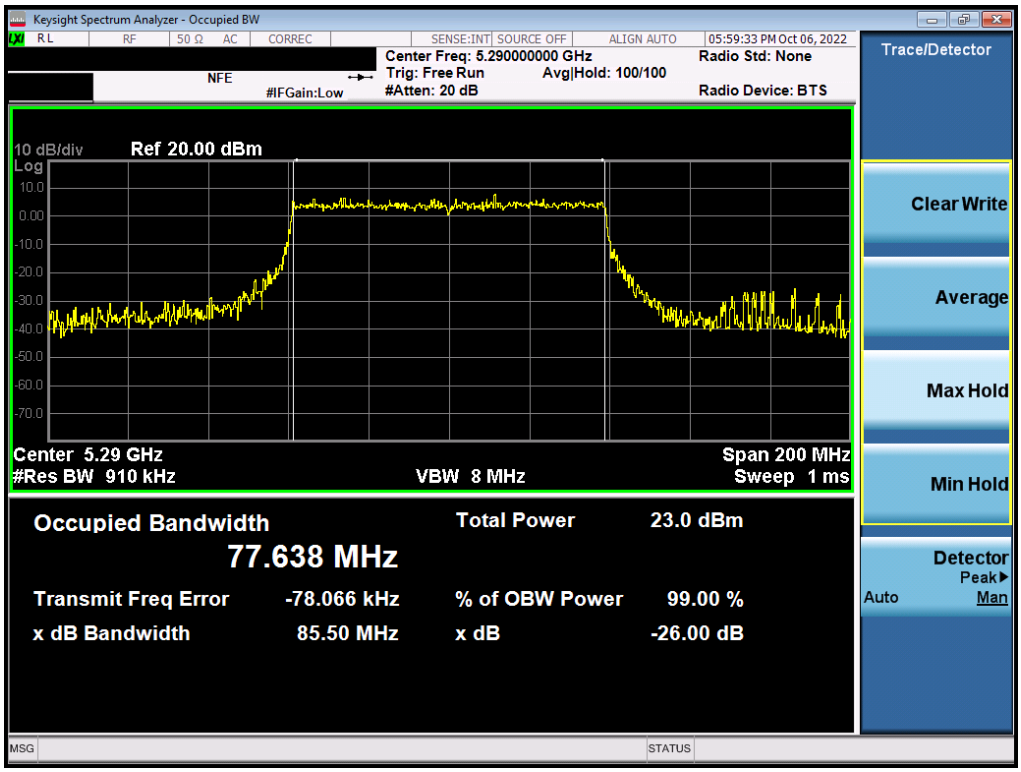
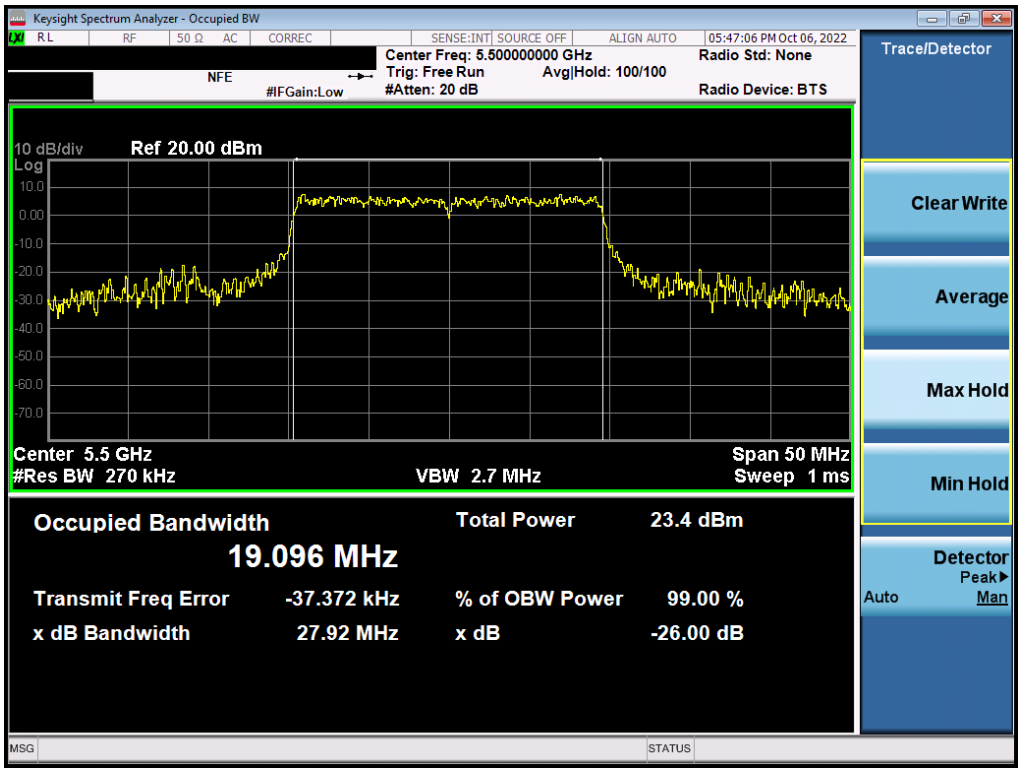
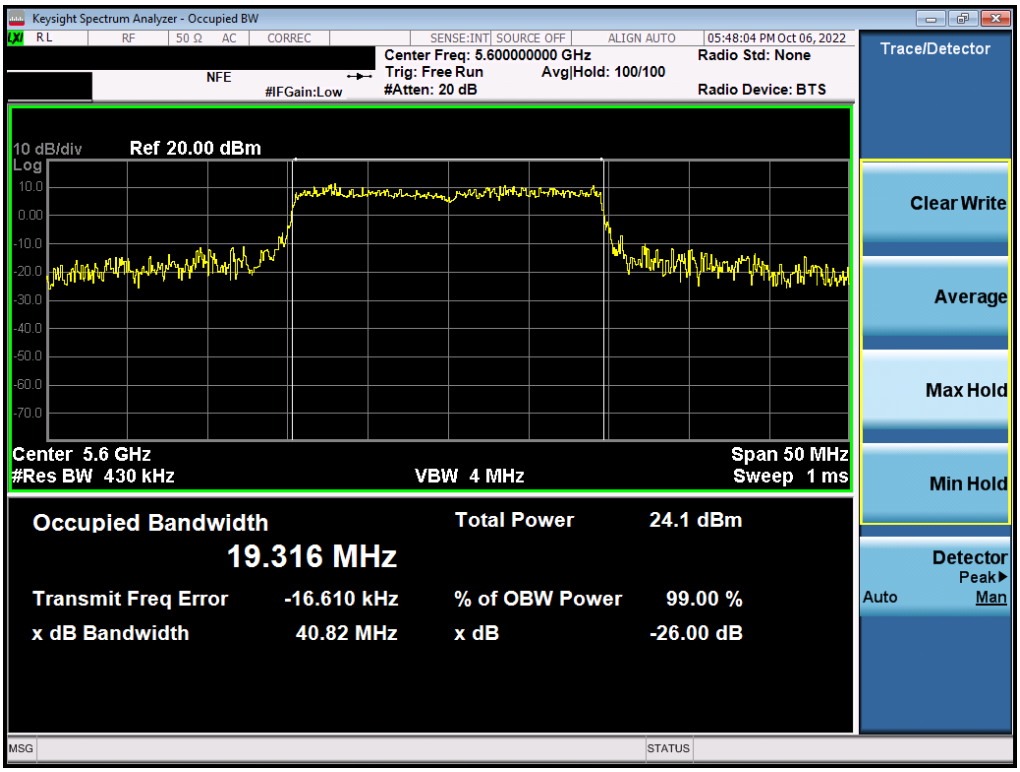


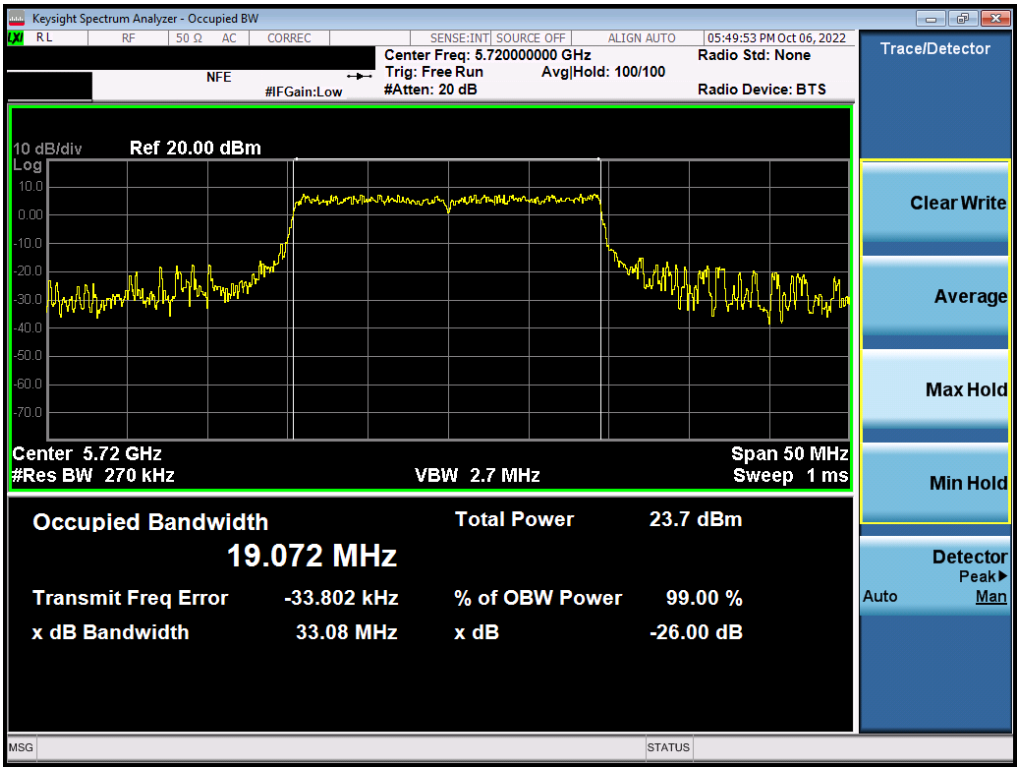
Plot 7-86. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 2A) – Ch. 58)



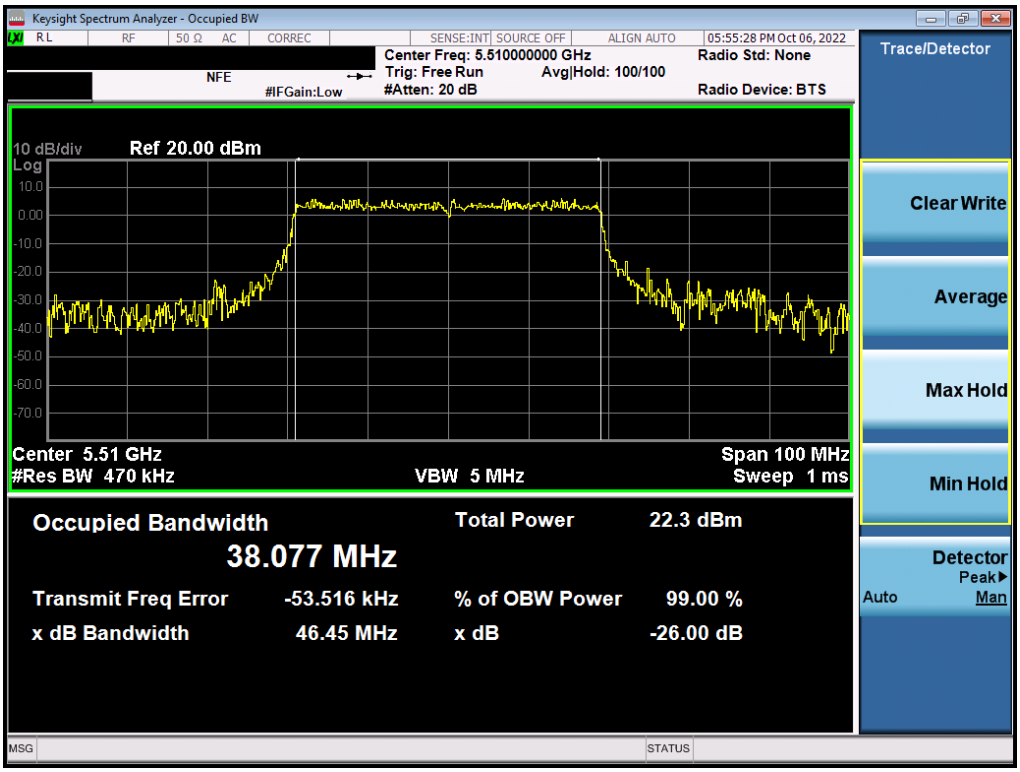
Plot 7-87. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 100)



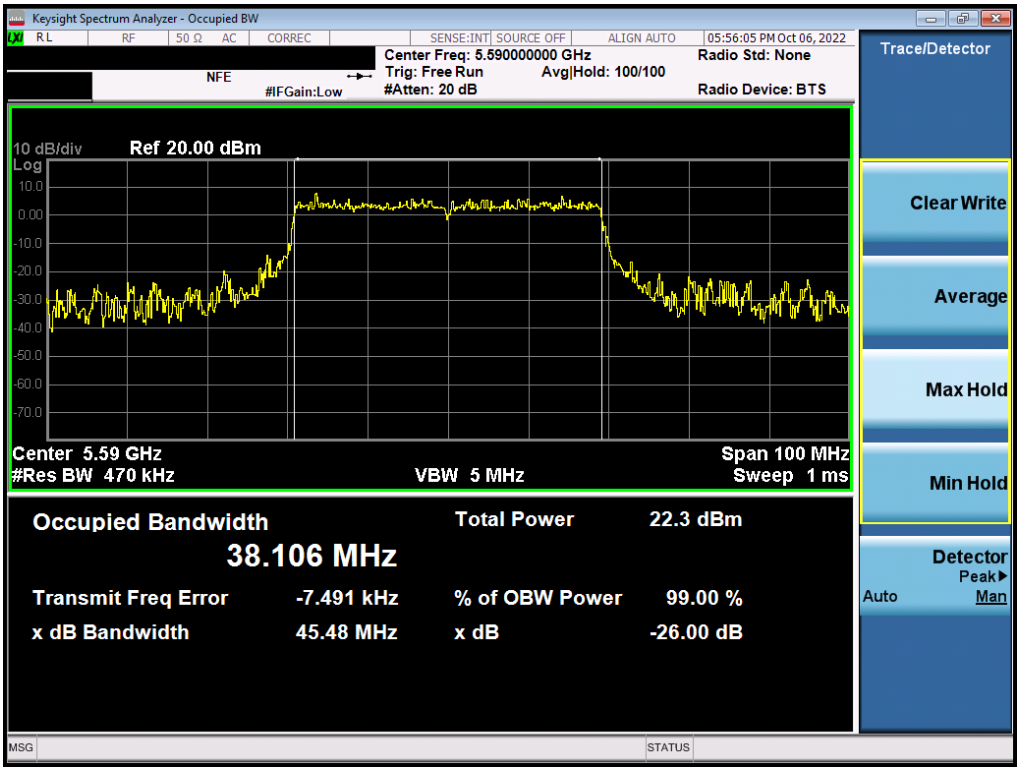
Plot 7-88. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 120)



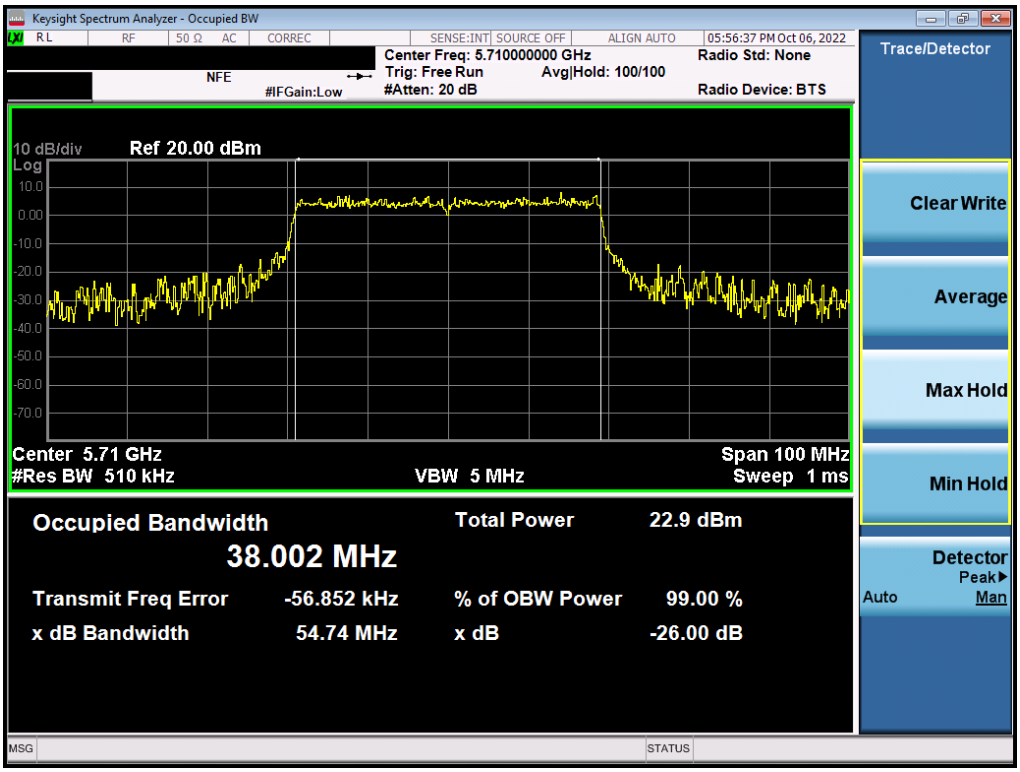
Plot 7-89. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 144)



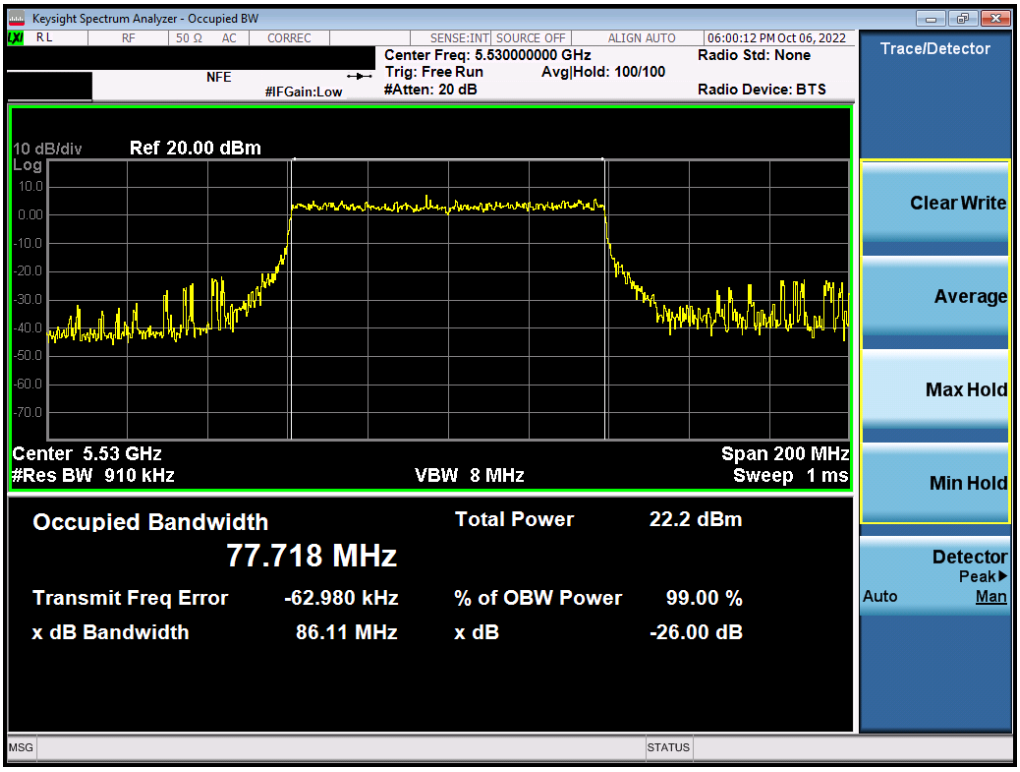
Plot 7-90. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 102)



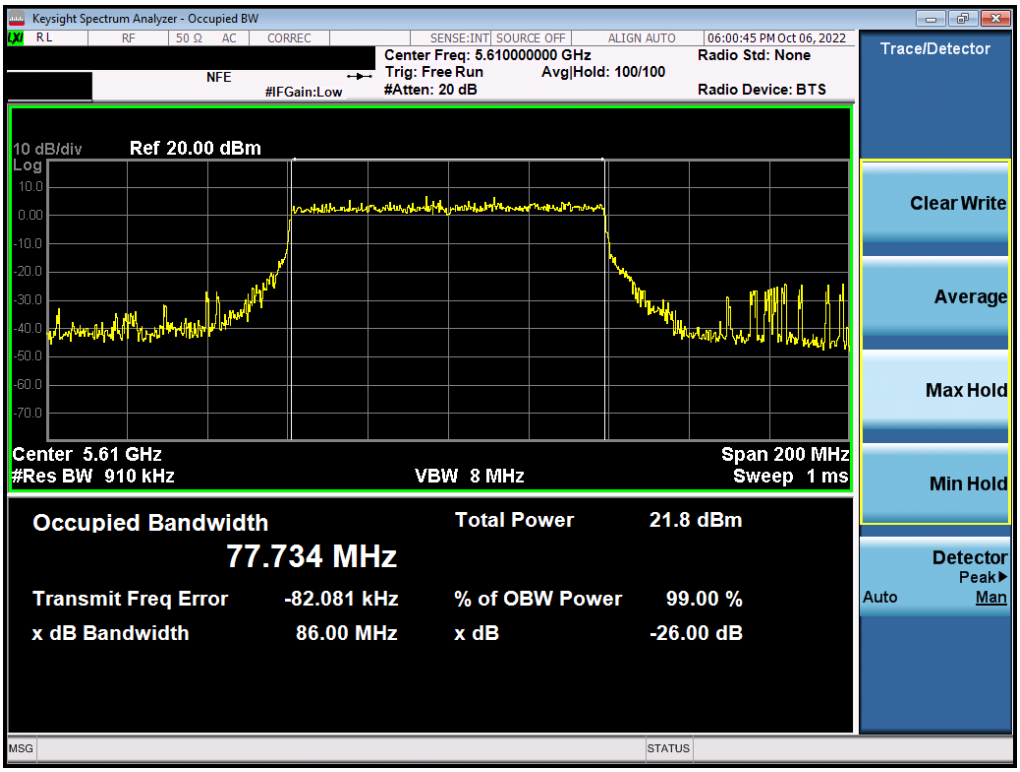
Plot 7-91. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 118)



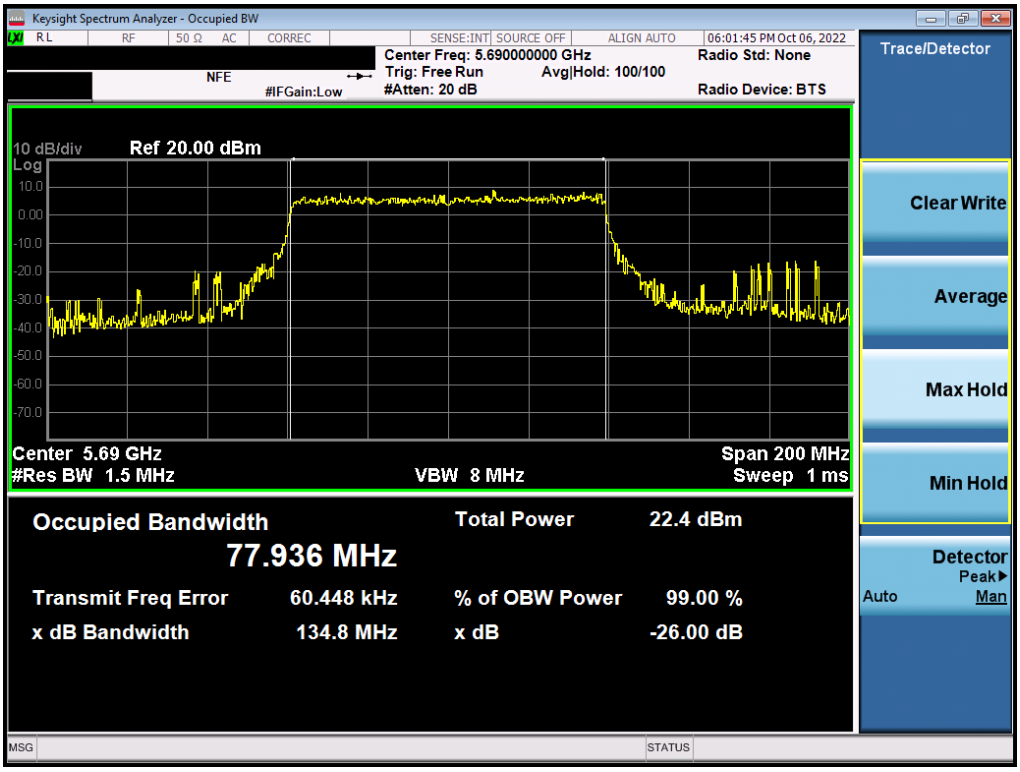
Plot 7-92. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 142)



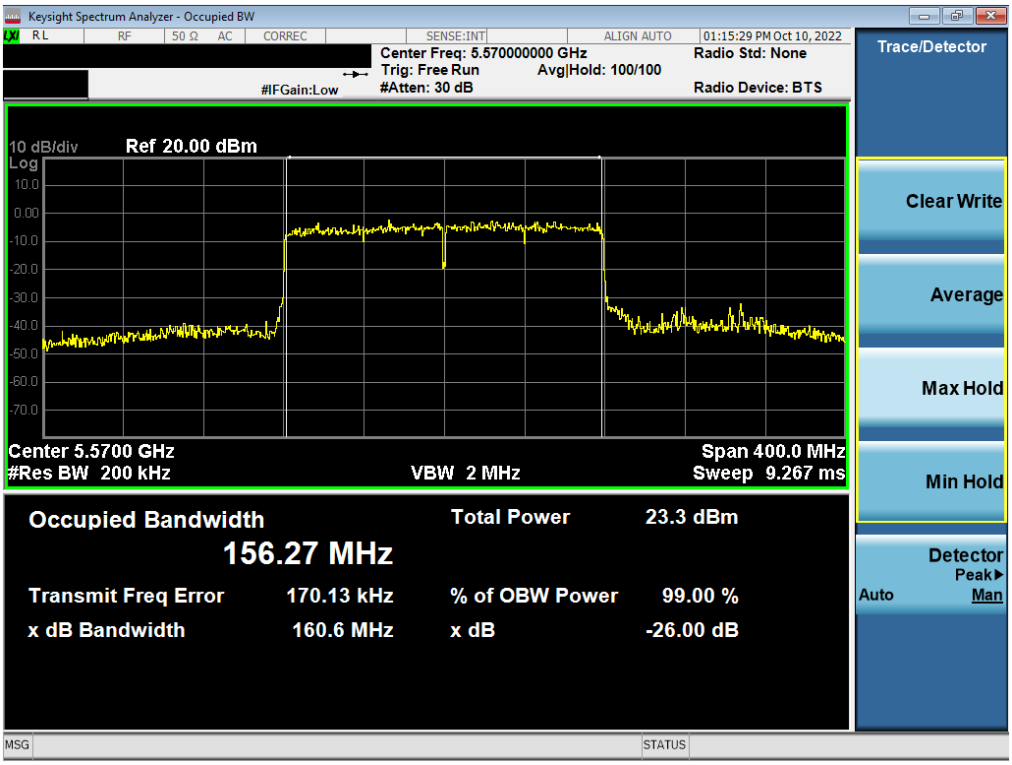
Plot 7-93. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 106)



Plot 7-94. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 122)



Plot 7-95. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 138)



Plot 7-96. 26dB Bandwidth Plot MIMO ANT2 (160MHz BW 802.11ax – 996*2 Tones (UNII Band 2C) – Ch. 114)

7.3 6dB Bandwidth Measurement – 802.11ax OFDMA

§15.407 (e); RSS-Gen [6.7]

Test Overview and Limit

The bandwidth at 6dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal 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. The spectrum analyzer's bandwidth measurement function is configured to measure the 6dB bandwidth.

In the 5.725 – 5.850GHz and 5.850-5.895 bands, the 6dB bandwidth must be ≥ 500 kHz.

Test Procedure Used

ANSI C63.10-2013 – Section 6.9.2
KDB 789033 D02 v02r01 – Section C

Test Settings

1. The signal analyzers' automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 6. The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 100 kHz
3. VBW ≥ 3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple

Test Setup

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

Figure 7-2. Test Instrument & Measurement Setup

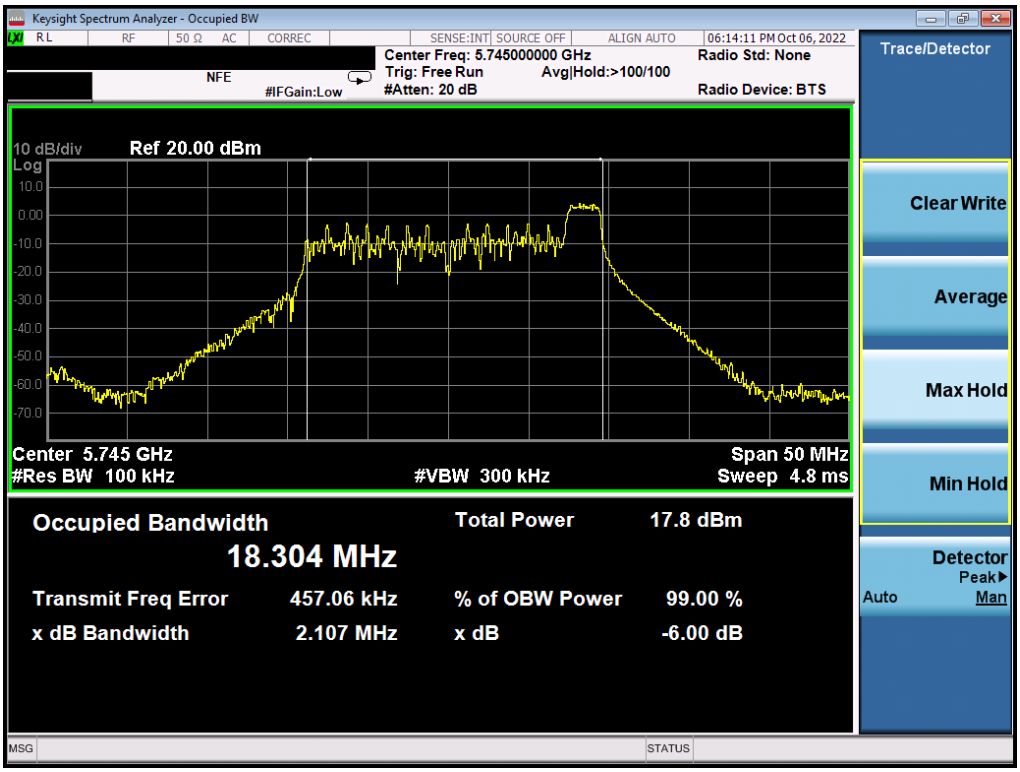
Test Notes

The 6dB Bandwidth measurement for each channel was measured with the RU index showing the highest conducted power.

