Appendix Test Data for WLAN(2.4G) (Conducted Measurement)

Product Name: Alpha Egg Dictionary Pen

Trade Mark: ALPHA EGG

Test Model: TYP-AIR10

FCC ID: 2A7P5TYP-AIR10

Environmental Conditions

Temperature:	25.5°C
Relative Humidity:	55%
ATM Pressure:	100.0 kPa
Test #JobTitle:	Anna Hu
Supervised by:	Hugo Chen
NOTE	N/A

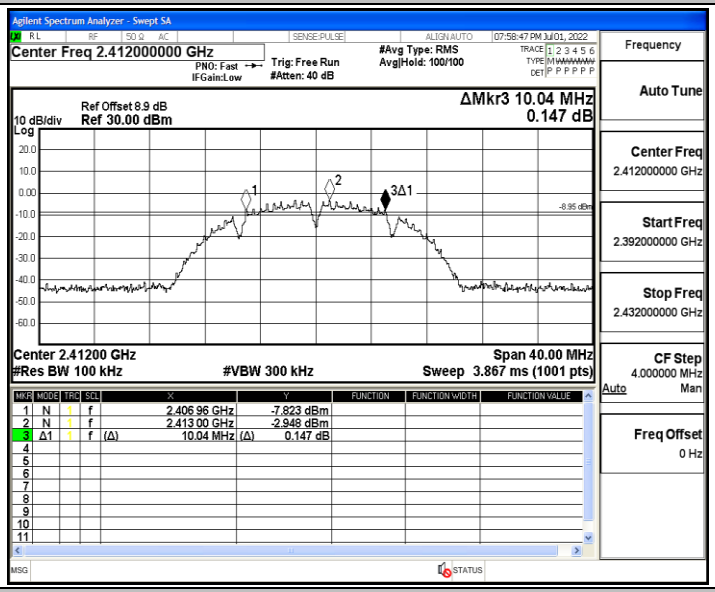
Appendix A: DTS Bandwidth

Test Result

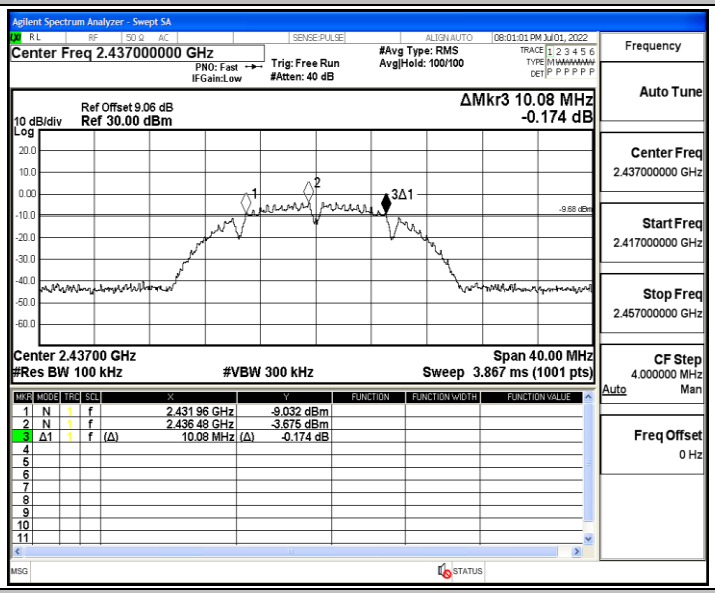
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	10.040	2406.960	2417.000	0.5	PASS
		2437	10.080	2431.960	2442.040	0.5	PASS
		2462	10.080	2456.960	2467.040	0.5	PASS
11G	Ant1	2412	16.320	2403.840	2420.160	0.5	PASS
		2437	16.320	2428.840	2445.160	0.5	PASS
		2462	16.320	2453.840	2470.160	0.5	PASS
11N20SISO	Ant1	2412	17.080	2403.480	2420.560	0.5	PASS
		2437	17.160	2428.400	2445.560	0.5	PASS
		2462	17.360	2453.400	2470.760	0.5	PASS
11N40SISO	Ant1	2422	35.680	2404.160	2439.840	0.5	PASS
		2437	35.680	2419.080	2454.760	0.5	PASS
		2452	35.440	2434.080	2469.520	0.5	PASS

Test Graphs

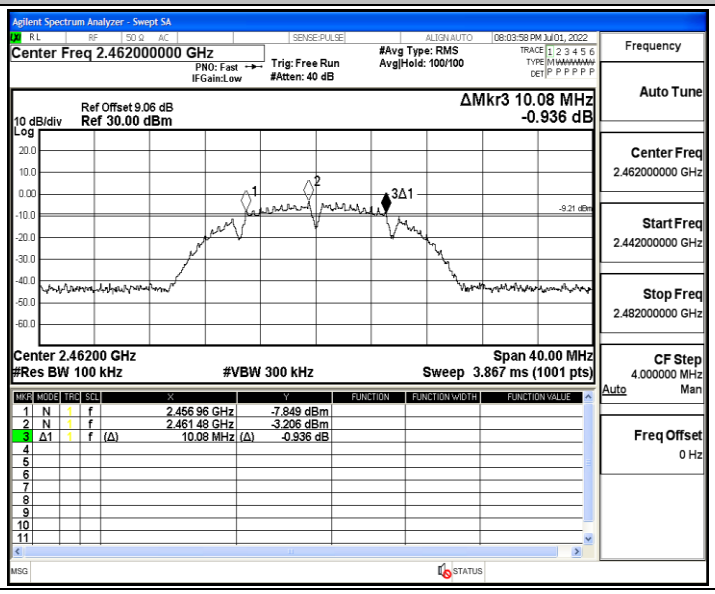
11B_Ant1_2412



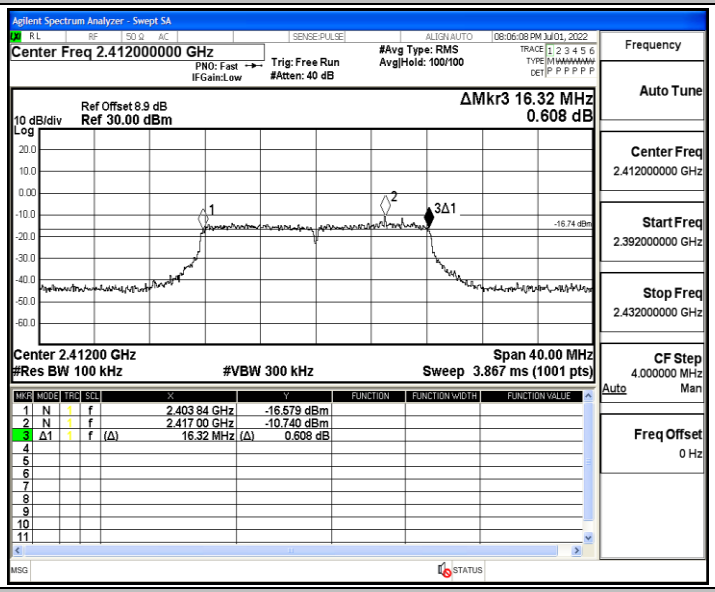
11B_Ant1_2437



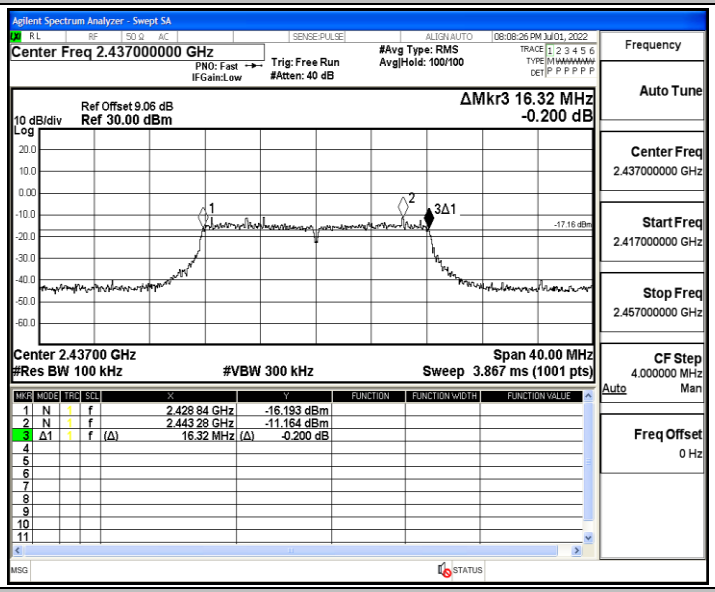
11B_Ant1_2462



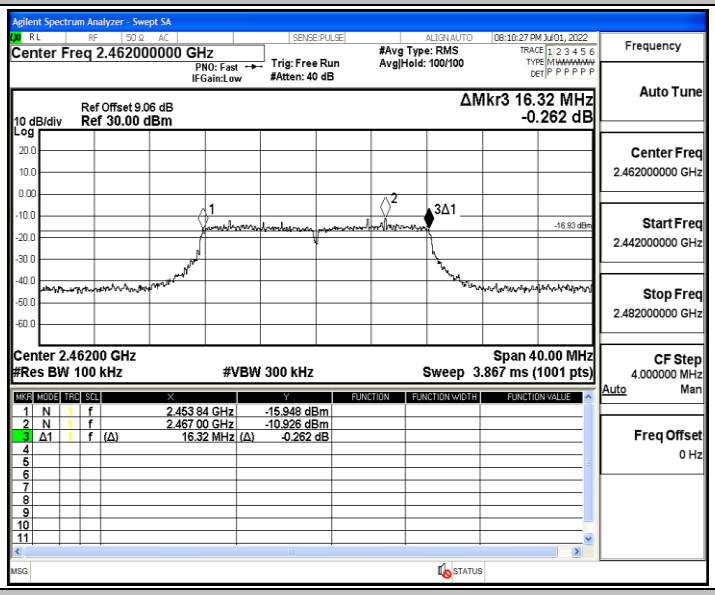
11G_Ant1_2412



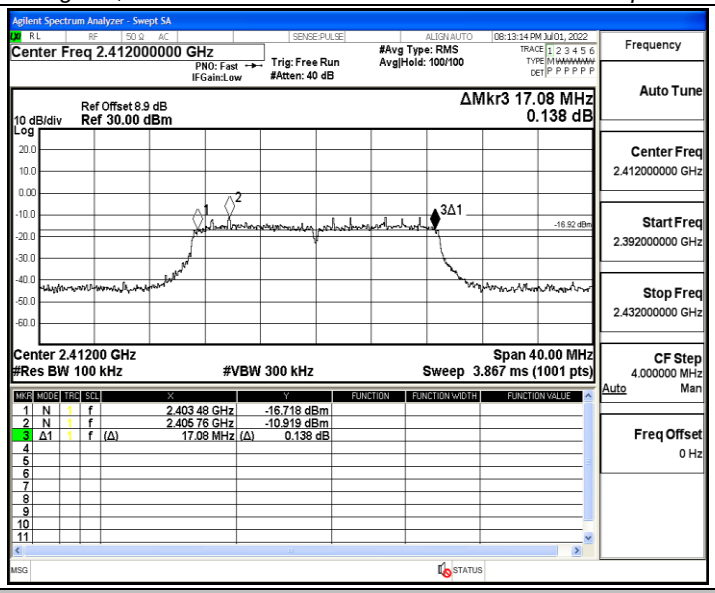
11G_Ant1_2437



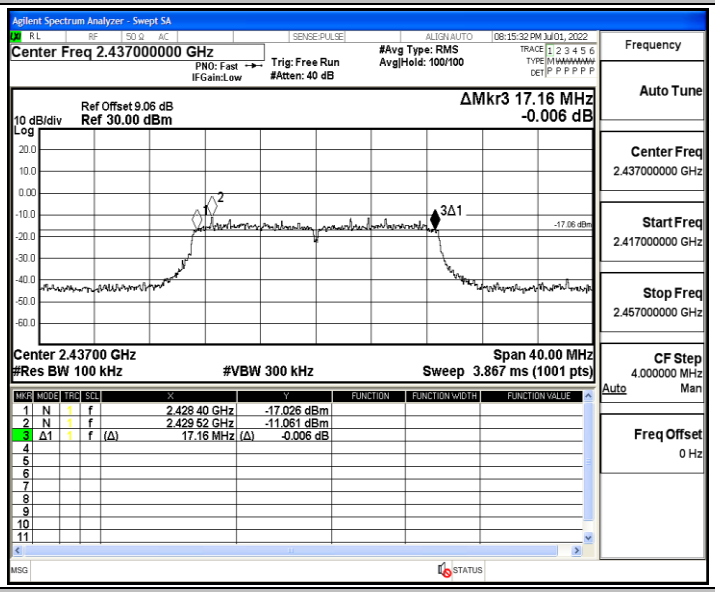
11G_Ant1_2462



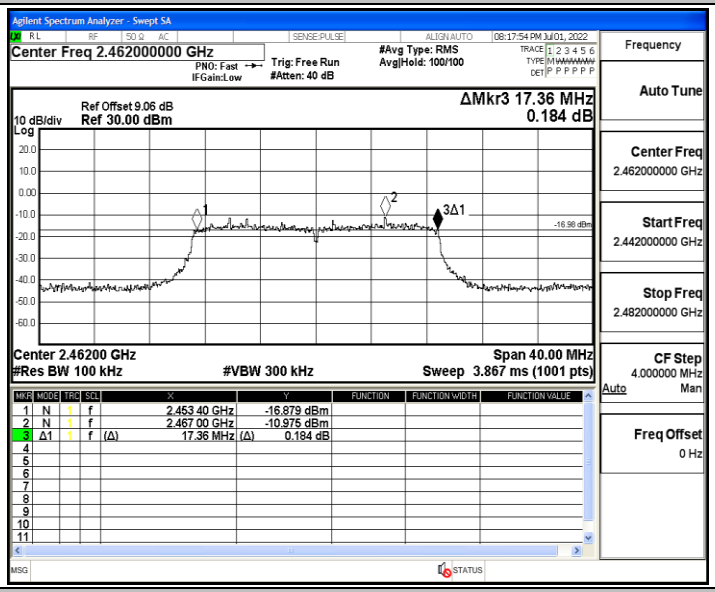
11N20SISO_Ant1_2412



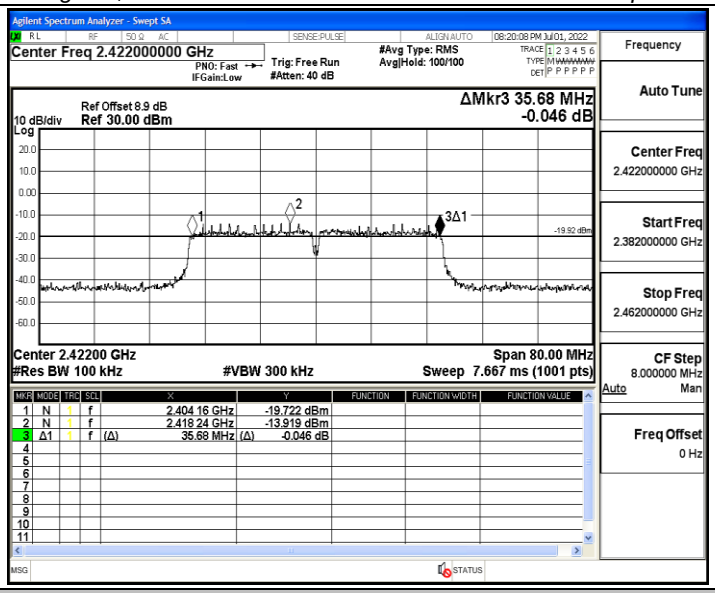
11N20SISO_Ant1_2437



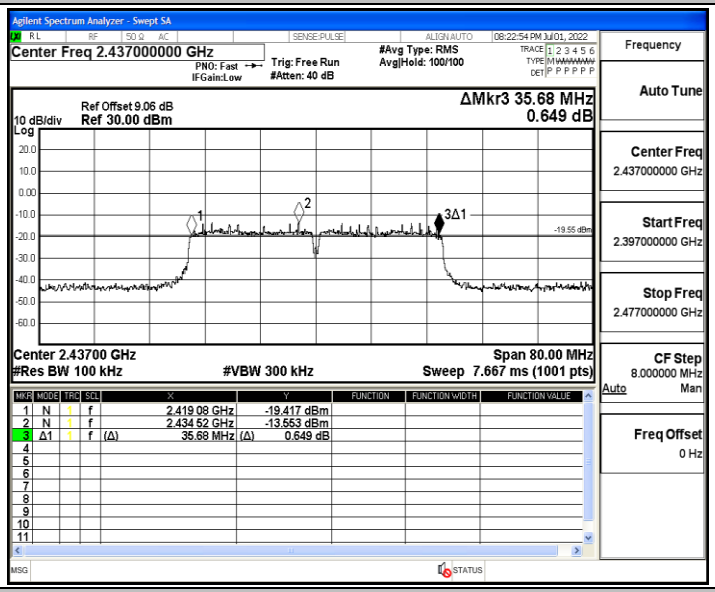
11N20SISO_Ant1_2462



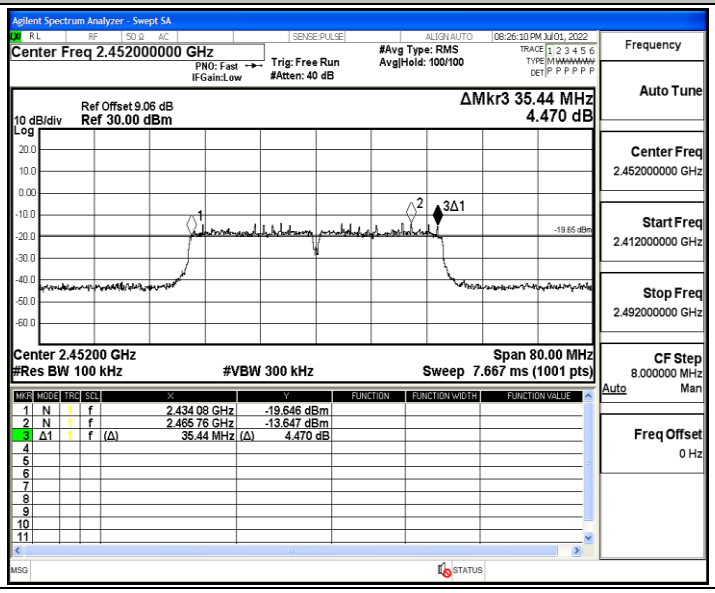
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



