Appendix Test Data

Report No.:	18220WC30248802	Test Sample No.:	1-2-2
Start Test Date:	2023.12.04	Finish Test Date:	2024.1.04
Test Engineer:	Hayman Chen	Auditor:	Rick Luo
Temperature:	25.2℃	Relative Humidity:	43%
Pressure:	101kPa		

Appendix A: DTS Bandwidth

Test Result

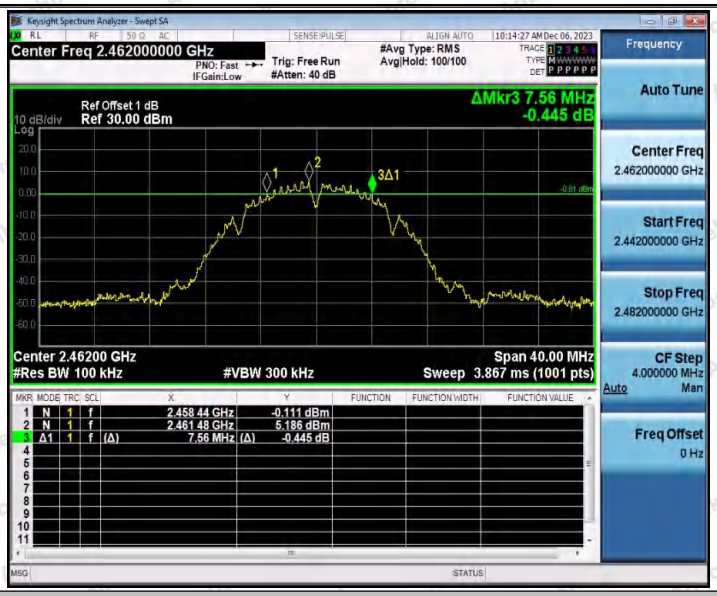
TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	7.560	2408.440	2416.000	0.5	PASS
		2437	7.560	2433.440	2441.000	0.5	PASS
		2462	7.560	2458.440	2466.000	0.5	PASS
11G	Ant1	2412	16.360	2403.800	2420.160	0.5	PASS
		2437	16.360	2428.800	2445.160	0.5	PASS
		2462	16.320	2453.840	2470.160	0.5	PASS
11N20SISO	Ant1	2412	17.680	2403.200	2420.880	0.5	PASS
		2437	17.600	2428.200	2445.800	0.5	PASS
		2462	16.920	2453.840	2470.760	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

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.462000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold: 100/100
10:33:45 AM Dec 06, 2023
Frequency
Auto Tune
Center Freq
2.462000000 GHz
Start Freq
2.442000000 GHz
Stop Freq
2.482000000 GHz
CF Step
4.000000 MHz
Auto
Man
Freq Offset
0 Hz
Ref Offset 1 dB
10 dB/div
Ref 30.00 dBm
Log
ΔMkr3 16.92 MHz
0.739 dB
Center 2.46200 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 40.00 MHz
Sweep 3.867 ms (1001 pts)
1 N 1 f 2.453 84 GHz -4.452 dBm
2 N 1 f 2.463 28 GHz 1.429 dBm
3 Δ1 1 f (Δ) 16.92 MHz (Δ) 0.739 dB
MSG
STATUS

Appendix B: Occupied Channel Bandwidth

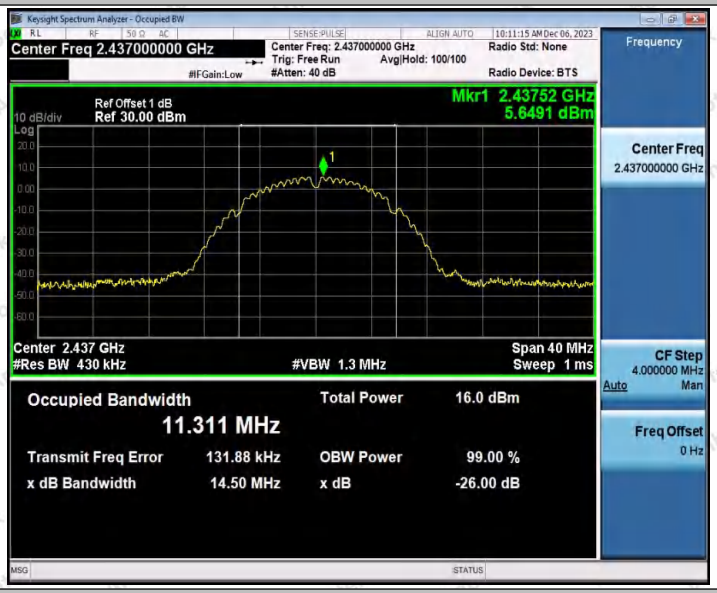
Test Result

TestMode	Antenna	Channel Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	11.919	2406.0828	2418.0018	---	---
		2437	11.311	2431.4764	2442.7874	---	---
		2462	11.431	2456.4294	2467.8604	---	---
11G	Ant1	2412	17.112	2403.4579	2420.5699	---	---
		2437	17.113	2428.4934	2445.6064	---	---
		2462	17.163	2453.4515	2470.6145	---	---
11N20SISO	Ant1	2412	18.264	2402.9306	2421.1946	---	---
		2437	18.157	2427.9748	2446.1318	---	---
		2462	18.200	2452.9329	2471.1329	---	---

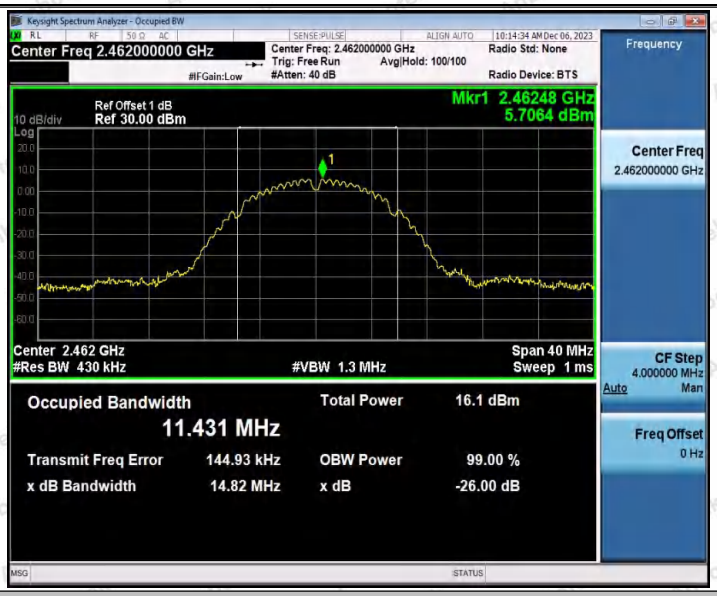
Test Graphs

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

Keysight Spectrum Analyzer - Occupied BW
Center Freq 2.462000000 GHz
Center Freq: 2.462000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 40 dB
Radio Std: None
Radio Device: BTS
Frequency
Ref Offset 1 dB
10 dB/div
Ref 30.00 dBm
Mkr1 2.46228 GHz
6.2376 dBm
Center Freq
2.462000000 GHz
Center 2.462 GHz
#Res BW 430 kHz
#VBW 1.3 MHz
Span 40 MHz
Sweep 1 ms
CF Step
4.000000 MHz
Auto
Man
Occupied Bandwidth
18.200 MHz
Total Power
19.0 dBm
Transmit Freq Error
32.903 kHz
OBW Power
99.00 %
x dB Bandwidth
21.97 MHz
x dB
-26.00 dB
Freq Offset
0 Hz
MSG
STATUS

Appendix C: Maximum conducted output power

Test Result

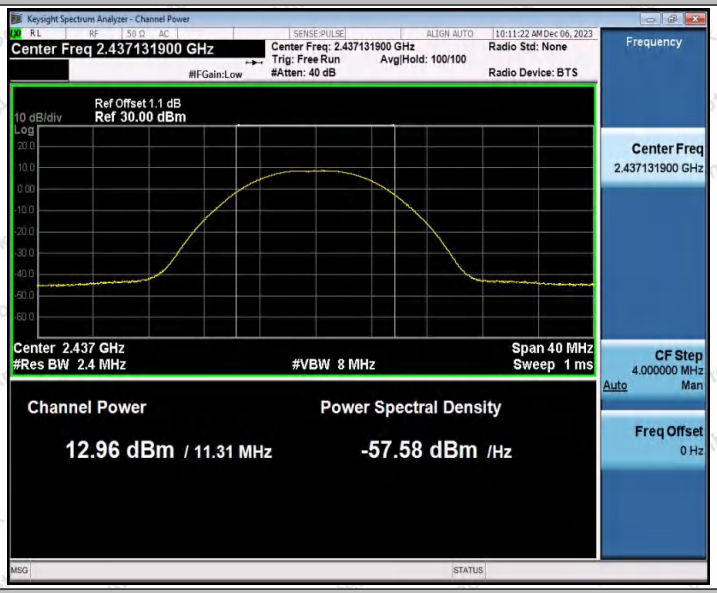
TestMode	Antenna	Frequency[MHz]	Average Output Power[dBm]	Conducted Limit[dBm]
11B	Ant1	2412	13.37	≤30.00
		2437	12.96	≤30.00
		2462	13.12	≤30.00
11G	Ant1	2412	12.91	≤30.00
		2437	13.03	≤30.00
		2462	13.08	≤30.00
11N20SISO	Ant1	2412	**13.60**	≤30.00
		2437	12.91	≤30.00
		2462	12.95	≤30.00

Note：The Duty Cycle Factor(10*log(1/D)) and cable loss are compensated in the graph.

