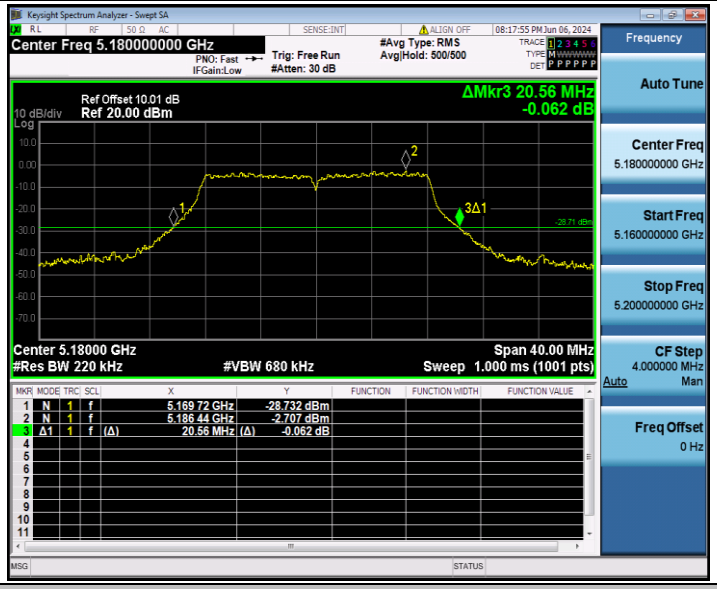
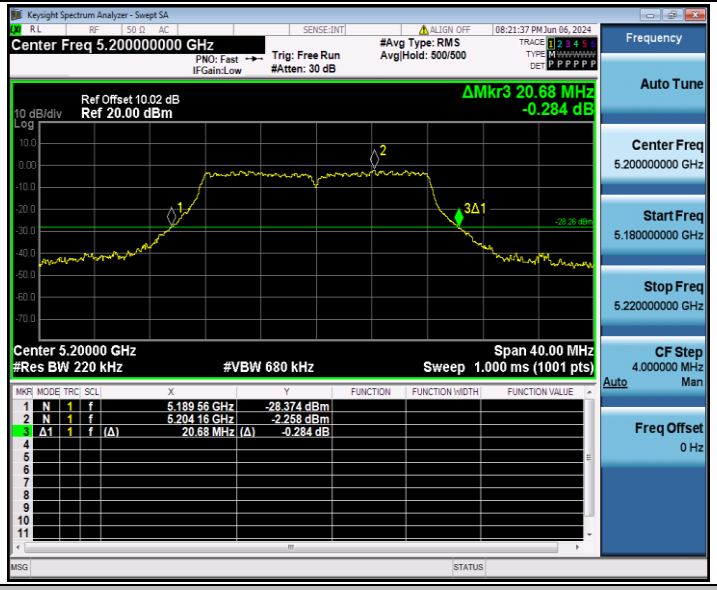
Case No. : CTA24053000104	
Ambient Condition: 23 ℃, 48 %RH	
According Standard: ■Part15E	
Test Date: 2024.6.5	**Test Engineer:** Evan ouyang

Appendix D.1: Emission Bandwidth

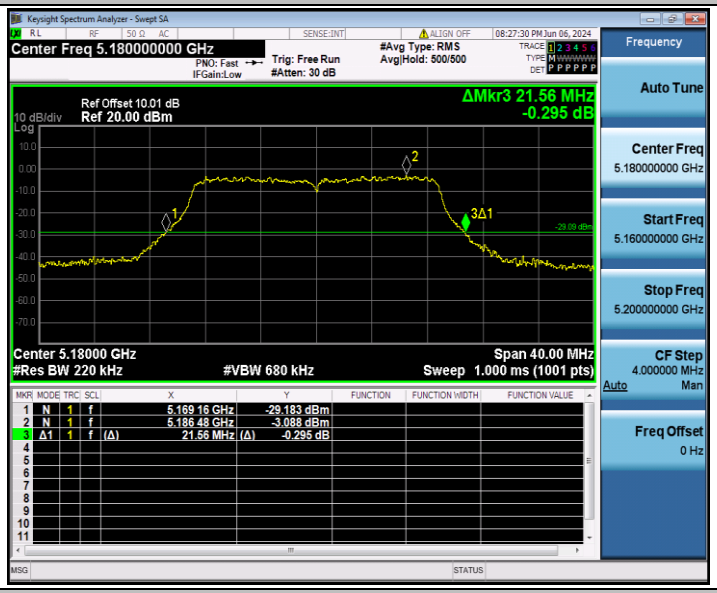
Test Result

TestMode	Antenna	Freq(MHz)	26db EBW [MHz]	FL[MHz]	FH[MHz]
11A	Ant1	5180	20.560	5169.720	5190.280
		5200	20.680	5189.560	5210.240
		5240	20.760	5229.480	5250.240
11N20SISO	Ant1	5180	21.560	5169.160	5190.720
		5200	21.720	5189.040	5210.760
		5240	21.680	5229.040	5250.720
11N40SISO	Ant1	5190	43.440	5168.160	5211.600
		5230	43.600	5208.080	5251.680
11AC20SISO	Ant1	5180	21.520	5169.200	5190.720
		5200	21.720	5189.120	5210.840
		5240	21.640	5229.120	5250.760
11AC40SISO	Ant1	5190	43.200	5168.400	5211.600
		5230	43.600	5208.080	5251.680
11AC80SISO	Ant1	5210	82.880	5169.040	5251.920

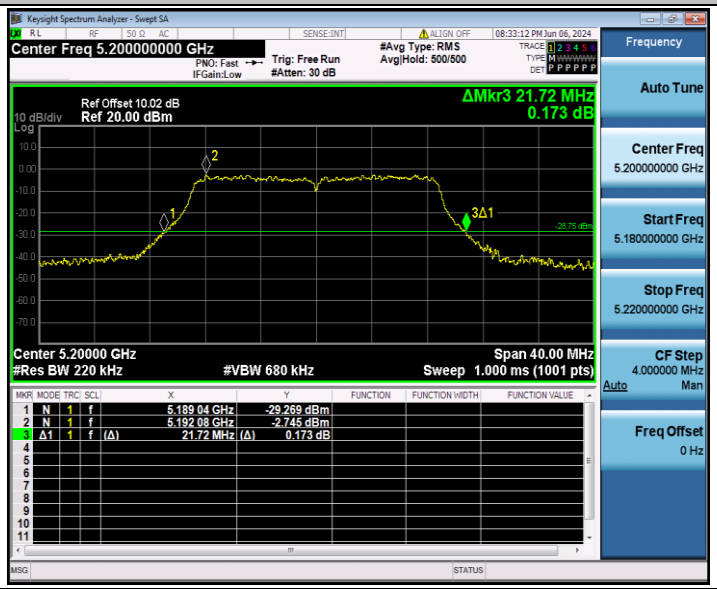
Test Graphs

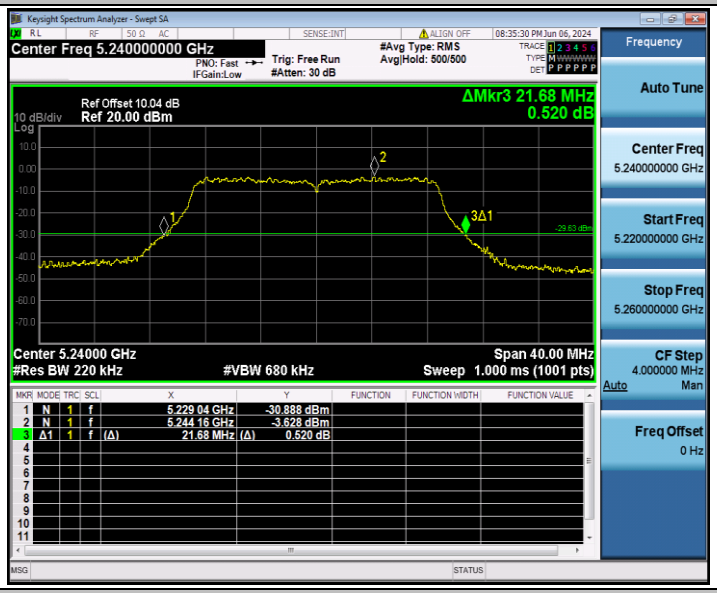
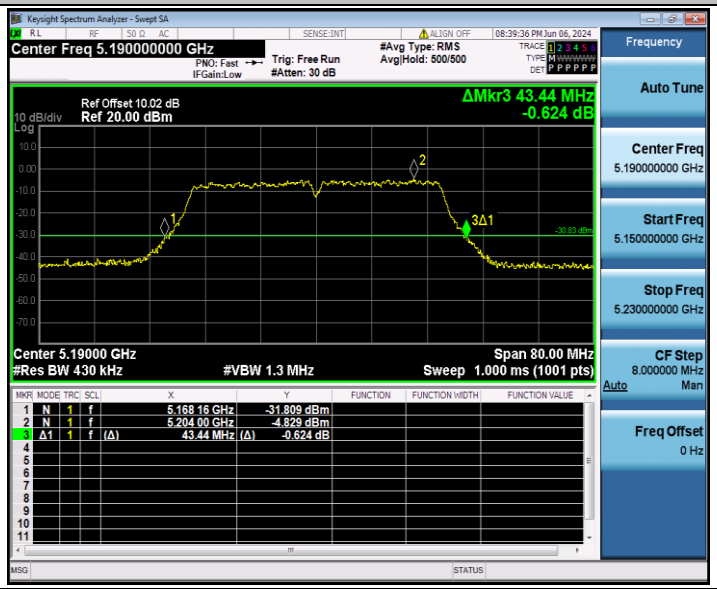
11A_Ant1_5180

11A_Ant1_5200

11A_Ant1_5240

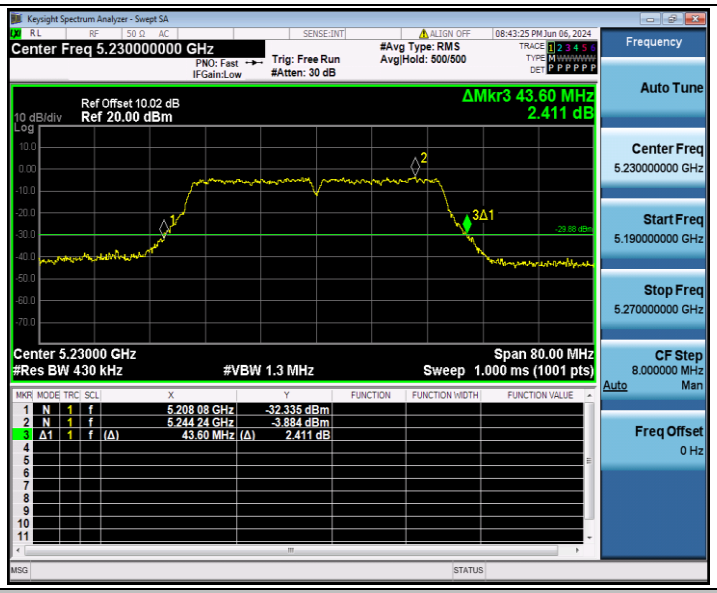
11N20SISO_Ant1_5180



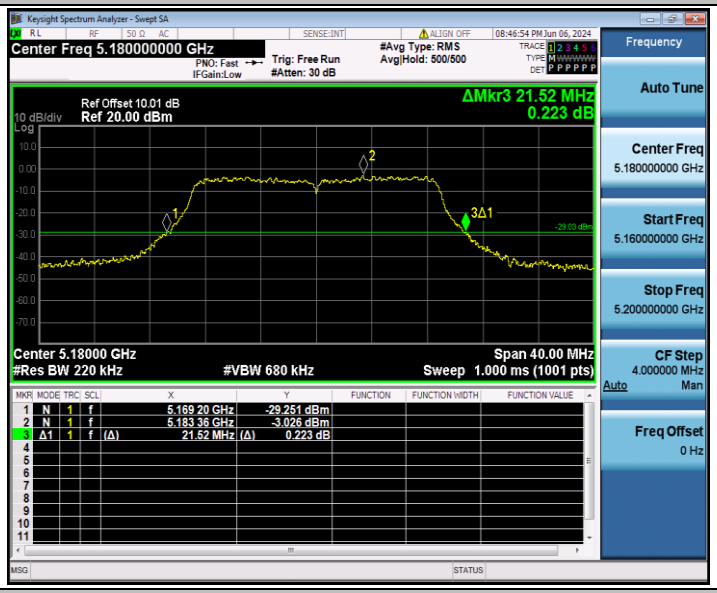
11N20SISO_Ant1_5200



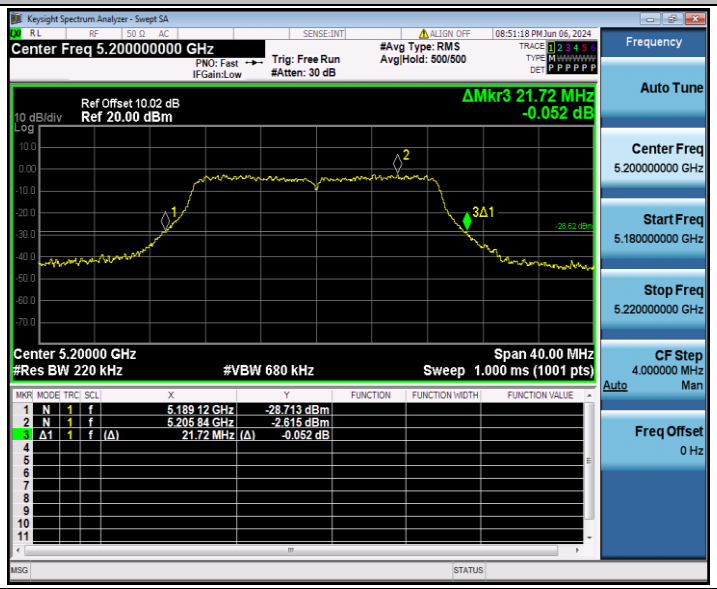
11N20SISO_Ant1_5240

11N40SISO_Ant1_5190

11N40SISO_Ant1_5230

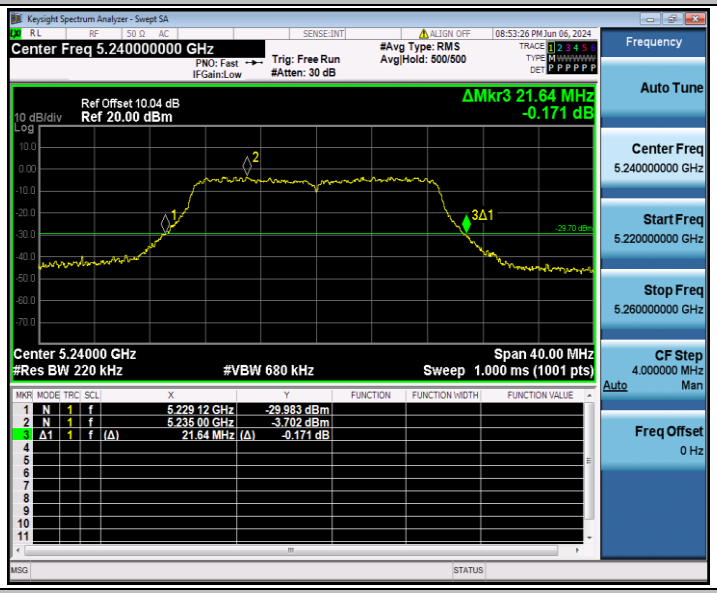
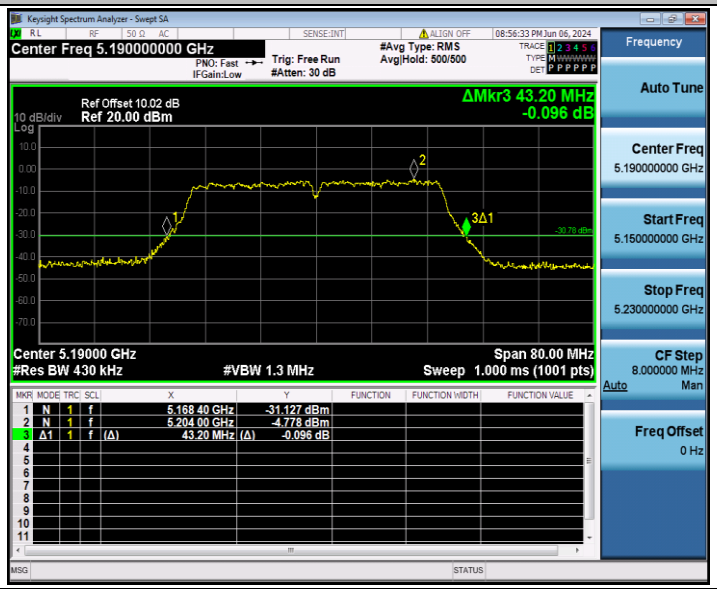


