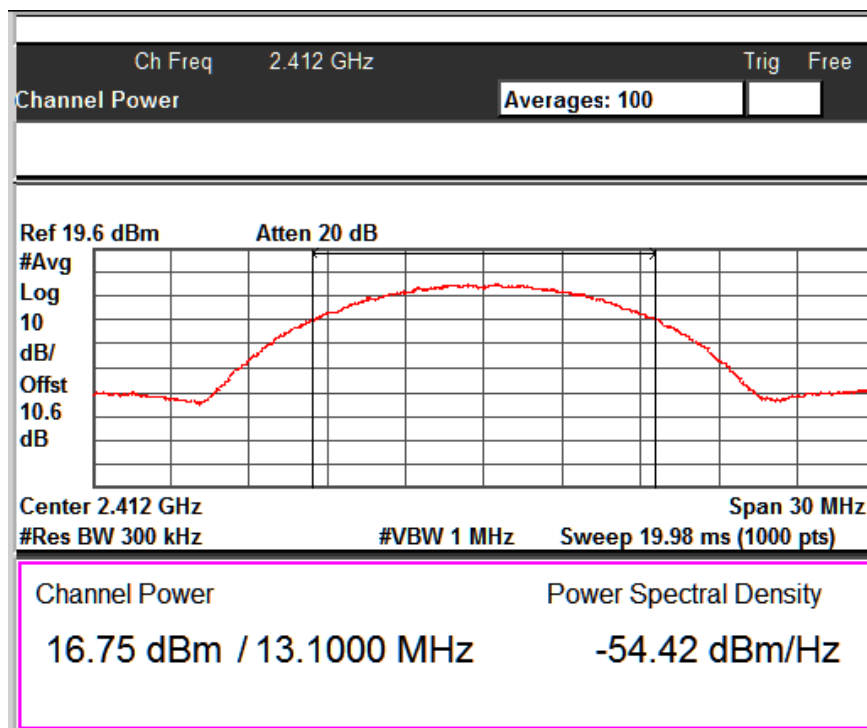
Channel Frequency: 2437 MHz

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Data rate: 1 Mbps

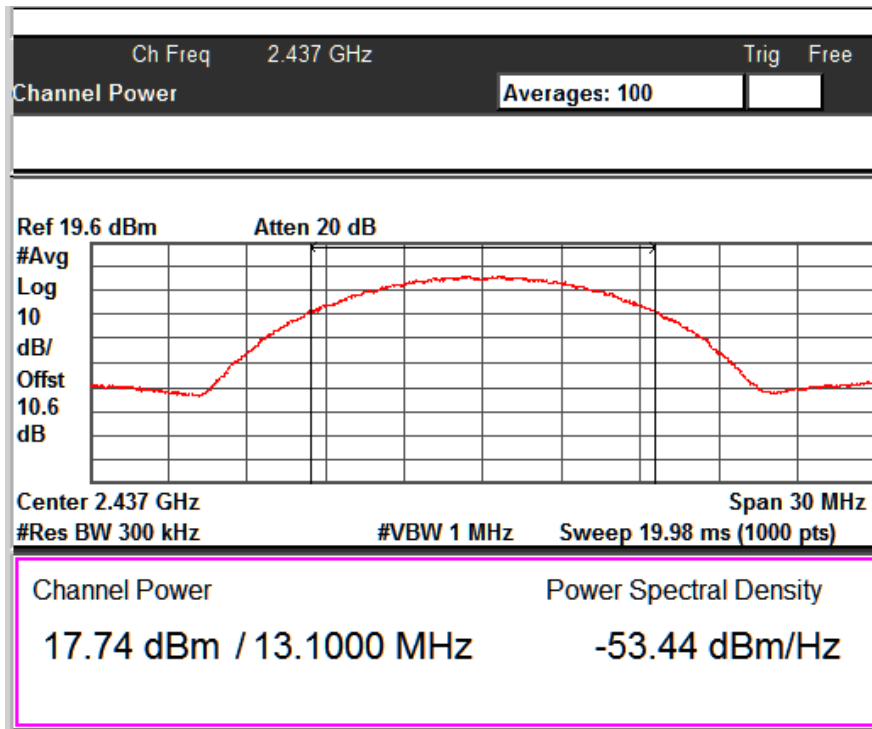
Channel Frequency: 2462 MHz



Data rate: 11 Mbps

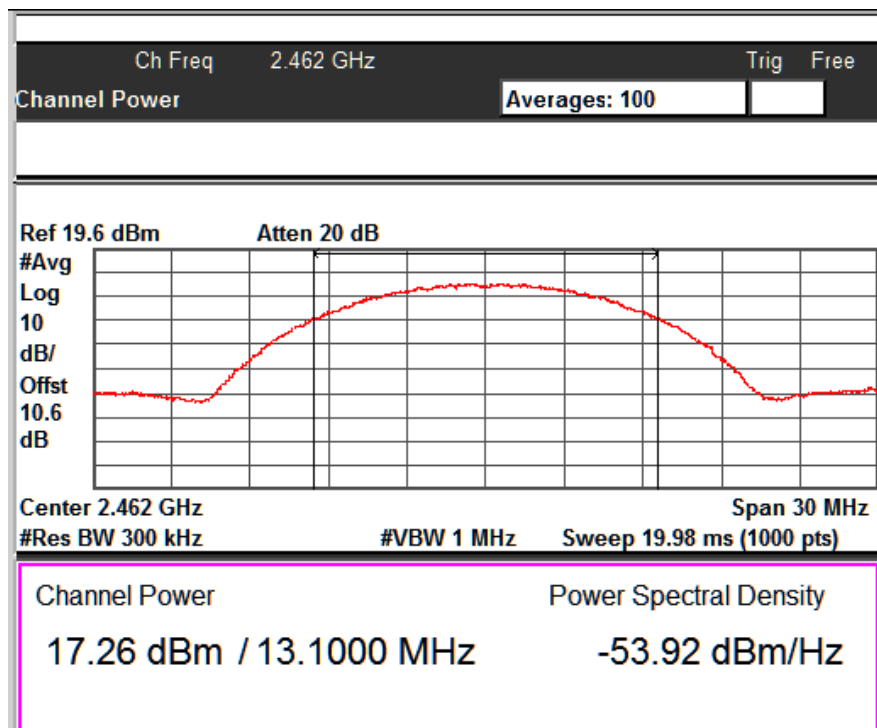
Channel Frequency: 2412 MHz

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Data rate: 11 Mbps

Channel Frequency: 2437 MHz



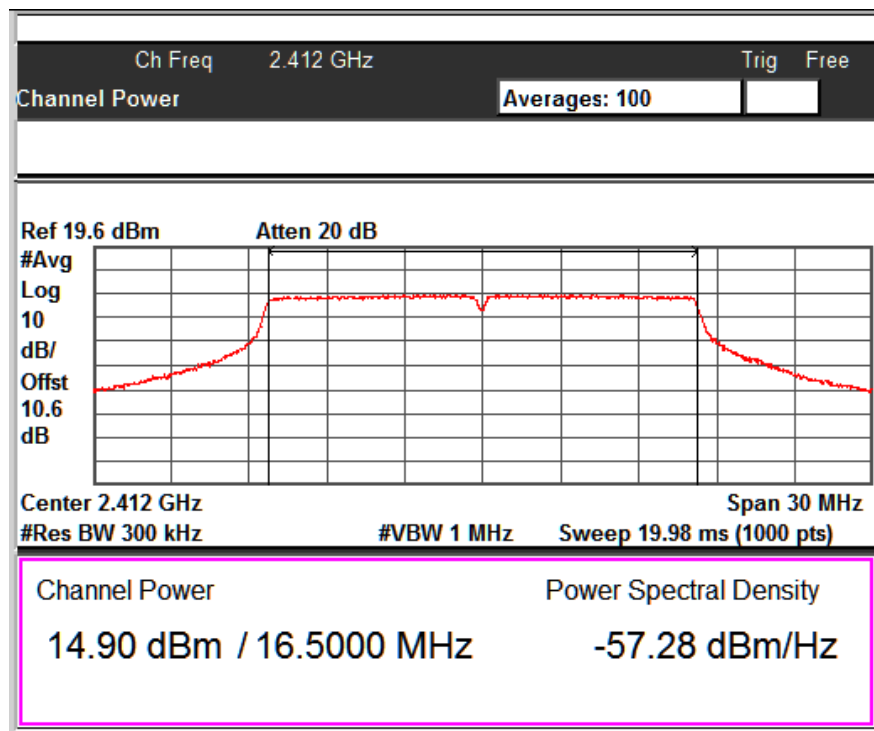
Data rate: 11 Mbps

Channel Frequency: 2462 MHz

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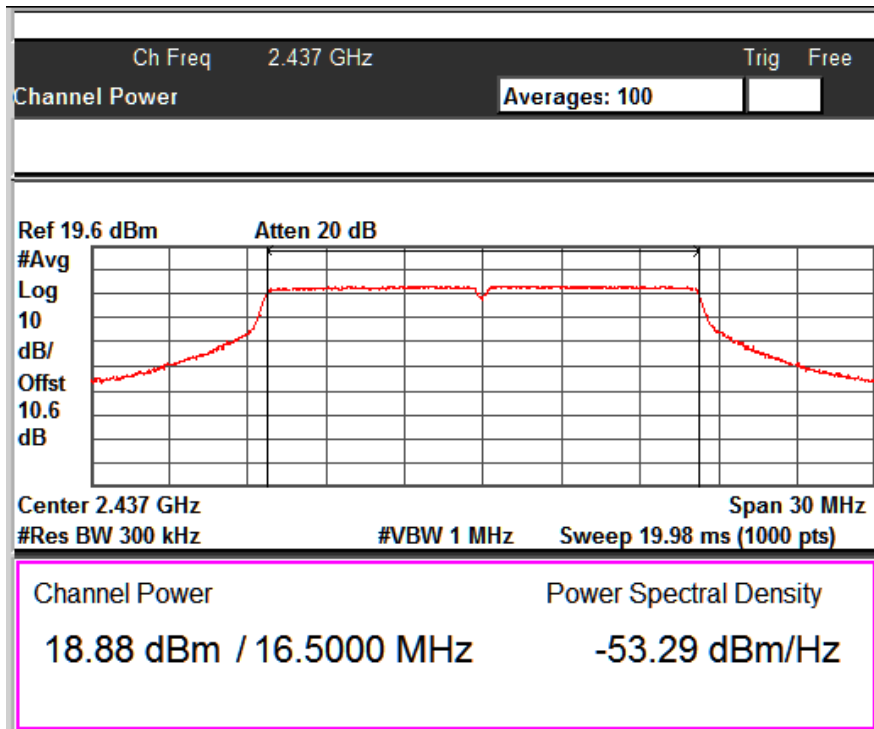
Note: Test was performed on both the transmit chains and worst case results were from chain 0 and the respective results has been reported.

802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Total Power (dBm)	Limit (dBm)	Margin (dB)
g	6	2412.00	14.90	30.00	-15.1
		2437.00	18.88	30.00	-11.12
		2462.00	14.61	30.00	-15.39
	24	2412.00	14.74	30.00	-15.26
		2437.00	18.63	30.00	-11.37
		2462.00	14.21	30.00	-15.79
	54	2412.00	13.04	30.00	-16.96
		2437.00	16.18	30.00	-13.82
		2462.00	12.57	30.00	-17.43



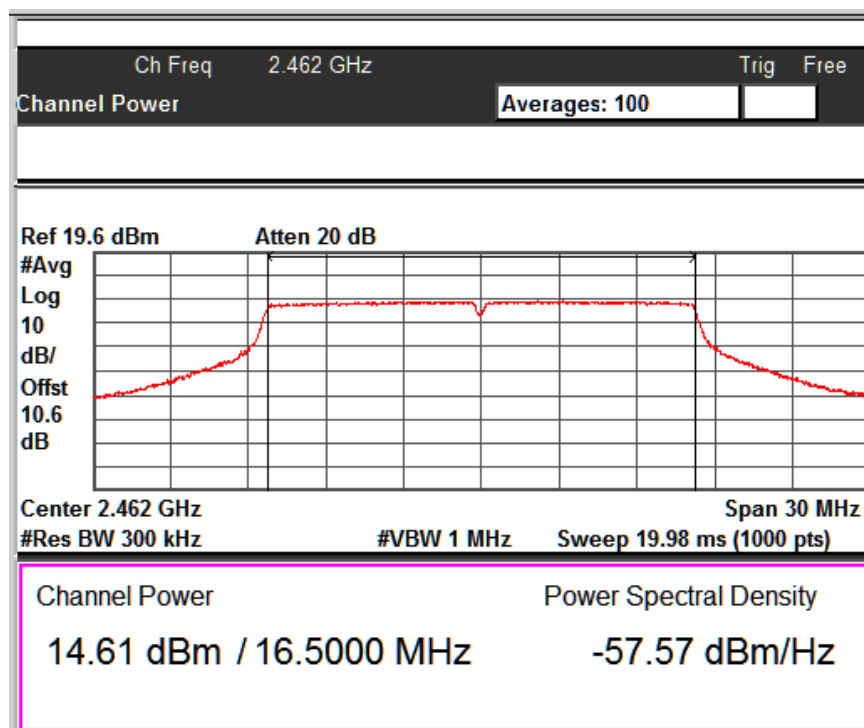
Data rate: 6 Mbps

Channel Frequency: 2412 MHz



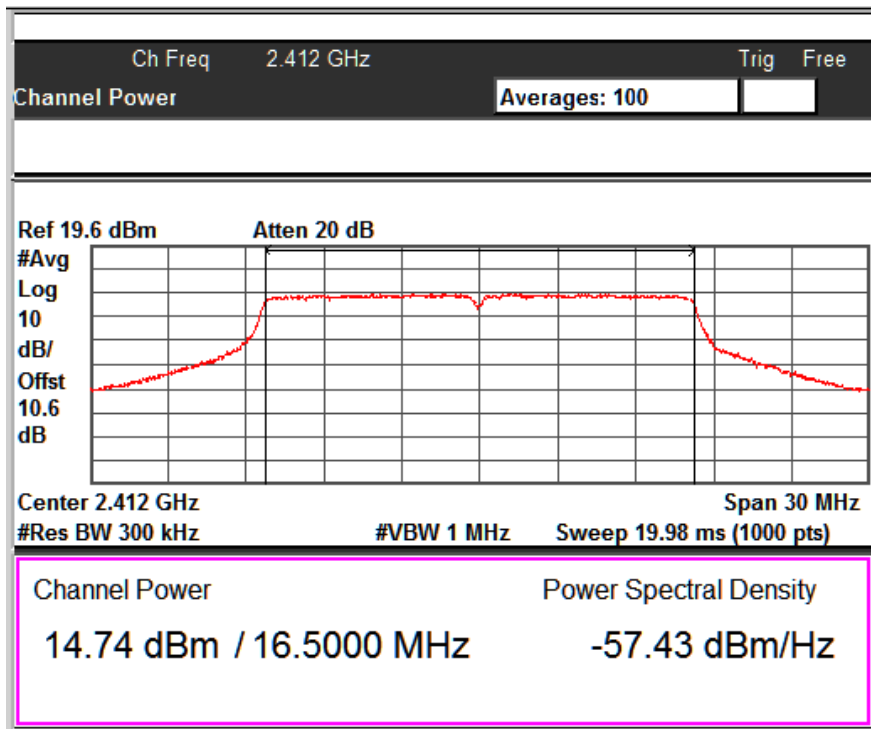
Data rate: 6 Mbps

Channel Frequency: 2437 MHz



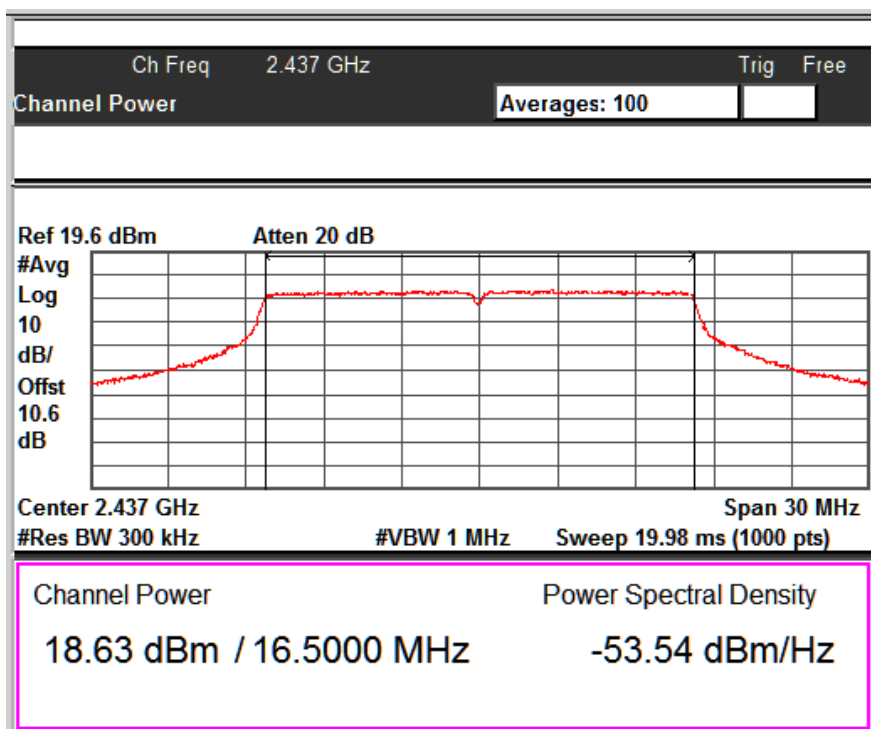
Data rate: 6 Mbps

Channel Frequency: 2462 MHz



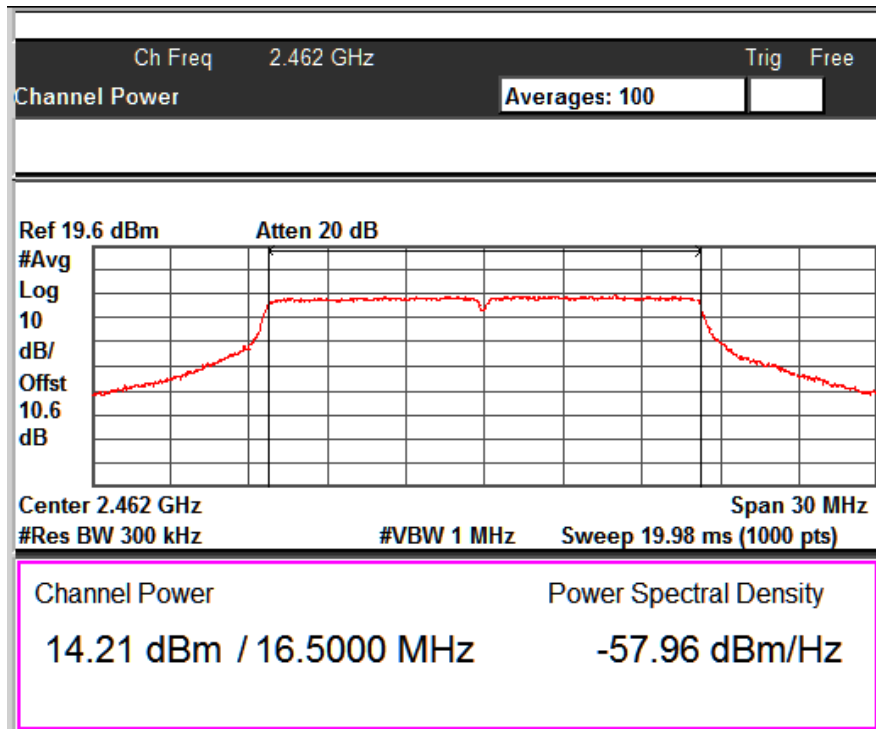
Data rate: 24 Mbps

Channel Frequency: 2412 MHz



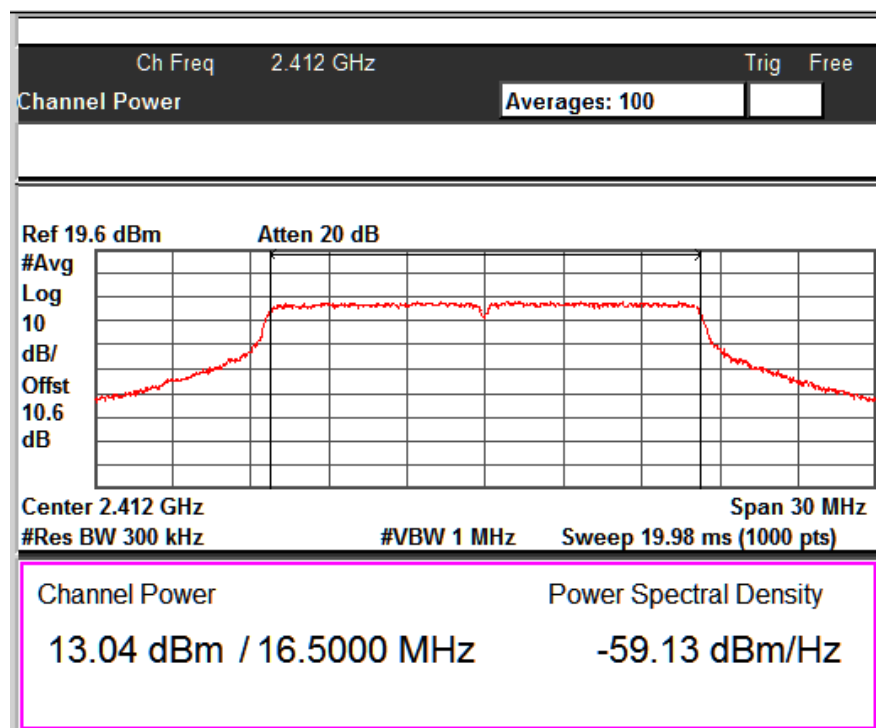
Data rate: 24 Mbps

Channel Frequency: 2437 MHz



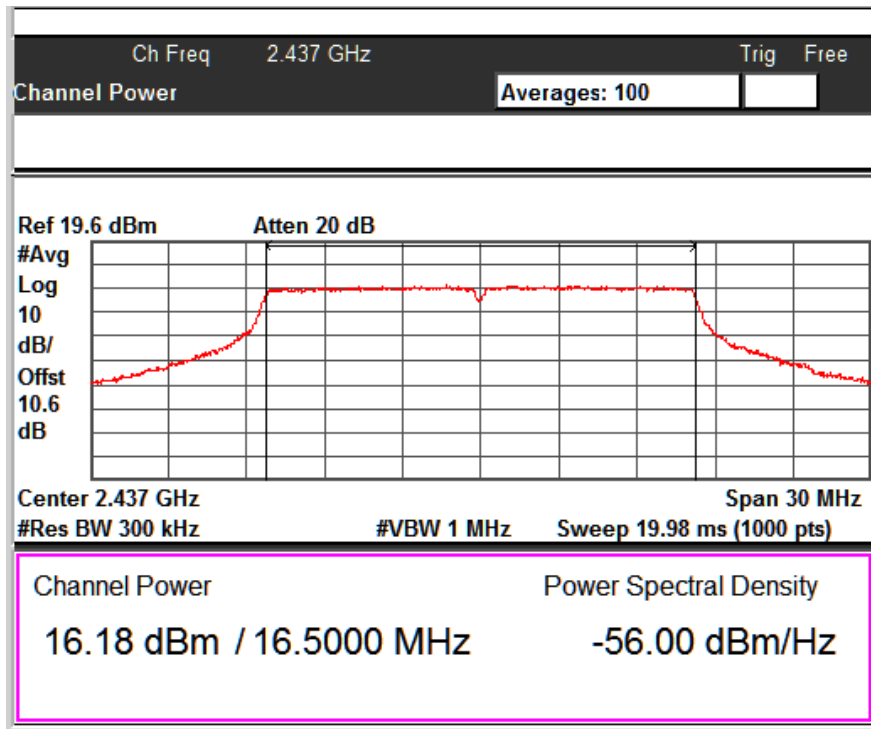
Data rate: 24 Mbps

Channel Frequency: 2462 MHz



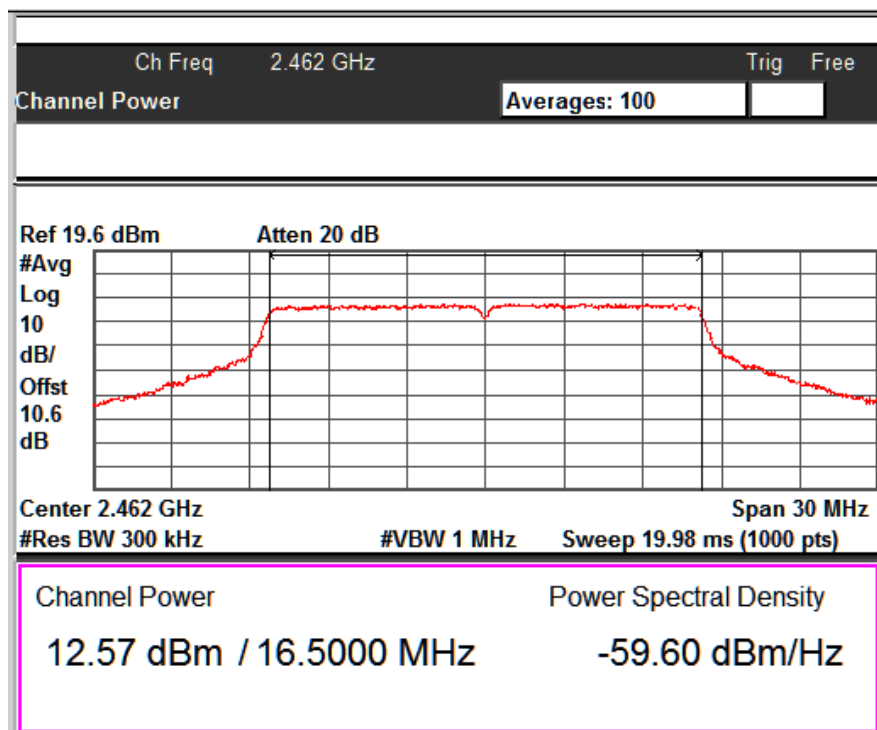
Data rate: 54 Mbps

Channel Frequency: 2412 MHz



Data rate: 54 Mbps

Channel Frequency: 2437 MHz



Data rate: 54 Mbps

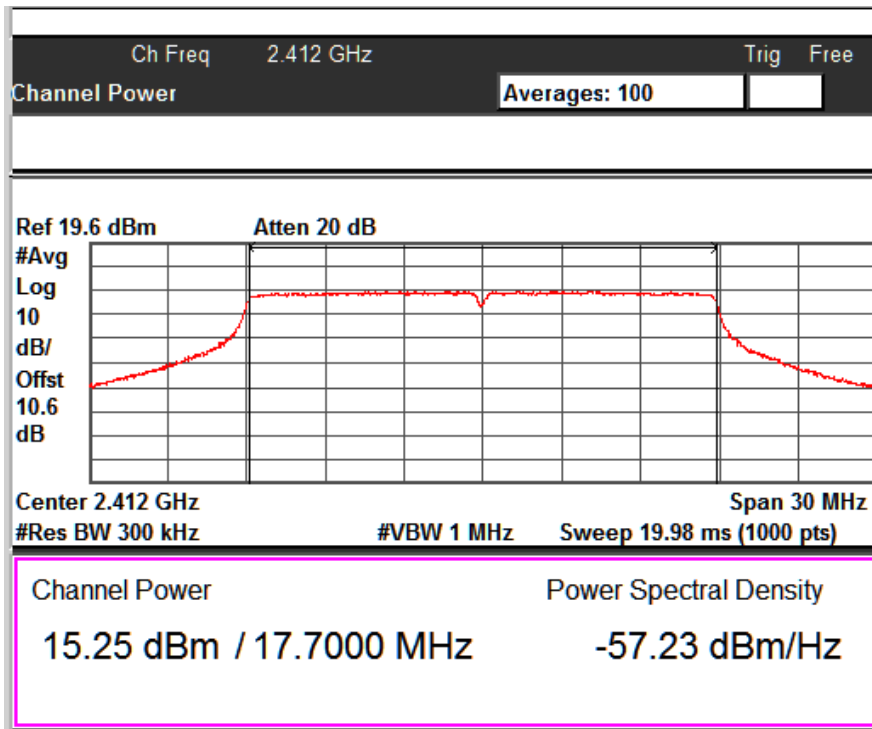
Channel Frequency: 2462 MHz

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N mode SISO 20MHz Channel Bandwidth:

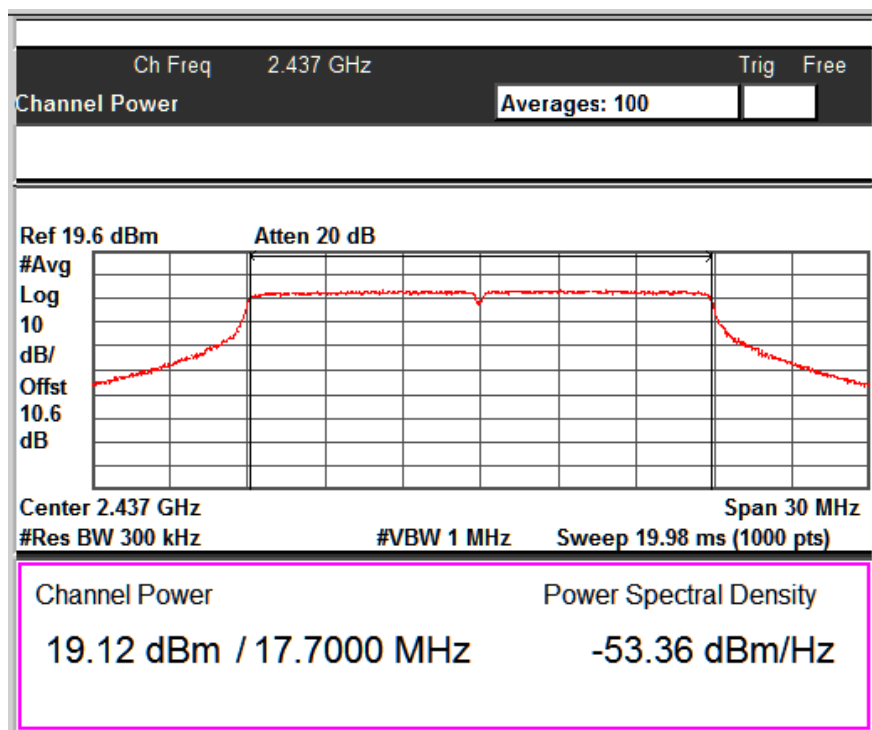
Note: Test was performed on both the transmit chains and worst case results were from chain 0 and the respective results has been reported.

802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Total Power (dBm)	Limit (dBm)	Margin (dB)
n	MCS 0	2412.00	15.25	30.00	-14.75
		2437.00	19.12	30.00	-10.88
		2462.00	14.68	30.00	-15.32
	MCS 4	2412.00	15.25	30.00	-14.75
		2437.00	19.11	30.00	-10.89
		2462.00	14.67	30.00	-15.33
	MCS 7	2412.00	13.19	30.00	-16.81
		2437.00	17.12	30.00	-12.88
		2462.00	13.60	30.00	-16.4



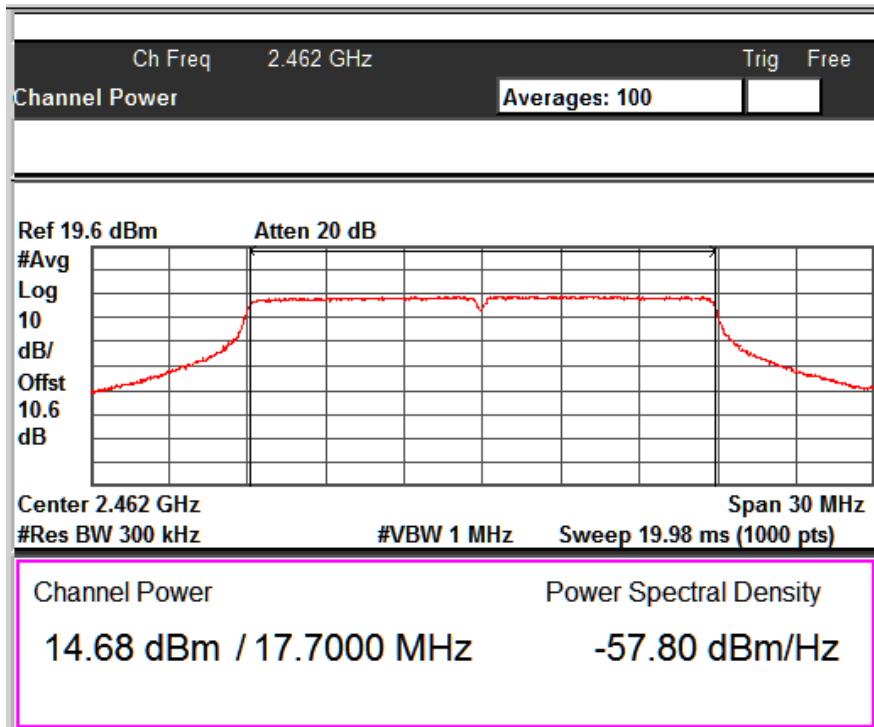
Data Rate: MCS0

Channel Frequency: 2412 MHz



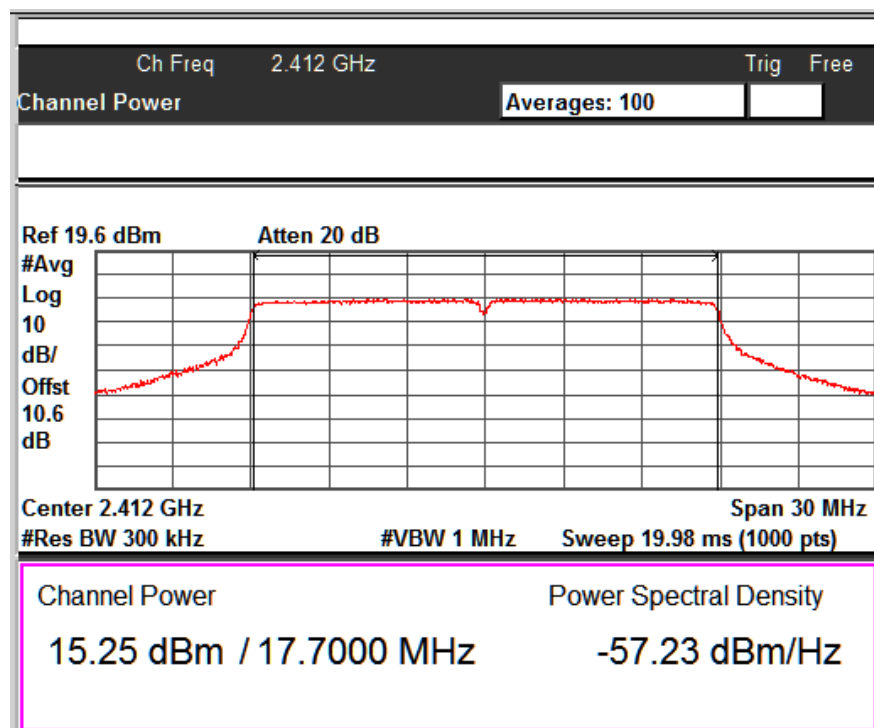
Data Rate: MCS0

Channel Frequency: 2437 MHz



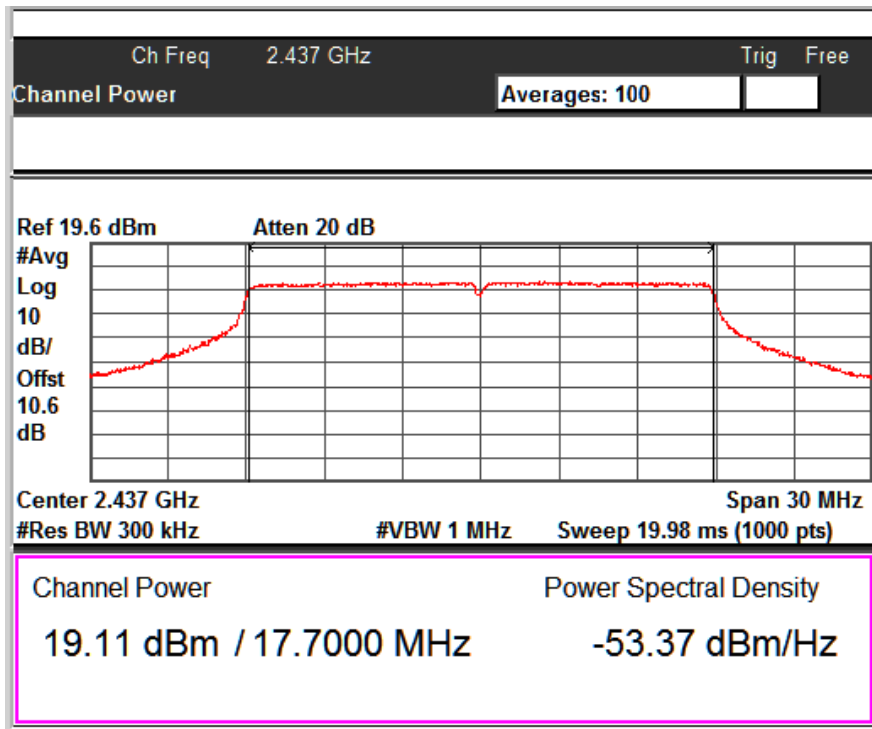
Data Rate: MCS0

Channel Frequency: 2462 MHz



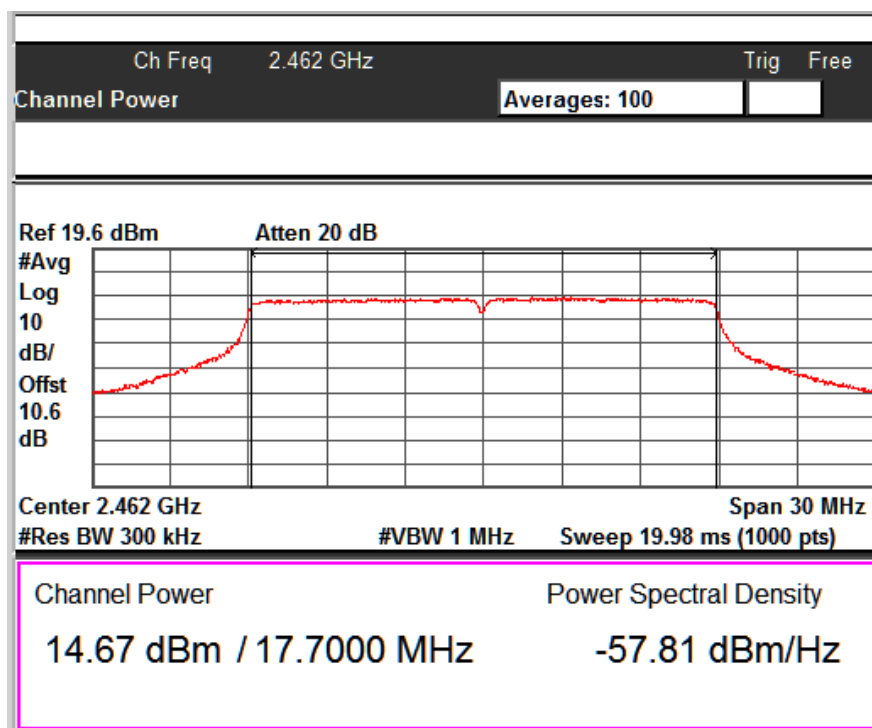
Data Rate: MCS4

Channel Frequency: 2412 MHz



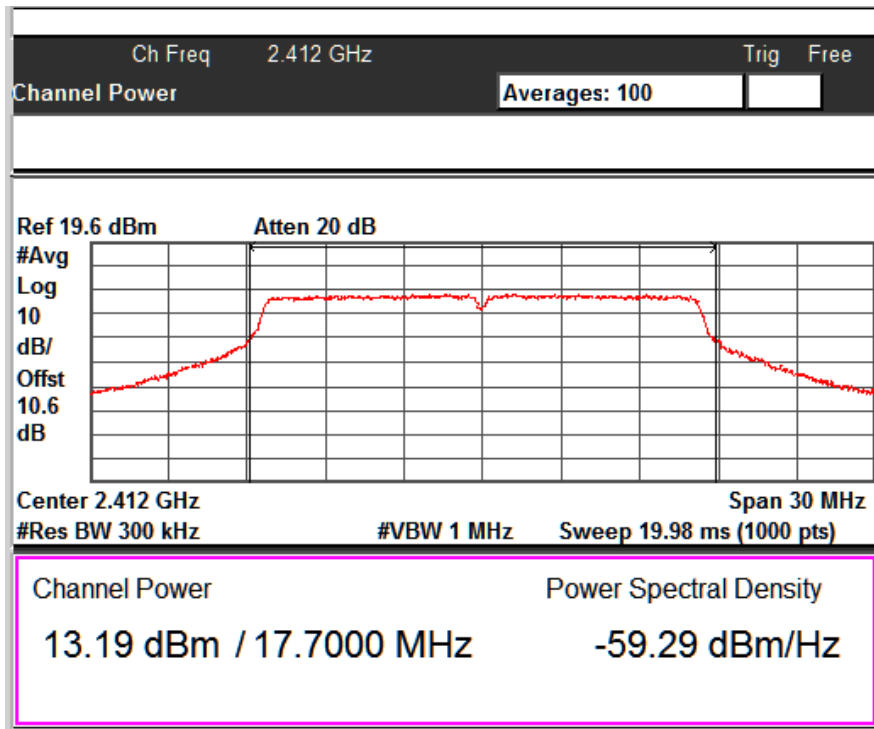
Data Rate: MCS4

Channel Frequency: 2437 MHz



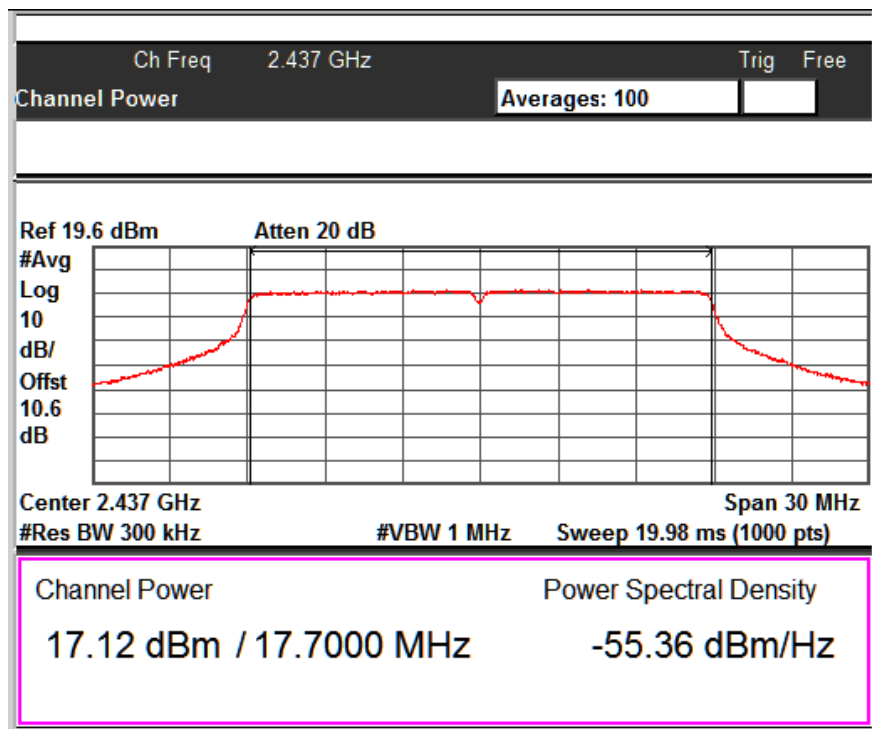
Data Rate: MCS4

Channel Frequency: 2462 MHz



Data Rate: MCS7

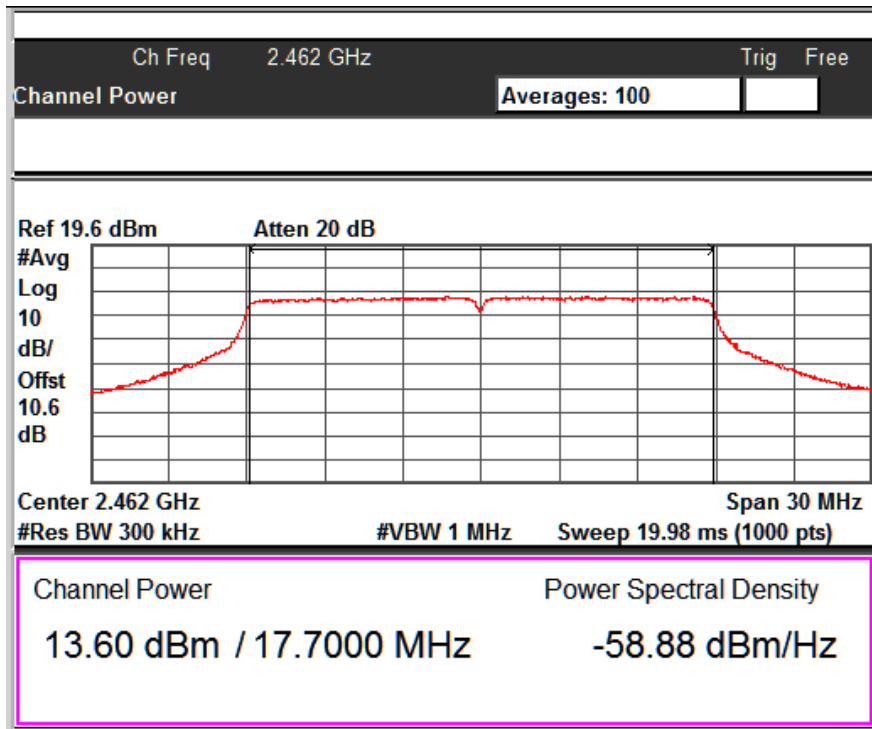
Channel Frequency: 2412 MHz



Data Rate: MCS7

Channel Frequency: 2437 MHz

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Data Rate: MCS7

Channel Frequency: 2462 MHz

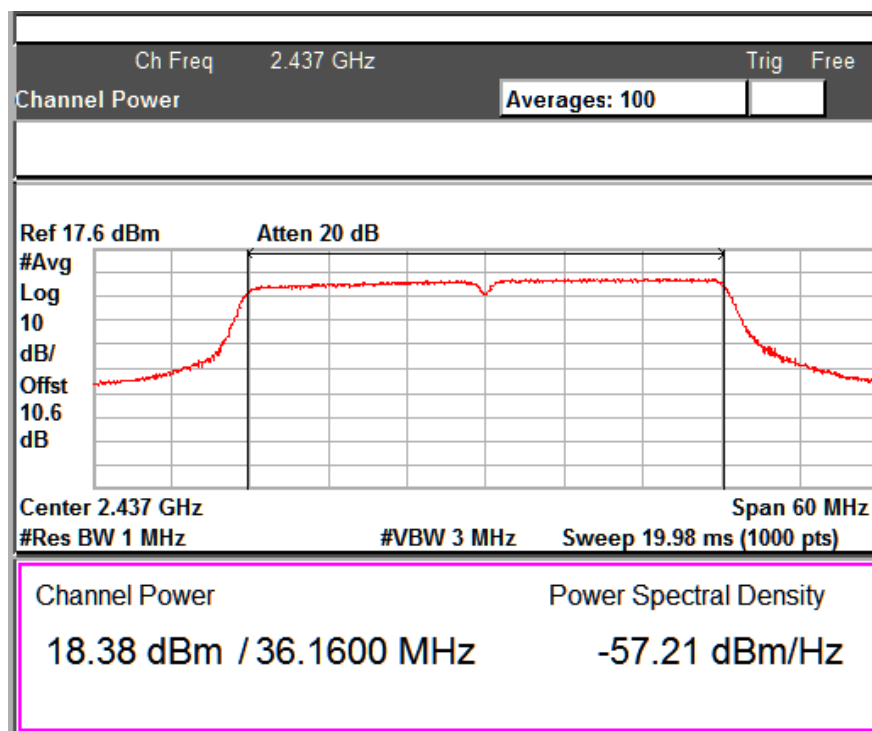
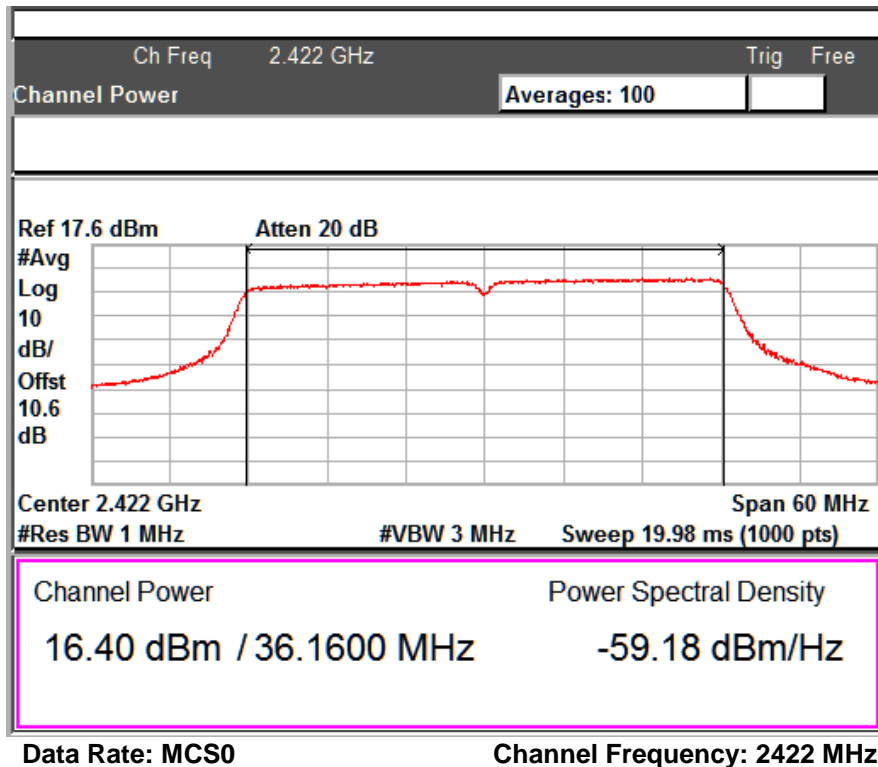
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N mode SISO 40MHz Channel Bandwidth:

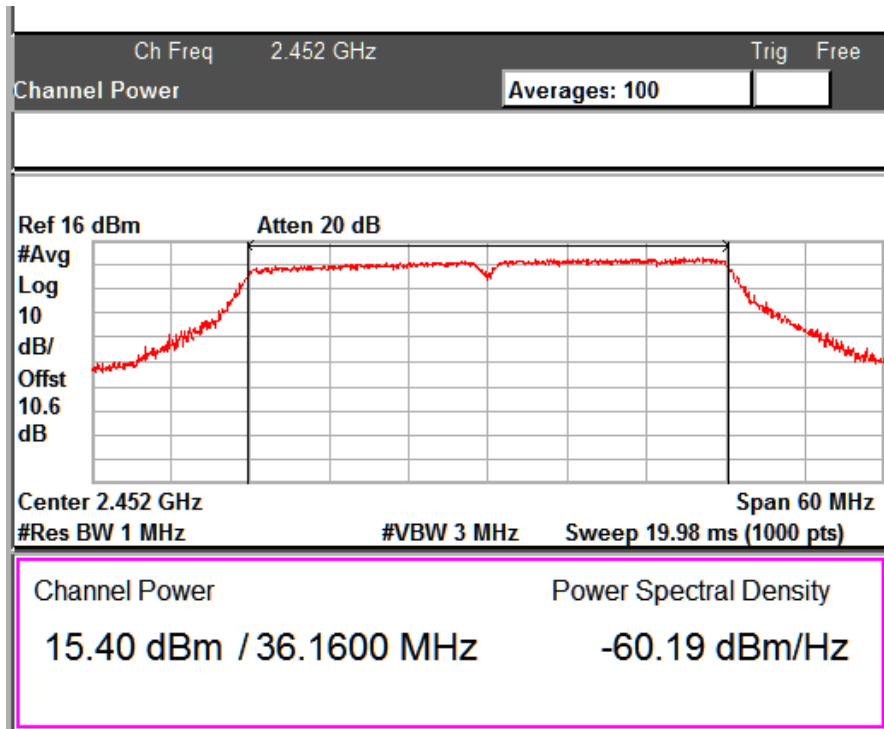
Note: Test was performed on both the transmit chains and worst case results were from chain 0 and the respective results has been reported.

802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Total Power (dBm)	Limit (dBm)	Margin (dB)
N	MCS 0	2422.00	16.40	30.00	-13.6
		2437.00	18.38	30.00	-11.62
		2452.00	15.40	30.00	-14.60
	MCS 4	2422.00	16.36	30.00	-13.64
		2437.00	17.25	30.00	-12.75
		2452.00	15.36	30.00	-14.64
	MCS 7	2422.00	15.19	30.00	-14.81
		2437.00	15.29	30.00	-14.71
		2452.00	14.35	30.00	-15.65

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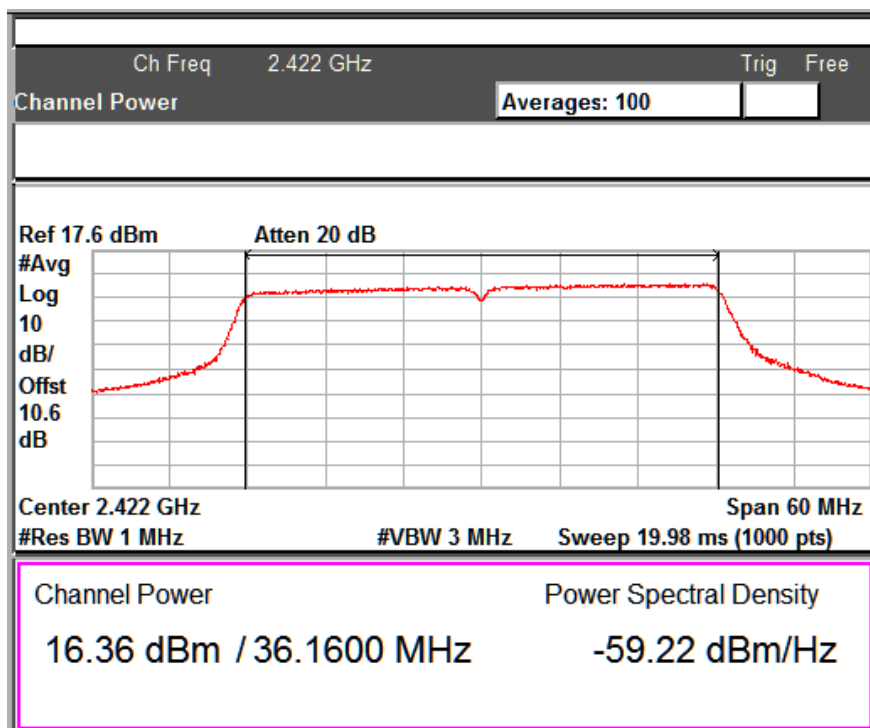


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Data Rate: MCS0

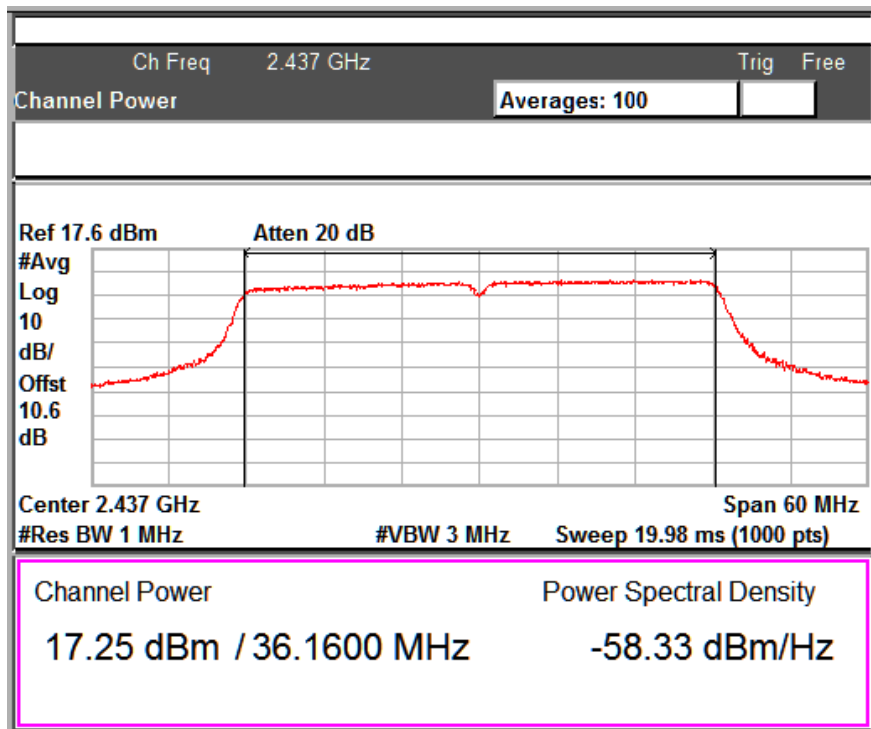
Channel Frequency: 2452 MHz



Data Rate: MCS4

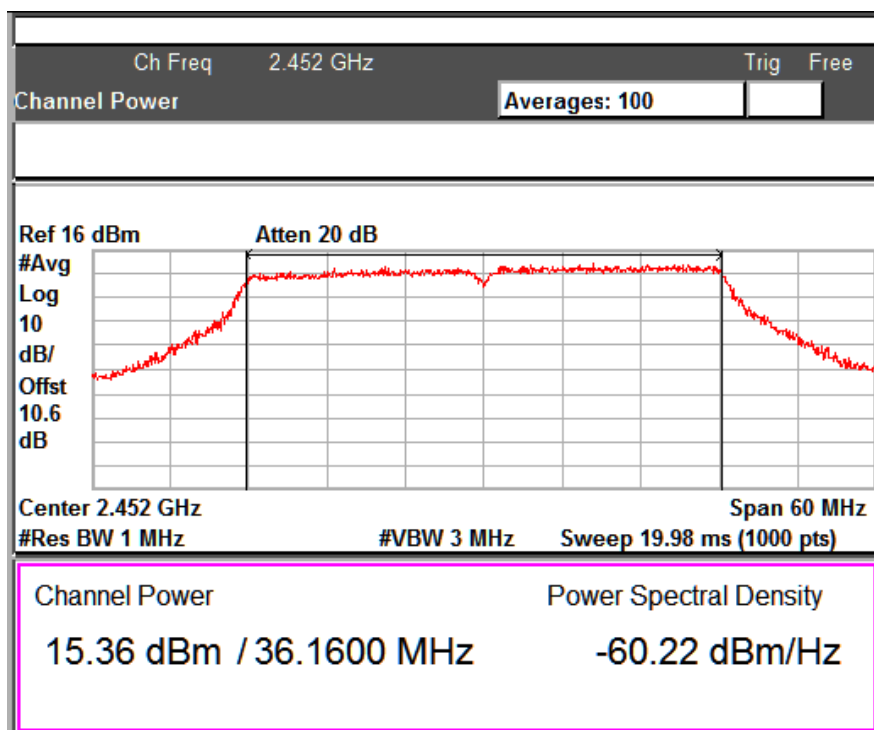
Channel Frequency: 2422 MHz

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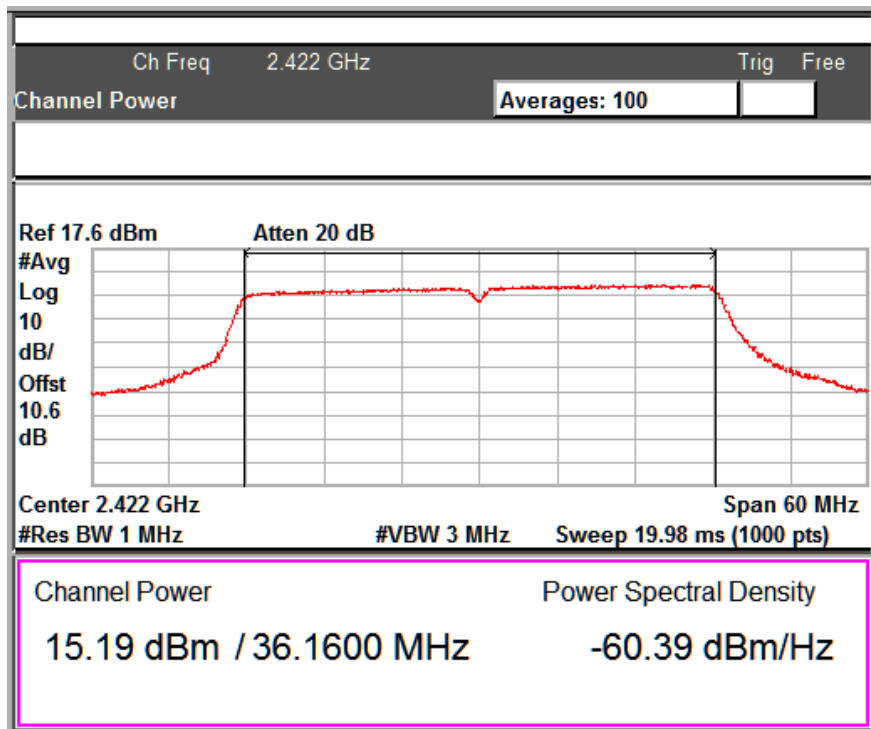
Data Rate: MCS4

Channel Frequency: 2437 MHz



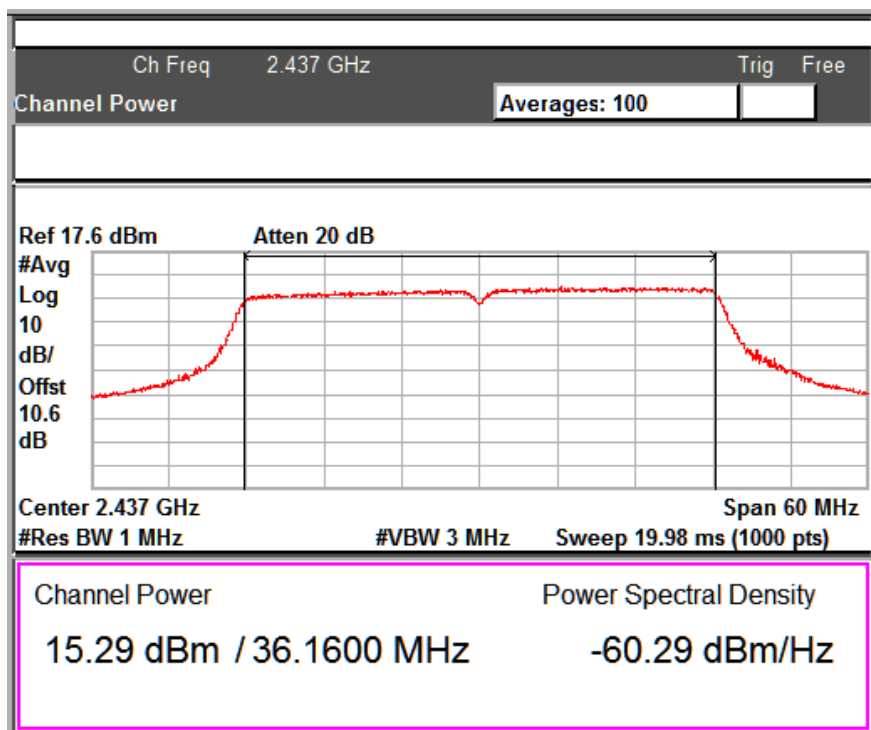
Data Rate: MCS4

Channel Frequency: 2452 MHz



Data Rate: MCS7

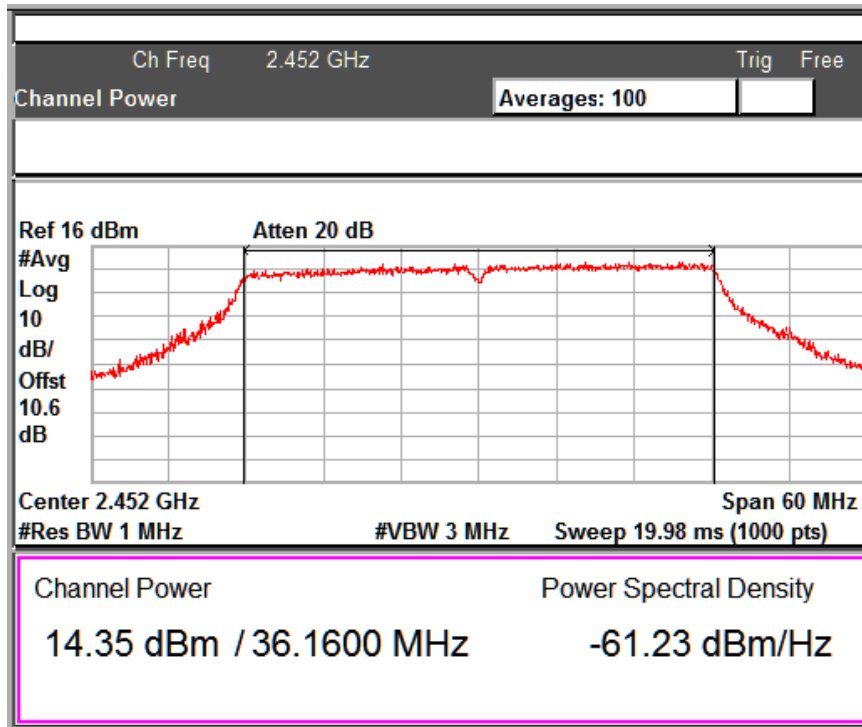
Channel Frequency: 2422 MHz



Data Rate: MCS7

Channel Frequency: 2437 MHz

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Data Rate: MCS7

Channel Frequency: 2452 MHz

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N mode MIMO 20MHz Channel Bandwidth:

Note: Since it has Unequal antenna gains, with equal transmit powers and classified as correlated with each other, based on that the directional gain is calculated below.

