

FCC Appendix RF Test Data for 2.4GWIFI

FCC ID : 2BVLN-QS

Company : Wuhan Qinggou Intelligent Technology Co., Ltd.

EUT : Qingo AI Vending

Model Number : QS-779CREW(G)-US

Report No. : CTA26030400802

Reviewed By : Eric Wang

Appendix A: DTS Bandwidth

Test Result

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	10.240	2406.920	2417.160	0.5	PASS
		2437	10.240	2431.920	2442.160	0.5	PASS
		2462	10.240	2456.920	2467.160	0.5	PASS
11G	Ant1	2412	15.880	2404.120	2420.000	0.5	PASS
		2437	15.920	2429.080	2445.000	0.5	PASS
		2462	15.600	2454.240	2469.840	0.5	PASS
11N20SISO	Ant1	2412	16.880	2403.520	2420.400	0.5	PASS
		2437	17.120	2428.480	2445.600	0.5	PASS
		2462	17.000	2453.480	2470.480	0.5	PASS
11N40SISO	Ant1	2422	35.920	2404.240	2440.160	0.5	PASS
		2437	36.000	2419.000	2455.000	0.5	PASS
		2452	34.160	2435.200	2469.360	0.5	PASS

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



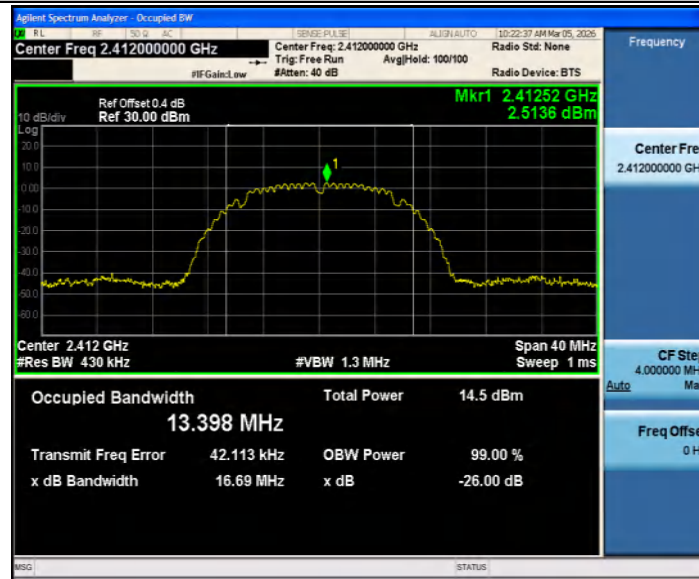
Appendix B: Occupied Channel Bandwidth

Test Result

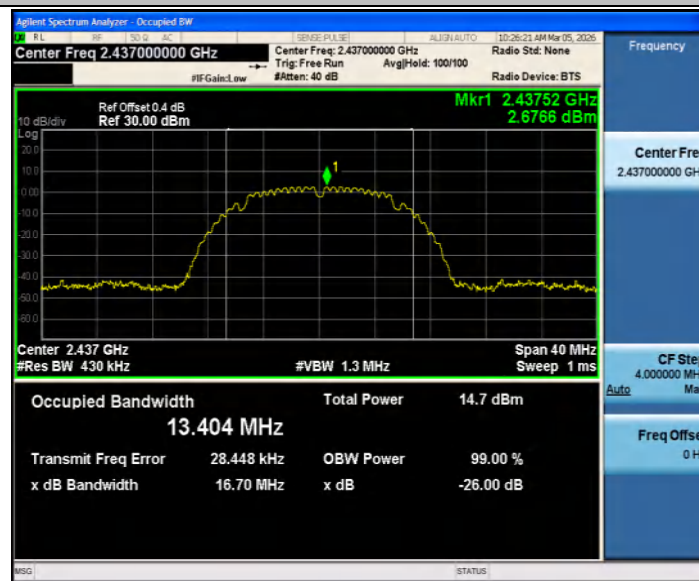
TestMode	Antenna	Channel Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	13.398	2405.3431	2418.7411	---	---
		2437	13.404	2430.3265	2443.7305	---	---
		2462	13.410	2455.3068	2468.7168	---	---
11G	Ant1	2412	16.847	2403.6333	2420.4803	---	---
		2437	16.857	2428.6258	2445.4828	---	---
		2462	16.815	2453.6021	2470.4171	---	---
11N20SISO	Ant1	2412	17.816	2403.1441	2420.9601	---	---
		2437	17.861	2428.1197	2445.9807	---	---
		2462	17.937	2453.0476	2470.9846	---	---
11N40SISO	Ant1	2422	36.043	2404.0540	2440.0970	---	---
		2437	36.031	2419.0631	2455.0941	---	---
		2452	36.027	2434.0664	2470.0934	---	---

Test Graphs

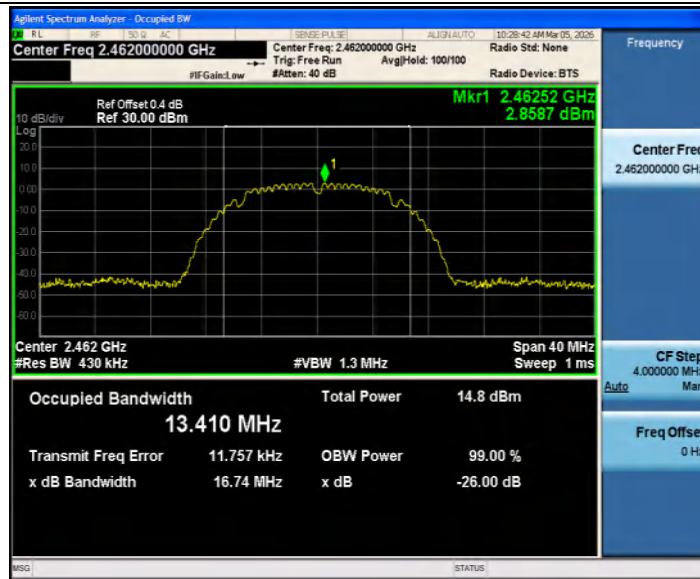
11B_Ant1_2412



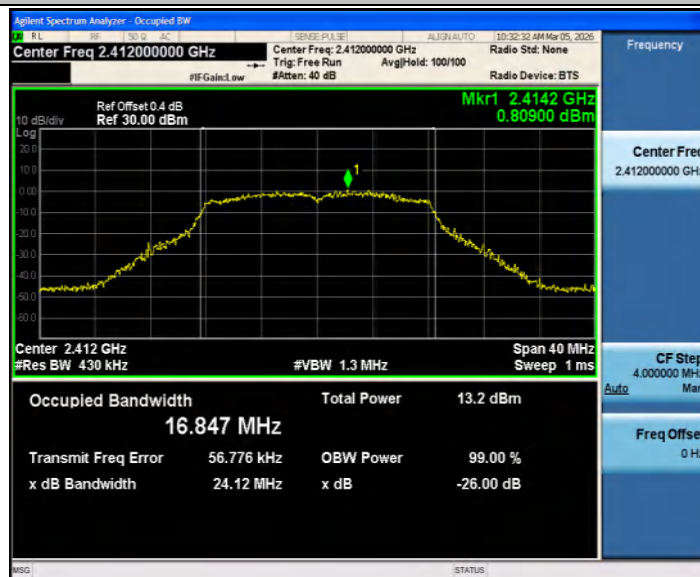
11B_Ant1_2437



11B_Ant1_2462



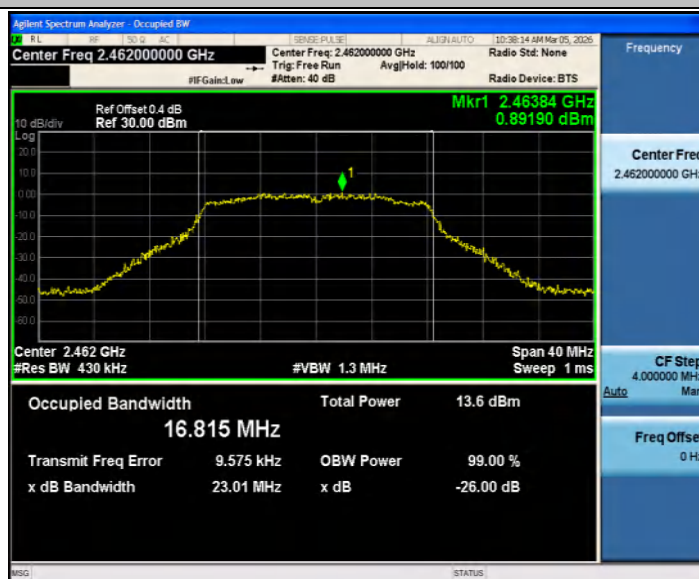
11G_Ant1_2412



11G_Ant1_2437



11G_Ant1_2462



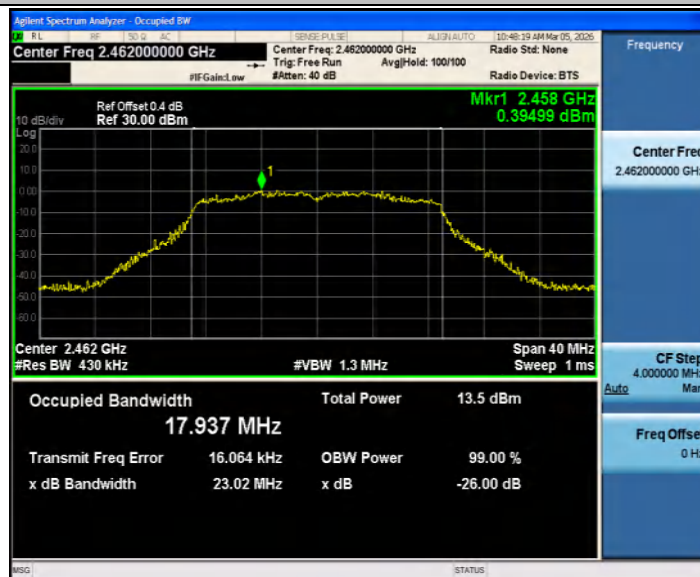
11N20SISO_Ant1_2412



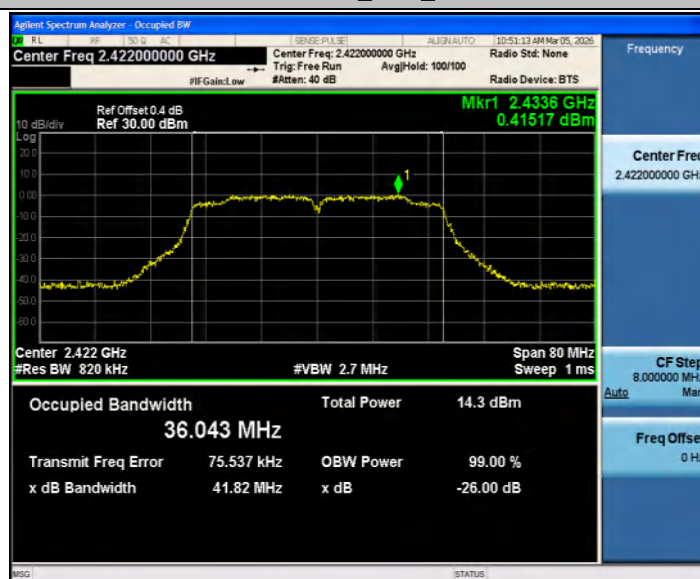
11N20SISO_Ant1_2437



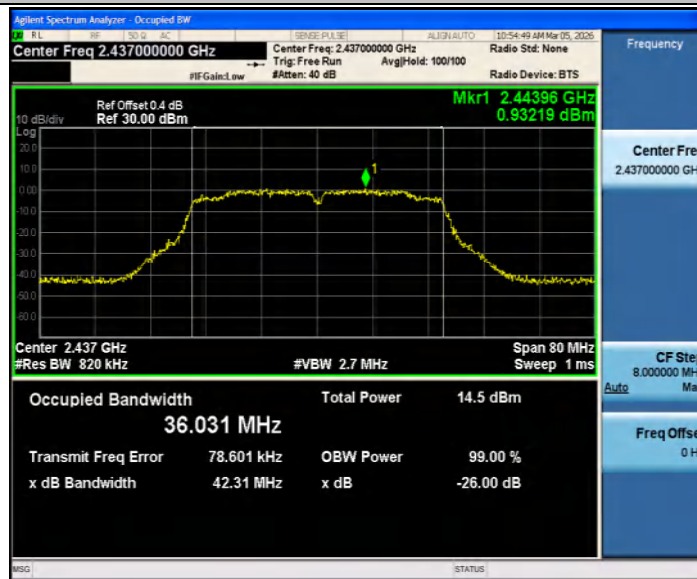
11N20SISO_Ant1_2462



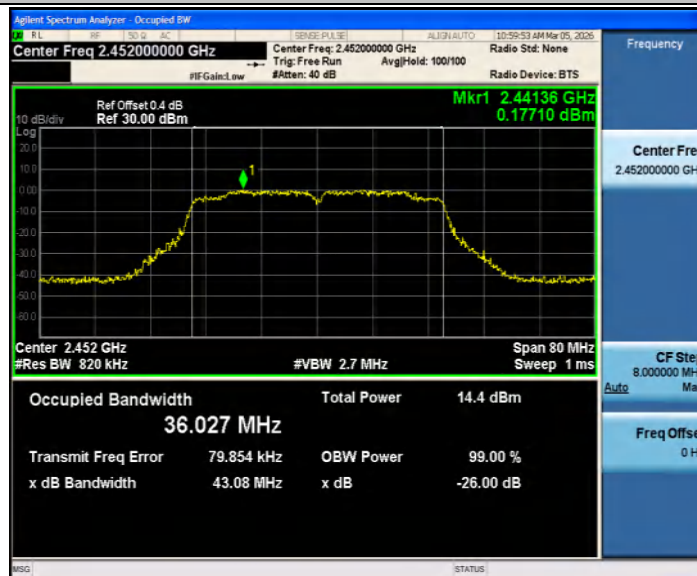
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



