Appendix B

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: X1 Star Projector and Home Planetarium, White

Test Model: LV-X2P-W-US

Environmental Conditions

Temperature:	23.5° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Nick Peng
	Nick Peng
Supervised by:	Ling Zhu

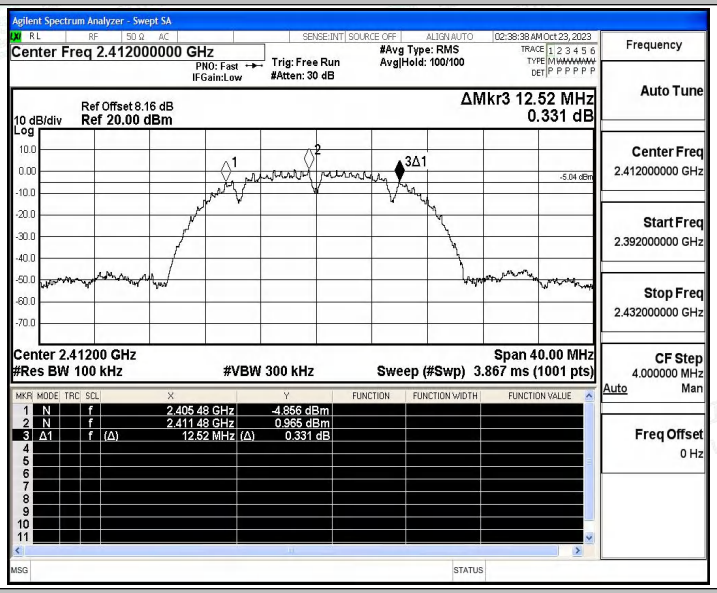
B.1 DTS Bandwidth

Test Result

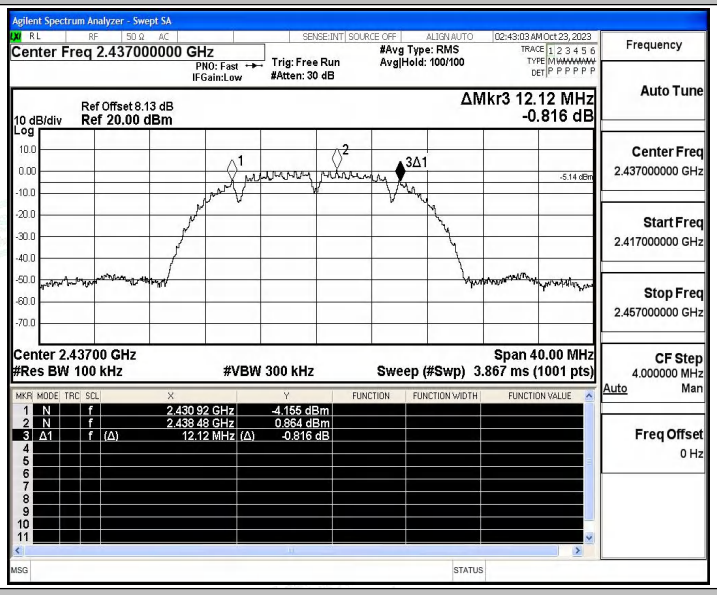
TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	12.520	2405.480	2418.000	0.5	PASS
		2437	12.120	2430.920	2443.040	0.5	PASS
		2462	12.560	2455.480	2468.040	0.5	PASS
11G	Ant1	2412	16.600	2403.520	2420.120	0.5	PASS
		2437	15.440	2429.680	2445.120	0.5	PASS
		2462	16.000	2454.080	2470.080	0.5	PASS
11N20SISO	Ant1	2412	16.120	2404.680	2420.800	0.5	PASS
		2437	16.480	2428.480	2444.960	0.5	PASS
		2462	16.920	2453.680	2470.600	0.5	PASS
11N40SISO	Ant1	2422	33.840	2405.680	2439.520	0.5	PASS
		2437	35.120	2419.400	2454.520	0.5	PASS
		2452	35.040	2434.480	2469.520	0.5	PASS