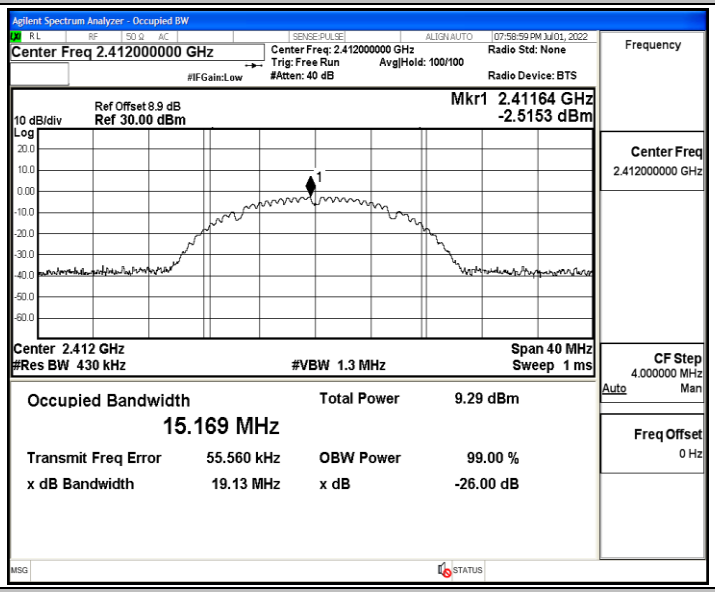
Appendix B: Occupied Channel Bandwidth

Test Result

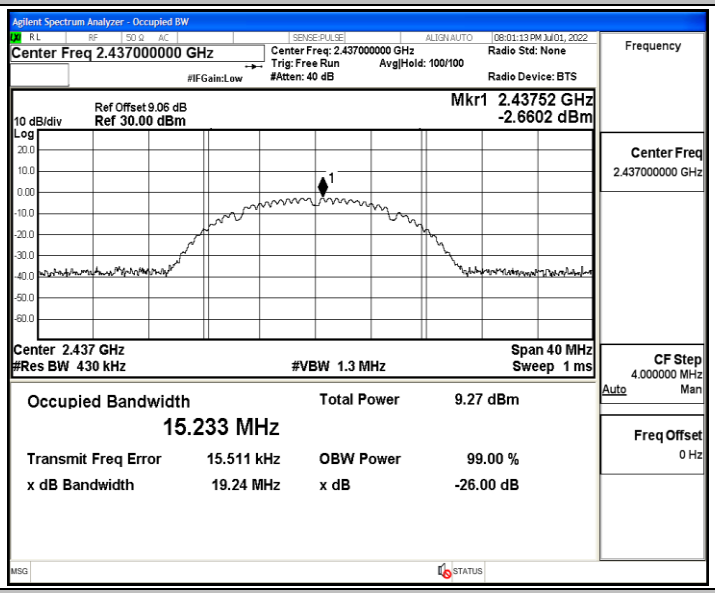
TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	15.169	2404.471	2419.640	---	---
		2437	15.233	2429.399	2444.632	---	---
		2462	15.243	2454.423	2469.666	---	---
11G	Ant1	2412	17.225	2403.439	2420.664	---	---
		2437	17.168	2428.416	2445.584	---	---
		2462	17.188	2453.465	2470.653	---	---
11N20SISO	Ant1	2412	18.117	2402.982	2421.099	---	---
		2437	18.035	2427.984	2446.019	---	---
		2462	18.100	2452.970	2471.070	---	---
11N40SISO	Ant1	2422	36.590	2403.806	2440.396	---	---
		2437	36.629	2418.763	2455.392	---	---
		2452	36.661	2433.778	2470.439	---	---

Test Graphs

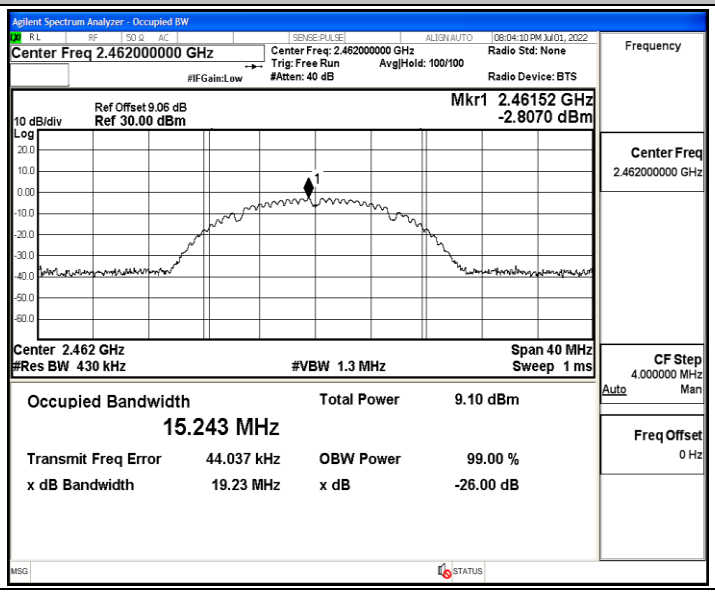
11B_Ant1_2412



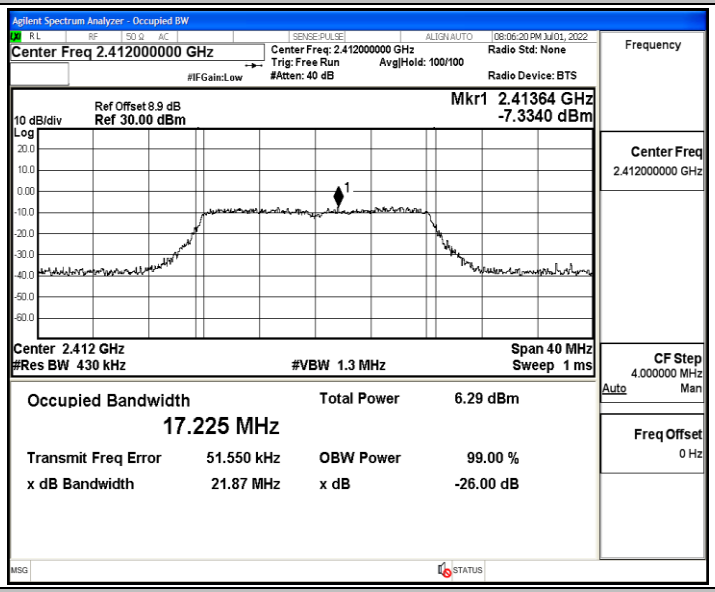
11B_Ant1_2437



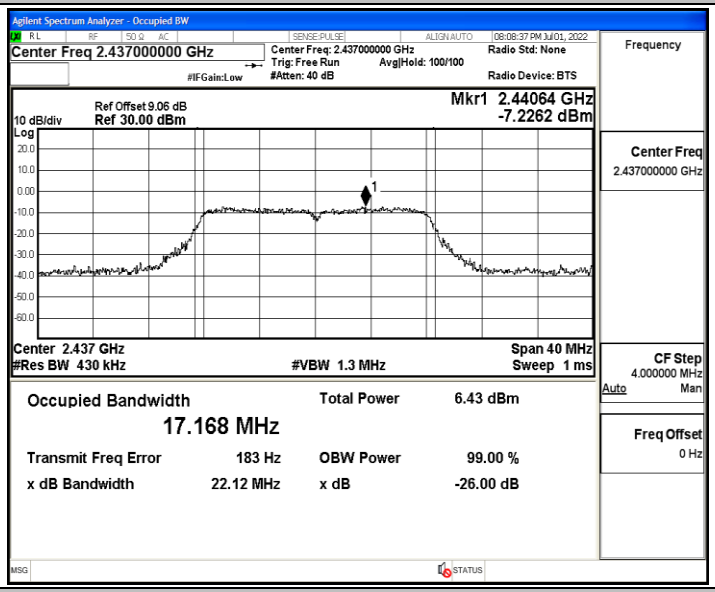
11B_Ant1_2462



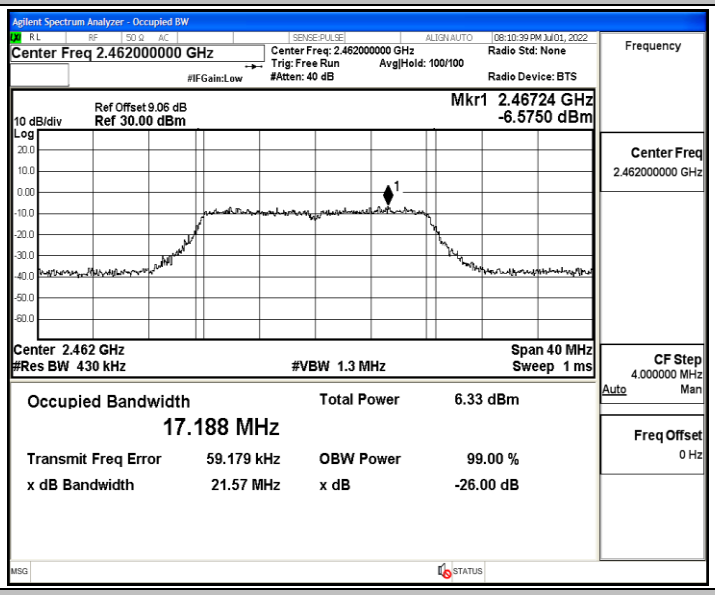
11G_Ant1_2412



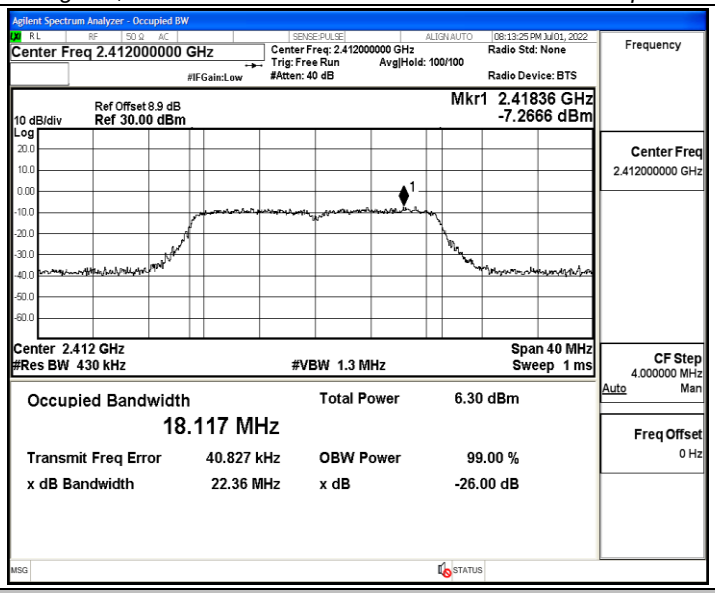
11G_Ant1_2437



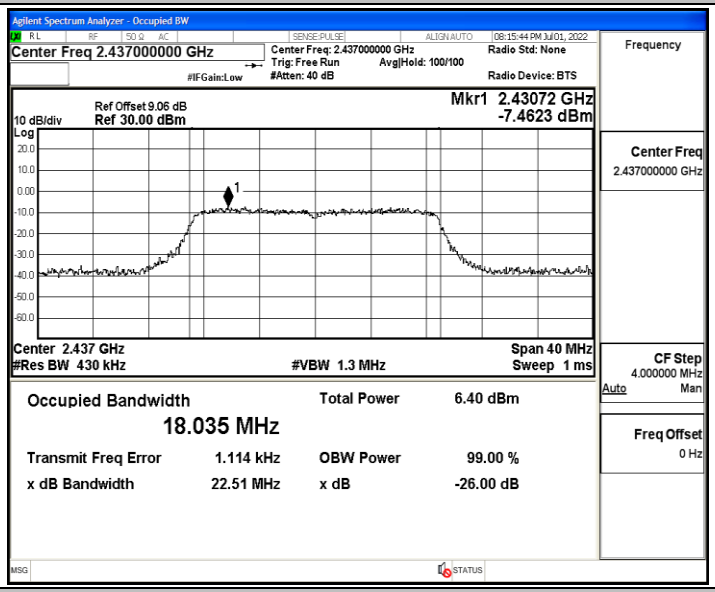
11G_Ant1_2462



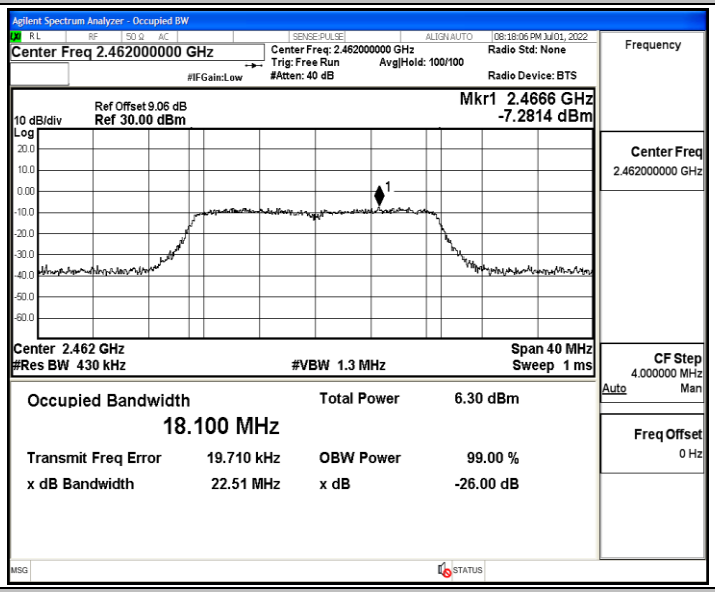
11N20SISO_Ant1_2412



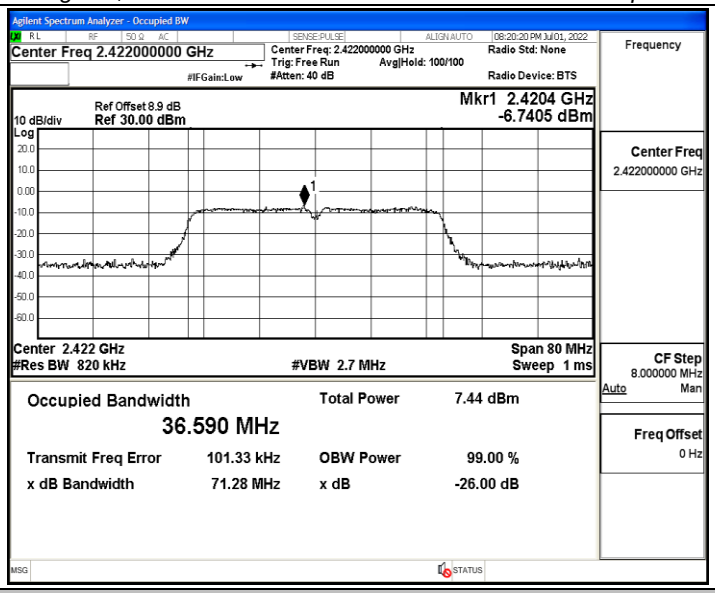
11N20SISO_Ant1_2437



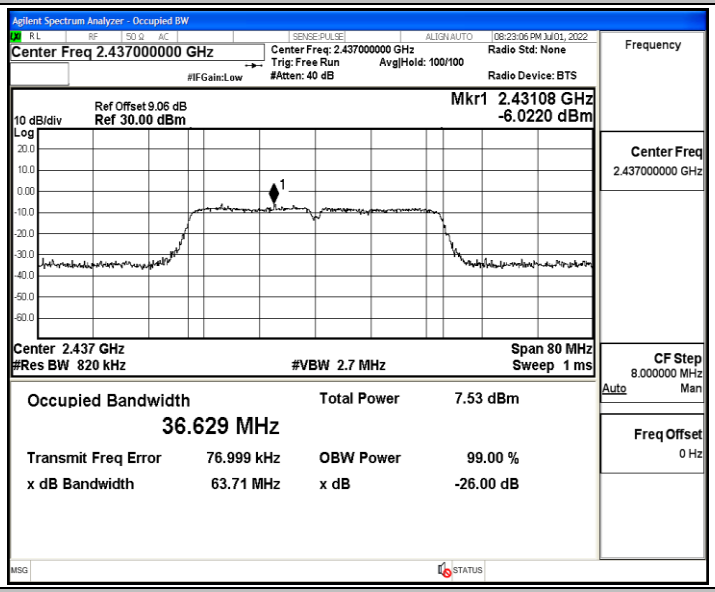
11N20SISO_Ant1_2462



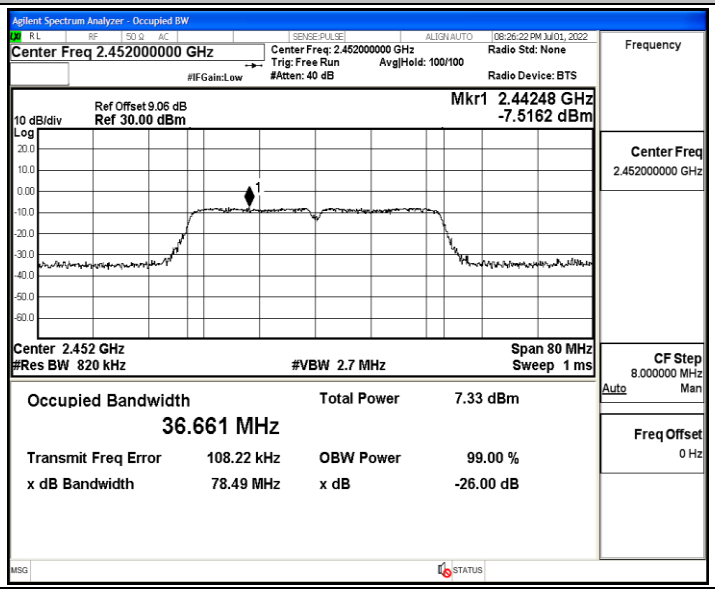
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



Appendix C: Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	8.94	≤30.00	PASS
		2437	8.92	≤30.00	PASS
		2462	8.76	≤30.00	PASS
11G	Ant1	2412	7.44	≤30.00	PASS
		2437	7.47	≤30.00	PASS
		2462	7.45	≤30.00	PASS
11N20SISO	Ant1	2412	7.40	≤30.00	PASS
		2437	7.48	≤30.00	PASS
		2462	7.42	≤30.00	PASS
11N40SISO	Ant1	2422	7.75	≤30.00	PASS
		2437	7.79	≤30.00	PASS
		2452	7.60	≤30.00	PASS

Note：The Duty Cycle Factor is compensated in the test result.

