

Appendix A

RF Test Data for 2.4GWIFI (Conducted Measurement)

Product Name: Laser Engraver

Test Model: X3S

Environmental Conditions

Temperature:	24.2°C
Relative Humidity:	53.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Zhang hai
Supervised by:	Fengliu Tang

A.1 DTS Bandwidth

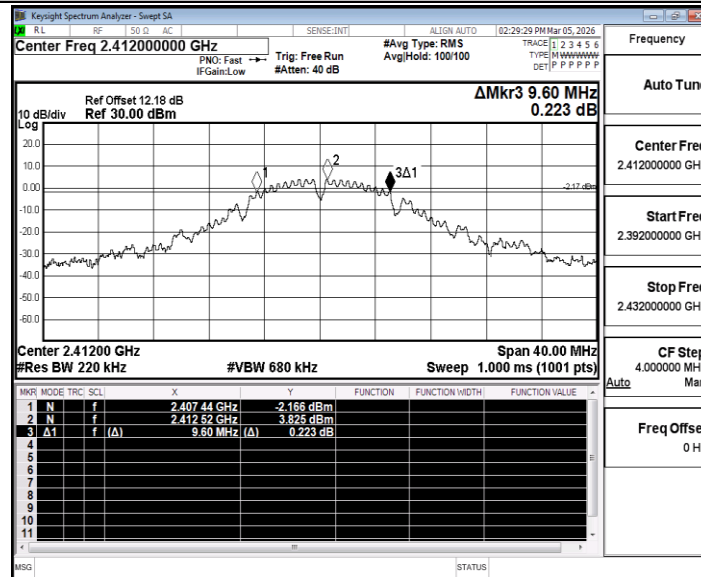
Test Result

TestMode	Antenna	Frequency [MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit [MHz]	Verdict
11B	Ant1	2412	9.600	2407.440	2417.040	0.5	PASS
		2437	9.120	2432.400	2441.520	0.5	PASS
		2462	9.600	2457.440	2467.040	0.5	PASS
11G	Ant1	2412	15.880	2404.280	2420.160	0.5	PASS
		2437	16.200	2428.800	2445.000	0.5	PASS
		2462	16.120	2454.040	2470.160	0.5	PASS
11N20SISO	Ant1	2412	16.040	2404.320	2420.360	0.5	PASS
		2437	17.080	2428.240	2445.320	0.5	PASS
		2462	16.720	2453.560	2470.280	0.5	PASS
11N40SISO	Ant1	2422	35.360	2404.240	2439.600	0.5	PASS
		2437	35.680	2418.920	2454.600	0.5	PASS
		2452	36.080	2434.000	2470.080	0.5	PASS

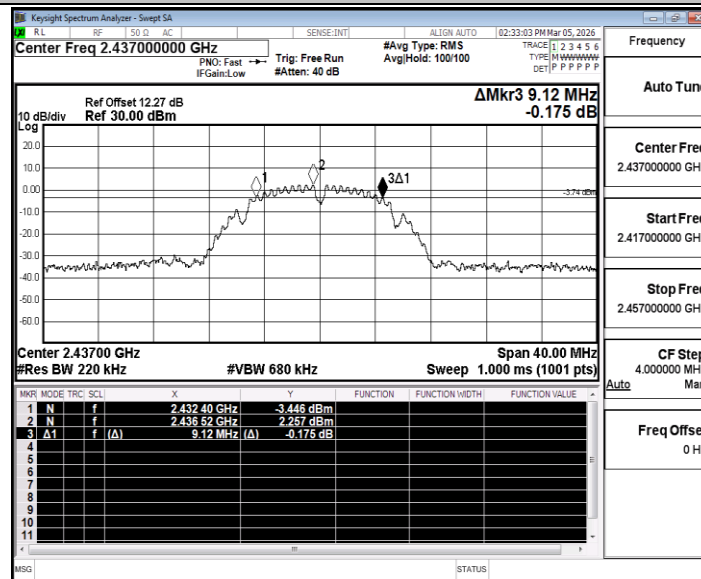
Note: offset=System attenuation +cable loss

