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Prüfbericht - Nr.: *Test Report No.:*	**19660317 001**		**Seite 1 von 187** *Page 1 of 187*
Auftraggeber: *Client:*	**Nokia Solutions and Networks Oy** **Karaportti 1** **02610 ESPOO** **Finland**		
Gegenstand der Prüfung: *Test item:*	**Home Router**		
Bezeichnung: *Identification:*	**FMHRN0002.00**	**Serien-Nr.:** *Serial No.*	**LC163500263**
Wareneingangs-Nr.: *Receipt No.:*	**1803192751**	**Eingangsdatum:** *Date of receipt:*	**28.12.2016**
Prüfort: *Testing location:*	**Refer Page 4 of 187 for test facilities**		
Prüfgrundlage: *Test specification:*	**FCC Part 15, Subpart E** **ANSI C63.10-2013**		
Prüfergebnis: *Test Result:*	**Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).** *The tests item passed the test specification(s).*		
Prüflaboratorium: *Testing Laboratory:*	**TÜV Rheinland (India) Pvt. Ltd.** 82/A, 3rd Main, West Wing, Electronic City Phase 1 Hosur Road, Bangalore – 560 100. India **FCC Registration No.: 176555**		

geprüft / *tested by:*			**kontrolliert** / *reviewed by:*		
20.06.2017	Girish Kumar Engineer		23.06.2017	Saibaba Assistant Manager	
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*	**Datum** *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

Sonstiges /*Other Aspects:* **FCC ID: 2AL7J-FMHRN0002**

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

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.

Test Result Summary

Clause	Test Item	Result
15.407 (a)	Emission Bandwidth	Pass
15.407 (a)	Maximum Conducted Output Power	Pass
15.407 (a)	Power Spectral Density	Pass
15.209/15.205/15.407	Radiated Spurious 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. **789033 D02 General U-NII Test Procedures New Rules v01r04**

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Appendix 1: Test Setup Photo

Appendix 2: EUT External Photo

Appendix 3: EUT Internal Photo

Appendix 4: FCC Label and Label Location

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Appendix 6: Specification of EUT

Appendix 7: Schematic Diagrams

Appendix 8: Bill of Material

Appendix 9: User Manual

Appendix 10: Maximum Permissible Human Exposure

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

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

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	5150 - 5250 MHz	
Channel Bandwidth	20 MHz, 40MHz, 80MHz	
Transmitted Power	802.11a	17.88 dBm
	802.11ac	18.08 dBm
	802.11n	18.82 dBm
Modulation	802.11a	OFDM with BPSK,QPSK, 16-QAM, 64-QAM
	802.11n	BPSK,QPSK,16-QAM,64-QAM
	802.11ac	OFDM
Data Rate	802.11n: 6.5, 13, 19.5, 26, 39, 52, 58.5, 65 Mbps 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11ac 20MHz : 6.5, 13, 19.5, 26, 39, 52, 58.5, 65, 78,86.7 802.11ac 40MHz: 13.5, 27, 40.5, 54, 81, 108, 121.5, 135, 162, 180 802.11ac 80MHz: 29.2, 58.5, 87.8, 117, 175.5, 234, 263.2, 292.5, 351, 390	
Antenna Type	Internal mount and cable connection	
Number of antenna	2x2 mimo	
Antenna Gain	5dBi and 4.47dBi	
Supply Voltage	54VDC	
Environmental	0ºC to +40ºC	

Test Conditions:

Supply Voltage: 54V DC from Power Adaptor

Environmental conditions:

Temperature: +25.3 º C **RH:** 59%

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 all data rates and only worst case results are reported in this report.

SISO mode operation: 802.11a – 6Mbps to 54Mbps
802.11n – MCS0 to MCS7
MIMO mode operation: 802.11n – MCS8 to MCS15
802.11ac – MCS0 to MCS9

Antenna Details:

Manufacturer	Antenna Type
Ethertronics	Internal mount and cable connection

Test Methodology

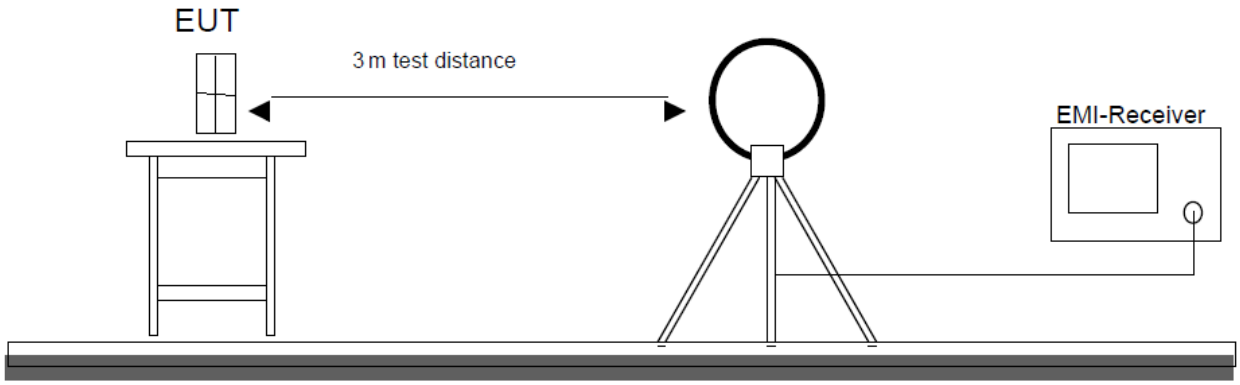
Radiated Emission Test

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.

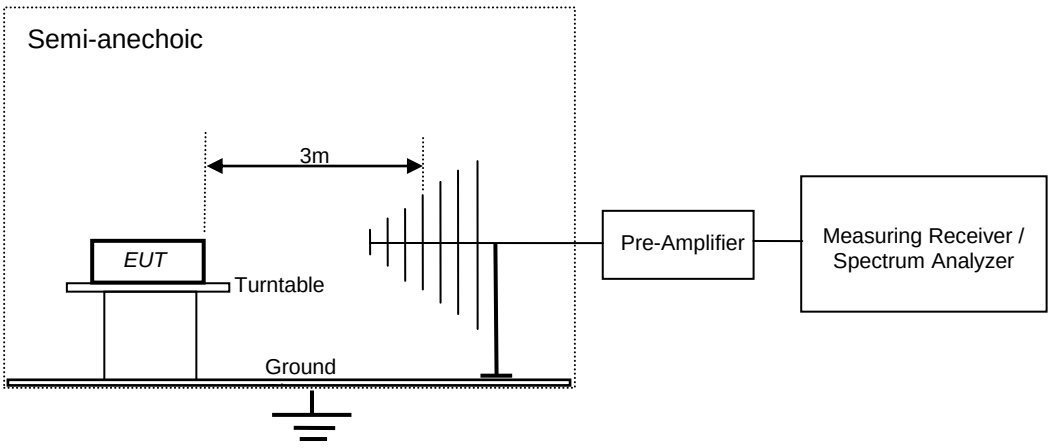
The EUT was rotated around the X-, Y-, and Z-Axis and the results from worst case axis are recorded.

Test Setup Configuration

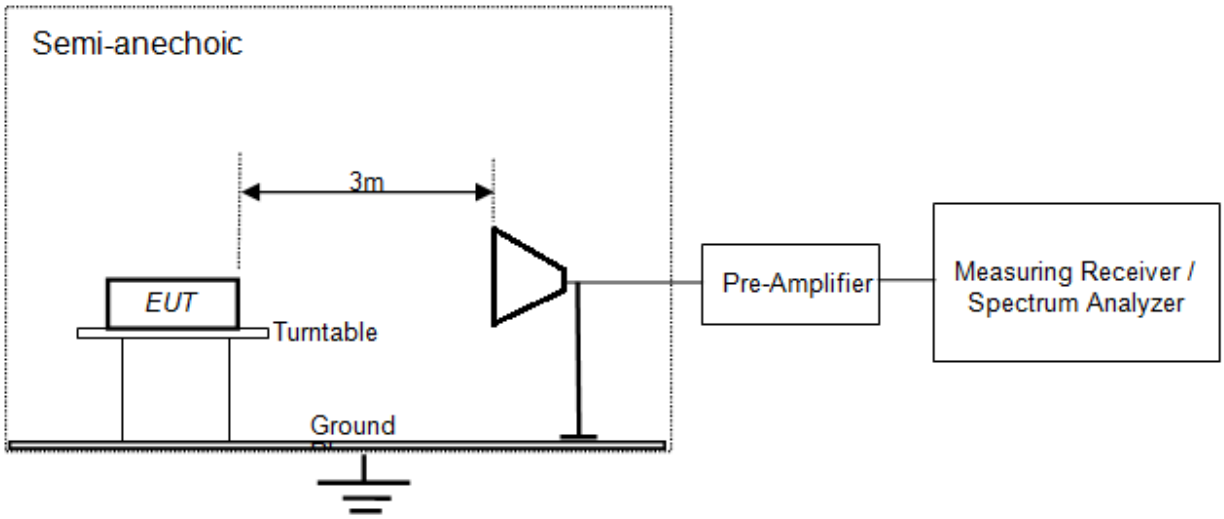
Frequency Range 9 kHz -30 MHz



Frequency Range 30MHz -1GHz

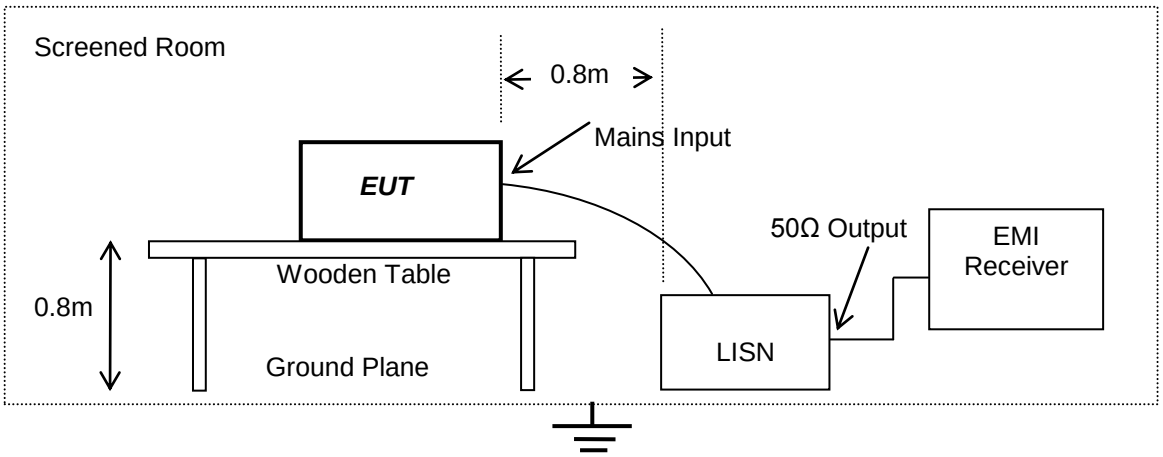


Frequency above 1GHz



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

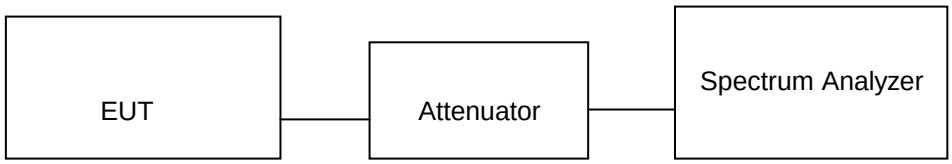


Test Results

Emission Bandwidth **Section 15.407 (a)**
Result **Pass**

Test Specification	FCC Part 15 Section 15.407(a)
Measurement Bandwidth (RBW)	300 kHz / 1MHz

Test Method:

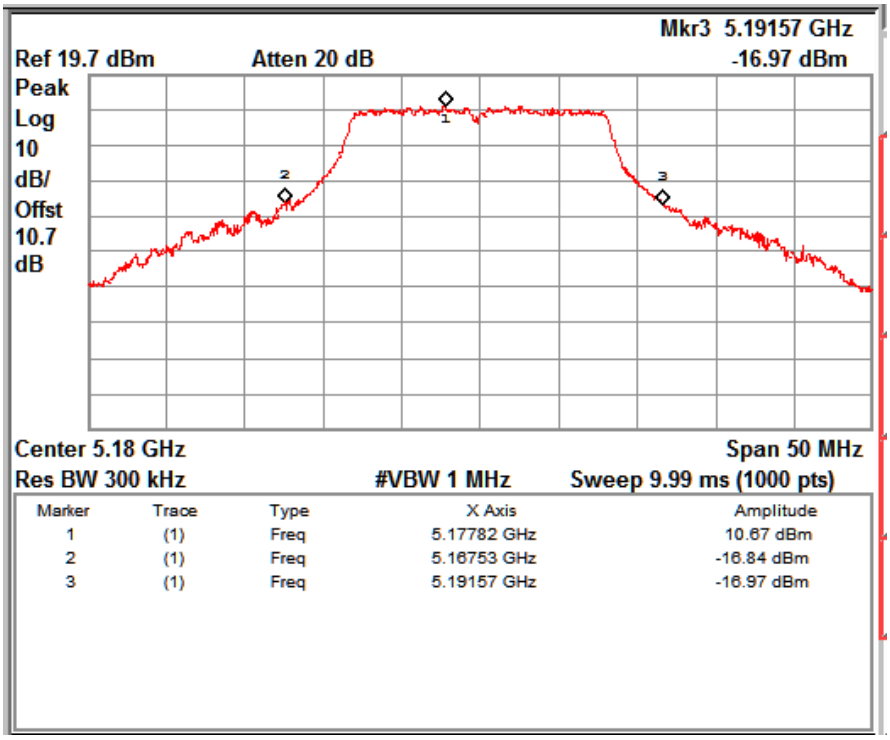


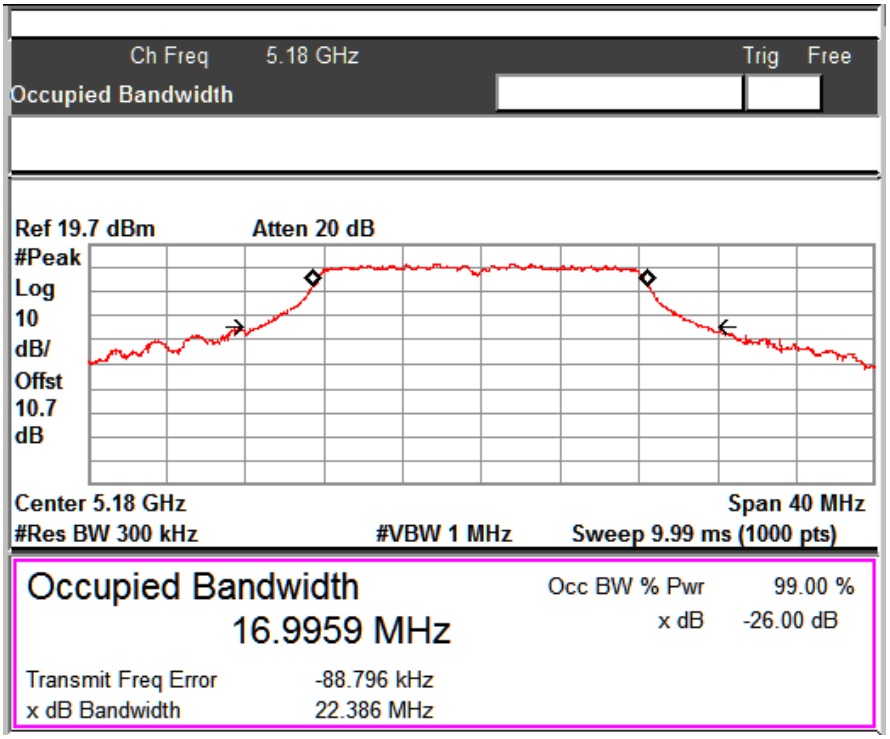
Offset value 10.7dB is added in the final measurement value.

Test Result:

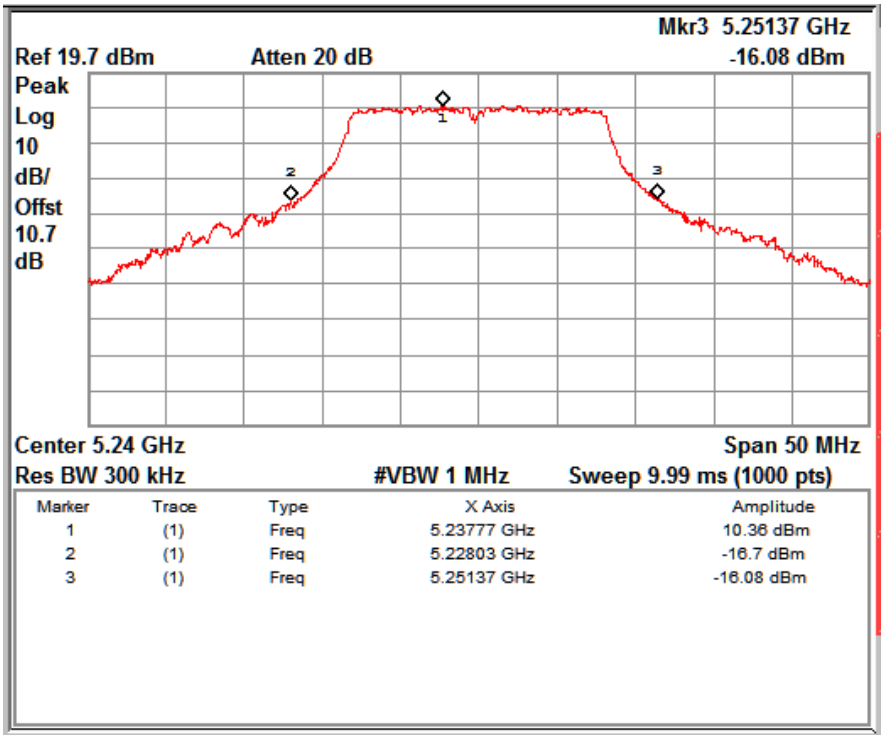
Modulation: 802.11a

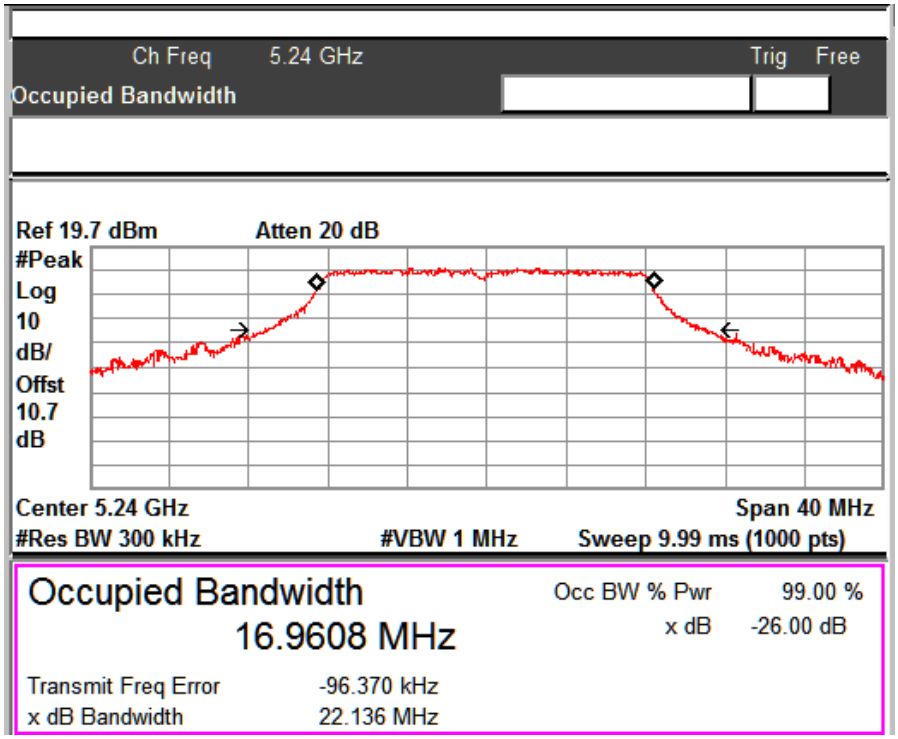
Data Rate (Mbps)	Channel. No	Frequency (MHz)	EBW (MHz)	OBW (MHz)
6	36	5180	24.04	16.99
	48	5240	23.34	16.96
24	36	5180	23.04	16.82
	48	5240	22.89	16.84
54	36	5180	22.09	16.82
	48	5240	22.04	16.81



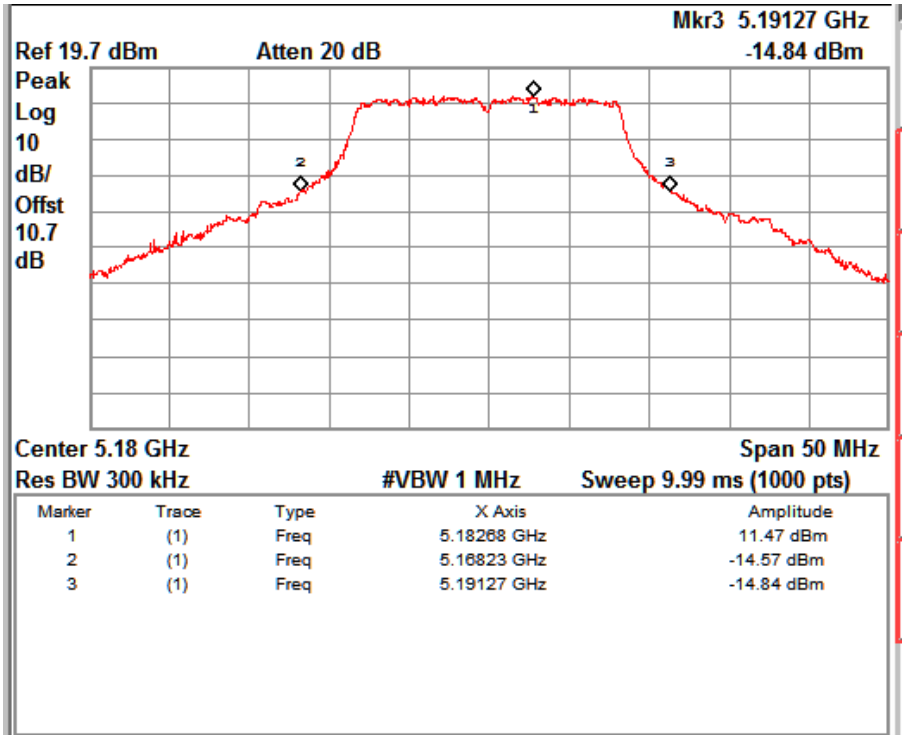


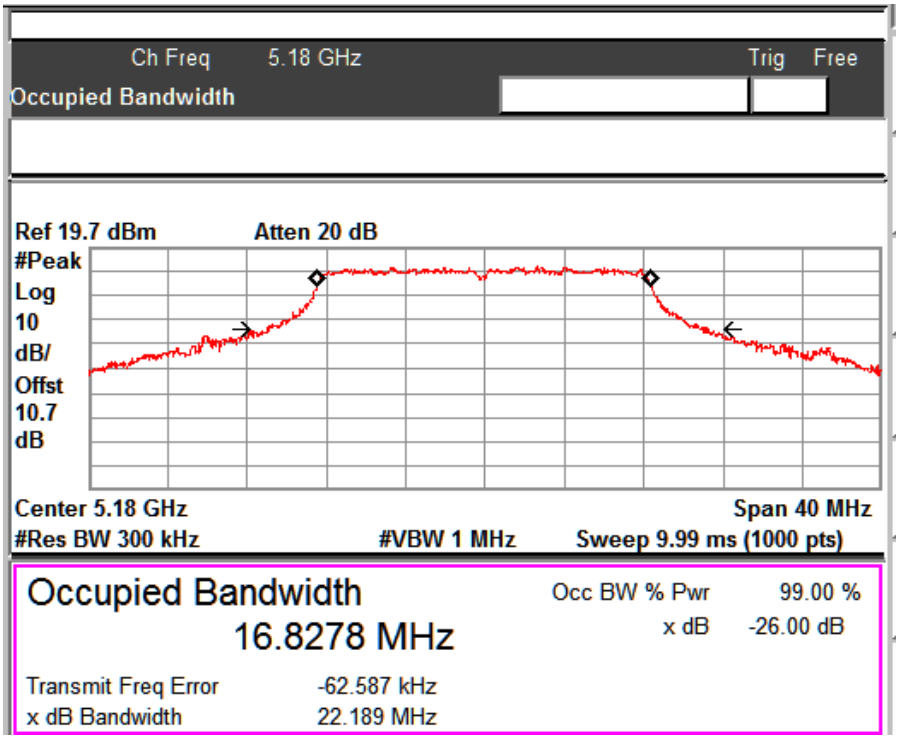
Data Rate: 6Mbps **Channel Frequency: 5180MHz**



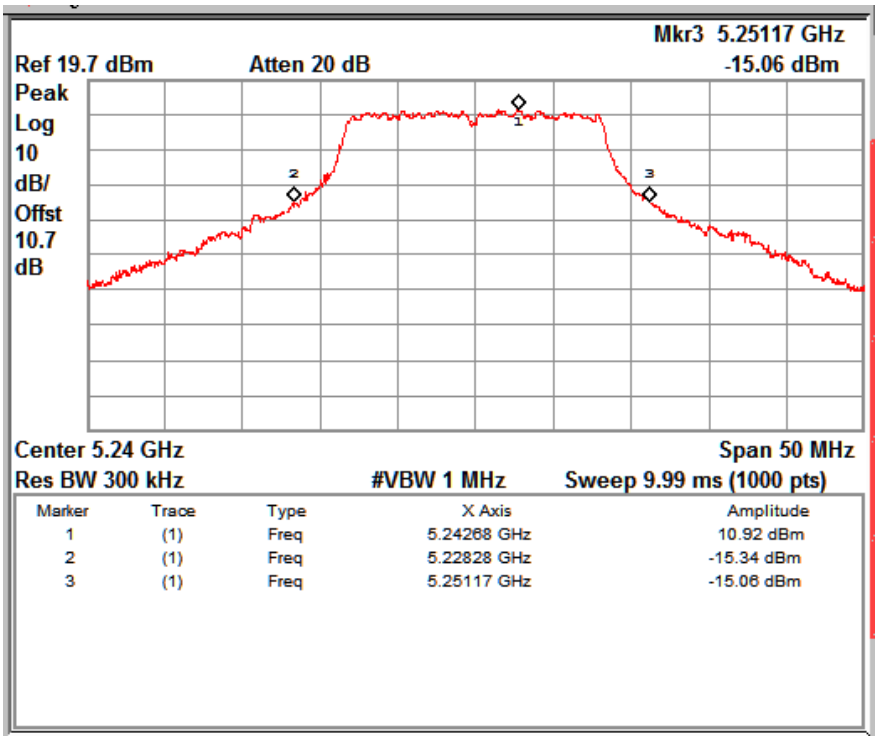


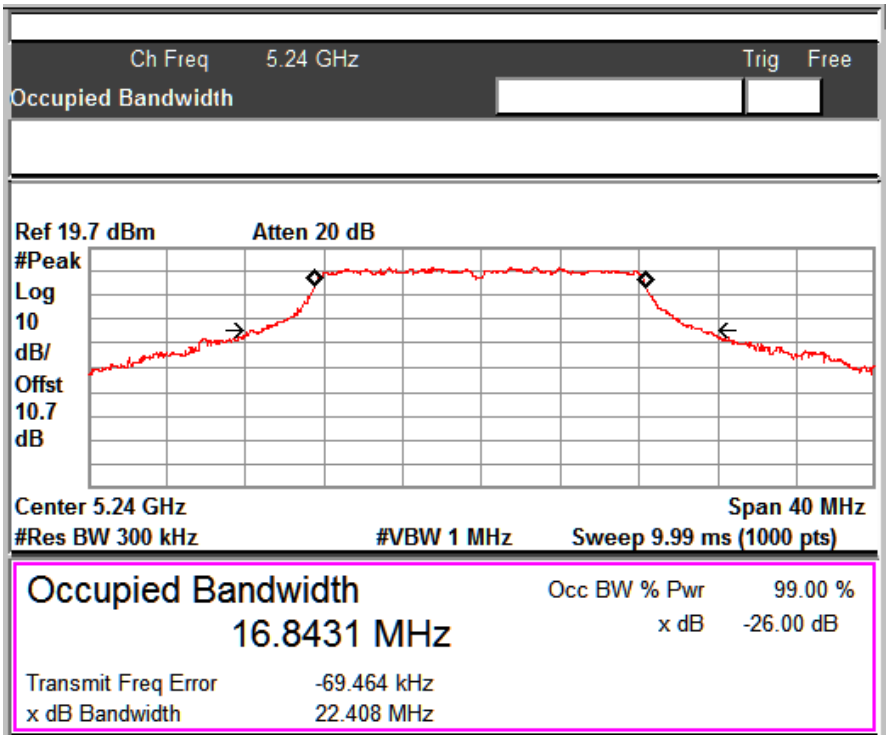
Data Rate: 6Mbps **Channel Frequency: 5240MHz**



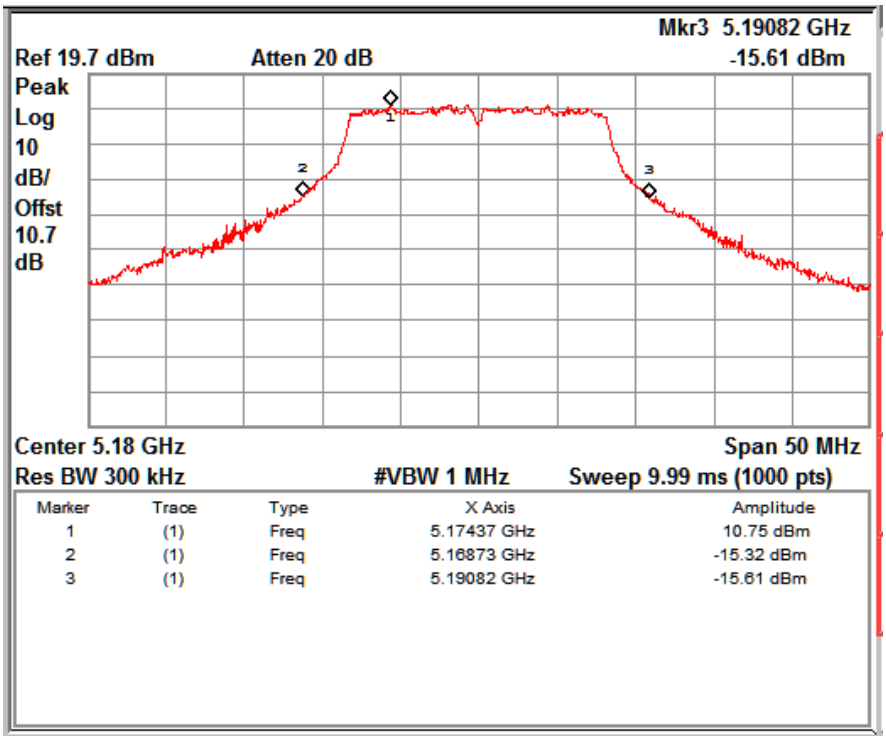


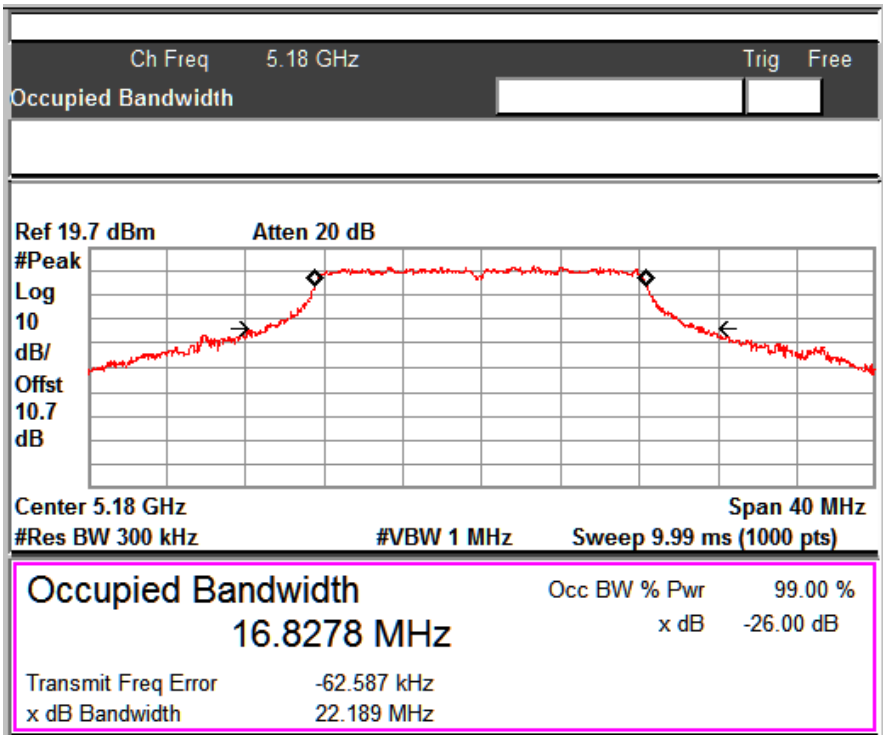
Data Rate: 24Mbps **Channel Frequency: 5180MHz**



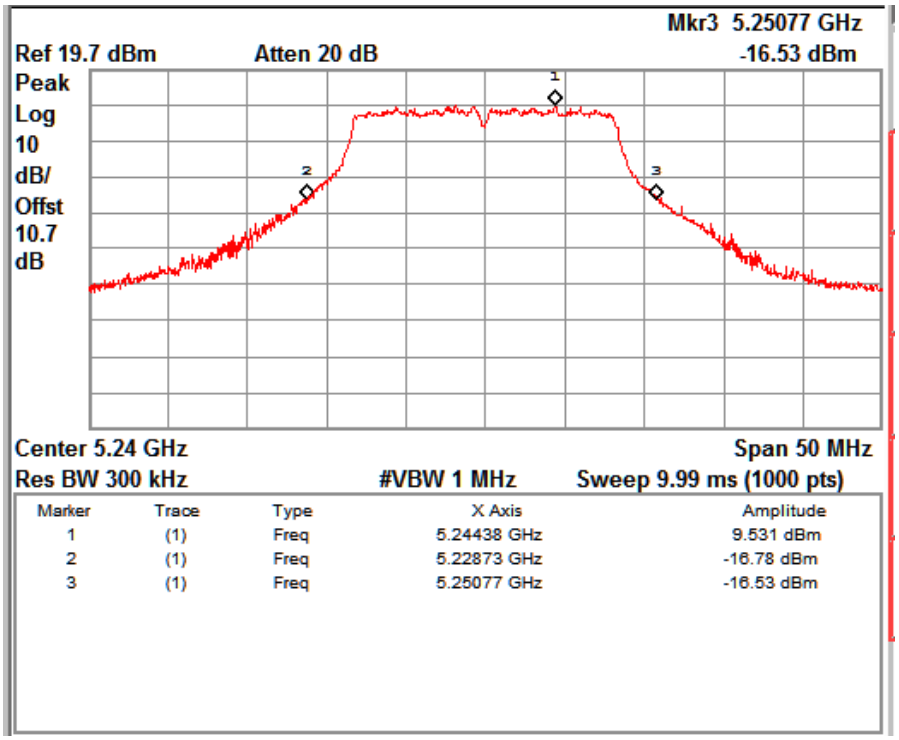


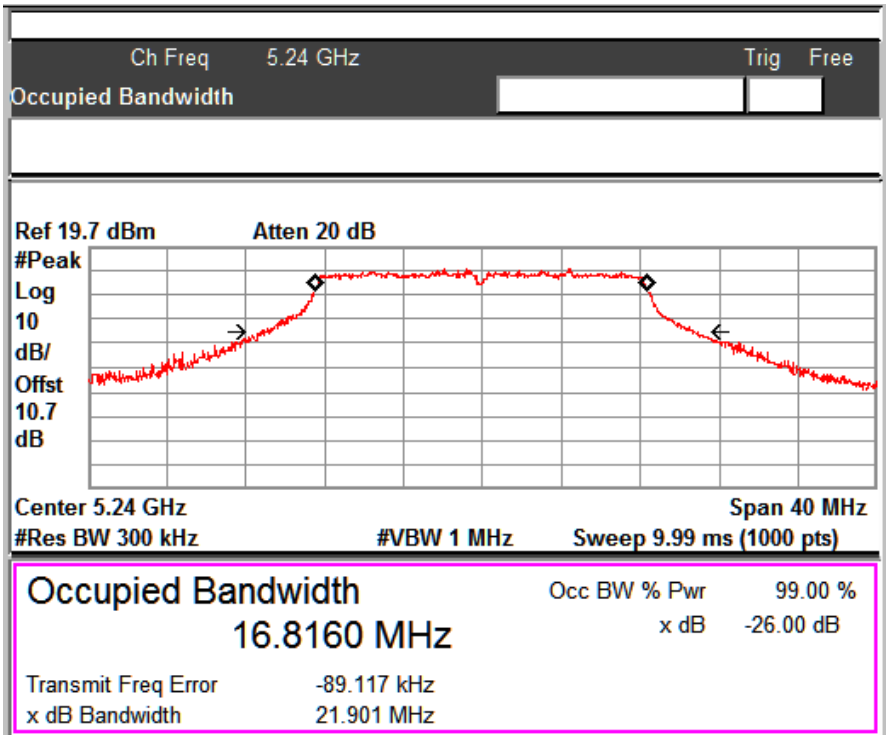
Data Rate: 24Mbps **Channel Frequency: 5240MHz**





Data Rate: 54Mbps **Channel Frequency: 5180MHz**

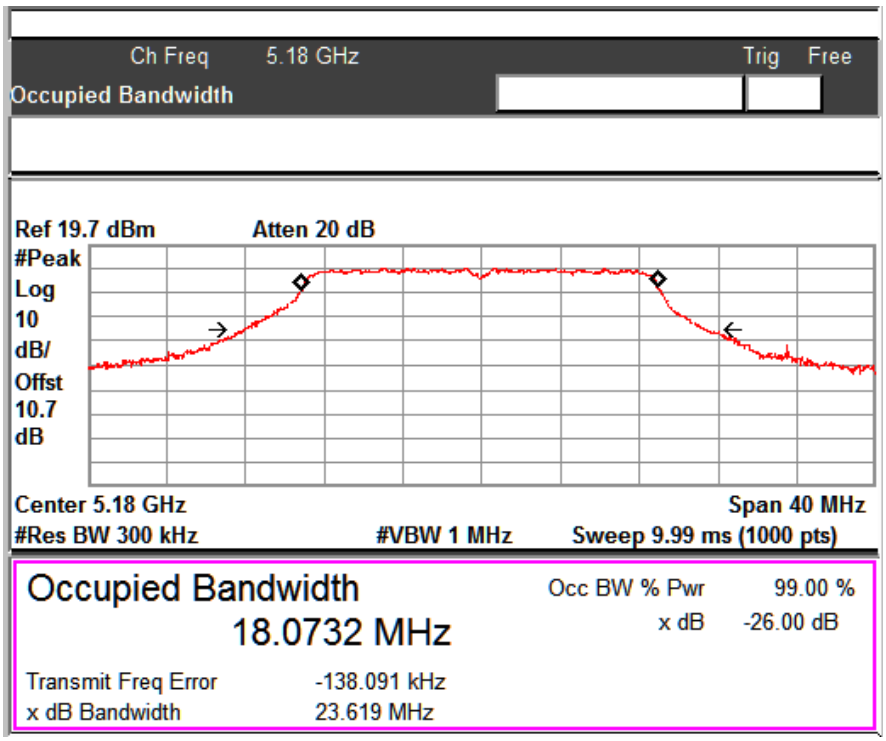




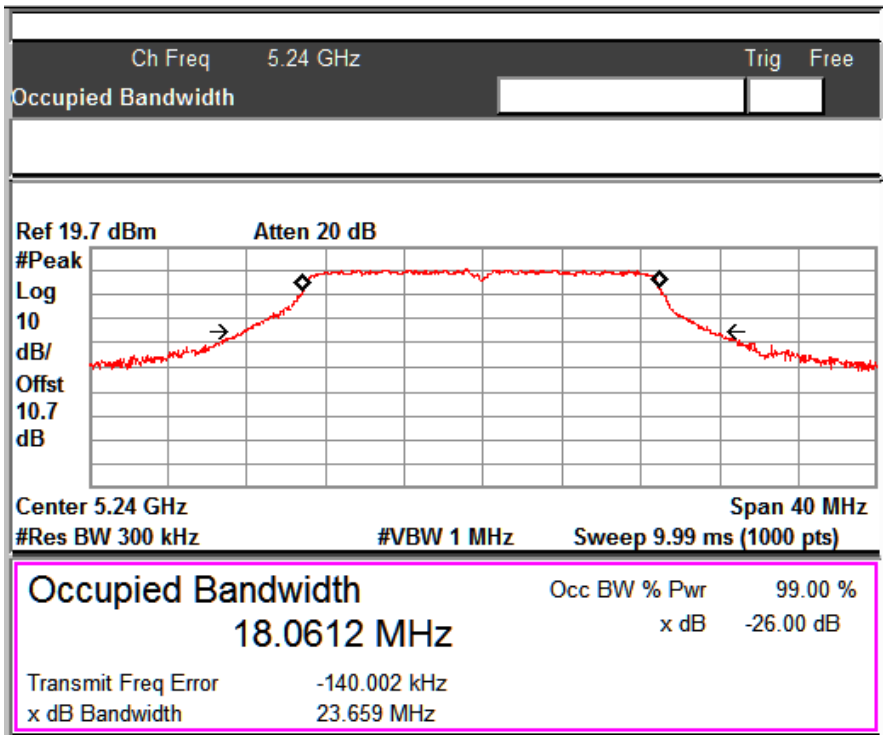
Data Rate: 54Mbps **Channel Frequency: 5240MHz**

Modulation: 802.11ac VHT20

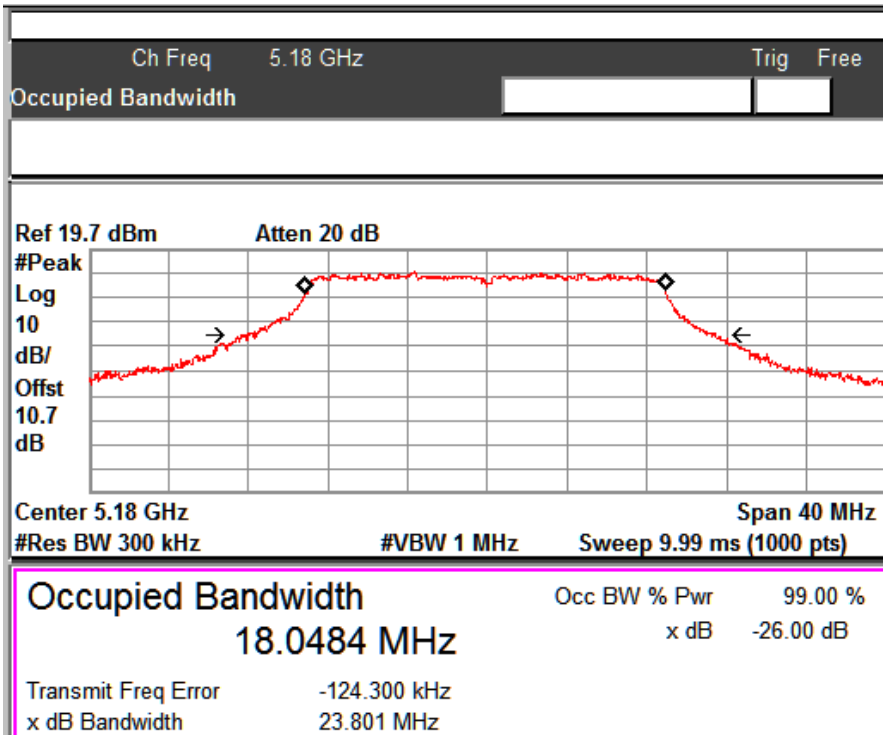
Data Rate (Mbps)	Channel. No	Frequency (MHz)	EBW (MHz)	OBW (MHz)
MCS 0	36	5180	23.61	18.07
	48	5240	23.65	18.06
MCS 4	36	5180	23.80	18.04
	48	5240	23.69	18.05
MCS 7	36	5180	23.09	17.96
	48	5240	23.07	17.98



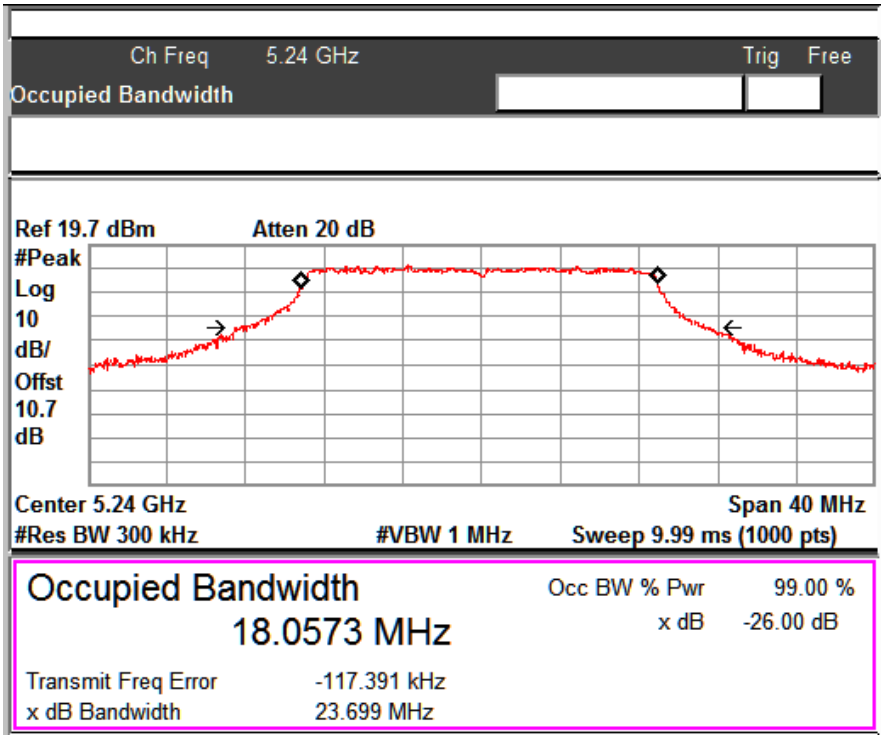
Data Rate: MCS 0 **Channel Frequency: 5180MHz**



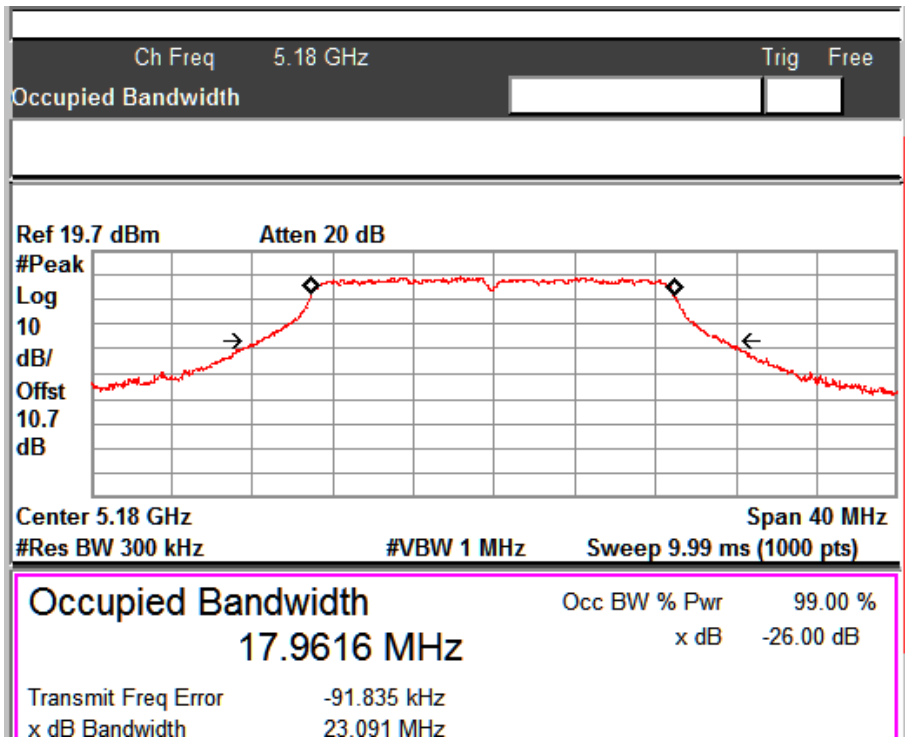
Data Rate: MCS 0 **Channel Frequency: 5240MHz**



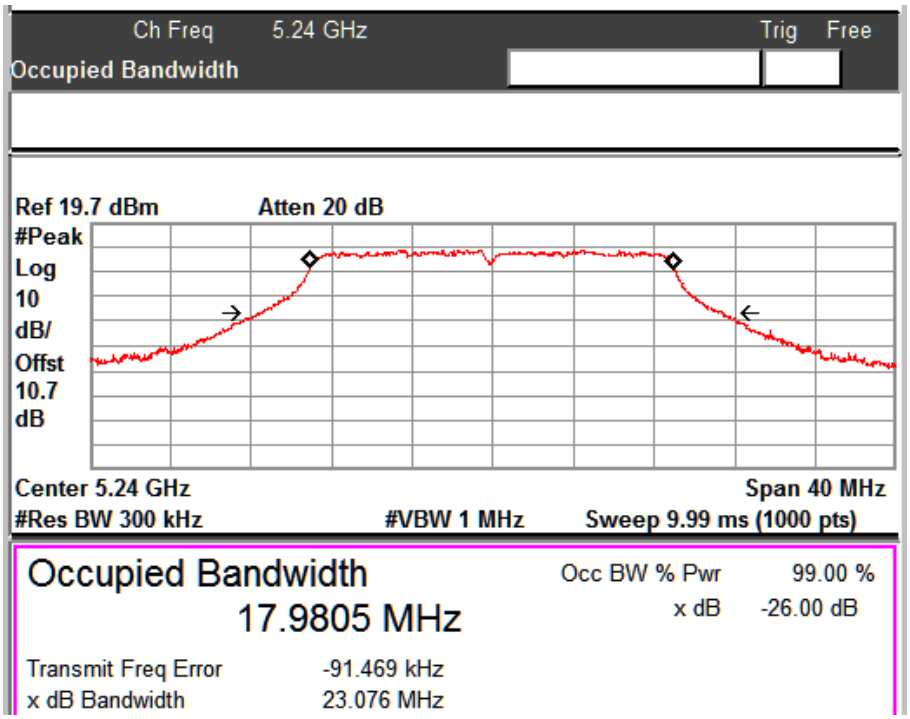
Data Rate: MCS 4 **Channel Frequency: 5180MHz**



Data Rate: MCS4 **Channel Frequency: 5240MHz**



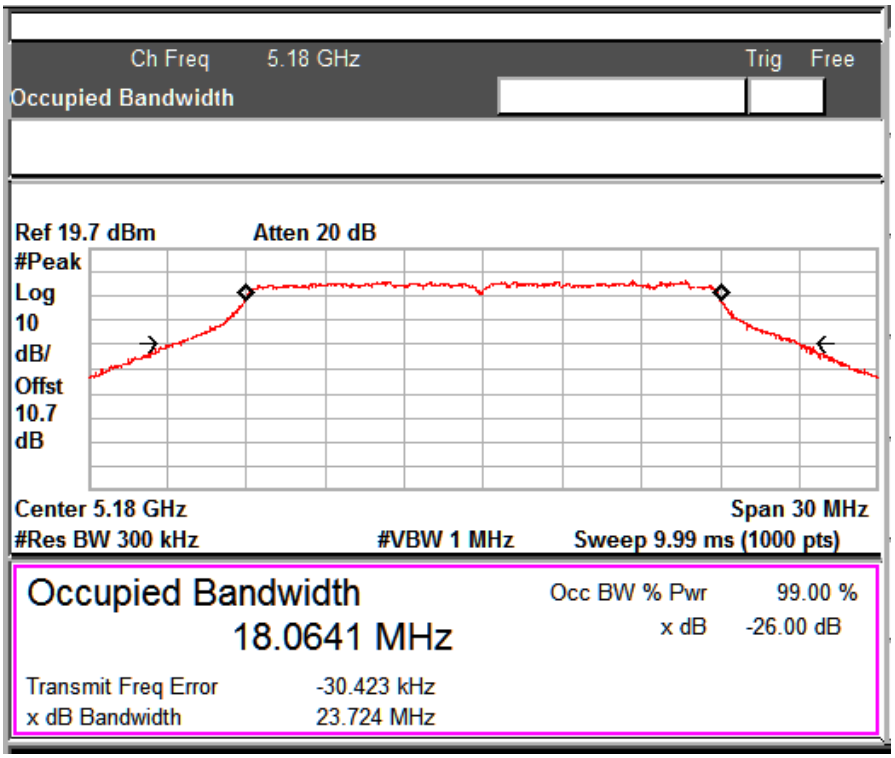
Data Rate: MCS 7 **Channel Frequency: 5180MHz**



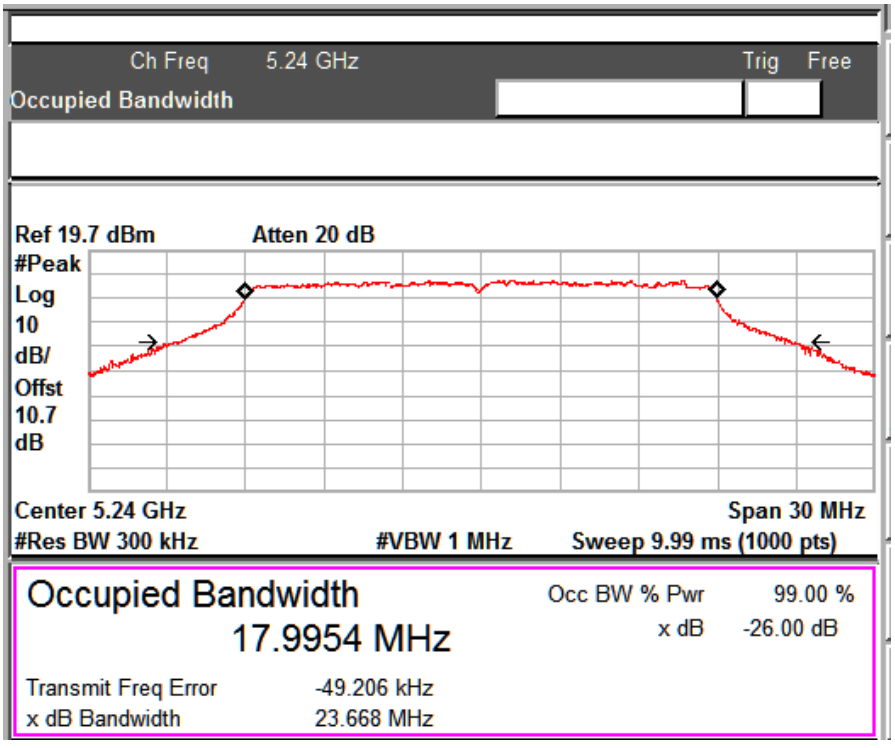
Data Rate: MCS 7 **Channel Frequency: 5240MHz**

Modulation: 802.11ac VHT20 MIMO

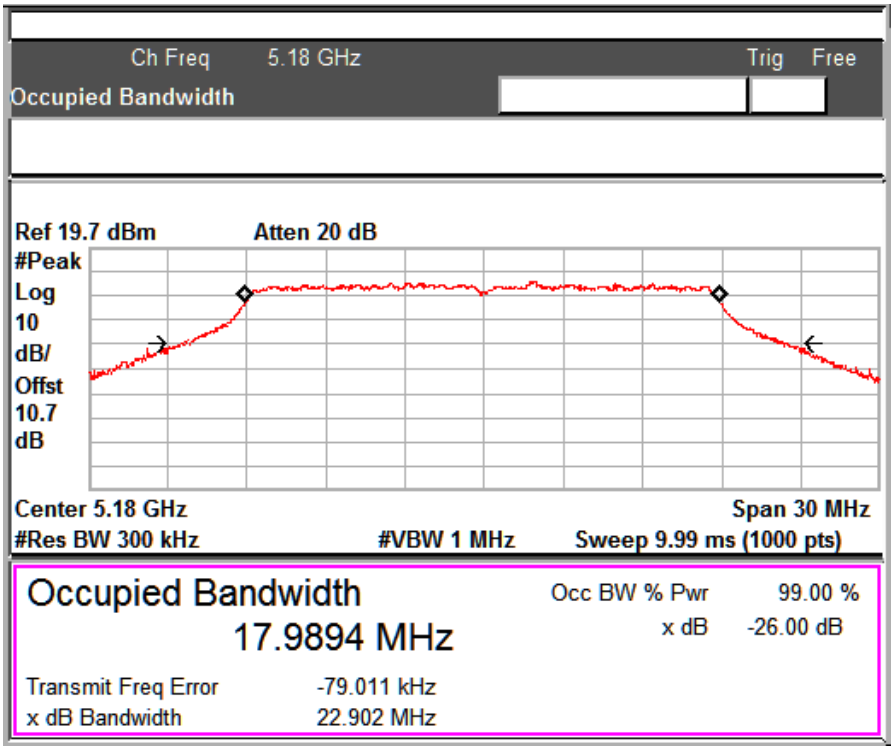
Data Rate (Mbps)	Channel. No	Frequency (MHz)	EBW (MHz)	OBW (MHz)
MCS 8	36	5180	23.72	18.06
	48	5240	23.66	17.99
MCS 11	36	5180	22.90	17.98
	48	5240	22.75	18.00
MCS 15	36	5180	22.87	17.91
	48	5240	23.03	17.92



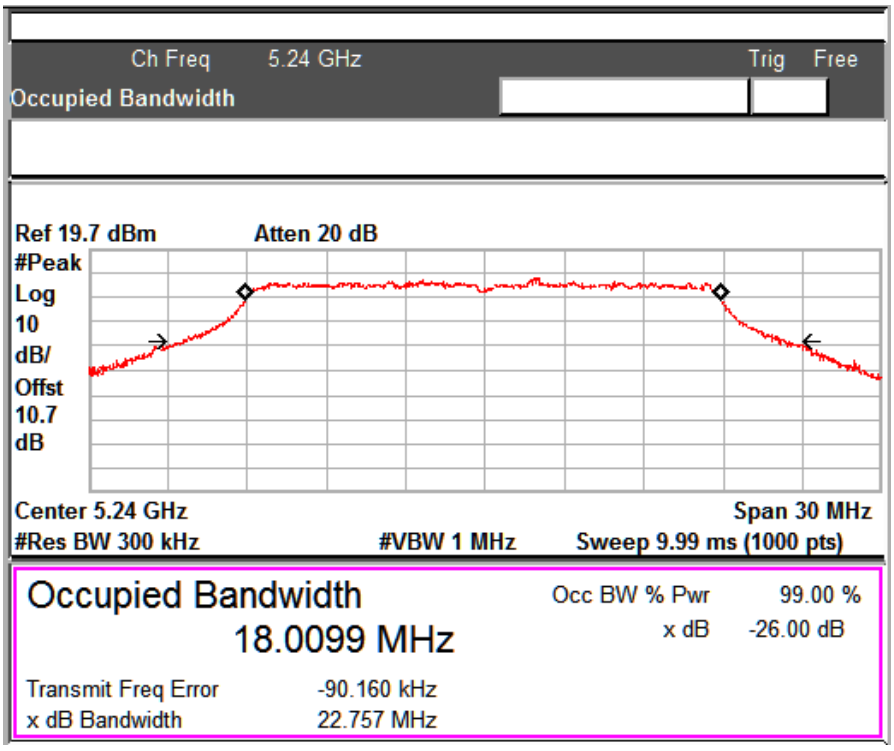
Data Rate: MCS 8 **Channel Frequency: 5180MHz**



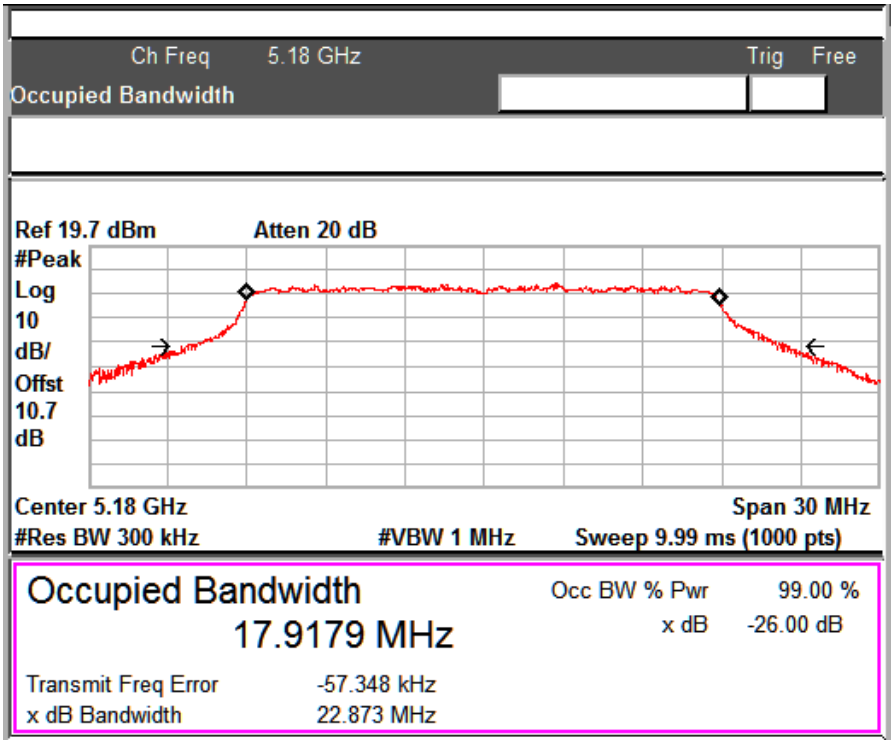
Data Rate: MCS 8 **Channel Frequency: 5240MHz**



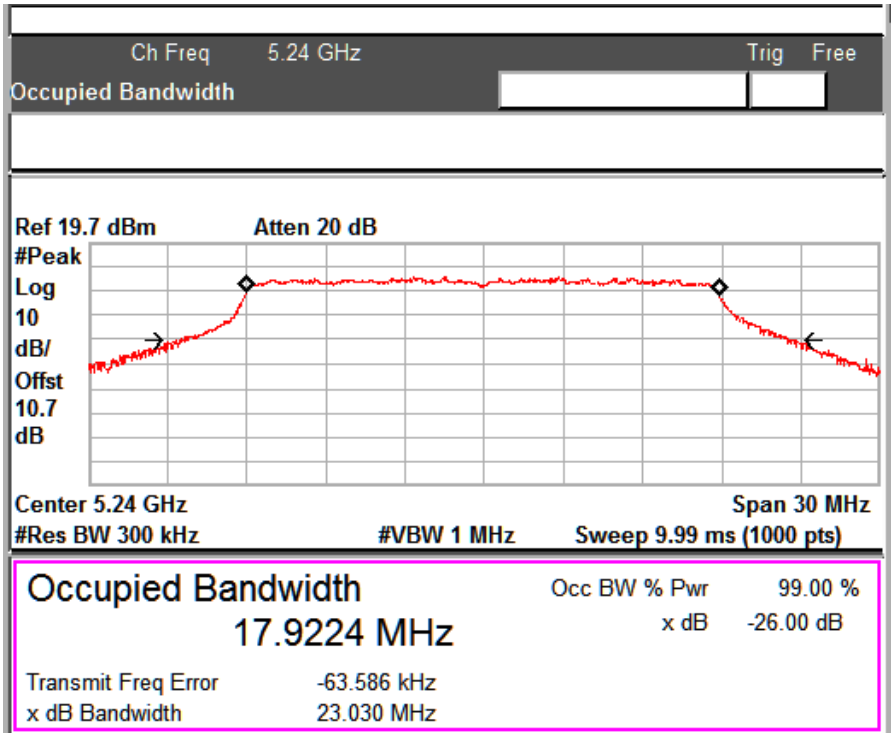
Data Rate: MCS 11 **Channel Frequency: 5180MHz**



Data Rate: MCS 11 **Channel Frequency: 5240MHz**



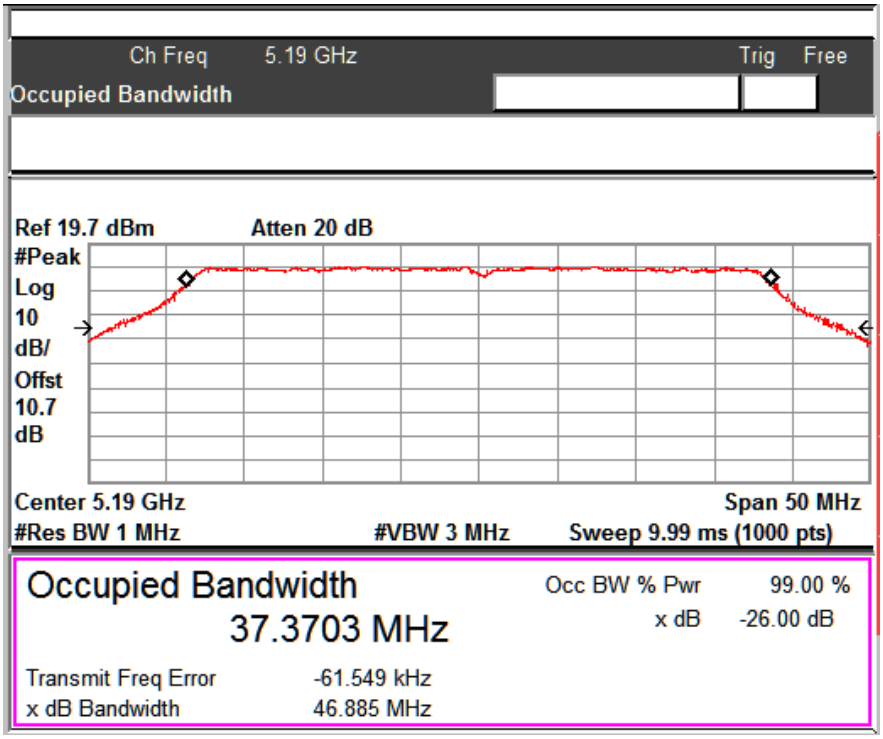
Data Rate: MCS 15 **Channel Frequency: 5180MHz**



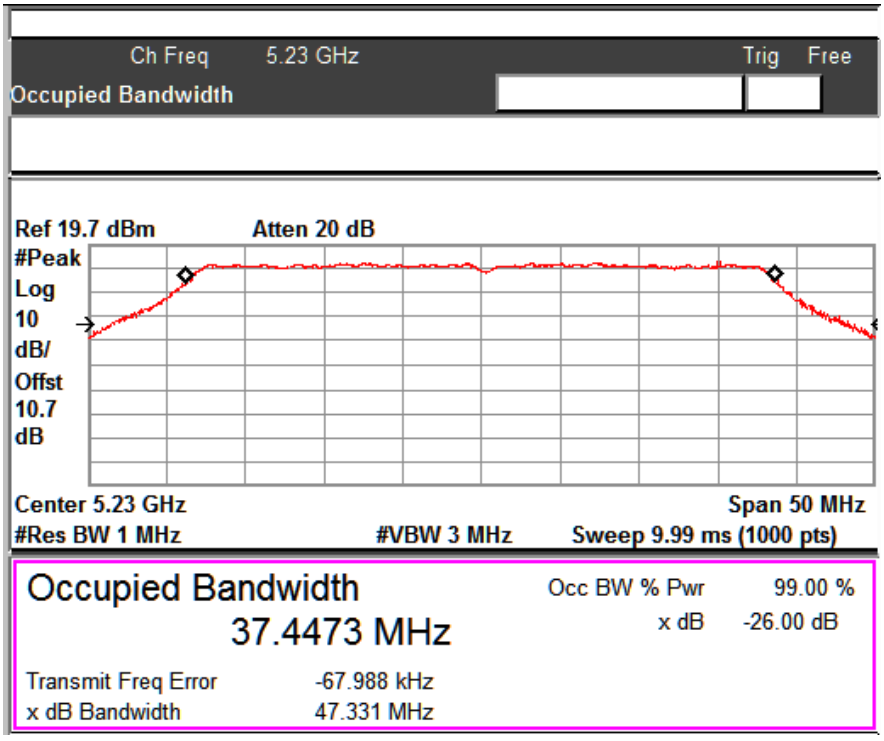
Data Rate: MCS 15 **Channel Frequency: 5240MHz**