Directional gain = $10 \log[(10G_1/20 + 10G_2/20 + \dots + 10G_N/20)^2 / NANT]$ dBi [Note the “20”s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

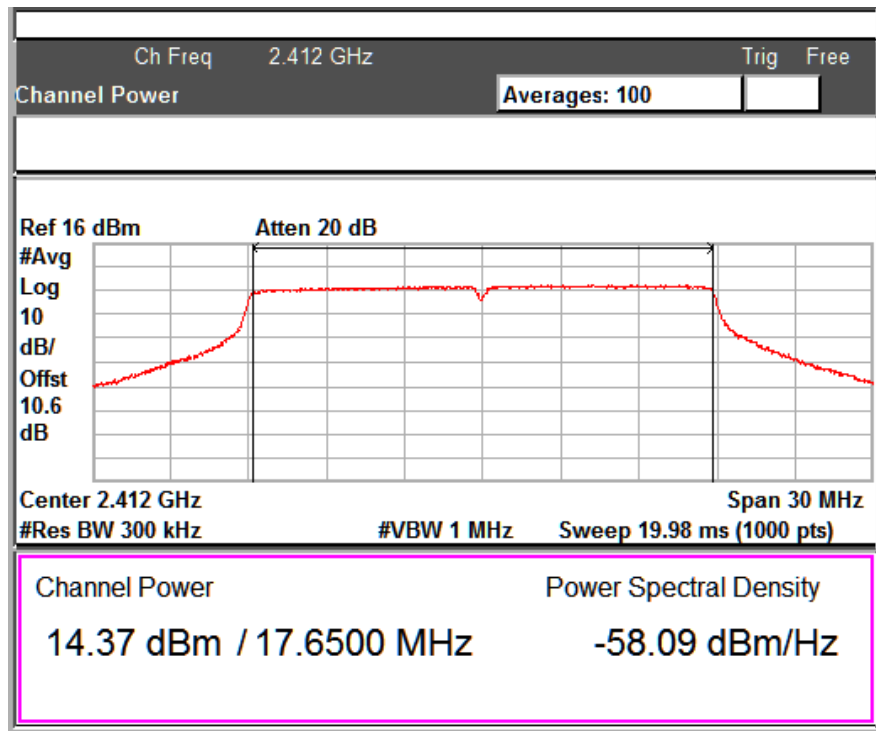
Directional gain = $10 * \text{LOG}((10^{(4.61/20)} + 10^{(3.52/20)})^2 / 2) = 7.09 \text{dBi}$

Since the antenna gain is more than 6dBi, the power limit has been reduced accordingly.

$$P_{\text{out}} = P_{\text{limit}} - (G_{\text{tx}} - 6) = 30 - (7.09 - 6) = 28.91 \text{dBm}$$

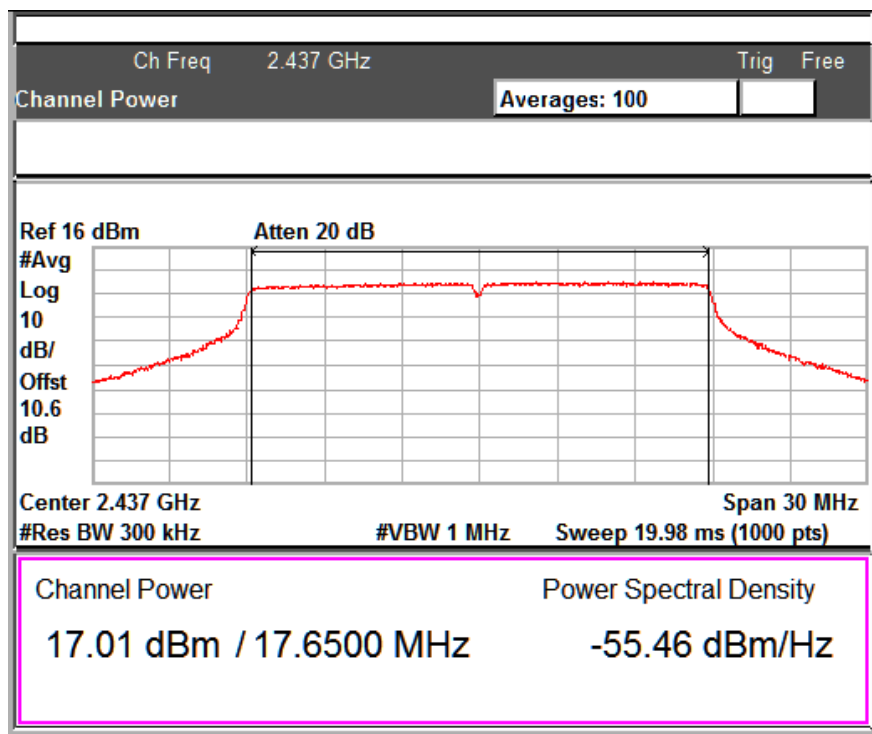
802.11 Protocol	Data Rate (Mbps)	Frequency (MHz)	CH 0 Output power (dBm)	CH 0 Output power (mW)	CH 1 Output power (dBm)	CH 1 Output power (mW)	Final Power (mW)	Final Power (dBm)	Limit (dBm)	Margin (dB)
n	MCS 8	2412.00	14.37	27.35	10.77	11.93	39.28	15.94	28.91	-12.97
		2437.00	17.01	50.23	16.22	41.87	92.1	19.64	28.91	-9.27
		2462.00	13.36	21.67	08.67	7.36	29.03	14.63	28.91	-14.28
	MCS 11	2412.00	12.66	18.45	09.40	8.70	27.15	14.33	28.91	-14.58
		2437.00	17.15	51.88	16.42	43.85	95.73	19.81	28.91	-9.10
		2462.00	12.73	18.74	07.92	6.19	24.93	13.97	28.91	-14.94
	MCS 15	2412.00	12.62	18.28	09.13	8.18	26.46	14.22	28.91	-14.69
		2437.00	15.04	31.91	10.67	11.66	43.57	16.39	28.91	-12.52
		2462.00	12.39	17.33	07.55	5.68	23.01	13.62	28.91	-15.29

www.tuv.com
Chain 0



Data Rate: MCS8

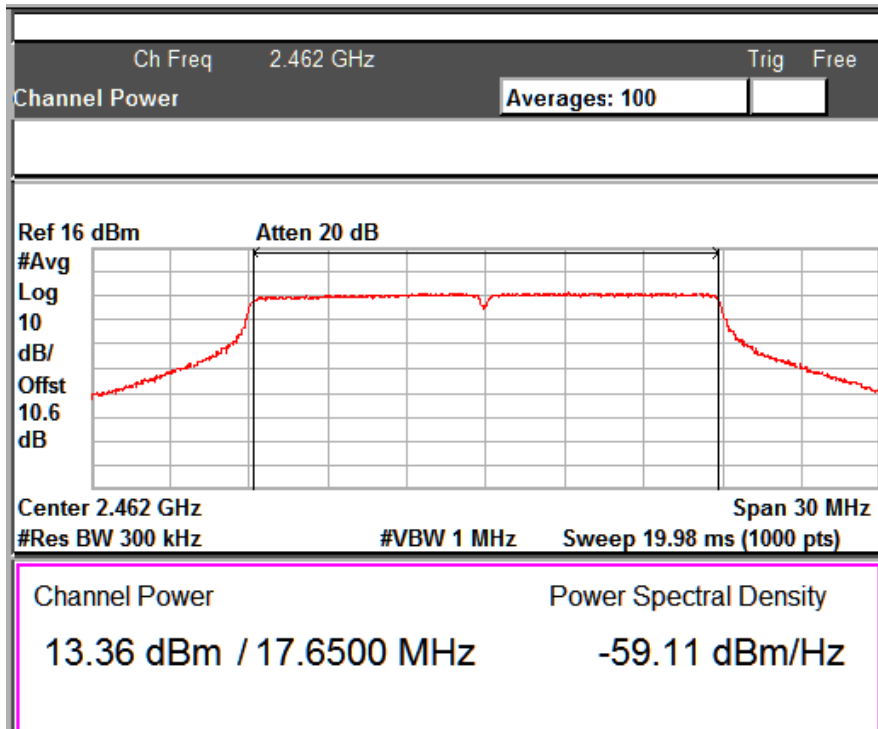
Channel Frequency: 2412 MHz



Data Rate: MCS8

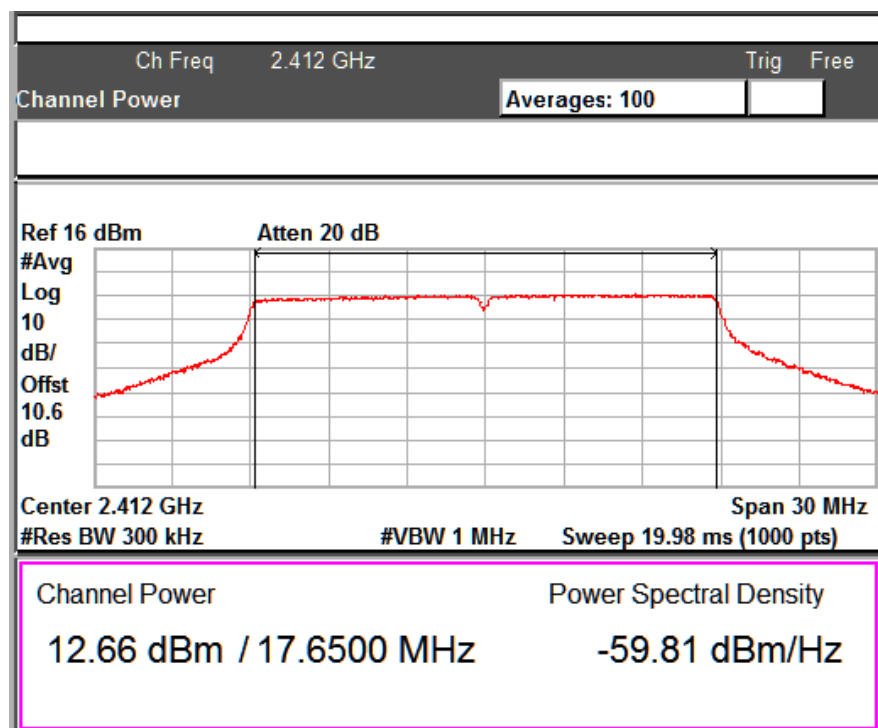
Channel Frequency: 2437 MHz

www.tuv.com



Data Rate: MCS8

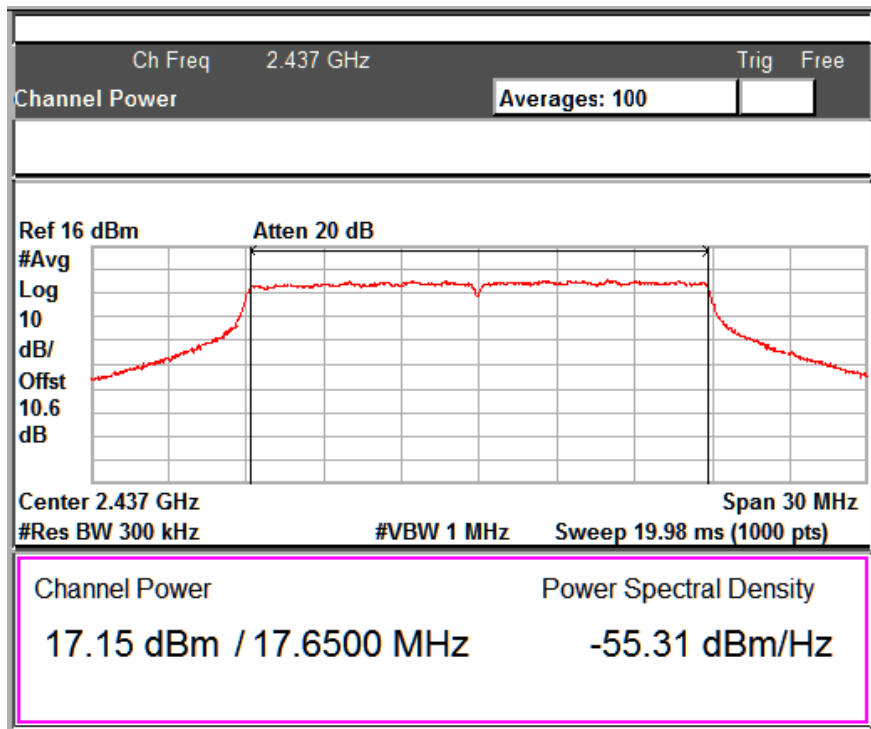
Channel Frequency: 2462 MHz



Data Rate: MCS11

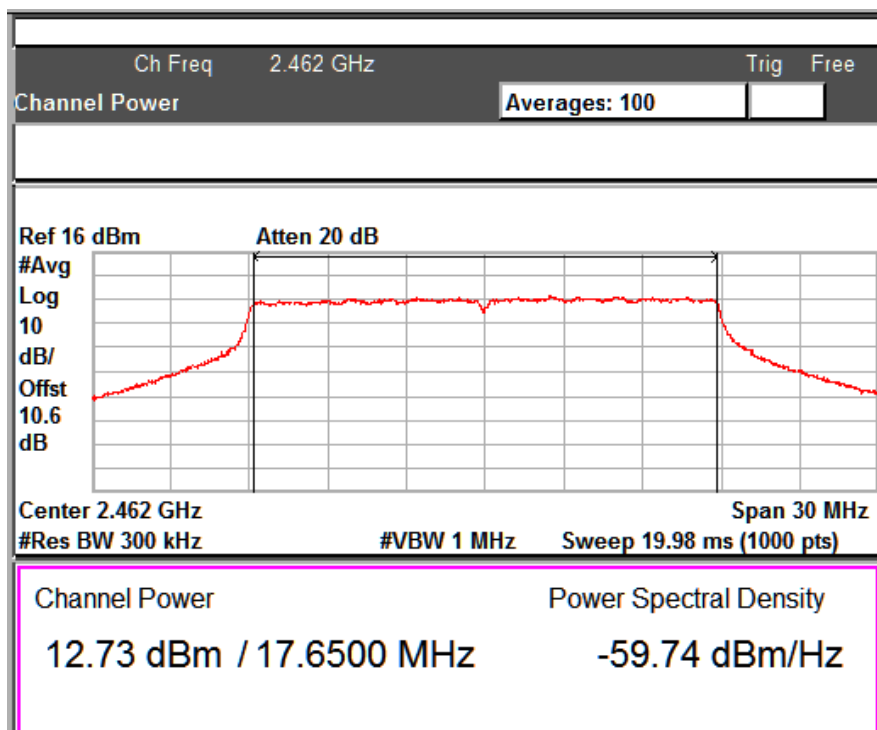
Channel Frequency: 2412 MHz

www.tuv.com



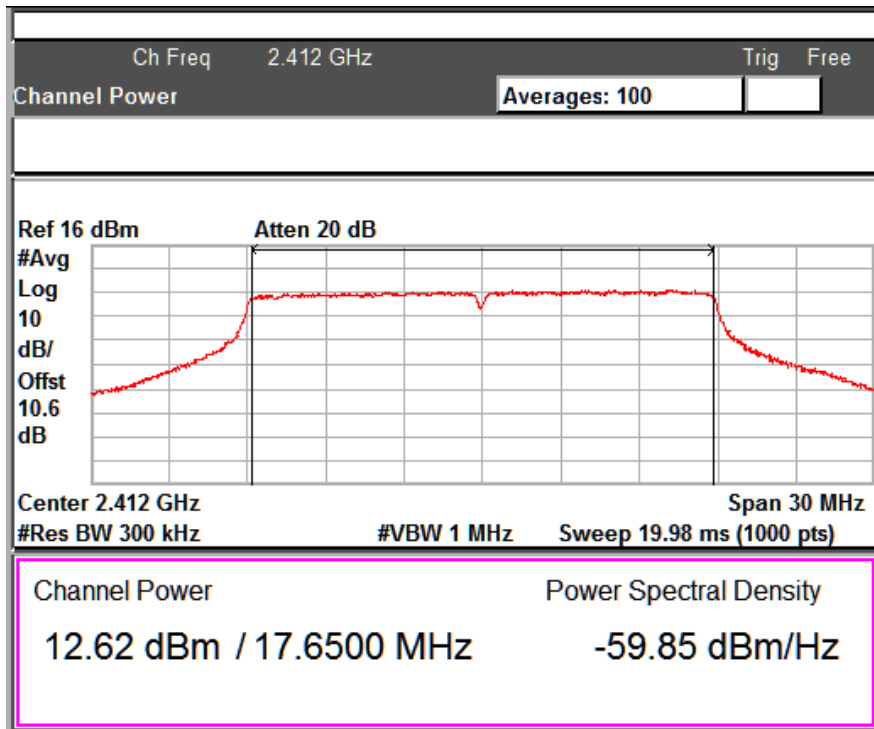
Data Rate: MCS11

Channel Frequency: 2437 MHz



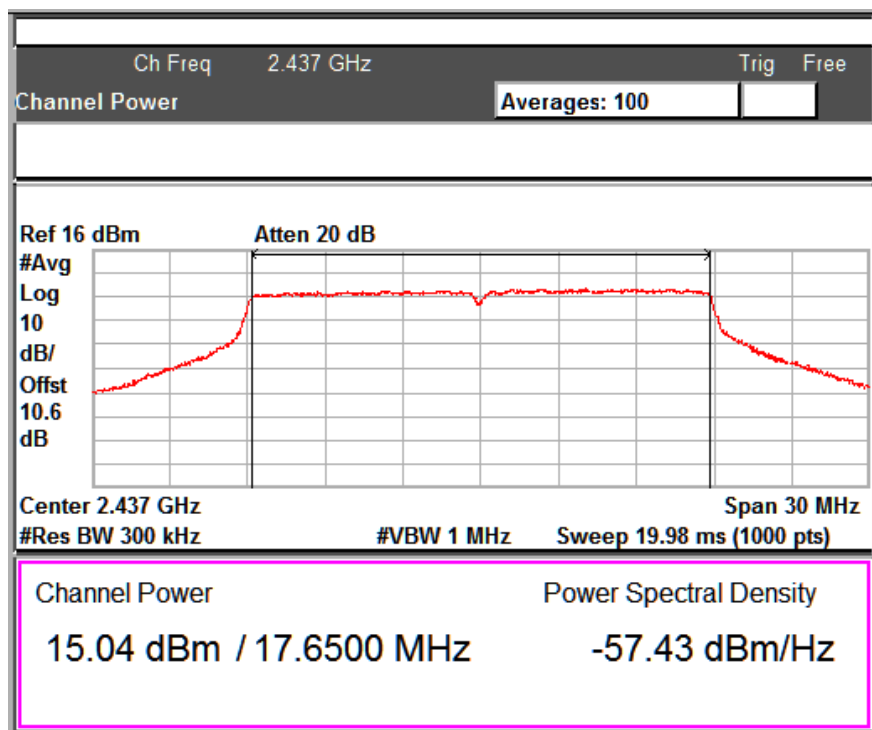
Data Rate: MCS11

Channel Frequency: 2462 MHz



Data Rate: MCS15

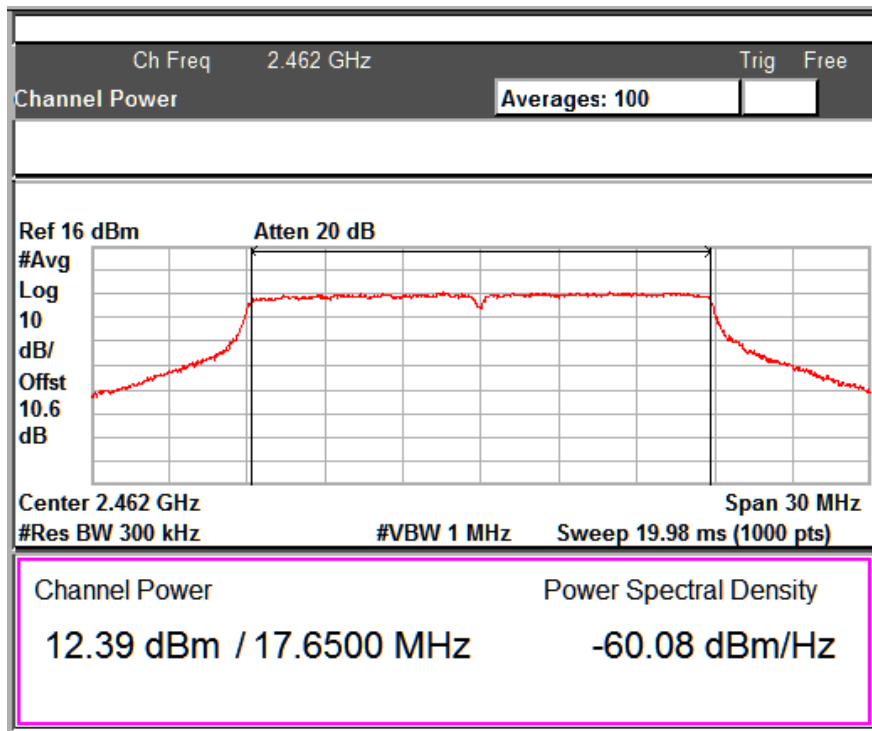
Channel Frequency: 2412 MHz



Data Rate: MCS15

Channel Frequency: 2437 MHz

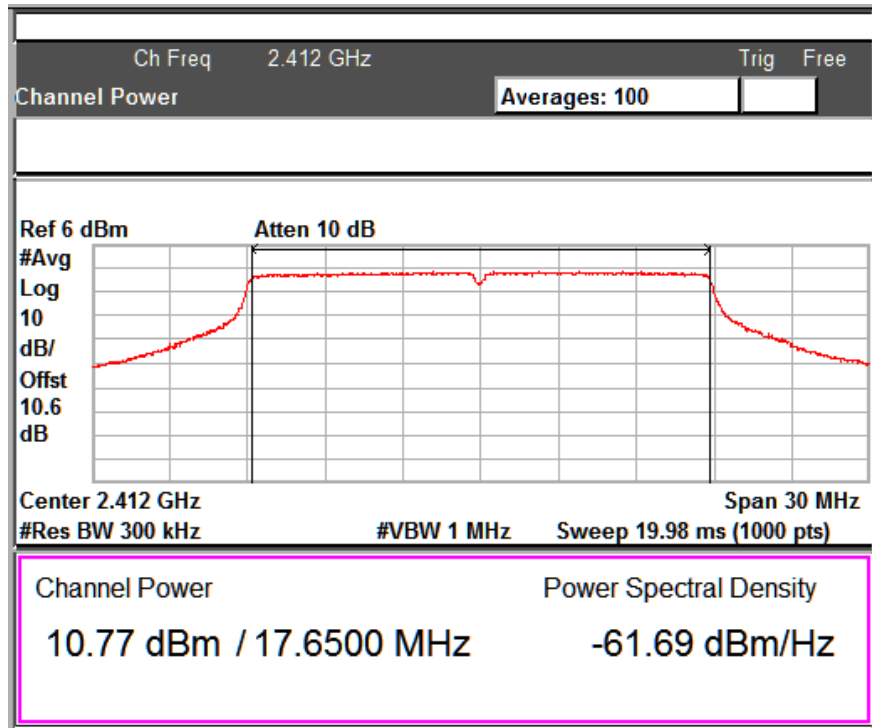
www.tuv.com



Data Rate: MCS15

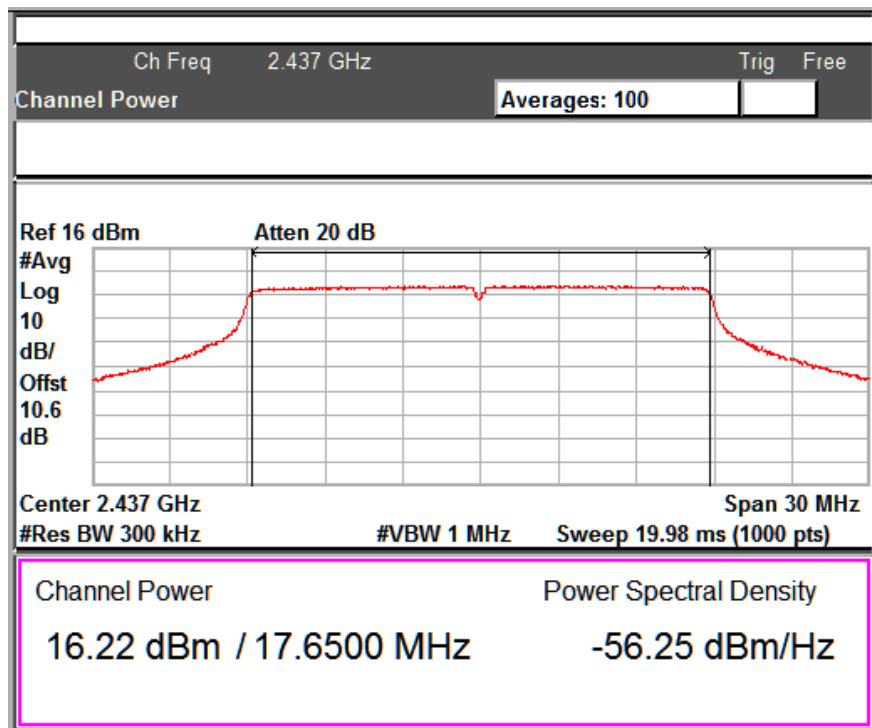
Channel Frequency: 2462 MHz

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Chain 1



Data Rate: MCS8

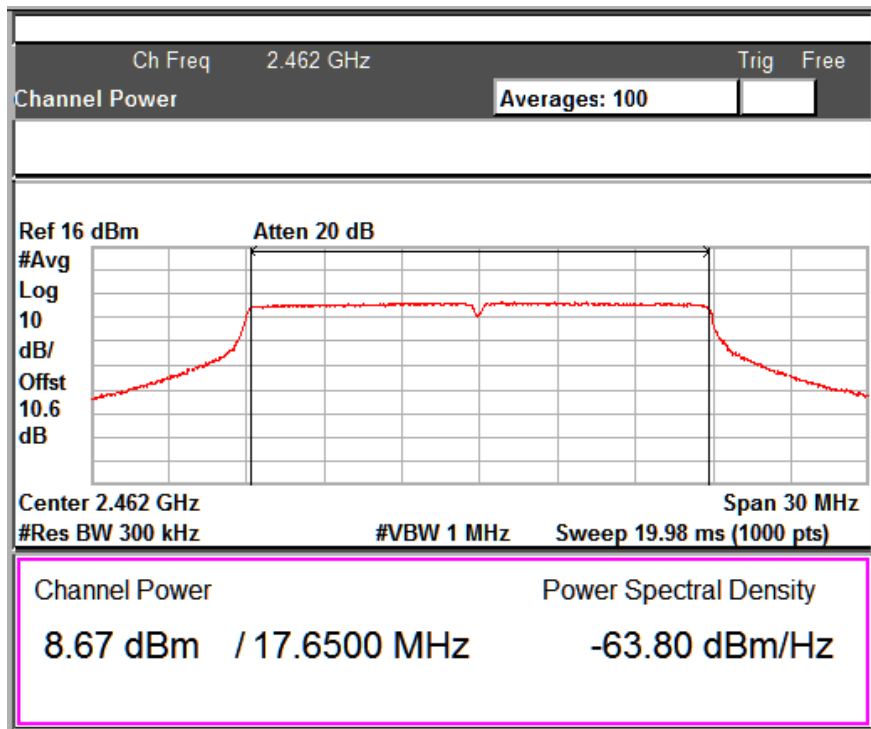
Channel Frequency: 2412 MHz



Data Rate: MCS8

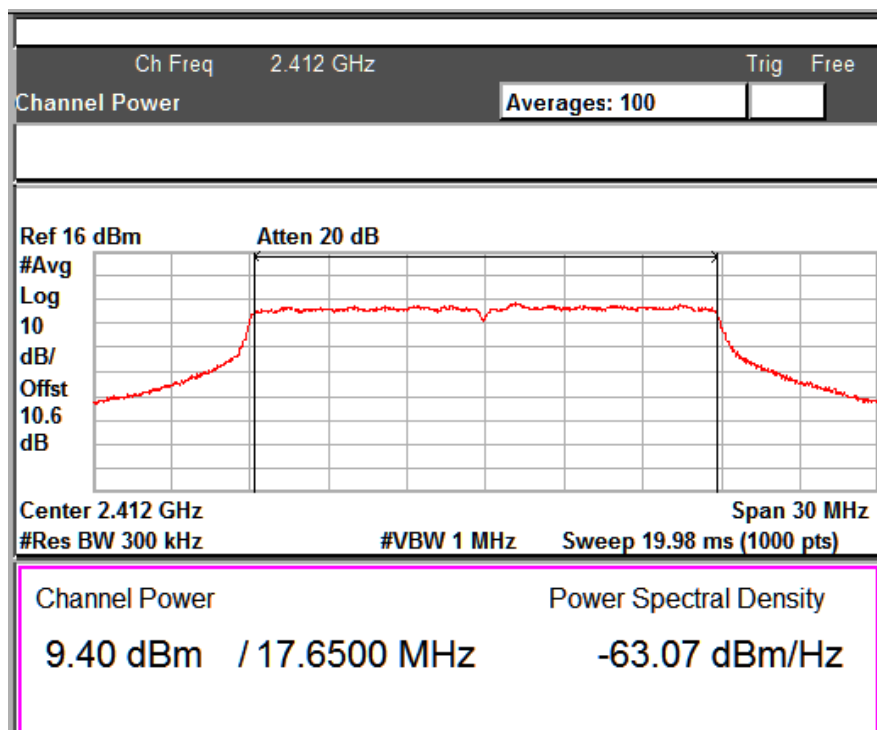
Channel Frequency: 2437 MHz

www.tuv.com



Data Rate: MCS8

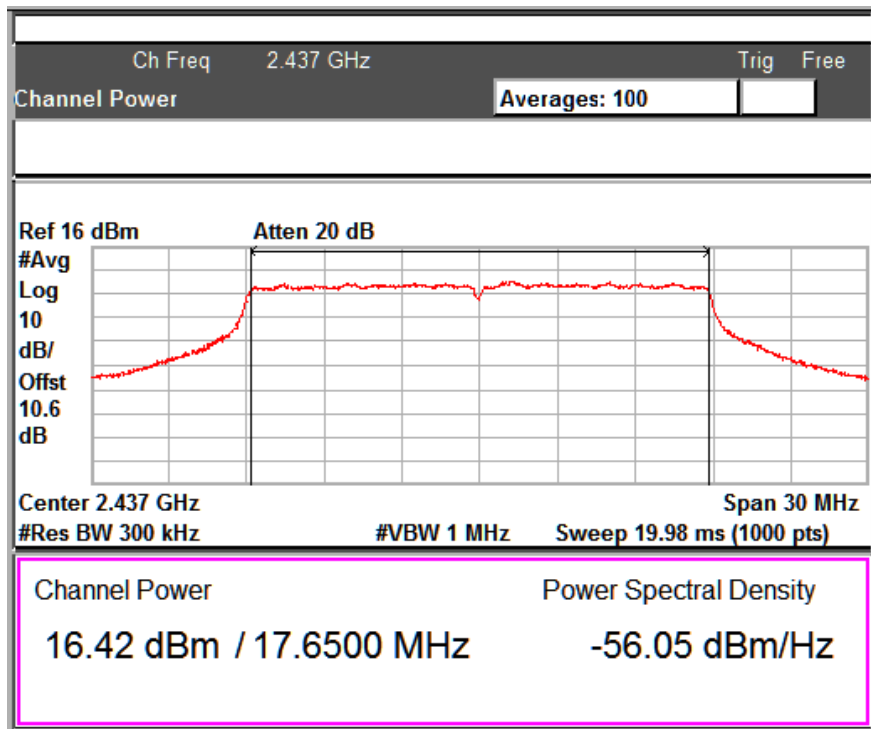
Channel Frequency: 2462 MHz



Data Rate: MCS11

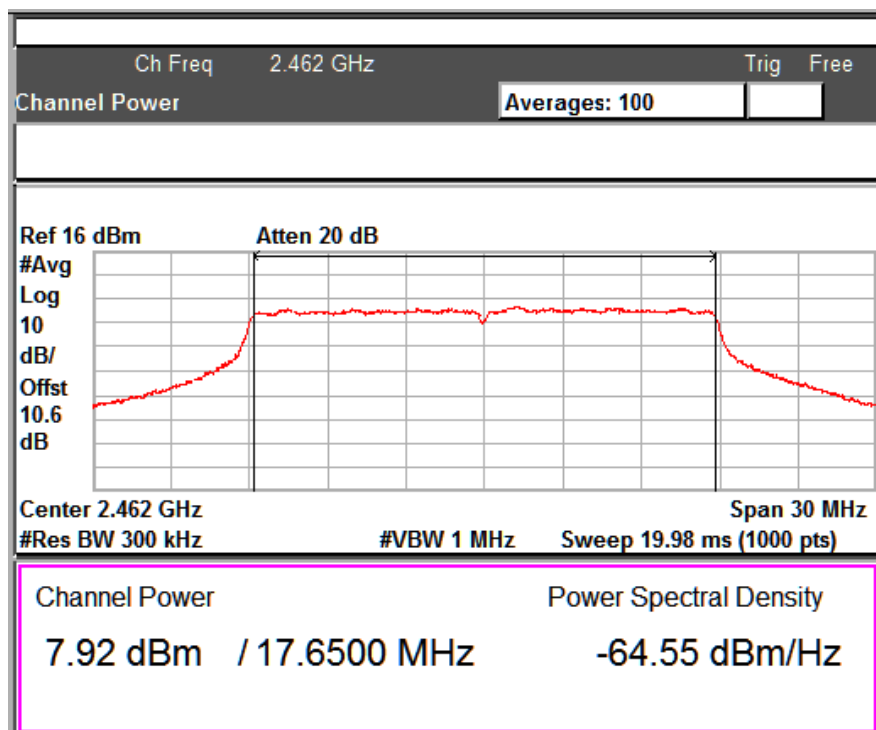
Channel Frequency: 2412 MHz

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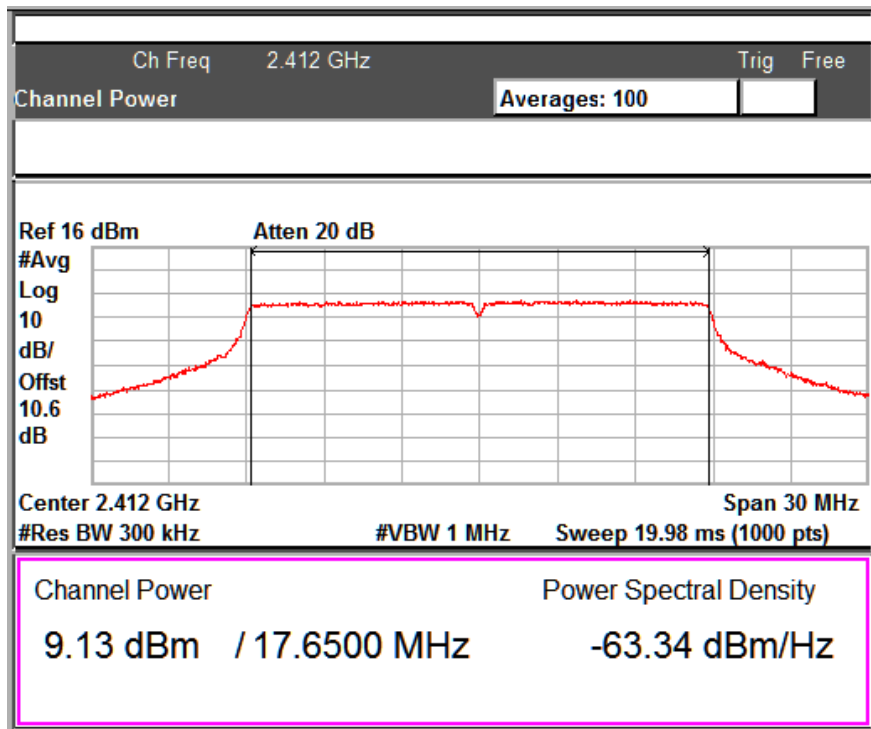
Data Rate: MCS11

Channel Frequency: 2437 MHz



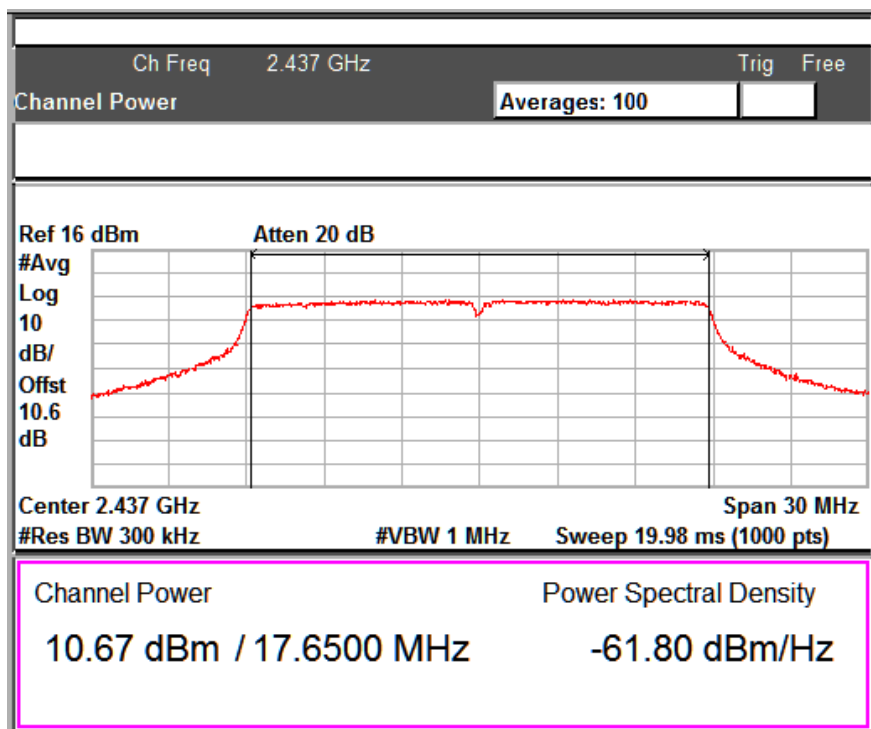
Data Rate: MCS11

Channel Frequency: 2462 MHz



Data Rate: MCS15

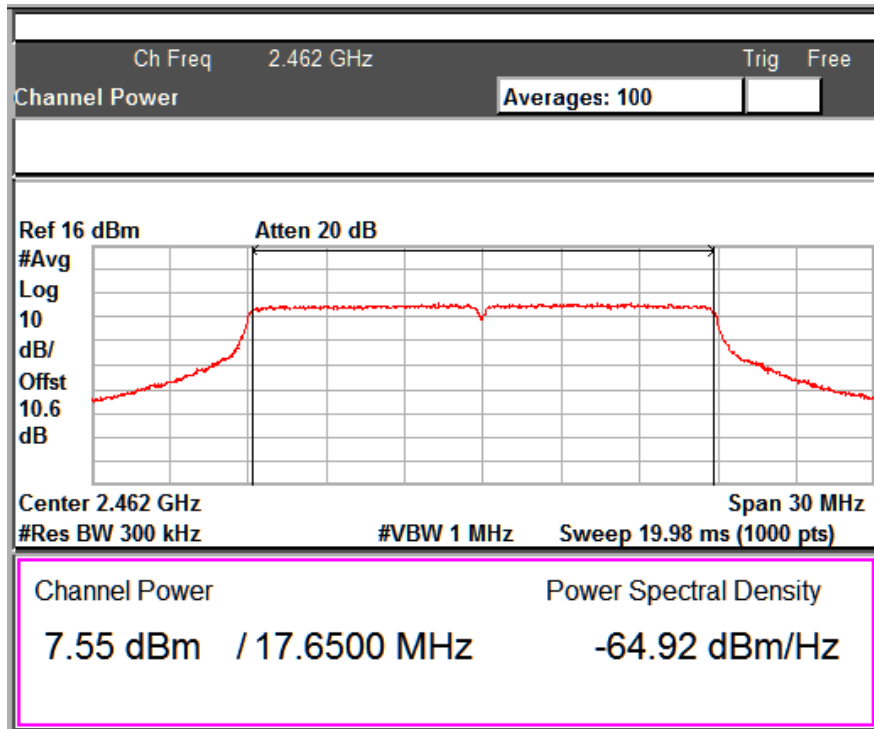
Channel Frequency: 2412 MHz



Data Rate: MCS15

Channel Frequency: 2437 MHz

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Data Rate: MCS15

Channel Frequency: 2462 MHz

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N mode MIMO 40MHz Channel Bandwidth:

Note: Since it has Unequal antenna gains, with equal transmit powers and classified as correlated with each other, based on that the directional gain is calculated below.

Directional gain = $10 \log[(10G_1/20 + 10G_2/20 + \dots + 10G_N/20)^2 / NANT]$ dBi [Note the “20”s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

Directional gain = $10 * \text{LOG}((10^{(4.61/20)} + 10^{(3.52/20)})^2 / 2) = 7.09 \text{dBi}$

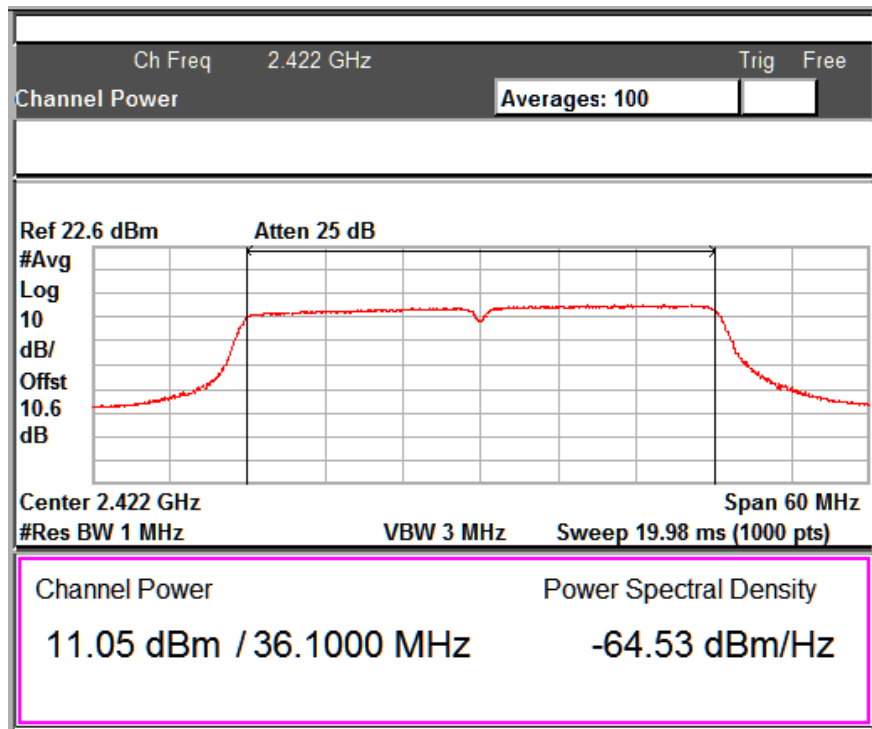
Since the antenna gain is more than 6dBi, the power limit has been reduced accordingly.

$$P_{\text{out}} = P_{\text{limit}} - (G_{\text{tx}} - 6) = 30 - (7.09 - 6) = 28.91 \text{dBm}$$

802.11 Protocol	Data Rate (Mbps)	Frequency (MHz)	CH 0 Output power (dBm)	CH 0 Output power (mW)	CH 1 Output power (dBm)	CH 1 Output power (mW)	Final Power (mW)	Final Power (dBm)	Limit (dBm)	Margin (dB)
n	MCS 8	2422.00	11.05	12.73	7.77	5.98	18.71	12.72	28.91	-16.19
		2437.00	15.69	37.06	14.94	31.18	68.24	18.34	28.91	-10.57
		2452.00	13.59	22.85	8.81	7.60	30.45	14.83	28.91	-14.08
	MCS 11	2422.00	11.10	12.88	7.73	5.92	18.8	12.74	28.91	-16.17
		2437.00	15.74	37.49	14.92	31.04	68.53	18.36	28.91	-10.55
		2452.00	13.56	22.69	8.90	7.76	30.45	14.83	28.91	-14.08
	MCS 15	2422.00	10.68	11.69	7.40	5.49	17.18	12.35	28.91	-16.56
		2437.00	15.29	33.80	11.12	12.94	46.74	16.69	28.91	-12.22
		2452.00	13.10	20.41	8.43	6.96	27.37	14.37	28.91	-14.54

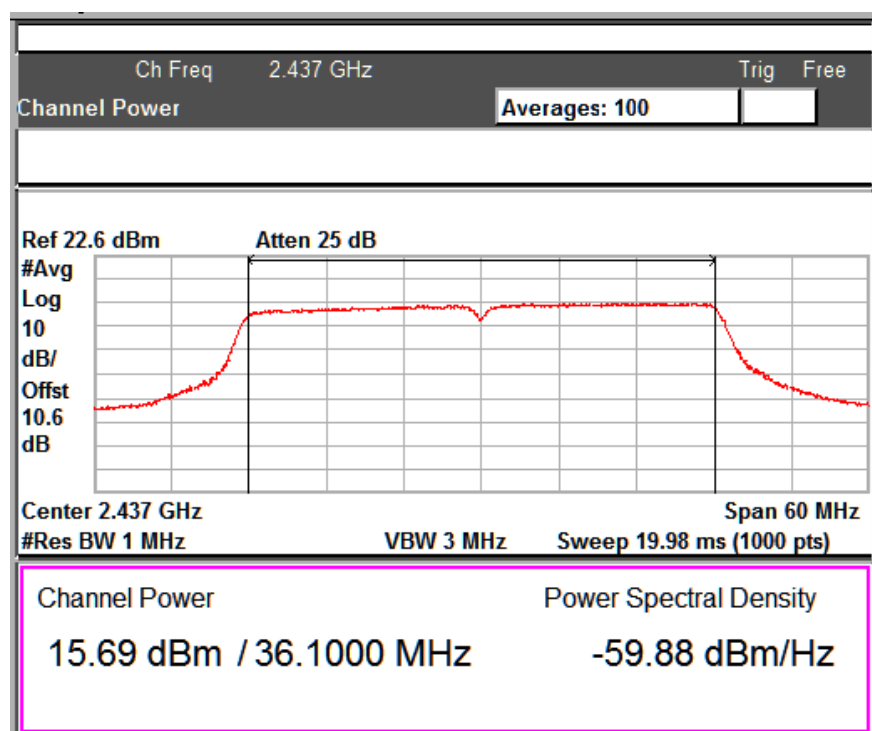
www.tuv.com

Chain 0



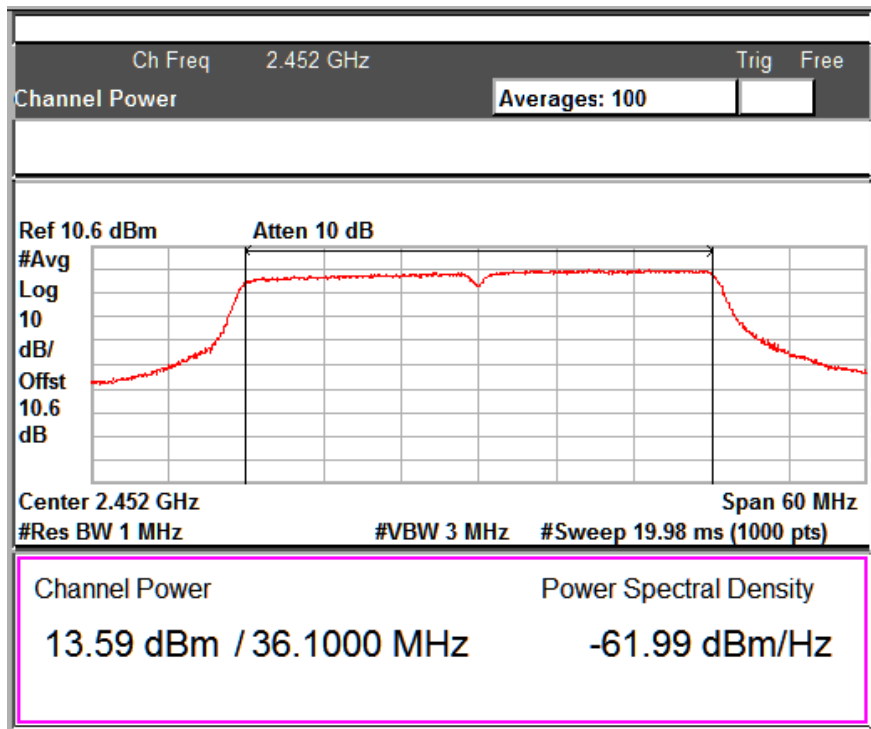
Data Rate: MCS8

Channel Frequency: 2422 MHz



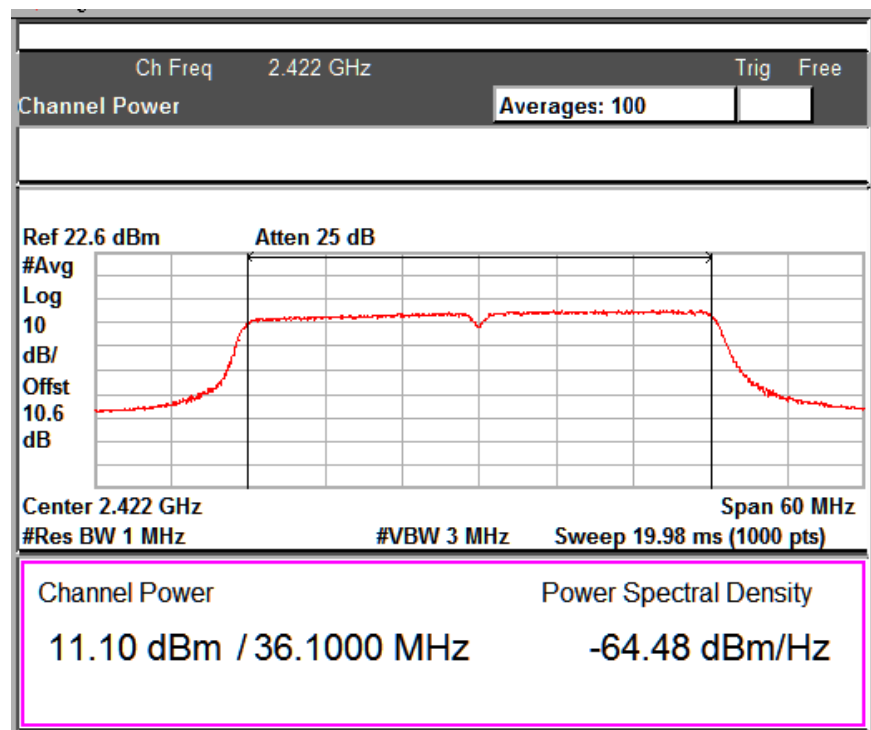
Data Rate: MCS8

Channel Frequency: 2437 MHz



Data Rate: MCS8

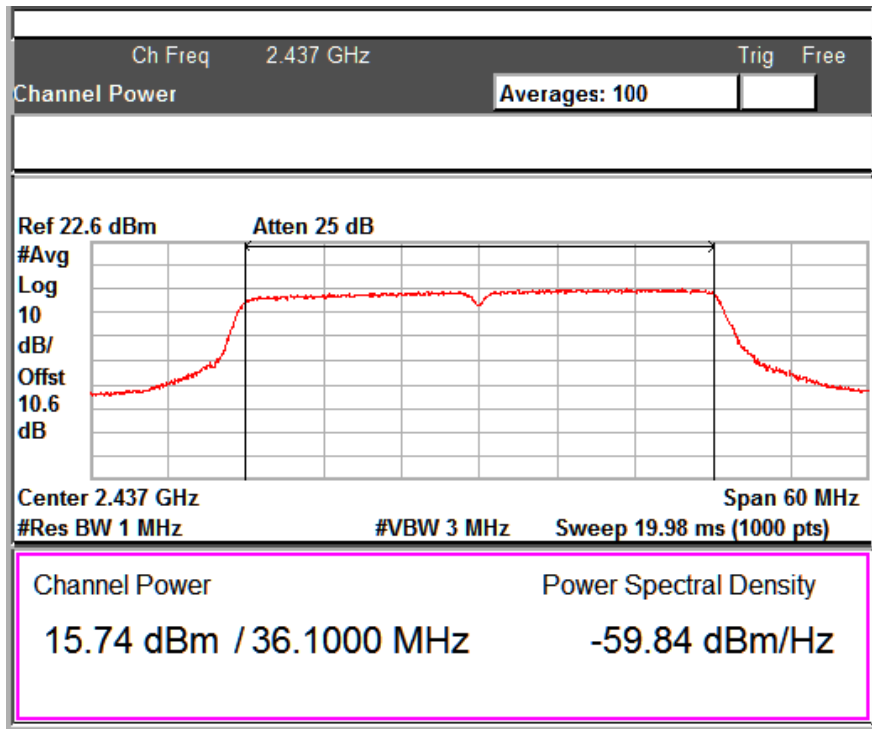
Channel Frequency: 2452 MHz



Data Rate: MCS11

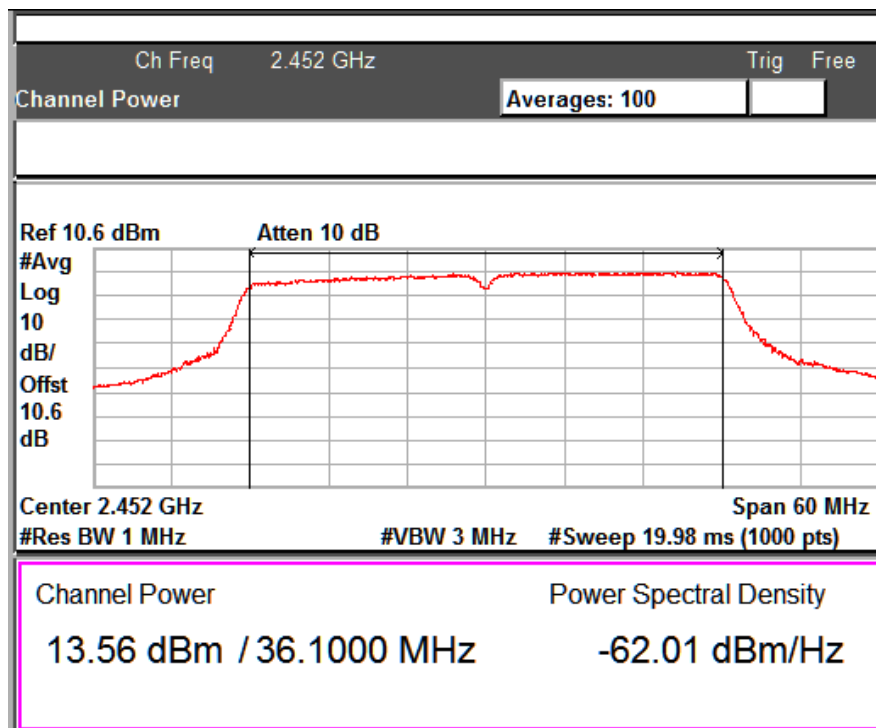
Channel Frequency: 2422 MHz

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Data Rate: MCS11

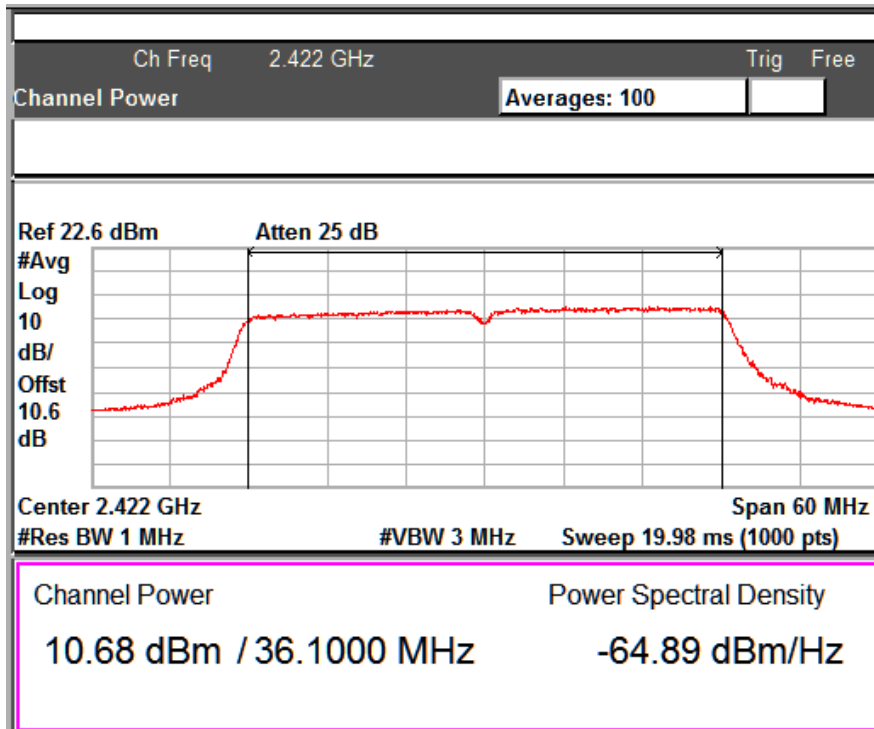
Channel Frequency: 2437 MHz



Data Rate: MCS11

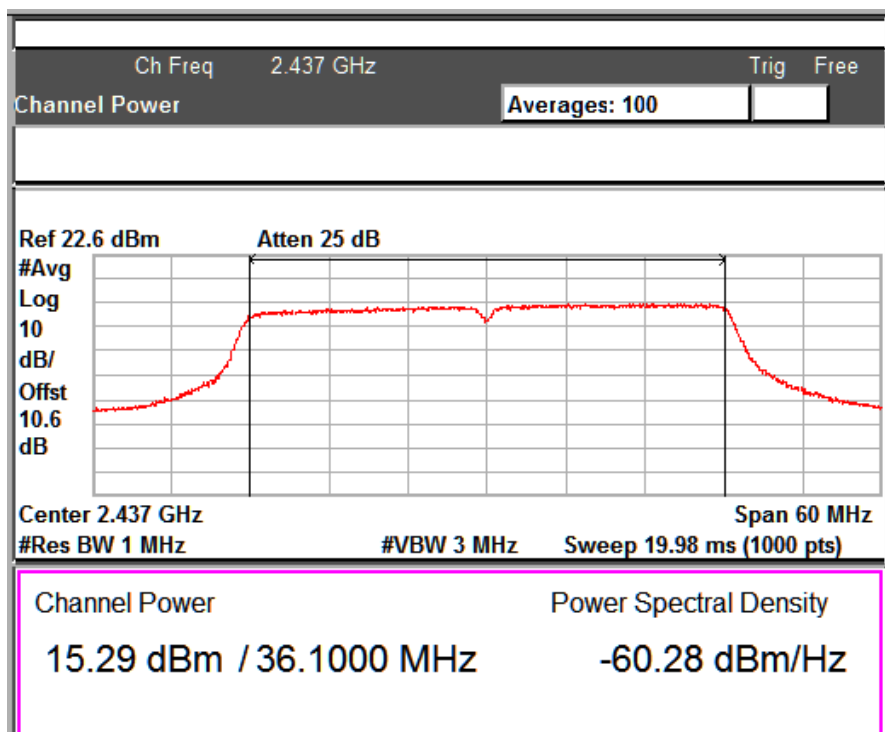
Channel Frequency: 2452 MHz

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Data Rate: MCS15

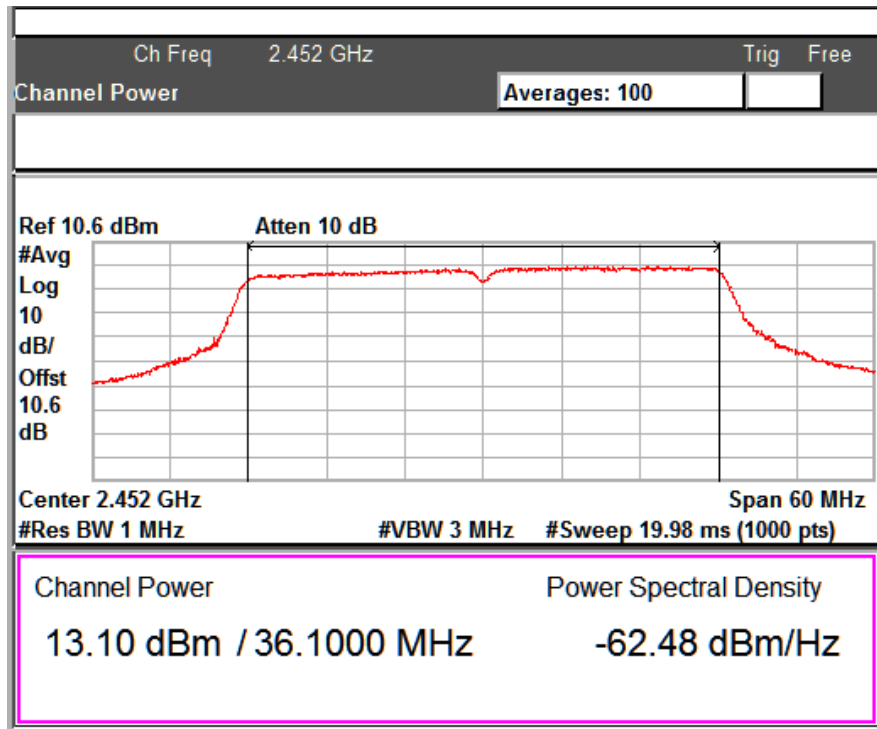
Channel Frequency: 2422 MHz



Data Rate: MCS15

Channel Frequency: 2437 MHz

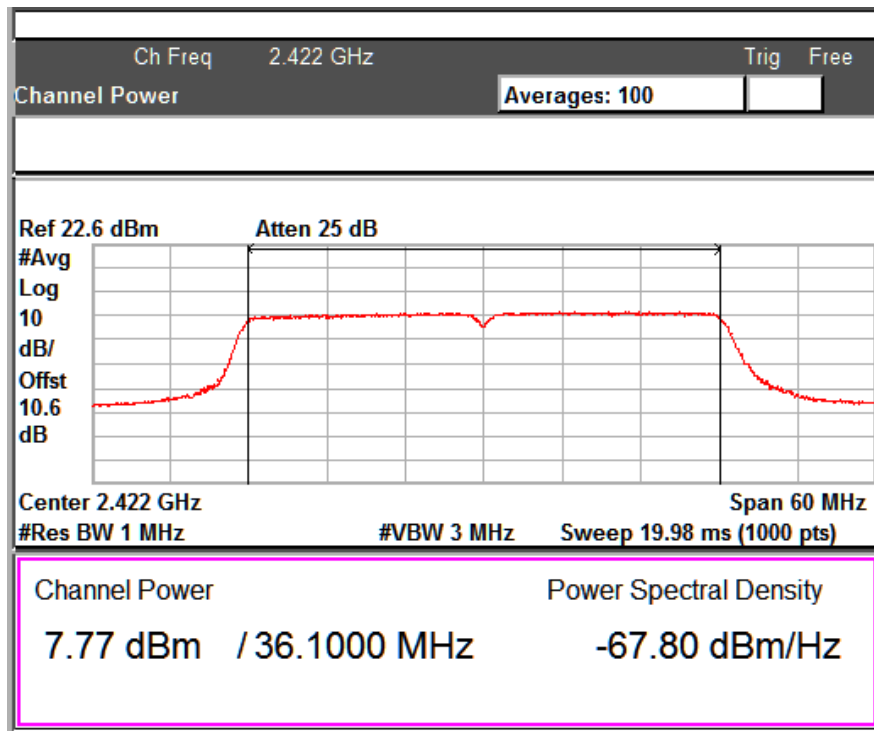
www.tuv.com



Data Rate: MCS15

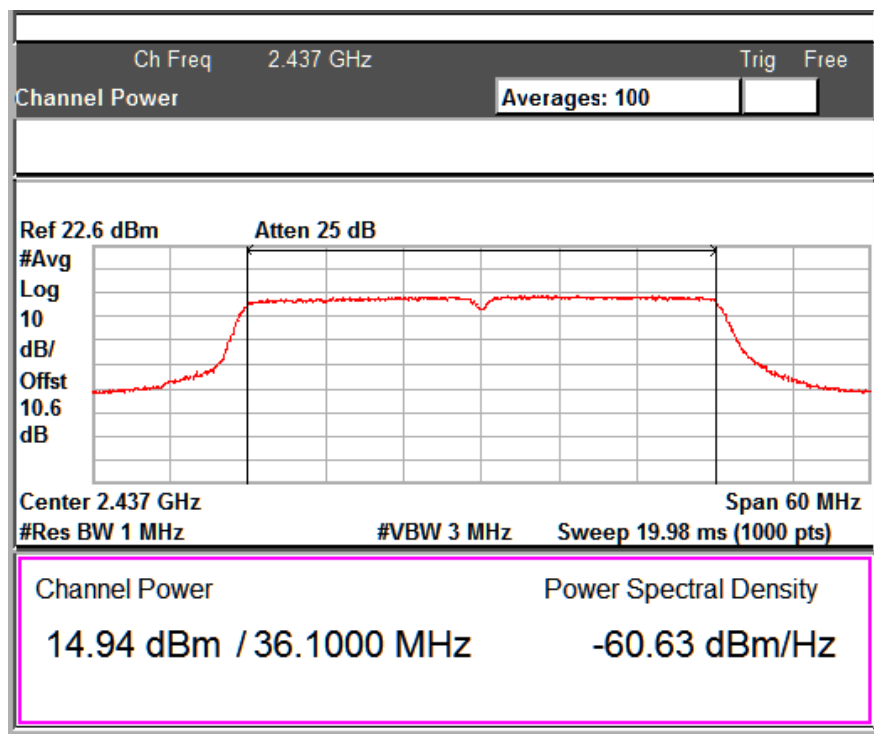
Channel Frequency: 2452 MHz

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Chain 1



Data Rate: MCS8

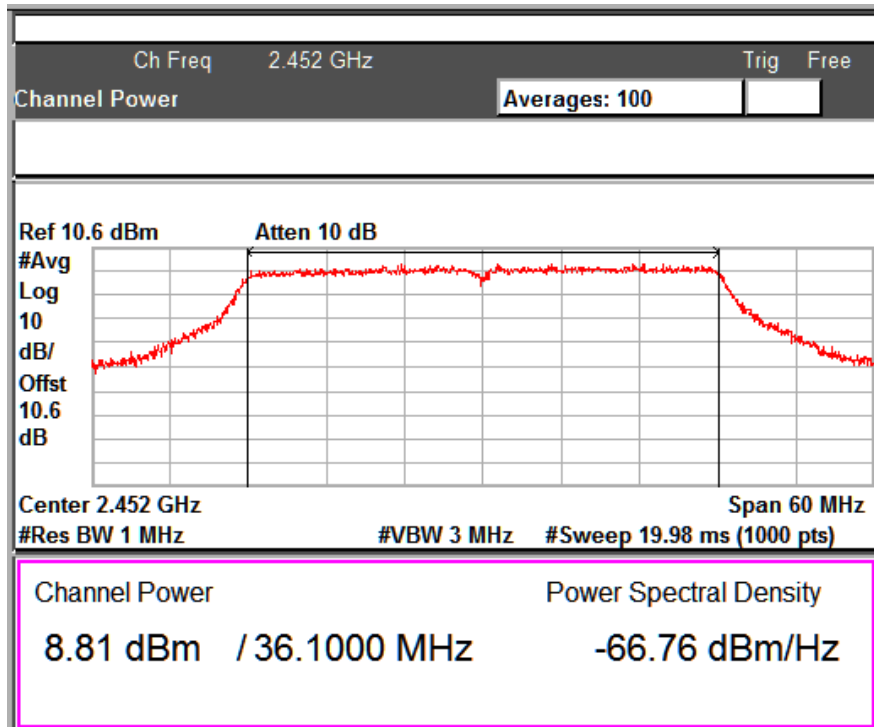
Channel Frequency: 2422 MHz



Data Rate: MCS8

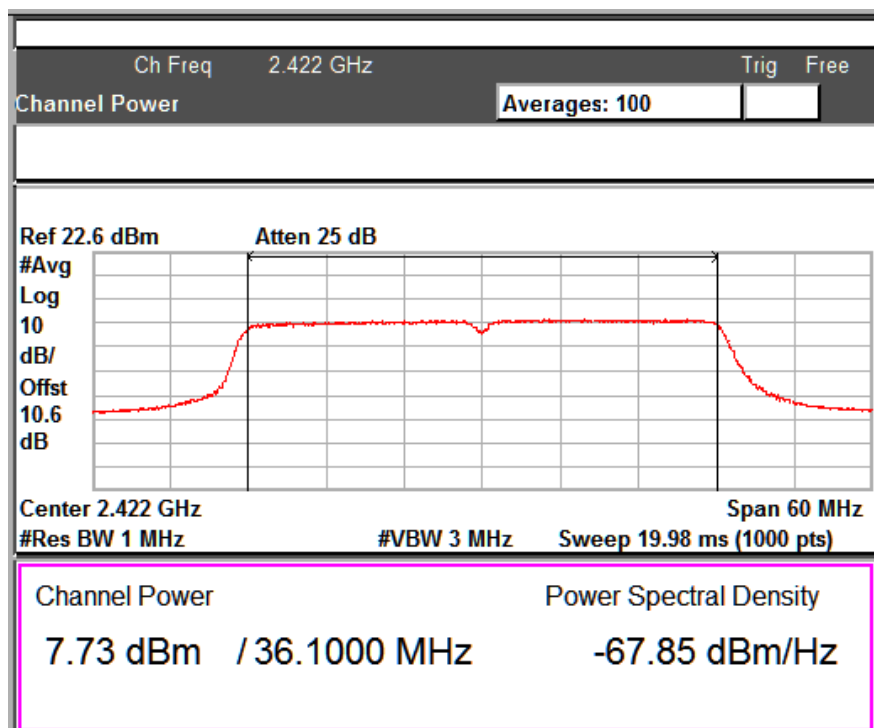
Channel Frequency: 2437 MHz

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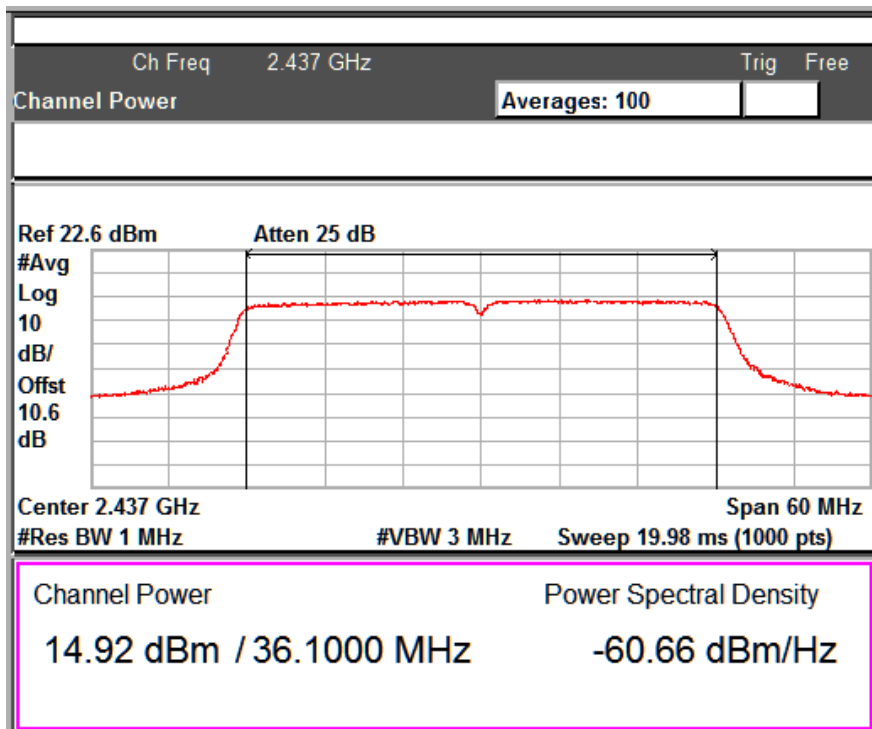
Data Rate: MCS8

Channel Frequency: 2452 MHz



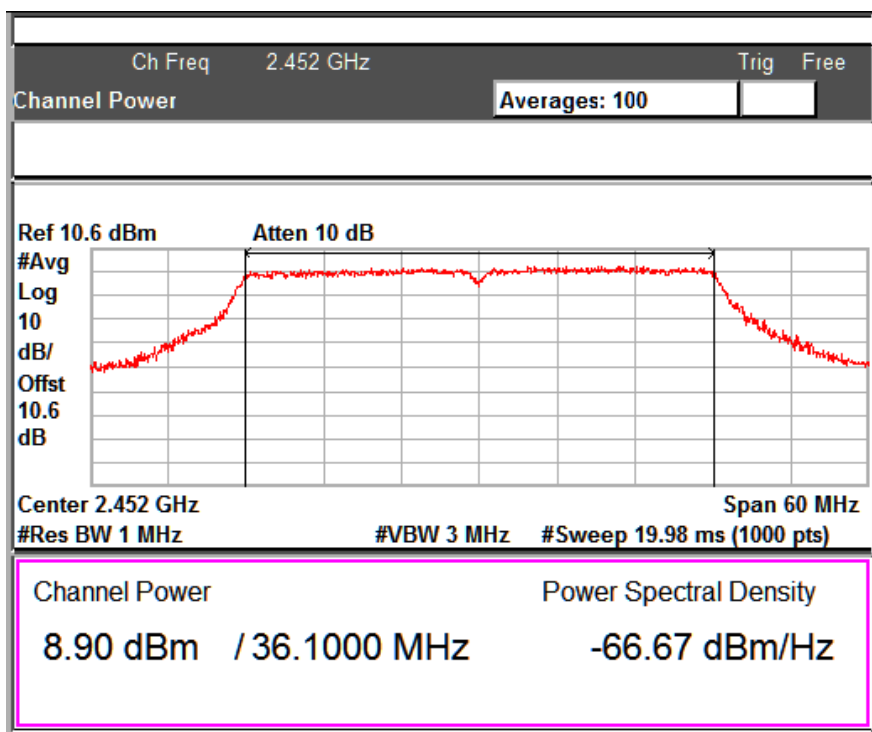
Data Rate: MCS11

Channel Frequency: 2422 MHz



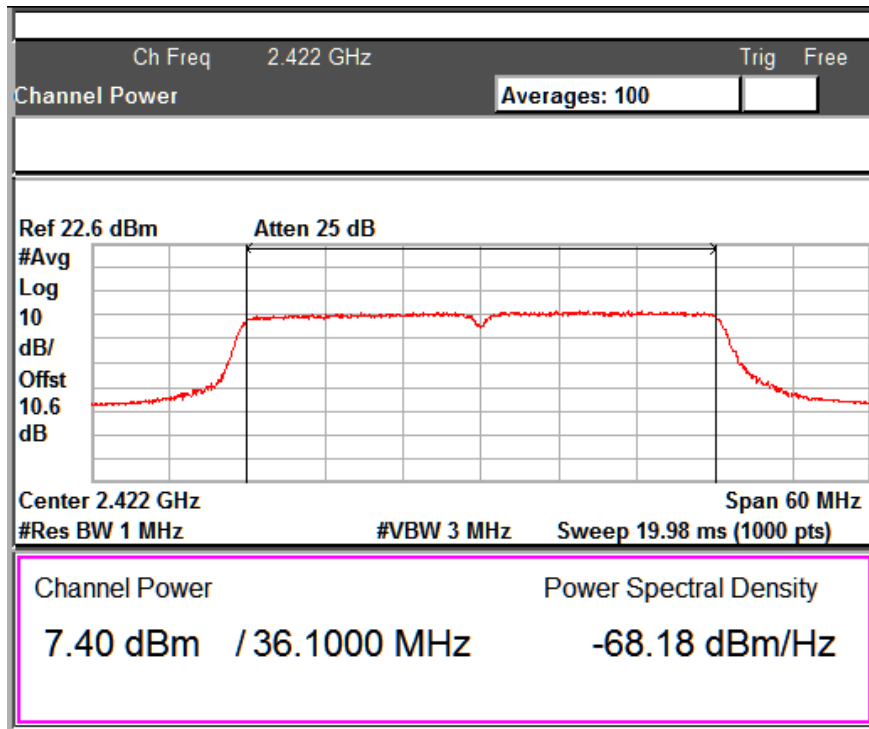
Data Rate: MCS11

Channel Frequency: 2437 MHz



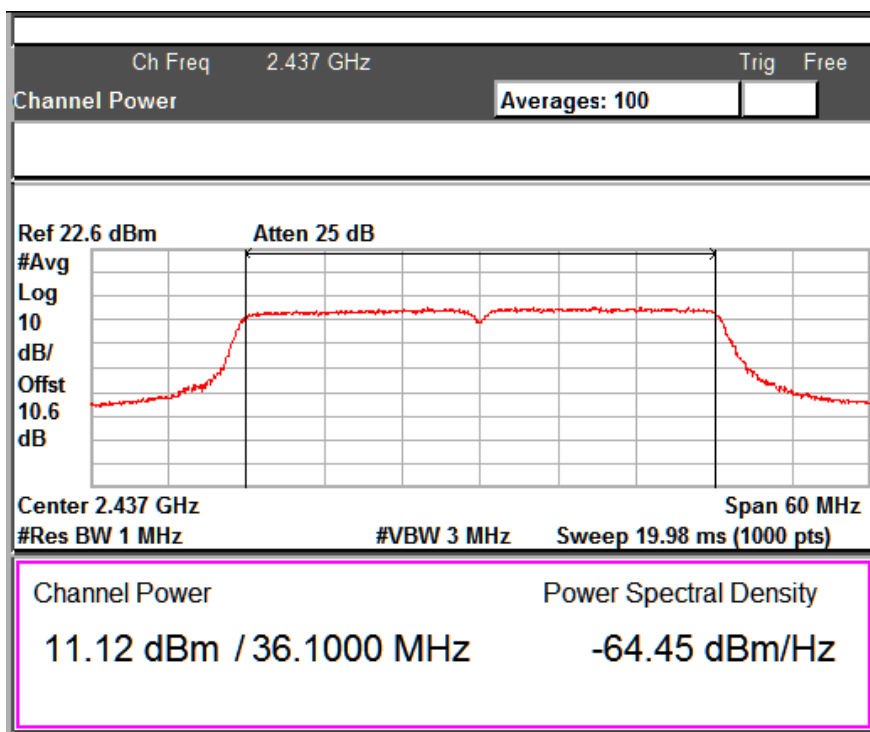
Data Rate: MCS11

Channel Frequency: 2452 MHz



Data Rate: MCS15

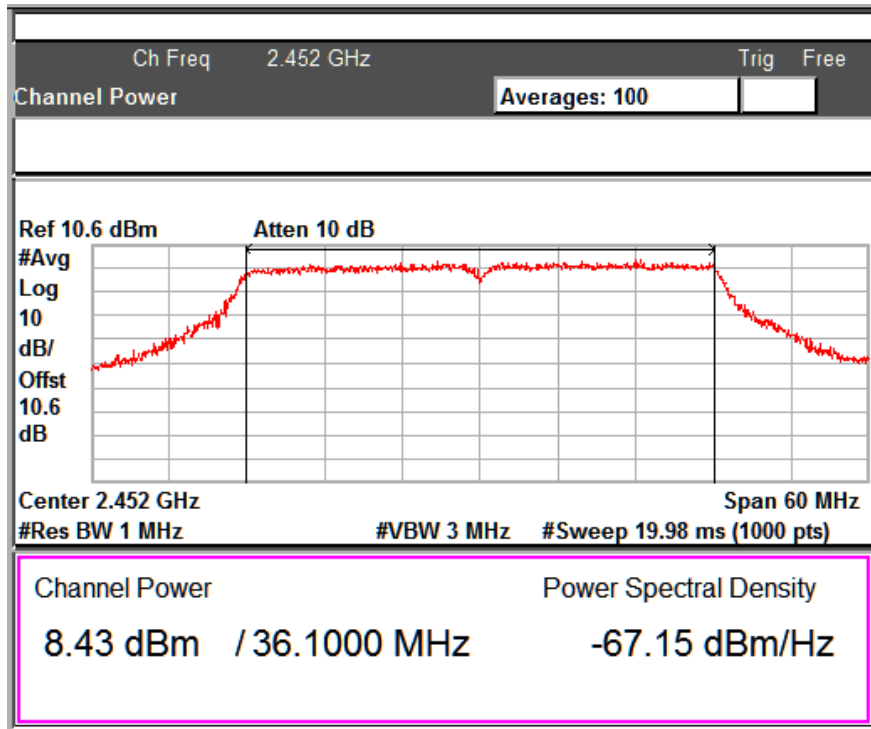
Channel Frequency: 2422 MHz



Data Rate: MCS15

Channel Frequency: 2437 MHz

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Data Rate: MCS15

Channel Frequency: 2452 MHz

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Maximum Power Spectral Density

Section 15.247(e)

Result

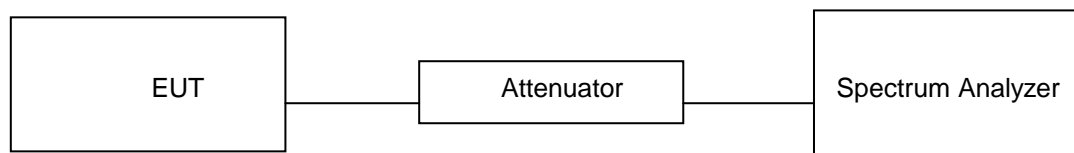
Pass

Test Specification
Detector Function
Requirement

FCC Part 15 Section 15.247 (e)
Average

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:



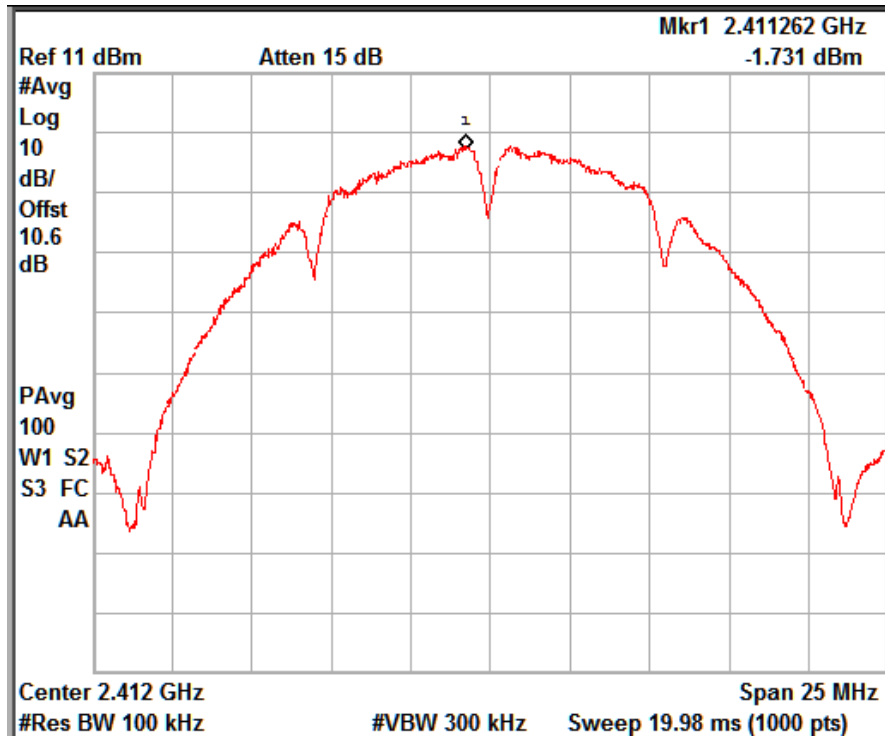
Offset value 10.6dB is added in the final measurement value.

Note: Measurement method clause 10.3 of KDB 558074 D01 DTS Meas Guidance V04 was used.

Note: Test was performed on both the transmit chains and worst case results were from chain 0 and the respective results has been reported.

