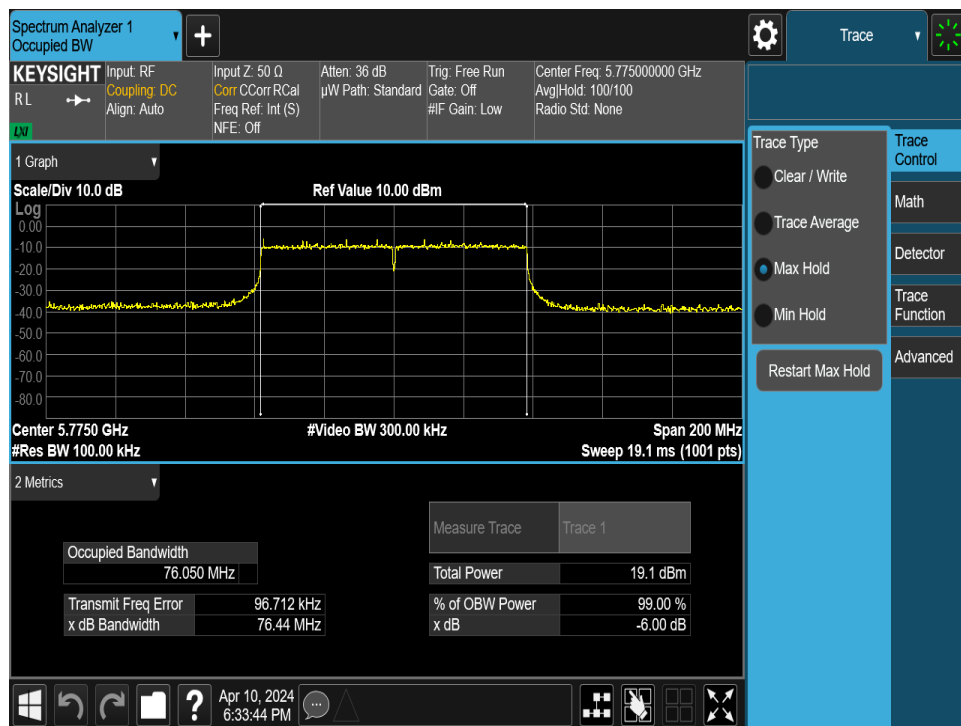
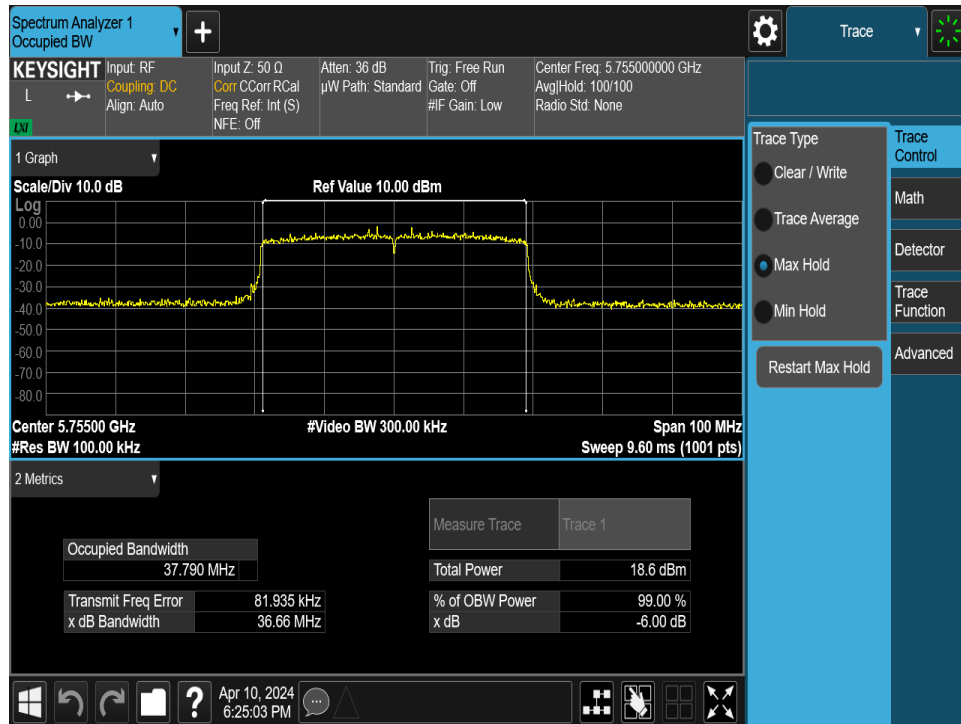
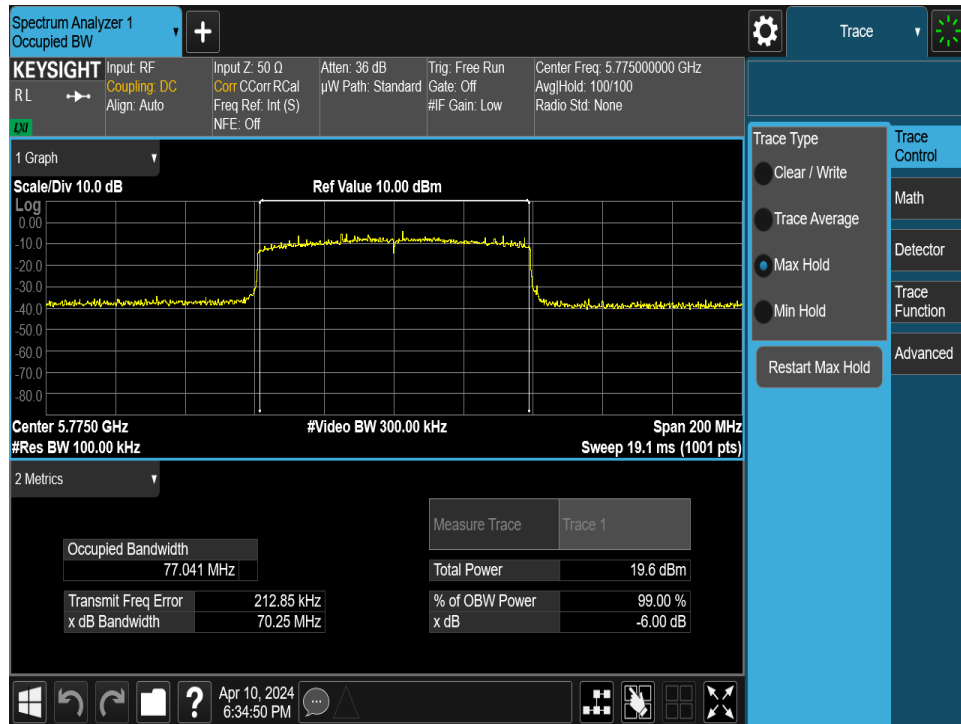
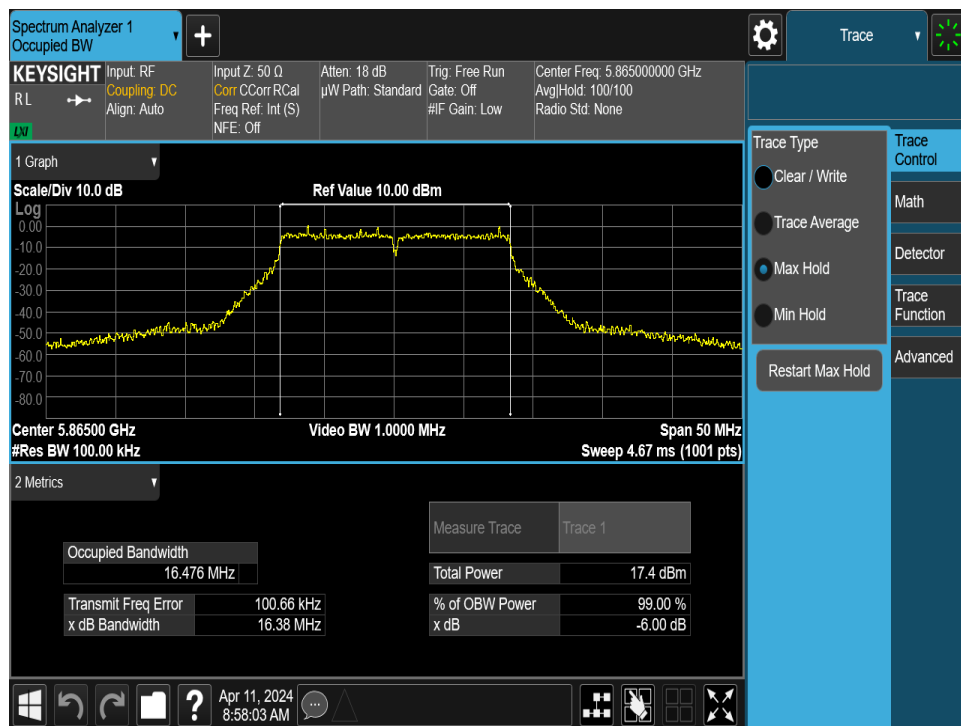




FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
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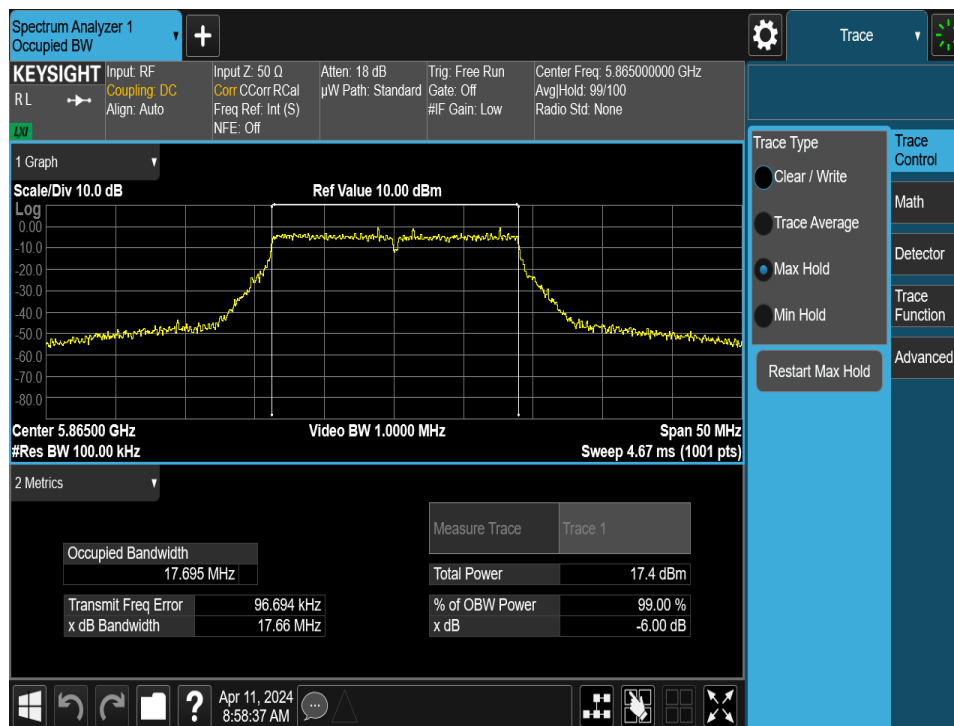


Plot 7-57. 6dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax/be (UNII Band 3) – Ch. 155)

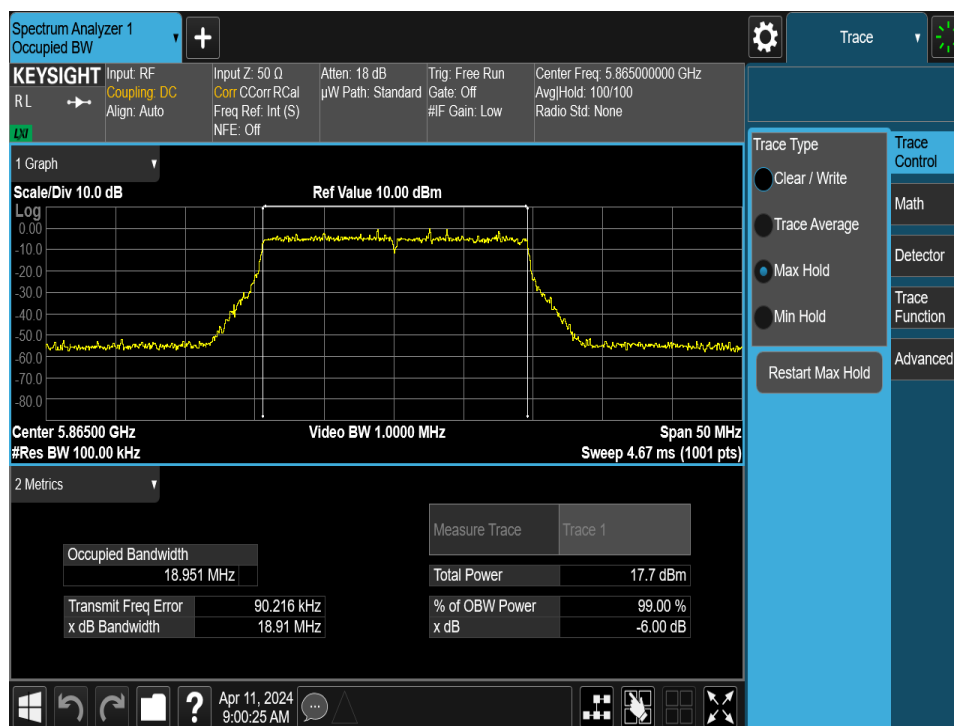


Plot 7-58. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11a (UNII Band 4) – Ch. 173)

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2403190019-07.A3L	Test Dates: 3/14/2024 – 4/24/2024	EUT Type: Portable Computing Device	Page 49 of 156

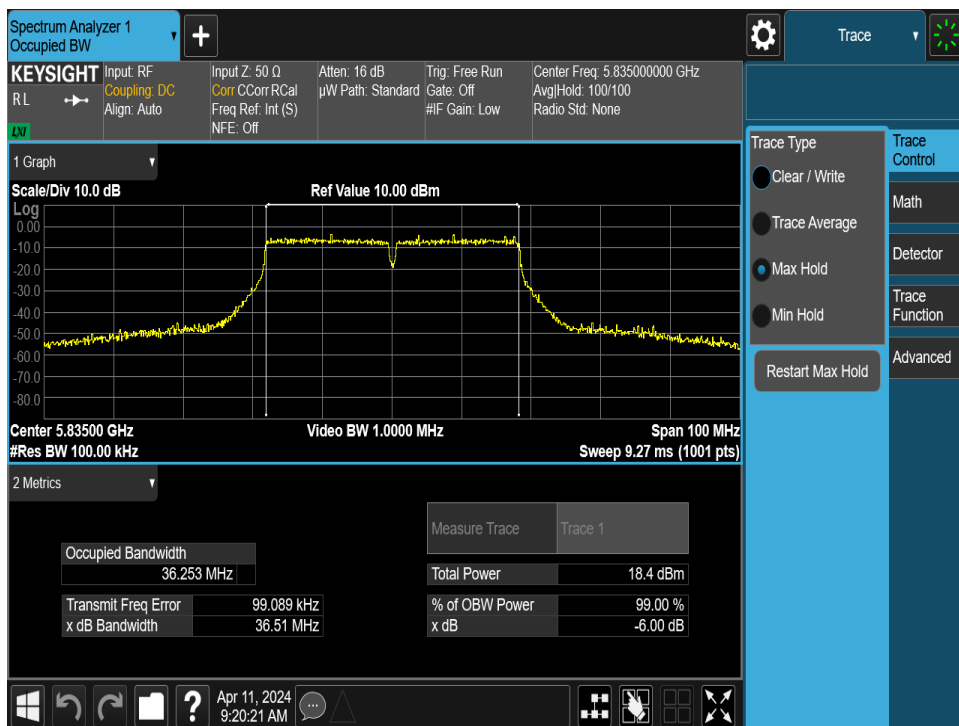


Plot 7-59. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 4) – Ch. 173)



Plot 7-60. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax/be (UNII Band 4) – Ch. 173)

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
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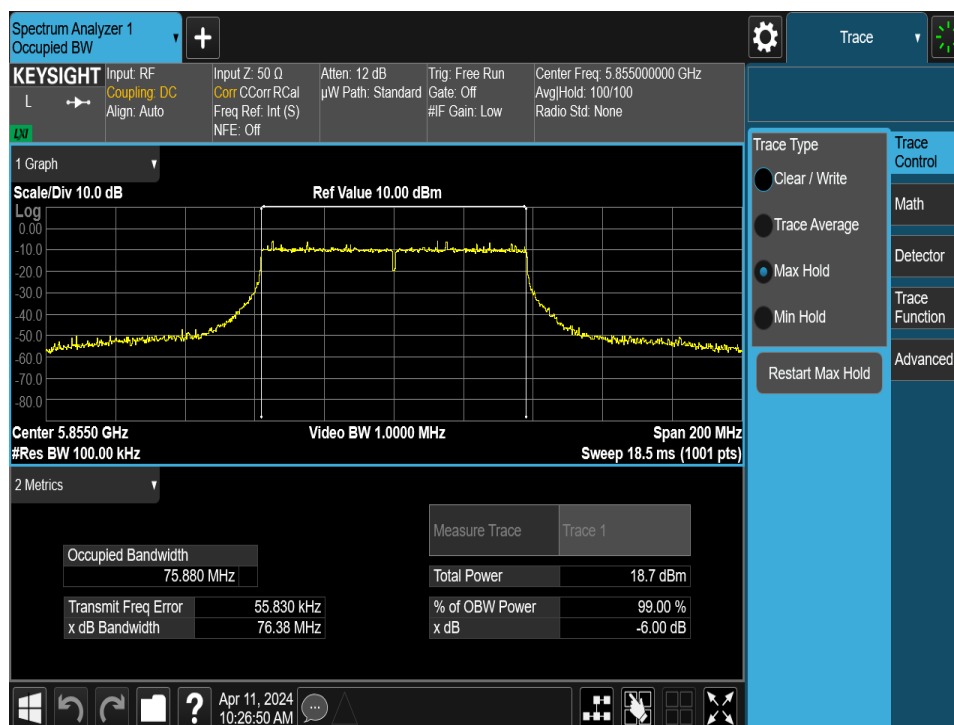


Plot 7-61. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 3/4) – Ch. 167)

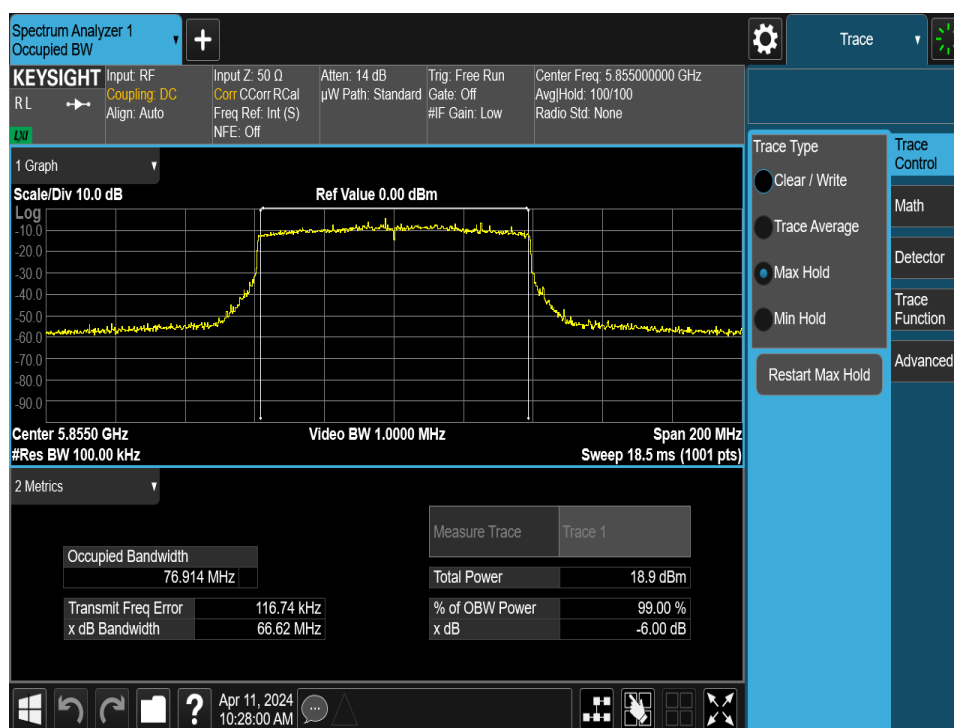


Plot 7-62. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax/be (UNII Band 3/4) – Ch. 167)

