

Appendix B

RF Test Data for 2.4GWIFI (Conducted Measurement)

Product Name: Self-cleaning Cat Litter Box / Smart Cat Litter Box

Test Model: X1 Pro

Environmental Conditions

Temperature:	23.6°C
Relative Humidity:	52.7%
ATM Pressure:	100.0 kPa
Test Engineer:	Zhang Hai
Supervised by:	Fengliu Tang

B.1 DTS Bandwidth

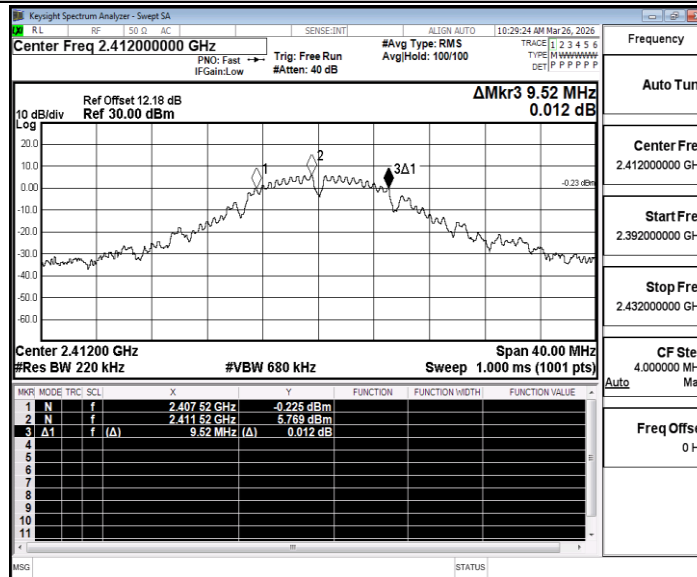
Test Result

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.520	2407.520	2417.040	0.5	PASS
		2437	9.120	2432.400	2441.520	0.5	PASS
		2462	9.560	2457.480	2467.040	0.5	PASS
11G	Ant1	2412	15.840	2404.280	2420.120	0.5	PASS
		2437	16.160	2428.840	2445.000	0.5	PASS
		2462	16.120	2454.040	2470.160	0.5	PASS
11N20SISO	Ant1	2412	17.000	2403.720	2420.720	0.5	PASS
		2437	17.000	2428.280	2445.280	0.5	PASS
		2462	16.520	2454.040	2470.560	0.5	PASS

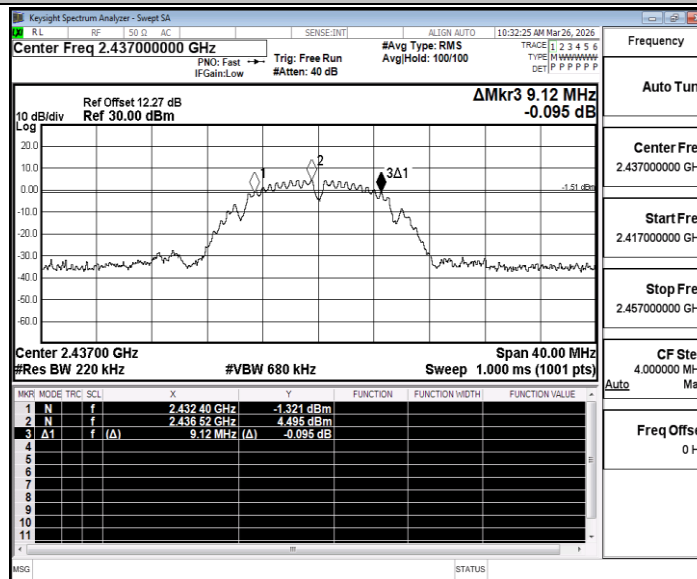
Note :offset=System attenuation +cabal loss