Test Graphs

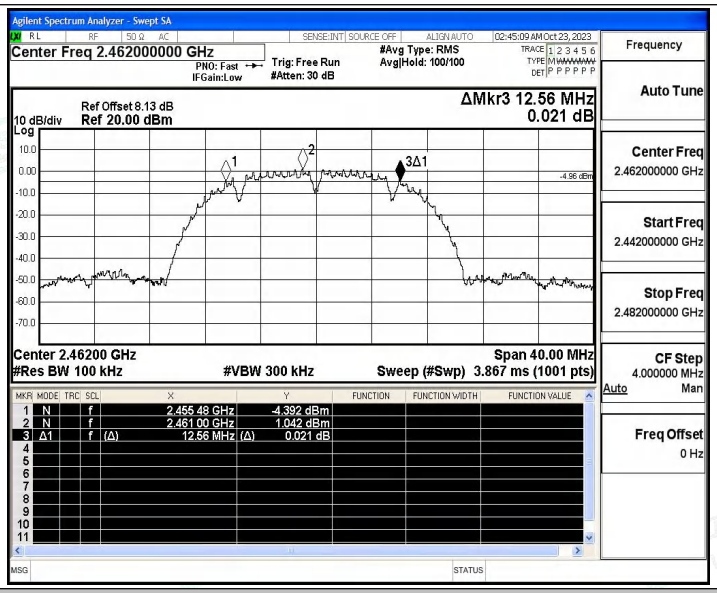
11B_Ant1_2412



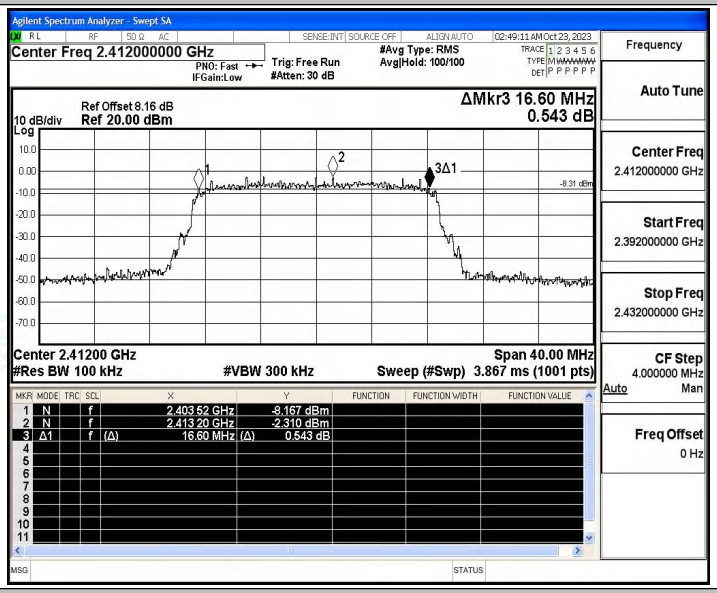
11B_Ant1_2437



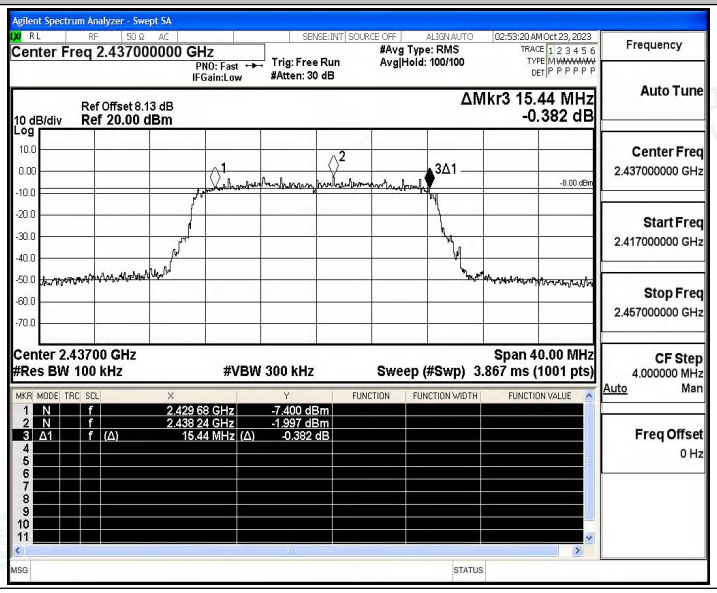
11B_Ant1_2462



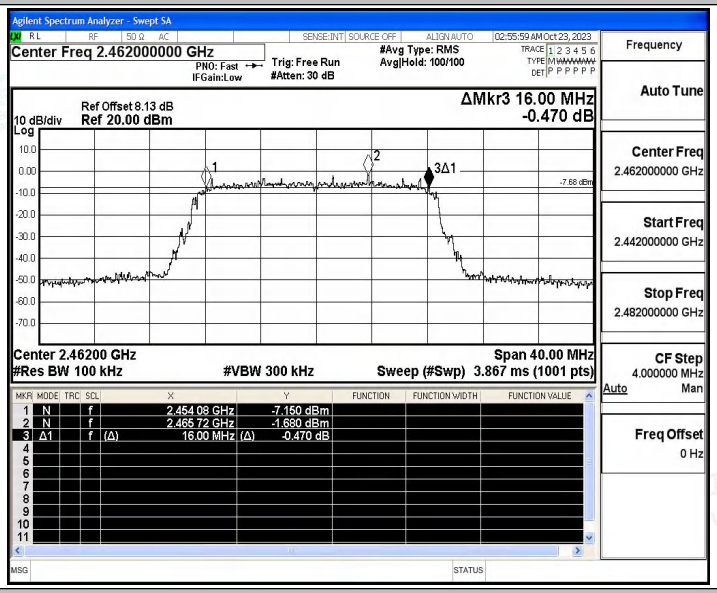
11G_Ant1_2412



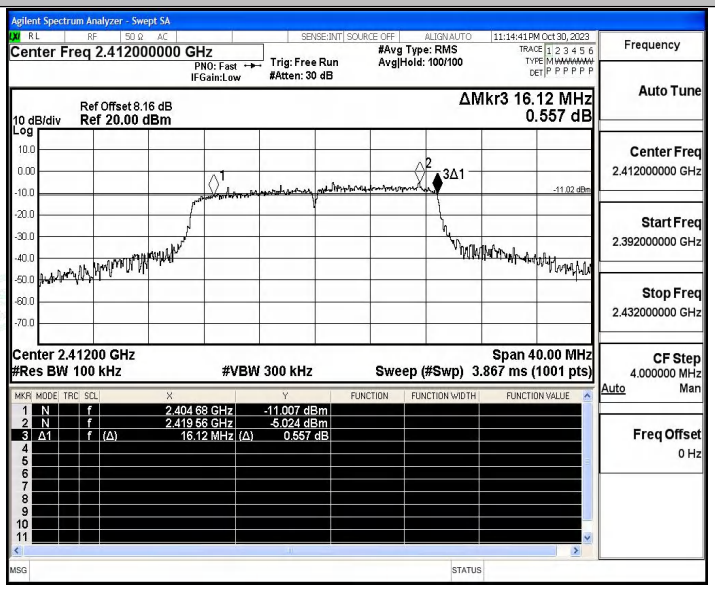
11G_Ant1_2437



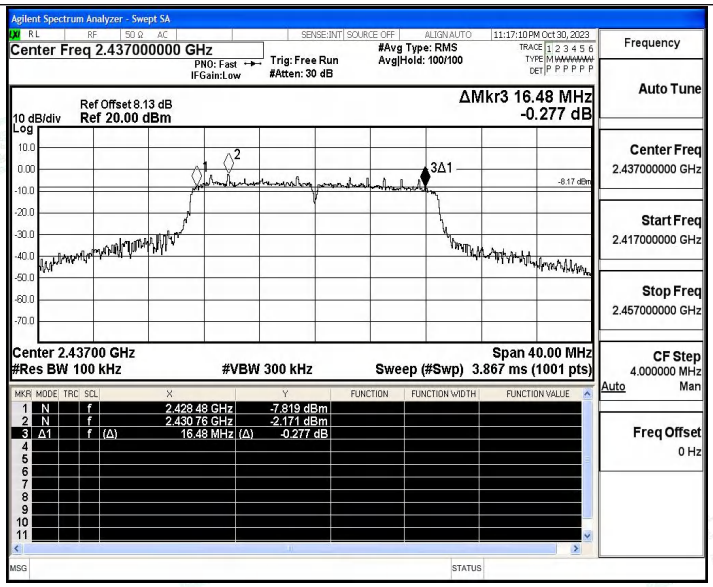
11G_Ant1_2462



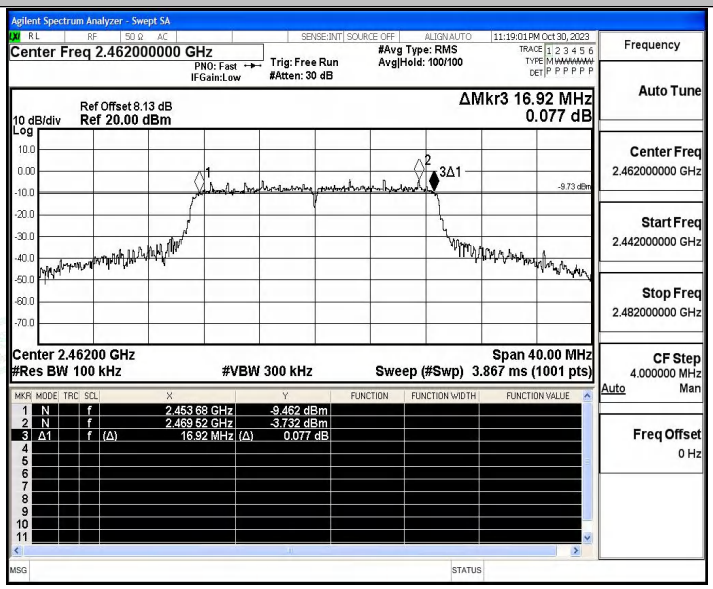
11N20SISO_Ant1_2412



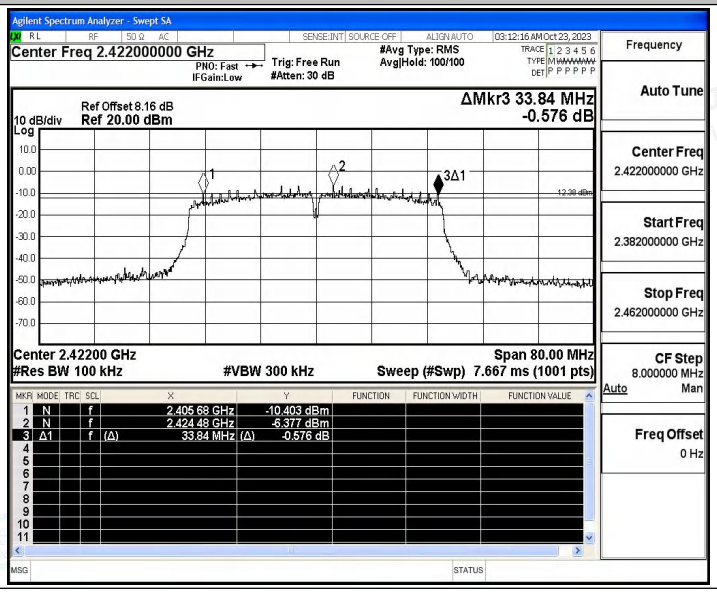
11N20SISO_Ant1_2437



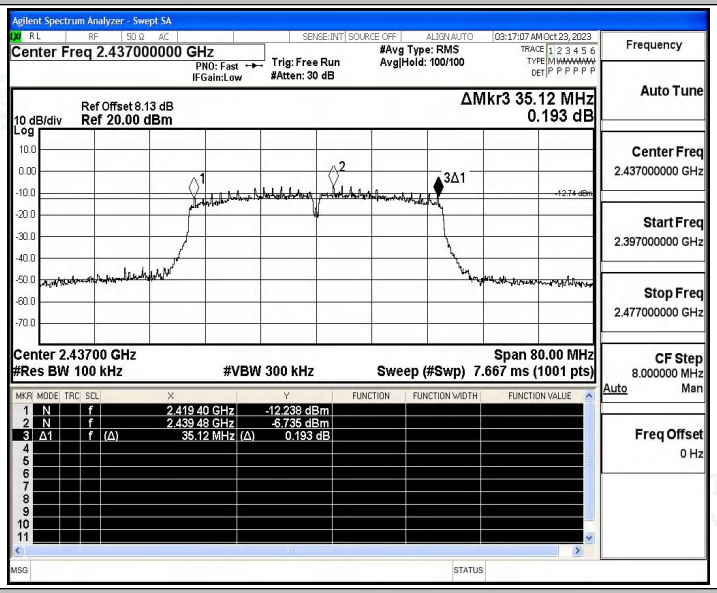
11N20SISO_Ant1_2462



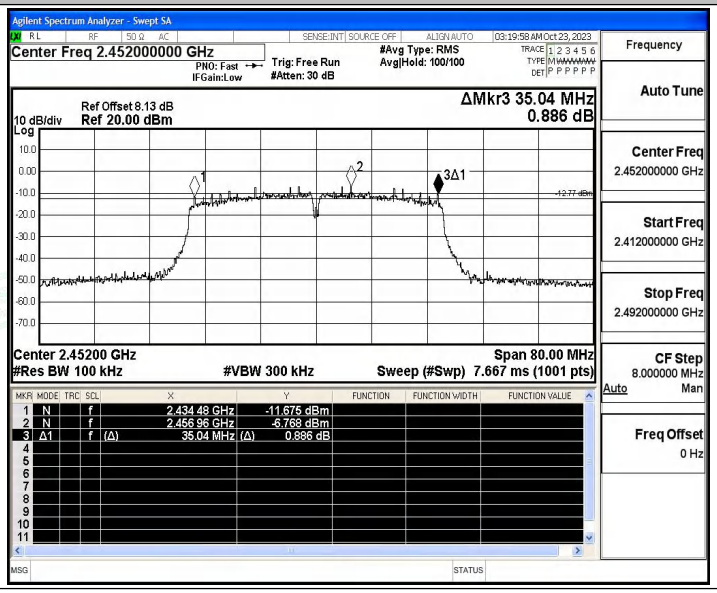
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



