Case No. : CTA24061300704	
Ambient Condition: 24 ℃, 59 %RH	
According Standard: ■Part15E	
Test Date: 2024.6.20	**Test Engineer:** Evan ouyang

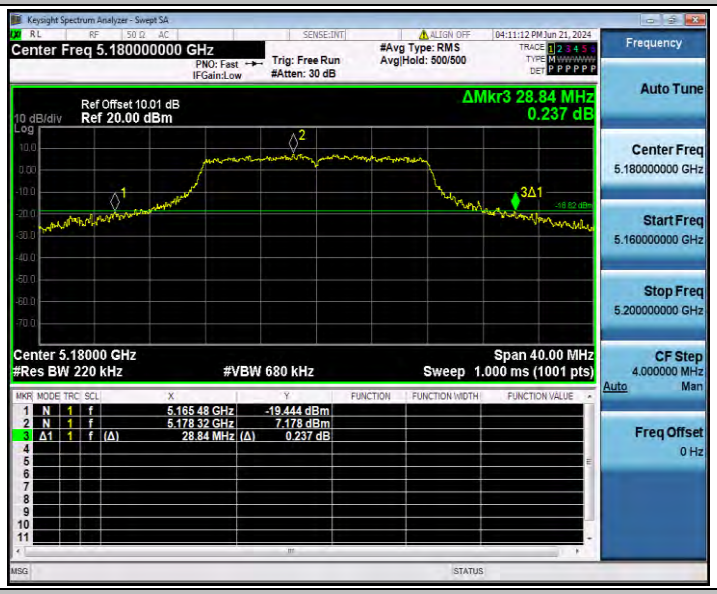
Appendix D.1: Emission Bandwidth

Test Result

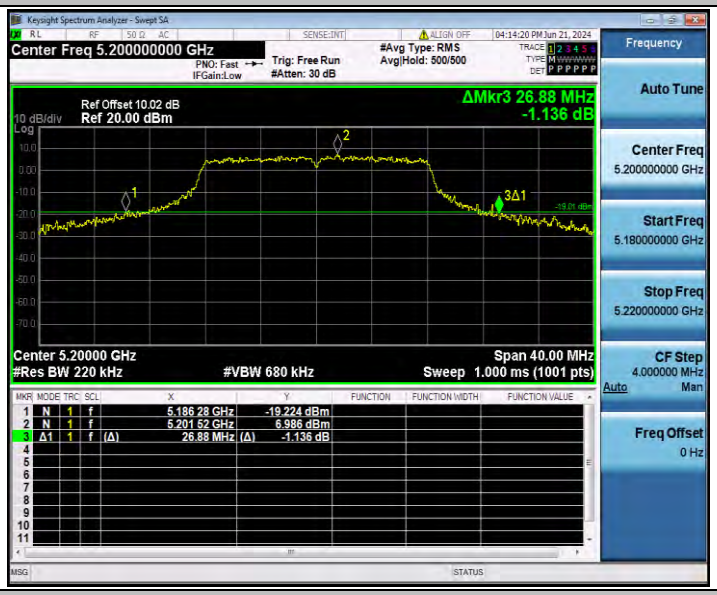
TestMode	Antenna	Freq(MHz)	26db EBW [MHz]	FL[MHz]	FH[MHz]
11A	Ant1	5180	28.840	5165.480	5194.320
		5200	26.880	5186.280	5213.160
		5240	27.200	5226.840	5254.040
11N20SISO	Ant1	5180	24.400	5167.840	5192.240
		5200	24.920	5187.840	5212.760
		5240	24.760	5227.680	5252.440
11N40SISO	Ant1	5190	44.000	5167.760	5211.760
		5230	43.760	5208.000	5251.760
11AC20SISO	Ant1	5180	25.120	5167.840	5192.960
		5200	24.880	5187.880	5212.760
		5240	24.640	5227.880	5252.520
11AC40SISO	Ant1	5190	44.400	5167.840	5212.240
		5230	43.600	5208.000	5251.600