Test Graphs

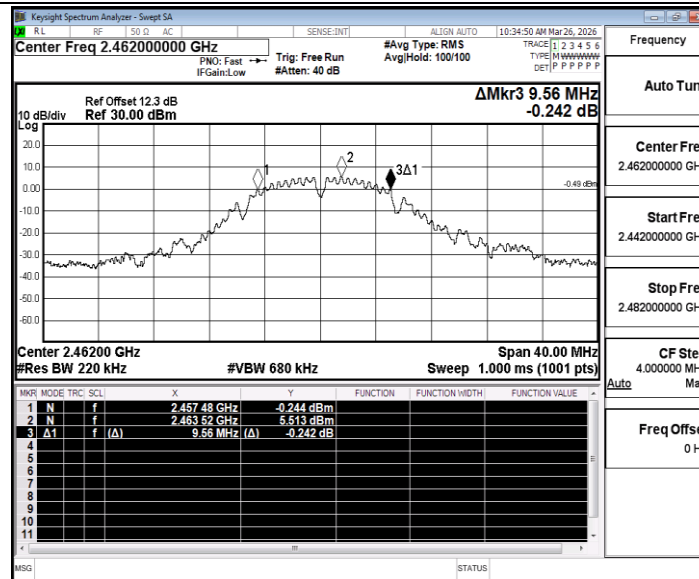
11B_Ant1_2412



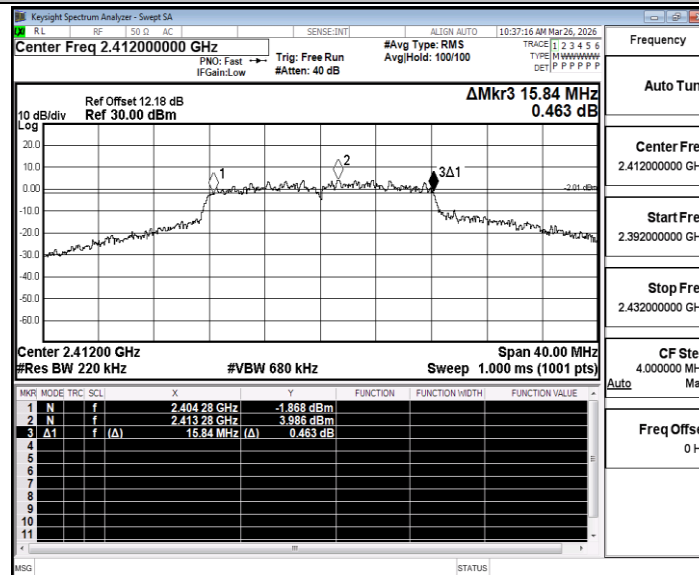
11B_Ant1_2437



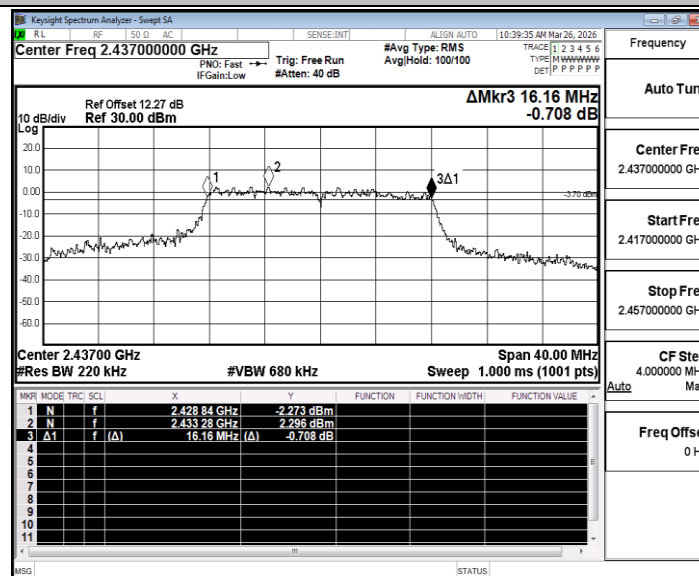
11B_Ant1_2462



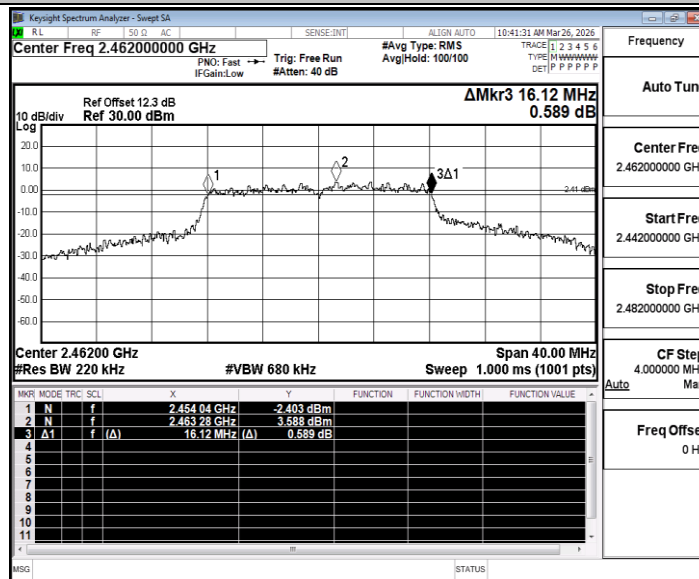
11G_Ant1_2412



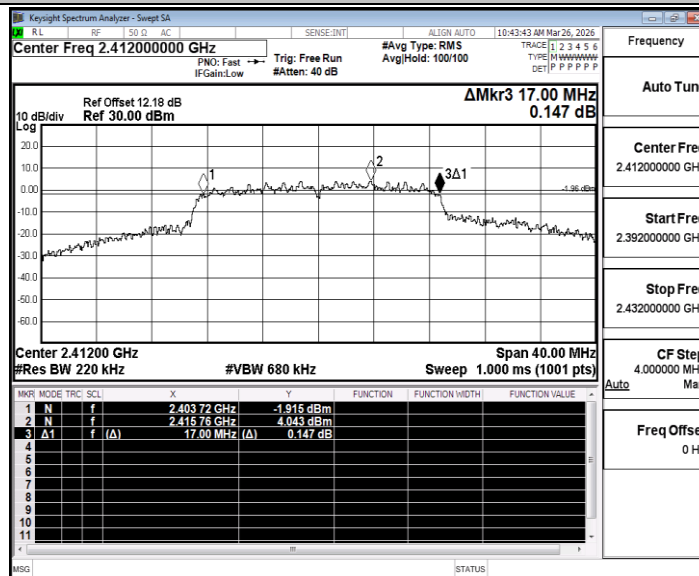
11G_Ant1_2437



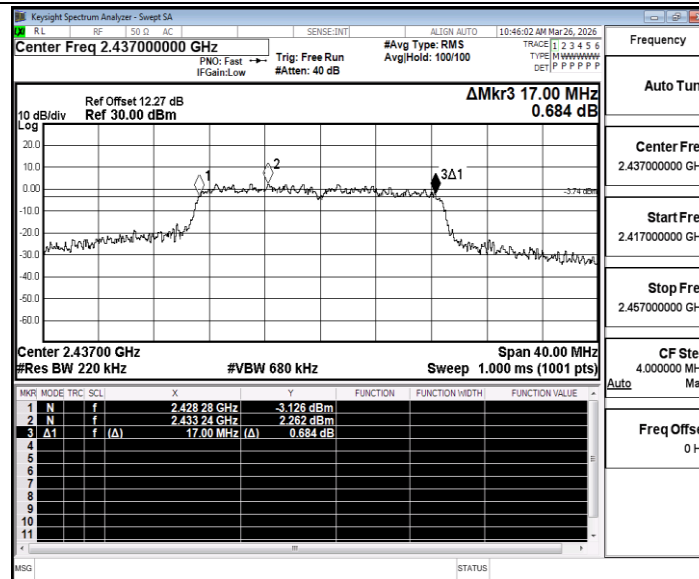
11G_Ant1_2462



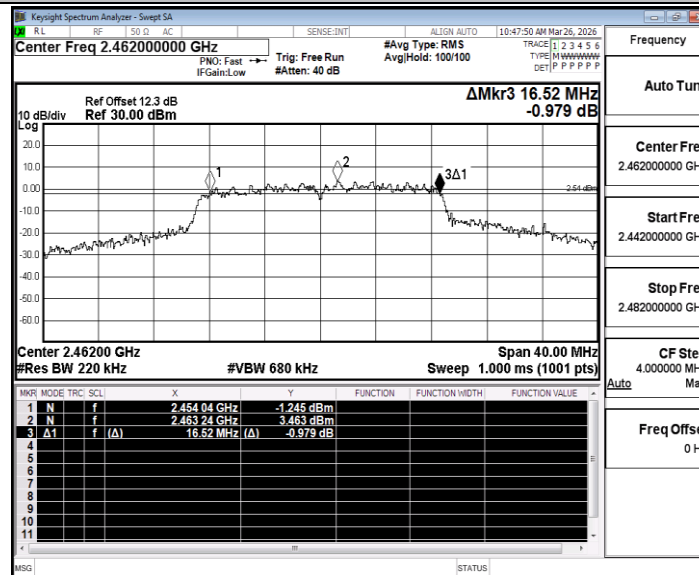
11N20SISO_Ant1_2412



11N20SISO_Ant1_2437



11N20SISO_Ant1_2462



B.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	Ant	2412	13.85	0.34	14.19	≤30.00	PASS
		2437	12.59	0.34	12.93	≤30.00	PASS
		2462	13.58	0.34	13.92	≤30.00	PASS
11G	Ant	2412	11.69	1.89	13.58	≤30.00	PASS
		2437	10.36	2.14	12.5	≤30.00	PASS
		2462	11.04	1.89	12.93	≤30.00	PASS
11N20SISO	Ant	2412	11.83	1.89	13.72	≤30.00	PASS
		2437	10.48	2.14	12.62	≤30.00	PASS
		2462	11.2	1.76	12.96	≤30.00	PASS

Note :offset=System attenuation +cabal loss

B.3 Maximum power spectral density

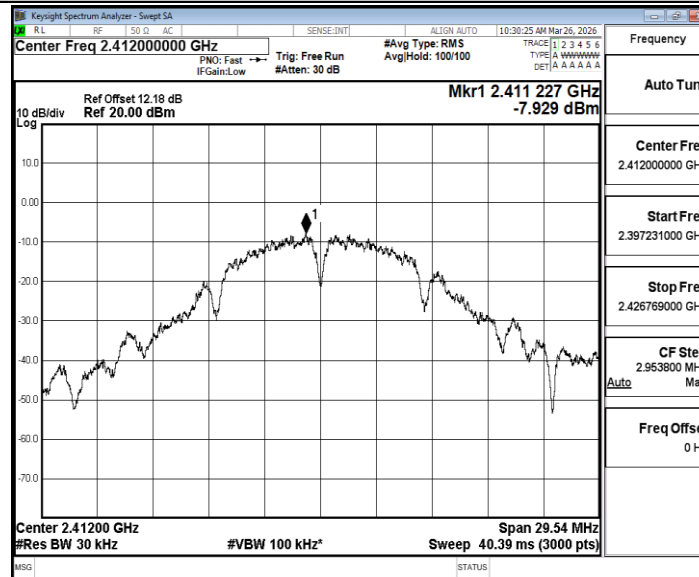
Test Result

TestMode	Antenna	Frequency[MHz]	Measured PSD[dBm/30kHz]	DC Factor[dB]	Result[dBm/30kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant	2412	-7.93	0.34	-7.59	≤8.00	PASS
		2437	-9.18	0.34	-8.84	≤8.00	PASS
		2462	-7.57	0.34	-7.23	≤8.00	PASS
11G	Ant	2412	-9.66	1.89	-7.77	≤8.00	PASS
		2437	-11.64	2.14	-9.5	≤8.00	PASS
		2462	-10.83	1.89	-8.94	≤8.00	PASS
11N20SISO	Ant	2412	-9.55	1.89	-7.66	≤8.00	PASS
		2437	-11.86	2.14	-9.72	≤8.00	PASS
		2462	-10.89	1.76	-9.13	≤8.00	PASS

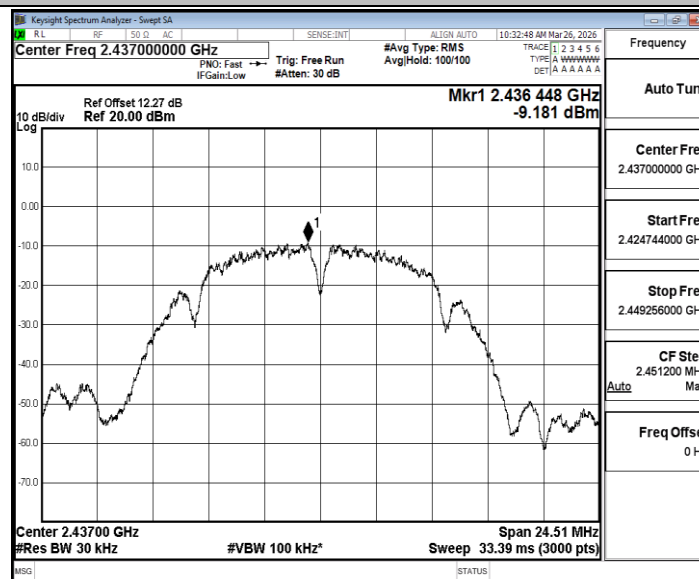
Note :offset=System attenuation +cabal loss