B.2 Maximum conducted output power

Test Result Peak

TestMode	Antenna	Freq(MHz)	Peak Power[dBm]	Conducted Limit[dBm]	Verdict
11B	Ant1	2412	14.12	≤30.00	PASS
		2437	14.08	≤30.00	PASS
		2462	14.66	≤30.00	PASS
11G	Ant1	2412	15.63	≤30.00	PASS
		2437	15.47	≤30.00	PASS
		2462	15.94	≤30.00	PASS
11N20SISO	Ant1	2412	14.49	≤30.00	PASS
		2437	14.20	≤30.00	PASS
		2462	14.72	≤30.00	PASS
11N40SISO	Ant1	2422	13.41	≤30.00	PASS
		2437	13.11	≤30.00	PASS
		2452	13.05	≤30.00	PASS

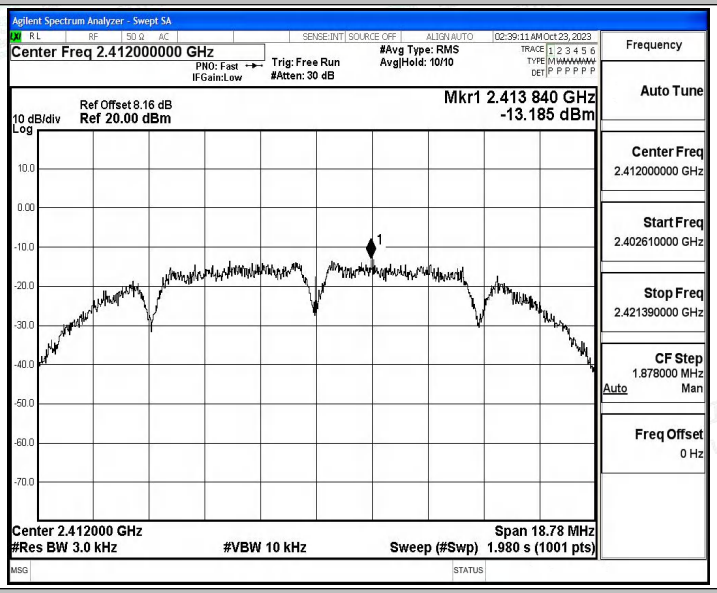
B.3 Maximum power spectral density

Test Result

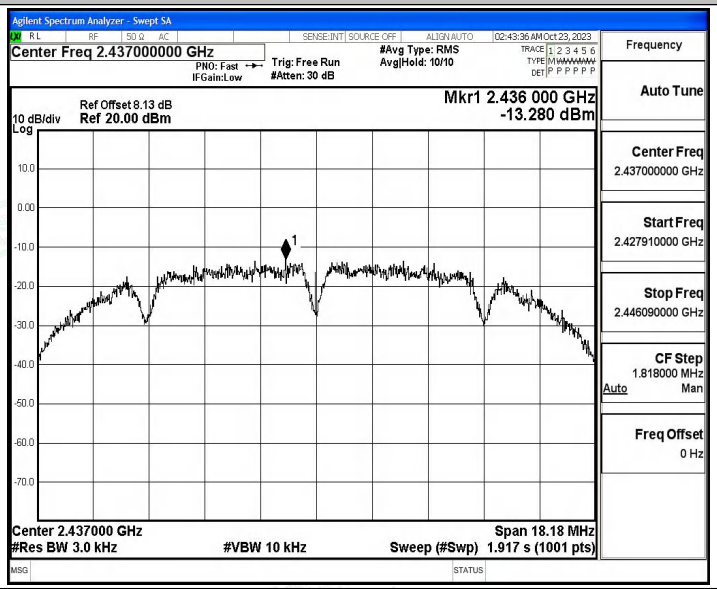
TestMode	Antenna	Freq(MHz)	Result [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
11B	Ant1	2412	-13.19	≤8.00	PASS
		2437	-13.28	≤8.00	PASS
		2462	-12.56	≤8.00	PASS
11G	Ant1	2412	-15.39	≤8.00	PASS
		2437	-15.97	≤8.00	PASS
		2462	-15.21	≤8.00	PASS
11N20SISO	Ant1	2412	-18.86	≤8.00	PASS
		2437	-17.43	≤8.00	PASS
		2462	-18.4	≤8.00	PASS
11N40SISO	Ant1	2422	-19.91	≤8.00	PASS
		2437	-19.64	≤8.00	PASS
		2452	-19.89	≤8.00	PASS

