

Appendix A

RF Test Data for 2.4GWIFI (Conducted Measurement)

Product Name: Water Timer
Test Model: WG05

Environmental Conditions

Temperature:	24.9°C
Relative Humidity:	53.8%
ATM Pressure:	100.0 kPa
Test Engineer:	Zhao xing hai
Supervised by:	Fengliu Tang

A.1 DTS Bandwidth

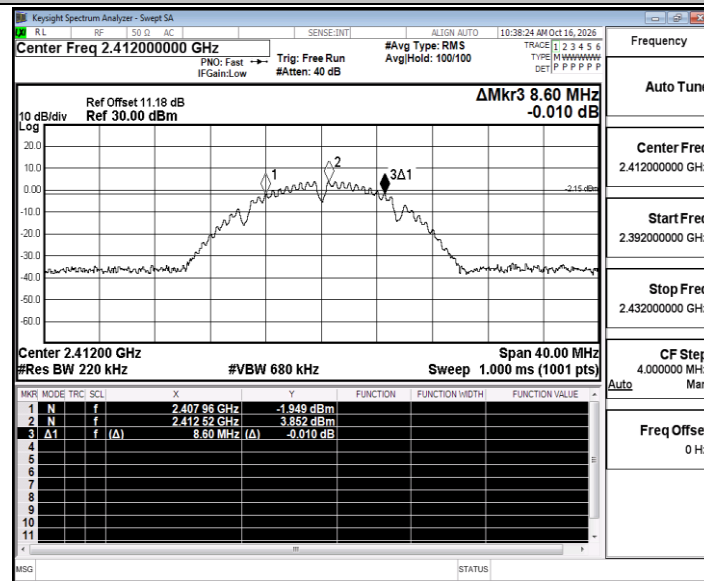
Test Result

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	8.600	2407.960	2416.560	0.5	PASS
		2437	8.120	2432.960	2441.080	0.5	PASS
		2462	8.120	2457.960	2466.080	0.5	PASS
11G	Ant1	2412	16.000	2404.160	2420.160	0.5	PASS
		2437	15.960	2429.040	2445.000	0.5	PASS
		2462	15.720	2454.280	2470.000	0.5	PASS
11N20SISO	Ant1	2412	17.320	2403.440	2420.760	0.5	PASS
		2437	17.160	2428.440	2445.600	0.5	PASS
		2462	16.560	2453.880	2470.440	0.5	PASS
11N40SISO	Ant1	2422	31.040	2409.200	2440.240	0.5	PASS
		2437	32.720	2421.800	2454.520	0.5	PASS
		2452	35.840	2434.160	2470.000	0.5	PASS

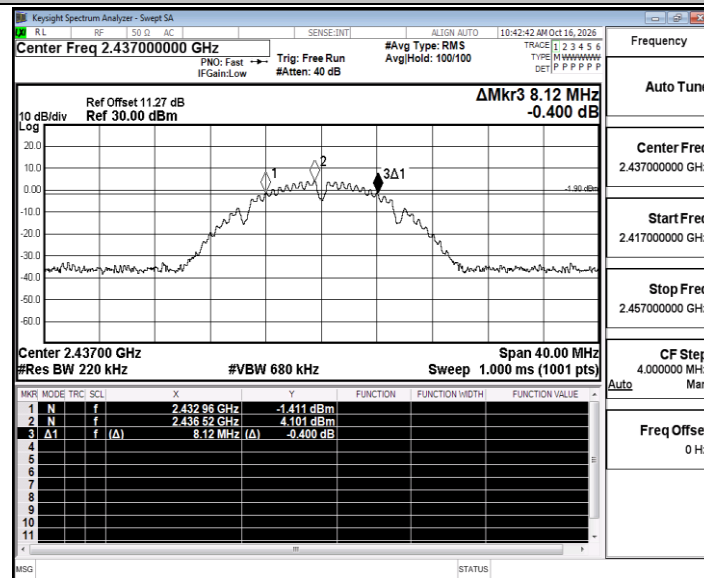
Note :offset=System attenuation +cable loss

