

Appendix A

RF Test Data for 2.4GWIFI (Conducted Measurement)

Product Name: Smart Ear Cleaning Device
Test Model: Elite 14

Environmental Conditions

Temperature:	23.8°C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Suichao Lai
Supervised by:	Yan Chen

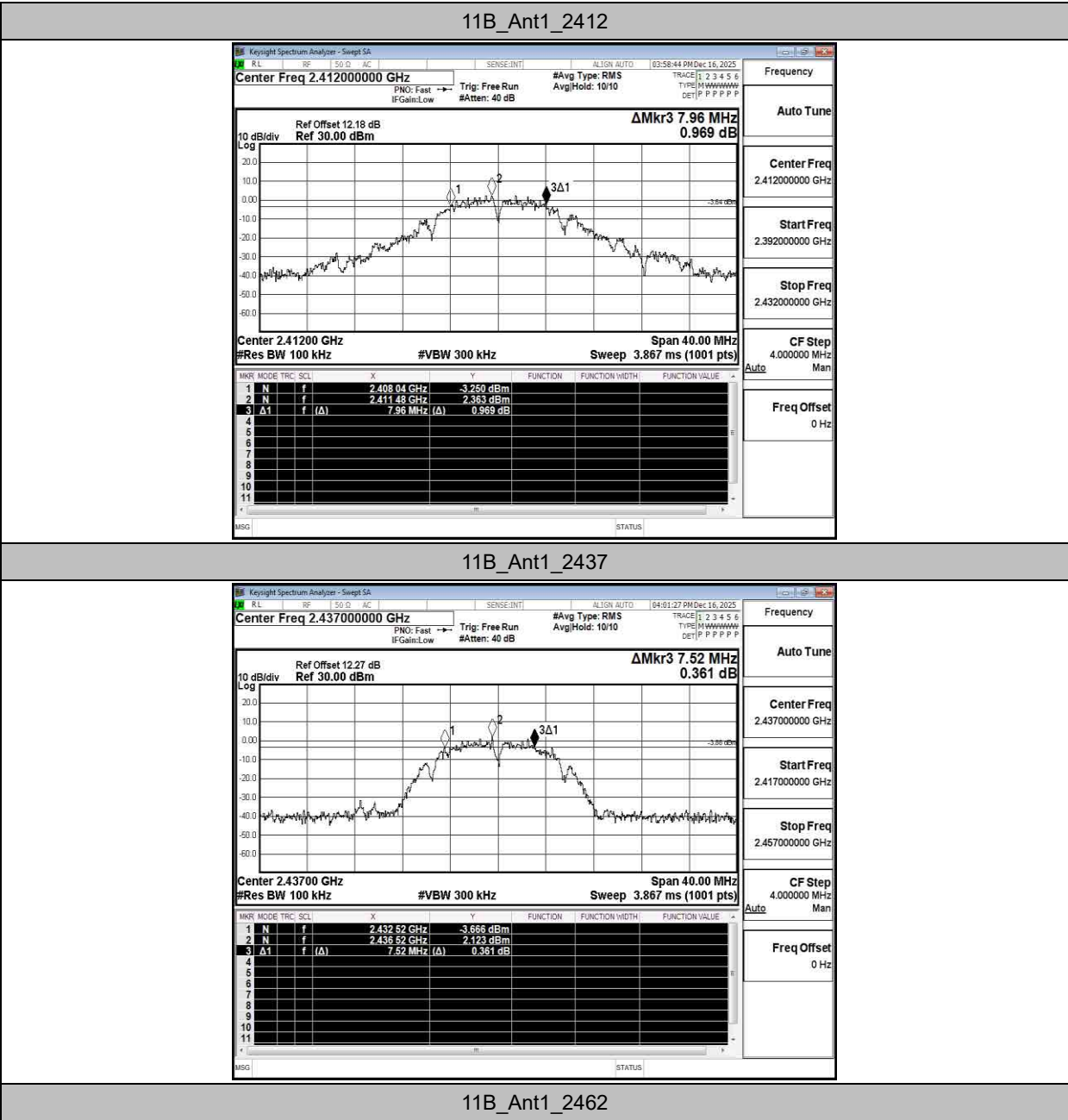
A.1 DTS Bandwidth

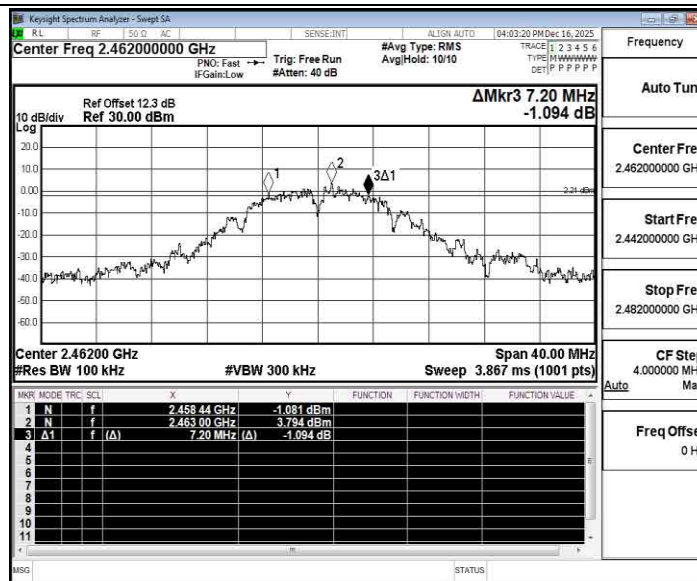
Test Result

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	7.960	2408.040	2416.000	0.5	PASS
		2437	7.520	2432.520	2440.040	0.5	PASS
		2462	7.200	2458.440	2465.640	0.5	PASS
11G	Ant1	2412	15.160	2404.400	2419.560	0.5	PASS
		2437	15.680	2428.840	2444.520	0.5	PASS
		2462	13.840	2455.680	2469.520	0.5	PASS
11N20SISO	Ant1	2412	14.360	2405.680	2420.040	0.5	PASS
		2437	16.120	2428.640	2444.760	0.5	PASS
		2462	15.040	2454.480	2469.520	0.5	PASS
11N40SISO	Ant1	2422	33.840	2404.480	2438.320	0.5	PASS
		2437	35.440	2419.080	2454.520	0.5	PASS
		2452	35.440	2434.480	2469.920	0.5	PASS

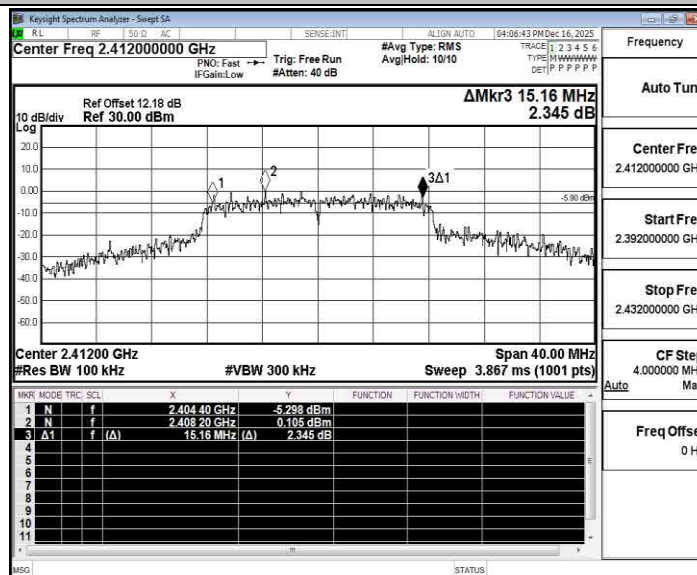
Note :offset=System attenuation +cabal loss