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2403190019-07.A3L	Test Dates: 3/14/2024 – 4/24/2024	EUT Type: Portable Computing Device	Page 51 of 156

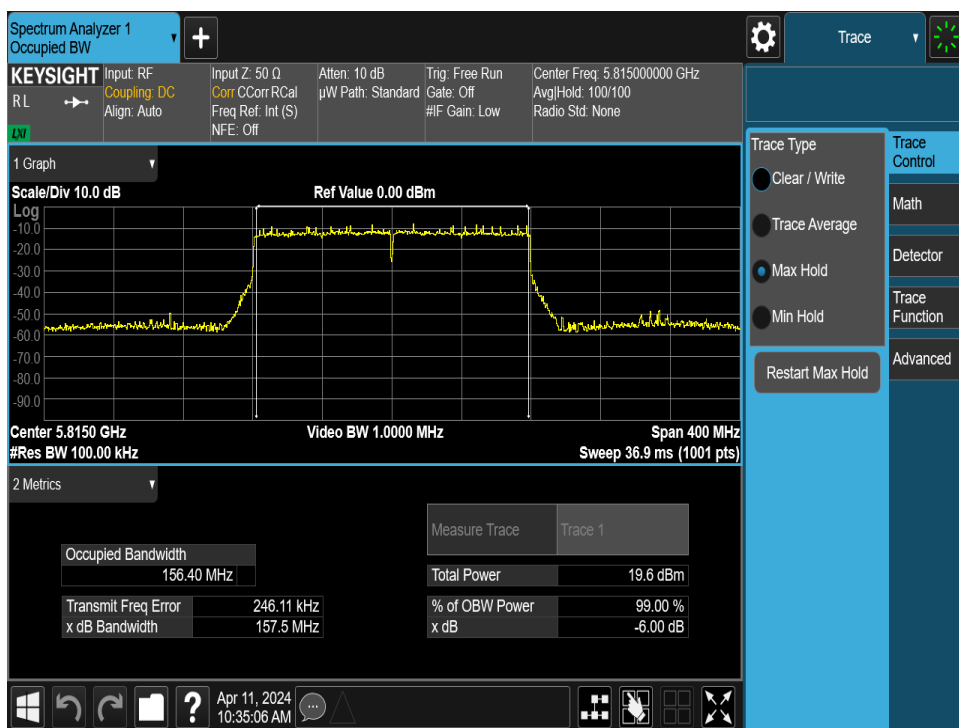
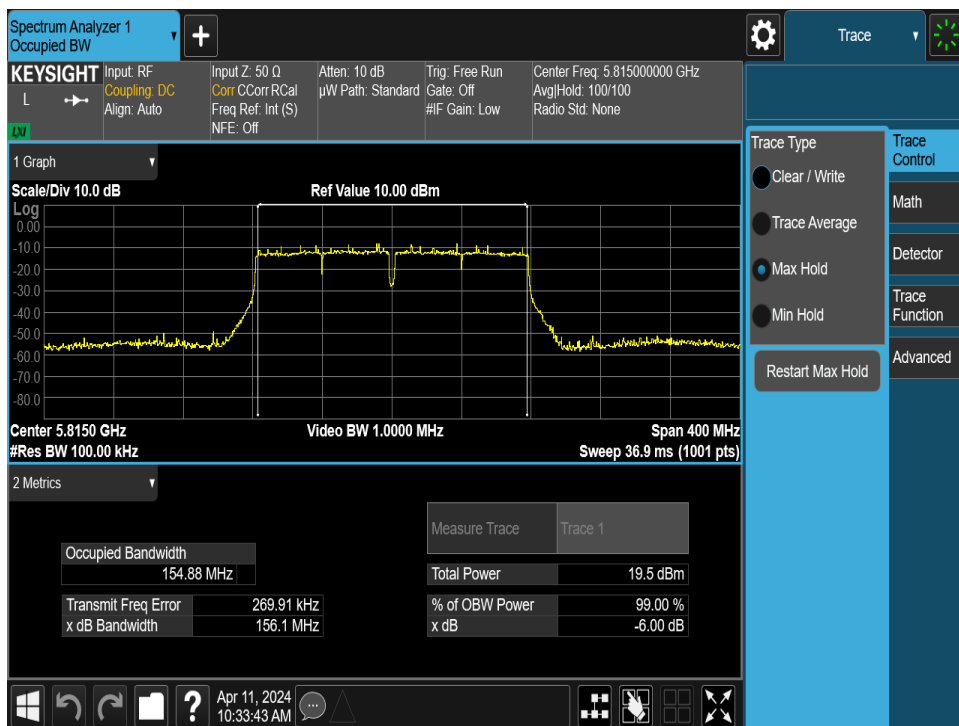


Plot 7-63. 6dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ac (UNII Band 3/4) – Ch. 171)



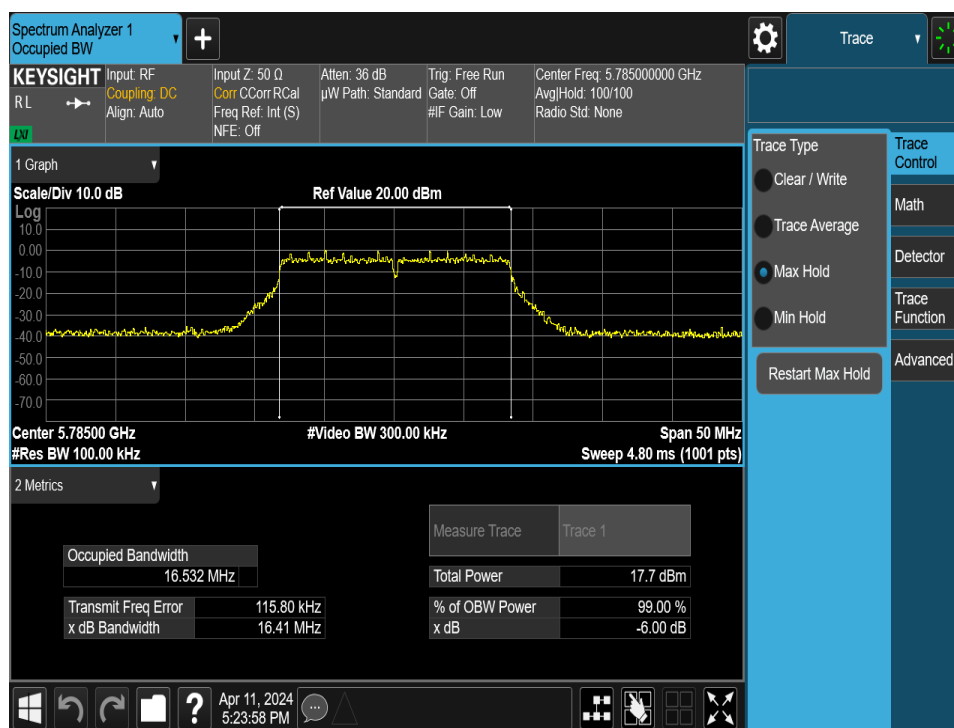
Plot 7-64. 6dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax/be (UNII Band 3/4) – Ch. 171)

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2403190019-07.A3L	Test Dates: 3/14/2024 – 4/24/2024	EUT Type: Portable Computing Device	Page 52 of 156

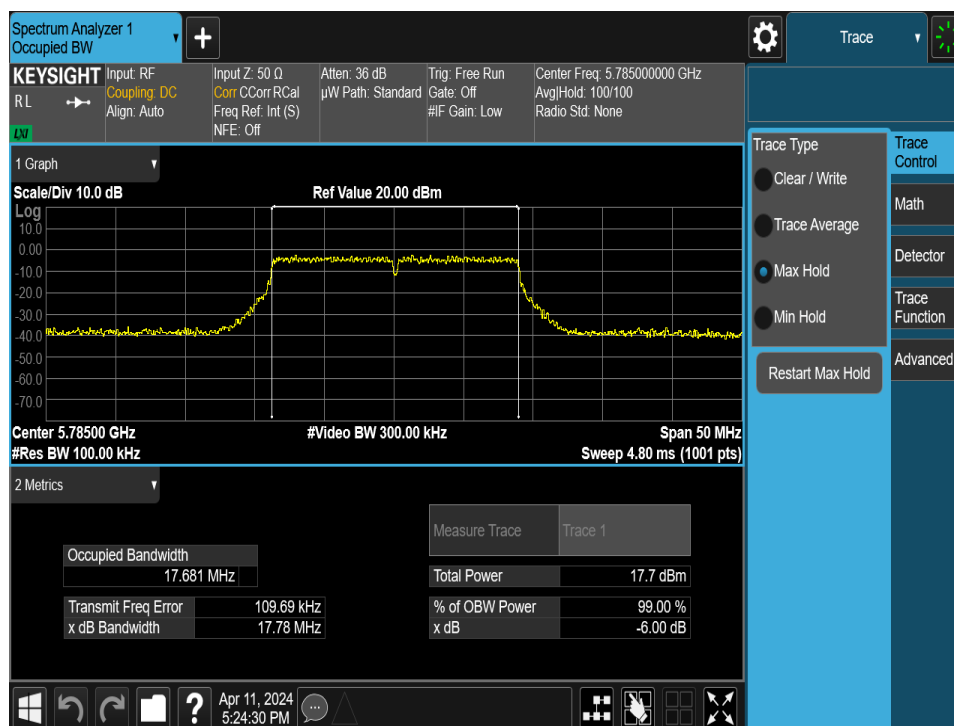


FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
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7.3.2 MIMO Antenna-2 6dB Bandwidth Measurements

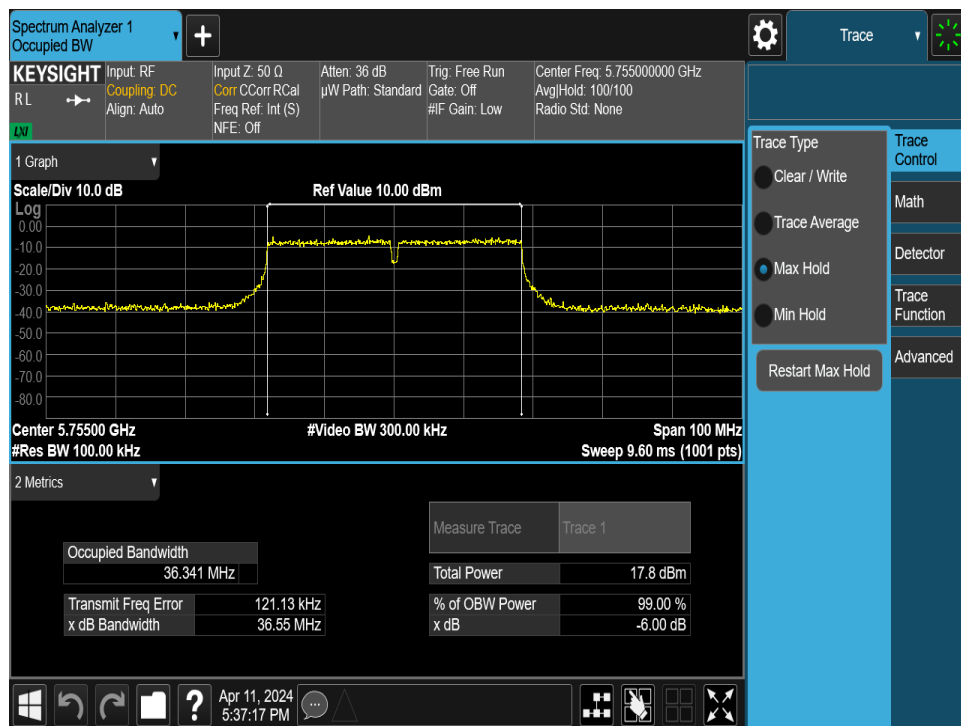
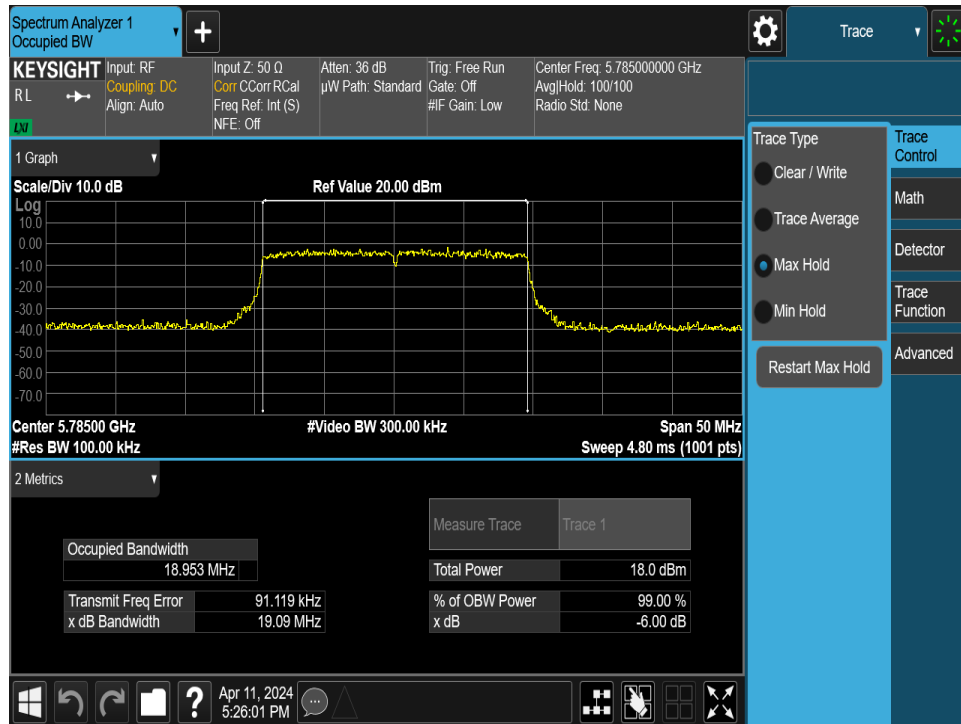


Plot 7-67. 6dB Bandwidth Plot MIMO ANT2 (802.11a (UNII Band 3) – Ch. 157)

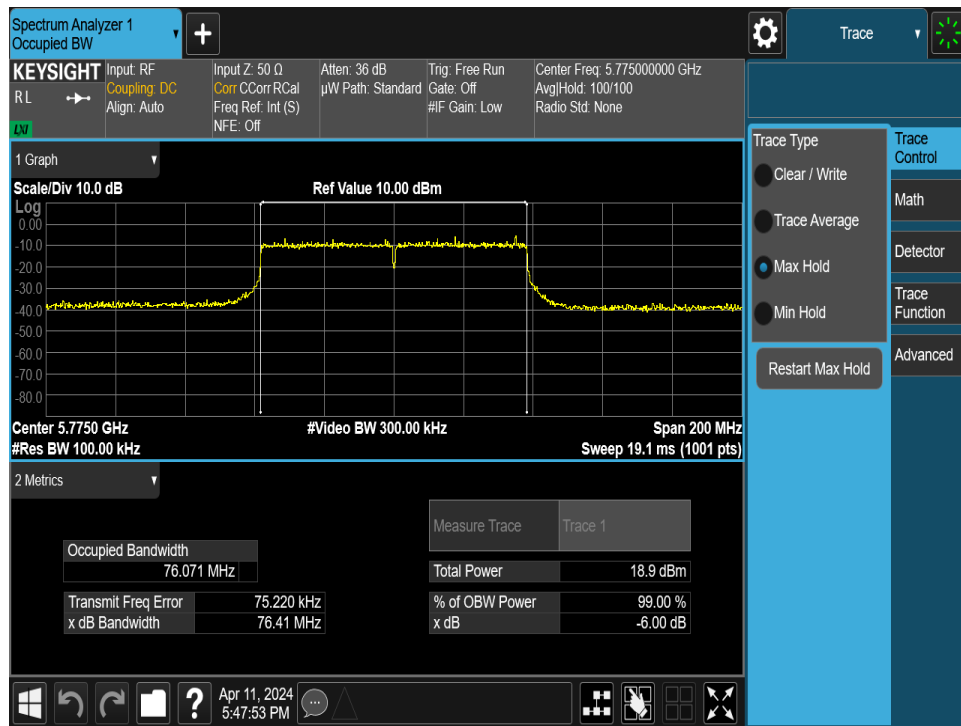
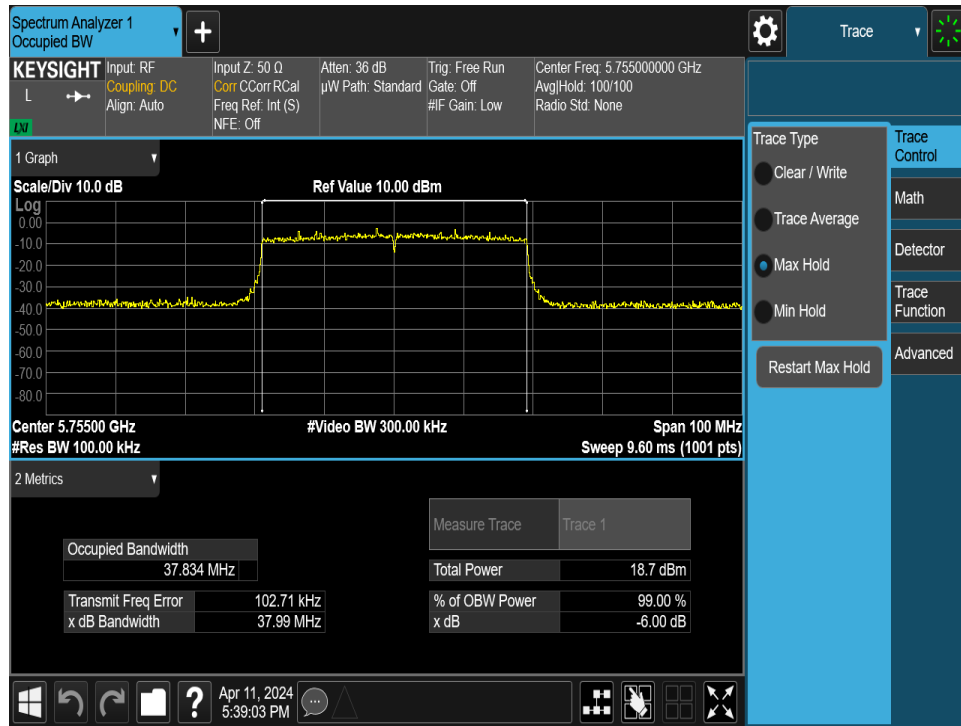


Plot 7-68. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 3) – Ch. 157)