Test Graphs

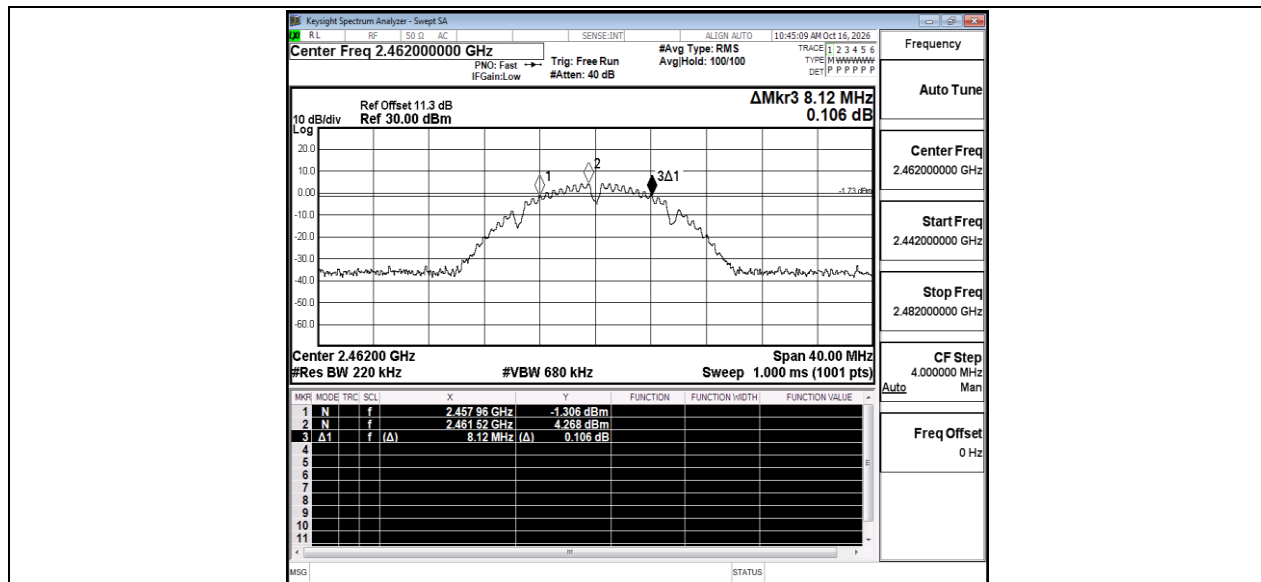
11B_Ant1_2412



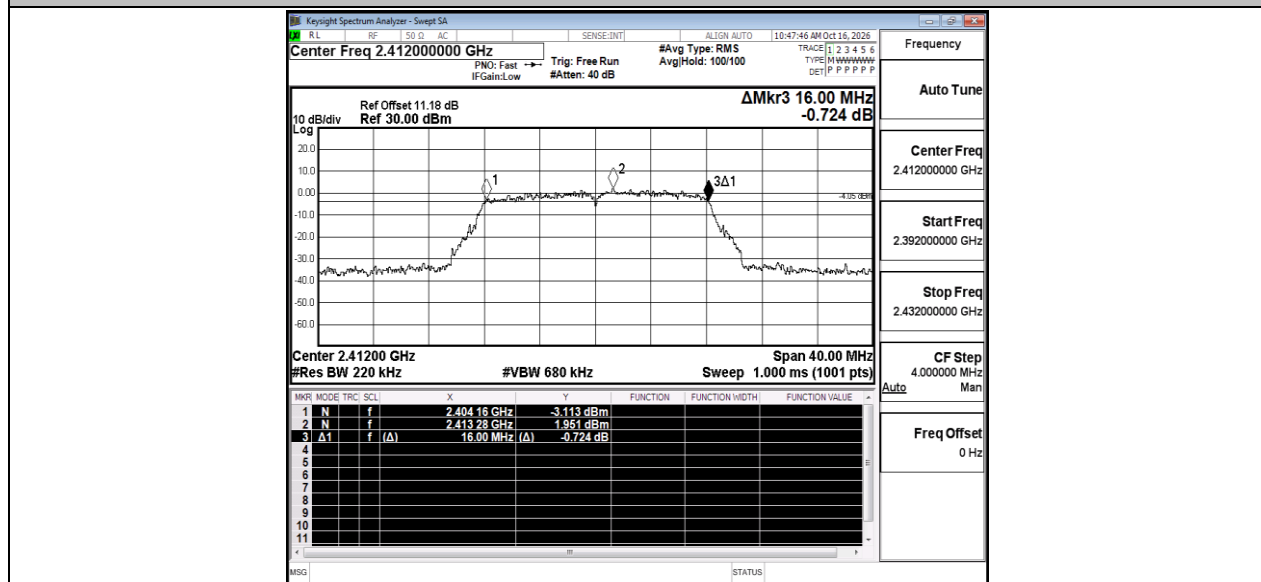
11B_Ant1_2437



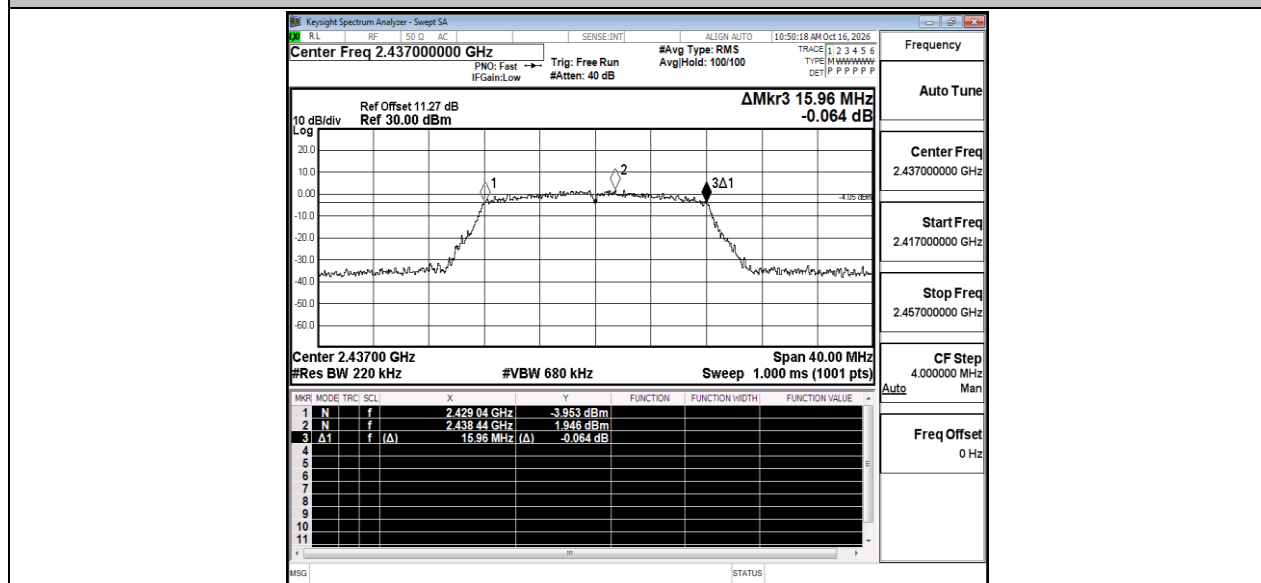
11B_Ant1_2462



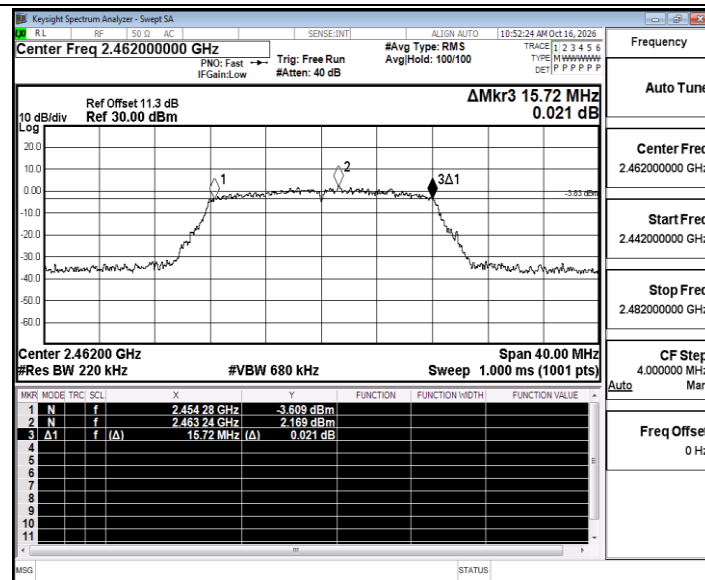
11G_Ant1_2412



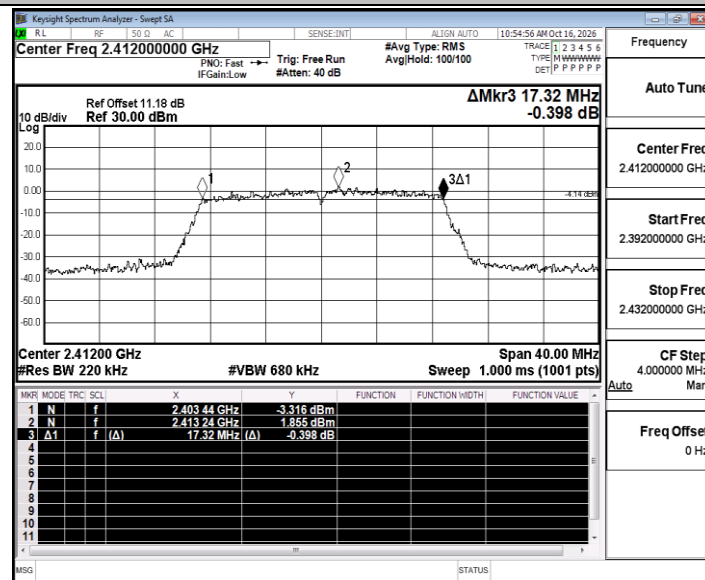
11G_Ant1_2437



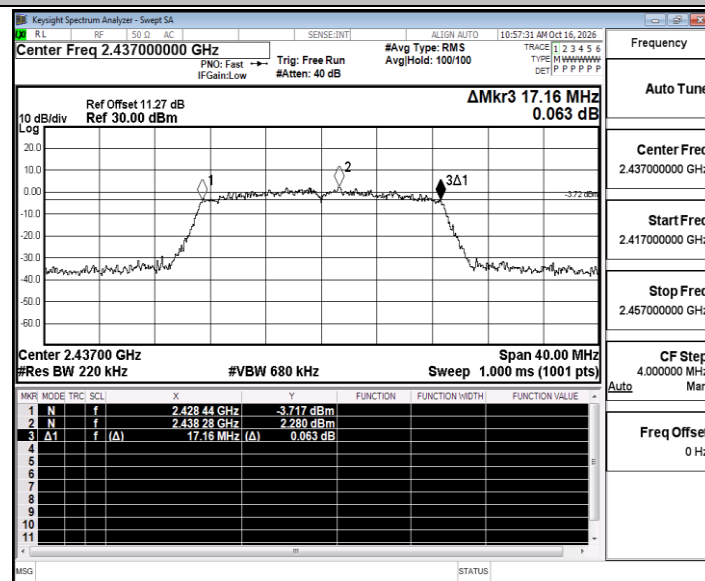
11G_Ant1_2462



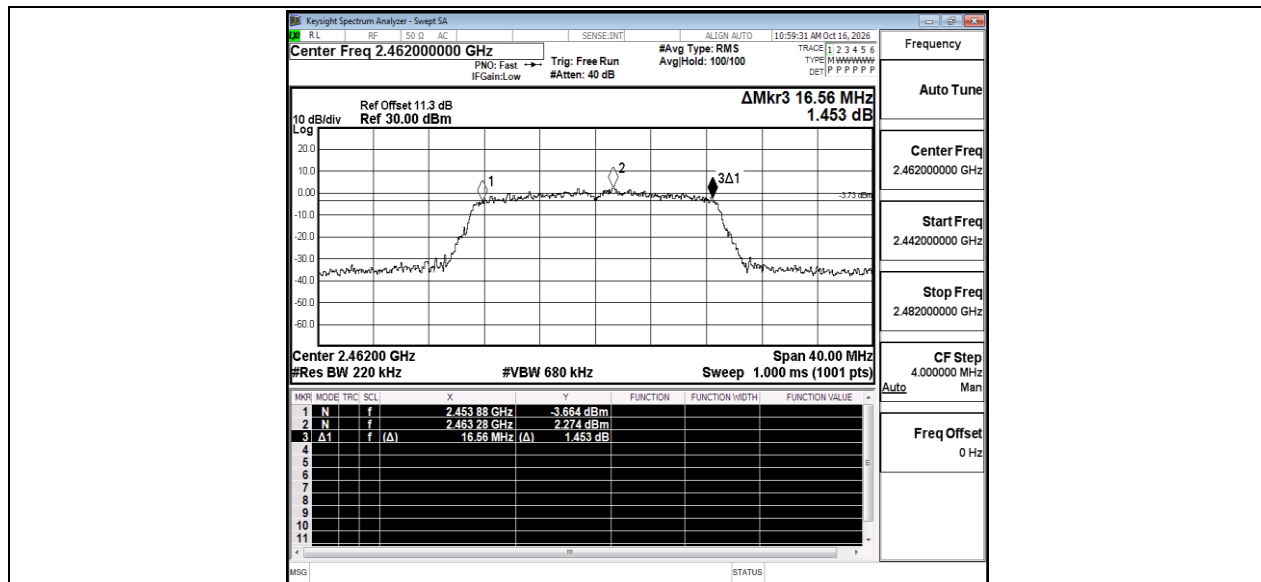
11N20SISO_Ant1_2412



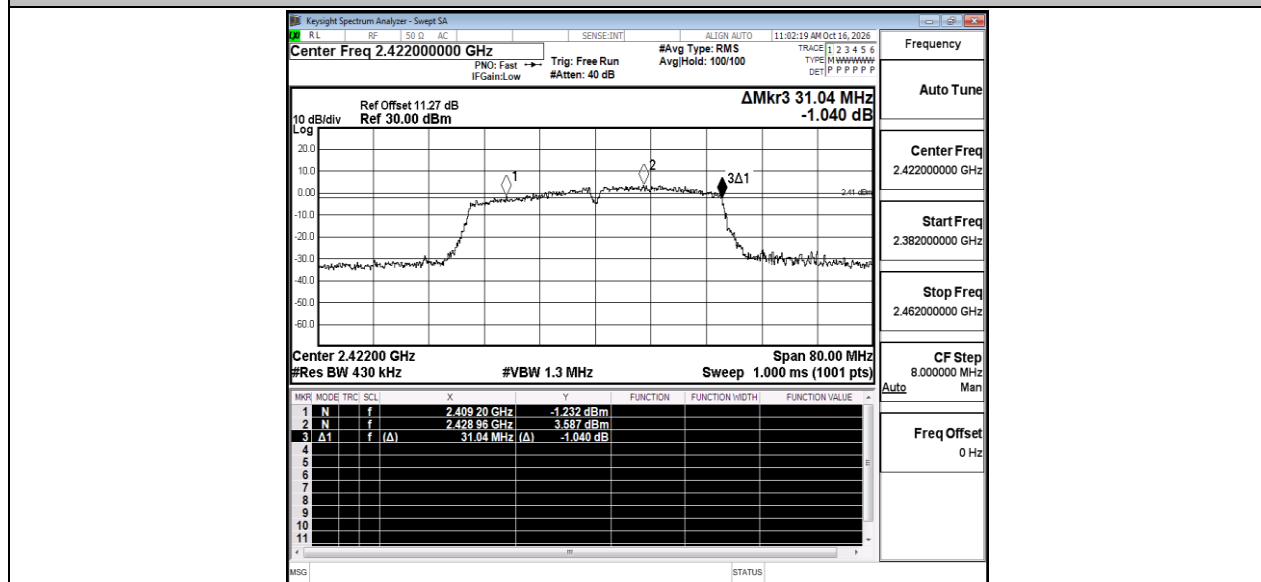
11N20SISO_Ant1_2437



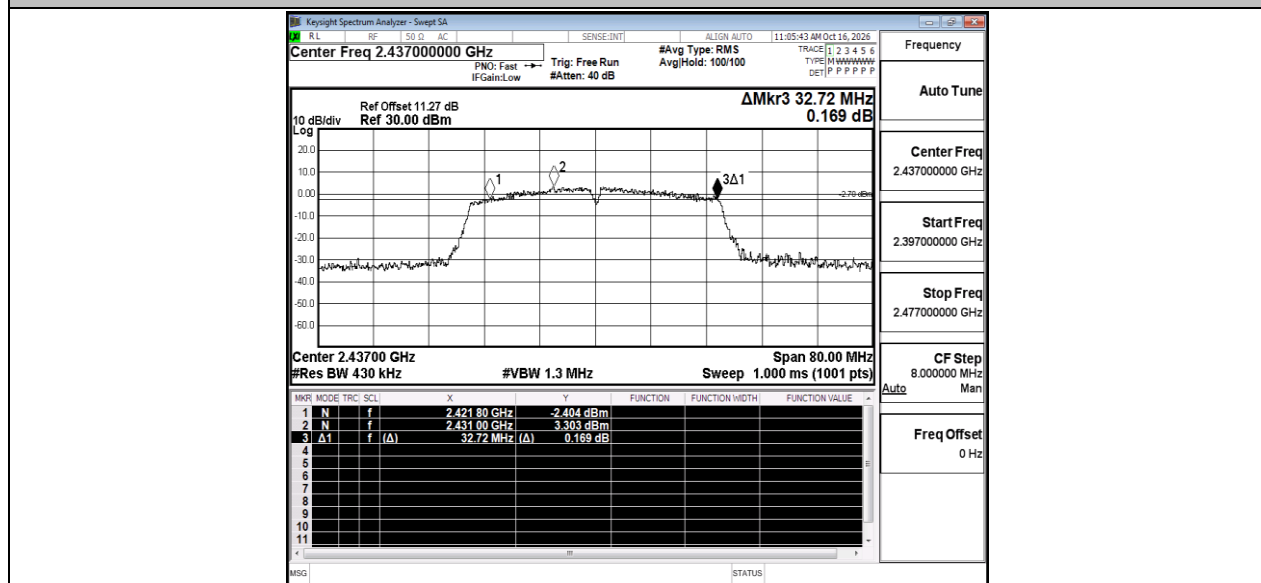
11N20SISO_Ant1_2462



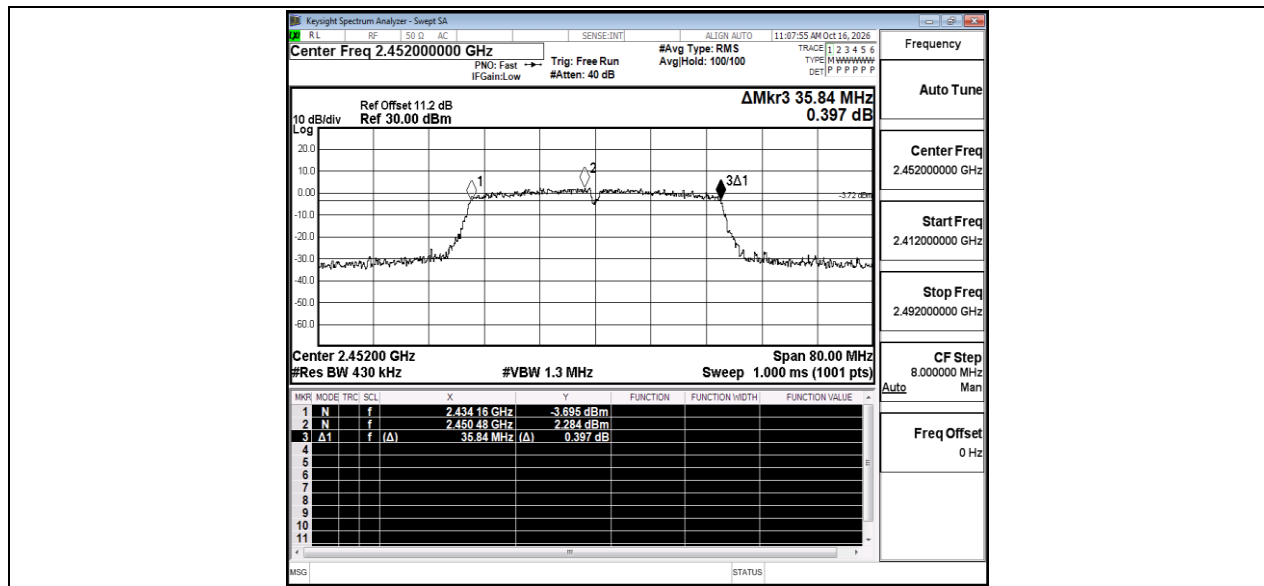
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



A.2 Maximum average conducted output power

Test Result Average

TestMode	Antenna	Frequency [MHz]	Measured Power	DC Factor [dB]	AV Power [dBm]	Gain [dBi]	Verdict
11B	Ant1	2412	11.22	0.02	11.2	≤30.00	PASS
		2437	11.49	0.02	11.51	≤30.00	PASS
		2462	11.39	0.02	11.41	≤30.00	PASS
11G	Ant1	2412	11.12	0.12	11.24	≤30.00	PASS
		2437	11.54	0.12	11.66	≤30.00	PASS
		2462	11.31	0.15	11.46	≤30.00	PASS
11N20SISO	Ant1	2412	11.13	0.13	11.26	≤30.00	PASS
		2437	11.35	0.13	11.48	≤30.00	PASS
		2462	11.13	0.13	11.26	≤30.00	PASS
11N40SISO	Ant1	2422	12.71	0.26	12.97	≤30.00	PASS
		2437	12.89	0.32	13.21	≤30.00	PASS
		2452	12.59	0.32	12.91	≤30.00	PASS