Test Graphs

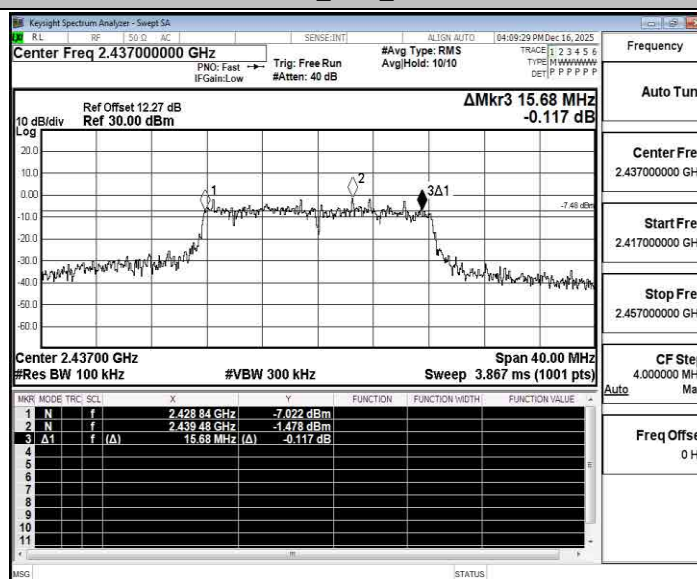


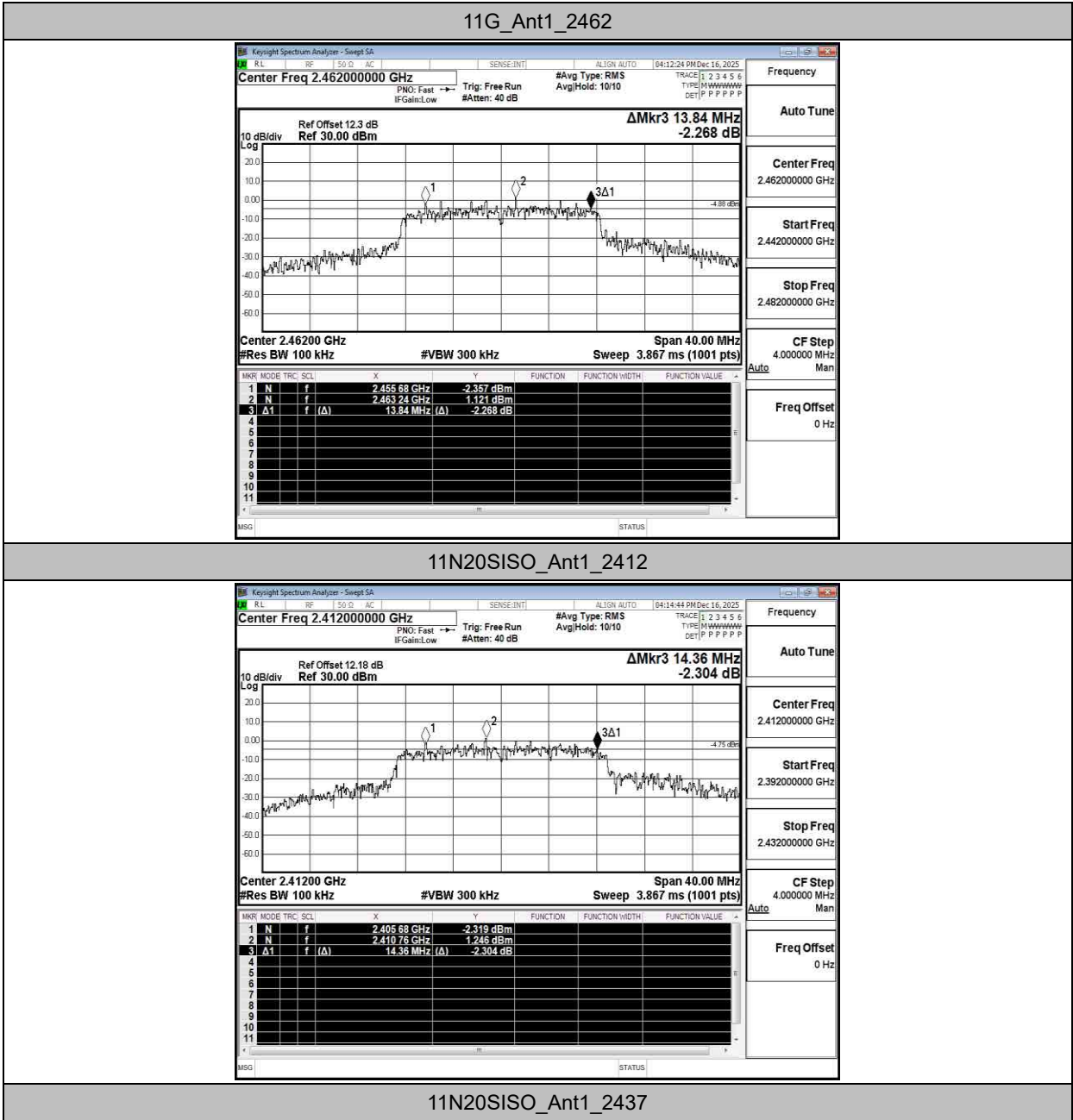


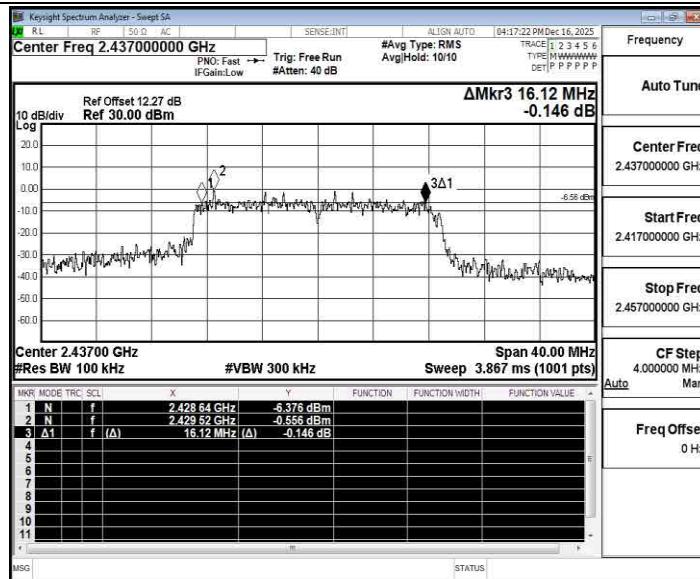
11G_Ant1_2412



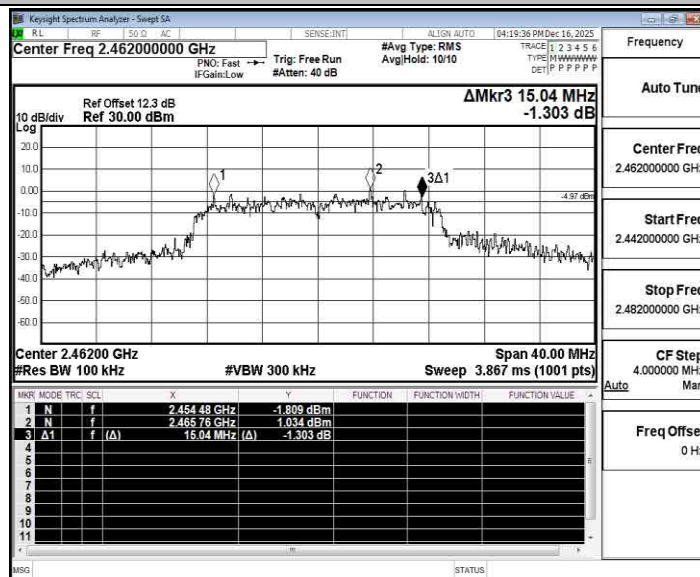
11G_Ant1_2437



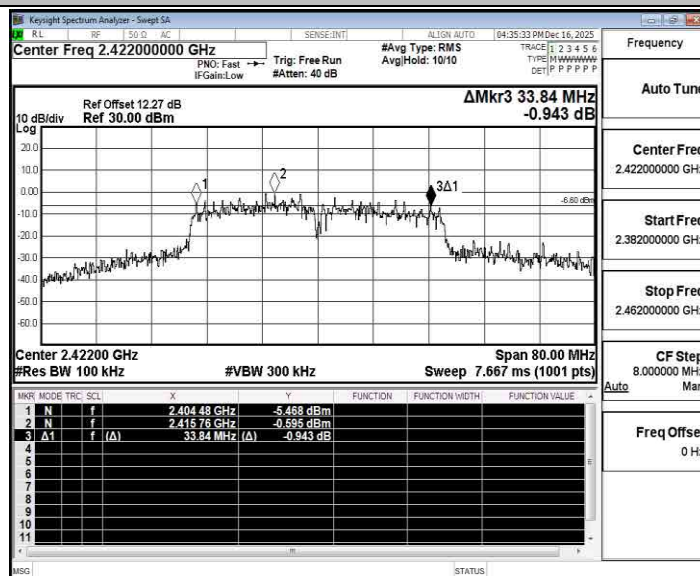


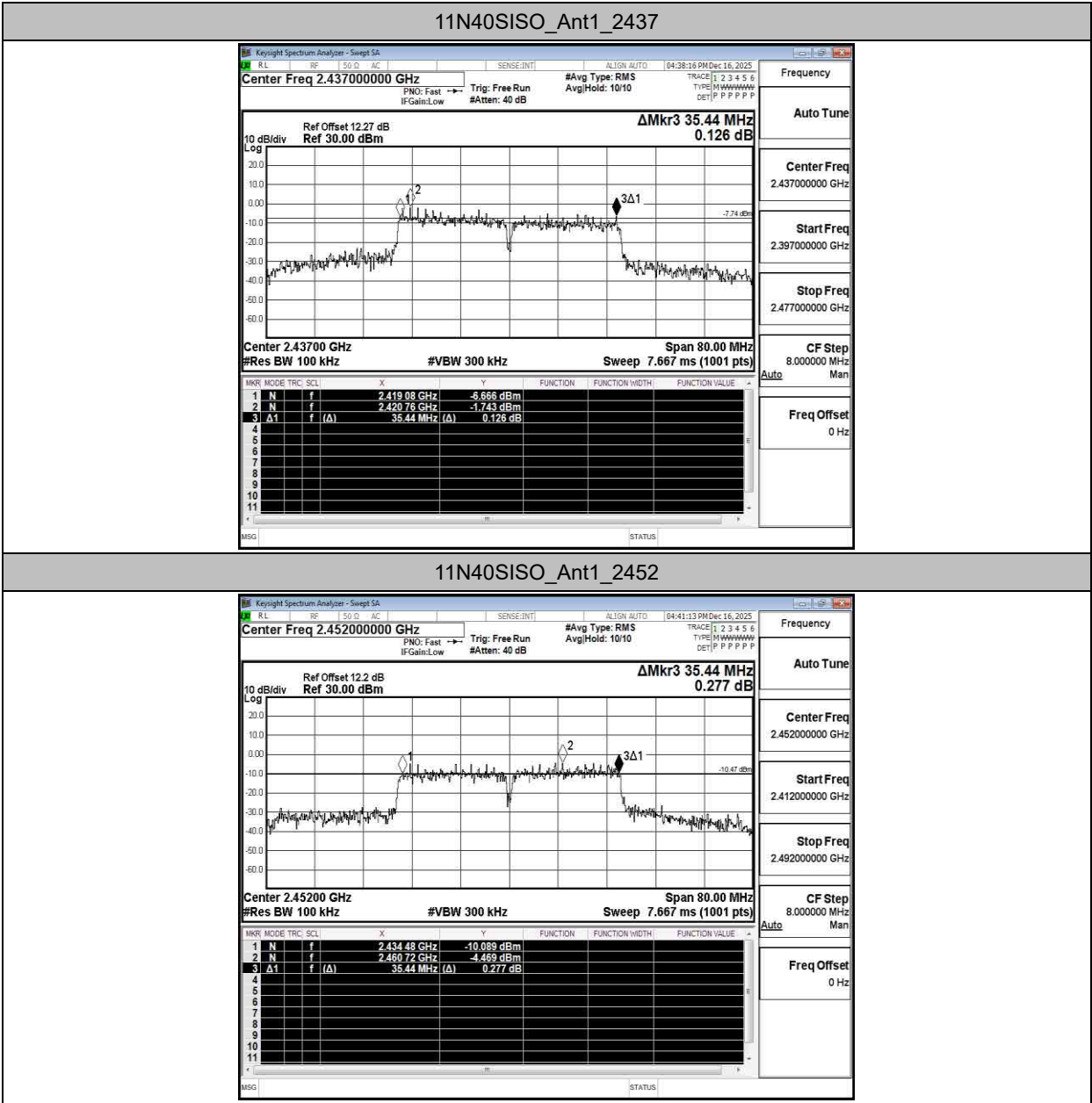


11N20SISO_Ant1_2462



11N40SISO_Ant1_2422





A.2 Maximum Average Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant1	8.63	30	Pass
NVNT	b	2437	Ant1	8.56	30	Pass
NVNT	b	2462	Ant1	8.34	30	Pass
NVNT	g	2412	Ant1	8.09	30	Pass
NVNT	g	2437	Ant1	7.92	30	Pass
NVNT	g	2462	Ant1	8.29	30	Pass
NVNT	n20	2412	Ant1	7.52	30	Pass
NVNT	n20	2437	Ant1	7.31	30	Pass
NVNT	n20	2462	Ant1	7.06	30	Pass
NVNT	n40	2422	Ant1	6.84	30	Pass
NVNT	n40	2437	Ant1	7.29	30	Pass
NVNT	n40	2452	Ant1	6.75	30	Pass

Note :offset=System attenuation +cable loss

A.3 Maximum power spectral density

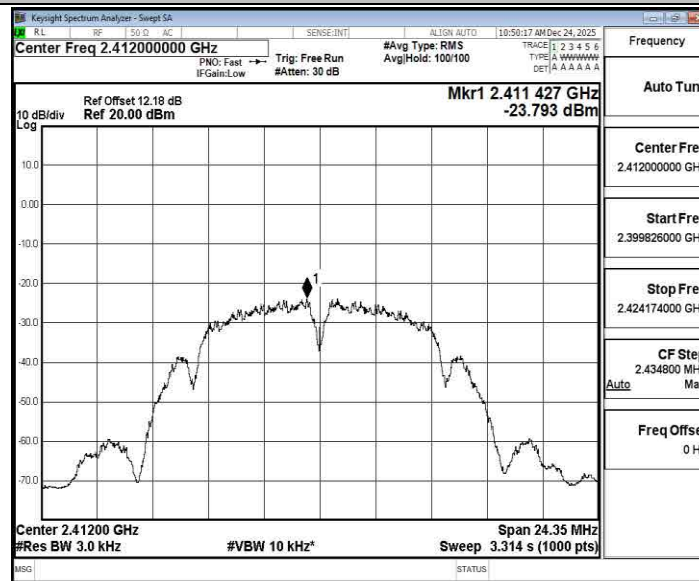
Test Result

TestMode	Antenna	Frequency[MHz]	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-23.45	≤8.00	PASS
		2437	-25.37	≤8.00	PASS
		2462	-24.35	≤8.00	PASS
11G	Ant1	2412	-24.15	≤8.00	PASS
		2437	-25.54	≤8.00	PASS
		2462	-24.81	≤8.00	PASS
11N20SISO	Ant1	2412	-25.25	≤8.00	PASS
		2437	-24.47	≤8.00	PASS
		2462	-25.72	≤8.00	PASS
11N40SISO	Ant1	2422	-27.42	≤8.00	PASS
		2437	-27.93	≤8.00	PASS
		2452	-29.31	≤8.00	PASS

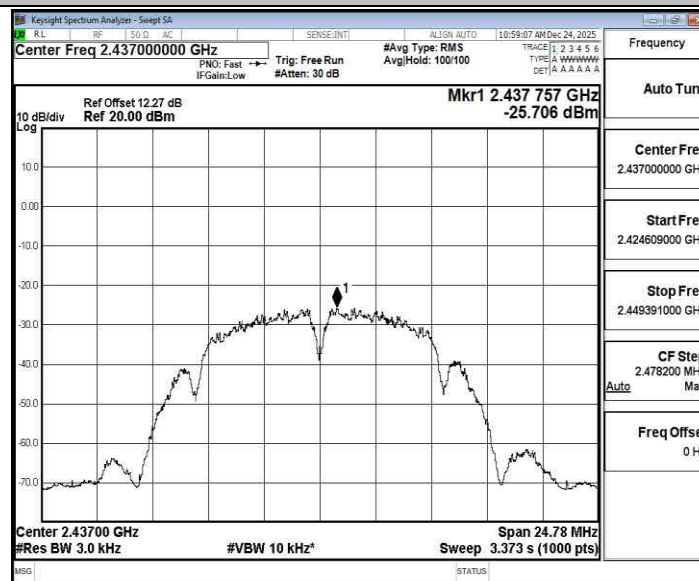
Note :offset=System attenuation +cabal loss