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

Keysight Spectrum Analyzer - Channel Power
Center Freq 2.462032900 GHz
Center Freq: 2.462032900 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 40 dB
Radio Std: None
Radio Device: BTS
10:33:57 AM Dec 06, 2023
Frequency
Ref Offset 1.63 dB
10 dB/div
Ref 30.00 dBm
Log
Center Freq
2.462032900 GHz
Center 2.462 GHz
#Res BW 2.4 MHz
#VBW 8 MHz
Span 40 MHz
Sweep 1 ms
CF Step
4.000000 MHz
Auto
Man
Channel Power
12.95 dBm / 18.2 MHz
Power Spectral Density
-59.65 dBm /Hz
Freq Offset
0 Hz

Appendix D: Maximum power spectral density

Test Result

TestMode	Antenna	Frequency[MHz]	Result[dBm/30kHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-7.27	-17.27	≤8.00	PASS
		2437	-7.35	-17.35	≤8.00	PASS
		2462	-7.17	-17.17	≤8.00	PASS
11G	Ant1	2412	-8.28	-18.28	≤8.00	PASS
		2437	-8.1	-18.10	≤8.00	PASS
		2462	-7.93	-17.93	≤8.00	PASS
11N20SISO	Ant1	2412	-8.08	-18.08	≤8.00	PASS
		2437	-8.47	-18.47	≤8.00	PASS
		2462	-12.75	-22.75	≤8.00	PASS

Note:

1. The Duty Cycle Factor(10*log(1/D)) and cable loss are compensated in the graph.
2. PSD(dBm/3kHz)= PSD(dBm/30kHz)- (10*log(30/3))

Test Graphs

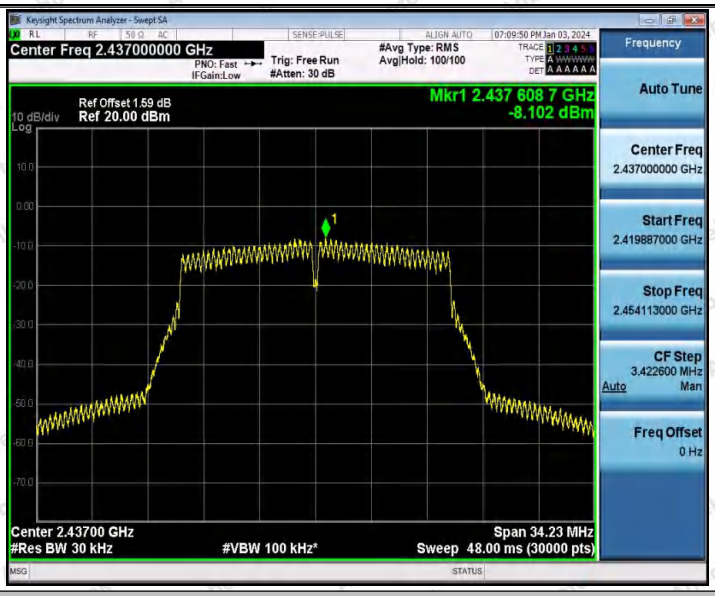
11B_Ant1_2412

11B_Ant1_2437

11B_Ant1_2462

11G_Ant1_2412

11G_Ant1_2437

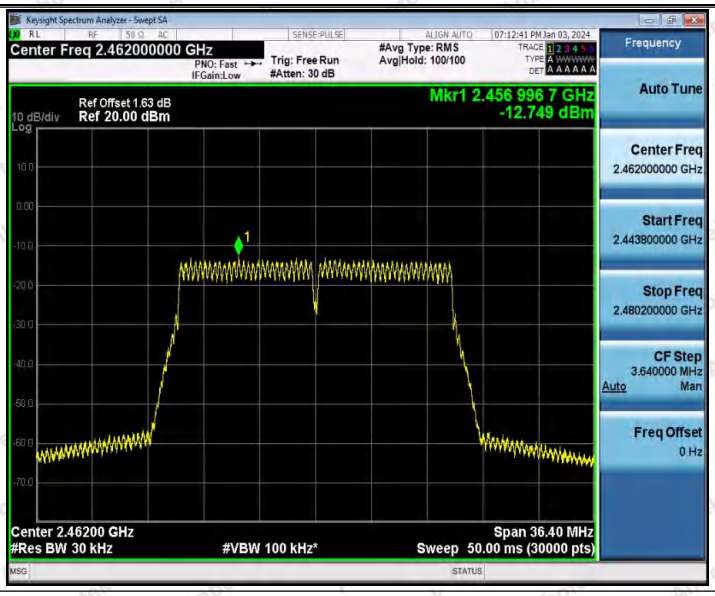


11G_Ant1_2462

11N20SISO_Ant1_2412

11N20SISO_Ant1_2437

11N20SISO_Ant1_2462


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.462000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 100/100
07:12:41 PM Jan 03, 2024
Ref Offset 1.63 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.456 996 7 GHz
-12.749 dBm
Center 2.46200 GHz
#Res BW 30 kHz
#VBW 100 kHz*
Span 36.40 MHz
Sweep 50.00 ms (30000 pts)
Frequency
Auto Tune
Center Freq
2.462000000 GHz
Start Freq
2.443800000 GHz
Stop Freq
2.480200000 GHz
CF Step
3.640000 MHz
Auto
Man
Freq Offset
0 Hz