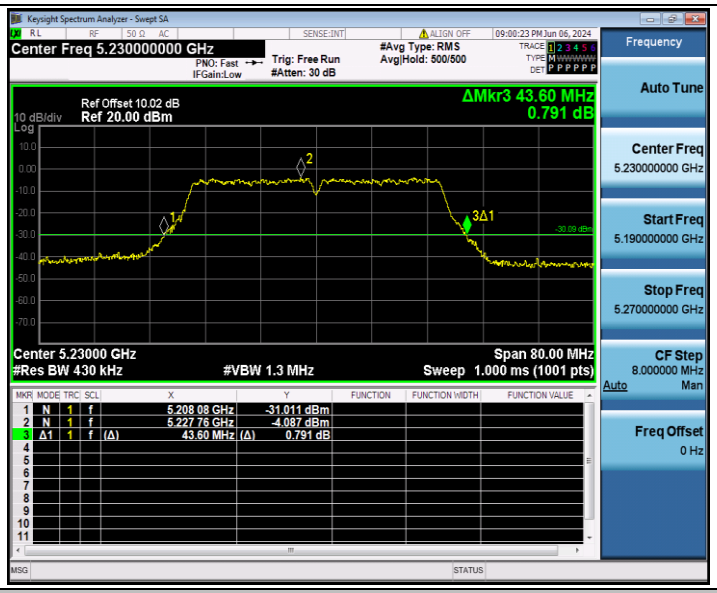
11AC20SISO_Ant1_5180



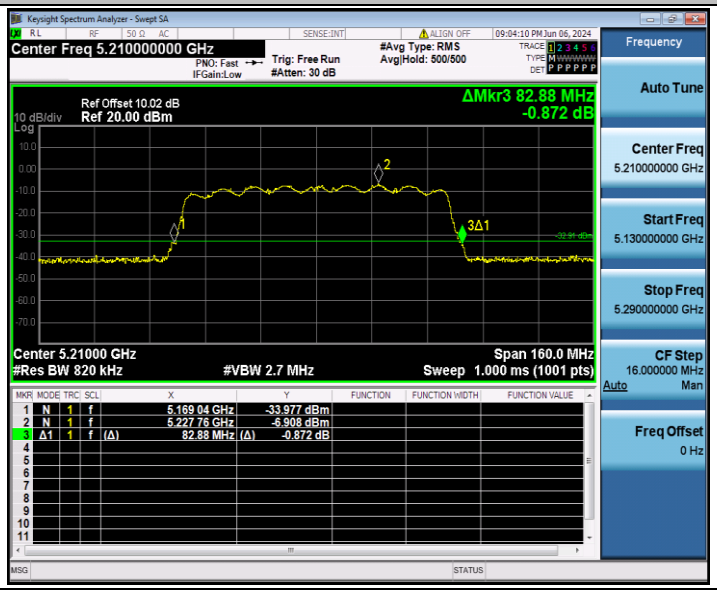
11AC20SISO_Ant1_5200



11AC20SISO_Ant1_5240

11AC40SISO_Ant1_5190

11AC40SISO_Ant1_5230



11AC80SISO_Ant1_5210



Appendix D.2: Occupied channel bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]
11A	Ant1	5180	17.092	5171.3652	5188.4572
		5200	17.082	5191.3468	5208.4288
		5240	17.085	5231.3351	5248.4201
11N20SISO	Ant1	5180	18.104	5170.9162	5189.0202
		5200	18.071	5190.9115	5208.9825
		5240	18.066	5230.9136	5248.9796
11N40SISO	Ant1	5190	36.944	5171.6371	5208.5811
		5230	37.045	5211.4866	5248.5316
11AC20SISO	Ant1	5180	18.110	5170.9421	5189.0521
		5200	18.097	5190.9185	5209.0155
		5240	18.106	5230.8973	5249.0033
11AC40SISO	Ant1	5190	36.939	5171.6286	5208.5676
		5230	37.042	5211.4876	5248.5296
11AC80SISO	Ant1	5210	75.160	5172.6376	5247.7976

Test Graphs

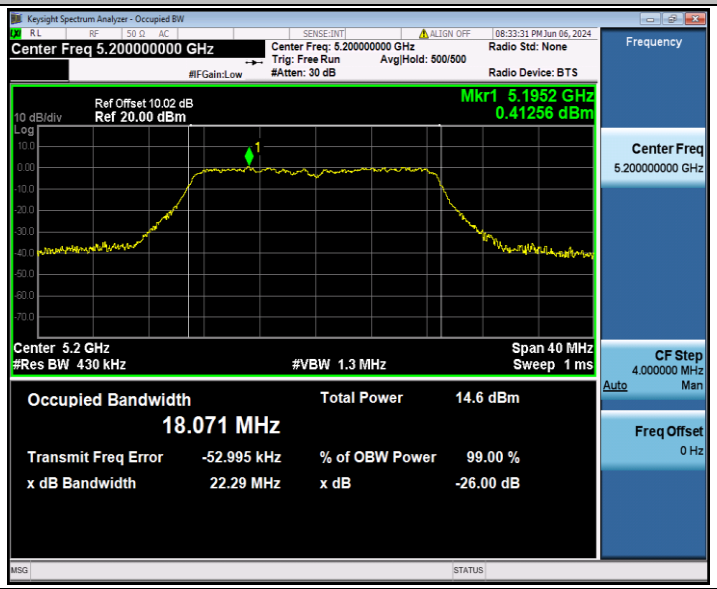
11A_Ant1_5180

11A_Ant1_5200

11A_Ant1_5240

11N20SISO_Ant1_5180

11N20SISO_Ant1_5200



11N20SISO_Ant1_5240

11N40SISO_Ant1_5190

11N40SISO_Ant1_5230

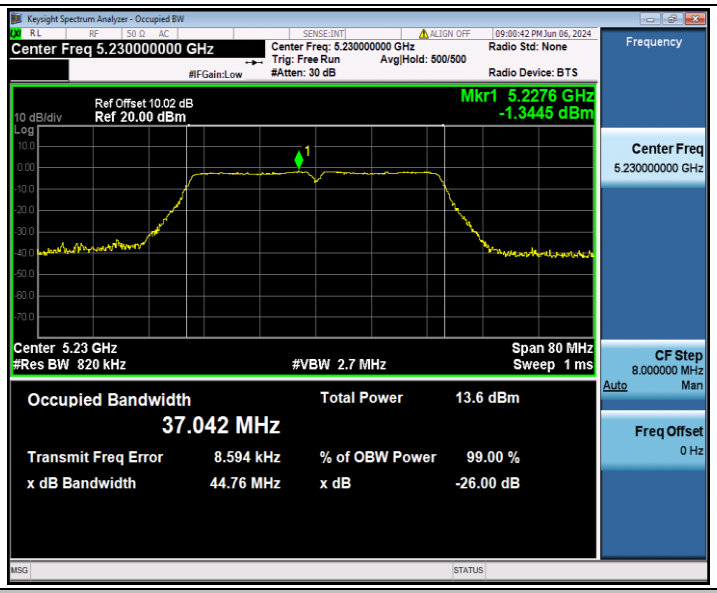
11AC20SISO_Ant1_5180

11AC20SISO_Ant1_5200

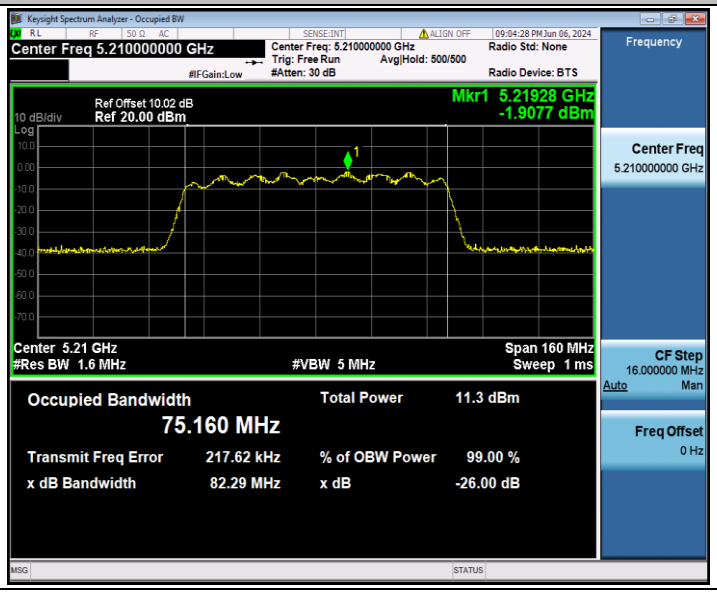
11AC20SISO_Ant1_5240

11AC40SISO_Ant1_5190

11AC40SISO_Ant1_5230



11AC80SISO_Ant1_5210

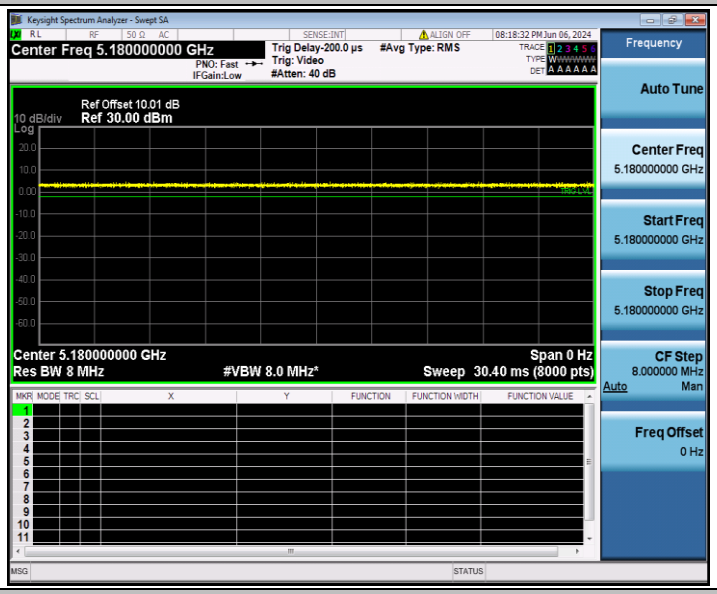
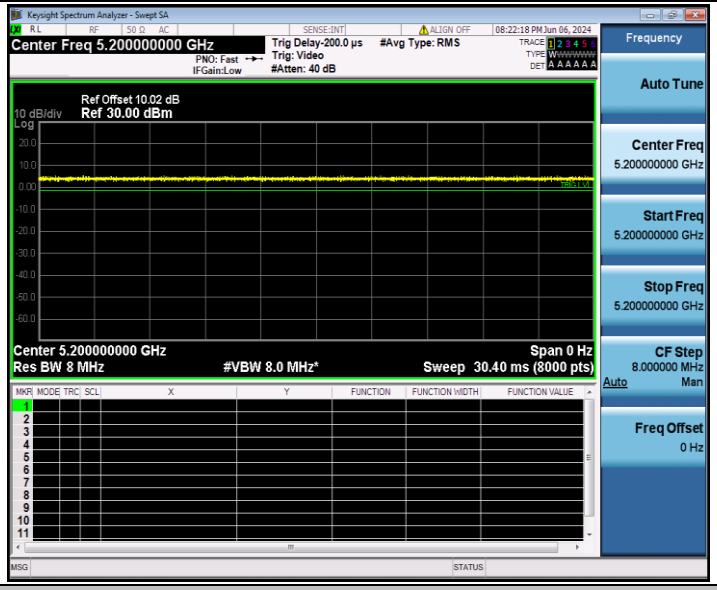


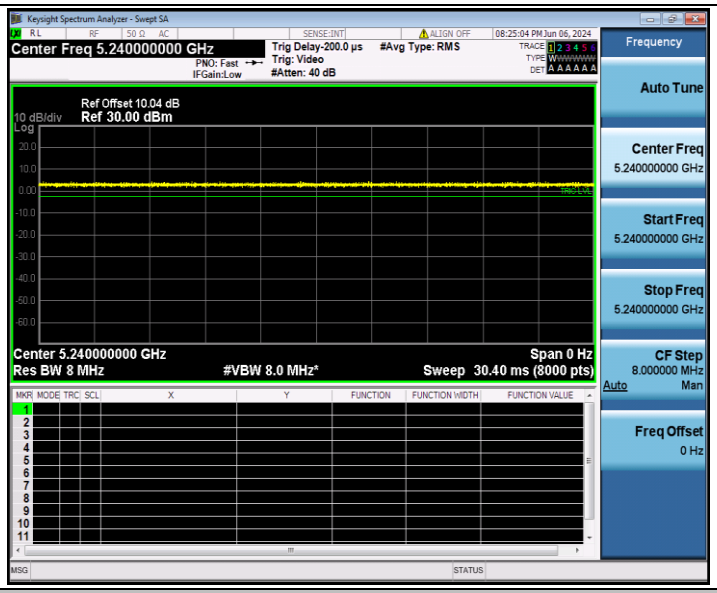
Appendix D.3: Duty Cycle

Test Result

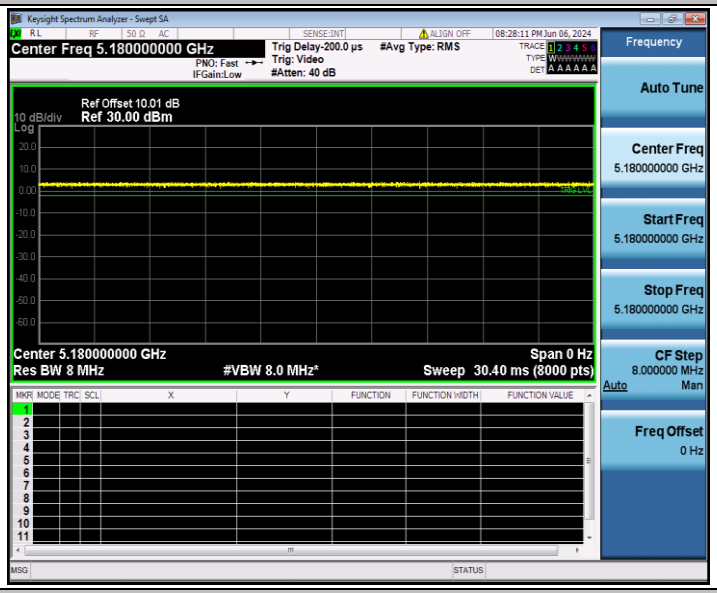
TestMode	Antenna	Freq(MHz)	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]	1/T Factor[KHz]
11A	Ant1	5180	30.00	30.00	100.00	0.00	0.03
		5200	30.00	30.00	100.00	0.00	0.03
		5240	30.00	30.00	100.00	0.00	0.03
11N20SISO	Ant1	5180	30.00	30.00	100.00	0.00	0.03
		5200	30.00	30.00	100.00	0.00	0.03
		5240	30.00	30.00	100.00	0.00	0.03
11N40SISO	Ant1	5190	30.00	30.00	100.00	0.00	0.03
		5230	30.00	30.00	100.00	0.00	0.03
11AC20SISO	Ant1	5180	30.00	30.00	100.00	0.00	0.03
		5200	30.00	30.00	100.00	0.00	0.03
		5240	30.00	30.00	100.00	0.00	0.03
11AC40SISO	Ant1	5190	30.00	30.00	100.00	0.00	0.03
		5230	30.00	30.00	100.00	0.00	0.03
11AC80SISO	Ant1	5210	30.00	30.00	100.00	0.00	0.03

Test Graphs

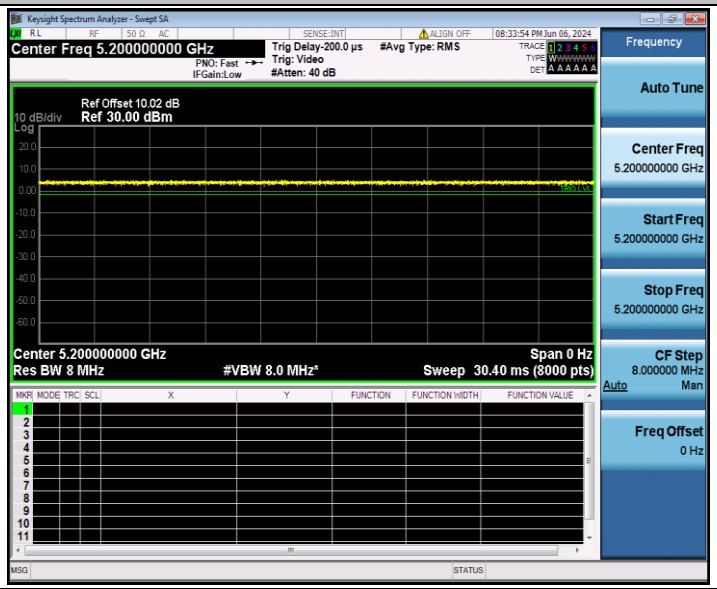
11A_Ant1_5180

11A_Ant1_5200

11A_Ant1_5240

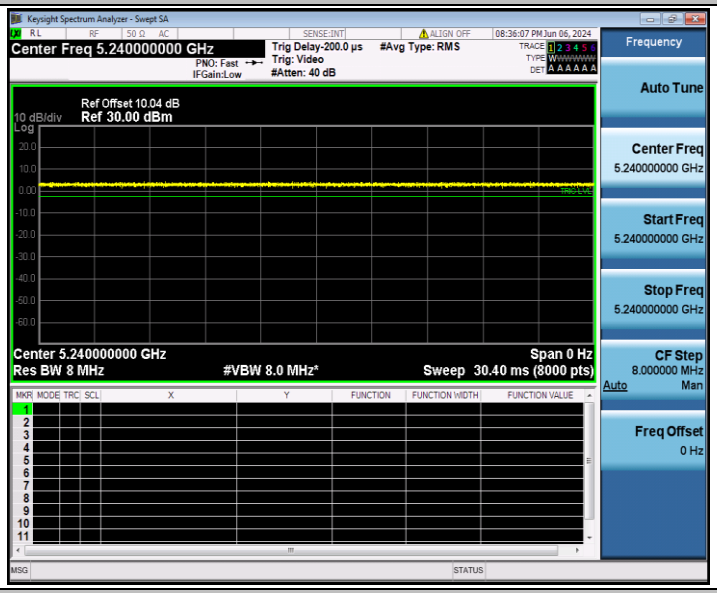
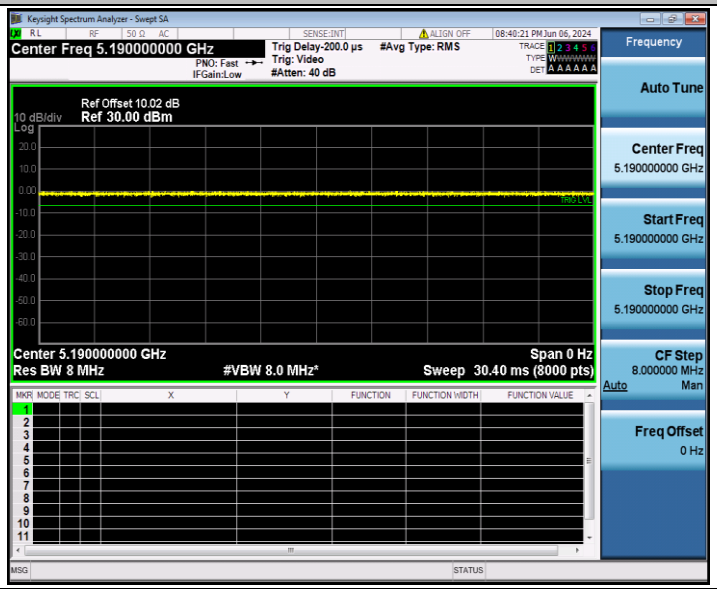