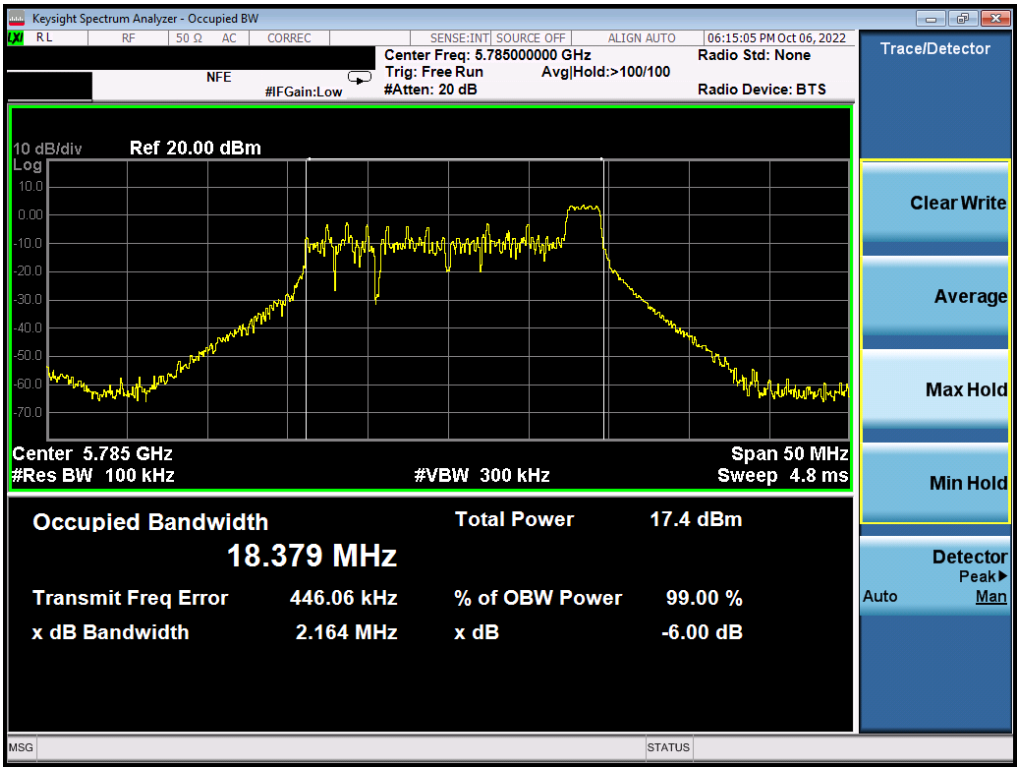
MIMO Antenna-1 6 dB Bandwidth Measurements (26 Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
Band 3	5745	149	ax (20MHz)	26T	MCS0	2.11
	5785	157	ax (20MHz)	26T	MCS0	2.16
	5825	165	ax (20MHz)	26T	MCS0	2.15
	5755	151	ax (40MHz)	26T	MCS0	2.20
	5795	159	ax (40MHz)	26T	MCS0	2.19
	5775	155	ax (80MHz)	26T	MCS0	2.29

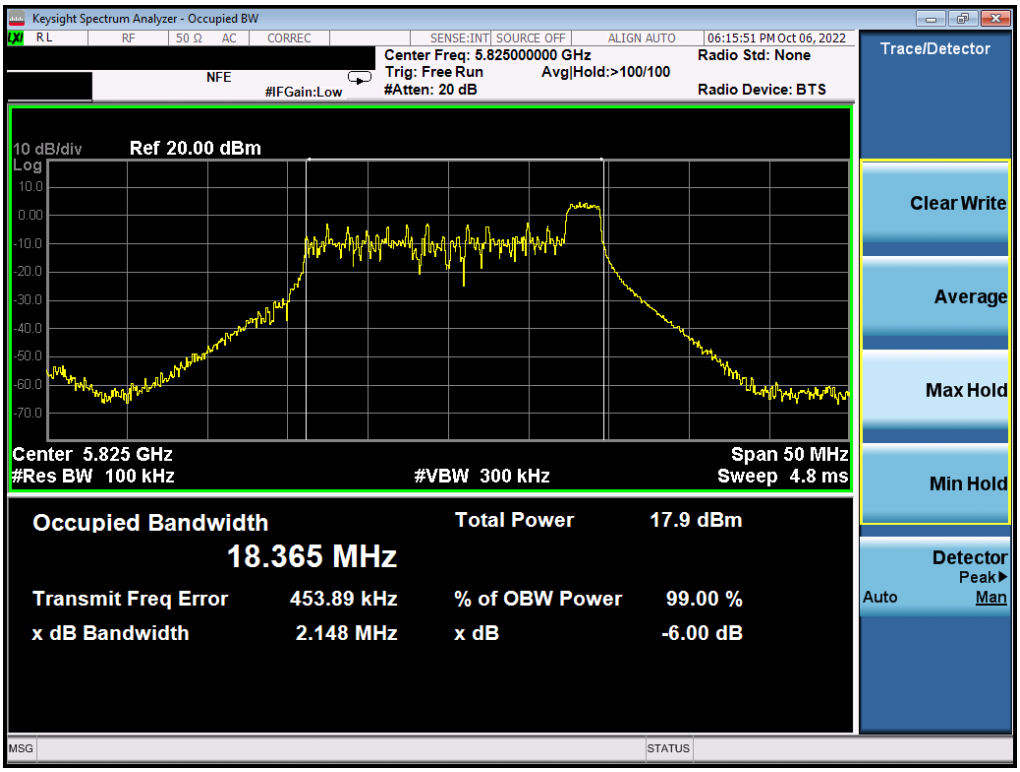
Table 7-6. Conducted Bandwidth Measurements MIMO ANT1 (26 Tones)



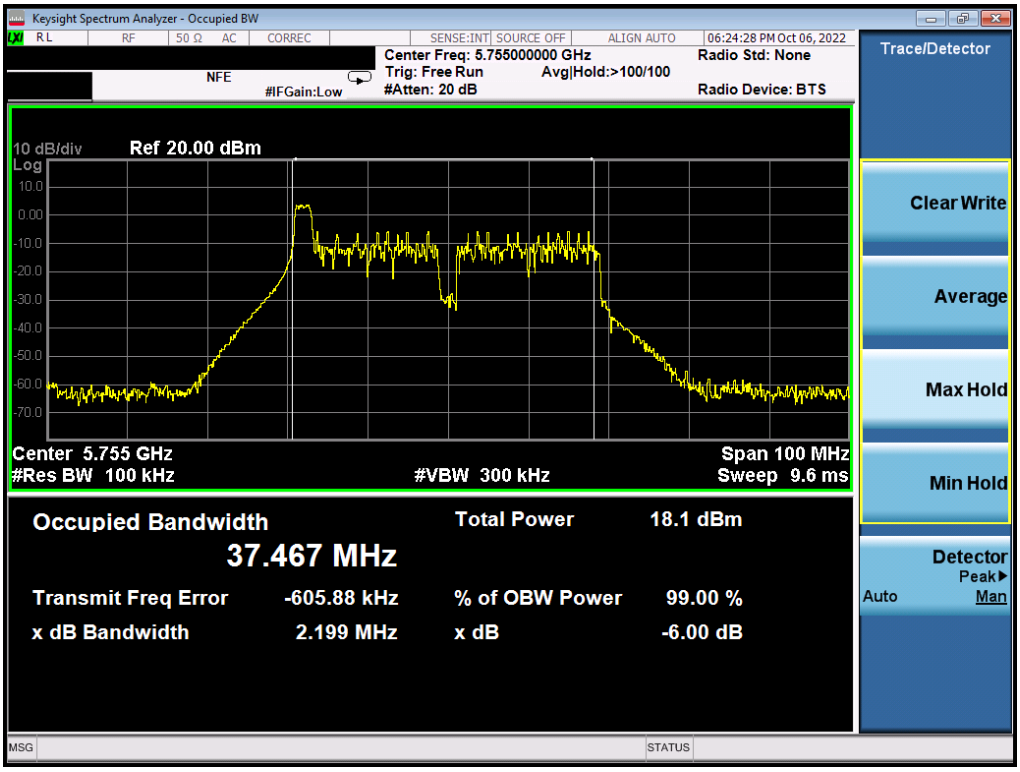
Plot 7-97. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 149)



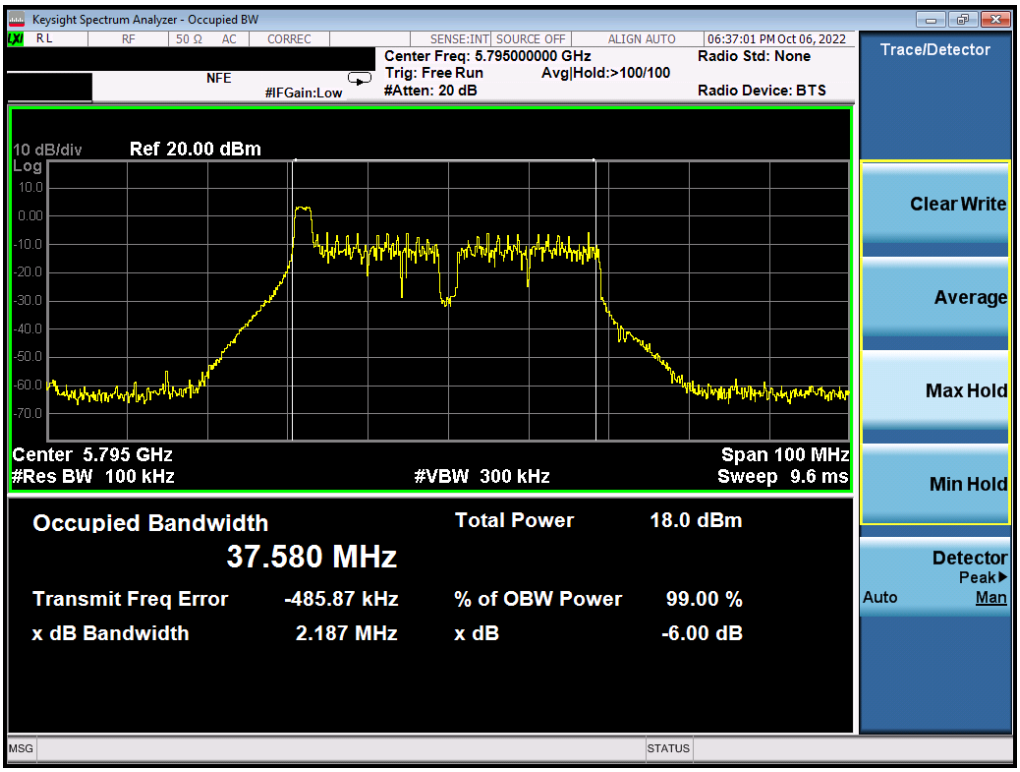
Plot 7-98. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 157)



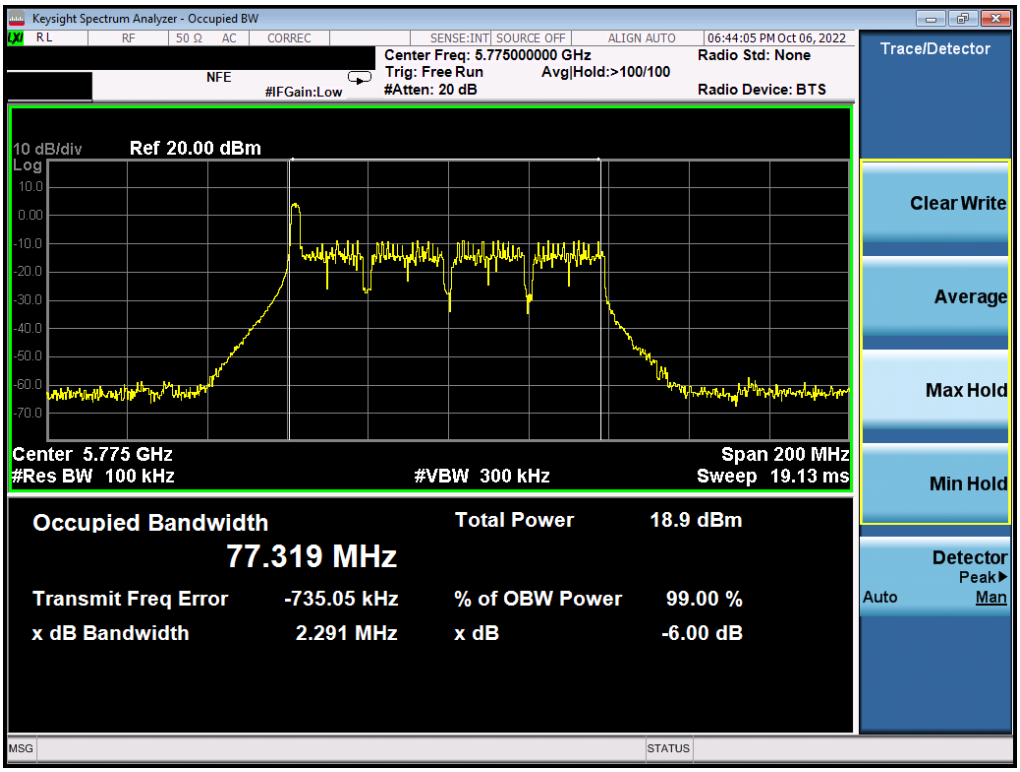
Plot 7-99. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 165)



Plot 7-100. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 151)



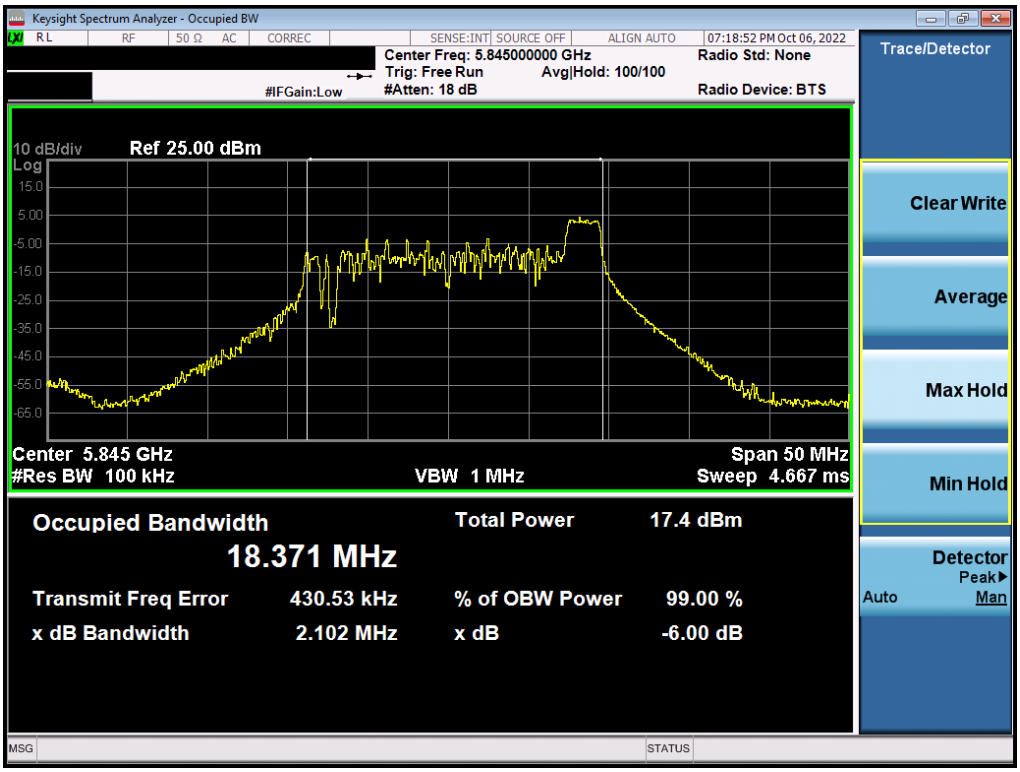
Plot 7-101. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 159)



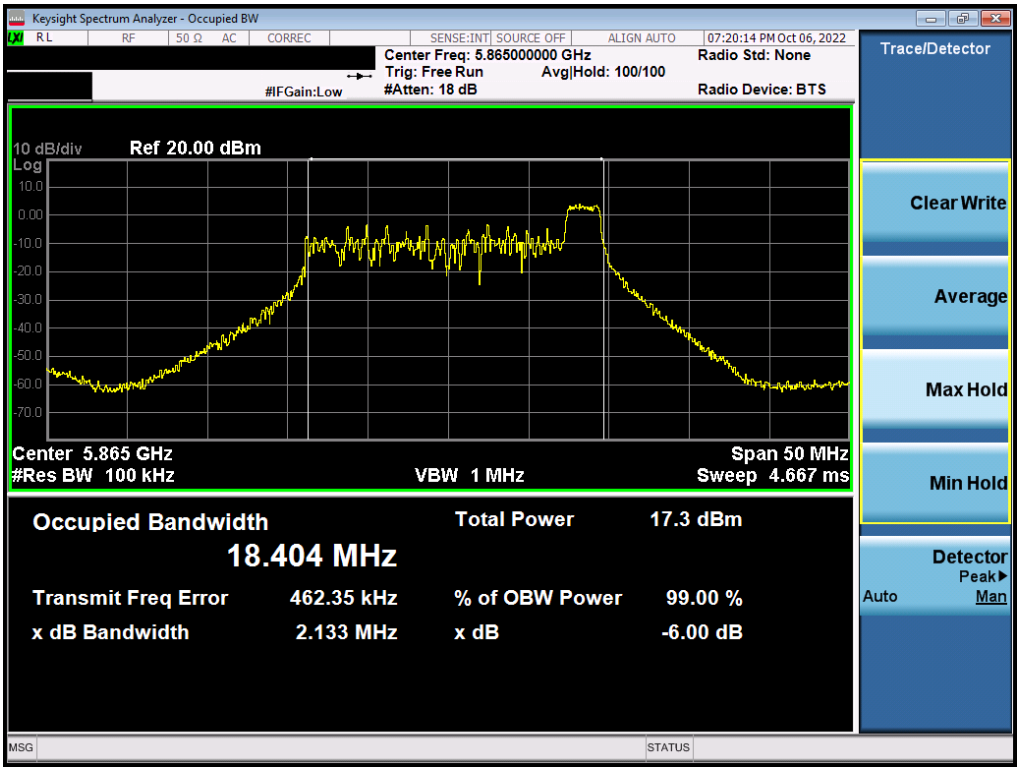
Plot 7-102. 6dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 155)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
Band 3/4	5845	169	ax (20MHz)	26T	MCS0	2.10
Band 4	5865	173	ax (20MHz)	26T	MCS0	2.13
	5885	177	ax (20MHz)	26T	MCS0	2.18
Band 3/4	5835	167	ax (40MHz)	26T	MCS0	2.16
Band 4	5875	175	ax (40MHz)	26T	MCS0	2.16
Band 3/4	5855	171	ax (80MHz)	26T	MCS0	2.84
	5815	163	ax (160MHz L)	26T	MCS0	3.51
	5815	163	ax (160MHz U)	26T	MCS0	3.01

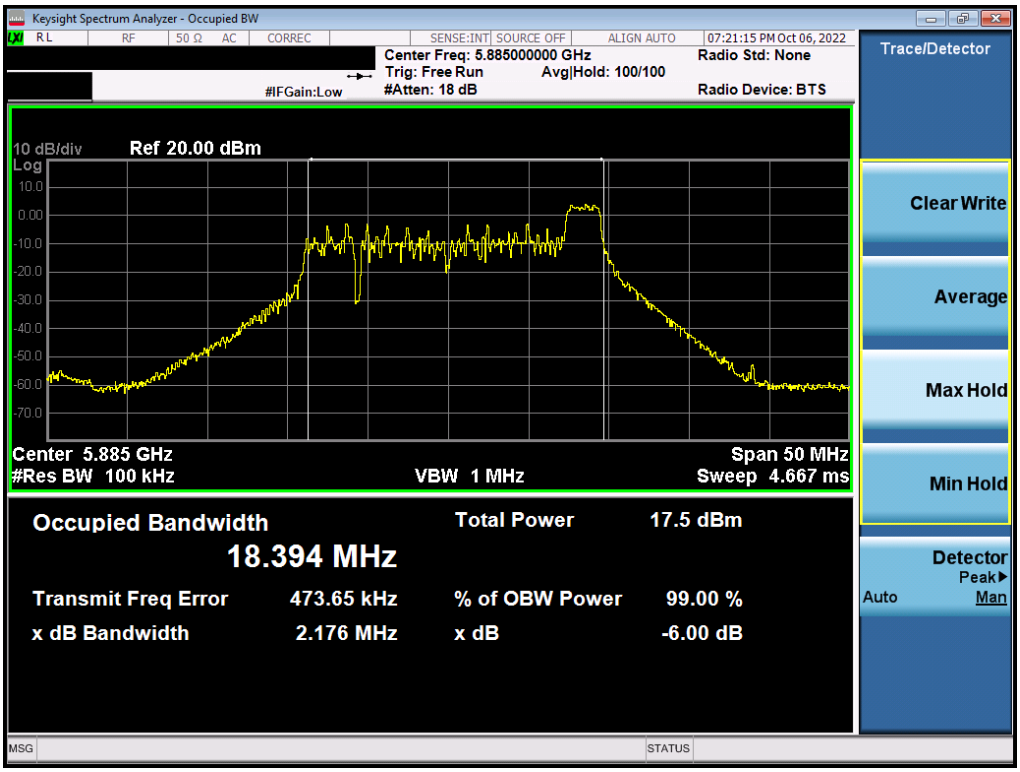
Table 7-7. Conducted Bandwidth Measurements MIMO ANT1 (26 Tones)



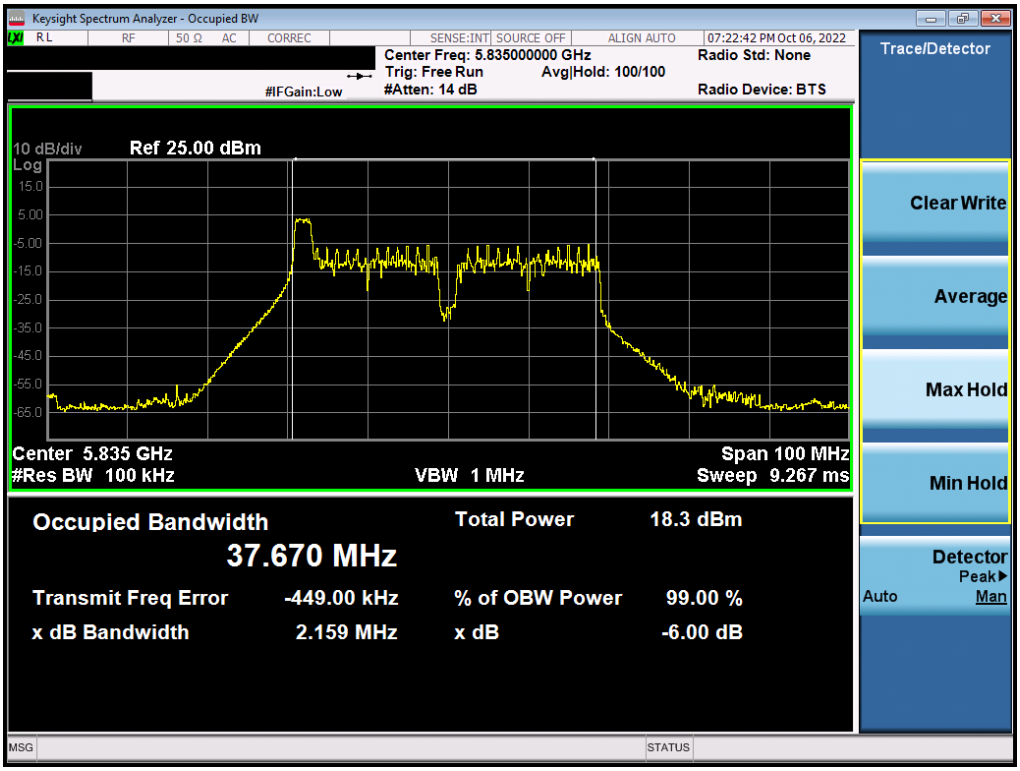
Plot 7-103. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 3/4) – Ch. 169)



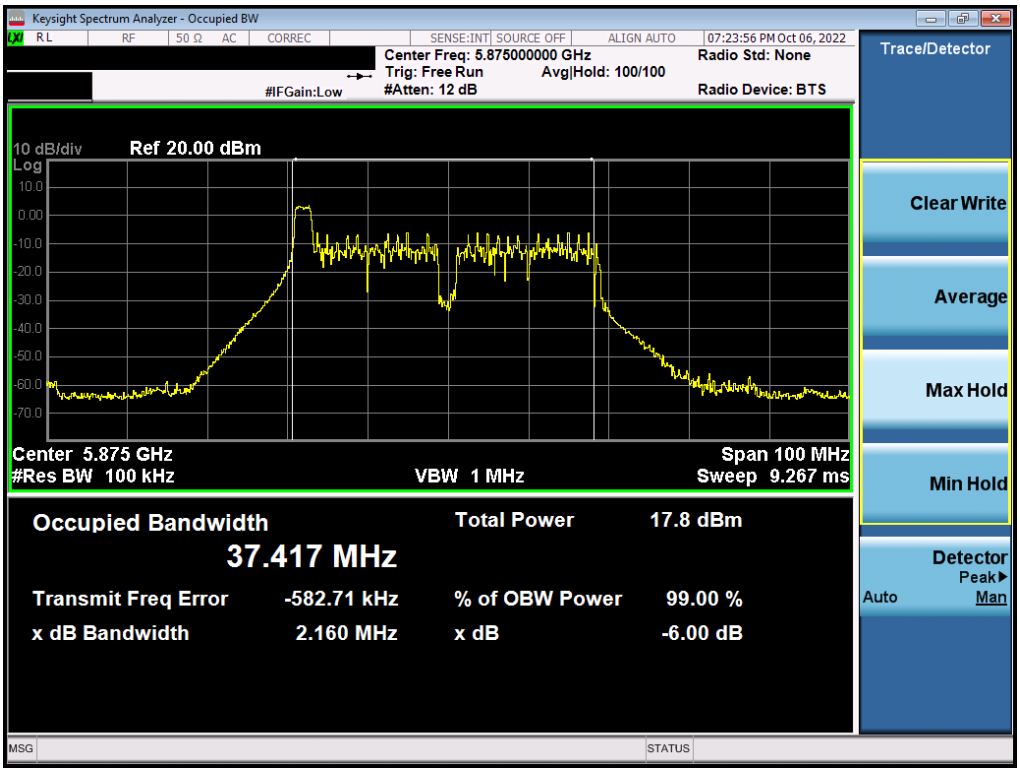
Plot 7-104. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 173)



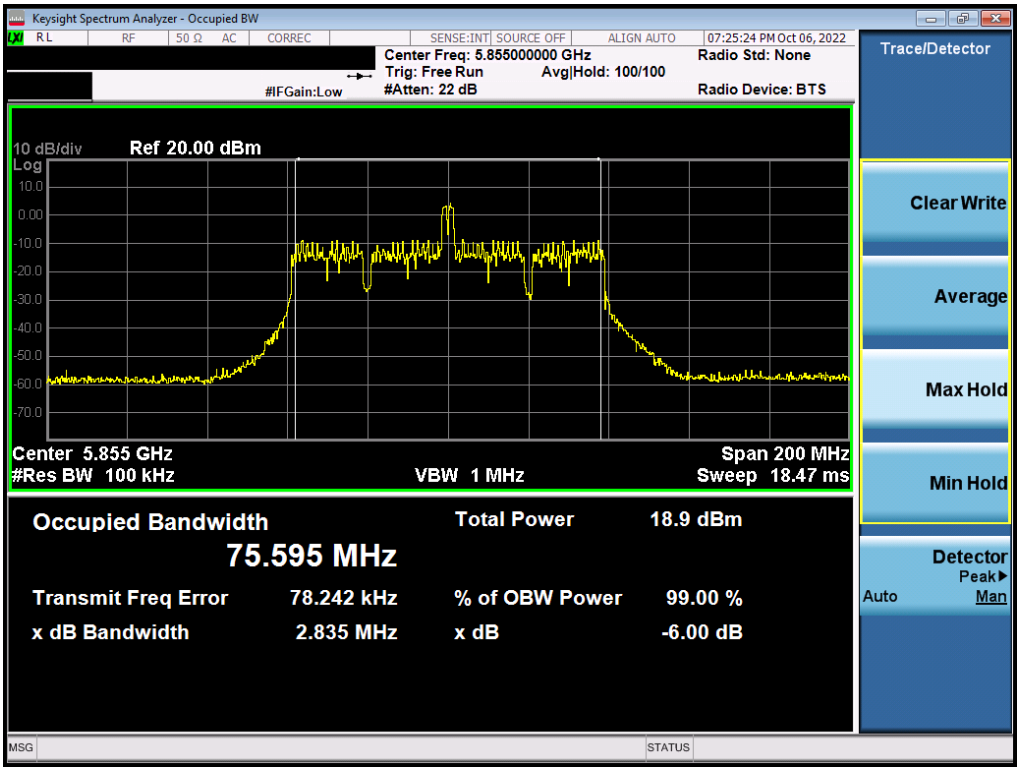
Plot 7-105. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 177)



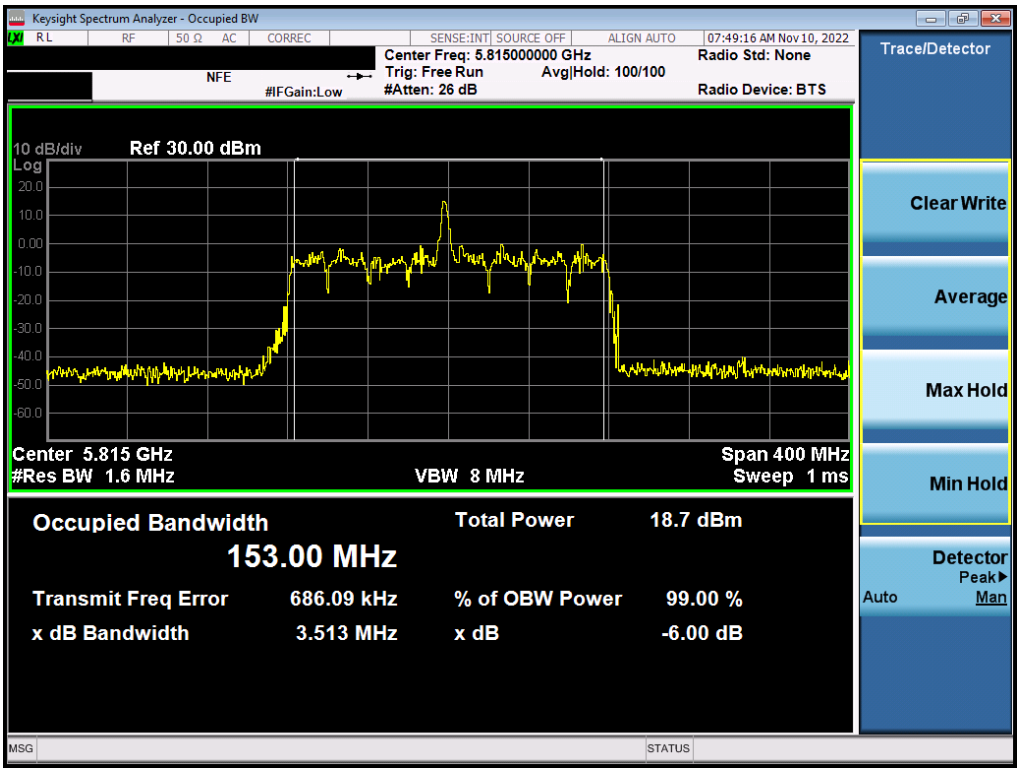
Plot 7-106. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 3/4) – Ch. 167)



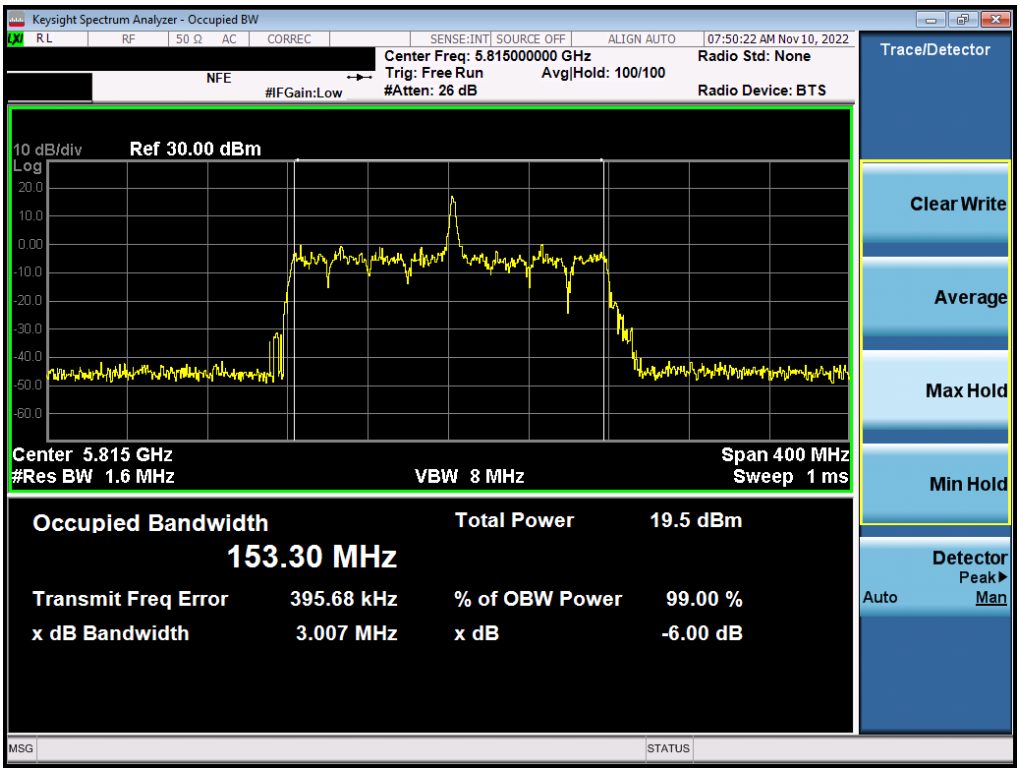
Plot 7-107. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 175)



Plot 7-108. 6dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 3/4) – Ch. 171)



Plot 7-109. 6dB Bandwidth Plot MIMO ANT1 (160MHz(L) BW 802.11ax – 26 Tones (UNII Band 3/4) – Ch. 163)