Test Graphs

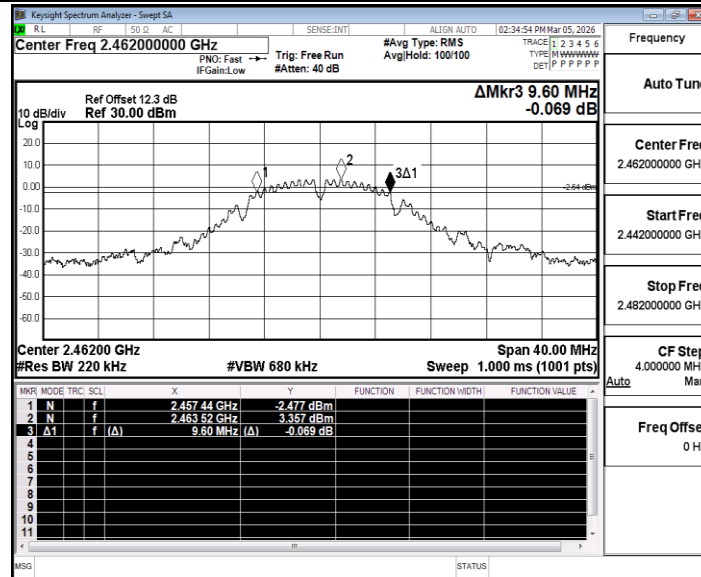
11B_Ant1_2412



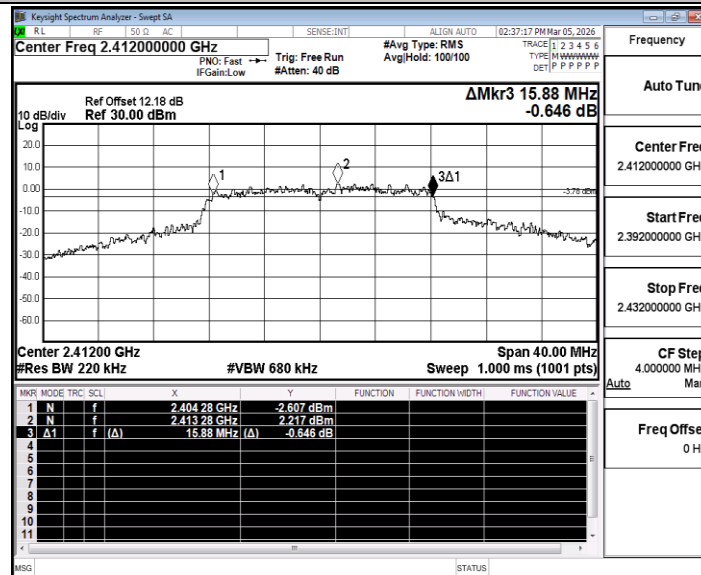
11B_Ant1_2437



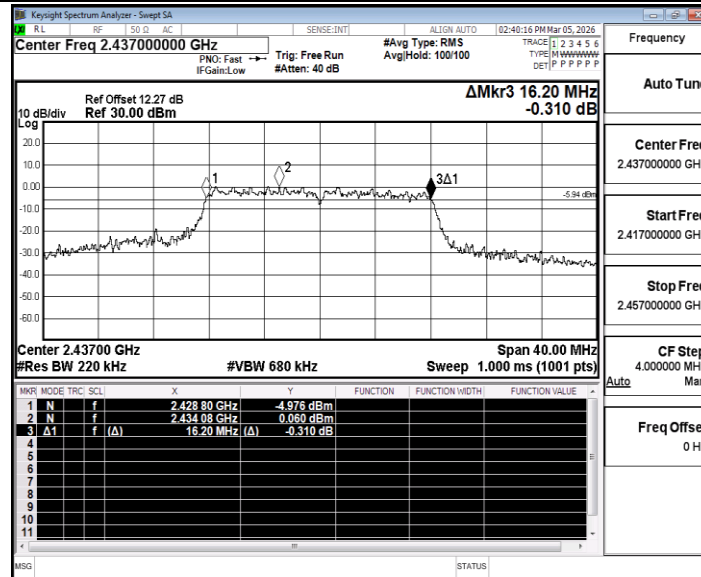
11B_Ant1_2462



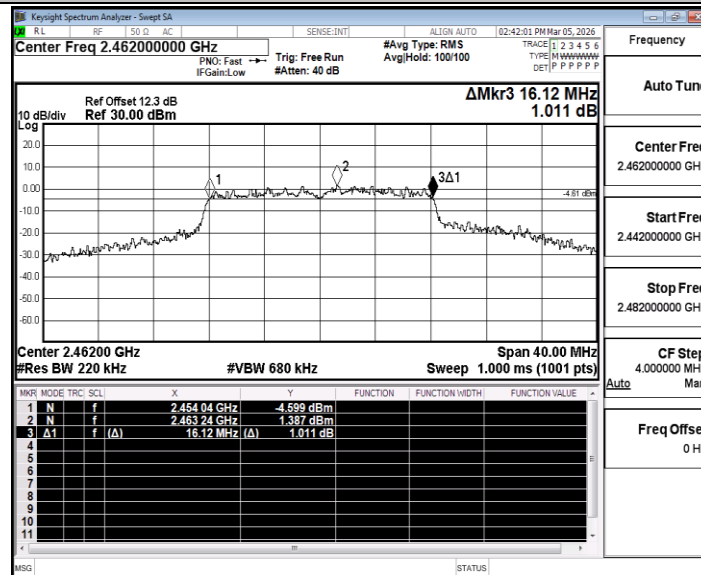
11G_Ant1_2412



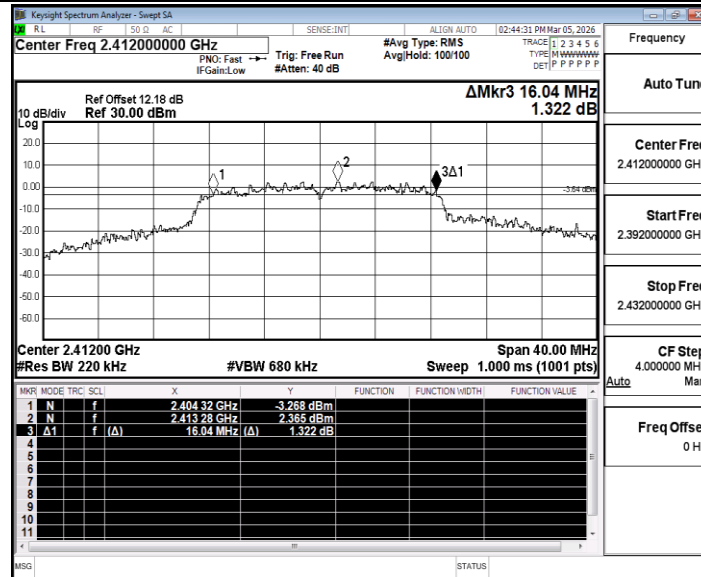
11G_Ant1_2437



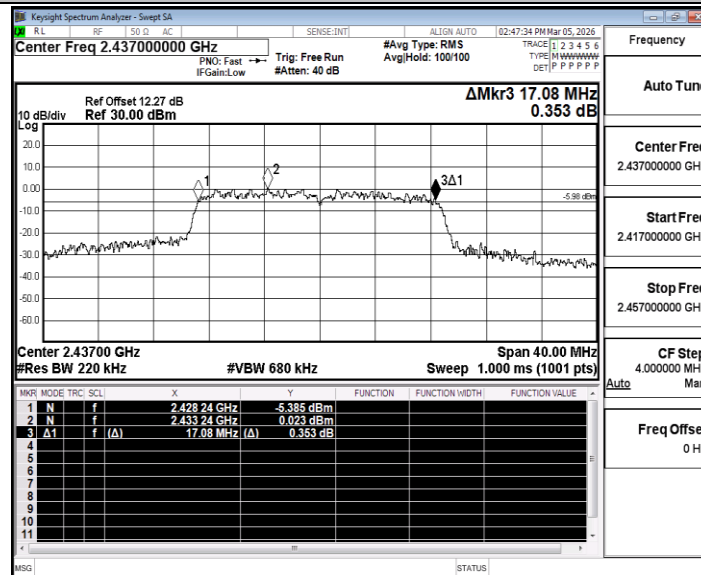
11G_Ant1_2462



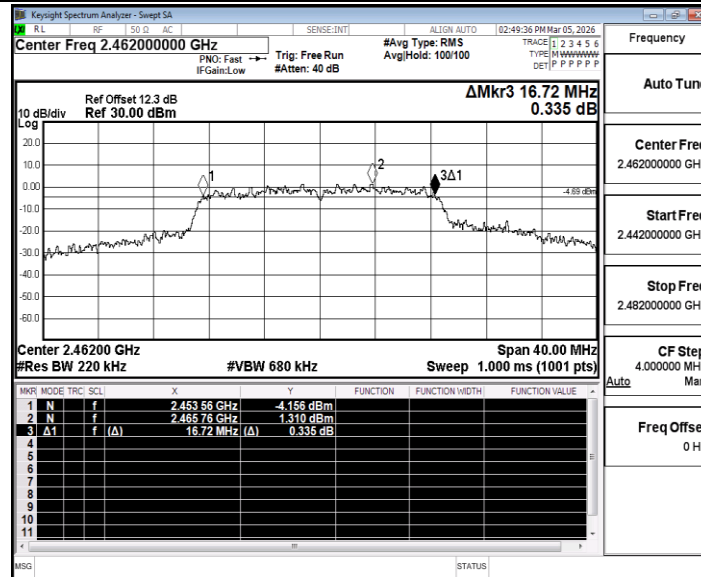
11N20SISO_Ant1_2412



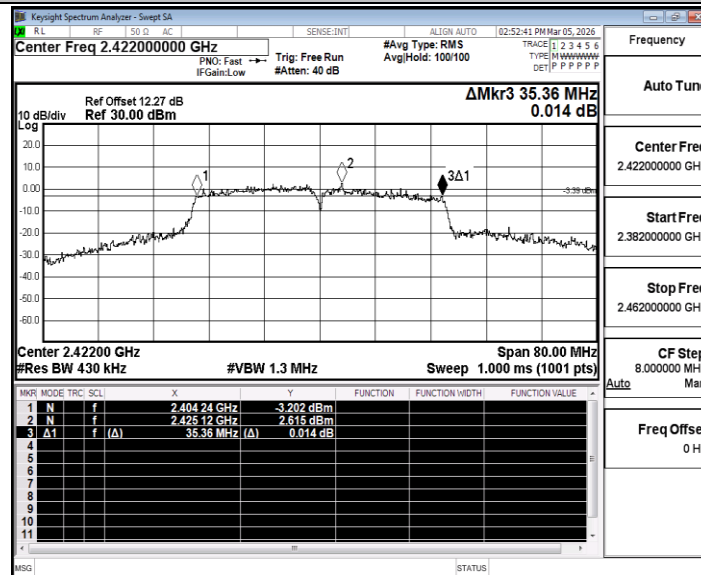
11N20SISO_Ant1_2437



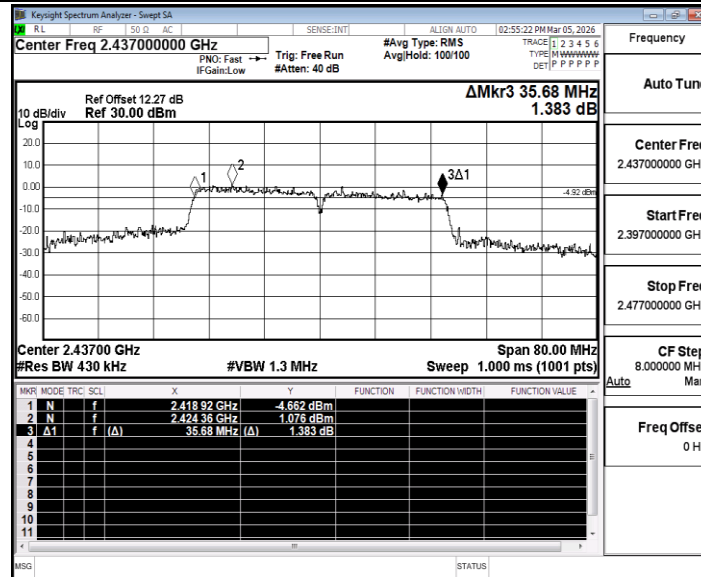
11N20SISO_Ant1_2462



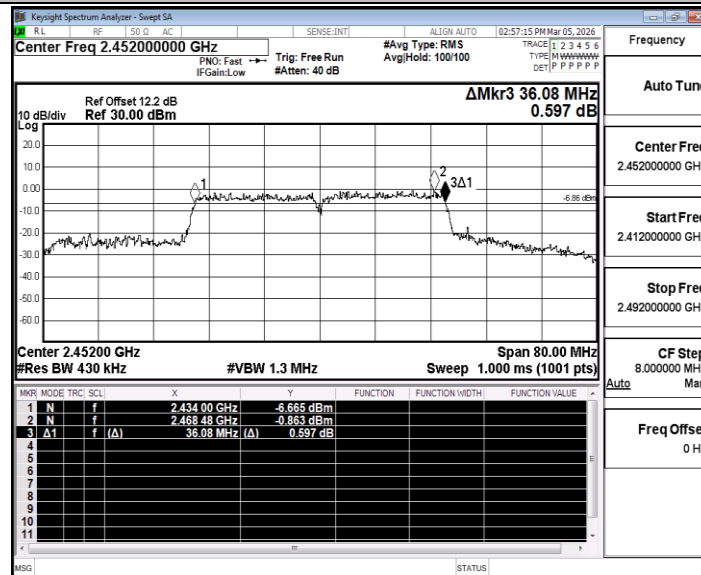
11N40SISO_Ant1_2422



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]	Conducted Limit[dBm]	Verdict
11B	Ant1	2412	12.18	0.34	12.52	≤30.00	PASS
		2437	10.41	0.34	10.75	≤30.00	PASS
		2462	11.26	0.34	11.60	≤30.00	PASS
11G	Ant1	2412	10.07	2.14	12.21	≤30.00	PASS
		2437	8.17	1.89	10.06	≤30.00	PASS
		2462	9.06	2.14	11.20	≤30.00	PASS
11N20SISO	Ant1	2412	10.19	1.76	11.95	≤30.00	PASS
		2437	8.29	1.76	10.05	≤30.00	PASS
		2462	9.14	1.76	10.90	≤30.00	PASS
11N40SISO	Ant1	2422	9.24	2.43	11.67	≤30.00	PASS
		2437	8.06	2.43	10.49	≤30.00	PASS
		2452	7.29	3.01	10.30	≤30.00	PASS