Test Graphs

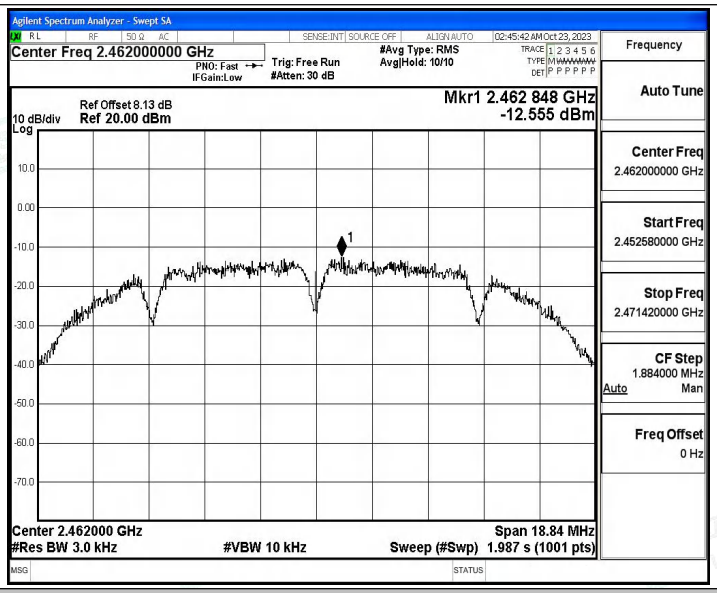
11B_Ant1_2412



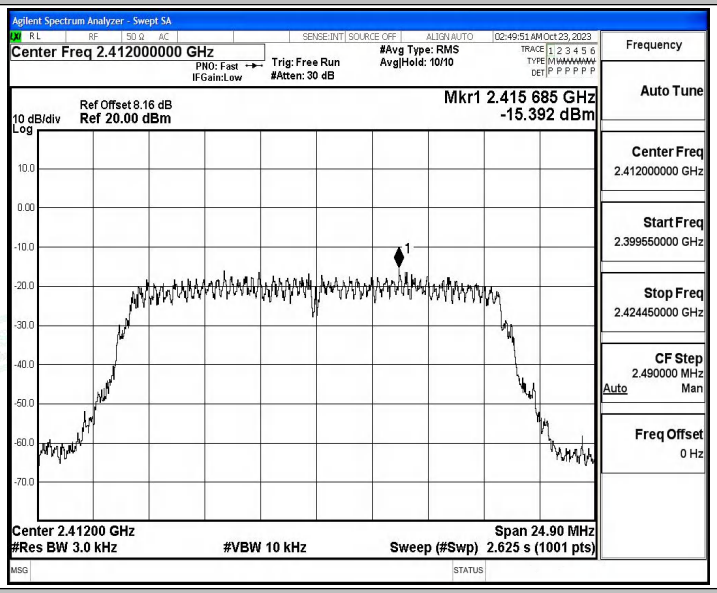
11B_Ant1_2437



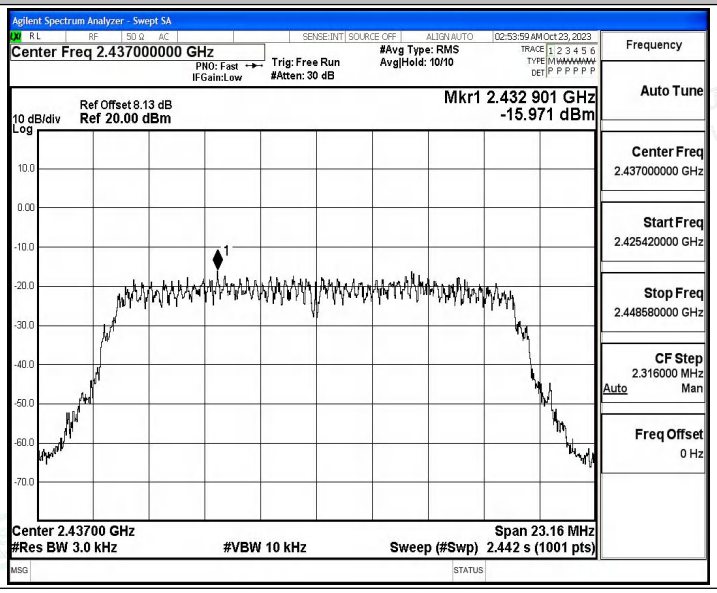
11B_Ant1_2462



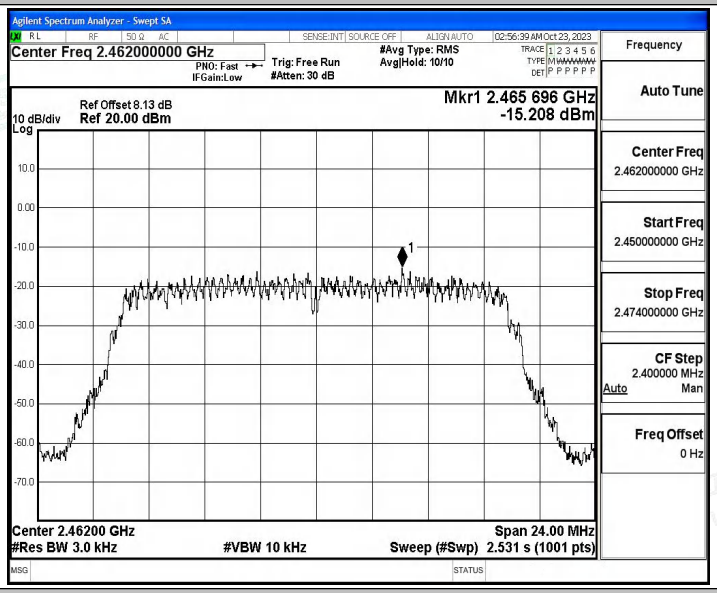
11G_Ant1_2412



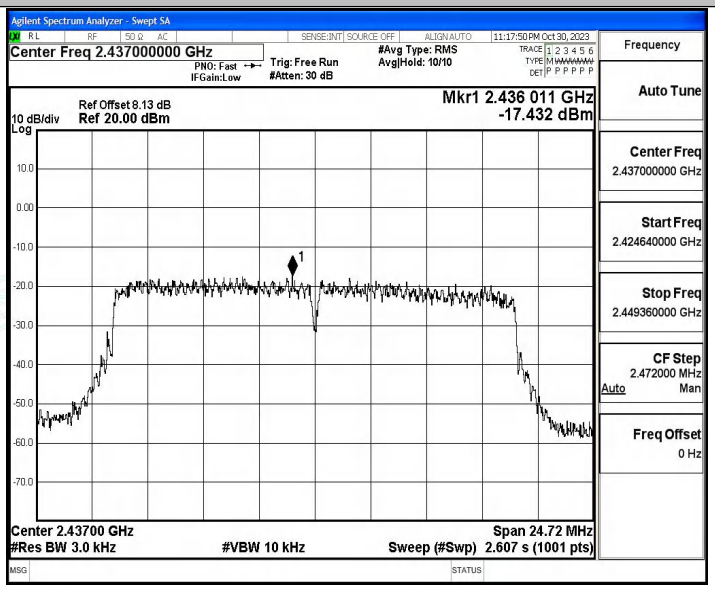
11G_Ant1_2437



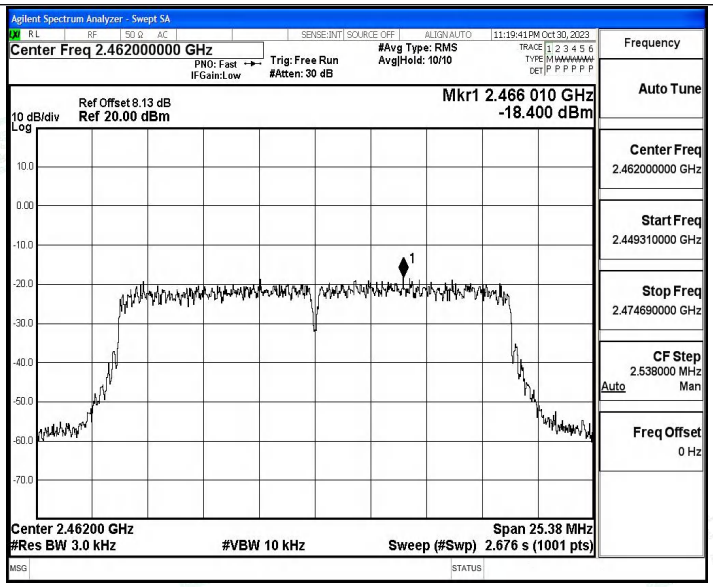
11G_Ant1_2462



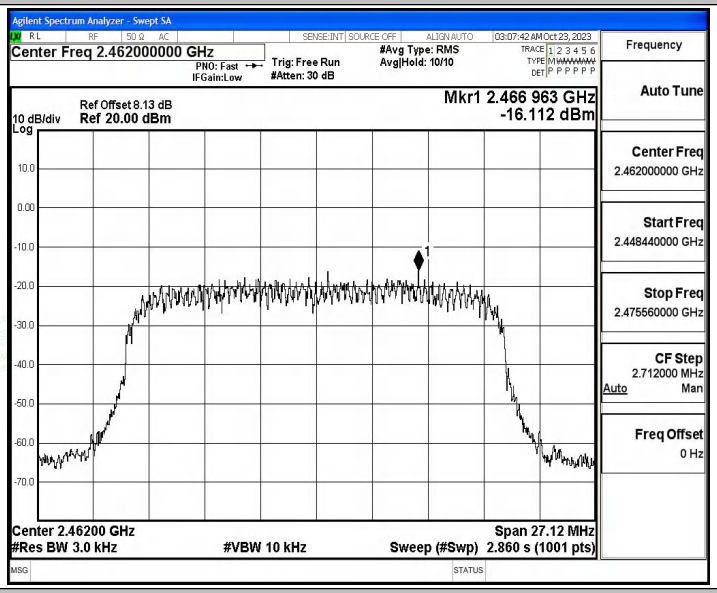
11N20SISO_Ant1_2412



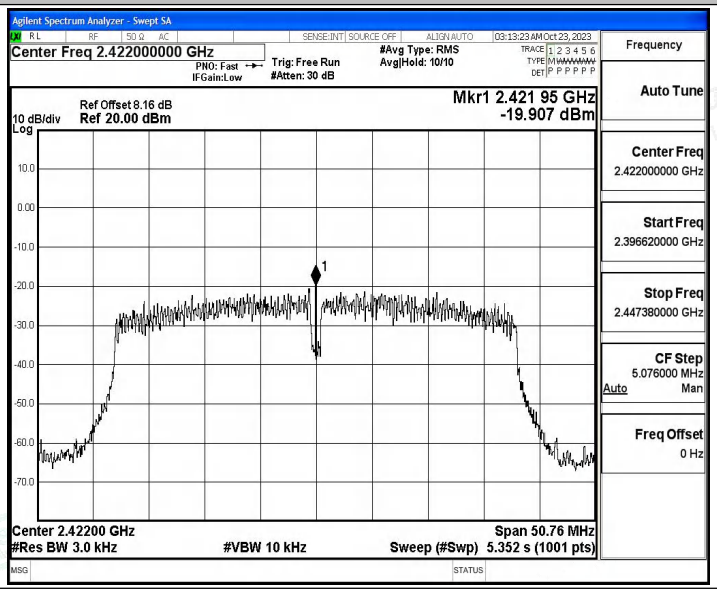
11N20SISO_Ant1_2437



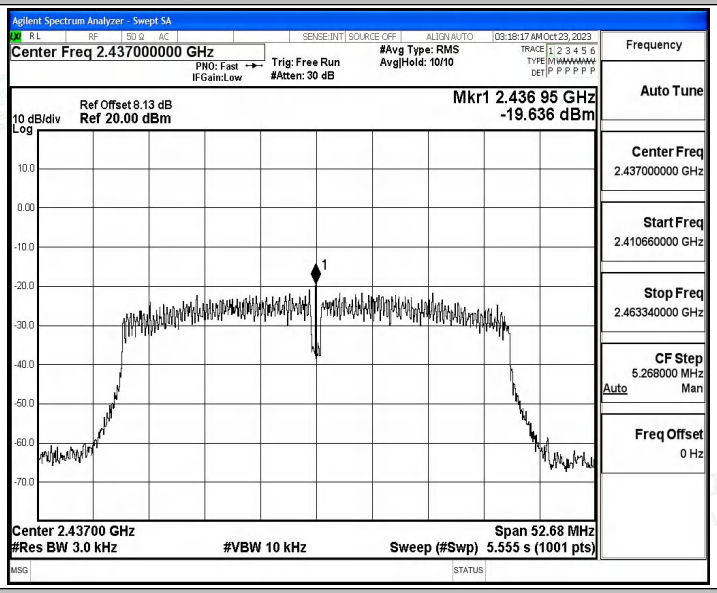
11N20SISO_Ant1_2462