Note :offset=System attenuation +cabal loss

A.3 Maximum power spectral density

Test Result

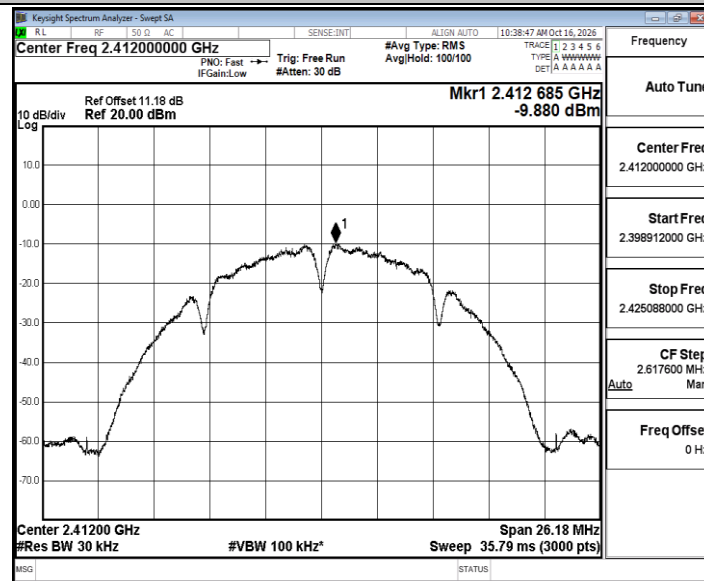
TestMode	Antenna	Frequency[MHz]	Measured PSD [dBm/30kHz]	DC Factor [dB]	Result[dBm/30 kHz]	Result[dBm/3k Hz]	Limit[d Bm/3k Hz]	Verdict
11B	Ant1	2412	-9.88	0.02	-9.86	-19.86	≤8.00	PASS
		2437	-9.65	0.02	-9.63	-19.63	≤8.00	PASS
		2462	-9.48	0.02	-9.46	-19.46	≤8.00	PASS
11G	Ant1	2412	-12.71	0.12	-12.59	-22.59	≤8.00	PASS
		2437	-12.45	0.12	-12.33	-22.33	≤8.00	PASS
		2462	-12.52	0.15	-12.37	-22.37	≤8.00	PASS
11N20SISO	Ant1	2412	-12.63	0.13	-12.5	-22.5	≤8.00	PASS
		2437	-12.59	0.13	-12.46	-22.46	≤8.00	PASS
		2462	-12.14	0.13	-12.01	-22.01	≤8.00	PASS
11N40SISO	Ant1	2422	-13.08	0.26	-12.82	-22.82	≤8.00	PASS
		2437	-13.54	0.32	-13.22	-23.22	≤8.00	PASS
		2452	-14.62	0.32	-14.3	-24.3	≤8.00	PASS

Note :offset=System attenuation +cable loss

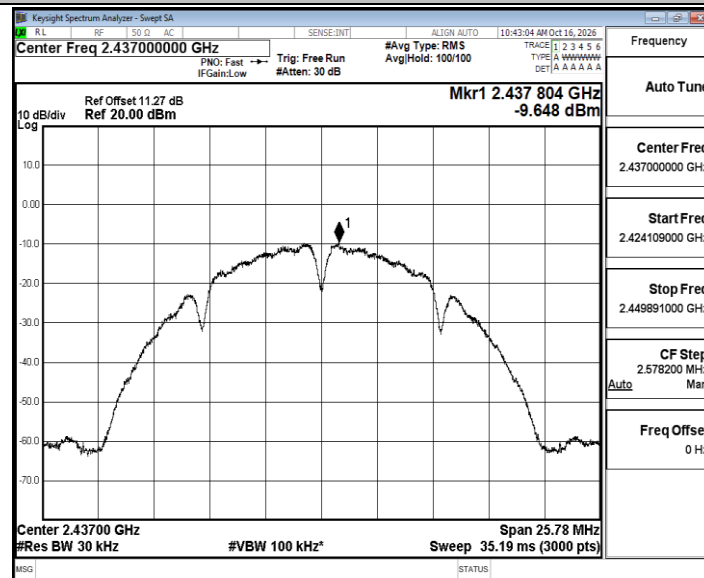
Result[dBm/3kHz]=Result[dBm/30kHz]+10*Log(3/30)