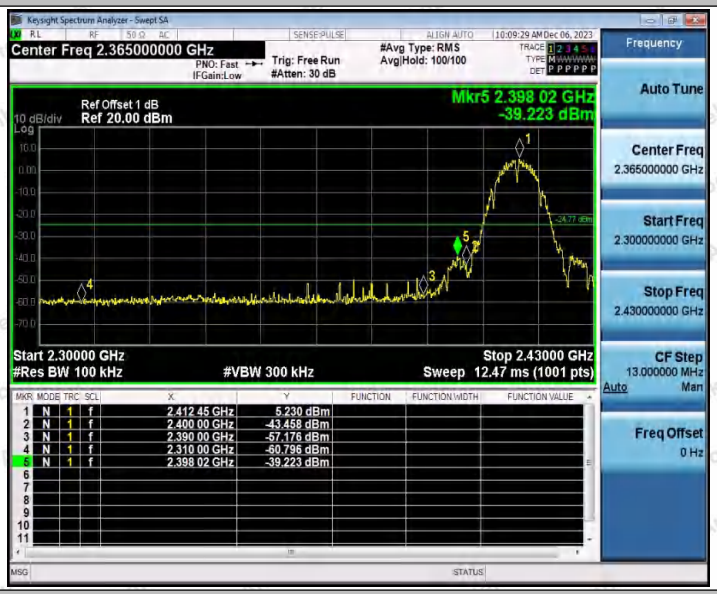
Appendix E: Band edge measurements

Test Result

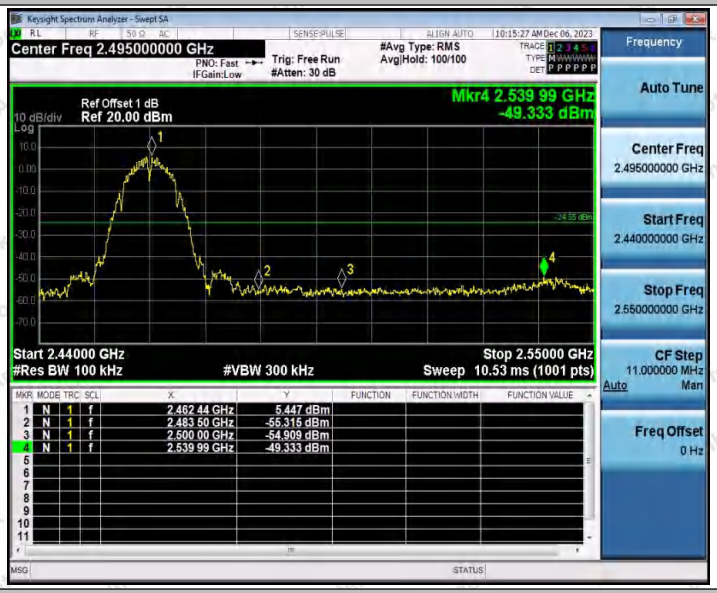
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	5.23	-39.22	≤-24.77	PASS
		High	2462	5.45	-49.33	≤-24.55	PASS
11G	Ant1	Low	2412	0.57	-37.75	≤-29.43	PASS
		High	2462	0.71	-45.91	≤-29.3	PASS
11N20SISO	Ant1	Low	2412	1.45	-34.92	≤-28.55	PASS
		High	2462	1.26	-43.71	≤-28.74	PASS

Test Graphs

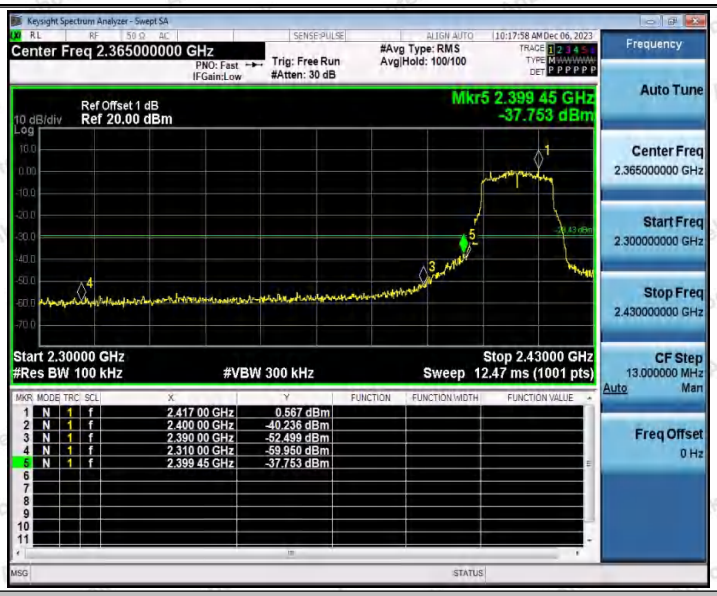
11B_Ant1_Low_2412



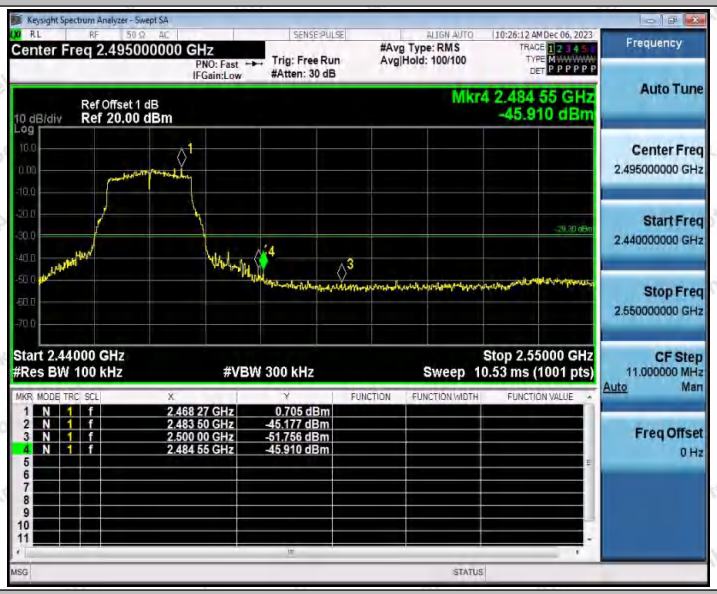
11B_Ant1_High_2462



11G_Ant1_Low_2412

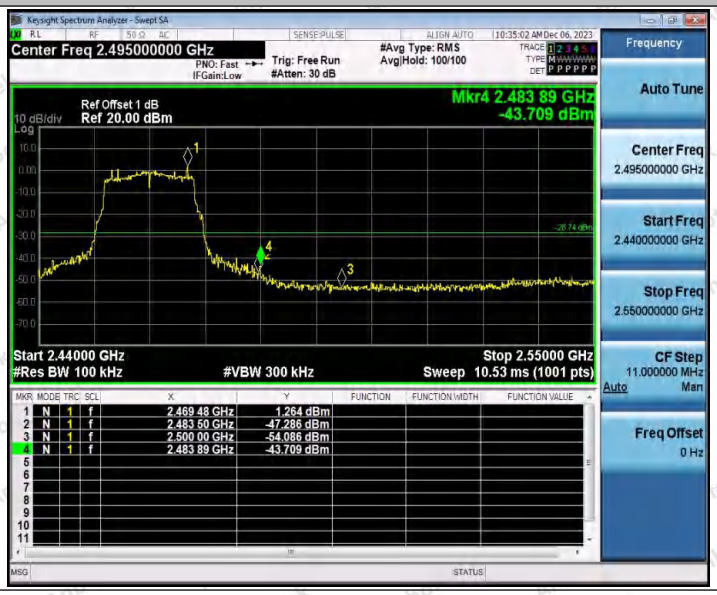


11G_Ant1_High_2462



11N20SISO_Ant1_Low_2412

11N20SISO_Ant1_High_2462



Appendix F: Conducted Spurious Emission

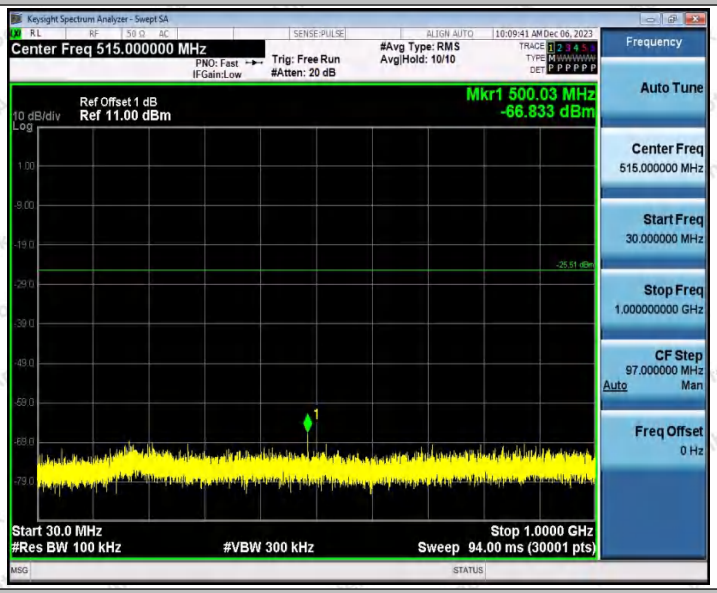
Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	4.49	4.49	---	PASS
			30~1000	4.49	-66.83	≤-25.51	PASS
			1000~26500	4.49	-52.59	≤-25.51	PASS
		2437	Reference	4.54	4.54	---	PASS
			30~1000	4.54	-66.6	≤-25.46	PASS
			1000~26500	4.54	-52.57	≤-25.46	PASS
		2462	Reference	3.61	3.61	---	PASS
			30~1000	3.61	-67.23	≤-26.39	PASS
			1000~26500	3.61	-50.55	≤-26.39	PASS
11G	Ant1	2412	Reference	0.49	0.49	---	PASS
			30~1000	0.49	-66.7	≤-29.51	PASS
			1000~26500	0.49	-50.19	≤-29.51	PASS
		2437	Reference	-1.05	-1.05	---	PASS
			30~1000	-1.05	-67.17	≤-31.05	PASS
			1000~26500	-1.05	-49.57	≤-31.05	PASS
		2462	Reference	-1.06	-1.06	---	PASS
			30~1000	-1.06	-66.92	≤-31.06	PASS
			1000~26500	-1.06	-51.05	≤-31.06	PASS
11N20SISO	Ant1	2412	Reference	-0.12	-0.12	---	PASS
			30~1000	-0.12	-66.71	≤-30.12	PASS
			1000~26500	-0.12	-51.03	≤-30.12	PASS
		2437	Reference	-0.67	-0.67	---	PASS
			30~1000	-0.67	-66.37	≤-30.67	PASS
			1000~26500	-0.67	-50.86	≤-30.67	PASS
		2462	Reference	0.31	0.31	---	PASS
			30~1000	0.31	-68.26	≤-29.69	PASS
			1000~26500	0.31	-50.57	≤-29.69	PASS

