

5.4 Peak Power Spectral Density

5.4.1 Regulation

According to §15.407 (a)(1)(ii) the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.

According to §15.407(a)(3) the maximum power spectral density shall not exceed 30 dBm in any 500-klz band.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.4.2 Measurement Procedure

These test measurement settings are specified in section F of 789033 D02 General UNII Test Procedures New Rules v01.

5.4.2.1 Maximum power spectral density (PSD)

1. Create an average power spectrum for the EUT operating mode being tested by following the instructions in section II.E.2. for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, "Compute power...". (This procedure is required even if the maximum conducted output power measurement was performed using a power meter, method PM.)
2. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
3. Make the following adjustments to the peak value of the spectrum, if applicable:
 - a) If Method SA-2 or SA-2 Alternative was used, add $10 \log(1/x)$, where x is the duty cycle, to the peak of the spectrum.
 - b) If Method SA-3 Alternative was used and the linear mode was used in step II.E.2.g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.
4. The result is the Maximum PSD over 1 MHz reference bandwidth.
5. For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, "provided that the measured power is integrated over the full reference bandwidth" to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply: a) Set $RBW \geq 1/T$, where T is defined in section II.B.1.a).

- b) Set $VBW \geq 3 RBW$.
- c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10\log(500\text{kHz}/RBW)$ to the measured result, whereas $RBW (< 500 \text{ kHz})$ is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
- d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add $10\log(1\text{MHz}/RBW)$ to the measured result, whereas $RBW (< 1 \text{ MHz})$ is the reduced resolution bandwidth of spectrum analyzer set during measurement.
- e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 kHz for the sections 5.c) and 5.d) above, since $RBW=100 \text{ kHz}$ is available on nearly all spectrum analyzers.

5.4.3 Test Result

-Complied

5 150 Band

802.11a ANT 1

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 180	2.90	-	-	0.22	3.12	17.00	13.88
5 200	2.61	-	-	0.22	2.83	17.00	14.17
5 240	2.93	-	-	0.22	3.15	17.00	13.85

802.11a ANT 2

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 180	-	3.02	-	0.22	3.24	17.00	13.76
5 200	-	2.82	-	0.22	3.04	17.00	13.96
5 240	-	3.00	-	0.22	3.22	17.00	13.78

802.11a ANT 3

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 180	-	-	2.97	0.22	3.19	17.00	13.81
5 200	-	-	2.72	0.22	2.94	17.00	14.06
5 240	-	-	2.80	0.22	3.02	17.00	13.98

802.11n HT20 ANT 1

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 180	2.62	-	-	0.22	2.84	17.00	14.16
5 200	2.37	-	-	0.22	2.59	17.00	14.41
5 240	2.37	-	-	0.22	2.59	17.00	14.41

802.11n HT20 ANT 2

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 180	-	2.54	-	0.22	2.76	17.00	14.24
5 200	-	2.53	-	0.22	2.75	17.00	14.25
5 240	-	2.38	-	0.22	2.60	17.00	14.40

802.11n HT20 ANT 3

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 180	-	-	2.48	0.22	2.70	17.00	14.30
5 200	-	-	2.16	0.22	2.38	17.00	14.62
5 240	-	-	2.52	0.22	2.74	17.00	14.26

802.11n HT20 MIMO (ANT 1+2)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 180	1.03	0.97	-	0.22	4.23	15.34	11.11
5 200	1.14	1.29	-	0.22	4.45	15.34	10.89
5 240	1.25	1.45	-	0.22	4.58	15.34	10.76

802.11n HT20 MIMO (ANT 2+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 180	-	1.60	1.15	0.22	4.61	15.50	10.89
5 200	-	1.65	1.14	0.22	4.63	15.50	10.87
5 240	-	1.37	0.88	0.22	4.36	15.50	11.14

802.11n HT20 MIMO (ANT 1+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 180	1.53	-	1.32	0.22	4.66	15.34	10.68
5 200	1.43	-	0.93	0.22	4.42	15.34	10.92
5 240	1.29	-	1.18	0.22	4.47	15.34	10.87

802.11n HT20 MIMO (ANT 1+2+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 180	-0.57	-0.66	-0.59	0.57	4.74	13.58	8.84
5 200	-0.80	-0.95	-1.30	0.57	4.33	13.58	9.25
5 240	-0.91	-1.10	-1.00	0.57	4.34	13.58	9.24

802.11n HT40 ANT 1

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 190	1.85	-	-	0.39	2.24	17.00	14.76
5 230	1.74	-	-	0.39	2.13	17.00	14.87

802.11n HT40 ANT 2

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 190	-	1.79	-	0.39	2.18	17.00	14.82
5 230	-	1.52	-	0.39	1.91	17.00	15.09

802.11n HT40 ANT 3

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 190	-	-	1.48	0.39	1.87	17.00	15.13
5 230	-	-	1.53	0.39	1.92	17.00	15.08

802.11n HT40 MIMO (ANT 1+2)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 190	-0.85	-1.44	-	1.05	2.92	15.34	12.42
5 230	-0.86	-1.11	-	1.05	3.07	15.34	12.27

802.11n HT40 MIMO (ANT 2+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 190	-	-1.21	-1.31	1.05	2.80	15.50	12.70
5 230	-	-1.17	-1.09	1.05	2.93	15.50	12.57

802.11n HT40 MIMO (ANT 2+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 190	-1.27	-	-1.05	1.05	2.90	15.34	12.44
5 230	-0.54	-	-1.29	1.05	3.16	15.34	12.18

802.11n HT40 MIMO (ANT 1+2+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 190	-3.49	-3.64	-3.51	1.06	2.28	13.58	11.30
5 230	-3.27	-3.48	-3.52	1.06	2.41	13.58	11.17

802.11ac VHT20 ANT 1

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 180	2.64	-	-	0.07	2.71	17.00	14.29
5 200	2.62	-	-	0.07	2.69	17.00	14.31
5 240	2.67	-	-	0.07	2.74	17.00	14.26

802.11ac VHT20 ANT 2

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 180	-	2.78	-	0.07	2.85	17.00	14.15
5 200	-	2.47	-	0.07	2.54	17.00	14.46
5 240	-	2.67	-	0.07	2.74	17.00	14.26

802.11ac VHT20 ANT 3

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 180	-	-	2.80	0.07	2.87	17.00	14.13
5 200	-	-	2.66	0.07	2.73	17.00	14.27
5 240	-	-	2.54	0.07	2.61	17.00	14.39

802.11ac VHT20 MIMO (ANT 1+2)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 180	1.20	0.73	-	0.57	4.55	15.34	10.79
5 200	0.69	0.84	-	0.57	4.35	15.34	10.99
5 240	1.06	0.92	-	0.57	4.57	15.34	10.77

802.11ac VHT20 MIMO (ANT 2+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 180	-	1.06	0.77	0.57	4.50	15.50	11.00
5 200	-	0.89	0.83	0.57	4.44	15.50	11.06
5 240	-	0.87	0.31	0.57	4.18	15.50	11.32

802.11ac VHT20 MIMO (ANT 1+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 180	0.79	-	0.87	0.57	4.41	15.34	10.93
5 200	0.90	-	0.66	0.57	4.36	15.34	10.98
5 240	0.74	-	0.61	0.57	4.26	15.34	11.08

802.11ac VHT20 MIMO (ANT 1+2+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 180	-0.28	-0.63	-0.62	0.16	4.43	13.58	12.57
5 200	-0.53	-0.61	-0.72	0.16	4.31	13.58	12.69
5 240	-0.52	-1.09	-1.12	0.16	4.03	13.58	12.97

802.11ac VHT40 ANT 1

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 190	1.34	-	-	0.13	1.47	17.00	15.53
5 230	1.44	-	-	0.13	1.57	17.00	15.43

802.11ac VHT40 ANT 2

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 190	-	1.52	-	0.13	1.65	17.00	15.35
5 230	-	1.46	-	0.13	1.59	17.00	15.41

802.11ac VHT40 ANT 3

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 190	-	-	1.25	0.13	1.38	17.00	15.62
5 230	-	-	1.23	0.13	1.36	17.00	15.64

802.11ac VHT40 MIMO (ANT 1+2)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 190	-0.72	-1.00	-	1.05	3.20	15.34	12.14
5 230	-1.02	-0.89	-	1.05	3.10	15.34	12.24

802.11ac VHT40 MIMO (ANT 2+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 190	-	-0.92	-0.74	1.05	3.23	15.50	12.27
5 230	-	-1.16	-1.24	1.05	2.86	15.50	12.65

802.11ac VHT40 MIMO (ANT 1+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 190	-0.90	-	-1.18	1.05	3.02	15.34	12.32
5 230	-0.85	-	-1.11	1.05	3.08	15.34	12.26

802.11ac VHT40 MIMO (ANT 1+2+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 190	-2.96	-3.17	-3.46	0.32	1.90	13.58	11.68
5 230	-2.81	-3.61	-3.54	0.32	1.78	13.58	11.80

802.11ac VHT80 ANT 1

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 210	-1.35	-	-	0.24	-1.11	17.00	18.11

802.11ac VHT80 ANT 2

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 210	-	-1.55	-	0.24	-1.31	17.00	18.31

802.11ac VHT80 ANT 3

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 210	-	-	-1.73	0.24	-1.49	17.00	18.49

802.11ac VHT80 MIMO (ANT 1+2)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 210	-4.68	-5.10	-	1.78	-0.10	15.34	15.44

802.11ac VHT80 MIMO (ANT 2+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 210	-	-4.77	-4.69	1.78	0.06	15.34	15.29

802.11ac VHT80 MIMO (ANT 1+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 210	-4.32	-	-4.73	1.78	0.27	15.34	15.08

802.11ac VHT80 MIMO (ANT 1+2+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 210	-6.45	-6.80	-6.85	0.57	-1.35	13.58	14.93

5 725 Band

802.11a ANT 1

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 745	0.25	-	-	0.22	0.47	30.00	29.53
5 785	0.22	-	-	0.22	0.44	30.00	29.56
5 825	-0.08	-	-	0.22	0.14	30.00	29.86

802.11a ANT 2

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 745	-	0.34	-	0.22	0.56	30.00	29.44
5 785	-	0.80	-	0.22	1.02	30.00	28.98
5 825	-	0.28	-	0.22	0.50	30.00	29.50

802.11a ANT 3

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 745	-	-	-0.18	0.22	0.04	30.00	29.96
5 785	-	-	0.19	0.22	0.41	30.00	29.59
5 825	-	-	0.11	0.22	0.33	30.00	29.67

802.11n HT20 ANT 1

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 745	-0.03	-	-	0.22	0.19	30.00	29.81
5 785	0.04	-	-	0.22	0.26	30.00	29.74
5 825	-0.38	-	-	0.22	-0.16	30.00	30.16

802.11n HT20 ANT 2

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 745	-	0.24	-	0.22	0.46	30.00	29.54
5 785	-	0.21	-	0.22	0.43	30.00	29.57
5 825	-	0.08	-	0.22	0.30	30.00	29.70

802.11n HT20 ANT 3

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 745	-	-	-0.57	0.22	-0.35	30.00	30.35
5 785	-	-	-0.29	0.22	-0.07	30.00	30.07
5 825	-	-	-0.26	0.22	-0.04	30.00	30.04

802.11n HT20 MIMO (ANT 1+2)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 745	-1.85	-1.78	-	0.22	1.42	28.35	26.93
5 785	-1.66	-1.46	-	0.22	1.67	28.35	26.68
5 825	-1.46	-1.02	-	0.22	2.00	28.35	26.35