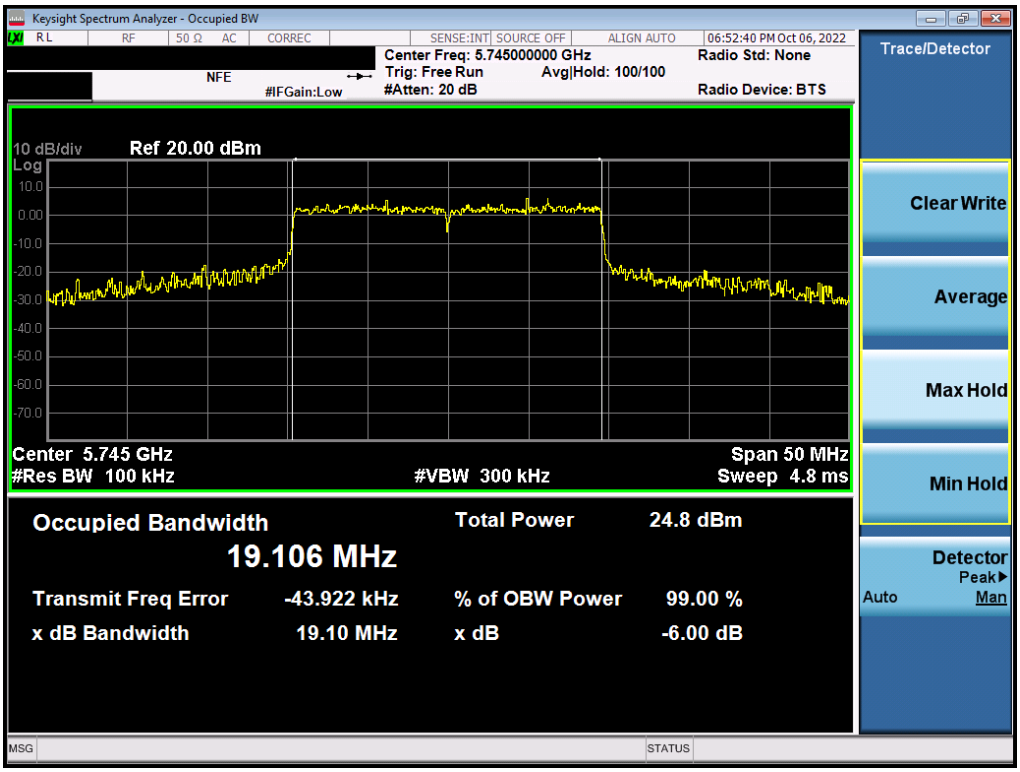


Plot 7-110. 6dB Bandwidth Plot MIMO ANT1 (160MHz(U) BW 802.11ax – 26 Tones (UNII Band 3/4) – Ch. 163)

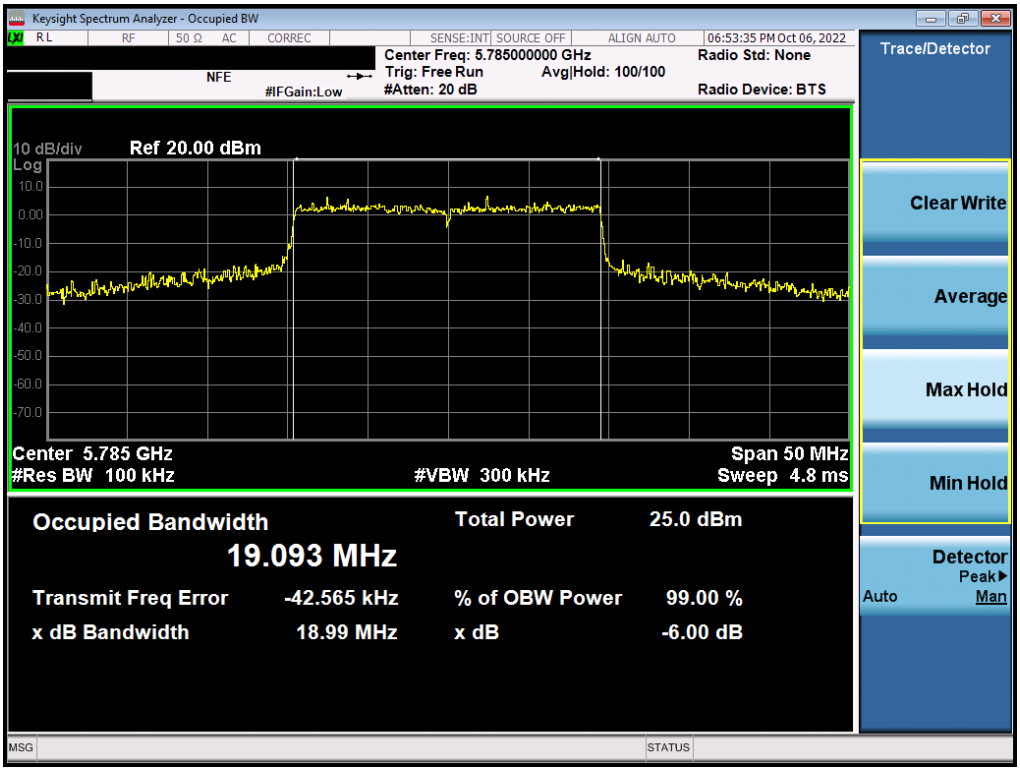
MIMO Antenna-1 6 dB Bandwidth Measurements (Full Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
Band 3	5745	149	ax (20MHz)	242T	MCS0	19.10
	5785	157	ax (20MHz)	242T	MCS0	18.99
	5825	165	ax (20MHz)	242T	MCS0	19.01
	5755	151	ax (40MHz)	484T	MCS0	38.12
	5795	159	ax (40MHz)	484T	MCS0	38.19
	5775	155	ax (80MHz)	996T	MCS0	78.21

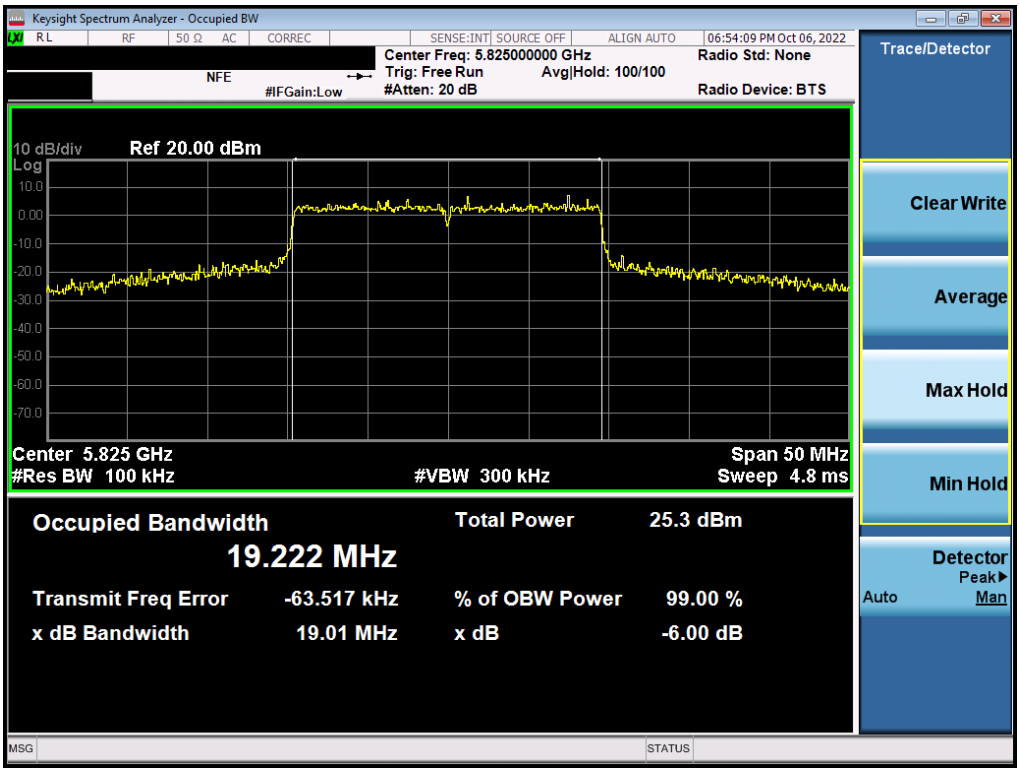
Table 7-8. Conducted Bandwidth Measurements MIMO ANT1 (Full Tones)



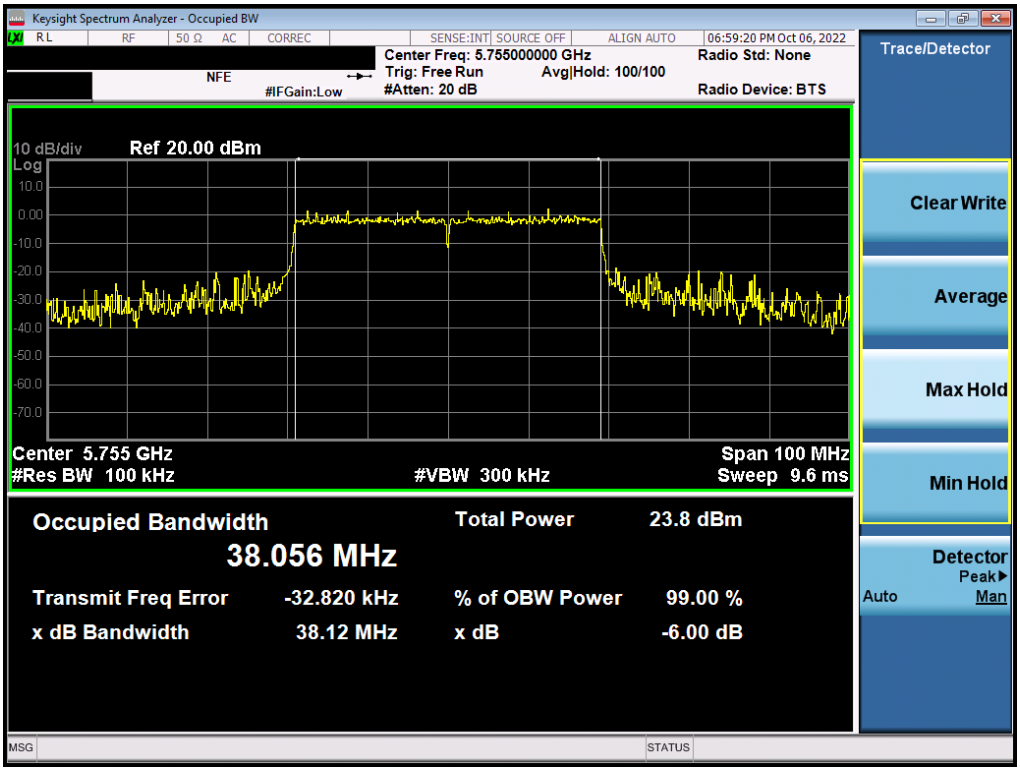
Plot 7-111. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 149)



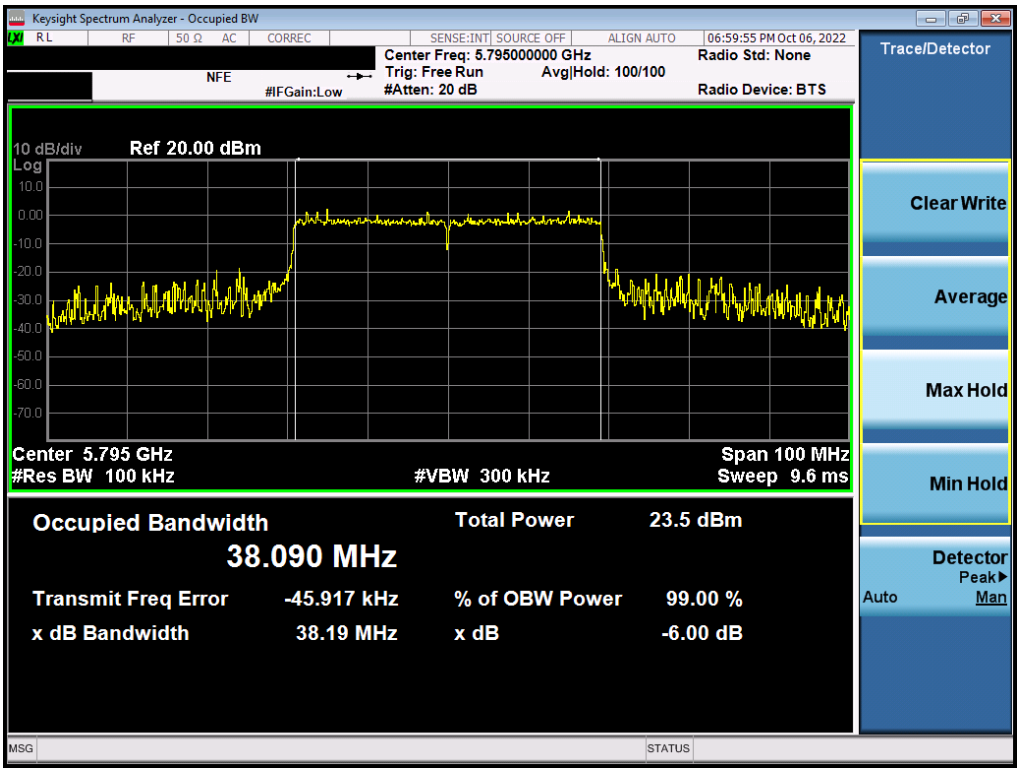
Plot 7-112. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 157)



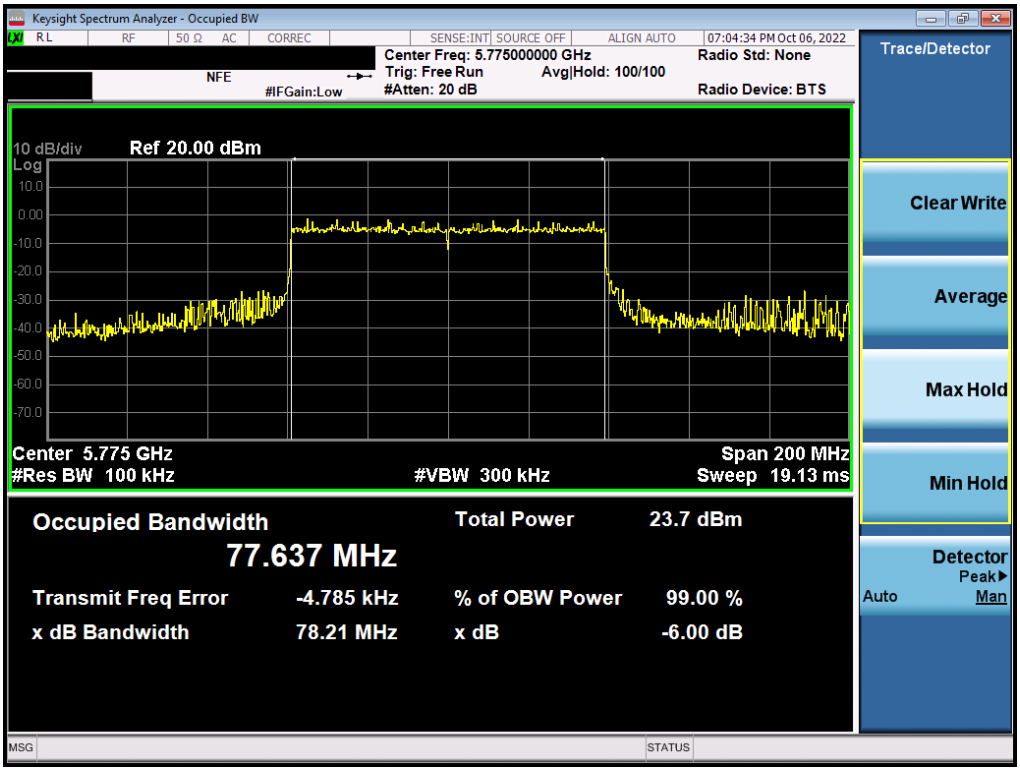
Plot 7-113. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 165)



Plot 7-114. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 3) – Ch. 151)



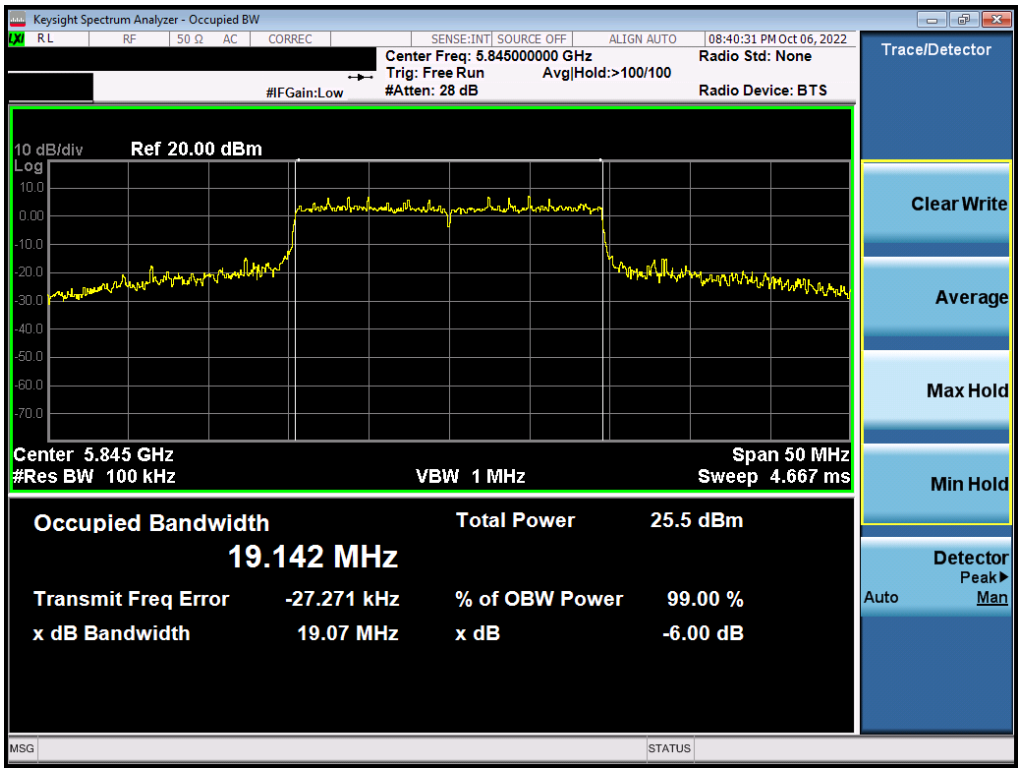
Plot 7-115. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 3) – Ch. 159)



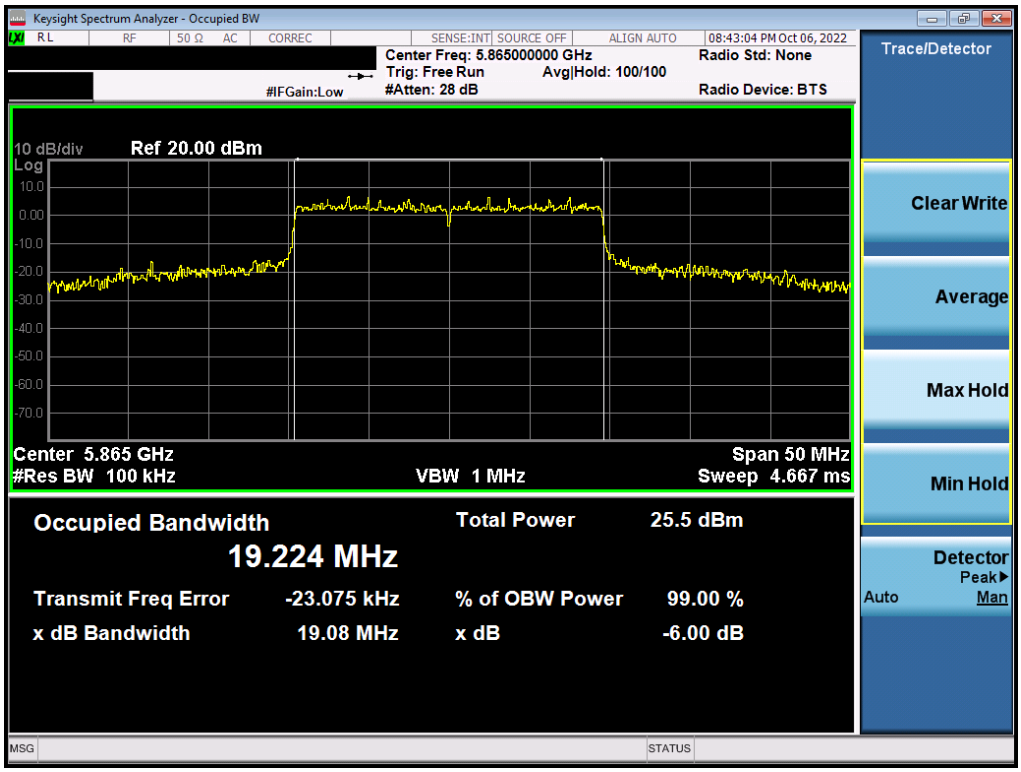
Plot 7-116. 6dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax – 996 Tones (UNII Band 3) – Ch. 155)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
Band 3/4	5845	169	ax (20MHz)	242T	MCS0	19.07
Band 4	5865	173	ax (20MHz)	242T	MCS0	19.08
	5885	177	ax (20MHz)	242T	MCS0	19.06
Band 3/4	5835	167	ax (40MHz)	484T	MCS0	38.10
Band 4	5875	175	ax (40MHz)	484T	MCS0	38.15
Band 3/4	5855	171	ax (80MHz)	996T	MCS0	78.22
	5815	163	ax (160MHz)	996*2T	MCS0	157.40

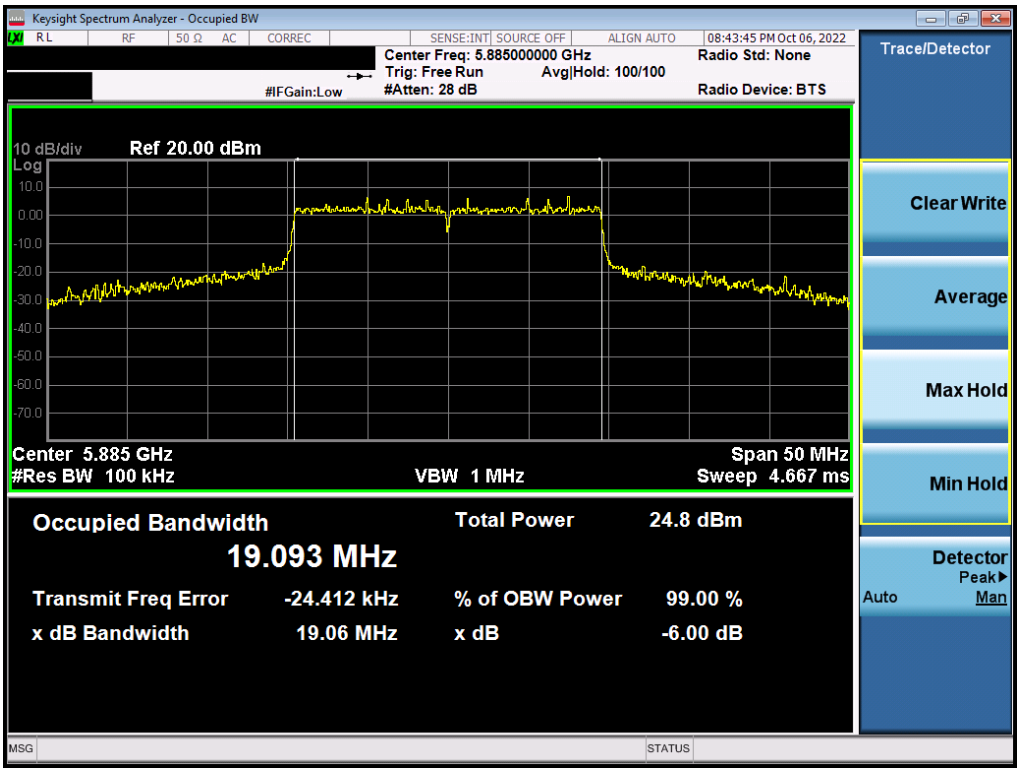
Table 7-9. Conducted Bandwidth Measurements MIMO ANT1 (Full Tones)



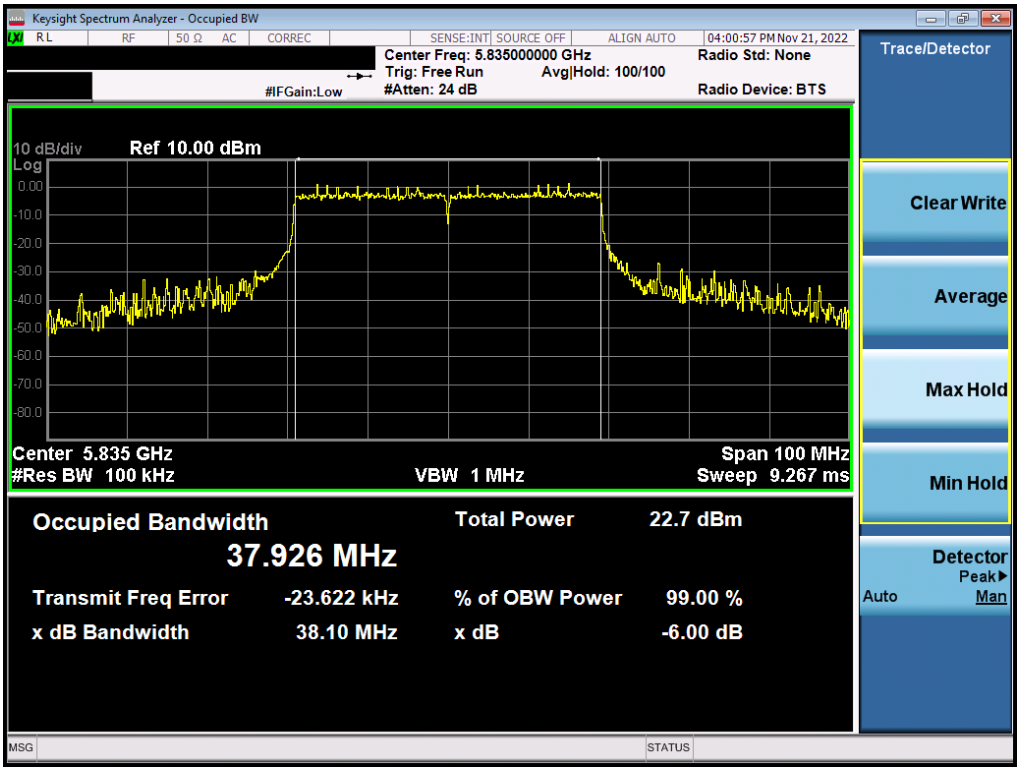
Plot 7-117. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 3/4) – Ch. 169)



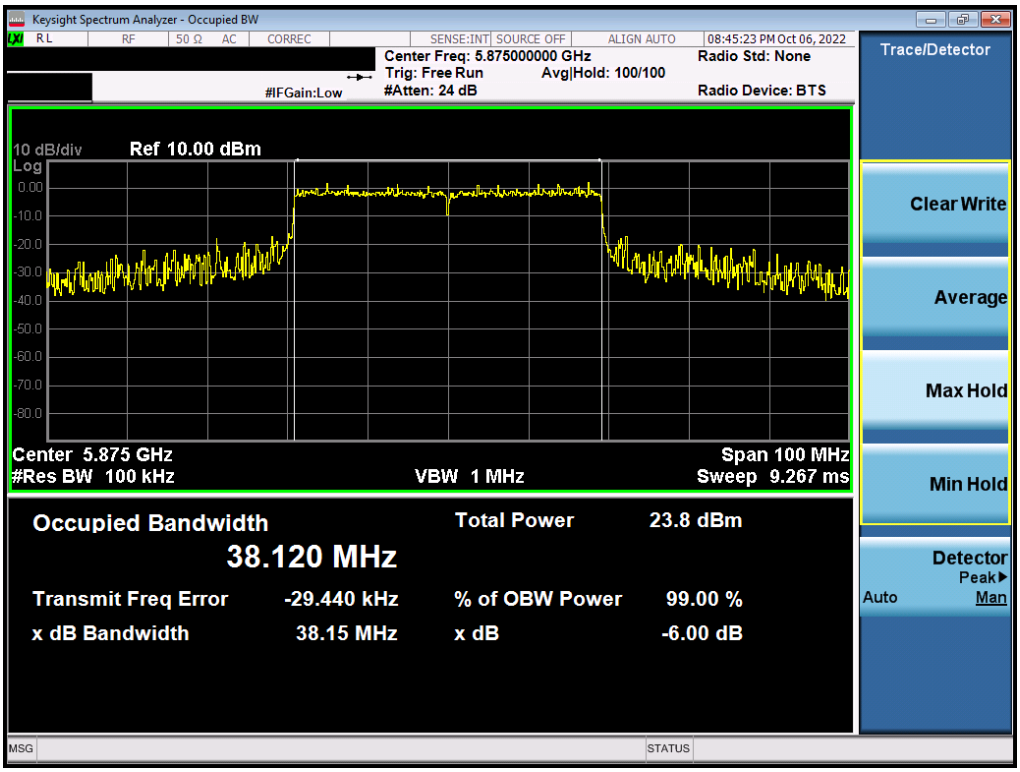
Plot 7-118. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 173)



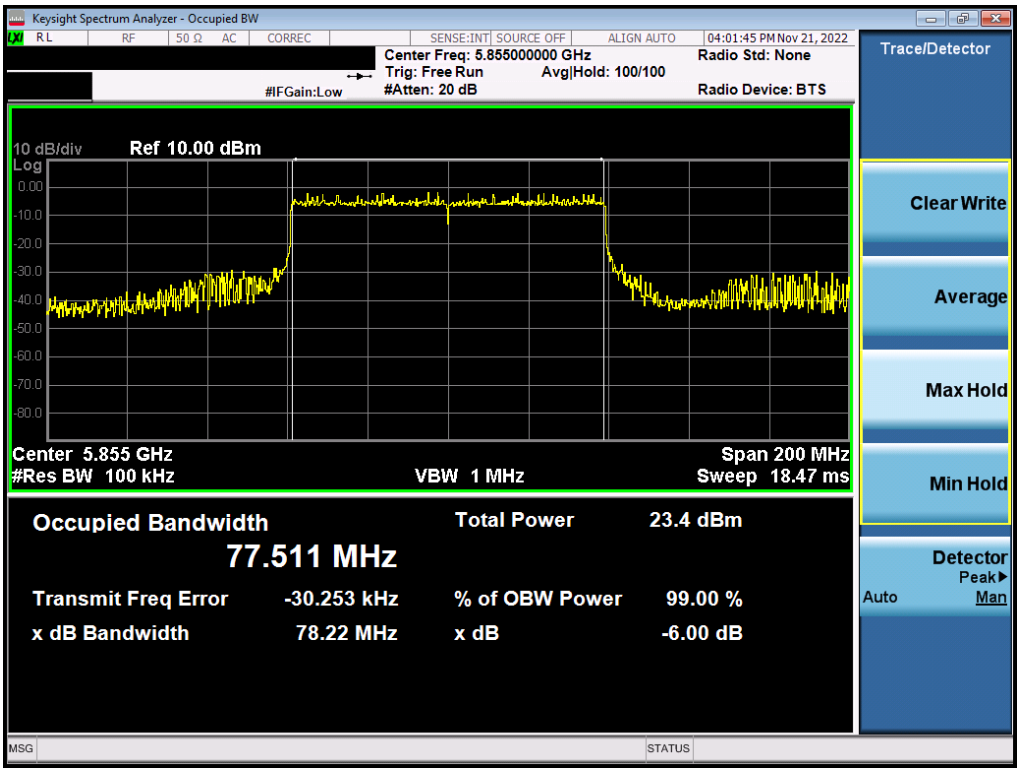
Plot 7-119. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 177)



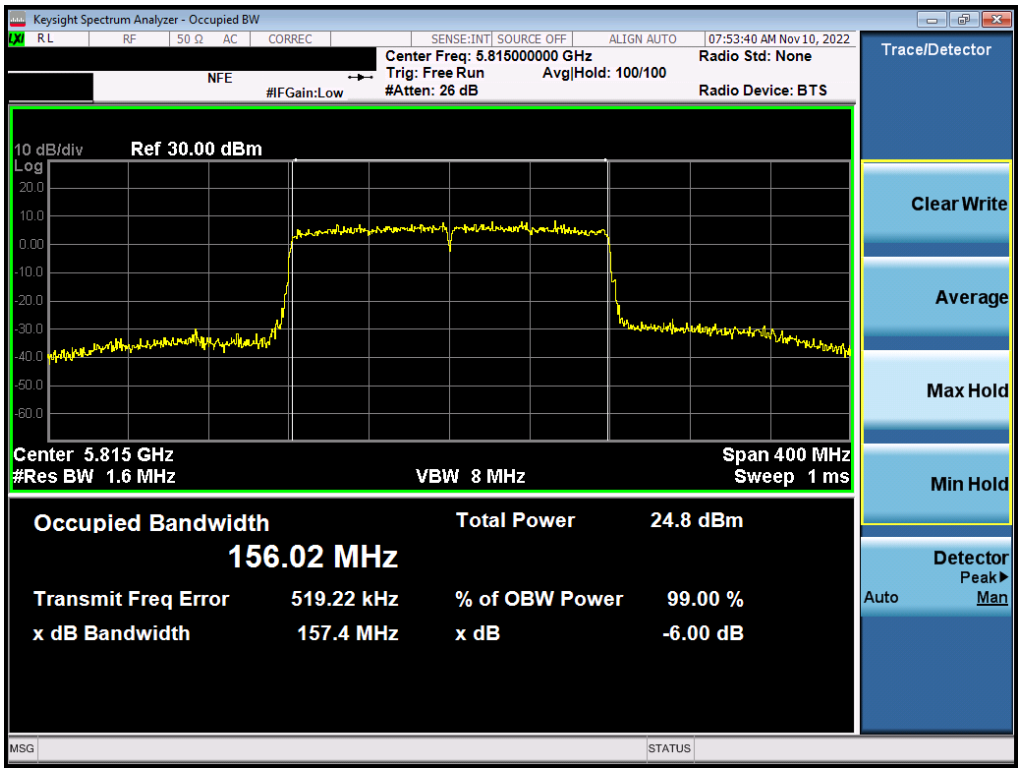
Plot 7-120. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 3/4) – Ch. 167)



Plot 7-121. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 3) – Ch. 175)



Plot 7-122. 6dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax – 996 Tones (UNII Band 3/4) – Ch. 171)

