

Produkte
Products

Prüfbericht - Nr.: 19660261 001		Seite 1 von 110	
<i>Test Report No.:</i>		<i>Page 1 of 110</i>	
Auftraggeber: <i>Client:</i>		Redpine Signals Inc. 2107 N. First Street, Suite 680, San Jose, CA 95131-2019 United States	
Gegenstand der Prüfung: <i>Test item:</i>		High Performance Module	
Bezeichnung: <i>Identification:</i>	RS9113DBH	Serien-Nr.: <i>Serial No.</i>	Engineering Sample
Wareneingangs-Nr.: <i>Receipt No.:</i>	1803166512	Eingangsdatum: <i>Date of receipt:</i>	19.09.2016
Prüfart: <i>Testing location:</i>		Refer Page 4 of 110 for test facilities	
Prüfgrundlage: <i>Test specification:</i>		FCC Part 15, Subpart E ANSI C63.10-2013	
Prüfergebnis: <i>Test Result:</i>		Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). <i>The tests item passed the test specification(s).</i>	
Prüflaboratorium: <i>Testing Laboratory:</i>		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:	
26.09.2016 Raghavendra Katti Engineer		28.09.2016 Vinay N Ast.Manager	
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Unterschrift <i>Signature</i>
			
Sonstiges / Other Aspects: FCC ID: XF6-RS9113DBH			
Abkürzungen: P(ass) = entspricht Prüfgrundlage F(ail) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet		Abbreviations: P(ass) = passed F(ail) = failed N/A = not applicable N/T = not tested	
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>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.</i>			

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

Clause	Test Item	Result
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

Note: Conducted measurements are done according to the procedure given in KDB No. **789033 D02**
General UNII Test Procedures v01r03

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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	23.11.2016
Hybrid Log Periodic antenna	ETS Lindgren	3142D	00081354	10.06.2017
Broadband Horn Antenna	Frankonia	HAX-18	HAX18-802	14.03.2017
Double-Ridged Waveguide Horn Antenna	ETS Lindgren	116794	00133356	14.03.2017
Emission Horn Antenna	ETS Lindgren	116706	00107323	02.11.2016
Active Loop Antenna	Frankonia	LAX-10	LAX-10-800	22.12.2016
Spectrum Analyser	Agilent Technologies	E4407B	US41192772	23.04.2017

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

The RS9113DBH module family is based on Redpine Signals' RS9113 ultra-low-power, single spatial stream, dual-band 802.11abgn. The modules are high performance single band and 2.4GHz/5GHz dual band devices IEEE 802.11abgn WLAN standards. The modules integrate a multi-threaded MAC processor with integrated analog peripherals and support for digital peripherals, baseband digital signal processor, analog front-end, crystal oscillator, calibration OTP memory, dual-band RF transceiver, dual-band high-power amplifiers, baluns, diplexers, diversity switch and Quad-SPI flash. They support host-based software architectures as well as fully embedded architectures. The interface to the host processor is available over SDIO, USB, SPI and UART interfaces. These modules are shielded. We are using two RF ports RFOUT1 and RFOUT2, in which RFOUT2 was used for testing. The firmware in this module will allow transmitting or receiving in only one path that is RFOUT2.

Ratings and System Details

Operating Frequency	5150 - 5250 MHz, & 5725 – 5850 MHz	
No. of channel	Refer page 6, Table 1	
Channel Spacing	20 MHz	
Transmitted Power	802.11a	23.53dBm
	802.11n	23.49dBm
Modulation	802.11a	OFDM with BPSK,QPSK, 16-QAM, 64-QAM
	802.11n	BPSK,QPSK,16-QAM,64-QAM
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	
Antenna Type	External	
Number of antenna	One	
Antenna Gain	2dBi	
Supply Voltage to module	3.1V – 3.6V DC from Host device	
Environmental	-40°C to +85°C	

Test Conditions:

Supply Voltage: 5V DC from Adapter

Environmental conditions:

Temperature: +23 °C

RH: 62%

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 software was used to enable the transmission with 100% duty cycle, changing channels (low/mid/high) and data rates on the EUT for the tests in this report.

Note: The firmware in this module will allow transmitting or receiving in only one path that is RFOUT2.

Special Accessories and Auxiliary Equipment

- None

Countermeasures to achieve EMC Compliance

- None

Test Modes – Data Rates and Modulations

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

Table of Carrier frequencies

5GHz Band – 20MHz Bandwidth Channel List

Frequency Band	Channel No.	Frequency (MHz)
5150 – 5250 MHz	36	5180
	40	5200
	44	5220
	48	5240
5725 – 5850MHz	149	5745
	143	5765
	157	5785
	161	5805
	165	5825

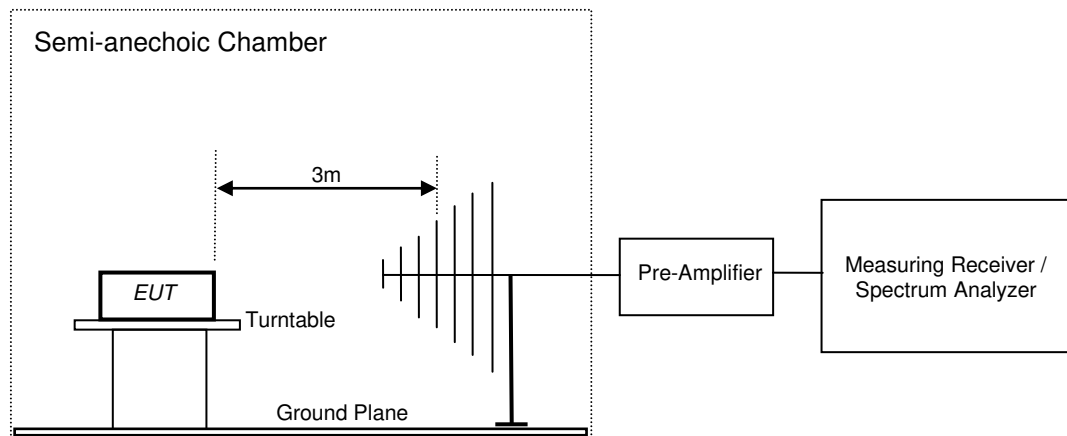
Table 1

Test Methodology

Radiated Emission Test

The radiated emission measurement was performed according to the procedures in ANSI C63.4-2009. The equipment under test (EUT) was placed at the middle of the 80 cm high turntable, 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.



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Test Results

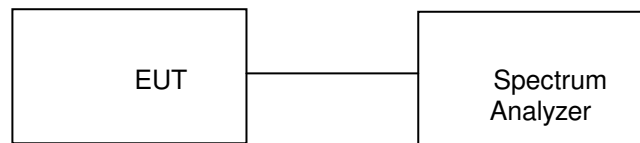
**Emission Bandwidth
Result**

**Section 15.407 (a)
Pass**

Test Specification
Measurement Bandwidth (RBW)

FCC Part 15 Section 15.407(a)
300 kHz

Test Method:

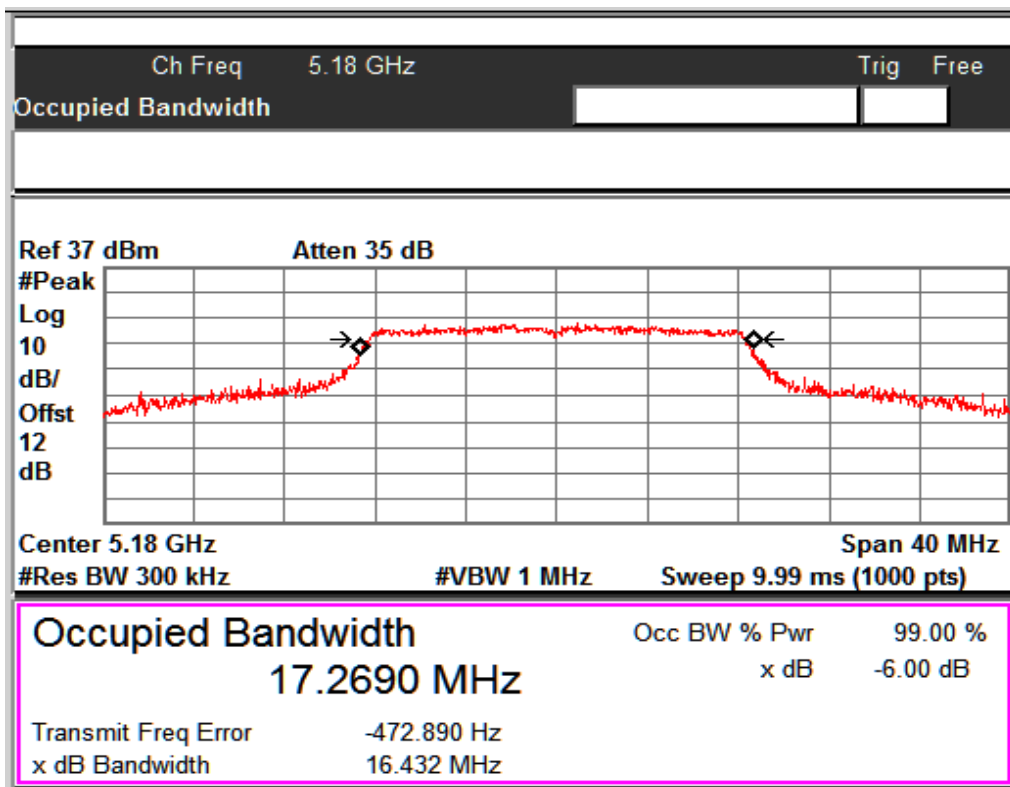
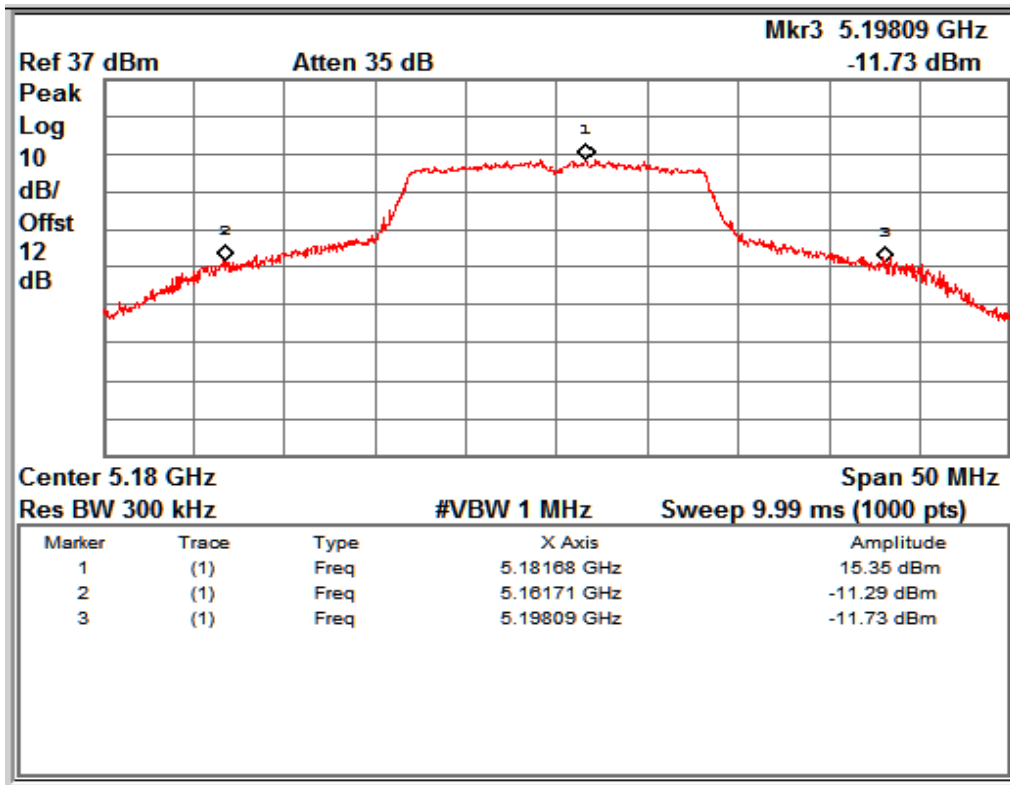


Test Result:

Modulation: 802.11a

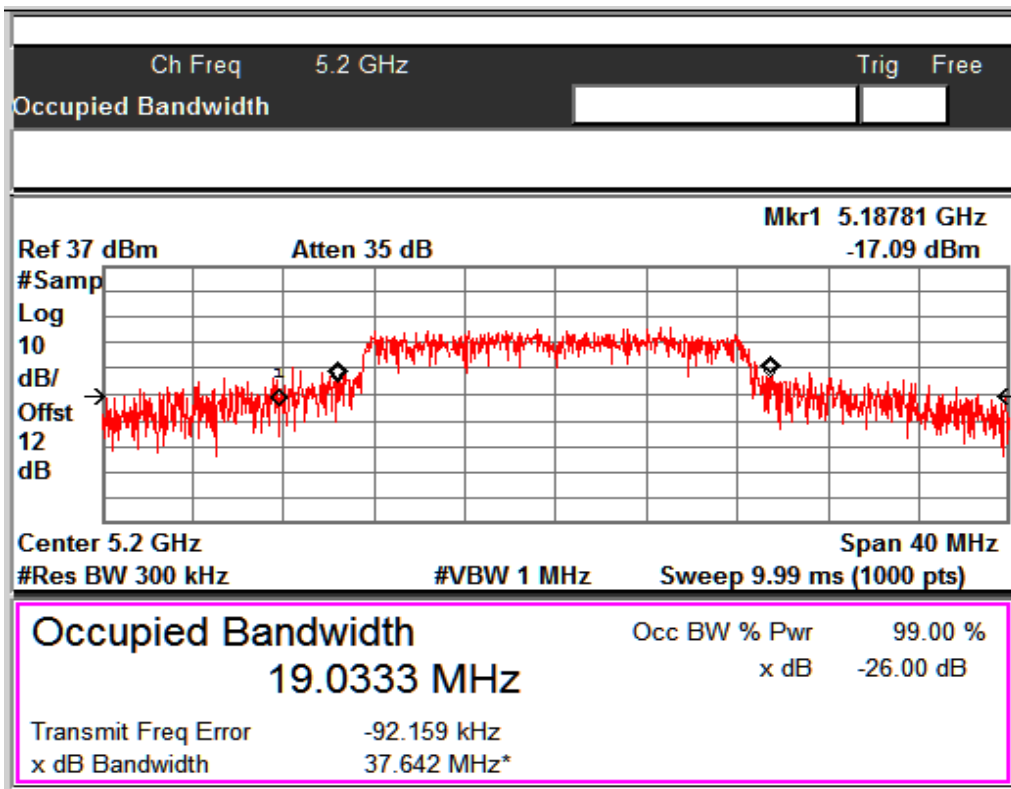
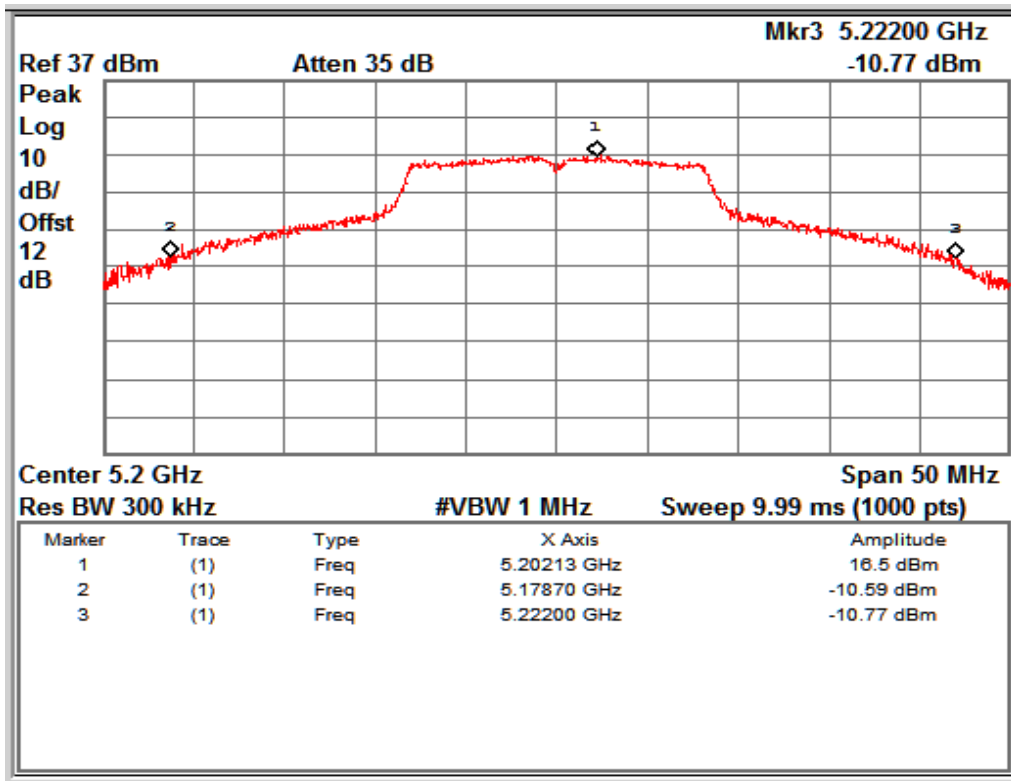
Data Rate (Mbps)	Channel. No	Frequency (MHz)	EBW (MHz)	OBW (MHz)
6	36	5180	36.38	17.26
	40	5200	43.30	19.03
	48	5240	41.85	17.69
24	36	5180	35.43	16.89
	40	5200	36.83	19.92
	48	5240	34.63	18.58
54	36	5180	34.93	16.58
	40	5200	37.73	19.91
	48	5240	37.73	18.30

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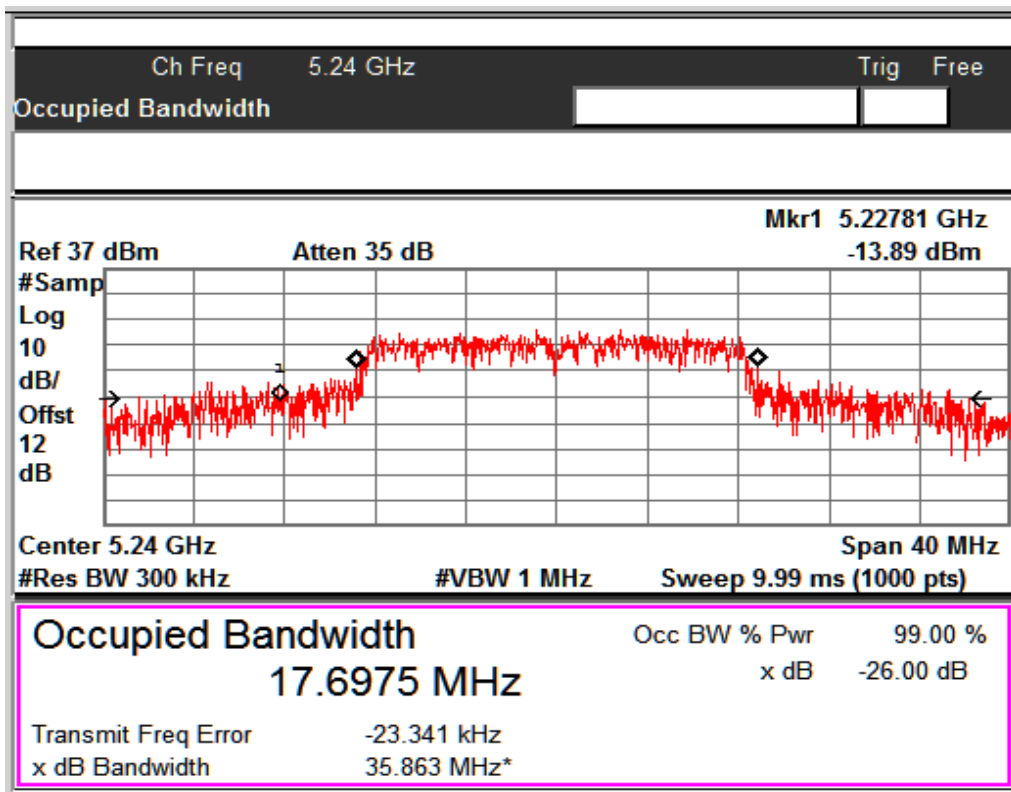
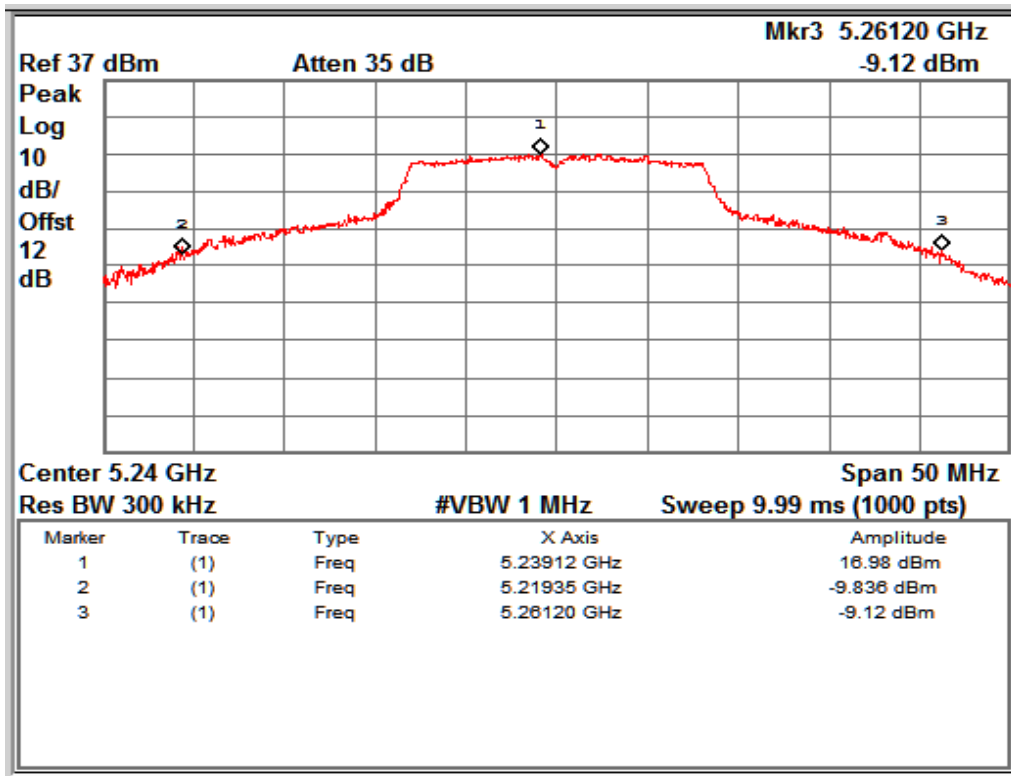
Data Rate: 6Mbps

Channel Frequency: 5180MHz



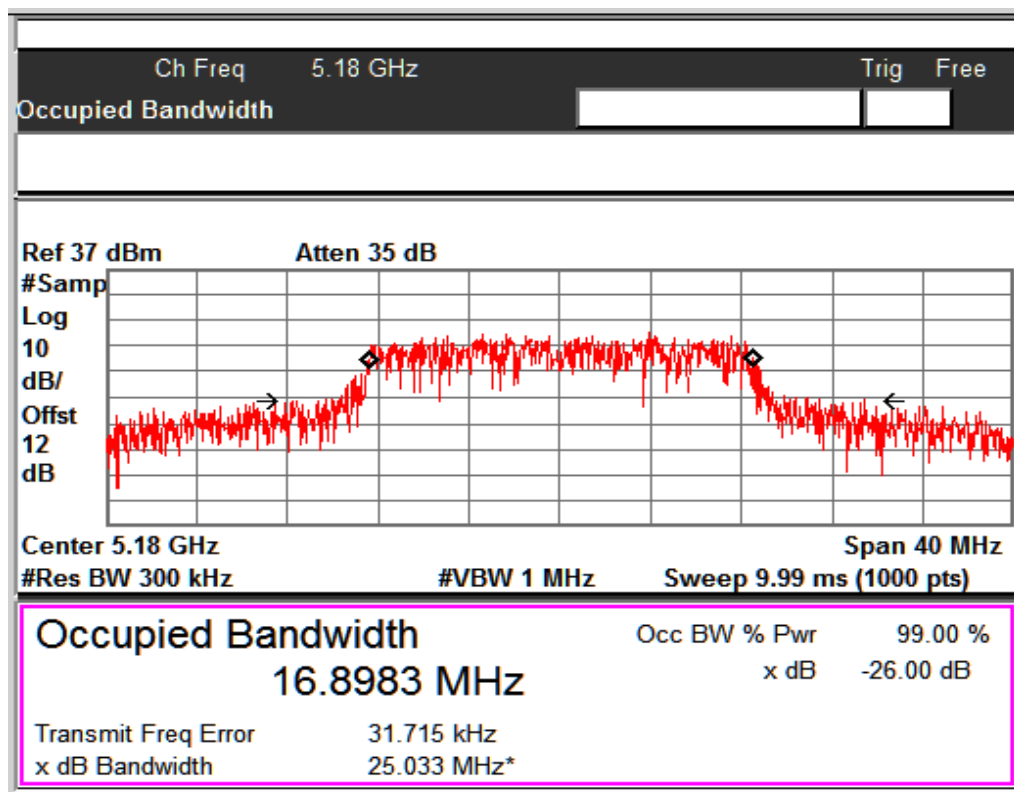
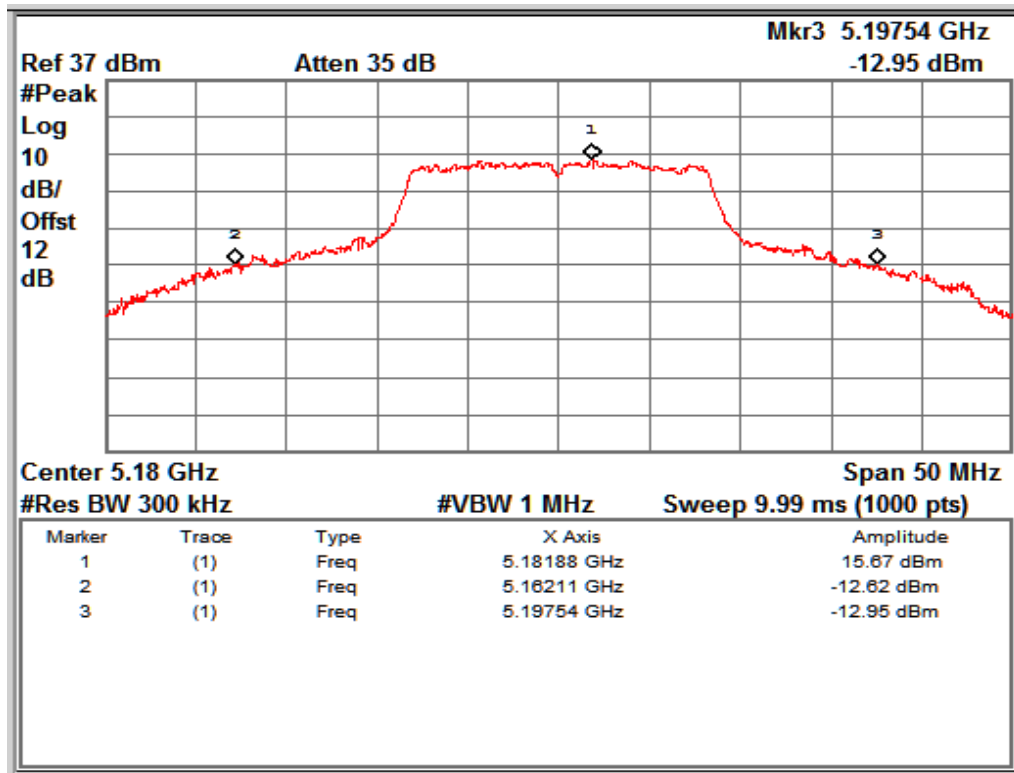
Data Rate: 6Mbps

Channel Frequency: 5200MHz



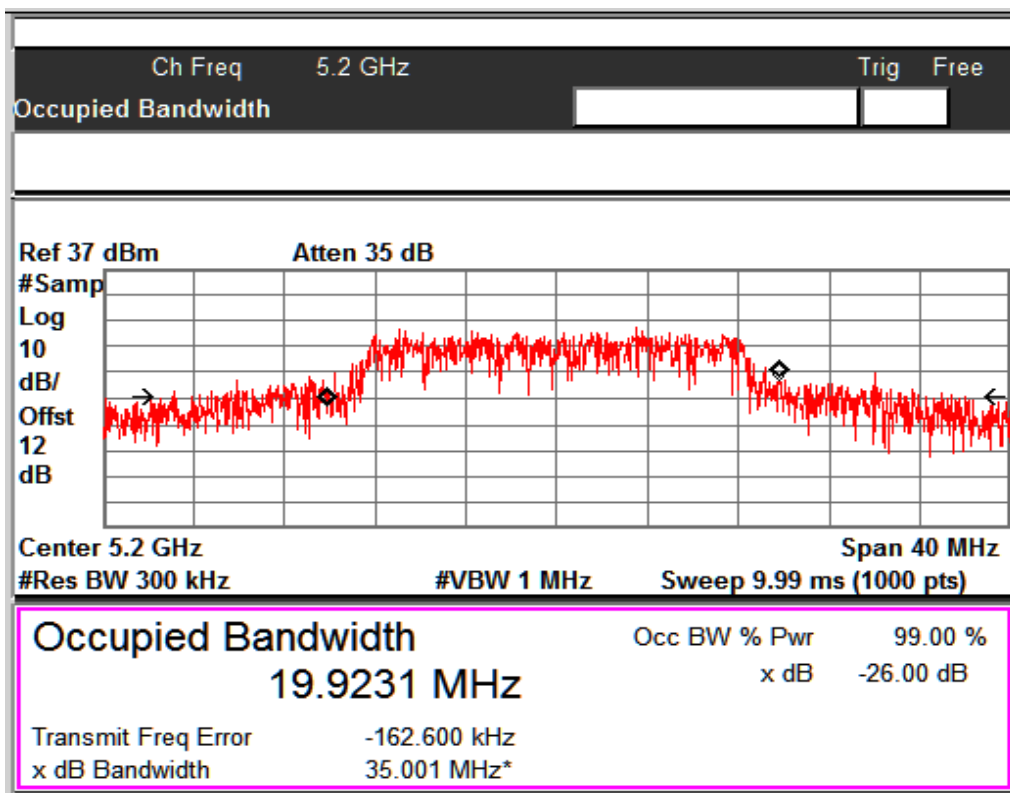
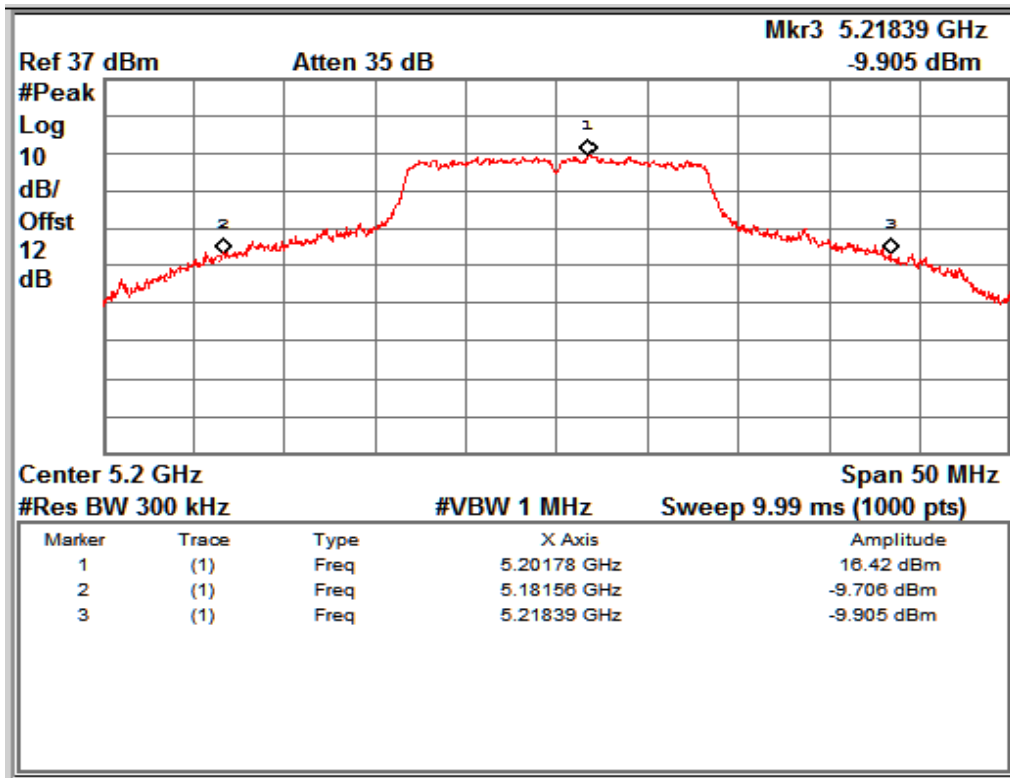
Data Rate: 6Mbps

Channel Frequency: 5240MHz



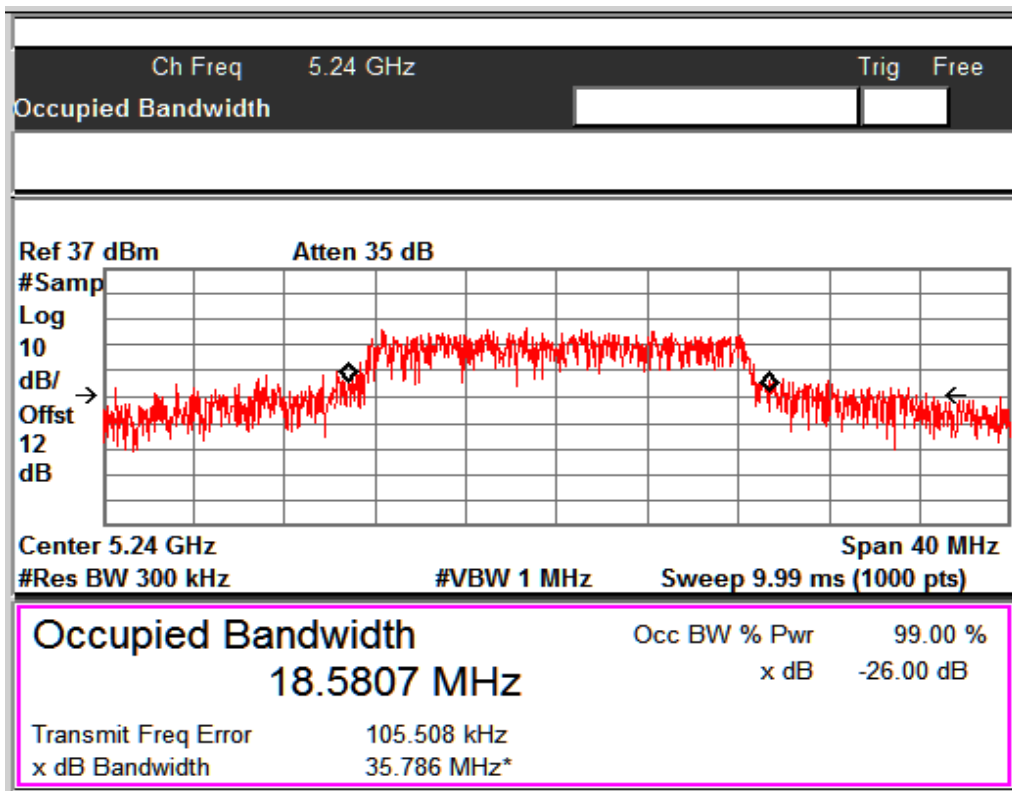
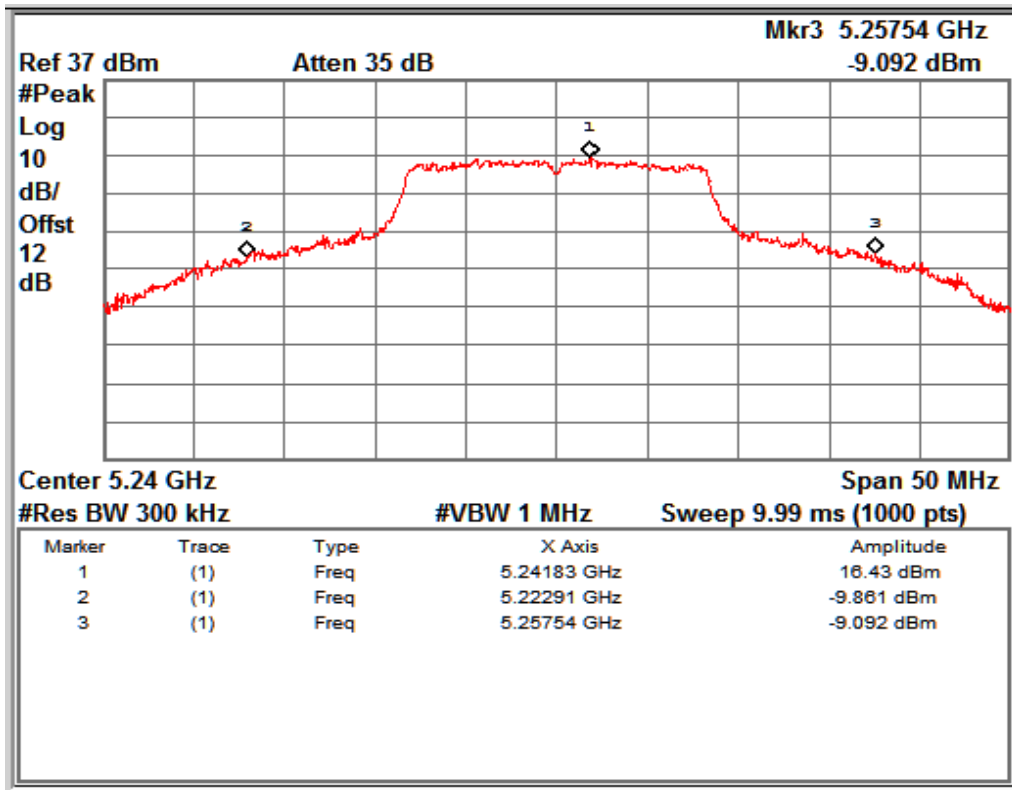
Data Rate: 24Mbps

Channel Frequency: 5180MHz



Data Rate: 24Mbps

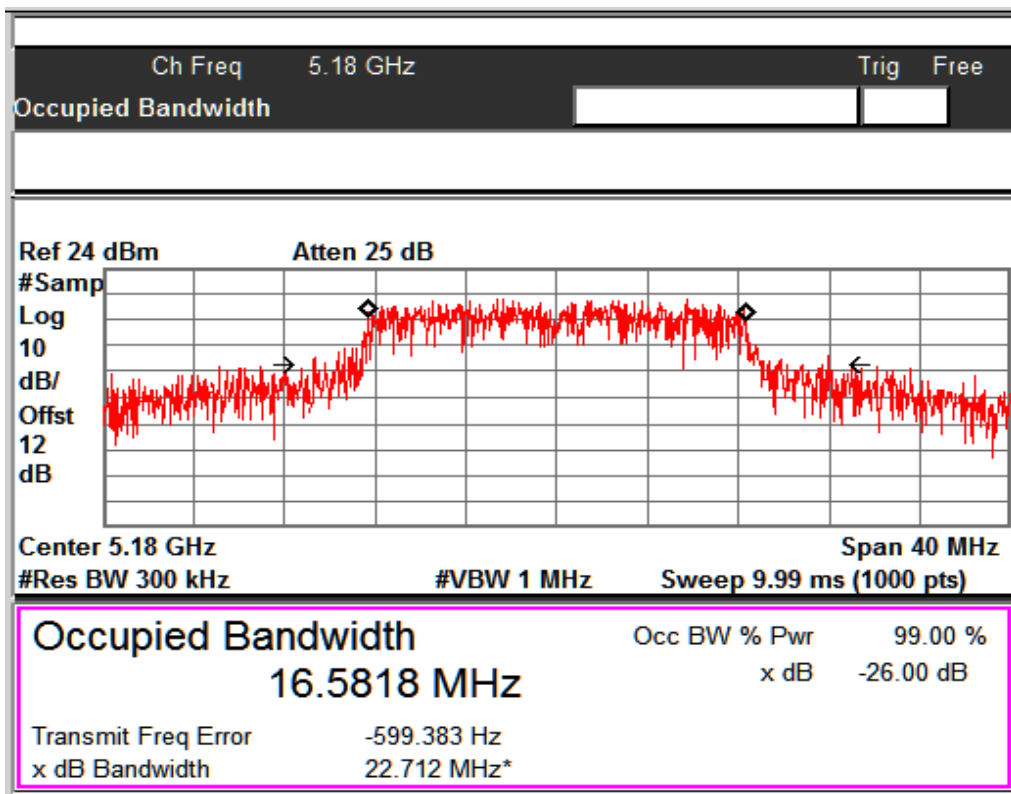
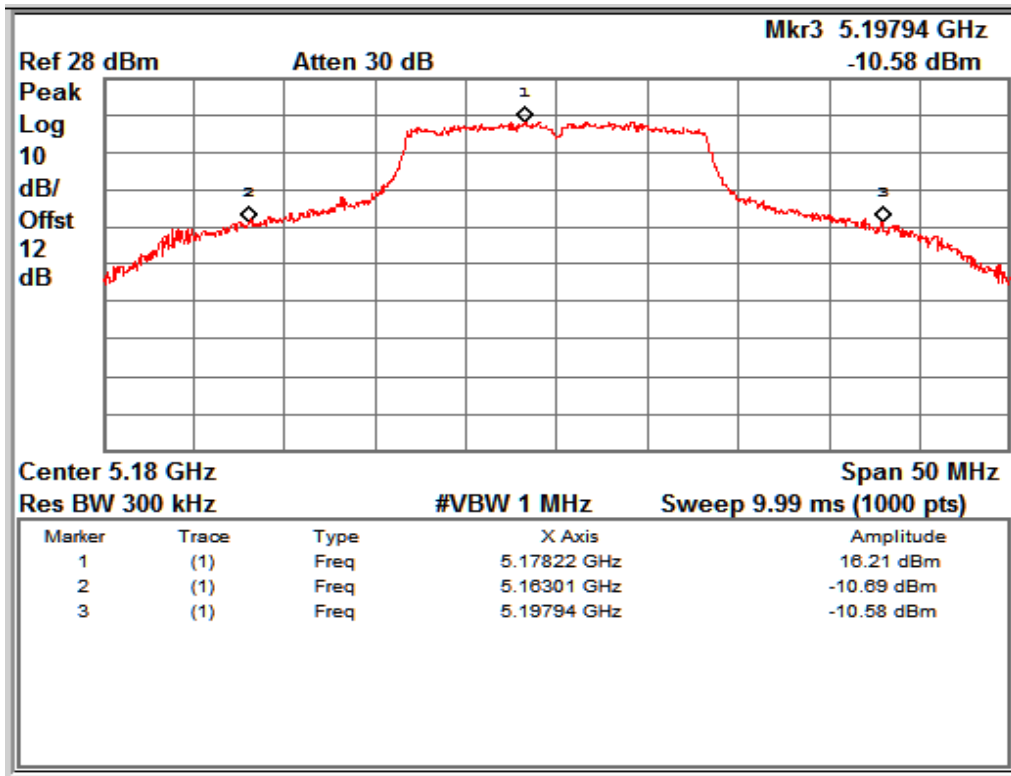
Channel Frequency: 5200MHz



Data Rate: 24Mbps

Channel Frequency: 5240MHz

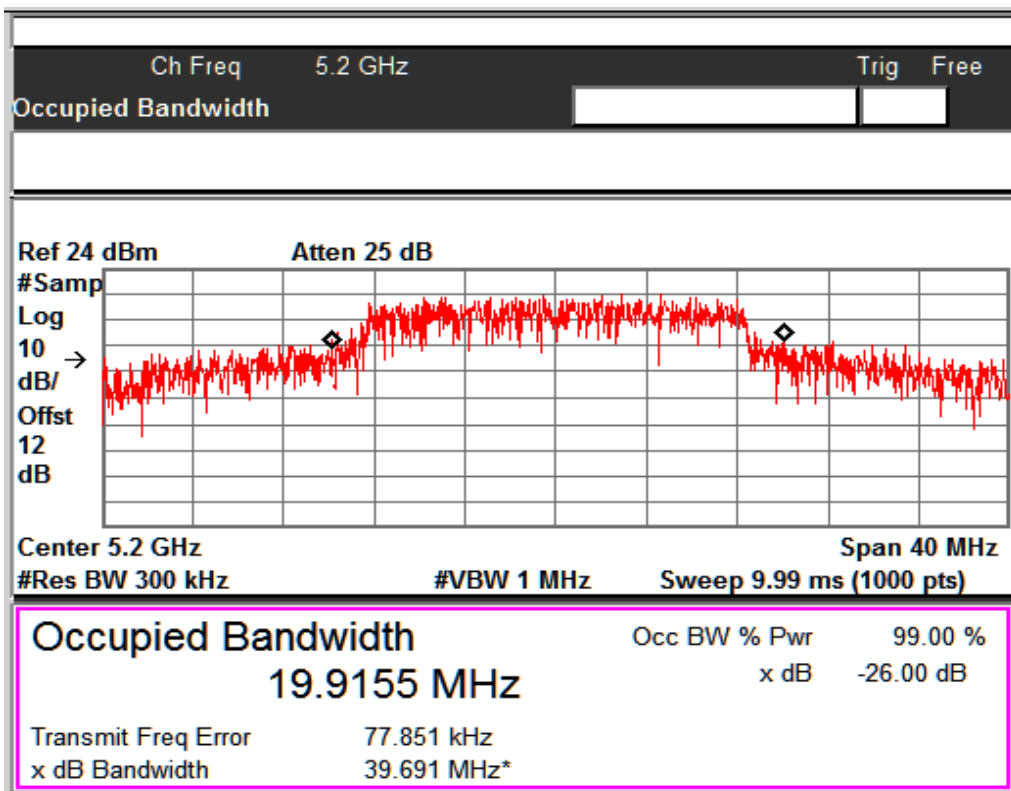
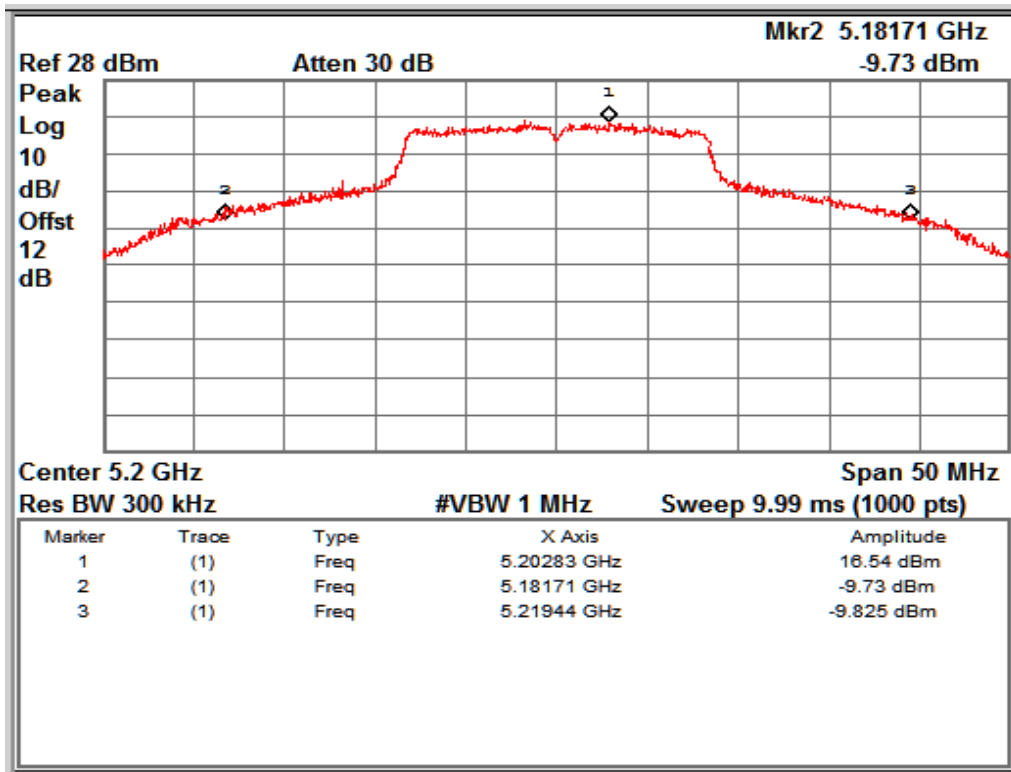
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Data Rate: 54Mbps

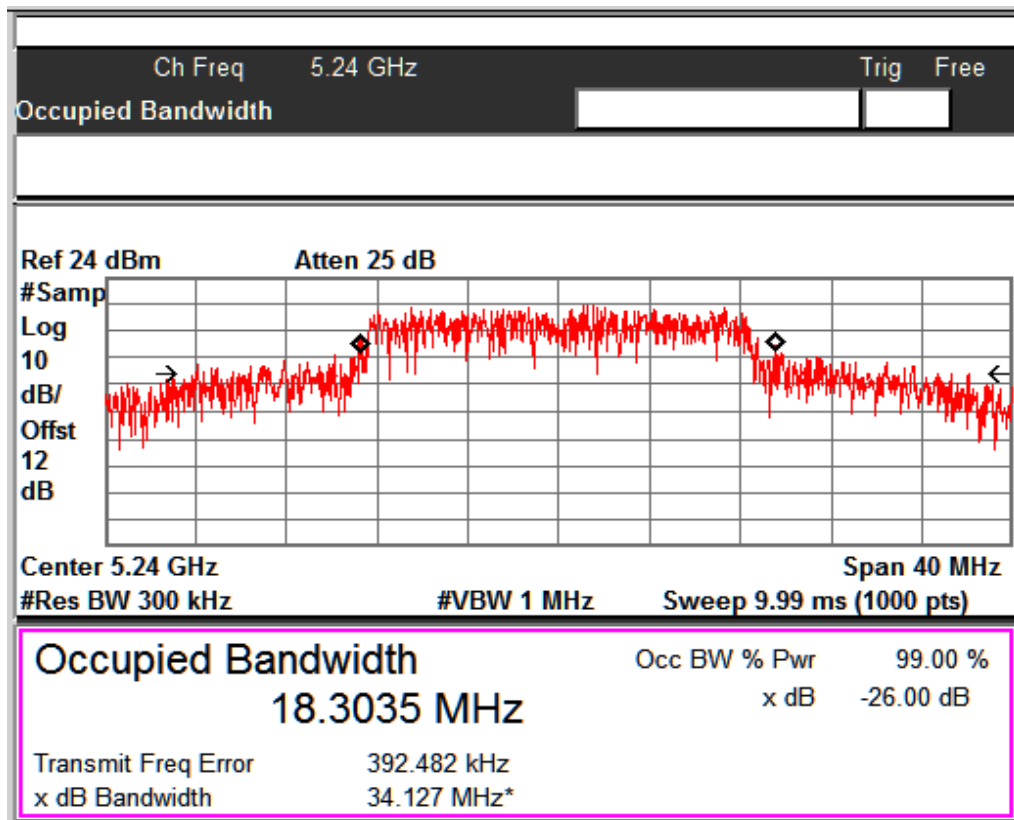
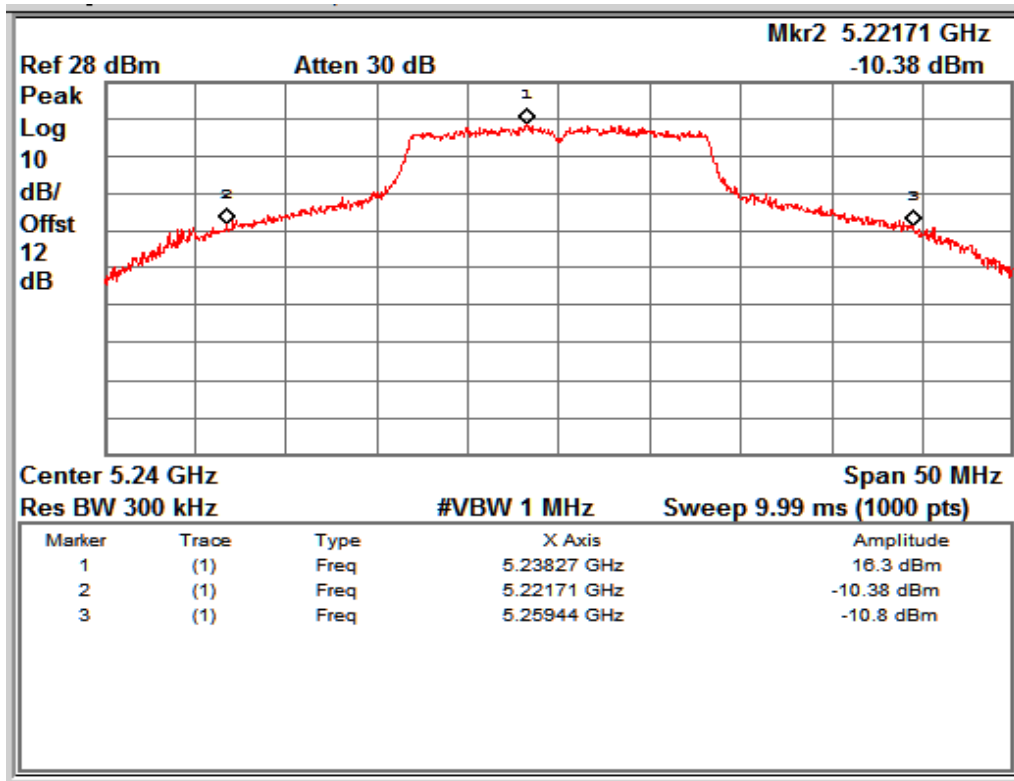
Channel Frequency: 5180MHz

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Data Rate: 54Mbps

Channel Frequency: 5200MHz



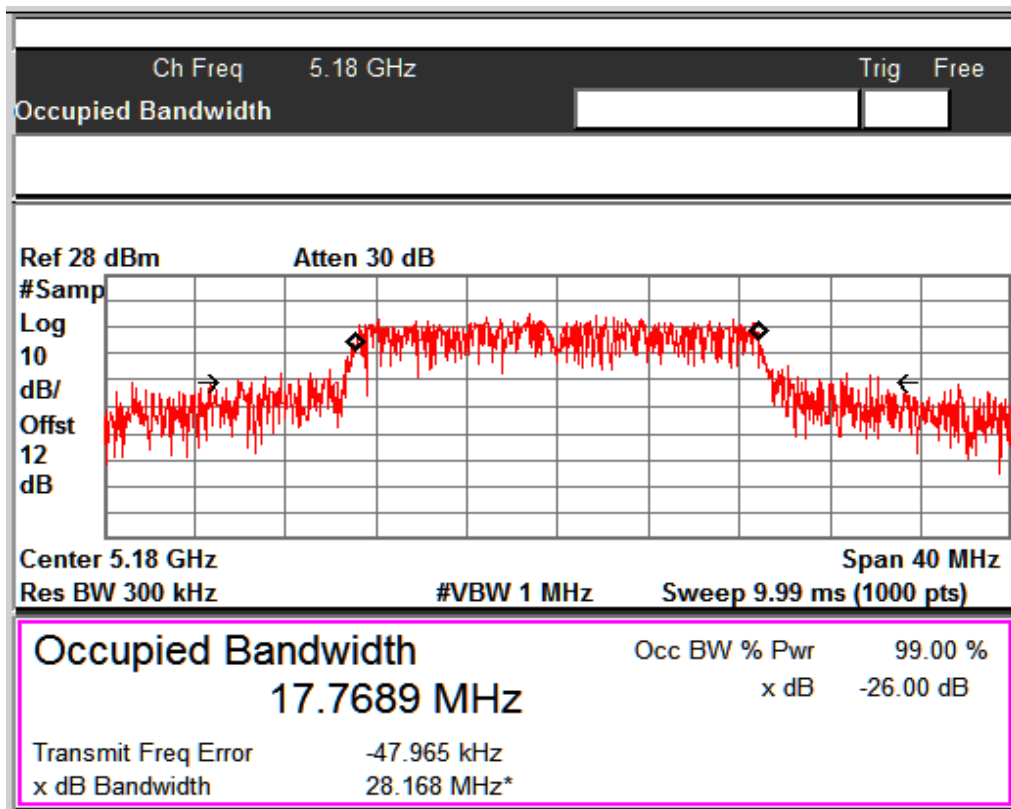
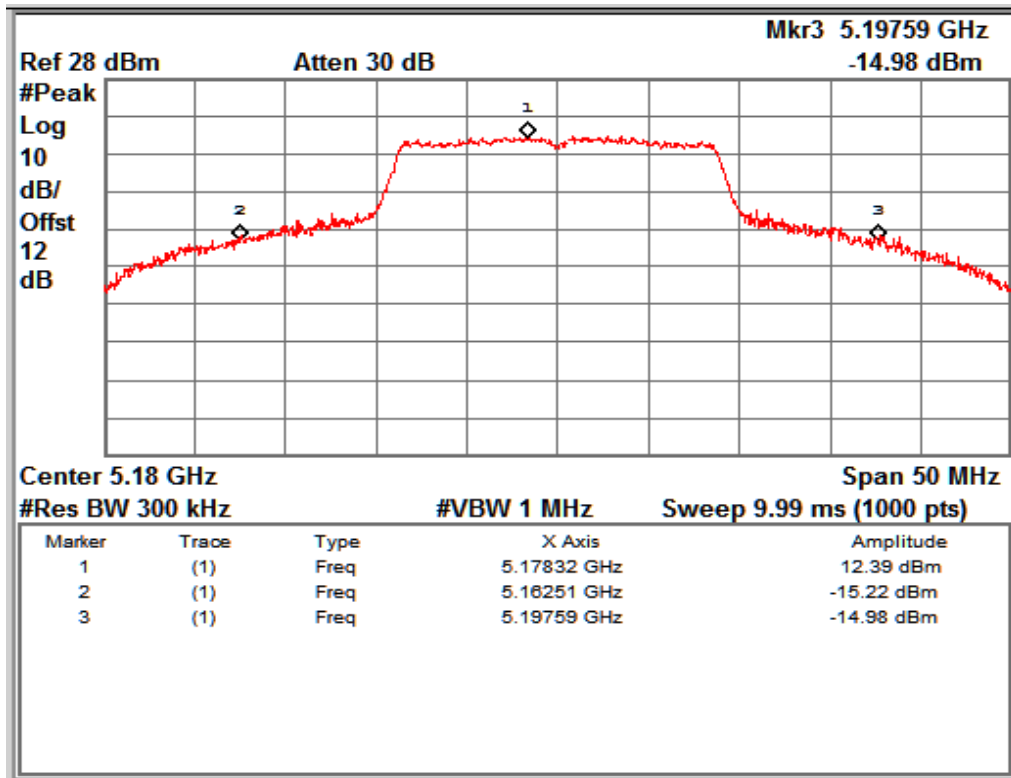
Data Rate: 54Mbps