802.11n HT20 MIMO (ANT 2+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 745	-	-1.36	-1.99	0.22	1.57	28.35	26.78
5 785	-	-1.29	-1.60	0.22	1.79	28.35	26.56
5 825	-	-0.89	-1.43	0.22	2.08	28.35	26.27

802.11n HT20 MIMO (ANT 1+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 745	-1.65	-	-1.87	0.22	1.47	28.74	27.26
5 785	-1.61	-	-1.61	0.22	1.62	28.74	27.12
5 825	-1.38	-	-1.52	0.22	1.78	28.74	26.96

802.11n HT20 MIMO (ANT 1+2+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 745	-3.87	-3.60	-4.07	0.57	1.50	26.59	25.09
5 785	-3.45	-3.38	-3.49	0.57	1.91	26.59	24.68
5 825	-3.68	-3.05	-3.91	0.57	1.81	26.59	24.77

802.11n HT40 ANT 1

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 755	-1.10	-	-	0.39	-0.71	30.00	30.71
5 795	-0.88	-	-	0.39	-0.49	30.00	30.49

802.11n HT40 ANT 2

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 755	-	-0.96	-	0.39	-0.57	30.00	30.57
5 795	-	-0.66	-	0.39	-0.27	30.00	30.27

802.11n HT40 ANT 3

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 755	-	-	-1.34	0.39	-0.95	30.00	30.95
5 795	-	-	-1.09	0.39	-0.70	30.00	30.70

802.11n HT40 MIMO (ANT 1+2)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 755	-3.77	-3.67	-	1.05	0.34	28.35	28.01
5 795	-4.86	-4.76	-	1.05	-0.75	28.35	29.10

802.11n HT40 MIMO (ANT 2+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 755	-	-3.42	-3.71	1.05	0.49	28.35	27.86
5 795	-	-4.46	-4.62	1.05	-0.48	28.35	28.83

802.11n HT40 MIMO (ANT 1+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 755	-3.67	-	-3.56	1.05	0.44	28.74	28.30
5 795	-4.59	-	-4.73	1.05	-0.60	28.74	29.34

802.11n HT40 MIMO (ANT 1+2+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 755	-6.17	-6.27	-6.53	1.06	-0.49	26.59	27.08
5 795	-6.12	-5.99	-5.77	1.06	-0.13	26.59	26.72

802.11ac VHT20 ANT 1

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result	Limit [dBm]	Margin [dBm]
5 745	0.21	-	-	0.07	0.28	30.00	29.72
5 785	0.45	-	-	0.07	0.52	30.00	29.48
5 825	0.32	-	-	0.07	0.39	30.00	29.61

802.11ac VHT20 ANT 2

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 745	-	0.50	-	0.07	0.57	30.00	29.43
5 785	-	0.58	-	0.07	0.65	30.00	29.35
5 825	-	0.51	-	0.07	0.58	30.00	29.42

802.11ac VHT20 ANT 3

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 745	-	-	-0.19	0.07	-0.12	30.00	30.12
5 785	-	-	-0.14	0.07	-0.07	30.00	30.07
5 825	-	-	-0.12	0.07	-0.05	30.00	30.05

802.11ac VHT20 MIMO (ANT 1+2)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 745	-3.67	-3.15	-	0.57	0.18	28.35	28.17
5 785	-2.28	-2.16	-	0.57	1.36	28.35	26.99
5 825	-2.37	-1.42	-	0.57	1.71	28.35	26.64

802.11ac VHT20 MIMO (ANT 2+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 745	-	-3.01	-3.14	0.57	0.51	28.35	27.84
5 785	-	-2.11	-2.62	0.57	1.23	28.35	27.12
5 825	-	-2.31	-1.93	0.57	1.47	28.35	26.88

802.11ac VHT20 MIMO (ANT 1+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 745	-3.20	-	-3.32	0.57	0.32	28.74	28.41
5 785	-2.05	-	-1.61	0.57	1.76	28.74	26.98
5 825	-2.02	-	-2.67	0.57	1.25	28.74	27.49

802.11ac VHT20 MIMO (ANT 1+2+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 745	-3.61	-3.16	-3.58	0.16	1.49	26.59	28.51
5 785	-3.13	-2.88	-3.22	0.16	1.86	26.59	28.14
5 825	-3.34	-3.08	-3.72	0.16	1.56	26.59	28.44

802.11ac VHT40 ANT 1

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 755	-1.17	-	-	0.13	-1.04	30.00	31.04
5 795	-1.10	-	-	0.13	-0.97	30.00	30.97

802.11ac VHT40 ANT 2

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 755	-	-1.21	-	0.13	-1.08	30.00	31.08
5 795	-	-0.96	-	0.13	-0.83	30.00	30.83

802.11ac VHT40 ANT 3

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 755	-	-	-1.32	0.13	-1.19	30.00	31.19
5 795	-	-	-1.19	0.13	-1.06	30.00	31.06

802.11ac VHT40 MIMO (ANT 1+2)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 755	-3.62	-3.43	-	1.05	0.53	28.35	27.82
5 795	-3.35	-2.99	-	1.05	0.89	28.35	27.46

802.11ac VHT40 MIMO (ANT 2+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 755	-	-3.43	-4.07	1.05	0.32	28.35	28.03
5 795	-	-3.28	-3.58	1.05	0.63	28.35	27.72

802.11ac VHT40 MIMO (ANT 1+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 755	-3.75	-	-3.44	1.05	0.46	28.74	28.27
5 795	-3.22	-	-3.73	1.05	0.59	28.74	28.15

802.11ac VHT40 MIMO (ANT 1+2+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 755	-5.90	-6.10	-6.07	0.32	-0.93	26.59	27.52
5 795	-6.18	-6.16	-5.75	0.32	-0.94	26.59	27.53

802.11ac VHT80 ANT 1

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 775	-4.35	-	-	0.24	-4.11	30.00	34.11

802.11ac VHT80 ANT 2

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 775	-	-4.30	-	0.24	-4.06	30.00	34.06

802.11ac VHT80 ANT 3

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 775	-	-	-4.75	0.24	-4.51	30.00	34.51

802.11ac VHT80 MIMO (ANT 1+2)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 775	-7.31	-7.06	-	1.78	-2.40	28.35	30.75

802.11ac VHT80 MIMO (ANT 2+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 775	-	-7.13	-7.52	1.78	-2.53	28.35	30.88

802.11ac VHT80 MIMO (ANT 1+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 775	-7.33	-	-7.32	1.78	-2.54	28.74	31.28

802.11ac VHT80 MIMO (ANT 1+2+3)

Freq [MHz]	Reading Ant 1 [dBm]	Reading Ant 2 [dBm]	Reading Ant 3 [dBm]	Duty Factor [dB]	Result [dBm]	Limit [dBm]	Margin [dBm]
5 775	-9.25	-9.05	-9.29	0.57	-3.85	26.59	30.44