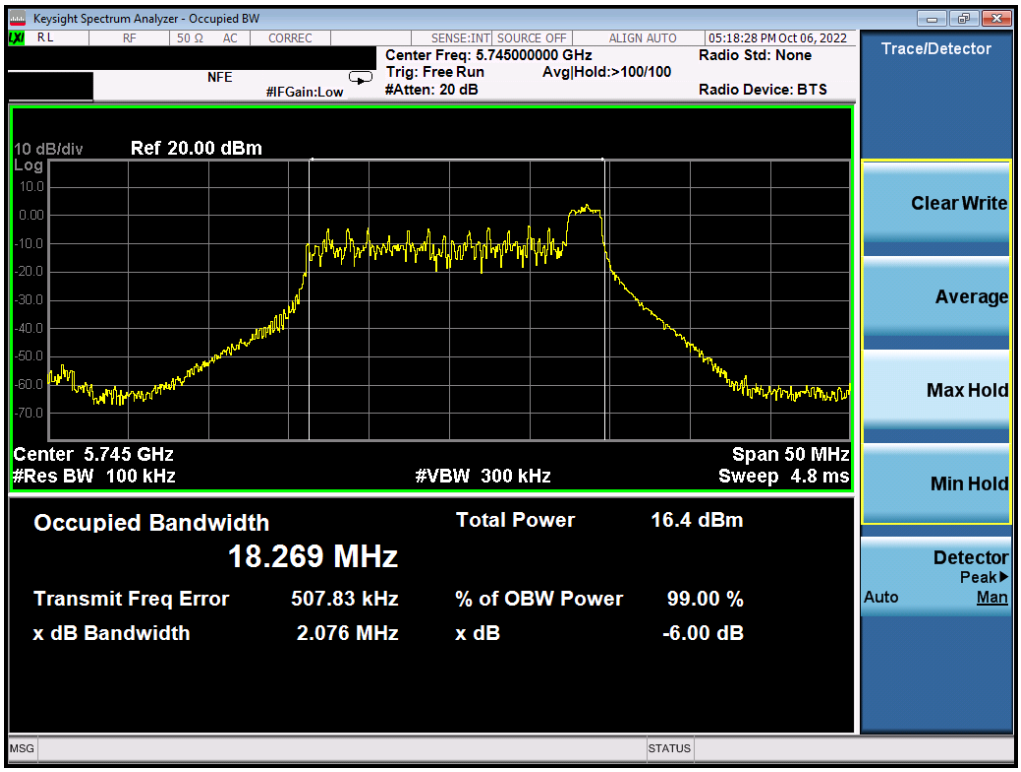


Plot 7-123. 6dB Bandwidth Plot MIMO ANT1 (160MHz BW 802.11ax – 996*2 Tones (UNII Band 3/4) – Ch. 163)

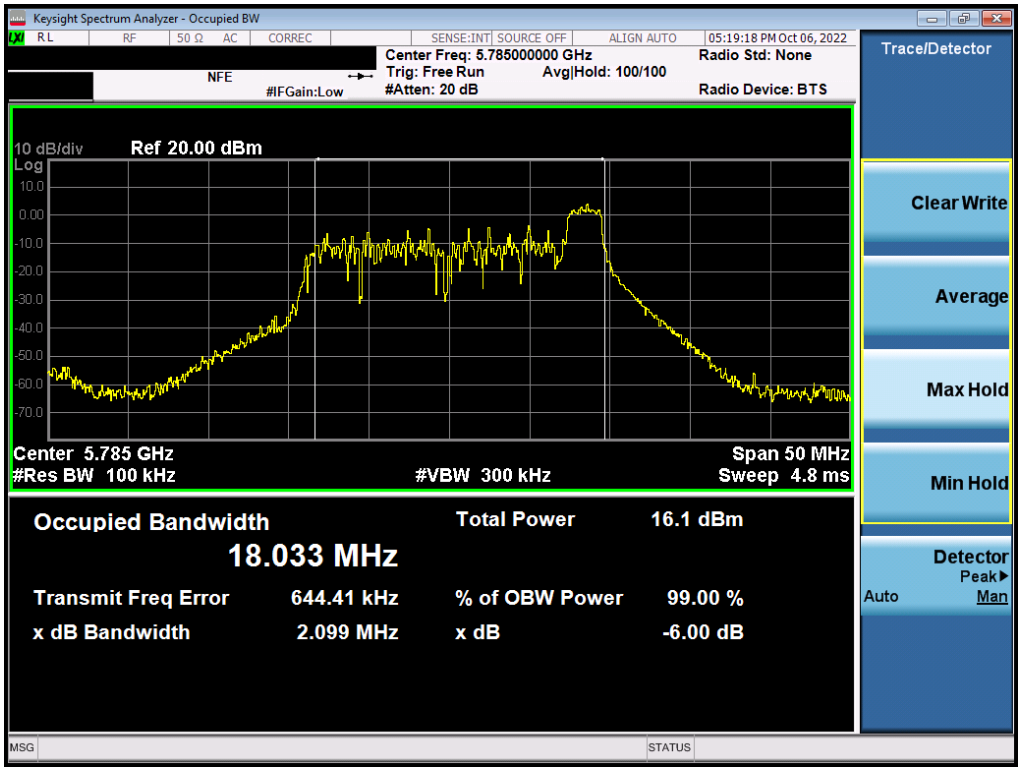
MIMO Antenna-2 6dB Bandwidth Measurements (26 Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
Band 3	5745	149	ax (20MHz)	26T	MCS0	2.08
	5785	157	ax (20MHz)	26T	MCS0	2.10
	5825	165	ax (20MHz)	26T	MCS0	2.11
	5755	151	ax (40MHz)	26T	MCS0	2.20
	5795	159	ax (40MHz)	26T	MCS0	2.18
	5775	155	ax (80MHz)	26T	MCS0	2.87

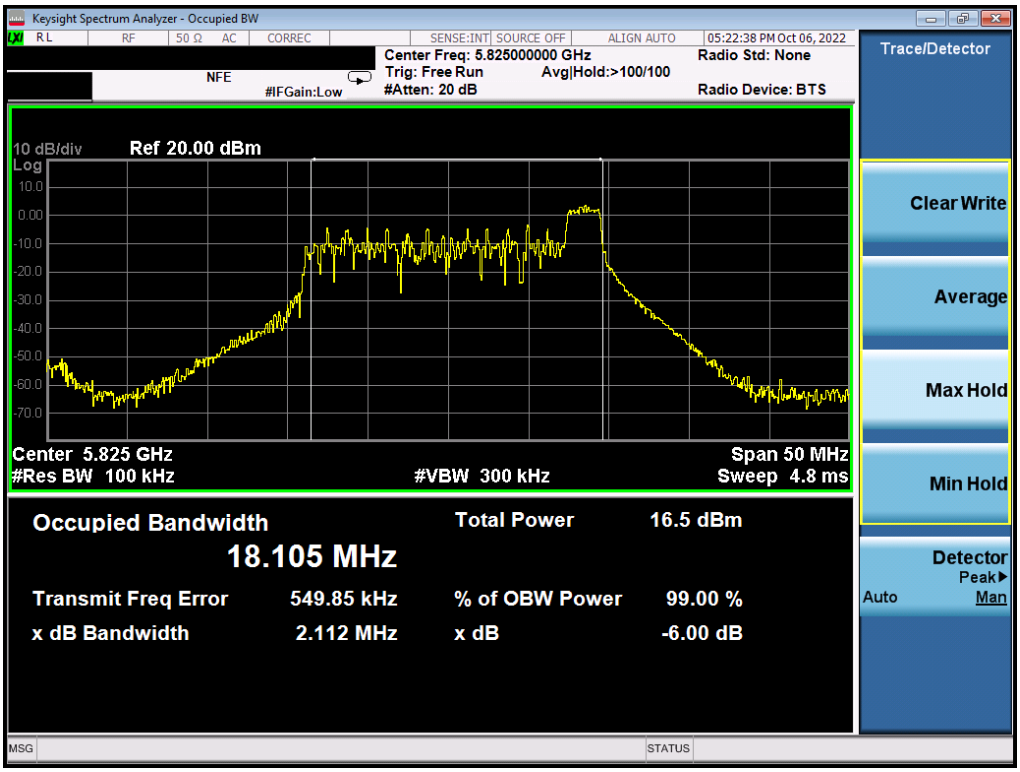
Table 7-10. Conducted Bandwidth Measurements MIMO ANT2 (26 Tones)



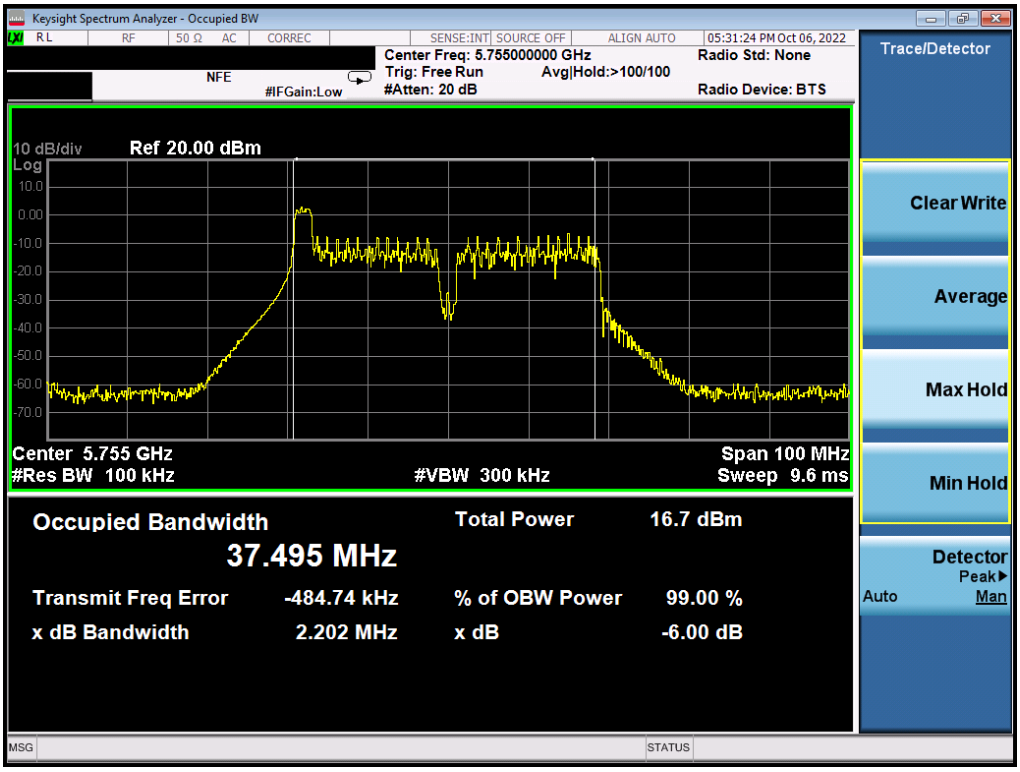
Plot 7-124. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 149)



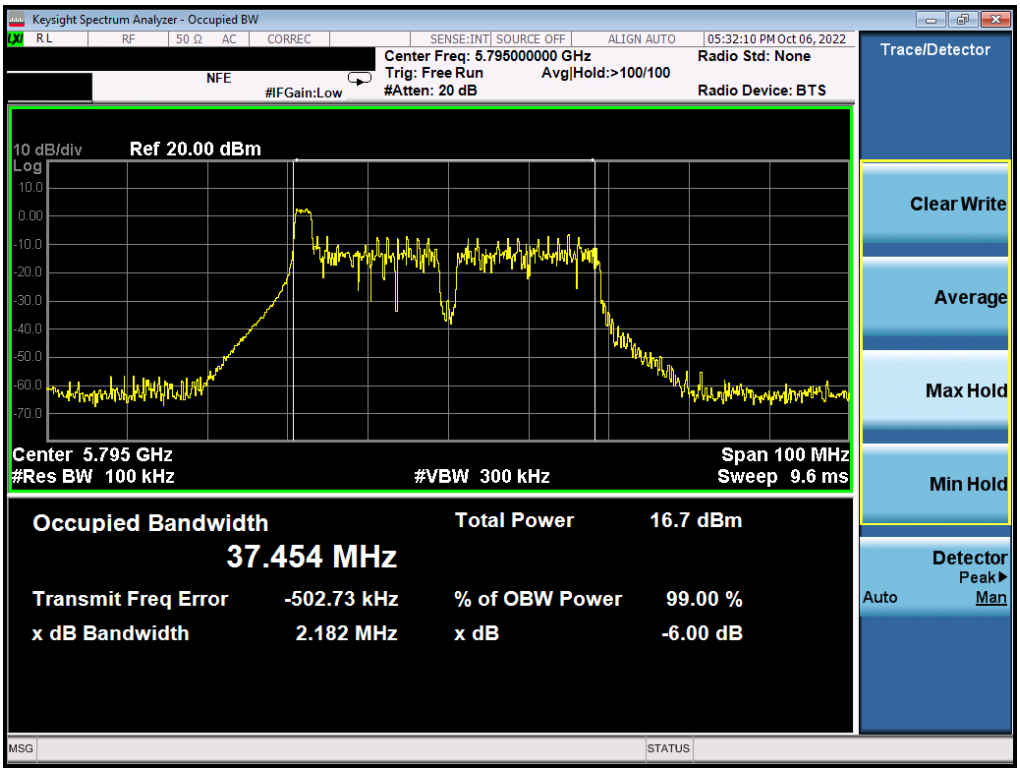
Plot 7-125. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 157)



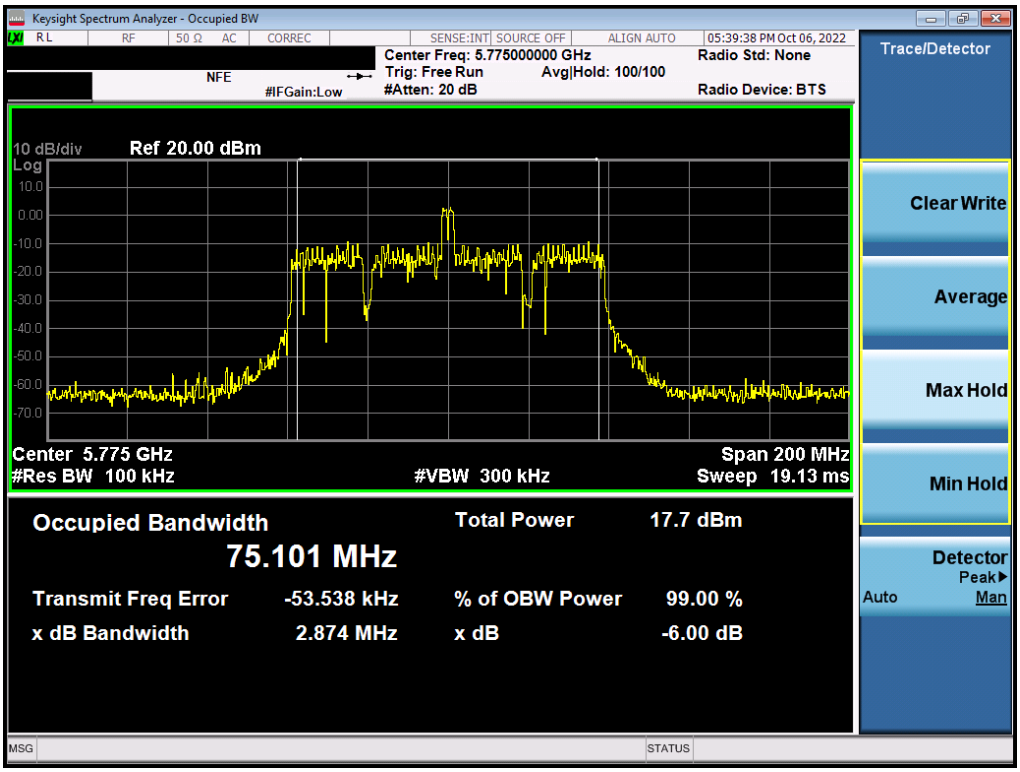
Plot 7-126. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 165)



Plot 7-127. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 151)



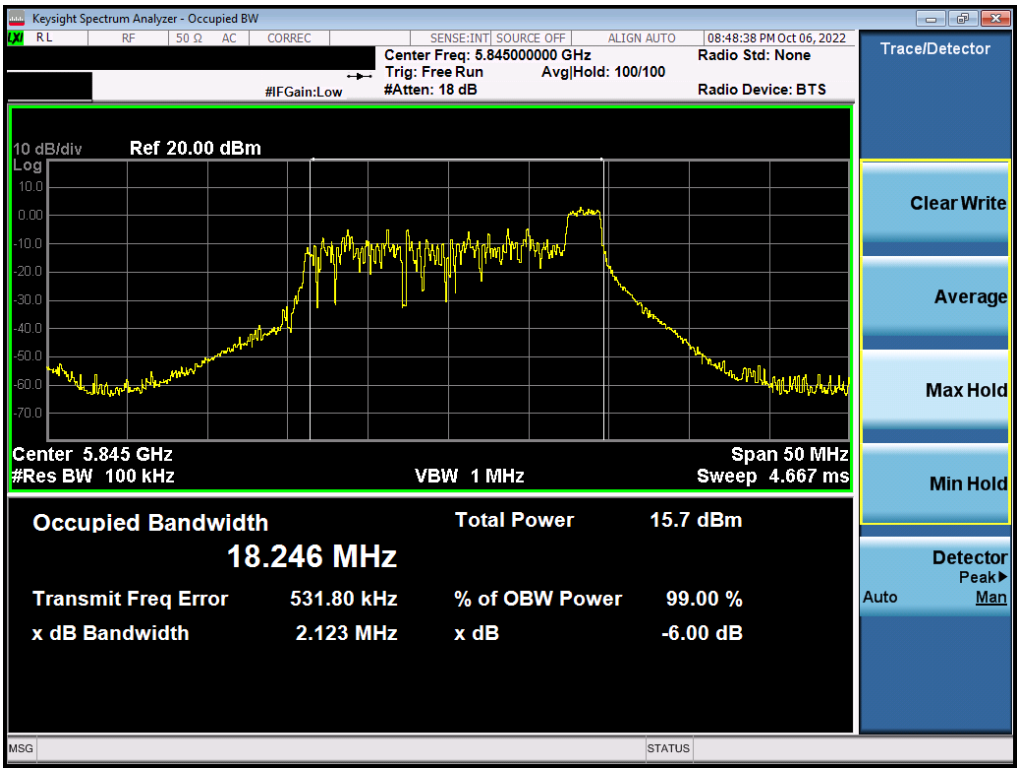
Plot 7-128. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 159)



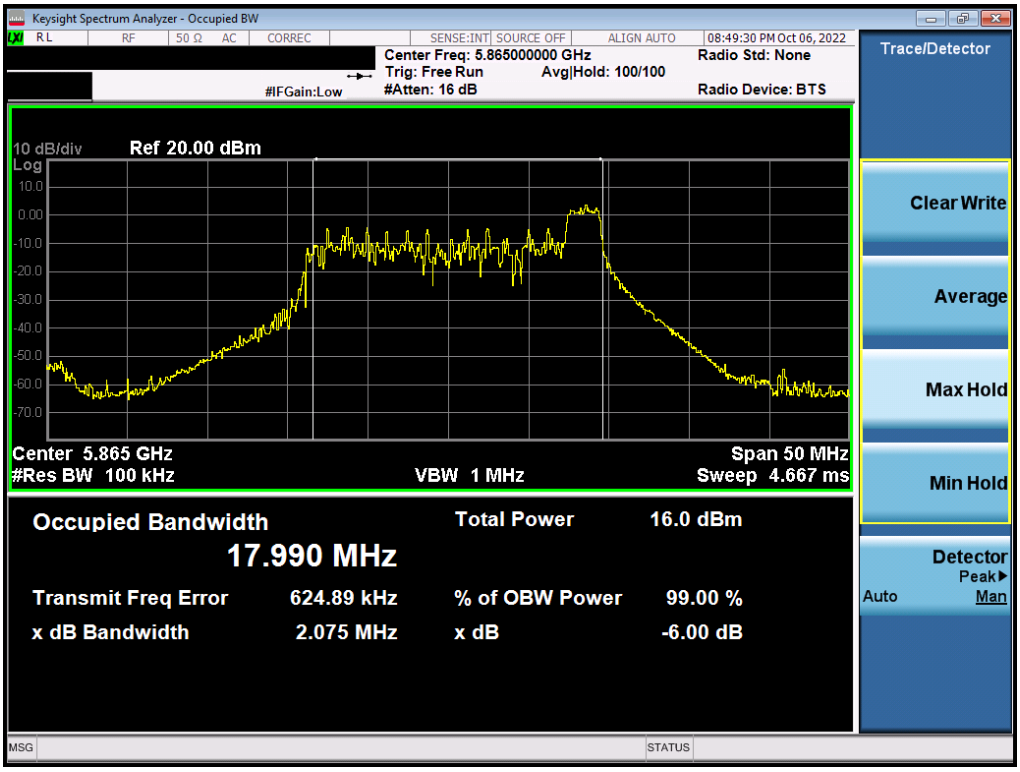
Plot 7-129. 6dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 155)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
Band 3/4	5845	169	ax (20MHz)	26T	MCS0	2.12
Band 4	5865	173	ax (20MHz)	26T	MCS0	2.08
	5885	177	ax (20MHz)	26T	MCS0	2.07
Band 3/4	5835	167	ax (40MHz)	26T	MCS0	2.17
Band 4	5875	175	ax (40MHz)	26T	MCS0	2.23
Band 3/4	5855	171	ax (80MHz)	26T	MCS0	2.80
	5815	163	ax (160MHz L)	26T	MCS0	3.04
	5815	163	ax (160MHz U)	26T	MCS0	3.09

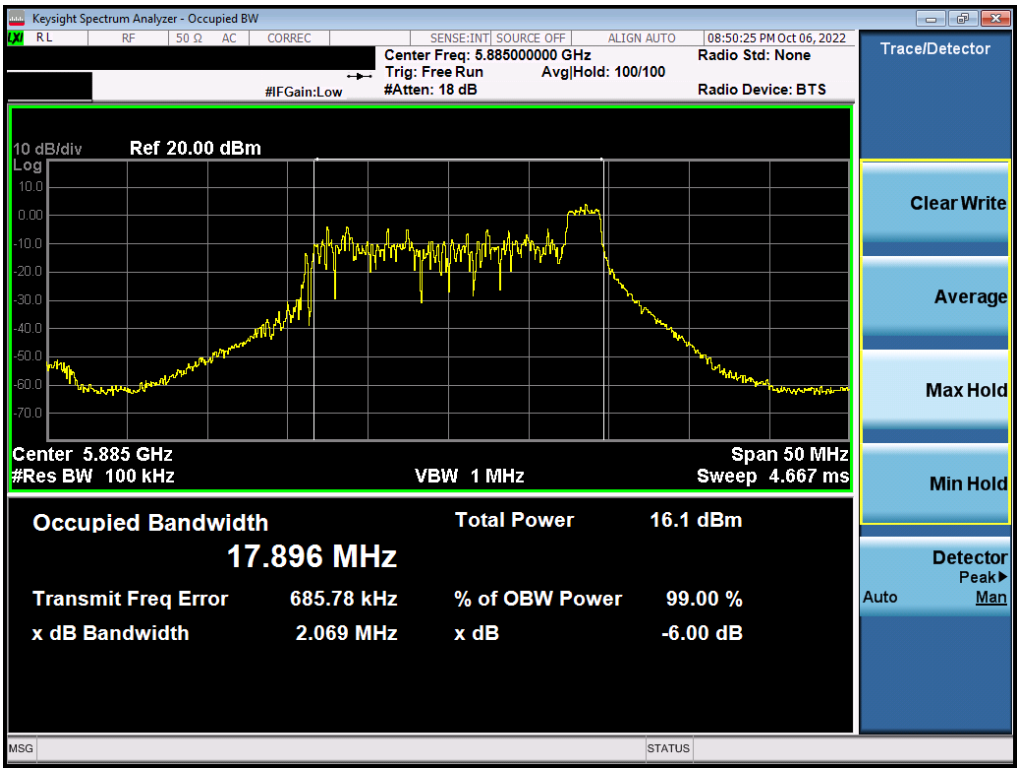
Table 7-11. Conducted Bandwidth Measurements MIMO ANT2 (26 Tones)



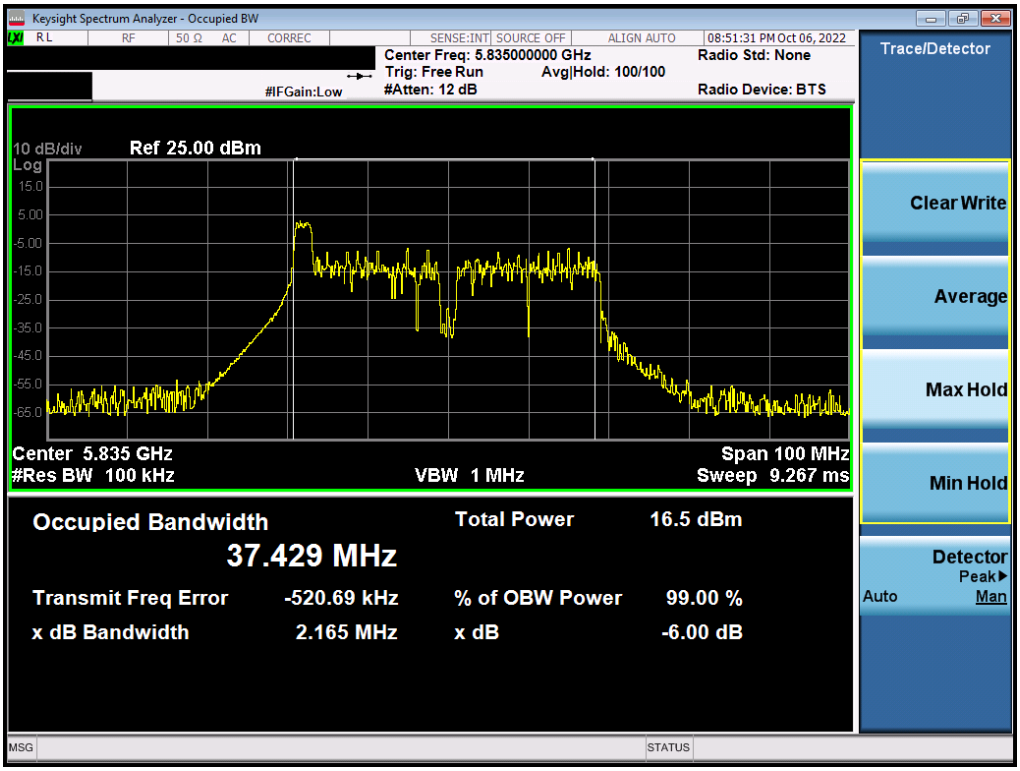
Plot 7-130. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 3/4) – Ch. 169)



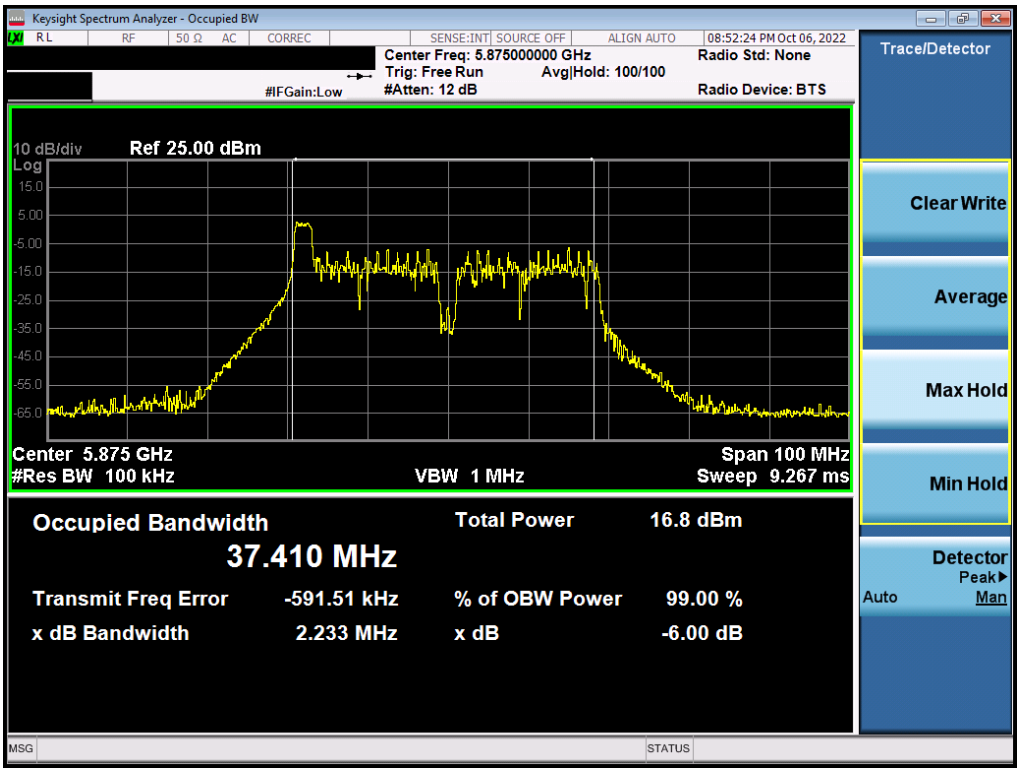
Plot 7-131. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 173)



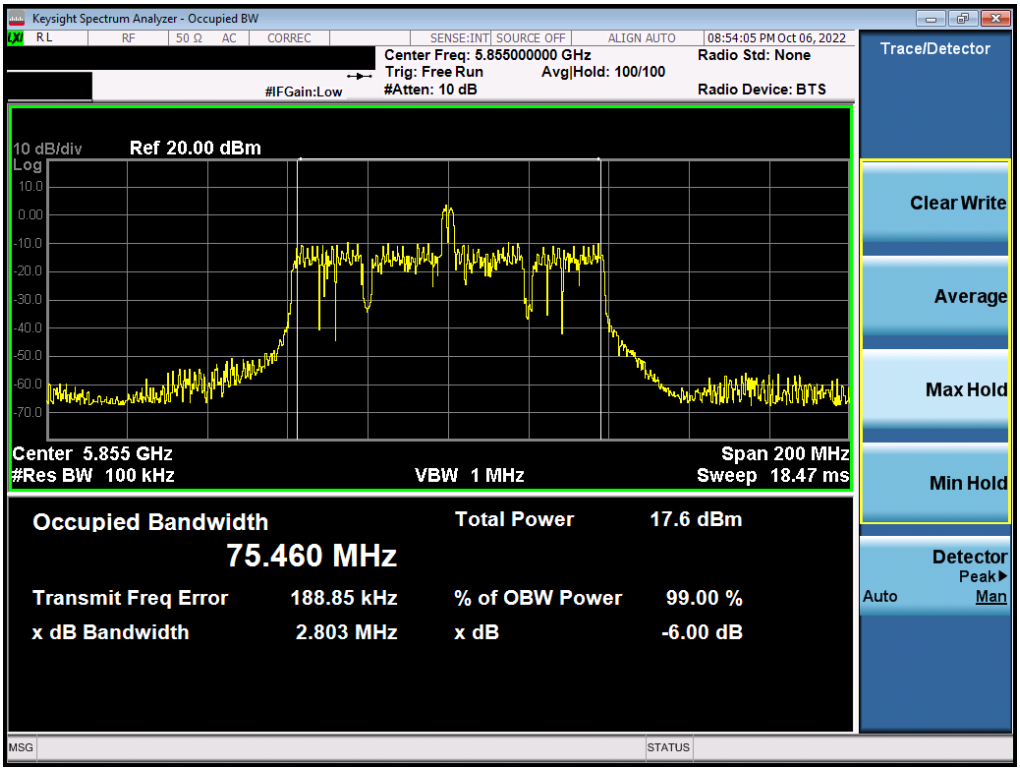
Plot 7-132. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 177)



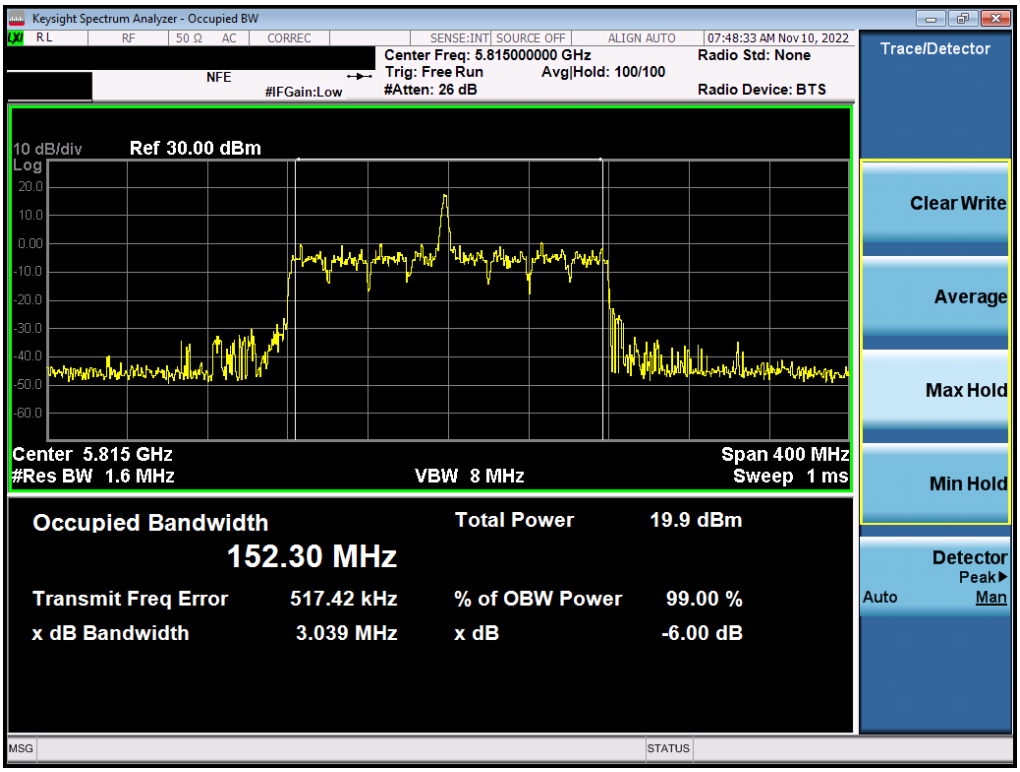
Plot 7-133. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 3/4) – Ch. 167)