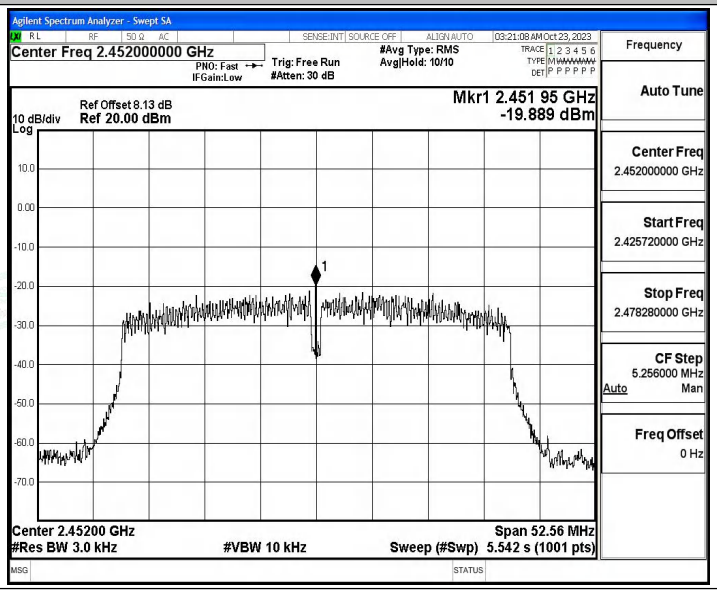
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



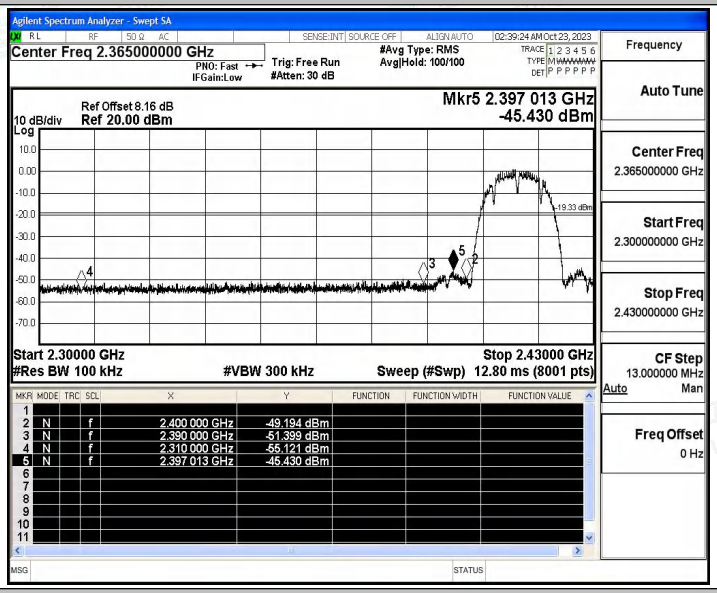
B.4 Band edge measurements

Test Result

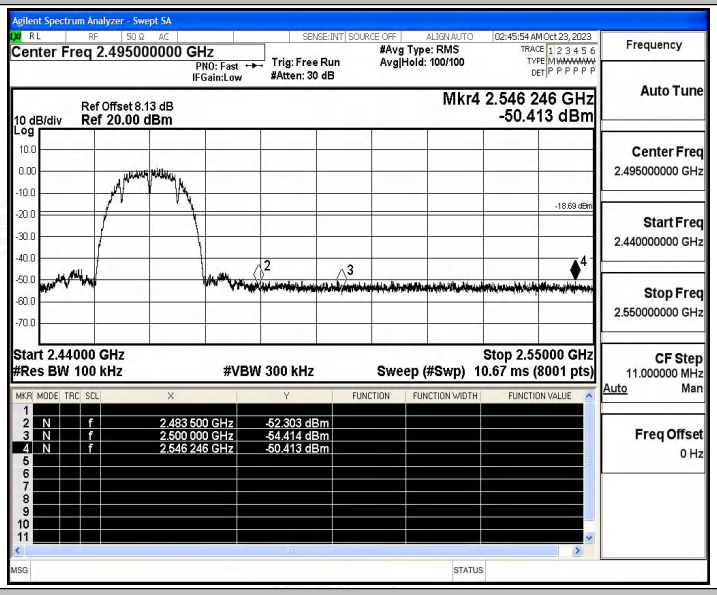
TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	0.67	-45.43	≤-19.33	PASS
		High	2462	1.31	-50.41	≤-18.69	PASS
11G	Ant1	Low	2412	-1.98	-44.41	≤-21.98	PASS
		High	2462	-1.69	-49.4	≤-21.69	PASS
11N20SISO	Ant1	Low	2412	0.27	-45.13	≤-19.73	PASS
		High	2462	0.55	-49.15	≤-19.45	PASS
11N40SISO	Ant1	Low	2422	-6.92	-43.9	≤-26.92	PASS
		High	2452	-6.89	-48.81	≤-26.89	PASS