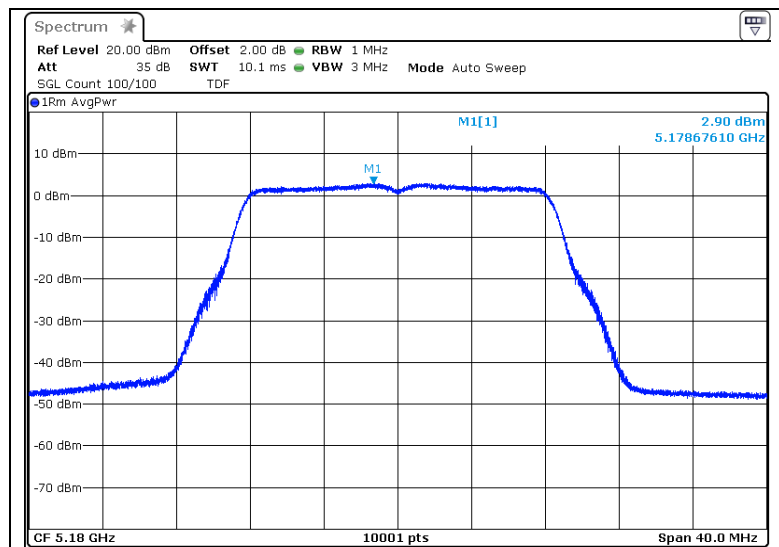
5.4.4 Test Plot

Figure 2. Plot of the Power Spectral Density

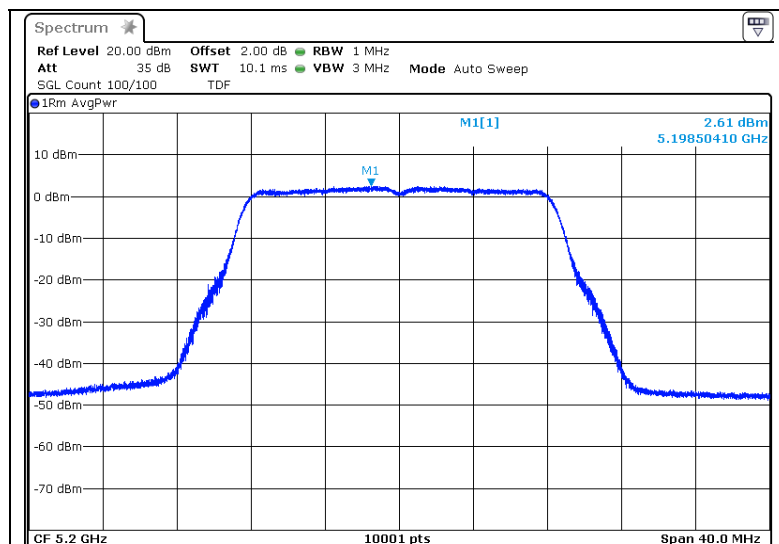
5 150 Band

802.11a_ANT 1

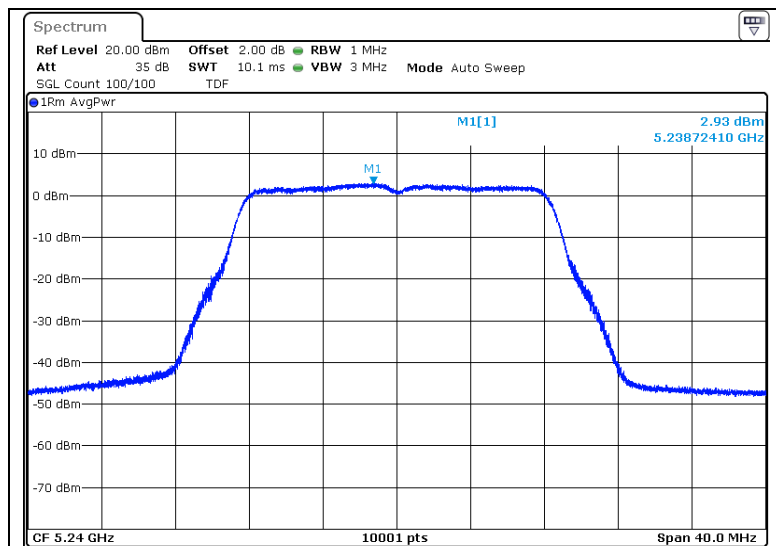
5 180 MHz



5 200 MHz

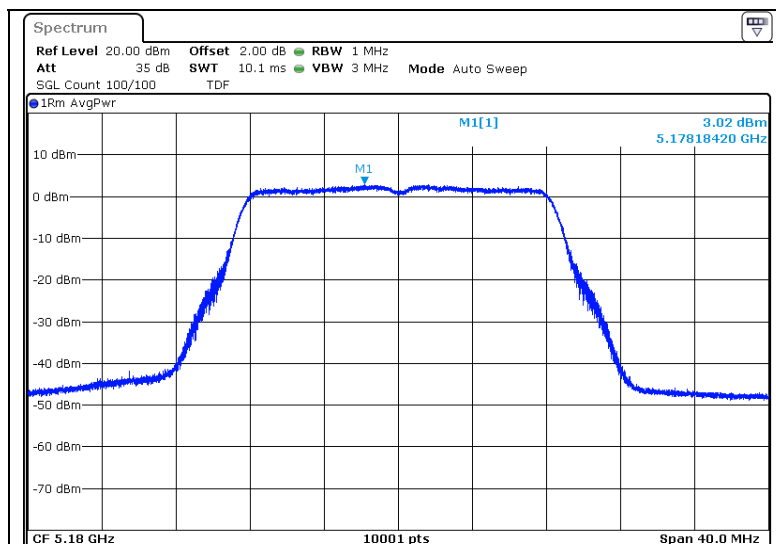


5 240 MHz

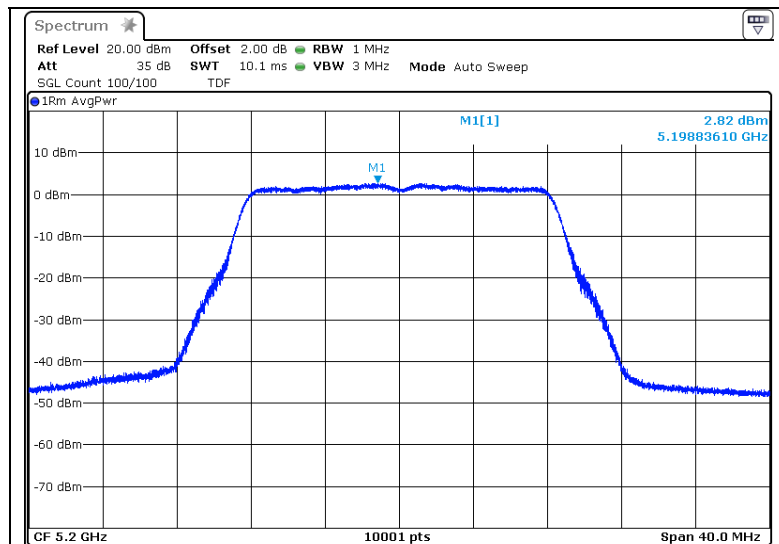


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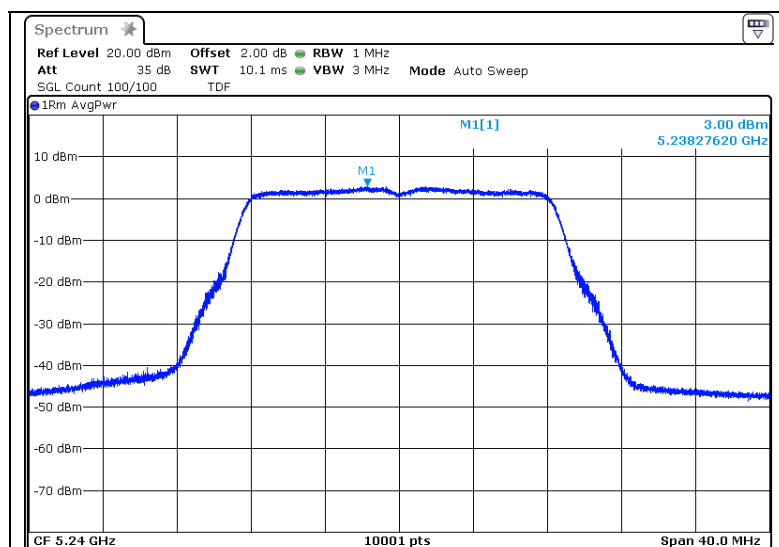
5 180 MHz



5 200 MHz

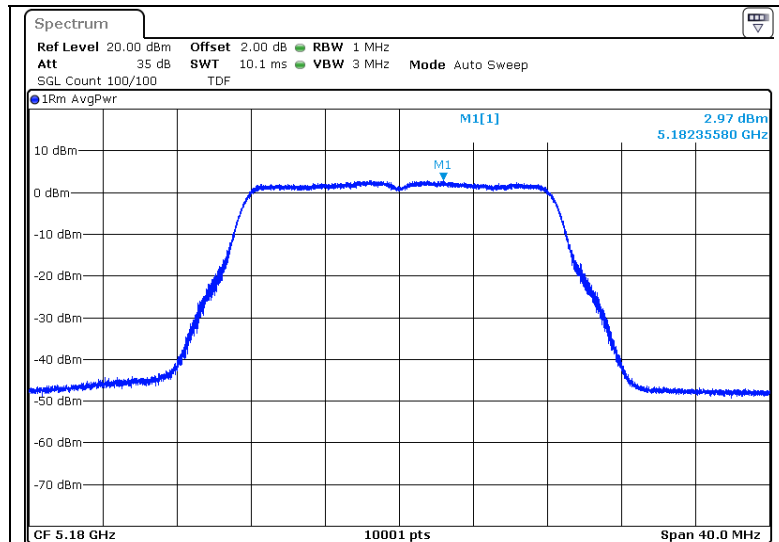


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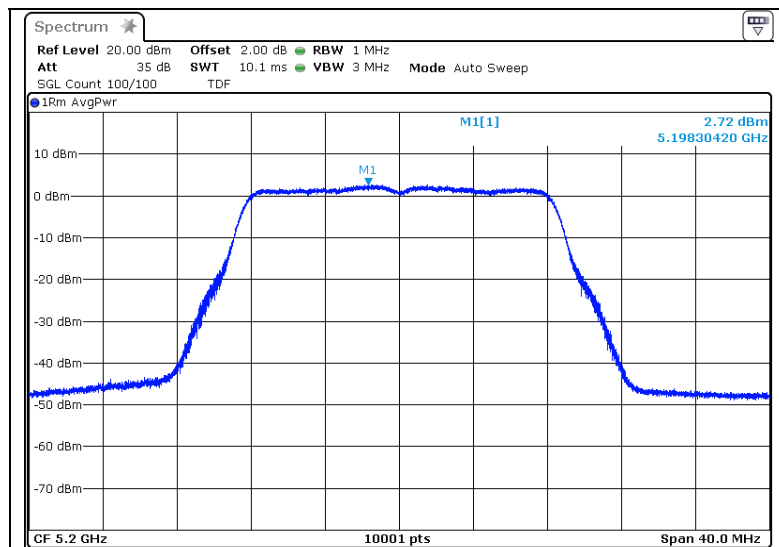


802.11a_ANT 3

5 180 MHz



5 200 MHz



Spectrum

Ref Level 20.00 dBm Offset 2.00 dB RBW 1 MHz
 Att 35 dB SWT 10.1 ms VBW 3 MHz Mode Auto Sweep
 SGL Count 100/100 TDF

● IRm AvgPwr

M1[1] 2.80 dBm
 5.24137190 GHz

10 dBm
 0 dBm
 -10 dBm
 -20 dBm
 -30 dBm
 -40 dBm
 -50 dBm
 -60 dBm
 -70 dBm

CF 5.24 GHz 10001 pts Span 40.0 MHz

Spectrum Spectrum 2 x

Ref Level 20.00 dBm **Offset** 2.00 dB **RBW** 1 MHz
Att 35 dB **SWT** 10.1 ms **VBW** 3 MHz **Mode** Auto Sweep
SGL Count 100/100 **TDF**

1Rm AvgPwr

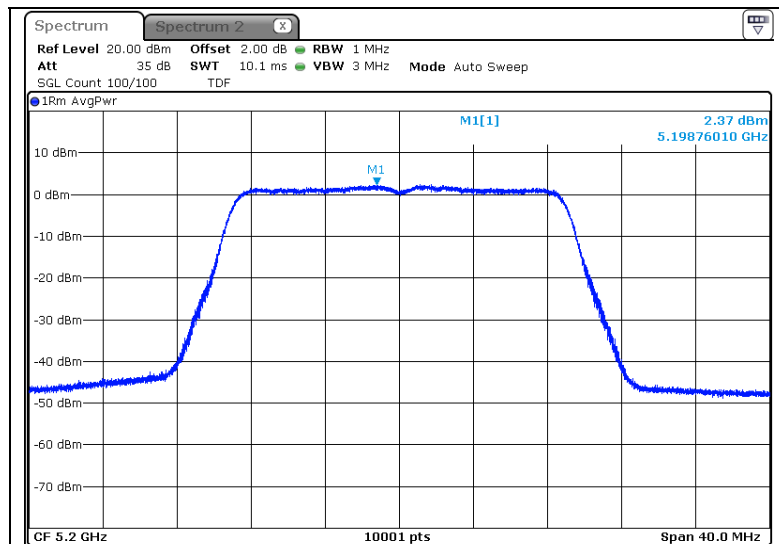
2.62 dBm
5.18159580 GHz

M1

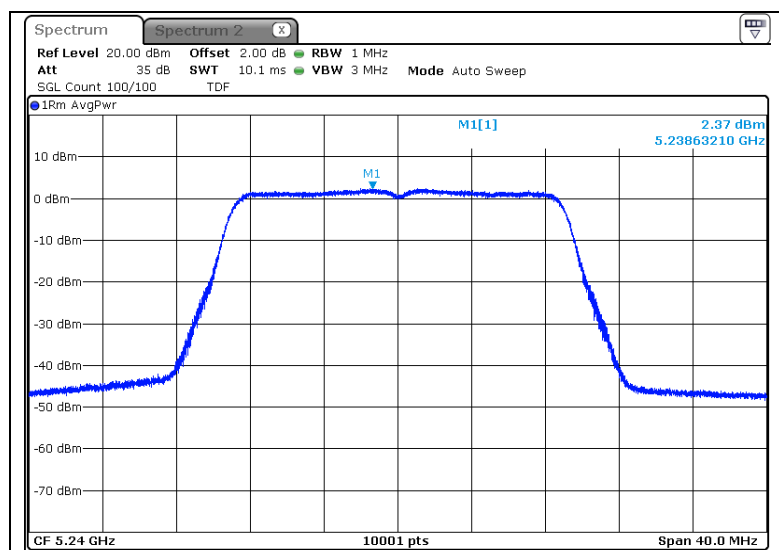
M1[1]