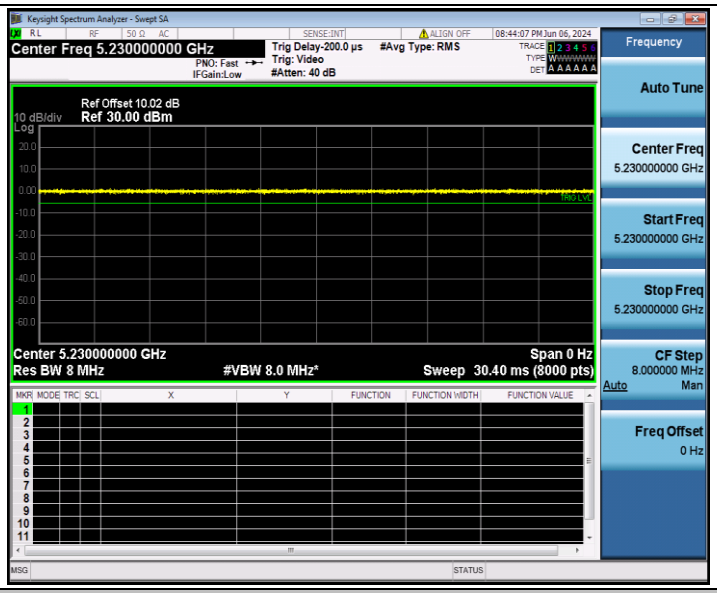
11N20SISO_Ant1_5180



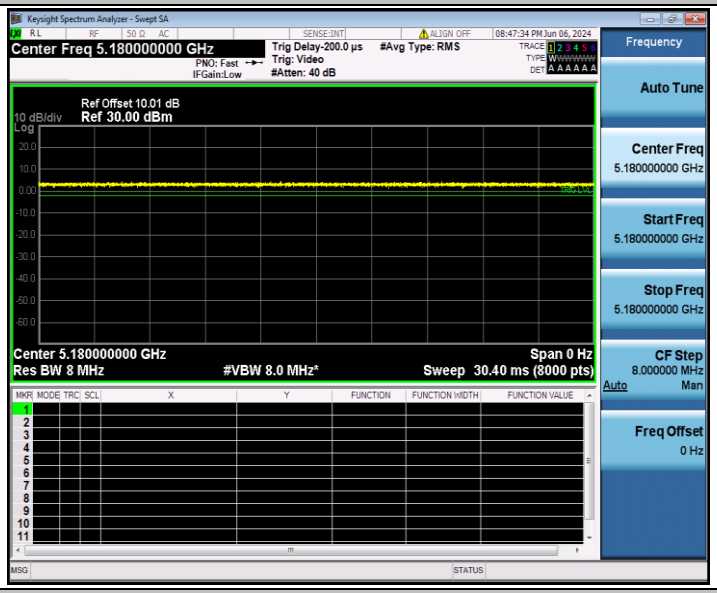
11N20SISO_Ant1_5200



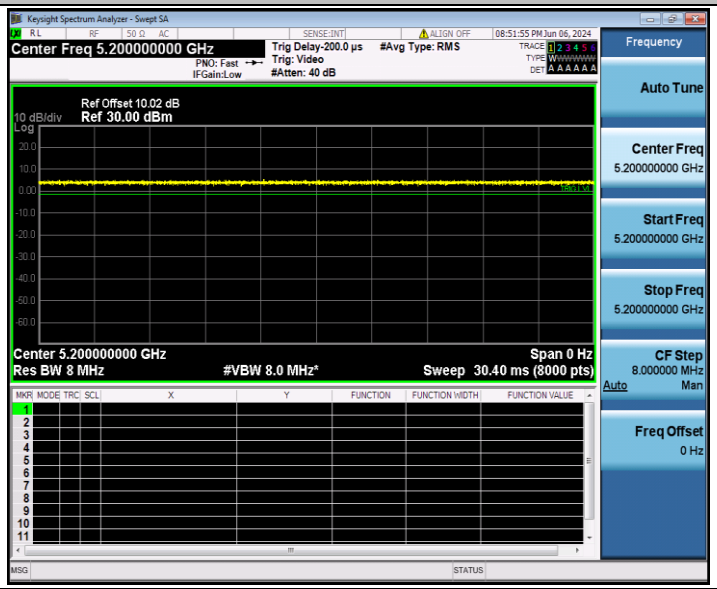
11N20SISO_Ant1_5240

11N40SISO_Ant1_5190

11N40SISO_Ant1_5230

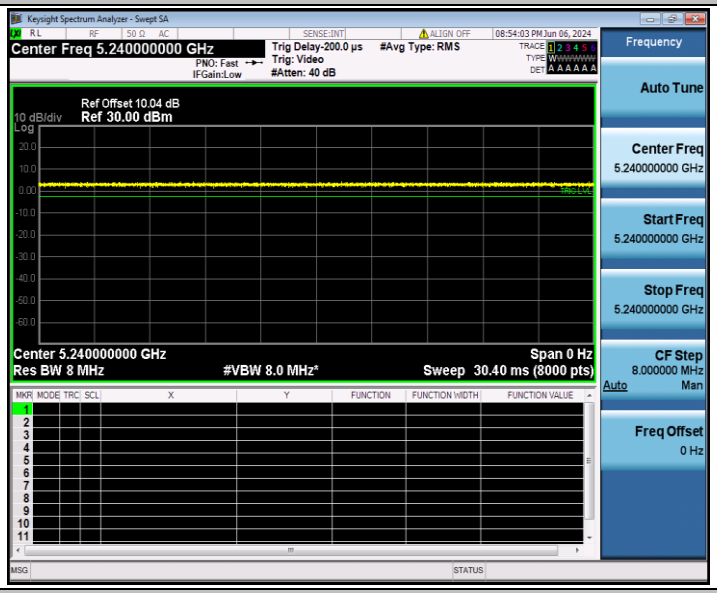
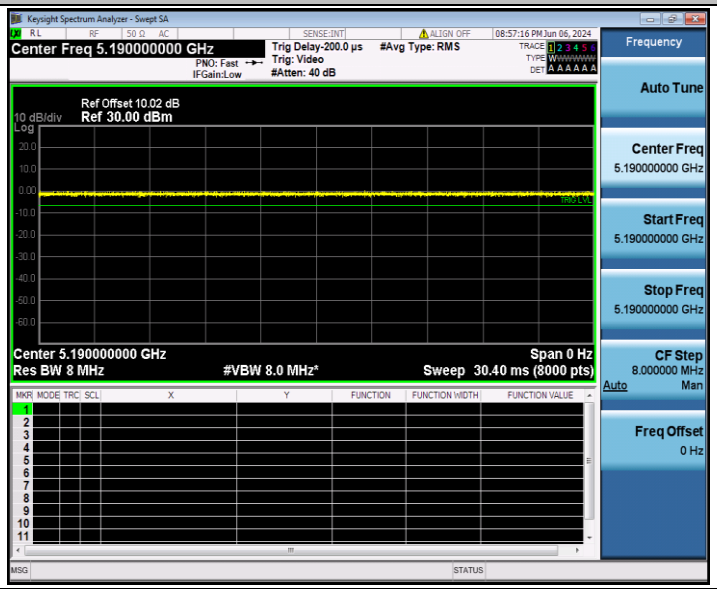


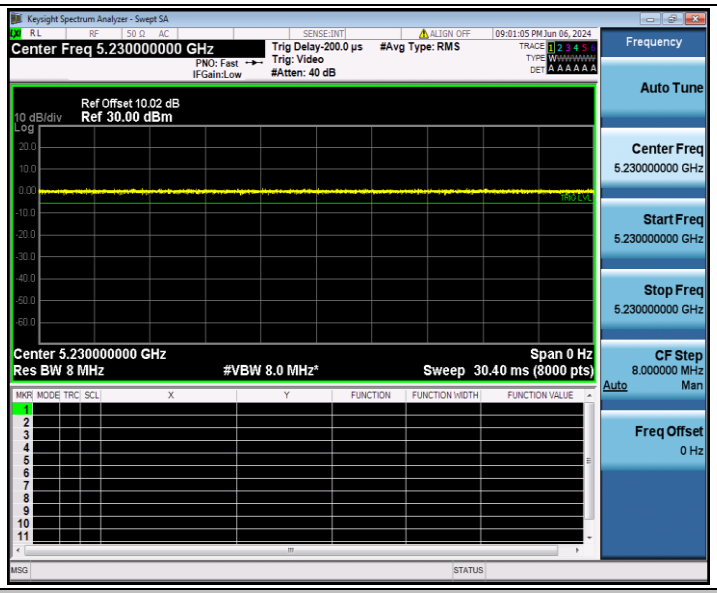
11AC20SISO_Ant1_5180



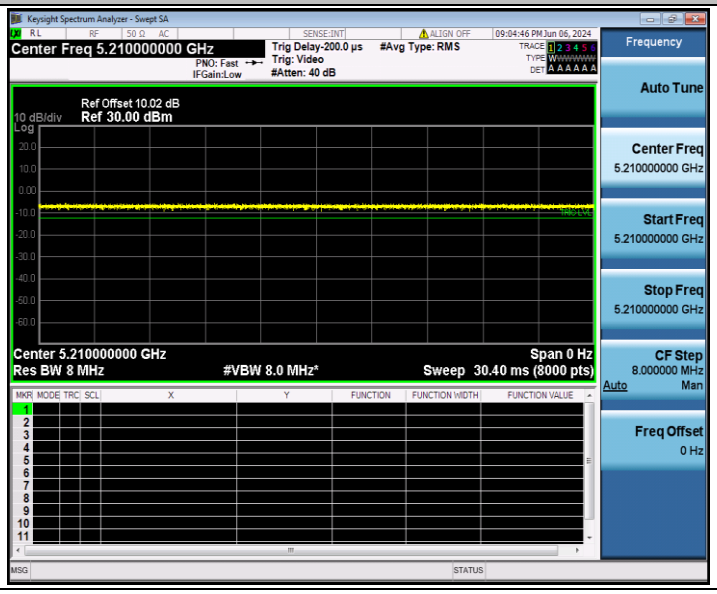
11AC20SISO_Ant1_5200



11AC20SISO_Ant1_5240

11AC40SISO_Ant1_5190

11AC40SISO_Ant1_5230



11AC80SISO_Ant1_5210



Appendix D.4: Maximum conducted output power

Test Result Channel Power

Test Mode	Antenna	Freq(MHz)	Channel Powert [dBm]	Duty Cycle [%]	Result [dBm]	Limit [dBm]	Verdict
11A	Ant1	5180	7.07	100.00	7.07	≤23.98	PASS
		5200	7.75	100.00	7.75	≤23.98	PASS
		5240	6.61	100.00	6.61	≤23.98	PASS
11N20SISO	Ant1	5180	7.18	100.00	7.18	≤23.98	PASS
		5200	7.94	100.00	7.94	≤23.98	PASS
		5240	6.98	100.00	6.98	≤23.98	PASS
11N40SISO	Ant1	5190	5.35	100.00	5.35	≤23.98	PASS
		5230	6.51	100.00	6.51	≤23.98	PASS
11AC20SISO	Ant1	5180	7.17	100.00	7.17	≤23.98	PASS
		5200	7.98	100.00	7.98	≤23.98	PASS
		5240	6.98	100.00	6.98	≤23.98	PASS
11AC40SISO	Ant1	5190	5.27	100.00	5.27	≤23.98	PASS
		5230	6.43	100.00	6.43	≤23.98	PASS
11AC80SISO	Ant1	5210	2.47	100.00	2.47	≤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	-4.23	≤11.00	PASS
		5200	-3.71	≤11.00	PASS
		5240	-4.78	≤11.00	PASS
11N20SISO	Ant1	5180	-4.49	≤11.00	PASS
		5200	-3.81	≤11.00	PASS
		5240	-4.77	≤11.00	PASS
11N40SISO	Ant1	5190	-9.13	≤11.00	PASS
		5230	-8.11	≤11.00	PASS
11AC20SISO	Ant1	5180	-4.47	≤11.00	PASS
		5200	-3.75	≤11.00	PASS
		5240	-4.75	≤11.00	PASS
11AC40SISO	Ant1	5190	-9.21	≤11.00	PASS
		5230	-8.21	≤11.00	PASS
11AC80SISO	Ant1	5210	-13.73	≤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.

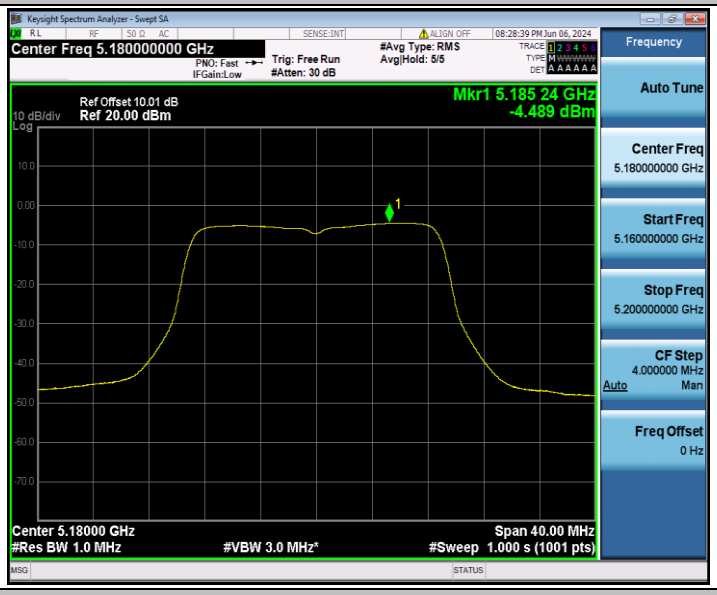
Test Graphs

11A_Ant1_5180

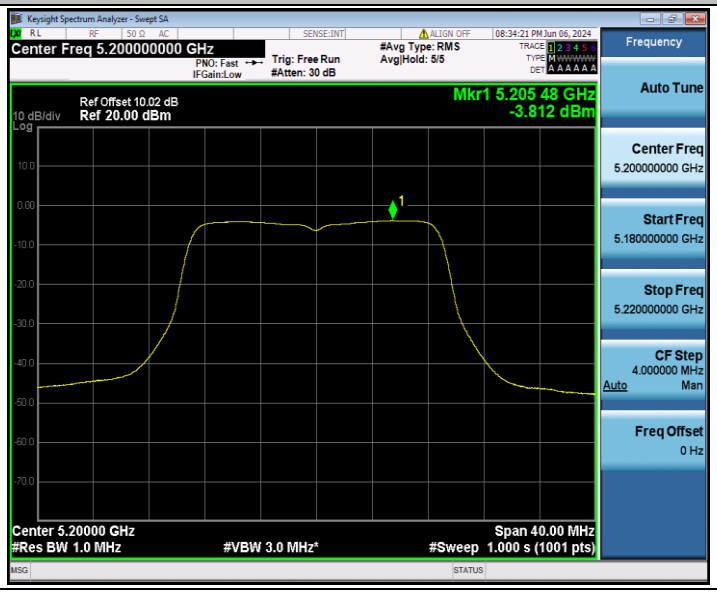
11A_Ant1_5200

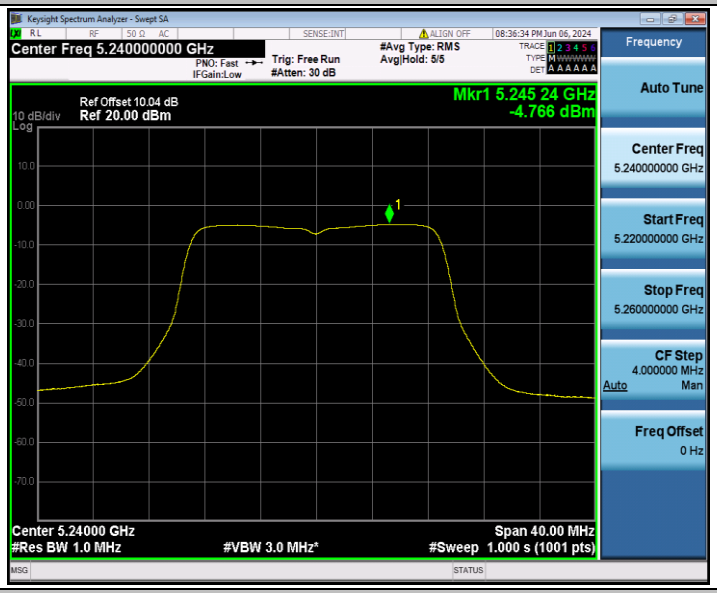
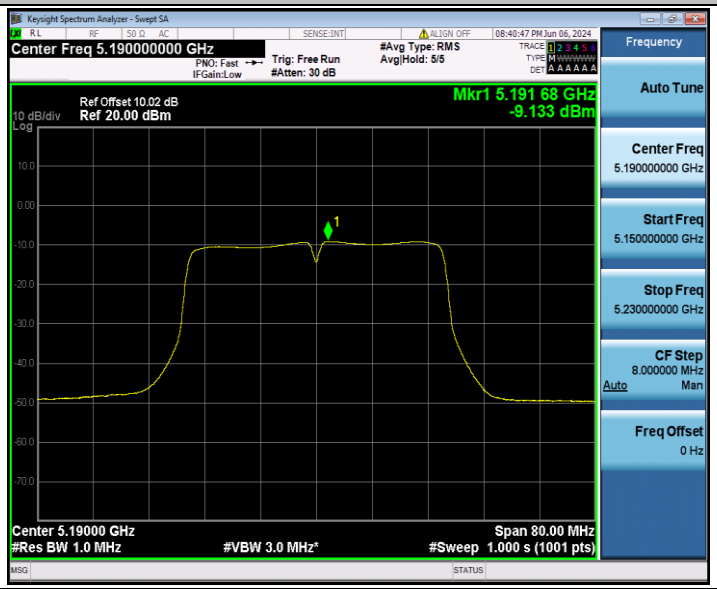
11A_Ant1_5240