Channel Frequency: 5240MHz

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Modulation: 802.11n

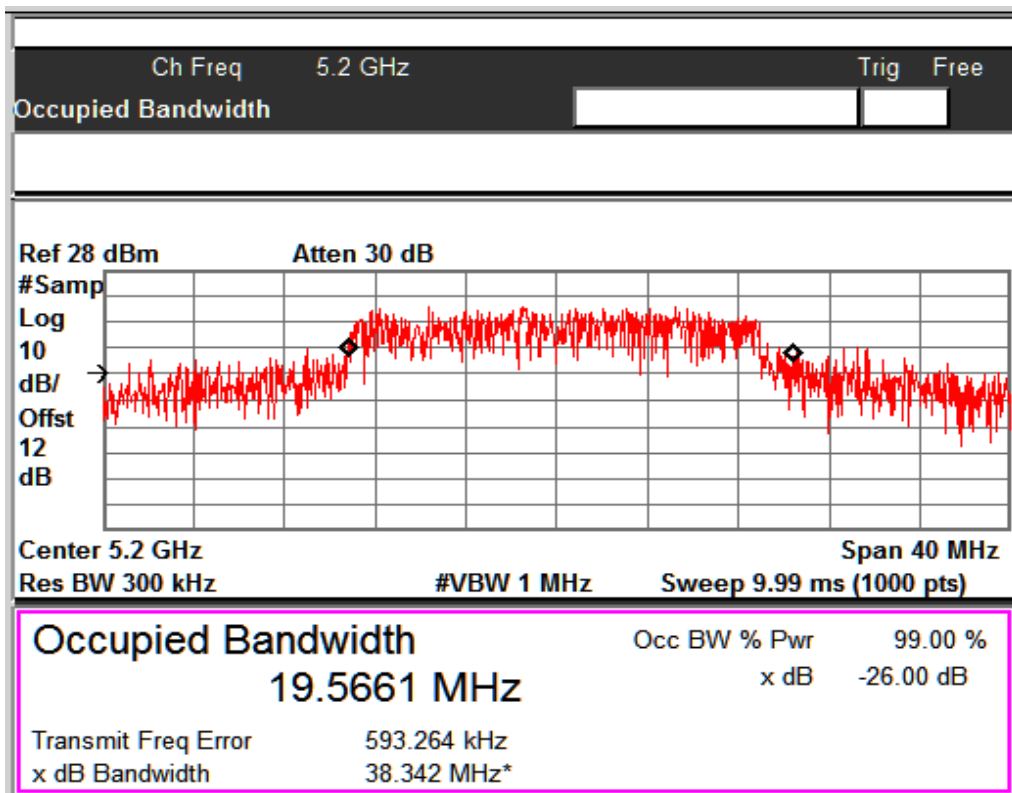
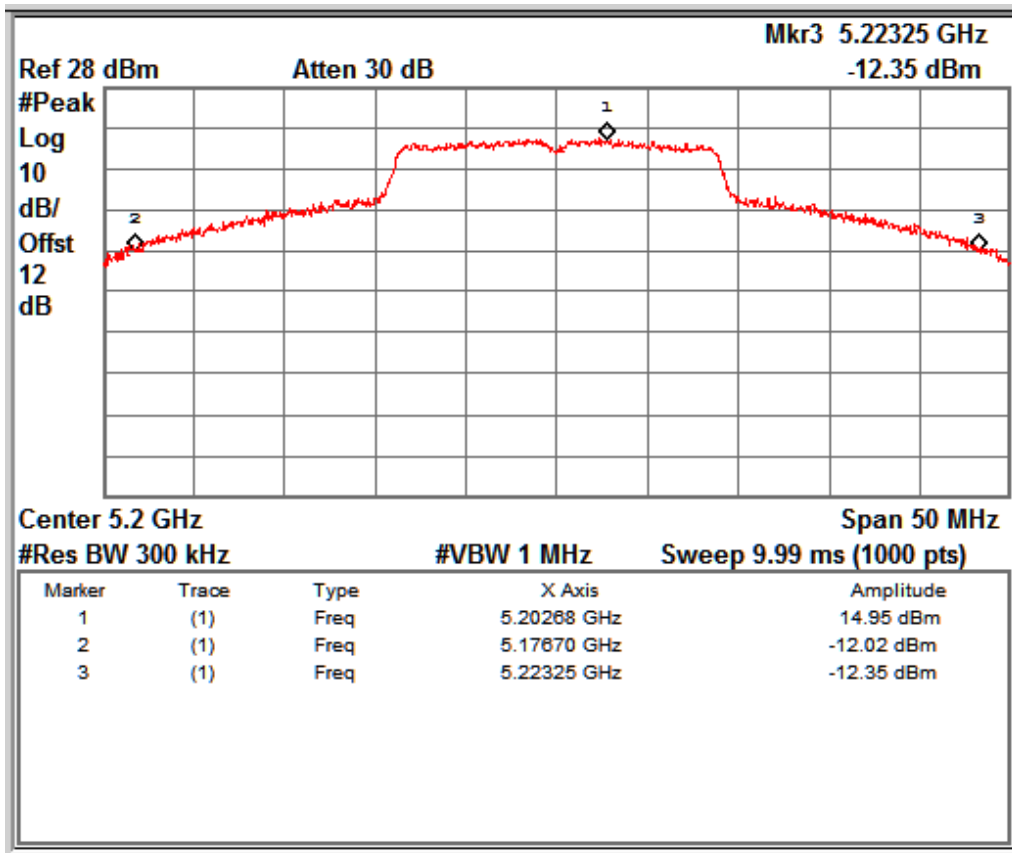
Data Rate (Mbps)	Channel. No	Frequency (MHz)	EBW (MHz)	OBW (MHz)
MCS 0	36	5180	35.08	17.76
	40	5200	46.55	19.56
	48	5240	44.95	19.10
MSC 4	36	5180	35.38	18.98
	40	5200	41.40	18.10
	48	5240	41.55	18.23
MCS 7	36	5180	36.03	17.84
	40	5200	43.15	18.24
	48	5240	36.33	19.74



Data Rate: MSC 0

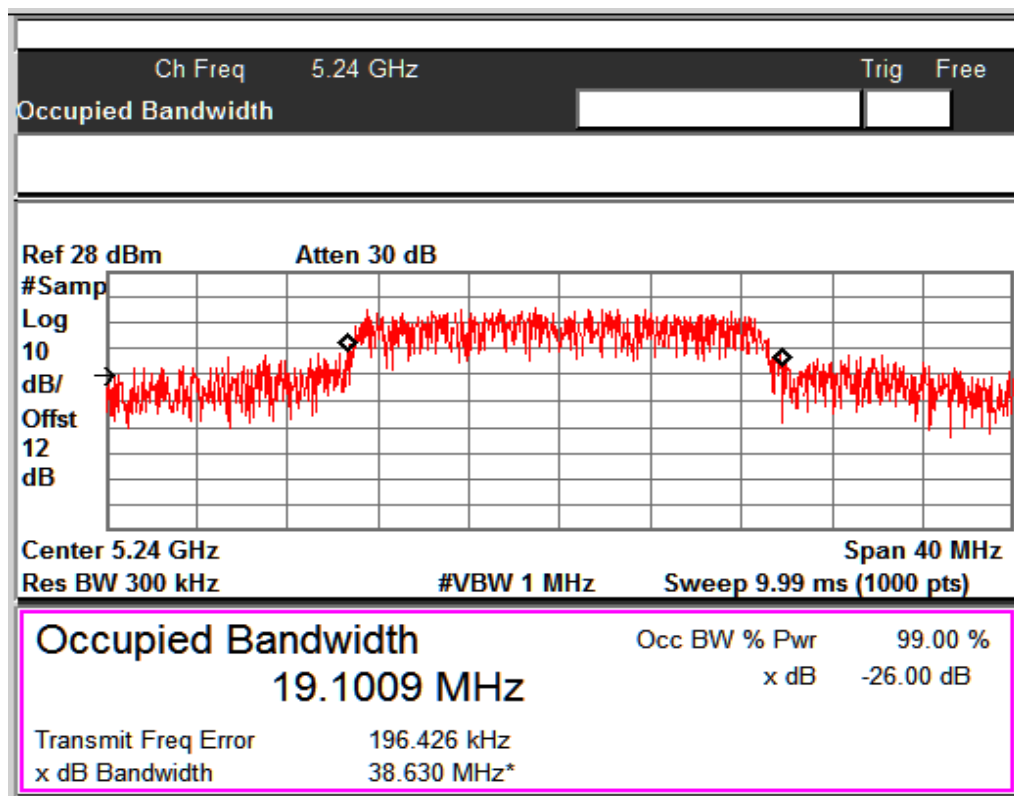
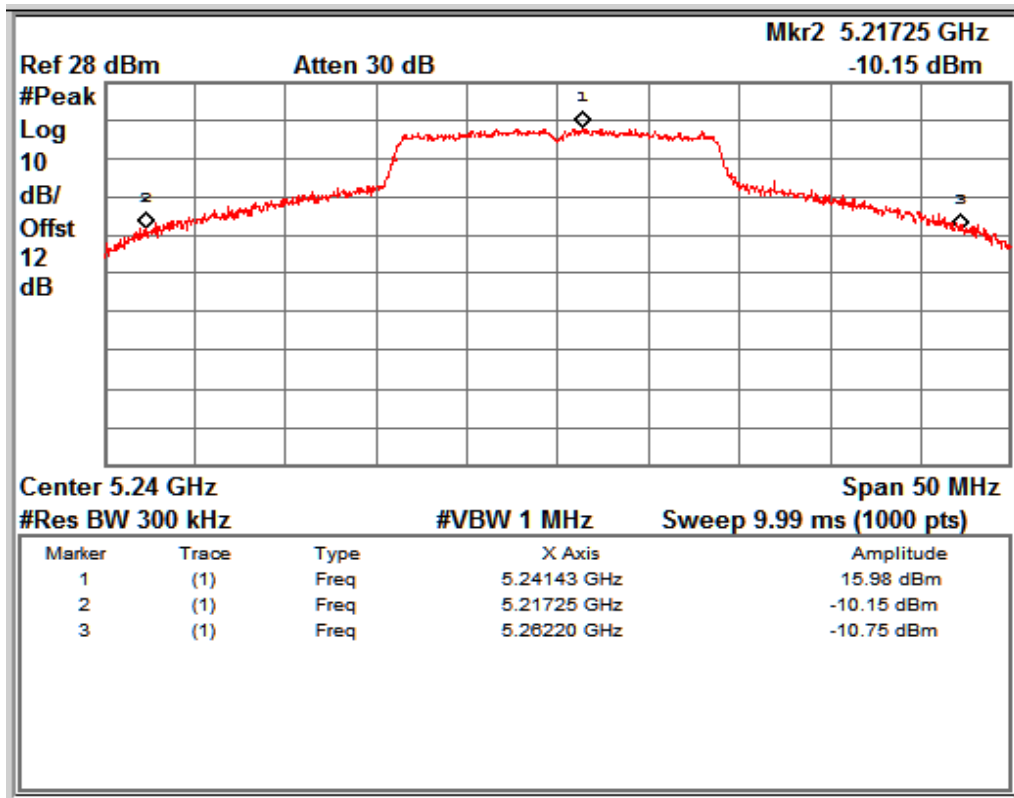
Channel Frequency: 5180MHz

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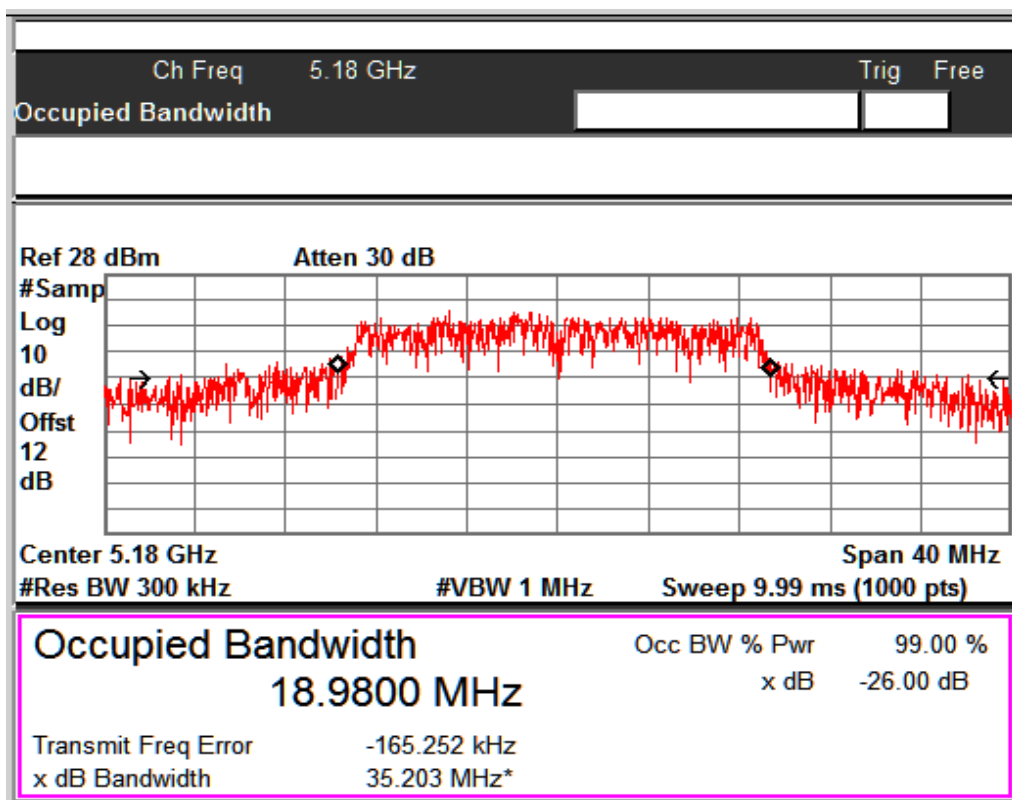
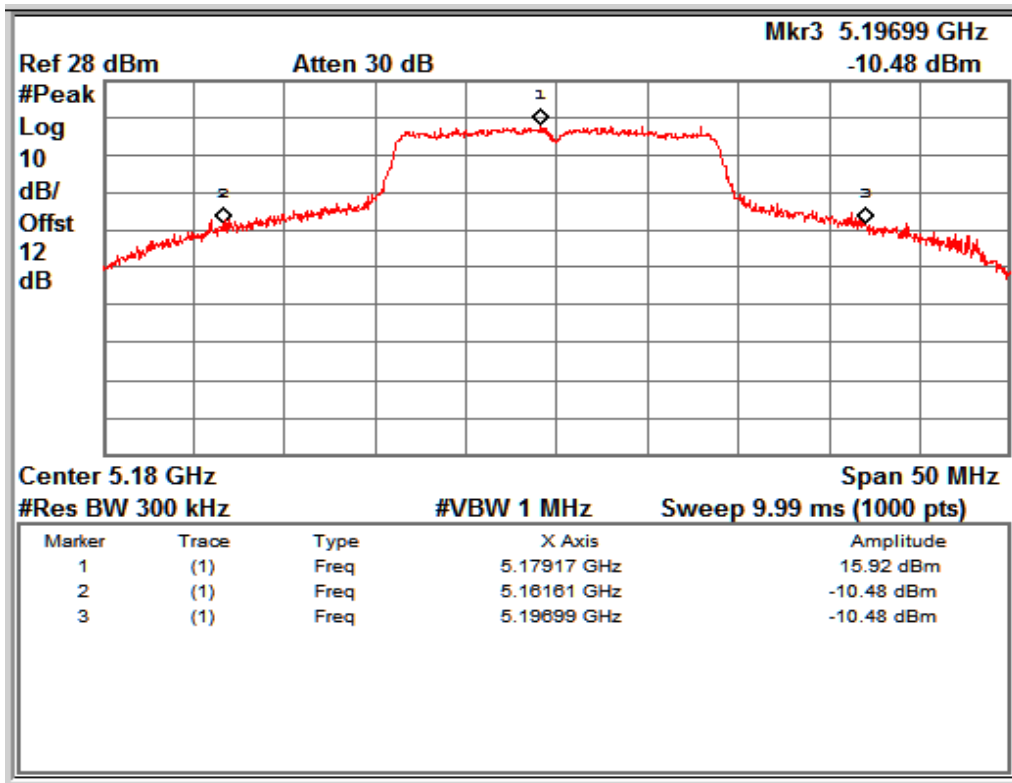
Data Rate: MCS 0

Channel Frequency: 5200MHz



Data Rate: MCS 0

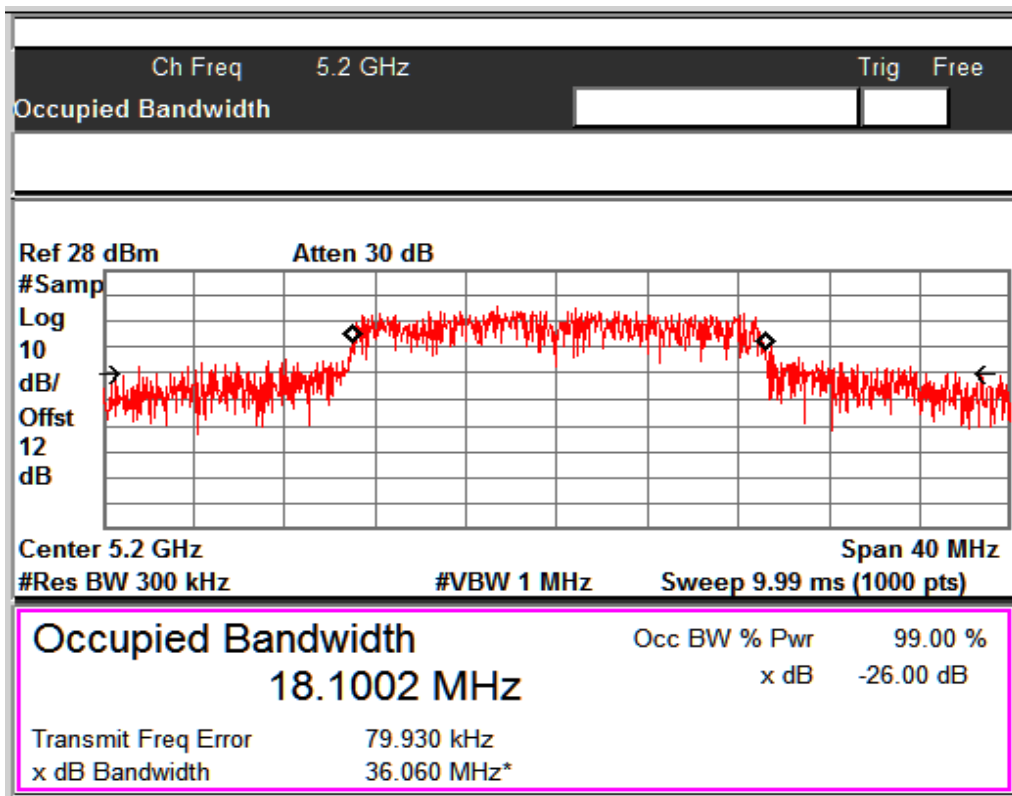
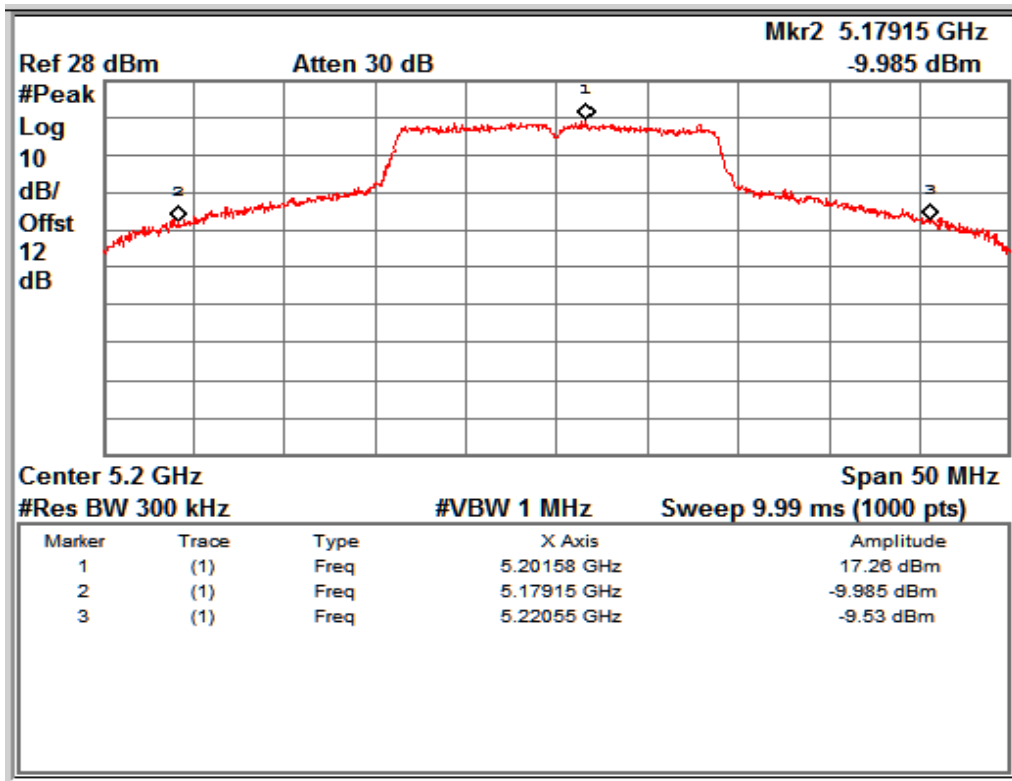
Channel Frequency: 5240MHz



Data Rate: MCS 4

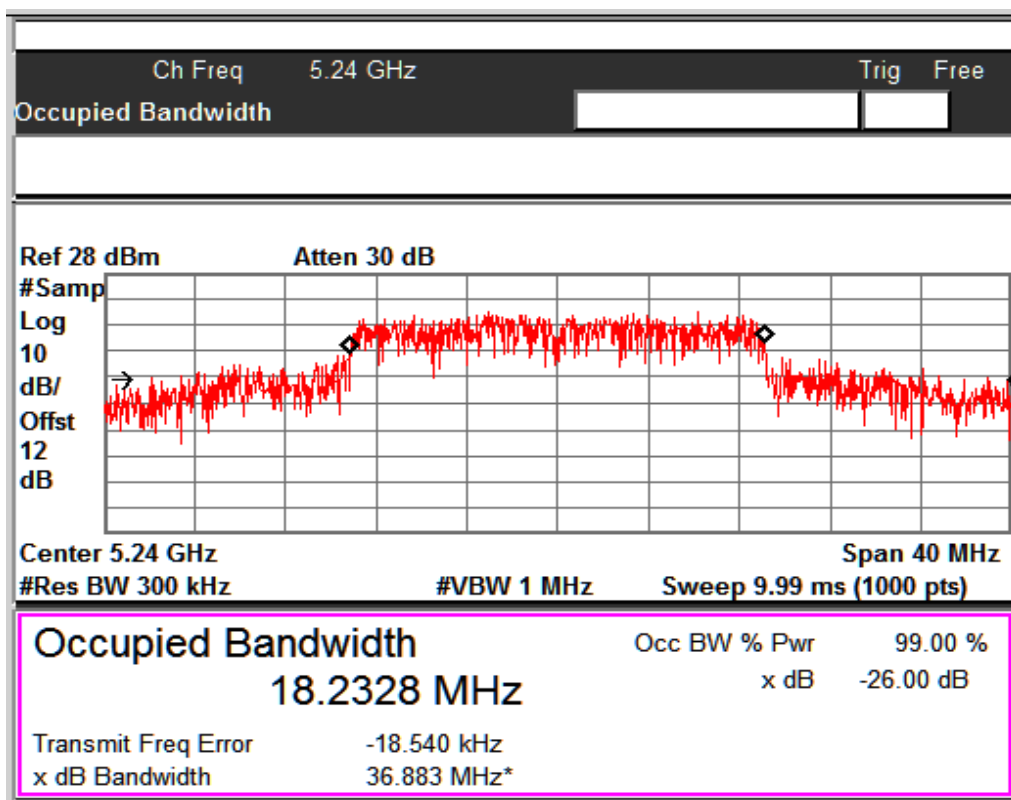
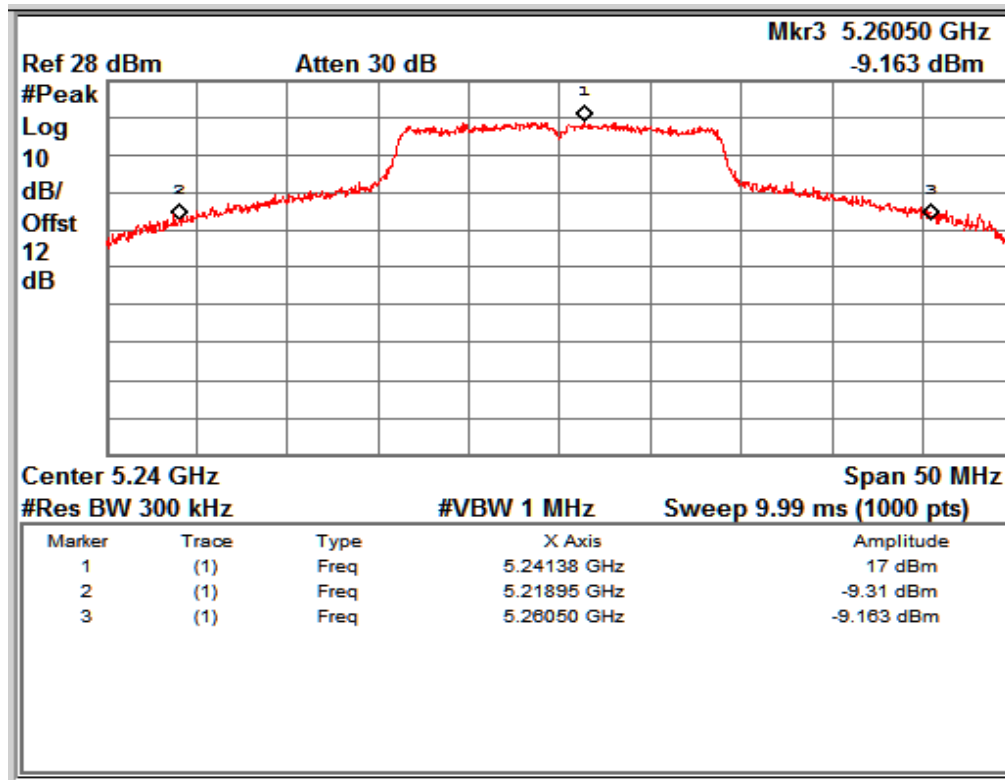
Channel Frequency: 5180MHz

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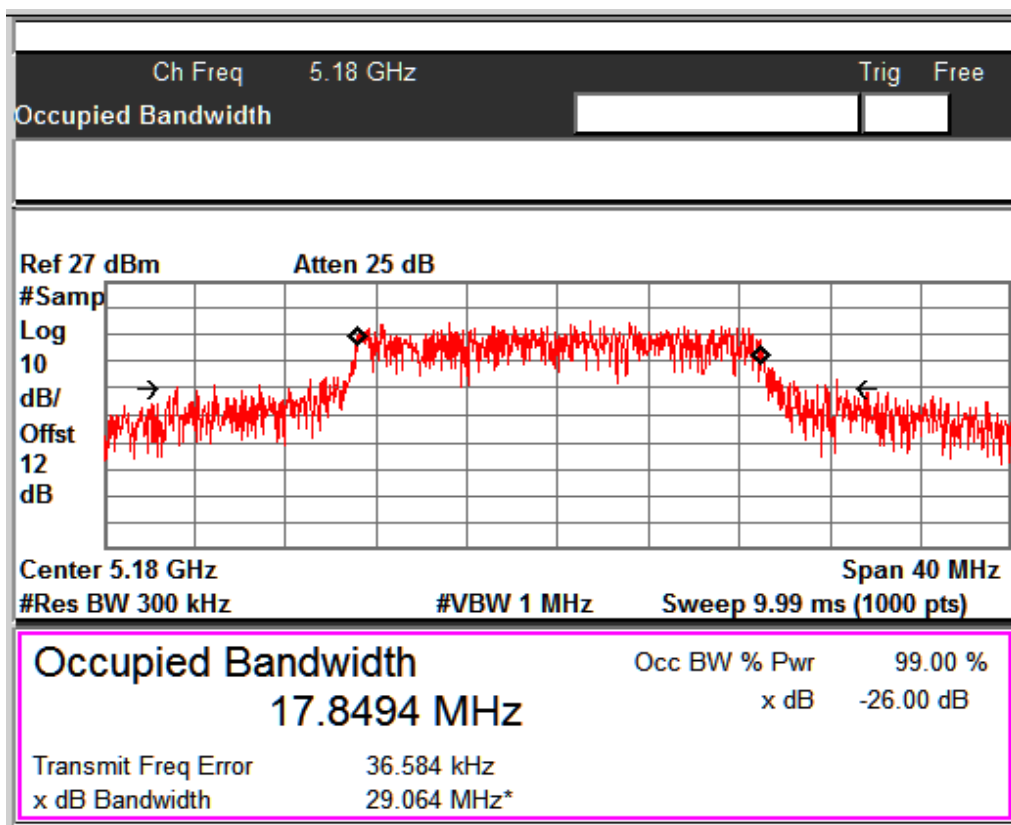
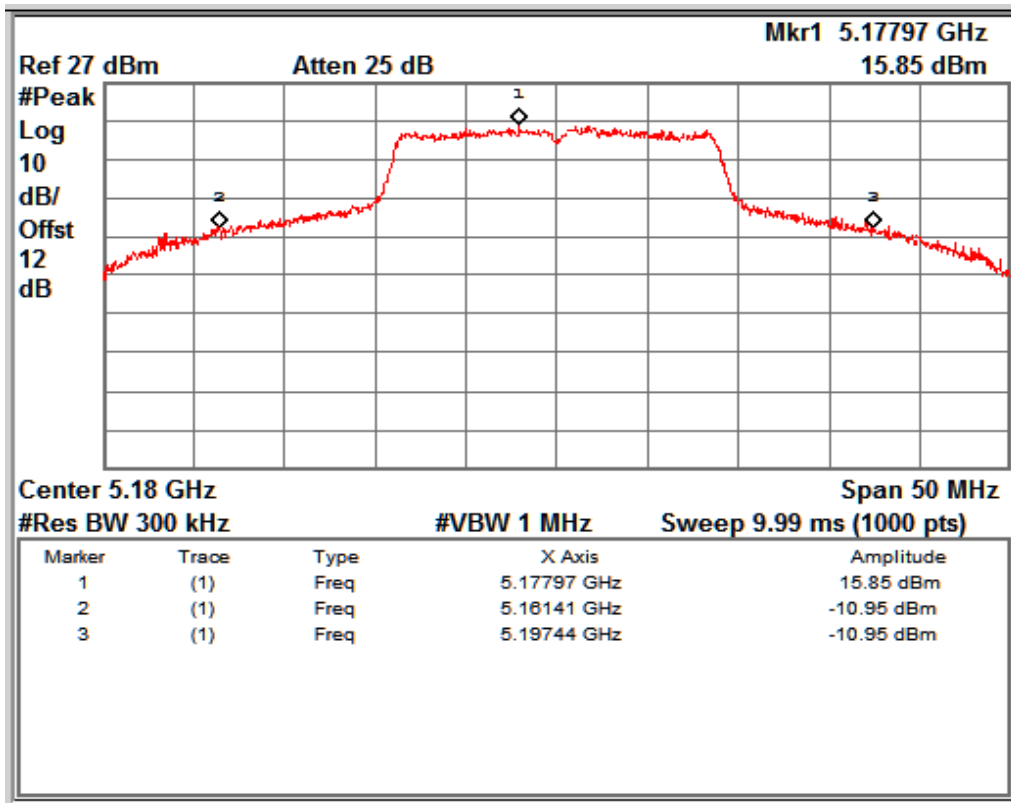
Data Rate: MCS 4

Channel Frequency: 5200MHz



Data Rate: MCS 4

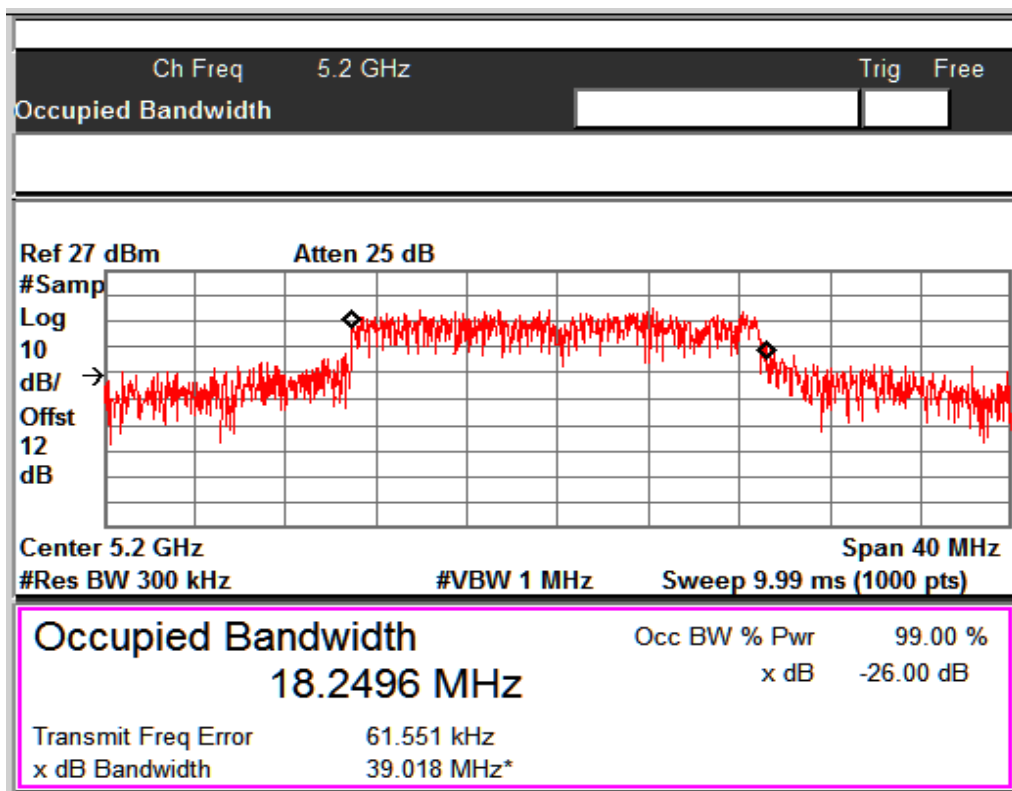
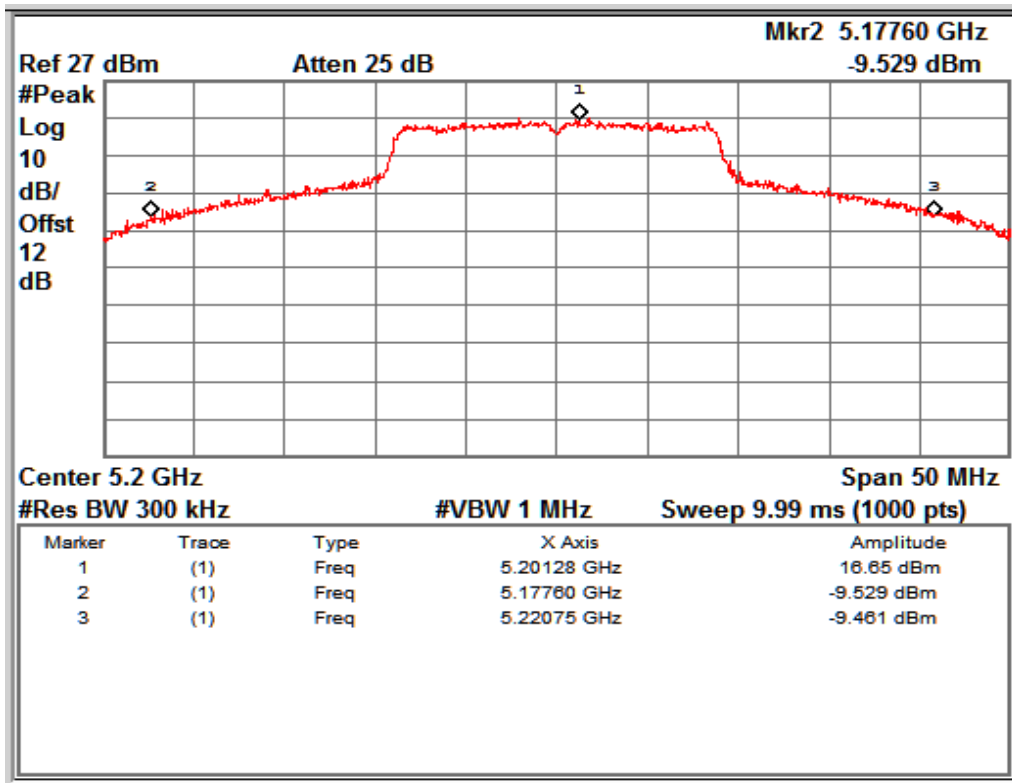
Channel Frequency: 5240MHz



Data Rate: MCS 7

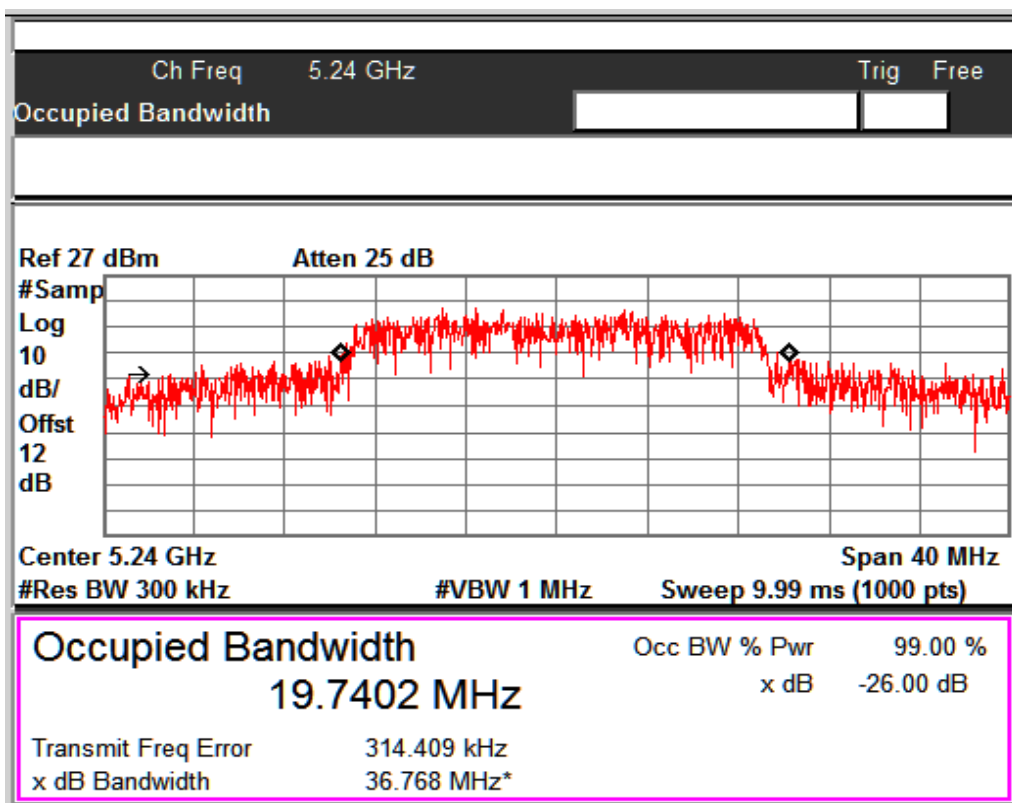
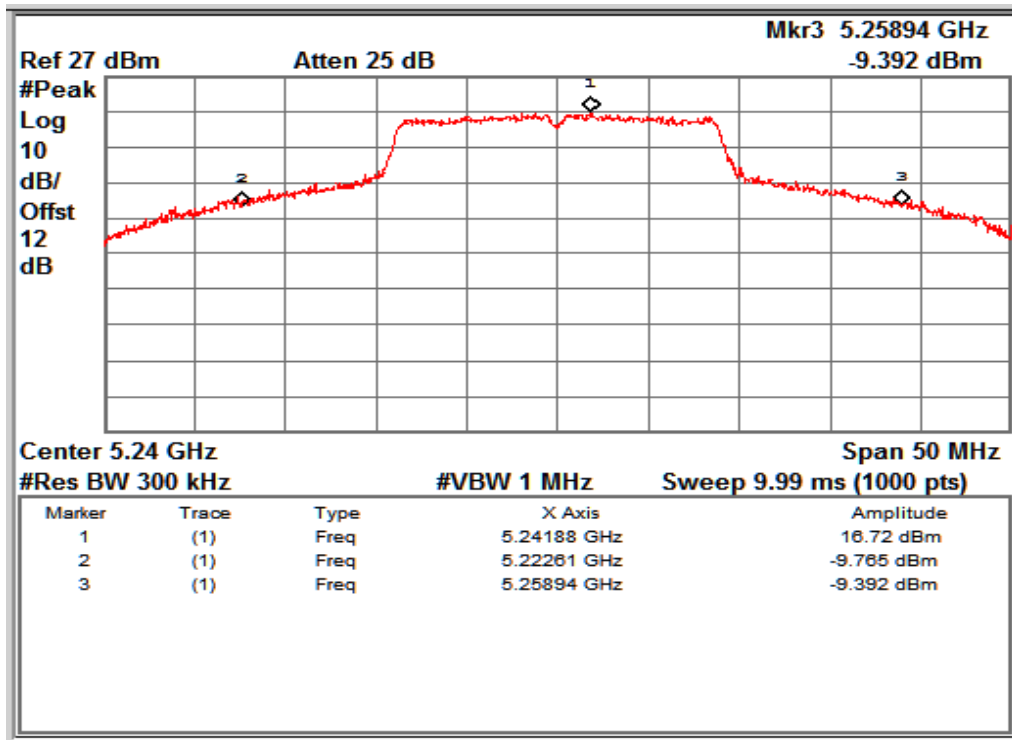
Channel Frequency: 5180MHz

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Data Rate: MCS 7

Channel Frequency: 5200MHz



Data Rate: MCS 7

Channel Frequency: 5240MHz

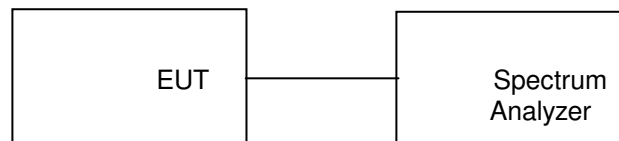
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**Minimum Emission Bandwidth
Result**

**Section 15.407(a)
Pass**

Test Specification	FCC Part 15 Subpart E
Measurement Bandwidth (RBW)	300 kHz
Requirement	For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall be at least 500 kHz.

Test Method:



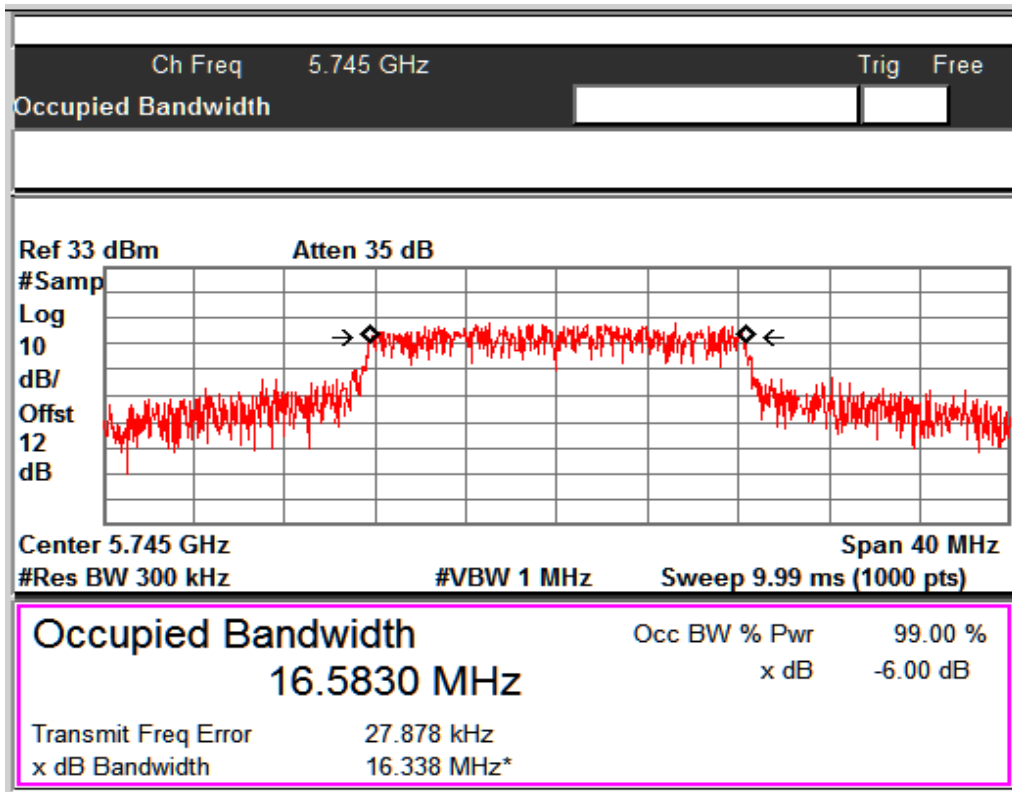
Test Result:

5725 MHz – 5850 MHz Band

Modulation: 802.11a

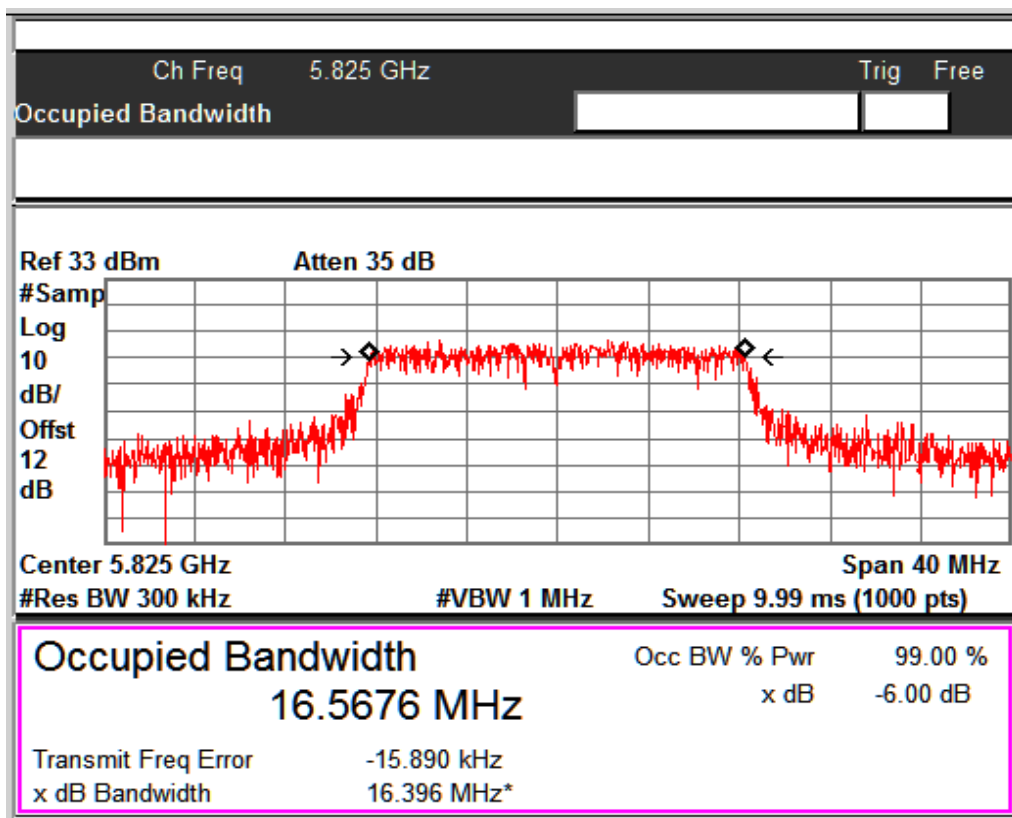
Data Rate (Mbps)	Channel. No	Frequency (MHz)	6 dB (MHz)	OBW (MHz)
6	149	5745	16.33	16.58
	157	5785	16.35	16.75
	165	5825	16.39	16.56
24	149	5745	16.21	16.73
	157	5785	16.18	16.69
	165	5825	16.24	16.70
54	149	5745	15.82	16.63
	157	5785	15.97	16.73
	165	5825	15.85	16.43