Test Graphs

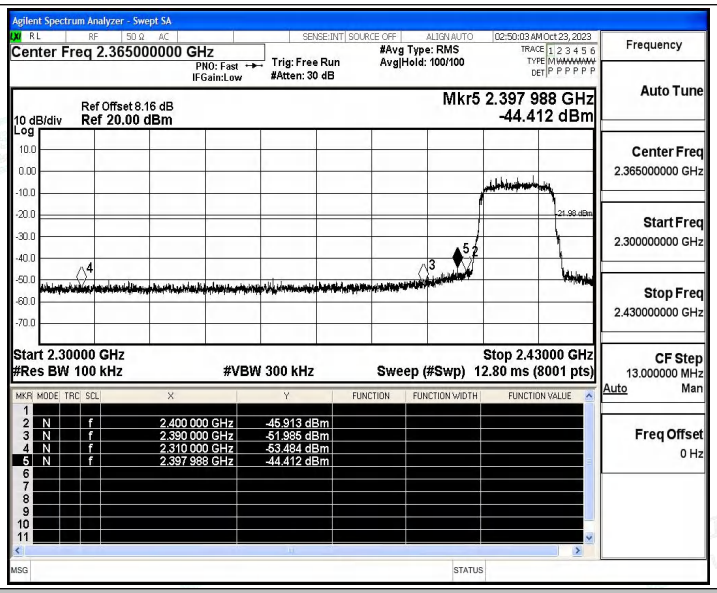
11B_Ant1_Low_2412



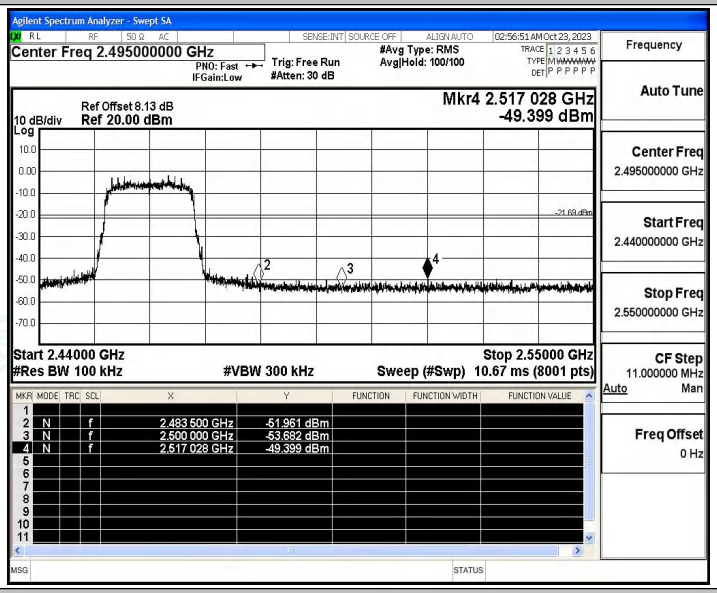
11B_Ant1_High_2462



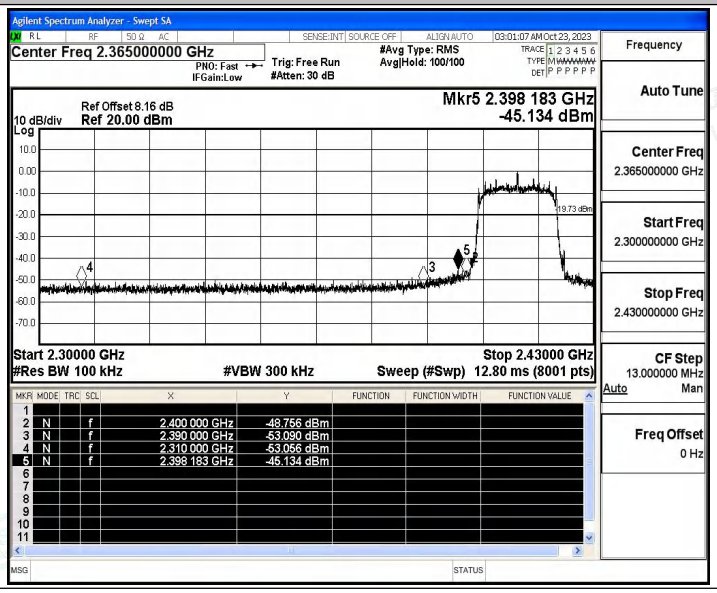
11G_Ant1_Low_2412



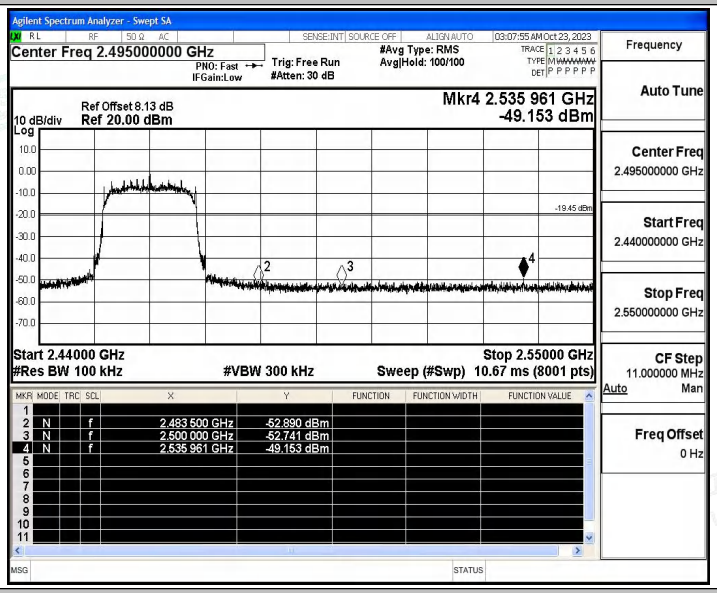
11G_Ant1_High_2462



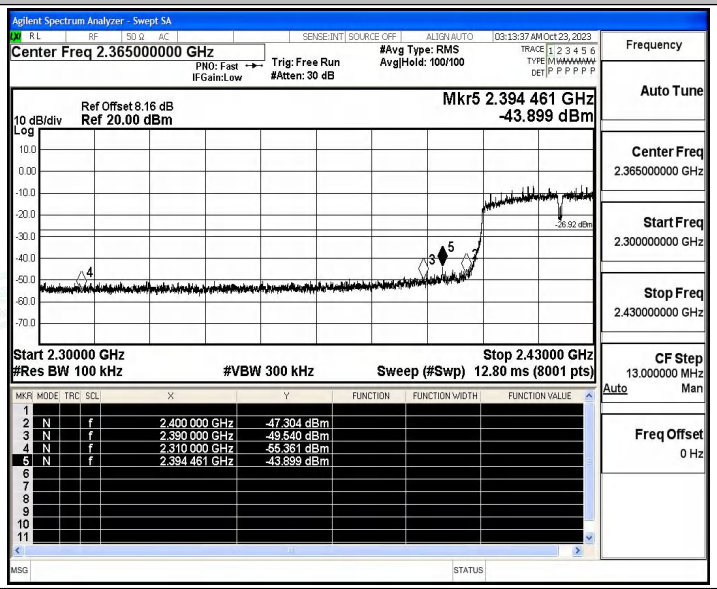
11N20SISO_Ant1_Low_2412



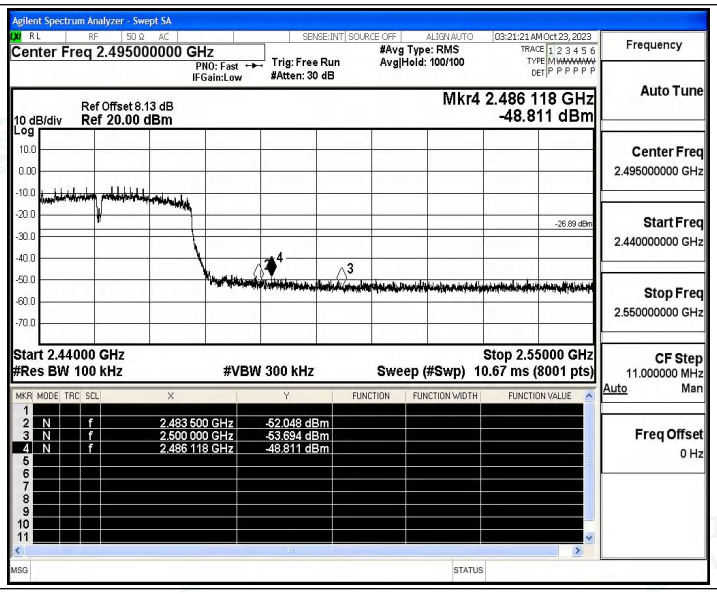
11N20SISO_Ant1_High_2462



11N40SISO_Ant1_Low_2422



11N40SISO_Ant1_High_2452


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.495000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 100/100
03:21:21 AM Oct 23, 2023
Frequency
Auto Tune
Mkr4 2.486 118 GHz
-48.811 dBm
Ref Offset 8.13 dB
10 dB/div Ref 20.00 dBm
Log
-26.89 dBm
Center Freq
2.495000000 GHz
Start Freq
2.440000000 GHz
Stop Freq
2.550000000 GHz
Start 2.44000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.55000 GHz
Sweep (#Swp) 10.67 ms (8001 pts)
CF Step
11.000000 MHz
Auto Man
Freq Offset
0 Hz
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
2 N f 2.483 500 GHz -52.048 dBm
3 N f 2.500 000 GHz -53.694 dBm
4 N f 2.486 118 GHz -48.811 dBm
MSG
STATUS