Test Graphs

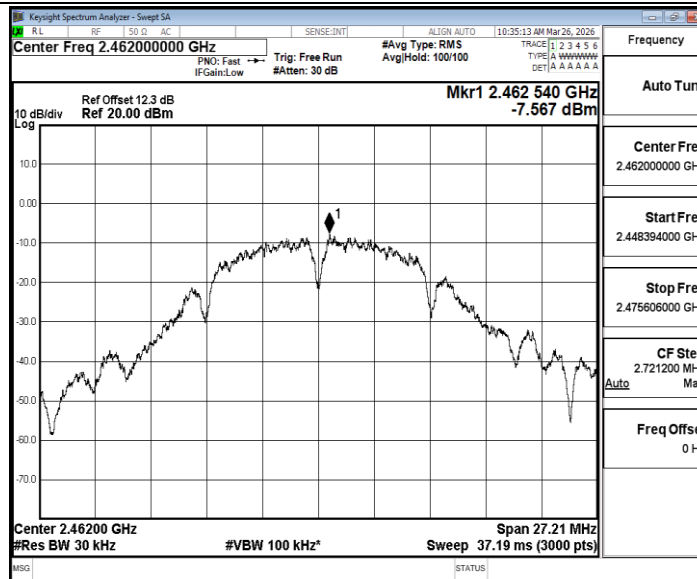
11B_Ant1_2412



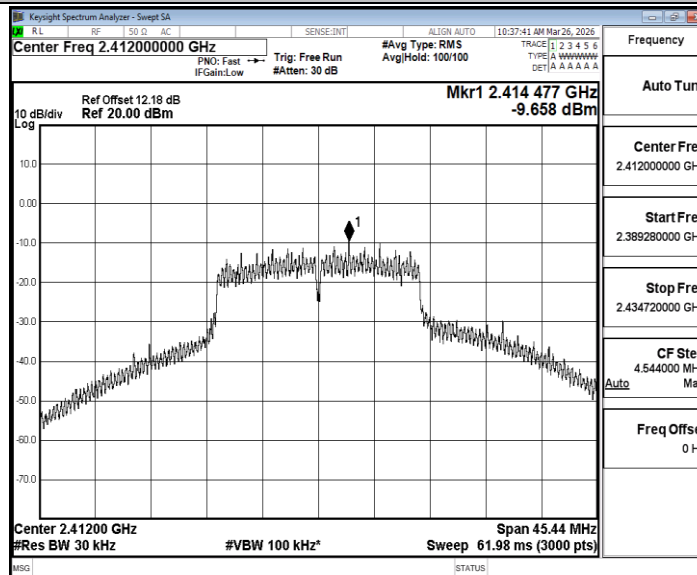
11B_Ant1_2437



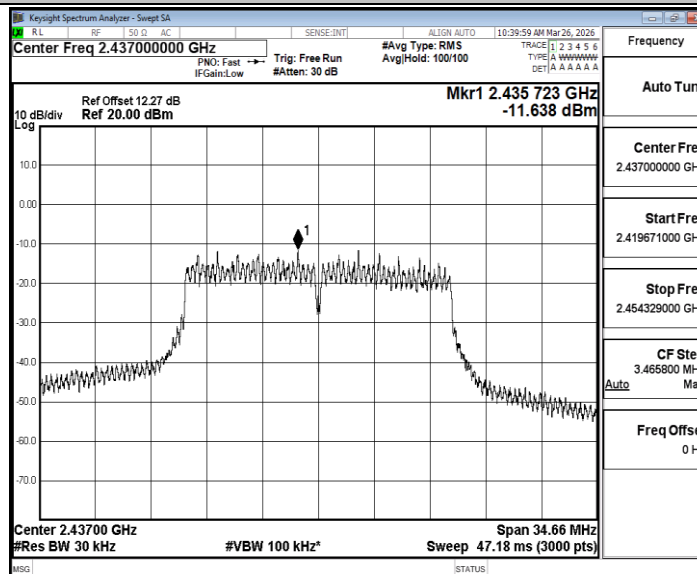
11B_Ant1_2462



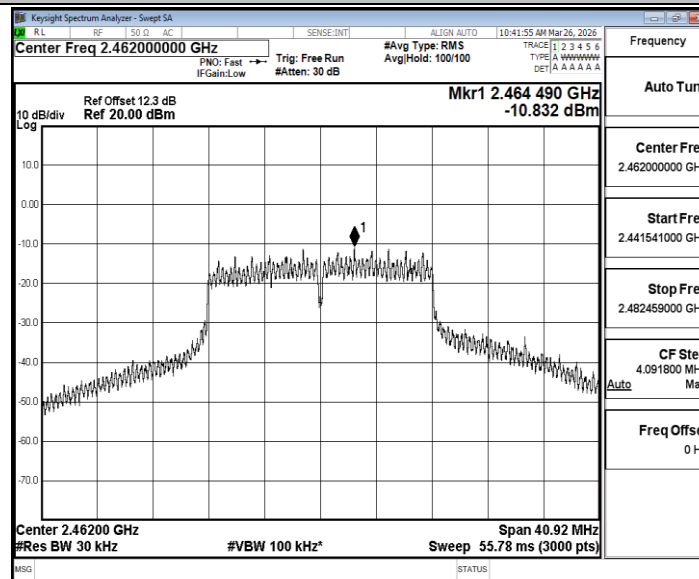
11G_Ant1_2412



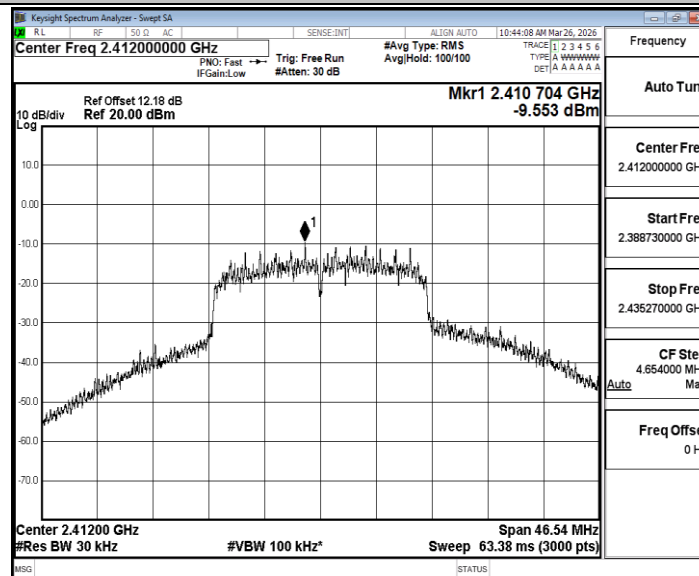
11G_Ant1_2437



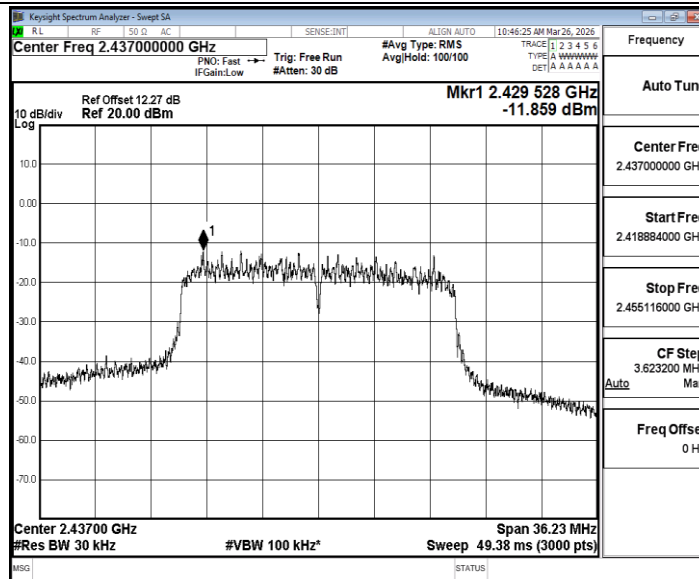
11G_Ant1_2462



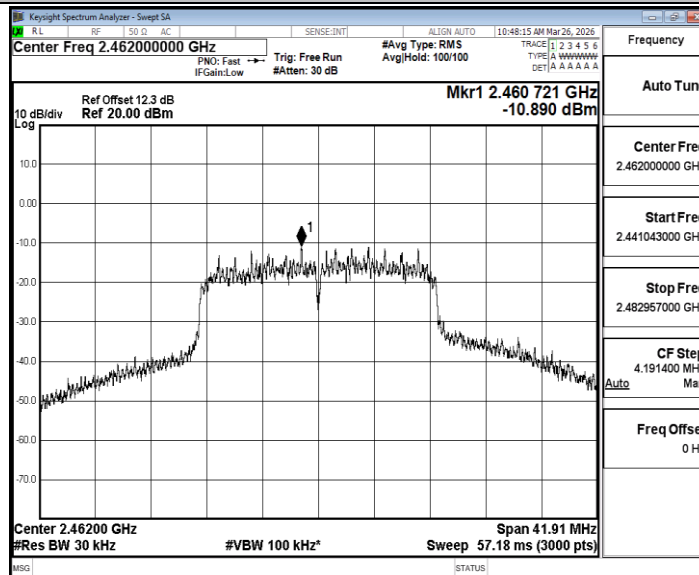
11N20SISO_Ant1_2412



11N20SISO_Ant1_2437



11N20SISO_Ant1_2462



B.4 Band edge measurements

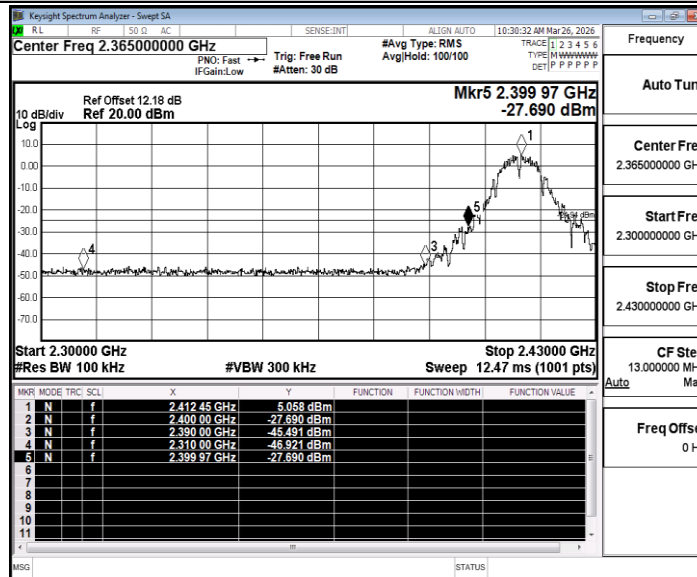
Test Result

TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	5.06	-27.69	≤-24.94	PASS
		High	2462	5.00	-39.78	≤-25	PASS
11G	Ant1	Low	2412	-2.95	-37.44	≤-32.95	PASS
		High	2462	-2.42	-46.35	≤-32.42	PASS
11N20SISO	Ant1	Low	2412	-3.08	-34.79	≤-33.08	PASS
		High	2462	2.83	-29.83	≤-27.18	PASS

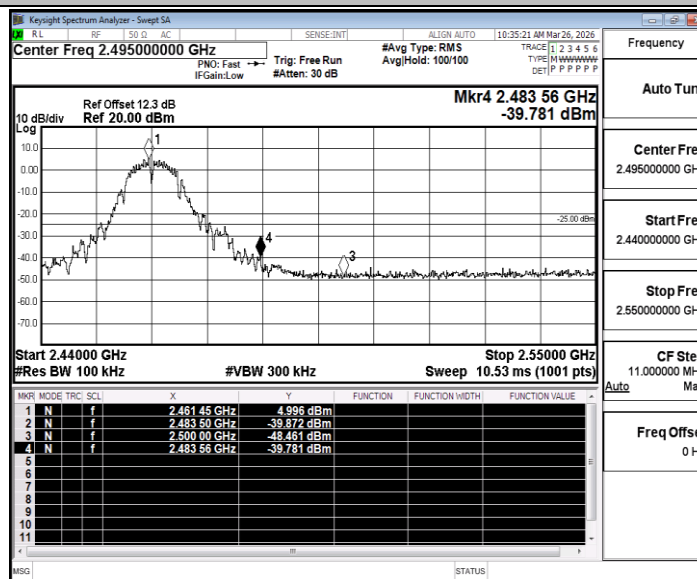
Note :offset=System attenuation +cabal loss