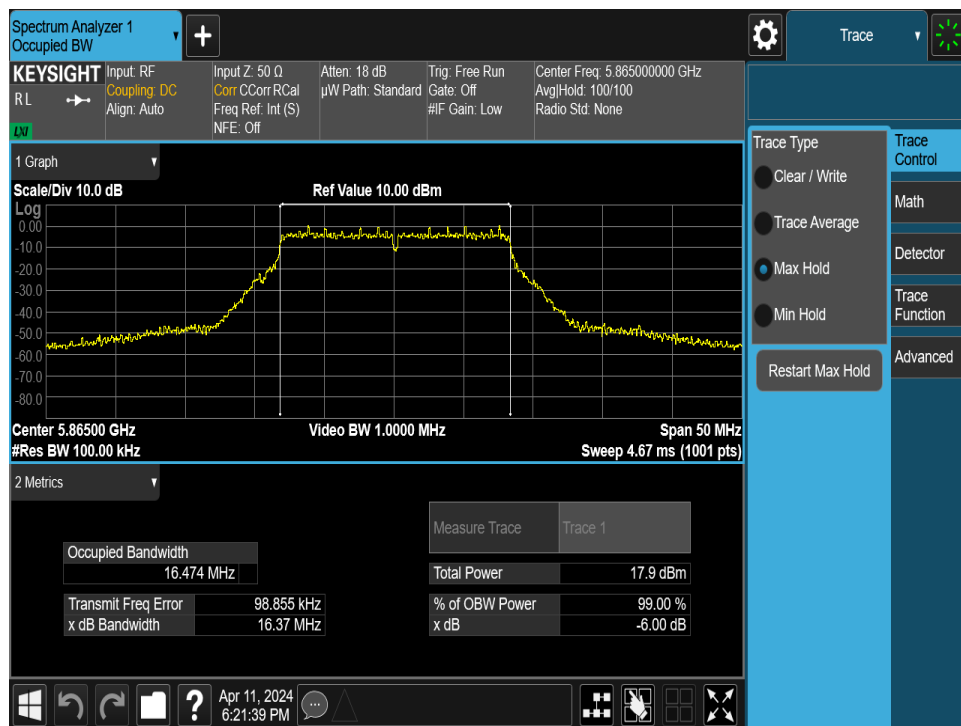
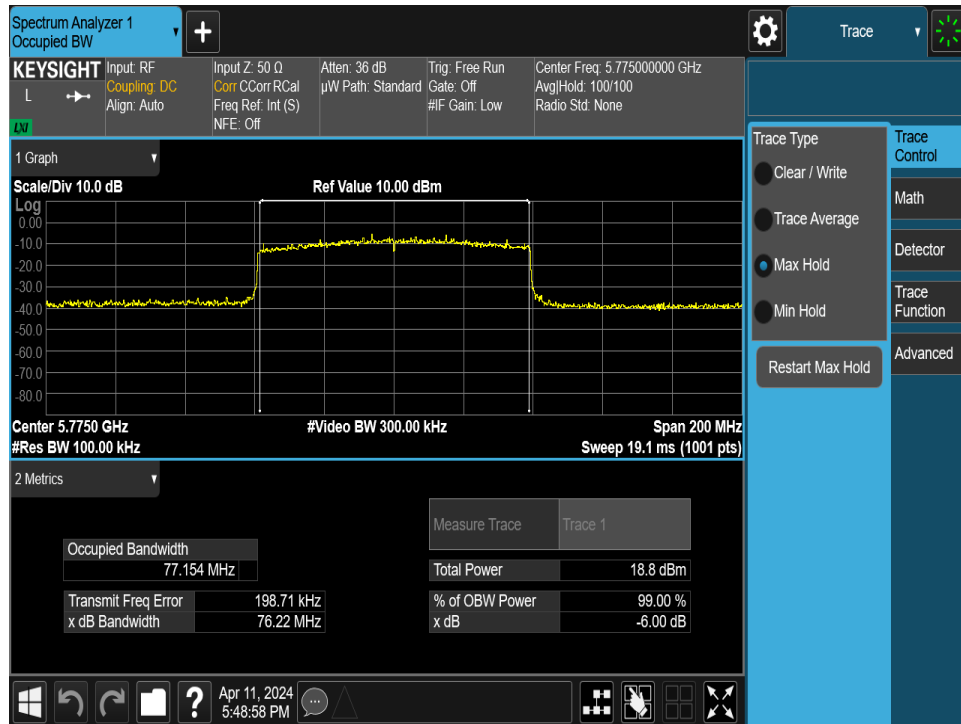
FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2403190019-07.A3L	Test Dates: 3/14/2024 – 4/24/2024	EUT Type: Portable Computing Device	Page 54 of 156



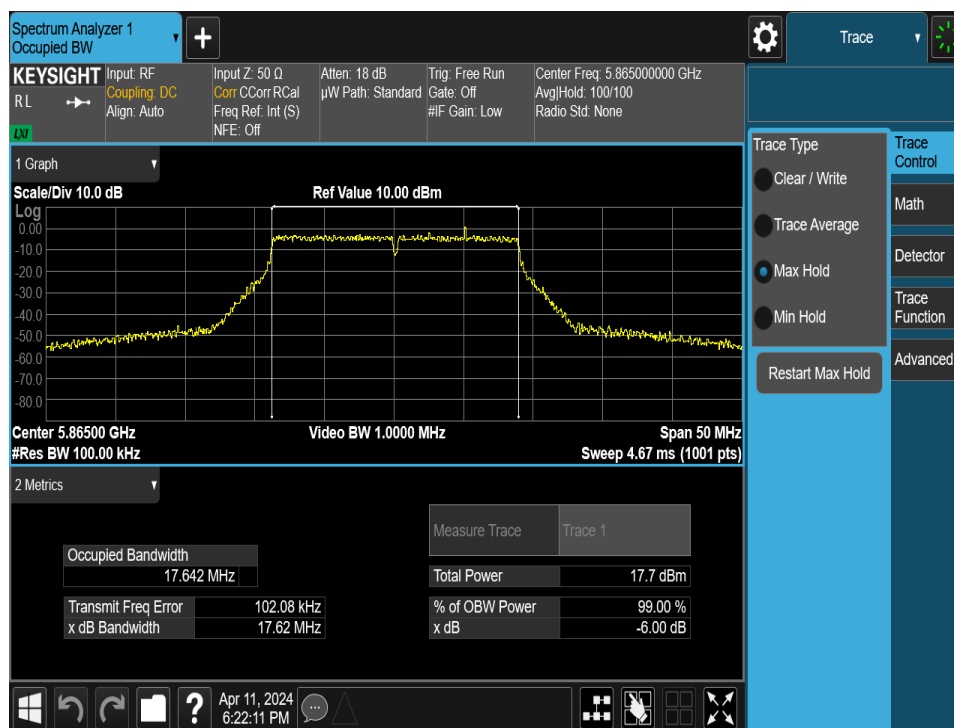
FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2403190019-07.A3L	Test Dates: 3/14/2024 – 4/24/2024	EUT Type: Portable Computing Device	Page 55 of 156



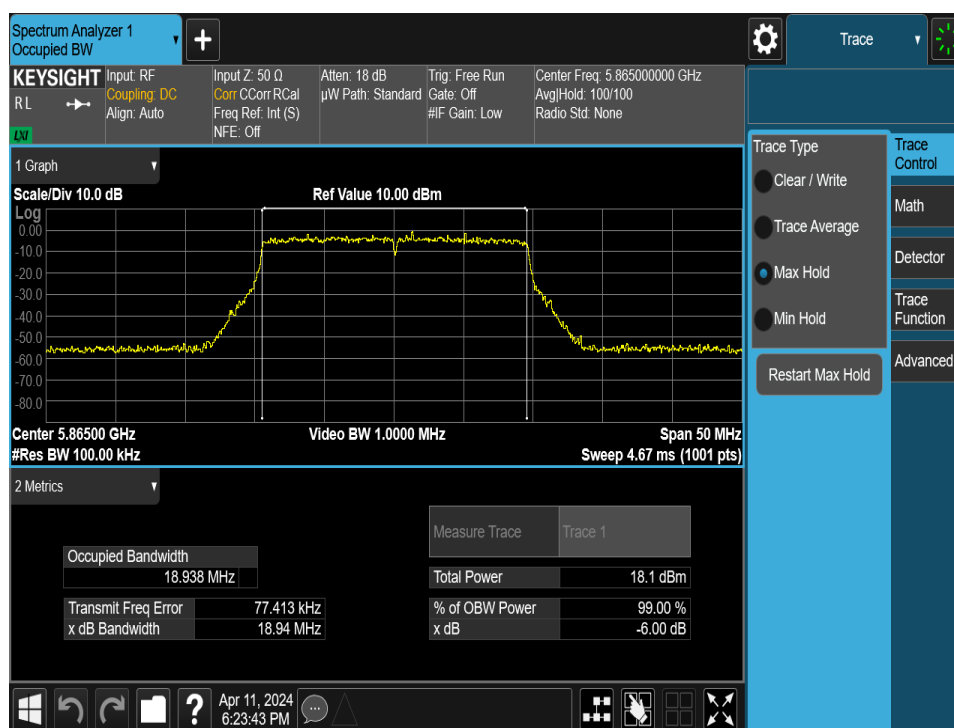
FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2403190019-07.A3L	Test Dates: 3/14/2024 – 4/24/2024	EUT Type: Portable Computing Device	Page 56 of 156



FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
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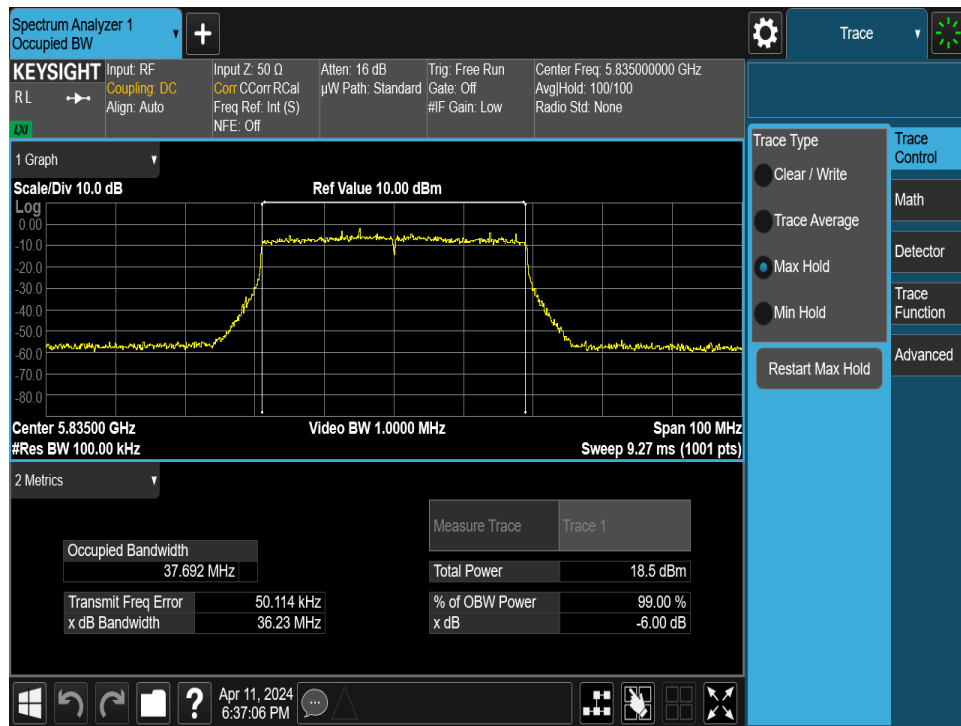
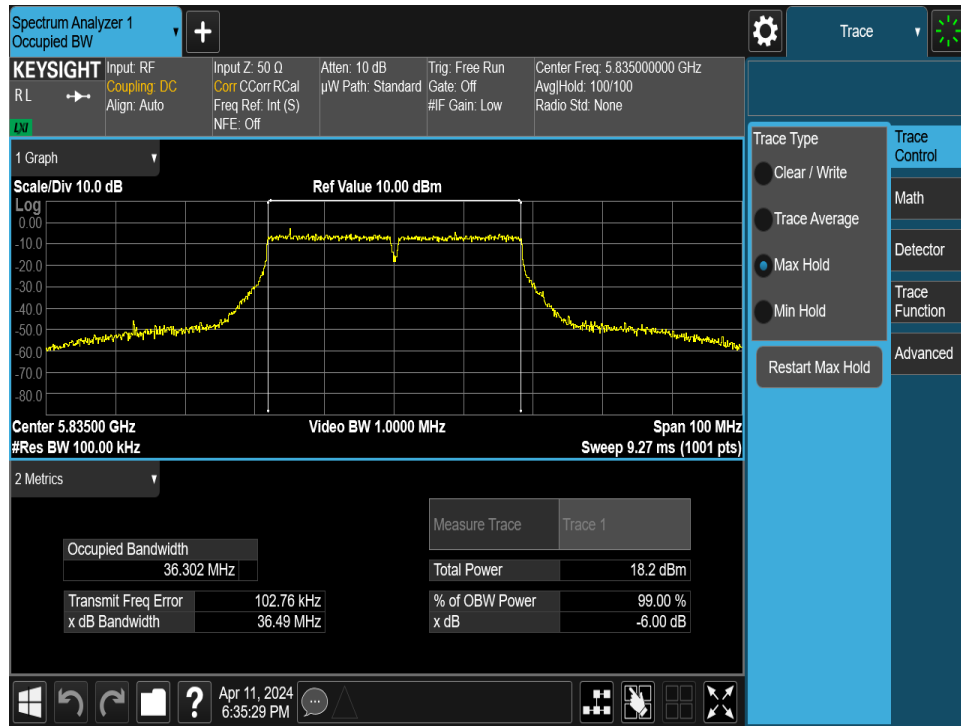


Plot 7-75. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 4) – Ch. 173)

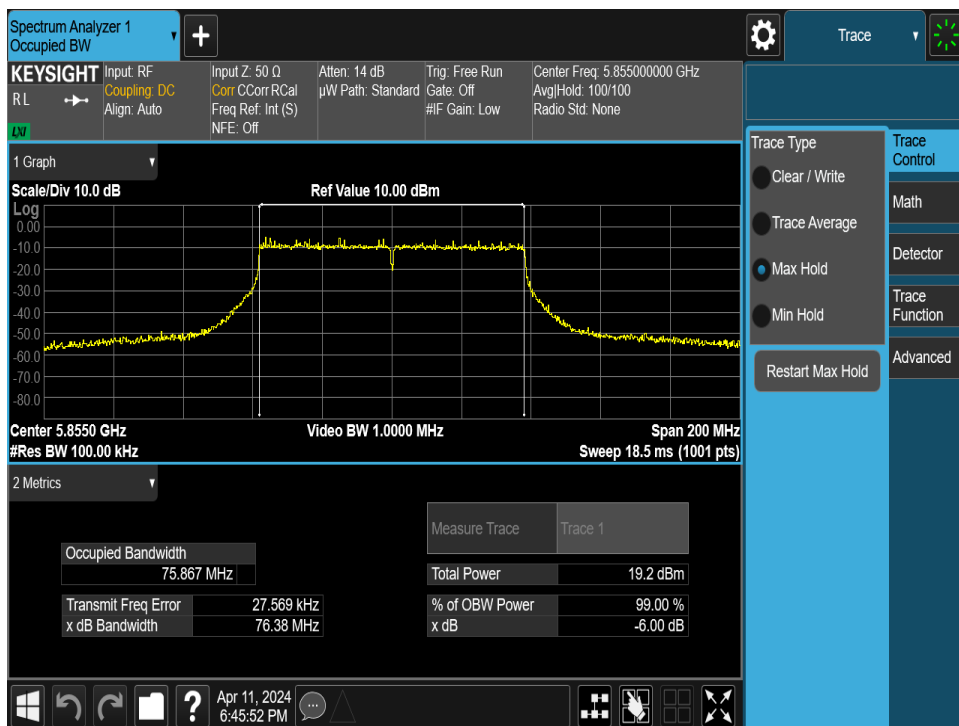


Plot 7-76. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax/be (UNII Band 4) – Ch. 173)

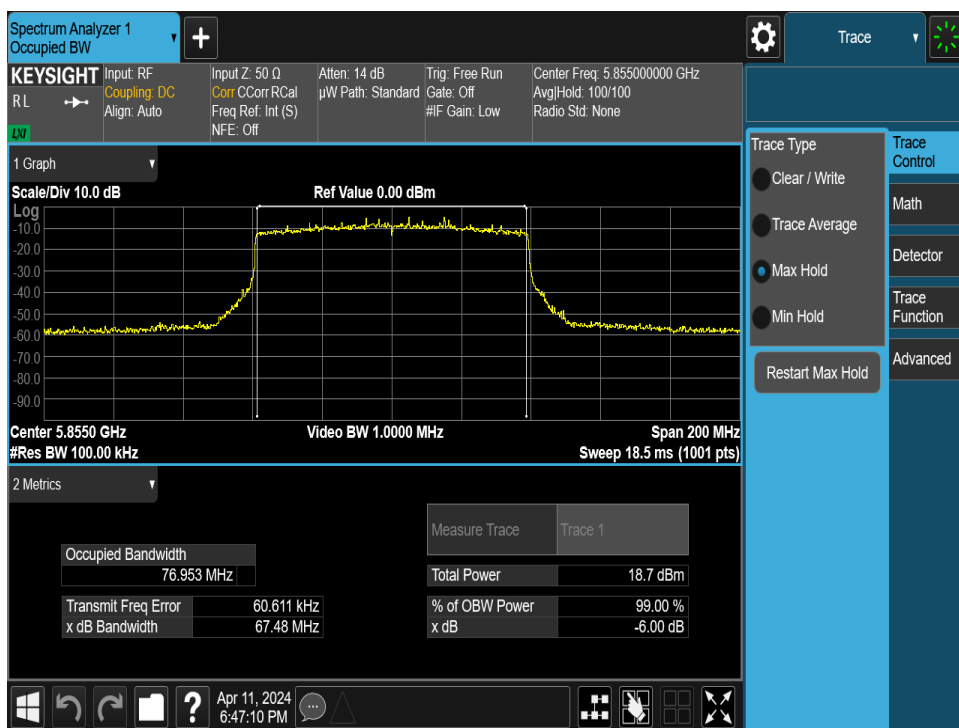
FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2403190019-07.A3L	Test Dates: 3/14/2024 – 4/24/2024	EUT Type: Portable Computing Device	Page 58 of 156



FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
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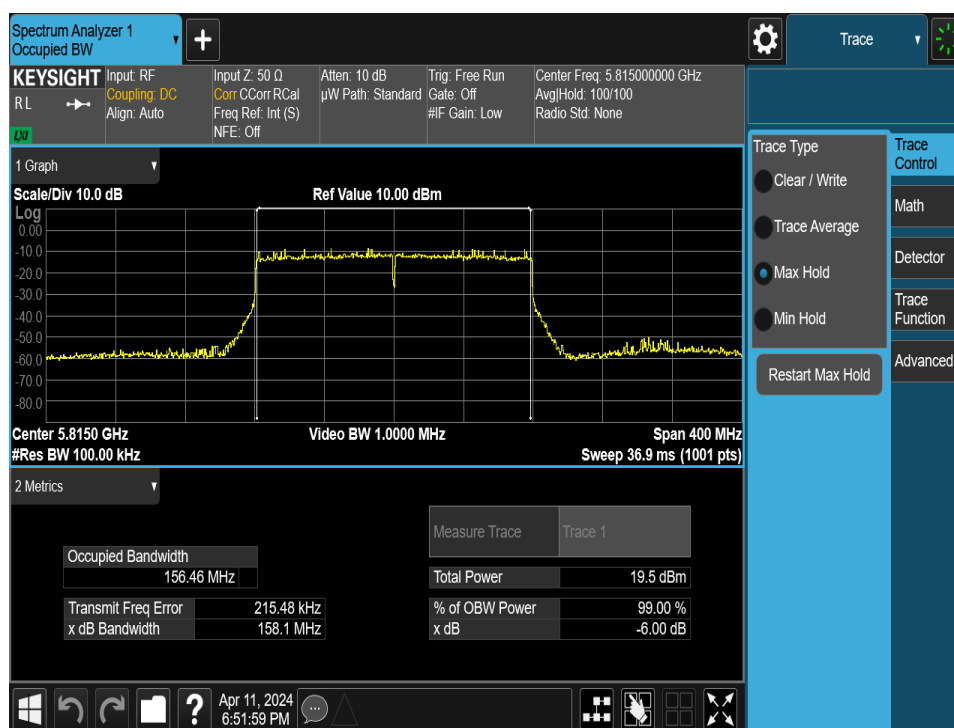
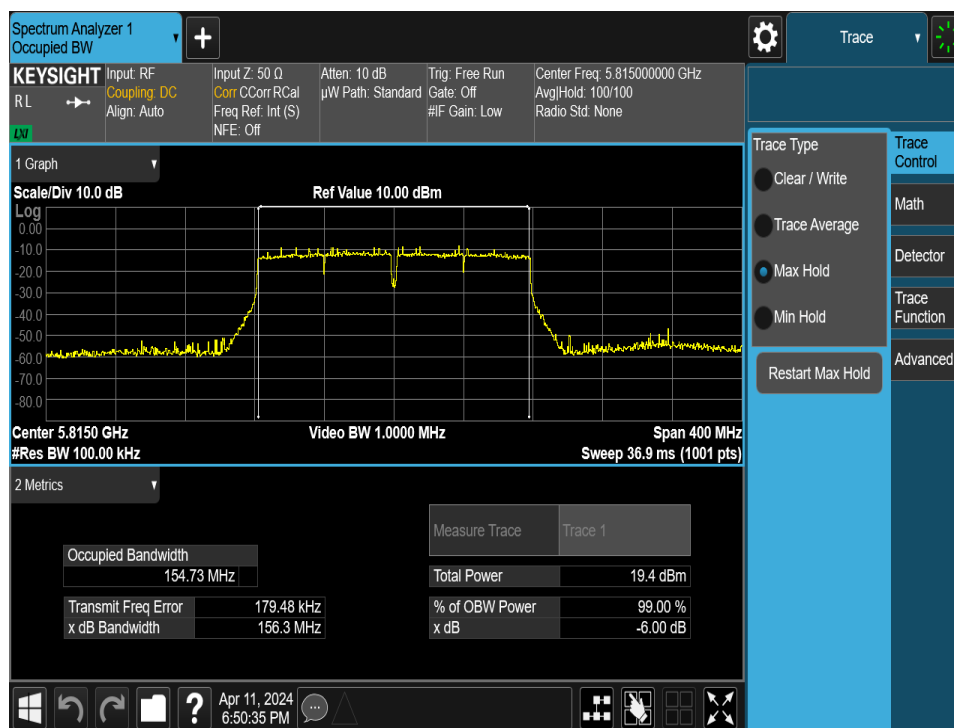


Plot 7-79. 6dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ac (UNII Band 3/4) – Ch. 171)



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

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
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FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
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7.4 UNII Output Power Measurement

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 at the appropriate frequencies.