Modulation: 802.11ac vht 40

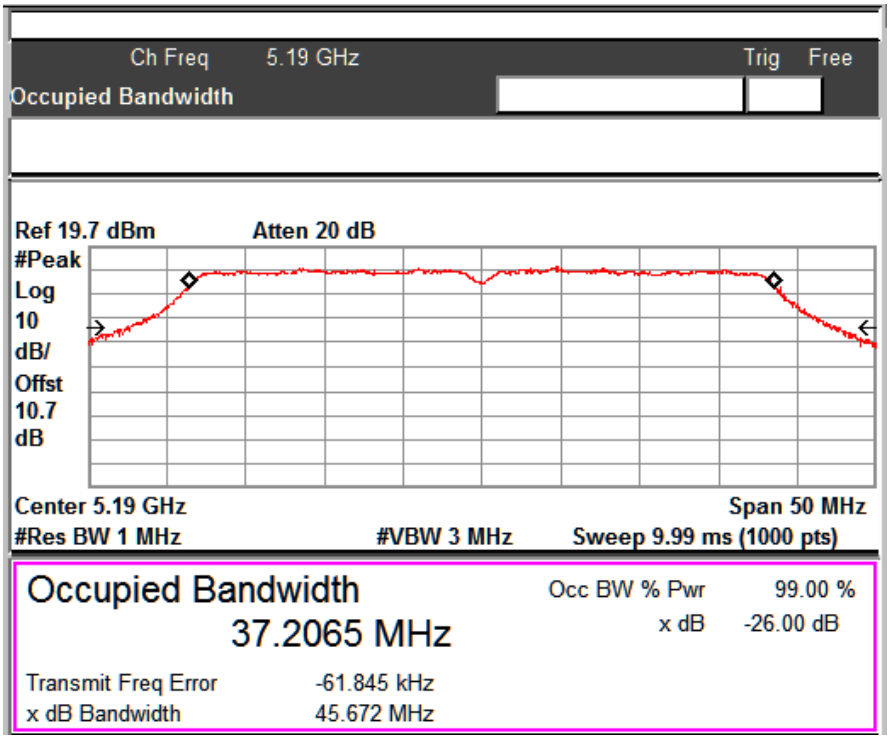
Data Rate (Mbps)	Channel. No	Frequency (MHz)	EBW (MHz)	OBW (MHz)
MCS 0	38	5190	46.88	37.37
	46	5230	47.33	37.44
MCS 4	38	5190	45.67	37.20
	46	5230	46.35	37.17
MCS 7	38	5190	46.88	37.37
	46	5230	47.33	37.44



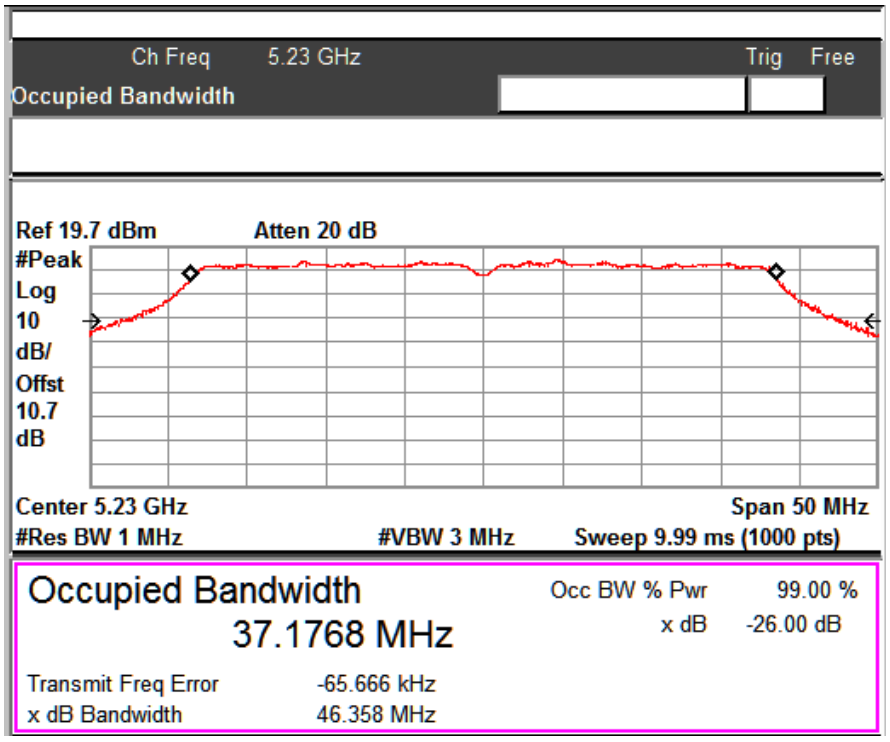
Data Rate: MCS 0 **Channel Frequency: 5190MHz**



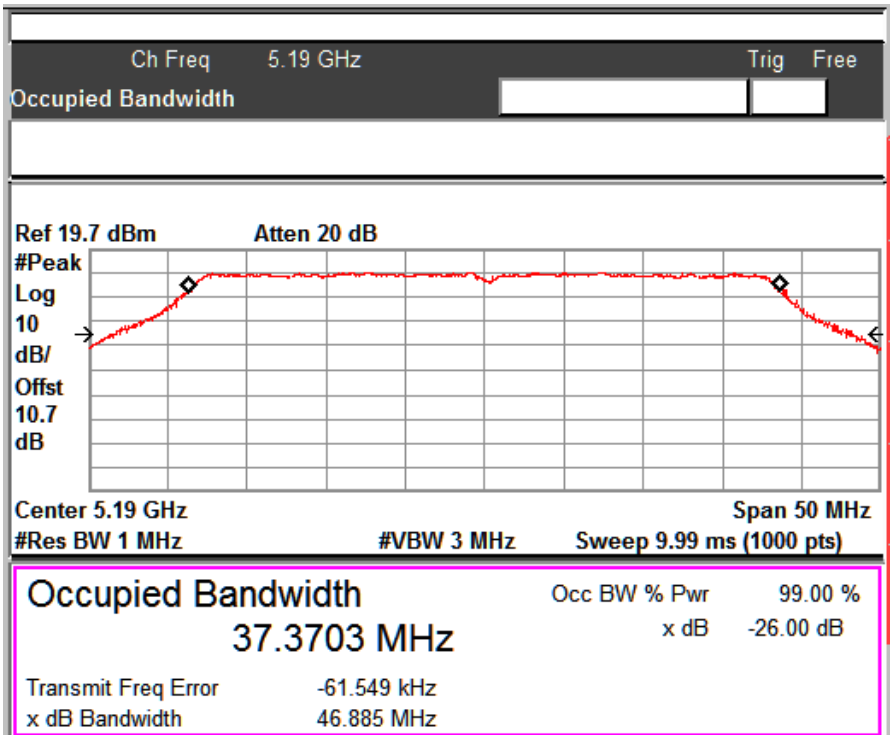
Data Rate: MCS 0 **Channel Frequency: 5230MHz**



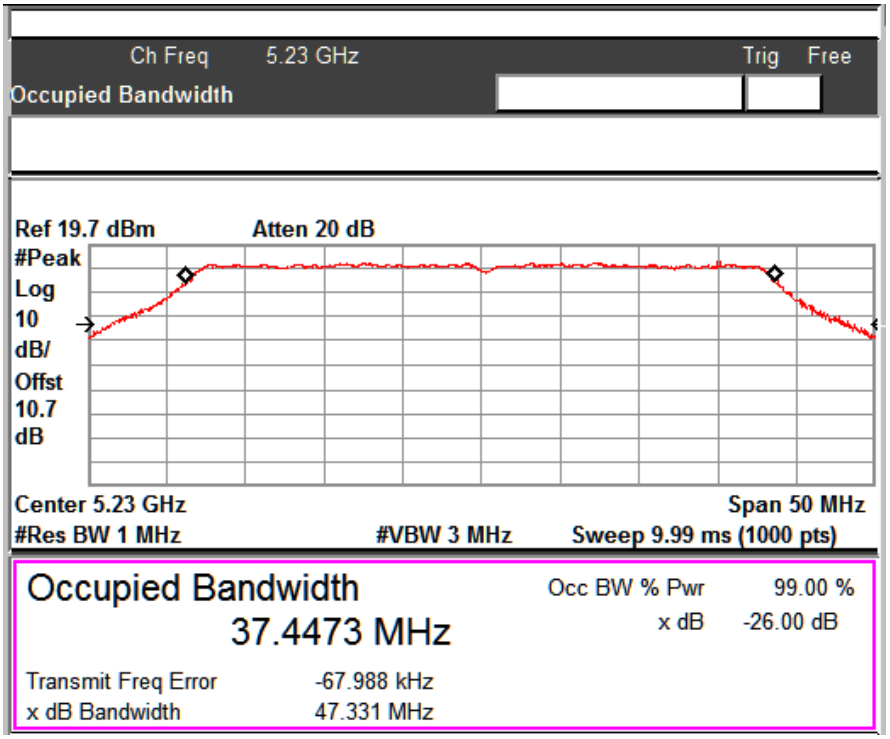
Data Rate: MCS 4 **Channel Frequency: 5190MHz**



Data Rate: MCS 4 **Channel Frequency: 5230MHz**



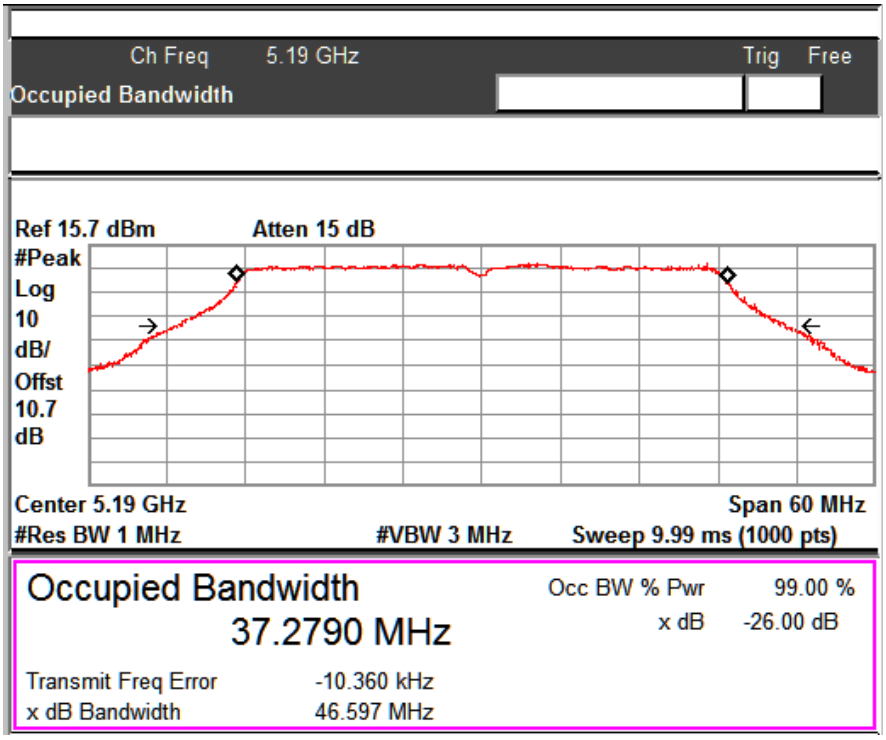
Data Rate: MCS 7 **Channel Frequency: 5190MHz**



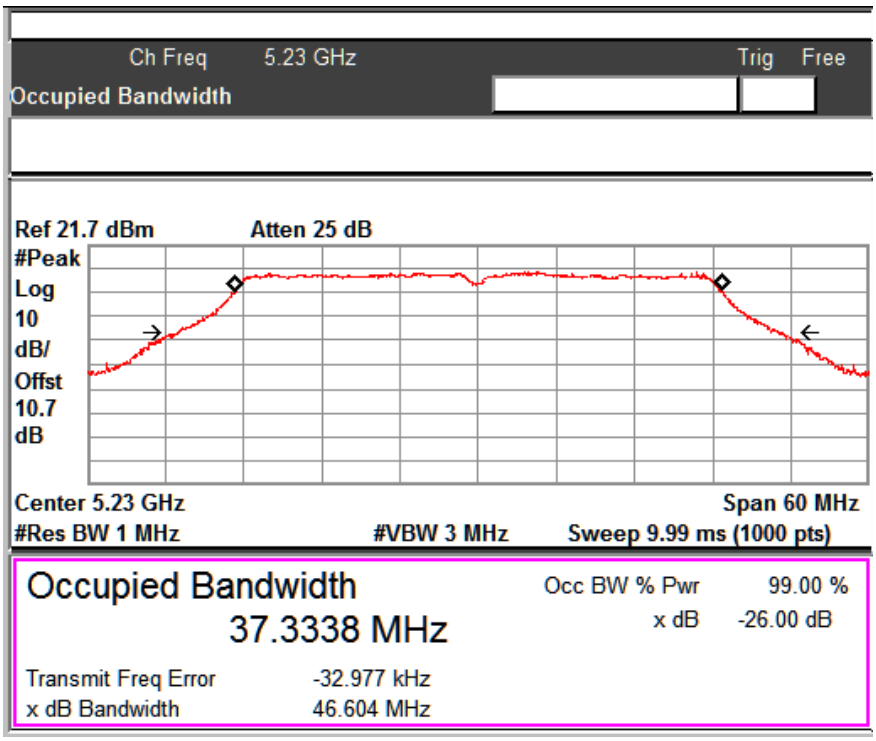
Data Rate: MCS 7 **Channel Frequency: 5230MHz**

Modulation: 802.11ac VHT 40 MIMO

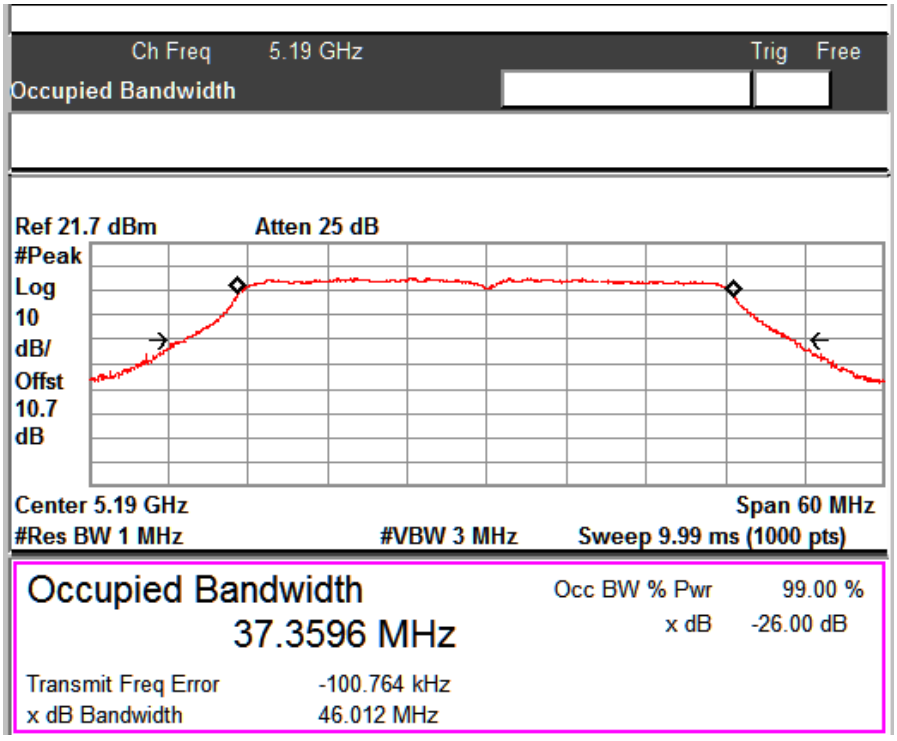
Data Rate (Mbps)	Channel. No	Frequency (MHz)	EBW (MHz)	OBW (MHz)
MCS 8	38	5190	46.59	37.27
	46	5230	46.60	37.33
MCS 11	38	5190	46.01	37.35
	46	5230	46.03	37.43
MCS 15	38	5190	45.39	36.98
	46	5230	46.40	37.25



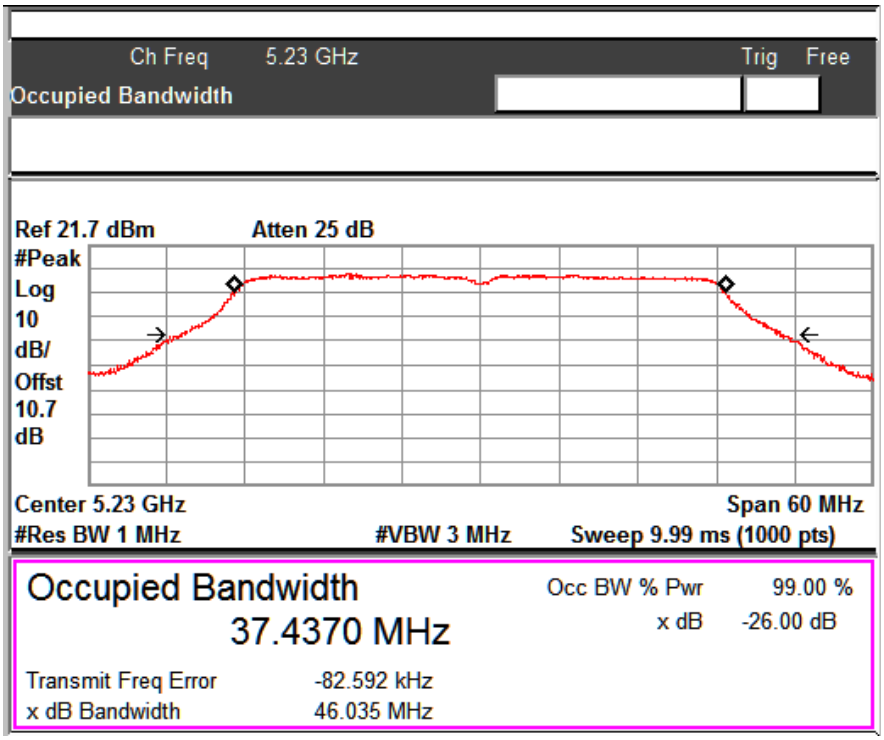
Data Rate: MCS 8 **Channel Frequency: 5190MHz**



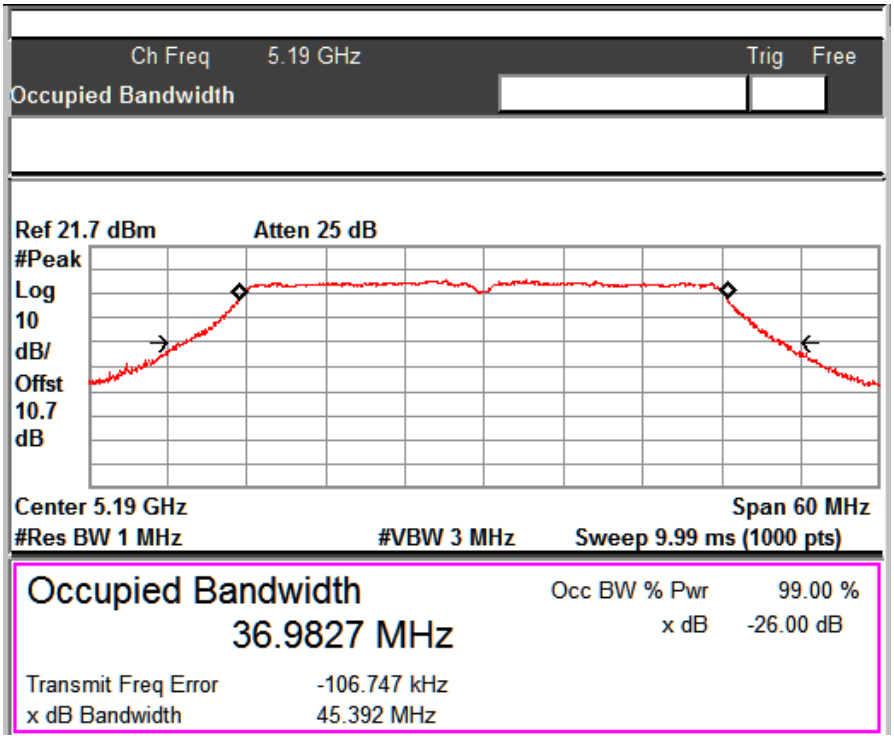
Data Rate: MCS 8 **Channel Frequency: 5230MHz**



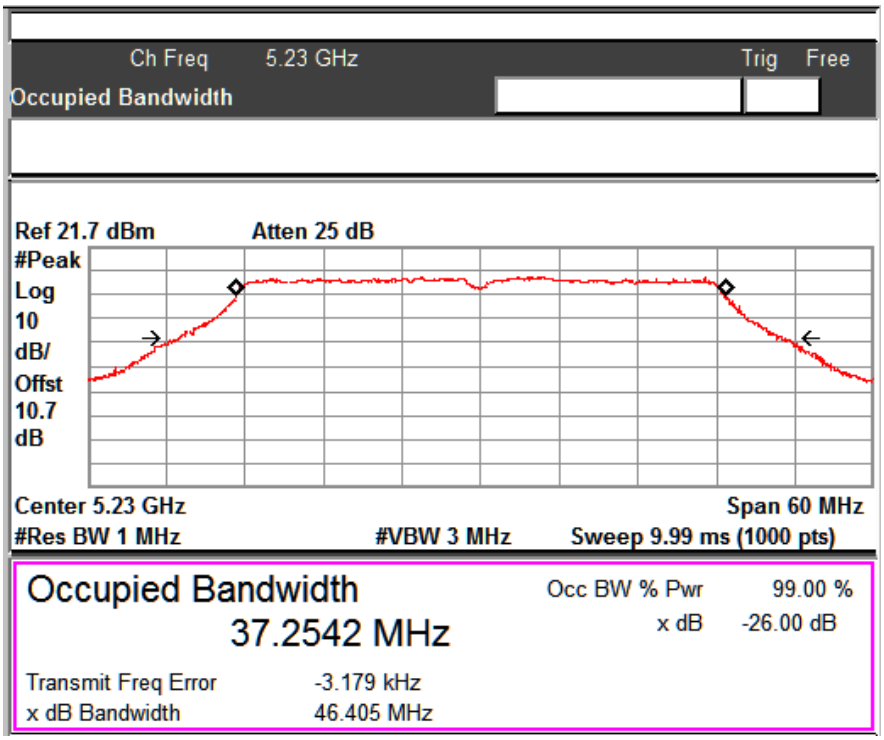
Data Rate: MCS 11 **Channel Frequency: 5190MHz**



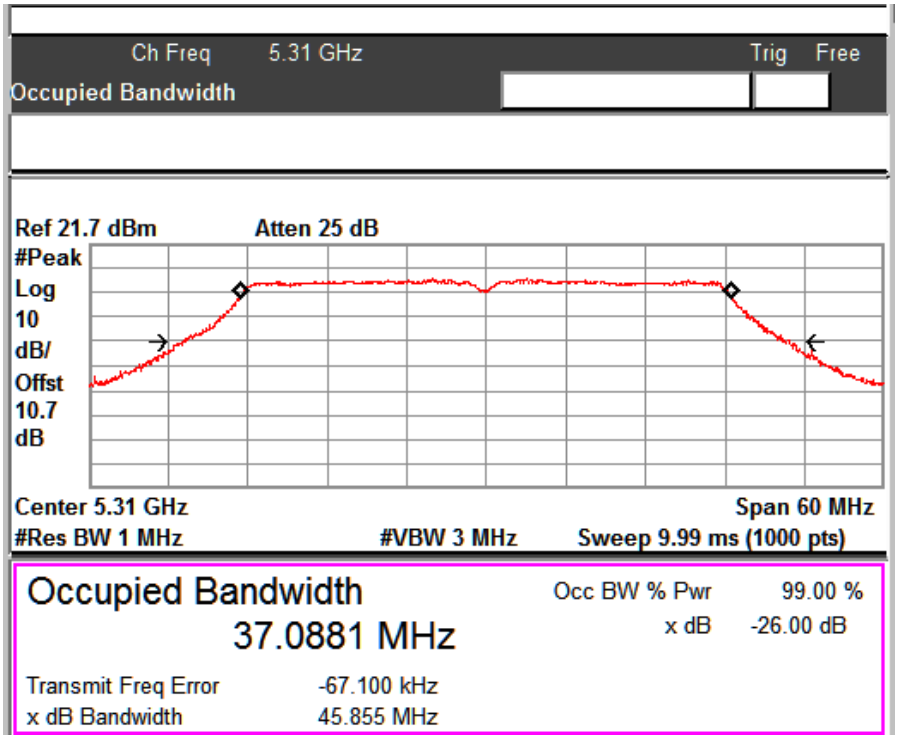
Data Rate: MCS 11 **Channel Frequency: 5230MHz**



Data Rate: MCS 15 **Channel Frequency: 5190MHz**



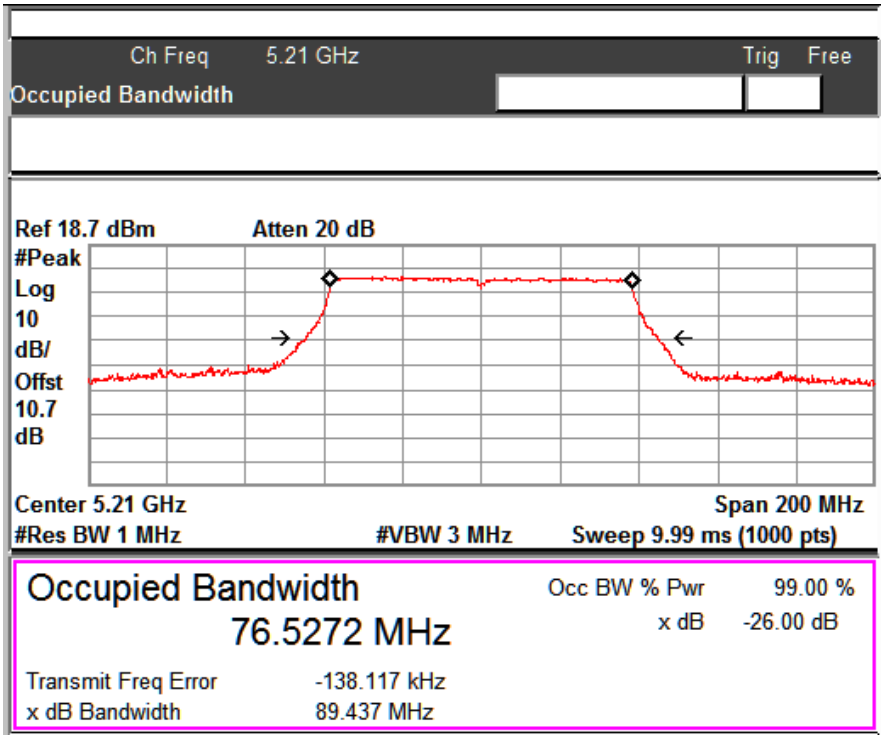
Data Rate: MCS 15 **Channel Frequency: 5230MHz**



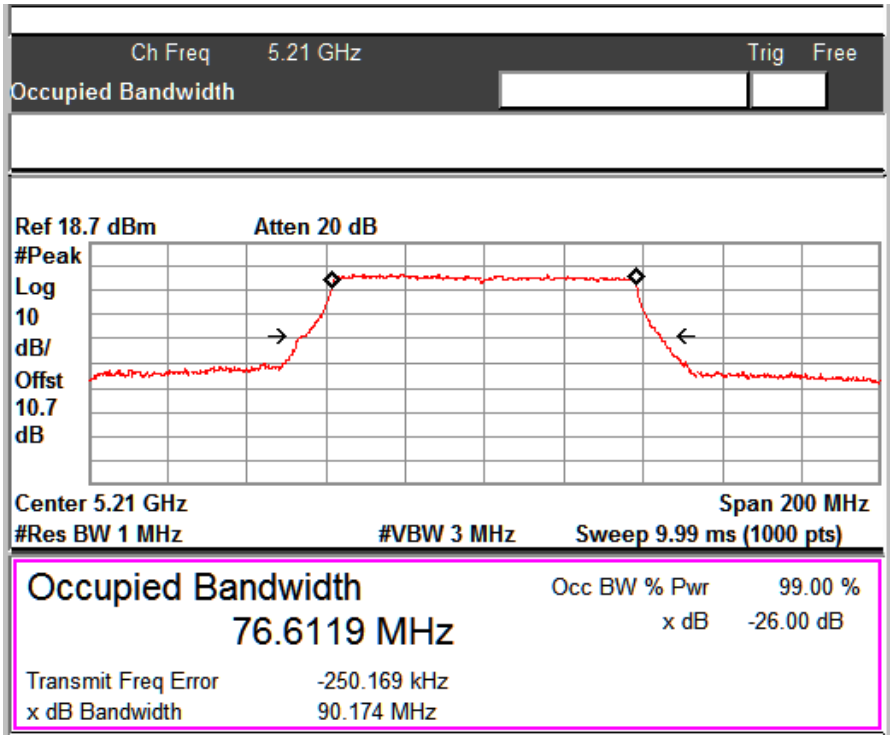
Data Rate: MCS 15 **Channel Frequency: 5310MHz**

Modulation: 802.11ac vht 80

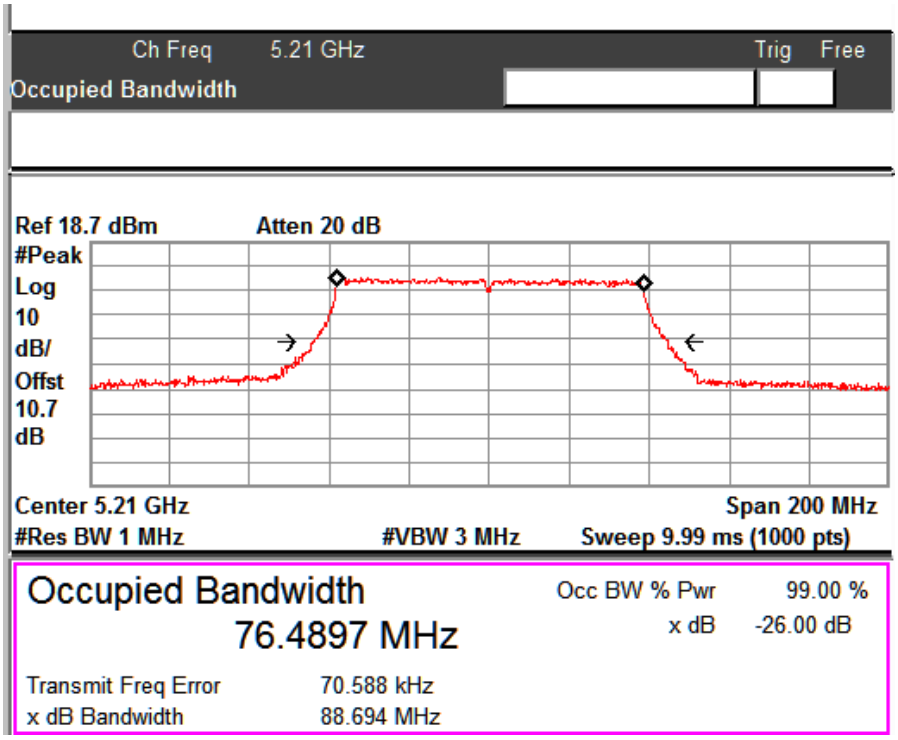
Data Rate (Mbps)	Channel. No	Frequency (MHz)	EBW (MHz)	OBW (MHz)
MCS 0	42	5210	89.43	76.52
MCS 4	42	5210	90.17	76.61
MCS 9	42	5210	88.69	76.48



Data Rate: MCS 0 **Channel Frequency: 5210MHz**



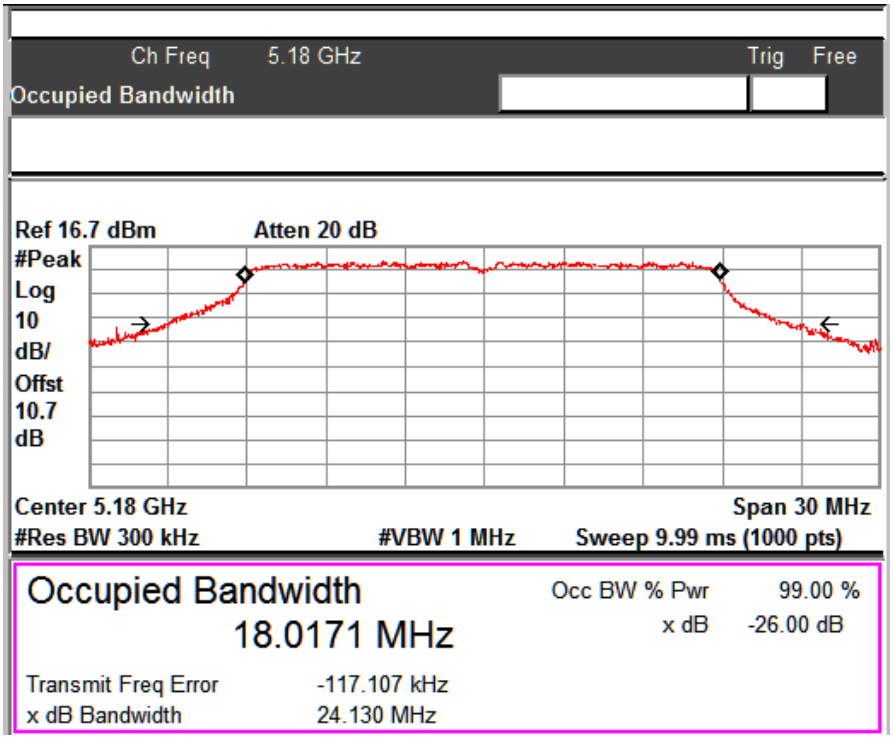
Data Rate: MCS 4 **Channel Frequency: 5210MHz**



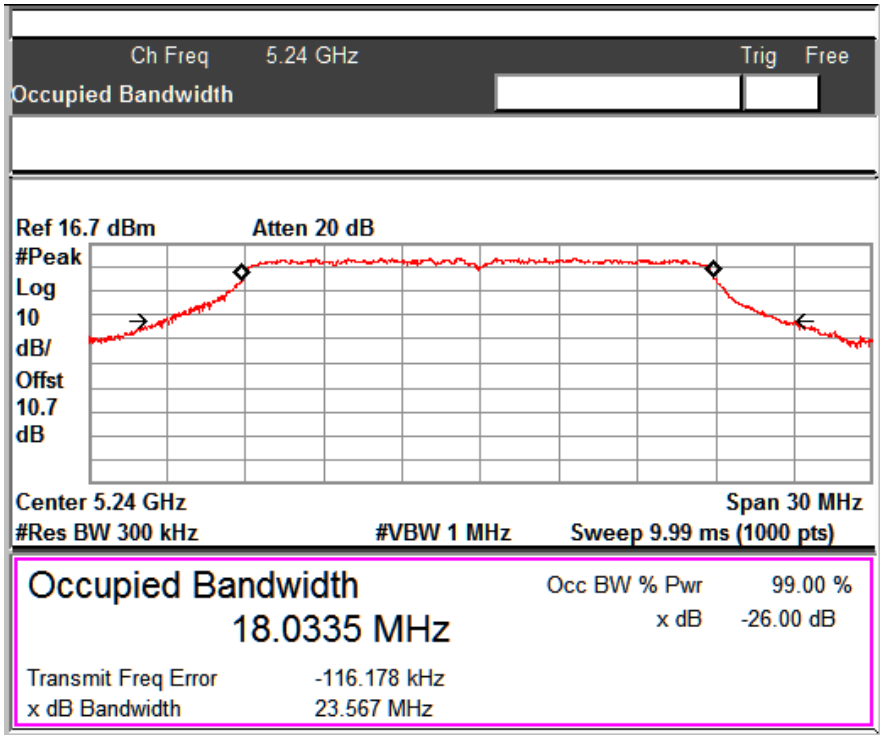
Data Rate: MCS 9 **Channel Frequency: 5210MHz**

Modulation: 802.11n HT20 SISO

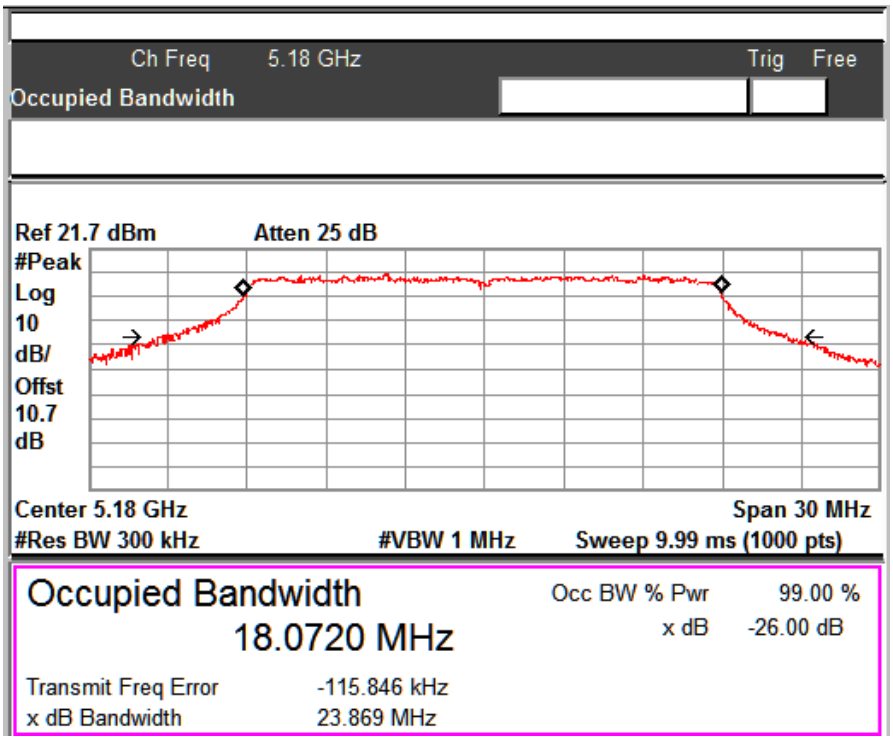
Data Rate (Mbps)	Channel. No	Frequency (MHz)	EBW (MHz)	OBW (MHz)
MCS 0	36	5180	24.13	18.01
	48	5240	23.56	18.03
MCS 4	36	5180	23.86	18.07
	48	5240	23.82	18.05
MCS 7	36	5180	23.08	17.98
	48	5240	22.96	17.99



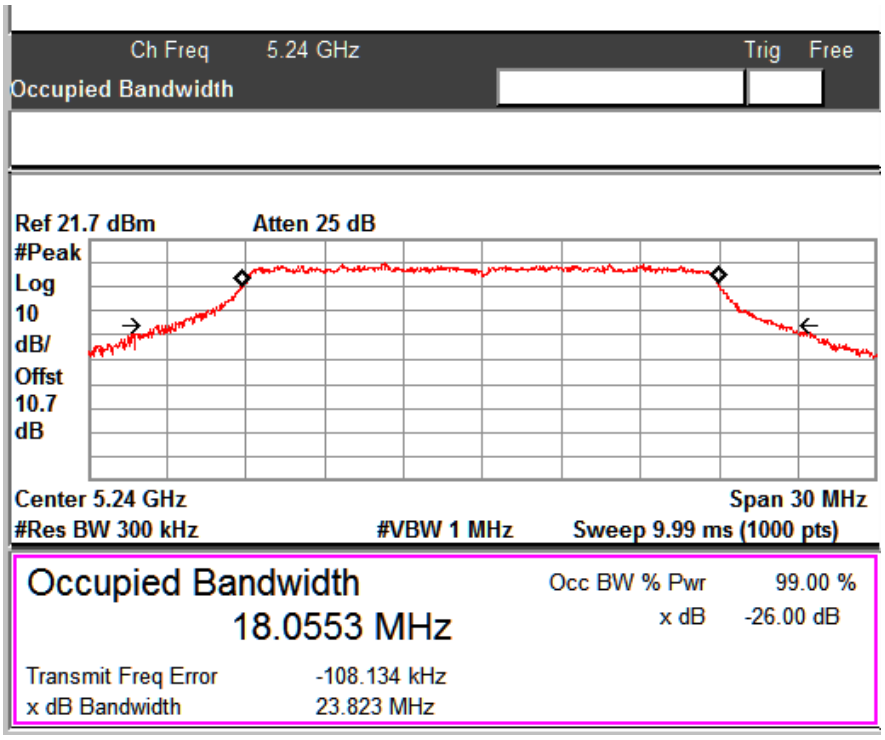
Data Rate: MCS 0 **Channel Frequency: 5180MHz**



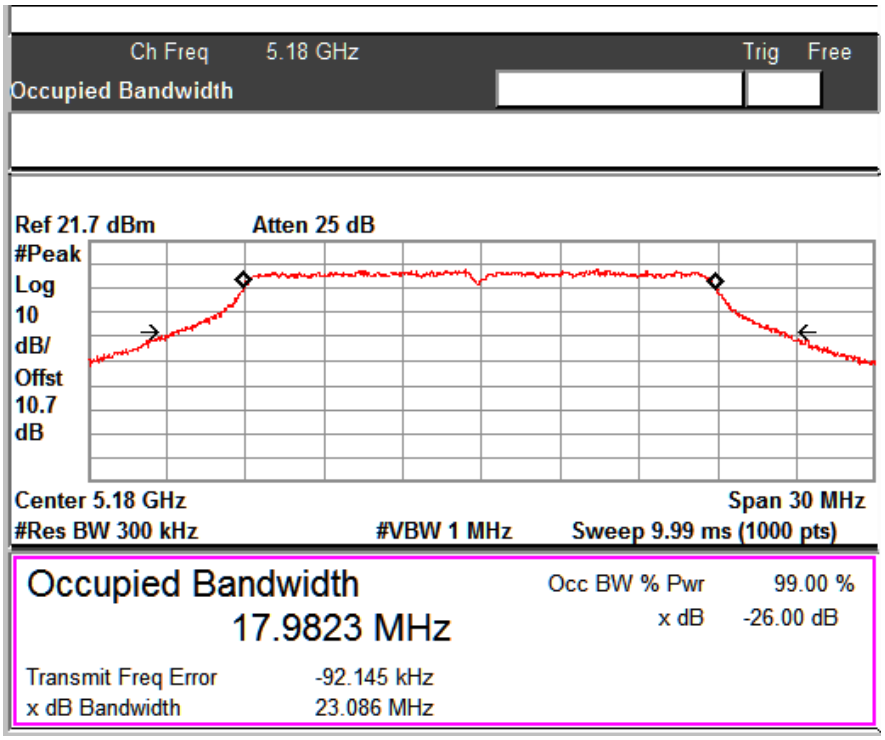
Data Rate: MCS 0 **Channel Frequency: 5240MHz**



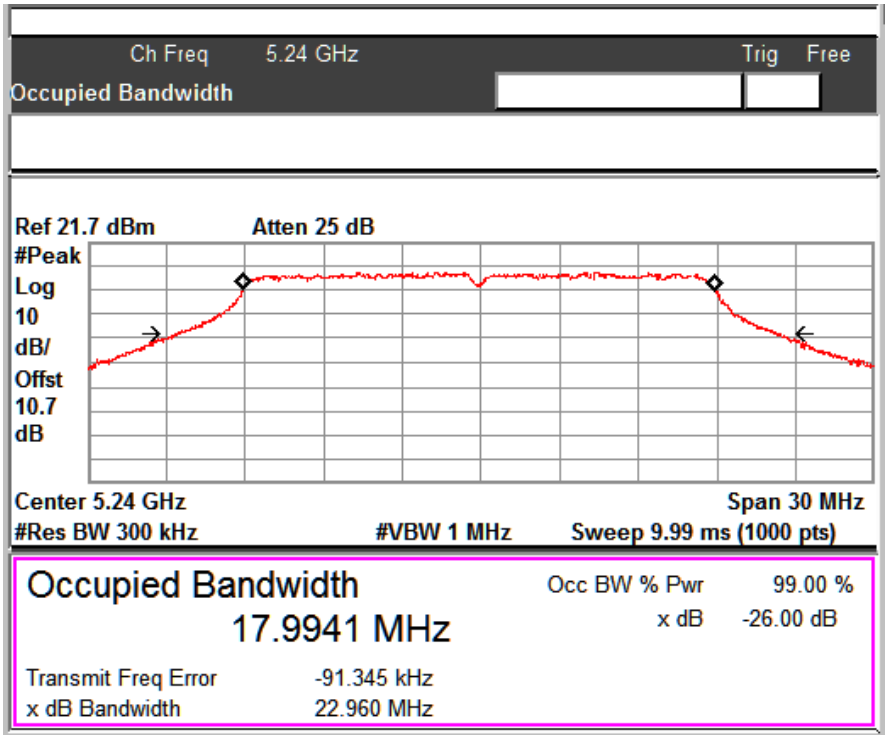
Data Rate: MCS 4 **Channel Frequency: 5180MHz**



Data Rate: MCS 4 **Channel Frequency: 5240MHz**



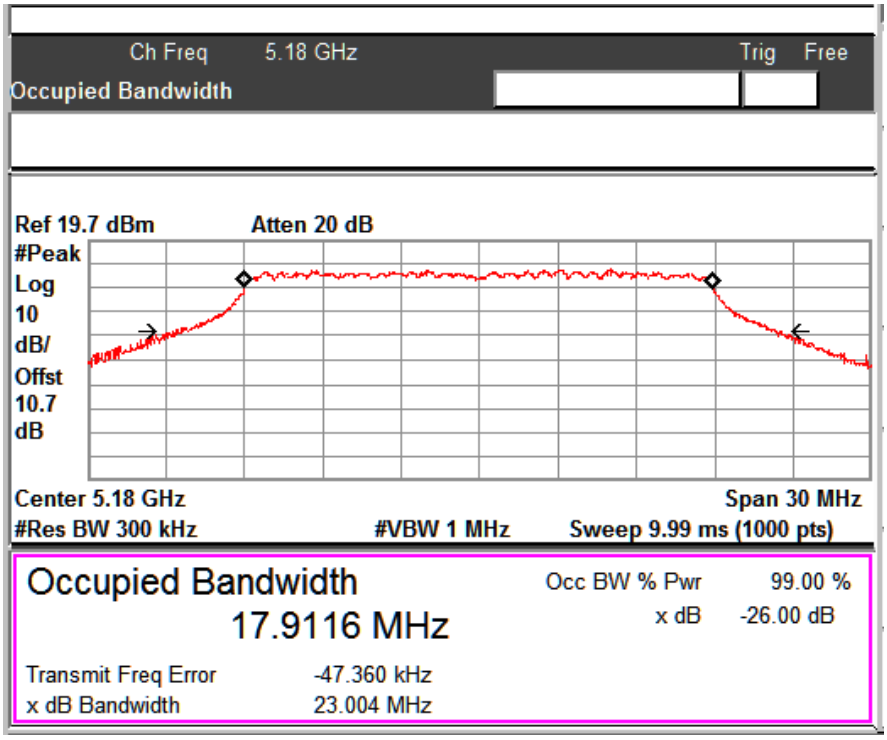
Data Rate: MCS 7 **Channel Frequency: 5180MHz**



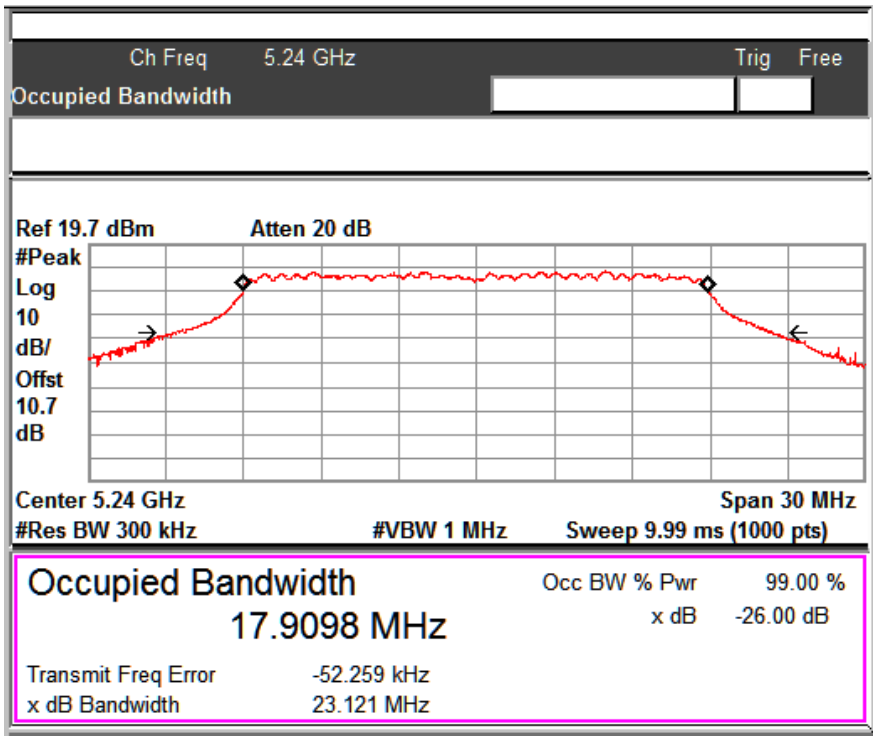
Data Rate: MCS 7 **Channel Frequency: 5240MHz**

Modulation: 802.11n HT 20 MIMO

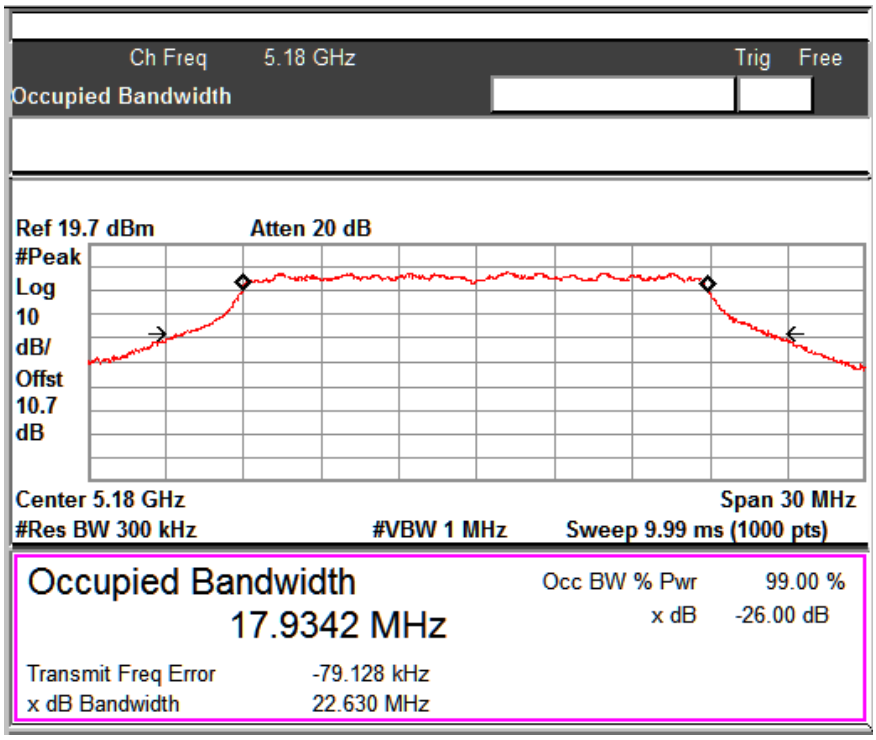
Data Rate (Mbps)	Channel. No	Frequency (MHz)	EBW (MHz)	OBW (MHz)
MCS 8	36	5180	23.00	17.91
	48	5240	23.12	17.90
MCS 11	36	5180	22.63	17.93
	48	5240	22.77	17.92
MCS 15	36	5180	23.72	18.04
	48	5240	23.57	18.03



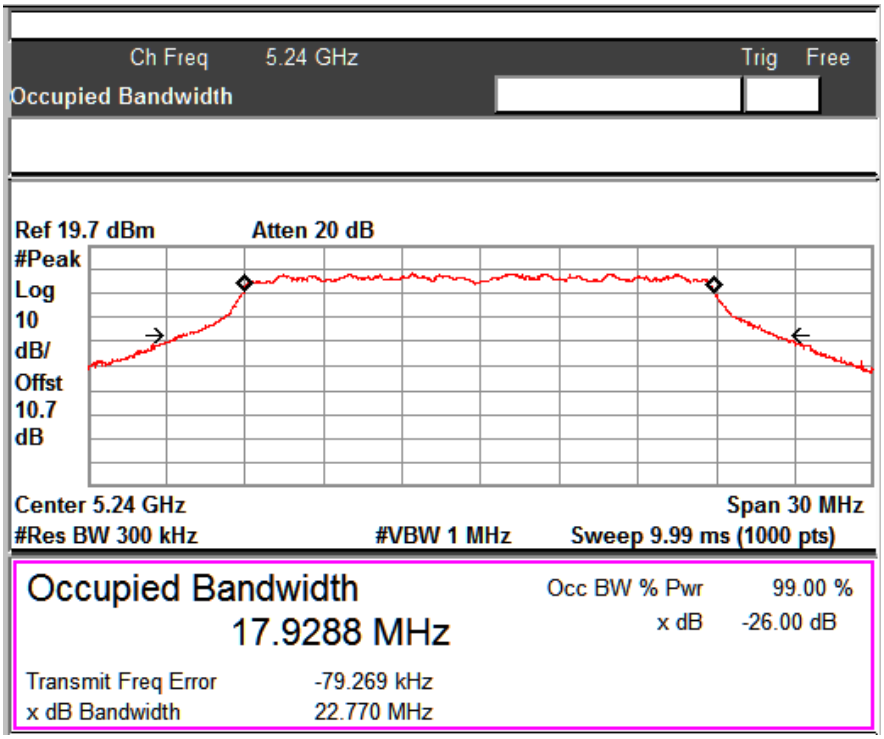
Data Rate: MCS 8 **Channel Frequency: 5180MHz**



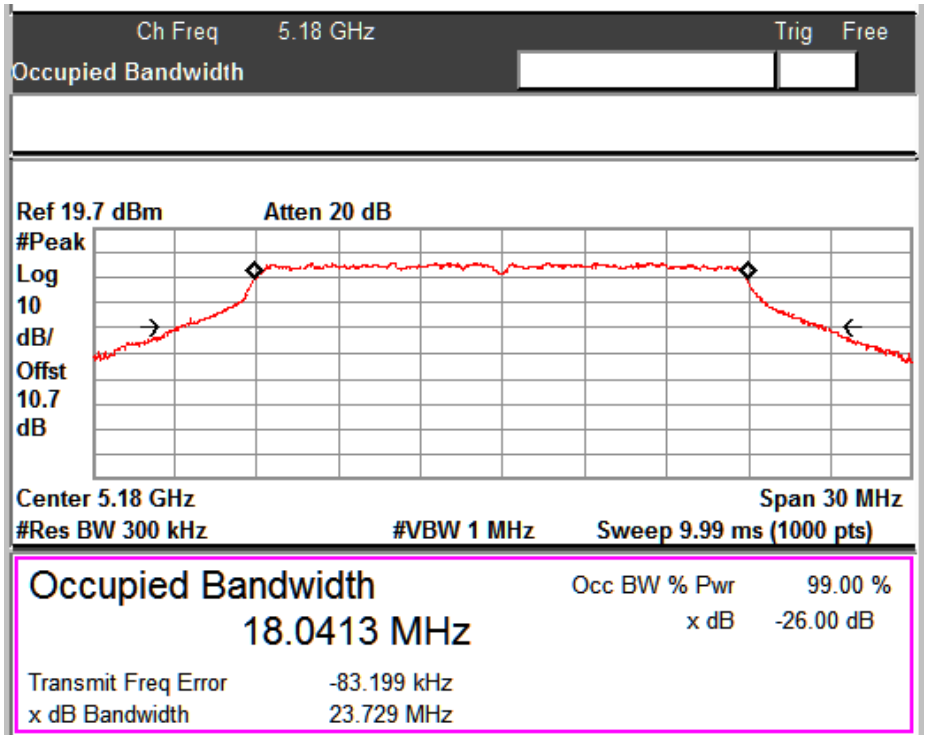
Data Rate: MCS 8 **Channel Frequency: 5240MHz**



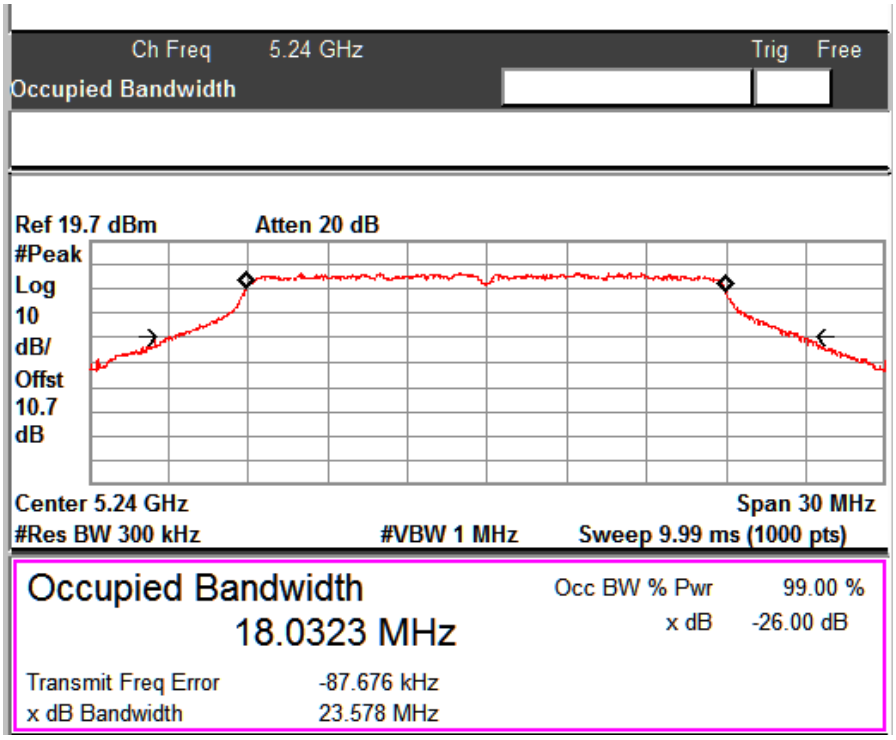
Data Rate: MCS 11 **Channel Frequency: 5180MHz**



Data Rate: MCS 11 **Channel Frequency: 5240MHz**



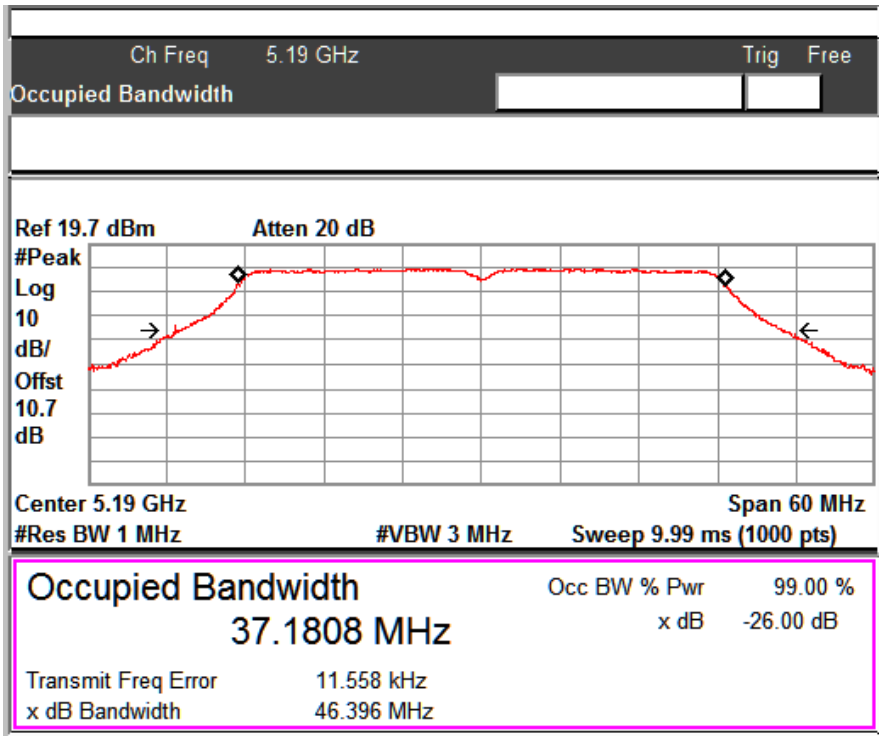
Data Rate: MCS 15 **Channel Frequency: 5180MHz**



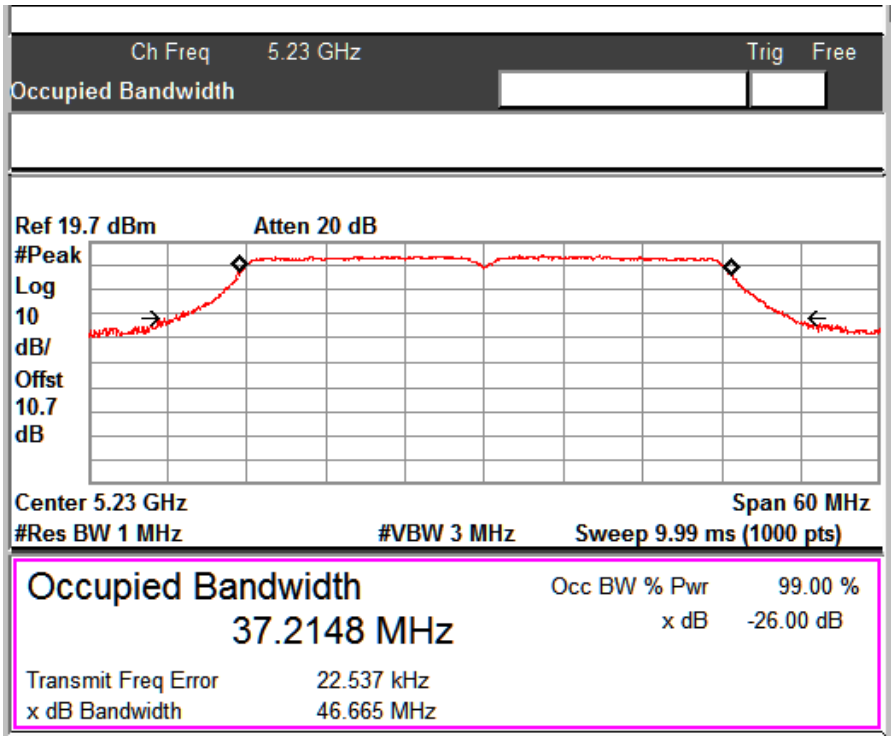
Data Rate: MCS 15 **Channel Frequency: 5240MHz**

Modulation: 802.11n HT 40 SISO

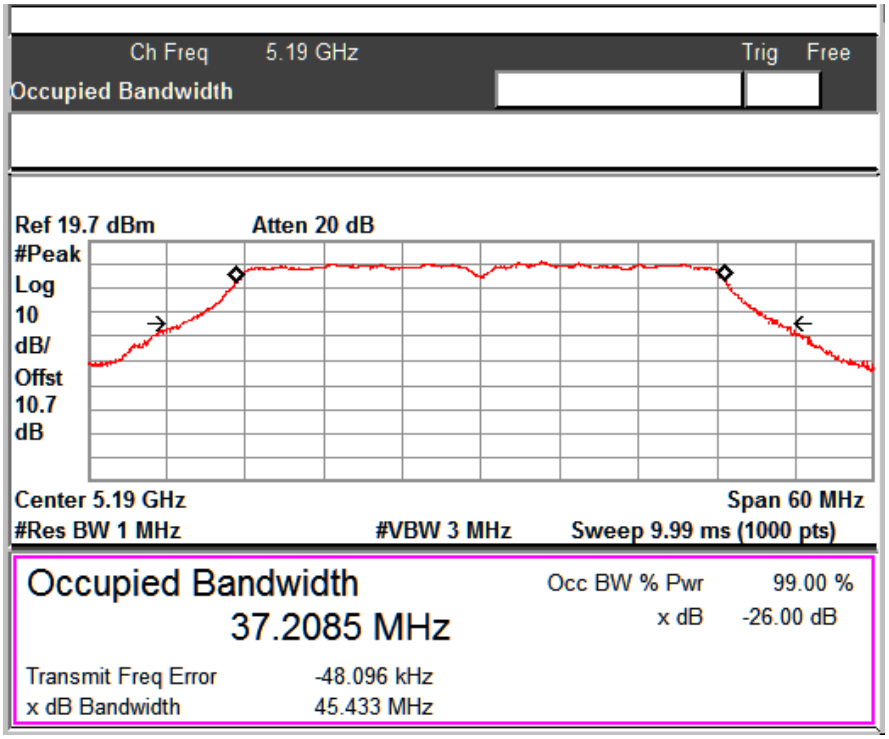
Data Rate (Mbps)	Channel. No	Frequency (MHz)	EBW (MHz)	OBW (MHz)
MCS 0	38	5190	46.39	37.18
	46	5230	46.66	37.21
MCS 4	38	5190	45.43	37.20
	46	5230	46.64	37.29
MCS 7	38	5190	46.31	37.28
	46	5230	46.72	37.38



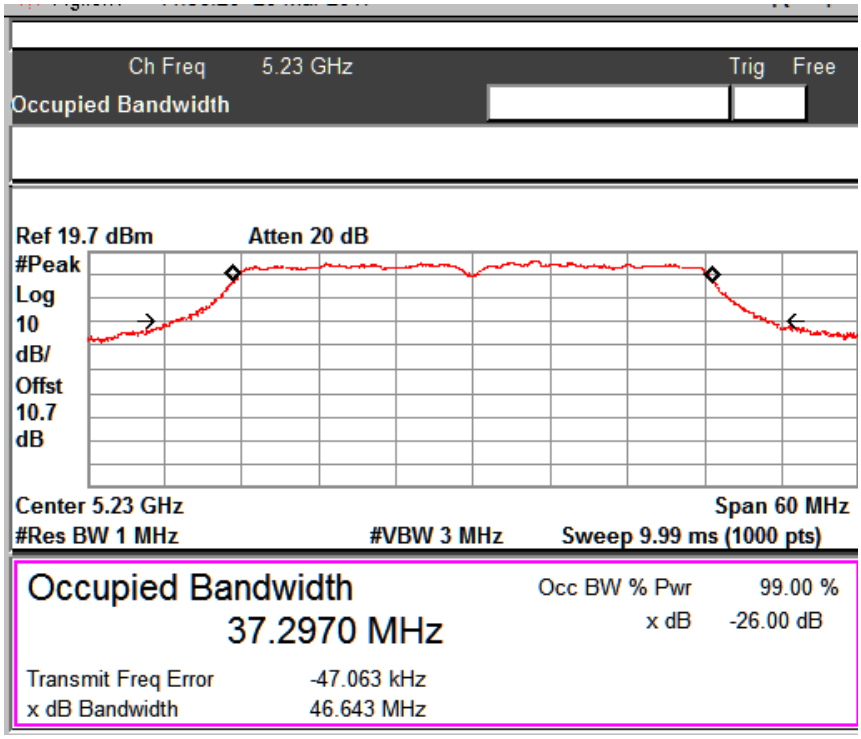
Data Rate: MCS 0 **Channel Frequency: 5190MHz**



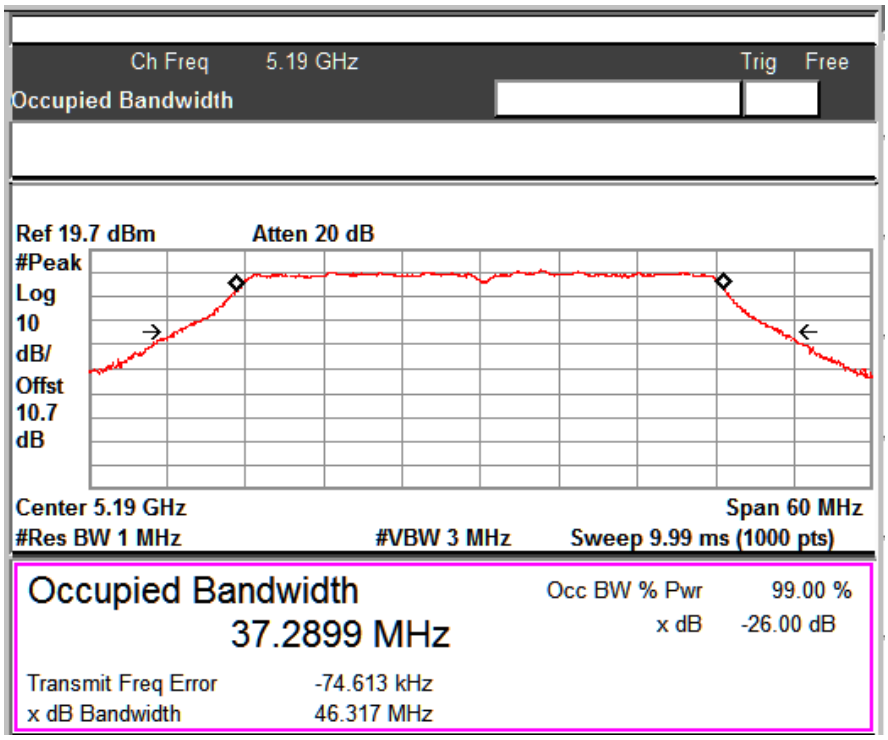
Data Rate: MCS 0 **Channel Frequency: 5230MHz**