11N20SISO_Ant1_5180



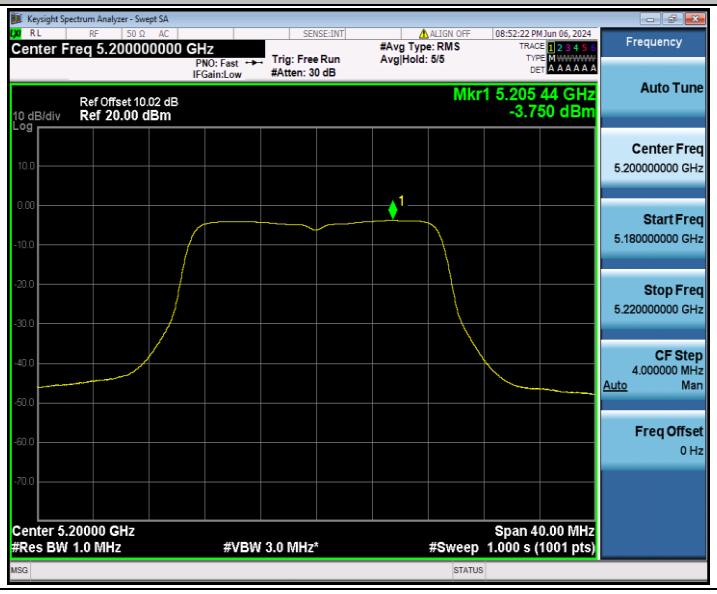
11N20SISO_Ant1_5200

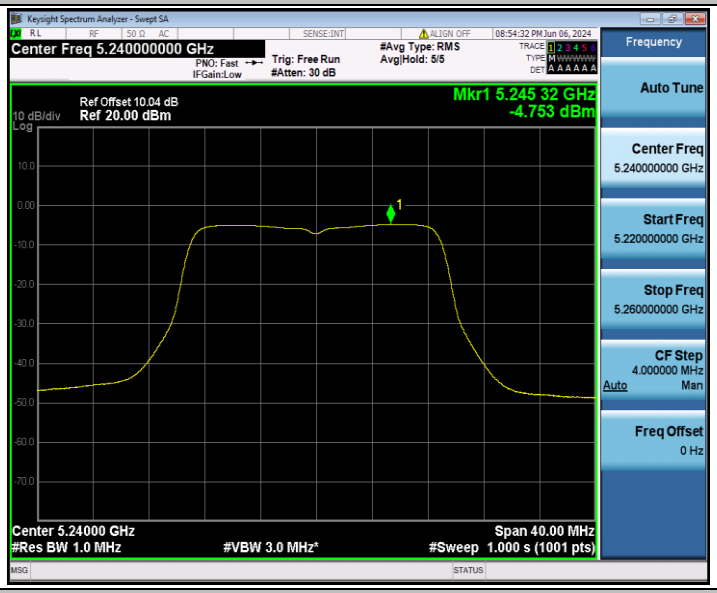
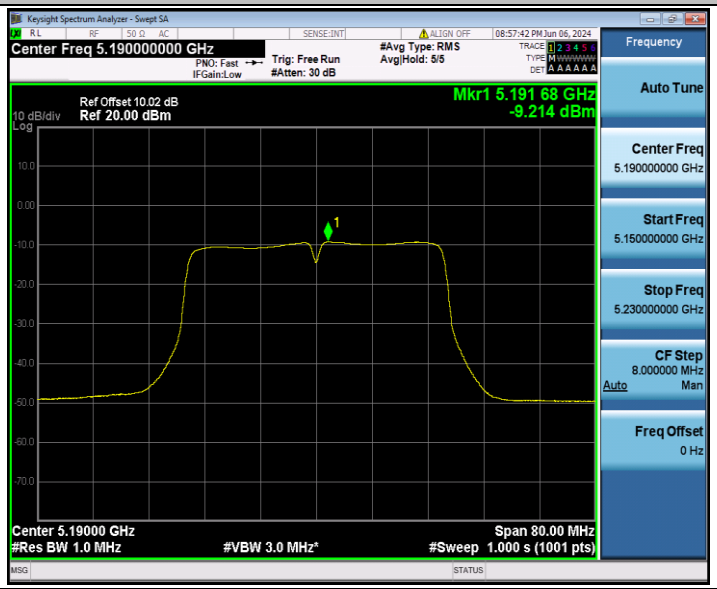


11N20SISO_Ant1_5240

11N40SISO_Ant1_5190

11N40SISO_Ant1_5230

11AC20SISO_Ant1_5180

11AC20SISO_Ant1_5200



11AC20SISO_Ant1_5240

11AC40SISO_Ant1_5190

11AC40SISO_Ant1_5230

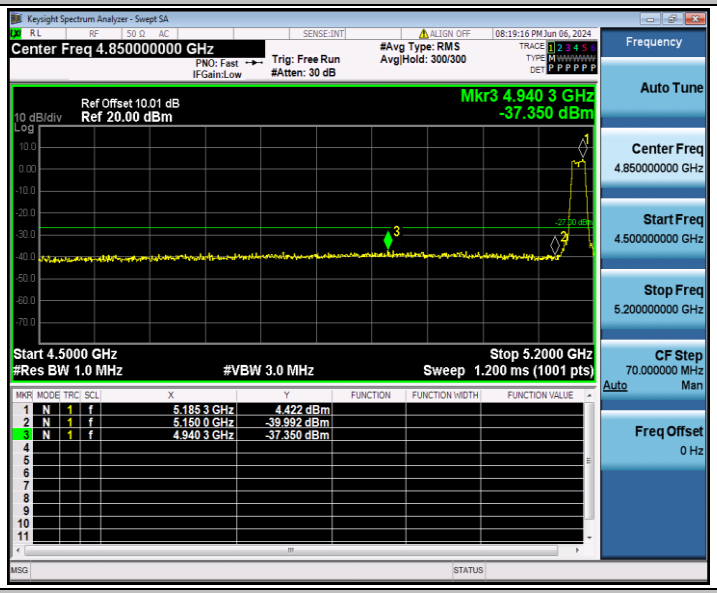
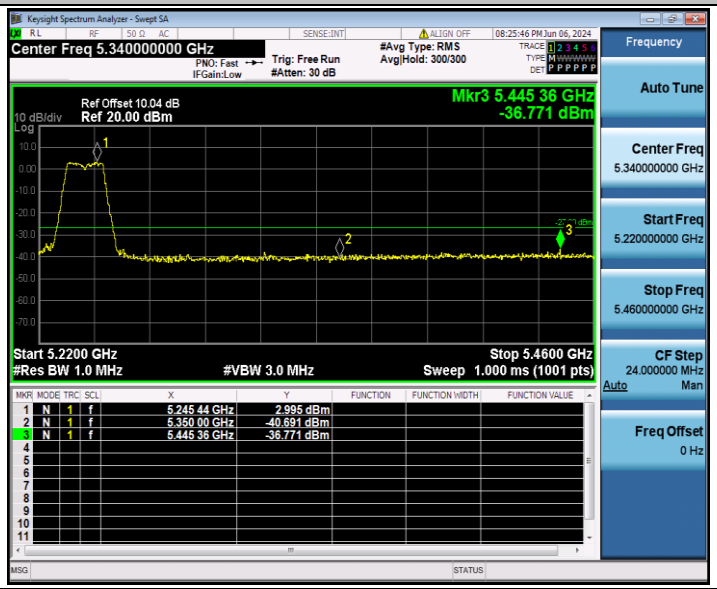
11AC80SISO_Ant1_5210

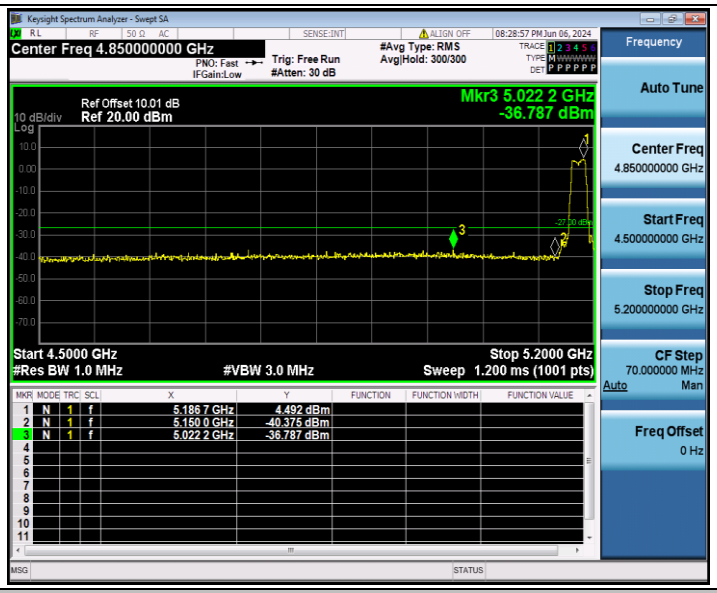
Appendix D.6: Band edge measurements

Test Result B1

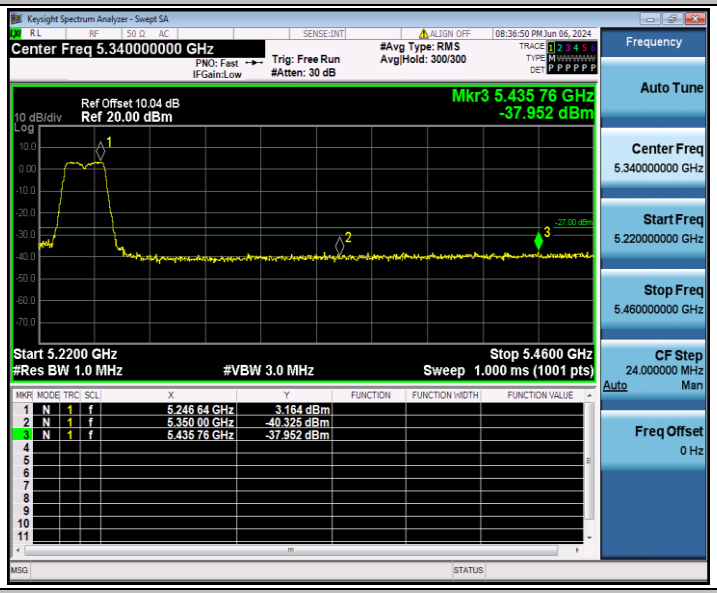
TestMode	Antenna	ChName	Freq(MHz)	Result[dBm]	Limit[dBm]	Verdict
11A	Ant1	Low	5180	-37.35	≤-27	PASS
		High	5240	-36.77	≤-27	PASS
11N20SISO	Ant1	Low	5180	-36.79	≤-27	PASS
		High	5240	-37.95	≤-27	PASS
11N40SISO	Ant1	Low	5190	-37.1	≤-27	PASS
		High	5230	-37.38	≤-27	PASS
11AC20SISO	Ant1	Low	5180	-37.34	≤-27	PASS
		High	5240	-37.5	≤-27	PASS
11AC40SISO	Ant1	Low	5190	-37.12	≤-27	PASS
		High	5230	-37.59	≤-27	PASS
11AC80SISO	Ant1	Low	5210	-36.68	≤-27	PASS
		High	5210	-36.93	≤-27	PASS

Test Graphs B1

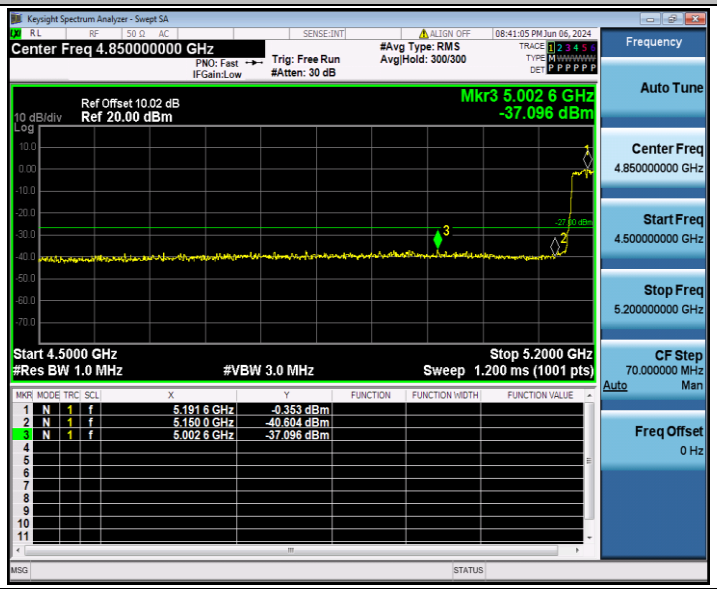
11A_Ant1_Low_5180

11A_Ant1_High_5240

11N20SISO_Ant1_Low_5180

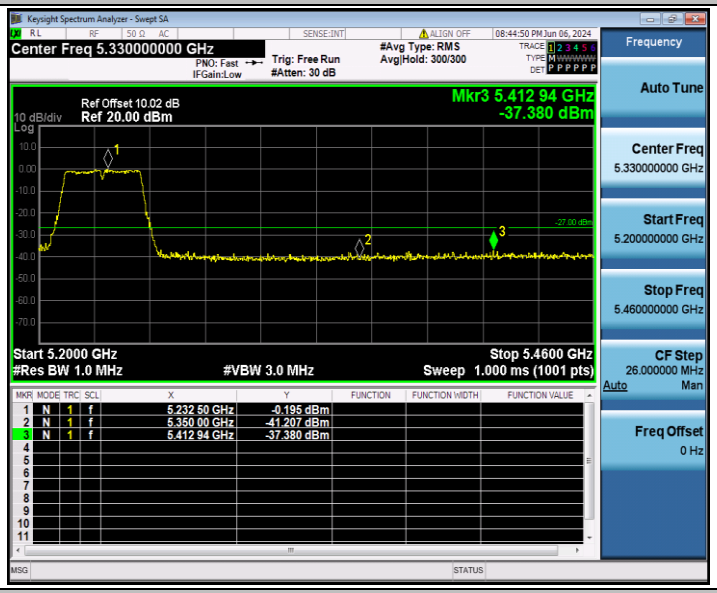
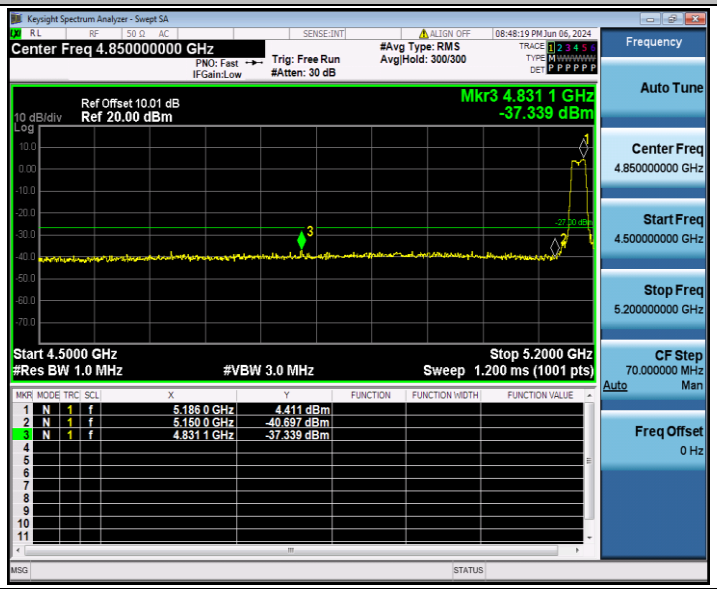