Test Graphs

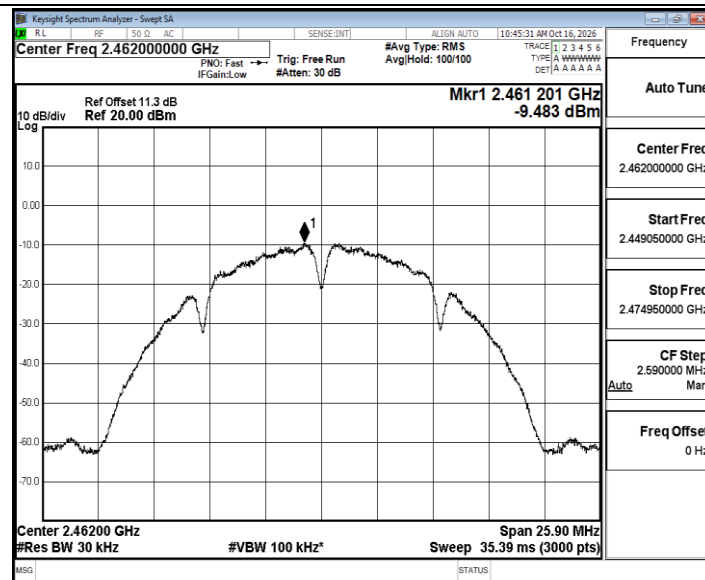
11B_Ant1_2412



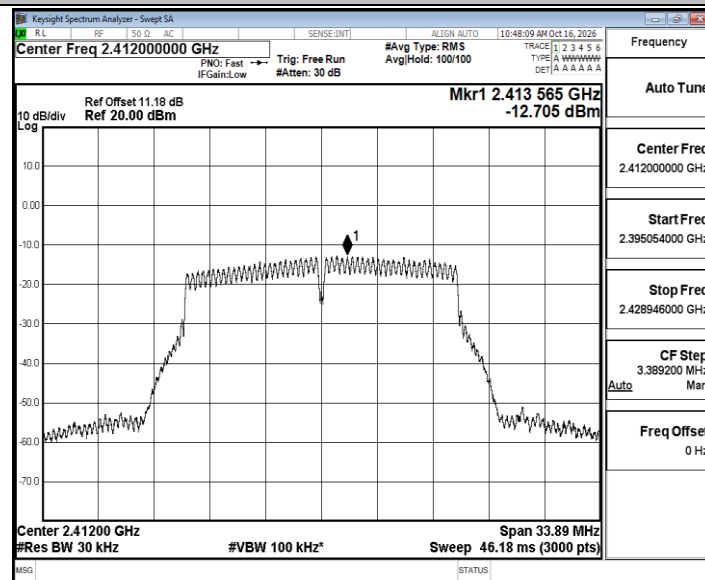
11B_Ant1_2437



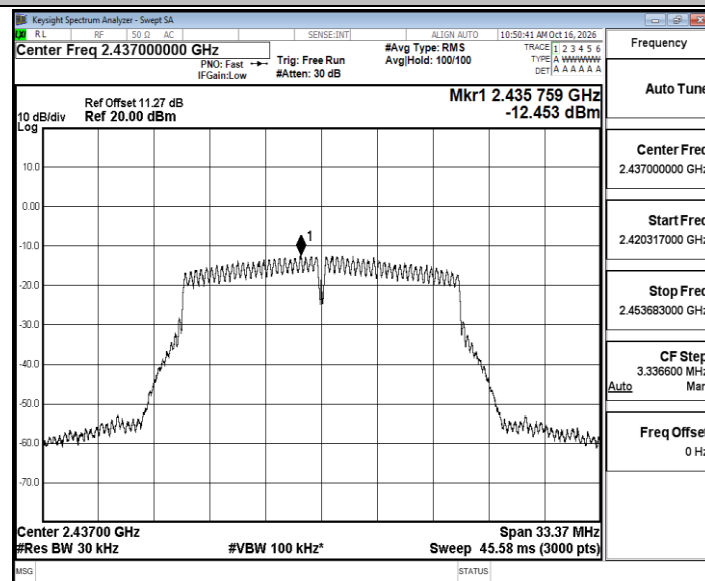
11B_Ant1_2462



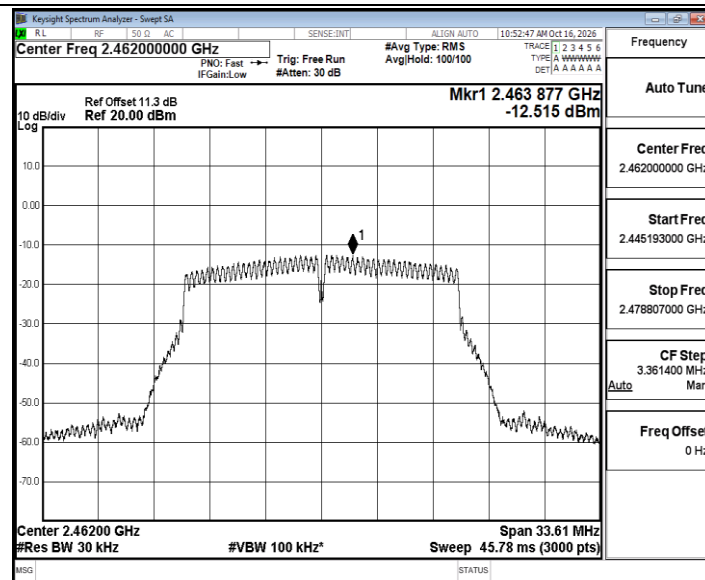
11G_Ant1_2412



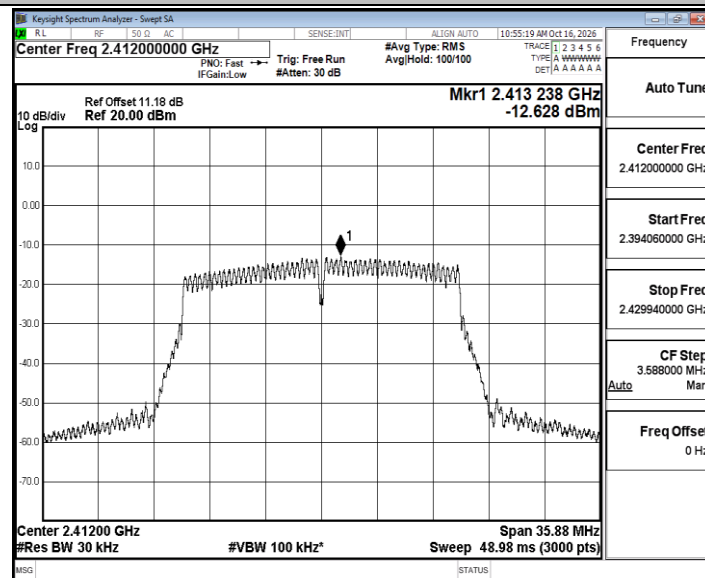
11G_Ant1_2437



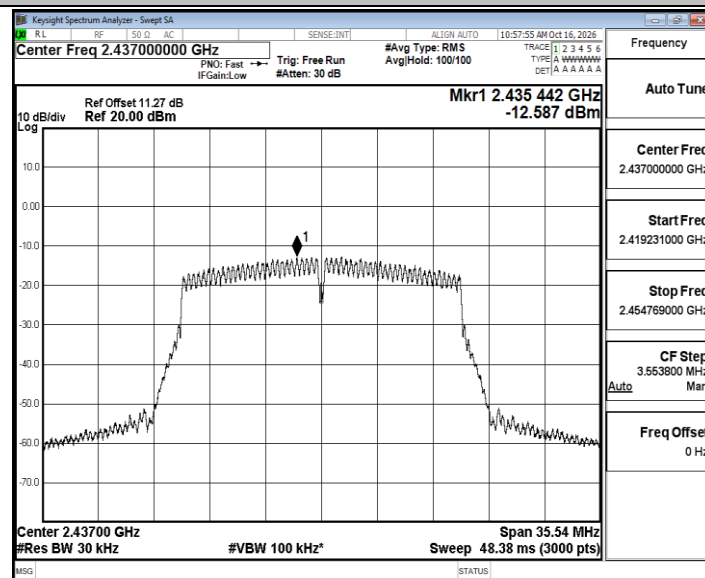
11G_Ant1_2462



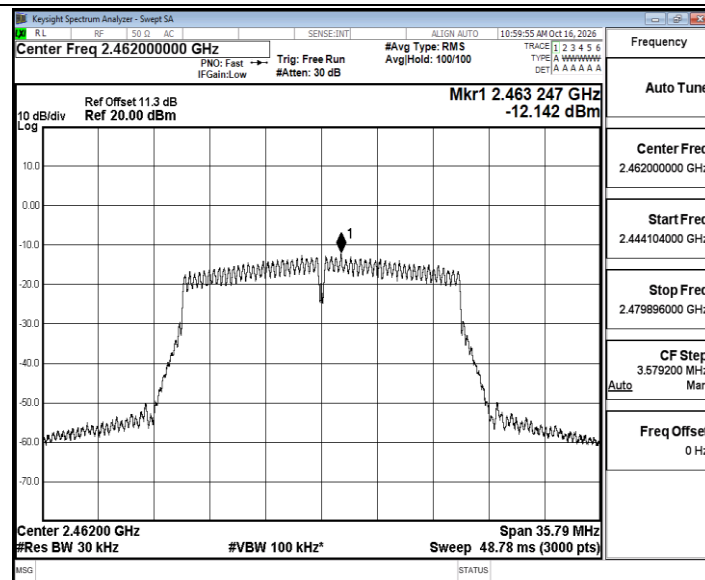
11N20SISO_Ant1_2412



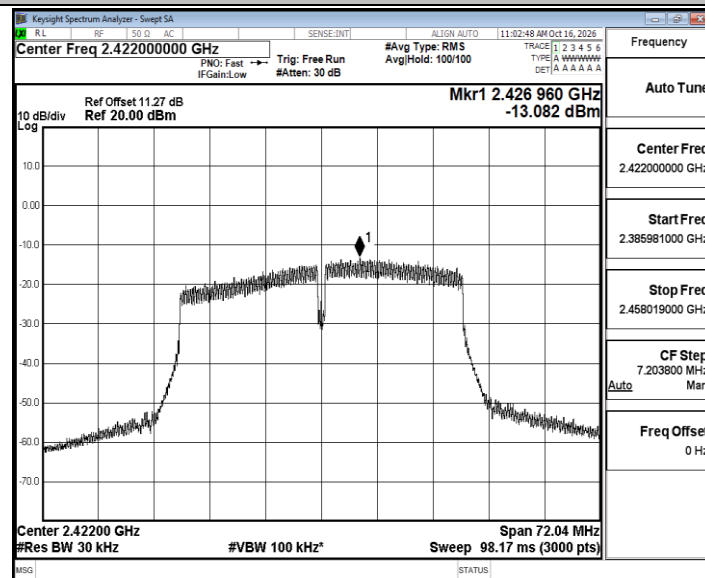
11N20SISO_Ant1_2437



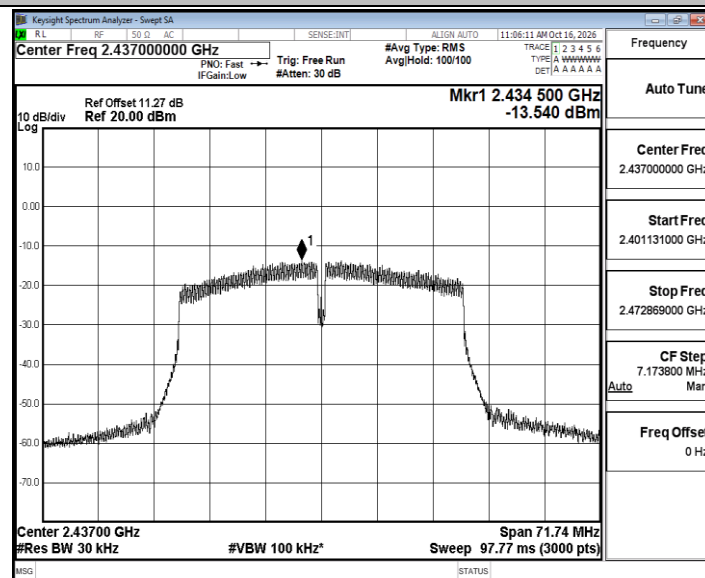
11N20SISO_Ant1_2462



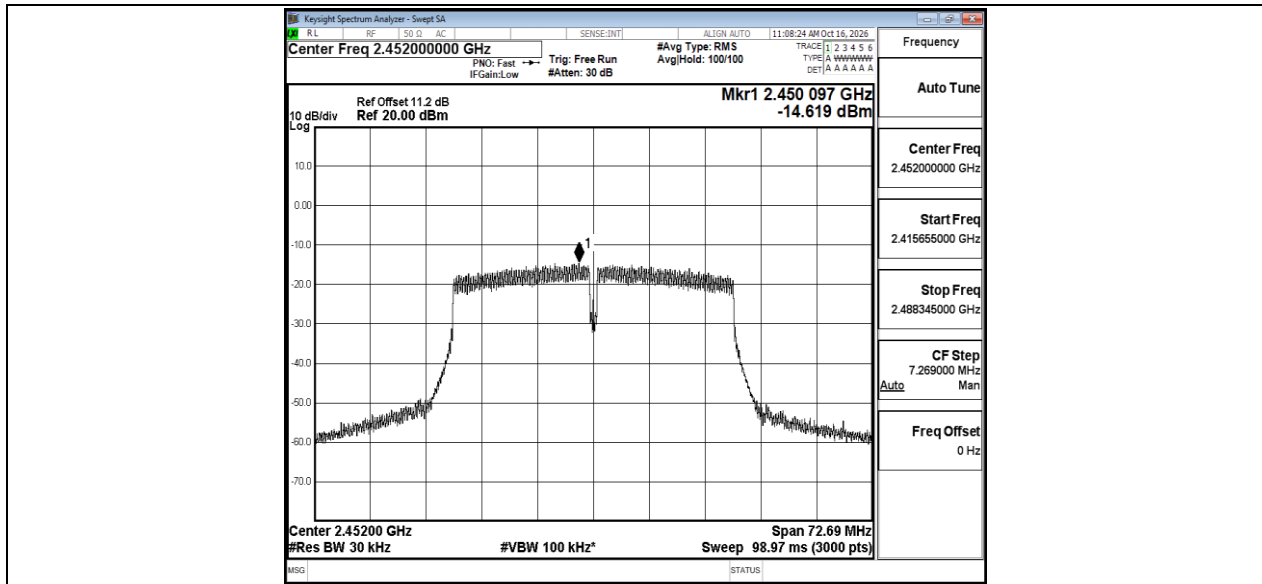
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



A.4 Band edge measurements

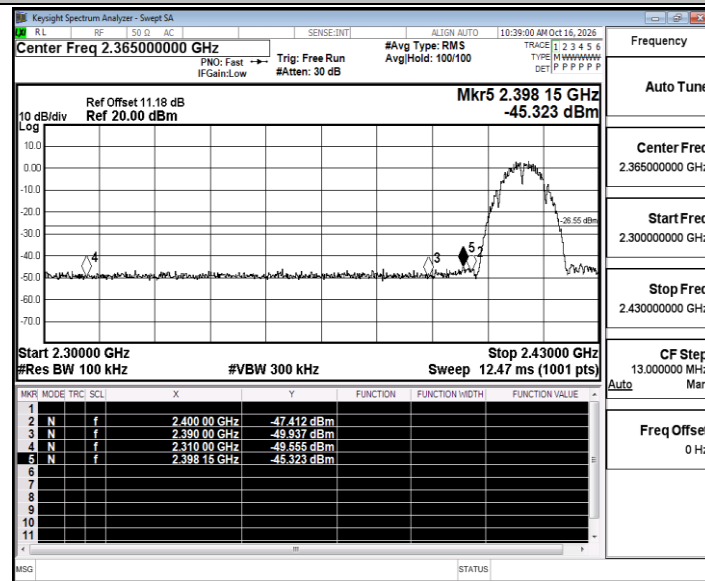
Test Result

TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	3.45	-45.32	≤-26.55	PASS
		High	2462	3.73	-45.56	≤-26.27	PASS
11G	Ant1	Low	2412	0.38	-38.47	≤-29.62	PASS
		High	2462	0.82	-45.61	≤-29.18	PASS
11N20SISO	Ant1	Low	2412	0.02	-37.6	≤-29.98	PASS
		High	2462	1.27	-45.52	≤-28.73	PASS
11N40SISO	Ant1	Low	2422	0.52	-38.79	≤-29.48	PASS
		High	2452	-0.47	-37.63	≤-30.47	PASS

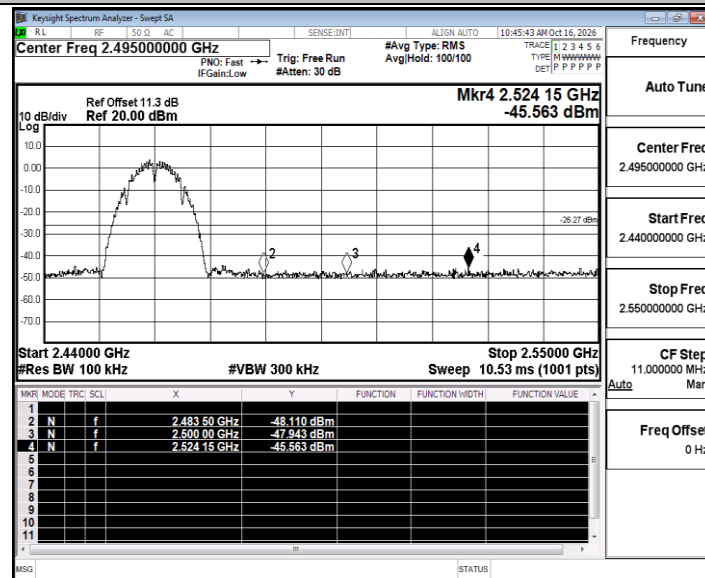
Note :offset=System attenuation +cable loss