CF 5.18 GHz **10001 pts** **Span 40.0 MHz**

5 200 MHz

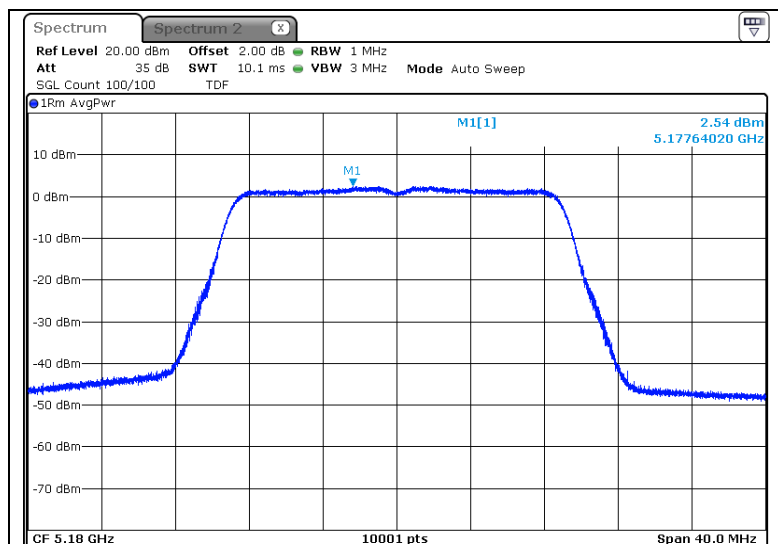


5 240 MHz

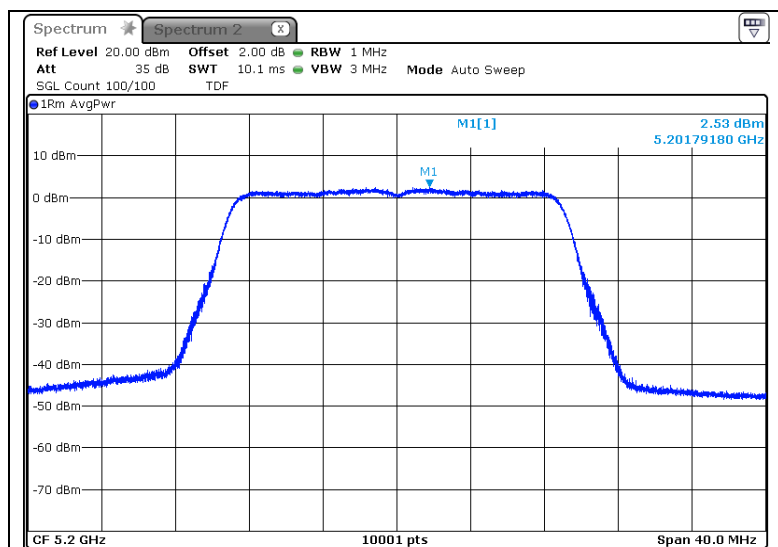


802.11n HT20_ANT 2

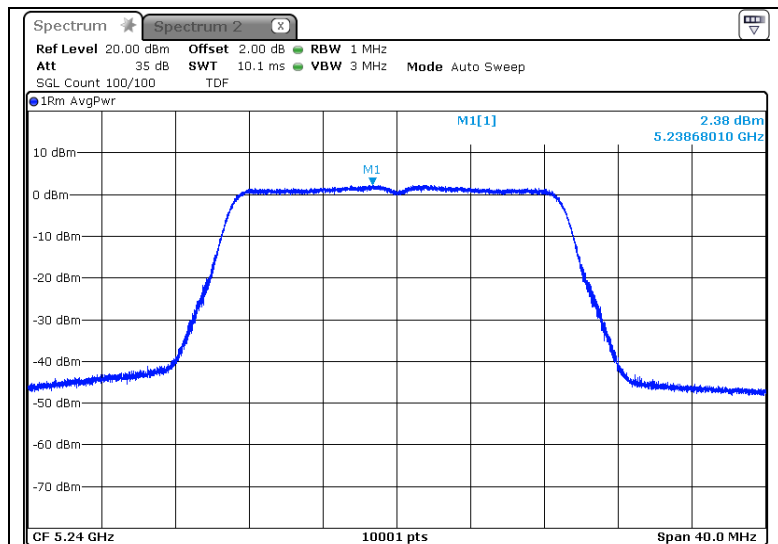
5 180 MHz



5 200 MHz

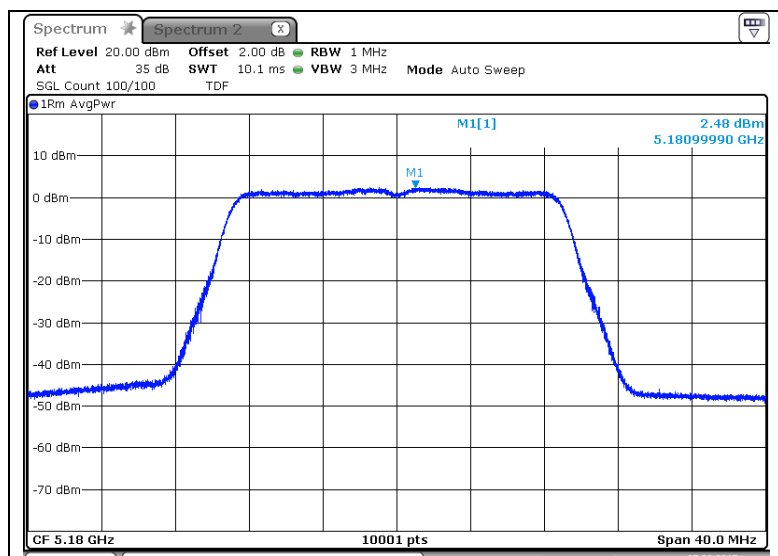


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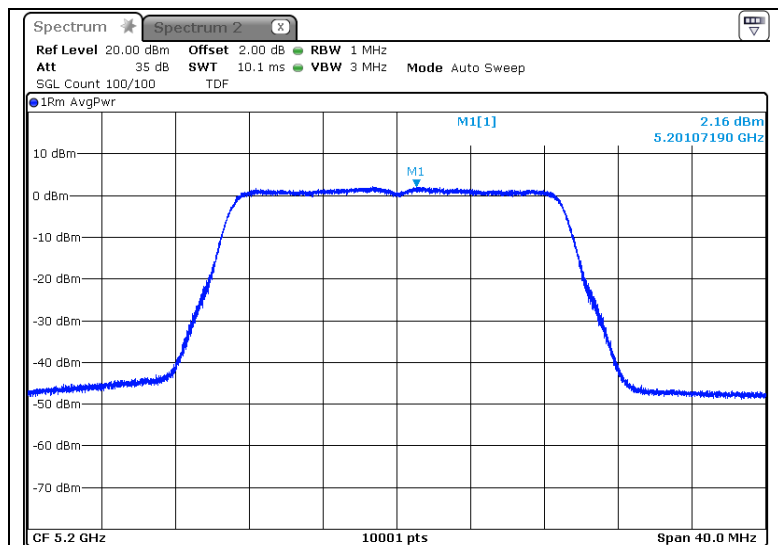


802.11n HT20_ANT 3

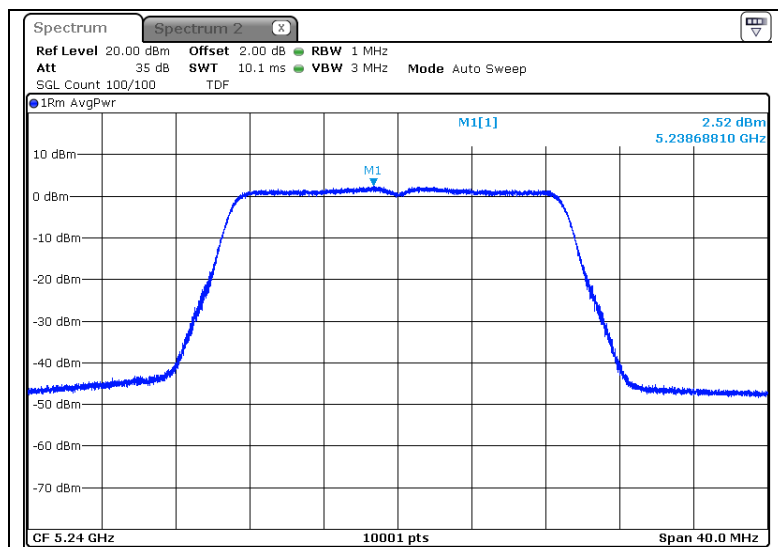
5 180 MHz



5 200 MHz



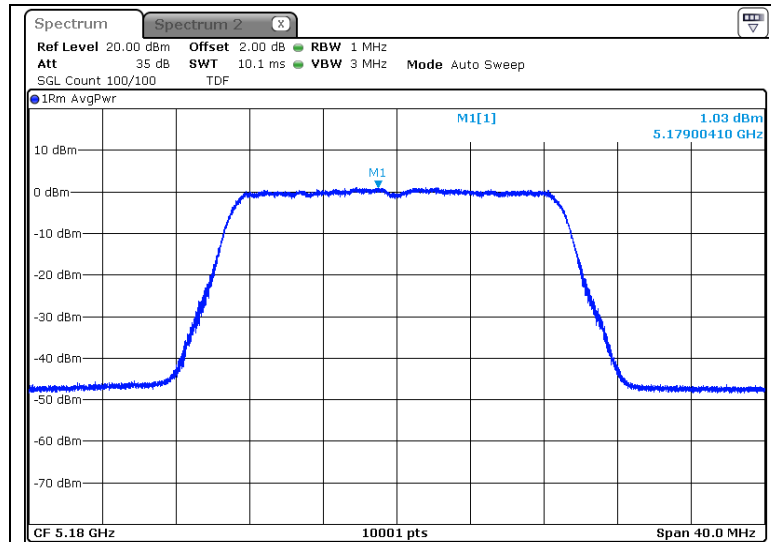
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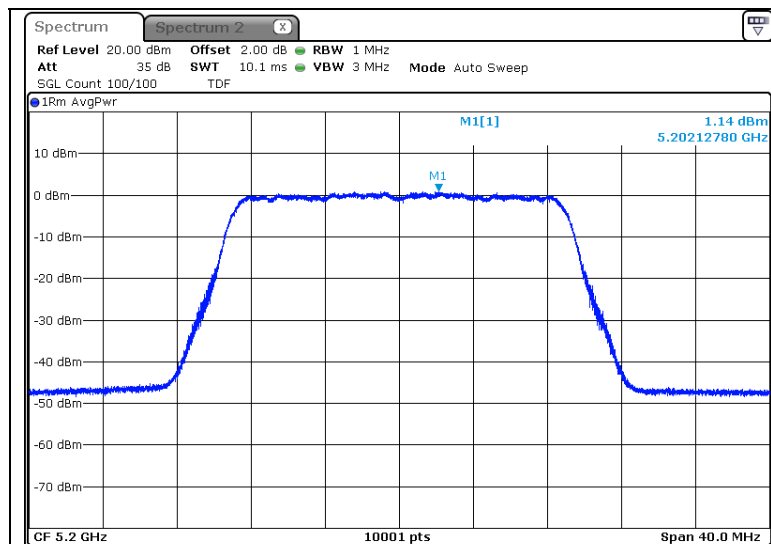
802.11n HT20_MIMO (ANT 1+2)

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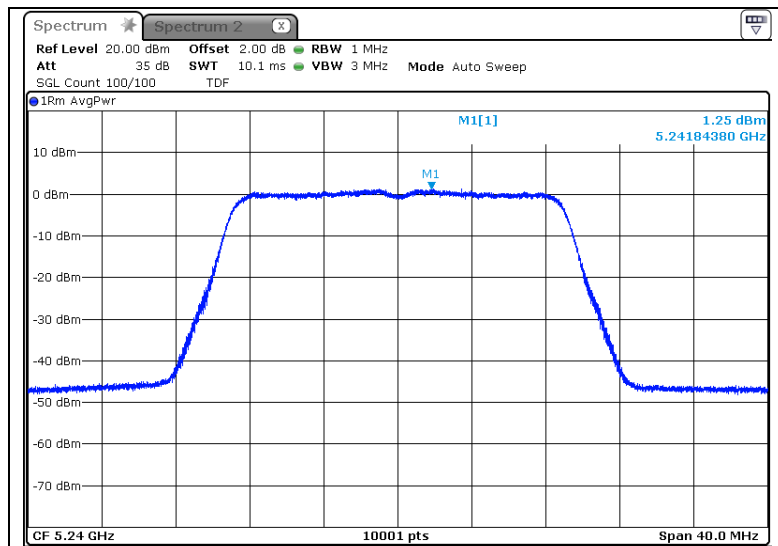
5 180 MHz