Appendix C: Maximum conducted output power

Test Result Peak

Test Mode	Antenna	Frequency[MHz]	Peak power [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	14.10	≤30.00	PASS
		2437	14.34	≤30.00	PASS
		2462	14.41	≤30.00	PASS
11G	Ant1	2412	14.10	≤30.00	PASS
		2437	14.38	≤30.00	PASS
		2462	14.47	≤30.00	PASS
11N20SISO	Ant1	2412	13.98	≤30.00	PASS
		2437	14.23	≤30.00	PASS
		2462	14.46	≤30.00	PASS
11N40SISO	Ant1	2422	14.47	≤30.00	PASS
		2437	14.71	≤30.00	PASS
		2452	14.56	≤30.00	PASS

Appendix D: Maximum power spectral density

Test Result

TestMode	Antenna	Frequency[MHz]	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-12.38	≤8.00	PASS
		2437	-12.27	≤8.00	PASS
		2462	-10.84	≤8.00	PASS
11G	Ant1	2412	-18.03	≤8.00	PASS
		2437	-17.53	≤8.00	PASS
		2462	-16.98	≤8.00	PASS
11N20SISO	Ant1	2412	-15.47	≤8.00	PASS
		2437	-16.51	≤8.00	PASS
		2462	-16.91	≤8.00	PASS
11N40SISO	Ant1	2422	-20.37	≤8.00	PASS
		2437	-20.65	≤8.00	PASS
		2452	-19.79	≤8.00	PASS

Test Graphs

11B_Ant1_2412



11B_Ant1_2437



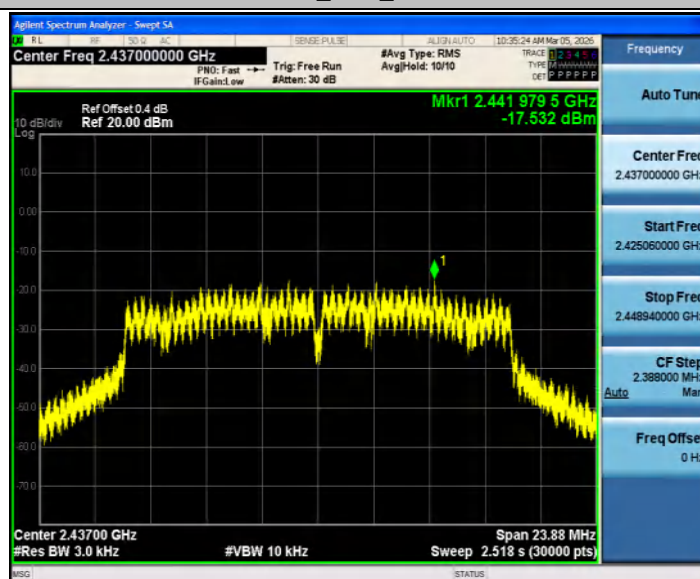
11B_Ant1_2462



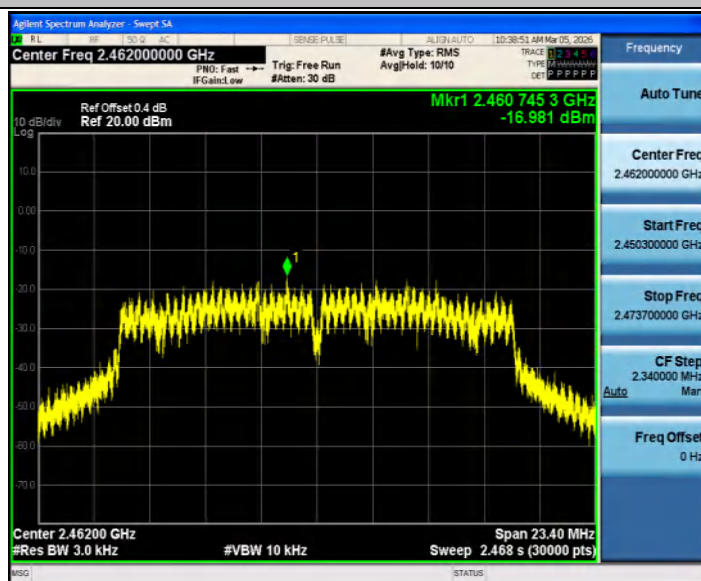
11G_Ant1_2412



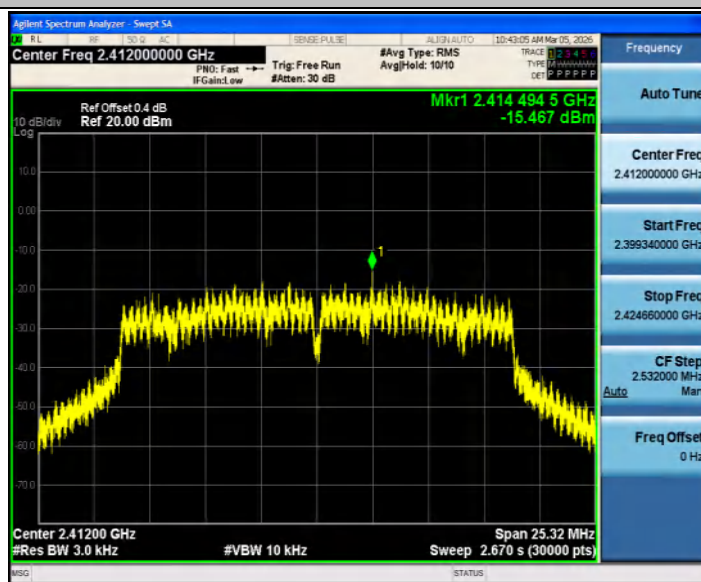
11G_Ant1_2437



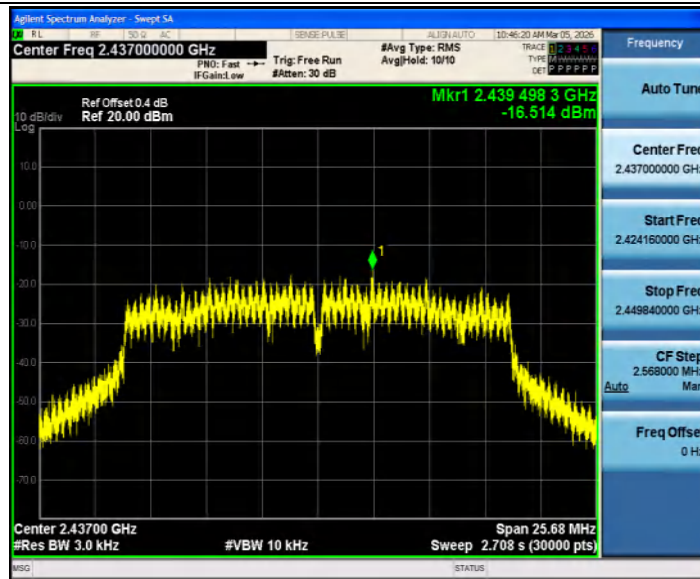
11G_Ant1_2462



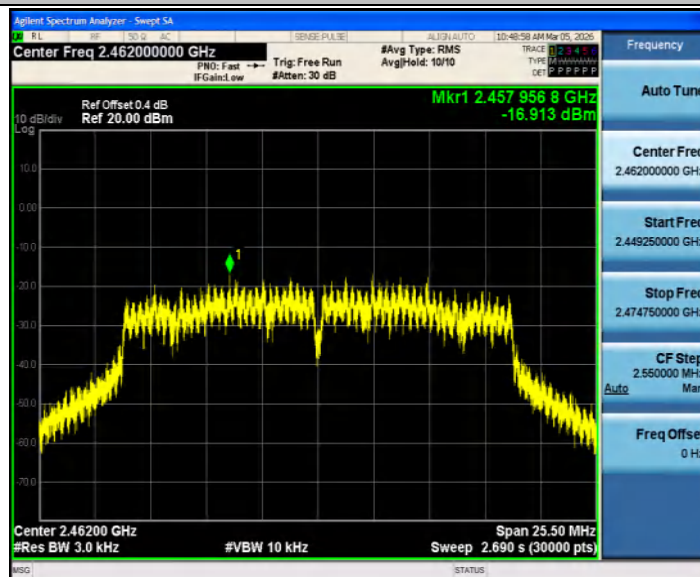
11N20SISO_Ant1_2412



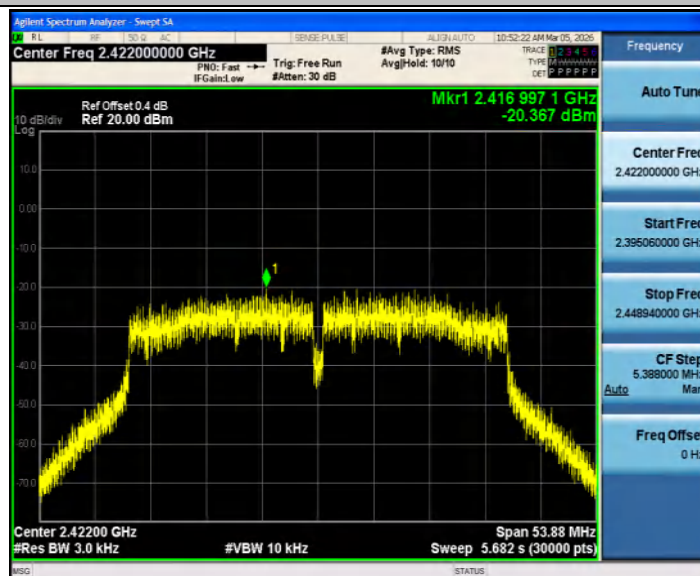
11N20SISO_Ant1_2437



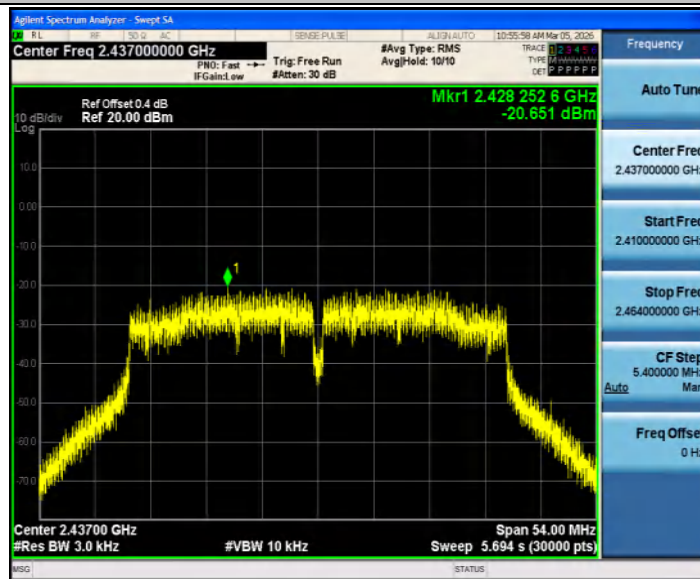
11N20SISO_Ant1_2462



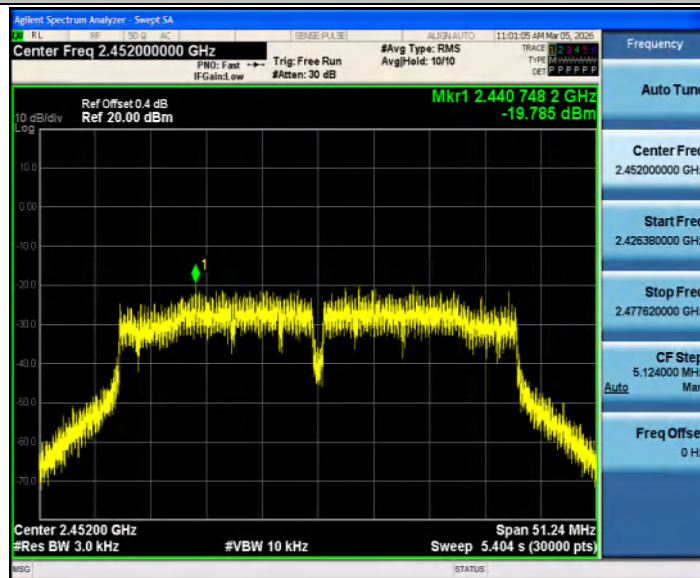
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