Appendix D: Maximum power spectral density

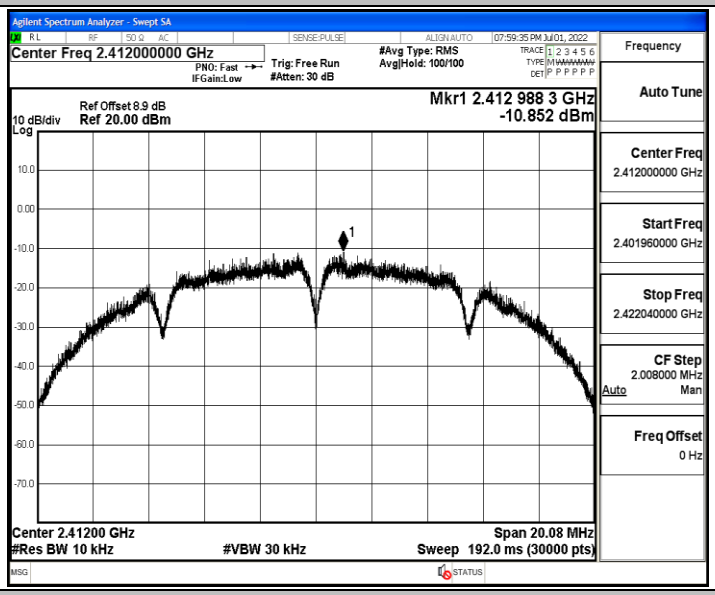
Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-10.85	≤8.00	PASS
		2437	-10.21	≤8.00	PASS
		2462	-10.73	≤8.00	PASS
11G	Ant1	2412	-18.55	≤8.00	PASS
		2437	-19.03	≤8.00	PASS
		2462	-18.92	≤8.00	PASS
11N20SISO	Ant1	2412	-19.96	≤8.00	PASS
		2437	-20.08	≤8.00	PASS
		2462	-19.57	≤8.00	PASS
11N40SISO	Ant1	2422	-21.97	≤8.00	PASS
		2437	-21.16	≤8.00	PASS
		2452	-21.6	≤8.00	PASS

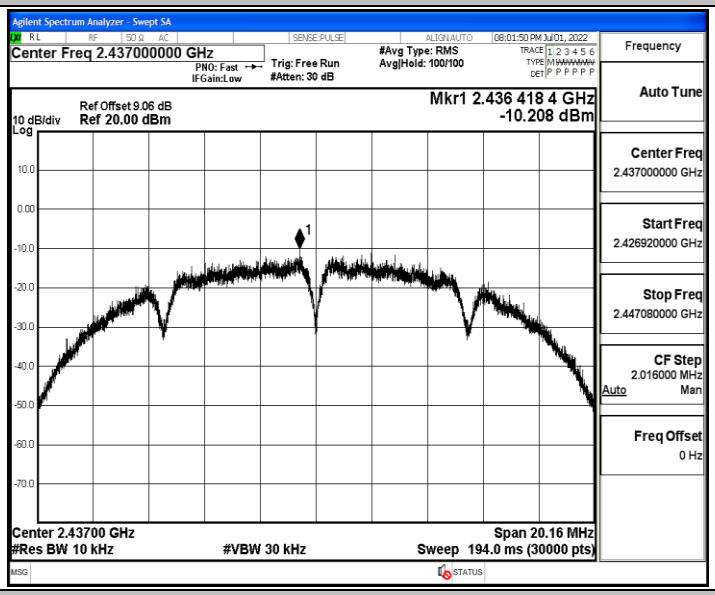
Note：The Duty Cycle Factor is compensated in the test result.