5 200 MHz

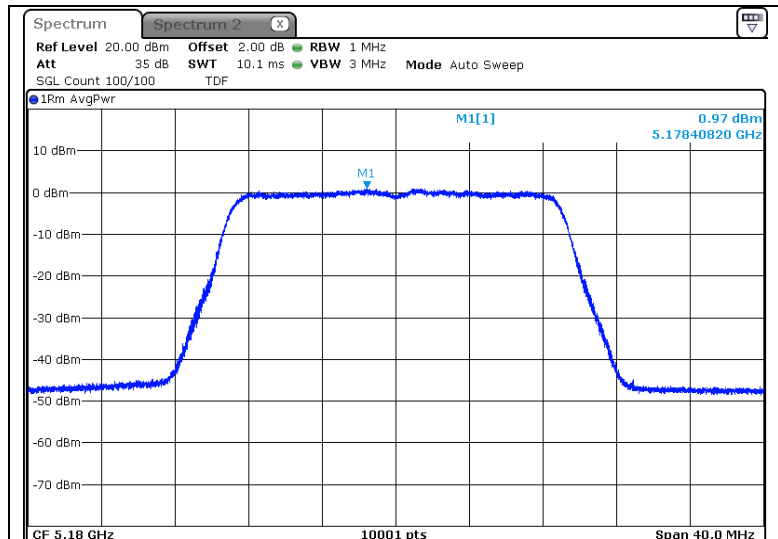


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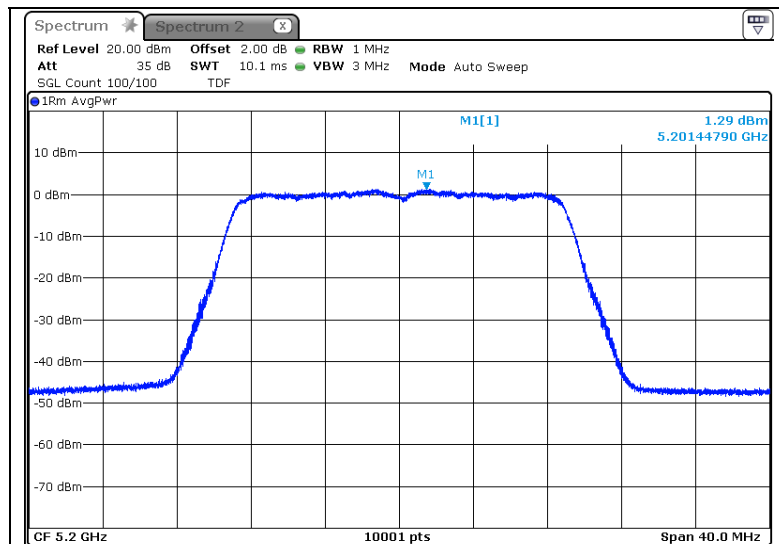


-ANT 2

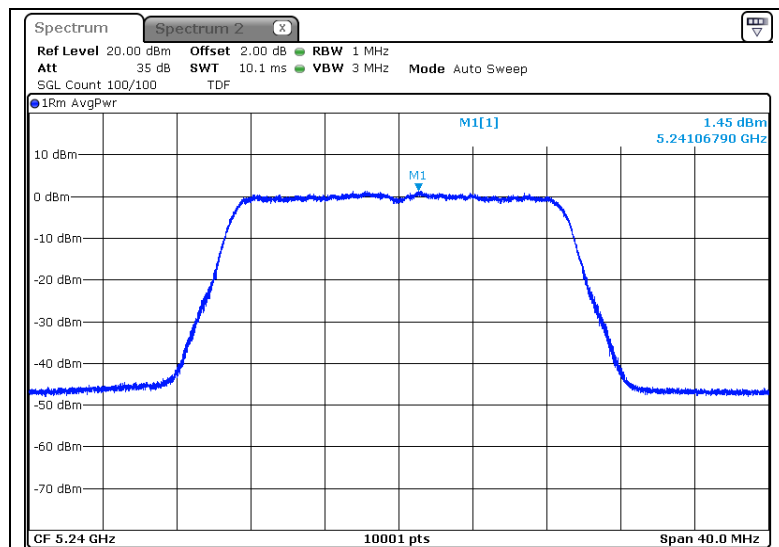
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5 200 MHz



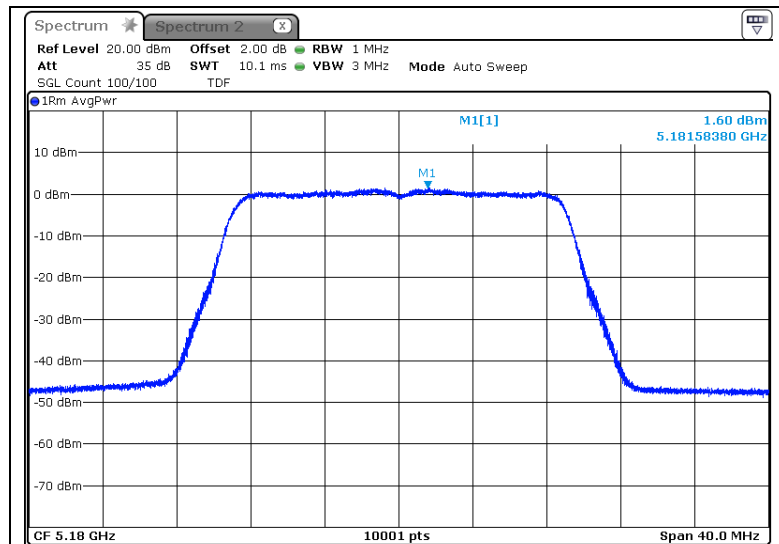
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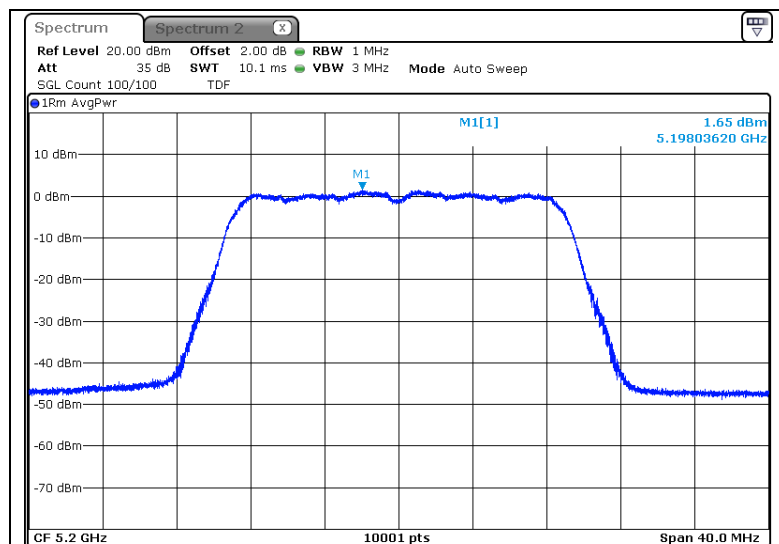
802.11n HT20_MIMO (ANT 2+3)

-ANT 2

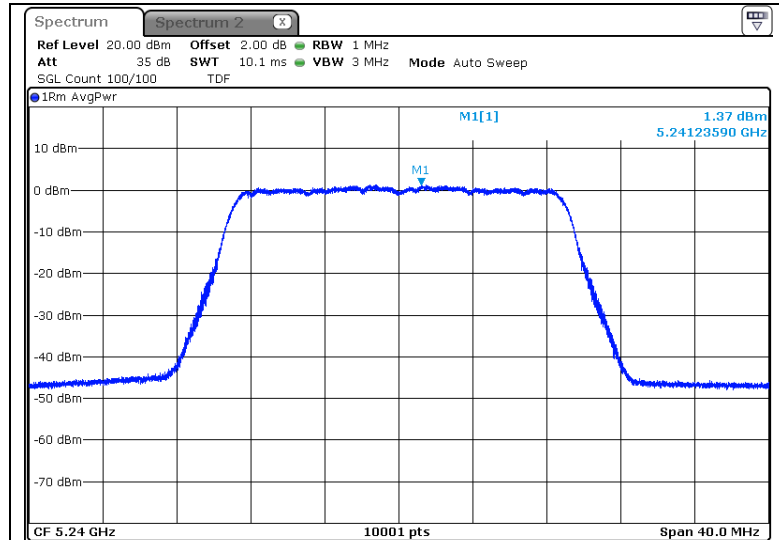
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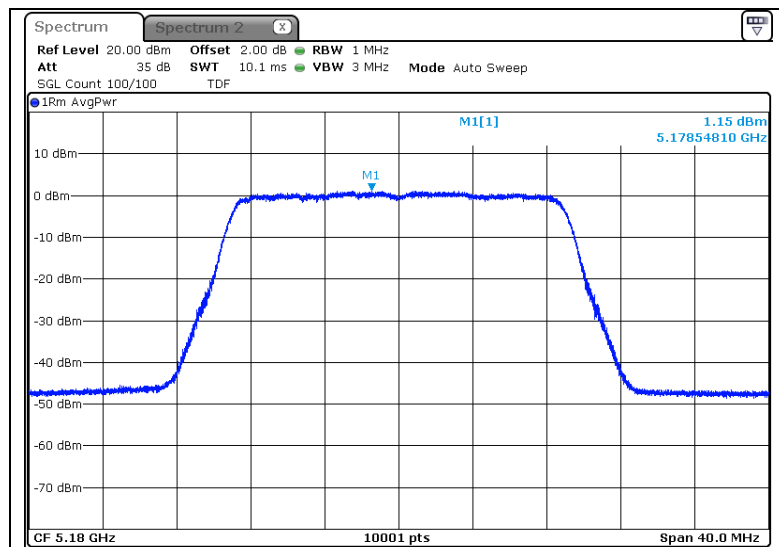


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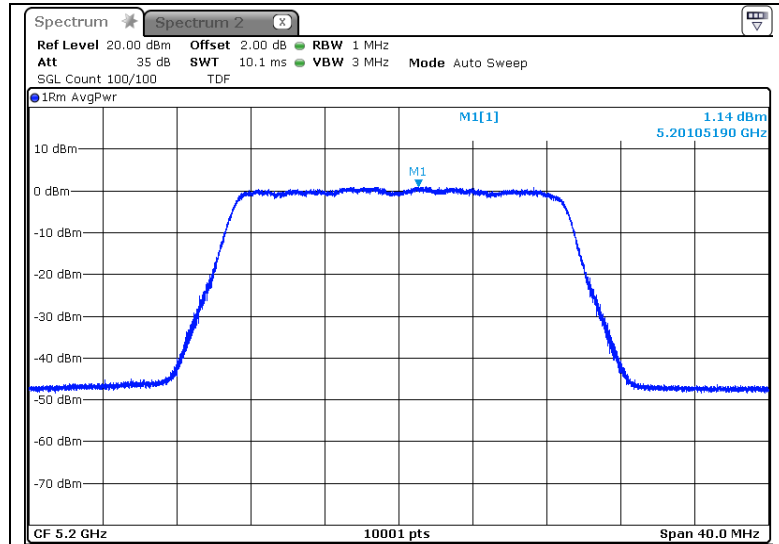