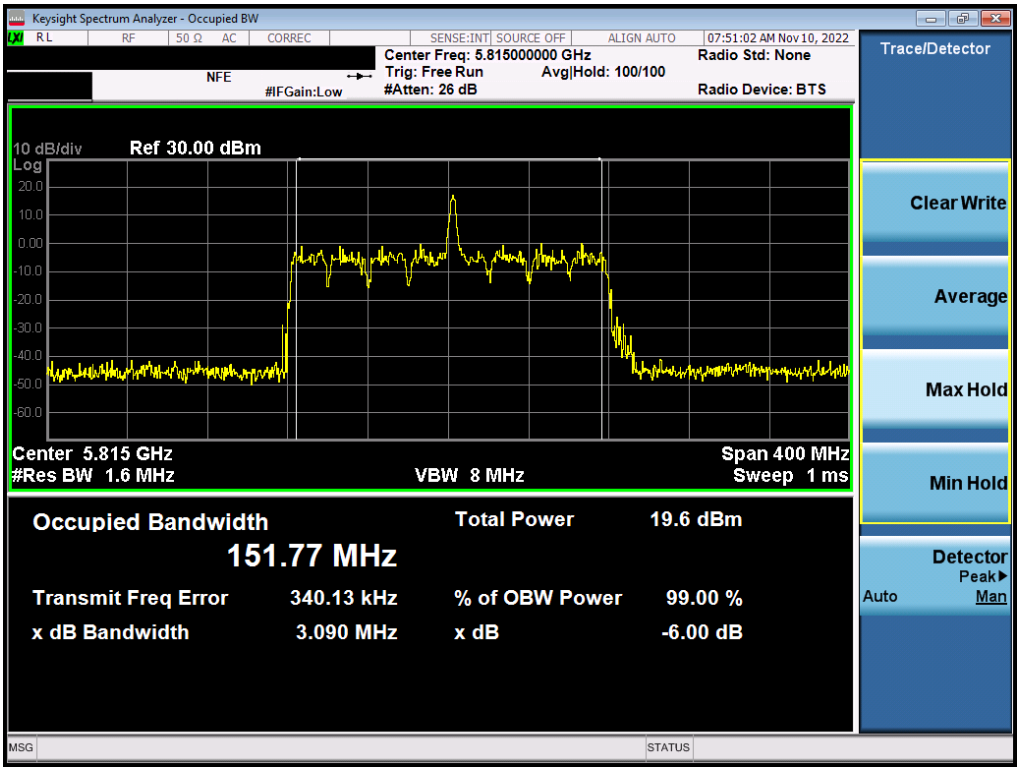
Plot 7-134. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 175)



Plot 7-135. 6dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 3/4) – Ch. 171)



Plot 7-136. 6dB Bandwidth Plot MIMO ANT2 (160MHz(L) BW 802.11ax – 26 Tones (UNII Band 3/4) – Ch. 163)

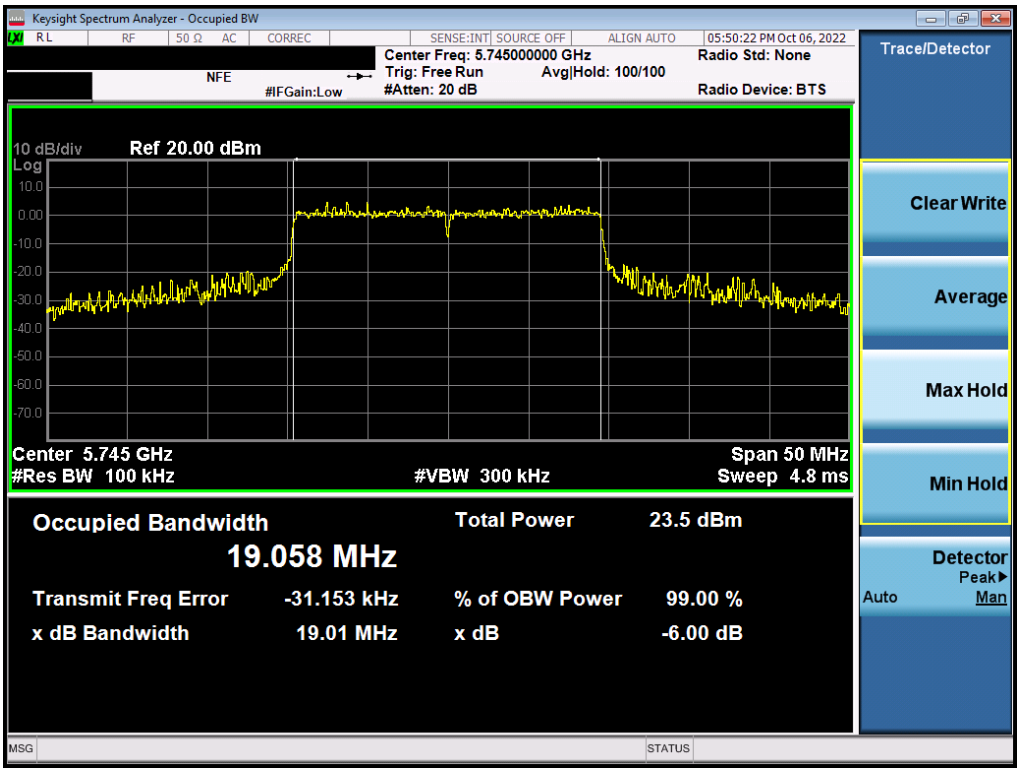


Plot 7-137. 6dB Bandwidth Plot MIMO ANT2 (160MHz(U) BW 802.11ax – 26 Tones (UNII Band 3/4) – Ch. 163)

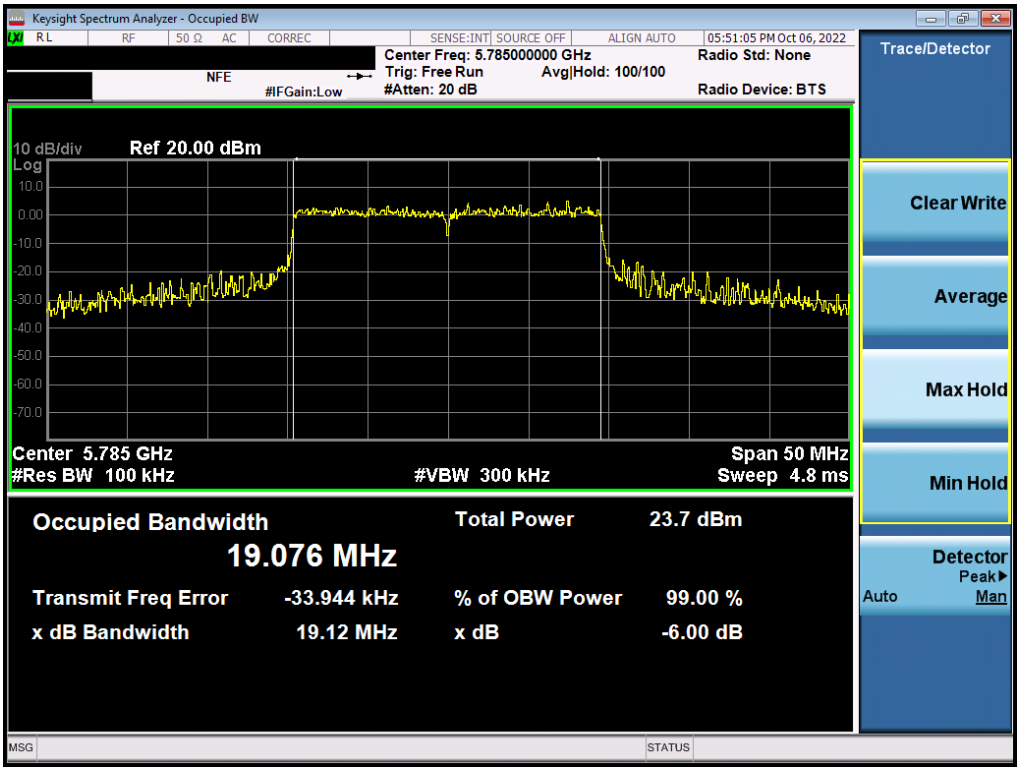
MIMO Antenna-2 6dB Bandwidth Measurements (Full Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
Band 3	5745	149	ax (20MHz)	242T	MCS0	19.01
	5785	157	ax (20MHz)	242T	MCS0	19.12
	5825	165	ax (20MHz)	242T	MCS0	19.07
	5755	151	ax (40MHz)	484T	MCS0	38.23
	5795	159	ax (40MHz)	484T	MCS0	38.21
	5775	155	ax (80MHz)	996T	MCS0	78.11

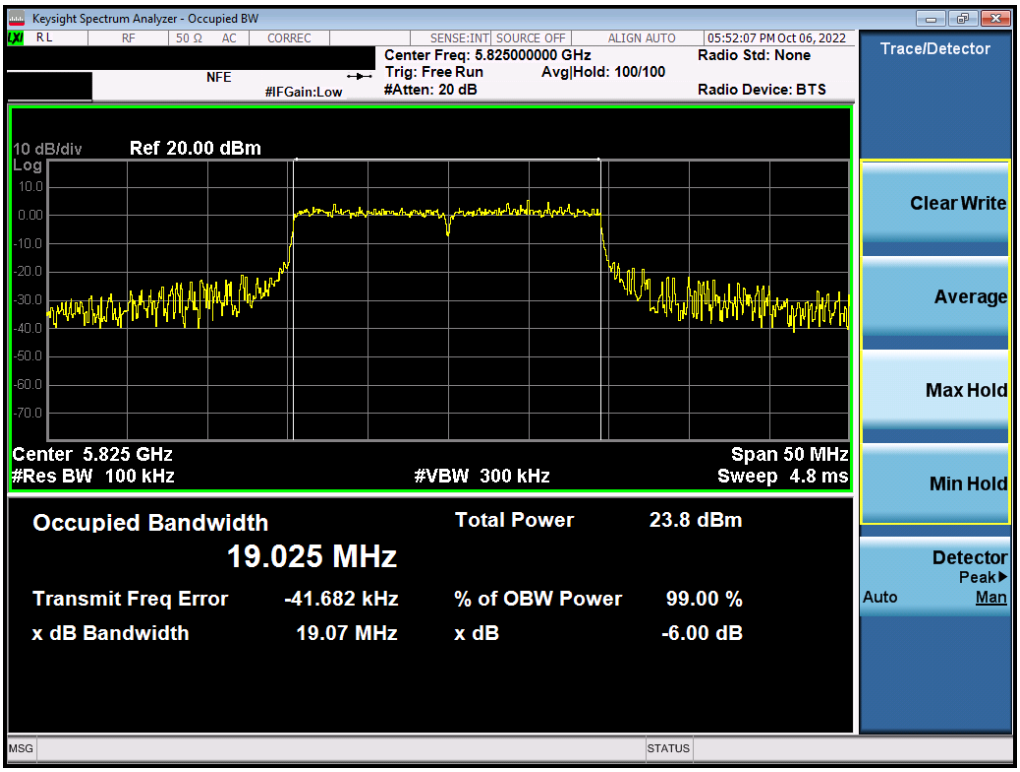
Table 7-12. Conducted Bandwidth Measurements MIMO ANT2 (Full Tones)



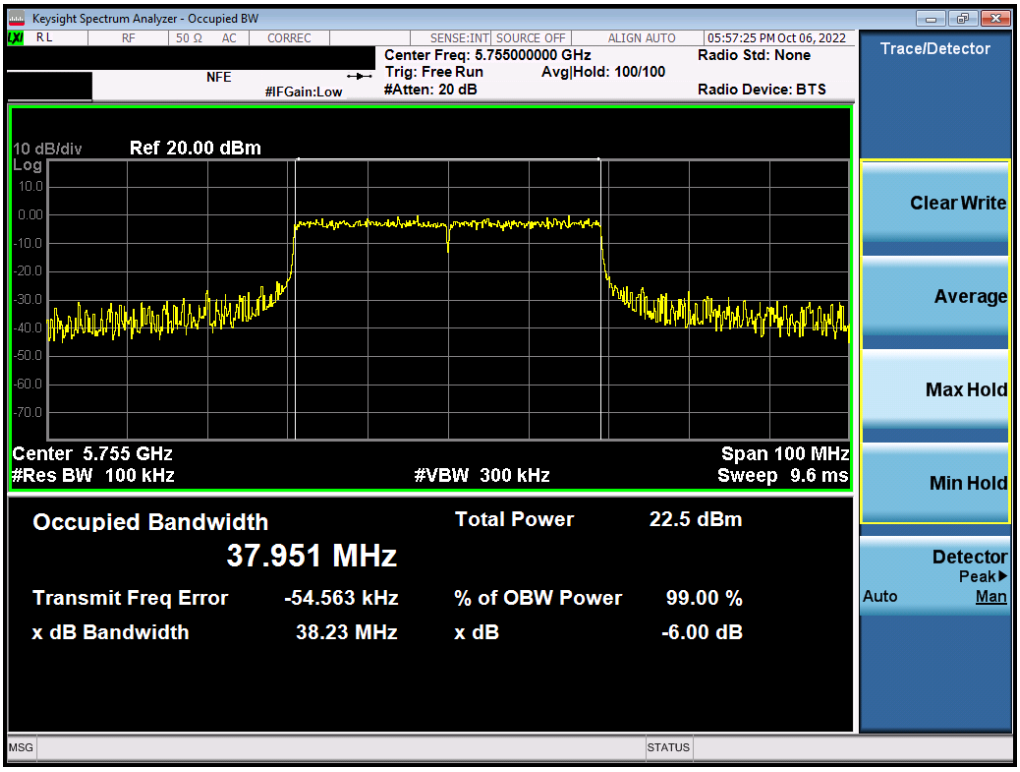
Plot 7-138. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 149)



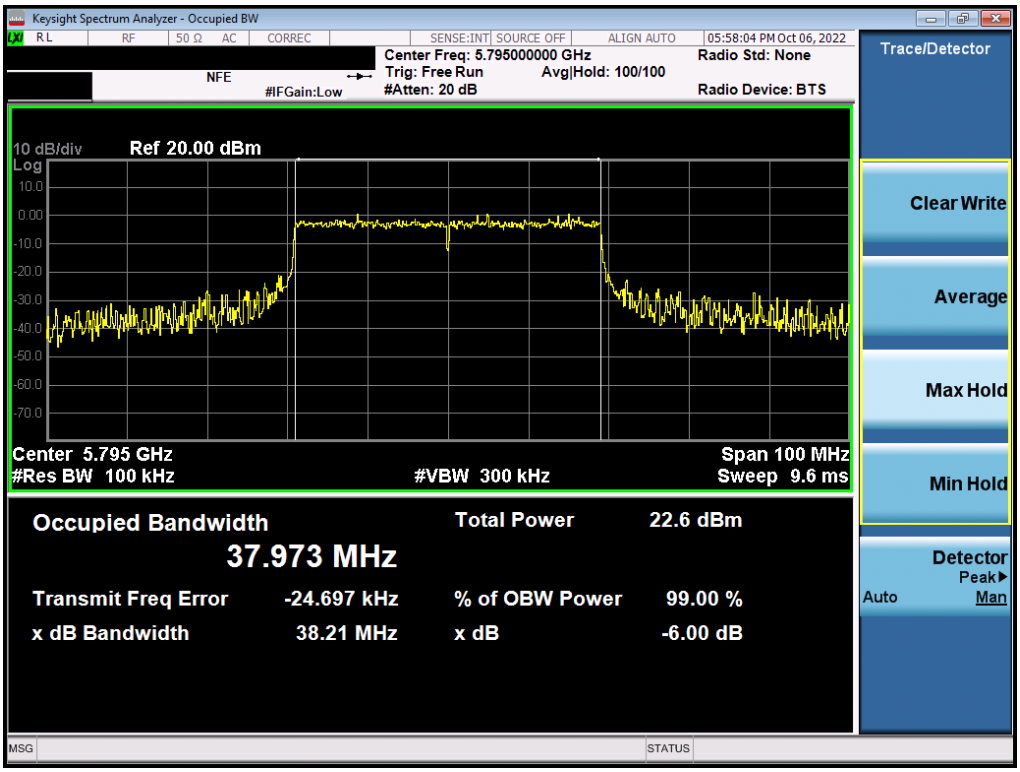
Plot 7-139. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 157)



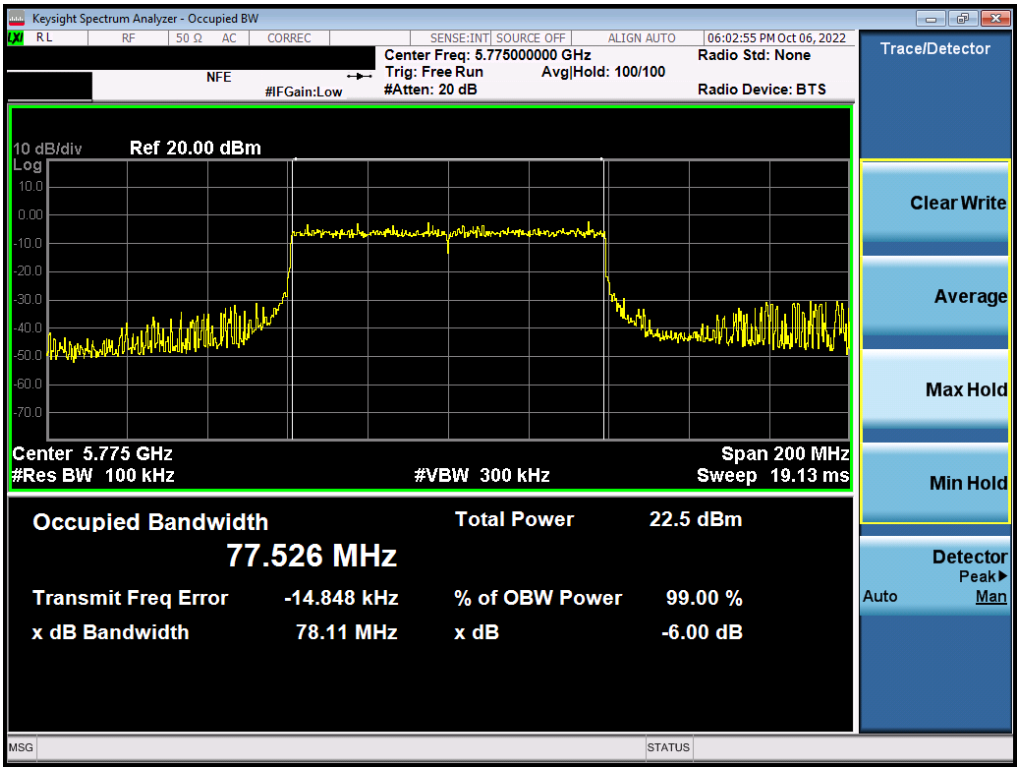
Plot 7-140. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 165)



Plot 7-141. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 3) – Ch. 151)



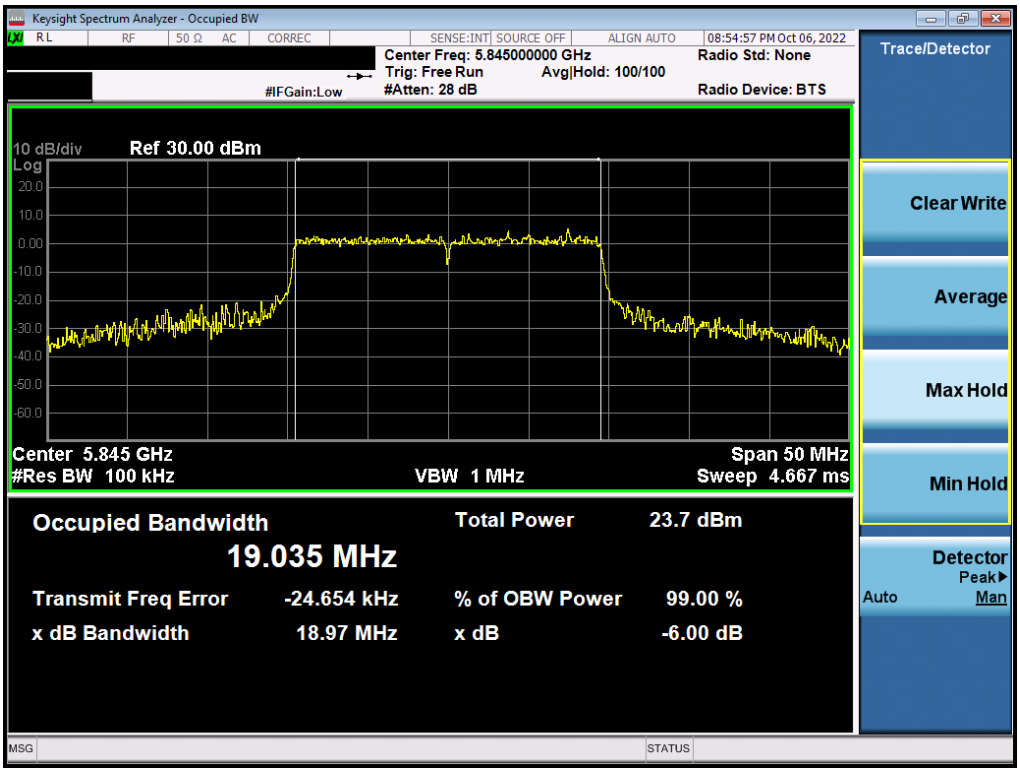
Plot 7-142. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 3) – Ch. 159)



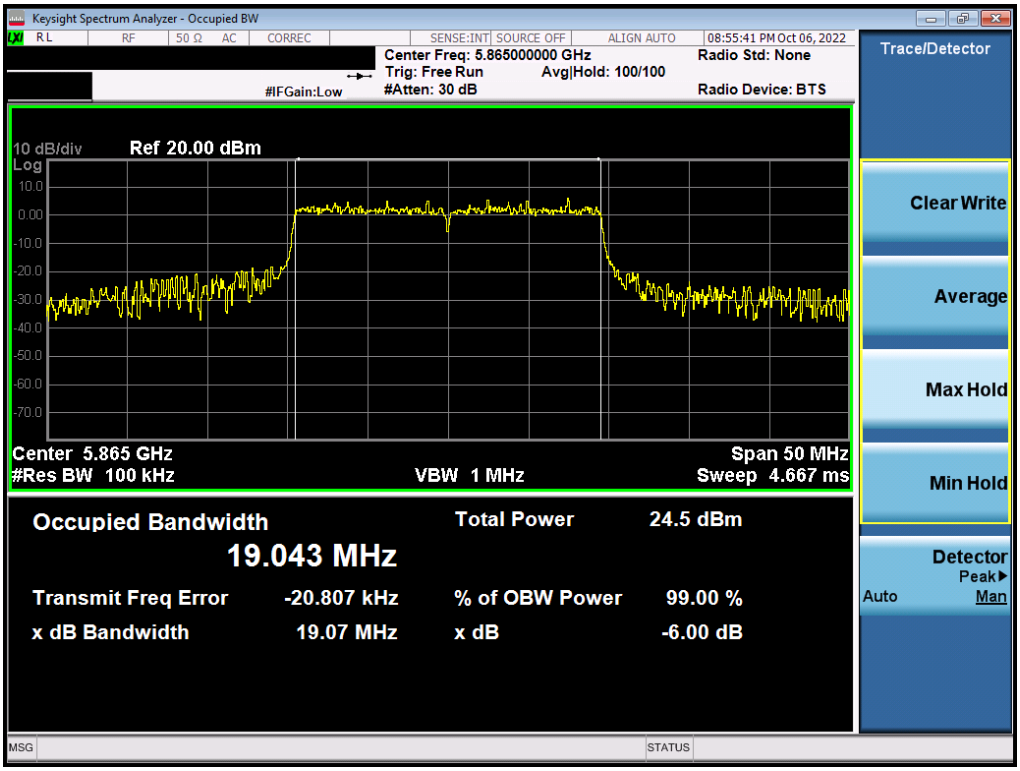
Plot 7-143. 6dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 3) – Ch. 155)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
Band 3/4	5845	169	ax (20MHz)	242T	MCS0	18.97
Band 4	5865	173	ax (20MHz)	242T	MCS0	19.07
	5885	177	ax (20MHz)	242T	MCS0	19.09
Band 3/4	5835	167	ax (40MHz)	484T	MCS0	38.17
Band 4	5875	175	ax (40MHz)	484T	MCS0	38.12
Band 3/4	5855	171	ax (80MHz)	996T	MCS0	78.16
	5815	163	ax (160MHz)	996*2T	MCS0	156.50

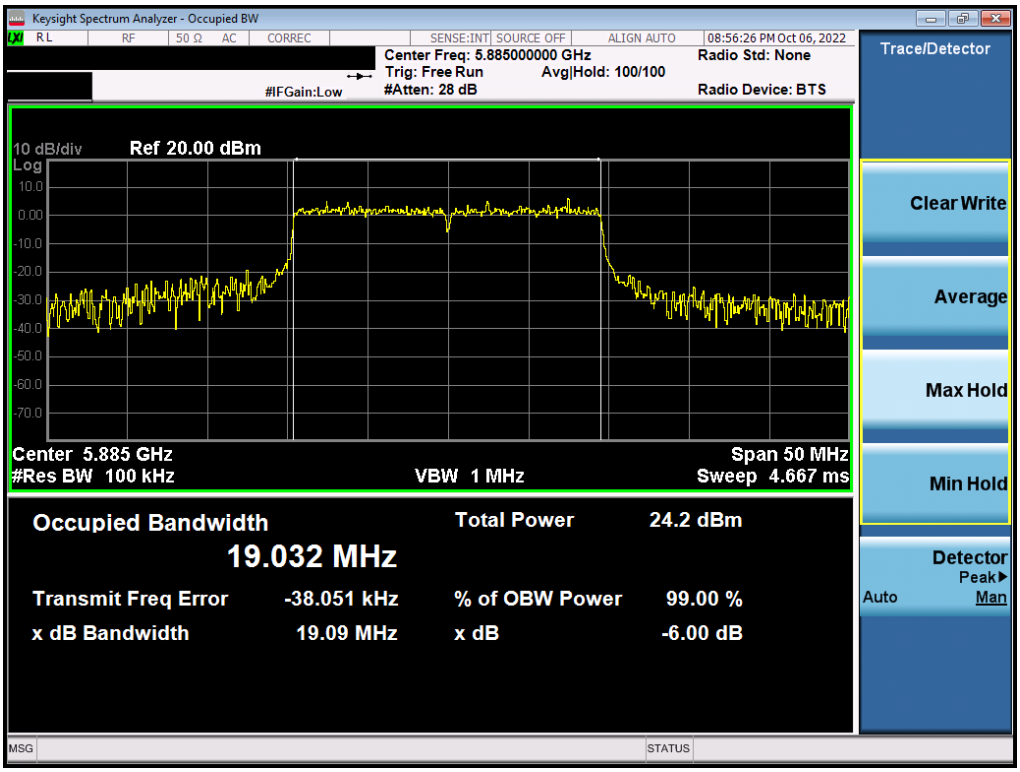
Table 7-13. Conducted Bandwidth Measurements MIMO ANT2 (Full Tones)



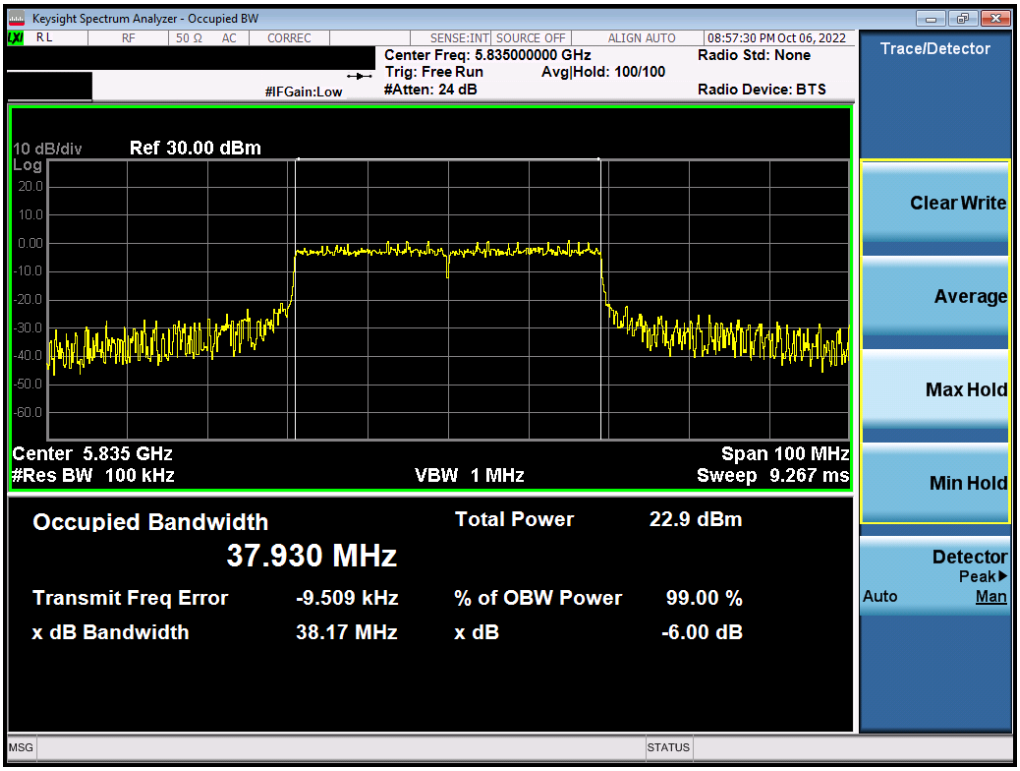
Plot 7-144. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 3/4) – Ch. 169)



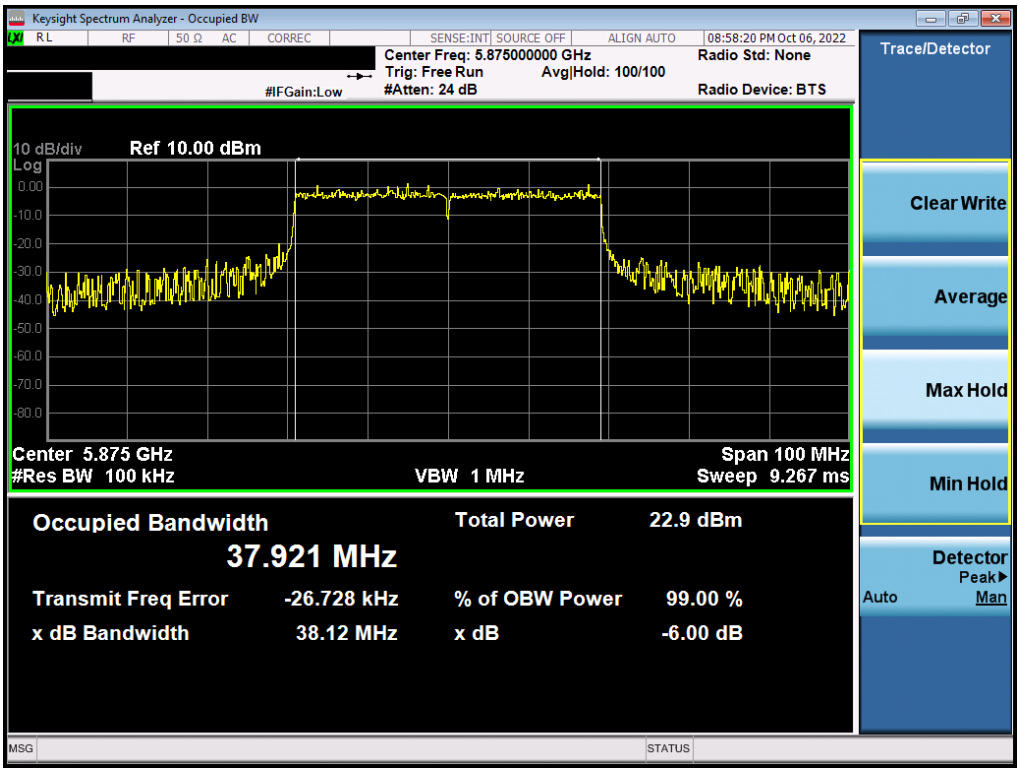
Plot 7-145. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 173)



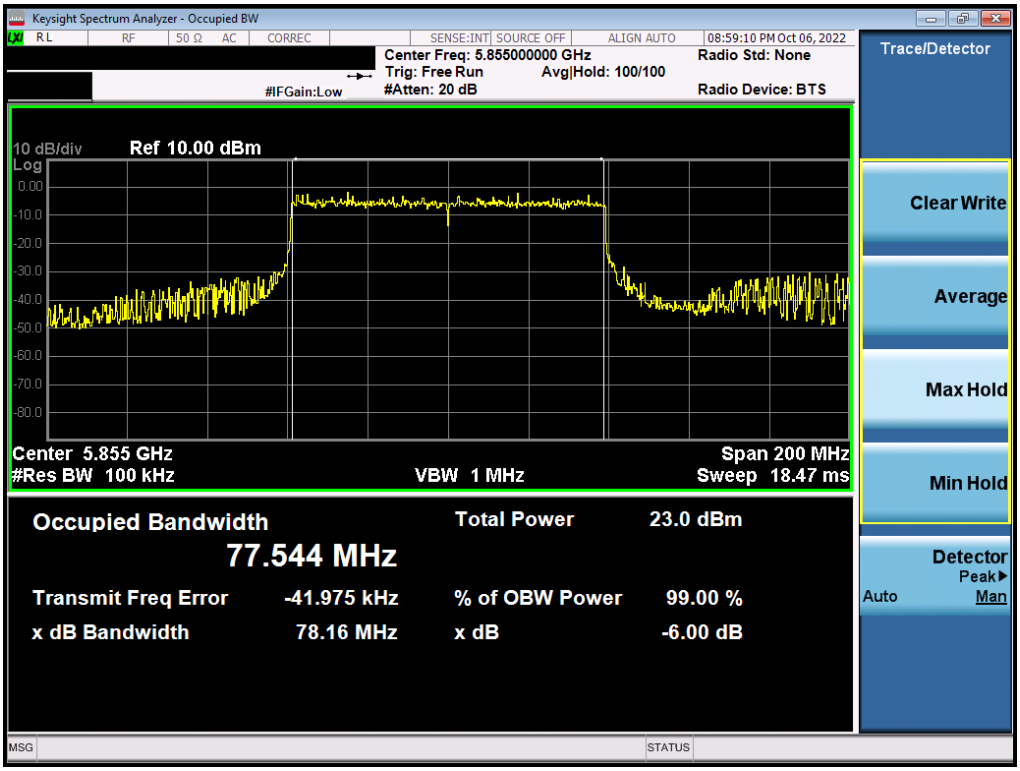
Plot 7-146. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 177)



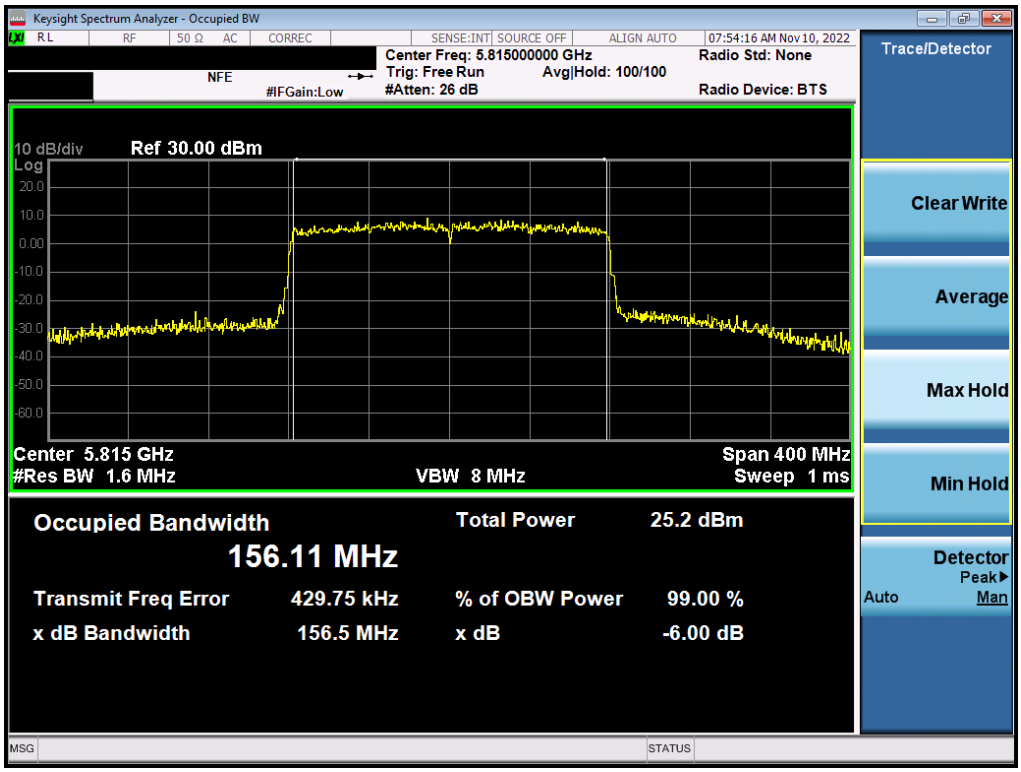
Plot 7-147. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 3/4) – Ch. 167)



Plot 7-148. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 3) – Ch. 175)



Plot 7-149. 6dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 3/4) – Ch. 171)



Plot 7-150. 6dB Bandwidth Plot MIMO ANT2 (160MHz BW 802.11ax – 996*2 Tones (UNII Band 3/4) – Ch. 163)

7.4 UNII Output Power Measurement – 802.11ax OFDMA

§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$_{10}$(19.26) = 23.85dBm. 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$_{10}$(19.83) = 23.97dBm. 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.