Test Graphs

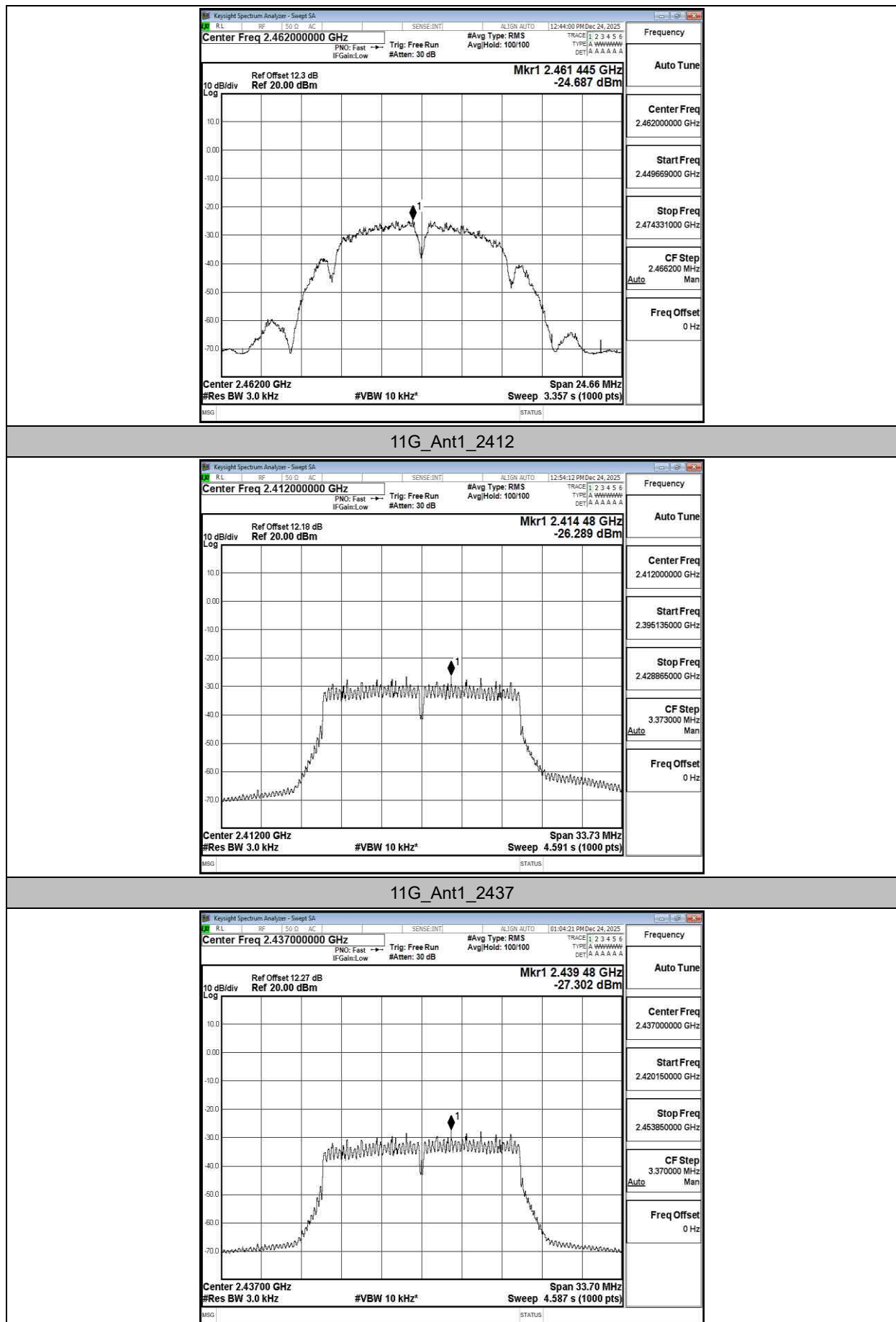
11B_Ant1_2412



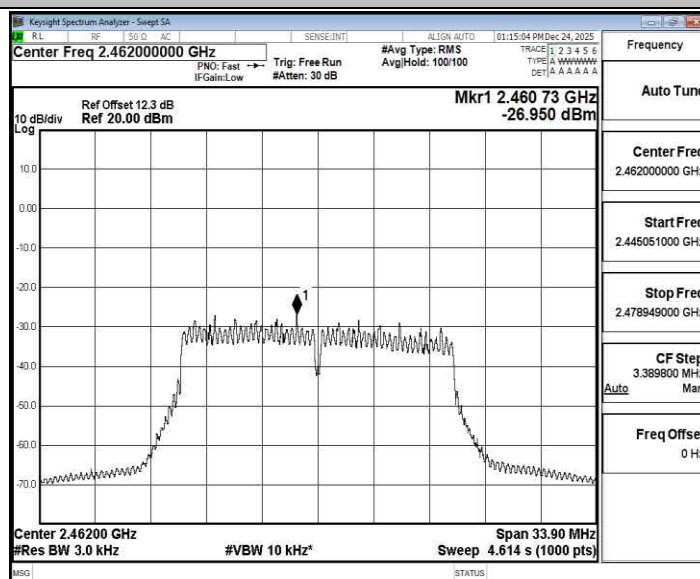
11B_Ant1_2437



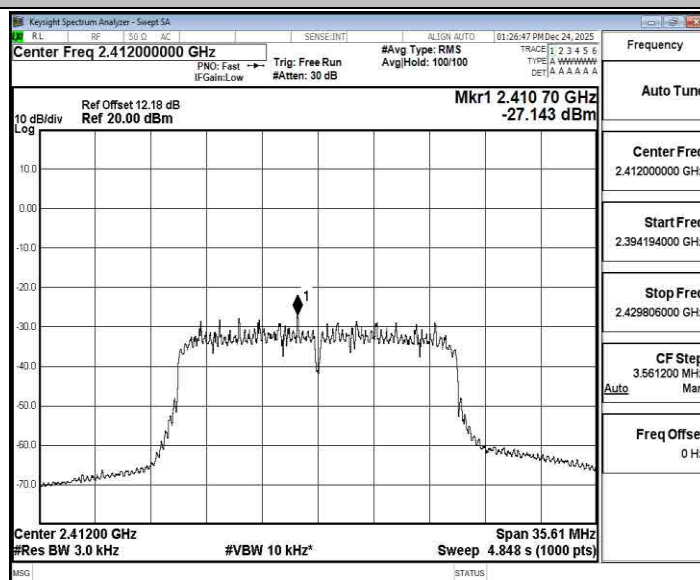
11B_Ant1_2462



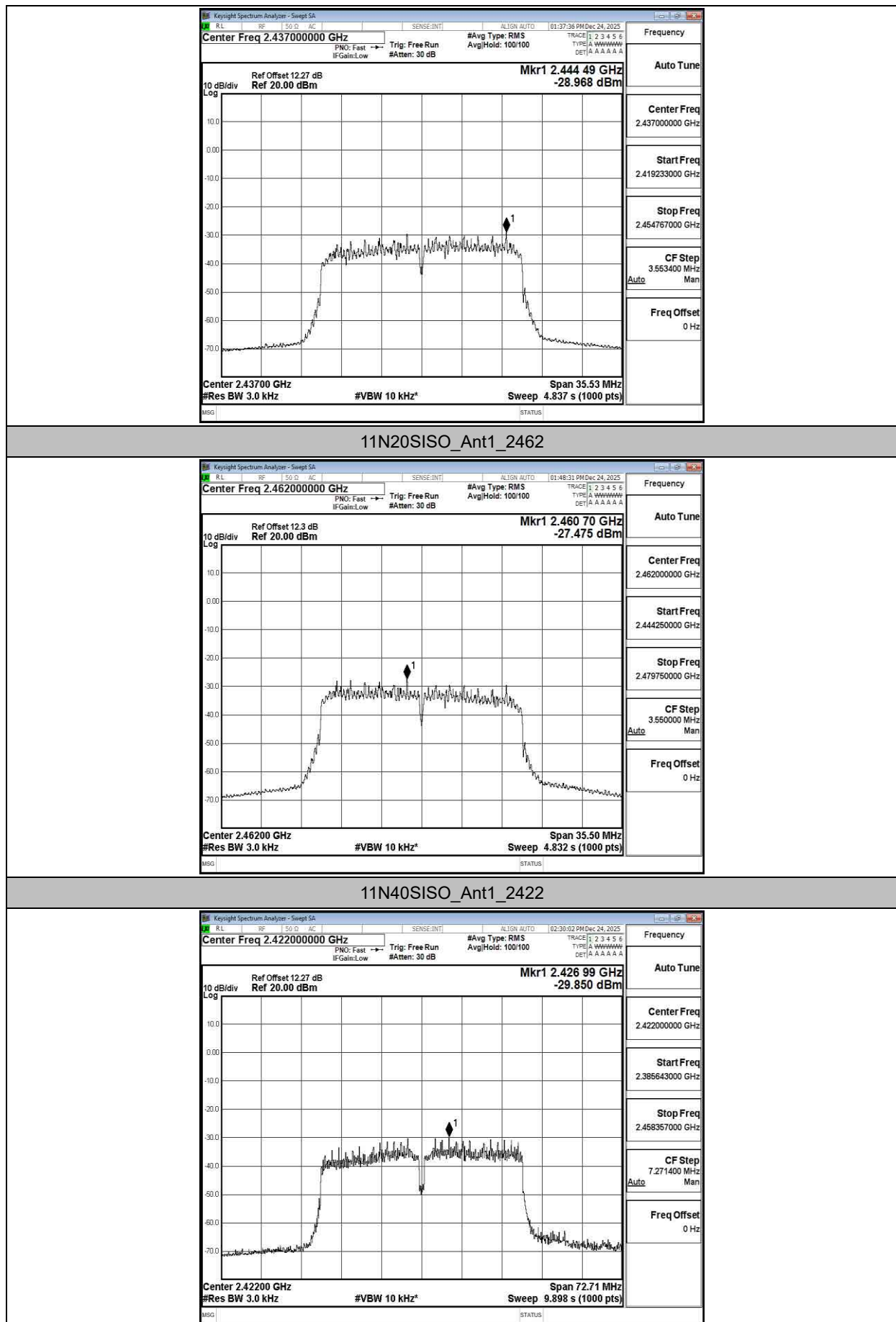
11G_Ant1_2462



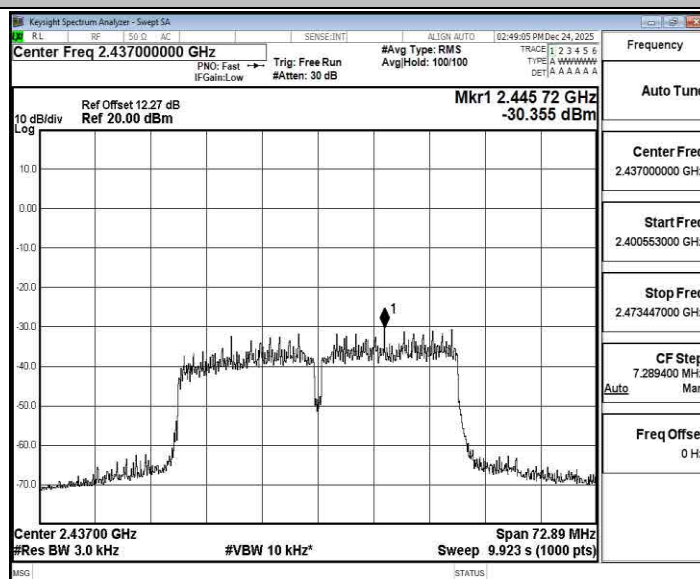
11N20SISO_Ant1_2412



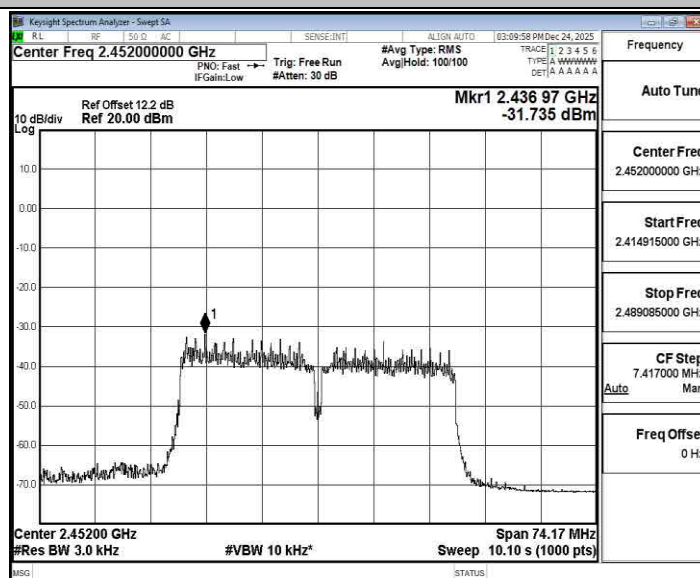
11N20SISO_Ant1_2437



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



A.4 Band edge measurements

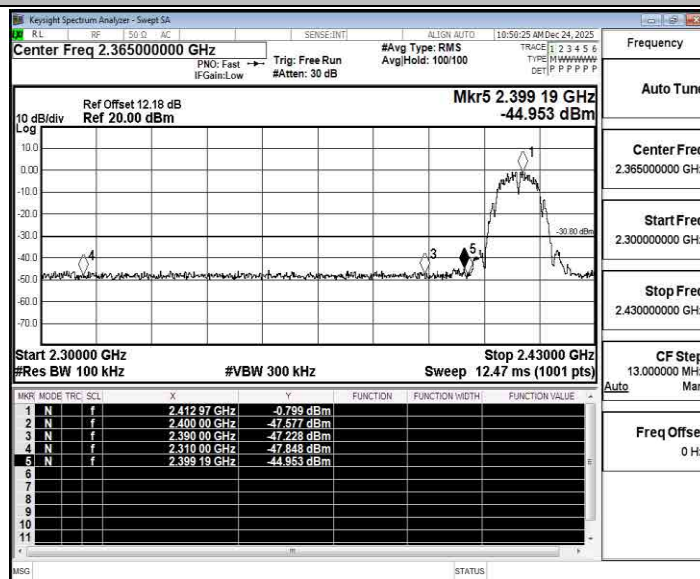
Test Result

TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	-0.80	-44.95	≤-30.8	PASS
		High	2462	-2.17	-44.66	≤-32.17	PASS
11G	Ant1	Low	2412	-4.00	-35.65	≤-34	PASS
		High	2462	-4.05	-44.64	≤-34.05	PASS
11N20SISO	Ant1	Low	2412	-5.08	-38.34	≤-35.08	PASS
		High	2462	-4.50	-44.67	≤-34.5	PASS
11N40SISO	Ant1	Low	2422	-6.18	-42	≤-36.18	PASS
		High	2452	-8.12	-44.81	≤-38.12	PASS

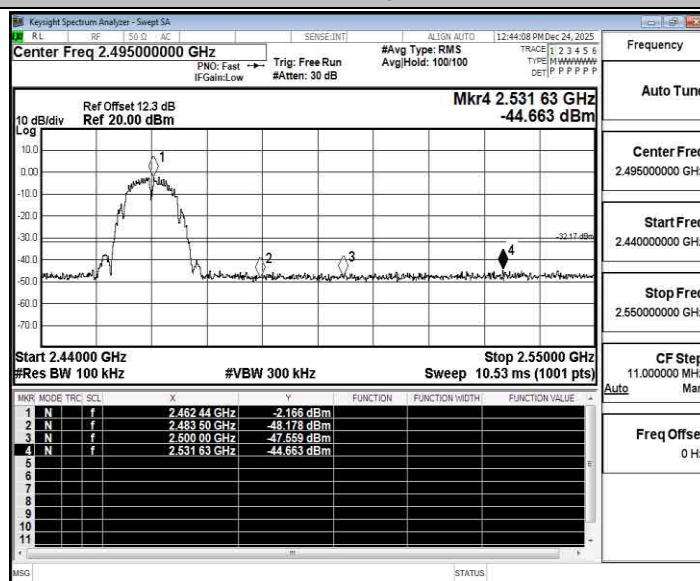
Note :offset=System attenuation +cabal loss

Test Graphs

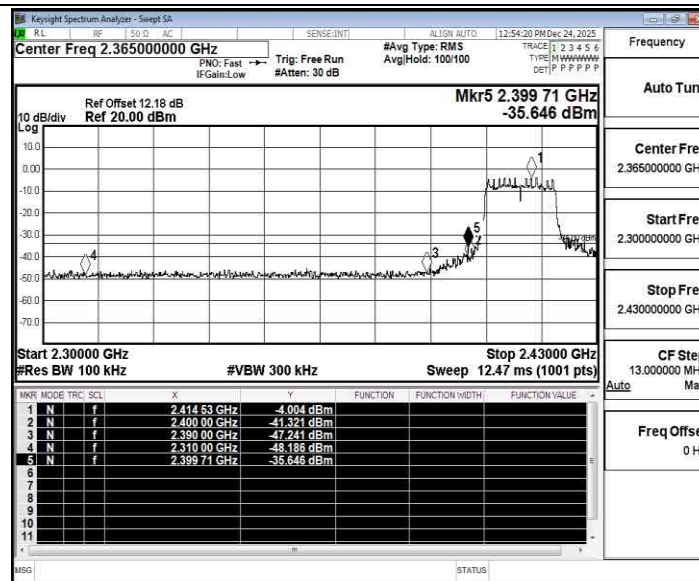
11B_Ant1_Low_2412



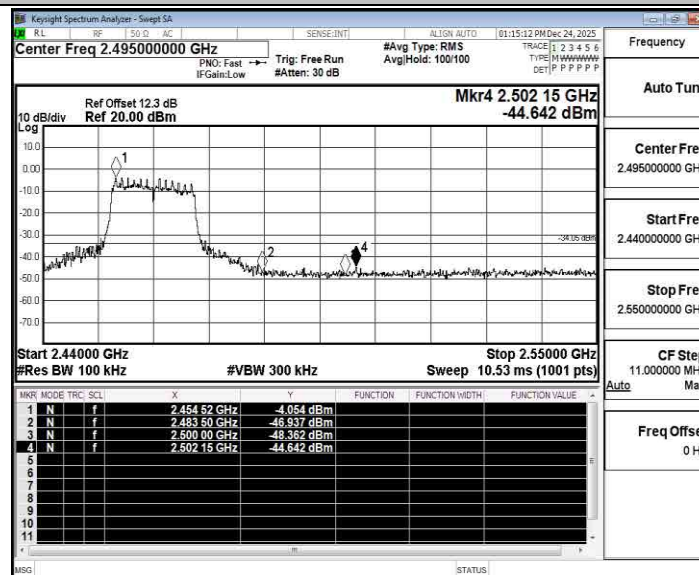
11B_Ant1_High_2462



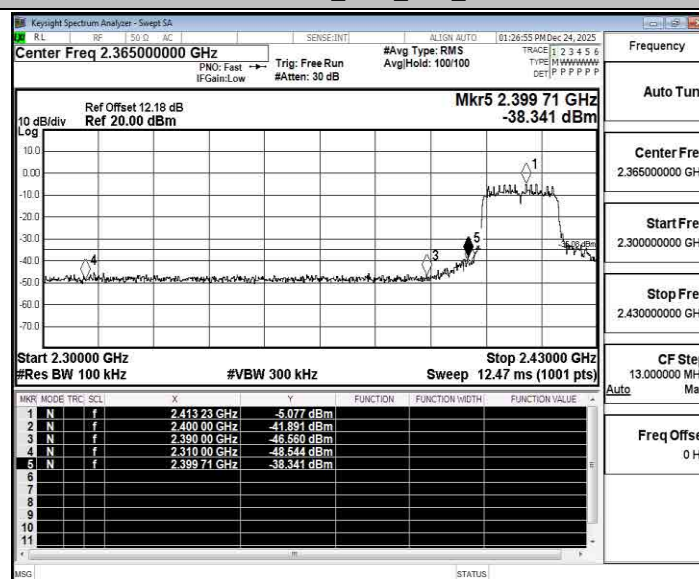
11G_Ant1_Low_2412



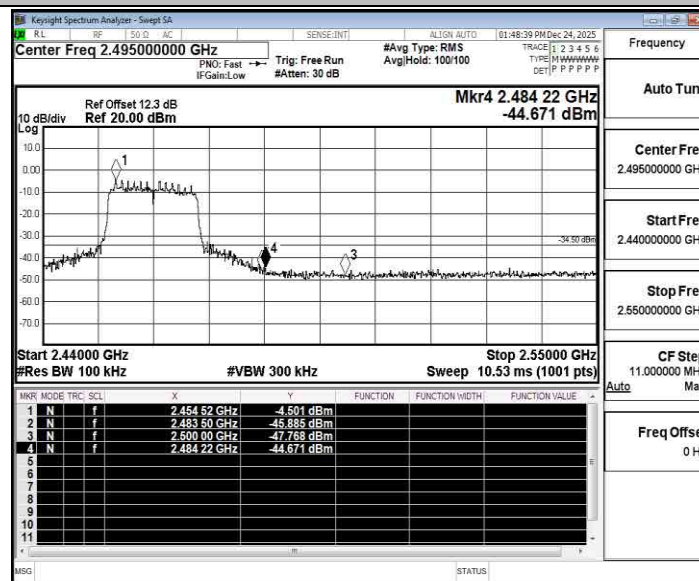
11G_Ant1_High_2462



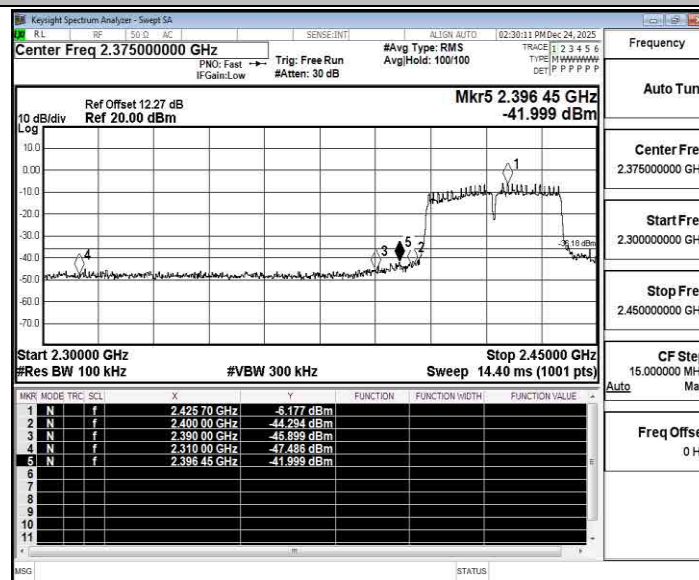
11N20SISO_Ant1_Low_2412



11N20SISO_Ant1_High_2462



11N40SISO_Ant1_Low_2422



11N40SISO_Ant1_High_2452

A.5 Conducted Spurious Emission

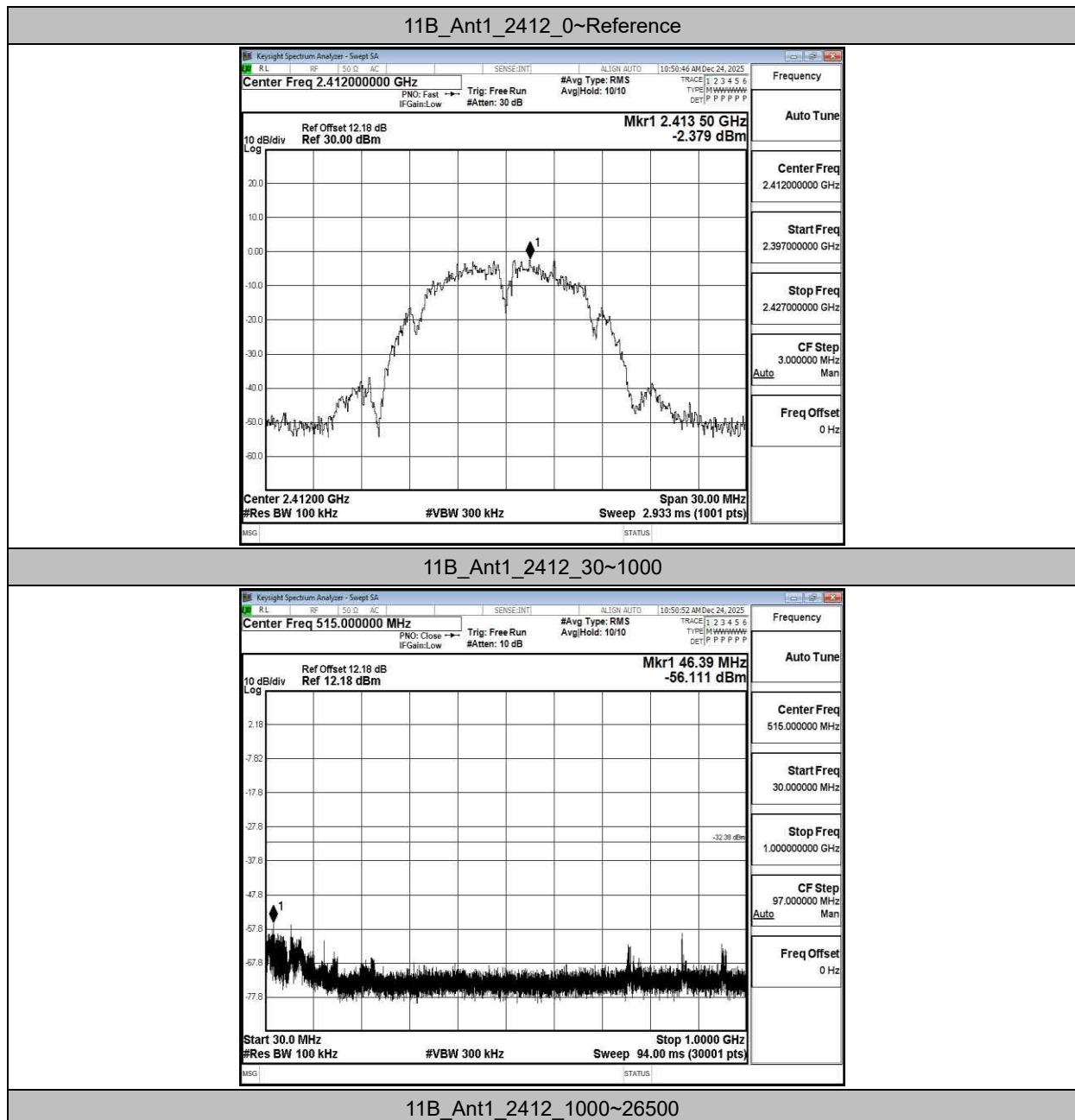
Test Result

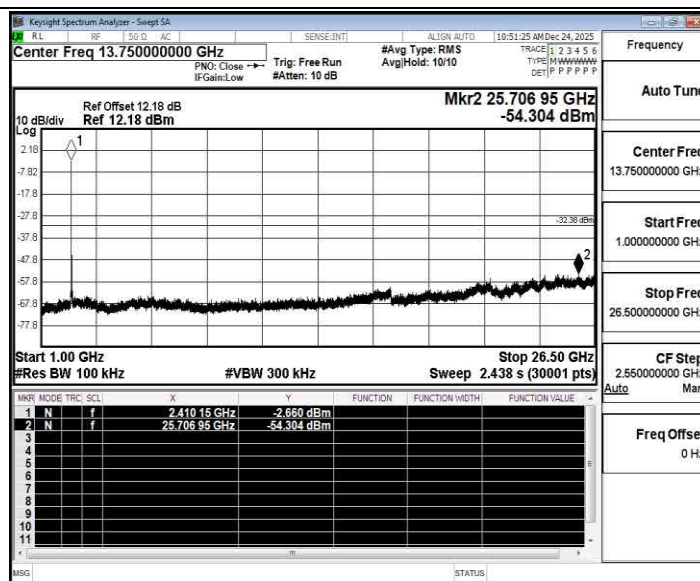
TestMode	Antenna	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	-2.38	-2.38	---	PASS
			30~1000	-2.38	-56.11	≤-32.38	PASS
			1000~26500	-2.38	-54.3	≤-32.38	PASS
		2437	Reference	-4.01	-4.01	---	PASS
			30~1000	-4.01	-55.97	≤-34.01	PASS
			1000~26500	-4.01	-54.23	≤-34.01	PASS
		2462	Reference	-2.50	-2.50	---	PASS
			30~1000	-2.50	-55.44	≤-32.5	PASS
			1000~26500	-2.50	-54.45	≤-32.5	PASS
11G	Ant1	2412	Reference	-4.22	-4.22	---	PASS
			30~1000	-4.22	-56.31	≤-34.22	PASS
			1000~26500	-4.22	-54.54	≤-34.22	PASS
		2437	Reference	-5.01	-5.01	---	PASS
			30~1000	-5.01	-56.62	≤-35.01	PASS
			1000~26500	-5.01	-54.38	≤-35.01	PASS
		2462	Reference	-4.56	-4.56	---	PASS
			30~1000	-4.56	-56.87	≤-34.56	PASS
			1000~26500	-4.56	-54.8	≤-34.56	PASS
11N20SISO	Ant1	2412	Reference	-6.01	-6.01	---	PASS
			30~1000	-6.01	-54.55	≤-36.01	PASS
			1000~26500	-6.01	-53.9	≤-36.01	PASS
		2437	Reference	-6.17	-6.17	---	PASS
			30~1000	-6.17	-55.21	≤-36.17	PASS
			1000~26500	-6.17	-54.23	≤-36.17	PASS
		2462	Reference	-5.24	-5.24	---	PASS
			30~1000	-5.24	-55.3	≤-35.24	PASS
			1000~26500	-5.24	-54.23	≤-35.24	PASS
11N40SISO	Ant1	2422	Reference	-6.42	-6.42	---	PASS
			30~1000	-6.42	-55.7	≤-36.42	PASS
			1000~26500	-6.42	-54.55	≤-36.42	PASS
		2437	Reference	-7.52	-7.52	---	PASS
			30~1000	-7.52	-53.87	≤-37.52	PASS
			1000~26500	-7.52	-54.53	≤-37.52	PASS
		2452	Reference	-8.79	-8.79	---	PASS
			30~1000	-8.79	-54.95	≤-38.79	PASS
			1000~26500	-8.79	-54.51	≤-38.79	PASS