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Data Rate: 6 Mbps

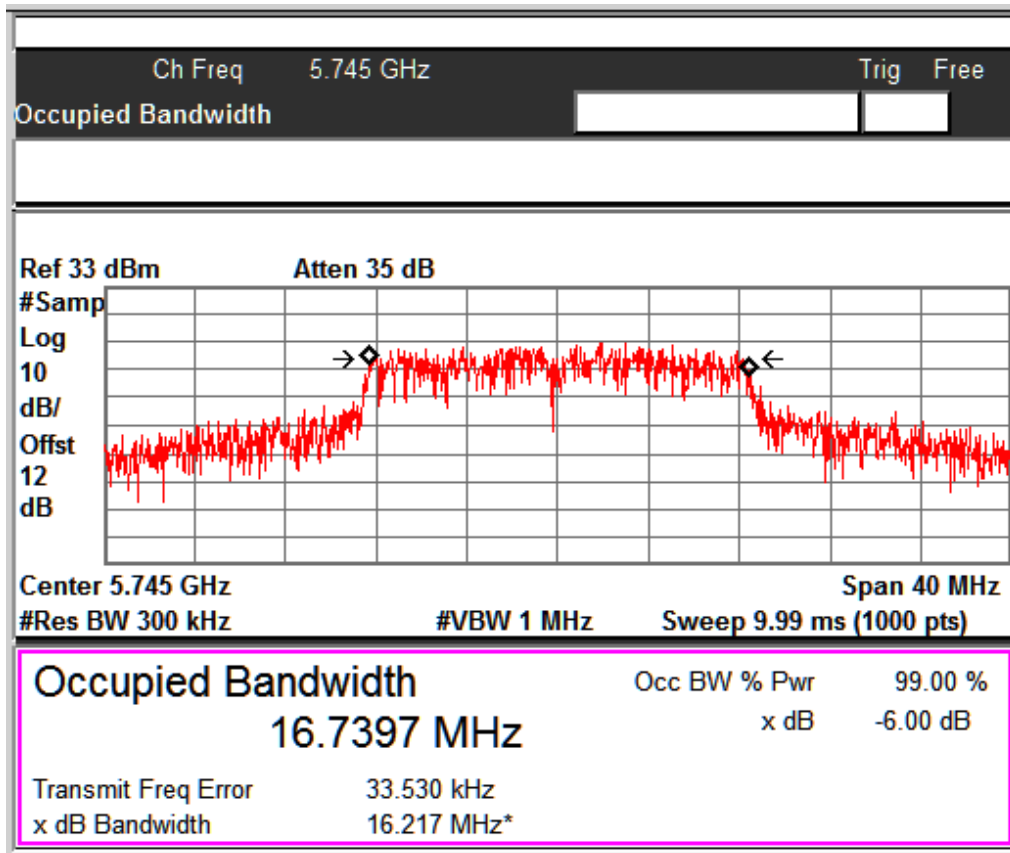
Channel Frequency: 5745 MHz



Data Rate: 6 Mbps

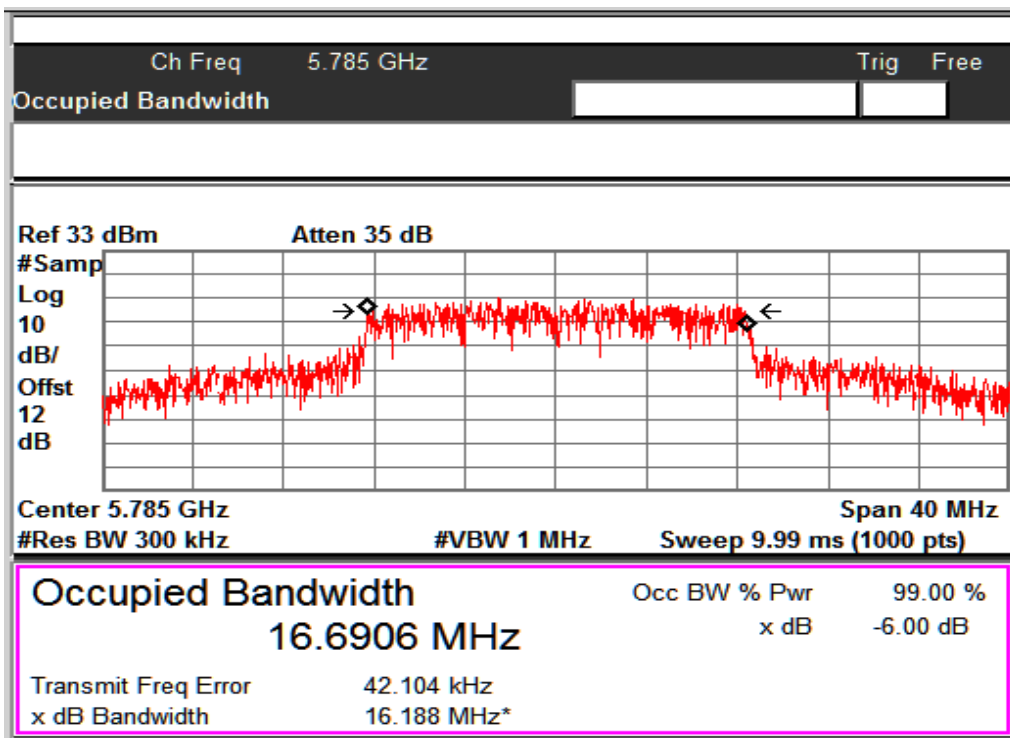
Channel Frequency: 5825 MHz

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Data Rate: 24Mbps

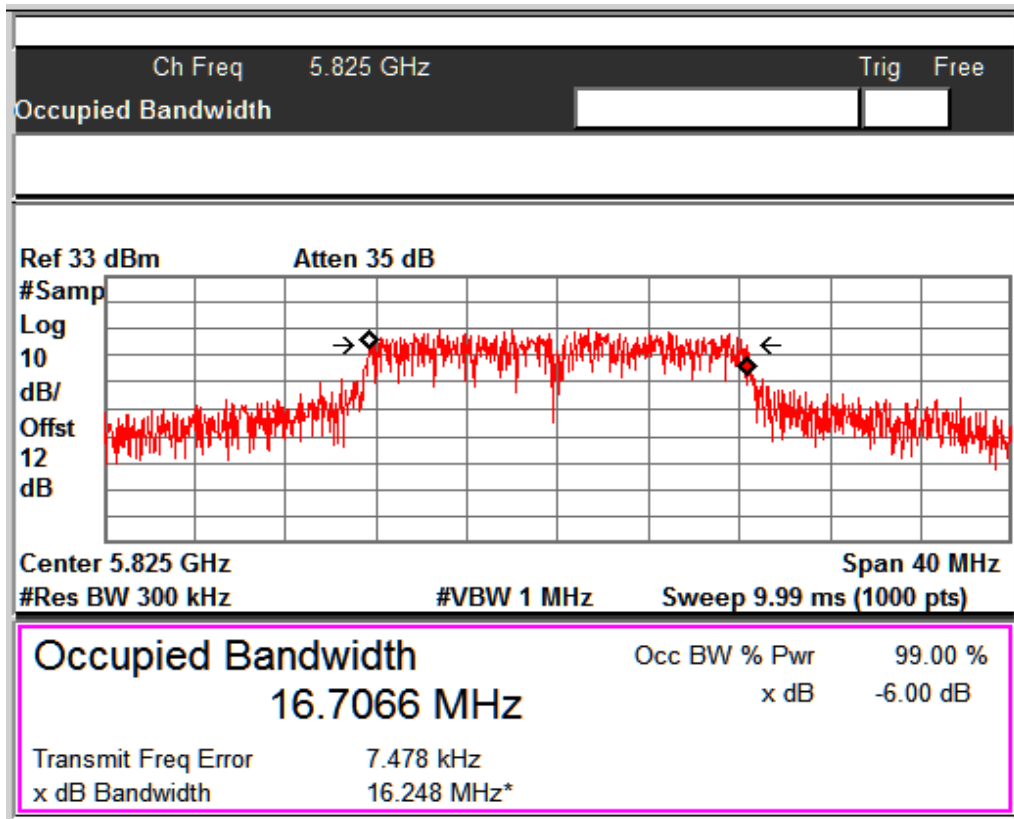
Channel Frequency: 5745 MHz



Data Rate: 24Mbps

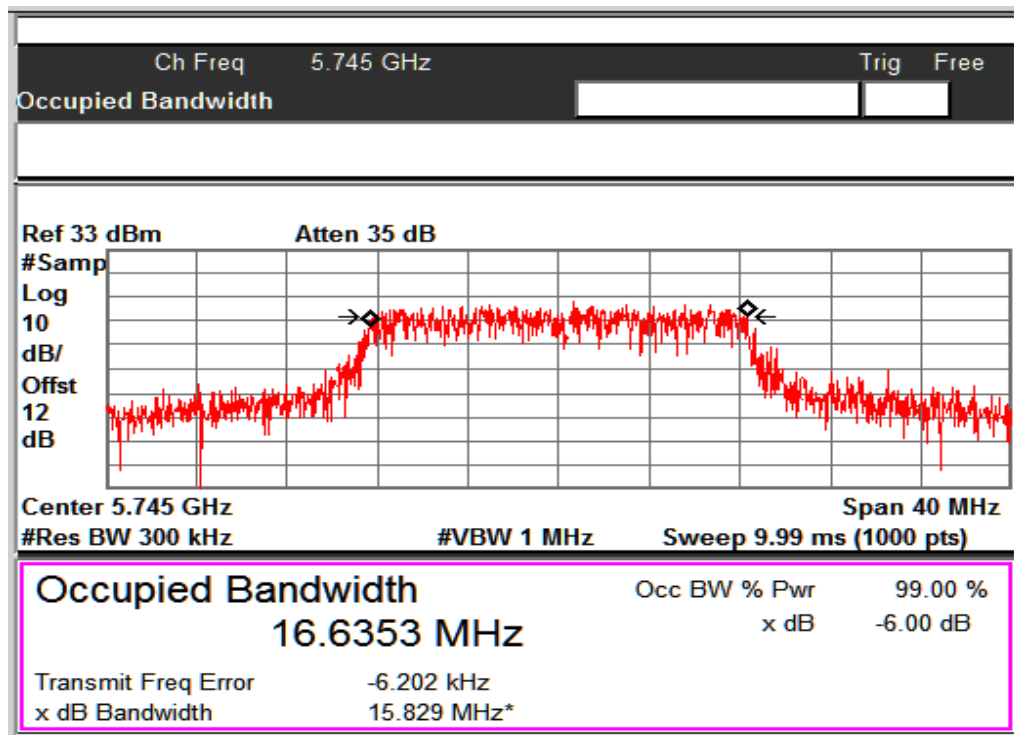
Channel Frequency: 5785 MHz

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Data Rate: 24Mbps

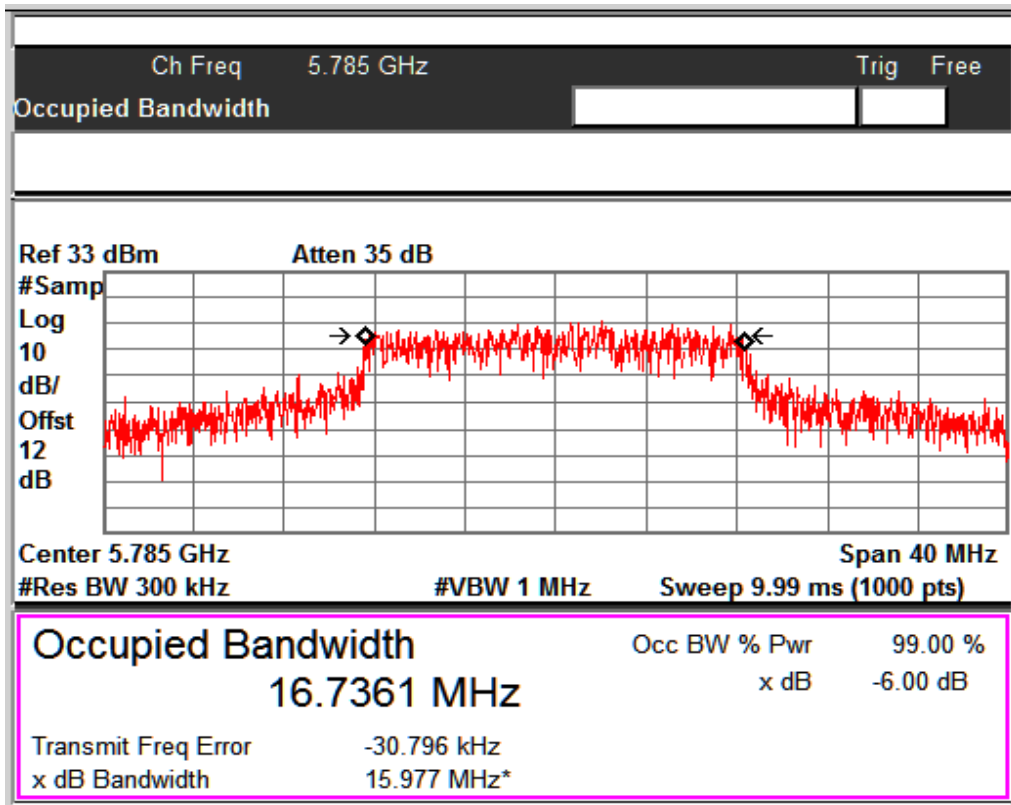
Channel Frequency: 5825 MHz



Data Rate: 54 Mbps

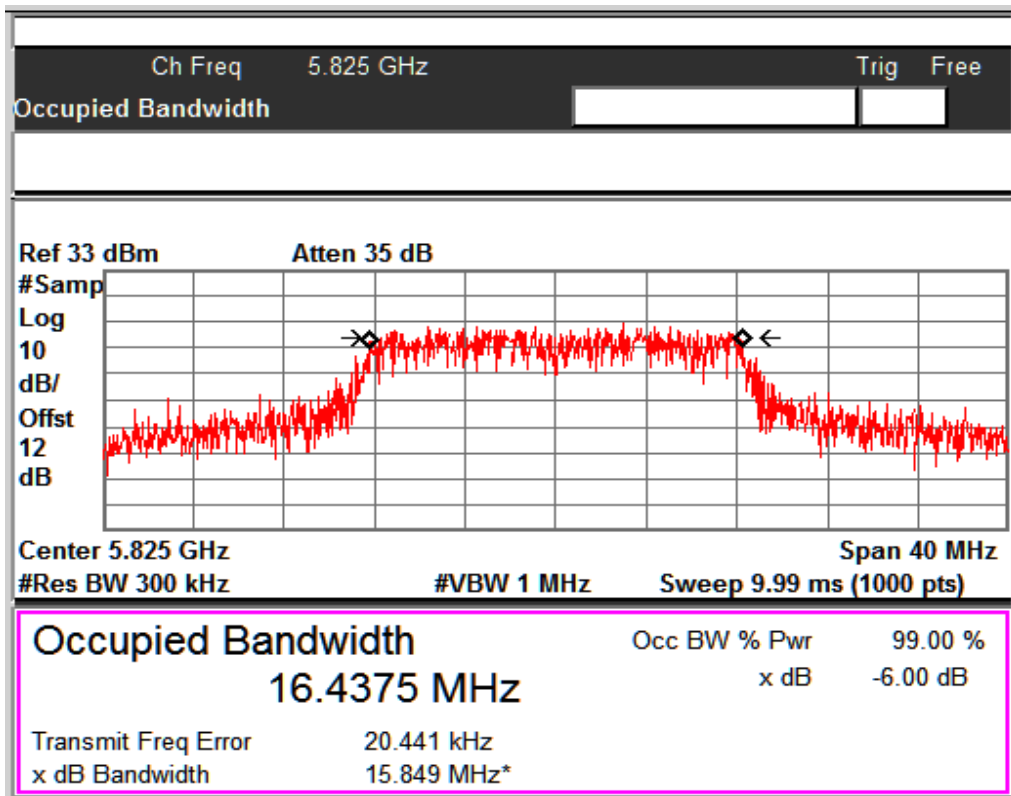
Channel Frequency: 5745 MHz

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Data Rate: 54 Mbps

Channel Frequency: 5785 MHz

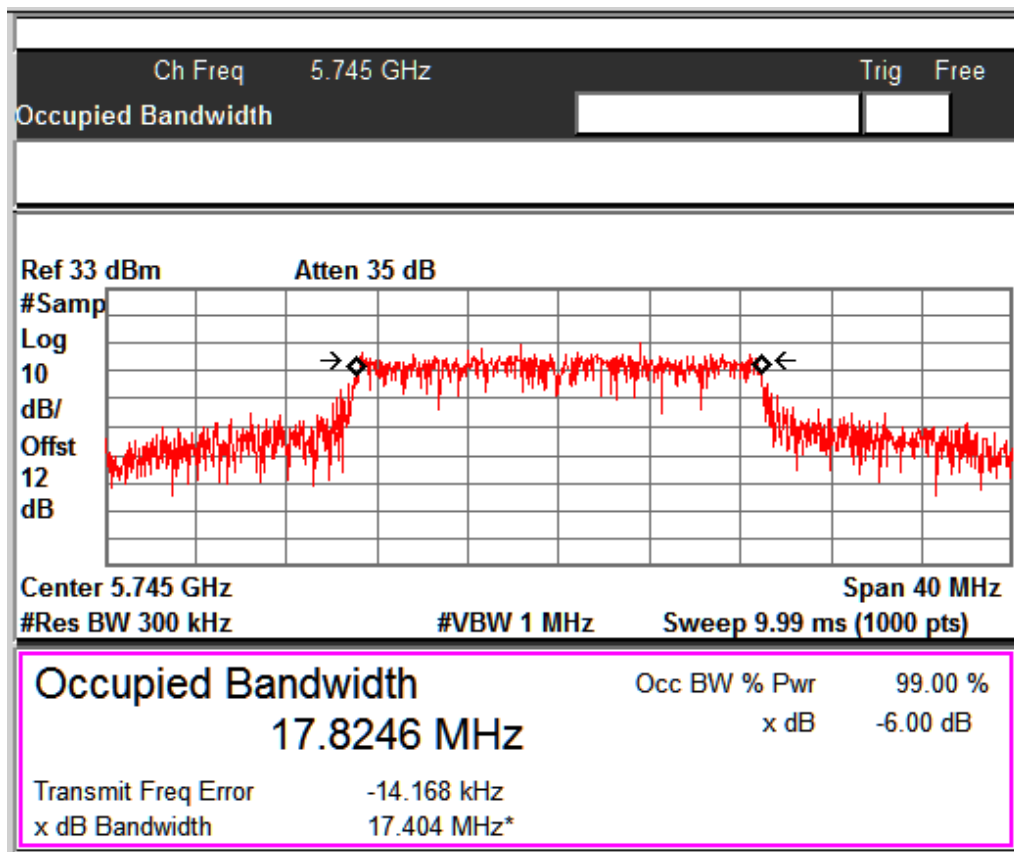


Data Rate: 54 Mbps

Channel Frequency: 5825 MHz

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Modulation: 802.11n

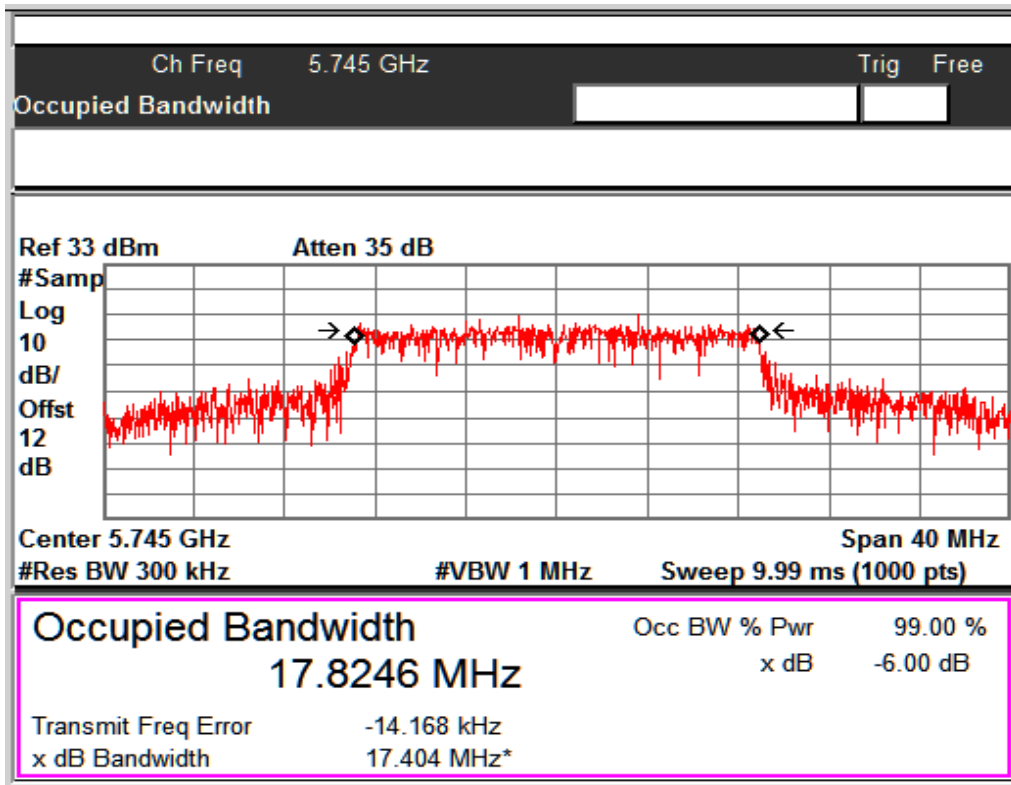
Data Rate (Mbps)	Channel. No	Frequency (MHz)	6 dB (MHz)	OBW (MHz)
MCS 0	149	5745	17.40	17.82
	157	5785	17.39	17.70
	165	5825	17.40	17.69
MSC 4	149	5745	17.70	17.94
	157	5785	17.74	17.89
	165	5825	17.48	17.89
MCS 7	149	5745	17.35	17.71
	157	5785	17.57	17.89
	165	5825	17.67	18.11



Data Rate: MCS 0

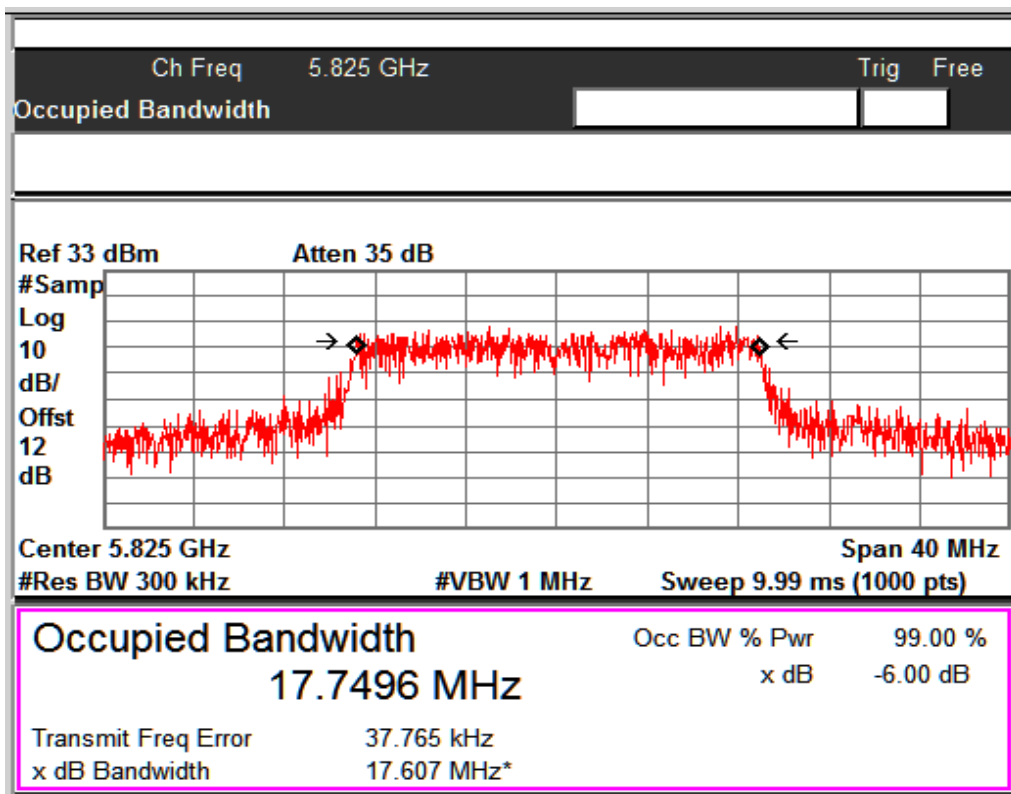
Channel Frequency: 5745 MHz

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Data Rate: MCS 0

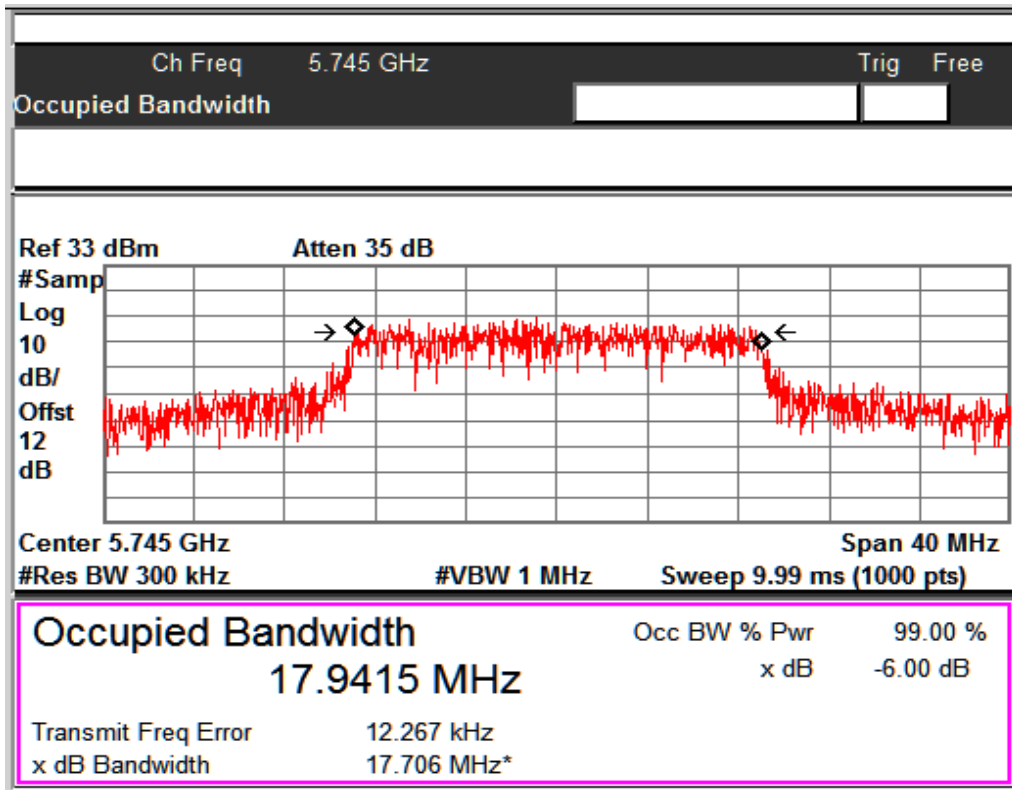
Channel Frequency: 5785 MHz



Data Rate: MCS 0

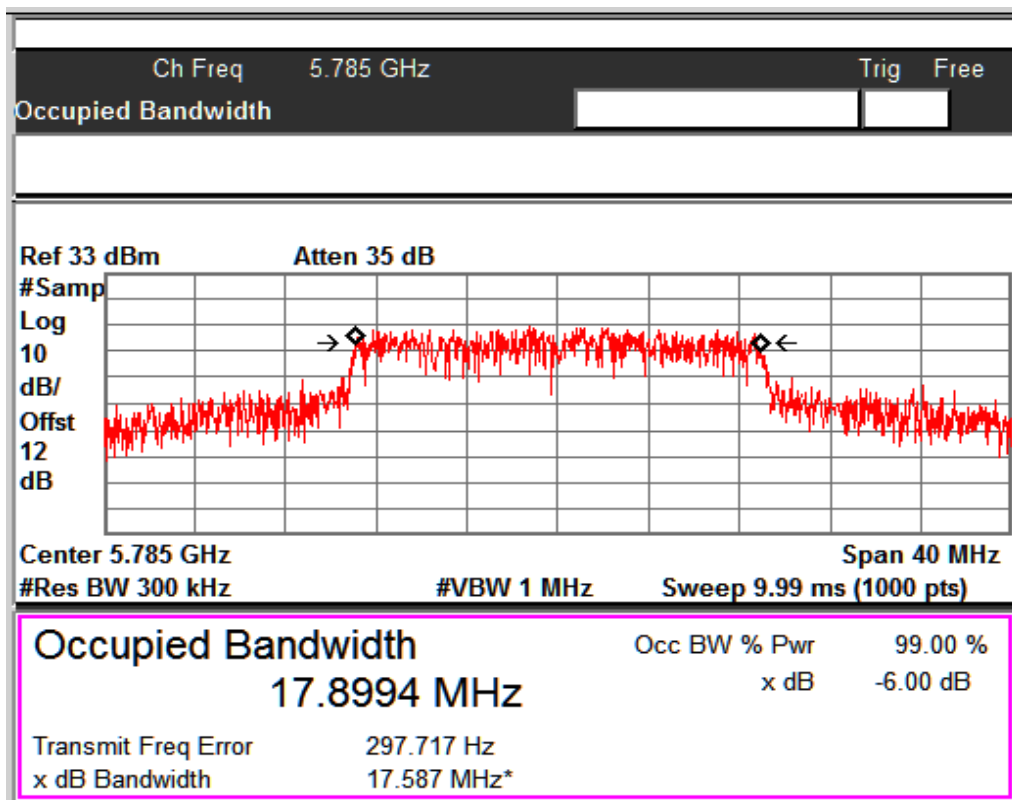
Channel Frequency: 5825 MHz

www.tuv.com



Data Rate: MCS 4

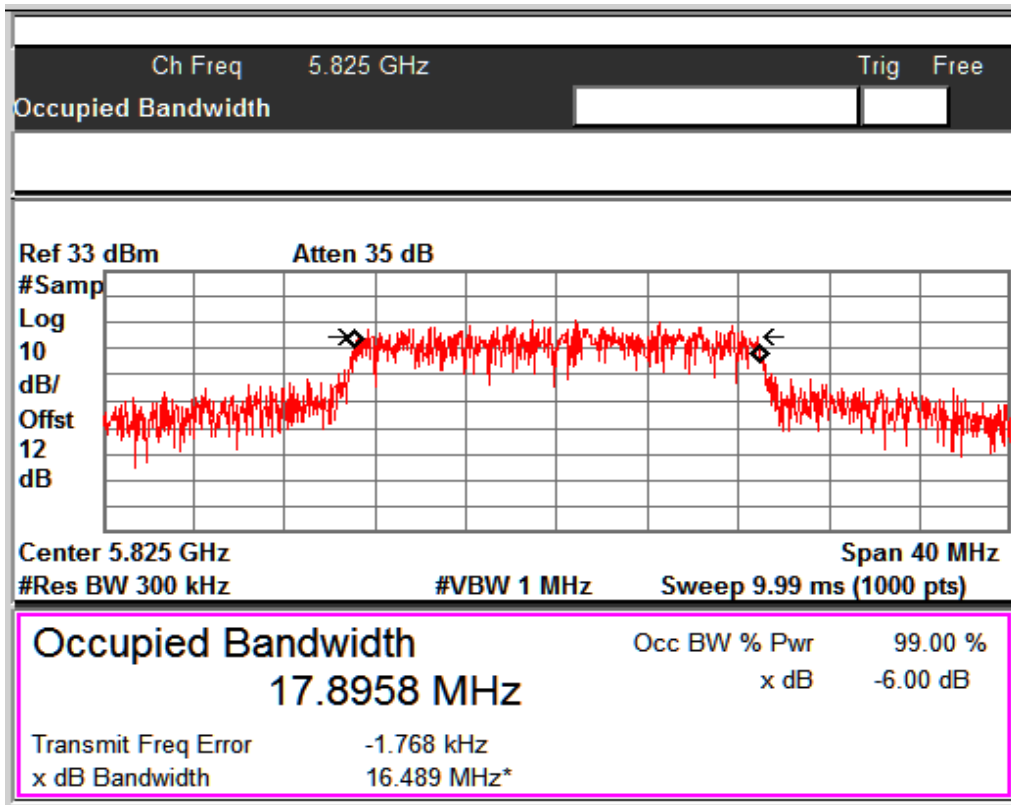
Channel Frequency: 5745 MHz



Data Rate: MCS 4

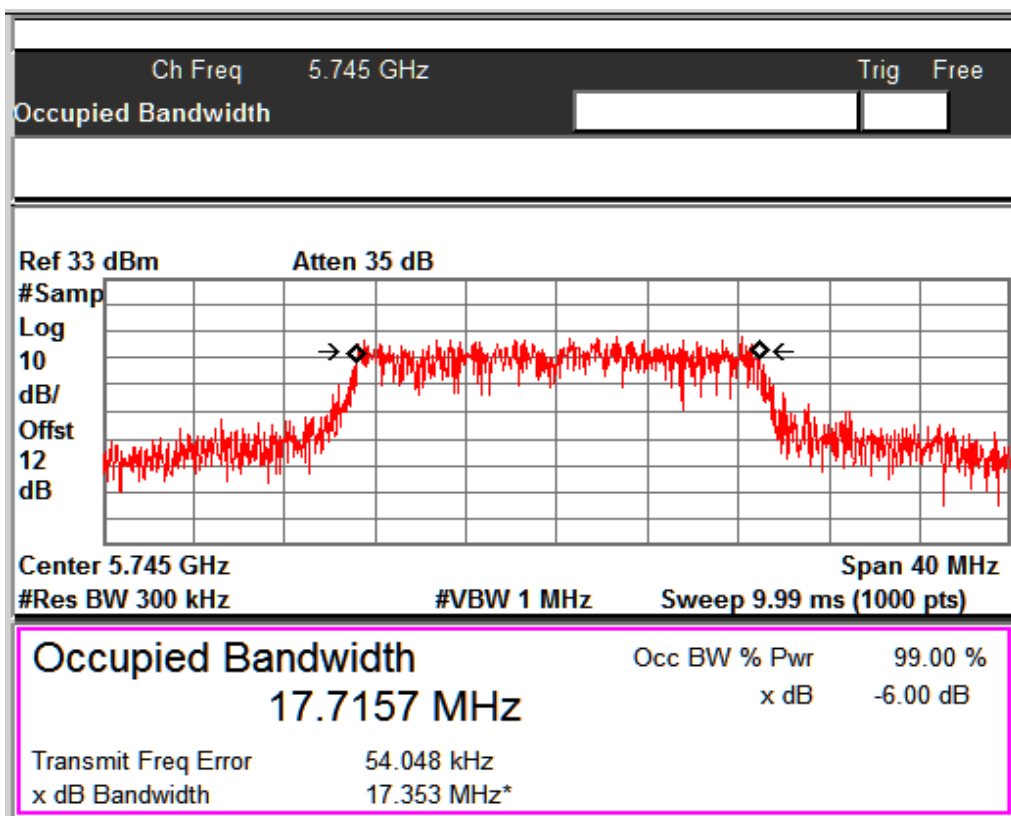
Channel Frequency: 5785 MHz

www.tuv.com



Data Rate: MCS 4

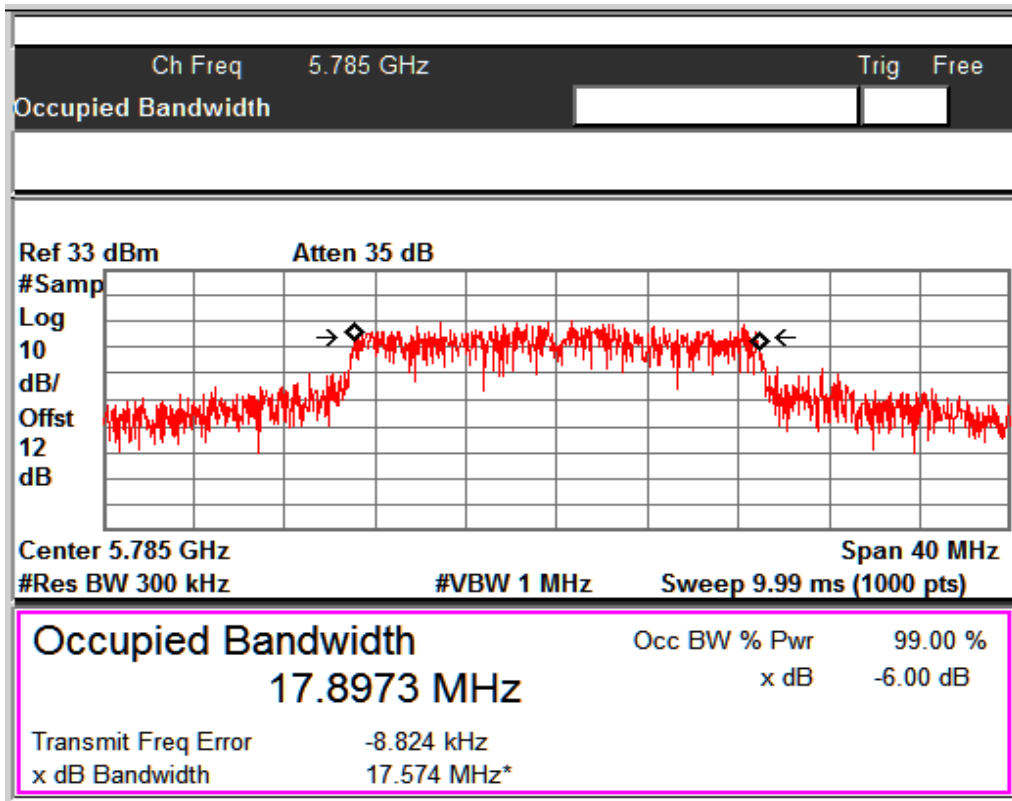
Channel Frequency: 5825 MHz



Data Rate: MCS 7

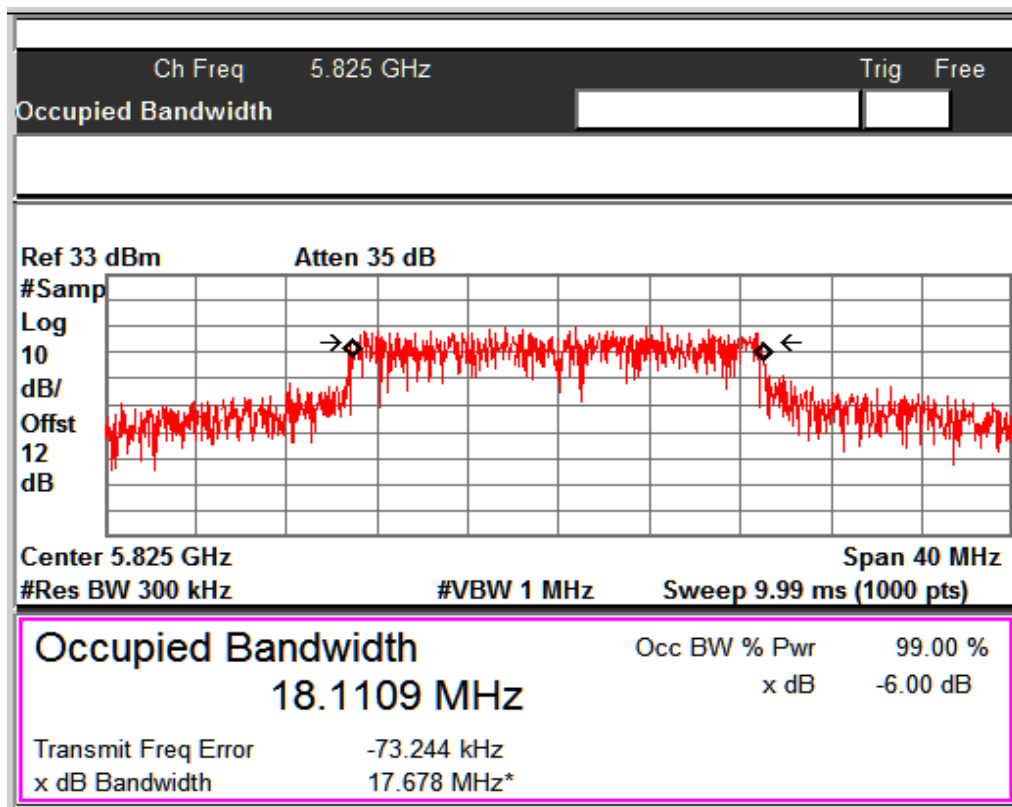
Channel Frequency: 5745 MHz

www.tuv.com



Data Rate: MCS 7

Channel Frequency: 5785 MHz



Data Rate: MCS 7

Channel Frequency: 5825 MHz

www.tuv.com

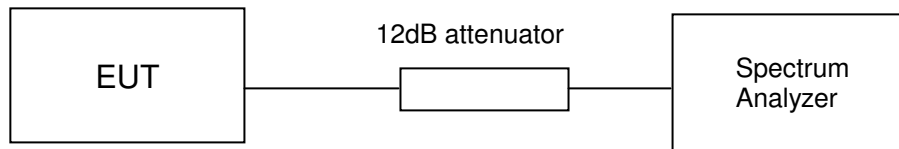
**Maximum conducted output power
Result**

**Section 15.407(a)
Pass**

Test Specification
Measurement Bandwidth (RBW)
Requirement

FCC Part 15 Subpart E
1 MHz
For the band 5.15-5.25 GHz & 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1W.

Test Method:



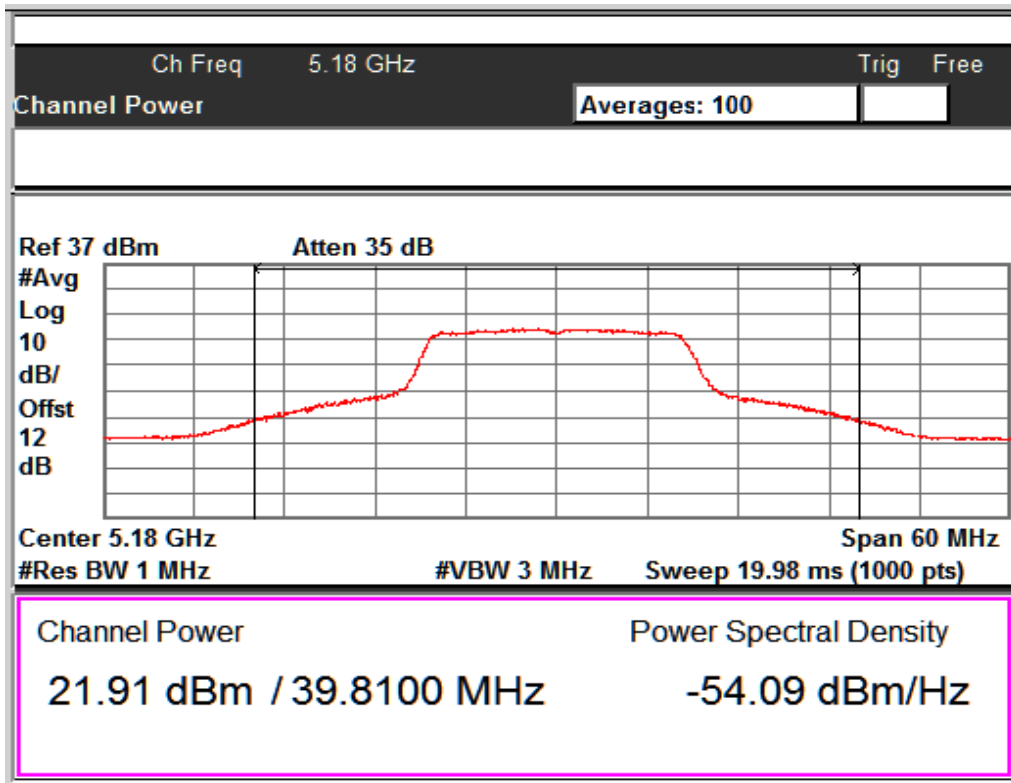
Test Result:

5150 MHz – 5250MHz Band

Modulation: 802.11a

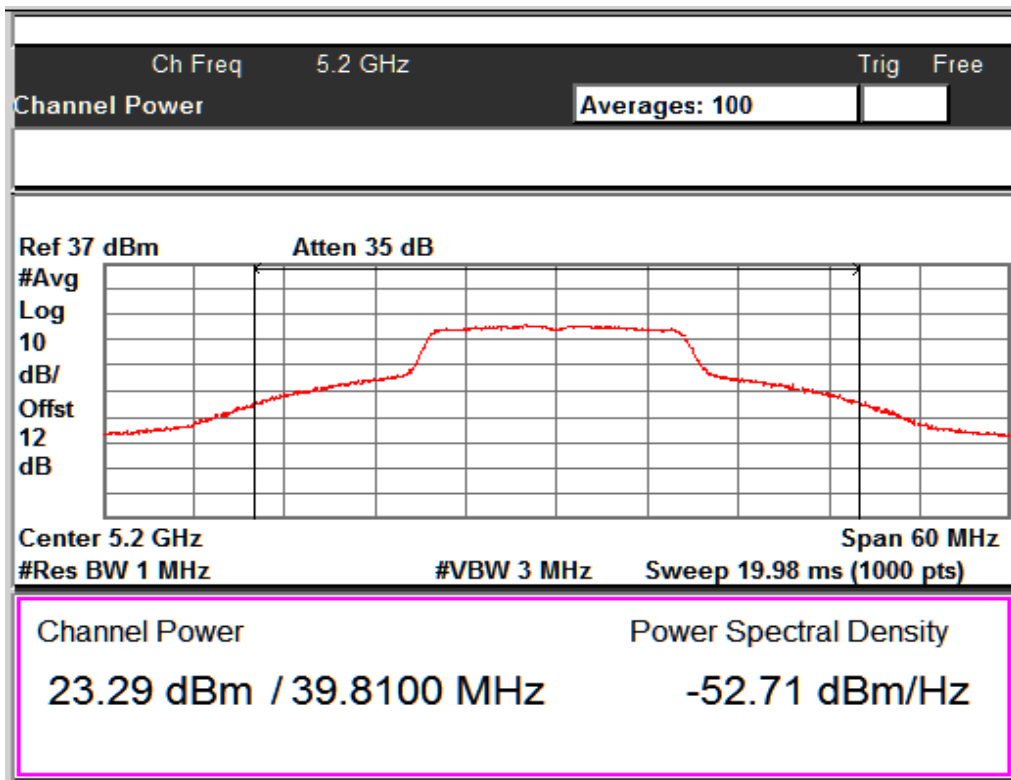
Data Rate (Mbps)	Channel. No	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
6	36	5180	21.91	30	-8.09
	40	5200	23.29	30	-6.71
	48	5240	23.39	30	-6.61
24	36	5180	21.61	30	-8.39
	40	5200	23.00	30	-7.00
	48	5240	22.29	30	-7.71
54	36	5180	22.19	30	-7.81
	40	5200	23.53	30	-6.47
	48	5240	23.25	30	-6.75

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Data Rate: 6Mbps

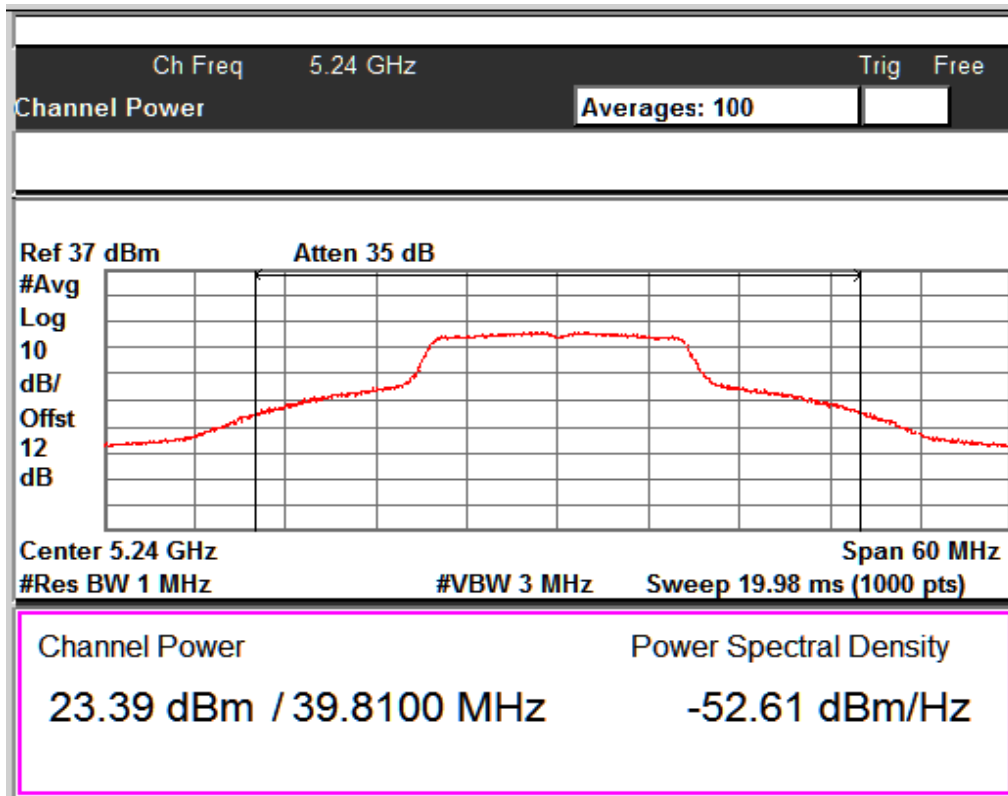
Channel Frequency: 5180MHz



Data Rate: 6Mbps

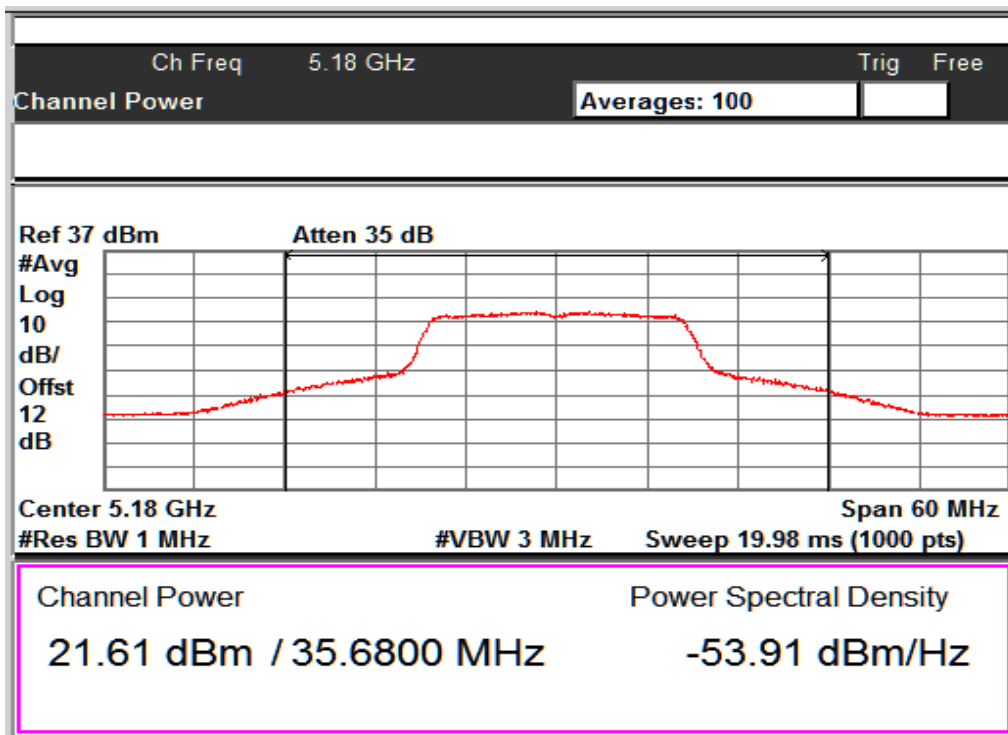
Channel Frequency: 5200MHz

www.tuv.com



Data Rate: 6Mbps

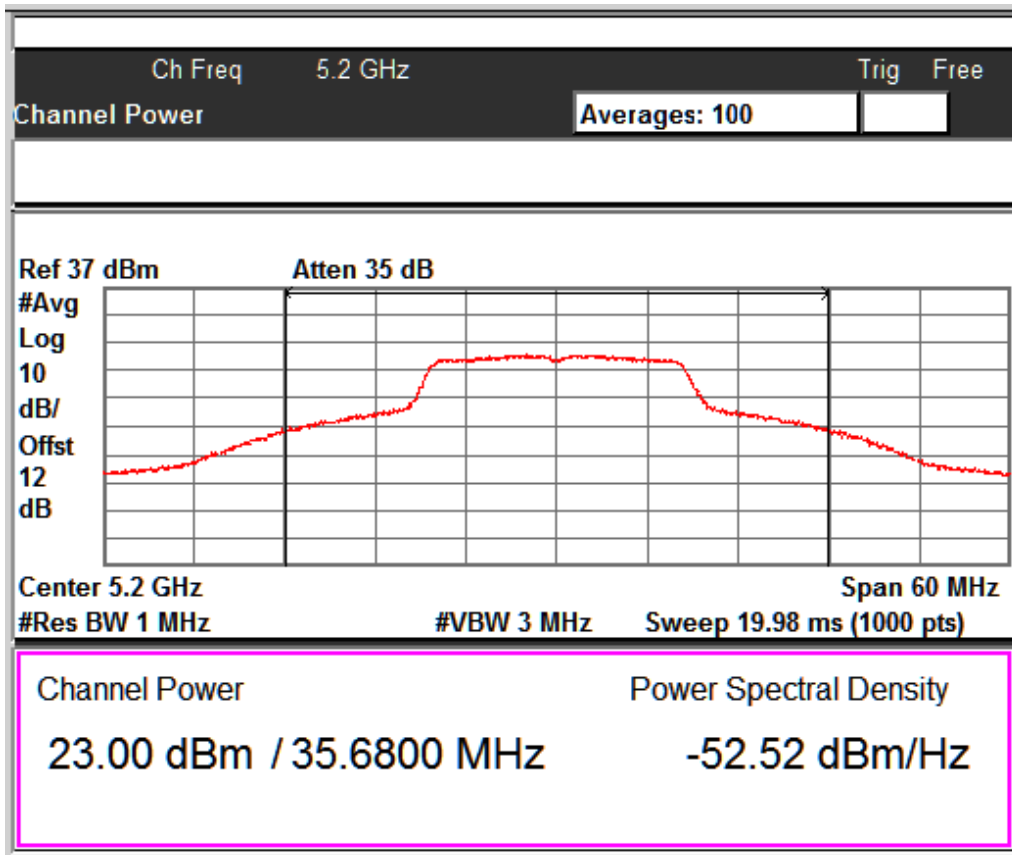
Channel Frequency: 5240MHz



Data Rate: 24Mbps

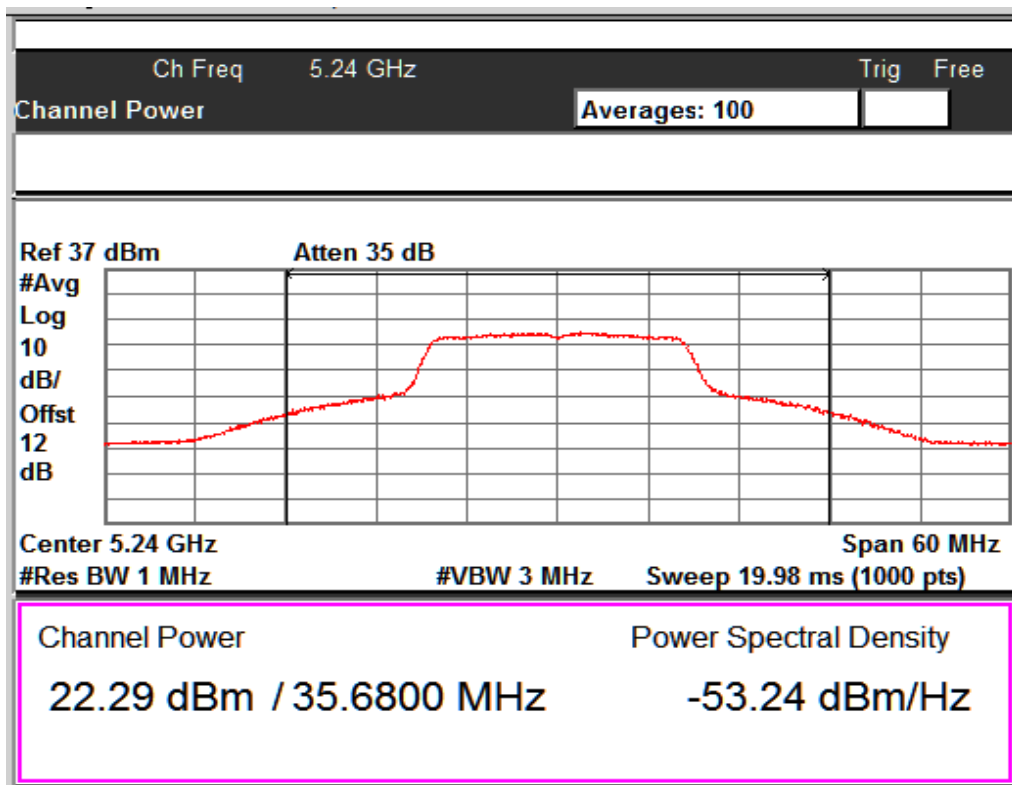
Channel Frequency: 5180MHz

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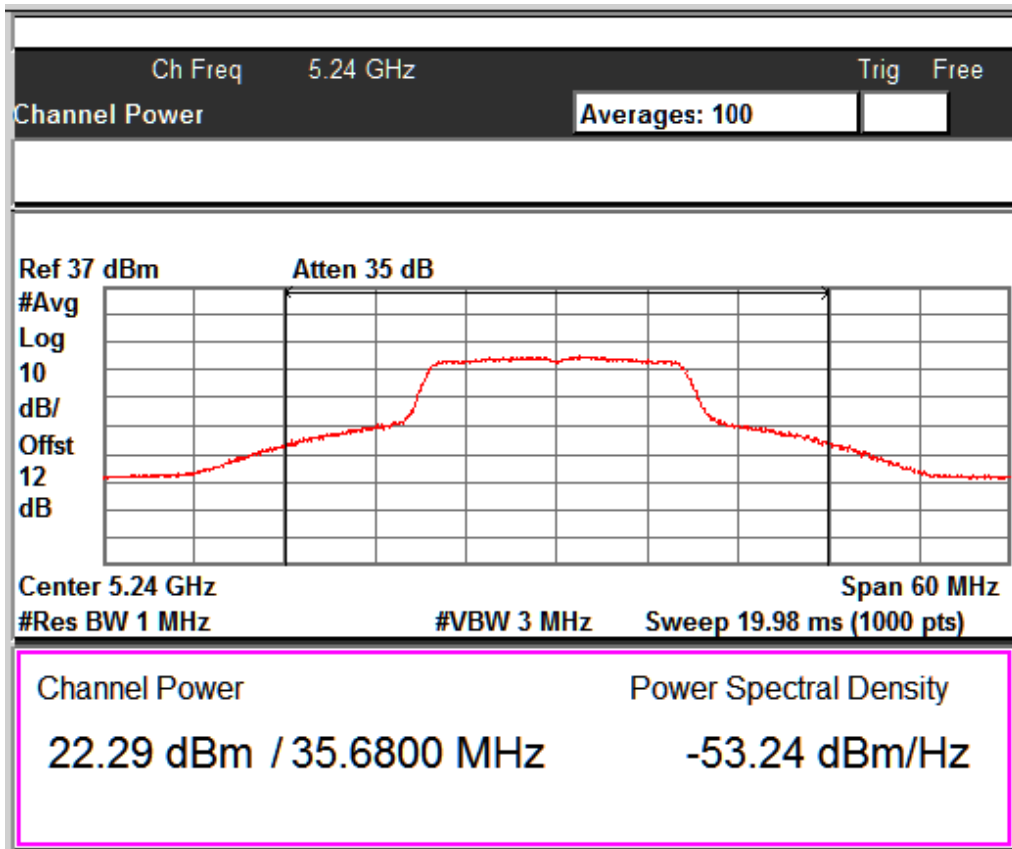


