



Appendix B

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: 6inch Wifi-BLE recessed down light

Test Model: LJD006SMWH

Environmental Conditions

Temperature:	22.6° C
Relative Humidity:	53.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Kay Hu
Supervised by:	Li Huan

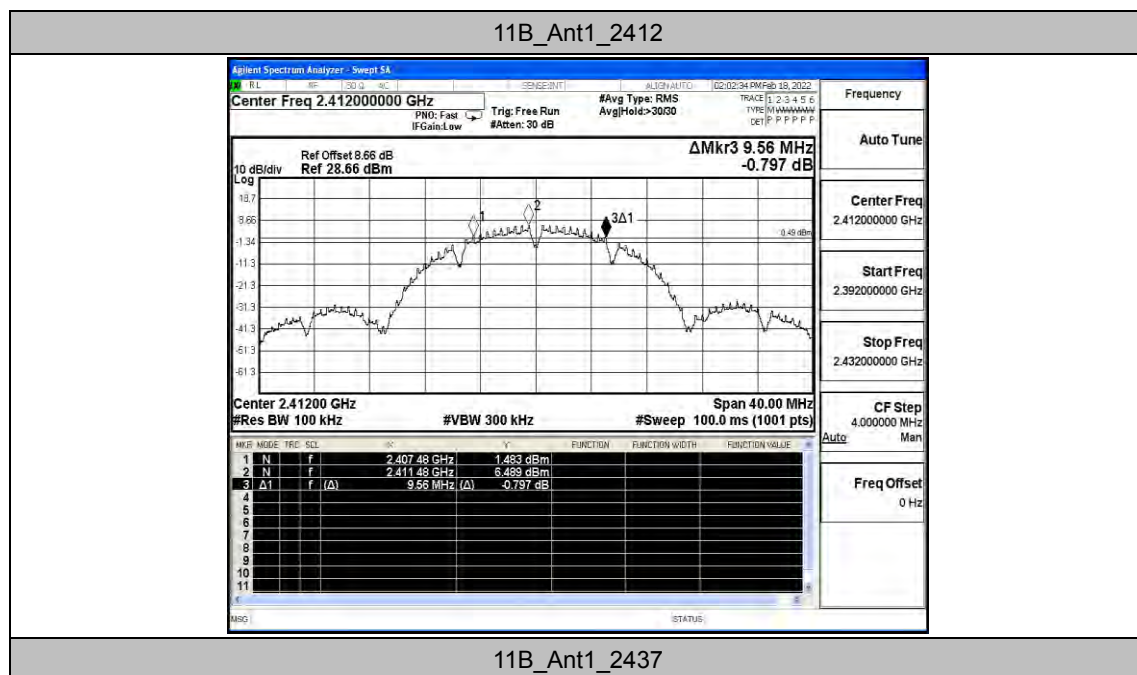


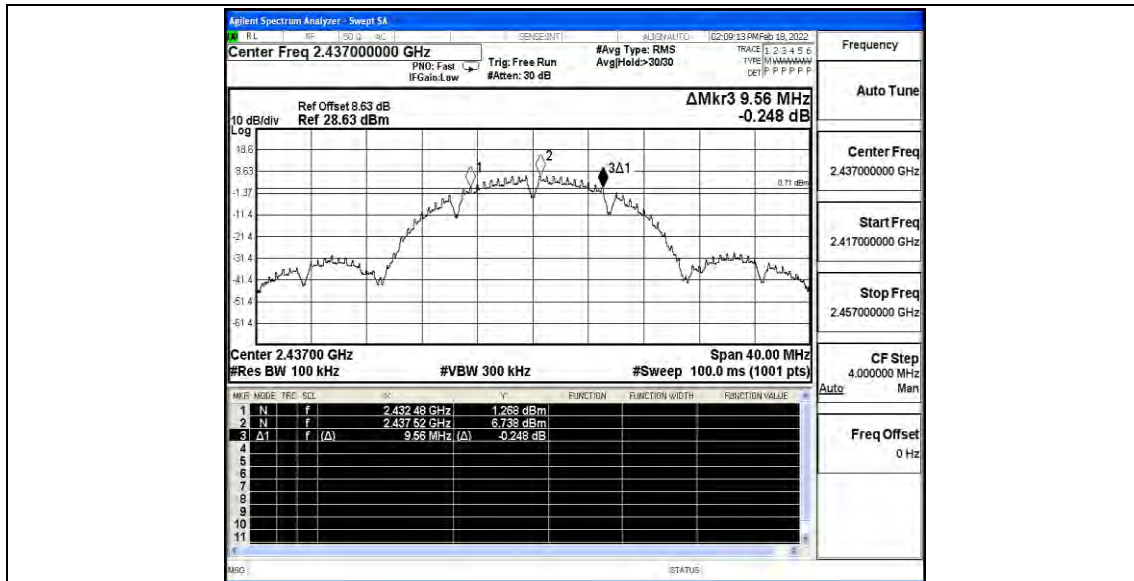
B.1 6dB Bandwidth

Test Result

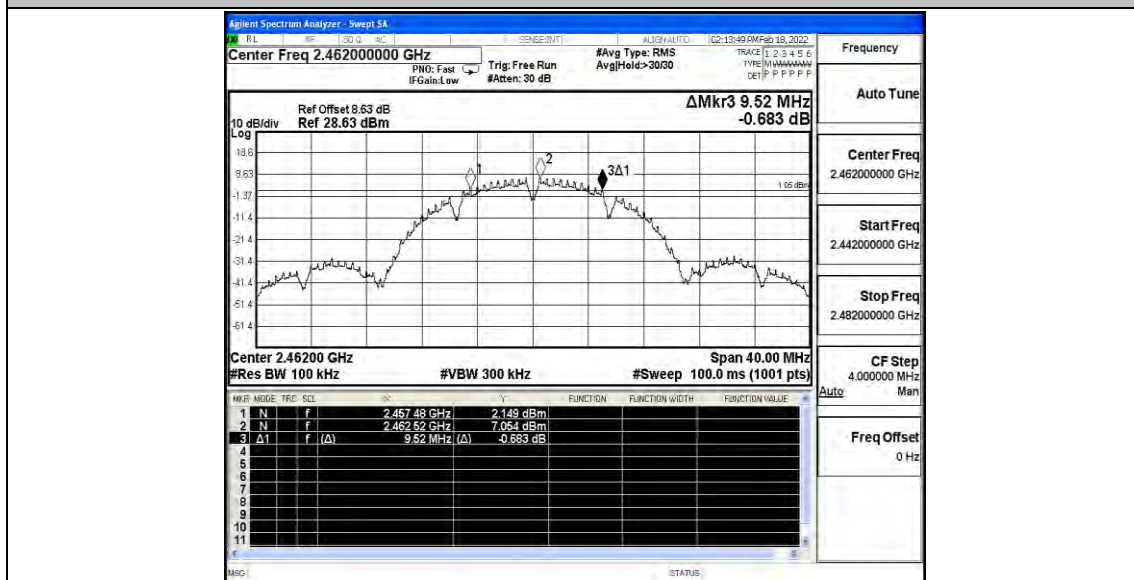
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.560	2407.480	2417.040	0.5	PASS
		2437	9.560	2432.480	2442.040	0.5	PASS
		2462	9.520	2457.480	2467.000	0.5	PASS
11G	Ant1	2412	13.800	2405.720	2419.520	0.5	PASS
		2437	13.800	2430.720	2444.520	0.5	PASS
		2462	13.800	2455.720	2469.520	0.5	PASS
11N20SISO	Ant1	2412	13.800	2405.720	2419.520	0.5	PASS
		2437	13.800	2430.720	2444.520	0.5	PASS
		2462	13.800	2455.720	2469.520	0.5	PASS
11N40SISO	Ant1	2422	33.760	2405.760	2439.520	0.5	PASS
		2437	33.760	2420.760	2454.520	0.5	PASS
		2452	33.760	2435.760	2469.520	0.5	PASS