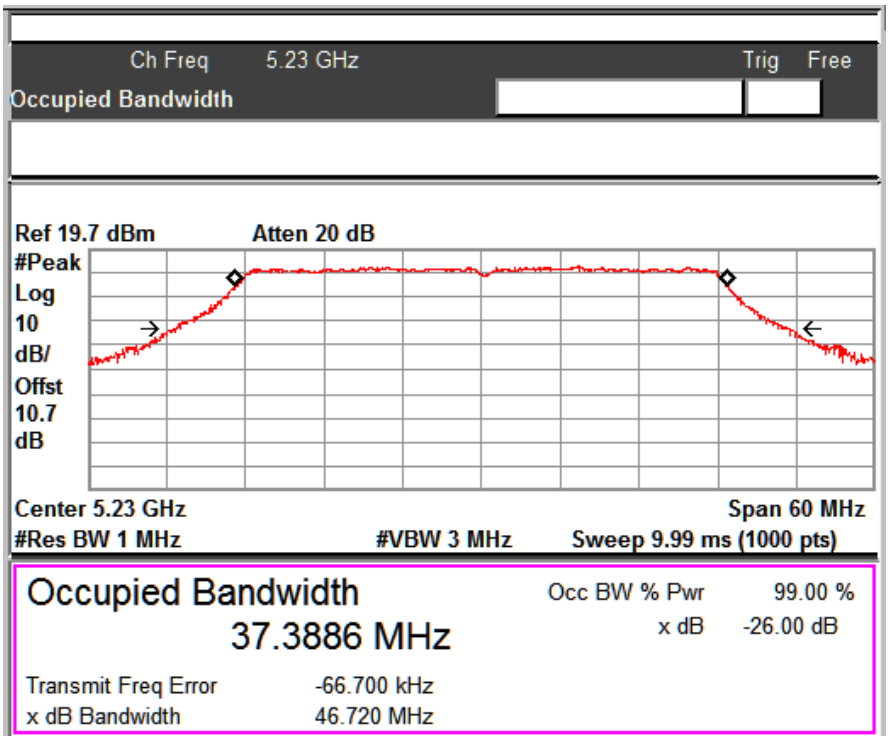
Data Rate: MCS 4 **Channel Frequency: 5190MHz**



Data Rate: MCS 4 **Channel Frequency: 5230MHz**



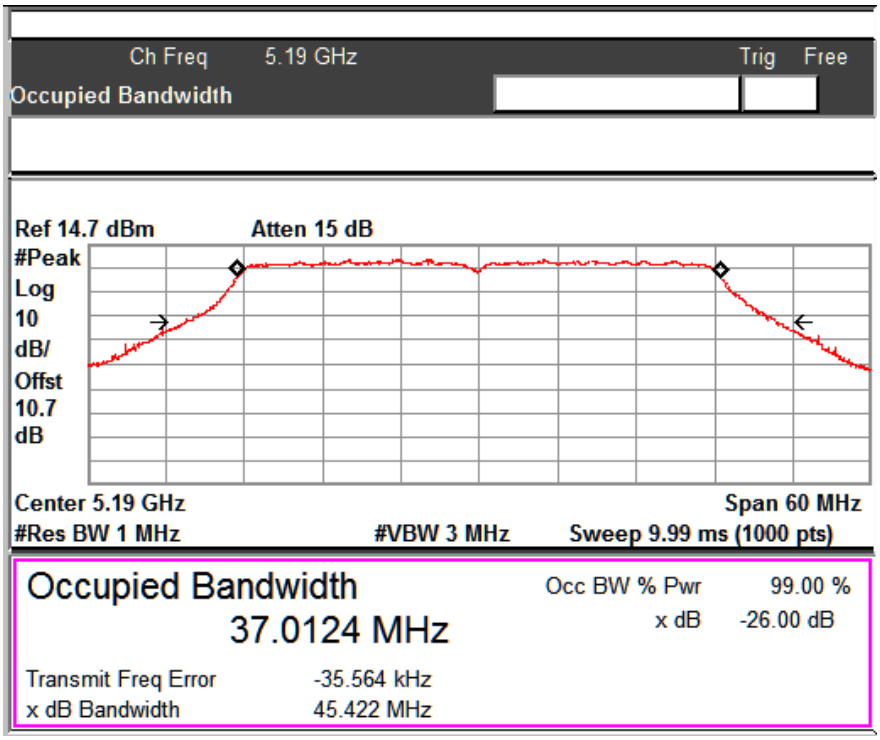
Data Rate: MCS 7 **Channel Frequency: 5190MHz**



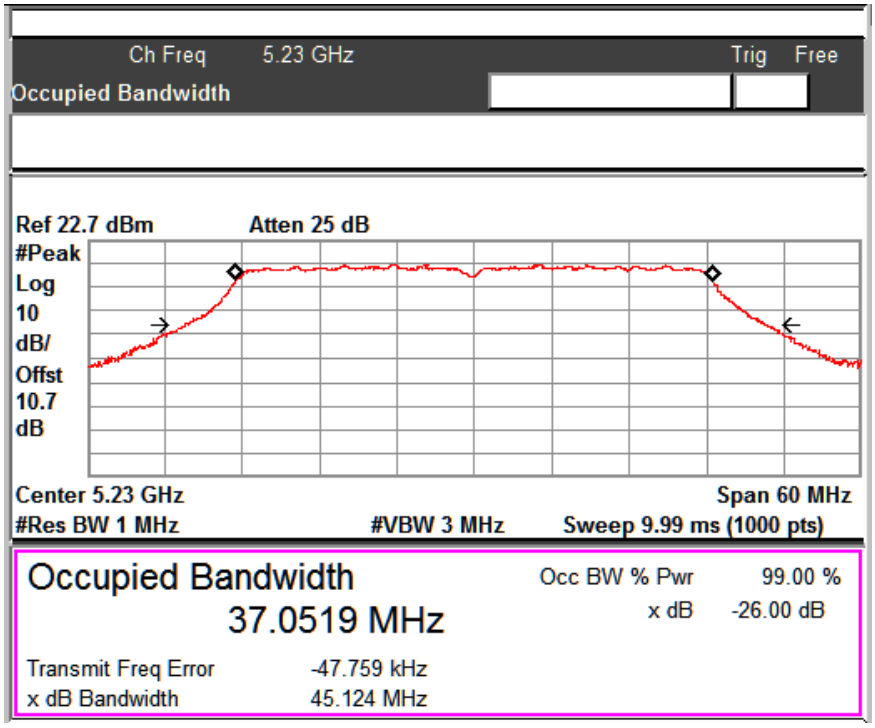
Data Rate: MCS 7 **Channel Frequency: 5230MHz**

Modulation: 802.11n ht 40 MIMO

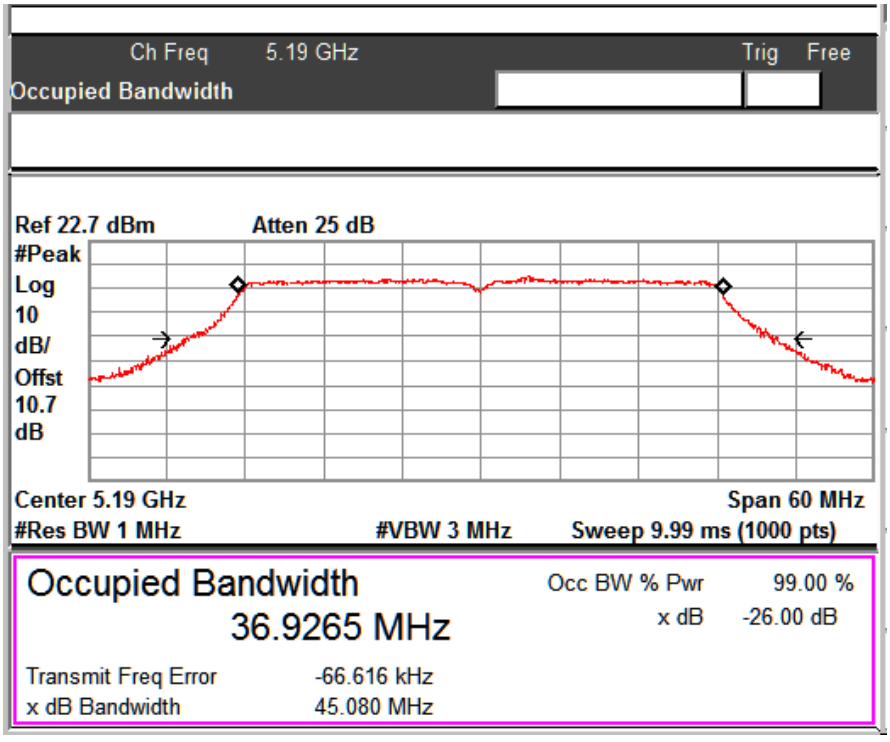
Data Rate (Mbps)	Channel. No	Frequency (MHz)	EBW (MHz)	OBW (MHz)
MCS 8	38	5190	45.42	37.01
	46	5230	45.12	37.05
MCS 11	38	5190	45.08	36.92
	46	5230	45.43	37.03
MCS 15	38	5190	45.26	37.26
	46	5230	45.38	37.30



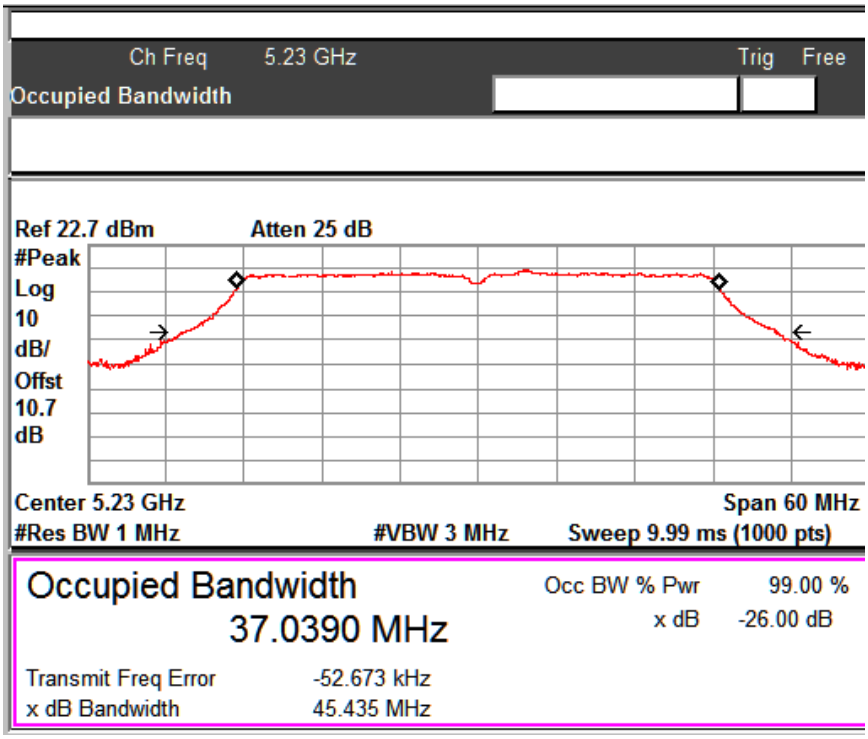
Data Rate: MCS 8 **Channel Frequency: 5190MHz**



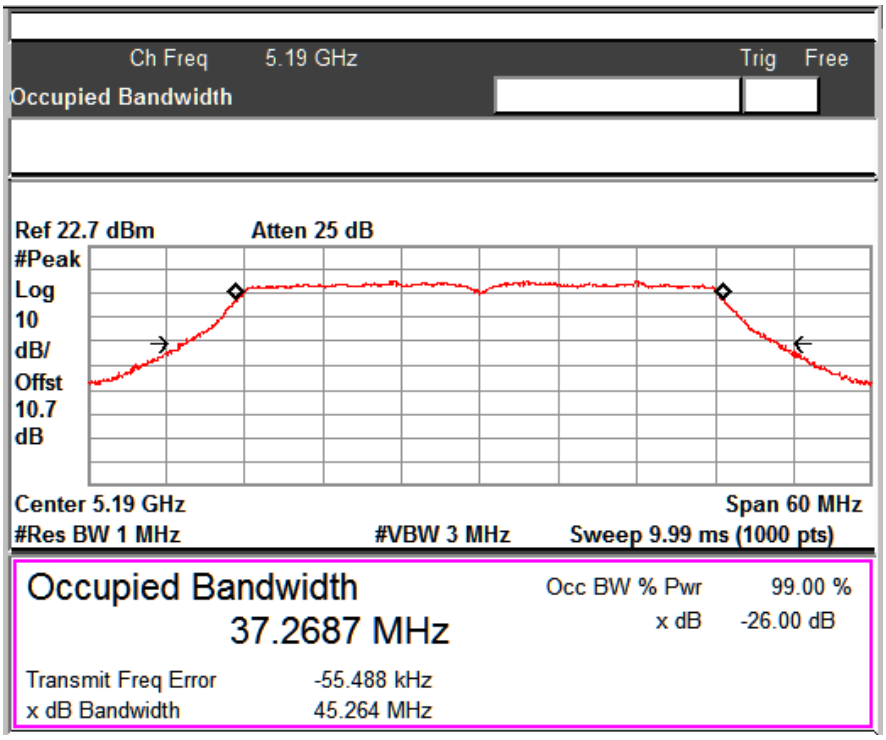
Data Rate: MCS 8 **Channel Frequency: 5230MHz**



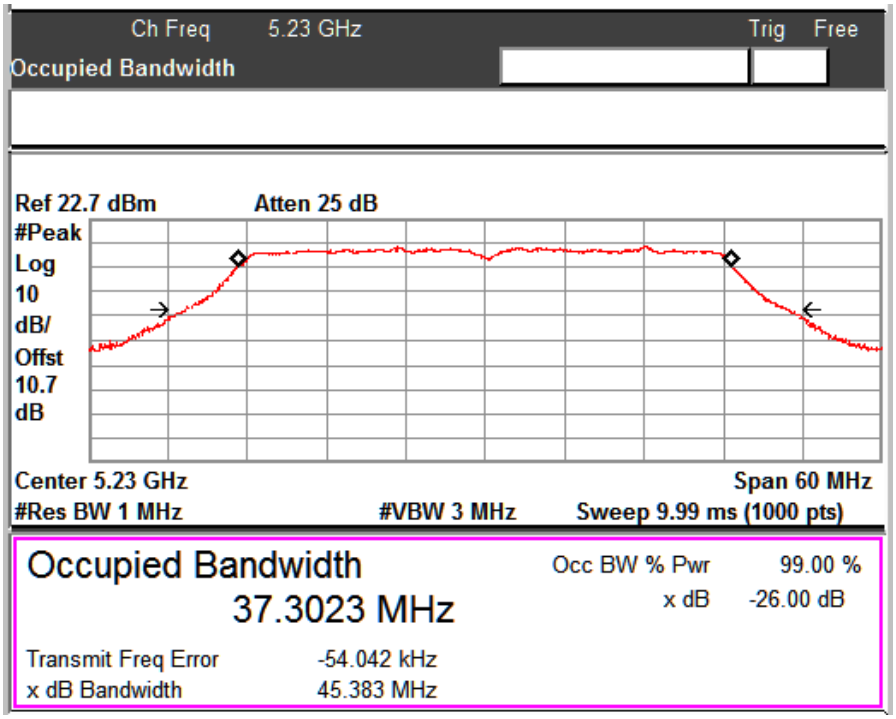
Data Rate: MCS 11 **Channel Frequency: 5190MHz**



Data Rate: MCS 11 **Channel Frequency: 5230MHz**



Data Rate: MCS 15 **Channel Frequency: 5190MHz**

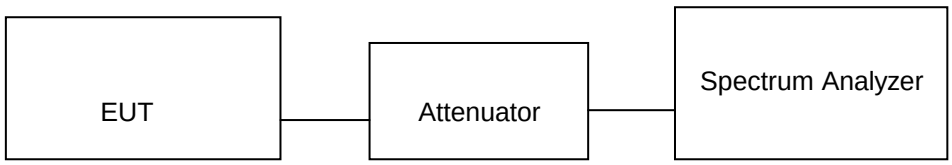


Data Rate: MCS 15 **Channel Frequency: 5230MHz**

Maximum conducted output power **Section 15.407(a)**
Result **Pass**

Test Specification	FCC Part 15 Subpart E
Measurement Bandwidth (RBW)	1 MHz
Requirement	For the band 5150 - 5350 MHz, 5470 – 5725 MHz, 5725 – 5850 MHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4dBm + 10log B, where B is the 26- dB emission bandwidth in MHz

Test Method:

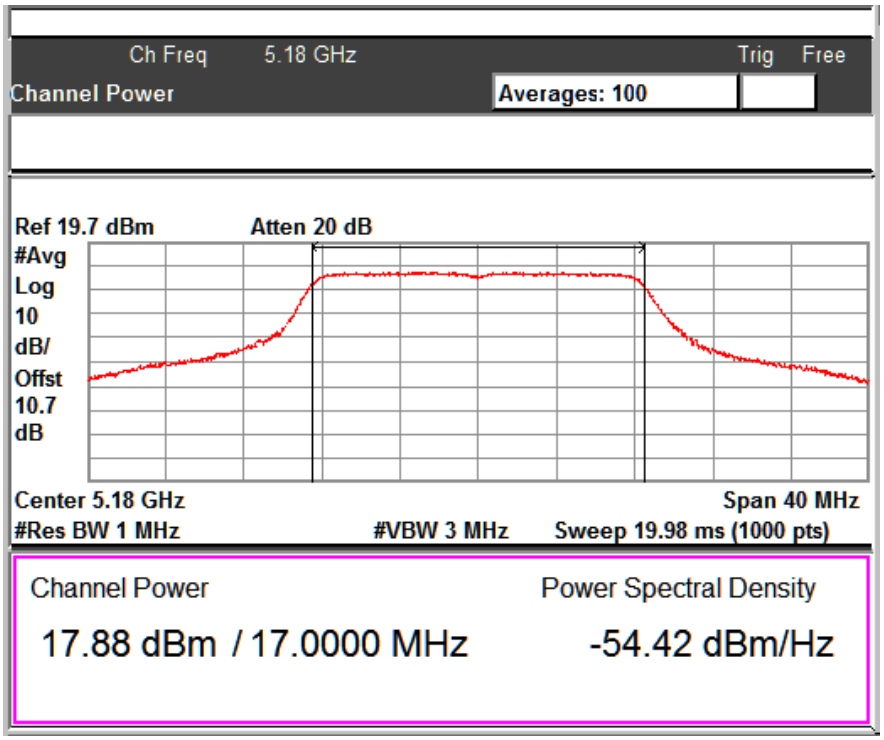


Offset value 10.7dB is added in the final measurement value.

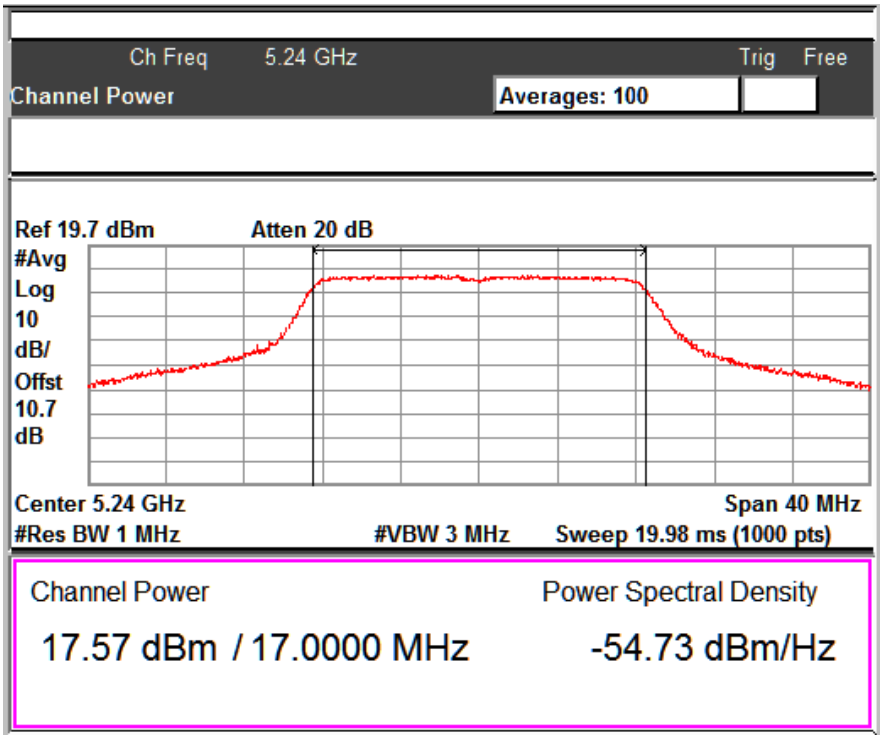
Test Result:

Modulation: 802.11a
Note: Test was performed on both the transmit chains and worst case results were from chain 1 and the respective results has been reported.

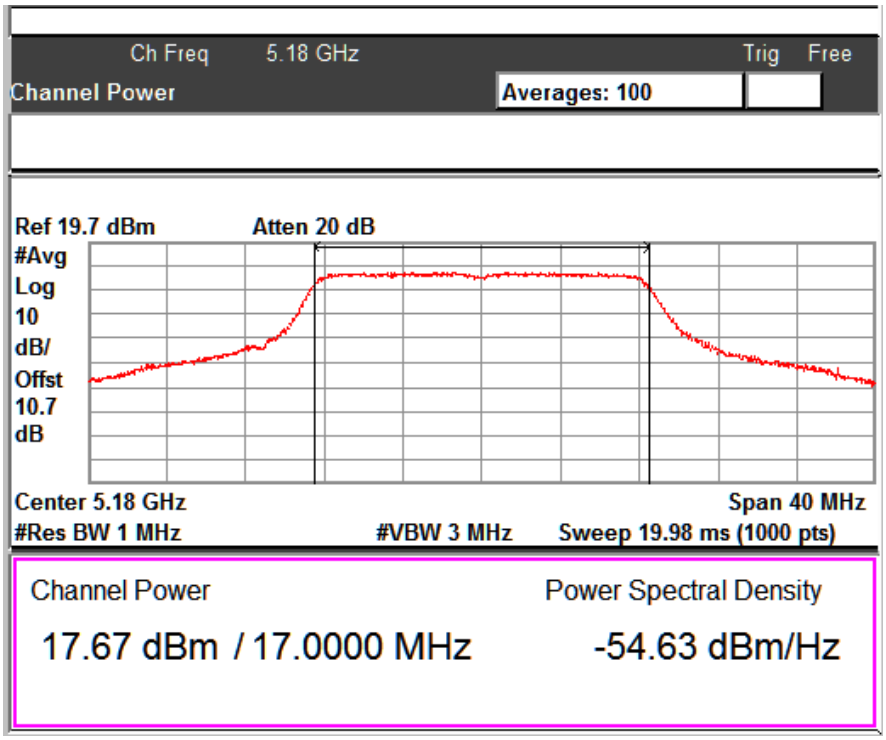
Data Rate (Mbps)	Channel No.	Frequency (MHz)	Output power (dBm)	Limit (dBm)	Margin (dB)
6	36	5180	17.88	23.00	-5.12
	48	5240	17.57	23.00	-5.43
24	36	5180	17.67	23.00	-5.33
	48	5240	17.28	23.00	-5.72
54	36	5180	16.03	23.00	-6.97
	48	5240	14.86	23.00	-8.14



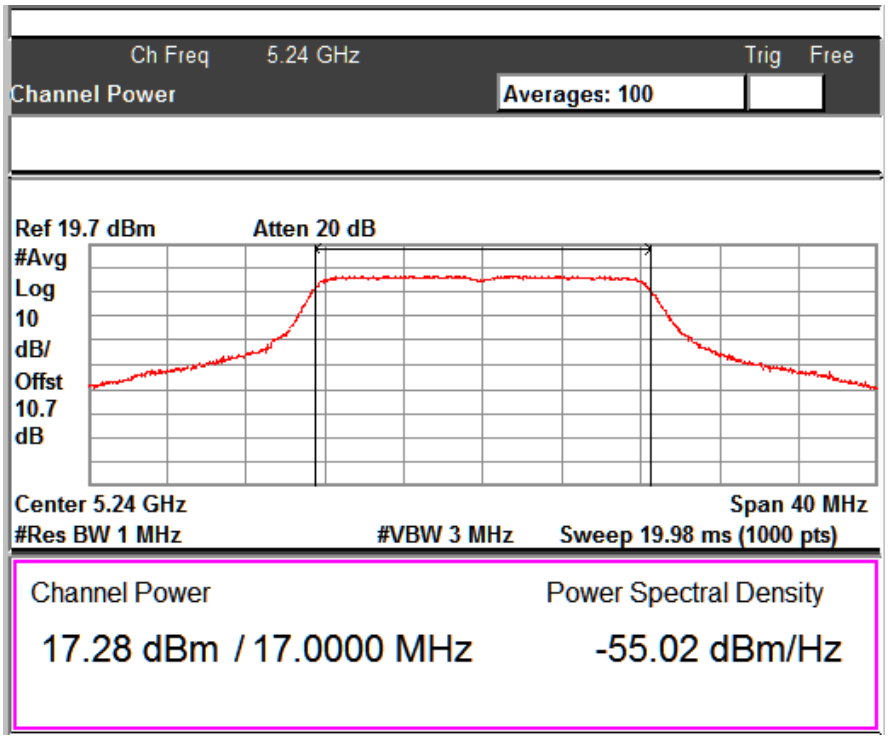
Data Rate: 6Mbps **Channel Frequency: 5180MHz**



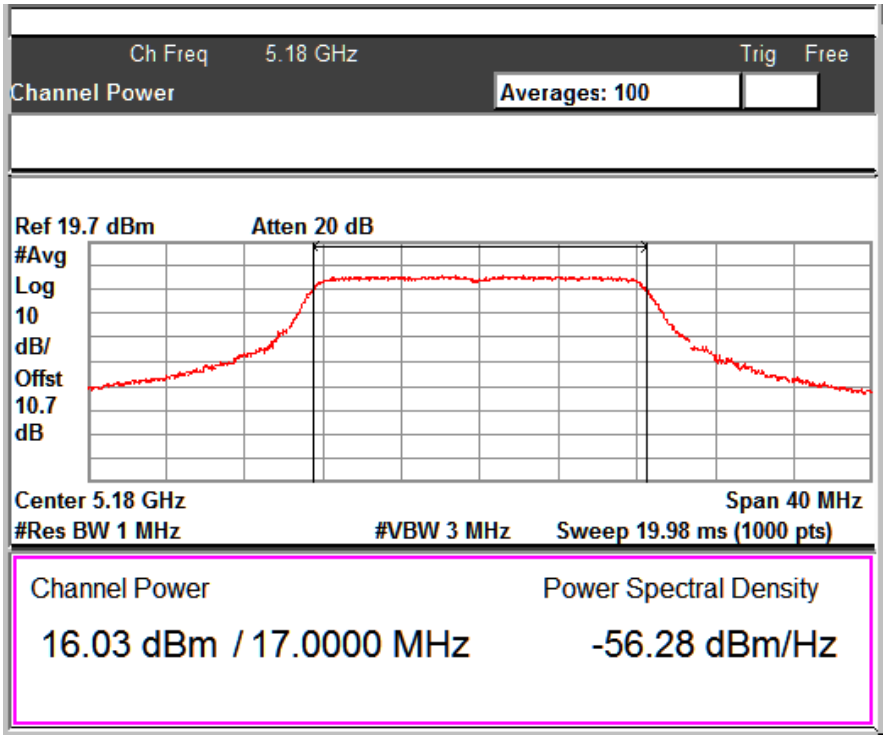
Data Rate: 6Mbps **Channel Frequency: 5240MHz**



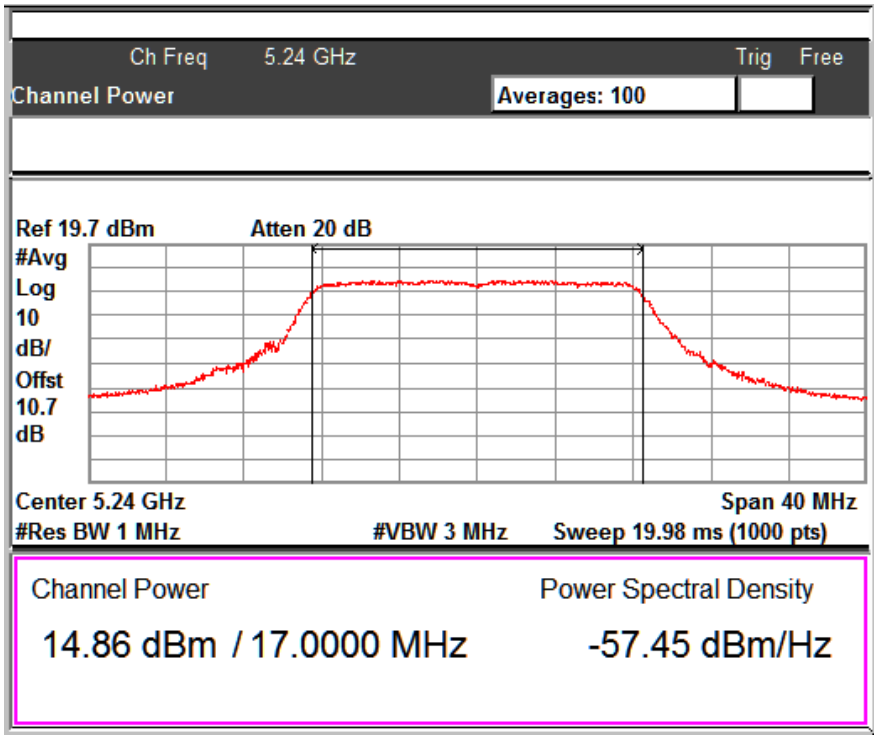
Data Rate: 24Mbps **Channel Frequency: 5180MHz**



Data Rate: 24Mbps **Channel Frequency: 5240MHz**



Data Rate: 54Mbps **Channel Frequency: 5180MHz**

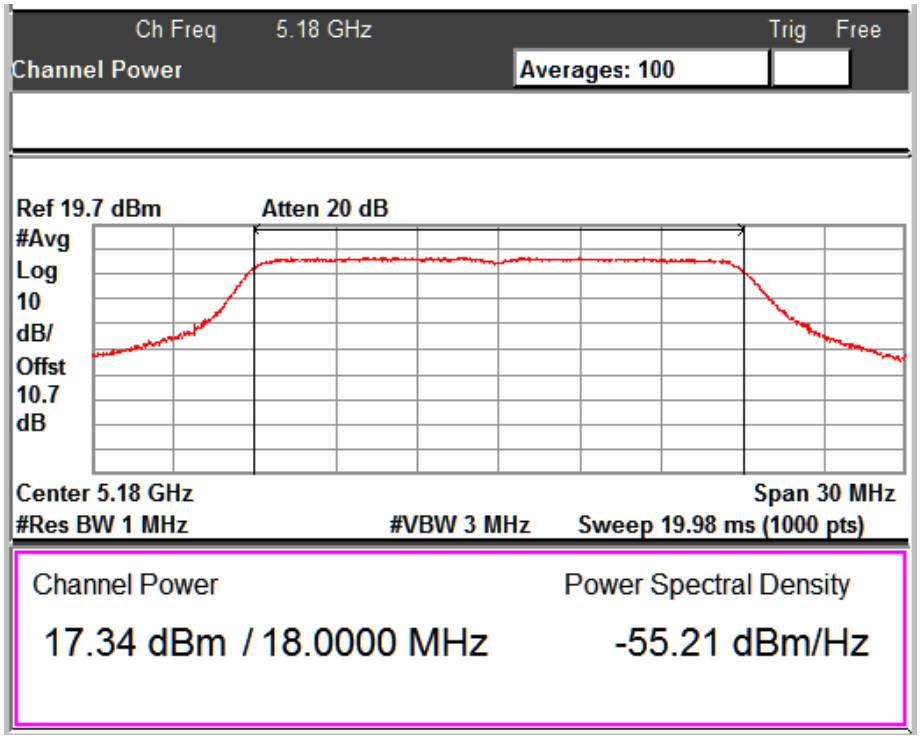


Data Rate: 54Mbps **Channel Frequency: 5240MHz**

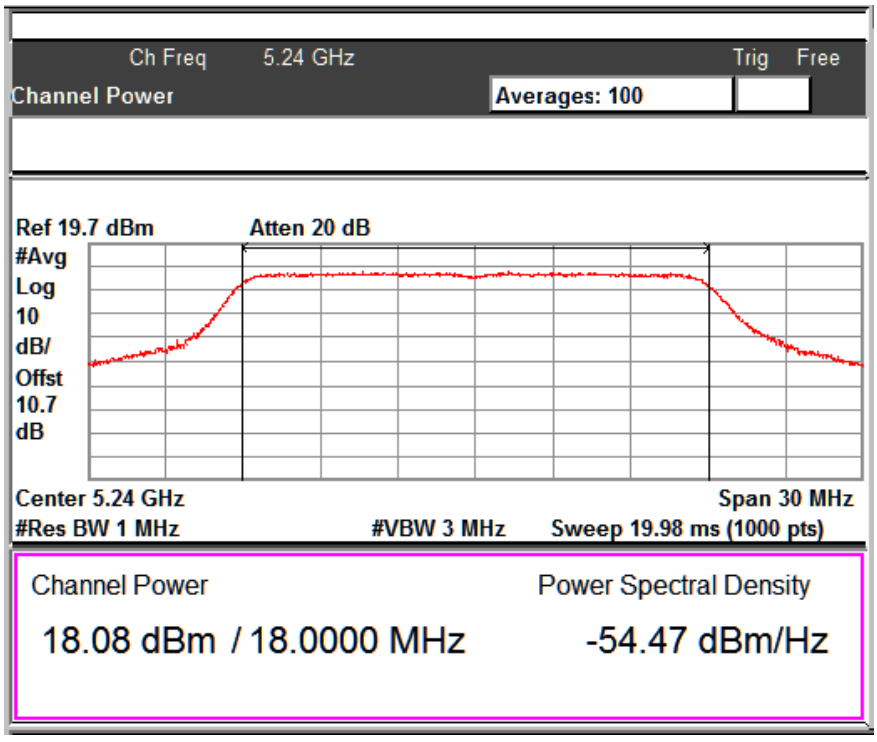
Modulation: 802.11ac vht 20

Note: Test was performed on both the transmit chains and worst case results were from chain 1 and the respective results has been reported.

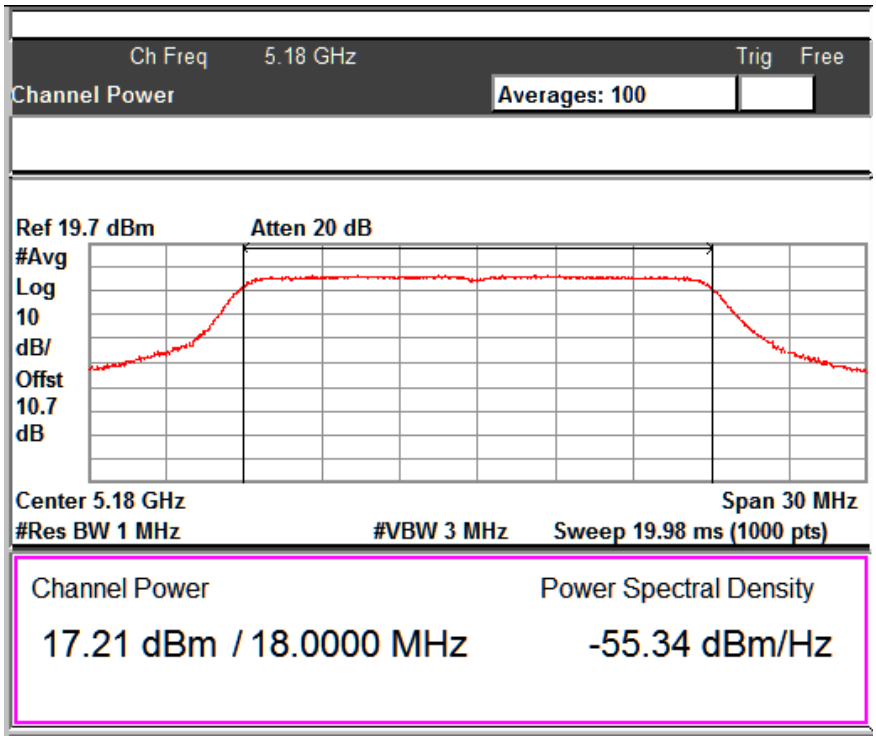
Data Rate (Mbps)	Channel No.	Frequency (MHz)	Output power (dBm)	Limit (dBm)	Margin (dB)
MCS 0	36	5180	17.34	23	-5.660
	48	5240	18.08	23	-4.920
MCS4	36	5180	17.21	23	-5.790
	48	5240	17.98	23	-5.020
MCS 7	36	5180	16.04	23	-6.960
	48	5240	15.96	23	-7.040



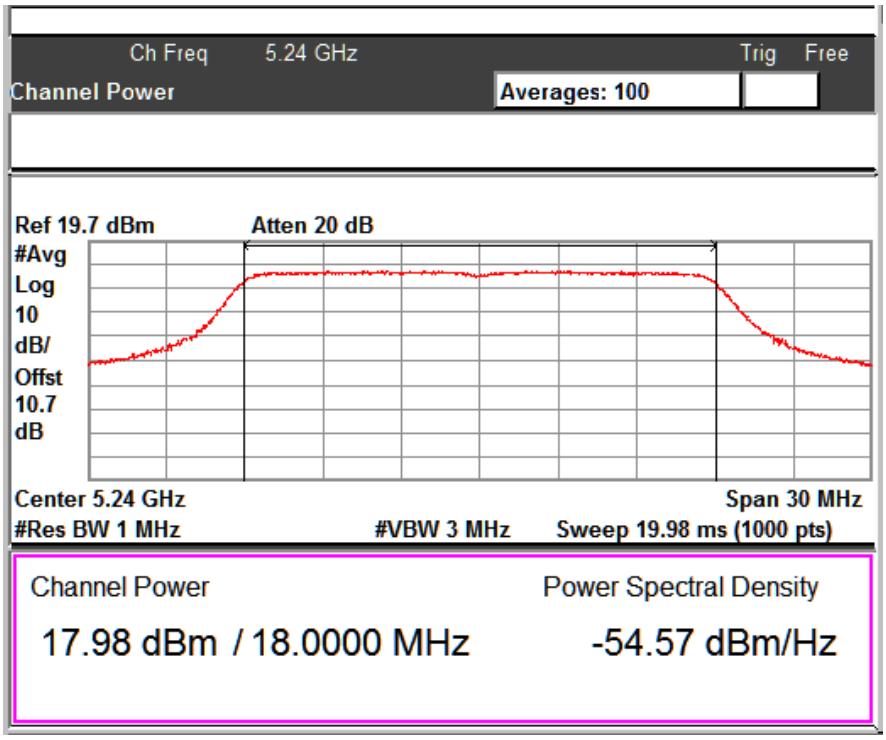
Data Rate: MCS 0 **Channel Frequency: 5180MHz**



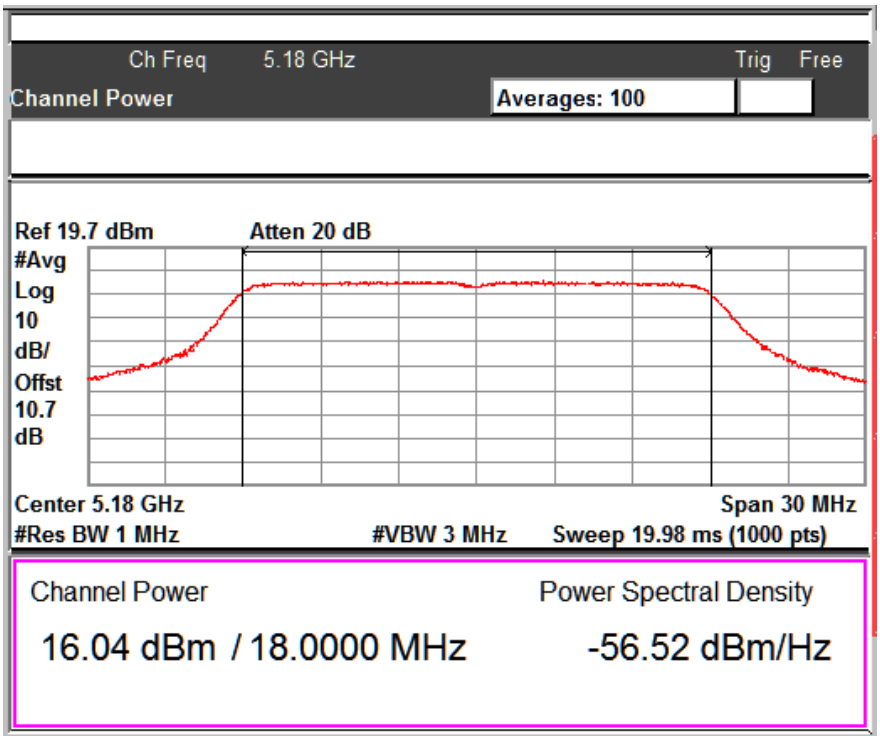
Data Rate: MCS 0 **Channel Frequency: 5240MHz**



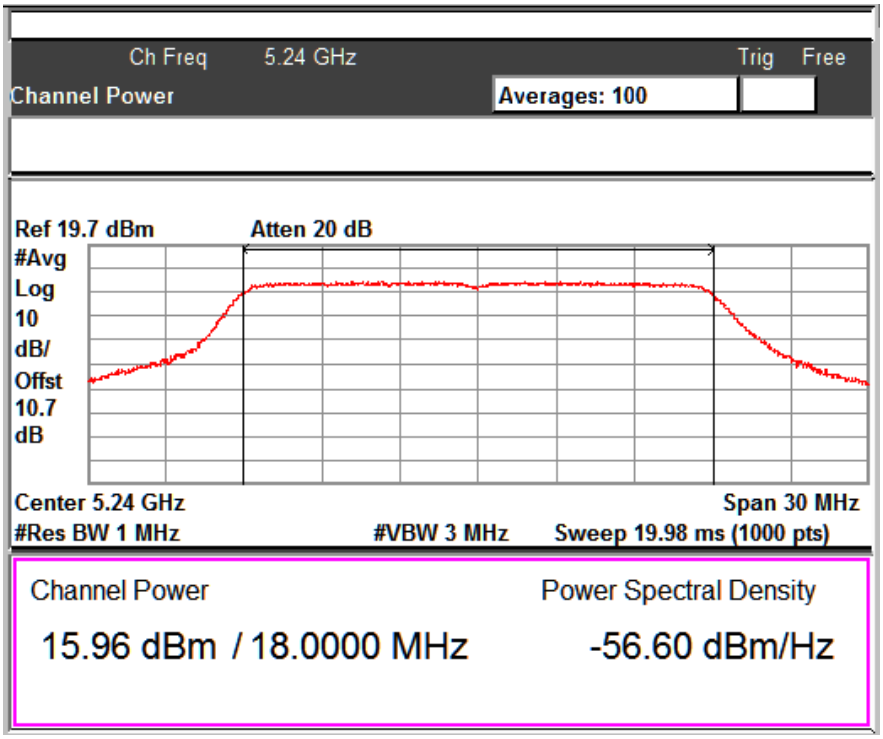
Data Rate: MCS 4 **Channel Frequency: 5180MHz**



Data Rate: MCS 4 **Channel Frequency: 5240MHz**



Data Rate: MCS 7 **Channel Frequency: 5180MHz**



Data Rate: MCS 7 **Channel Frequency: 5240MHz**

Modulation: 802.11ac vht 20 MIMO
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.

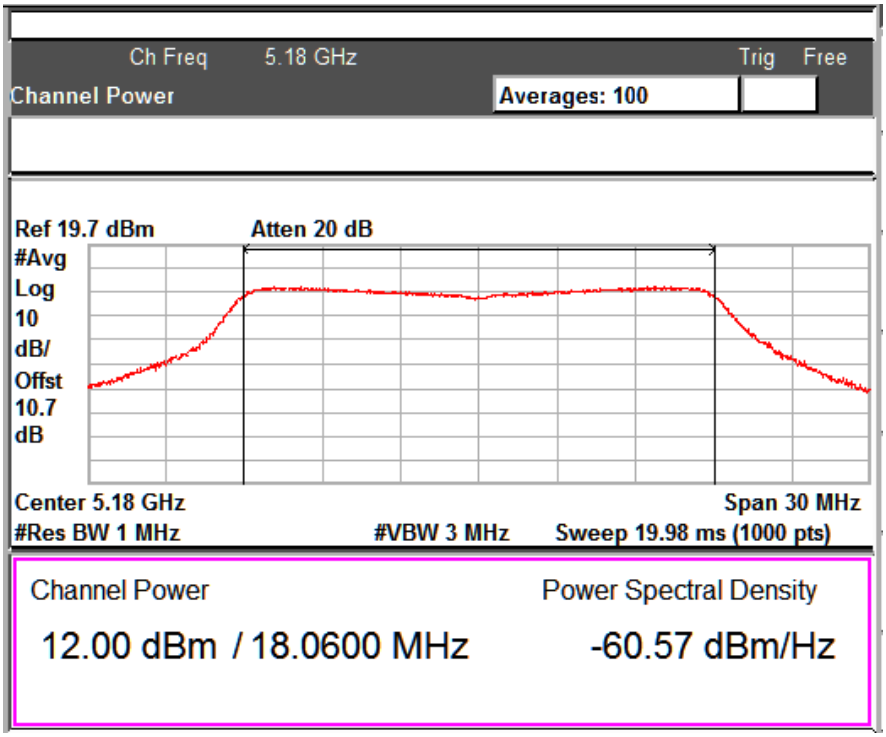
Directional gain = 10 log[(10G1 /20 + 10G2 /20 + … + 10GN /20) 2 /NANT] dBi [Note the “20”s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

Directional gain =10*LOG((10^(4.47/20)+10^(5/20))^2/2) = 7.75dBi

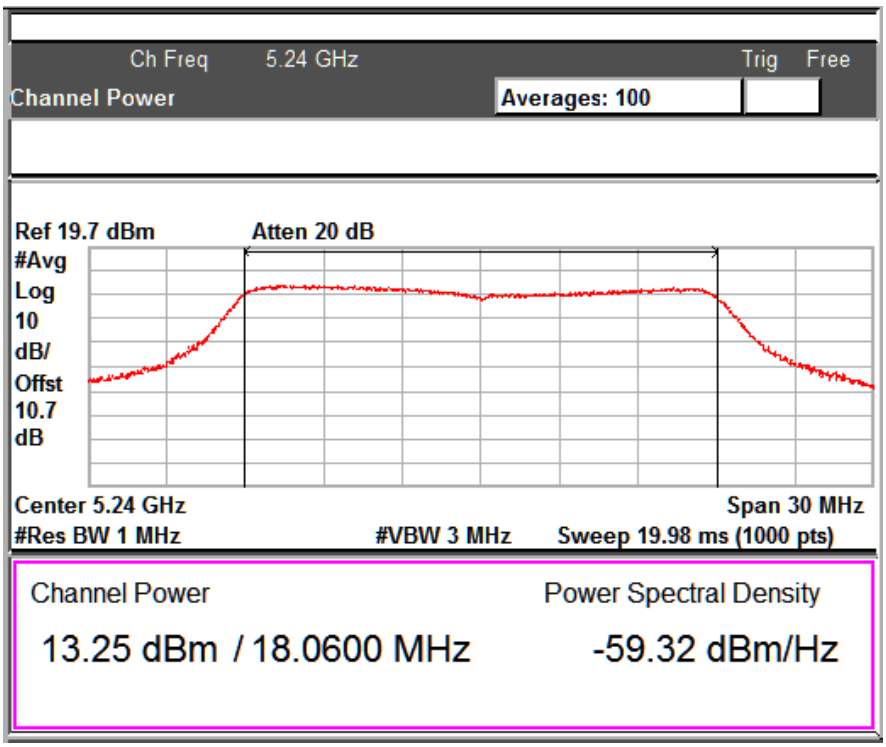
Since the antenna gain is more than 6dBi, the power limit has been reduced accordingly.

$P_{out} = P_{limit}-(G_{tx}-6) = 23-(7.75-6) = 21.25dBm$

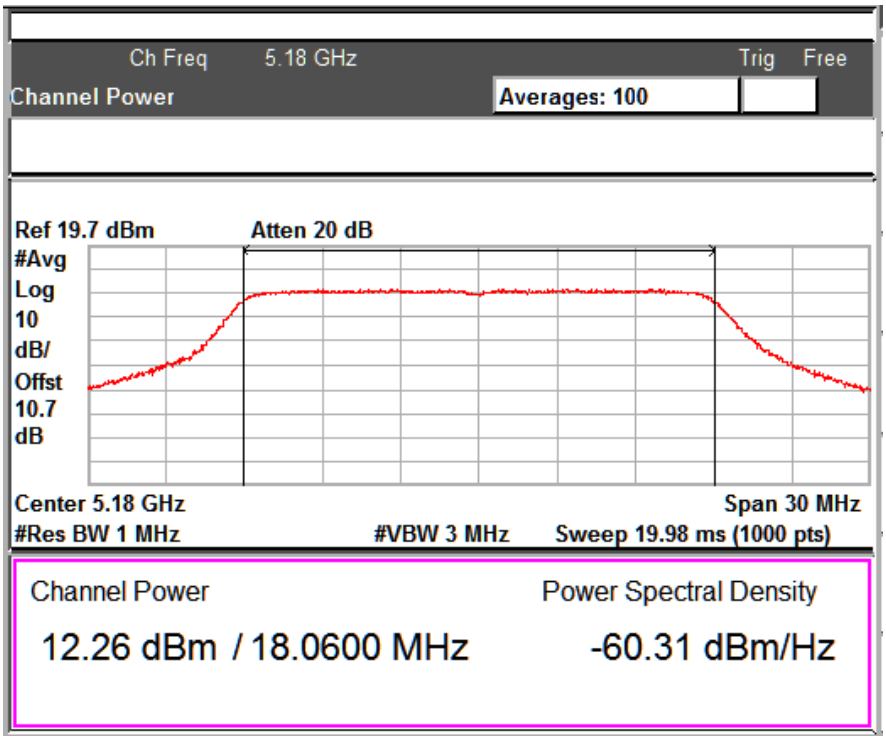
Data Rate (Mbps)	Channel No.	Frequency (MHz)	CH 0 Output power (dBm)	CH 0 Output power (mW)	CH 1 Output power (dBm)	CH 1 Output power (mW)	Final Power (mW)	Final Power (dBm)	Limit (dBm)	Margin (dB)
MCS 8	36	5180	12.00	15.84	12.69	18.57	34.41	15.369	21.25	-5.881
	48	5240	13.25	21.13	14.01	25.17	46.30	16.657	21.25	-4.593
MCS 11	36	5180	12.26	16.82	12.58	18.11	34.93	15.433	21.25	-5.817
	48	5240	13.69	23.38	13.87	24.37	47.75	16.791	21.25	-4.459
MCS 15	36	5180	11.11	12.91	11.56	14.32	27.23	14.351	21.25	-6.899
	48	5240	12.67	18.49	12.73	18.74	37.23	15.710	21.25	-5.540



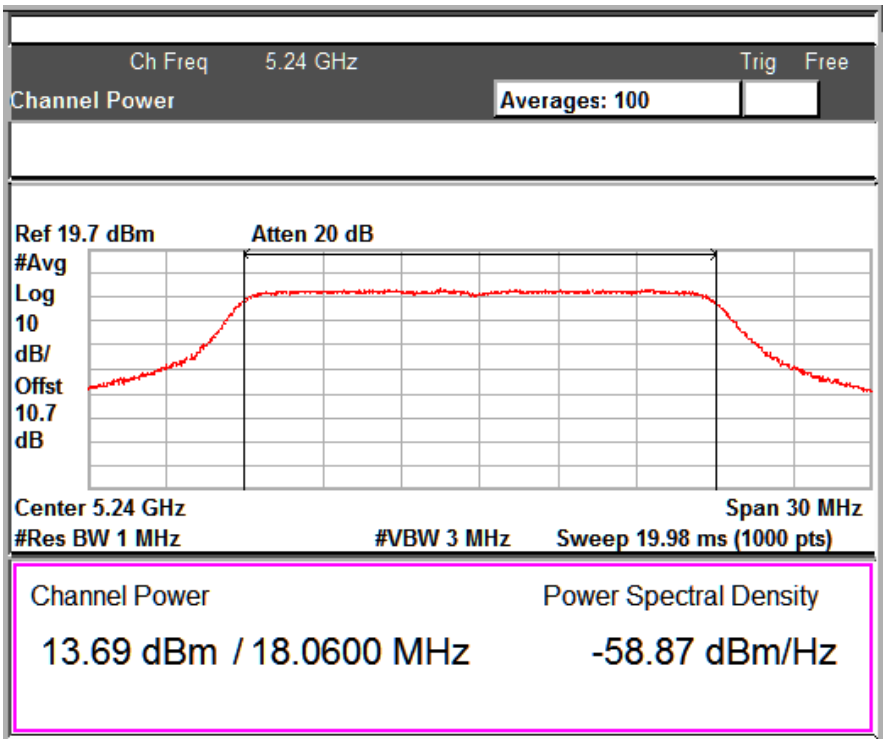
Data Rate: MCS 8 **Channel Frequency: 5180MHz**



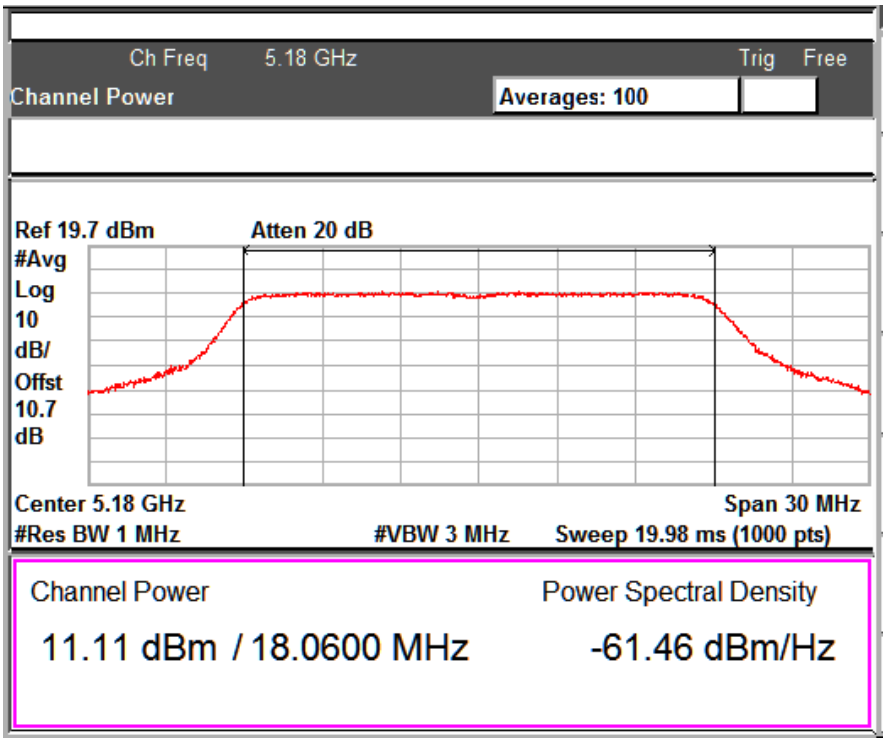
Data Rate: MCS 8 **Channel Frequency: 5240MHz**



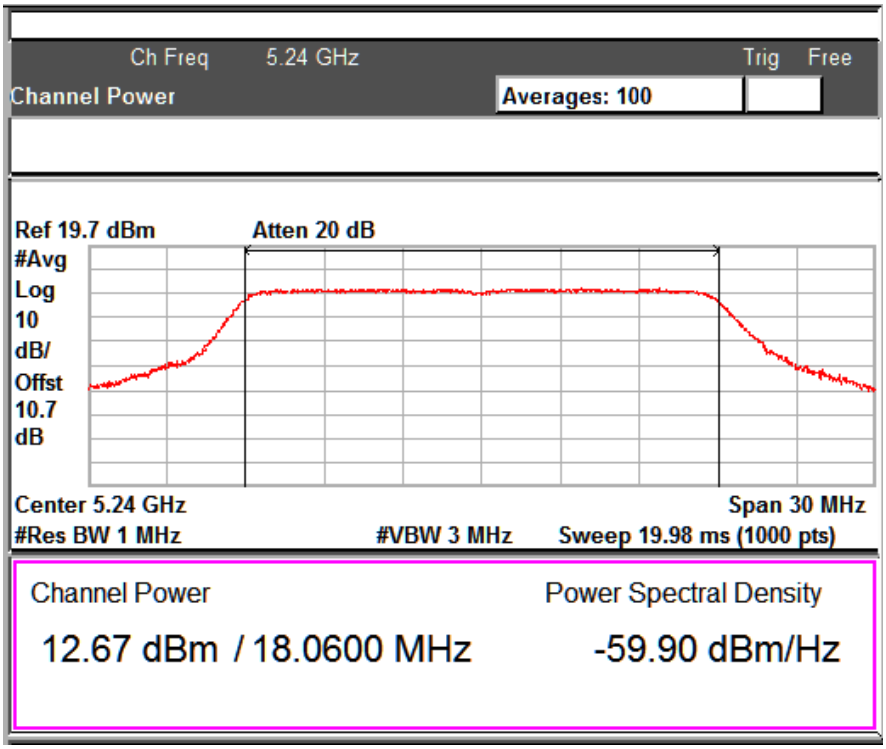
Data Rate: MCS 11 **Channel Frequency: 5180MHz**



Data Rate: MCS 11 **Channel Frequency: 5240MHz**

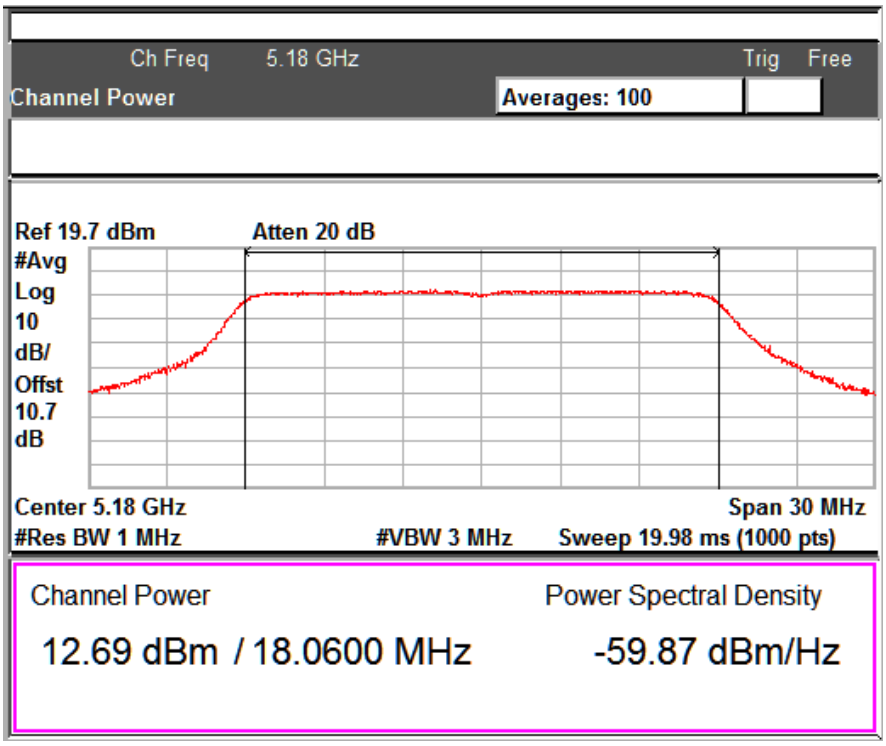


Data Rate: MCS 15 **Channel Frequency: 5180MHz**

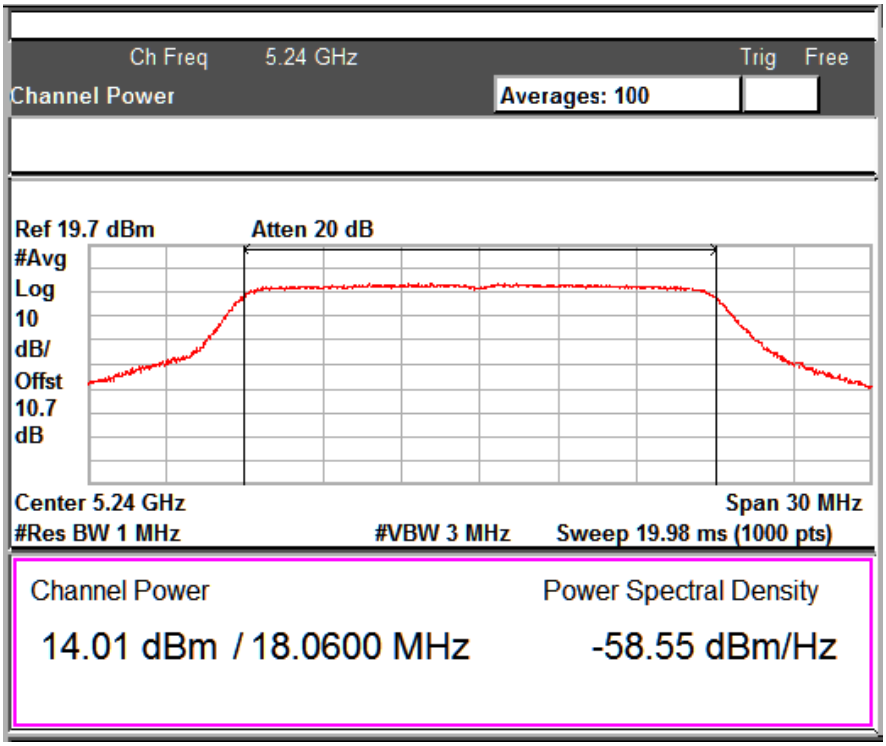


Data Rate: MCS 15 **Channel Frequency: 5240MHz**

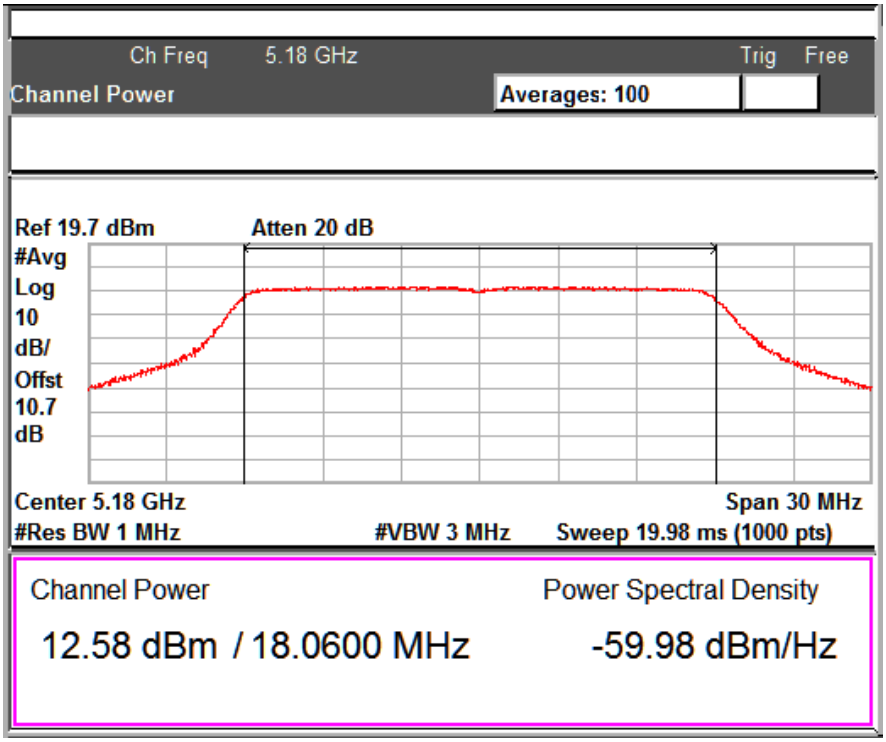
Chain 1



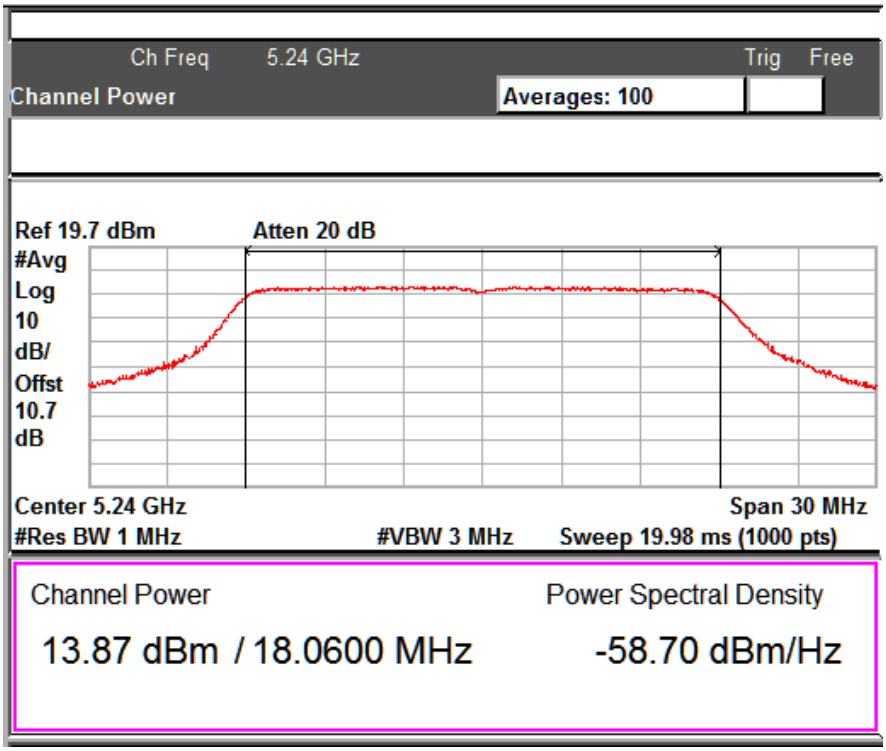
Data Rate: MCS 8 **Channel Frequency: 5180MHz**



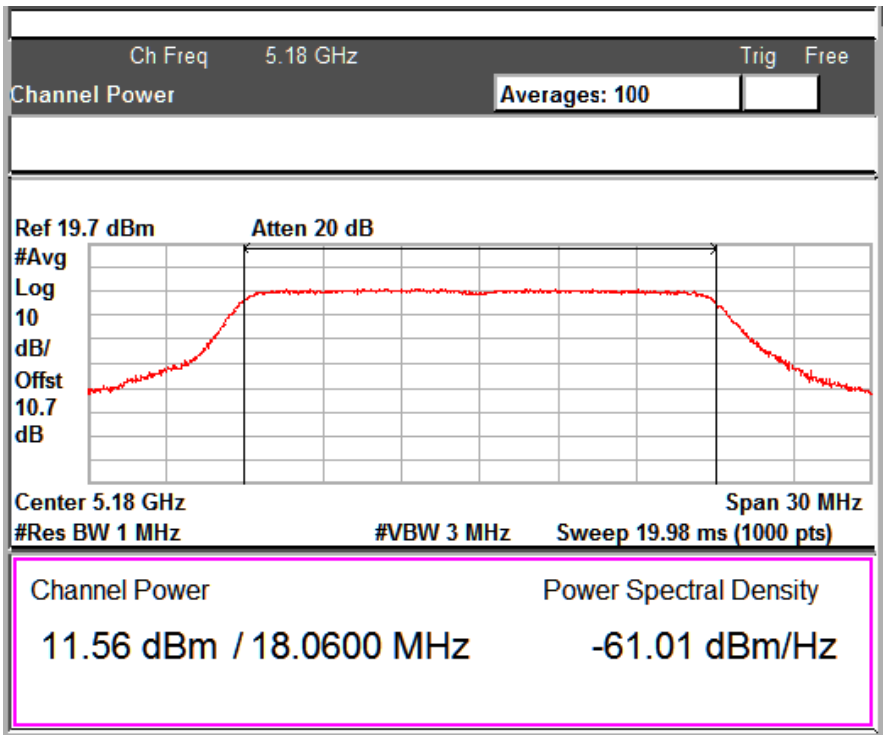
Data Rate: MCS 8 **Channel Frequency: 5240MHz**



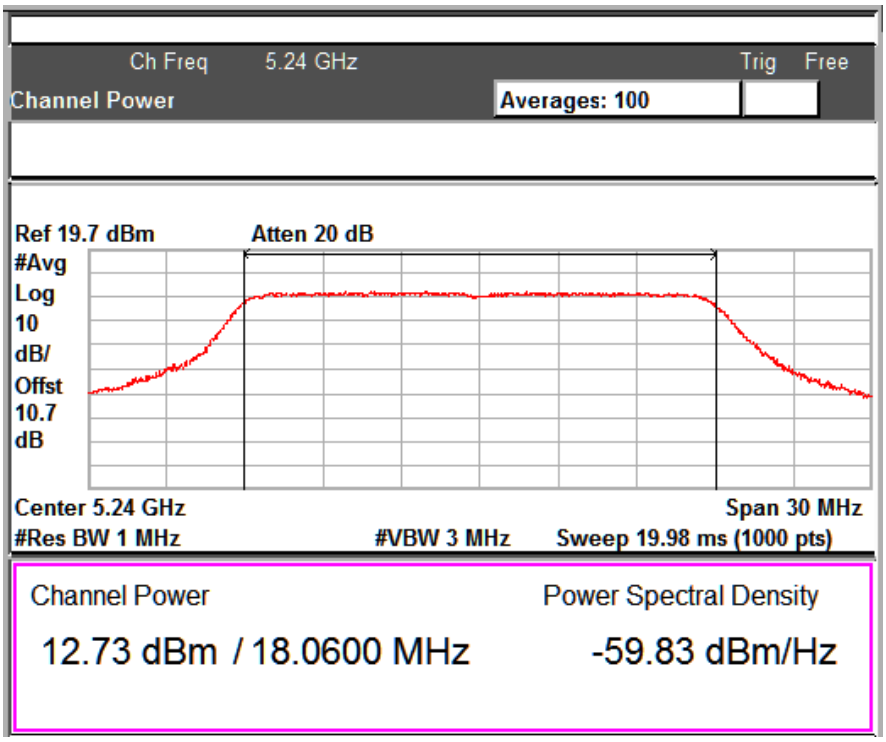
Data Rate: MCS 11 **Channel Frequency: 5180MHz**



Data Rate: MCS 11 **Channel Frequency: 5240MHz**



Data Rate: MCS 15 **Channel Frequency: 5180MHz**

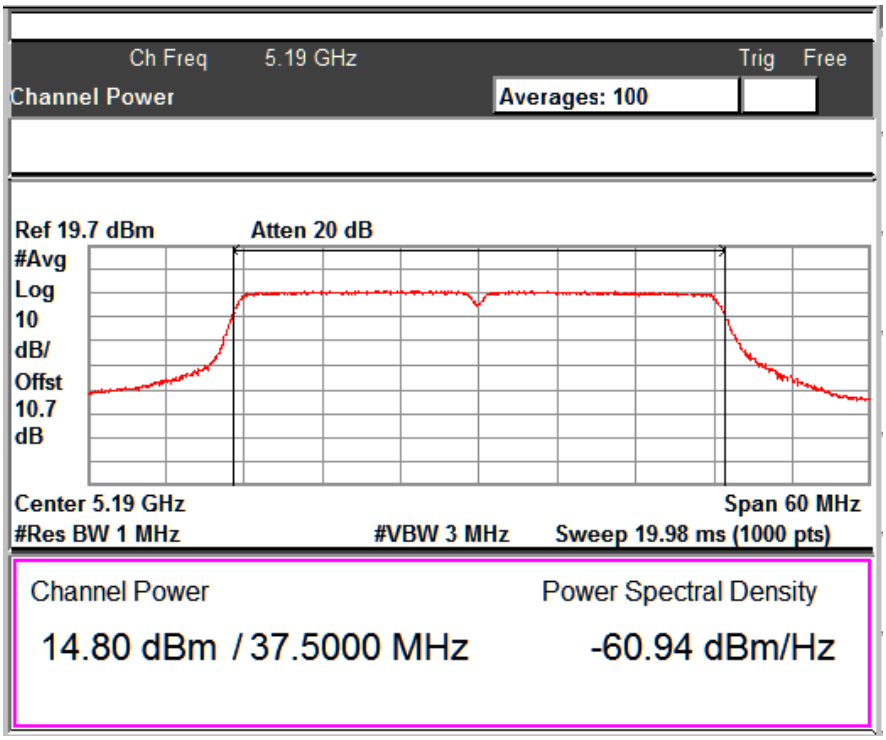


Data Rate: MCS 15 **Channel Frequency: 5240MHz**

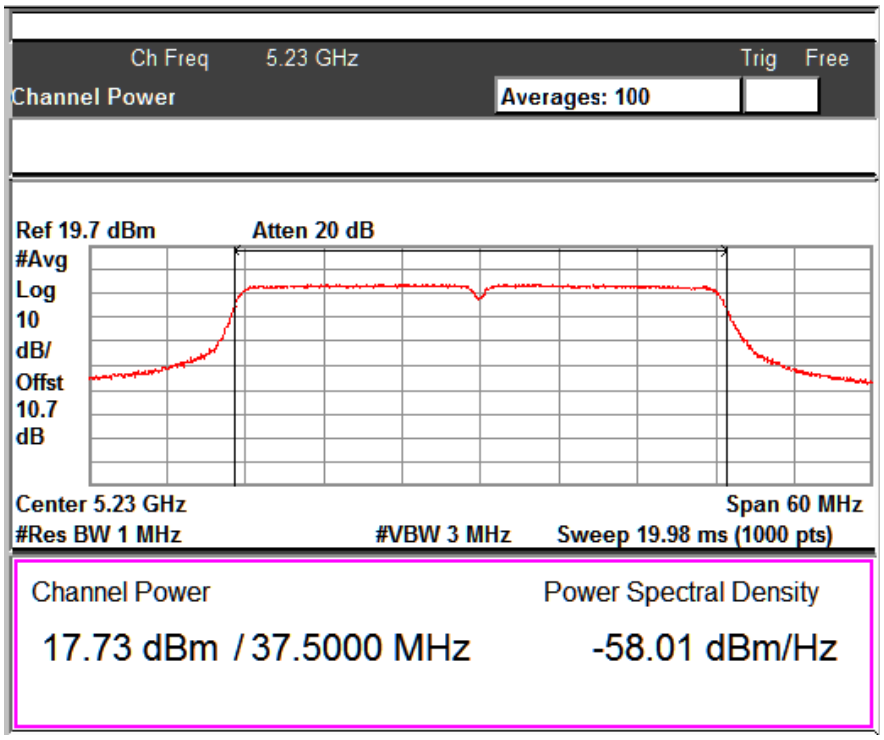
Modulation: 802.11ac vht 40

Note: Test was performed on both the transmit chains and worst case results were from chain 1 and the respective results has been reported.