In the 5.850 – 5.895 GHz band, the maximum permissible e.i.r.p is 30dBm.

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

MIMO Conducted Output Power Measurements (26 Tones)

5GHz (20MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
					0			4			8								
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO						
	5180	36	AVG	26T	8.68	8.75	11.73	8.45	8.65	11.56	8.59	8.86	11.74	23.98	-12.24	-0.99	10.75	30.00	-19.25
	5200	40	AVG	26T	8.59	8.73	11.67	8.45	8.67	11.57	8.57	8.82	11.71	23.98	-12.27	-0.99	10.72	30.00	-19.28
	5240	48	AVG	26T	8.79	8.64	11.73	8.46	8.39	11.44	8.72	8.75	11.75	23.98	-12.23	-0.99	10.76	30.00	-19.24
	5260	52	AVG	26T	8.97	8.84	11.92	8.72	8.49	11.62	8.86	8.91	11.90	23.85	-11.93	0.40	12.32	29.85	-17.53
	5280	56	AVG	26T	8.91	8.82	11.88	8.49	8.52	11.52	8.82	8.92	11.88	23.85	-11.97	0.40	12.28	29.85	-17.57
	5320	64	AVG	26T	8.64	8.43	11.55	8.53	8.34	11.45	8.99	8.93	11.97	23.85	-11.88	0.40	12.37	29.85	-17.48
	5500	100	AVG	26T	8.49	8.34	11.43	8.84	8.86	11.86	8.51	8.53	11.53	23.97	-12.11	-0.81	11.05	29.97	-18.92
	5600	120	AVG	26T	8.86	8.39	11.64	8.81	8.52	11.68	8.90	8.61	11.77	23.97	-12.20	-0.81	10.96	29.97	-19.01
	5720	144	AVG	26T	8.99	8.45	11.74	8.98	8.37	11.70	8.99	8.55	11.79	23.97	-12.18	-0.81	10.98	29.97	-18.99
	5745	149	AVG	26T	8.95	8.39	11.69	8.84	8.36	11.62	8.95	8.52	11.75	30.00	-18.25	-0.58	11.17	36.00	-24.83
	5785	157	AVG	26T	8.82	8.43	11.64	8.73	8.37	11.56	8.85	8.51	11.69	30.00	-18.31	-0.58	11.11	36.00	-24.89
	5825	165	AVG	26T	8.88	8.12	11.53	8.78	8.15	11.49	8.72	8.15	11.45	30.00	-18.47	-0.58	10.95	36.00	-25.05
	5845	169	AVG	26T	8.75	8.59	11.68	8.40	8.19	11.31	8.87	8.65	11.77	-	-	-0.81	10.96	30.00	-19.04
	5865	173	AVG	26T	8.64	8.74	11.70	8.30	8.18	11.25	8.84	8.65	11.75	-	-	-0.81	10.94	30.00	-19.06
	5885	177	AVG	26T	8.73	8.60	11.68	8.37	8.04	11.22	8.81	8.42	11.63	-	-	-0.81	10.87	30.00	-19.13

Table 7-14. MIMO 20MHz BW (UNII) Maximum Conducted Output Power (26 Tones)

5GHz (40MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
					0			8			17								
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO						
	5190	38	AVG	26T	8.93	8.84	11.90	8.68	8.78	11.74	8.42	8.76	11.60	23.98	-12.08	-0.99	10.91	30.00	-19.09
	5230	46	AVG	26T	8.83	8.42	11.64	8.65	8.49	11.58	8.61	8.64	11.64	23.98	-12.34	-0.99	10.65	30.00	-19.35
	5270	54	AVG	26T	8.86	8.51	11.70	8.63	8.47	11.56	8.65	8.80	11.74	23.85	-12.11	0.40	12.14	29.85	-17.71
	5310	62	AVG	26T	8.99	8.59	11.80	8.72	8.46	11.60	8.86	8.79	11.84	23.85	-12.01	0.40	12.24	29.85	-17.61
	5510	102	AVG	26T	8.87	8.51	11.70	8.94	8.91	11.94	8.85	8.88	11.88	23.97	-12.03	-0.81	11.13	29.97	-18.84
	5590	118	AVG	26T	8.89	8.59	11.75	8.99	8.54	11.78	8.82	8.57	11.71	23.97	-12.19	-0.81	10.97	29.97	-19.00
	5710	142	AVG	26T	8.99	8.49	11.76	8.99	8.39	11.71	8.99	8.47	11.75	23.97	-12.21	-0.81	10.95	29.97	-19.02
	5755	151	AVG	26T	8.78	8.90	11.85	8.71	8.78	11.76	8.44	8.75	11.61	30.00	-18.15	-0.58	11.27	36.00	-24.73
	5795	159	AVG	26T	8.70	8.94	11.83	8.47	8.85	11.67	8.39	8.73	11.57	30.00	-18.17	-0.58	11.25	36.00	-24.75
	5835	167	AVG	26T	8.62	8.36	11.50	8.42	8.24	11.34	8.73	8.55	11.65	-	-	-0.81	10.84	30.00	-19.16
	5875	175	AVG	26T	8.51	8.59	11.56	8.34	8.40	11.38	8.69	8.62	11.67	-	-	-0.81	10.86	30.00	-19.14

Table 7-15. MIMO 40MHz BW (UNII) Maximum Conducted Output Power (26 Tones)

5GHz (80MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
					0			18			36								
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO						
	5210	42	AVG	26T	8.82	8.05	11.46	8.72	8.28	11.52	8.74	8.75	11.76	23.98	-12.22	-0.99	10.77	30.00	-19.23
	5290	58	AVG	26T	8.86	8.24	11.57	8.69	8.42	11.57	8.71	8.87	11.80	23.85	-12.05	0.40	12.20	29.85	-17.65
	5530	106	AVG	26T	8.99	8.35	11.69	8.82	8.45	11.65	8.59	8.56	11.59	23.97	-12.28	-0.81	10.88	29.97	-19.09
	5610	122	AVG	26T	8.91	8.19	11.58	8.99	8.57	11.80	8.99	8.64	11.83	23.97	-12.14	-0.81	11.02	29.97	-18.95
	5690	138	AVG	26T	8.89	7.77	11.38	8.97	8.07	11.55	8.82	8.09	11.48	23.97	-12.42	-0.81	10.74	29.97	-19.23
	5775	155	AVG	26T	8.99	8.17	11.61	8.99	8.48	11.75	8.97	8.36	11.69	30.00	-18.25	-0.58	11.17	36.00	-24.83
	5855	171	AVG	26T	8.50	8.44	11.48	8.50	8.32	11.42	8.97	8.57	11.79	-	-	-0.81	10.98	28.80	-17.82

Table 7-16. MIMO 80MHz BW (UNII) Maximum Conducted Output Power (26 Tones)

5GHz (160MHz BW Lower)	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
					0			18			36								
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO						
	5250	50	AVG	26T	8.95	8.21	11.61	8.98	8.22	11.63	8.74	8.24	11.51	23.47	-11.84	0.40	12.03	22.39	-10.36
	5570	114	AVG	26T	8.98	7.79	11.44	8.97	8.05	11.54	8.98	8.20	11.62	22.80	-11.18	-0.81	10.81	28.80	-17.99
	5815	163	AVG	26T	8.48	8.46	11.48	8.69	8.80	11.75	8.84	8.95	11.91	-	-	-0.58	11.33	30.00	-18.67

Table 7-17. MIMO 160MHz BW (L) (UNII) Maximum Conducted Output Power (26 Tones)

5GHz (160MHz BW Upper)	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
					0			18			36								
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO						
	5250	50	AVG	26T	8.82	8.23	11.55	8.71	8.60	11.67	8.63	8.97	11.81	23.47	-11.66	0.40	12.21	22.39	-10.18
	5570	114	AVG	26T	8.99	8.58	11.80	9.11	8.66	11.90	8.81	8.56	11.70	22.80	-10.90	-0.81	11.09	28.80	-17.71
	5815	163	AVG	26T	8.99	8.89	11.95	8.89	8.90	11.91	8.56	8.49	11.53	-	-	-0.58	11.37	30.00	-18.63

Table 7-18. MIMO 160MHz BW (U) (UNII) Maximum Conducted Output Power (26 Tones)

MIMO Conducted Output Power Measurements (52 Tones)

5GHz (20MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
					37			39			40								
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO						
	5180	36	AVG	52T	10.71	10.99	13.86	10.45	10.88	13.68	10.67	10.99	13.84	23.98	-10.12	-0.99	12.87	30.00	-17.13
	5200	40	AVG	52T	10.70	10.99	13.86	10.42	10.81	13.63	10.60	10.98	13.80	23.98	-10.12	-0.99	12.87	30.00	-17.13
	5240	48	AVG	52T	10.71	10.95	13.84	10.41	10.86	13.65	10.63	10.97	13.81	23.98	-10.14	-0.99	12.85	30.00	-17.15
	5260	52	AVG	52T	10.58	10.68	13.64	10.55	10.62	13.60	10.47	10.71	13.60	23.85	-10.21	0.40	14.04	29.85	-15.81
	5280	56	AVG	52T	10.51	10.67	13.60	10.23	10.58	13.42	10.39	10.73	13.57	23.85	-10.25	0.40	14.00	29.85	-15.85
	5320	64	AVG	52T	10.81	10.77	13.80	10.44	10.50	13.48	10.68	10.74	13.72	23.85	-10.05	0.40	14.20	29.85	-15.65
	5500	100	AVG	52T	10.68	10.65	13.68	10.77	10.87	13.83	10.67	10.69	13.69	23.97	-10.14	-0.81	13.02	29.97	-16.95
	5600	120	AVG	52T	10.51	10.24	13.39	10.98	10.47	13.74	10.57	10.40	13.50	23.97	-10.23	-0.81	12.93	29.97	-17.04
	5720	144	AVG	52T	10.79	10.19	13.51	10.99	10.11	13.58	10.79	10.25	13.54	23.97	-10.39	-0.81	12.77	29.97	-17.20
	5745	149	AVG	52T	10.99	10.58	13.80	10.84	10.46	13.66	10.99	10.67	13.84	30.00	-16.16	-0.58	13.26	36.00	-22.74
	5785	157	AVG	52T	10.89	10.49	13.70	10.93	10.46	13.71	10.78	10.23	13.52	30.00	-16.29	-0.58	13.13	36.00	-22.87
	5825	165	AVG	52T	10.98	10.13	13.59	10.97	10.16	13.59	10.98	10.05	13.55	30.00	-16.41	-0.58	13.01	36.00	-22.99
	5845	169	AVG	52T	10.99	10.37	13.70	10.85	10.16	13.53	10.43	10.99	13.73	-	-	-0.81	12.92	30.00	-17.08
	5865	173	AVG	52T	10.98	10.39	13.71	10.81	10.17	13.51	10.37	10.99	13.70	-	-	-0.81	12.90	30.00	-17.10
	5885	177	AVG	52T	10.89	10.28	13.60	10.70	10.07	13.41	10.94	10.27	13.63	-	-	-0.81	12.82	30.00	-17.18

Table 7-19. MIMO 20MHz BW (UNII) Maximum Conducted Output Power (52 Tones)

5GHz (40MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
					37			40			44								
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO						
	5190	38	AVG	52T	10.98	10.96	13.98	10.55	10.81	13.69	10.73	10.96	13.86	23.98	-10.00	-0.99	12.99	30.00	-17.01
	5230	46	AVG	52T	10.82	10.33	13.59	10.65	10.38	13.53	10.58	10.47	13.54	23.98	-10.39	-0.99	12.60	30.00	-17.40
	5270	54	AVG	52T	10.88	10.63	13.77	10.49	10.42	13.47	10.61	10.74	13.69	23.85	-10.08	0.40	14.17	29.85	-15.68
	5310	62	AVG	52T	10.99	10.63	13.82	10.73	10.46	13.61	10.81	10.74	13.79	23.85	-10.03	0.40	14.22	29.85	-15.63
	5510	102	AVG	52T	10.92	10.57	13.76	10.99	10.79	13.90	10.94	10.76	13.86	23.97	-10.07	-0.81	13.09	29.97	-16.88
	5590	118	AVG	52T	10.85	10.14	13.52	10.64	10.10	13.39	10.69	10.38	13.55	23.97	-10.42	-0.81	12.74	29.97	-17.23
	5710	142	AVG	52T	10.92	10.16	13.57	10.83	10.05	13.47	10.98	10.23	13.63	23.97	-10.34	-0.81	12.82	29.97	-17.15
	5755	151	AVG	52T	10.98	10.58	13.79	10.98	10.38	13.70	10.95	10.57	13.77	30.00	-16.21	-0.58	13.21	36.00	-22.79
	5795	159	AVG	52T	10.95	10.60	13.79	10.99	10.38	13.71	10.56	10.11	13.35	30.00	-16.21	-0.58	13.21	36.00	-22.79
	5835	167	AVG	52T	10.99	10.40	13.72	10.99	10.24	13.64	10.33	10.15	13.25	-	-	-0.81	12.91	30.00	-17.09
	5875	175	AVG	52T	10.97	10.53	13.76	10.82	10.36	13.61	10.13	10.11	13.13	-	-	-0.81	12.95	30.00	-17.05

Table 7-20. MIMO 40MHz BW (UNII) Maximum Conducted Output Power (52 Tones)

5GHz (80MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
					37			44			52								
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO						
	5210	42	AVG	52T	10.98	10.26	13.65	10.75	10.32	13.55	10.46	10.62	13.55	23.98	-10.33	-0.99	12.66	30.00	-17.34
	5290	58	AVG	52T	10.97	10.51	13.76	10.72	10.48	13.61	10.37	10.84	13.62	23.85	-10.09	0.40	14.16	29.85	-15.69
	5530	106	AVG	52T	10.99	10.72	13.87	10.93	10.75	13.85	10.92	10.85	13.90	23.97	-10.07	-0.81	13.09	29.97	-16.88
	5610	122	AVG	52T	10.95	10.05	13.53	10.85	10.15	13.52	10.71	10.63	13.68	23.97	-10.29	-0.81	12.87	29.97	-17.10
	5690	138	AVG	52T	10.97	9.96	13.50	10.97	9.99	13.52	11.25	10.43	13.87	23.97	-10.10	-0.81	13.06	29.97	-16.91
	5775	155	AVG	52T	10.74	10.06	13.42	10.96	10.39	13.69	10.79	10.13	13.48	30.00	-16.31	-0.58	13.11	36.00	-22.89
	5855	171	AVG	52T	10.91	10.35	13.65	10.91	10.25	13.60	10.37	10.03	13.21	-	-	-0.81	12.84	28.80	-15.96

Table 7-21. MIMO 80MHz BW (UNII) Maximum Conducted Output Power (52 Tones)

5GHz (160MHz BW Lower)	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
					37			44			52								
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO						
	5250	50	AVG	52T	10.98	10.05	13.55	10.98	10.14	13.59	10.75	10.43	13.60	23.47	-9.87	0.40	14.00	22.68	-8.68
	5570	114	AVG	52T	10.89	9.68	13.34	10.92	9.98	13.49	10.82	10.05	13.46	22.80	-9.31	-0.81	12.68	29.97	-17.29
	5815	163	AVG	52T	10.33	10.47	13.41	10.46	10.77	13.63	10.60	10.94	13.78	-	-	-0.58	13.20	30.00	-16.80

Table 7-22. MIMO 160MHz BW (L) (UNII) Maximum Conducted Output Power (52 Tones)

5GHz (160MHz BW Upper)	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
					37			44			52								
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO						
	5250	50	AVG	52T	10.56	10.43	13.51	10.62	10.71	13.68	10.67	10.05	13.38	23.47	-9.79	0.40	14.08	22.68	-8.60
	5570	114	AVG	52T	10.96	10.38	13.69	10.85	10.56	13.72	10.99	10.95	13.98	22.80	-8.82	-0.81	13.17	29.97	-16.80
	5815	163	AVG	52T	10.60	10.97	13.80	10.47	10.74	13.61	10.87	10.97	13.93	-	-	-0.58	13.35	30.00	-16.65

Table 7-23. MIMO 160MHz BW (U) (UNII) Maximum Conducted Output Power (52 Tones)

MIMO Conducted Output Power Measurements (106 Tones)

5GHz (20MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
					53			54								
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO						
	5180	36	AVG	106T	13.29	13.59	16.45	13.15	13.68	16.43	23.98	-7.53	-0.99	15.46	30.00	-14.54
	5200	40	AVG	106T	13.75	13.93	16.85	13.69	13.98	16.85	23.98	-7.13	-0.99	15.86	30.00	-14.14
	5240	48	AVG	106T	13.65	13.51	16.59	13.56	13.59	16.59	23.98	-7.39	-0.99	15.60	30.00	-14.40
	5260	52	AVG	106T	13.59	13.71	16.66	13.51	13.85	16.69	23.85	-7.16	0.40	17.09	29.85	-12.76
	5280	56	AVG	106T	13.57	13.71	16.65	13.48	13.78	16.64	23.85	-7.20	0.40	17.05	29.85	-12.80
	5320	64	AVG	106T	13.97	13.86	16.93	13.92	13.89	16.92	23.85	-6.92	0.40	17.33	29.85	-12.52
	5500	100	AVG	106T	13.52	13.84	16.69	13.53	13.97	16.77	23.97	-7.20	-0.81	15.96	29.97	-14.01
	5600	120	AVG	106T	13.98	13.48	16.75	13.98	13.65	16.83	23.97	-7.14	-0.81	16.02	29.97	-13.95
	5720	144	AVG	106T	13.88	13.25	16.59	13.88	13.34	16.63	23.97	-7.34	-0.81	15.82	29.97	-14.15
	5745	149	AVG	106T	13.99	13.50	16.76	13.90	13.56	16.74	30.00	-13.24	-0.58	16.18	36.00	-19.82
	5785	157	AVG	106T	13.95	13.66	16.82	13.95	13.68	16.83	30.00	-13.17	-0.58	16.25	36.00	-19.75
	5825	165	AVG	106T	13.98	13.05	16.55	13.95	13.10	16.56	30.00	-13.44	-0.58	15.98	36.00	-20.02
	5845	169	AVG	106T	13.99	13.43	16.73	13.60	12.83	16.24	-	-	-0.81	15.92	30.00	-14.08
	5865	173	AVG	106T	13.97	13.43	16.72	13.50	13.00	16.27	-	-	-0.81	15.91	30.00	-14.09
	5885	177	AVG	106T	13.78	13.45	16.63	13.99	13.39	16.71	-	-	-0.81	15.90	30.00	-14.10

Table 7-24. MIMO 20MHz BW (UNII) Maximum Conducted Output Power (106 Tones)

5GHz (40MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
					53			54			56								
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO						
	5190	38	AVG	106T	13.41	13.52	16.48	13.72	13.97	16.86	13.29	13.67	16.49	23.98	-7.12	-0.99	15.87	30.00	-14.13
	5230	46	AVG	106T	13.87	13.43	16.67	13.75	13.49	16.63	13.65	13.60	16.64	23.98	-7.31	-0.99	15.68	30.00	-14.32
	5270	54	AVG	106T	13.73	13.64	16.70	13.43	13.51	16.48	13.45	13.76	16.62	23.85	-7.15	0.40	17.10	29.85	-12.75
	5310	62	AVG	106T	13.99	13.75	16.88	13.91	13.65	16.79	13.86	13.84	16.86	23.85	-6.97	0.40	17.28	29.85	-12.57
	5510	102	AVG	106T	13.48	13.73	16.62	13.32	13.67	16.51	13.48	13.98	16.75	23.97	-7.22	-0.81	15.94	29.97	-14.03
	5590	118	AVG	106T	13.92	13.02	16.50	13.98	13.05	16.55	13.97	13.15	16.59	23.97	-7.38	-0.81	15.78	29.97	-14.19
	5710	142	AVG	106T	13.99	13.18	16.61	13.99	13.08	16.57	13.95	13.37	16.68	23.97	-7.29	-0.81	15.87	29.97	-14.10
	5755	151	AVG	106T	13.78	13.22	16.52	13.99	13.34	16.69	13.78	13.26	16.54	30.00	-13.31	-0.58	16.11	36.00	-19.89
	5795	159	AVG	106T	13.75	13.35	16.56	13.95	13.45	16.72	13.72	13.20	16.48	30.00	-13.28	-0.58	16.14	36.00	-19.86
	5835	167	AVG	106T	13.99	13.51	16.77	13.96	13.37	16.69	13.44	13.01	16.24	-	-	-0.81	15.96	30.00	-14.04
	5875	175	AVG	106T	13.97	13.59	16.79	13.84	13.43	16.65	13.99	13.58	16.80	-	-	-0.81	15.99	30.00	-14.01

Table 7-25. MIMO 40MHz BW (UNII) Maximum Conducted Output Power (106 Tones)

5GHz (80MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
					53			56			60								
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO						
	5210	42	AVG	106T	13.99	13.34	16.69	13.78	13.39	16.60	13.58	13.65	16.63	23.98	-7.29	-0.99	15.70	30.00	-14.30
	5290	58	AVG	106T	13.98	13.56	16.79	13.59	13.51	16.56	13.42	13.85	16.65	23.85	-7.06	0.40	17.19	29.85	-12.66
	5530	106	AVG	106T	13.67	13.51	16.60	13.50	13.56	16.54	13.74	13.98	16.87	23.97	-7.10	-0.81	16.06	29.97	-13.91
	5610	122	AVG	106T	13.89	12.89	16.43	13.99	12.99	16.53	13.98	13.25	16.64	23.97	-7.33	-0.81	15.83	29.97	-14.14
	5690	138	AVG	106T	13.98	12.92	16.49	13.95	12.97	16.50	13.95	13.48	16.73	23.97	-7.24	-0.81	15.92	29.97	-14.05
	5775	155	AVG	106T	13.92	13.22	16.59	13.91	13.38	16.66	13.25	13.59	16.43	30.00	-13.34	-0.58	16.08	36.00	-19.92
	5855	171	AVG	106T	13.95	13.32	16.66	13.97	13.24	16.63	13.77	13.00	16.41	-	-	-0.81	15.85	28.80	-12.95

Table 7-26. MIMO 80MHz BW (UNII) Maximum Conducted Output Power (106 Tones)

5GHz (160MHz BW Lower)	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
					53			56			60								
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO						
	5250	50	AVG	106T	13.98	12.68	16.39	13.78	12.75	16.31	13.76	13.26	16.53	23.47	-6.94	0.40	16.93	22.68	-5.75
	5570	114	AVG	106T	13.92	12.78	16.40	13.99	13.02	16.54	13.95	13.05	16.53	22.80	-6.26	-0.81	15.73	29.97	-14.24
	5815	163	AVG	106T	13.69	13.81	16.76	13.80	13.99	16.91	13.35	13.79	16.59	-	-	-0.58	16.33	30.00	-13.67

Table 7-27. MIMO 160MHz BW (L) (UNII) Maximum Conducted Output Power (106 Tones)

5GHz (160MHz BW Upper)	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
					53			56			60								
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO						
	5250	50	AVG	106T	13.99	13.72	16.87	13.97	13.95	16.97	13.45	13.75	16.61	23.47	-6.50	0.40	17.37	22.68	-5.31
	5570	114	AVG	106T	13.95	13.52	16.75	13.94	13.42	16.70	13.61	13.52	16.58	22.80	-6.05	-0.81	15.94	29.97	-14.03
	5815	163	AVG	106T	13.43	13.89	16.68	13.74	13.99	16.88	13.78	13.88	16.84	-	-	-0.58	16.30	30.00	-13.70

Table 7-28. MIMO 160MHz BW (U) (UNII) Maximum Conducted Output Power (106 Tones)

MIMO Conducted Output Power Measurements (242 Tones)

	Freq [MHz]	Channel	Detector	Tones	RU Index 61 ANT1	RU Index 61 ANT2	RU Index 61 MIMO	Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
5GHz (20MHz Bandwidth)	5180	36	AVG	242T	17.44	17.87	20.67	23.98	-3.31	-0.99	19.68	30.00	-10.32
	5200	40	AVG	242T	17.43	17.91	20.69	23.98	-3.29	-0.99	19.70	30.00	-10.30
	5240	48	AVG	242T	17.58	17.37	20.49	23.98	-3.49	-0.99	19.50	30.00	-10.50
	5260	52	AVG	242T	17.62	17.51	20.58	23.85	-3.27	0.40	20.98	29.85	-8.87
	5280	56	AVG	242T	17.61	17.47	20.55	23.85	-3.30	0.40	20.95	29.85	-8.90
	5320	64	AVG	242T	14.91	14.70	17.82	23.85	-6.03	0.40	18.22	29.85	-11.63
	5500	100	AVG	242T	15.23	14.37	17.83	23.97	-6.14	-0.81	17.02	29.97	-12.95
	5600	120	AVG	242T	17.86	17.87	20.88	23.97	-3.09	-0.81	20.07	29.97	-9.90
	5720	144	AVG	242T	17.95	17.47	20.73	23.97	-3.24	-0.81	19.92	29.97	-10.05
	5745	149	AVG	242T	17.90	17.44	20.69	30.00	-9.31	-0.58	20.11	36.00	-15.89
	5785	157	AVG	242T	17.55	17.68	20.63	30.00	-9.37	-0.58	20.05	36.00	-15.95
	5825	165	AVG	242T	17.65	17.63	20.65	30.00	-9.35	-0.58	20.07	36.00	-15.93
	5845	169	AVG	242T	17.86	17.67	20.77	-	-	-0.81	19.96	30.00	-10.04
	5865	173	AVG	242T	17.81	17.67	20.75	-	-	-0.81	19.94	30.00	-10.06
	5885	177	AVG	242T	17.69	17.85	20.78	-	-	-0.81	19.97	30.00	-10.03

Table 7-29. MIMO 20MHz BW (UNII) Maximum Conducted Output Power (242 Tones)

	Freq [MHz]	Channel	Detector	Tones	RU Index 61 ANT1	RU Index 61 ANT2	RU Index 61 MIMO	RU Index 62 ANT1	RU Index 62 ANT2	RU Index 62 MIMO	Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
5GHz (40MHz Bandwidth)	5190	38	AVG	242T	14.74	14.45	17.61	14.85	14.27	17.58	23.98	-6.37	-0.99	16.62	30.00	-13.38
	5230	46	AVG	242T	17.93	17.99	20.97	17.76	17.99	20.89	23.98	-3.01	-0.99	19.98	30.00	-10.02
	5270	54	AVG	242T	17.34	17.82	20.60	17.18	17.91	20.57	23.85	-3.25	0.40	21.00	29.85	-8.85
	5310	62	AVG	242T	14.76	14.62	17.70	14.86	14.54	17.71	23.85	-6.14	0.40	18.11	29.85	-11.74
	5510	102	AVG	242T	15.09	14.37	17.76	15.19	14.31	17.78	23.97	-6.19	-0.81	16.97	29.97	-13.00
	5590	118	AVG	242T	17.47	17.96	20.73	17.55	17.99	20.79	23.97	-3.18	-0.81	19.98	29.97	-9.99
	5710	142	AVG	242T	17.85	17.99	20.93	17.33	17.68	20.52	23.97	-3.04	-0.81	20.12	29.97	-9.85
	5755	151	AVG	242T	17.64	17.76	20.71	17.66	17.86	20.77	30.00	-9.23	-0.58	20.19	36.00	-15.81
	5795	159	AVG	242T	17.41	17.87	20.66	17.48	17.94	20.73	30.00	-9.27	-0.58	20.15	36.00	-15.85
	5835	167	AVG	242T	17.68	17.64	20.67	17.76	17.71	20.75	-	-	-0.81	19.94	30.00	-10.06
	5875	175	AVG	242T	17.55	17.68	20.63	17.67	17.68	20.68	-	-	-0.81	19.87	30.00	-10.13

Table 7-30. MIMO 40MHz BW (UNII) Maximum Conducted Output Power (242 Tones)

	Freq [MHz]	Channel	Detector	Tones	RU Index 61 ANT1	RU Index 61 ANT2	RU Index 61 MIMO	RU Index 62 ANT1	RU Index 62 ANT2	RU Index 62 MIMO	RU Index 64 ANT1	RU Index 64 ANT2	RU Index 64 MIMO	Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
5GHz (80MHz Bandwidth)	5210	42	AVG	242T	14.01	14.43	17.24	14.06	14.18	17.13	14.44	14.02	17.25	23.98	-6.73	-0.99	16.26	30.00	-13.74
	5290	58	AVG	242T	14.55	14.37	17.47	14.51	14.11	17.32	14.86	14.01	17.47	23.85	-6.38	0.40	17.87	29.85	-11.98
	5530	106	AVG	242T	14.93	14.38	17.67	14.89	14.21	17.57	15.29	14.23	17.80	23.97	-6.17	-0.81	16.99	29.97	-12.98
	5610	122	AVG	242T	17.98	17.54	20.78	17.99	17.59	20.80	17.84	17.44	20.65	23.97	-3.17	-0.81	19.99	29.97	-9.98
	5690	138	AVG	242T	17.99	16.98	20.52	17.92	17.05	20.52	17.99	17.42	20.72	23.97	-3.25	-0.81	19.91	29.97	-10.06
	5775	155	AVG	242T	17.99	17.31	20.67	17.82	17.24	20.55	17.89	17.41	20.67	30.00	-9.33	-0.58	20.09	36.00	-15.91
	5855	171	AVG	242T	17.82	17.65	20.75	17.89	17.72	20.81	17.71	17.20	20.47	-	-	-0.81	20.00	28.80	-8.80