Test Graphs

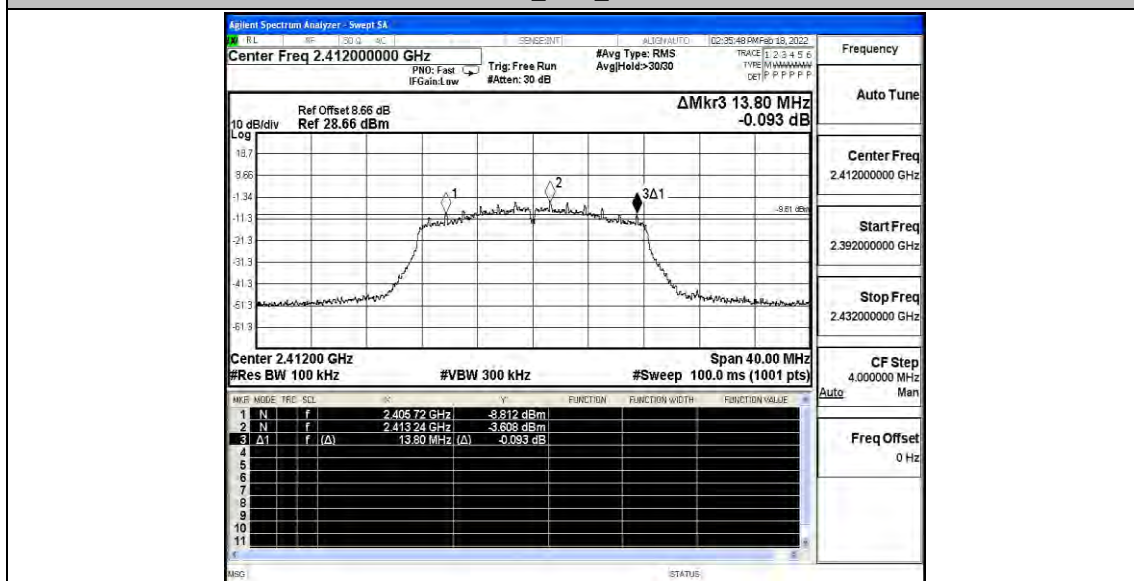




11B_Ant1_2462

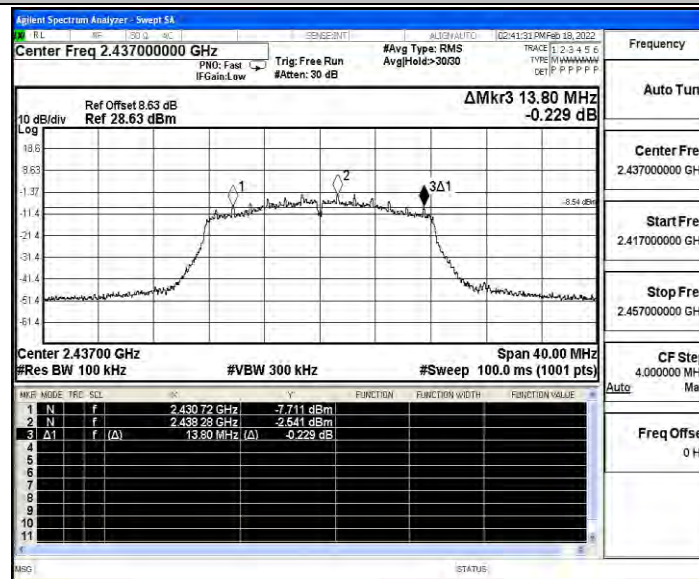


11G_Ant1_2412

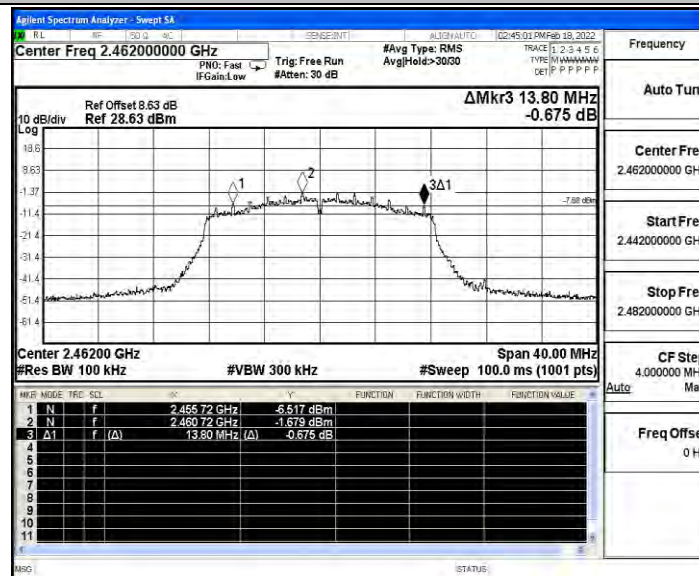




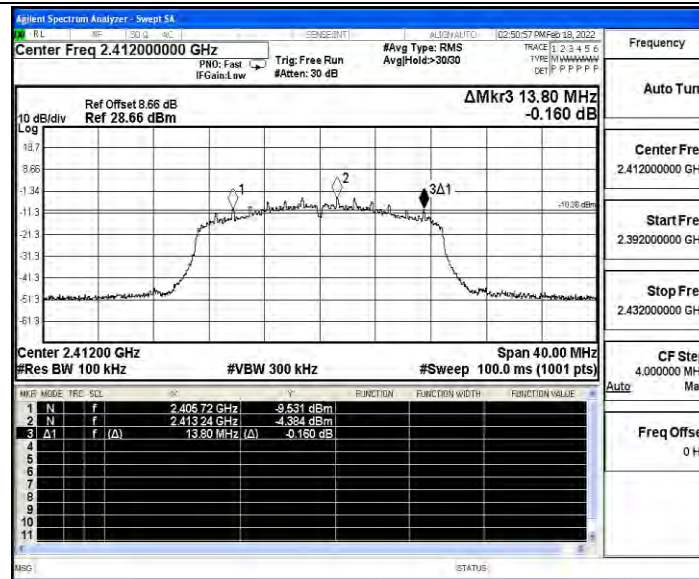