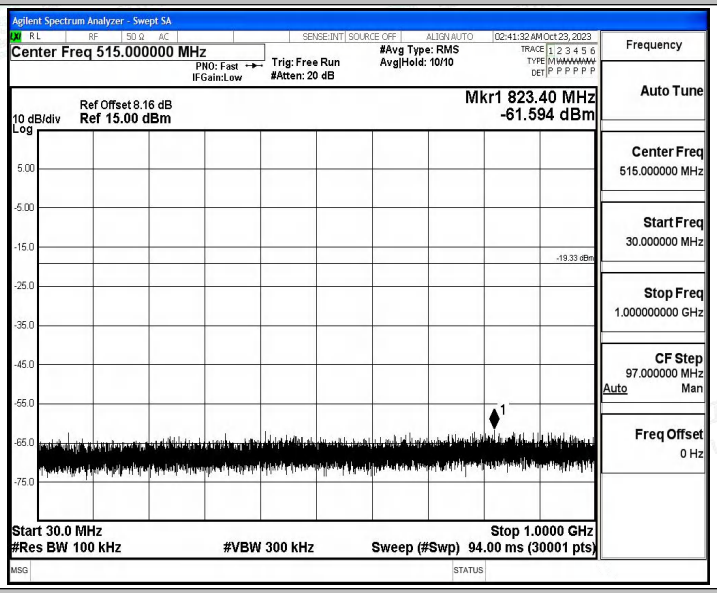
B.5 Conducted Spurious Emission

Test Result

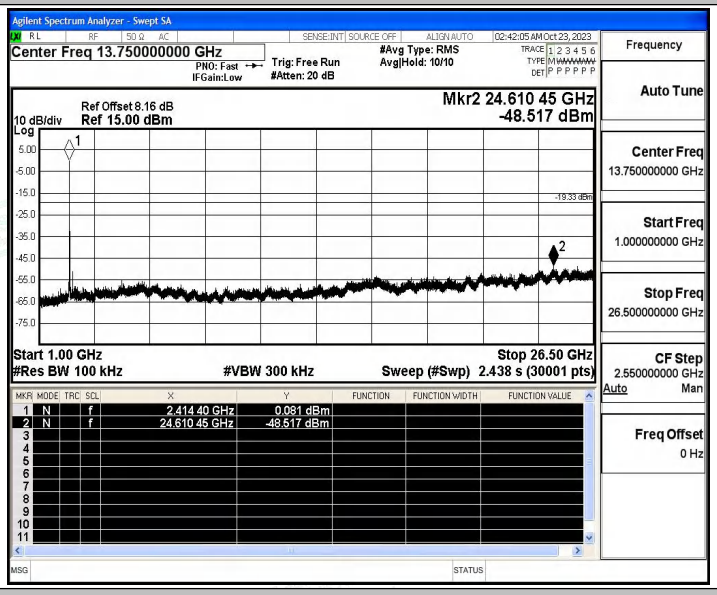
TestMode	Antenna	Freq(MHz)	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	30~1000	0.67	-61.59	≤-19.33	PASS
			1000~26500	0.67	-48.52	≤-19.33	PASS
		2437	30~1000	0.63	-61.37	≤-19.37	PASS
			1000~26500	0.63	-49.43	≤-19.37	PASS
		2462	30~1000	1.31	-62.14	≤-18.69	PASS
			1000~26500	1.31	-48.23	≤-18.69	PASS
11G	Ant1	2412	30~1000	-1.98	-61.18	≤-21.98	PASS
			1000~26500	-1.98	-48.61	≤-21.98	PASS
		2437	30~1000	-2.75	-61.43	≤-22.75	PASS
			1000~26500	-2.75	-49.07	≤-22.75	PASS
		2462	30~1000	-1.69	-61.75	≤-21.69	PASS
			1000~26500	-1.69	-47.68	≤-21.69	PASS
11N20SISO	Ant1	2412	30~1000	0.27	-60.69	≤-19.73	PASS
			1000~26500	0.27	-48.81	≤-19.73	PASS
		2437	30~1000	-2.18	-61.86	≤-22.18	PASS
			1000~26500	-2.18	-49.28	≤-22.18	PASS
		2462	30~1000	0.55	-61.25	≤-19.45	PASS
			1000~26500	0.55	-49.28	≤-19.45	PASS
11N40SISO	Ant1	2422	30~1000	-6.92	-61.43	≤-26.92	PASS
			1000~26500	-6.92	-48.13	≤-26.92	PASS
		2437	30~1000	-7.18	-61.7	≤-27.18	PASS
			1000~26500	-7.18	-49.06	≤-27.18	PASS
		2452	30~1000	-6.89	-61.78	≤-26.89	PASS
			1000~26500	-6.89	-49.27	≤-26.89	PASS

