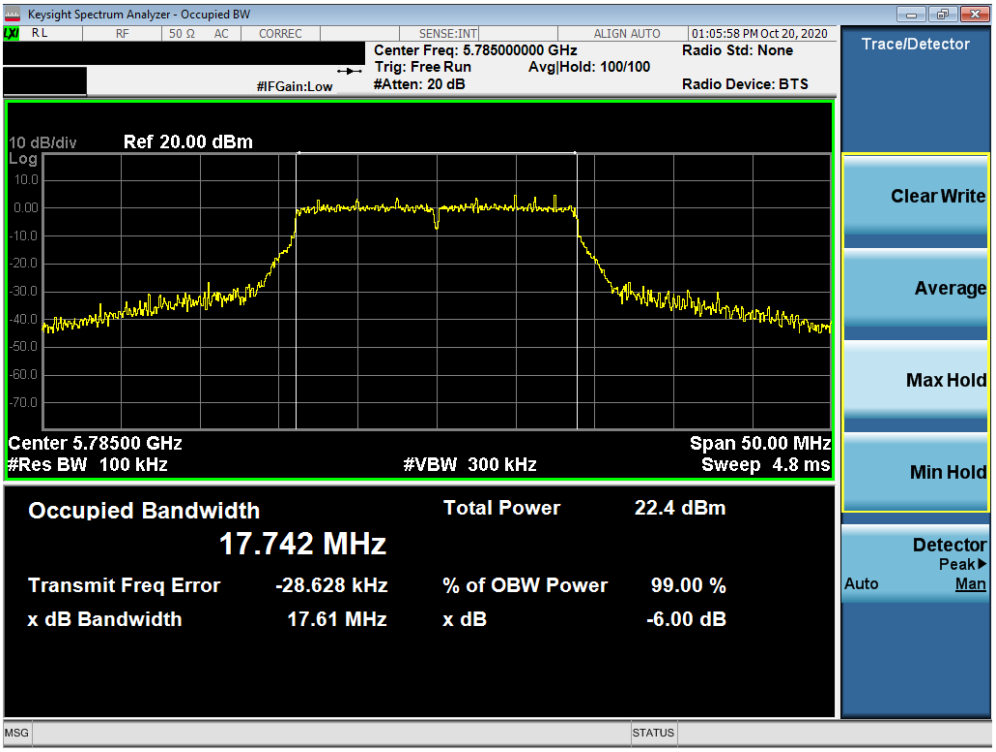
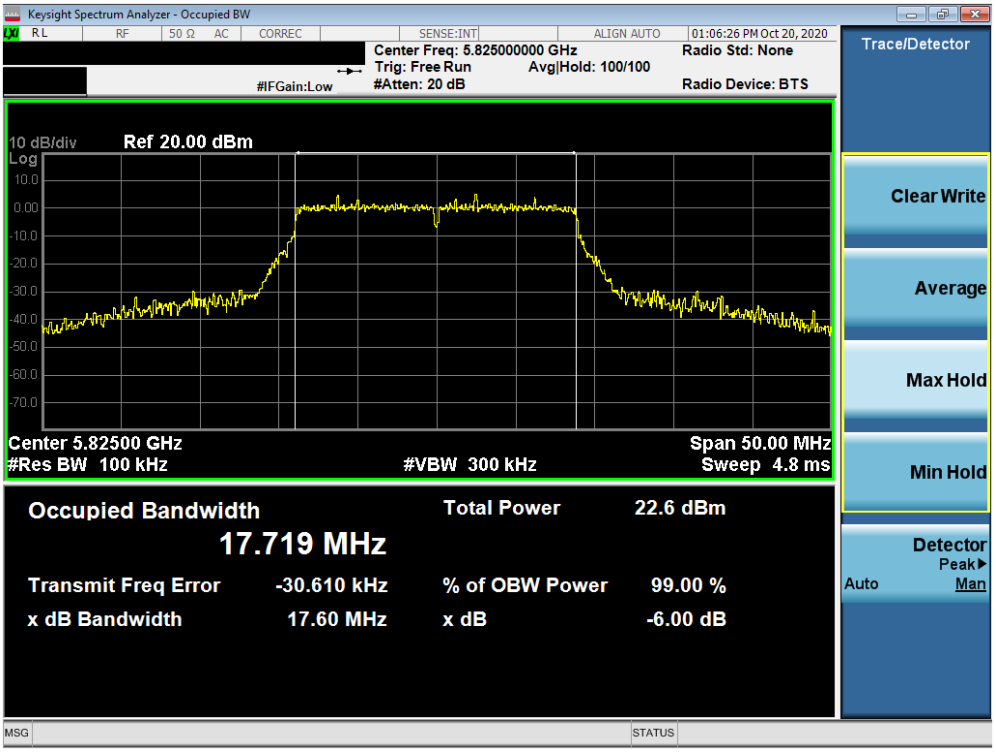
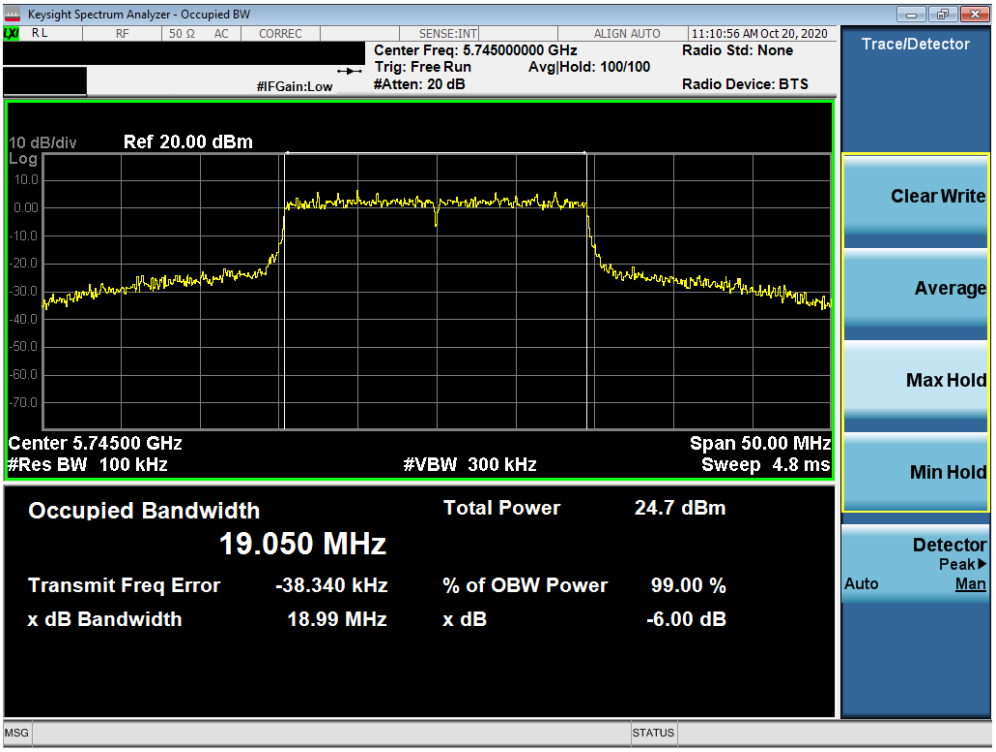


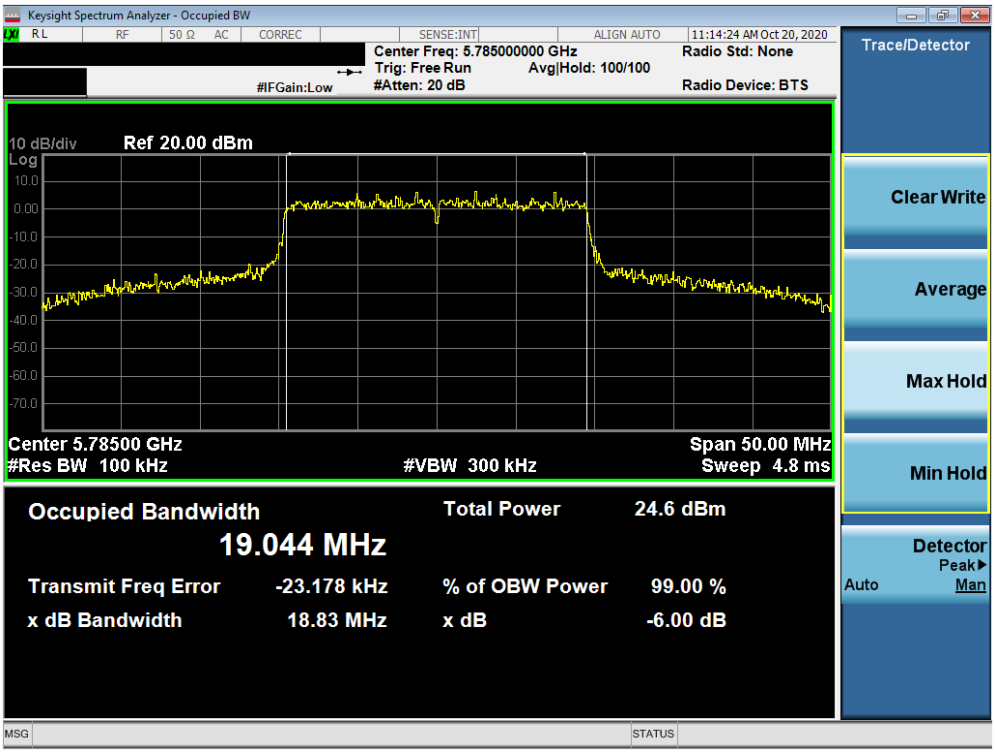
Plot 7-115. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 3) – Ch. 157)



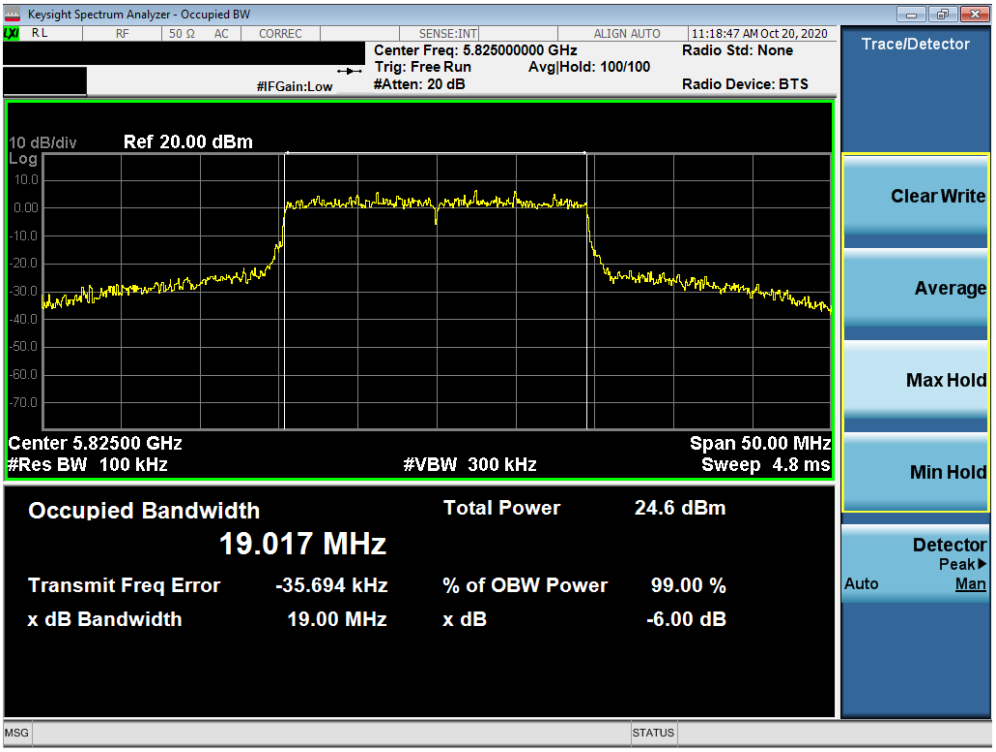
Plot 7-116. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 3) – Ch. 165)



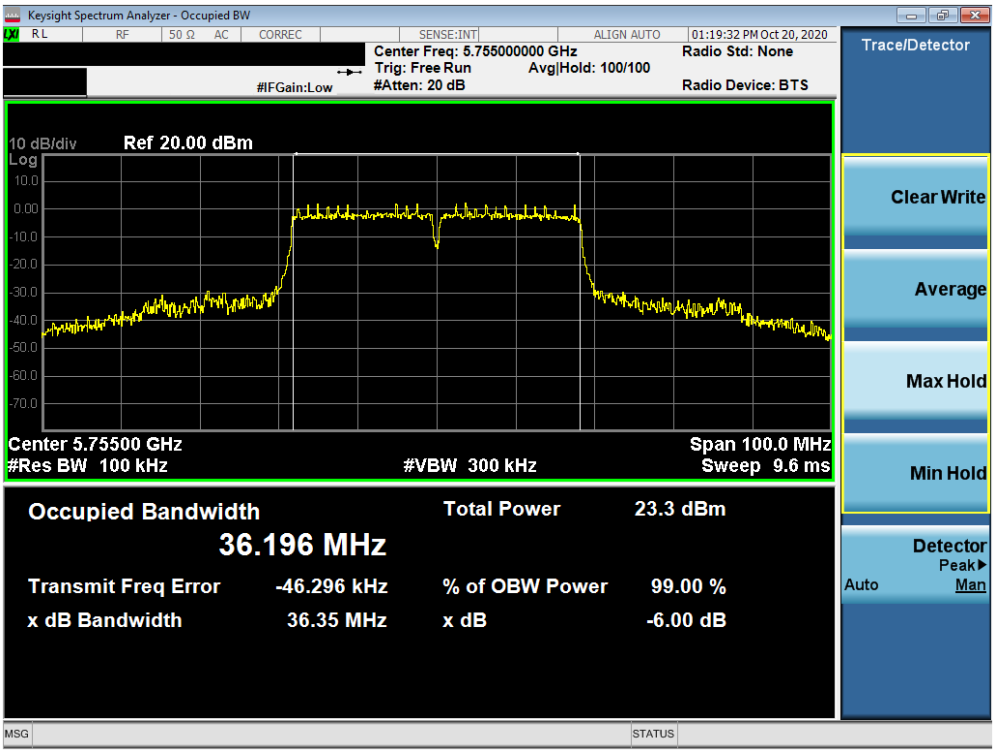
Plot 7-117. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 3) – Ch. 149)



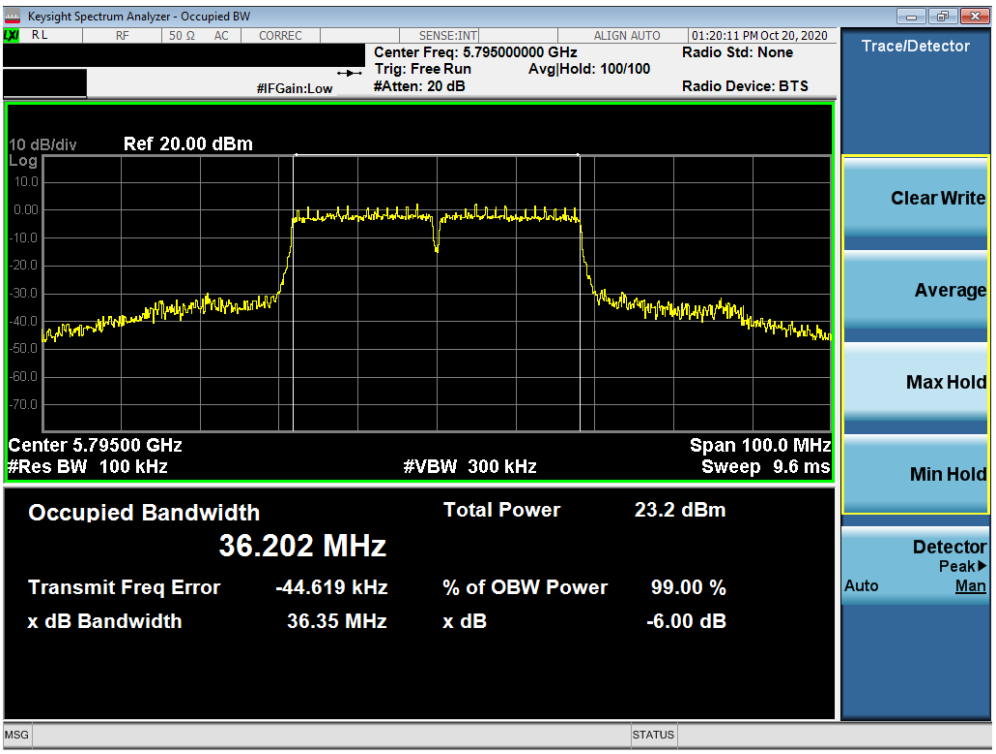
Plot 7-118. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 3) – Ch. 157)



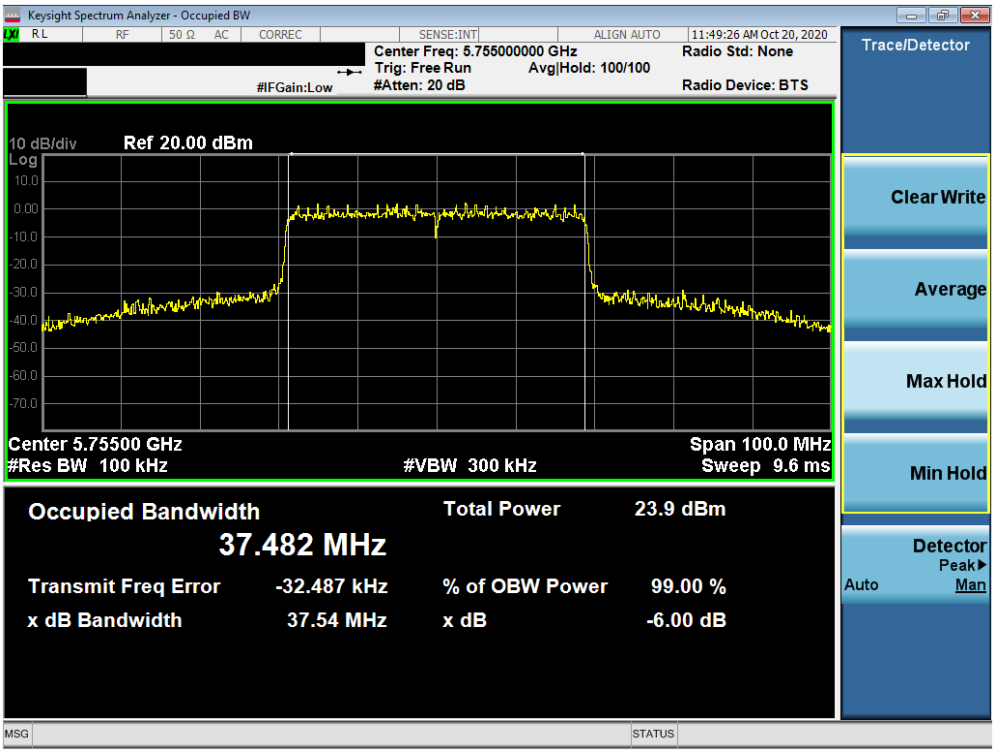
Plot 7-119. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 3) – Ch. 165)



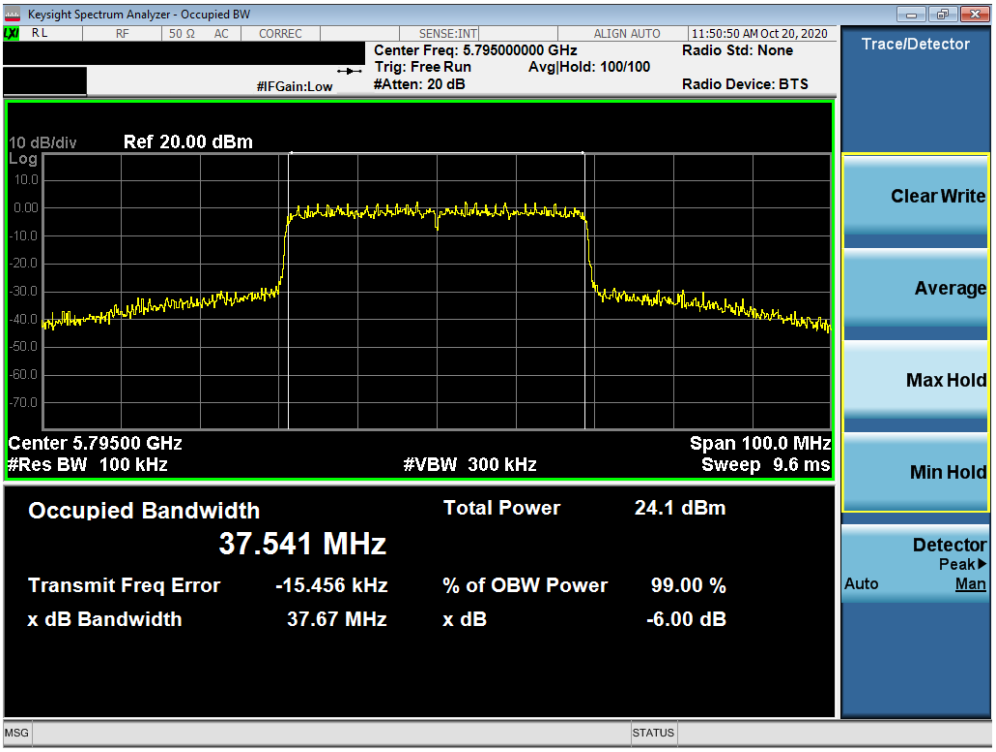
Plot 7-120. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 3) – Ch. 151)



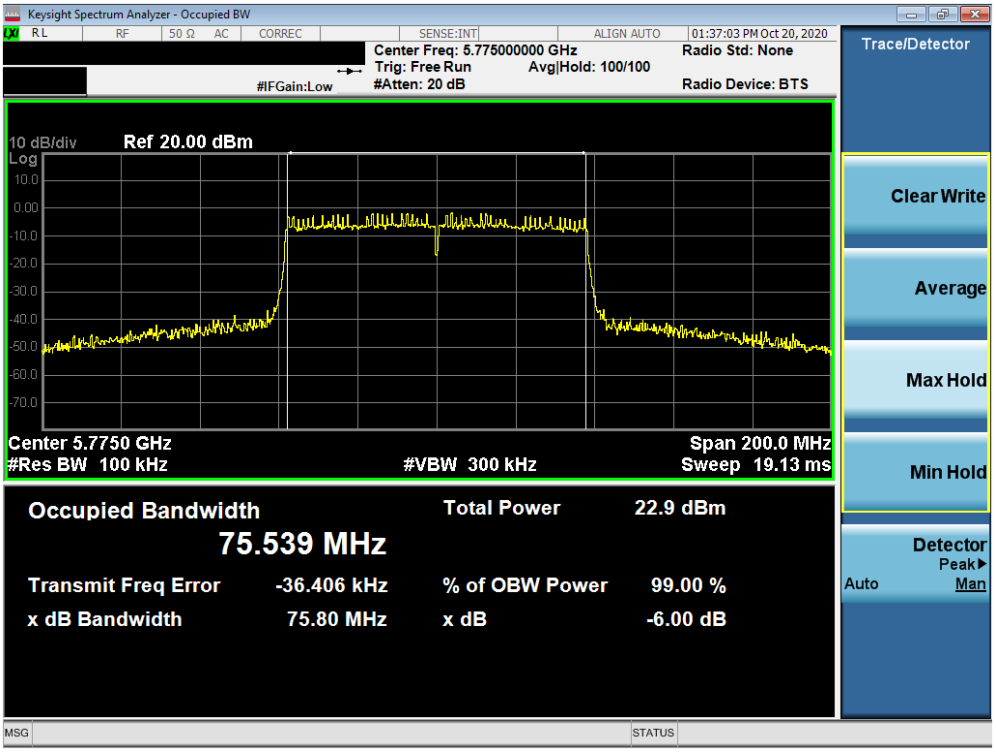
Plot 7-121. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 3) – Ch. 159)



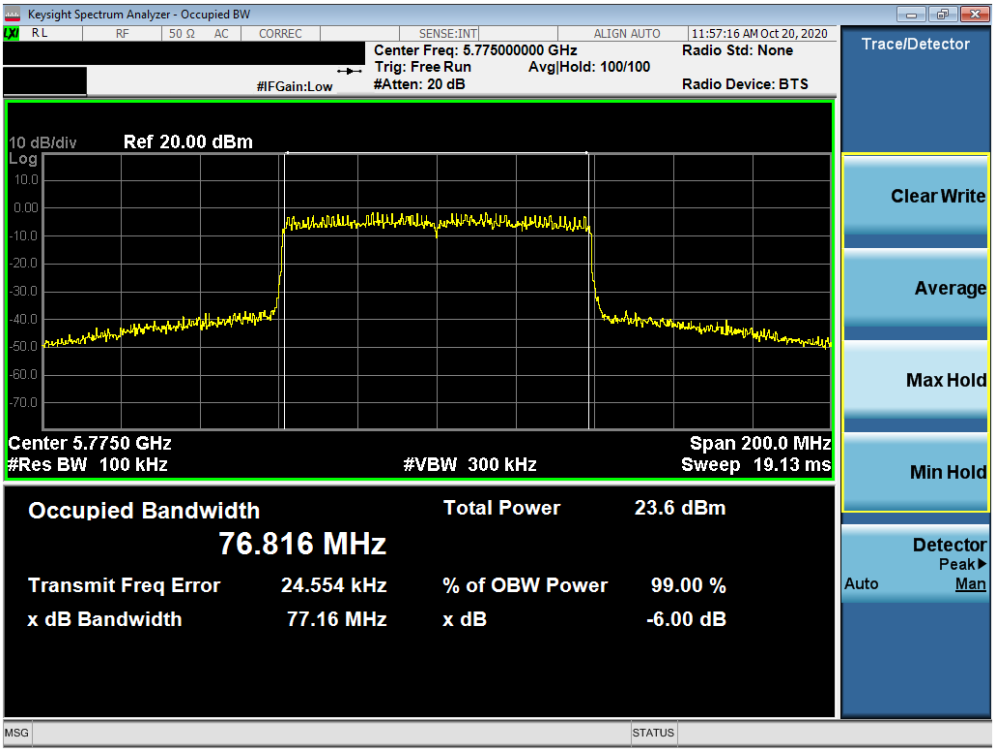
Plot 7-122. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax (UNII Band 3) – Ch. 151)



Plot 7-123. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax (UNII Band 3) – Ch. 159)

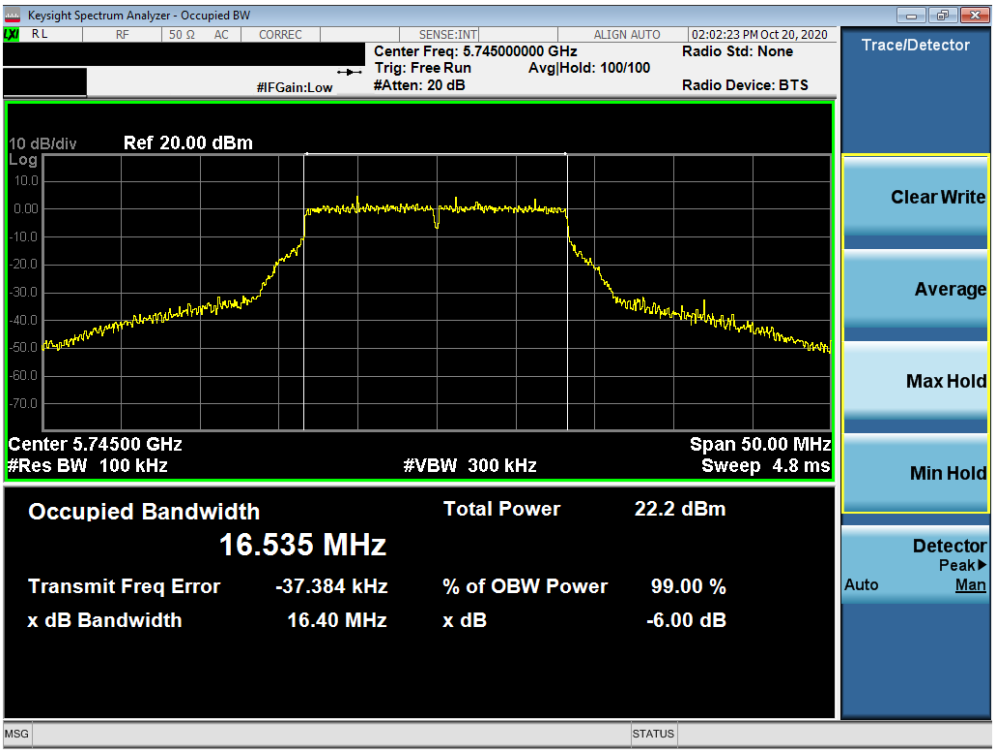


Plot 7-124. 6dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ac (UNII Band 3) – Ch. 155)

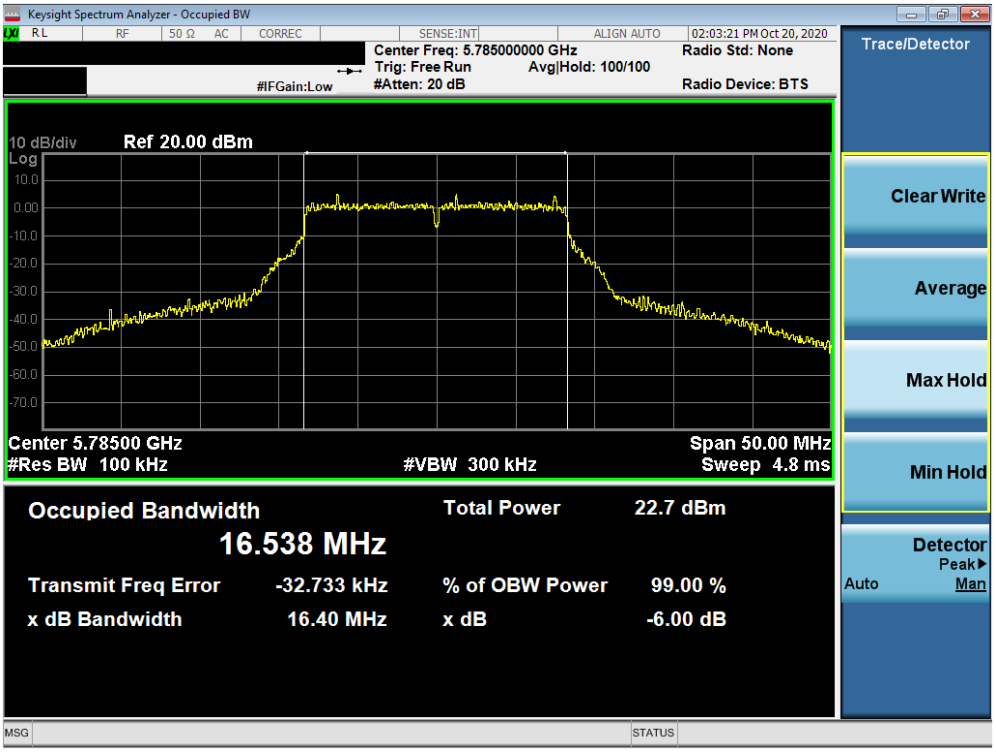


Plot 7-125. 6dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax (UNII Band 3) – Ch. 155)

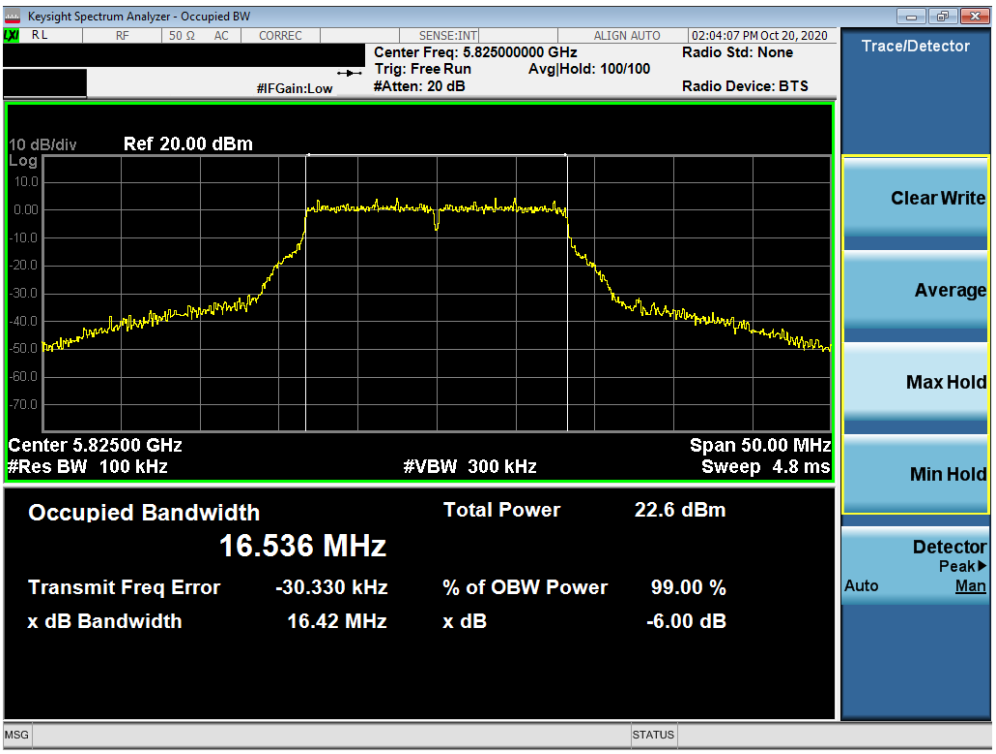
MIMO Antenna-2 6dB Bandwidth Measurements



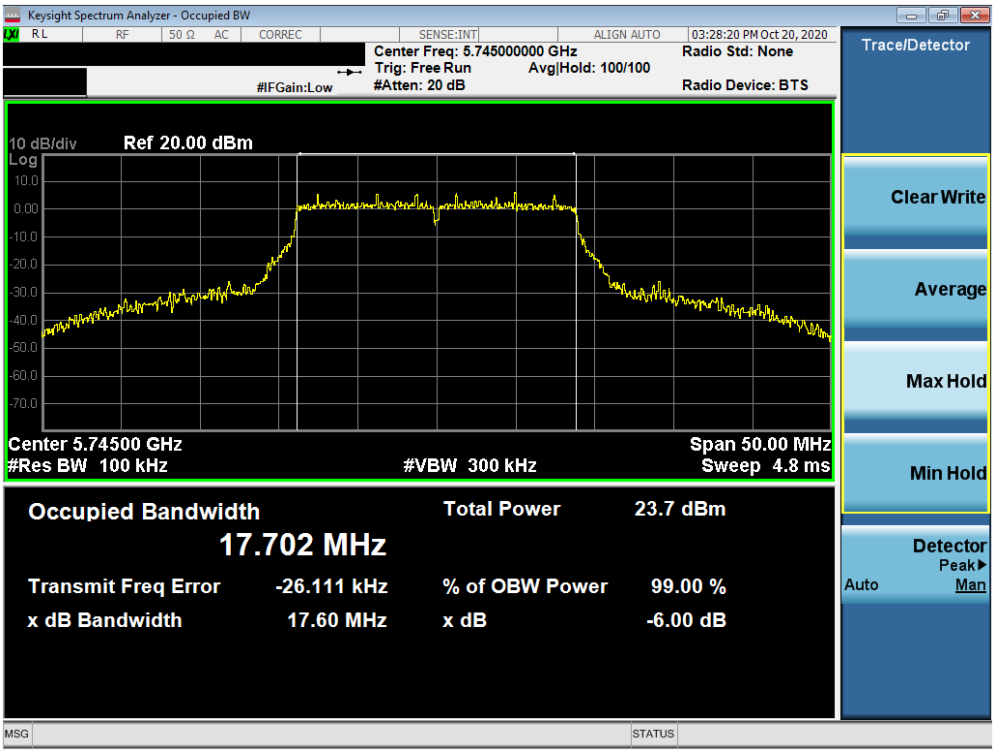
Plot 7-126. 6dB Bandwidth Plot MIMO ANT2 (802.11a (UNII Band 3) – Ch. 149)



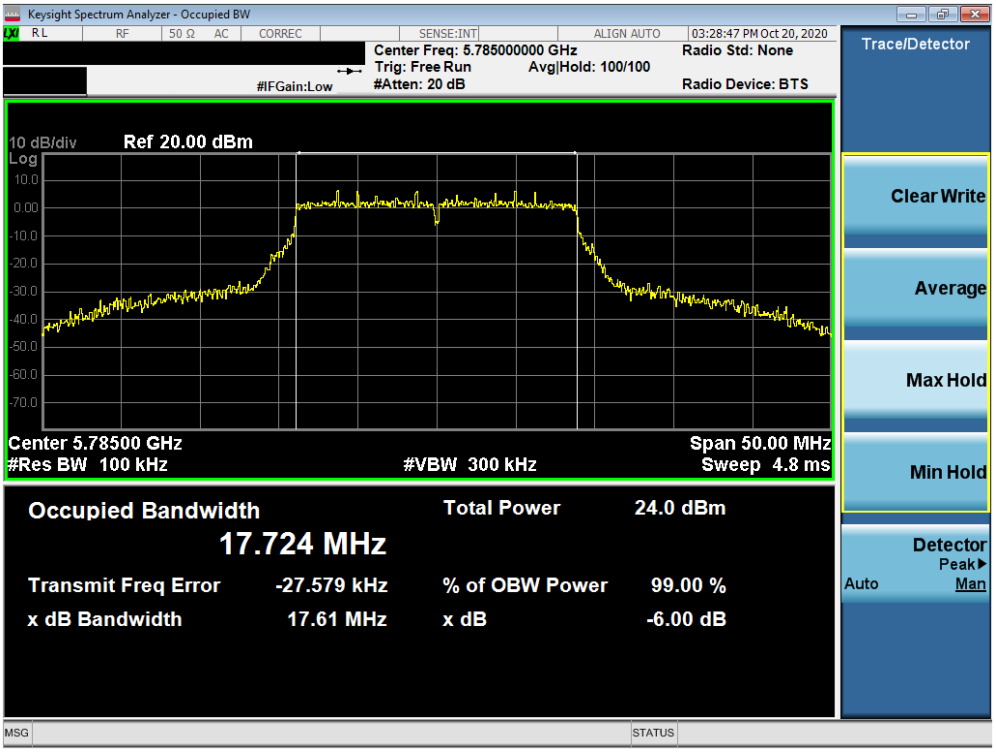
Plot 7-127. 6dB Bandwidth Plot MIMO ANT2 (802.11a (UNII Band 3) – Ch. 157)