Table 7-31. MIMO 80MHz BW (UNII) Maximum Conducted Output Power (242 Tones)

	Freq [MHz]	Channel	Detector	Tones	RU Index 61 ANT1	RU Index 61 ANT2	RU Index 61 MIMO	RU Index 62 ANT1	RU Index 62 ANT2	RU Index 62 MIMO	RU Index 64 ANT1	RU Index 64 ANT2	RU Index 64 MIMO	Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
5GHz (160MHz BW Lower)	5250	50	AVG	242T	14.58	14.13	17.37	14.98	14.13	17.59	14.89	14.33	17.63	23.47	-5.84	0.40	18.03	22.68	-4.65
	5570	114	AVG	242T	14.67	14.13	17.42	14.93	14.36	17.66	14.86	14.41	17.65	22.80	-5.14	-0.81	16.85	29.97	-13.12
	5815	163	AVG	242T	17.71	17.82	20.78	17.76	17.99	20.89	17.38	17.63	20.52	-	-	-0.58	20.31	30.00	-9.69

Table 7-32. MIMO 160MHz BW (L) (UNII) Maximum Conducted Output Power (242 Tones)

	Freq [MHz]	Channel	Detector	Tones	RU Index 61 ANT1	RU Index 61 ANT2	RU Index 61 MIMO	RU Index 62 ANT1	RU Index 62 ANT2	RU Index 62 MIMO	RU Index 64 ANT1	RU Index 64 ANT2	RU Index 64 MIMO	Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
5GHz (160MHz BW Upper)	5250	50	AVG	242T	14.88	14.12	17.53	14.81	14.32	17.58	14.73	14.67	17.71	23.47	-5.76	0.40	18.11	22.68	-4.57
	5570	114	AVG	242T	14.69	14.32	17.52	14.98	14.66	17.83	14.99	14.82	17.92	22.80	-4.88	-0.81	17.11	29.97	-12.86
	5815	163	AVG	242T	17.47	17.75	20.63	17.64	17.90	20.78	17.63	17.69	20.67	-	-	-0.58	20.20	30.00	-9.80

Table 7-33. MIMO 160MHz BW (U) (UNII) Maximum Conducted Output Power (242 Tones)

MIMO Conducted Output Power Measurements (484 Tones)

5GHz (40MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index 65 ANT1	RU Index 65 ANT2	RU Index 65 MIMO	Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
	5190	38	AVG	484T	15.34	14.95	18.16	23.98	-5.82	-0.99	17.17	30.00	-12.83
	5230	46	AVG	484T	16.58	16.72	19.66	23.98	-4.32	-0.99	18.67	30.00	-11.33
	5270	54	AVG	484T	16.75	16.99	19.88	23.85	-3.97	0.40	20.28	29.85	-9.57
	5310	62	AVG	484T	13.79	13.41	16.61	23.85	-7.24	0.40	17.01	29.85	-12.84
	5510	102	AVG	484T	15.63	14.85	18.27	23.97	-5.70	-0.81	17.46	29.97	-12.51
	5590	118	AVG	484T	16.83	16.90	19.88	23.97	-4.09	-0.81	19.07	29.97	-10.90
	5710	142	AVG	484T	16.55	16.41	19.49	23.97	-4.48	-0.81	18.68	29.97	-11.29
	5755	151	AVG	484T	16.74	16.92	19.84	30.00	-10.16	-0.58	19.26	36.00	-16.74
	5795	159	AVG	484T	16.66	16.96	19.82	30.00	-10.18	-0.58	19.24	36.00	-16.76
	5835	167	AVG	484T	16.85	16.82	19.85	-	-	-0.81	19.04	30.00	-10.96
	5875	175	AVG	484T	16.80	16.85	19.83	-	-	-0.81	19.02	30.00	-10.98

Table 7-34. MIMO 40MHz BW (UNII) Maximum Conducted Output Power (484 Tones)

5GHz (80MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index 65 ANT1	RU Index 65 ANT2	RU Index 65 MIMO	RU Index 66 ANT1	RU Index 66 ANT2	RU Index 66 MIMO	Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
	5210	42	AVG	484T	14.51	14.76	17.65	14.80	14.45	17.64	23.98	-6.33	-0.99	16.66	30.00	-13.34
	5290	58	AVG	484T	13.48	13.13	16.32	13.65	12.83	16.27	23.85	-7.53	0.40	16.72	29.85	-13.13
	5530	106	AVG	484T	15.67	15.32	18.51	15.75	15.61	18.69	23.97	-5.28	-0.81	17.88	29.97	-12.09
	5610	122	AVG	484T	15.98	15.02	18.54	15.89	15.01	18.48	23.97	-5.43	-0.81	17.73	29.97	-12.24
	5690	138	AVG	484T	15.97	14.68	18.38	15.99	14.91	18.49	23.97	-5.48	-0.81	17.68	29.97	-12.29
	5775	155	AVG	484T	15.99	15.34	18.69	15.61	15.94	18.79	30.00	-11.21	-0.58	18.21	36.00	-17.79
	5855	171	AVG	484T	15.85	15.55	18.71	15.99	15.64	18.83	-	-	-0.81	18.02	28.80	-10.78

Table 7-35. MIMO 80MHz BW (UNII) Maximum Conducted Output Power (484 Tones)

5GHz (160MHz BW Lower)	Freq [MHz]	Channel	Detector	Tones	RU Index 65 ANT1	RU Index 65 ANT2	RU Index 65 MIMO	RU Index 66 ANT1	RU Index 66 ANT2	RU Index 66 MIMO	Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
	5250	50	AVG	484T	13.48	13.10	16.30	13.46	13.09	16.29	23.47	-7.17	0.40	16.70	22.68	-5.98
	5570	114	AVG	484T	15.99	15.46	18.74	15.92	15.46	18.71	22.80	-4.06	-0.81	17.93	29.97	-12.04
	5815	163	AVG	484T	15.78	15.90	18.85	15.93	15.99	18.97	-	-	-0.58	18.39	30.00	-11.61

Table 7-36. MIMO 160MHz BW (L) (UNII) Maximum Conducted Output Power (484 Tones)

5GHz (160MHz BW Upper)	Freq [MHz]	Channel	Detector	Tones	RU Index 65 ANT1	RU Index 65 ANT2	RU Index 65 MIMO	RU Index 66 ANT1	RU Index 66 ANT2	RU Index 66 MIMO	Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
	5250	50	AVG	484T	13.15	12.97	16.07	13.07	13.22	16.16	23.47	-7.31	0.40	16.56	22.68	-6.12
	5570	114	AVG	484T	15.81	15.14	18.50	15.98	15.74	18.87	22.80	-3.93	-0.81	18.06	29.97	-11.91
	5815	163	AVG	484T	15.61	15.87	18.75	15.48	15.58	18.54	-	-	-0.58	18.17	30.00	-11.83

Table 7-37. MIMO 160MHz BW (U) (UNII) Maximum Conducted Output Power (484 Tones)

MIMO Conducted Output Power Measurements (996 Tones)

5GHz (80MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
					67								
					ANT1	ANT2	MIMO						
	5210	42	AVG	996T	15.79	15.48	18.65	23.98	-5.33	-0.99	17.66	30.00	-12.34
	5290	58	AVG	996T	13.42	12.91	16.18	23.85	-7.67	0.40	16.58	29.85	-13.27
	5530	106	AVG	996T	11.38	10.89	14.15	23.97	-9.82	-0.81	13.34	29.97	-16.63
	5610	122	AVG	996T	15.86	15.05	18.48	23.97	-5.49	-0.81	17.67	29.97	-12.30
	5690	138	AVG	996T	15.99	14.74	18.42	23.97	-5.55	-0.81	17.61	29.97	-12.36
	5775	155	AVG	996T	15.96	15.31	18.66	30.00	-11.34	-0.58	18.08	36.00	-17.92
	5855	171	AVG	996T	15.98	15.51	18.76	-	-	-0.81	17.95	28.80	-10.85

Table 7-38. MIMO 80MHz BW (UNII) Maximum Conducted Output Power (996 Tones)

5GHz (160MHz BW Lower)	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
					67								
					ANT1	ANT2	MIMO						
	5250	50	AVG	996T	13.18	12.49	15.86	23.47	-7.61	0.40	16.26	22.68	-6.42
	5570	114	AVG	996T	11.48	11.03	14.27	22.80	-8.53	-0.81	13.46	29.97	-16.51
	5815	163	AVG	996T	15.68	15.80	18.75	-	-	-0.58	18.17	30.00	-11.83

Table 7-39. MIMO 160MHz BW (L) (UNII) Maximum Conducted Output Power (996 Tones)

5GHz (160MHz BW Upper)	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
					67								
					ANT1	ANT2	MIMO						
	5250	50	AVG	996T	12.95	13.18	16.08	23.47	-7.39	0.40	16.48	22.68	-6.20
	5570	114	AVG	996T	11.08	11.42	14.26	22.80	-8.54	-0.81	13.45	29.97	-16.52
	5815	163	AVG	996T	15.72	15.85	18.79	-	-	-0.58	18.21	30.00	-11.79

Table 7-40. MIMO 160MHz BW (U) (UNII) Maximum Conducted Output Power (996 Tones)

MIMO Conducted Output Power Measurements (996*2 Tones)

5GHz (160MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
					68								
					ANT1	ANT2	MIMO						
	5250	50	AVG	996T*2	15.91	15.03	18.50	23.85	-5.35	0.40	18.90	22.68	-3.78
	5570	114	AVG	996T*2	15.99	14.99	18.53	23.97	-5.44	-0.81	17.72	29.97	-12.25
	5815	163	AVG	996T*2	15.69	15.04	18.39	-	-	-0.58	17.81	30.00	-12.19

Table 7-41. MIMO 160MHz BW (UNII) Maximum Conducted Output Power (996*2 Tones)

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.

Per ANSI C63.10-2013 Section 14.4.3, the directional gain is calculated using the following formula, where G_N is the gain of the nth antenna and N_{ANT}, the total number of antennas used.

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}] \text{ dBi}$$

Sample MIMO Calculation:

At 5180MHz in 802.11n (20MHz BW) mode, the average conducted output power was measured to be 17.71 dBm for Antenna 1 and 16.95 dBm for Antenna 2.

Antenna 1 + Antenna 2 = MIMO

(17.71 dBm + 16.95 dBm) = (59.02 mW + 49.55 mW) = 108.57 mW = 20.36 dBm

Sample e.i.r.p. Calculation:

At 5180MHz in 802.11n (20MHz BW) mode, the average MIMO conducted power was calculated to be 20.36 dBm with directional gain of -0.99dBi.

e.i.r.p. (dBm) = Conducted Power (dBm) + Ant gain (dBi)

20.36 dBm + -0.99 dBi = 19.37 dBm

7.5 Maximum Power Spectral Density – 802.11ax OFDMA

§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 band, the maximum permissible power spectral density is 11dBm/MHz. For ISED operation, the maximum e.i.r.p. spectral density is 10dBm/MHz.

In the 5.25 – 5.35GHz and 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.

In the 5.850 – 5.855GHz band, the maximum permissible power spectral density is 14dBm/MHz e.i.r.p.

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

The power spectral density for each channel was measured with the RU index showing the highest conducted power

Summed MIMO Power Spectral Density Measurements (26 Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	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	ax (20MHz)	26T	MCS0	5.72	5.24	8.49	11.00	-2.51
	5200	40	ax (20MHz)	26T	MCS0	5.99	4.97	8.52	11.00	-2.48
	5240	48	ax (20MHz)	26T	MCS0	5.75	4.39	8.13	11.00	-2.87
	5190	38	ax (40MHz)	26T	MCS0	6.47	4.82	8.73	11.00	-2.27
	5230	46	ax (40MHz)	26T	MCS0	6.72	4.30	8.68	11.00	-2.32
	5210	42	ax (80MHz)	26T	MCS0	6.61	4.32	8.62	11.00	-2.38
Band 1/2A	5250	50	ax (160MHz) L	26T	MCS0	5.70	5.04	8.39	11.00	-2.61
	5250	50	ax (160MHz) U	26T	MCS0	4.83	5.13	8.00	11.00	-3.00
Band 2A	5260	52	ax (20MHz)	26T	MCS0	6.84	5.31	9.15	11.00	-1.85
	5280	56	ax (20MHz)	26T	MCS0	6.57	5.20	8.95	11.00	-2.05
	5320	64	ax (20MHz)	26T	MCS0	6.66	5.14	8.98	11.00	-2.02
	5270	54	ax (40MHz)	26T	MCS0	6.59	4.61	8.72	11.00	-2.28
	5310	62	ax (40MHz)	26T	MCS0	6.62	4.09	8.55	11.00	-2.45
	5290	58	ax (80MHz)	26T	MCS0	6.83	4.00	8.65	11.00	-2.35
Band 2C	5500	100	ax (20MHz)	26T	MCS0	5.58	4.14	7.93	11.00	-3.07
	5600	120	ax (20MHz)	26T	MCS0	6.36	5.22	8.84	11.00	-2.16
	5720	144	ax (20MHz)	26T	MCS0	6.68	5.57	9.17	11.00	-1.83
	5510	102	ax (40MHz)	26T	MCS0	6.43	4.31	8.51	11.00	-2.49
	5590	118	ax (40MHz)	26T	MCS0	6.65	4.57	8.74	11.00	-2.26
	5710	142	ax (40MHz)	26T	MCS0	6.82	5.01	9.02	11.00	-1.98
	5530	106	ax (80MHz)	26T	MCS0	6.65	3.98	8.52	11.00	-2.48
	5610	122	ax (80MHz)	26T	MCS0	6.69	3.99	8.56	11.00	-2.44
	5690	138	ax (80MHz)	26T	MCS0	6.35	3.97	8.33	11.00	-2.67
	5570	114	ax (160MHz) L	26T	MCS0	4.00	3.85	6.93	11.00	-4.07
	5570	114	ax (160MHz) U	26T	MCS0	5.03	5.13	8.09	11.00	-2.91

Table 7-42. Bands 1, 2A, 2C MIMO Conducted Power Spectral Density Measurements MIMO (26 Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Antenna-1 Power Density [dBm]	Antenna-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Max Permissible Power Density	Margin [dB]
Band 3	5745	149	ax (20MHz)	26T	MCS0	3.88	2.26	6.16	30.00	-23.84
	5785	157	ax (20MHz)	26T	MCS0	3.30	2.13	5.76	30.00	-24.24
	5825	165	ax (20MHz)	26T	MCS0	3.94	2.37	6.24	30.00	-23.76
	5755	151	ax (40MHz)	26T	MCS0	3.65	1.92	5.88	30.00	-24.12
	5795	159	ax (40MHz)	26T	MCS0	3.55	2.17	5.92	30.00	-24.08
	5775	155	ax (80MHz)	26T	MCS0	3.69	2.27	6.05	30.00	-23.95

Table 7-43. Band 3 MIMO Conducted Power Spectral Density Measurements MIMO (26 Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Antenna-1 Power Density [dBm/MHz]	Antenna-2 Power Density [dBm/MHz]	MIMO Summed Power Density [dBm/MHz]	Max Permissible Power Density [dBm/500kHz]	Margin [dB]	Directional Antenna Gain [dBi]	EIRP Power Density [dBm/MHz]	Max EIRP Power Density [dBm/MHz]	Margin [dB]
Band 3/4	5845	169	ax (20MHz)	26T	MCS0	6.45	5.18	8.87	30.00	-21.13	-0.58	8.29	14.00	-5.71
Band 4	5865	173	ax (20MHz)	26T	MCS0	6.43	5.10	8.82			-0.81	8.01	14.00	-5.99
	5885	177	ax (20MHz)	26T	MCS0	6.32	5.41	8.90			-0.81	8.09	14.00	-5.91
Band 3/4	5835	167	ax (40MHz)	26T	MCS0	6.34	4.91	8.69	30.00	-21.31	-0.58	8.11	14.00	-5.89
Band 4	5875	175	ax (40MHz)	26T	MCS0	5.88	5.21	8.57			-0.81	7.76	14.00	-6.24
Band 3/4	5855	171	ax (80MHz)	26T	MCS0	5.29	4.15	7.77	30.00	-22.23	-0.58	7.19	14.00	-6.81
	5815	163	ax (160MHz L)	26T	MCS0	5.42	5.42	8.43	30.00	-21.57	-0.58	7.85	14.00	-6.15
	5815	163	ax (160MHz U)	26T	MCS0	5.47	5.80	8.65	30.00	-21.35	-0.58	8.07	14.00	-5.93

Table 7-44. Band 3/4 MIMO Conducted Power Spectral Density Measurements MIMO (26 Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	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	ax (20MHz)	242T	MCS0	5.72	4.67	8.24	11.00	-2.76
	5200	40	ax (20MHz)	242T	MCS0	5.72	4.51	8.17	11.00	-2.83
	5240	48	ax (20MHz)	242T	MCS0	6.16	4.42	8.39	11.00	-2.61
	5190	38	ax (40MHz)	484T	MCS0	1.74	0.43	4.14	11.00	-6.86
	5230	46	ax (40MHz)	484T	MCS0	1.52	0.05	3.86	11.00	-7.14
	5210	42	ax (80MHz)	996T	MCS0	-1.32	-3.12	0.88	11.00	-10.12
Band 1/2A	5250	50	ax (160MHz)	996T*2	MCS0	-5.18	-4.77	-1.96	11.00	-12.96
Band 2A	5260	52	ax (20MHz)	242T	MCS0	6.38	4.33	8.49	11.00	-2.51
	5280	56	ax (20MHz)	242T	MCS0	6.44	4.68	8.66	11.00	-2.34
	5320	64	ax (20MHz)	242T	MCS0	6.64	4.51	8.71	11.00	-2.29
	5270	54	ax (40MHz)	484T	MCS0	2.27	0.59	4.52	11.00	-6.48
	5310	62	ax (40MHz)	484T	MCS0	2.03	0.16	4.21	11.00	-6.79
	5290	58	ax (80MHz)	996T	MCS0	-1.77	-2.98	0.68	11.00	-10.32
Band 2C	5500	100	ax (20MHz)	242T	MCS0	6.55	4.39	8.61	11.00	-2.39
	5600	120	ax (20MHz)	242T	MCS0	6.07	4.70	8.45	11.00	-2.55
	5720	144	ax (20MHz)	242T	MCS0	6.40	5.06	8.79	11.00	-2.21
	5510	102	ax (40MHz)	484T	MCS0	1.88	0.28	4.16	11.00	-6.84
	5590	118	ax (40MHz)	484T	MCS0	2.06	0.28	4.27	11.00	-6.73
	5710	142	ax (40MHz)	484T	MCS0	1.93	0.77	4.40	11.00	-6.60
	5530	106	ax (80MHz)	996T	MCS0	-1.98	-3.38	0.39	11.00	-10.61
	5610	122	ax (80MHz)	996T	MCS0	-1.49	-3.87	0.49	11.00	-10.51
	5690	138	ax (80MHz)	996T	MCS0	-1.45	-3.44	0.68	11.00	-10.32
	5570	114	ax (160MHz)	996T*2	MCS0	-5.35	-5.77	-2.54	11.00	-13.54

Table 7-45. Bands 1, 2A, 2C MIMO Conducted Power Spectral Density Measurements MIMO (Full Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Antenna-1 Power Density [dBm]	Antenna-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Max Permissible Power Density	Margin [dB]
Band 3	5745	149	ax (20MHz)	242T	MCS0	3.77	2.04	6.00	30.00	-24.00
	5785	157	ax (20MHz)	242T	MCS0	3.83	2.54	6.24	30.00	-23.76
	5825	165	ax (20MHz)	242T	MCS0	4.13	2.50	6.40	30.00	-23.60
	5755	151	ax (40MHz)	484T	MCS0	-0.44	-2.16	1.79	30.00	-28.21
	5795	159	ax (40MHz)	484T	MCS0	-0.94	-1.81	1.66	30.00	-28.34
	5775	155	ax (80MHz)	996T	MCS0	-4.11	-5.39	-1.69	30.00	-31.69

Table 7-46. Band 3 MIMO Conducted Power Spectral Density Measurements MIMO (Full Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Antenna-1 Power Density [dBm/MHz]	Antenna-2 Power Density [dBm/MHz]	MIMO Summed Power Density [dBm/MHz]	Max Permissible Power Density [dBm/500kHz]	Margin [dB]	Directional Antenna Gain [dBi]	EIRP Power Density [dBm/MHz]	Max EIRP Power Density [dBm/MHz]	Margin [dB]
Band 3/4	5845	169	ax (20MHz)	242T	MCS0	6.70	5.09	8.98	30.00	-21.02	-0.58	8.40	14.00	-5.60
Band 4	5865	173	ax (20MHz)	242T	MCS0	6.72	5.67	9.24			-0.81	8.43	14.00	-5.57
	5885	177	ax (20MHz)	242T	MCS0	6.15	5.57	8.88			-0.81	8.07	14.00	-5.93
Band 3/4	5835	167	ax (40MHz)	484T	MCS0	2.35	1.41	4.91	30.00	-25.09	-0.58	4.33	14.00	-9.67
Band 4	5875	175	ax (40MHz)	484T	MCS0	1.82	0.92	4.40			-0.81	3.59	14.00	-10.41
Band 3/4	5855	171	ax (80MHz)	996T	MCS0	-2.06	-2.44	0.76	30.00	-29.24	-0.58	0.18	14.00	-13.82
	5815	163	ax (160MH)	996*2T	MCS0	-4.13	-3.92	-1.01	30.00	-31.01	-0.58	-1.59	14.00	-15.59

Table 7-47. Band 3/4 MIMO Conducted Power Spectral Density Measurements MIMO (Full Tones)

Note:

Per ANSI C63.10-2013 Section 14.3.2.2 and KDB 662911 v02r01 Section E)2), the power spectral density at Antenna-1 and Antenna-2 were first measured separately with reduced Antenna-1 and Antenna-2 powers per manufacture's tune-up document. The measured values were then summed in linear power units then converted back to dBm.

Sample Directional Gain Calculation:

Assuming the antenna gain is -8.61 dBi for Antenna-1 and -7.68 dBi for Antenna-2.

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}] \text{ dBi}$$
$$= 10 \log[(10^{-8.61/20} + 10^{-7.68/20} / 2] \text{ dBi}$$
$$= (-5.12) \text{ dBi}$$

Sample MIMO Calculation:

Assuming the average conducted power spectral density was measured to be 5.88 dBm for Antenna-1 and 6.27 dBm for Antenna-2.

Antenna-1 + Antenna-2 = MIMO

(5.88 dBm + 6.27 dBm) = (3.87 mW + 4.24 mW) = 8.11mW = 9.09 dBm

Sample e.i.r.p Power Spectral Density Calculation:

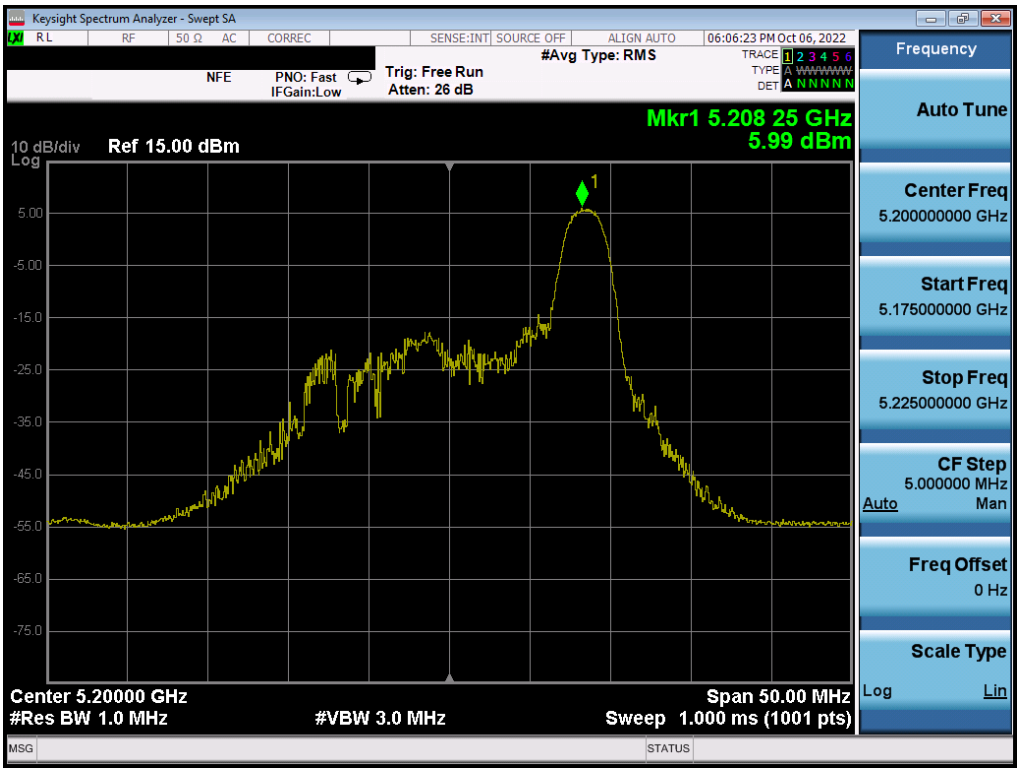
Assuming the average MIMO power density was calculated to be 9.09 dBm with directional gain of -5.12 dBi.

e.i.r.p. Power Spectral Density(dBm) = Power Spectral Density (dBm) + directional gain (dBi)

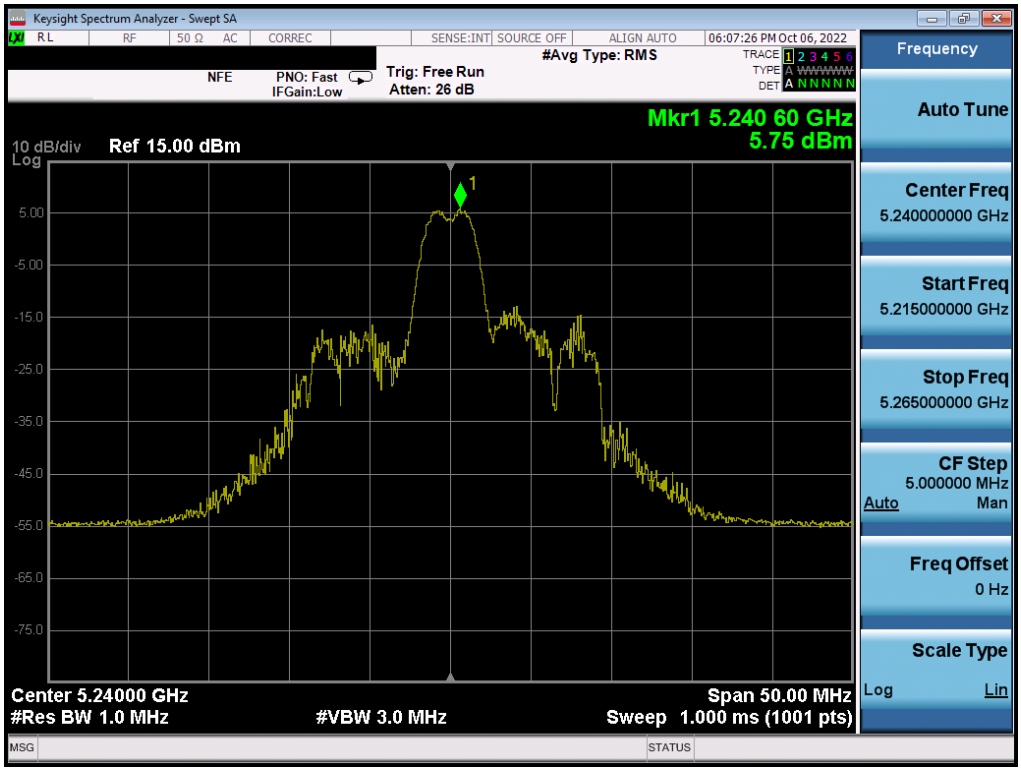
9.09 dBm + (-5.12) dBi = 3.97 dBm

MIMO Antenna-1 Power Spectral Density Measurements (26 Tones)

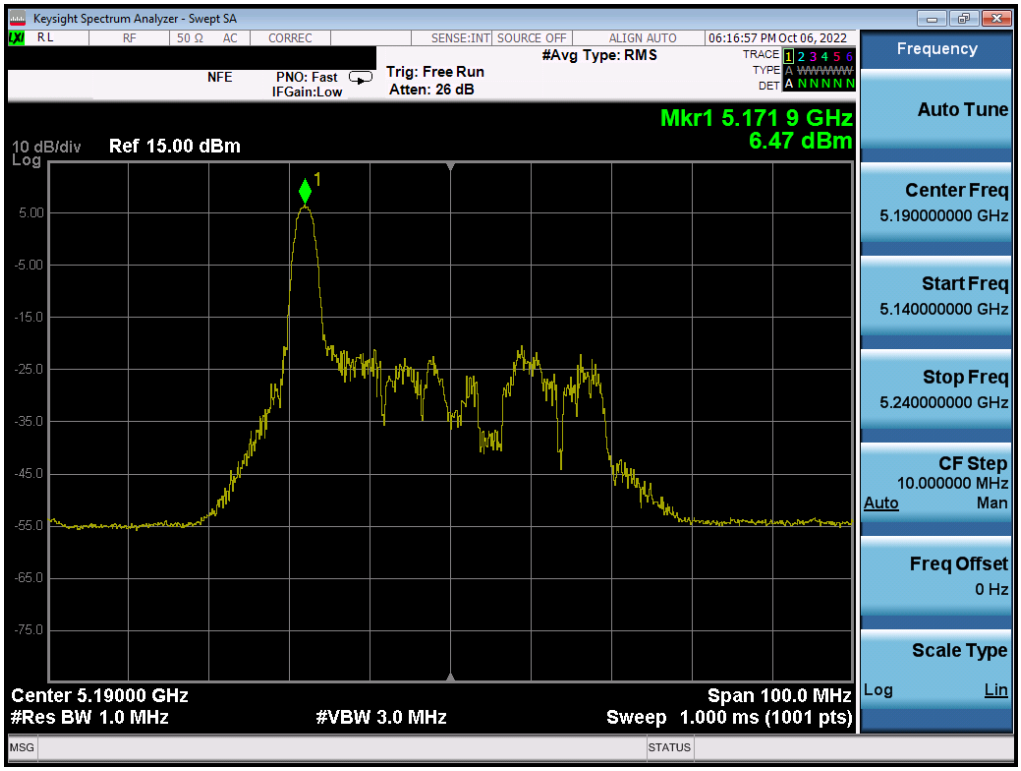
Plot 7-151. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 36)



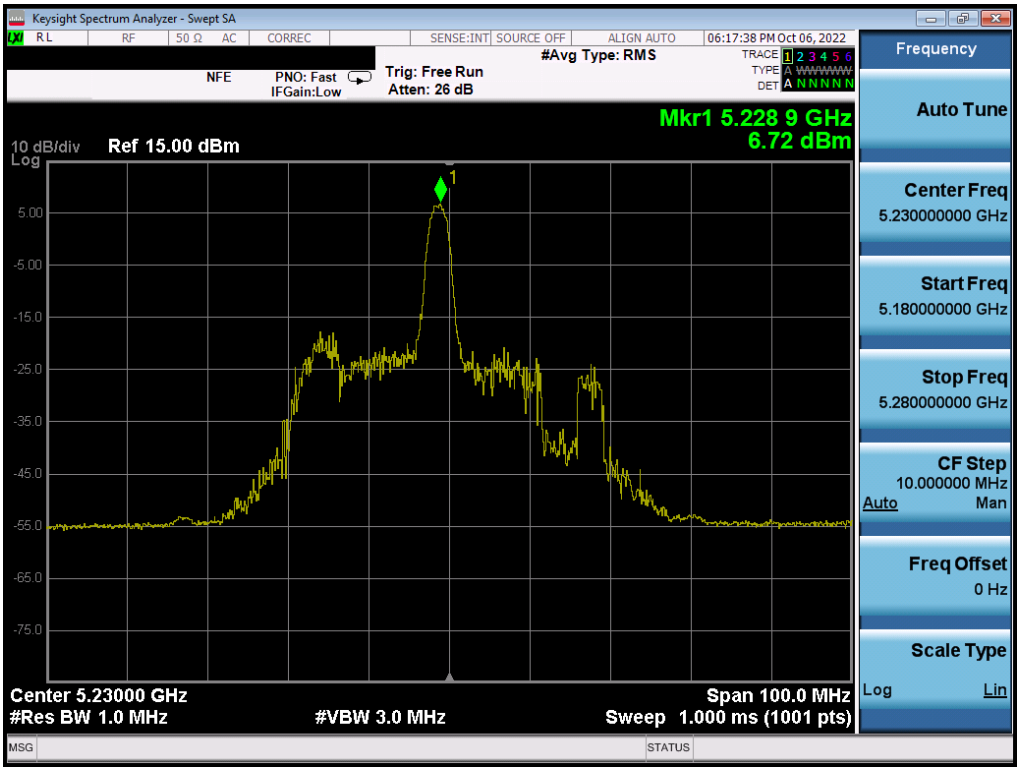
Plot 7-152. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 40)