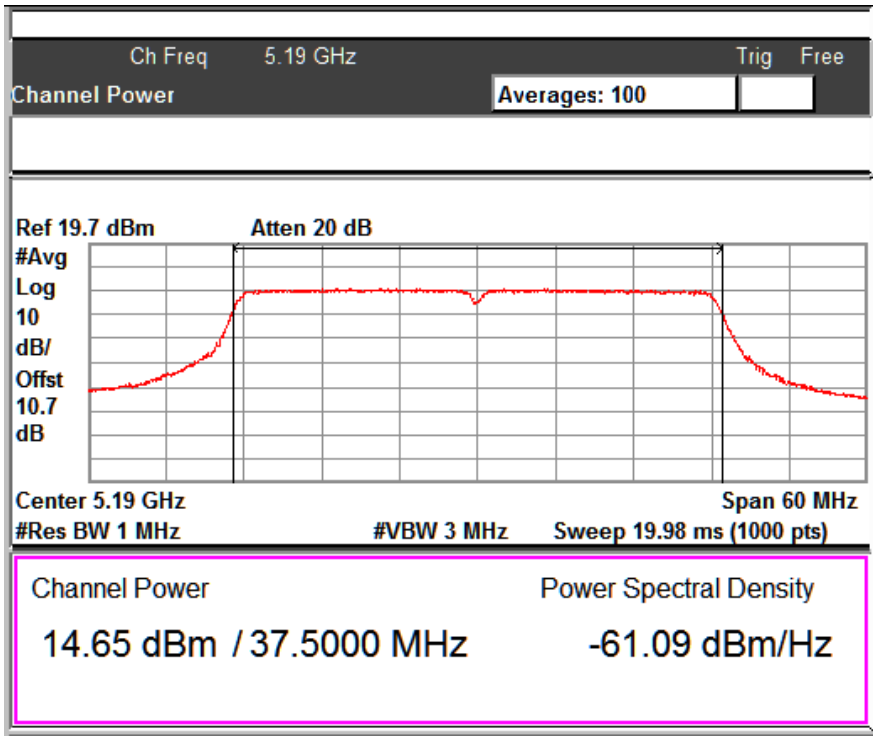
Data Rate (Mbps)	Channel No.	Frequency (MHz)	Output power (dBm)	Limit (dBm)	Margin (dB)
MCS 0	38	5190	14.80	23.00	-8.2
	46	5230	17.73	23.00	-5.27
MCS 4	38	5190	14.65	23.00	-8.35
	46	5230	17.28	23.00	-5.72
MCS 7	38	5190	14.40	23.00	-8.6
	46	5230	16.37	23.00	-6.63



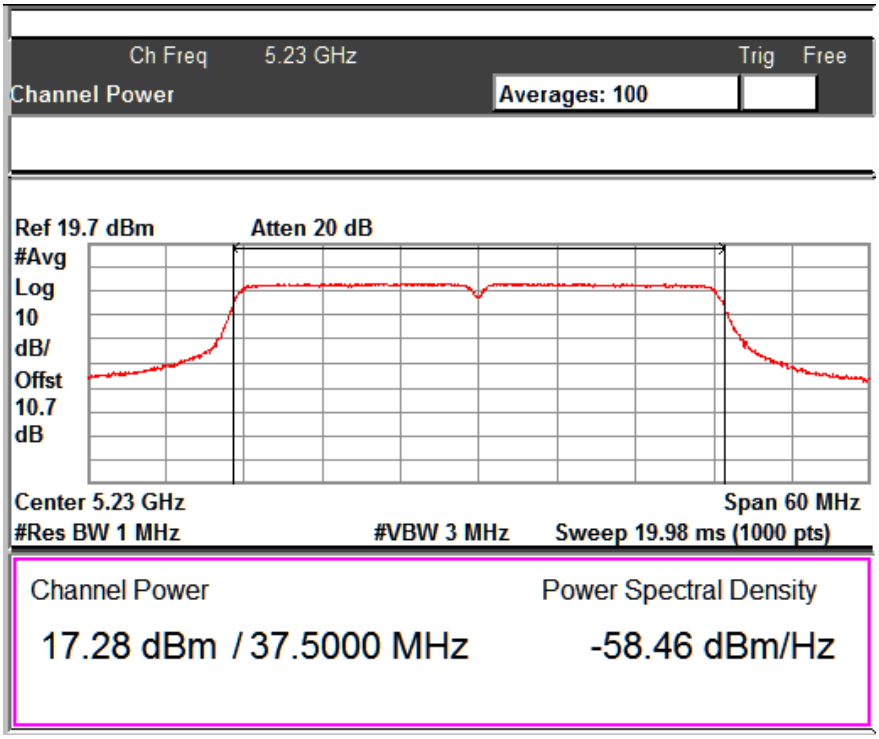
Data Rate: MCS 0 **Channel Frequency: 5190MHz**



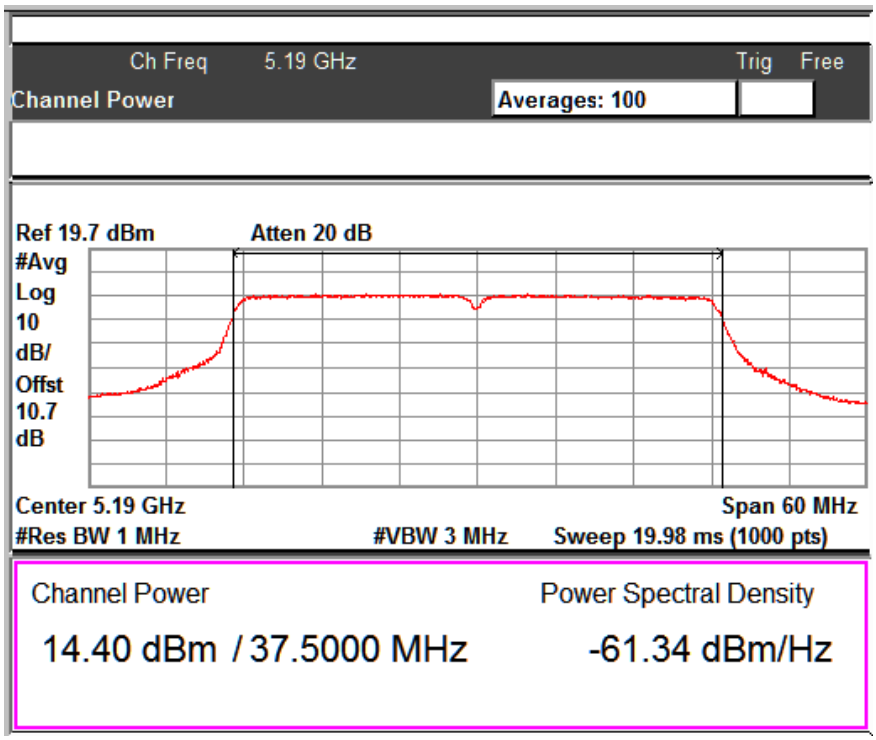
Data Rate: MCS 0 **Channel Frequency: 5230MHz**



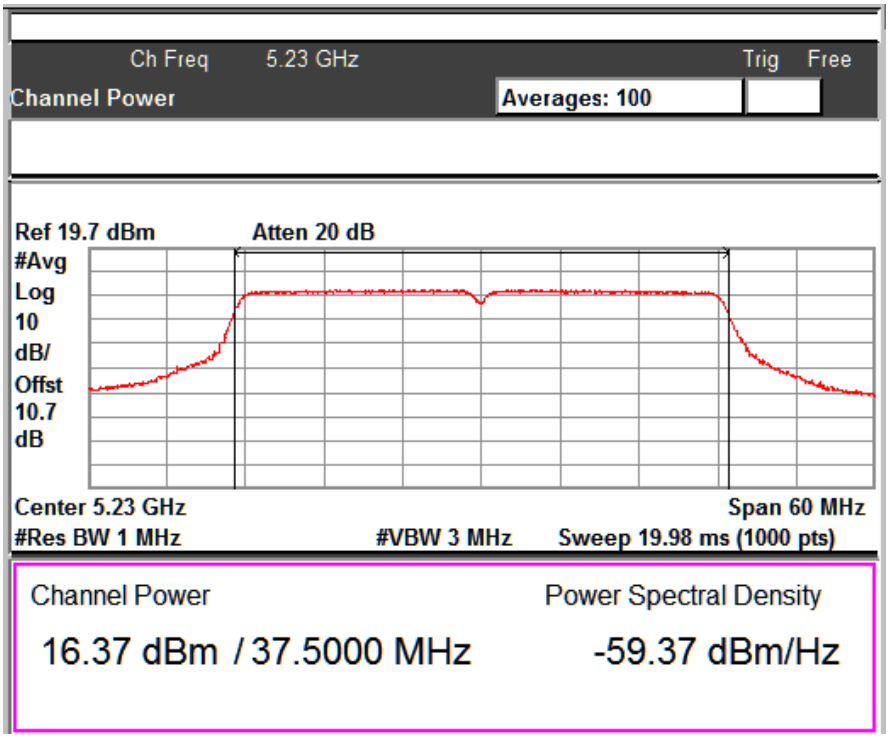
Data Rate: MCS 4 **Channel Frequency: 5190MHz**



Data Rate: MCS 4 **Channel Frequency: 5230MHz**



Data Rate: MCS 7 **Channel Frequency: 5190MHz**



Data Rate: MCS 7 **Channel Frequency: 5230MHz**

Modulation: 802.11ac vht 40 MIMO

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[(10G1 /20 + 10G2 /20 + … + 10GN /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.]

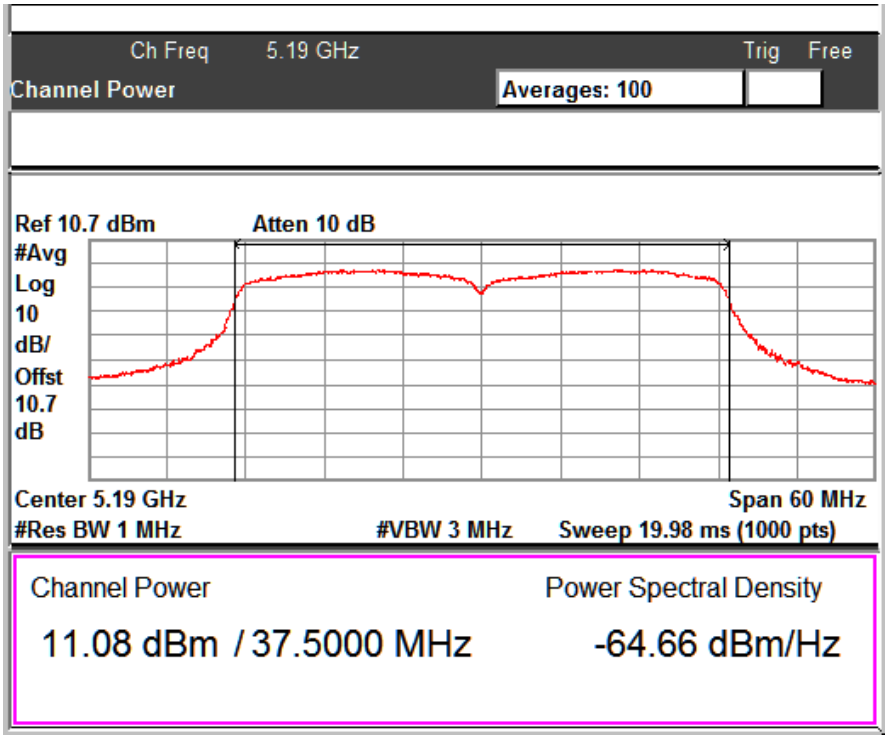
Directional gain =10*LOG((10^(4.47/20)+10^(5/20))^2/2) = 7.75dBi

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

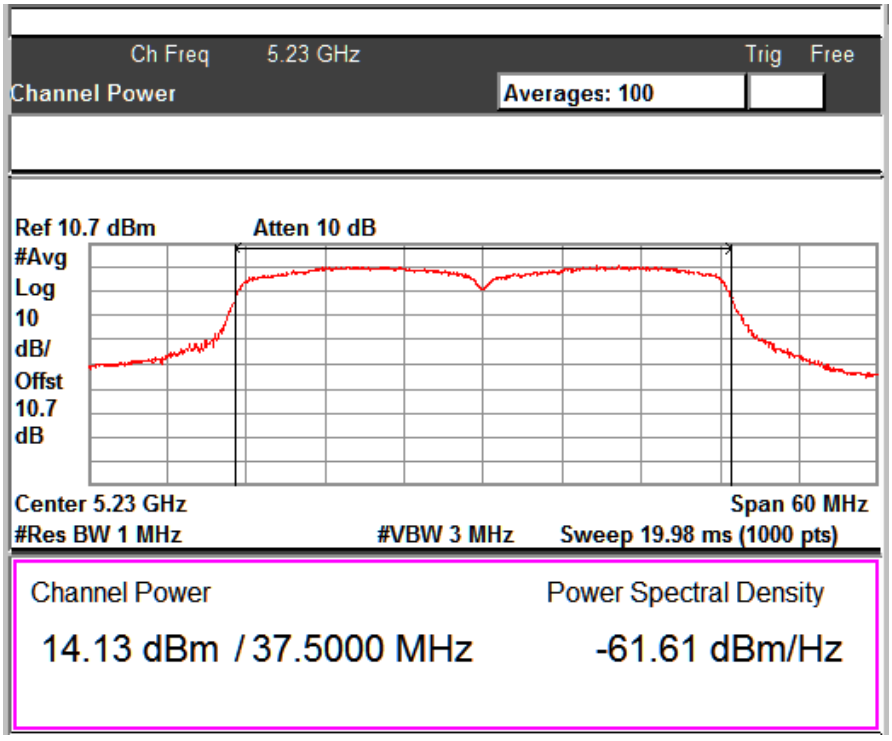
$P_{out} = P_{limit}-(G_{tx}-6) = 23-(7.75-6) = 21.25$dBm

Data Rate (Mbps)	Channel No.	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)
MCS 8	38	5190	11.08	12.82	12.02	15.92	28.74	14.58	21.25	-6.67
	46	5230	14.13	25.88	14.32	27.03	52.91	17.23	21.25	-4.02
MCS 11	38	5190	10.97	12.50	11.75	14.96	27.46	14.38	21.25	-6.87
	46	5230	14.03	25.29	14.30	26.91	52.20	17.17	21.25	-4.08
MCS 15	38	5190	10.73	11.83	11.51	14.15	25.98	14.14	21.25	-7.11
	46	5230	12.99	19.90	13.25	21.13	41.03	16.13	21.25	-5.12

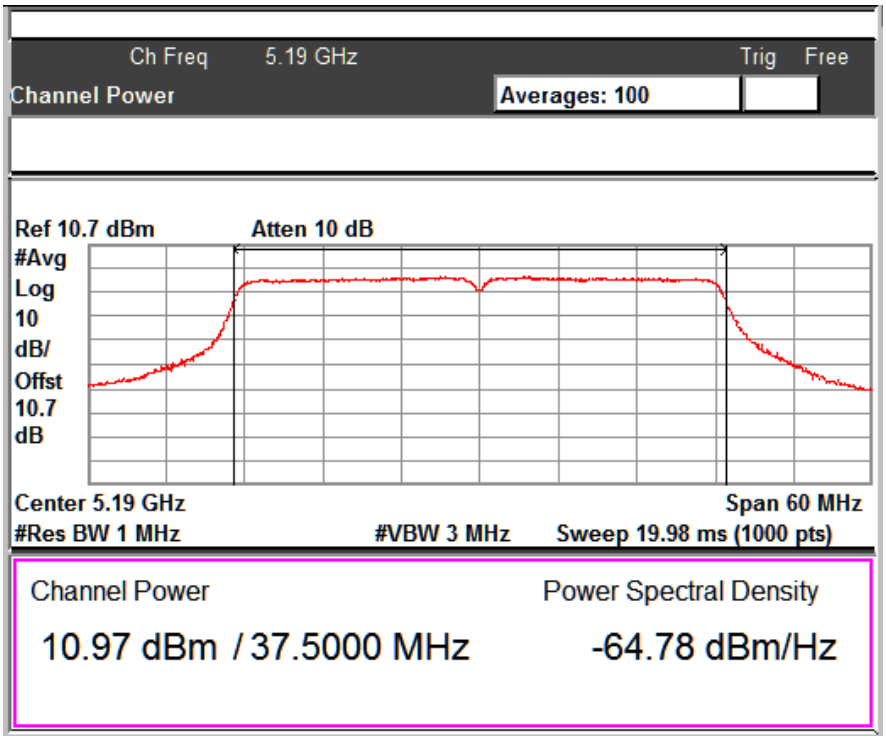
Chain 0



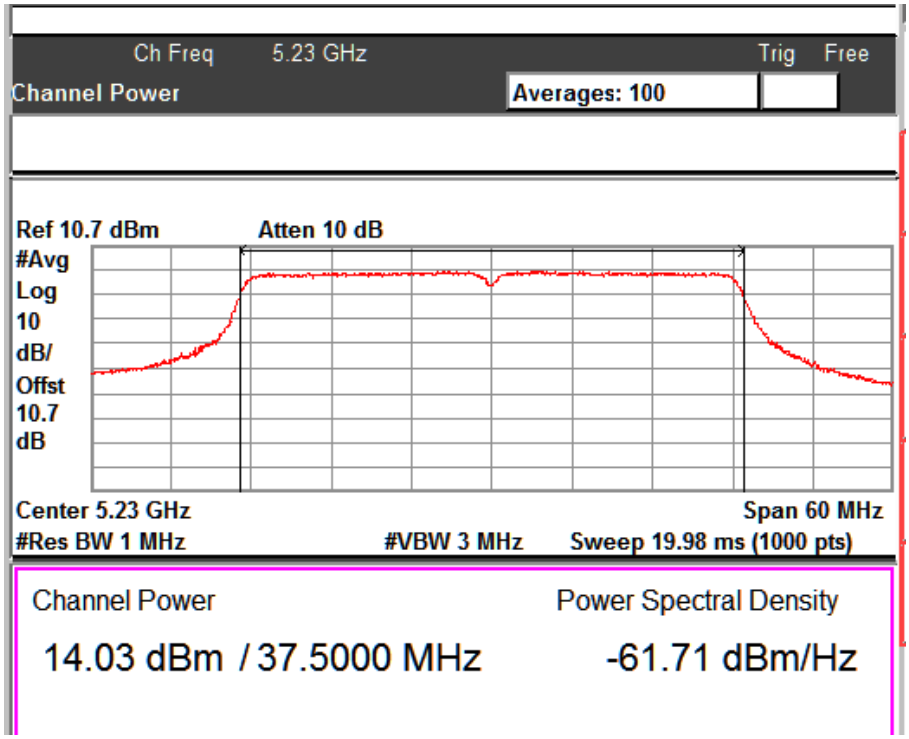
Data Rate: MCS 8 **Channel Frequency: 5190MHz**



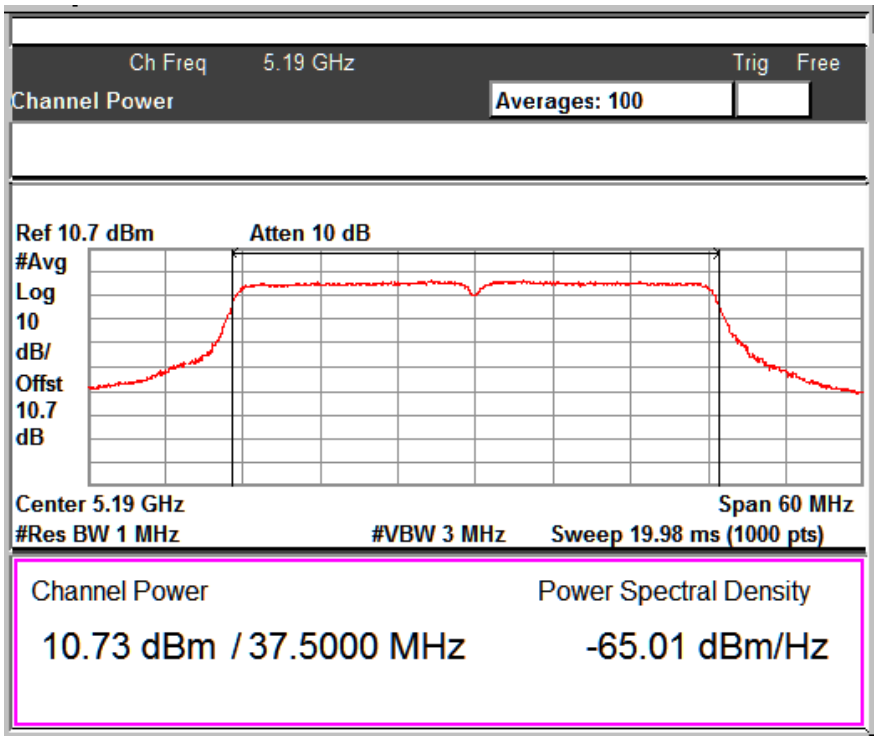
Data Rate: MCS 8 **Channel Frequency: 5230MHz**



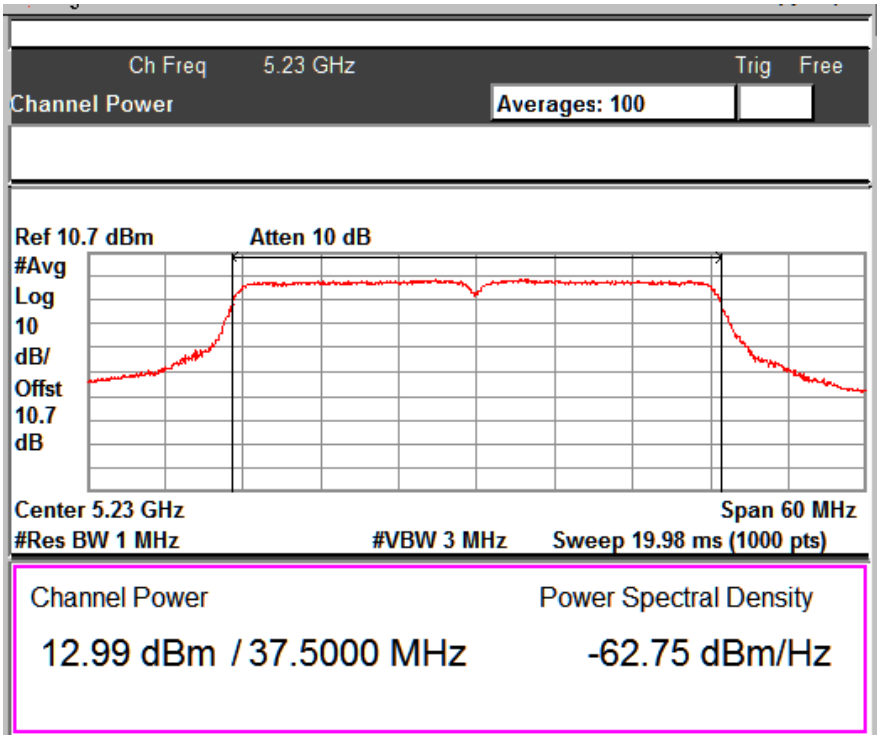
Data Rate: MCS 11 **Channel Frequency: 5190MHz**



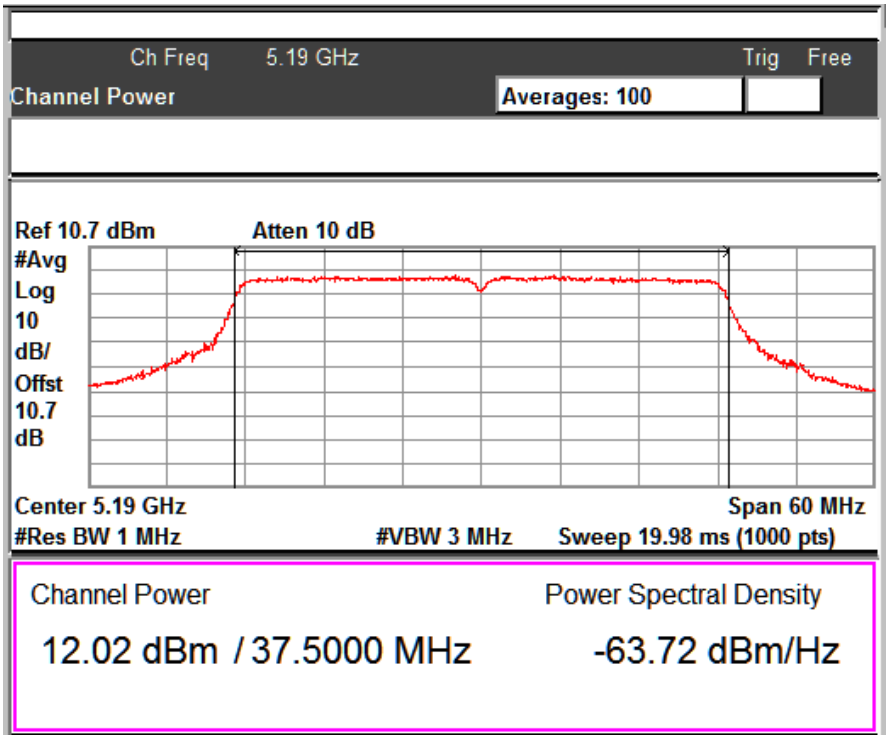
Data Rate: MCS 11 **Channel Frequency: 5230MHz**



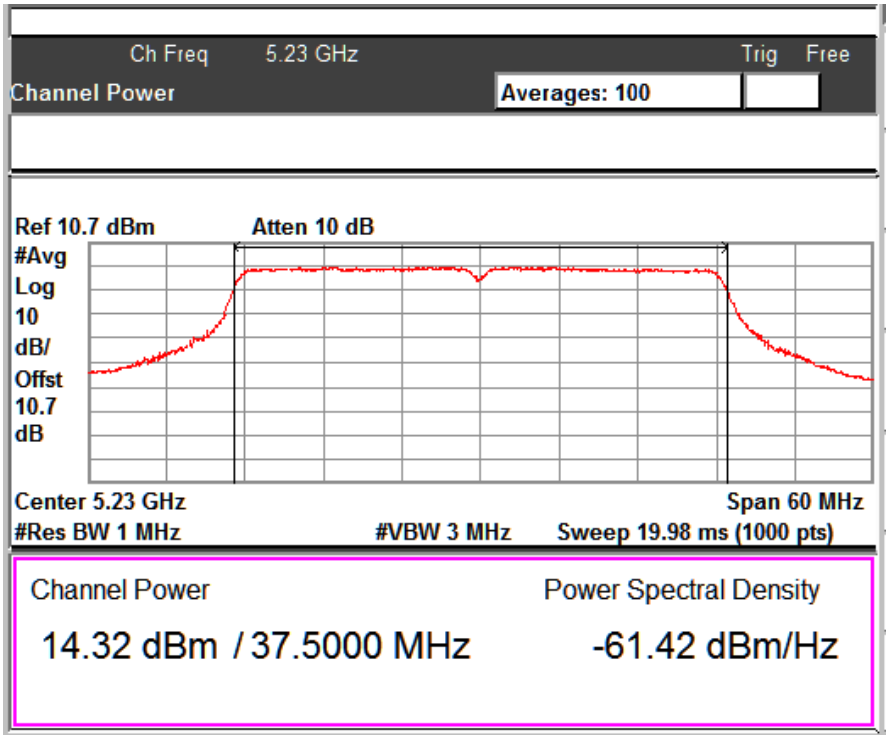
Data Rate: MCS 15 **Channel Frequency: 5190MHz**



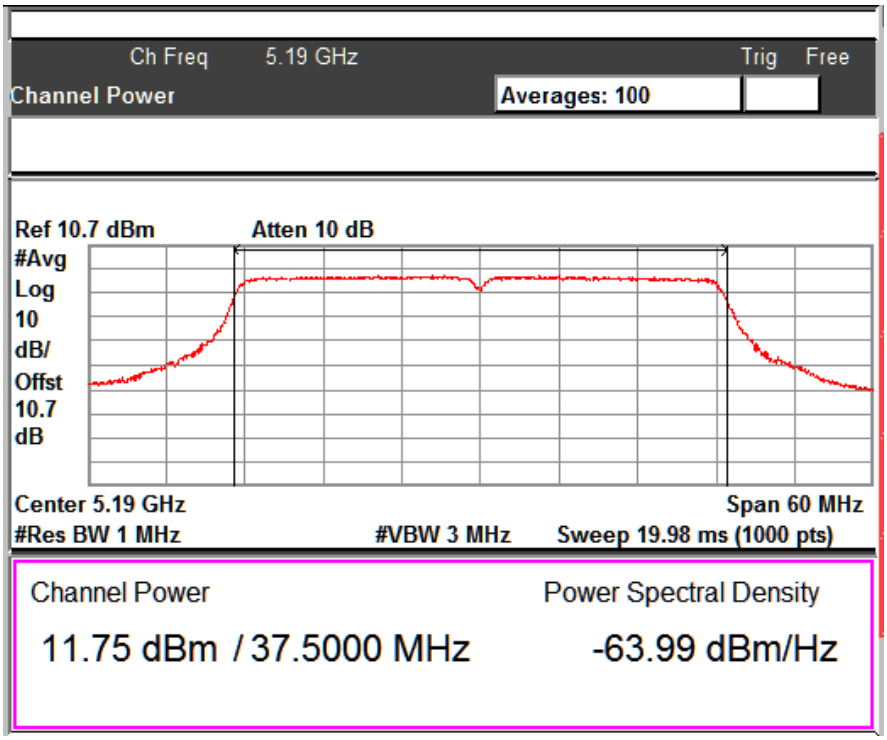
Data Rate: MCS 15 **Channel Frequency: 5230MHz**



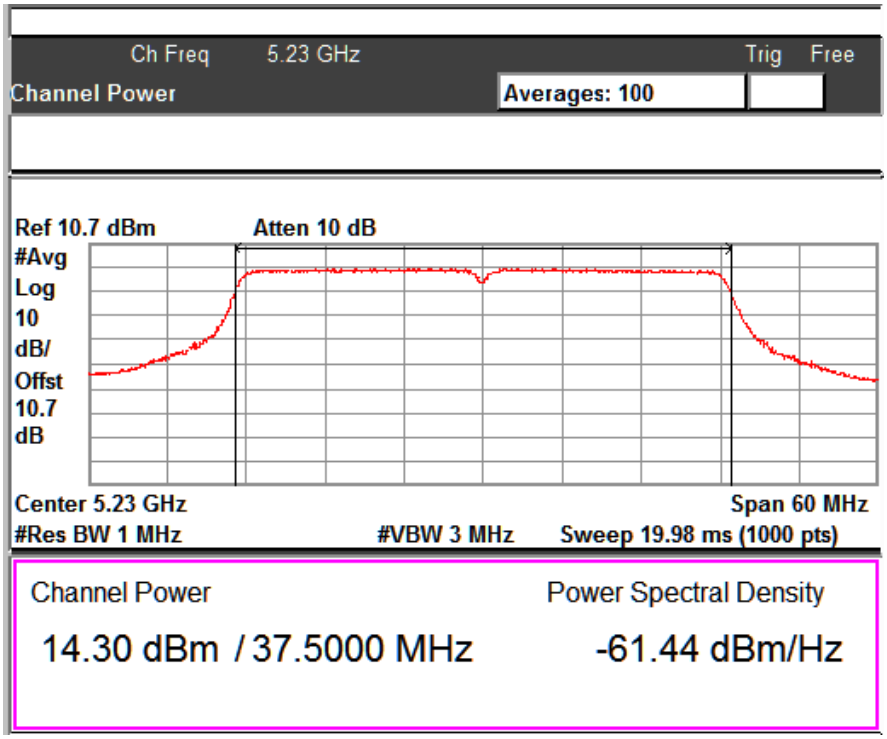
Data Rate: MCS 8 **Channel Frequency: 5190MHz**



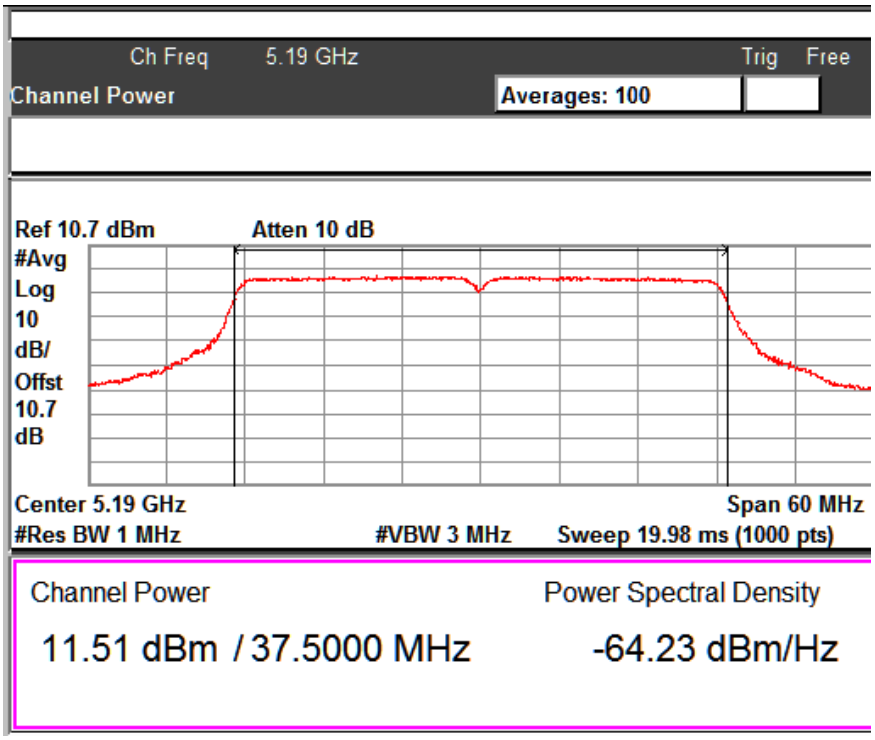
Data Rate: MCS 8 **Channel Frequency: 5230MHz**



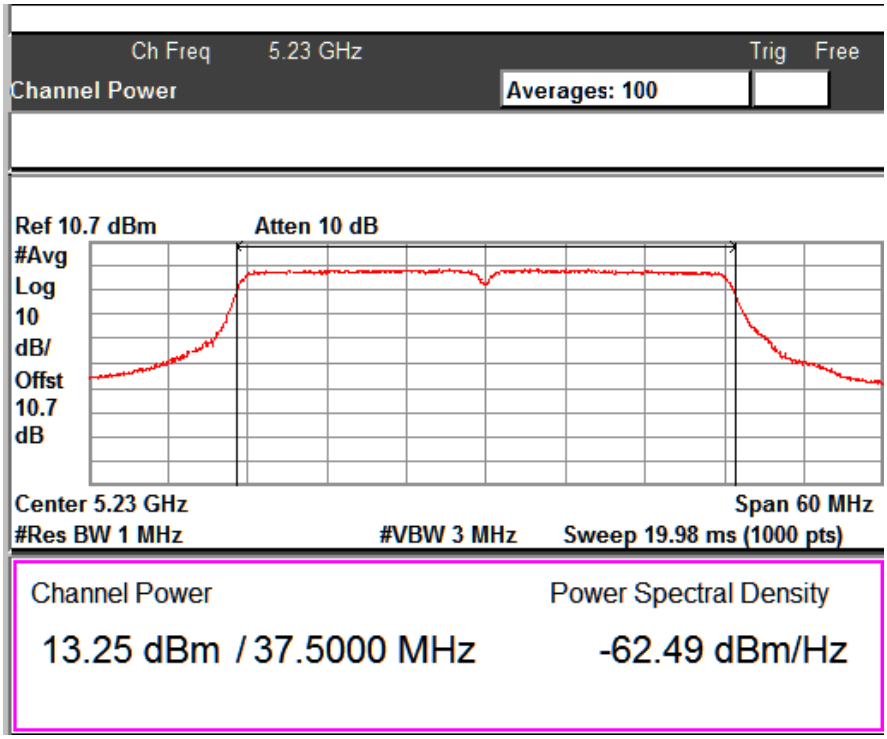
Data Rate: MCS 11 **Channel Frequency: 5190MHz**



Data Rate: MCS 11 **Channel Frequency: 5230MHz**



Data Rate: MCS 15 **Channel Frequency: 5190MHz**



Data Rate: MCS 15 **Channel Frequency: 5230MHz**

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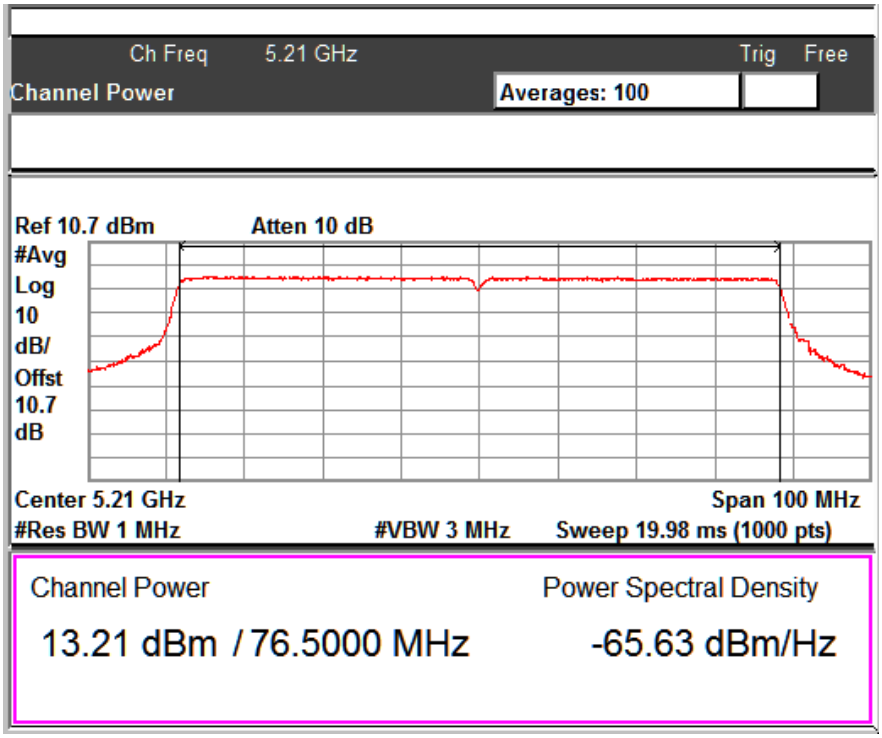
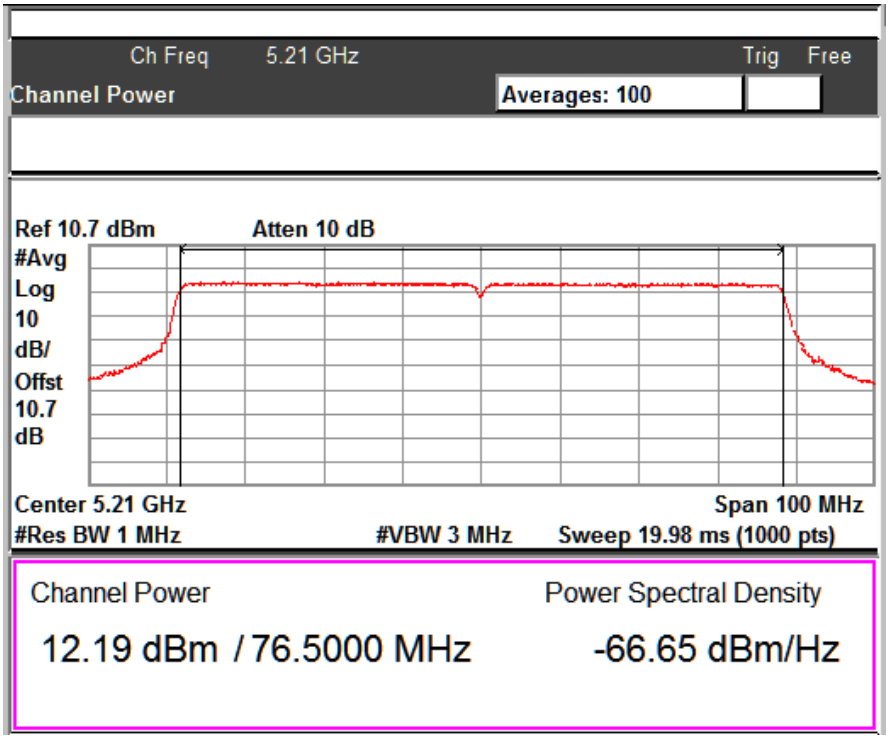
Modulation: 802.11ac vht 80

Note: Test was performed on both the transmit chains and worst case results were from chain 1 and the respective results has been reported.

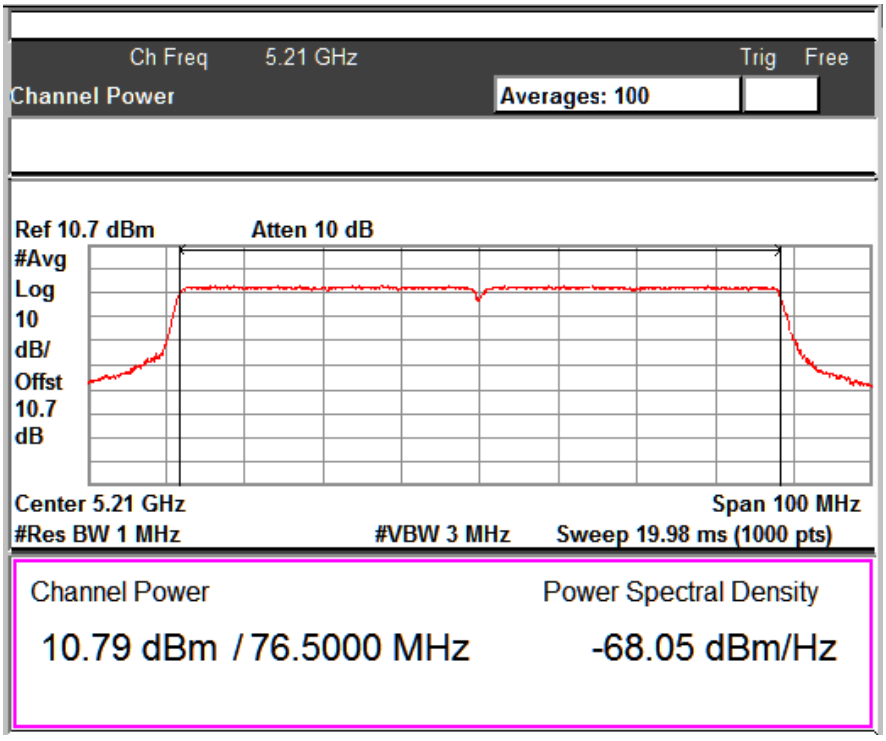
Data Rate (Mbps)	Channel No.	Frequency (MHz)	Output power (dBm)	Limit (dBm)	Margin (dB)
MCS 0	42	5210	13.21	23.00	-9.79
MCS 4	42	5210	12.19	23.00	-10.81
MCS 9	42	5210	10.79	23.00	-12.21



Data Rate: MCS 0 **Channel Frequency: 5210MHz**



Data Rate: MCS 4 **Channel Frequency: 5210MHz**



Data Rate: MCS 9 **Channel Frequency: 5210MHz**

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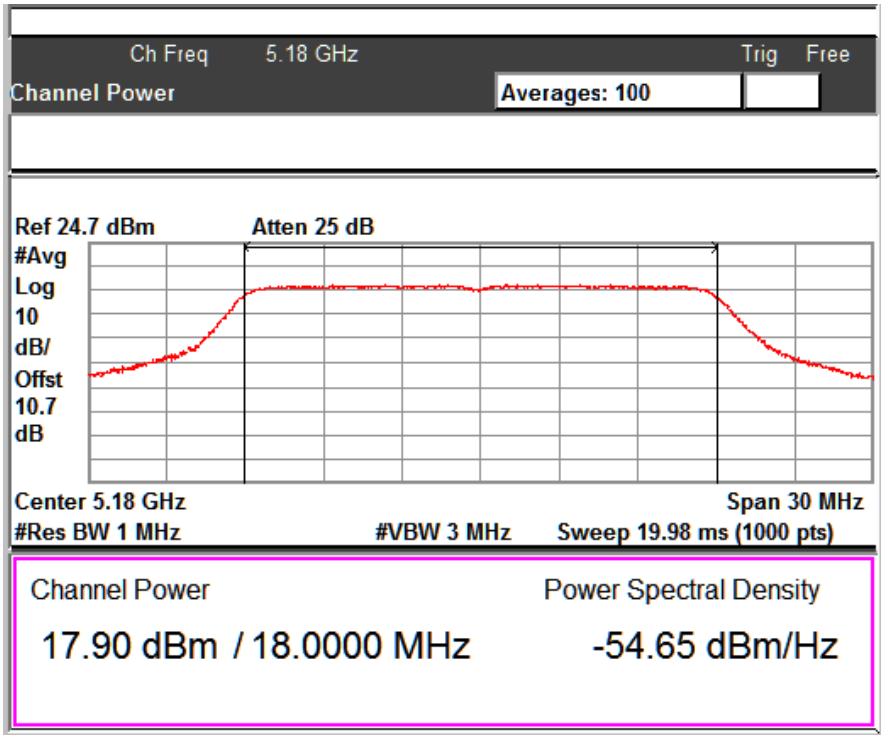
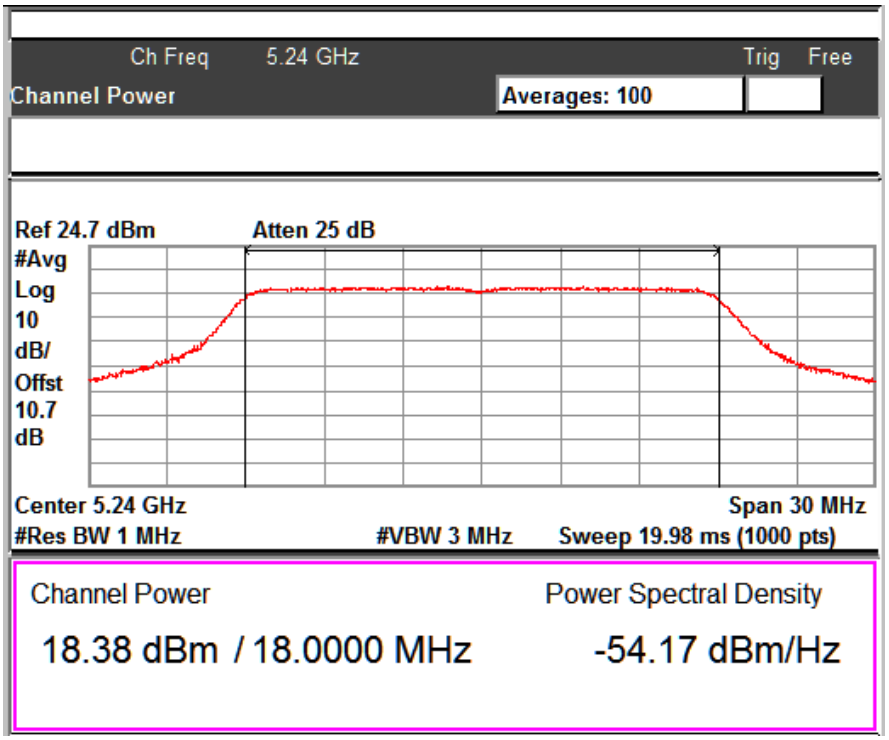
Modulation: 802.11n ht 20 SISO

Note: Test was performed on both the transmit chains and worst case results were from chain 1 and the respective results has been reported.

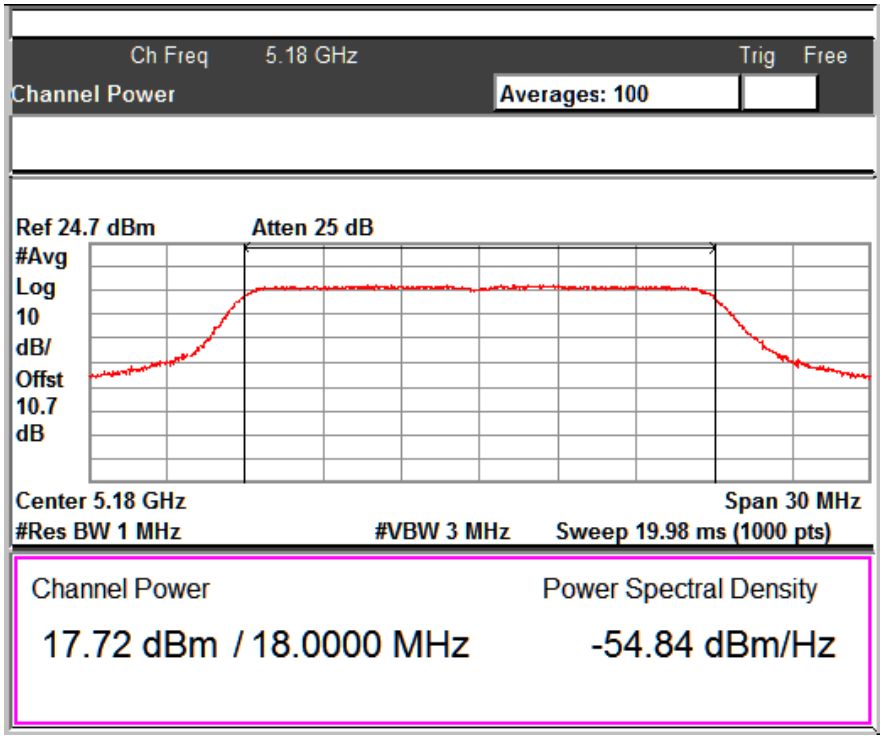
Data Rate (Mbps)	Channel No.	Frequency (MHz)	Output power (dBm)	Limit (dBm)	Margin (dB)
MCS 0	36	5180	17.90	23	-5.100
	48	5240	18.38	23	-4.620
MCS4	36	5180	17.72	23	-5.280
	48	5240	18.25	23	-4.750
MCS 7	36	5180	16.76	23	-6.240
	48	5240	16.45	23	-6.550



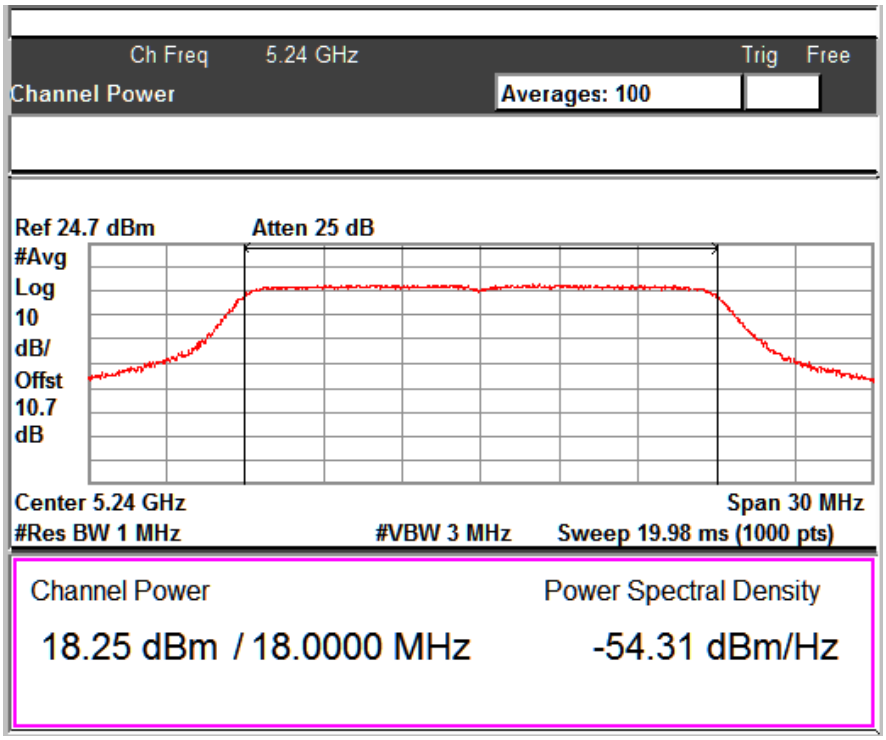
Data Rate: MCS 0 **Channel Frequency: 5180MHz**



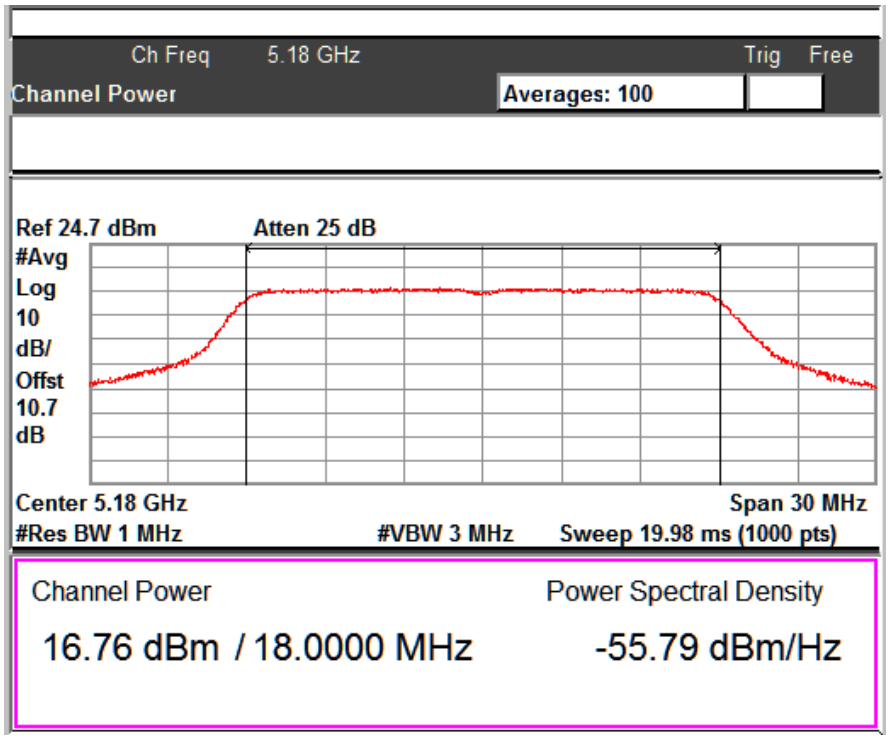
Data Rate: MCS 0 **Channel Frequency: 5240MHz**



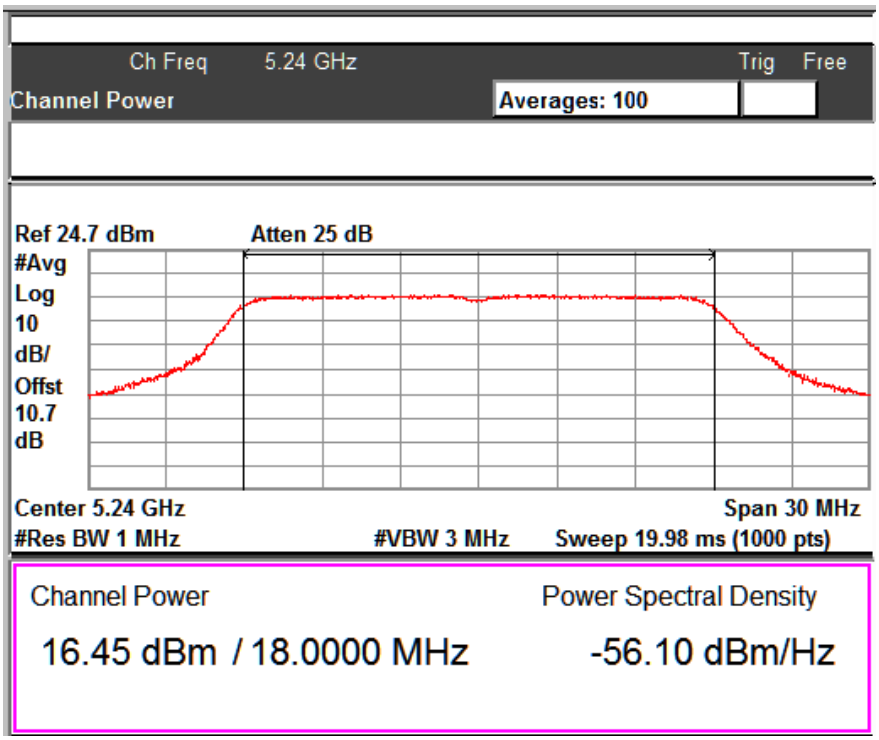
Data Rate: MCS 4 **Channel Frequency: 5180MHz**



Data Rate: MCS 4 **Channel Frequency: 5240MHz**



Data Rate: MCS 7 **Channel Frequency: 5180MHz**



Data Rate: MCS 7 **Channel Frequency: 5240MHz**

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Modulation: 802.11n ht 20 MIMO

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[(10G1 /20 + 10G2 /20 + … + 10GN /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.]