Test Graphs

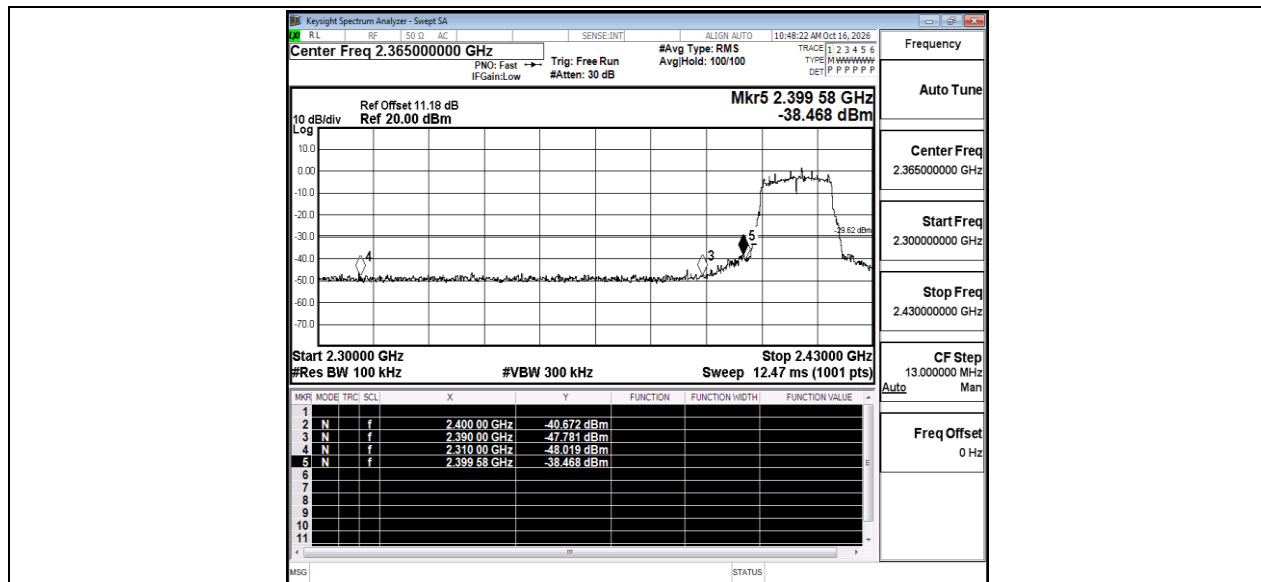
11B_Ant1_Low_2412



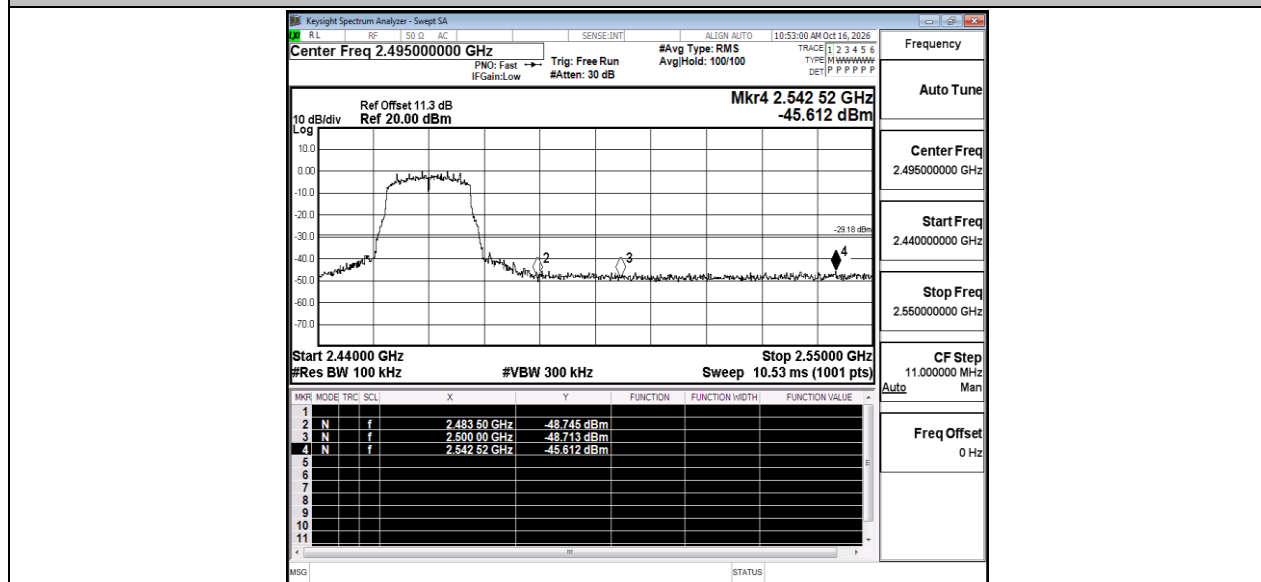
11B_Ant1_High_2462



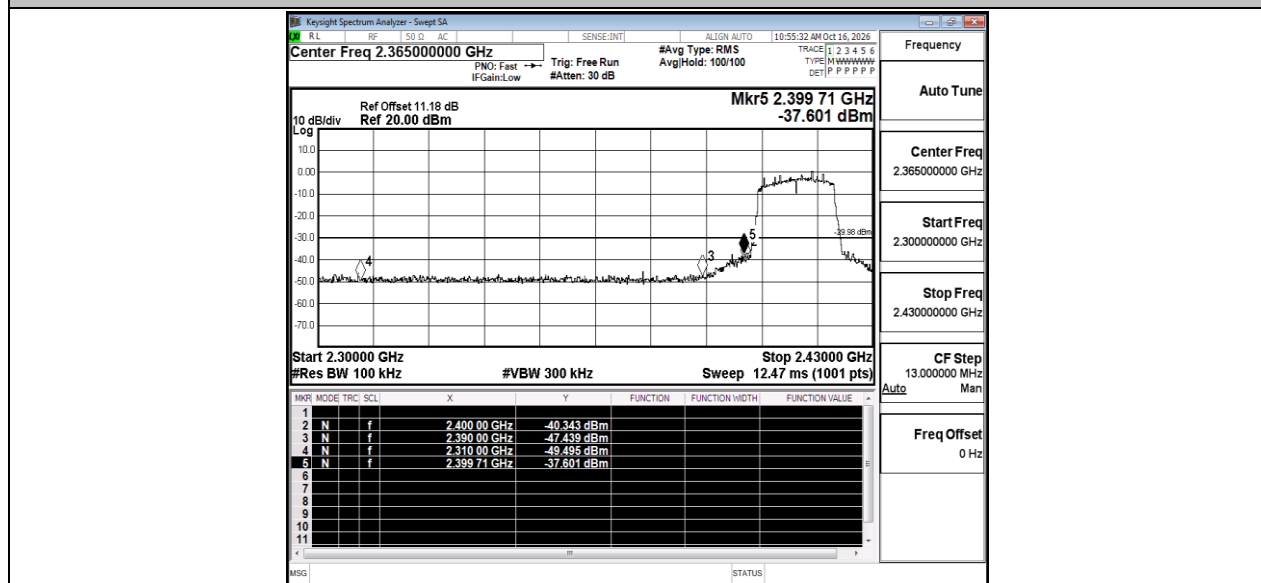
11G_Ant1_Low_2412



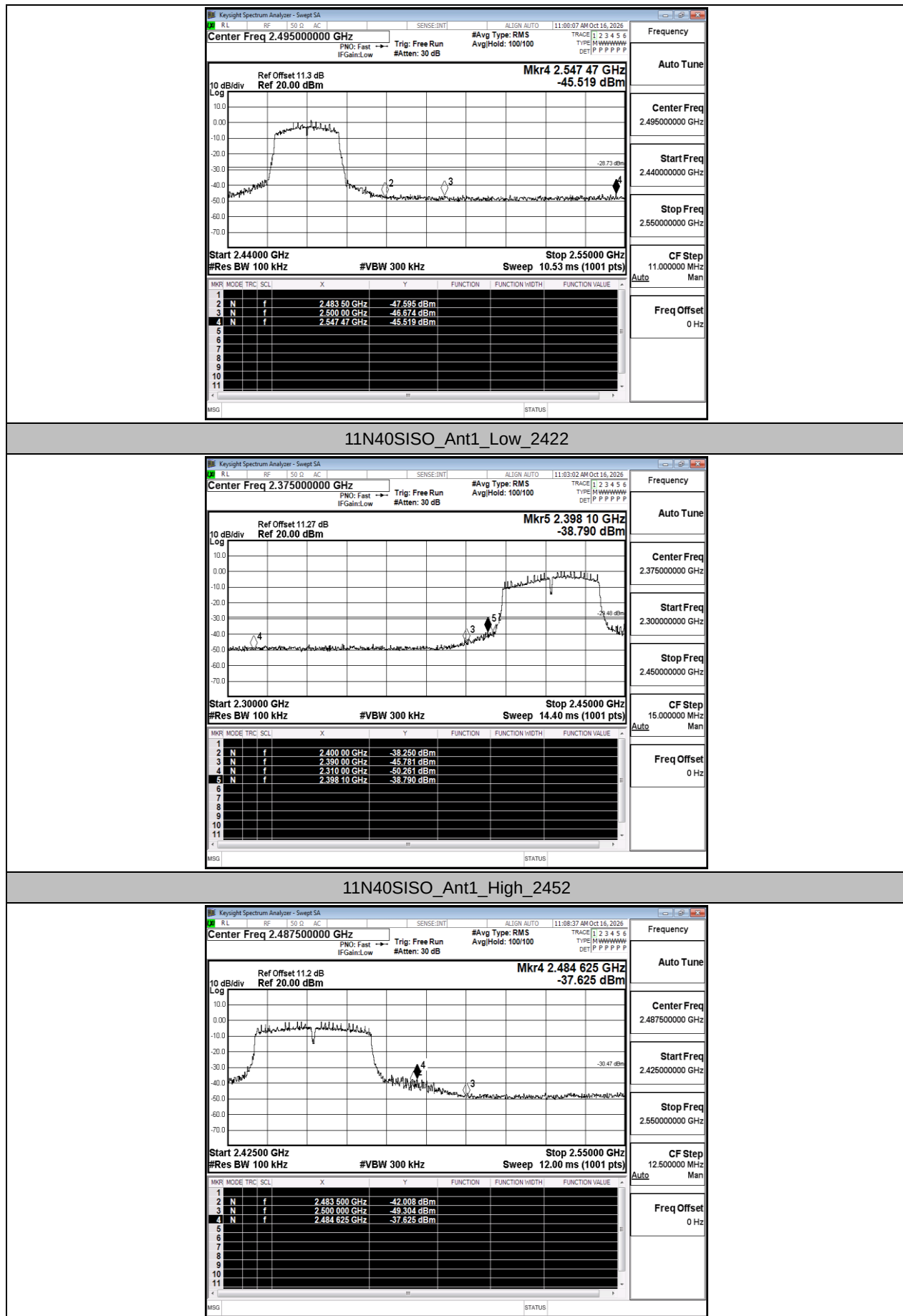
11G_Ant1_High_2462



11N20SISO_Ant1_Low_2412



11N20SISO_Ant1_High_2462



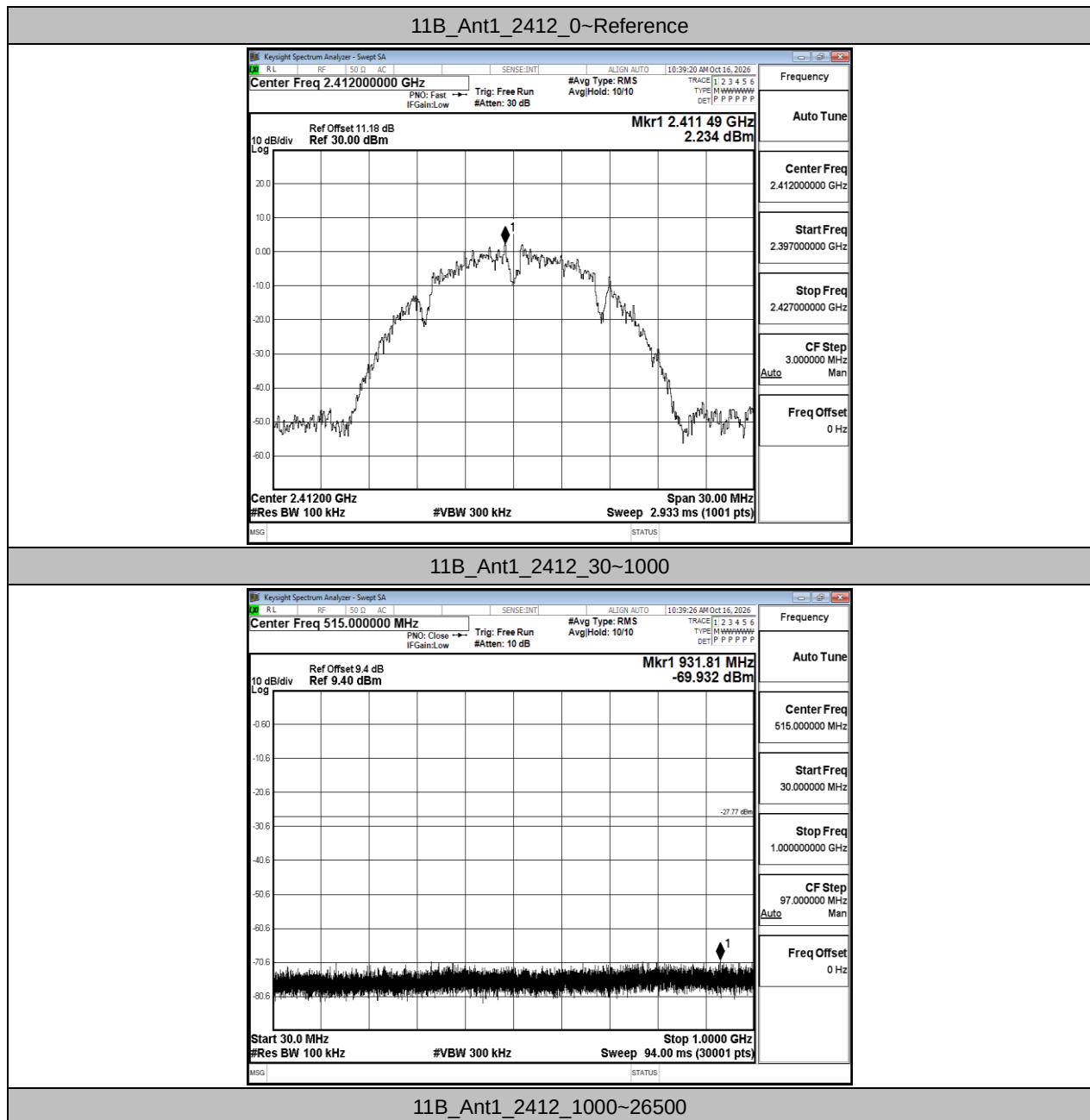
A.5 Conducted Spurious Emission

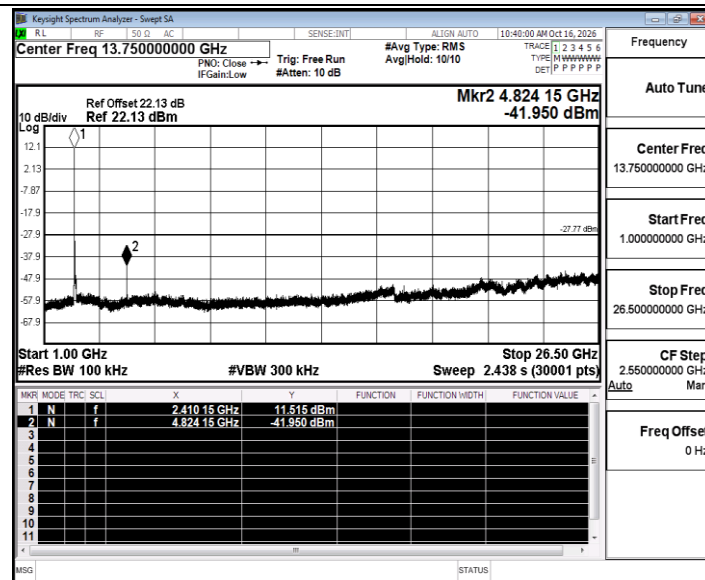
Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	2.23	2.23	---	PASS
			30~1000	2.23	-69.93	≤ -27.77	PASS
			1000~26500	2.23	-41.95	≤ -27.77	PASS
		2437	Reference	3.21	3.21	---	PASS
			30~1000	3.21	-69.52	≤ -26.79	PASS
			1000~26500	3.21	-45	≤ -26.79	PASS
		2462	Reference	3.61	3.61	---	PASS
			30~1000	3.61	-69.83	≤ -26.39	PASS
			1000~26500	3.61	-43.98	≤ -26.39	PASS
11G	Ant1	2412	Reference	-1.68	-1.68	---	PASS
			30~1000	-1.68	-69.86	≤ -31.68	PASS
			1000~26500	-1.68	-44	≤ -31.68	PASS
		2437	Reference	0.32	0.32	---	PASS
			30~1000	0.32	-68.91	≤ -29.68	PASS
			1000~26500	0.32	-44.82	≤ -29.68	PASS
		2462	Reference	0.35	0.35	---	PASS
			30~1000	0.35	-68.09	≤ -29.65	PASS
			1000~26500	0.35	-44.53	≤ -29.65	PASS
11N20SISO	Ant1	2412	Reference	-1.96	-1.96	---	PASS
			30~1000	-1.96	-69.78	≤ -31.96	PASS
			1000~26500	-1.96	-44.49	≤ -31.96	PASS
		2437	Reference	-2.93	-2.93	---	PASS
			30~1000	-2.93	-69.49	≤ -32.93	PASS
			1000~26500	-2.93	-43.84	≤ -32.93	PASS
		2462	Reference	-1.36	-1.36	---	PASS
			30~1000	-1.36	-68.56	≤ -31.36	PASS
			1000~26500	-1.36	-44.03	≤ -31.36	PASS
11N40SISO	Ant1	2422	Reference	-2.36	-2.36	---	PASS
			30~1000	-2.36	-69.4	≤ -32.36	PASS
			1000~26500	-2.36	-44.46	≤ -32.36	PASS
		2437	Reference	-0.05	-0.05	---	PASS
			30~1000	-0.05	-69.35	≤ -30.05	PASS
			1000~26500	-0.05	-44.51	≤ -30.05	PASS
		2452	Reference	-1.07	-1.07	---	PASS
			30~1000	-1.07	-69.91	≤ -31.07	PASS
			1000~26500	-1.07	-44.61	≤ -31.07	PASS

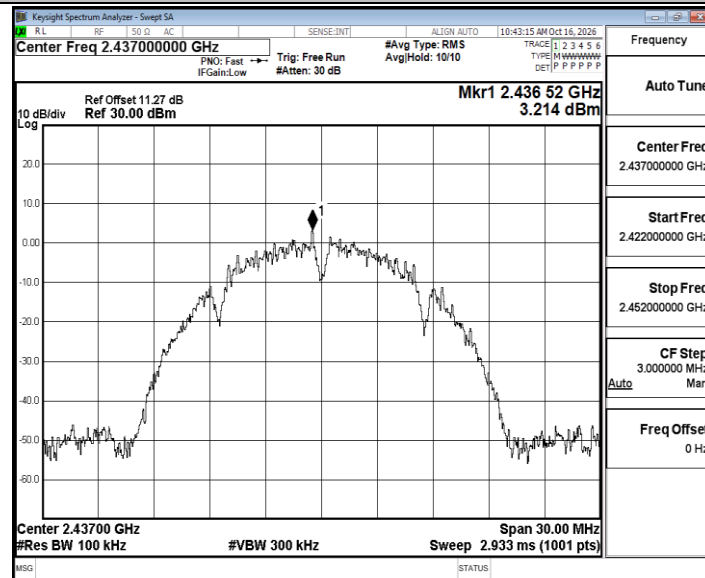
Note :Regarding the spurious emissions from 30MHz to 26.5GHz, the cable lose have been set in the CORREC' of the Spectrum Analyzer during the test.