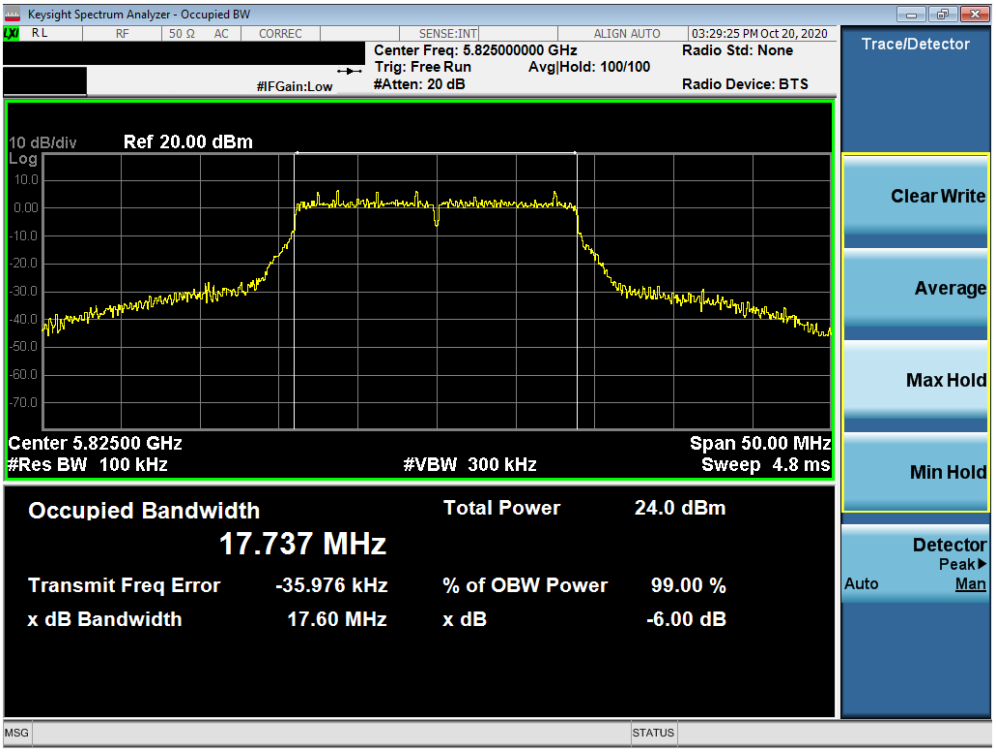
Plot 7-128. 6dB Bandwidth Plot MIMO ANT2 (802.11a (UNII Band 3) – Ch. 165)



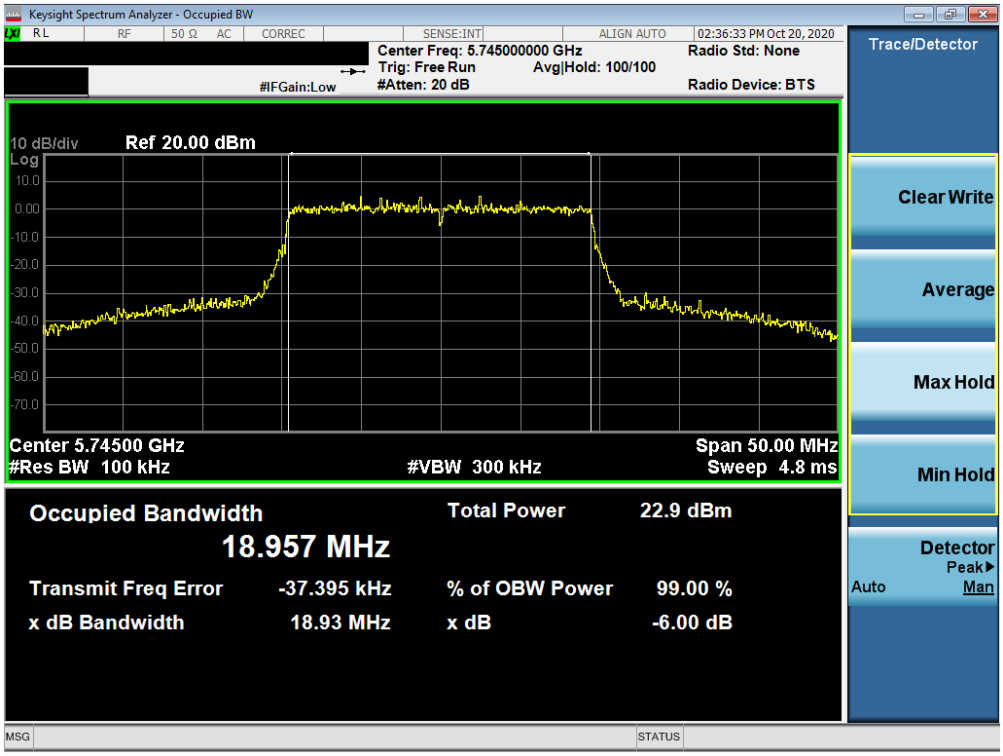
Plot 7-129. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 3) – Ch. 149)



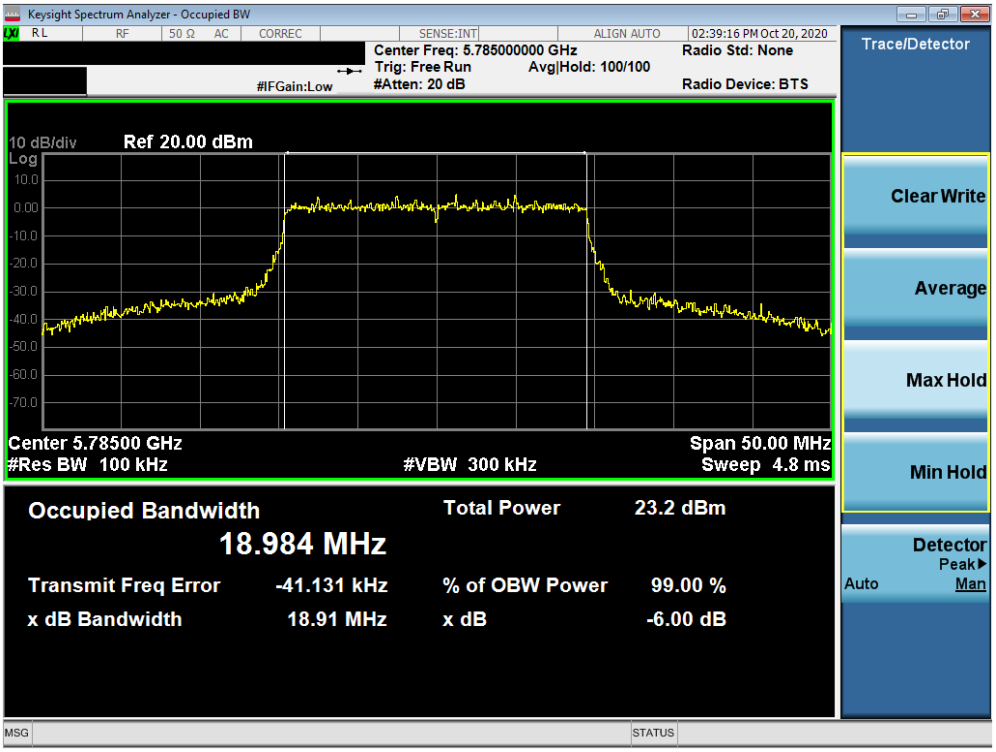
Plot 7-130. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 3) – Ch. 157)



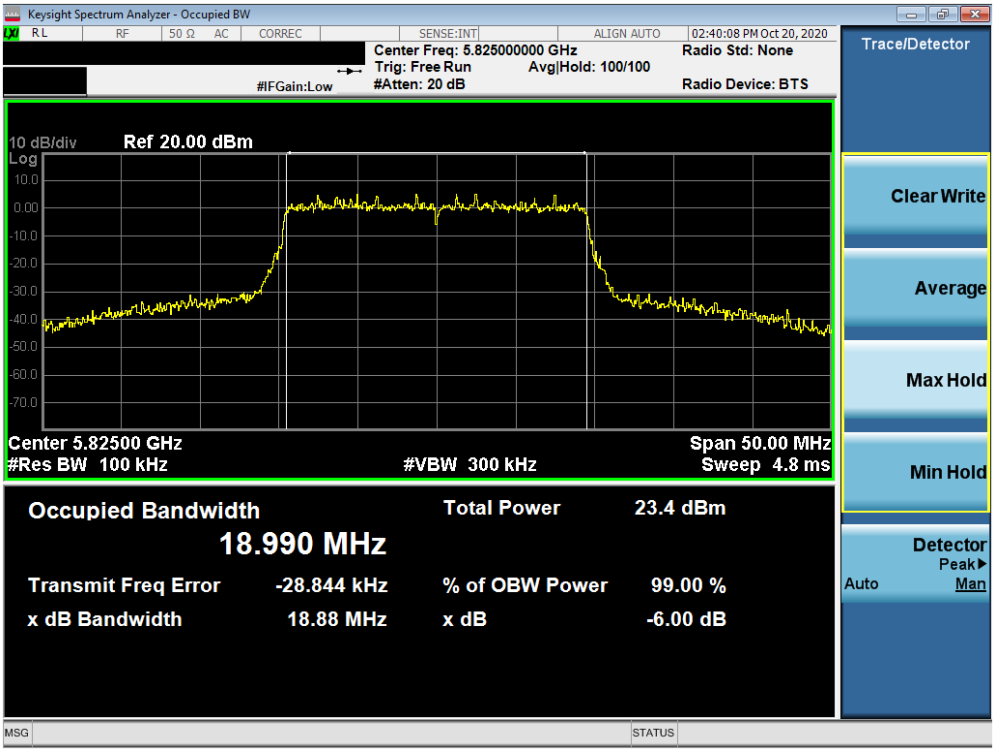
Plot 7-131. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 3) – Ch. 165)



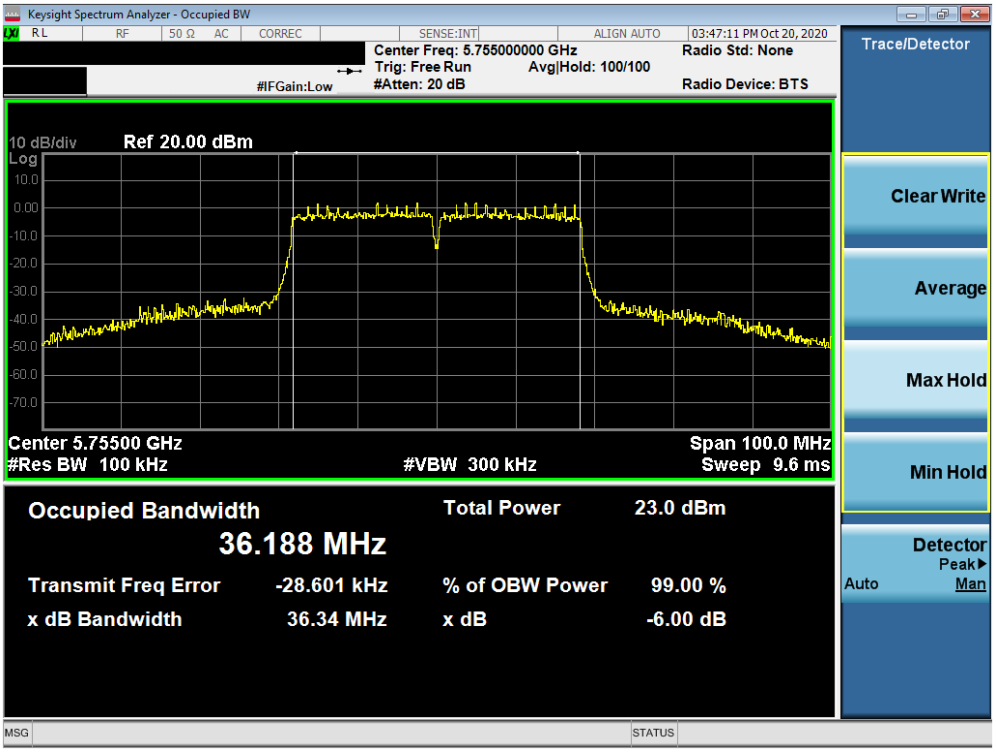
Plot 7-132. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax (UNII Band 3) – Ch. 149)



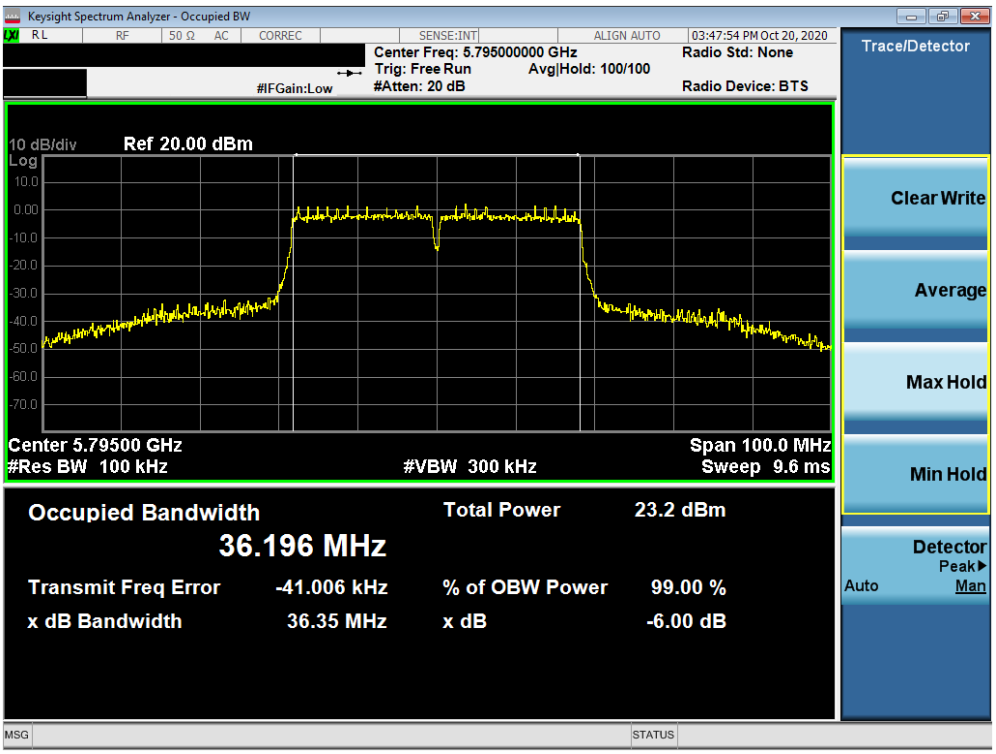
Plot 7-133. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax (UNII Band 3) – Ch. 157)



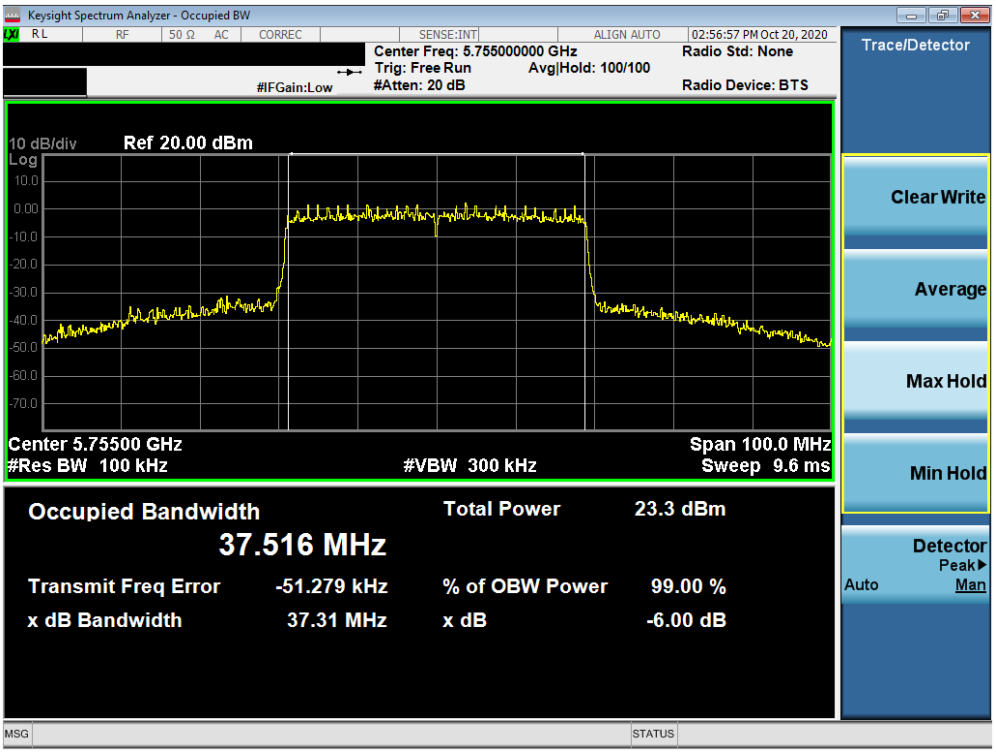
Plot 7-134. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax (UNII Band 3) – Ch. 165)



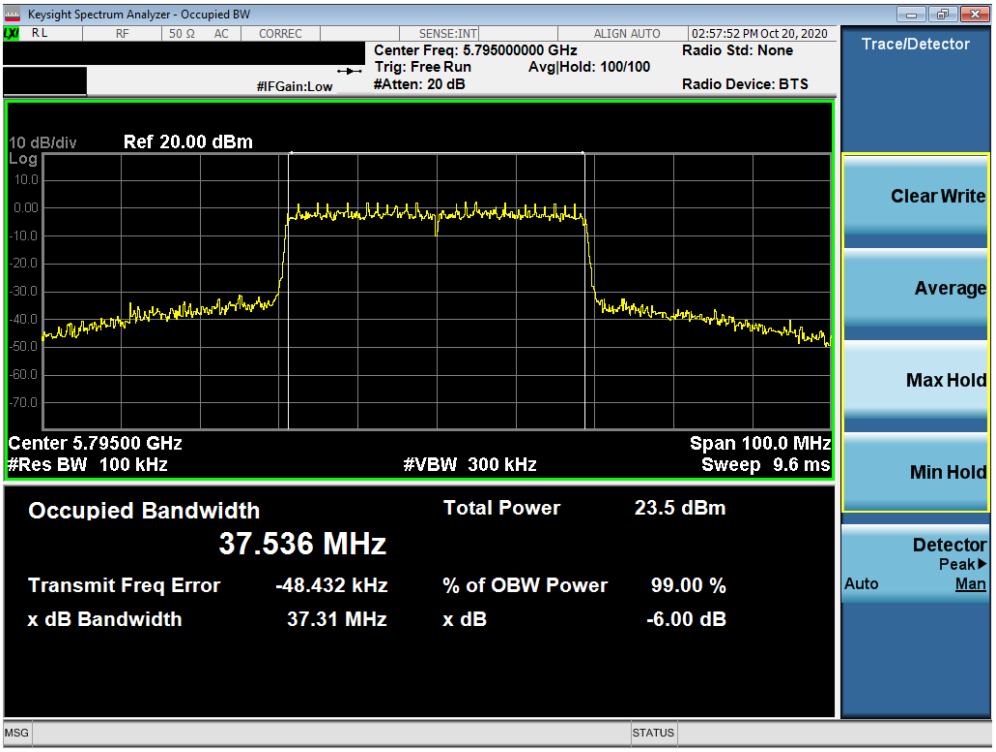
Plot 7-135. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11n (UNII Band 3) – Ch. 151)



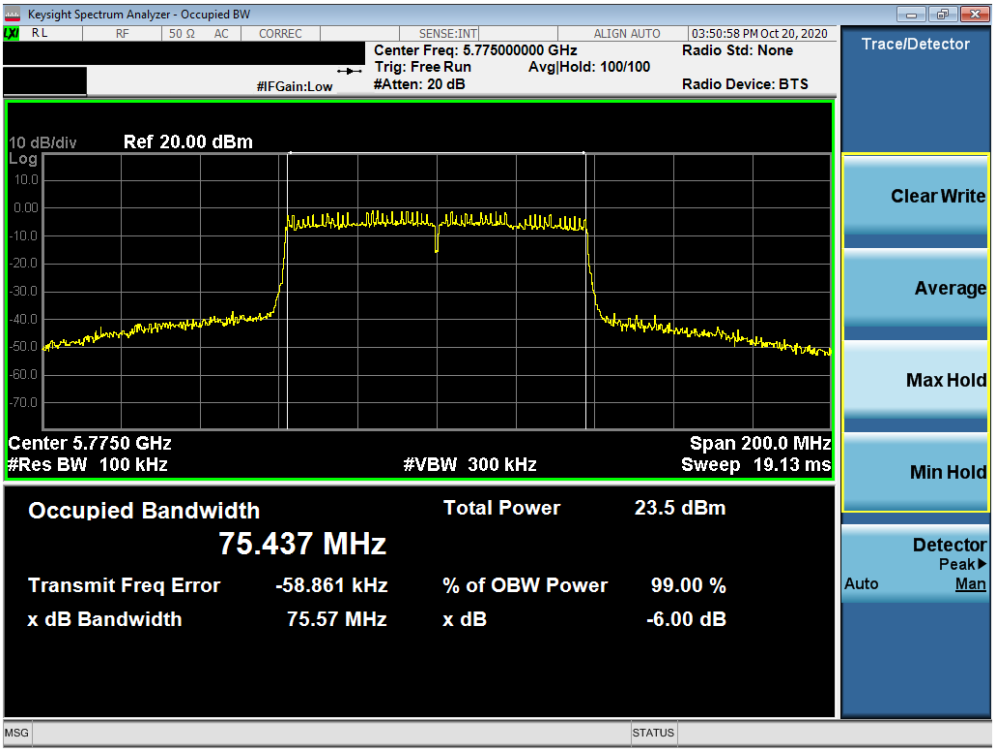
Plot 7-136. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11n (UNII Band 3) – Ch. 159)



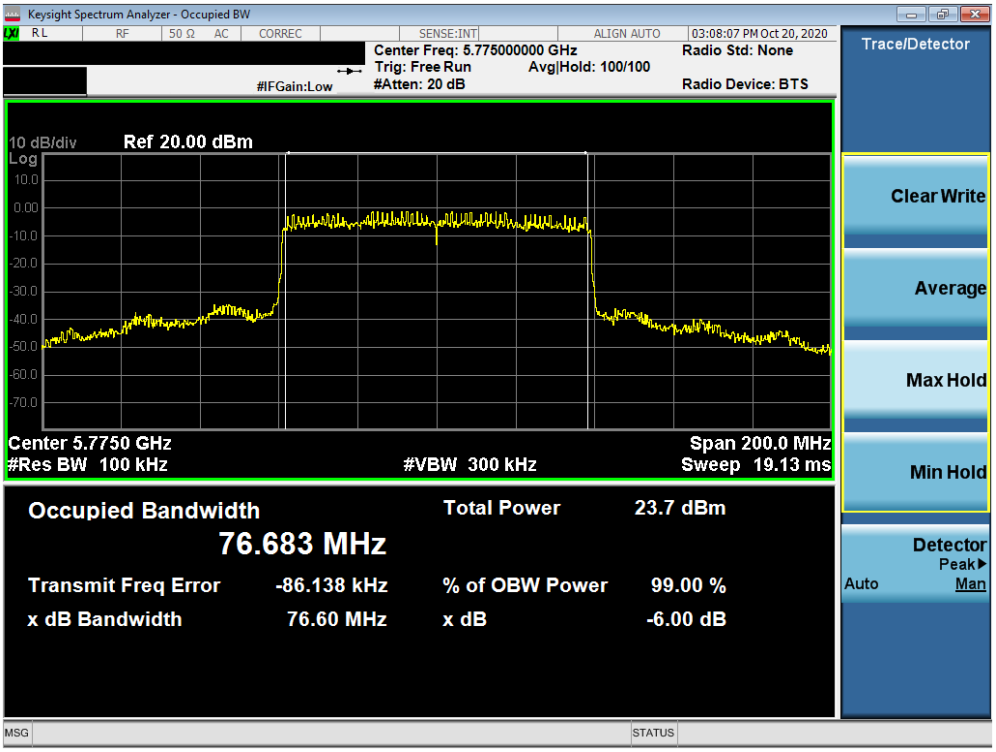
Plot 7-137. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax (UNII Band 3) – Ch. 151)



Plot 7-138. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax (UNII Band 3) – Ch. 159)



Plot 7-139. 6dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ac (UNII Band 3) – Ch. 155)



Plot 7-140. 6dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax (UNII Band 3) – Ch. 155)

7.4 UNII Output Power Measurement – 802.11a/n/ac/ax

§15.407(a.1.iv) §15.407(a.2) §15.407(a.3); RSS-247 [6.2]

Test Overview and Limits

A transmitter antenna terminal of the EUT is connected to the input of an RF pulse power sensor. Measurement is made using a broadband average power meter while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies.

In the 5.15 – 5.25GHz band, the maximum permissible conducted output power is 250mW (23.98dBm). The maximum e.i.r.p. shall not exceed the lesser of 200 mW or 10 + 10 log10B, dBm.

In the 5.25 – 5.35GHz band, the maximum permissible conducted output power is the lesser of 250mW (23.98dBm) or 11 dBm + 10log$_{10}$(26dB BW) = 11 dBm + 10log$_{10}$(21.15) = 24.25dBm. The maximum e.i.r.p. shall not exceed the lesser of 1.0 W or 17 + 10 log10B, dBm.

In the 5.47 – 5.725GHz band, the maximum permissible conducted output power is the lesser of 250mW (23.98dBm) or 11 dBm + 10log$_{10}$(26dB BW) = 11 dBm + 10log$_{10}$(21.23) = 24.27dBm. The maximum e.i.r.p. shall not exceed the lesser of 1.0 W or 17 + 10 log10B, dBm.

In the 5.725 – 5.850GHz band, the maximum permissible conducted output power is 1W (30dBm). The maximum e.i.r.p. is 36 dBm.

Test Procedure Used

ANSI C63.10-2013 – Section 12.3.3.2 Method PM-G
KDB 789033 D02 v02r01 – Section E)3)b) Method PM-G
ANSI C63.10-2013 – Section 14.2 Measure-and-Sum Technique
KDB 662911 v02r01 – Section E)1) Measure-and-Sum Technique

Test Settings

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter. The trace was averaged over 100 traces to obtain the final measured average power.

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

Figure 7-3. Test Instrument & Measurement Setup

Test Notes

None

MIMO Maximum Conducted Output Power Measurements

5GHz (20MHz Bandwidth)	Freq [MHz]	Channel	Detector	Conducted Power [dBm]			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
				ANT1	ANT2	MIMO		
	5180	36	AVG	17.61	18.06	20.85	23.98	-3.13
	5200	40	AVG	17.66	17.92	20.80	23.98	-3.18
	5220	44	AVG	17.70	17.85	20.79	23.98	-3.19
	5240	48	AVG	17.82	17.81	20.83	23.98	-3.15
	5260	52	AVG	17.49	17.85	20.68	23.98	-3.30
	5280	56	AVG	17.51	17.76	20.65	23.98	-3.33
	5300	60	AVG	17.69	17.78	20.75	23.98	-3.23
	5320	64	AVG	15.83	15.76	18.81	23.98	-5.17
	5500	100	AVG	17.16	17.62	20.41	23.98	-3.57
	5580	120	AVG	17.36	17.42	20.40	23.98	-3.58
	5660	124	AVG	17.51	17.35	20.44	23.98	-3.54
	5720	144	AVG	17.35	17.43	20.40	23.98	-3.58
	5745	149	AVG	16.62	16.84	19.74	30.00	-10.26
	5785	157	AVG	16.71	16.93	19.83	30.00	-10.17
	5825	165	AVG	16.56	16.87	19.73	30.00	-10.27

Table 7-4. MIMO 20MHz BW 802.11a (UNII) Maximum Conducted Output Power

5GHz (20MHz Bandwidth)	Freq [MHz]	Channel	Detector	Conducted Power [dBm]			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
				ANT1	ANT2	MIMO		
	5180	36	AVG	15.56	14.62	18.13	23.98	-5.85
	5200	40	AVG	17.98	17.52	20.77	23.98	-3.21
	5220	44	AVG	17.97	17.48	20.74	23.98	-3.24
	5240	48	AVG	17.94	17.45	20.71	23.98	-3.27
	5260	52	AVG	17.88	17.48	20.69	23.98	-3.29
	5280	56	AVG	17.96	17.39	20.69	23.98	-3.29
	5300	60	AVG	17.98	17.44	20.73	23.98	-3.25
	5320	64	AVG	14.94	14.72	17.84	23.98	-6.14
	5500	100	AVG	17.49	17.44	20.48	23.98	-3.50
	5580	120	AVG	17.57	17.30	20.45	23.98	-3.53
	5660	124	AVG	17.86	17.52	20.70	23.98	-3.28
	5720	144	AVG	17.64	17.41	20.54	23.98	-3.44
	5745	149	AVG	16.68	16.91	19.81	30.00	-10.19
	5785	157	AVG	16.74	16.95	19.86	30.00	-10.14
	5825	165	AVG	16.54	16.87	19.72	30.00	-10.28

Table 7-5. MIMO 20MHz BW 802.11n (UNII) Maximum Conducted Output Power

5GHz (20MHz Bandwidth)	Freq [MHz]	Channel	Detector	Conducted Power [dBm]			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
				ANT1	ANT2	MIMO		
	5180	36	AVG	15.53	14.64	18.12	23.98	-5.86
	5200	40	AVG	17.93	17.59	20.77	23.98	-3.21
	5220	44	AVG	17.98	17.53	20.77	23.98	-3.21
	5240	48	AVG	17.94	17.44	20.71	23.98	-3.27
	5260	52	AVG	17.88	17.49	20.70	23.98	-3.28
	5280	56	AVG	17.86	17.44	20.67	23.98	-3.31
	5300	60	AVG	17.99	17.45	20.74	23.98	-3.24
	5320	64	AVG	14.93	14.77	17.86	23.98	-6.12
	5500	100	AVG	17.35	17.47	20.42	23.98	-3.56
	5580	120	AVG	17.61	17.16	20.40	23.98	-3.58
	5660	124	AVG	17.79	17.28	20.55	23.98	-3.43
	5720	144	AVG	17.63	17.41	20.53	23.98	-3.45
	5745	149	AVG	16.63	16.94	19.80	30.00	-10.20
	5785	157	AVG	16.65	16.93	19.80	30.00	-10.20
	5825	165	AVG	16.54	16.92	19.74	30.00	-10.26

Table 7-6. MIMO 20MHz BW 802.11ac (UNII) Maximum Conducted Output Power

5GHz (20MHz Bandwidth)	Freq [MHz]	Channel	Detector	Conducted Power [dBm]			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
				ANT1	ANT2	MIMO		
	5180	36	AVG	17.73	17.10	20.44	23.98	-3.54
	5200	40	AVG	17.11	17.64	20.39	23.98	-3.59
	5220	44	AVG	17.18	17.68	20.45	23.98	-3.53
	5240	48	AVG	17.95	17.65	20.81	23.98	-3.17
	5260	52	AVG	17.97	17.71	20.85	23.98	-3.13
	5280	56	AVG	17.90	17.60	20.76	23.98	-3.22
	5300	60	AVG	17.99	17.56	20.79	23.98	-3.19
	5320	64	AVG	15.14	15.01	18.09	23.98	-5.89
	5500	100	AVG	17.46	17.62	20.55	23.98	-3.43
	5580	120	AVG	17.58	17.54	20.57	23.98	-3.41
	5660	124	AVG	17.78	17.69	20.75	23.98	-3.23
	5720	144	AVG	17.61	17.63	20.63	23.98	-3.35
	5745	149	AVG	16.79	17.06	19.94	30.00	-10.06
	5785	157	AVG	16.82	17.11	19.98	30.00	-10.02
	5825	165	AVG	16.67	17.09	19.90	30.00	-10.10

Table 7-7. MIMO 20MHz BW 802.11ax (UNII) Maximum Conducted Output Power

	Freq [MHz]	Channel	Detector	Conducted Power [dBm]			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
				ANT1	ANT2	MIMO		
5GHz (40MHz Bandwidth)	5190	38	AVG	14.31	13.58	16.97	23.98	-7.01
	5230	46	AVG	16.62	16.10	19.38	23.98	-4.60
	5270	54	AVG	16.31	16.94	19.65	23.98	-4.33
	5310	62	AVG	12.63	12.59	15.62	23.98	-8.36
	5510	102	AVG	13.63	13.11	16.39	23.98	-7.59
	5550	110	AVG	16.33	16.82	19.59	23.98	-4.39
	5670	134	AVG	16.61	16.87	19.75	23.98	-4.23
	5710	142	AVG	16.42	16.75	19.60	23.98	-4.38
	5755	151	AVG	15.92	15.63	18.78	30.00	-11.22
	5795	159	AVG	15.94	15.62	18.79	30.00	-11.21

Table 7-8. MIMO 40MHz BW 802.11n (UNII) Maximum Conducted Output Power

	Freq [MHz]	Channel	Detector	Conducted Power [dBm]			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
				ANT1	ANT2	MIMO		
5GHz (40MHz Bandwidth)	5190	38	AVG	14.33	13.56	16.97	23.98	-7.01
	5230	46	AVG	16.62	16.12	19.39	23.98	-4.59
	5270	54	AVG	16.34	16.96	19.67	23.98	-4.31
	5310	62	AVG	12.71	12.64	15.69	23.98	-8.29
	5510	102	AVG	13.59	13.26	16.44	23.98	-7.54
	5550	110	AVG	16.35	16.93	19.66	23.98	-4.32
	5670	134	AVG	16.63	16.89	19.77	23.98	-4.21
	5710	142	AVG	16.30	16.78	19.56	23.98	-4.42
	5755	151	AVG	15.82	15.52	18.68	30.00	-11.32
	5795	159	AVG	15.91	15.47	18.71	30.00	-11.29

Table 7-9. MIMO 40MHz BW 802.11ac (UNII) Maximum Conducted Output Power

5GHz (40MHz Bandwidth)	Freq [MHz]	Channel	Detector	Conducted Power [dBm]			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
				ANT1	ANT2	MIMO		
	5190	38	AVG	13.67	12.71	16.23	23.98	-7.75
	5230	46	AVG	16.94	16.82	19.89	23.98	-4.09
	5270	54	AVG	16.75	16.59	19.68	23.98	-4.30
	5310	62	AVG	13.99	13.94	16.98	23.98	-7.00
	5510	102	AVG	13.91	13.45	16.70	23.98	-7.28
	5550	110	AVG	16.51	16.47	19.50	23.98	-4.48
	5670	134	AVG	16.84	16.62	19.74	23.98	-4.24
	5710	142	AVG	16.63	16.68	19.67	23.98	-4.31
	5755	151	AVG	16.14	15.79	18.98	30.00	-11.02
	5795	159	AVG	16.17	15.73	18.97	30.00	-11.03

Table 7-10. MIMO 40MHz BW 802.11ax (UNII) Maximum Conducted Output Power

5GHz (80MHz Bandwidth)	Freq [MHz]	Channel	Detector	Conducted Power [dBm]			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
				ANT1	ANT2	MIMO		
	5210	42	AVG	13.27	12.73	16.02	23.98	-7.96
	5290	58	AVG	13.04	12.35	15.72	23.98	-8.26
	5530	106	AVG	13.71	13.15	16.45	23.98	-7.53
	5690	138	AVG	15.15	15.80	18.50	23.98	-5.48
	5775	155	AVG	15.35	15.79	18.59	30.00	-11.41

Table 7-11. MIMO 80MHz BW 802.11ac (UNII) Maximum Conducted Output Power

5GHz (80MHz Bandwidth)	Freq [MHz]	Channel	Detector	Conducted Power [dBm]			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
				ANT1	ANT2	MIMO		
	5210	42	AVG	13.58	12.96	16.29	23.98	-7.69
	5290	58	AVG	13.22	12.63	15.95	23.98	-8.03
	5530	106	AVG	13.01	12.42	15.74	23.98	-8.24
	5690	138	AVG	15.66	15.47	18.58	23.98	-5.40
	5775	155	AVG	15.82	15.71	18.78	30.00	-11.22

Table 7-12. MIMO 80MHz BW 802.11ax (UNII) Maximum Conducted Output Power

5GHz (160MHz Bandwidth)	Freq [MHz]	Channel	Detector	Conducted Power [dBm]			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
				ANT1	ANT2	MIMO		
	5250	50	AVG	12.55	12.03	15.31	23.98	-8.67
	5570	114	AVG	14.51	14.25	17.39	30.00	-12.61

Table 7-13. MIMO 160MHz BW 802.11ac (UNII) Maximum Conducted Output Power

5GHz (160MHz Bandwidth)	Freq [MHz]	Channel	Detector	Conducted Power [dBm]			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
				ANT1	ANT2	MIMO		
	5250	50	AVG	14.73	14.07	17.42	23.98	-6.56
	5570	114	AVG	11.81	11.25	14.55	30.00	-15.45

Table 7-14. MIMO 160MHz BW 802.11ax (UNII) Maximum Conducted Output Power

Note:

Per ANSI C63.10-2013 and KDB 662911 v02r01 Section E)1), the conducted powers at Antenna 1 and Antenna 2 were first measured separately during MIMO transmission as shown in the section above. The measured values were then summed in linear power units then converted back to dBm.

Sample MIMO Calculation:

At 5180MHz in 802.11n (20MHz BW) mode, the average conducted output power was measured to be 15.56 dBm for Antenna-1 and 14.62 dBm for Antenna-2.

Antenna 1 + Antenna 2 = MIMO

(15.56 dBm + 14.62 dBm) = (35.97 mW + 28.97 mW) = 64.95 mW = 18.13 dBm

7.5 Maximum Power Spectral Density – 802.11a/n/ac/ax

§15.407(a.1.iv) §15.407(a.2) §15.407(a.3); RSS-247 [6.2]

Test Overview and Limit

The spectrum analyzer was connected to the antenna terminal while the EUT was operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies. Method SA-1, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, was used to measure the power spectral density.

In the 5.15 – 5.25GHz, 5.25 – 5.35GHz, 5.47 – 5.725GHz bands, the maximum permissible power spectral density is 11dBm/MHz.

In the 5.725 – 5.850GHz band, the maximum permissible power spectral density is 30dBm/500kHz.

Test Procedure Used

ANSI C63.10-2013 – Section 12.3.2.2
KDB 789033 D02 v02r01 – Section F
ANSI C63.10-2013 – Section 14.3.2.2 Measure-and-Sum Technique
KDB 662911 v02r01 – Section E)2) Measure-and-Sum Technique

Test Settings

1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire emission bandwidth of the signal
3. RBW = 1MHz
4. VBW = 3MHz
5. Number of sweep points ≥ 2 x (span/RBW)
6. Sweep time = auto
7. Detector = power averaging (RMS)
8. Trigger was set to free run for all modes
9. Trace was averaged over 100 sweeps
10. The peak search function of the spectrum analyzer was used to find the peak of the spectrum.