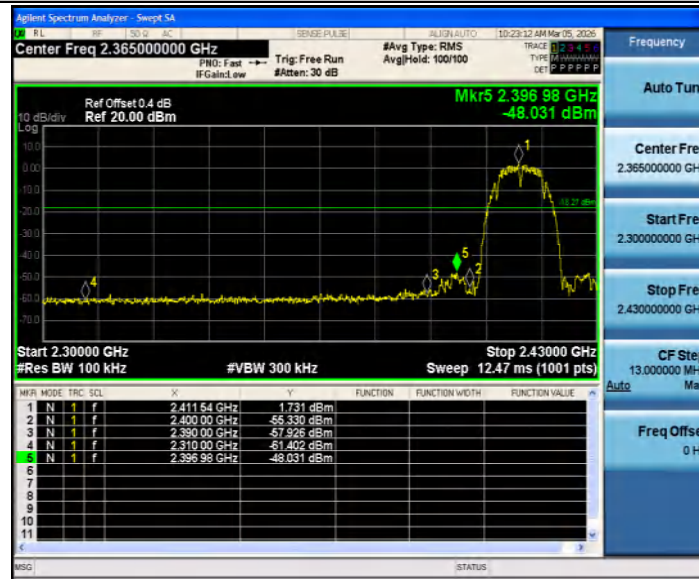
Appendix E: Band edge measurements

Test Result

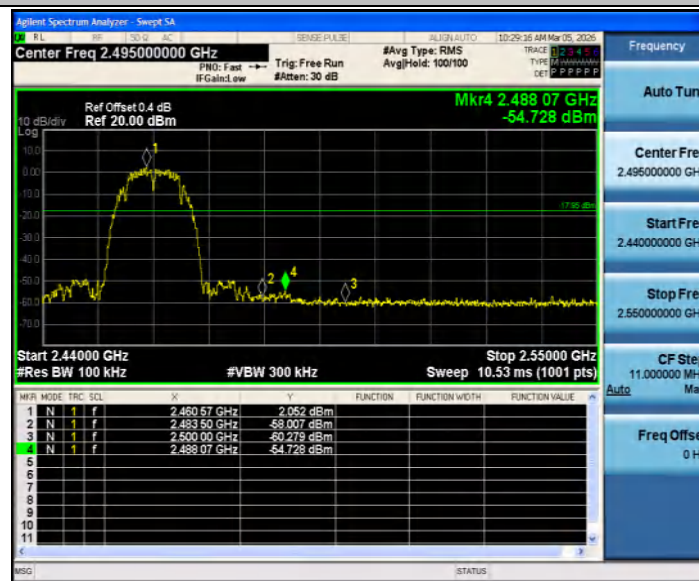
TestMode	Antenna	Channel Name	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	1.73	-48.03	≤-18.27	PASS
		High	2462	2.05	-54.73	≤-17.95	PASS
11G	Ant1	Low	2412	-2.32	-34.35	≤-22.32	PASS
		High	2462	-1.96	-57.74	≤-21.96	PASS
11N20SISO	Ant1	Low	2412	-2.28	-34.45	≤-22.28	PASS
		High	2462	-1.95	-57.51	≤-21.95	PASS
11N40SISO	Ant1	Low	2422	-5.60	-33.8	≤-25.6	PASS
		High	2452	-5.58	-56.25	≤-25.58	PASS