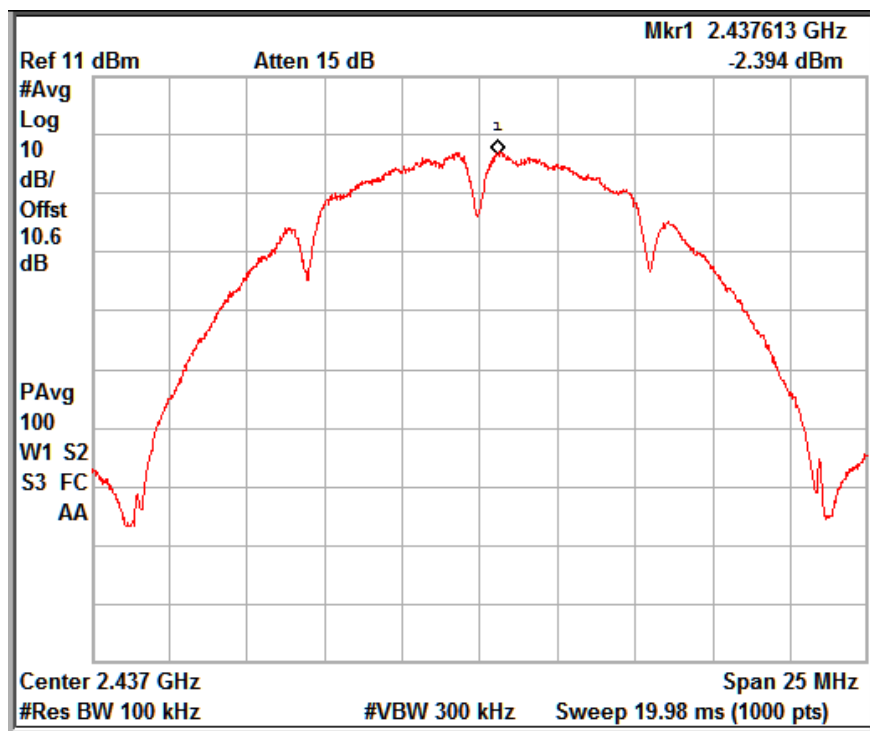
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
b	1	2412.00	-1.73	8.00	-9.73
		2437.00	-2.39	8.00	-10.39
		2462.00	-0.99	8.00	-8.99
	11	2412.00	1.10	8.00	-6.90
		2437.00	2.14	8.00	-5.86
		2462.00	1.64	8.00	-9.64

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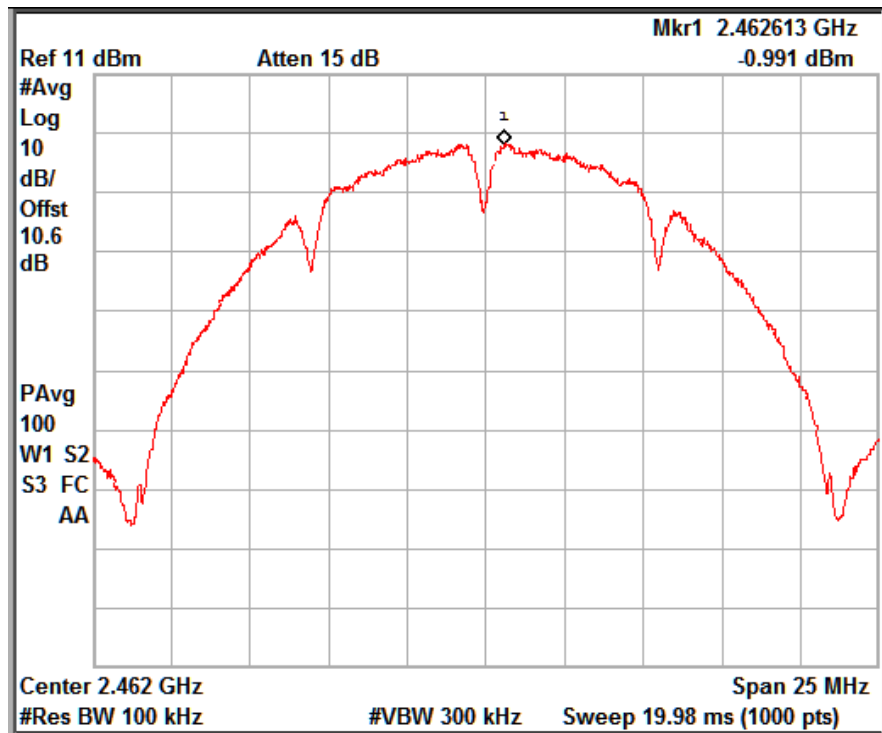
Data rate: 1 Mbps

Channel Frequency: 2412 MHz



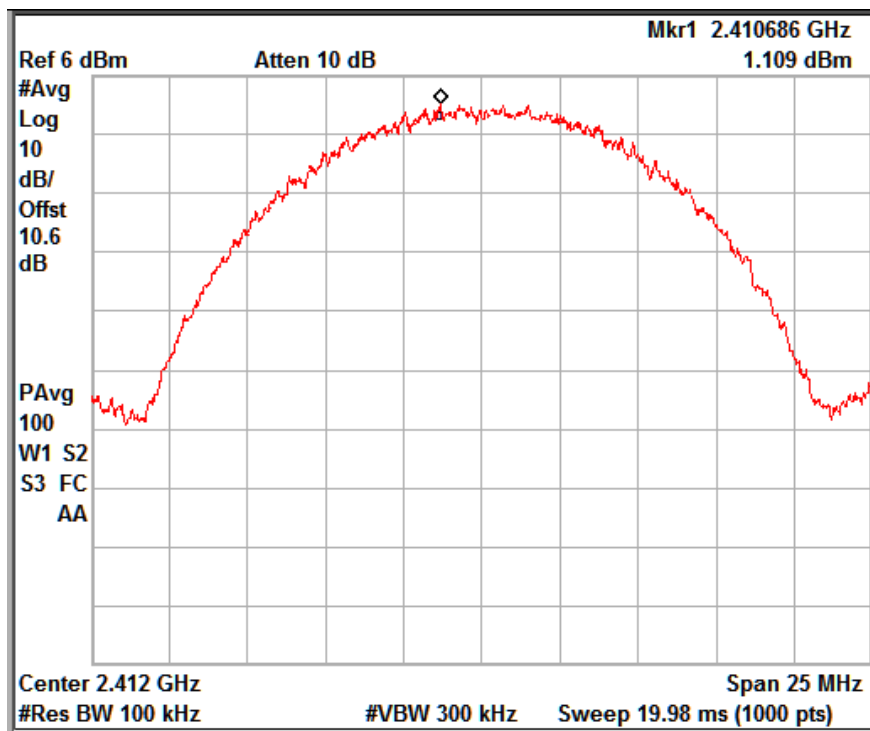
Data rate: 1 Mbps

Channel Frequency: 2437 MHz



Data rate: 1 Mbps

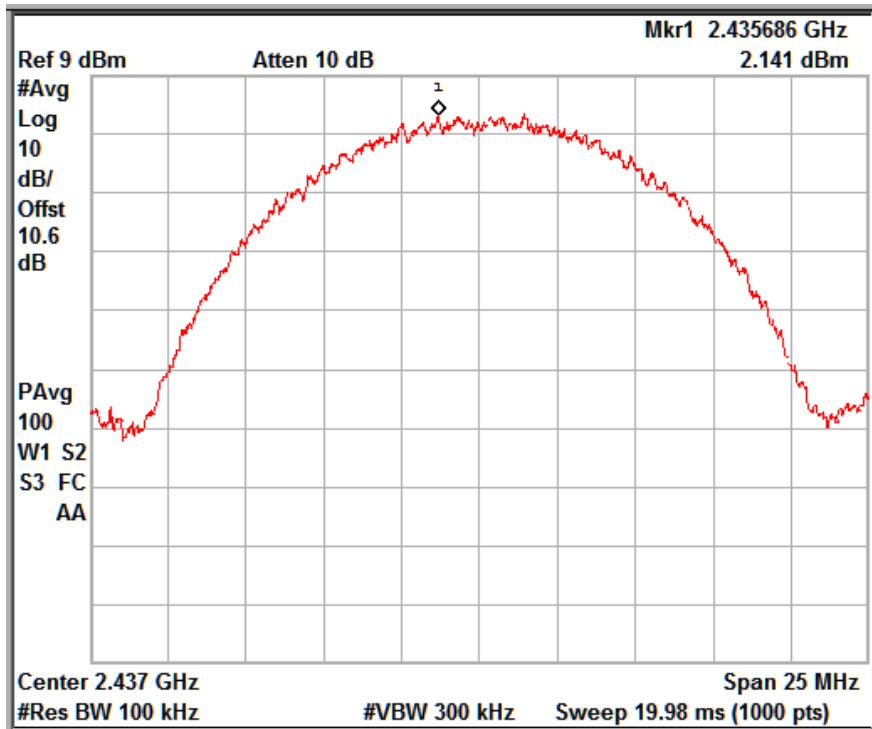
Channel Frequency: 2462 MHz



Data rate: 11 Mbps

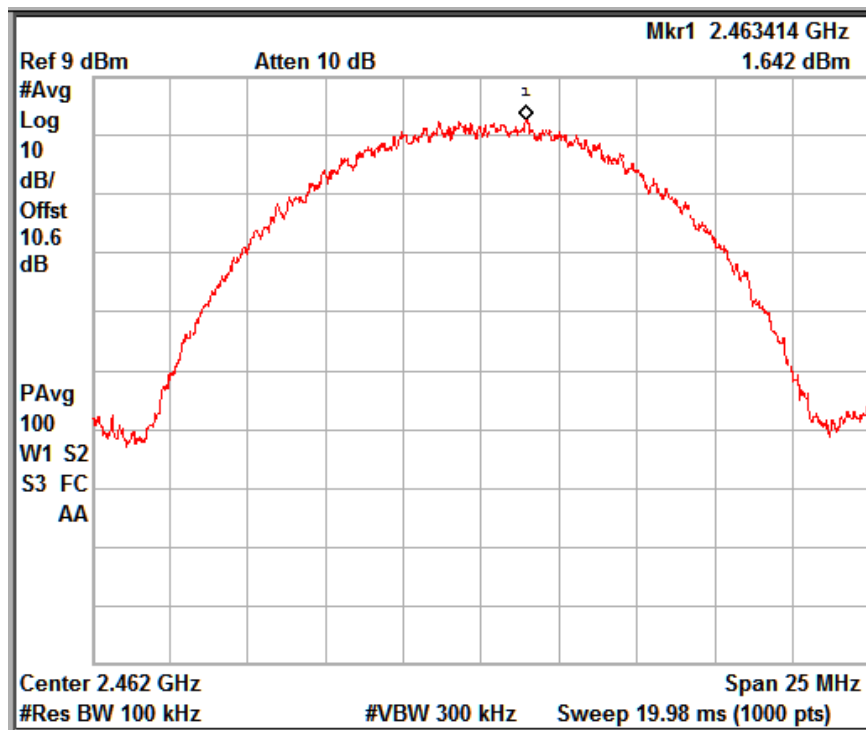
Channel Frequency: 2412 MHz

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Data rate: 11 Mbps

Channel Frequency: 2437 MHz



Data rate: 11 Mbps

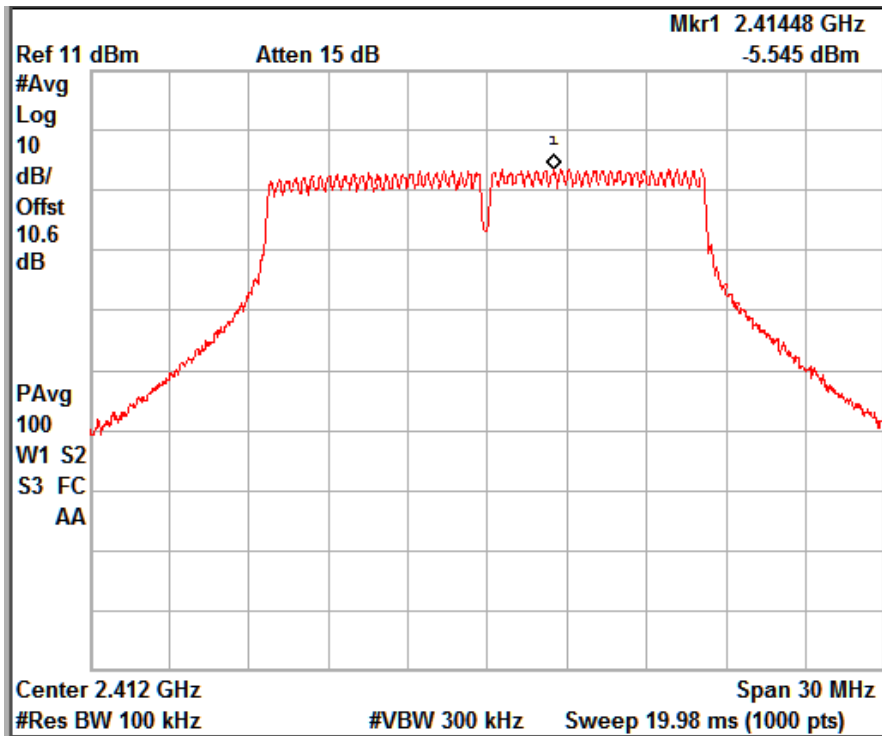
Channel Frequency: 2462 MHz

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Note: Test was performed on both the transmit chains and worst case results were from chain 0 and the respective results has been reported.

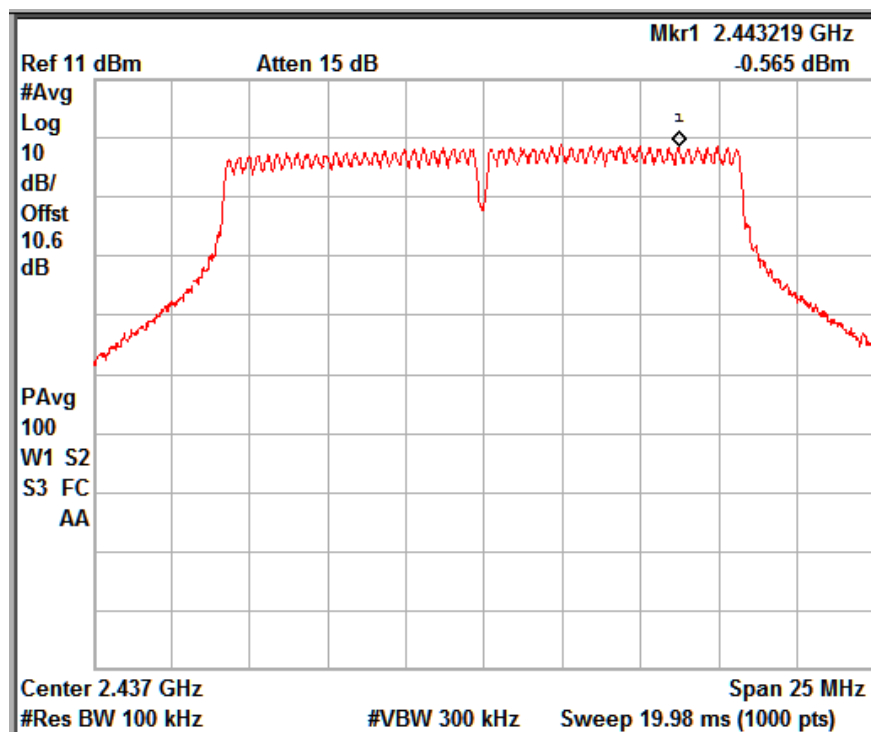
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
g	6	2412.00	-5.54	8.00	-13.54
		2437.00	-0.56	8.00	-8.56
		2462.00	-3.79	8.00	-11.79
	24	2412.00	-5.15	8.00	-13.15
		2437.00	-0.23	8.00	-8.23
		2462.00	-4.89	8.00	-12.89
	54	2412.00	-6.36	8.00	-14.36
		2437.00	-2.94	8.00	-10.94
		2462.00	-23.79	8.00	-31.79

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Data rate: 6 Mbps

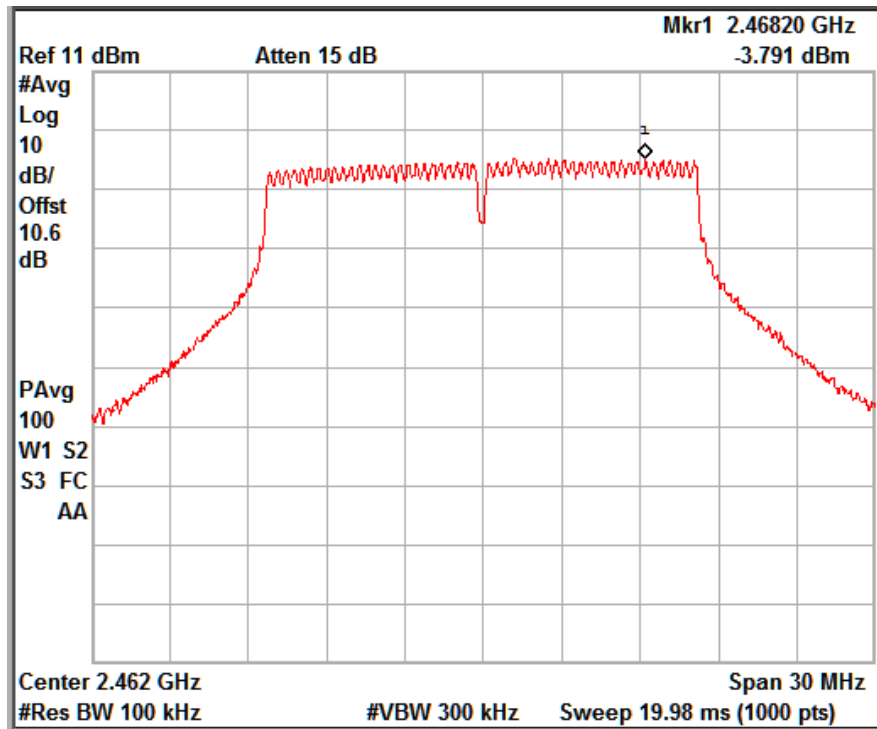
Channel Frequency: 2412 MHz



Data rate: 6 Mbps

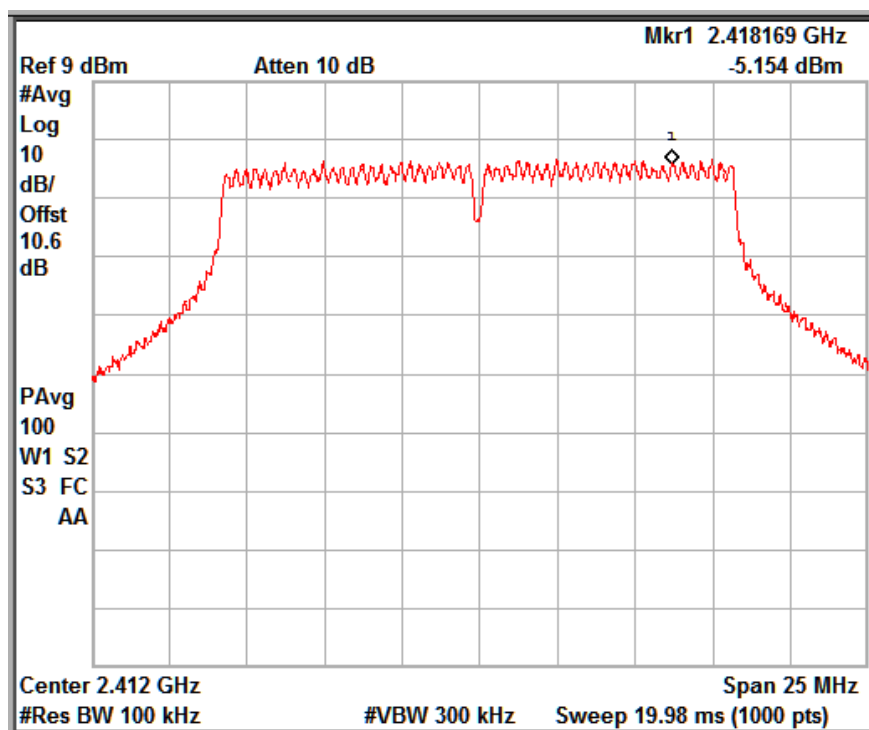
Channel Frequency: 2437 MHz

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Data rate: 6 Mbps

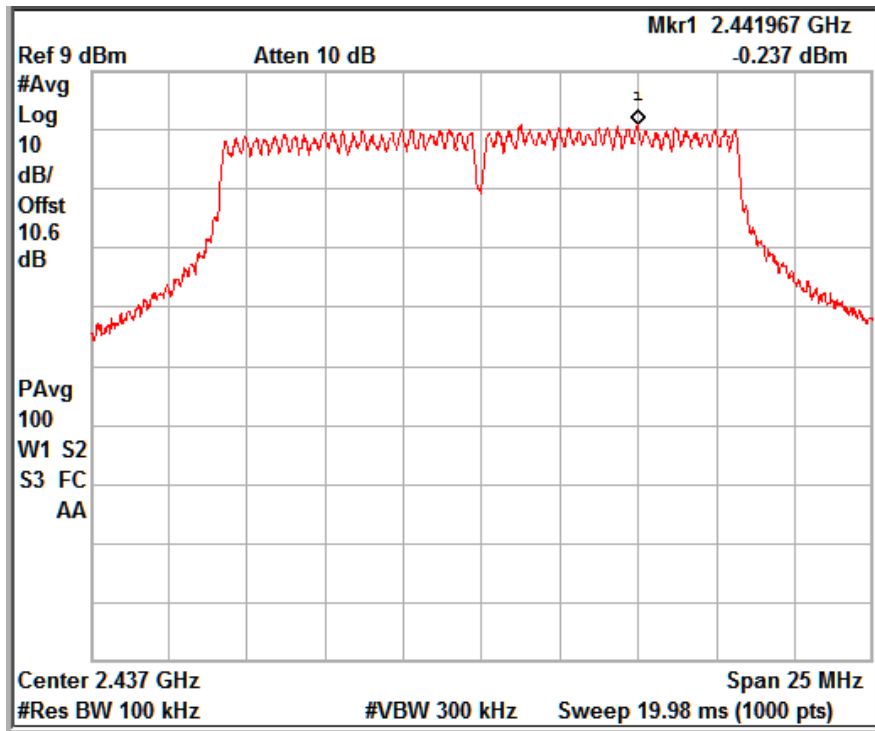
Channel Frequency: 2462 MHz



Data rate: 24 Mbps

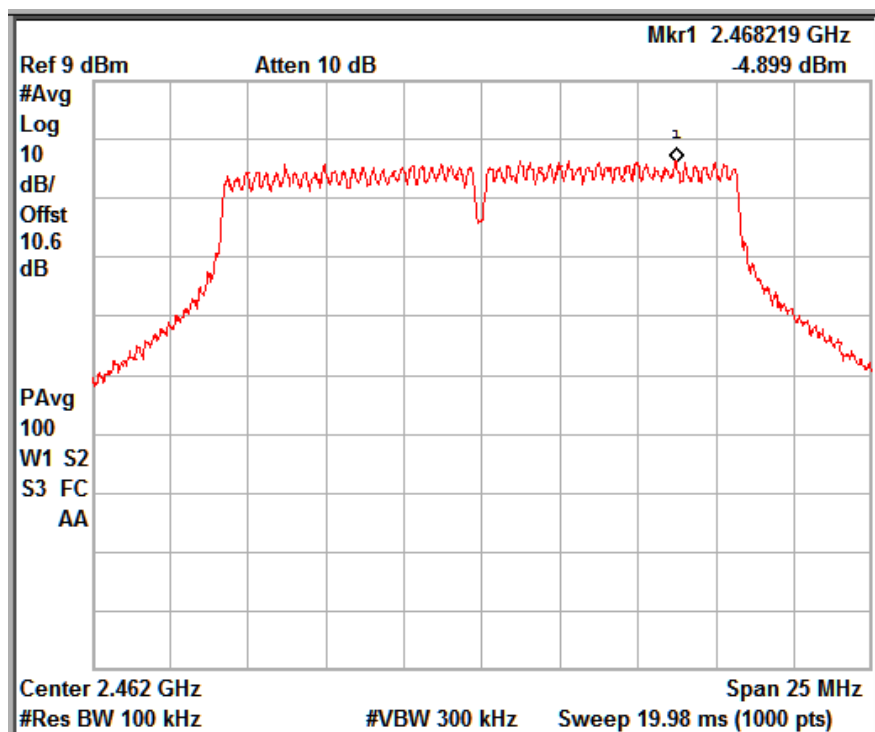
Channel Frequency: 2412 MHz

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Data rate: 24 Mbps

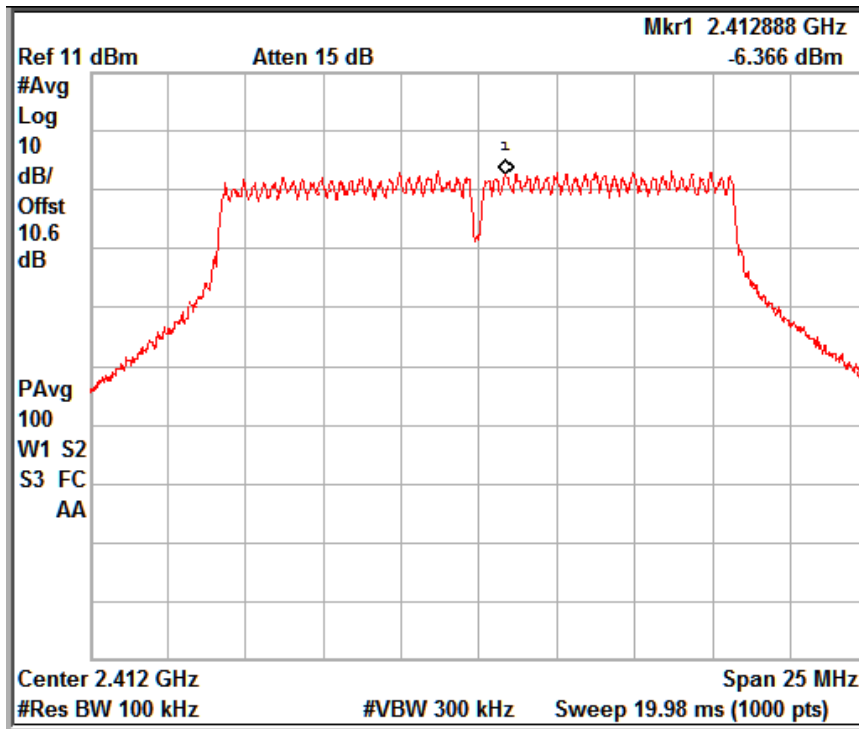
Channel Frequency: 2437 MHz



Data rate: 24 Mbps

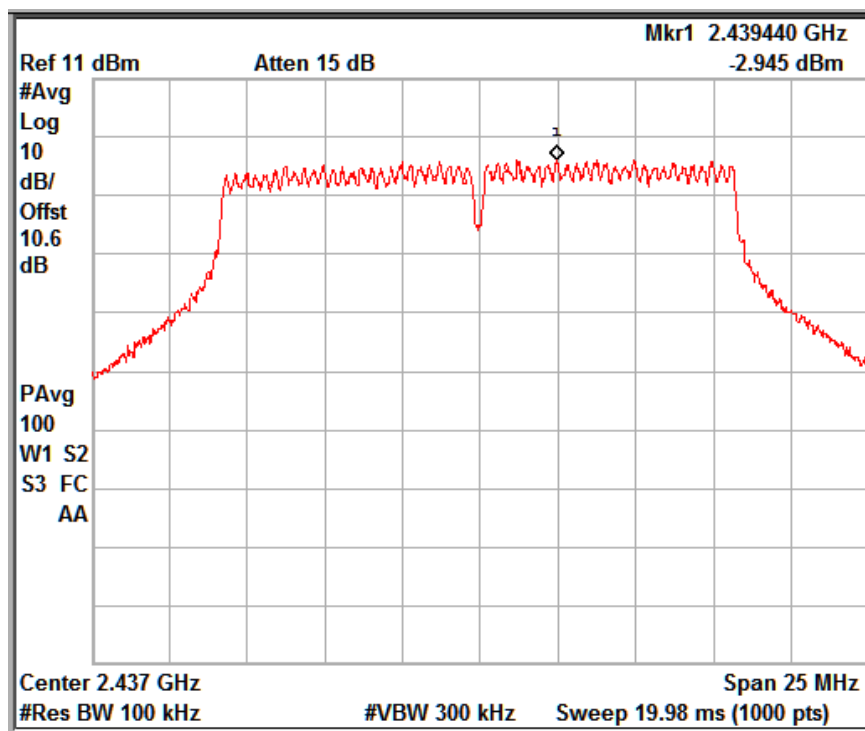
Channel Frequency: 2462 MHz

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Data rate: 54 Mbps

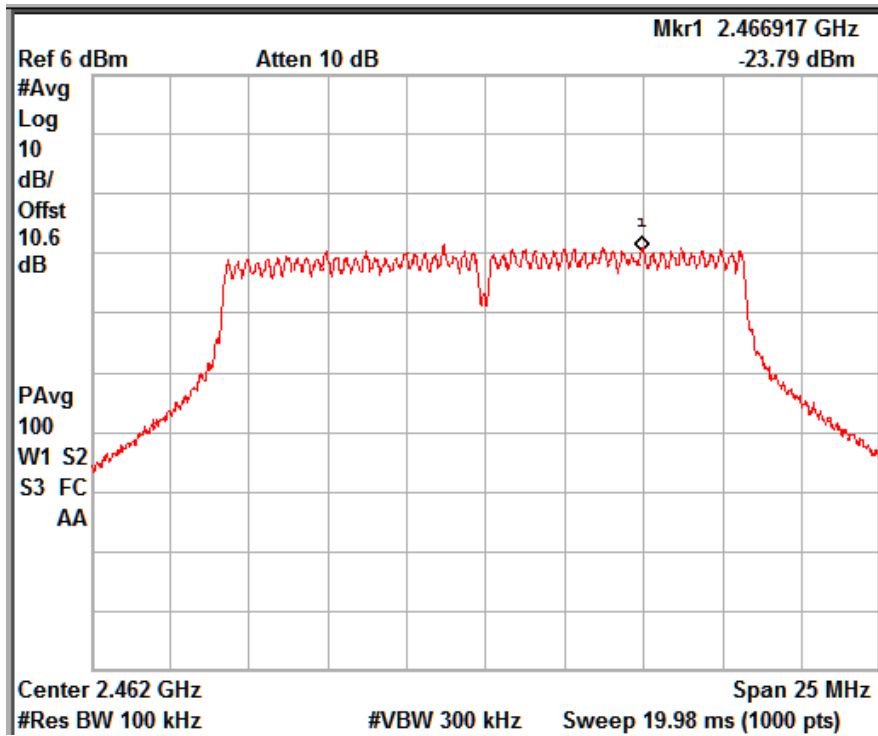
Channel Frequency: 2412 MHz



Data rate: 54 Mbps

Channel Frequency: 2437 MHz

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Data rate: 54 Mbps

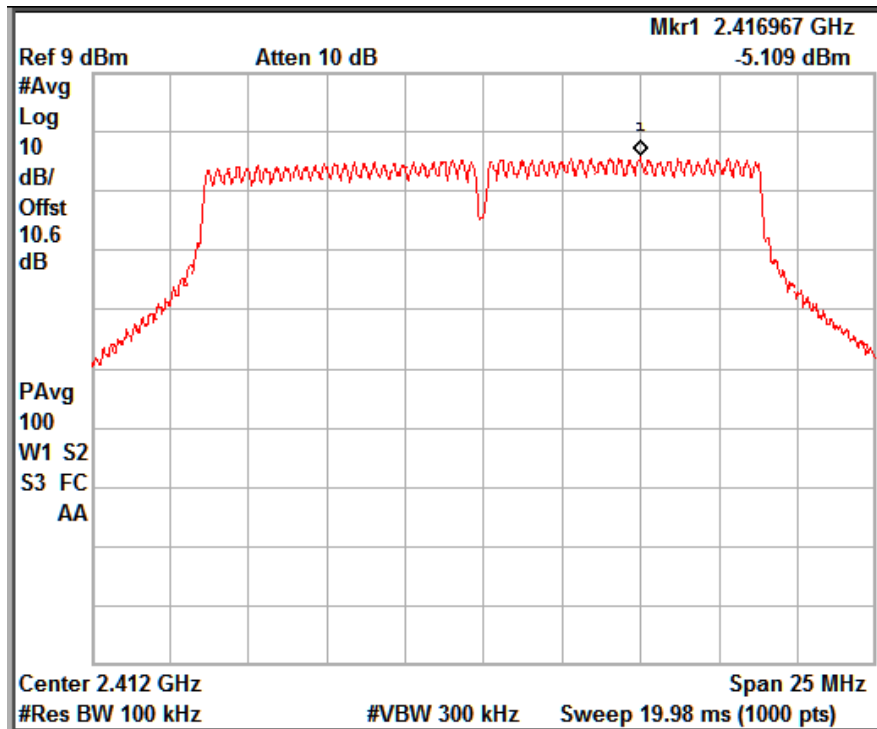
Channel Frequency: 2462 MHz

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Note: Test was performed on both the transmit chains and worst case results were from chain 0 and the respective results has been reported.

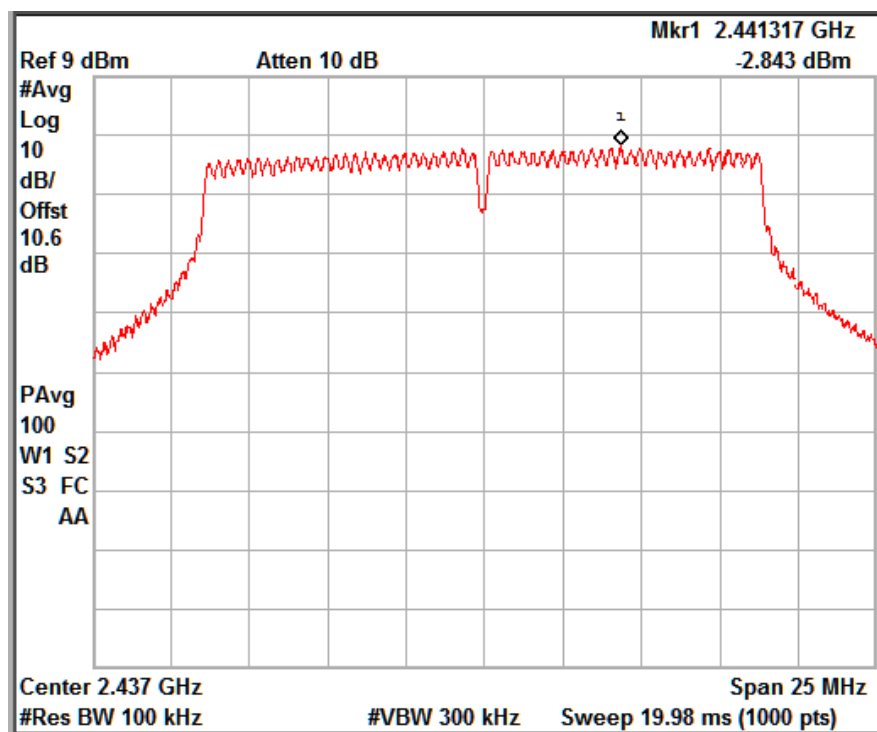
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
n	MCS 0	2412.00	-5.10	8.00	-13.10
		2437.00	-2.84	8.00	-10.84
		2462.00	-10.44	8.00	-18.44
	MCS 4	2412.00	-5.20	8.00	-13.20
		2437.00	-4.70	8.00	-12.70
		2462.00	-4.99	8.00	-12.99
	MCS 7	2412.00	-10.02	8.00	-18.02
		2437.00	-3.91	8.00	-11.91
		2462.00	-17.48	8.00	-25.48

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Data rate: MCS 0

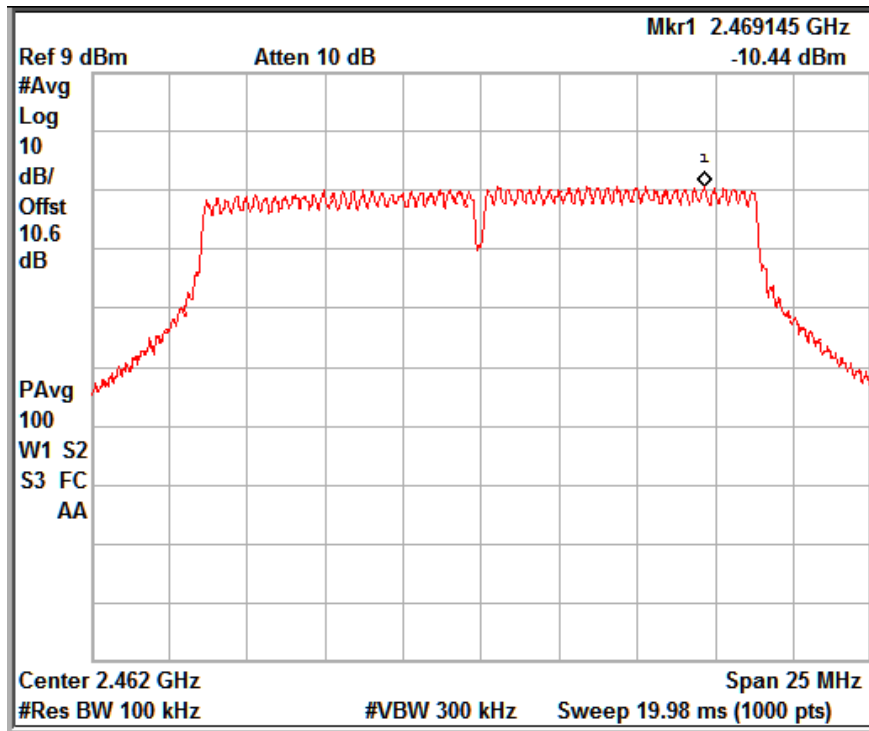
Channel Frequency: 2412 MHz



Data rate: MCS 0

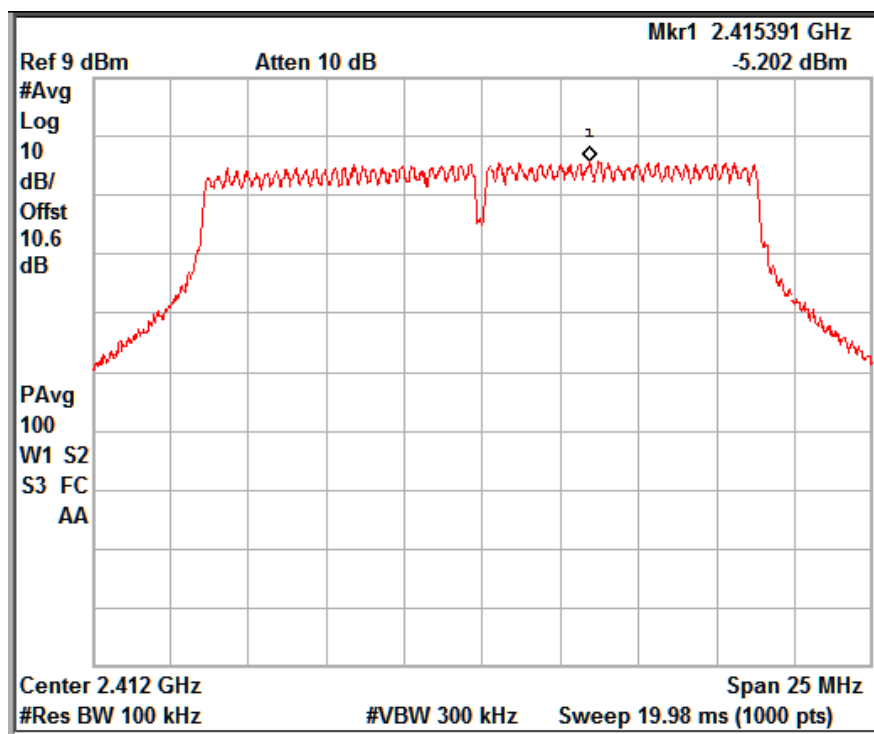
Channel Frequency: 2437 MHz

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Data rate: MCS 0

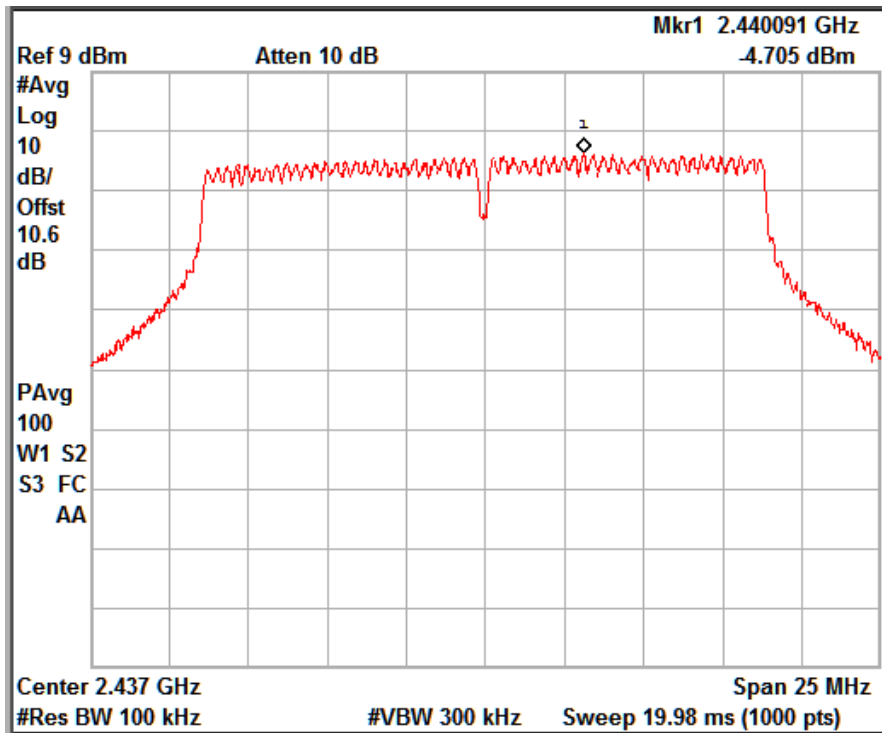
Channel Frequency: 2462 MHz



Data rate: MCS 4

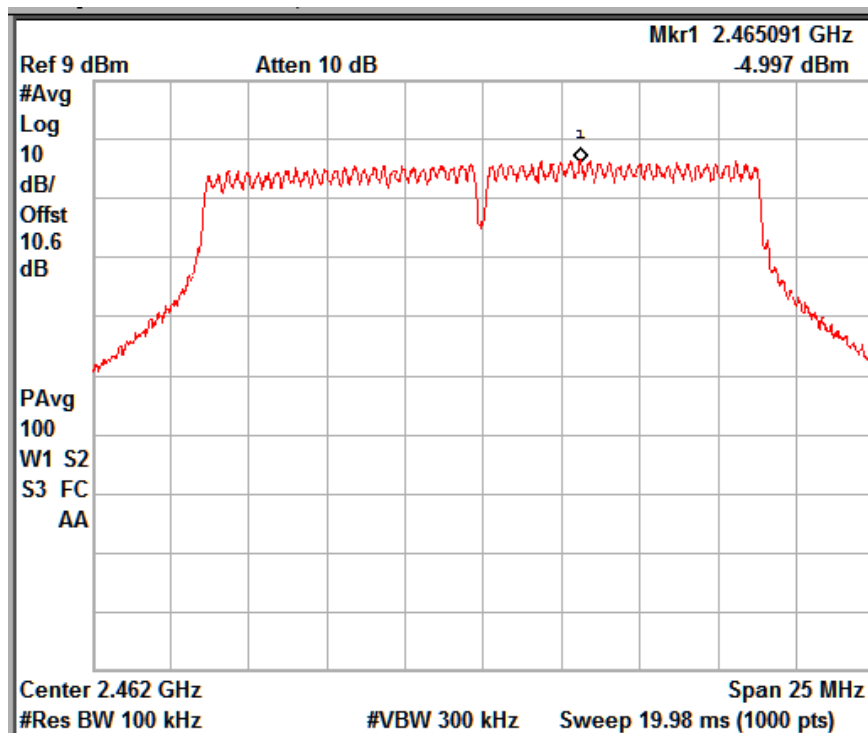
Channel Frequency: 2412 MHz

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Data rate: MCS 4

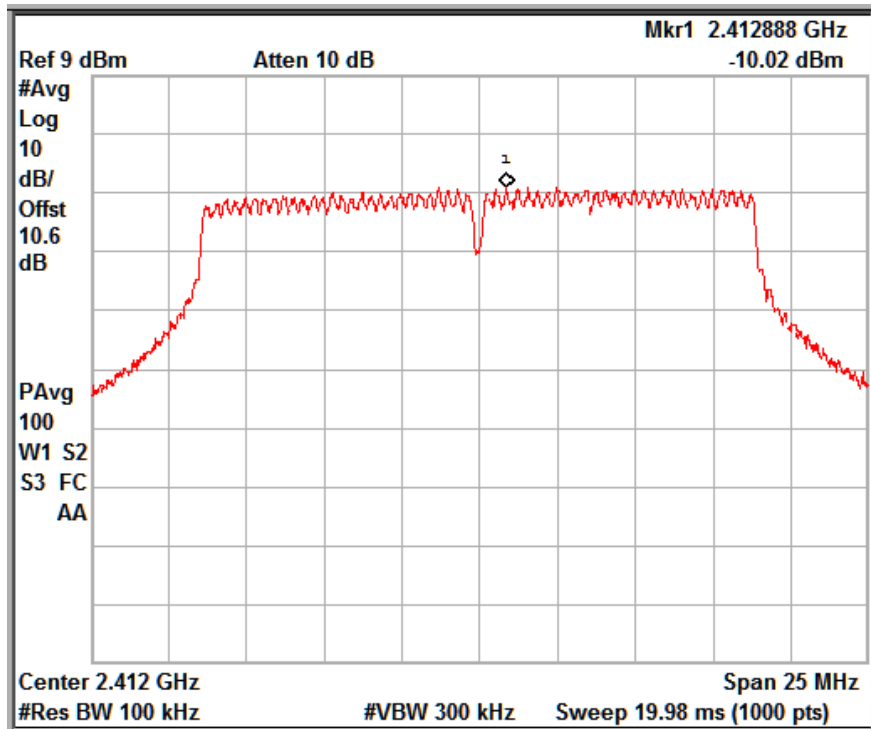
Channel Frequency: 2437 MHz



Data rate: MCS 4

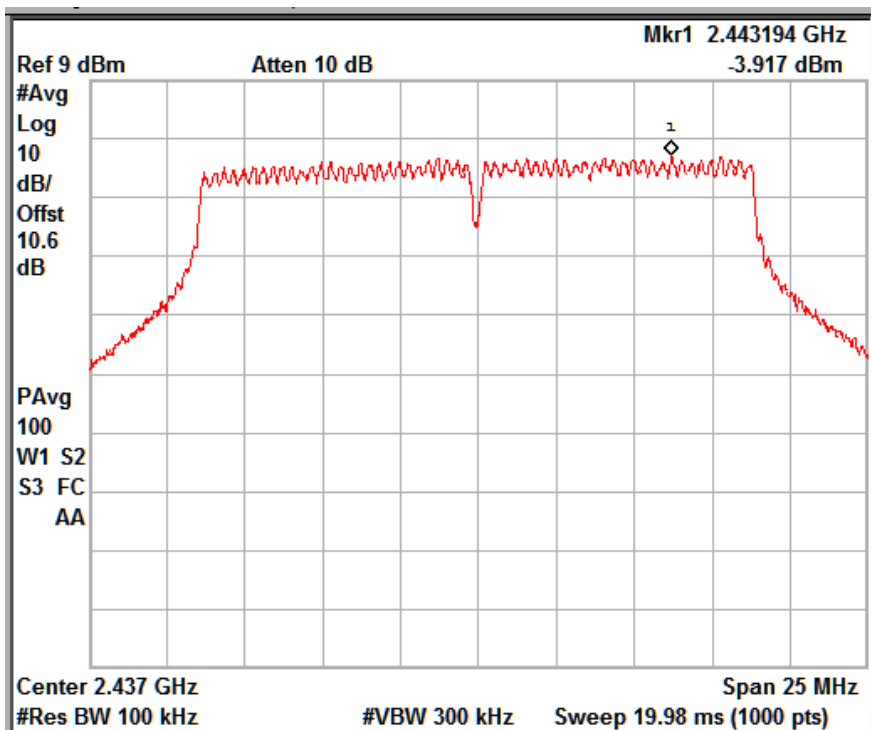
Channel Frequency: 2462 MHz

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Data rate: MCS 7

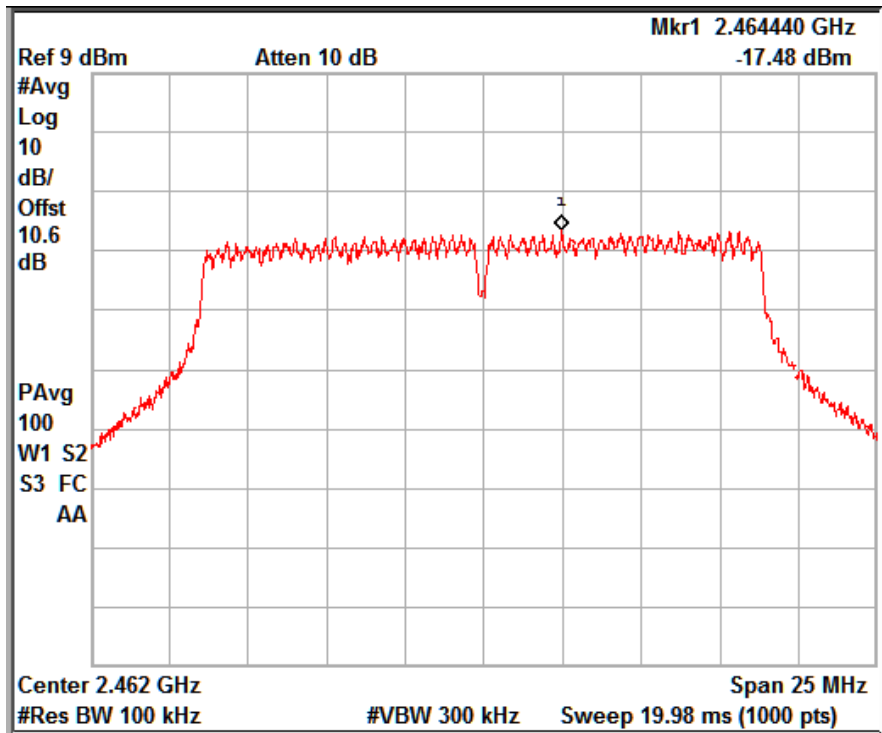
Channel Frequency: 2412 MHz



Data rate: MCS 7

Channel Frequency: 2437 MHz

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Data rate: MCS 7

Channel Frequency: 2462 MHz

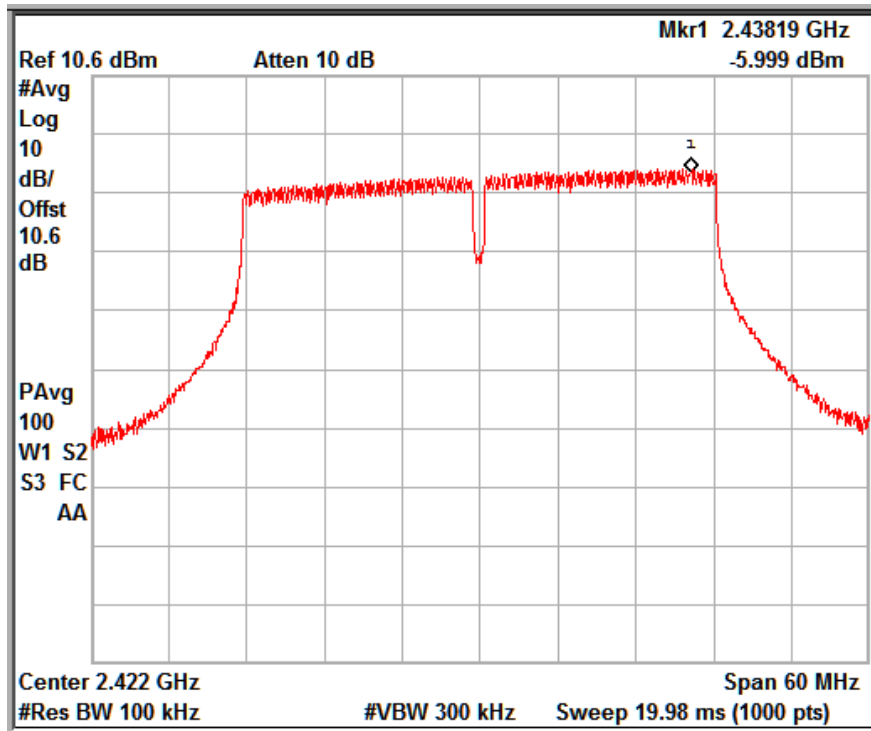
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N mode SISO 40MHz Channel Bandwidth

Note: Test was performed on both the transmit chains and worst case results were from chain 0 and the respective results has been reported.

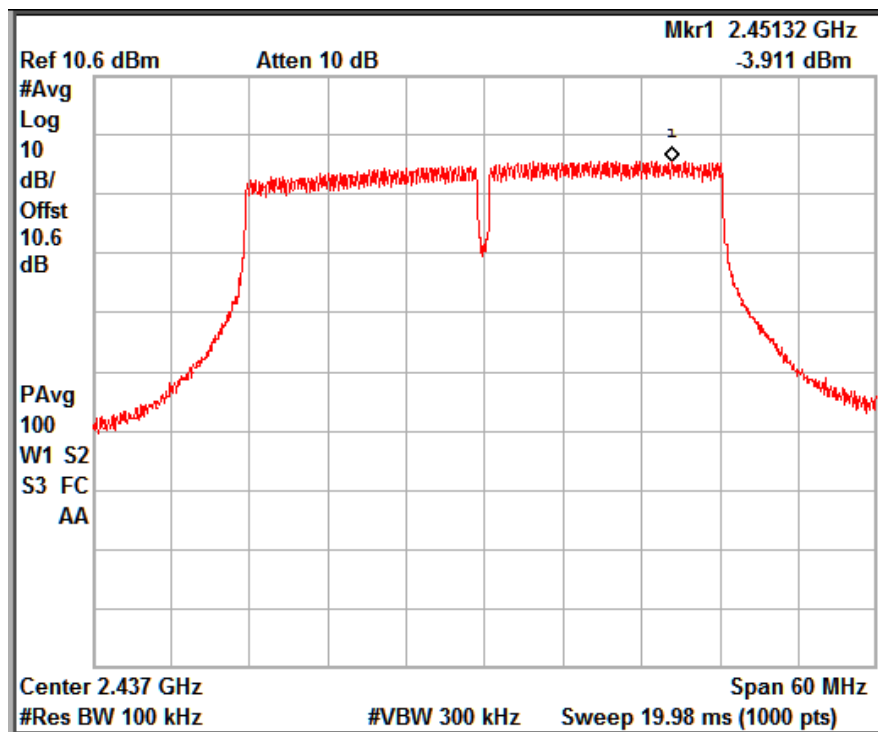
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
n	MCS 0	2422.00	-5.99	8.00	-13.99
		2437.00	-3.91	8.00	-11.91
		2452.00	-6.64	8.00	-14.64
	MCS 4	2422.00	-5.30	8.00	-13.3
		2437.00	-3.42	8.00	-11.42
		2452.00	-6.68	8.00	-14.68
	MCS 7	2422.00	-6.11	8.00	-14.11
		2437.00	-5.21	8.00	-13.21
		2452.00	-7.27	8.00	-15.27

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Data Rate: MCS0

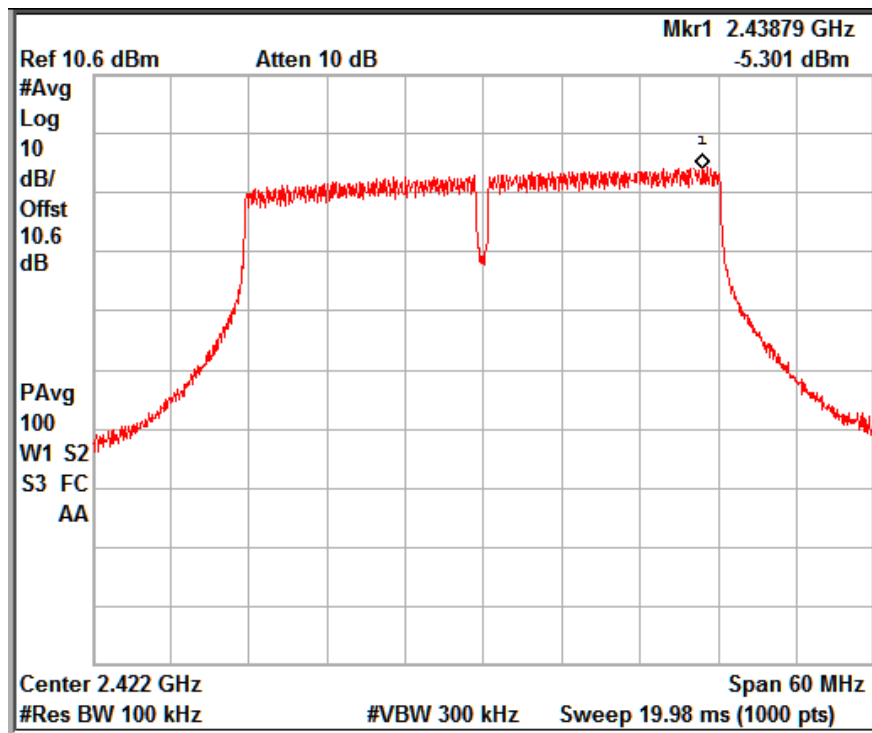
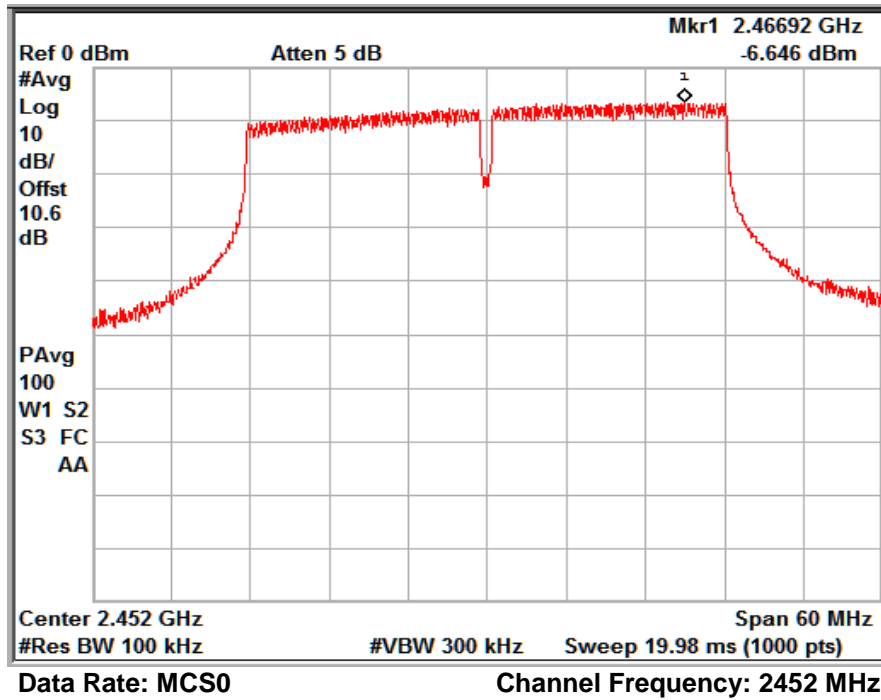
Channel Frequency: 2422 MHz



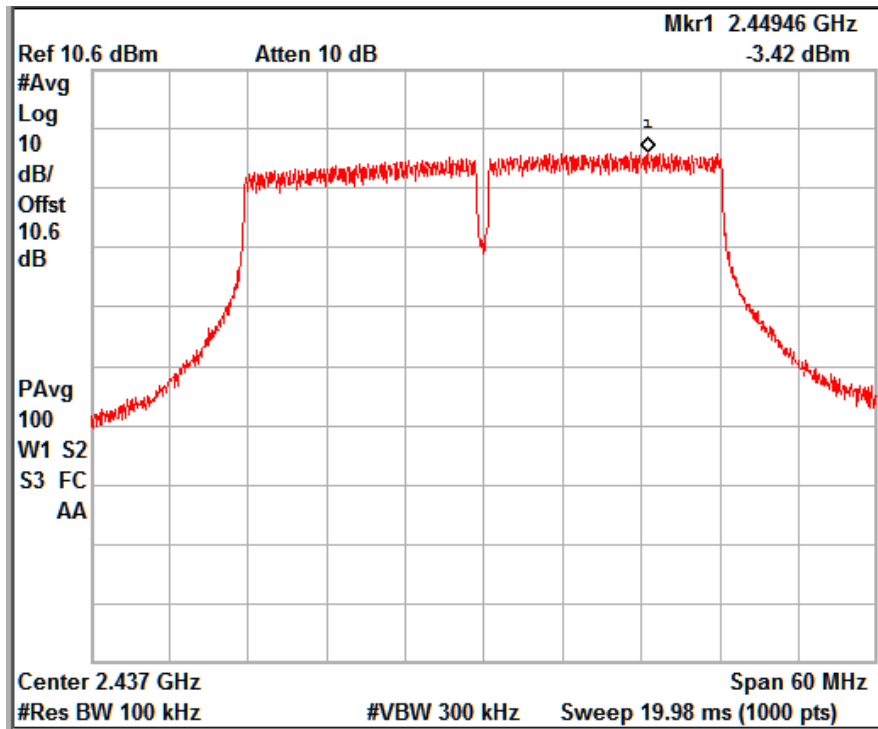
Data Rate: MCS0

Channel Frequency: 2437 MHz

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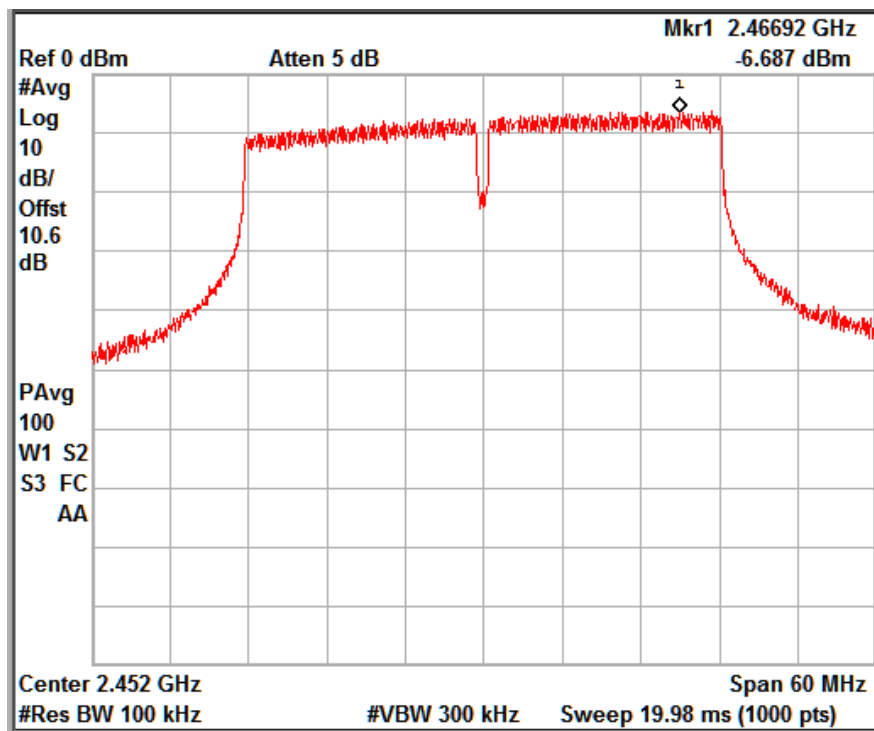


www.tuv.com



Data Rate: MCS4

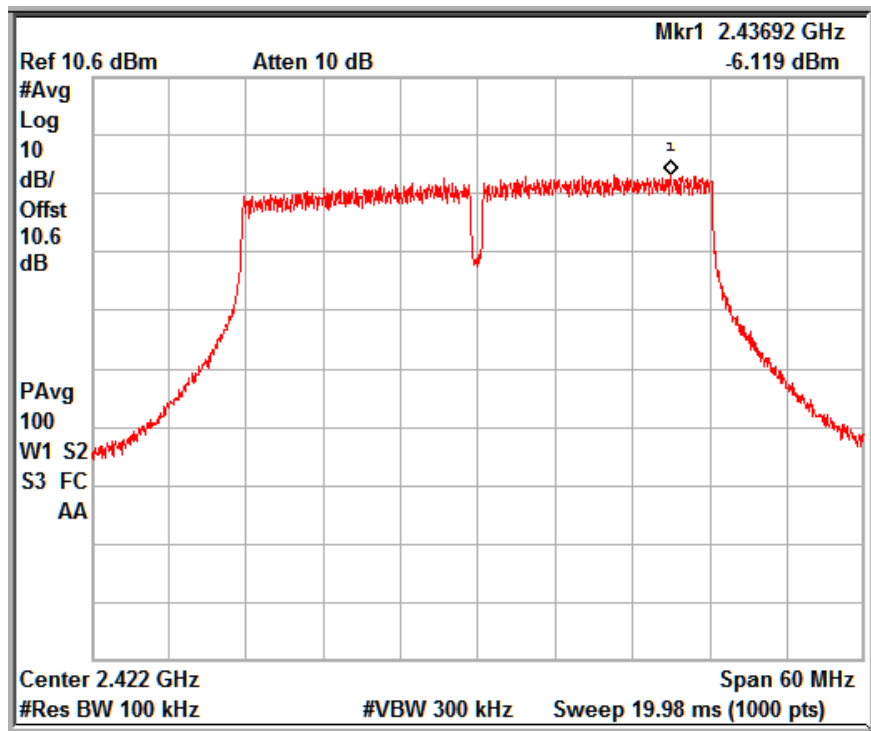
Channel Frequency: 2437 MHz



Data Rate: MCS4

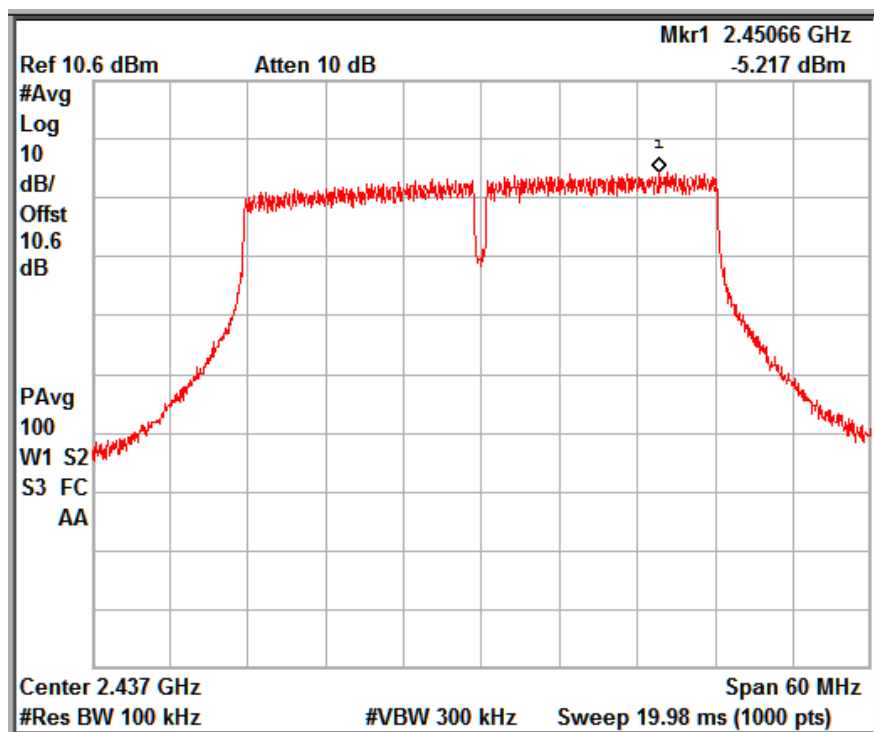
Channel Frequency: 2452 MHz

www.tuv.com



Data Rate: MCS7

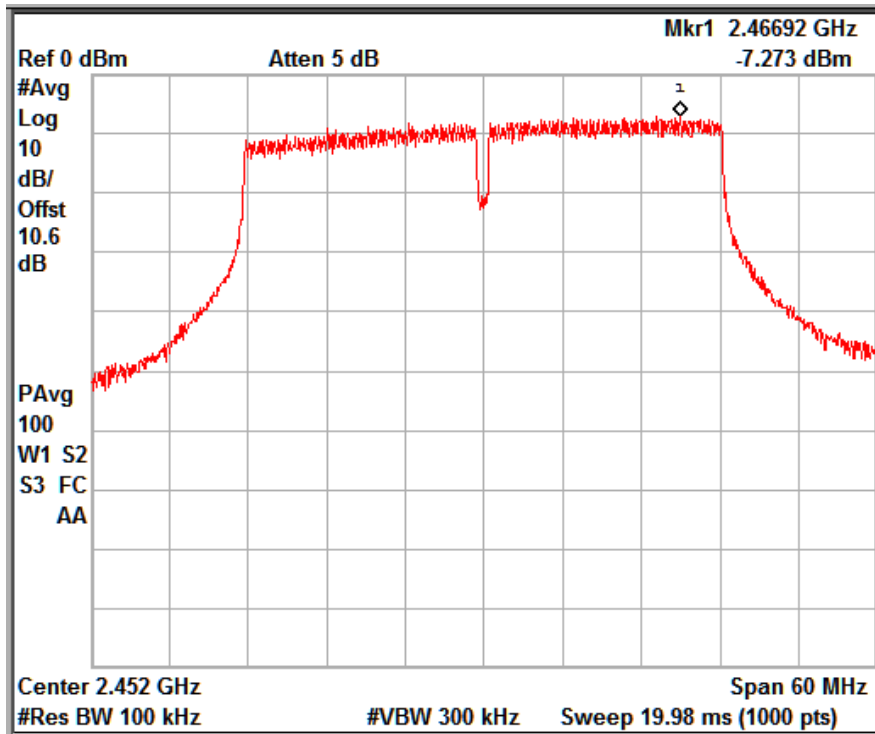
Channel Frequency: 2422 MHz



Data Rate: MCS7

Channel Frequency: 2437 MHz

www.tuv.com



Data Rate: MCS7

Channel Frequency: 2452 MHz

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N mode MIMO 20 MHz Channel Bandwidth_ch0

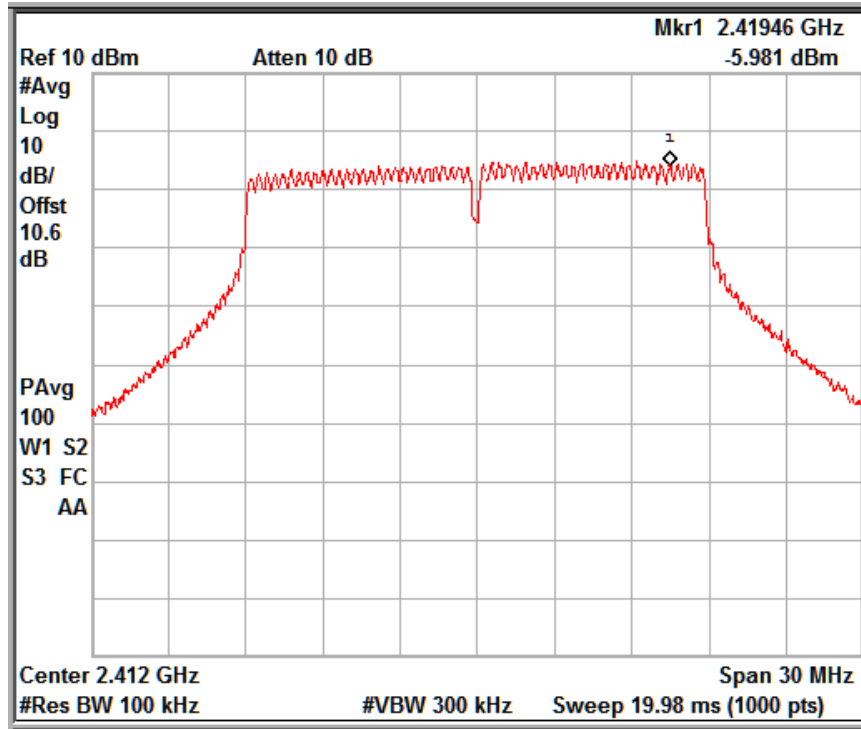
802.11 Protocol	Data Rate (Mbps)	Frequency (MHz)	CH 0 PSD (dBm)	Add $10\log(N_{Ant})$	Final PSD (dBm)	Limit (dBm)	Margin (dB)
n	MCS 8	2412.00	-5.98	3.01	-2.97	8.00	-10.97
		2437.00	-2.98	3.01	0.03	8.00	-7.97
		2462.00	-6.58	3.01	-3.57	8.00	-11.57
	MCS 11	2412.00	-5.88	3.01	-2.87	8.00	-10.87
		2437.00	-1.56	3.01	1.45	8.00	-6.55
		2462.00	-5.33	3.01	-2.32	8.00	-10.32
	MCS 15	2412.00	-6.76	3.01	-3.75	8.00	-11.75
		2437.00	-4.45	3.01	-1.44	8.00	-9.44
		2462.00	-7.71	3.01	-4.7	8.00	-12.7

N mode MIMO 20 MHz Channel Bandwidth_ch1

802.11 Protocol	Data Rate (Mbps)	Frequency (MHz)	CH 0 PSD (dBm)	Add $10\log(N_{Ant})$	Final PSD (dBm)	Limit (dBm)	Margin (dB)
n	MCS 8	2412.00	-9.60	3.01	-6.59	8.00	-14.59
		2437.00	-4.03	3.01	-1.02	8.00	-9.02
		2462.00	-11.34	3.01	-8.33	8.00	-16.33
	MCS 11	2412.00	-2.10	3.01	0.91	8.00	-7.09
		2437.00	3.78	3.01	6.79	8.00	-1.21
		2462.00	-8.34	3.01	-5.33	8.00	-13.33
	MCS 15	2412.00	-11.1	3.01	-8.09	8.00	-16.09
		2437.00	-9.34	3.01	-6.33	8.00	-14.33
		2462.00	-11.81	3.01	-8.8	8.00	-16.8