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

Figure 7-4. Test Instrument & Measurement Setup

Test Notes

None

Summed MIMO Power Spectral Density Measurements

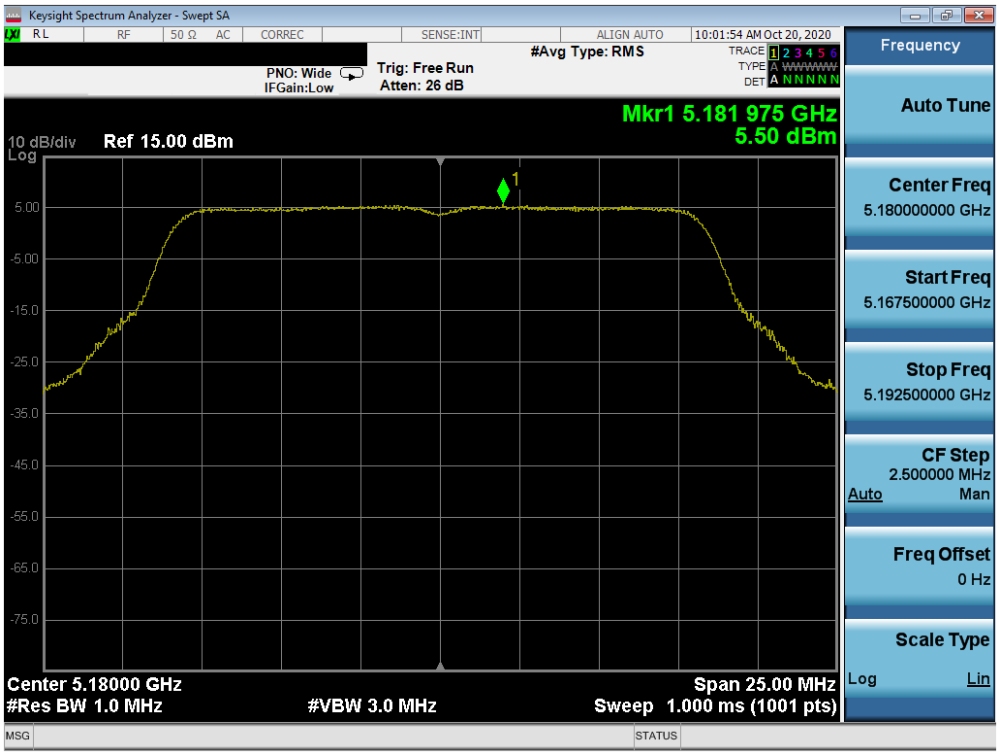
	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Antenna-1 Power Density [dBm]	Antenna-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Max Power Density [dBm/MHz]	Margin [dB]
Band 1	5180	36	a	6	5.50	5.48	8.50	11.0	-2.50
	5200	40	a	6	4.99	5.15	8.08	11.0	-2.92
	5240	48	a	6	4.31	5.30	7.84	11.0	-3.16
	5180	36	n (20MHz)	6.5/7.2 (MCS0)	5.19	6.16	8.71	11.0	-2.29
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	4.81	6.05	8.48	11.0	-2.52
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	4.93	5.73	8.36	11.0	-2.64
	5180	36	ax (20MHz)	6.5/7.2 (MCS0)	4.96	5.17	8.08	11.0	-2.92
	5200	40	ax (20MHz)	6.5/7.2 (MCS0)	4.77	5.03	7.91	11.0	-3.09
	5240	48	ax (20MHz)	6.5/7.2 (MCS0)	6.21	4.78	8.56	11.0	-2.44
	5190	38	n (40MHz)	13.5/15 (MCS0)	1.44	1.90	4.68	11.0	-6.32
	5230	46	n (40MHz)	13.5/15 (MCS0)	1.65	1.48	4.58	11.0	-6.42
	5190	38	ax (40MHz)	13.5/15 (MCS0)	1.50	1.69	4.60	11.0	-6.40
	5230	46	ax (40MHz)	13.5/15 (MCS0)	1.41	1.53	4.48	11.0	-6.52
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	-2.49	-2.61	0.46	11.0	-10.54
	5210	42	ax (80MHz)	29.3/32.5 (MCS0)	-2.78	-2.25	0.51	11.0	-10.49
Band 1/2A	5250	50	ac (160MHz)	58.5/65 (MCS0)	-6.76	-7.93	-4.30	11.0	-15.30
	5250	50	ax (160MHz)	58.5/65 (MCS0)	-5.34	-5.41	-2.36	11.0	-13.36
Band 2A	5260	52	a	6	5.22	4.99	8.12	11.0	-2.88
	5280	56	a	6	5.01	4.81	7.92	11.0	-3.08
	5320	64	a	6	4.13	4.90	7.54	11.0	-3.46
	5260	52	n (20MHz)	6.5/7.2 (MCS0)	4.79	5.85	8.36	11.0	-2.64
	5280	56	n (20MHz)	6.5/7.2 (MCS0)	4.71	5.81	8.31	11.0	-2.69
	5320	64	n (20MHz)	6.5/7.2 (MCS0)	4.90	5.55	8.25	11.0	-2.75
	5260	52	ax (20MHz)	6.5/7.2 (MCS0)	6.22	4.47	8.44	11.0	-2.56
	5280	56	ax (20MHz)	6.5/7.2 (MCS0)	5.84	4.53	8.24	11.0	-2.76
	5320	64	ax (20MHz)	6.5/7.2 (MCS0)	5.93	4.34	8.22	11.0	-2.78
	5270	54	n (40MHz)	13.5/15 (MCS0)	1.46	2.13	4.82	11.0	-6.18
	5310	62	n (40MHz)	13.5/15 (MCS0)	1.50	2.09	4.82	11.0	-6.18
	5270	54	ax (40MHz)	13.5/15 (MCS0)	1.28	1.64	4.47	11.0	-6.53
	5310	62	ax (40MHz)	13.5/15 (MCS0)	1.57	0.85	4.23	11.0	-6.77
	5290	58	ac (80MHz)	29.3/32.5 (MCS0)	-2.83	-3.01	0.09	11.0	-10.91
	5290	58	ax (80MHz)	29.3/32.5 (MCS0)	-2.68	-3.01	0.17	11.0	-10.83
Band 2C	5500	100	a	6	4.55	5.00	7.79	11.0	-3.21
	5600	120	a	6	5.04	4.79	7.93	11.0	-3.07
	5720	144	a	6	5.06	4.82	7.95	11.0	-3.05
	5500	100	n (20MHz)	6.5/7.2 (MCS0)	4.30	5.83	8.14	11.0	-2.86
	5600	120	n (20MHz)	6.5/7.2 (MCS0)	4.60	5.77	8.23	11.0	-2.77
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	4.66	5.73	8.24	11.0	-2.76
	5500	100	ax (20MHz)	6.5/7.2 (MCS0)	5.40	4.67	8.06	11.0	-2.94
	5600	120	ax (20MHz)	6.5/7.2 (MCS0)	5.80	4.58	8.24	11.0	-2.76
	5720	144	ax (20MHz)	6.5/7.2 (MCS0)	5.83	4.43	8.20	11.0	-2.80
	5510	102	n (40MHz)	13.5/15 (MCS0)	1.09	2.30	4.75	11.0	-6.25
	5590	118	n (40MHz)	13.5/15 (MCS0)	1.49	1.97	4.75	11.0	-6.25
	5710	142	n (40MHz)	13.5/15 (MCS0)	1.52	2.32	4.95	11.0	-6.05
	5510	102	ax (40MHz)	13.5/15 (MCS0)	1.15	0.88	4.03	11.0	-6.97
	5590	118	ax (40MHz)	13.5/15 (MCS0)	1.47	1.25	4.37	11.0	-6.63
	5710	142	ax (40MHz)	13.5/15 (MCS0)	1.19	1.01	4.11	11.0	-6.89
	5530	106	ac (80MHz)	29.3/32.5 (MCS0)	-2.50	-2.36	0.58	11.0	-10.42
	5610	122	ac (80MHz)	29.3/32.5 (MCS0)	-1.84	-2.16	1.01	11.0	-9.99
	5690	138	ac (80MHz)	29.3/32.5 (MCS0)	-5.52	-4.89	-2.19	11.0	-13.19
	5530	106	ax (80MHz)	29.3/32.5 (MCS0)	-3.47	-2.19	0.23	11.0	-10.77
	5610	122	ax (80MHz)	29.3/32.5 (MCS0)	-2.84	-2.15	0.53	11.0	-10.47
	5690	138	ax (80MHz)	29.3/32.5 (MCS0)	-5.62	-4.84	-2.20	11.0	-13.20
	5570	114	ac (160MHz)	58.5/65 (MCS0)	-5.90	-6.77	-3.30	11.0	-14.30
	5570	114	ax (160MHz)	58.5/65 (MCS0)	-8.74	-9.40	-6.05	11.0	-17.05

Table 7-15. Bands 1, 2A, 2C Conducted Power Spectral Density Measurements MIMO

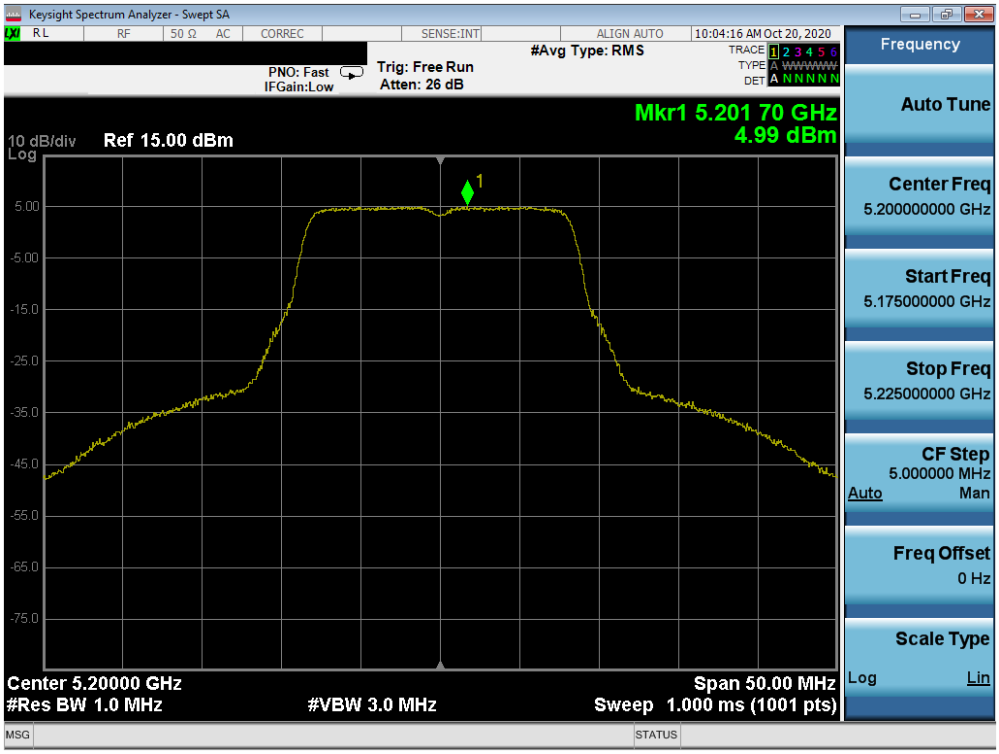
	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Antenn-1 Power Density [dBm]	Antenn-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Max Permissible Power Density [dBm/500kHz]	Margin [dB]
Band 3	5745	149	a	6	2.19	1.88	5.05	30.0	-24.95
	5785	157	a	6	2.15	2.09	5.13	30.0	-24.87
	5825	165	a	6	2.22	2.22	5.23	30.0	-24.77
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	1.95	2.82	5.42	30.0	-24.58
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	1.76	3.08	5.48	30.0	-24.52
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	1.72	3.12	5.49	30.0	-24.51
	5745	149	ax (20MHz)	6.5/7.2 (MCS0)	2.86	1.61	5.29	30.0	-24.71
	5785	157	ax (20MHz)	6.5/7.2 (MCS0)	2.94	1.89	5.46	30.0	-24.54
	5825	165	ax (20MHz)	6.5/7.2 (MCS0)	3.08	1.93	5.55	30.0	-24.45
	5755	151	n (40MHz)	13.5/15 (MCS0)	-1.25	1.61	3.42	30.0	-26.58
	5795	159	n (40MHz)	13.5/15 (MCS0)	-1.23	-1.63	1.58	30.0	-28.42
	5755	151	ax (40MHz)	13.5/15 (MCS0)	-1.01	-1.31	1.86	30.0	-28.14
	5795	159	ax (40MHz)	13.5/15 (MCS0)	-1.24	-1.36	1.71	30.0	-28.29
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	-3.15	-1.31	0.88	30.0	-29.12
	5775	155	ax (80MHz)	29.3/32.5 (MCS0)	-2.68	-2.09	0.64	30.0	-29.36

Table 7-16. Band 3 MIMO Conducted Power Spectral Density Measurements

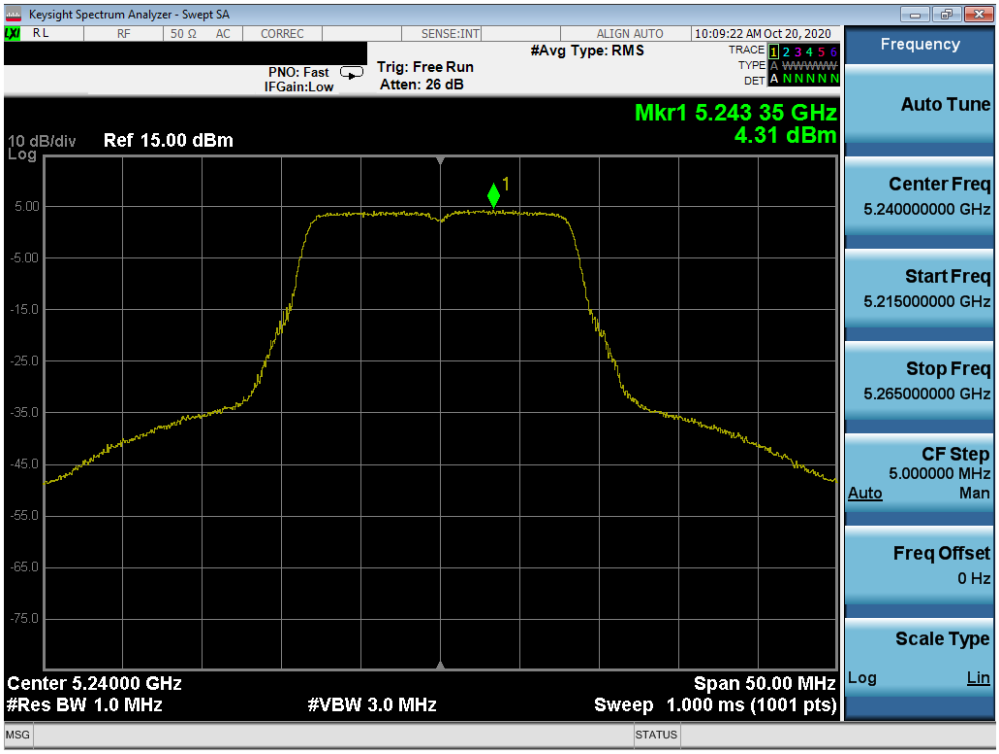
MIMO Antenna-1 Power Spectral Density Measurements



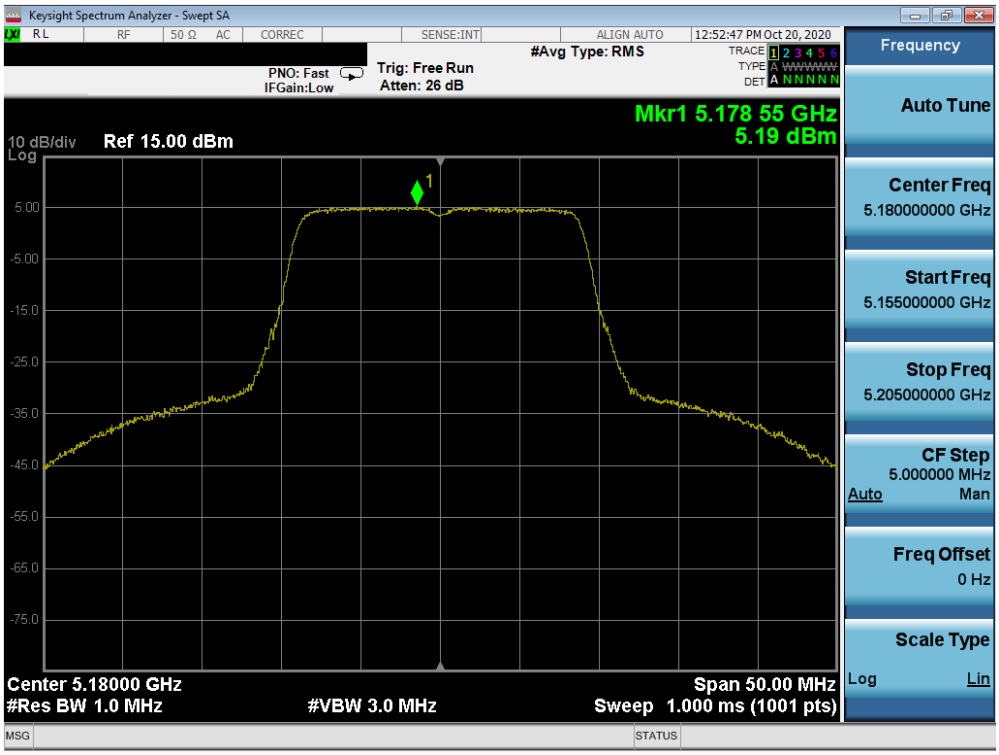
Plot 7-141. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 1) – Ch. 36)



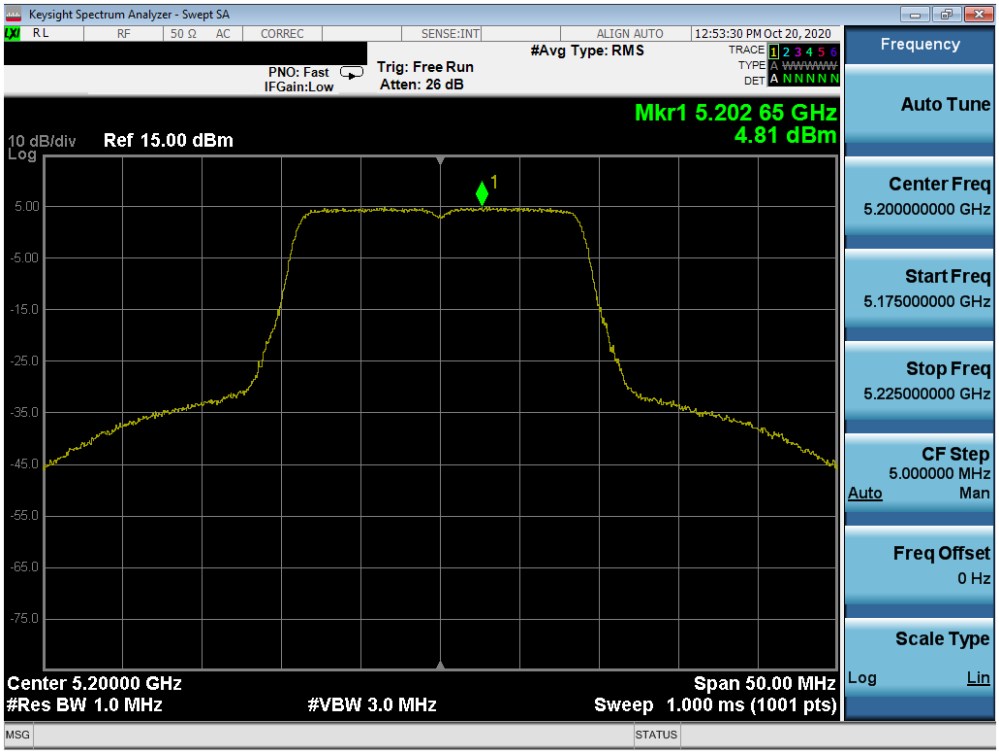
Plot 7-142. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 1) – Ch. 40)



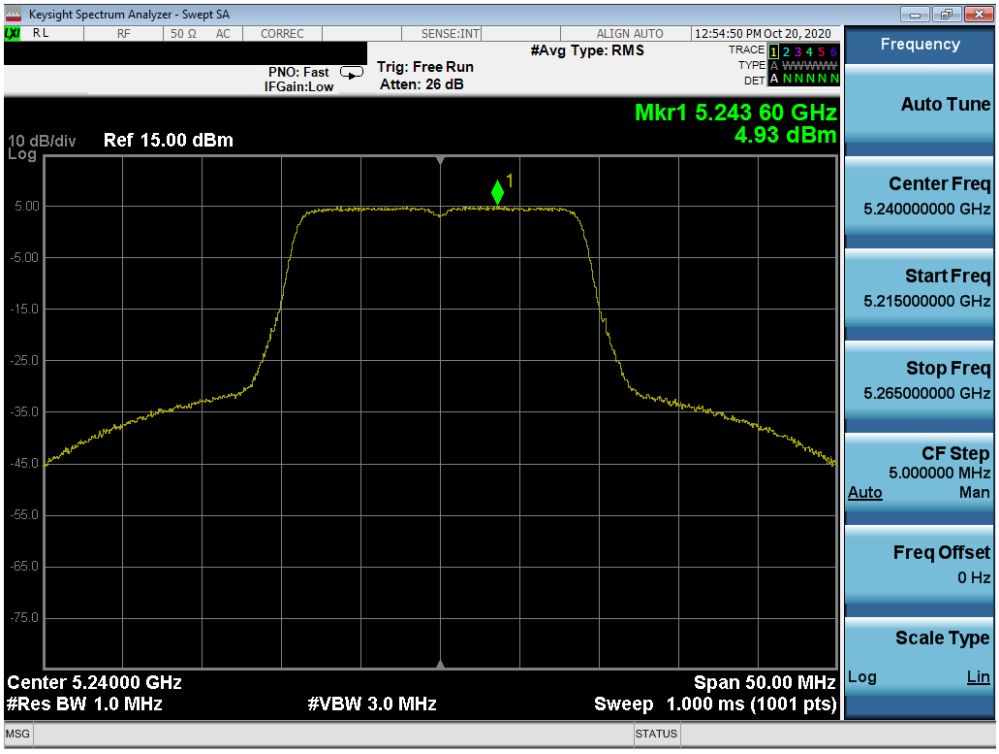
Plot 7-143. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 1) – Ch. 48)



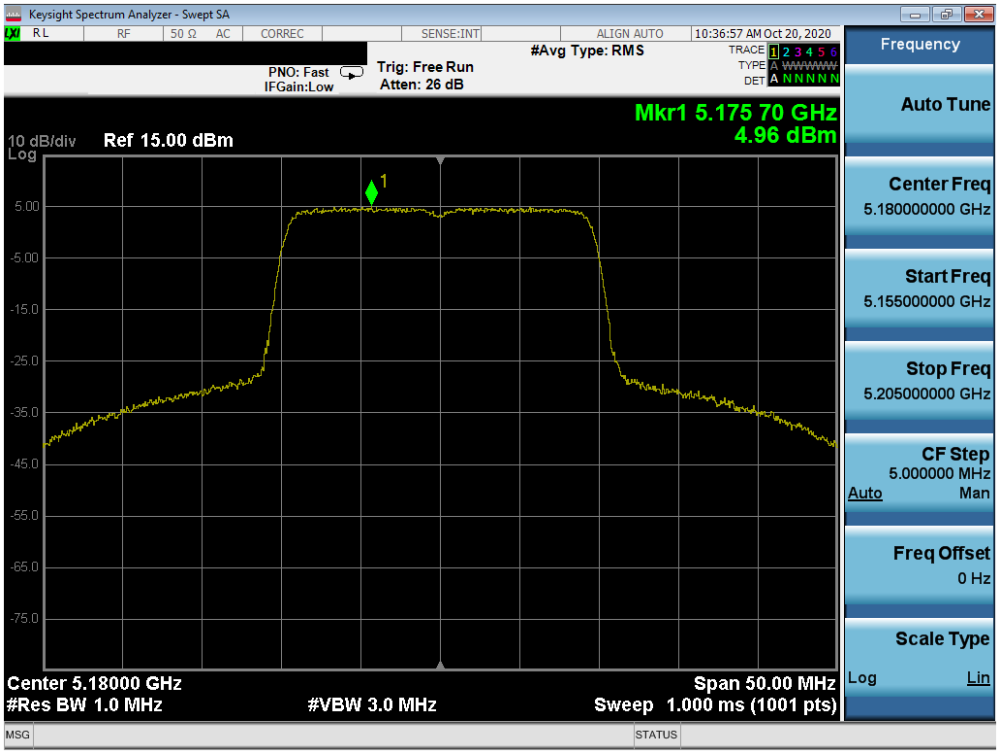
Plot 7-144. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 1) – Ch. 36)



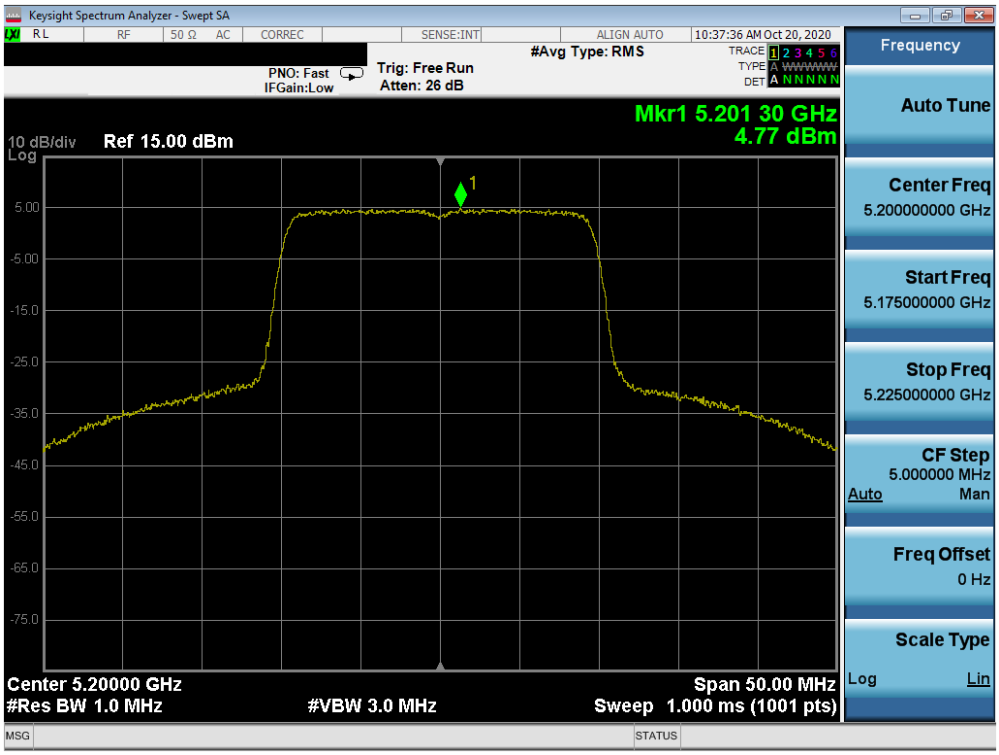
Plot 7-145. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 1) – Ch. 40)



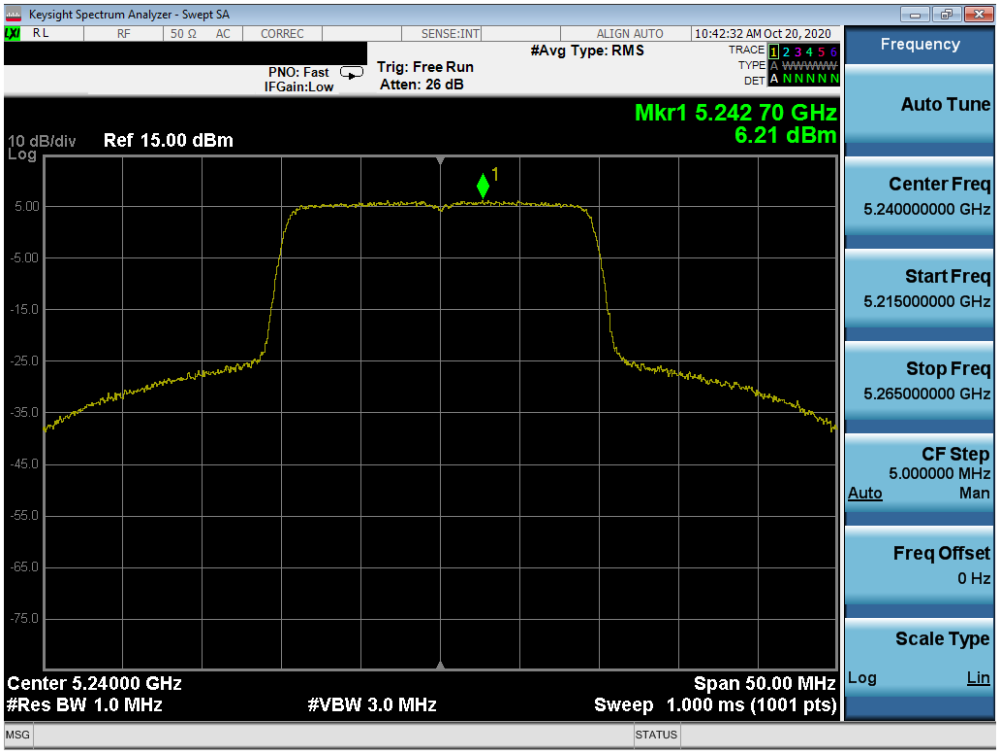
Plot 7-146. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 1) – Ch. 48)



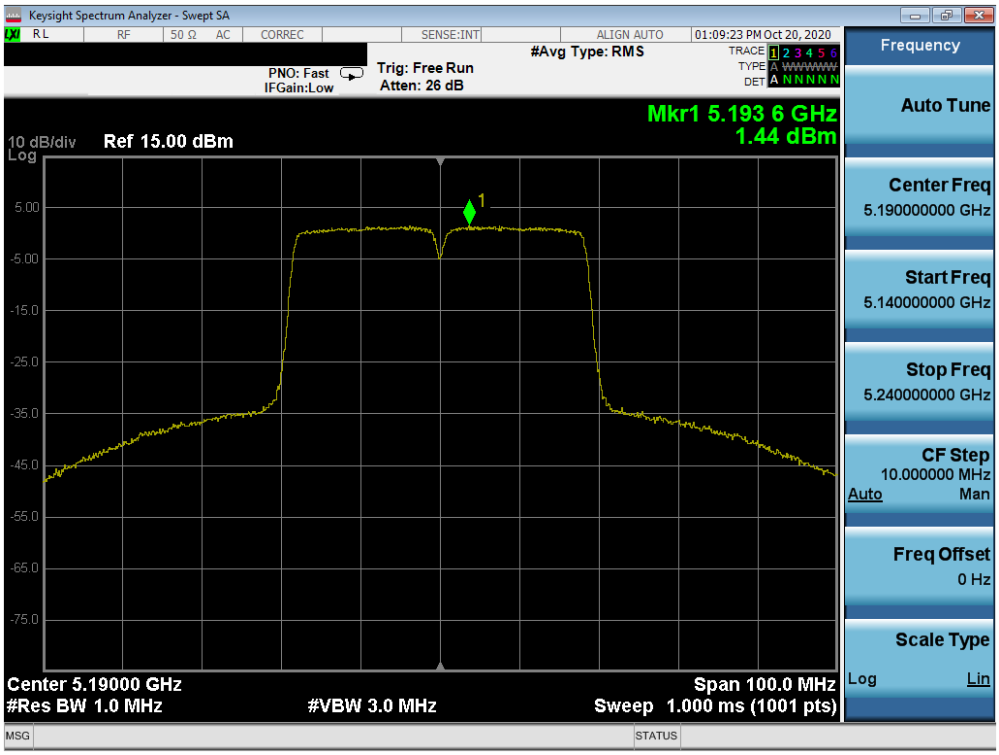
Plot 7-147. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 1) – Ch. 36)



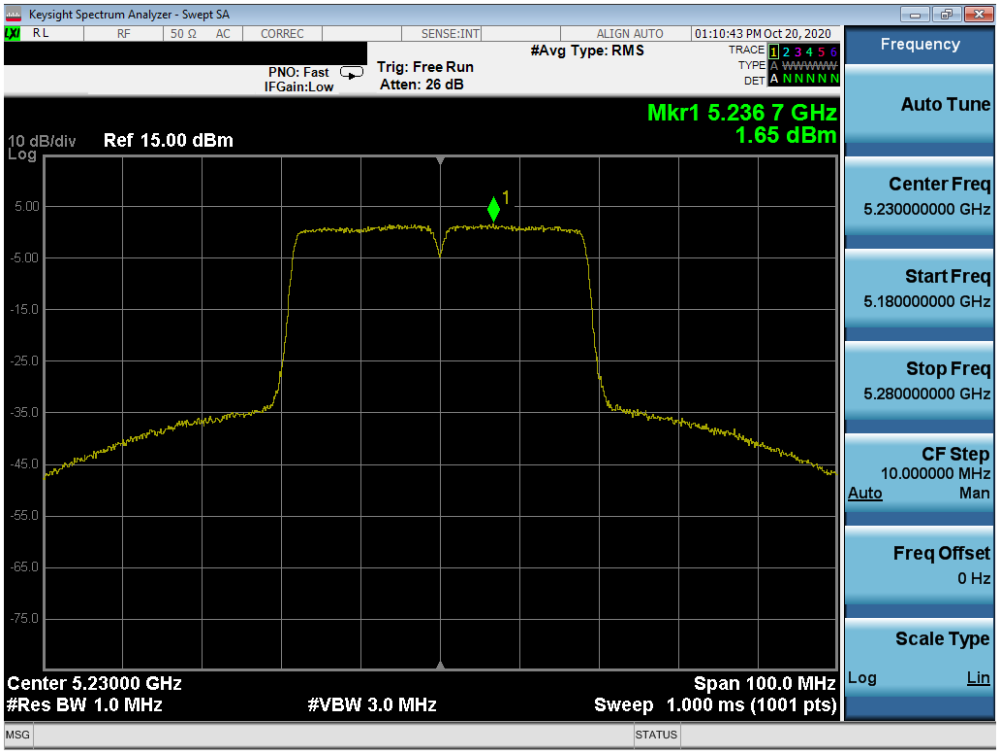
Plot 7-148. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 1) – Ch. 40)



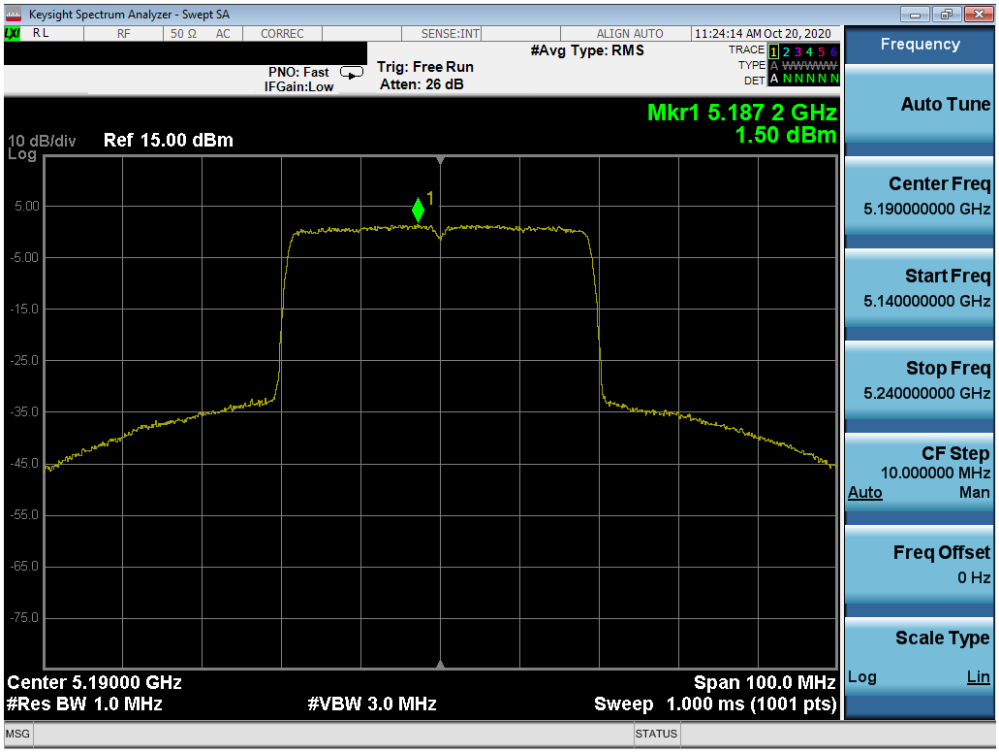
Plot 7-149. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 1) – Ch. 48)



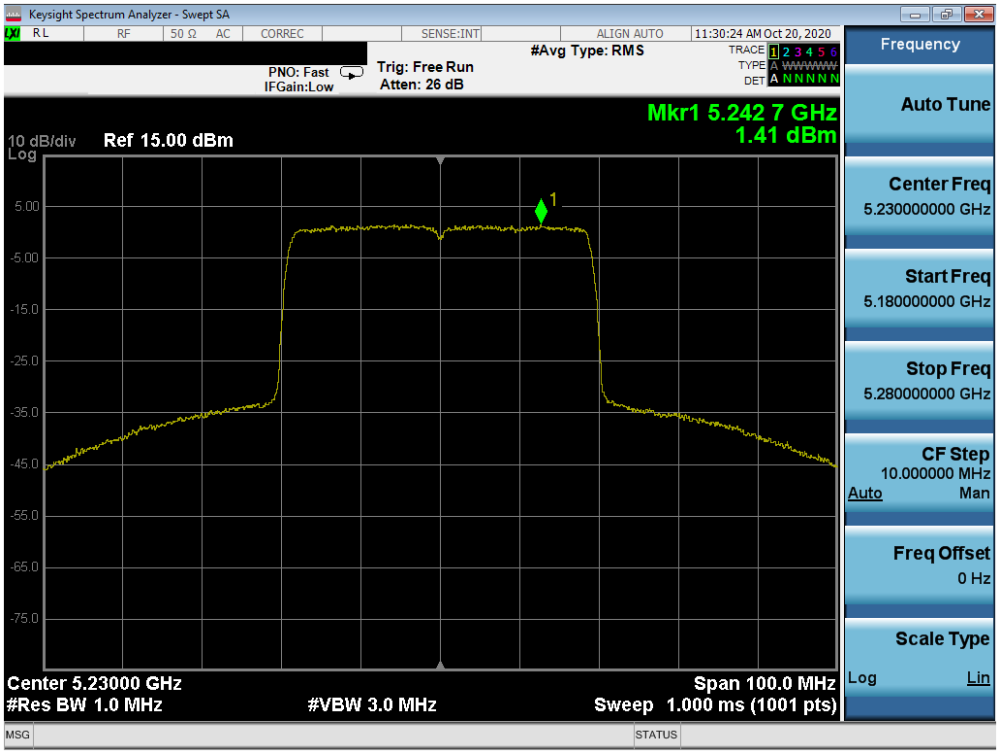
Plot 7-150. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 1) – Ch. 38)



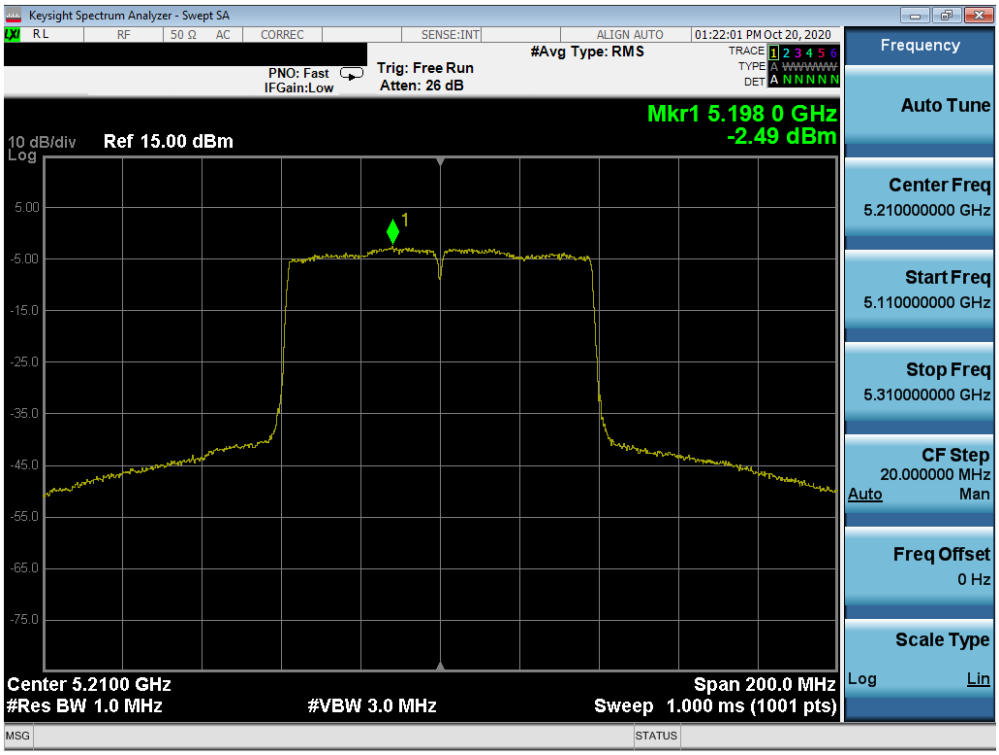
Plot 7-151. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 1) – Ch. 46)