Test Graphs

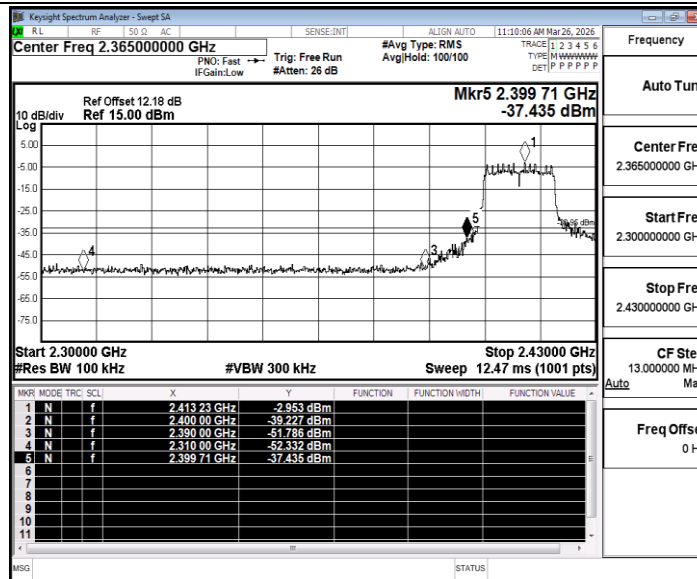
11B_Ant1_Low_2412



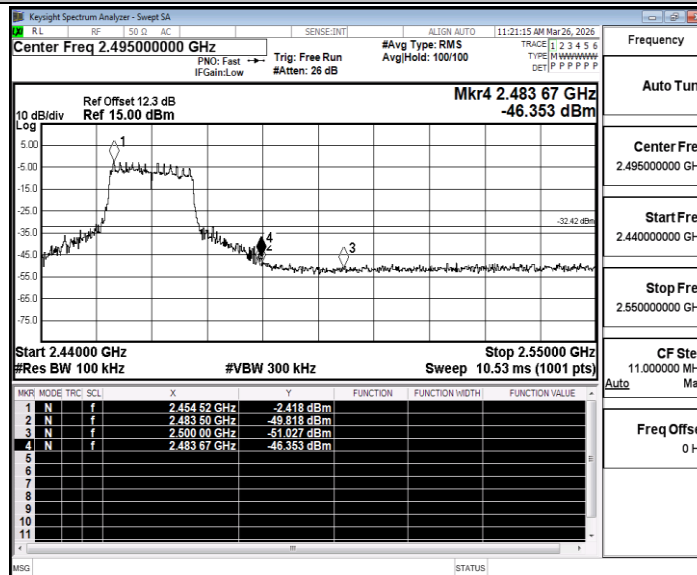
11B_Ant1_High_2462



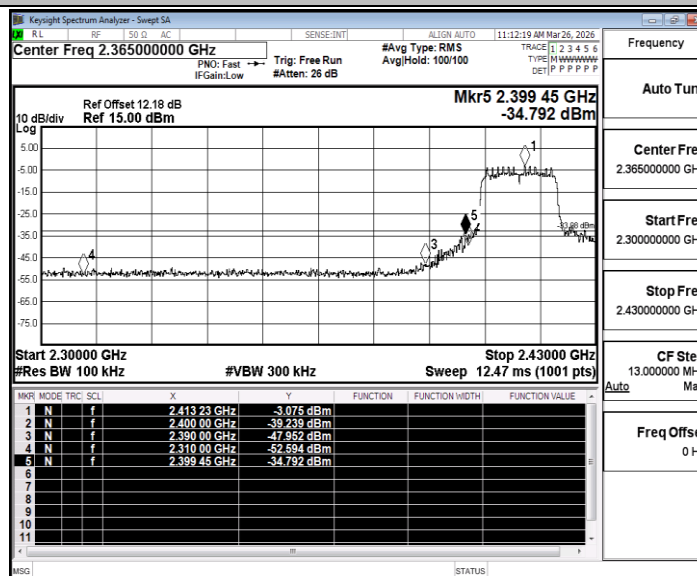
11G_Ant1_Low_2412



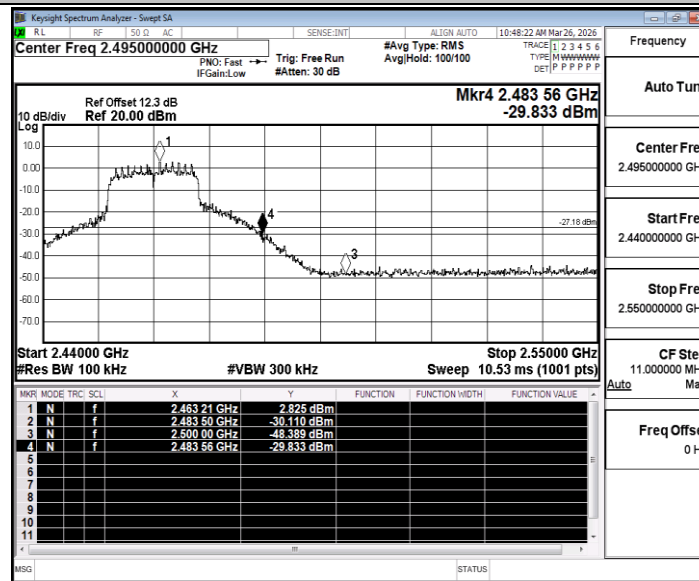
11G_Ant1_High_2462



11N20SISO_Ant1_Low_2412



11N20SISO_Ant1_High_2462



B.5 Conducted Spurious Emission

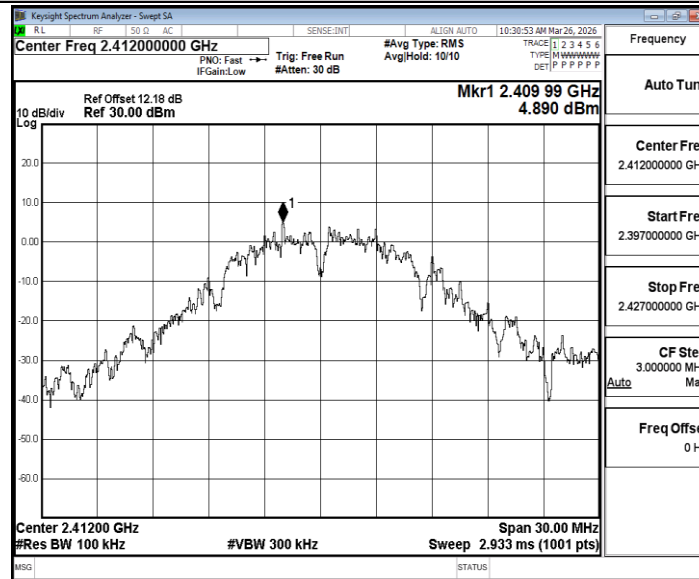
Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	4.89	4.89	---	PASS
			30~1000	4.89	-61.68	≤-25.11	PASS
			1000~26500	4.89	-43.39	≤-25.11	PASS
		2437	Reference	3.92	3.92	---	PASS
			30~1000	3.92	-60.67	≤-26.08	PASS
			1000~26500	3.92	-43.5	≤-26.08	PASS
		2462	Reference	3.64	3.64	---	PASS
			30~1000	3.64	-61.86	≤-26.36	PASS
			1000~26500	3.64	-43.27	≤-26.36	PASS
11G	Ant1	2412	Reference	2.57	2.57	---	PASS
			30~1000	2.57	-59.93	≤-27.43	PASS
			1000~26500	2.57	-43.76	≤-27.43	PASS
		2437	Reference	0.89	0.89	---	PASS
			30~1000	0.89	-57.6	≤-29.11	PASS
			1000~26500	0.89	-40.6	≤-29.11	PASS
		2462	Reference	1.94	1.94	---	PASS
			30~1000	1.94	-61.59	≤-28.06	PASS
			1000~26500	1.94	-43.64	≤-28.06	PASS
11N20SISO	Ant1	2412	Reference	1.97	1.97	---	PASS
			30~1000	1.97	-61.67	≤-28.03	PASS
			1000~26500	1.97	-42.67	≤-28.03	PASS
		2437	Reference	0.43	0.43	---	PASS
			30~1000	0.43	-61.1	≤-29.57	PASS
			1000~26500	0.43	-34.76	≤-29.57	PASS
		2462	Reference	2.10	2.10	---	PASS
			30~1000	2.10	-62.72	≤-27.9	PASS
			1000~26500	2.10	-41.04	≤-27.9	PASS

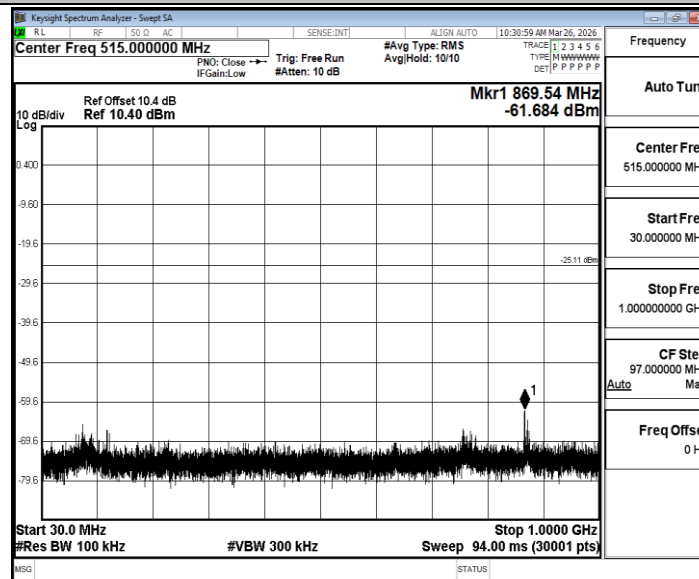
Note :Regarding the spurious emissions from 30MHz to 26.5GHz, the cable lose have been set in the CORREC' of the Spectrum Analyzer during the test.