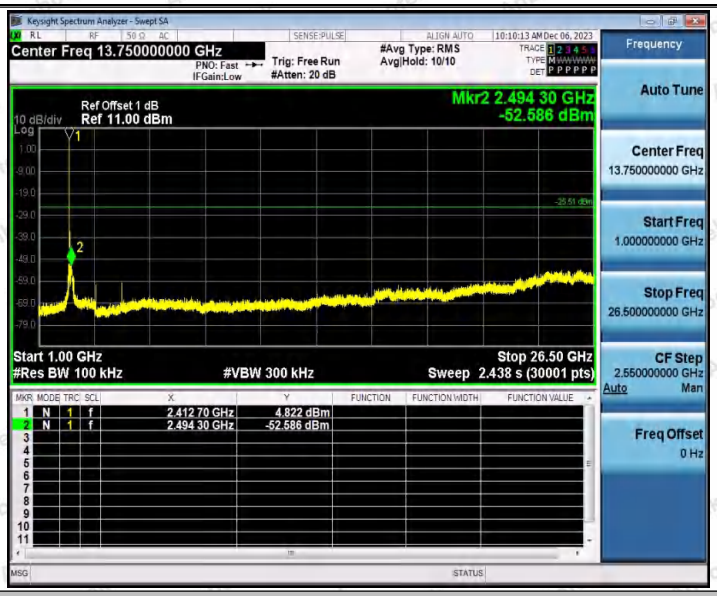
Test Graphs

11B_Ant1_2412_0~Reference

11B_Ant1_2412_30~1000

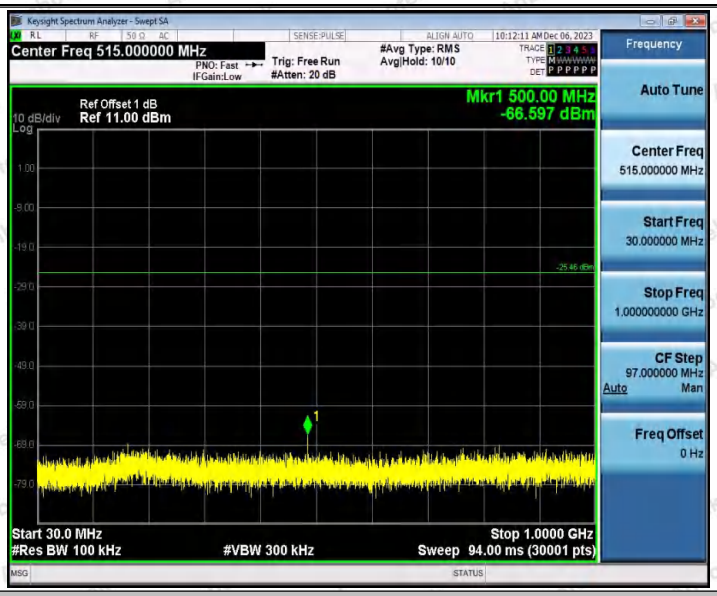


11B_Ant1_2412_1000~26500

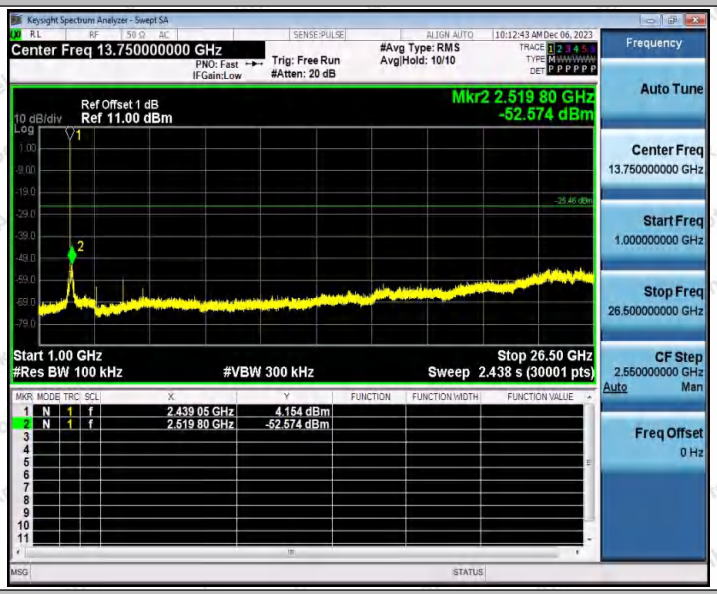


11B_Ant1_2437_0~Reference

11B_Ant1_2437_30~1000

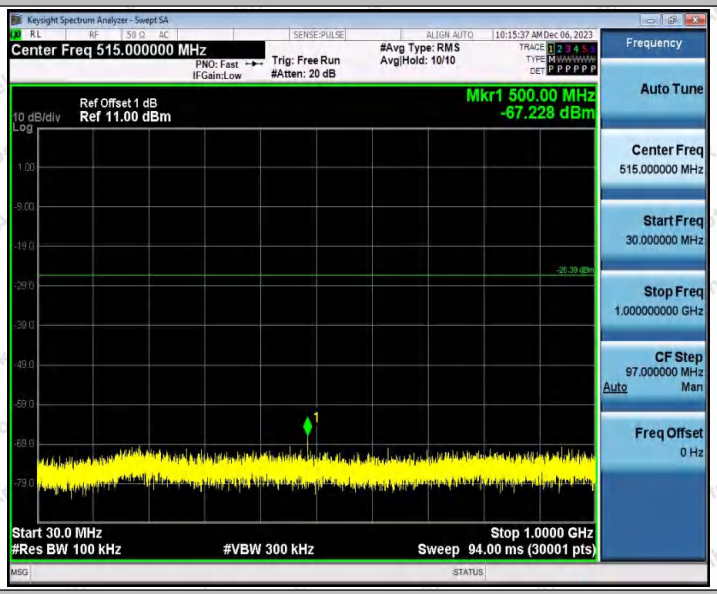


11B_Ant1_2437_1000~26500

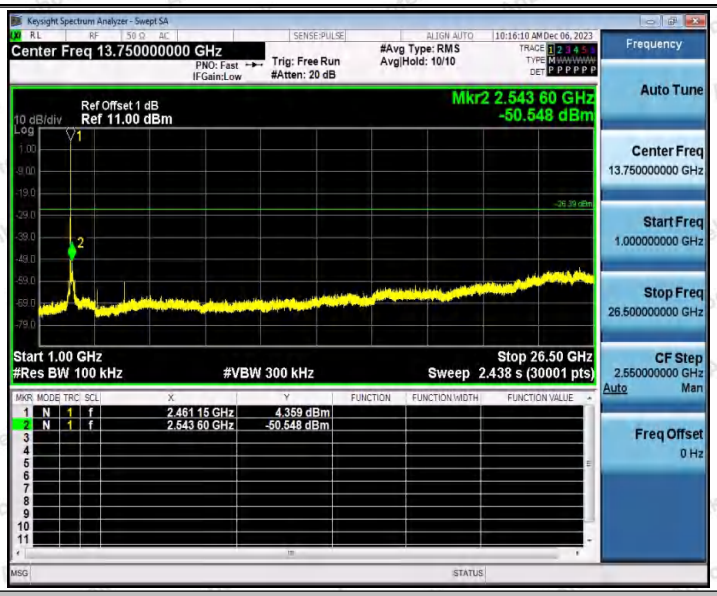


11B_Ant1_2462_0~Reference

11B_Ant1_2462_30~1000

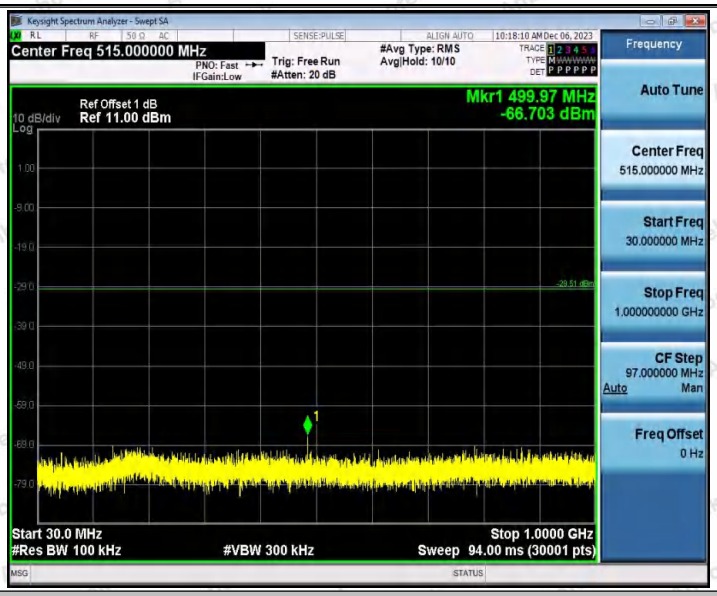


11B_Ant1_2462_1000~26500

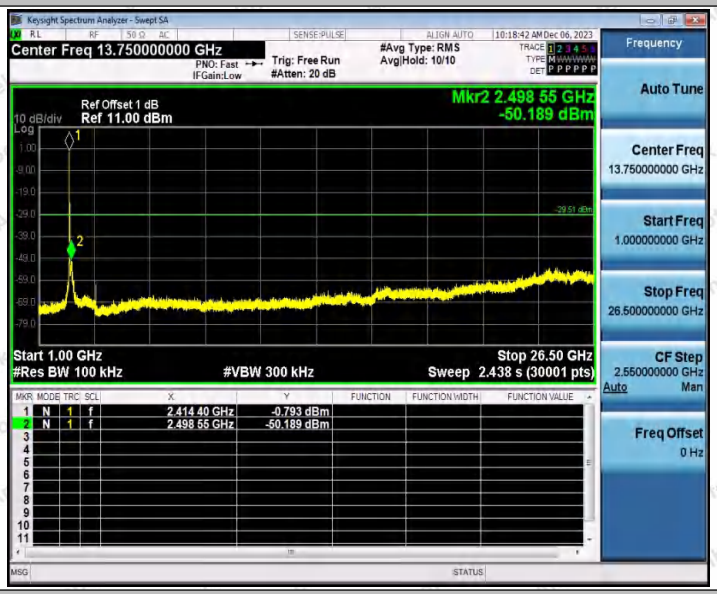


11G_Ant1_2412_0~Reference

11G_Ant1_2412_30~1000

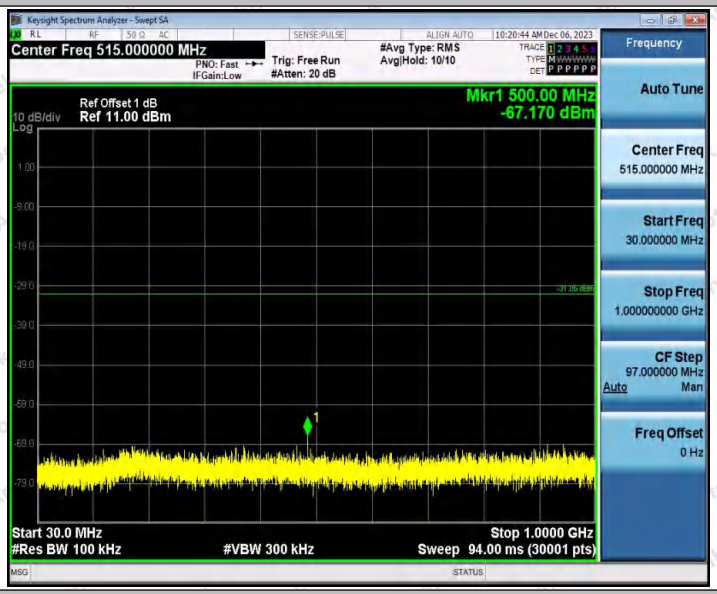