Test Graphs

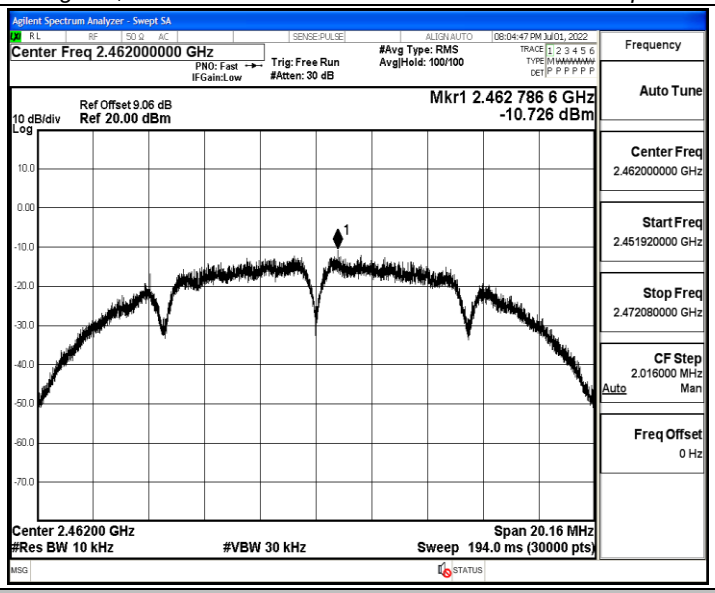
11B_Ant1_2412



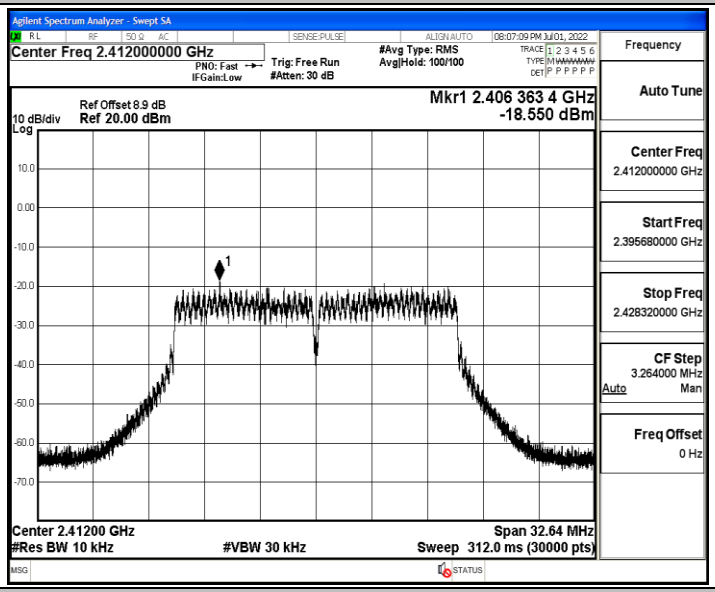
11B_Ant1_2437



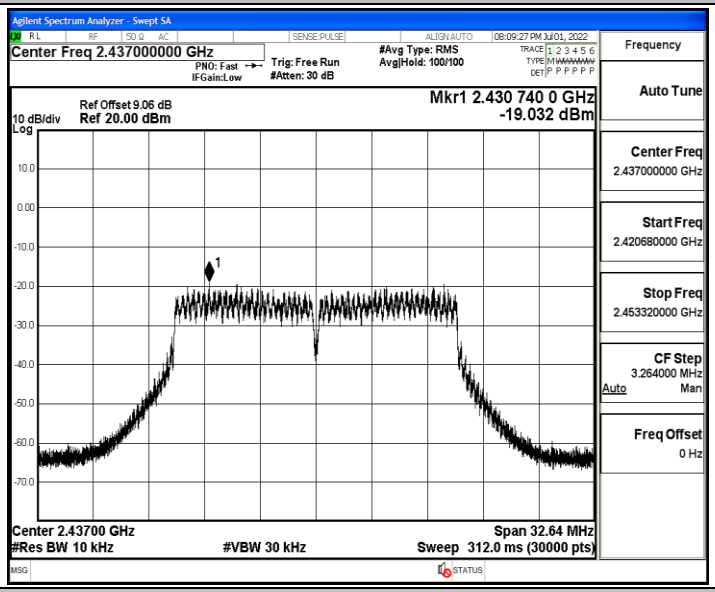
11B_Ant1_2462



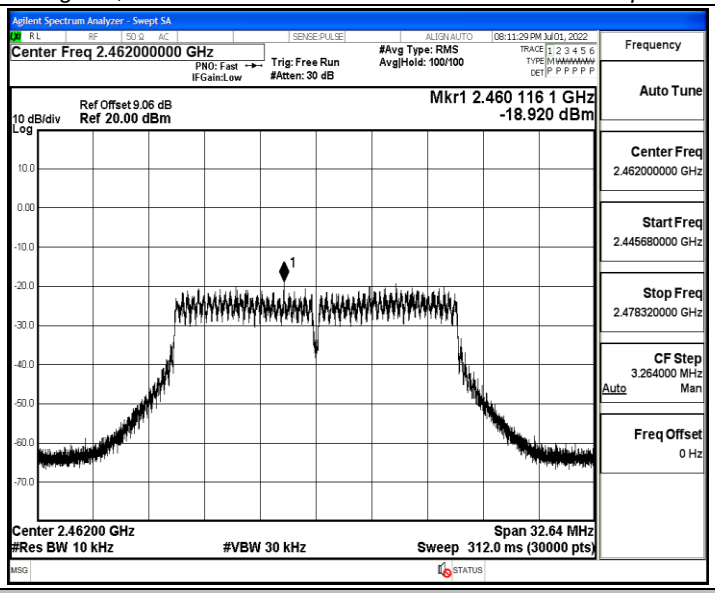
11G_Ant1_2412



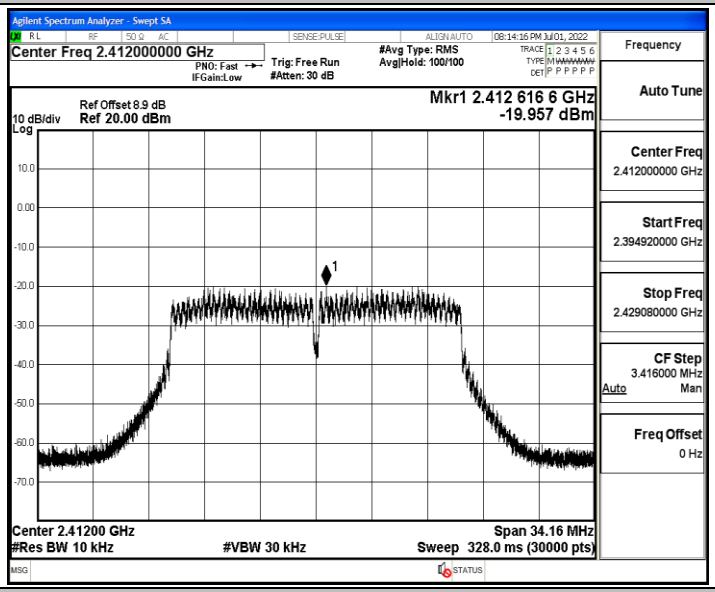
11G_Ant1_2437



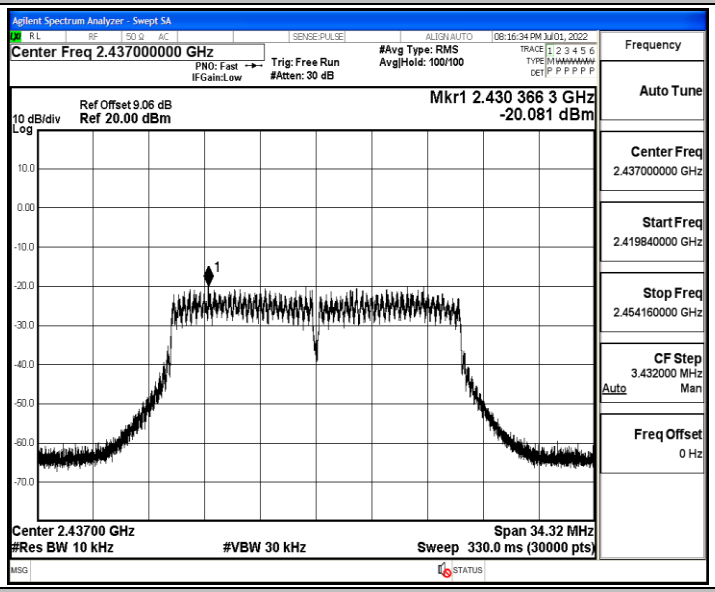
11G_Ant1_2462



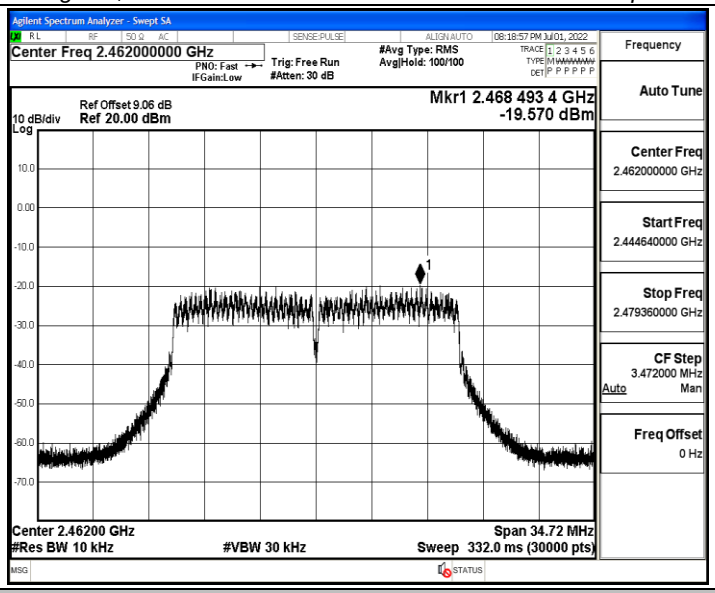
11N20SISO_Ant1_2412



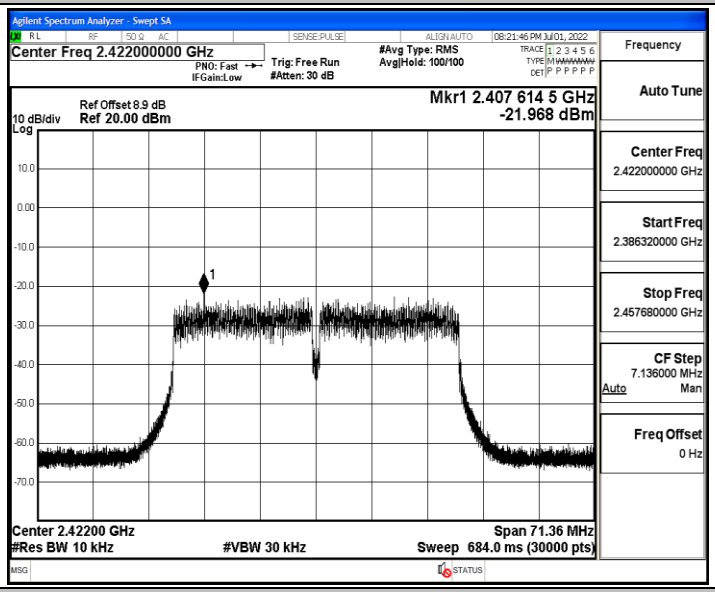
11N20SISO_Ant1_2437



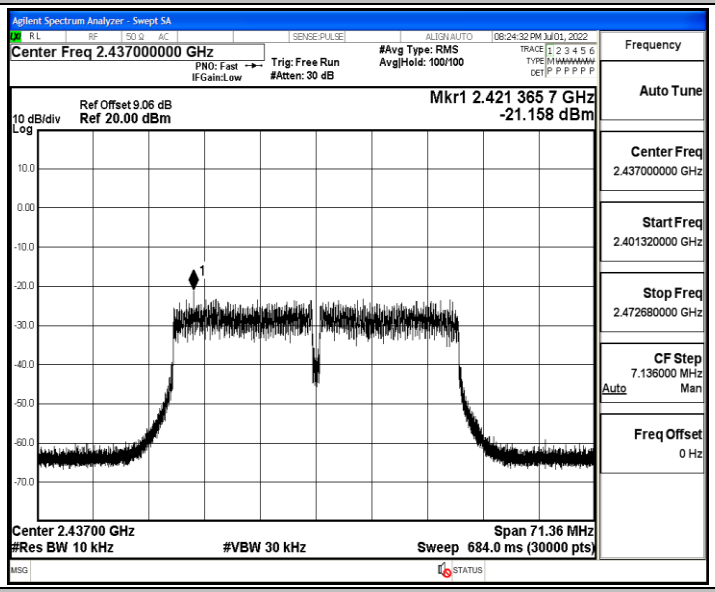
11N20SISO_Ant1_2462



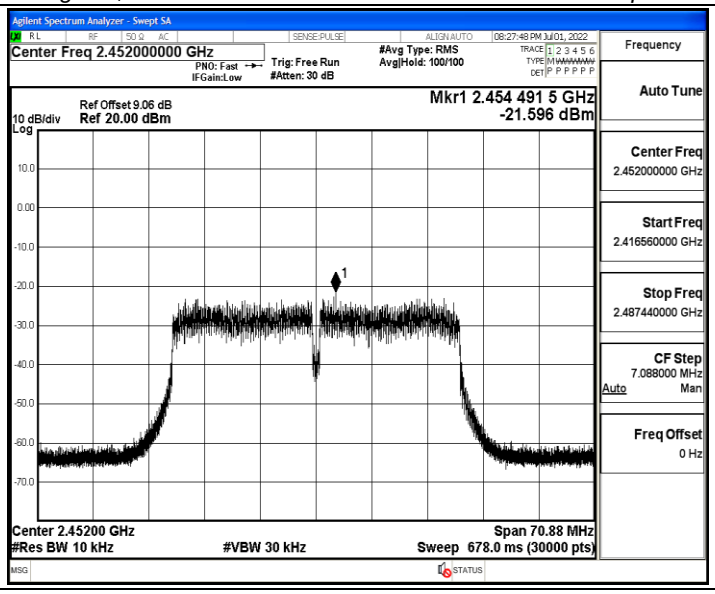
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.452000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 100/100
08:27:48 PM Jul 01, 2022
Frequency
Auto Tune
Ref Offset 9.06 dB
10 dB/div Ref 20.00 dBm
Log
Mkr1 2.454 491 5 GHz
-21.596 dBm
Center Freq
2.452000000 GHz
Start Freq
2.416560000 GHz
Stop Freq
2.487440000 GHz
CF Step
7.088000 MHz
Auto Man
Freq Offset
0 Hz
Center 2.45200 GHz
#Res BW 10 kHz
#VBW 30 kHz
Span 70.88 MHz
Sweep 678.0 ms (30000 pts)

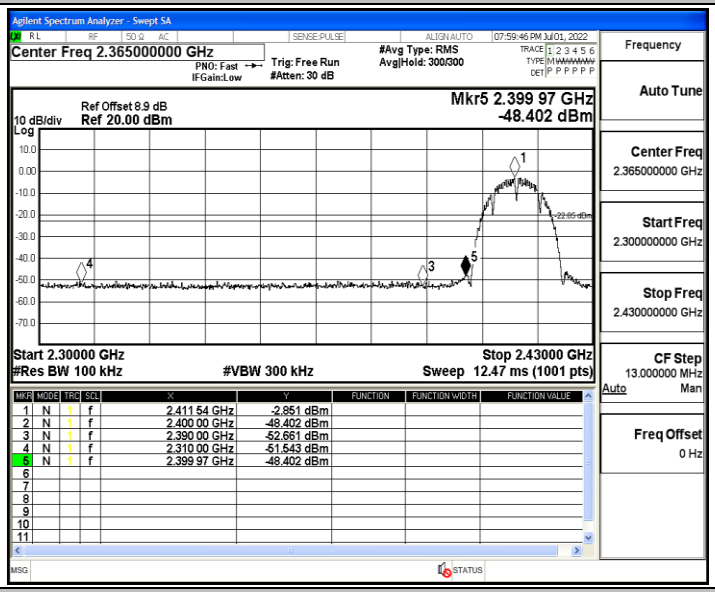
Appendix E: Band edge measurements

Test Result

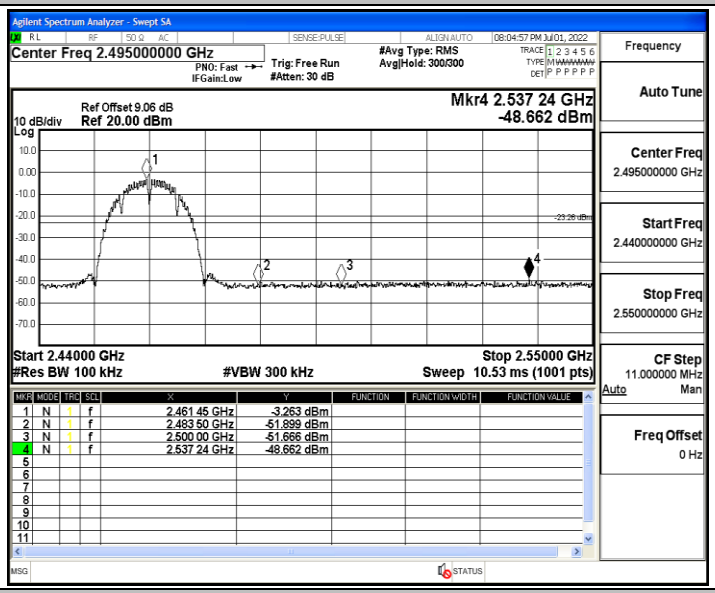
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	-2.85	-48.4	≤-22.85	PASS
		High	2462	-3.26	-48.66	≤-23.26	PASS
11G	Ant1	Low	2412	-11.22	-47.91	≤-31.22	PASS
		High	2462	-10.93	-49.31	≤-30.93	PASS
11N20SISO	Ant1	Low	2412	-10.86	-48.17	≤-30.86	PASS
		High	2462	-10.85	-49.44	≤-30.85	PASS
11N40SISO	Ant1	Low	2422	-13.56	-47.8	≤-33.56	PASS
		High	2452	-13.60	-49.29	≤-33.6	PASS