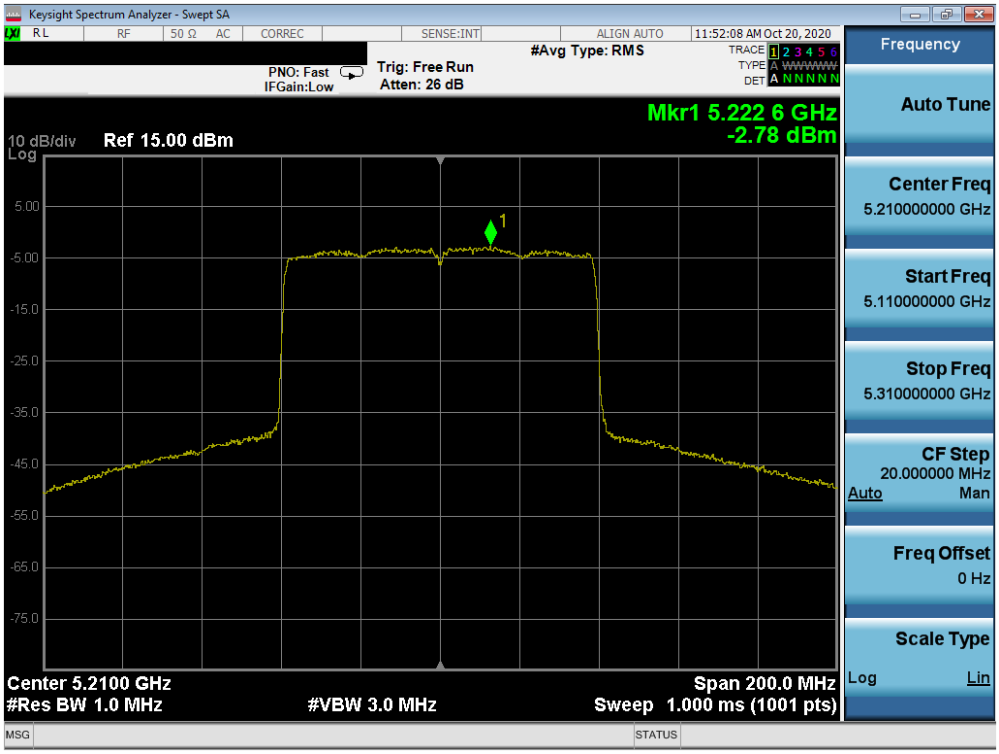
Plot 7-152. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax (UNII Band 1) – Ch. 38)



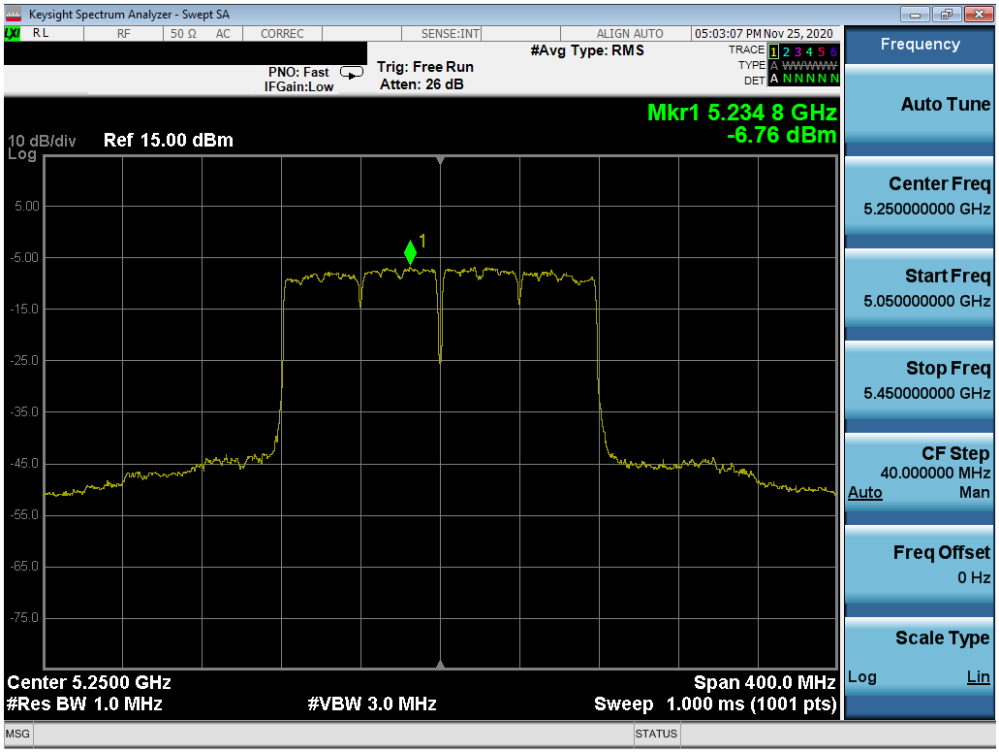
Plot 7-153. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax (UNII Band 1) – Ch. 46)



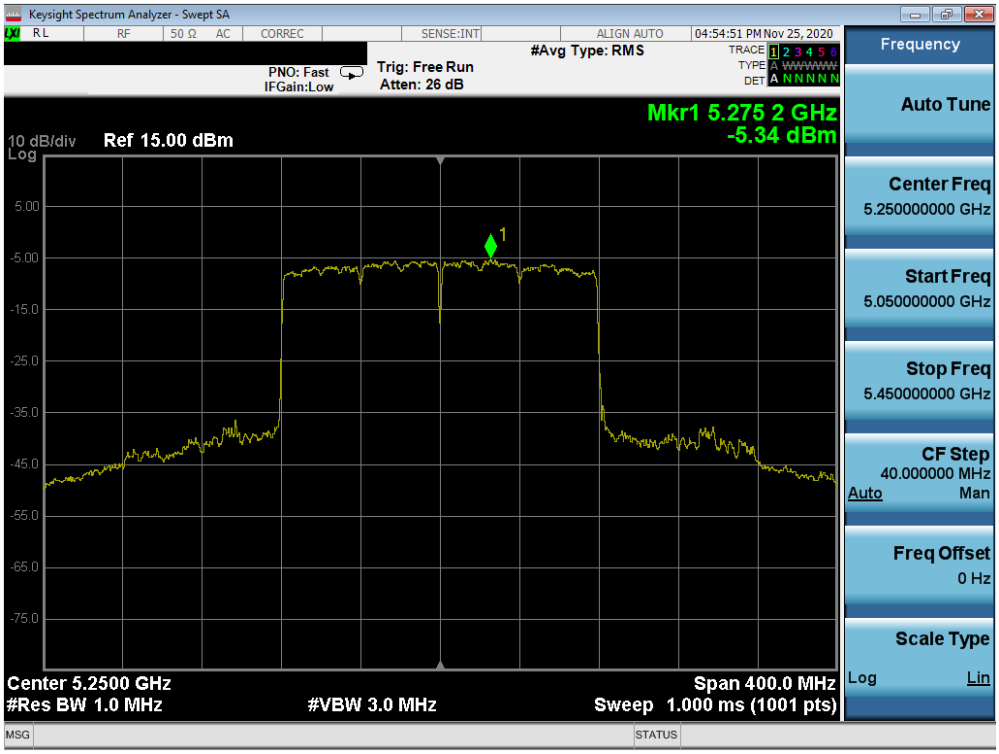
Plot 7-154. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ac (UNII Band 1) – Ch. 42)



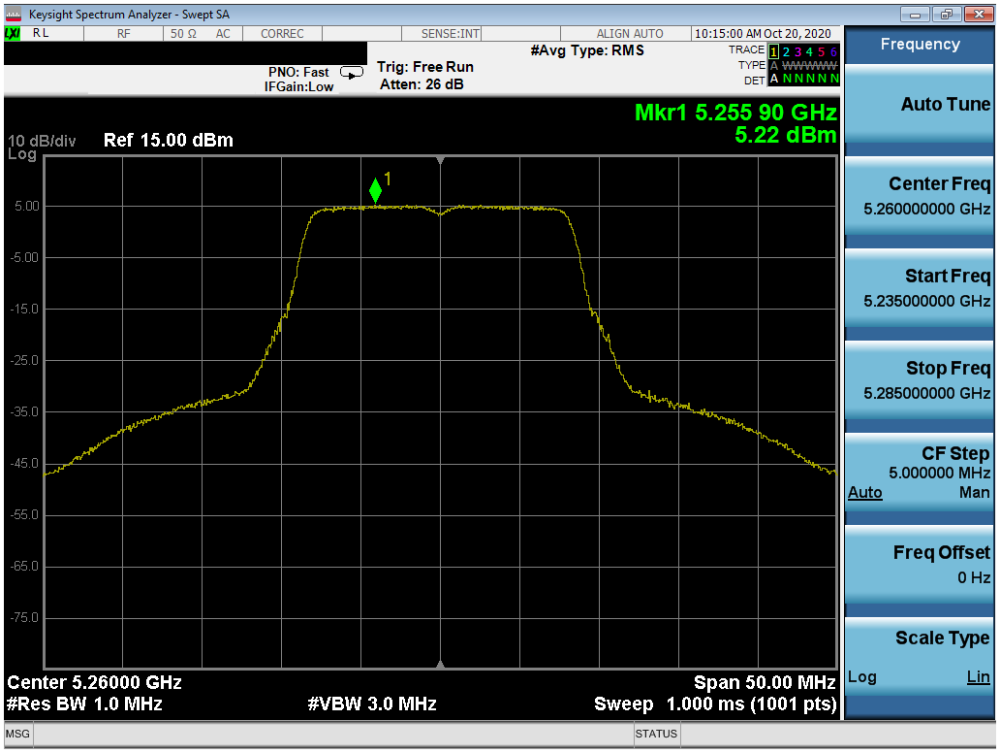
Plot 7-155. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax (UNII Band 1) – Ch. 42)



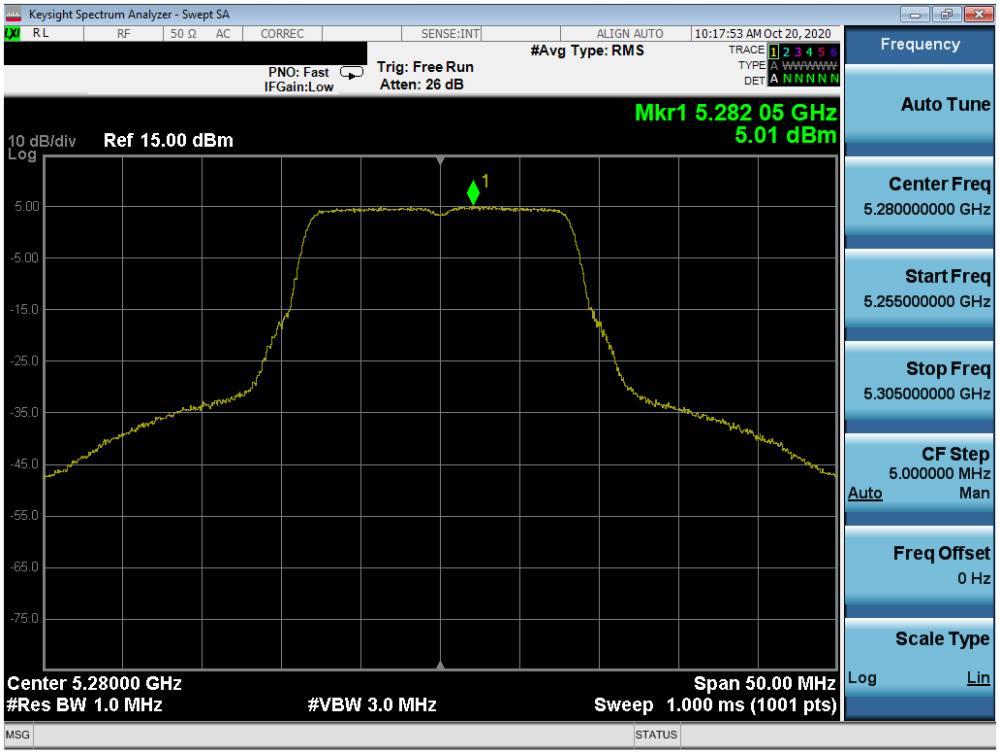
Plot 7-156. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11ac (UNII Band 1) – Ch. 50)



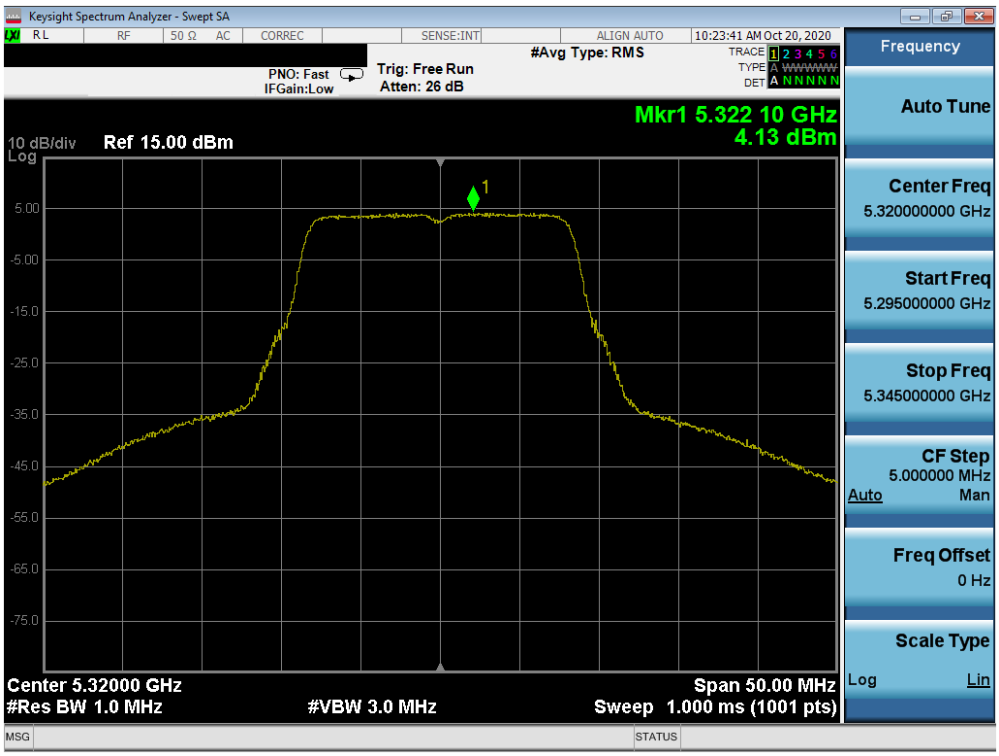
Plot 7-157. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11ax (UNII Band 1) – Ch. 50)



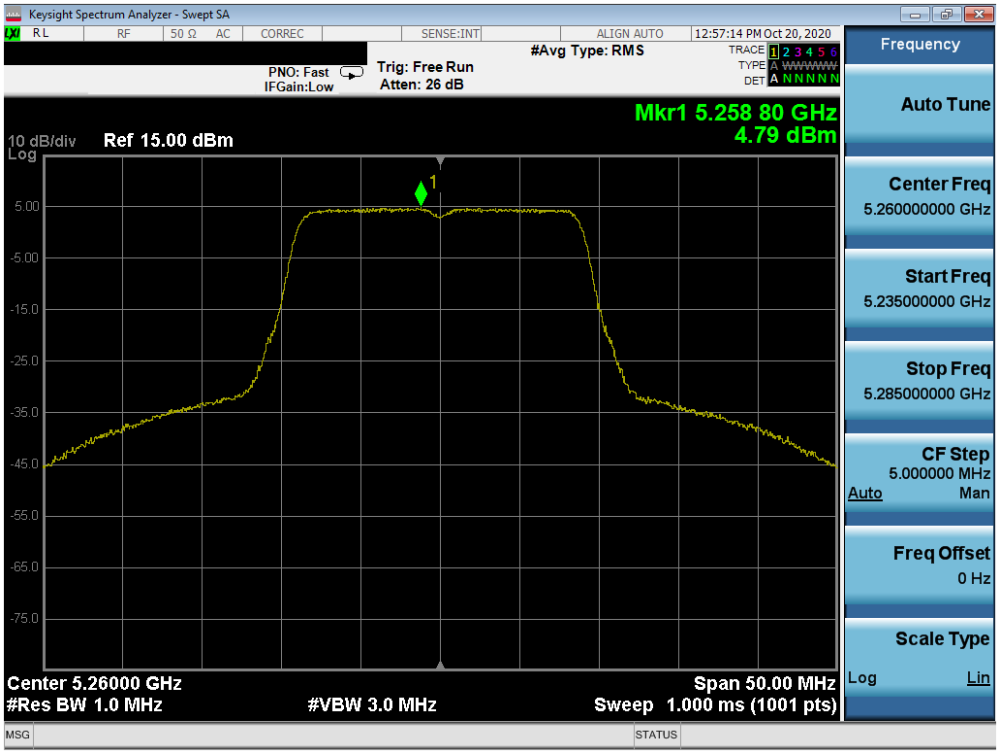
Plot 7-158. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 2A) – Ch. 52)



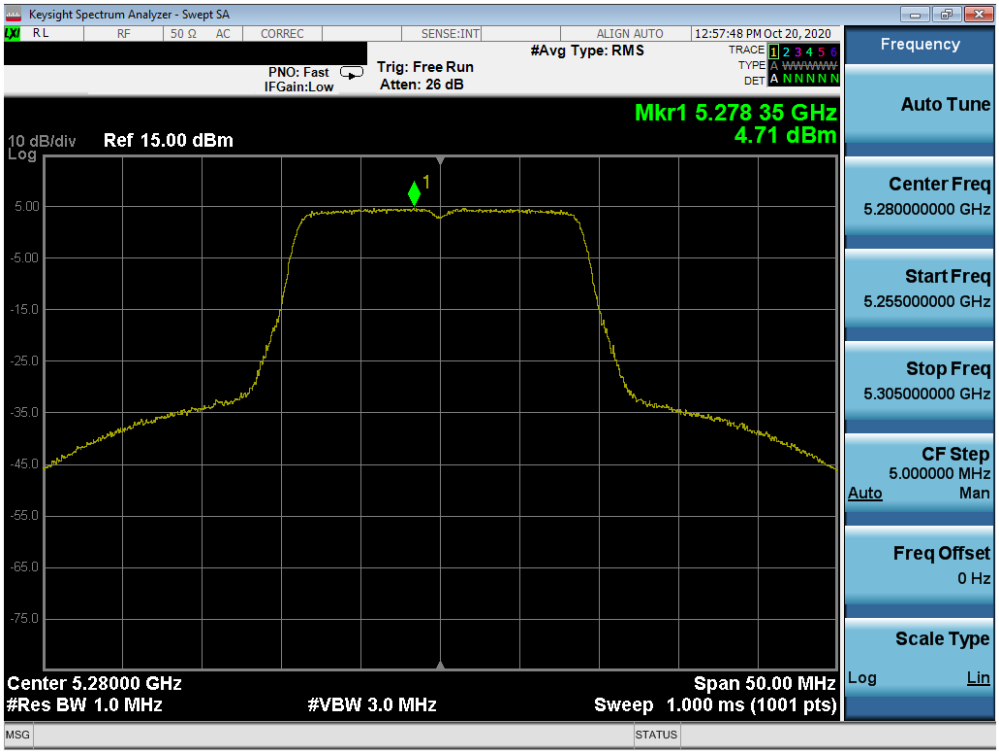
Plot 7-159. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 2A) – Ch. 56)



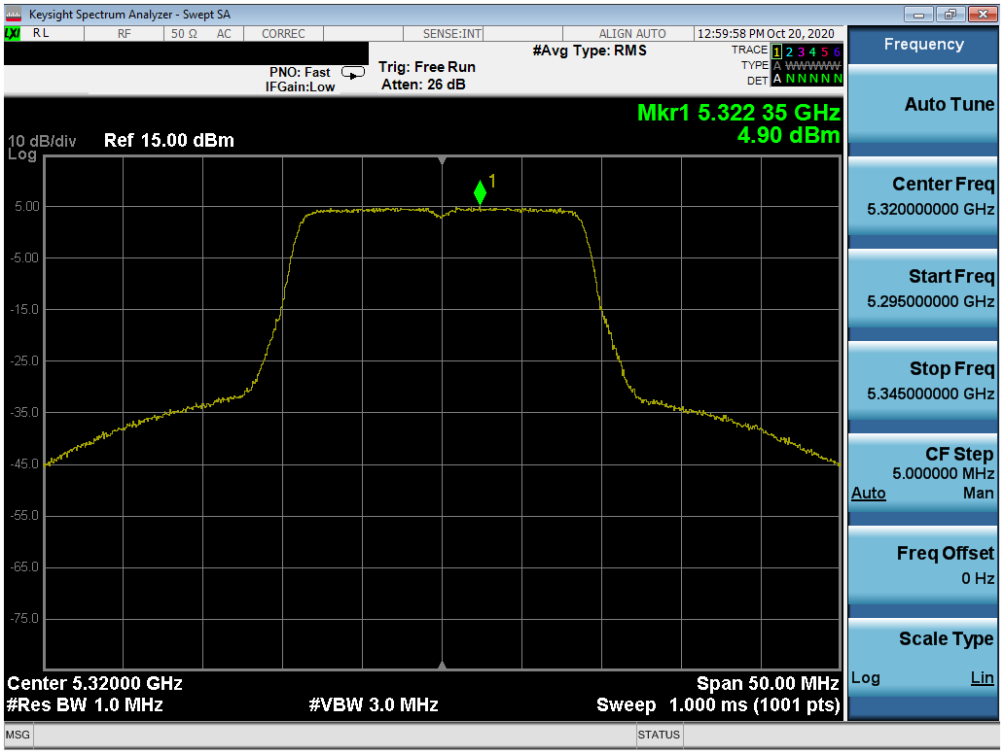
Plot 7-160. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 2A) – Ch. 64)



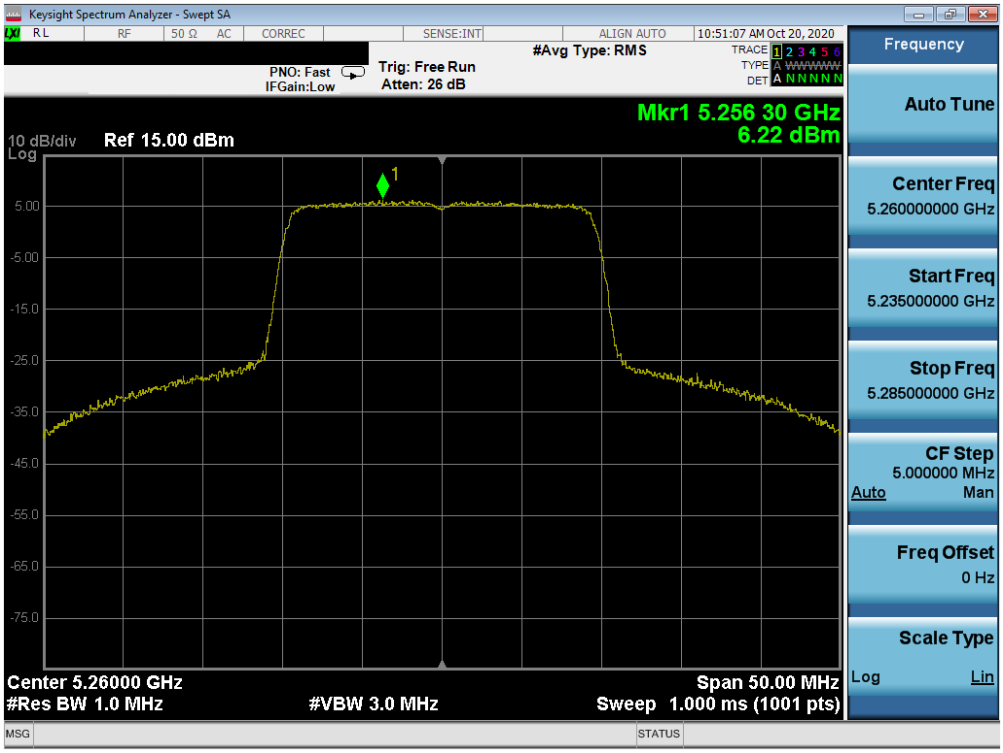
Plot 7-161. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 2A) – Ch. 52)



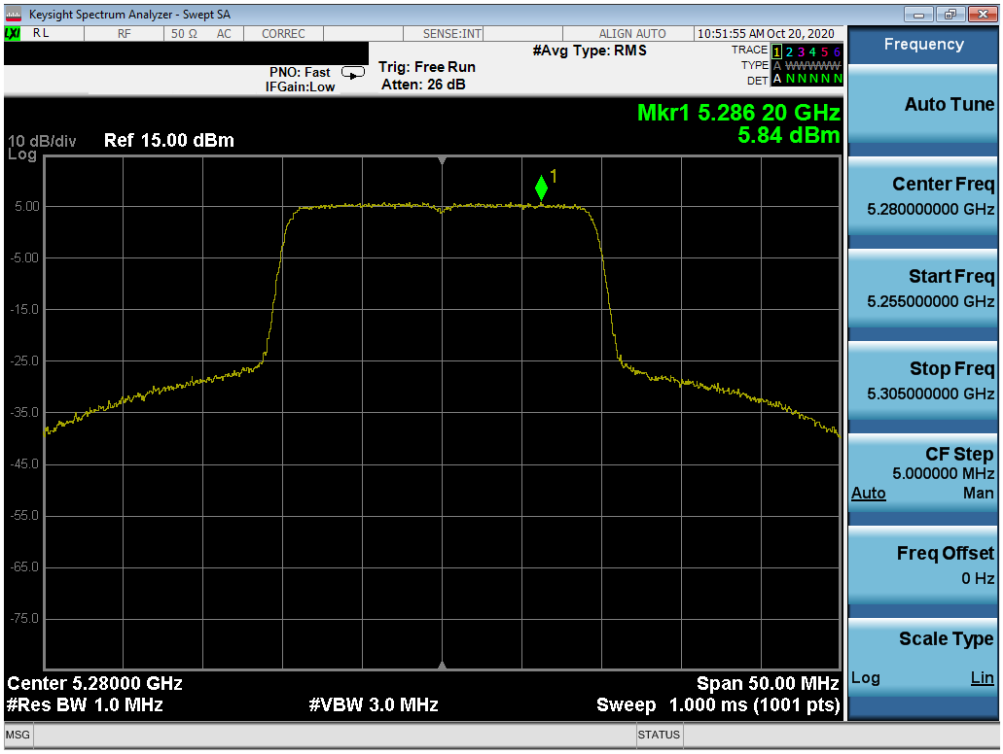
Plot 7-162. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 2A) – Ch. 56)



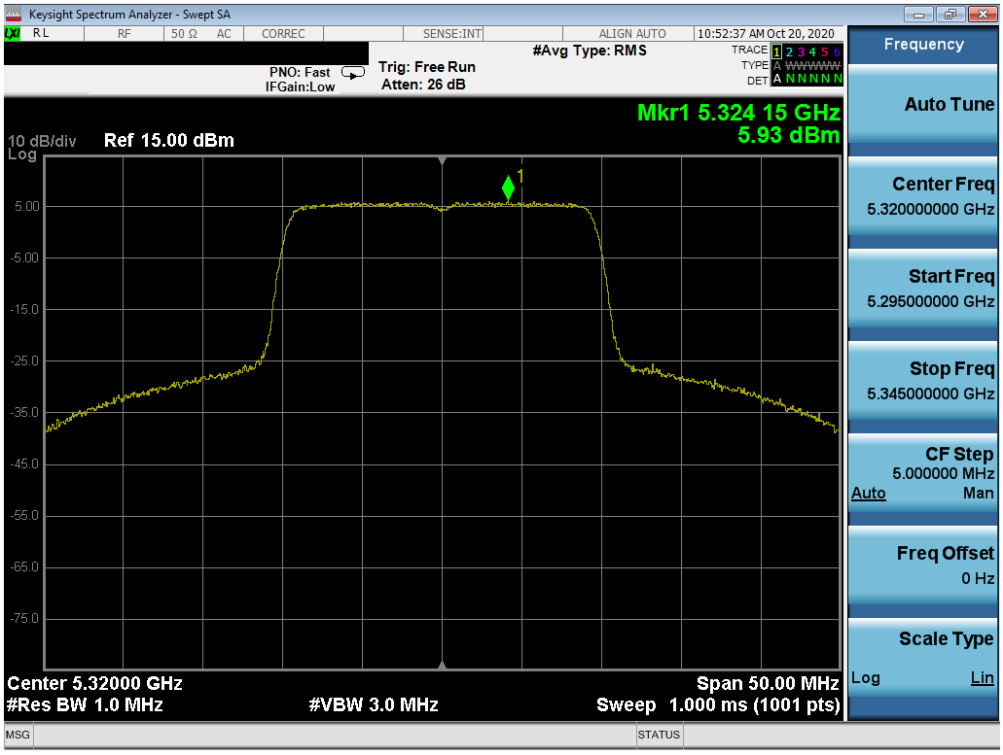
Plot 7-163. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 2A) – Ch. 64)



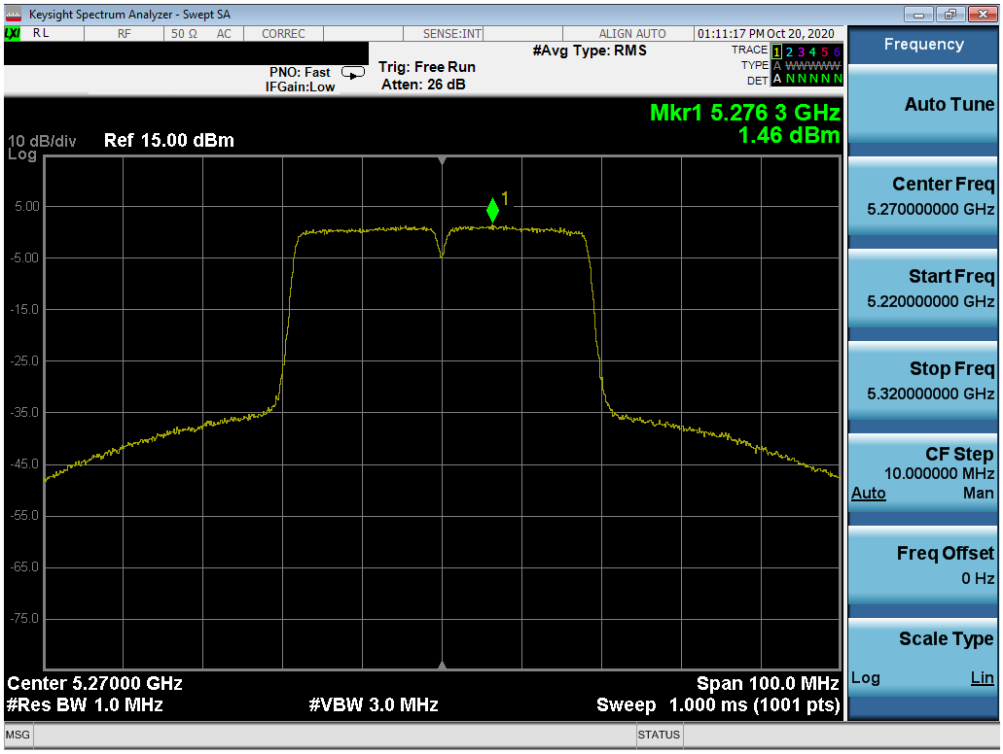
Plot 7-164. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 2A) – Ch. 52)



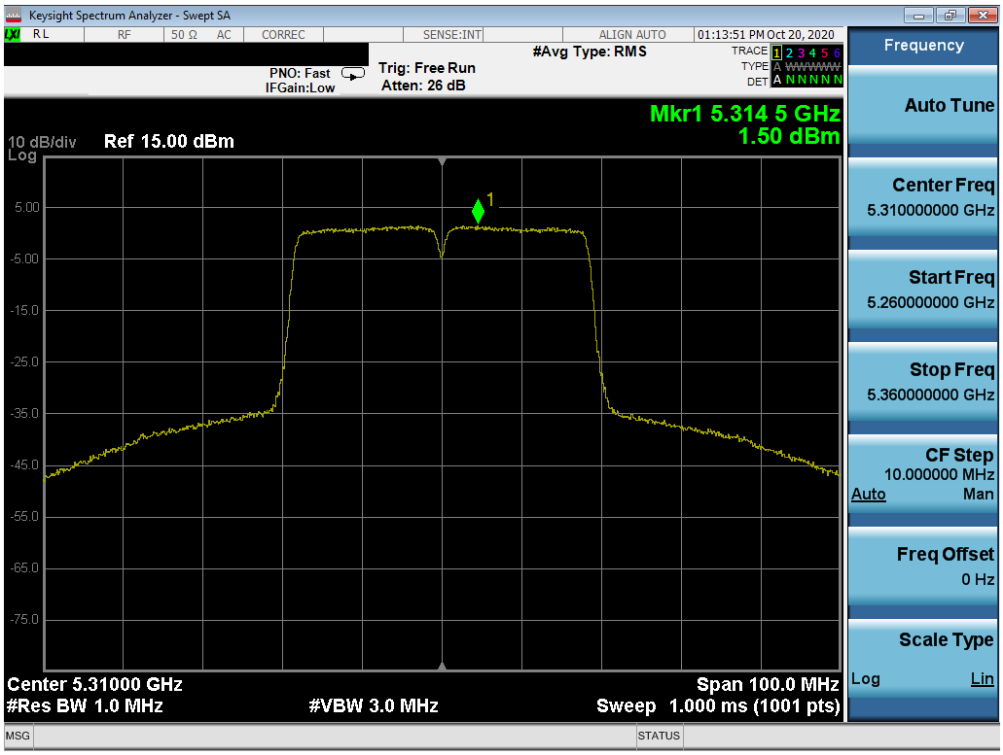
Plot 7-165. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 2A) – Ch. 56)



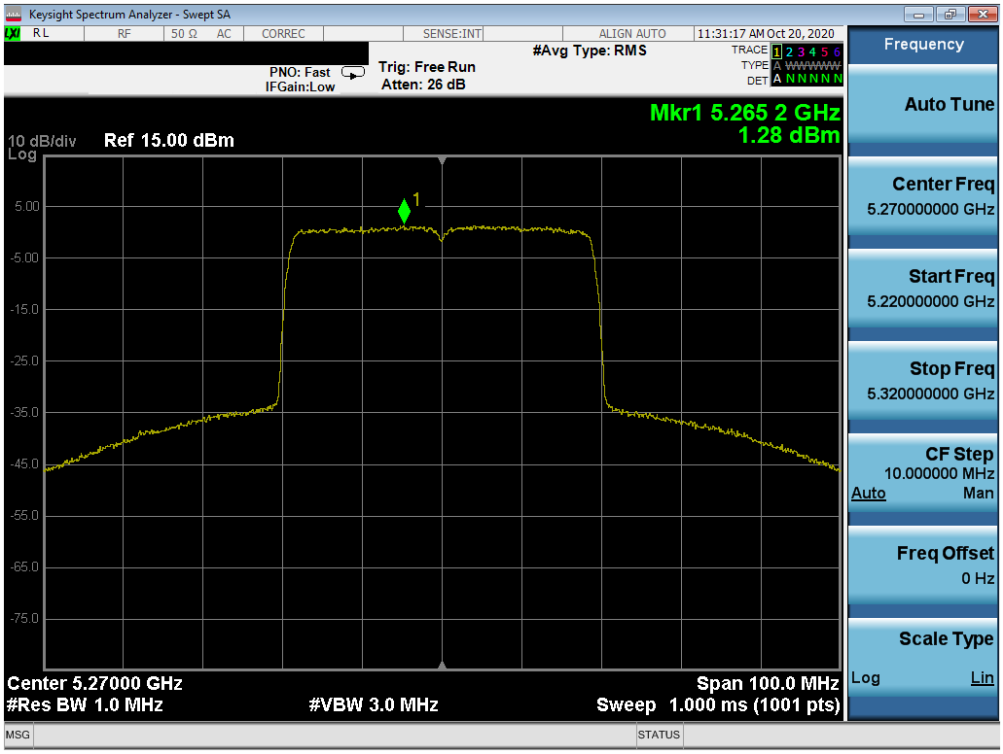
Plot 7-166. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 2A) – Ch. 64)



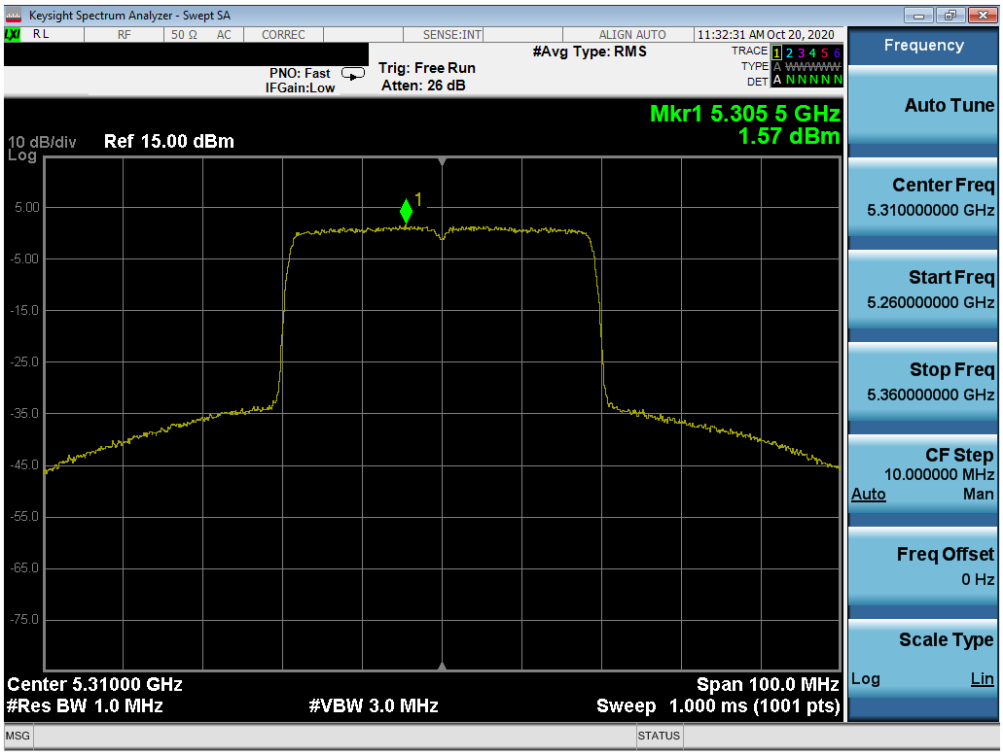
Plot 7-167. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 2A) – Ch. 54)