Test Graphs

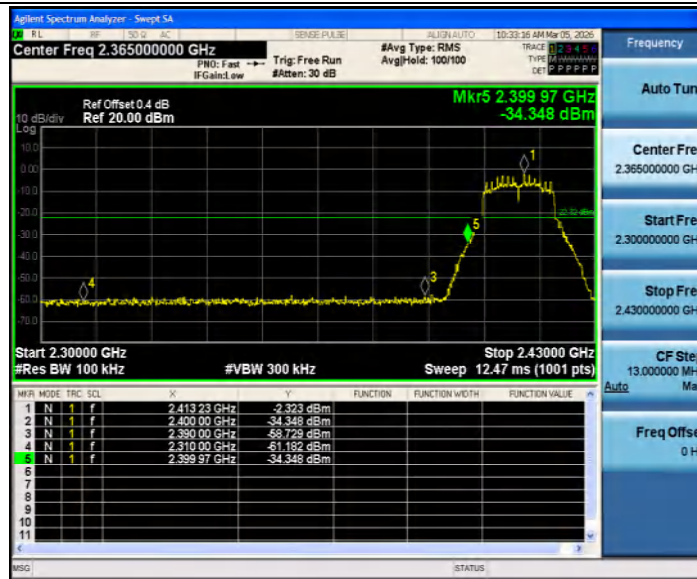
11B_Ant1_Low_2412



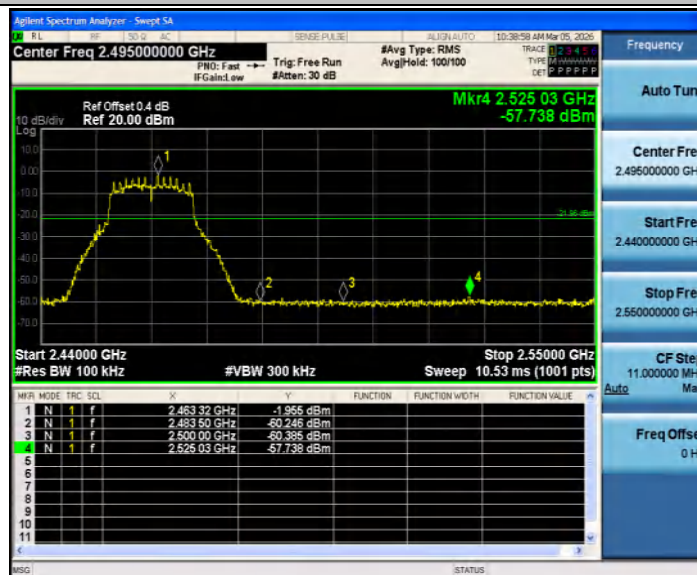
11B_Ant1_High_2462



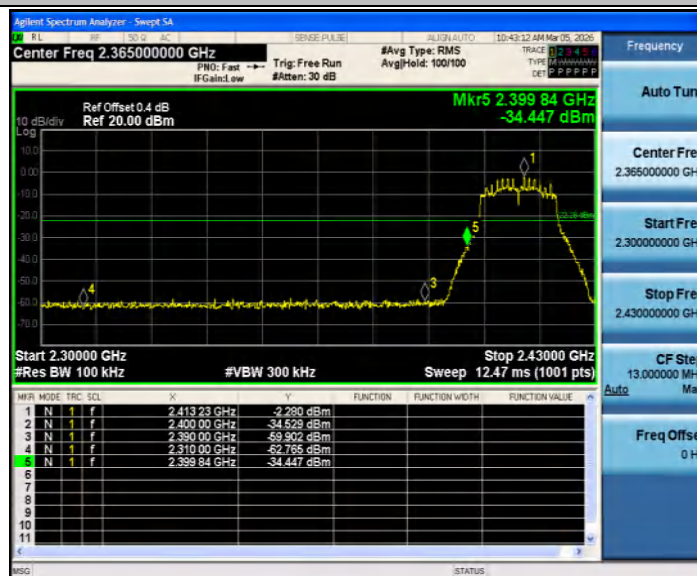
11G_Ant1_Low_2412



11G_Ant1_High_2462



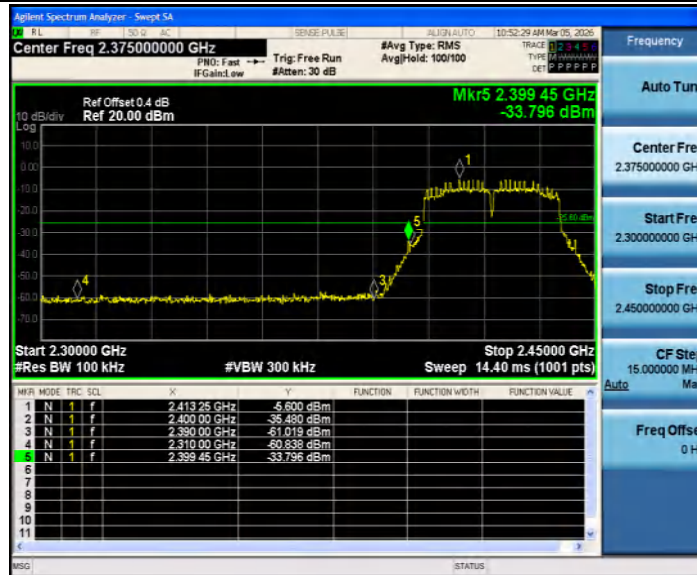
11N20SISO_Ant1_Low_2412



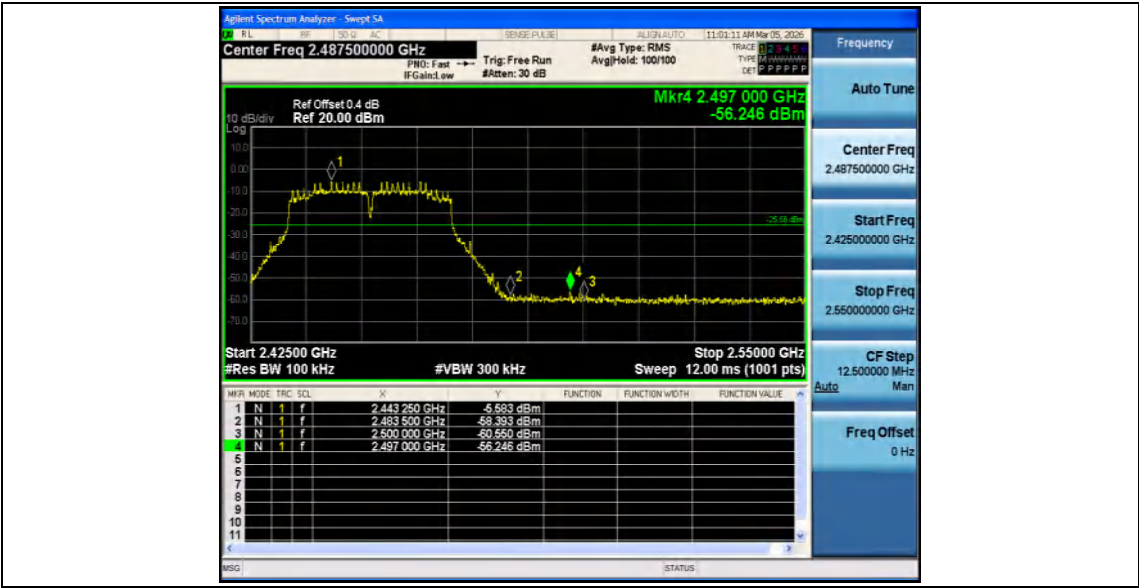
11N20SISO_Ant1_High_2462



11N40SISO_Ant1_Low_2422



11N40SISO_Ant1_High_2452



Appendix F: Conducted Spurious Emission

Test Result

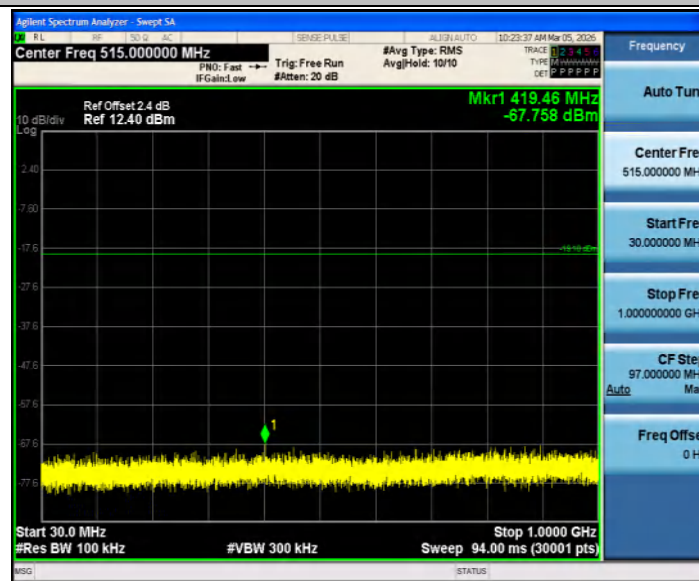
TestMode	Antenna	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	0.90	0.90	---	PASS
			30~1000	0.90	-67.76	≤-19.1	PASS
			1000~26500	0.90	-55.61	≤-19.1	PASS
		2437	Reference	2.10	2.10	---	PASS
			30~1000	2.10	-67.8	≤-17.9	PASS
			1000~26500	2.10	-55.13	≤-17.9	PASS
		2462	Reference	2.11	2.11	---	PASS
			30~1000	2.11	-67.84	≤-17.89	PASS
			1000~26500	2.11	-54.68	≤-17.89	PASS
11G	Ant1	2412	Reference	-3.41	-3.41	---	PASS
			30~1000	-3.41	-68.19	≤-23.41	PASS
			1000~26500	-3.41	-55.21	≤-23.41	PASS
		2437	Reference	-2.09	-2.09	---	PASS
			30~1000	-2.09	-67.94	≤-22.09	PASS
			1000~26500	-2.09	-54.99	≤-22.09	PASS
		2462	Reference	-2.68	-2.68	---	PASS
			30~1000	-2.68	-68.35	≤-22.68	PASS
			1000~26500	-2.68	-55.7	≤-22.68	PASS
11N20SISO	Ant1	2412	Reference	-3.23	-3.23	---	PASS
			30~1000	-3.23	-67.77	≤-23.23	PASS
			1000~26500	-3.23	-54.48	≤-23.23	PASS
		2437	Reference	-3.53	-3.53	---	PASS
			30~1000	-3.53	-67.14	≤-23.53	PASS
			1000~26500	-3.53	-55.04	≤-23.53	PASS
		2462	Reference	-2.80	-2.80	---	PASS
			30~1000	-2.80	-67.96	≤-22.8	PASS
			1000~26500	-2.80	-55	≤-22.8	PASS
11N40SISO	Ant1	2422	Reference	-6.34	-6.34	---	PASS
			30~1000	-6.34	-67.77	≤-26.34	PASS
			1000~26500	-6.34	-54.59	≤-26.34	PASS
		2437	Reference	-5.84	-5.84	---	PASS
			30~1000	-5.84	-68.17	≤-25.84	PASS
			1000~26500	-5.84	-54.91	≤-25.84	PASS
		2452	Reference	-5.39	-5.39	---	PASS
			30~1000	-5.39	-68.1	≤-25.39	PASS
			1000~26500	-5.39	-55.19	≤-25.39	PASS