The output power limits are as specified in the tables below.

UNII Band	Frequency Range	Maximum Conducted Power Limit		Maximum e.i.r.p	
		FCC	ISED	FCC	ISED
UNII 1	5.15 – 5.25GHz	23.98dBm (250mW)	N/A	N/A	The lesser of 23.01dBm (200mW) or 10dBm + 10log ₁₀ B
UNII 2A	5.25 – 5.35GHz	The lesser of 23.98dBm (250mW) or 11dBm + 10log ₁₀ B		N/A	The lesser of 30dBm (1W) or 17dBm + 10log ₁₀ B
UNII 2C	5.47 – 5.725GHz				
UNII 3	5.725 – 5.850GHz	30dBm (1W)		N/A	N/A
UNII 4	5.850 – 5.895GHz	N/A		30dBm (1W)	30dBm (1W)

Test Procedure Used

ANSI C63.10-2013 – Section 12.3.3.2 Method PM-G

ANSI C63.10-2013 – Section 14.2 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.

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MIMO Maximum Conducted Output Power Measurements

5GHz WIFI (20MHz 802.11a MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5180	36	11.15	11.17	14.17	23.98	-9.81	2.93	17.10	30.00	-12.90
	5200	40	11.14	11.17	14.17	23.98	-9.81	2.93	17.10	30.00	-12.90
	5220	44	11.07	11.20	14.15	23.98	-9.83	2.93	17.08	30.00	-12.92
	5240	48	11.29	11.17	14.24	23.98	-9.74	2.93	17.17	30.00	-12.83
UNII-2A	5260	52	11.34	11.19	14.28	23.98	-9.70	2.86	17.14	30.00	-12.86
	5280	56	11.44	11.26	14.36	23.98	-9.62	2.86	17.22	30.00	-12.78
	5300	60	11.57	11.59	14.59	23.98	-9.39	2.86	17.45	30.00	-12.55
	5320	64	11.59	11.58	14.60	23.98	-9.38	2.86	17.46	30.00	-12.54
UNII-2C	5500	100	11.89	10.96	14.46	23.98	-9.52	3.07	17.53	30.00	-12.47
	5600	120	11.91	11.68	14.81	23.98	-9.17	3.07	17.88	30.00	-12.12
	5620	124	11.98	11.73	14.87	23.98	-9.11	3.07	17.94	30.00	-12.06
	5720	144	11.90	11.77	14.85	23.98	-9.13	3.07	17.92	30.00	-12.08
UNII-3	5745	149	11.29	11.83	14.58	30.00	-15.42	3.16	17.73	36.00	-18.27
	5785	157	11.75	11.58	14.68	30.00	-15.32	3.16	17.83	36.00	-18.17
	5825	165	11.43	11.91	14.69	30.00	-15.31	3.16	17.84	36.00	-18.16
UNII-4	5845	169	11.52	11.83	14.69	-	-	3.38	18.07	30.00	-11.93
	5865	173	11.40	11.76	14.59	-	-	3.38	17.98	30.00	-12.02
	5885	177	11.48	11.94	14.73	-	-	3.38	18.11	30.00	-11.89

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

5GHz WIFI (20MHz 802.11n MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5180	36	11.25	11.38	14.33	23.98	-9.65	2.93	17.26	30.00	-12.74
	5200	40	11.25	11.49	14.38	23.98	-9.60	2.93	17.31	30.00	-12.69
	5220	44	11.16	11.47	14.33	23.98	-9.65	2.93	17.26	30.00	-12.74
	5240	48	11.38	11.44	14.42	23.98	-9.56	2.93	17.35	30.00	-12.65
UNII-2A	5260	52	11.44	11.37	14.42	23.98	-9.56	2.86	17.28	30.00	-12.72
	5280	56	11.52	11.48	14.51	23.98	-9.47	2.86	17.37	30.00	-12.63
	5300	60	11.60	11.76	14.69	23.98	-9.29	2.86	17.55	30.00	-12.45
	5320	64	11.60	11.71	14.67	23.98	-9.31	2.86	17.53	30.00	-12.47
UNII-2C	5500	100	11.86	11.14	14.53	23.98	-9.45	3.07	17.60	30.00	-12.40
	5620	124	11.98	11.86	14.93	23.98	-9.05	3.07	18.00	30.00	-12.00
	5720	144	11.87	11.91	14.90	23.98	-9.08	3.07	17.97	30.00	-12.03
UNII-3	5745	149	11.23	11.94	14.61	30.00	-15.39	3.16	17.77	36.00	-18.23
	5785	157	11.69	11.71	14.71	30.00	-15.29	3.16	17.87	36.00	-18.13
	5825	165	10.97	11.66	14.34	30.00	-15.66	3.16	17.50	36.00	-18.50
UNII-4	5845	169	11.49	11.96	14.74	-	-	3.38	18.12	30.00	-11.88
	5865	173	11.38	11.89	14.65	-	-	3.38	18.04	30.00	-11.96
	5885	177	11.61	11.95	14.79	-	-	3.38	18.18	30.00	-11.82

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

5GHz WIFI (20MHz 802.11ac MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5180	36	11.28	11.43	14.37	23.98	-9.61	2.93	17.30	30.00	-12.70
	5200	40	11.24	11.41	14.34	23.98	-9.64	2.93	17.27	30.00	-12.73
	5220	44	11.19	11.44	14.33	23.98	-9.65	2.93	17.26	30.00	-12.74
	5240	48	11.45	11.44	14.46	23.98	-9.52	2.93	17.39	30.00	-12.61
UNII-2A	5260	52	11.46	11.45	14.47	23.98	-9.51	2.86	17.33	30.00	-12.67
	5280	56	11.52	11.50	14.52	23.98	-9.46	2.86	17.38	30.00	-12.62
	5300	60	11.64	11.75	14.71	23.98	-9.27	2.86	17.57	30.00	-12.43
	5320	64	11.65	11.71	14.69	23.98	-9.29	2.86	17.55	30.00	-12.45
UNII-2C	5500	100	11.93	11.13	14.56	23.98	-9.42	3.07	17.63	30.00	-12.37
	5600	120	11.97	11.87	14.93	23.98	-9.05	3.07	18.00	30.00	-12.00
	5620	124	11.58	11.61	14.61	23.98	-9.37	3.07	17.68	30.00	-12.32
	5720	144	11.96	11.91	14.95	23.98	-9.03	3.07	18.02	30.00	-11.98
UNII-3	5745	149	11.33	11.95	14.66	30.00	-15.34	3.16	17.82	36.00	-18.18
	5785	157	11.81	11.71	14.77	30.00	-15.23	3.16	17.93	36.00	-18.07
	5825	165	11.02	11.67	14.37	30.00	-15.63	3.16	17.52	36.00	-18.48
UNII-4	5845	169	11.58	11.98	14.79	-	-	3.38	18.18	30.00	-11.82
	5865	173	11.45	11.89	14.69	-	-	3.38	18.07	30.00	-11.93
	5885	177	11.63	11.99	14.82	-	-	3.38	18.21	30.00	-11.79

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

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
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5GHz WIFI (20MHz 802.11ax MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5180	36	11.31	11.57	14.45	23.98	-9.53	2.93	17.38	30.00	-12.62
	5200	40	11.28	11.60	14.45	23.98	-9.53	2.93	17.38	30.00	-12.62
	5220	44	11.24	11.52	14.39	23.98	-9.59	2.93	17.32	30.00	-12.68
	5240	48	10.91	11.11	14.02	23.98	-9.96	2.93	16.95	30.00	-13.05
UNII-2A	5260	52	10.95	11.07	14.02	23.98	-9.96	2.86	16.88	30.00	-13.12
	5280	56	11.06	11.09	14.09	23.98	-9.89	2.86	16.95	30.00	-13.05
	5300	60	11.15	11.38	14.28	23.98	-9.70	2.86	17.14	30.00	-12.86
	5320	64	11.16	11.34	14.26	23.98	-9.72	2.86	17.12	30.00	-12.88
UNII-2C	5500	100	11.57	11.01	14.31	23.98	-9.67	3.07	17.38	30.00	-12.62
	5600	120	11.56	11.39	14.49	23.98	-9.49	3.07	17.56	30.00	-12.44
	5620	124	11.83	11.49	14.67	23.98	-9.31	3.07	17.75	30.00	-12.25
	5720	144	11.77	11.45	14.62	23.98	-9.36	3.07	17.69	30.00	-12.31
UNII-3	5745	149	11.72	11.84	14.79	30.00	-15.21	3.16	17.95	36.00	-18.05
	5785	157	11.71	11.27	14.51	30.00	-15.49	3.16	17.66	36.00	-18.34
	5825	165	11.45	11.62	14.55	30.00	-15.45	3.16	17.70	36.00	-18.30
UNII-4	5845	169	11.49	11.60	14.56	-	-	3.38	17.94	30.00	-12.06
	5865	173	11.39	11.51	14.46	-	-	3.38	17.84	30.00	-12.16
	5885	177	11.48	11.98	14.75	-	-	3.38	18.13	30.00	-11.87

Table 7-8. MIMO 20MHz BW 802.11ax (UNII) Maximum Conducted Output Power

5GHz WIFI (20MHz 802.11be MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5180	36	11.34	11.65	14.51	23.98	-9.47	2.93	17.44	30.00	-12.56
	5200	40	11.28	11.65	14.48	23.98	-9.50	2.93	17.41	30.00	-12.59
	5220	44	11.29	11.58	14.45	23.98	-9.53	2.93	17.38	30.00	-12.62
	5240	48	10.97	11.13	14.06	23.98	-9.92	2.93	16.99	30.00	-13.01
UNII-2A	5260	52	11.02	11.05	14.05	23.98	-9.93	2.86	16.91	30.00	-13.09
	5280	56	11.06	11.17	14.13	23.98	-9.85	2.86	16.99	30.00	-13.01
	5300	60	11.19	11.45	14.33	23.98	-9.65	2.86	17.19	30.00	-12.81
	5320	64	11.21	11.44	14.34	23.98	-9.64	2.86	17.20	30.00	-12.80
UNII-2C	5500	100	11.61	11.01	14.33	23.98	-9.65	3.07	17.40	30.00	-12.60
	5600	120	11.60	11.43	14.53	23.98	-9.45	3.07	17.60	30.00	-12.40
	5620	124	11.79	11.55	14.68	23.98	-9.30	3.07	17.75	30.00	-12.25
	5720	144	11.81	11.51	14.67	23.98	-9.31	3.07	17.74	30.00	-12.26
UNII-3	5745	149	11.76	11.88	14.83	30.00	-15.17	3.16	17.99	36.00	-18.01
	5785	157	11.72	11.29	14.52	30.00	-15.48	3.16	17.68	36.00	-18.32
	5825	165	11.46	11.69	14.59	30.00	-15.41	3.16	17.74	36.00	-18.26
UNII-4	5845	169	11.51	11.61	14.57	-	-	3.38	17.95	30.00	-12.05
	5865	173	11.44	11.55	14.51	-	-	3.38	17.89	30.00	-12.11
	5885	177	11.54	11.93	14.75	-	-	3.38	18.13	30.00	-11.87

Table 7-9. MIMO 20MHz BW 802.11be (UNII) Maximum Conducted Output Power

5GHz WIFI (40MHz 802.11n MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5190	38	11.61	11.81	14.72	23.98	-9.26	2.93	17.65	30.00	-12.35
	5230	46	11.49	11.81	14.66	23.98	-9.32	2.93	17.59	30.00	-12.41
UNII-2A	5270	54	11.75	11.81	14.79	23.98	-9.19	2.86	17.65	30.00	-12.35
	5310	62	11.66	11.53	14.61	23.98	-9.37	2.86	17.47	30.00	-12.53
UNII-2C	5510	102	11.97	11.01	14.53	23.98	-9.45	3.07	17.60	30.00	-12.40
	5590	118	11.51	11.00	14.27	23.98	-9.71	3.07	17.34	30.00	-12.66
	5630	126	11.64	11.23	14.45	23.98	-9.53	3.07	17.52	30.00	-12.48
	5710	142	11.48	11.17	14.34	23.98	-9.64	3.07	17.41	30.00	-12.59
UNII-3	5755	151	11.28	11.61	14.46	30.00	-15.54	3.16	17.62	36.00	-18.38
	5795	159	11.76	11.44	14.61	30.00	-15.39	3.16	17.77	36.00	-18.23
UNII-4	5835	167	11.69	11.91	14.81	-	-	3.38	18.19	30.00	-11.81
	5875	175	11.39	11.67	14.54	-	-	3.38	17.93	30.00	-12.07

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

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
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5GHz WIFI (40MHz 802.11ac MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5190	38	11.42	11.21	14.33	23.98	-9.65	2.93	17.26	30.00	-12.74
	5230	46	11.36	11.29	14.34	23.98	-9.64	2.93	17.27	30.00	-12.73
UNII-2A	5270	54	11.62	11.27	14.46	23.98	-9.52	2.86	17.32	30.00	-12.68
	5310	62	11.77	11.64	14.72	23.98	-9.26	2.86	17.58	30.00	-12.42
UNII-2C	5510	102	11.71	10.54	14.17	23.98	-9.81	3.07	17.24	30.00	-12.76
	5590	118	11.86	11.28	14.59	23.98	-9.39	3.07	17.66	30.00	-12.34
	5630	126	11.85	11.43	14.66	23.98	-9.32	3.07	17.73	30.00	-12.27
	5710	142	11.80	11.32	14.58	23.98	-9.40	3.07	17.65	30.00	-12.35
UNII-3	5755	151	11.73	11.65	14.70	30.00	-15.30	3.16	17.86	36.00	-18.14
	5795	159	11.67	11.01	14.36	30.00	-15.64	3.16	17.52	36.00	-18.48
UNII-4	5835	167	11.61	11.49	14.56	-	-	3.38	17.94	30.00	-12.06
	5875	175	11.98	11.90	14.95	-	-	3.38	18.33	30.00	-11.67

Table 7-11. MIMO 40MHz BW 802.11ac (UNII) Maximum Conducted Output Power

5GHz WIFI (40MHz 802.11ax MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5190	38	11.27	11.11	14.20	23.98	-9.78	2.93	17.13	30.00	-12.87
	5230	46	11.17	11.13	14.16	23.98	-9.82	2.93	17.09	30.00	-12.91
UNII-2A	5270	54	11.56	11.21	14.40	23.98	-9.58	2.86	17.26	30.00	-12.74
	5310	62	11.61	11.52	14.58	23.98	-9.40	2.86	17.44	30.00	-12.56
UNII-2C	5510	102	11.68	10.42	14.11	23.98	-9.87	3.07	17.18	30.00	-12.82
	5590	118	11.75	11.15	14.47	23.98	-9.51	3.07	17.54	30.00	-12.46
	5630	126	11.81	11.29	14.57	23.98	-9.41	3.07	17.64	30.00	-12.36
	5710	142	11.73	11.22	14.49	23.98	-9.49	3.07	17.56	30.00	-12.44
UNII-3	5755	151	11.98	11.92	14.96	30.00	-15.04	3.16	18.12	36.00	-17.88
	5795	159	11.48	11.01	14.26	30.00	-15.74	3.16	17.42	36.00	-18.58
UNII-4	5835	167	11.82	11.64	14.74	-	-	3.38	18.12	30.00	-11.88
	5875	175	11.78	11.76	14.78	-	-	3.38	18.16	30.00	-11.84

Table 7-12. MIMO 40MHz BW 802.11ax (UNII) Maximum Conducted Output Power

5GHz WIFI (40MHz 802.11be MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5190	38	11.25	11.10	14.19	23.98	-9.79	2.93	17.12	30.00	-12.88
	5230	46	11.18	11.15	14.18	23.98	-9.80	2.93	17.11	30.00	-12.89
UNII-2A	5270	54	11.61	11.19	14.42	23.98	-9.56	2.86	17.28	30.00	-12.72
	5310	62	11.61	11.51	14.57	23.98	-9.41	2.86	17.43	30.00	-12.57
UNII-2C	5510	102	11.67	10.41	14.10	23.98	-9.88	3.07	17.17	30.00	-12.83
	5590	118	11.78	11.17	14.50	23.98	-9.48	3.07	17.57	30.00	-12.43
	5630	126	11.79	11.27	14.55	23.98	-9.43	3.07	17.62	30.00	-12.38
	5710	142	11.71	11.21	14.48	23.98	-9.50	3.07	17.55	30.00	-12.45
UNII-3	5755	151	11.92	11.91	14.93	30.00	-15.07	3.16	18.09	36.00	-17.91
	5795	159	11.48	11.01	14.26	30.00	-15.74	3.16	17.42	36.00	-18.58
UNII-4	5835	167	11.84	11.64	14.75	-	-	3.38	18.13	30.00	-11.87
	5875	175	11.76	11.79	14.79	-	-	3.38	18.17	30.00	-11.83

Table 7-13. MIMO 40MHz BW 802.11be (UNII) Maximum Conducted Output Power

5GHz WIFI (80MHz 802.11ac MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5210	42	11.15	10.88	14.03	23.98	-9.95	2.93	16.96	30.00	-13.04
UNII-2A	5290	58	11.49	11.16	14.34	23.98	-9.64	2.86	17.20	30.00	-12.80
	5530	106	11.54	10.64	14.12	23.98	-9.86	3.07	17.19	30.00	-12.81
UNII-2C	5610	122	11.53	10.75	14.17	23.98	-9.81	3.07	17.24	30.00	-12.76
	5690	138	11.75	10.64	14.24	23.98	-9.74	3.07	17.31	30.00	-12.69
UNII-3	5775	155	11.55	11.01	14.30	30.00	-15.70	3.16	17.46	36.00	-18.54
UNII-4	5855	171	11.57	11.34	14.47	-	-	3.38	17.85	30.00	-12.15

Table 7-14. MIMO 80MHz BW 802.11ac (UNII) Maximum Conducted Output Power

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5GHz WIFI (80MHz 802.11ax MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5210	42	11.16	11.20	14.19	23.98	-9.79	2.93	17.12	30.00	-12.88
UNII-2A	5290	58	11.03	11.01	14.03	23.98	-9.95	2.86	16.89	30.00	-13.11
UNII-2C	5530	106	11.74	11.01	14.40	23.98	-9.58	3.07	17.47	30.00	-12.53
	5610	122	11.67	11.01	14.36	23.98	-9.62	3.07	17.43	30.00	-12.57
	5690	138	11.99	11.02	14.54	23.98	-9.44	3.07	17.61	30.00	-12.39
UNII-3	5775	155	11.81	11.15	14.50	30.00	-15.50	3.16	17.66	36.00	-18.34
UNII-4	5855	171	11.31	11.01	14.17	-	-	3.38	17.55	30.00	-12.45

Table 7-15. MIMO 80MHz BW 802.11ax (UNII) Maximum Conducted Output Power

5GHz WIFI (80MHz 802.11be MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5210	42	11.29	11.19	14.25	23.98	-9.73	2.93	17.18	30.00	-12.82
UNII-2A	5290	58	11.05	11.05	14.06	23.98	-9.92	2.86	16.92	30.00	-13.08
UNII-2C	5530	106	11.78	11.01	14.42	23.98	-9.56	3.07	17.49	30.00	-12.51
	5610	122	11.73	11.03	14.40	23.98	-9.58	3.07	17.47	30.00	-12.53
	5690	138	11.46	11.04	14.27	23.98	-9.71	3.07	17.34	30.00	-12.66
UNII-3	5775	155	11.84	11.18	14.53	30.00	-15.47	3.16	17.69	36.00	-18.31
UNII-4	5855	171	11.34	11.01	14.19	-	-	3.38	17.57	30.00	-12.43

Table 7-16. MIMO 80MHz BW 802.11be (UNII) Maximum Conducted Output Power

5GHz WIFI (160MHz 802.11ac MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1/2A	5250	50	11.07	11.01	14.05	23.98	-9.93	2.93	16.98	30.00	-13.02
UNII-2C	5570	114	11.53	11.02	14.29	23.98	-9.69	3.07	17.36	30.00	-12.64
UNII-3/4	5815	163	11.55	11.23	14.40	30.00	-15.60	3.38	17.78	30.00	-12.22