Test Graphs

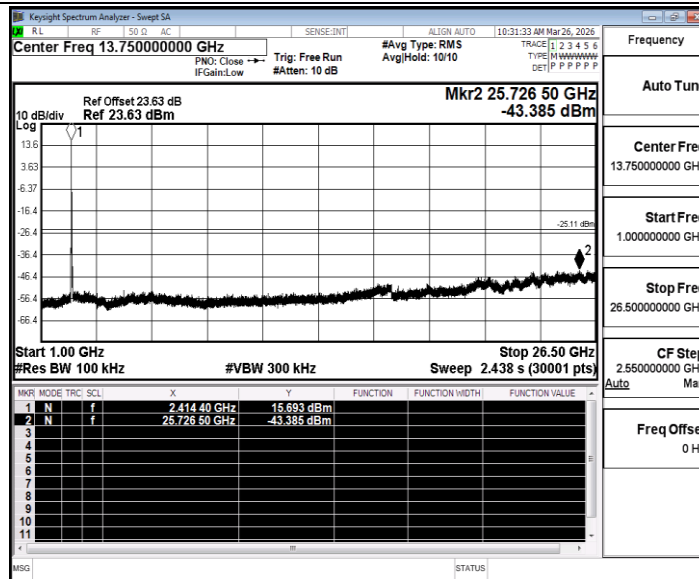
11B_Ant1_2412_0~Reference



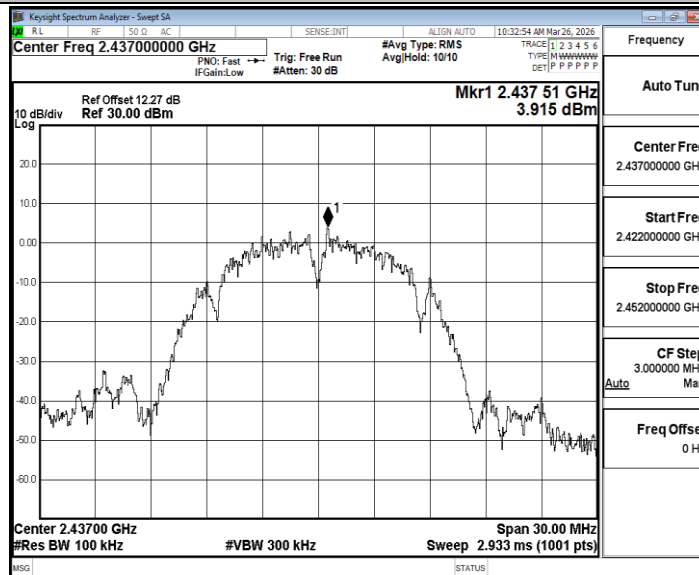
11B_Ant1_2412_30~1000



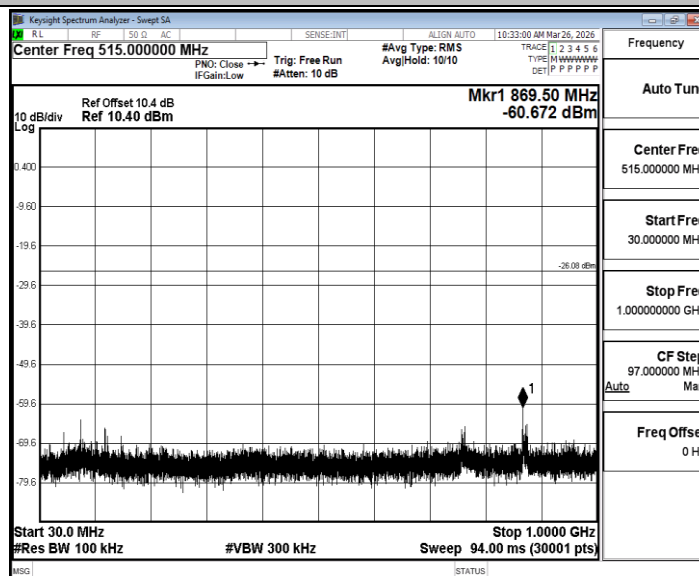
11B_Ant1_2412_1000~26500



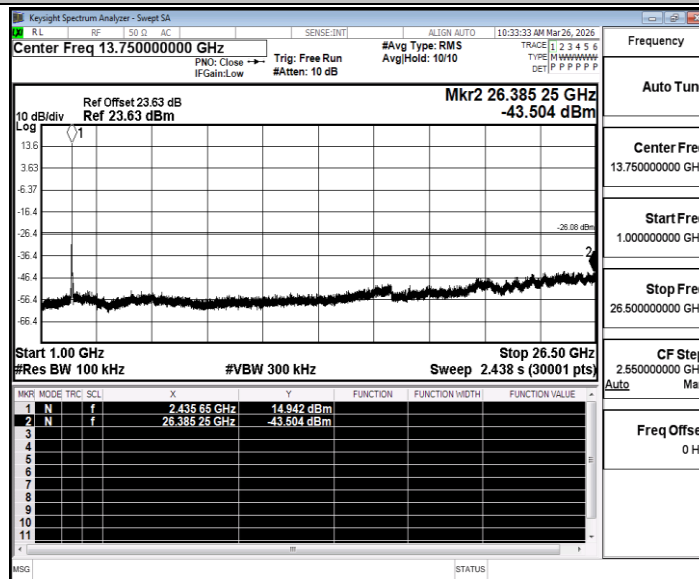
11B_Ant1_2437_0-Reference



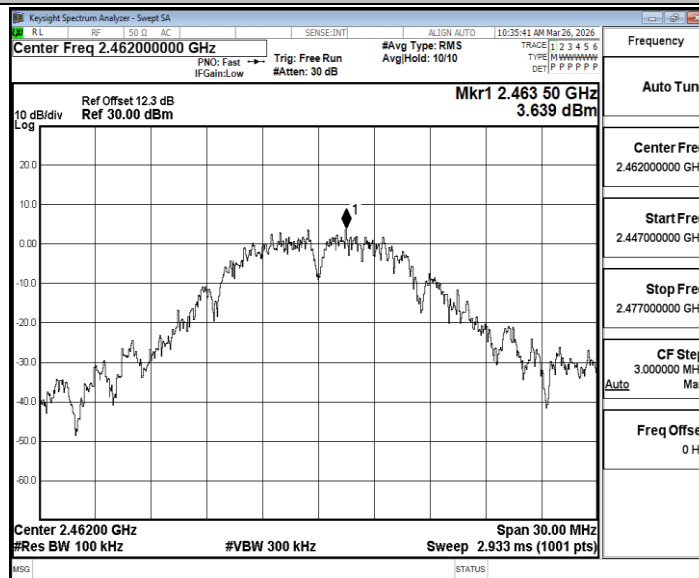
11B_Ant1_2437_30~1000



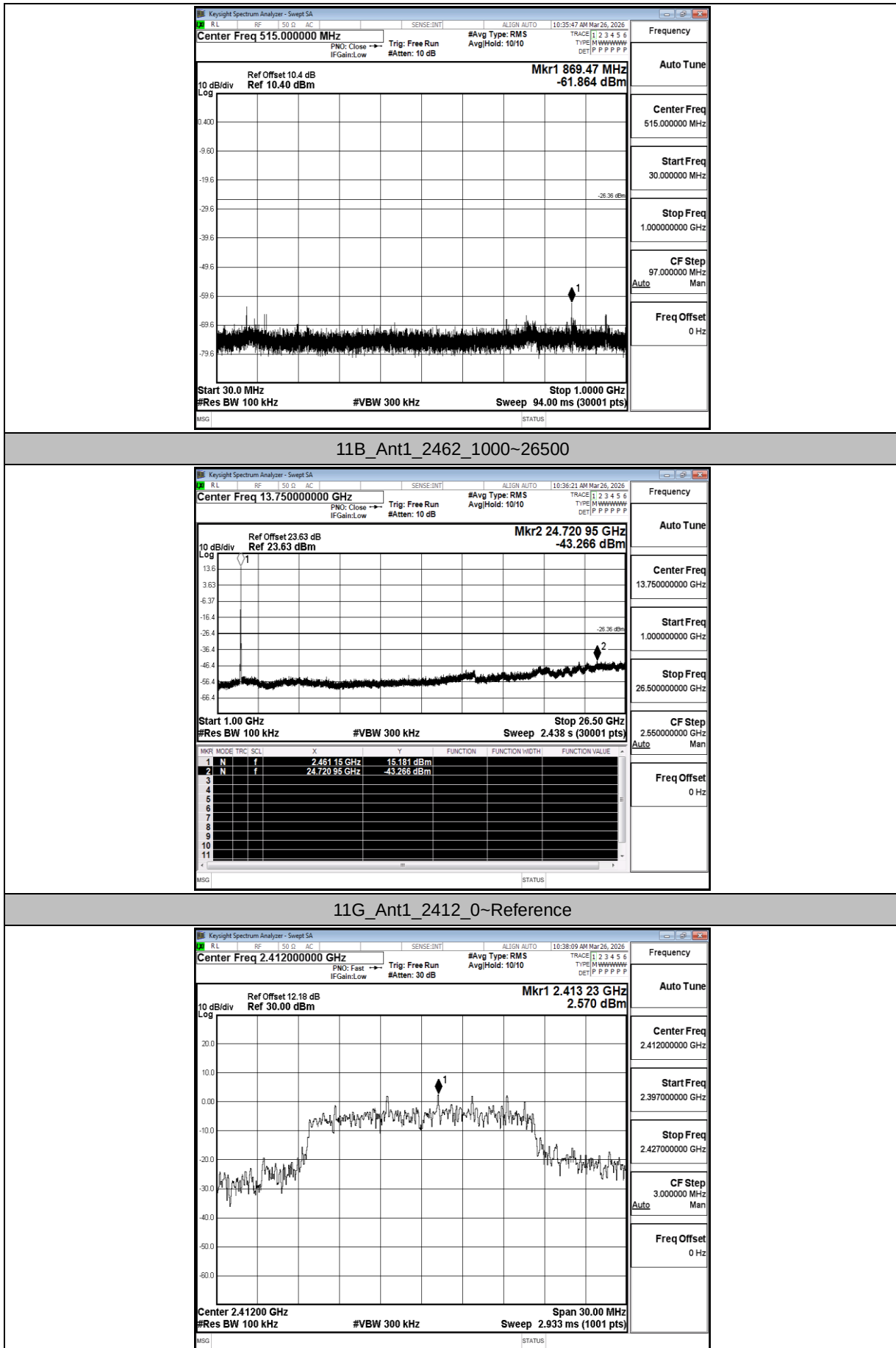
11B_Ant1_2437_1000~26500



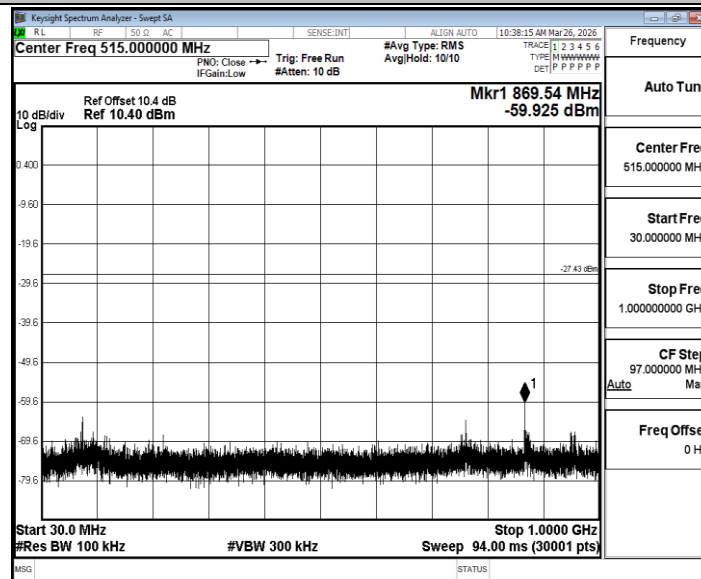
11B_Ant1_2462_0~Reference



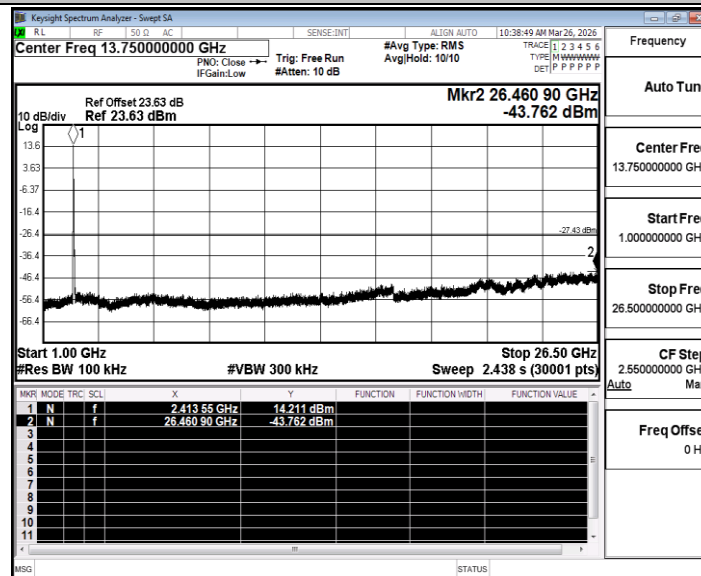
11B_Ant1_2462_30~1000



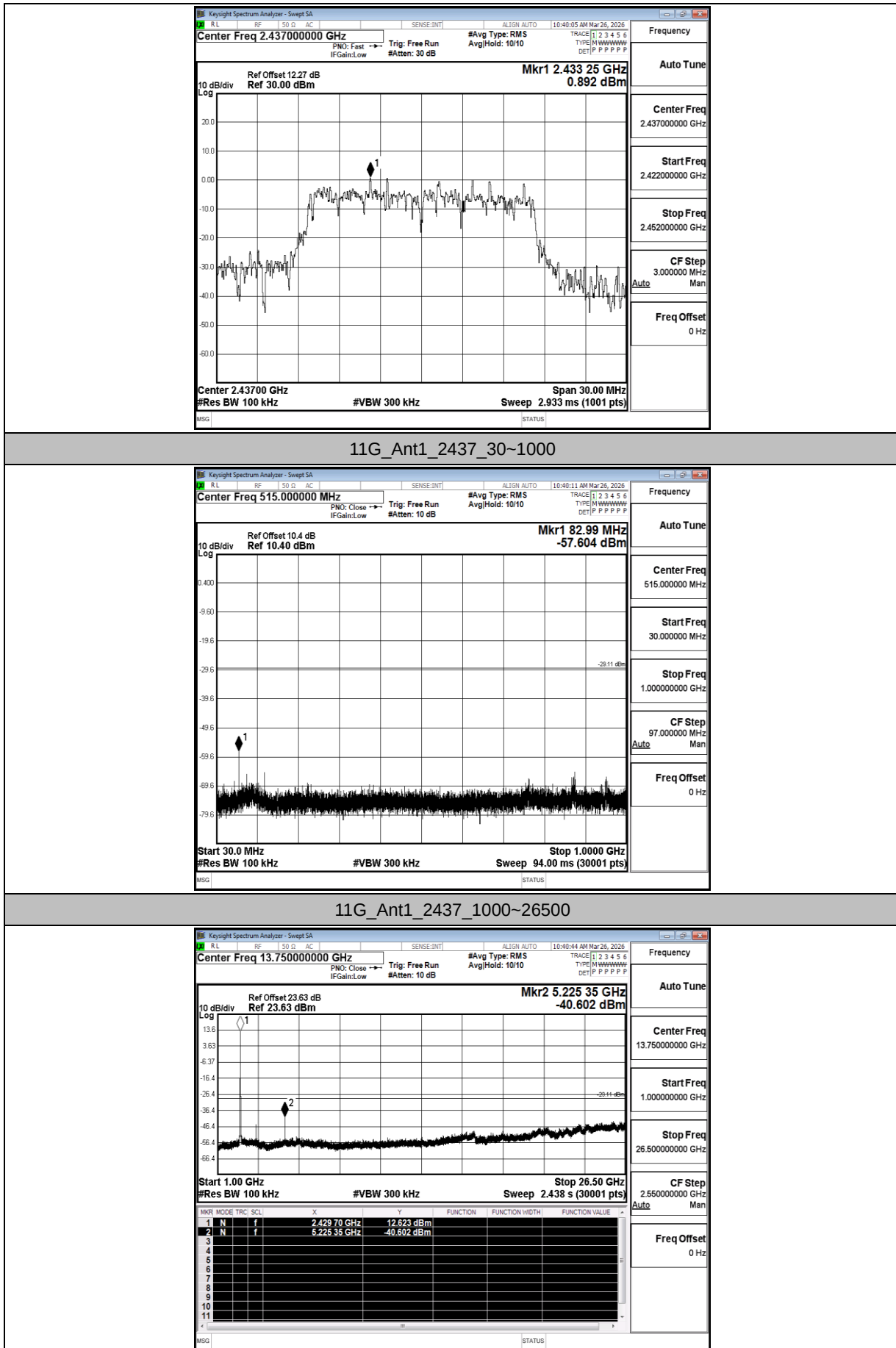
11G_Ant1_2412_30~1000



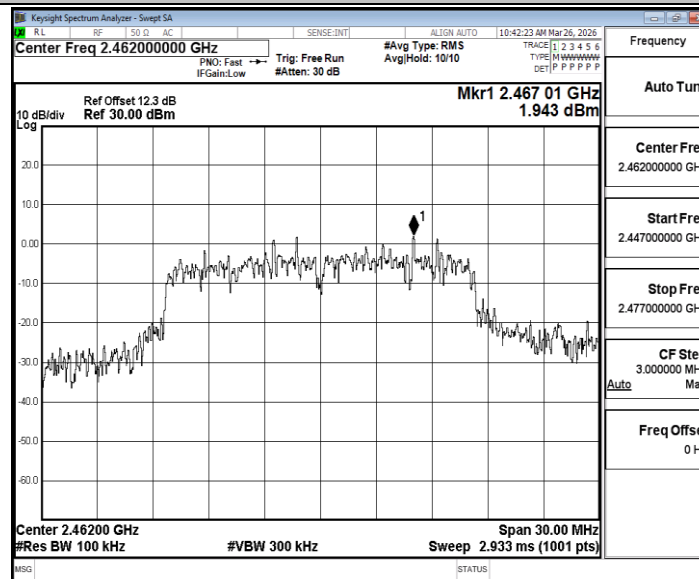