Test Graphs

11A_Ant1_5180

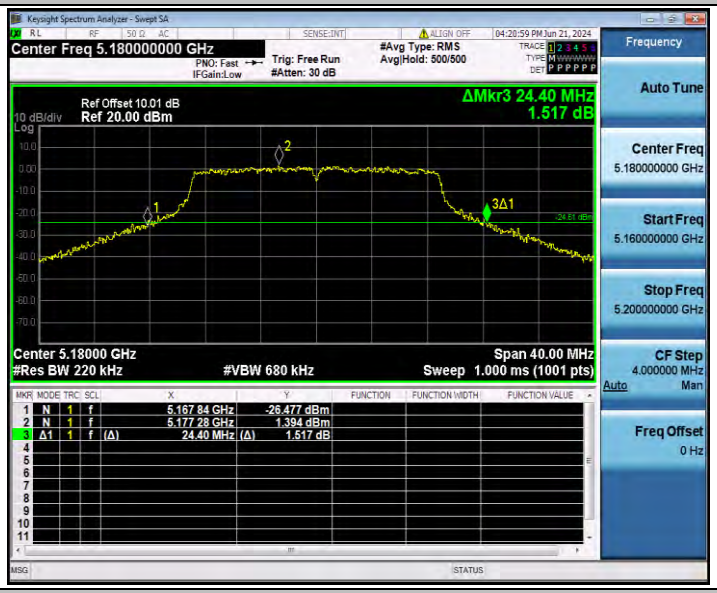


11A_Ant1_5200

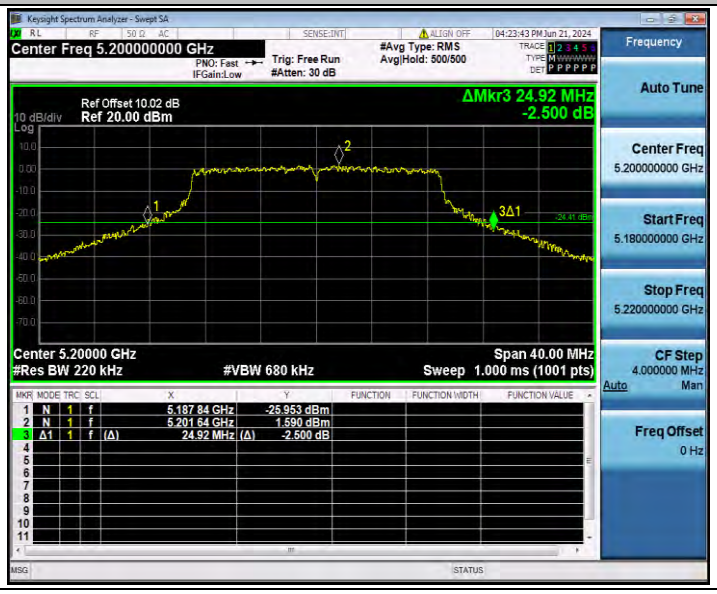


11A_Ant1_5240

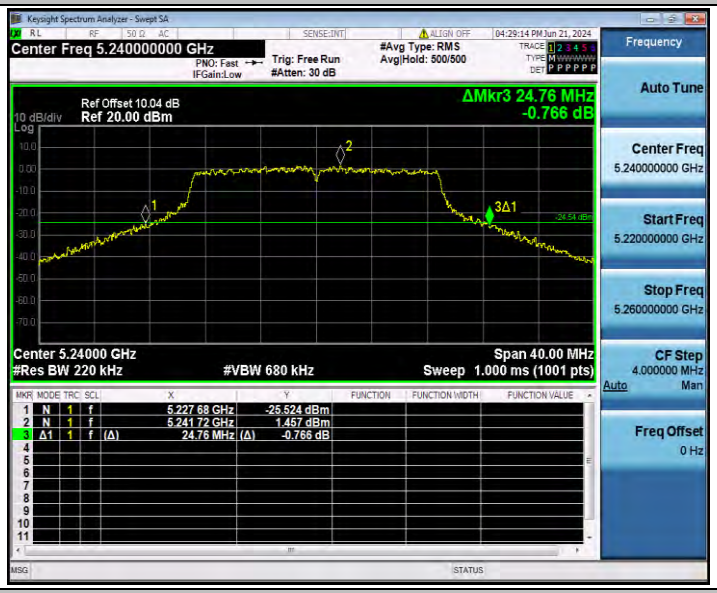
11N20SISO_Ant1_5180



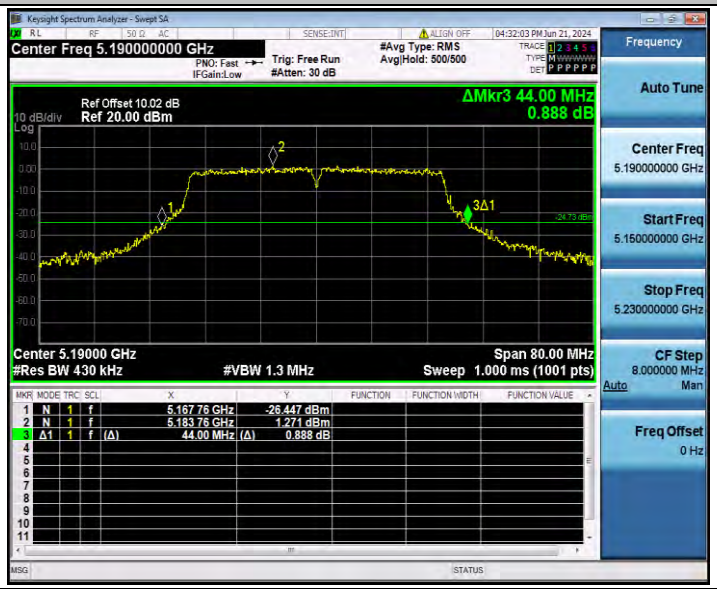
11N20SISO_Ant1_5200



11N20SISO_Ant1_5240

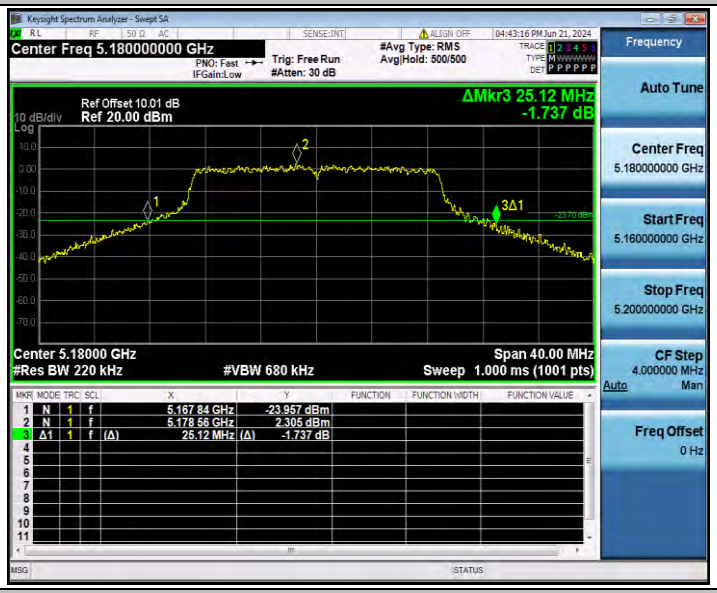


11N40SISO_Ant1_5190

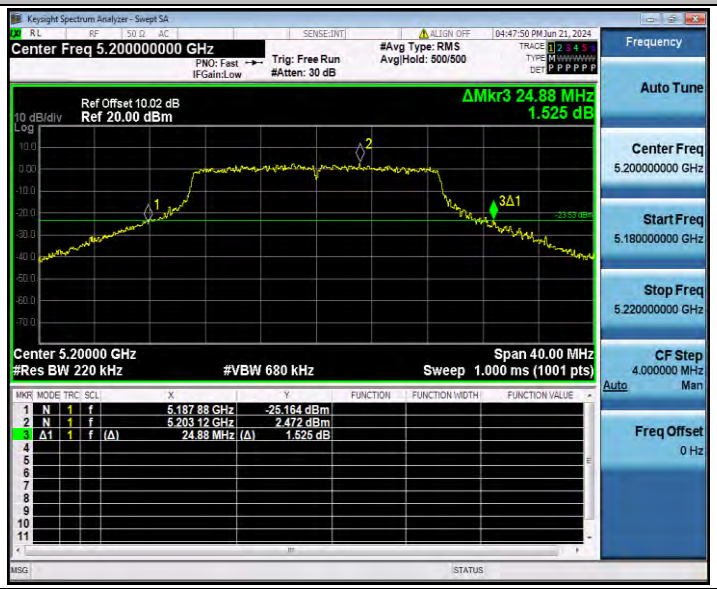


11N40SISO_Ant1_5230

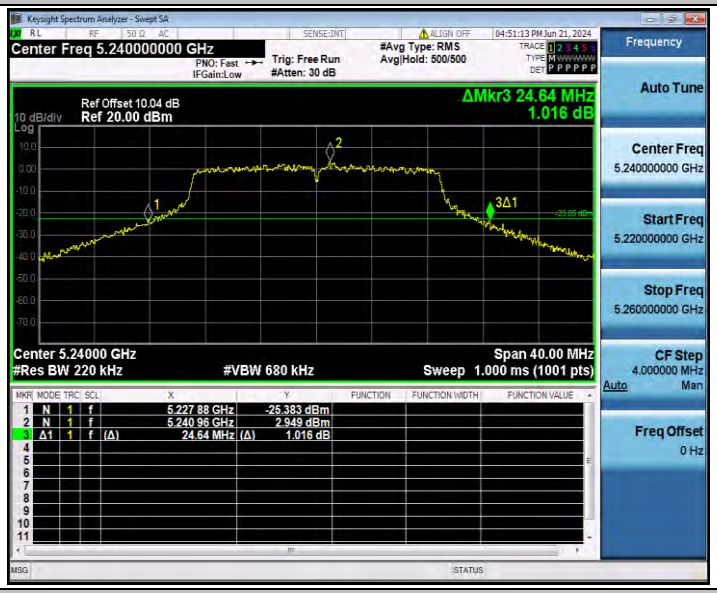
11AC20SISO_Ant1_5180



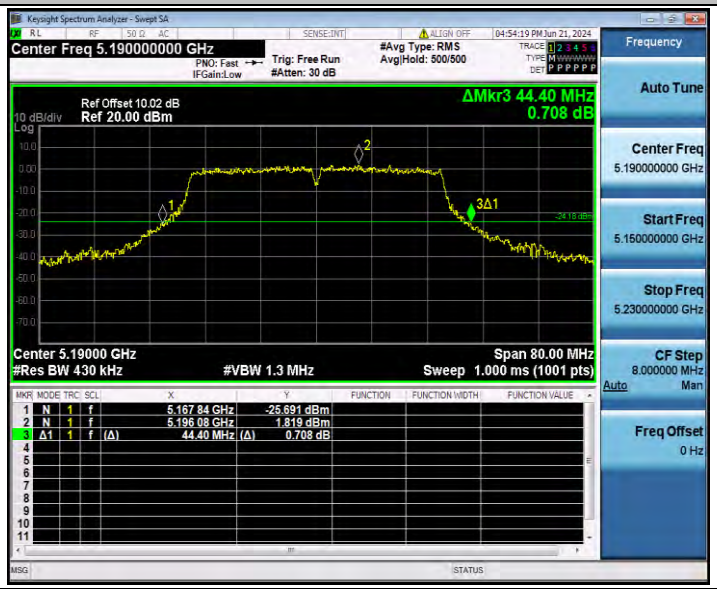
11AC20SISO_Ant1_5200



11AC20SISO_Ant1_5240



11AC40SISO_Ant1_5190



11AC40SISO_Ant1_5230

Keysight Spectrum Analyzer - Swept SA
Center Freq 5.230000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 500/500
04:58:28 PM Jun 21, 2024
Frequency
Auto Tune
Center Freq
5.230000000 GHz
Start Freq
5.190000000 GHz
Stop Freq
5.270000000 GHz
CF Step
8.000000 MHz
Auto
Man
Freq Offset
0 Hz
Ref Offset 10.02 dB
10 dB/div
Ref 20.00 dBm
Log
ΔMkr3 43.60 MHz
0.730 dB
Center 5.23000 GHz
#Res BW 430 kHz
#VBW 1.3 MHz
Span 80.00 MHz
Sweep 1.000 ms (1001 pts)
1 N 1 f 5.208 00 GHz -25.991 dBm
2 N 1 f 5.236 24 GHz 1.997 dBm
3 Δ1 1 f (Δ) 43.60 MHz (Δ) 0.730 dB

Appendix D.2: Occupied channel bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]
11A	Ant1	5180	18.010	5170.9672	5188.9772
		5200	17.915	5190.9549	5208.8699
		5240	17.873	5230.9736	5248.8466
11N20SISO	Ant1	5180	18.361	5170.8373	5189.1983
		5200	18.344	5190.8158	5209.1598
		5240	18.396	5230.7934	5249.1894
11N40SISO	Ant1	5190	36.887	5171.6752	5208.5622
		5230	36.860	5211.5610	5248.4210
11AC20SISO	Ant1	5180	18.368	5170.8329	5189.2009
		5200	18.323	5190.8473	5209.1703
		5240	18.342	5230.8147	5249.1567
11AC40SISO	Ant1	5190	36.658	5171.6475	5208.3055
		5230	36.810	5211.5278	5248.3378

Test Graphs

11A_Ant1_5180

11A_Ant1_5200

11A_Ant1_5240

11N20SISO_Ant1_5180

11N20SISO_Ant1_5200

11N20SISO_Ant1_5240

11N40SISO_Ant1_5190

11N40SISO_Ant1_5230

11AC20SISO_Ant1_5180

11AC20SISO_Ant1_5200

11AC20SISO_Ant1_5240

11AC40SISO_Ant1_5190

11AC40SISO_Ant1_5230

Keysight Spectrum Analyzer - Occupied BW
Center Freq 5.230000000 GHz
Center Freq: 5.230000000 GHz
Trig: Free Run
Avg|Hold: 500/500
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Frequency
Ref Offset 10.02 dB
10 dB/div
Ref 20.00 dBm
Mkr1 5.23488 GHz
4.9553 dBm
Center 5.23 GHz
#Res BW 820 kHz
#VBW 2.7 MHz
Span 80 MHz
Sweep 1 ms
Occupied Bandwidth
36.810 MHz
Total Power 19.1 dBm
Transmit Freq Error -67.184 kHz
% of OBW Power 99.00 %
x dB Bandwidth 47.43 MHz
x dB -26.00 dB
Center Freq
5.230000000 GHz
CF Step
8.000000 MHz
Auto
Man
Freq Offset
0 Hz

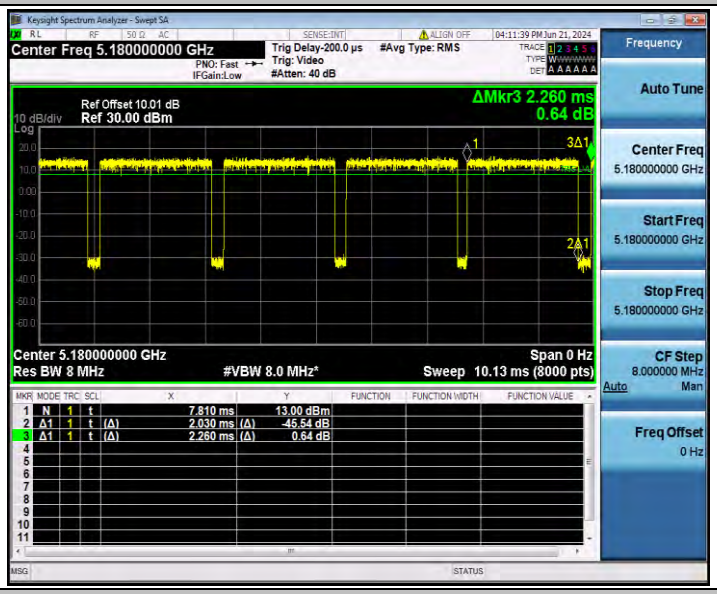
Appendix D.3: Duty Cycle

Test Result

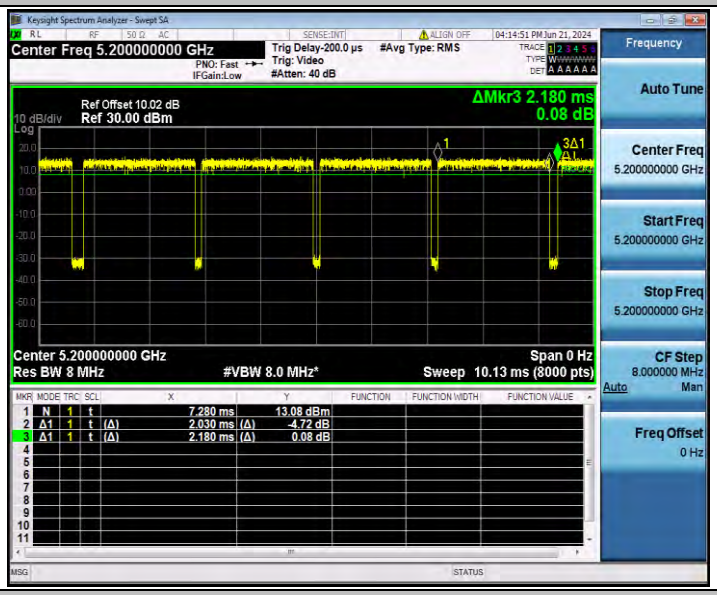
TestMode	Antenna	Freq(MHz)	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]	1/T Factor[KHz]
11A	Ant1	5180	2.03	2.26	89.82	0.47	0.49
		5200	2.03	2.18	93.12	0.31	0.49
		5240	2.03	2.25	90.22	0.45	0.49
11N20SISO	Ant1	5180	0.22	0.46	47.83	3.20	4.55
		5200	1.79	3.91	45.78	3.39	0.56
		5240	0.22	0.59	37.29	4.28	4.55
11N40SISO	Ant1	5190	0.90	4.51	19.96	7.00	1.11
		5230	0.38	1.19	31.93	4.96	2.63
11AC20SISO	Ant1	5180	0.20	0.48	41.67	3.80	5.00
		5200	0.19	0.55	34.55	4.62	5.26
		5240	0.19	0.31	61.29	2.13	5.26
11AC40SISO	Ant1	5190	0.11	0.44	25.00	6.02	9.09
		5230	0.86	2.51	34.26	4.65	1.16