Table 7-17. MIMO 160MHz BW 802.11ac (UNII) Maximum Conducted Output Power

5GHz WIFI (160MHz 802.11ax MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1/2A	5250	50	11.45	11.29	14.38	23.98	-9.60	2.93	17.31	30.00	-12.69
UNII-2C	5570	114	11.88	11.31	14.61	23.98	-9.37	3.07	17.68	30.00	-12.32
UNII-3/4	5815	163	11.85	11.61	14.74	30.00	-15.26	3.38	18.12	30.00	-11.88

Table 7-18. MIMO 160MHz BW 802.11ax (UNII) Maximum Conducted Output Power

5GHz WIFI (160MHz 802.11be MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1/2A	5250	50	11.26	11.91	14.61	23.98	-9.37	2.93	17.54	30.00	-12.46
UNII-2C	5570	114	11.68	11.31	14.51	23.98	-9.47	3.07	17.58	30.00	-12.42
UNII-3/4	5815	163	11.16	11.01	14.10	30.00	-15.90	3.38	17.48	30.00	-12.52

Table 7-19. MIMO 160MHz BW 802.11be (UNII) Maximum Conducted Output Power

80MHz BW	Band	Freq [MHz]	Channel	Puncture Size	Average Conducted Power (dBm)												Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					Puncture Case																	
					90			92			93											
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO						
1	5210	42	20MHz	11.31	11.94	14.05	11.33	11.98	14.08	11.34	11.99	14.09	23.98	-9.29	2.93	17.62	30.0	-12.38				
2A	5290	58	20MHz	11.03	11.60	14.33	11.16	11.73	14.46	11.16	11.72	14.46	23.98	-9.52	2.86	17.33	30.0	-12.67				
3	5390	114	20MHz	11.58	11.63	14.62	11.74	11.80	14.78	11.69	11.72	14.72	23.98	-9.20	3.07	17.85	30.0	-12.15				
4	5610	128	20MHz	11.47	11.83	14.66	11.49	11.82	14.67	11.45	11.72	14.60	23.98	-9.31	3.07	17.74	30.0	-12.26				
5	5690	138	20MHz	11.81	11.53	14.68	11.77	11.53	14.66	11.79	11.72	14.77	23.98	-9.21	3.07	17.84	30.0	-12.16				
6	5775	155	20MHz	11.46	11.12	14.30	11.66	11.20	14.45	11.65	11.72	14.70	30	-15.30	3.16	17.85	36.0	-18.15				
7	5855	171	20MHz	11.41	11.66	14.55	11.43	11.65	14.55	11.42	11.72	14.58	30	-15.30	3.38	17.97	36.0	-18.03				

Table 7-20. MIMO 80MHz BW 802.11be (UNII) Maximum Conducted Output Power - Punctured

160MHz BW	Band	Freq [MHz]	Channel	Puncture Size	Average Conducted Power (dBm)												Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					Puncture Case																	
					94			95			1095											
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO									
1/2A	250	50	40MHz	11.03	11.78	14.43	11.02	11.83	14.45	11.04	11.87	14.49	23.98	-9.49	2.93	17.41	30.0	-12.59				
1/2A	250	50	40MHz	10.85	10.49	13.68	10.84	11.52	14.20	10.92	11.51	14.24	23.98	-9.74	3.07	17.31	30.0	-12.69				
3/4	5815	163	40MHz	11.04	11.42	14.24	11.12	11.87	14.36	11.24	11.63	14.45			3.38	17.83	30.0	-12.17				

Table 7-21. MIMO 160MHz BW 802.11be (UNII) Maximum Conducted Output Power - Punctured

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160MHz BW	Band	Freq [MHz]	Channel	Puncture Size	Average Conducted Power (dBm)												Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					Puncture Case																	
					96			99			1099											
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO						
1/2A	5250	50	20MHz		11.03	11.88	14.49	11.04	11.88	14.49	11.02	11.91	14.50	23.98	-9.48	2.93	17.43	30.0	-12.57			
2C	5570	114	20MHz		10.74	11.52	14.16	10.79	11.51	14.18	10.76	11.52	14.17	23.98	-9.80	3.07	17.25	30.0	-12.75			
3/4	5815	163	20MHz		11.13	11.51	14.33	11.20	11.64	14.44	11.24	11.63	14.45			3.38	17.83	30.0	-12.17			

Table 7-22. MIMO 160MHz BW 802.11be (UNII) Maximum Conducted Output Power - Punctured

Note:

Per ANSI C63.10-2013, 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.

$$\text{Directional gain} = 10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{ANT}] \text{ dBi}$$

Sample MIMO Calculation:

At 5180MHz in 802.11a (20MHz BW) mode, the average conducted output power was measured to be 11.15 dBm for Antenna 1 and 11.17 dBm for Antenna 2.

$$\text{Antenna 1} + \text{Antenna 2} = \text{MIMO}$$

$$(11.15 \text{ dBm} + 11.17 \text{ dBm}) = (13.03 \text{ mW} + 13.09 \text{ mW}) = 26.12 \text{ mW} = 14.17 \text{ dBm}$$

Sample e.i.r.p Calculation:

At 5180MHz in 802.11a (20MHz BW) mode, the average MIMO conducted power was calculated to be 14.17 dBm with directional gain of 2.93 dBi.

$$\text{e.i.r.p. (dBm)} = \text{Conducted Power (dBm)} + \text{Ant gain (dBi)}$$

$$14.17 \text{ dBm} + 2.93 \text{ dBi} = 17.10 \text{ dBm}$$

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7.5 Maximum Power Spectral Density

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 at the appropriate frequencies. Method SA-1, as defined in ANSI C63.10-2013, was used to measure the power spectral density.

The output power density limits are as specified in the tables below.

UNII Band	Frequency Range	Maximum Power Spectral Density	
		FCC	ISED
UNII 1	5.15 – 5.25GHz	11dBm/MHz	10dBm/MHz e.i.r.p
UNII 2A	5.25 – 5.35GHz	11dBm/MHz	
UNII 2C	5.47 – 5.725GHz		
UNII 3	5.725 – 5.850GHz	30dBm/500kHz	
UNII 4	5.850 – 5.895GHz	14dBm/MHz e.i.r.p	

Test Procedure Used

ANSI C63.10-2013 – Section 12.3.2.3 (Method SA-2)

ANSI C63.10-2013 – Section 14.3.2.2 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 $\geq 2 \times (\text{span}/\text{RBW})$
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

All cases were investigated; a subset of the taken plots were included to represent relevant settings and measurements.

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Summed MIMO Power Spectral Density Measurements

	Frequency [MHz]	Channel	802.11 MODE	Antenna 1 PSD [dBm]	Antenna 2 PSD [dBm]	MIMO Summed PSD [dBm]	Max PSD [dBm]	Margin [dB]
Band 1	5180	36	a	0.63	0.61	3.63	11.00	-7.37
	5200	40	a	0.56	0.98	3.78	11.00	-7.22
	5240	48	a	0.17	0.97	3.60	11.00	-7.40
	5180	36	n	-0.07	0.41	3.19	11.00	-7.81
	5200	40	n	0.38	1.00	3.71	11.00	-7.29
	5240	48	n	0.07	0.97	3.55	11.00	-7.45
	5180	36	be SU	0.55	0.38	3.48	11.00	-7.52
	5200	40	be SU	0.42	0.74	3.59	11.00	-7.41
	5240	48	be SU	0.38	0.78	3.59	11.00	-7.41
	5190	38	n	-2.13	-2.31	0.79	11.00	-10.21
	5230	46	n	-2.38	-2.36	0.64	11.00	-10.36
	5190	38	be SU	-2.45	-2.44	0.57	11.00	-10.43
	5230	46	be SU	-2.88	-2.68	0.23	11.00	-10.77
	5210	42	ac	-5.78	-5.90	-2.83	11.00	-13.83
Band 1/2A	5210	42	be SU	-4.55	-4.46	-1.49	11.00	-12.49
	5250	50	ac	-8.91	-8.97	-5.93	11.00	-16.93
Band 2A	5250	50	be SU	-8.70	-8.97	-5.82	11.00	-16.82
	5260	52	a	0.05	0.01	3.04	11.00	-7.96
	5280	56	a	-0.14	-0.26	2.81	11.00	-8.19
	5320	64	a	-0.12	-0.14	2.88	11.00	-8.12
	5260	52	n	-0.23	-0.38	2.71	11.00	-8.29
	5280	56	n	-0.52	-0.57	2.47	11.00	-8.53
	5320	64	n	-0.25	-0.30	2.74	11.00	-8.26
	5260	52	be SU	-0.61	-0.29	2.56	11.00	-8.44
	5280	56	be SU	-0.86	-0.71	2.22	11.00	-8.78
	5320	64	be SU	-0.70	-0.54	2.39	11.00	-8.61
	5270	54	n	-2.51	-2.57	0.47	11.00	-10.53
	5310	62	n	-2.63	-2.56	0.42	11.00	-10.58
	5270	54	be SU	-3.39	-3.34	-0.36	11.00	-11.36
	5310	62	be SU	-2.92	-2.54	0.29	11.00	-10.71
Band 2C	5290	58	ac	-6.02	-6.33	-3.16	11.00	-14.16
	5290	58	be SU	-5.73	-5.20	-2.44	11.00	-13.44
	5500	100	a	0.89	-0.10	3.44	11.00	-7.56
	5600	120	a	0.42	0.20	3.32	11.00	-7.68
	5720	144	a	0.60	0.77	3.70	11.00	-7.30
	5500	100	n	0.56	-0.35	3.14	11.00	-7.86
	5600	120	n	0.04	-0.38	2.85	11.00	-8.15
	5720	144	n	0.56	0.53	3.55	11.00	-7.45
	5500	100	be SU	0.30	-0.46	2.95	11.00	-8.05
	5600	120	be SU	-0.36	-0.53	2.56	11.00	-8.44
	5720	144	be SU	0.44	0.45	3.46	11.00	-7.54
	5510	102	n	-2.20	-3.20	0.34	11.00	-10.66
	5590	118	n	-2.45	-2.99	0.30	11.00	-10.70
	5710	142	n	-2.11	-3.06	0.46	11.00	-10.54
	5510	102	be SU	-3.06	-3.80	-0.40	11.00	-11.40
	5590	118	be SU	-2.82	-3.03	0.09	11.00	-10.91
	5710	142	be SU	-2.61	-2.96	0.23	11.00	-10.77
	5530	106	ac	-5.65	-6.56	-3.07	11.00	-14.07
	5610	122	ac	-5.74	-6.51	-3.10	11.00	-14.10
	5690	138	ac	-5.47	-6.54	-2.96	11.00	-13.96
	5530	106	be SU	-4.98	-5.45	-2.19	11.00	-13.19
	5610	122	be SU	-4.69	-5.08	-1.87	11.00	-12.87
	5690	138	be SU	-4.09	-6.37	-2.07	11.00	-13.07
	5570	114	ac	-8.28	-8.94	-5.58	11.00	-16.58
	5570	114	be SU	-8.68	-8.47	-5.56	11.00	-16.56

Table 7-23. Bands 1, 2A, 2C MIMO Conducted Power Spectral Density Measurements

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	Frequency [MHz]	Channel	802.11 MODE	Antenna 1 PSD [dBm]	Antenna 2 PSD [dBm]	MIMO Summed PSD [dBm]	Max PSD [dBm]	Margin [dB]
Band 3	5745	149	a	-1.96	-2.42	0.82	11.00	-10.18
	5785	157	a	-1.30	-2.23	1.27	11.00	-9.73
	5825	165	a	-2.03	-2.26	0.87	11.00	-10.13
	5745	149	n	-2.27	-2.68	0.54	11.00	-10.46
	5785	157	n	-1.52	-2.69	0.95	11.00	-10.05
	5825	165	n	-2.25	-2.84	0.48	11.00	-10.52
	5745	149	be SU	-2.63	-2.23	0.58	11.00	-10.42
	5785	157	be SU	-1.75	-2.67	0.82	11.00	-10.18
	5825	165	be SU	-2.65	-2.31	0.53	11.00	-10.47
	5755	151	n	-4.98	-5.67	-2.30	11.00	-13.30
	5795	159	n	-4.00	-5.83	-1.81	11.00	-12.81
	5755	151	be SU	-5.14	-4.97	-2.04	11.00	-13.04
	5795	159	be SU	-4.24	-5.88	-1.97	11.00	-12.97
	5775	155	ac	-8.54	-8.95	-5.73	11.00	-16.73
	5775	155	be SU	-7.25	-7.73	-4.47	11.00	-15.47

Table 7-24. Band 3 MIMO Conducted Power Spectral Density Measurements

	Frequency [MHz]	Channel	802.11 MODE	Antenna 1 PSD [dBm]	Antenna 2 PSD [dBm]	MIMO Summed PSD [dBm]	Directional Antenna Gain [dBi]	EIRP PSD [dBm]	Max EIRP PSD [dBm]	Margin [dB]
13/4	5845	169	a	0.40	0.80	3.62	3.38	7.00	14.00	-7.00
Band 4	5865	173	a	1.07	1.04	4.07	3.38	7.45	14.00	-6.55
	5885	177	a	1.16	1.55	4.37	3.38	7.75	14.00	-6.25
13/4	5845	169	n	0.18	0.22	3.21	3.38	6.59	14.00	-7.41
Band 4	5865	173	n	0.62	0.86	3.75	3.38	7.13	14.00	-6.87
	5885	177	n	0.80	1.48	4.16	3.38	7.54	14.00	-6.46
13/4	5845	169	be SU	-0.28	0.30	3.03	3.38	6.41	14.00	-7.59
Band 4	5865	173	be SU	0.27	1.02	3.67	3.38	7.05	14.00	-6.95
	5885	177	be SU	0.38	1.40	3.93	3.38	7.31	14.00	-6.69
13/4	5835	167	n	-1.96	-2.31	0.88	3.38	4.26	14.00	-9.74
id 4	5875	175	n	-1.19	-2.24	1.33	3.38	4.71	14.00	-9.29
13/4	5835	167	be SU	-2.12	-2.22	0.84	3.38	4.22	14.00	-9.78
id 4	5875	175	be SU	-1.36	-1.55	1.55	3.38	4.93	14.00	-9.07
Band 3/4	5855	171	ac	-5.97	-5.23	-2.58	3.38	0.80	14.00	-13.20
	5855	171	be SU	-4.60	-4.74	-1.66	3.38	1.72	14.00	-12.28
	5815	163	ac	-8.15	-7.97	-5.04	3.38	-1.66	14.00	-15.66
	5815	163	be SU	-8.37	-8.44	-5.39	3.38	-2.01	14.00	-16.01

Table 7-25. Bands 3/4 MIMO Conducted Power Spectral Density Measurements

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
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	Frequency [MHz]	Channel	802.11 MODE	Punctured Cases	Antenna 1 PSD [dBm]	Antenna 2 PSD [dBm]	MIMO Summed PSD [dBm]	Max PSD [dBm]	Margin [dB]
Band 1	5210	42	be SU	484+242T	-2.92	-2.70	0.20	11.00	-10.80
Band 1/2A	5250	50	be SU	996+484T	-7.04	-7.25	-4.13	11.00	-15.13
	5250	50	be SU	996+484+242T	-7.07	-7.70	-4.36	11.00	-15.36
Band 2A	5290	58	be SU	484+242T	-3.65	-3.40	-0.51	11.00	-11.51
Band 2C	5530	106	be SU	484+242T	-2.45	-2.57	0.50	11.00	-10.50
	5570	114	be SU	996+484T	-6.93	-6.92	-3.91	11.00	-14.91
	5570	114	be SU	996+484+242T	-7.73	-8.06	-4.88	11.00	-15.88

Table 7-26. Bands 1, 2A, 2C MIMO Conducted Power Spectral Density Measurements - Punctured

	Frequency [MHz]	Channel	802.11 MODE	Punctured Cases	Antenna 1 PSD [dBm]	Antenna 2 PSD [dBm]	MIMO Summed PSD [dBm]	Max PSD [dBm]	Margin [dB]
Band 3	5775	155	be SU	484+242T	-5.52	-5.47	-2.48	11.00	-13.48

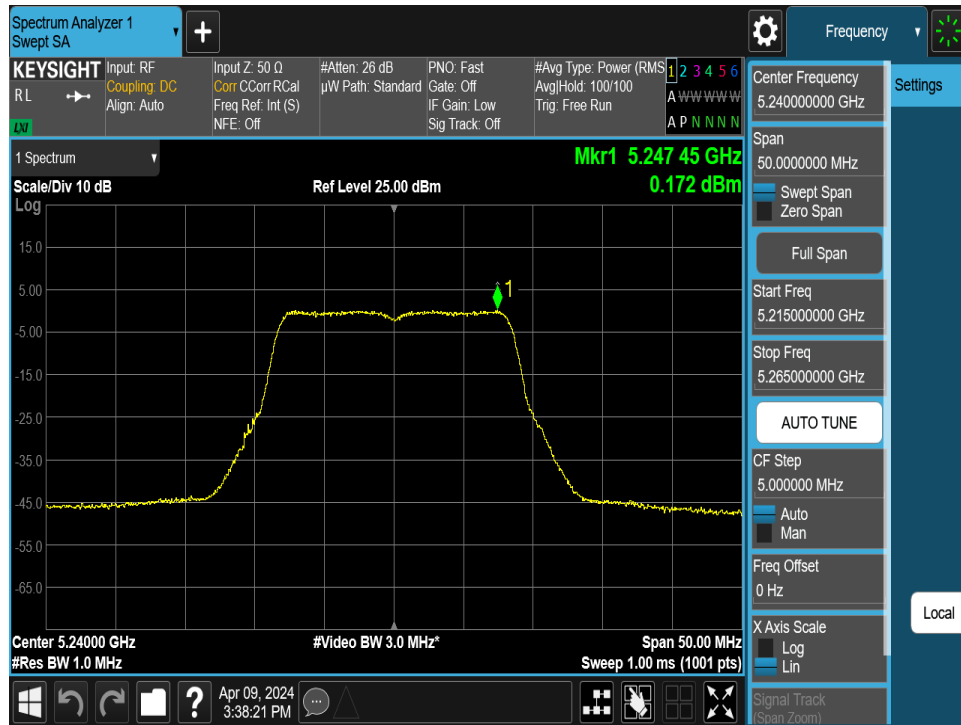
Table 7-27. Band 3 MIMO Conducted Power Spectral Density Measurements - Punctured

	Frequency [MHz]	Channel	802.11 MODE	Punctured Cases	Antenna 1 PSD [dBm]	Antenna 2 PSD [dBm]	MIMO Summed PSD [dBm]	Directional Antenna Gain [dBi]	EIRP PSD [dBm]	Max EIRP PSD [dBm]	Margin [dB]
Band 3/4	5855	171	be SU	484+242T	-2.20	-2.06	0.88	3.38	4.26	14.00	-9.74
	5815	163	be SU	996+484T	-6.51	-6.83	-3.66	3.38	-0.28	14.00	-14.28
	5815	163	be SU	996+484+242T	-7.41	-7.56	-4.47	3.38	-1.09	14.00	-15.09

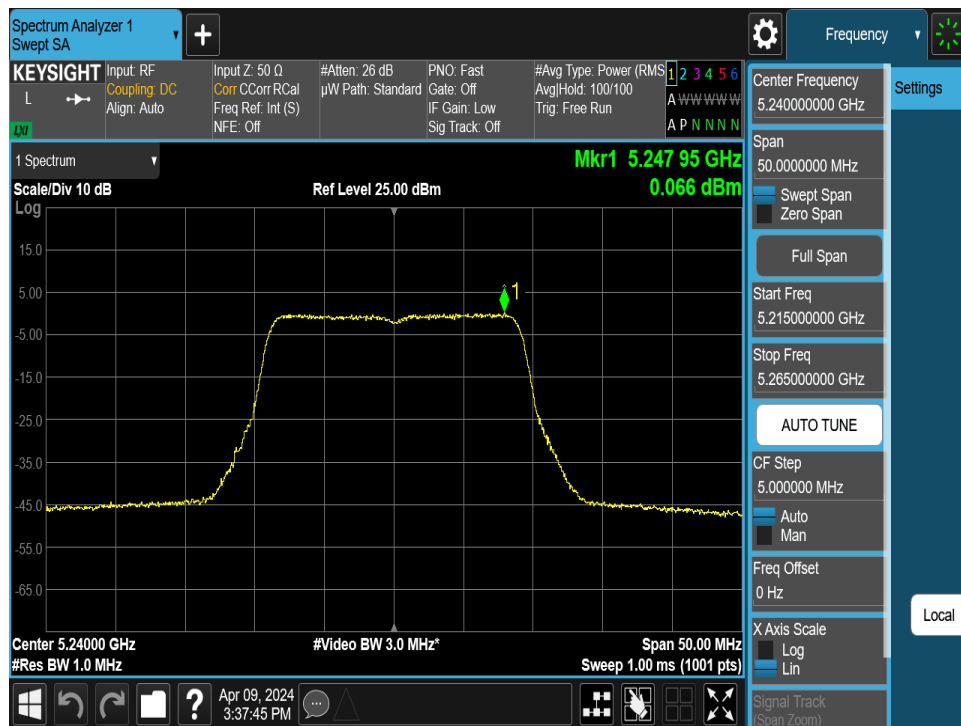
Table 7-28. Bands 3/4 MIMO Conducted Power Spectral Density Measurements - Punctured