Test Graphs

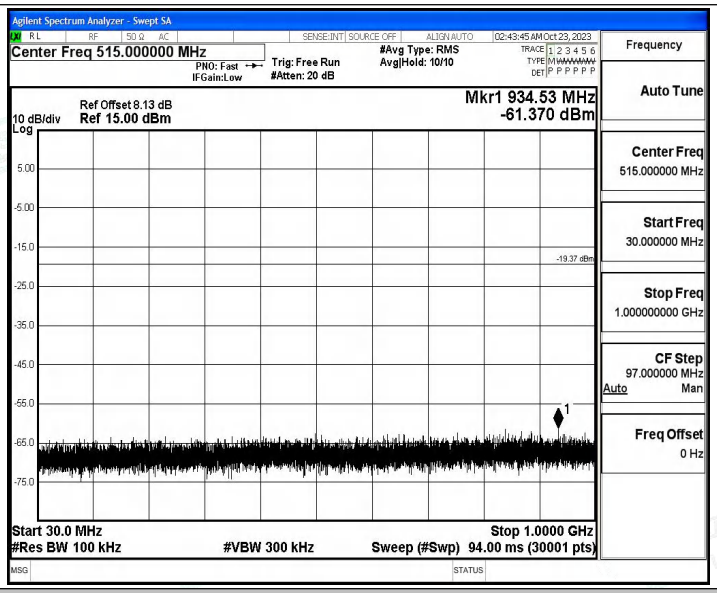
11B_Ant1_2412_30~1000



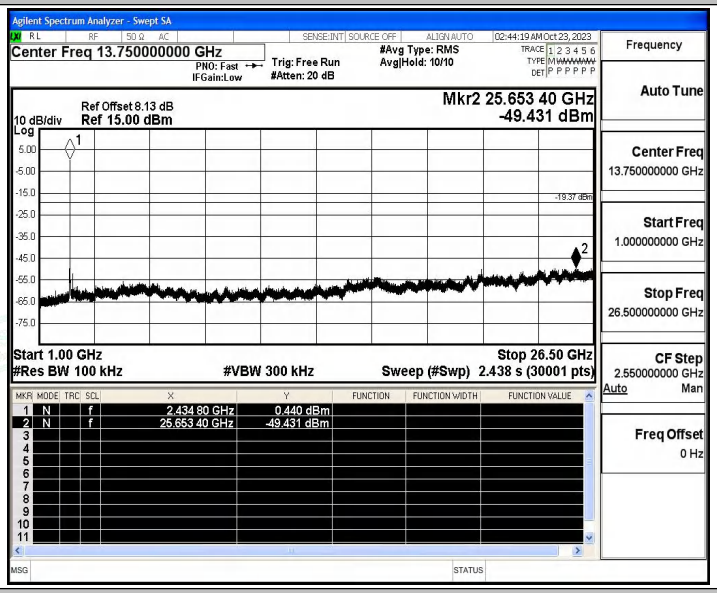
11B_Ant1_2412_1000~26500



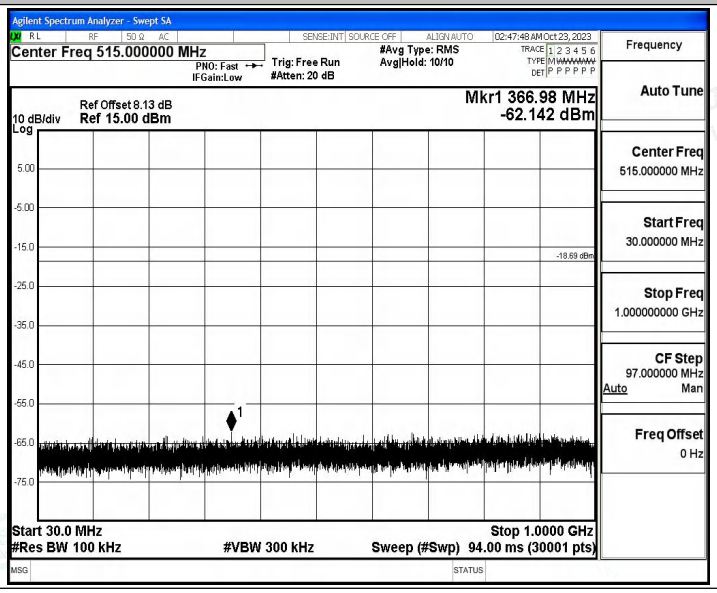
11B_Ant1_2437_30~1000



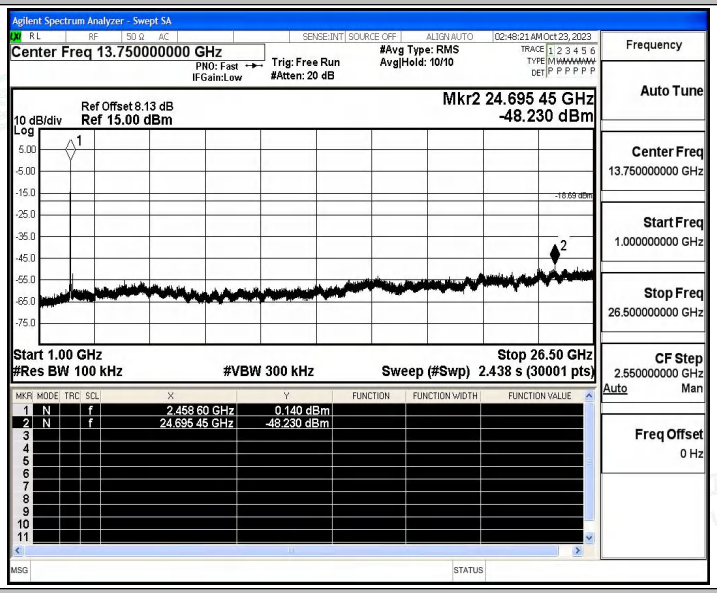
11B_Ant1_2437_1000~26500



11B_Ant1_2462_30~1000



11B_Ant1_2462_1000~26500



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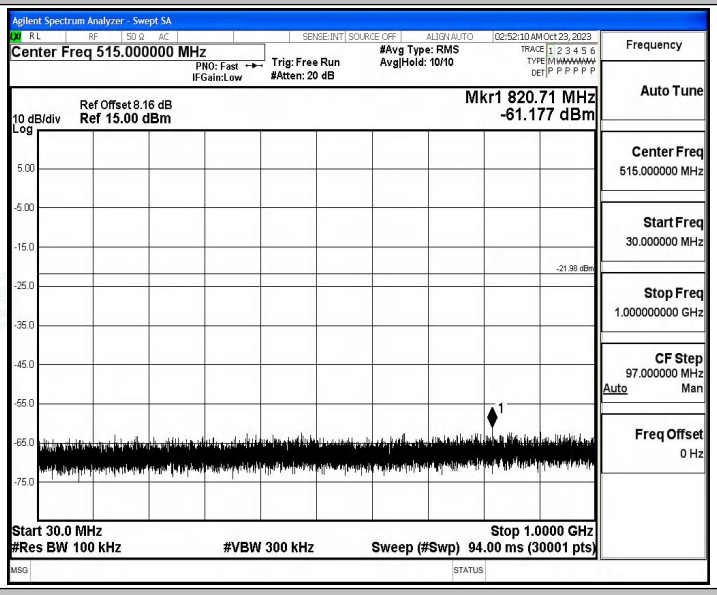

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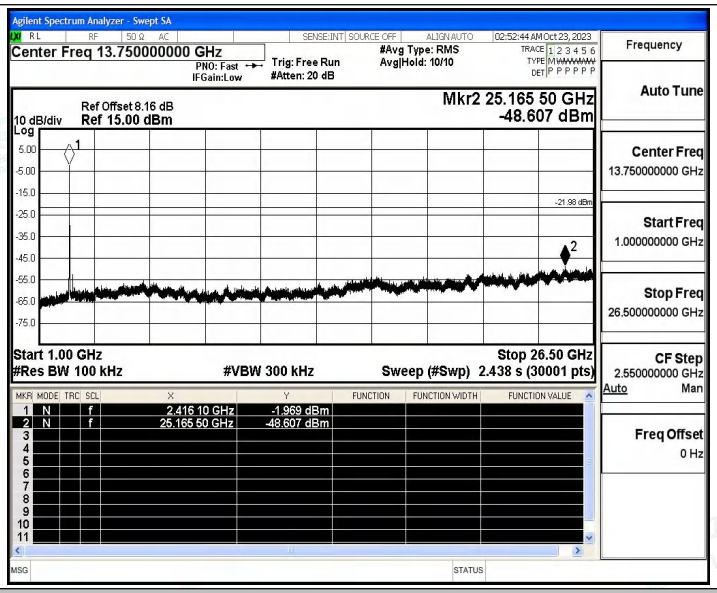

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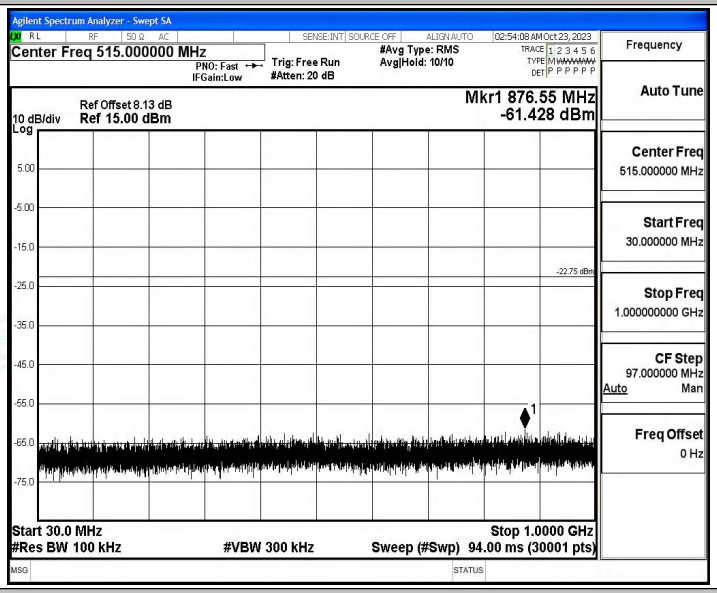

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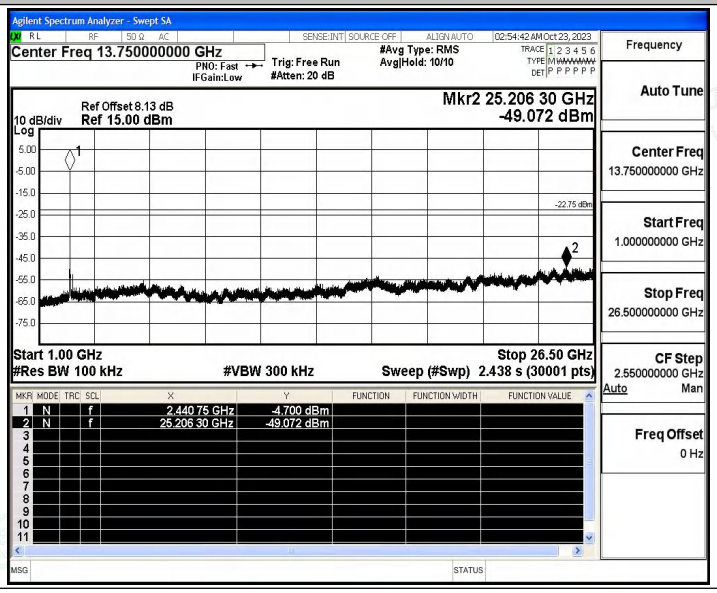

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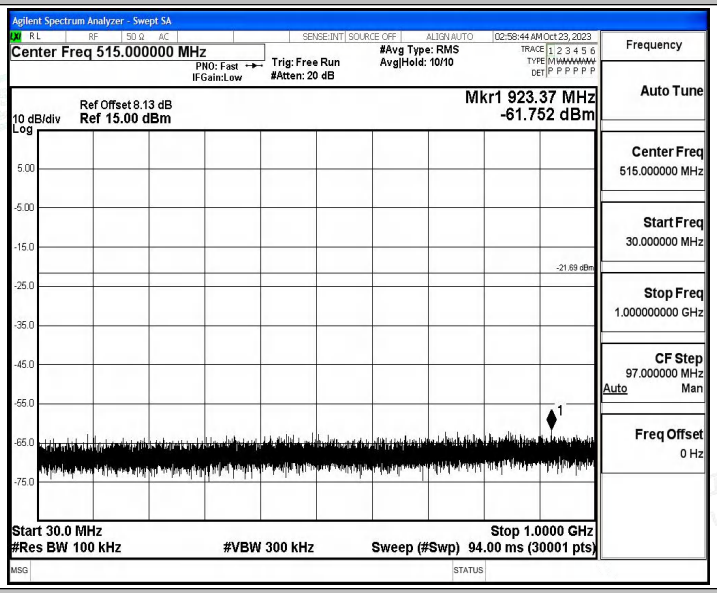

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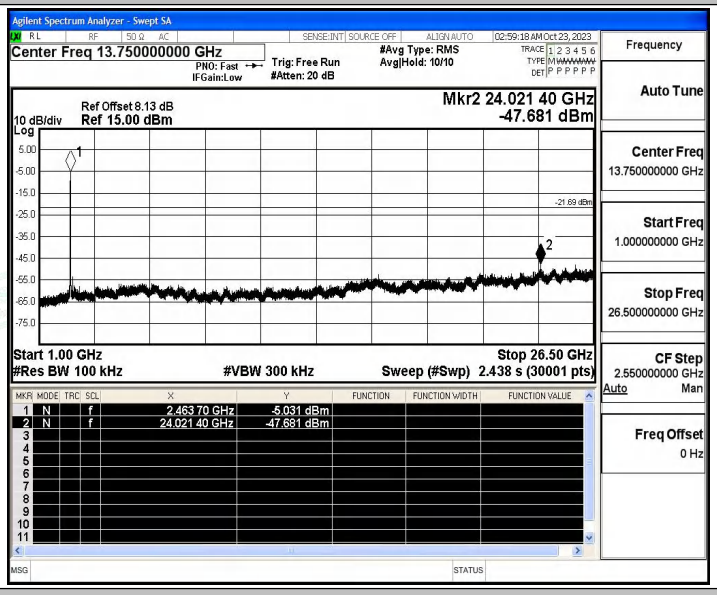

11N20SISO_Ant1_2412_30~1000