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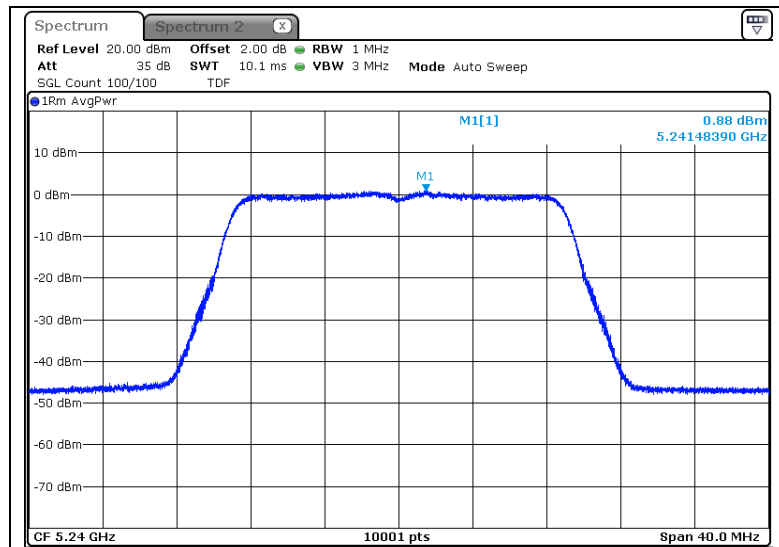
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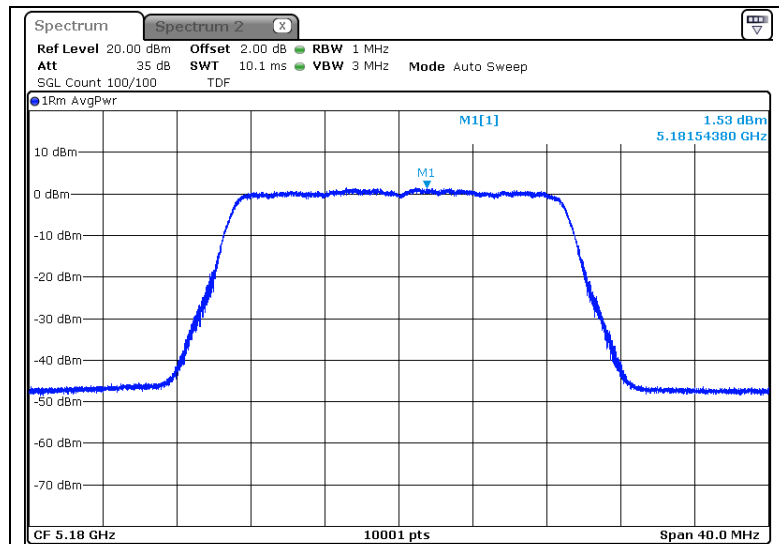
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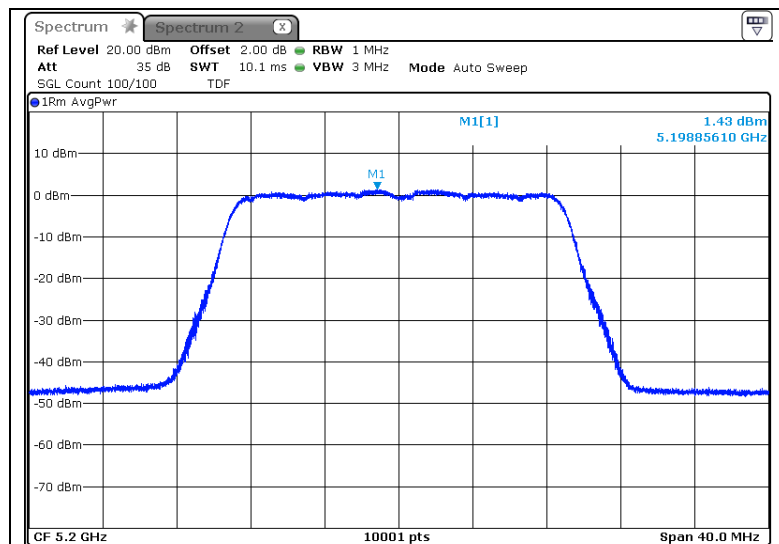
802.11n HT20_MIMO (ANT 1+3)

-ANT 1

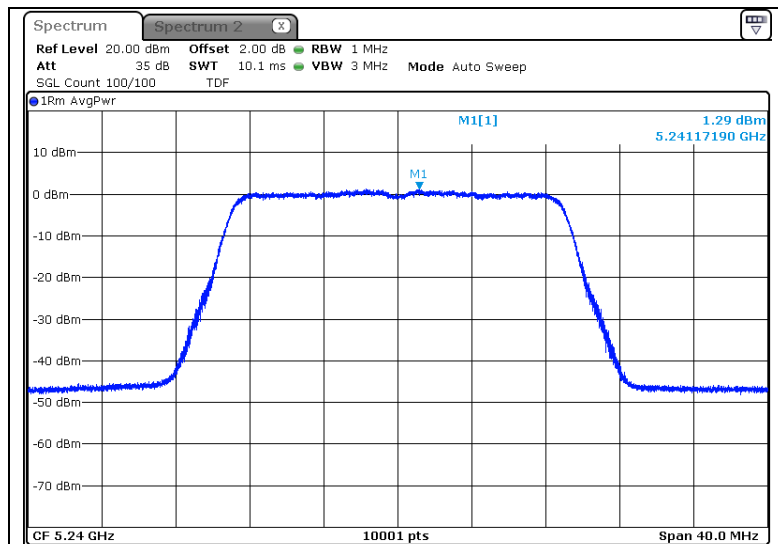
5 180 MHz



5 200 MHz

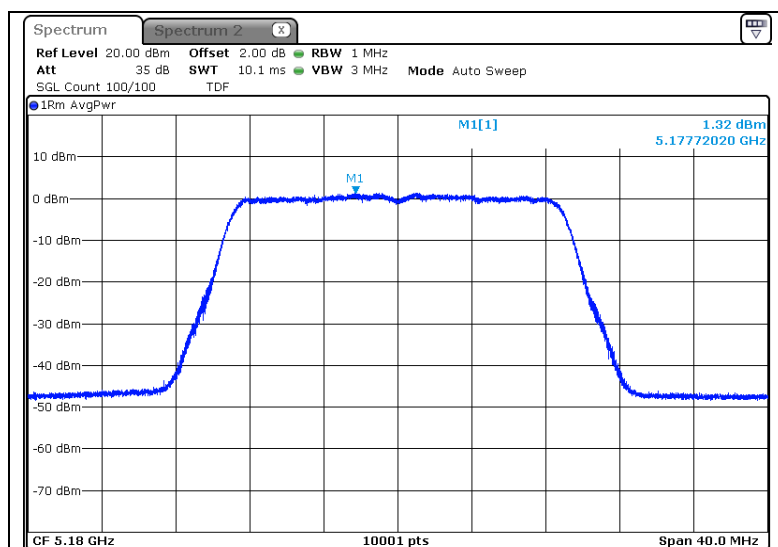


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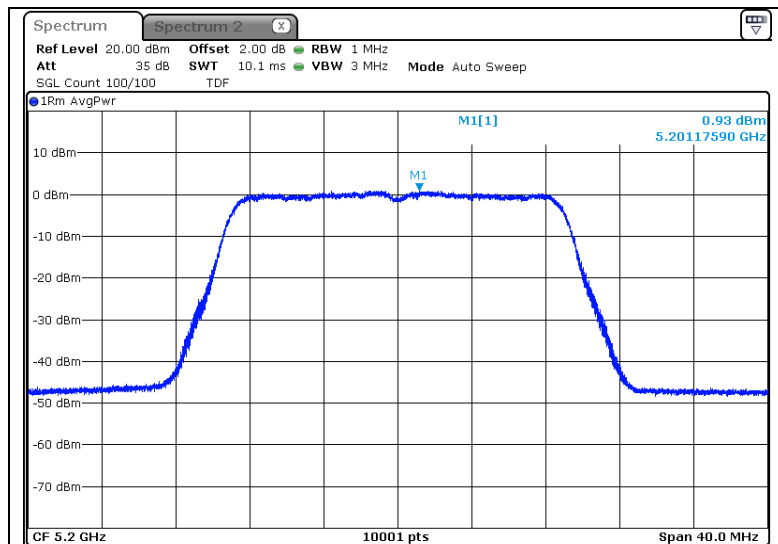


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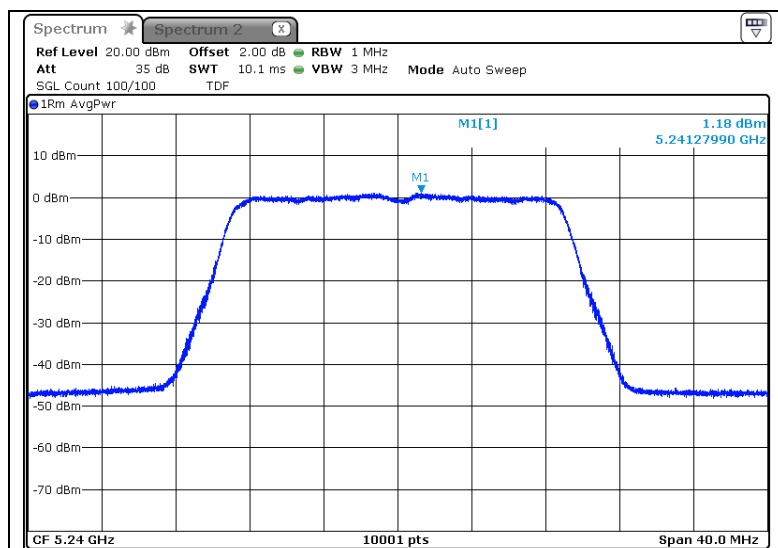
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5 200 MHz



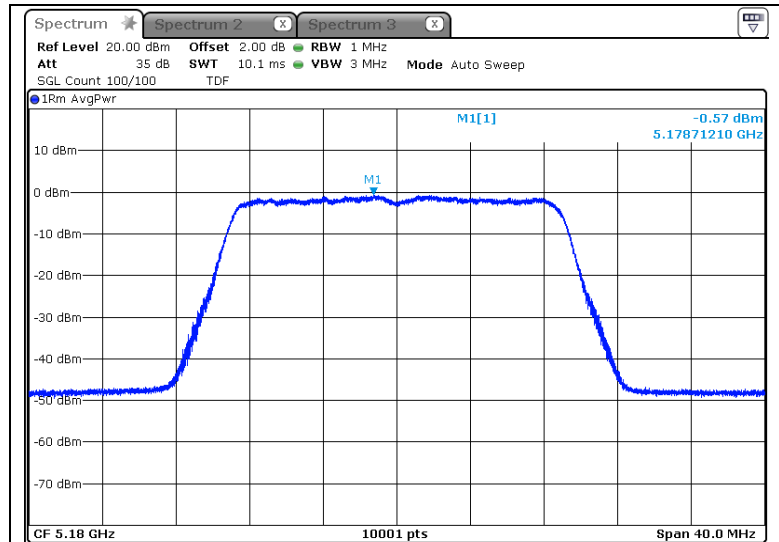
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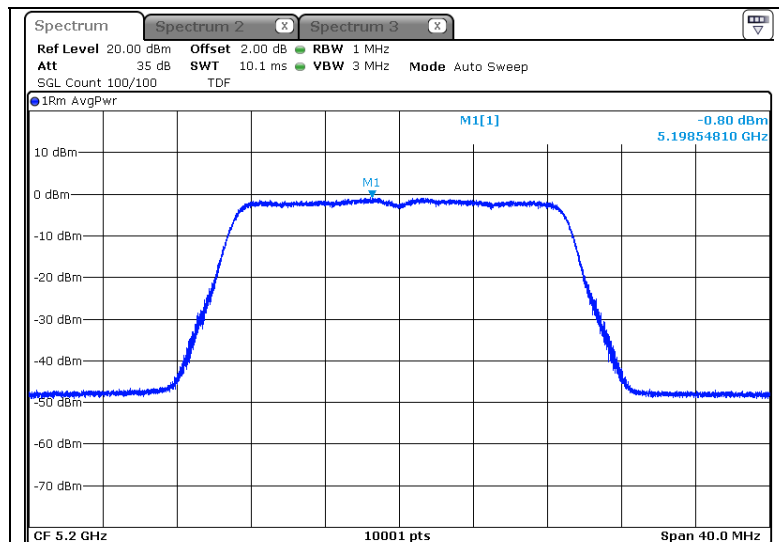
802.11n HT20_MIMO (ANT 1+2+3)