Note: offset=System attenuation +cable loss

A.3 Maximum power spectral density

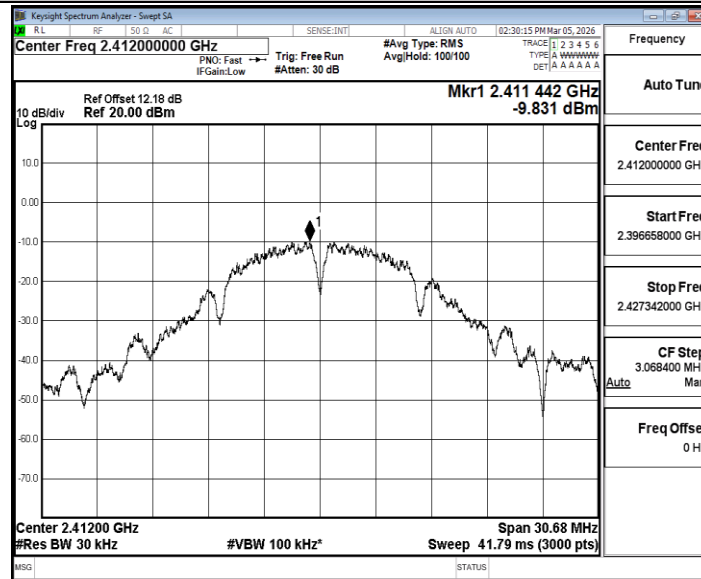
Test Result

TestMode	Antenna	Frequency [MHz]	Measured PSD [dBm/30kHz]	DC Factor [dB]	Result[dBm/30kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-9.83	0.34	-9.49	≤8.00	PASS
		2437	-11.37	0.34	-11.03	≤8.00	PASS
		2462	-9.8	0.34	-9.46	≤8.00	PASS
11G	Ant1	2412	-11.83	2.14	-9.69	≤8.00	PASS
		2437	-13.84	1.89	-11.95	≤8.00	PASS
		2462	-12.44	2.14	-10.30	≤8.00	PASS
11N20SISO	Ant1	2412	-10.95	1.76	-9.19	≤8.00	PASS
		2437	-13.8	1.76	-12.04	≤8.00	PASS
		2462	-12.75	1.76	-10.99	≤8.00	PASS
11N40SISO	Ant1	2422	-14.11	2.43	-11.68	≤8.00	PASS
		2437	-15.03	2.43	-12.60	≤8.00	PASS
		2452	-17.16	3.01	-14.15	≤8.00	PASS

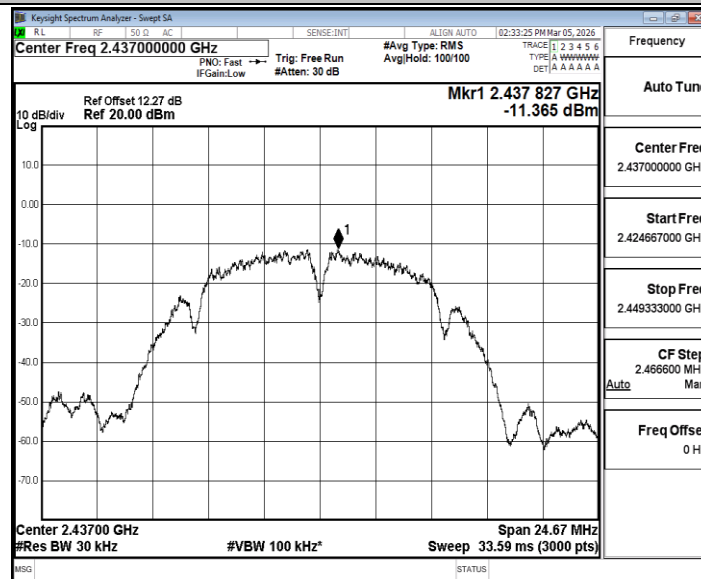
Note: offset=System attenuation +cable loss