Test Graphs

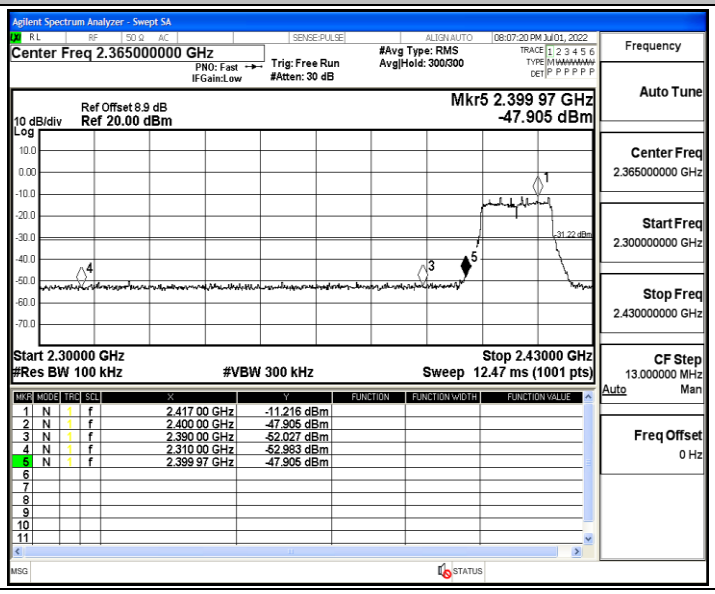
11B_Ant1_Low_2412



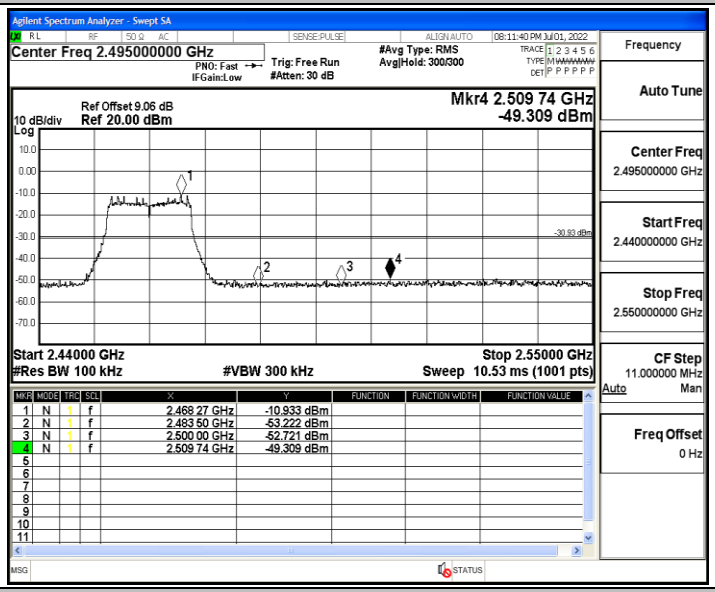
11B_Ant1_High_2462



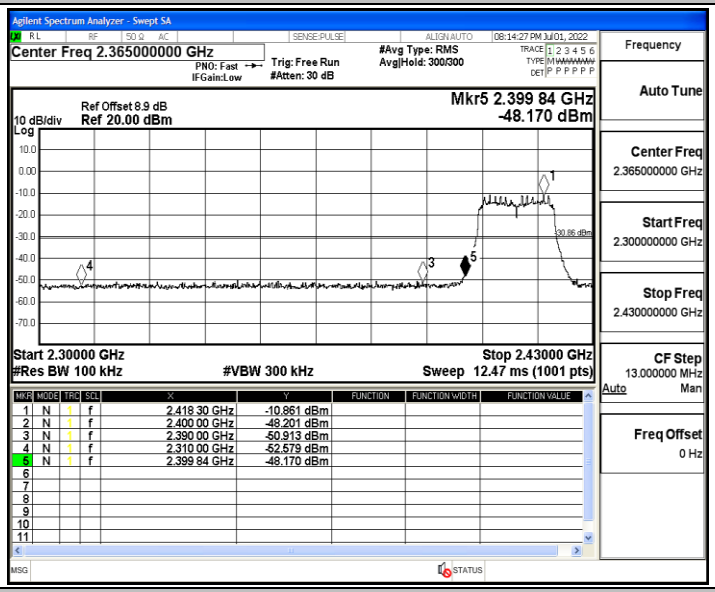
11G_Ant1_Low_2412



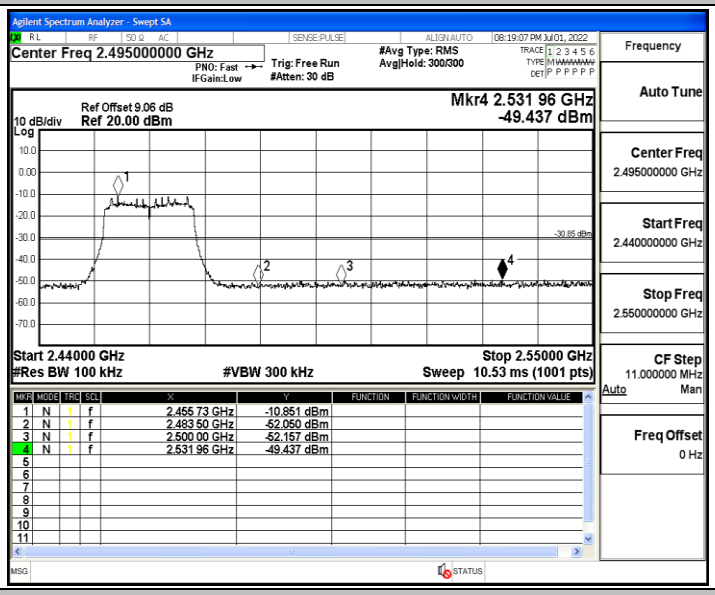
11G_Ant1_High_2462



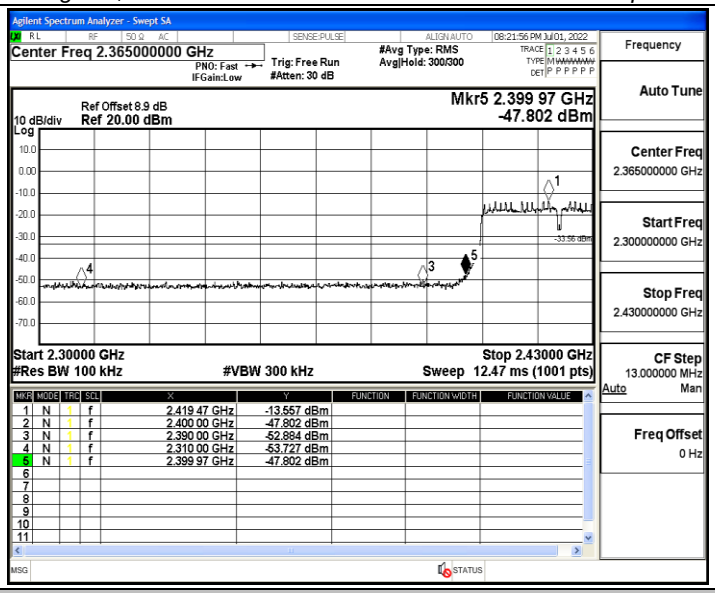
11N20SISO_Ant1_Low_2412



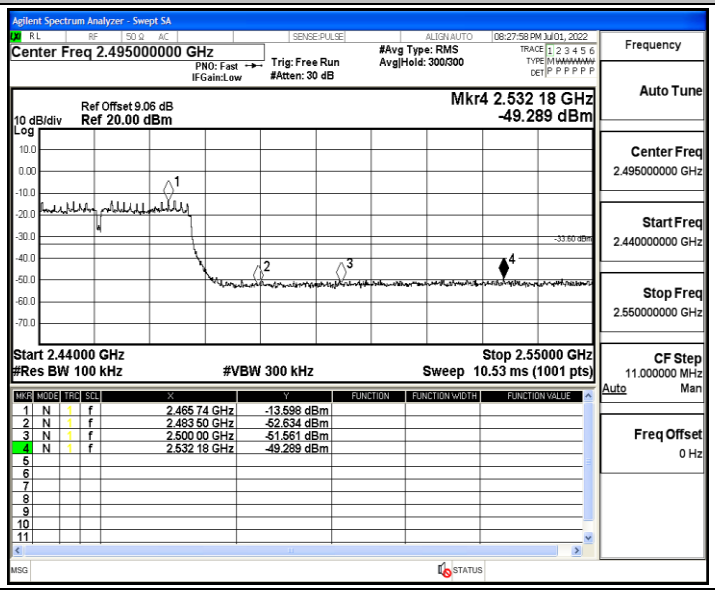
11N20SISO_Ant1_High_2462



11N40SISO_Ant1_Low_2422



11N40SISO_Ant1_High_2452



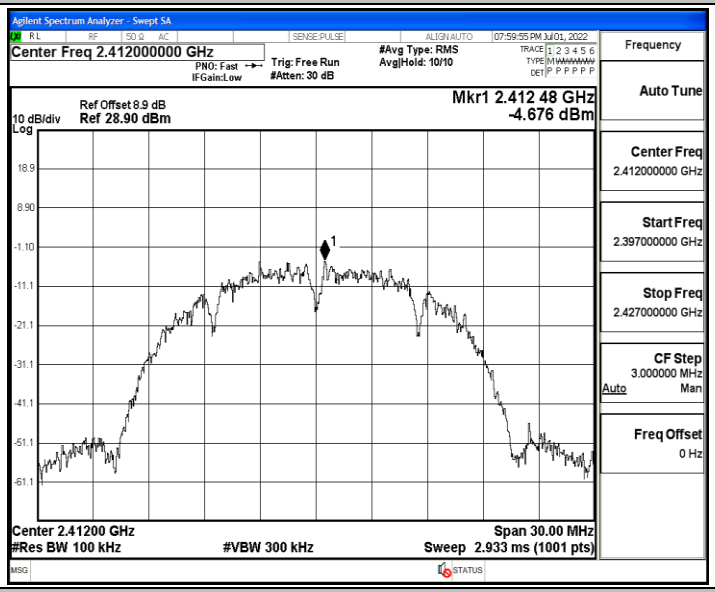
Appendix F: Conducted Spurious Emission

Test Result

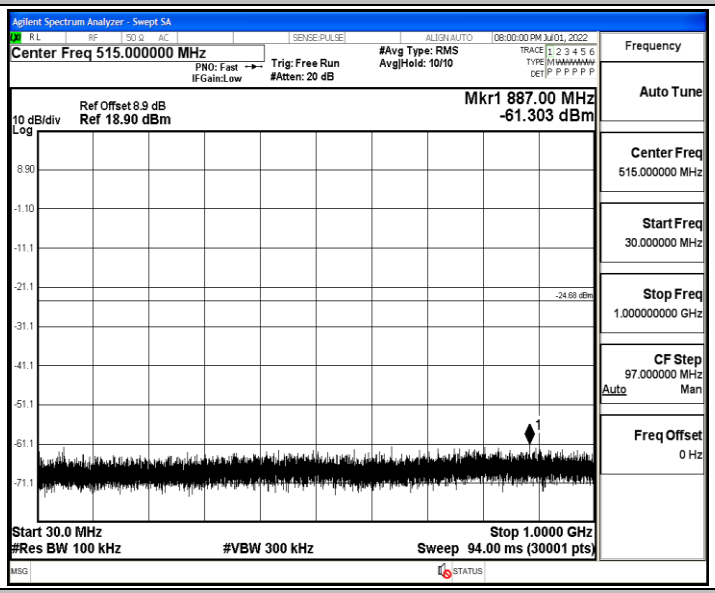
TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	-4.68	-4.68	---	PASS
			30~1000	-4.68	-61.3	≤-24.68	PASS
			1000~26500	-4.68	-50.74	≤-24.68	PASS
		2437	Reference	-5.05	-5.05	---	PASS
			30~1000	-5.05	-61.55	≤-25.05	PASS
			1000~26500	-5.05	-51.59	≤-25.05	PASS
		2462	Reference	-4.27	-4.27	---	PASS
			30~1000	-4.27	-61.14	≤-24.27	PASS
			1000~26500	-4.27	-51.02	≤-24.27	PASS
11G	Ant1	2412	Reference	-11.55	-11.55	---	PASS
			30~1000	-11.55	-61.88	≤-31.55	PASS
			1000~26500	-11.55	-50.97	≤-31.55	PASS
		2437	Reference	-14.29	-14.29	---	PASS
			30~1000	-14.29	-60.21	≤-34.29	PASS
			1000~26500	-14.29	-52.22	≤-34.29	PASS
		2462	Reference	-11.54	-11.54	---	PASS
			30~1000	-11.54	-61.09	≤-31.54	PASS
			1000~26500	-11.54	-51.92	≤-31.54	PASS
11N20SISO	Ant1	2412	Reference	-12.27	-12.27	---	PASS
			30~1000	-12.27	-61.09	≤-32.27	PASS
			1000~26500	-12.27	-51.14	≤-32.27	PASS
		2437	Reference	-13.74	-13.74	---	PASS
			30~1000	-13.74	-60.69	≤-33.74	PASS
			1000~26500	-13.74	-50.35	≤-33.74	PASS
		2462	Reference	-11.67	-11.67	---	PASS
			30~1000	-11.67	-61.1	≤-31.67	PASS
			1000~26500	-11.67	-50.95	≤-31.67	PASS
11N40SISO	Ant1	2422	Reference	-14.19	-14.19	---	PASS
			30~1000	-14.19	-62.03	≤-34.19	PASS
			1000~26500	-14.19	-50.9	≤-34.19	PASS
		2437	Reference	-13.77	-13.77	---	PASS
			30~1000	-13.77	-61.14	≤-33.77	PASS
			1000~26500	-13.77	-50.3	≤-33.77	PASS
		2452	Reference	-14.90	-14.90	---	PASS
			30~1000	-14.90	-61.04	≤-34.9	PASS
			1000~26500	-14.90	-51.07	≤-34.9	PASS