Data Rate: 24Mbps

Channel Frequency: 5200MHz

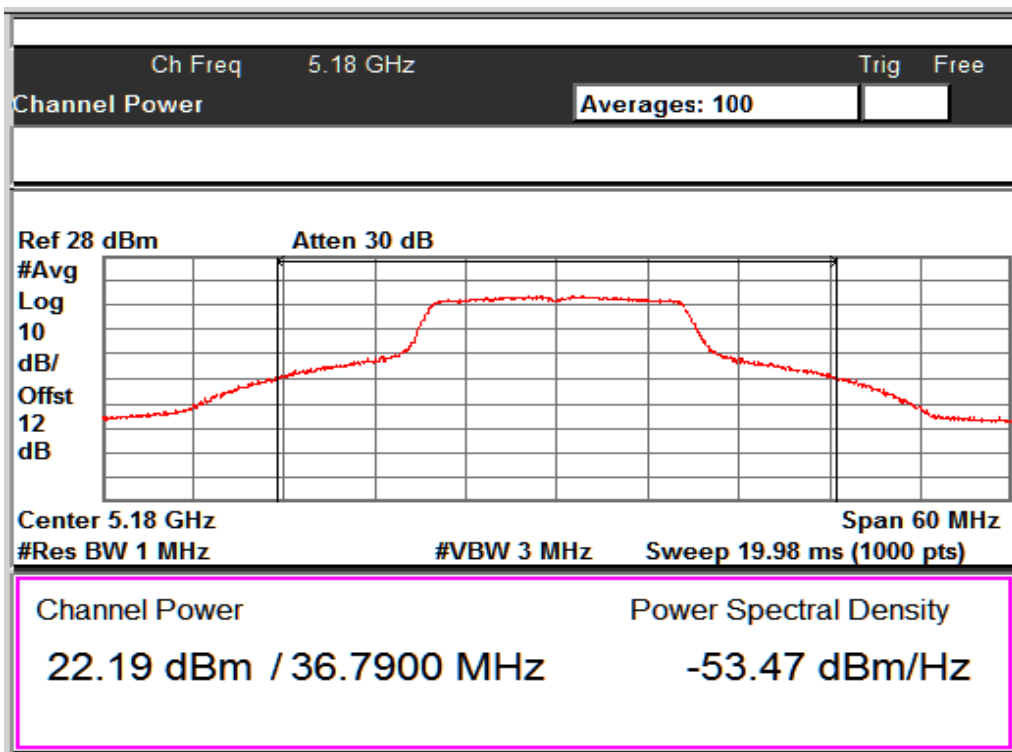


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Data Rate: 24Mbps

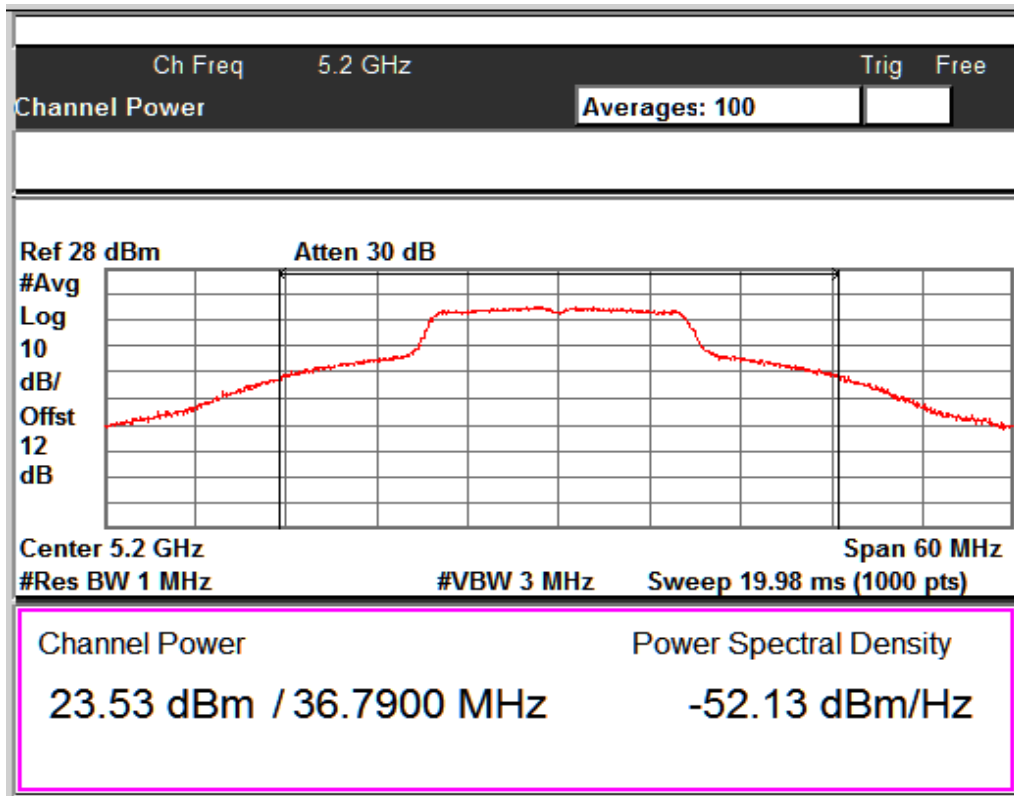
Channel Frequency: 5240MHz



Data Rate: 54Mbps

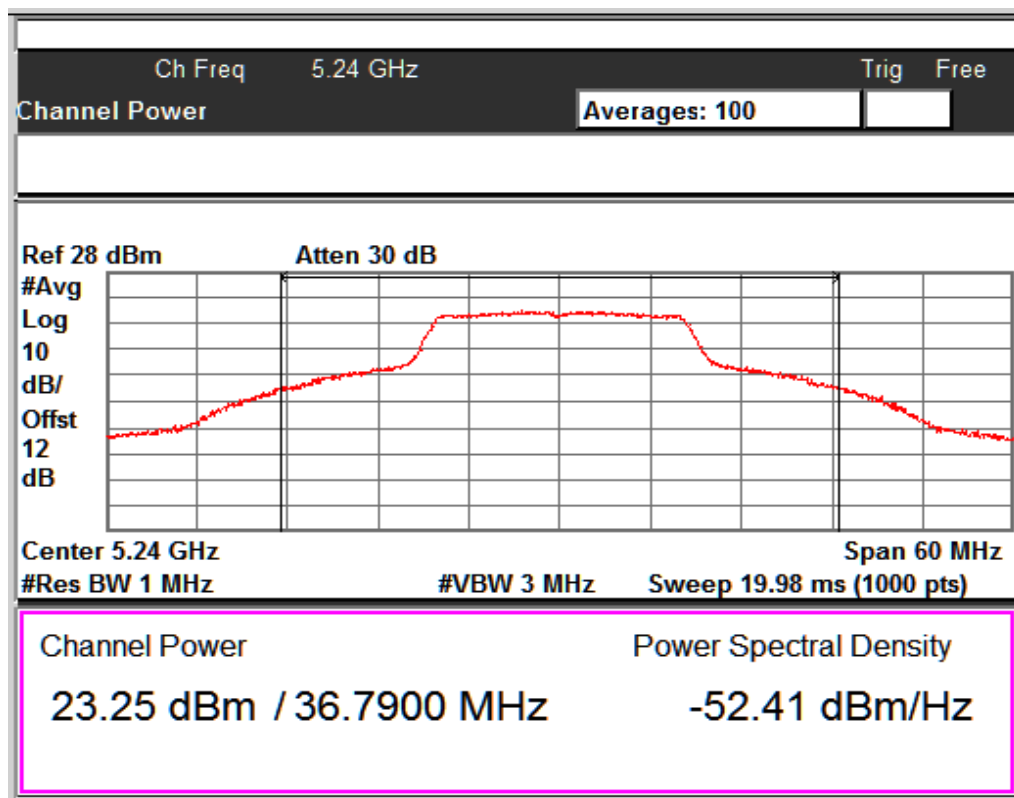
Channel Frequency: 5180MHz

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Data Rate: 54Mbps

Channel Frequency: 5200MHz

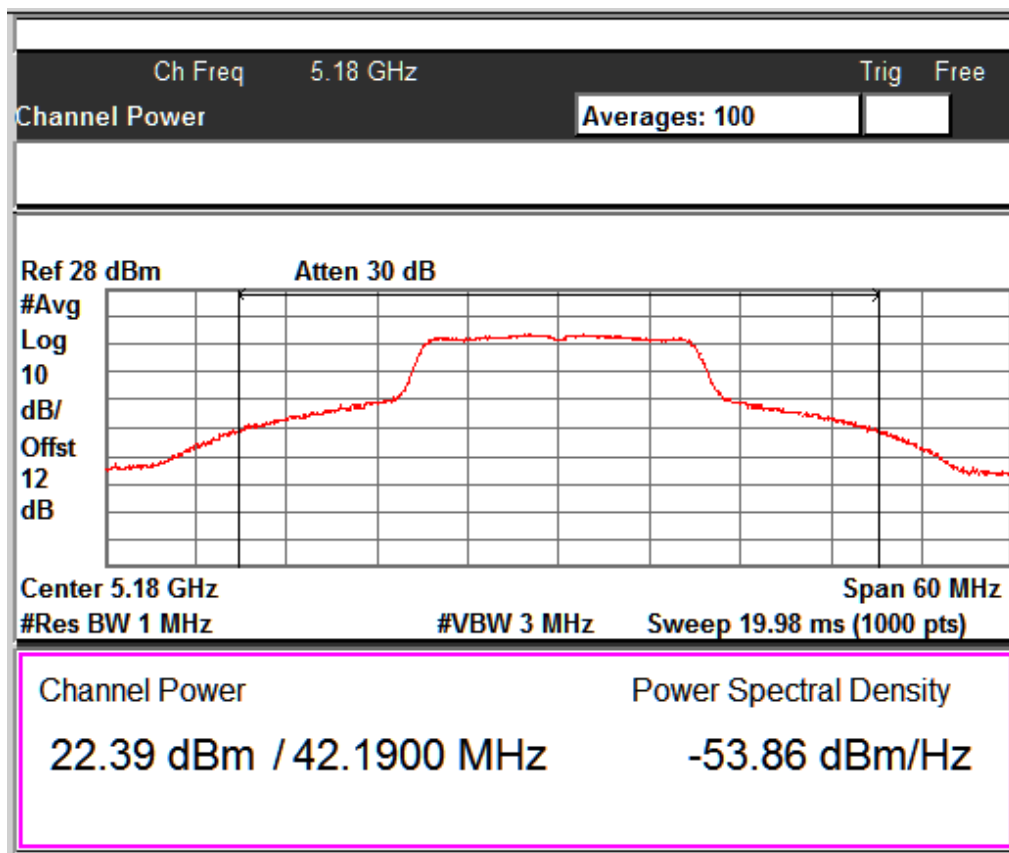


Data Rate: 54Mbps

Channel Frequency: 5240MHz

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Modulation: 802.11n

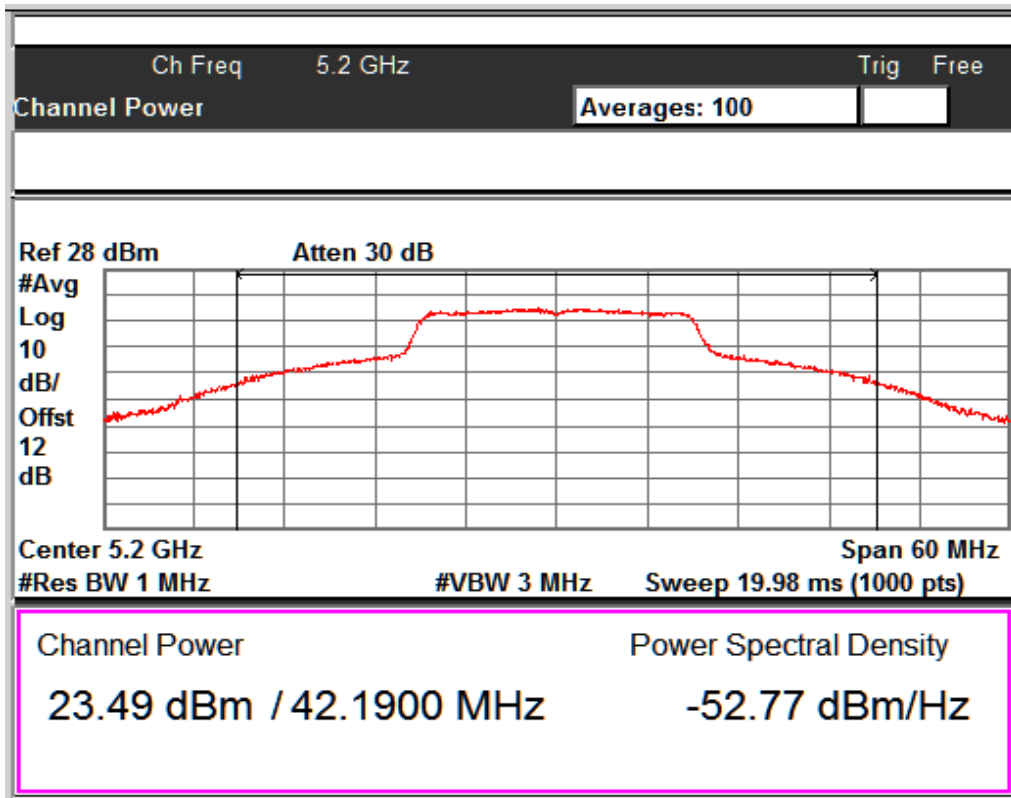
Data Rate (Mbps)	Channel. No	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
MCS 0	36	5180	22.39	30	-7.61
	40	5200	23.49	30	-6.51
	48	5240	23.39	30	-6.61
MSC 4	36	5180	21.68	30	-8.32
	40	5200	22.89	30	-7.11
	48	5240	23.28	30	-6.72
MCS 7	36	5180	21.87	30	-8.13
	40	5200	22.24	30	-7.76
	48	5240	22.61	30	-7.39



Data Rate: MCS 0

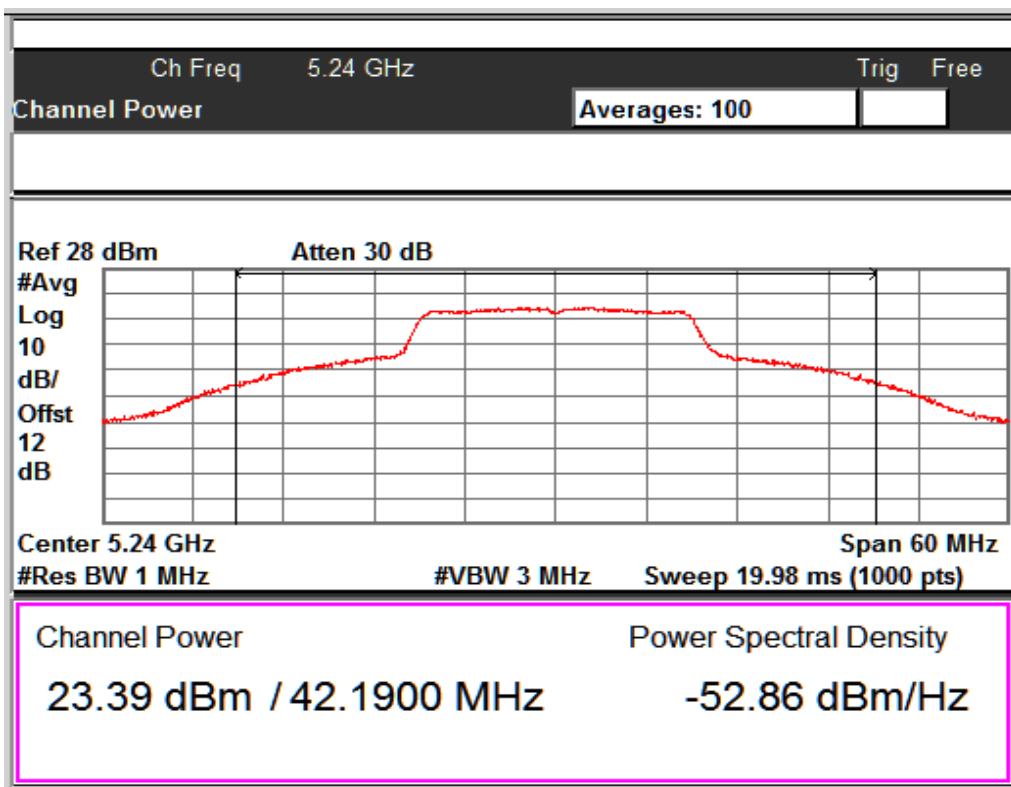
Channel Frequency: 5180MHz

www.tuv.com



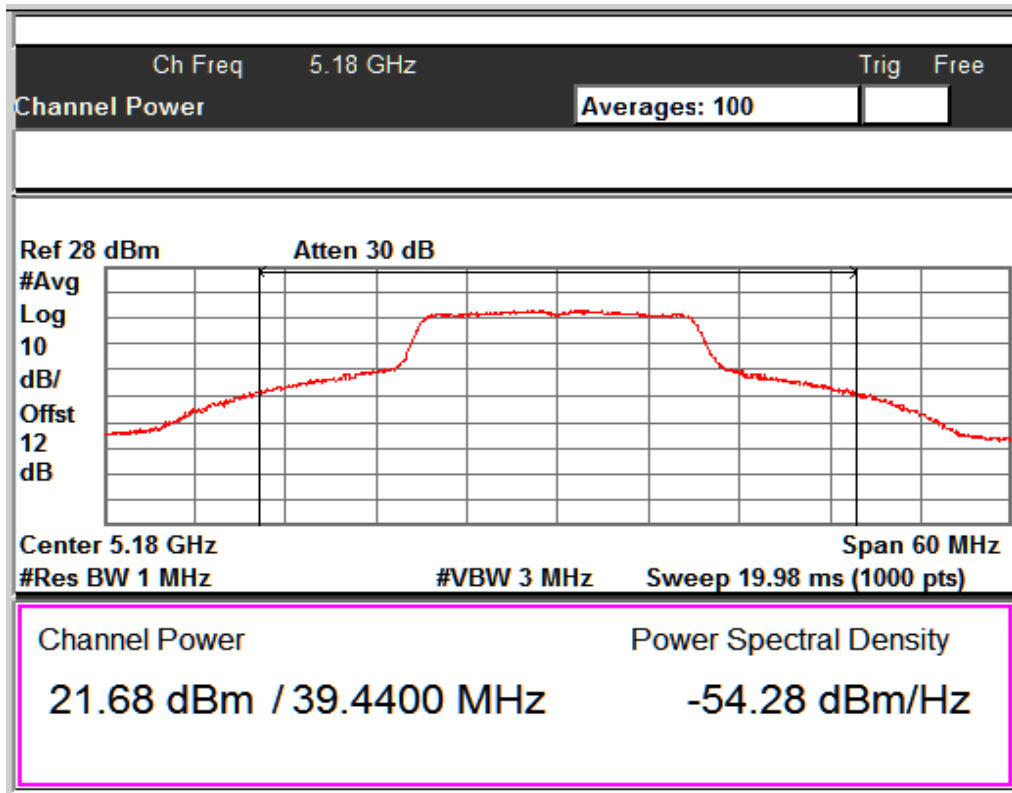
Data Rate: MCS 0

Channel Frequency: 5200MHz



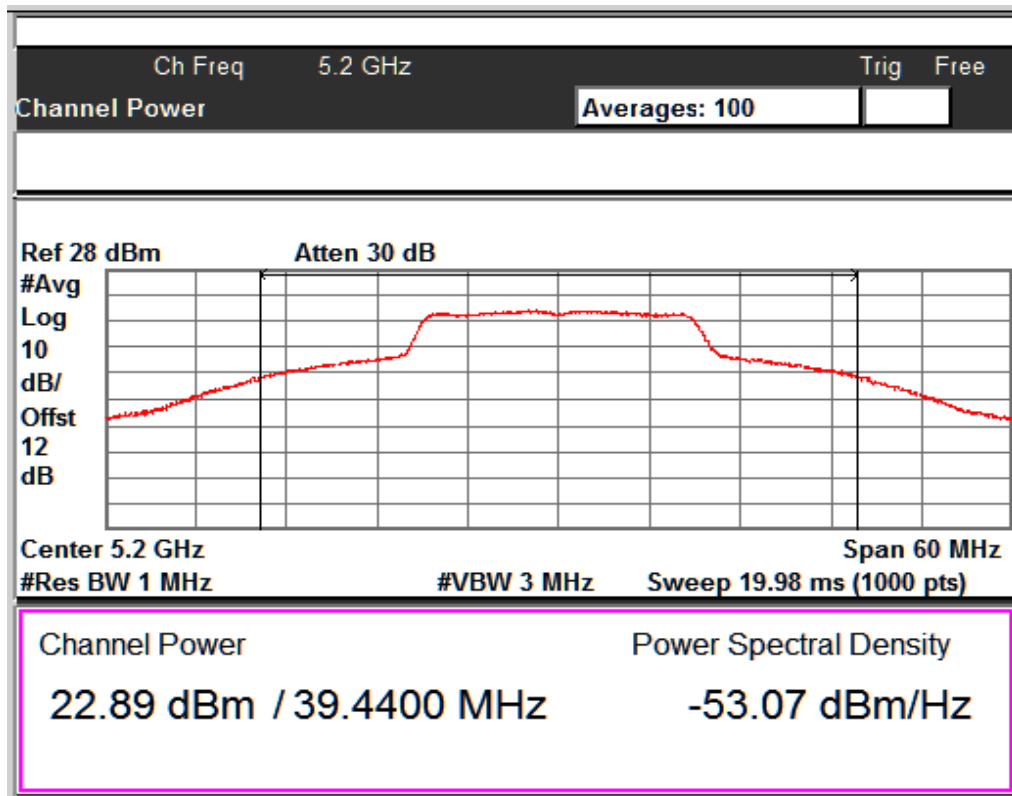
Data Rate: MCS 0

Channel Frequency: 5240MHz



Data Rate: MCS 4

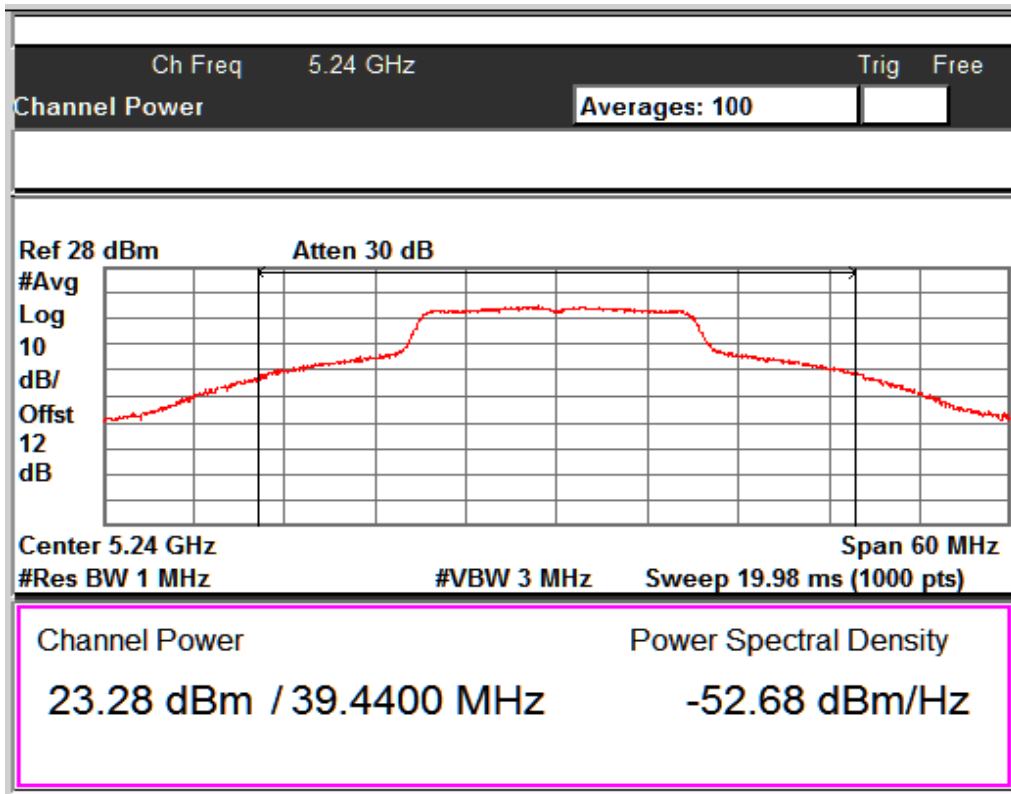
Channel Frequency: 5180MHz



Data Rate: MCS 4

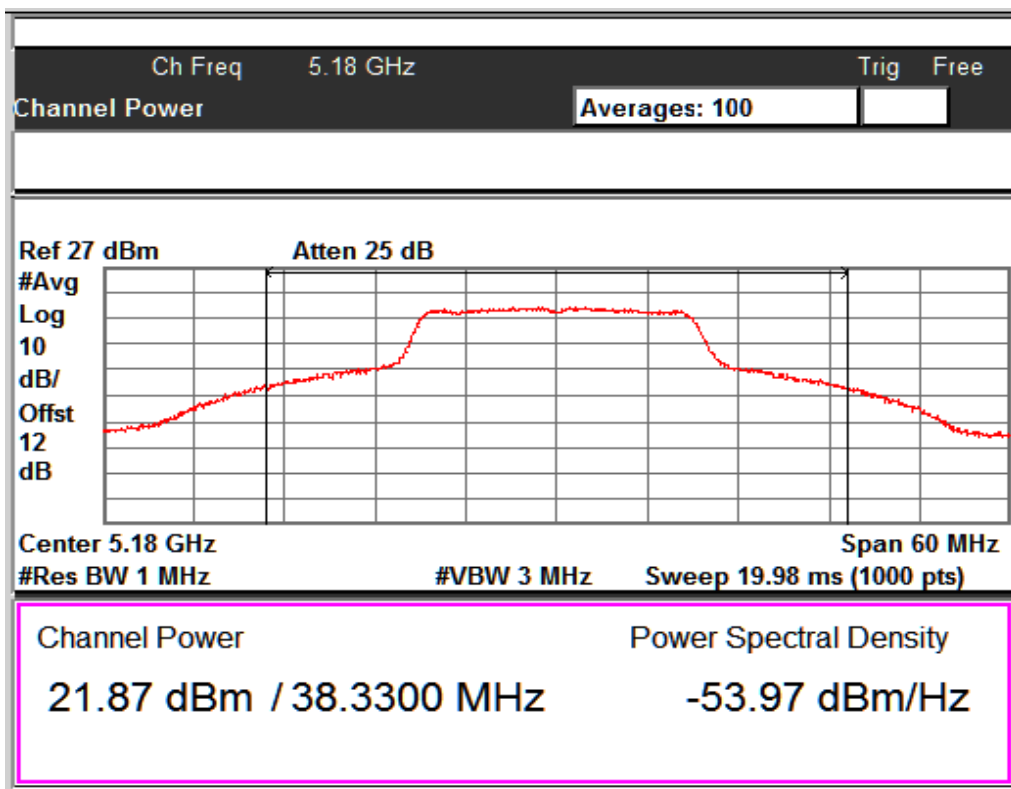
Channel Frequency: 5200 MHz

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Data Rate: MCS 4

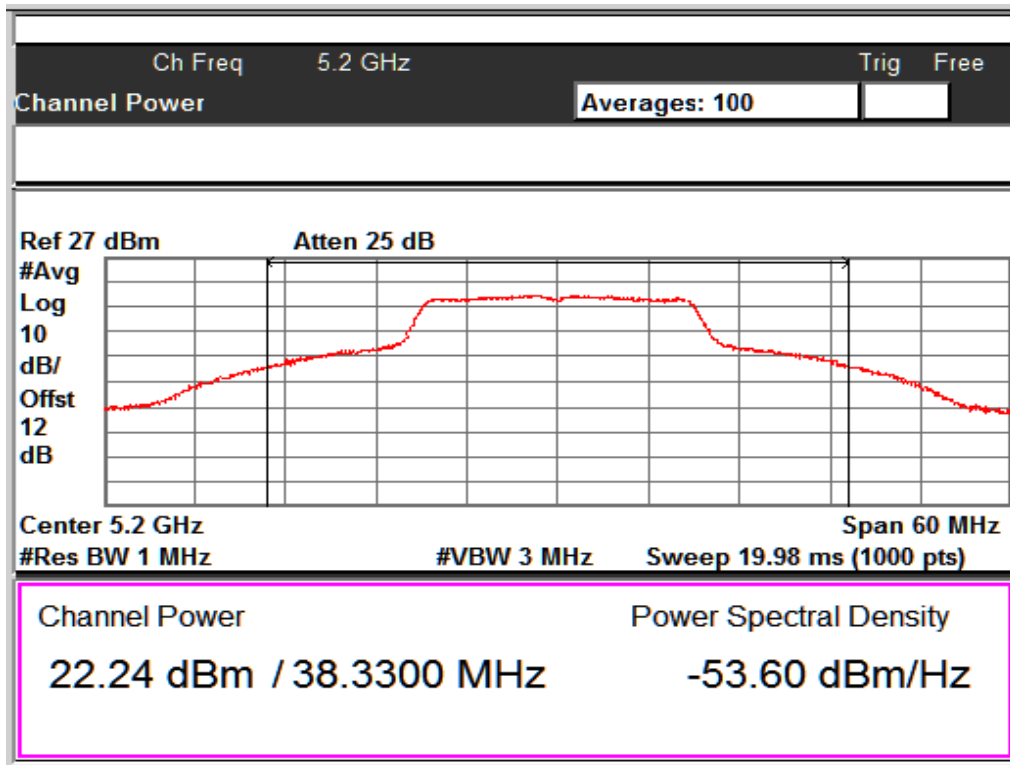
Channel Frequency: 5240MHz



Data Rate: MCS 7

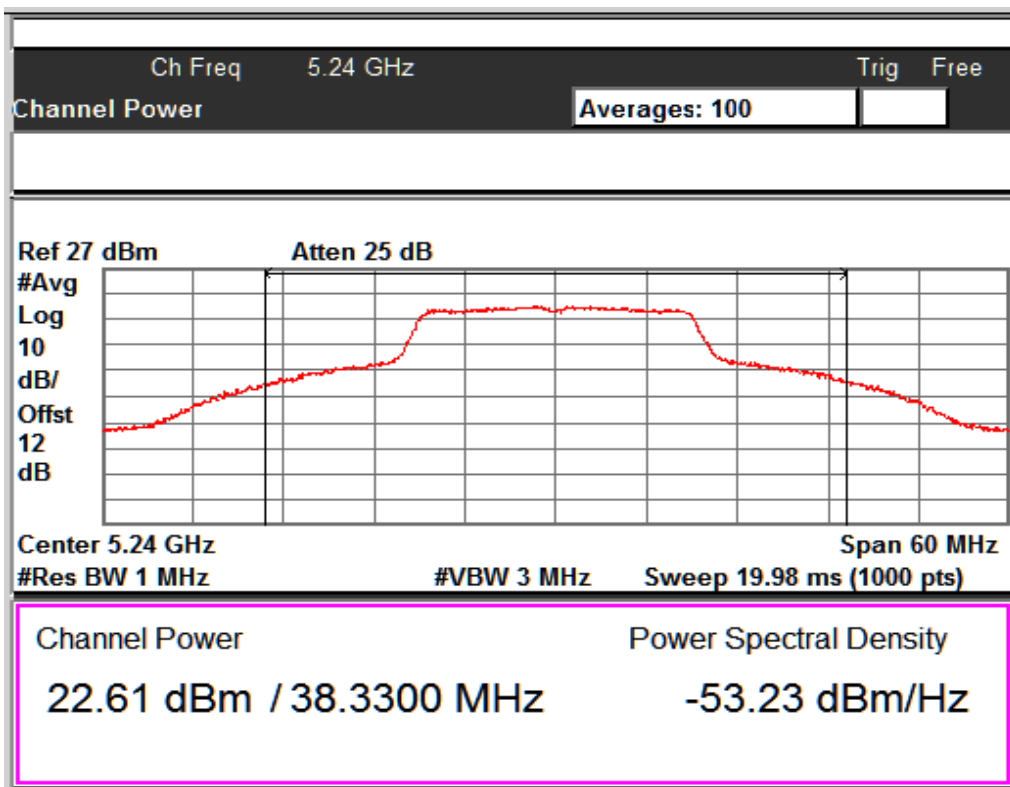
Channel Frequency: 5180MHz

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Data Rate: MCS 7

Channel Frequency: 5200 MHz



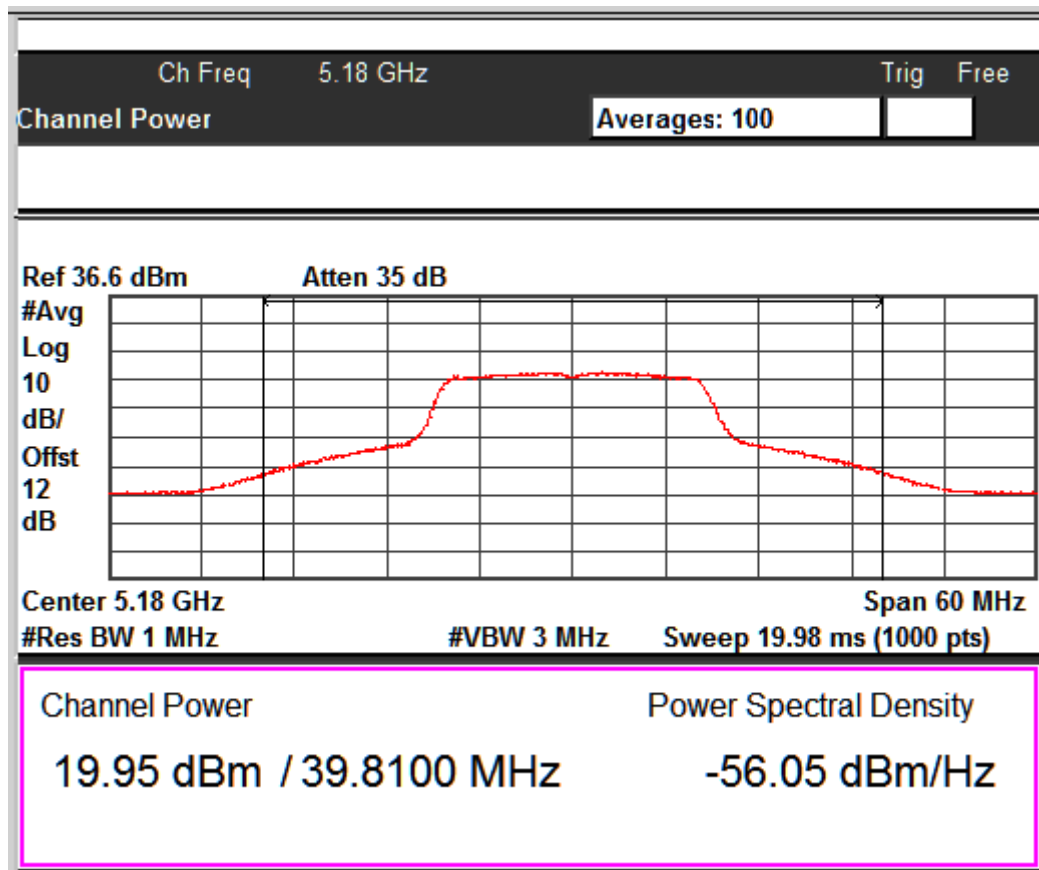
Data Rate: MCS 7

Channel Frequency: 5240MHz

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Result: 802.11 a (Mobile and Portable device)

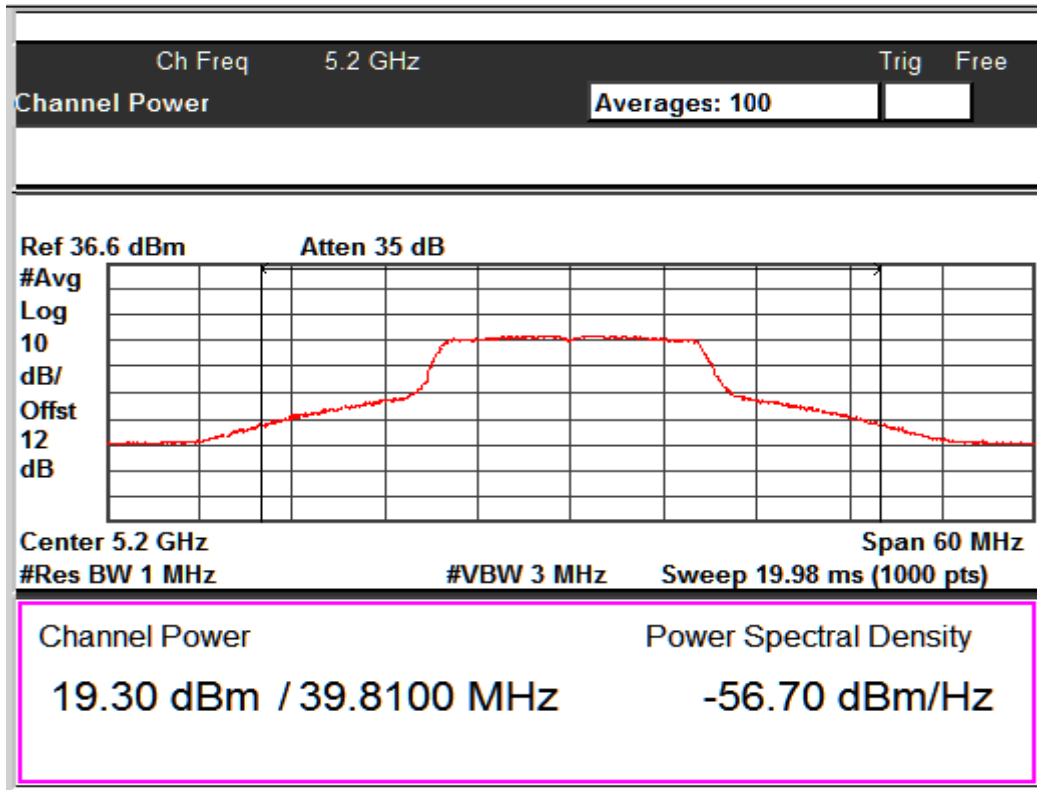
Data Rate (Mbps)	Channel. No	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
6	36	5180	19.95	24	-4.05
	40	5200	19.30	24	-4.70
	48	5240	18.47	24	-5.53
24	36	5180	19.06	24	-4.94
	40	5200	19.22	24	-4.78
	48	5240	18.26	24	-5.74
54	36	5180	19.10	24	-4.90
	40	5200	19.42	24	-4.58
	48	5240	18.89	24	-5.11



Data Rate: 6 Mbps

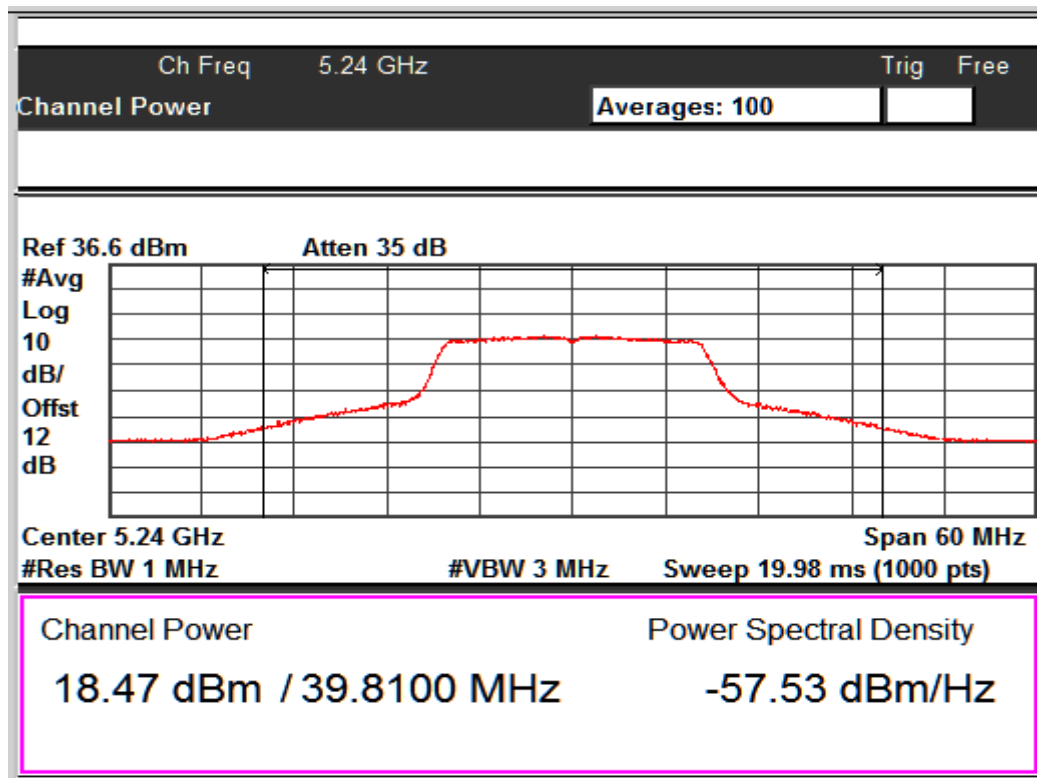
Channel Frequency: 5180MHz

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Data Rate: 6 Mbps

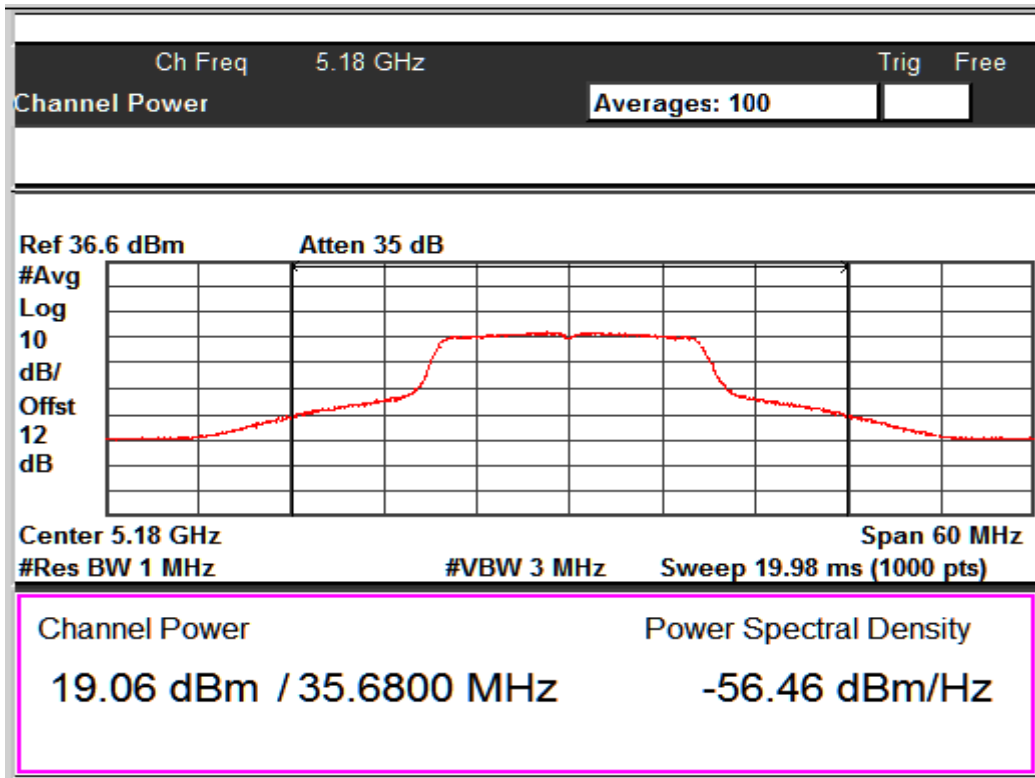
Channel Frequency: 5200MHz



Data Rate: 6 Mbps

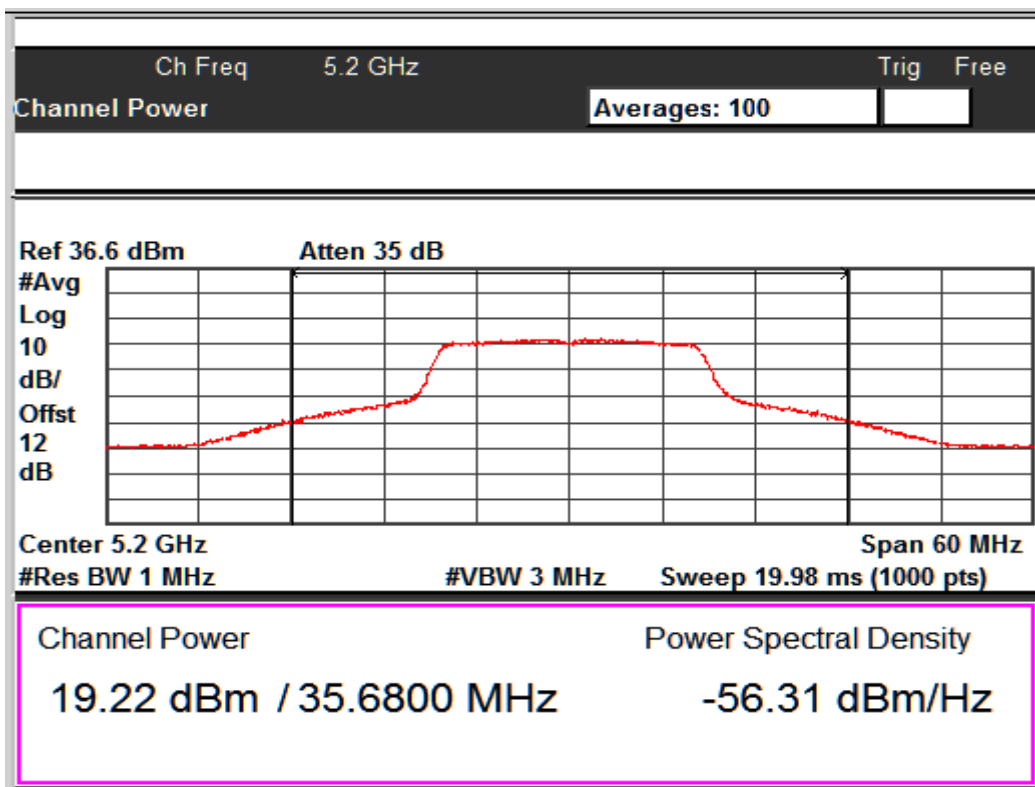
Channel Frequency: 5240MHz

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Data Rate: 24 Mbps

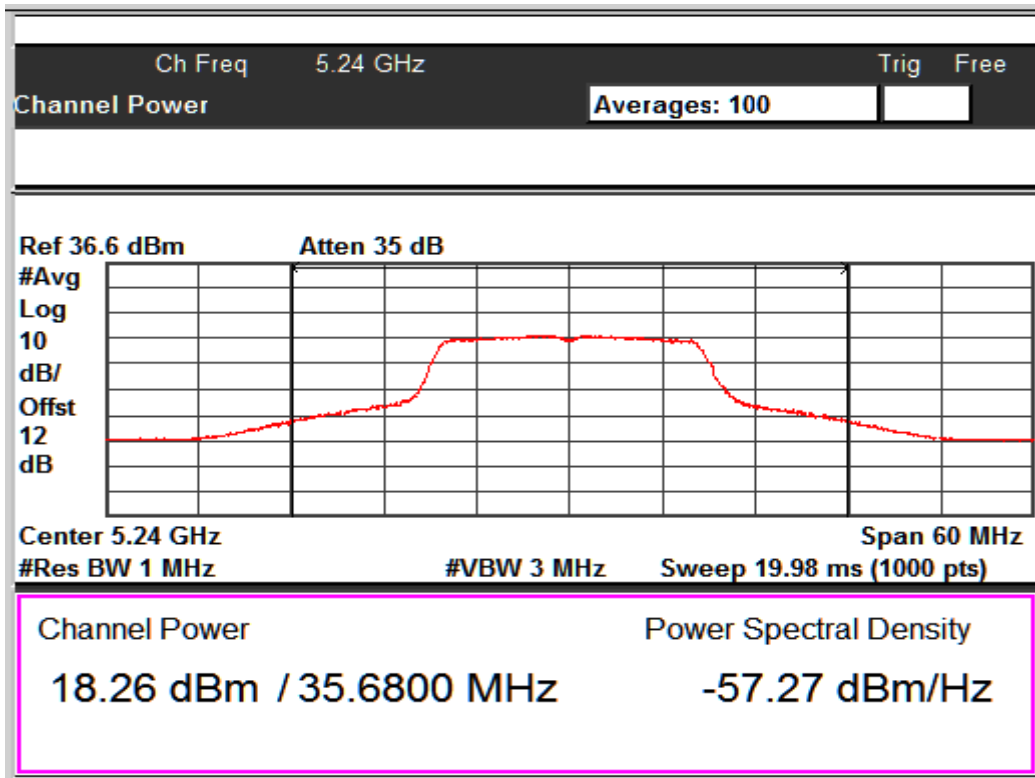
Channel Frequency: 5180MHz



Data Rate: 24 Mbps

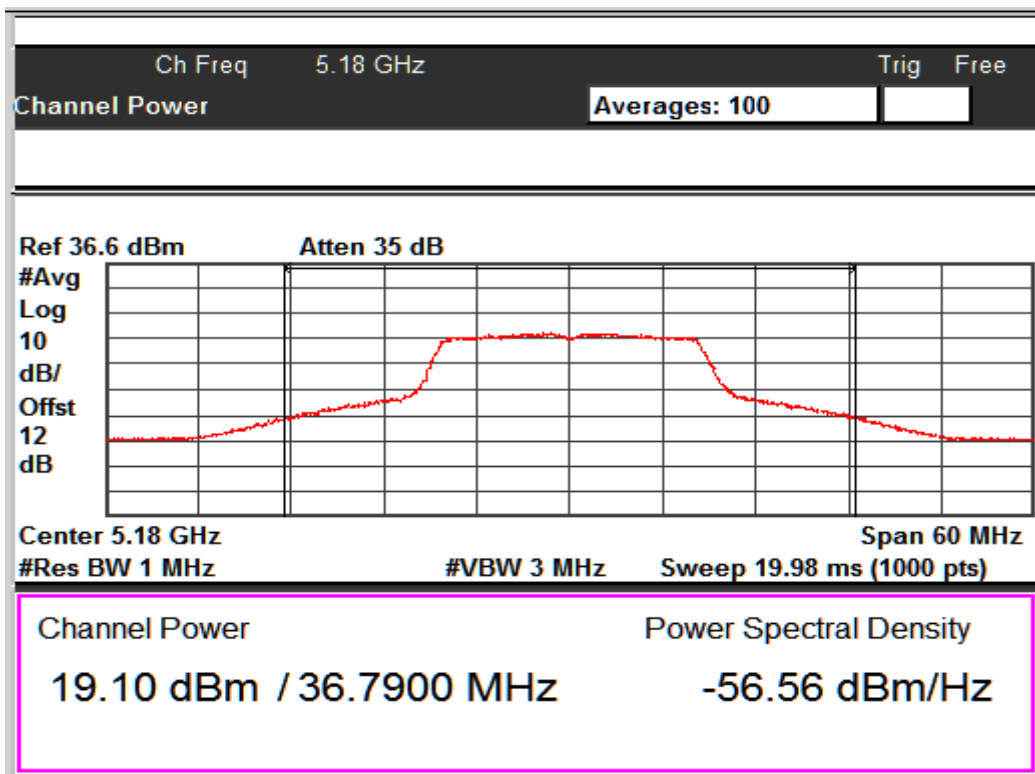
Channel Frequency: 5200MHz

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Data Rate: 24 Mbps

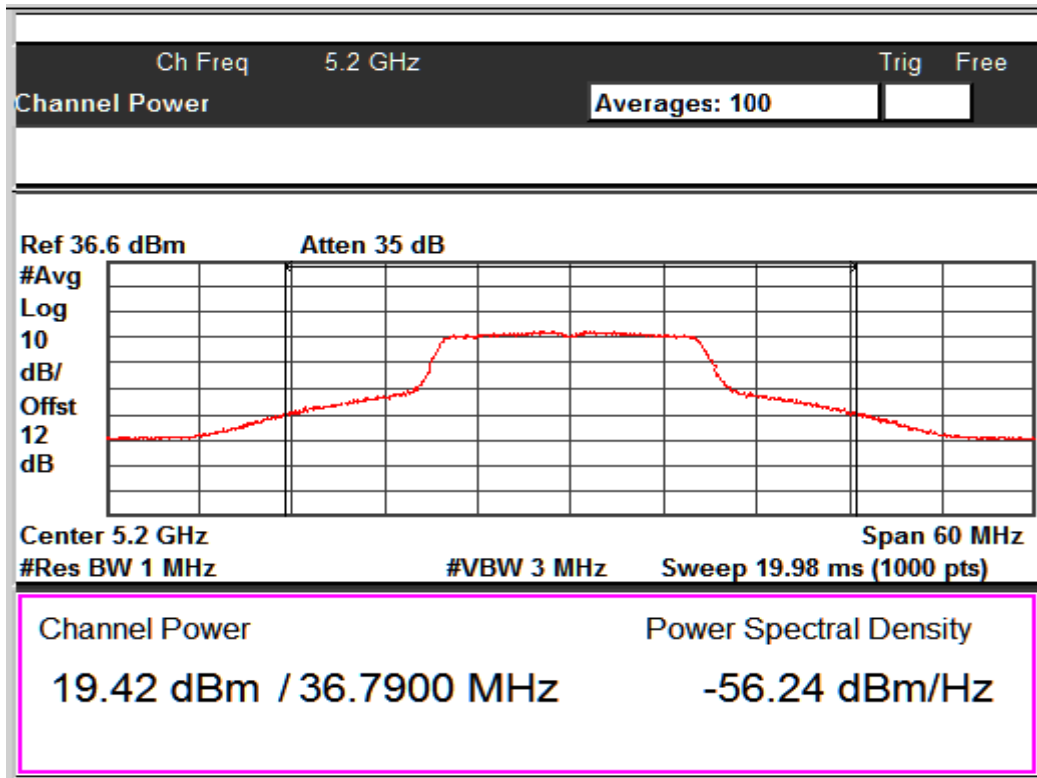
Channel Frequency: 5240MHz



Data Rate: 54 Mbps

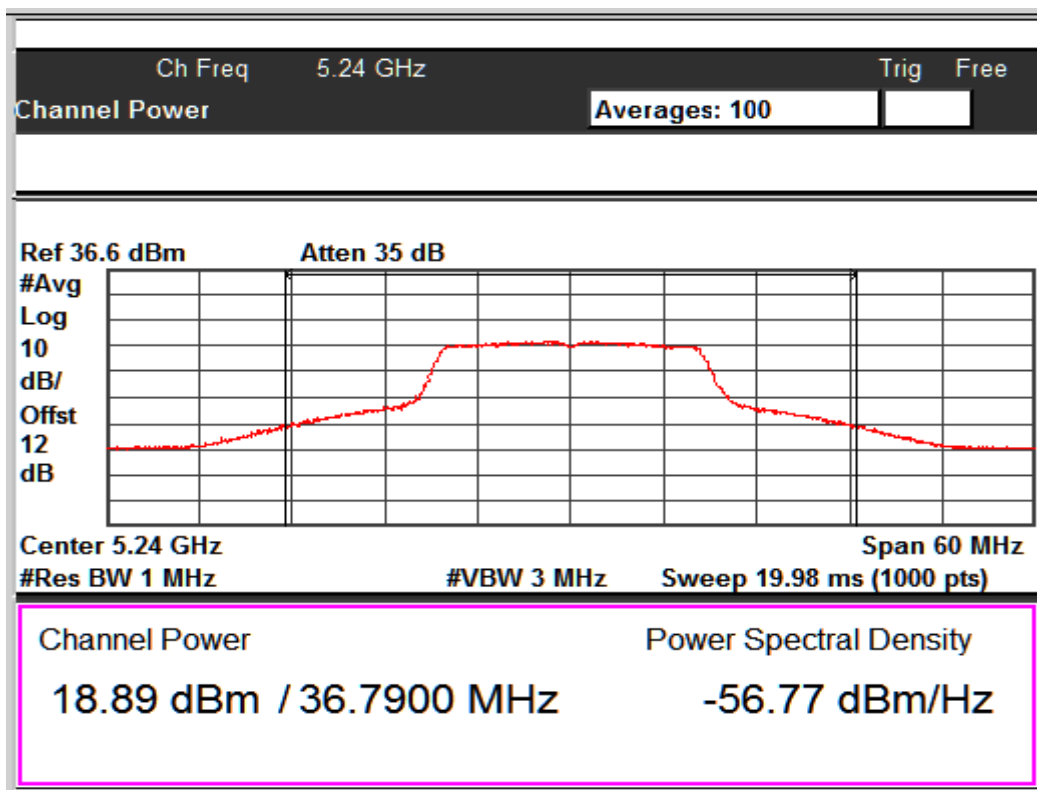
Channel Frequency: 5180MHz

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Data Rate: 54 Mbps

Channel Frequency: 5200MHz

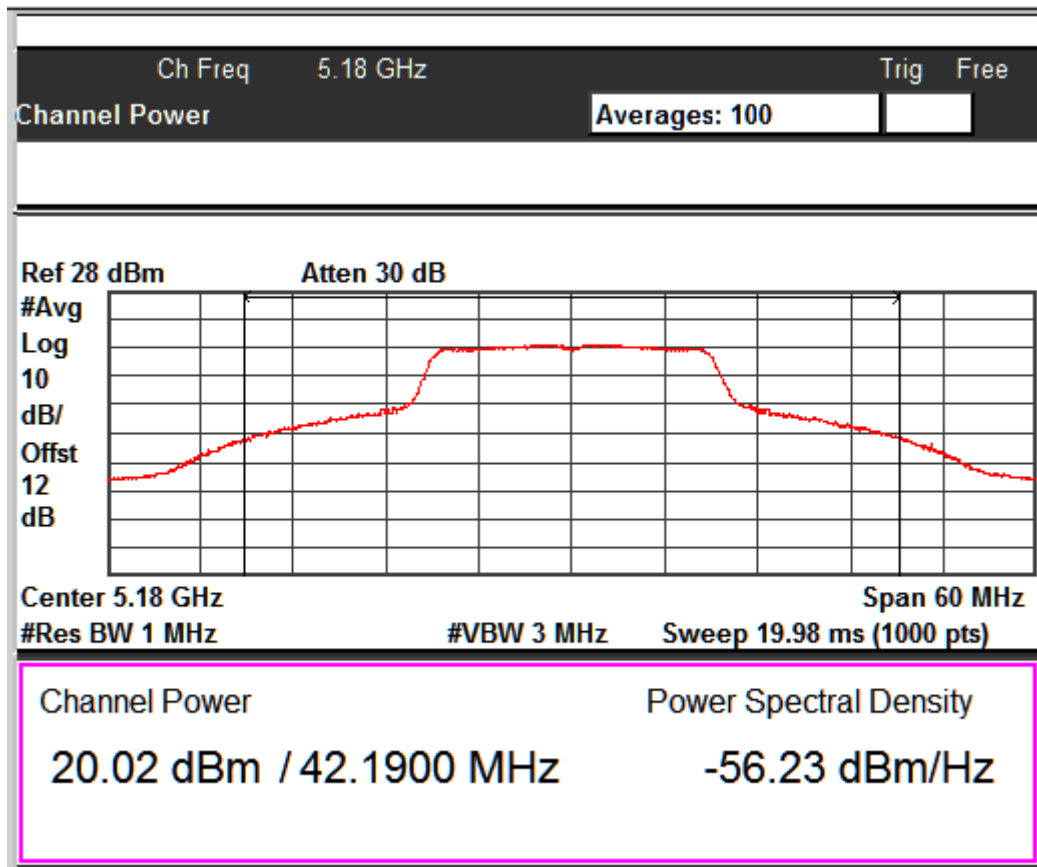


Data Rate: 54 Mbps

Channel Frequency: 5240MHz

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Result: 802.11 n

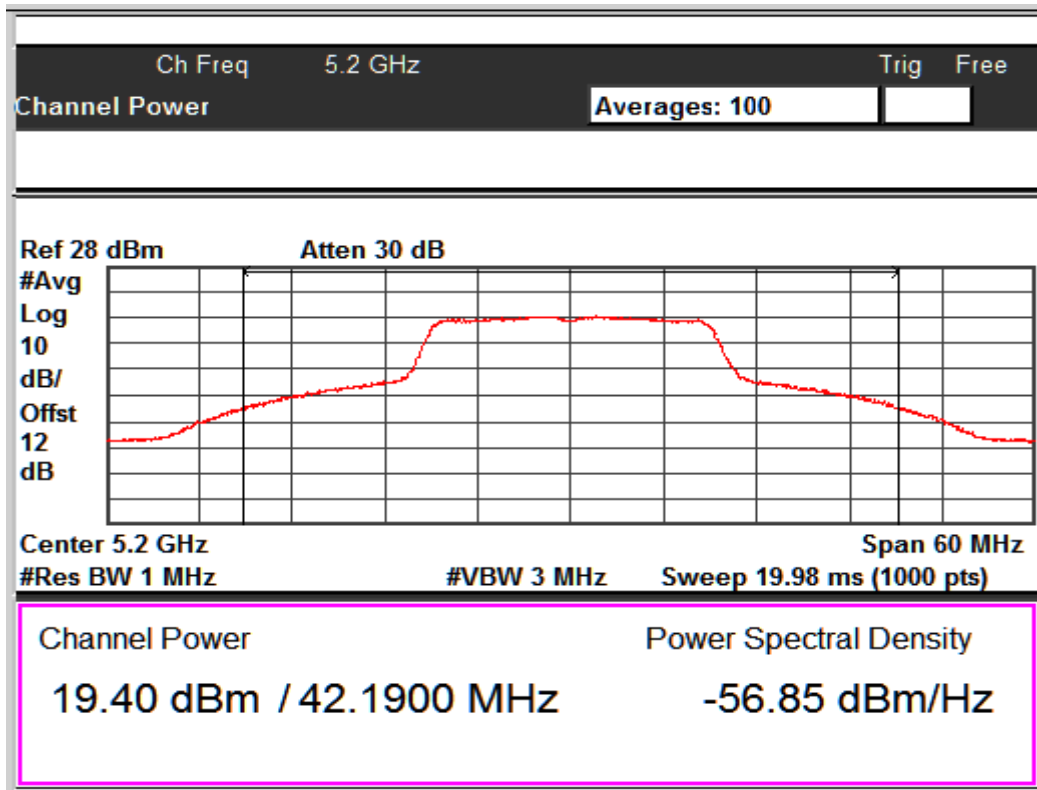
Data Rate (Mbps)	Channel. No	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
MCS 0	36	5180	20.02	24	-3.98
	40	5200	19.40	24	-4.60
	48	5240	19.34	24	-4.66
MCS 4	36	5180	20.02	24	-3.98
	40	5200	19.41	24	-4.59
	48	5240	19.20	24	-4.80
MCS 7	36	5180	19.99	24	-4.01
	40	5200	19.36	24	-4.64
	48	5240	19.21	24	-4.79