Test Graphs

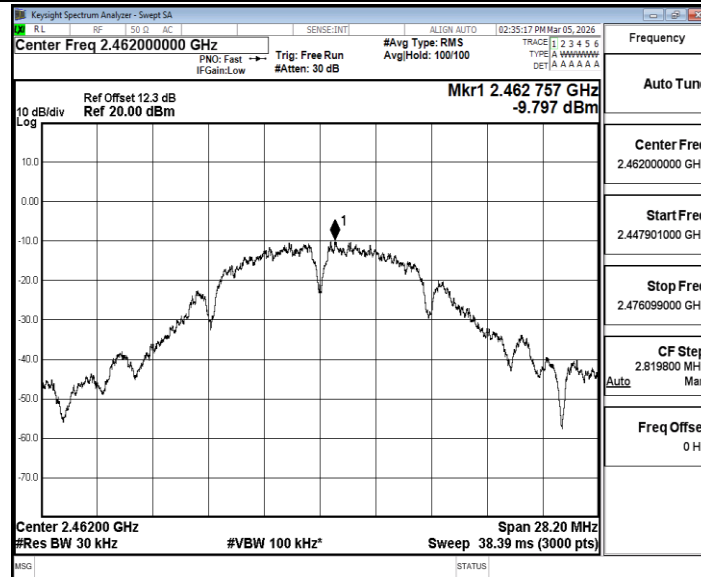
11B_Ant1_2412



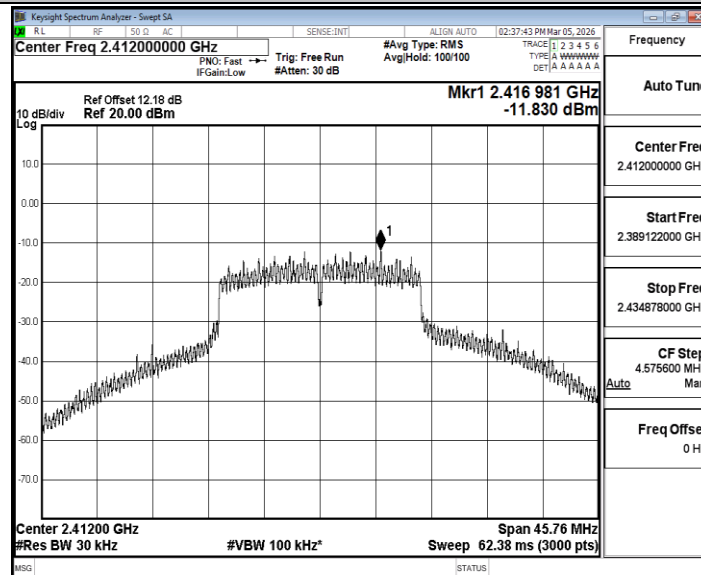
11B_Ant1_2437



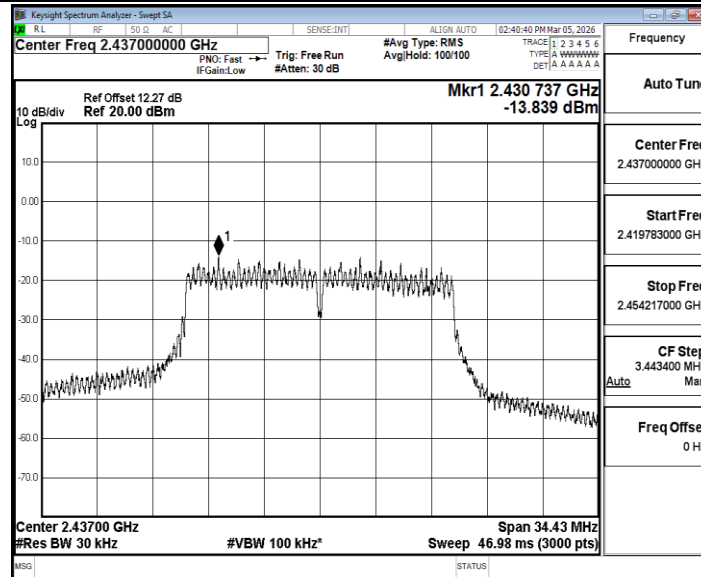
11B_Ant1_2462



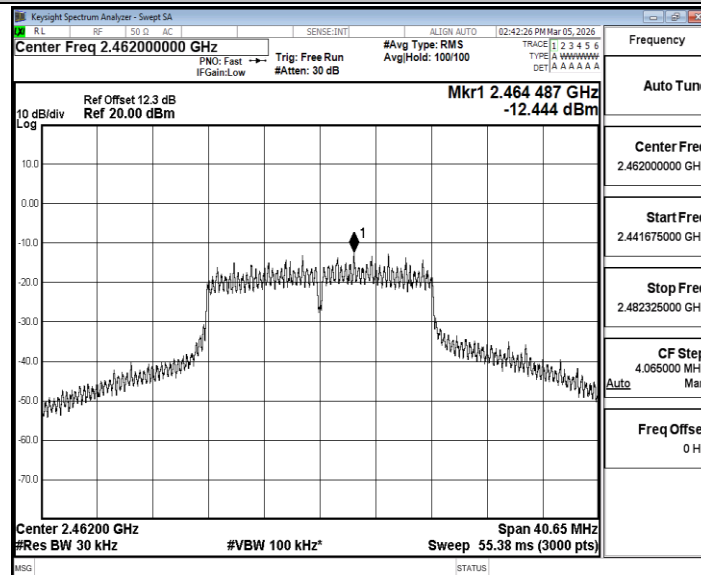
11G_Ant1_2412



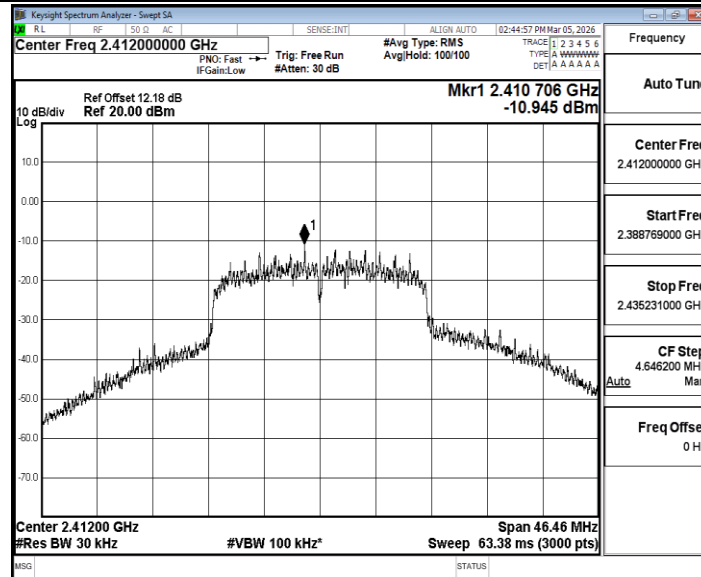
11G_Ant1_2437



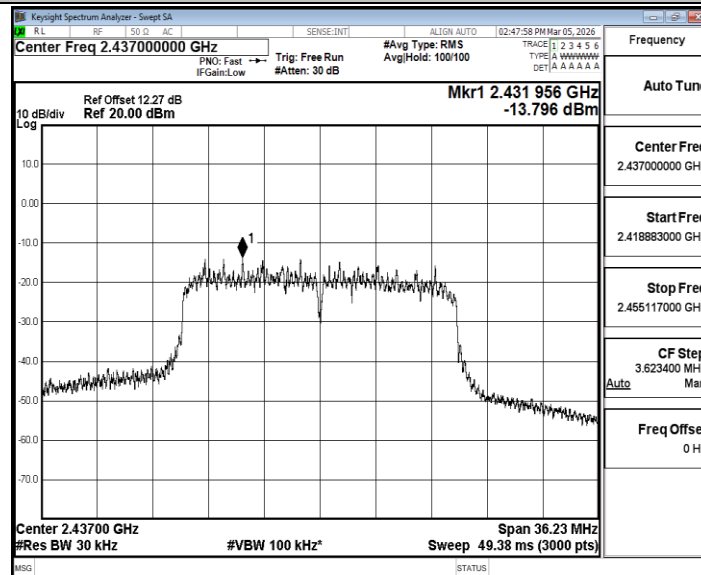
11G_Ant1_2462



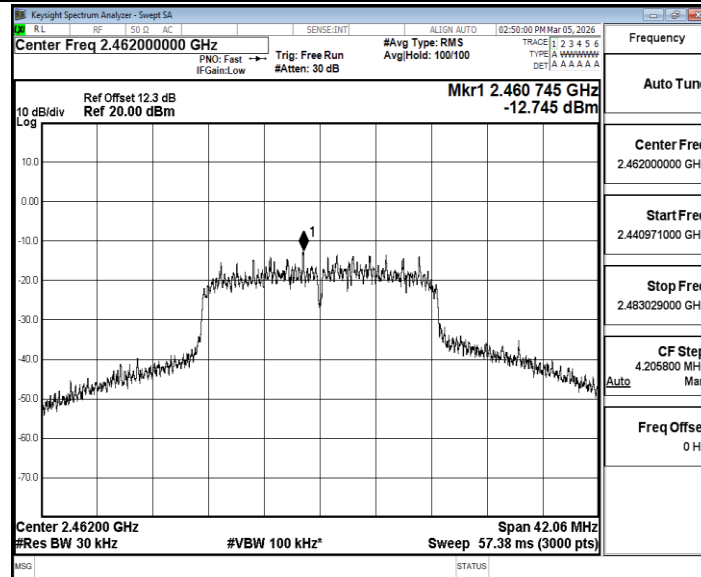
11N20SISO_Ant1_2412



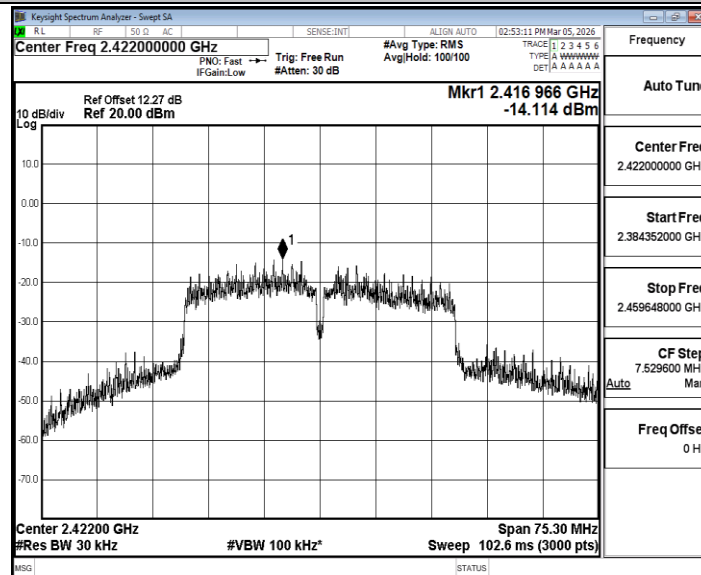
11N20SISO_Ant1_2437



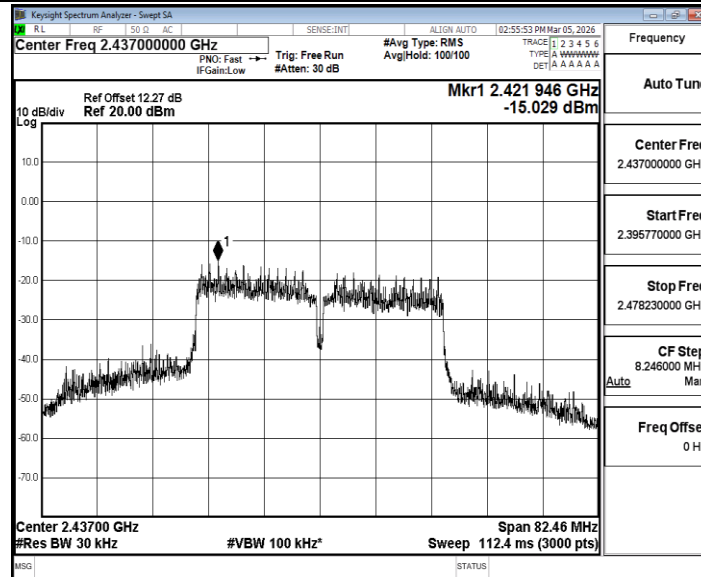
11N20SISO_Ant1_2462



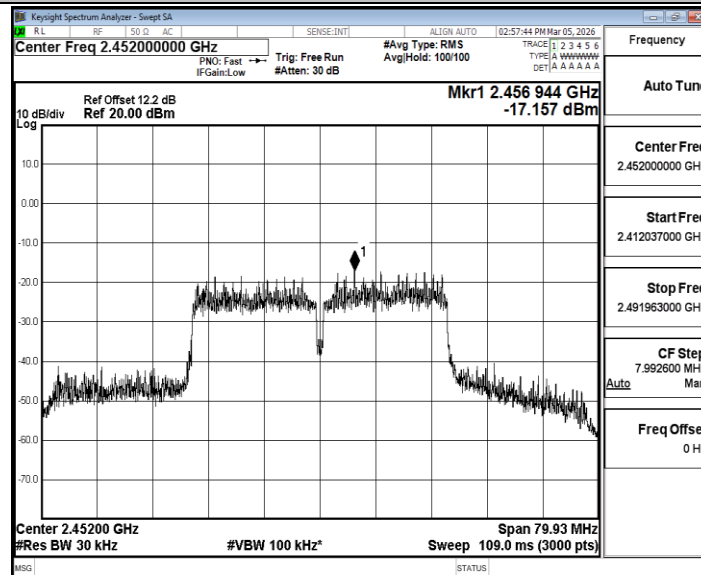
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