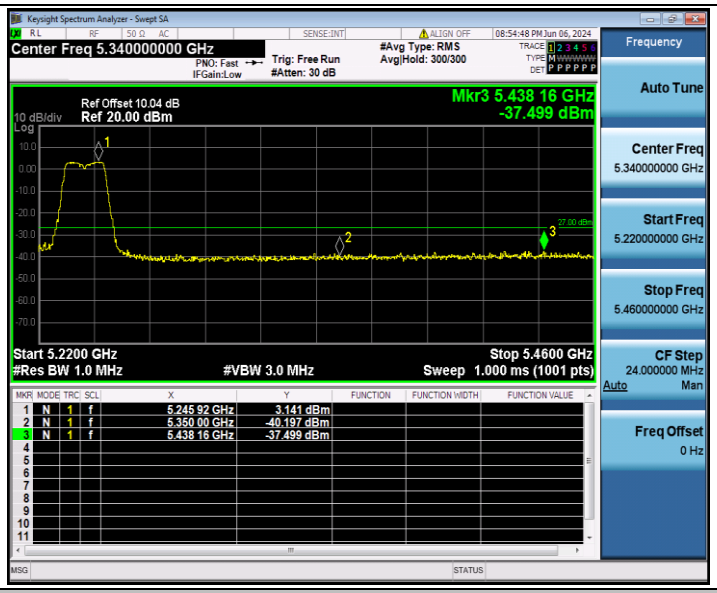
11N20SISO_Ant1_High_5240



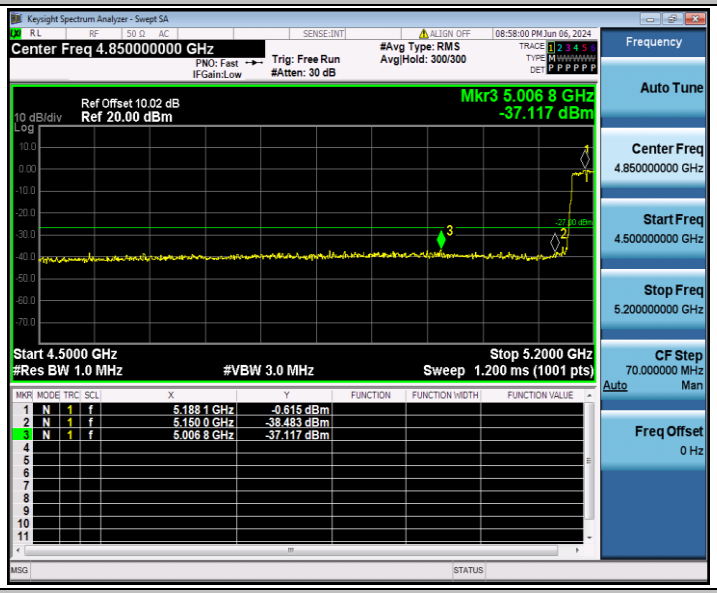
11N40SISO_Ant1_Low_5190



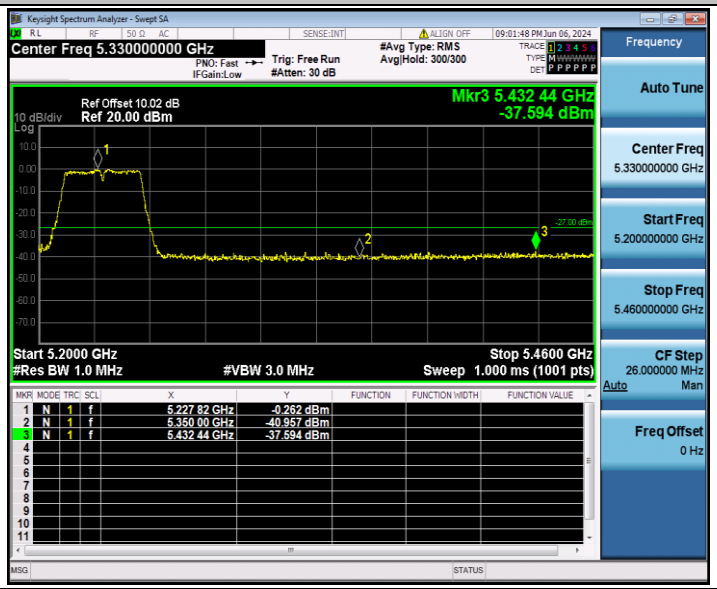
11N40SISO_Ant1_High_5230

11AC20SISO_Ant1_Low_5180

11AC20SISO_Ant1_High_5240

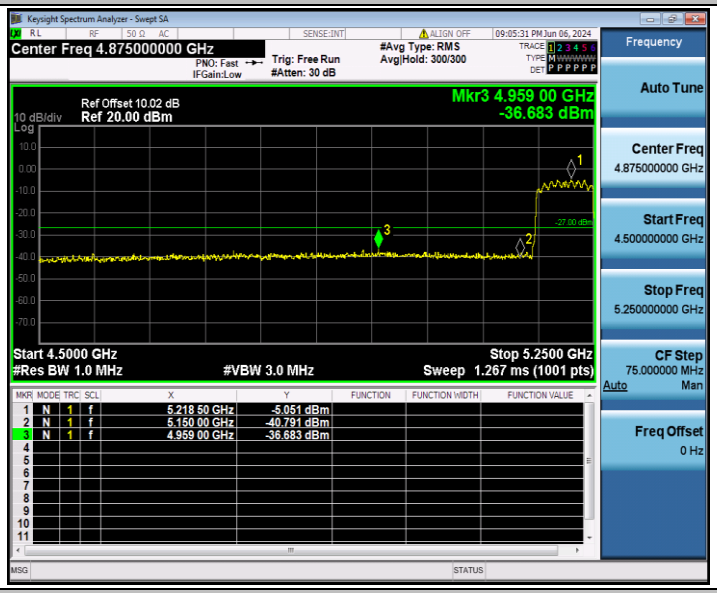


11AC40SISO_Ant1_Low_5190



11AC40SISO_Ant1_High_5230



11AC80SISO_Ant1_Low_5210

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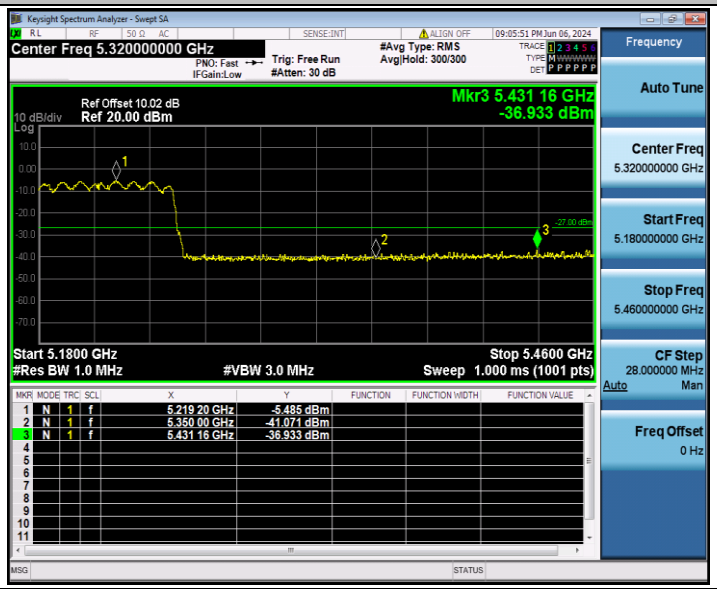
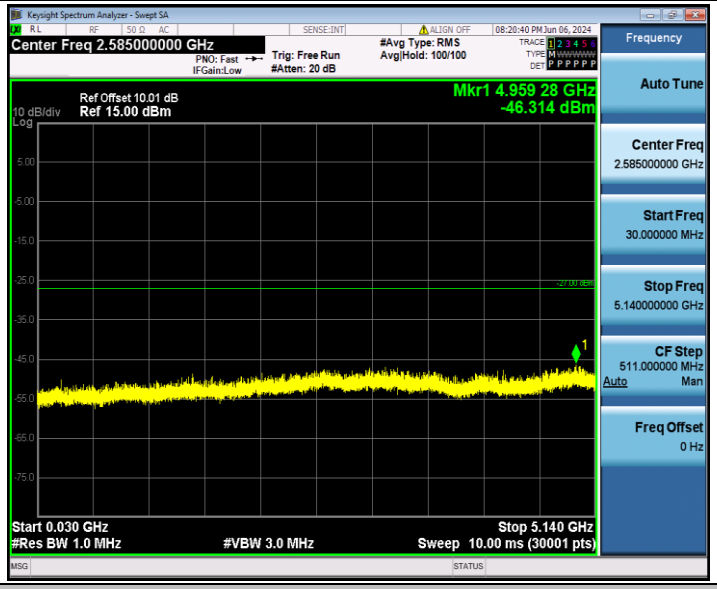
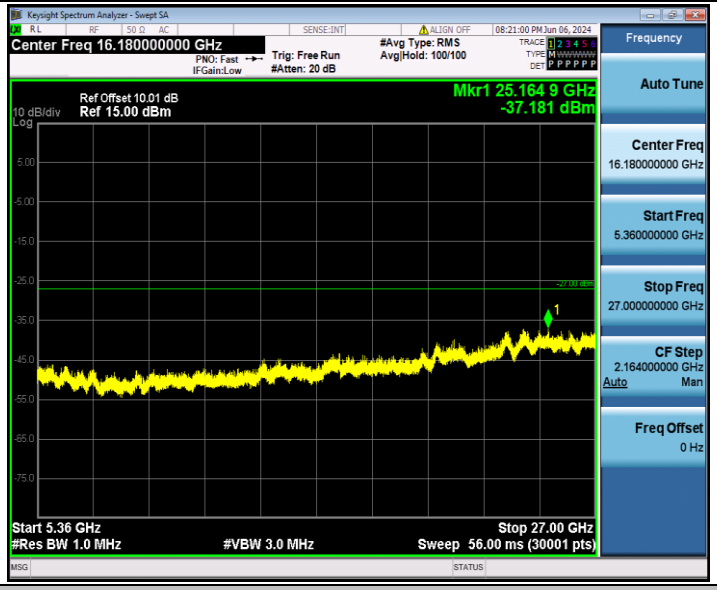


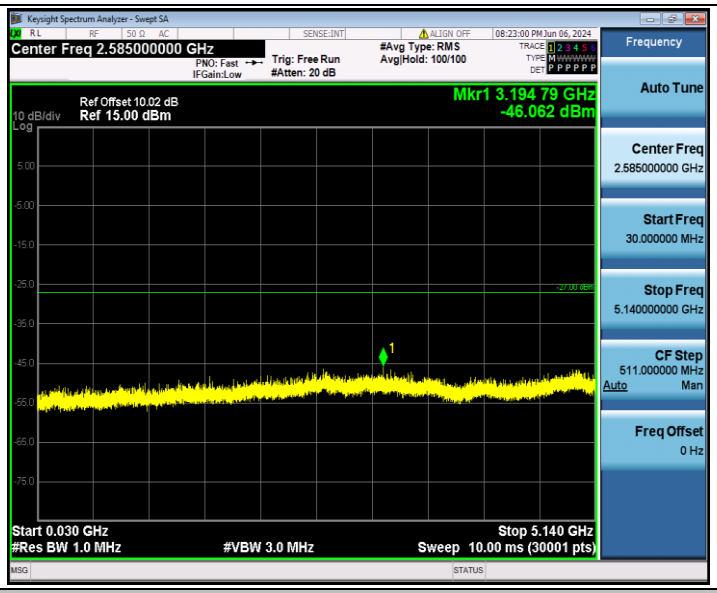
Appendix D.7: Conducted Spurious Emission

Test Result

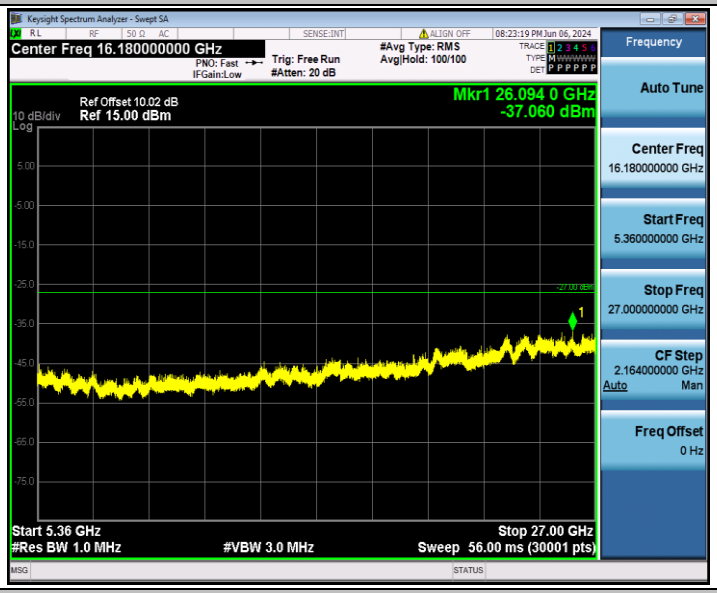
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	Max. Fre [MHz]	Max. Level [dBm]	Limit [dBm]	Verdict
11A	Ant1	5180	30~5140	4959.28	-46.31	≤-27	PASS
			5360~27000	25164.93	-37.18	≤-27	PASS
		5200	30~5140	3194.79	-46.06	≤-27	PASS
			5360~27000	26094.01	-37.06	≤-27	PASS
		5240	30~5140	3179.46	-45.56	≤-27	PASS
			5360~27000	24854.75	-36.92	≤-27	PASS
11N20SISO	Ant1	5180	30~5140	833.63	-45.74	≤-27	PASS
			5360~27000	23575.83	-37.28	≤-27	PASS
		5200	30~5140	4901.02	-46.05	≤-27	PASS
			5360~27000	26947.34	-37.04	≤-27	PASS
		5240	30~5140	5018.72	-45.84	≤-27	PASS
			5360~27000	24168.77	-36.92	≤-27	PASS
11N40SISO	Ant1	5190	30~5140	2519.59	-44.97	≤-27	PASS
			5360~27000	24271.92	-36.56	≤-27	PASS
		5230	30~5140	3578.04	-46.52	≤-27	PASS
			5360~27000	26023.31	-37.12	≤-27	PASS
11AC20SISO	Ant1	5180	30~5140	4974.61	-46.25	≤-27	PASS
			5360~27000	23476.29	-37.32	≤-27	PASS
		5200	30~5140	4916.35	-44.63	≤-27	PASS
			5360~27000	24258.93	-36.25	≤-27	PASS
		5240	30~5140	2687.54	-45.93	≤-27	PASS
			5360~27000	23497.21	-36.81	≤-27	PASS
11AC40SISO	Ant1	5190	30~5140	2717.69	-45.75	≤-27	PASS
			5360~27000	23614.78	-36.74	≤-27	PASS
		5230	30~5140	5027.24	-46.7	≤-27	PASS
			5360~27000	26632.84	-37.21	≤-27	PASS
11AC80SISO	Ant1	5210	30~5140	5139.66	-44.48	≤-27	PASS
			5360~27000	25169.26	-36.87	≤-27	PASS