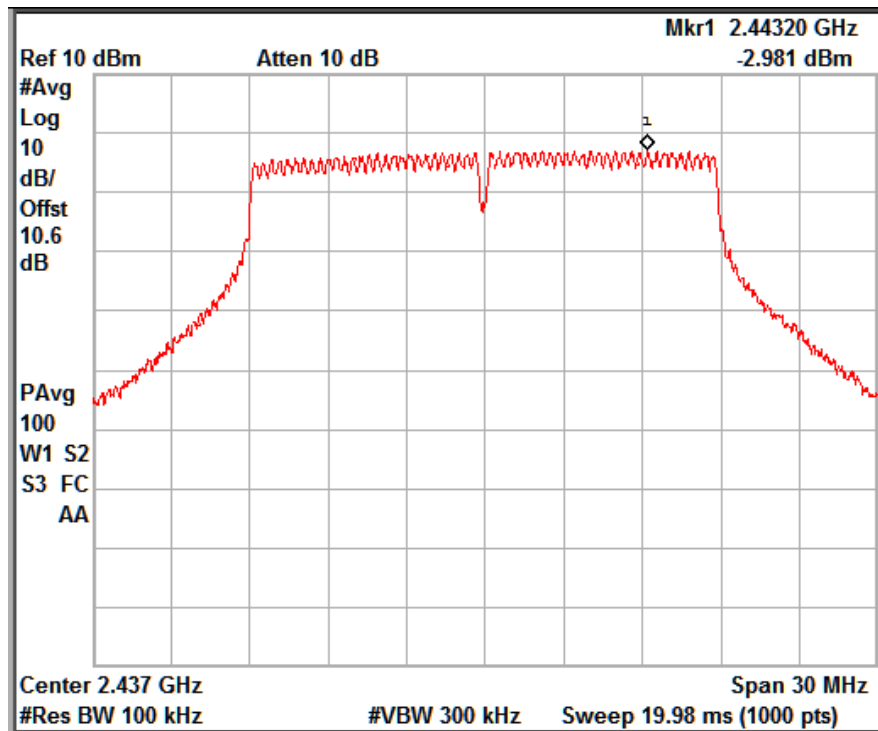
www.tuv.com

Chain 0



Data Rate: MCS8

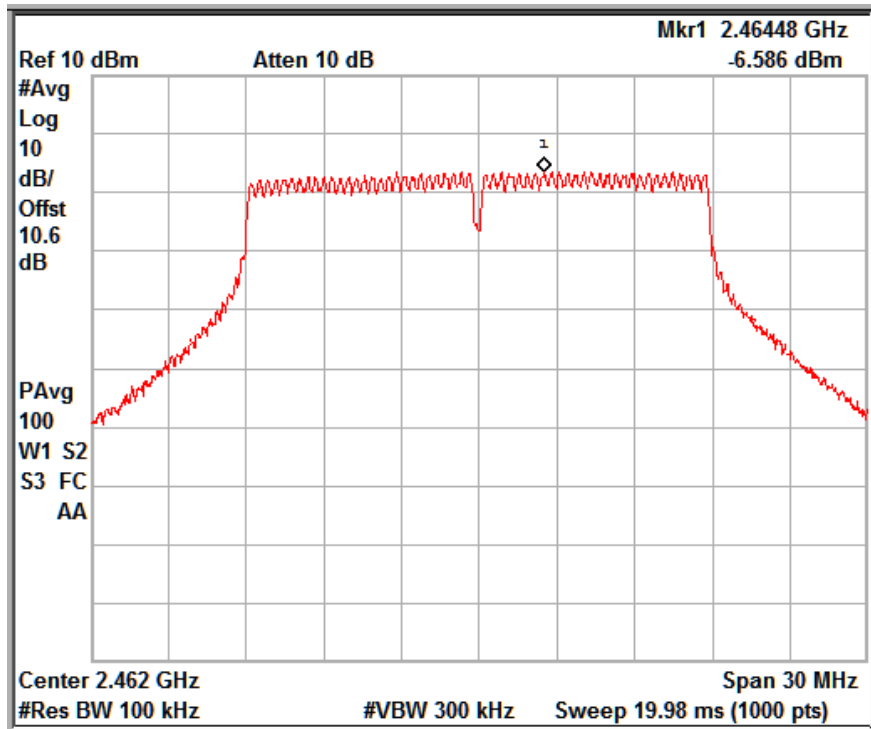
Channel Frequency: 2412 MHz



Data Rate: MCS8

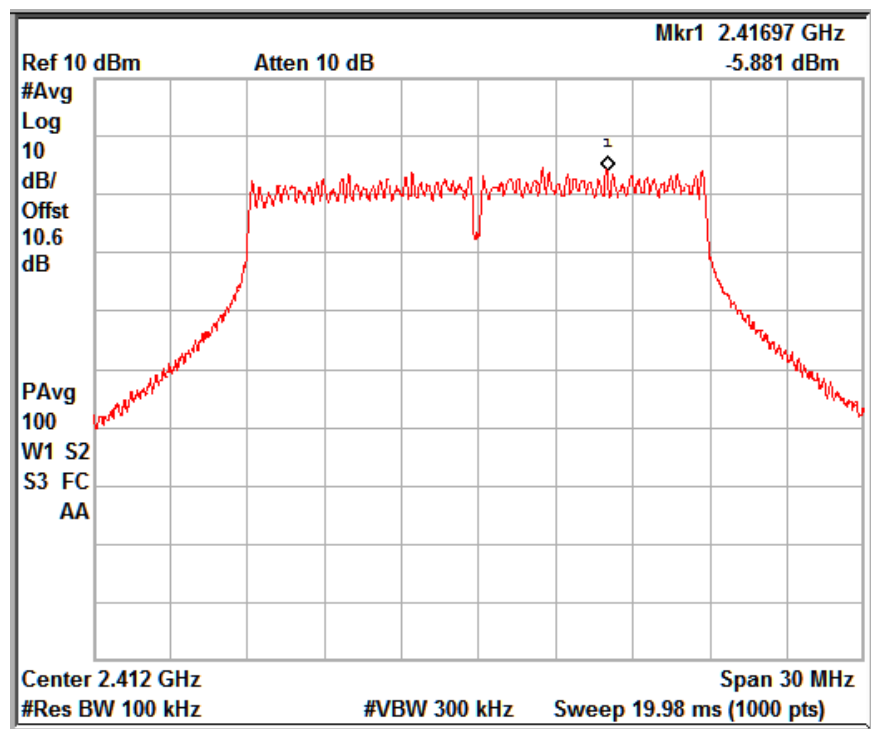
Channel Frequency: 2437 MHz

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Data Rate: MCS8

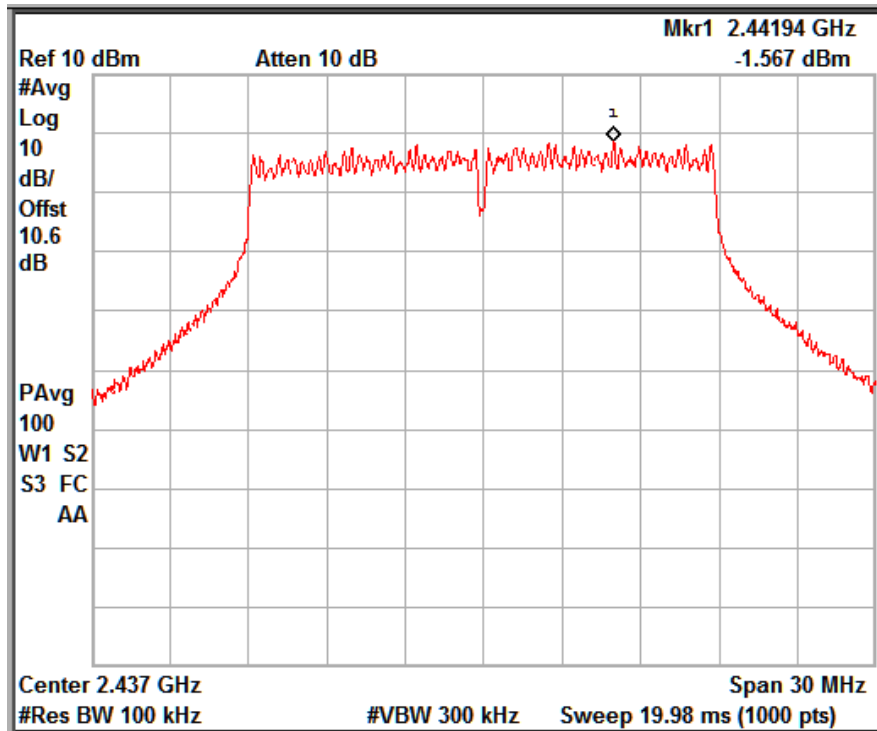
Channel Frequency: 2462 MHz



Data Rate: MCS11

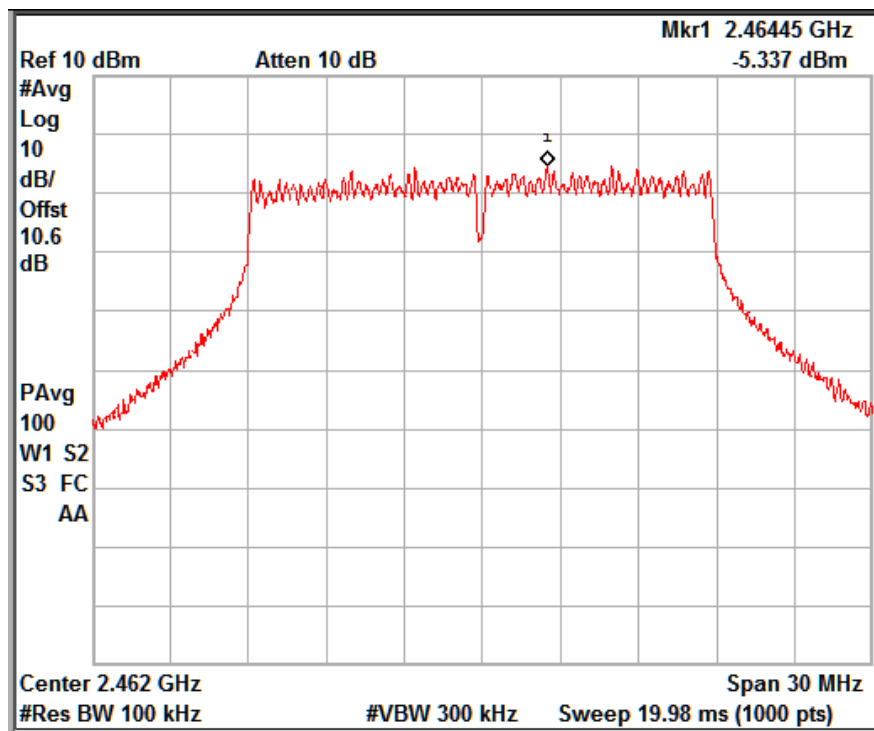
Channel Frequency: 2412 MHz

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Data Rate: MCS11

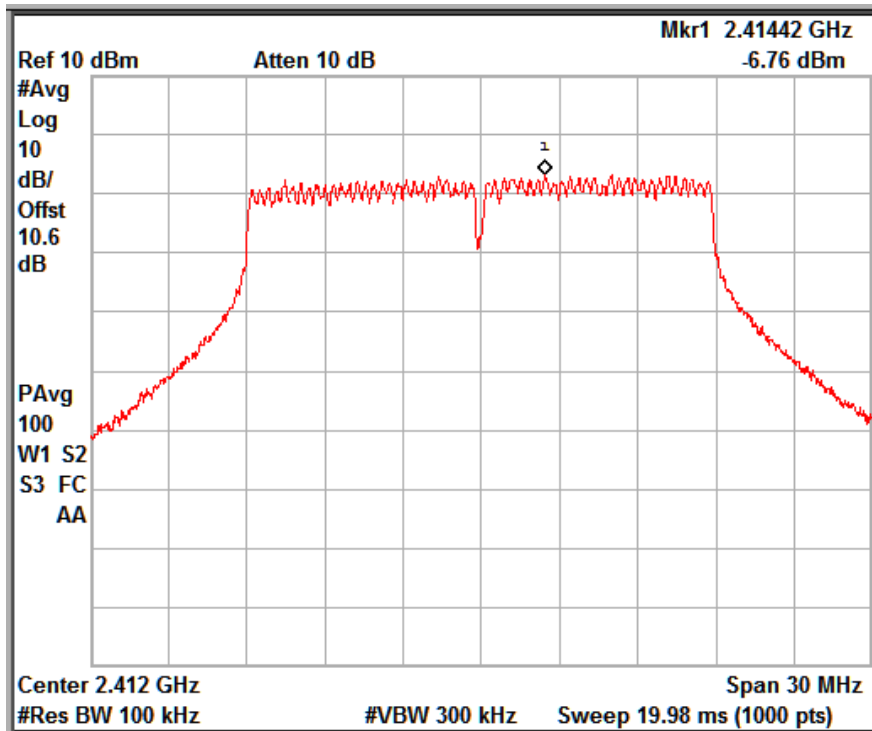
Channel Frequency: 2437 MHz



Data Rate: MCS11

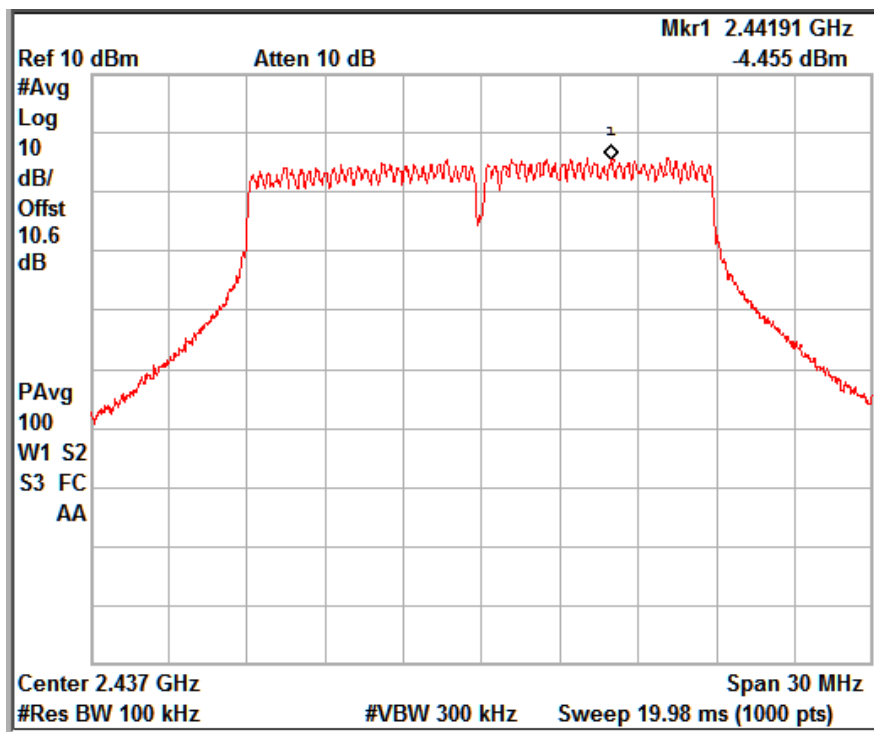
Channel Frequency: 2462 MHz

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Data Rate: MCS15

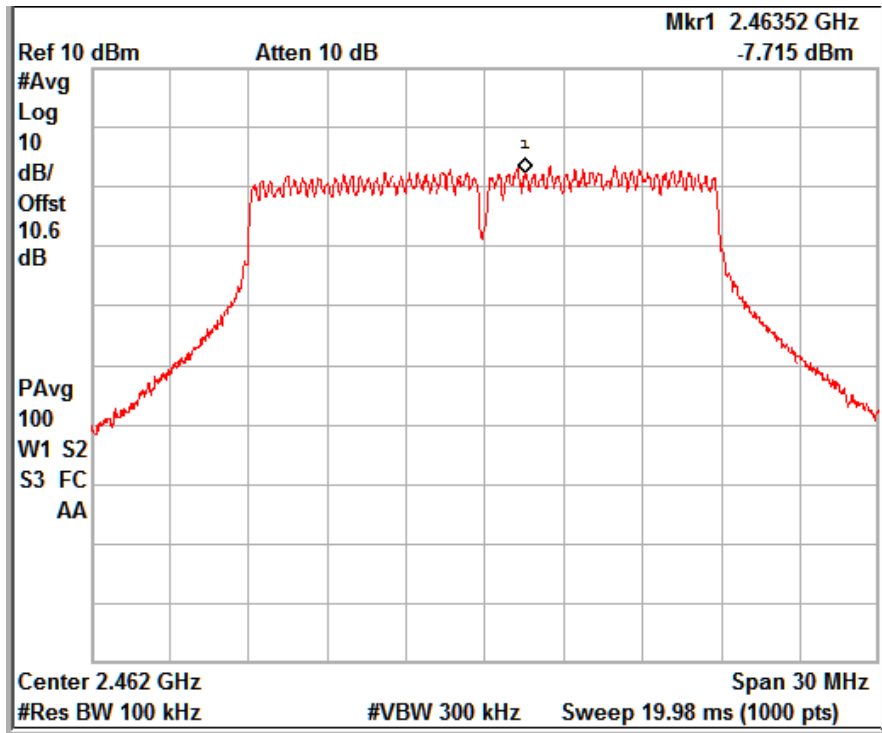
Channel Frequency: 2412 MHz



Data Rate: MCS15

Channel Frequency: 2437 MHz

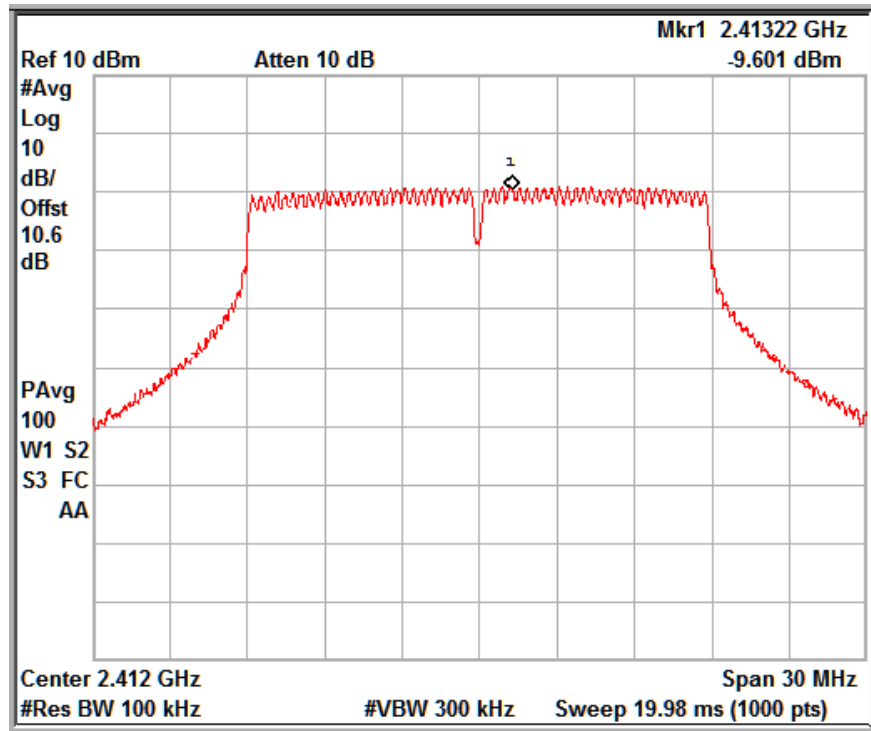
www.tuv.com



Data Rate: MCS15

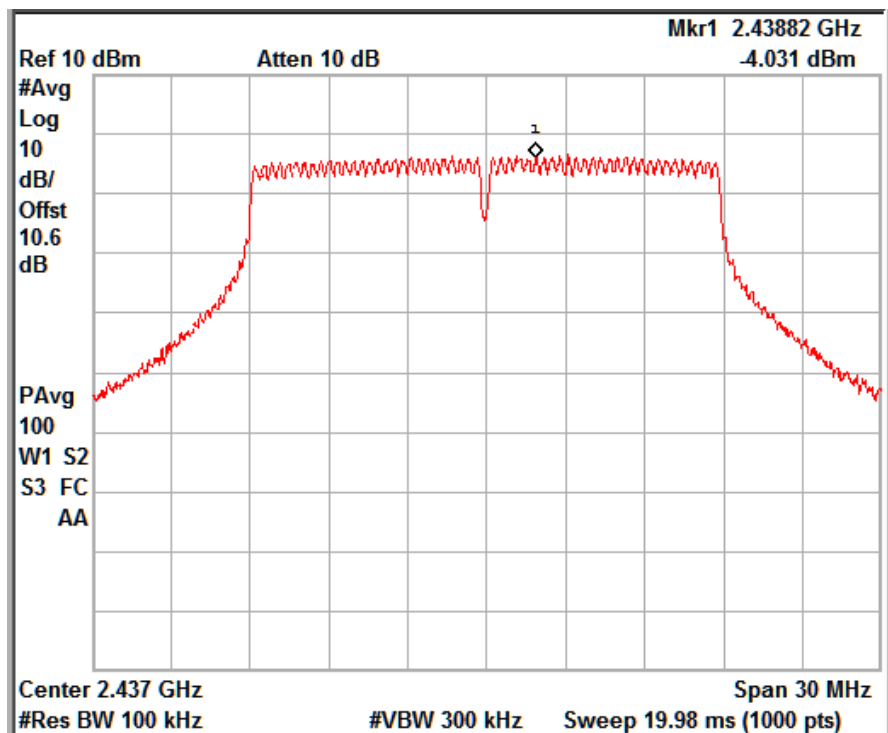
Channel Frequency: 2462 MHz

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Chain 1



Data Rate: MCS8

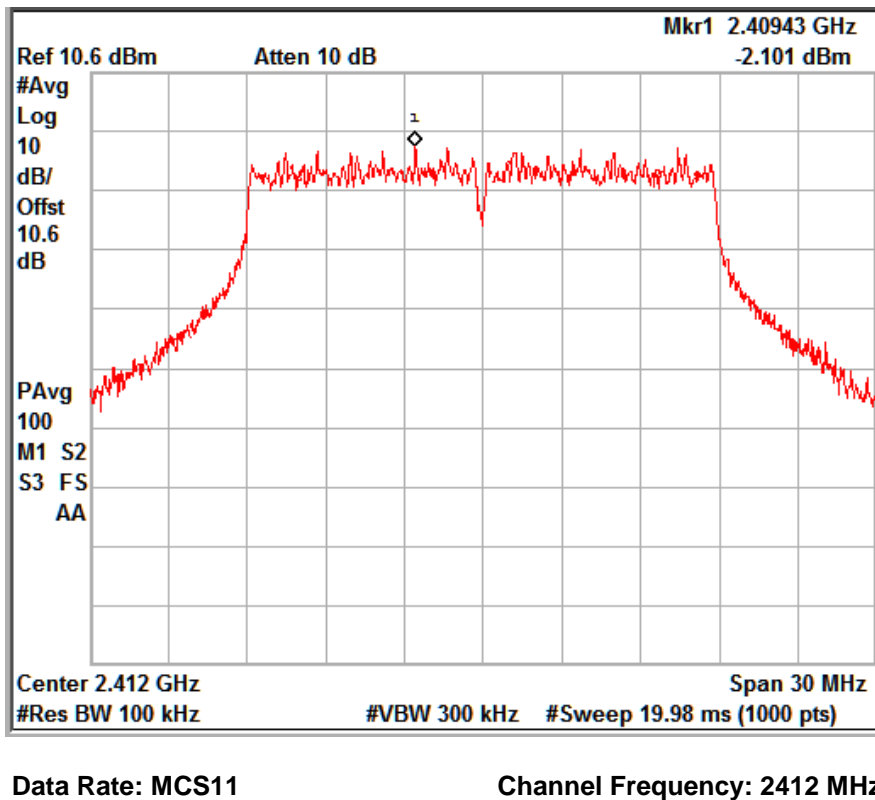
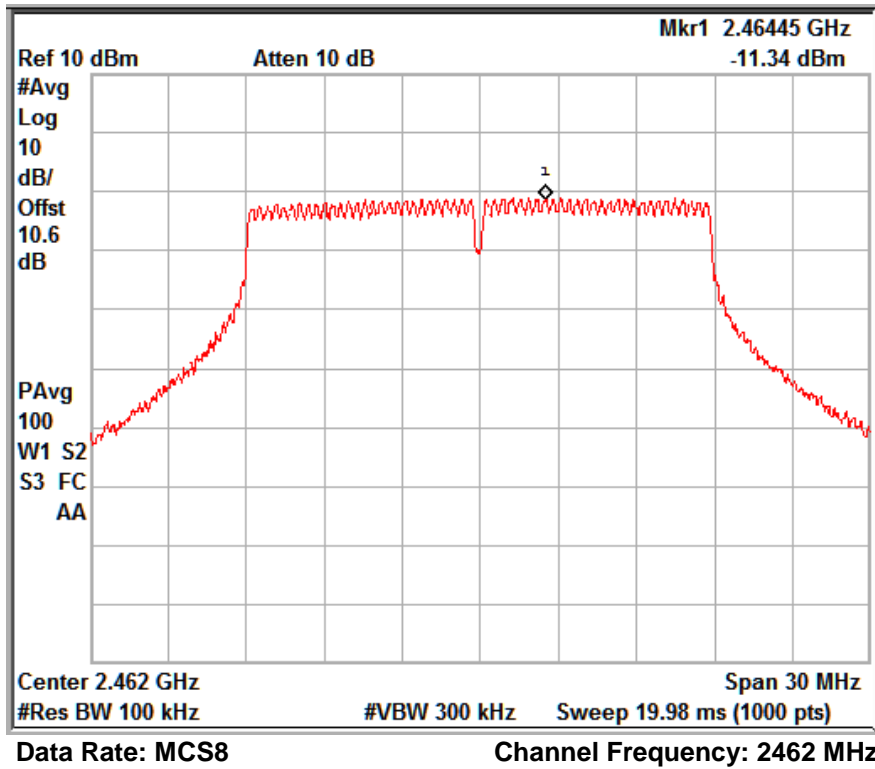
Channel Frequency: 2412 MHz



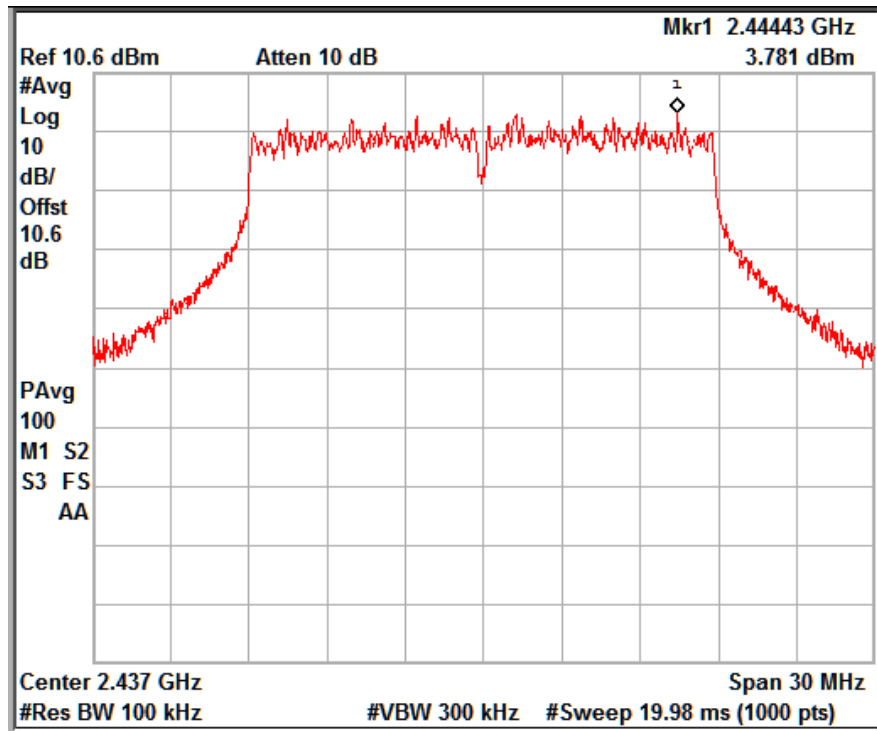
Data Rate: MCS8

Channel Frequency: 2437 MHz

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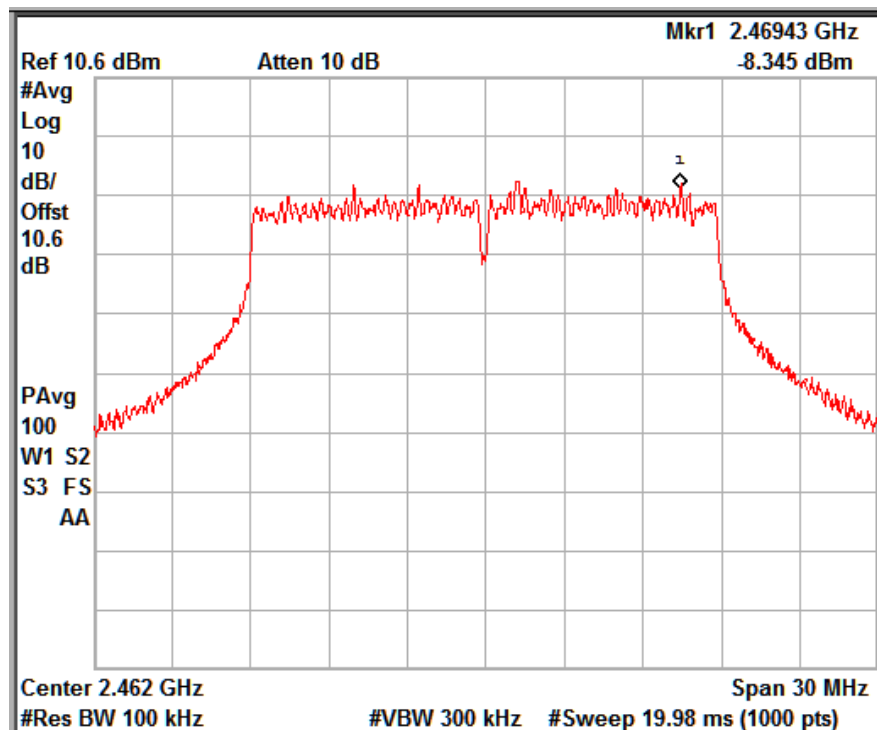


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Data Rate: MCS11

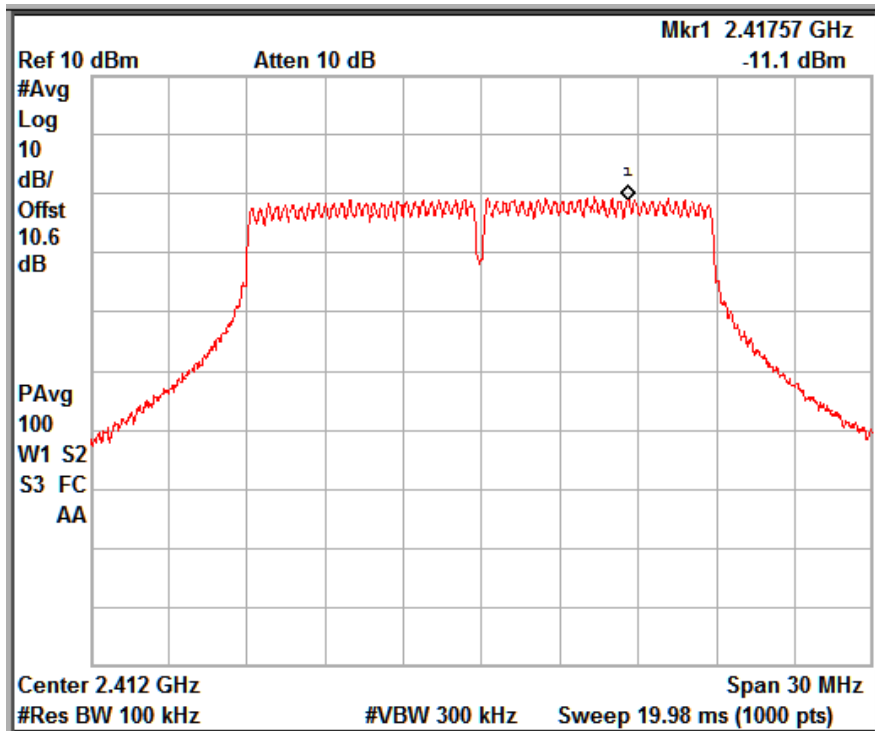
Channel Frequency: 2437 MHz



Data Rate: MCS11

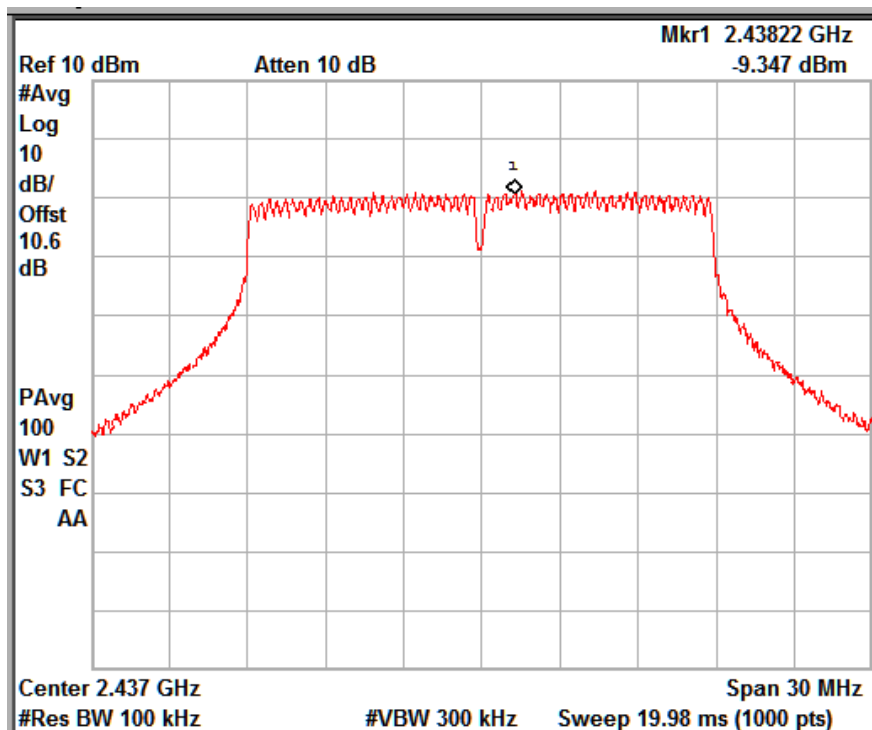
Channel Frequency: 2462 MHz

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Data Rate: MCS15

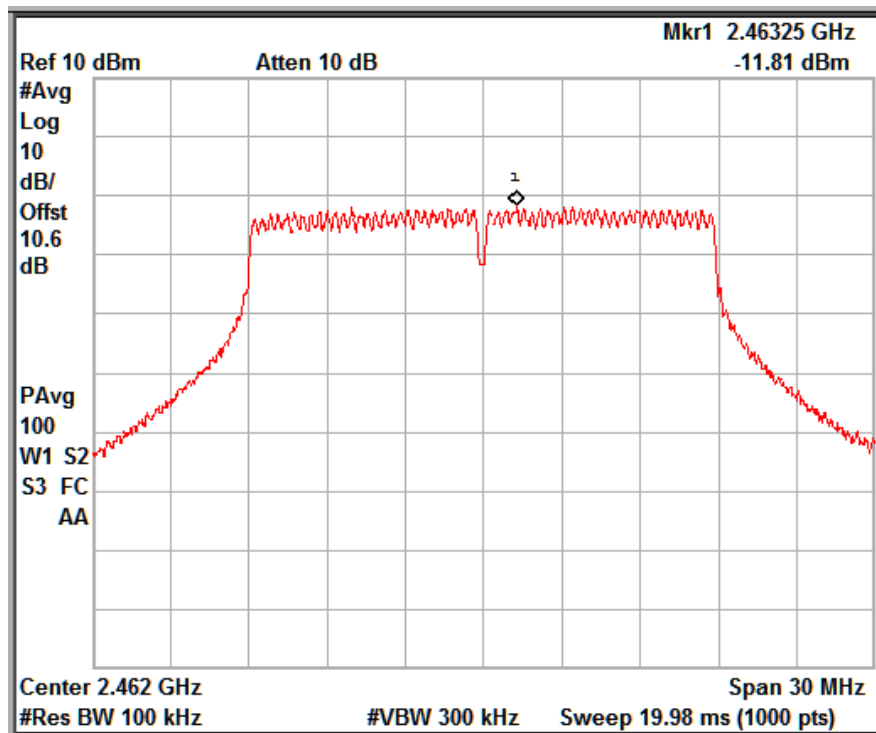
Channel Frequency: 2412 MHz



Data Rate: MCS15

Channel Frequency: 2437 MHz

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Data Rate: MCS15

Channel Frequency: 2462 MHz

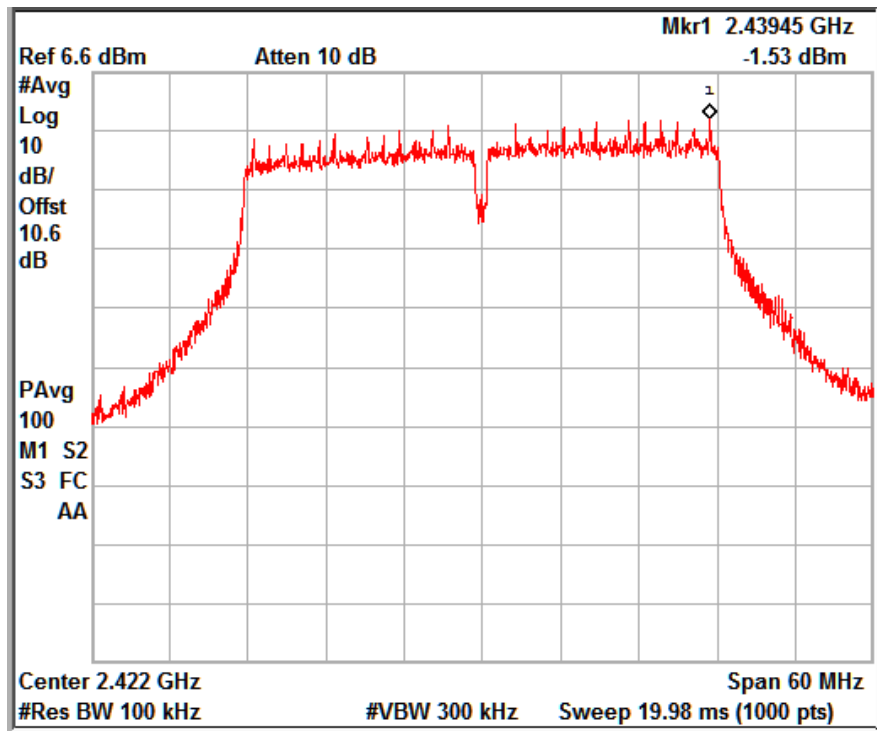
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N mode MIMO 40 MHz_Ch0

802.11 Protocol	Data Rate (Mbps)	Frequency (MHz)	CH 0 PSD (dBm)	Add $10\log(N_{Ant})$	Final PSD (dBm)	Limit (dBm)	Margin (dB)
n	MCS 8	2422.00	-1.53	3.01	1.48	8.00	-6.52
		2437.00	2.73	3.01	5.74	8.00	-2.26
		2452.00	-8.43	3.01	-5.42	8.00	-13.42
	MCS 11	2422.00	-1.53	3.01	1.48	8.00	-6.52
		2437.00	2.7	3.01	5.71	8.00	-2.29
		2452.00	-8.64	3.01	-5.63	8.00	-13.63
	MCS 15	2422.00	-1.82	3.01	1.19	8.00	-6.81
		2437.00	2.81	3.01	5.82	8.00	-2.18
		2452.00	-8.21	3.01	-5.2	8.00	-13.2

N mode MIMO 40 MHz_Ch1

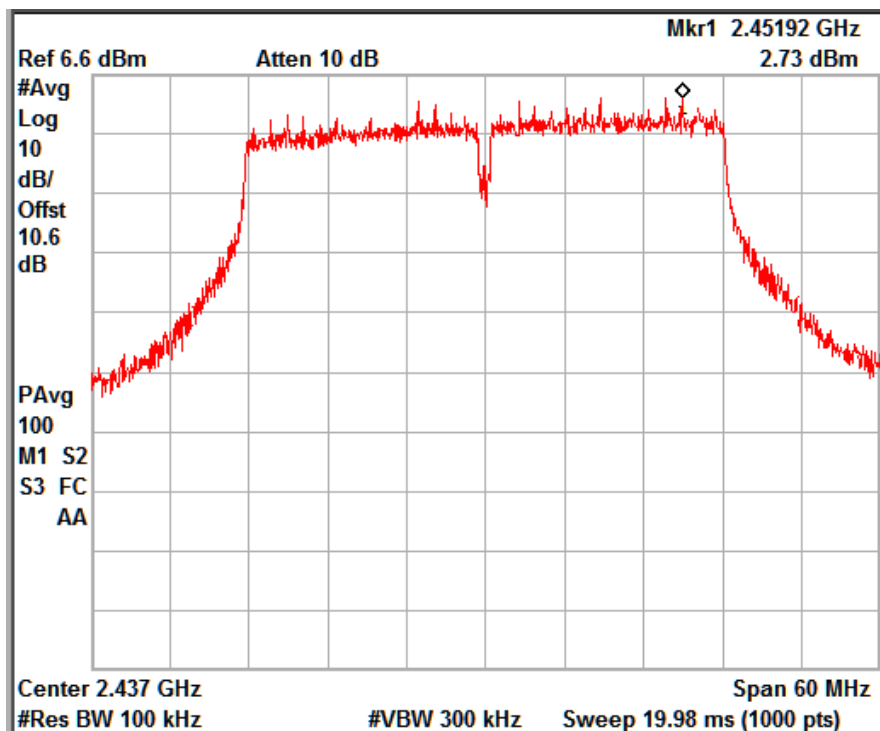
802.11 Protocol	Data Rate (Mbps)	Frequency (MHz)	CH 1 PSD (dBm)	Add $10\log(N_{Ant})$	Final PSD (dBm)	Limit (dBm)	Margin (dB)
n	MCS 8	2422.00	-5.01	3.01	-2.00	8.00	-10.00
		2437.00	0.55	3.01	3.56	8.00	-4.44
		2452.00	-13.06	3.01	-10.05	8.00	-18.05
	MCS 11	2422.00	-5.82	3.01	-2.81	8.00	-10.81
		2437.00	01.60	3.01	4.61	8.00	-3.39
		2452.00	-13.12	3.01	-10.11	8.00	-18.11
	MCS 15	2422.00	-5.49	3.01	-2.48	8.00	-10.48
		2437.00	-1.84	3.01	1.17	8.00	-6.83
		2452.00	-13.94	3.01	-10.93	8.00	-18.93

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Chain 0



Data Rate: MCS8

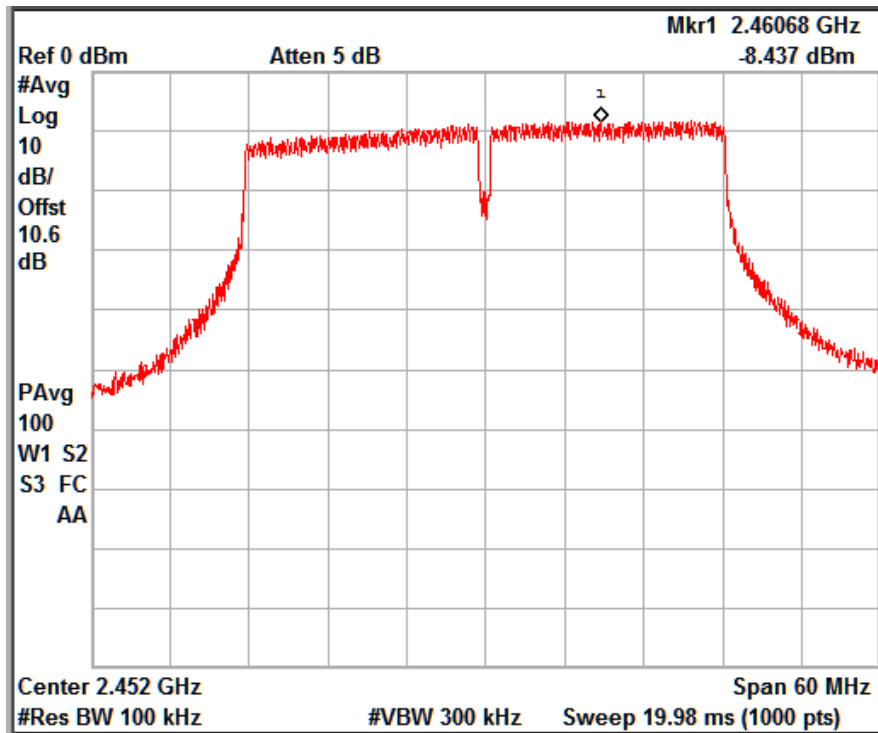
Channel Frequency: 2422 MHz



Data Rate: MCS8

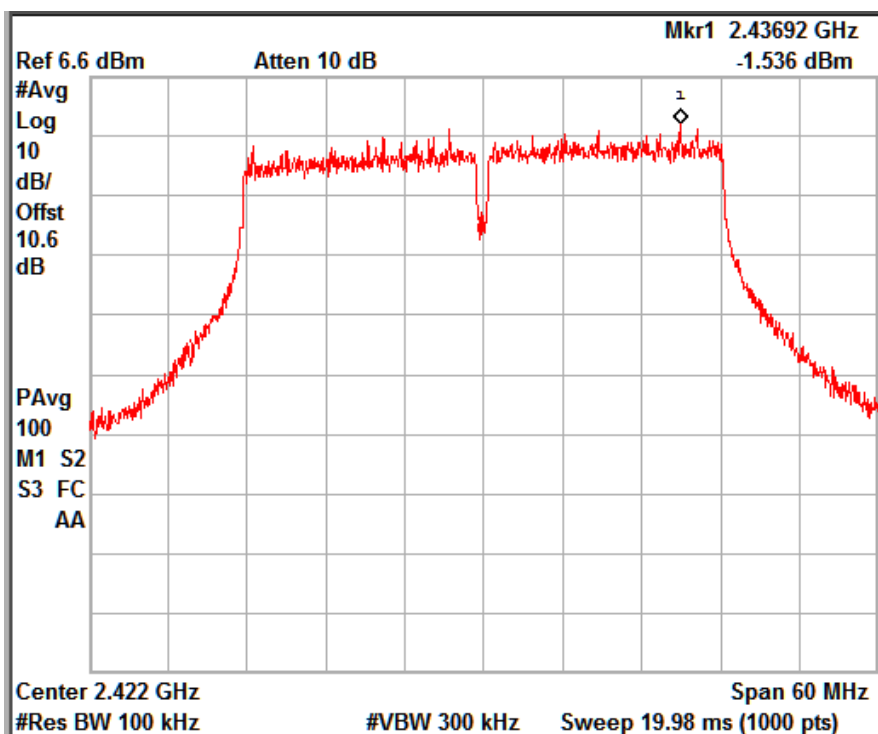
Channel Frequency: 2437 MHz

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Data Rate: MCS8

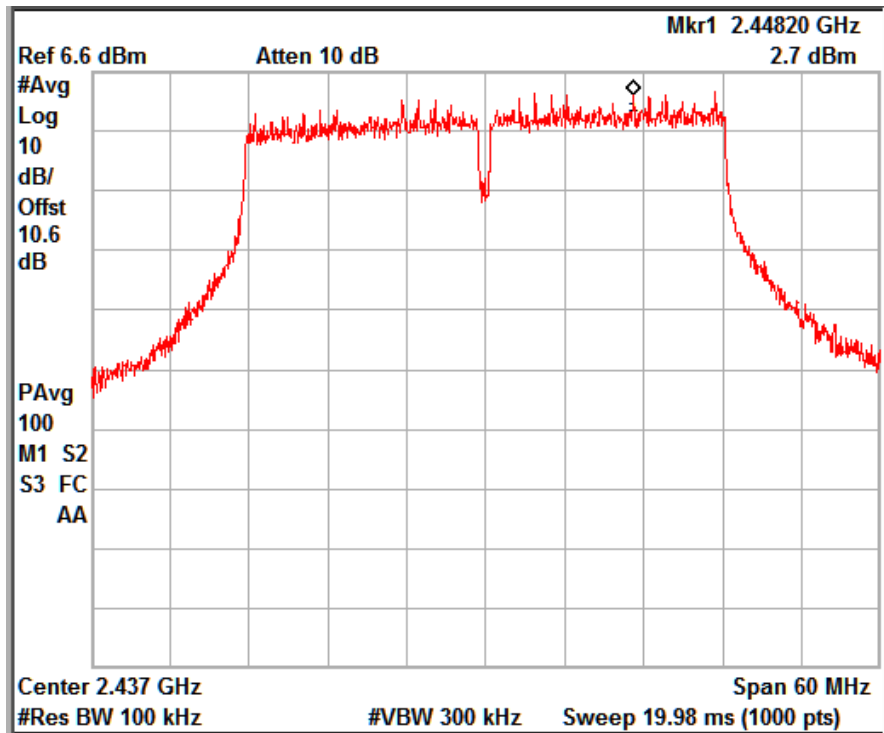
Channel Frequency: 2452 MHz



Data Rate: MCS11

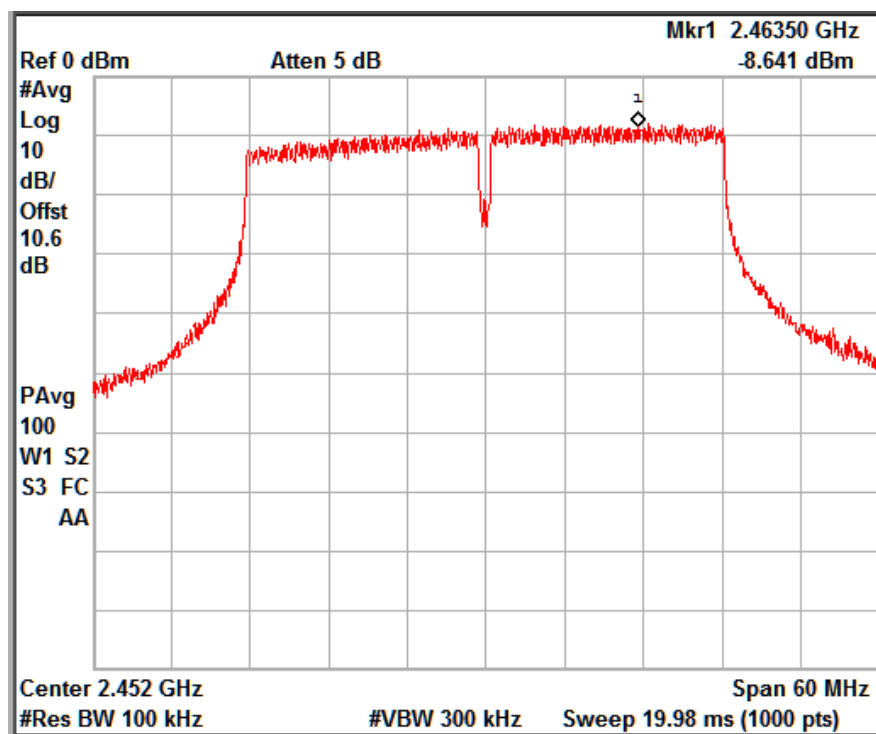
Channel Frequency: 2422 MHz

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Data Rate: MCS11

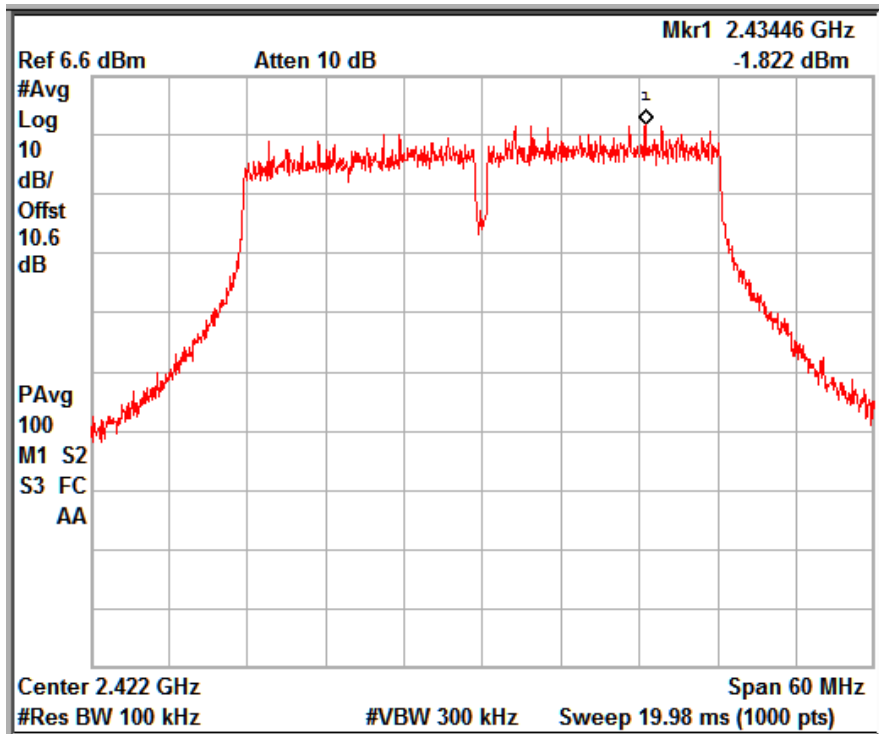
Channel Frequency: 2437 MHz



Data Rate: MCS11

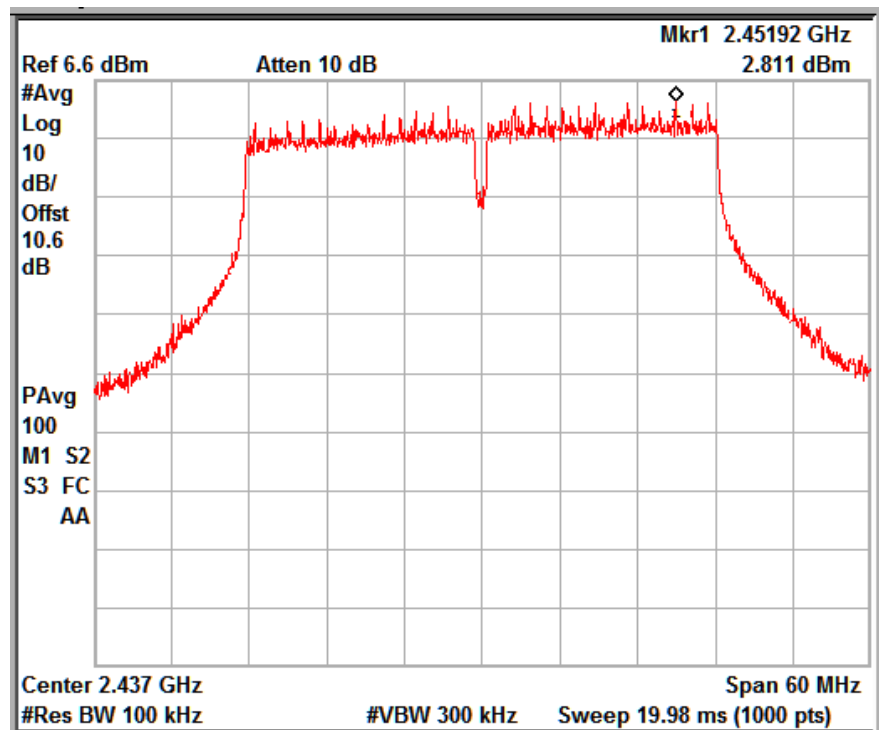
Channel Frequency: 2452 MHz

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Data Rate: MCS15

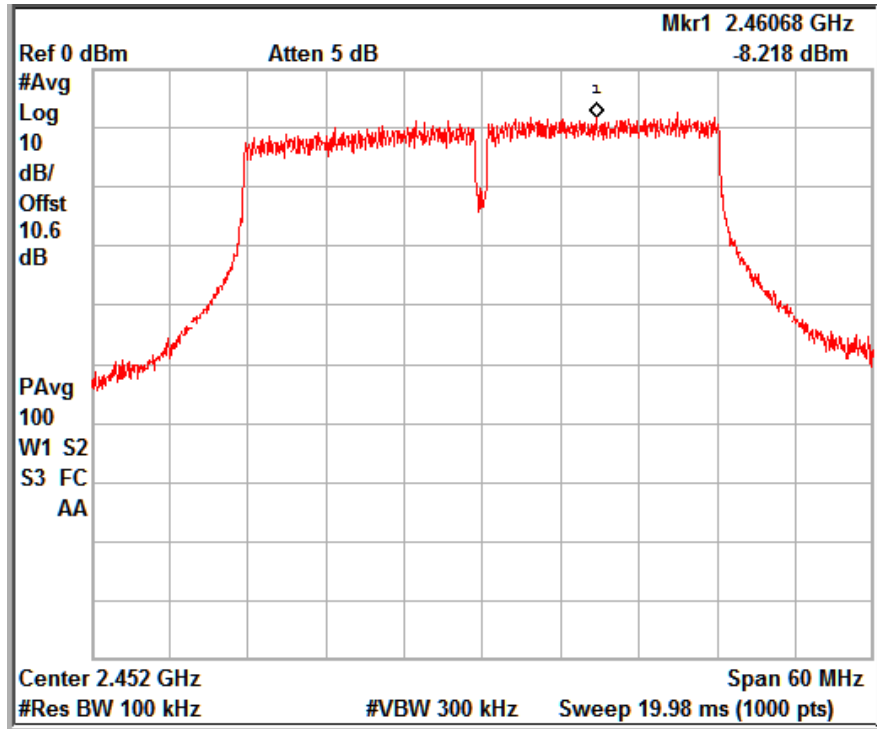
Channel Frequency: 2422 MHz



Data Rate: MCS15

Channel Frequency: 2437 MHz

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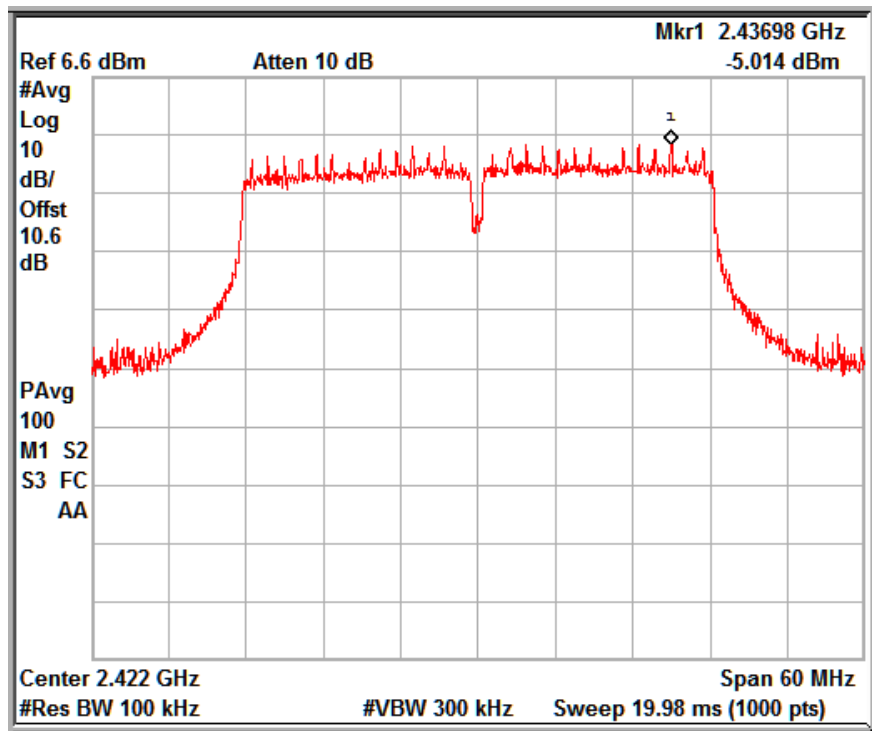


Data Rate: MCS15

Channel Frequency: 2452 MHz

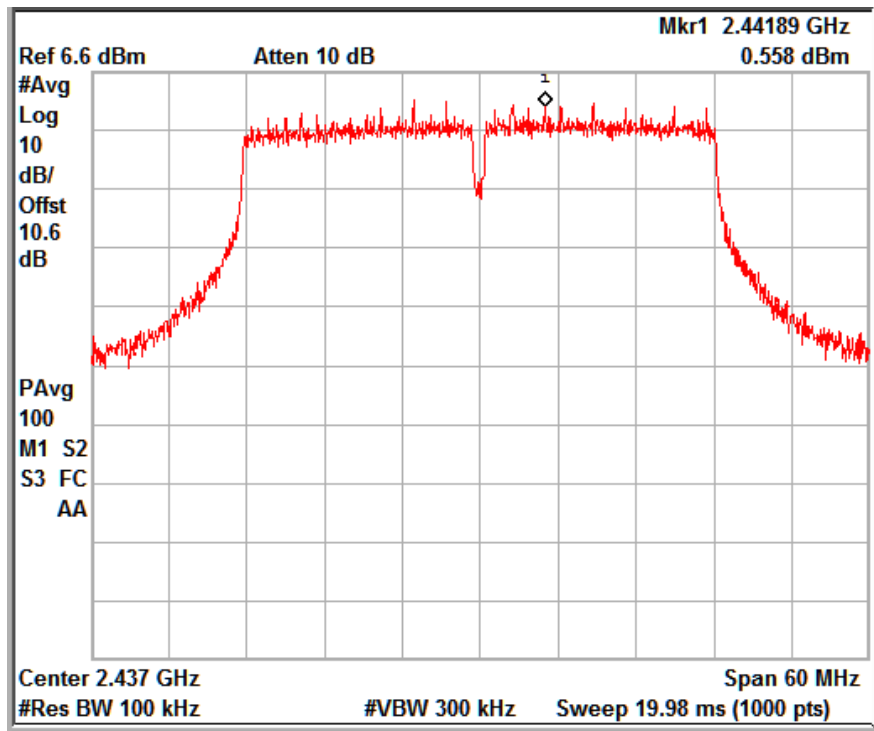
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Chain 1



Data Rate: MCS8

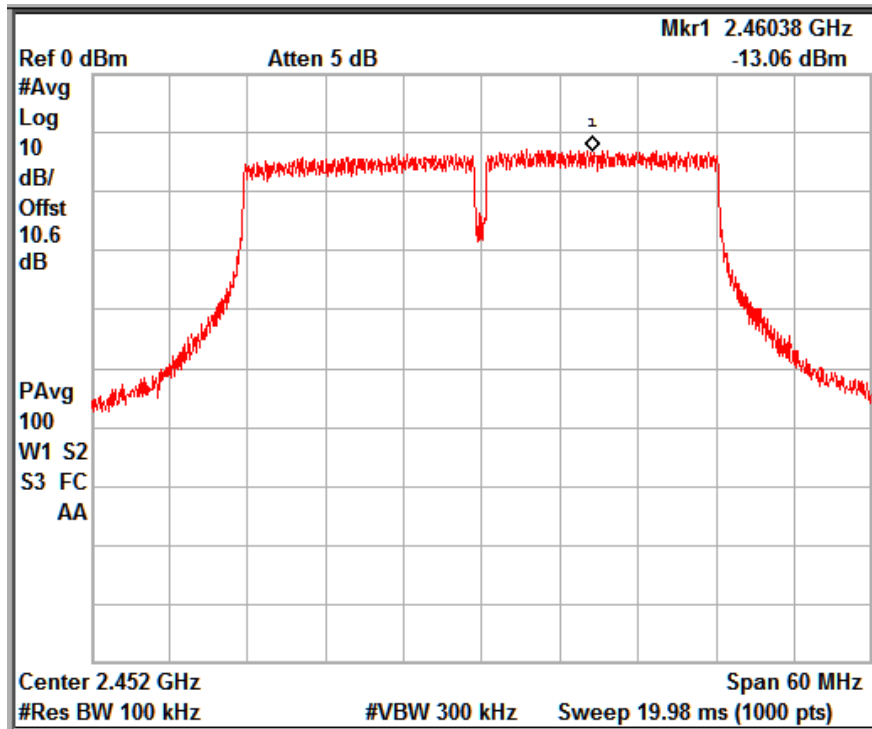
Channel Frequency: 2422 MHz



Data Rate: MCS8

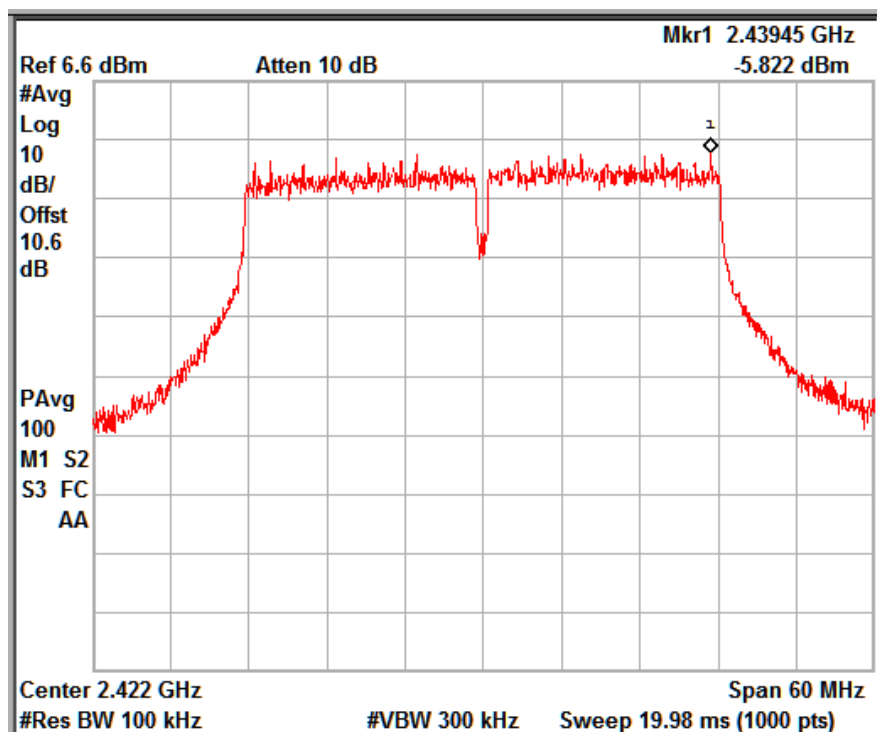
Channel Frequency: 2437 MHz

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Data Rate: MCS8

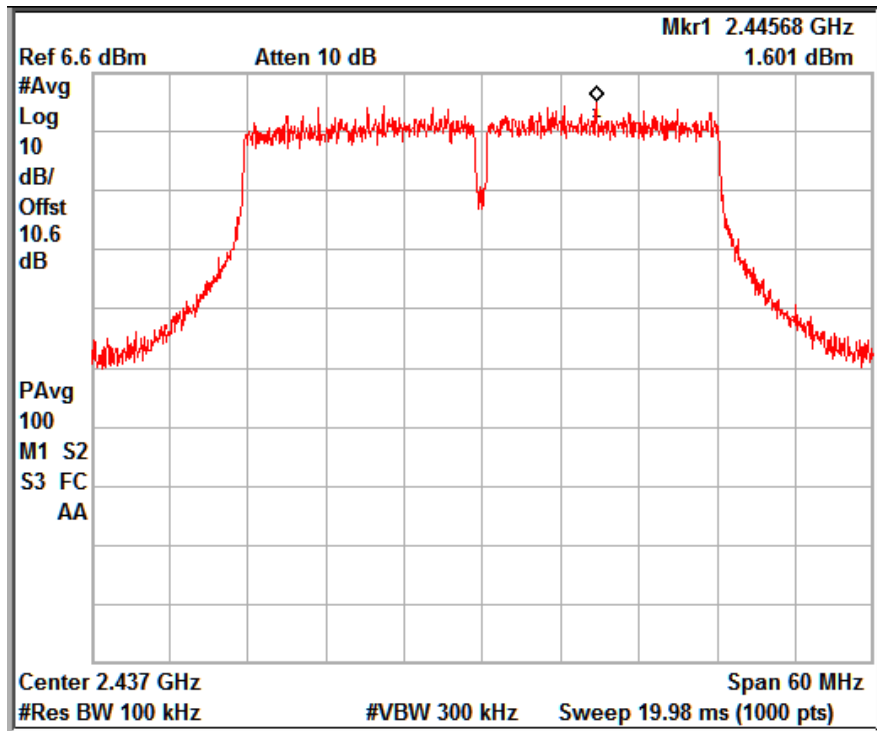
Channel Frequency: 2452 MHz



Data Rate: MCS11

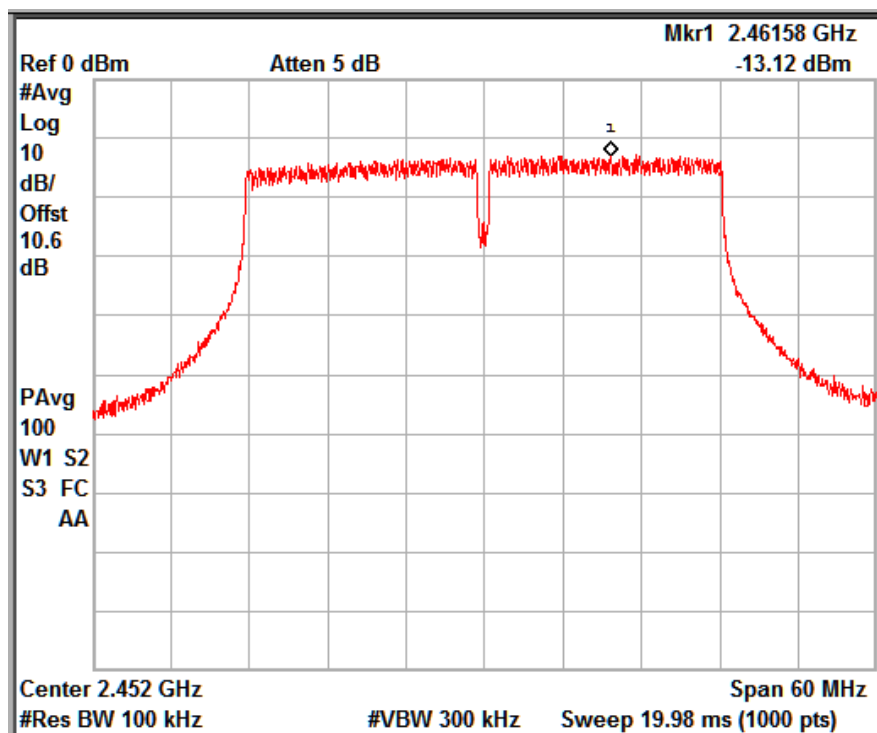
Channel Frequency: 2422 MHz

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Data Rate: MCS11

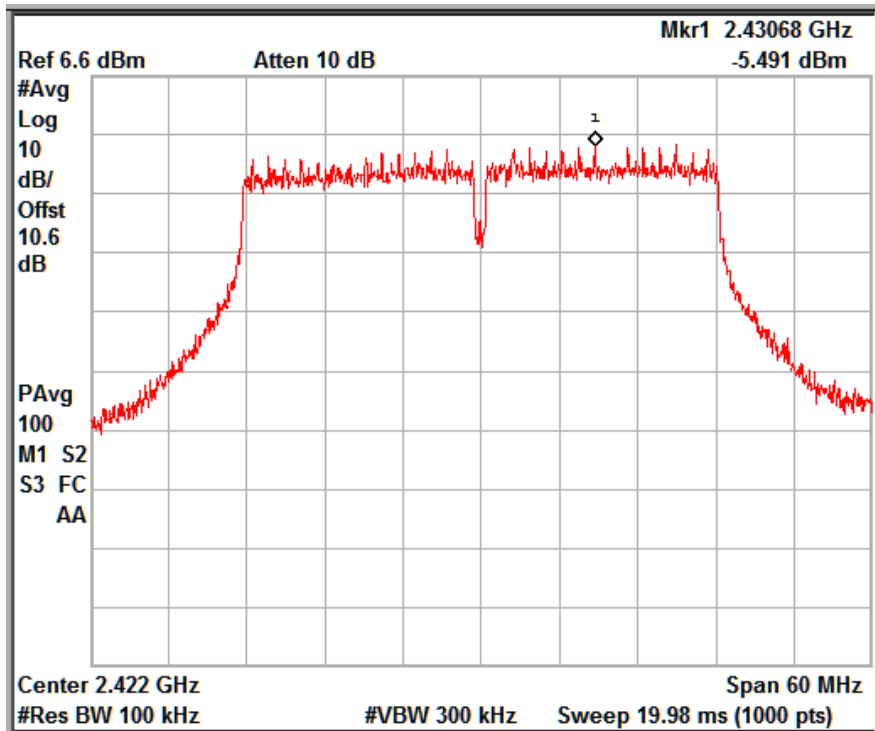
Channel Frequency: 2437 MHz



Data Rate: MCS11

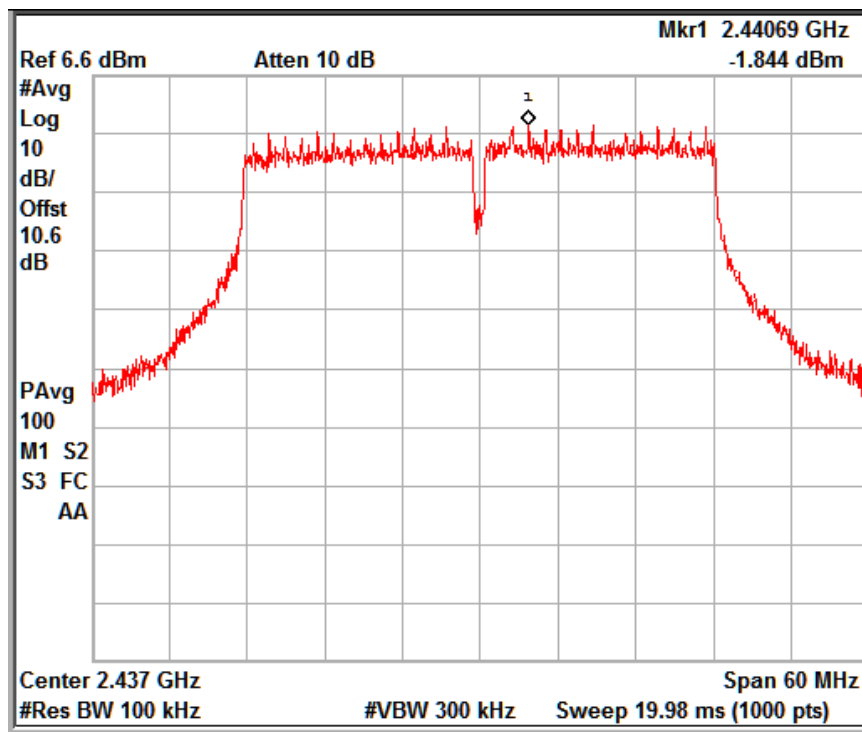
Channel Frequency: 2452 MHz

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Data Rate: MCS15

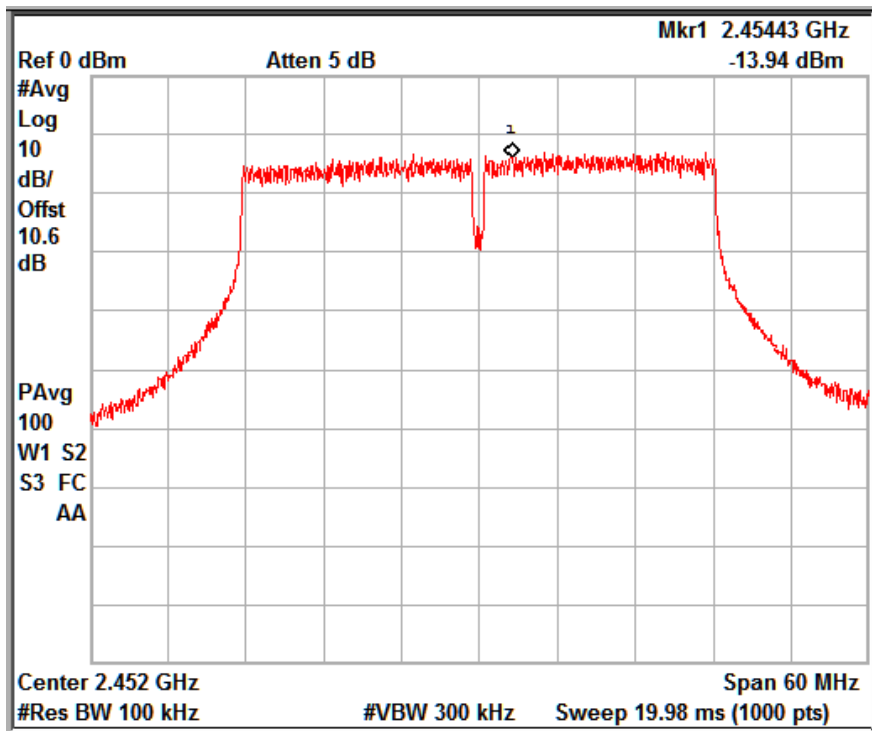
Channel Frequency: 2422 MHz



Data Rate: MCS15

Channel Frequency: 2437 MHz

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Data Rate: MCS15

Channel Frequency: 2452 MHz

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6 dB Bandwidth

Section 15.247(a) (2)

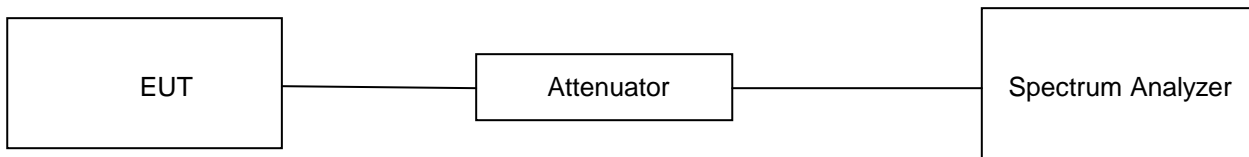
Result

Pass

Test Specification
Requirement

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

Test Method:

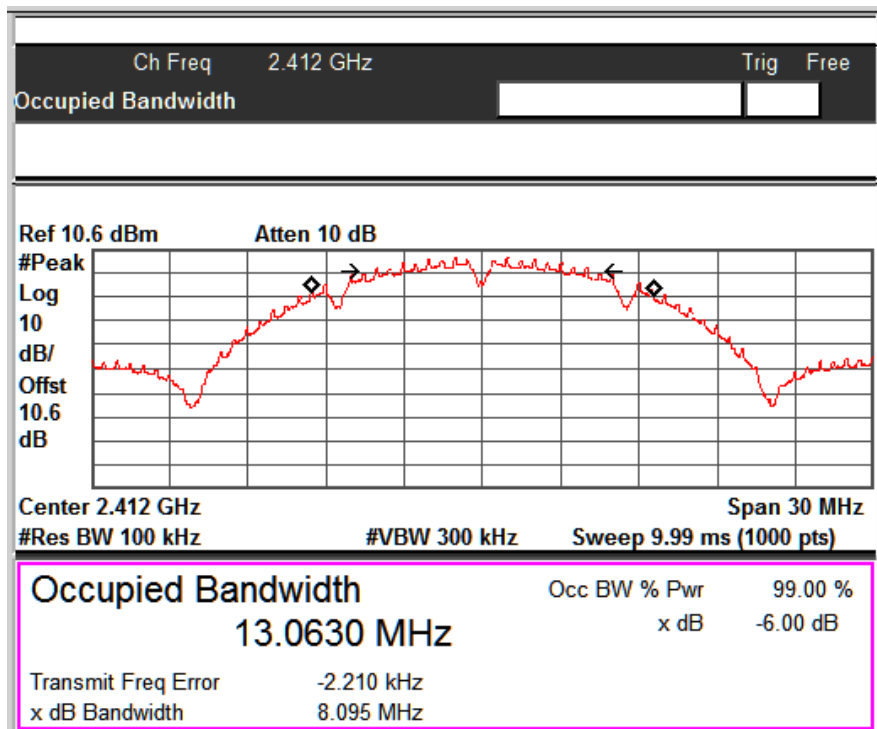


Test Result:

Offset value 10.6dB is added in the final measurement value.