11G_Ant1_2412_1000~26500

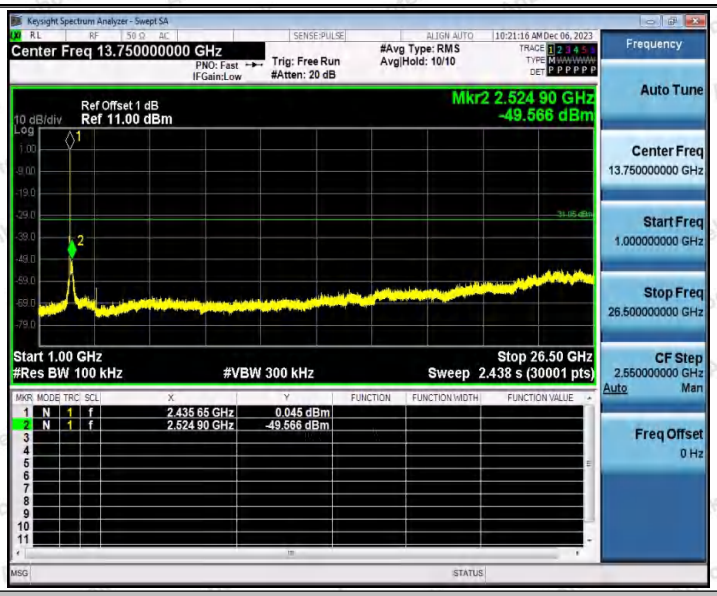


11G_Ant1_2437_0~Reference

11G_Ant1_2437_30~1000

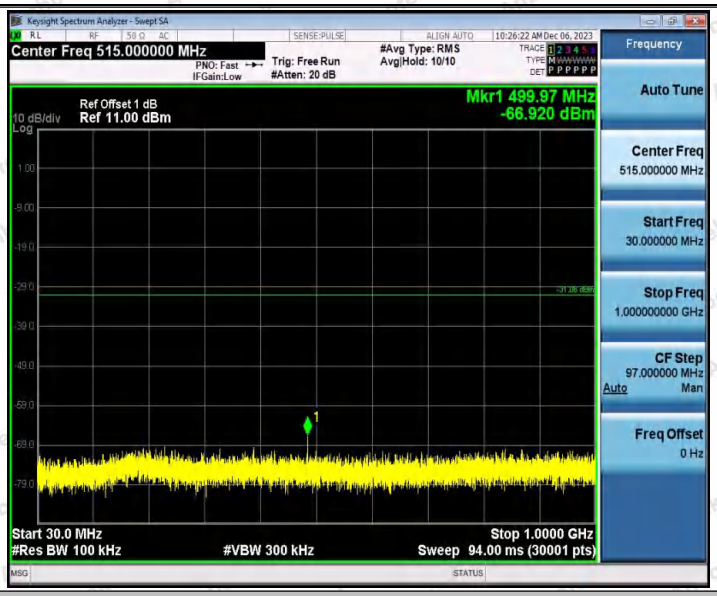


11G_Ant1_2437_1000~26500

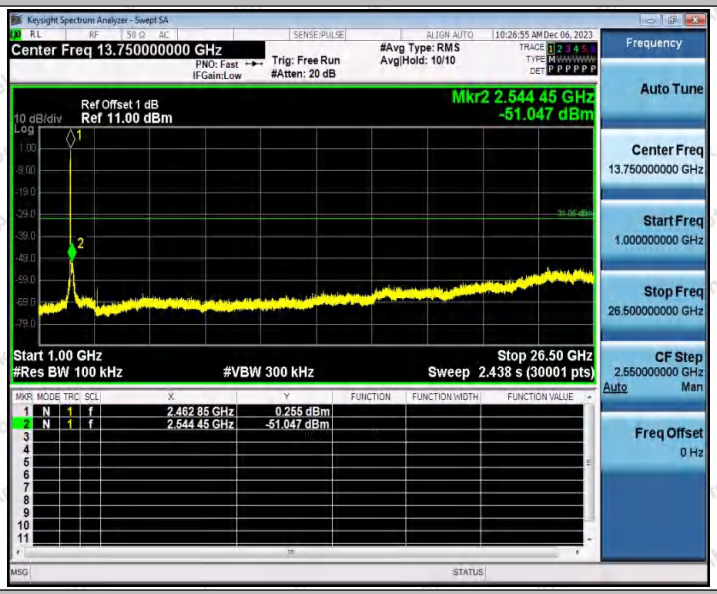


11G_Ant1_2462_0~Reference

11G_Ant1_2462_30~1000

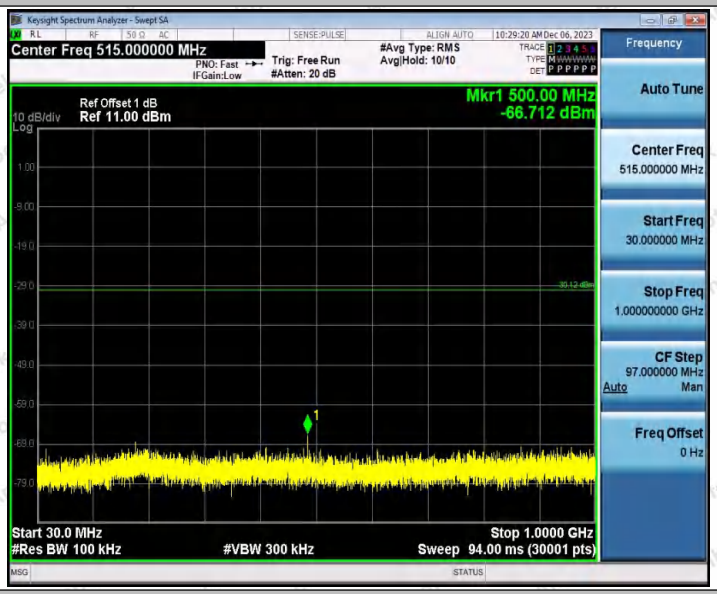


11G_Ant1_2462_1000~26500

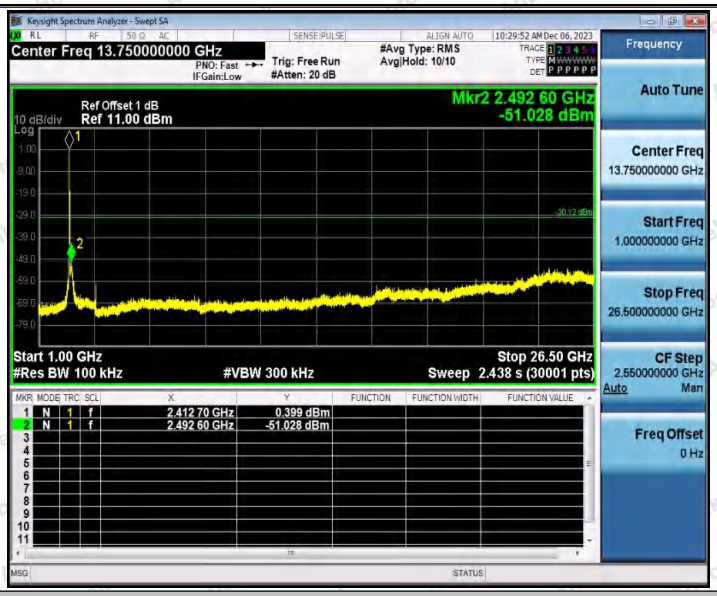


11N20SISO_Ant1_2412_0~Reference

11N20SISO_Ant1_2412_30~1000

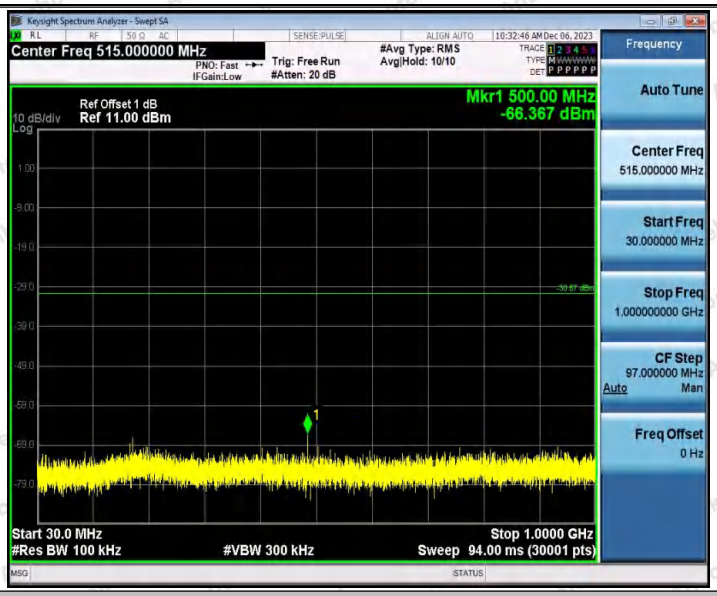


11N20SISO_Ant1_2412_1000~26500

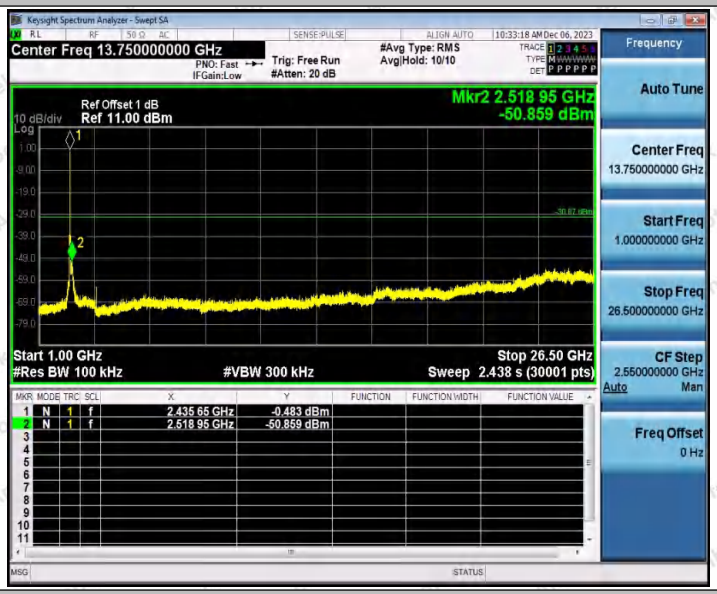


11N20SISO_Ant1_2437_0~Reference

11N20SISO_Ant1_2437_30~1000