-ANT 1

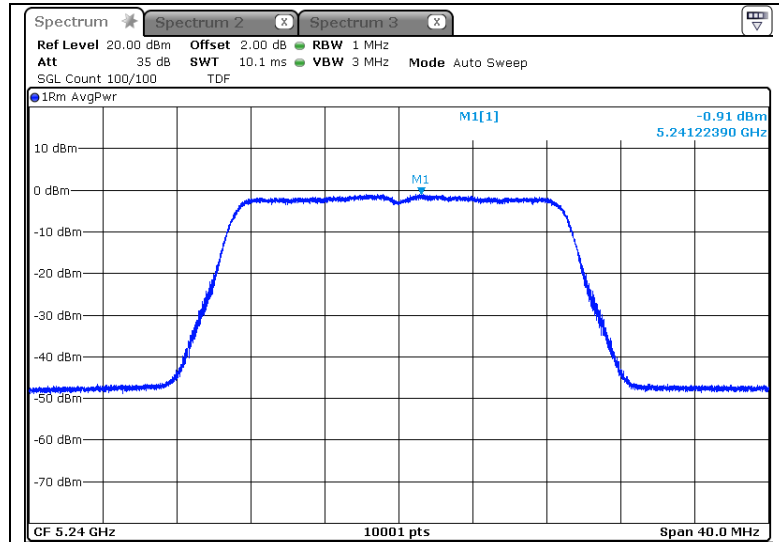
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5 200 MHz

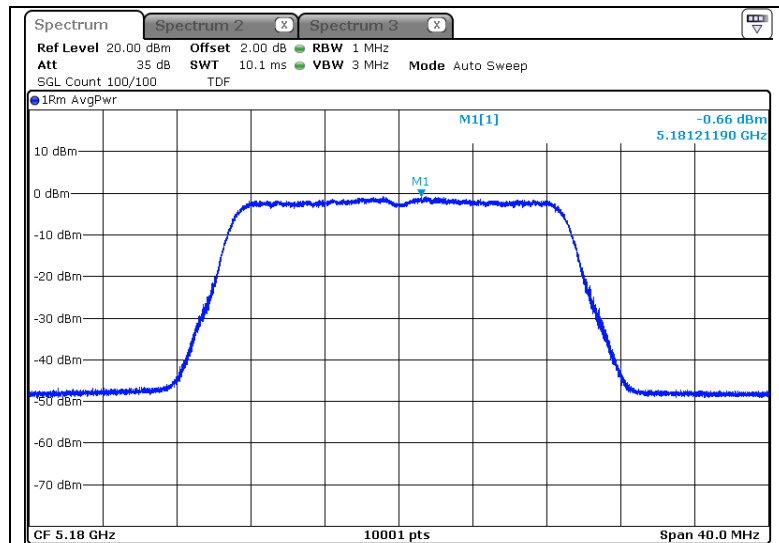


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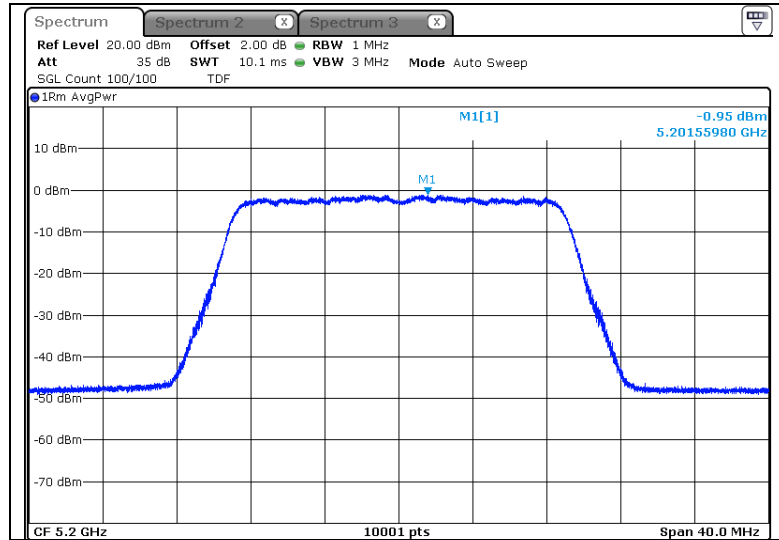


-ANT 2

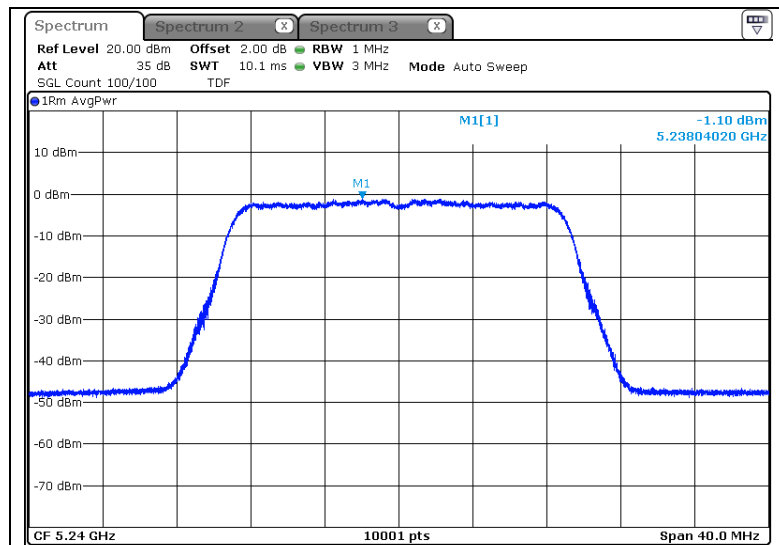
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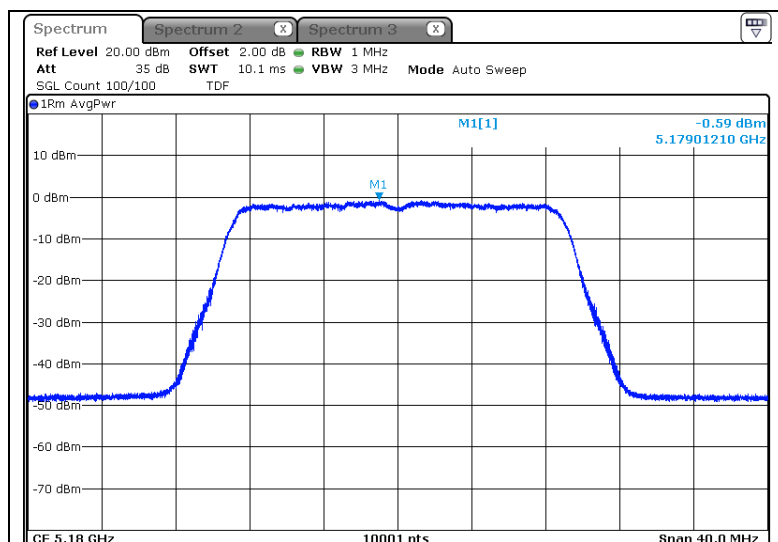


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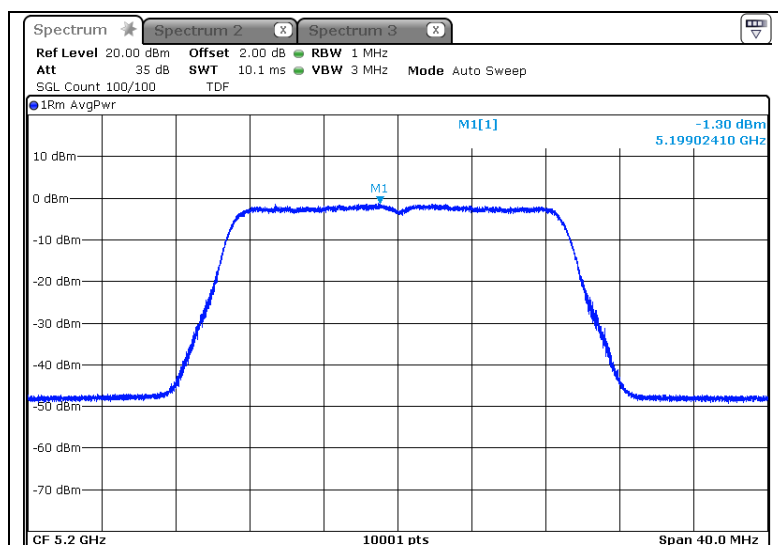


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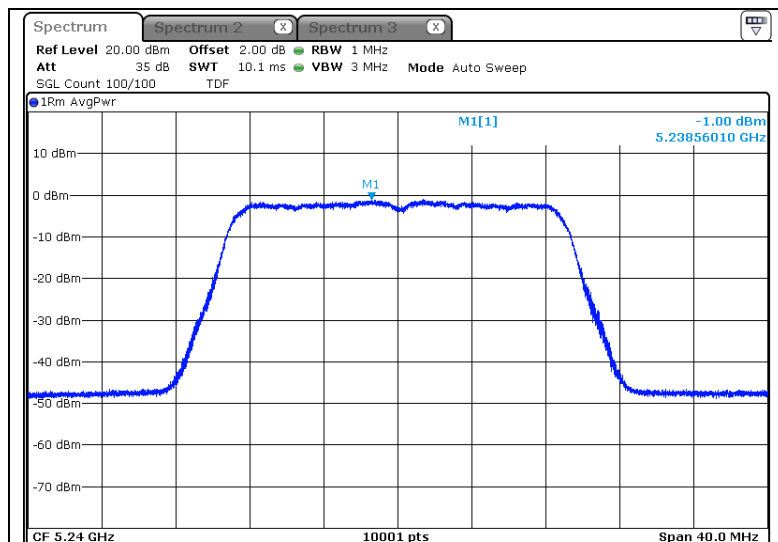
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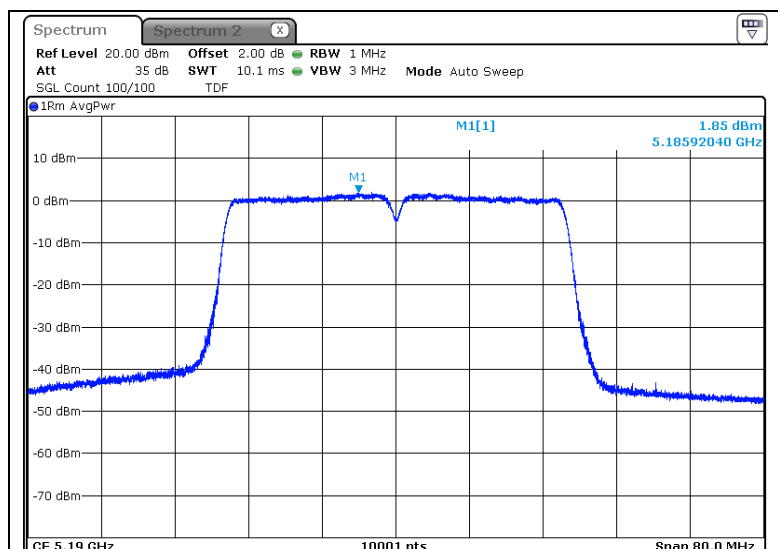