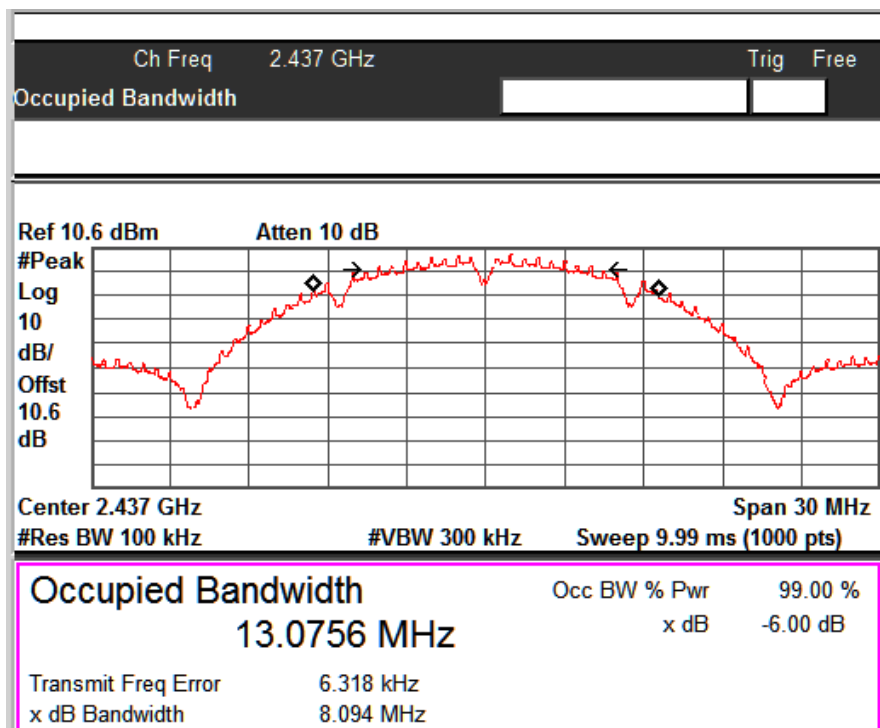
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	6 dB Bandwidth (MHz)	99% OBW (MHz)
b	1	2412.00	8.09	13.06
		2437.00	8.09	13.07
		2462.00	8.54	13.16
	11	2412.00	7.33	12.86
		2437.00	8.29	12.96
		2462.00	8.04	13.02

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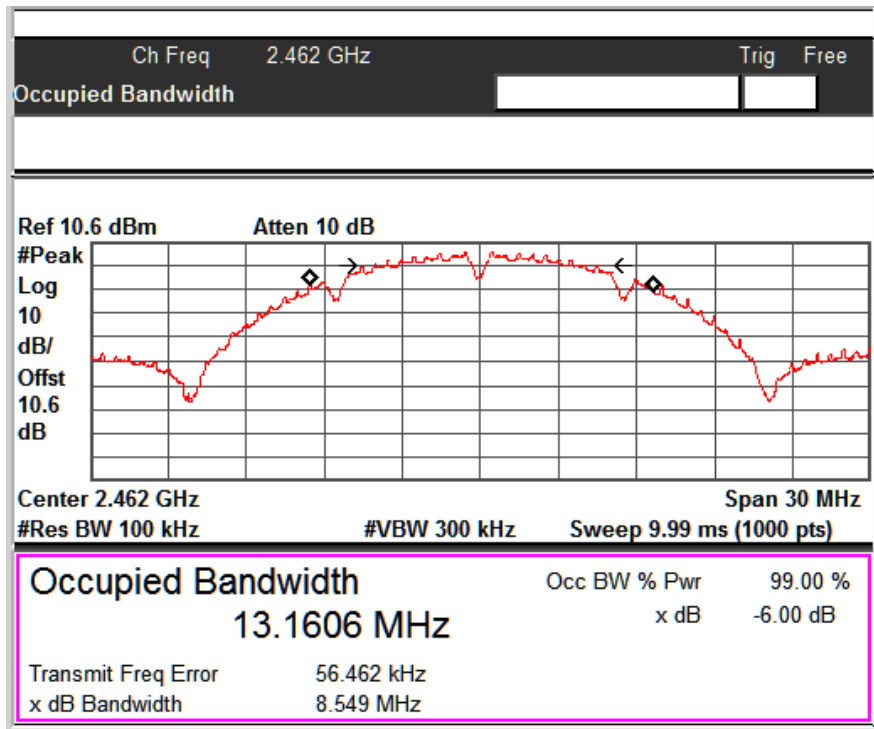
Data Rate: 1 Mbps

Channel frequency: 2412 MHz



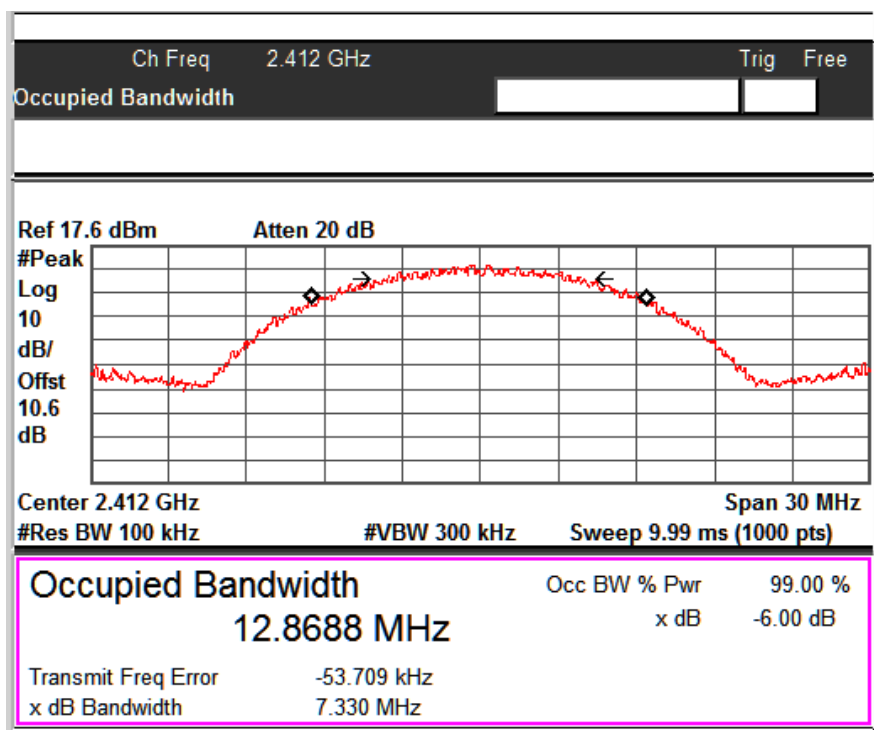
Data Rate: 1 Mbps

Channel frequency: 2437 MHz



Data Rate: 1 Mbps

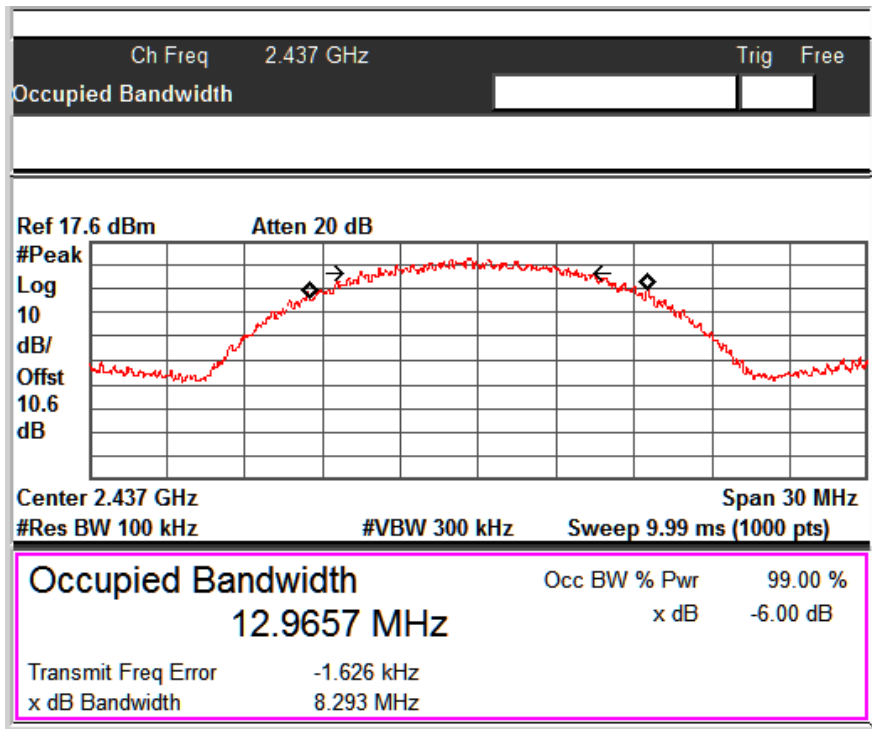
Channel frequency: 2462 MHz



Data Rate: 11 Mbps

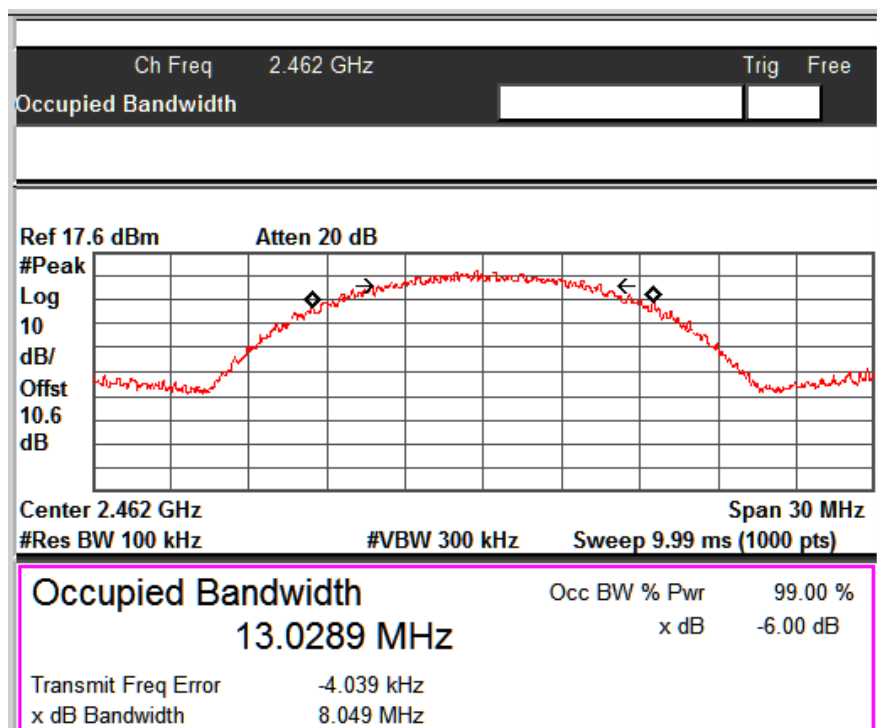
Channel frequencies: 2412 MHz

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Data Rate: 11 Mbps

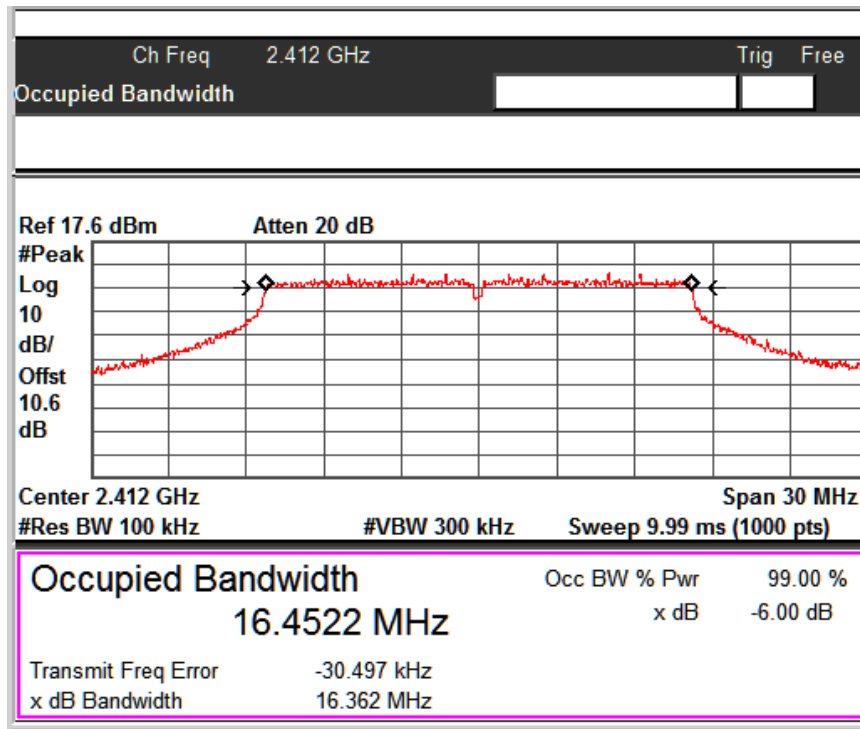
Channel frequency: 2437 MHz



Data Rate: 11 Mbps

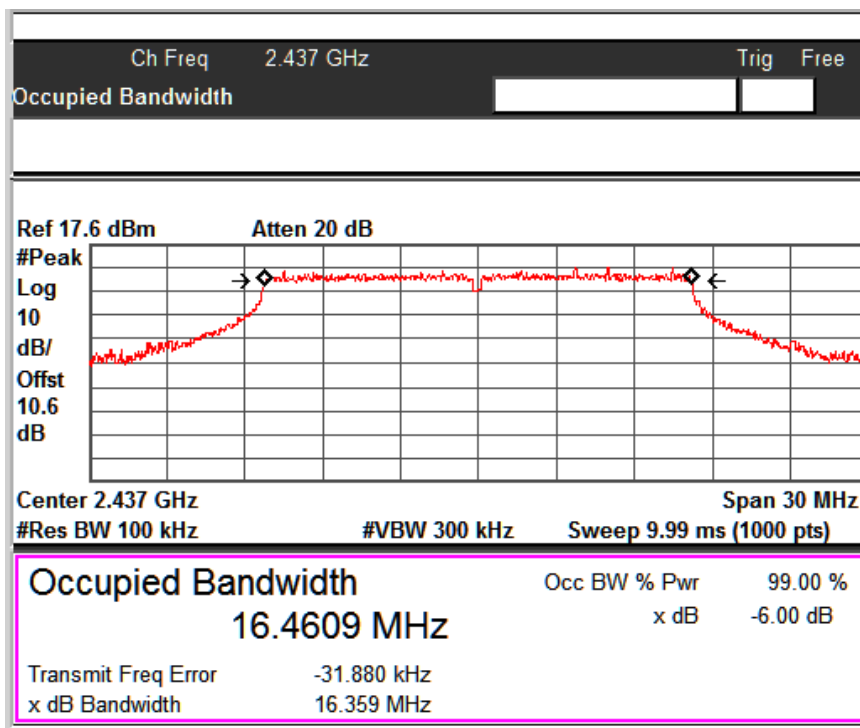
Channel frequency: 2462 MHz

802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	6 dB Bandwidth (MHz)	99% OBW (MHz)
g	6	2412.00	16.36	16.45
		2437.00	16.35	16.46
		2462.00	16.37	16.45
	24	2412.00	16.46	16.41
		2437.00	16.47	16.42
		2462.00	16.47	16.42
	54	2412.00	16.47	16.42
		2437.00	16.47	16.41
		2462.00	16.48	16.42



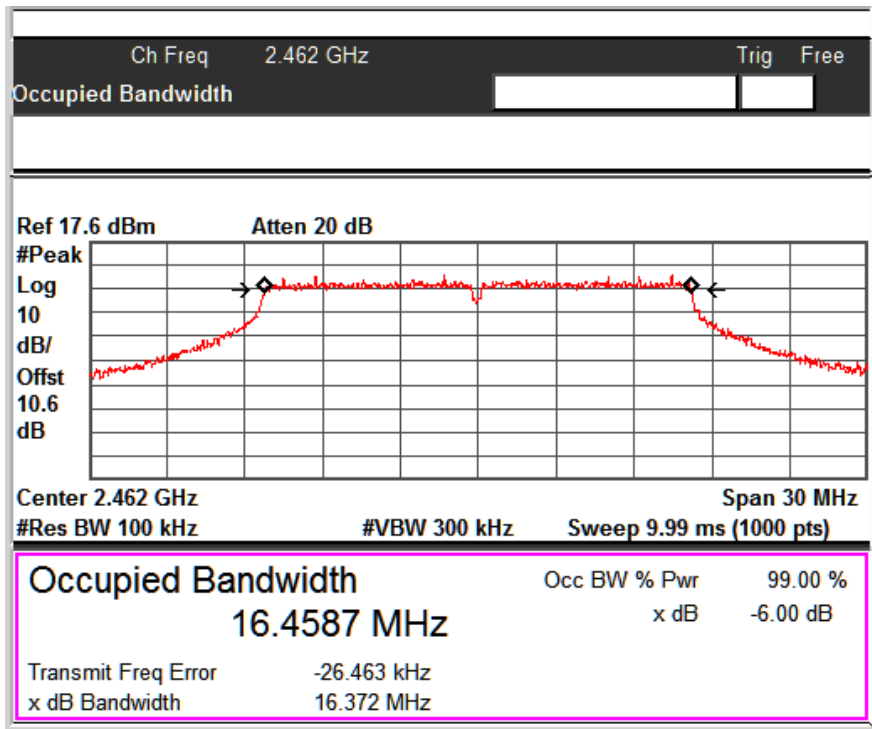
Data Rate: 6 Mbps

Channel frequencies: 2412 MHz



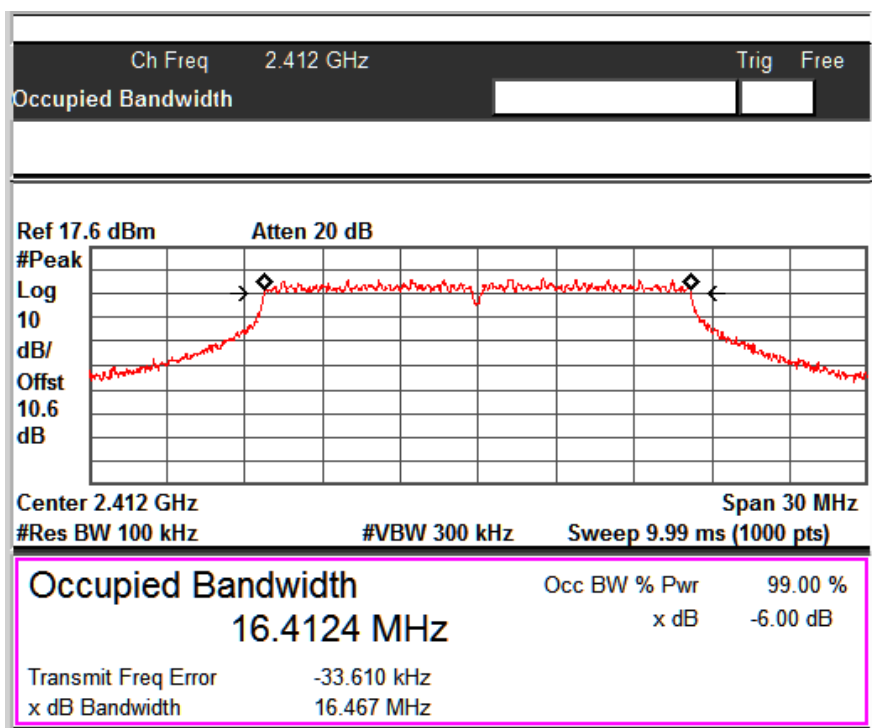
Data Rate: 6 Mbps

Channel frequencies: 2437 MHz



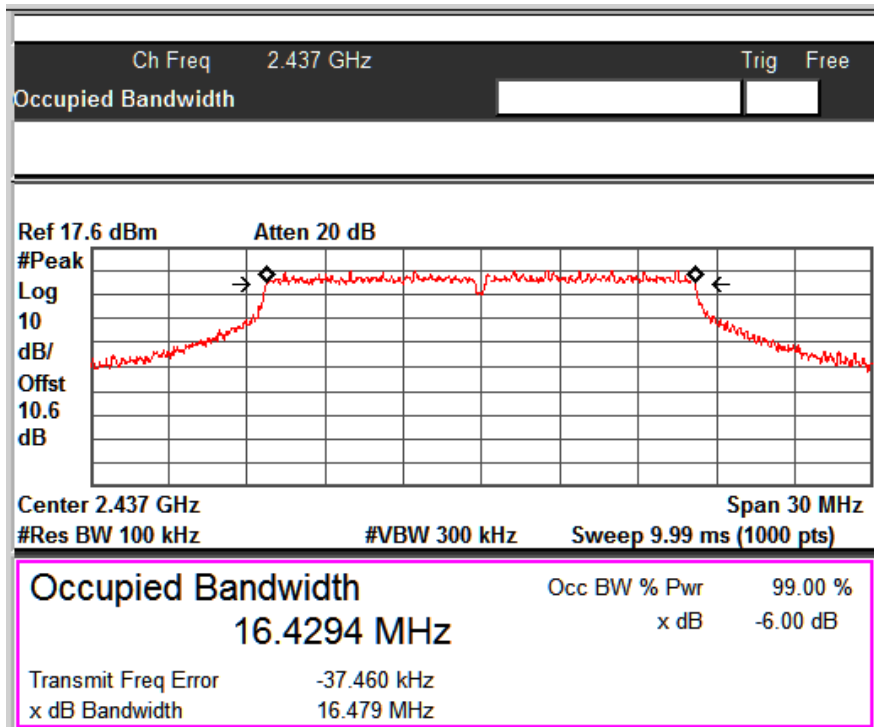
Data Rate: 6 Mbps

Channel frequencies: 2462 MHz



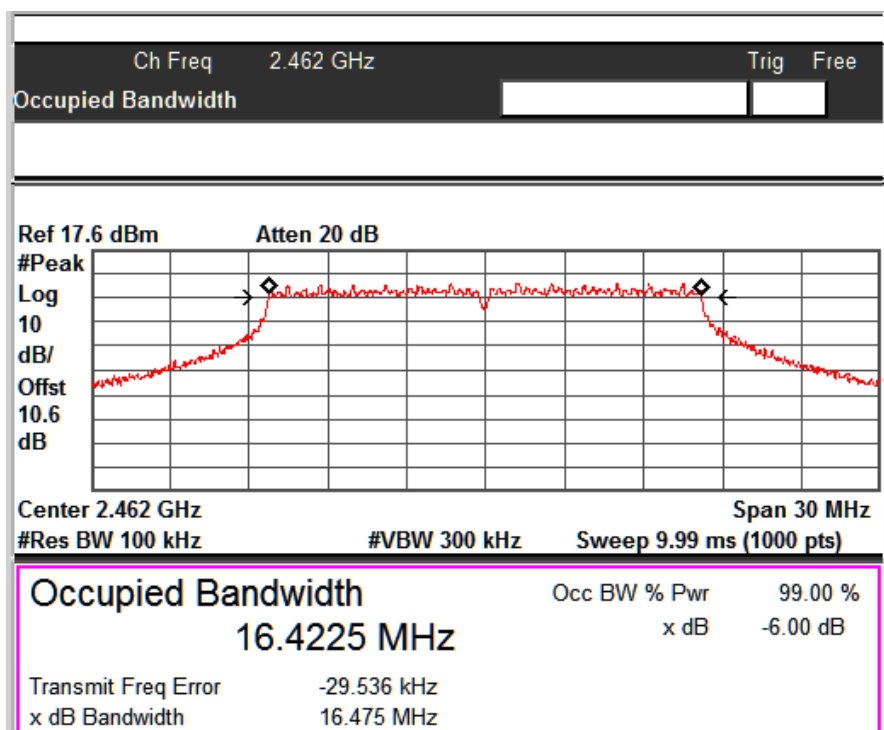
Data Rate: 24 Mbps

Channel frequencies: 2412 MHz



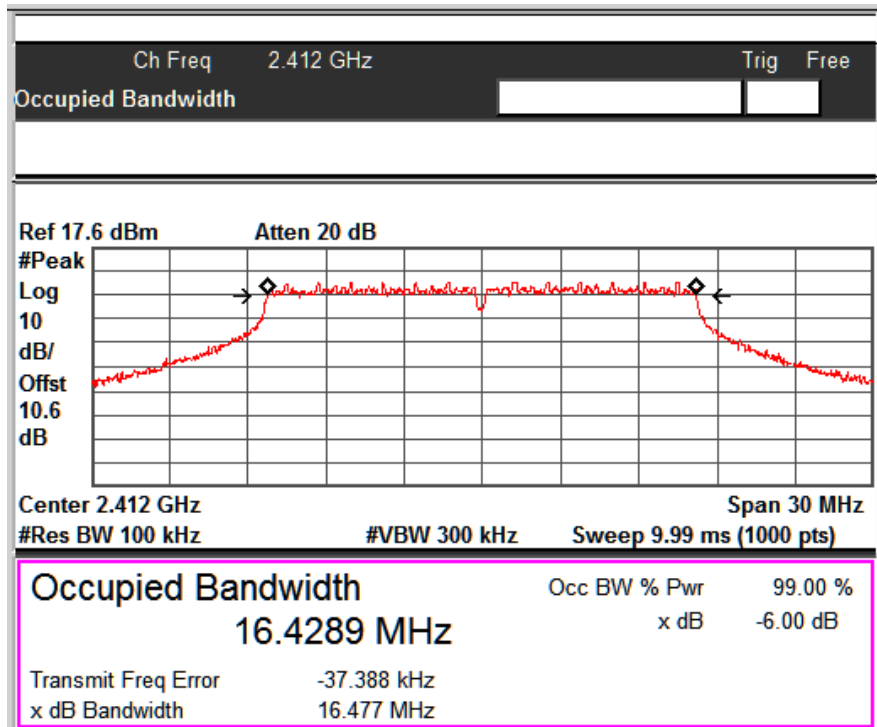
Data Rate: 24 Mbps

Channel frequencies: 2437 MHz



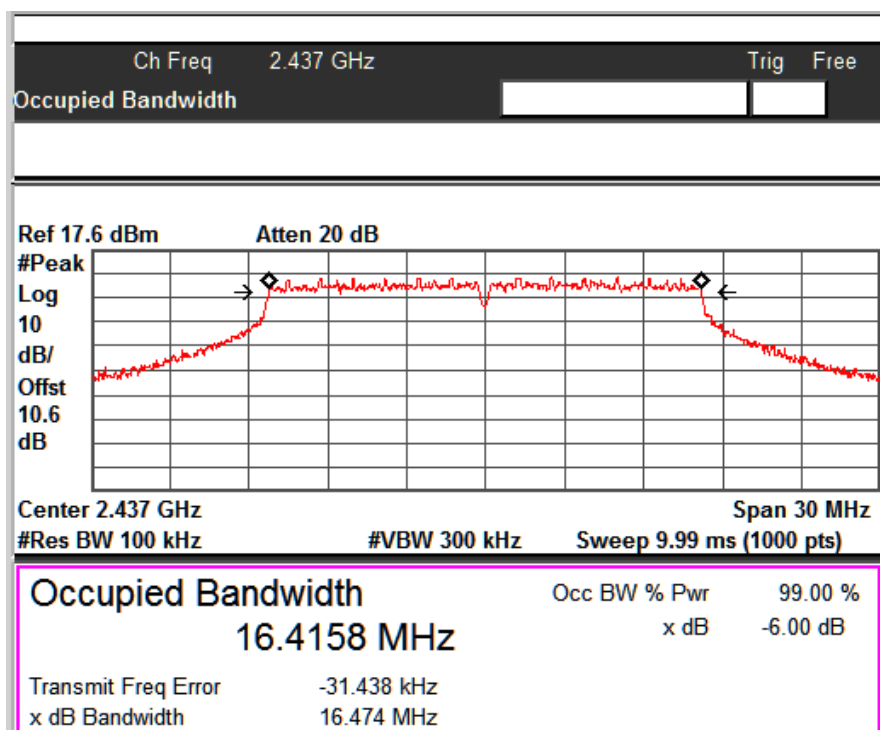
Data Rate: 24 Mbps

Channel frequencies: 2462 MHz



Data Rate: 54 Mbps

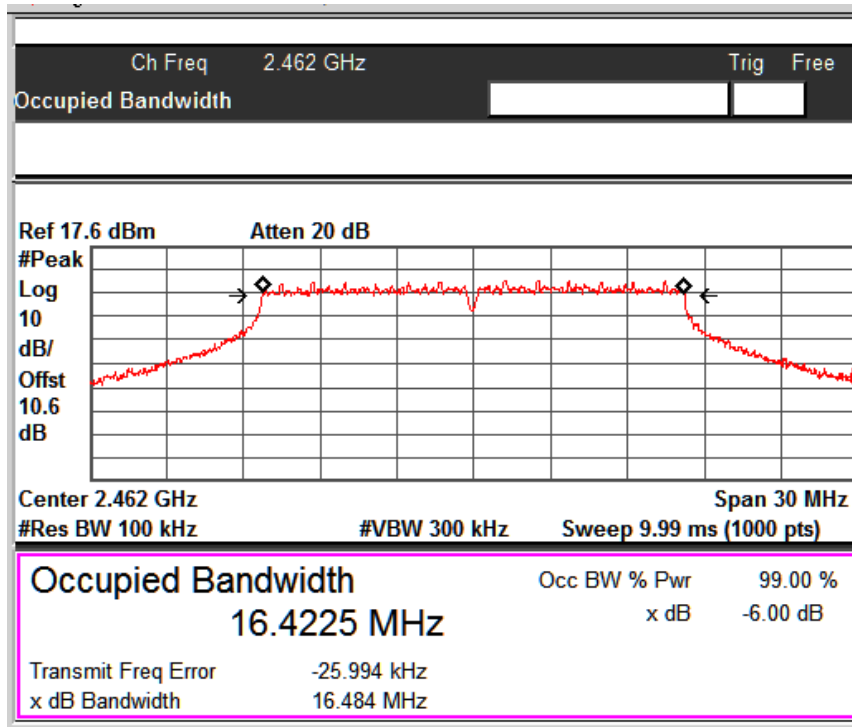
Channel frequencies: 2412 MHz



Data Rate: 54 Mbps

Channel frequencies: 2437MHz

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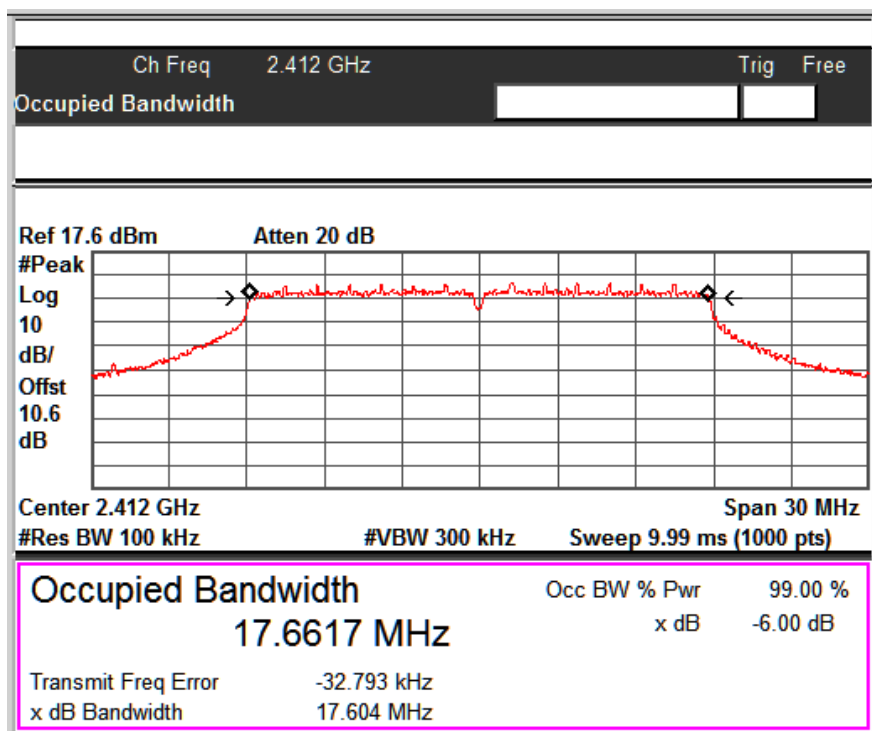


Data Rate: 54 Mbps

Channel frequencies: 2462 MHz

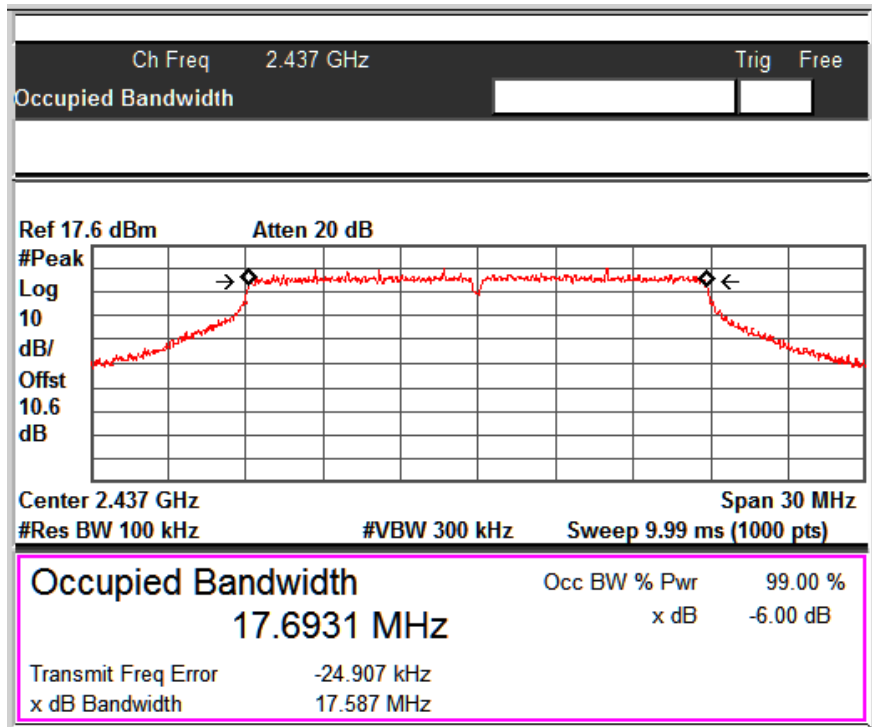
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802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	6 dB Bandwidth (MHz)	99% OBW (MHz)
n	MCS 0	2412.00	17.60	17.66
		2437.00	17.58	17.69
		2462.00	17.61	17.68
	MCS 4	2412.00	17.67	17.64
		2437.00	17.69	17.65
		2462.00	17.67	17.65
	MCS 7	2412.00	17.76	17.68
		2437.00	17.73	17.67
		2462.00	17.75	17.67



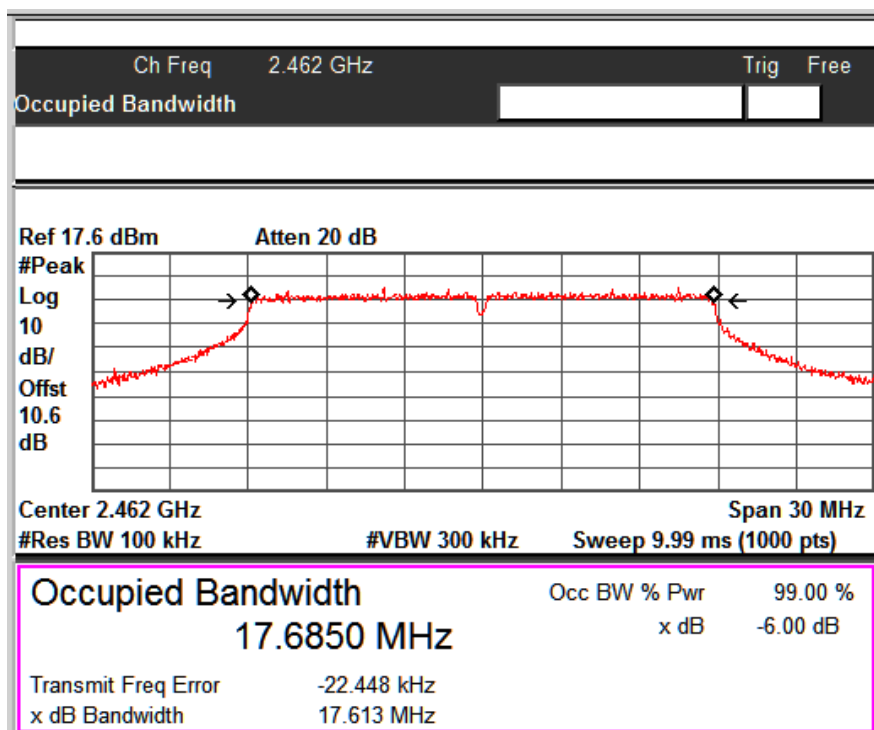
Data Rate: MCS 0

Channel: 2412 MHz



Data Rate: MCS 0

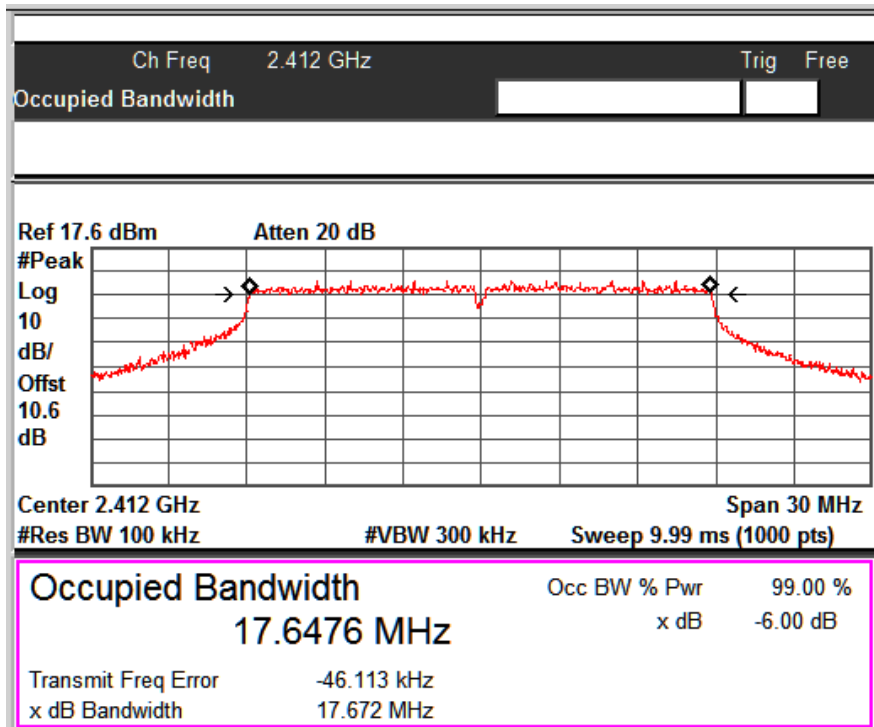
Channel: 2437 MHz



Data Rate: MCS 0

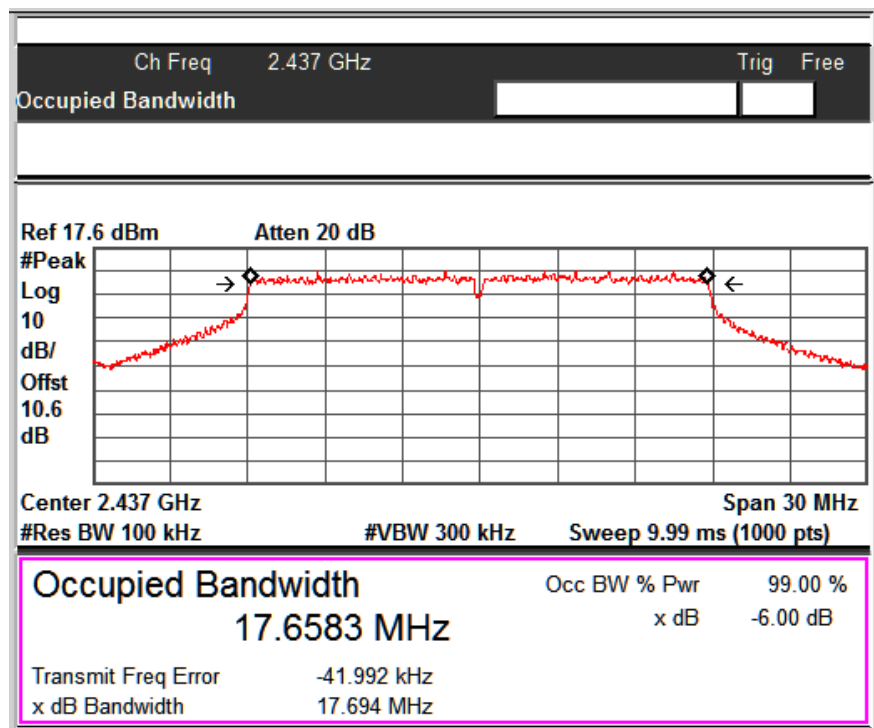
Channel: 2462 MHz

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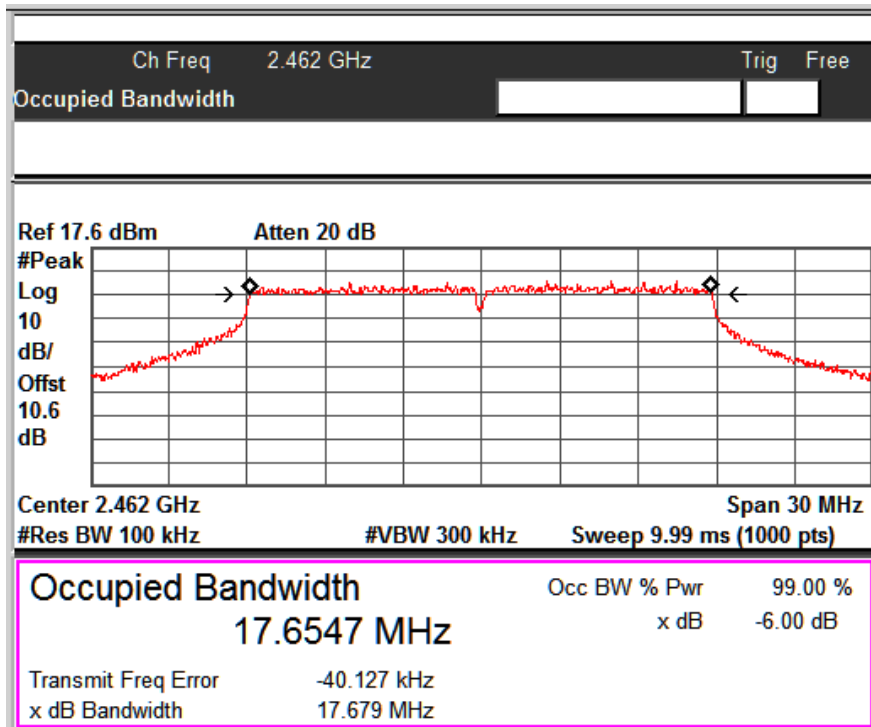
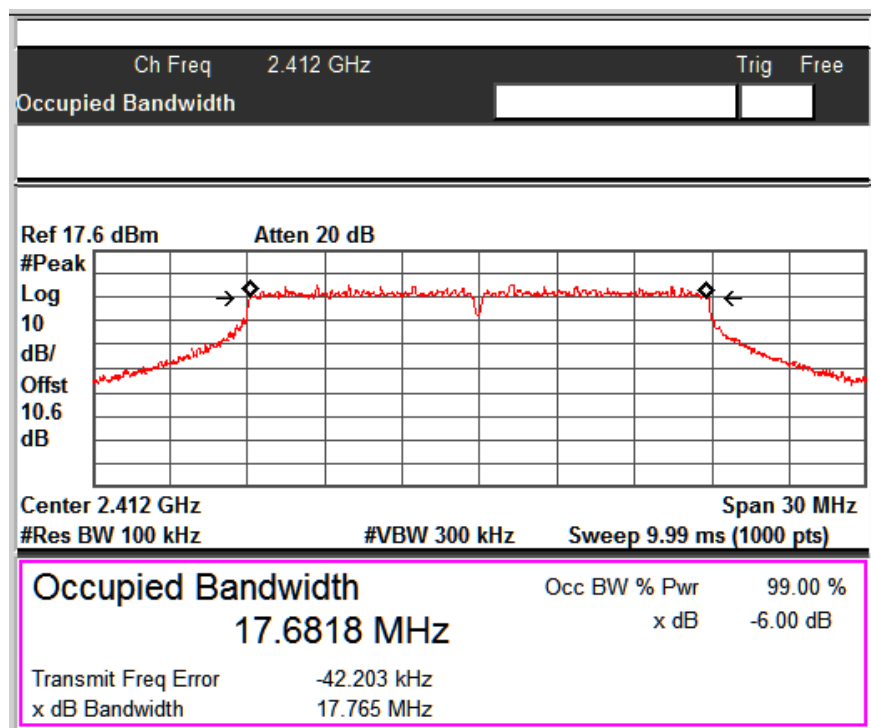
Data Rate: MCS 4

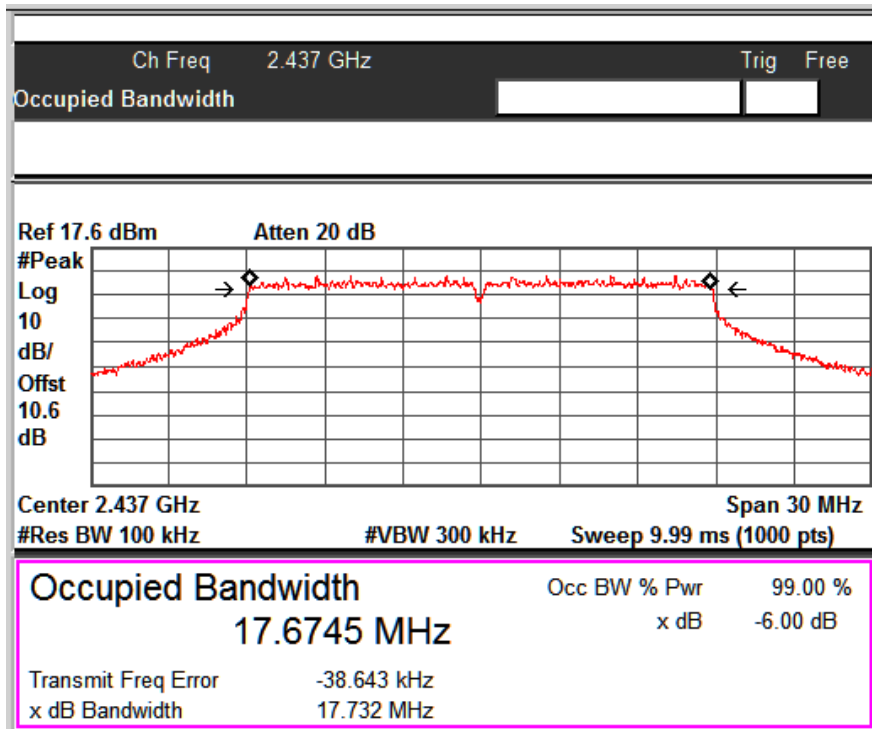
Channel: 2412 MHz



Data Rate: MCS 4

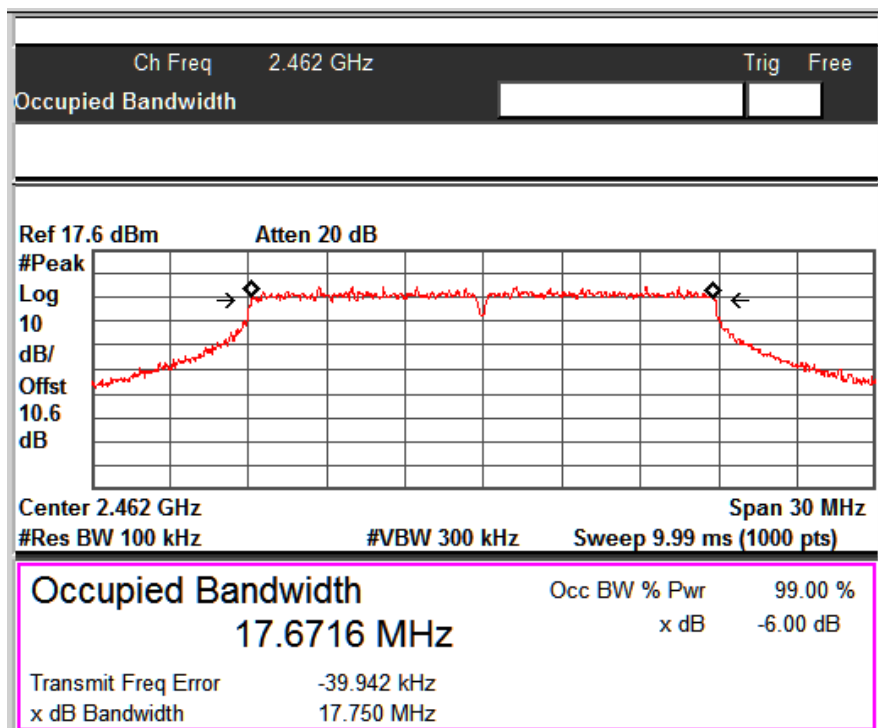
Channel: 2437 MHz


Data Rate: MCS 4
Channel: 2462 MHz

Data Rate: MCS 7
Channel: 2412 MHz



Data Rate: MCS 7

Channel: 2437 MHz



Data Rate: MCS 7

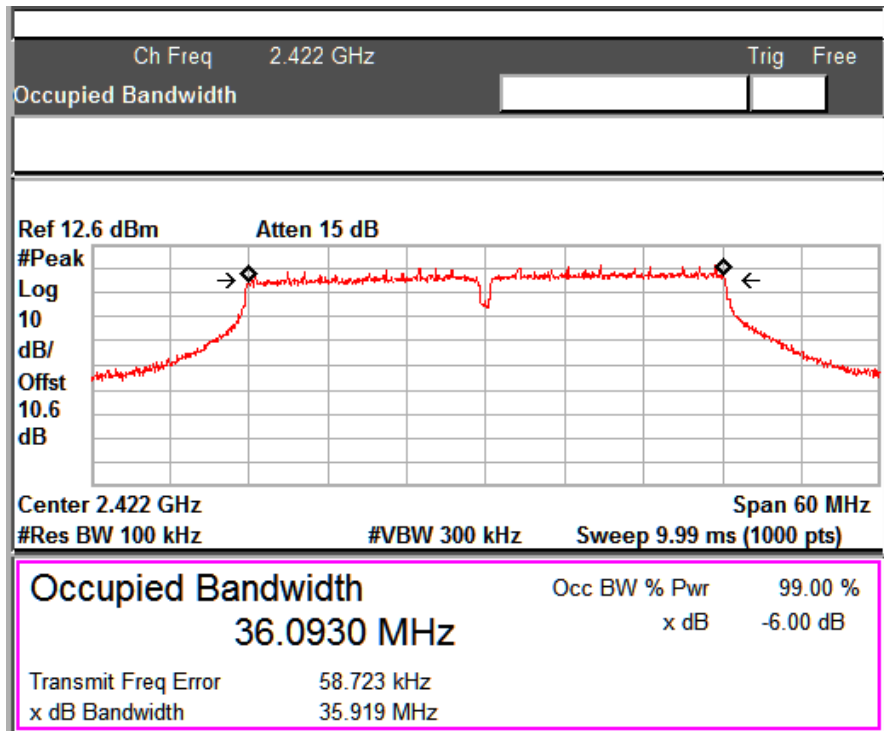
Channel: 2462 MHz

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N mode SISO 40MHz Channel Bandwidth

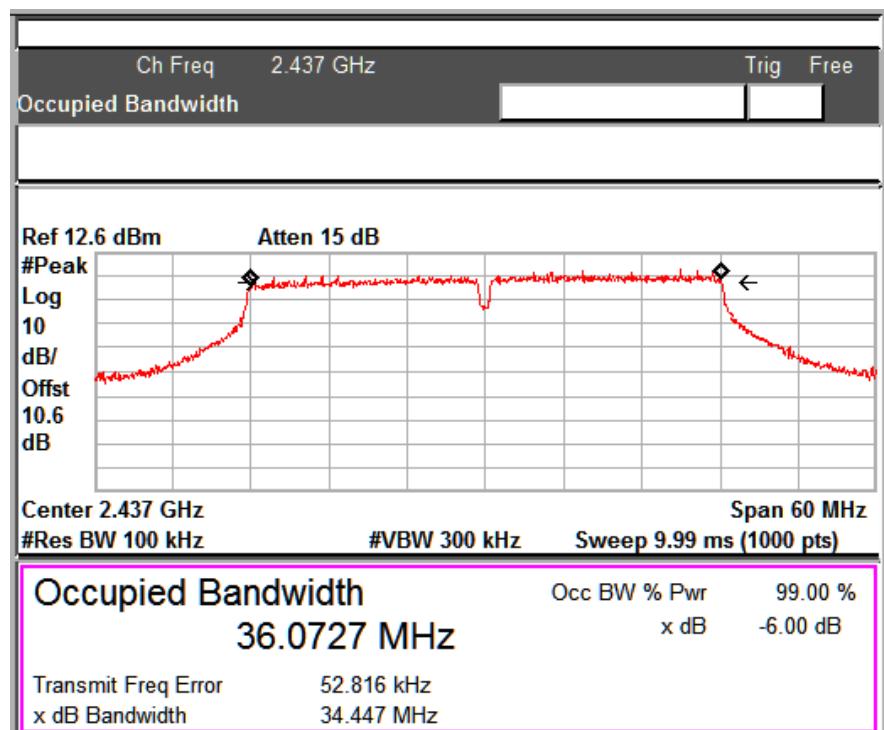
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	6 dB Bandwidth (MHz)	99% OBW (MHz)
n	MCS 0	2422.00	35.91	36.09
		2437.00	34.44	36.07
		2452.00	35.75	36.07
	MCS 4	2422.00	35.82	36.16
		2437.00	36.43	36.13
		2452.00	35.72	36.13
	MCS 7	2422.00	35.81	36.09
		2437.00	36.15	36.10
		2452.00	36.09	36.08

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Data Rate: MCS0

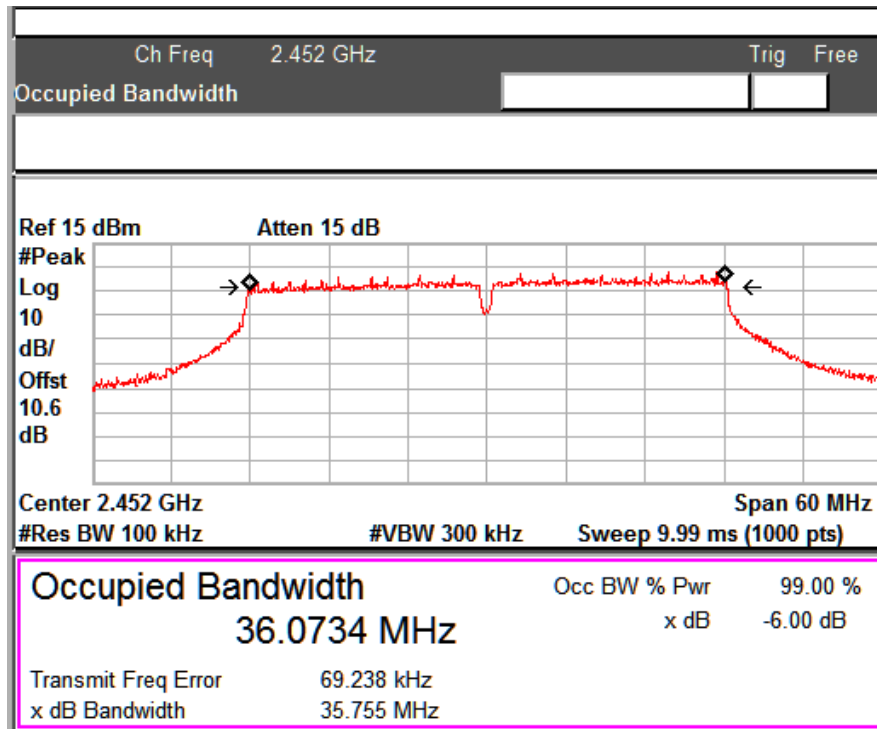
Channel Frequency: 2422 MHz



Data Rate: MCS0

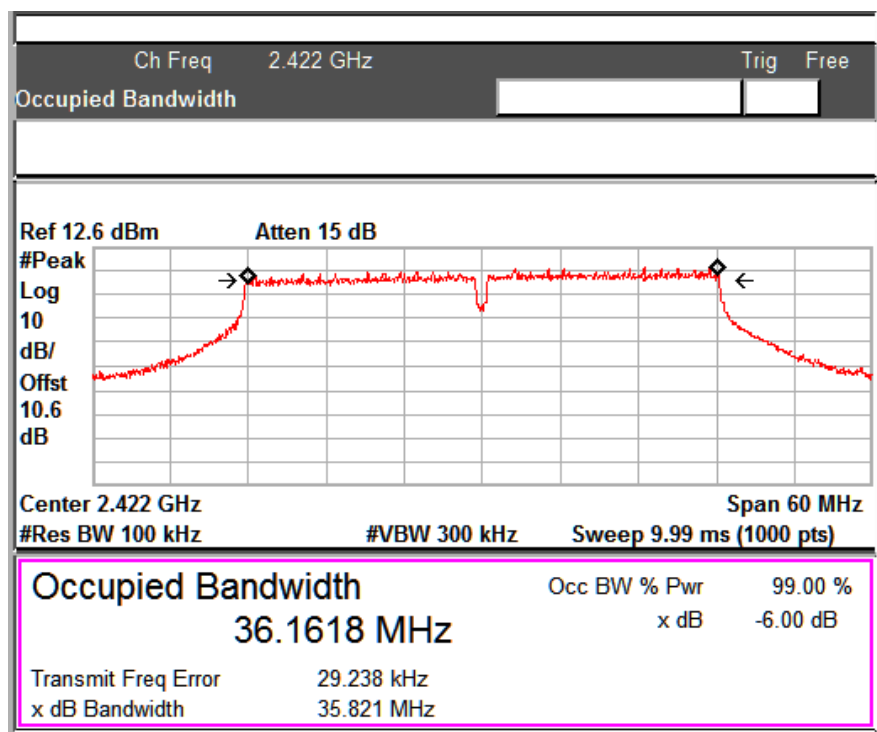
Channel Frequency: 2437 MHz

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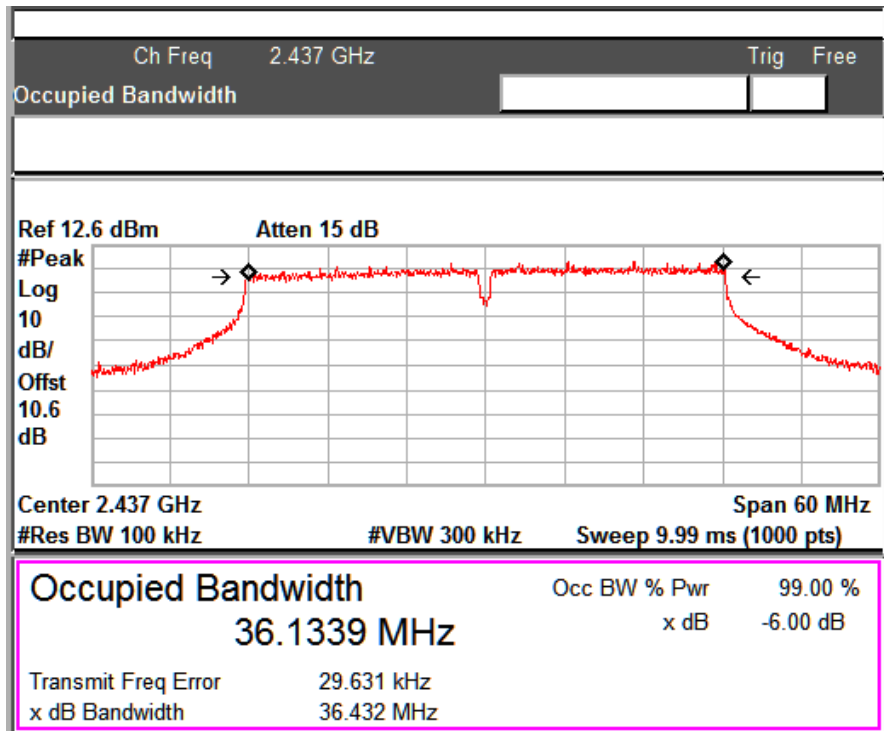
Data Rate: MCS0

Channel Frequency: 2452 MHz



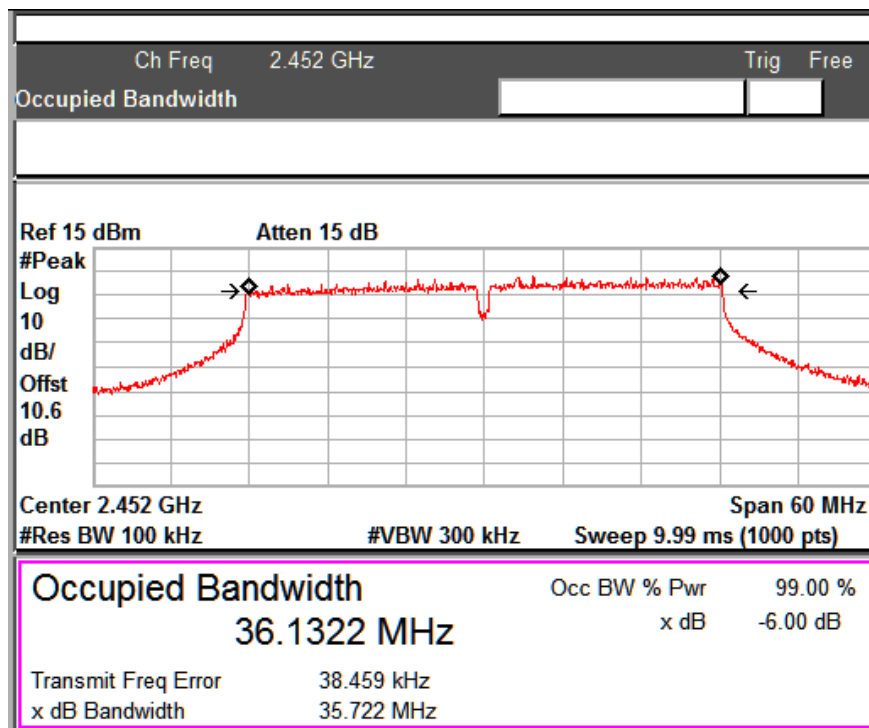
Data Rate: MCS4

Channel Frequency: 2422 MHz



Data Rate: MCS4

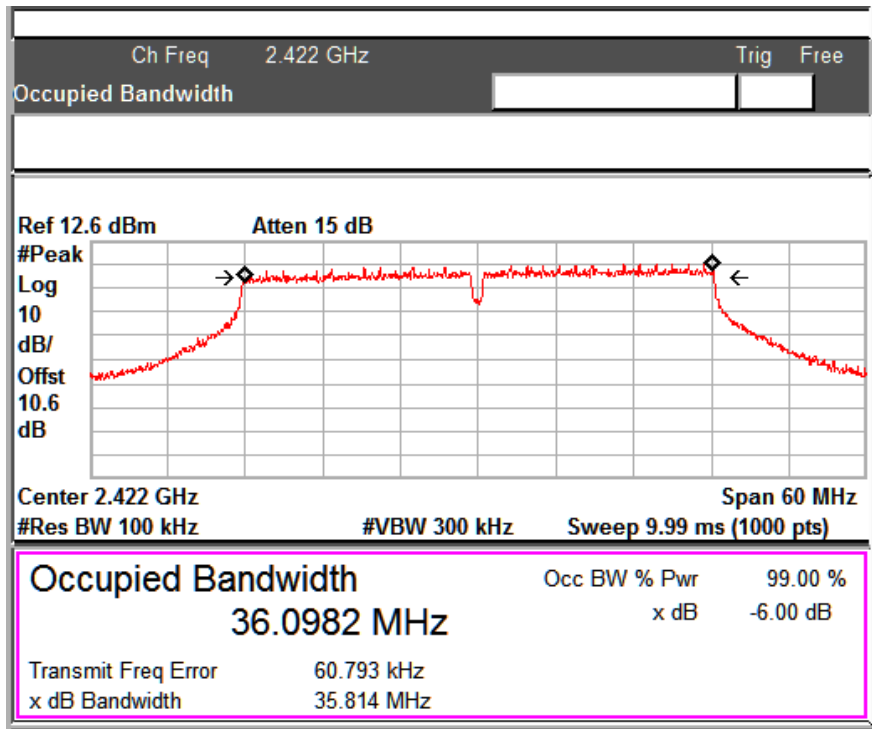
Channel Frequency: 2437 MHz



Data Rate: MCS4

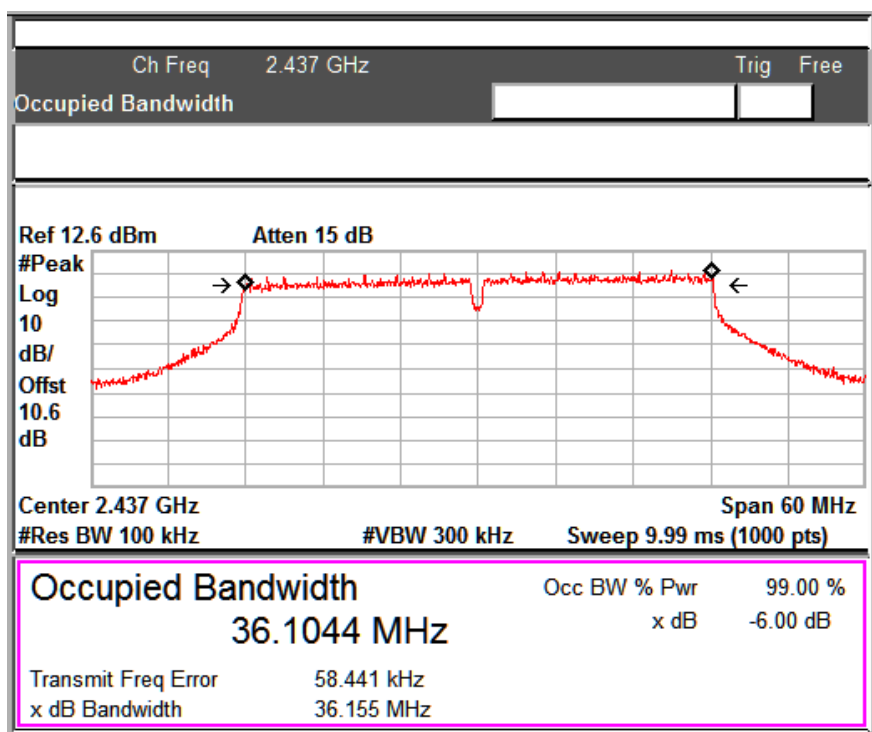
Channel Frequency: 2452 MHz

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Data Rate: MCS7

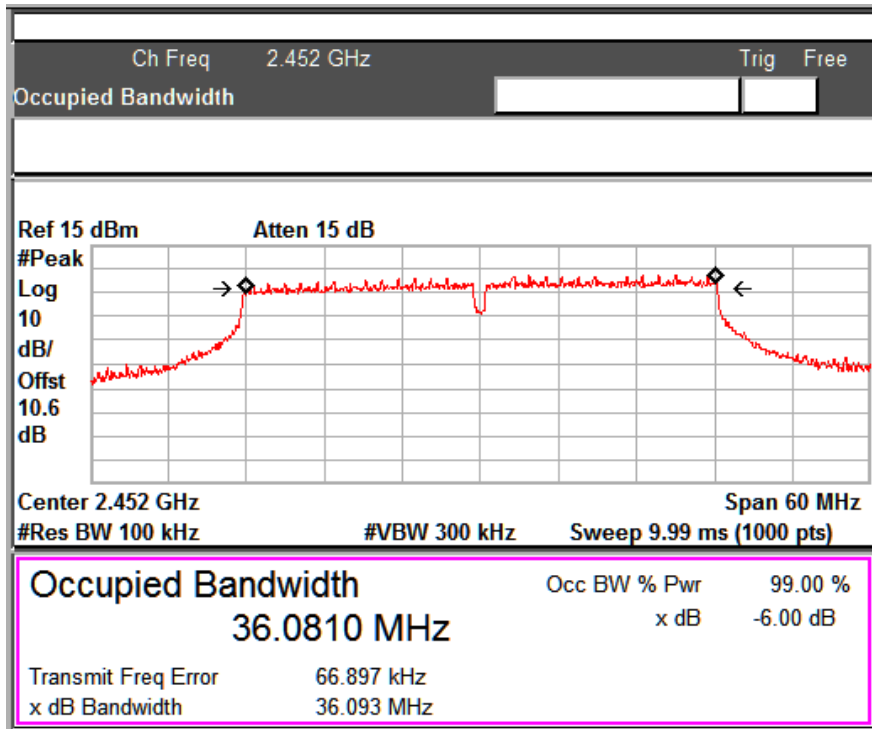
Channel Frequency: 2422 MHz



Data Rate: MCS7

Channel Frequency: 2437 MHz

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Data Rate: MCS7

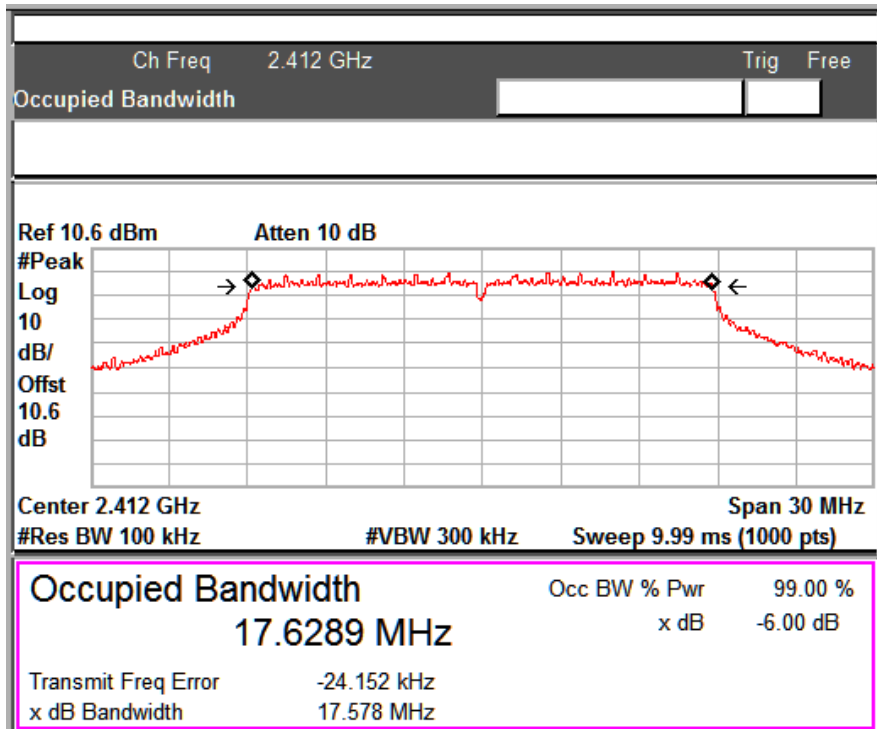
Channel Frequency: 2452 MHz

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N mode MIMO 20 MHz Channel Bandwidth:

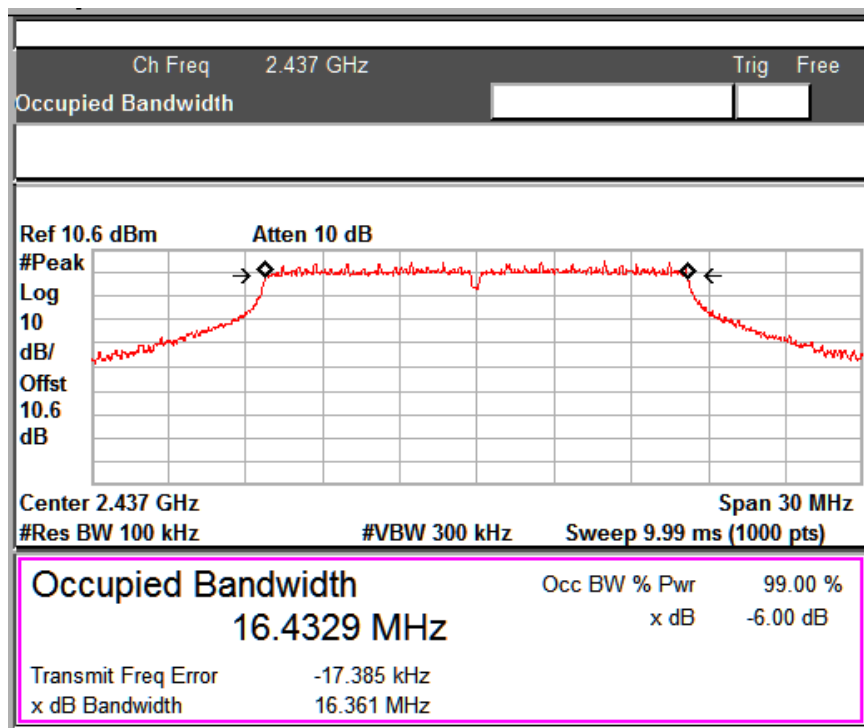
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	6 dB Bandwidth (MHz)	99% OBW (MHz)
n	MCS 8	2412.00	17.57	17.62
		2437.00	16.36	16.43
		2462.00	17.56	17.64
	MCS 11	2412.00	17.58	17.65
		2437.00	16.37	16.43
		2462.00	17.69	17.64
	MCS 15	2412.00	17.70	17.65
		2437.00	17.68	17.63
		2462.00	17.70	17.64

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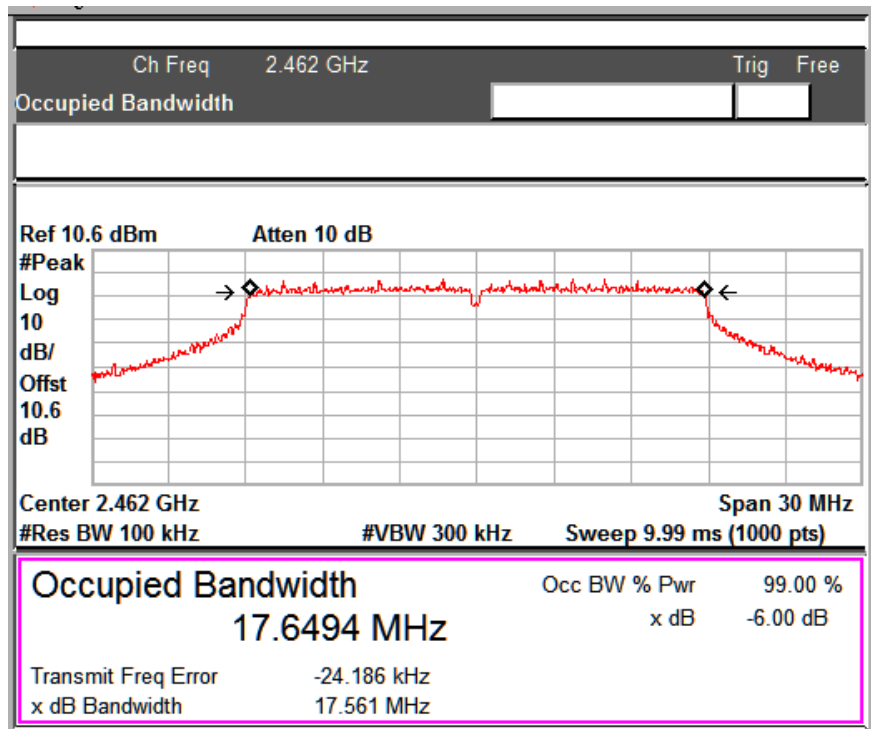
Data Rate: MCS8

Channel Frequency: 2412 MHz



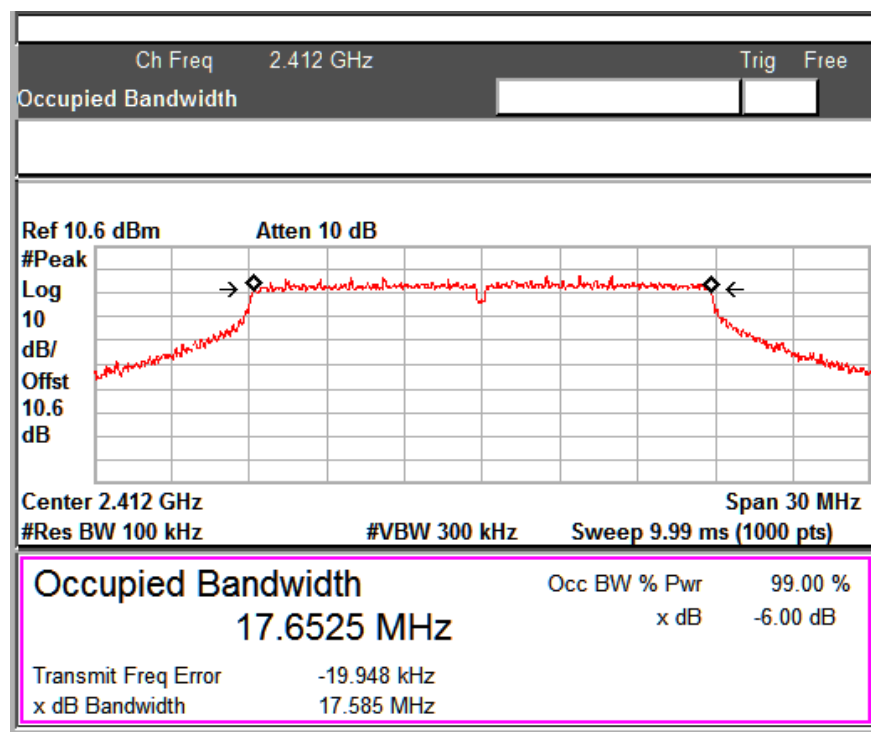
Data Rate: MCS8

Channel Frequency: 2437 MHz



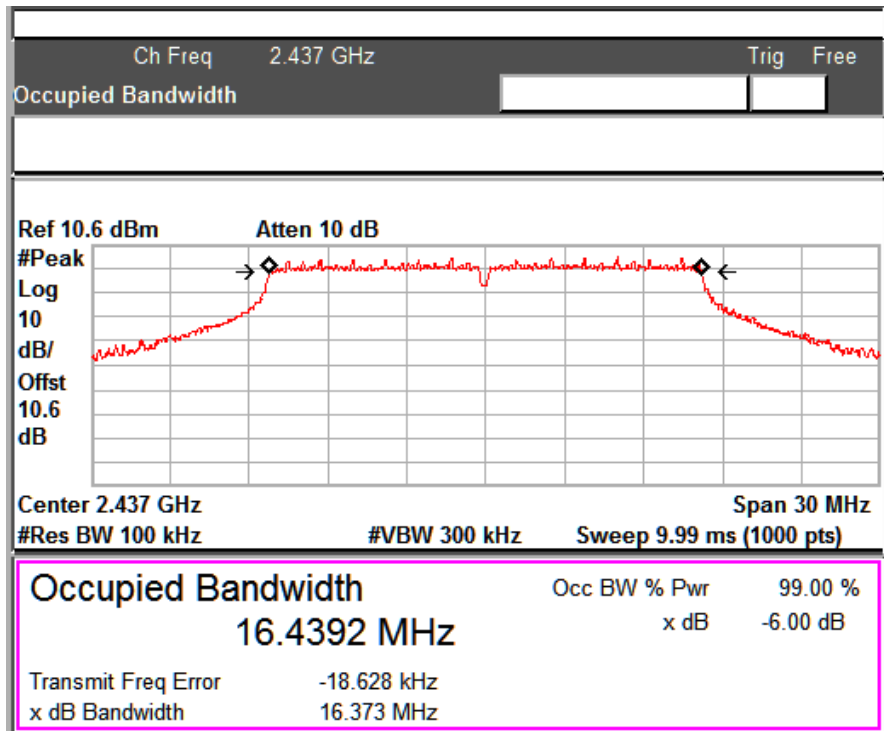
Data Rate: MCS8

Channel Frequency: 2462 MHz



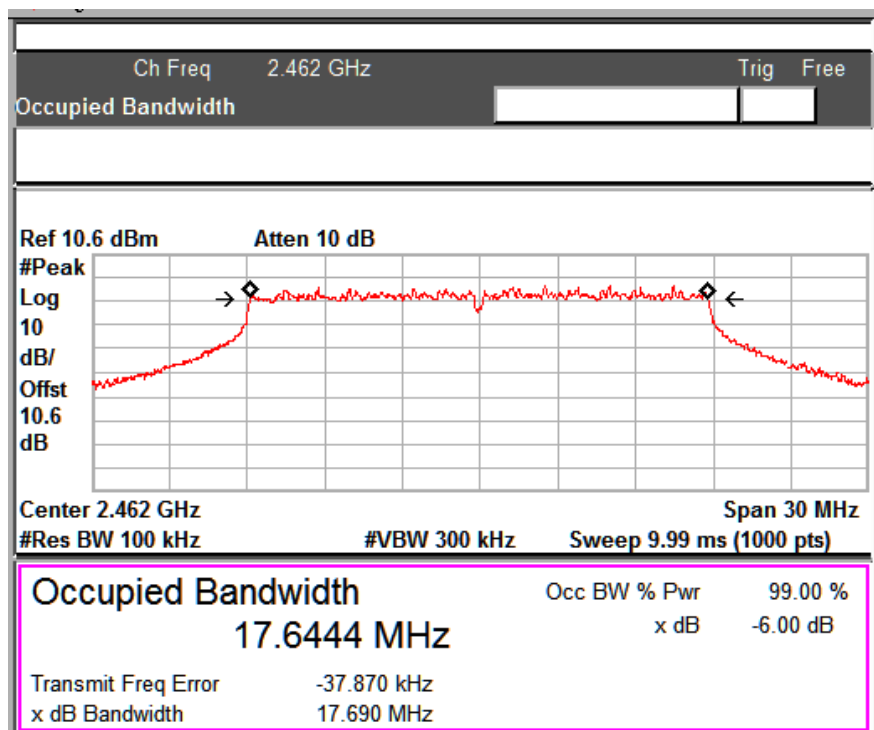
Data Rate: MCS11

Channel Frequency: 2412 MHz



Data Rate: MCS11

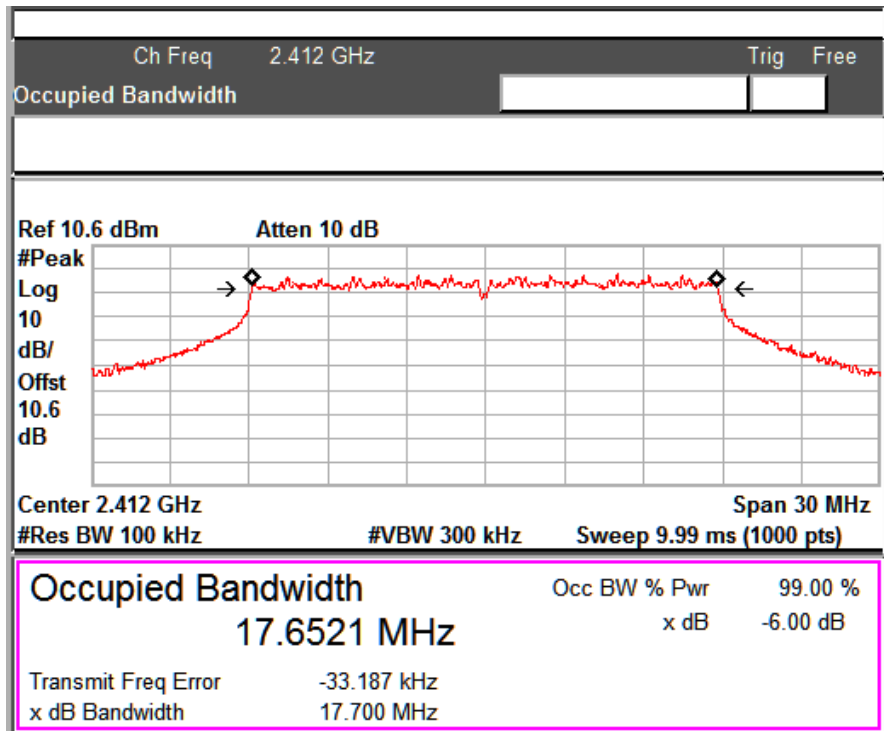
Channel Frequency: 2437 MHz



Data Rate: MCS11

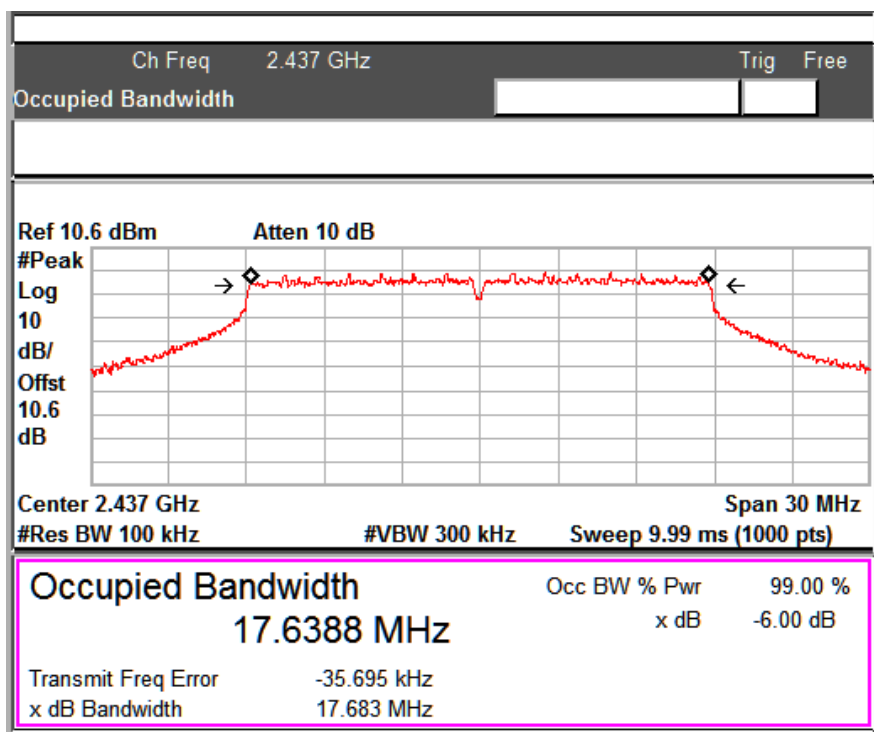
Channel Frequency: 2462 MHz

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Data Rate: MCS15

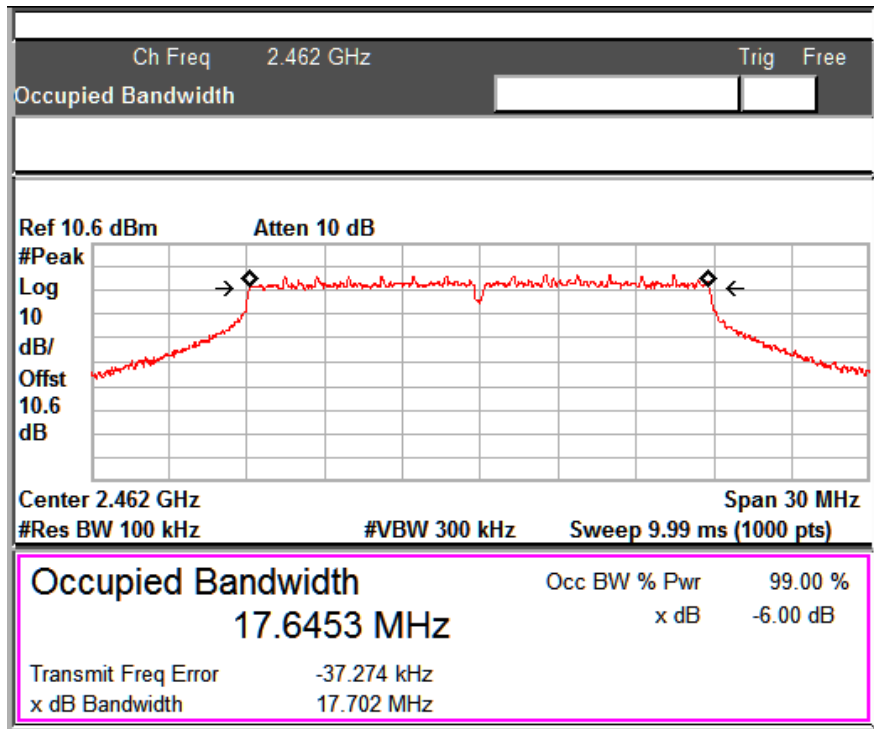
Channel Frequency: 2412 MHz



Data Rate: MCS15

Channel Frequency: 2437 MHz

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Data Rate: MCS15

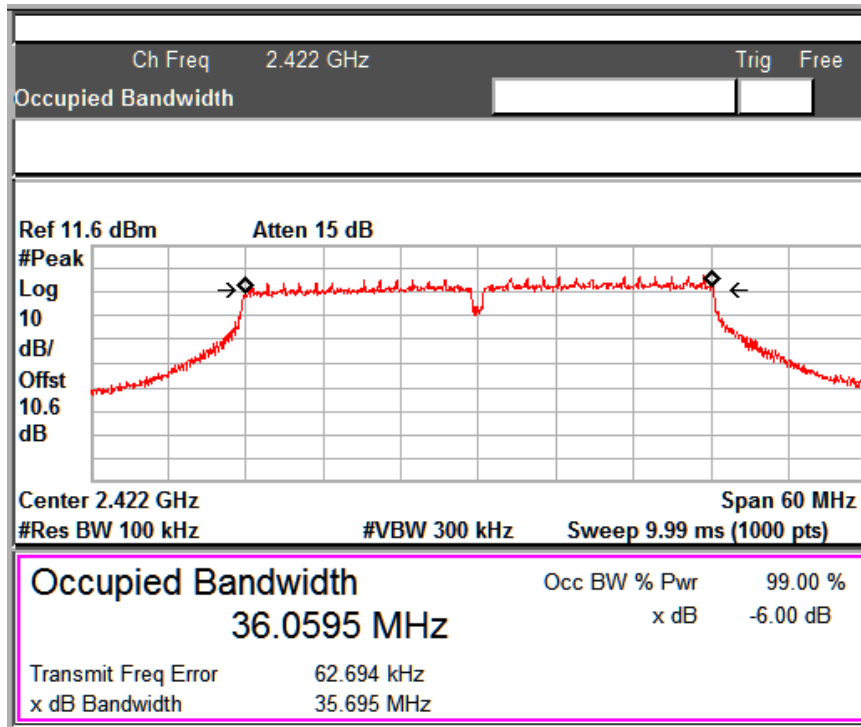
Channel Frequency: 2462 MHz

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N mode MIMO 40 MHz Channel Bandwidth:

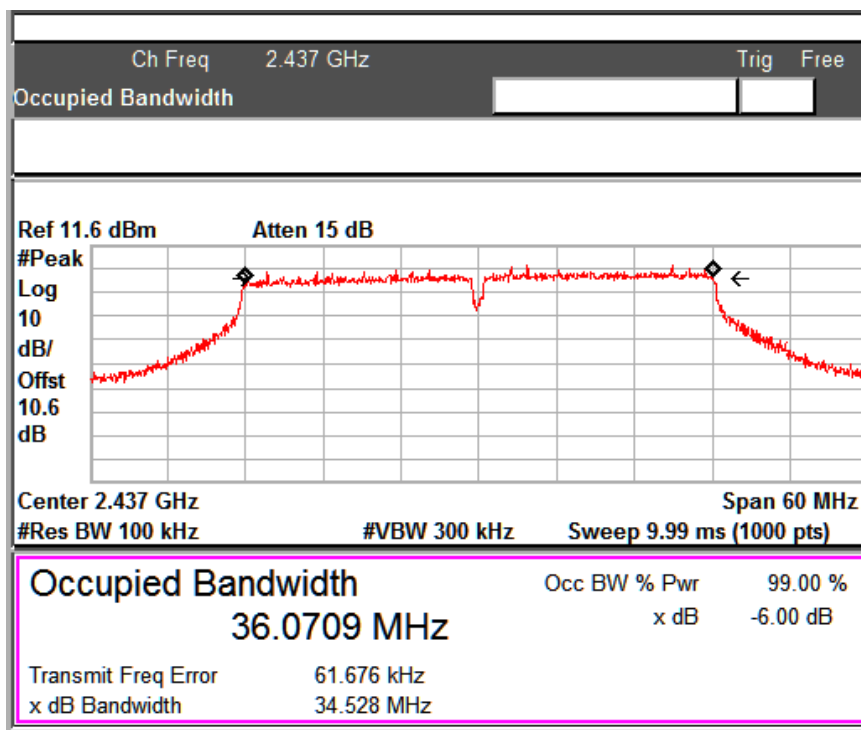
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	6 dB Bandwidth (MHz)	99% OBW (MHz)
n	MCS 8	2422.00	35.69	36.05
		2437.00	34.52	36.07
		2452.00	35.69	36.05
	MCS 11	2422.00	36.09	36.13
		2437.00	35.15	36.04
		2452.00	35.82	36.07
	MCS 15	2422.00	35.79	36.09
		2437.00	36.13	36.09
		2452.00	35.81	36.03

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Data Rate: MCS8

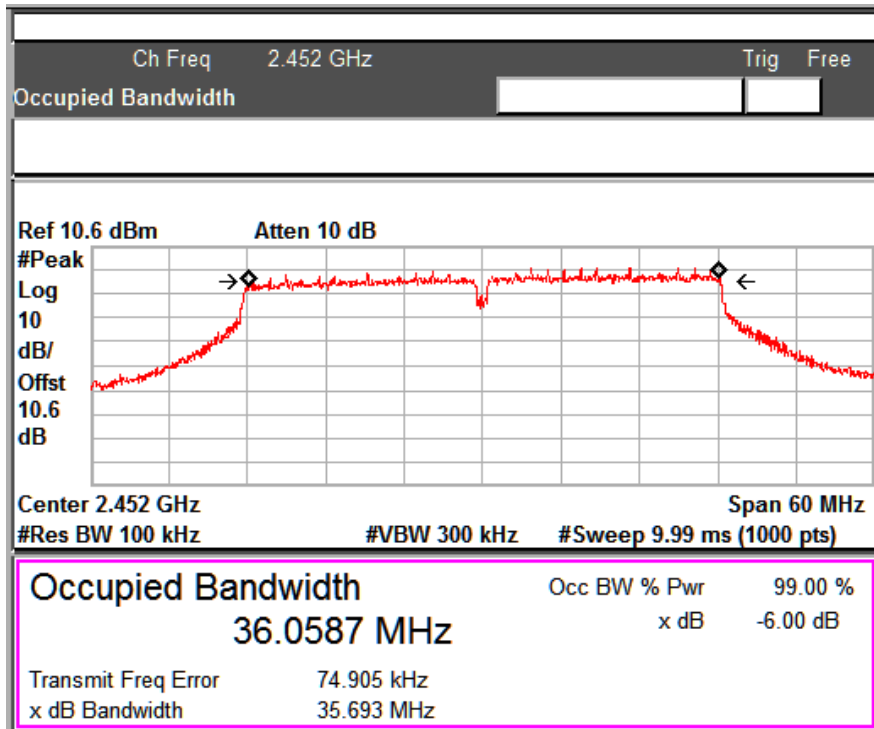
Channel Frequency: 2422 MHz



Data Rate: MCS8

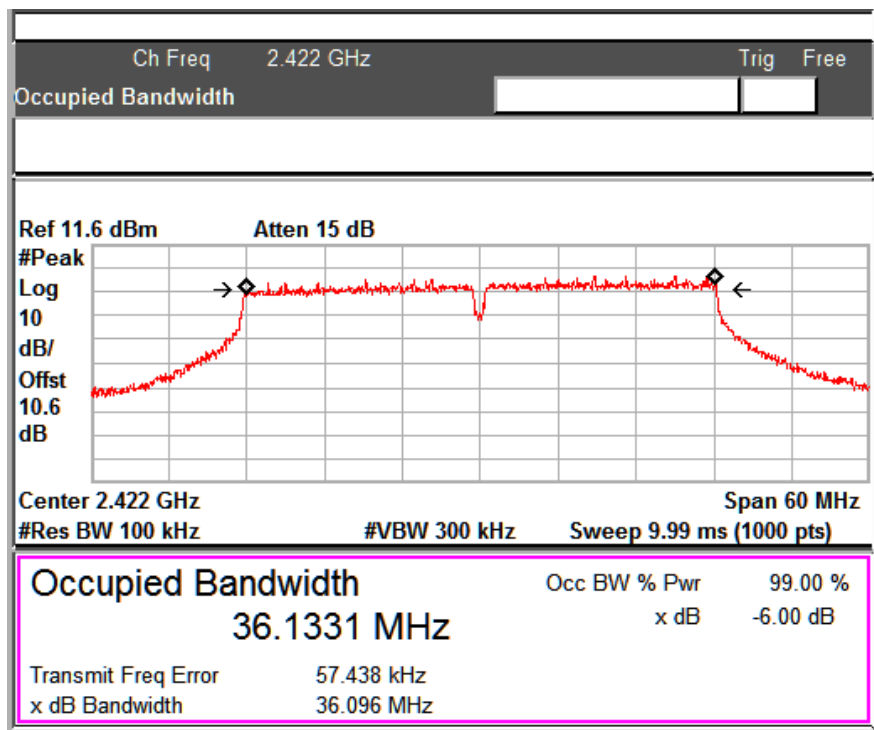
Channel Frequency: 2437 MHz

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Data Rate: MCS8

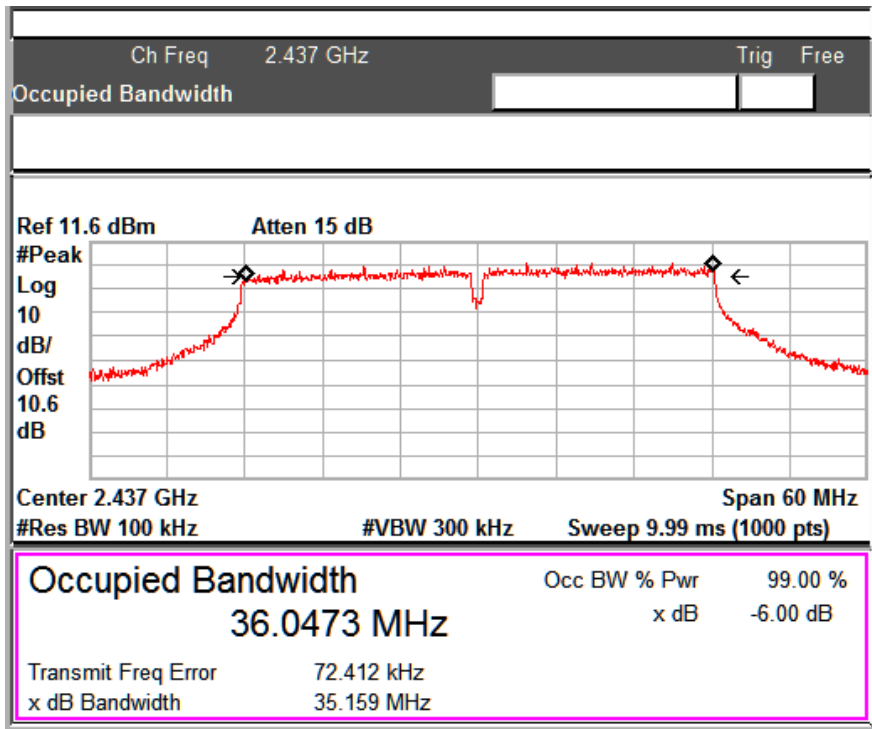
Channel Frequency: 2452 MHz



Data Rate: MCS11

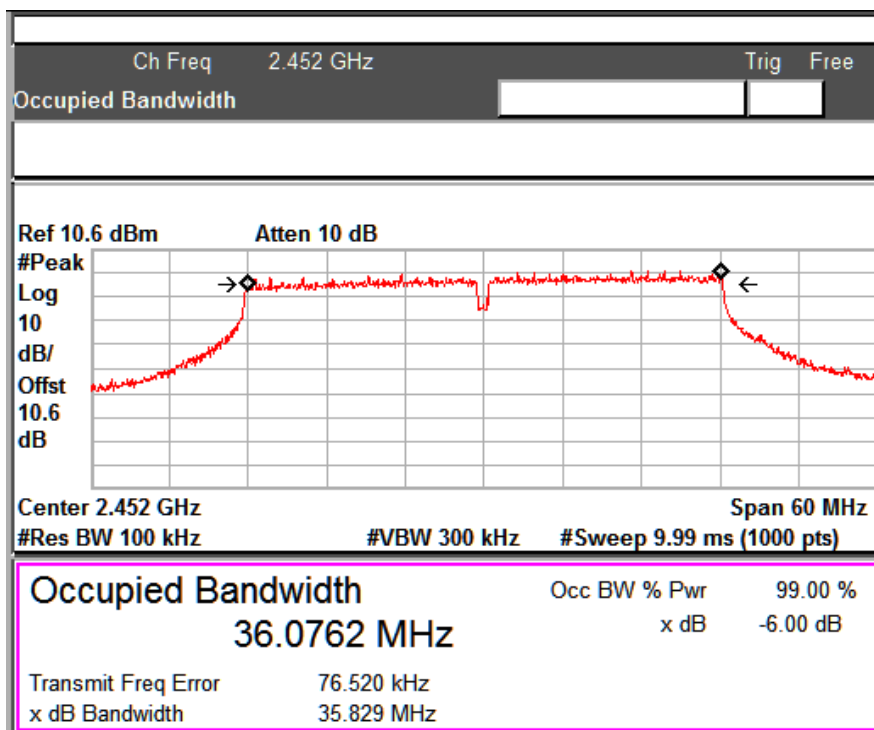
Channel Frequency: 2422 MHz

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Data Rate: MCS11

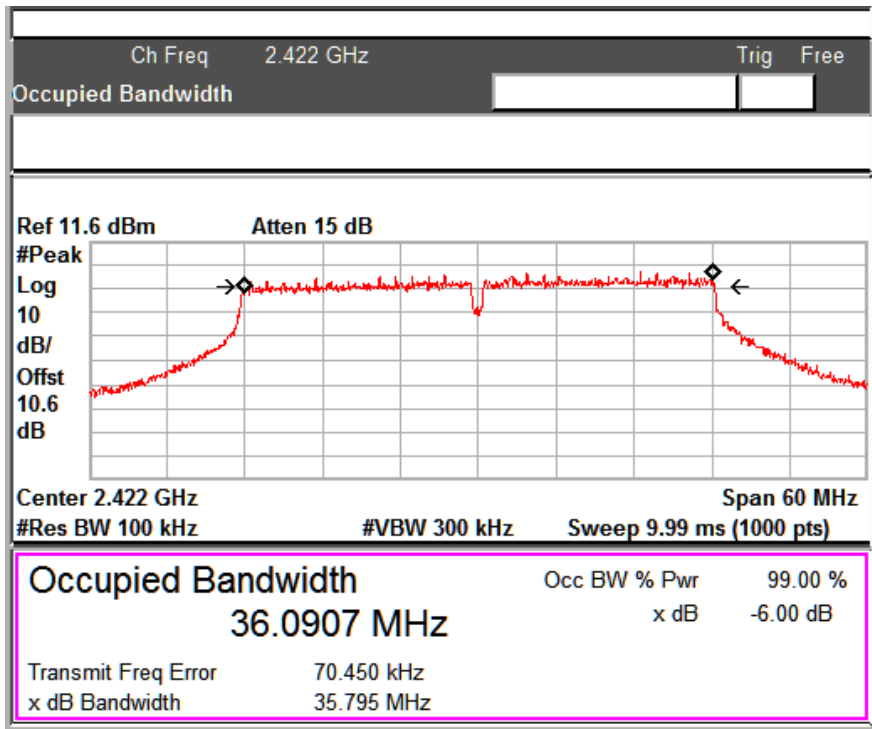
Channel Frequency: 2437 MHz



Data Rate: MCS11

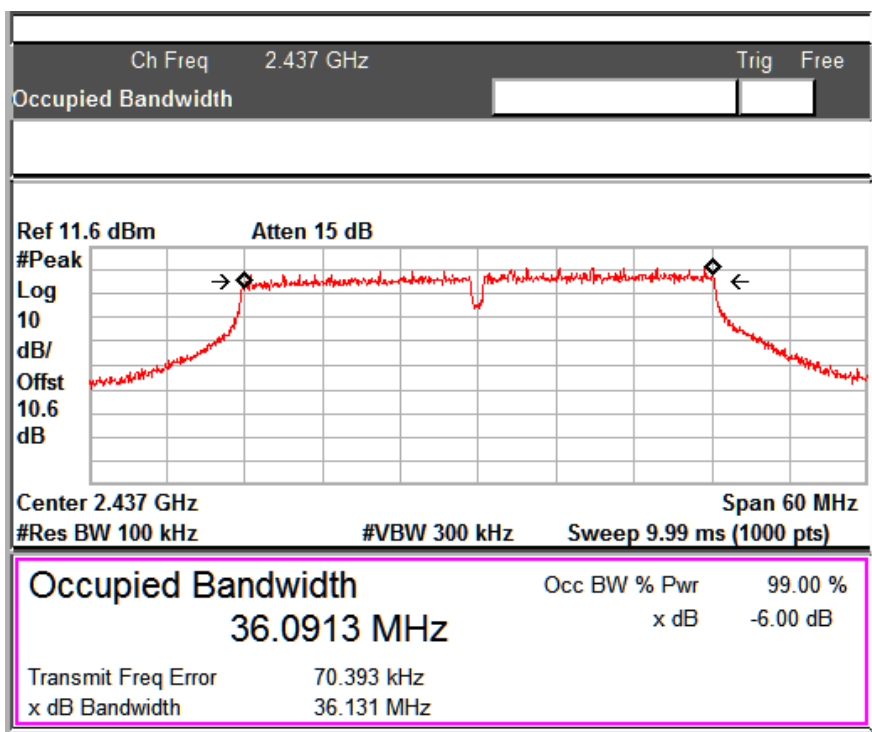
Channel Frequency: 2452 MHz

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Data Rate: MCS15

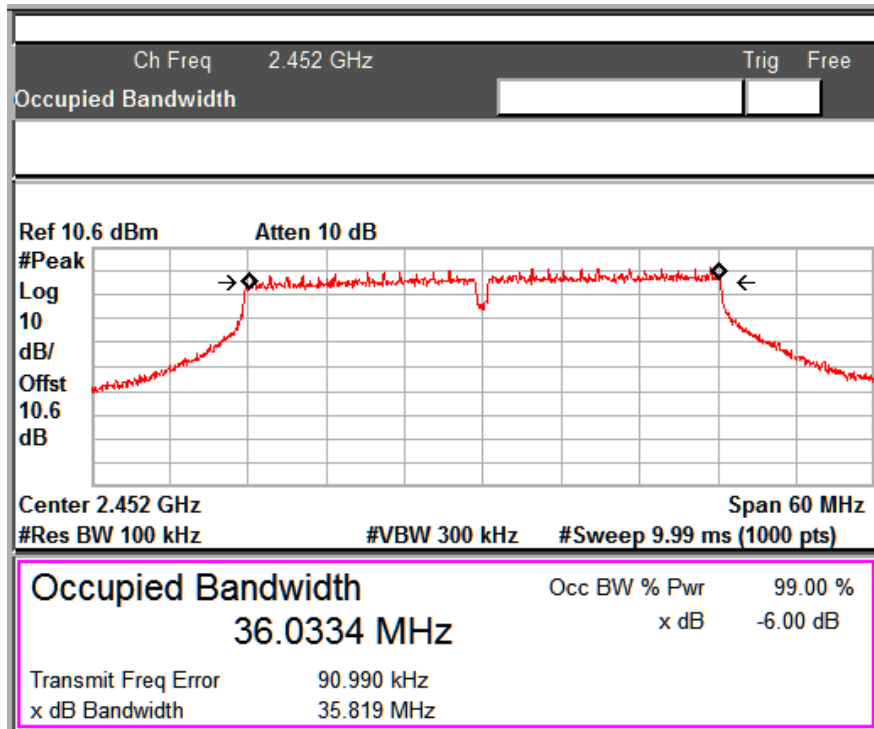
Channel Frequency: 2422 MHz



Data Rate: MCS15

Channel Frequency: 2437 MHz

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Data Rate: MCS15

Channel Frequency: 2452 MHz

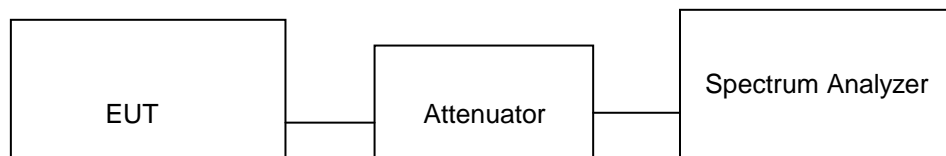
Test Specification
 Detector Function
 Requirement

FCC Part 15 Section 15.247(d)

Peak

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 30dB 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 Average conducted power limits.

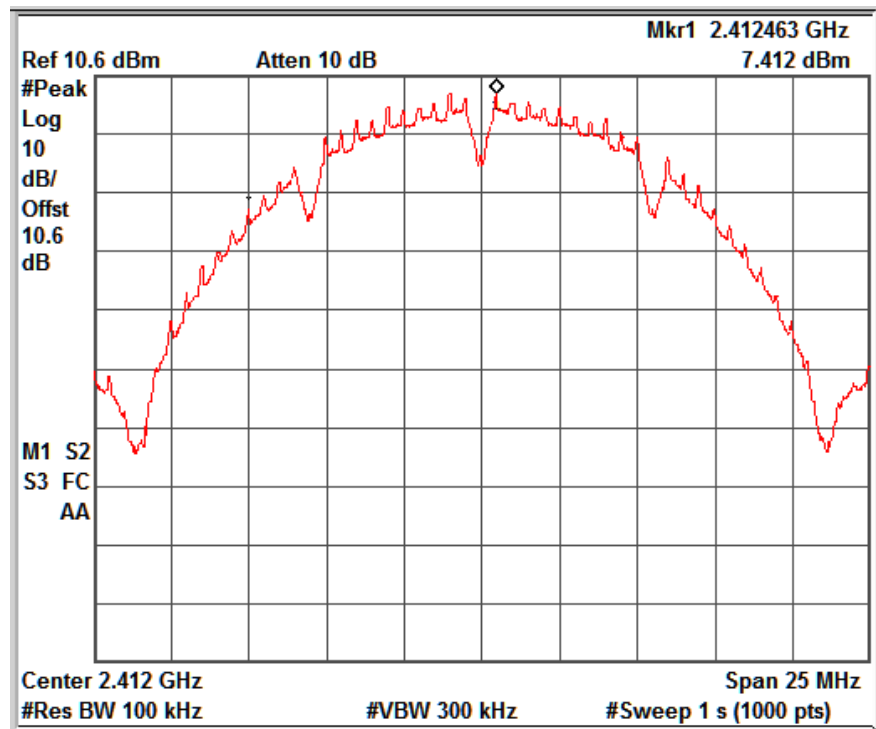
Test Method:



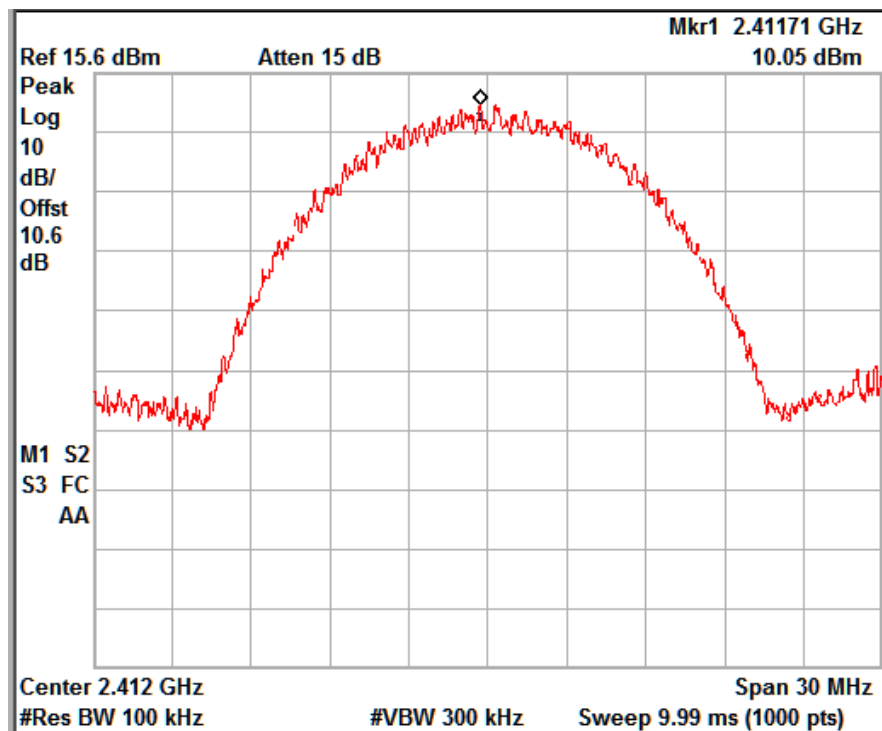
Offset value 10.6dB is added in the final measurement value.

Test Result: Wi-Fi

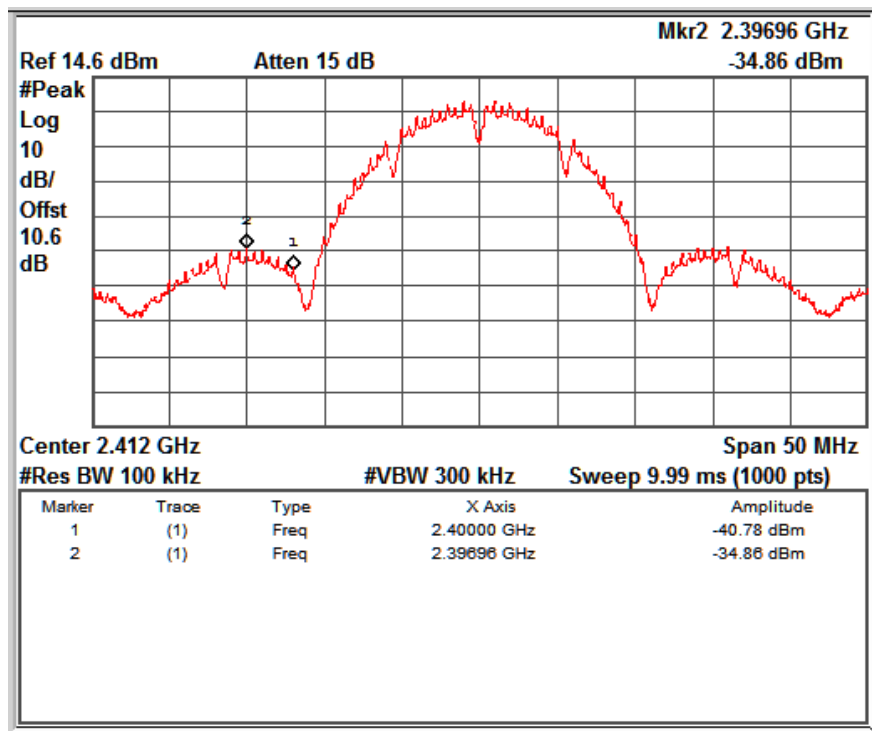
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Value at Band Edge		Reference Value B (dBm)	Band Edge Value A~B (dBc)	Limit (dBc)
			Frequency (MHz)	Value A (dBm)			
b	1	2412	2396.96	-34.86	7.41	42.27	30.00
		2462	2483.5	-50.58	7.41	57.99	30.00
	11	2412	2396.41	-32.56	10.05	42.61	30.00
		2462	2483.5	-47.82	10.05	57.87	30.00



Reference Level Plot: 1Mbps

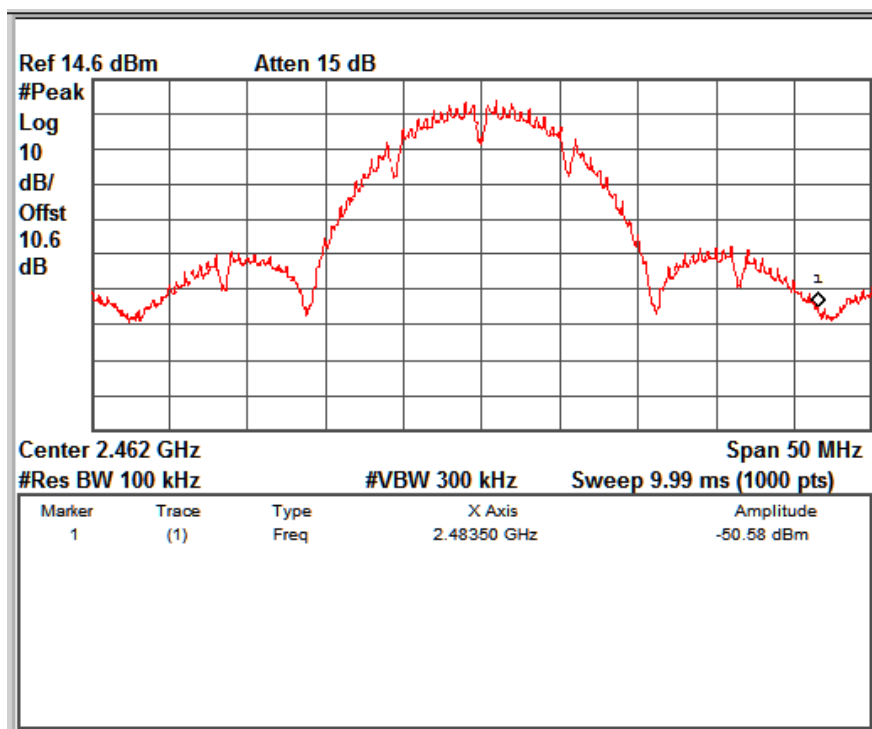


Reference Level Plot: 11Mbps



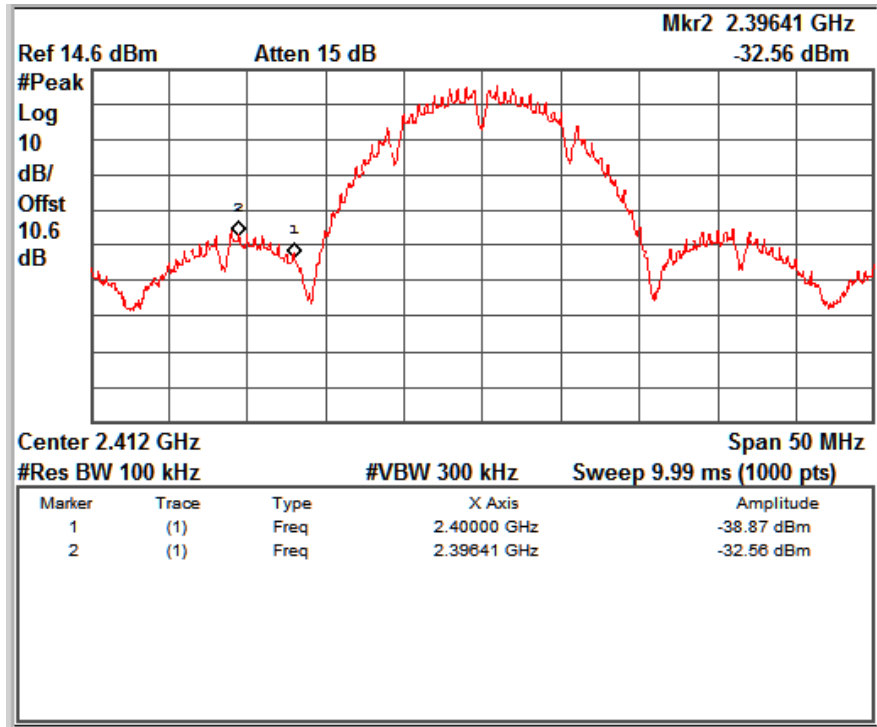
Data Rate: 1 Mbps

Channel frequency: 2412 MHz



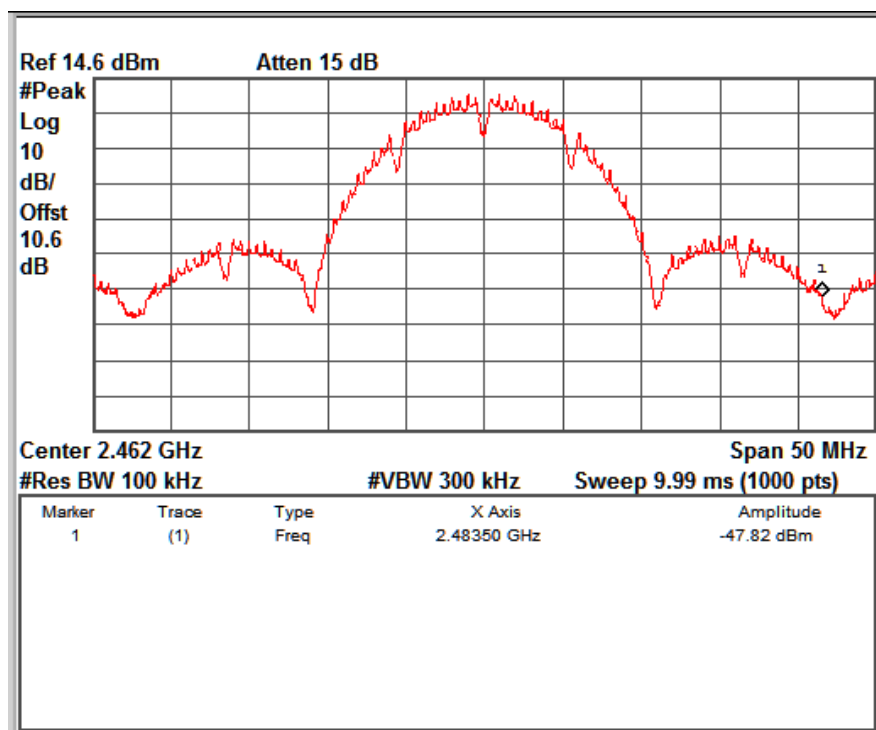
Data Rate: 1 Mbps

Channel frequency: 2462 MHz



Data Rate: 11 Mbps

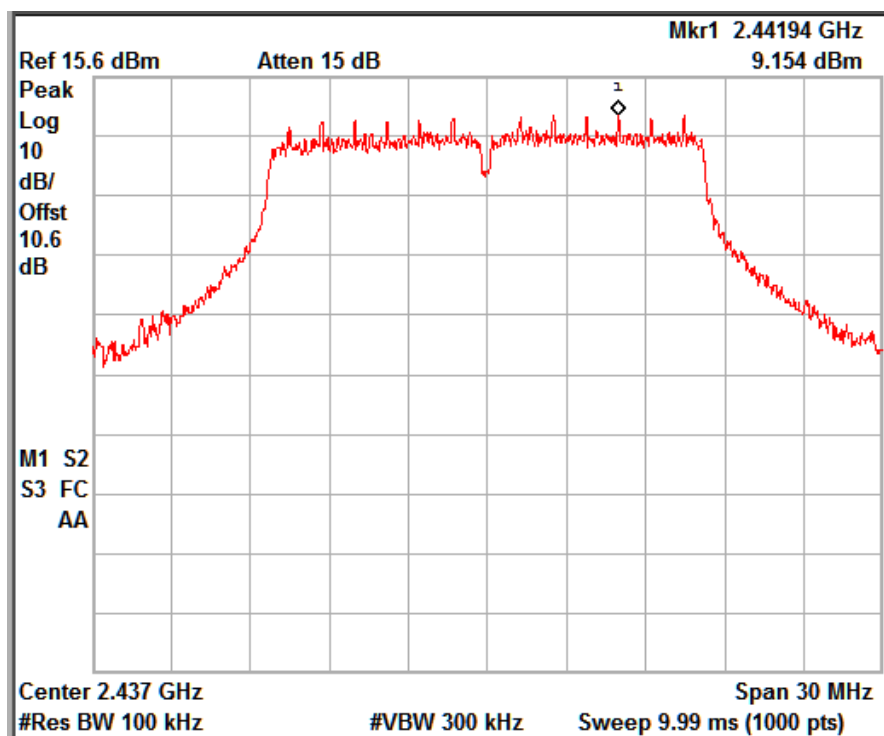
Channel frequency: 2412 MHz



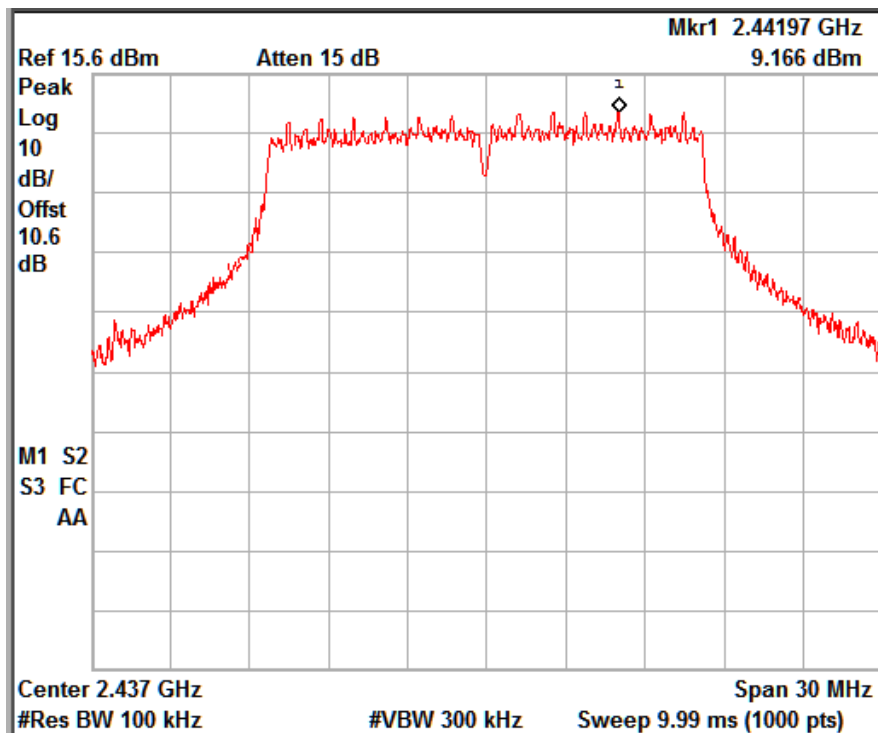
Data Rate: 11 Mbps

Channel frequency: 2462 MHz

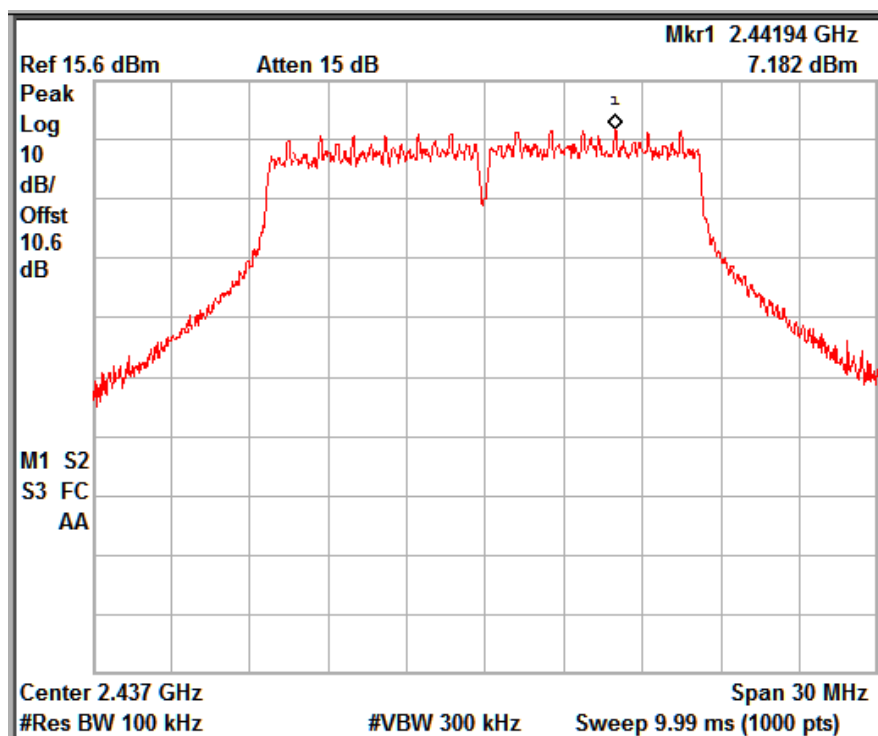
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Value at Band Edge		Reference Value B (dBm)	Band Edge Value A~B (dBc)	Limit (dBc)
			Frequency (MHz)	Value A (dBm)			
g	6	2412	2400	-29.18	09.15	38.33	30.00
		2462	2483.5	-40.34	09.15	49.49	30.00
	24	2412	2400	-29.67	09.16	38.83	30.00
		2462	2400	-39.65	09.16	48.81	30.00
	54	2412	2400	-30.61	07.18	37.79	30.00
		2462	2483.5	-43.88	07.18	51.06	30.00



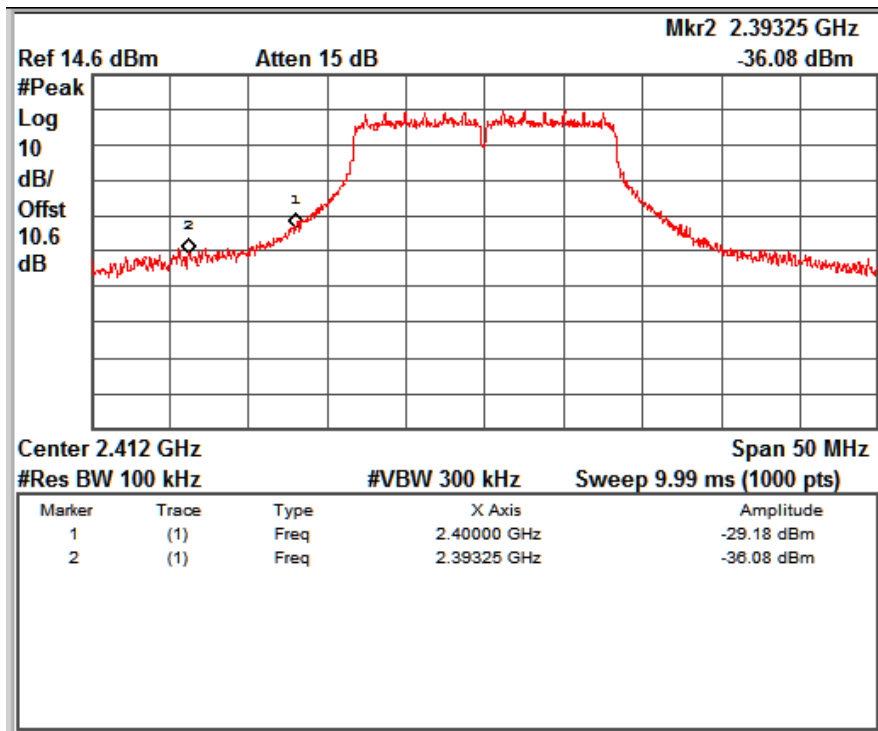
Reference Level Plot: 6 Mbps



Reference Level Plot: 24 Mbps

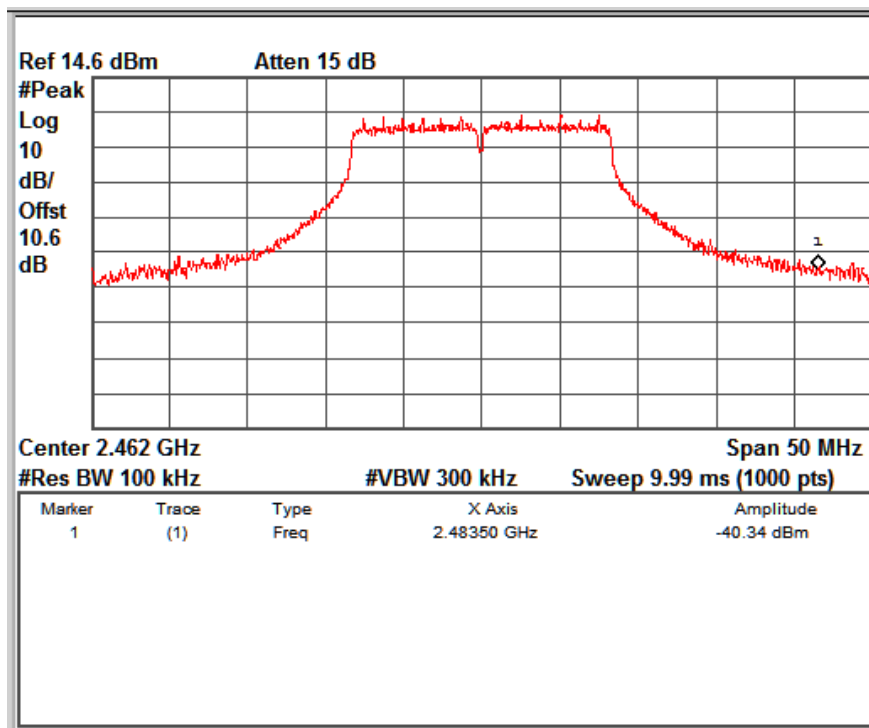


Reference Level Plot: 54 Mbps



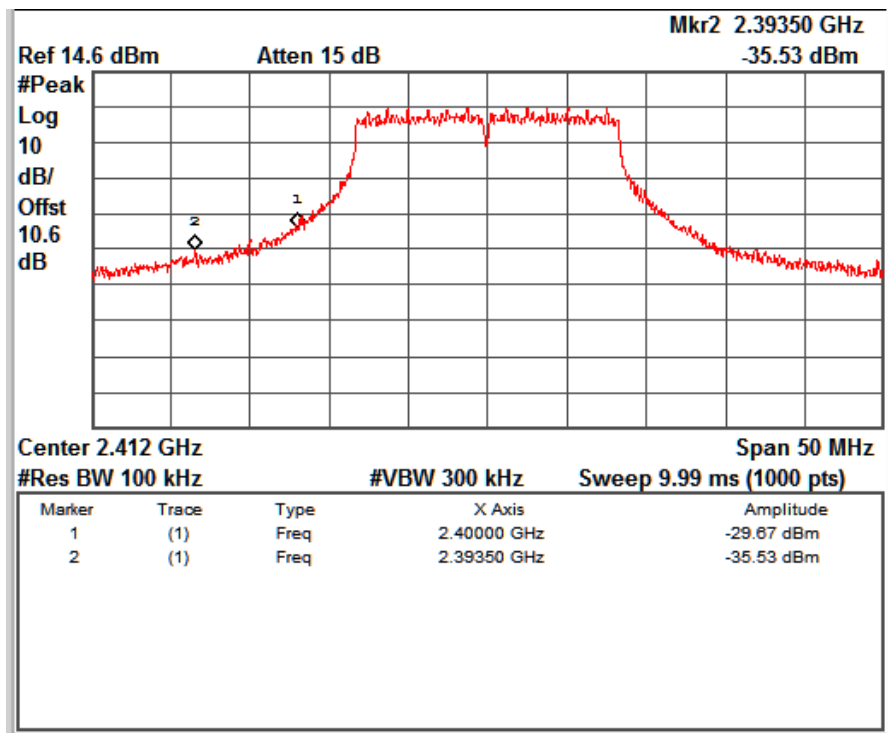
Data Rate: 6 Mbps

Channel frequency: 2412 MHz



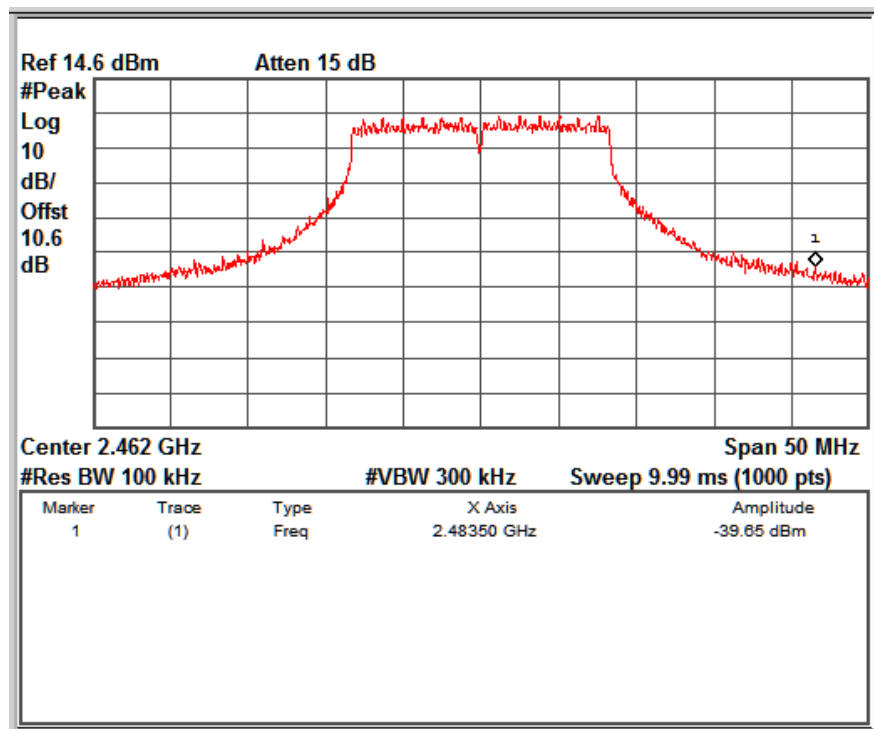
Data Rate: 6 Mbps

Channel frequency: 2462 MHz



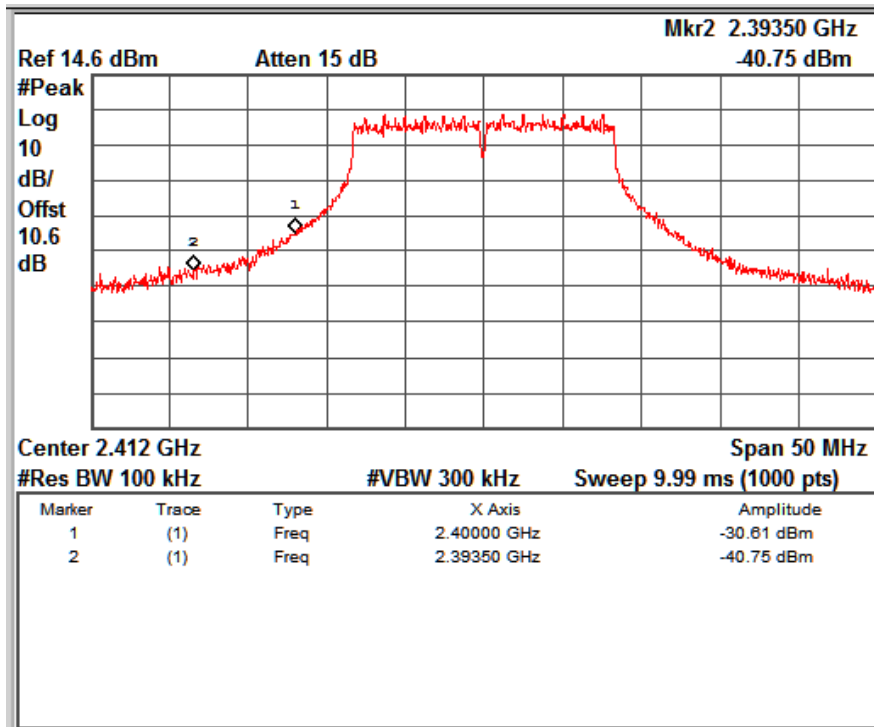
Data Rate: 24 Mbps

Channel frequency: 2412 MHz



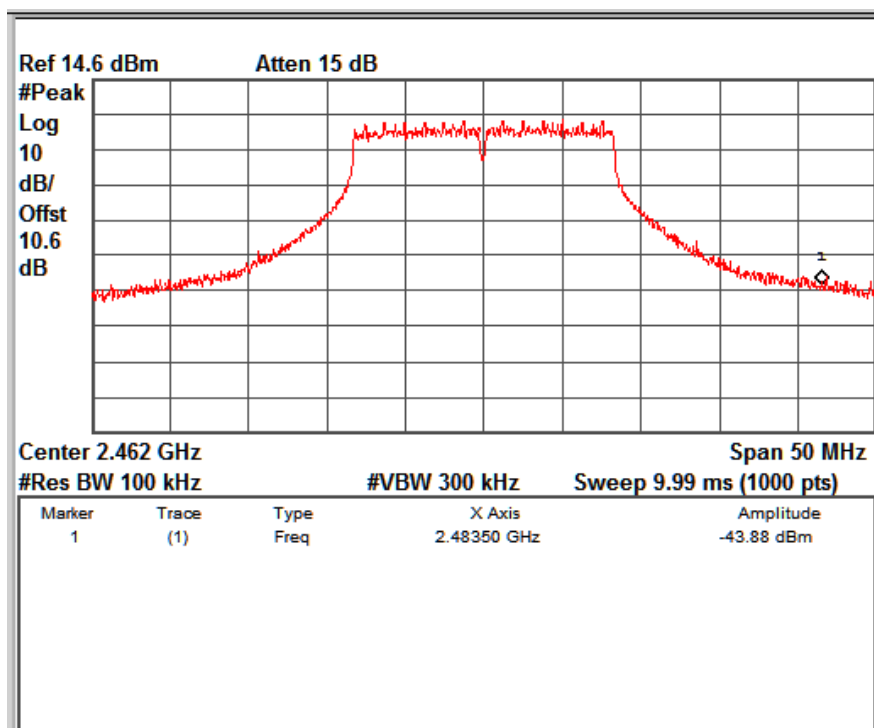
Data Rate: 24 Mbps

Channel frequency: 2462 MHz



Data Rate: 54 Mbps

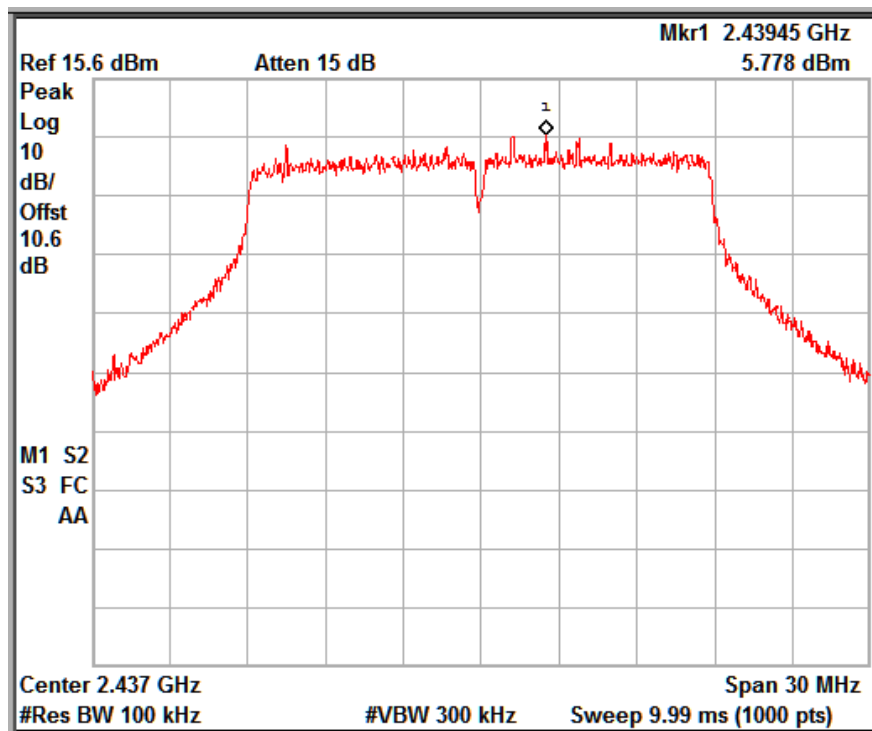
Channel frequency: 2412 MHz



Data Rate: 54 Mbps

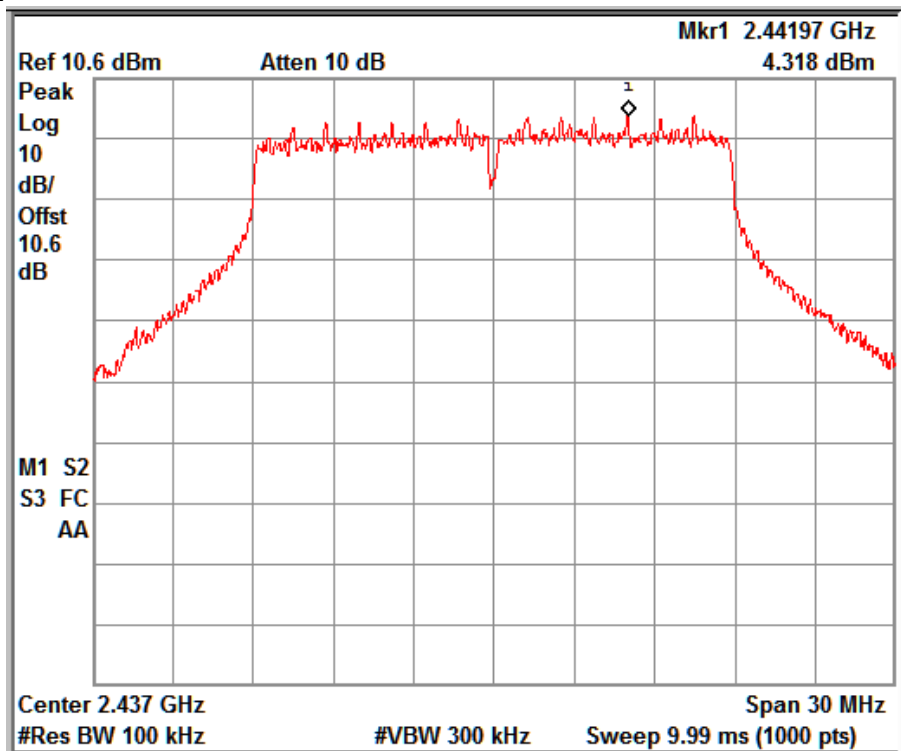
Channel frequency: 2462 MHz

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	2412	2400.00	-28.36	05.77	34.13	30.00
		2462	2483.5	-39.19	05.77	44.96	30.00
	MCS4	2412	2400.00	-31.68	04.31	35.99	30.00
		2462	2483.5	-55.78	04.31	60.09	30.00
	MCS7	2412	2400.00	-25.70	05.15	30.85	30.00
		2462	2483.5	-40.52	05.15	45.67	30.00