Test Graphs

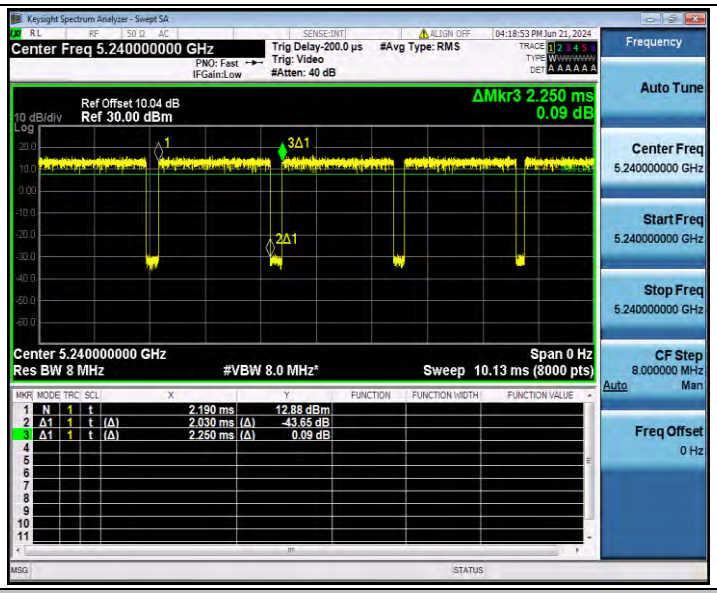
11A_Ant1_5180



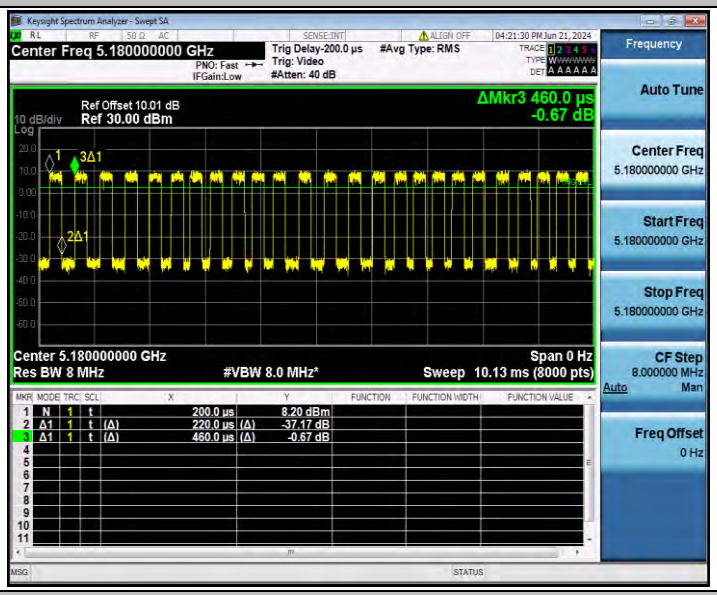
11A_Ant1_5200



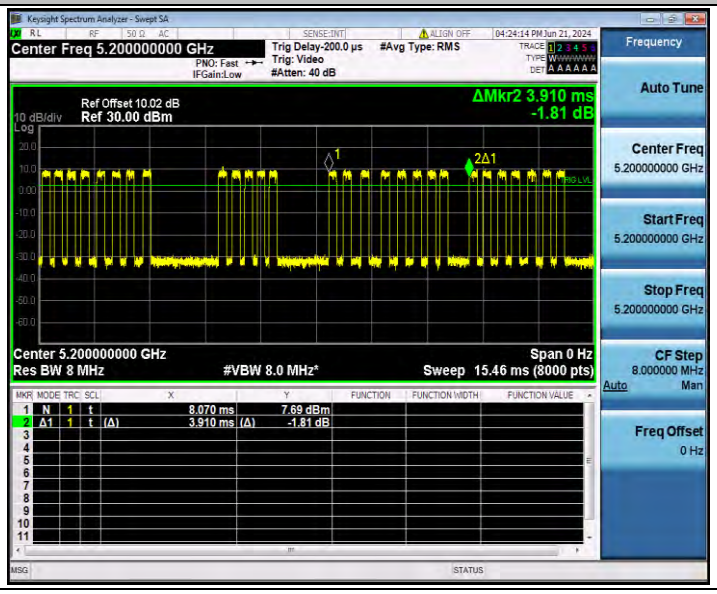
11A_Ant1_5240



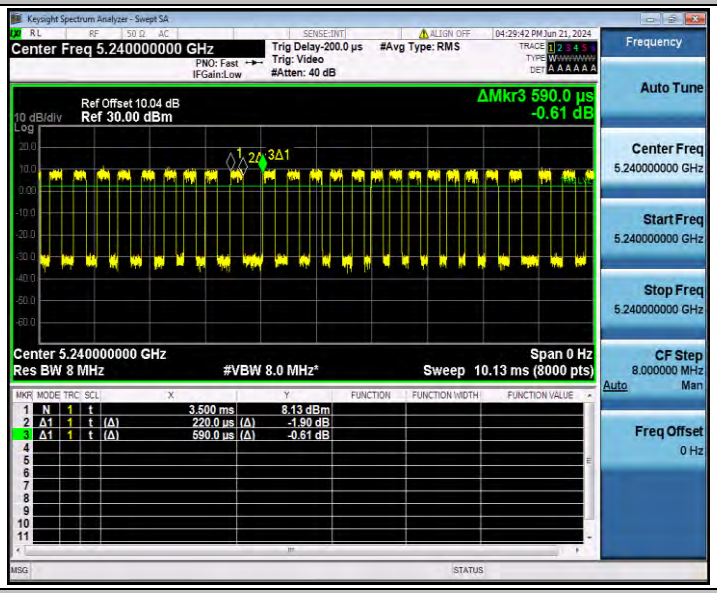
11N20SISO_Ant1_5180



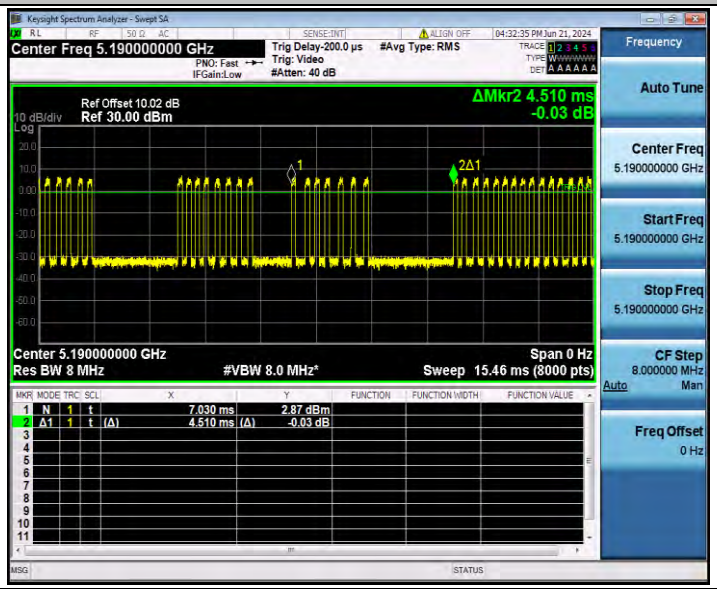
11N20SISO_Ant1_5200



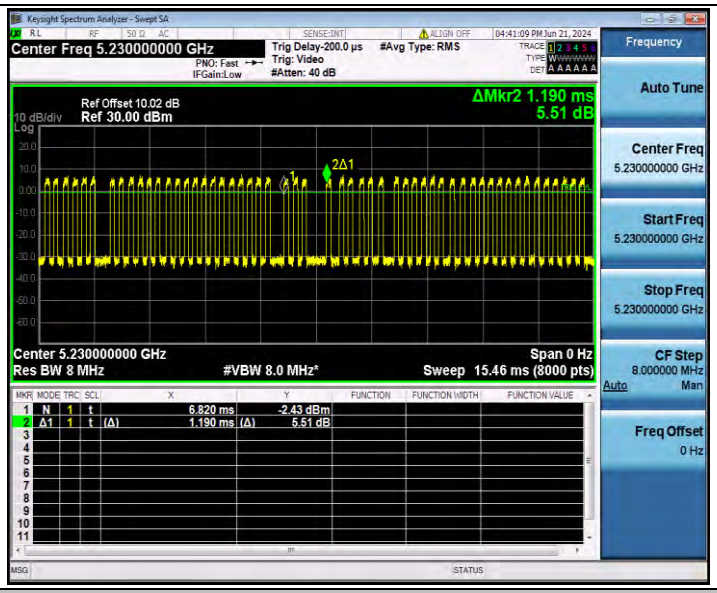
11N20SISO_Ant1_5240



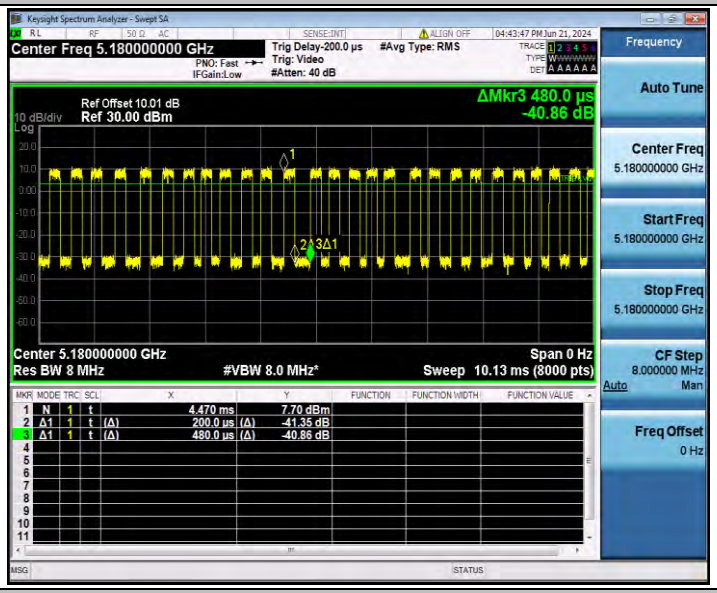
11N40SISO_Ant1_5190



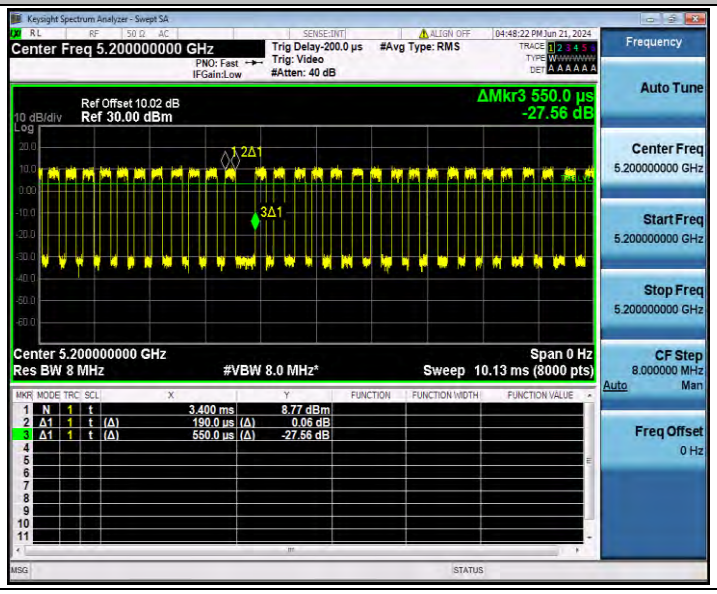
11N40SISO_Ant1_5230



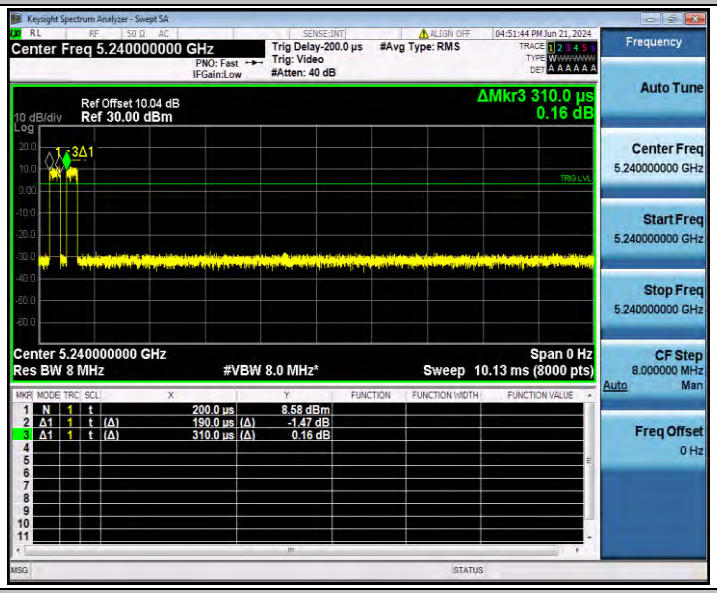
11AC20SISO_Ant1_5180



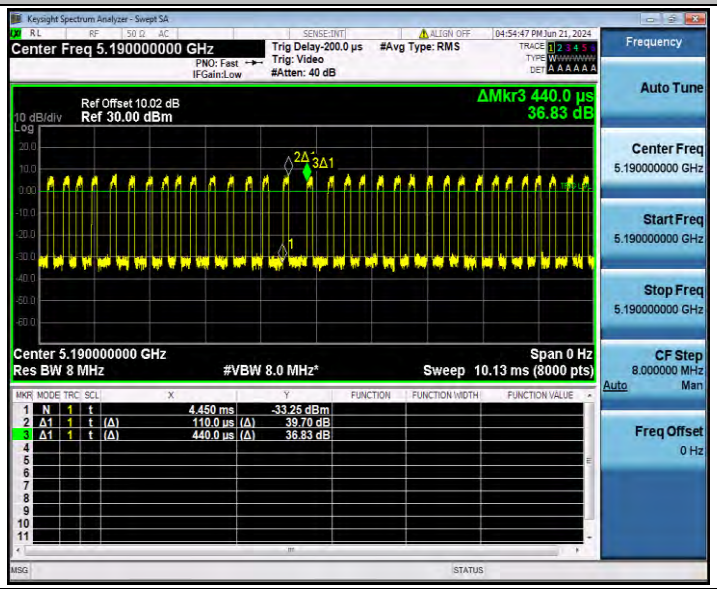
11AC20SISO_Ant1_5200



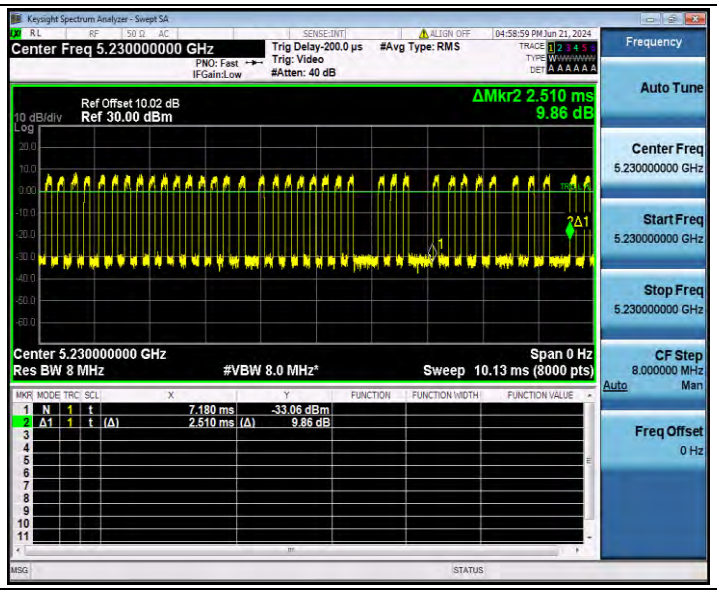
11AC20SISO_Ant1_5240



11AC40SISO_Ant1_5190



11AC40SISO_Ant1_5230


Keysight Spectrum Analyzer - Swept SA
Center Freq 5.230000000 GHz
Trig Delay-200.0 µs
#Avg Type: RMS
Trig: Video
#Atten: 40 dB
Ref Offset 10.02 dB
10 dB/div
Ref 30.00 dBm
ΔMkr2 2.510 ms
9.86 dB
Center 5.230000000 GHz
Span 0 Hz
Res BW 8 MHz
#VBW 8.0 MHz*
Sweep 10.13 ms (8000 pts)
Frequency
Auto Tune
Center Freq
5.230000000 GHz
Start Freq
5.230000000 GHz
Stop Freq
5.230000000 GHz
CF Step
8.000000 MHz
Auto
Man
Freq Offset
0 Hz
1 N 1 t 7.180 ms -33.06 dBm
2 Δ1 1 t (Δ) 2.510 ms (Δ) 9.86 dB

Appendix D.4: Maximum conducted output power

Test Result Channel Power

Test Mode	Antenna	Freq(MHz)	Channel Powert [dBm]	Duty Cycle [%]	DC Factor [dBm]	Result [dBm]	Limit [dBm]	Verdict
11A	Ant1	5180	16.30	89.82	0.47	16.77	≤23.98	PASS
		5200	16.21	93.12	0.31	16.52	≤23.98	PASS
		5240	15.80	90.22	0.45	16.25	≤23.98	PASS
11N20SISO	Ant1	5180	8.63	47.83	3.20	11.83	≤23.98	PASS
		5200	8.92	45.78	3.39	12.31	≤23.98	PASS
		5240	8.70	37.29	4.28	12.98	≤23.98	PASS
11N40SISO	Ant1	5190	5.84	19.96	7.00	12.84	≤23.98	PASS
		5230	7.65	31.93	4.96	12.61	≤23.98	PASS
11AC20SISO	Ant1	5180	6.92	41.67	3.80	10.72	≤23.98	PASS
		5200	9.05	34.55	4.62	13.67	≤23.98	PASS
		5240	8.18	61.29	2.13	10.31	≤23.98	PASS
11AC40SISO	Ant1	5190	5.06	25.00	6.02	11.08	≤23.98	PASS
		5230	7.07	34.26	4.65	11.72	≤23.98	PASS

Note：

1. The Duty Cycle Factor is compensated in the graph.
2. The Duty Cycle Factor and RBW Factor is compensated in the data.