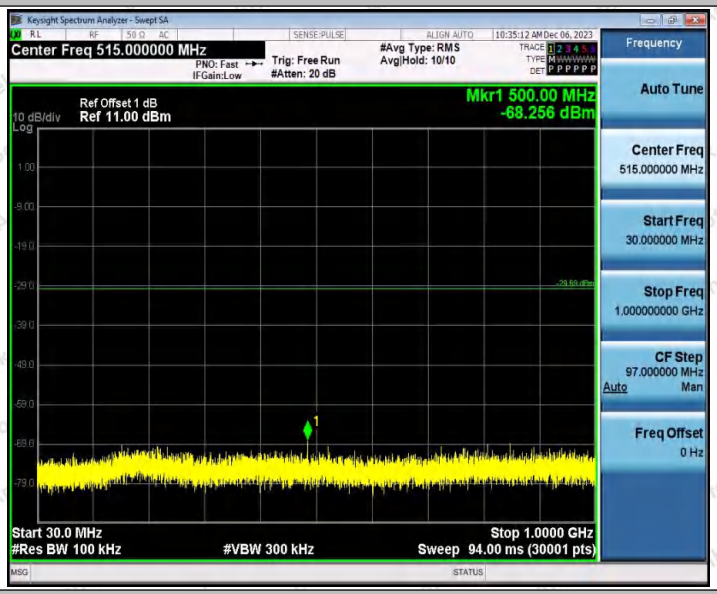


11N20SISO_Ant1_2437_1000~26500

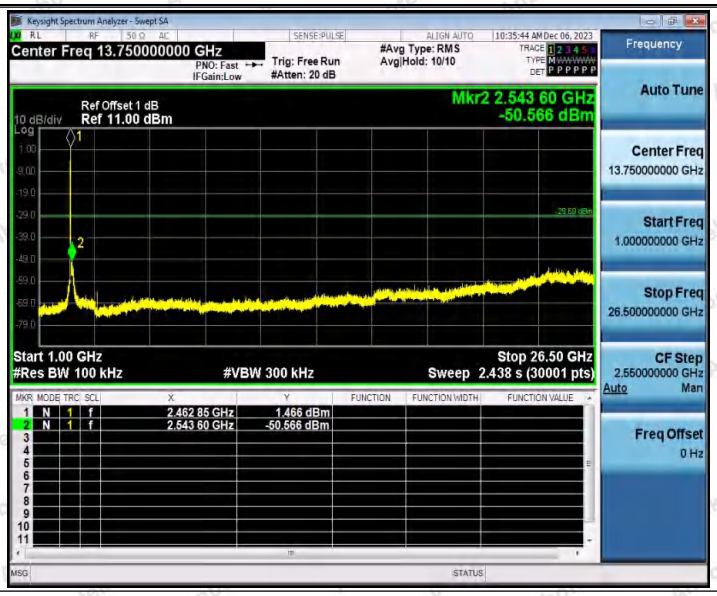


11N20SISO_Ant1_2462_0~Reference

11N20SISO_Ant1_2462_30~1000



11N20SISO_Ant1_2462_1000~26500


Keysight Spectrum Analyzer - Swept SA
Center Freq 13.750000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
#Avg Type: RMS
Avg|Hold: 10/10
10:35:44 AM Dec 06, 2023
Ref Offset 1 dB
10 dB/div
Ref 11.00 dBm
Log
Mkr2 2.543 60 GHz
-50.566 dBm
Start 1.00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.50 GHz
Sweep 2.438 s (30001 pts)
1 N 1 f 2.462 85 GHz 1.466 dBm
2 N 1 f 2.543 60 GHz -50.566 dBm
Frequency
Auto Tune