Test Graphs

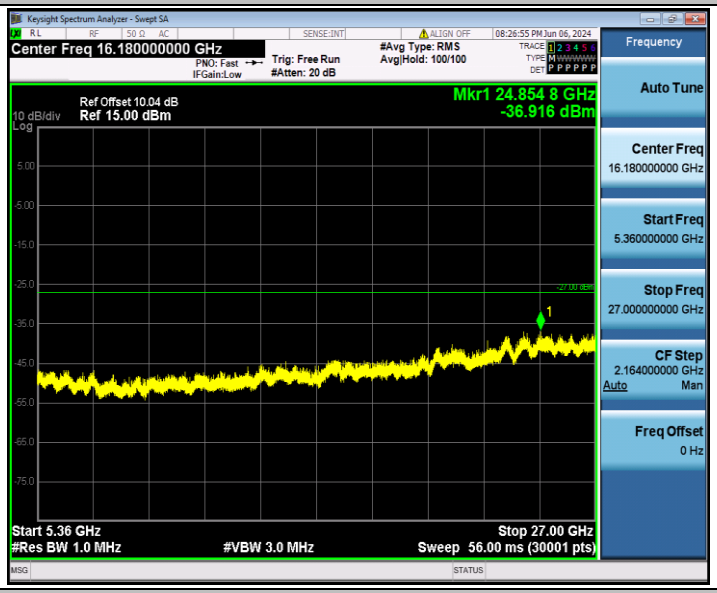
11A_Ant1_5180_30~5140

11A_Ant1_5180_5360~27000

11A_Ant1_5200_30~5140



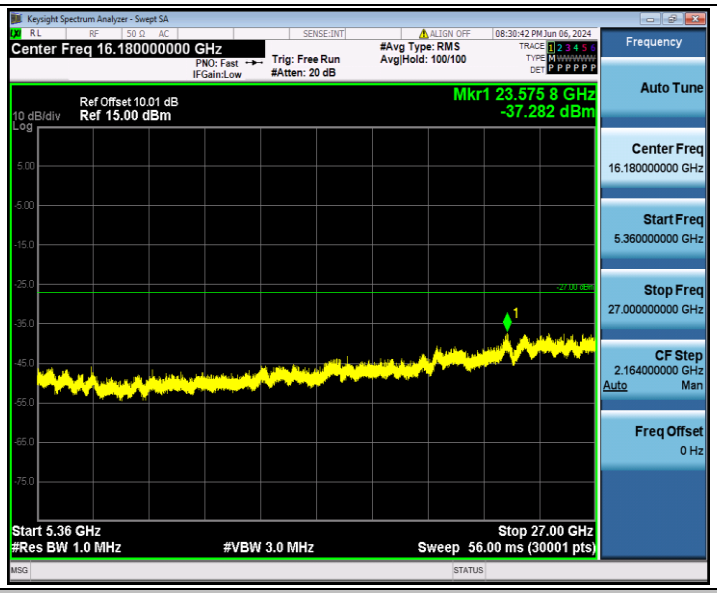
11A_Ant1_5200_5360~27000



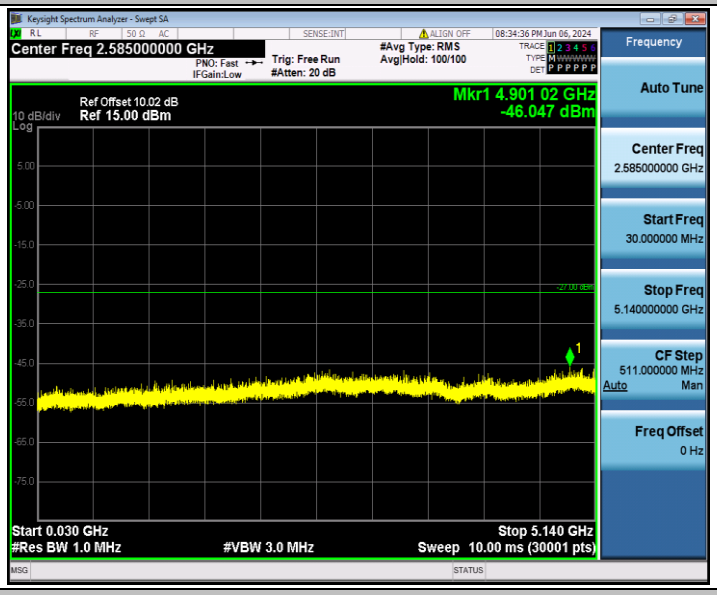
11A_Ant1_5240_30~5140

11A_Ant1_5240_5360~27000

11N20SISO_Ant1_5180_30~5140

11N20SISO_Ant1_5180_5360~27000

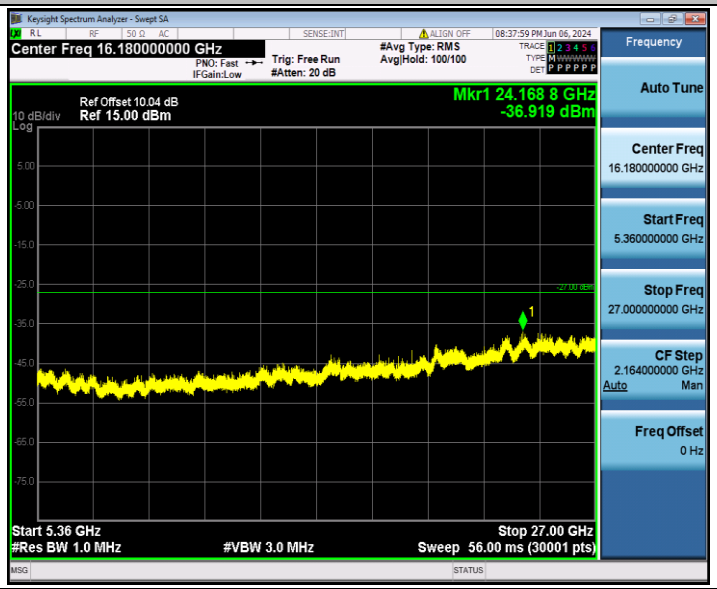


11N20SISO_Ant1_5200_30~5140



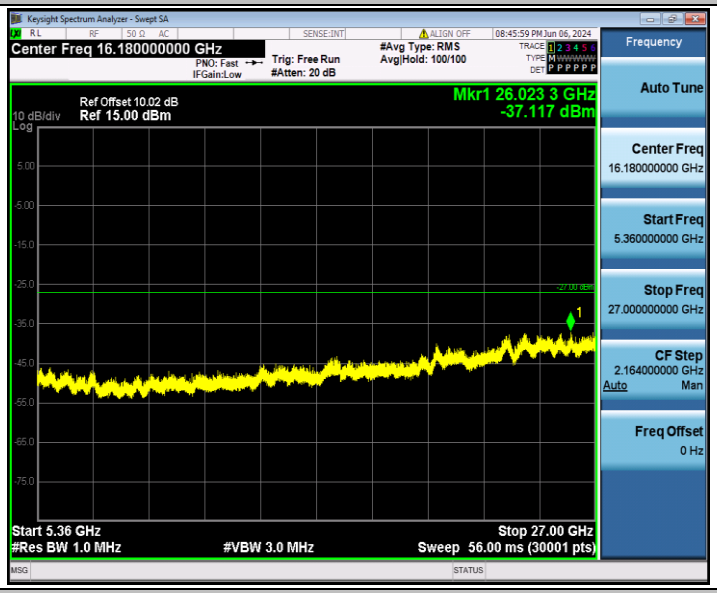
11N20SISO_Ant1_5200_5360~27000

11N20SISO_Ant1_5240_30~5140

11N20SISO_Ant1_5240_5360~27000

11N40SISO_Ant1_5190_30~5140

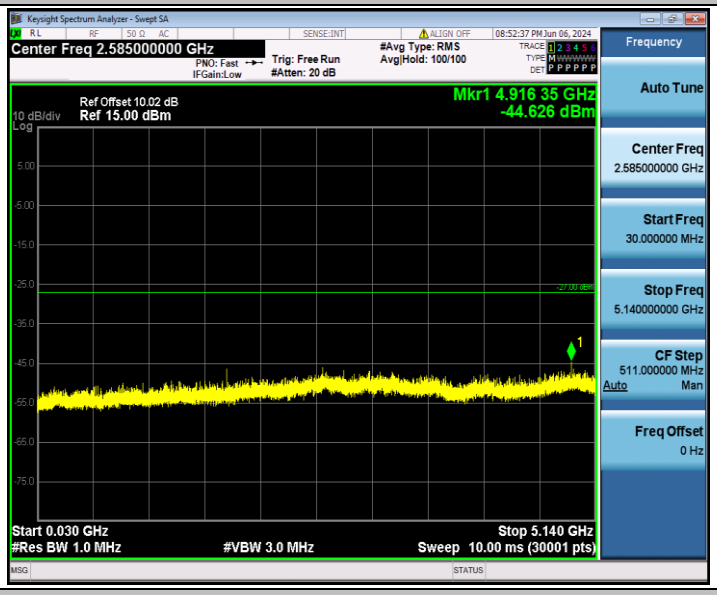
11N40SISO_Ant1_5190_5360~27000

11N40SISO_Ant1_5230_30~5140

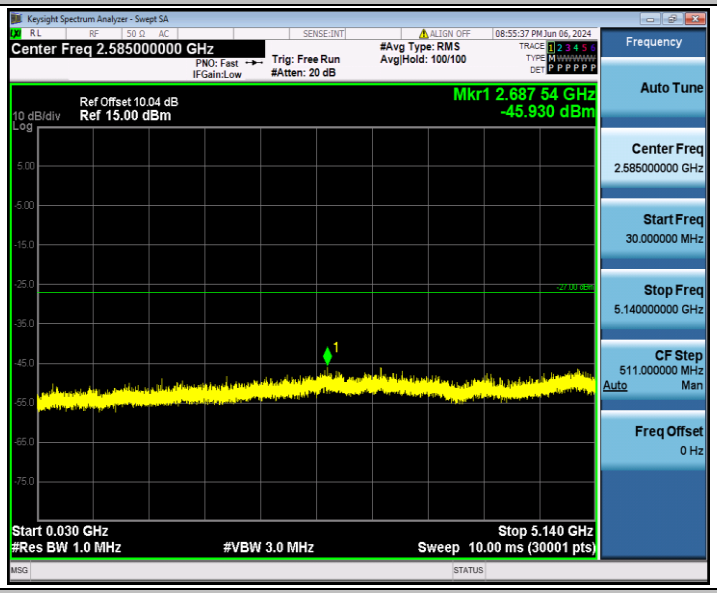
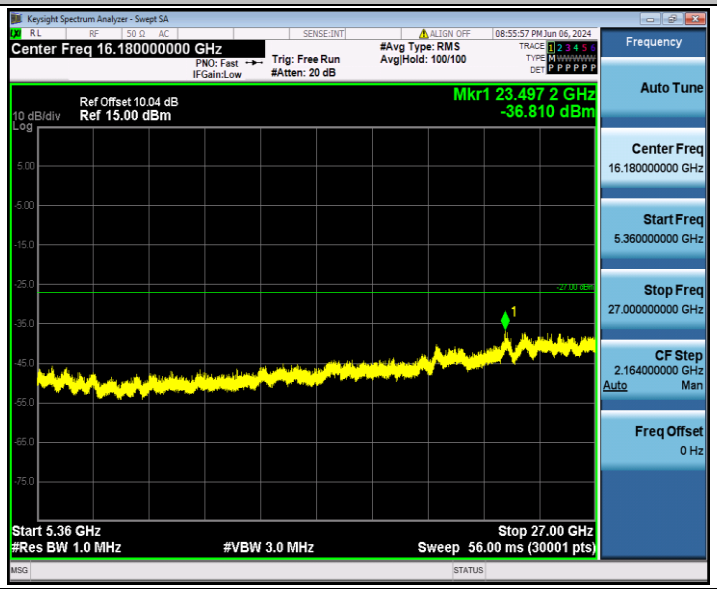
11N40SISO_Ant1_5230_5360~27000

11AC20SISO_Ant1_5180_30~5140

11AC20SISO_Ant1_5180_5360~27000

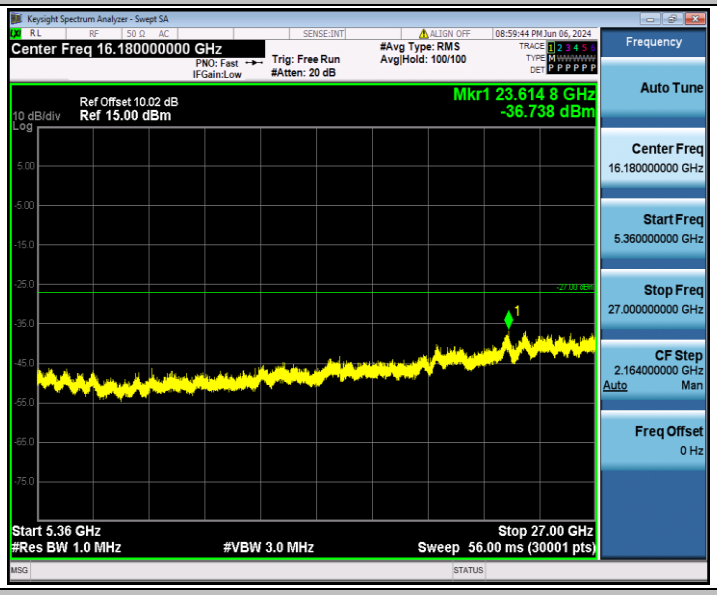
11AC20SISO_Ant1_5200_30~5140



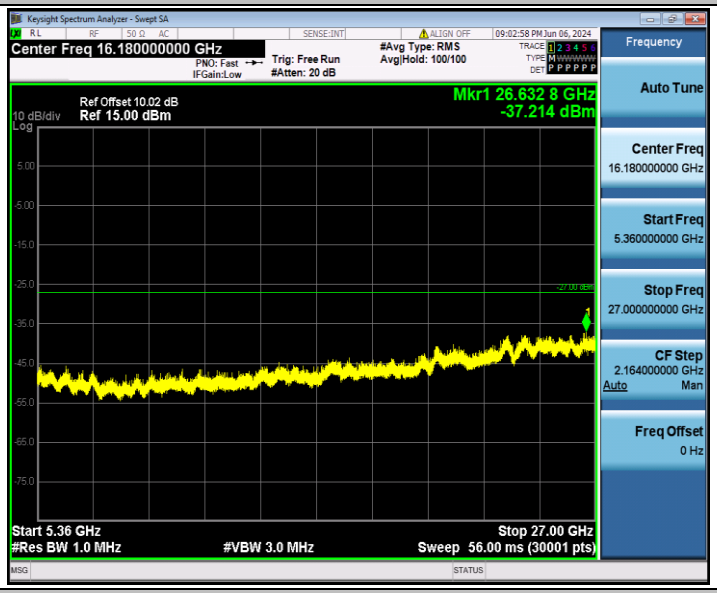
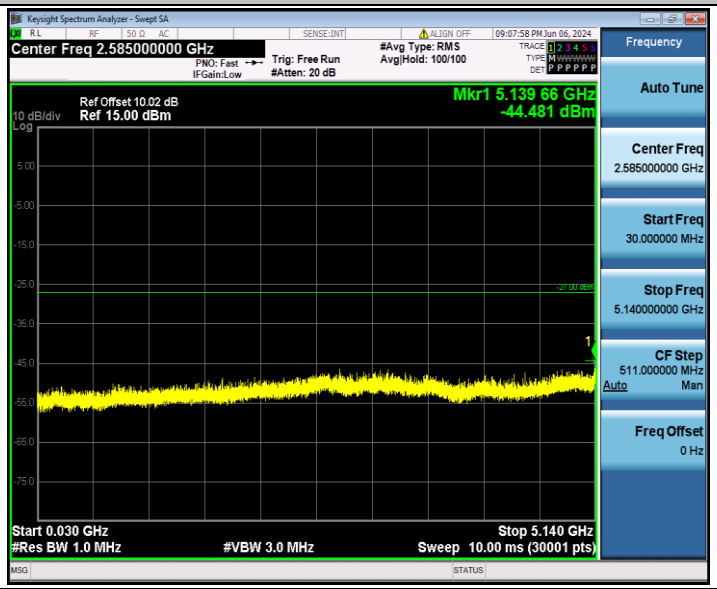
11AC20SISO_Ant1_5200_5360~27000

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

11AC80SISO_Ant1_5210_30~5140

11AC80SISO_Ant1_5210_5360~27000


Keysight Spectrum Analyzer - Swept SA
Center Freq 16.180000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
#Avg Type: RMS
Avg|Hold: 100/100
09:08:17 PM Jun 06, 2024
Ref Offset 10.02 dB
10 dB/div
Ref 15.00 dBm
Log
Mkr1 25.169 3 GHz
-36.874 dBm
Start 5.36 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 27.00 GHz
Sweep 56.00 ms (30001 pts)
Frequency
Auto Tune
Center Freq
16.180000000 GHz
Start Freq
5.360000000 GHz
Stop Freq
27.000000000 GHz
CF Step
2.164000000 GHz
Auto
Man
Freq Offset
0 Hz

Appendix D.8: Emissions in Restricted Bands

Test Result

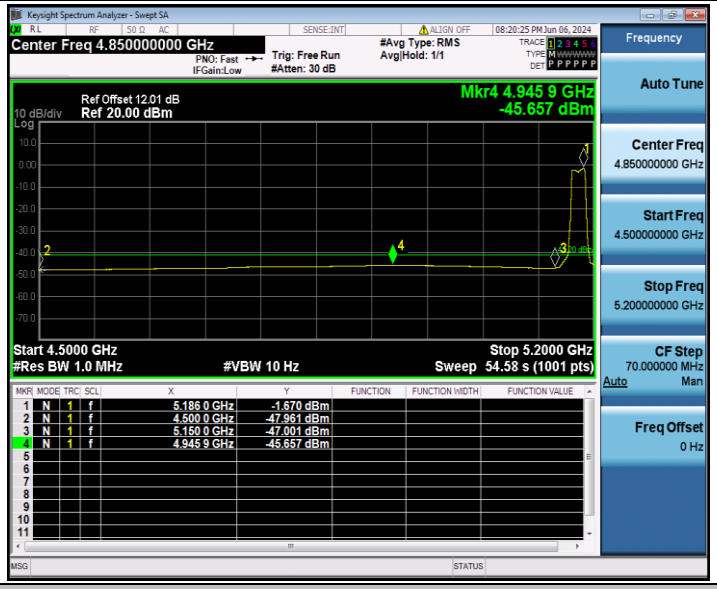
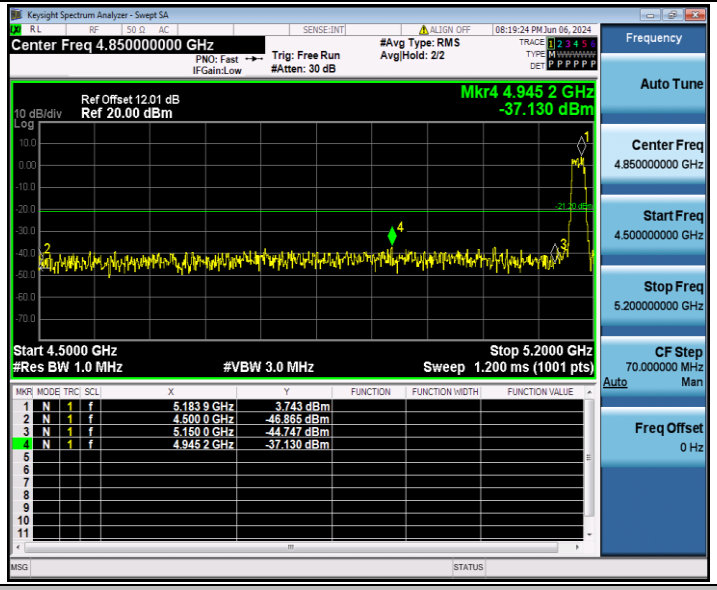
TestMode	Antenna	ChName	Freq(MHz)	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
11A	Ant1	Low	5180	AV	4500.000	-47.96	≤-41.20	47.24	≤54	PASS
				AV	4945.900	-45.66	≤-41.20	49.54	≤54	PASS
				AV	5150.000	-47	≤-41.20	48.20	≤54	PASS
				Peak	4500.000	-46.87	≤-21.20	48.33	≤74	PASS
				Peak	4945.200	-37.13	≤-21.20	58.07	≤74	PASS
				Peak	5150.000	-44.75	≤-21.20	50.45	≤74	PASS
		High	5240	AV	5350.000	-46.85	≤-41.20	48.35	≤54	PASS
				AV	5457.600	-45.87	≤-41.20	49.33	≤54	PASS
				AV	5460.000	-45.91	≤-41.20	49.29	≤54	PASS
				Peak	5350.000	-48.31	≤-21.20	46.89	≤74	PASS
				Peak	5433.360	-37.21	≤-21.20	57.99	≤74	PASS
				Peak	5460.000	-42.1	≤-21.20	53.10	≤74	PASS
11N20SISO	Ant1	Low	5180	AV	4500.000	-47.94	≤-41.20	47.26	≤54	PASS
				AV	4943.100	-45.65	≤-41.20	49.55	≤54	PASS
				AV	5150.000	-46.91	≤-41.20	48.29	≤54	PASS
				Peak	4500.000	-43.65	≤-21.20	51.55	≤74	PASS
				Peak	4955.000	-37.37	≤-21.20	57.83	≤74	PASS
				Peak	5150.000	-48.89	≤-21.20	46.31	≤74	PASS
		High	5240	AV	5350.000	-46.84	≤-41.20	48.36	≤54	PASS
				AV	5457.840	-45.85	≤-41.20	49.35	≤54	PASS
				AV	5460.000	-45.91	≤-41.20	49.29	≤54	PASS
				Peak	5350.000	-42.51	≤-21.20	52.69	≤74	PASS
				Peak	5448.240	-37.93	≤-21.20	57.27	≤74	PASS
				Peak	5460.000	-45.37	≤-21.20	49.83	≤74	PASS
11N40SISO	Ant1	Low	5190	AV	4500.000	-47.95	≤-41.20	47.25	≤54	PASS
				AV	4945.200	-45.63	≤-41.20	49.57	≤54	PASS
				AV	5150.000	-46.08	≤-41.20	49.12	≤54	PASS
				Peak	4500.000	-43.02	≤-21.20	52.18	≤74	PASS
				Peak	5130.700	-36.53	≤-21.20	58.67	≤74	PASS
				Peak	5150.000	-47.09	≤-21.20	48.11	≤74	PASS
		High	5230	AV	5350.000	-46.81	≤-41.20	48.39	≤54	PASS
				AV	5453.500	-45.87	≤-41.20	49.33	≤54	PASS
				AV	5460.000	-45.92	≤-41.20	49.28	≤54	PASS
				Peak	5350.000	-45.42	≤-21.20	49.78	≤74	PASS
				Peak	5457.400	-37.86	≤-21.20	57.34	≤74	PASS
				Peak	5460.000	-41.23	≤-21.20	53.97	≤74	PASS