11G_Ant1_2412_1000~26500



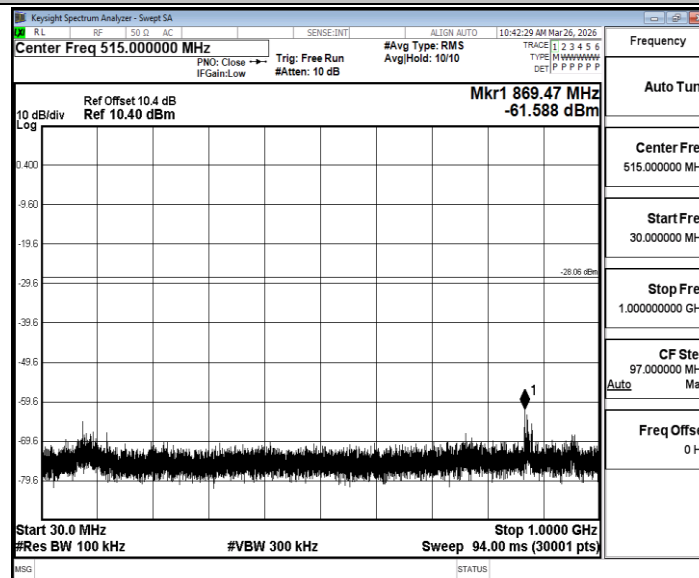
11G_Ant1_2437_0~Reference



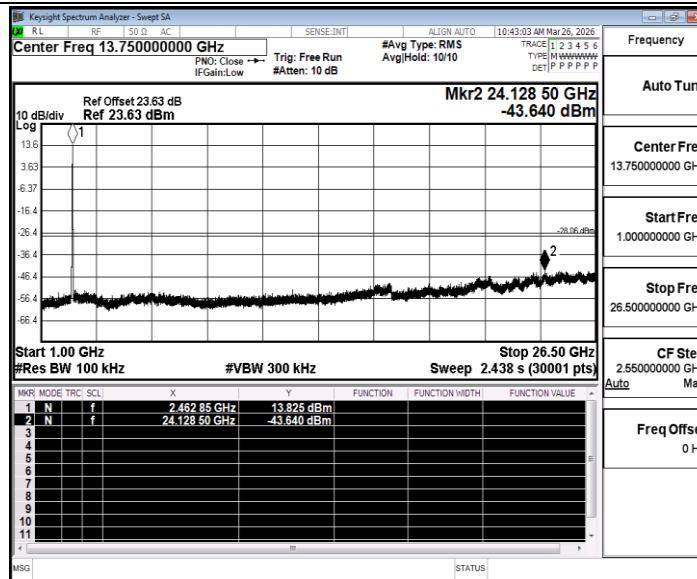
11G_Ant1_2462_0~Reference



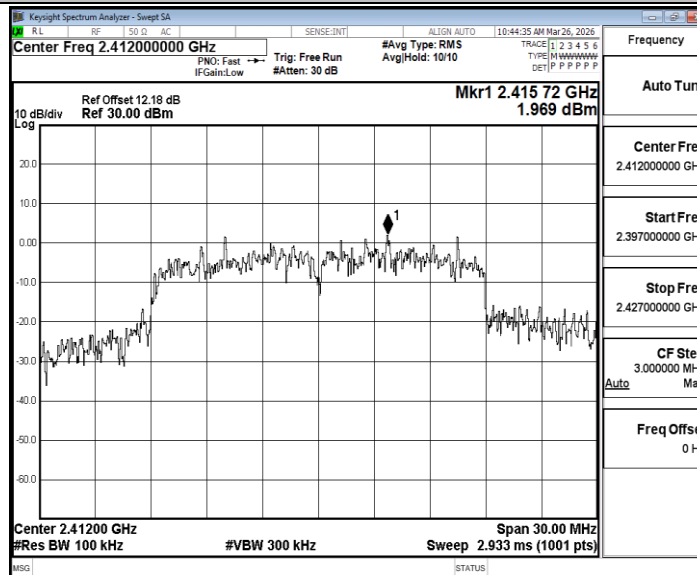
11G_Ant1_2462_30~1000



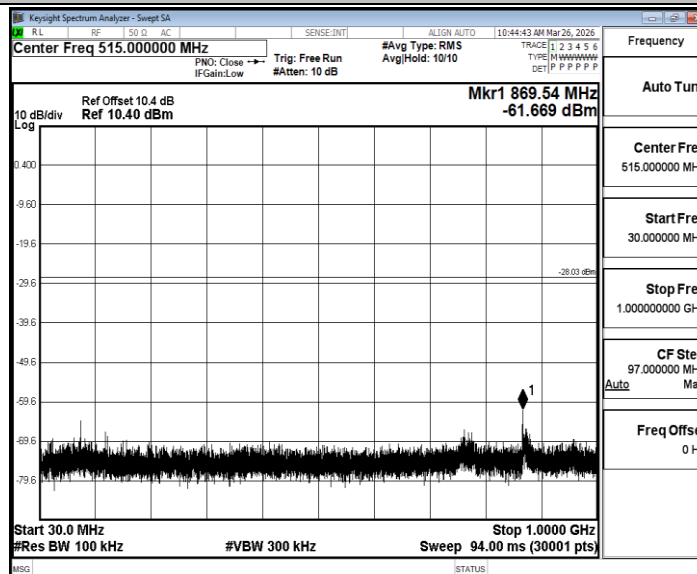
11G_Ant1_2462_1000~26500



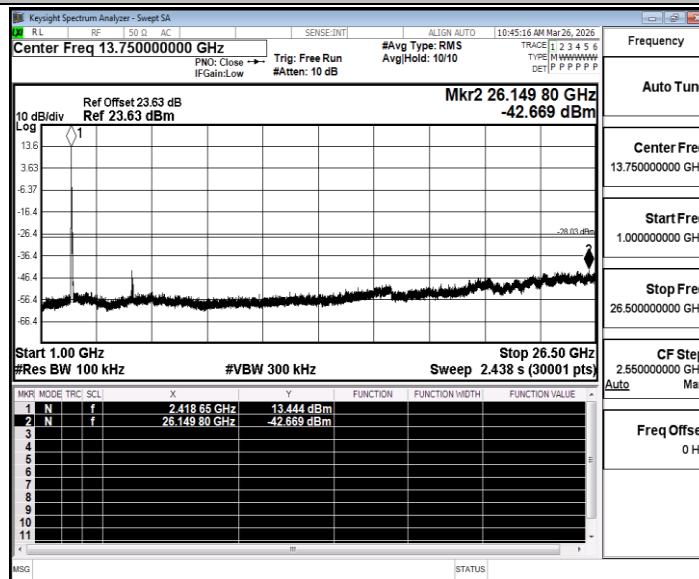
11N20SISO_Ant1_2412_0~Reference



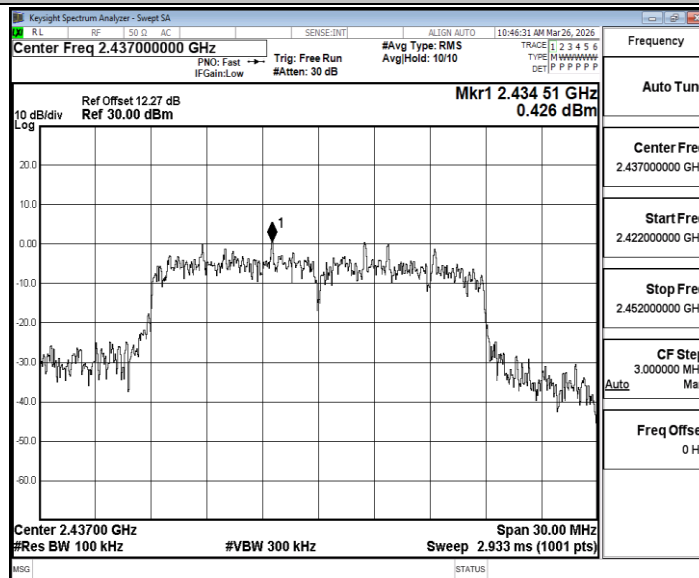
11N20SISO_Ant1_2412_30~1000



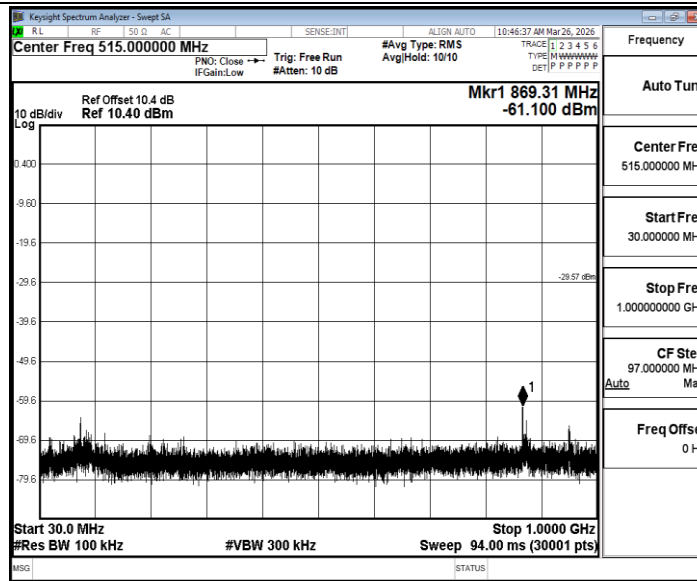
11N20SISO_Ant1_2412_1000~26500



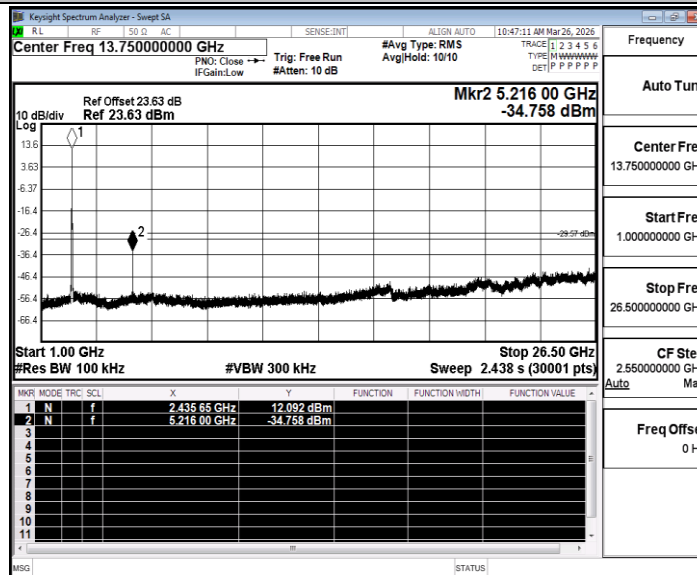
11N20SISO_Ant1_2437_0~Reference



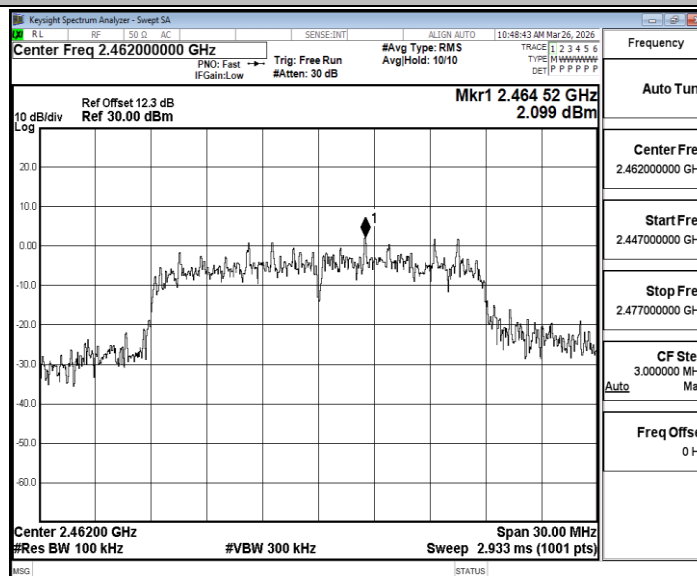
11N20SISO_Ant1_2437_30~1000