Center Freq
13.750000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
26.500000000 GHz
CF Step
2.550000000 GHz
Auto
Man
Freq Offset
0 Hz

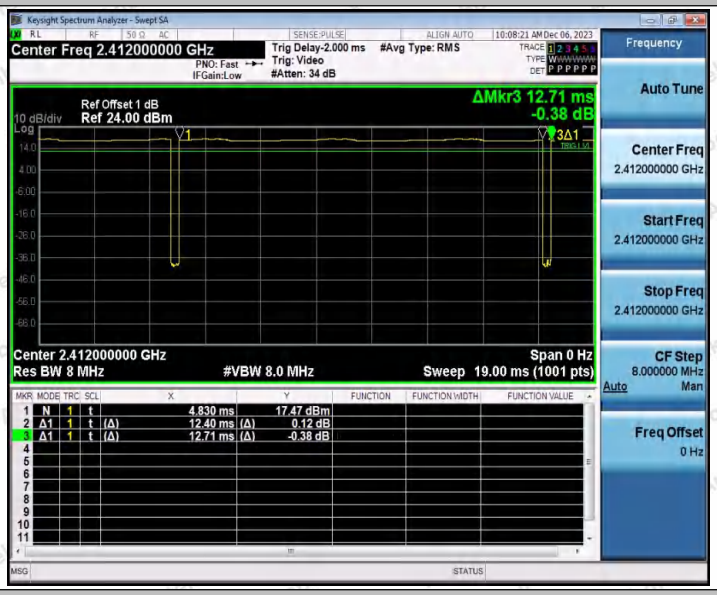
Appendix G: Duty Cycle

Test Result

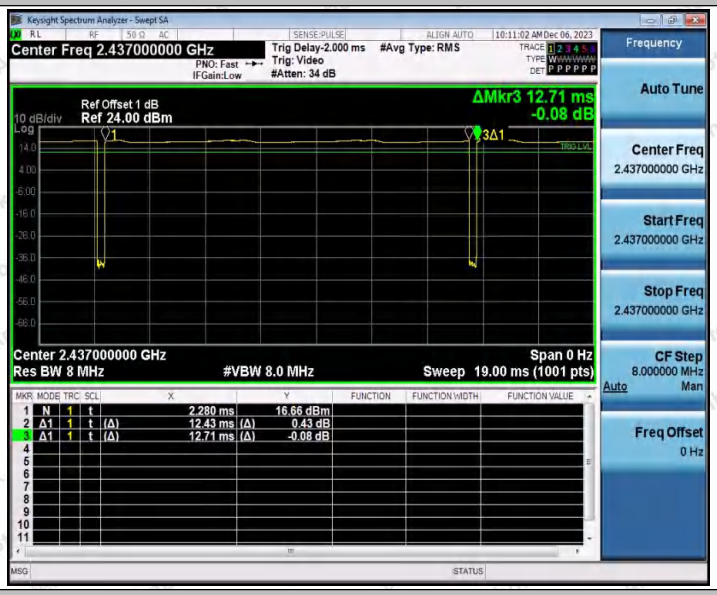
TestMode	Antenna	Frequency[MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Factor
11B	Ant1	2412	12.40	12.71	97.56	0.11
		2437	12.43	12.71	97.80	0.10
		2462	12.41	12.71	97.64	0.10
11G	Ant1	2412	2.07	2.37	87.34	0.59
		2437	2.06	2.36	87.29	0.59
		2462	2.07	2.37	87.34	0.59
11N20SISO	Ant1	2412	1.91	2.21	86.43	0.63
		2437	1.92	2.22	86.49	0.63
		2462	1.92	2.22	86.49	0.63