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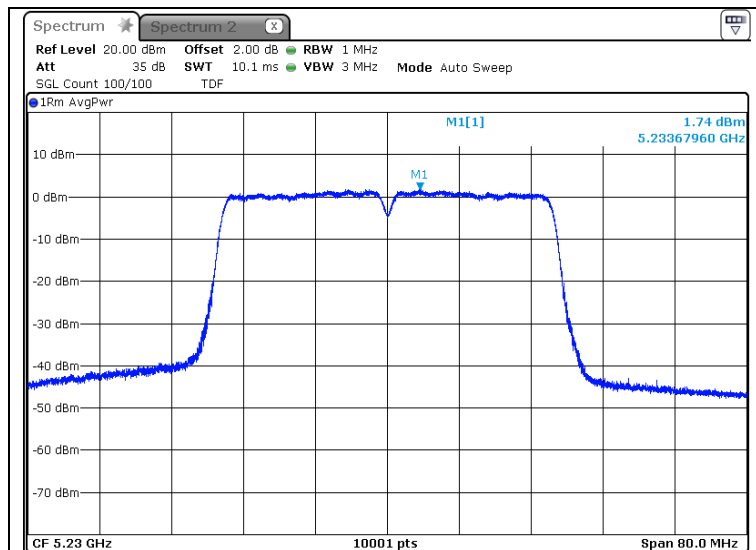


802.11n HT40_ANT 1

5 190 MHz

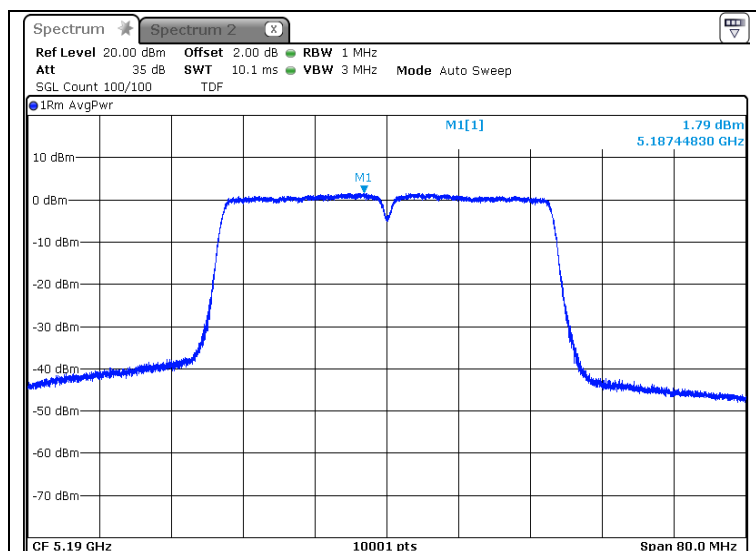


5 230 MHz

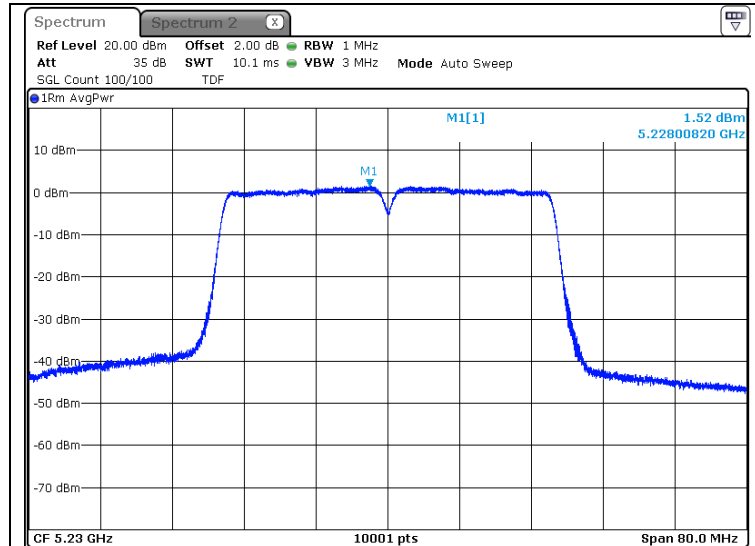


802.11n HT40_ANT 2

5 190 MHz

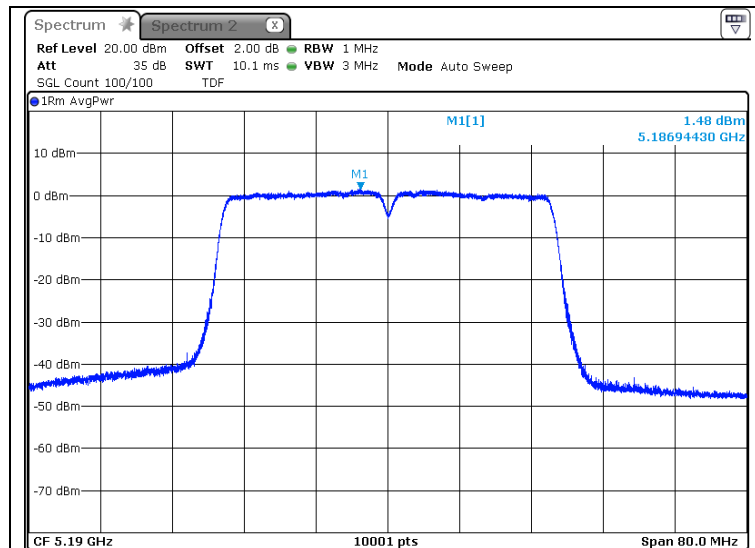


5 230 MHz

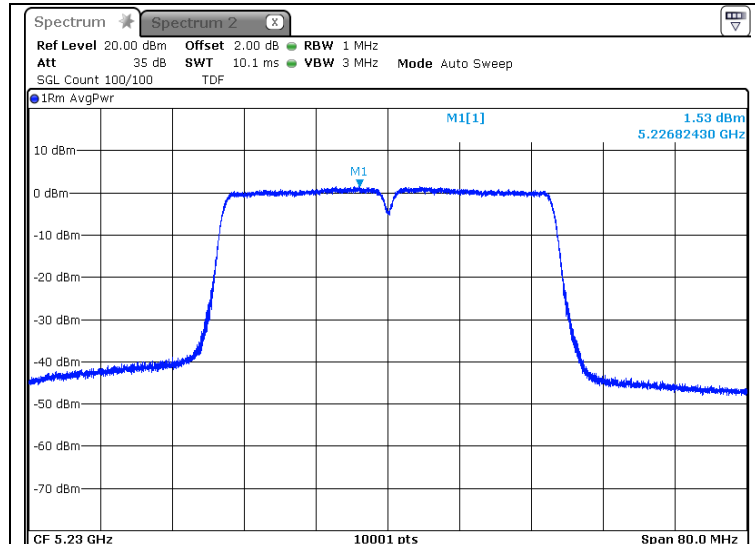


802.11n HT40_ANT 3

5 190 MHz



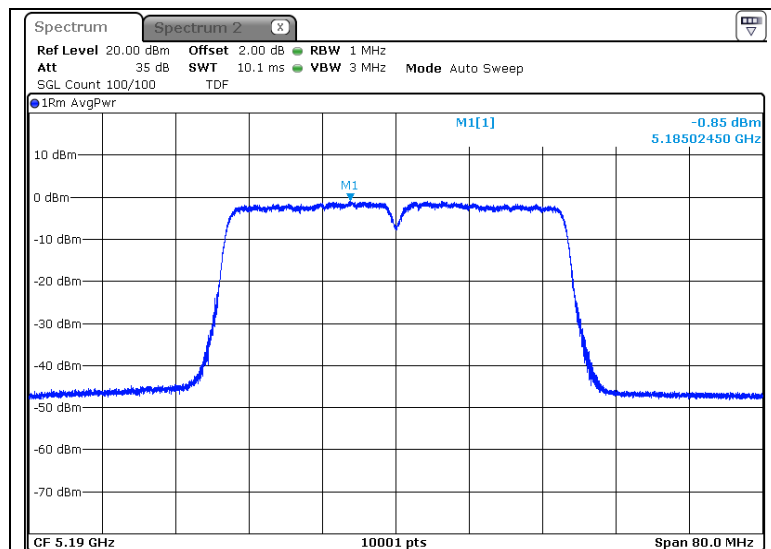
5 230 MHz



802.11n HT40_MIMO (ANT 1+2)

-ANT 1

5 190 MHz



Spectrum

Ref Level 20.00 dBm Offset 2.00 dB RBW 1 MHz
Att 35 dB SWT 10.1 ms VBW 3 MHz Mode Auto Sweep
SGL Count 100/100 TDF

1Rm AvgPwr

M1

M1[1]

-0.86 dBm
5.22356060 GHz

CF 5.23 GHz 10001 pts Span 80.0 MHz

Spectrum

Spectrum 2

Ref Level 20.00 dBm Offset 2.00 dB RBW 1 MHz
Att 35 dB SWT 10.1 ms VBW 3 MHz Mode Auto Sweep
SGL Count 100/100 TDF

1Rm AvgPwr

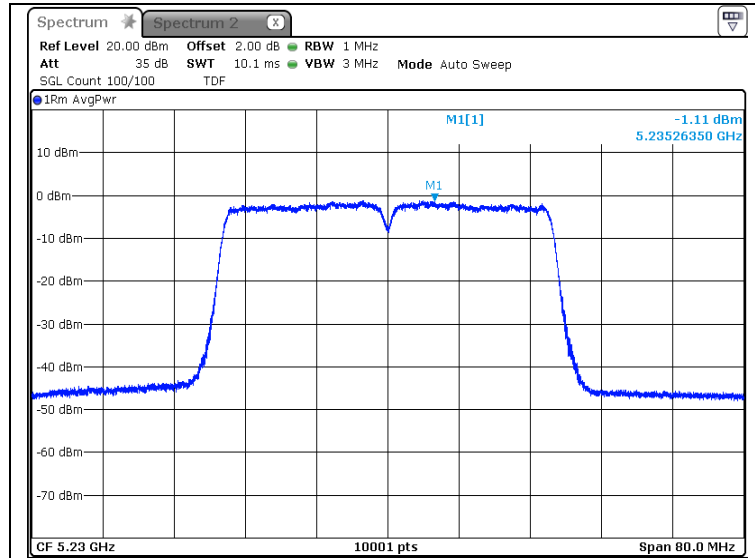
M1[1]

M1

~1.44 dBm
5.19474350 GHz

CF 5.19 GHz 10001 nts Span 80.0 MHz

5 230 MHz



802.11n HT40_MIMO (ANT 2+3)

-ANT 2

5 190 MHz