Appendix D.5: Maximum power spectral density

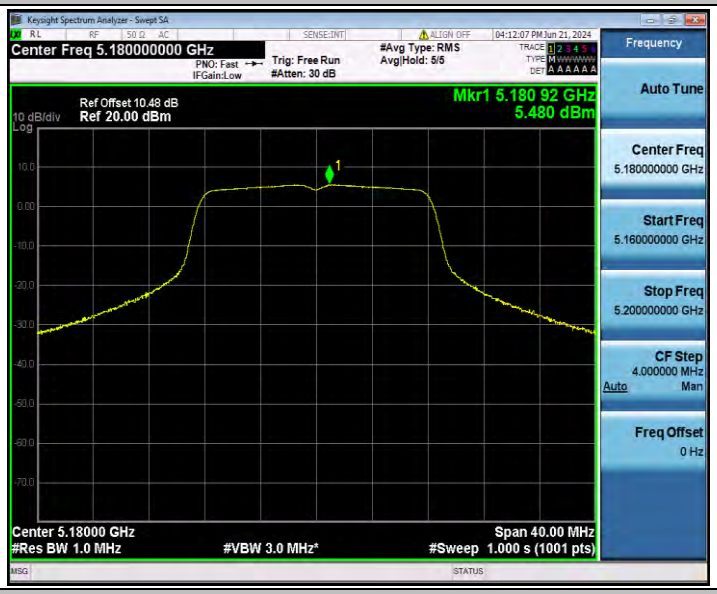
Test Result

TestMode	Antenna	Freq(MHz)	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	Ant1	5180	5.48	≤11.00	PASS
		5200	5.51	≤11.00	PASS
		5240	5.42	≤11.00	PASS
11N20SISO	Ant1	5180	0.95	≤11.00	PASS
		5200	1.36	≤11.00	PASS
		5240	2.03	≤11.00	PASS
11N40SISO	Ant1	5190	1.11	≤11.00	PASS
		5230	-0.87	≤11.00	PASS
11AC20SISO	Ant1	5180	2.05	≤11.00	PASS
		5200	3.13	≤11.00	PASS
		5240	0.62	≤11.00	PASS
11AC40SISO	Ant1	5190	0.42	≤11.00	PASS
		5230	-0.95	≤11.00	PASS

Note：1.The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.
2.The Duty Cycle Factor and RBW Factor is compensated in the graph.

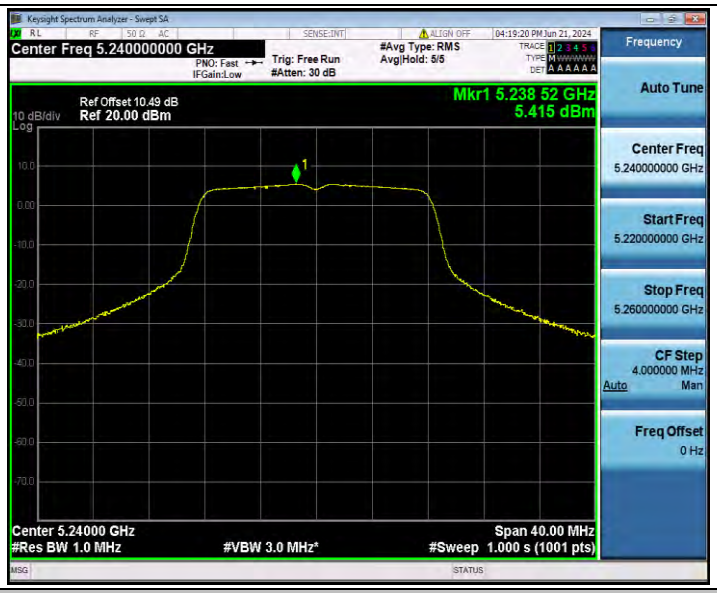
Test Graphs

11A_Ant1_5180

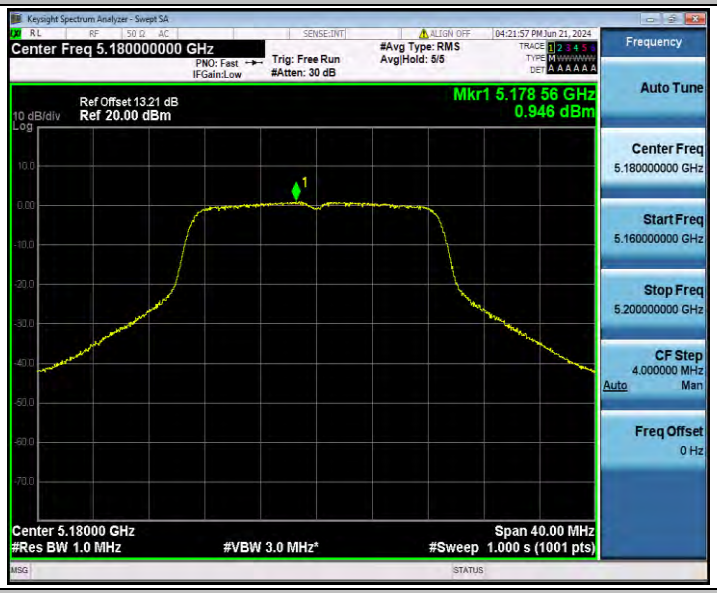


11A_Ant1_5200

11A_Ant1_5240



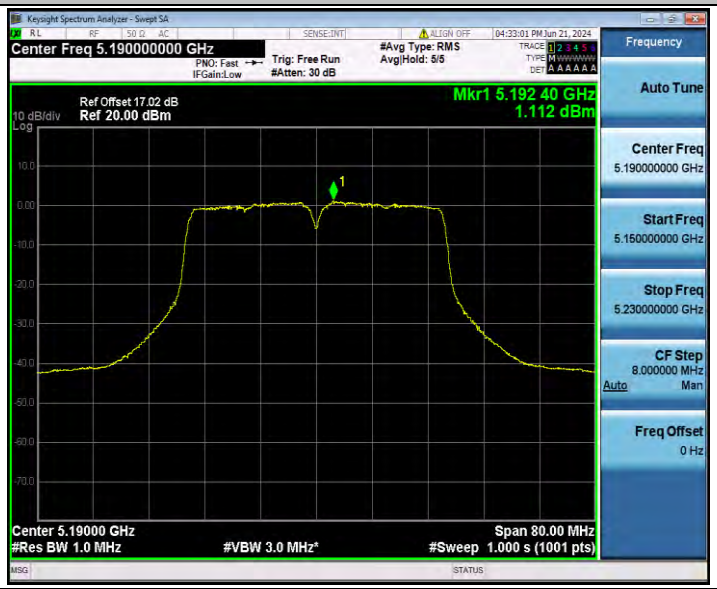
11N20SISO_Ant1_5180



11N20SISO_Ant1_5200

11N20SISO_Ant1_5240

11N40SISO_Ant1_5190

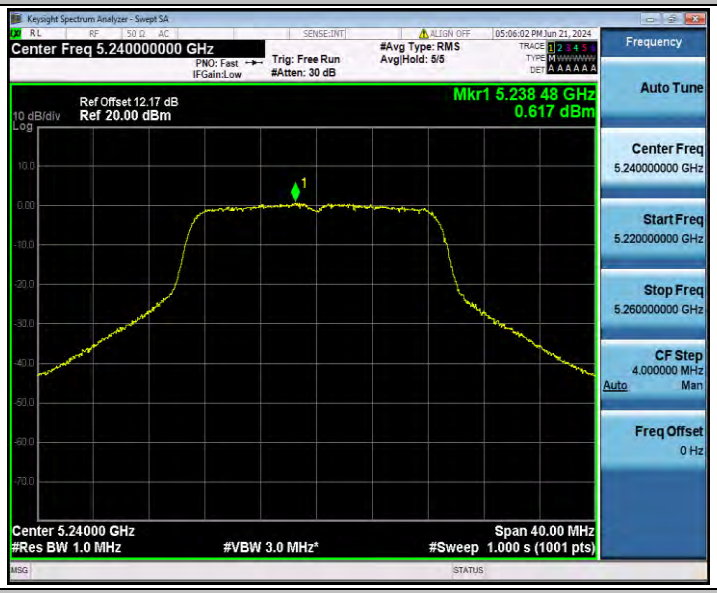


11N40SISO_Ant1_5230

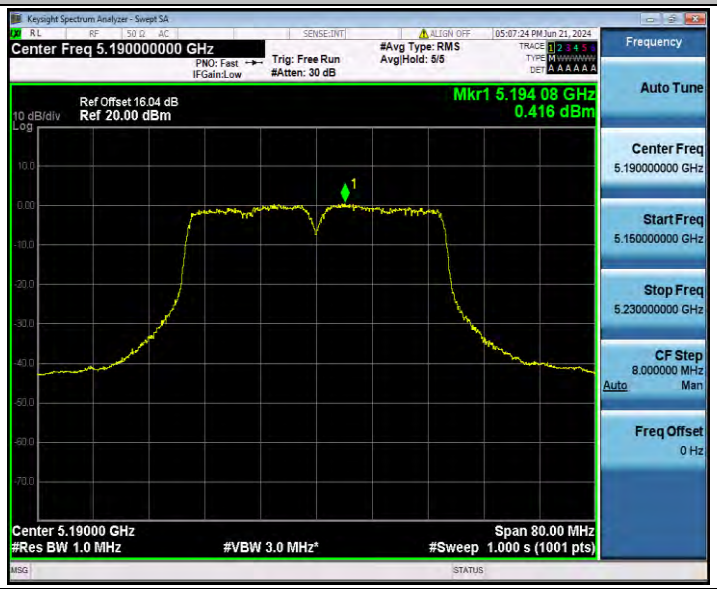
11AC20SISO_Ant1_5180

11AC20SISO_Ant1_5200

11AC20SISO_Ant1_5240



11AC40SISO_Ant1_5190



11AC40SISO_Ant1_5230

Keysight Spectrum Analyzer - Swept SA
Center Freq 5.230000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 5/5
Ref Offset 14.67 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 5.232 56 GHz
-0.952 dBm
Center 5.23000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Span 80.00 MHz
#Sweep 1.000 s (1001 pts)
Frequency
Auto Tune
Center Freq
5.230000000 GHz
Start Freq
5.190000000 GHz
Stop Freq
5.270000000 GHz
CF Step
8.000000 MHz
Auto
Man
Freq Offset
0 Hz