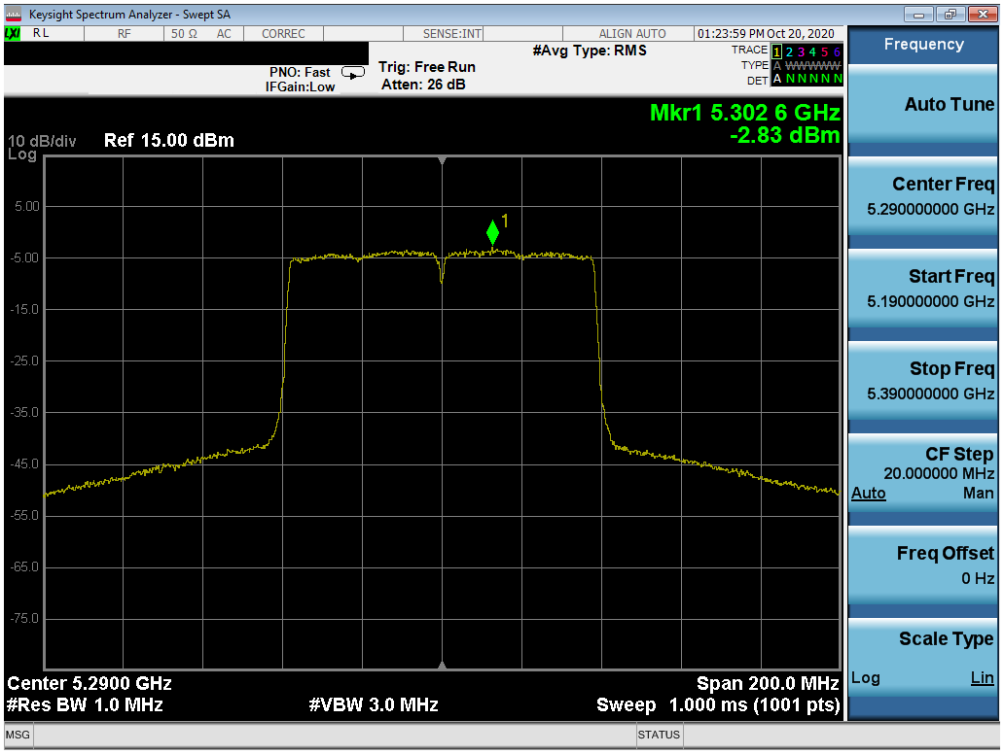
Plot 7-168. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 2A) – Ch. 62)



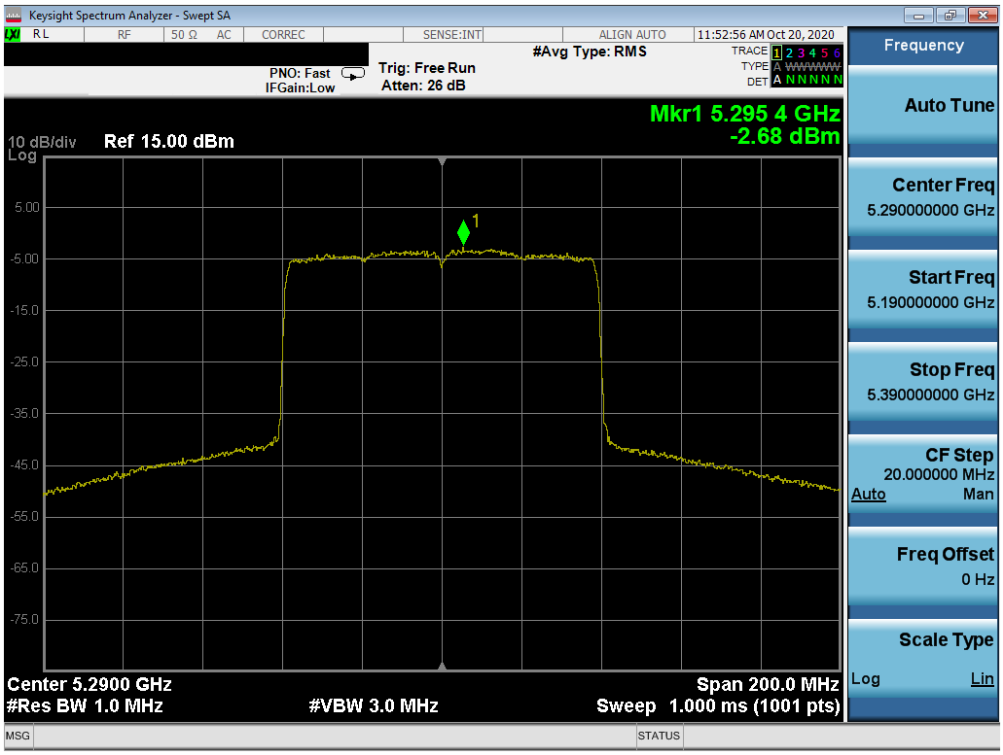
Plot 7-169. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax (UNII Band 2A) – Ch. 54)



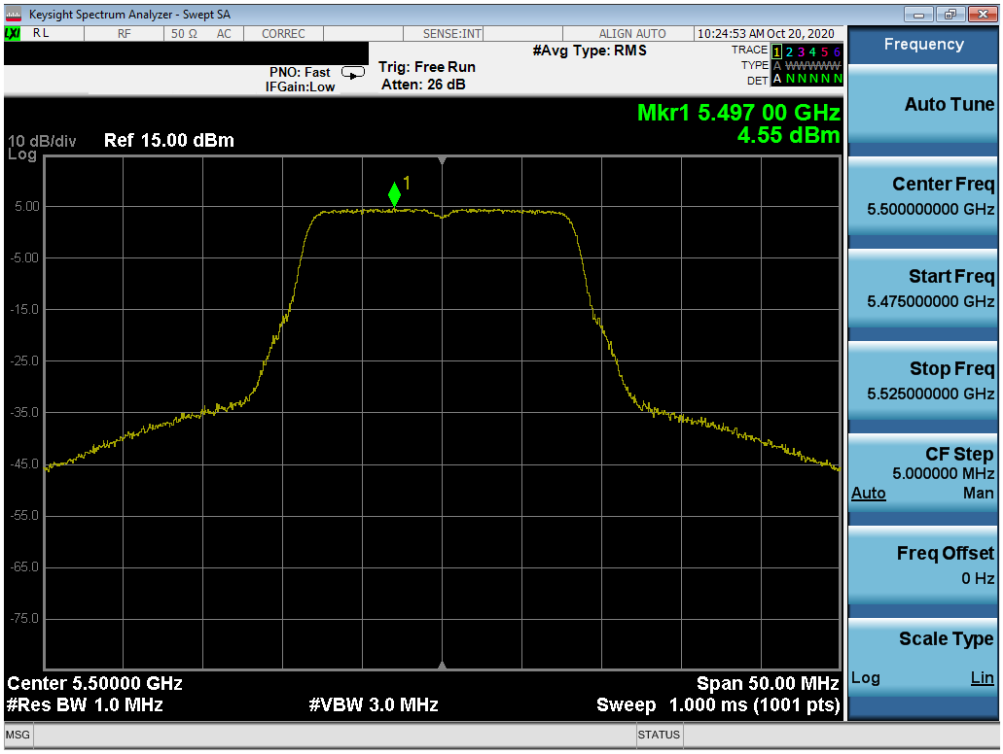
Plot 7-170. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax (UNII Band 2A) – Ch. 62)



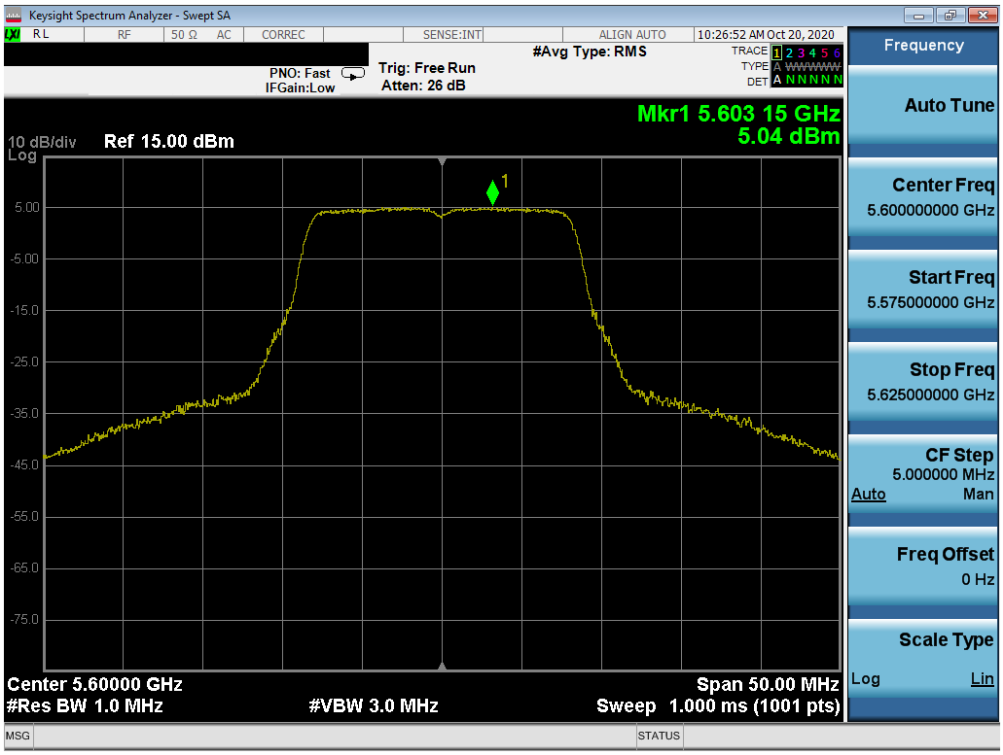
Plot 7-171. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ac (UNII Band 2A) – Ch. 58)



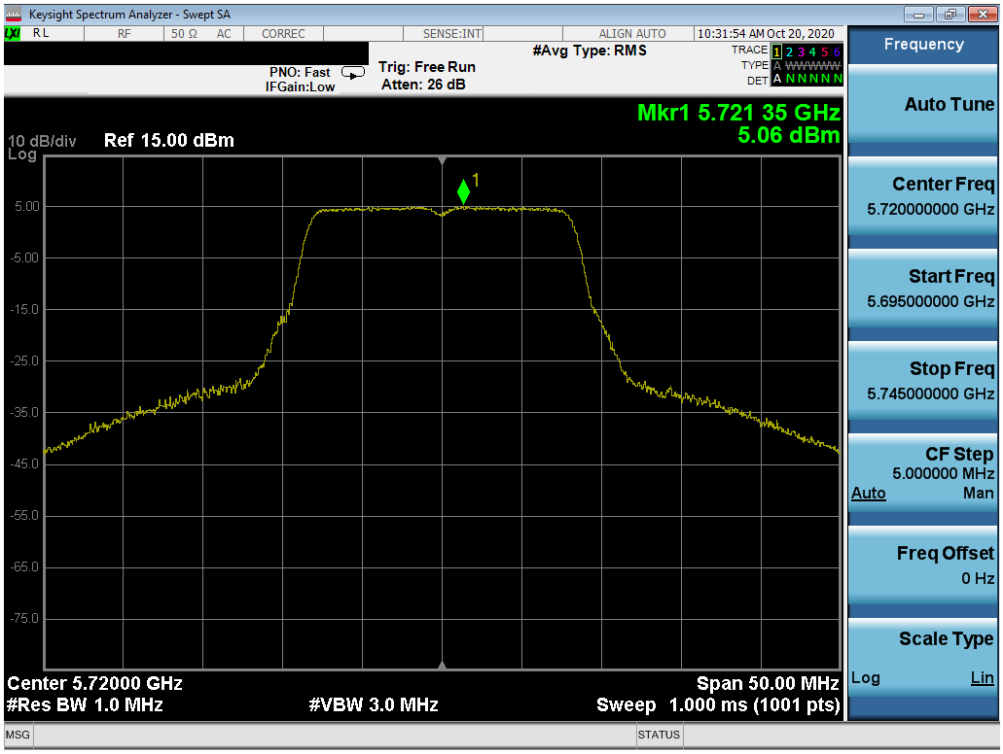
Plot 7-172. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax (UNII Band 2A) – Ch. 58)



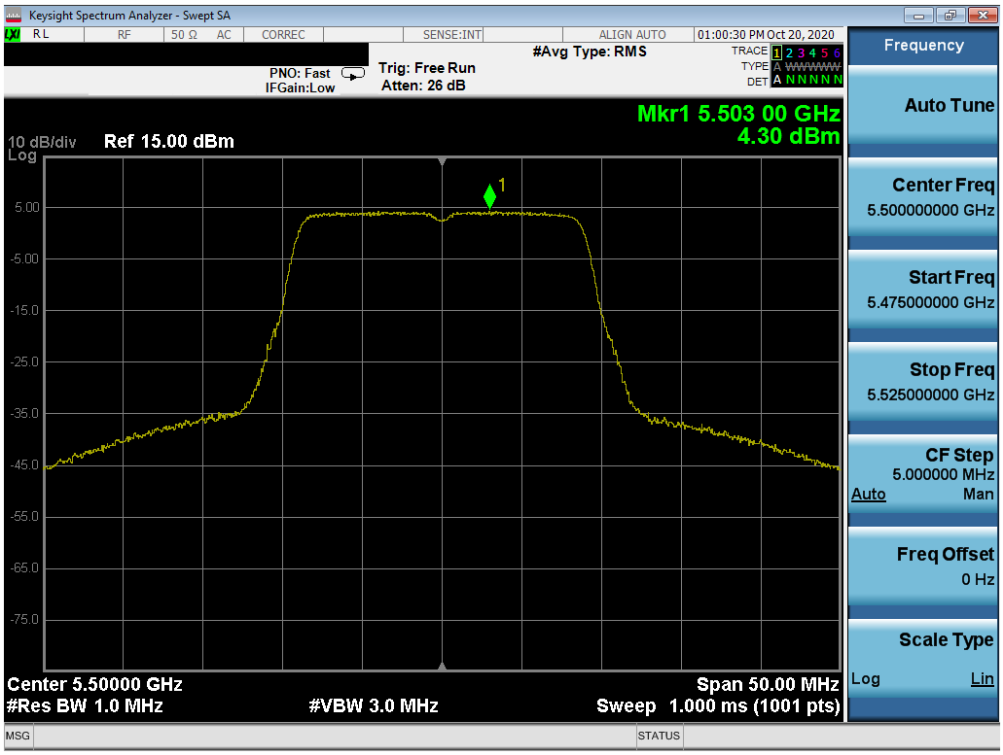
Plot 7-173. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 2C) – Ch. 100)



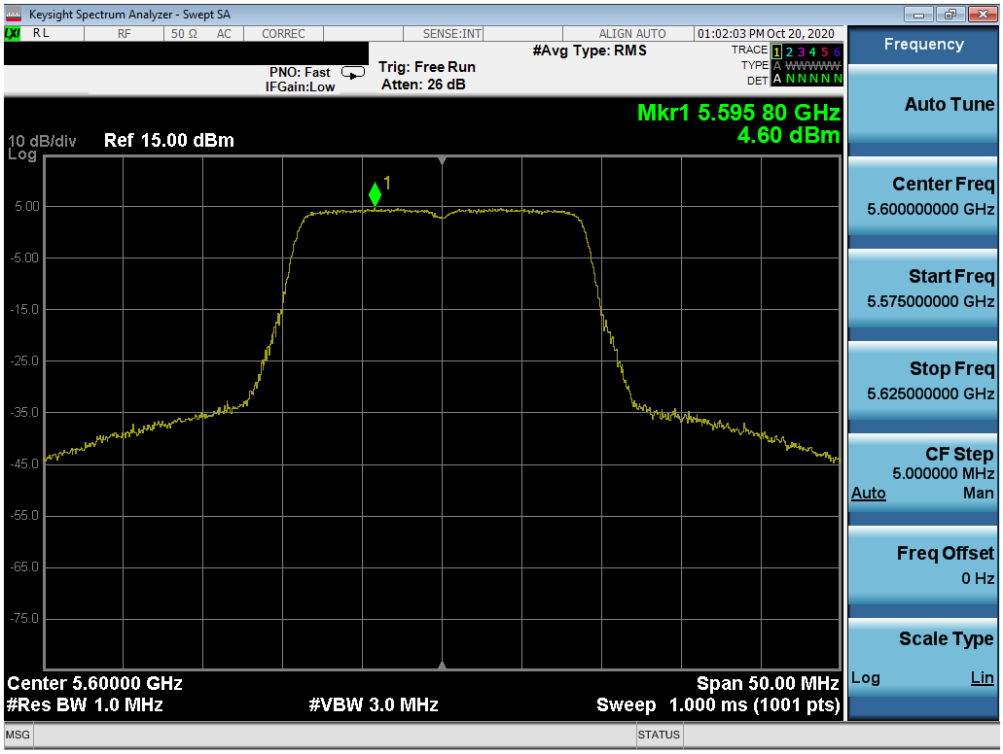
Plot 7-174. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 2C) – Ch. 120)



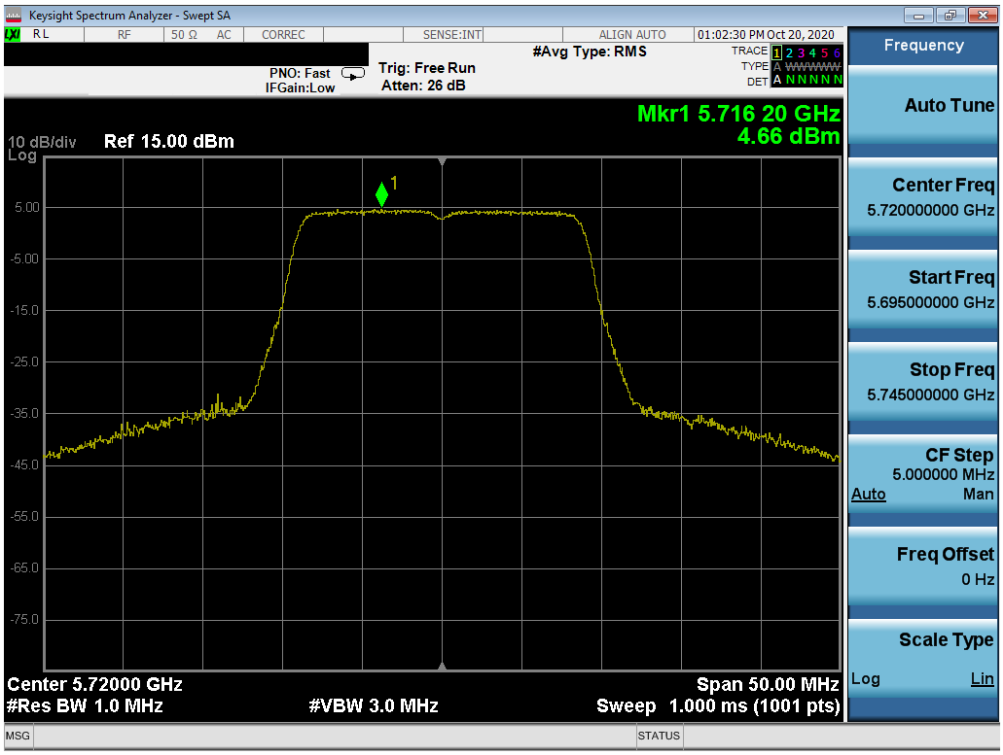
Plot 7-175. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 2C) – Ch. 144)



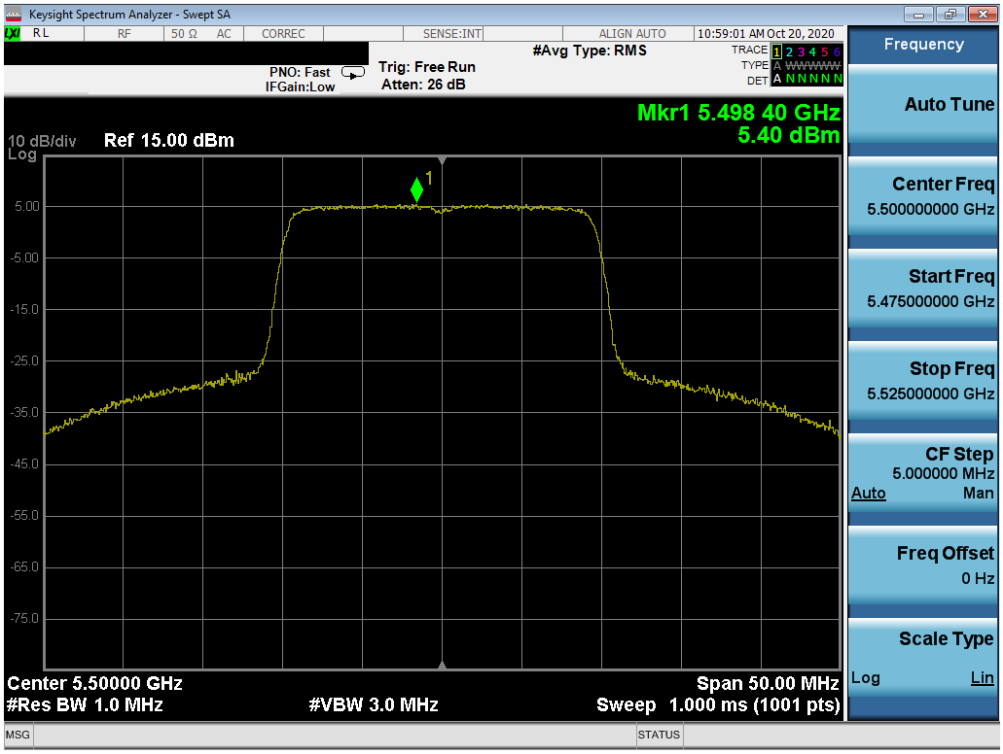
Plot 7-176. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 2C) – Ch. 100)



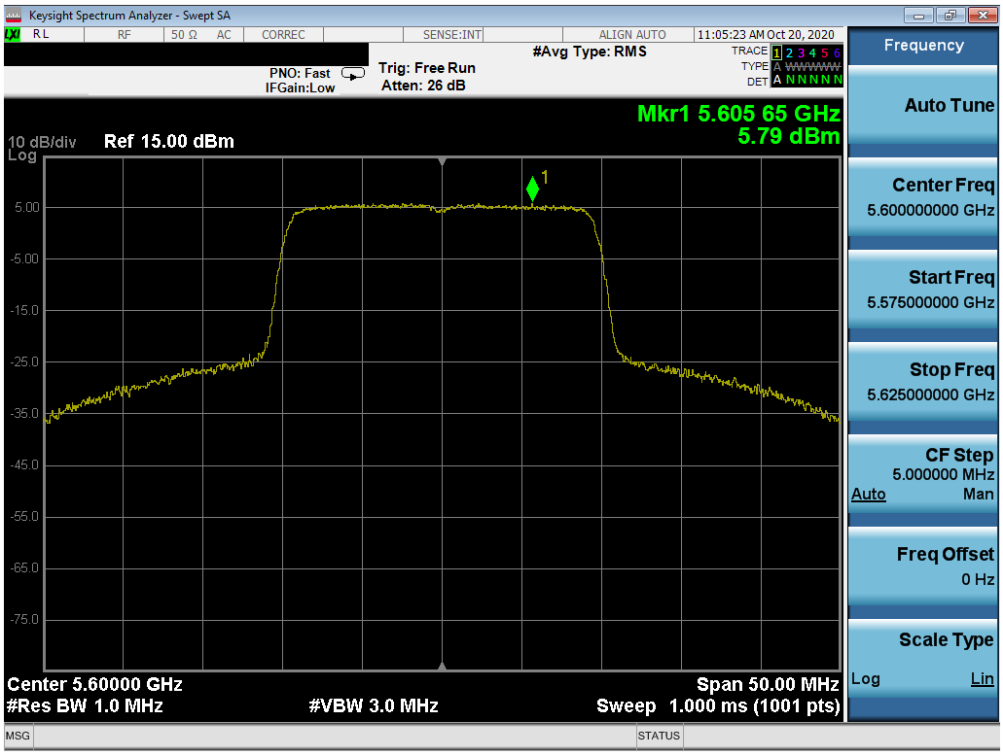
Plot 7-177. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 2C) – Ch. 120)



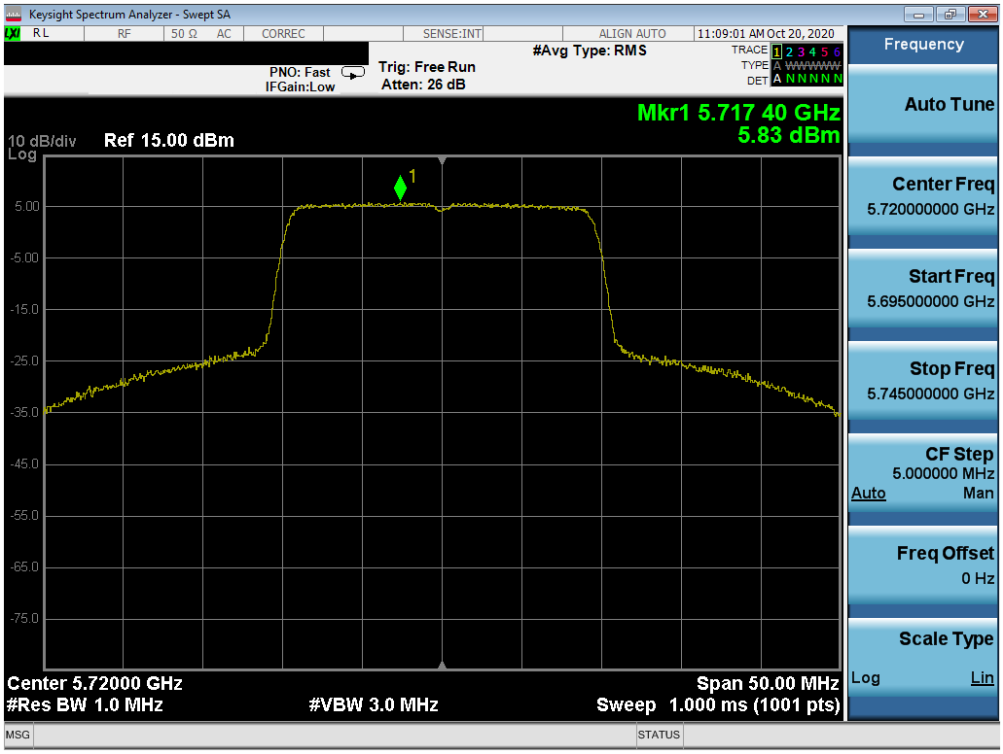
Plot 7-178. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 2C) – Ch. 144)



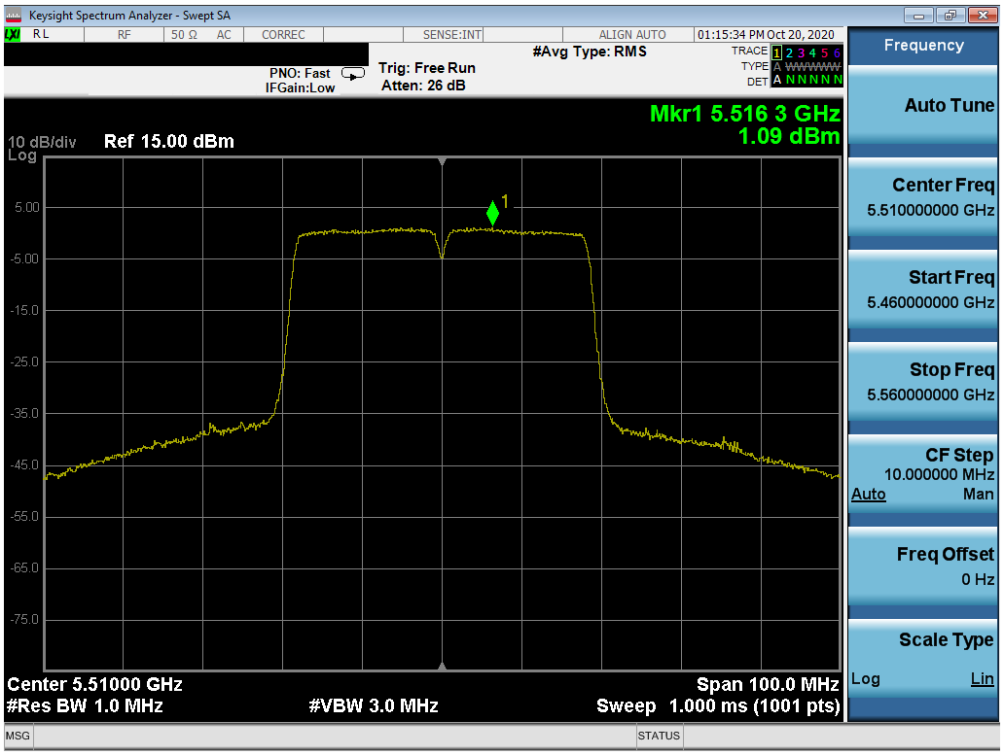
Plot 7-179. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 2C) – Ch. 100)



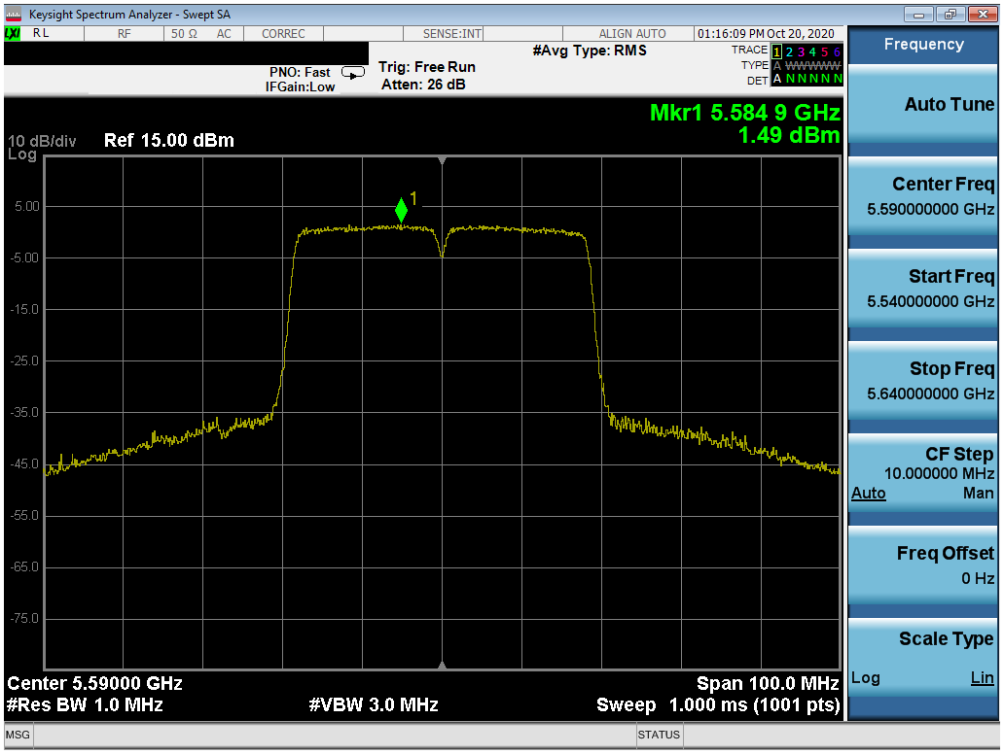
Plot 7-180. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 2C) – Ch. 120)



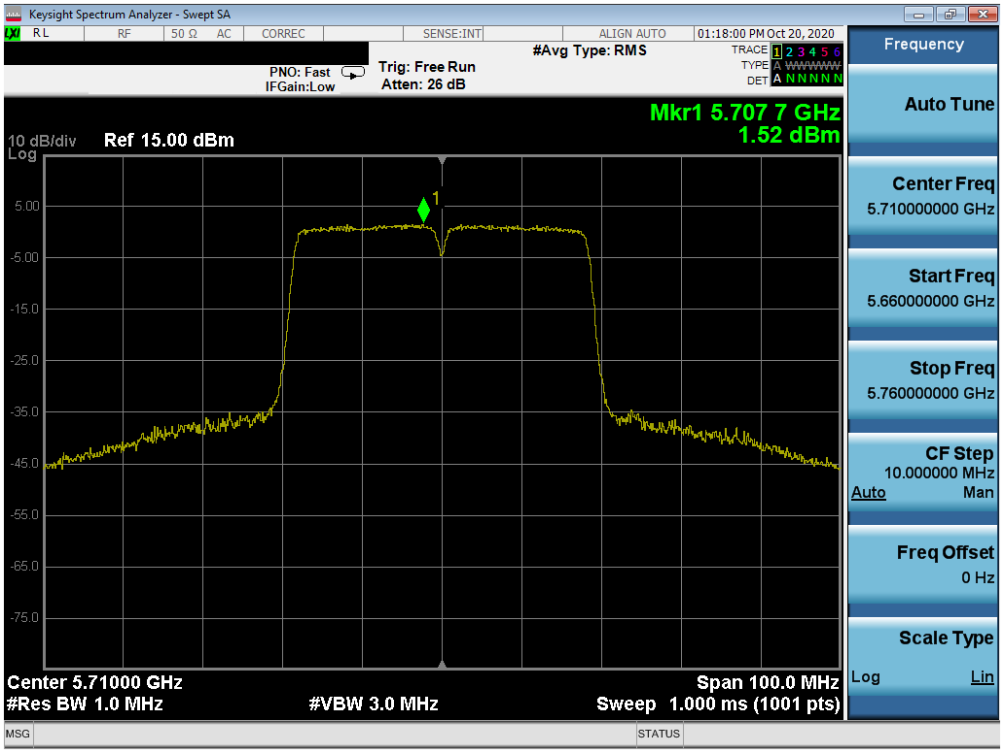
Plot 7-181. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 2C) – Ch. 144)



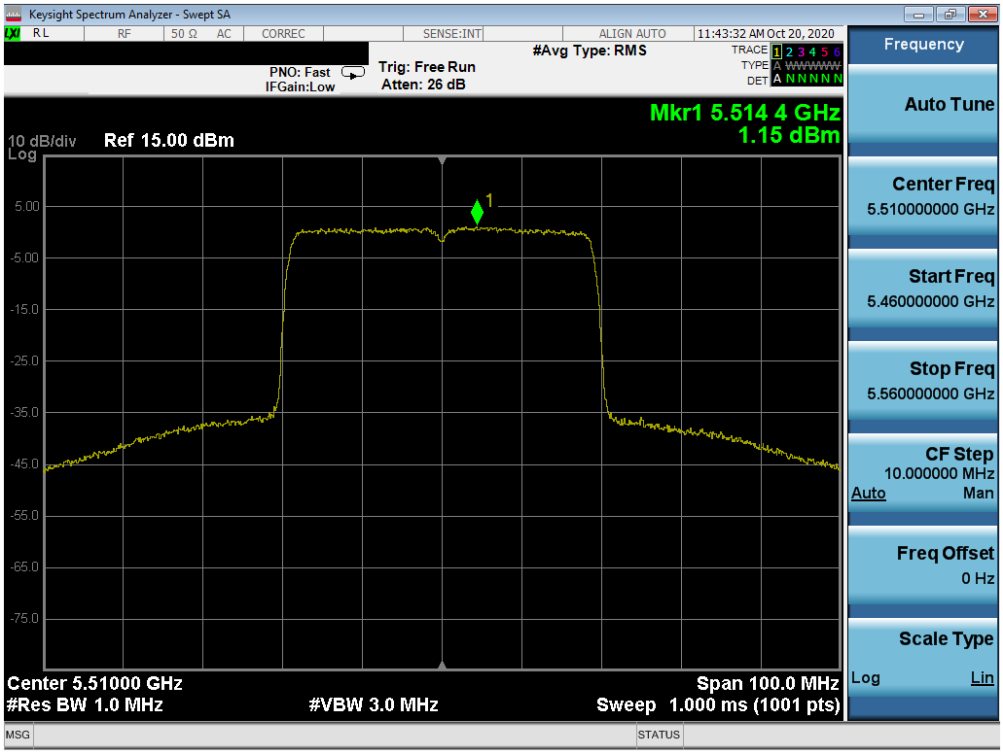
Plot 7-182. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 2C) – Ch. 102)



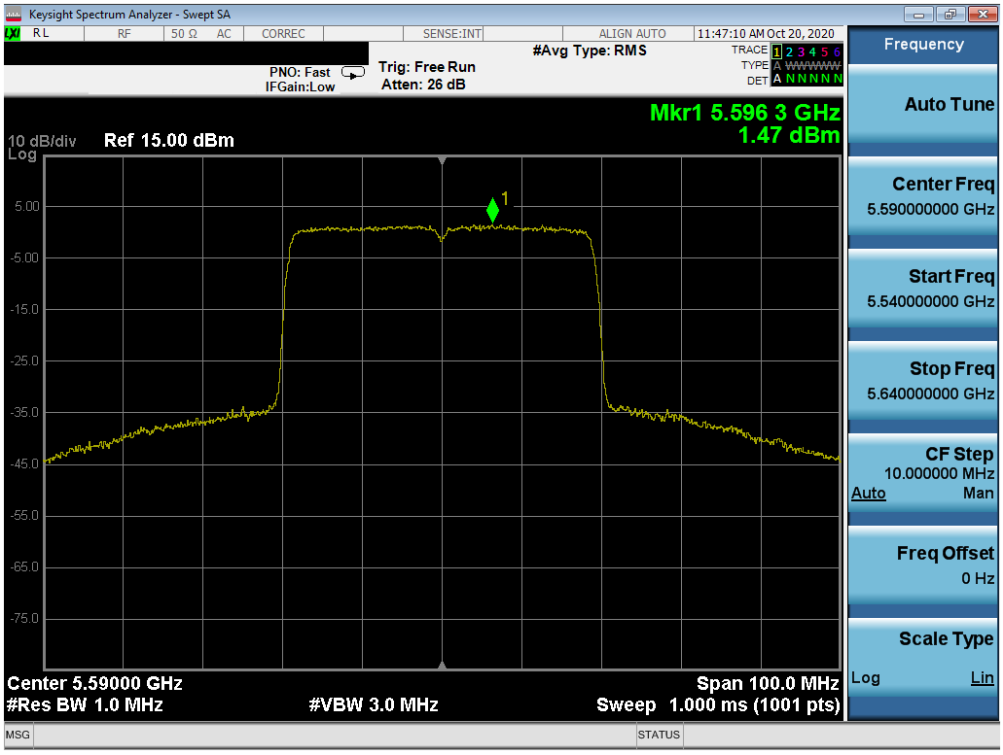
Plot 7-183. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 2C) – Ch. 118)



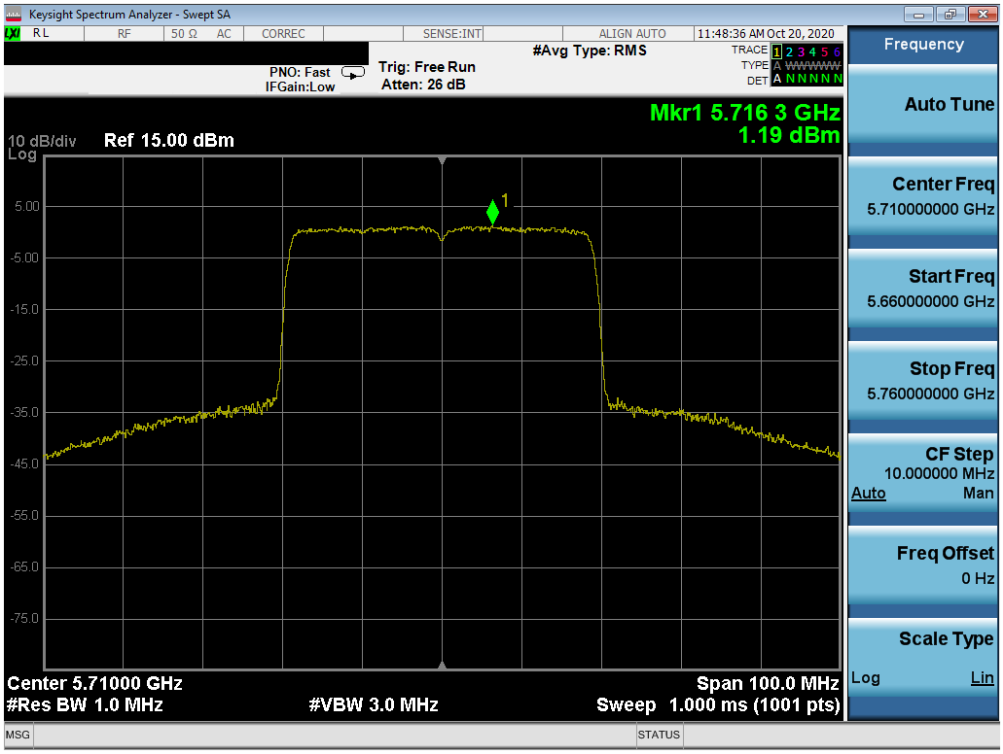
Plot 7-184. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 2C) – Ch. 142)