Test Graphs

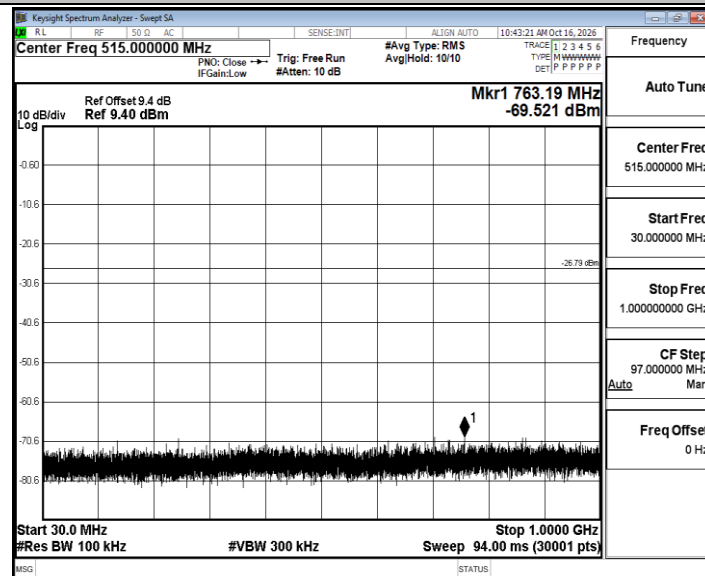




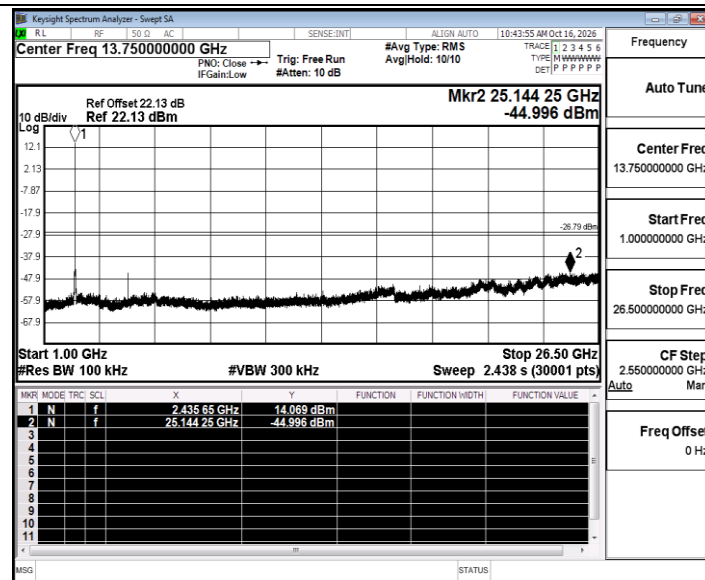
11B_Ant1_2437_0~Reference



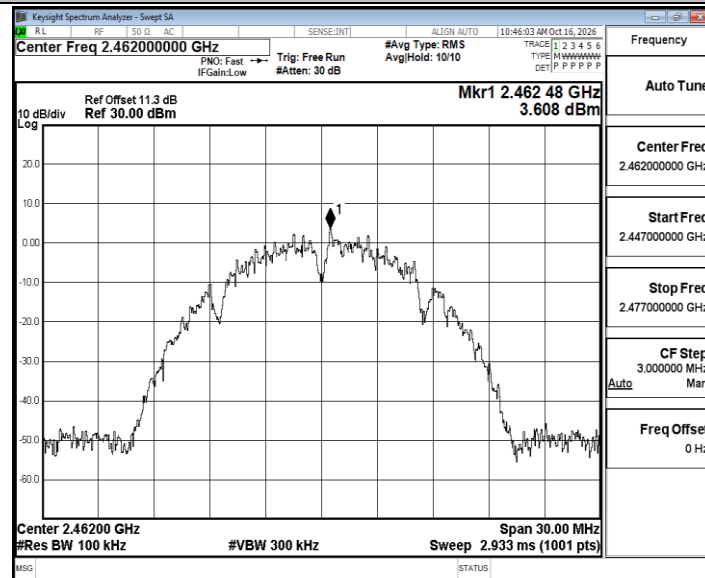
11B_Ant1_2437_30~1000



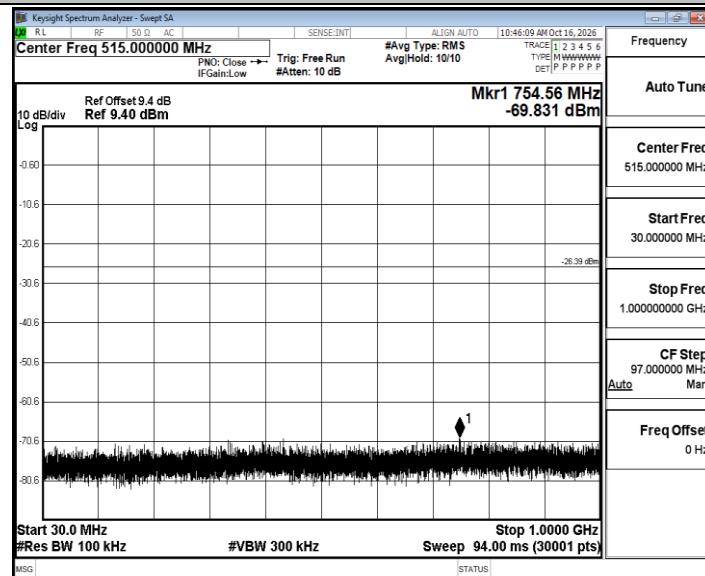
11B_Ant1_2437_1000~26500



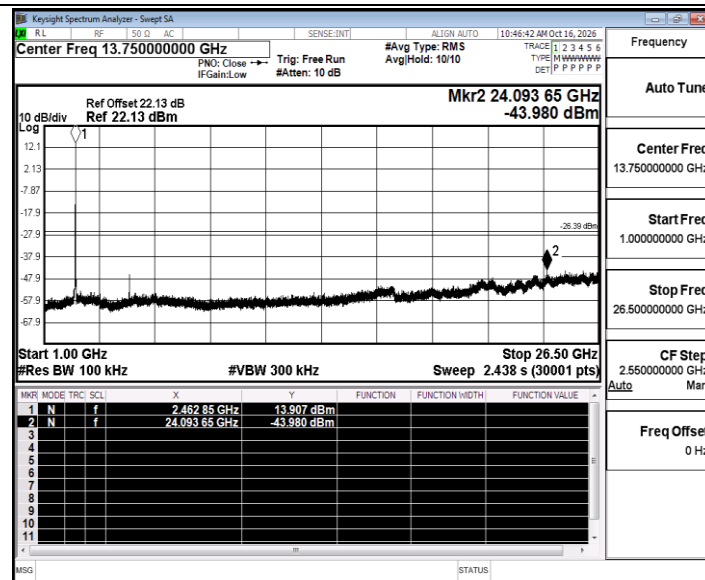
11B_Ant1_2462_0~Reference



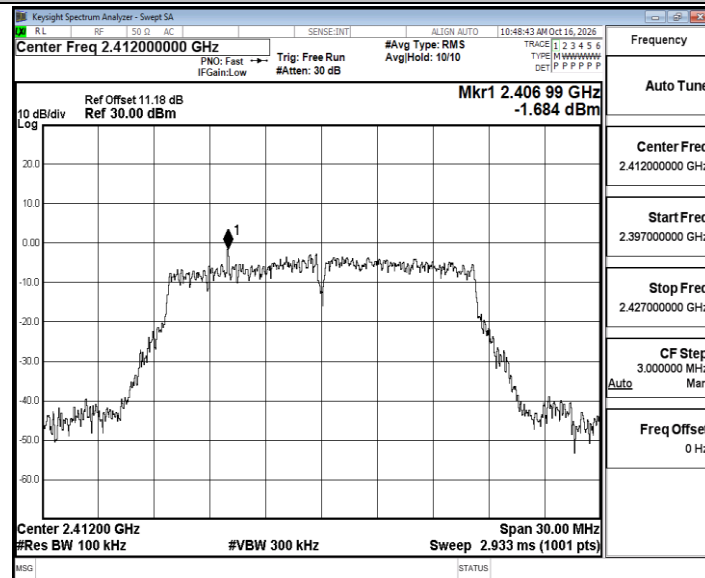
11B_Ant1_2462_30~1000



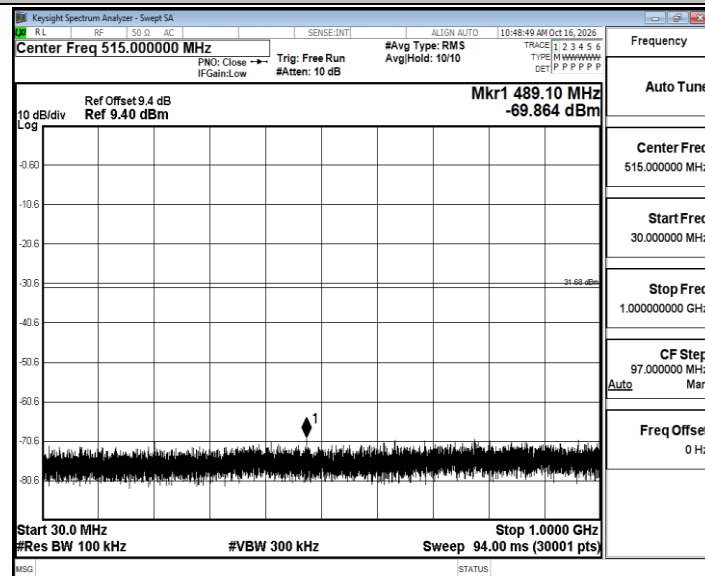
11B_Ant1_2462_1000~26500



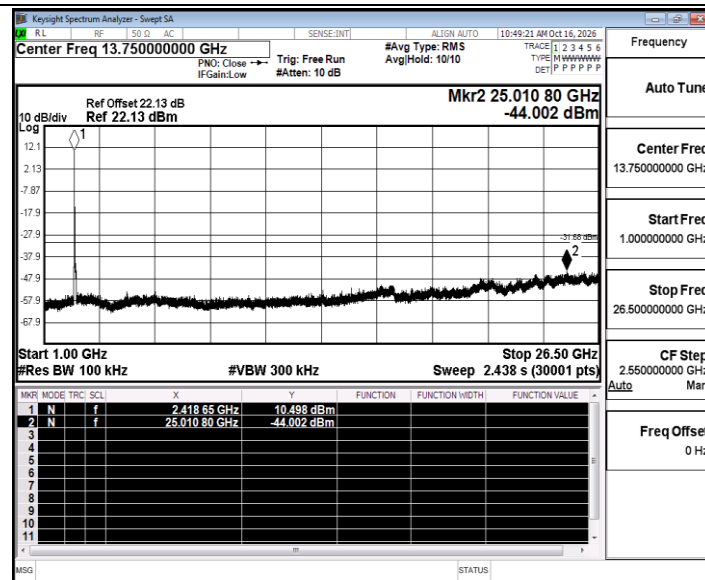
11G_Ant1_2412_0~Reference



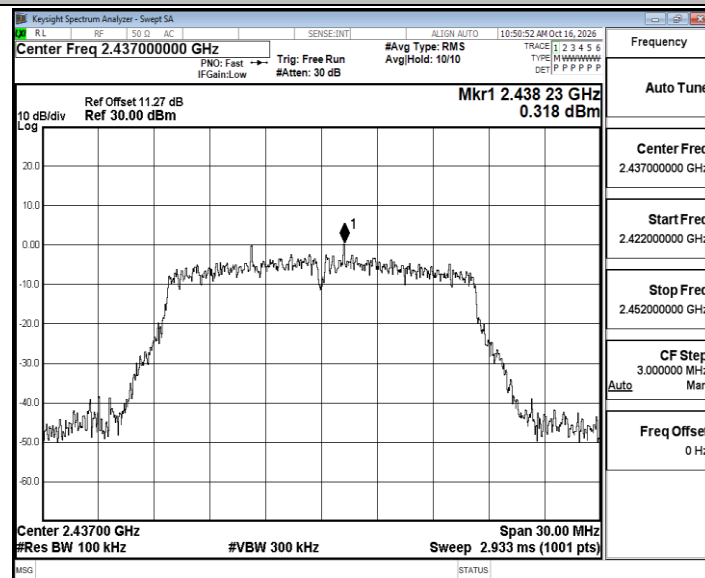
11G_Ant1_2412_30~1000



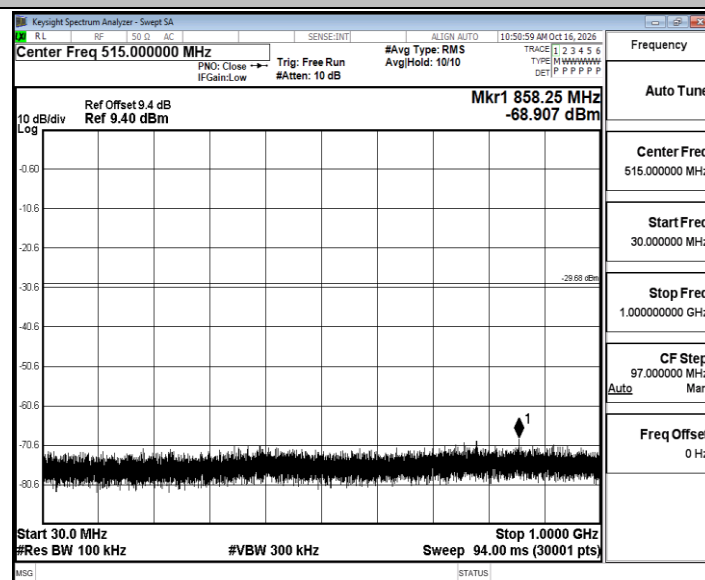
11G_Ant1_2412_1000~26500



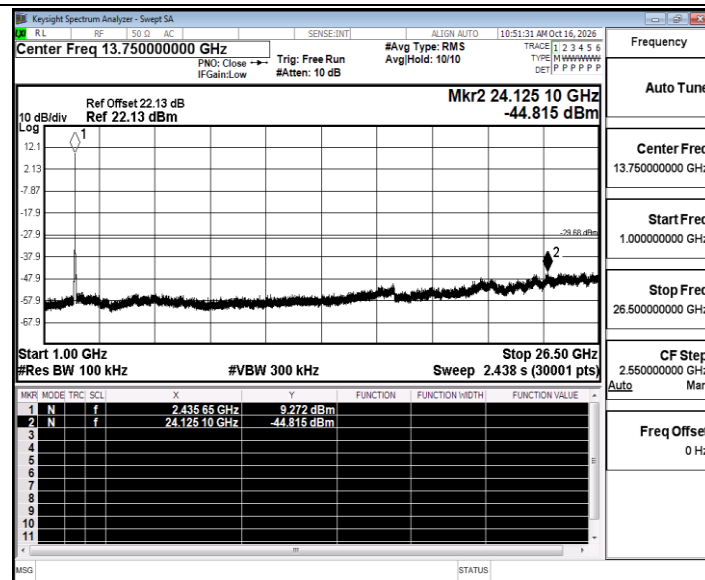