Data Rate: MCS 0

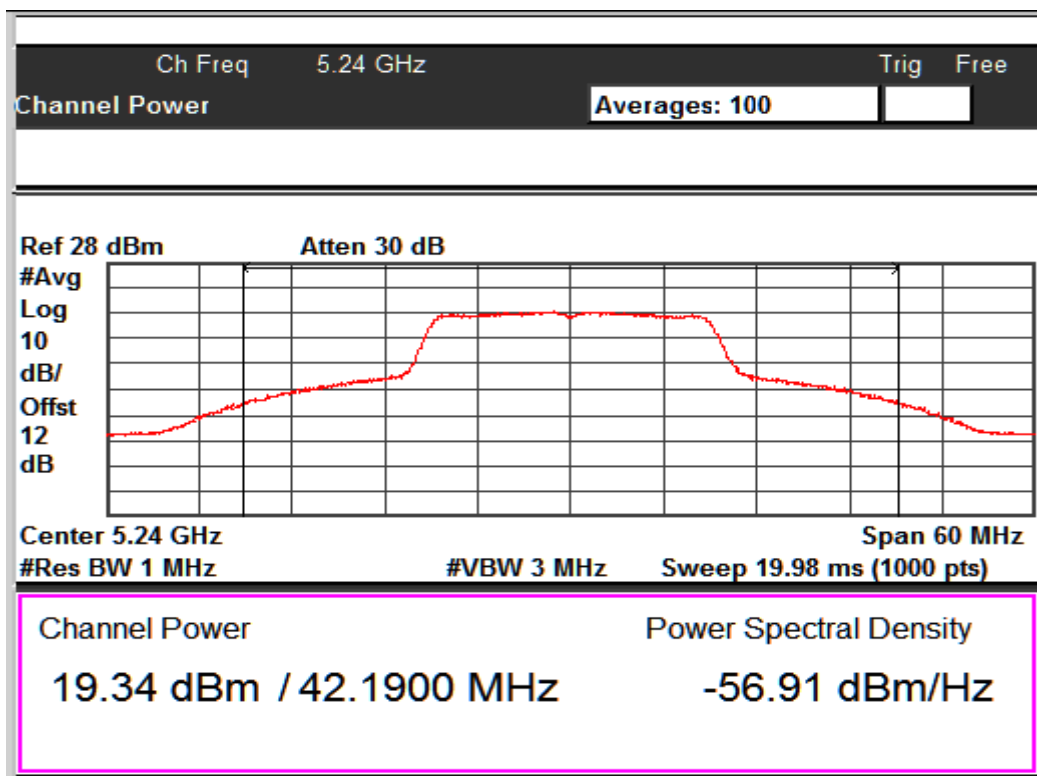
Channel Frequency: 5180MHz

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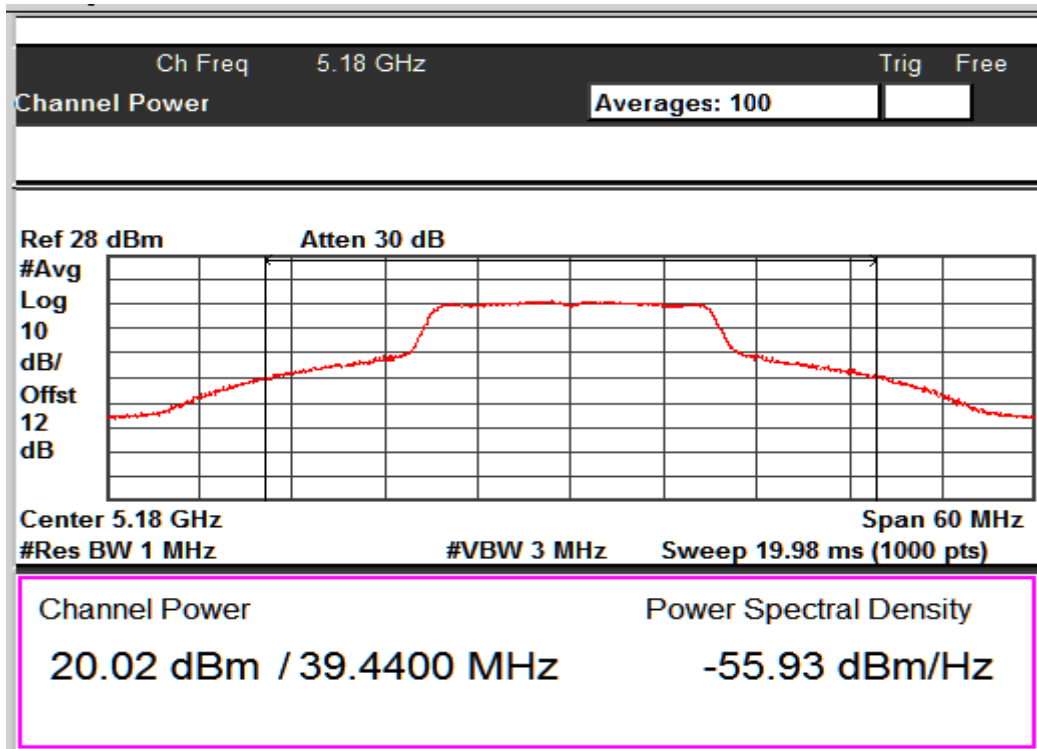
Data Rate: MCS 0

Channel Frequency: 5200MHz



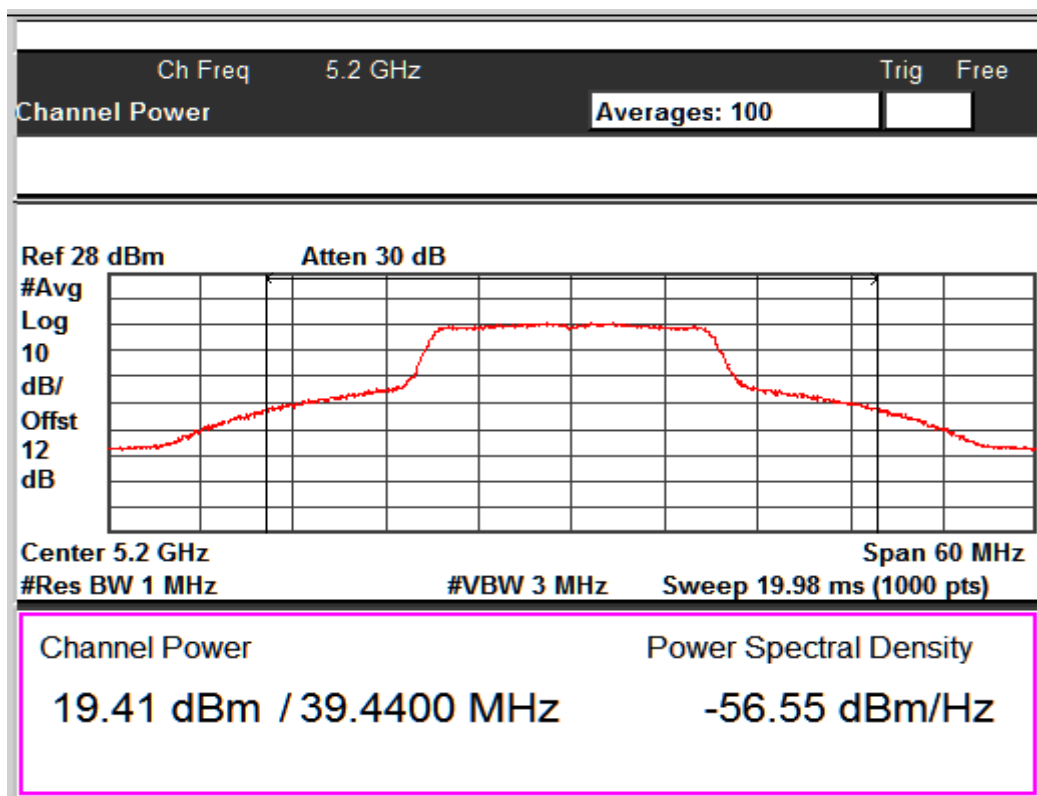
Data Rate: MCS 0

Channel Frequency: 5240MHz



Data Rate: MCS 4

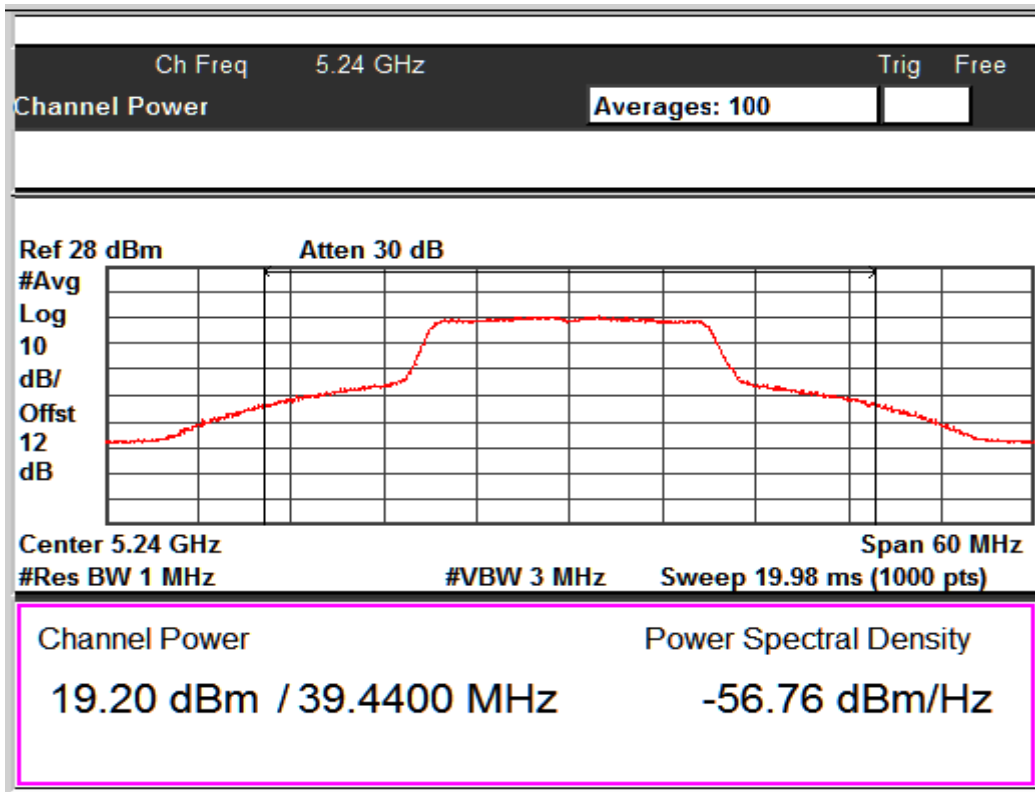
Channel Frequency: 5180MHz



Data Rate: MCS 4

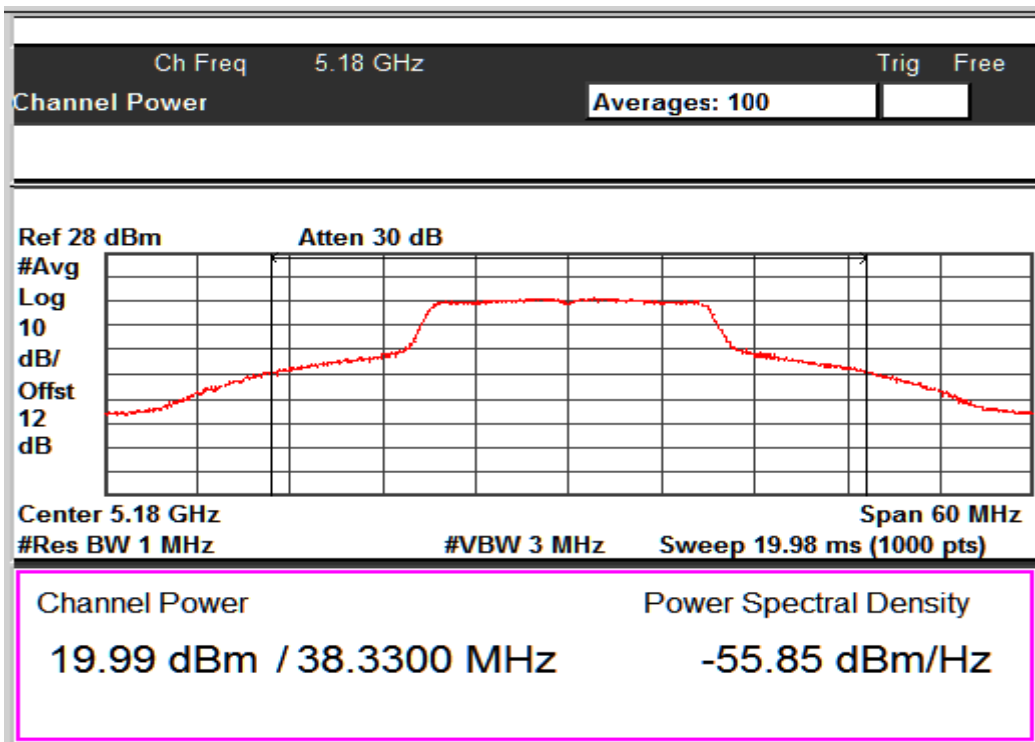
Channel Frequency: 5200MHz

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Data Rate: MCS 4

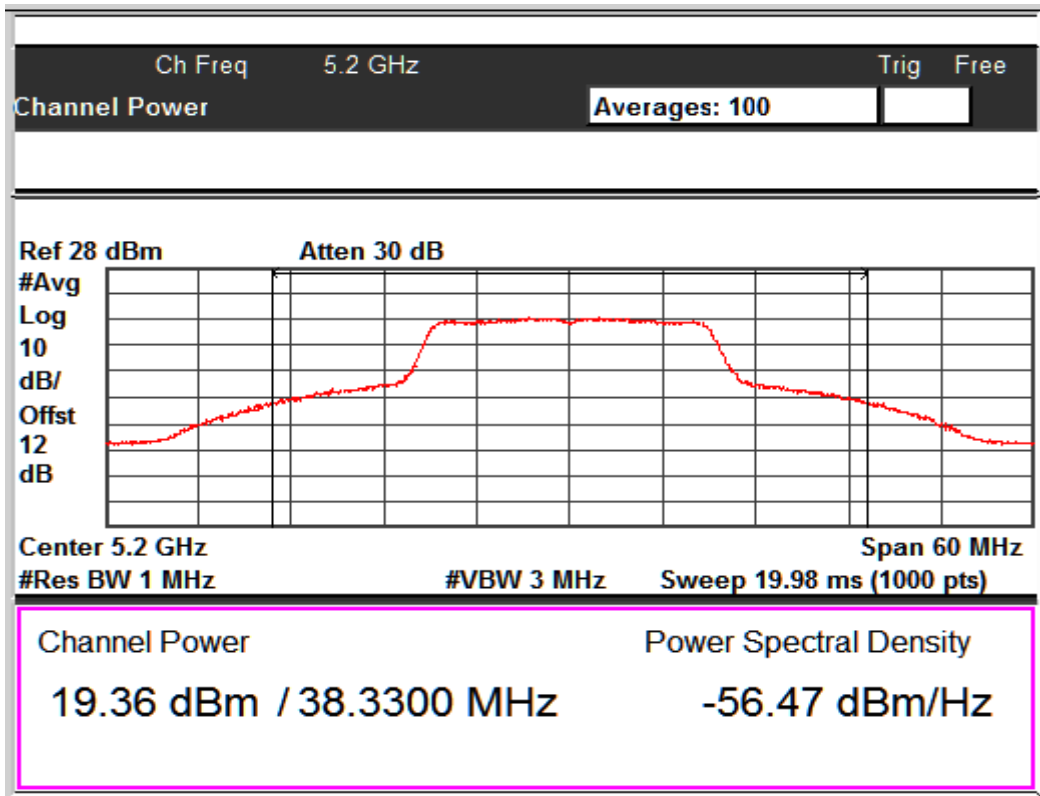
Channel Frequency: 5240MHz



Data Rate: MCS 7

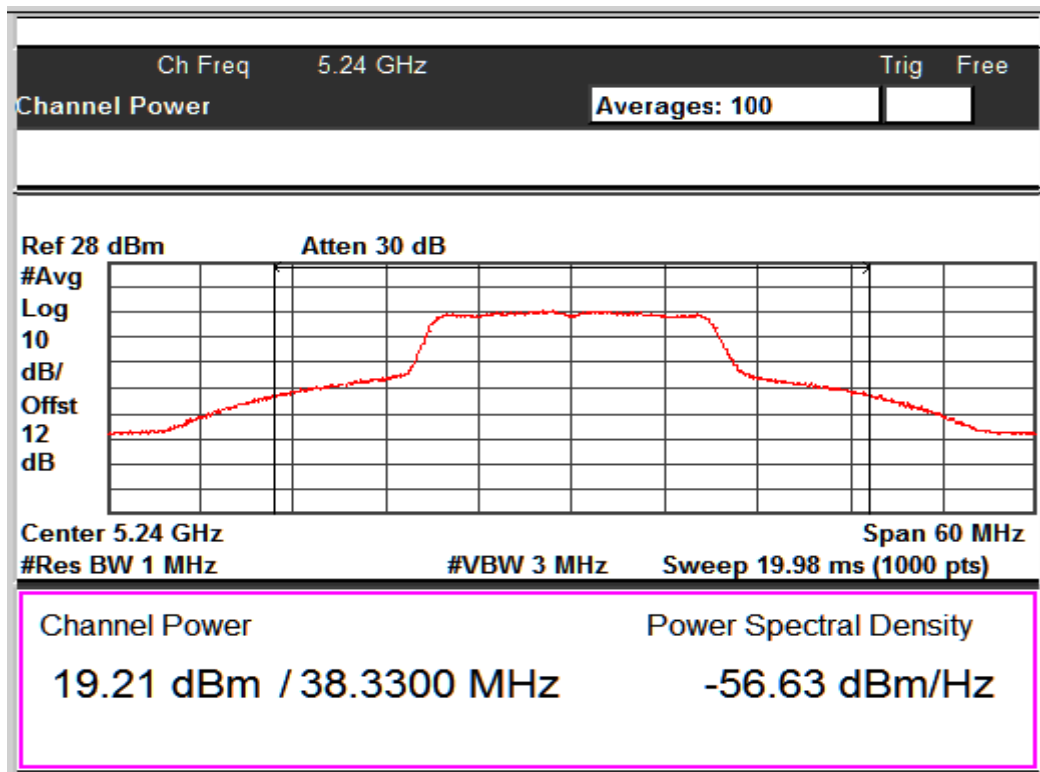
Channel Frequency: 5180MHz

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Data Rate: MCS 7

Channel Frequency: 5200MHz

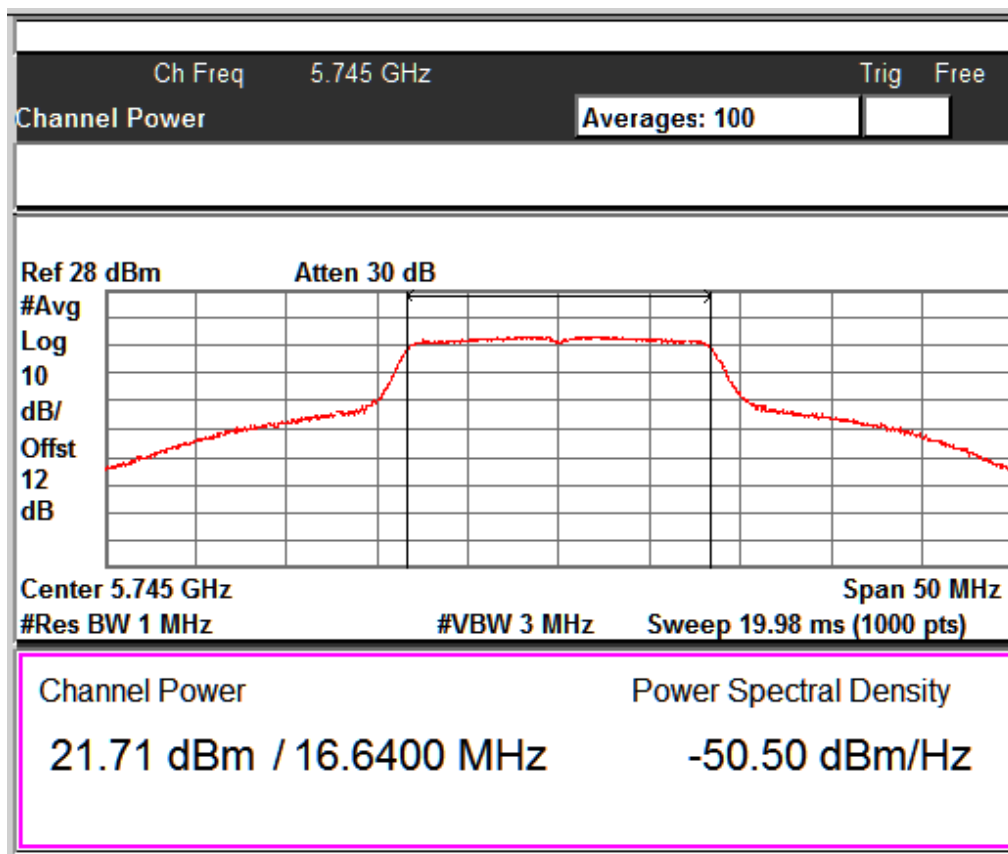


Data Rate: MCS 7

Channel Frequency: 5240MHz

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 5725 MHz – 5850MHz Band
 802.11 a

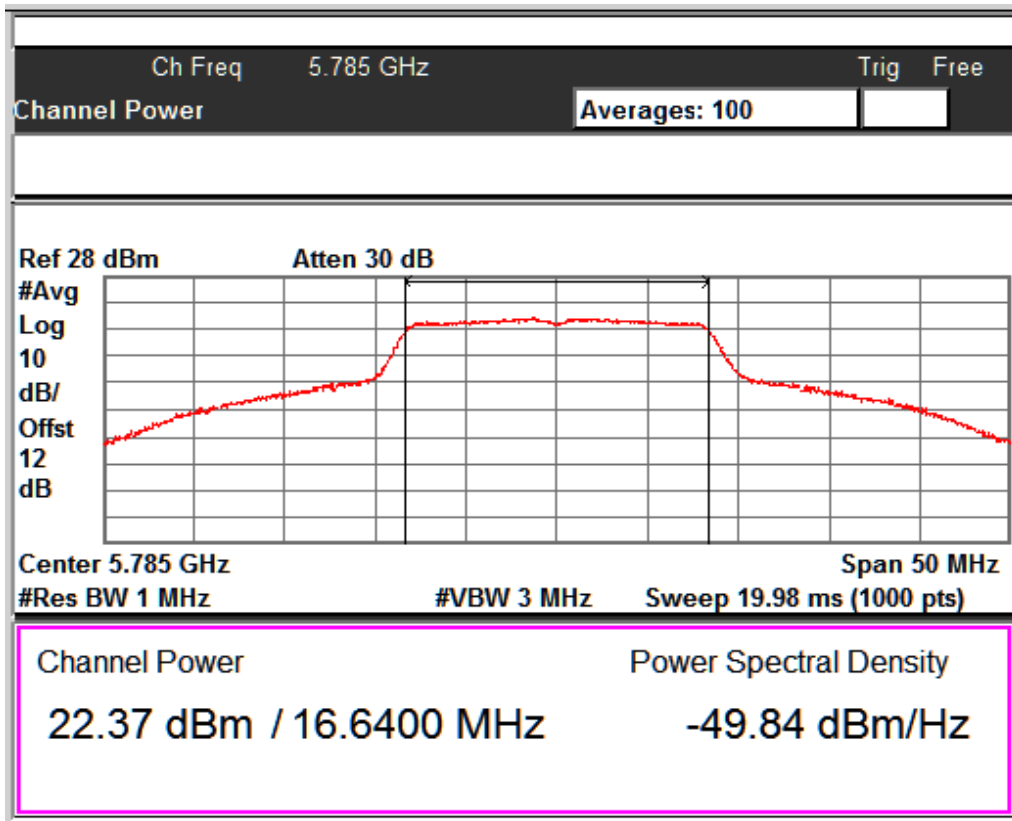
Data Rate (Mbps)	Channel. No	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dBm)
6	149	5745	21.71	30	-8.29
	157	5785	22.37	30	-7.63
	165	5825	22.47	30	-7.53
24	149	5745	21.89	30	-8.11
	157	5785	22.25	30	-7.75
	165	5825	22.21	30	-7.79
54	149	5745	21.82	30	-8.18
	157	5785	22.28	30	-7.72
	165	5825	22.22	30	-7.78



Data Rate: 6 Mbps

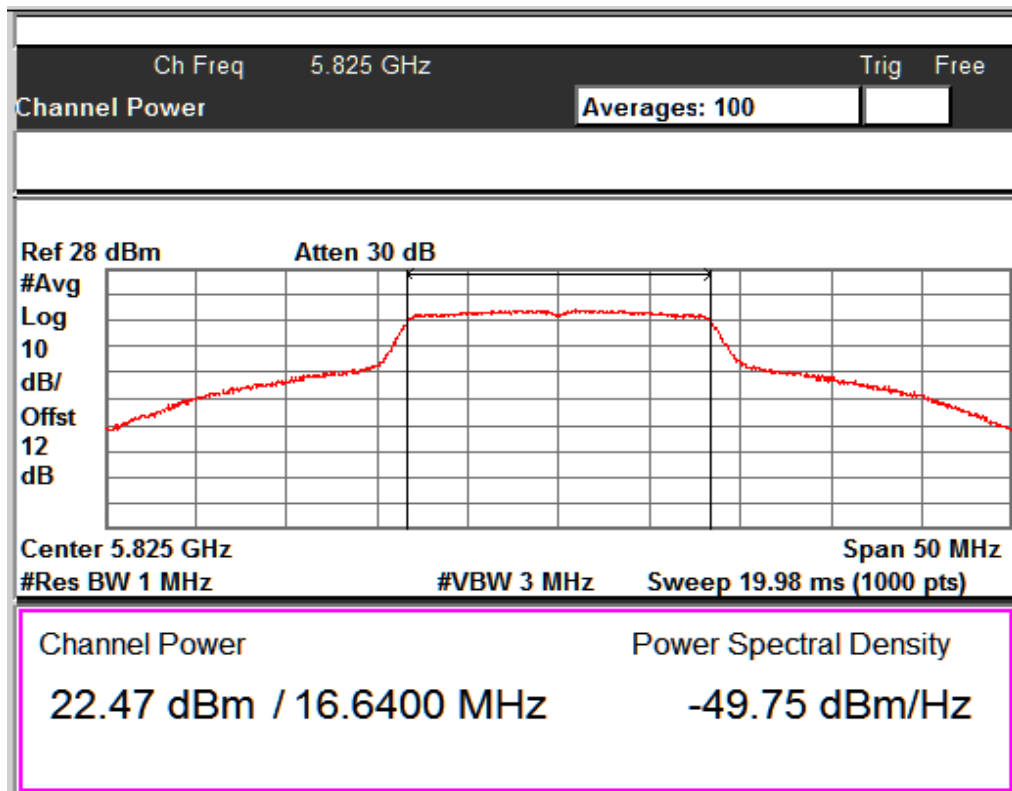
Channel Frequency: 5745 MHz

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Data Rate: 6 Mbps

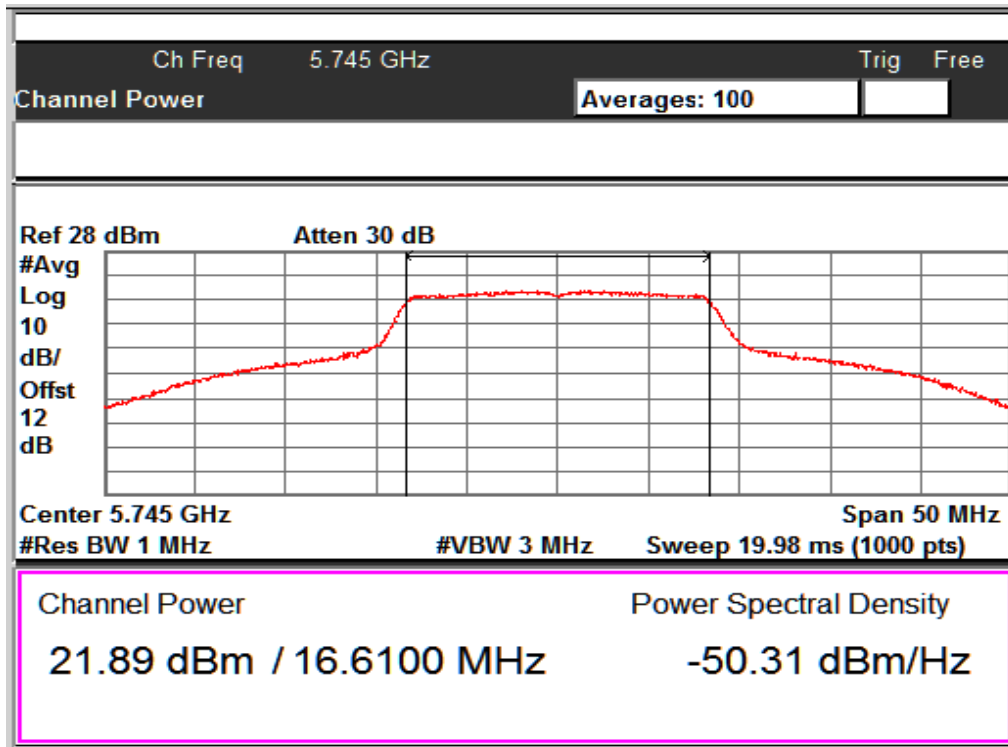
Channel Frequency: 5785 MHz



Data Rate: 6 Mbps

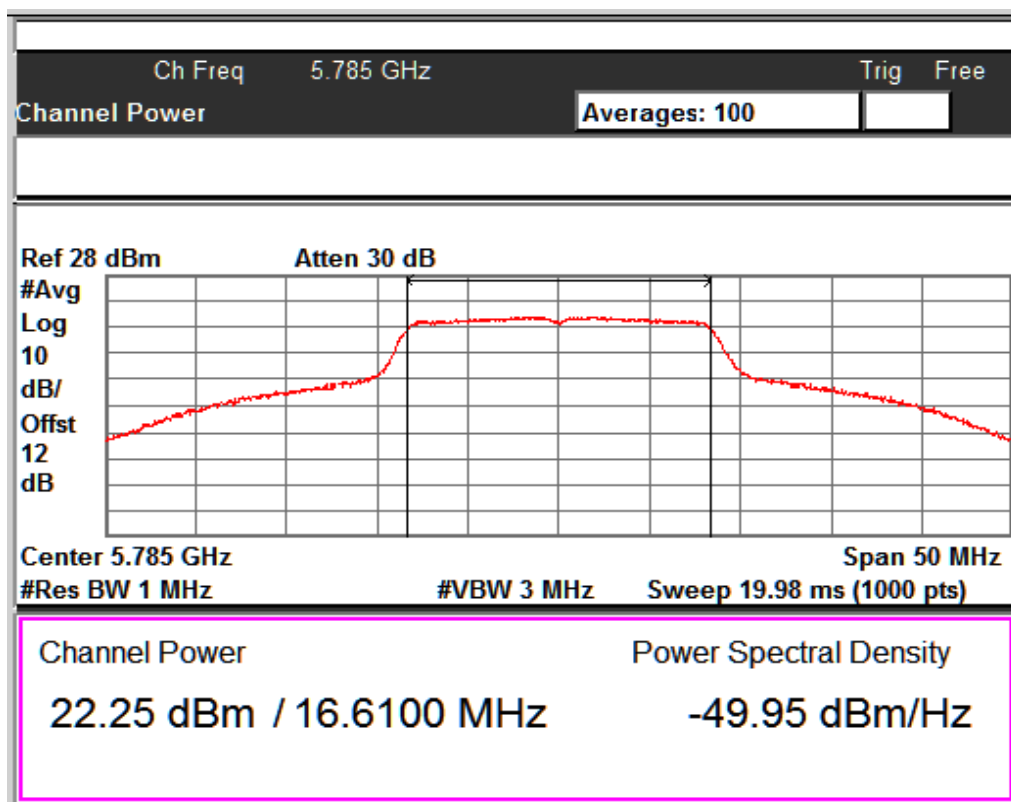
Channel Frequency: 5825 MHz

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Data Rate: 24 Mbps

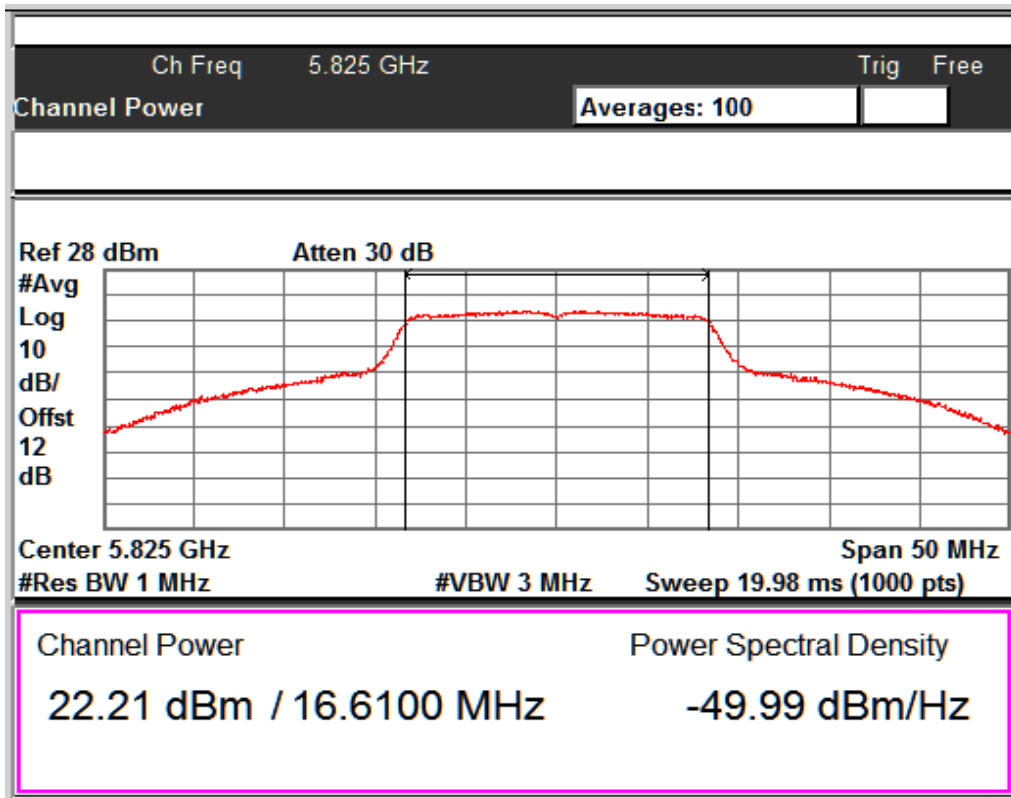
Channel Frequency: 5745 MHz



Data Rate: 24 Mbps

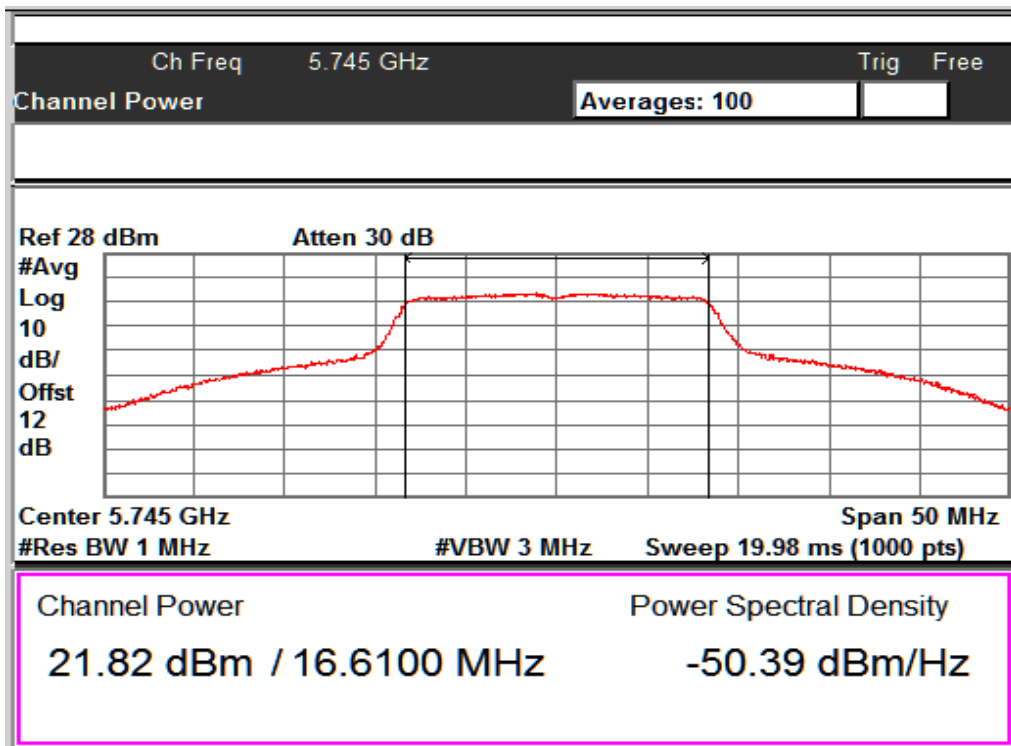
Channel Frequency: 5785 MHz

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Data Rate: 24 Mbps

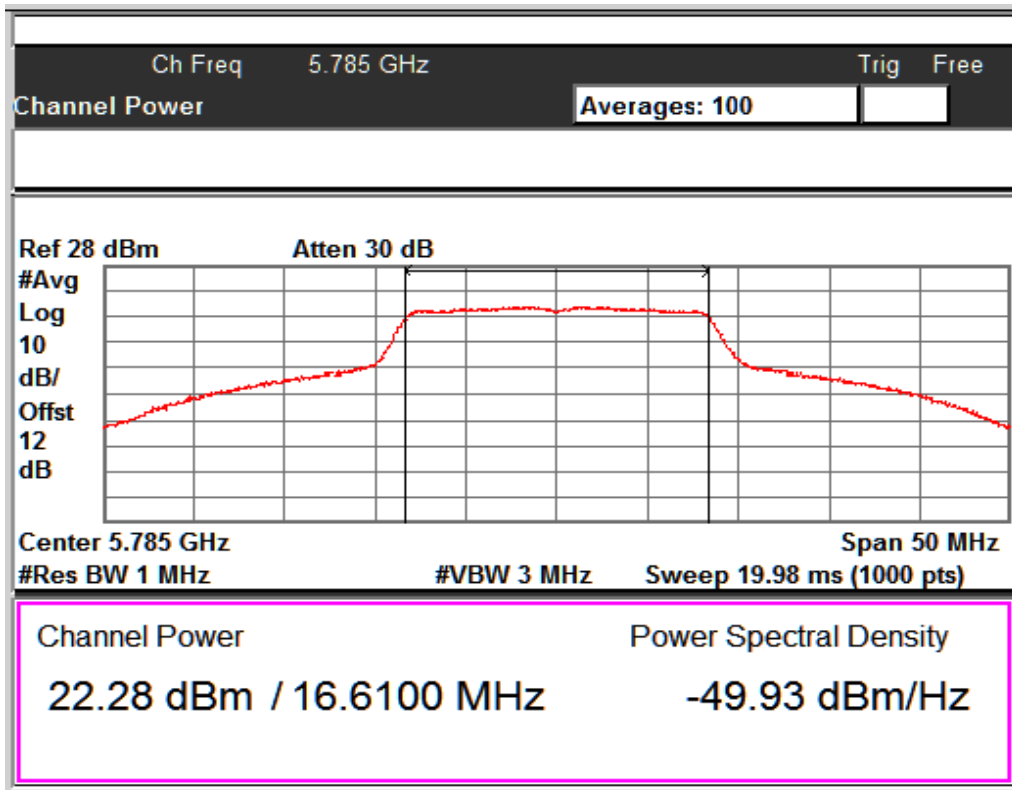
Channel Frequency: 5825 MHz



Data Rate: 54 Mbps

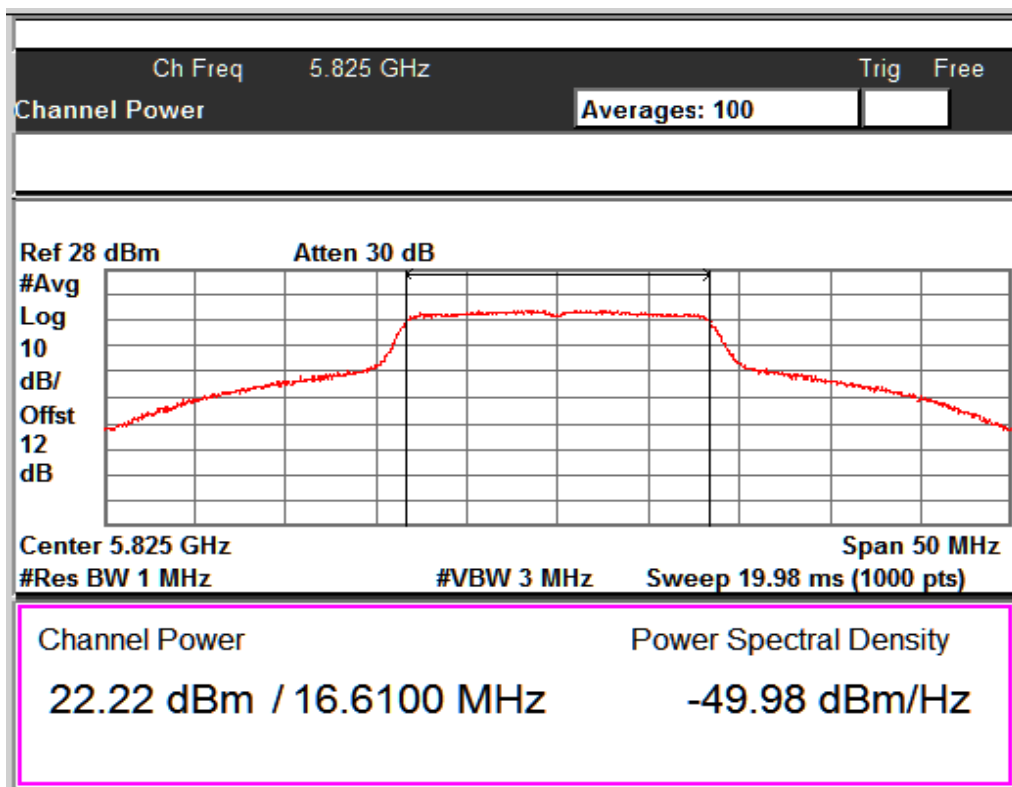
Channel Frequency: 5745 MHz

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Data Rate: 54 Mbps

Channel Frequency: 5785 MHz

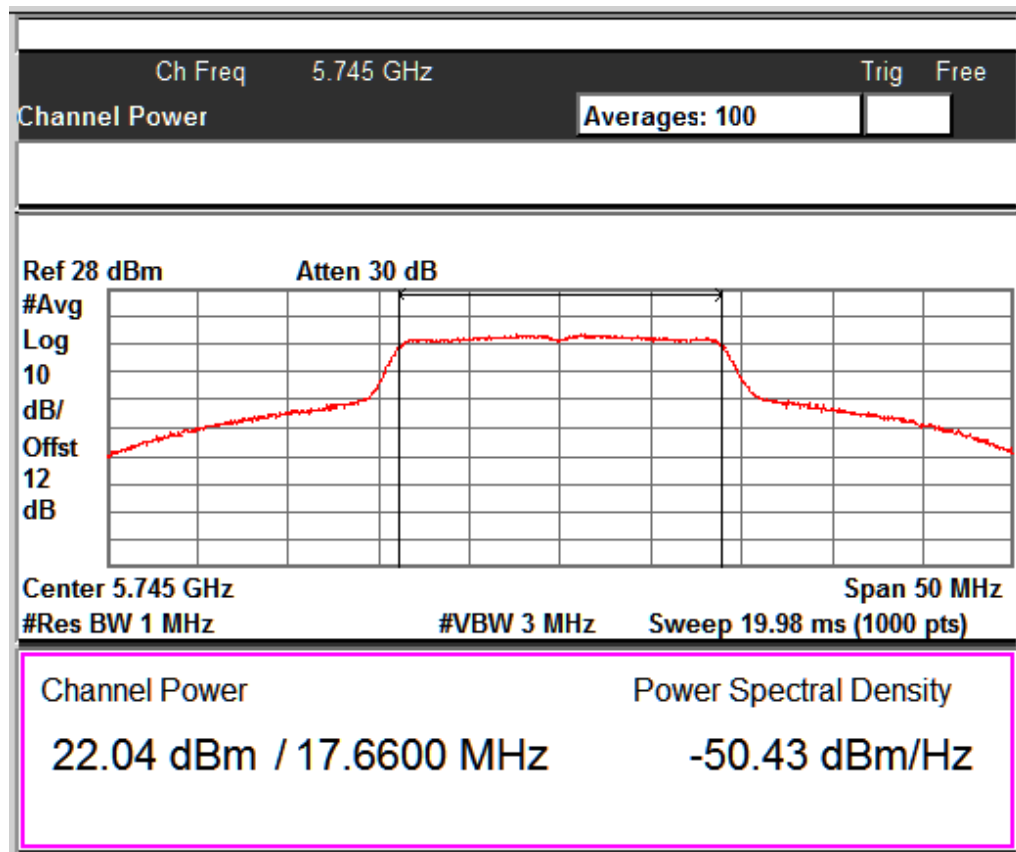


Data Rate: 54 Mbps

Channel Frequency: 5825 MHz

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Result: 802.11n

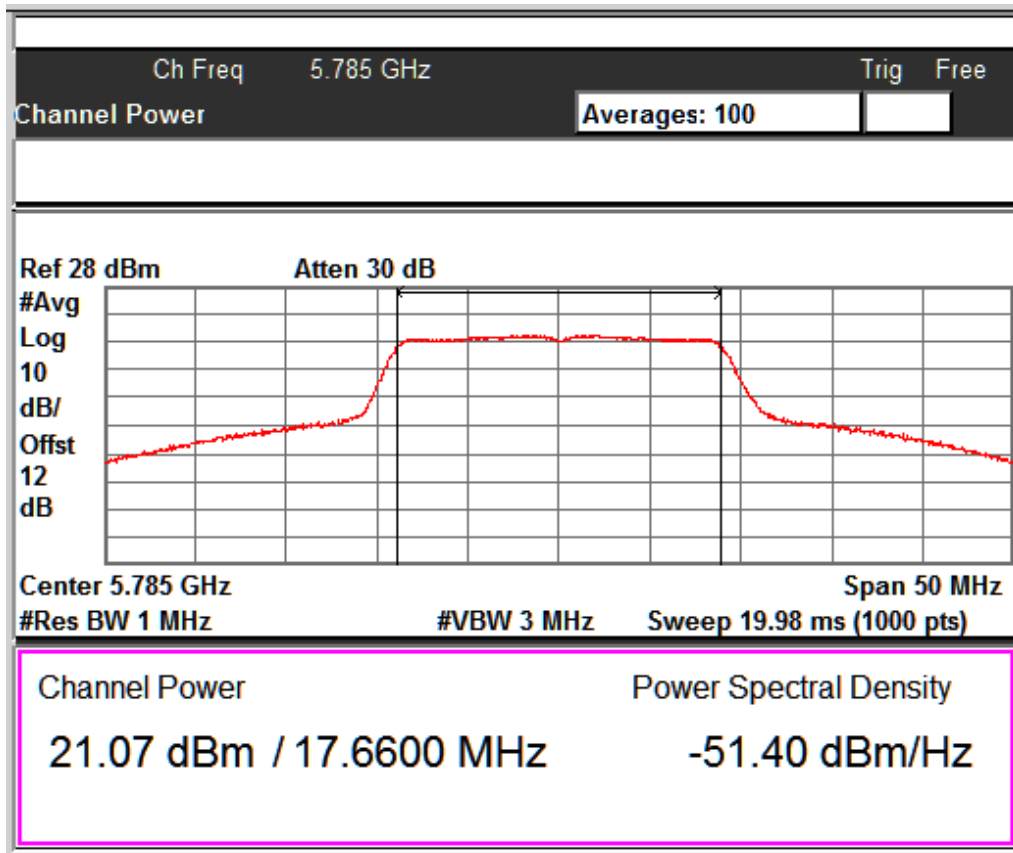
Data Rate (Mbps)	Channel. No	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dBm)
MCS 0	149	5745	22.04	30	-7.96
	157	5785	21.07	30	-8.93
	165	5825	22.11	30	-7.89
MSC 4	149	5745	21.66	30	-8.34
	157	5785	22.22	30	-7.78
	165	5825	22.38	30	-7.62
MCS 7	149	5745	20.66	30	-9.34
	157	5785	22.23	30	-7.77
	165	5825	21.94	30	-8.06