A.4 Band edge measurements

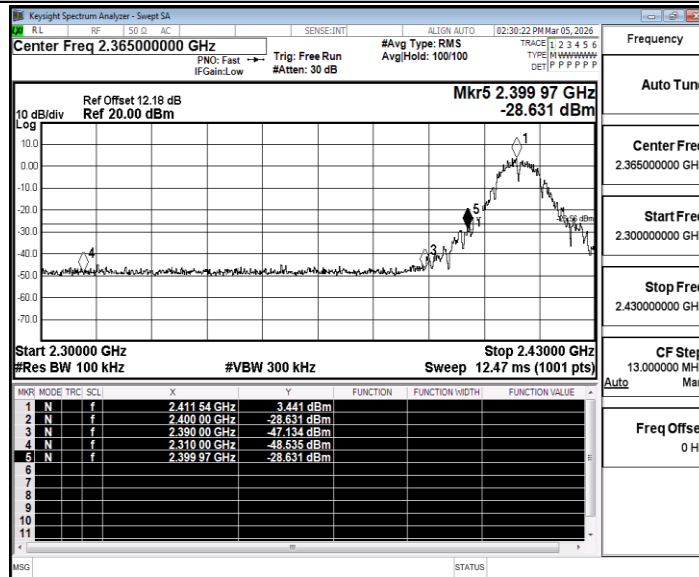
Test Result

TestMode	Antenna	ChName	Frequency [MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	3.44	-28.63	≤-26.56	PASS
		High	2462	3.03	-42.78	≤-26.97	PASS
11G	Ant1	Low	2412	-4.87	-39.03	≤-34.87	PASS
		High	2462	0.84	-34.22	≤-29.16	PASS
11N20SISO	Ant1	Low	2412	-4.74	-37.31	≤-34.74	PASS
		High	2462	0.78	-31.45	≤-29.22	PASS
11N40SISO	Ant1	Low	2422	-6.50	-41.48	≤-36.5	PASS
		High	2452	-8.35	-44.31	≤-38.35	PASS

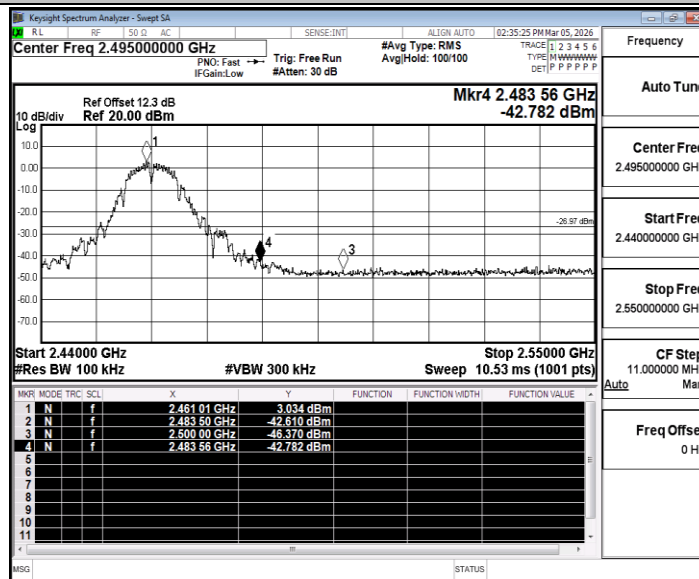
Note: offset=System attenuation +cabal loss