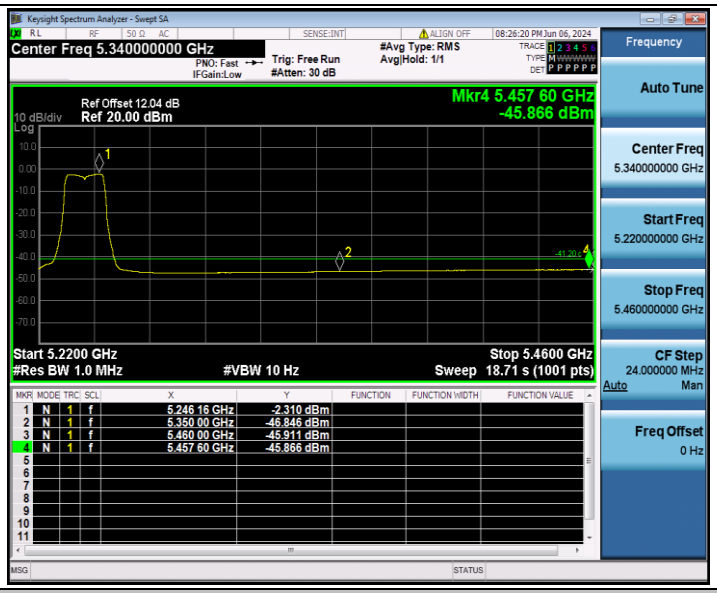
11AC20SISO	Ant1	Low	5180	AV	4500.000	-47.94	≤-41.20	47.26	≤54	PASS
				AV	4942.400	-45.65	≤-41.20	49.55	≤54	PASS
				AV	5150.000	-46.9	≤-41.20	48.30	≤54	PASS
				Peak	4500.000	-45.97	≤-21.20	49.23	≤74	PASS
				Peak	4962.000	-37.79	≤-21.20	57.41	≤74	PASS
				Peak	5150.000	-42.13	≤-21.20	53.07	≤74	PASS
		High	5240	AV	5350.000	-46.81	≤-41.20	48.39	≤54	PASS
				AV	5441.520	-45.86	≤-41.20	49.34	≤54	PASS
				AV	5460.000	-45.89	≤-41.20	49.31	≤54	PASS
				Peak	5350.000	-41.23	≤-21.20	53.97	≤74	PASS
				Peak	5418.000	-36.59	≤-21.20	58.61	≤74	PASS
				Peak	5460.000	-40.36	≤-21.20	54.84	≤74	PASS
11AC40SISO	Ant1	Low	5190	AV	4500.000	-47.93	≤-41.20	47.27	≤54	PASS
				AV	4942.400	-45.64	≤-41.20	49.56	≤54	PASS
				AV	5150.000	-46.11	≤-41.20	49.09	≤54	PASS
				Peak	4500.000	-45.61	≤-21.20	49.59	≤74	PASS
				Peak	4827.600	-37.19	≤-21.20	58.01	≤74	PASS
				Peak	5150.000	-41.44	≤-21.20	53.76	≤74	PASS
		High	5230	AV	5350.000	-46.84	≤-41.20	48.36	≤54	PASS
				AV	5458.700	-45.89	≤-41.20	49.31	≤54	PASS
				AV	5460.000	-45.92	≤-41.20	49.28	≤54	PASS
				Peak	5350.000	-47.61	≤-21.20	47.59	≤74	PASS
				Peak	5439.720	-36.36	≤-21.20	58.84	≤74	PASS
				Peak	5460.000	-47.2	≤-21.20	48.00	≤74	PASS
11AC80SISO	Ant1	Low	5210	AV	4500.000	-47.95	≤-41.20	47.25	≤54	PASS
				AV	4940.250	-45.65	≤-41.20	49.55	≤54	PASS
				AV	5150.000	-46.56	≤-41.20	48.64	≤54	PASS
				Peak	4500.000	-44.94	≤-21.20	50.26	≤74	PASS
				Peak	5033.250	-36.83	≤-21.20	58.37	≤74	PASS
				Peak	5150.000	-40.51	≤-21.20	54.69	≤74	PASS
		High	5210	AV	5350.000	-46.87	≤-41.20	48.33	≤54	PASS
				AV	5456.920	-45.89	≤-41.20	49.31	≤54	PASS
				AV	5460.000	-45.94	≤-41.20	49.26	≤54	PASS
				Peak	5350.000	-42.05	≤-21.20	53.15	≤74	PASS
				Peak	5372.920	-37.62	≤-21.20	57.58	≤74	PASS
				Peak	5460.000	-42.43	≤-21.20	52.77	≤74	PASS

Note：

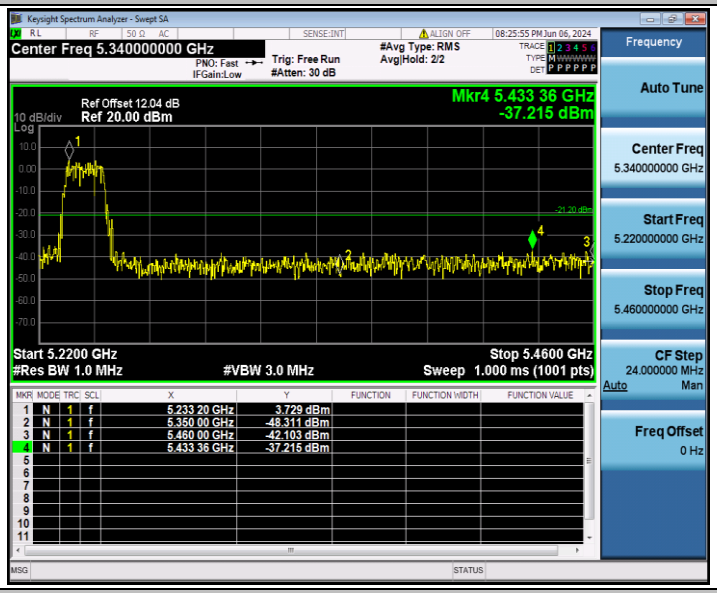
1. The Antenna Gain is compensated in the graph.
2. The Duty Cycle Factor and RBW Factor is compensated in the graph.
3. For transmitters operating in 5150-5350 GHz band and 5470-5725 GHz band: The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm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

Test Graphs

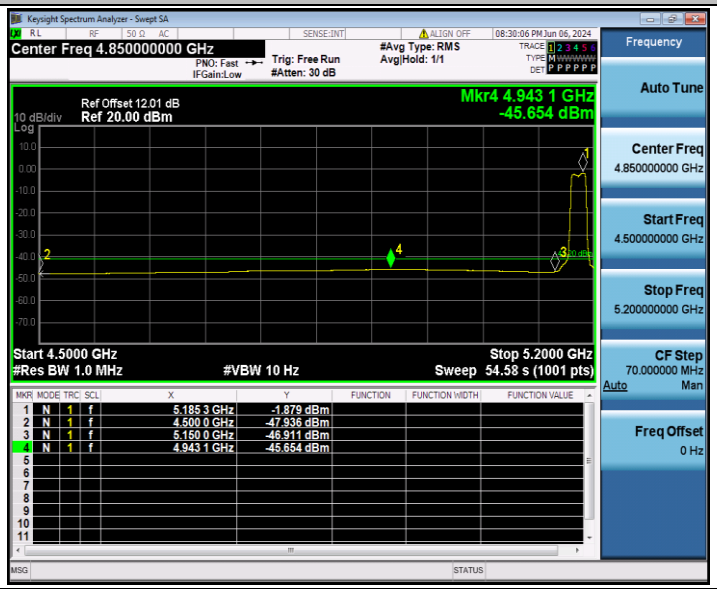
11A_Ant1_Low_5180_AV

11A_Ant1_Low_5180_Peak

11A_Ant1_High_5240_AV



11A_Ant1_High_5240_Peak



11N20SISO_Ant1_Low_5180_AV



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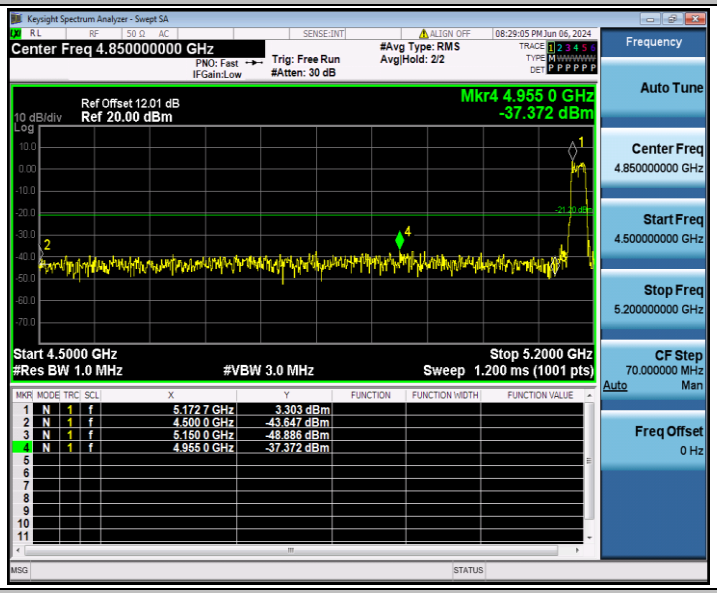
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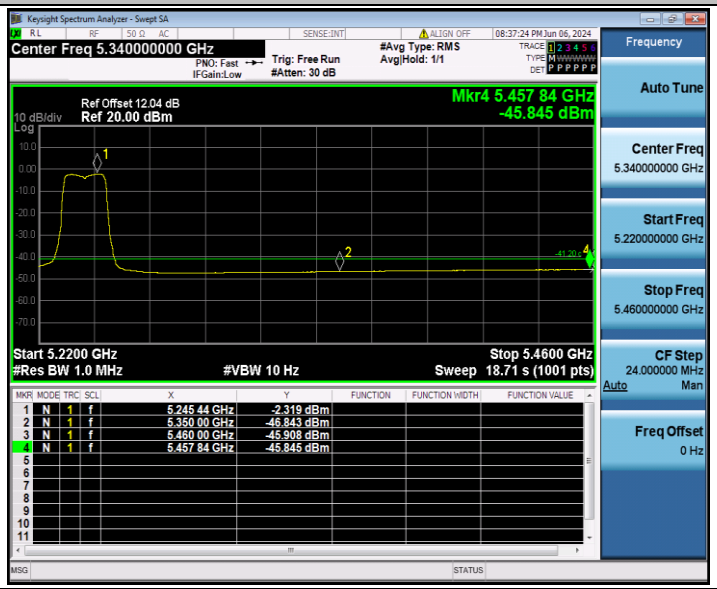
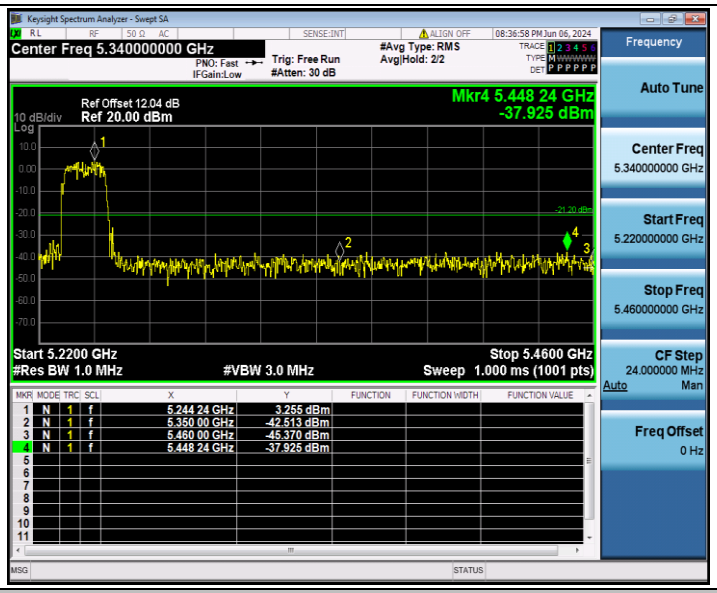
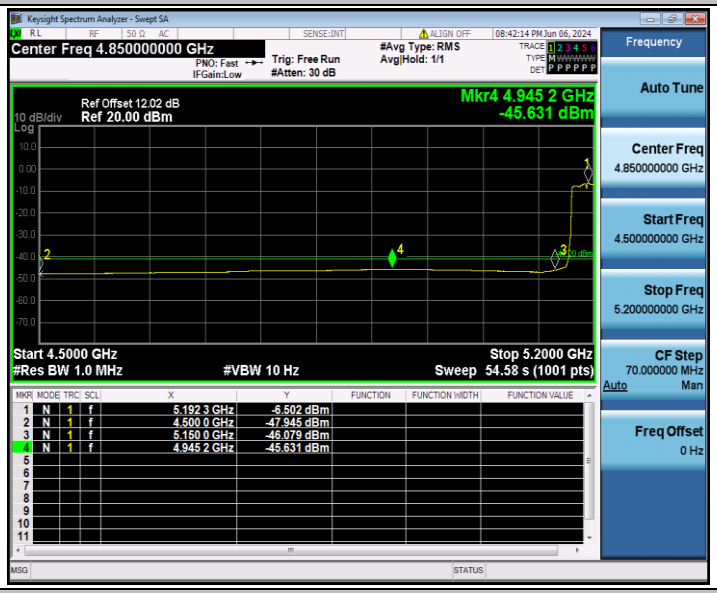

11N20SISO_Ant1_High_5240_Peak



11N40SISO_Ant1_Low_5190_AV



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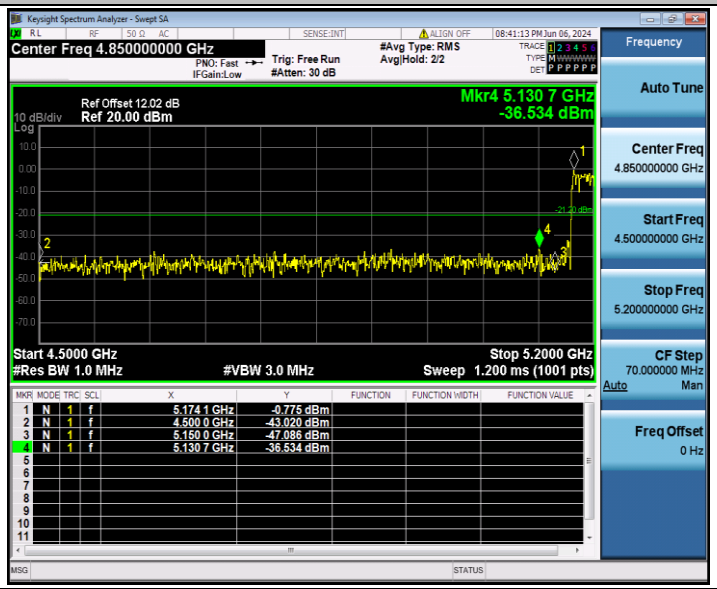