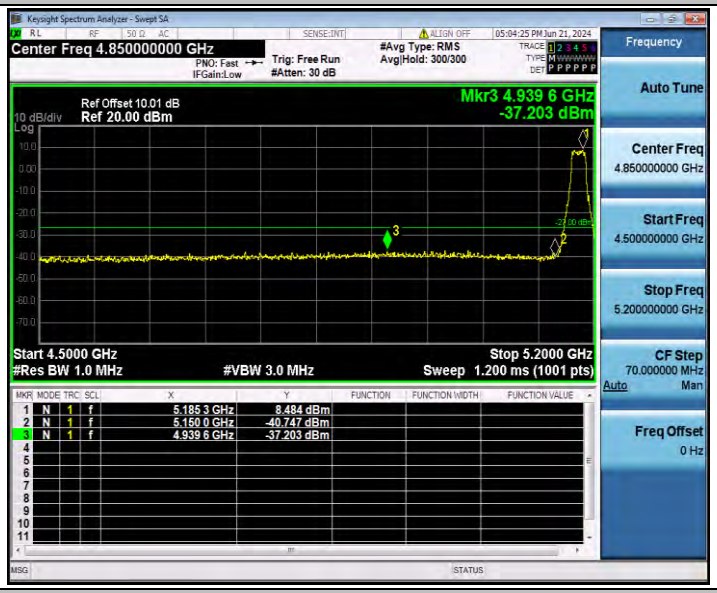
Appendix D.6: Band edge measurements

Test Result B1

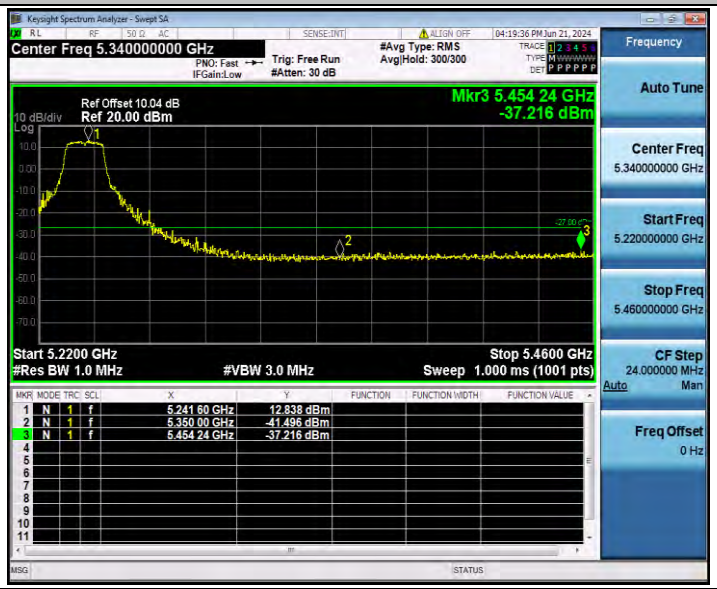
TestMode	Antenna	ChName	Freq(MHz)	Result[dBm]	Limit[dBm]	Verdict
11A	Ant1	Low	5180	-37.2	≤-27	PASS
		High	5240	-37.22	≤-27	PASS
11N20SISO	Ant1	Low	5180	-37.37	≤-27	PASS
		High	5240	-37.76	≤-27	PASS
11N40SISO	Ant1	Low	5190	-36.03	≤-27	PASS
		High	5230	-37.37	≤-27	PASS
11AC20SISO	Ant1	Low	5180	-36.34	≤-27	PASS
		High	5240	-36.37	≤-27	PASS
11AC40SISO	Ant1	Low	5190	-32.38	≤-27	PASS
		High	5230	-37.63	≤-27	PASS

Test Graphs B1

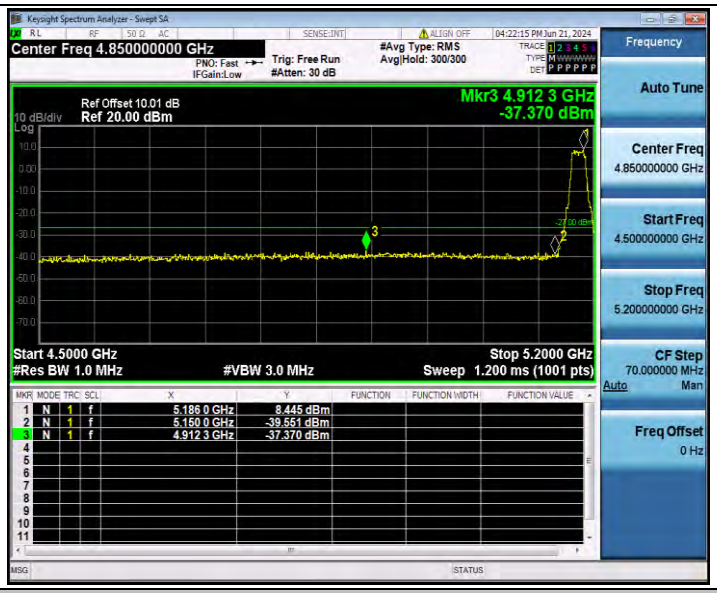
11A_Ant1_Low_5180



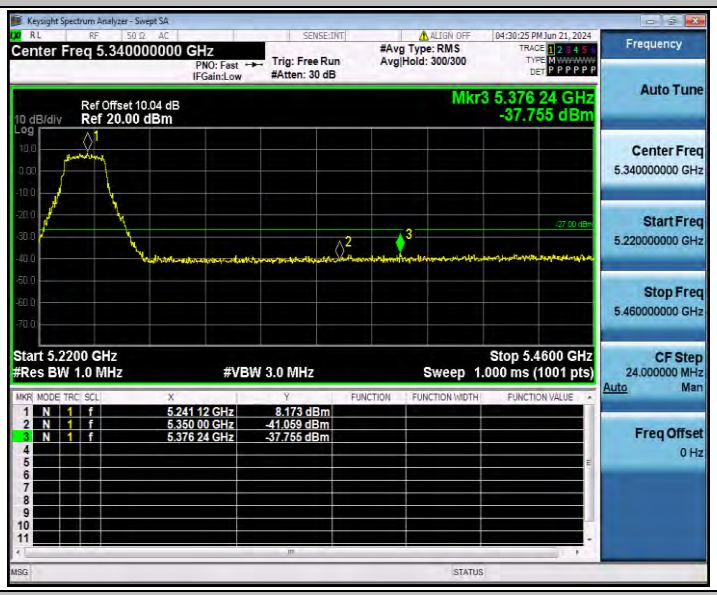
11A_Ant1_High_5240



11N20SISO_Ant1_Low_5180



11N20SISO_Ant1_High_5240



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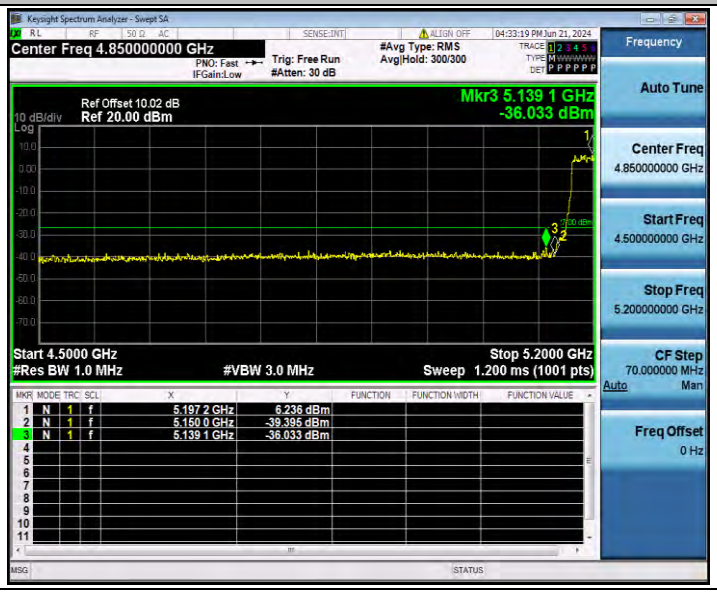

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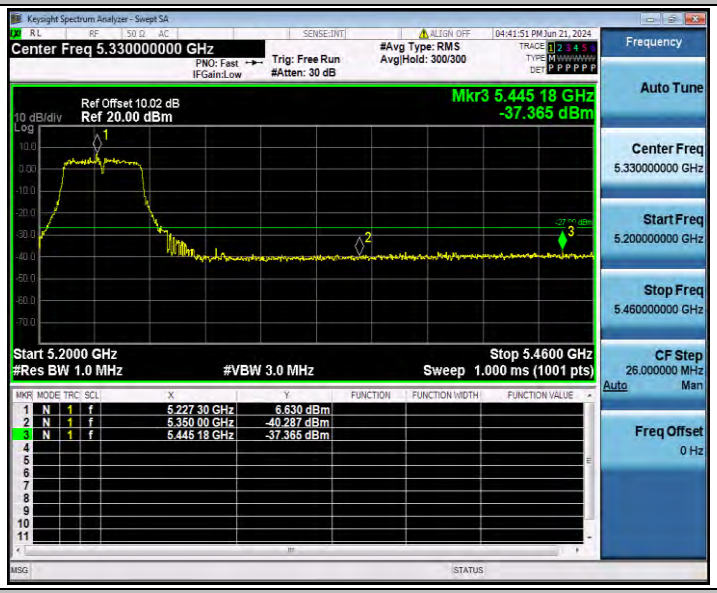

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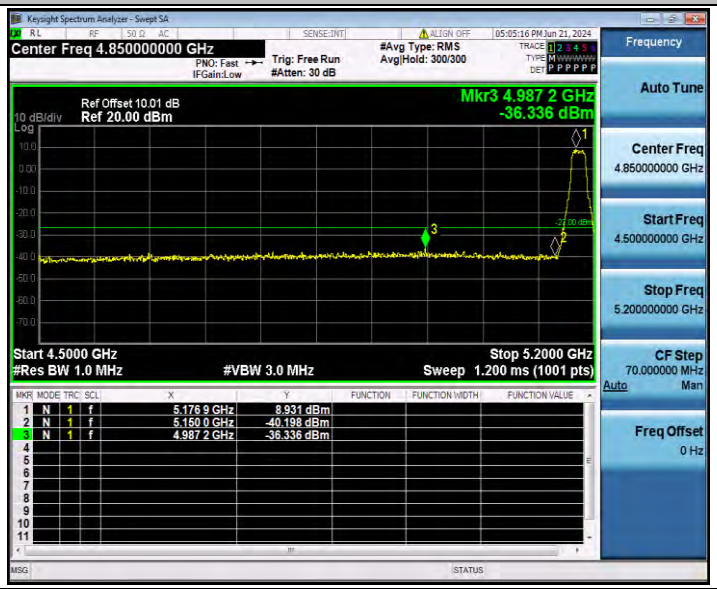

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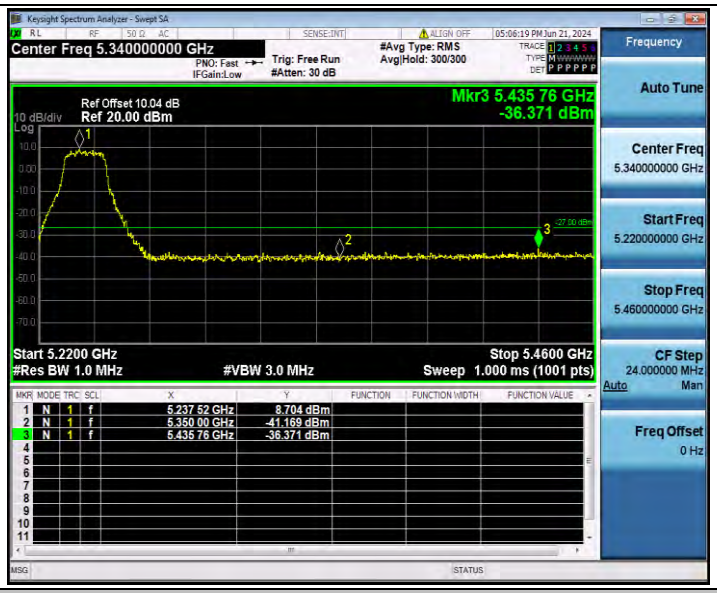

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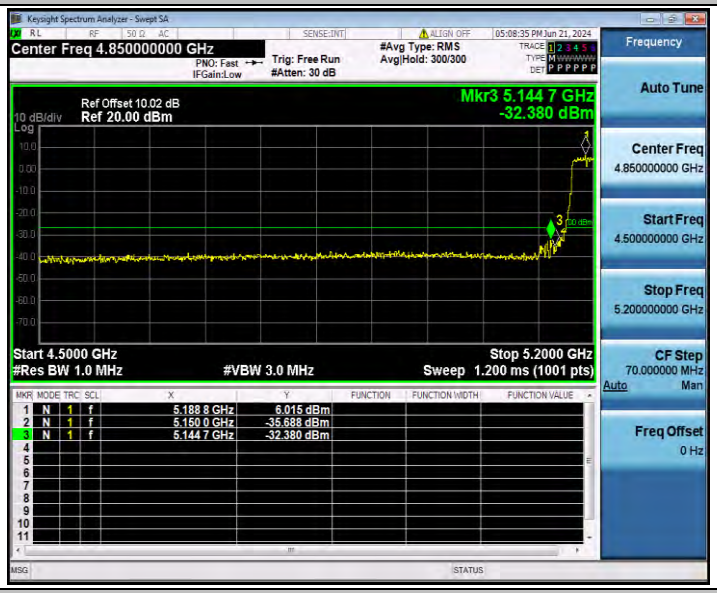