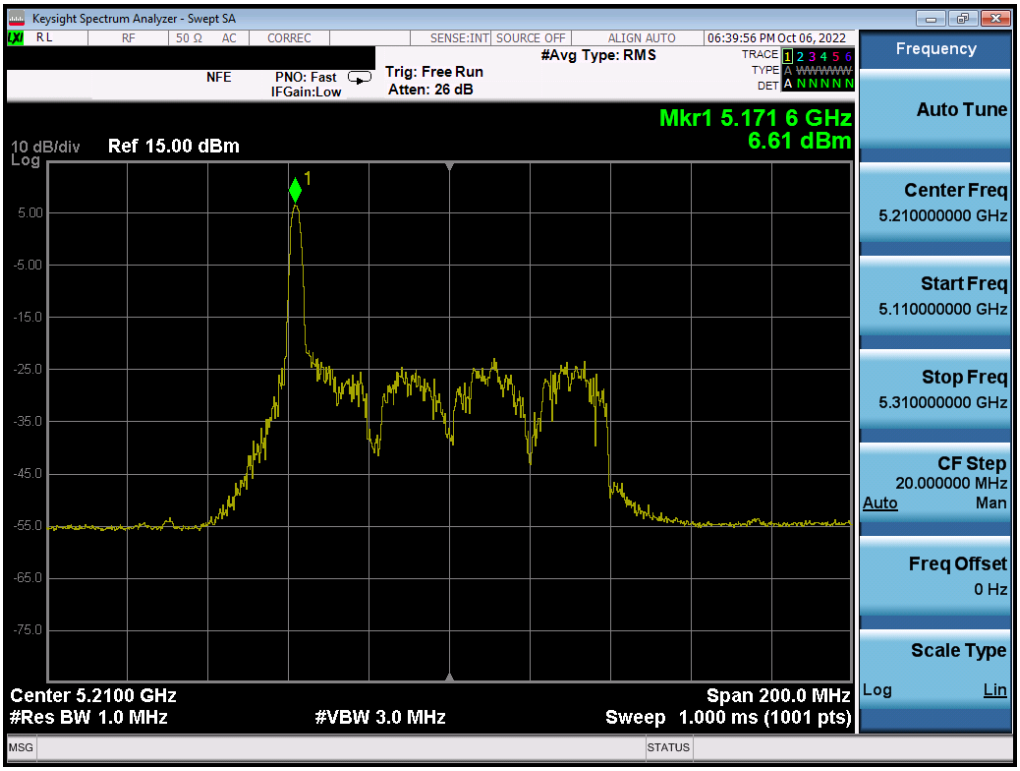
Plot 7-153. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 48)



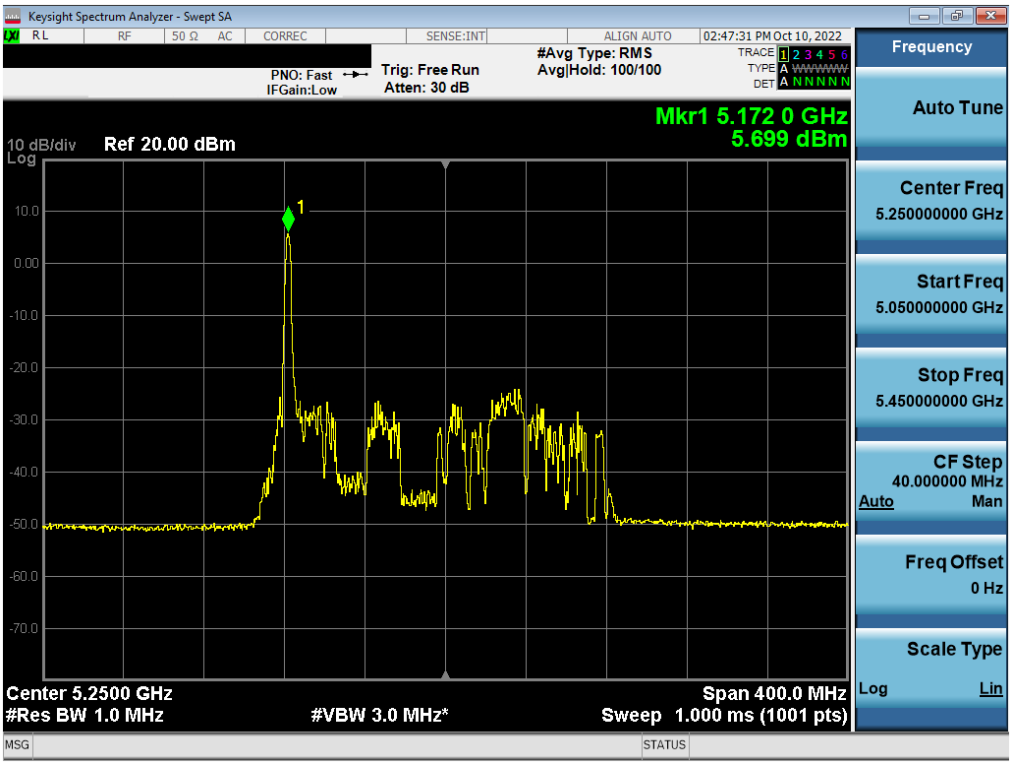
Plot 7-154. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 38)



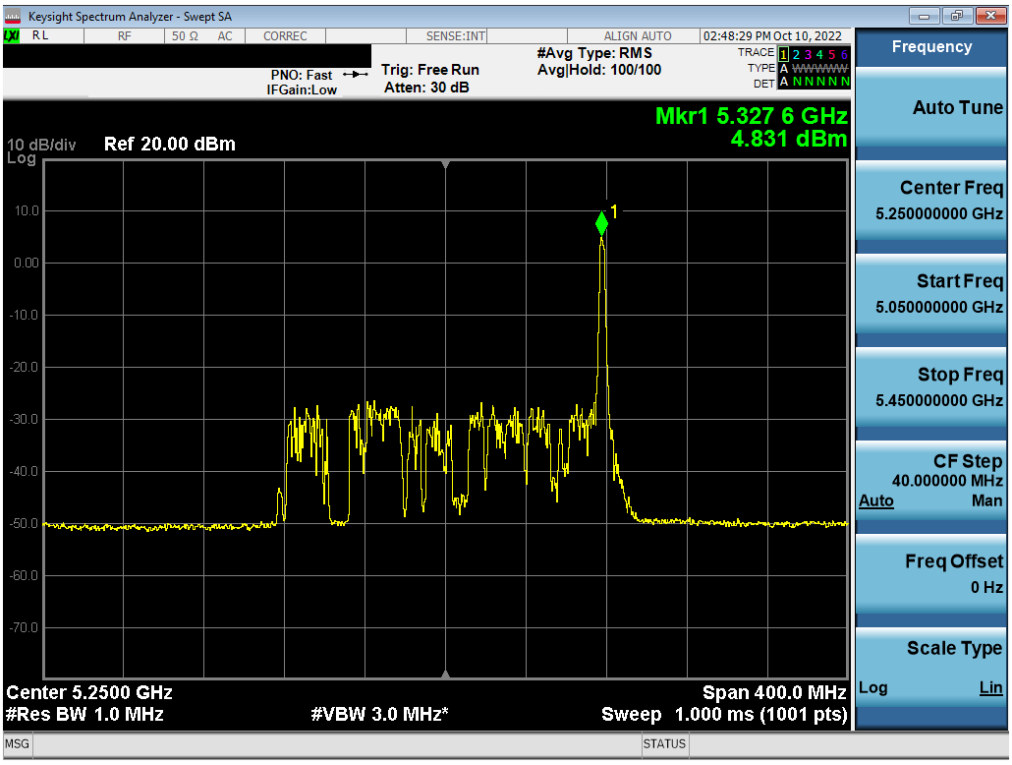
Plot 7-155. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 46)



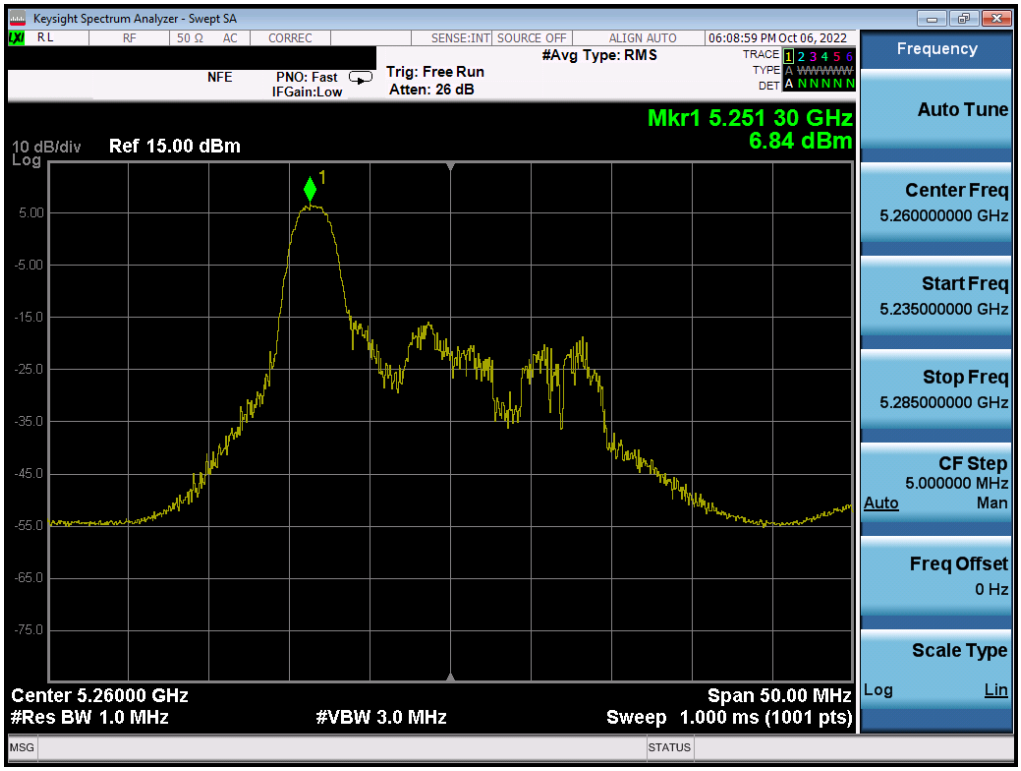
Plot 7-156. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 42)



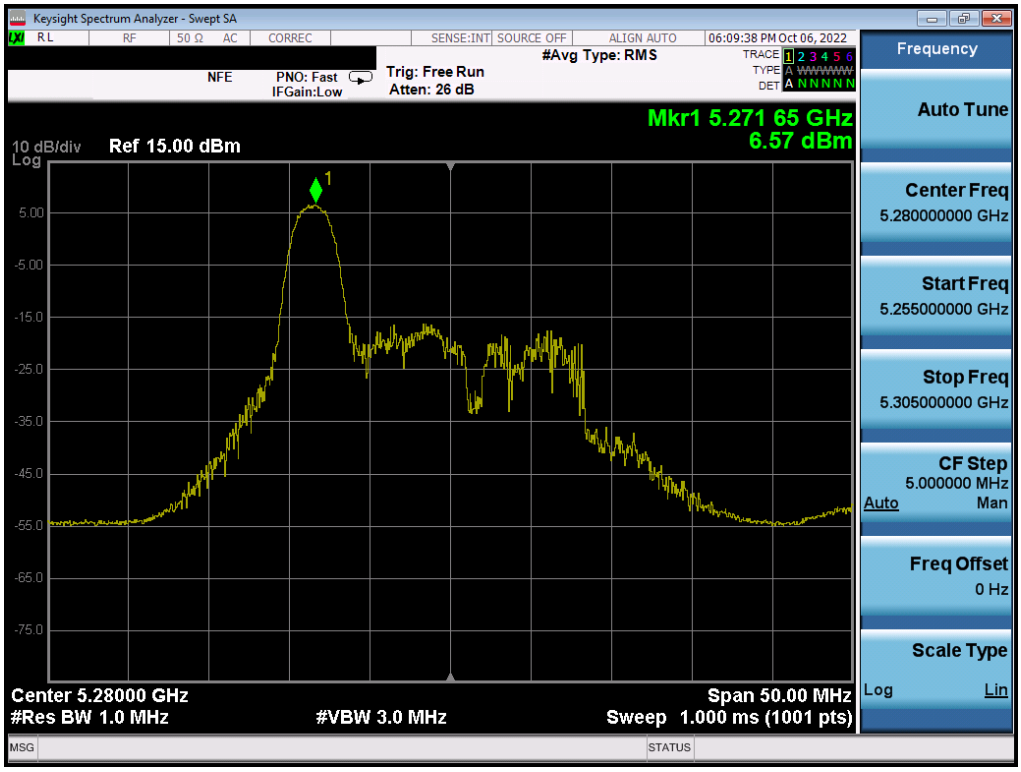
Plot 7-157. Power Spectral Density Plot MIMO ANT1 (160MHz(L) BW 802.11ax – 26 Tones (UNII Band 1/2A) – Ch. 50)



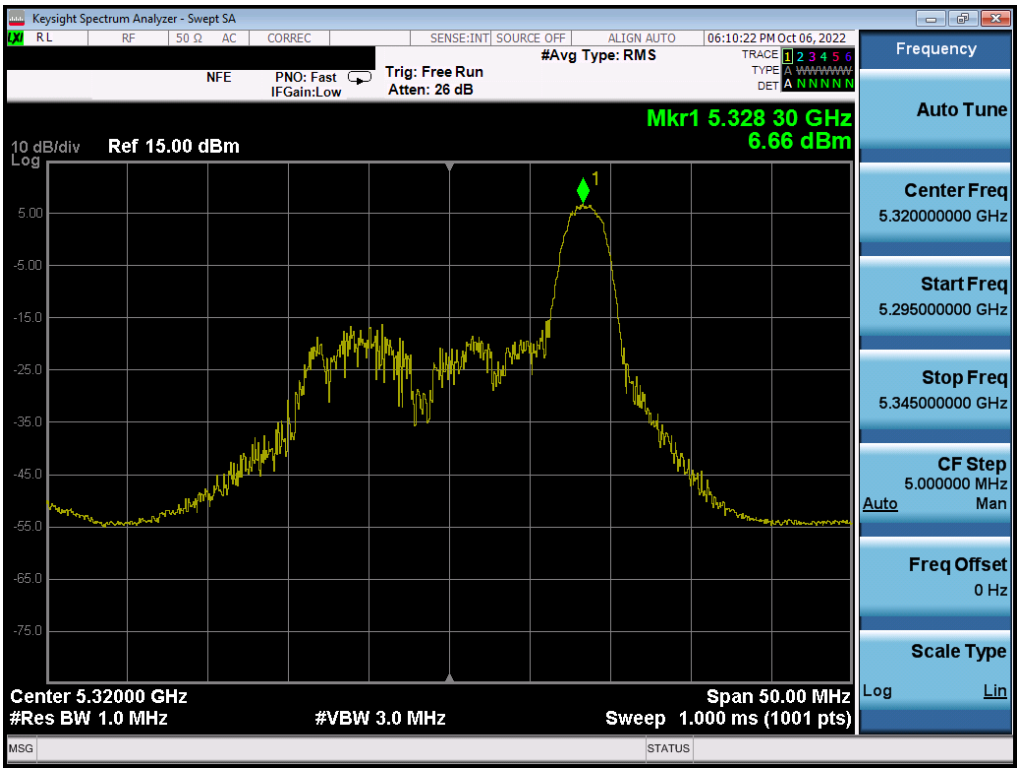
Plot 7-158. Power Spectral Density Plot MIMO ANT1 (160MHz(U) BW 802.11ax – 26 Tones (UNII Band 1/2A) – Ch. 50)



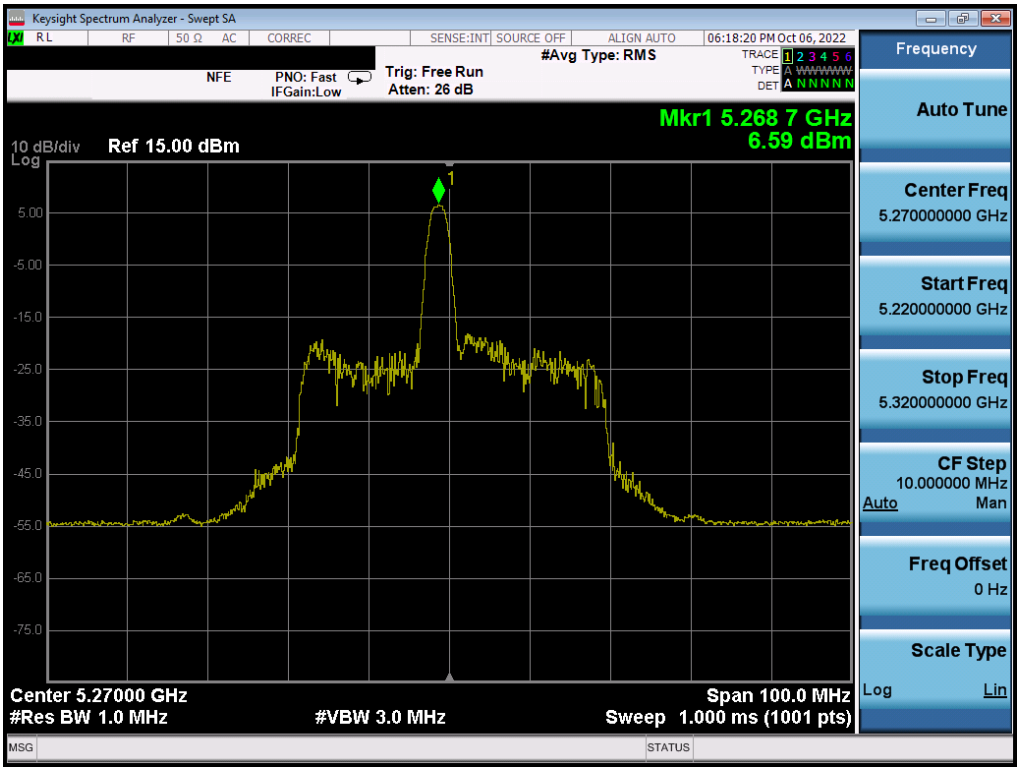
Plot 7-159. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 52)



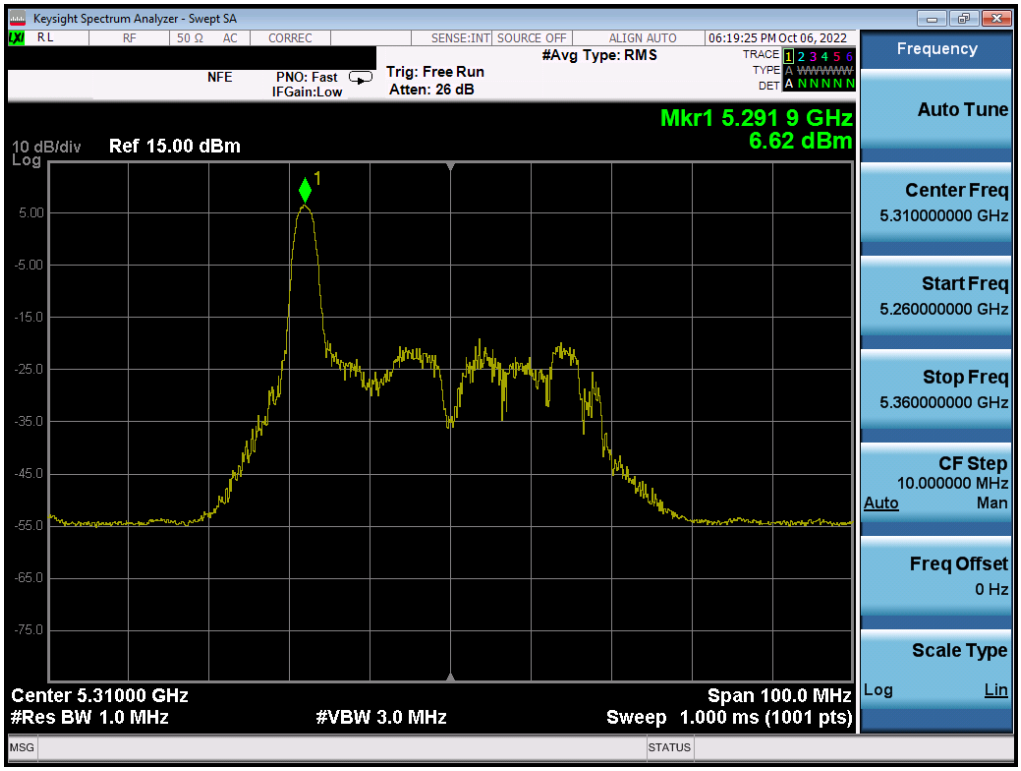
Plot 7-160. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 56)



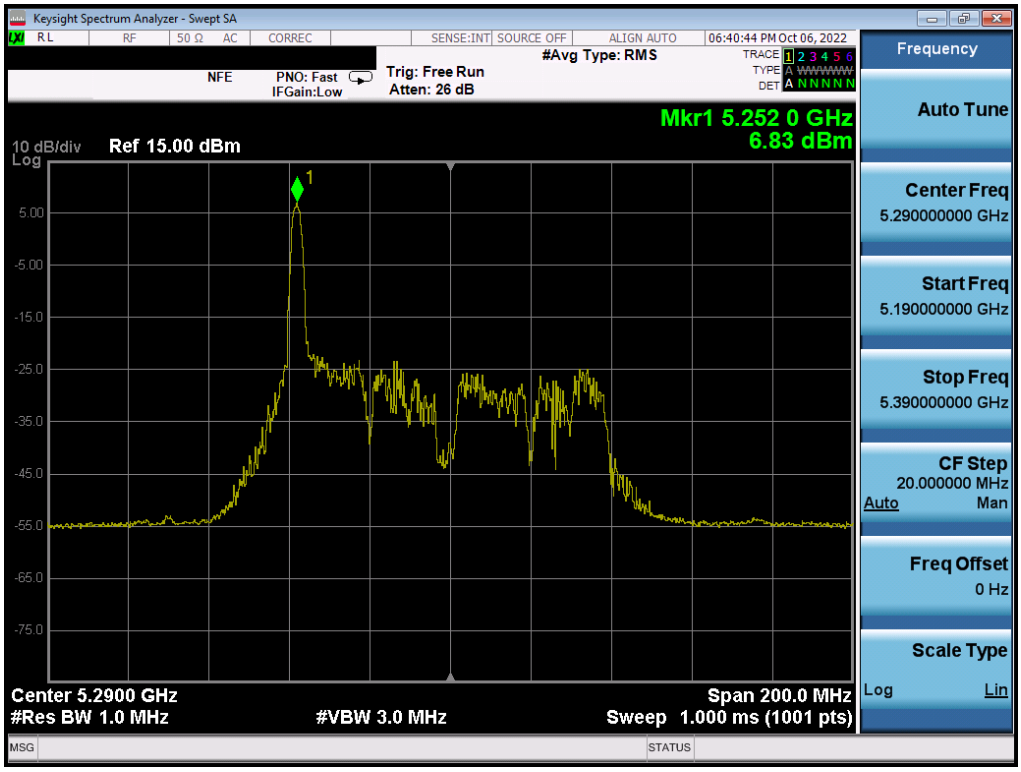
Plot 7-161. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 64)



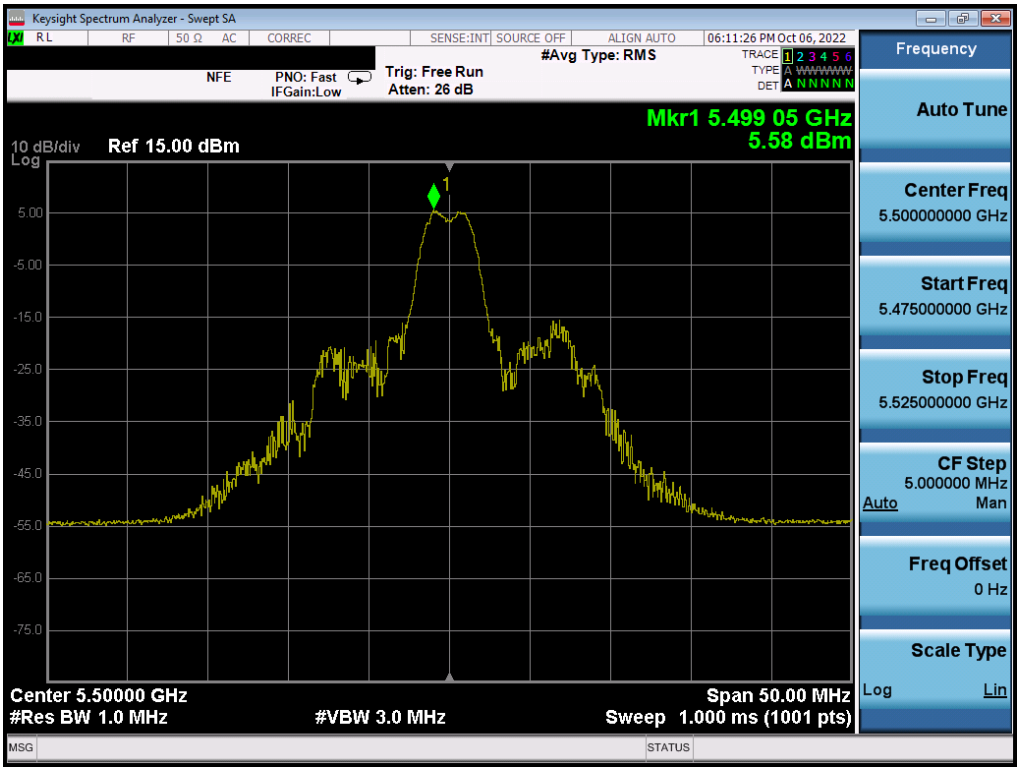
Plot 7-162. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 54)



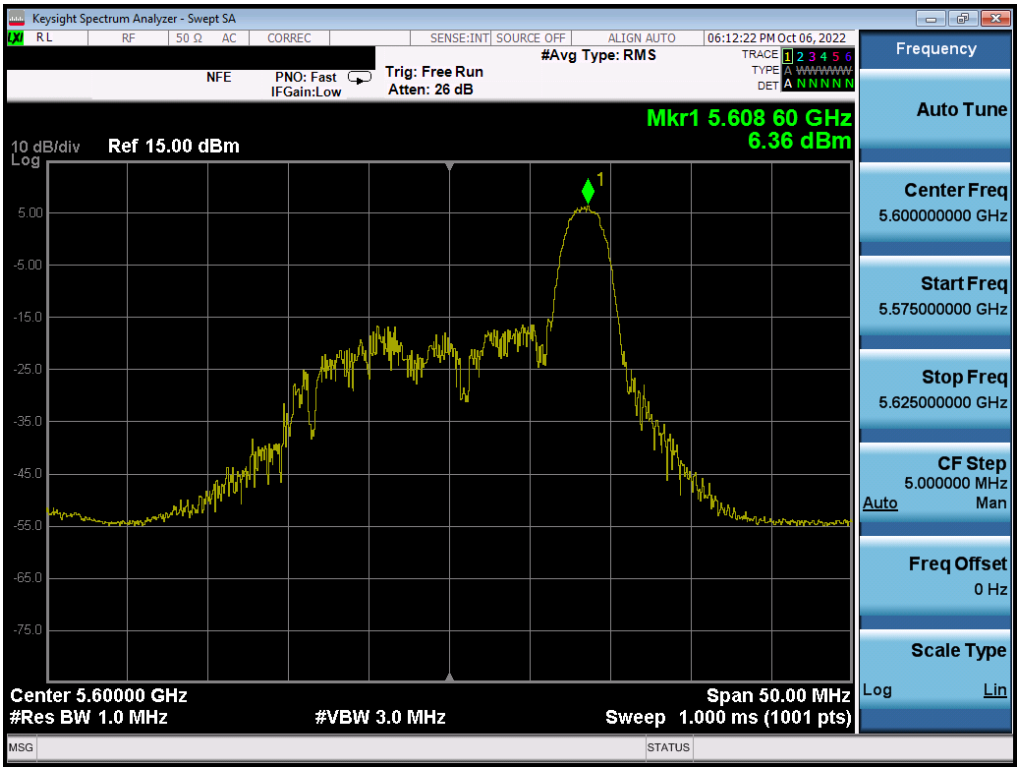
Plot 7-163. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 62)



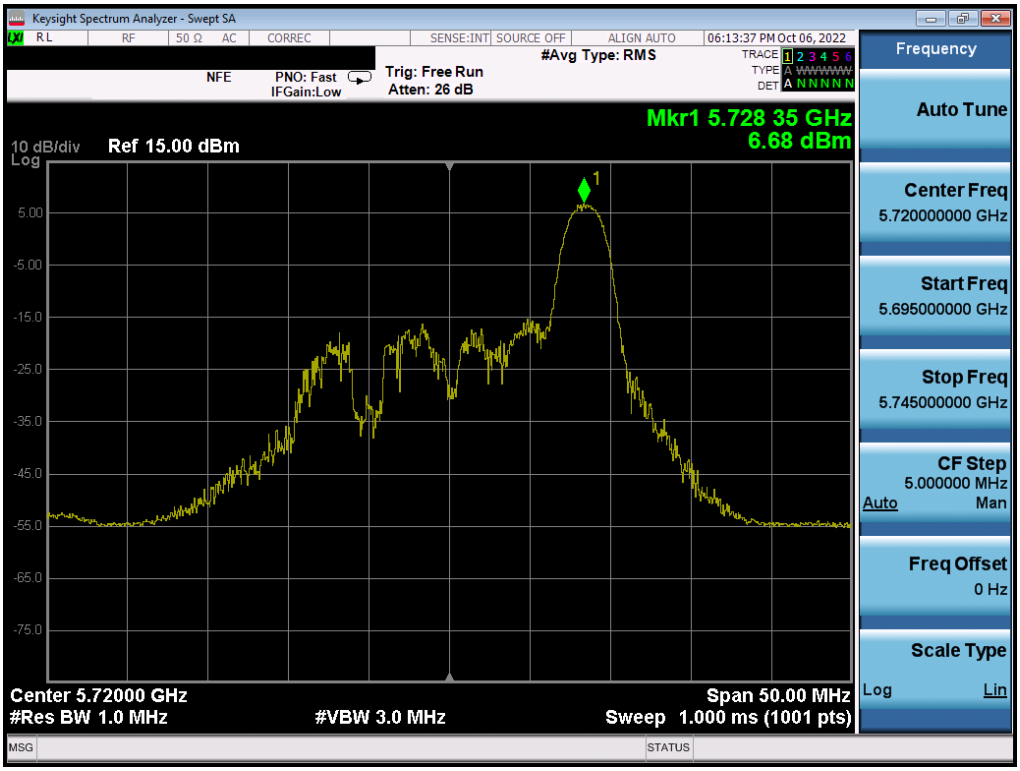
Plot 7-164. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 58)



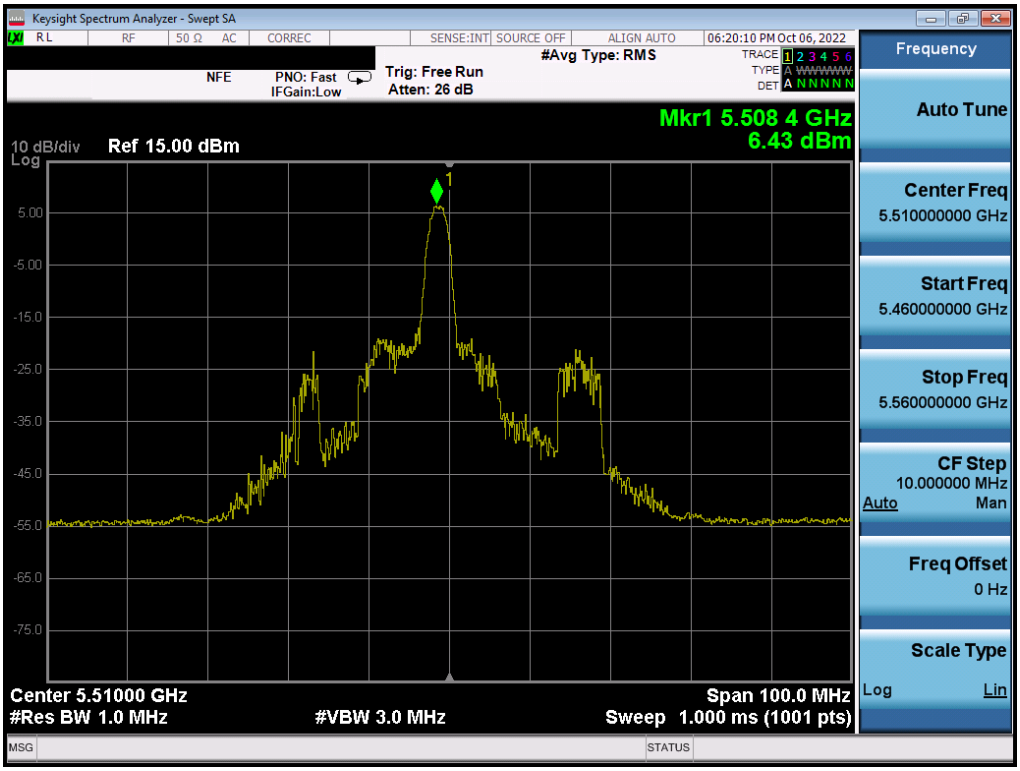
Plot 7-165. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 100)



Plot 7-166. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 120)



Plot 7-167. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 144)



Plot 7-168. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 102)