Note :Regarding the spurious emissions from 30MHz to 26.5GHz, the cable lose have been set in

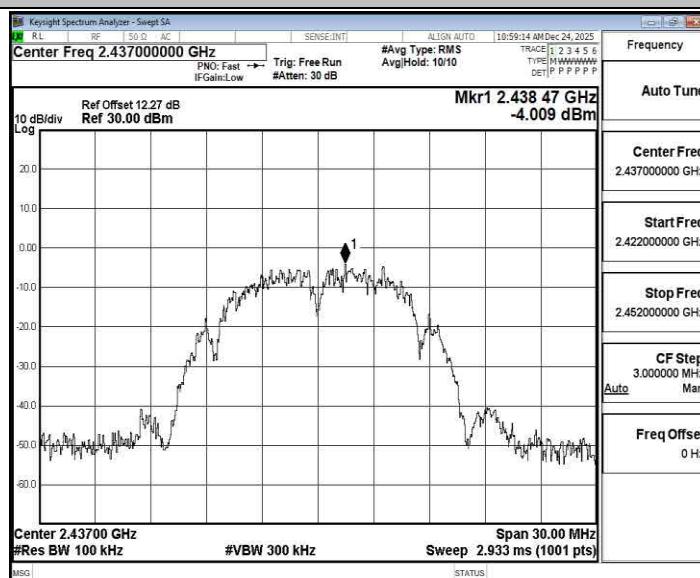
the CORREC' of the Spectrum Analyzer during the test.