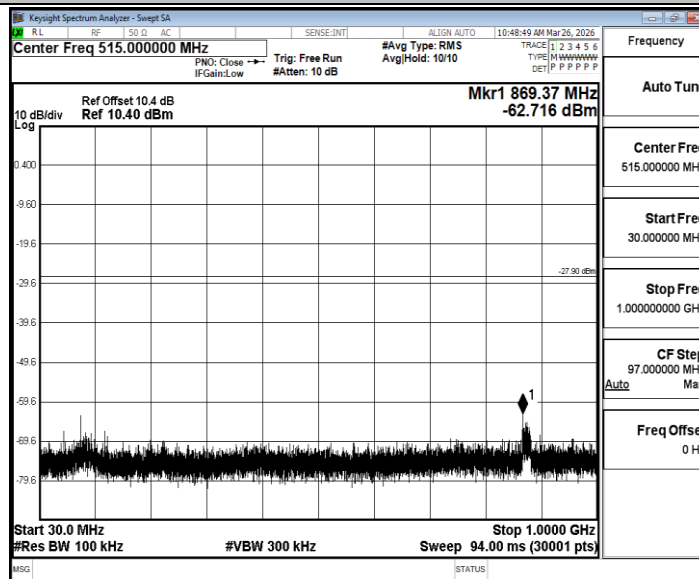
11N20SISO_Ant1_2437_1000~26500



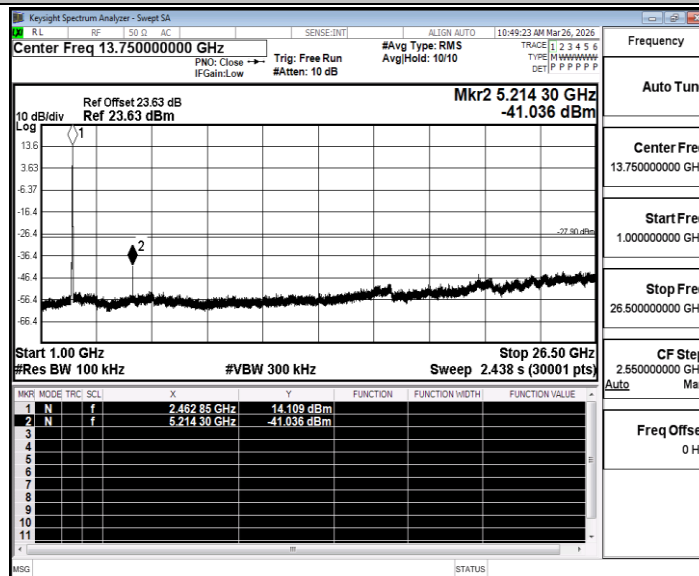
11N20SISO_Ant1_2462_0~Reference



11N20SISO_Ant1_2462_30~1000



11N20SISO_Ant1_2462_1000~26500



B.6 Duty Cycle

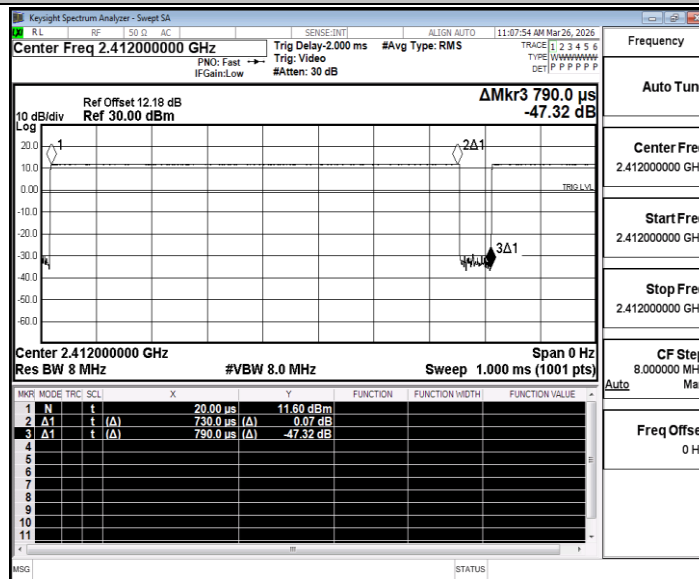
Test Result

TestMode	Antenna	Frequency[MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	xFactor
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	0.11	0.17	64.71	1.89
		2437	0.11	0.18	61.11	2.14
		2462	0.11	0.17	64.71	1.89
11N20SISO	Ant1	2412	0.11	0.17	64.71	1.89
		2437	0.11	0.18	61.11	2.14
		2462	0.12	0.18	66.67	1.76

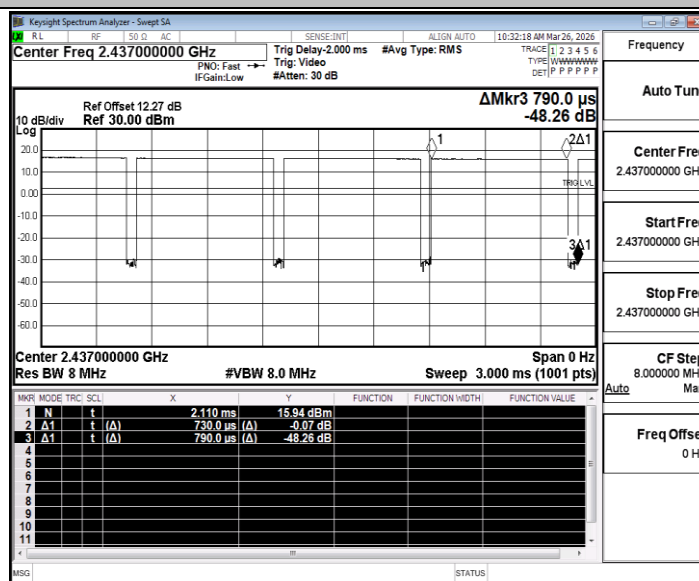
Note :offset=System attenuation +cabal loss