Test Graphs

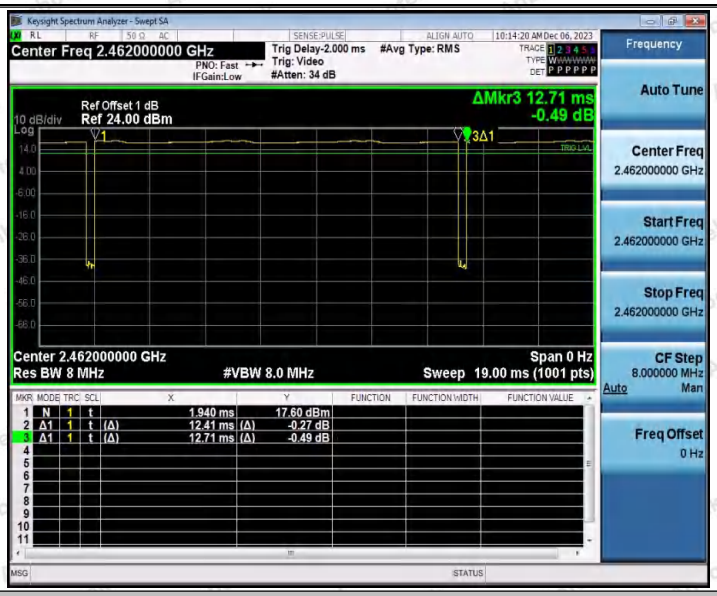
11B_Ant1_2412



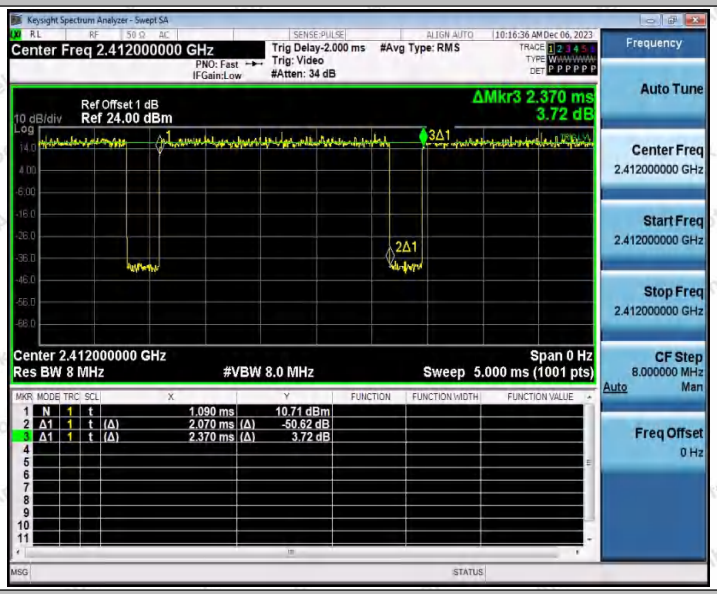
11B_Ant1_2437



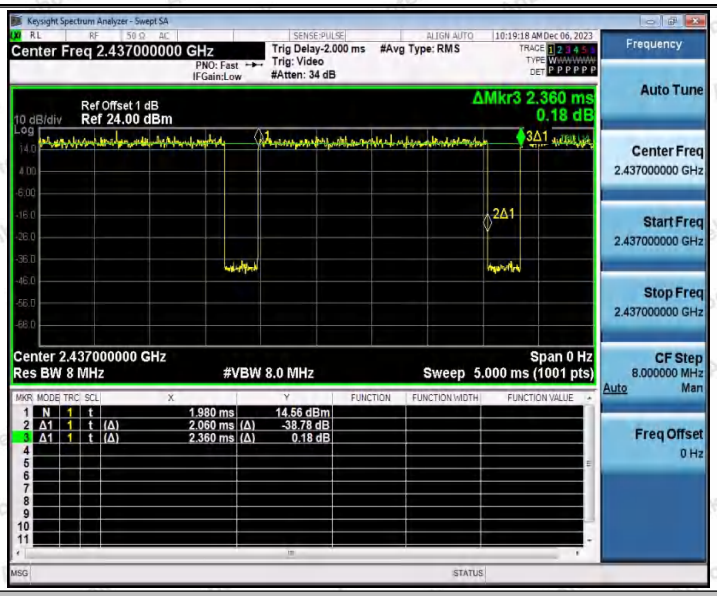
11B_Ant1_2462



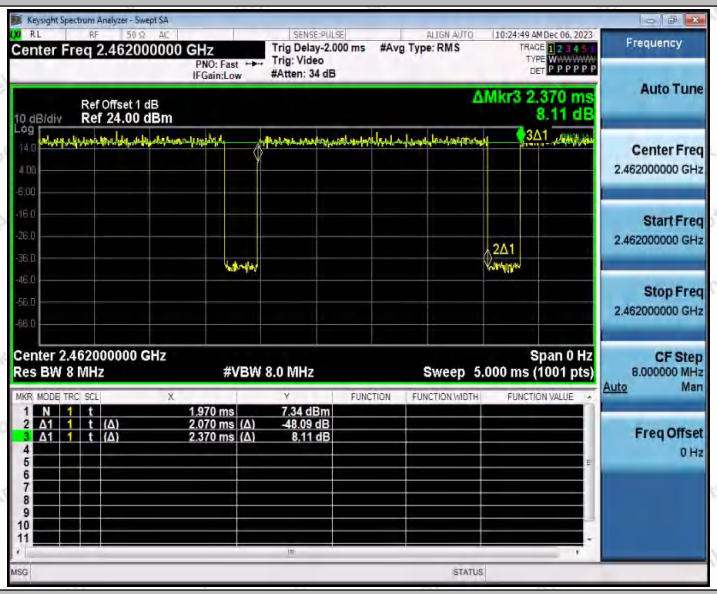
11G_Ant1_2412



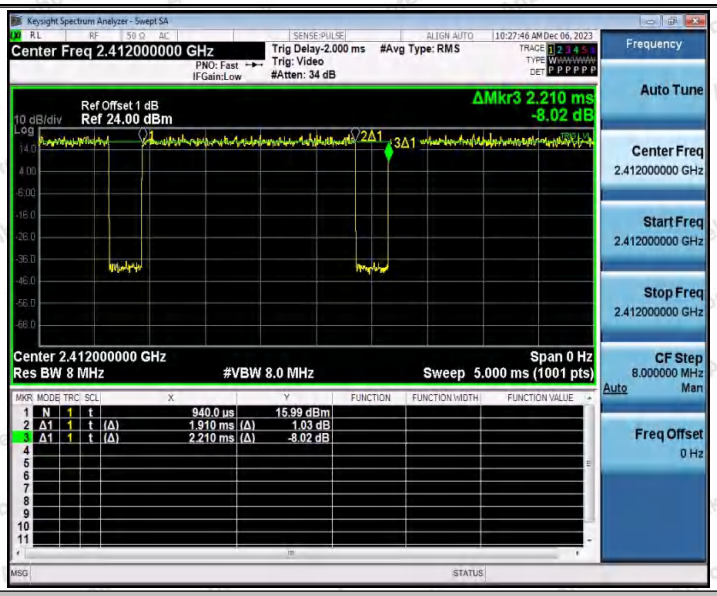
11G_Ant1_2437



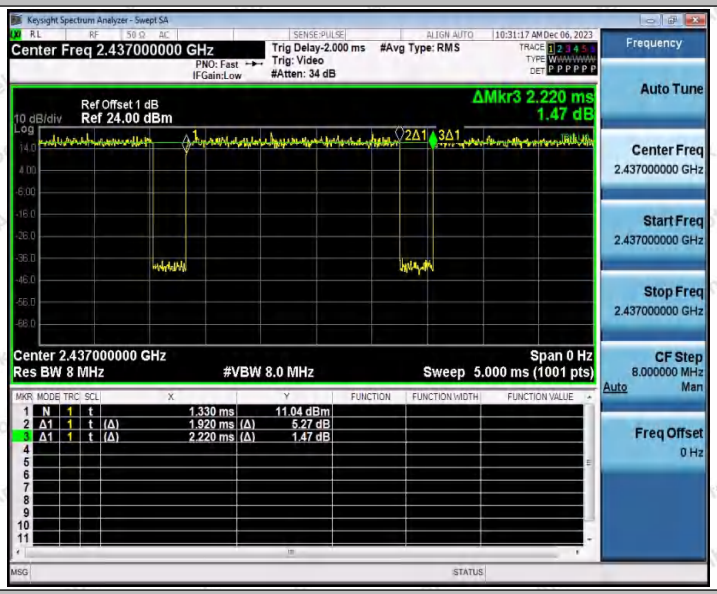
11G_Ant1_2462



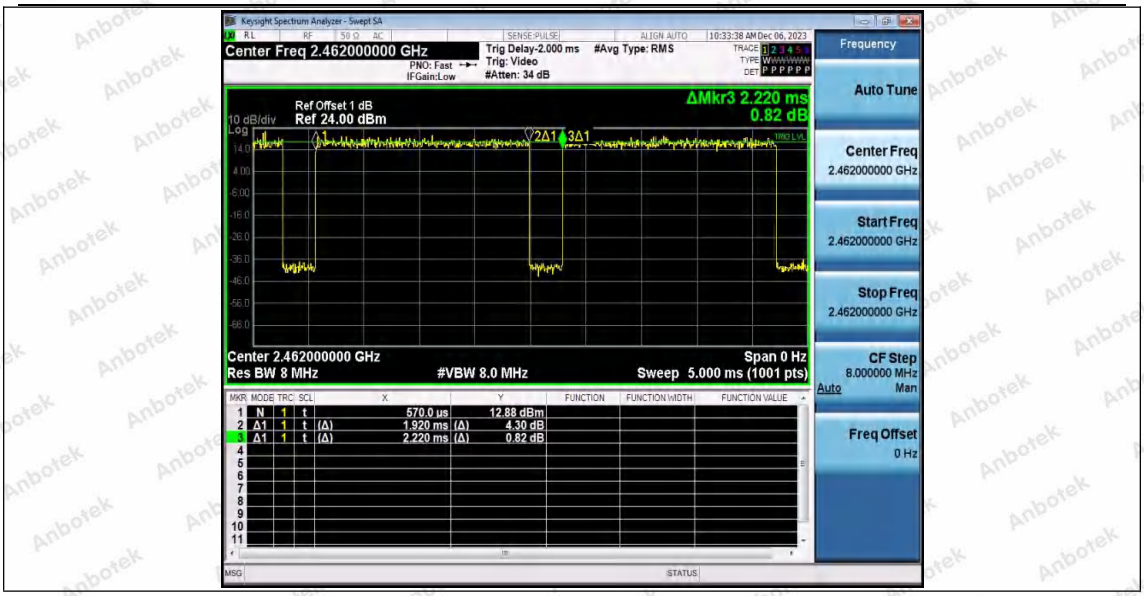
11N20SISO_Ant1_2412



11N20SISO_Ant1_2437



11N20SISO_Ant1_2462


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.462000000 GHz
PNO: Fast
IFGain:Low
Trig Delay-2.000 ms
Trig: Video
#Atten: 34 dB
#Avg Type: RMS
10:33:38 AM Dec 06, 2023
Frequency
Auto Tune
Ref Offset 1 dB
10 dB/div
Ref 24.00 dBm
ΔMkr3 2.220 ms
0.82 dB
Center Freq
2.462000000 GHz
Start Freq
2.462000000 GHz
Stop Freq
2.462000000 GHz
Center 2.462000000 GHz
Span 0 Hz
Res BW 8 MHz
#VBW 8.0 MHz
Sweep 5.000 ms (1001 pts)
CF Step
8.000000 MHz
Auto
Man
Freq Offset
0 Hz
1 N 1 t 570.0 µs 12.88 dBm
2 Δ1 1 t (Δ) 1.920 ms (Δ) 4.30 dB
3 Δ1 1 t (Δ) 2.220 ms (Δ) 0.82 dB
MSG
STATUS

---End---