Test Graphs

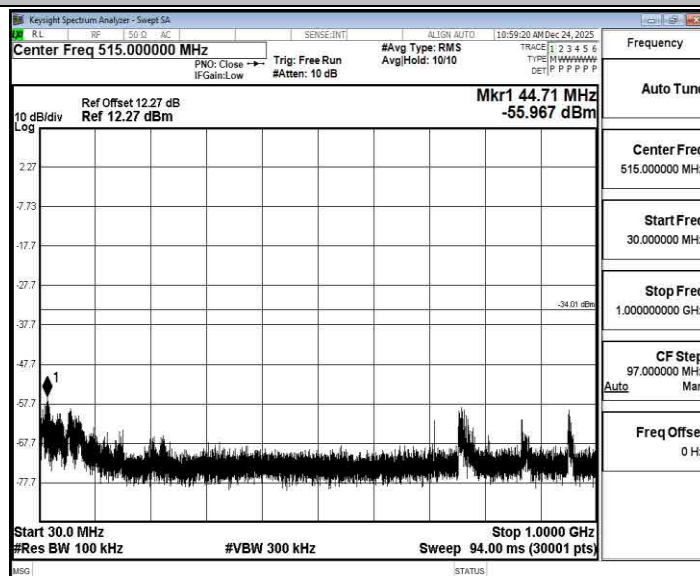




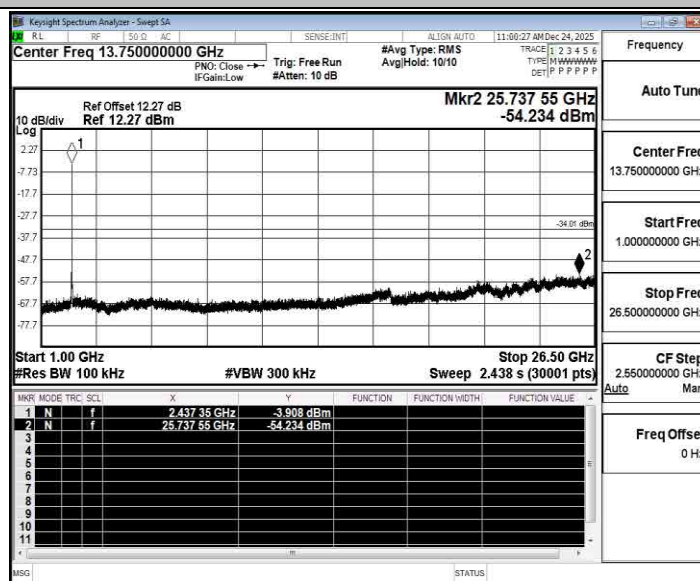
11B_Ant1_2437_0~Reference



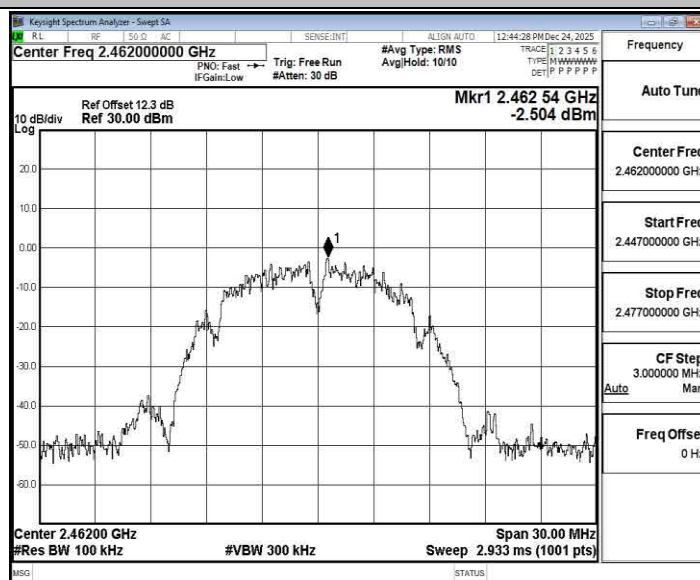
11B_Ant1_2437_30~1000



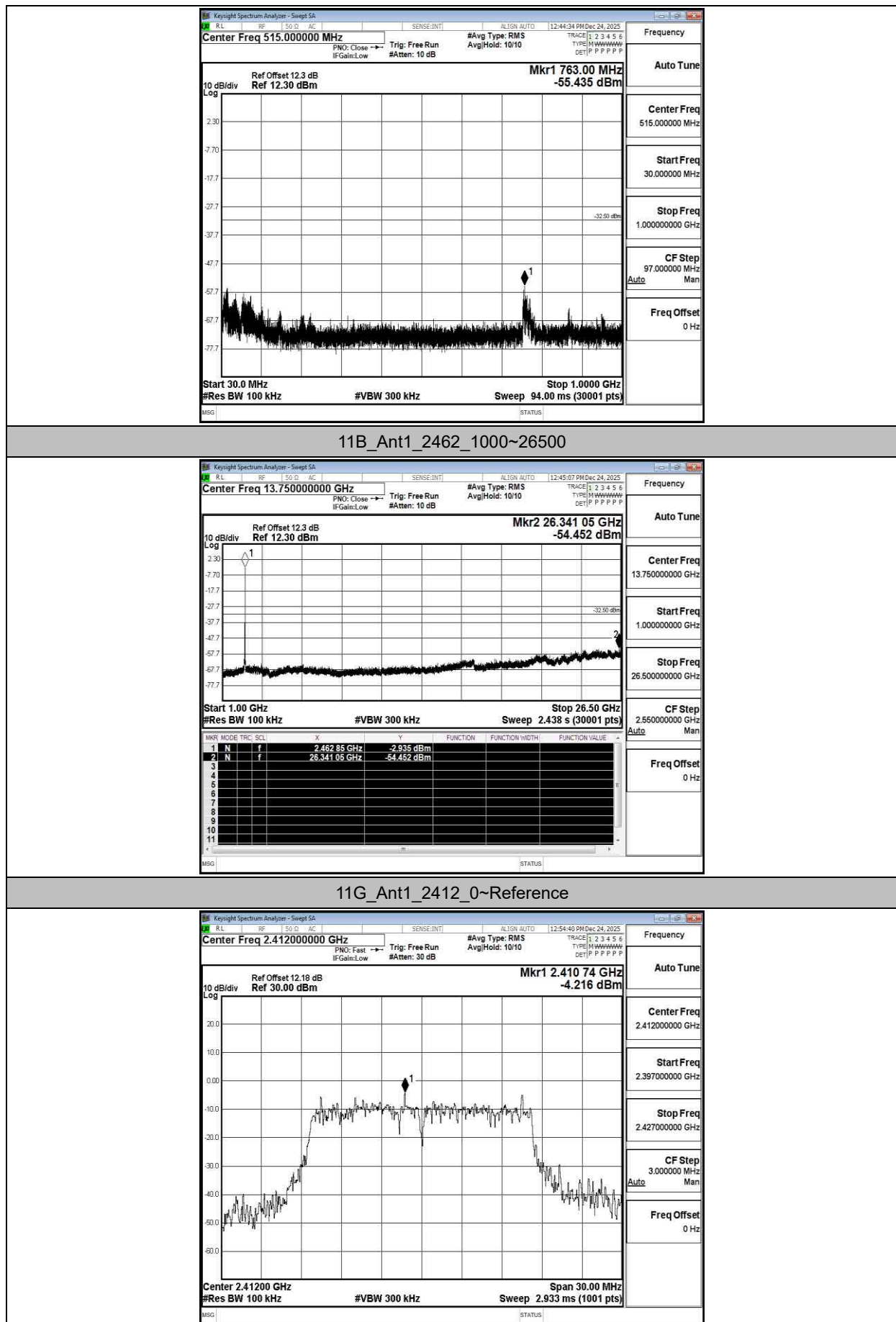
11B_Ant1_2437_1000~26500

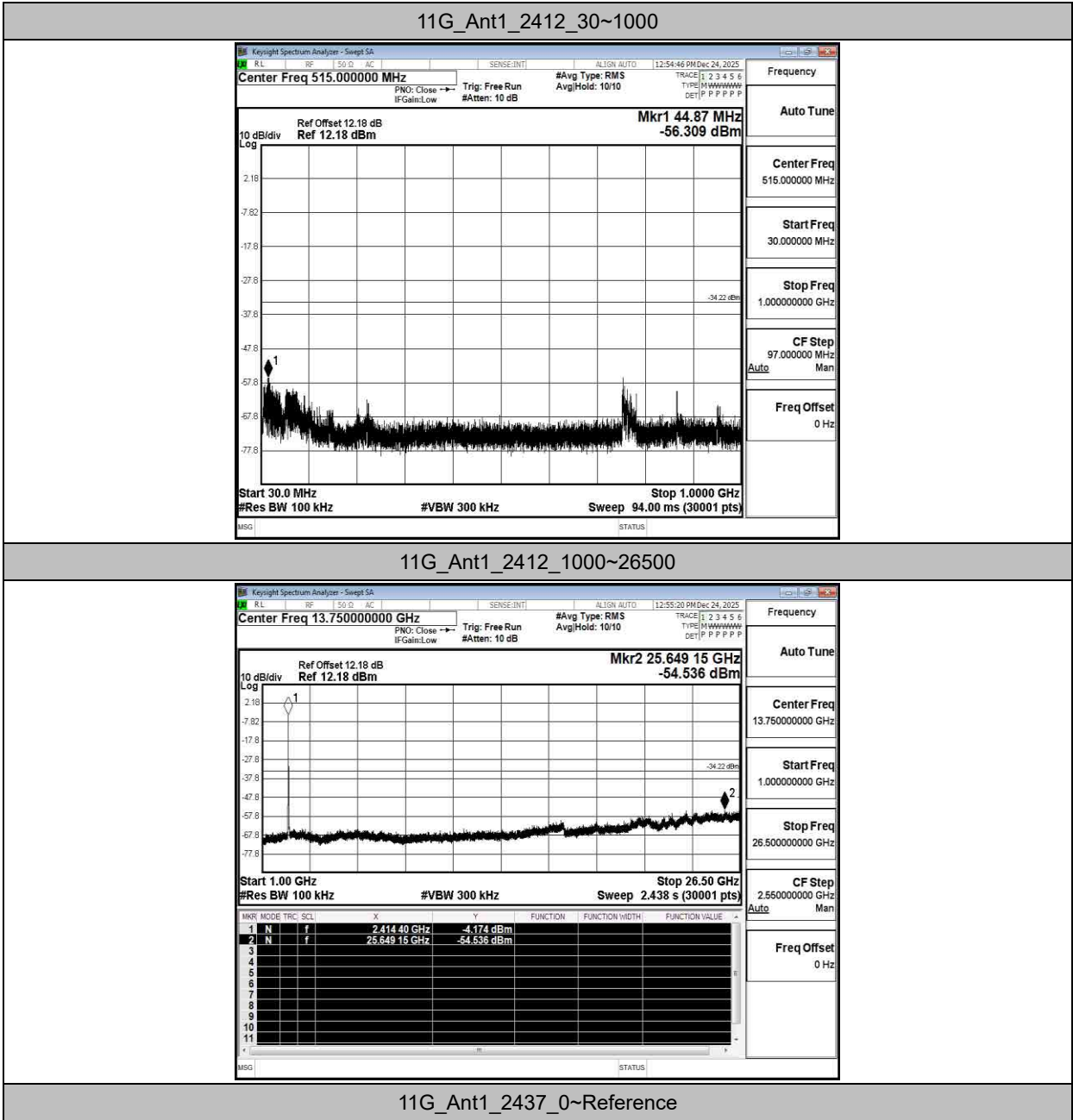


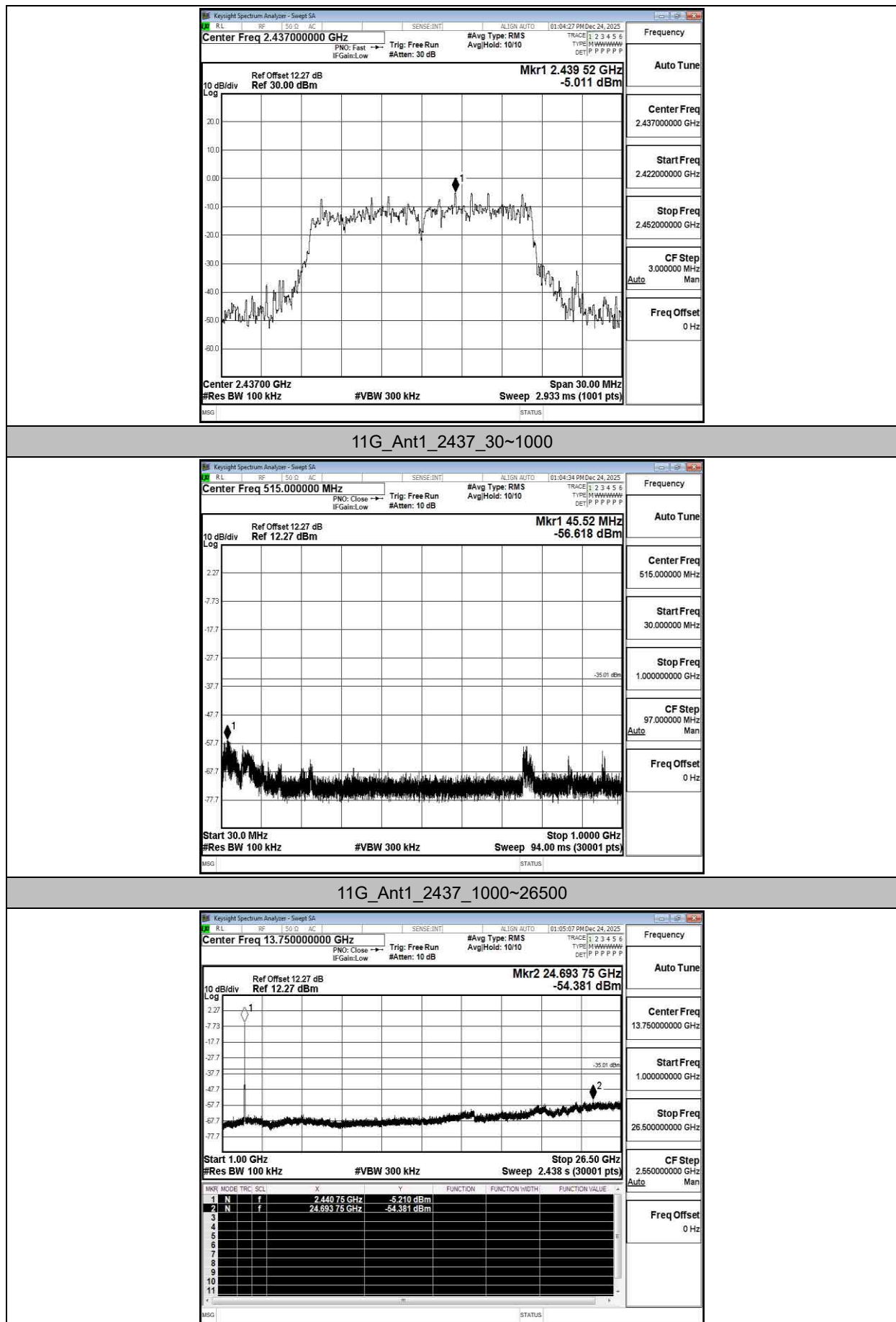
11B_Ant1_2462_0~Reference



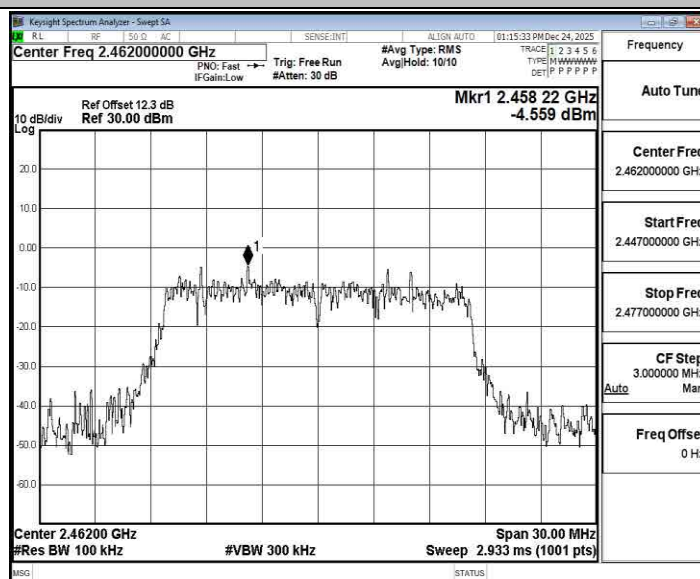
11B_Ant1_2462_30~1000



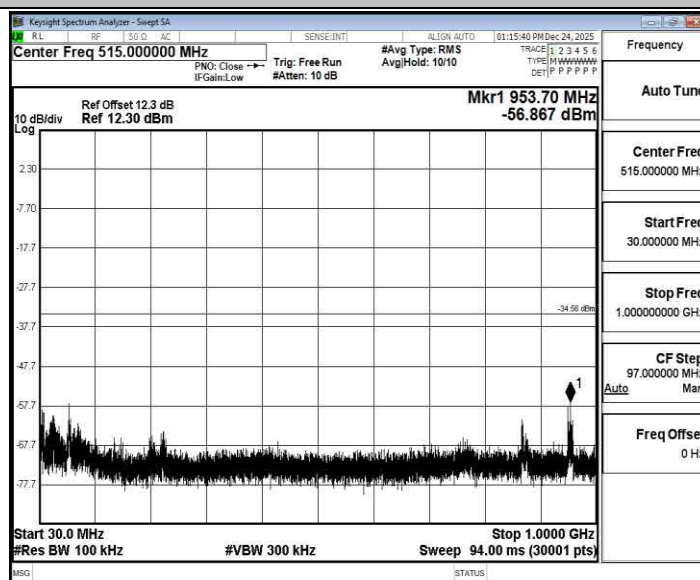




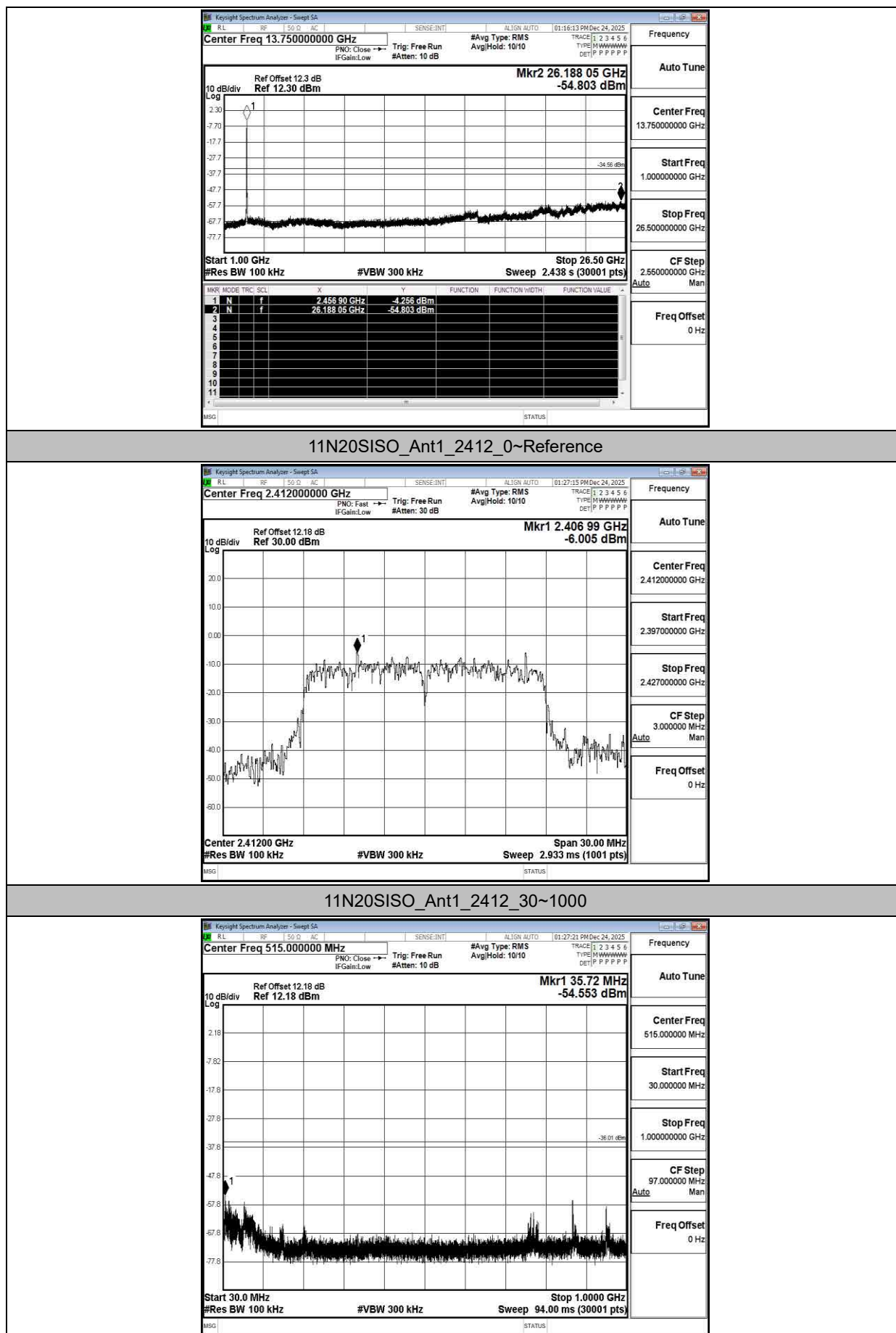
11G_Ant1_2462_0~Reference



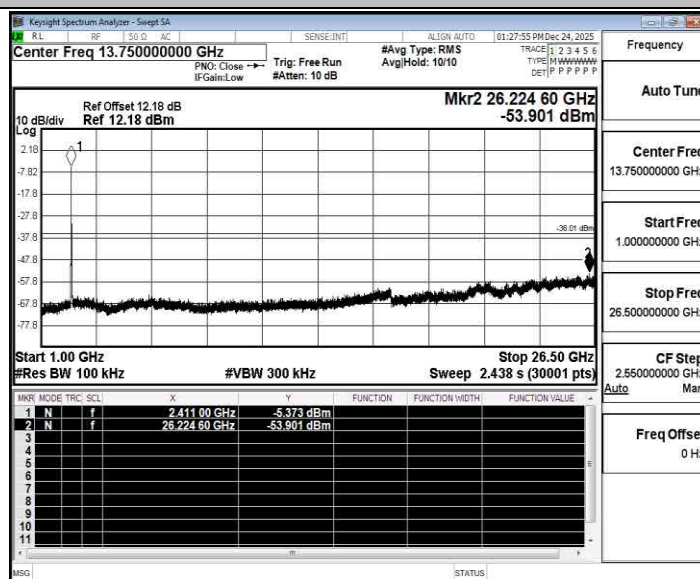
11G_Ant1_2462_30~1000



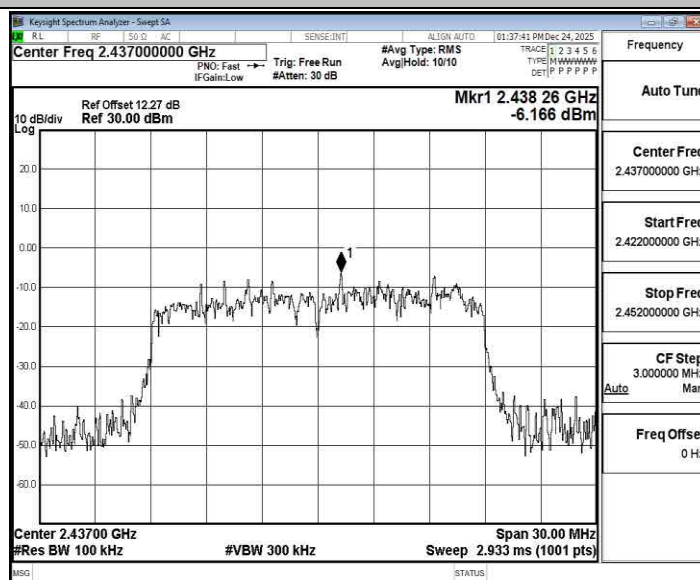
11G_Ant1_2462_1000~26500



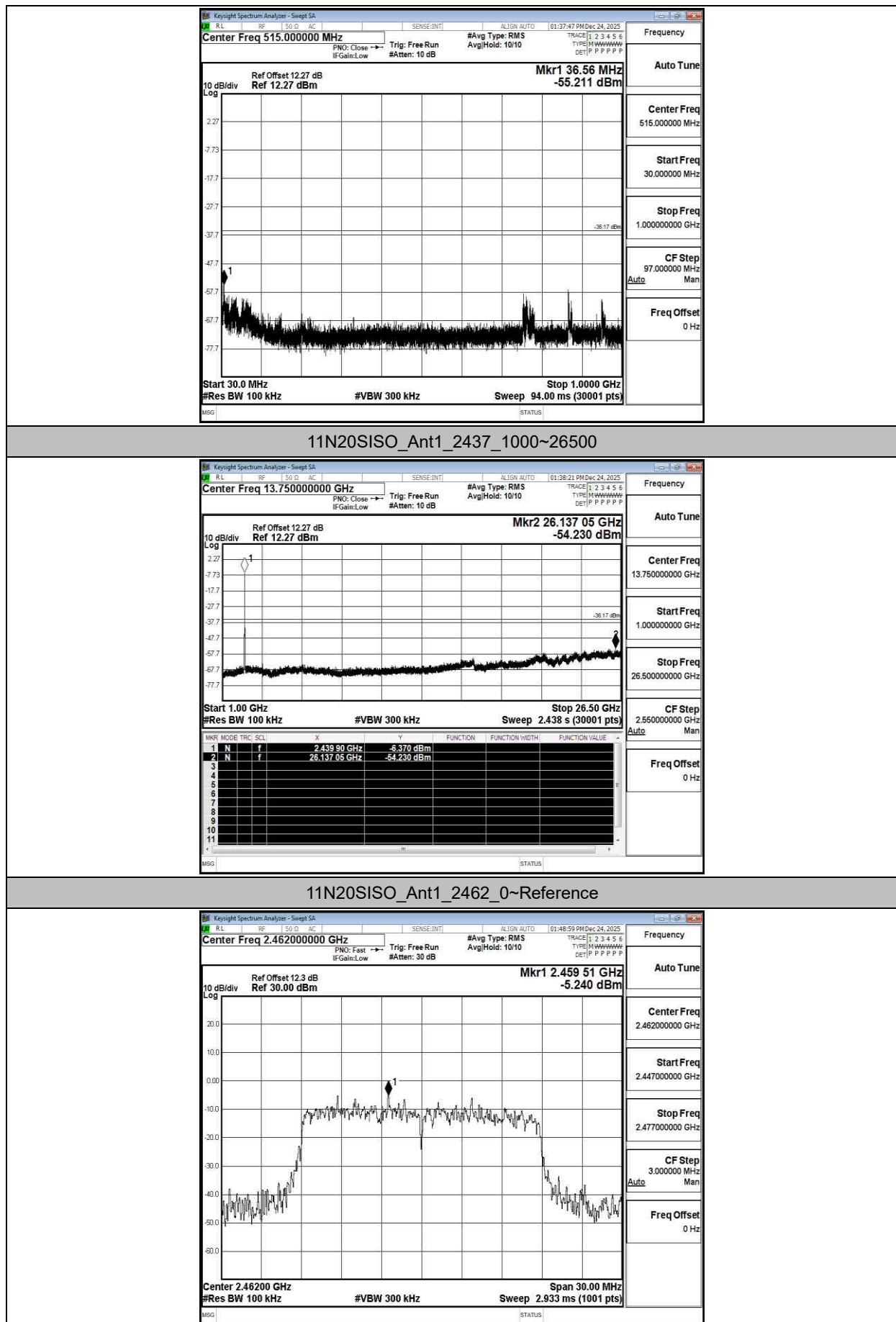
11N20SISO_Ant1_2412_1000~26500

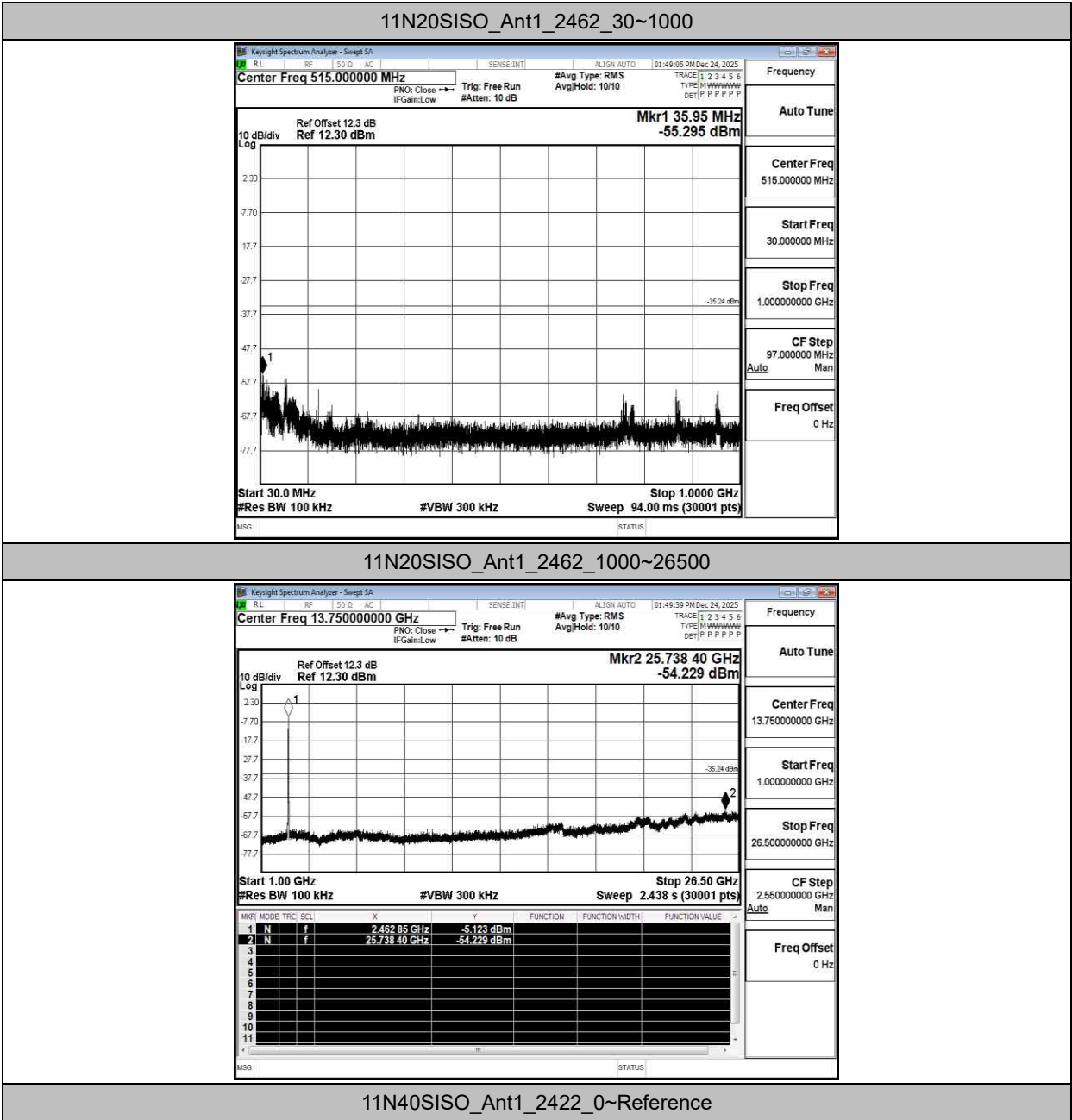


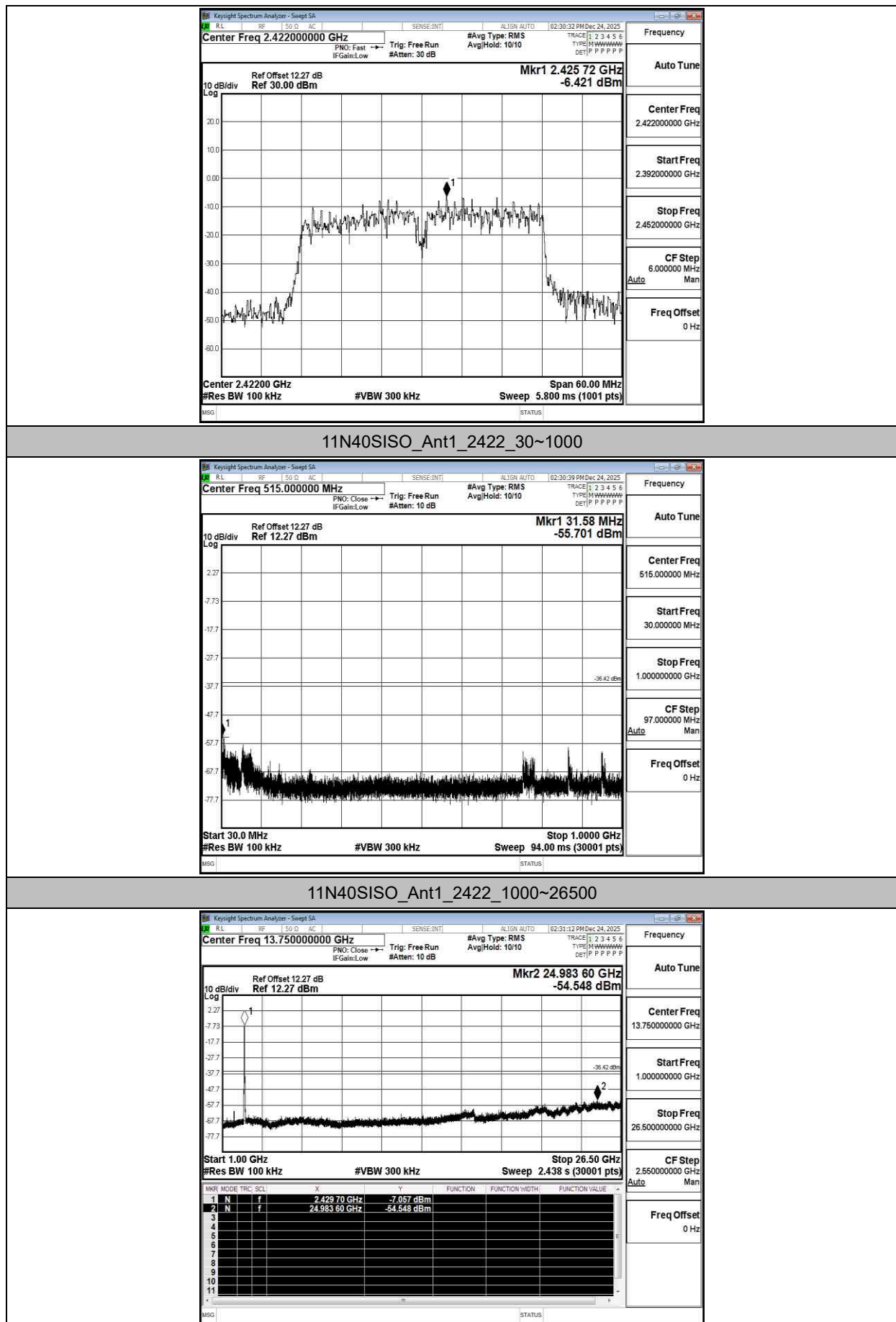
11N20SISO_Ant1_2437_0~Reference



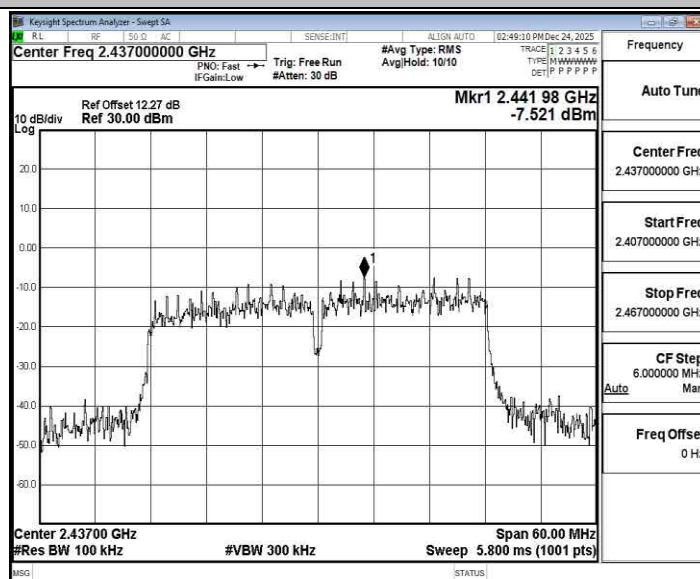
11N20SISO_Ant1_2437_30~1000



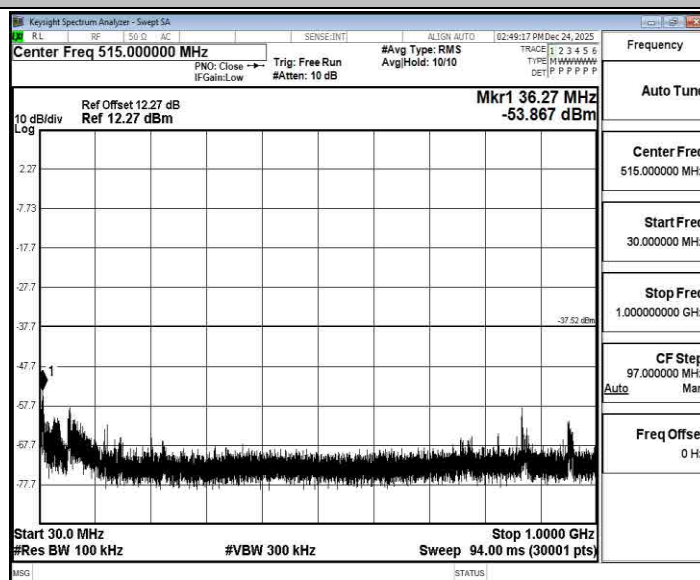




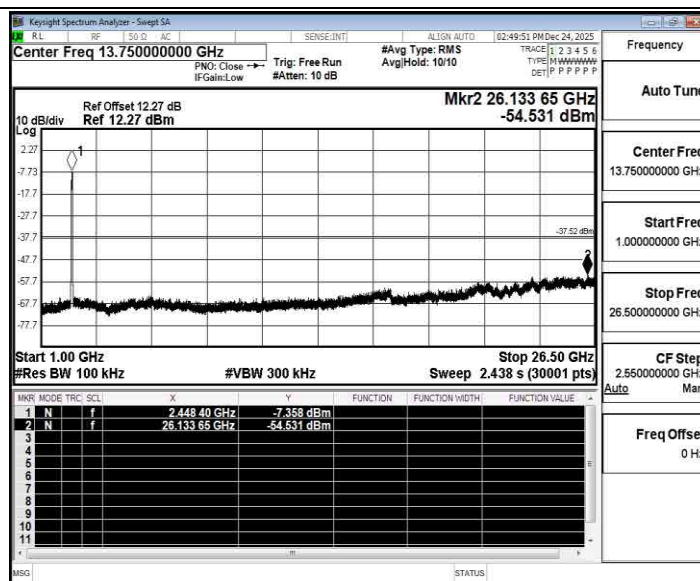
11N40SISO_Ant1_2437_0~Reference



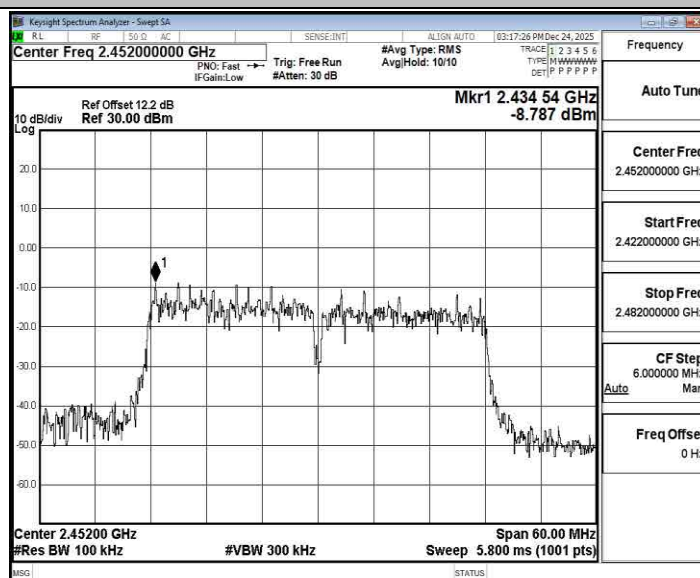
11N40SISO_Ant1_2437_30~1000



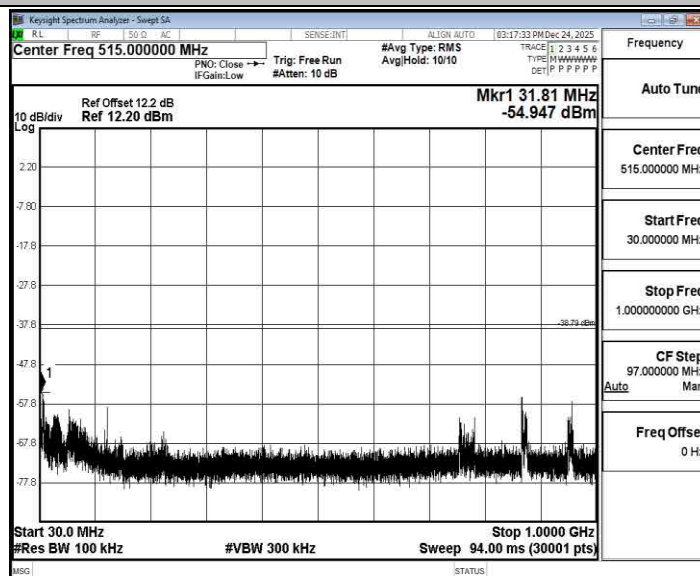
11N40SISO_Ant1_2437_1000~26500

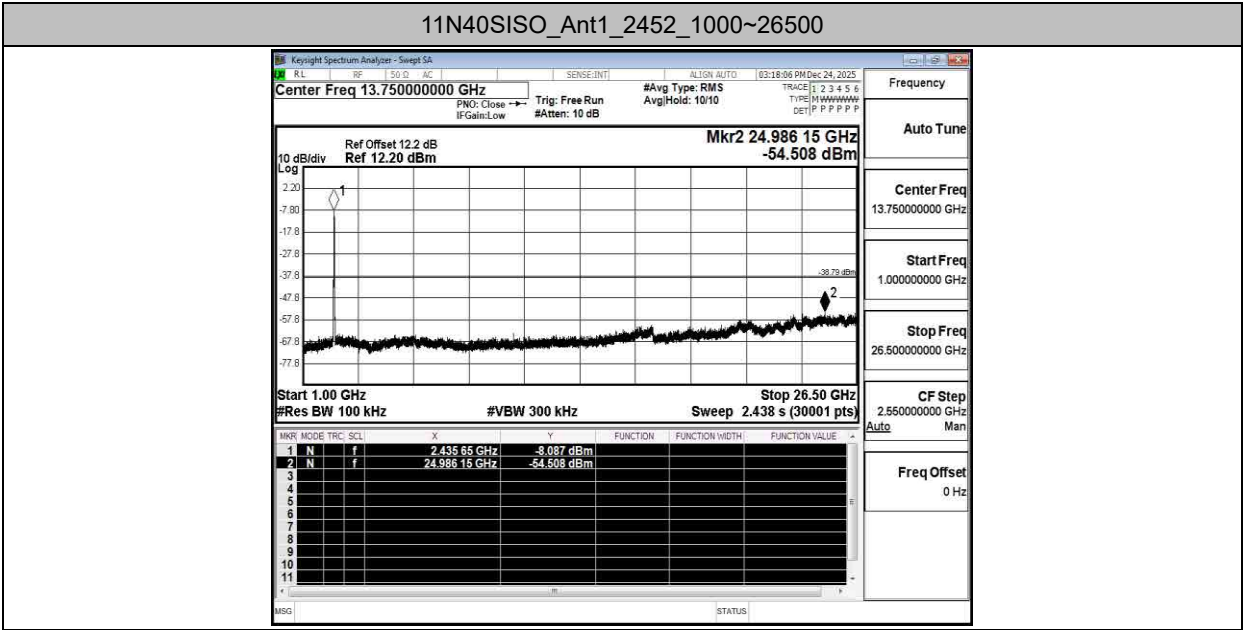


11N40SISO_Ant1_2452_0~Reference



11N40SISO_Ant1_2452_30~1000





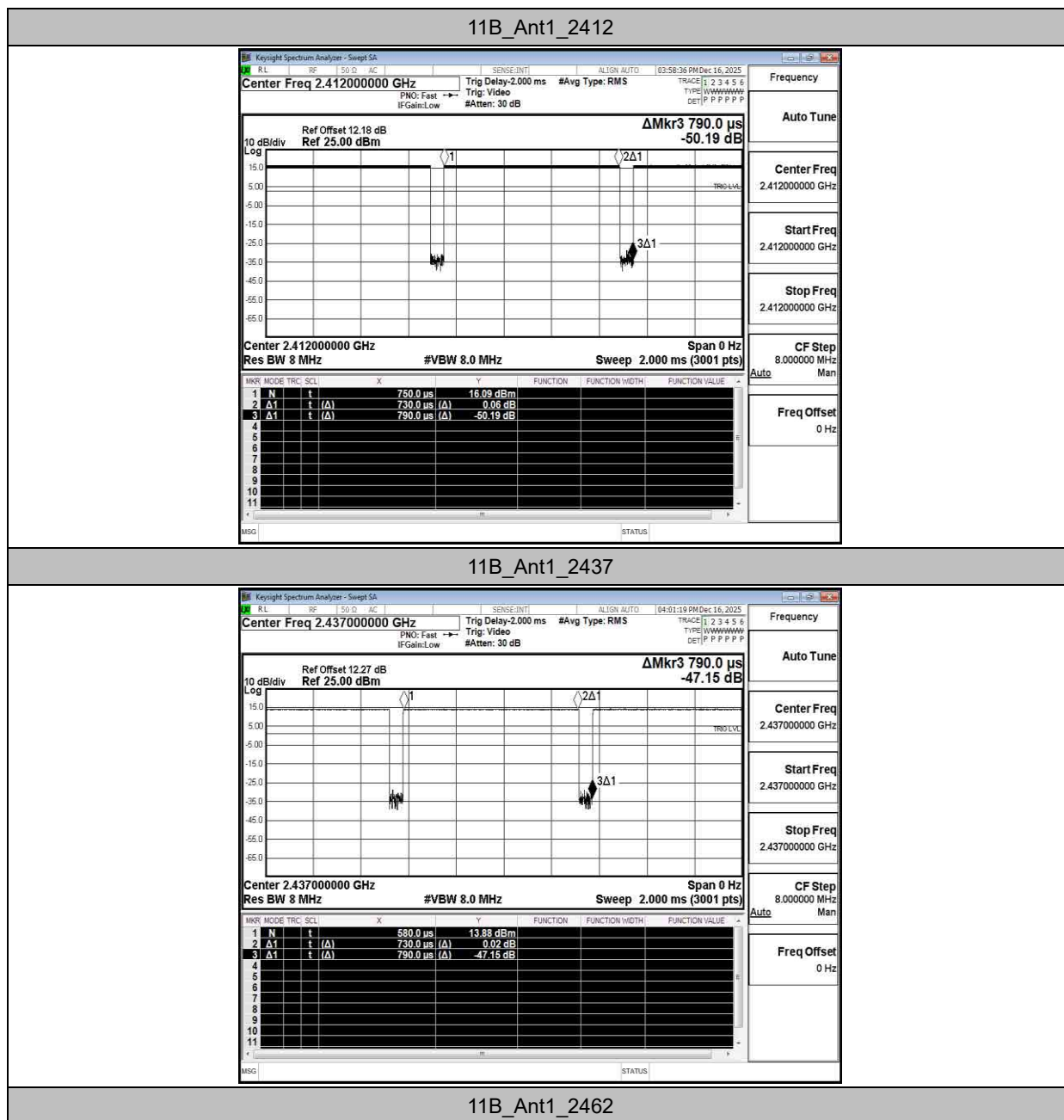
A.6 Duty Cycle

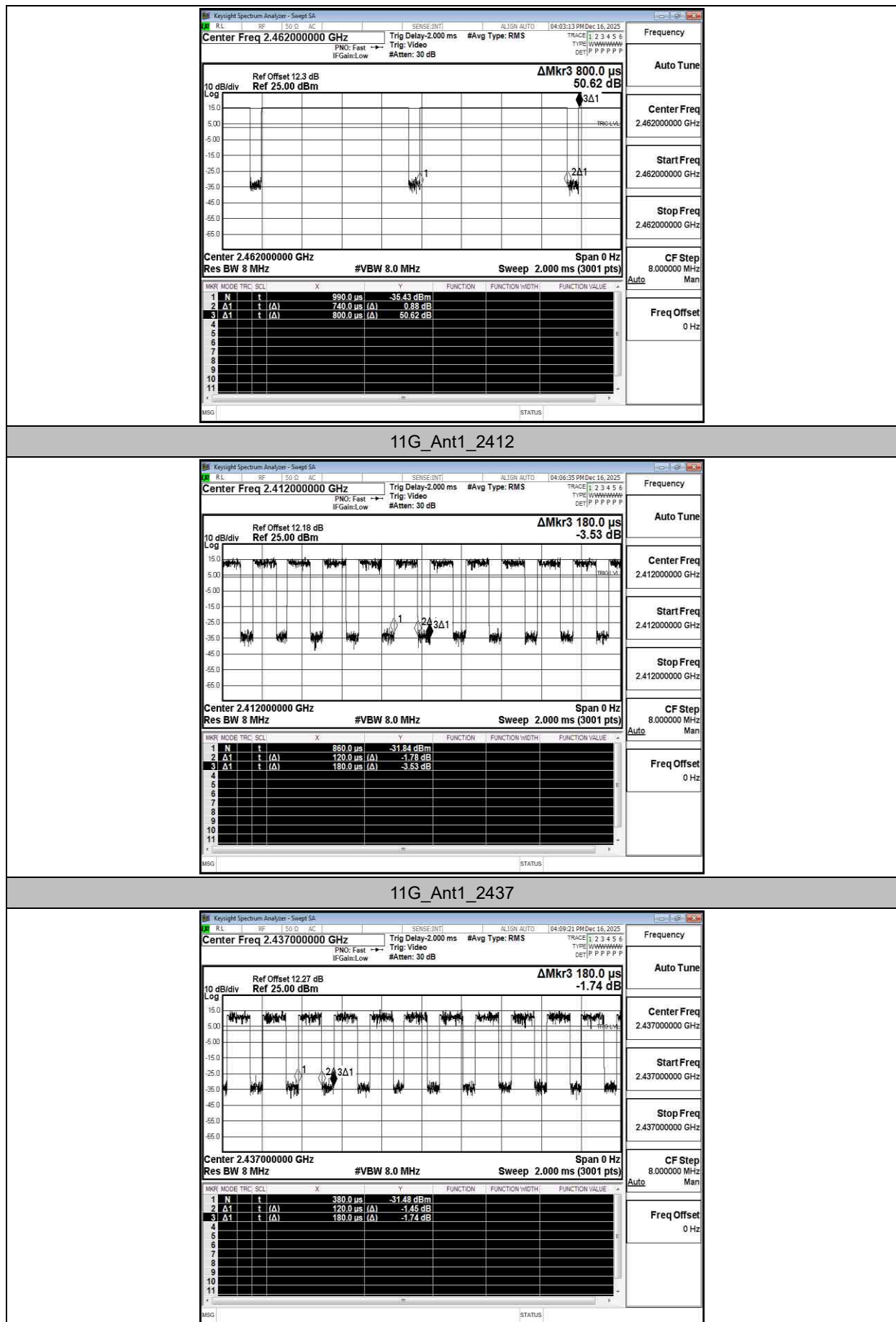
Test Result

TestMode	Antenna	Frequency[MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	DC Factor [dB]