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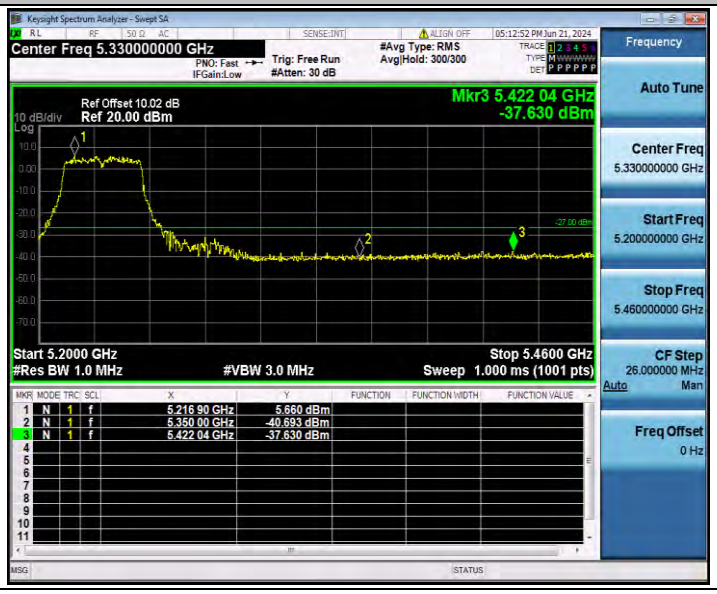


Appendix D.7: Conducted Spurious Emission

Test Result

TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	Max. Fre [MHz]	Max. Level [dBm]	Limit [dBm]	Verdict
11A	Ant1	5180	30~5140	5134.89	-32.45	≤-27	PASS
			5360~27000	26016.1	-36.97	≤-27	PASS
		5200	30~5140	5139.83	-37.89	≤-27	PASS
			5360~27000	24808.59	-36.82	≤-27	PASS
		5240	30~5140	4192.27	-42.71	≤-27	PASS
			5360~27000	24217.1	-37.79	≤-27	PASS
11N20SISO	Ant1	5180	30~5140	4945.31	-45.73	≤-27	PASS
			5360~27000	25219.75	-36.74	≤-27	PASS
		5200	30~5140	4911.75	-46.58	≤-27	PASS
			5360~27000	26651.6	-37.26	≤-27	PASS
		5240	30~5140	4192.44	-44.14	≤-27	PASS
			5360~27000	26039.18	-36.92	≤-27	PASS
11N40SISO	Ant1	5190	30~5140	5135.06	-39.73	≤-27	PASS
			5360~27000	26925.7	-36.22	≤-27	PASS
		5230	30~5140	5121.6	-42.97	≤-27	PASS
			5360~27000	26070.92	-36.83	≤-27	PASS
11AC20SISO	Ant1	5180	30~5140	4144.74	-43.12	≤-27	PASS
			5360~27000	23491.43	-37.43	≤-27	PASS
		5200	30~5140	4159.56	-41.34	≤-27	PASS
			5360~27000	24279.85	-36.37	≤-27	PASS
		5240	30~5140	5112.07	-44.11	≤-27	PASS
			5360~27000	26042.07	-37.16	≤-27	PASS
11AC40SISO	Ant1	5190	30~5140	5134.55	-39.28	≤-27	PASS
			5360~27000	26059.38	-36.89	≤-27	PASS
		5230	30~5140	5137.27	-42.6	≤-27	PASS
			5360~27000	24333.95	-35.98	≤-27	PASS

Test Graphs

11A_Ant1_5180_30~5140

11A_Ant1_5180_5360~27000

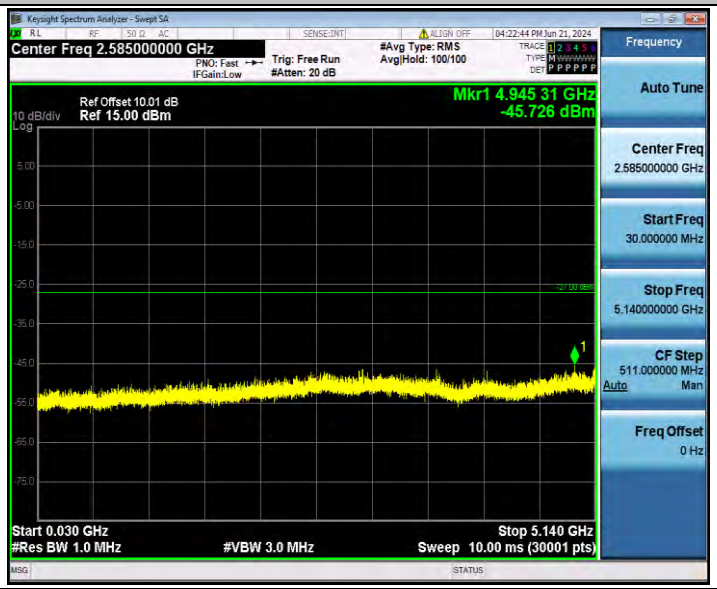
11A_Ant1_5200_30~5140

11A_Ant1_5200_5360~27000

11A_Ant1_5240_30~5140

11A_Ant1_5240_5360~27000

11N20SISO_Ant1_5180_30~5140



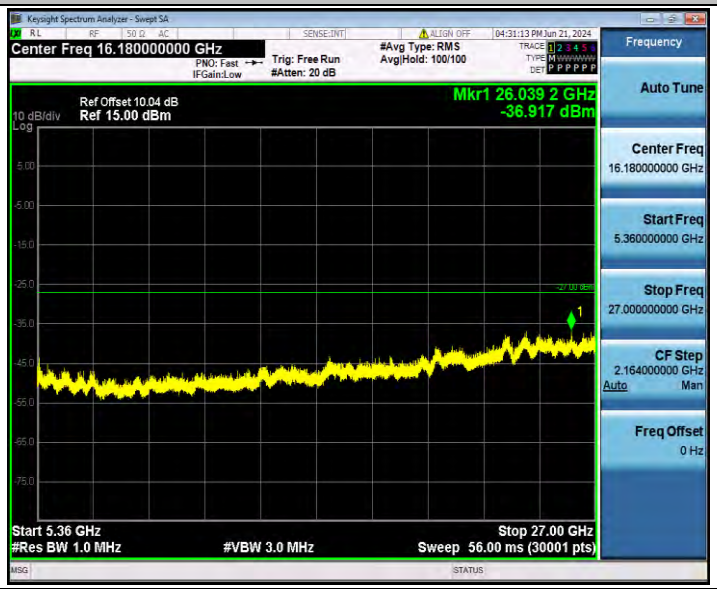
11N20SISO_Ant1_5180_5360~27000

11N20SISO_Ant1_5200_30~5140

11N20SISO_Ant1_5200_5360~27000

11N20SISO_Ant1_5240_30~5140

11N20SISO_Ant1_5240_5360~27000



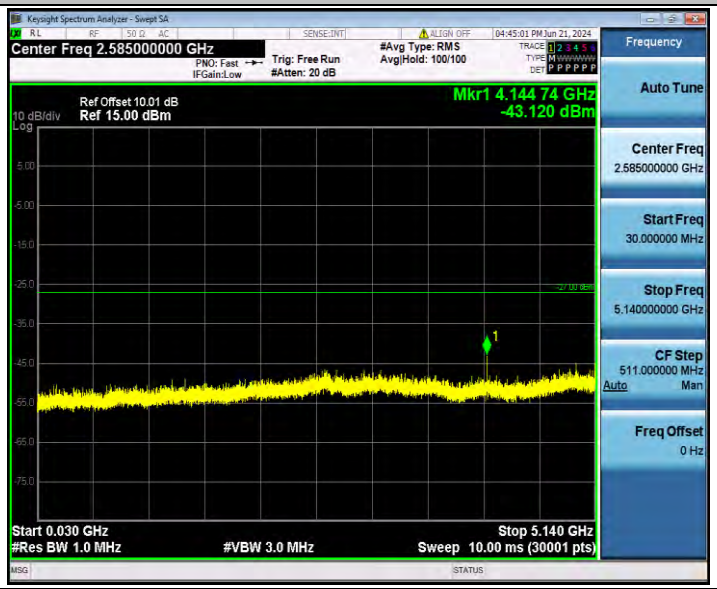
11N40SISO_Ant1_5190_30~5140

11N40SISO_Ant1_5190_5360~27000

11N40SISO_Ant1_5230_30~5140

11N40SISO_Ant1_5230_5360~27000

11AC20SISO_Ant1_5180_30~5140



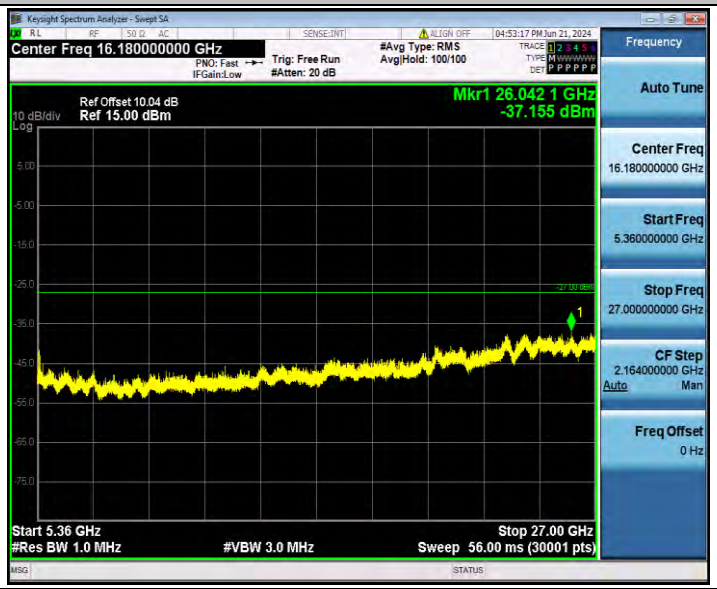
11AC20SISO_Ant1_5180_5360~27000

11AC20SISO_Ant1_5200_30~5140

11AC20SISO_Ant1_5200_5360~27000

11AC20SISO_Ant1_5240_30~5140

11AC20SISO_Ant1_5240_5360~27000



11AC40SISO_Ant1_5190_30~5140

11AC40SISO_Ant1_5190_5360~27000

11AC40SISO_Ant1_5230_30~5140

11AC40SISO_Ant1_5230_5360~27000

Appendix D.8: Emissions in Restricted Bands

Test Result

TestMode	Antenna	ChName	Freq(MHz)	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
11A	Ant1	Low	5180	AV	4500.000	-47.69	≤-41.20	47.51	≤54	PASS
				AV	5149.600	-43.45	≤-41.20	51.75	≤54	PASS
				AV	5150.000	-42.74	≤-41.20	52.46	≤54	PASS
				Peak	4500.000	-44.82	≤-21.20	50.38	≤74	PASS
				Peak	5004.700	-36.88	≤-21.20	58.32	≤74	PASS
				Peak	5150.000	-46.63	≤-21.20	48.57	≤74	PASS
		High	5240	AV	5350.000	-46.63	≤-41.20	48.57	≤54	PASS
				AV	5444.880	-45.37	≤-41.20	49.83	≤54	PASS
				AV	5460.000	-45.51	≤-41.20	49.69	≤54	PASS
				Peak	5350.000	-44.81	≤-21.20	50.39	≤74	PASS
				Peak	5456.880	-37.52	≤-21.20	57.68	≤74	PASS
				Peak	5460.000	-45.92	≤-21.20	49.28	≤74	PASS
11N20SISO	Ant1	Low	5180	AV	4500.000	-47.6	≤-41.20	47.60	≤54	PASS
				AV	5149.600	-44.56	≤-41.20	50.64	≤54	PASS
				AV	5150.000	-43.98	≤-41.20	51.22	≤54	PASS
				Peak	4500.000	-46.69	≤-21.20	48.51	≤74	PASS
				Peak	4950.100	-36.36	≤-21.20	58.84	≤74	PASS
				Peak	5150.000	-40.55	≤-21.20	54.65	≤74	PASS
		High	5240	AV	5350.000	-46.67	≤-41.20	48.53	≤54	PASS
				AV	5457.600	-45.43	≤-41.20	49.77	≤54	PASS
				AV	5460.000	-45.97	≤-41.20	49.23	≤54	PASS
				Peak	5350.000	-42.71	≤-21.20	52.49	≤74	PASS
				Peak	5389.440	-36.37	≤-21.20	58.83	≤74	PASS
				Peak	5460.000	-41.44	≤-21.20	53.76	≤74	PASS
11N40SISO	Ant1	Low	5190	AV	4500.000	-47.59	≤-41.20	47.61	≤54	PASS
				AV	4941.000	-44.98	≤-41.20	50.22	≤54	PASS
				AV	5150.000	-45.95	≤-41.20	49.25	≤54	PASS
				Peak	4500.000	-45.59	≤-21.20	49.61	≤74	PASS
				Peak	4961.300	-37.43	≤-21.20	57.77	≤74	PASS
				Peak	5150.000	-41.23	≤-21.20	53.97	≤74	PASS
		High	5230	AV	5350.000	-46.18	≤-41.20	49.02	≤54	PASS
				AV	5416.840	-45.35	≤-41.20	49.85	≤54	PASS
				AV	5460.000	-45.44	≤-41.20	49.76	≤54	PASS
				Peak	5350.000	-46.32	≤-21.20	48.88	≤74	PASS
				Peak	5446.740	-37.66	≤-21.20	57.54	≤74	PASS
				Peak	5460.000	-42.55	≤-21.20	52.65	≤74	PASS