Test Graphs

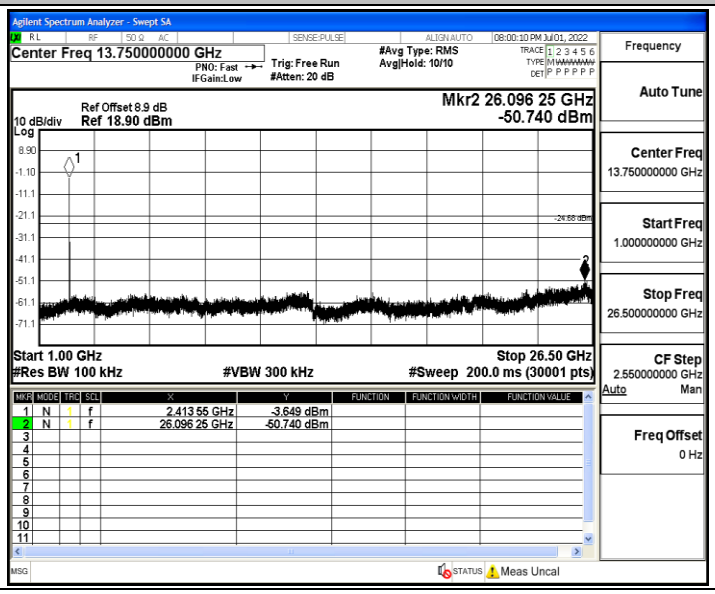
11B_Ant1_2412_0~Reference



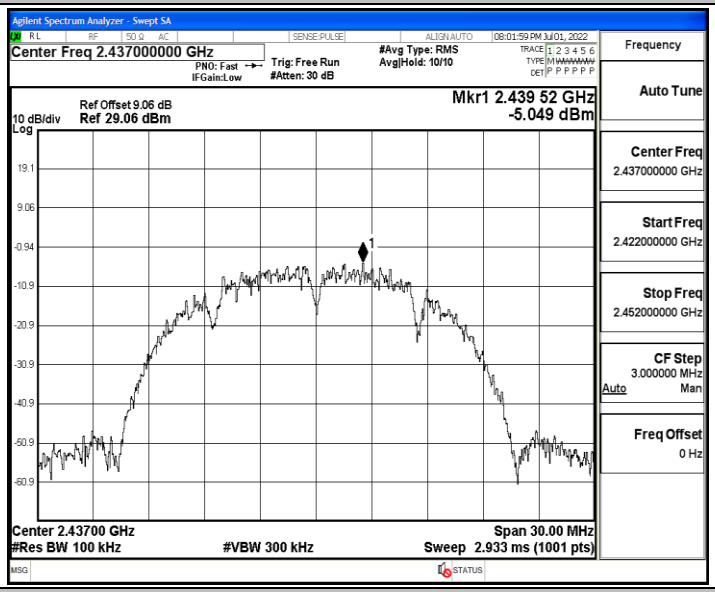
11B_Ant1_2412_30~1000



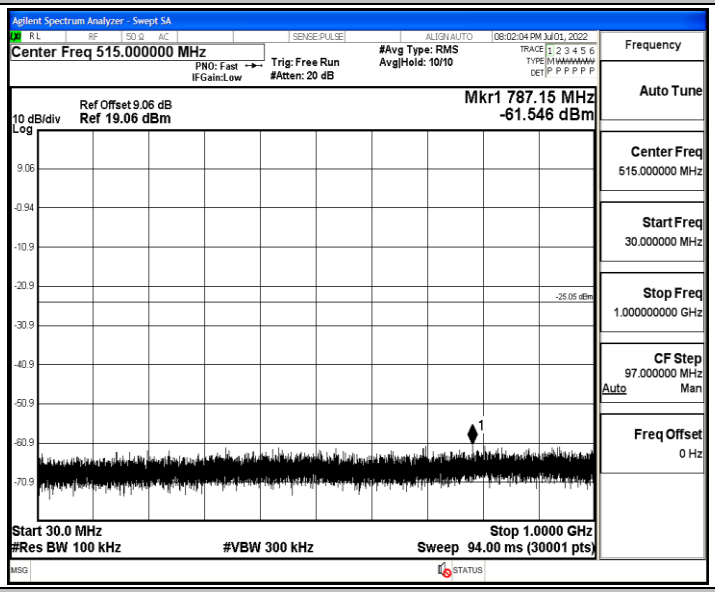
11B_Ant1_2412_1000~26500



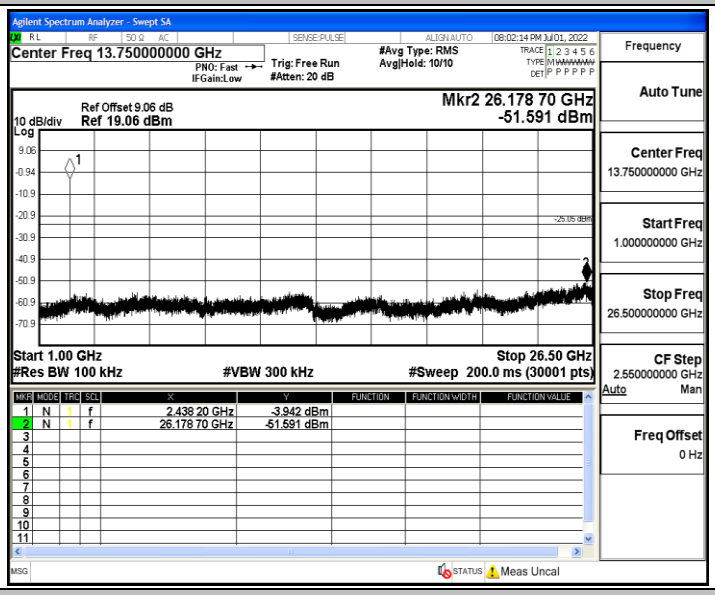
11B_Ant1_2437_0~Reference



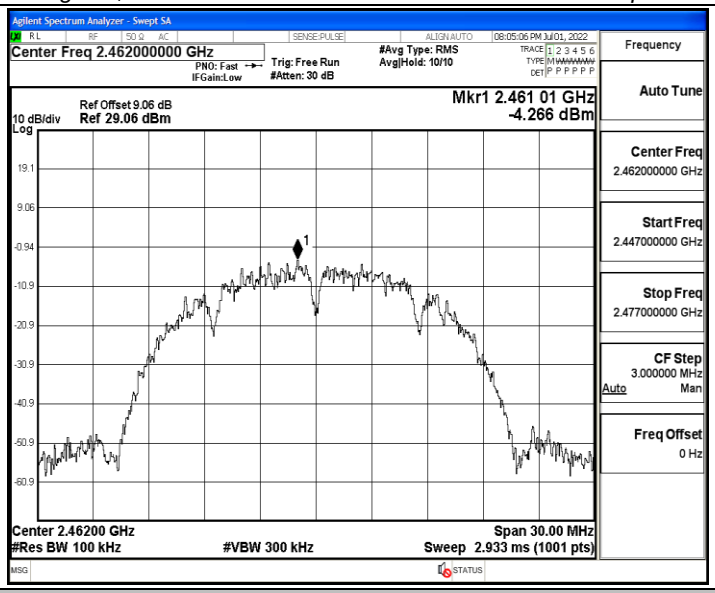
11B_Ant1_2437_30~1000



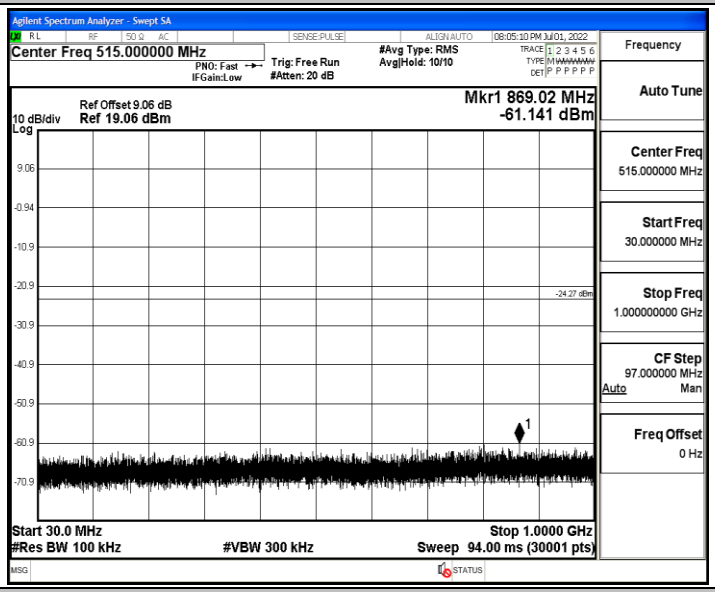
11B_Ant1_2437_1000~26500



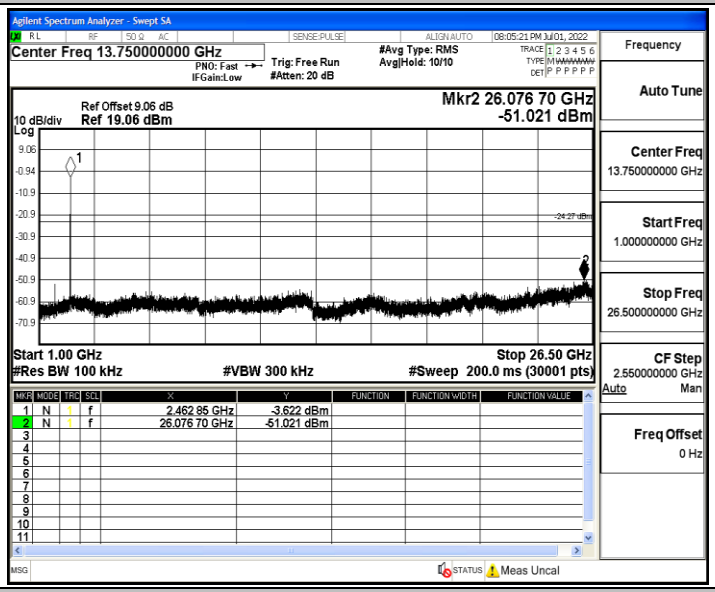
11B_Ant1_2462_0~Reference



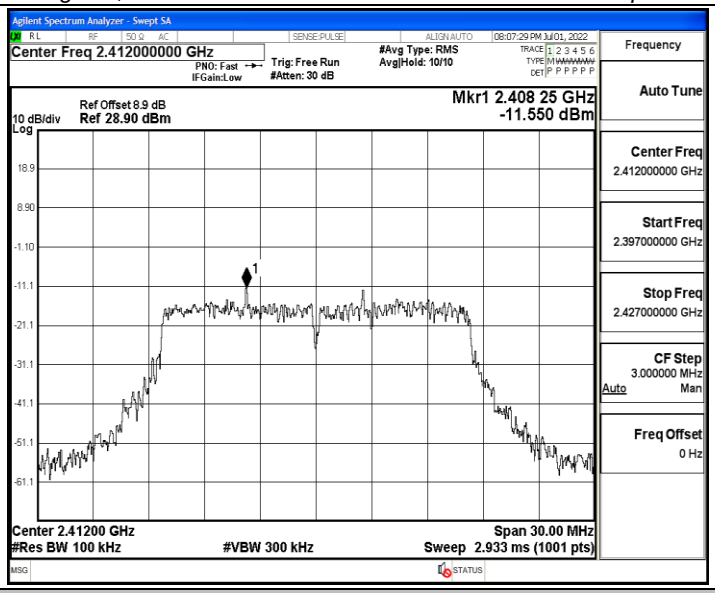
11B_Ant1_2462_30~1000



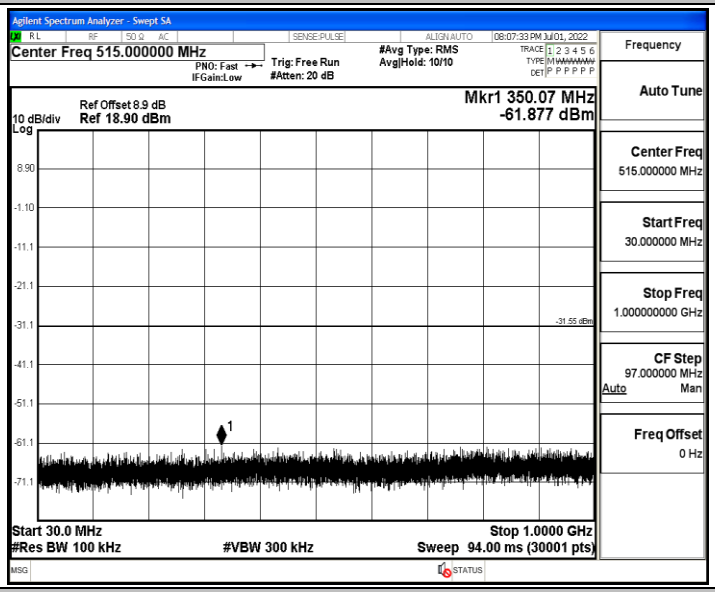
11B_Ant1_2462_1000~26500



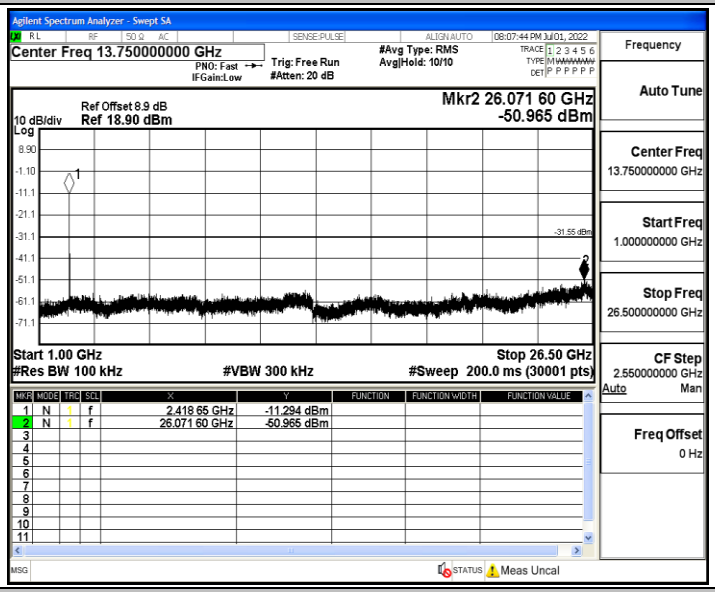
11G_Ant1_2412_0~Reference



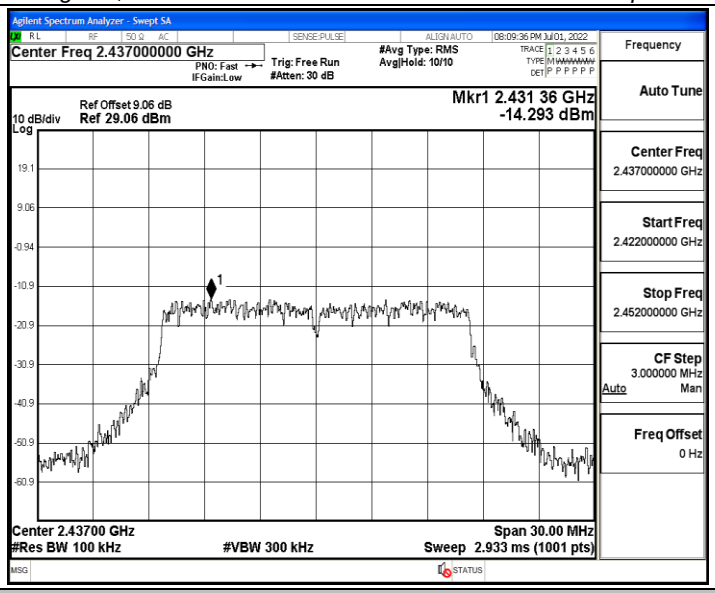
11G_Ant1_2412_30~1000



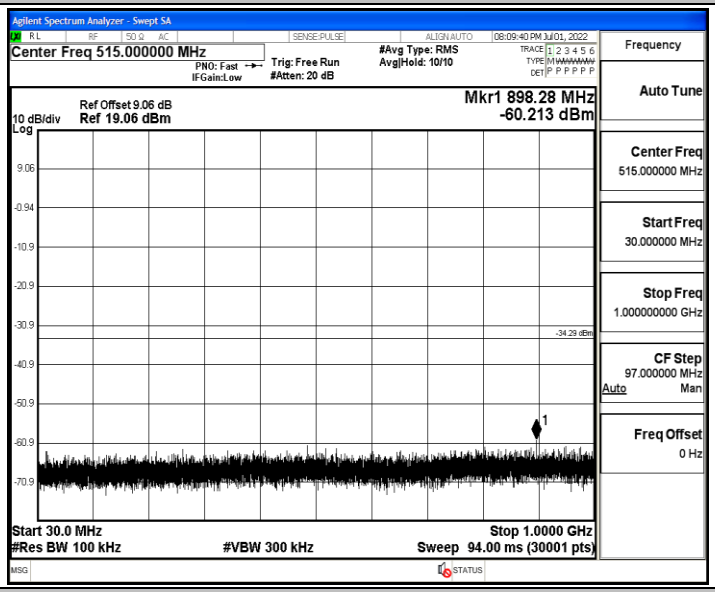
11G_Ant1_2412_1000~26500



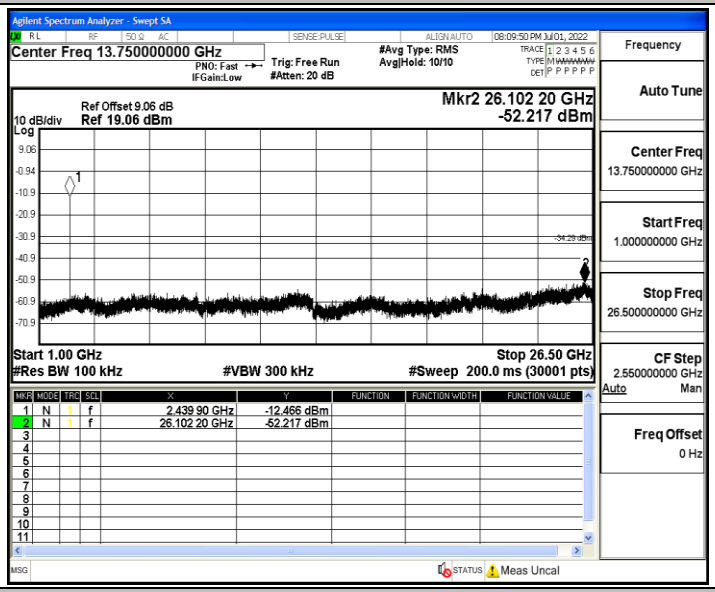
11G_Ant1_2437_0~Reference



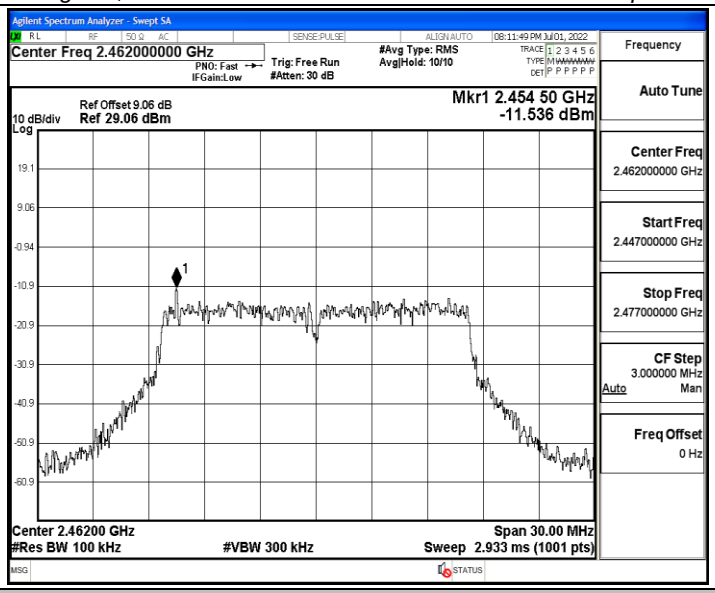
11G_Ant1_2437_30~1000



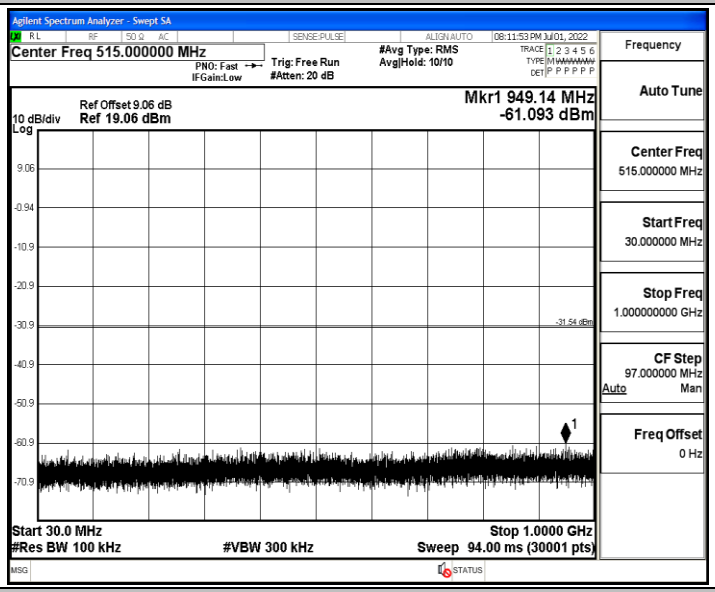
11G_Ant1_2437_1000~26500



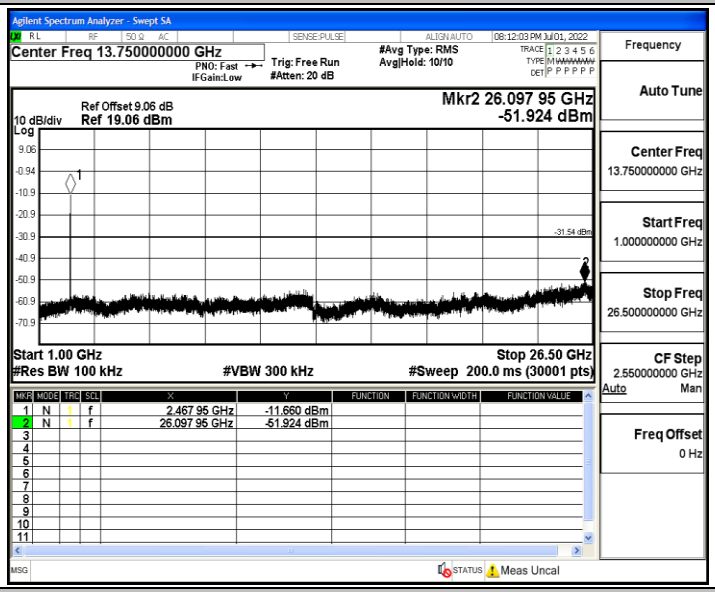
11G_Ant1_2462_0~Reference



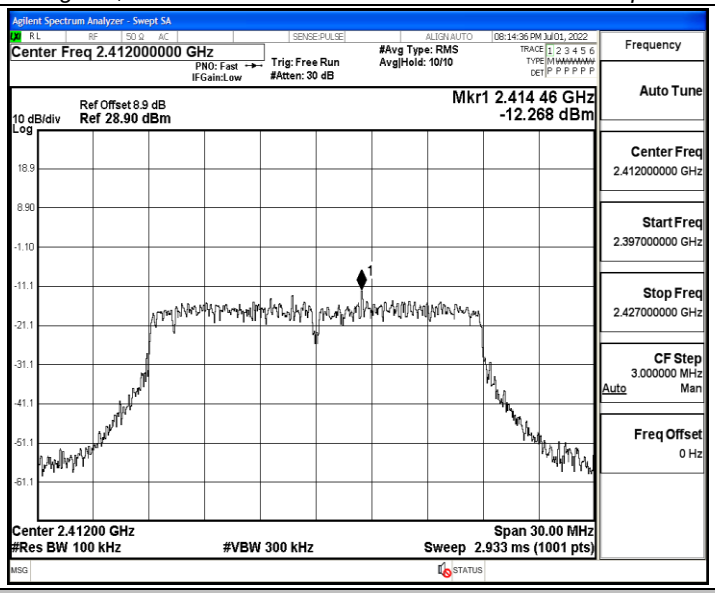
11G_Ant1_2462_30~1000



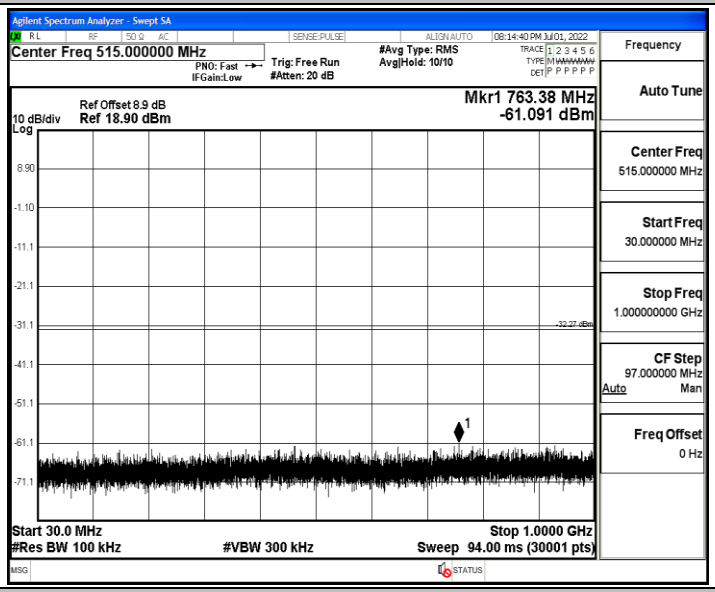
11G_Ant1_2462_1000~26500