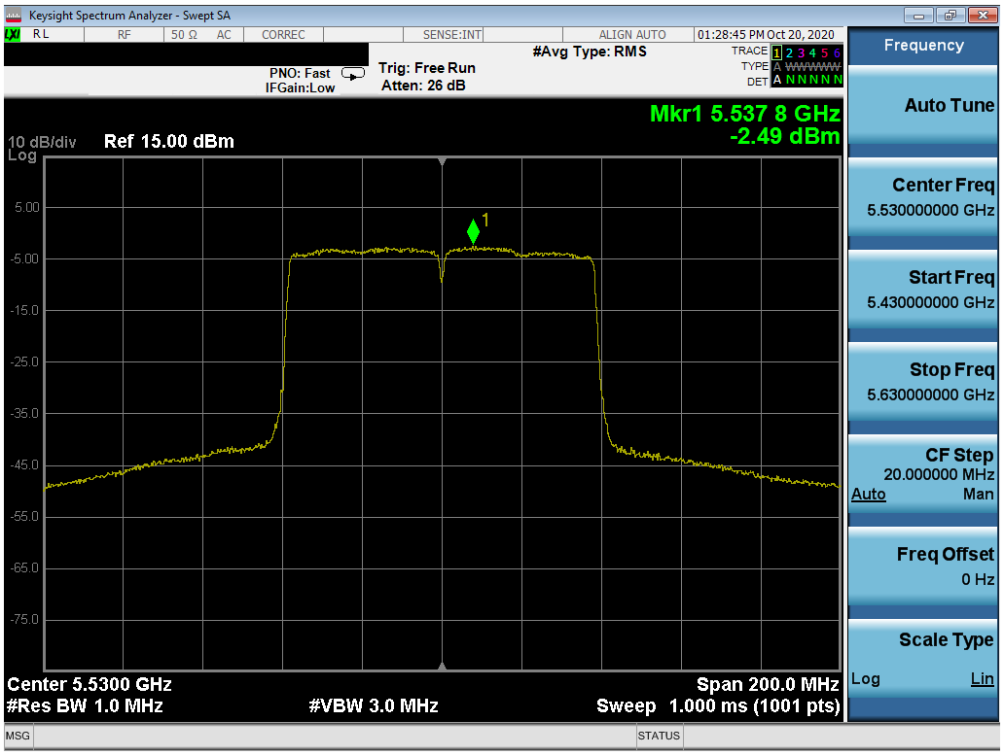
Plot 7-185. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax (UNII Band 2C) – Ch. 102)



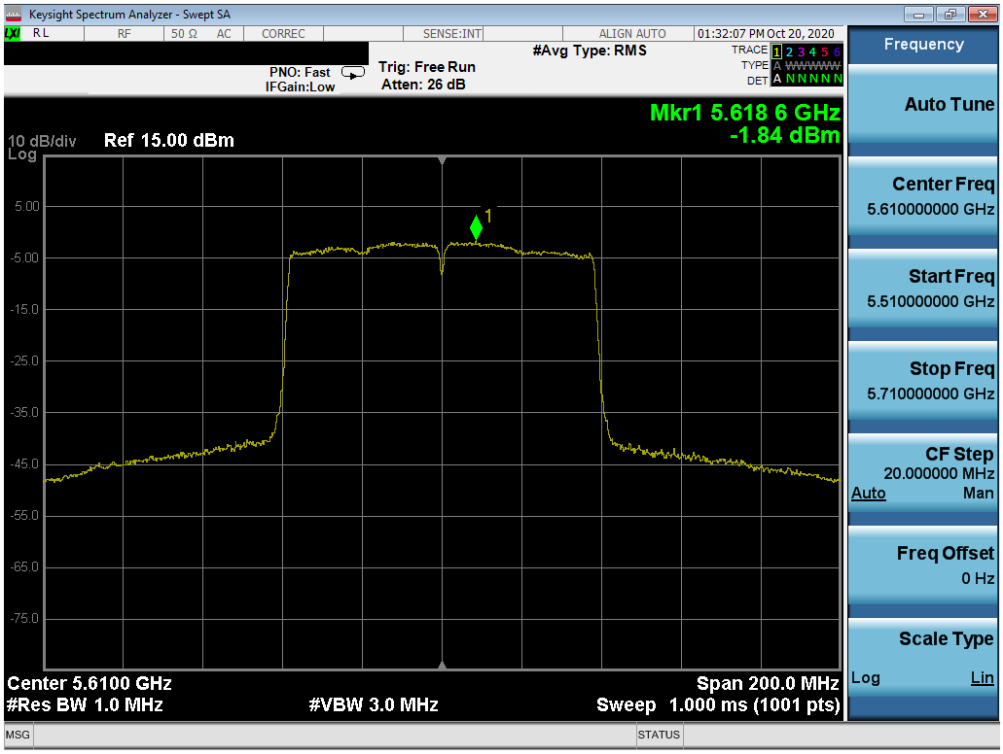
Plot 7-186. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax (UNII Band 2C) – Ch. 118)



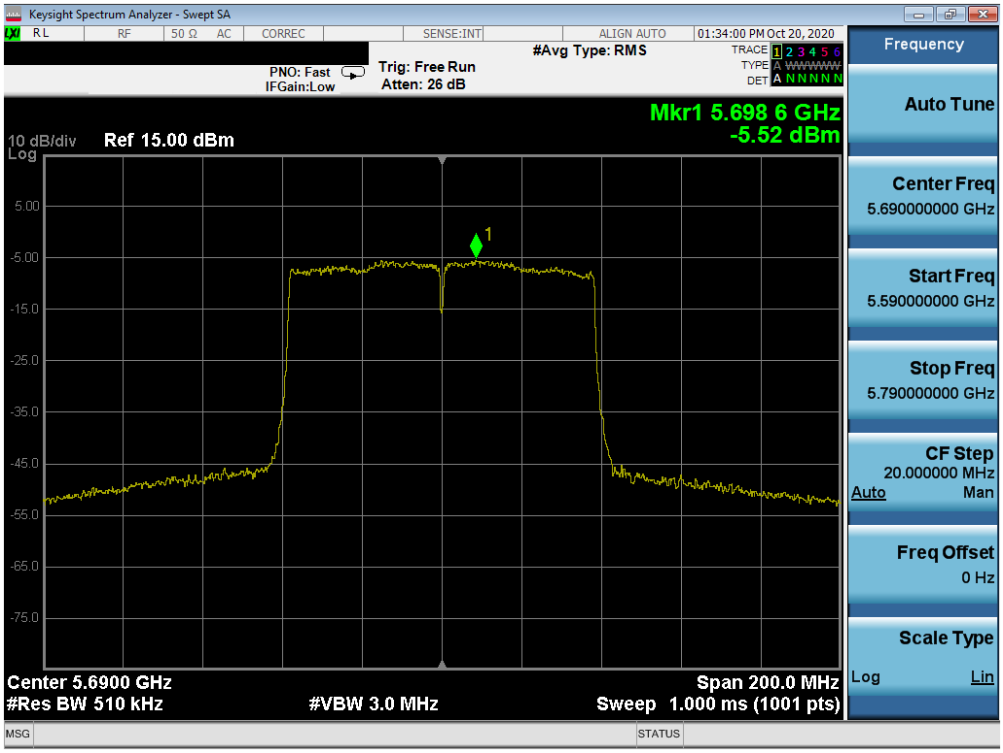
Plot 7-187. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax (UNII Band 2C) – Ch. 142)



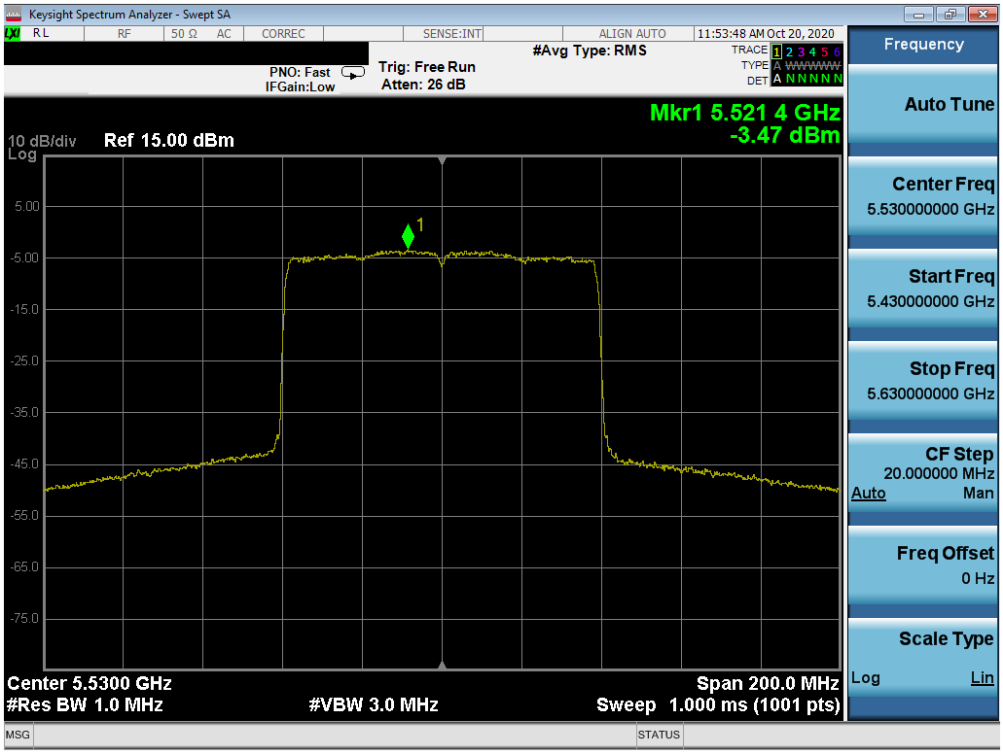
Plot 7-188. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ac (UNII Band 2C) – Ch. 106)



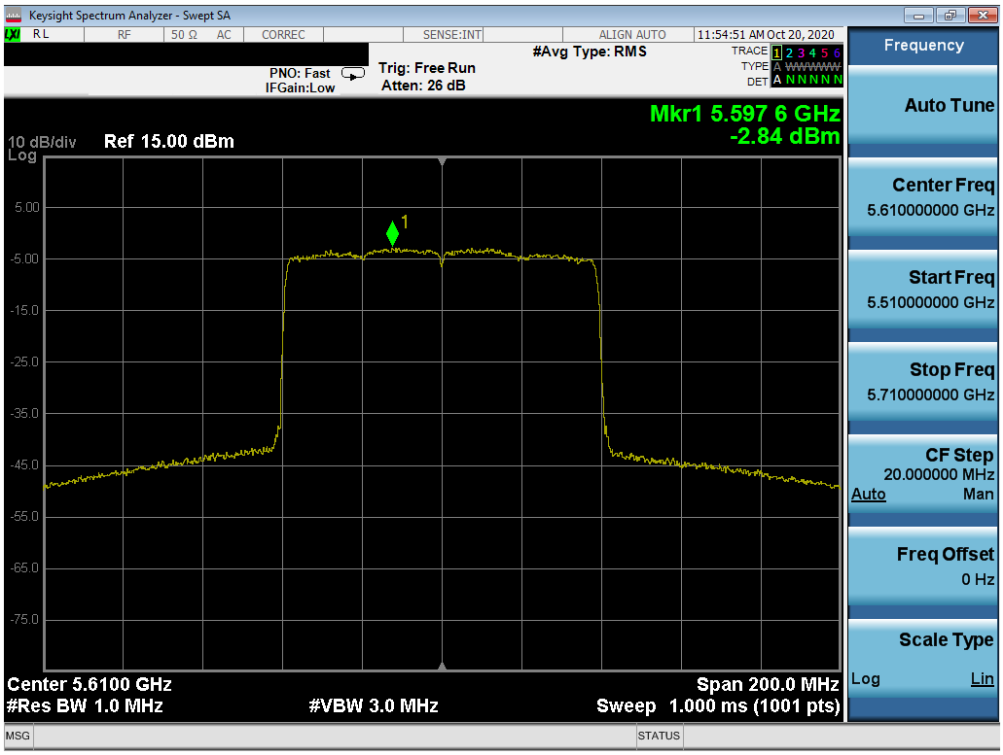
Plot 7-189. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ac (UNII Band 2C) – Ch. 122)



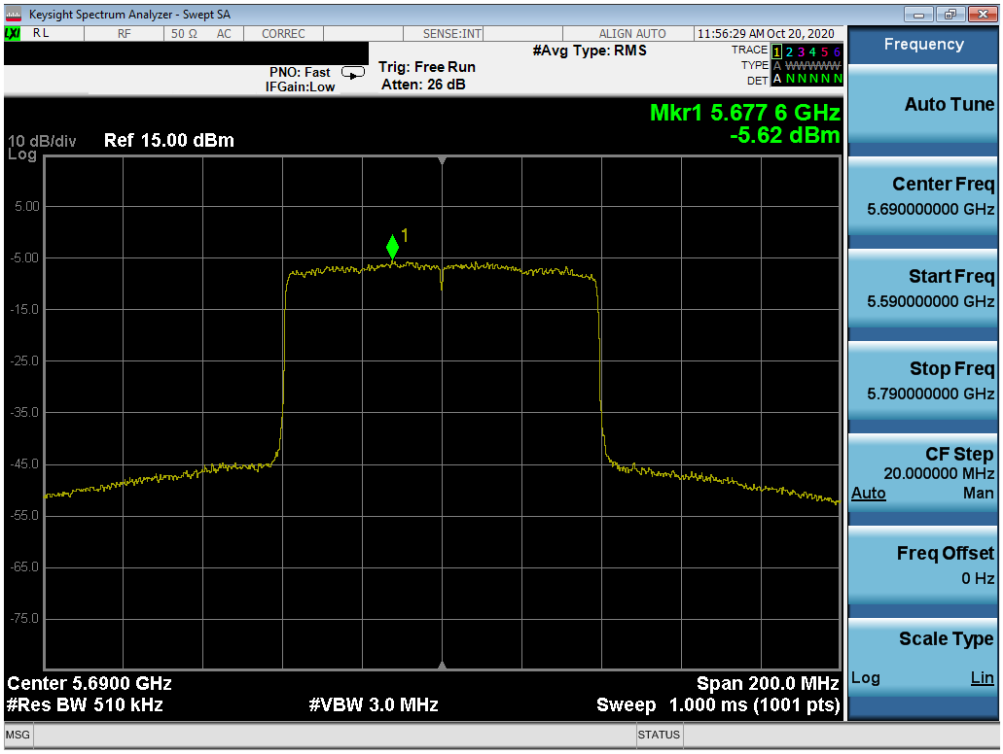
Plot 7-190. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ac (UNII Band 2C) – Ch. 138)



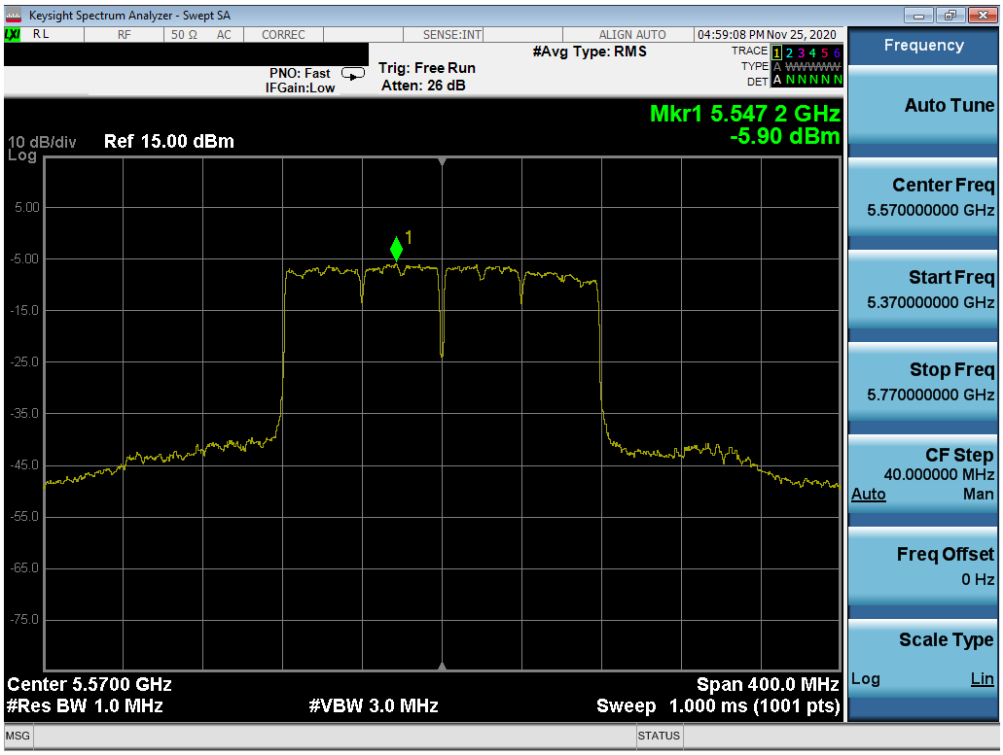
Plot 7-191. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax (UNII Band 2C) – Ch. 106)



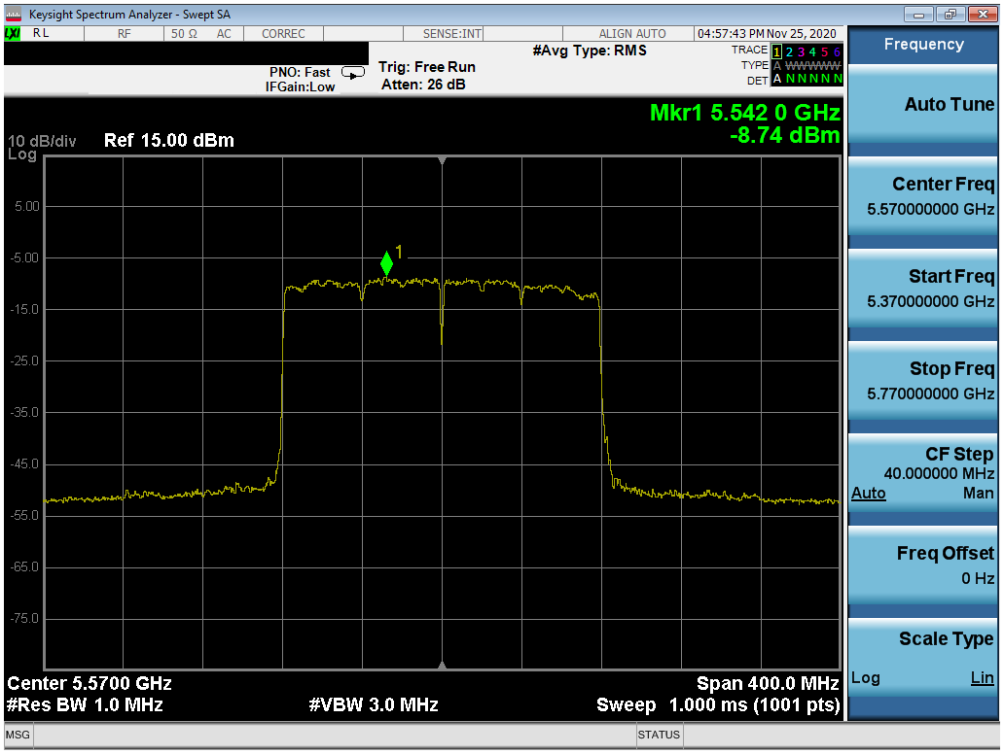
Plot 7-192. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax (UNII Band 2C) – Ch. 122)



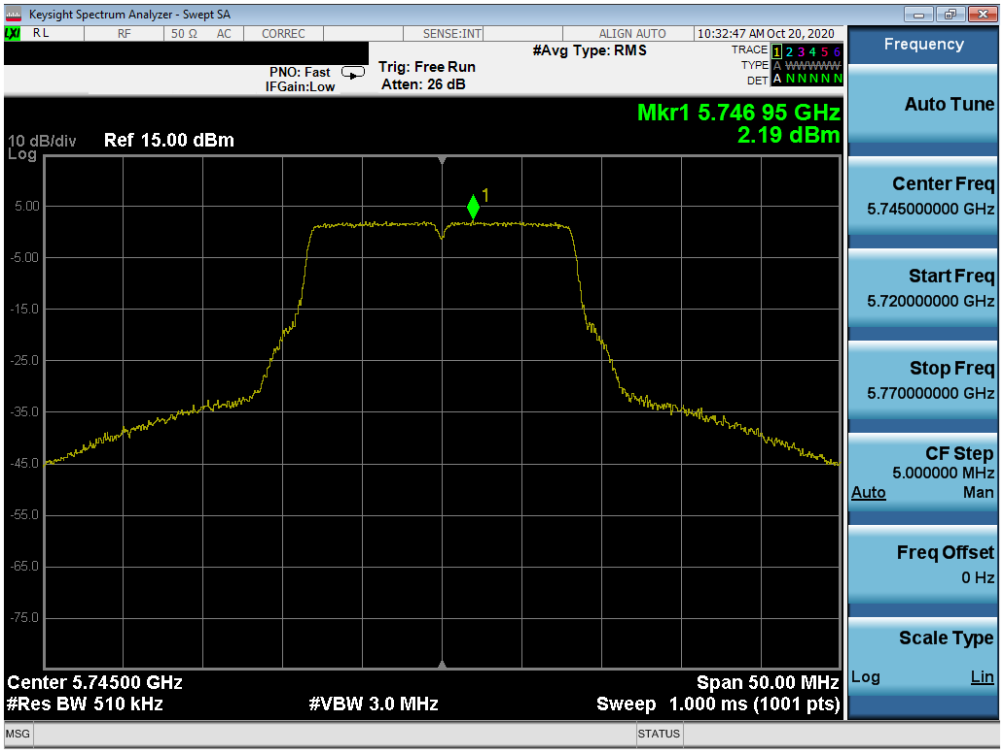
Plot 7-193. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax (UNII Band 2C) – Ch. 138)



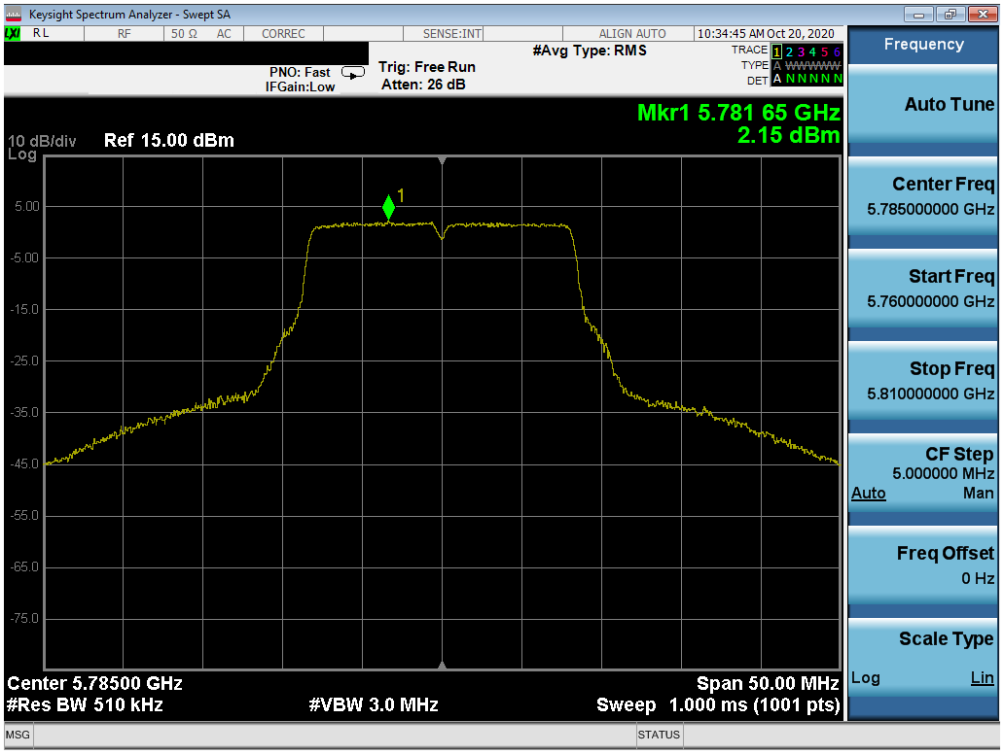
Plot 7-194. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11ac (UNII Band 2C) – Ch. 114)



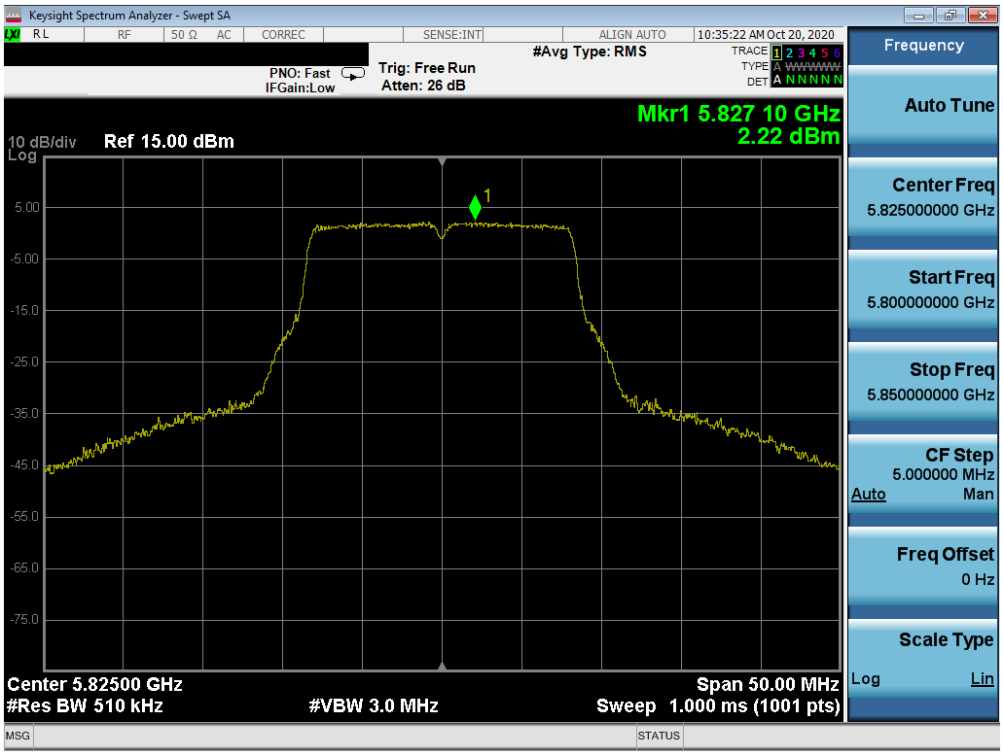
Plot 7-195. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11ax (UNII Band 2C) – Ch. 114)



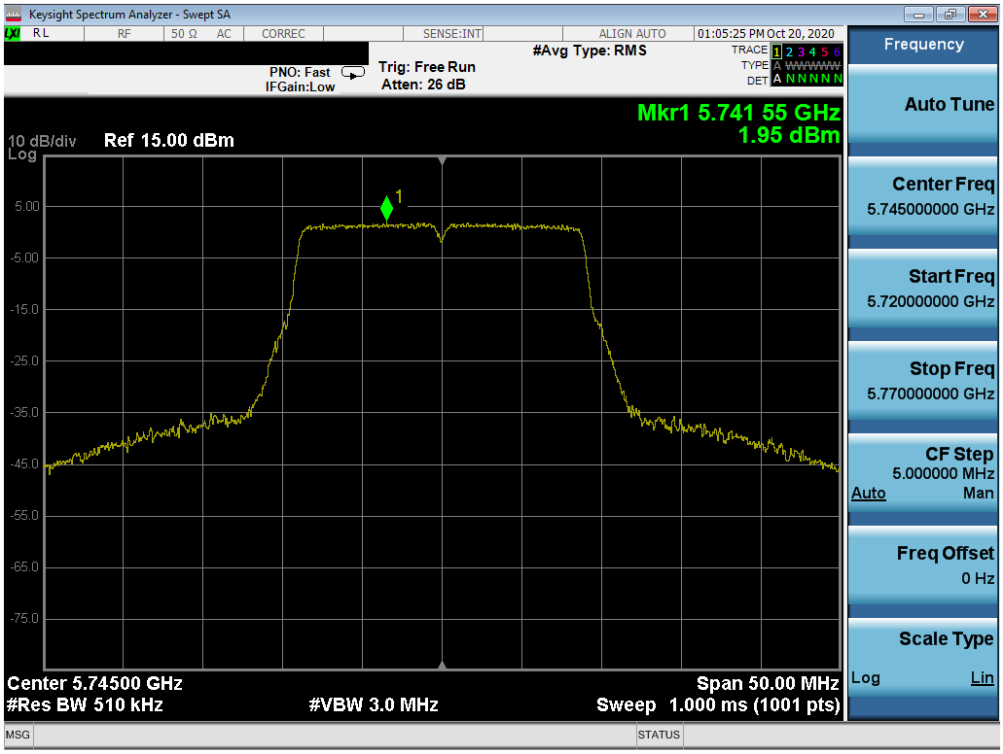
Plot 7-196. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 3) – Ch. 149)



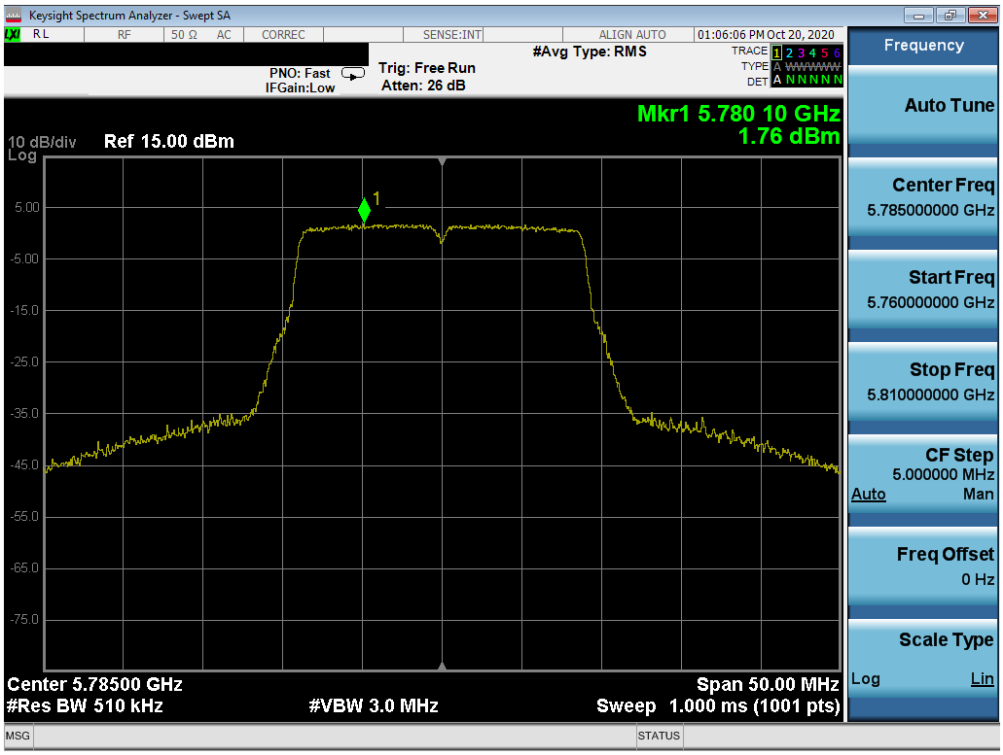
Plot 7-197. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 3) – Ch. 157)



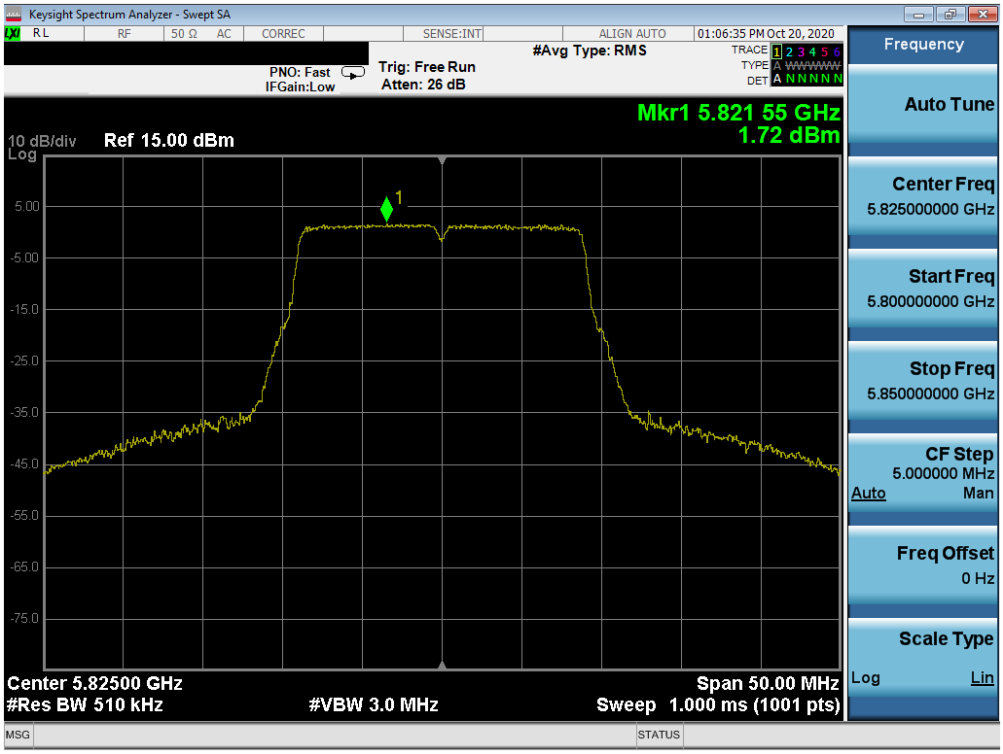
Plot 7-198. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 3) – Ch. 165)



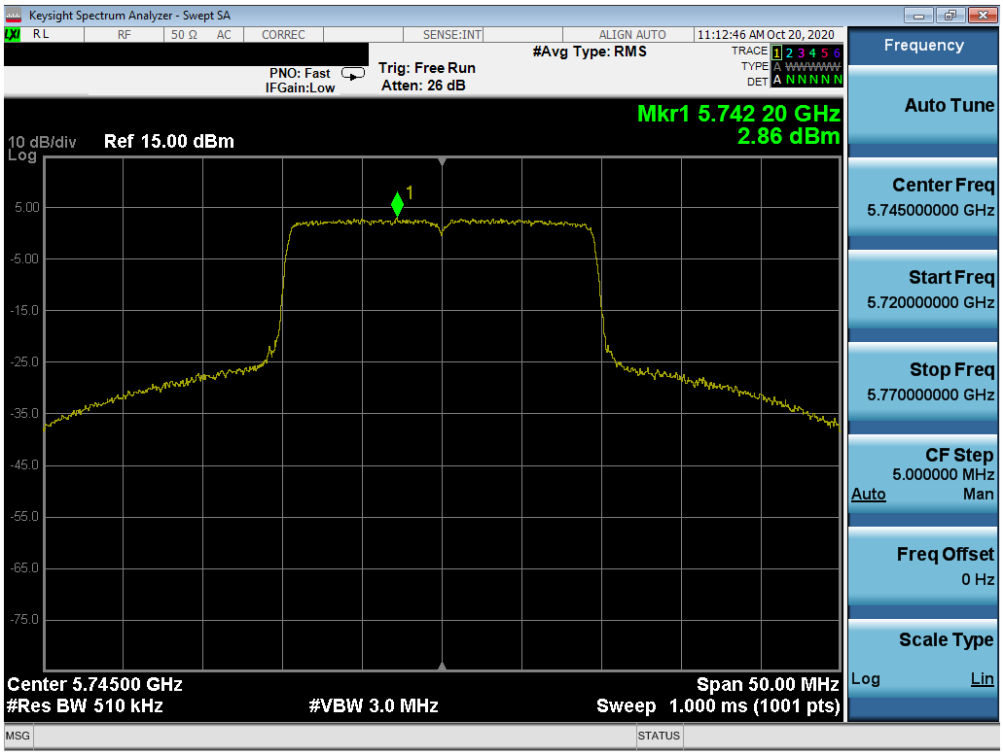
Plot 7-199. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 3) – Ch. 149)



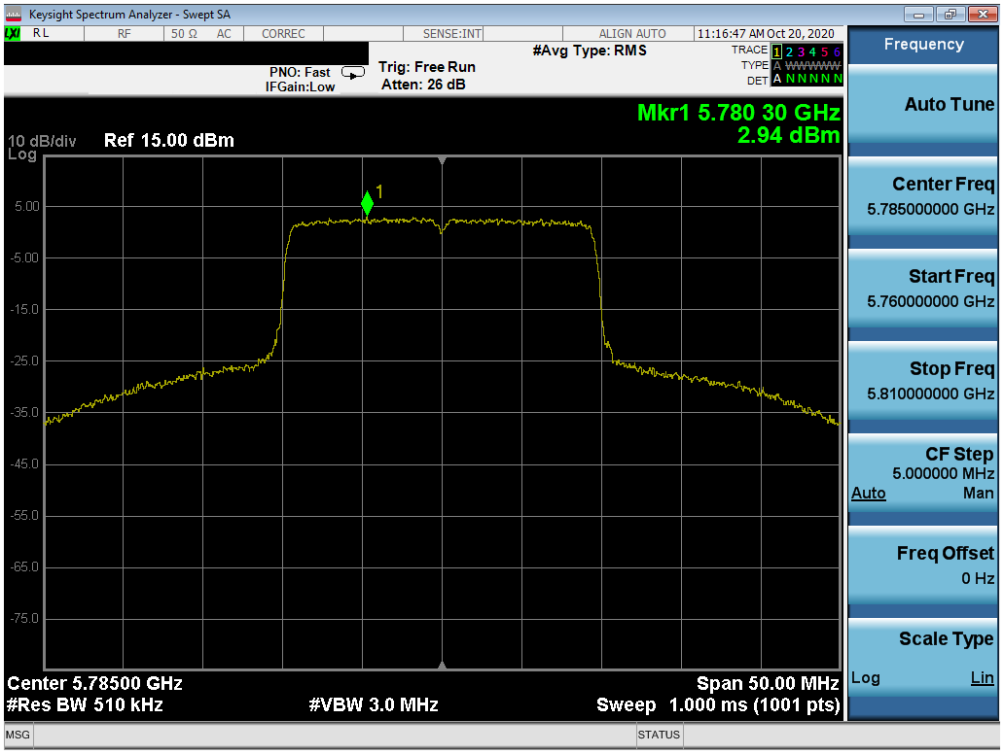
Plot 7-200. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 3) – Ch. 157)