Data Rate: MSC 0

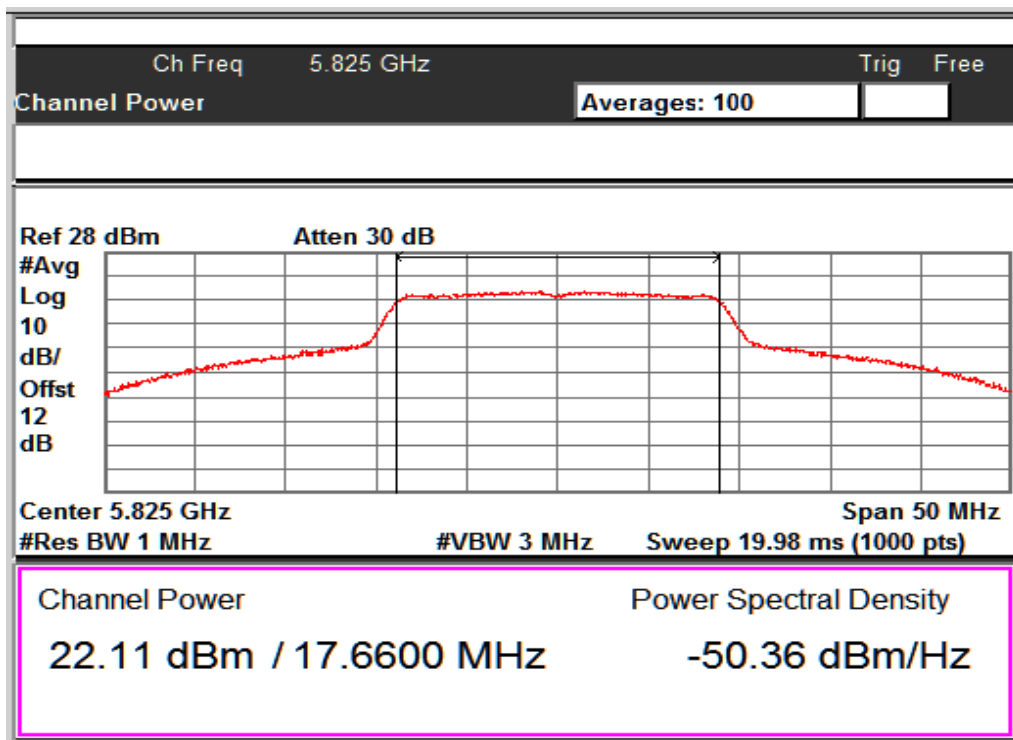
Channel Frequency: 5745 MHz

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Data Rate: MSC 0

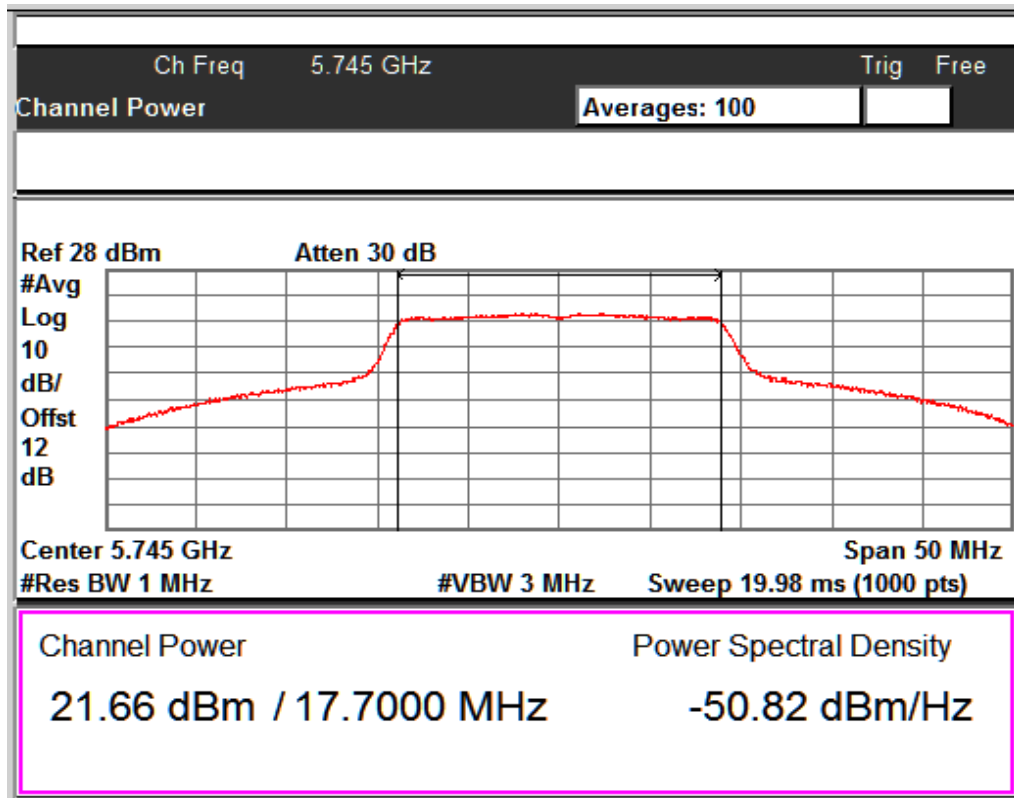
Channel Frequency: 5785 MHz



Data Rate: MSC 0

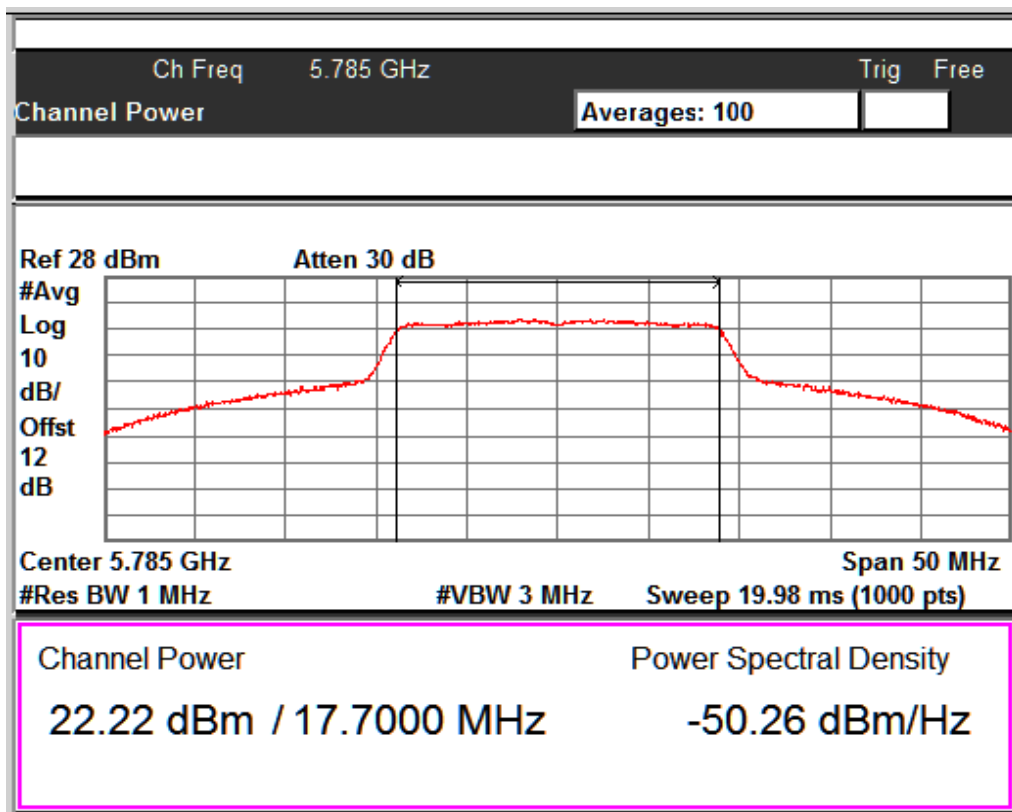
Channel Frequency: 5825 MHz

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Data Rate: MSC 04

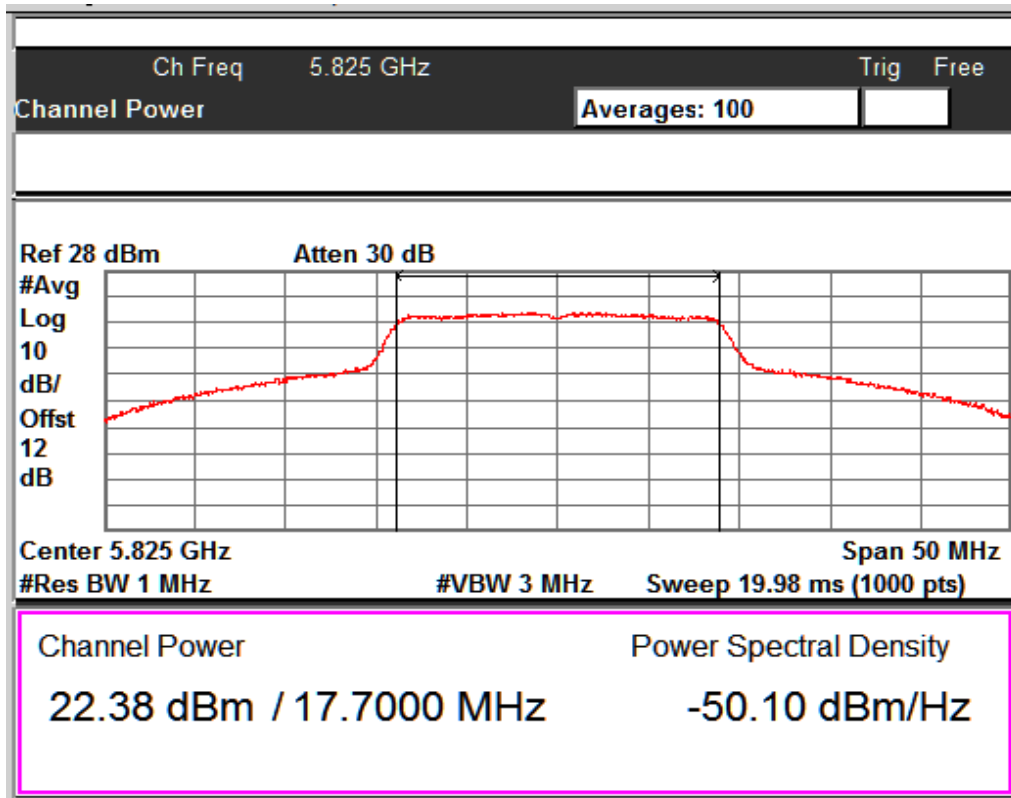
Channel Frequency: 5745 MHz



Data Rate: MSC 4

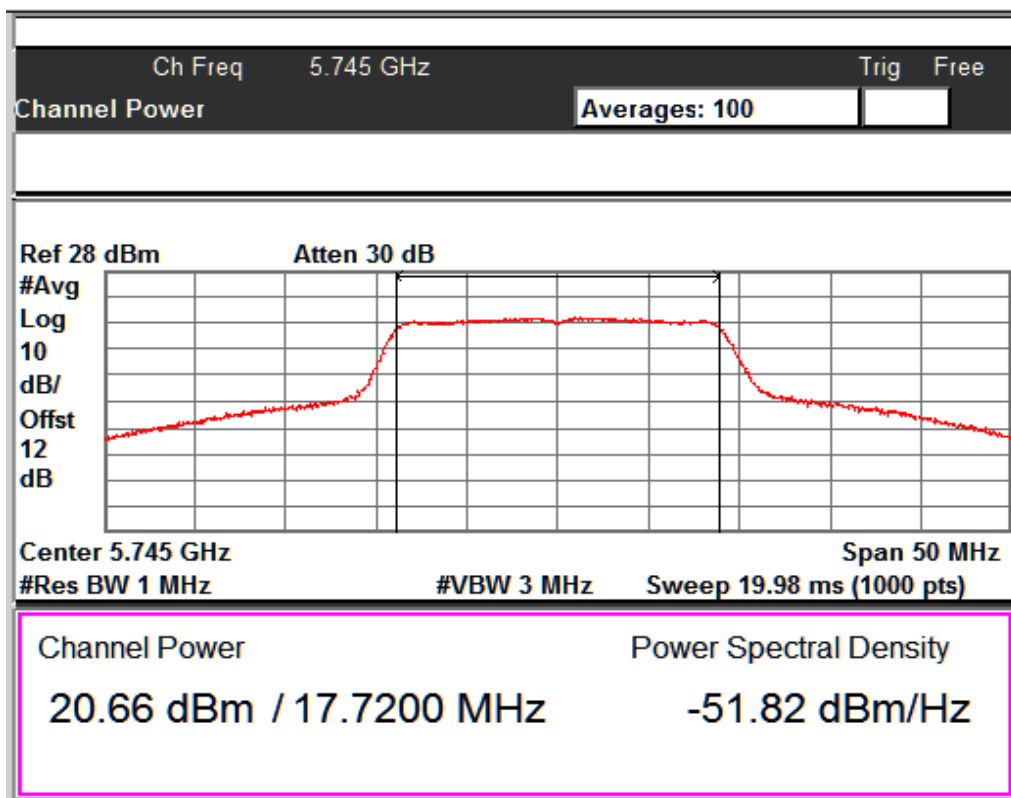
Channel Frequency: 5785 MHz

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Data Rate: MSC 4

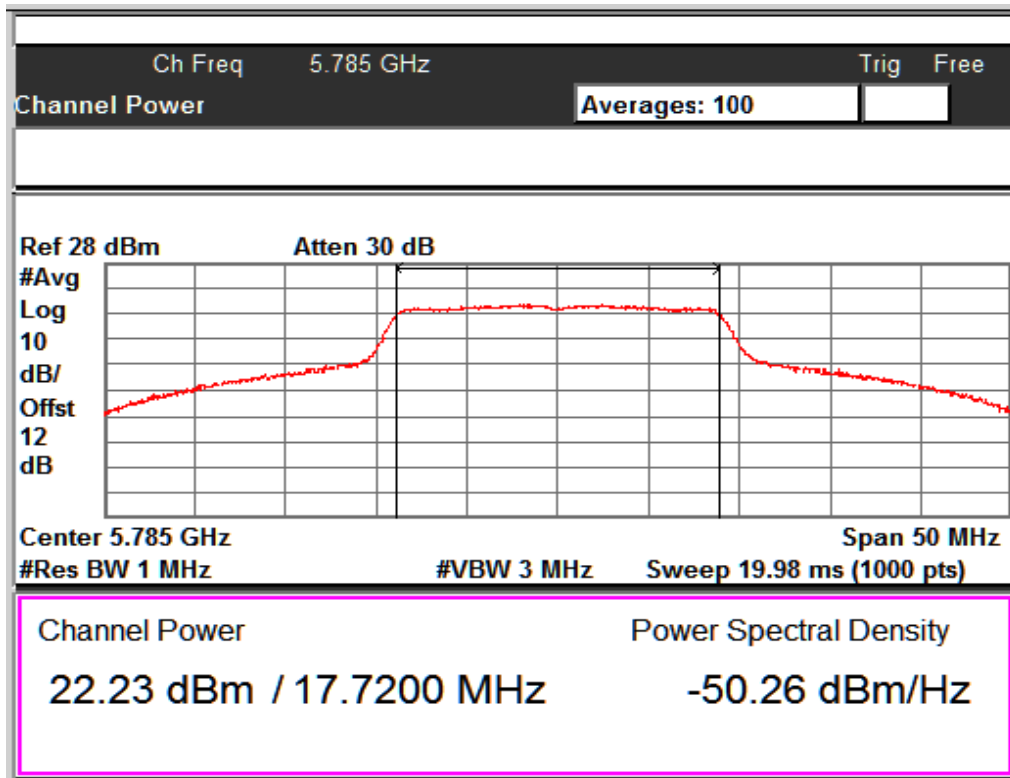
Channel Frequency: 5825 MHz



Data Rate: MSC 7

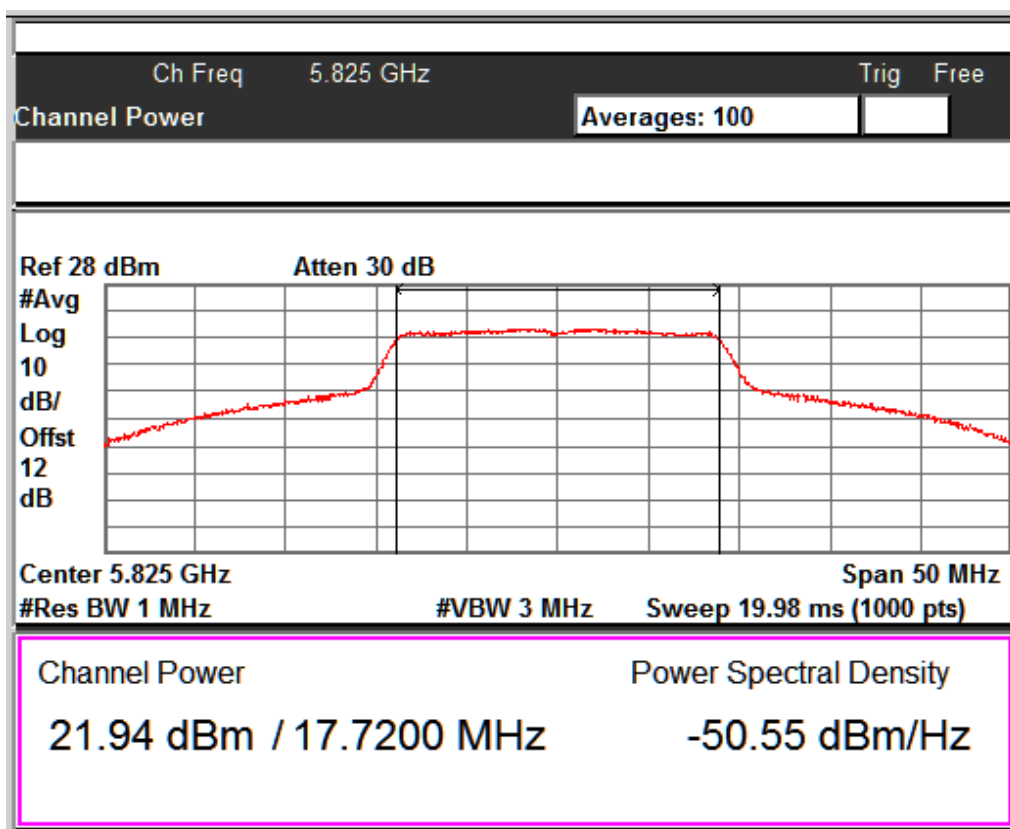
Channel Frequency: 5745 MHz

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Data Rate: MSC 7

Channel Frequency: 5785 MHz



Data Rate: MSC 7

Channel Frequency: 5825 MHz

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**Maximum conducted power
spectral density**

Section 15.407(a)

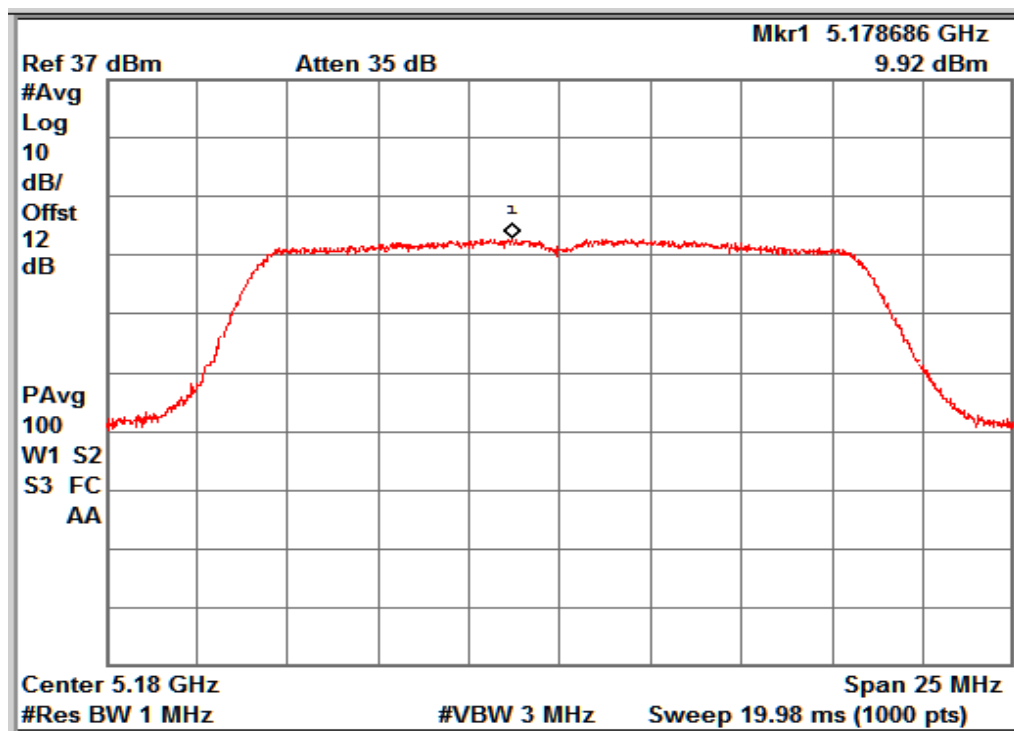
Result

Pass

Test Specification	FCC Part 15 Subpart E
Measurement Bandwidth (RBW)	1 MHz
Requirement	Power spectral density for the band 5.15-5.25 GHz is 17dBm/MHz for fixed use, and 11dBm/MHz for mobile and portable use. 5.725-5.850 GHz is 30dBm/500kHz,

Result: 802.11 a

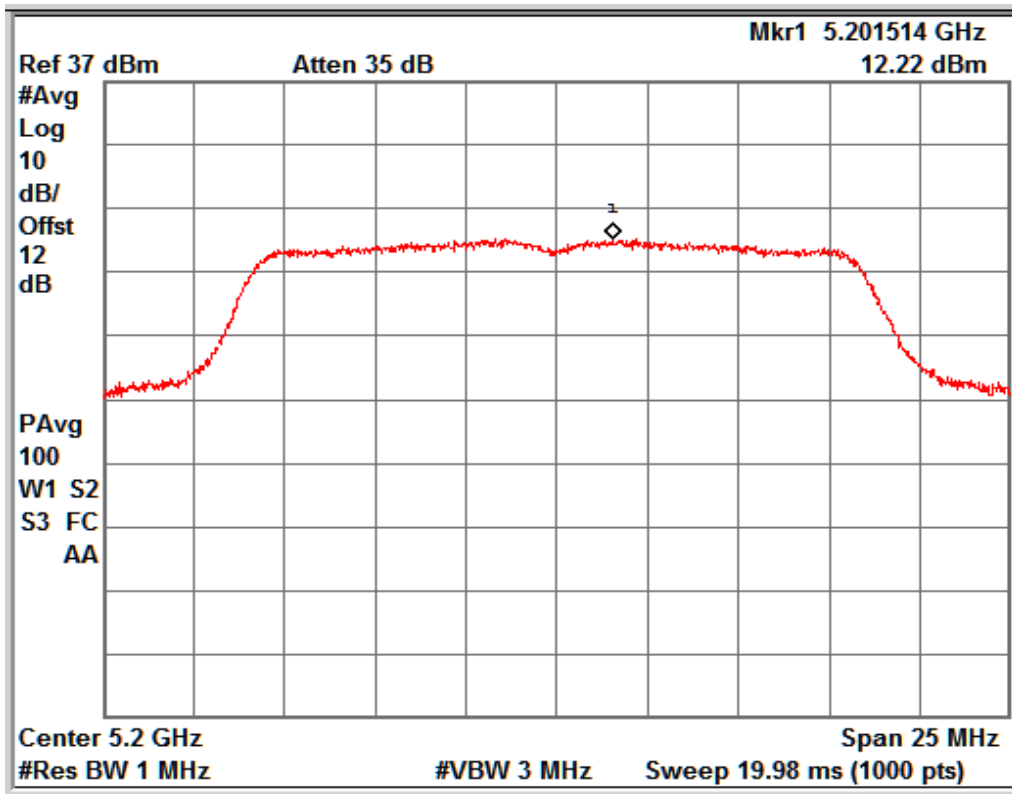
Data Rate (Mbps)	Channel. No	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dBm)
6	36	5180	9.92	17	-7.08
	40	5200	12.22	17	-4.78
	48	5240	12.33	17	-4.67
24	36	5180	10.94	17	-6.06
	40	5200	11.99	17	-5.01
	48	5240	12.56	17	-4.44
54	36	5180	11.86	17	-5.14
	40	5200	12.77	17	-4.23
	48	5240	13.24	17	-3.76



Data Rate: 6 Mbps

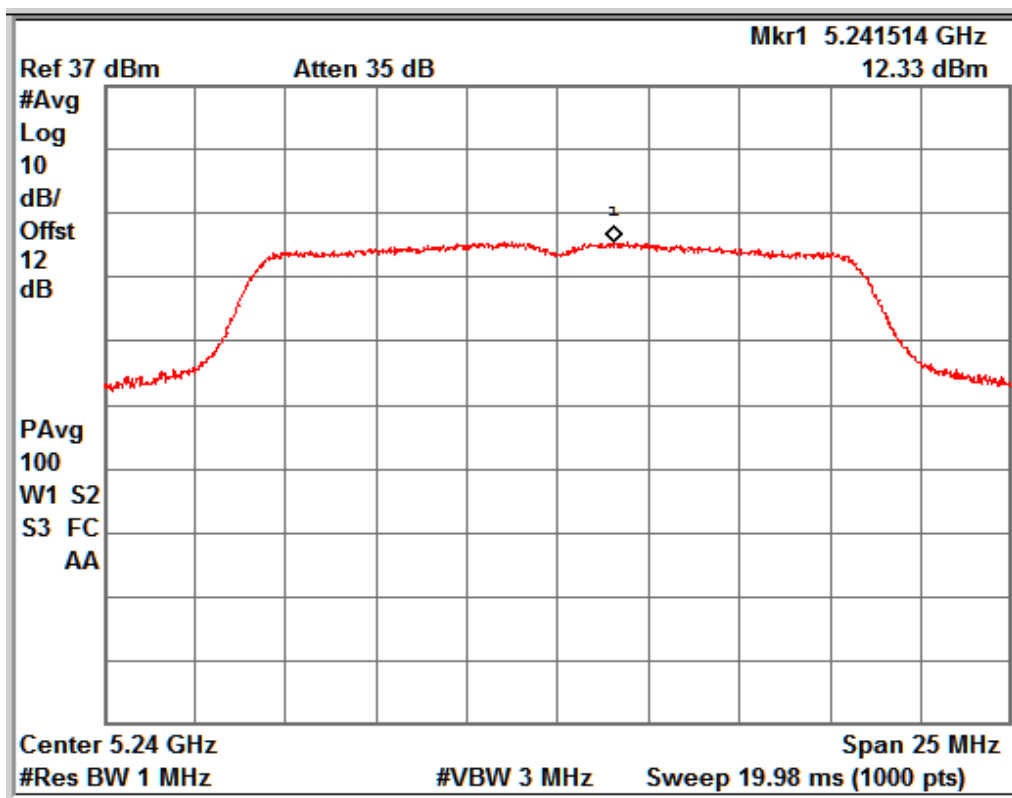
Channel Frequency: 5180 MHz

www.tuv.com



Data Rate: 6 Mbps

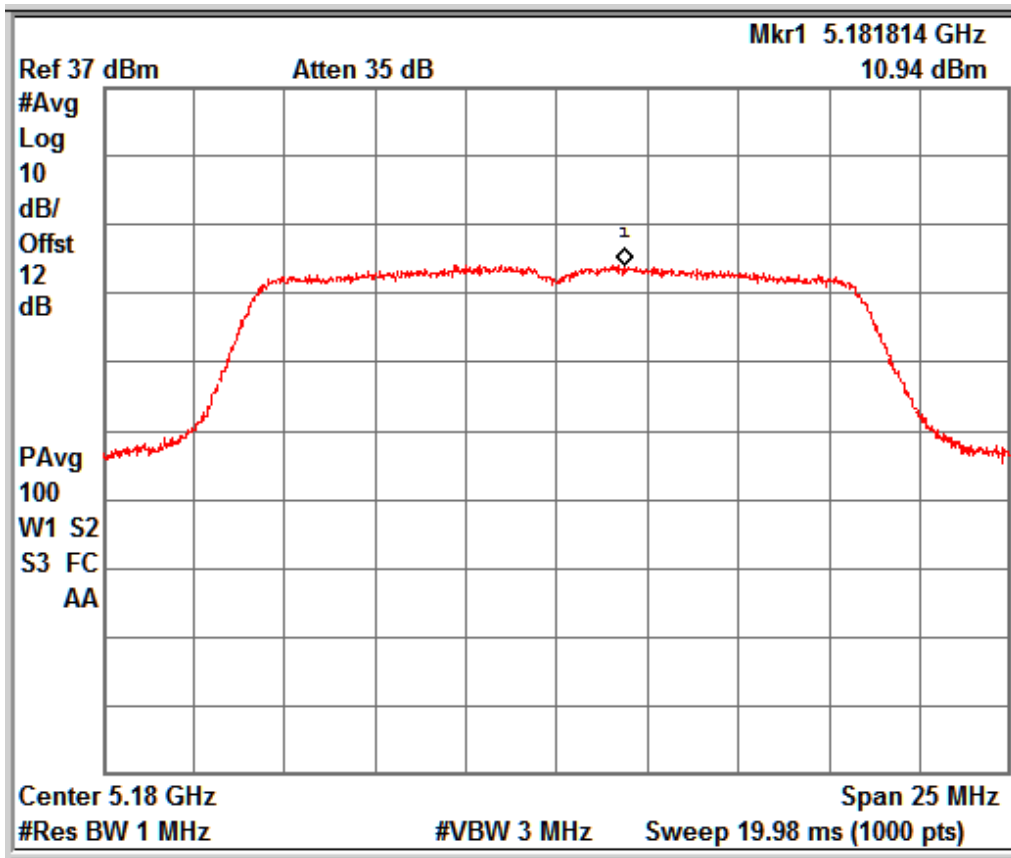
Channel Frequency: 5200 MHz



Data Rate: 6 Mbps

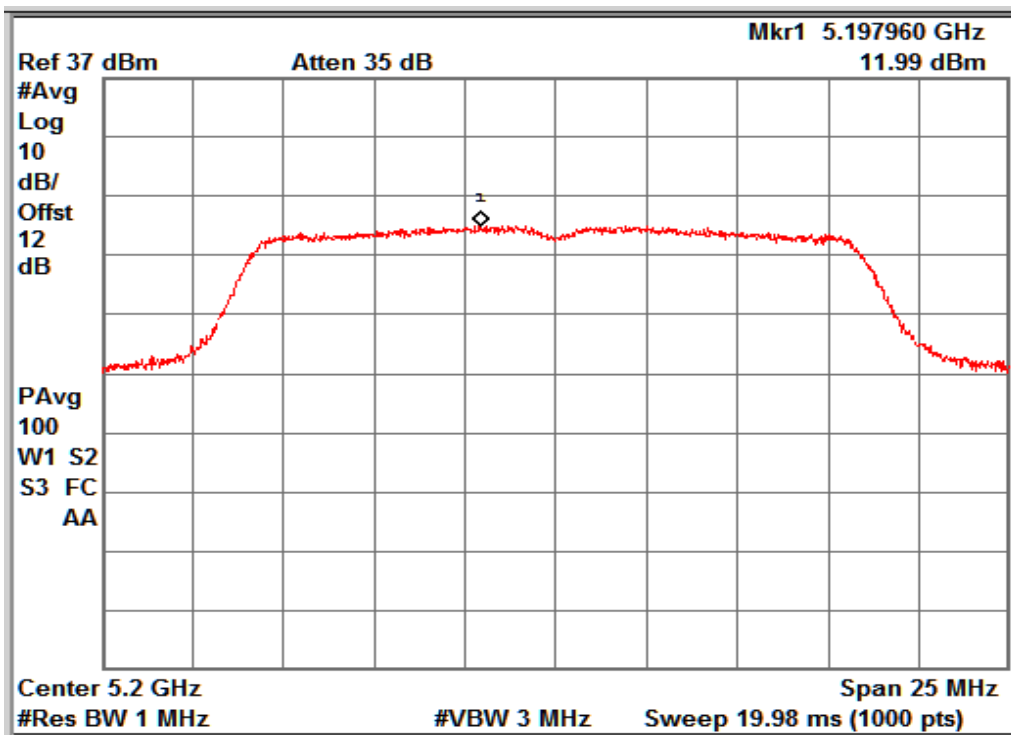
Channel Frequency: 5240 MHz

www.tuv.com



Data Rate: 24 Mbps

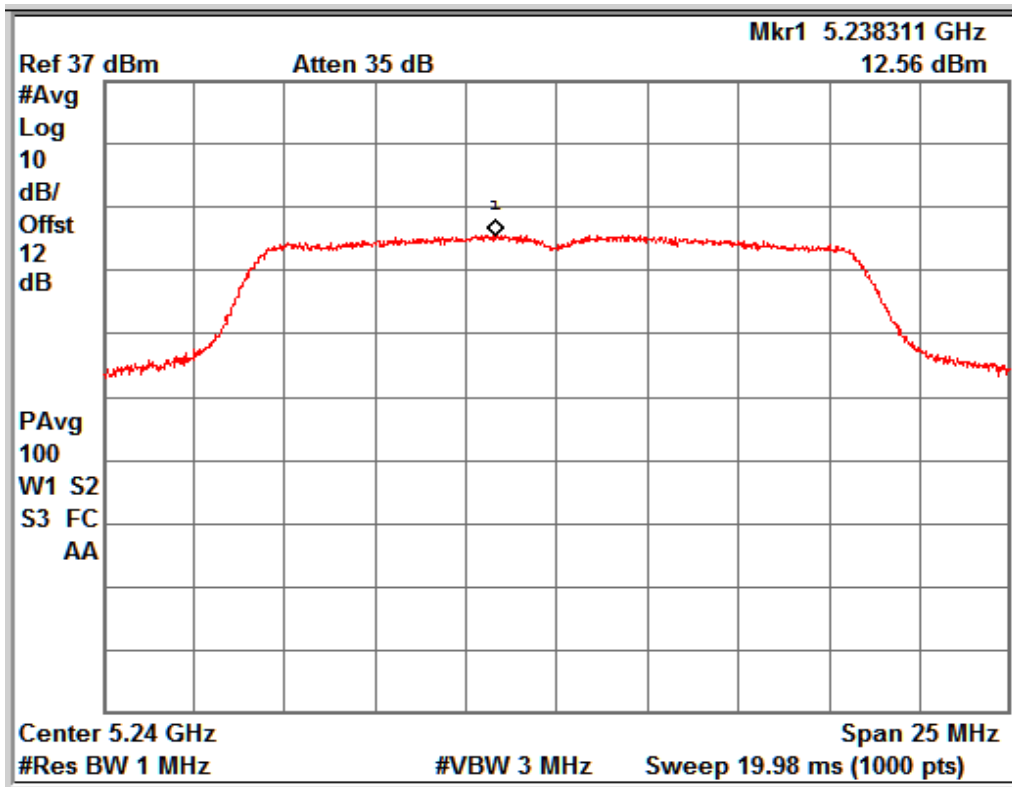
Channel Frequency: 5180 MHz



Data Rate: 24 Mbps

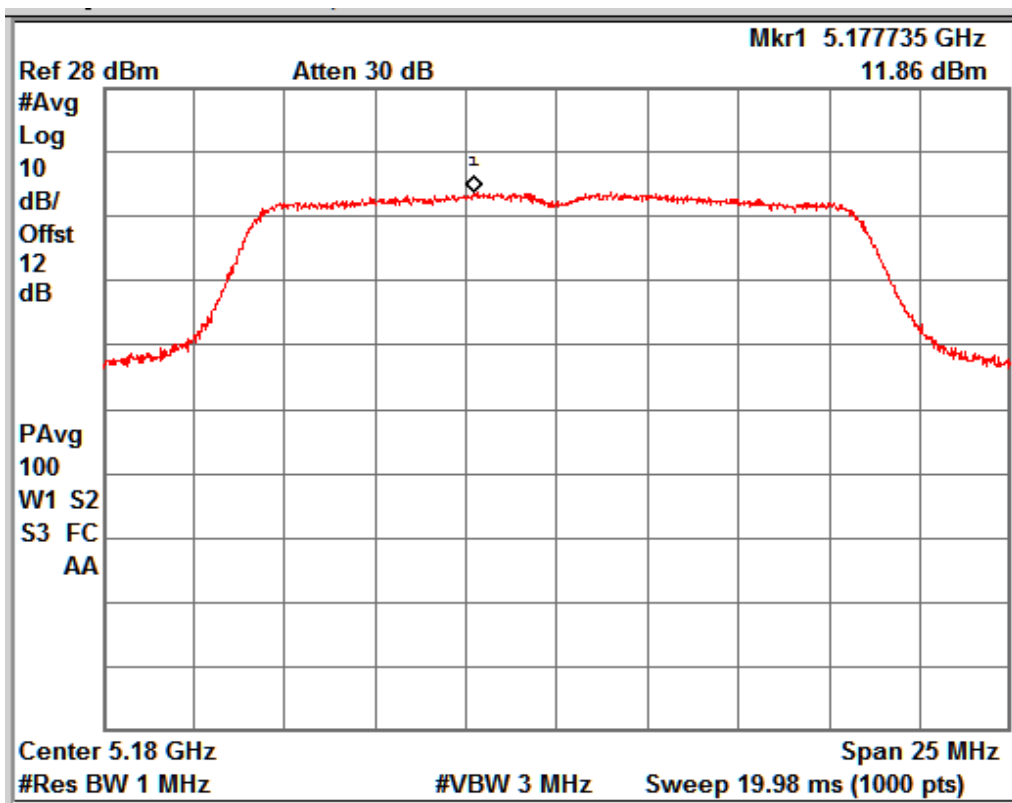
Channel Frequency: 5200 MHz

www.tuv.com



Data Rate: 24 Mbps

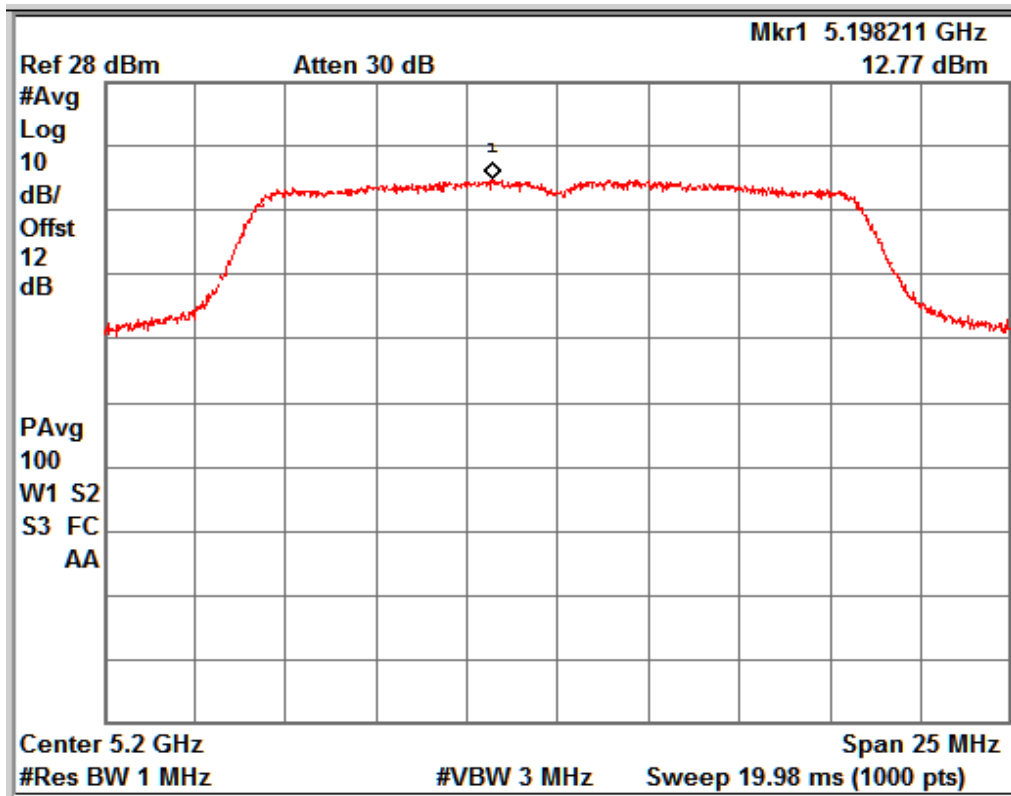
Channel Frequency: 5240 MHz



Data Rate: 54 Mbps

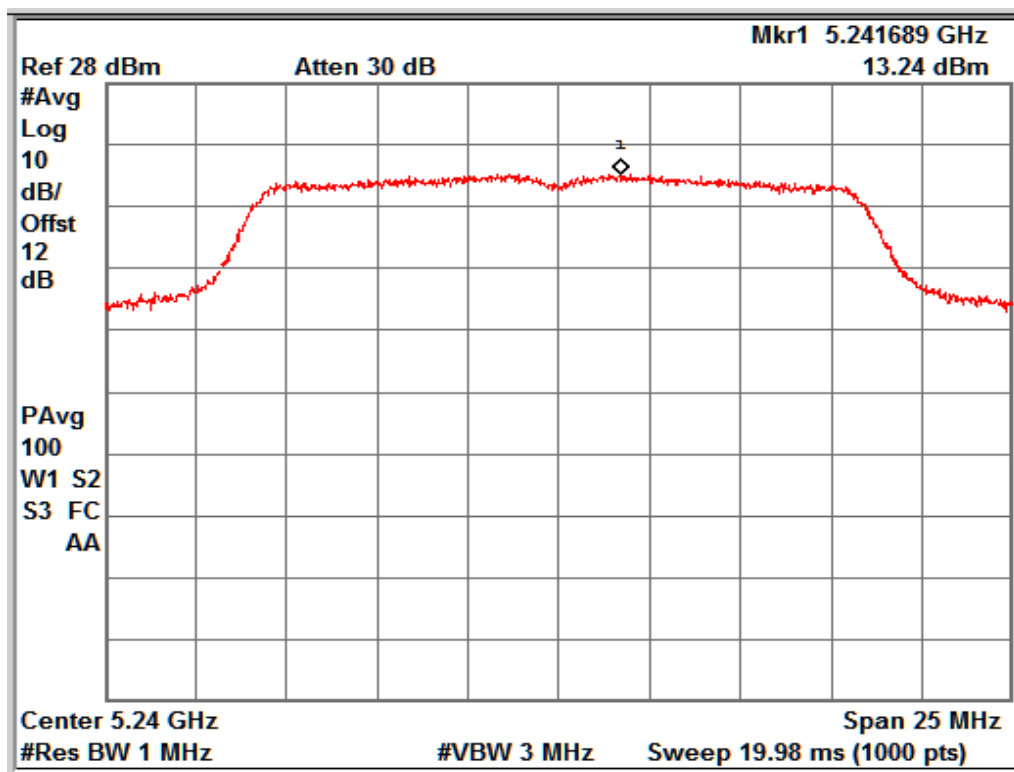
Channel Frequency: 5180 MHz

www.tuv.com



Data Rate: 54 Mbps

Channel Frequency: 5200 MHz

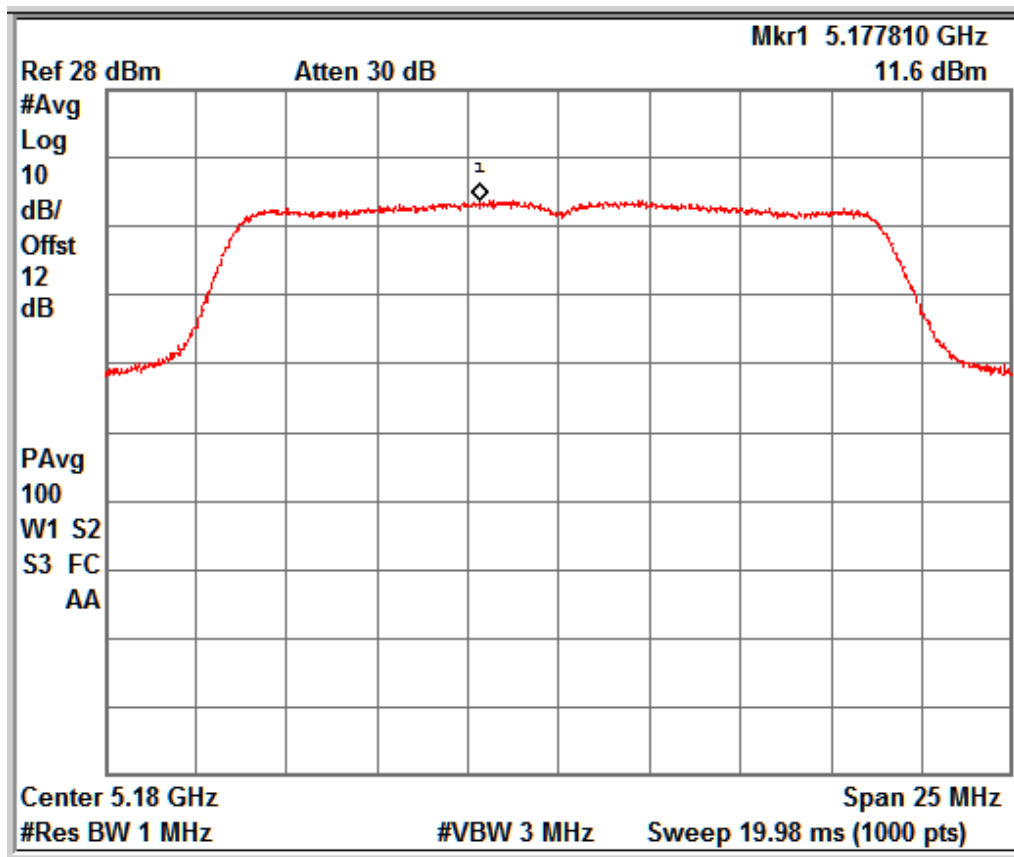


Data Rate: 54 Mbps

Channel Frequency: 5240 MHz

www.tuv.com
Result: 802.11n

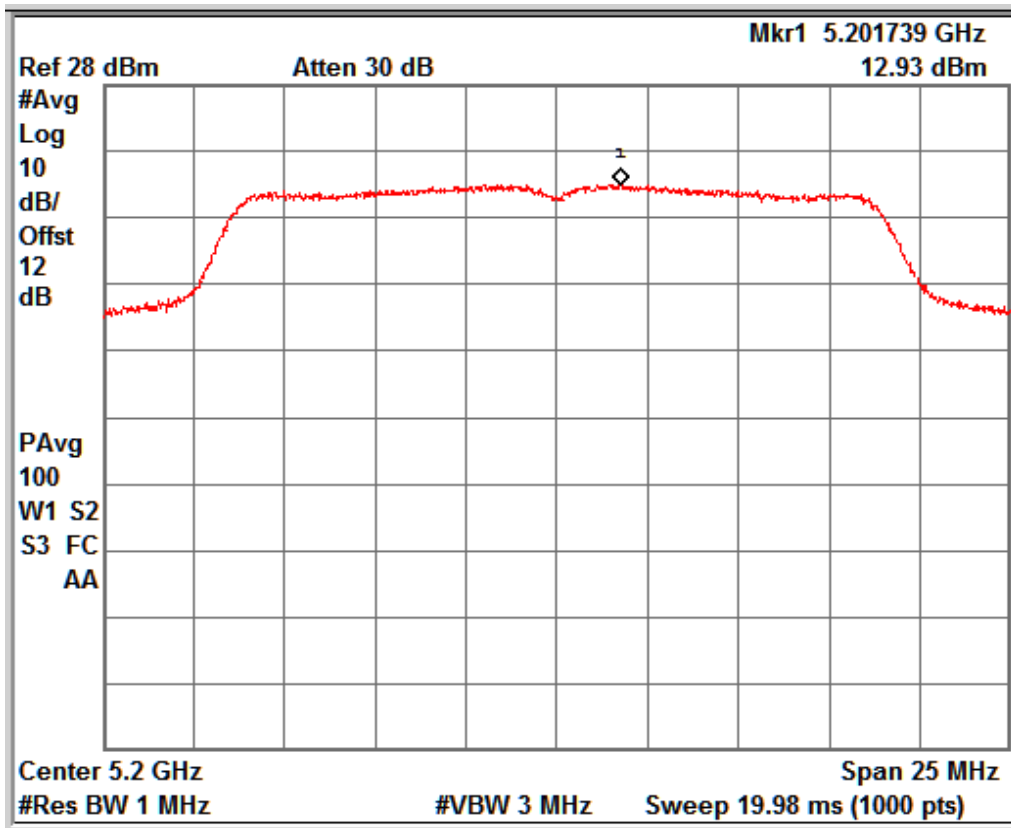
Data Rate (Mbps)	Channel. No	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dBm)
MCS 0	36	5180	11.60	17	-5.40
	40	5200	12.93	17	-4.07
	48	5240	12.62	17	-4.38
MCS 4	36	5180	10.91	17	-6.09
	40	5200	11.92	17	-5.08
	48	5240	12.03	17	-4.97
MCS 7	36	5180	11.30	17	-5.70
	40	5200	12.33	17	-4.67
	48	5240	12.98	17	-4.02



Data Rate: MCS 0

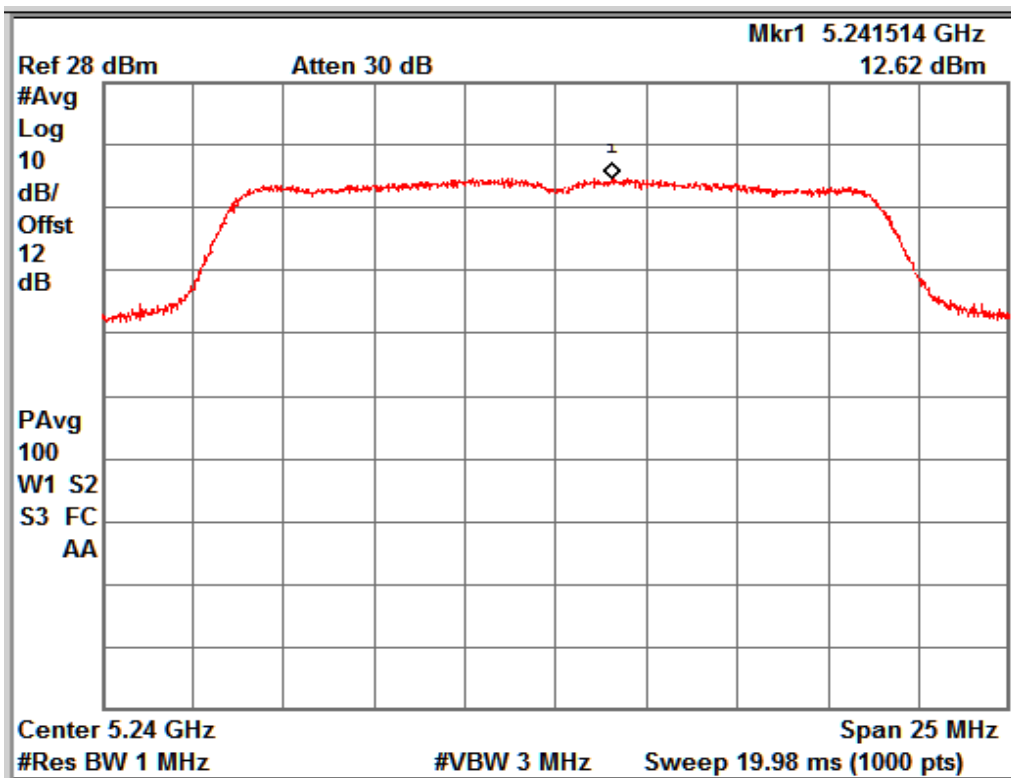
Channel Frequency: 5180 MHz

www.tuv.com



Data Rate: MCS 0

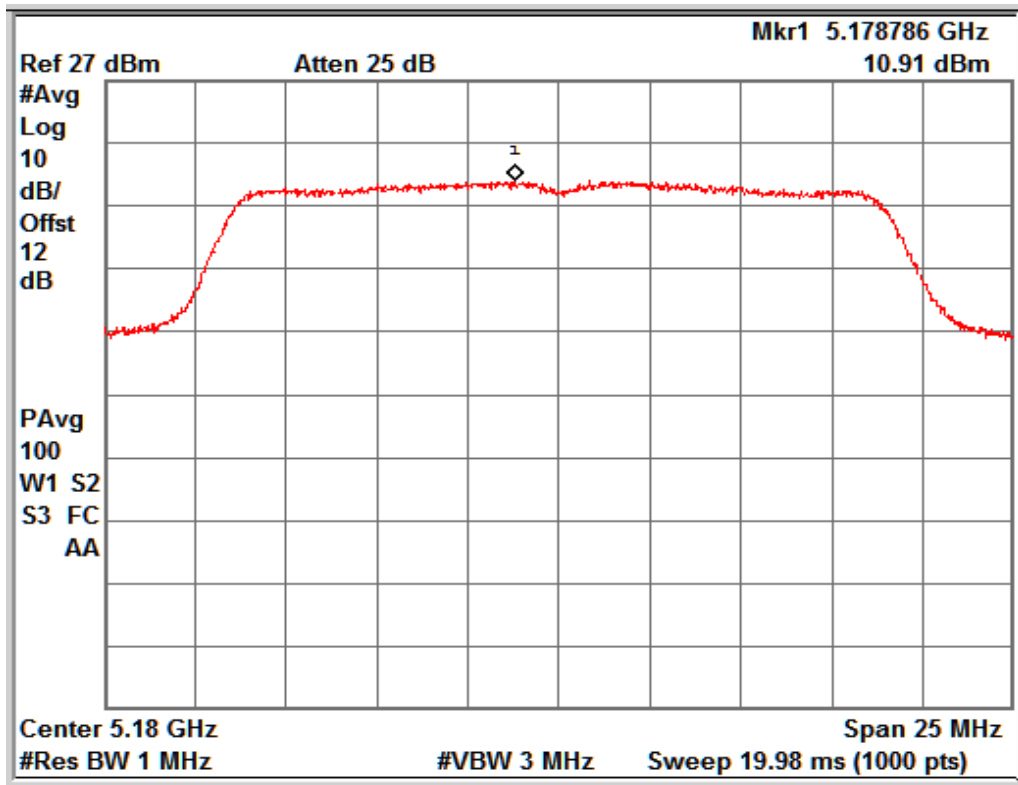
Channel Frequency: 5200 MHz



Data Rate: MCS 0

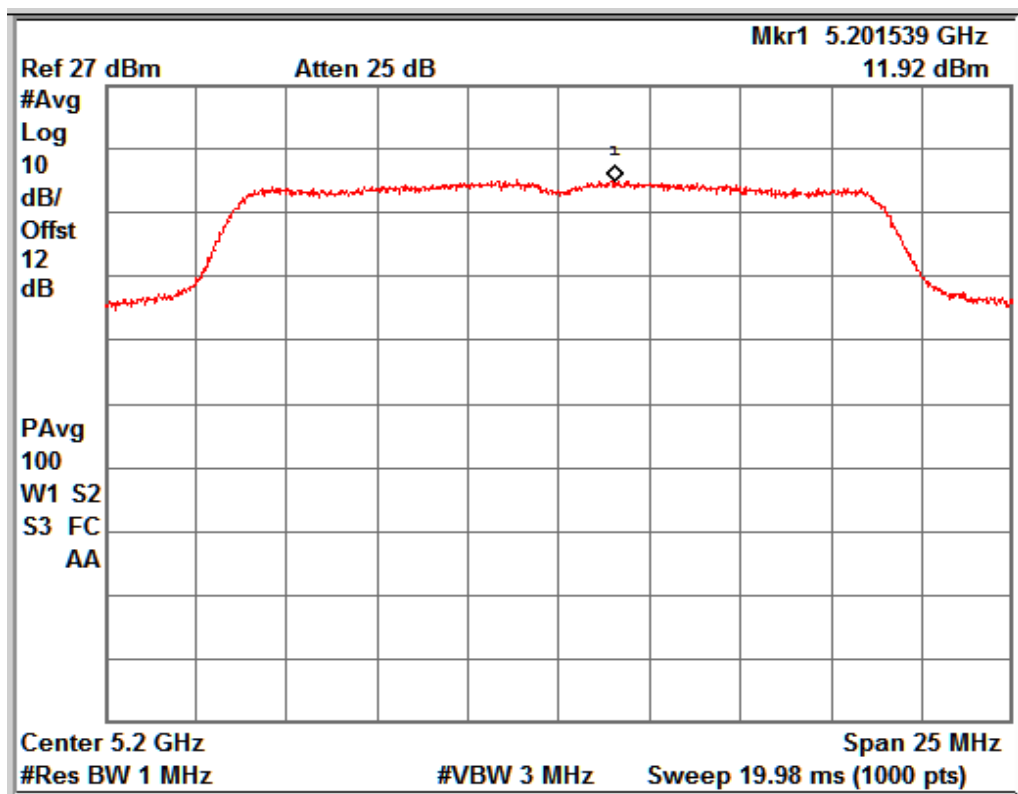
Channel Frequency: 5240 MHz

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Data Rate: MCS 4

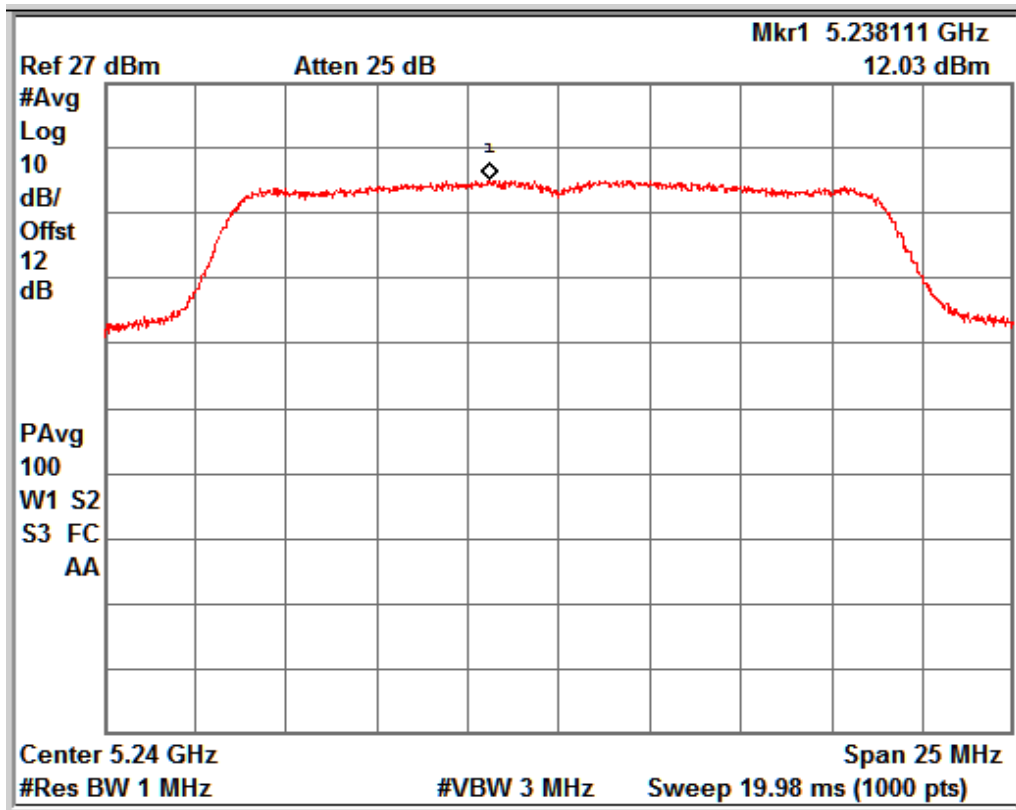
Channel Frequency: 5180 MHz



Data Rate: MCS 4

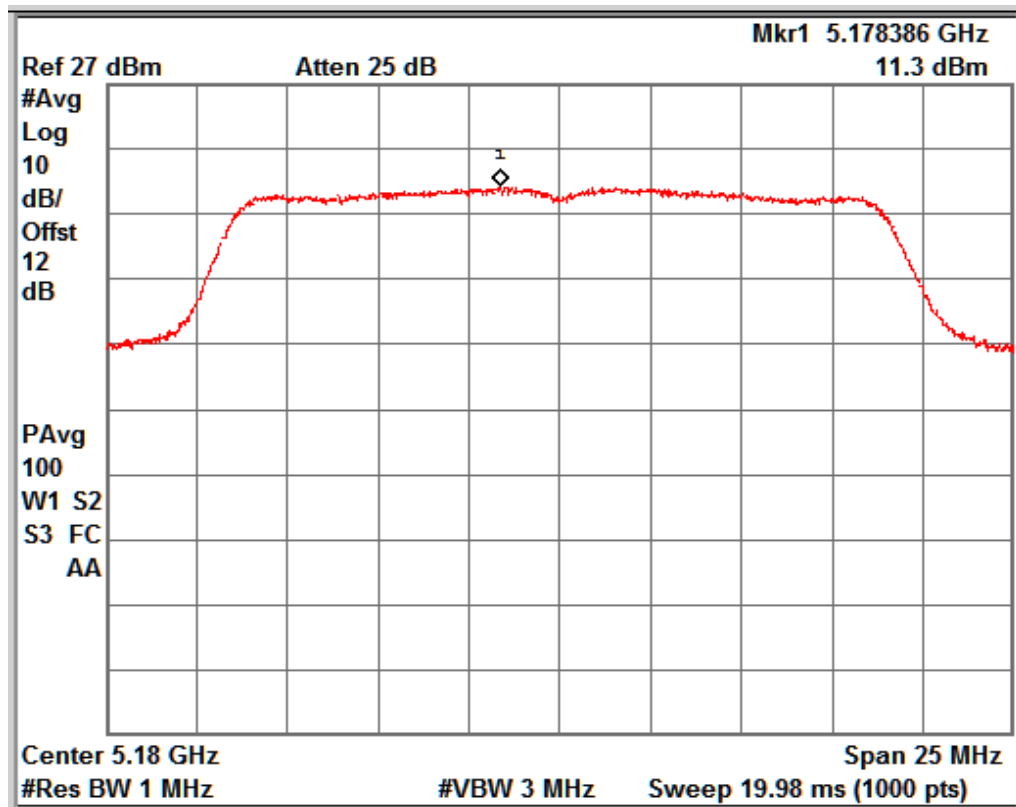
Channel Frequency: 5200 MHz

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Data Rate: MCS 4

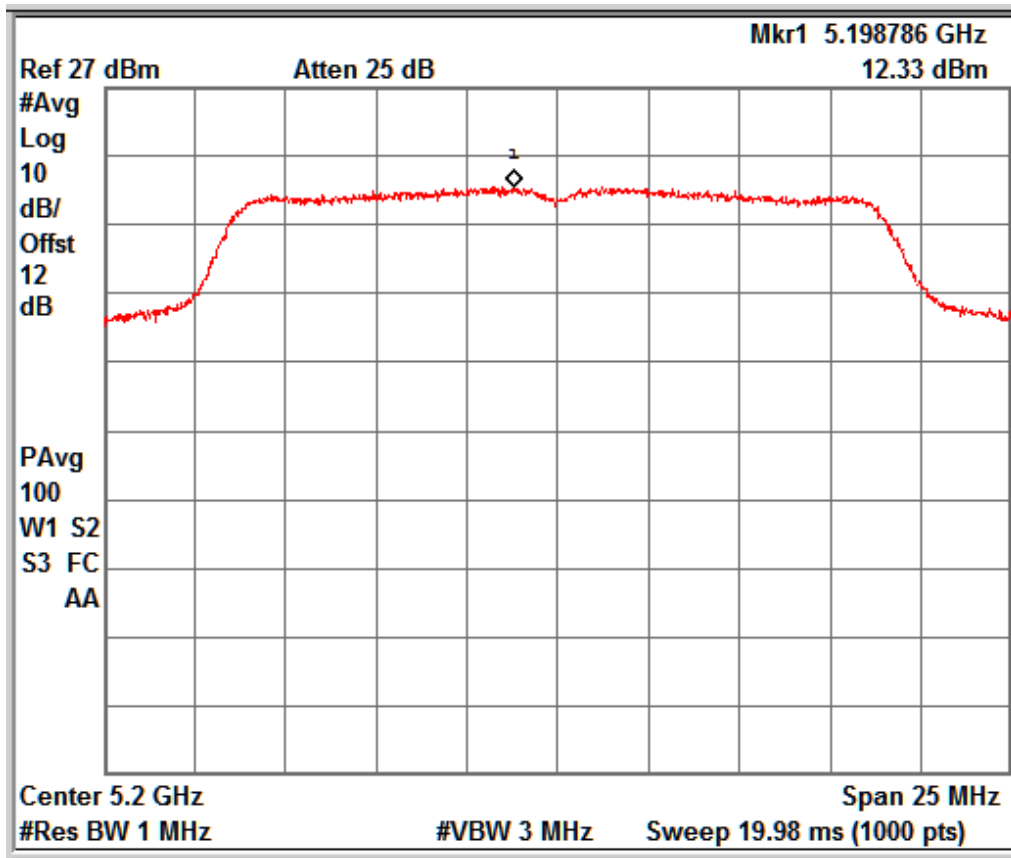
Channel Frequency: 5240 MHz



Data Rate: MCS 7

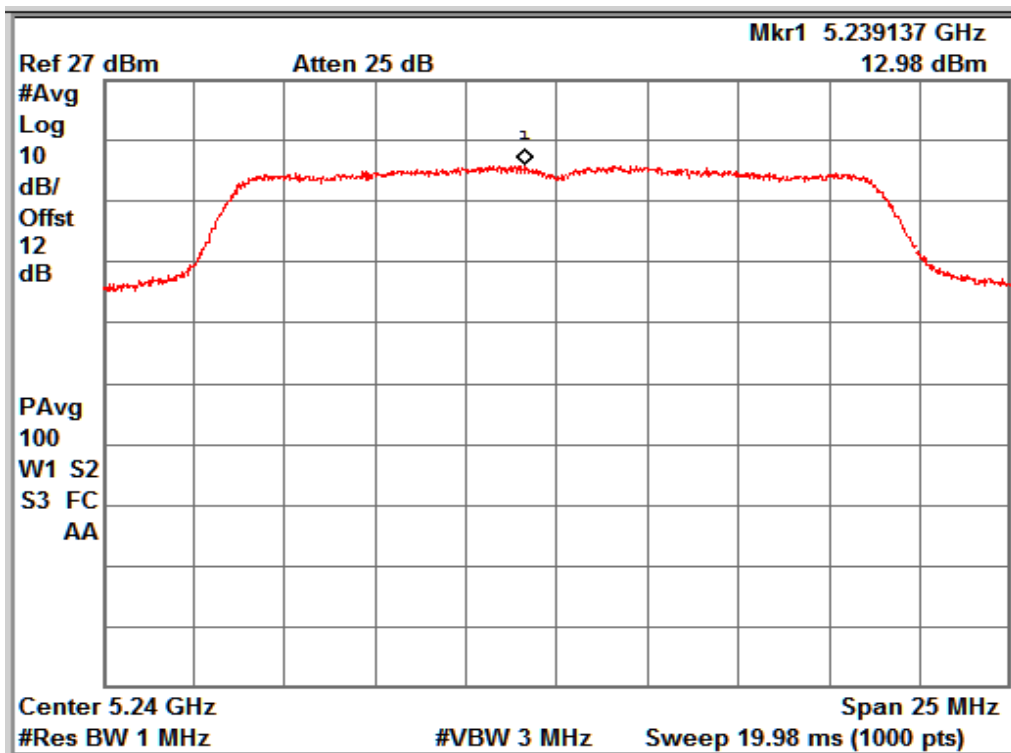
Channel Frequency: 5180 MHz

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Data Rate: MCS 7

Channel Frequency: 5200 MHz



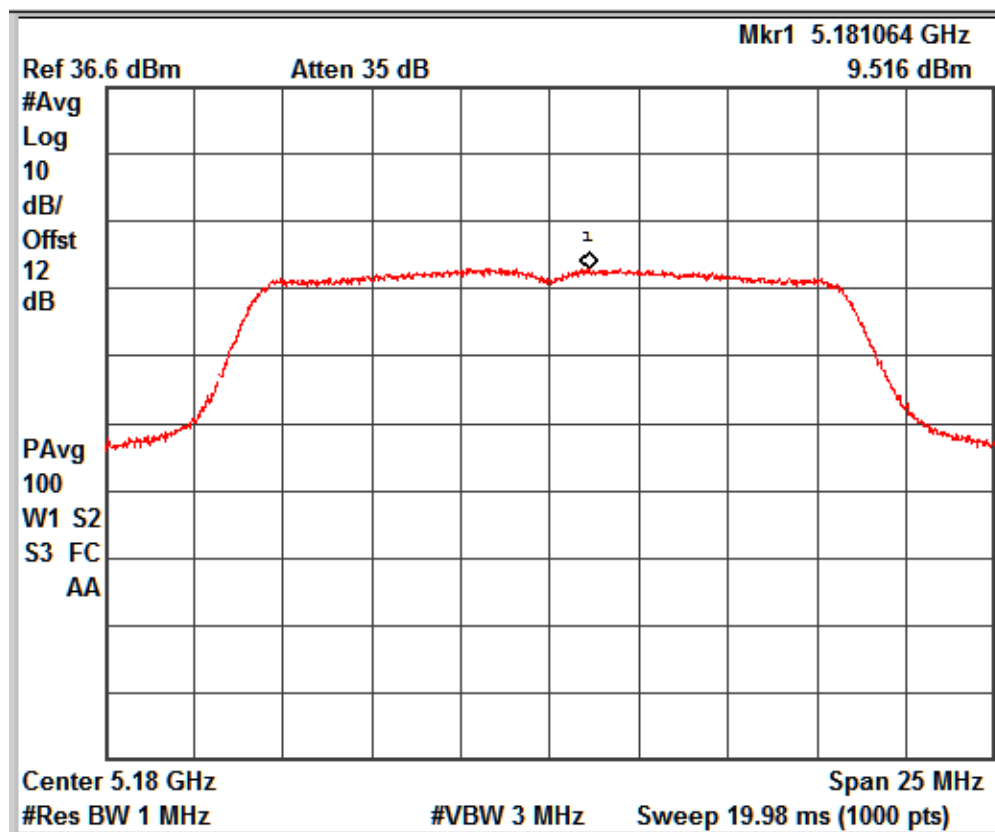
Data Rate: MCS 7

Channel Frequency: 5240 MHz

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Result: 5.150 – 5.250 GHz Band Mobile and Portable device
802.11 a