Test Graphs

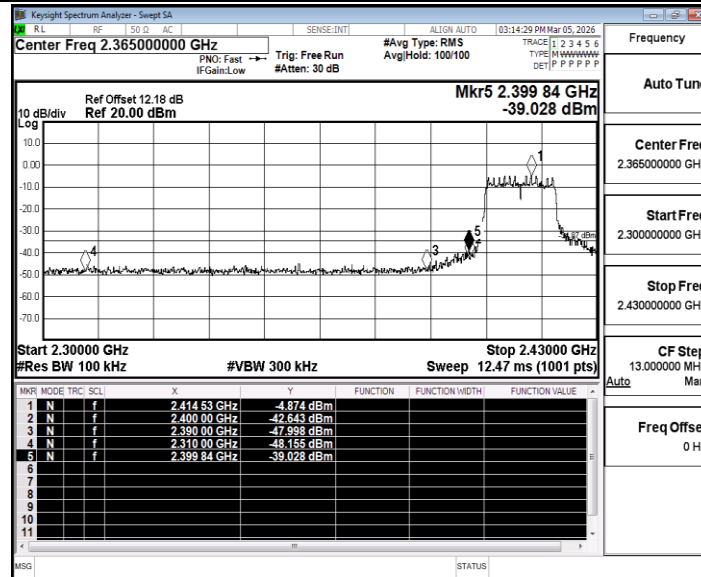
11B_Ant1_Low_2412



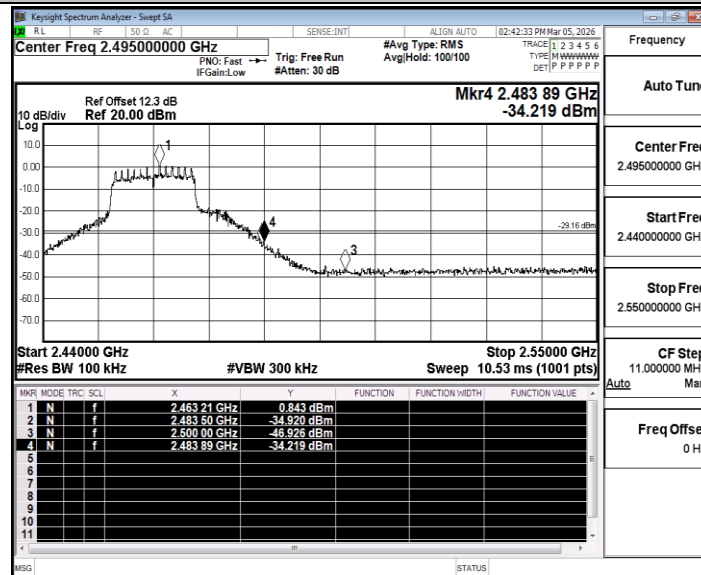
11B_Ant1_High_2462



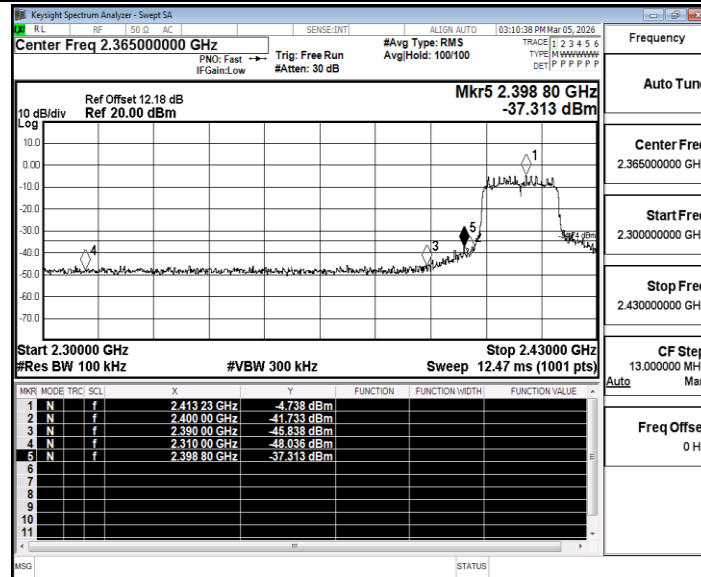
11G_Ant1_Low_2412



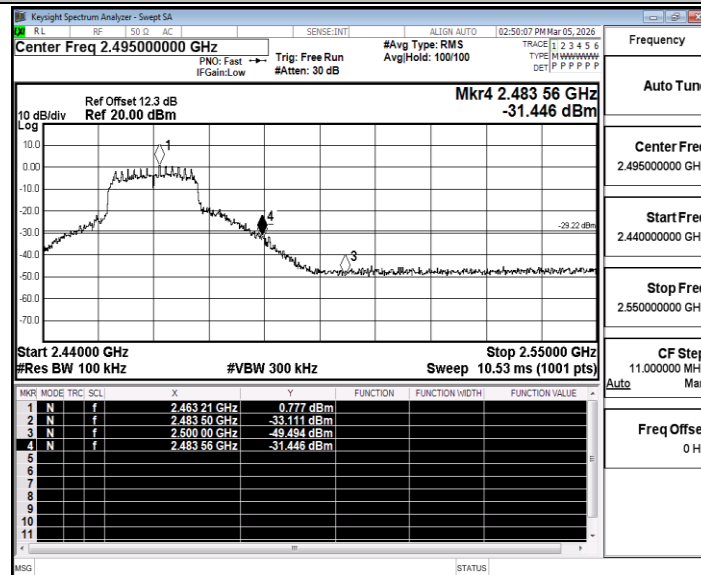
11G_Ant1_High_2462



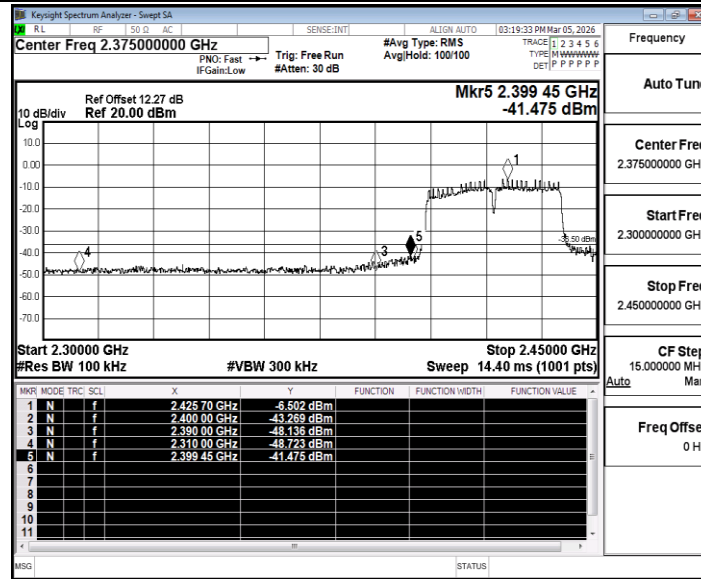
11N20SISO_Ant1_Low_2412



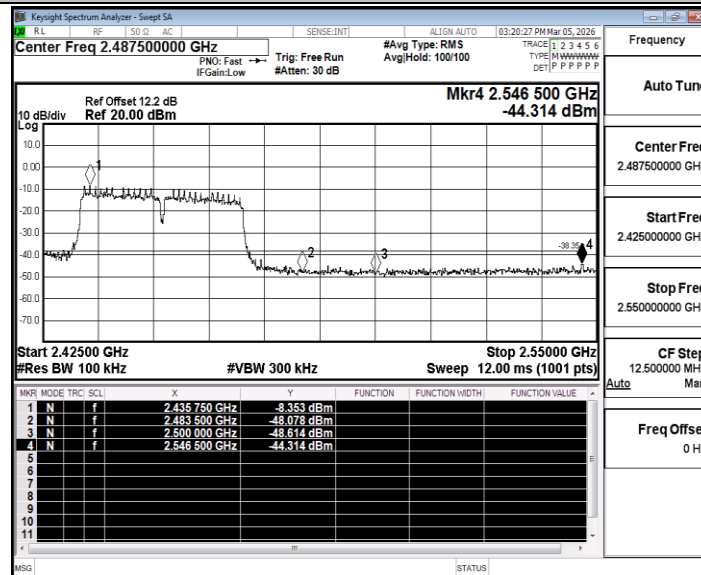
11N20SISO_Ant1_High_2462



11N40SISO_Ant1_Low_2422



11N40SISO_Ant1_High_2452



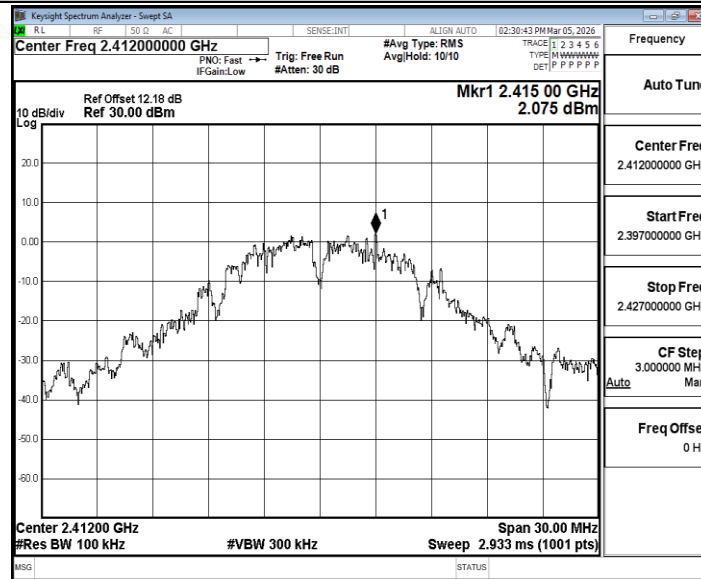
A.5 Conducted Spurious Emission

Test Result

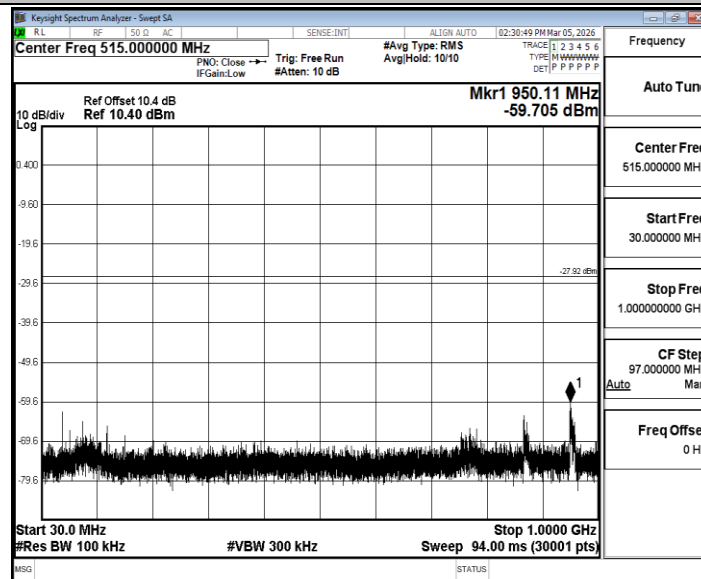
TestMode	Antenna	Frequency [MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	2.08	2.08	---	PASS
			30~1000	2.08	-59.71	≤-27.92	PASS
			1000~26500	2.08	-43.18	≤-27.92	PASS
		2437	Reference	1.83	1.83	---	PASS
			30~1000	1.83	-61.13	≤-28.17	PASS
			1000~26500	1.83	-42.79	≤-28.17	PASS
		2462	Reference	1.83	1.83	---	PASS
			30~1000	1.83	-61.29	≤-28.17	PASS
			1000~26500	1.83	-42.15	≤-28.17	PASS
11G	Ant1	2412	Reference	0.91	0.91	---	PASS
			30~1000	0.91	-60.87	≤-29.09	PASS
			1000~26500	0.91	-43.37	≤-29.09	PASS
		2437	Reference	-1.63	-1.63	---	PASS
			30~1000	-1.63	-61.84	≤-31.63	PASS
			1000~26500	-1.63	-42.97	≤-31.63	PASS
		2462	Reference	0.77	0.77	---	PASS
			30~1000	0.77	-62.22	≤-29.23	PASS
			1000~26500	0.77	-43.56	≤-29.23	PASS
11N20SISO	Ant1	2412	Reference	0.90	0.90	---	PASS
			30~1000	0.90	-61.31	≤-29.1	PASS
			1000~26500	0.90	-43.03	≤-29.1	PASS
		2437	Reference	-1.23	-1.23	---	PASS
			30~1000	-1.23	-60.51	≤-31.23	PASS
			1000~26500	-1.23	-43.42	≤-31.23	PASS
		2462	Reference	0.57	0.57	---	PASS
			30~1000	0.57	-59.62	≤-29.43	PASS
			1000~26500	0.57	-43.05	≤-29.43	PASS
11N40SISO	Ant1	2422	Reference	-0.70	-0.70	---	PASS
			30~1000	-0.70	-62.44	≤-30.7	PASS
			1000~26500	-0.70	-42.1	≤-30.7	PASS
		2437	Reference	-3.09	-3.09	---	PASS
			30~1000	-3.09	-59.07	≤-33.09	PASS
			1000~26500	-3.09	-42.99	≤-33.09	PASS
		2452	Reference	-3.95	-3.95	---	PASS
			30~1000	-3.95	-60.64	≤-33.95	PASS
			1000~26500	-3.95	-42.28	≤-33.95	PASS