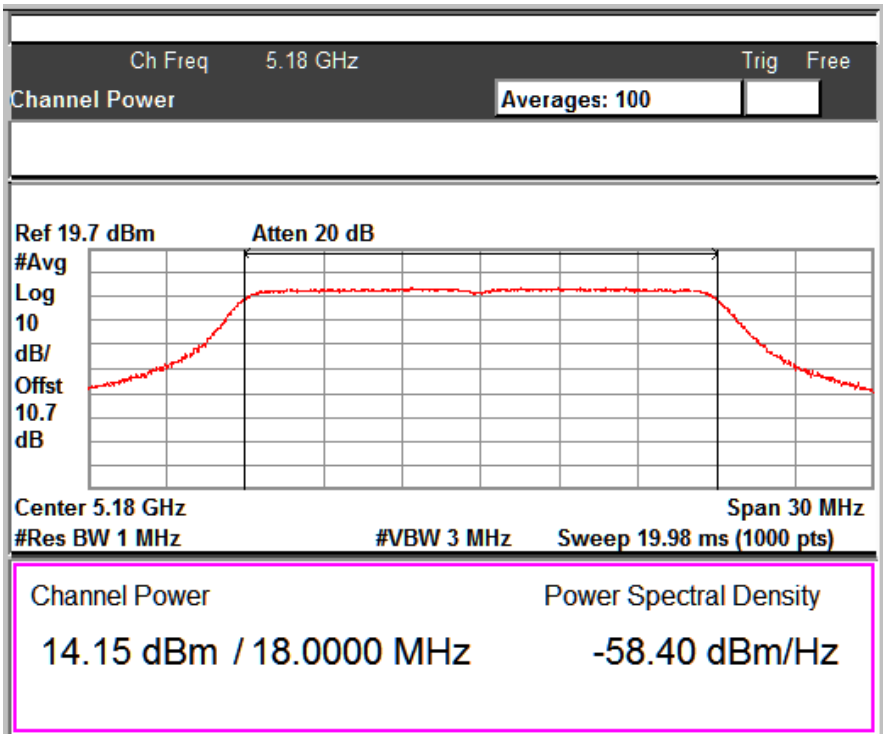
Directional gain =10*LOG((10^(4.47/20)+10^(5/20))^2/2) = 7.75dBi

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

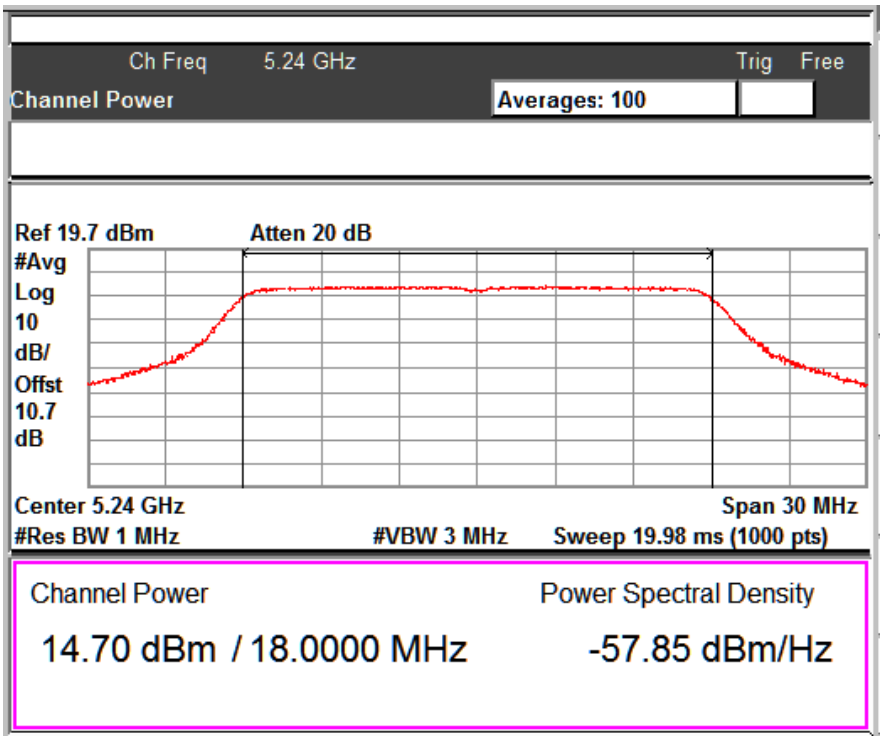
$P_{out} = P_{limit}-(G_{tx}-6) = 23-(7.75-6) = 21.25dBm$

Data Rate (Mbps)	Channel No.	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)
MCS 8	36	5180	14.15	26.00	14.24	26.54	52.54	17.20	21.25	-4.05
	48	5240	14.70	29.51	14.88	30.76	60.27	17.80	21.25	-3.45
MCS 11	36	5180	14.14	25.94	14.47	27.98	53.92	17.31	21.25	-3.94
	48	5240	14.42	27.66	15.11	32.43	60.09	17.78	21.25	-3.47
MCS 15	36	5180	13.06	20.23	13.14	20.60	40.83	16.11	21.25	-5.14
	48	5240	13.72	23.55	13.59	22.85	46.4	16.66	21.25	-4.59

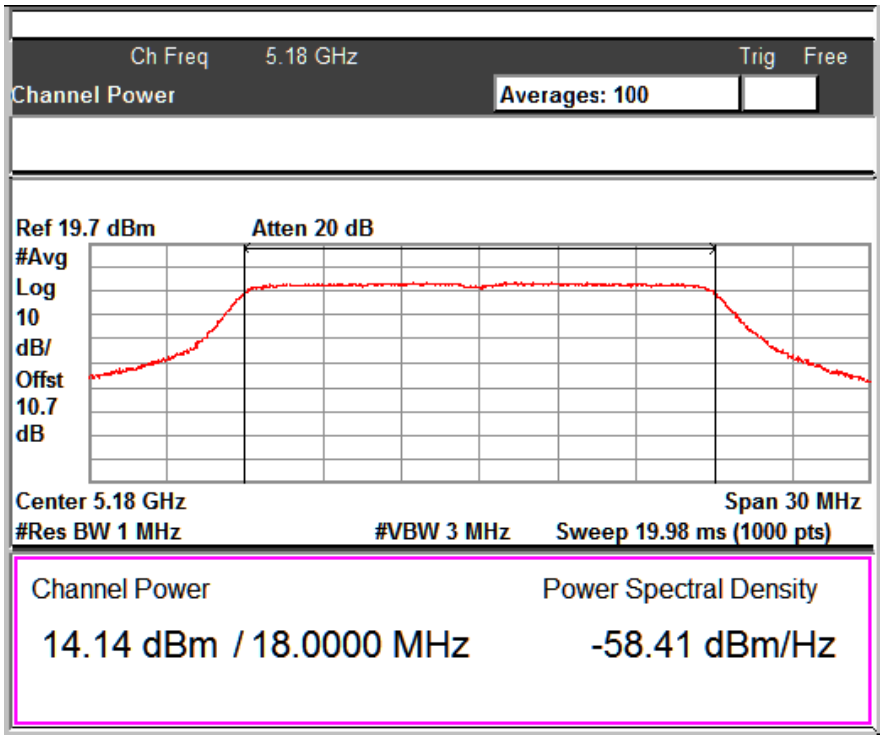
Chain 0



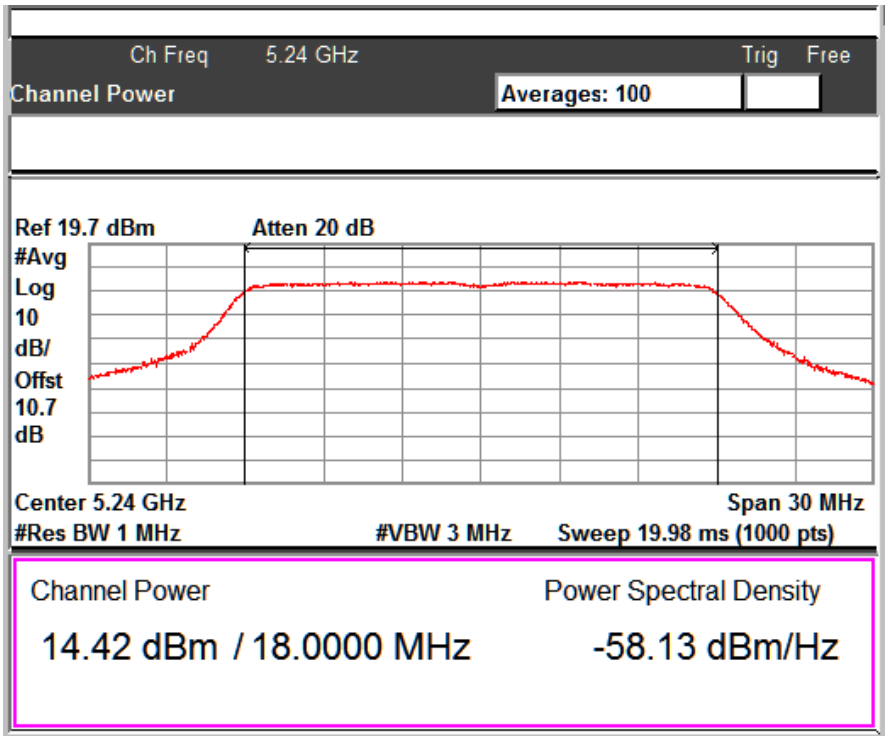
Data Rate: MCS 8 **Channel Frequency: 5180MHz**



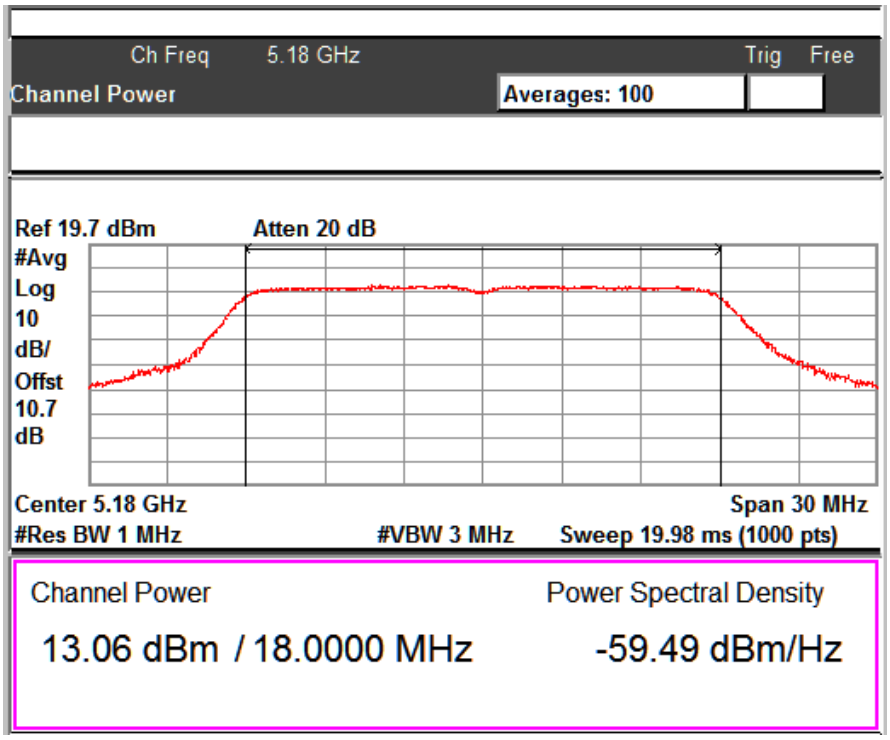
Data Rate: MCS 8 **Channel Frequency: 5240MHz**



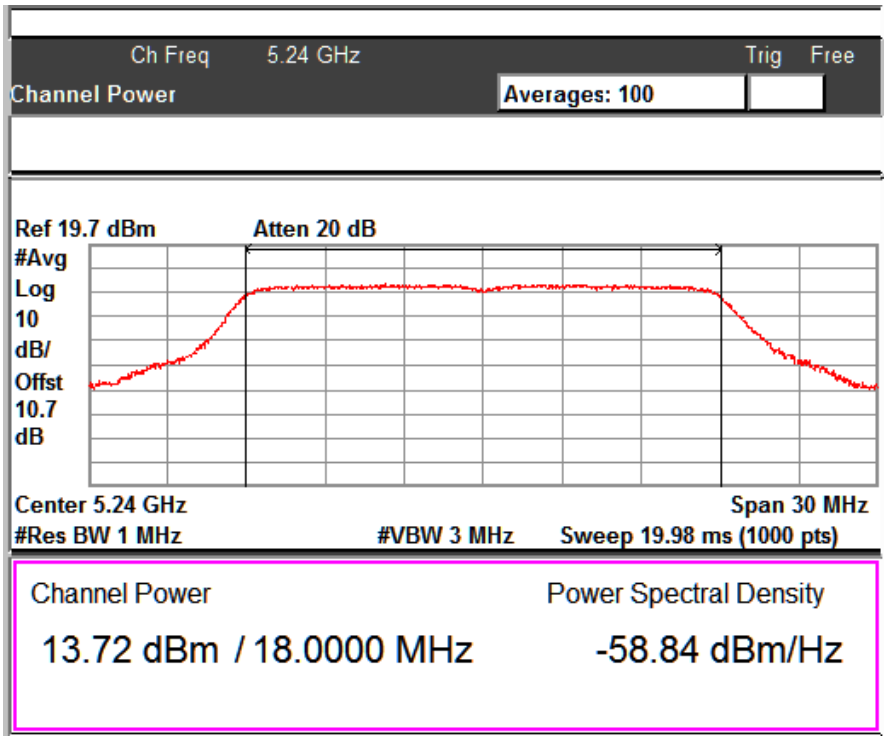
Data Rate: MCS 11 **Channel Frequency: 5180MHz**



Data Rate: MCS 11 **Channel Frequency: 5240MHz**

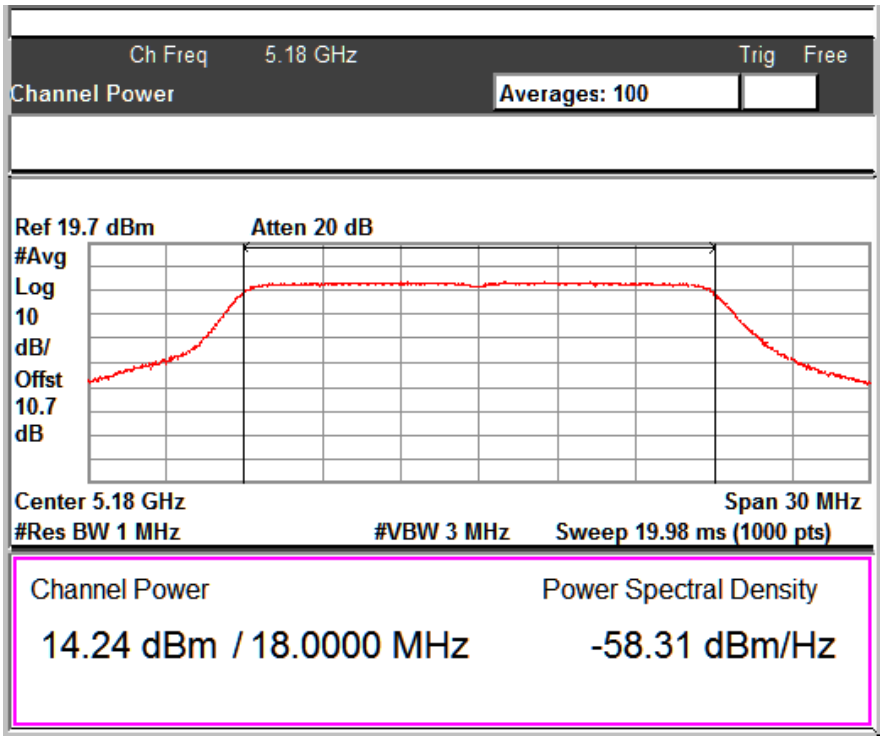


Data Rate: MCS 15 **Channel Frequency: 5180MHz**

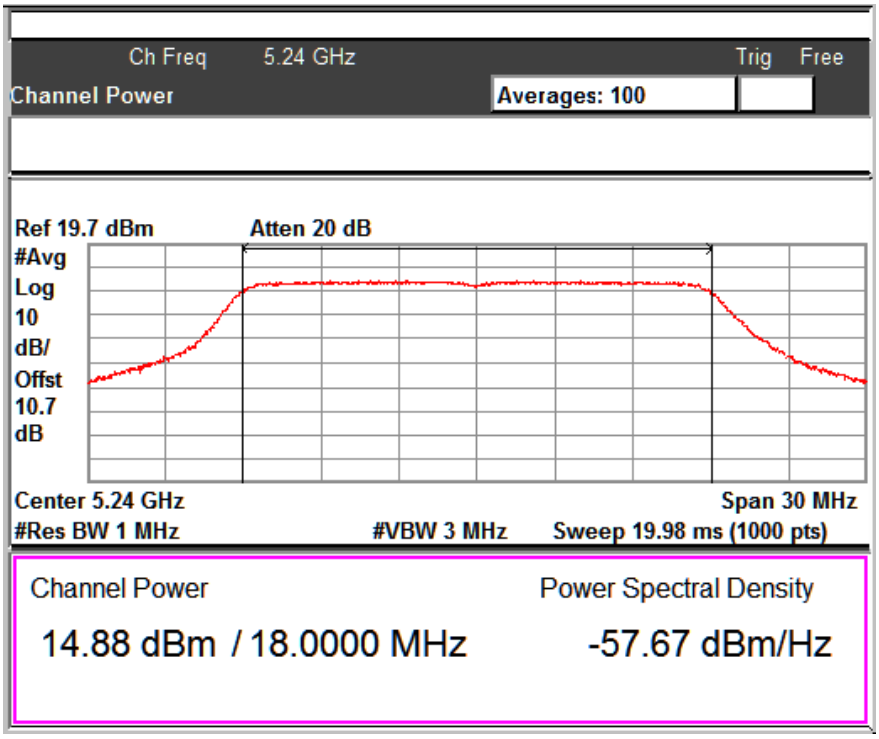


Data Rate: MCS 15 **Channel Frequency: 5240MHz**

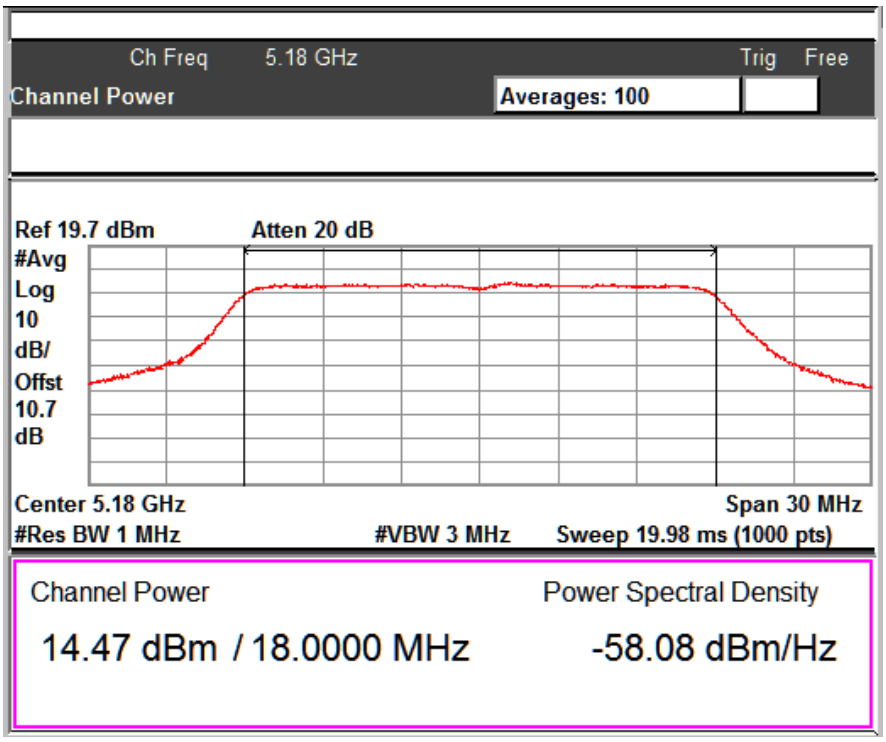
Chain 1



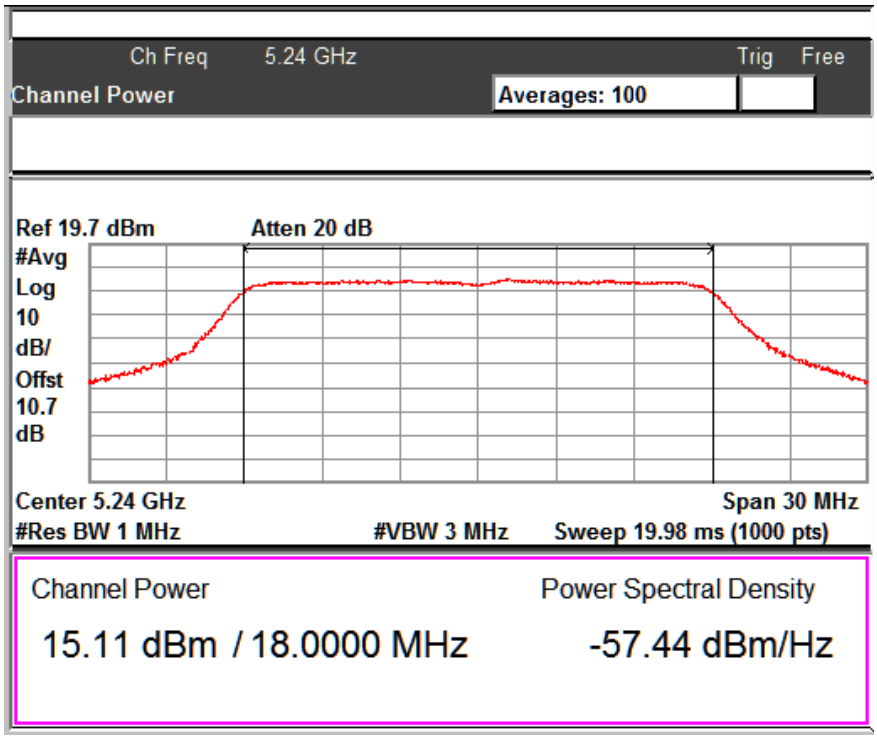
Data Rate: MCS 8 **Channel Frequency: 5180MHz**



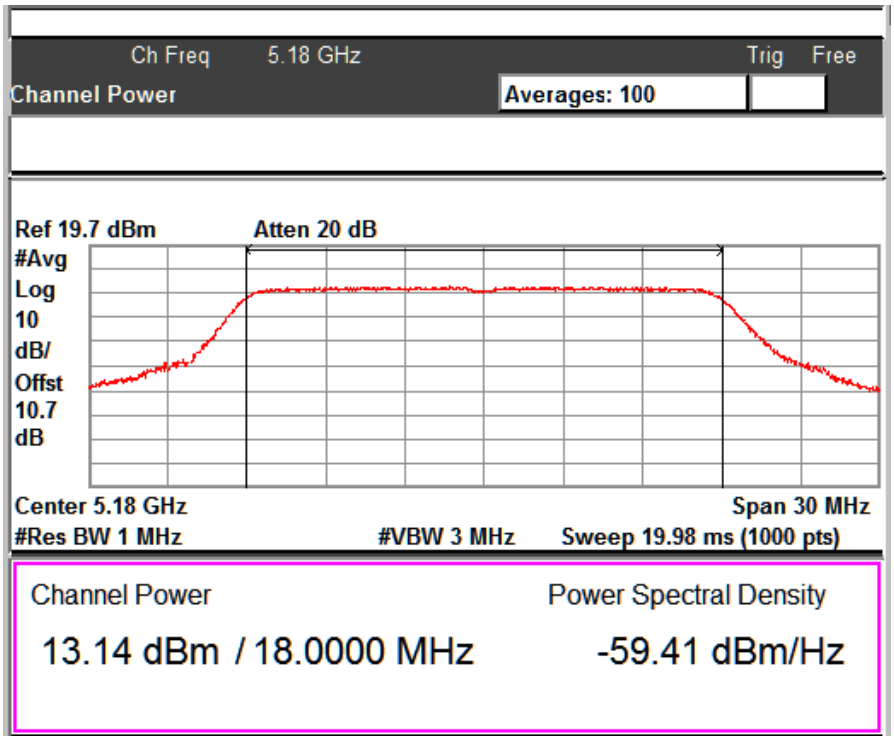
Data Rate: MCS 8 **Channel Frequency: 5240MHz**



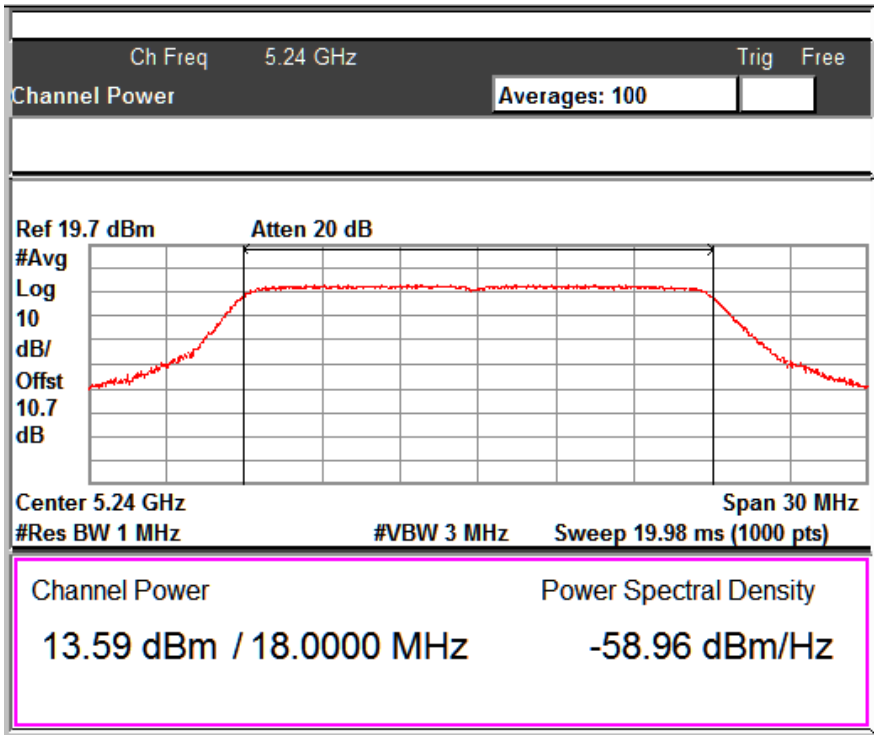
Data Rate: MCS 11 **Channel Frequency: 5180MHz**



Data Rate: MCS 11 **Channel Frequency: 5240MHz**



Data Rate: MCS 15 **Channel Frequency: 5180MHz**



Data Rate: MCS 15 **Channel Frequency: 5240MHz**

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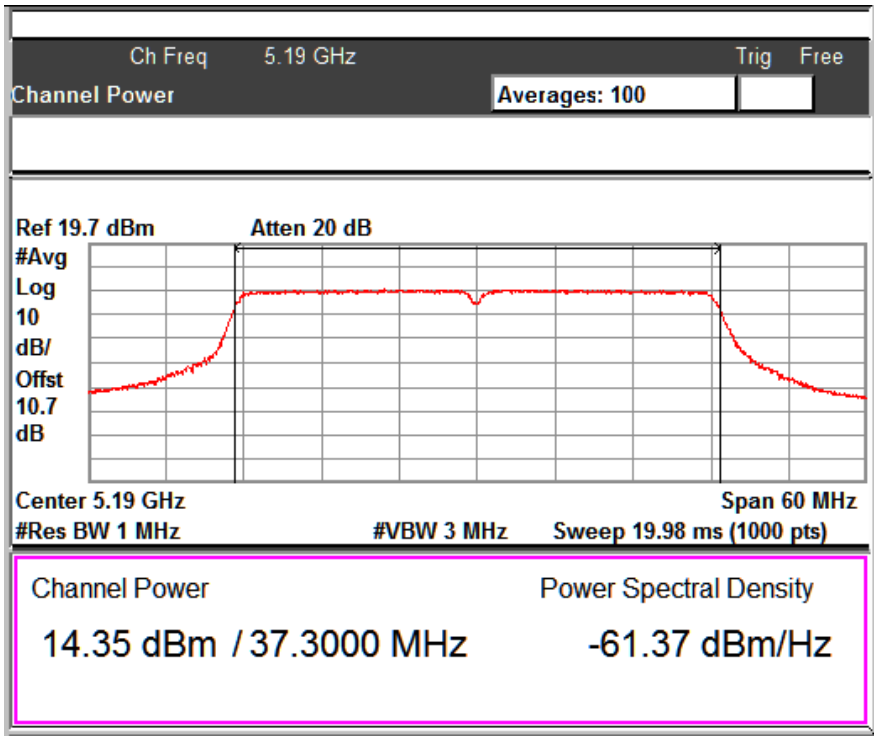
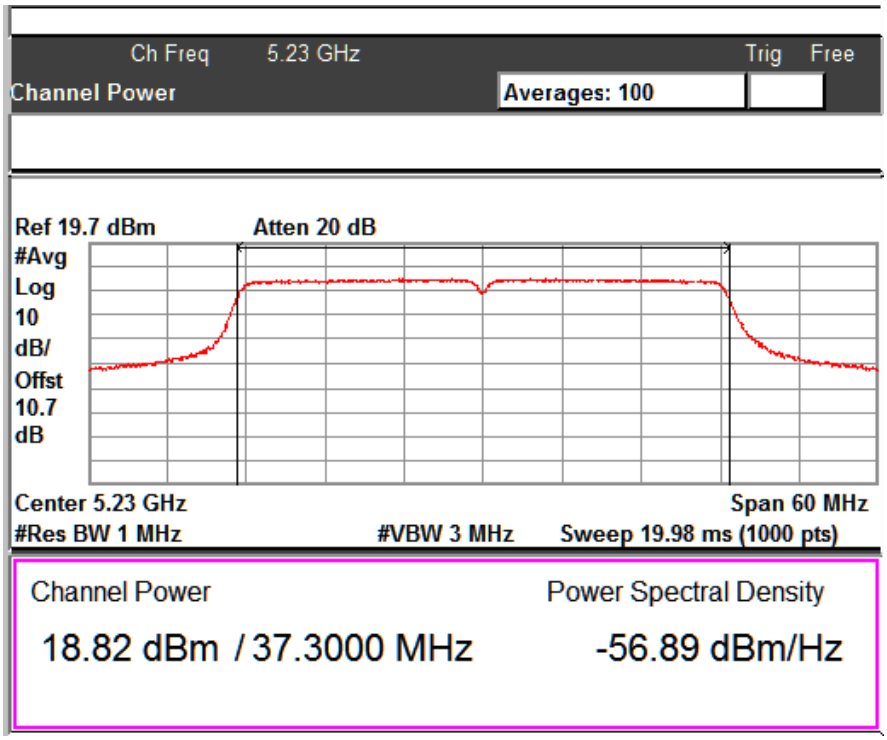
Modulation: 802.11n ht 40 SISO

Note: Test was performed on both the transmit chains and worst case results were from chain 1 and the respective results has been reported.

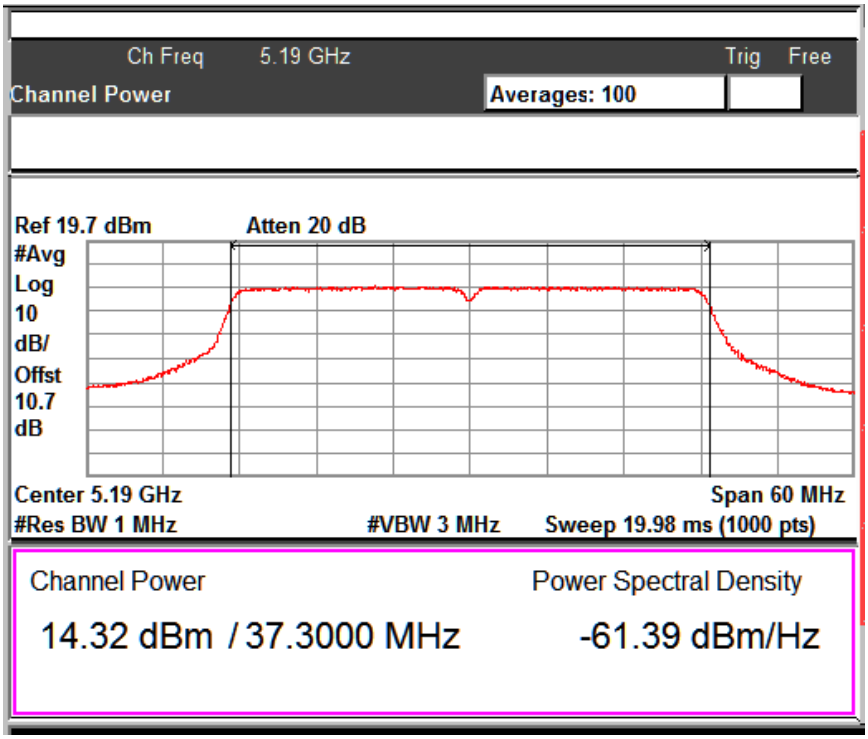
Data Rate (Mbps)	Channel No.	Frequency (MHz)	Output power (dBm)	Limit (dBm)	Margin (dB)
MCS 0	38	5190	14.35	23.00	-8.65
	46	5230	18.82	23.00	-4.18
MCS4	38	5190	14.32	23.00	-8.68
	46	5230	18.76	23.00	-4.24
MCS 7	38	5190	14.15	23.00	-8.85
	46	5230	16.58	23.00	-6.42



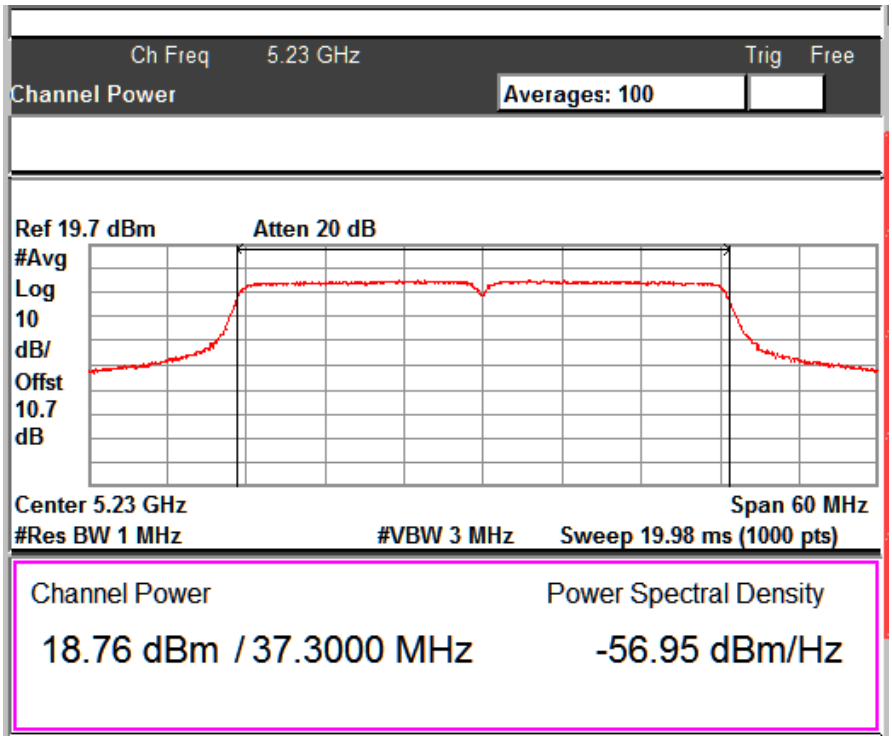
Data Rate: MCS 0 **Channel Frequency: 5190MHz**



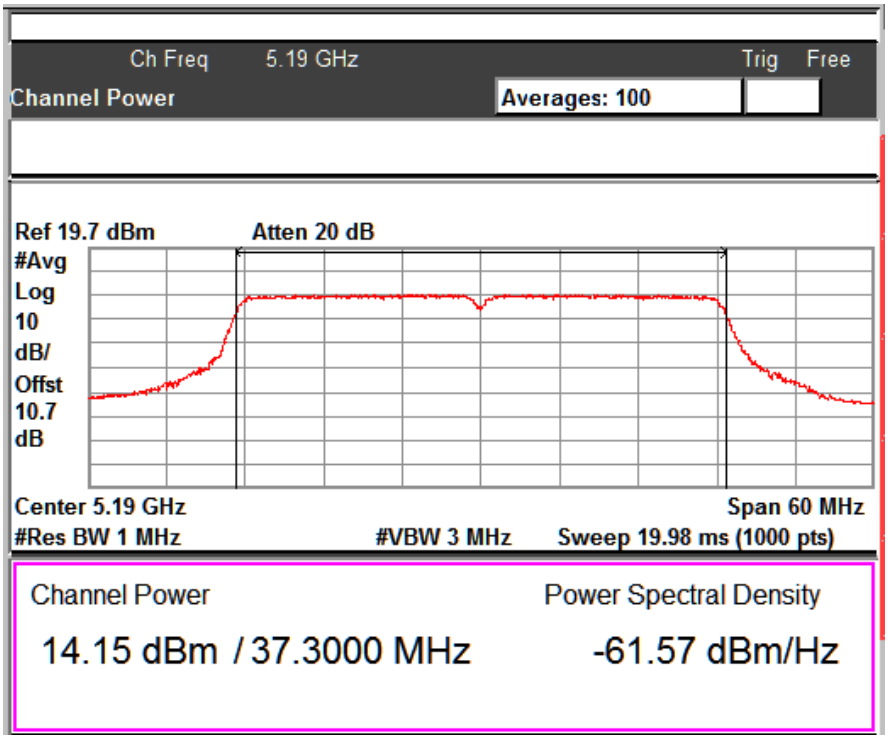
Data Rate: MCS 0 **Channel Frequency: 5230MHz**



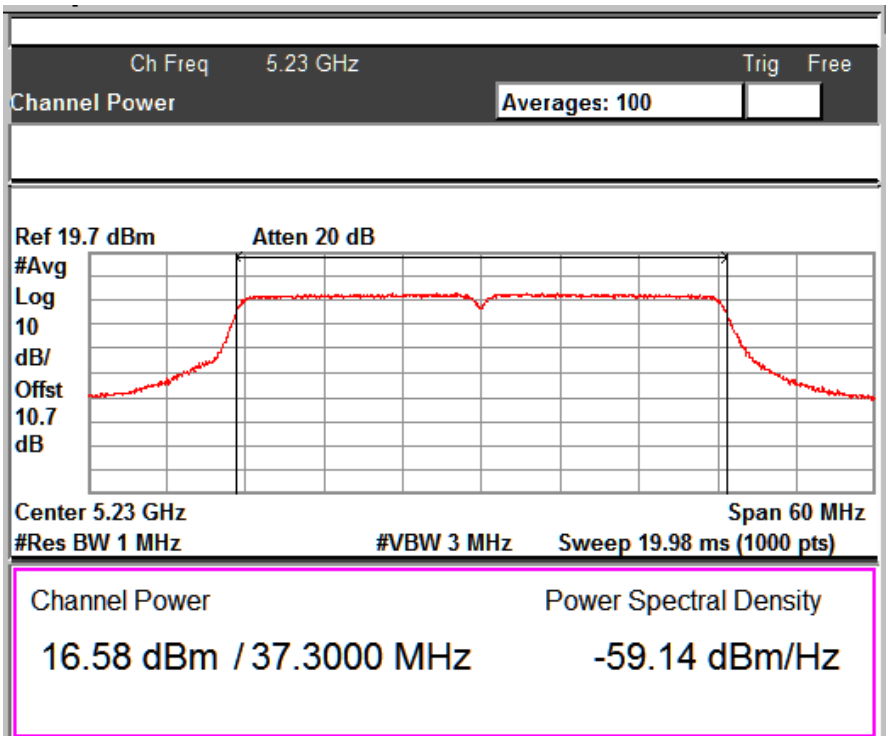
Data Rate: MCS 4 **Channel Frequency: 5190MHz**



Data Rate: MCS 4 **Channel Frequency: 5230MHz**



Data Rate: MCS 7 **Channel Frequency: 5190MHz**



Data Rate: MCS 7 **Channel Frequency: 5230MHz**

Modulation: 802.11n ht 40 MIMO

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[(10G1 /20 + 10G2 /20 + … + 10GN /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.]

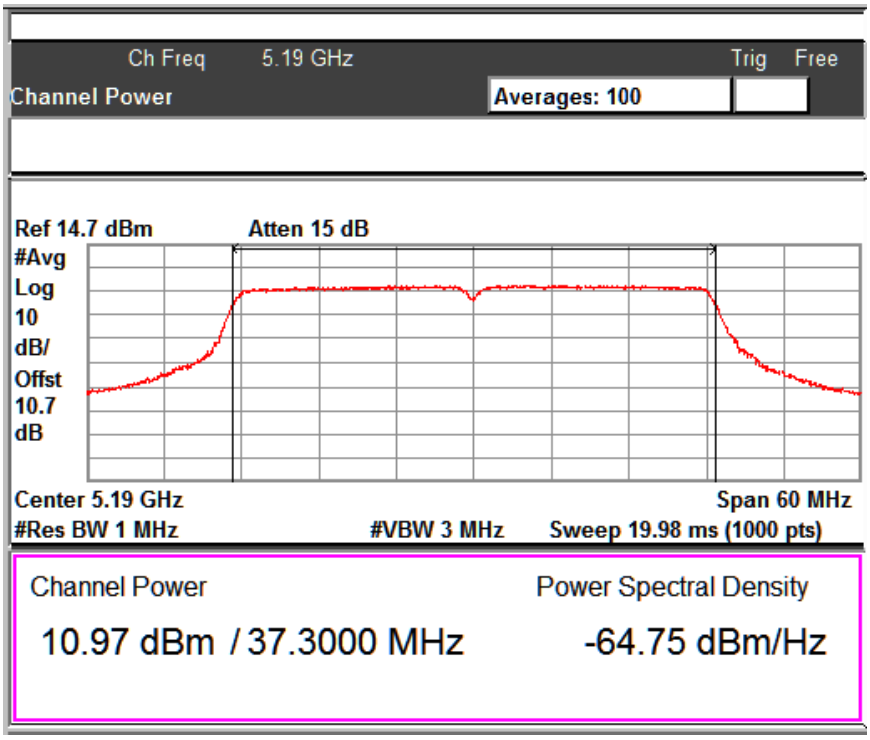
Directional gain =10*LOG((10^(4.47/20)+10^(5/20))^2/2) = 7.75dBi

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

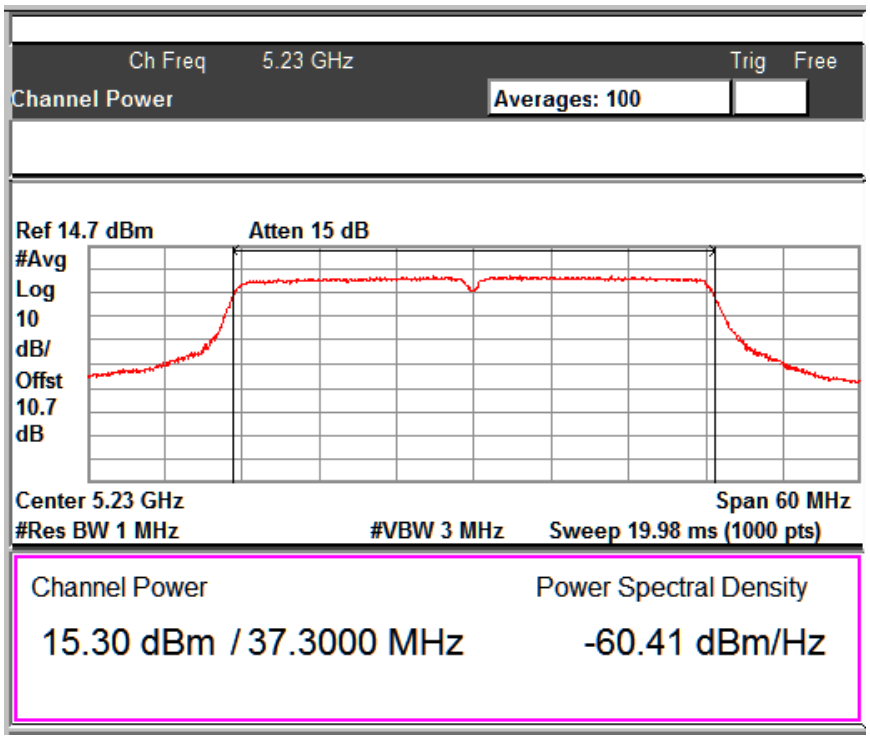
$P_{out} = P_{limit}-(G_{tx}-6) = 23-(7.75-6) = 21.25dBm$

Data Rate (Mbps)	Channel No.	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)
MCS 8	38	5190	10.97	12.50	11.37	13.70	26.2	14.18	21.25	-7.07
	46	5230	15.30	33.88	15.46	35.15	69.03	18.39	21.25	-2.86
MCS 11	38	5190	10.93	12.38	11.32	13.55	25.93	14.14	21.25	-7.11
	46	5230	15.27	33.65	15.41	34.75	68.4	18.35	21.25	-2.9
MCS 15	38	5190	10.64	11.58	10.97	12.50	24.08	13.81	21.25	-7.44
	46	5230	14.00	25.11	14.25	26.60	51.71	17.13	21.25	-4.12

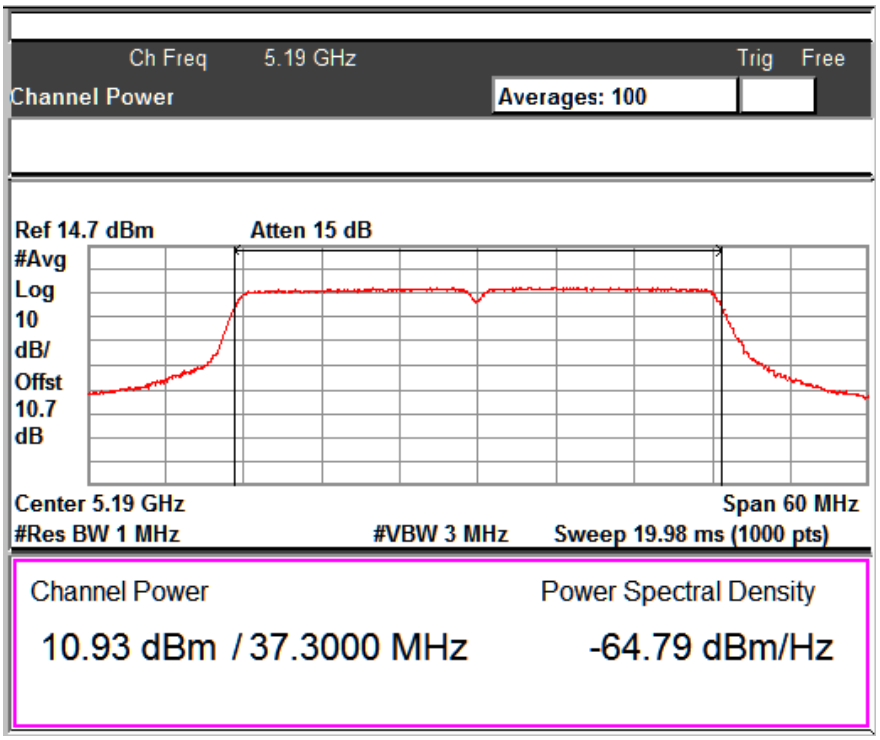
Chain 0



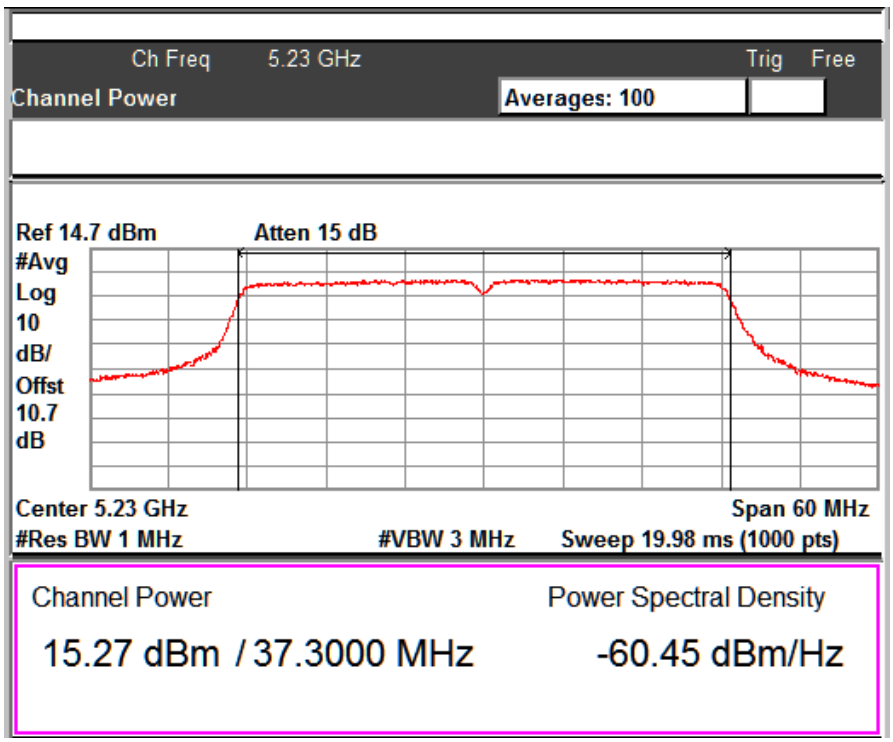
Data Rate: MCS 8 **Channel Frequency: 5190MHz**



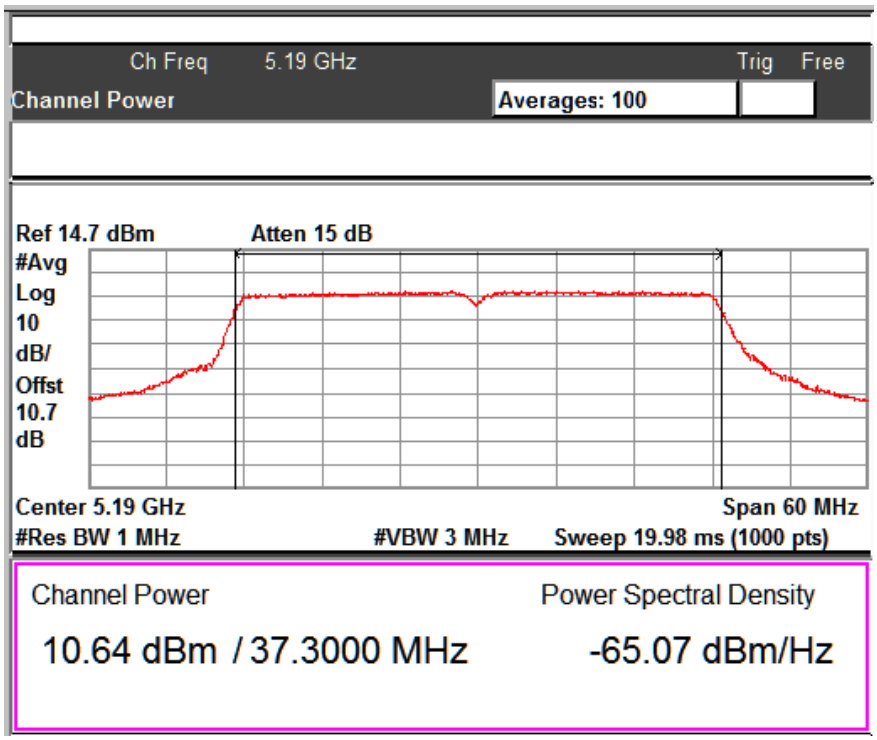
Data Rate: MCS 8 **Channel Frequency: 5230MHz**



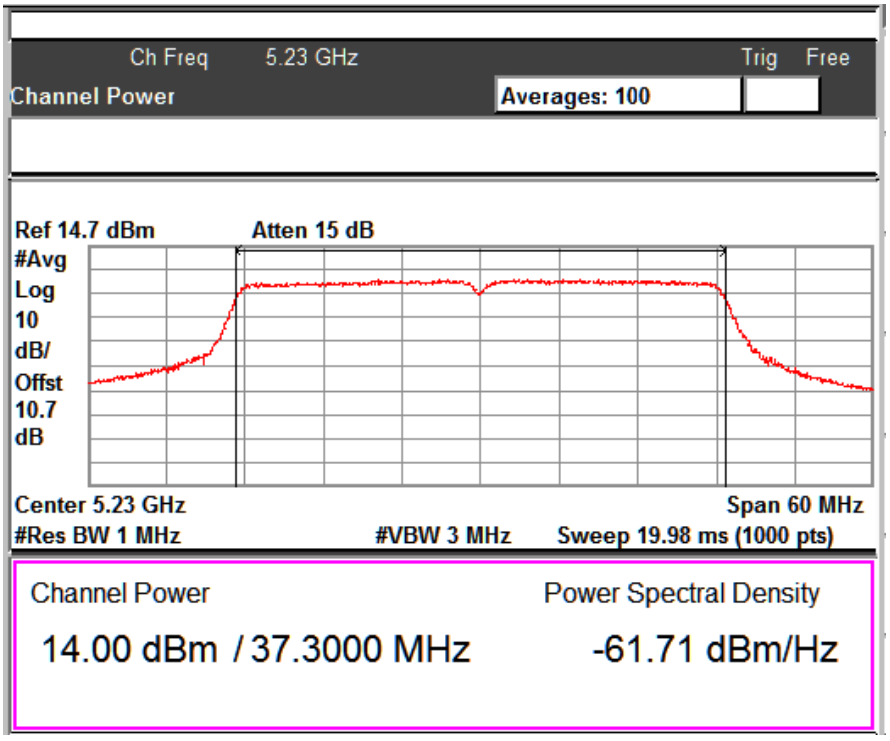
Data Rate: MCS 11 **Channel Frequency: 5190MHz**



Data Rate: MCS 11 **Channel Frequency: 5230MHz**

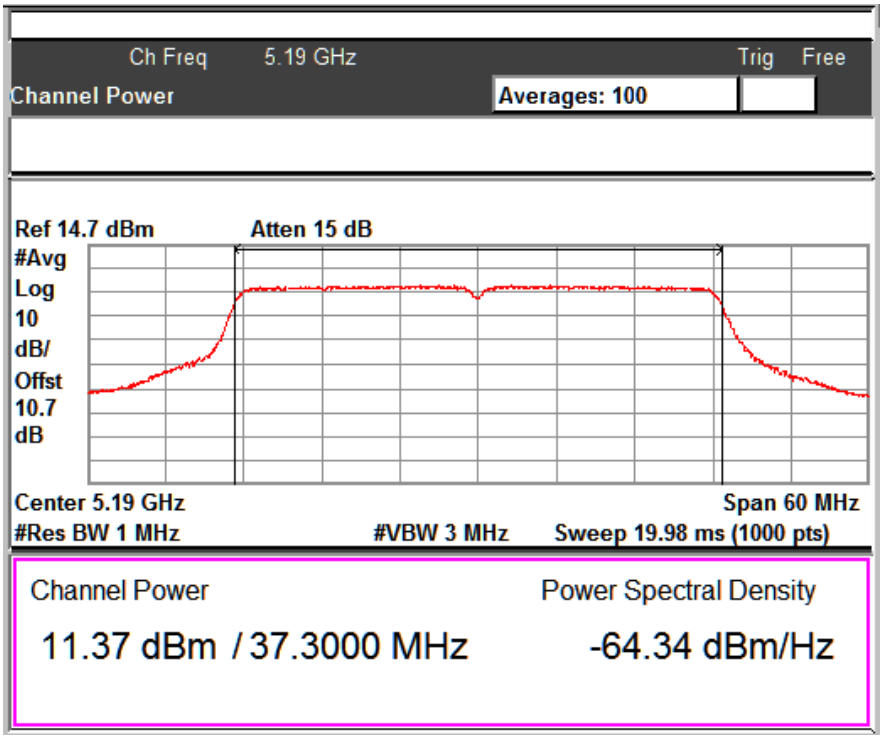


Data Rate: MCS 15 **Channel Frequency: 5190MHz**

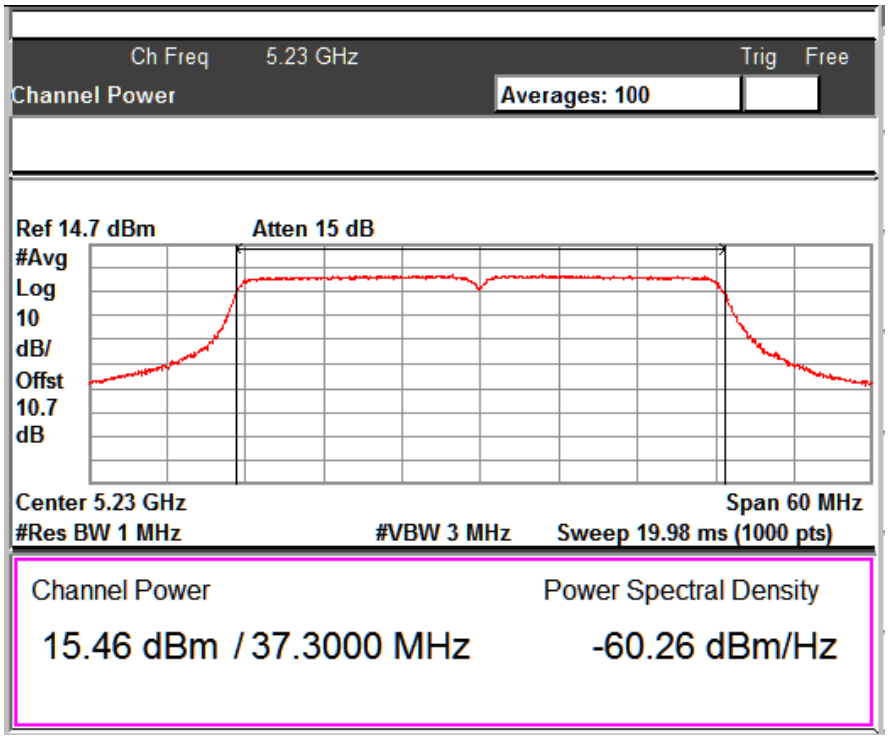


Data Rate: MCS 15 **Channel Frequency: 5230MHz**

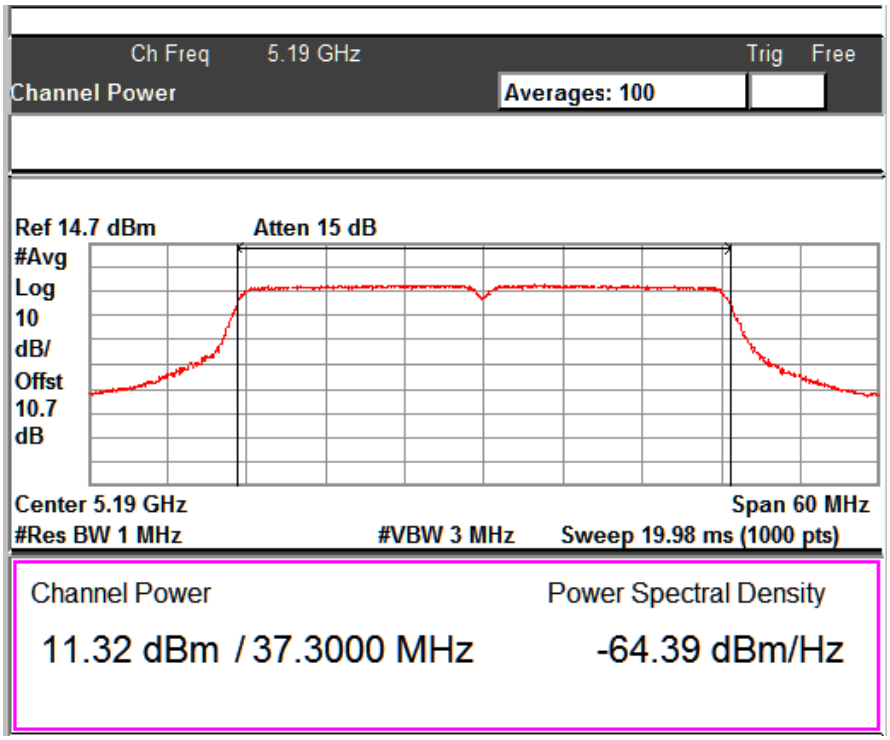
Chain 1



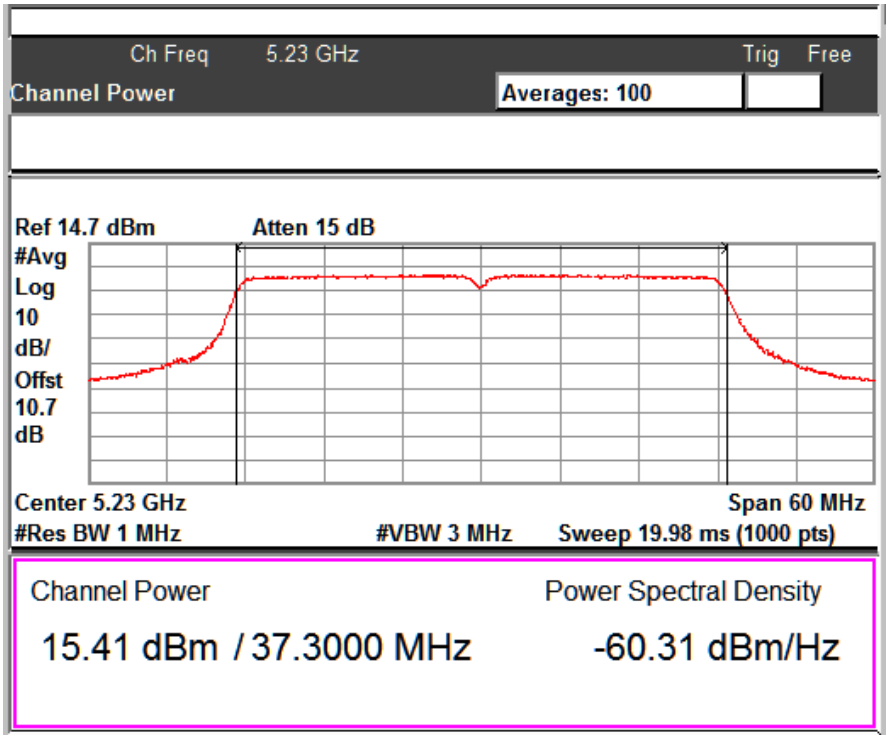
Data Rate: MCS 8 **Channel Frequency: 5190MHz**



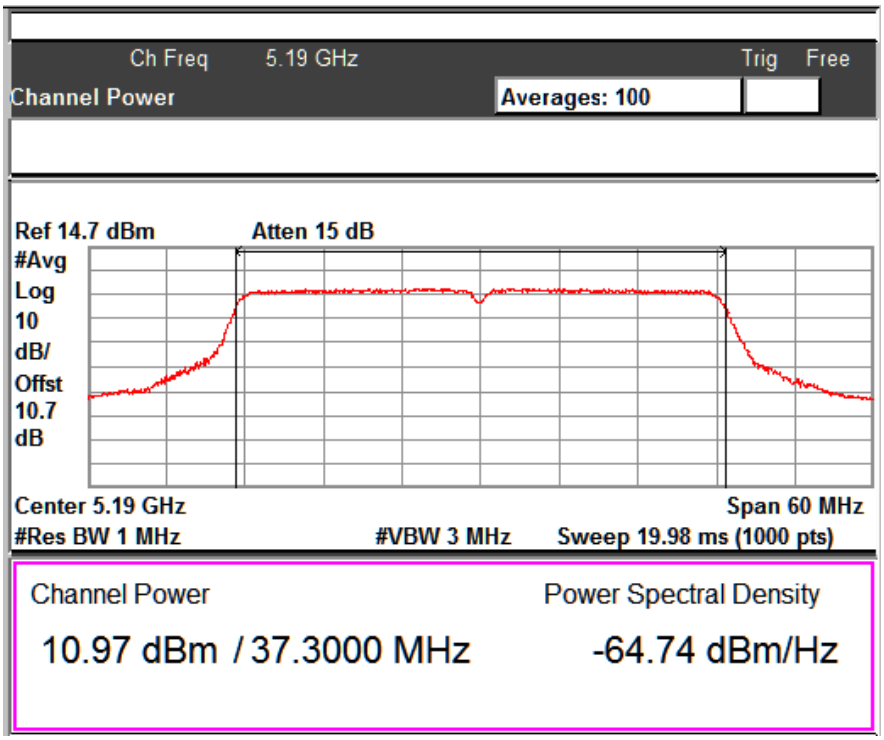
Data Rate: MCS 8 **Channel Frequency: 5230MHz**



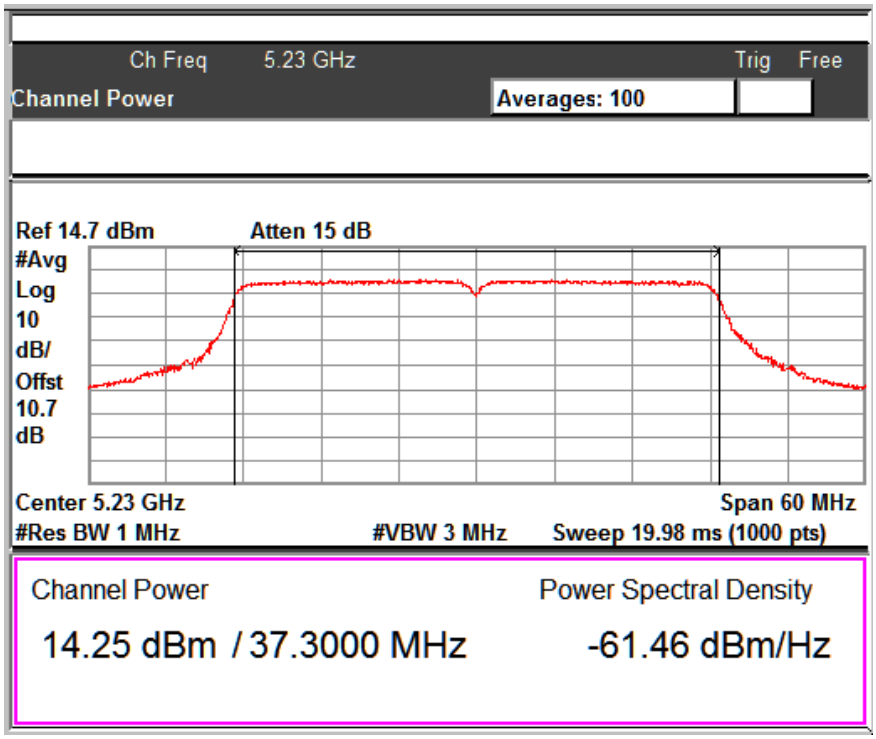
Data Rate: MCS 11 **Channel Frequency: 5190MHz**



Data Rate: MCS 11 **Channel Frequency: 5230MHz**



Data Rate: MCS 15 **Channel Frequency: 5190MHz**



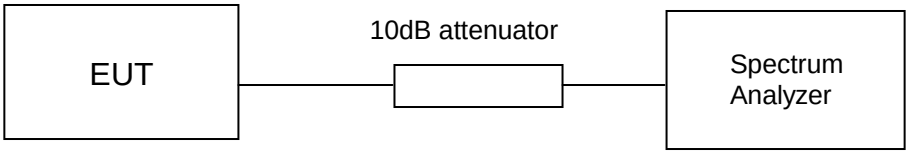
Data Rate: MCS 15 **Channel Frequency: 5230MHz**

Peak power spectral density **Section 15.407 (a)**
Result **Pass**

Test Specification FCC Part 15 Section 15.407 (a)
Requirement the peak power spectral density shall not exceed 4 dBm in any 1-MHz band

Note: Though the rule refers to “peak power spectral density”, the intent is to measure the maximum value of the time average of the power spectral density measured during a period of continuous transmission.

Test Method:



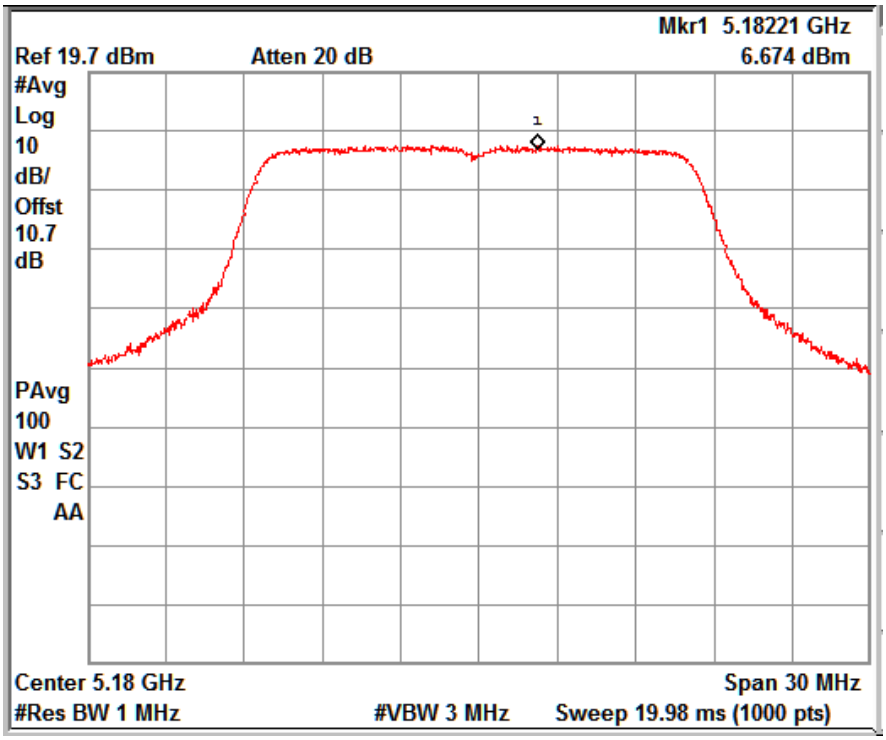
Offset value 10.7dB is added in the final measurement value.

Test Result:

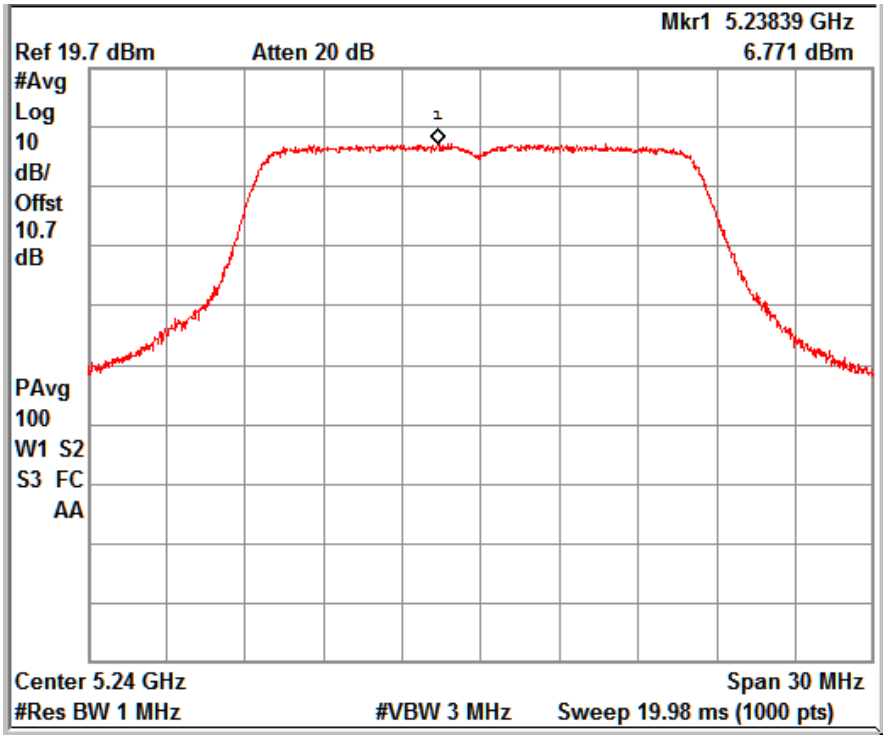
Modulation: 802.11a

Note: Test was performed on both the transmit chains and worst case results were from chain 1 and the respective results has been reported.