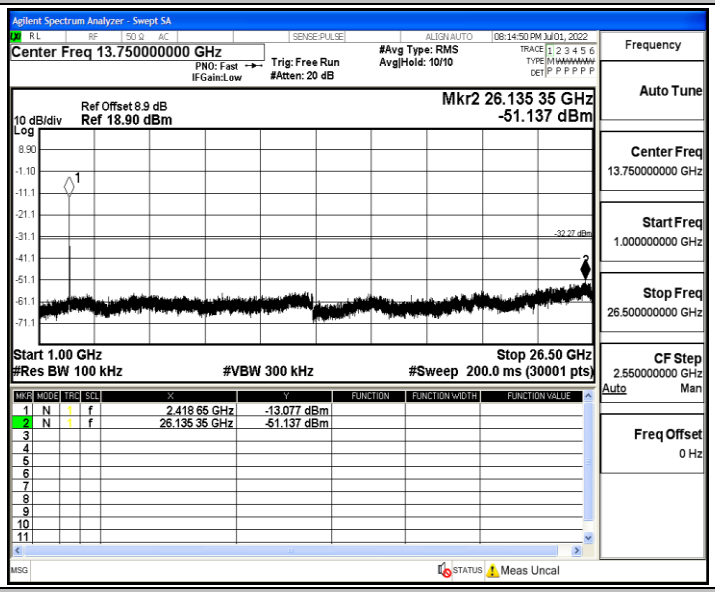
11N20SISO_Ant1_2412_0~Reference



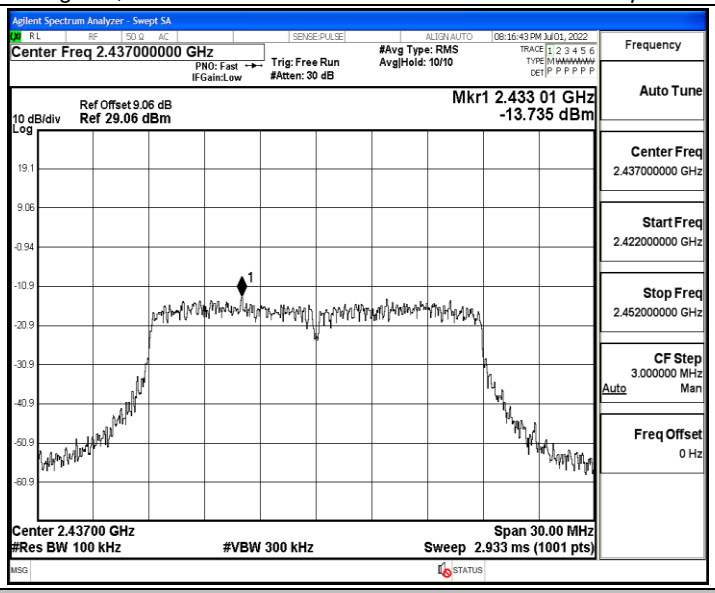
11N20SISO_Ant1_2412_30~1000



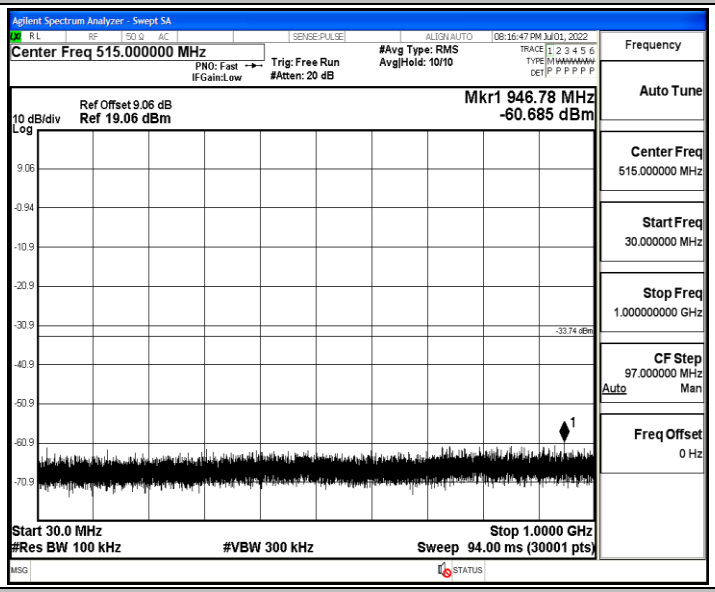
11N20SISO_Ant1_2412_1000~26500



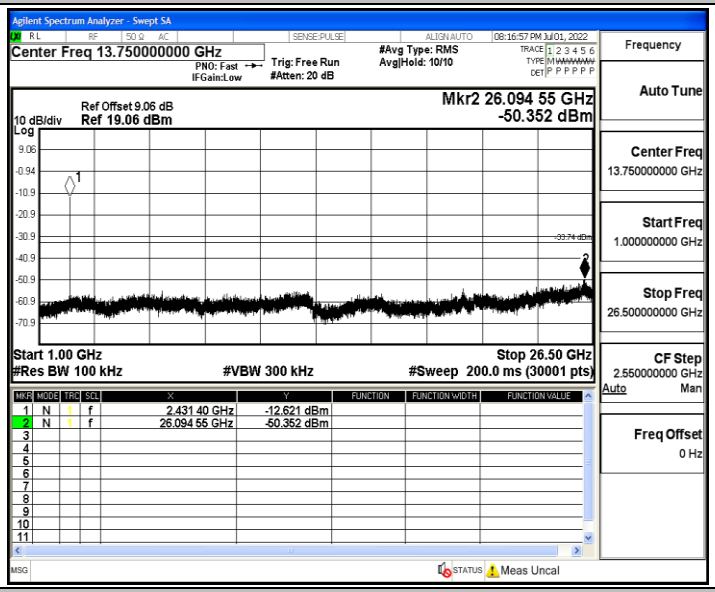
11N20SISO_Ant1_2437_0~Reference



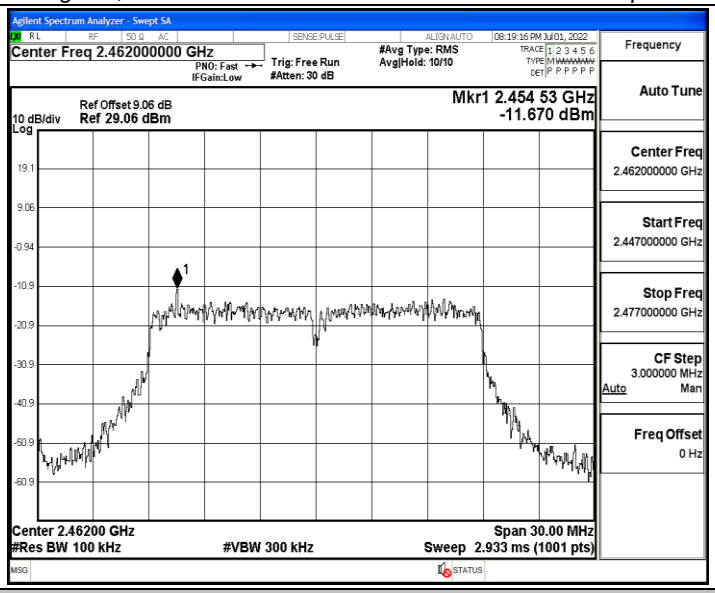
11N20SISO_Ant1_2437_30~1000



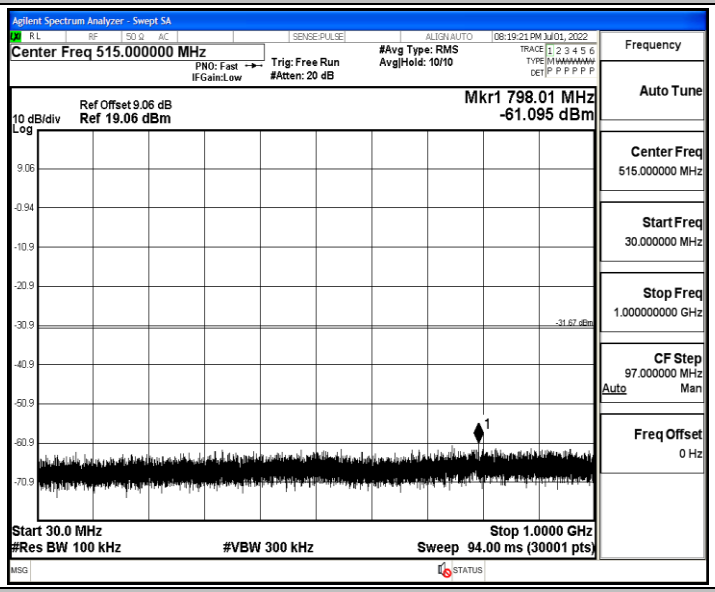
11N20SISO_Ant1_2437_1000~26500



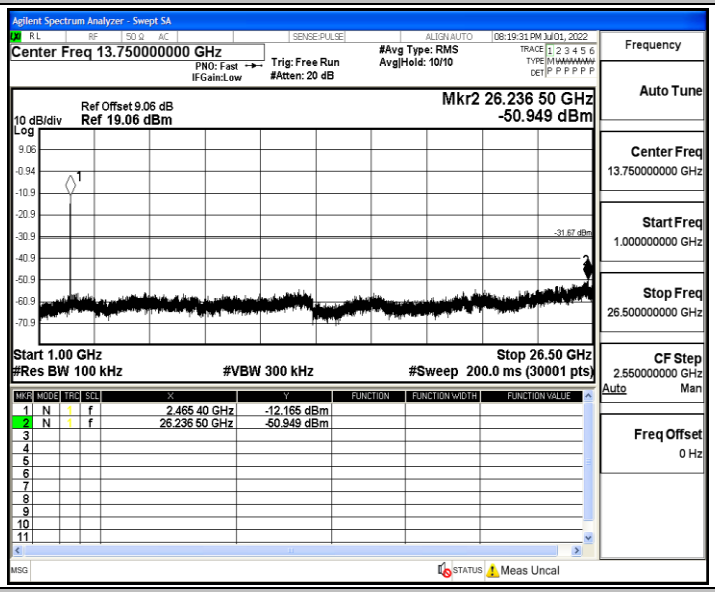
11N20SISO_Ant1_2462_0~Reference



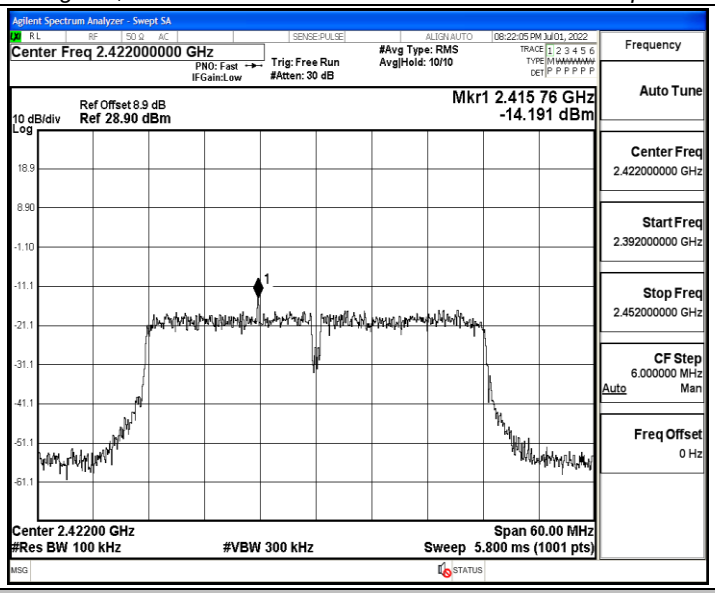
11N20SISO_Ant1_2462_30~1000



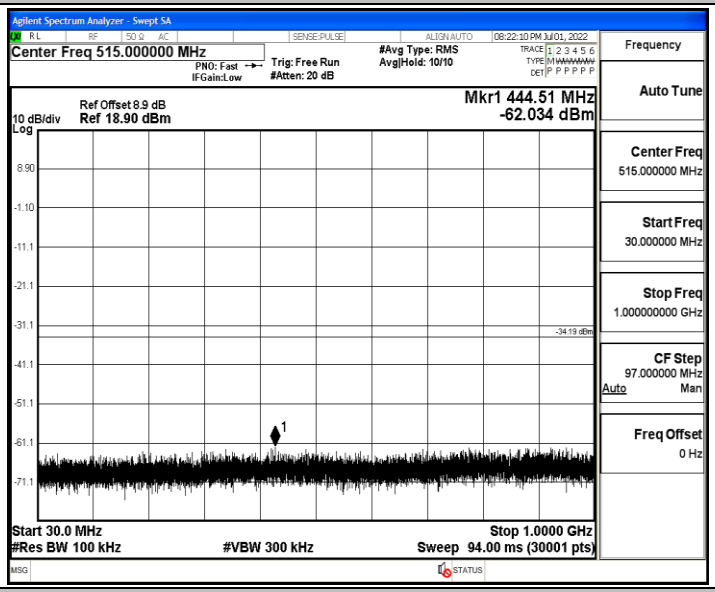
11N20SISO_Ant1_2462_1000~26500



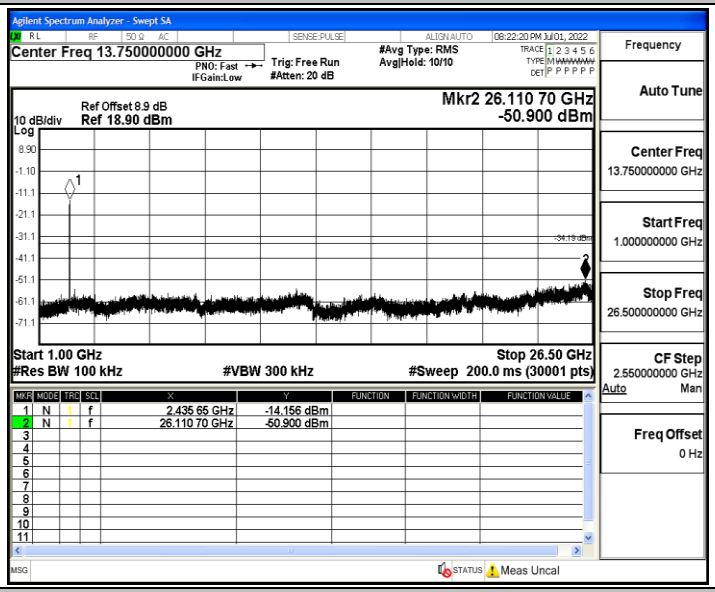
11N40SISO_Ant1_2422_0~Reference



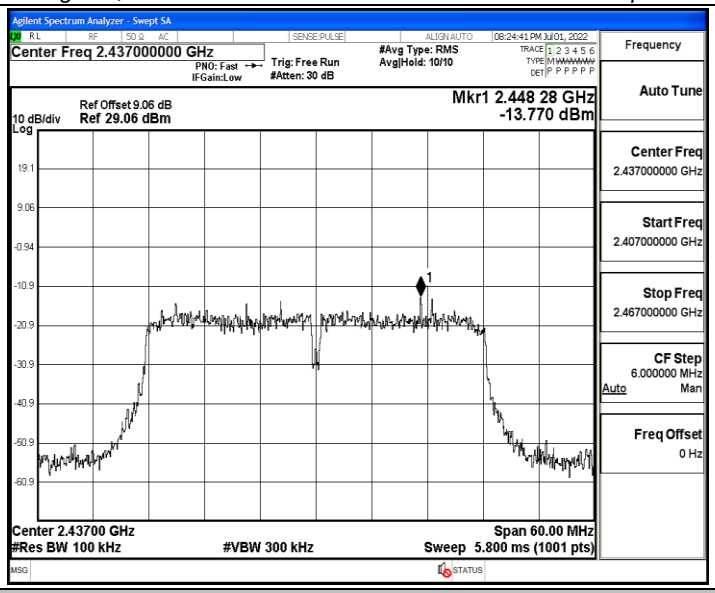
11N40SISO_Ant1_2422_30~1000



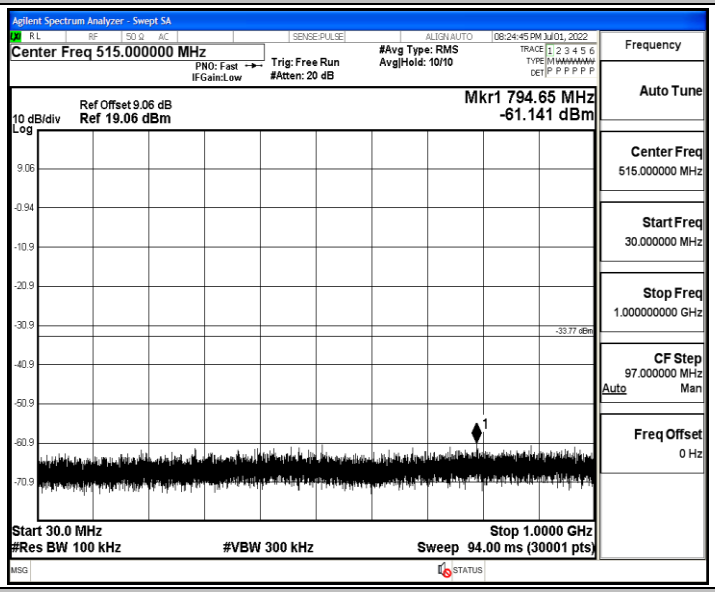
11N40SISO_Ant1_2422_1000~26500



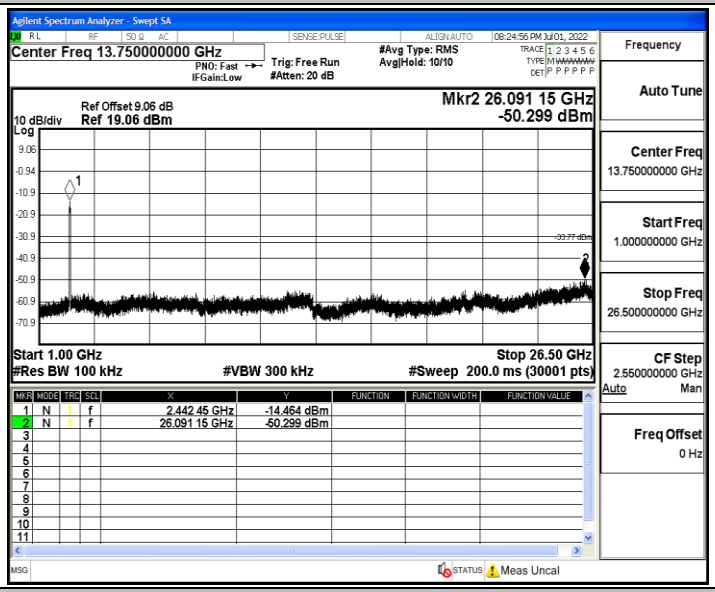
11N40SISO_Ant1_2437_0~Reference



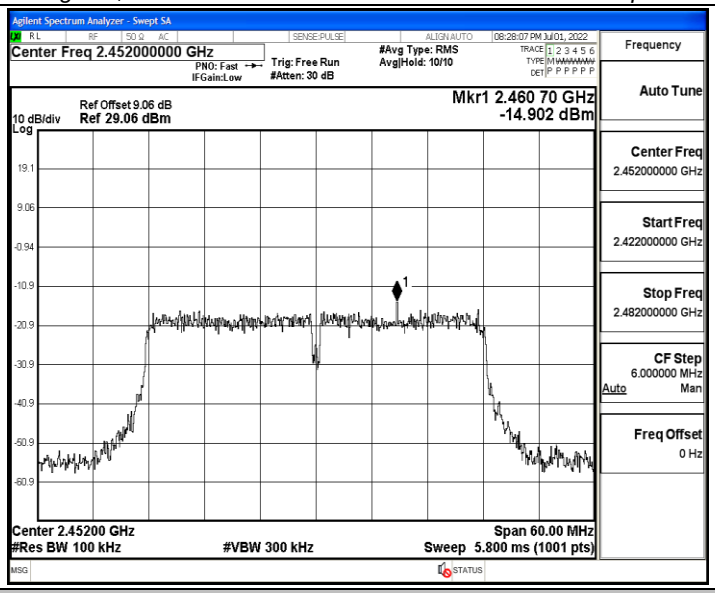
11N40SISO_Ant1_2437_30~1000



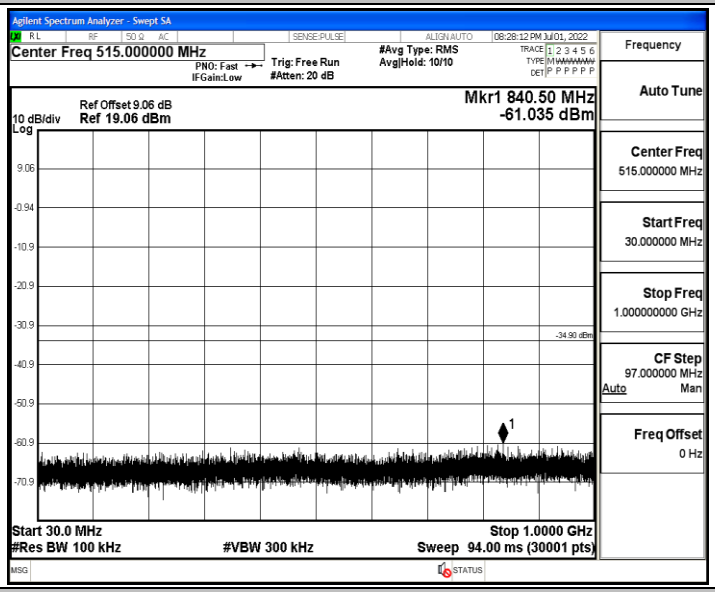
11N40SISO_Ant1_2437_1000~26500



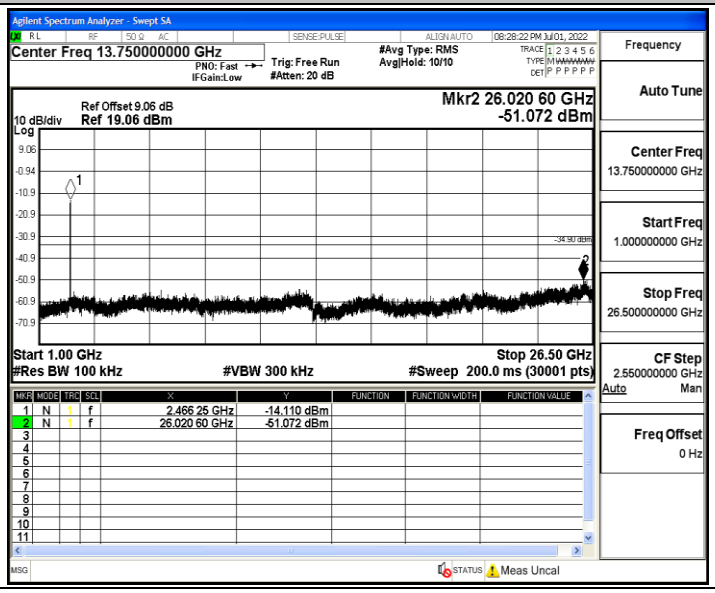
11N40SISO_Ant1_2452_0~Reference



11N40SISO_Ant1_2452_30~1000