Test Graphs

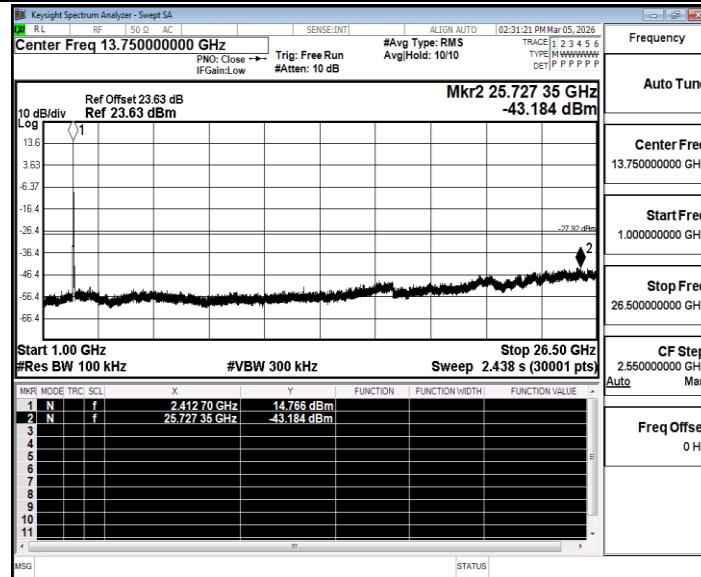
11B_Ant1_2412_0~Reference



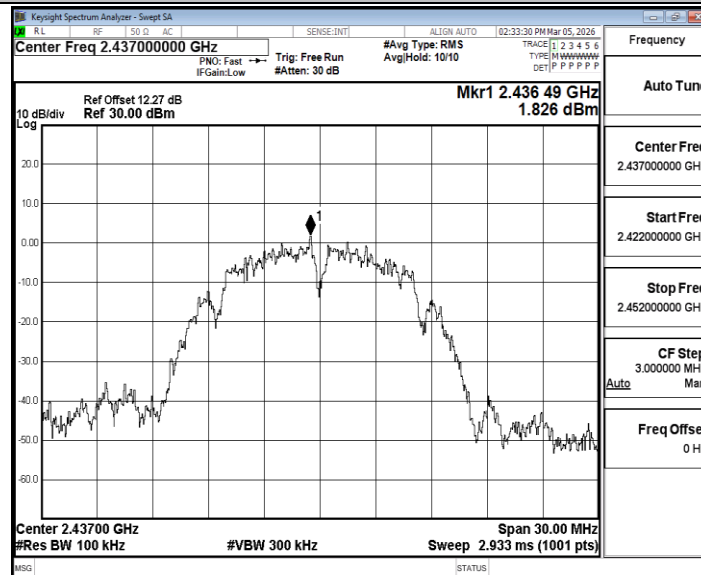
11B_Ant1_2412_30~1000



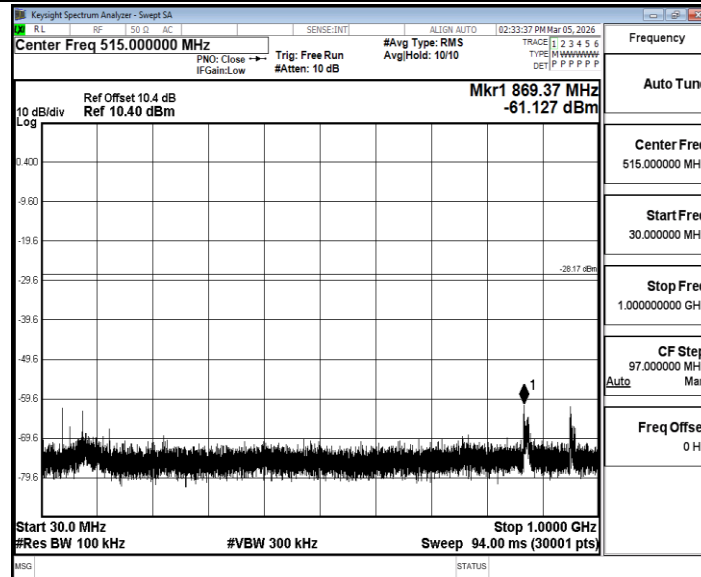
11B_Ant1_2412_1000~26500



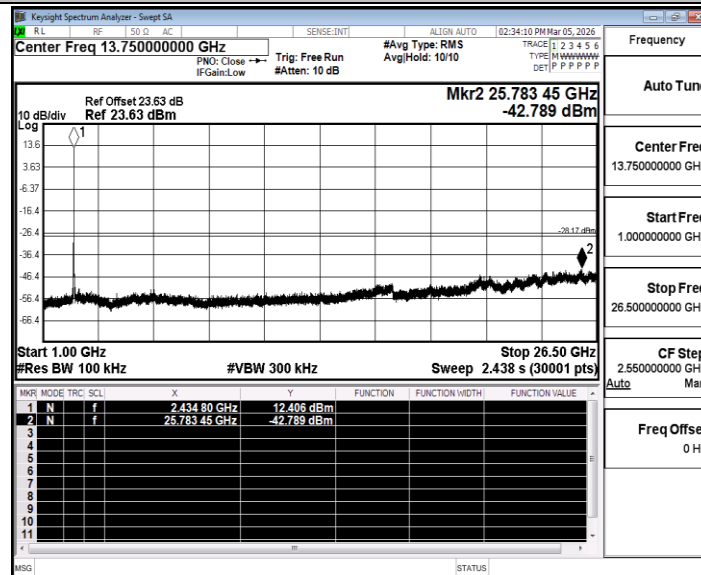
11B_Ant1_2437_0~Reference



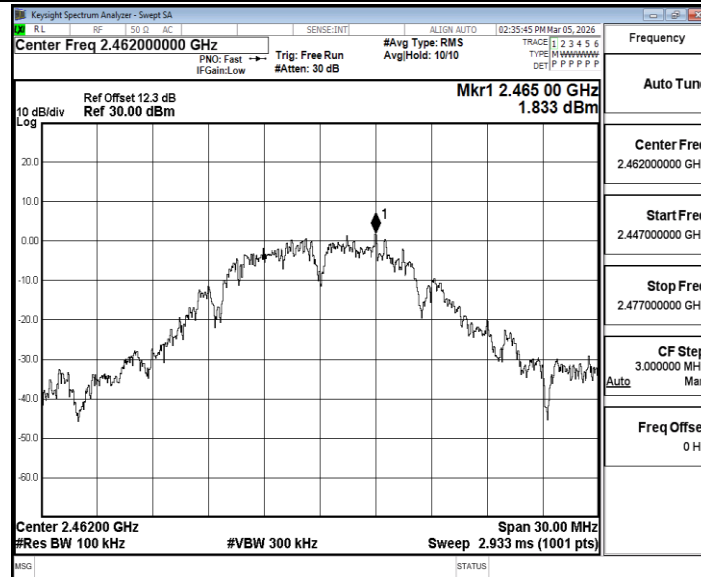
11B_Ant1_2437_30~1000



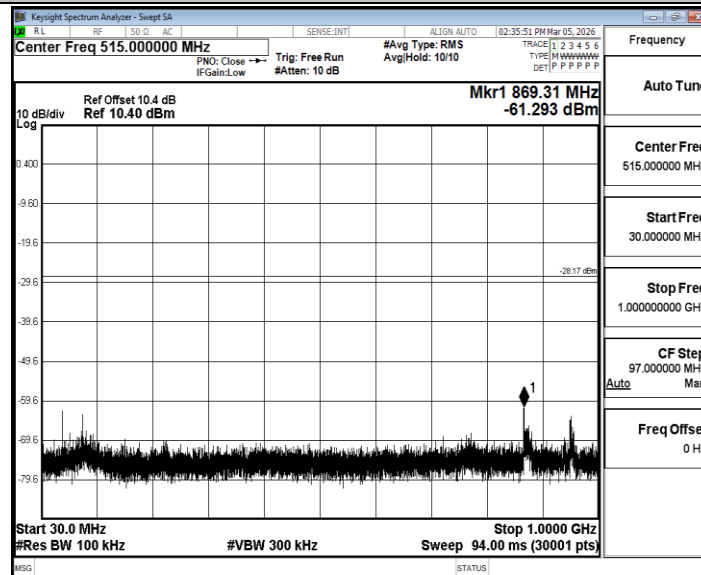
11B_Ant1_2437_1000~26500



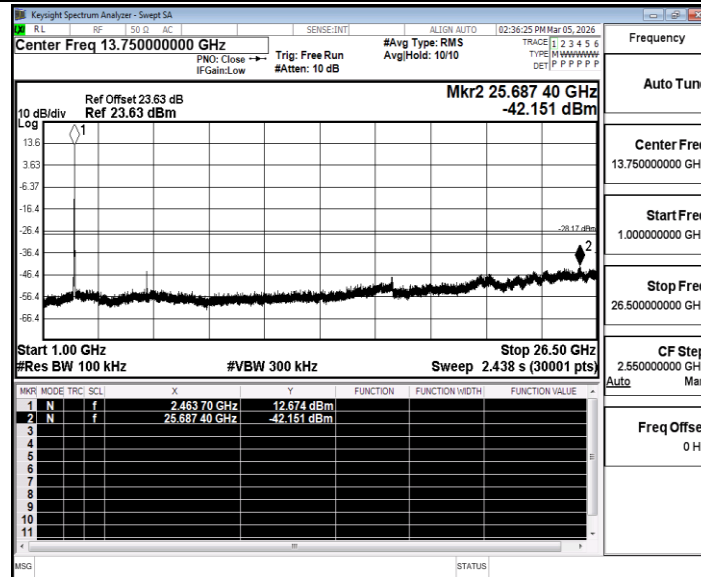
11B_Ant1_2462_0~Reference



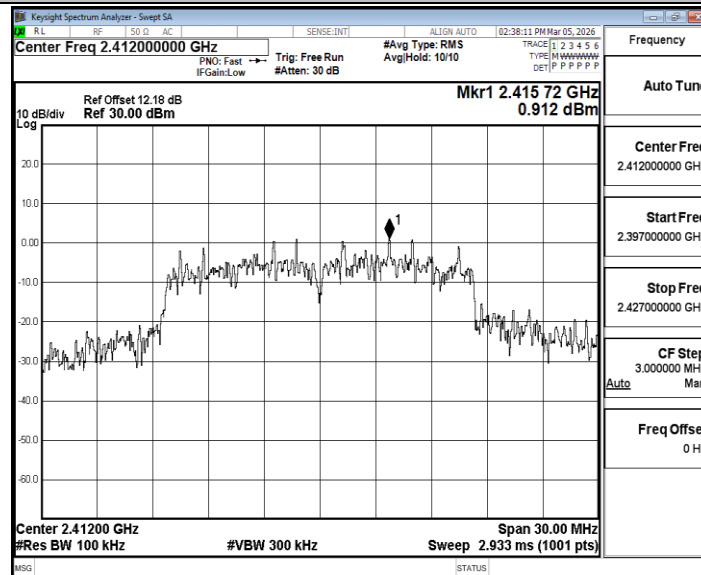