Test Graphs

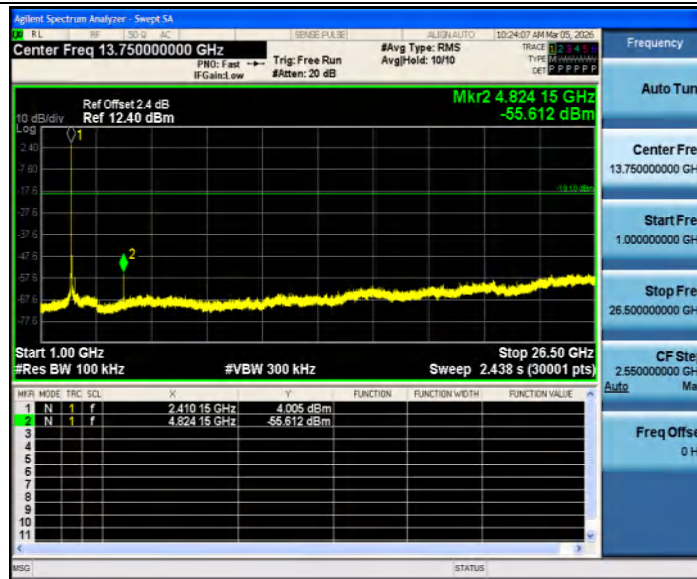
11B_Ant1_2412_0~Reference



11B_Ant1_2412_30~1000



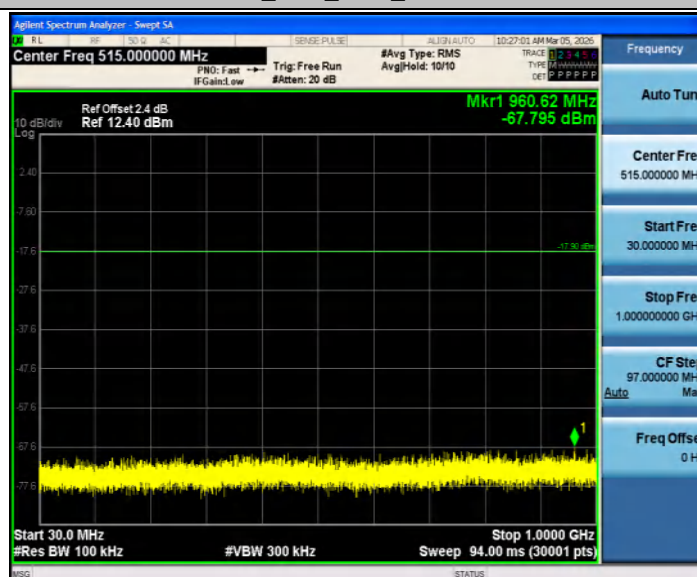
11B_Ant1_2412_1000~26500



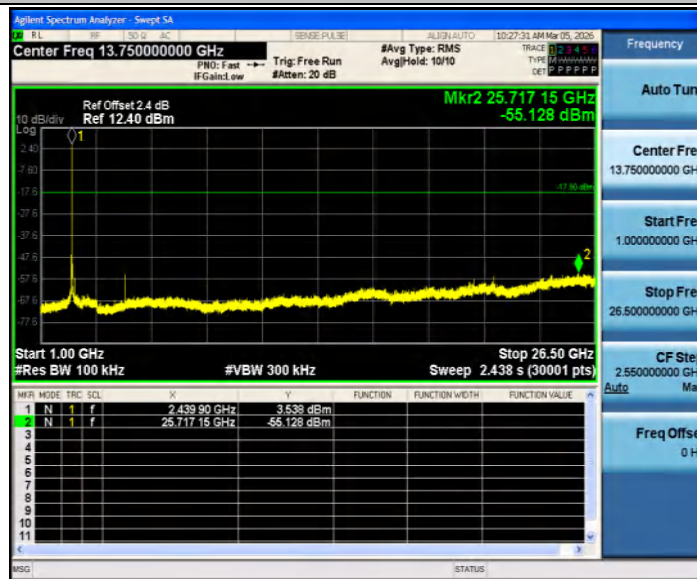
11B_Ant1_2437_0~Reference



11B_Ant1_2437_30~1000



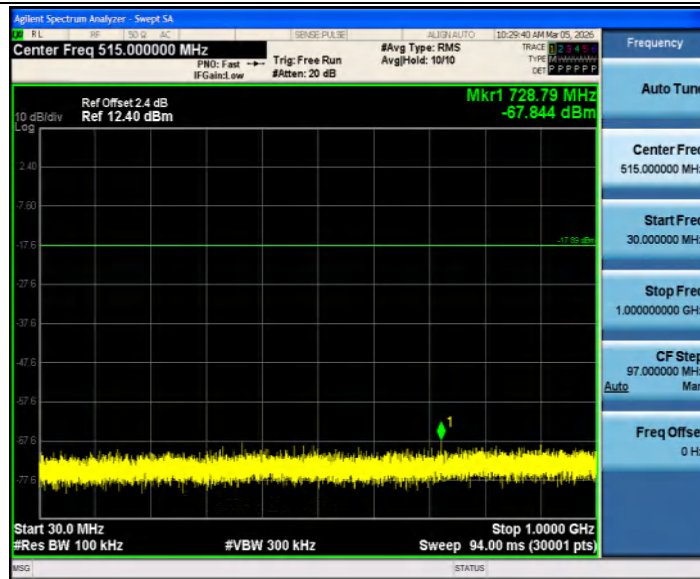
11B_Ant1_2437_1000~26500



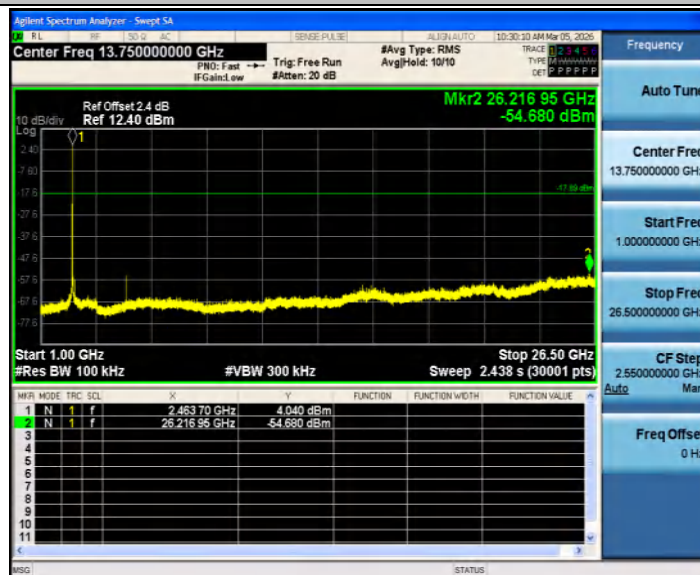
11B_Ant1_2462_0~Reference



11B_Ant1_2462_30~1000



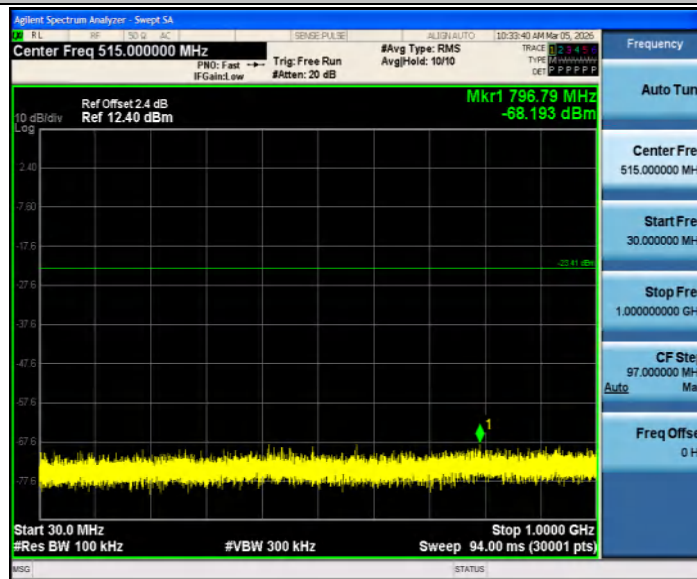
11B_Ant1_2462_1000~26500



11G_Ant1_2412_0~Reference



11G_Ant1_2412_30~1000



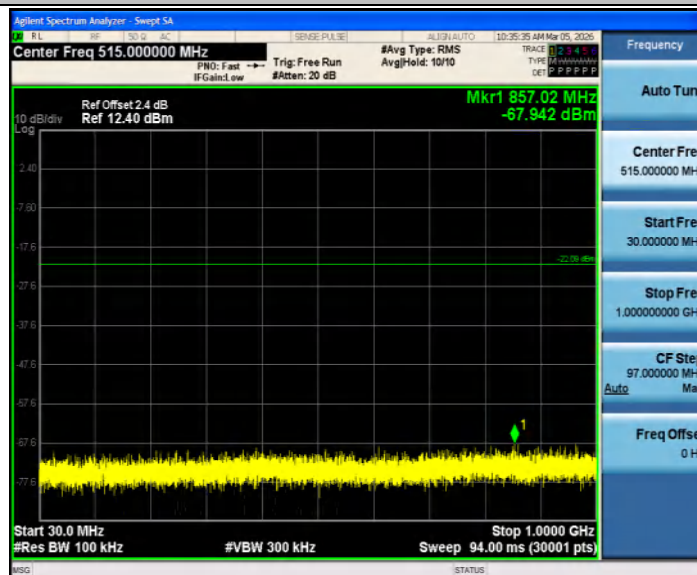
11G_Ant1_2412_1000~26500



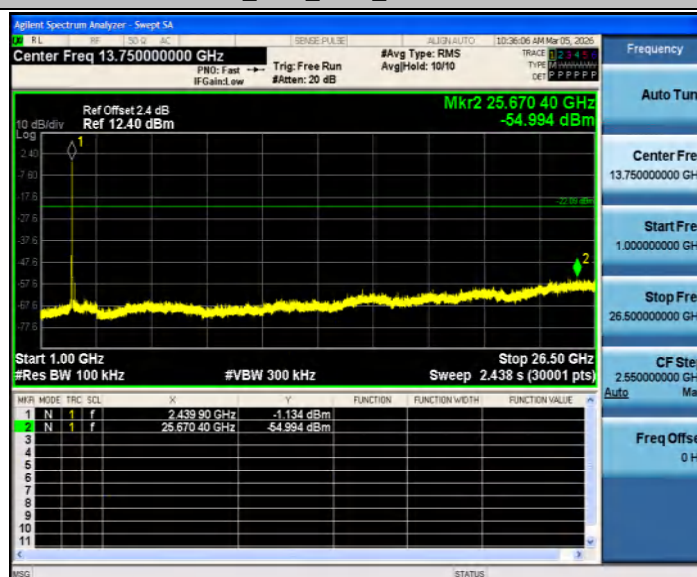
11G_Ant1_2437_0~Reference



11G_Ant1_2437_30~1000



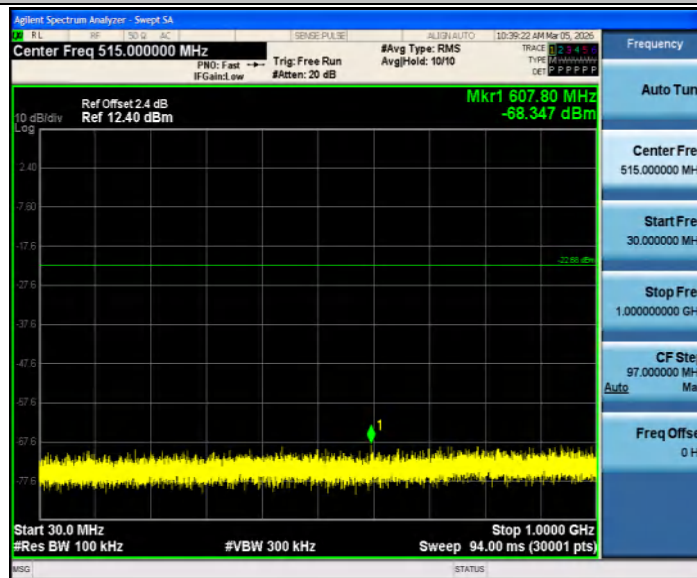
11G_Ant1_2437_1000~26500



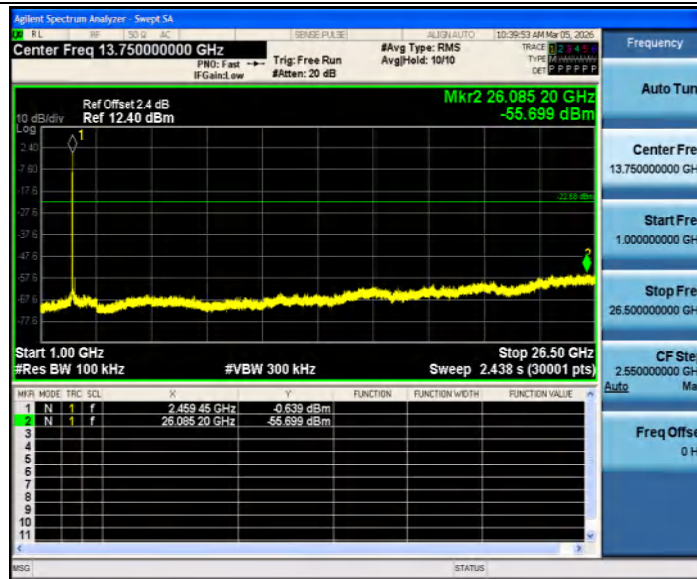
11G_Ant1_2462_0~Reference



11G_Ant1_2462_30~1000



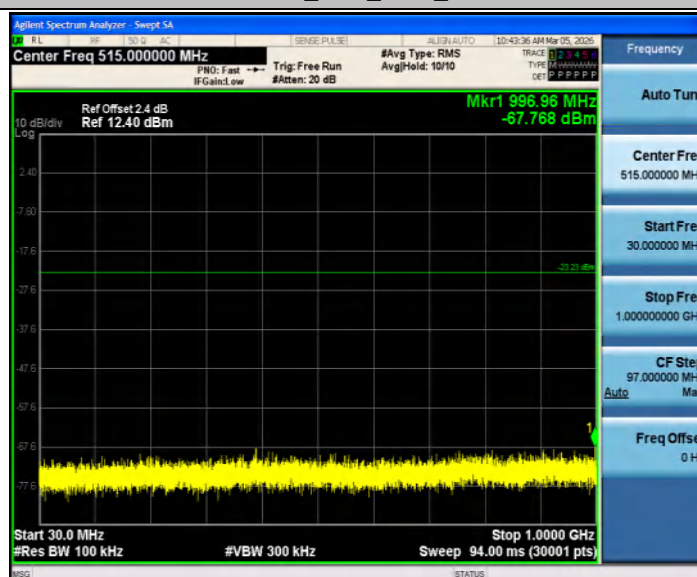
11G_Ant1_2462_1000~26500



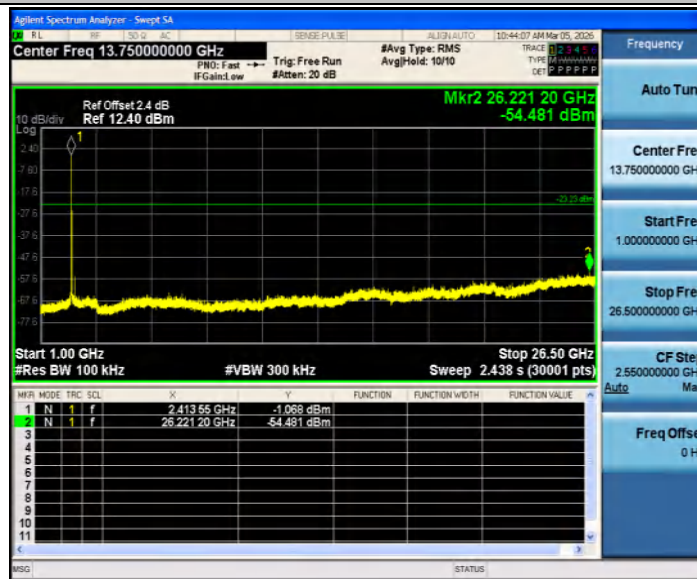
11N20SISO_Ant1_2412_0~Reference



11N20SISO_Ant1_2412_30~1000



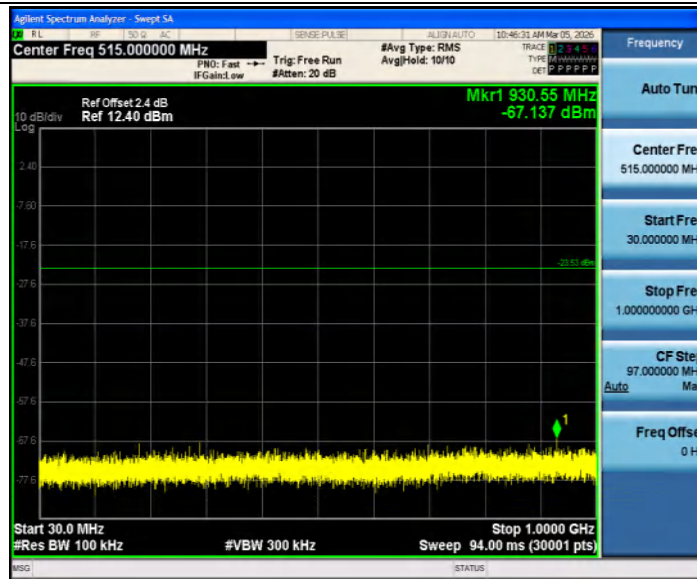
11N20SISO_Ant1_2412_1000~26500



11N20SISO_Ant1_2437_0~Reference



11N20SISO_Ant1_2437_30~1000



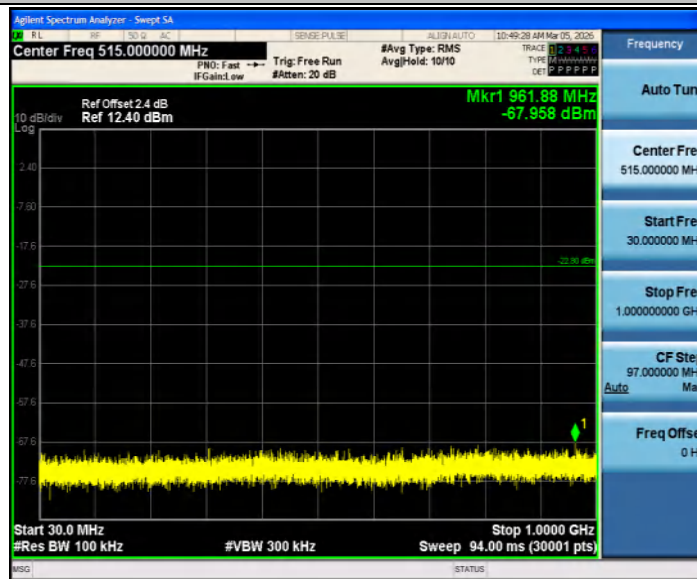
11N20ISO_Ant1_2437_1000~26500



11N20ISO_Ant1_2462_0~Reference