11B	Ant1	2412	0.73	0.79	92.41	0.34
		2437	0.73	0.79	92.41	0.34
		2462	0.74	0.80	92.50	0.34
11G	Ant1	2412	0.12	0.18	66.67	1.76
		2437	0.12	0.18	66.67	1.76
		2462	0.11	0.18	61.11	2.14
11N20SISO	Ant1	2412	0.12	0.18	66.67	1.76
		2437	0.12	0.18	66.67	1.76
		2462	0.12	0.18	66.67	1.76
11N40SISO	Ant1	2422	0.08	0.14	57.14	2.43
		2437	0.08	0.14	57.14	2.43
		2452	0.07	0.14	50.00	3.01

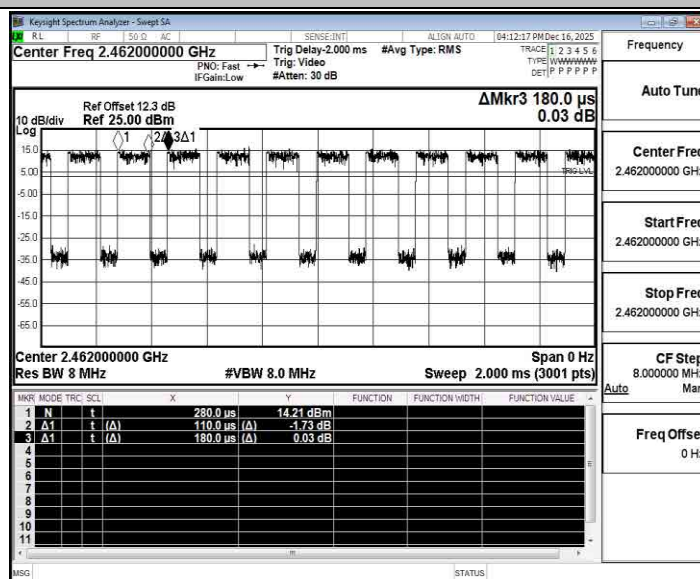
Note :offset=System attenuation +cable loss

Test Graphs

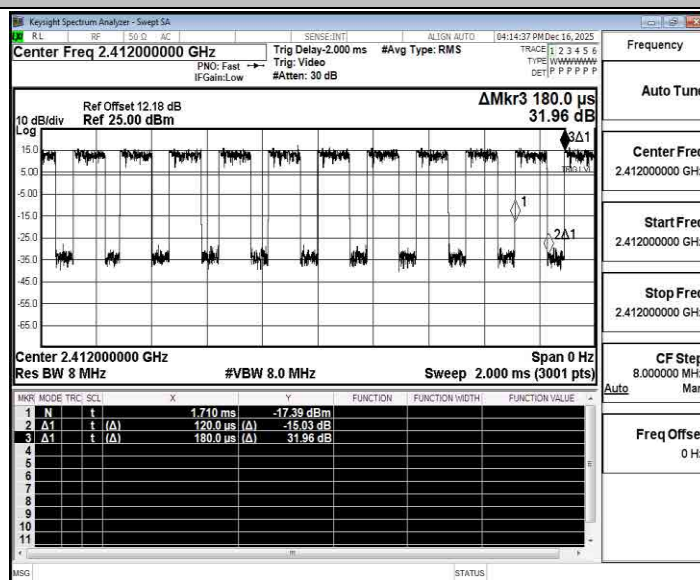




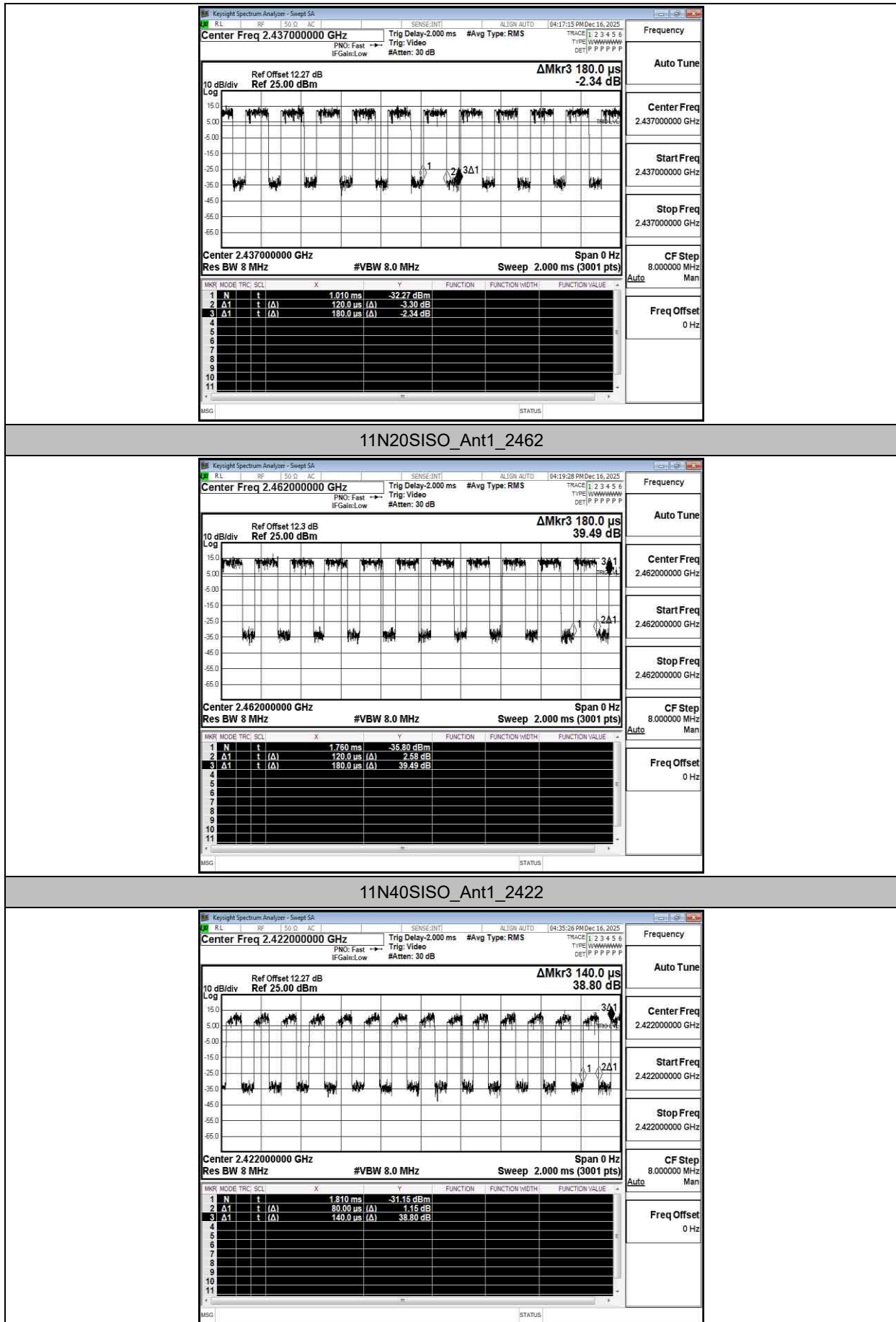
11G_Ant1_2462

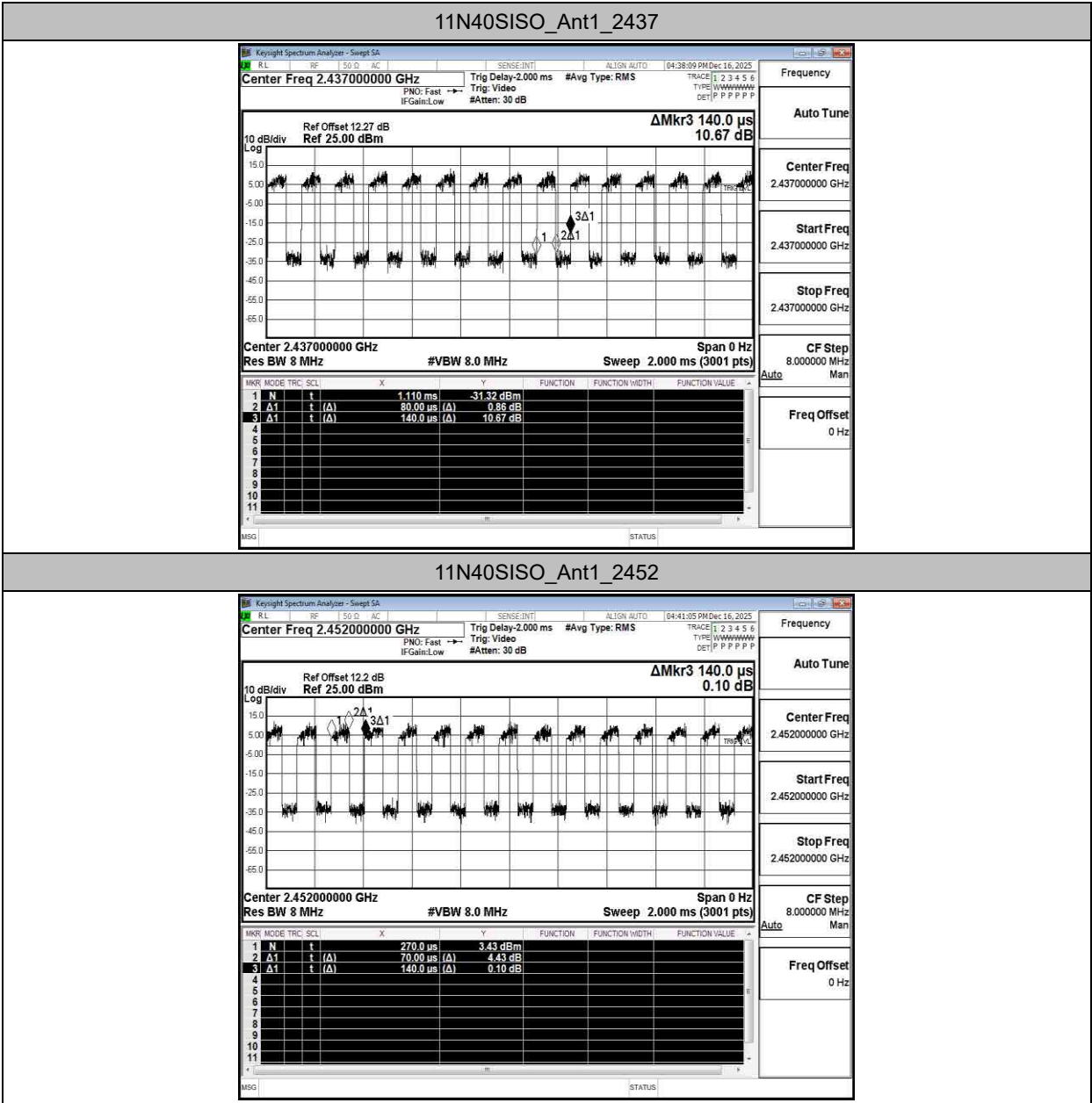


11N20SISO_Ant1_2412



11N20SISO_Ant1_2437





A.7 Emissions in Restricted Bands

Test Result

Test Mode	Antenna	ChName	Frequency [MHz]	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Gain [dBi]	DC Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
11B	Ant1	Low	2412	AV	2310.000	-57.28	≤-43.54	2.00	0.34	40.26	≤54	PASS
				AV	2389.960	-46.92	≤-43.54	2.00	0.34	50.62	≤54	PASS
				AV	2390.000	-46.92	≤-43.54	2.00	0.34	50.62	≤54	PASS
				Peak	2310.000	-51.63	≤-23.20	2.00	0.00	45.57	≤74	PASS
				Peak	2389.960	-40.92	≤-23.20	2.00	0.00	56.28	≤74	PASS
				Peak	2390.000	-40.92	≤-23.20	2.00	0.00	56.28	≤74	PASS
		High	2462	AV	2483.500	-56.03	≤-43.54	2.00	0.34	41.51	≤54	PASS
				AV	2483.670	-55.24	≤-43.54	2.00	0.34	42.30	≤54	PASS
				AV	2500.000	-56.33	≤-43.54	2.00	0.34	41.21	≤54	PASS
				Peak	2483.500	-49.1	≤-23.20	2.00	0.00	48.10	≤74	PASS