FCC ID: A3LNP940XMA	MEASUREMENT REPORT			Approved by: Technical Manager
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7.5.1 MIMO Antenna-1 Power Spectral Density Measurements

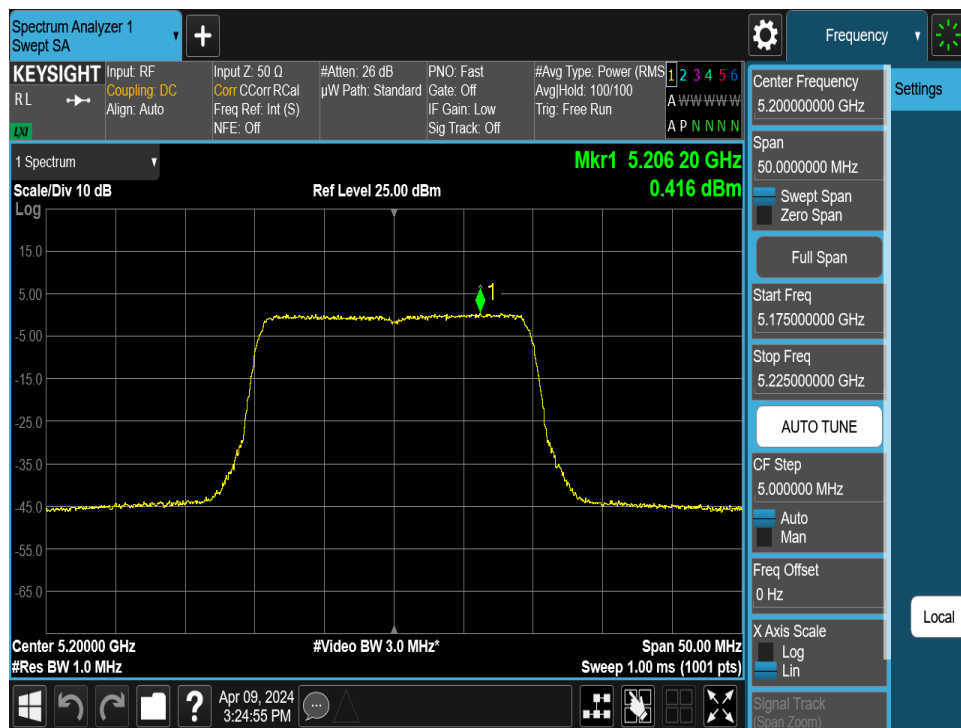


Plot 7-83. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 1) – Ch. 48)

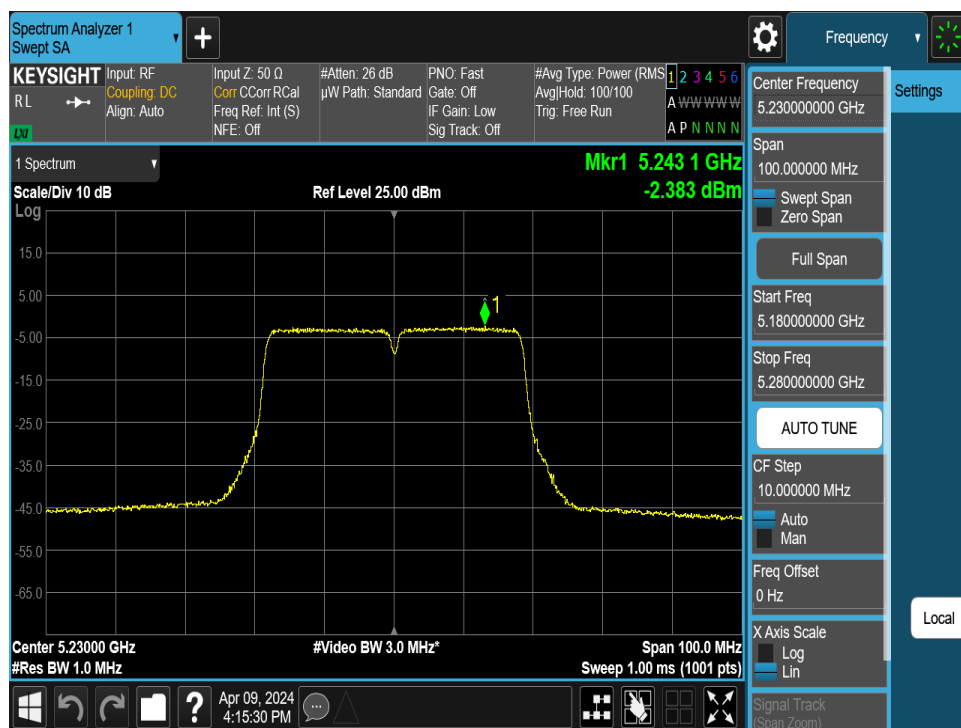


Plot 7-84. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 1) – Ch. 48)

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
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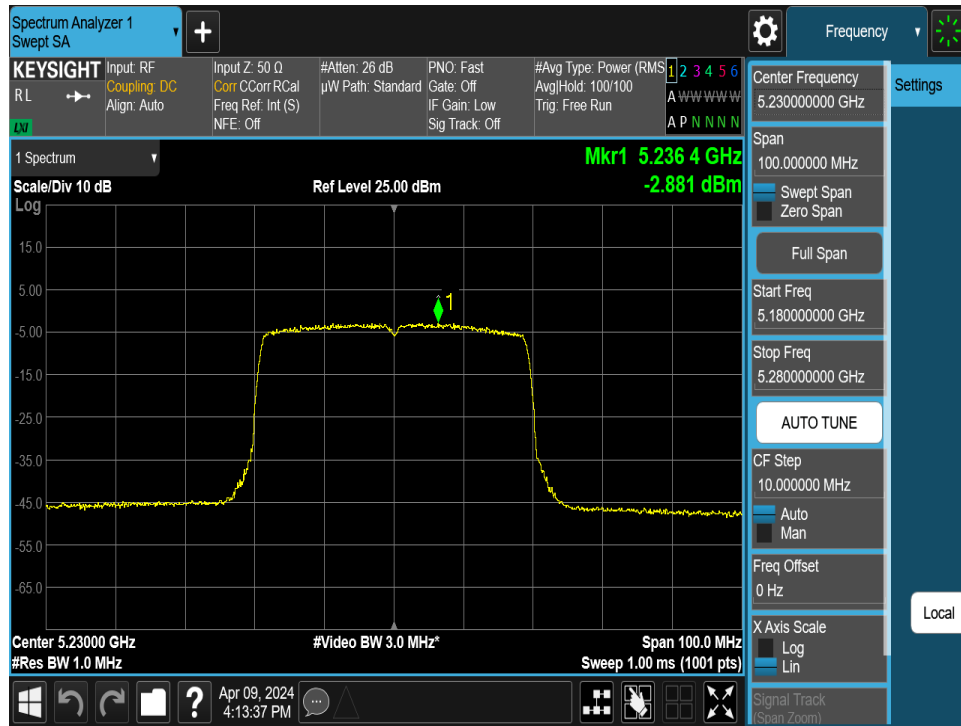


Plot 7-85. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802. 11ax/be (UNII Band 1) – Ch. 40)

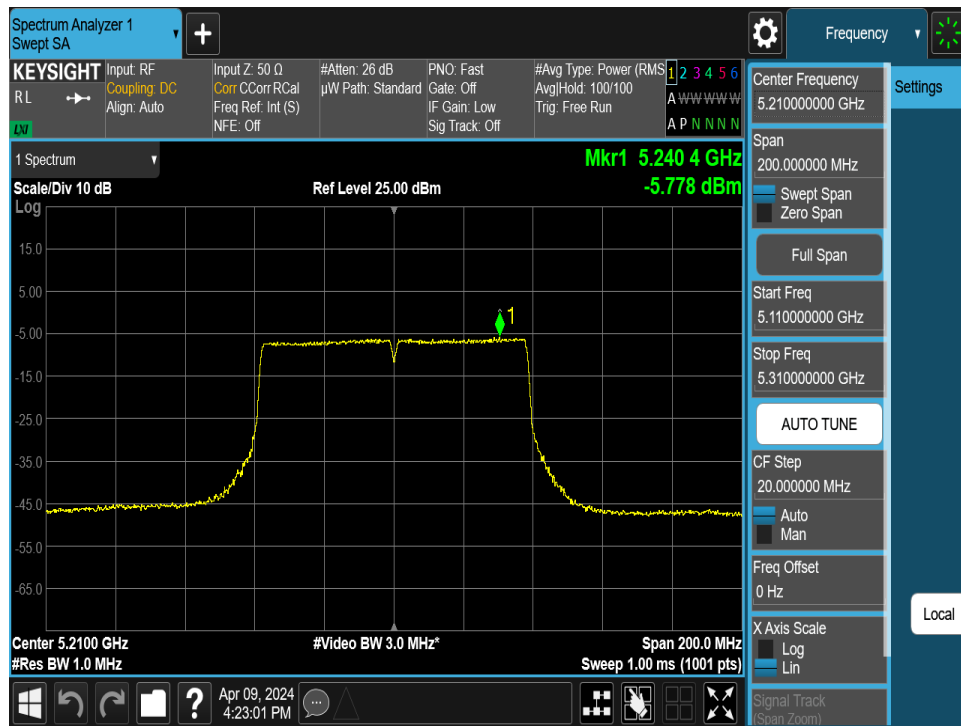


Plot 7-86. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 1) – Ch. 46)

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
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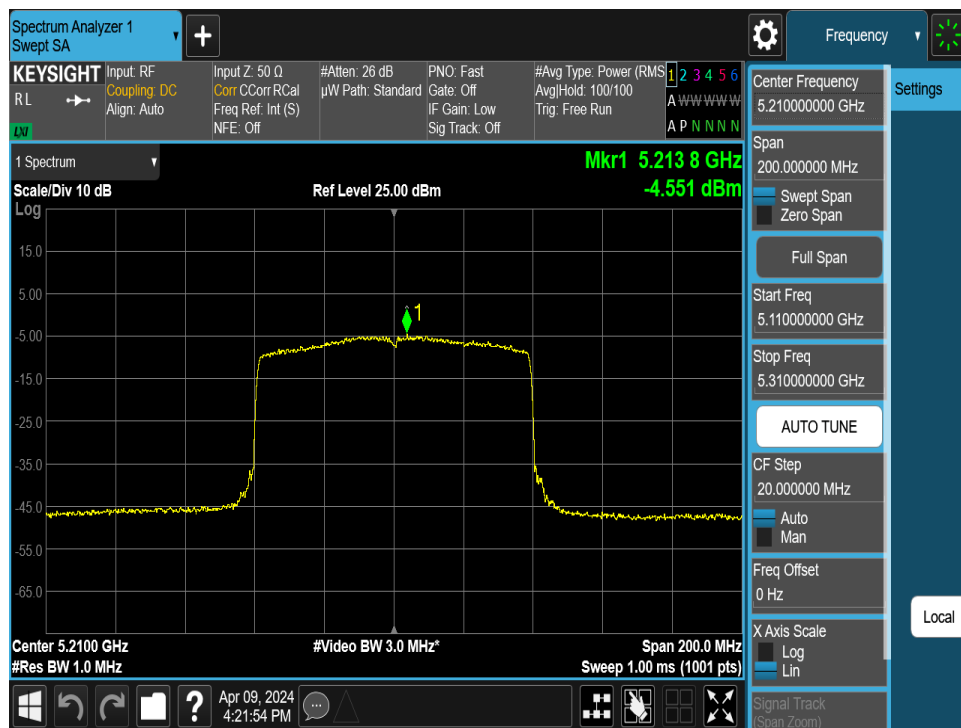


Plot 7-87. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax/be (UNII Band 1) – Ch. 46)

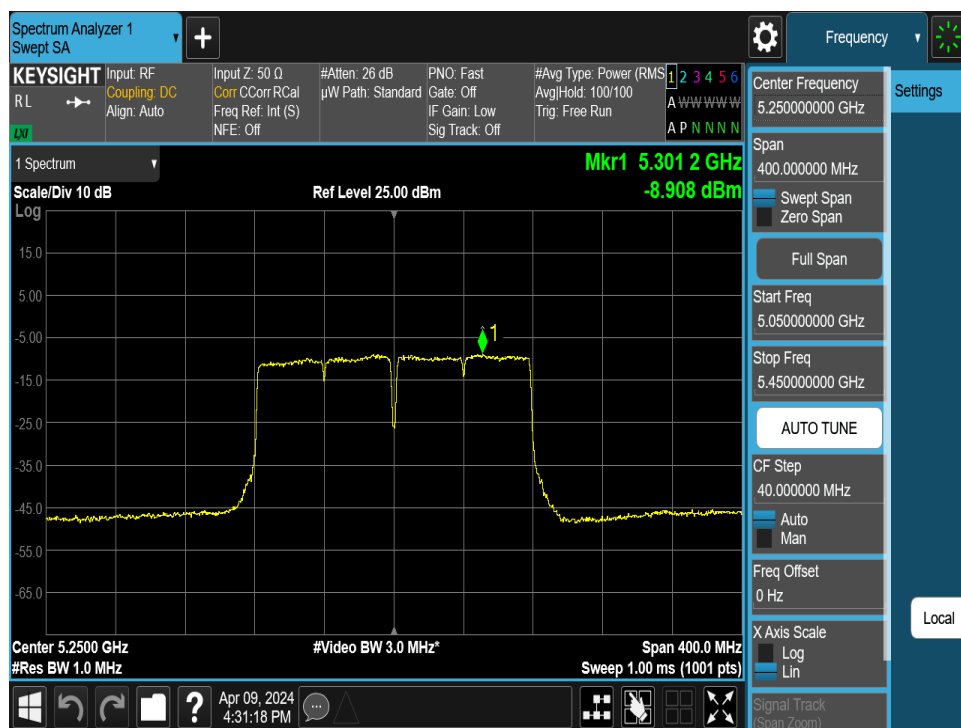


Plot 7-88. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ac (UNII Band 1) – Ch. 42)

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
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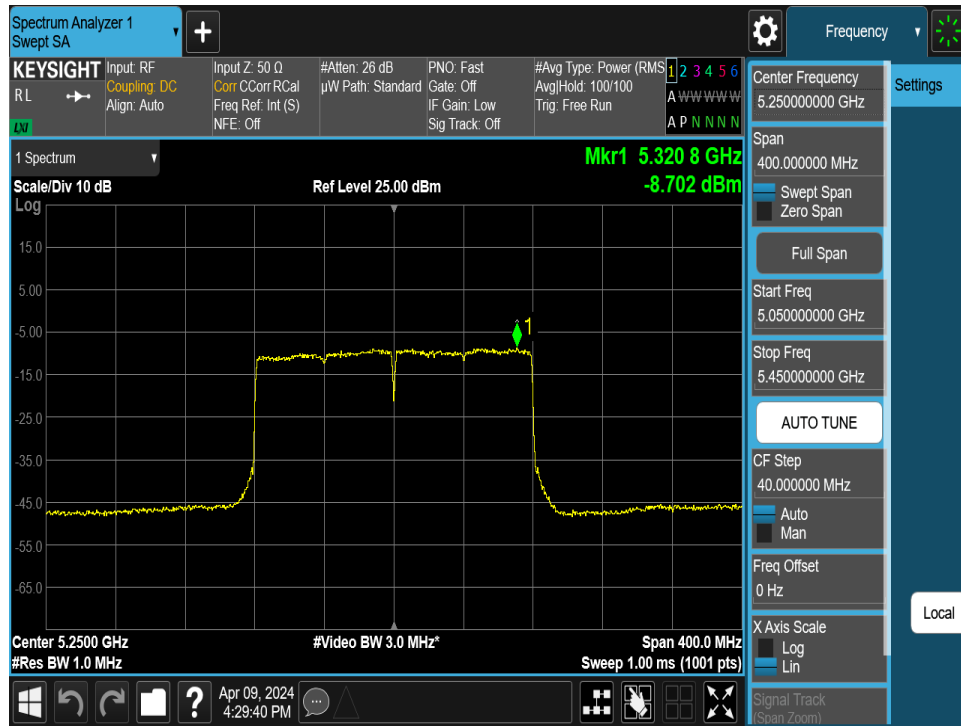


Plot 7-89. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax/be (UNII Band 1) – Ch. 42)

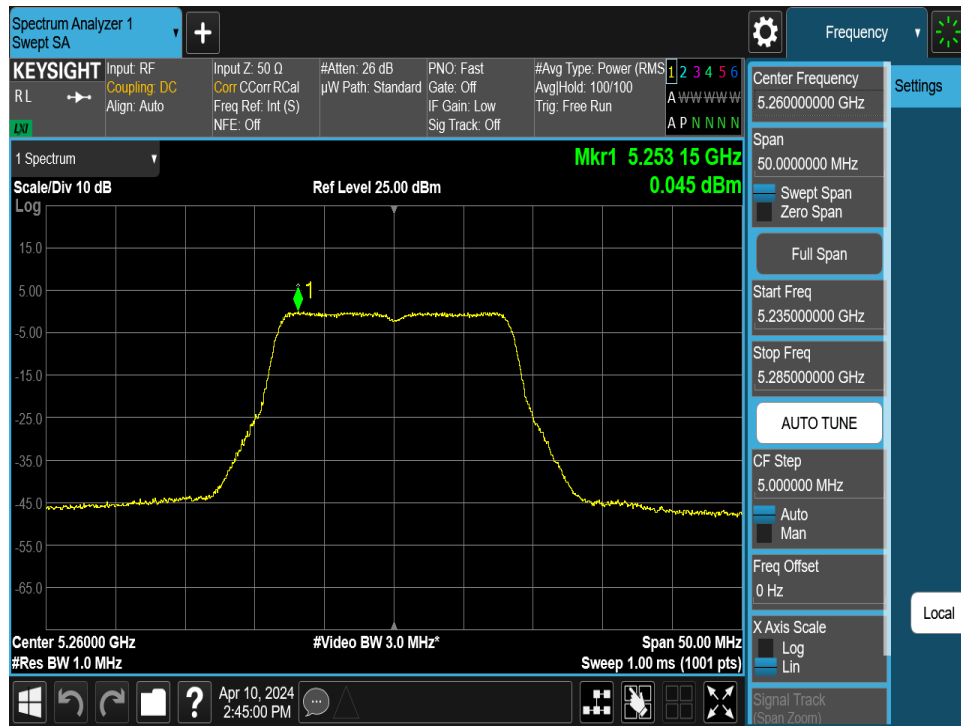


Plot 7-90. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11ac (UNII Band 1/2A) – Ch. 50)