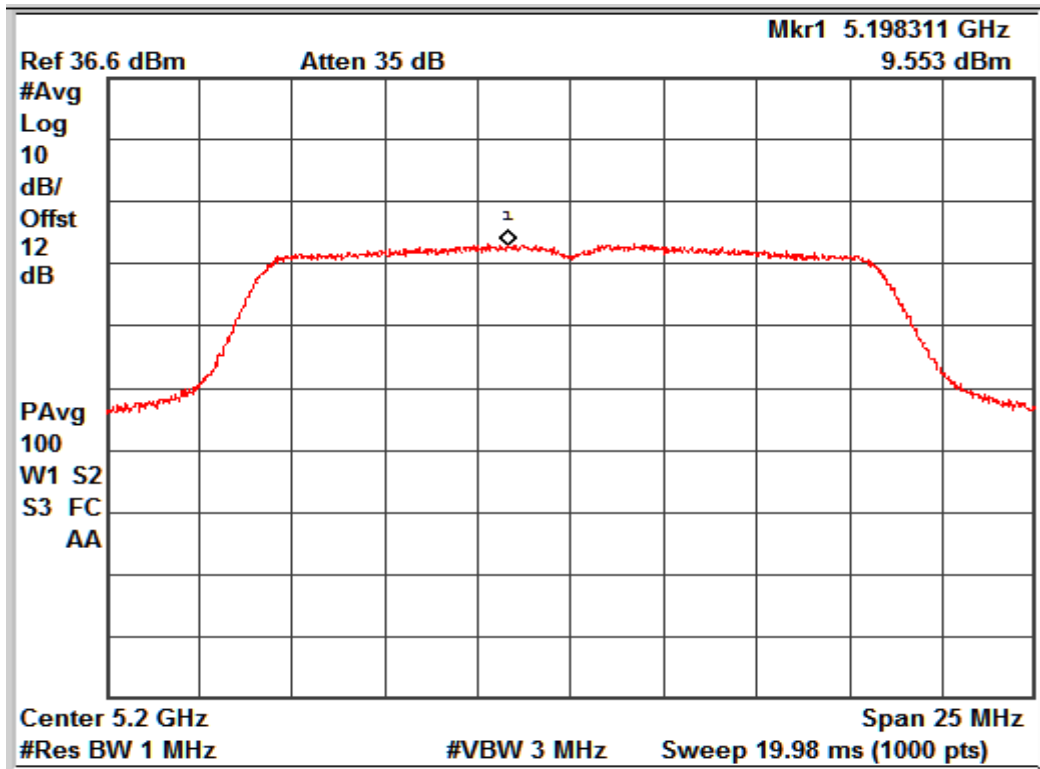
Data Rate (Mbps)	Channel. No	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dBm)
6	36	5180	9.51	11	-1.49
	40	5200	9.53	11	-1.47
	48	5240	9.28	11	-1.72
24	36	5180	9.57	11	-1.43
	40	5200	9.70	11	-1.30
	48	5240	9.19	11	-1.81
54	36	5180	9.56	11	-1.44
	40	5200	9.21	11	-1.79
	48	5240	9.35	11	-1.65



Data Rate: 6 Mbps

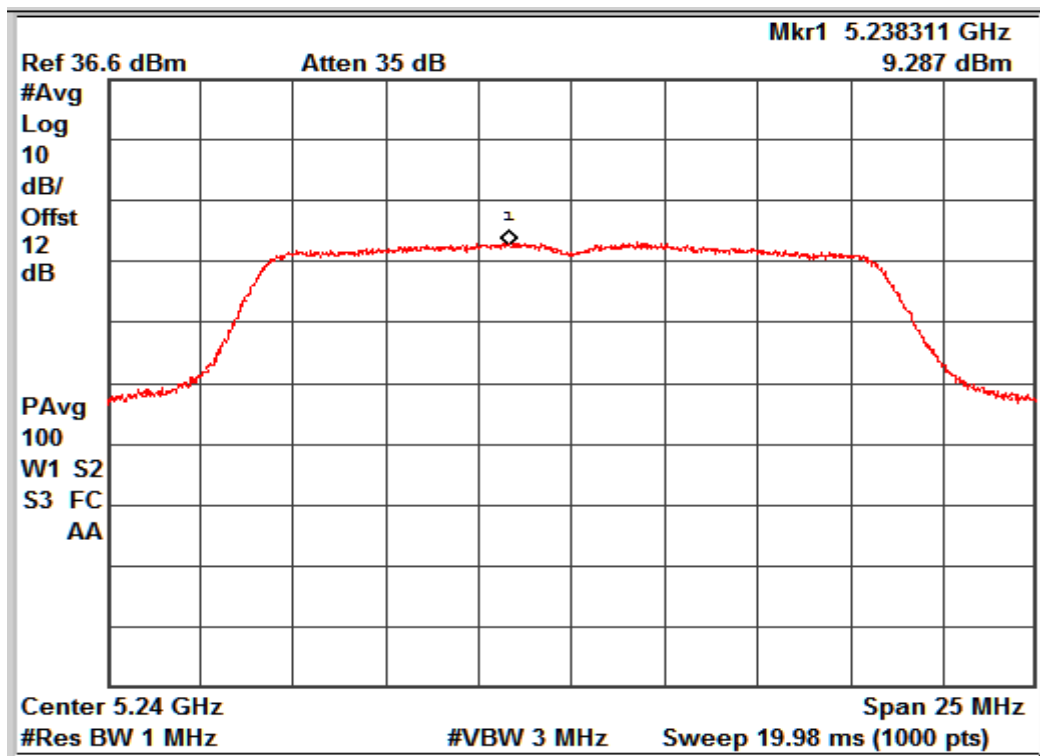
Channel Frequency: 5180 MHz

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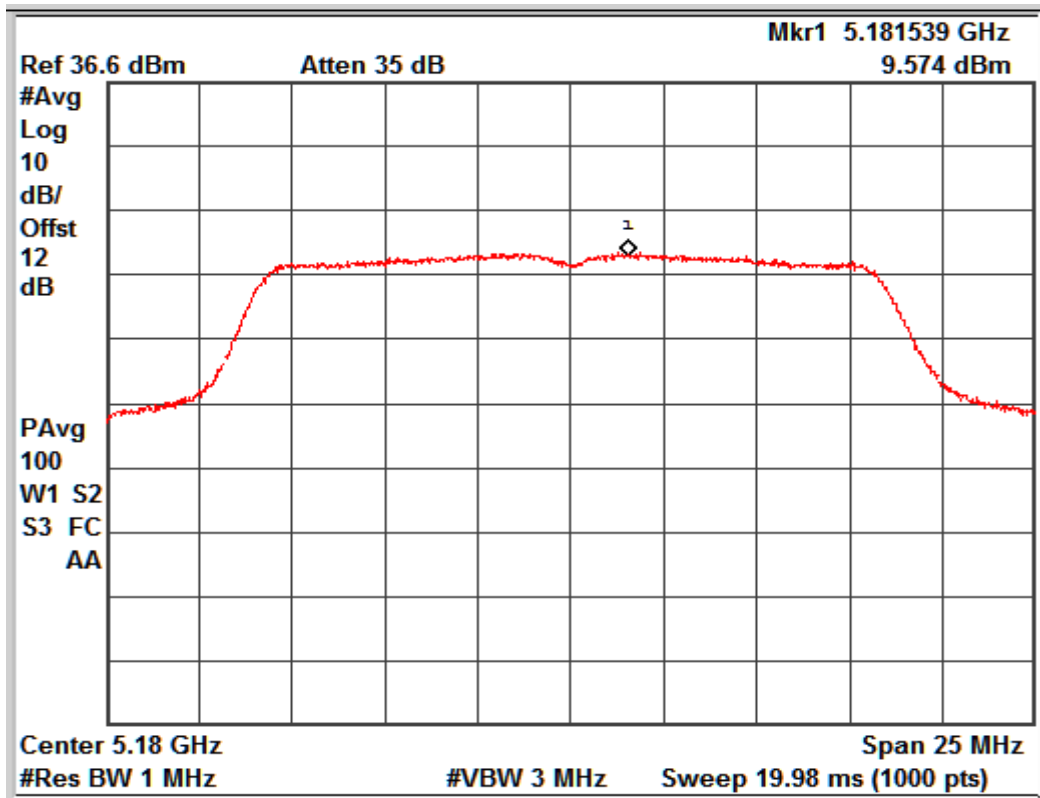
Data Rate: 6 Mbps

Channel Frequency: 5200 MHz



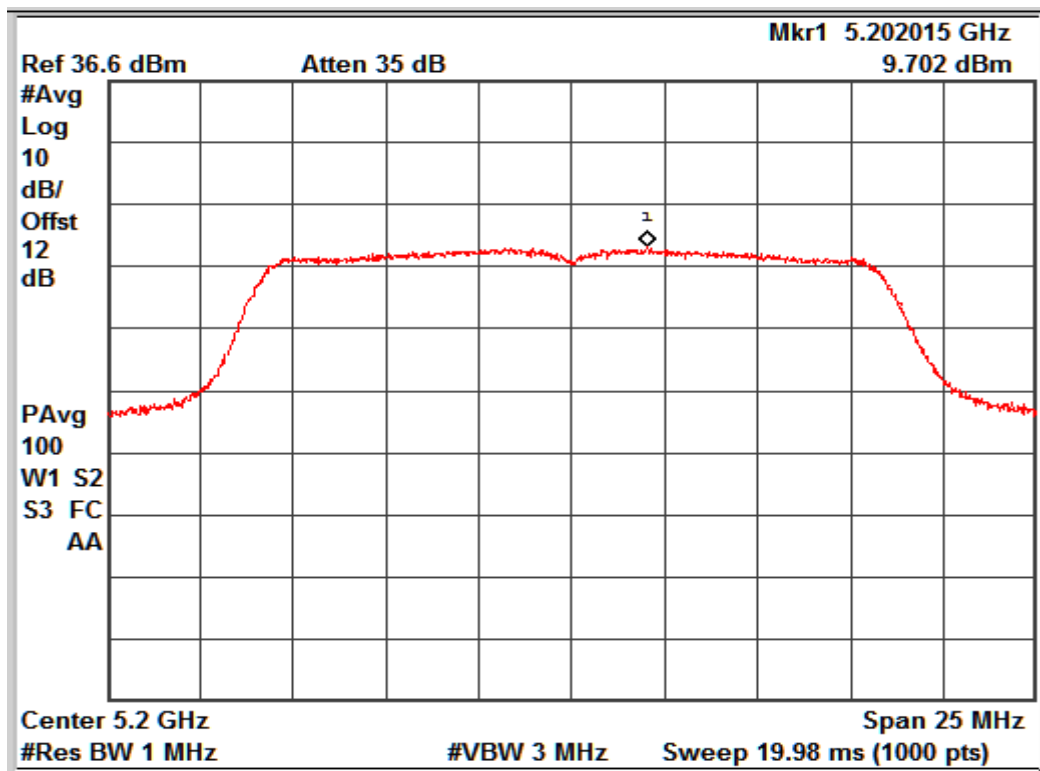
Data Rate: 6 Mbps

Channel Frequency: 5240 MHz



Data Rate: 24 Mbps

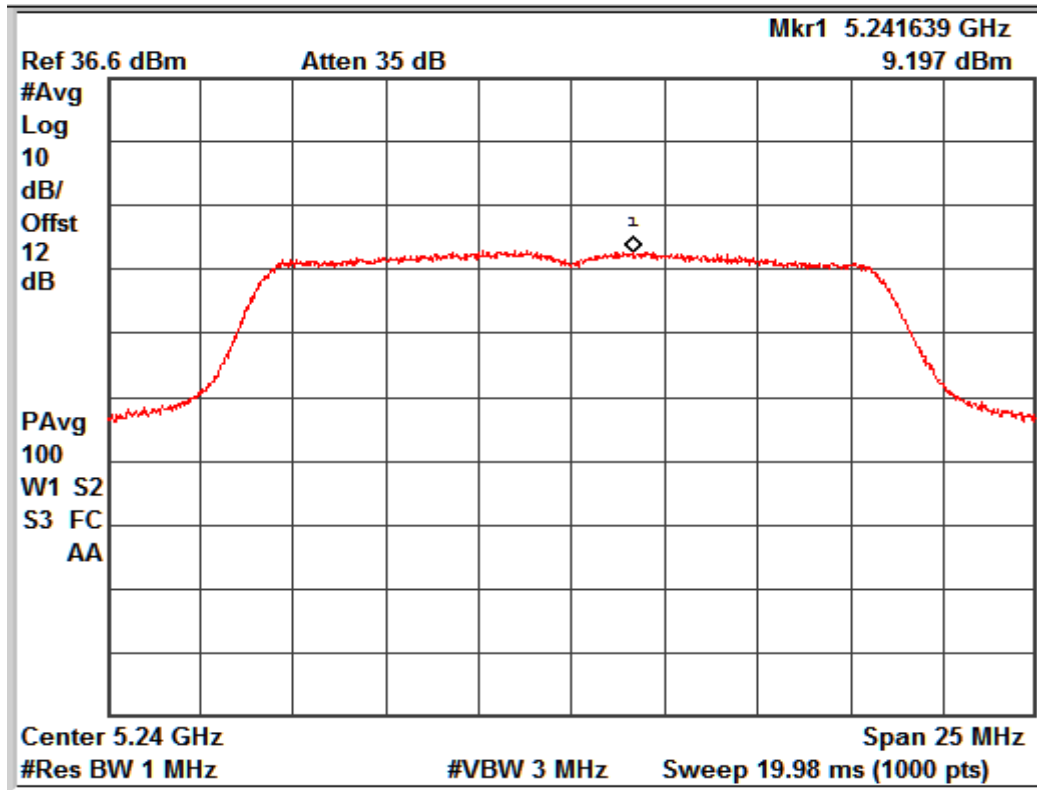
Channel Frequency: 5180 MHz



Data Rate: 24 Mbps

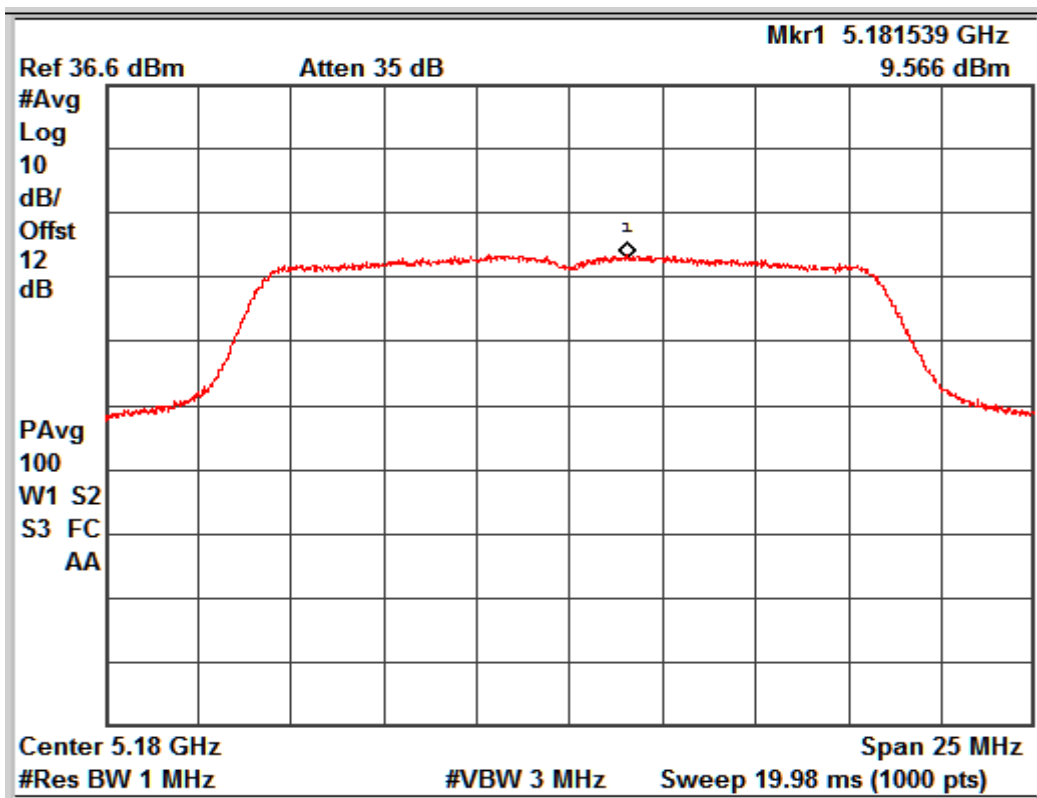
Channel Frequency: 5200 MHz

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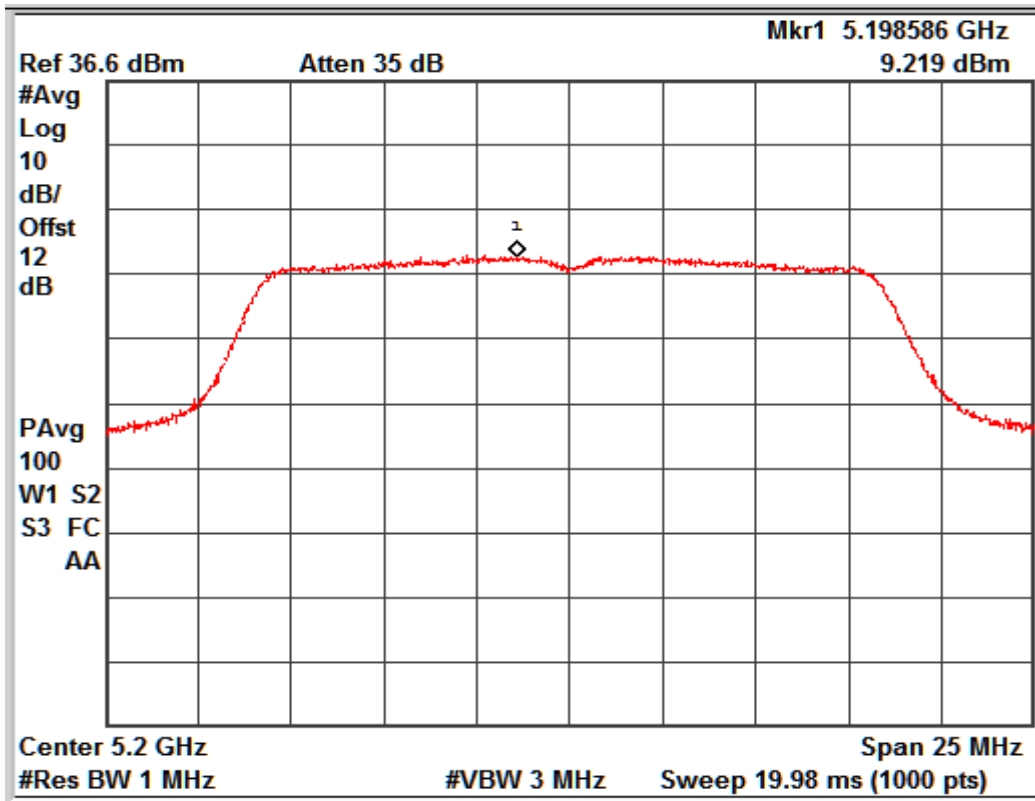
Data Rate: 24 Mbps

Channel Frequency: 5240 MHz



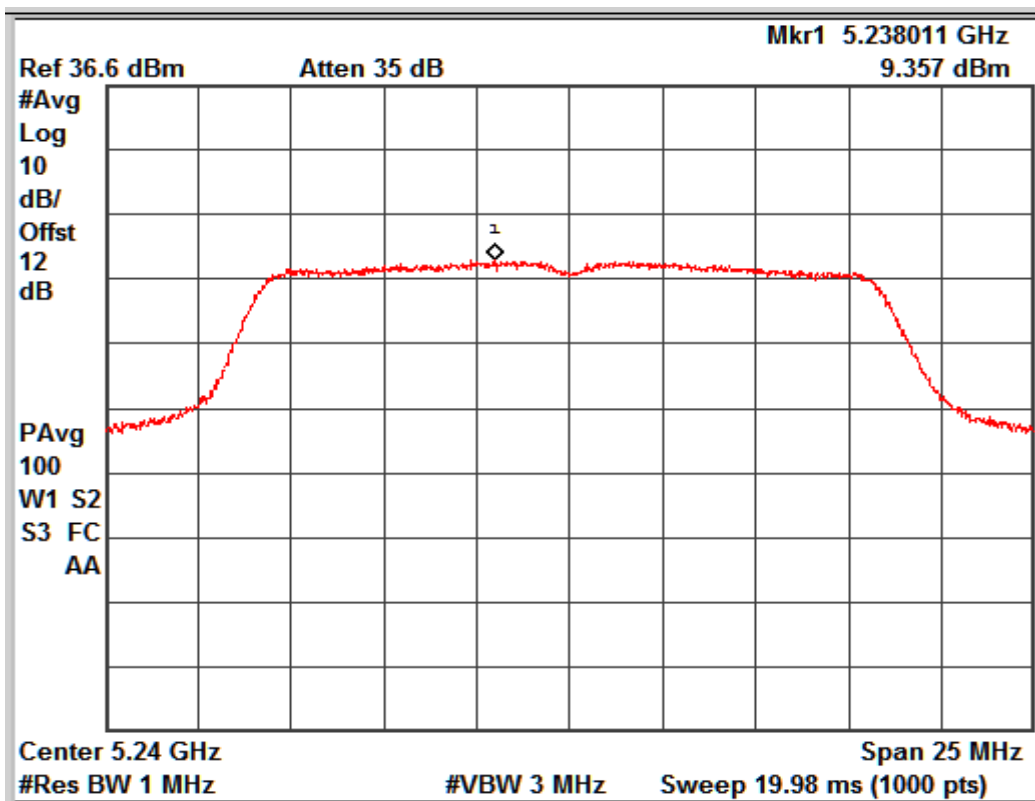
Data Rate: 54 Mbps

Channel Frequency: 5180 MHz



Data Rate: 54 Mbps

Channel Frequency: 5200 MHz

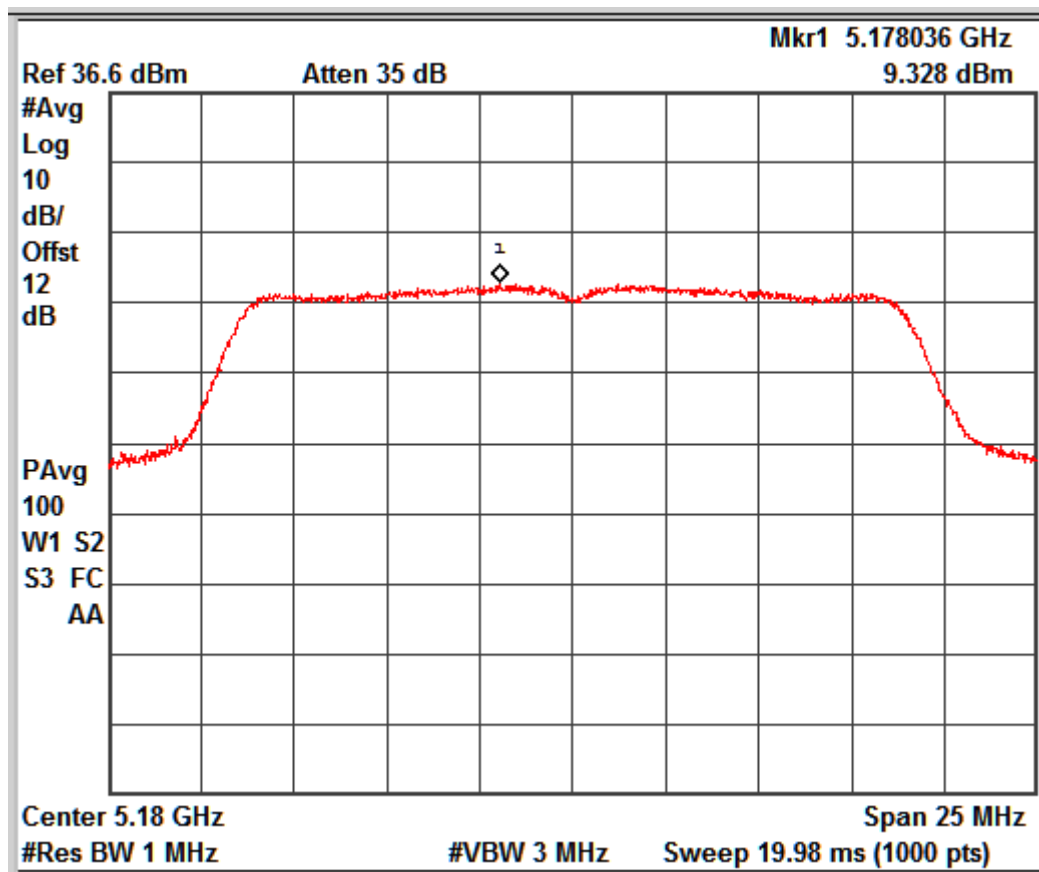


Data Rate: 54 Mbps

Channel Frequency: 5240 MHz

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Result: 802.11n

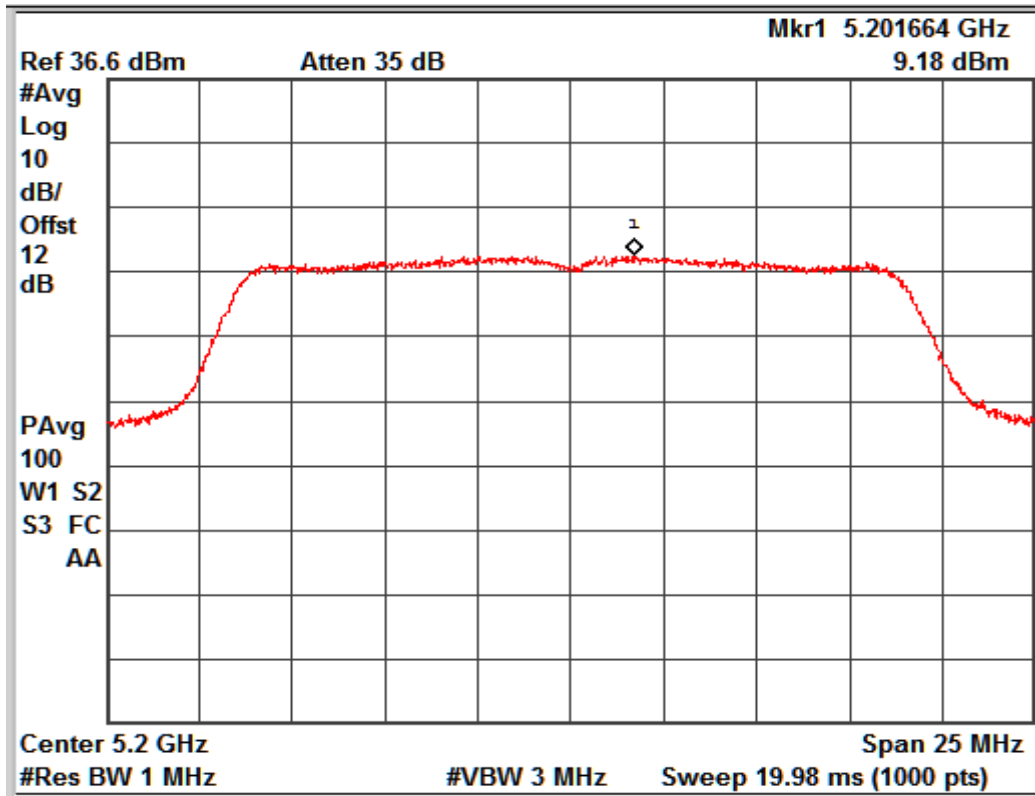
Data Rate (Mbps)	Channel. No	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dBm)
MCS 0	36	5180	9.38	11	-1.62
	40	5200	9.18	11	-1.82
	48	5240	9.16	11	-1.84
MSC 4	36	5180	9.55	11	-1.45
	40	5200	9.52	11	-1.48
	48	5240	9.59	11	-1.41
MCS 7	36	5180	9.92	11	-1.08
	40	5200	9.24	11	-1.76
	48	5240	9.72	11	-1.22



Data Rate: MCS 0

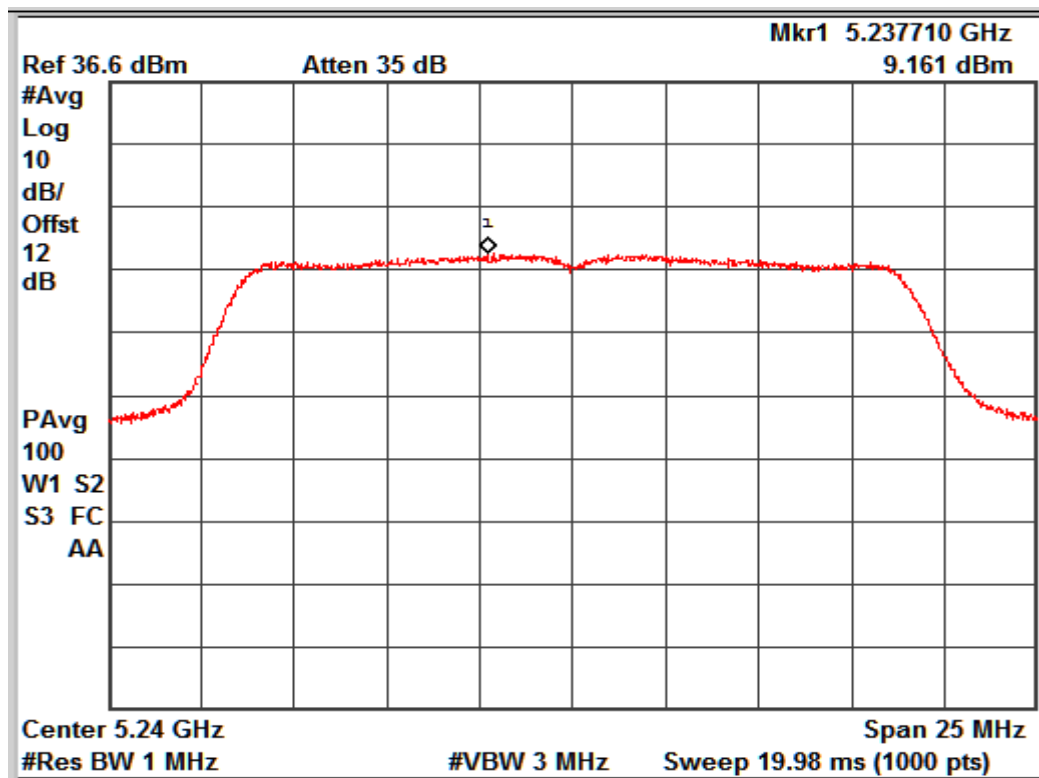
Channel Frequency: 5180 MHz

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Data Rate: MCS 0

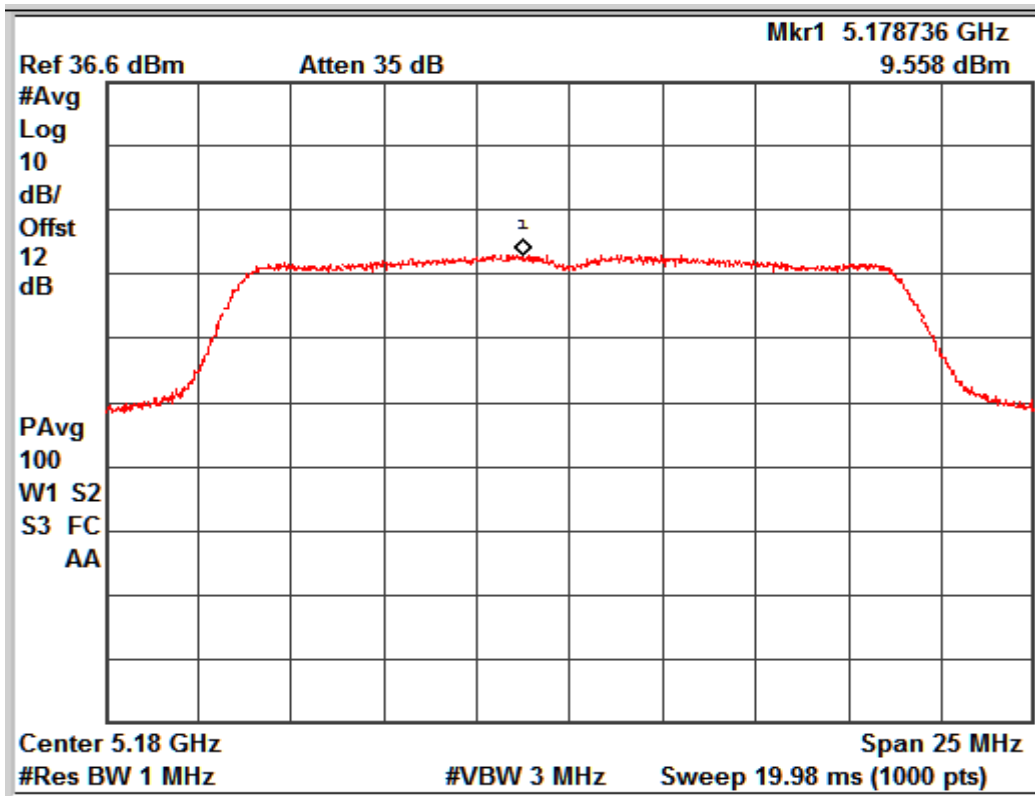
Channel Frequency: 5200 MHz



Data Rate: MCS 0

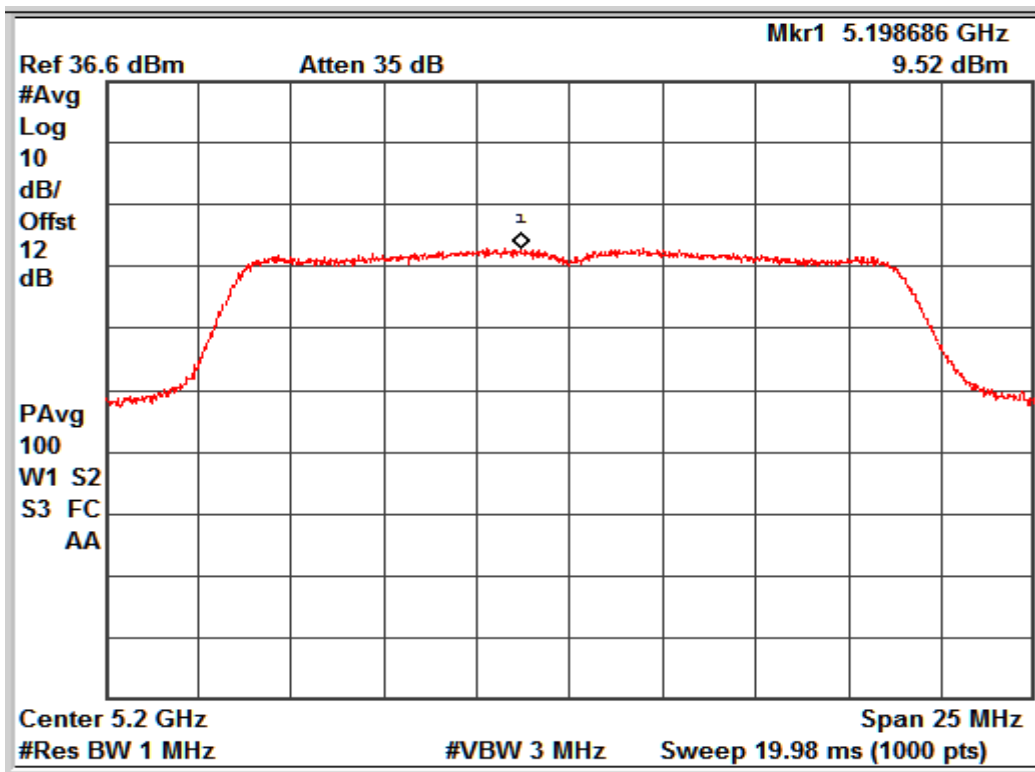
Channel Frequency: 5240 MHz

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Data Rate: MCS 4

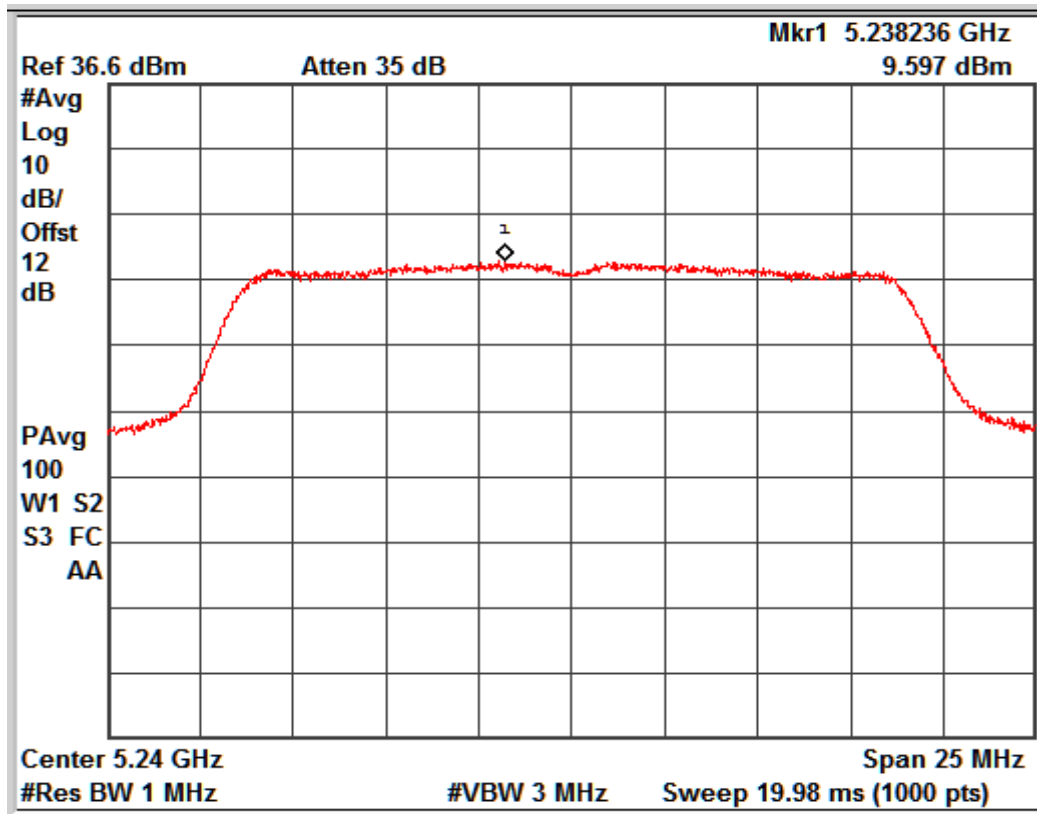
Channel Frequency: 5180 MHz



Data Rate: MCS 4

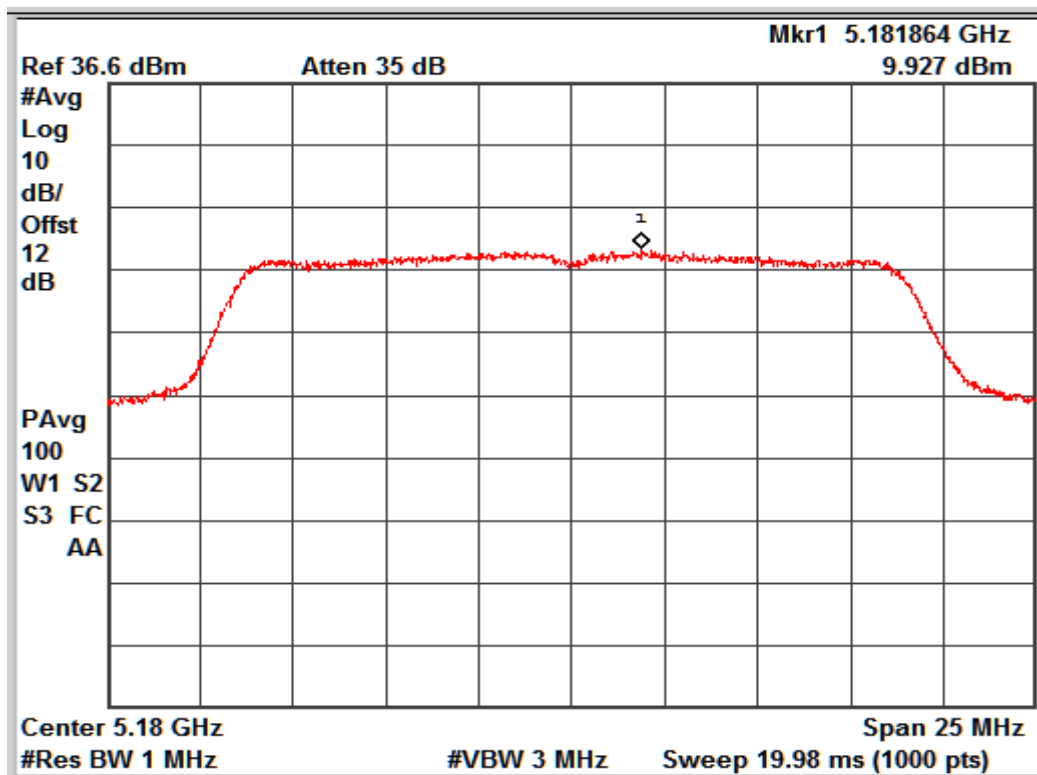
Channel Frequency: 5200 MHz

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Data Rate: MCS 4

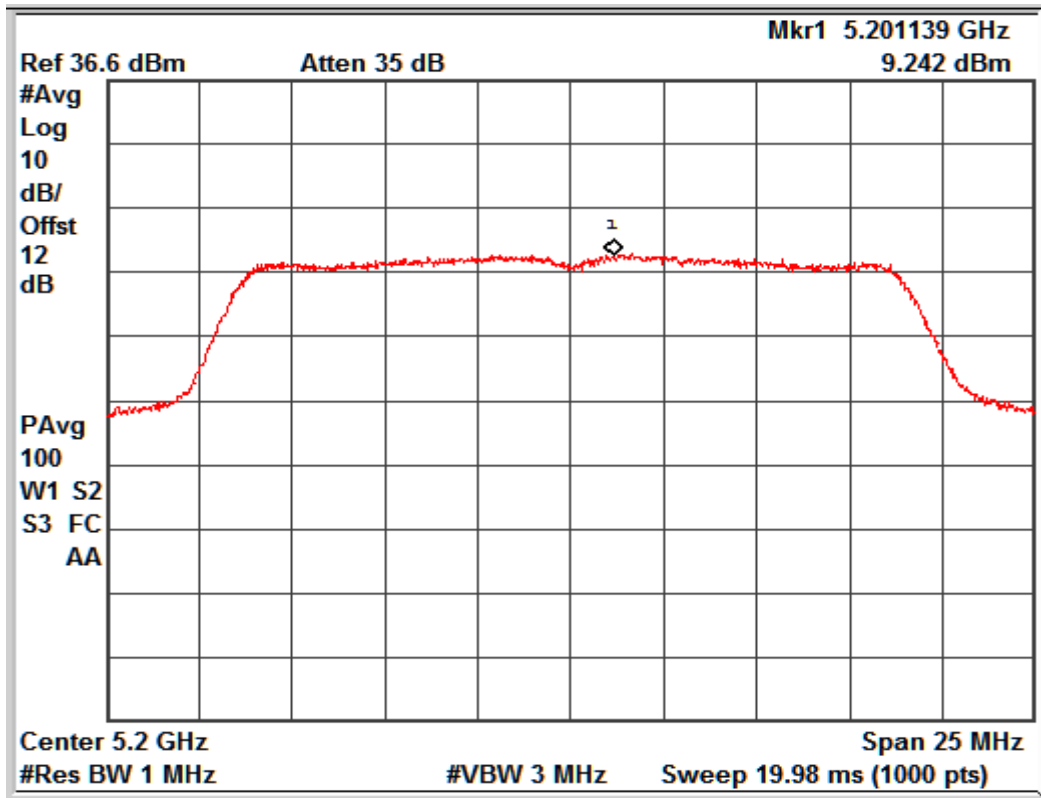
Channel Frequency: 5240 MHz



Data Rate: MCS 7

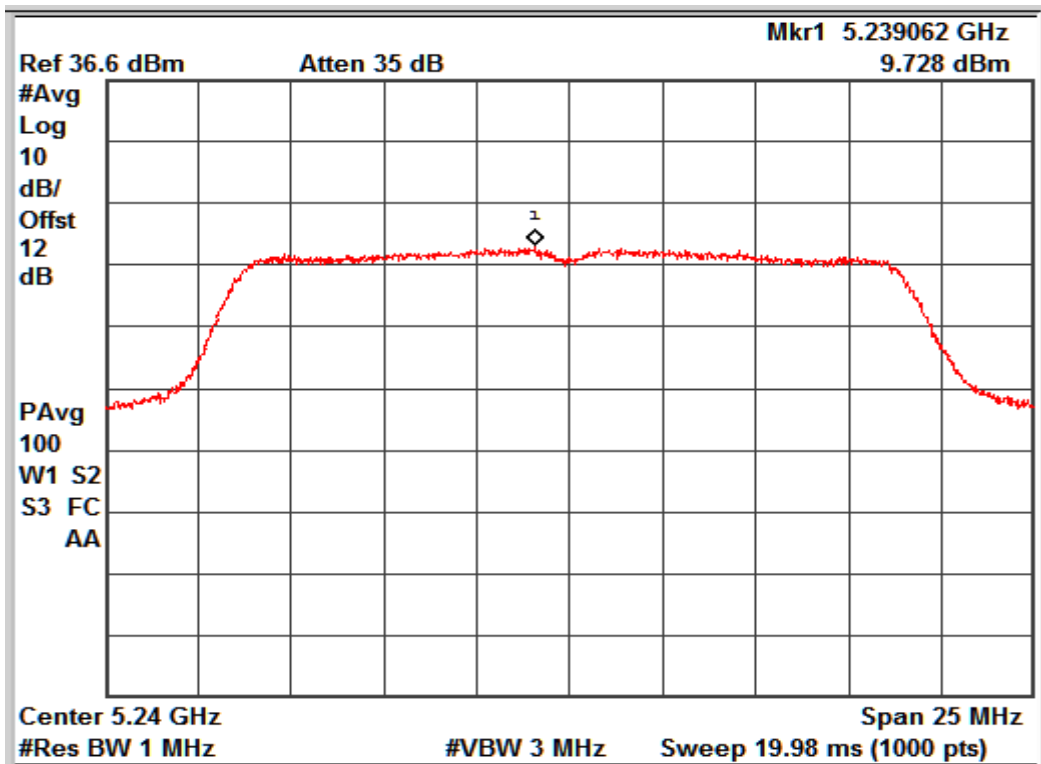
Channel Frequency: 5180 MHz

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Data Rate: MCS 7

Channel Frequency: 5200 MHz



Data Rate: MCS 7

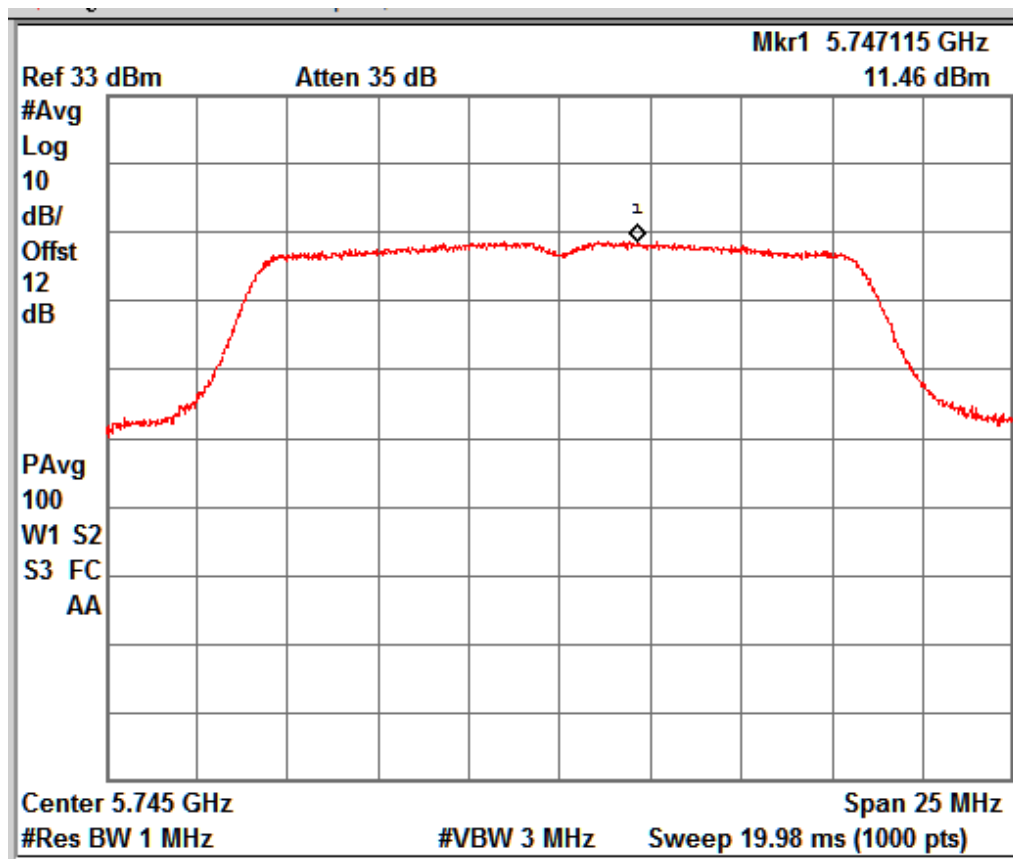
Channel Frequency: 5240 MHz

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Result: 5.725 – 5.850 GHz Band
802.11 a

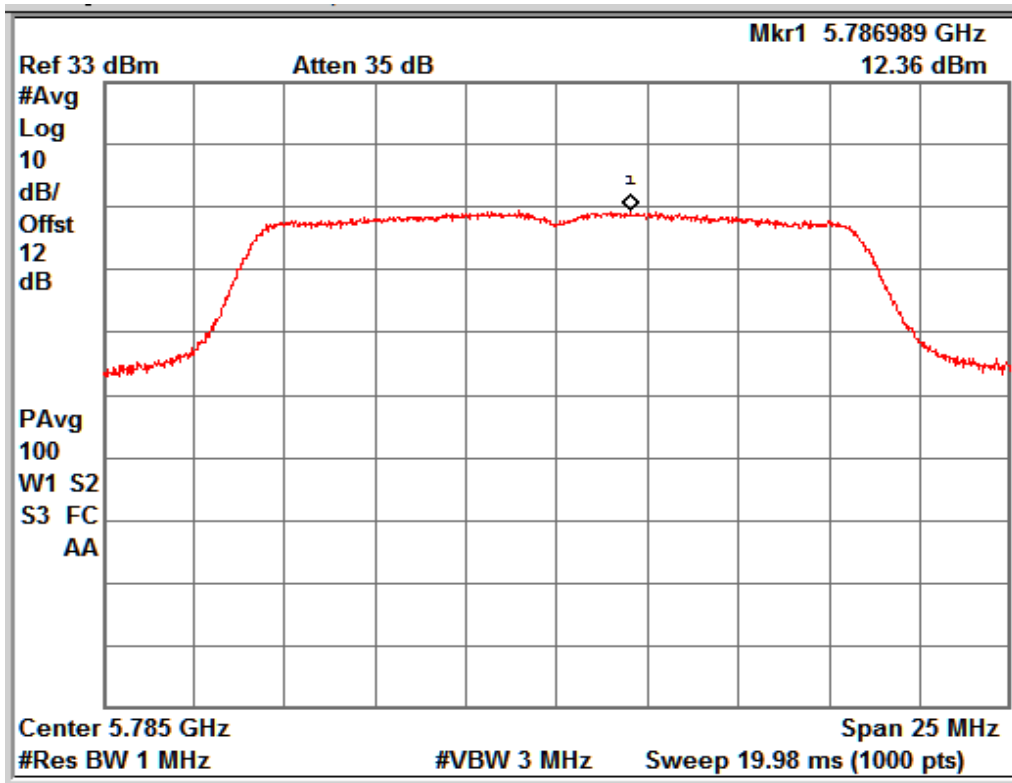
Data Rate (Mbps)	Channel. No	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
6	149	5745	14.46	30	-15.54
	157	5785	15.36	30	-14.64
	165	5825	15.10	30	-14.90
24	149	5745	14.26	30	-15.74
	157	5785	15.77	30	-14.23
	165	5825	14.51	30	-15.49
54	149	5745	13.21	30	-16.79
	157	5785	15.36	30	-14.64
	165	5825	15.47	30	-14.53

Correction Factor=10*log (Required Bandwidth/ Measured Bandwidth)