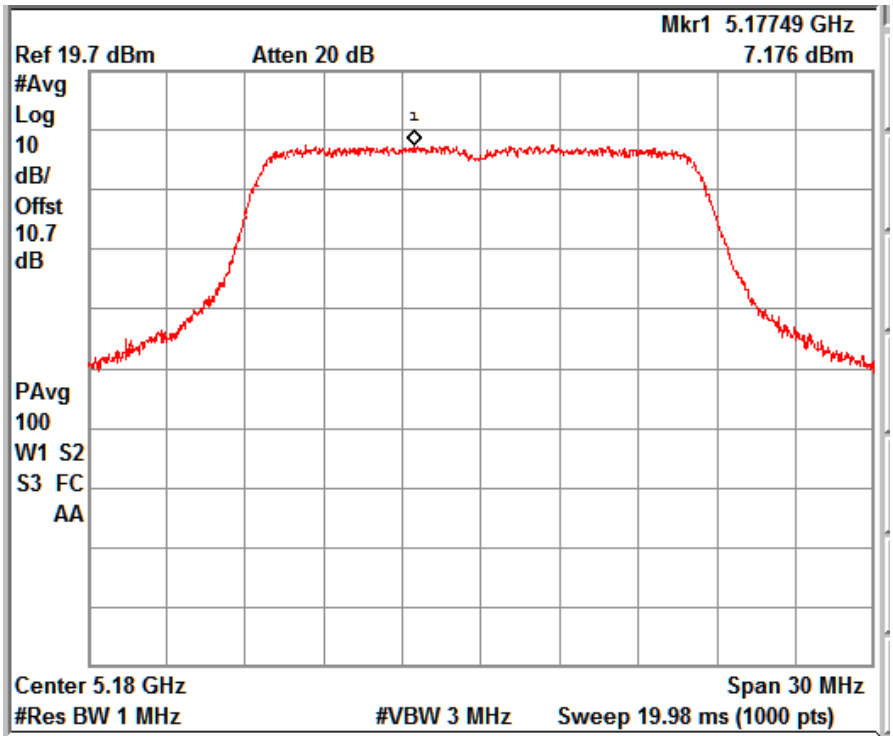
Data Rate (Mbps)	Channel No.	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
6	36	5180	6.67	11.00	-12.24
	48	5240	6.77	11.00	-11.86
24	36	5180	7.17	11.00	-12.07
	48	5240	6.63	11.00	-12.38
54	36	5180	5.53	11.00	-12.19
	48	5240	4.29	11.00	-12.16



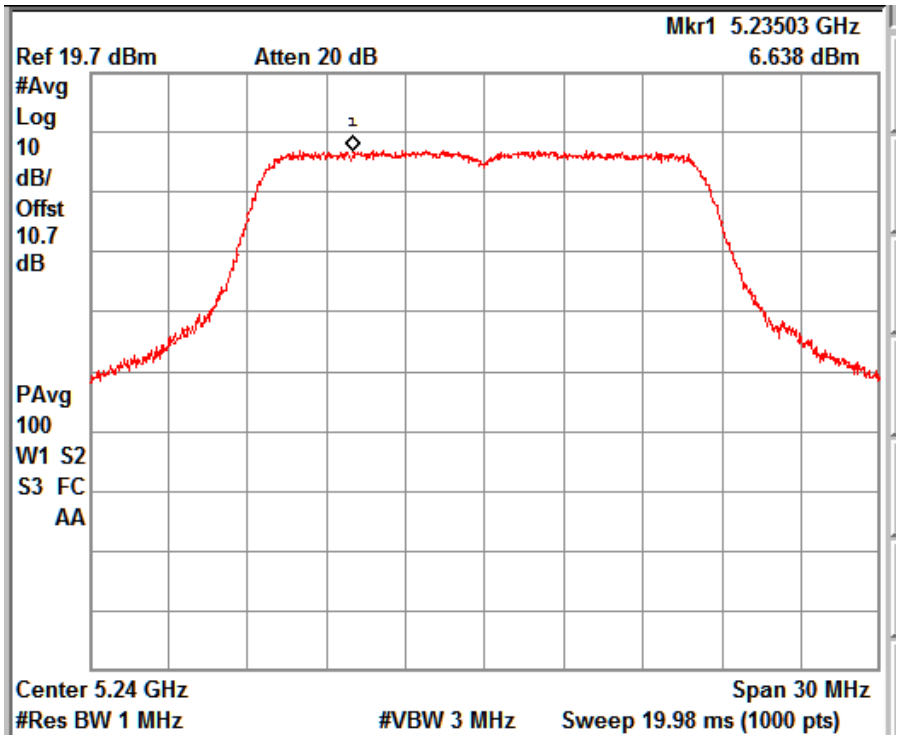
Data Rate: 6Mbps **Channel Frequency: 5180MHz**



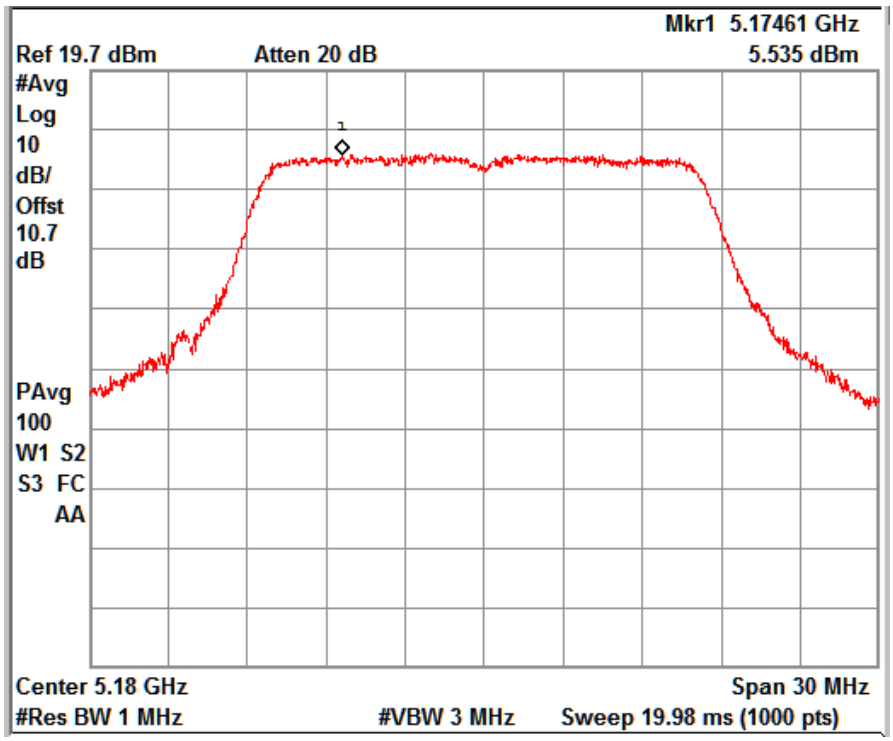
Data Rate: 6Mbps **Channel Frequency: 5240MHz**



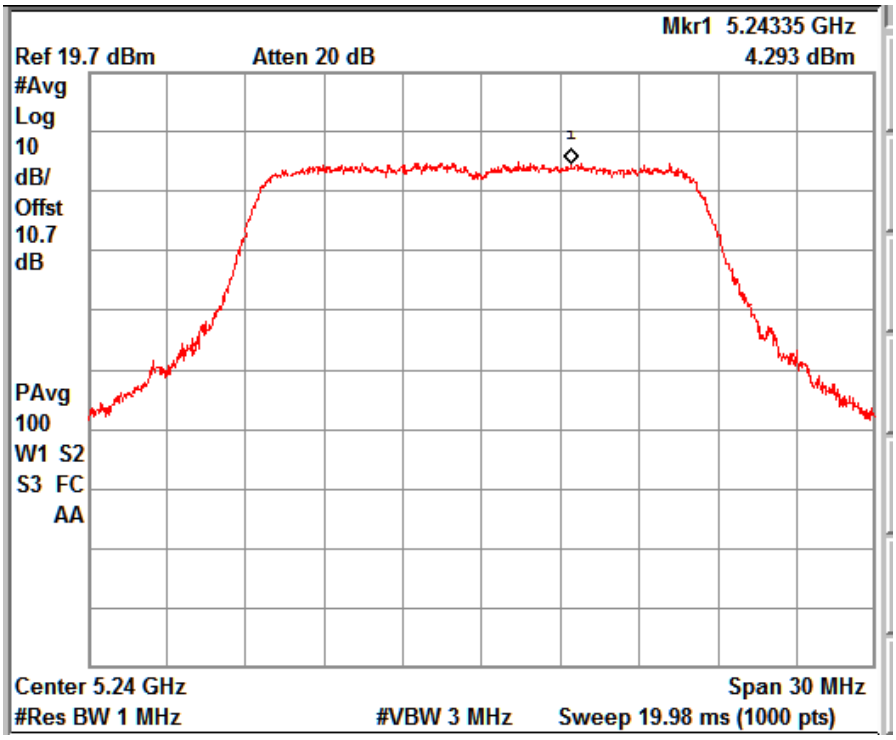
Data Rate: 24Mbps **Channel Frequency: 5180MHz**



Data Rate: 24Mbps **Channel Frequency: 5240MHz**



Data Rate: 54Mbps **Channel Frequency: 5180MHz**

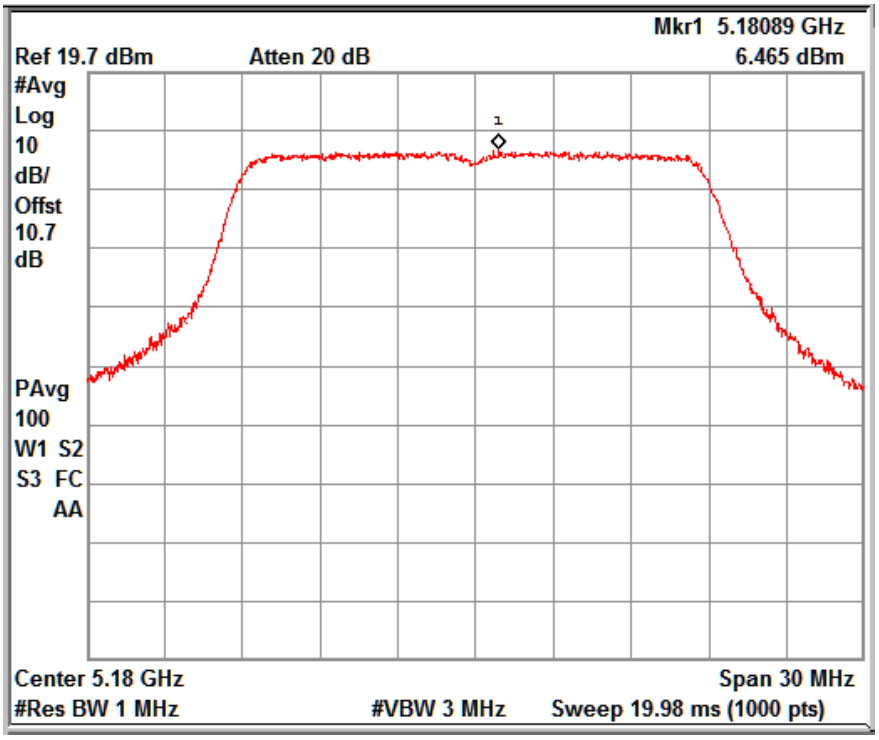


Data Rate: 54Mbps **Channel Frequency: 5240MHz**

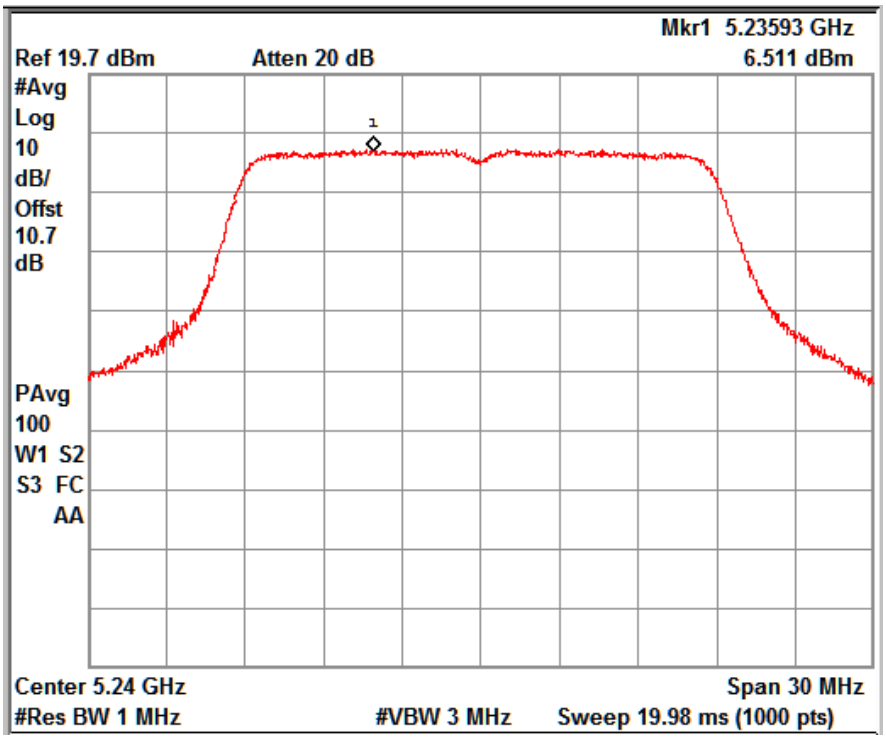
Modulation: 802.11ac vht 20

Note: Test was performed on both the transmit chains and worst case results were from chain 1 and the respective results has been reported.

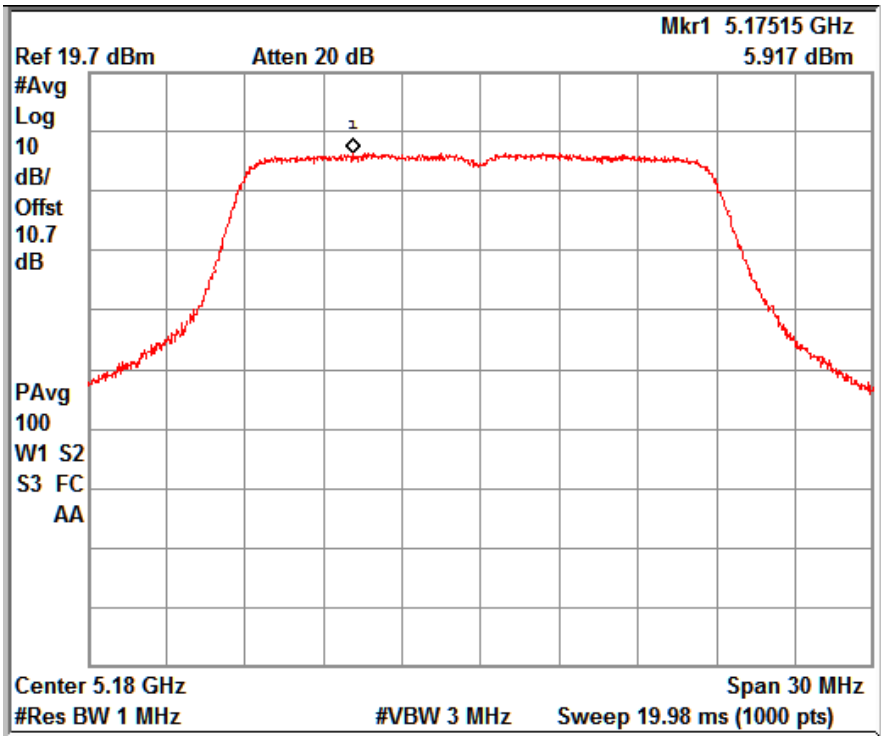
Data Rate (Mbps)	Channel No.	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
MCS 0	36	5180	6.46	11	-4.54
	48	5240	6.51	11	-4.49
MCS 4	36	5180	5.91	11	-5.09
	48	5240	6.82	11	-4.18
MCS 7	36	5180	5.20	11	-5.8
	48	5240	4.77	11	-6.23



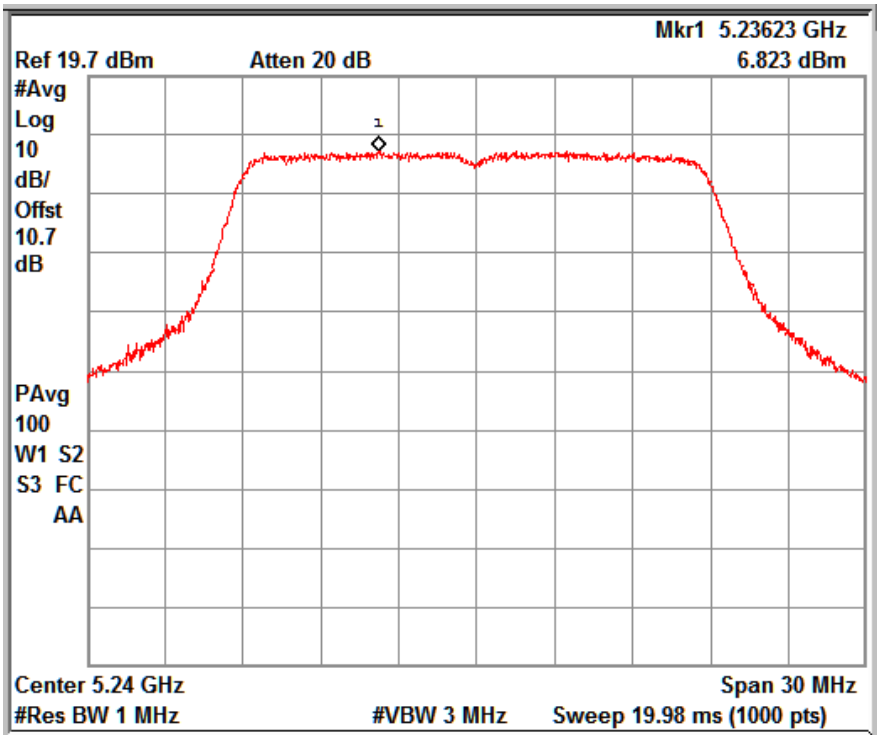
Data Rate: MCS 0 **Channel Frequency: 5180MHz**



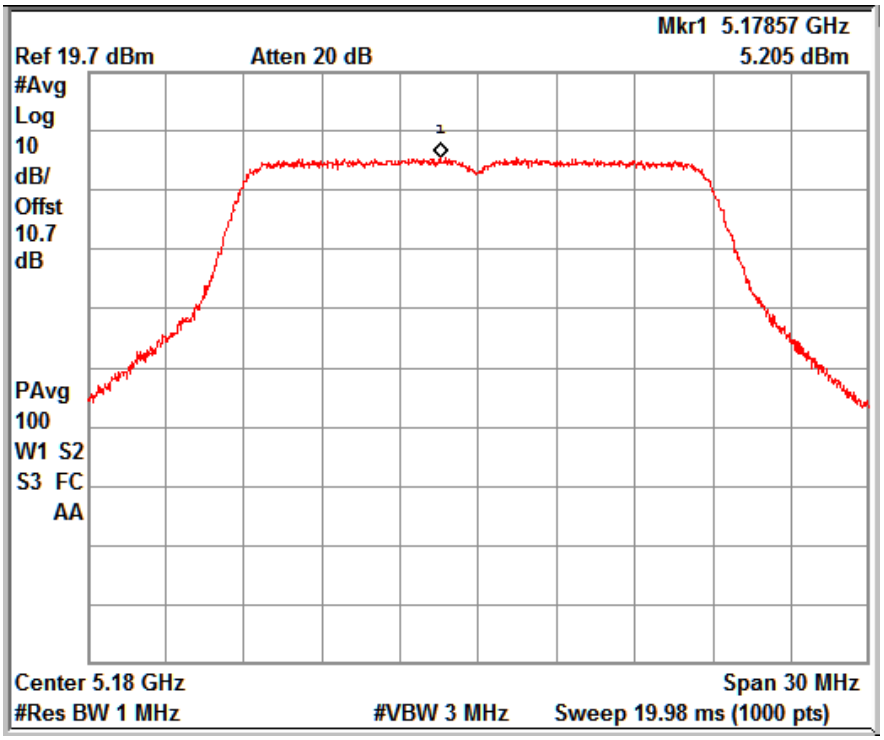
Data Rate: MCS 0 **Channel Frequency: 5240MHz**



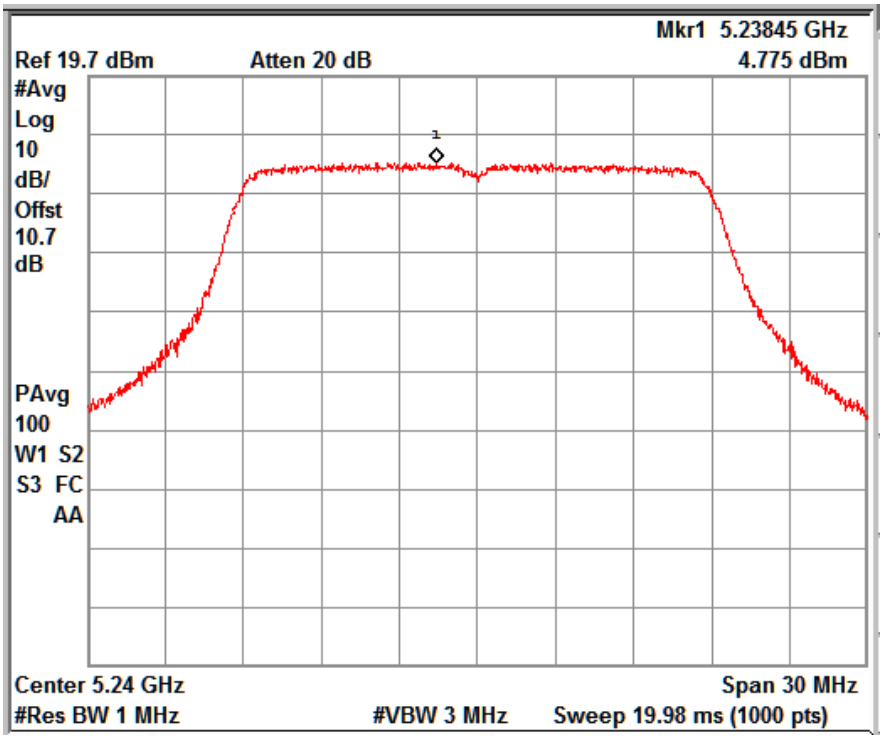
Data Rate: MCS 4 **Channel Frequency: 5180MHz**



Data Rate: MCS 4 **Channel Frequency: 5240MHz**



Data Rate: MCS 7 **Channel Frequency: 5180MHz**



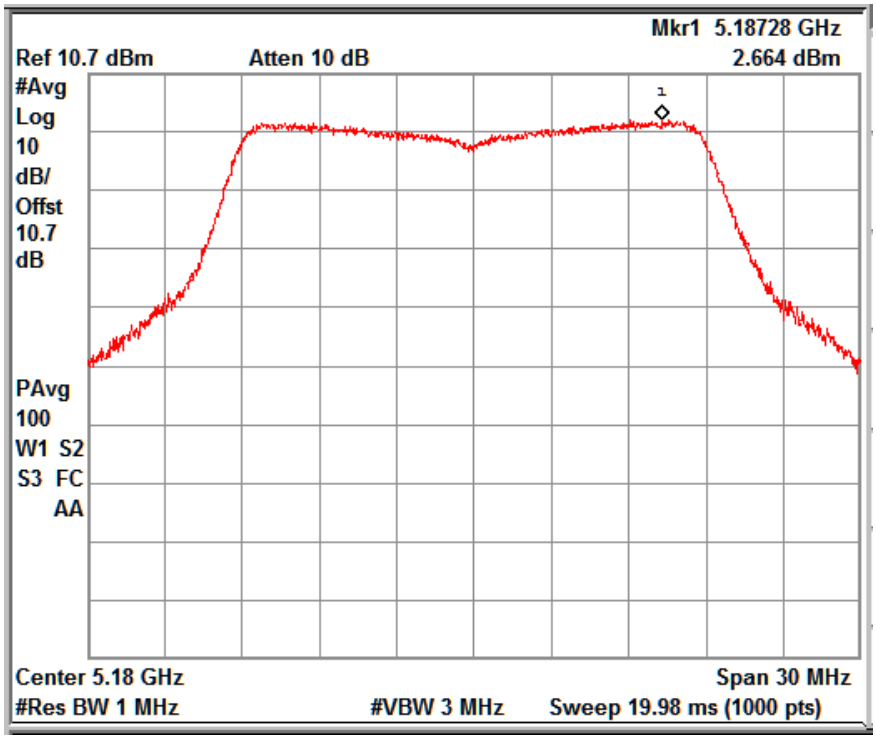
Data Rate: MCS 7 **Channel Frequency: 5240MHz**

Modulation: 802.11ac vht 20 MIMO_ch0

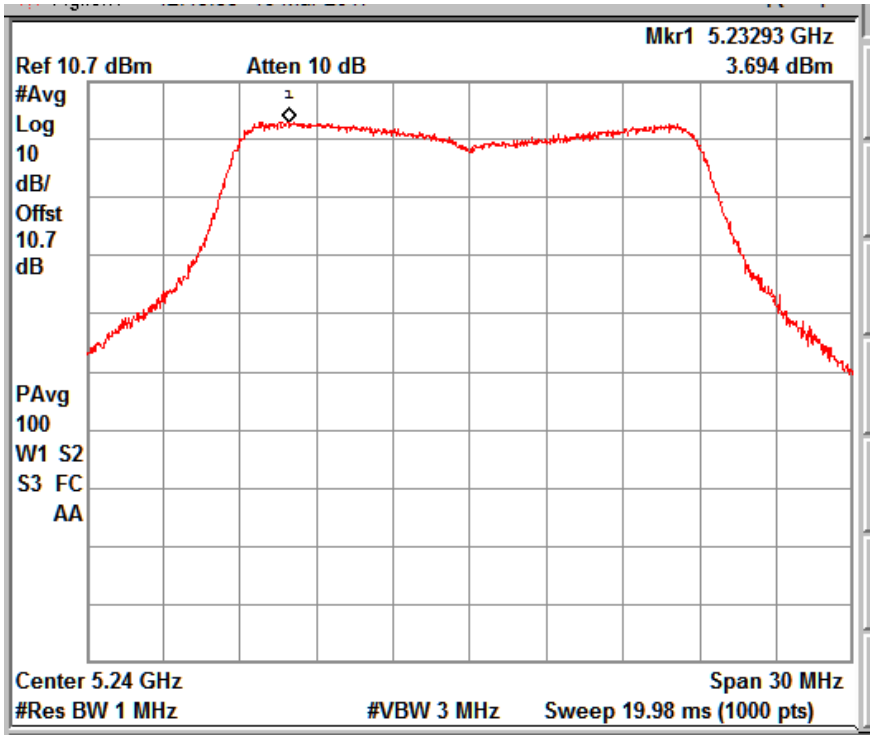
Data Rate (Mbps)	Channel No.	Frequency (MHz)	CH 0 PSD (dBm)	Add 10log(N_{Ant})	Final PSD (dBm)	Limit (dBm)	Margin (dB)
MCS 8	36	5180	2.66	3.01	5.67	11	-5.33
	48	5240	3.69	3.01	6.7	11	-4.3
MCS 11	36	5180	2.23	3.01	5.24	11	-5.76
	48	5240	3.21	3.01	6.22	11	-4.78
MCS 15	36	5180	1.07	3.01	4.08	11	-6.92
	48	5240	2.34	3.01	5.35	11	-5.65

Modulation: 802.11ac vht 20 MIMO_ch1

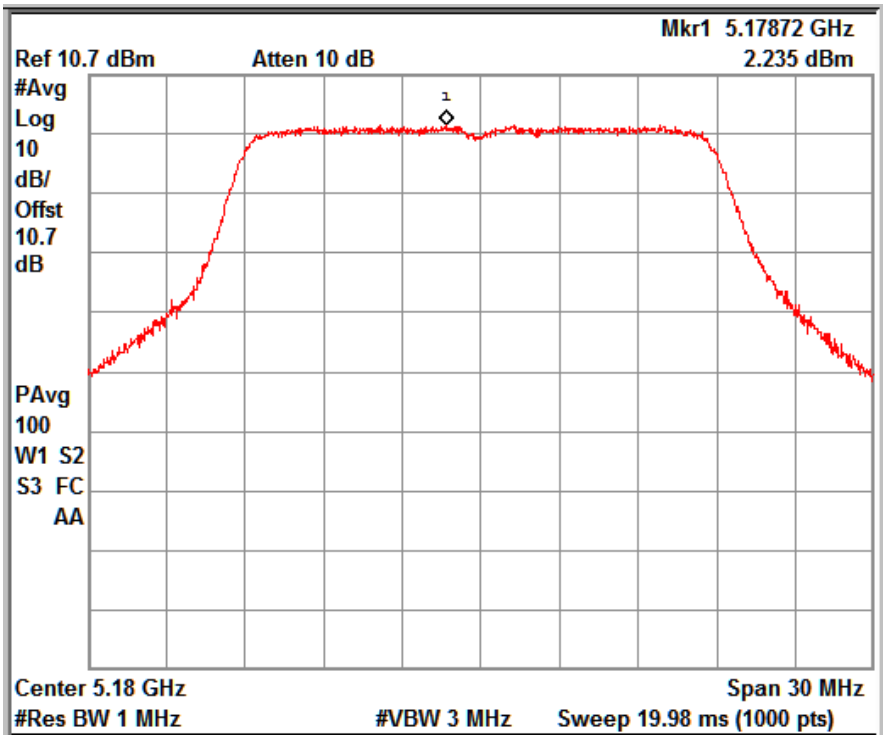
Data Rate (Mbps)	Channel No.	Frequency (MHz)	CH 1 PSD (dBm)	Add 10log(N_{Ant})	Final PSD (dBm)	Limit (dBm)	Margin (dB)
MCS 8	36	5180	1.98	3.01	4.99	11	-6.01
	48	5240	3.64	3.01	6.65	11	-4.35
MCS 11	36	5180	2.84	3.01	5.85	11	-5.15
	48	5240	3.57	3.01	6.58	11	-4.42
MCS 15	36	5180	1.79	3.01	4.8	11	-6.2
	48	5240	2.29	3.01	5.3	11	-5.7



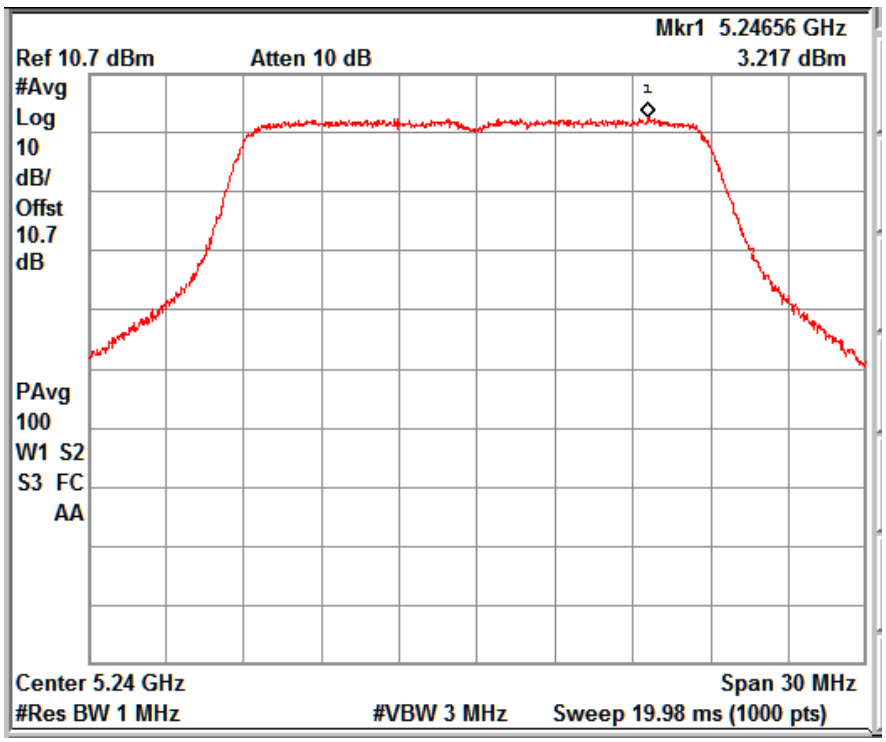
Data Rate: MCS 8 **Channel Frequency: 5180MHz**



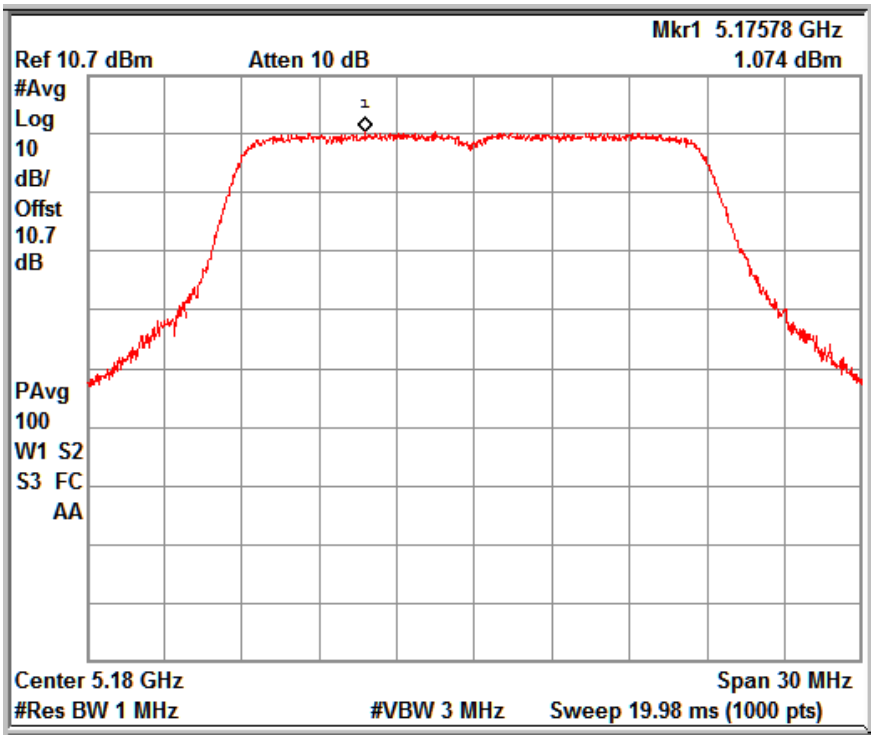
Data Rate: MCS 8 **Channel Frequency: 5240MHz**



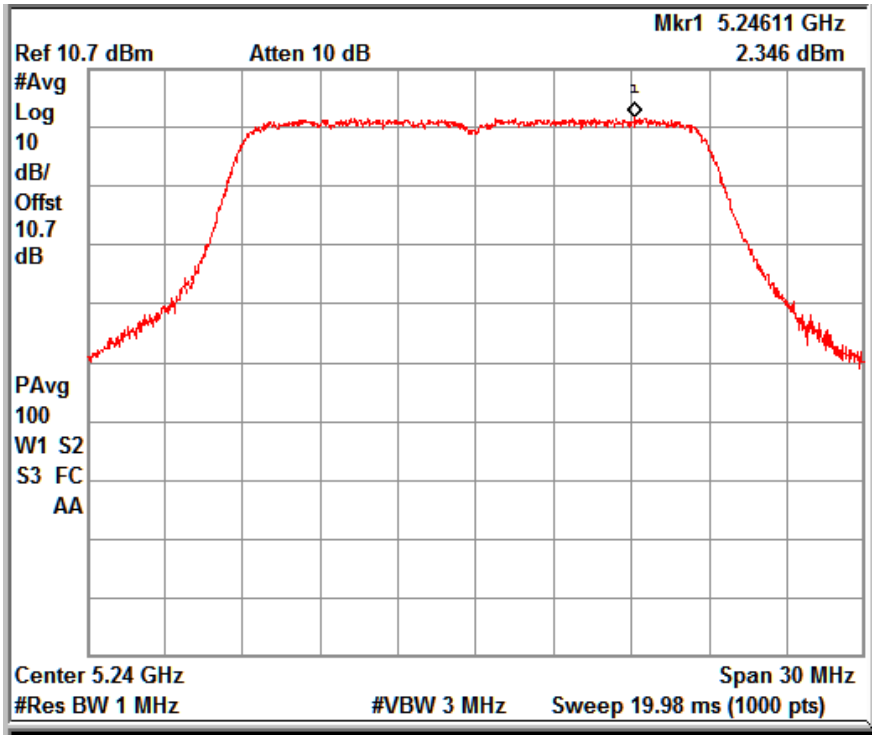
Data Rate: MCS 11 **Channel Frequency: 5180MHz**



Data Rate: MCS 11 **Channel Frequency: 5240MHz**

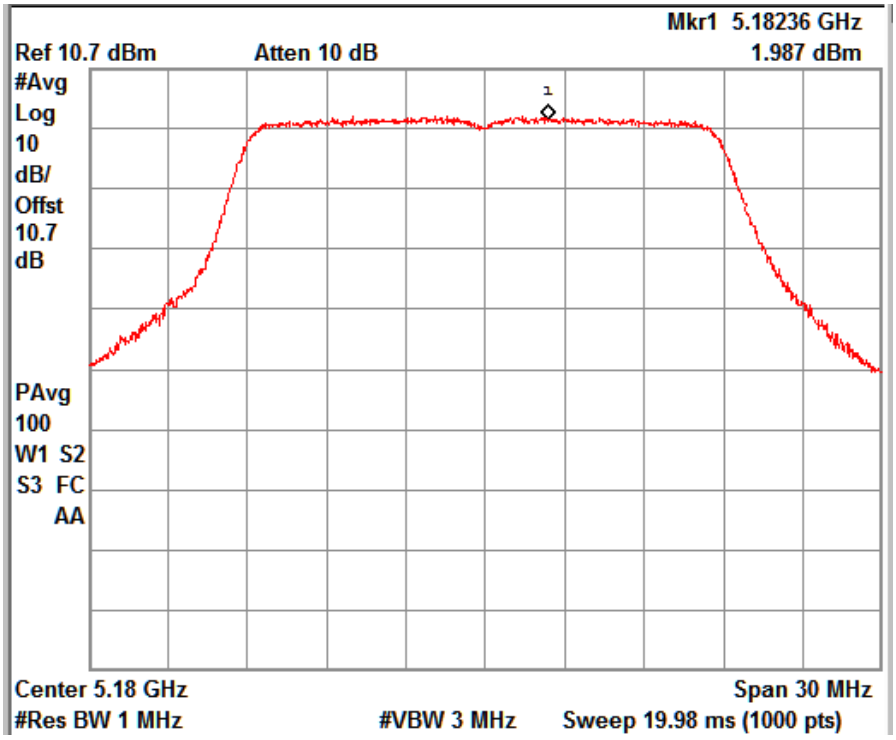


Data Rate: MCS 15 **Channel Frequency: 5180MHz**

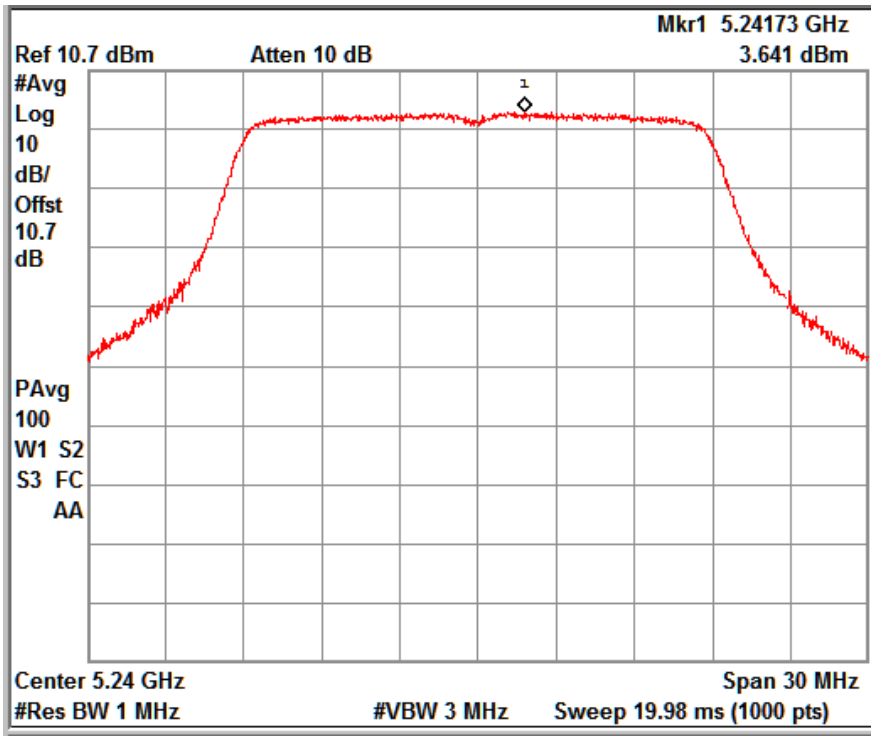


Data Rate: MCS 15 **Channel Frequency: 5240MHz**

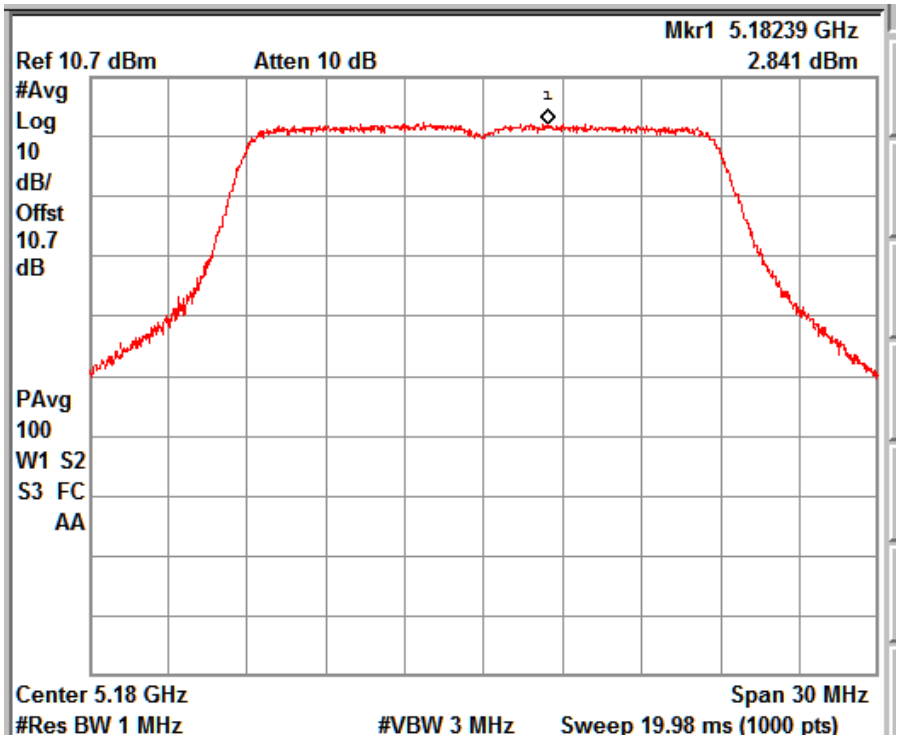
Chain 1



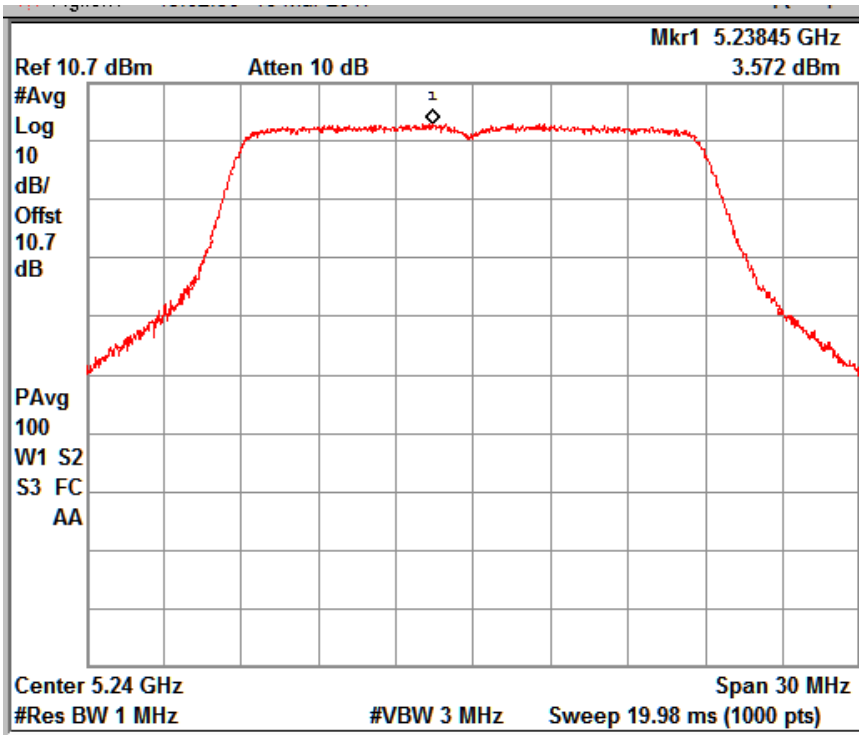
Data Rate: MCS 8 **Channel Frequency: 5180MHz**



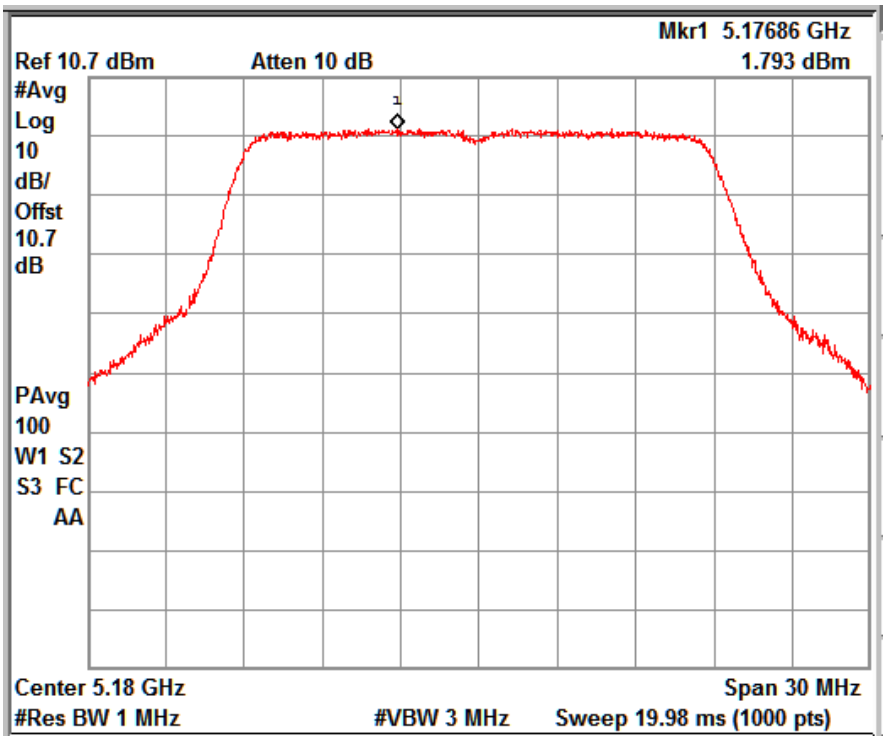
Data Rate: MCS 8 **Channel Frequency: 5240MHz**



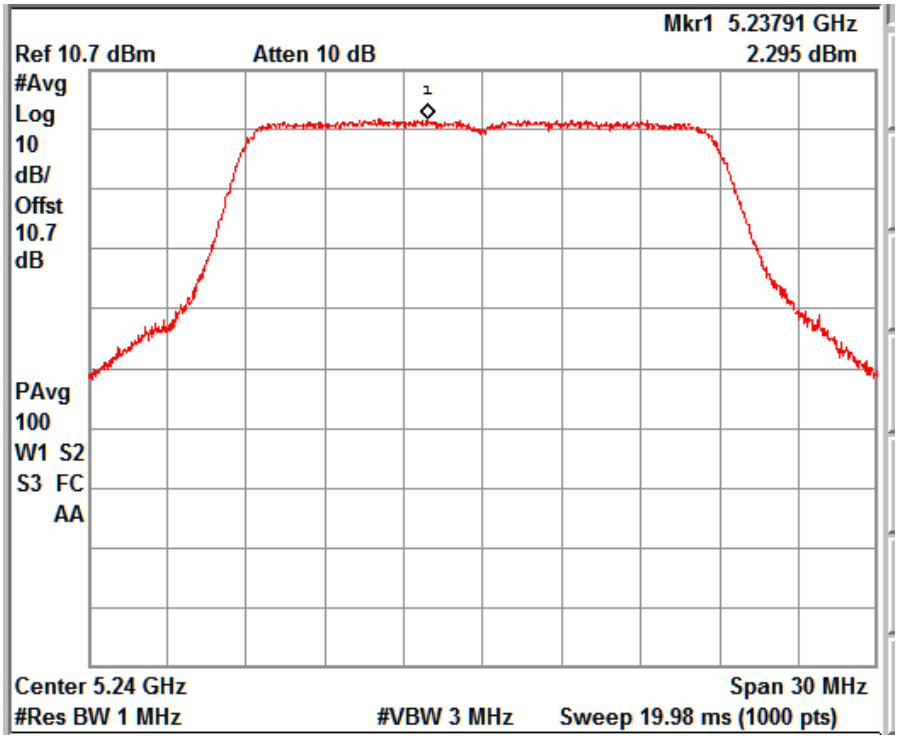
Data Rate: MCS 11 **Channel Frequency: 5180MHz**



Data Rate: MCS 11 **Channel Frequency: 5240MHz**



Data Rate: MCS 15 **Channel Frequency: 5180MHz**

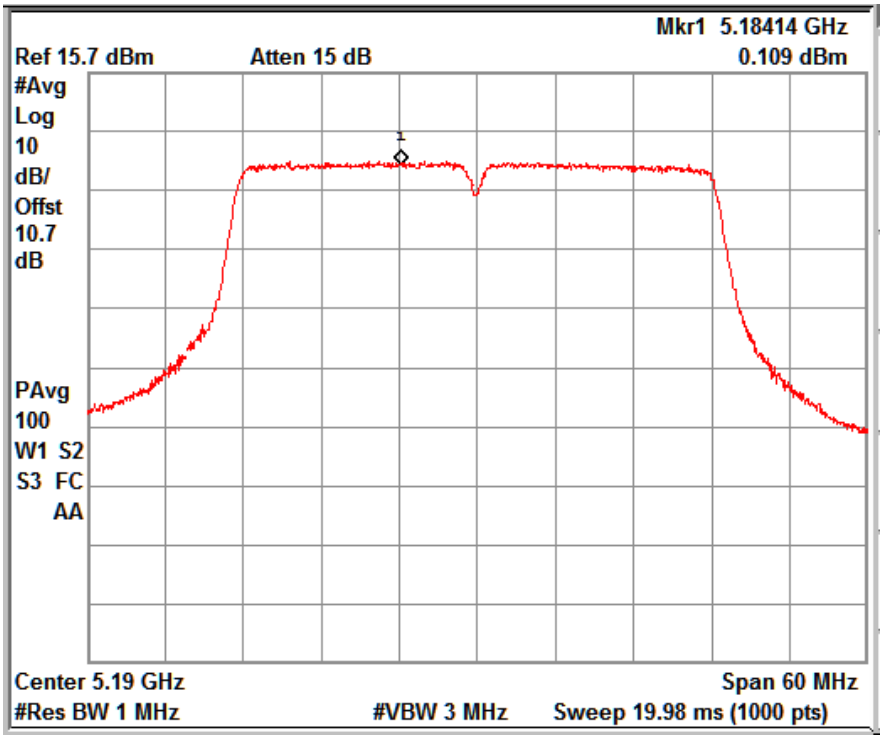


Data Rate: MCS 15 **Channel Frequency: 5240MHz**

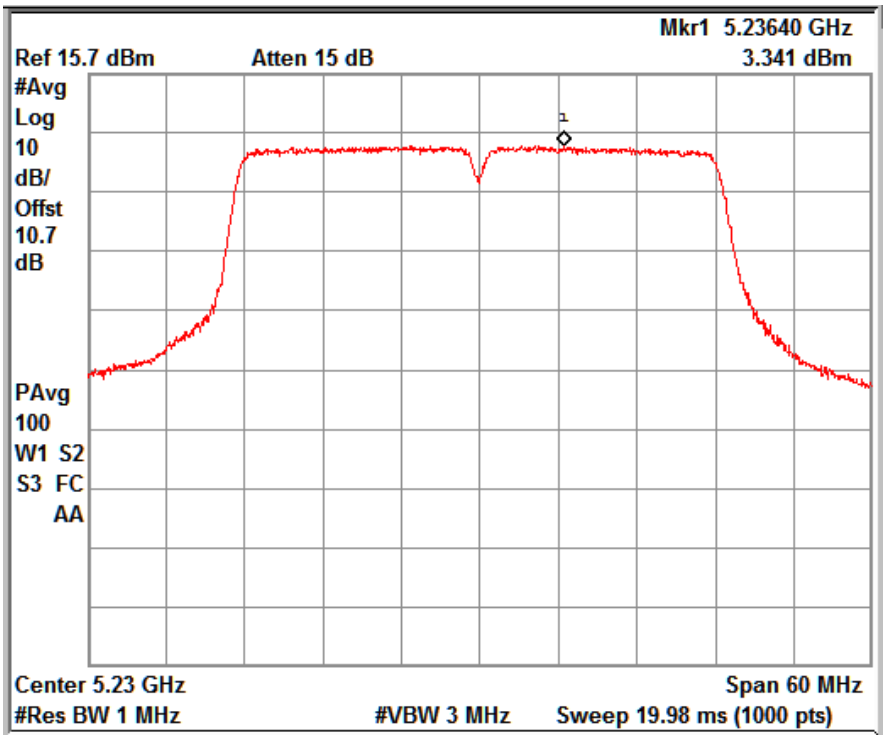
Modulation: 802.11ac vht 40

Note: Test was performed on both the transmit chains and worst case results were from chain 1 and the respective results has been reported.

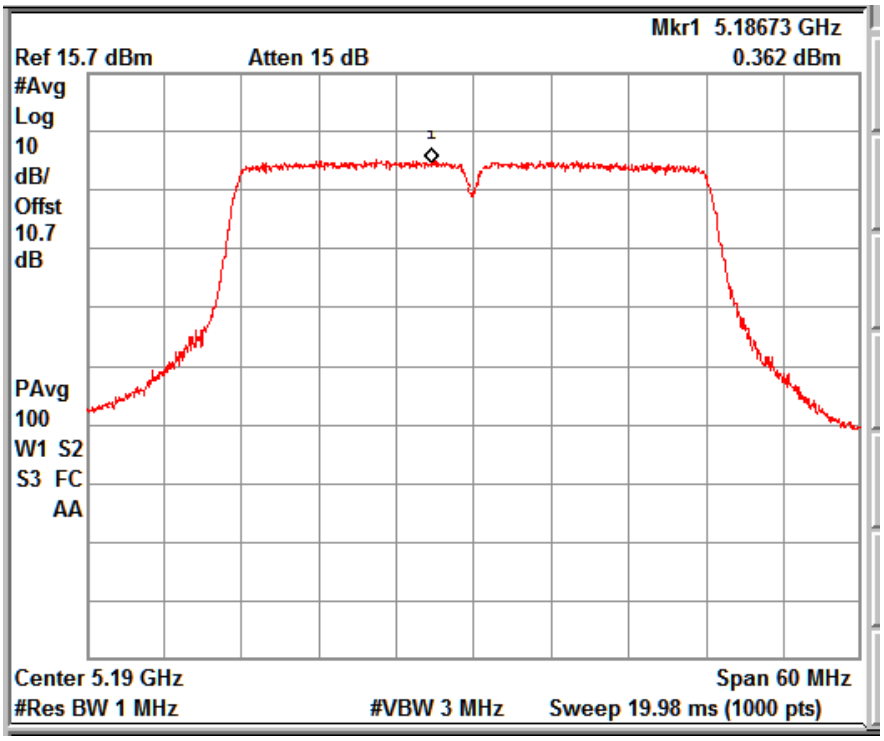
Data Rate (Mbps)	Channel No.	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
MCS 0	38	5190	0.10	11.00	-10.9
	46	5230	3.34	11.00	-7.66
MCS 4	38	5190	0.36	11.00	-10.64
	46	5230	3.59	11.00	-7.41
MCS 7	38	5190	-0.09	11.00	-11.09
	46	5230	2.22	11.00	-8.78



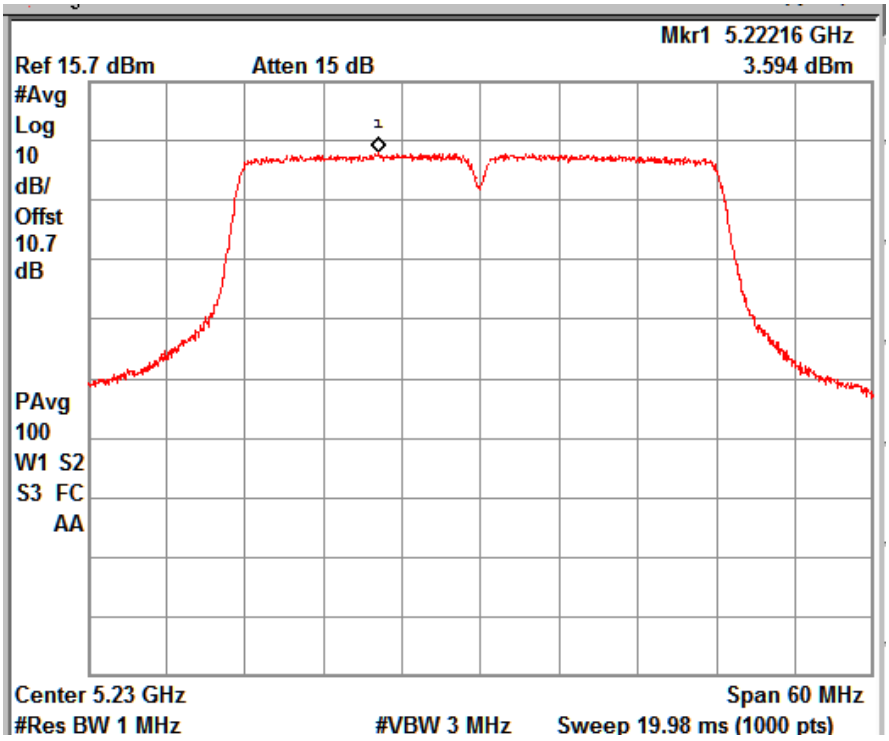
Data Rate: MCS 0 **Channel Frequency: 5190MHz**



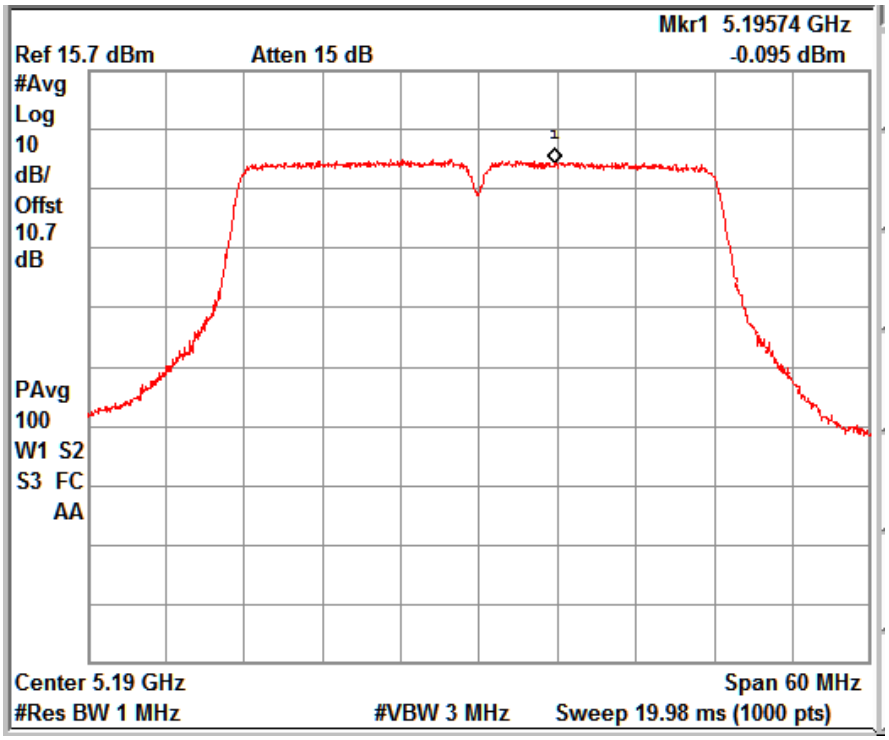
Data Rate: MCS 0 **Channel Frequency: 5230MHz**



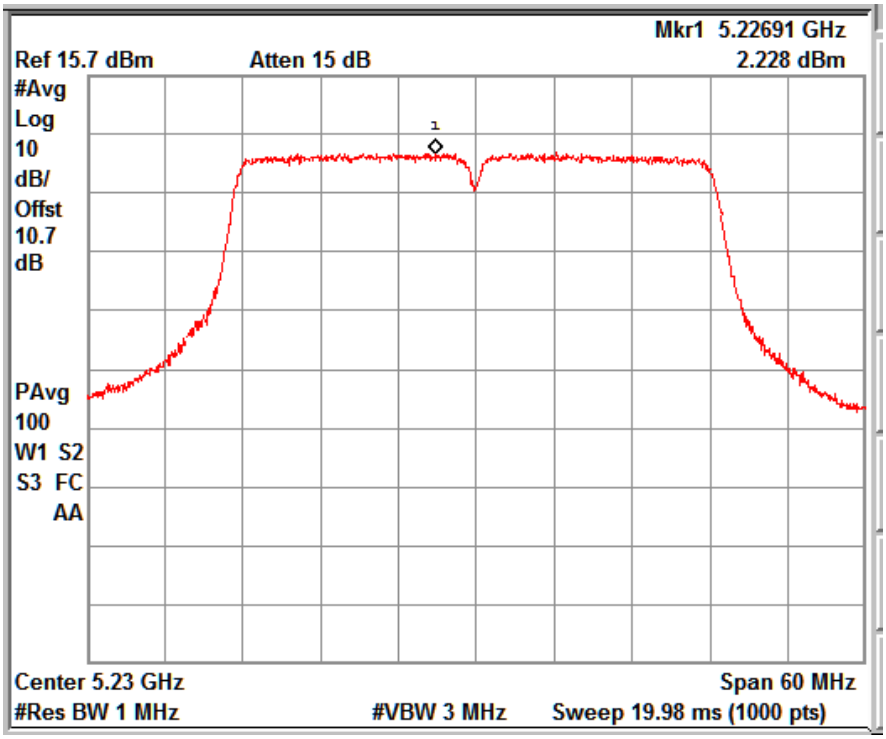
Data Rate: MCS 4 **Channel Frequency: 5190MHz**



Data Rate: MCS 4 **Channel Frequency: 5230MHz**



Data Rate: MCS 7 **Channel Frequency: 5190MHz**



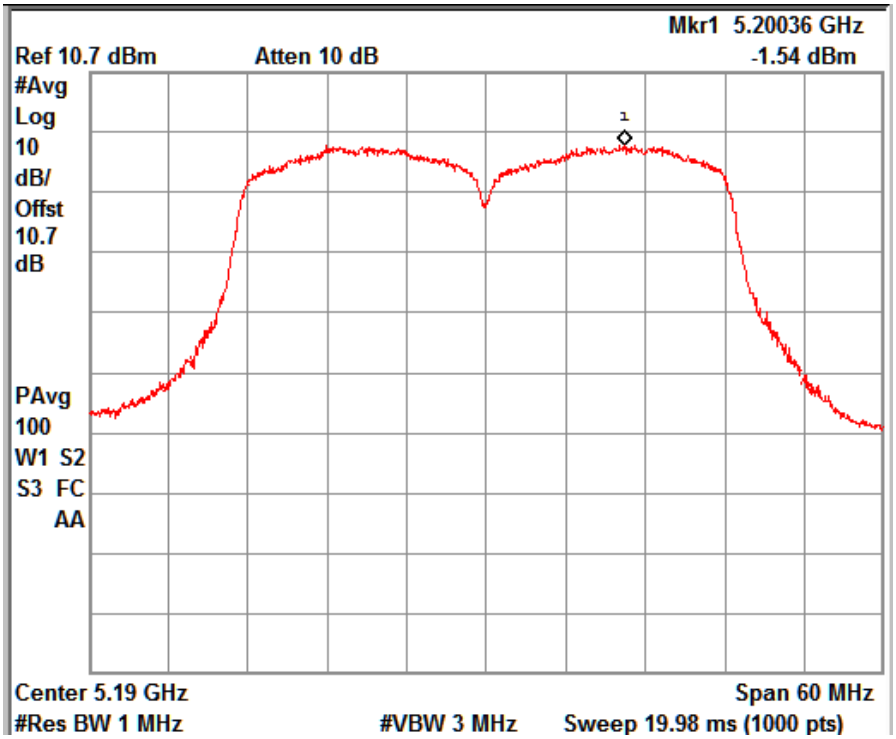
Data Rate: MCS 7 **Channel Frequency: 5230MHz**

Modulation: 802.11ac vht 40 MIMO_ch0

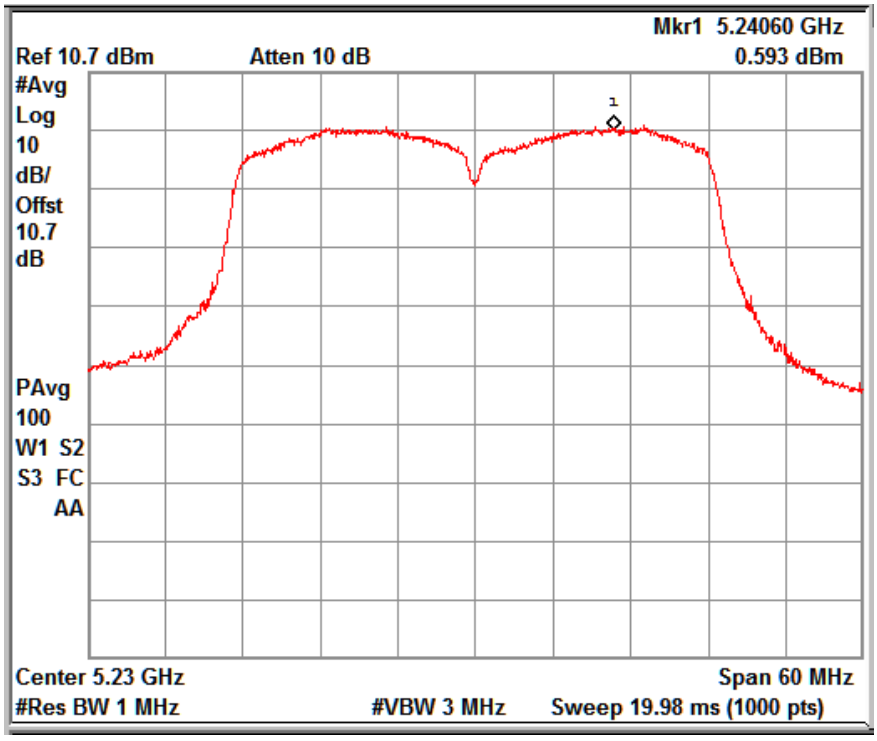
Data Rate (Mbps)	Channel No.	Frequency (MHz)	CH 0 PSD (dBm)	Add 10log(N_{Ant})	Final PSD (dBm)	Limit (dBm)	Margin (dB)
MCS 8	38	5190	-1.54	3.01	1.47	11.00	-9.53
	46	5230	0.59	3.01	3.6	11.00	-7.4
MCS 11	38	5190	-2.88	3.01	0.13	11.00	-10.87
	46	5230	0.12	3.01	3.13	11.00	-7.87
MCS 15	38	5190	-3.34	3.01	-0.33	11.00	-11.33
	46	5230	-1.12	3.01	1.89	11.00	-9.11

Modulation: 802.11ac vht 40 MIMO_ch1

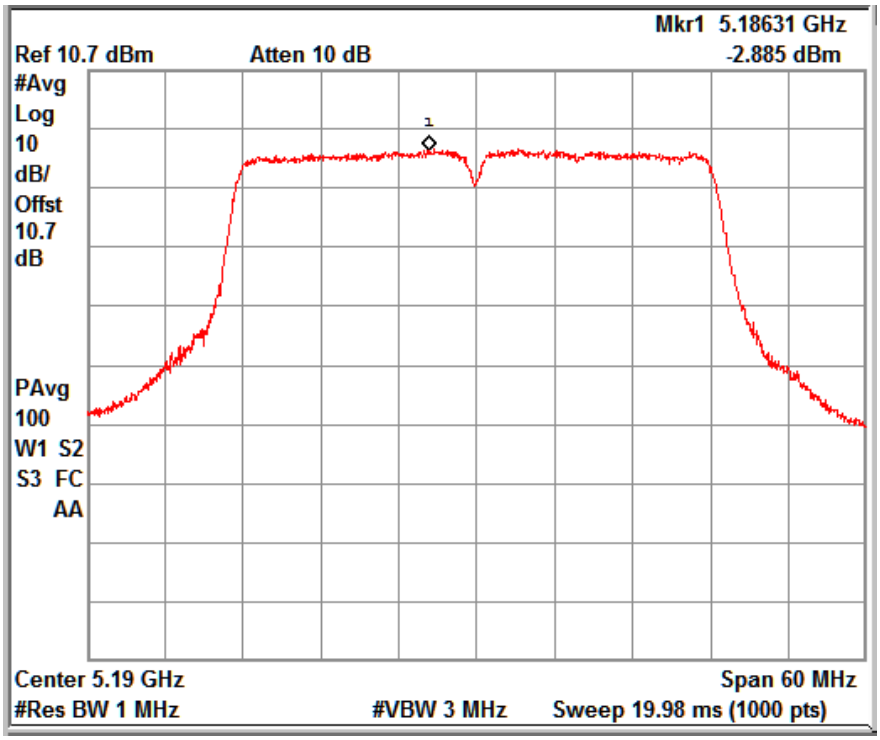
Data Rate (Mbps)	Channel No.	Frequency (MHz)	CH 1 PSD (dBm)	Add 10log(N_{Ant})	Final PSD (dBm)	Limit (dBm)	Margin (dB)
MCS 8	38	5190	-2.11	3.01	0.9	11.00	-10.1
	46	5230	-0.20	3.01	2.81	11.00	-8.19
MCS 11	38	5190	-2.19	3.01	0.82	11.00	-10.18
	46	5230	0.11	3.01	3.12	11.00	-7.88
MCS 15	38	5190	-2.17	3.01	0.84	11.00	-10.16
	46	5230	-1.99	3.01	1.02	11.00	-9.98



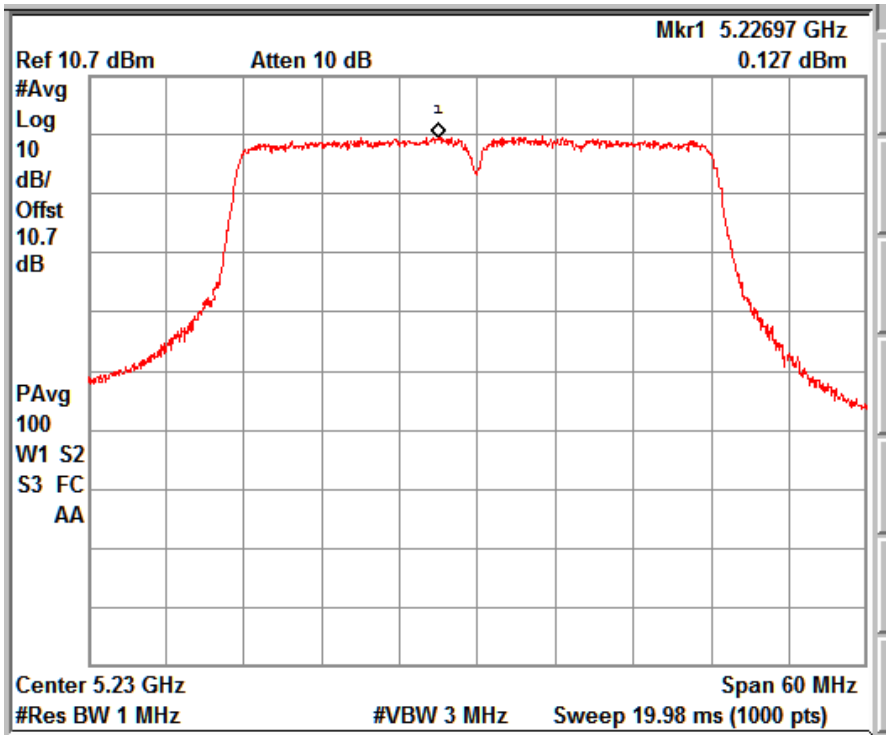
Data Rate: MCS 8 **Channel Frequency: 5190MHz**



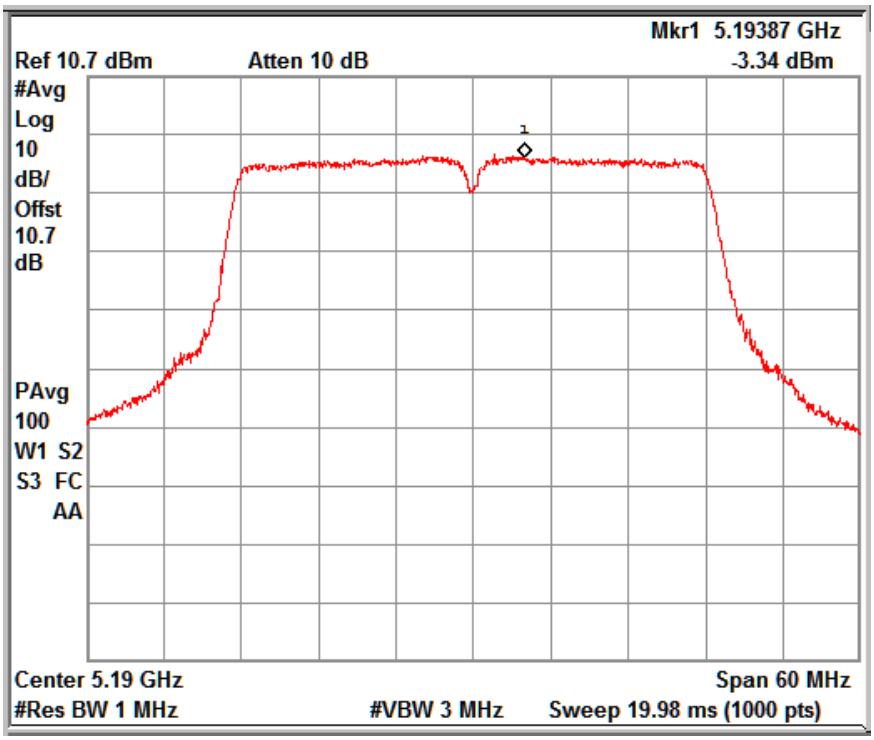
Data Rate: MCS 8 **Channel Frequency: 5230MHz**