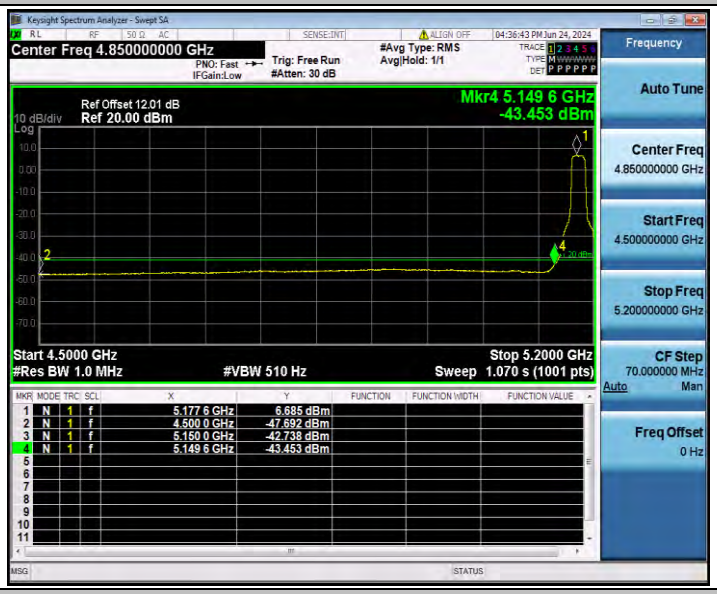
11AC20SISO	Ant1	Low	5180	AV	4500.000	-47.36	≤-41.20	47.84	≤54	PASS
				AV	4949.400	-43.94	≤-41.20	51.26	≤54	PASS
				AV	5150.000	-46.65	≤-41.20	48.55	≤54	PASS
				Peak	4500.000	-44.83	≤-21.20	50.37	≤74	PASS
				Peak	4945.900	-37.58	≤-21.20	57.62	≤74	PASS
				Peak	5150.000	-42.05	≤-21.20	53.15	≤74	PASS
		High	5240	AV	5350.000	-46.5	≤-41.20	48.70	≤54	PASS
				AV	5457.120	-45.37	≤-41.20	49.83	≤54	PASS
				AV	5460.000	-45.65	≤-41.20	49.55	≤54	PASS
				Peak	5350.000	-44.05	≤-21.20	51.15	≤74	PASS
				Peak	5410.800	-37.05	≤-21.20	58.15	≤74	PASS
				Peak	5460.000	-40.95	≤-21.20	54.25	≤74	PASS
11AC40SISO	Ant1	Low	5190	AV	4500.000	-46.84	≤-41.20	48.36	≤54	PASS
				AV	5146.100	-42	≤-41.20	53.20	≤54	PASS
				AV	5150.000	-42.1	≤-41.20	53.10	≤54	PASS
				Peak	4500.000	-46.95	≤-21.20	48.25	≤74	PASS
				Peak	4992.800	-37.71	≤-21.20	57.49	≤74	PASS
				Peak	5150.000	-46.32	≤-21.20	48.88	≤74	PASS
		High	5230	AV	5350.000	-46.52	≤-41.20	48.68	≤54	PASS
				AV	5439.980	-45.21	≤-41.20	49.99	≤54	PASS
				AV	5460.000	-45.96	≤-41.20	49.24	≤54	PASS
				Peak	5350.000	-39.82	≤-21.20	55.38	≤74	PASS
				Peak	5433.220	-37.75	≤-21.20	57.45	≤74	PASS
				Peak	5460.000	-43.08	≤-21.20	52.12	≤74	PASS

Note：

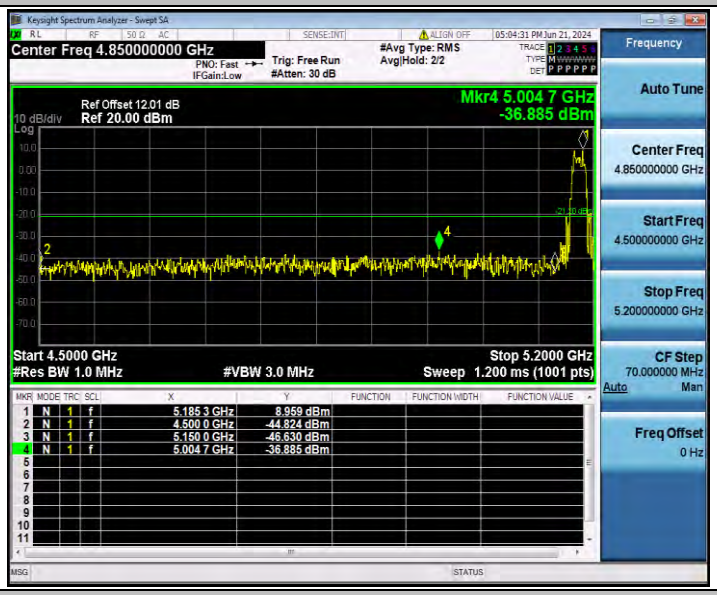
1. The Antenna Gain is compensated in the graph.
2. The Duty Cycle Factor and RBW Factor is compensated in the graph.
3. For transmitters operating in 5150-5350 GHz band and 5470-5725 GHz band: The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

11A_Ant1_Low_5180_AV

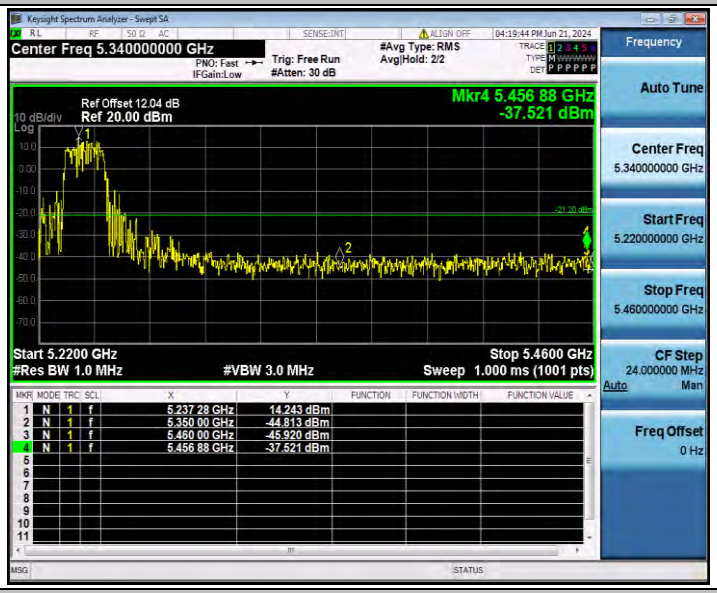


11A_Ant1_Low_5180_Peak

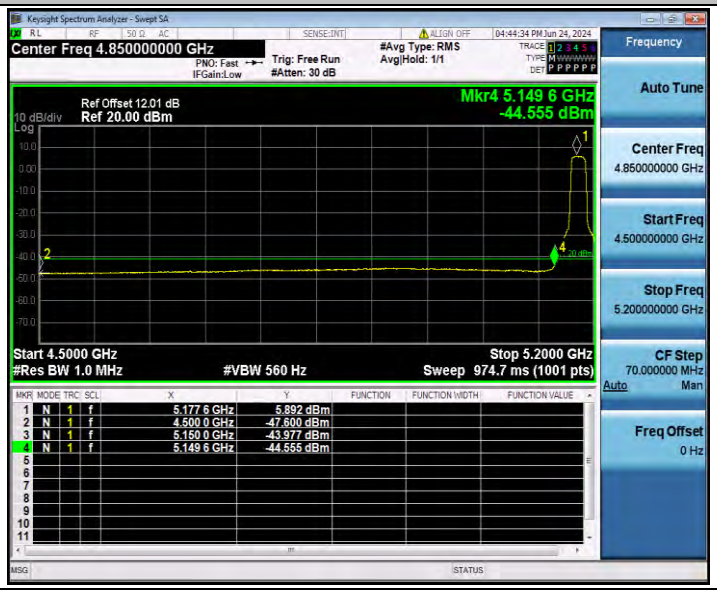


11A_Ant1_High_5240_AV

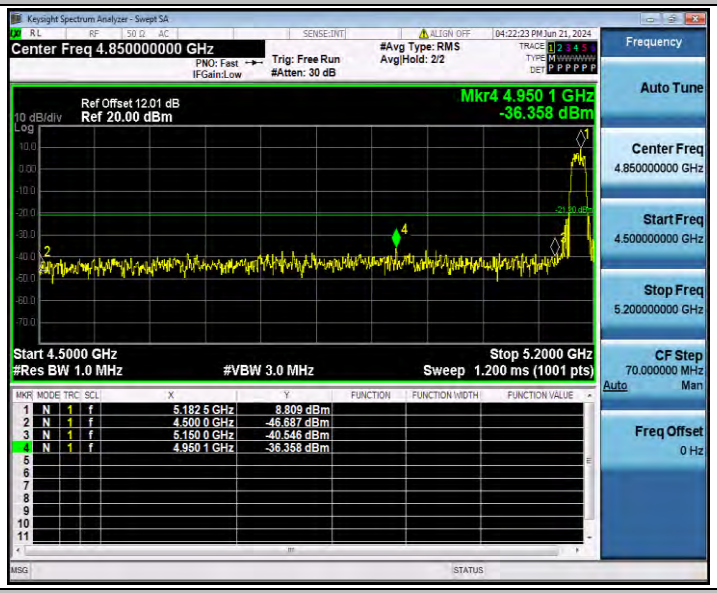
11A_Ant1_High_5240_Peak



11N20SISO_Ant1_Low_5180_AV



11N20SISO_Ant1_Low_5180_Peak



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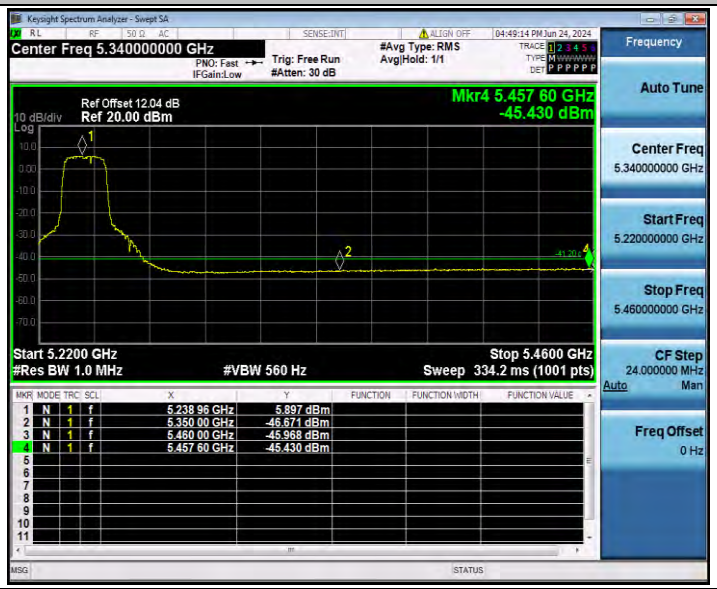
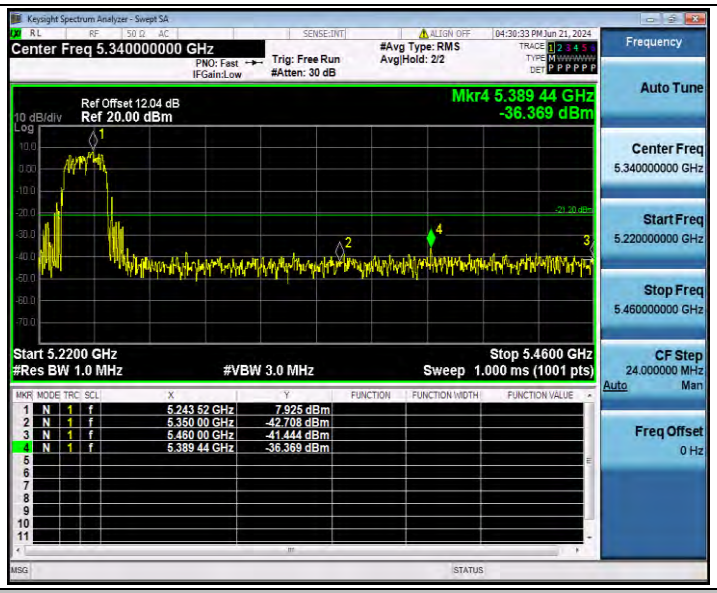
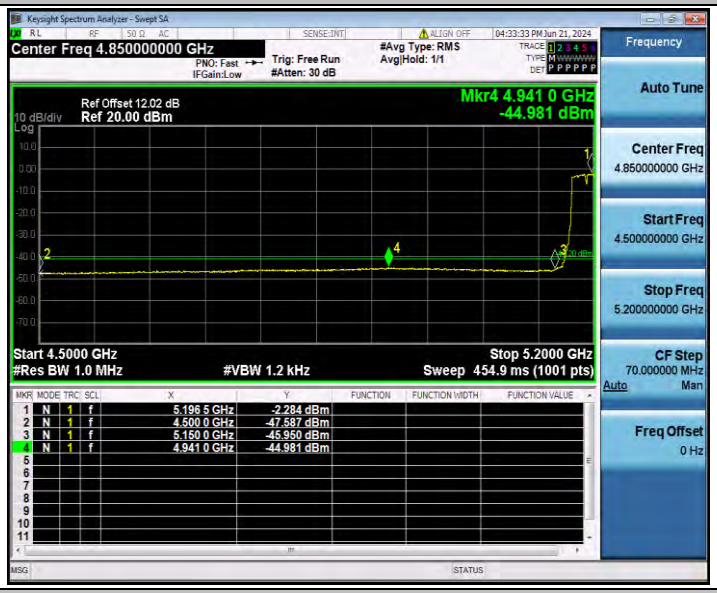