11G_Ant1_2437_0~Reference



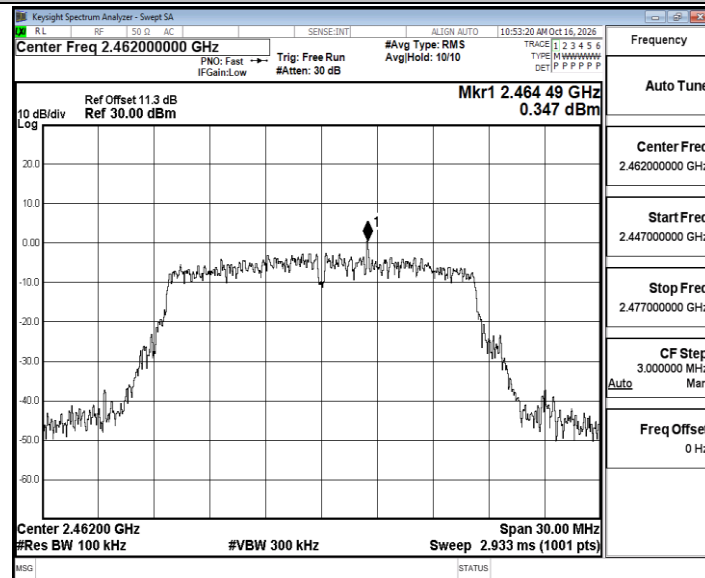
11G_Ant1_2437_30~1000



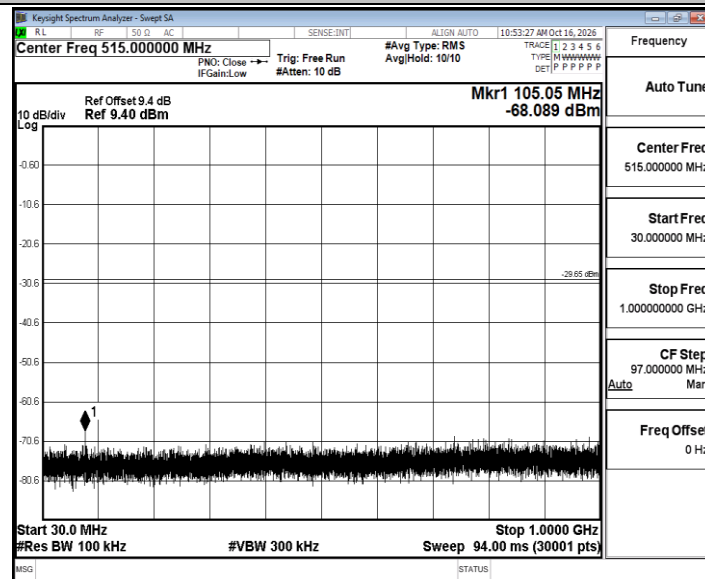
11G_Ant1_2437_1000~26500



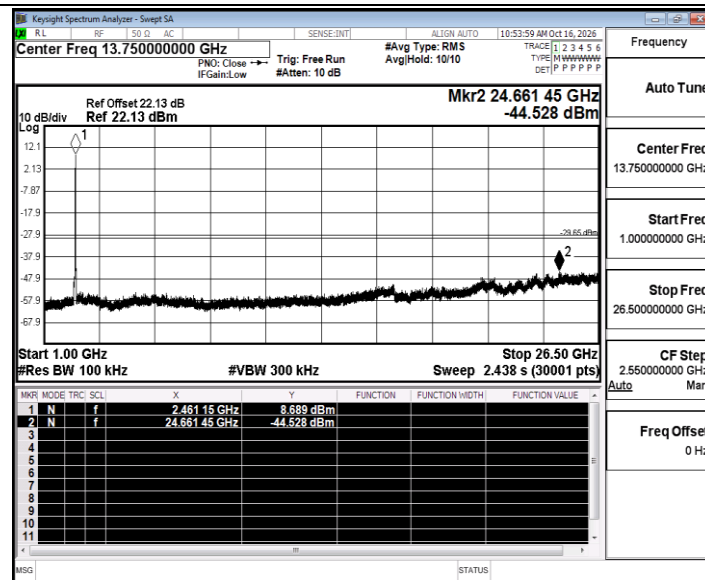
11G_Ant1_2462_0~Reference



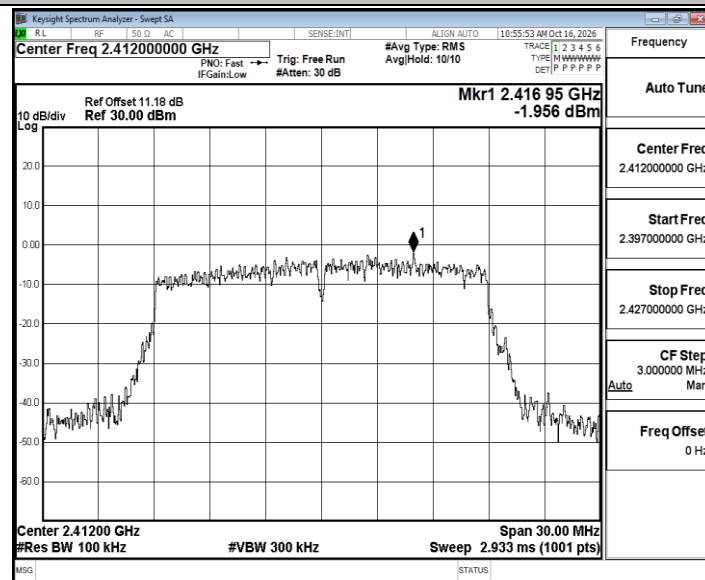
11G_Ant1_2462_30~1000



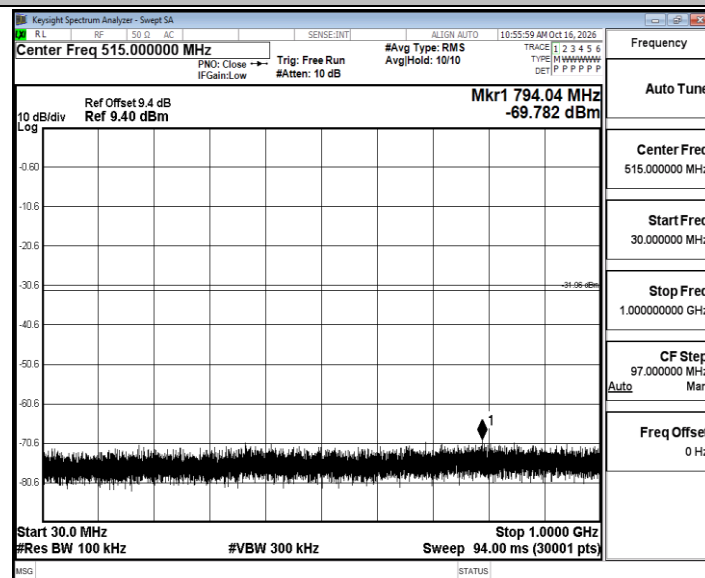
11G_Ant1_2462_1000~26500



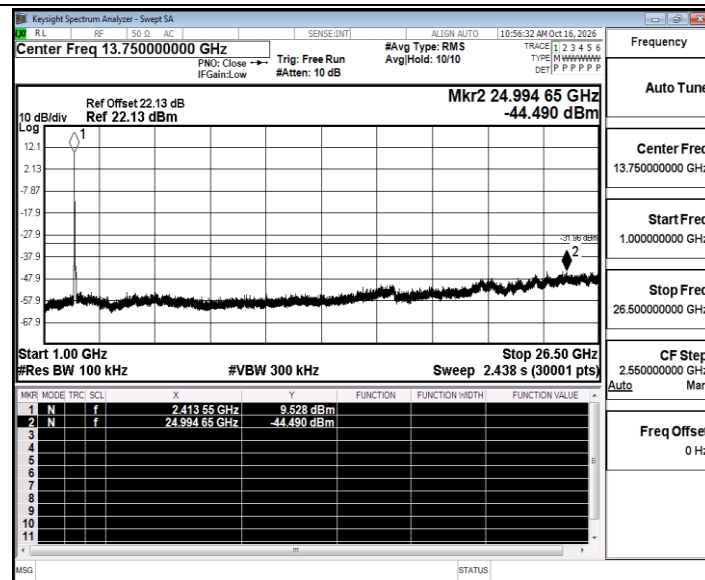
11N20SISO_Ant1_2412_0-Reference



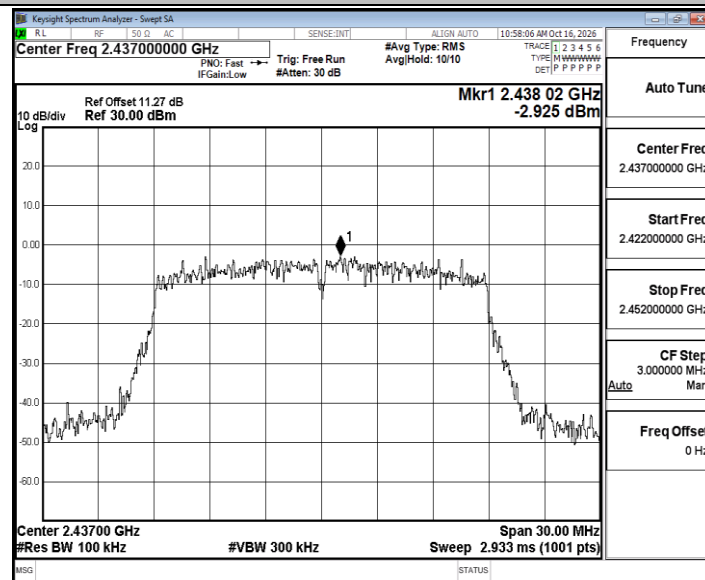
11N20SISO_Ant1_2412_30~1000



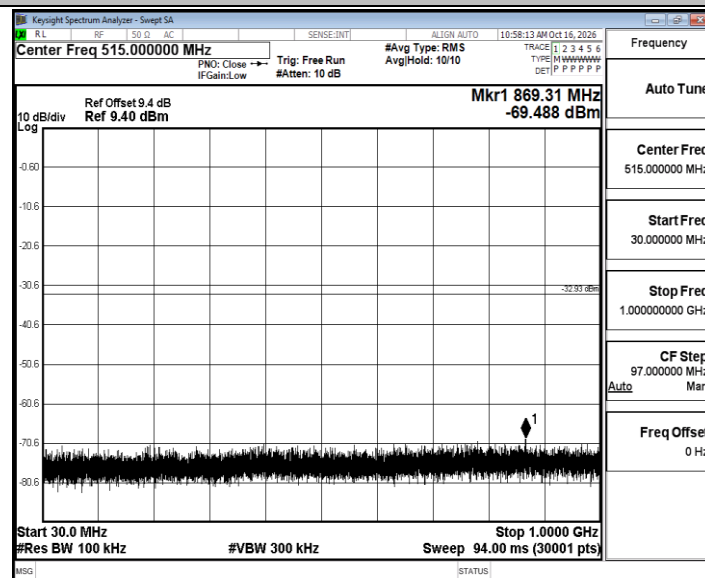
11N20SISO_Ant1_2412_1000~26500



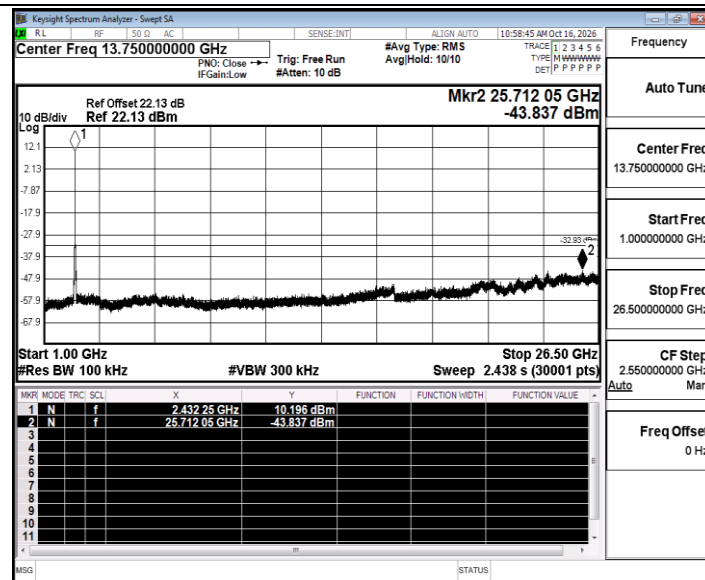
11N20SISO_Ant1_2437_0~Reference



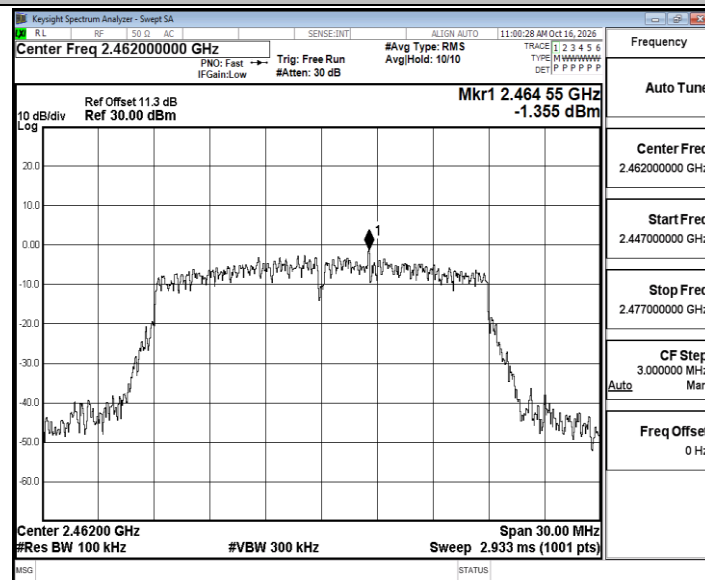