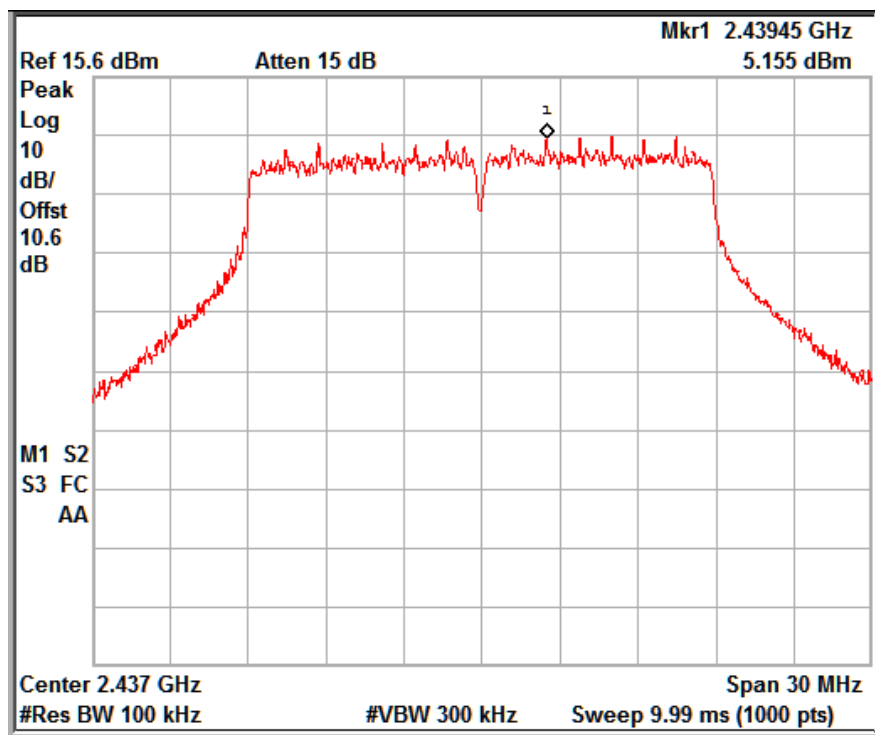


Reference Level Plot: MCS0

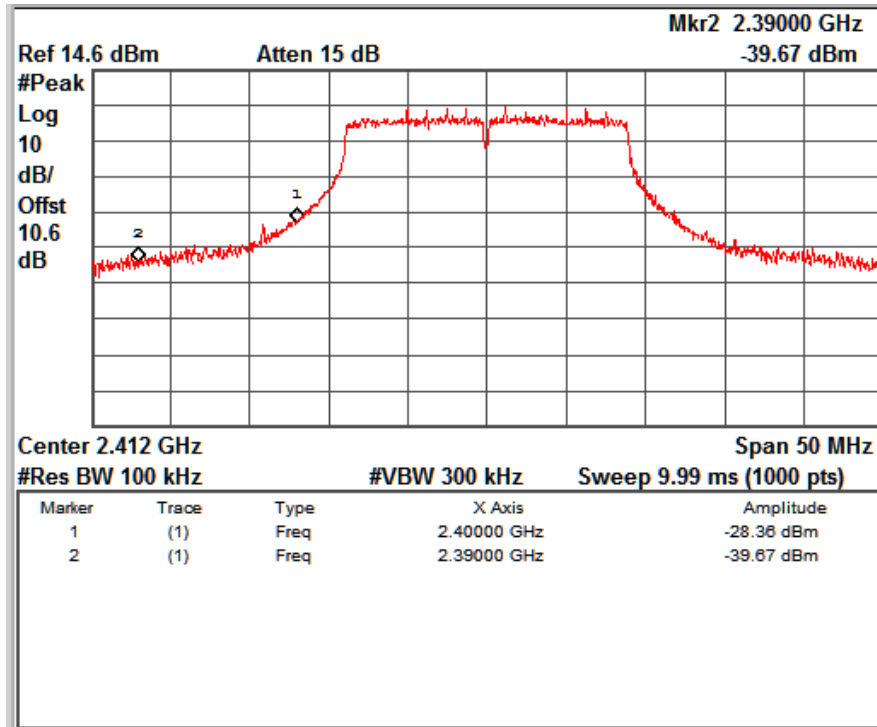
www.tuv.com



Reference Level Plot: MCS4

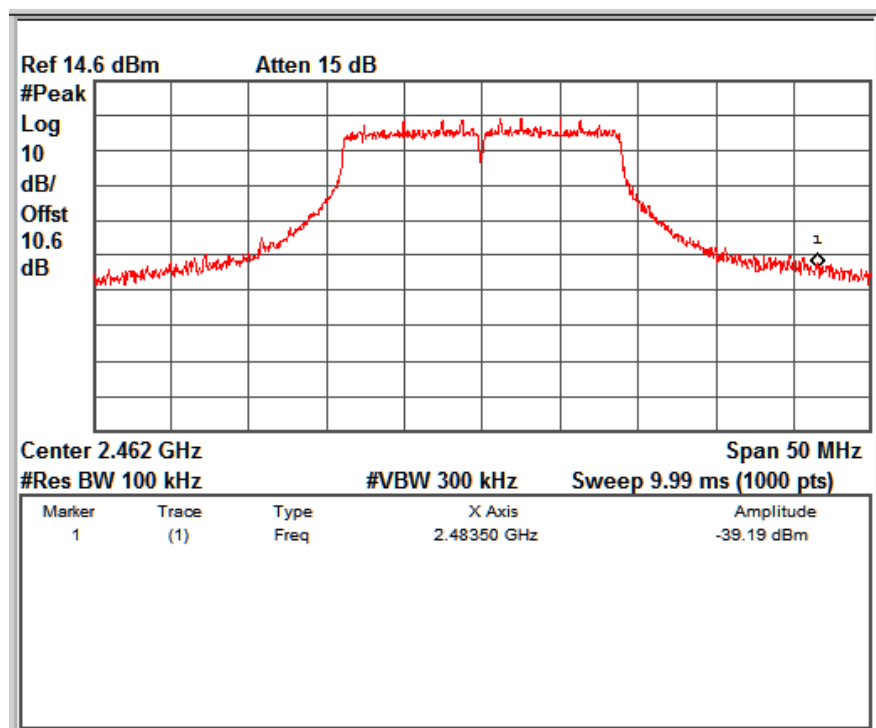


Reference Level Plot: MCS 7



Data Rate: MCS0

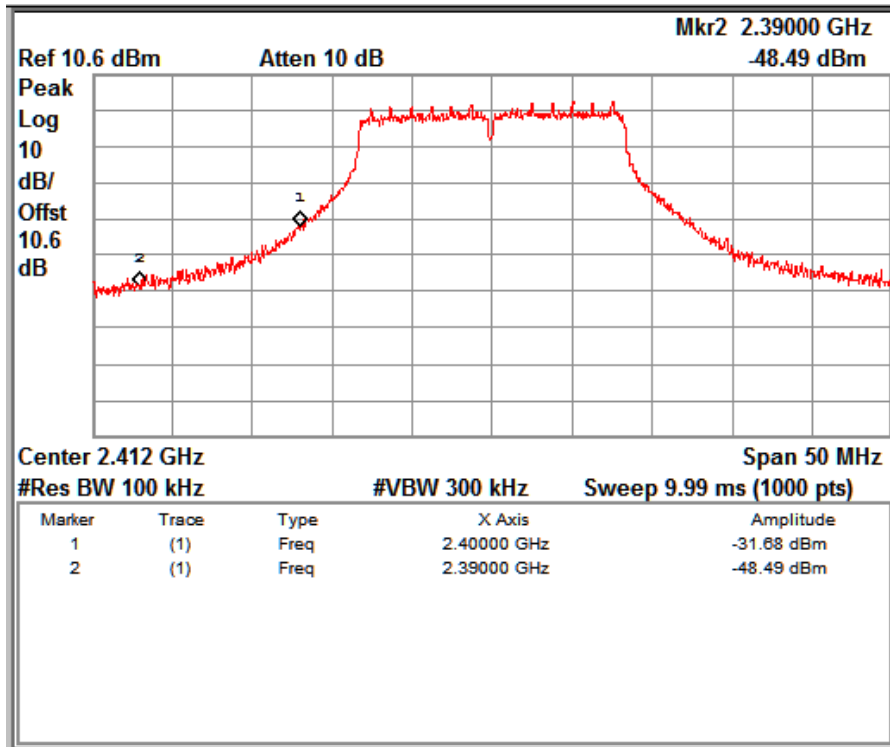
Channel frequency: 2412 MHz



Data Rate: MCS0

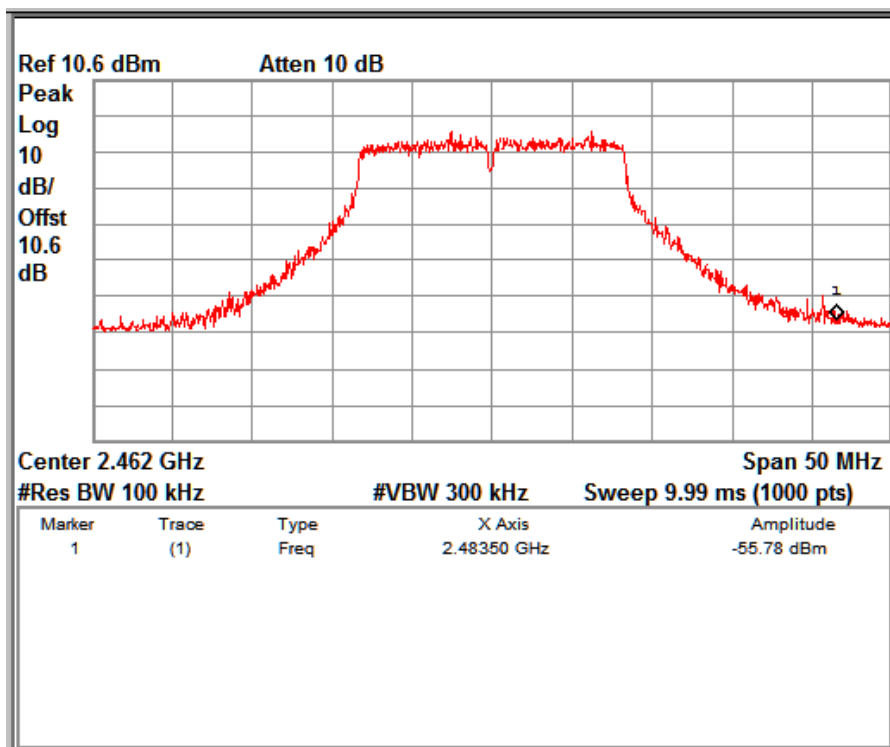
Channel frequency: 2462 MHz

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Data Rate: MCS4

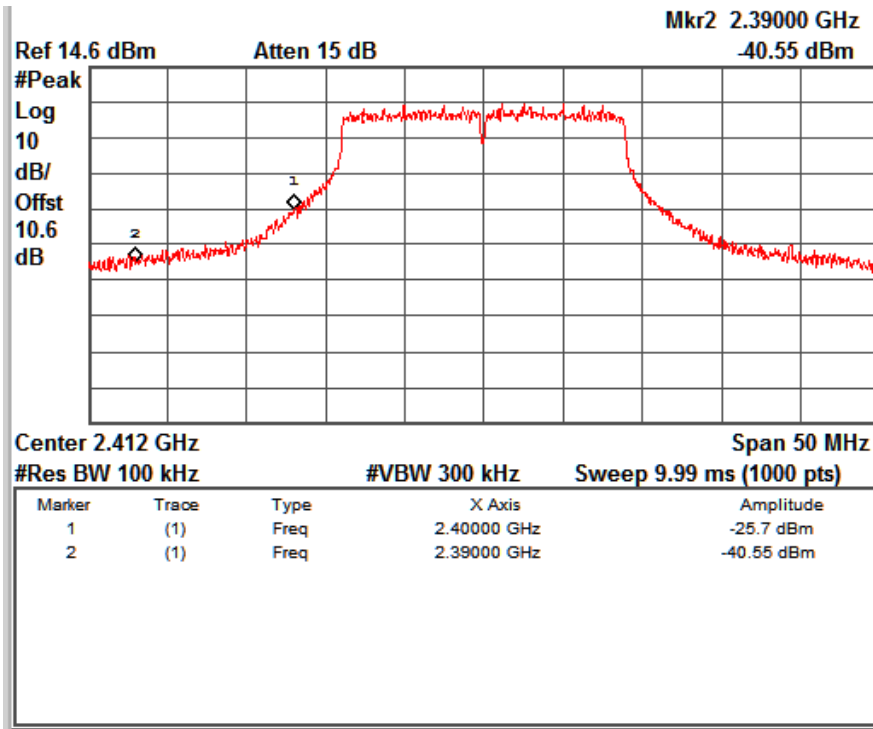
Channel frequency: 2412 MHz



Data Rate: MCS4

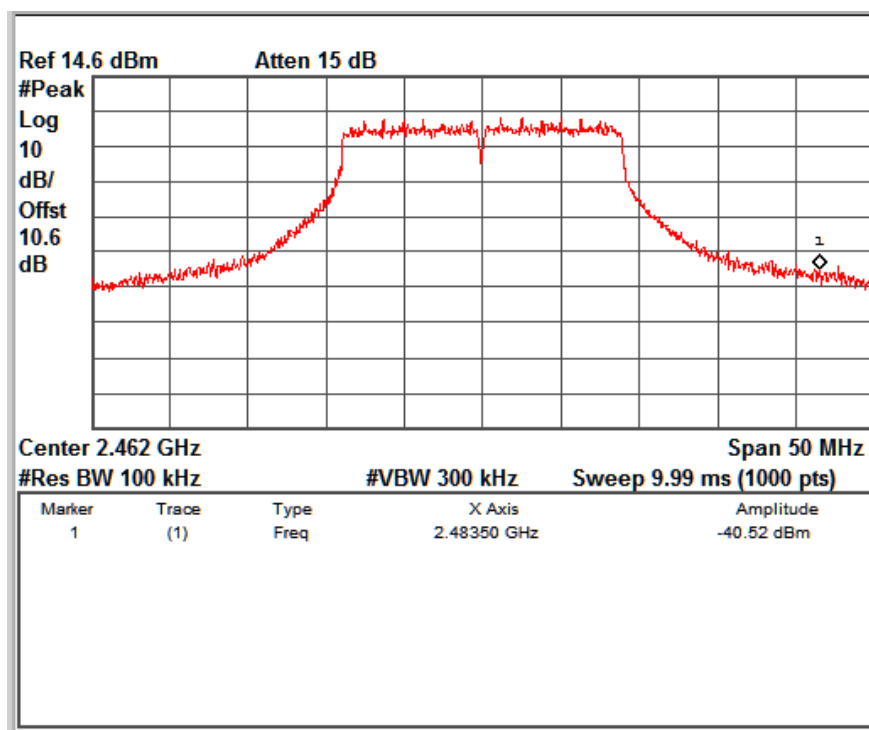
Channel frequency: 2462 MHz

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Data Rate: MCS7

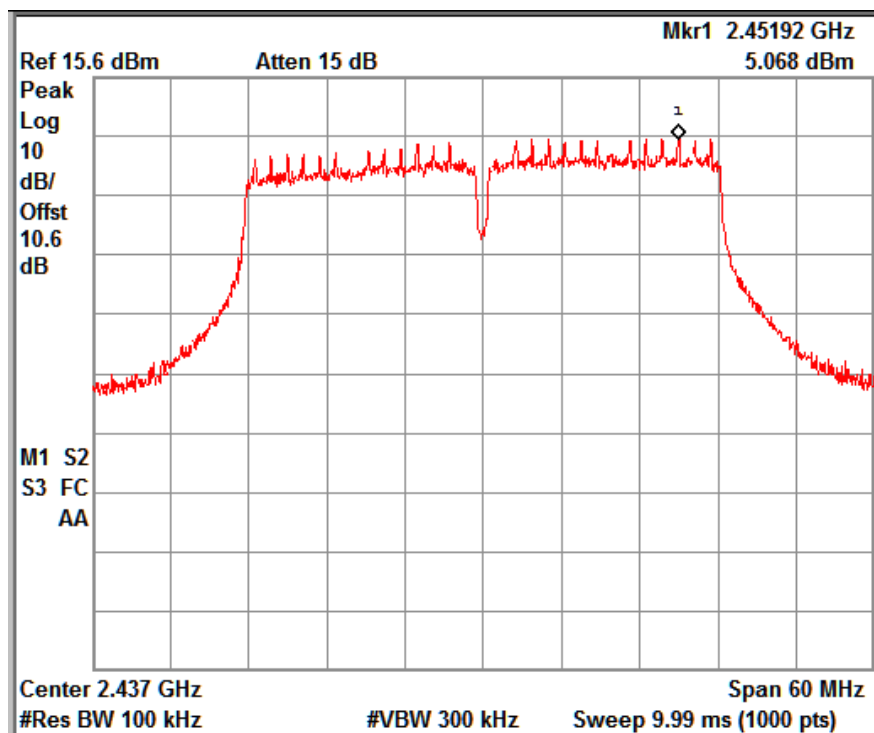
Channel frequency: 2412 MHz



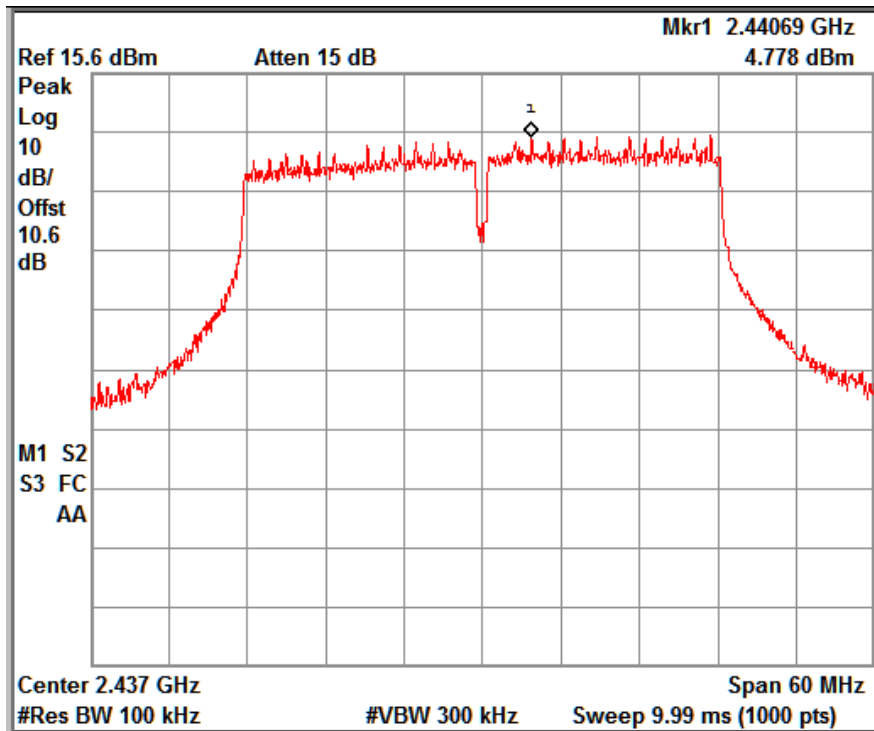
Data Rate: MCS7

Channel frequency: 2462 MHz

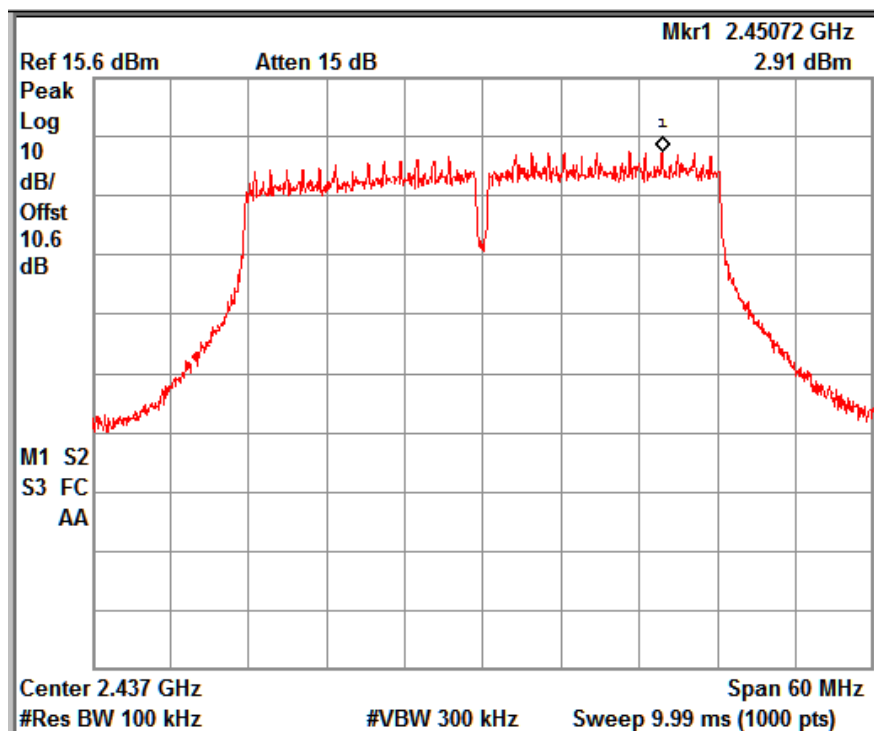
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Value at Band Edge		Reference Value B (dBm)	Band Edge Value A-B (dBc)	Limit (dBc)
			Frequency (MHz)	Value A (dBm)			
N 40MHz Channel BW	MCS0	2422	2400.00	-32.97	5.06	38.03	30.00
		2452	2483.5	-40.64	5.06	45.70	30.00
	MCS4	2422	2400.00	-31.91	4.77	36.68	30.00
		2452	2483.5	-40.44	4.77	45.21	30.00
	MCS7	2422	2400.00	-32.40	2.91	35.31	30.00
		2452	2483.5	-41.38	2.91	44.29	30.00



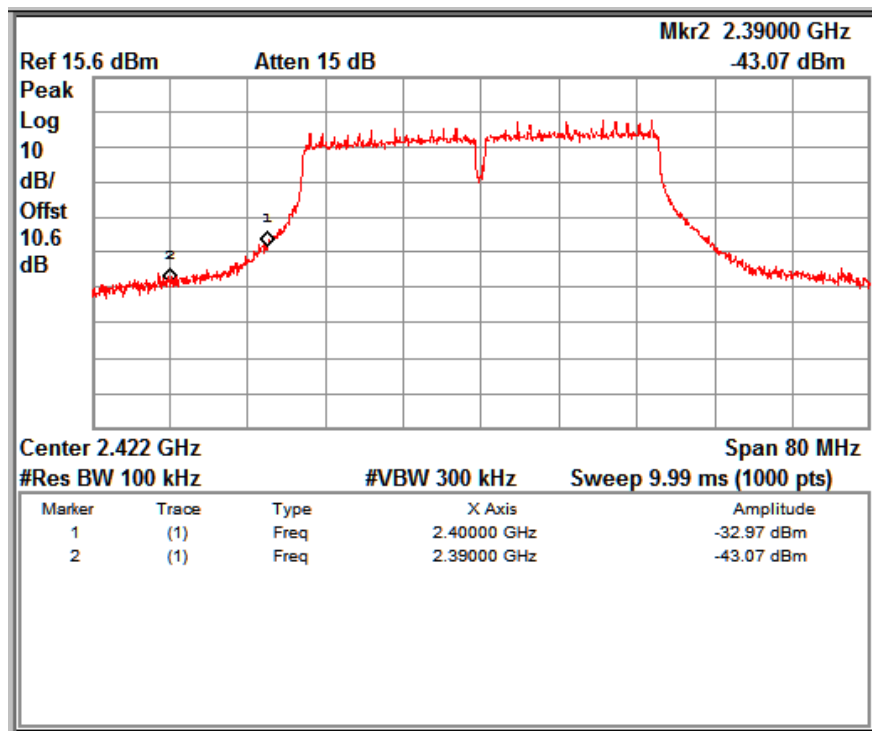
Reference Level Plot: MCS0



Reference Level Plot: MCS4

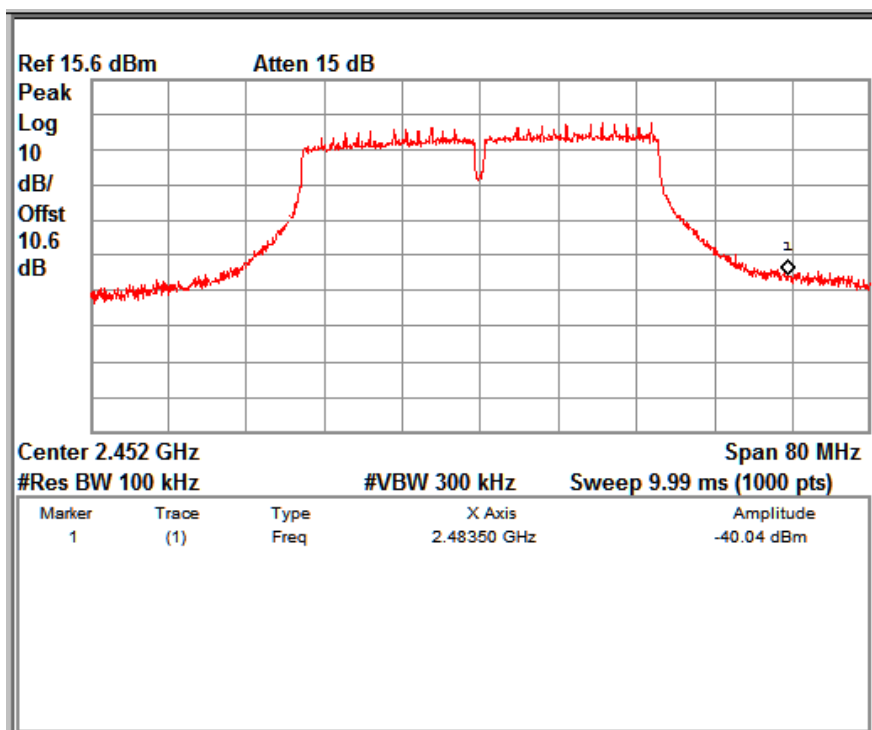


Reference Level Plot: MCS7



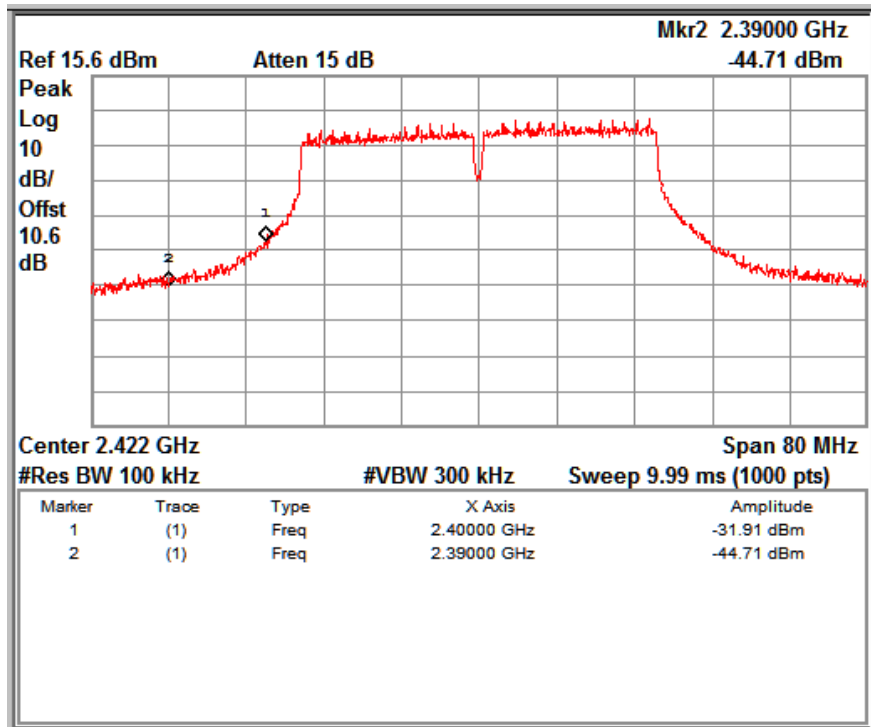
Data Rate: MCS0

Channel frequency: 2422 MHz



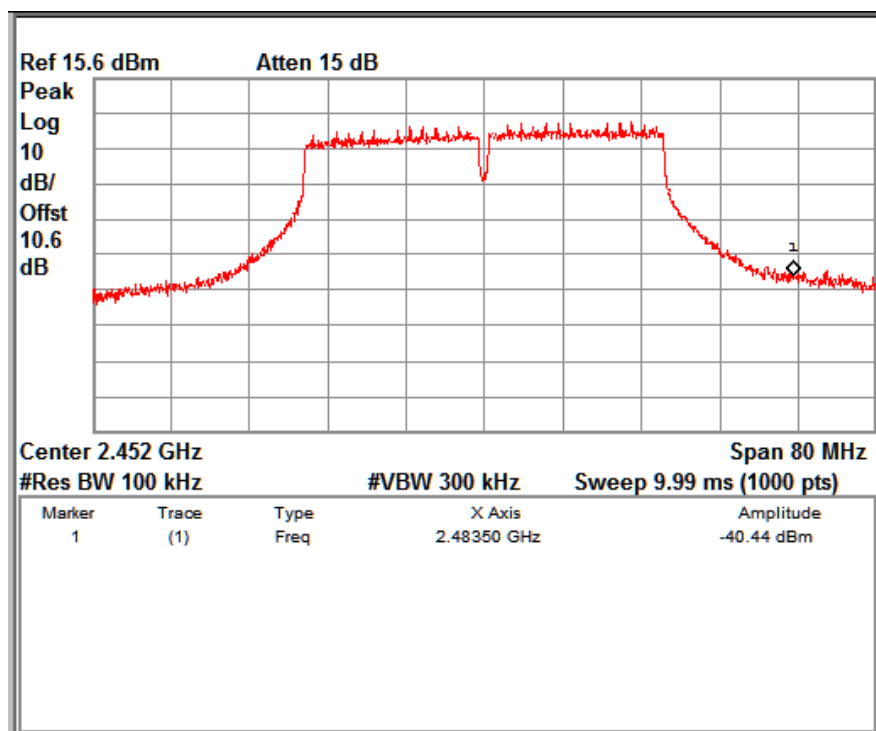
Data Rate: MCS0

Channel frequency: 2452 MHz



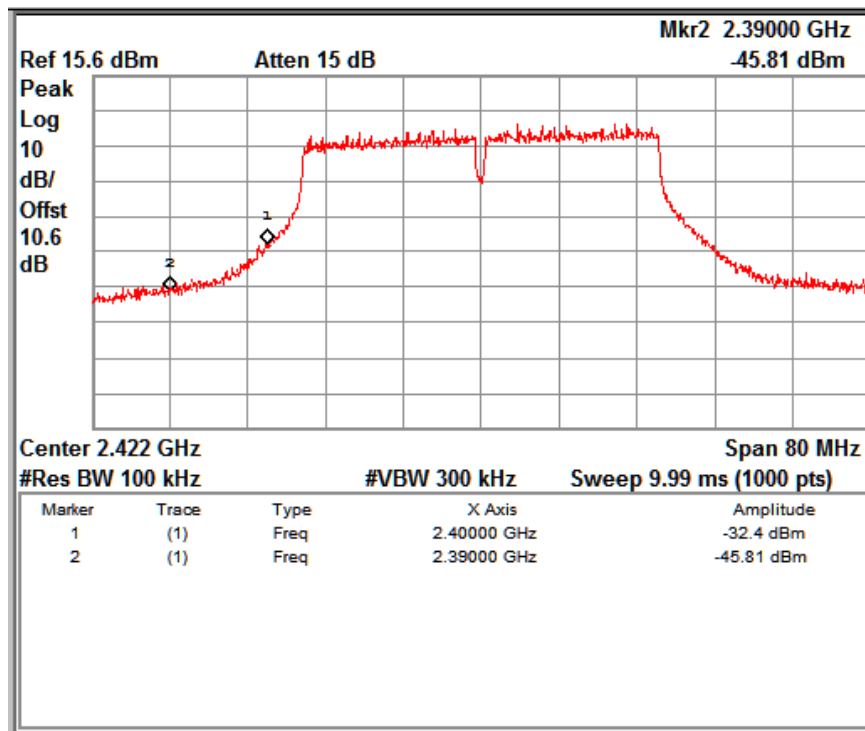
Data Rate: MCS4

Channel frequency: 2422 MHz



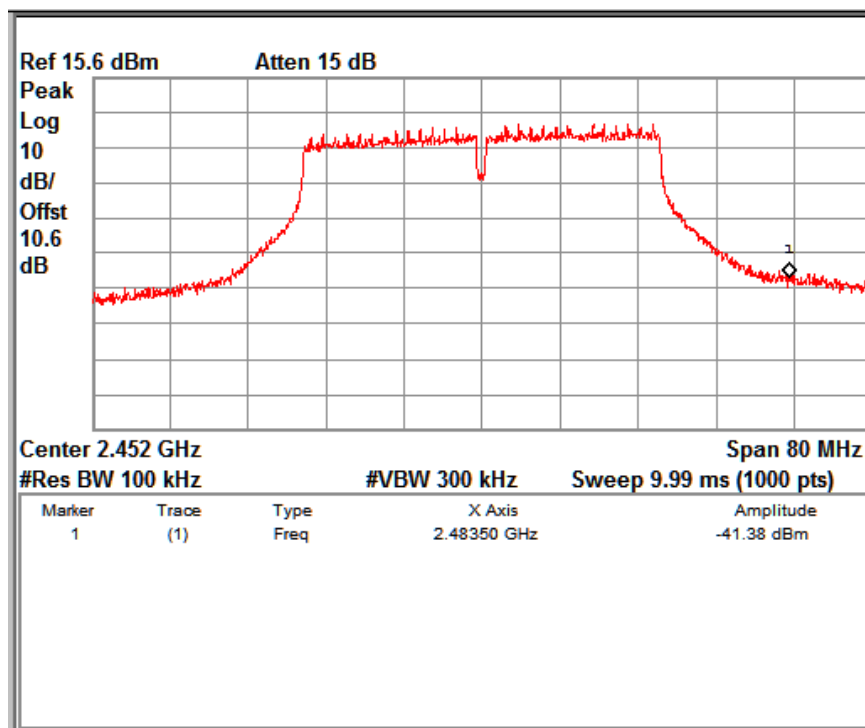
Data Rate: MCS4

Channel frequency: 2452 MHz



Data Rate: MCS7

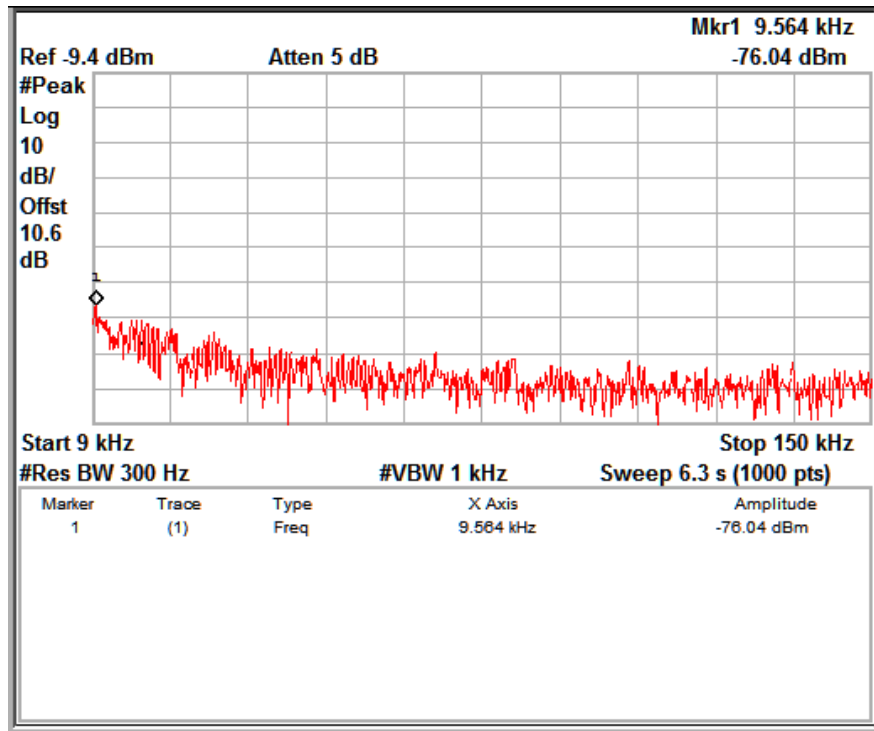
Channel frequency: 2422 MHz



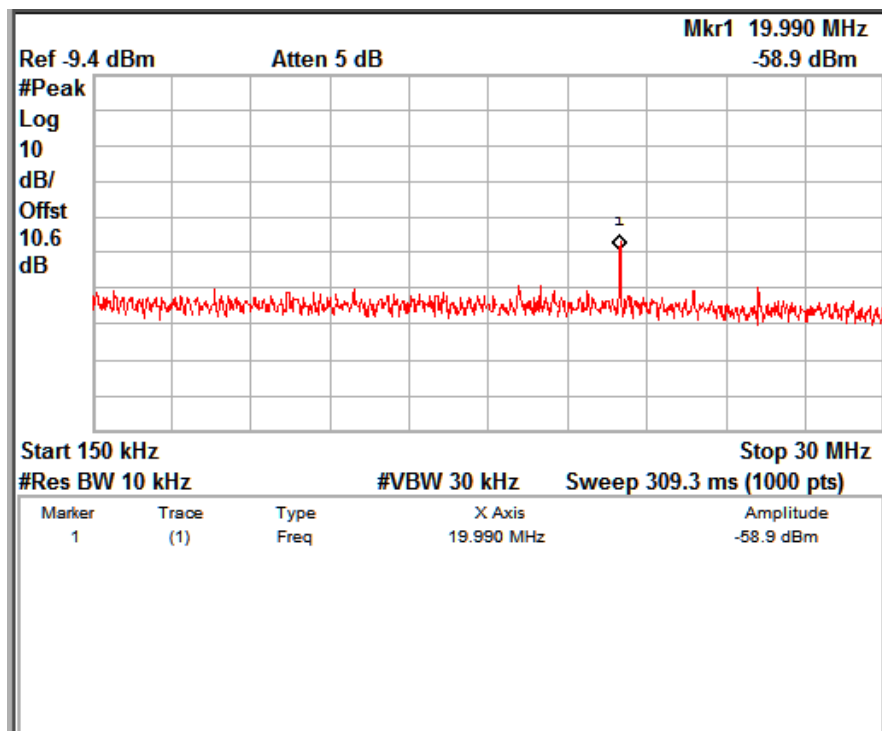
Data Rate: MCS7

Channel frequency: 2452 MHz

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Conducted Spurious Emission

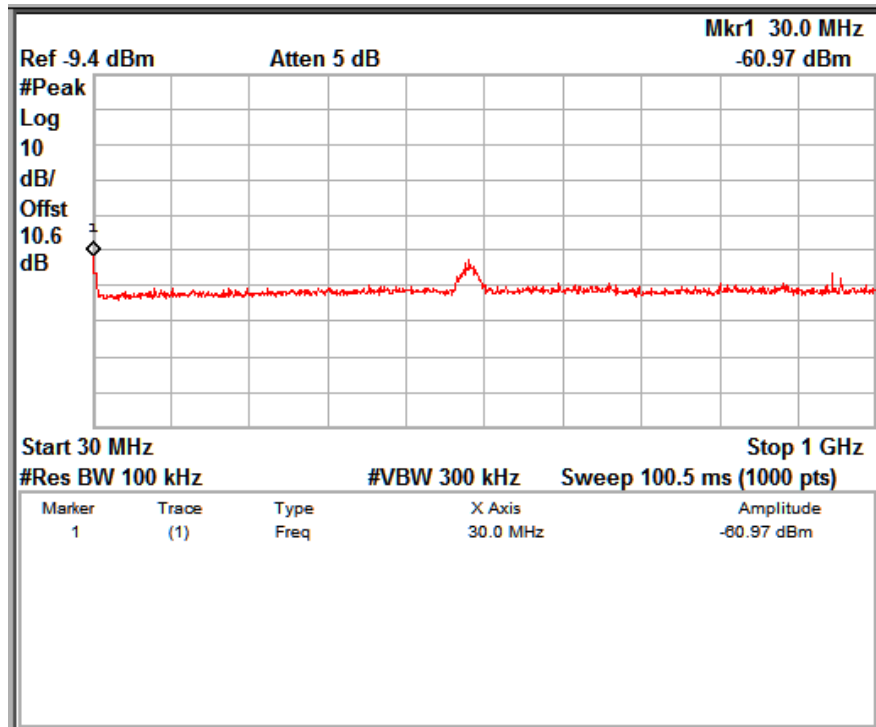


Below 1GHz

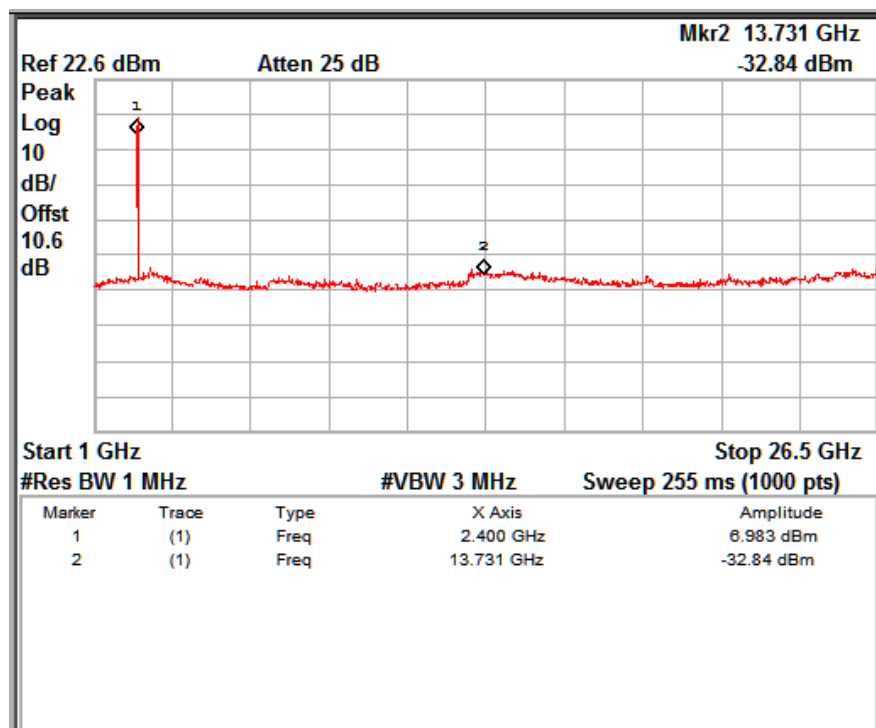


Below 1GHz

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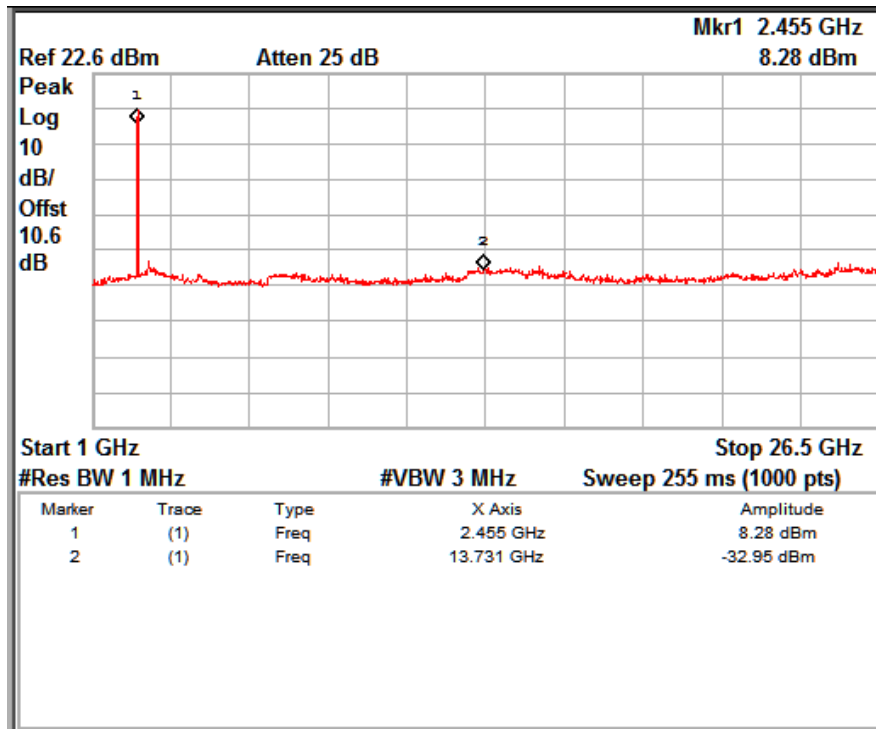


Below 1GHz



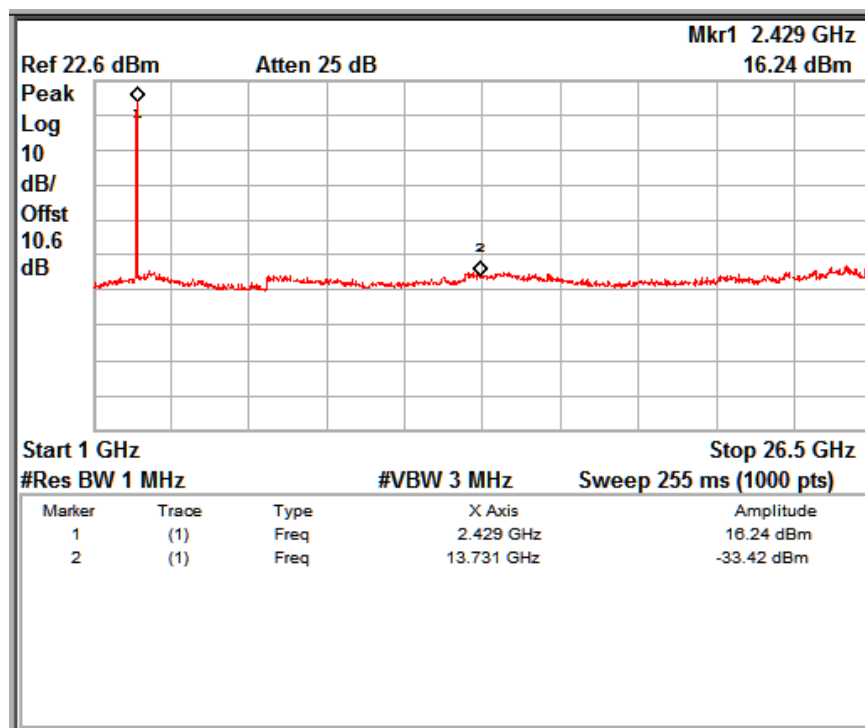
Data Rate: 1Mbps

Channel frequency: 2412 MHz



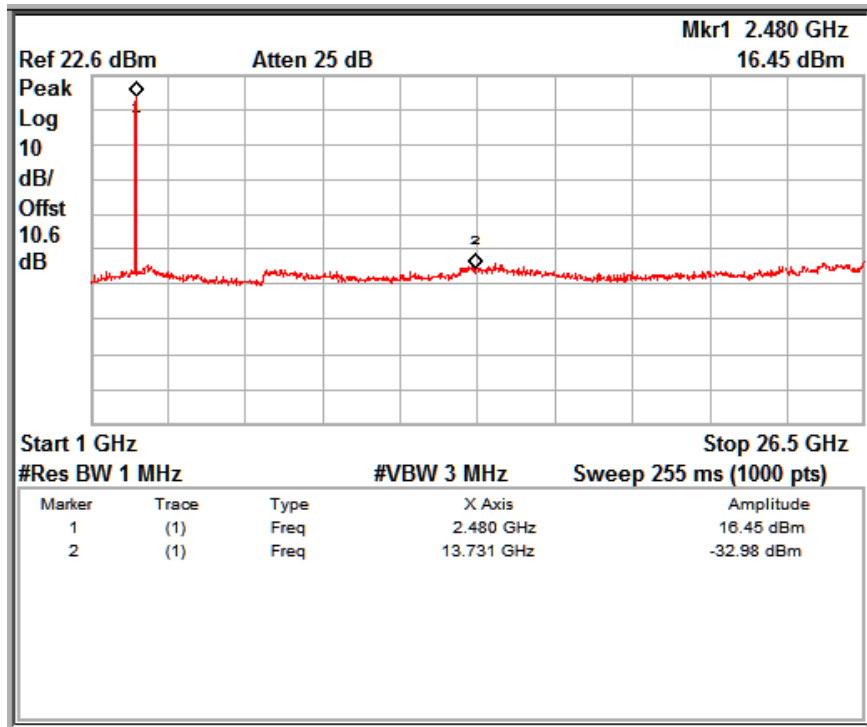
Data Rate: 1Mbps

Channel frequency: 2462 MHz



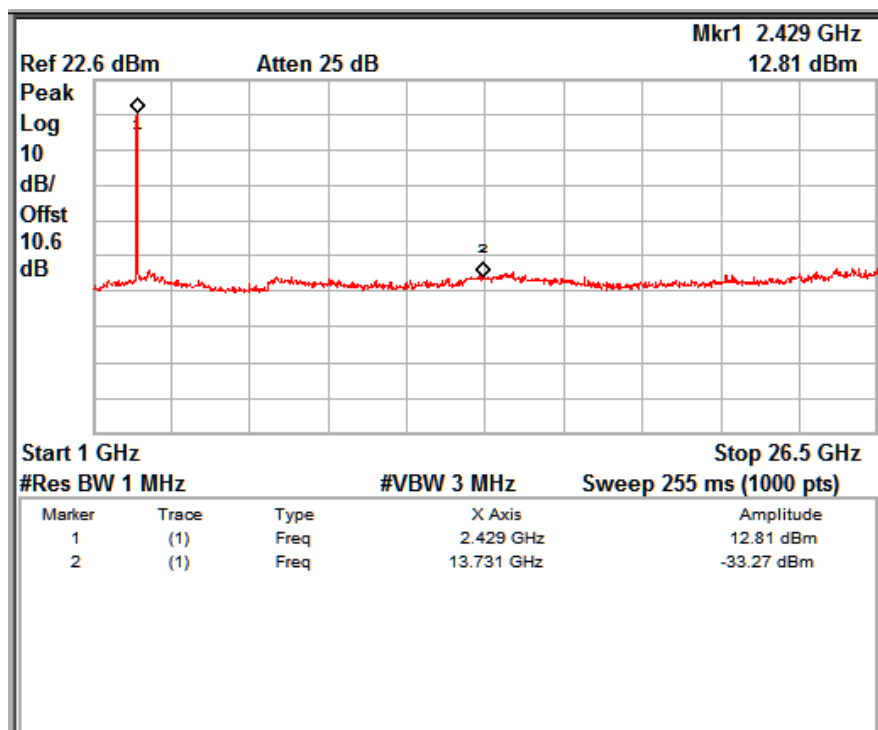
Data Rate: 11Mbps

Channel frequency: 2412 MHz



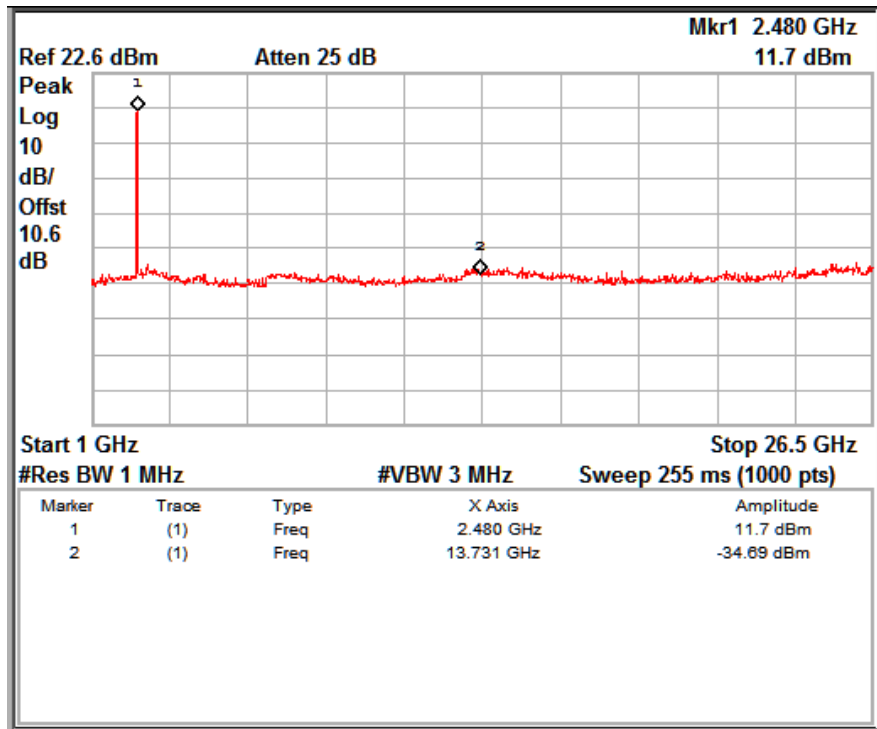
Data Rate: 11Mbps

Channel frequency: 2462 MHz



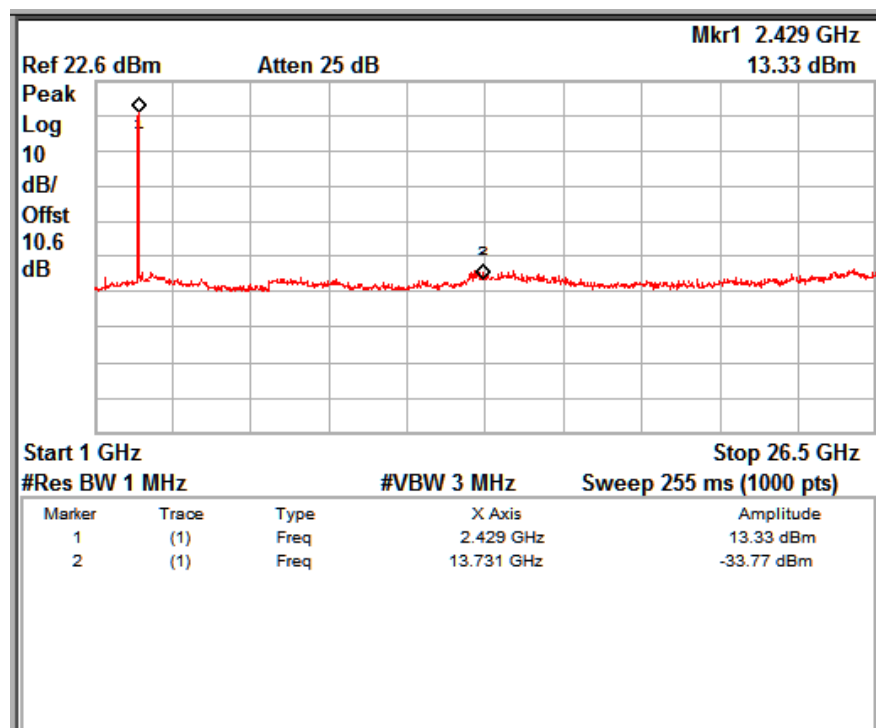
Data Rate: 6Mbps

Channel frequency: 2412 MHz



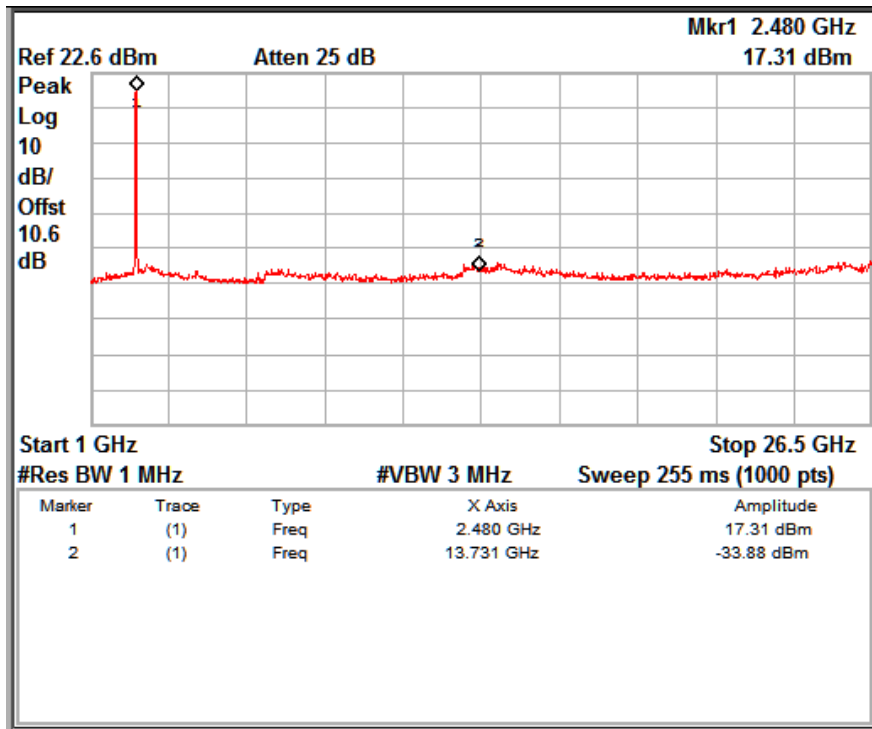
Data Rate: 6Mbps

Channel frequency: 2462 MHz



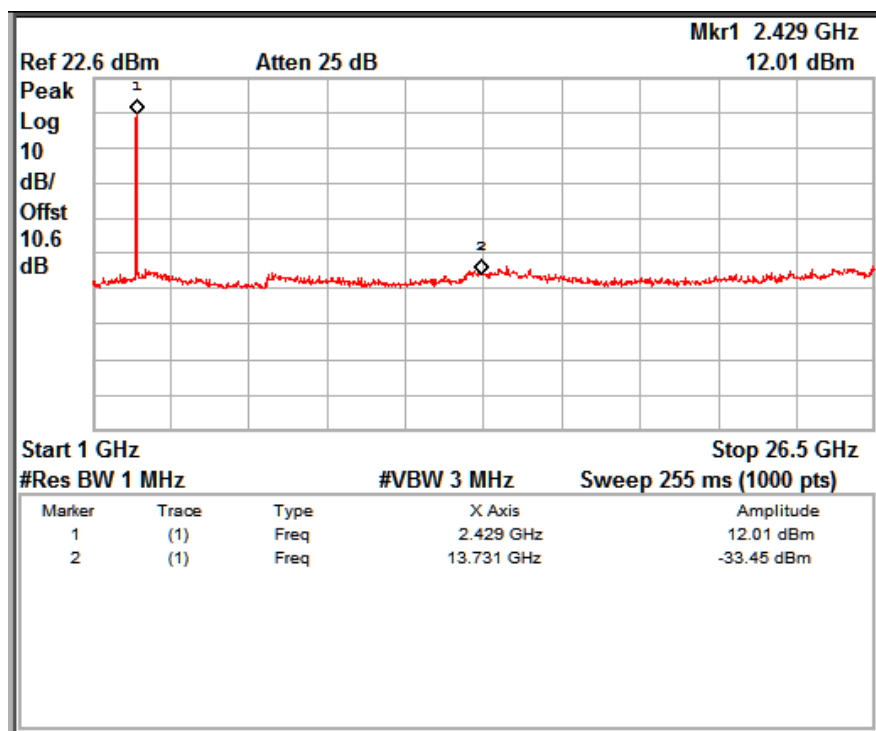
Data Rate: 24Mbps

Channel frequency: 2412 MHz



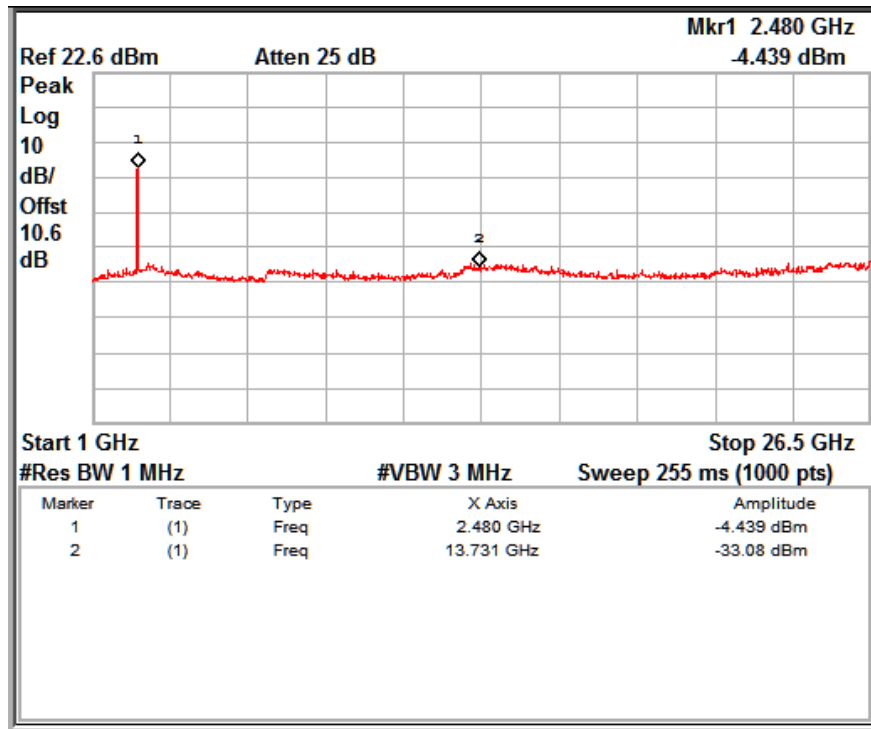
Data Rate: 24Mbps

Channel frequency: 2462 MHz



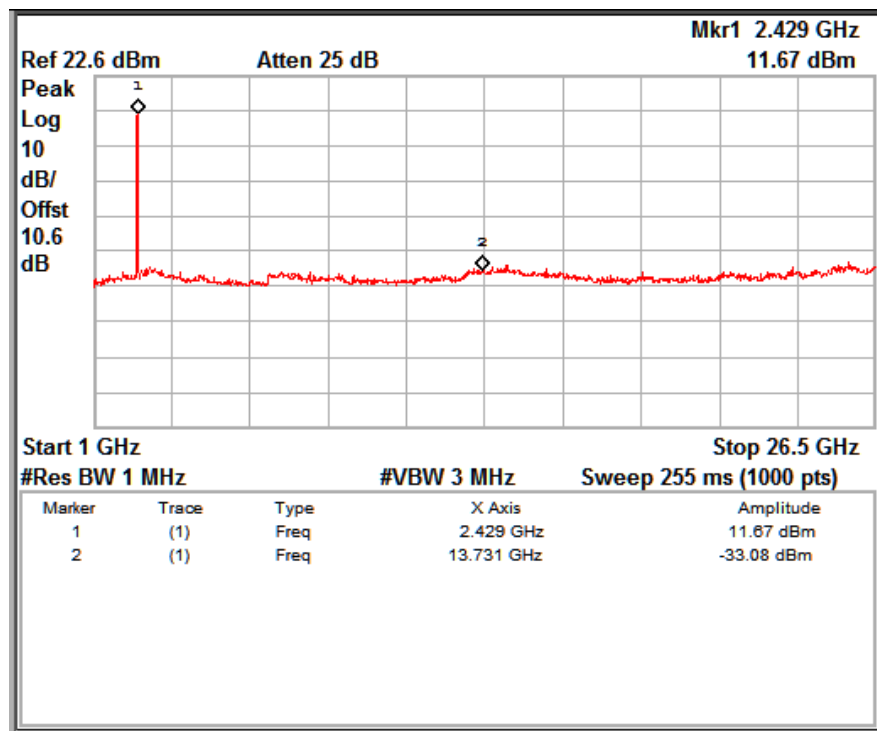
Data Rate: 54Mbps

Channel frequency: 2412 MHz



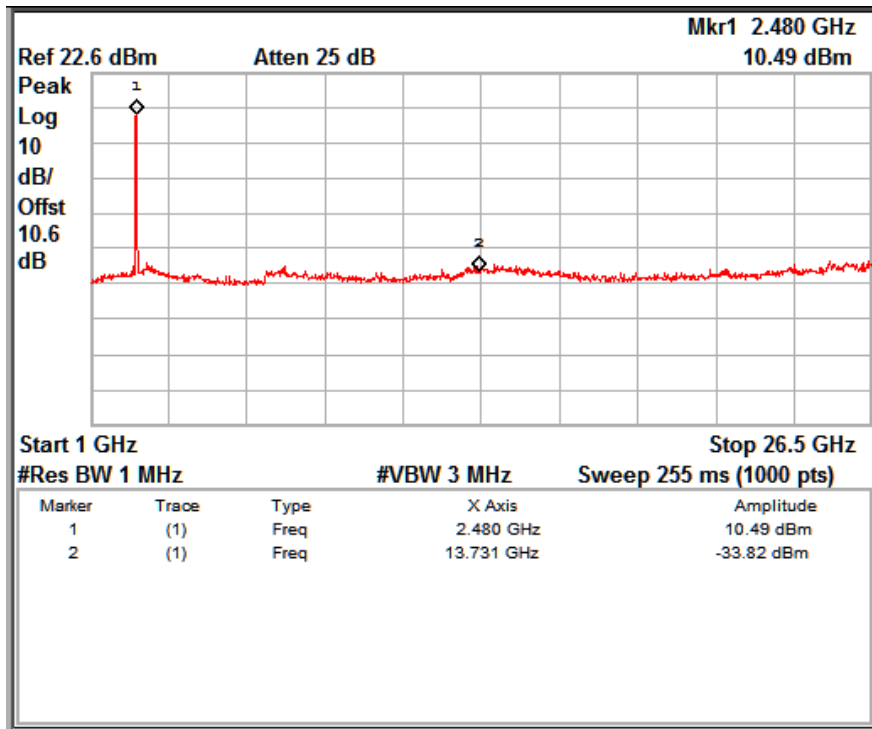
Data Rate: 54Mbps

Channel frequency: 2462 MHz



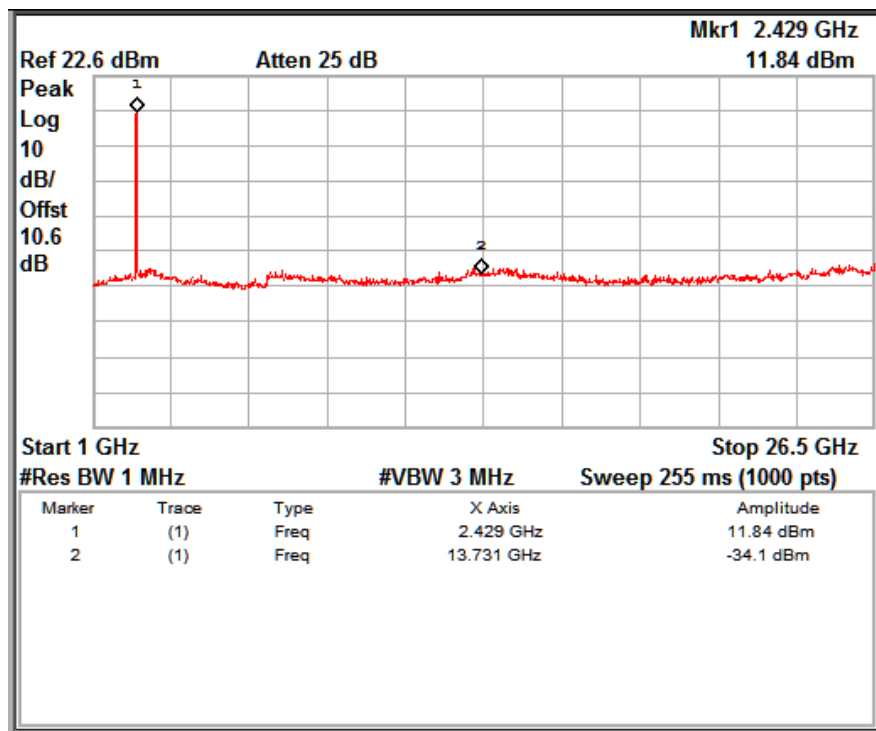
Data Rate: MCS0

Channel frequency: 2412 MHz



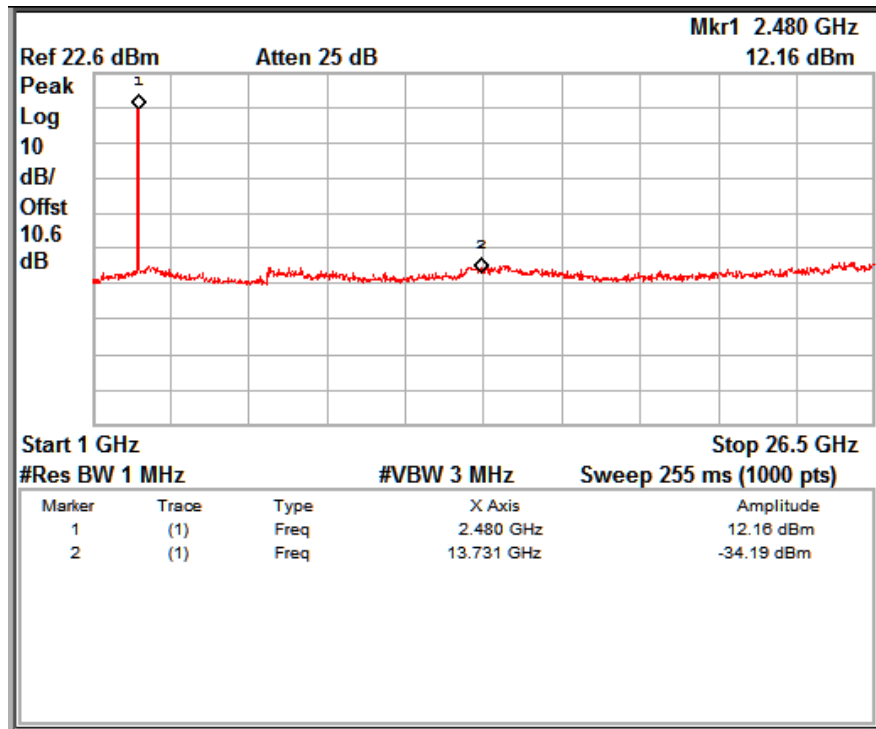
Data Rate: MCS0

Channel frequency: 2462 MHz



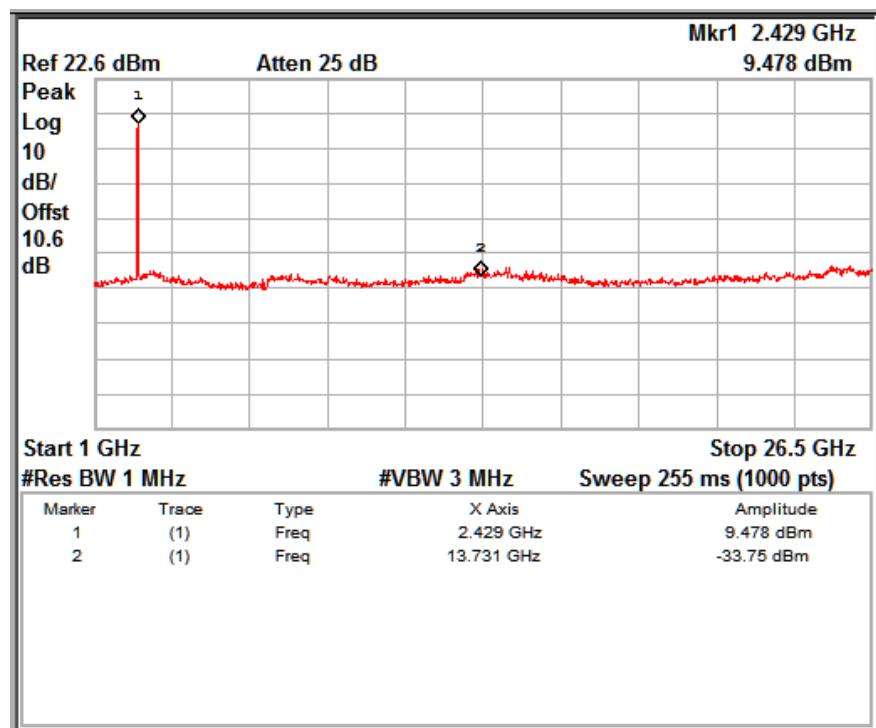
Data Rate: MCS4

Channel frequency: 2412 MHz



Data Rate: MCS4

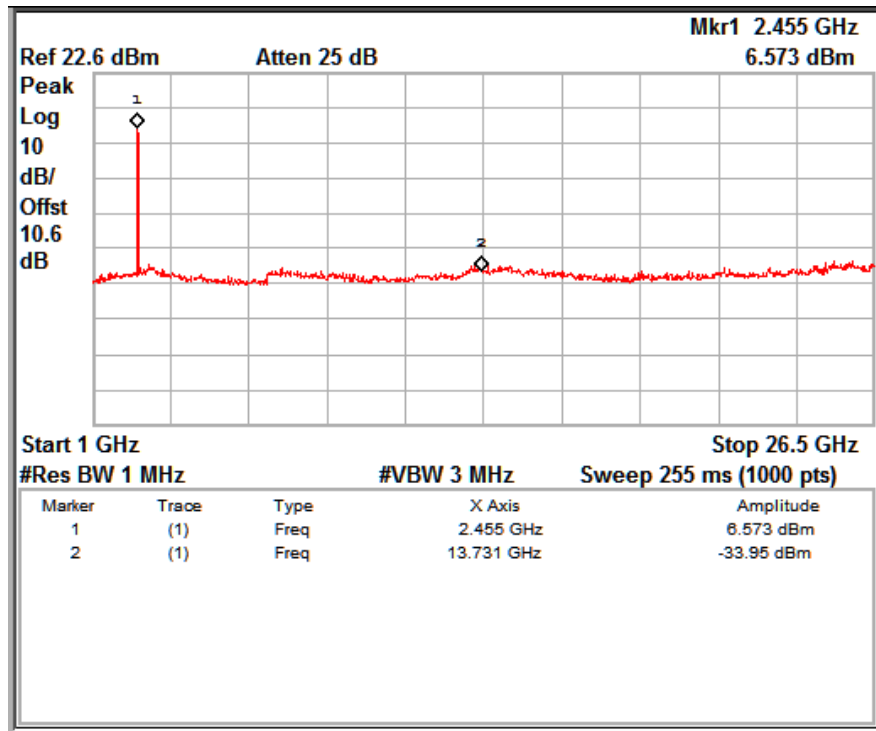
Channel frequency: 2462 MHz



Data Rate: MCS7

Channel frequency: 2412 MHz

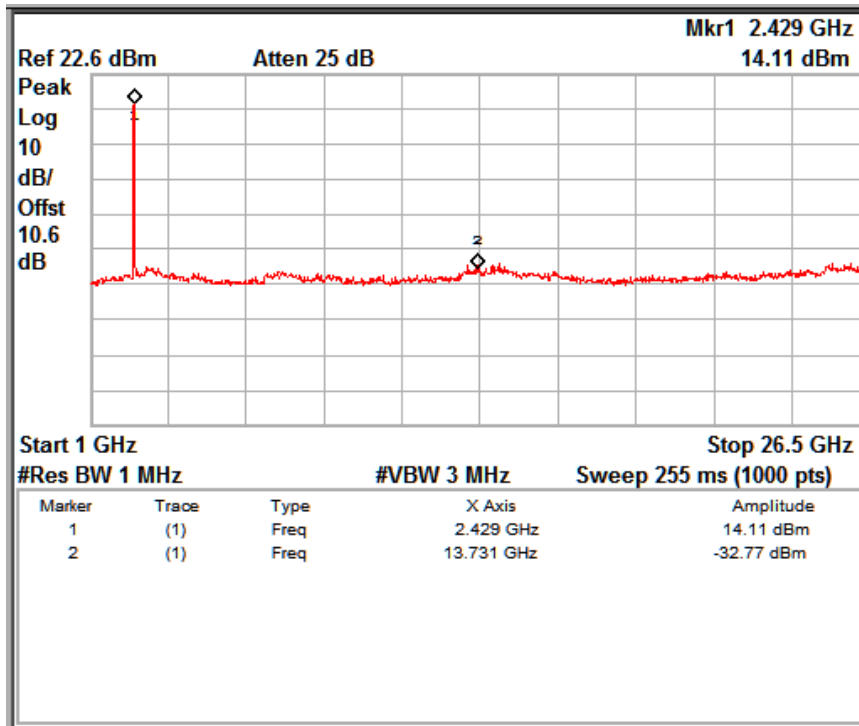
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Data Rate: MCS7