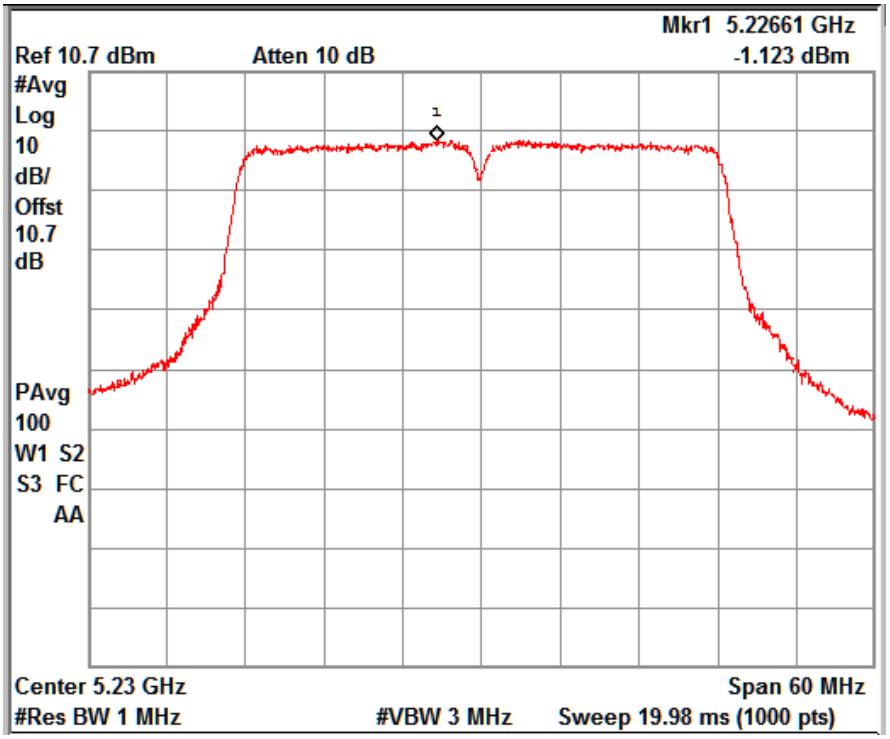
Data Rate: MCS 11 **Channel Frequency: 5190MHz**



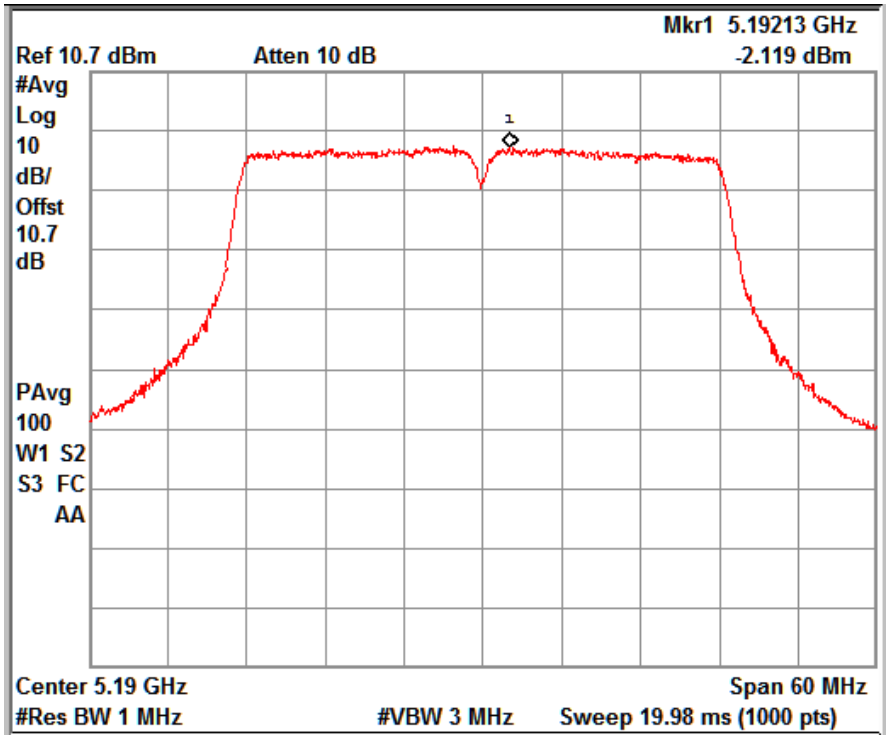
Data Rate: MCS 11 **Channel Frequency: 5230MHz**



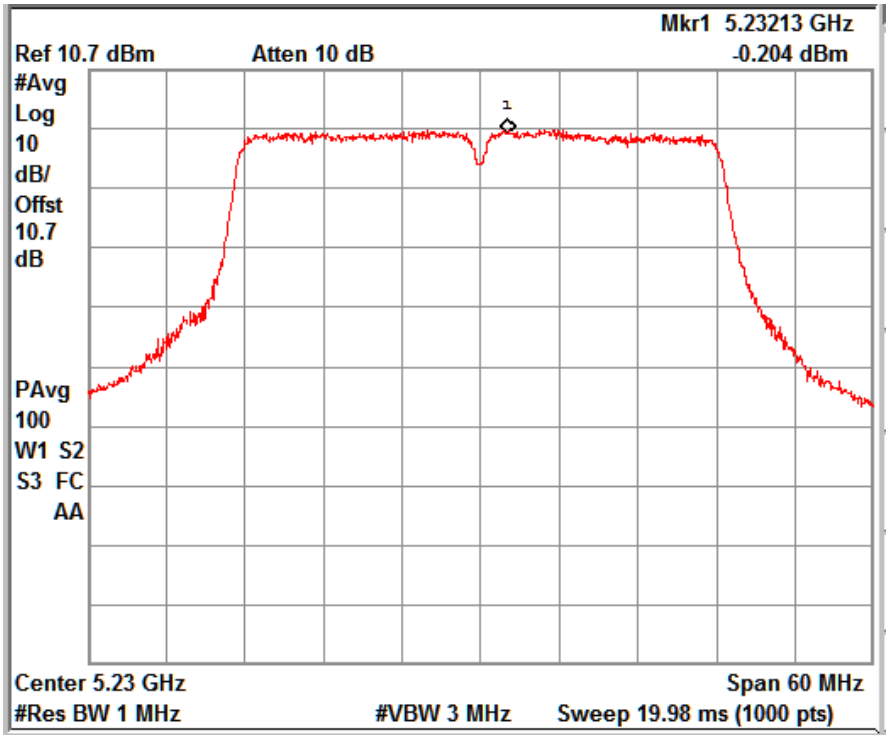
Data Rate: MCS 15 **Channel Frequency: 5190MHz**



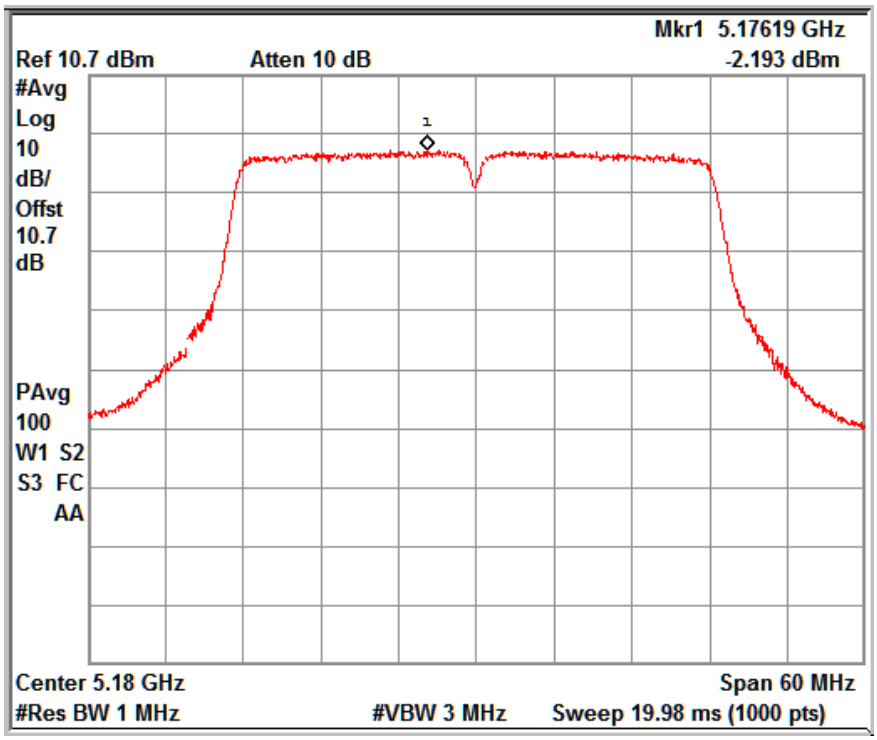
Data Rate: MCS 15 **Channel Frequency: 5230MHz**



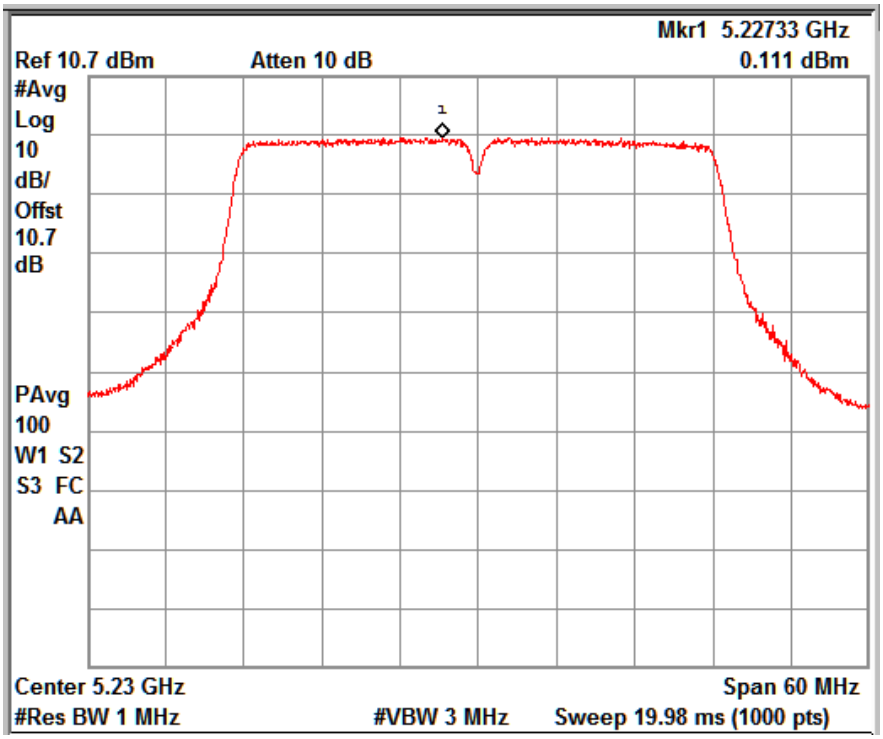
Data Rate: MCS 8 **Channel Frequency: 5190MHz**



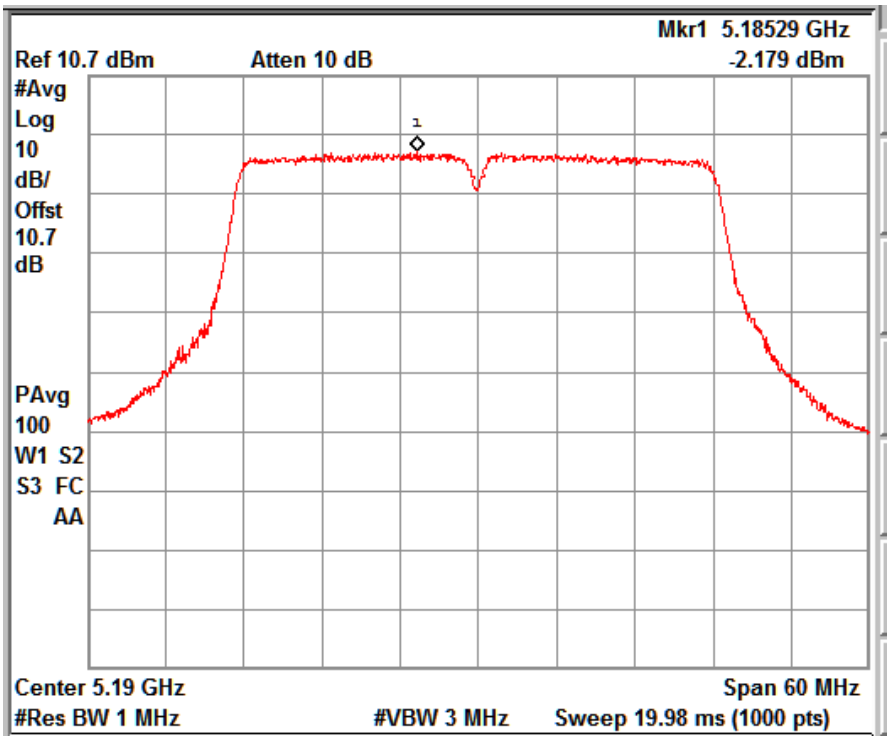
Data Rate: MCS 8 **Channel Frequency: 5230MHz**



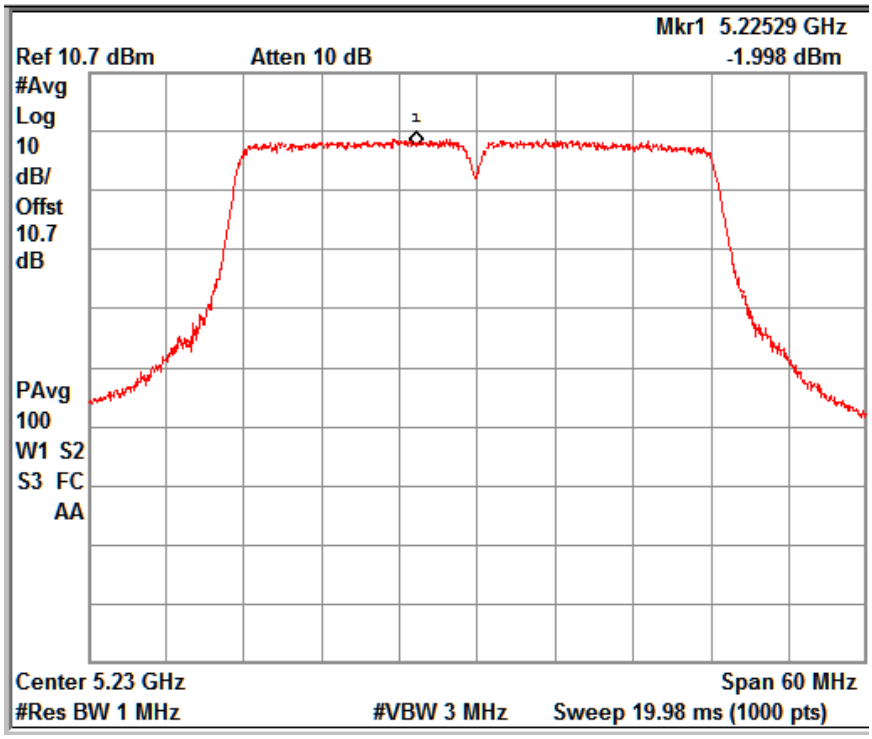
Data Rate: MCS 11 **Channel Frequency: 5190MHz**



Data Rate: MCS 11 **Channel Frequency: 5230MHz**



Data Rate: MCS 15 **Channel Frequency: 5190MHz**



Data Rate: MCS 15 **Channel Frequency: 5230MHz**

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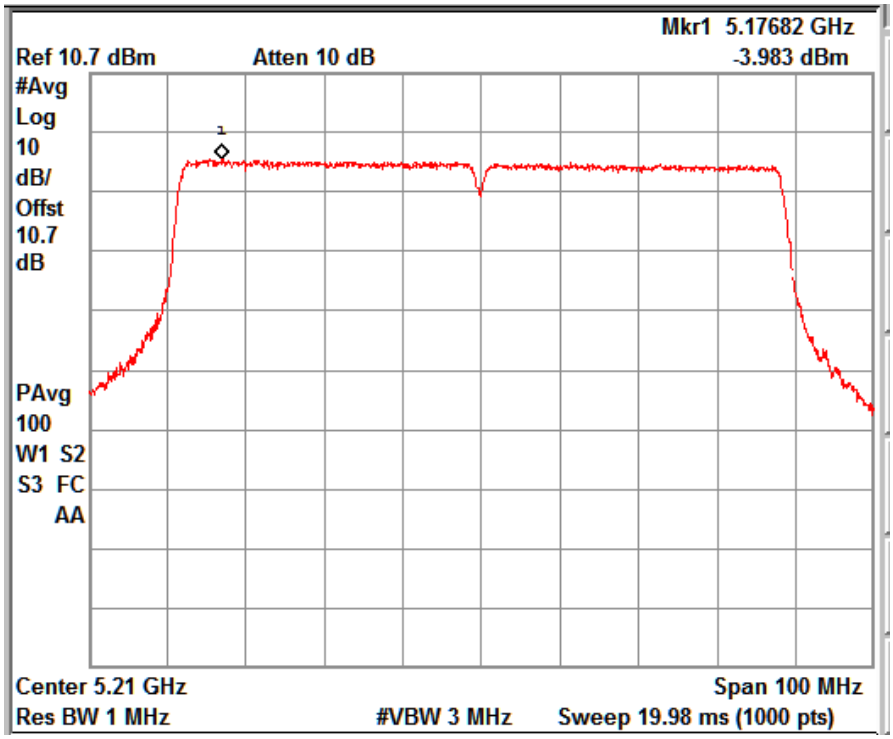
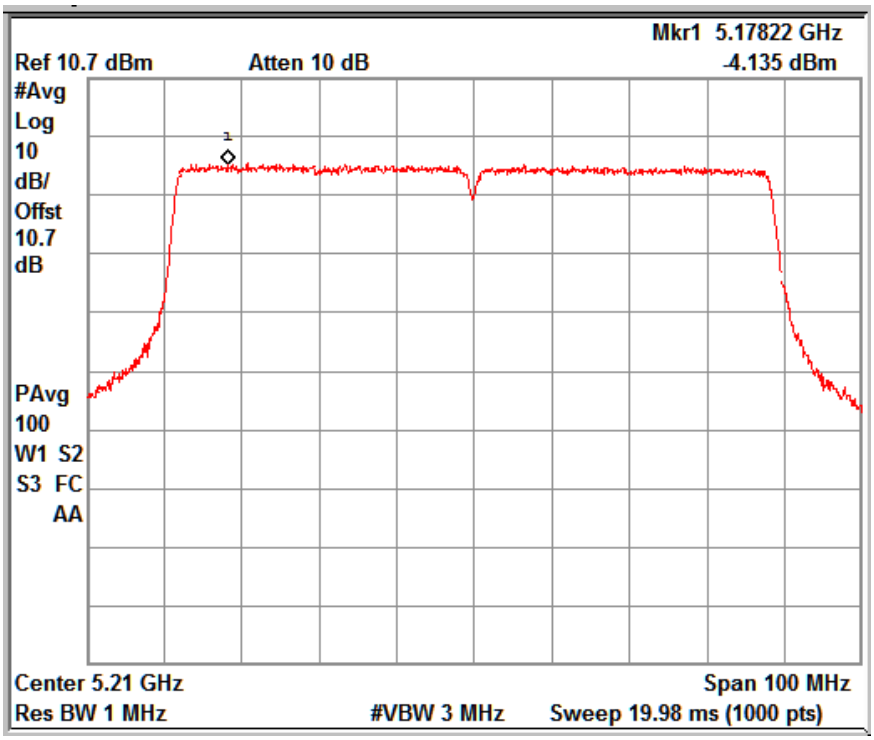
Modulation: 802.11ac vht 80

Note: Test was performed on both the transmit chains and worst case results were from chain 1 and the respective results has been reported.

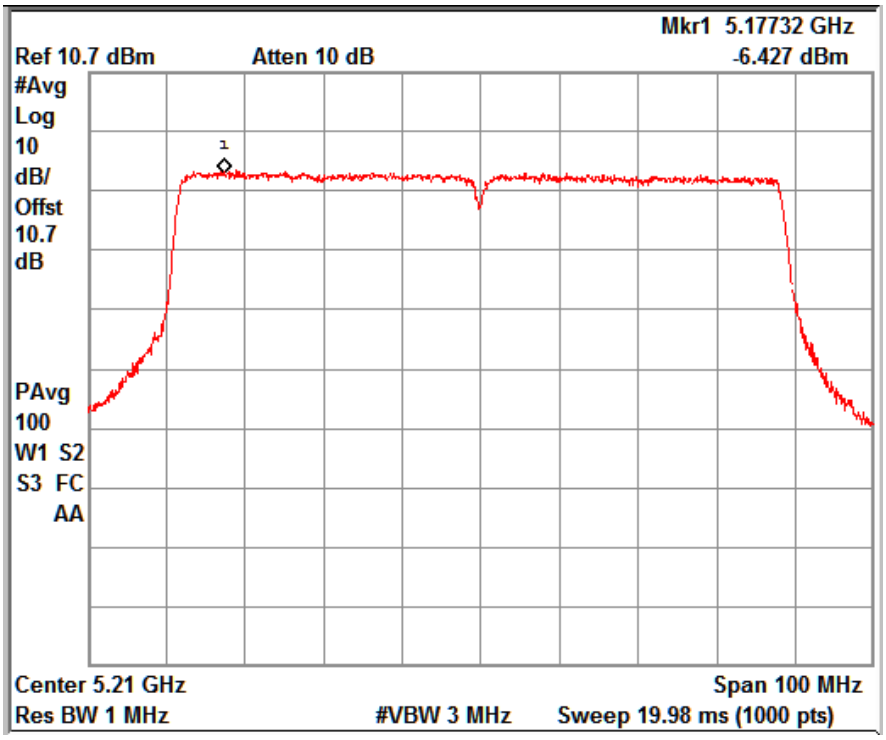
Data Rate (Mbps)	Channel No.	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
MCS 0	42	5210	-3.98	11.00	-14.98
MCS 4	42	5210	-4.13	11.00	-15.13
MCS 9	42	5210	-6.42	11.00	-17.42



Data Rate: MCS 0 **Channel Frequency: 5210MHz**



Data Rate: MCS 4 **Channel Frequency: 5210MHz**

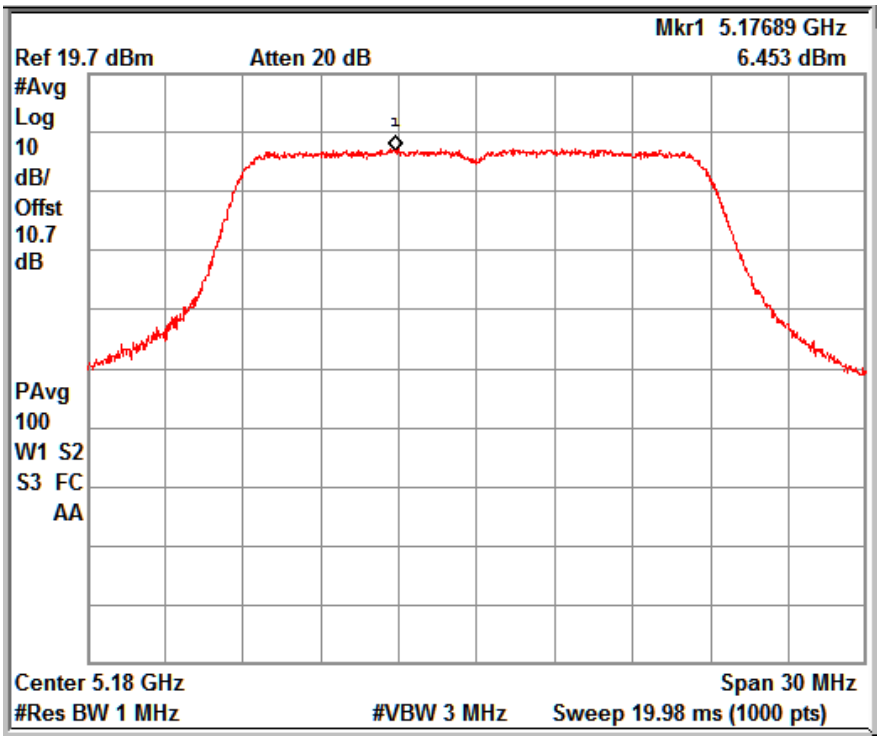


Data Rate: MCS 9 **Channel Frequency: 5210MHz**

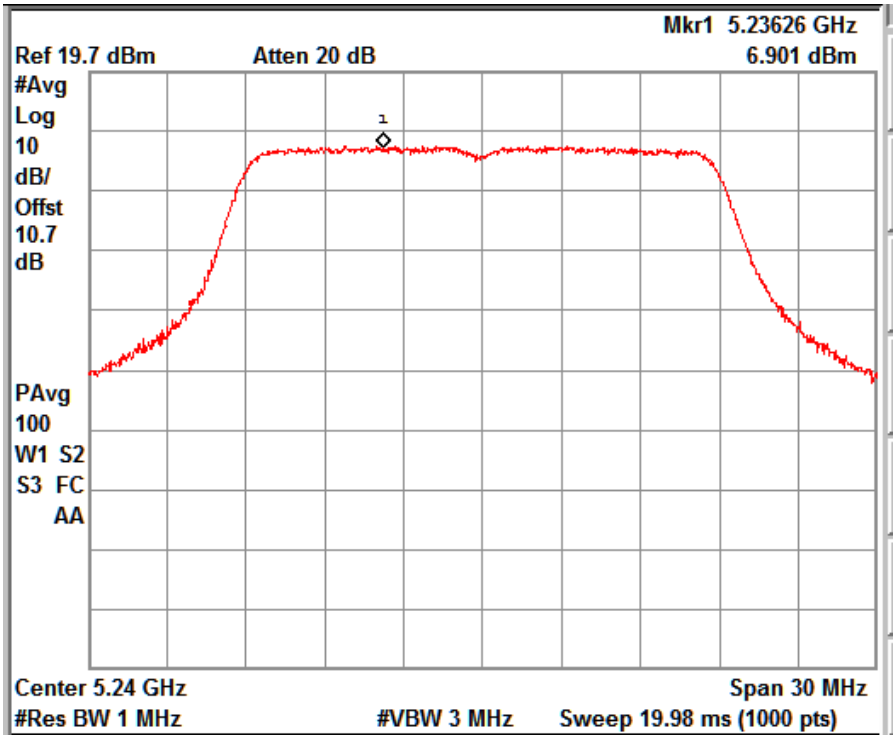
Modulation: 802.11n ht 20 SISO

Note: Test was performed on both the transmit chains and worst case results were from chain 1 and the respective results has been reported.

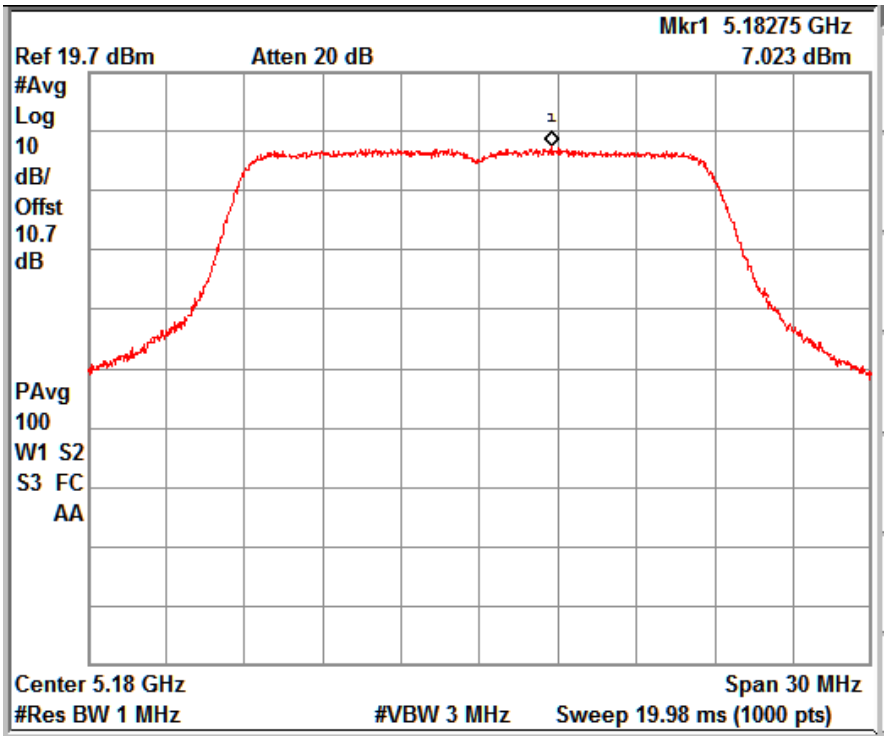
Data Rate (Mbps)	Channel No.	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
MCS 0	36	5180	6.45	11	-4.55
	48	5240	6.90	11	-4.10
MCS 4	36	5180	7.02	11	-3.98
	48	5240	7.12	11	-3.88
MCS 7	36	5180	5.60	11	-5.40
	48	5240	5.27	11	-5.73



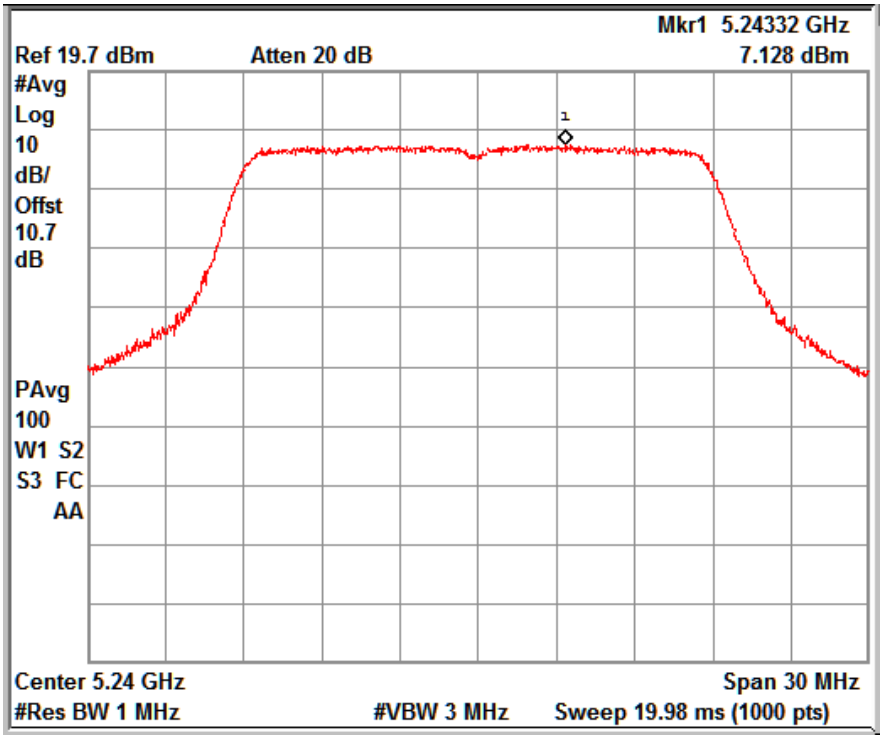
Data Rate: MCS 0 **Channel Frequency: 5180MHz**



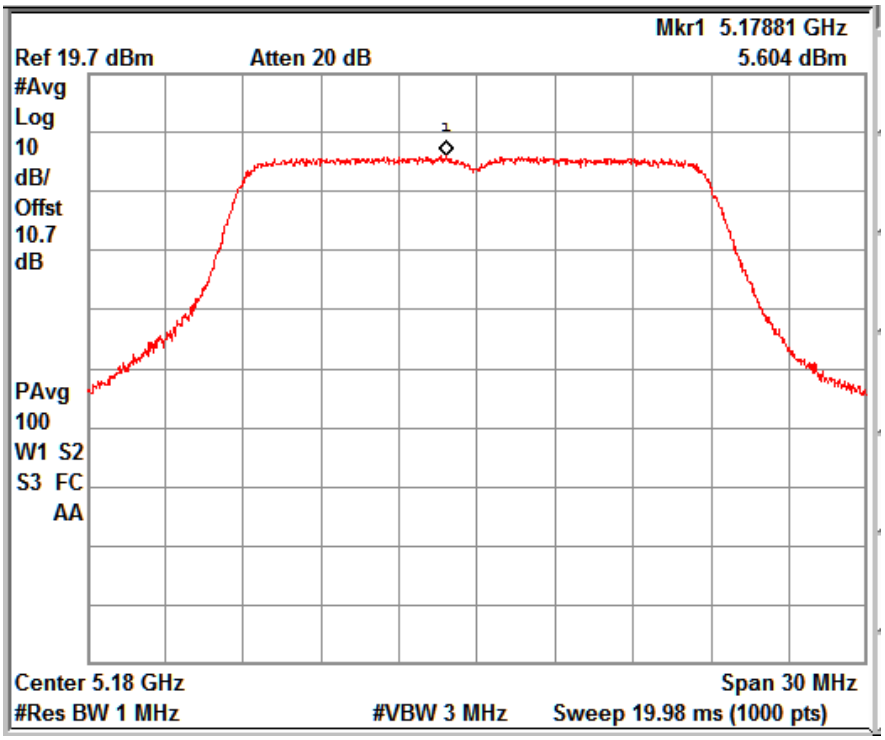
Data Rate: MCS 0 **Channel Frequency: 5240MHz**



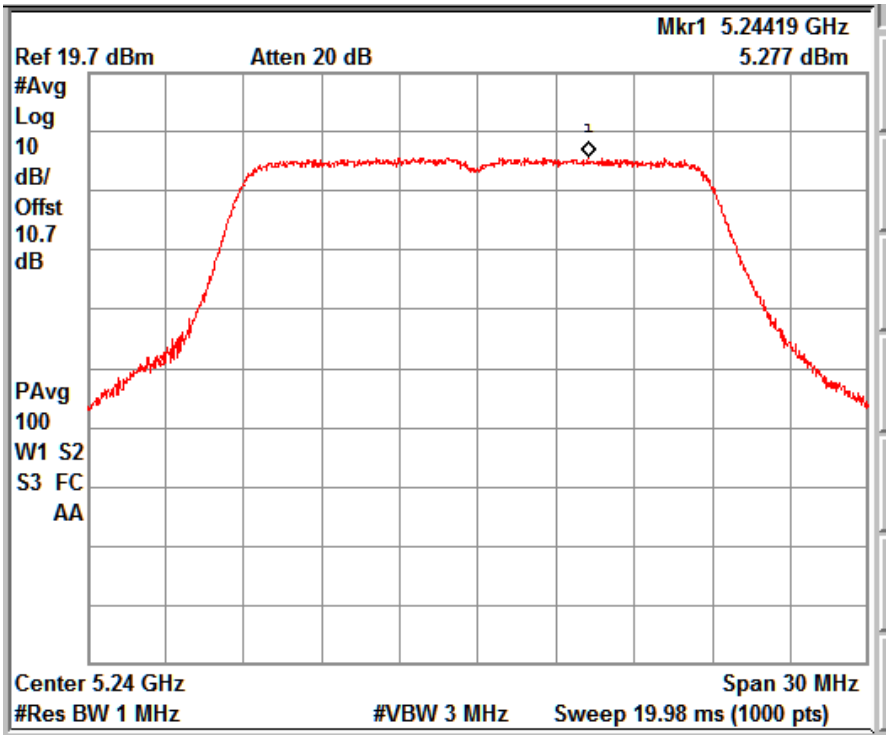
Data Rate: MCS 4 **Channel Frequency: 5180MHz**



Data Rate: MCS 4 **Channel Frequency: 5240MHz**



Data Rate: MCS 7 **Channel Frequency: 5180MHz**



Data Rate: MCS 7 **Channel Frequency: 5240MHz**

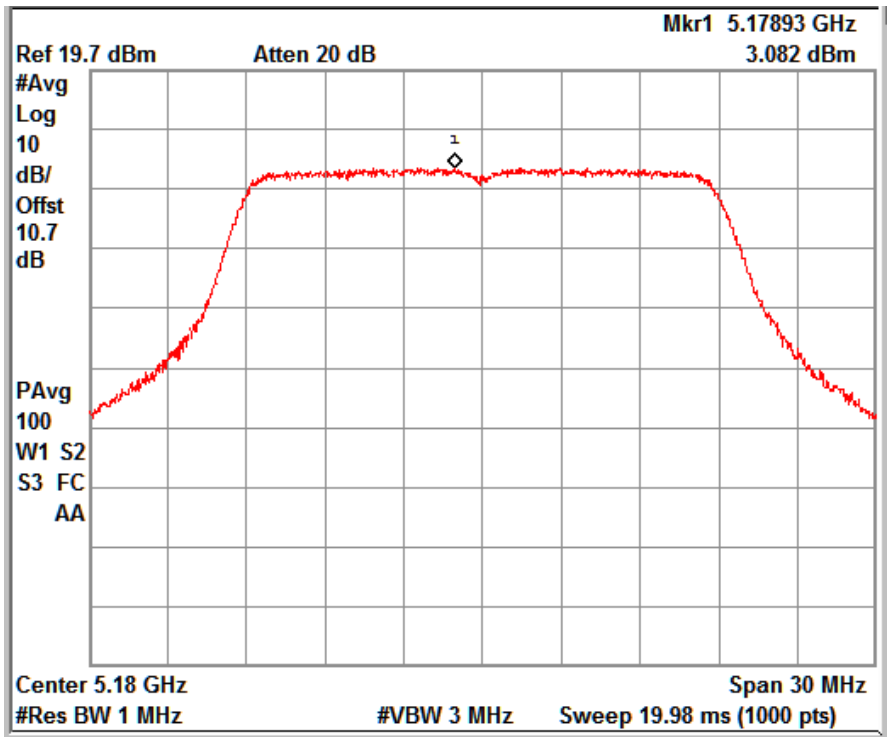
Modulation: 802.11n ht 20 MIMO_ch0

Data Rate (Mbps)	Channel No.	Frequency (MHz)	CH 0 PSD (dBm)	Add 10log(N_{Ant})	Final PSD (dBm)	Limit (dBm)	Margin (dB)
MCS 8	36	5180	3.08	3.01	6.09	11	-4.91
	48	5240	3.14	3.01	6.15	11	-4.85
MCS 11	36	5180	3.19	3.01	6.2	11	-4.8
	48	5240	3.61	3.01	6.62	11	-4.38
MCS 15	36	5180	2.58	3.01	5.59	11	-5.41
	48	5240	2.57	3.01	5.58	11	-5.42

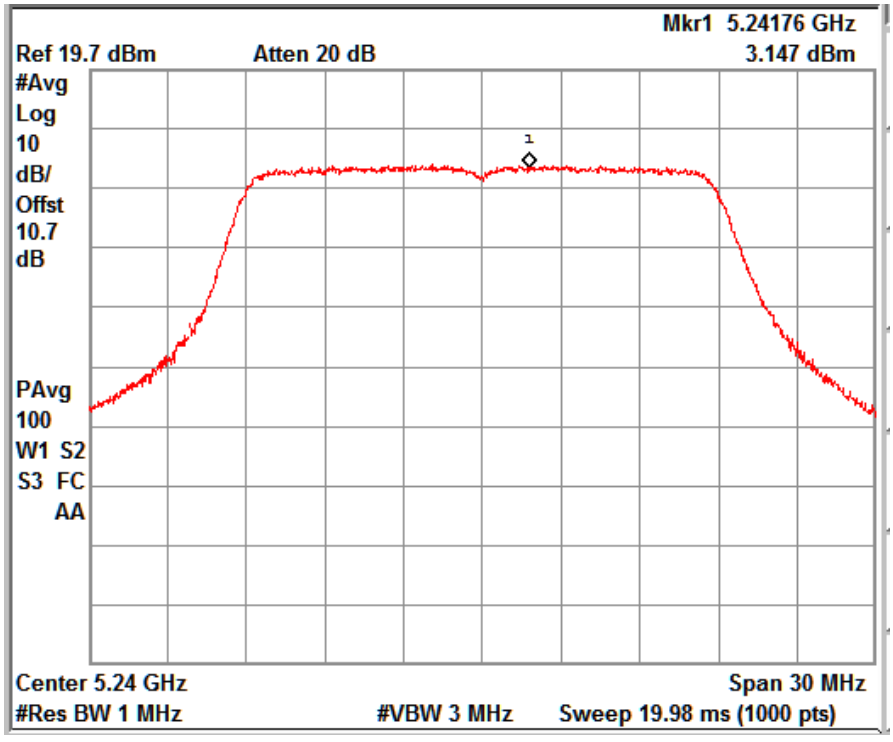
Modulation: 802.11n ht 20 MIMO_ch1

Data Rate (Mbps)	Channel No.	Frequency (MHz)	CH 1 PSD (dBm)	Add 10log(N_{Ant})	Final PSD (dBm)	Limit (dBm)	Margin (dB)
MCS 8	36	5180	3.63	3.01	6.64	11	-4.36
	48	5240	4.18	3.01	7.19	11	-3.81
MCS 11	36	5180	4.00	3.01	7.01	11	-3.99
	48	5240	4.53	3.01	7.54	11	-3.46
MCS 15	36	5180	2.49	3.01	5.5	11	-5.5
	48	5240	2.39	3.01	5.4	11	-5.6

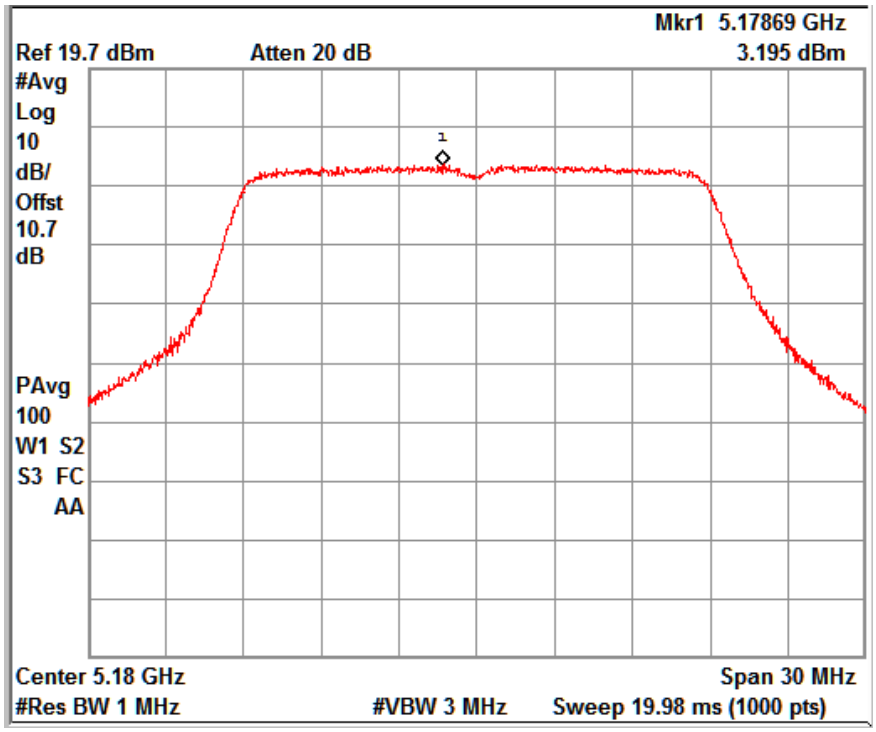
Chain 0



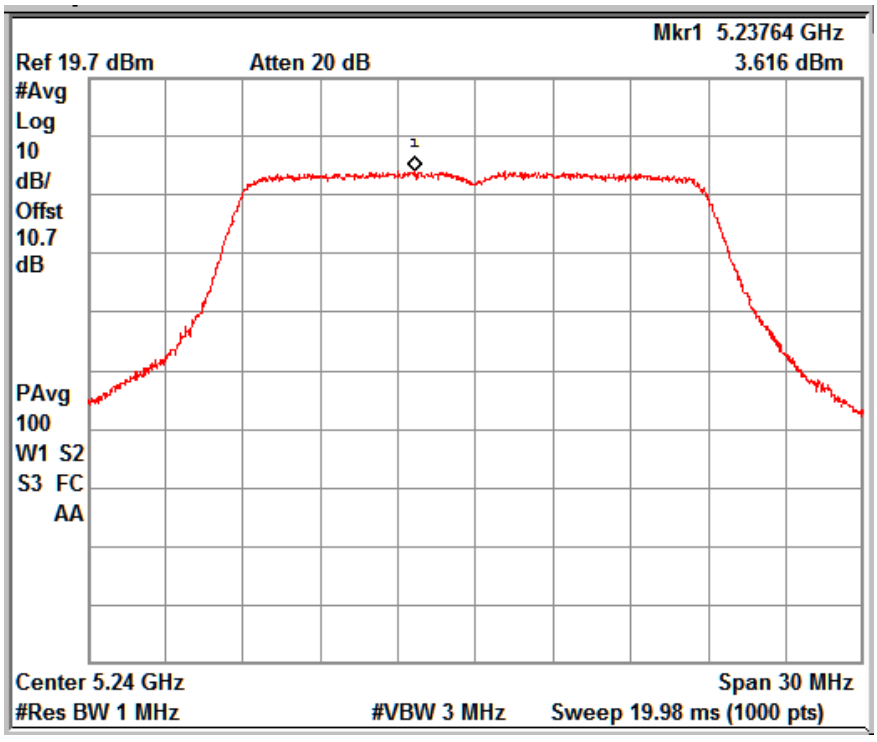
Data Rate: MCS 8 **Channel Frequency: 5180MHz**



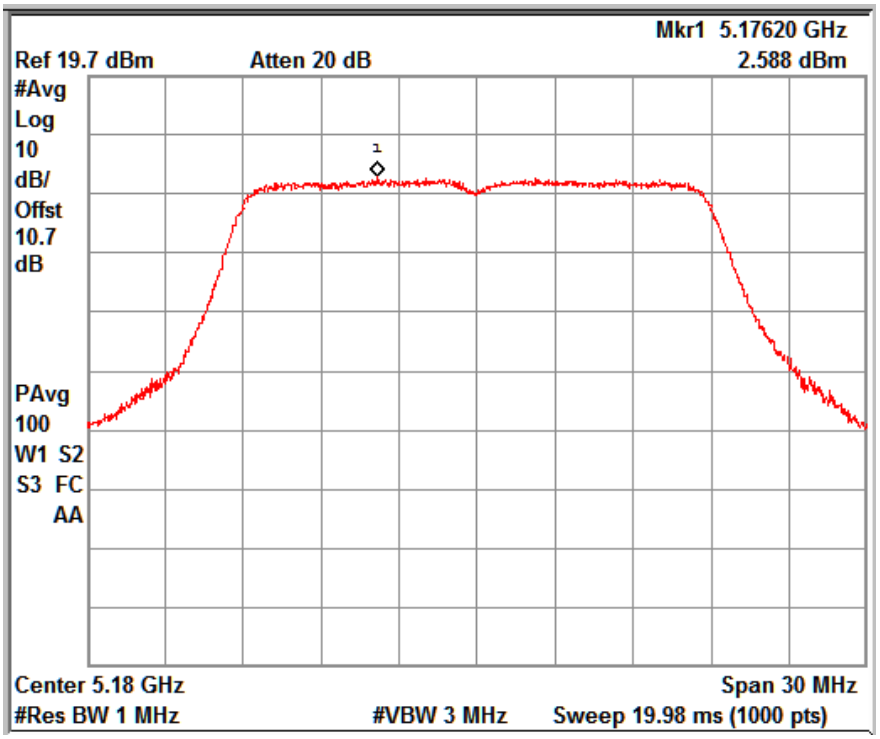
Data Rate: MCS 8 **Channel Frequency: 5240MHz**



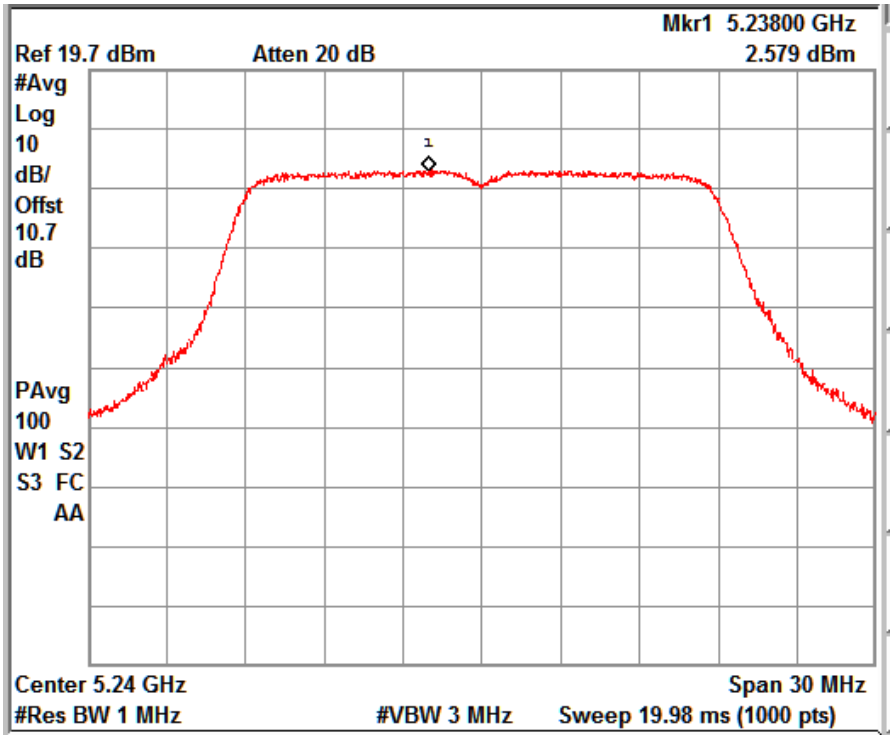
Data Rate: MCS 11 **Channel Frequency: 5180MHz**



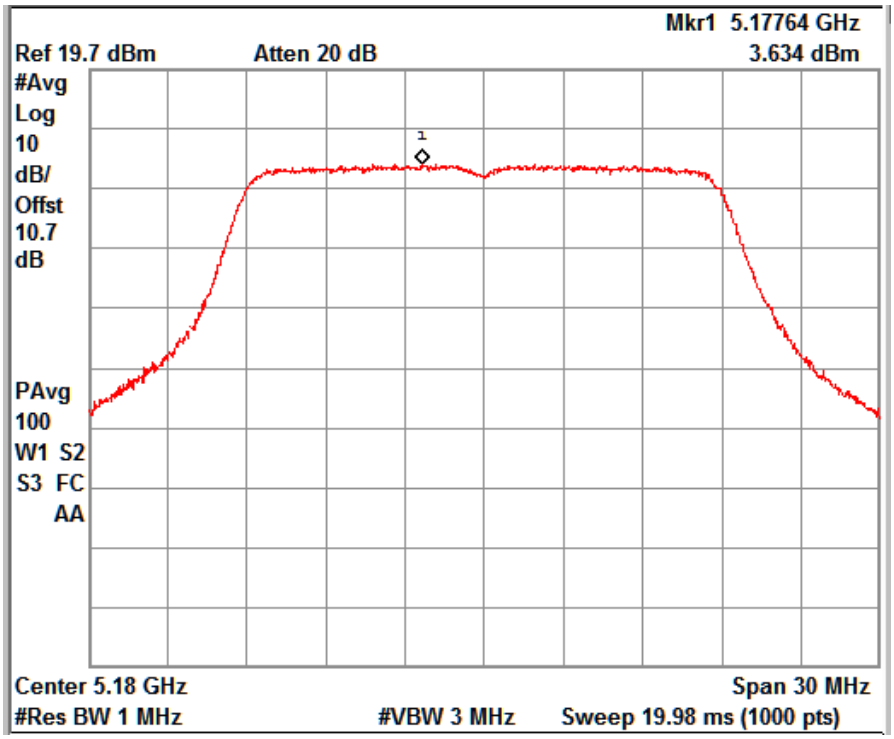
Data Rate: MCS 11 **Channel Frequency: 5240MHz**



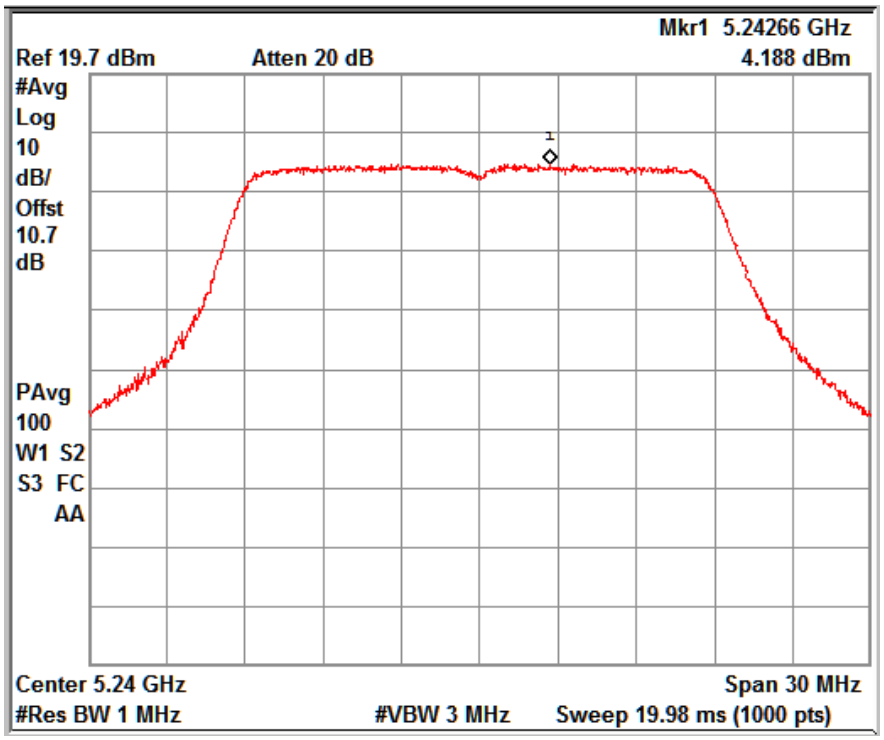
Data Rate: MCS 15 **Channel Frequency: 5180MHz**



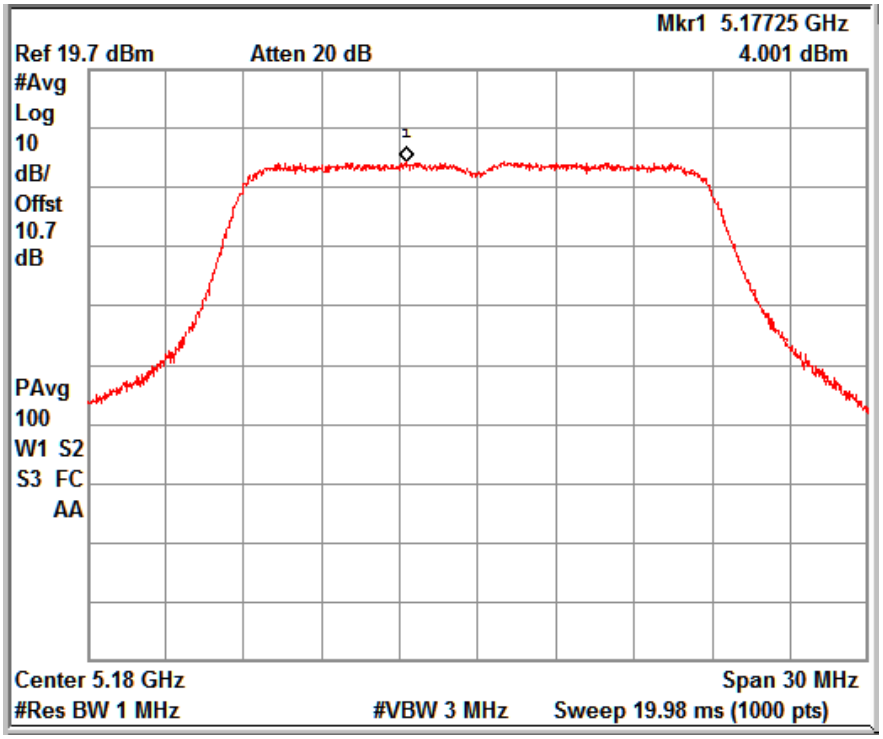
Data Rate: MCS 15 **Channel Frequency: 5240MHz**



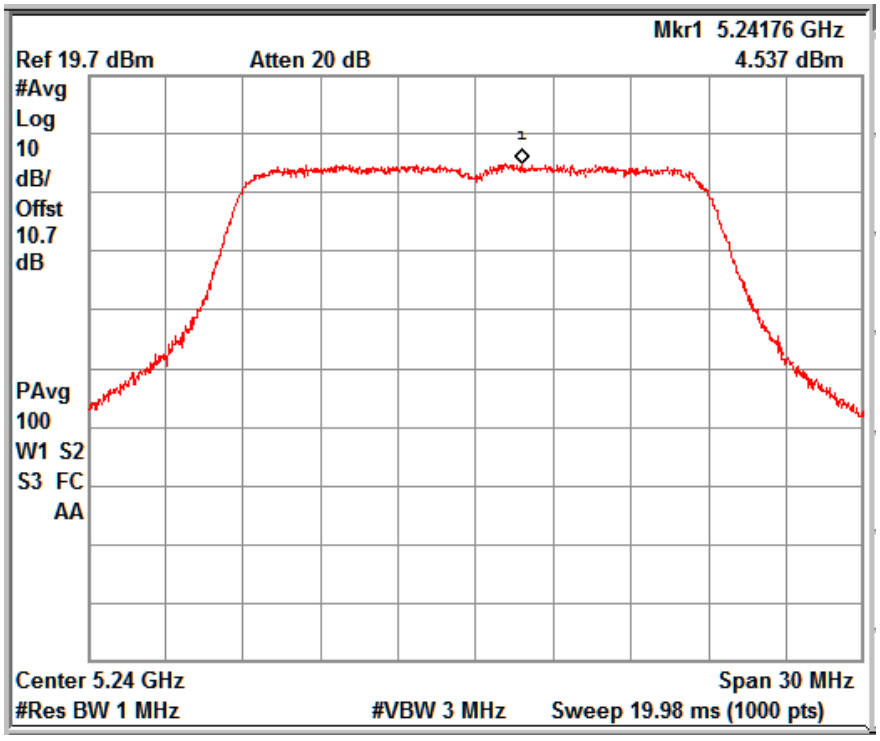
Data Rate: MCS 8 **Channel Frequency: 5180MHz**



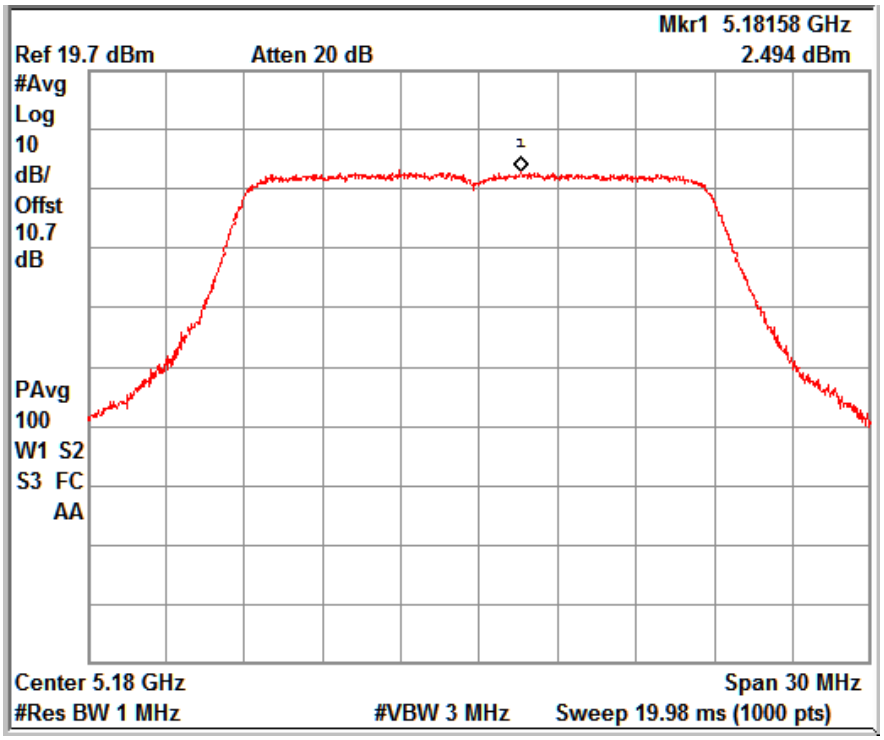
Data Rate: MCS 8 **Channel Frequency: 5240MHz**



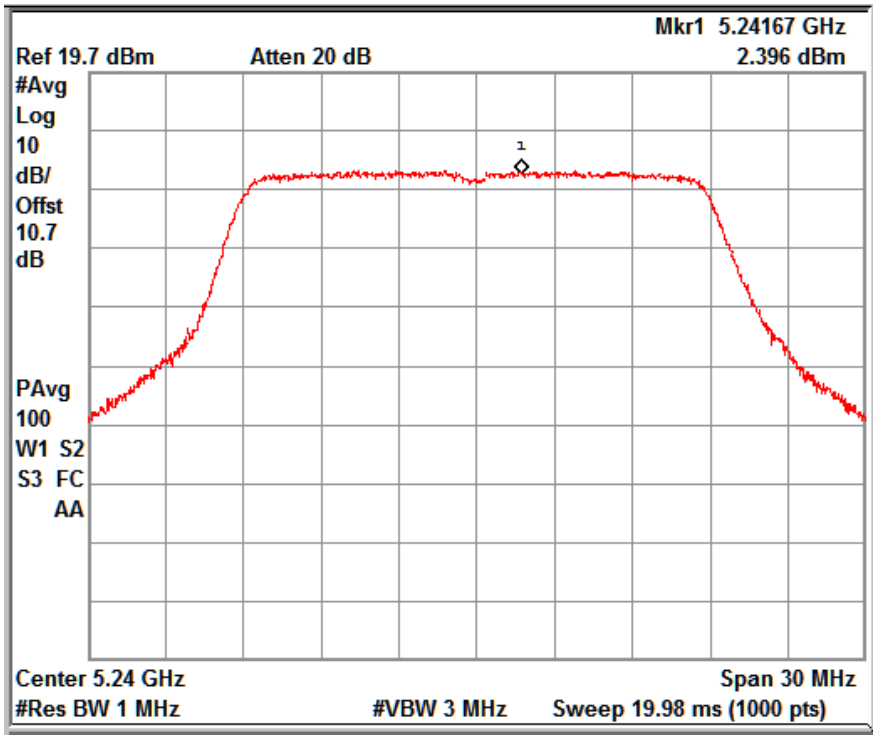
Data Rate: MCS 11 **Channel Frequency: 5180MHz**



Data Rate: MCS 11 **Channel Frequency: 5240MHz**



Data Rate: MCS 15 **Channel Frequency: 5180MHz**

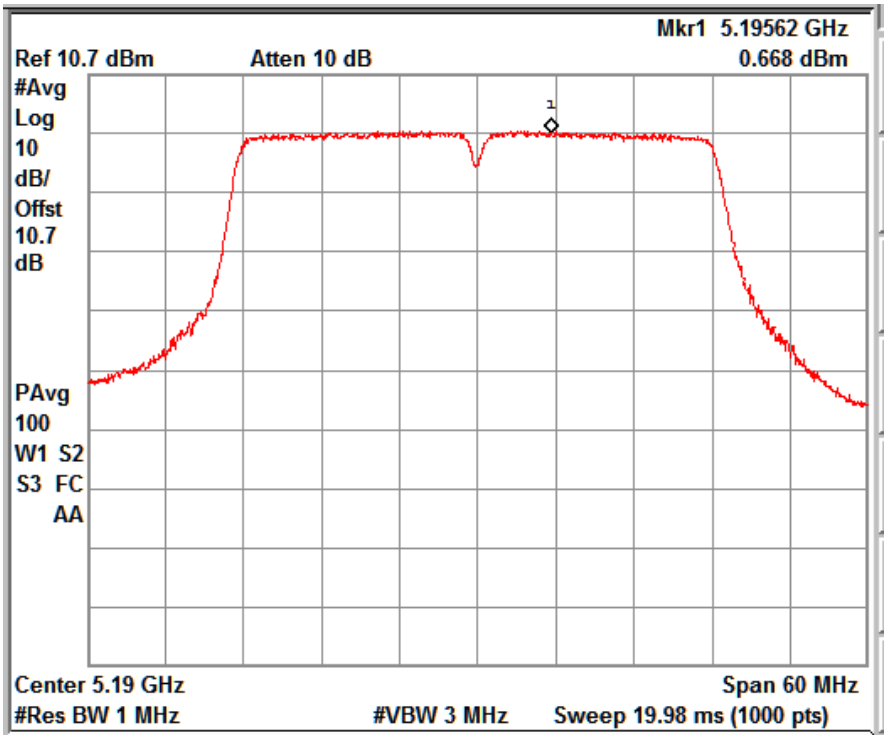


Data Rate: MCS 15 **Channel Frequency: 5240MHz**

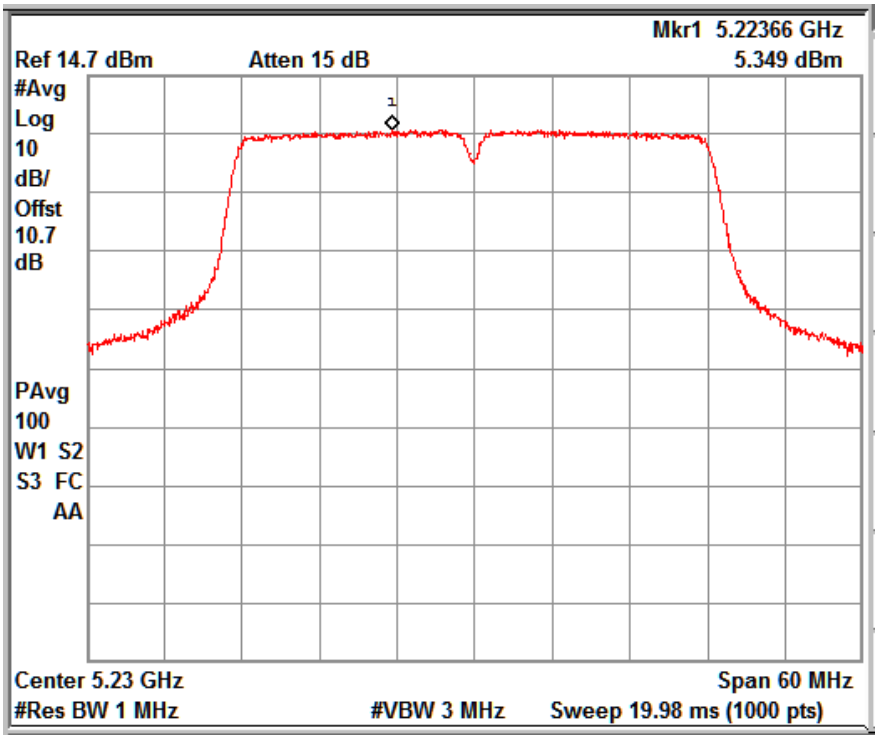
Modulation: 802.11n ht 40 SISO

Note: Test was performed on both the transmit chains and worst case results were from chain 1 and the respective results has been reported.