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
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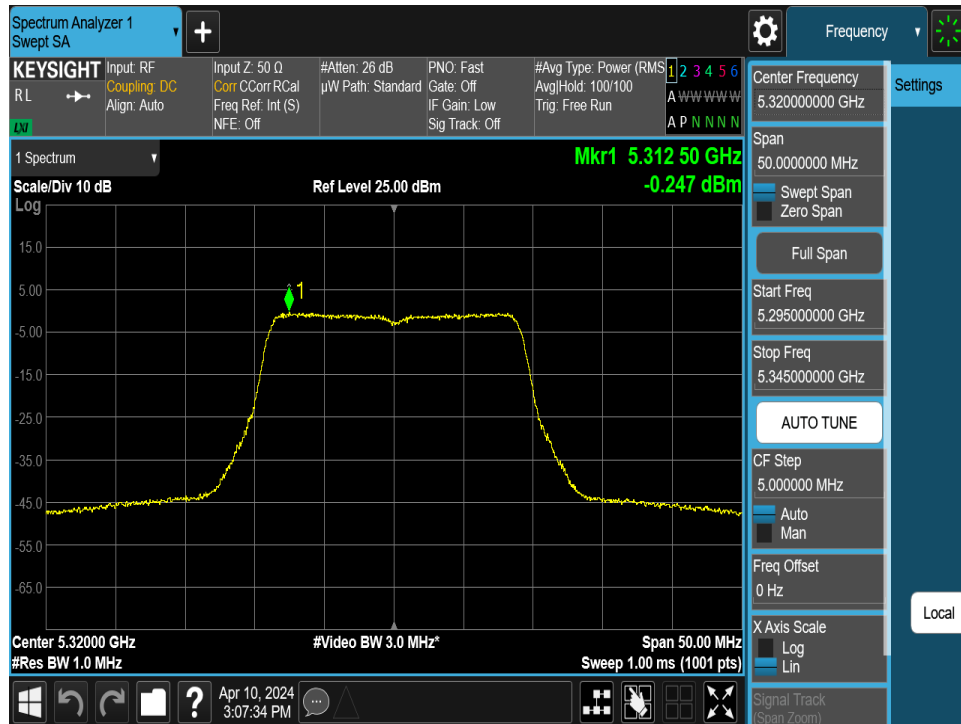


Plot 7-91. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802. 11ax/be (UNII Band 1/2A) – Ch. 50)

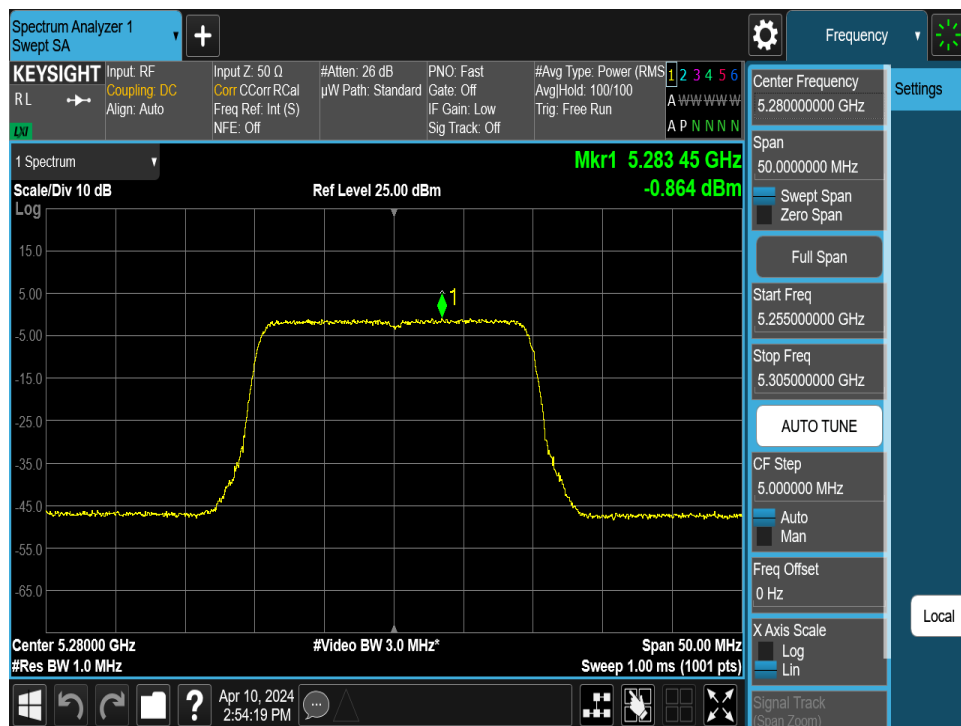


Plot 7-92. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 2A) – Ch. 52)

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
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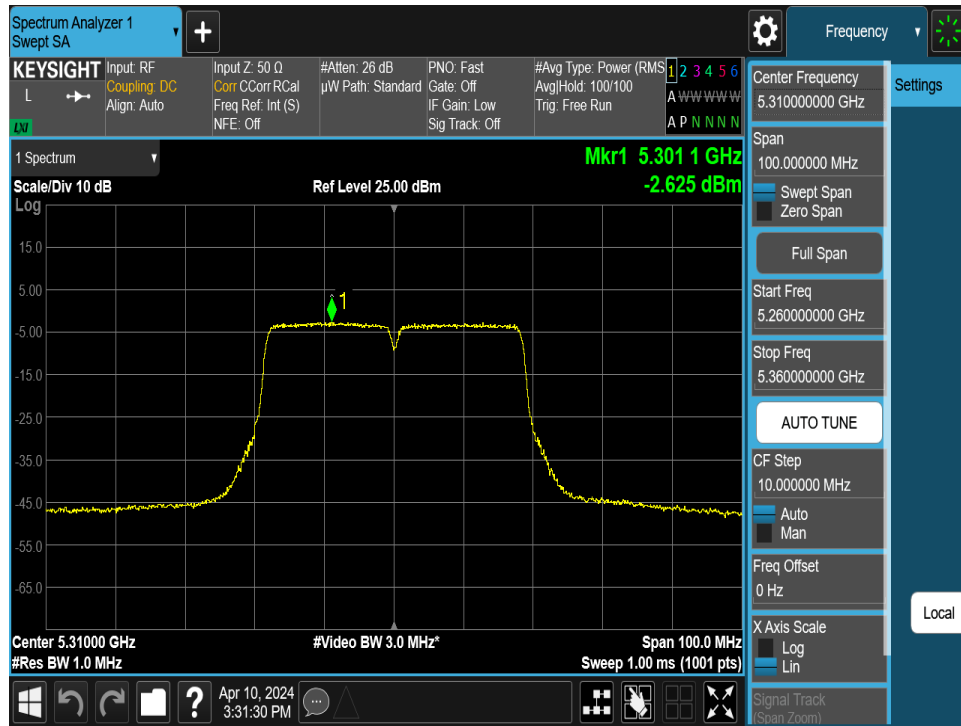


Plot 7-93. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 2A) – Ch. 64)

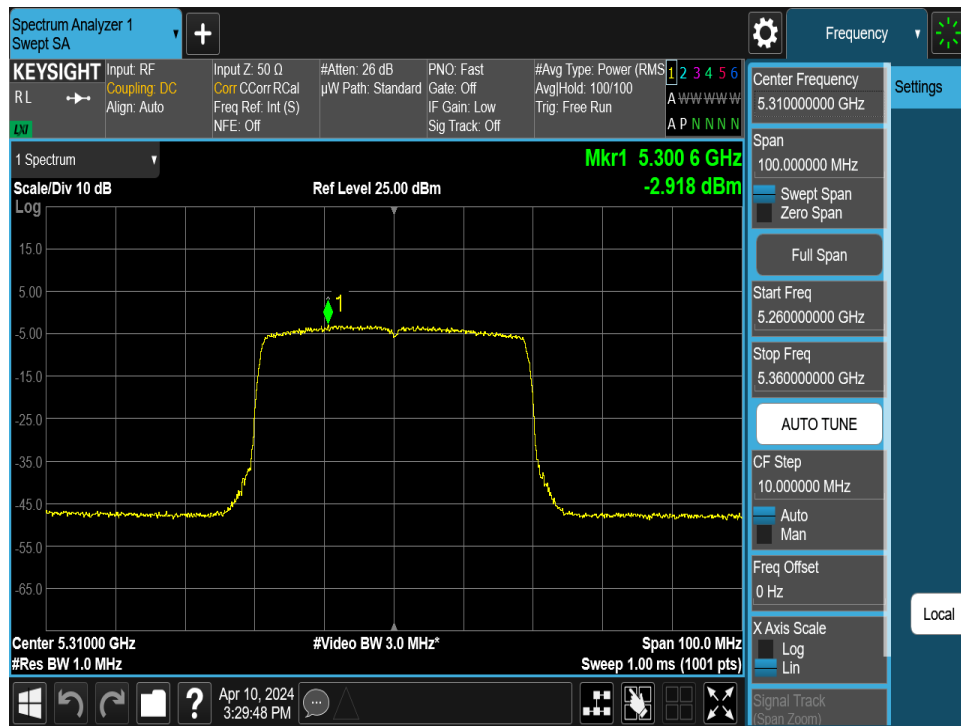


Plot 7-94. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax/be (UNII Band 2A) – Ch. 56)

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
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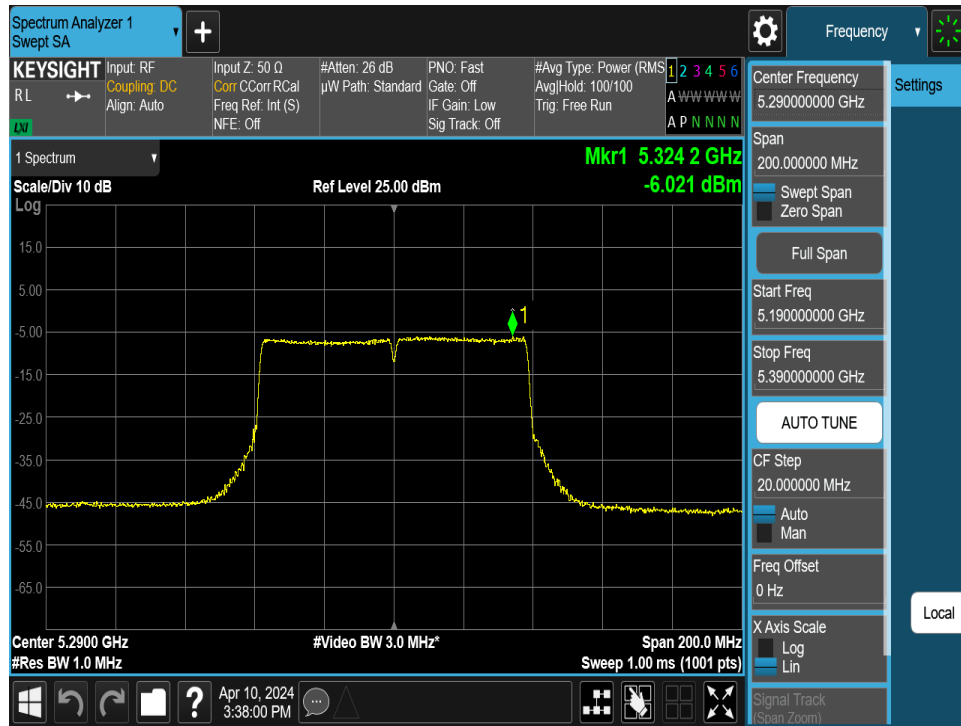


Plot 7-95. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 2A) – Ch. 62)

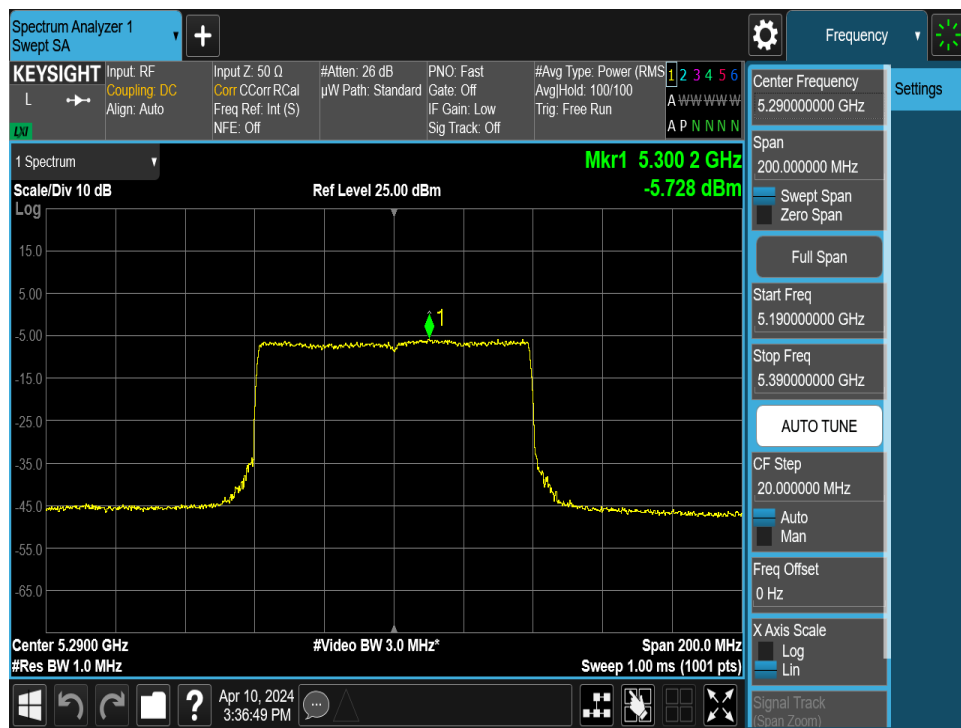


Plot 7-96. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax/be (UNII Band 2A) – Ch. 62)

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
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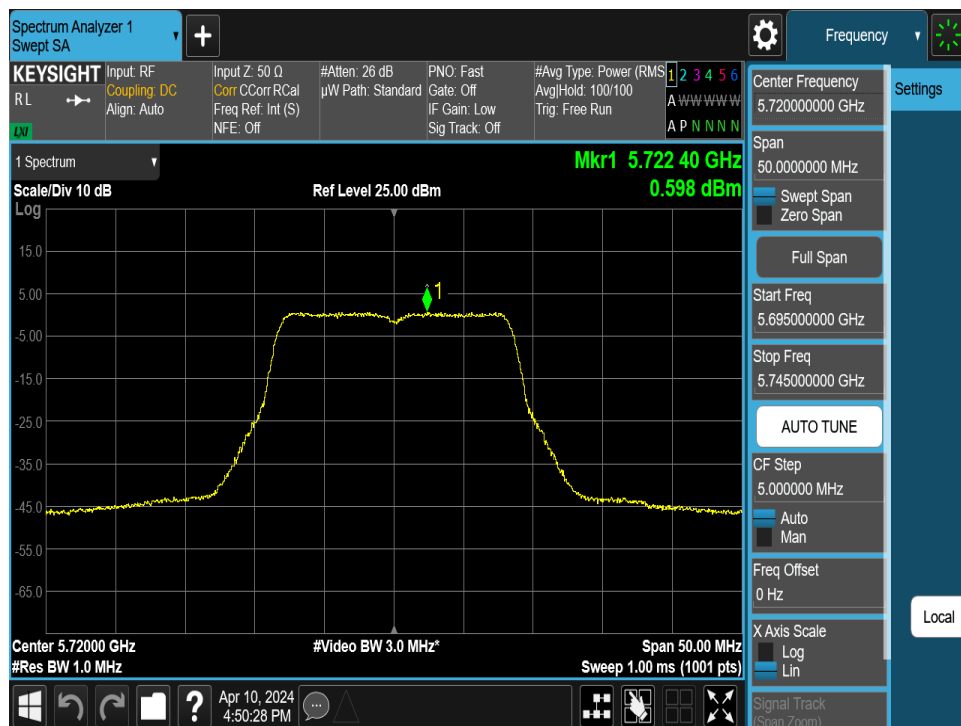


Plot 7-97. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ac (UNII Band 2A) – Ch. 58)

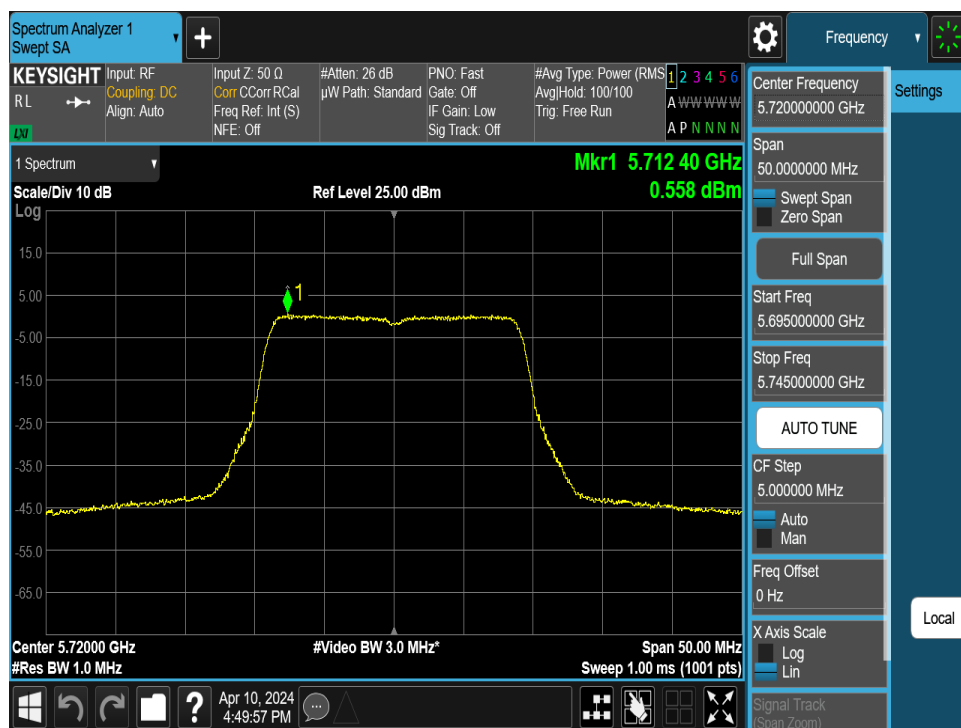


Plot 7-98. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax/be (UNII Band 2A) – Ch. 58)

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
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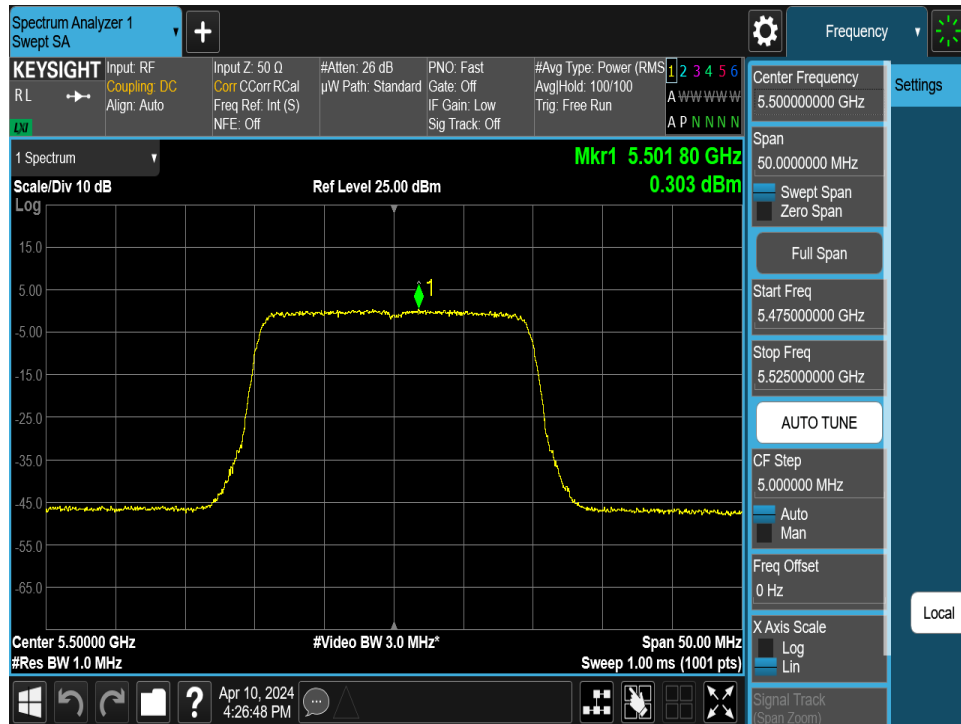


Plot 7-99. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 2C) – Ch. 144)