				Peak	2495.440	-47.77	≤-23.20	2.00	0.00	49.43	≤74	PASS
				Peak	2500.000	-51.21	≤-23.20	2.00	0.00	45.99	≤74	PASS
11G	Ant1	Low	2412	AV	2310.000	-57.08	≤-44.96	2.00	1.76	41.88	≤54	PASS
				AV	2389.050	-53.02	≤-44.96	2.00	1.76	45.94	≤54	PASS
				AV	2390.000	-53.68	≤-44.96	2.00	1.76	45.28	≤54	PASS
				Peak	2310.000	-51.91	≤-23.20	2.00	0.00	45.29	≤74	PASS
				Peak	2388.790	-43.14	≤-23.20	2.00	0.00	54.06	≤74	PASS
				Peak	2390.000	-44.85	≤-23.20	2.00	0.00	52.35	≤74	PASS
		High	2462	AV	2483.500	-51.25	≤-45.34	2.00	2.14	48.09	≤54	PASS
				AV	2483.560	-49.63	≤-45.34	2.00	2.14	49.71	≤54	PASS
				AV	2500.000	-56.34	≤-45.34	2.00	2.14	43.00	≤54	PASS
				Peak	2483.500	-50.59	≤-23.20	2.00	0.00	46.61	≤74	PASS
				Peak	2484.770	-38.66	≤-23.20	2.00	0.00	58.54	≤74	PASS
				Peak	2500.000	-51.51	≤-23.20	2.00	0.00	45.69	≤74	PASS
11N 20SI SO	Ant1	Low	2412	AV	2310.000	-56.93	≤-44.96	2.00	1.76	42.03	≤54	PASS
				AV	2389.700	-52.11	≤-44.96	2.00	1.76	46.85	≤54	PASS
				AV	2390.000	-52.72	≤-44.96	2.00	1.76	46.24	≤54	PASS
				Peak	2310.000	-52.29	≤-23.20	2.00	0.00	44.91	≤74	PASS
				Peak	2388.920	-40.36	≤-23.20	2.00	0.00	56.84	≤74	PASS
				Peak	2390.000	-47.87	≤-23.20	2.00	0.00	49.33	≤74	PASS
		High	2462	AV	2483.500	-49.62	≤-44.96	2.00	1.76	49.34	≤54	PASS
				AV	2484.000	-48.61	≤-44.96	2.00	1.76	50.35	≤54	PASS
				AV	2500.000	-56.72	≤-44.96	2.00	1.76	42.24	≤54	PASS
				Peak	2483.500	-41.08	≤-23.20	2.00	0.00	56.12	≤74	PASS
				Peak	2484.220	-38.99	≤-23.20	2.00	0.00	58.21	≤74	PASS