11N20SISO_Ant1_2437_30~1000



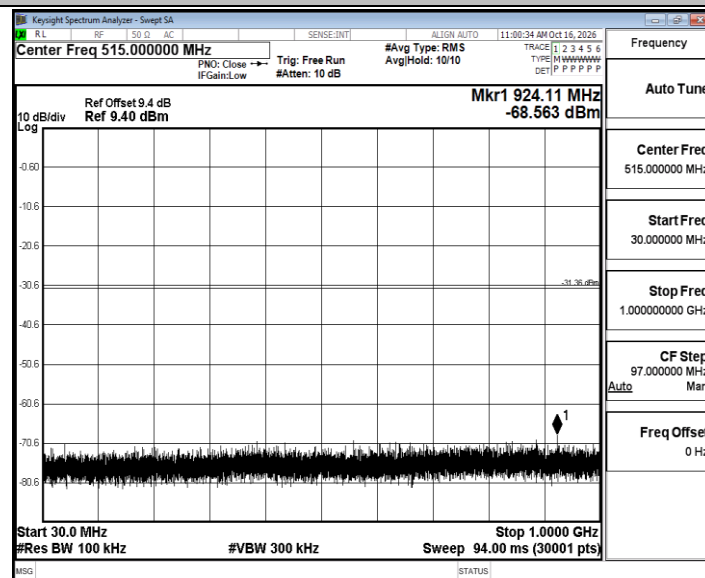
11N20SISO_Ant1_2437_1000~26500



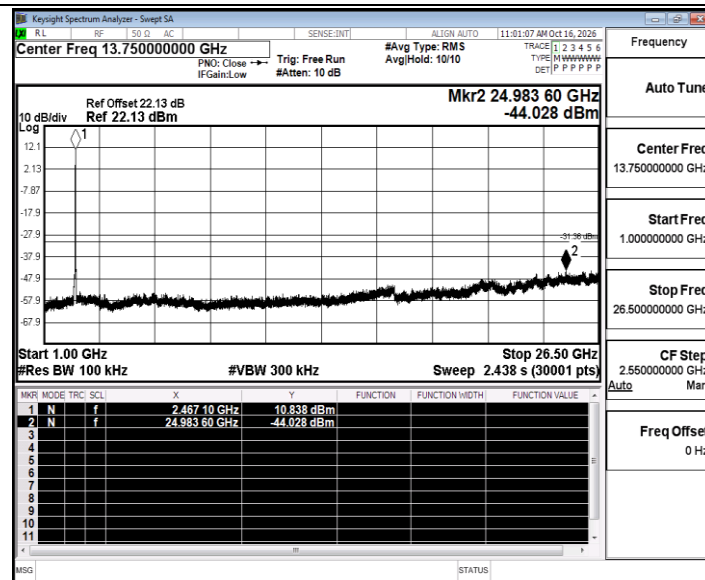
11N20SISO_Ant1_2462_0~Reference



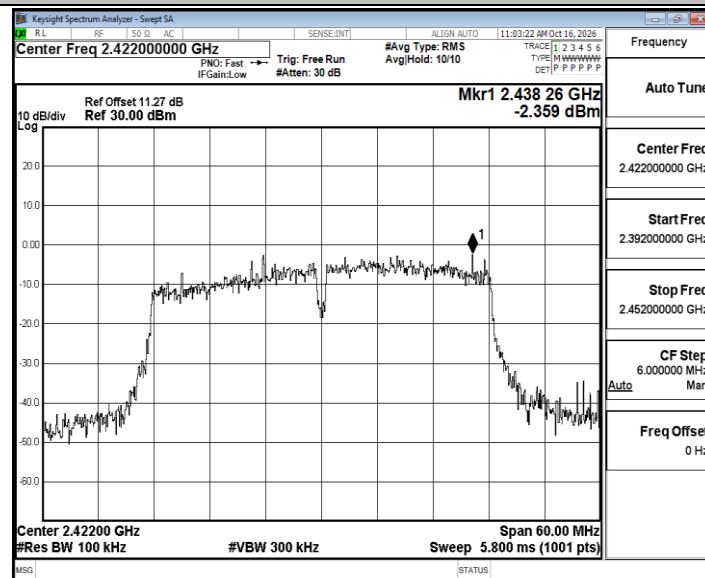
11N20SISO_Ant1_2462_30~1000



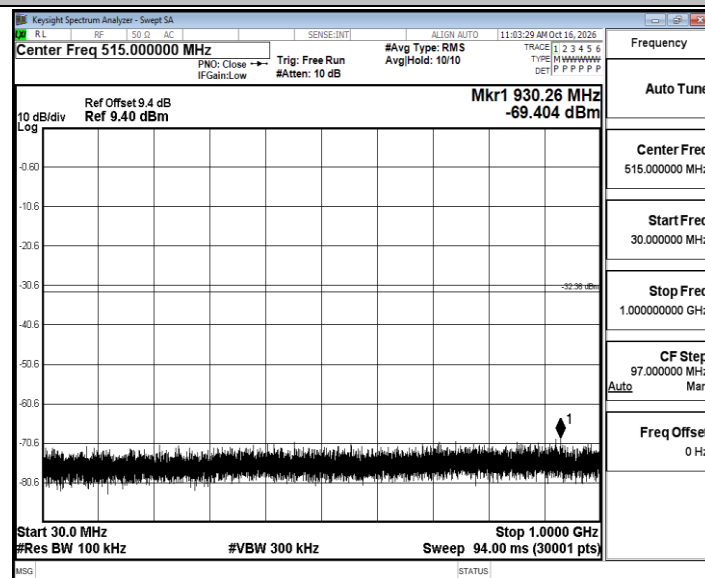
11N20SISO_Ant1_2462_1000~26500



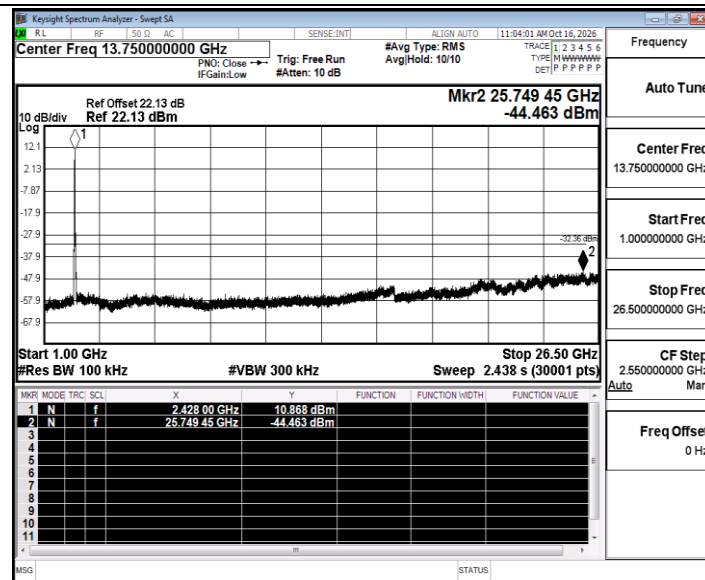
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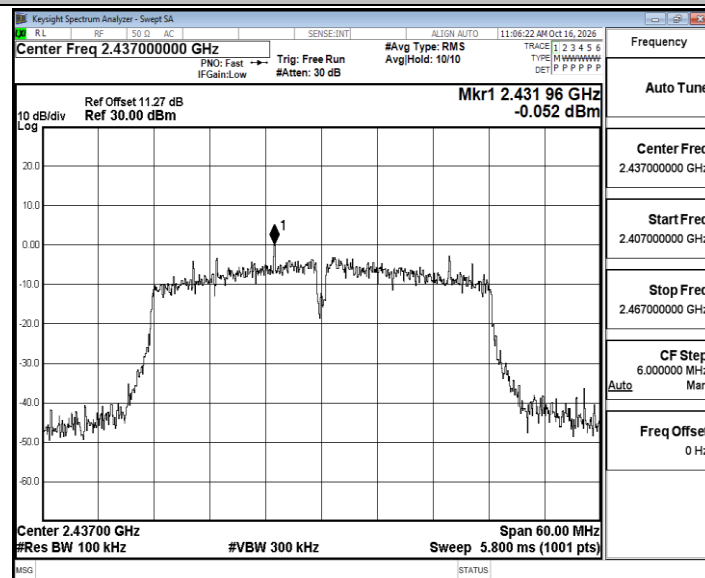
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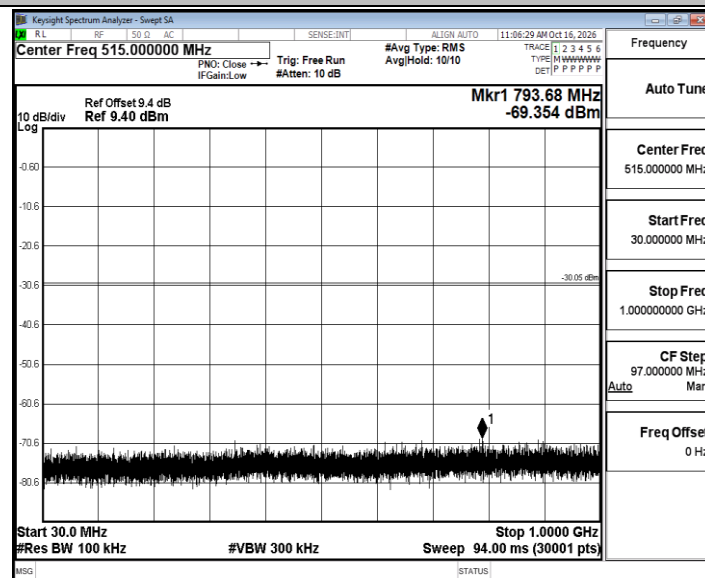
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11N40SISO_Ant1_2437_0~Reference



11N40SISO_Ant1_2437_30~1000



11N40SISO_Ant1_2437_1000~26500