11N20SISO_Ant1_2462_30~1000



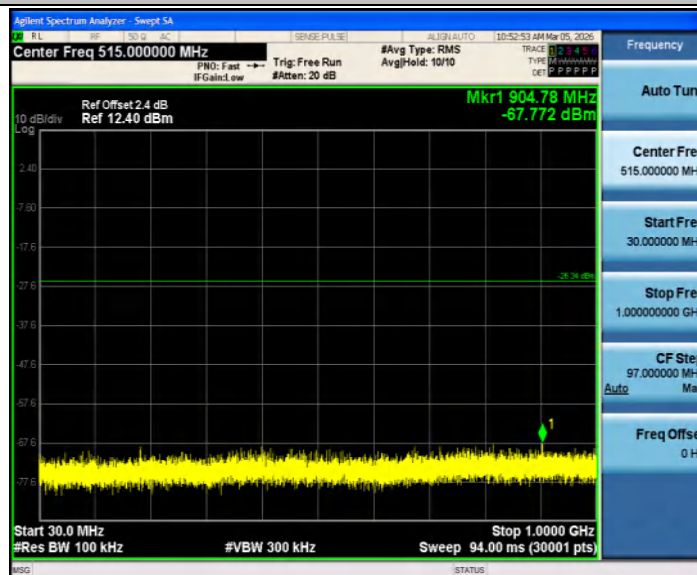
11N20SISO_Ant1_2462_1000~26500



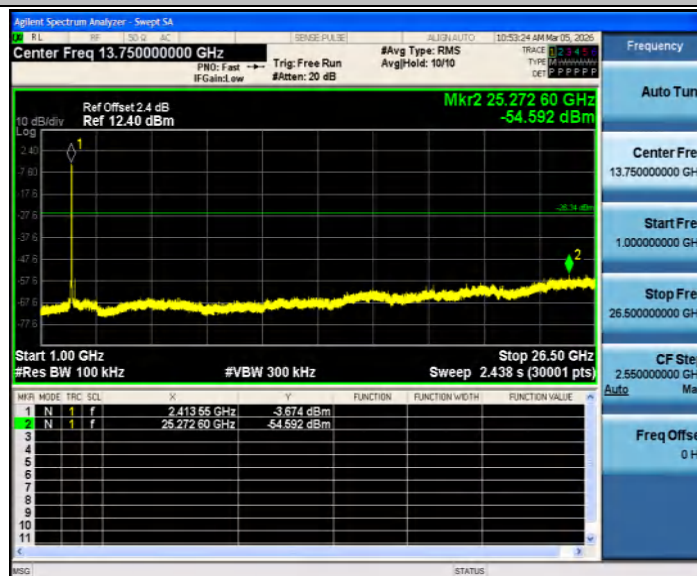
11N40SISO_Ant1_2422_0~Reference



11N40SISO_Ant1_2422_30~1000



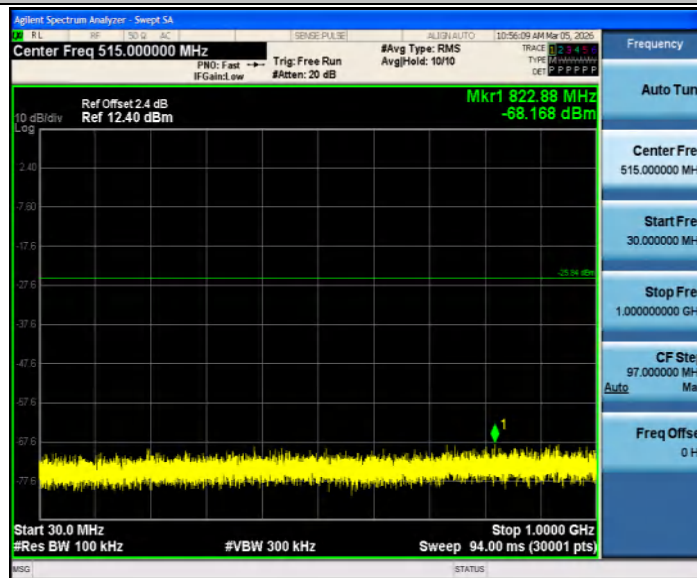
11N40SISO_Ant1_2422_1000~26500



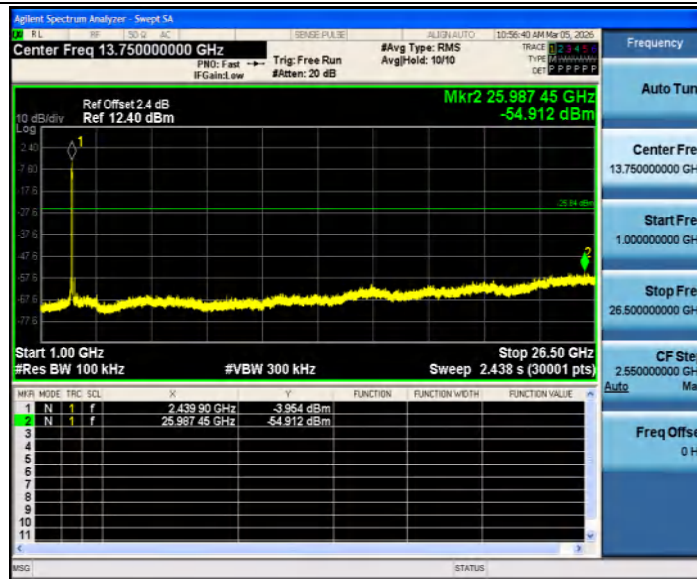
11N40SISO_Ant1_2437_0~Reference



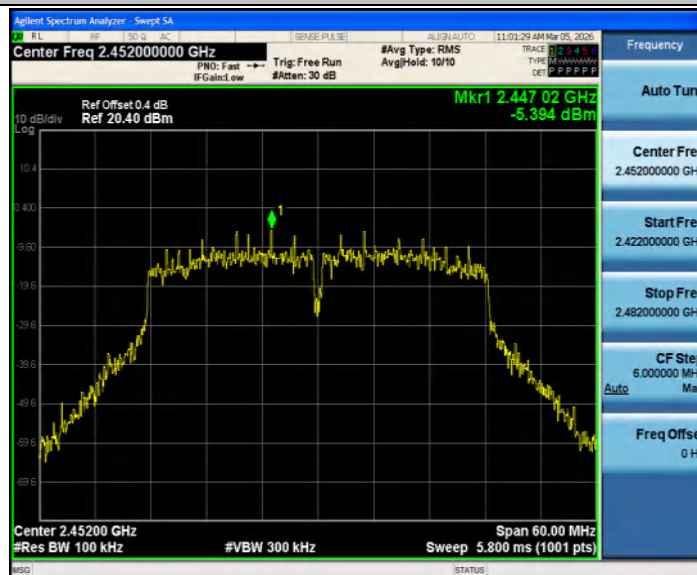
11N40SISO_Ant1_2437_30~1000



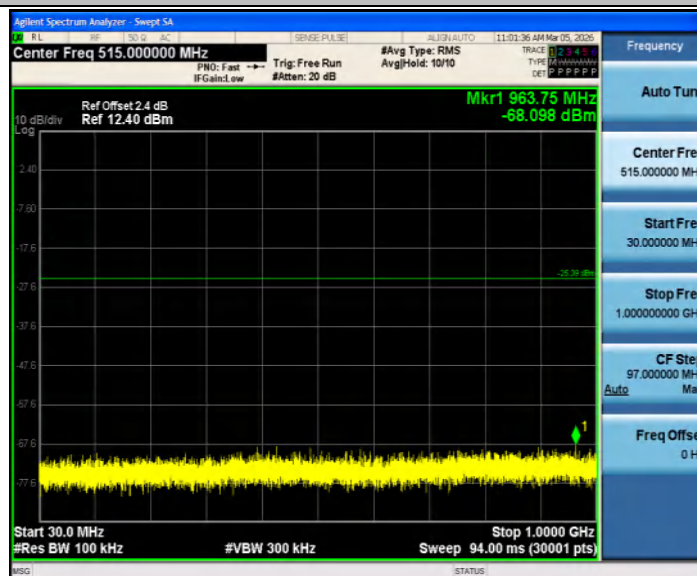
11N40SISO_Ant1_2437_1000~26500

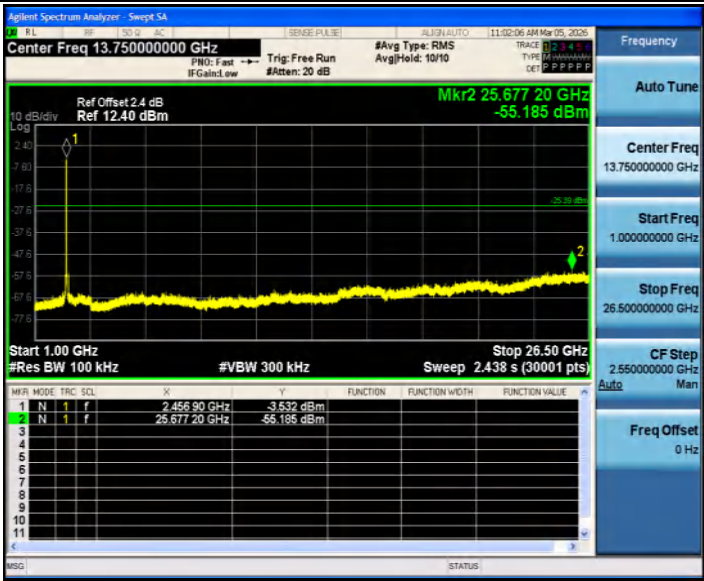


11N40SISO_Ant1_2452_0~Reference



11N40SISO_Ant1_2452_30~1000





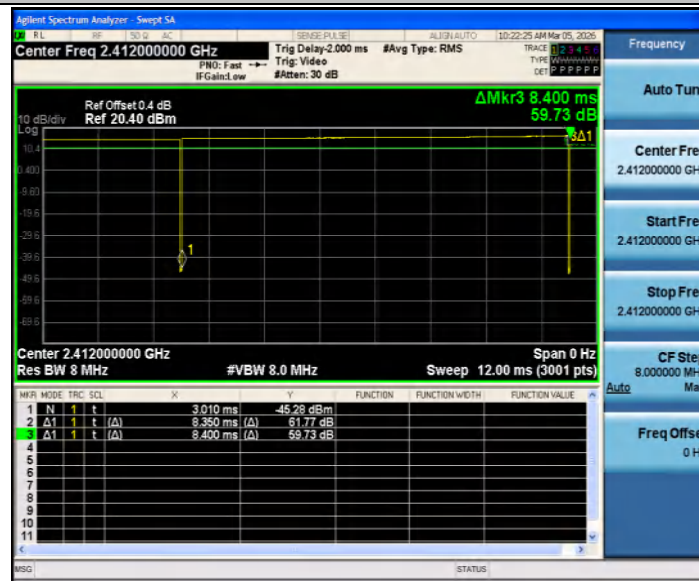
Appendix G: Duty Cycle

Test Result

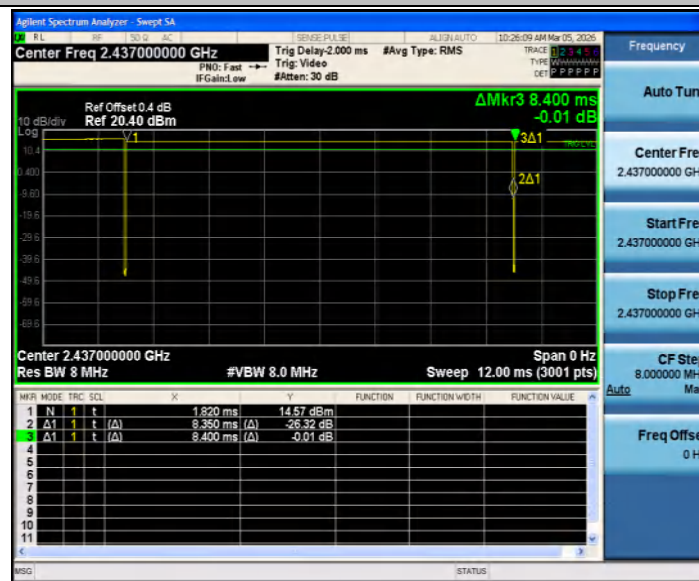
TestMode	Antenna	Frequency[MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	DC Factor [dB]	T Factor [dB]
11B	Ant1	2412	8.35	8.40	99.40	0.03	0.12
		2437	8.35	8.40	99.40	0.03	0.12
		2462	8.35	8.40	99.40	0.03	0.12
11G	Ant1	2412	0.15	0.19	78.95	1.03	6.67
		2437	0.15	0.20	75.00	1.25	6.67
		2462	0.15	0.20	75.00	1.25	6.67
11N20SISO	Ant1	2412	0.18	0.23	78.26	1.06	5.56
		2437	0.17	0.22	77.27	1.12	5.88
		2462	0.18	0.23	78.26	1.06	5.56
11N40SISO	Ant1	2422	0.18	0.23	78.26	1.06	5.56
		2437	0.18	0.23	78.26	1.06	5.56
		2452	0.18	0.23	78.26	1.06	5.56