Test Graphs

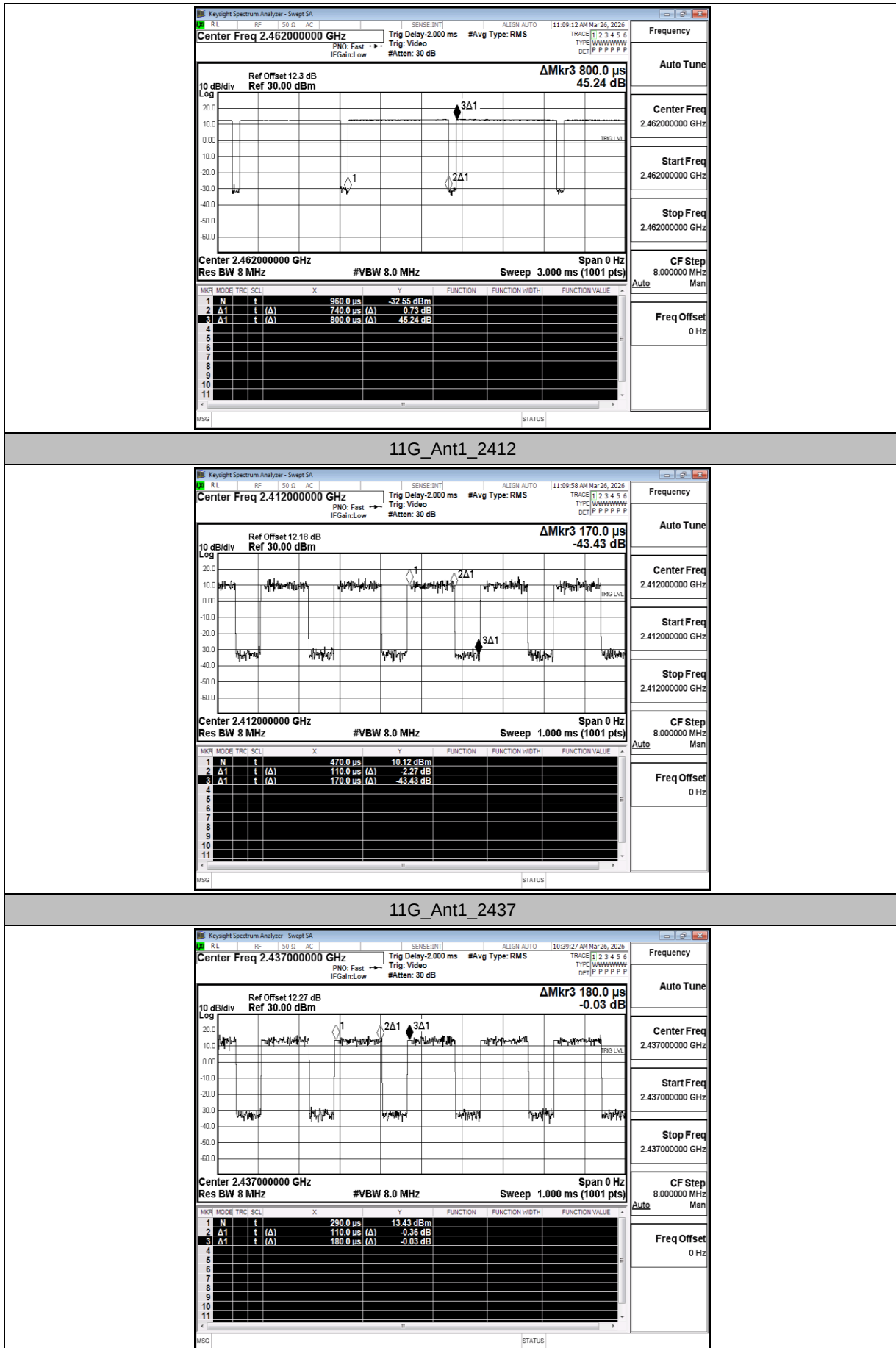
11B_Ant1_2412



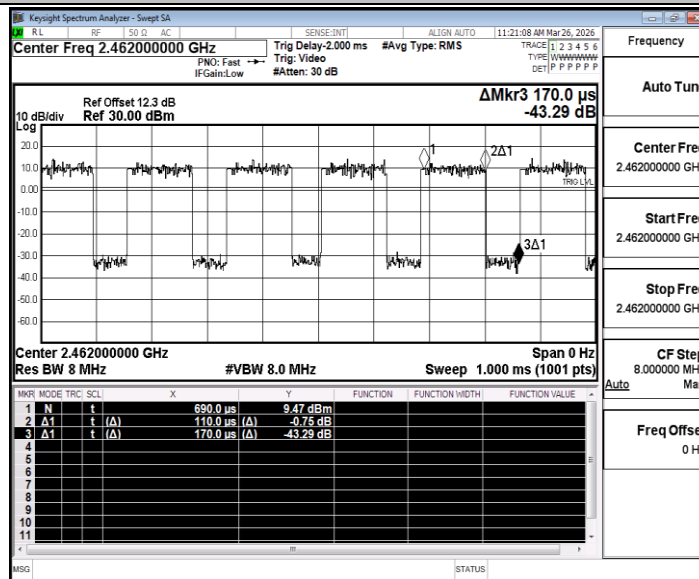
11B_Ant1_2437



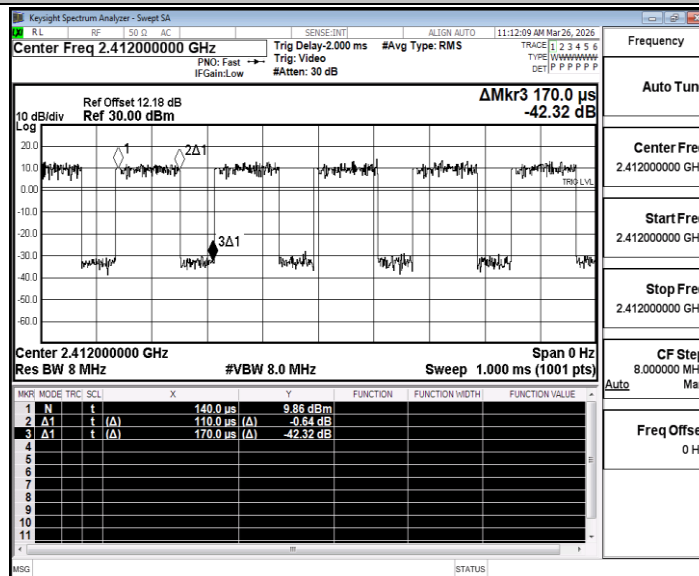
11B_Ant1_2462



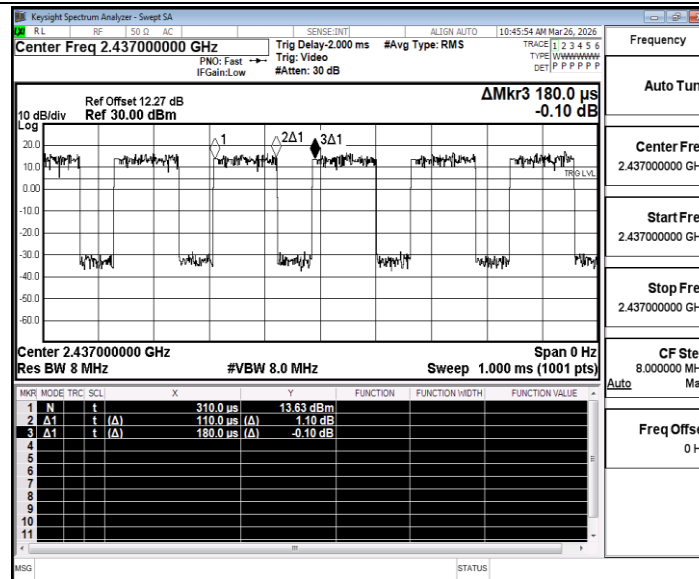
11G_Ant1_2462



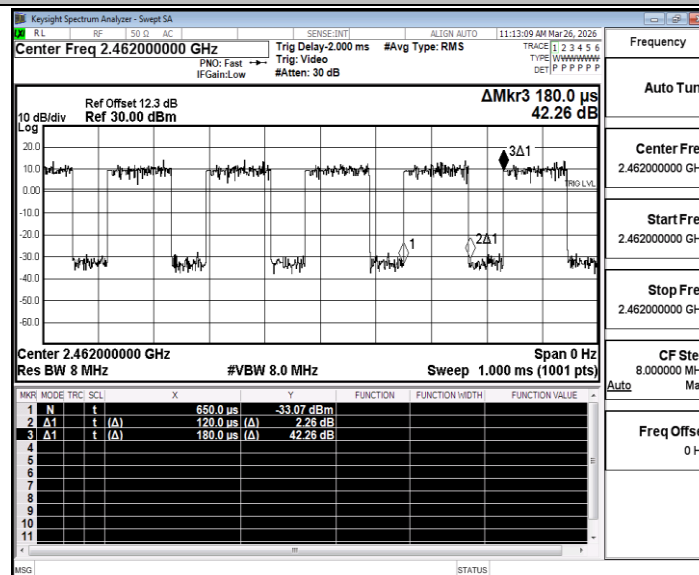
11N20SISO_Ant1_2412



11N20SISO_Ant1_2437



11N20SISO_Ant1_2462



B.7 Emissions in Restricted Bands

Test Result

Test Mode	Antenna	Channel Name	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	-51.1	≤-44.08	2.54	0.34	46.98	≤54	PASS
				AV	2325.220	-49.82	≤-44.08	2.54	0.34	48.26	≤54	PASS
				AV	2390.000	-50.39	≤-44.08	2.54	0.34	47.69	≤54	PASS
				Peak	2310.000	-42.66	≤-23.74	2.54	0.00	55.08	≤74	PASS
				Peak	2354.600	-39.9	≤-23.74	2.54	0.00	57.84	≤74	PASS
				Peak	2390.000	-43.06	≤-23.74	2.54	0.00	54.68	≤74	PASS
		High	2462	AV	2483.500	-50.42	≤-44.08	2.54	0.34	47.66	≤54	PASS
				AV	2489.830	-49.58	≤-44.08	2.54	0.34	48.50	≤54	PASS
				AV	2500.000	-50.3	≤-44.08	2.54	0.34	47.78	≤54	PASS
				Peak	2483.500	-41.73	≤-23.74	2.54	0.00	56.01	≤74	PASS
				Peak	2491.370	-40.13	≤-23.74	2.54	0.00	57.61	≤74	PASS
				Peak	2500.000	-41.78	≤-23.74	2.54	0.00	55.96	≤74	PASS
11G	Ant1	Low	2412	AV	2310.000	-50.8	≤-45.63	2.54	1.89	48.83	≤54	PASS
				AV	2387.100	-49.87	≤-45.63	2.54	1.89	49.76	≤54	PASS
				AV	2390.000	-50.37	≤-45.63	2.54	1.89	49.26	≤54	PASS
				Peak	2310.000	-43.4	≤-23.74	2.54	0.00	54.34	≤74	PASS
				Peak	2387.620	-37.86	≤-23.74	2.54	0.00	59.88	≤74	PASS
				Peak	2390.000	-41.05	≤-23.74	2.54	0.00	56.69	≤74	PASS
		High	2462	AV	2483.500	-47.23	≤-45.63	2.54	1.89	52.40	≤54	PASS
				AV	2484.110	-48.01	≤-45.63	2.54	1.89	51.62	≤54	PASS
				AV	2500.000	-50.26	≤-45.63	2.54	1.89	49.37	≤54	PASS
				Peak	2483.500	-32.36	≤-23.74	2.54	0.00	65.38	≤74	PASS
				Peak	2483.670	-34.7	≤-23.74	2.54	0.00	63.04	≤74	PASS
				Peak	2500.000	-41.58	≤-23.74	2.54	0.00	56.16	≤74	PASS
11N2 OSIS O	Ant1	Low	2412	AV	2310.000	-51.12	≤-45.63	2.54	1.89	48.51	≤54	PASS
				AV	2389.830	-49.04	≤-45.63	2.54	1.89	50.59	≤54	PASS
				AV	2390.000	-49.4	≤-45.63	2.54	1.89	50.23	≤54	PASS
				Peak	2310.000	-42.72	≤-23.74	2.54	0.00	55.02	≤74	PASS
				Peak	2389.050	-36.08	≤-23.74	2.54	0.00	61.66	≤74	PASS
				Peak	2390.000	-36.58	≤-23.74	2.54	0.00	61.16	≤74	PASS
		High	2462	AV	2483.500	-47.27	≤-45.50	2.54	1.76	52.23	≤54	PASS
				AV	2483.560	-47.27	≤-45.50	2.54	1.76	52.23	≤54	PASS
				AV	2500.000	-50.44	≤-45.50	2.54	1.76	49.06	≤54	PASS
				Peak	2483.500	-37.2	≤-23.74	2.54	0.00	60.54	≤74	PASS
				Peak	2484.660	-33.7	≤-23.74	2.54	0.00	64.04	≤74	PASS
				Peak	2500.000	-42.51	≤-23.74	2.54	0.00	55.23	≤74	PASS

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.