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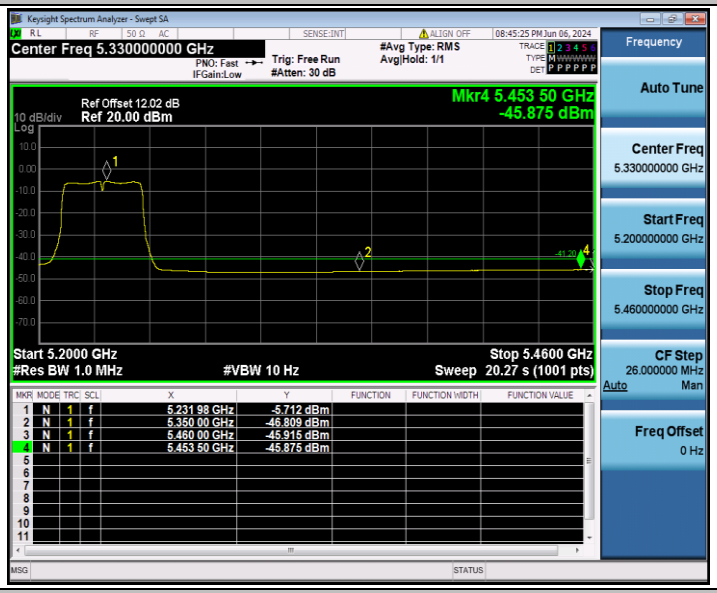
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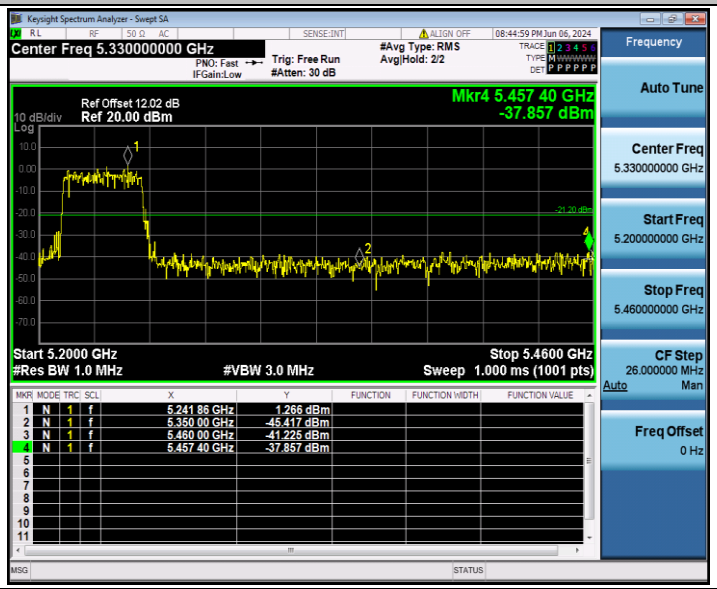
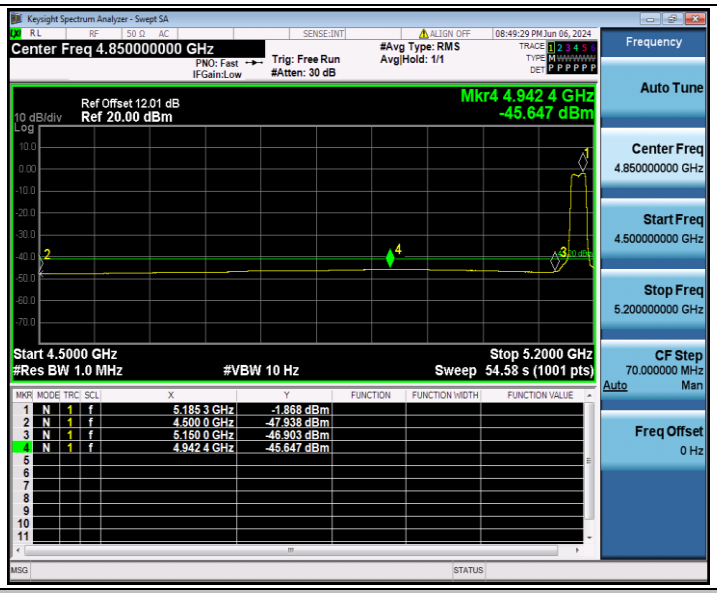
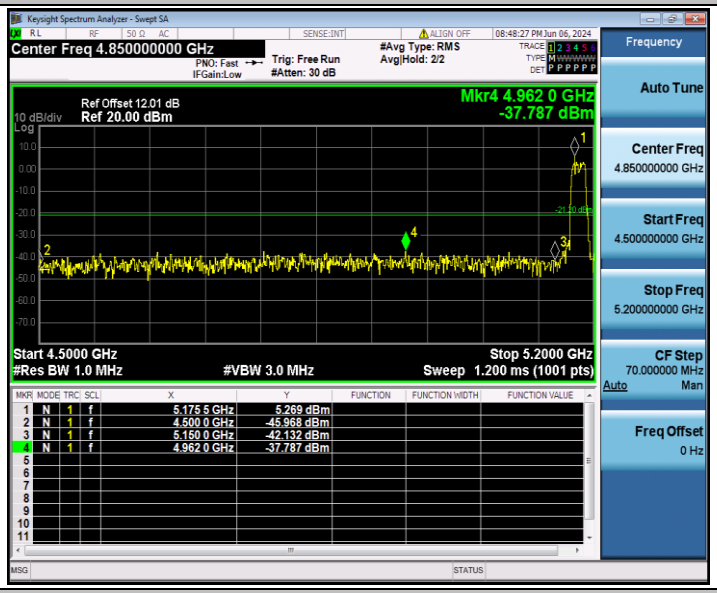
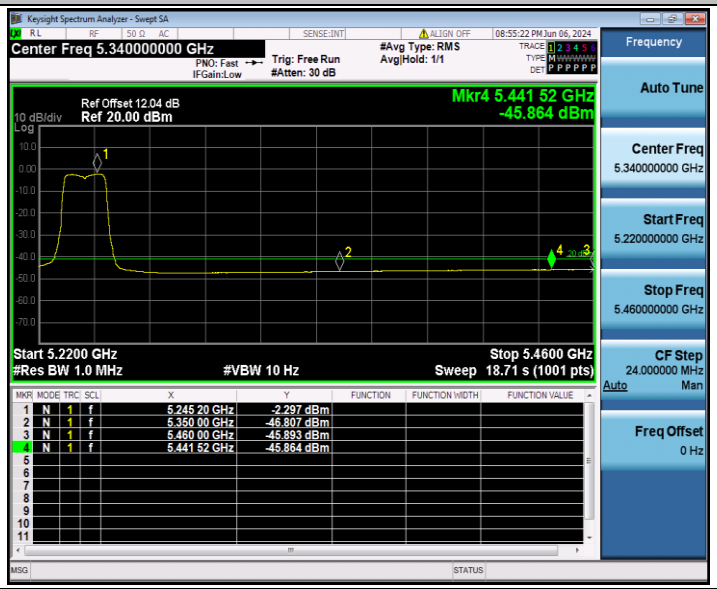

11AC20SISO_Ant1_Low_5180_AV



11AC20SISO_Ant1_Low_5180_Peak



11AC20SISO_Ant1_High_5240_AV



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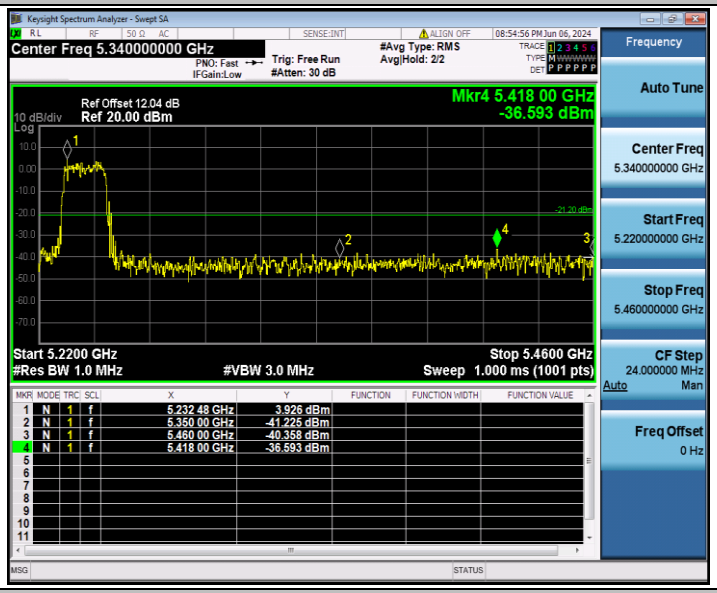
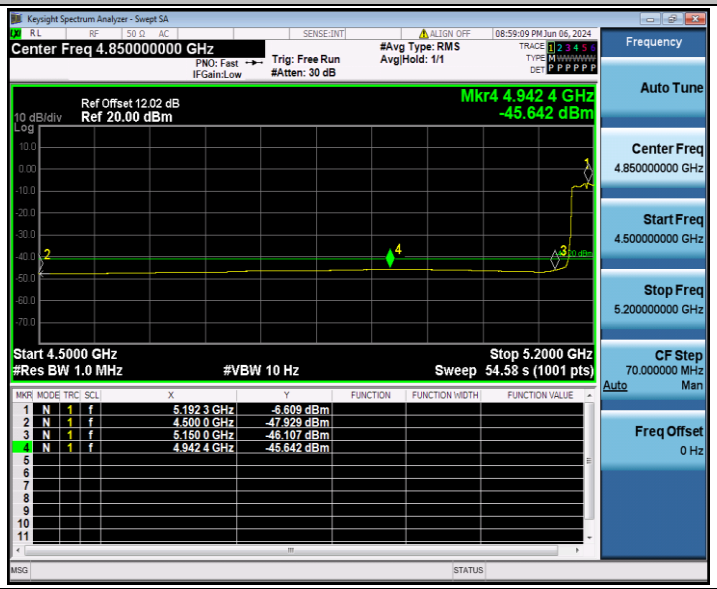

11AC40SISO_Ant1_Low_5190_AV

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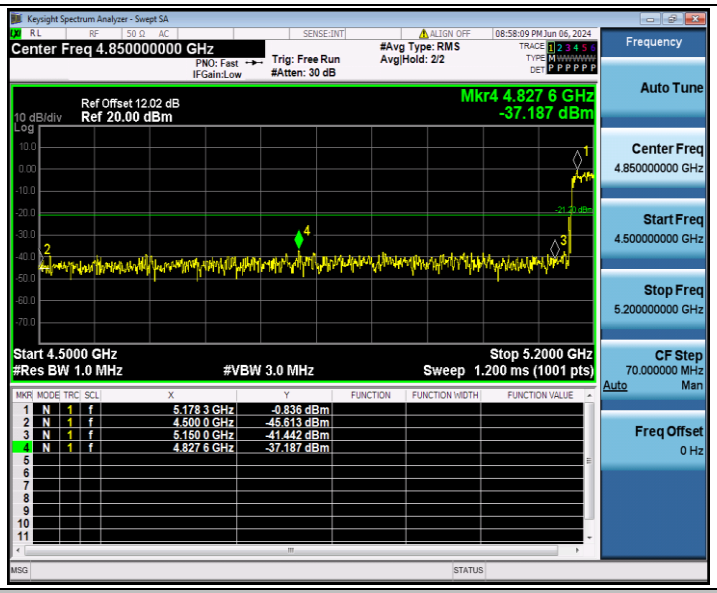
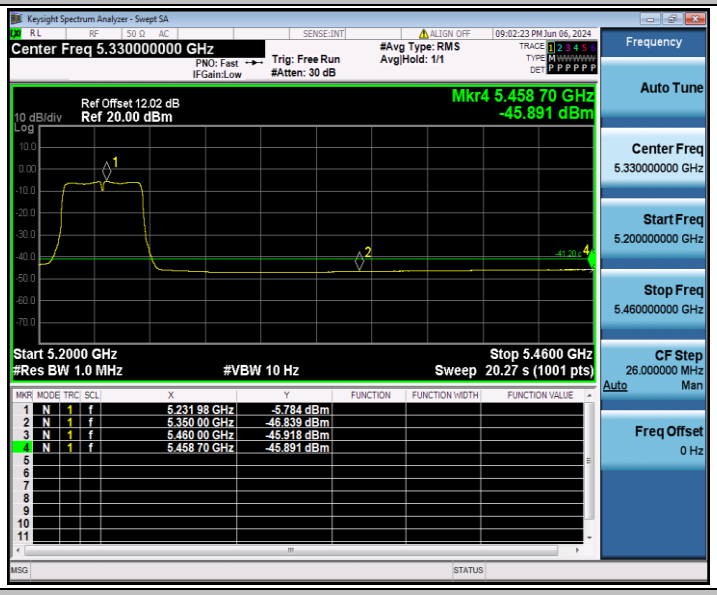
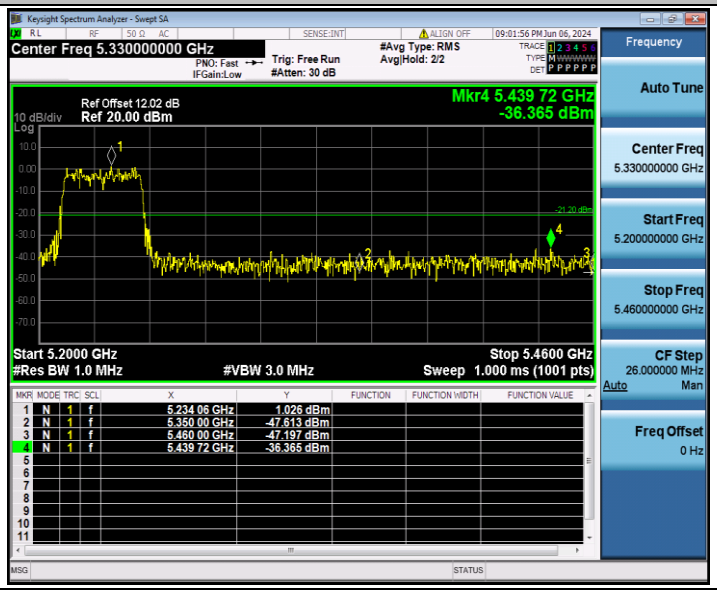
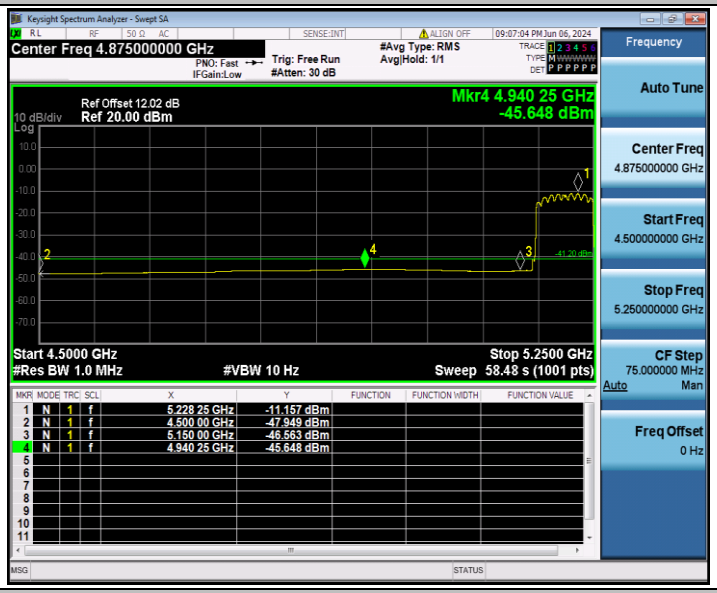


11AC40SISO_Ant1_High_5230_AV



11AC40SISO_Ant1_High_5230_Peak



11AC80SISO_Ant1_Low_5210_AV

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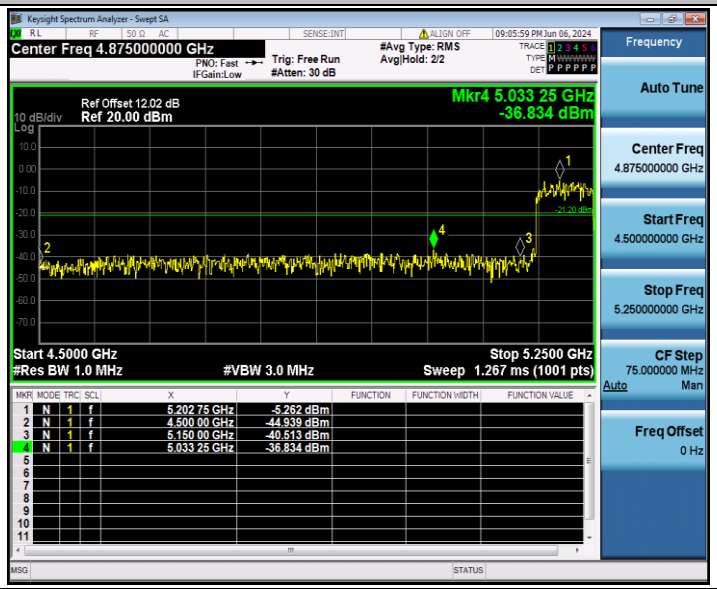
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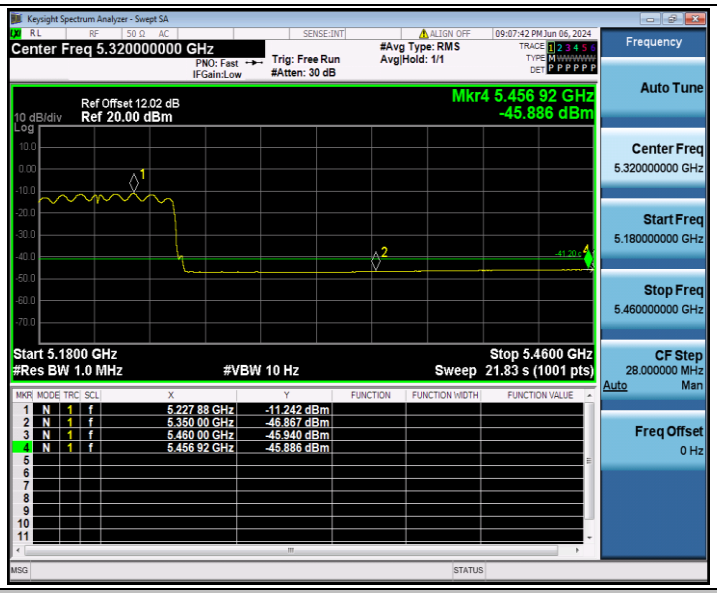

11AC80SISO_Ant1_High_5210_Peak