Test Graphs

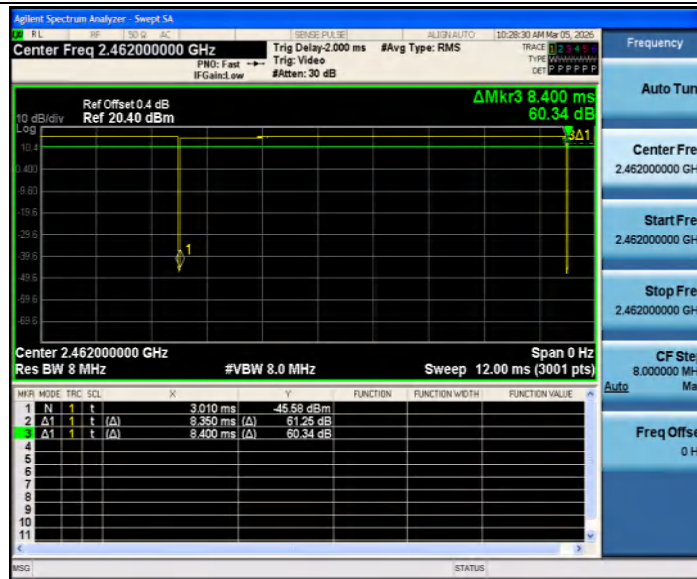
11B_Ant1_2412



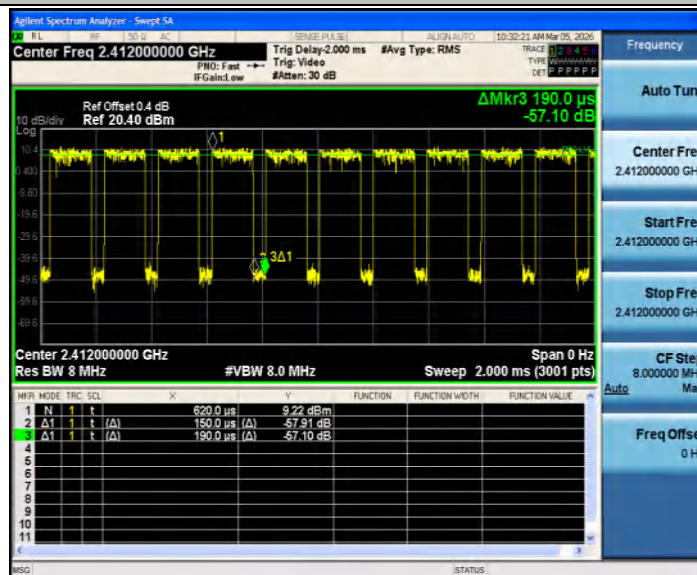
11B_Ant1_2437



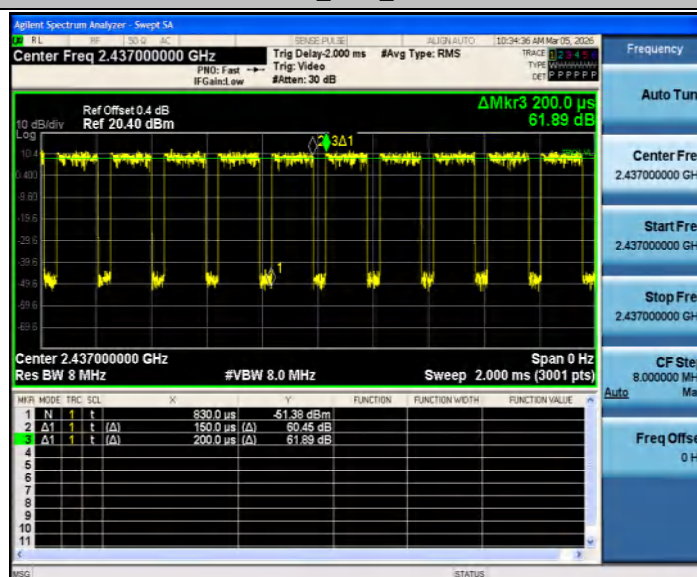
11B_Ant1_2462



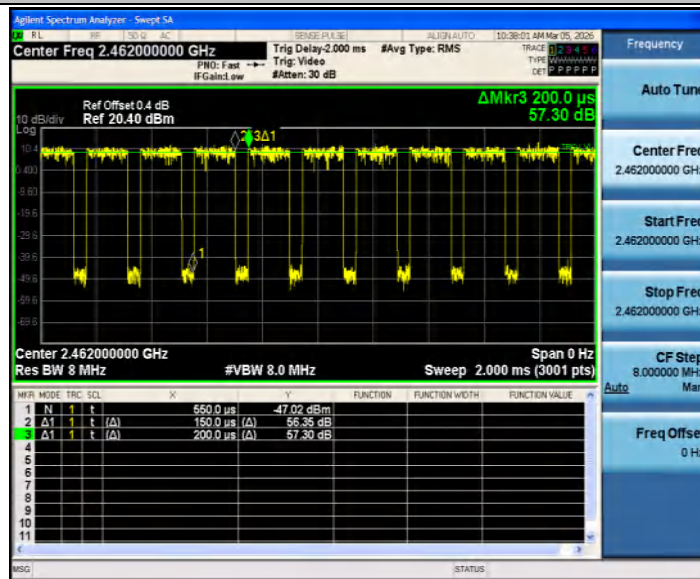
11G_Ant1_2412



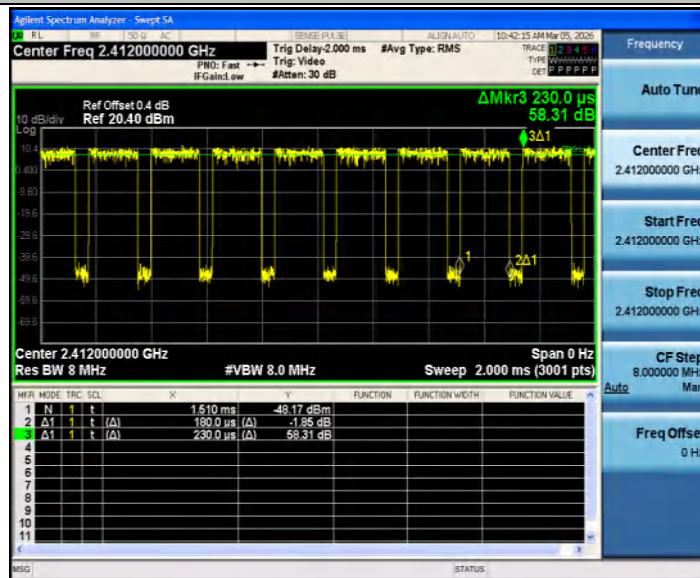
11G_Ant1_2437



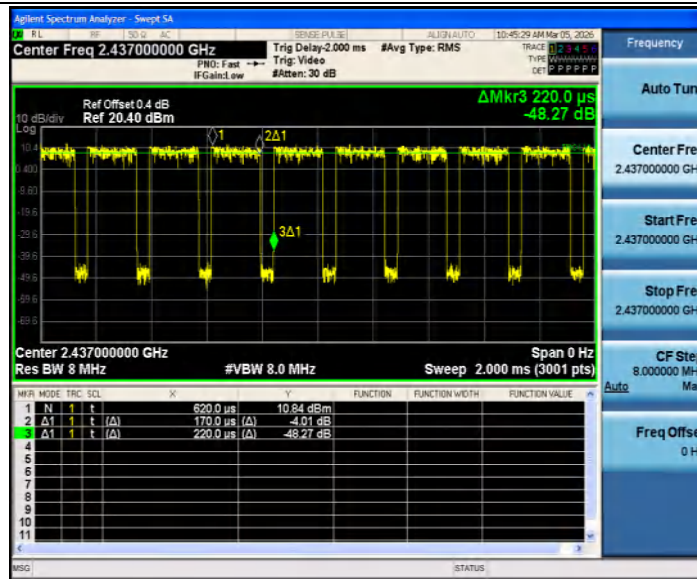
11G_Ant1_2462



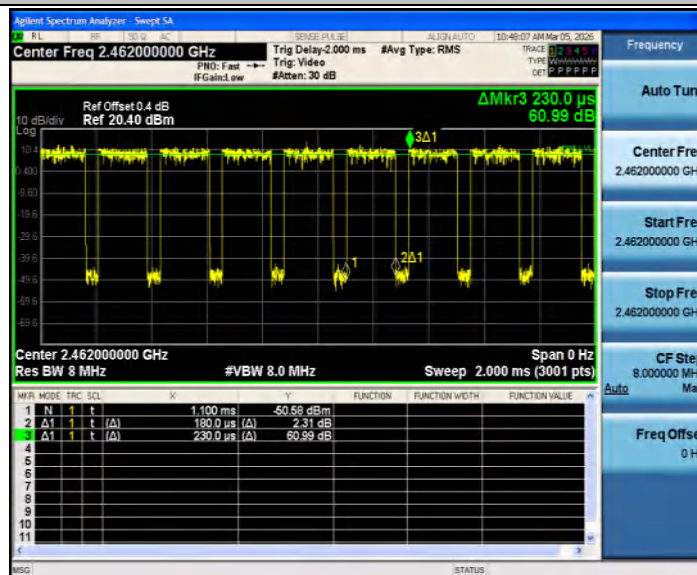
11N20SISO_Ant1_2412



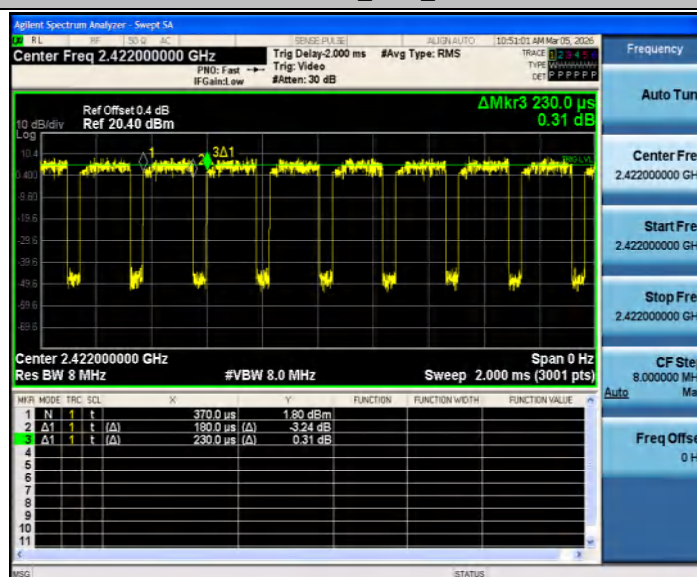
11N20SISO_Ant1_2437



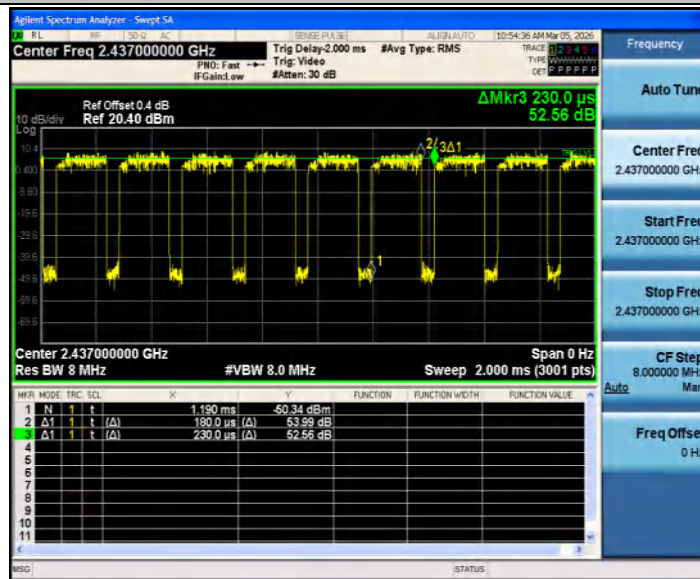
11N20SISO_Ant1_2462



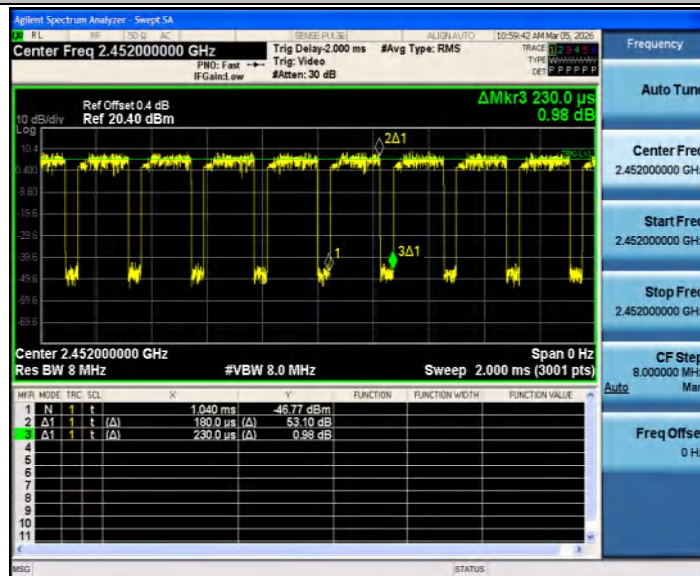
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



Appendix H: Emissions in Restricted Bands

Test Result

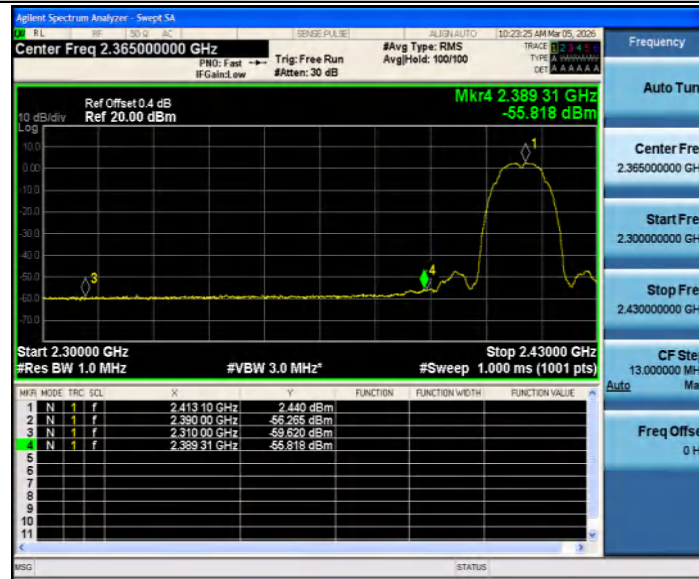
TestMode	Antenna	Channel Name	Frequency [MHz]	Detector	Freq [MHz]	Result [dBm]	Gain [dB]	DC Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
11B	Ant1	Low	2412	AV	2310.000	-59.62	2.00	0.03	37.61	≤54	PASS
				AV	2389.310	-55.82	2.00	0.03	41.41	≤54	PASS
				AV	2390.000	-56.27	2.00	0.03	40.96	≤54	PASS
				Peak	2310.000	-51.51	2.00	0.00	45.69	≤74	PASS
				Peak	2389.960	-46.76	2.00	0.00	50.44	≤74	PASS
				Peak	2390.000	-46.76	2.00	0.00	50.44	≤74	PASS
		High	2462	AV	2483.500	-55.99	2.00	0.03	41.24	≤54	PASS
				AV	2487.850	-55.05	2.00	0.03	42.18	≤54	PASS
				AV	2500.000	-58.28	2.00	0.03	38.95	≤54	PASS
				Peak	2483.500	-48.02	2.00	0.00	49.18	≤74	PASS
				Peak	2487.850	-46.33	2.00	0.00	50.87	≤74	PASS
				Peak	2500.000	-51.36	2.00	0.00	45.84	≤74	PASS
11G	Ant1	Low	2412	AV	2310.000	-59.7	2.00	1.03	38.53	≤54	PASS
				AV	2386.060	-58.76	2.00	1.03	39.47	≤54	PASS
				AV	2390.000	-59.38	2.00	1.03	38.85	≤54	PASS
				Peak	2310.000	-51.23	2.00	0.00	45.97	≤74	PASS
				Peak	2328.210	-48.74	2.00	0.00	48.46	≤74	PASS
				Peak	2390.000	-50.37	2.00	0.00	46.83	≤74	PASS
		High	2462	AV	2483.500	-59.19	2.00	1.25	39.26	≤54	PASS
				AV	2484.110	-58.25	2.00	1.25	40.20	≤54	PASS
				AV	2500.000	-59.28	2.00	1.25	39.17	≤54	PASS
				Peak	2483.500	-49.87	2.00	0.00	47.33	≤74	PASS
				Peak	2491.810	-48.53	2.00	0.00	48.67	≤74	PASS
				Peak	2500.000	-52.61	2.00	0.00	44.59	≤74	PASS
11N20SISO	Ant1	Low	2412	AV	2310.000	-60.09	2.00	1.06	38.17	≤54	PASS
				AV	2385.020	-58.58	2.00	1.06	39.68	≤54	PASS
				AV	2390.000	-59.39	2.00	1.06	38.87	≤54	PASS
				Peak	2310.000	-53.03	2.00	0.00	44.17	≤74	PASS
				Peak	2387.880	-48.73	2.00	0.00	48.47	≤74	PASS
				Peak	2390.000	-51.56	2.00	0.00	45.64	≤74	PASS
		High	2462	AV	2483.500	-59.38	2.00	1.06	38.88	≤54	PASS
				AV	2484.880	-58.06	2.00	1.06	40.20	≤54	PASS
				AV	2500.000	-59	2.00	1.06	39.26	≤54	PASS
				Peak	2483.500	-50.27	2.00	0.00	46.93	≤74	PASS
				Peak	2486.860	-48.74	2.00	0.00	48.46	≤74	PASS
				Peak	2500.000	-51.45	2.00	0.00	45.75	≤74	PASS