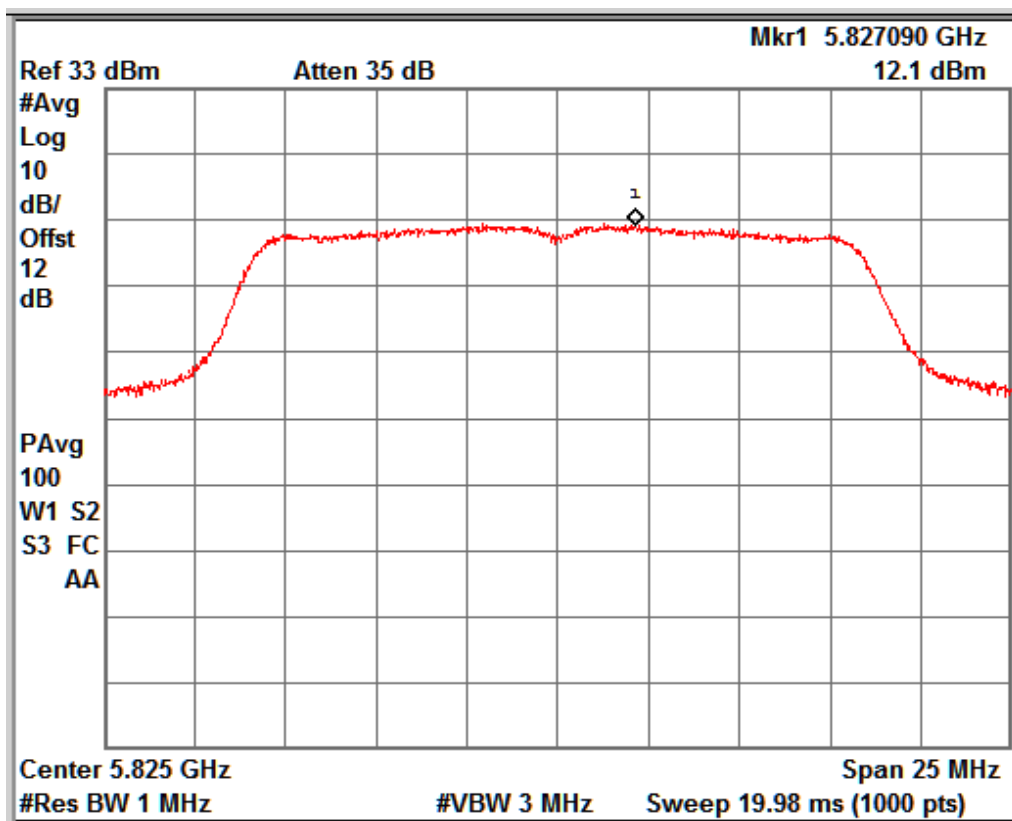
Data Rate: 6Mbps

Channel Frequency: 5745 MHz



Data Rate: 6Mbps

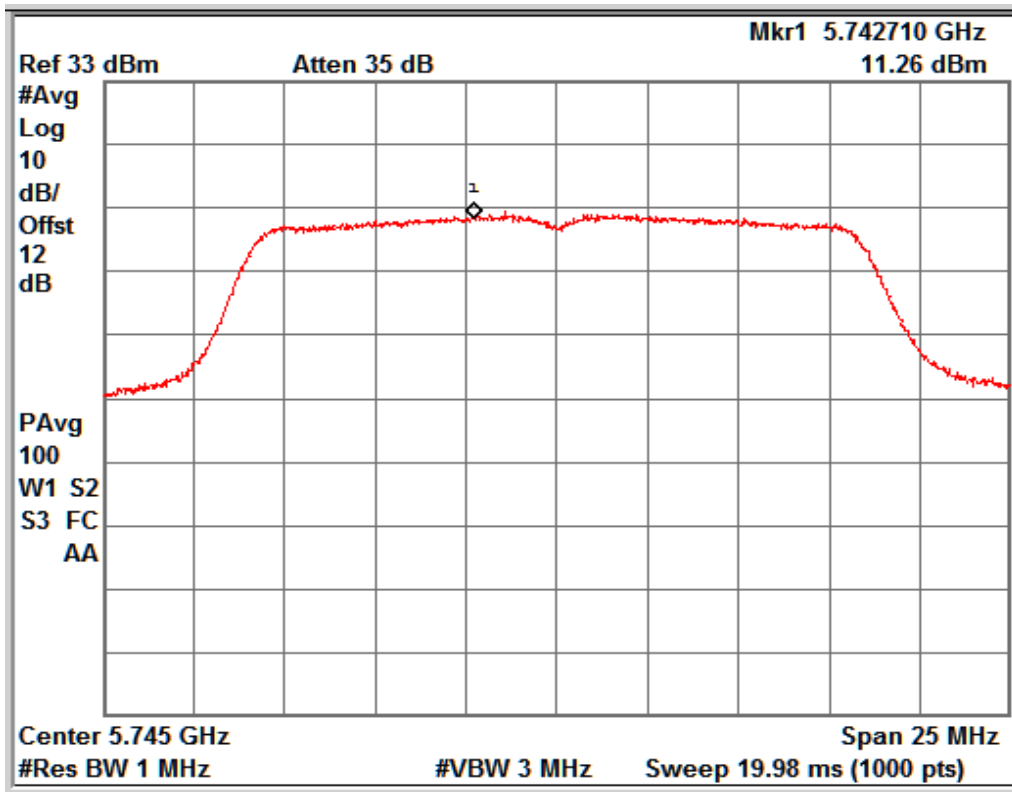
Channel Frequency: 5785 MHz



Data Rate: 6Mbps

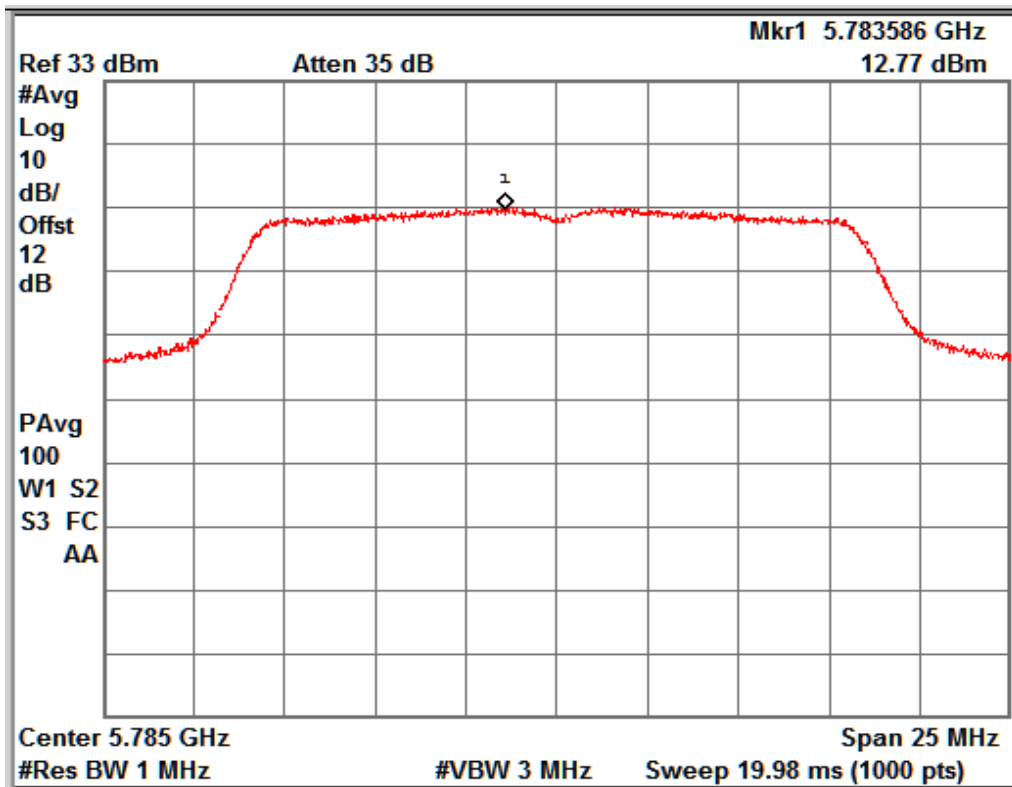
Channel Frequency: 5825 MHz

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Data Rate: 24 Mbps

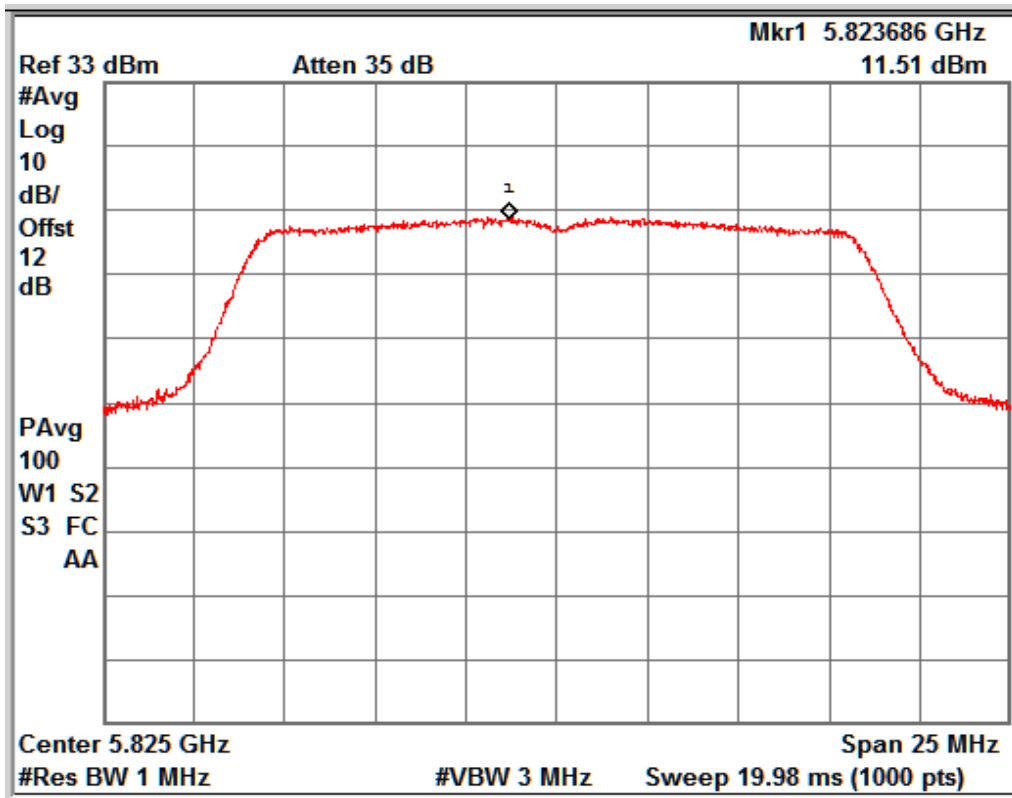
Channel Frequency: 5745 MHz



Data Rate: 24 Mbps

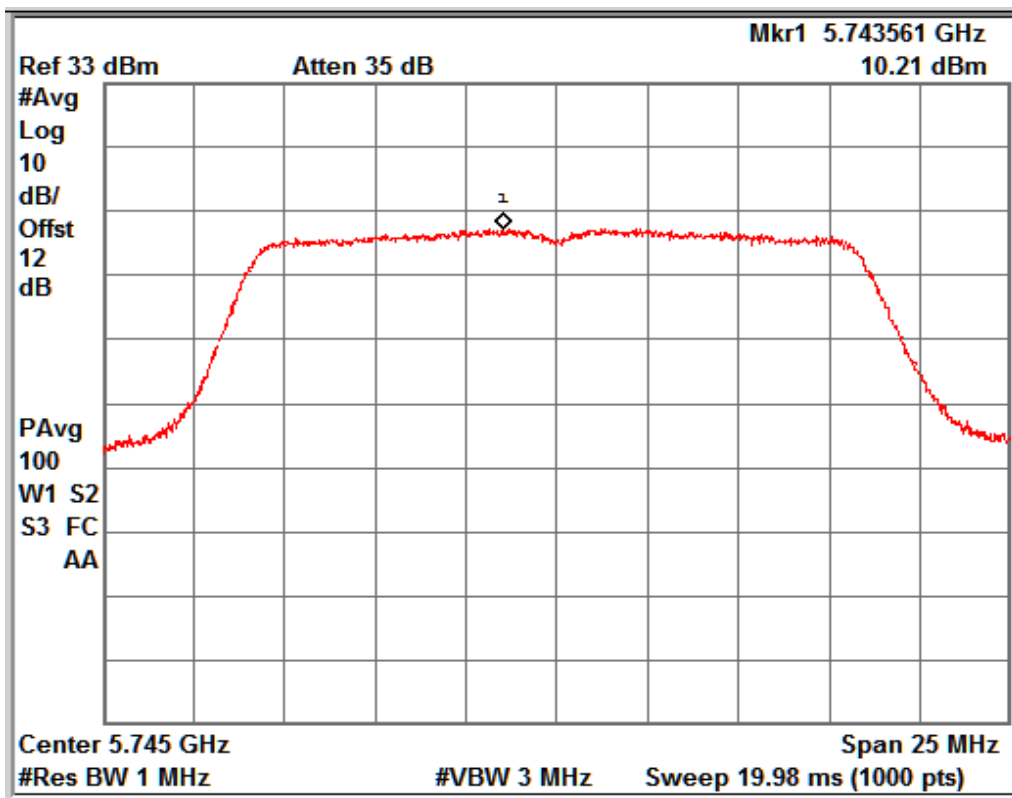
Channel Frequency: 5785 MHz

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Data Rate: 24 Mbps

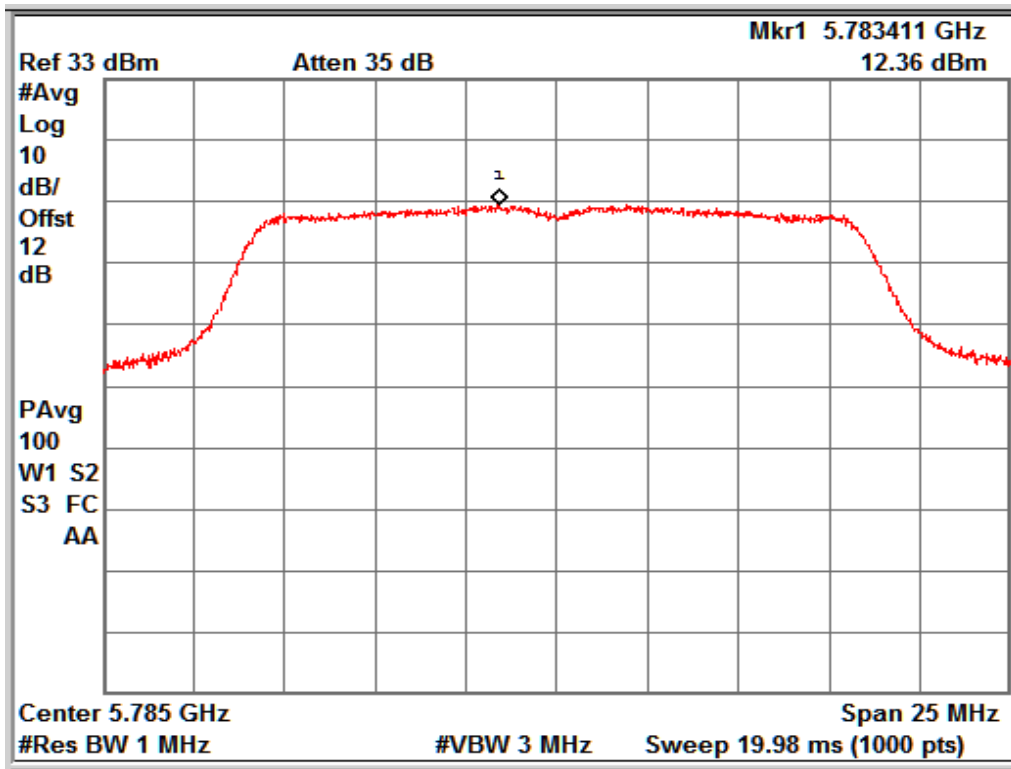
Channel Frequency: 5825 MHz



Data Rate: 54 Mbps

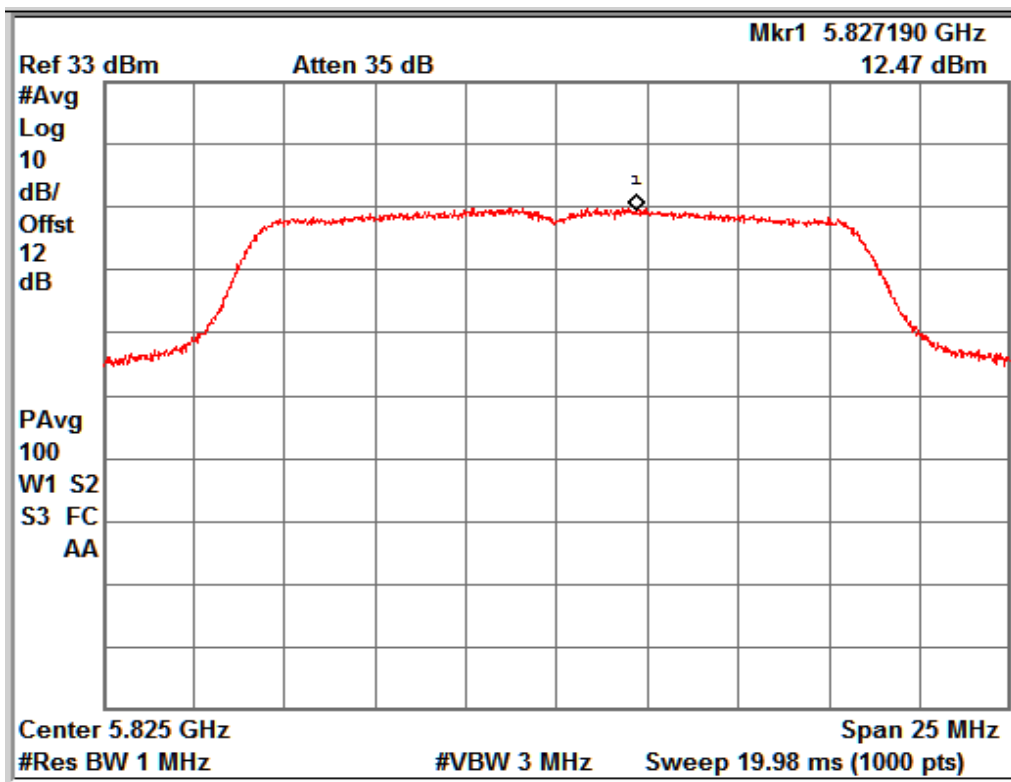
Channel Frequency: 5745 MHz

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Data Rate: 54 Mbps

Channel Frequency: 5785 MHz

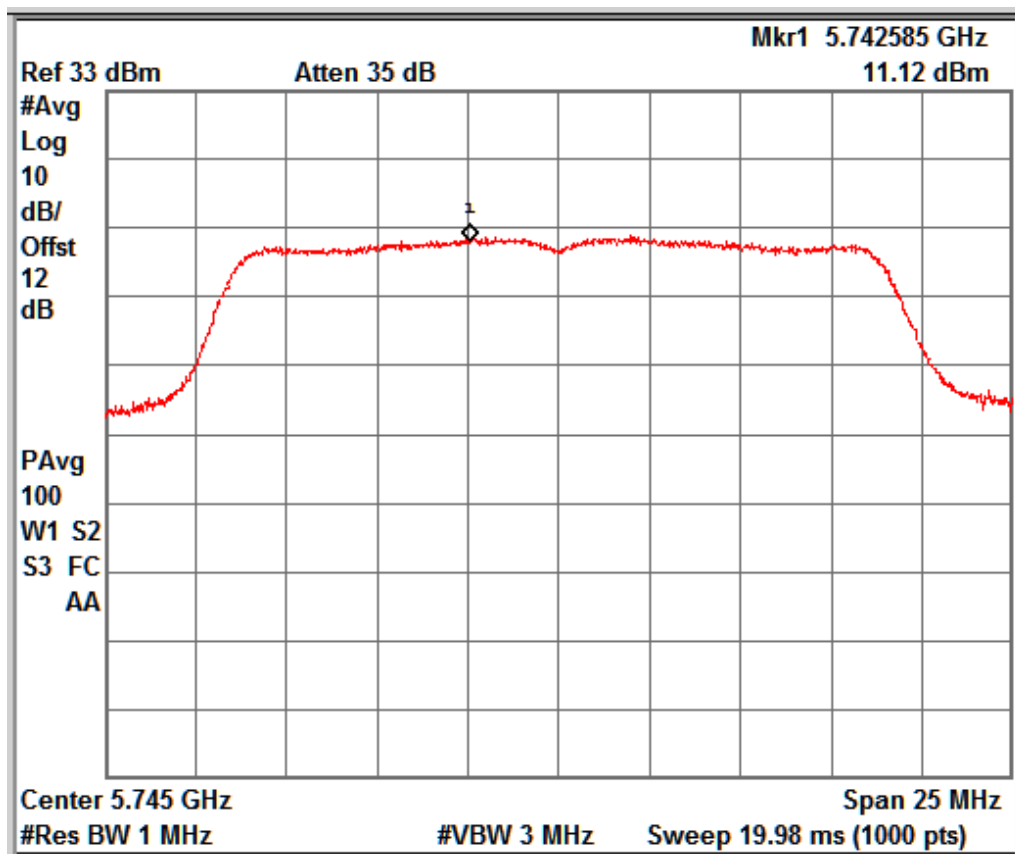


Data Rate: 54 Mbps

Channel Frequency: 5825 MHz

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Result: 802.11n

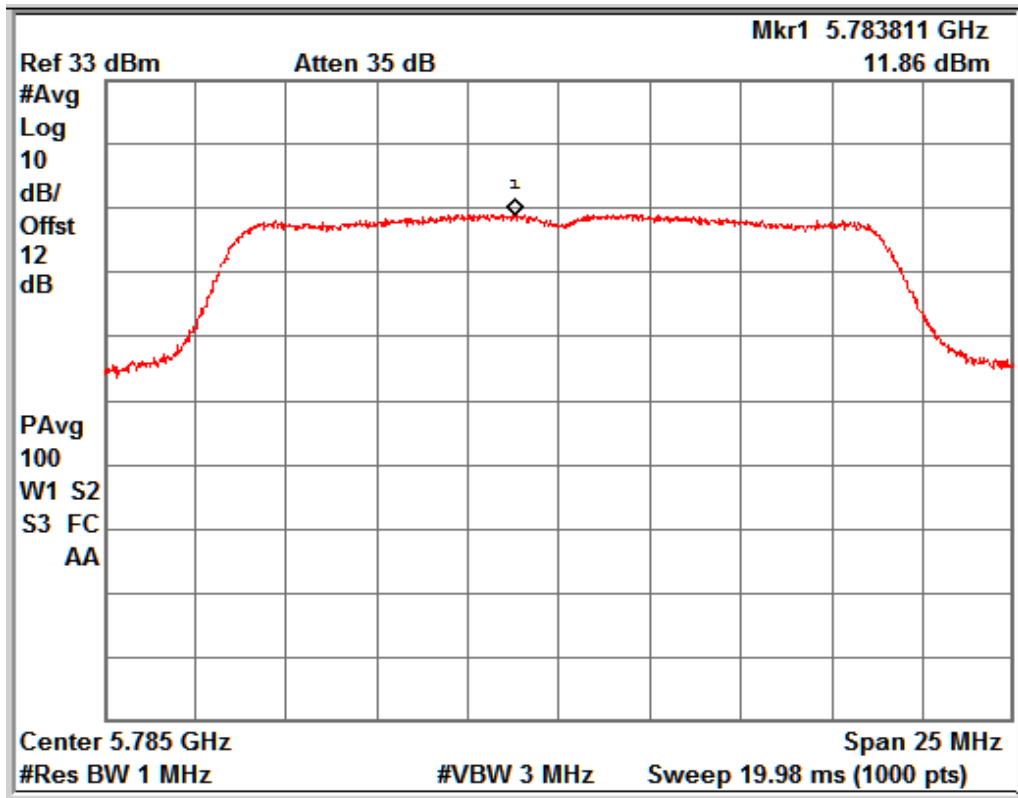
Data Rate (Mbps)	Channel. No	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dBm)
MCS 0	149	5745	14.12	30	-15.88
	157	5785	14.86	30	-15.14
	165	5825	15.08	30	-14.92
MCS 4	149	5745	14.15	30	-15.85
	157	5785	14.95	30	-15.05
	165	5825	14.85	30	-15.15
MCS 7	149	5745	14.17	30	-15.83
	157	5785	13.71	30	-16.29
	165	5825	14.35	30	-15.65



Data Rate: MCS 0

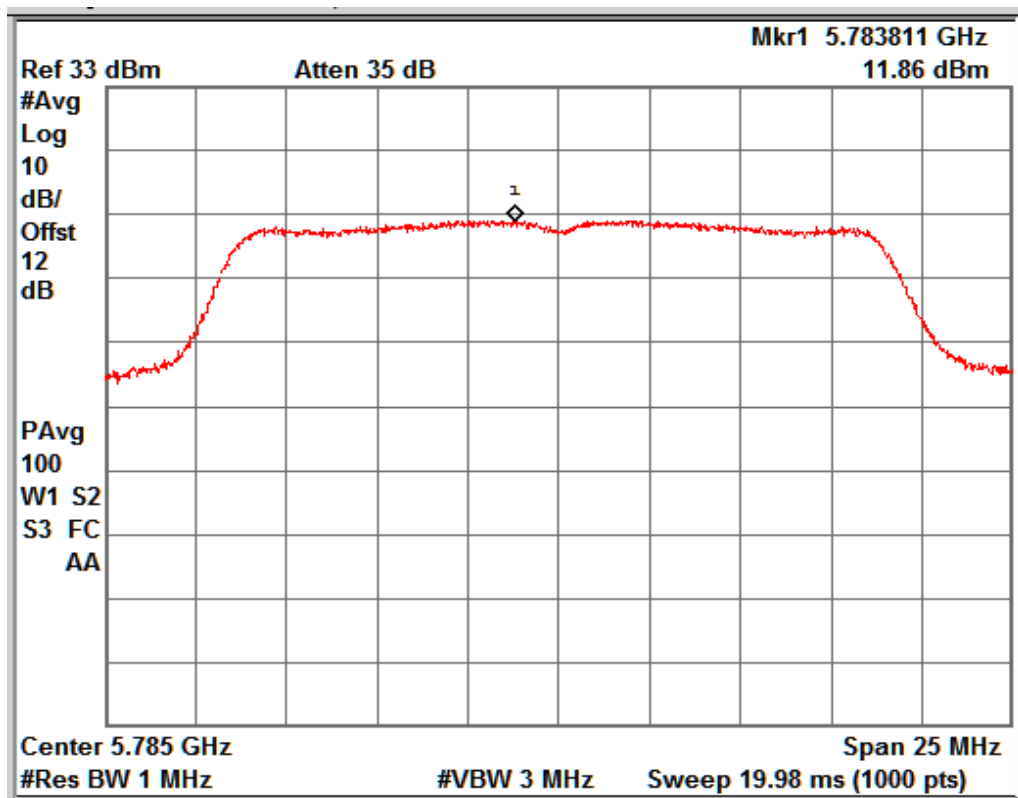
Channel Frequency: 5745 MHz

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Data Rate: MCS 0

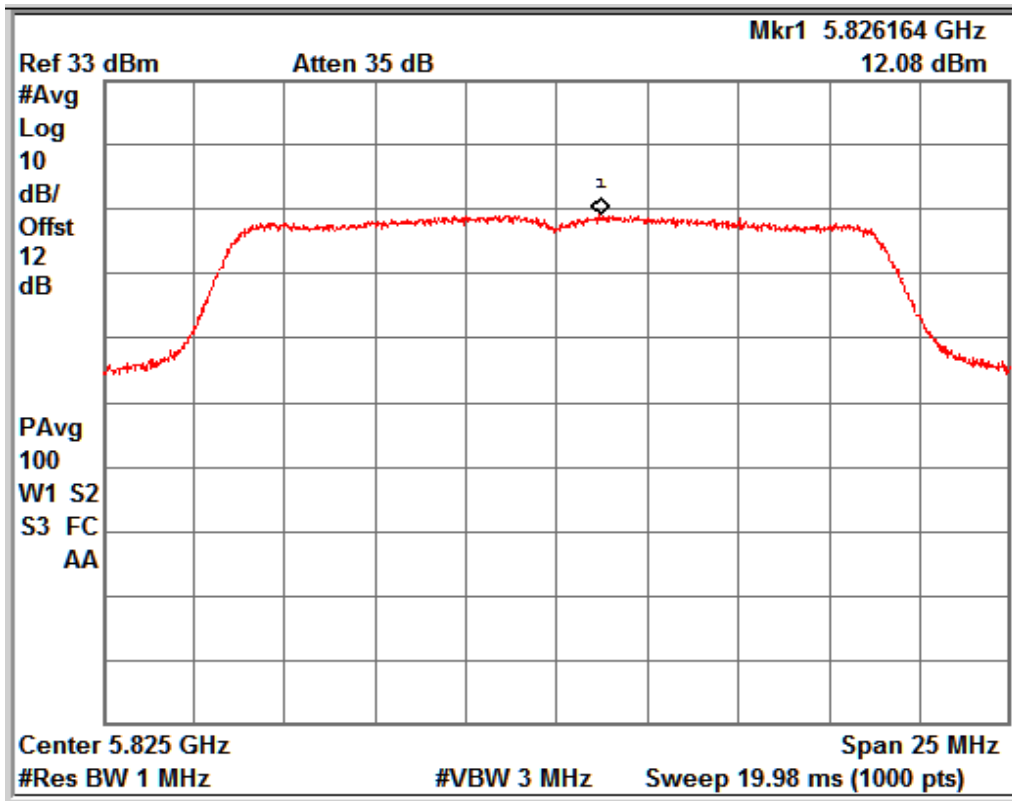
Channel Frequency: 5785 MHz



Data Rate: MCS 0

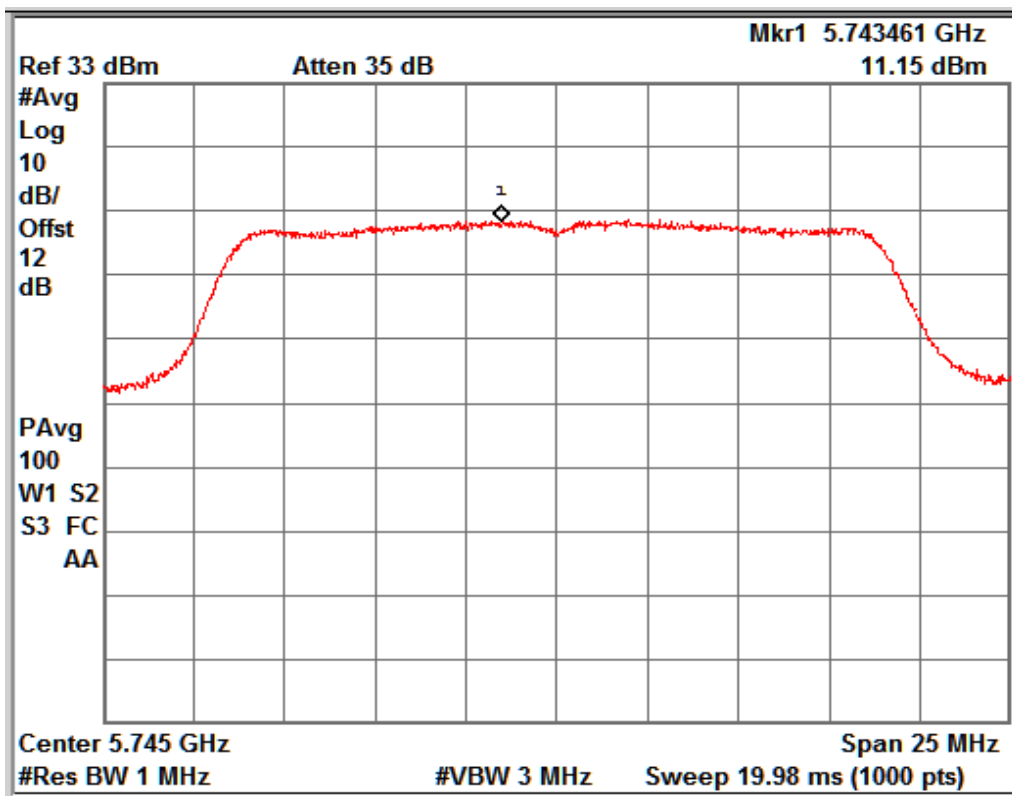
Channel Frequency: 5785 MHz

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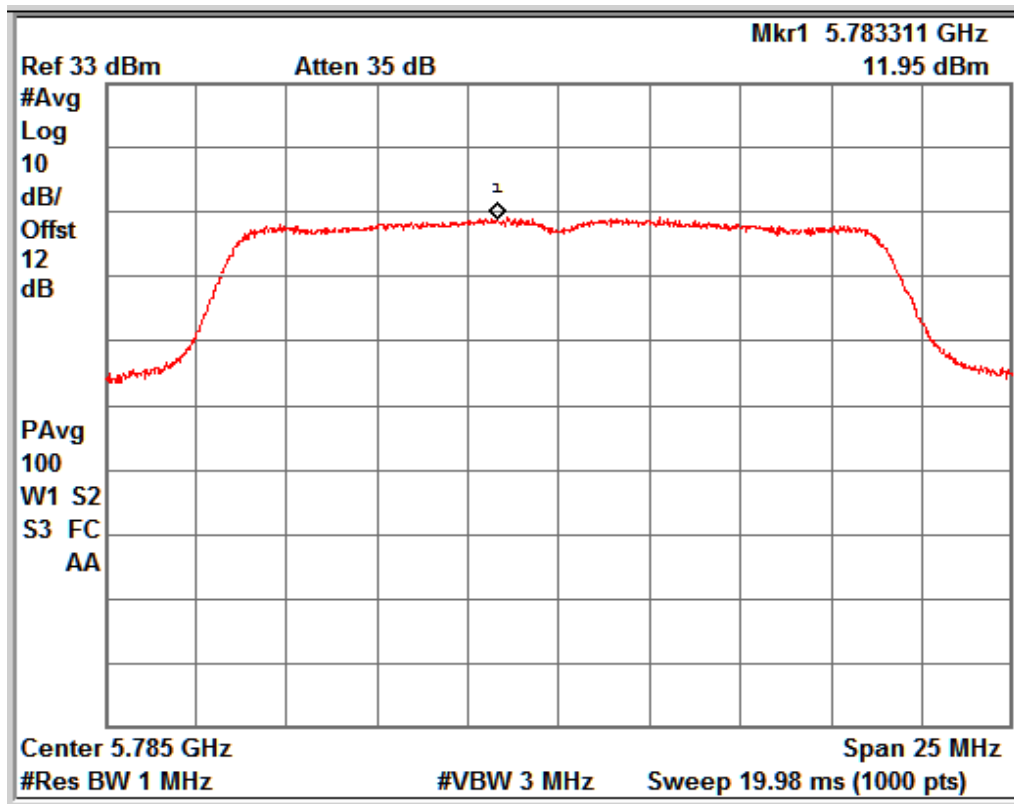
Data Rate: MCS 0

Channel Frequency: 5285 MHz



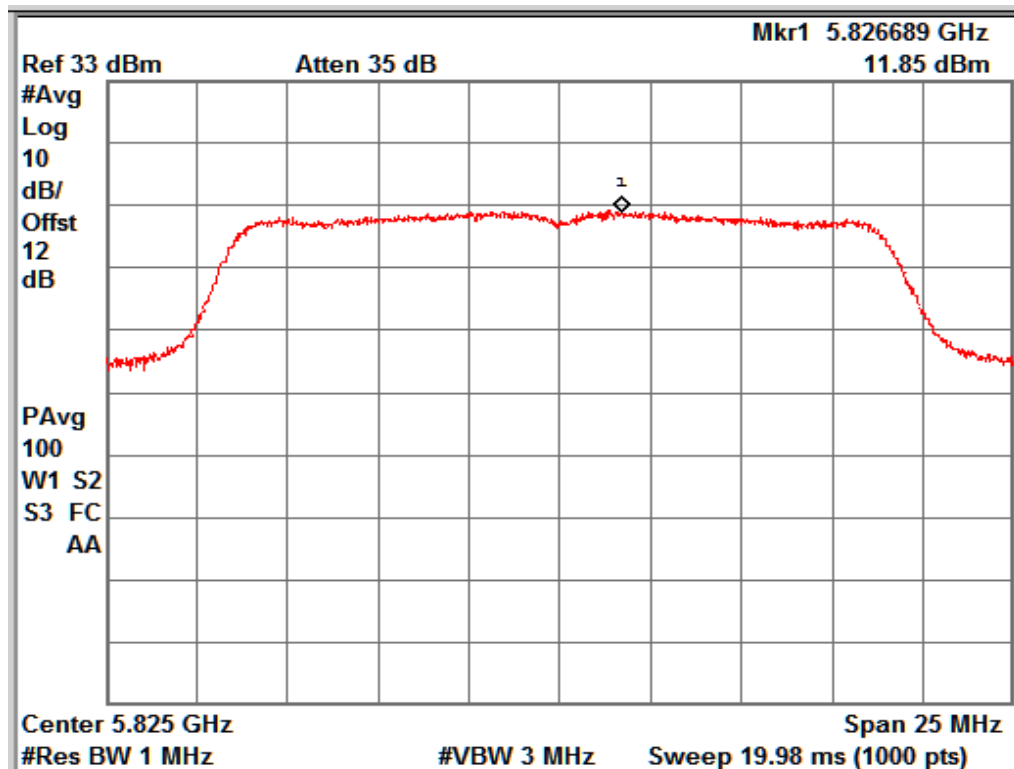
Data Rate: MCS 4

Channel Frequency: 5745 MHz



Data Rate: MCS 4

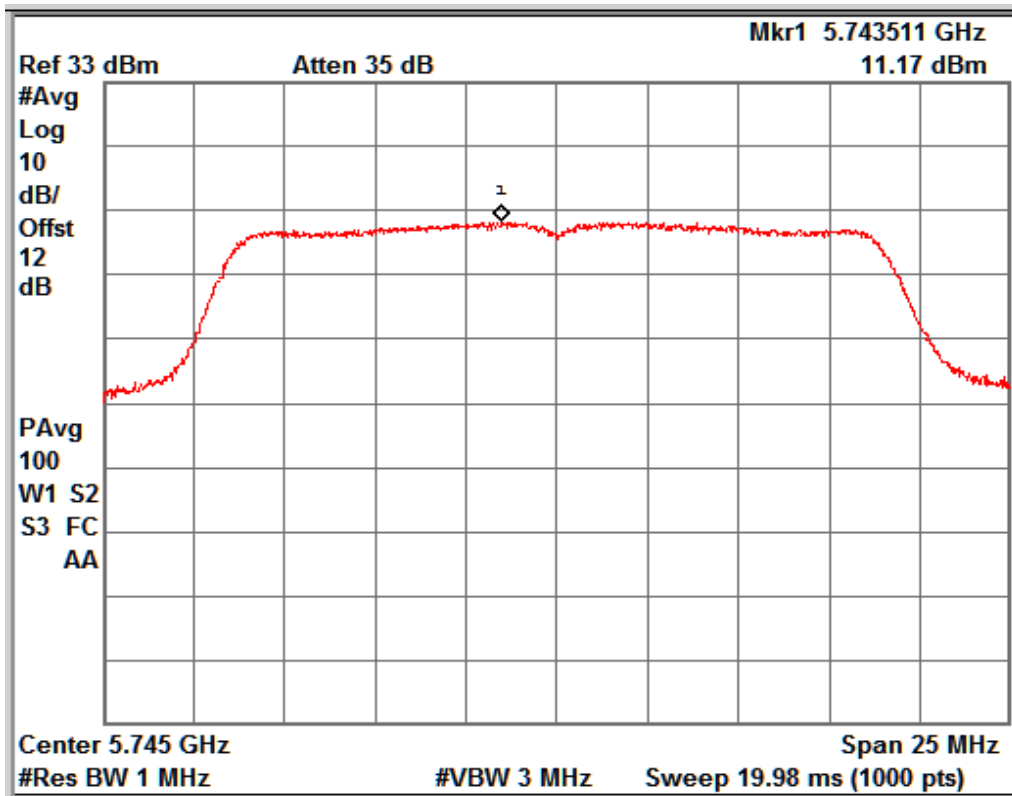
Channel Frequency: 5785 MHz



Data Rate: MCS 4

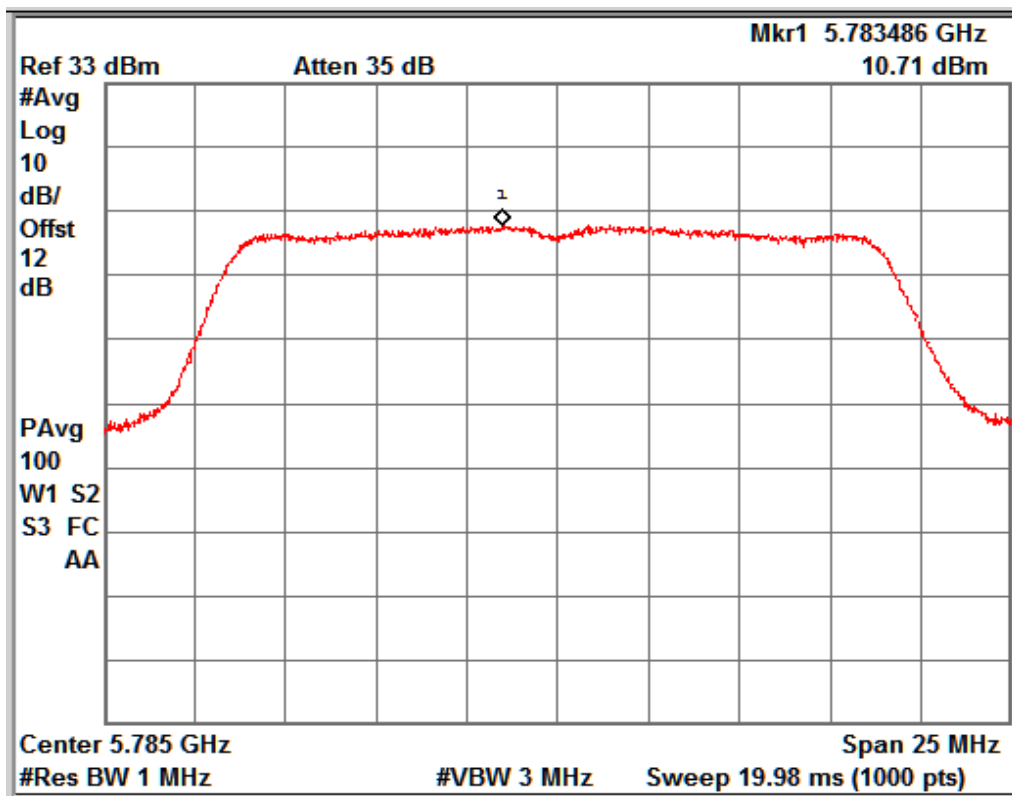
Channel Frequency: 5825 MHz

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Data Rate: MCS 7

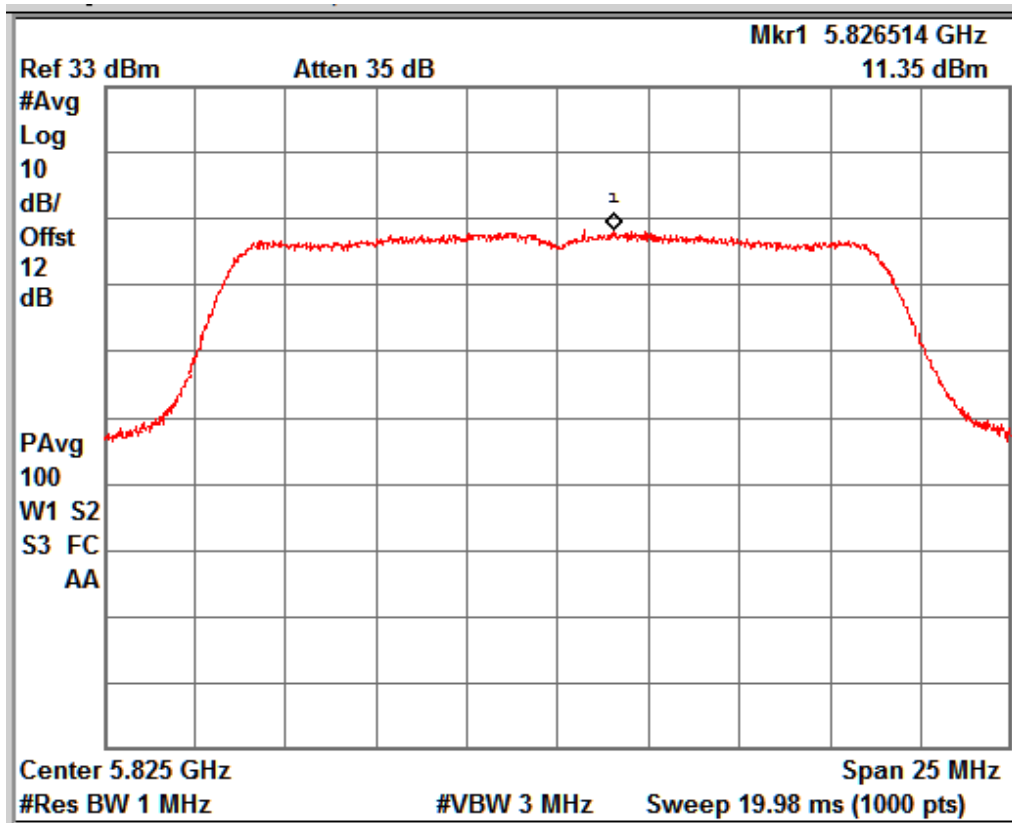
Channel Frequency: 5745 MHz



Data Rate: MCS 7

Channel Frequency: 5785 MHz

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Data Rate: MCS 7

Channel Frequency: 5825 MHz

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**Radiated Spurious Emissions and
Restricted bands of operation
Result**

**Section 15.209 /15.205/15.407 (b) (6)
Pass**

Test Specification	FCC Part 15 Section 15.209
Test Method	ANSI C63.4-2009
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.

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Test results:

For frequencies Range 9 kHz - 1 GHz

No emissions were found in this frequency range.

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For Frequencies above 1 GHz

5150 MHz – 5250 MHz Band

Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Polarization	Frequency (MHz)	Measured field Strength (dBuV/m)	Limit (dBuV/m)	Margin (dB)
802.11a	6	5180	V	5150 (Pk)	69.31	74	-4.69
				5150 (Av)	52.5	54	-1.5
				5180 (Pk)	116.16	-	*
				5180 (Av)	107.46	-	*
				10360 (Pk)	No Harmonic Found		
				10360 (Av)			
			H	5150 (Pk)	58.45	74	-15.55
				5150 (Av)	44.96	54	-9.04
				5180 (Pk)	108.55	-	*
				5180 (Av)	98.67	-	*
				10360 (Pk)	No Harmonic Found		
				10360 (Av)			
		5240	V	5240 (Pk)	116.77	-	*
				5240 (Av)	107.22	-	*
				10480 (Pk)	No Harmonic Found		
				10480 (Av)			
			H	5240 (Pk)	108.43	-	*
				5240 (Av)	98.97	-	*
				10480 (Pk)	No Harmonic Found		
				10480 (Av)			
	24	5180	V	5150 (Pk)	63.37	74	-10.63
				5150 (Av)	49.14	54	-4.86
				5180 (Pk)	117.08	-	*
				5180 (Av)	107.46	-	*
				10360 (Pk)	No Harmonic Found		
				10360 (Av)			
			H	5150 (Pk)	54.51	74	-19.49
				5150 (Av)	42.14	54	-11.86
				5180 (Pk)	107.95	-	*
				5180 (Av)	97.27	-	*
				10360 (Pk)	No Harmonic Found		
				10360 (Av)			
		5240	V	5240 (Pk)	118.19	-	*
				5240 (Av)	107.43	-	*
				10480 (Pk)	No Harmonic Found		
				10480 (Av)			
			H	5240 (Pk)	110.19	-	*
				5240 (Av)	99.56	-	*
				10480 (Pk)	No Harmonic Found		
				10480 (Av)			

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Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Polarization	Frequency (MHz)	Measured field Strength (dBuV/m)	Limit (dBuV/m)	Margin (dB)
802.11a	54	5180	V	5150 (Pk)	63.33	74	-10.67
				5150 (Av)	49.35	54	-4.65
				5180 (Pk)	116.52	-	*
				5180 (Av)	106.51	-	*
				10360 (Pk)	No Harmonic Found		
				10360 (Av)			
			H	5150 (Pk)	54.08	74	-19.92
				5150 (Av)	42.55	54	-11.45
				5180 (Pk)	107.98	-	*
				5180 (Av)	98.15	-	*
				10360 (Pk)	No Harmonic Found		
				10360 (Av)			
		5240	V	5240 (Pk)	117.01	-	*
				5240 (Av)	107.69	-	*
				10480 (Pk)	No Harmonic Found		
				10480 (Av)			
			H	5240 (Pk)	108.91	-	*
				5240 (Av)	99.06	-	*
				10480 (Pk)	No Harmonic Found		
				10480 (Av)			

* - -> Fundamental Frequency

P-->Peak detector

AV-->Average Detector

Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Polarization	Frequency (MHz)	Measured field Strength (dBuV/m)	Limit (dBuV/m)	Margin (dB)
802.11n	MSC 0	5180	V	5150 (Pk)	68.45	74	-5.55
				5150 (Av)	51.1	54	-2.9
				5180 (Pk)	115.07	-	*
				5180 (Av)	106.1	-	*
				10360 (Pk)	No Harmonic Found		
				10360 (Av)			
			H	5150 (Pk)	62.33	74	-11.67
				5150 (Av)	42.55	54	-11.45
				5180 (Pk)	106.49	-	*
				5180 (Av)	97.69	-	*
				10360 (Pk)	No Harmonic Found		
				10360 (Av)			
		5240	V	5240 (Pk)	117.19	-	*
				5240 (Av)	107.9	-	*
				10480 (Pk)	No Harmonic Found		
				10480 (Av)			
			H	5240 (Pk)	109.58	-	*
				5240 (Av)	100.22	-	*
				10480 (Pk)	No Harmonic Found		
				10480 (Av)			
	MSC 4	5180	V	5150 (Pk)	65.87	74	-8.13
				5150 (Av)	50.9	54	-3.1
				5180 (Pk)	116.77	-	*
				5180 (Av)	106.24	-	*
				10360 (Pk)	No Harmonic Found		
				10360 (Av)			
			H	5150 (Pk)	56.04	74	-17.96
				5150 (Av)	43.7	54	-10.3
				5180 (Pk)	107.02	-	*
				5180 (Av)	97.28	-	*
				10360 (Pk)	No Harmonic Found		
				10360 (Av)			
		5240	V	5240 (Pk)	117.6	-	*
				5240 (Av)	108.2	-	*
				10480 (Pk)	No Harmonic Found		
				10480 (Av)			
			H	5240 (Pk)	110.31	-	*
				5240 (Av)	100.34	-	*
				10480 (Pk)	No Harmonic Found		
				10480 (Av)			

Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Polarization	Frequency (MHz)	Measured field Strength (dBuV/m)	Limit (dBµV/m)	Margin (dB)
802.11n	MSC 7	5180	V	5150 (Pk)	65.32	74	-8.68
				5150 (Av)	50.48	54	-3.52
				5180 (Pk)	116.8	-	*
				5180 (Av)	105.79	-	*
				10360 (Pk)	No Harmonic Found		
				10360 (Av)			
			H	5150 (Pk)	57.91	74	-16.09
				5150 (Av)	43.73	54	-10.27
				5180 (Pk)	107.75	-	*
				5180 (Av)	97.18	-	*
				10360 (Pk)	No Harmonic Found		
				10360 (Av)			
		5240	V	5240 (Pk)	118.34	-	*
				5240 (Av)	108.24	-	*
				10480 (Pk)	No Harmonic Found		
				10480 (Av)			
			H	5240 (Pk)	111.68	-	*
				5240 (Av)	100.52	-	*
				10480 (Pk)	No Harmonic Found		
				10480 (Av)			

* - -> Fundamental Frequency

P-->Peak detector

AV-->Average Detector

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For Band 5.725 GHz – 5.850 GHz

Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Polarization	Frequency (MHz)	Measured field Strength (dBuV/m)	Limit (dBuV/m)	Margin (dB)
802.11a	6	5745	V	5650(Pk)	52.05	68.23	-16.18
				5650(Av)	40.81	54	-13.19
				5745(Pk)	108.1	-	*
				5745(Av)	98.88	-	*
				11490(Pk)	No Harmonic Found		
				11490(Av)			
			H	5650(Pk)	51.02	68.23	-17.21
				5650(Av)	39.61	54	-14.39
				5745(Pk)	107.31	-	*
				5745(Av)	97.17	-	*
				11490(Pk)	No Harmonic Found		
				11490(Av)			
		5825	V	5825(Pk)	108.79	-	*
				5825(Av)	99.42	-	*
				5925(Pk)	53.23	68.23	-15
				5925(Av)	41.68	54	-12.32
				11650(Pk)	No Harmonic Found		
				11650(Av)			
			H	5825(Pk)	106.7	-	*
				5825(Av)	97.37	-	*
				5925(Pk)	51.87	68.23	-16.36
				5925(Av)	40.61	54	-13.39
				11650(Pk)	No Harmonic Found		
				11650(Av)			
	24	5745	V	5650(Pk)	52.2	68.23	-16.03
				5650(Av)	40.58	54	-13.42
				5745(Pk)	108.54	-	*
				5745(Av)	98.15	-	*
				11490(Pk)	No Harmonic Found		
				11490(Av)			
			H	5650(Pk)	51.1	68.23	-17.13
				5650(Av)	39.91	54	-14.09
				5745(Pk)	108.7	-	*
				5745(Av)	98.06	-	*
				11490(Pk)	No Harmonic Found		
				11490(Av)			
		5825	V	5825(Pk)	110	-	*
				5825(Av)	99.3	-	*
				5925(Pk)	52.84	68.23	-15.39
				5925(Av)	41.93	54	-12.07
				11650(Pk)	No Harmonic Found		
				11650(Av)			
			H	5825(Pk)	108.27	-	*
				5825(Av)	97.44	-	*
				5925(Pk)	51.29	68.23	-16.94
				5925(Av)	40.65	54	-13.35
				11650(Pk)	No Harmonic Found		
				11650(Av)			

Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Polarization	Frequency (MHz)	Measured field Strength (dBuV/m)	Limit (dBuV/m)	Margin (dB)
802.11a	54	5745	V	5650(Pk)	51.65	68.23	-16.58
				5650(Av)	40.58	54	-13.42
				5745(Pk)	108.06	-	*
				5745(Av)	98.26	-	*
				11490(Pk)	No Harmonic Found		
				11490(Av)			
			H	5650(Pk)	51.25	68.23	-16.98
				5650(Av)	39.78	54	-14.22
				5745(Pk)	108.19	-	*
				5745(Av)	98.31	-	*
				11490(Pk)	No Harmonic Found		
				11490(Av)			
		5825	V	5825(Pk)	109.09	-	*
				5825(Av)	99.5	-	*
				5925(Pk)	52.44	68.23	-15.79
				5925(Av)	41.99	54	-12.01
				11650(Pk)	No Harmonic Found		
				11650(Av)			
			H	5825(Pk)	107.23	-	*
				5825(Av)	97.45	-	*
				5925(Pk)	52.38	68.23	-15.85
				5925(Av)	40.8	54	-13.2
				11650(Pk)	No Harmonic Found		
				11650(Av)			

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

Data Rate (Mbps)	Channel Frequency (MHz)	Polarization	Frequency (MHz)	Measured field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
MSC 0	5745	V	5650(Pk)	52.06	68.23	-16.17
			5650(Av)	40.24	54	-13.76
			5745(Pk)	105.26	-	*
			5745(Av)	95.93	-	*
			11490(Pk)	No Harmonic Found		
			11490(Av)			
		H	5650(Pk)	50.41	68.23	-17.82
			5650(Av)	39.49	54	-14.51
			5745(Pk)	105.07	-	*
			5745(Av)	96.34	-	*
			11490(Pk)	No Harmonic Found		
			11490(Av)			
	5825	V	5825(Pk)	108.56	-	*
			5825(Av)	99.49	-	*
			5925(Pk)	52.44	68.23	-15.79
			5925(Av)	41.84	54	-12.16
			11650(Pk)	No Harmonic Found		
			11650(Av)			
		H	5825(Pk)	106.12	-	*
			5825(Av)	97.48	-	*
			5925(Pk)	52.09	68.23	-16.14
			5925(Av)	40.76	54	-13.24
			11650(Pk)	No Harmonic Found		
			11650(Av)			
MSC 4	5745	V	5650(Pk)	51.65	68.23	-16.58
			5650(Av)	40.52	54	-13.48
			5745(Pk)	108.68	-	*
			5745(Av)	98.76	-	*
			11490(Pk)	No Harmonic Found		
			11490(Av)			
		H	5650(Pk)	50.71	68.23	-17.52
			5650(Av)	39.7	54	-14.3
			5745(Pk)	107.18	-	*
			5745(Av)	97.53	-	*
			11490(Pk)	No Harmonic Found		
			11490(Av)			
	5825	V	5825(Pk)	109.37	-	*
			5825(Av)	99.72	-	*
			5925(Pk)	52.54	68.23	-15.69
			5925(Av)	41.41	54	-12.59
			11650(Pk)	No Harmonic Found		
			11650(Av)			
		H	5825(Pk)	107.04	-	*
			5825(Av)	97.35	-	*
			5925(Pk)	52.2	68.23	-16.03
			5925(Av)	40.55	54	-13.45
			11650(Pk)	No Harmonic Found		
			11650(Av)			

Data Rate (Mbps)	Channel Frequency (MHz)	Polarization	Frequency (MHz)	Measured field Strength (dBuV/m)	Limit (dBμV/m)	Margin (dB)
MCS 7	5745	V	5650(Pk)	53.11	68.23	-15.12
			5650(Av)	40.52	54	-13.48
			5745(Pk)	108.59	-	*
			5745(Av)	98.25	-	*
			11490(Pk)	No Harmonic Found		
			11490(Av)			
		H	5650(Pk)	51.16	68.23	-17.07
			5650(Av)	39.71	54	-14.29
			5745(Pk)	108.08	-	*
			5745(Av)	96.96	-	*
			11490(Pk)	No Harmonic Found		
			11490(Av)			
	5825	V	5825(Pk)	109.88	-	*
			5825(Av)	99.6	-	*
			5925(Pk)	53.12	68.23	-15.11
			5925(Av)	41.8	54	-12.2
			11650(Pk)	No Harmonic Found		
			11650(Av)			
		H	5825(Pk)	107.43	-	*
			5825(Av)	97.45	-	*
			5925(Pk)	52.57	68.23	-15.66
			5925(Av)	40.74	54	-13.26
			11650(Pk)	No Harmonic Found		
			11650(Av)			

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

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Power level Settings used during testing:

		Channels		
Mode	Data Rate (Mbps)	Low	Mid	High
802.11 a (5 GHz) Band-1	6	21	22	22
	24	21	22	22
	54	21	22	22
802.11 n (5 GHz) Band-1	MCS0	21	22	22
	MCS4	21	22	22
	MCS7	21	22	22
802.11 a (5 GHz) Band-3	6	22	22	22
	24	22	22	22
	54	22	22	22
802.11 n (5 GHz) Band-3	MCS0	22	22	22
	MCS4	22	22	22
	MCS7	22	22	22

Power setting for Mobile and Portable applications

Mode	Data Rate (Mbps)	Low	Mid	High
802.11 a (5 GHz) Band-1	6	19	20	20
	24	19	20	20
	54	19	20	20
802.11 n (5 GHz) Band-1	MCS0	19	20	20
	MCS4	19	20	20
	MCS7	19	20	20

*** END OF TEST REPORT ***