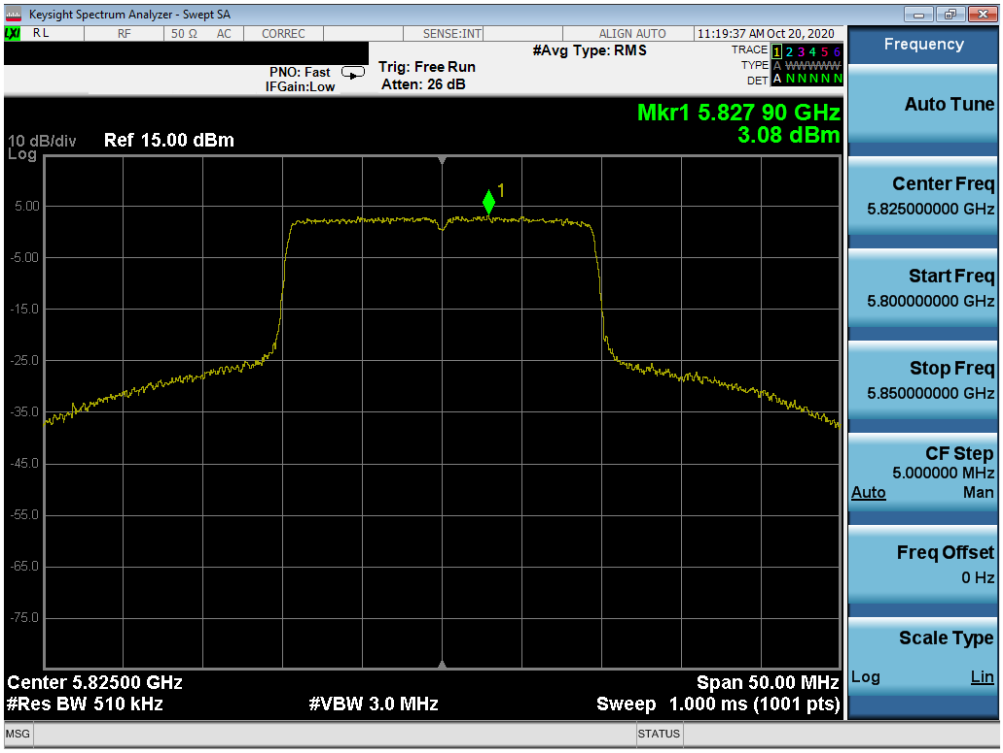
Plot 7-201. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 3) – Ch. 165)



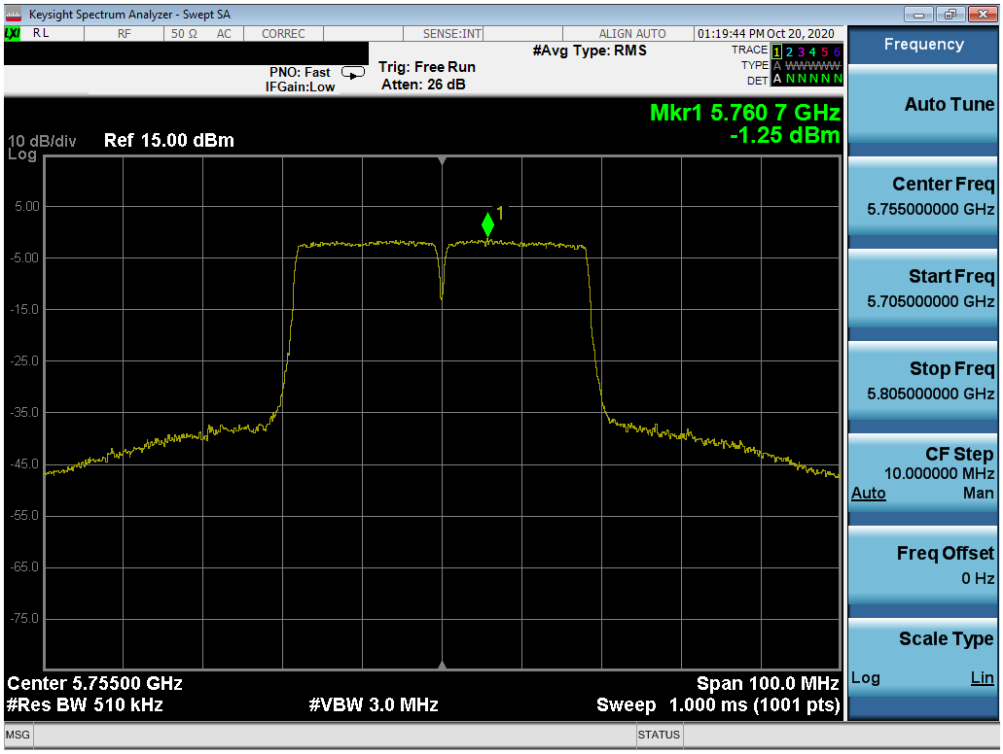
Plot 7-202. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 3) – Ch. 149)



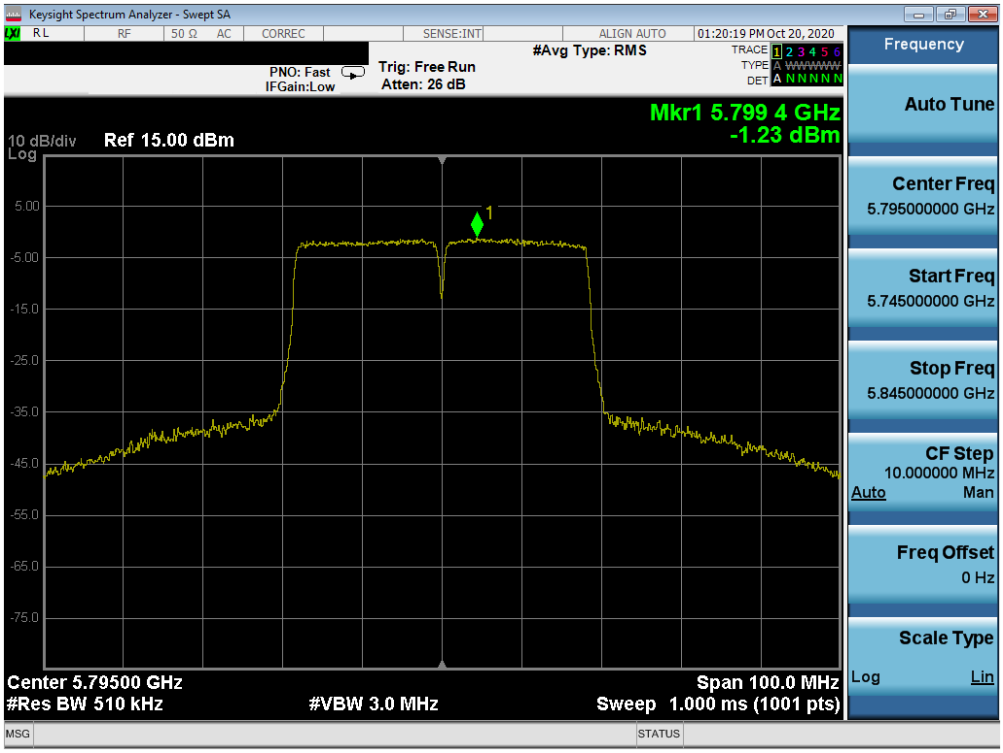
Plot 7-203. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 3) – Ch. 157)



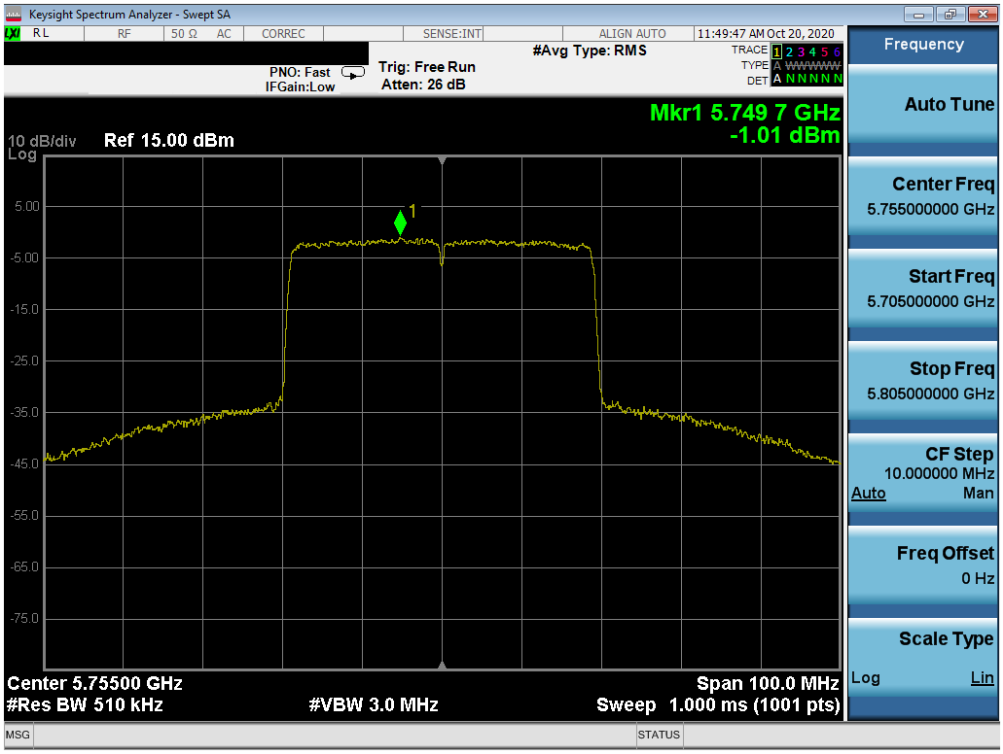
Plot 7-204. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 3) – Ch. 165)



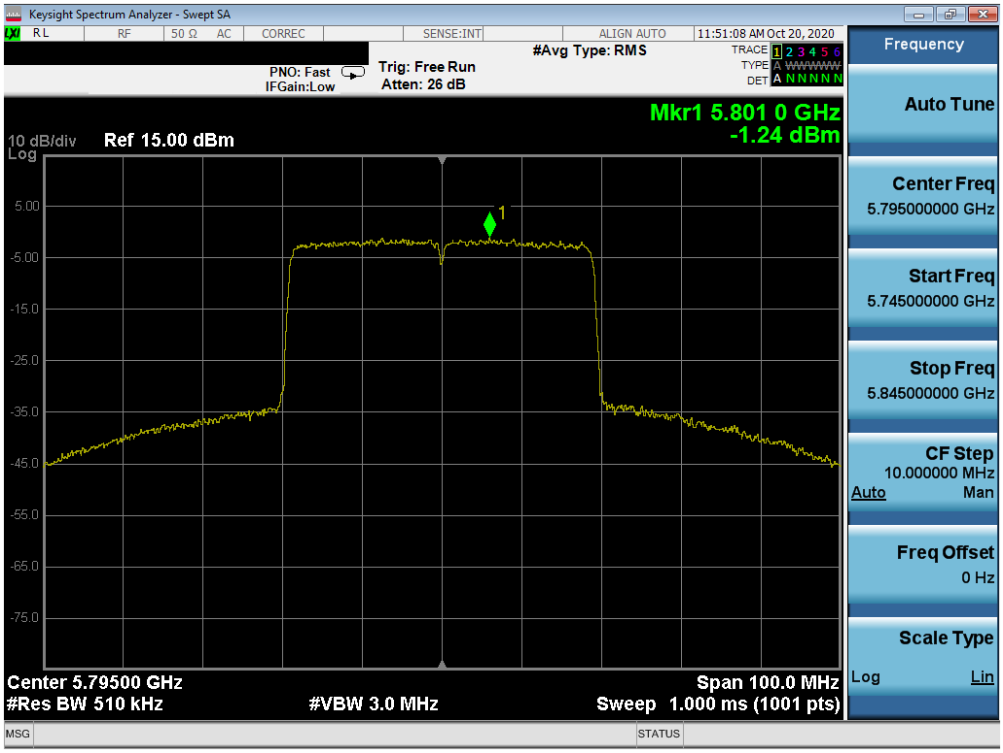
Plot 7-205. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 3) – Ch. 151)



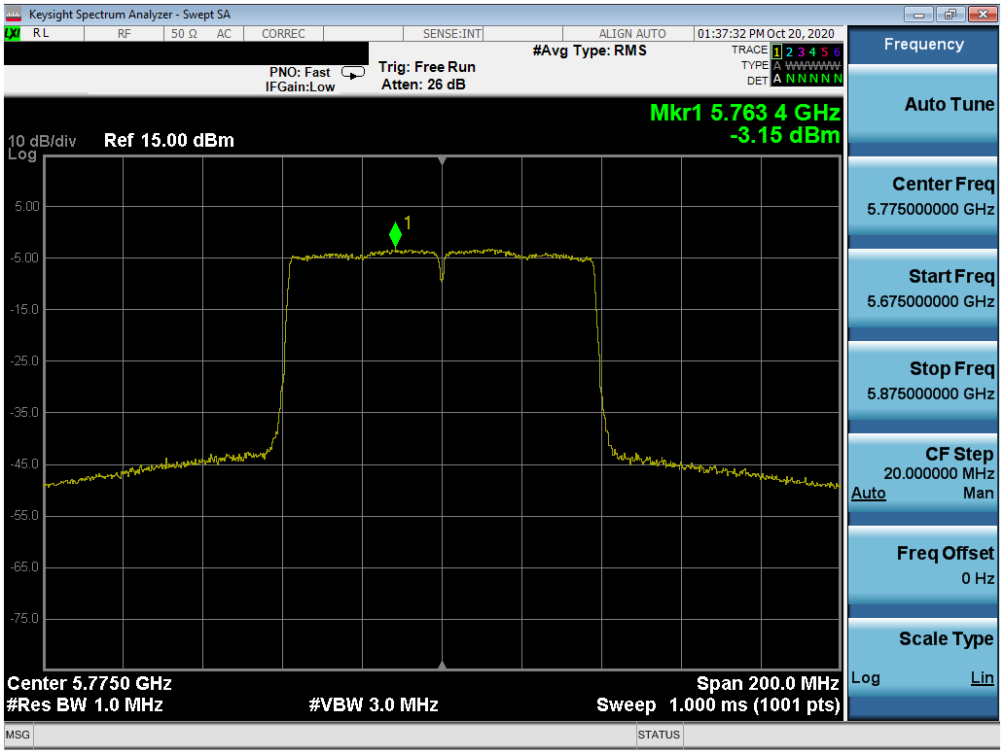
Plot 7-206. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 3) – Ch. 159)



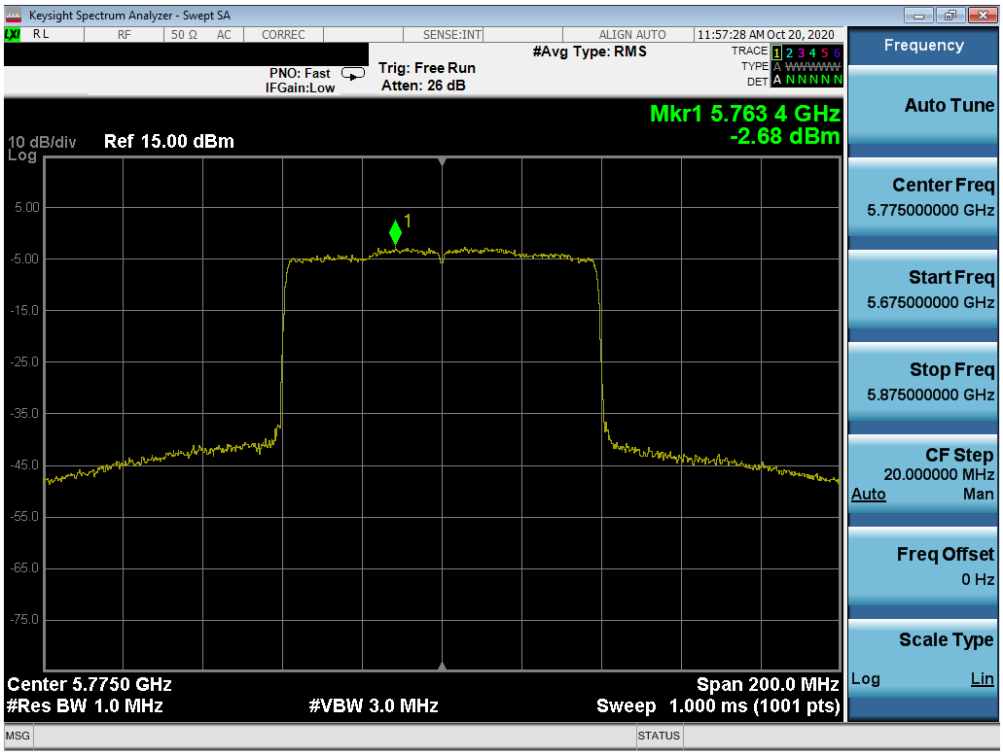
Plot 7-207. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax (UNII Band 3) – Ch. 151)



Plot 7-208. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax (UNII Band 3) – Ch. 159)

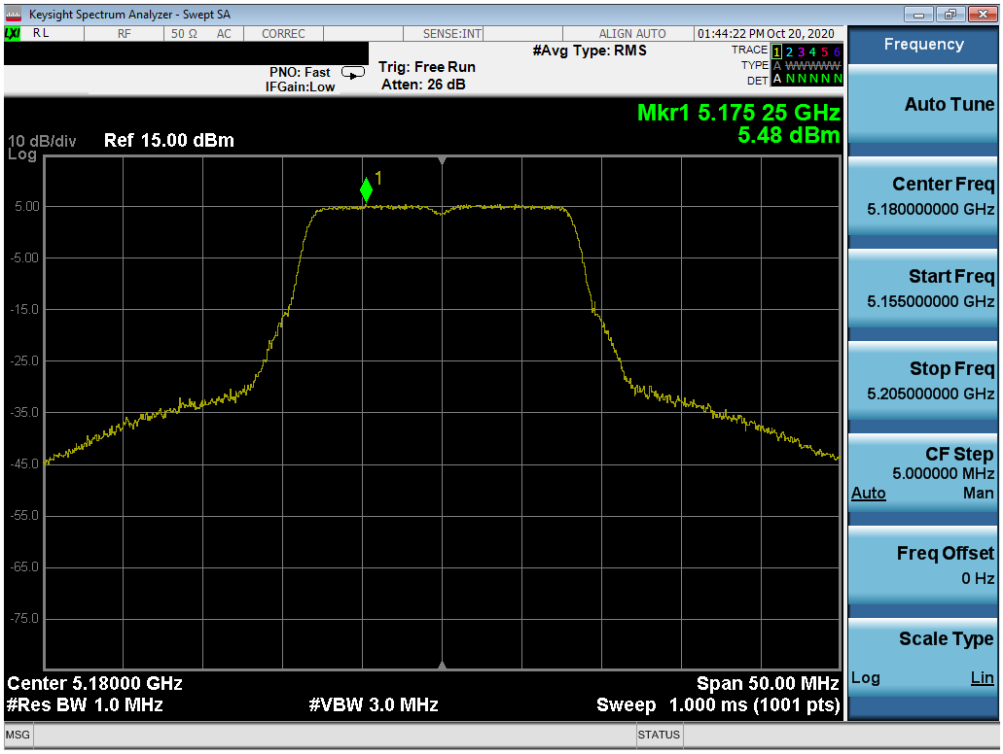


Plot 7-209. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ac (UNII Band 3) – Ch. 155)

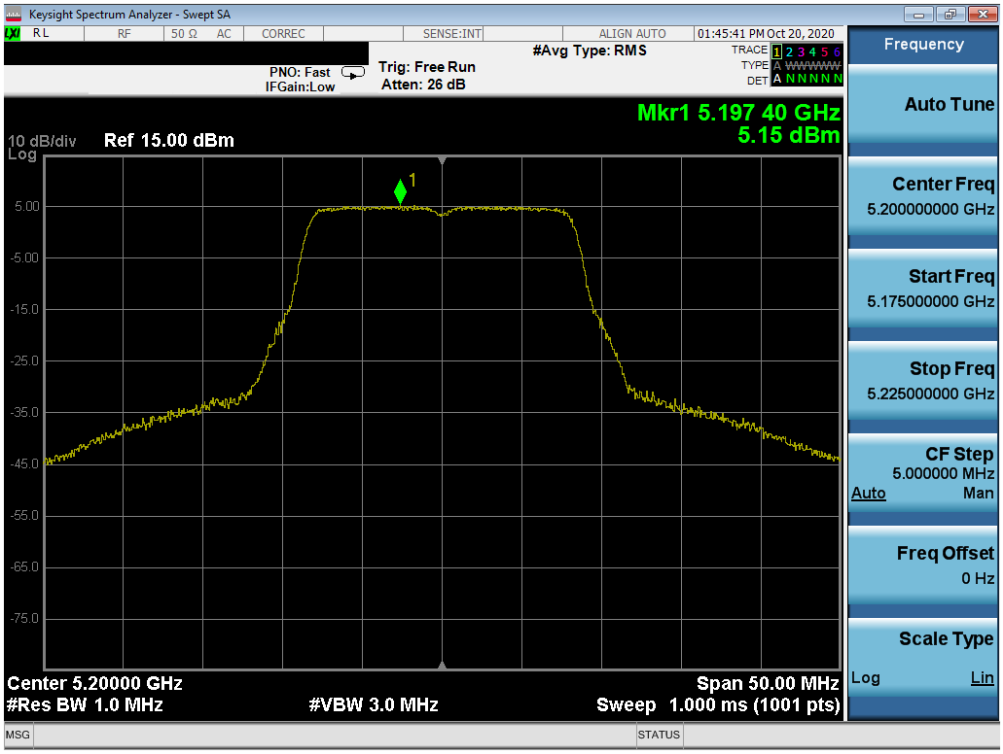


Plot 7-210. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax (UNII Band 3) – Ch. 155)

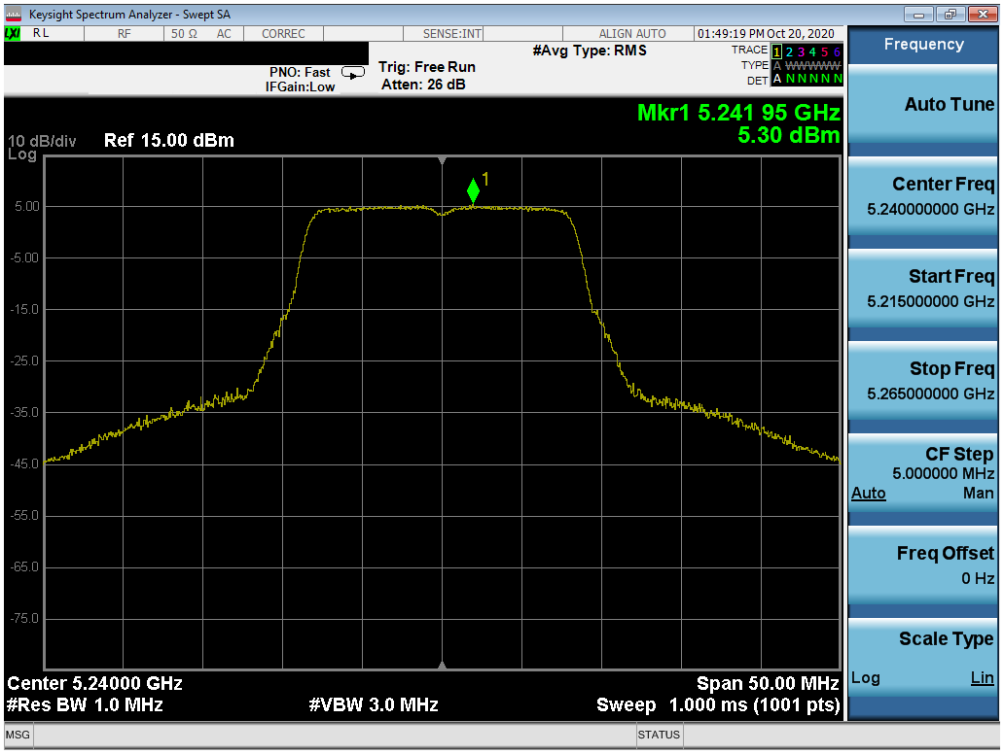
MIMO Antenna-2 Power Spectral Density Measurements



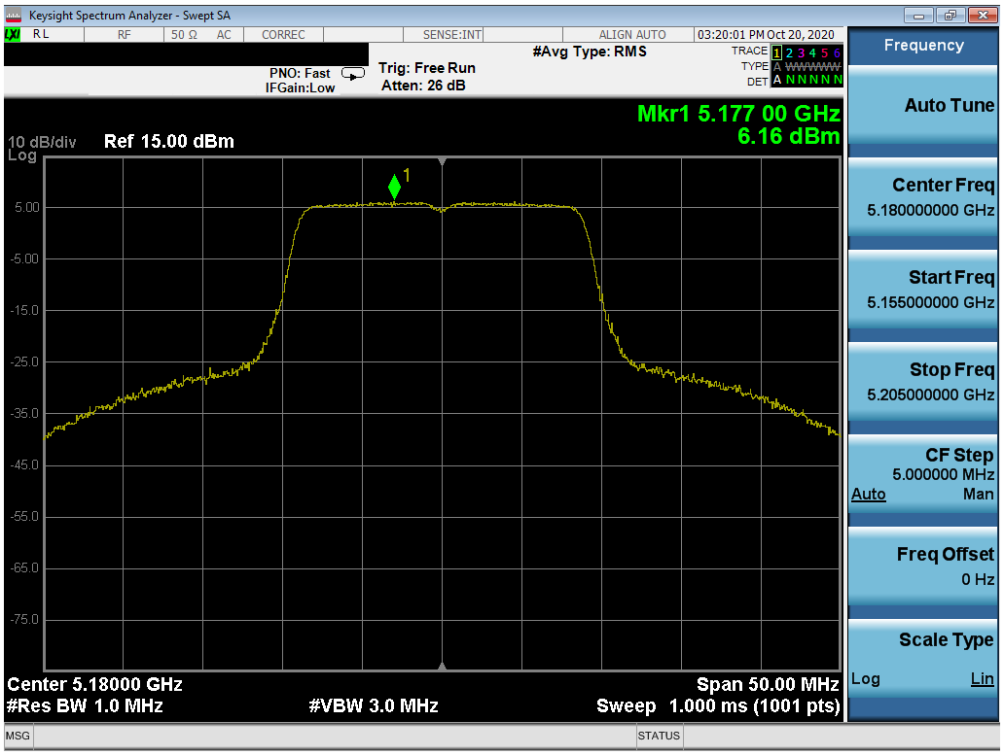
Plot 7-211. Power Spectral Density Plot MIMO ANT2 (802.11a (UNII Band 1) – Ch. 36)



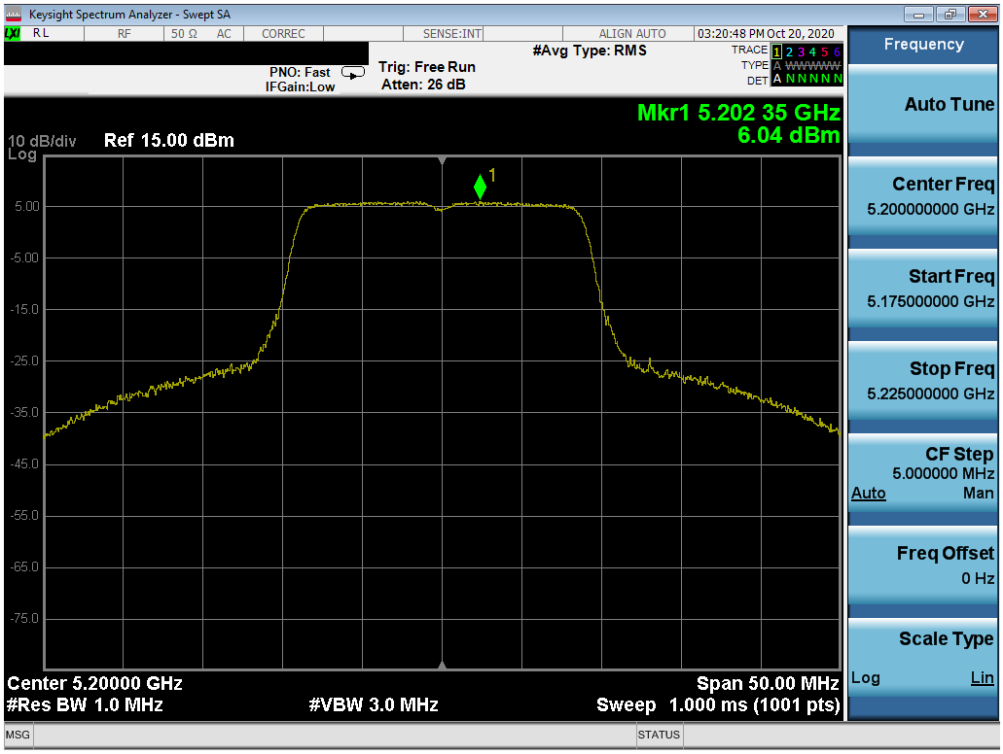
Plot 7-212. Power Spectral Density Plot MIMO ANT2 (802.11a (UNII Band 1) – Ch. 40)



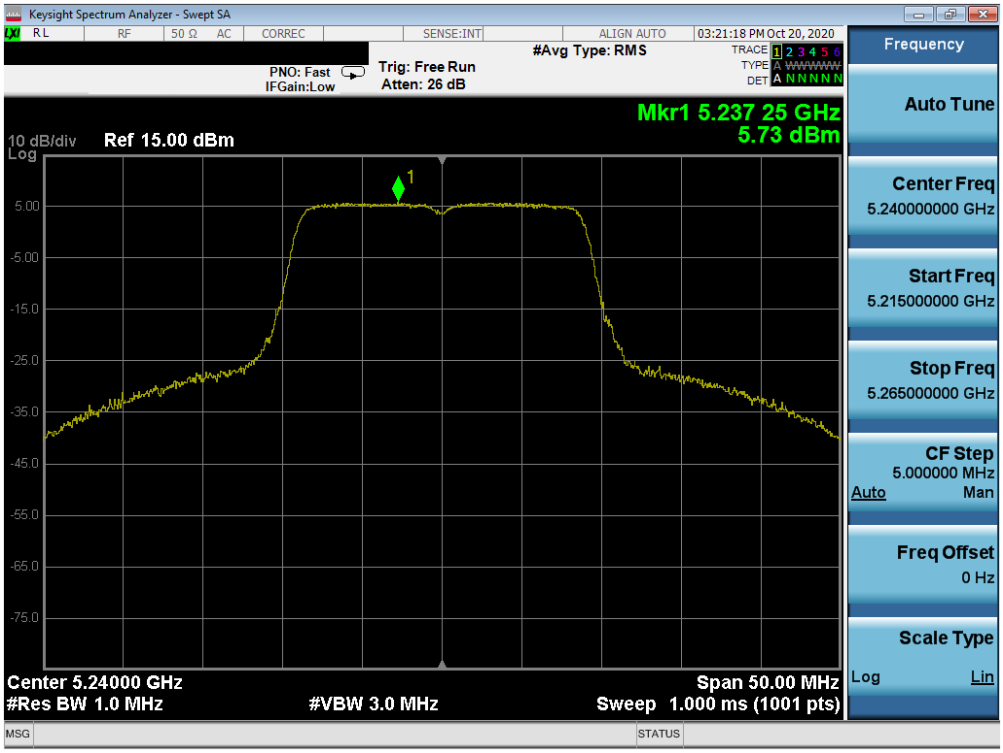
Plot 7-213. Power Spectral Density Plot MIMO ANT2 (802.11a (UNII Band 1) – Ch. 48)



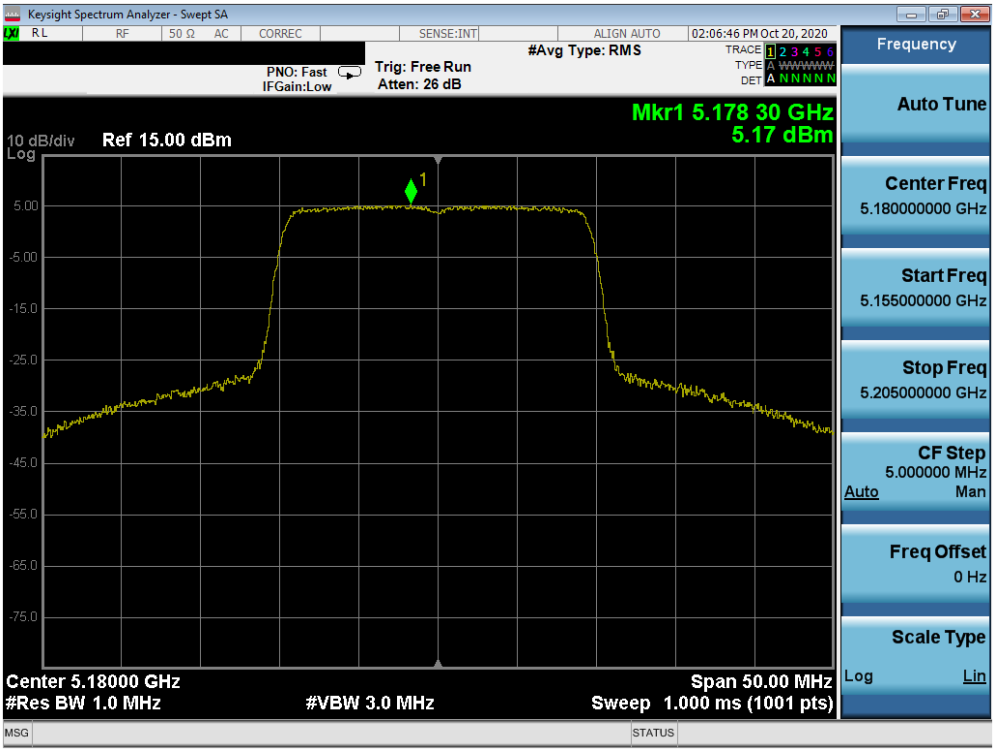
Plot 7-214. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 1) – Ch. 36)



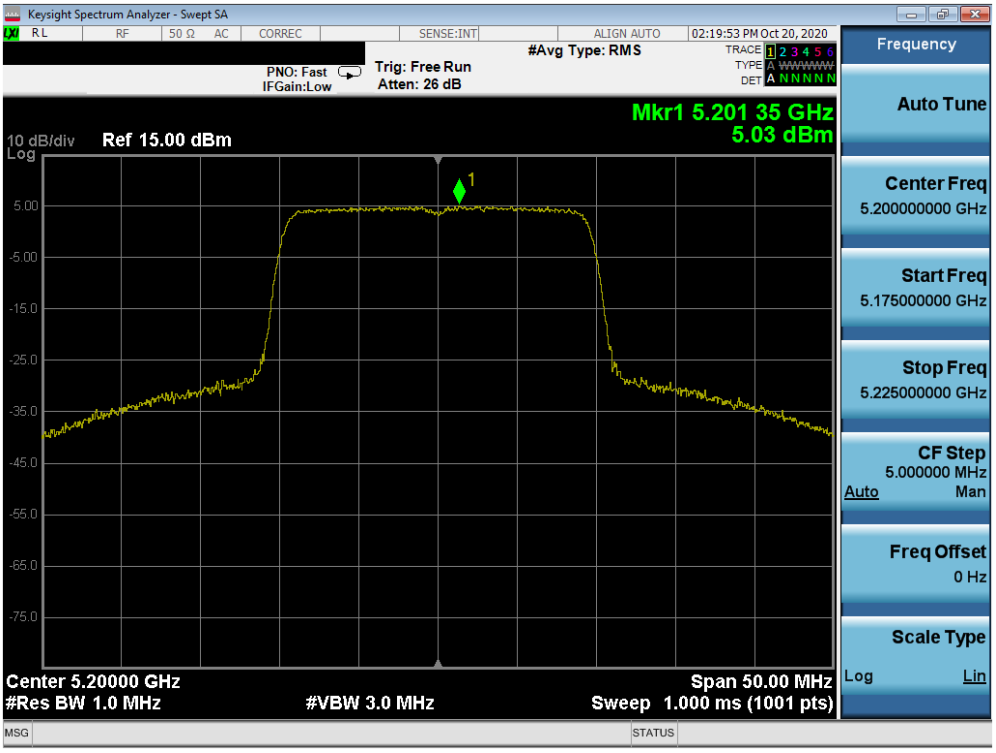
Plot 7-215. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 1) – Ch. 40)



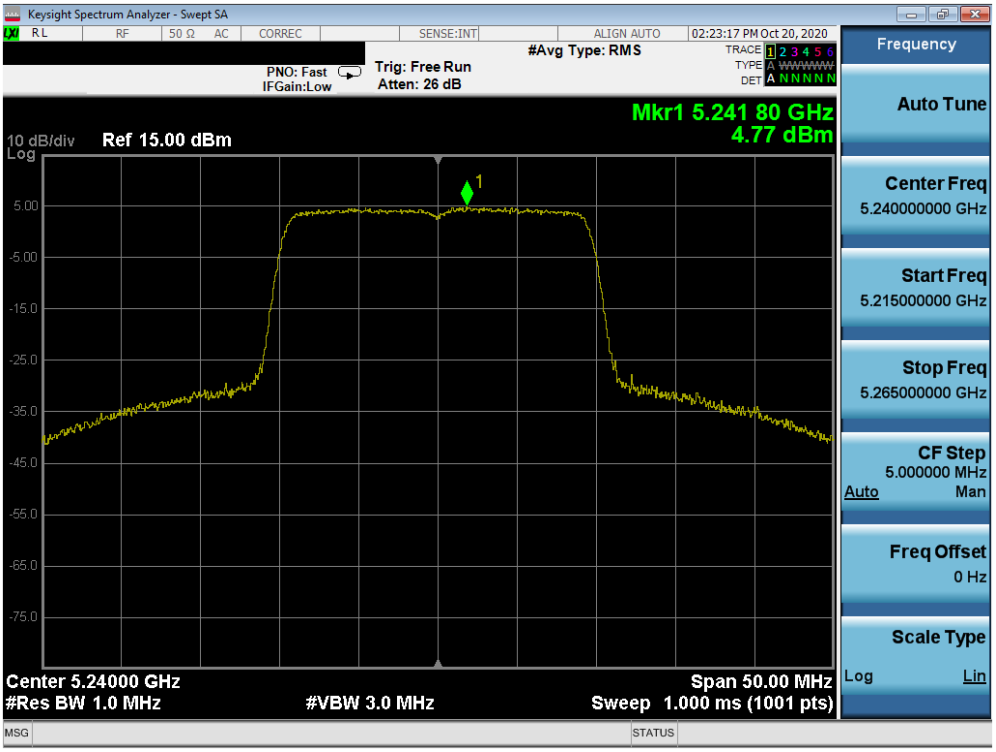
Plot 7-216. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 1) – Ch. 48)



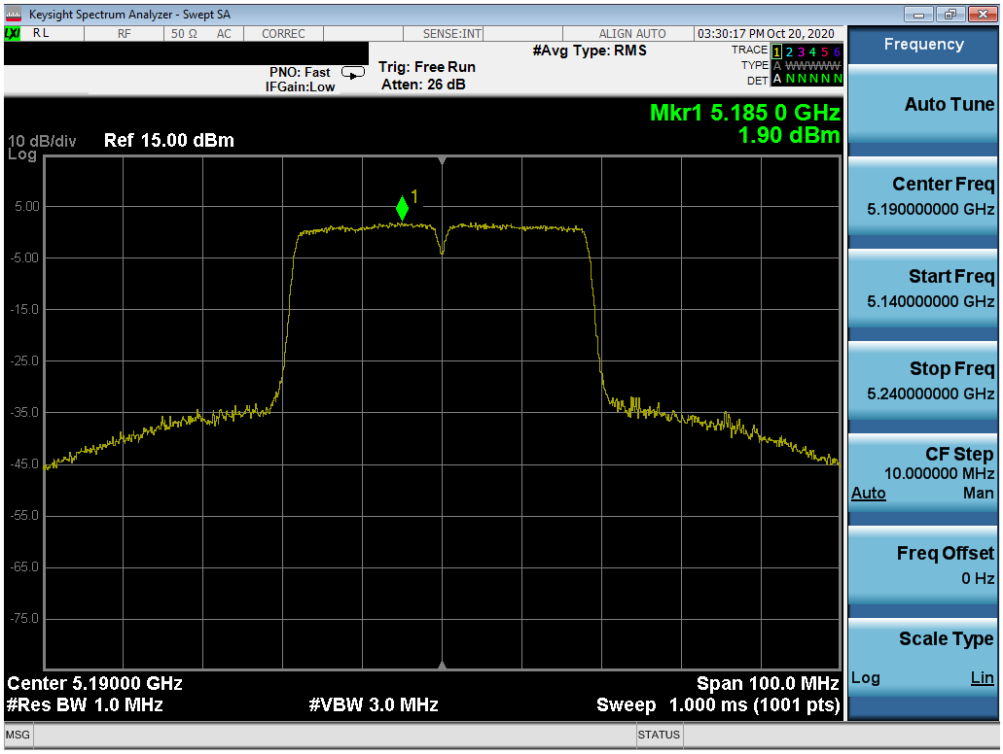
Plot 7-217. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax (UNII Band 1) – Ch. 36)