11N40SIS O	Ant1	Low	2422	AV	2310.000	-59.66	2.00	1.06	38.60	≤54	PASS
				AV	2389.550	-58.02	2.00	1.06	40.24	≤54	PASS
				AV	2390.000	-58.45	2.00	1.06	39.81	≤54	PASS
				Peak	2310.000	-52.42	2.00	0.00	44.78	≤74	PASS
				Peak	2367.500	-48.57	2.00	0.00	48.63	≤74	PASS
				Peak	2390.000	-49.47	2.00	0.00	47.73	≤74	PASS
		High	2452	AV	2483.500	-58.57	2.00	1.06	39.69	≤54	PASS
				AV	2492.500	-57.91	2.00	1.06	40.35	≤54	PASS
				AV	2500.000	-59.14	2.00	1.06	39.12	≤54	PASS
				Peak	2483.500	-49.89	2.00	0.00	47.31	≤74	PASS
				Peak	2487.750	-47.64	2.00	0.00	49.56	≤74	PASS
				Peak	2500.000	-50.97	2.00	0.00	46.23	≤74	PASS

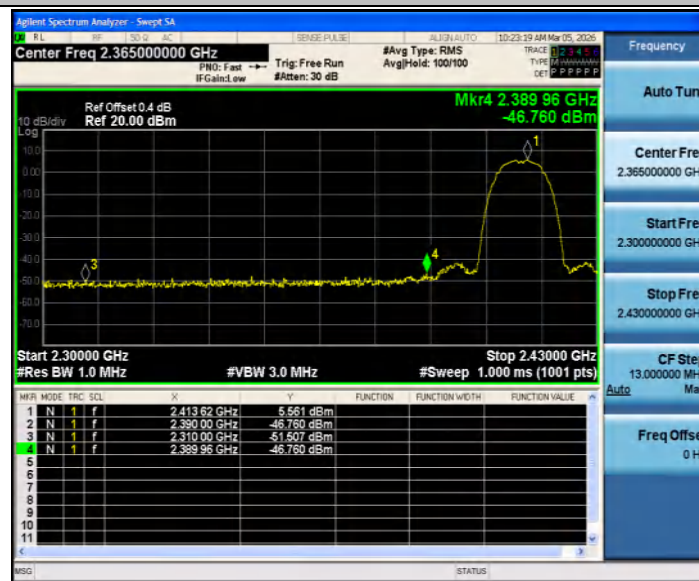
Note: The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

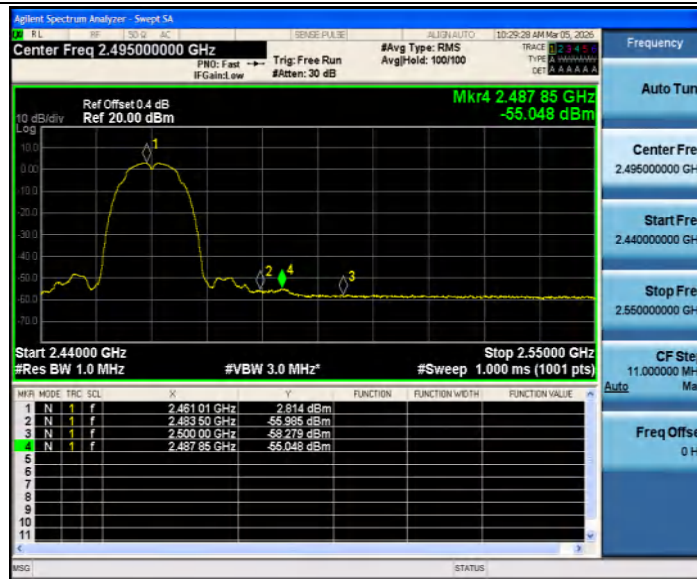
11B_Ant1_Low_2412_AV



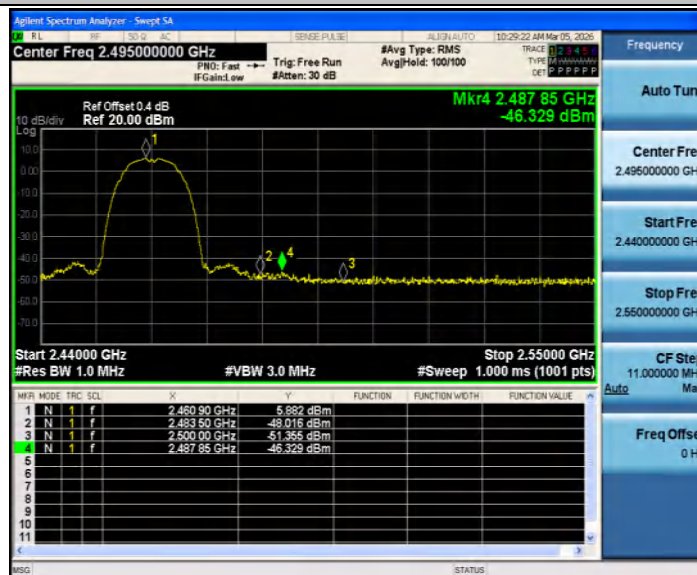
11B_Ant1_Low_2412_Peak



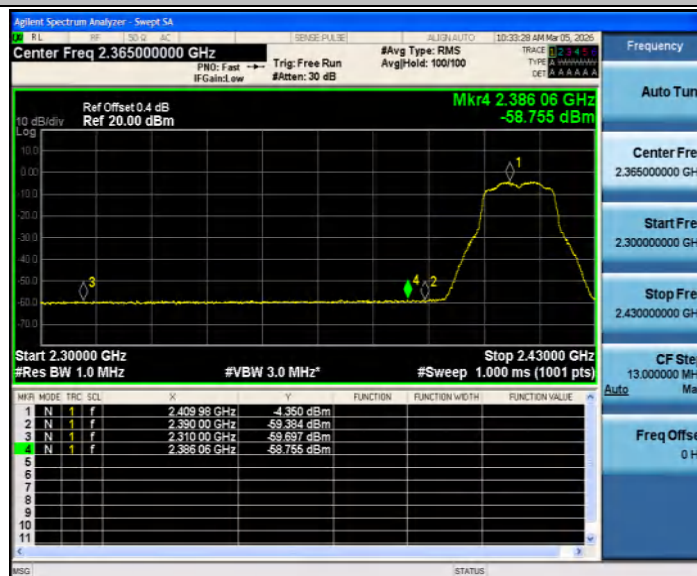
11B_Ant1_High_2462_AV



11B_Ant1_High_2462_Peak



11G_Ant1_Low_2412_AV



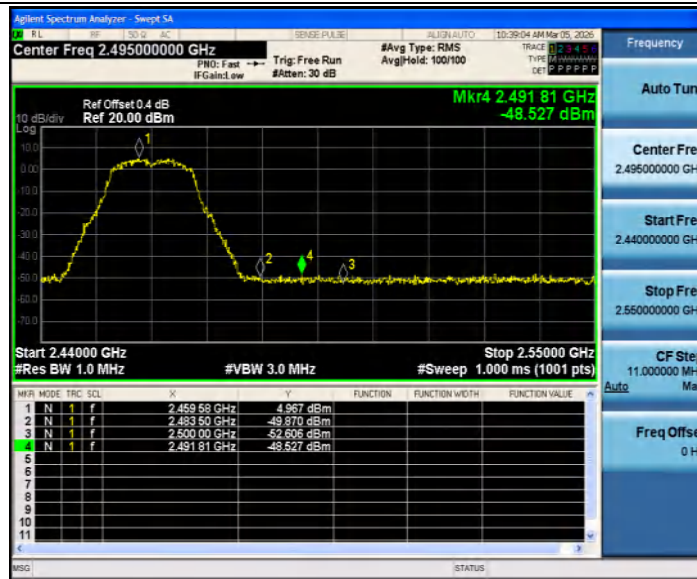
11G_Ant1_Low_2412_Peak



11G_Ant1_High_2462_AV



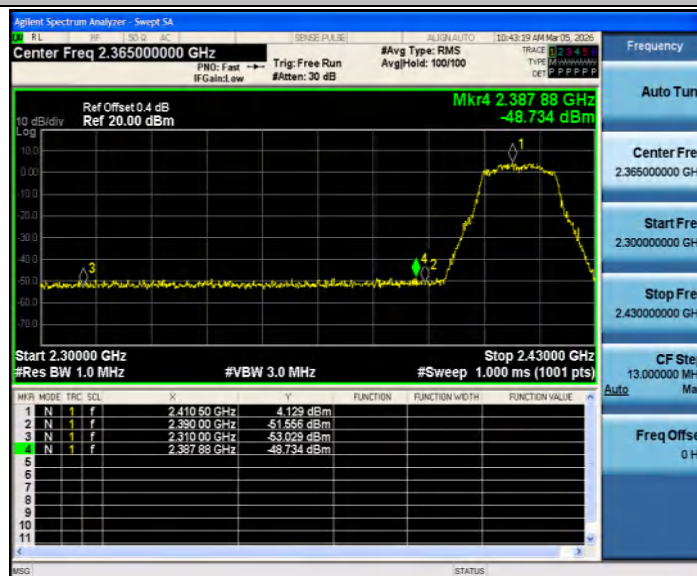
11G_Ant1_High_2462_Peak



11N20SISO_Ant1_Low_2412_AV



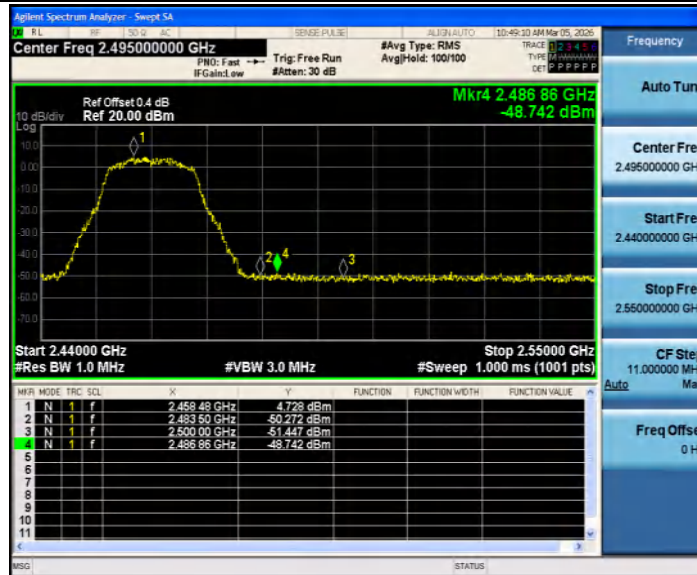
11N20SISO_Ant1_Low_2412_Peak



11N20SISO_Ant1_High_2462_AV



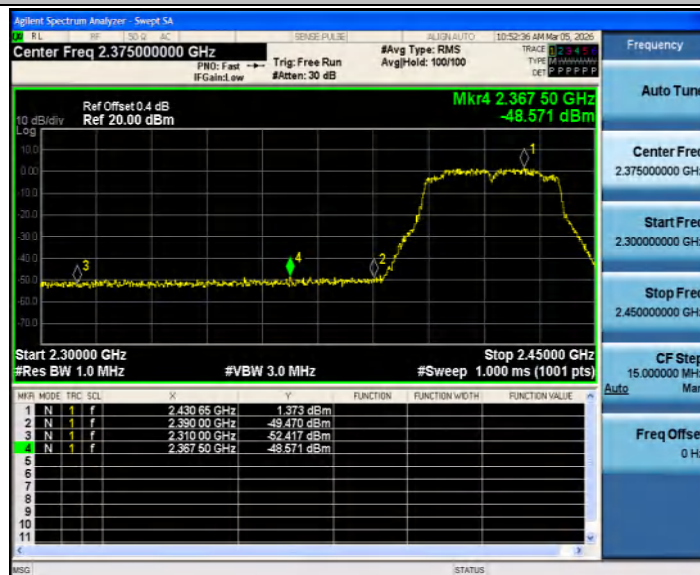
11N20SISO_Ant1_High_2462_Peak



11N40SISO_Ant1_Low_2422_AV



11N40SISO_Ant1_Low_2422_Peak



11N40SISO_Ant1_High_2452_AV



11N40SISO_Ant1_High_2452_Peak