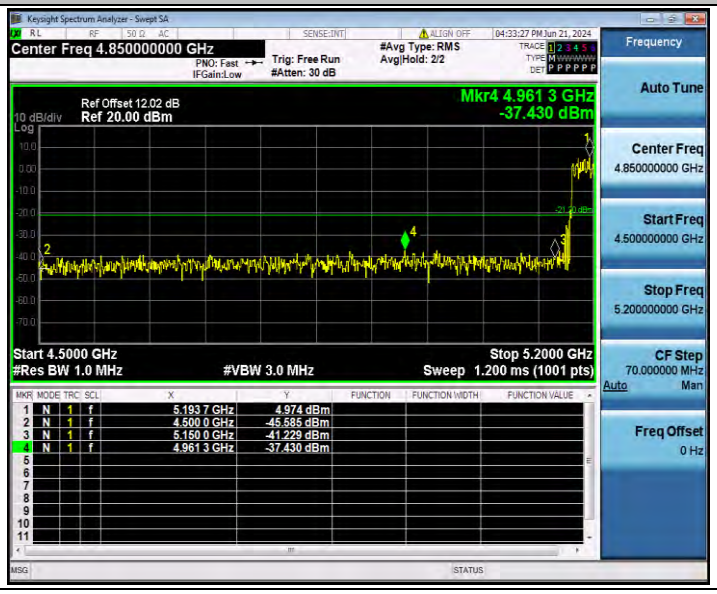
11N20SISO_Ant1_High_5240_Peak



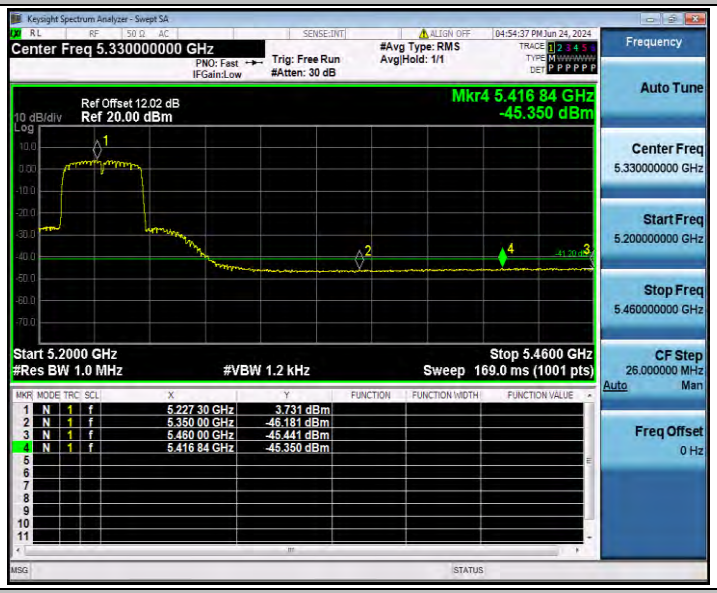
11N40SISO_Ant1_Low_5190_AV



11N40SISO_Ant1_Low_5190_Peak



11N40SISO_Ant1_High_5230_AV



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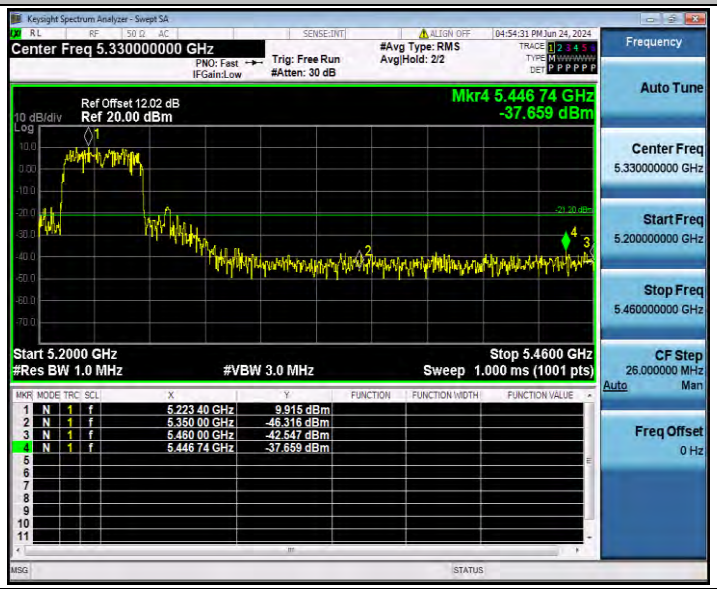
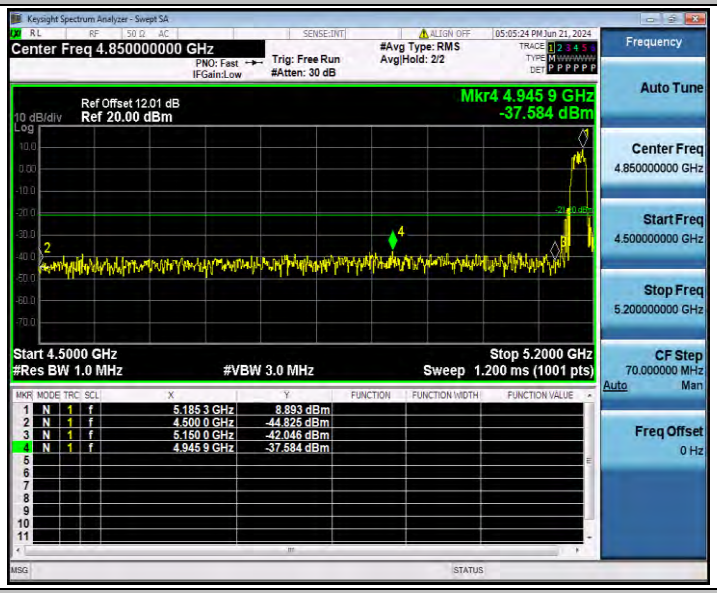


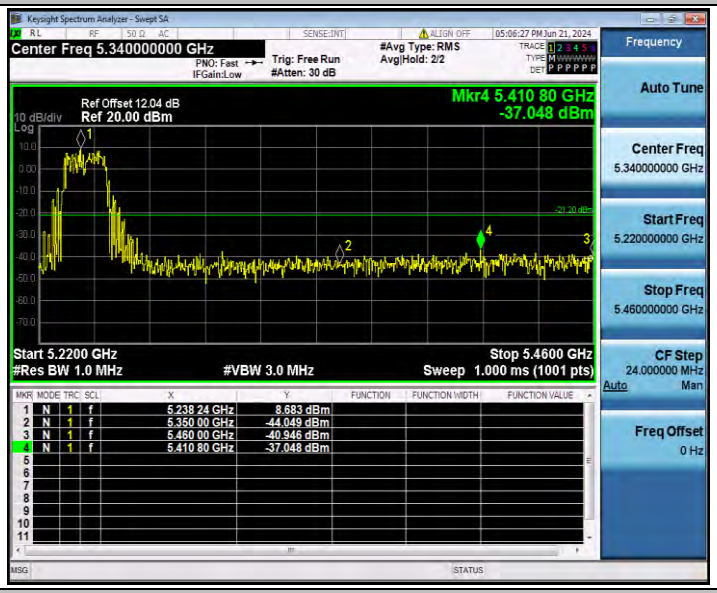
11AC20SISO_Ant1_Low_5180_AV

11AC20SISO_Ant1_Low_5180_Peak



11AC20SISO_Ant1_High_5240_AV

11AC20SISO_Ant1_High_5240_Peak



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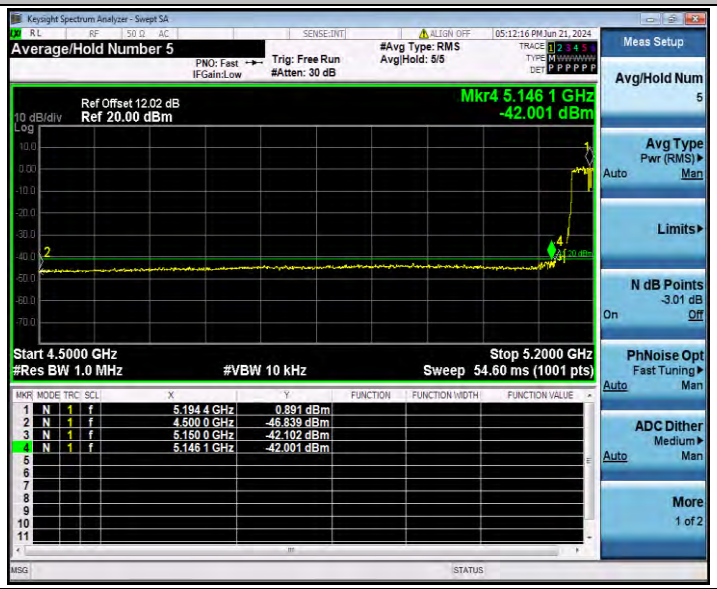
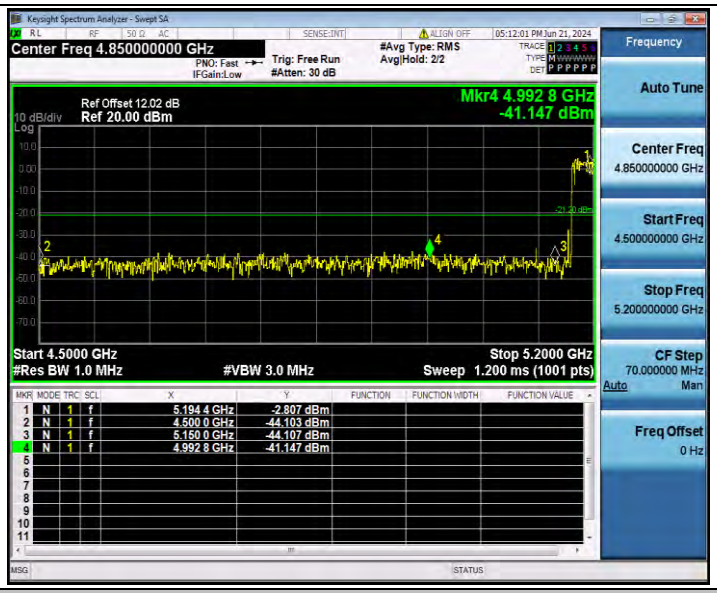
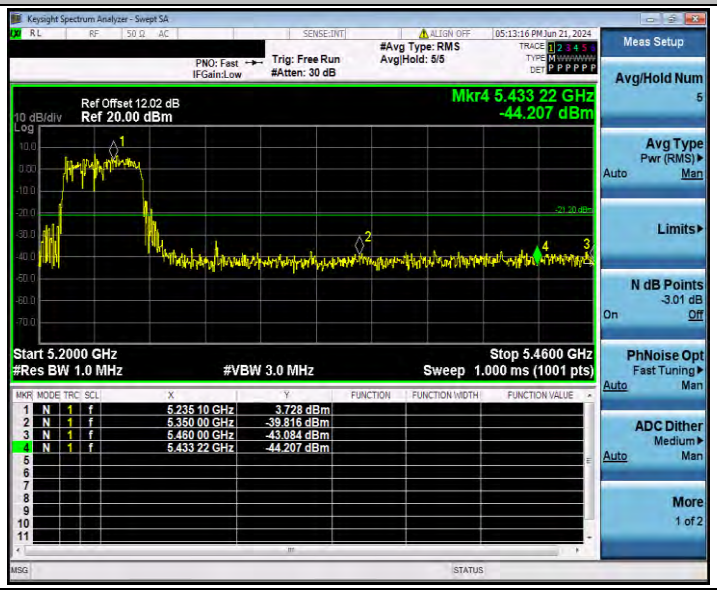


11AC40SISO_Ant1_Low_5190_Peak



11AC40SISO_Ant1_High_5230_AV

11AC40SISO_Ant1_High_5230_Peak