11N40SISO_Ant1_2452_1000~26500



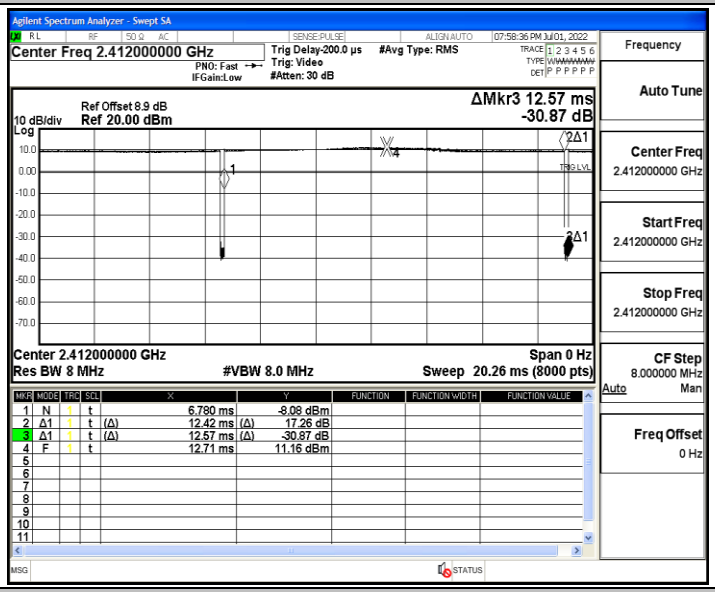
Appendix G: Duty Cycle

Test Result

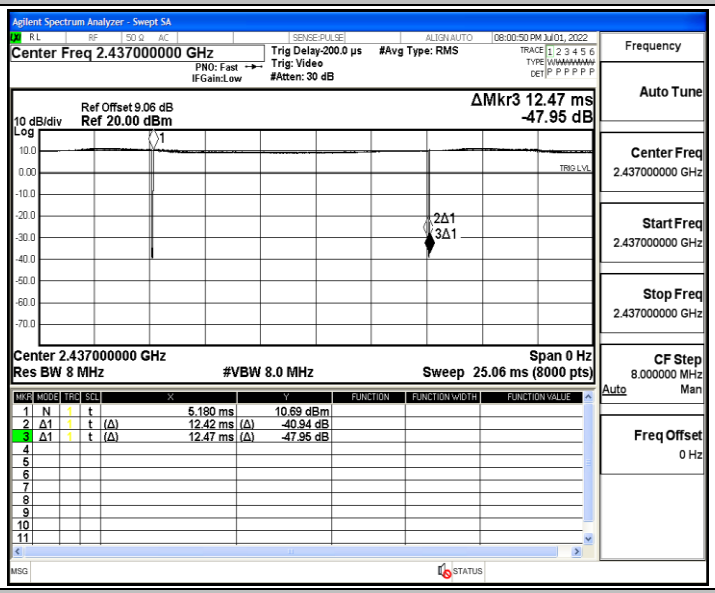
TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	1/T
11B	Ant1	2412	12.42	12.57	98.81	0.08
		2437	12.42	12.47	99.60	0.08
		2462	12.42	12.47	99.60	0.08
11G	Ant1	2412	2.06	2.18	94.50	0.49
		2437	2.07	2.24	92.41	0.48
		2462	2.07	2.14	96.73	0.48
11N20SISO	Ant1	2412	1.92	2.03	94.58	0.52
		2437	1.92	2.10	91.43	0.52
		2462	1.92	1.99	96.48	0.52
11N40SISO	Ant1	2422	0.94	1.12	83.93	1.06
		2437	0.94	1.09	86.24	1.06
		2452	0.95	1.09	87.16	1.05

Test Graphs

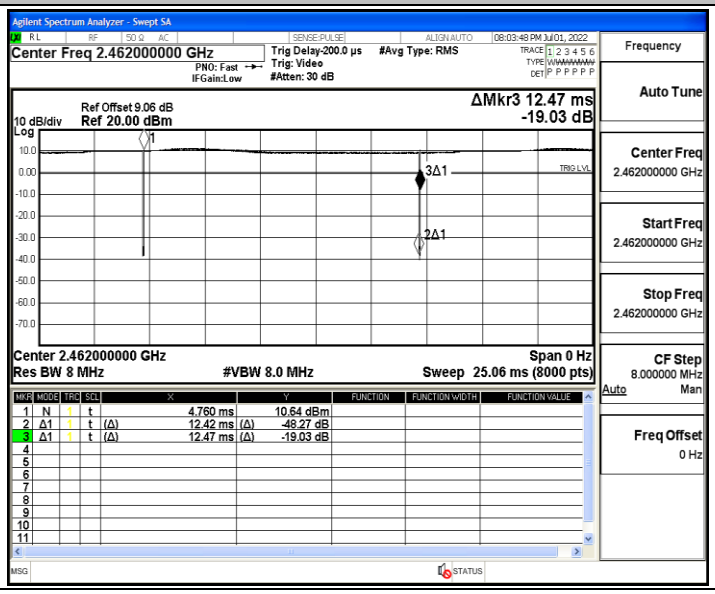
11B_Ant1_2412



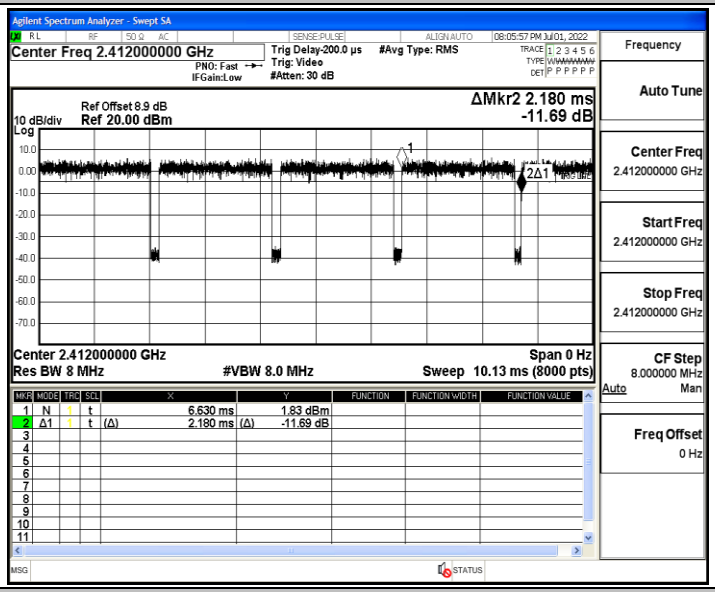
11B_Ant1_2437



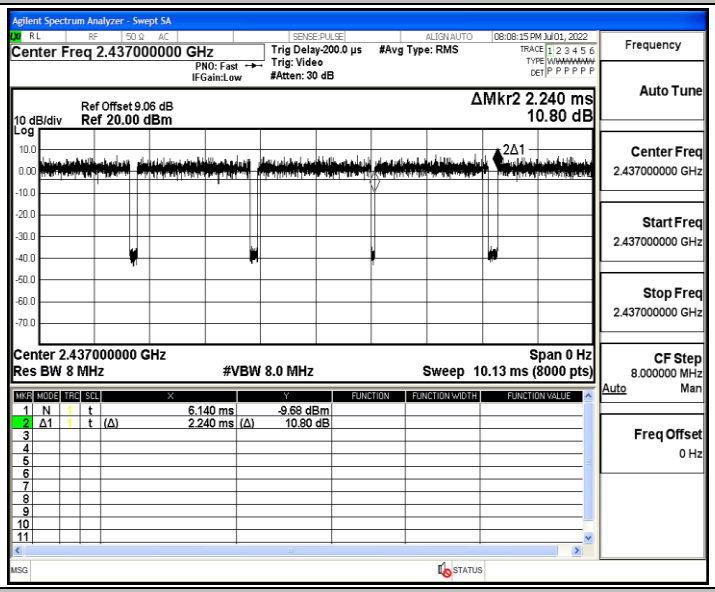
11B_Ant1_2462



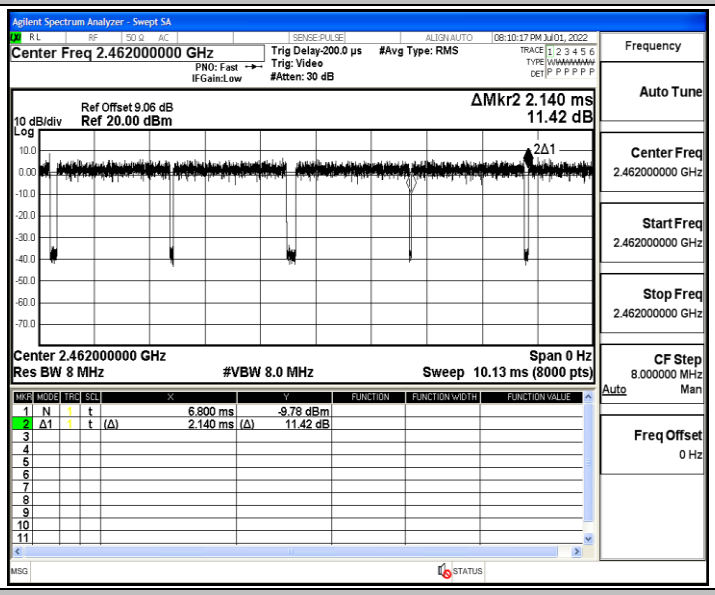
11G_Ant1_2412



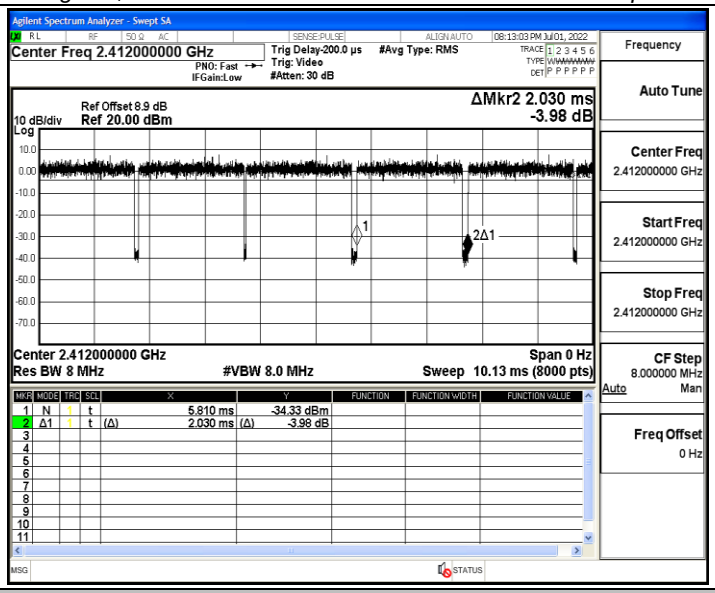
11G_Ant1_2437



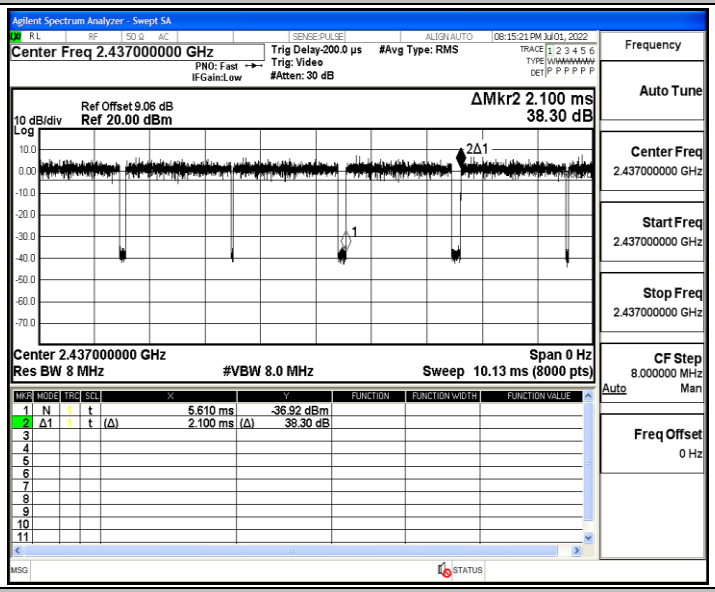
11G_Ant1_2462



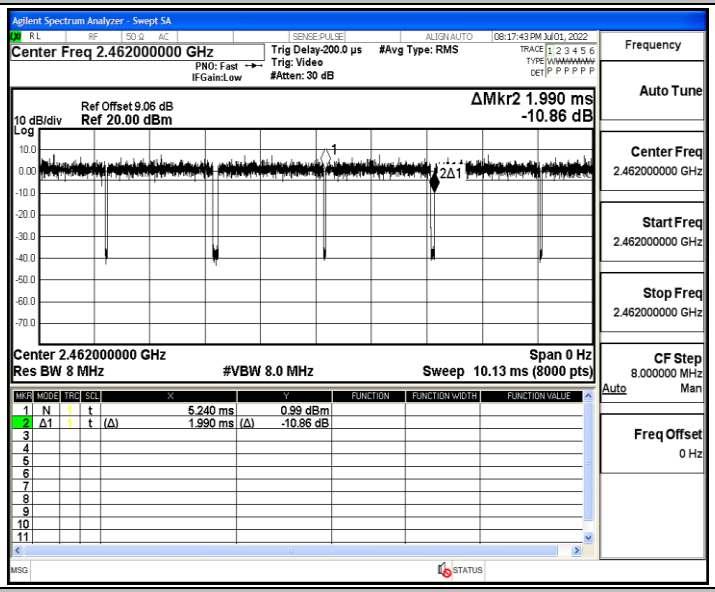
11N20SISO_Ant1_2412



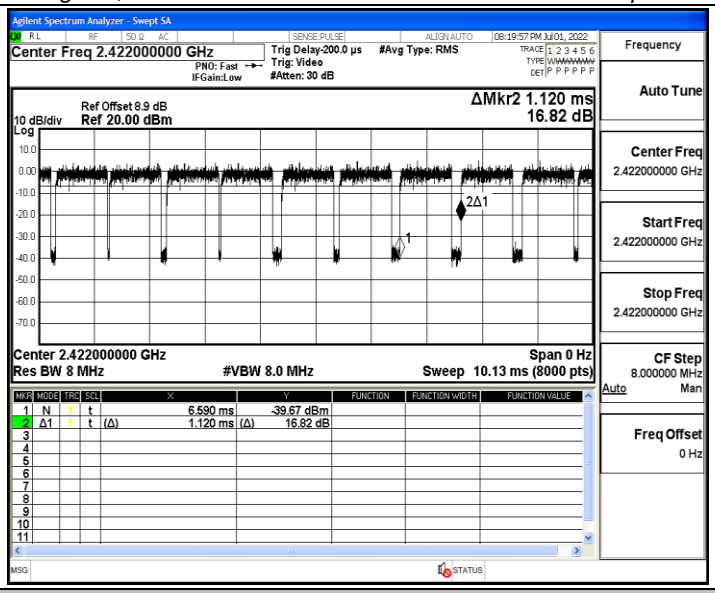
11N20SISO_Ant1_2437



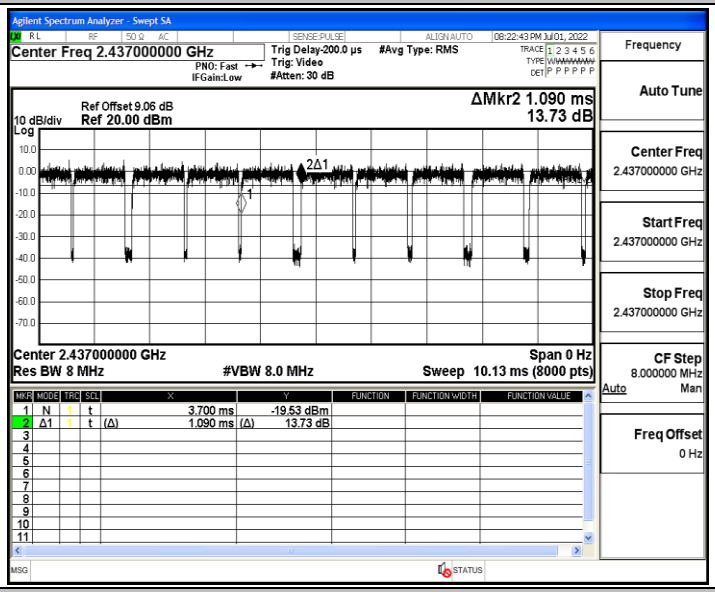
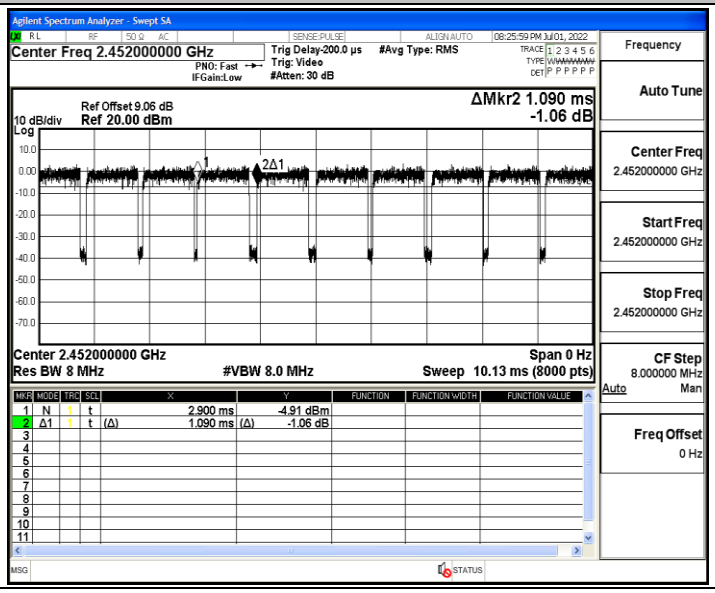
11N20SISO_Ant1_2462



11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452