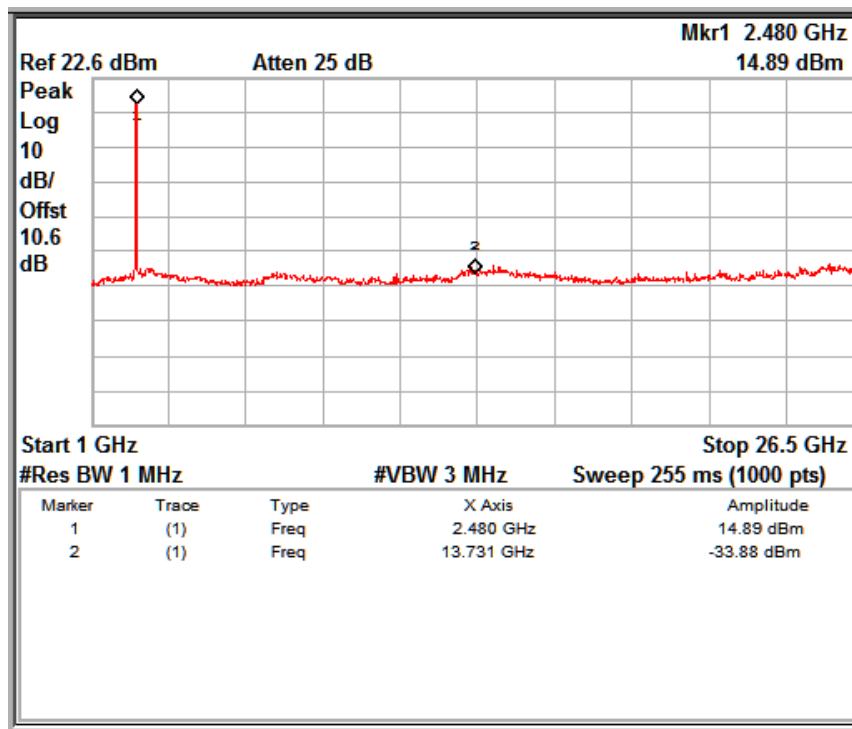
Channel frequency: 2462 MHz

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nmode SISO 40MHz



Data Rate: MCS0

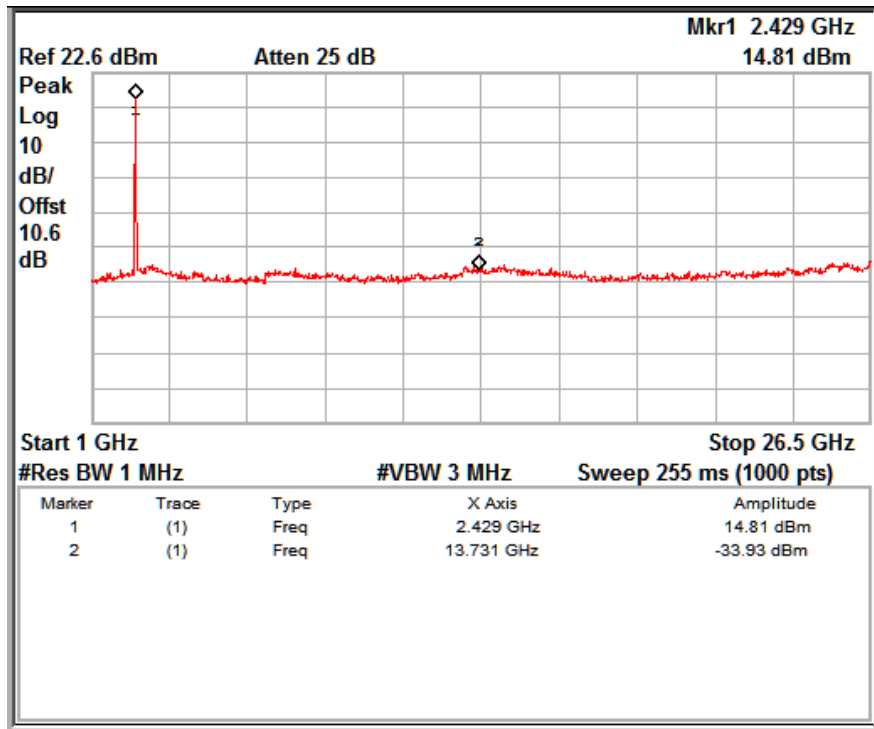
Channel frequency: 2422 MHz



Data Rate: MCS0

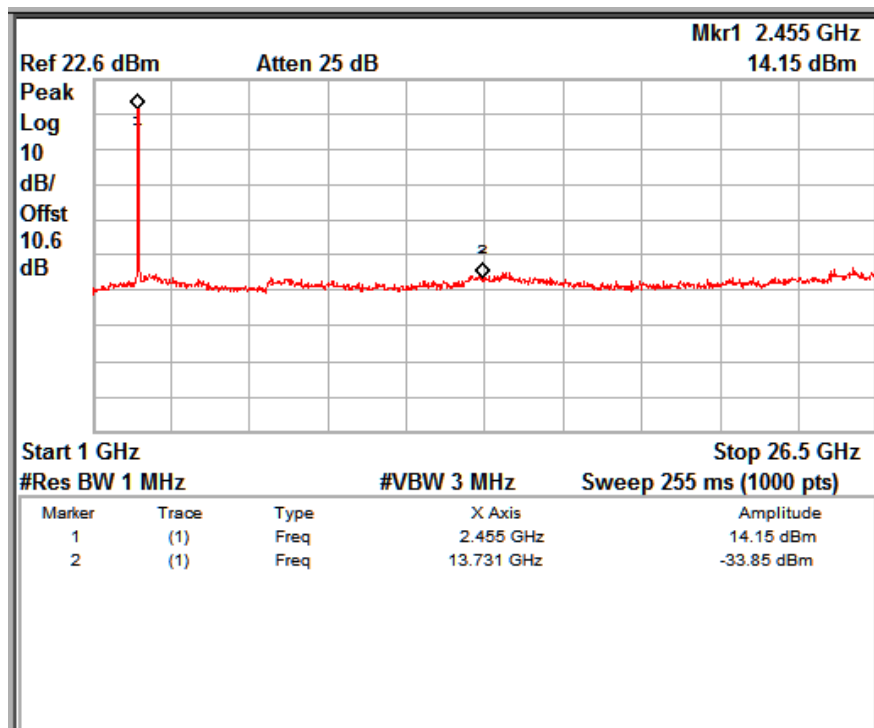
Channel frequency: 2457 MHz

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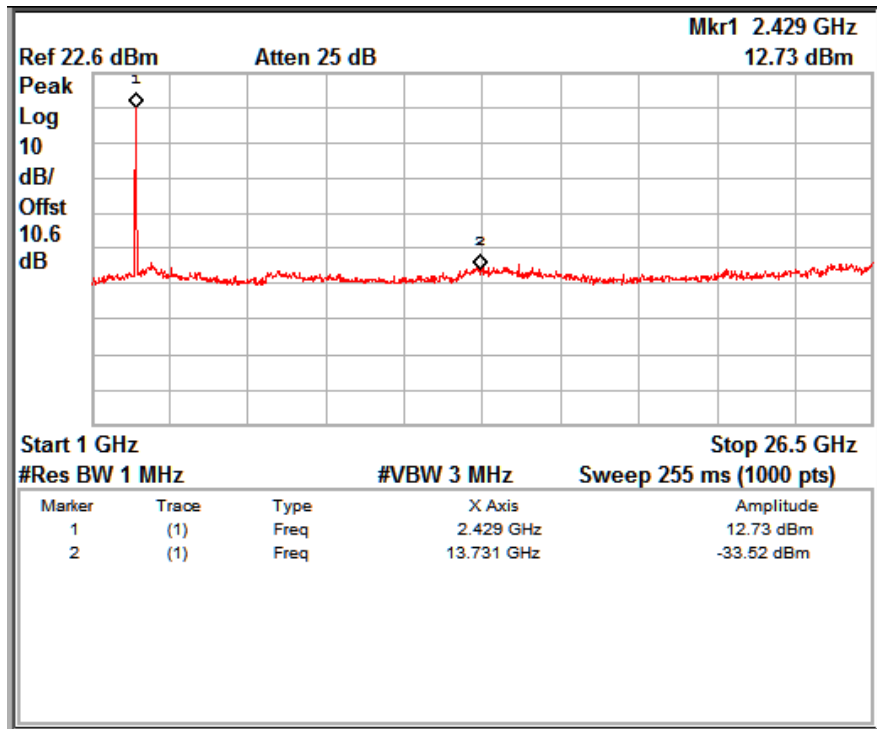
Data Rate: MCS4

Channel frequency: 2422 MHz



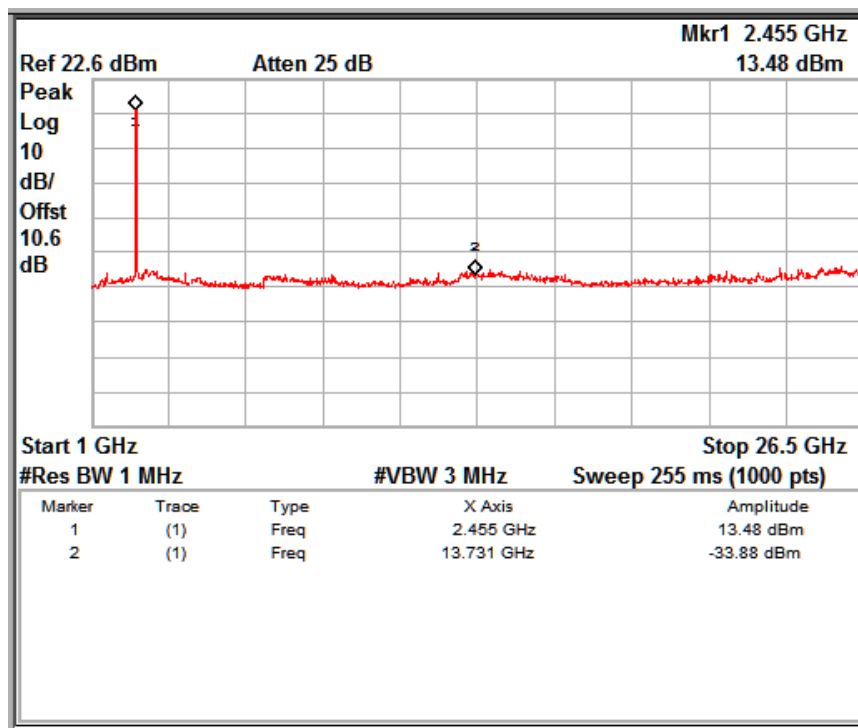
Data Rate: MCS4

Channel frequency: 2457 MHz



Data Rate: MCS7

Channel frequency: 2422 MHz

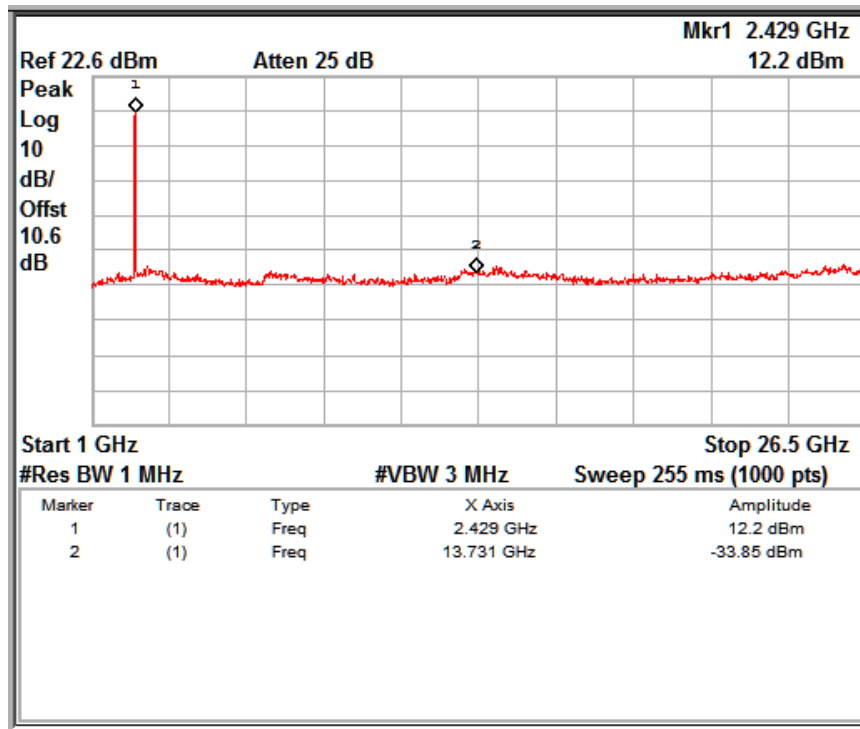


Data Rate: MCS7

Channel frequency: 2457 MHz

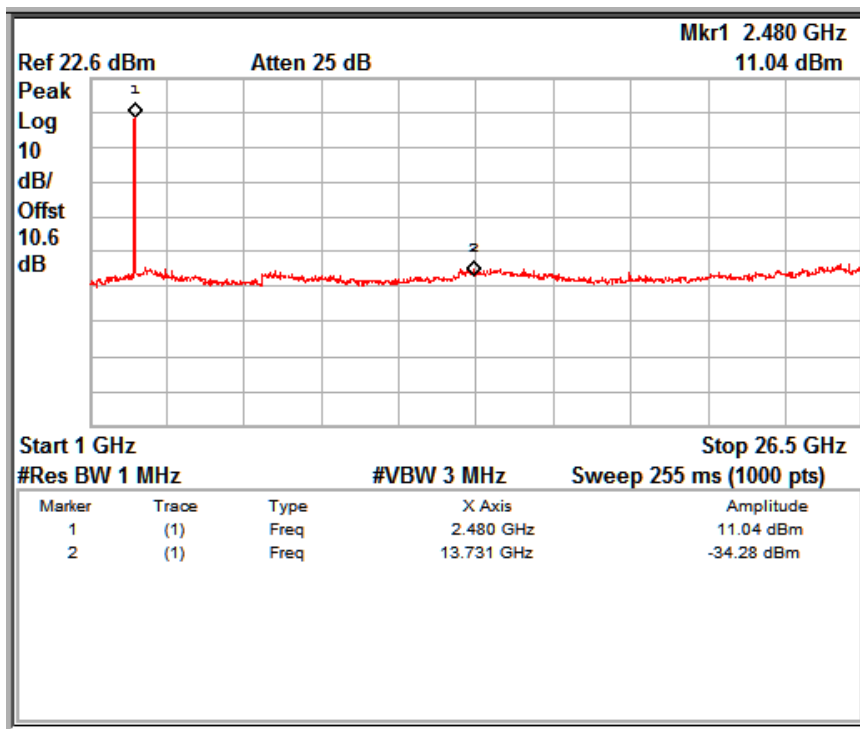
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nmode mimo 20MHz



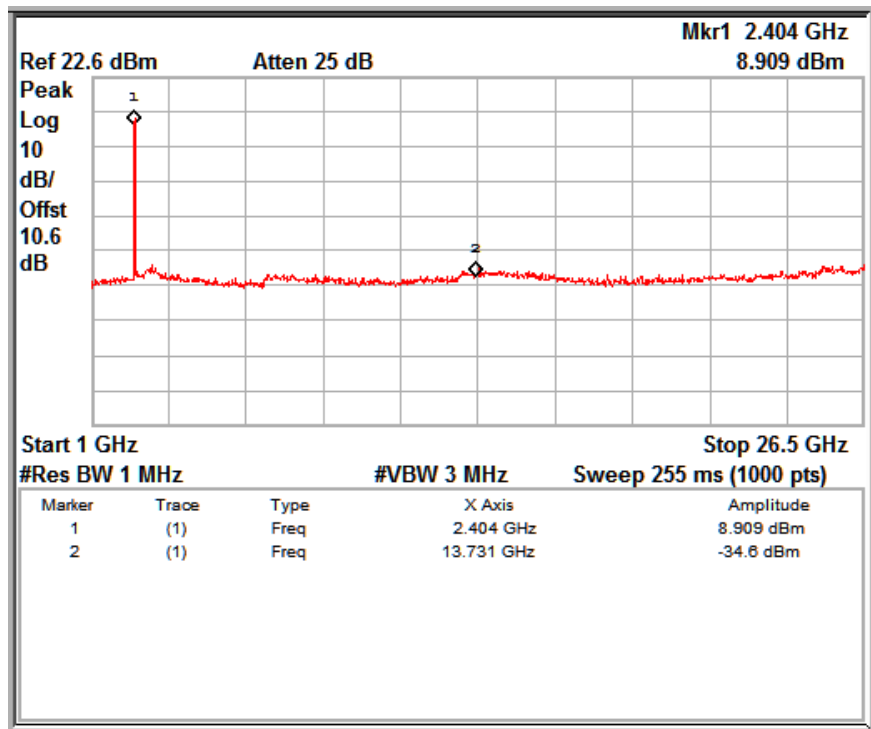
Data Rate: MCS8

Channel frequency: 2412 MHz



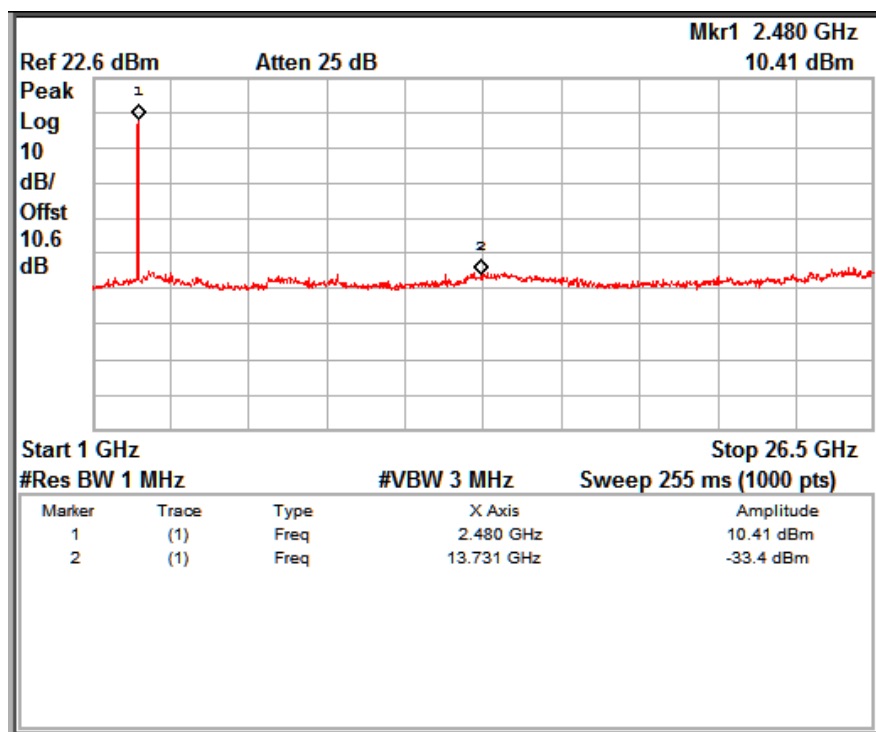
Data Rate: MCS8

Channel frequency: 2462 MHz



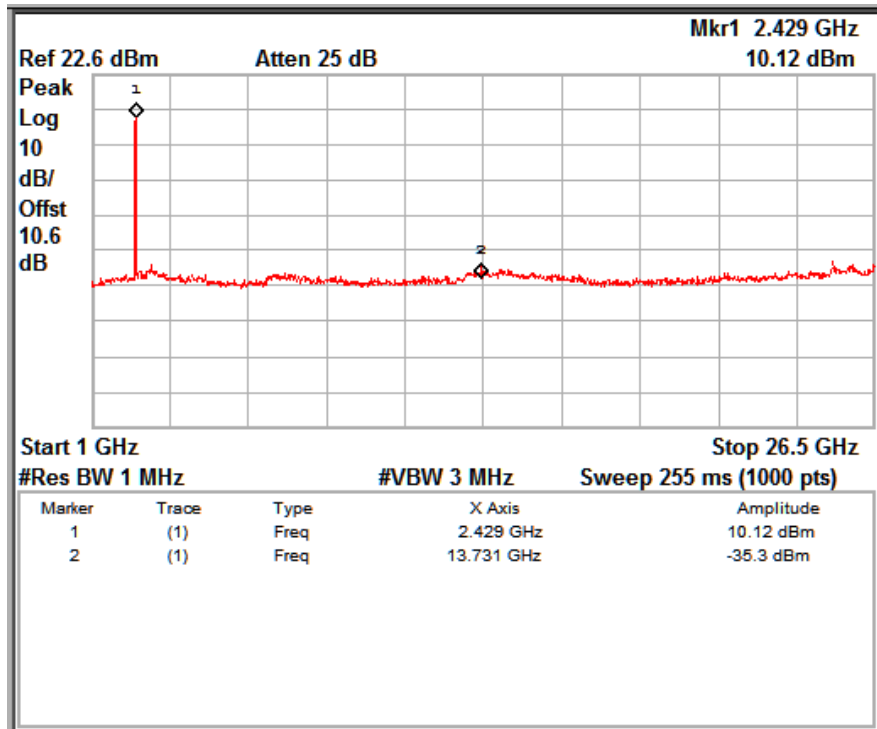
Data Rate: MCS11

Channel frequency: 2412 MHz



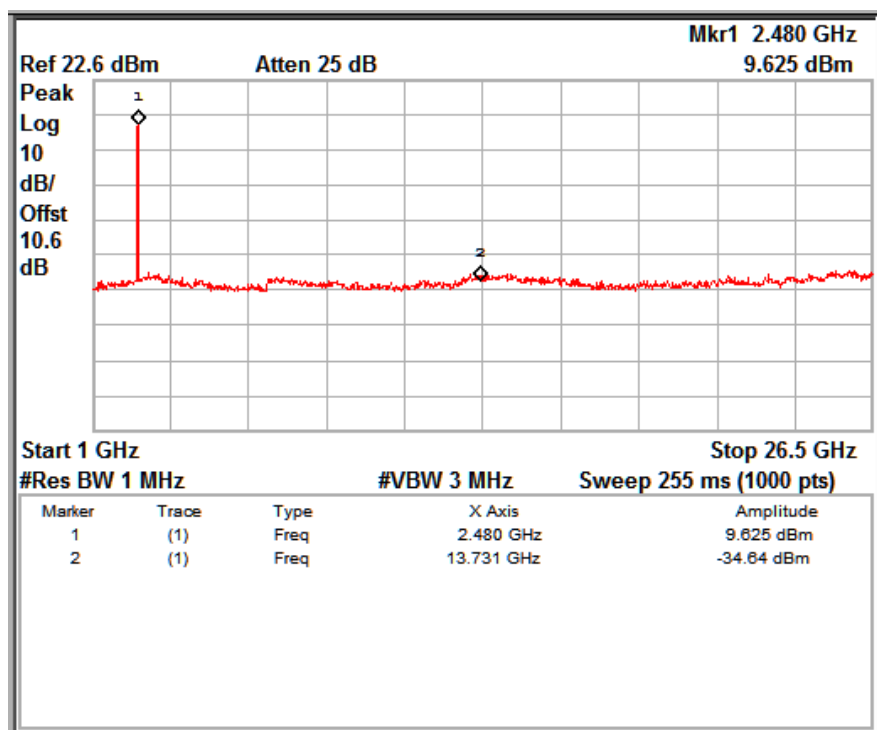
Data Rate: MCS11

Channel frequency: 2462 MHz



Data Rate: MCS15

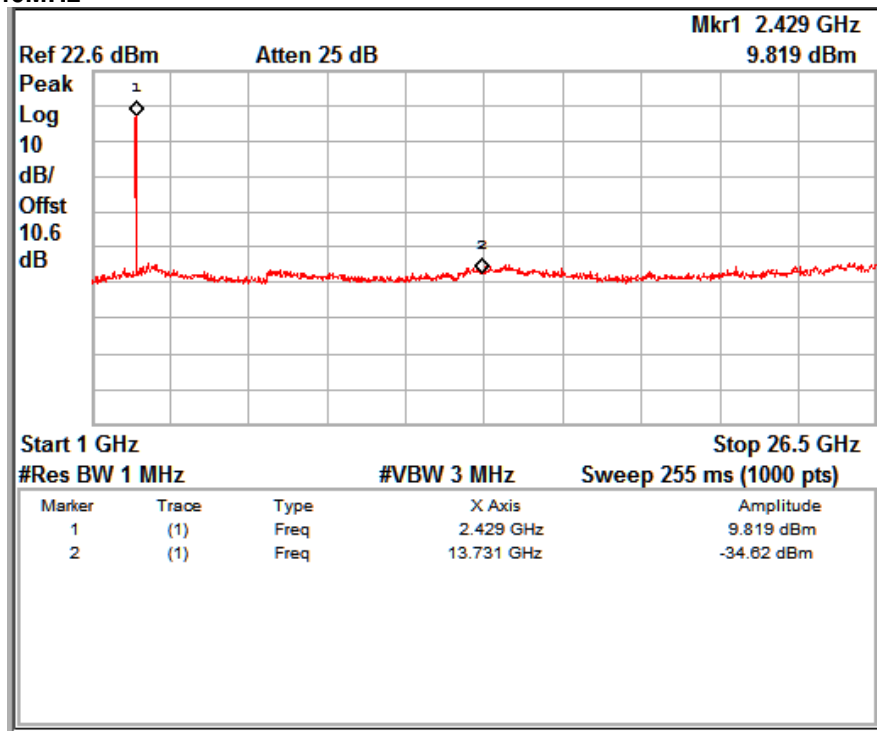
Channel frequency: 2412 MHz



Data Rate: MCS15

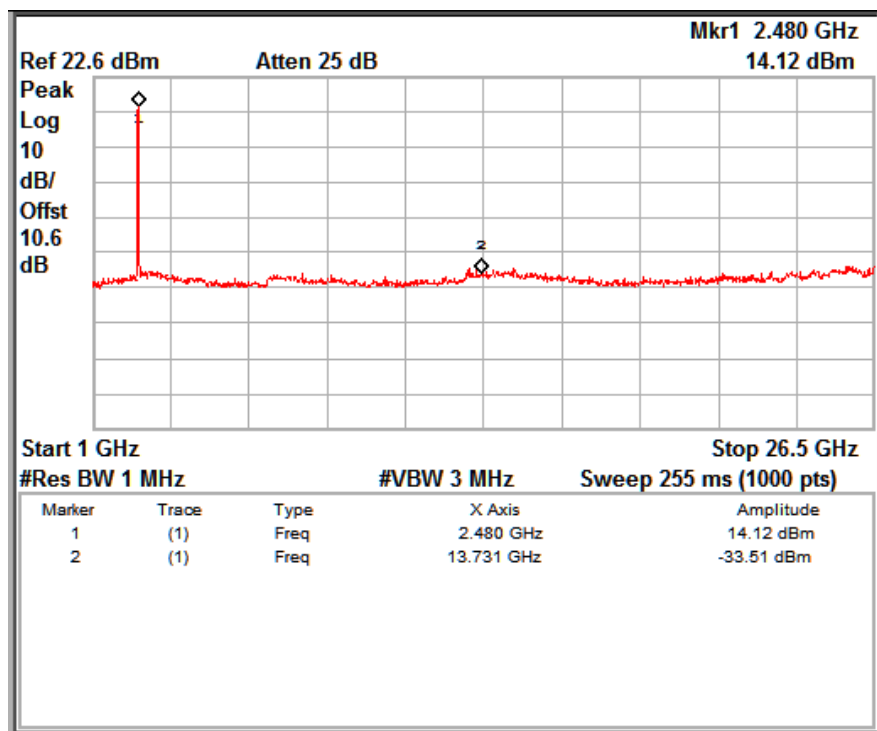
Channel frequency: 2462 MHz

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nmode mimo 40MHz



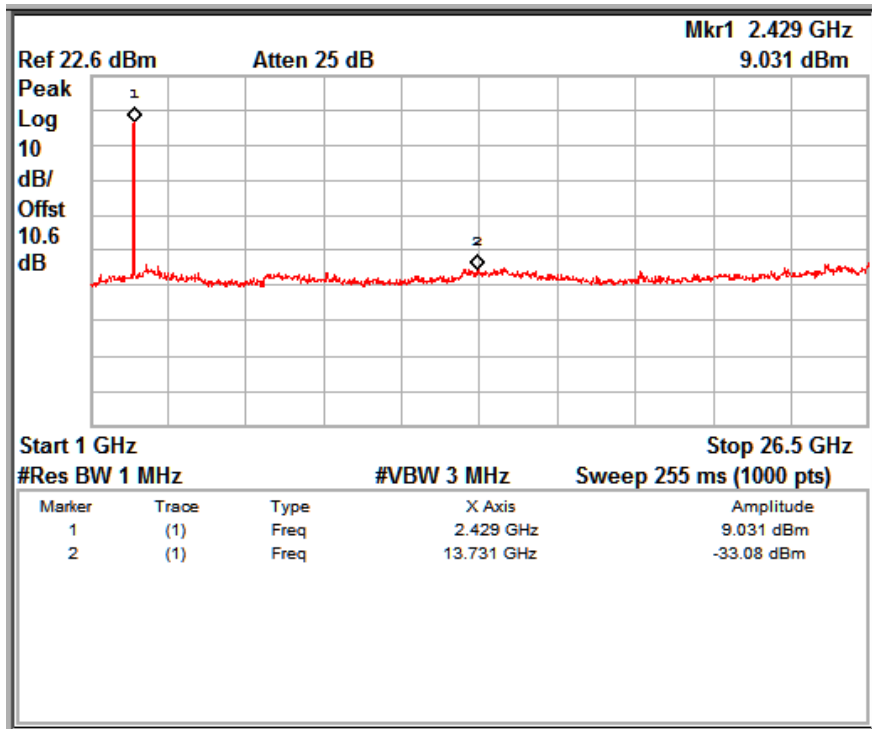
Data Rate: MCS8

Channel frequency: 2422 MHz



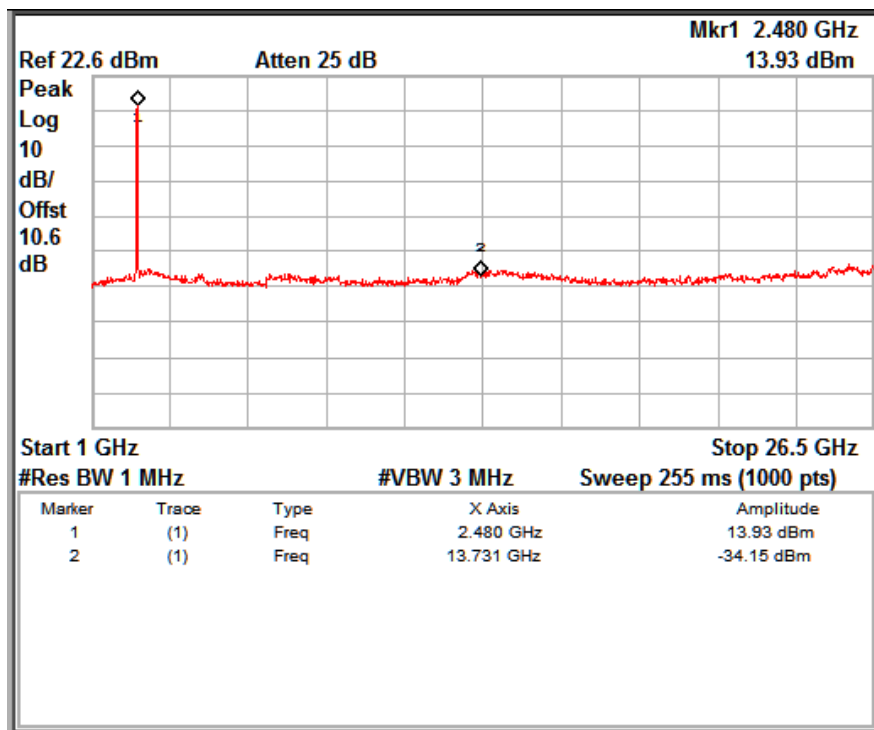
Data Rate: MCS8

Channel frequency: 2457 MHz



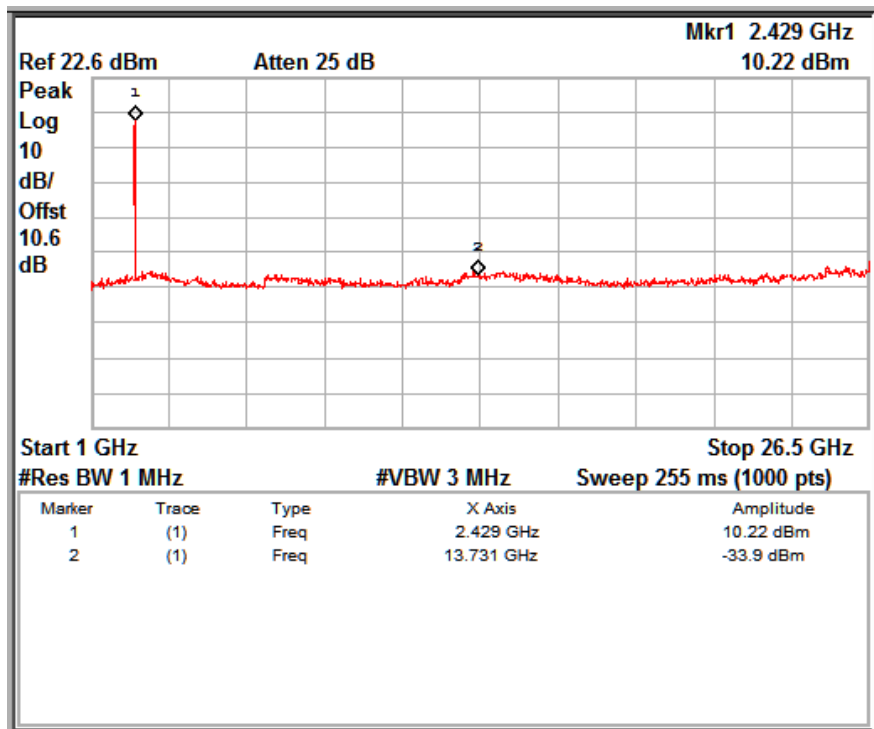
Data Rate: MCS11

Channel frequency: 2412 MHz



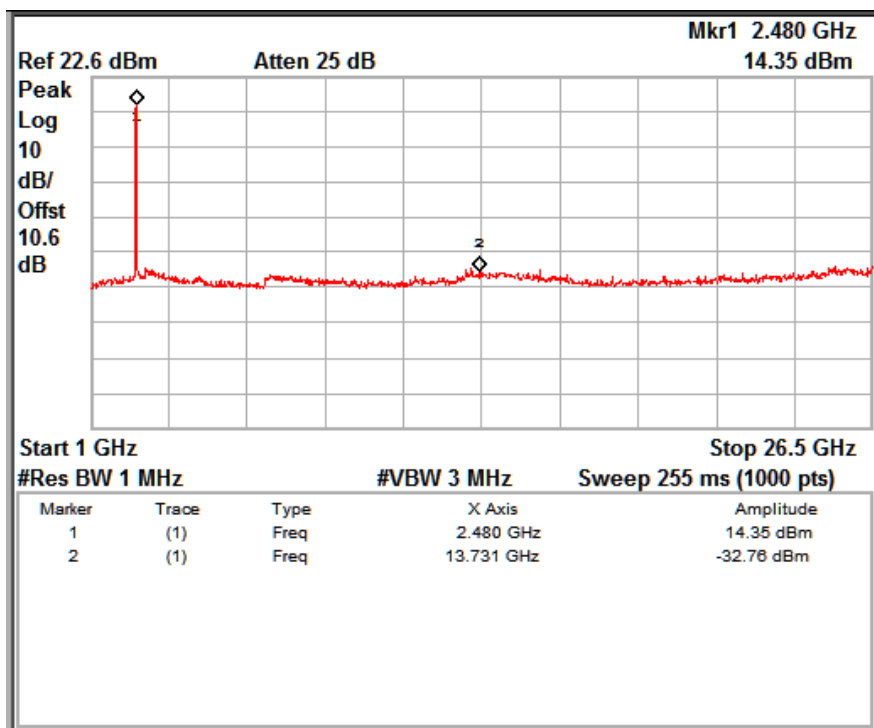
Data Rate: MCS11

Channel frequency: 2457 MHz



Data Rate: MCS15

Channel frequency: 2412 MHz



Data Rate: MCS15

Channel frequency: 2457 MHz

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Spurious Radiated Emissions and
Restricted Bands of Operation

Section 15.209 and 15.205

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

Polarisation	Measured Frequency (MHz)	Measured Value (dBuv/m)	Limit (dBuv/m)	Margin (dB)
V	30.24	33.10	40.00	-06.90
	30.72	35.40	40.00	-04.60
	31.87	38.54	40.00	-01.46
	33.83	38.58	40.00	-01.42
	39.63	32.91	40.00	-07.09
	42.76	29.01	40.00	-10.99
	45.27	21.03	40.00	-18.97
	61.77	25.34	40.00	-14.66
	66.76	29.68	40.00	-10.32
	124.98	23.30	43.50	-20.20
H	33.29	35.79	40.00	-04.21
	115.94	33.01	43.50	-10.49
	278.99	36.64	46.00	-09.36

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Frequency range: Above 1GHz

Note: Test was performed on both the transmit chains and worst case results were from chain 0 and the respective results has been reported.

B mode: 1Mbps

Channel	Polarization	Frequency in MHz	Emissions in dBuV/m	Limit in dBuV/m	Margin in dB
Low	V	2390(pk)	47.41	74	-26.59
		2390(Av)	40.47	54	-13.53
		2412(Pk)	99.52	*	-
		2412(Av)	97.04	*	-
		4824(Pk)	55.46	74	-18.54
		4824(Av)	51.87	54	-2.13
		7236(Pk)	55.7	74	-18.3
		7236(Av)	43.2	54	-10.8
	H	2390(pk)	48.74	74	-25.26
		2390(Av)	43.16	54	-10.84
		2412(Pk)	105.15	*	-
		2412(Av)	102.7	*	-
		4824(Pk)	51.76	74	-22.24
		4824(Av)	46.18	54	-7.82
		7311(Pk)	56.12	74	-17.88
		7311(Av)	43.13	54	-10.87
Mid	V	2437(Pk)	99	*	-
		2437(Av)	96.62	*	-
		4874(Pk)	55.67	74	-18.33
		4874(Av)	52.5	54	-1.5
		7311(Pk)	56.4	74	-17.6
		7311(Av)	43.18	54	-10.82
	H	2437(Pk)	106.49	*	-
		2437(Av)	103.89	*	-
		4874(Pk)	51.53	74	-22.47
		4874(Av)	45.23	54	-8.77
High	V	7326(Pk)	56.19	74	-17.81
		7326(Av)	43.16	54	-10.84
		2483.5(Pk)	44.21	74	-29.79
		2483.5(Av)	36.34	54	-17.66
		2462(Pk)	97.31	*	-
		2462(Av)	94.86	*	-
	H	4924(Pk)	56.99	74	-17.01
		4924(Av)	53.77	54	-0.23
		2483.5(Pk)	52.48	74	-21.52
		2483.5(Av)	46.39	54	-7.61
		2462(Pk)	106	*	-

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	2462(Av)	103.43	*	-
	4924(Pk)	51.71	74	-22.29
	4924(Av)	46.31	54	-7.69

B mode: 11Mbps

Channel	Polarization	Frequency in MHz	Emissions in dBuV/m	Limit in dBuV/m	Margin in dB
Low	V	2390(pk)	52.31	74	-21.69
		2390(Av)	43.74	54	-10.26
		2412(Pk)	105.8	*	-
		2412(Av)	98.07	*	-
		4824(Pk)	56.24	74	-17.76
		4824(Av)	49.43	54	-4.57
		7236(Pk)	55.71	74	-18.29
		7236(Av)	43.09	54	-10.91
	H	2390(pk)	54.27	74	-19.73
		2390(Av)	48.43	54	-5.57
		2412(Pk)	111.6	*	-
		2412(Av)	103.86	*	-
		4824(Pk)	53.01	74	-20.99
		4824(Av)	41.67	54	-12.33
		7236(Pk)	56.01	74	-17.99
		7236(Av)	43.03	54	-10.97
Mid	V	2437(Pk)	105.33	*	-
		2437(Av)	97.68	*	-
		4874(Pk)	58.44	74	-15.56
		4874(Av)	49.76	54	-4.24
	H	2437(Pk)	112.78	*	-
		2437(Av)	106.03	*	-
		4874(Pk)	54.59	74	-19.41
		4874(Av)	44.06	54	-9.94
High	V	2483.5(Pk)	48.76	74	-25.24
		2483.5(Av)	41.68	54	-12.32
		2462(Pk)	103.86	*	-
		2462(Av)	97.24	*	-
		4924(Pk)	60.02	74	-13.98
		4924(Av)	49.4	54	-4.6
	H	2483.5(Pk)	58.66	74	-15.34
		2483.5(Av)	52.09	54	-1.91
		2462(Pk)	112.52	*	-
		2462(Av)	104.73	*	-
		4924(Pk)	55.52	74	-18.48
		4924(Av)	44.88	54	-9.12

G mode: 6Mbps

Channel	Polarization	Frequency in MHz	Emissions in dBuV/m	Limit in dBuV/m	Margin in dB
Low	V	2390(pk)	60.49	74	-13.51
		2390(Av)	47.17	54	-6.83
		2412(Pk)	101.63	*	-
		2412(Av)	92.48	*	-
		4824(Pk)	53.1	74	-20.9
		4824(Av)	39.54	54	-14.46
		7236(Pk)	56.74	74	-17.26
		7236(Av)	43.25	54	-10.75
	H	2390(pk)	62.33	74	-11.67
		2390(Av)	49.88	54	-4.12
		2412(Pk)	106.6	*	-
		2412(Av)	98.15	*	-
		4824(Pk)	49.49	74	-24.51
		4824(Av)	37.21	54	-16.79
		7236(Pk)	55.54	74	-18.46
		7236(Av)	43.01	54	-10.99
Mid	V	2437(Pk)	104.34	*	-
		2437(Av)	95.52	*	-
		4874(Pk)	59.21	74	-14.79
		4874(Av)	45.42	54	-8.58
		7311(Pk)	57.2	74	-16.8
		7311(Av)	44.03	54	-9.97
	H	2437(Pk)	111.13	*	-
		2437(Av)	103.06	*	-
		4874(Pk)	53.63	74	-20.37
		4874(Av)	41.28	54	-12.72
		7311(Pk)	55.27	74	-18.73
		7311(Av)	43.26	54	-10.74
High	V	2483.5(Pk)	56.77	74	-17.23
		2483.5(Av)	43.19	54	-10.81
		2462(Pk)	98.97	*	-
		2462(Av)	89.49	*	-
		4924(Pk)	53.36	74	-20.64
		4924(Av)	41.55	54	-12.45
	H	2483.5(Pk)	67.76	74	-6.24
		2483.5(Av)	53.31	54	-0.69
		2462(Pk)	107.17	*	-
		2462(Av)	98.11	*	-
		4924(Pk)	50.79	74	-23.21

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		4924(Av)	38.7	54	-15.3
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G mode: 24Mbps

Channel	Polarization	Frequency in MHz	Emissions in dBuV/m	Limit in dBuV/m	Margin in dB
Low	V	2390(pk)	58.62	74	-15.38
		2390(Av)	45.43	54	-8.57
		2412(Pk)	102.41	*	-
		2412(Av)	91.7	*	-
		4824(Pk)	51.02	74	-22.98
		4824(Av)	39.24	54	-14.76
	H	2390(pk)	60.61	74	-13.39
		2390(Av)	48.29	54	-5.71
		2412(Pk)	107.57	*	-
		2412(Av)	97.04	*	-
		4824(Pk)	50.37	74	-23.63
		4824(Av)	37.3	54	-16.7
Mid	V	2437(Pk)	104.73	*	-
		2437(Av)	94.45	*	-
		4874(Pk)	57.49	74	-16.51
		4874(Av)	44.85	54	-9.15
	H	2437(Pk)	112.33	*	-
		2437(Av)	101.71	*	-
		4874(Pk)	53.7	74	-20.3
		4874(Av)	41.11	54	-12.89
High	V	2483.5(Pk)	52.94	74	-21.06
		2483.5(Av)	40.78	54	-13.22
		2462(Pk)	99.72	*	-
		2462(Av)	89.35	*	-
		4924(Pk)	53.96	74	-20.04
		4924(Av)	41.18	54	-12.82
	H	2483.5(Pk)	63.36	74	-10.64
		2483.5(Av)	51.06	54	-2.94
		2462(Pk)	107.84	*	-
		2462(Av)	97.22	*	-
		4924(Pk)	51.07	74	-22.93
		4924(Av)	38.57	54	-15.43

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G mode: 54Mbps

Channel	Polarization	Frequency in MHz	Emissions in dBuv/m	Limit in dBuv/m	Margin in dB
Low	V	2390(pk)	55.53	74	-18.47
		2390(Av)	42.24	54	-11.76
		2412(Pk)	100.08	*	-
		2412(Av)	88.58	*	-
		4824(Pk)	51.89	74	-22.11
		4824(Av)	38.17	54	-15.83
	H	2390(pk)	58.36	74	-15.64
		2390(Av)	44.7	54	-9.3
		2412(Pk)	106.98	*	-
		2412(Av)	95.06	*	-
		4824(Pk)	50.12	74	-23.88
		4824(Av)	36.17	54	-17.83
Mid	V	2437(Pk)	103.3	*	-
		2437(Av)	91.37	*	-
		4874(Pk)	55.03	74	-18.97
		4874(Av)	42.36	54	-11.64
	H	2437(Pk)	111.31	*	-
		2437(Av)	99.17	*	-
		4874(Pk)	52.39	74	-21.61
		4874(Av)	39.15	54	-14.85
High	V	2483.5(Pk)	51.2	74	-22.8
		2483.5(Av)	37.82	54	-16.18
		2462(Pk)	98.8	*	-
		2462(Av)	85.49	*	-
		4924(Pk)	52.79	74	-21.21
		4924(Av)	39.71	54	-14.29
	H	2483.5(Pk)	60.18	74	-13.82
		2483.5(Av)	47.32	54	-6.68
		2462(Pk)	106.4	*	-
		2462(Av)	94.69	*	-
		4924(Pk)	50.18	74	-23.82
		4924(Av)	37.4	54	-16.6

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N Mode 20 MHz SISO

MCS 0

Channel	Polarization	Frequency in MHz	Emissions in dBuV/m	Limit in dBuV/m	Margin in dB
Low	V	2390(pk)	60.17	74	-13.83
		2390(Av)	47.19	54	-6.81
		2412(Pk)	103.87	*	-
		2412(Av)	94.16	*	-
		4824(Pk)	54.93	74	-19.07
		4824(Av)	42.07	54	-11.93
	H	2390(pk)	64.32	74	-9.68
		2390(Av)	52.88	54	-1.12
		2412(Pk)	111.58	*	-
		2412(Av)	101.54	*	-
		4824(Pk)	52.42	74	-21.58
		4824(Av)	39.54	54	-14.46
Mid	V	2437(Pk)	105.75	*	-
		2437(Av)	96.39	*	-
		4874(Pk)	59.46	74	-14.54
		4874(Av)	46.85	54	-7.15
	H	2437(Pk)	114.84	*	-
		2437(Av)	105.11	*	-
		4874(Pk)	56.57	74	-17.43
		4874(Av)	43.27	54	-10.73
High	V	2483.5(Pk)	53.66	74	-20.34
		2483.5(Av)	41.96	54	-12.04
		2462(Pk)	98.11	*	-
		2462(Av)	88.57	*	-
		4924(Pk)	54.39	74	-19.61
		4924(Av)	40.95	54	-13.05
	H	2483.5(Pk)	64.47	74	-9.53
		2483.5(Av)	52.68	54	-1.32
		2462(Pk)	107.84	*	-
		2462(Av)	97.42	*	-
		4924(Pk)	50.59	74	-23.41
		4924(Av)	38.28	54	-15.72

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MCS4

Channel	Polarization	Frequency in MHz	Emissions in dBuV/m	Limit in dBuV/m	Margin in dB
Low	V	2390(pk)	57.77	74	-16.23
		2390(Av)	46.26	54	-7.74
		2412(Pk)	104.18	*	-
		2412(Av)	94.24	*	-
		4824(Pk)	53.81	74	-20.19
		4824(Av)	42.3	54	-11.7
	H	2390(pk)	53.62	74	-20.38
		2390(Av)	53.14	54	-0.86
		2412(Pk)	111.49	*	-
		2412(Av)	101.87	*	-
		4824(Pk)	51.65	74	-22.35
		4824(Av)	39.74	54	-14.26
Mid	V	2437(Pk)	104.58	*	-
		2437(Av)	94.71	*	-
		4874(Pk)	54.59	74	-19.41
		4874(Av)	44.56	54	-9.44
	H	2437(Pk)	112.73	*	-
		2437(Av)	103.42	*	-
		4874(Pk)	53.62	74	-20.38
		4874(Av)	41.57	54	-12.43
High	V	2483.5(Pk)	59.74	74	-14.26
		2483.5(Av)	47.24	54	-6.76
		2462(Pk)	103.49	*	-
		2462(Av)	93.31	*	-
		4924(Pk)	56.98	74	-17.02
		4924(Av)	45.56	54	-8.44
	H	2483.5(Pk)	71.66	74	-2.34
		2483.5(Av)	52.32	54	-1.68
		2462(Pk)	113.55	*	-
		2462(Av)	103.65	*	-
		4924(Pk)	54.37	74	-19.63
		4924(Av)	42.38	54	-11.62

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MCS7

Channel	Polarization	Frequency in MHz	Emissions in dBuv/m	Limit in dBuv/m	Margin in dB
Low	V	2390(pk)	56.43	74	-17.57
		2390(Av)	45.35	54	-8.65
		2412(Pk)	103.2	*	-
		2412(Av)	93.09	*	-
		4824(Pk)	52.78	74	-21.22
		4824(Av)	41.36	54	-12.64
	H	2390(pk)	62.46	74	-11.54
		2390(Av)	50.82	54	-3.18
		2412(Pk)	111.08	*	-
		2412(Av)	100.97	*	-
		4824(Pk)	49.85	74	-24.15
		4824(Av)	38.85	54	-15.15
Mid	V	2437(Pk)	106.03	*	-
		2437(Av)	94.93	*	-
		4874(Pk)	56.63	74	-17.37
		4874(Av)	45.6	54	-8.4
	H	2437(Pk)	114.93	*	-
		2437(Av)	104.19	*	-
		4874(Pk)	54.21	74	-19.79
		4874(Av)	42.26	54	-11.74
High	V	2483.5(Pk)	39.15	74	-34.85
		2483.5(Av)	28.56	54	-25.44
		2462(Pk)	84.5	*	-
		2462(Av)	73.67	*	-
		4924(Pk)	48.97	74	-25.03
		4924(Av)	37.56	54	-16.44
	H	2483.5(Pk)	35.81	74	-38.19
		2483.5(Av)	35.74	54	-18.26
		2462(Pk)	94.83	*	-
		2462(Av)	84.4	*	-
		4924(Pk)	49.12	74	-24.88
		4924(Av)	35.61	54	-18.39

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N Mode 40 MHz SISO

MCS 0

Channel	Polarization	Frequency in MHz	Emissions in dBuv/m	Limit in dBuv/m	Margin in dB
Low	V	2390(Pk)	62.35	74	-11.65
		2390(Av)	51.8	54	-2.2
		2422(pk)	101.14	*	-
		2422(Av)	93.1	*	-
		4844(Pk)	50.23	74	-23.77
		4844(Av)	46.21	54	-7.79
	H	2390(Pk)	66.35	74	-7.65
		2390(Av)	53.5	54	-0.5
		2422(pk)	104.63	*	-
		2422(Av)	94.24	*	-
		4844(Pk)	50.66	74	-23.34
		4844(Av)	46.99	54	-7.01
Mid	V	4874(Pk)	52.22	74	-21.78
		4874(Av)	46.77	54	-7.23
	H	4874(Pk)	52.11	74	-21.89
		4874(Av)	47.21	54	-6.79
High	V	2483.5(Pk)	62.38	74	-11.62
		2483.5(Av)	50.87	54	-3.13
		2452(Pk)	101.33	*	-
		2452(Av)	92.48	*	-
		4904(Pk)	50.77	74	-23.23
		4904(Av)	46.44	54	-7.56
	H	2483.5(Pk)	66.37	74	-7.63
		2483.5(Av)	39.9	54	-14.1
		2452(Pk)	105.78	*	-
		2452(Av)	96.1	*	-
		4904(Pk)	51.03	74	-22.97
		4904(Av)	46.88	54	-7.12

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MCS4

Channel	Polarization	Frequency in MHz	Emissions in dBuV/m	Limit in dBuV/m	Margin in dB
Low	V	2390(Pk)	57.4	74	-16.6
		2390(Av)	46.97	54	-7.03
		2422(pk)	99.27	*	-
		2422(Av)	88.81	*	-
		4844(Pk)	50.35	74	-23.65
		4844(Av)	46.12	54	-7.88
	H	2390(Pk)	63.8	74	-10.2
		2390(Av)	52.63	54	-1.37
		2422(pk)	105.15	*	-
		2422(Av)	94.53	*	-
		4844(Pk)	51.35	74	-22.65
		4844(Av)	46.88	54	-7.12
Mid	V	4874(Pk)	51.89	74	-22.11
		4874(Av)	46.77	54	-7.23
	H	4874(Pk)	52.01	74	-21.99
		4874(Av)	46.98	54	-7.02
High	V	2483.5(Pk)	51.12	74	-22.88
		2483.5(Av)	38.09	54	-15.91
		2452(Pk)	103.38	*	-
		2452(Av)	92.02	*	-
		4904(Pk)	50.11	74	-23.89
		4904(Av)	46.55	54	-7.45
	H	2483.5(Pk)	52.03	74	-21.97
		2483.5(Av)	39.62	54	-14.38
		2452(Pk)	106.52	*	-
		2452(Av)	95.38	*	-
		4904(Pk)	50.55	74	-23.45
		4904(Av)	47.01	54	-6.99

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MCS7

Channel	Polarization	Frequency in MHz	Emissions in dBuV/m	Limit in dBuV/m	Margin in dB
Low	V	2390(Pk)	60.24	74	-13.76
		2390(Av)	49.5	54	-4.5
		2422(pk)	102.2	*	-
		2422(Av)	90.83	*	-
		4844(Pk)	51.54	74	-22.46
		4844(Av)	46.18	54	-7.82
	H	2390(Pk)	62.63	74	-11.37
		2390(Av)	50.77	54	-3.23
		2422(pk)	103.45	*	-
		2422(Av)	93.21	*	-
		4844(Pk)	51.55	74	-22.45
		4844(Av)	46.68	54	-7.32
Mid	V	4874(Pk)	51.99	74	-22.01
		4874(Av)	47.22	54	-6.78
	H	4874(Pk)	51.89	74	-22.11
		4874(Av)	46.98	54	-7.02
High	V	2483.5(Pk)	61.69	74	-12.31
		2483.5(Av)	49.45	54	-4.55
		2452(Pk)	102.22	*	-
		2452(Av)	91.43	*	-
		4904(Pk)	50.35	74	-23.65
		4904(Av)	47.21	54	-6.79
	H	2483.5(Pk)	64.84	74	-9.16
		2483.5(Av)	53.2	54	-0.8
		2452(Pk)	104.07	*	-
		2452(Av)	93.01	*	-
		4904(Pk)	50.11	74	-23.89
		4904(Av)	47.2	54	-6.8

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MCS 8

Channel	Polarization	Frequency in MHz	Emissions in dBuv/m	Limit in dBuv/m	Margin in dB
Low	V	2390(pk)	57.86	74	-16.14
		2390(Av)	45.37	54	-8.63
		2412(Pk)	103.98	*	-
		2412(Av)	93.19	*	-
		4824(Pk)	58.24	74	-15.76
		4824(Av)	45.65	54	-8.35
	H	2390(pk)	59.69	74	-14.31
		2390(Av)	47.37	54	-6.63
		2412(Pk)	105.76	*	-
		2412(Av)	95.5	*	-
		4824(Pk)	58.95	74	-15.05
		4824(Av)	46.21	54	-7.79
Mid	V	4874(Pk)	58.64	74	-15.36
		4874(Av)	45.26	54	-8.74
	H	4874(Pk)	61.13	74	-12.87
		4874(Av)	48.25	54	-5.75
High	V	2483.5(Pk)	56.42	74	-17.58
		2483.5(Av)	44.34	54	-9.66
		2462(Pk)	102.86	*	-
		2462(Av)	92.03	*	-
		4924(Pk)	50.52	74	-23.48
		4924(Av)	37.54	54	-16.46
	H	2483.5(Pk)	60.92	74	-13.08
		2483.5(Av)	48.73	54	-5.27
		2462(Pk)	106.77	*	-
		2462(Av)	95.42	*	-
		4924(Pk)	54.52	74	-19.48
		4924(Av)	41.23	54	-12.77

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MCS11

Channel	Polarization	Frequency in MHz	Emissions in dBuV/m	Limit in dBuV/m	Margin in dB
Low	V	2390(pk)	54.69	74	-19.31
		2390(Av)	41.8	54	-12.2
		2412(Pk)	101.48	*	-
		2412(Av)	92.04	*	-
		4824(Pk)	51.21	74	-22.79
		4824(Av)	42.11	54	-11.89
	H	2390(pk)	49.96	74	-24.04
		2390(Av)	36.19	54	-17.81
		2412(Pk)	97.44	*	-
		2412(Av)	86.55	*	-
		4824(Pk)	61.67	74	-12.33
		4824(Av)	48.89	54	-5.11
Mid	V	4874(Pk)	58.85	74	-15.15
		4874(Av)	46.35	54	-7.65
	H	4874(Pk)	49.55	74	-24.45
		4874(Av)	37.76	54	-16.24
High	V	2483.5(Pk)	54.88	74	-19.12
		2483.5(Av)	42.8	54	-11.2
		2462(Pk)	100.62	*	-
		2462(Av)	91.26	*	-
		4924(Pk)	52.23	74	-21.77
		4924(Av)	46.12	54	-7.88
	H	2483.5(Pk)	51.5	74	-22.5
		2483.5(Av)	39.41	54	-14.59
		2462(Pk)	97.59	*	-
		2462(Av)	86.7	*	-
		4924(Pk)	50.52	74	-23.48
		4924(Av)	37.54	54	-16.46

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MCS15

Channel	Polarization	Frequency in MHz	Emissions in dBuV/m	Limit in dBuV/m	Margin in dB
Low	V	2390(pk)	42.07	74	-31.93
		2390(Av)	41.27	54	-12.73
		2412(Pk)	101.16	*	-
		2412(Av)	90.6	*	-
		4824(Pk)	58.21	74	-15.79
		4824(Av)	45.16	54	-8.84
	H	2390(pk)	53.88	74	-20.12
		2390(Av)	41.3	54	-12.7
		2412(Pk)	100.43	*	-
		2412(Av)	90.45	*	-
		4824(Pk)	53.77	74	-20.23
		4824(Av)	42.02	54	-11.98
Mid	V	4874(Pk)	51.77	74	-22.23
		4874(Av)	39.02	54	-14.98
	H	4874(Pk)	50.16	74	-23.84
		4874(Av)	37.5	54	-16.5
High	V	2483.5(Pk)	56.34	74	-17.66
		2483.5(Av)	40.66	54	-13.34
		2462(Pk)	101.3	*	-
		2462(Av)	90.54	*	-
		4924(Pk)	50.78	74	-23.22
		4924(Av)	39.54	54	-14.46
	H	2483.5(Pk)	52.7	74	-21.3
		2483.5(Av)	39.93	54	-14.07
		2462(Pk)	97.43	*	-
		2462(Av)	86.52	*	-
		4924(Pk)	51.52	74	-22.48
		4924(Av)	38.54	54	-15.46

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N Mode 40 MHz MIMO

MCS 8

Channel	Polarization	Frequency in MHz	Emissions in dBuv/m	Limit in dBuv/m	Margin in dB
Low	V	2390(Pk)	52.78	74	-21.22
		2390(Av)	40.15	54	-13.85
		2422(pk)	95.96	*	-
		2422(Av)	86.59	*	-
		4844(Pk)	51.21	74	-22.79
		4844(Av)	45.13	54	-8.87
	H	2390(Pk)	55.23	74	-18.77
		2390(Av)	43.41	54	-10.59
		2422(pk)	101.69	*	-
		2422(Av)	90.74	*	-
		4844(Pk)	51.55	74	-22.45
		4844(Av)	45.22	54	-8.78
Mid	V	4874(Pk)	52.13	74	-21.87
		4874(Av)	49.55	54	-4.45
	H	4874(Pk)	51.99	74	-22.01
		4874(Av)	49.98	54	-4.02
High	V	2483.5(Pk)	59.9	74	-14.1
		2483.5(Av)	48.3	54	-5.7
		2452(Pk)	99.65	*	-
		2452(Av)	89.75	*	-
		4904(Pk)	52.12	74	-21.88
		4904(Av)	46.12	54	-7.88
	H	2483.5(Pk)	50.87	74	-23.13
		2483.5(Av)	39.55	54	-14.45
		2452(Pk)	91.85	*	-
		2452(Av)	80.67	*	-
		4904(Pk)	52.5	74	-21.5
		4904(Av)	47.33	54	-6.67

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MCS11

Channel	Polarization	Frequency in MHz	Emissions in dBuV/m	Limit in dBuV/m	Margin in dB
Low	V	2390(Pk)	52.86	74	-21.14
		2390(Av)	41.09	54	-12.91
		2422(pk)	97.94	*	-
		2422(Av)	86.72	*	-
		4844(Pk)	50.21	74	-23.79
		4844(Av)	40.12	54	-13.88
	H	2390(Pk)	55.42	74	-18.58
		2390(Av)	43.1	54	-10.9
		2422(pk)	101.66	*	-
		2422(Av)	90.96	*	-
		4844(Pk)	51.21	74	-22.79
		4844(Av)	40.56	54	-13.44
Mid	V	4874(Pk)	50.77	74	-23.23
		4874(Av)	42.12	54	-11.88
	H	4874(Pk)	50.99	74	-23.01
		4874(Av)	42.9	54	-11.1
High	V	2483.5(Pk)	59.74	74	-14.26
		2483.5(Av)	47.45	54	-6.55
		2452(Pk)	100.75	*	-
		2452(Av)	89.48	*	-
		4904(Pk)	50.45	74	-23.55
		4904(Av)	43.22	54	-10.78
	H	2483.5(Pk)	50.71	74	-23.29
		2483.5(Av)	38.77	54	-15.23
		2452(Pk)	106.36	*	-
		2452(Av)	94.97	*	-
		4904(Pk)	51.45	74	-22.55
		4904(Av)	43.61	54	-10.39

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Channel	Polarization	Frequency in MHz	Emissions in dBuV/m	Limit in dBuV/m	Margin in dB
Low	V	2390(Pk)	52.65	74	-21.35
		2390(Av)	39.84	54	-14.16
		2422(pk)	97.1	*	-
		2422(Av)	85.72	*	-
		4844(Pk)	50.11	74	-23.89
		4844(Av)	45.21	54	-8.79
	H	2390(Pk)	54.4	74	-19.6
		2390(Av)	42.02	54	-11.98
		2422(pk)	101.74	*	-
		2422(Av)	90.09	*	-
		4844(Pk)	50.22	74	-23.78
		4844(Av)	45.65	54	-8.35
Mid	V	4874(Pk)	51.13	74	-22.87
		4874(Av)	46.66	54	-7.34
	H	4874(Pk)	51.76	74	-22.24
		4874(Av)	46.99	54	-7.01
High	V	2483.5(Pk)	67.13	74	-6.87
		2483.5(Av)	50.94	54	-3.06
		2452(Pk)	99.97	*	-
		2452(Av)	88.98	*	-
		4904(Pk)	50.55	74	-23.45
		4904(Av)	45.21	54	-8.79
	H	2483.5(Pk)	50.6	74	-23.4
		2483.5(Av)	38.13	54	-15.87
		2452(Pk)	91.32	*	-
		2452(Av)	80.05	*	-
		4904(Pk)	51.01	74	-22.99
		4904(Av)	45.88	54	-8.12

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Conducted Emission Test on A.C. Power Line

Section 15.207

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

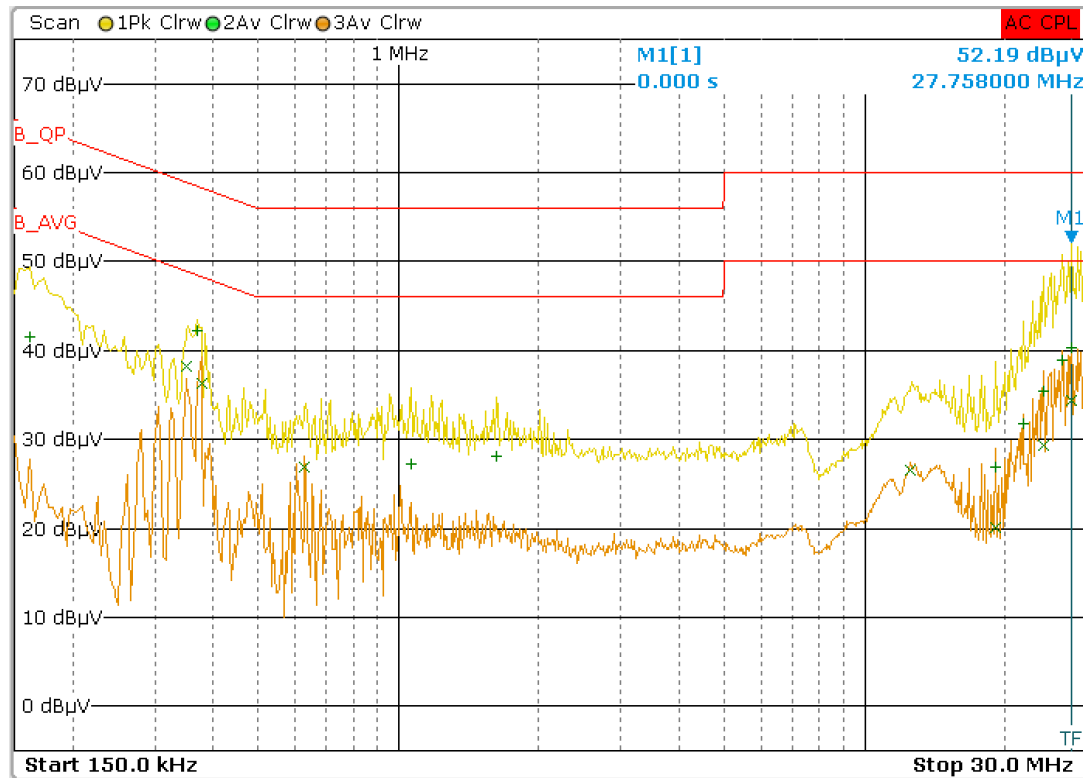
Limit of section 15.207

Frequency of emission (MHz)	QP Limit (dB μ V)	AV Limit (dB μ V/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

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Test Result:

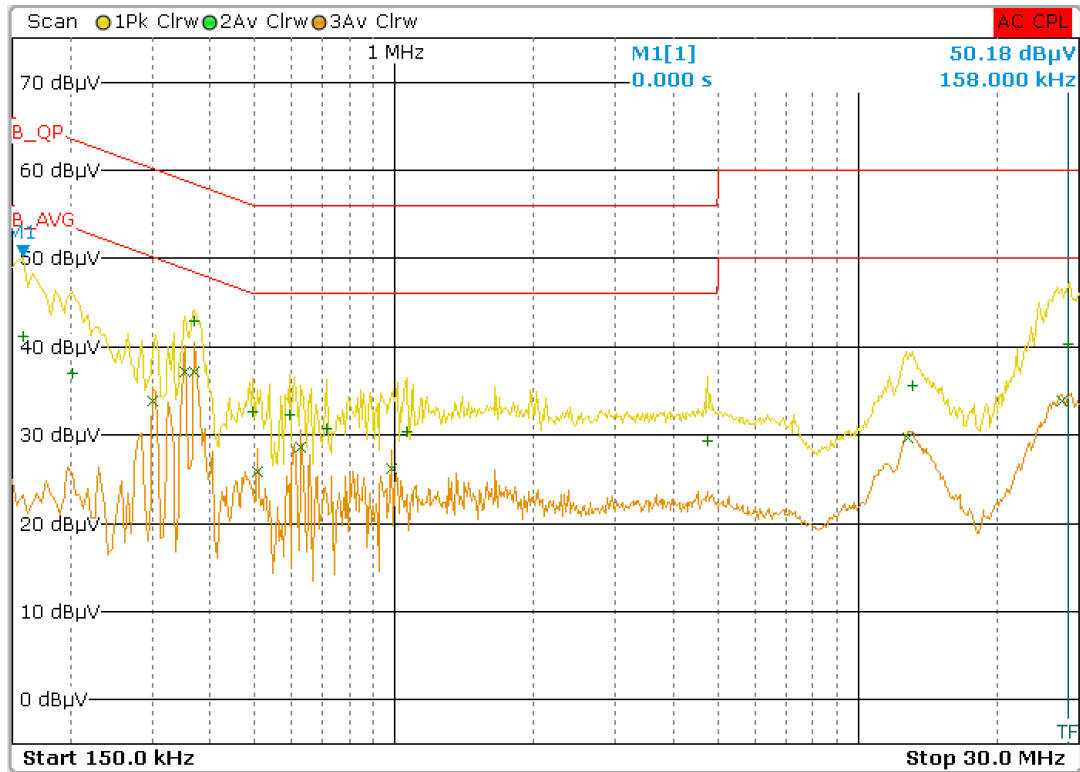


Line Graph

Frequency [MHz]	Emission Level [dBµV]	Detector
0.370	42.16	Quasi Peak
27.75	40.39	Quasi Peak
26.47	38.87	Quasi Peak
0.162	41.40	Quasi Peak
24.22	35.43	Quasi Peak
1.626	28.08	Quasi Peak
21.95	31.86	Quasi Peak
1.06	27.20	Quasi Peak
19.05	26.98	Quasi Peak
0.350	38.14	Average
0.378	36.28	Average
27.75	34.32	Average
0.630	26.89	Average
24.21	29.29	Average
12.57	26.51	Average
19.05	20.16	Average

Line: Table

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Neutral Graph

Frequency [MHz]	Emission Level [dBµV]	Detector
0.370	42.87	Quasi Peak
28.53	40.35	Quasi Peak
0.494	32.67	Quasi Peak
0.594	32.33	Quasi Peak
13.11	35.66	Quasi Peak
0.158	41.22	Quasi Peak
0.714	30.73	Quasi Peak
1.06	30.35	Quasi Peak
0.202	36.97	Quasi Peak
4.74	29.28	Quasi Peak
0.370	37.25	Average
0.354	37.12	Average
27.49	33.80	Average
0.302	33.82	Average
0.630	28.63	Average
0.986	26.24	Average
0.506	25.77	Average
12.84	29.76	Average

Neutral: Table

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Power Setting and Gain Index Value used for testing.

SIno	Mode	Data Rate	Channel	Tx Power setting	Tx Gain Index
1	802.11b	1 Mbps	2412	16	9
			2437	16	9
			2462	16	9
		11 Mbps	2412	19	9
			2437	20	9
			2462	19	9
2	802.11g	6 Mbps	2412	16	9
			2437	20	9
			2462	15	9
		24 Mbps	2412	16	9
			2437	20	9
			2462	15	9
		54 Mbps	2412	15	9
			2437	18	9
			2462	14	9
3	802.11n 20 MHz SISO	MCS0	2412	15	9
			2437	17	9
			2462	13	9
		MCS4	2412	15	9
			2437	16	9
			2462	15	9
		MCS7	2412	14	9
			2437	16	9
			2462	13	9
4	802.11n 20 MHz MIMO	MCS8	2412	15	16
			2437	17	9
			2462	14	14
		MCS11	2412	14	15
			2437	17	9
			2462	13	13
		MCS15	2412	14	15
			2437	16	16
			2462	13	13
5	802.11n 40 MHz SISO	MCS0	2422	18	9
			2437	20	9
			2452	18	9
		MCS4	2422	18	9
			2437	20	9
			2452	18	9
		MCS7	2422	17	9
			2422	17	9

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6	802.11n 40 MHz MIMO	MCS8	2437	18	9
			2452	17	9
			2422	14	14
		MCS11	2437	17	9
			2452	13	16
			2422	14	14
		MCS15	2437	17	9
			2452	13	16
			2422	14	14
		MCS15	2437	16	17
			2452	13	16
			2422	14	14

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