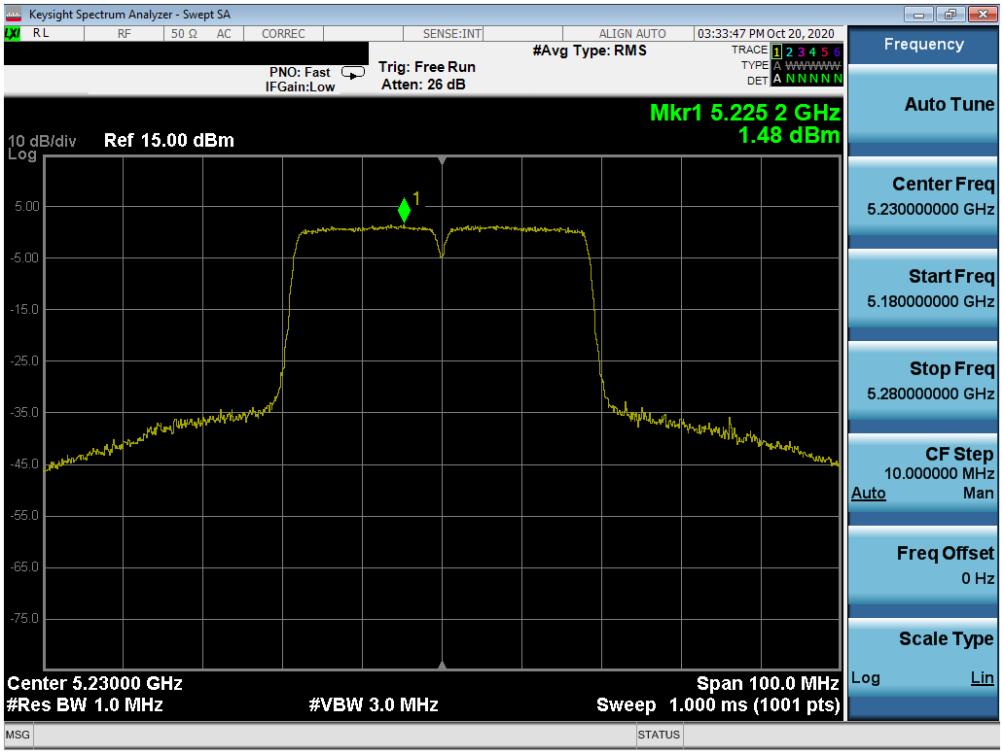
Plot 7-218. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax (UNII Band 1) – Ch. 40)



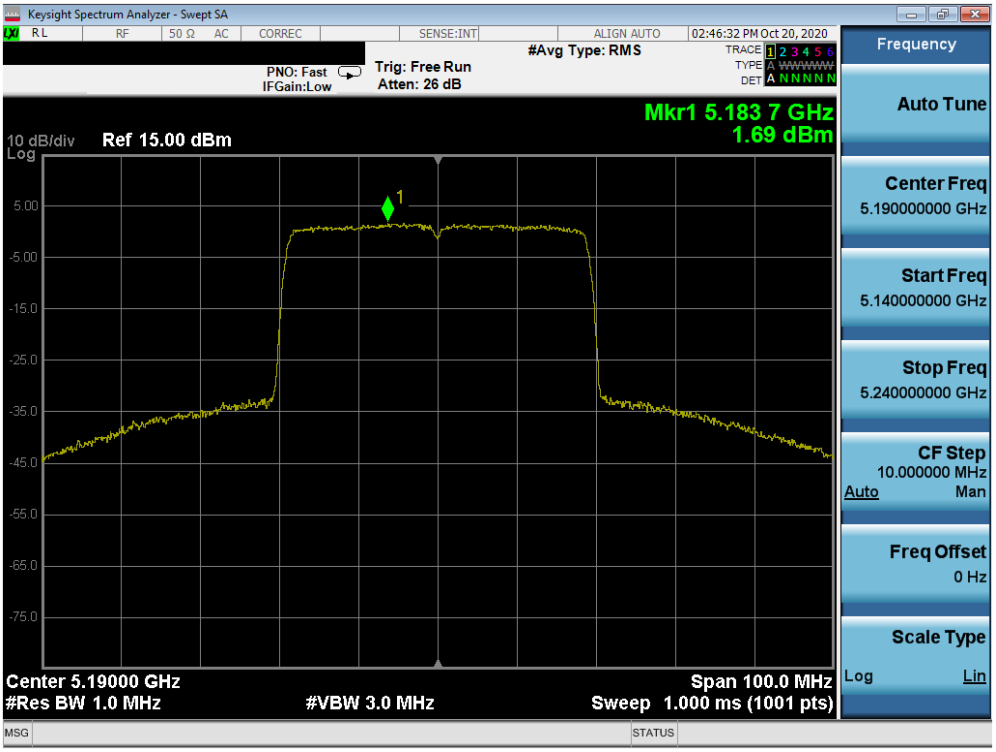
Plot 7-219. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax (UNII Band 1) – Ch. 48)



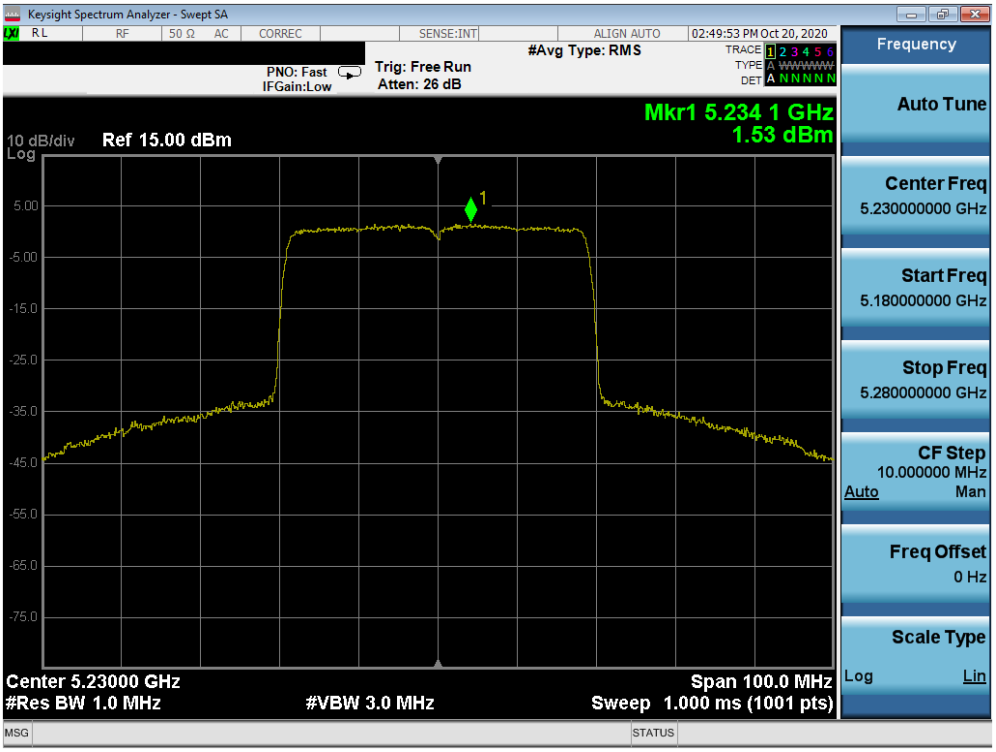
Plot 7-220. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11n (UNII Band 1) – Ch. 38)



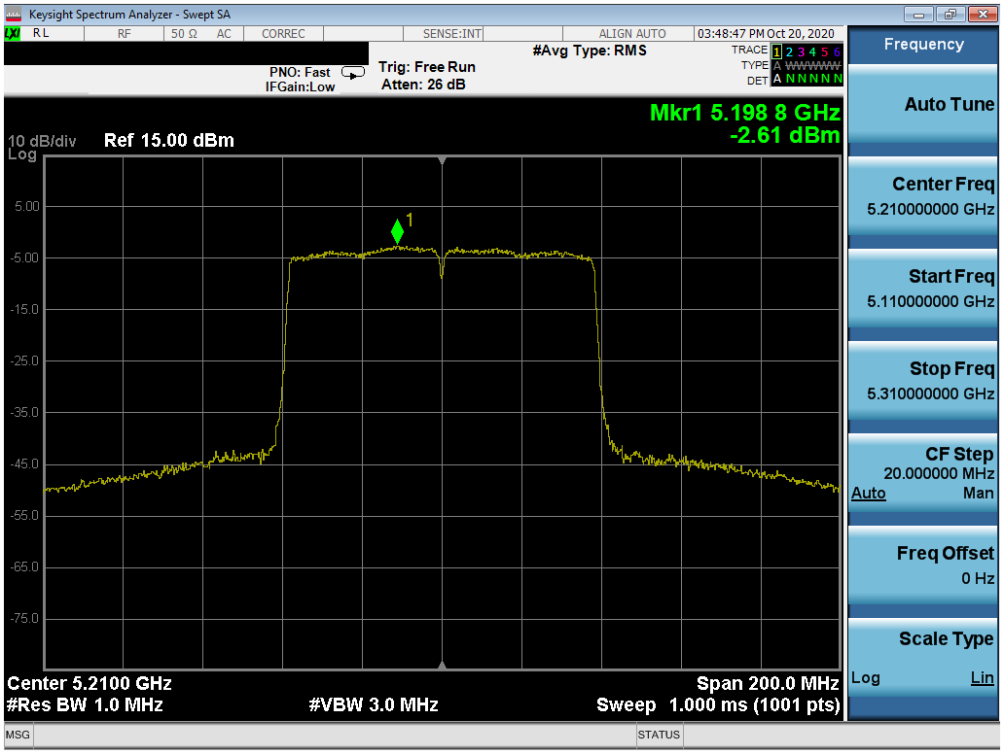
Plot 7-221. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11n (UNII Band 1) – Ch. 46)



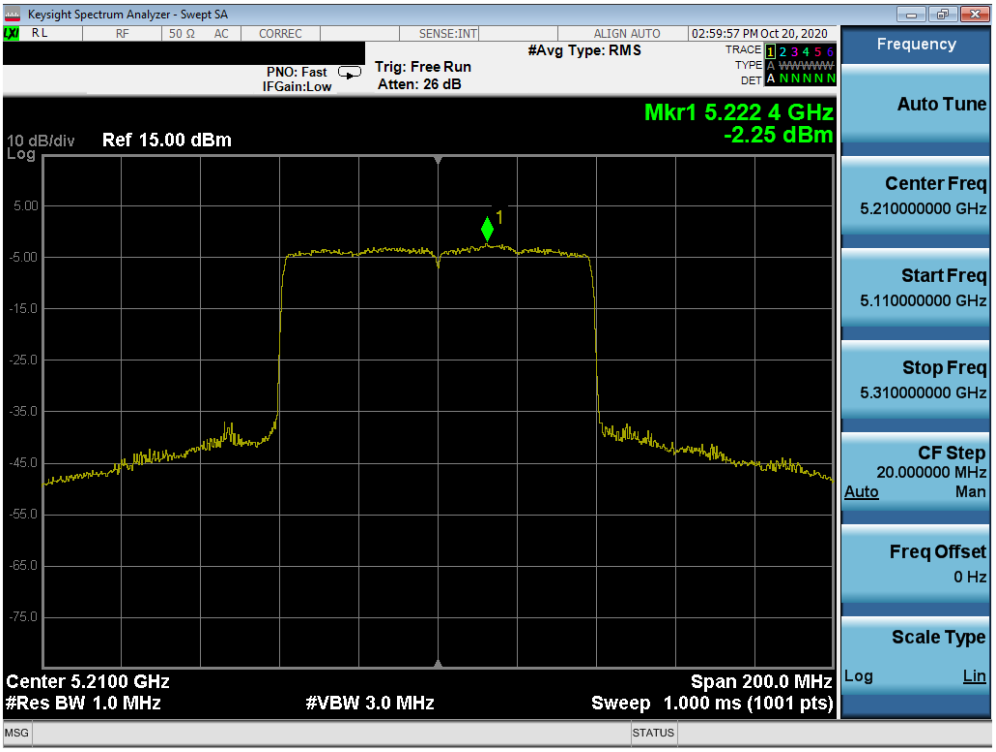
Plot 7-222. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax (UNII Band 1) – Ch. 38)



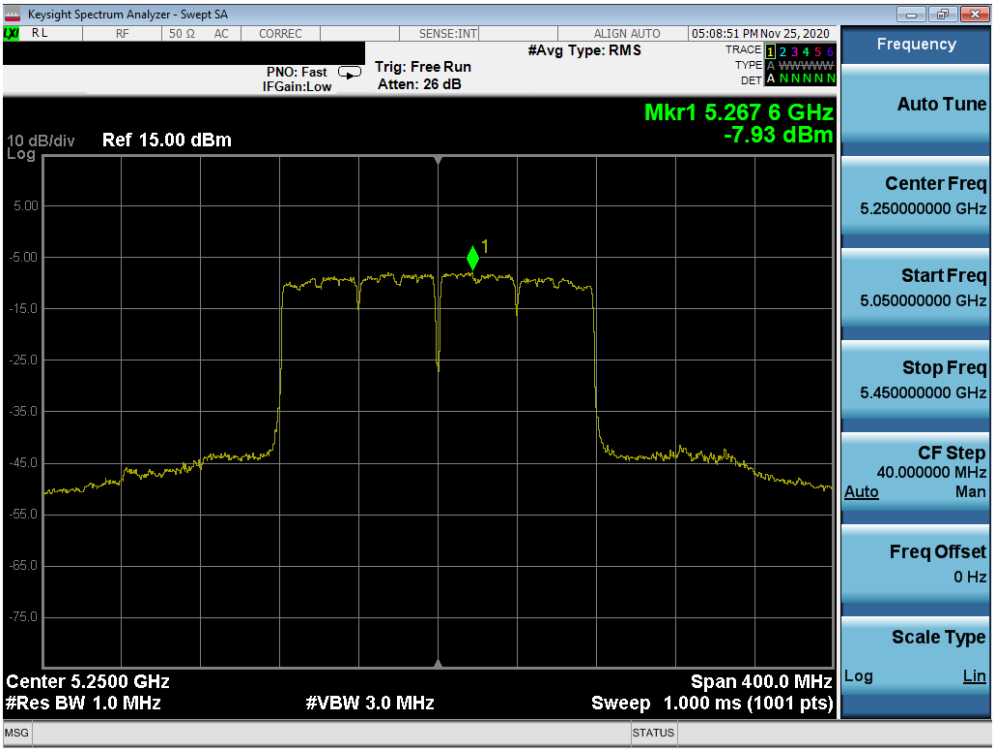
Plot 7-223. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax (UNII Band 1) – Ch. 46)



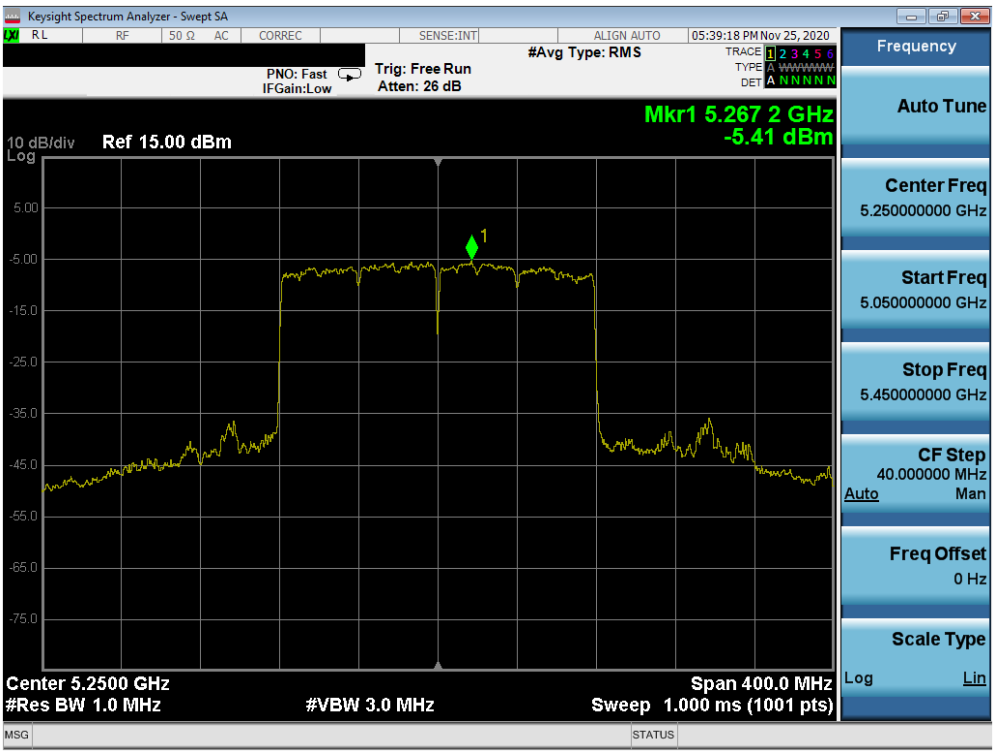
Plot 7-224. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ac (UNII Band 1) – Ch. 42)



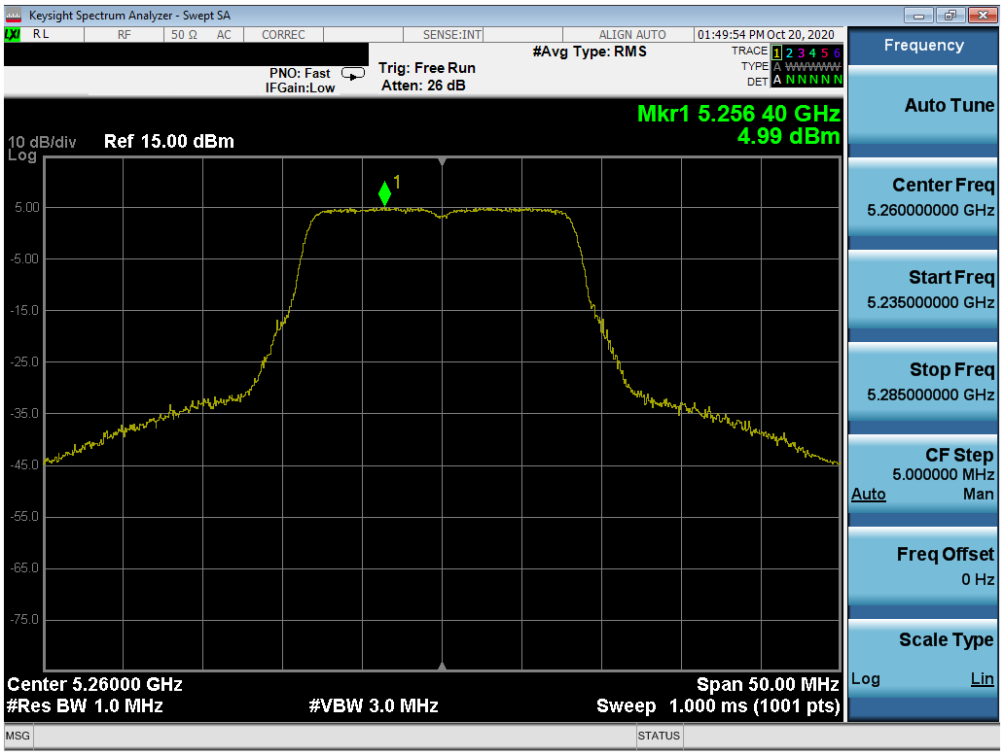
Plot 7-225. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax (UNII Band 1) – Ch. 42)



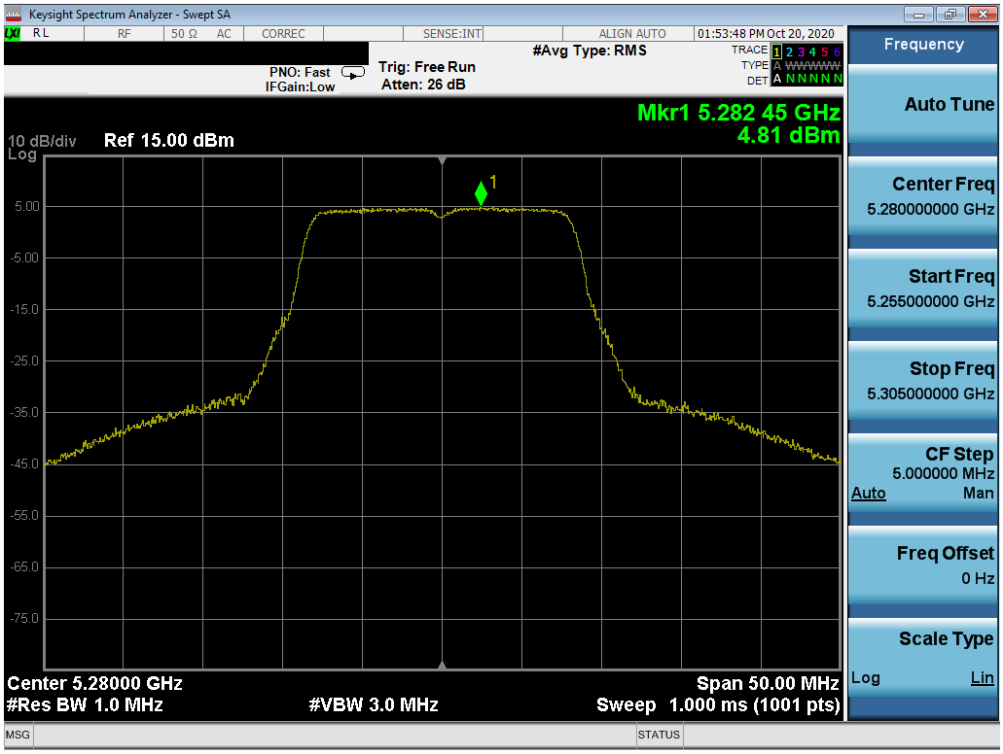
Plot 7-226. Power Spectral Density Plot MIMO ANT2 (160MHz BW 802.11ac (UNII Band 1) – Ch. 50)



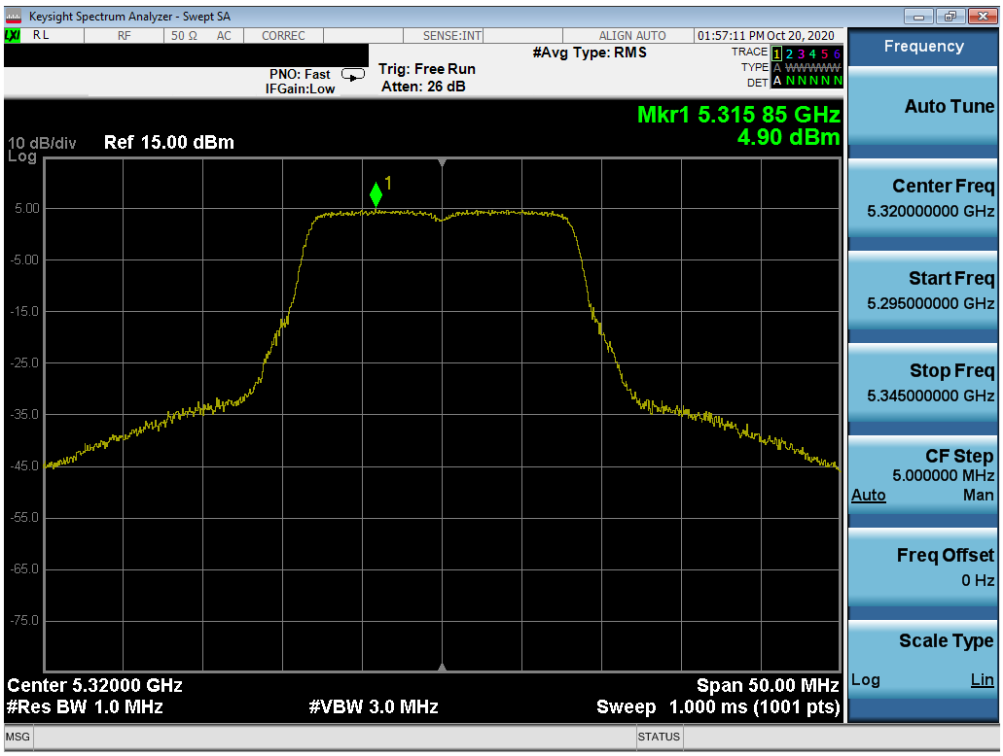
Plot 7-227. Power Spectral Density Plot MIMO ANT2 (160MHz BW 802.11ax (UNII Band 1) – Ch. 50)



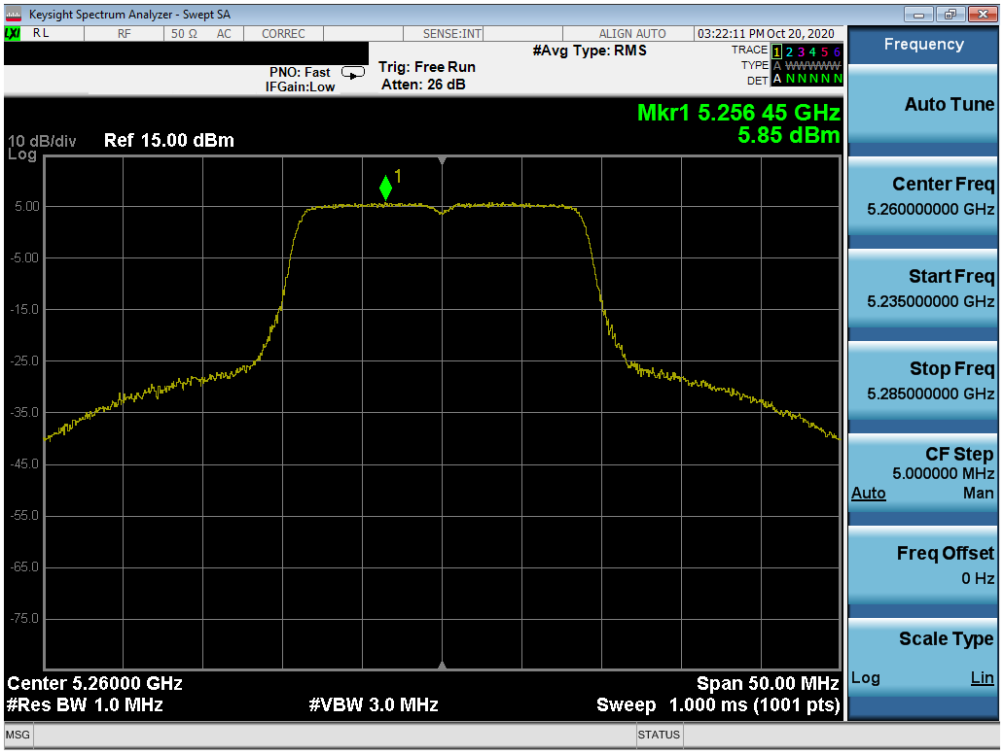
Plot 7-228. Power Spectral Density Plot MIMO ANT2 (802.11a (UNII Band 2A) – Ch. 52)



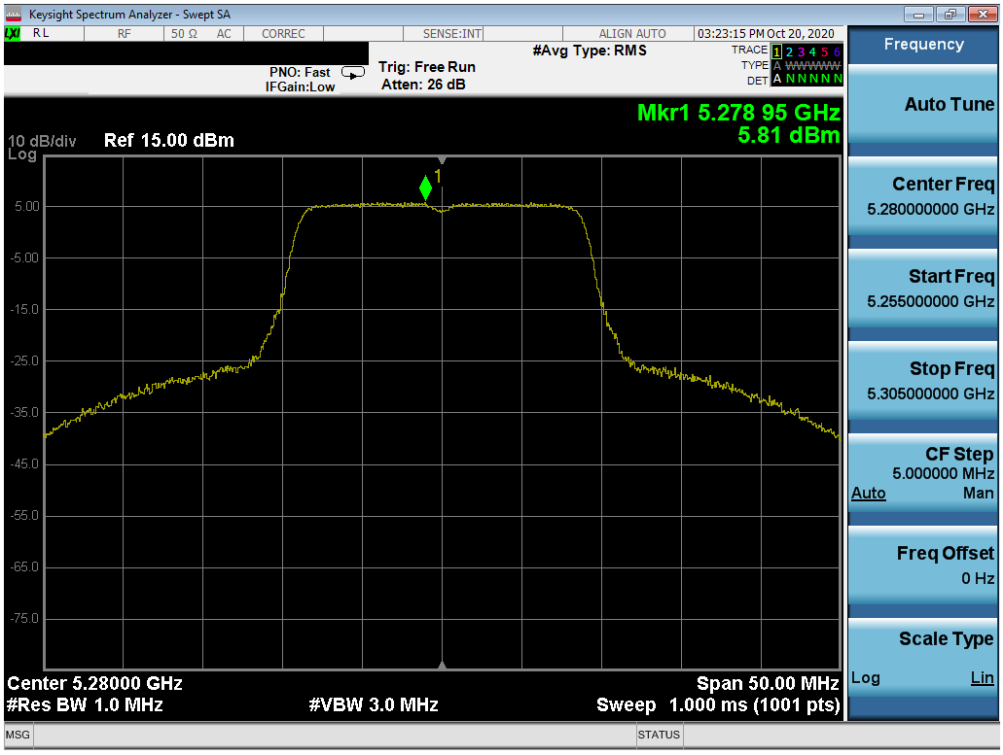
Plot 7-229. Power Spectral Density Plot MIMO ANT2 (802.11a (UNII Band 2A) – Ch. 56)



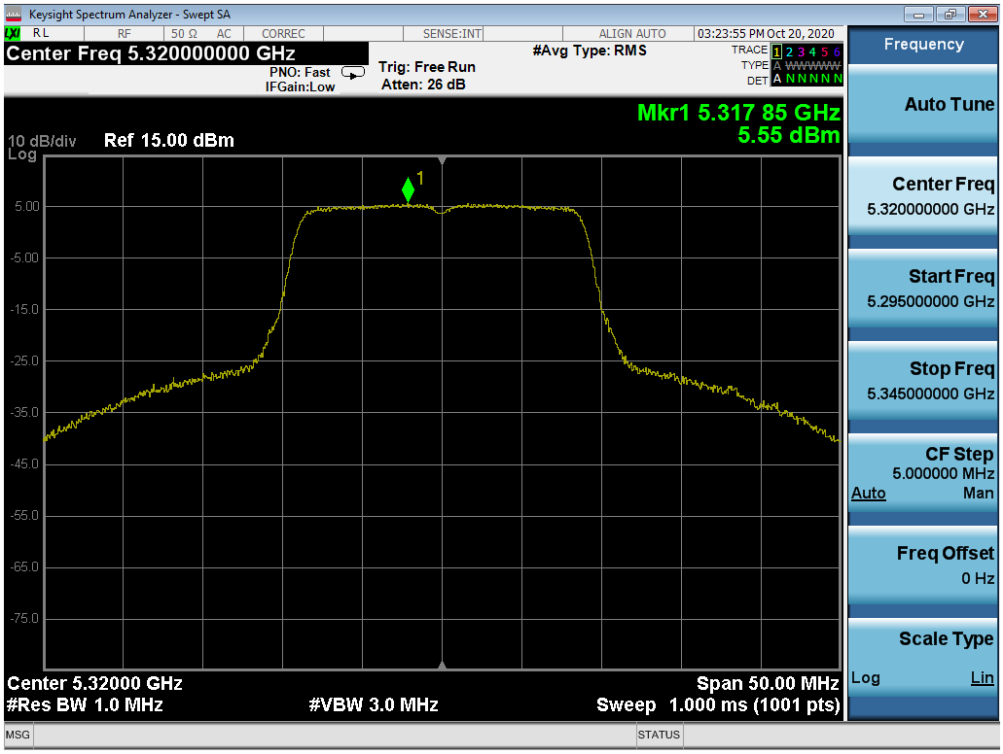
Plot 7-230. Power Spectral Density Plot MIMO ANT2 (802.11a (UNII Band 2A) – Ch. 64)



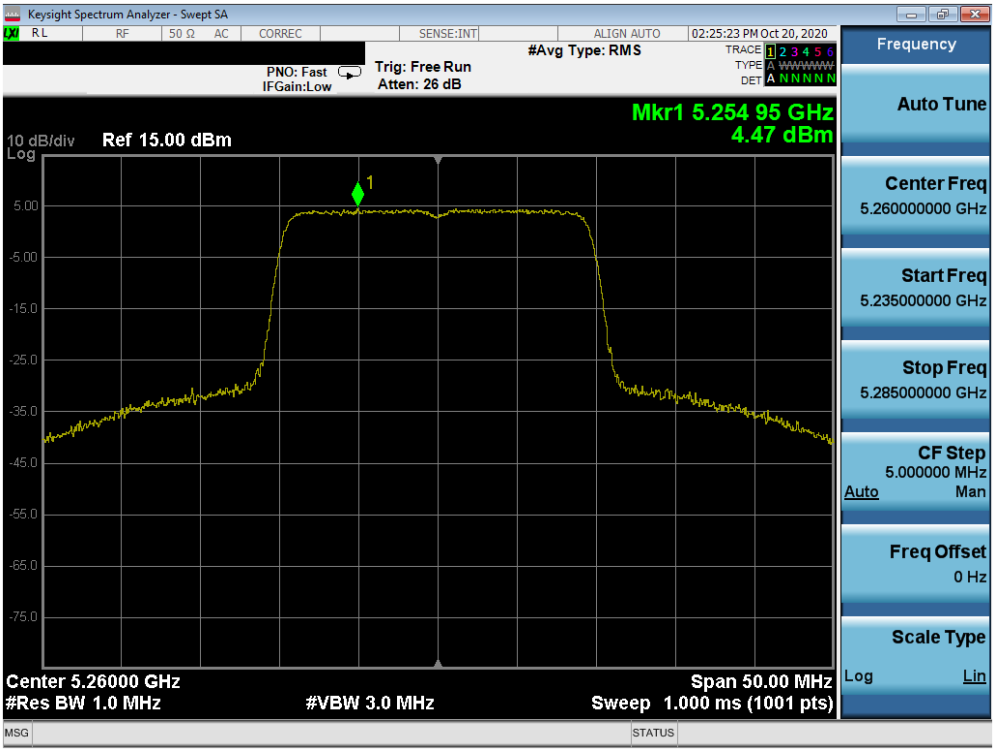
Plot 7-231. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 2A) – Ch. 52)



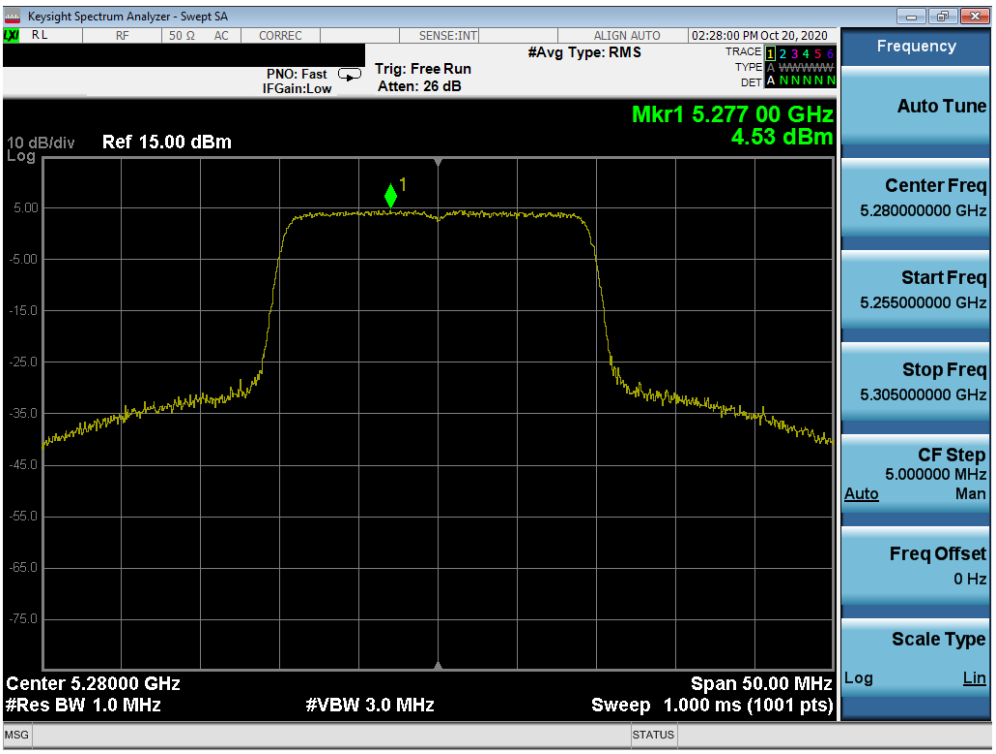
Plot 7-232. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 2A) – Ch. 56)



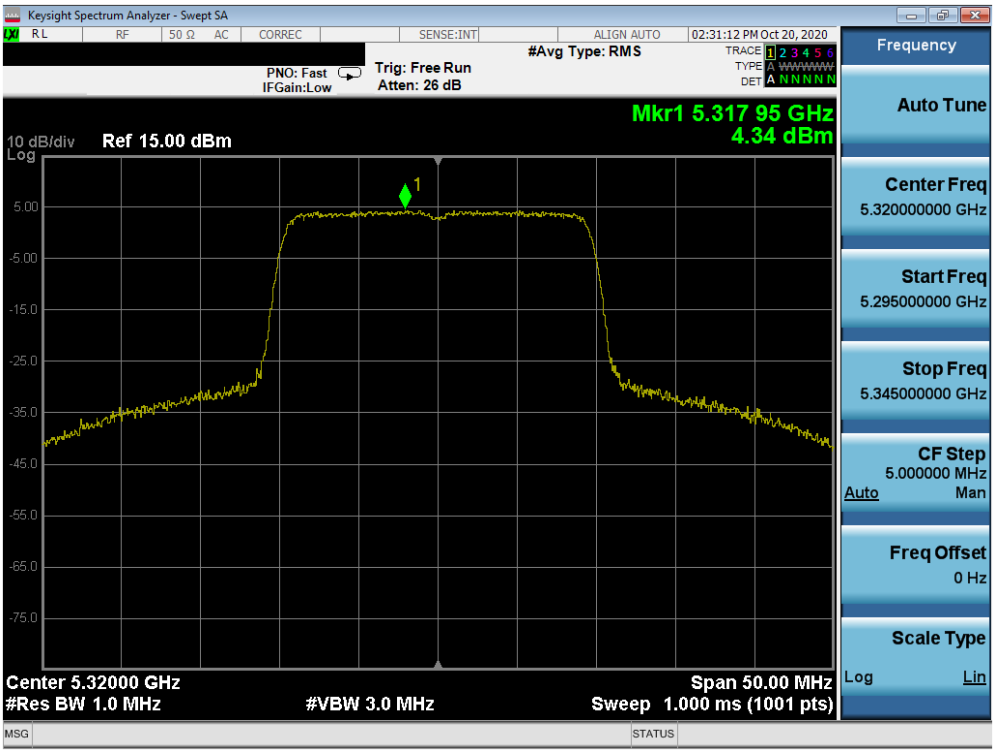
Plot 7-233. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 2A) – Ch. 64)



Plot 7-234. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax (UNII Band 2A) – Ch. 52)



Plot 7-235. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax (UNII Band 2A) – Ch. 56)



Plot 7-236. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax (UNII Band 2A) – Ch. 64)