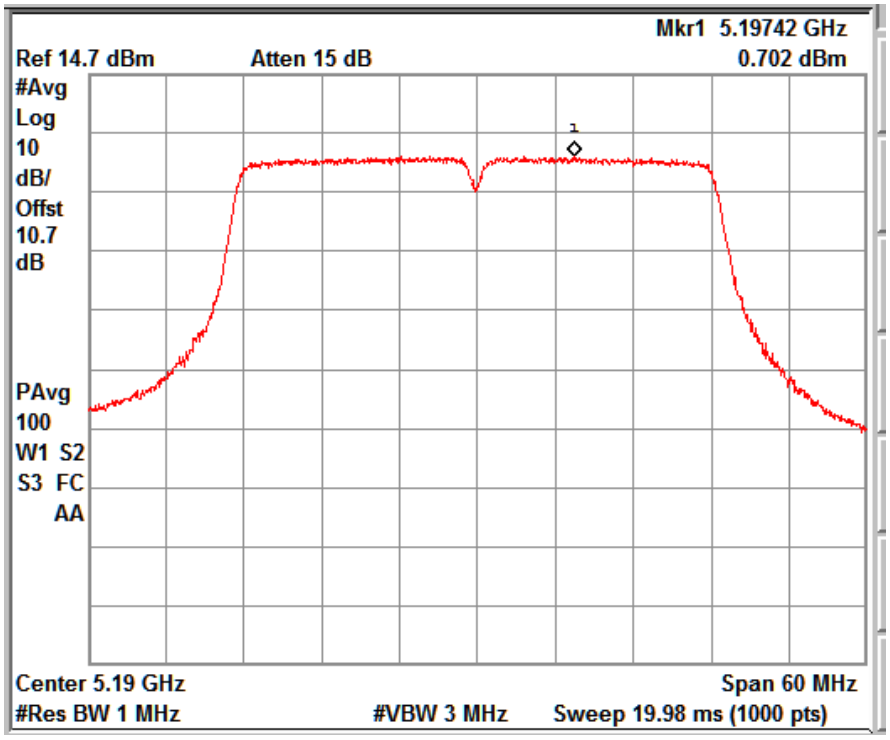
Data Rate (Mbps)	Channel No.	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
MCS 0	38	5190	0.66	11.00	-10.34
	46	5230	5.34	11.00	-5.66
MCS 4	38	5190	0.70	11.00	-10.3
	46	5230	5.16	11.00	-5.84
MCS 7	38	5190	0.74	11.00	-10.26
	46	5230	3.05	11.00	-7.95



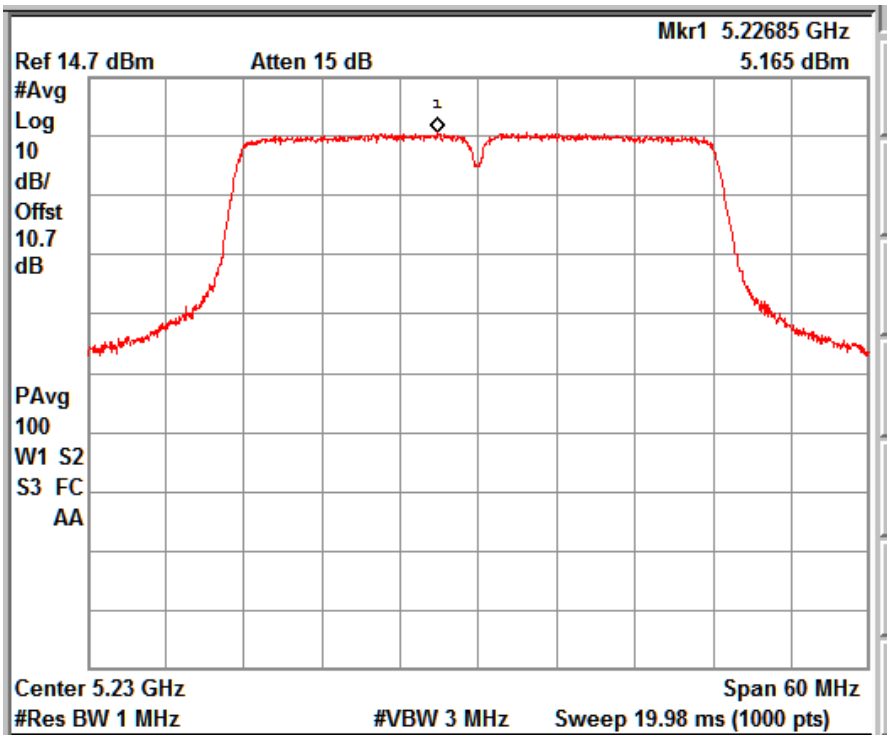
Data Rate: MCS 0 **Channel Frequency: 5190MHz**



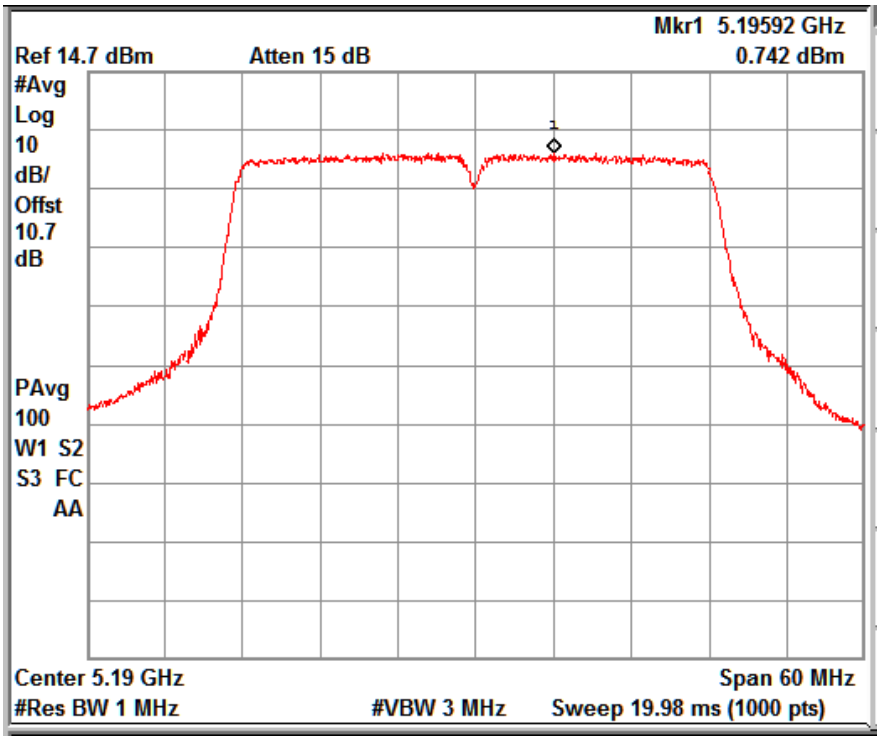
Data Rate: MCS 0 **Channel Frequency: 5230MHz**



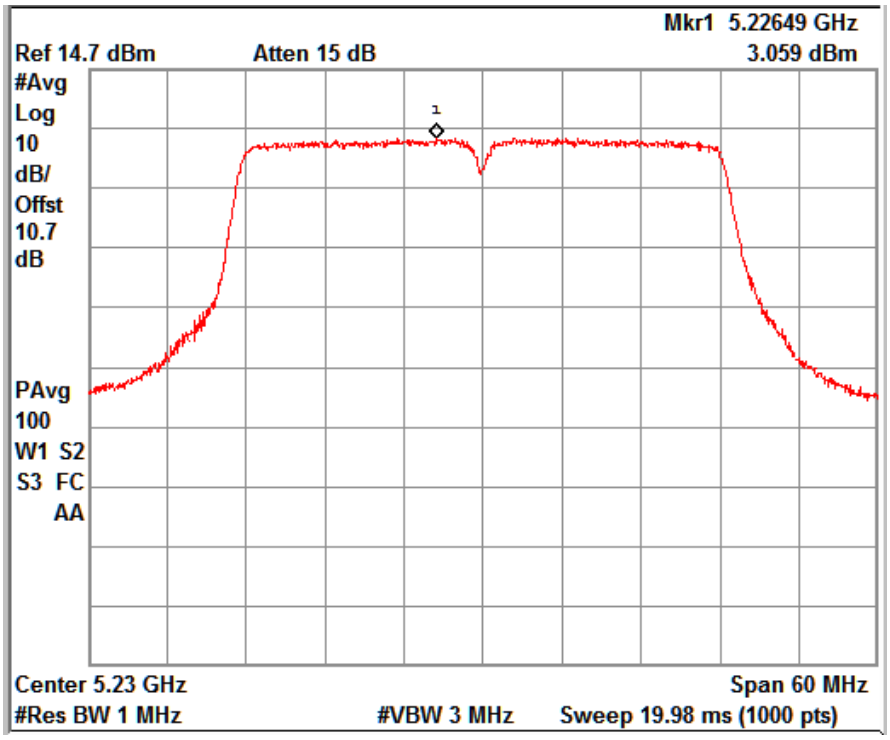
Data Rate: MCS 4 **Channel Frequency: 5190MHz**



Data Rate: MCS 4 **Channel Frequency: 5230MHz**



Data Rate: MCS 7 **Channel Frequency: 5190MHz**



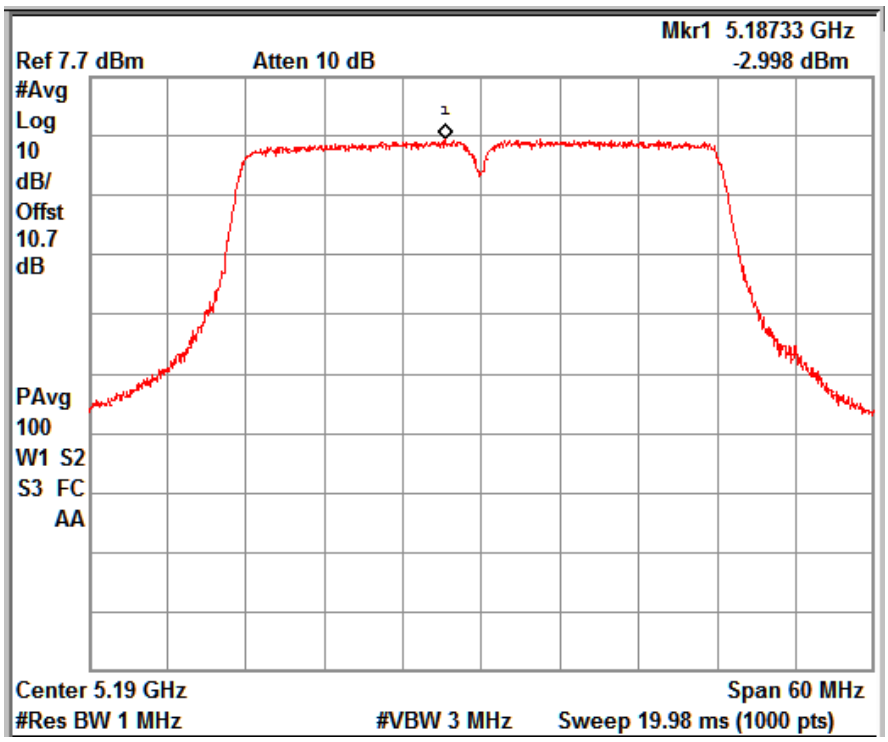
Data Rate: MCS 7 **Channel Frequency: 5230MHz**

Modulation: 802.11n ht 40 MIMO_ch0

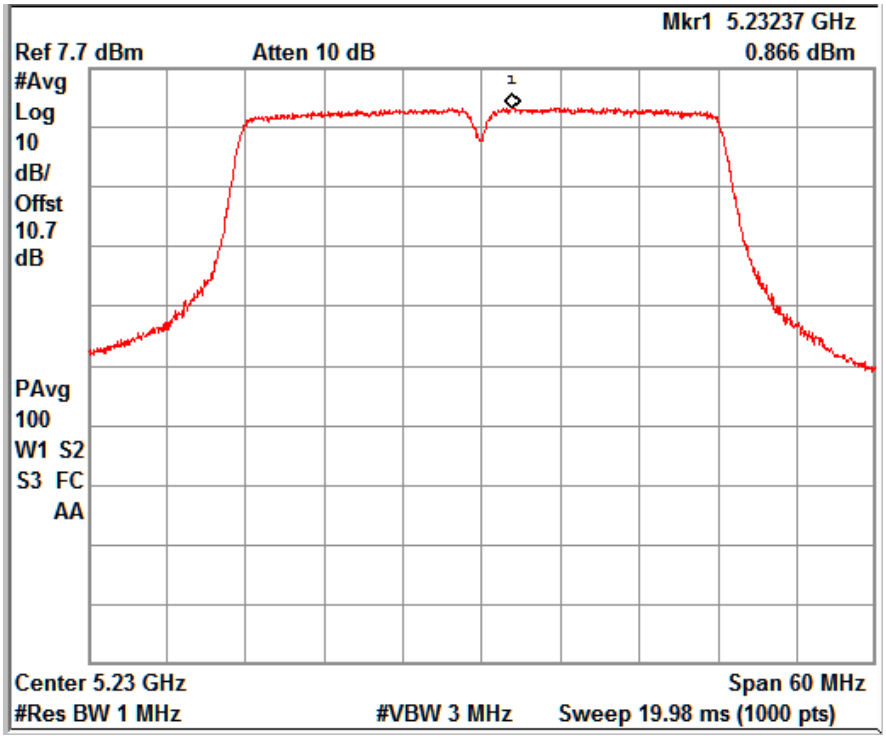
Data Rate (Mbps)	Channel No.	Frequency (MHz)	CH 0 PSD (dBm)	Add 10log(N_{Ant})	Final PSD (dBm)	Limit (dBm)	Margin (dB)
MCS 8	38	5190	-2.99	3.01	0.02	11.00	-10.98
	46	5230	0.86	3.01	3.87	11.00	-7.13
MCS 11	38	5190	-2.81	3.01	0.2	11.00	-10.8
	46	5230	0.57	3.01	3.58	11.00	-7.42
MCS 15	38	5190	-2.96	3.01	0.05	11.00	-10.95
	46	5230	0.30	3.01	3.31	11.00	-7.69

Modulation: 802.11n ht 40 MIMO_ch1

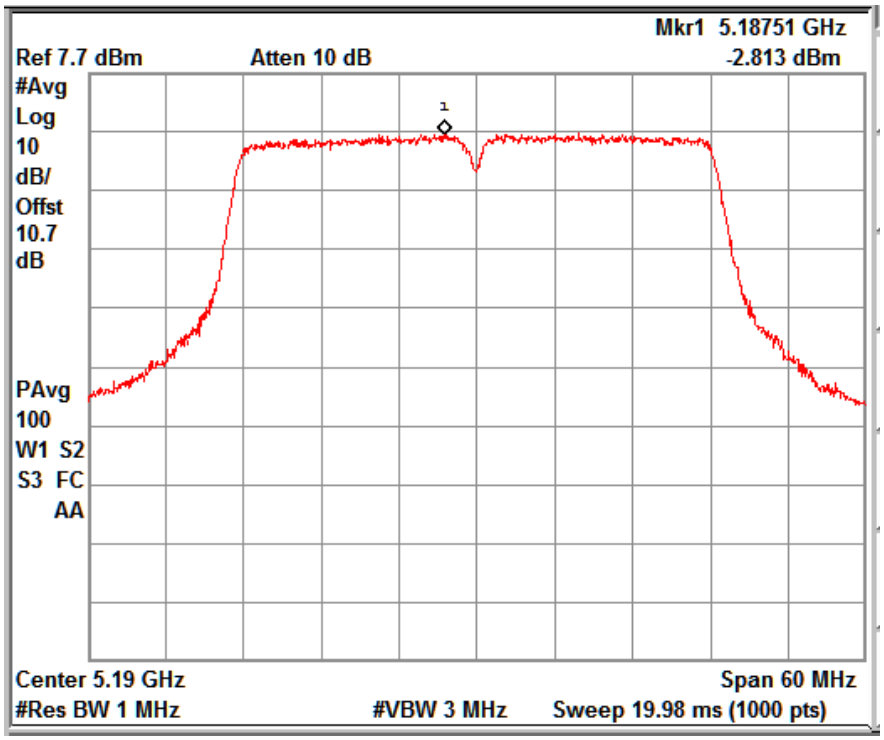
Data Rate (Mbps)	Channel No.	Frequency (MHz)	CH 1 PSD (dBm)	Add 10log(N_{Ant})	Final PSD (dBm)	Limit (dBm)	Margin (dB)
MCS 8	38	5190	-2.59	3.01	0.42	11.00	-10.58
	46	5230	1.58	3.01	4.59	11.00	-6.41
MCS 11	38	5190	-2.46	3.01	0.55	11.00	-10.45
	46	5230	0.74	3.01	3.75	11.00	-7.25
MCS 15	38	5190	-2.77	3.01	0.24	11.00	-10.76
	46	5230	0.24	3.01	3.25	11.00	-7.75



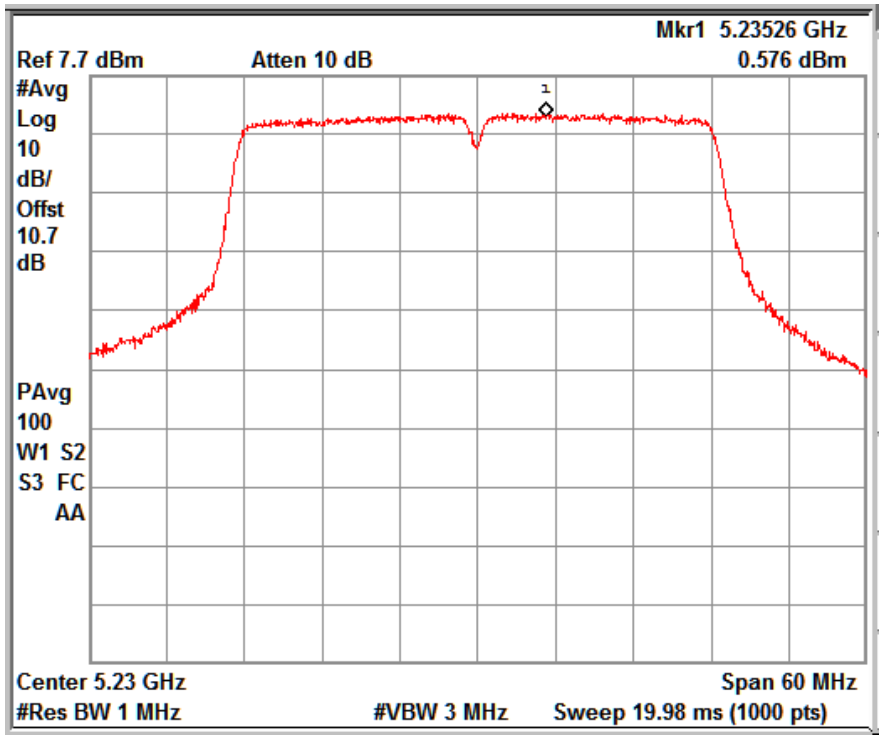
Data Rate: MCS 8 **Channel Frequency: 5190MHz**



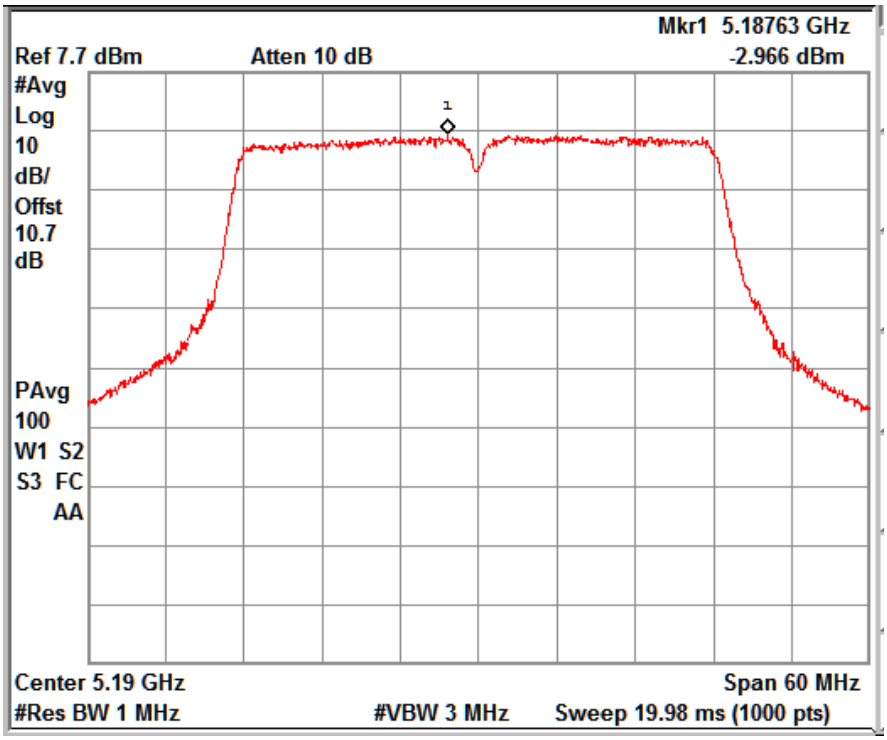
Data Rate: MCS 8 **Channel Frequency: 5230MHz**



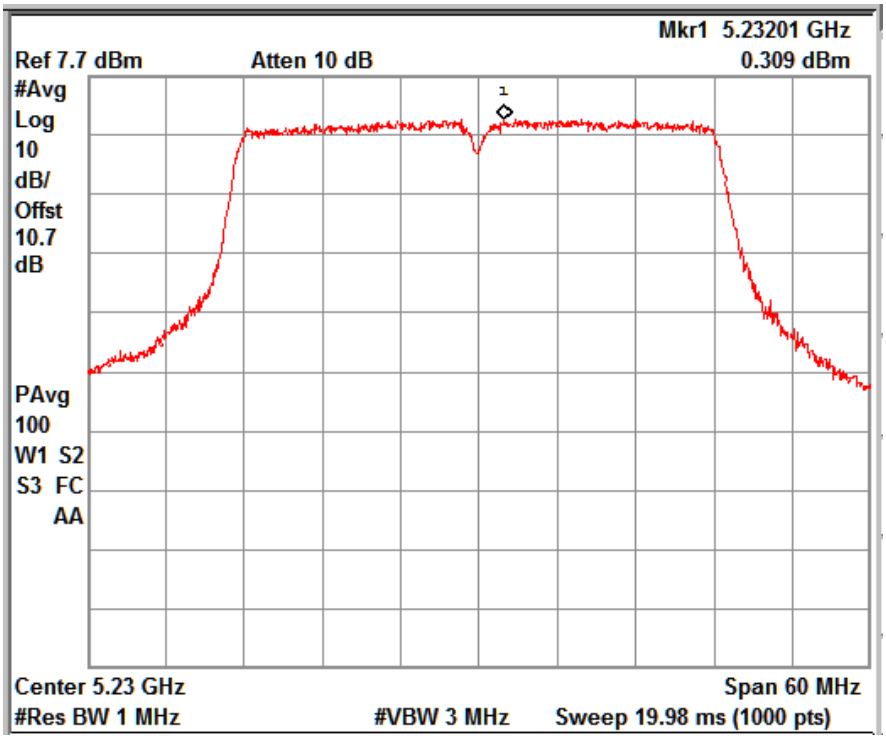
Data Rate: MCS 11 **Channel Frequency: 5190MHz**



Data Rate: MCS 11 **Channel Frequency: 5230MHz**

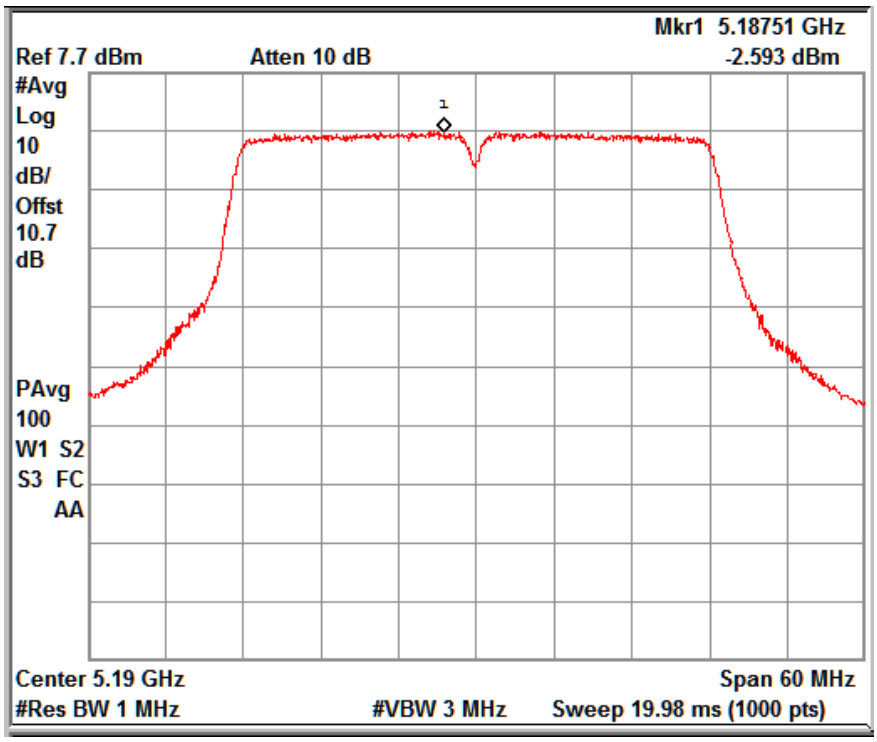


Data Rate: MCS 15 **Channel Frequency: 5190MHz**

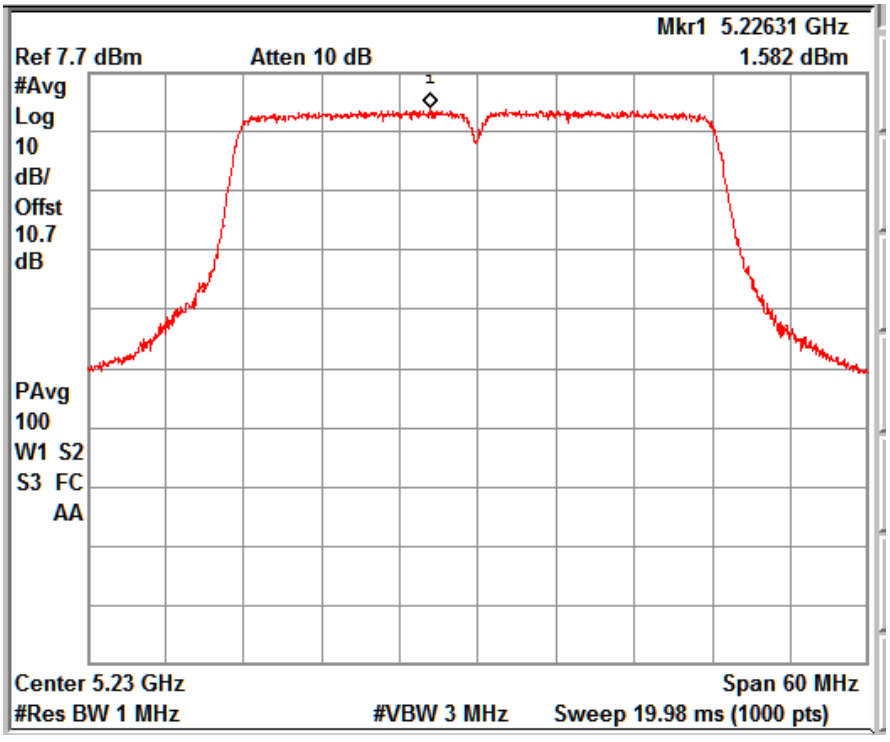


Data Rate: MCS 15 **Channel Frequency: 5230MHz**

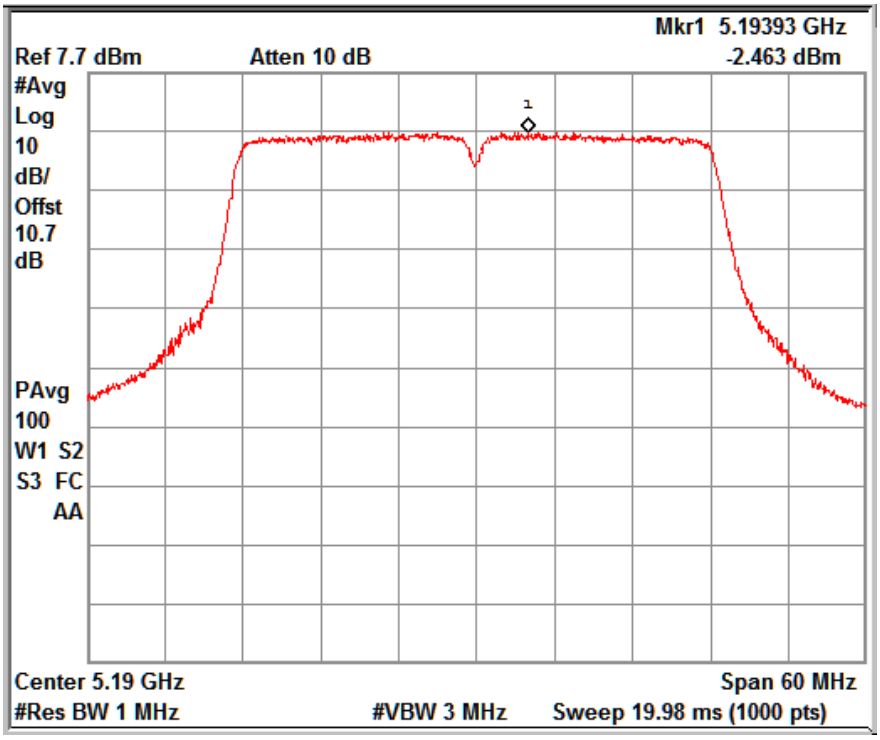
Chain 1



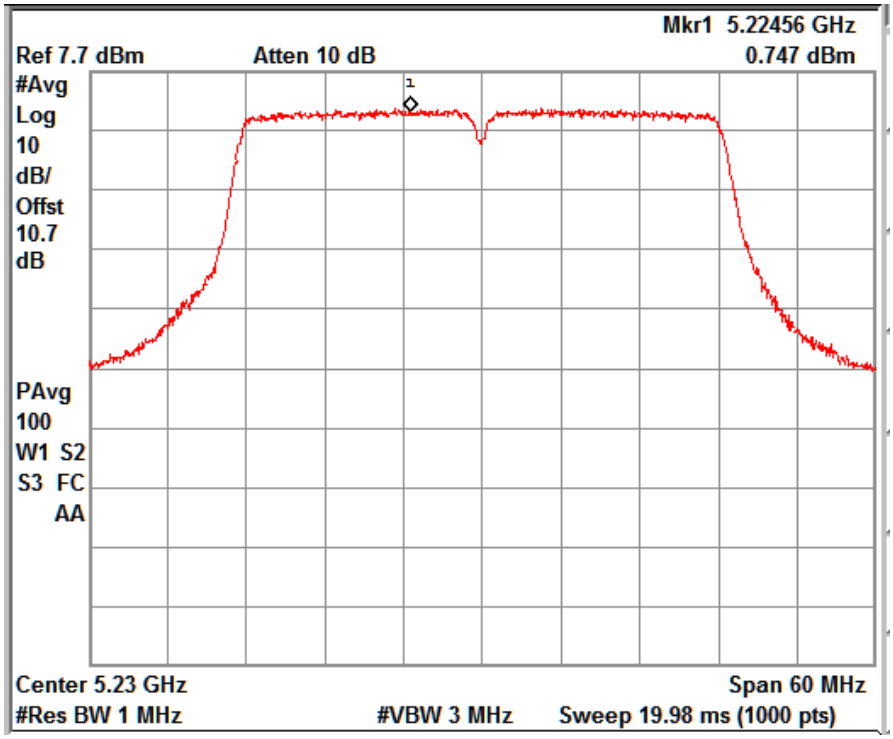
Data Rate: MCS 8 **Channel Frequency: 5190MHz**



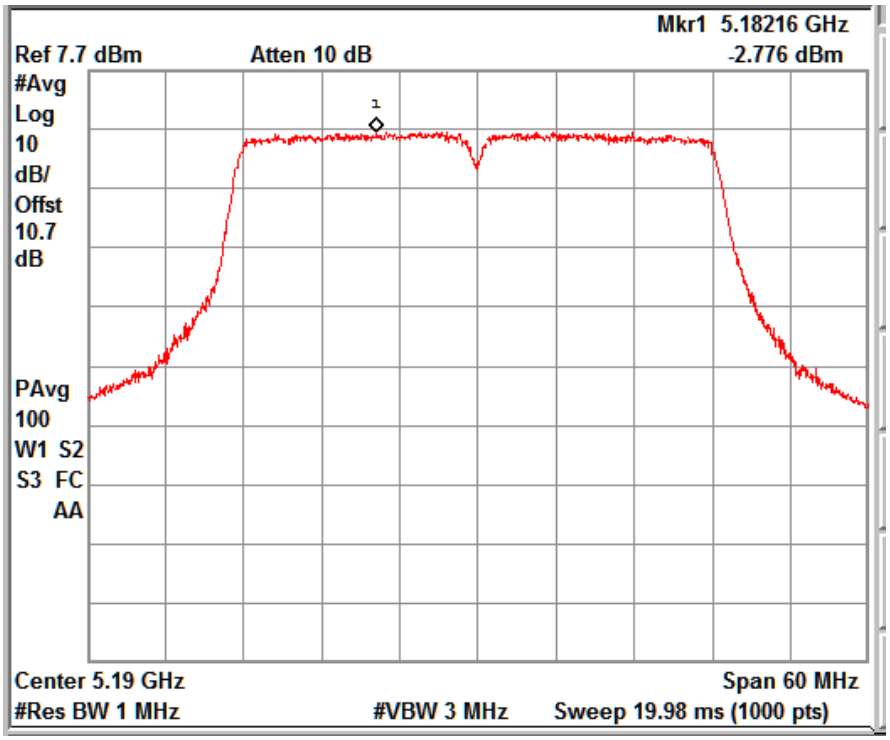
Data Rate: MCS 8 **Channel Frequency: 5230MHz**



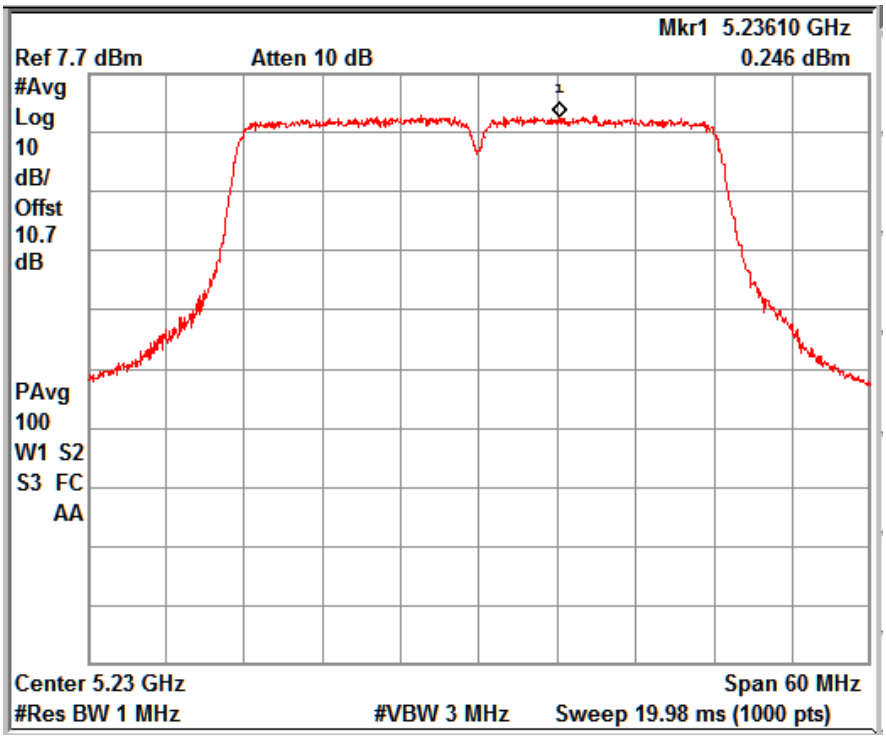
Data Rate: MCS 11 **Channel Frequency: 5190MHz**



Data Rate: MCS 11 **Channel Frequency: 5230MHz**



Data Rate: MCS 15 **Channel Frequency: 5190MHz**



Data Rate: MCS 15 **Channel Frequency: 5230MHz**

Radiated Spurious Emissions and Restricted bands of operation **Section 15.209 /15.205/15.407 (b) (6)**

Result **Pass**

Test Specification	FCC Part 15 Section 15.209
Test Method	ANSI C63.10-2013
Measurement Location	Semi Anechoic Chamber
Measuring Distance	3m
Detection	QP for frequency below 1GHz, Peak/Average for frequency above 1GHz
Requirement	Should Comply with the limits stated in the below 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:

For frequencies Range 9 kHz – 30 MHz
No emissions were found in this frequency range.

For frequencies 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

* - -> Fundamental Frequency
P-->Peak detector
AV-->Average Detector

Above 1GHz

Note: Test was performed on both the transmit chains and worst case results were from chain 1 and the respective results has been reported.

802.11 a mode 6Mbps

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
36 (5180MHz)	5150 (Pk)	Vertical	56.68	74	-17.32
	5150 (Av)		43.22	54	-10.78
	5180 (Pk)		109.02	*	-
	5180 (Av)		100.15	*	-
	10360 (Pk)		46.12	68.23	-22.11
	10360 (Av)		37.87	54	-16.13
	5150 (Pk)	Horizontal	56.81	74	-17.19
	5150 (Av)		44.23	54	-09.77
	5180 (Pk)		110.19	*	-
	5180 (Av)		100.44	*	-
	10360 (Pk)		45.89	68.23	-22.34
	10360 (Av)		38.12	54	-15.88
48 (5240 MHz)	10480 (Pk)	Vertical	46.95	68.23	-21.28
	10480 (Av)		38.94	54	-15.06
	10480 (Pk)	Horizontal	46.77	68.23	-21.46
	10480 (Av)		39.11	54	-14.89

802.11 a mode 24Mbps

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
36 (5180MHz)	5150 (Pk)	Vertical	55.34	74	-18.66
	5150 (Av)		43.04	54	-10.96
	5180 (Pk)		109.5	*	-
	5180 (Av)		99.16	*	-
	10360 (Pk)		48.48	68.23	-19.75
	10360 (Av)		44.39	54	-9.61
	5150 (Pk)	Horizontal	56.37	74	-17.63
	5150 (Av)		43.2	54	-10.8
	5180 (Pk)		109.68	*	-
	5180 (Av)		99.63	*	-
	10360 (Pk)		46.98	68.23	-21.25
	10360 (Av)		46.45	54	-7.55
48 (5240 MHz)	10480 (Pk)	Vertical	47.38	68.23	-20.85
	10480 (Av)		45.83	54	-8.17
	10480 (Pk)	Horizontal	47.35	68.23	-20.88
	10480 (Av)		39.03	54	-14.97

802.11 a mode 54Mbps

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
36 (5180MHz)	5150 (Pk)	Vertical	55.79	74	-18.21
	5150 (Av)		41.71	54	-12.29
	5180 (Pk)		109.12	*	-
	5180 (Av)		97.77	*	-
	10360 (Pk)		45.67	68.23	-22.56
	10360 (Av)		44.83	54	-9.17
	5150 (Pk)	Horizontal	56.59	74	-17.41
	5150 (Av)		42.87	54	-11.13
	5180 (Pk)		110.43	*	-
	5180 (Av)		98.39	*	-
	10360 (Pk)		46.13	68.23	-22.1
	10360 (Av)		38.95	54	-15.05
48 (5240 MHz)	10480 (Pk)	Vertical	47.49	68.23	-20.74
	10480 (Av)		45.97	54	-8.03
	10480 (Pk)	Horizontal	48.05	68.23	-20.18
	10480 (Av)		40.76	54	-13.24

802.11 ac mode MCS 0

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
36 (5180MHz)	5150 (Pk)	Vertical	52.92	74	-21.08
	5150 (Av)		41.87	54	-12.13
	5180 (Pk)		105.58	*	-
	5180 (Av)		96.22	*	-
	10360 (Pk)		45.92	68.23	-22.31
	10360 (Av)		39.34	54	-14.66
	5150 (Pk)	Horizontal	59.14	74	-14.86
	5150 (Av)		45.39	54	-8.61
	5180 (Pk)		110.37	*	-
	5180 (Av)		100.36	*	-
	10360 (Pk)		44.26	68.23	-23.97
	10360 (Av)		39.67	54	-14.33
48 (5240MHz)	10480 (Pk)	Vertical	46.3	68.23	-21.93
	10480 (Av)		40.13	54	-13.87
	10480 (Pk)	Horizontal	47.92	68.23	-20.31
	10480 (Av)		40.13	54	-13.87

802.11 ac mode MCS 4

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
36 (5180MHz)	5150 (Pk)	Vertical	52.36	74	-21.64
	5150 (Av)		41.92	54	-12.08
	5180 (Pk)		106.05	*	-
	5180 (Av)		96.52	*	-
	10360 (Pk)		45.69	68.23	-22.54
	10360 (Av)		40.18	54	-13.82
	5150 (Pk)	Horizontal	56.25	74	-17.75
	5150 (Av)		44.74	54	-9.26
	5180 (Pk)		111.04	*	-
	5180 (Av)		100.84	*	-
	10360 (Pk)		46.76	68.23	-21.47
	10360 (Av)		39.83	54	-14.17
48 (5240MHz)	10480 (Pk)	Vertical	46.76	68.23	-21.47
	10480 (Av)		41.43	54	-12.57
	10480 (Pk)	Horizontal	48.38	68.23	-19.85
	10480 (Av)		41.27	54	-12.73

802.11 ac mode MCS 7

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
36 (5180MHz)	5150 (Pk)	Vertical	51.99	74	-22.01
	5150 (Av)		40.37	54	-13.63
	5180 (Pk)		105.37	*	-
	5180 (Av)		95.1	*	-
	10360 (Pk)		45.95	68.23	-22.28
	10360 (Av)		41.23	54	-12.77
	5150 (Pk)	Horizontal	55.55	74	-18.45
	5150 (Av)		43.25	54	-10.75
	5180 (Pk)		110.29	*	-
	5180 (Av)		99.53	*	-
	10360 (Pk)		45.86	68.23	-22.37
	10360 (Av)		39.85	54	-14.15
48 (5240MHz)	10480 (Pk)	Vertical	46.31	68.23	-21.92
	10480 (Av)		42.45	54	-11.55
	10480 (Pk)	Horizontal	47.93	68.23	-20.30
	10480 (Av)		40.58	54	-13.42

VHT 40

802.11 ac mode MCS 0

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
38 (5190MHz)	5150 (Pk)	Vertical	60.75	74	-13.25
	5150 (Av)		47.64	54	-6.36
	5190 (Pk)		102.62	*	-
	5190 (Av)		93.98	*	-
	10380 (Pk)		45.7	68.23	-22.53
	10380 (Av)		37.49	54	-16.51
	5150 (Pk)	Horizontal	65.52	74	-8.48
	5150 (Av)		52.53	54	-1.47
	5190 (Pk)		106.99	*	-
	5190 (Av)		98.19	*	-
	10380 (Pk)		45.27	68.23	-22.96
	10380 (Av)		36.86	54	-17.14
46 (5230MHz)	10460 (Pk)	Vertical	46.47	68.23	-21.76
	10460 (Av)		40.18	54	-13.82
	10460 (Pk)	Horizontal	46.95	68.23	-21.28
	10460 (Av)		37.17	54	-16.83

802.11 ac mode MCS 4

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
38 (5190MHz)	5150 (Pk)	Vertical	60.99	74	-13.01
	5150 (Av)		48.29	54	-5.71
	5190 (Pk)		104.91	*	-
	5190 (Av)		93.3	*	-
	10380 (Pk)		45.41	68.23	-22.82
	10380 (Av)		38.42	54	-15.58
	5150 (Pk)	Horizontal	66.71	74	-7.29
	5150 (Av)		52.76	54	-1.24
	5190 (Pk)		108.98	*	-
	5190 (Av)		97.9	*	-
	10380 (Pk)		44.38	68.23	-23.85
	10380 (Av)		37.96	54	-16.04
46 (5230MHz)	10460 (Pk)	Vertical	46.18	68.23	-22.05
	10460 (Av)		39.03	54	-14.97
	10460 (Pk)	Horizontal	47.18	68.23	-21.05
	10460 (Av)		38.7	54	-15.3

802.11 ac mode MCS 7

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
38 (5190MHz)	5150 (Pk)	Vertical	59.61	74	-14.39
	5150 (Av)		47.52	54	-6.48
	5190 (Pk)		103.29	*	-
	5190 (Av)		93.45	*	-
	10380 (Pk)		44.94	68.23	-23.29
	10380 (Av)		38.59	54	-15.41
	5150 (Pk)	Horizontal	63.47	74	-10.53
	5150 (Av)		52.01	54	-1.99
	5190 (Pk)		107.9	*	-
	5190 (Av)		97.78	*	-
	10380 (Pk)		45.62	68.23	-22.61
	10380 (Av)		39.86	54	-14.14
46 (5230MHz)	10460 (Pk)	Vertical	46.98	68.23	-21.25
	10460 (Av)		40.47	54	-13.53
	10460 (Pk)	Horizontal	47.56	68.23	-20.67
	10460 (Av)		39.76	54	-14.24

802.11 ac mode MCS 0

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
42 (5210MHz)	5150 (Pk)	Vertical	57.36	74	-16.64
	5150 (Av)		46.86	54	-7.14
	5210 (Pk)		98.21	*	-
	5210 (Av)		88.12	*	-
	10420(Pk)		46.79	74	-27.21
	10420(Av)		39.57	54	-14.43
	5150 (Pk)	Horizontal	62.38	74	-11.62
	5150 (Av)		51.76	54	-2.24
	5210 (Pk)		102.65	*	-
	5210 (Av)		93.57	*	-
	10420(Pk)		47.37	74	-26.63
	10420(Av)		38.07	54	-15.93

802.11 ac mode MCS 4

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
42 (5210MHz)	5150 (Pk)	Vertical	56.89	74	-17.11
	5150 (Av)		47.39	54	-6.61
	5210 (Pk)		98.77	*	-
	5210 (Av)		88.33	*	-
	10420(Pk)		47.09	68.23	-21.14
	10420(Av)		39.02	54	-14.98
	5150 (Pk)	Horizontal	62.03	74	-11.97
	5150 (Av)		51.22	54	-2.78
	5210 (Pk)		103.81	*	-
	5210 (Av)		93.11	*	-
	10420(Pk)		47.18	68.23	-21.05
	10420(Av)		39.28	54	-14.72

802.11 ac mode MCS 9

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
42 (5210MHz)	5150 (Pk)	Vertical	55.05	74	-18.95
	5150 (Av)		44.47	54	-9.53
	5210 (Pk)		97.44	*	-
	5210 (Av)		86.39	*	-
	10420(Pk)		47.97	74	-26.03
	10420(Av)		40.27	54	-13.73
	5150 (Pk)	Horizontal	60.78	74	-13.22
	5150 (Av)		48.36	54	-5.64
	5210 (Pk)		101.85	*	-
	5210 (Av)		91.3	*	-
	10420(Pk)		48.04	74	-25.96
	10420(Av)		40.14	54	-13.86

VHT 20 MIMO
802.11 ac mode MCS 8

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
36 (5180MHz)	5150 (Pk)	Vertical	52.37	74	-21.63
	5150 (Av)		41.43	54	-12.57
	5180 (Pk)		108.82	*	-
	5180 (Av)		99.48	*	-
	10360 (Pk)		47.54	68.23	-20.69
	10360 (Av)		45.38	54	-8.62
	5150 (Pk)	Horizontal	56.51	74	-17.49
	5150 (Av)		43.98	54	-10.02
	5180 (Pk)		112.5	*	-
	5180 (Av)		101.88	*	-
	10360 (Pk)		44.83	68.23	-23.4
	10360 (Av)		46.87	54	-7.13
48 (5240MHz)	10480(Pk)	Vertical	46.68	68.23	-21.55
	10480(Av)		38.94	54	-15.06
	10480(Pk)	Horizontal	46.62	68.23	-21.61
	10480(Av)		45.36	54	-8.64

802.11 ac mode MCS 11

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
36 (5180MHz)	5150 (Pk)	Vertical	51.22	74	-22.78
	5150 (Av)		40.73	54	-13.27
	5180 (Pk)		106.72	*	-
	5180 (Av)		98.02	*	-
	10360 (Pk)		46.39	68.23	-21.84
	10360 (Av)		44.83	54	-9.17
	5150 (Pk)	Horizontal	53.26	74	-20.74
	5150 (Av)		42.01	54	-11.99
	5180 (Pk)		109.2	*	-
	5180 (Av)		99.59	*	-
	10360 (Pk)		46.96	68.23	-21.27
	10360 (Av)		45.36	54	-8.64
48 (5240MHz)	10480(Pk)	Vertical	47.63	68.23	-20.6
	10480(Av)		39.02	54	-14.98
	10480(Pk)	Horizontal	47.37	68.23	-20.86
	10480(Av)		46.08	54	-7.92

802.11 ac mode MCS 15

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
36 (5180MHz)	5150 (Pk)	Vertical	51.08	74	-22.92
	5150 (Av)		39.82	54	-14.18
	5180 (Pk)		106.23	*	-
	5180 (Av)		96.71	*	-
	10360 (Pk)		47.64	68.23	-20.59
	10360 (Av)		46.86	54	-7.14
	5150 (Pk)	Horizontal	51.96	74	-22.04
	5150 (Av)		40.38	54	-13.62
	5180 (Pk)		107.31	*	-
	5180 (Av)		97.63	*	-
	10360 (Pk)		47.39	68.23	-20.84
	10360 (Av)		44.17	54	-9.83
48 (5240MHz)	10480(Pk)	Vertical	46.28	68.23	-21.95
	10480(Av)		38.75	54	-15.25
	10480(Pk)	Horizontal	46.83	68.23	-21.4
	10480(Av)		45.82	54	-8.18

VHT 40 MIMO
802.11 ac mode MCS 8

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
38 (5190MHz)	5150 (Pk)	Vertical	53.57	74	-20.43
	5150 (Av)		41.24	54	-12.76
	5190 (Pk)		103.1	*	-
	5190 (Av)		92.74	*	-
	10380 (Pk)		45.97	68.23	-22.26
	10380 (Av)		40.65	54	-13.35
	5150 (Pk)	Horizontal	57.61	74	-16.39
	5150 (Av)		45.72	54	-8.28
	5190 (Pk)		104.79	*	-
	5190 (Av)		94.53	*	-
	10380 (Pk)		46.38	68.23	-21.85
	10380 (Av)		40.04	54	-13.96
46 (5230MHz)	10460(Pk)	Vertical	46.38	68.23	-21.85
	10460(Av)		40.86	54	-13.14
	10460(Pk)	Horizontal	46.93	68.23	-21.3
	10460(Av)		40.48	54	-13.52

802.11 ac mode MCS 11

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
38 (5190MHz)	5150 (Pk)	Vertical	54.37	74	-19.63
	5150 (Av)		42.79	54	-11.21
	5190 (Pk)		102.42	*	-
	5190 (Av)		92.5	*	-
	10380 (Pk)		45.78	68.23	-22.45
	10380 (Av)		41.9	54	-12.1
	5150 (Pk)	Horizontal	54.3	74	-19.7
	5150 (Av)		43.79	54	-10.21
	5190 (Pk)		102.79	*	-
	5190 (Av)		93.32	*	-
	10380 (Pk)		45.39	68.23	-22.84
	10380 (Av)		39.48	54	-14.52
46 (5230MHz)	10460(Pk)	Vertical	47.96	68.23	-20.27
	10460(Av)		41.6	54	-12.4
	10460(Pk)	Horizontal	47.44	68.23	-20.79
	10460(Av)		41.63	54	-12.37

802.11 ac mode MCS 15

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
38 (5190MHz)	5150 (Pk)	Vertical	54.26	74	-19.74
	5150 (Av)		42.88	54	-11.12
	5190 (Pk)		102.62	*	-
	5190 (Av)		92.24	*	-
	10380 (Pk)		46.73	68.23	-21.5
	10380 (Av)		40.53	54	-13.47
	5150 (Pk)	Horizontal	57.99	74	-16.01
	5150 (Av)		43.47	54	-10.53
	5190 (Pk)		103.48	*	-
	5190 (Av)		92.38	*	-
	10380 (Pk)		46.39	68.23	-21.84
	10380 (Av)		41.74	54	-12.26
46 (5230MHz)	10460(Pk)	Vertical	46.03	68.23	-22.2
	10460(Av)		40.37	54	-13.63
	10460(Pk)	Horizontal	45.85	68.23	-22.38
	10460(Av)		40.48	54	-13.52

HT 20 SISO
802.11 n mode MCS 0

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
36 (5180MHz)	5150 (Pk)	Vertical	53.01	74	-20.99
	5150 (Av)		41.69	54	-12.31
	5180 (Pk)		105.29	*	-
	5180 (Av)		95.43	*	-
	10360 (Pk)		45.48	68.23	-22.75
	10360 (Av)		41.04	54	-12.96
	5150 (Pk)	Horizontal	57.57	74	-16.43
	5150 (Av)		44.27	54	-9.73
	5180 (Pk)		109.54	*	-
	5180 (Av)		99.79	*	-
	10360 (Pk)		45.48	68.23	-22.75
	10360 (Av)		41.78	54	-12.22
48 (5240MHz)	10480(Pk)	Vertical	47.56	68.23	-20.67
	10480(Av)		42.68	54	-11.32
	10480(Pk)	Horizontal	47.74	68.23	-20.49
	10480(Av)		43.95	54	-10.05

802.11 n mode MCS 4

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
36 (5180MHz)	5150 (Pk)	Vertical	52.78	74	-21.22
	5150 (Av)		42.24	54	-11.76
	5180 (Pk)		106.59	*	-
	5180 (Av)		96.27	*	-
	10360 (Pk)		46.31	68.23	-21.92
	10360 (Av)		44.53	54	-9.47
	5150 (Pk)	Horizontal	55.81	74	-18.19
	5150 (Av)		44.69	54	-9.31
	5180 (Pk)		109.64	*	-
	5180 (Av)		99.93	*	-
	10360 (Pk)		46.17	68.23	-22.06
	10360 (Av)		42.58	54	-11.42
48 (5240MHz)	10480(Pk)	Vertical	47.23	68.23	-21
	10480(Av)		45.08	54	-8.92
	10480(Pk)	Horizontal	47.42	68.23	-20.81
	10480(Av)		43.67	54	-10.33

802.11 n mode MCS 7

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
36 (5180MHz)	5150 (Pk)	Vertical	53.58	74	-20.42
	5150 (Av)		40.66	54	-13.34
	5180 (Pk)		105.9	*	-
	5180 (Av)		94.81	*	-
	10360 (Pk)		46.23	68.23	-22
	10360 (Av)		43.87	54	-10.13
	5150 (Pk)	Horizontal	54.35	74	-19.65
	5150 (Av)		43.1	54	-10.9
	5180 (Pk)		109.46	*	-
	5180 (Av)		99.06	*	-
	10360 (Pk)		46.14	68.23	-22.09
	10360 (Av)		42.42	54	-11.58
48 (5240MHz)	10480(Pk)	Vertical	47.02	68.23	-21.21
	10480(Av)		44.83	54	-9.17
	10480(Pk)	Horizontal	46.43	68.23	-21.8
	10480(Av)		42.17	54	-11.83

HT 20 MIMO
802.11 n mode MCS 8

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
36 (5180MHz)	5150 (Pk)	Vertical	53.08	74	-20.92
	5150 (Av)		41.65	54	-12.35
	5180 (Pk)		108.14	*	-
	5180 (Av)		97.21	*	-
	10360 (Pk)		47.55	68.23	-20.68
	10360 (Av)		41.97	54	-12.03
	5150 (Pk)	Horizontal	54	74	-20
	5150 (Av)		42.43	54	-11.57
	5180 (Pk)		109.4	*	-
	5180 (Av)		98.74	*	-
	10360 (Pk)		47.27	68.23	-20.96
	10360 (Av)		41.54	54	-12.46

802.11 n mode MCS 11

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
36 (5180MHz)	5150 (Pk)	Vertical	55.86	74	-18.14
	5150 (Av)		41.53	54	-12.47
	5180 (Pk)		107.46	*	-
	5180 (Av)		97.35	*	-
	10360 (Pk)		46.93	68.23	-21.3
	10360 (Av)		40.78	54	-13.22
	5150 (Pk)	Horizontal	55.72	74	-18.28
	5150 (Av)		42.56	54	-11.44
	5180 (Pk)		109.26	*	-
	5180 (Av)		99.19	*	-
	10360 (Pk)		47.83	68.23	-20.4
	10360 (Av)		41.75	54	-12.25

802.11 n mode MCS 15

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
36 (5180MHz)	5150 (Pk)	Vertical	52.21	74	-21.79
	5150 (Av)		40.33	54	-13.67
	5180 (Pk)		107	*	-
	5180 (Av)		96.12	*	-
	10360 (Pk)		46.89	68.23	-21.34
	10360 (Av)		41.92	54	-12.08
	5150 (Pk)	Horizontal	52.81	74	-21.19
	5150 (Av)		41.2	54	-12.8
	5180 (Pk)		108.02	*	-
	5180 (Av)		97.41	*	-
	10360 (Pk)		46.92	68.23	-21.31
	10360 (Av)		40.72	54	-13.28

HT 40 SISO
802.11 n mode MCS 0

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
36 (5180MHz)	5150 (Pk)	Vertical	59.09	74	-14.91
	5150 (Av)		45.7	54	-8.3
	5180 (Pk)		104.79	*	-
	5180 (Av)		96.19	*	-
	10360 (Pk)		46.29	68.23	-21.94
	10360 (Av)		40.8	54	-13.2
	5150 (Pk)	Horizontal	64.11	74	-9.89
	5150 (Av)		51.76	54	-2.24
	5180 (Pk)		106.74	*	-
	5180 (Av)		98.21	*	-
	10360 (Pk)		46.05	68.23	-22.18
	10360 (Av)		40.35	54	-13.65
46 (5230MHz)	10460(Pk)	Vertical	47.3	68.23	-20.93
	10460(Av)		41.84	54	-12.16
	10460(Pk)	Horizontal	47.87	68.23	-20.36
	10460(Av)		40.93	54	-13.07

802.11 n mode MCS 4

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
36 (5180MHz)	5150 (Pk)	Vertical	53.64	74	-20.36
	5150 (Av)		43.05	54	-10.95
	5180 (Pk)		99.97	*	-
	5180 (Av)		89.63	*	-
	10360 (Pk)		-47.03	68.23	-115.26
	10360 (Av)		41.04	54	-12.96
	5150 (Pk)	Horizontal	56.33	74	-17.67
	5150 (Av)		45.73	54	-8.27
	5180 (Pk)		103.86	*	-
	5180 (Av)		93.48	*	-
	10360 (Pk)		47.83	68.23	-20.4
	10360 (Av)		40.94	54	-13.06
46 (5230MHz)	10460(Pk)	Vertical	47.6	68.23	-20.63
	10460(Av)		41.75	54	-12.25
	10460(Pk)	Horizontal	47.47	68.23	-20.76
	10460(Av)		41.91	54	-12.09

802.11 n mode MCS 7

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
36 (5180MHz)	5150 (Pk)	Vertical	54.28	74	-19.72
	5150 (Av)		43.07	54	-10.93
	5180 (Pk)		100.22	*	-
	5180 (Av)		89.63	*	-
	10360 (Pk)		46.84	68.23	-21.39
	10360 (Av)		40.39	54	-13.61
	5150 (Pk)	Horizontal	57.18	74	-16.82
	5150 (Av)		45.73	54	-8.27
	5180 (Pk)		102.89	*	-
	5180 (Av)		93.29	*	-
	10360 (Pk)		46.98	68.23	-21.25
	10360 (Av)		40.08	54	-13.92
46 (5230MHz)	10460(Pk)	Vertical	48.96	68.23	-19.27
	10460(Av)		41.54	54	-12.46
	10460(Pk)	Horizontal	49.26	68.23	-18.97
	10460(Av)		41.32	54	-12.68

HT 40 MIMO
802.11 n mode MCS 8

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
38 (5190MHz)	5150 (Pk)	Vertical	54.11	74	-19.89
	5150 (Av)		43.42	54	-10.58
	5190 (Pk)		102.32	*	-
	5190 (Av)		91.83	*	-
	10380 (Pk)		46.92	68.23	-21.31
	10380 (Av)		40.04	54	-13.96
	5150 (Pk)	Horizontal	56.22	74	-17.78
	5150 (Av)		44.57	54	-9.43
	5190 (Pk)		102.89	*	-
	5190 (Av)		92.74	*	-
	10380 (Pk)		46.06	68.23	-22.17
	10380 (Av)		40.83	54	-13.17
46 (5230MHz)	10460(Pk)	Vertical	47.31	68.23	-20.92
	10460(Av)		41.71	54	-12.29
	10460(Pk)	Horizontal	47.62	68.23	-20.61
	10460(Av)		41.56	54	-12.44

802.11 n mode MCS 11

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
38 (5190MHz)	5150 (Pk)	Vertical	53.3	74	-20.7
	5150 (Av)		42.99	54	-11.01
	5190 (Pk)		101.88	*	-
	5190 (Av)		91.3	*	-
	10380 (Pk)		45.94	68.23	-22.29
	10380 (Av)		40.92	54	-13.08
	5150 (Pk)	Horizontal	55.81	74	-18.19
	5150 (Av)		43.88	54	-10.12
	5190 (Pk)		102.5	*	-
	5190 (Av)		92.29	*	-
	10380 (Pk)		45.05	68.23	-23.18
	10380 (Av)		40.93	54	-13.07
46 (5230MHz)	10460(Pk)	Vertical	47.94	68.23	-20.29
	10460(Av)		41.87	54	-12.13
	10460(Pk)	Horizontal	47.46	68.23	-20.77
	10460(Av)		41.92	54	-12.08

802.11 n mode MCS 15

Ch No./ Frequency	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
38 (5190MHz)	5150 (Pk)	Vertical	53.73	74	-20.27
	5150 (Av)		42.7	54	-11.3
	5190 (Pk)		102.22	*	-
	5190 (Av)		91.13	*	-
	10380 (Pk)		45.98	68.23	-22.25
	10380 (Av)		39.92	54	-14.08
	5150 (Pk)	Horizontal	55.76	74	-18.24
	5150 (Av)		43.59	54	-10.41
	5190 (Pk)		104.14	*	-
	5190 (Av)		91.94	*	-
	10380 (Pk)		46.93	68.23	-21.3
	10380 (Av)		40.03	54	-13.97
46 (5230MHz)	10460(Pk)	Vertical	47.73	68.23	-20.5
	10460(Av)		41.67	54	-12.33
	10460(Pk)	Horizontal	47.94	68.23	-20.29
	10460(Av)		41.21	54	-12.79

Conducted Emission Test on A.C. Power Line

Result **Pass**

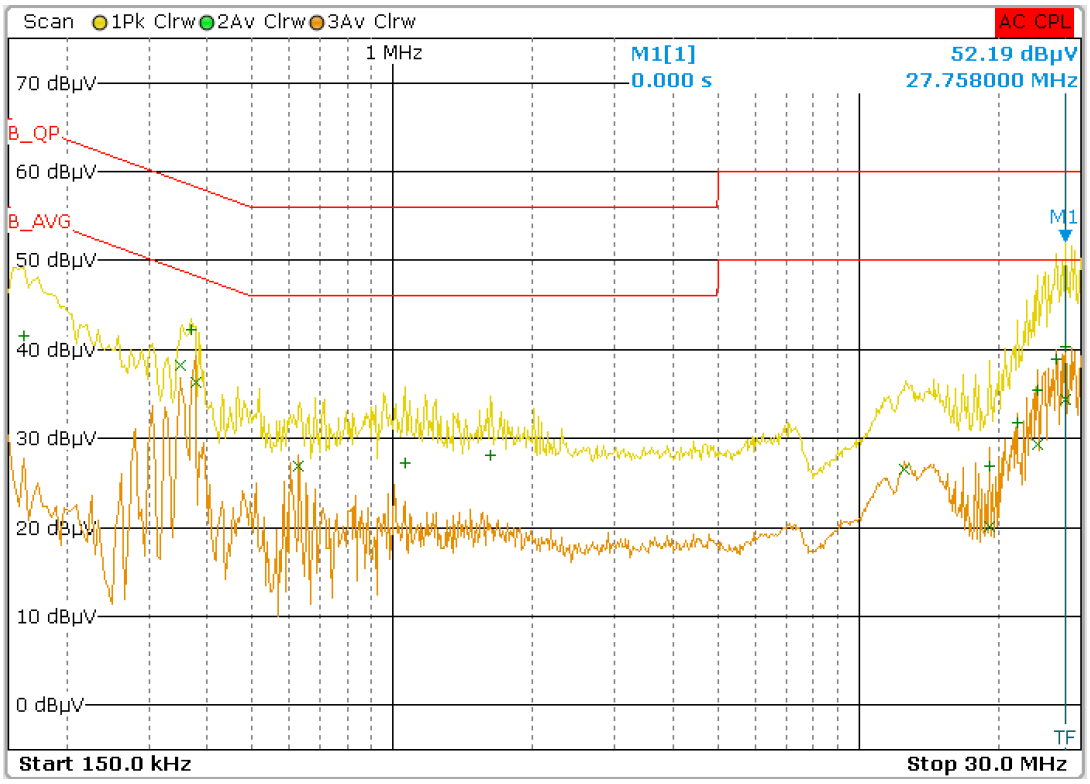
Test Specification	:	FCC Part 15 Section 15.207
Test Method	:	ANSI C63.10-2013
Testing Location	:	Screened room
Measurement Bandwidth	:	9kHz
Frequency Range	:	150kHz – 30MHz
Supply Voltage	:	120VAC,60Hz

Limit of section 15.207

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

* Decreases with the logarithm of the frequency

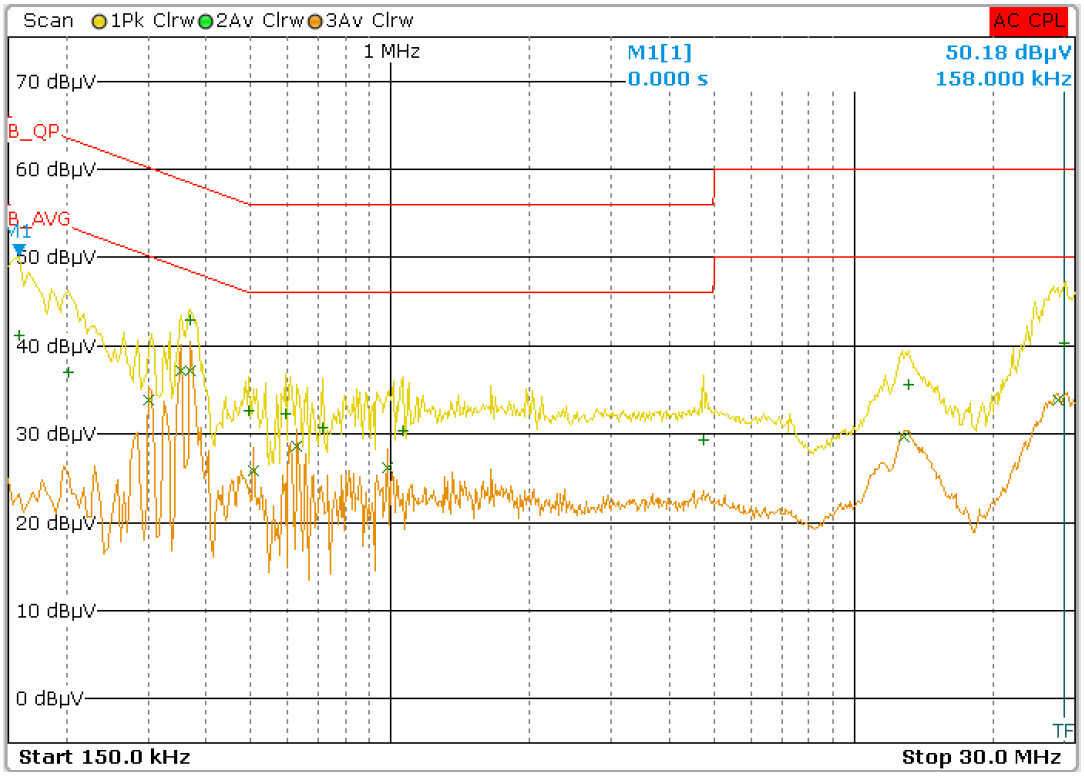
Test Result:



Line Graph

Frequency [MHz]	Emission Level [dBµV]	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



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

Power Setting and Gain index used to testing

Sl no	Mode	Data Rate	Channel	Tx Power setting	Tx Gain Index
1	802.11a	6 Mbps	5180	20	9
			5240	20	9
		24 Mbps	5180	20	9
			5240	20	9
		54 Mbps	5180	19	9
			5240	18	9
2	802.11n 20 MHz SISO	MCS0	5180	20	9
			5240	20	9
		MCS4	5180	20	9
			5240	20	9
		MCS7	5180	19	9
			5240	18	9
3	802.11n 20 MHz MIMO	MCS8	5180	17	9
			5240	17	9
		MCS11	5180	17	9
			5240	17	9
		MCS15	5180	16	9
			5240	16	9
4	802.11n 40 MHz SISO	MCS0	5190	16	9
			5230	20	9
		MCS4	5190	16	9
			5230	20	9
		MCS7	5190	16	9
			5230	18	9
5	802.11n 40 MHz MIMO	MCS8	5190	13	9
			5230	17	9
		MCS11	5190	13	9
			5230	17	9
		MCS15	5190	13	9
			5230	16	9
6	802.11AC VHT20 SISO	MCS0	5180	19	9
			5240	20	9
		MCS4	5180	19	9
			5240	20	9
		MCS7	5180	18	9
			5240	18	9
7	802.11AC VHT20 MIMO	MCS8	5180	16	9
			5240	17	9
		MCS11	5180	16	9
			5240	17	9

		MCS15	5180	15	9
			5240	16	9
8	802.11AC VHT40 SISO	MCS0	5190	16	9
			5230	19	9
		MCS4	5190	16	9
			5230	19	9
		MCS7	5190	16	9
			5230	18	9
9	802.11AC VHT40 MIMO	MCS8	5190	13	9
			5230	16	9
		MCS11	5190	13	9
			5230	16	9
		MCS15	5190	13	9
			5230	15	9
10	802.11AC VHT80	MCS0	5210	15	9
		MCS4	5210	15	9
		MCS9	5210	13	9

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