				Peak	2500.000	-47.6	≤ -23.20	2.00	0.00	49.60	≤ 74	PASS
11N 40SI SO	Ant1	Low	2422	AV	2310.000	-57.18	≤ -45.63	2.00	2.43	42.45	≤ 54	PASS
				AV	2388.800	-50.52	≤ -45.63	2.00	2.43	49.11	≤ 54	PASS
				AV	2390.000	-51.89	≤ -45.63	2.00	2.43	47.74	≤ 54	PASS
				Peak	2310.000	-50.05	≤ -23.20	2.00	0.00	47.15	≤ 74	PASS
				Peak	2389.850	-39.87	≤ -23.20	2.00	0.00	57.33	≤ 74	PASS
				Peak	2390.000	-42.63	≤ -23.20	2.00	0.00	54.57	≤ 74	PASS
		High	2452	AV	2483.500	-53.64	≤ -46.21	2.00	3.01	46.57	≤ 54	PASS
				AV	2485.875	-53.4	≤ -46.21	2.00	3.01	46.81	≤ 54	PASS
				AV	2500.000	-56.77	≤ -46.21	2.00	3.01	43.44	≤ 54	PASS
				Peak	2483.500	-46.43	≤ -23.20	2.00	0.00	50.77	≤ 74	PASS
				Peak	2485.625	-44.83	≤ -23.20	2.00	0.00	52.37	≤ 74	PASS
				Peak	2500.000	-50.83	≤ -23.20	2.00	0.00	46.37	≤ 74	PASS

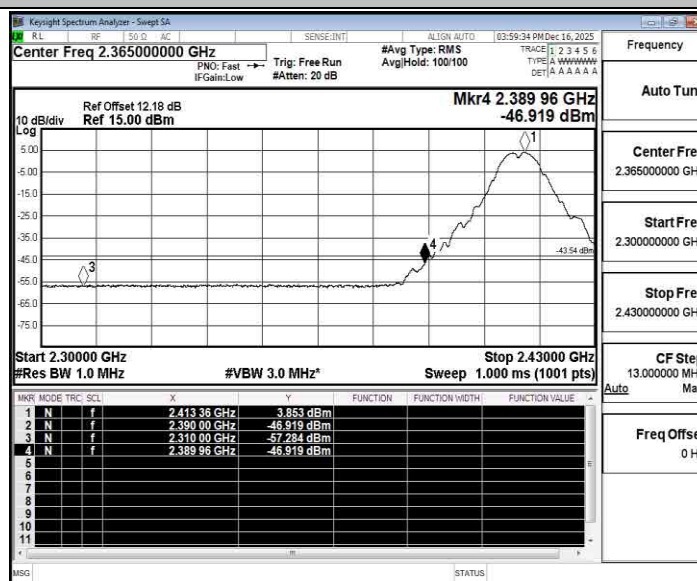
Note :offset=System attenuation +cable loss

Note:

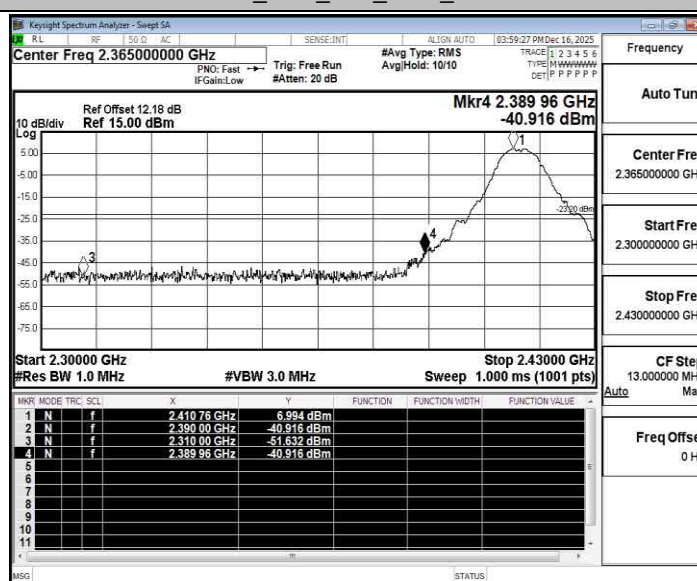
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

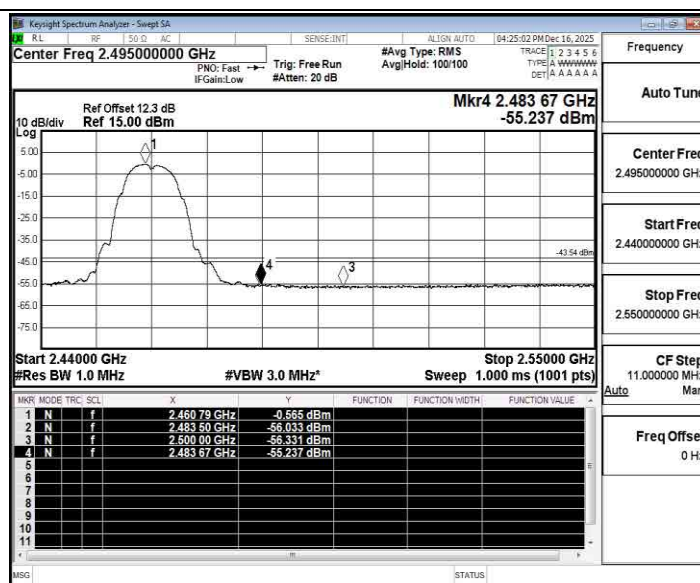
11B_Ant1_Low_2412_AV



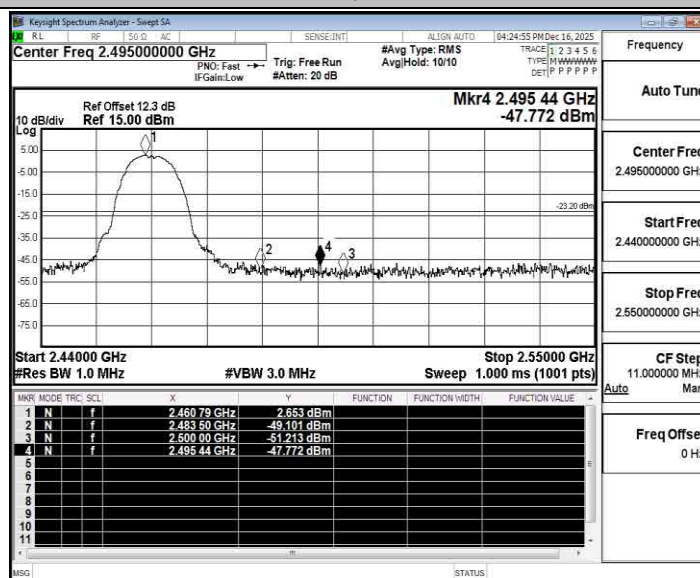
11B_Ant1_Low_2412_Peak



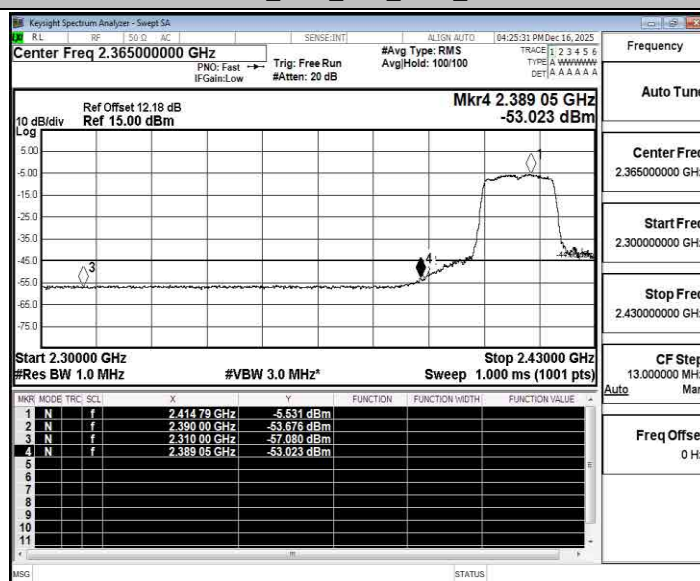
11B_Ant1_High_2462_AV



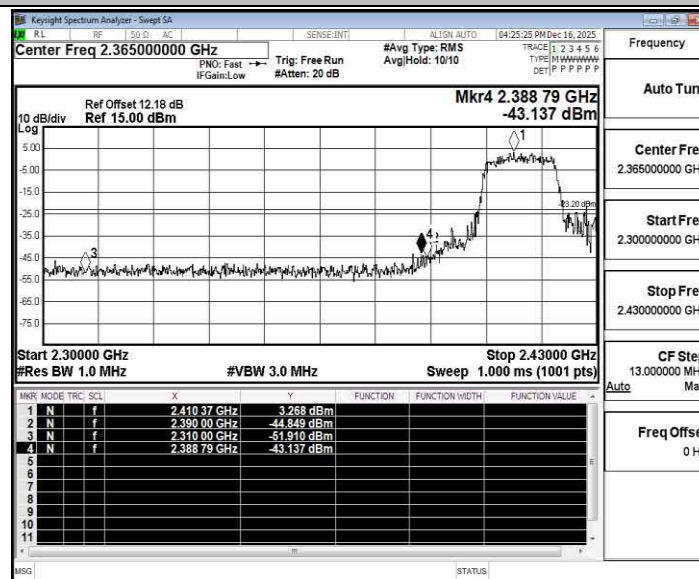
11B_Ant1_High_2462_Peak



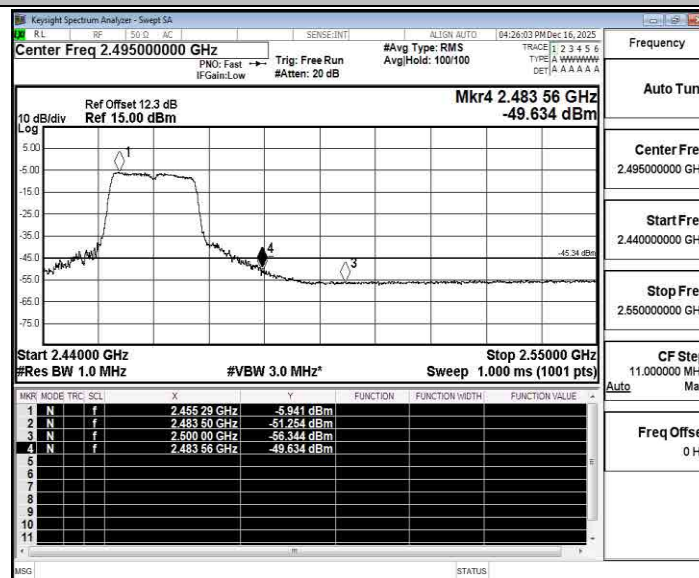
11G_Ant1_Low_2412_AV



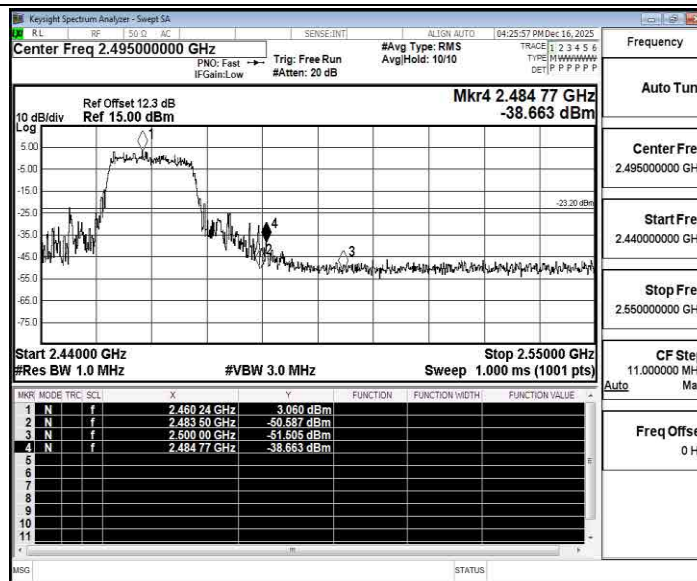
11G_Ant1_Low_2412_Peak



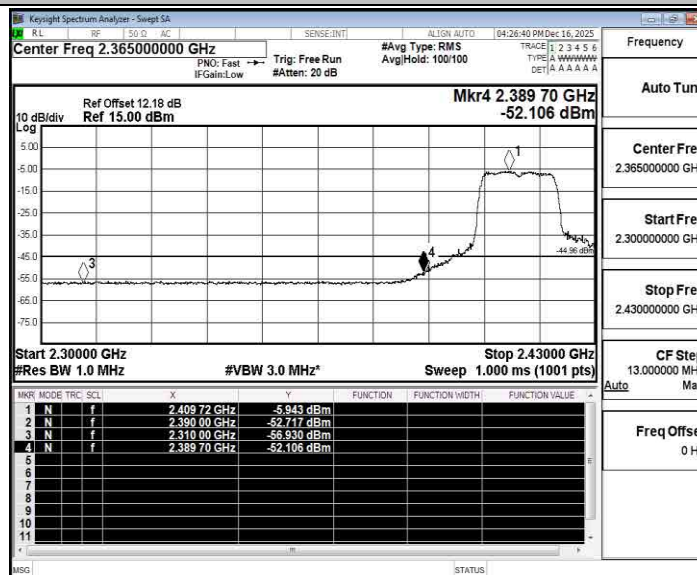
11G_Ant1_High_2462_AV



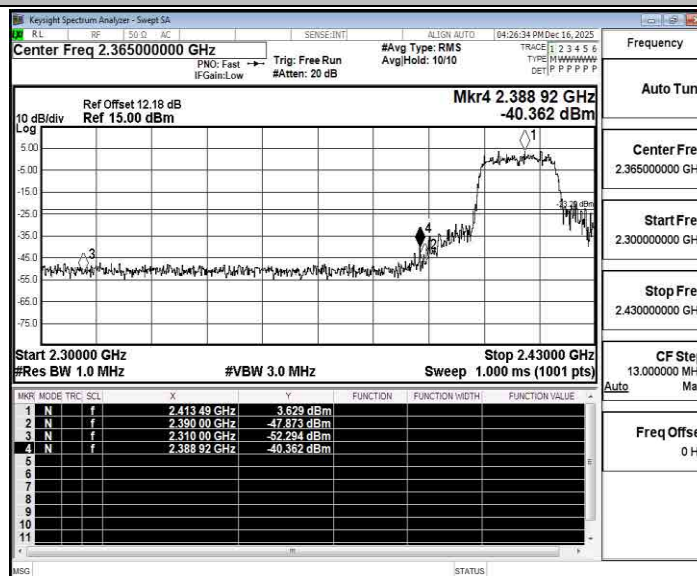
11G_Ant1_High_2462_Peak



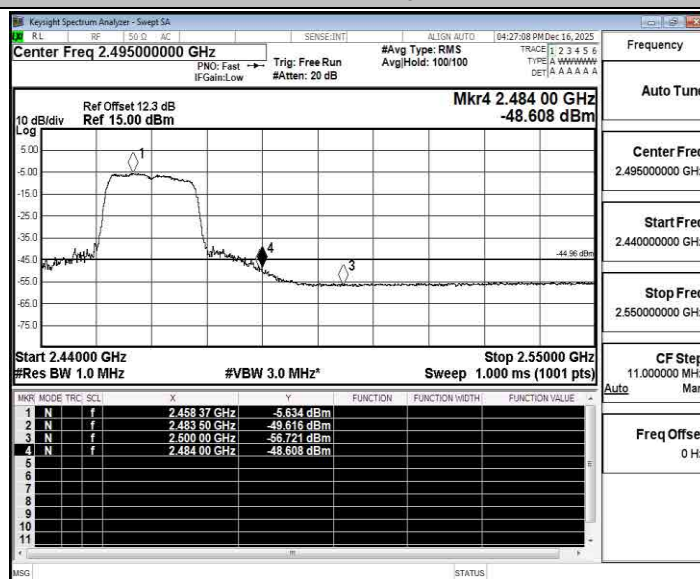
11N20SISO_Ant1_Low_2412_AV



11N20SISO_Ant1_Low_2412_Peak



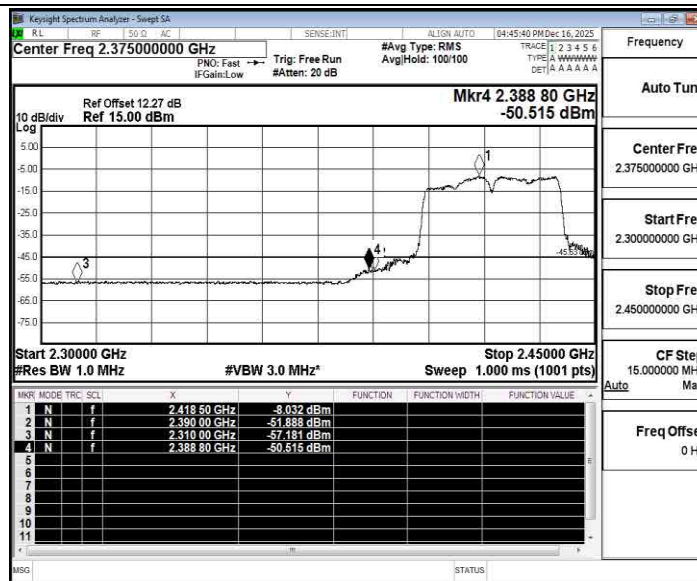
11N20SISO_Ant1_High_2462_AV



11N20SISO_Ant1_High_2462_Peak



11N40SISO_Ant1_Low_2422_AV



11N40SISO_Ant1_Low_2422_Peak



11N40SISO_Ant1_High_2452_AV