11B_Ant1_2462_30~1000



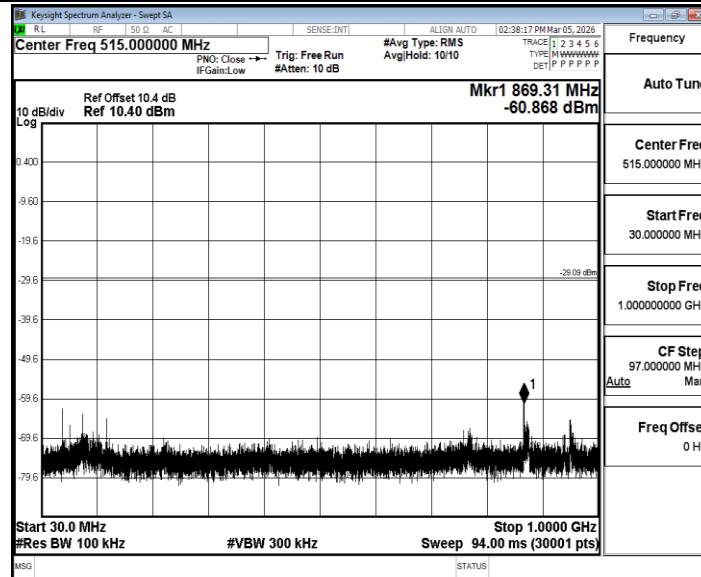
11B_Ant1_2462_1000~26500



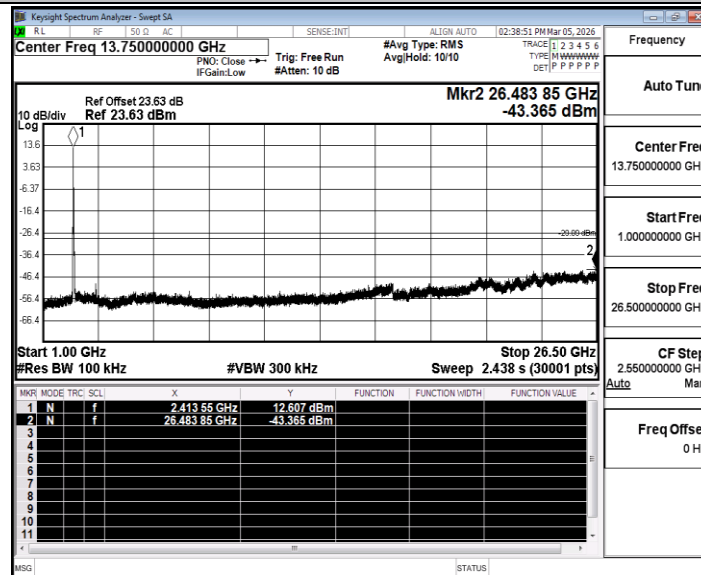
11G_Ant1_2412_0~Reference



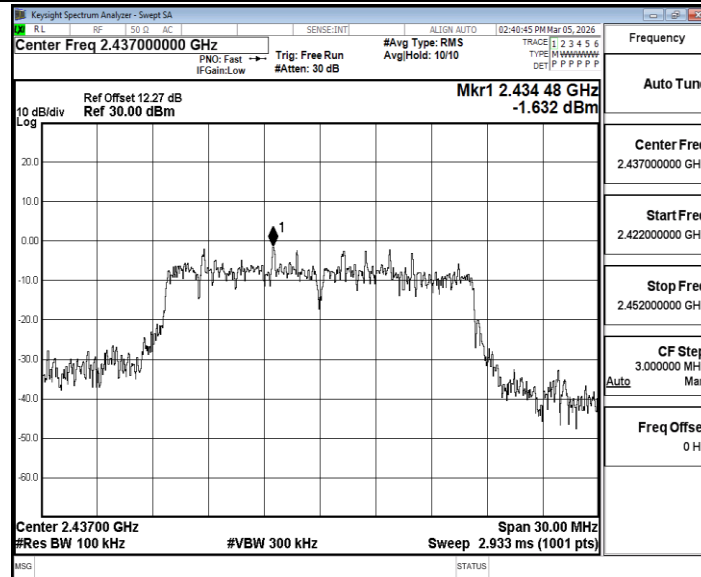
11G_Ant1_2412_30~1000



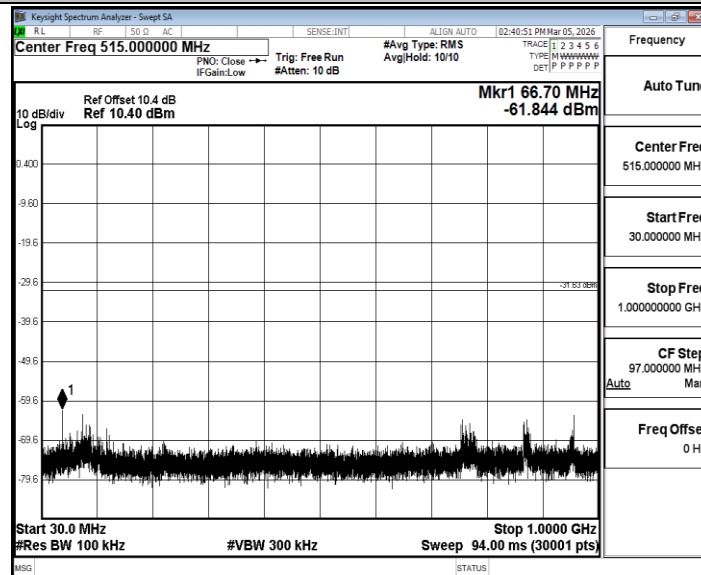
11G_Ant1_2412_1000~26500



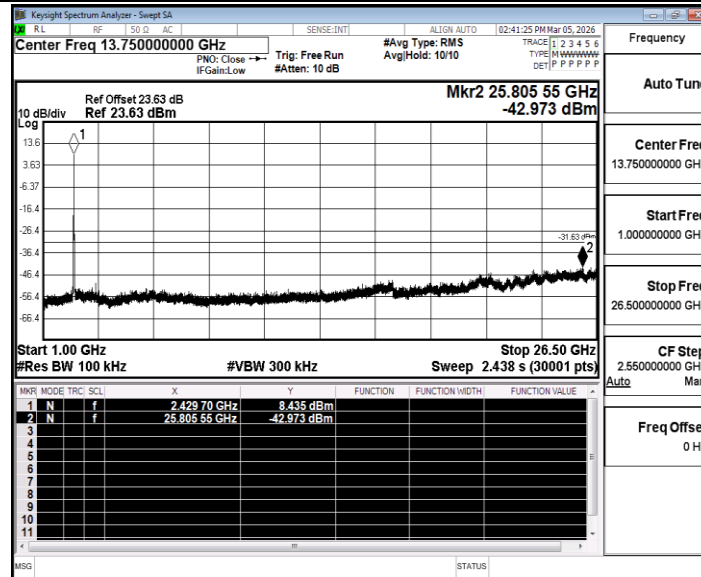
11G_Ant1_2437_0~Reference



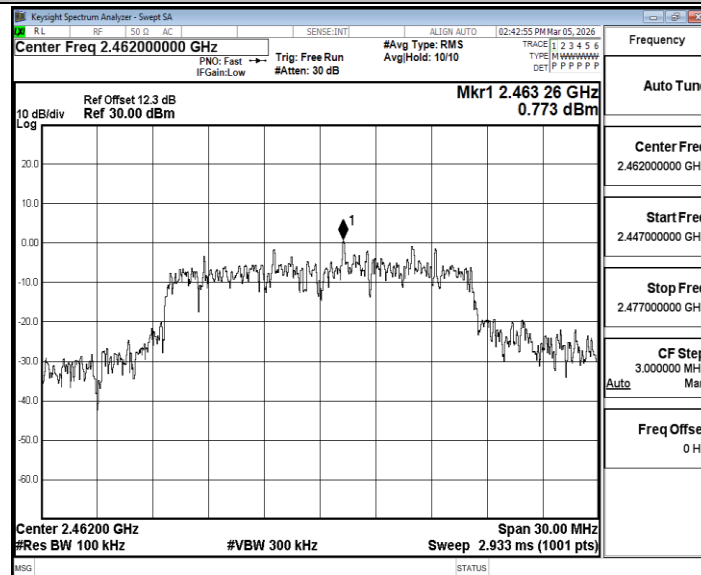
11G_Ant1_2437_30~1000



11G_Ant1_2437_1000~26500



11G_Ant1_2462_0~Reference



11G_Ant1_2462_30~1000