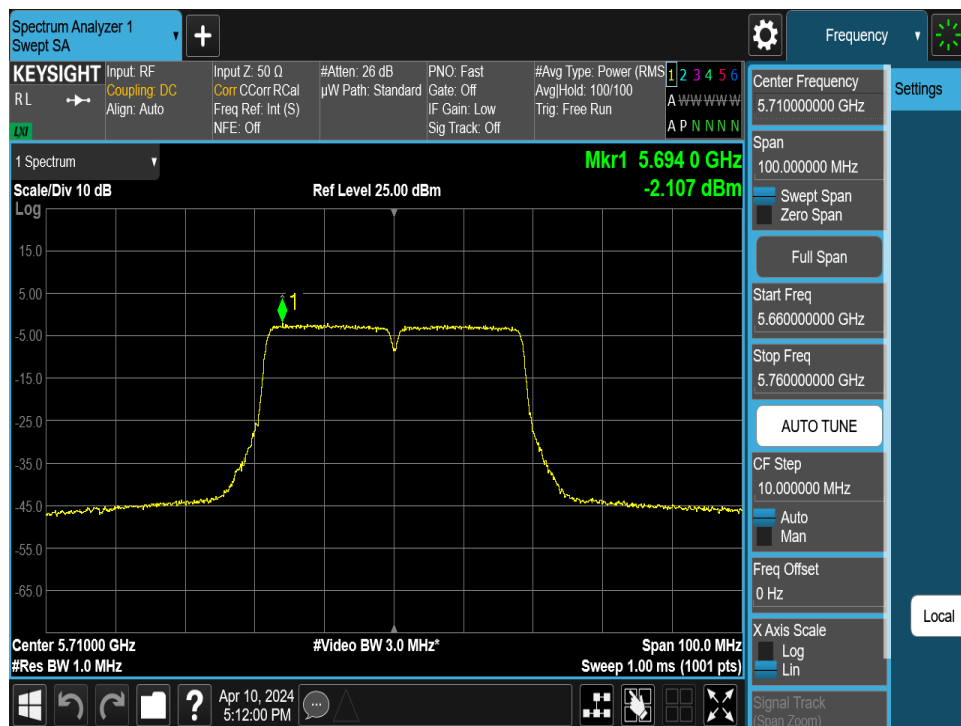


Plot 7-100. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 2C) – Ch. 144)

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
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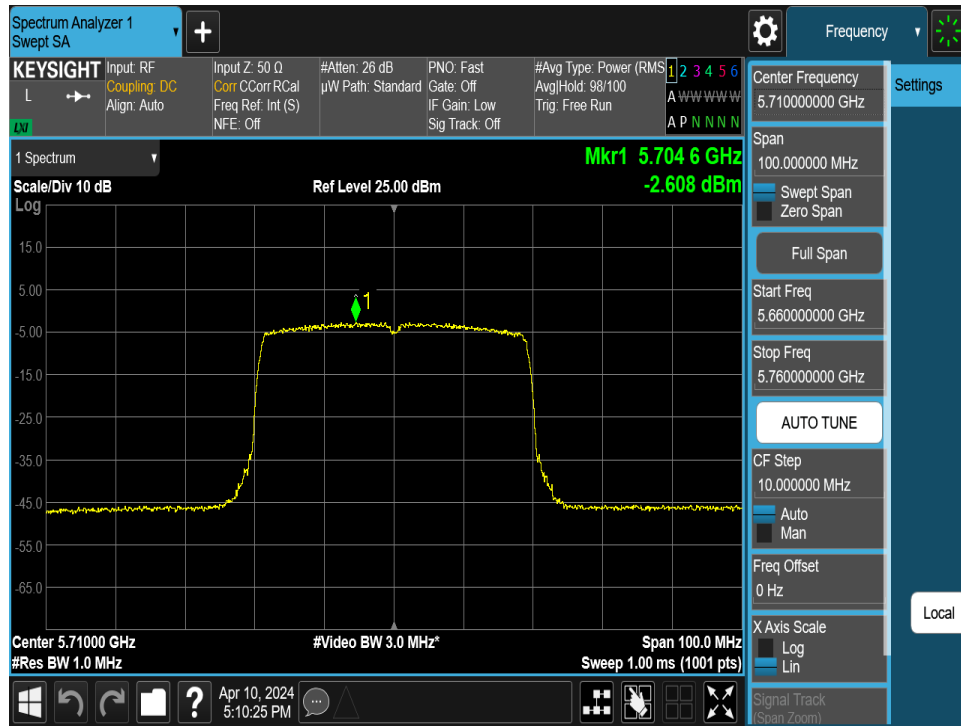


Plot 7-101. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax/be (UNII Band 2C) – Ch. 100)

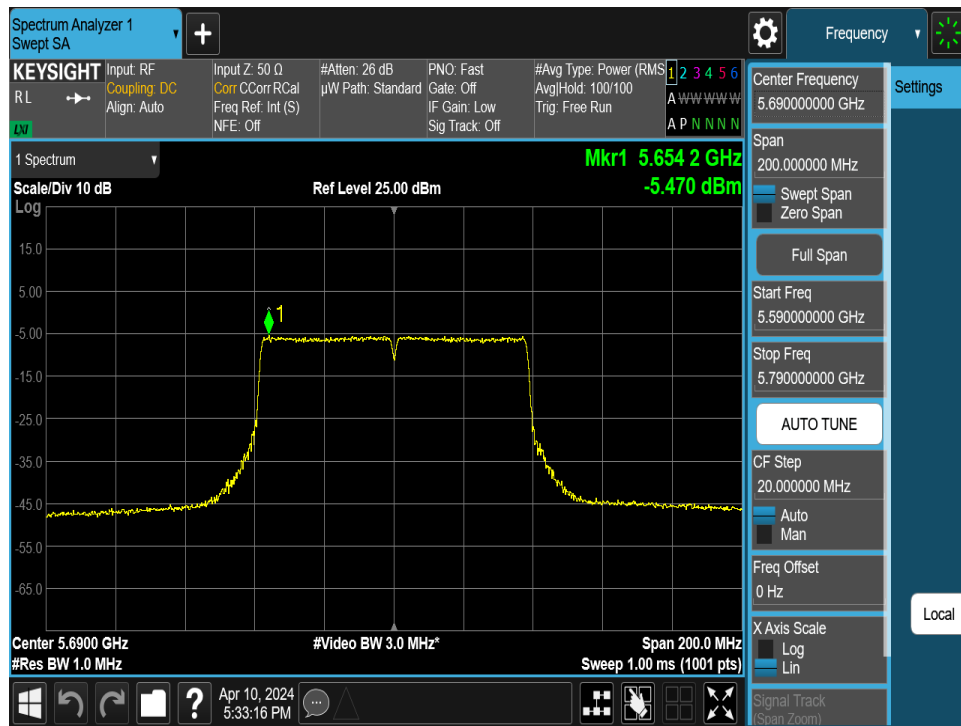


Plot 7-102. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 2C) – Ch. 142)

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2403190019-07.A3L	Test Dates: 3/14/2024 – 4/24/2024	EUT Type: Portable Computing Device	Page 81 of 156

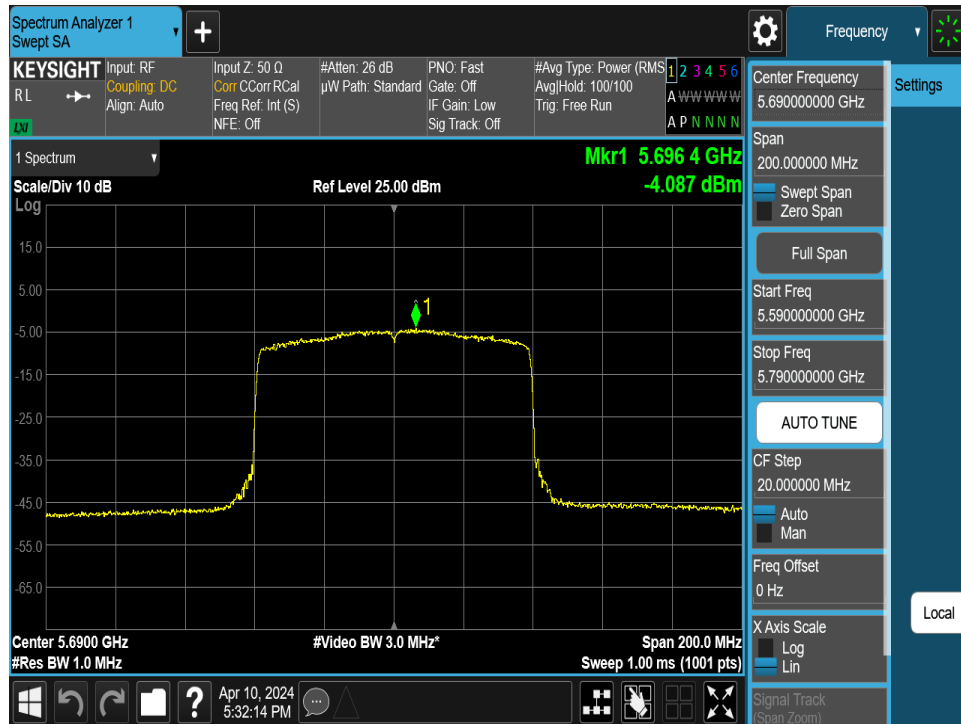


Plot 7-103. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax/be (UNII Band 2C) – Ch. 142)

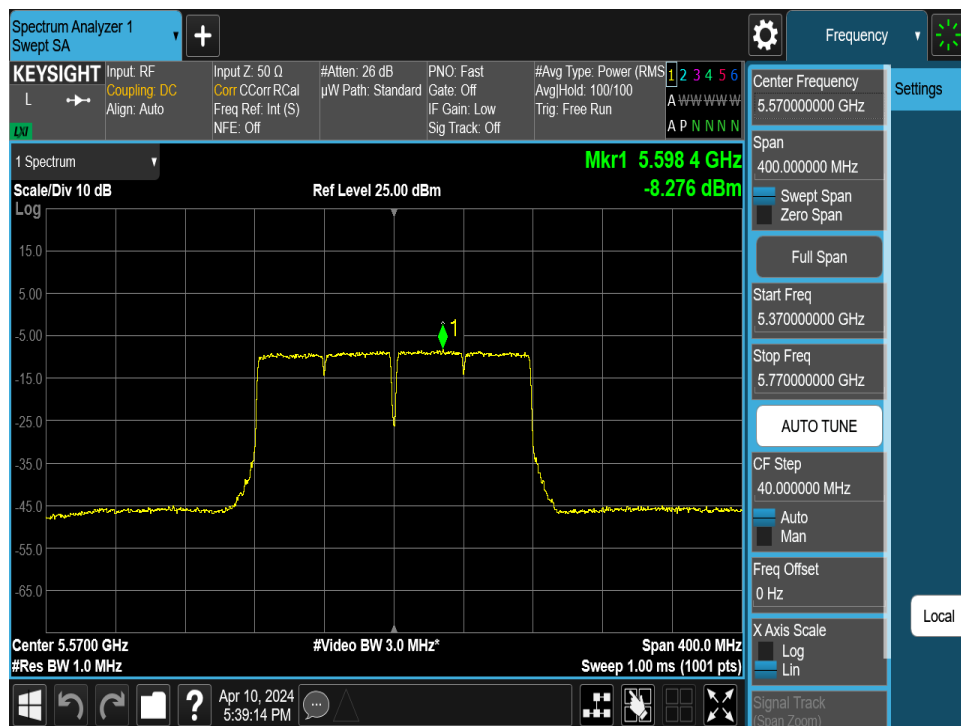


Plot 7-104. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ac (UNII Band 2C) – Ch. 138)

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2403190019-07.A3L	Test Dates: 3/14/2024 – 4/24/2024	EUT Type: Portable Computing Device	Page 82 of 156

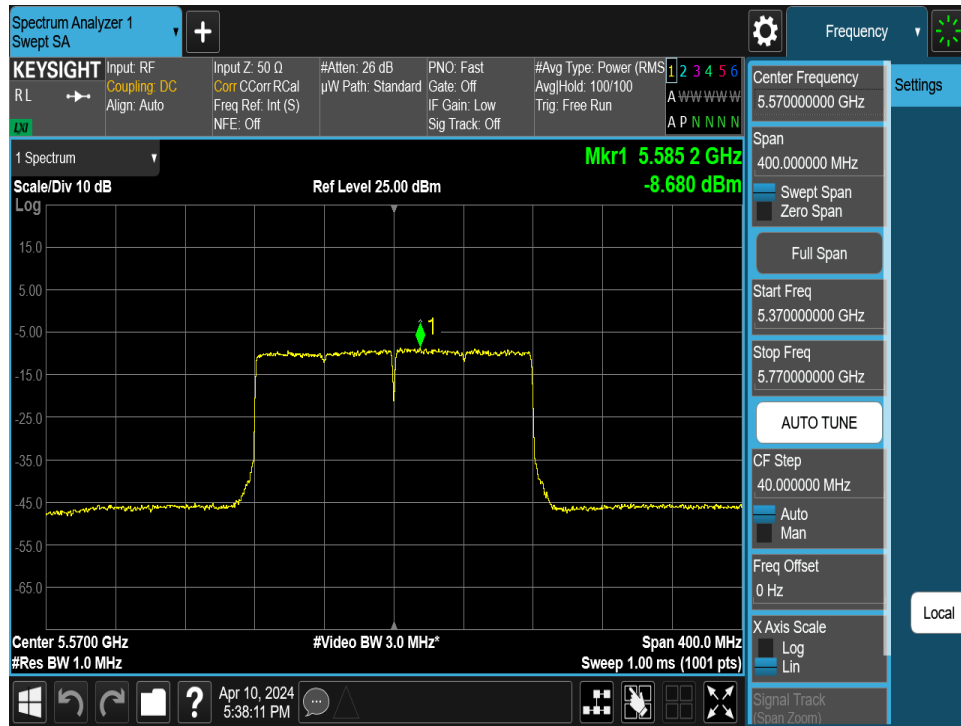


Plot 7-105. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax/be (UNII Band 2C) – Ch. 138)

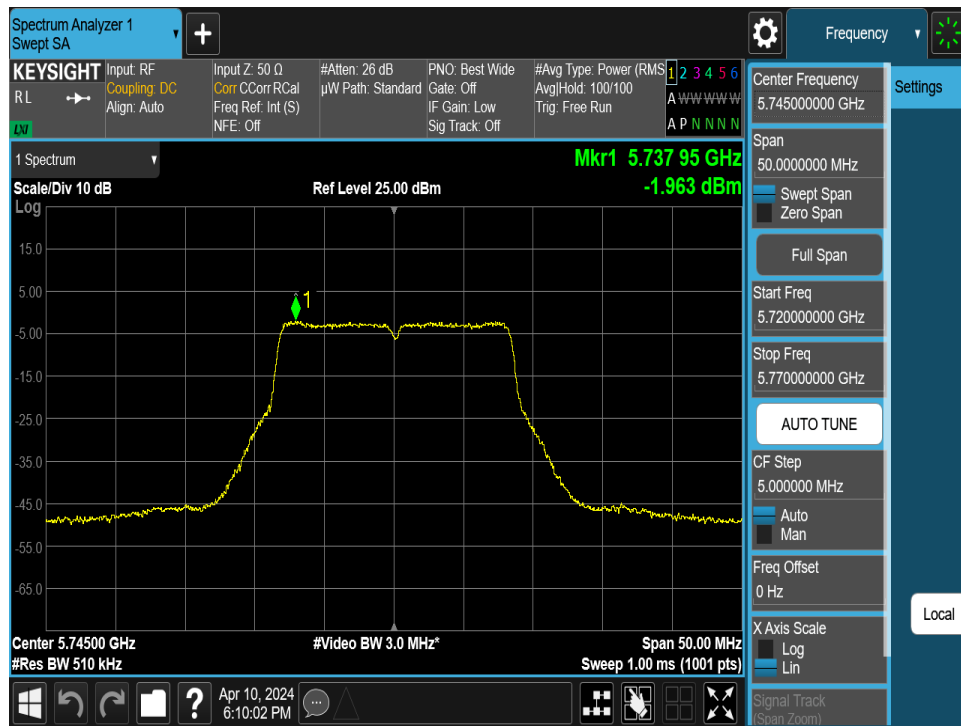


Plot 7-106. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11ac (UNII Band 2C) – Ch. 114)

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2403190019-07.A3L	Test Dates: 3/14/2024 – 4/24/2024	EUT Type: Portable Computing Device	Page 83 of 156

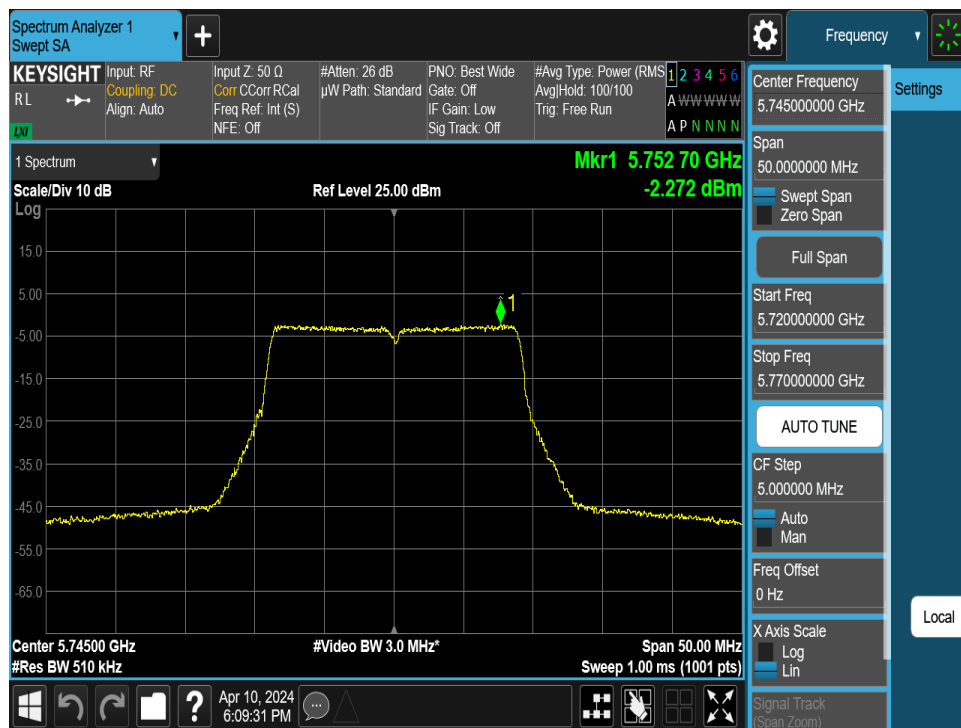


Plot 7-107. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11ax/be (UNII Band 2C) – Ch. 114)

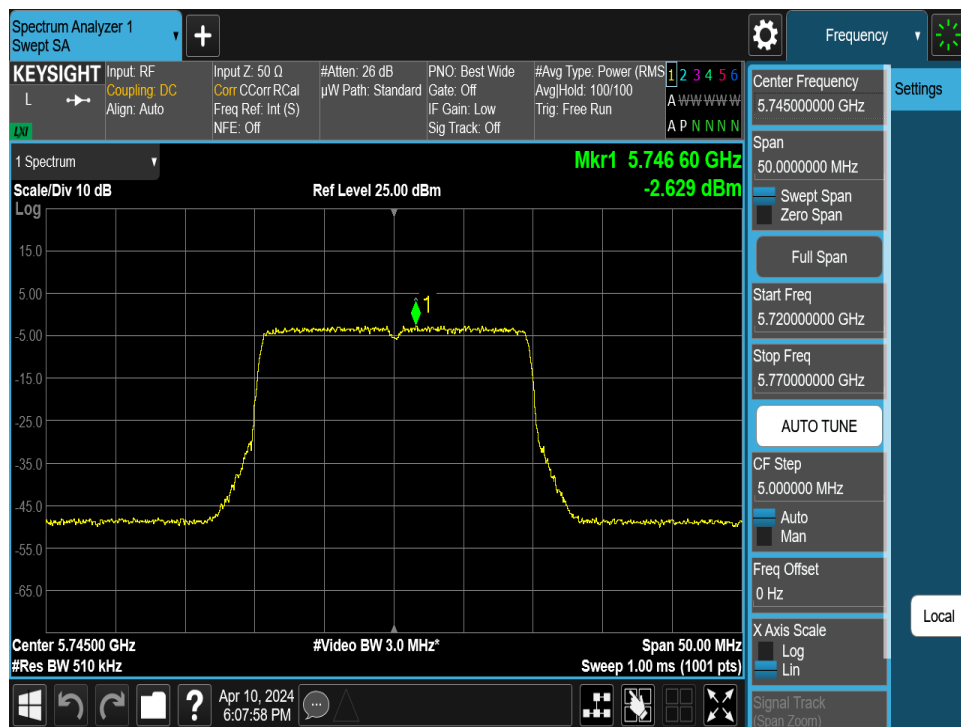


Plot 7-108. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 3) – Ch. 149)

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2403190019-07.A3L	Test Dates: 3/14/2024 – 4/24/2024	EUT Type: Portable Computing Device	Page 84 of 156



Plot 7-109. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 3) – Ch. 149)



Plot 7-110. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax/be (UNII Band 3) – Ch. 149)

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2403190019-07.A3L	Test Dates: 3/14/2024 – 4/24/2024	EUT Type: Portable Computing Device	Page 85 of 156