11G_Ant1_2437



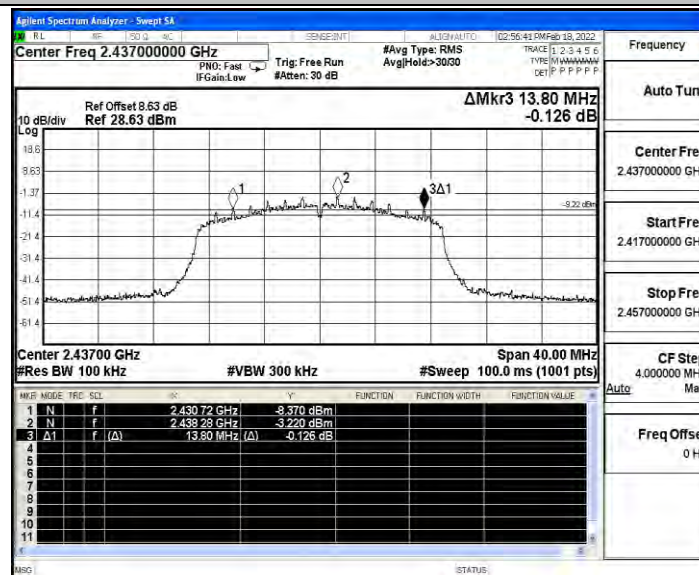
11G_Ant1_2462



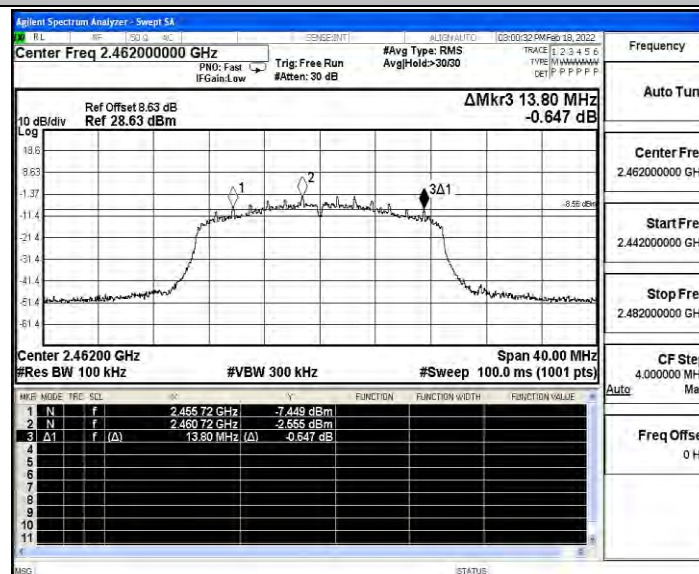
11N20SISO_Ant1_2412



11N20SISO_Ant1_2437

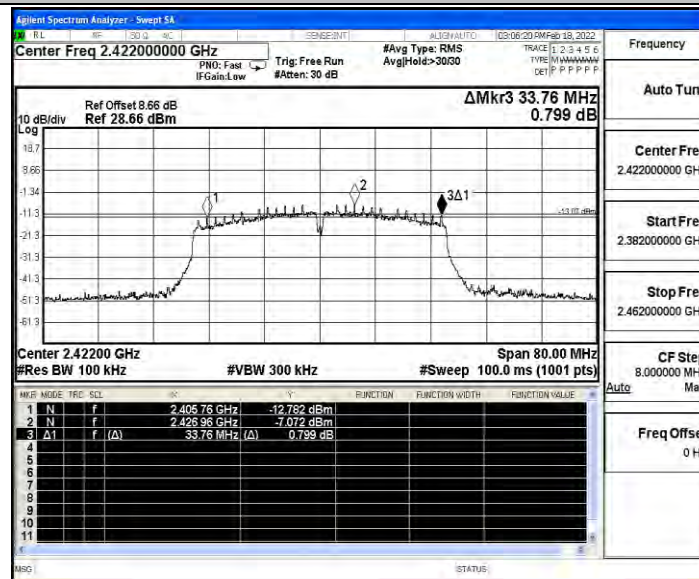


11N20SISO_Ant1_2462

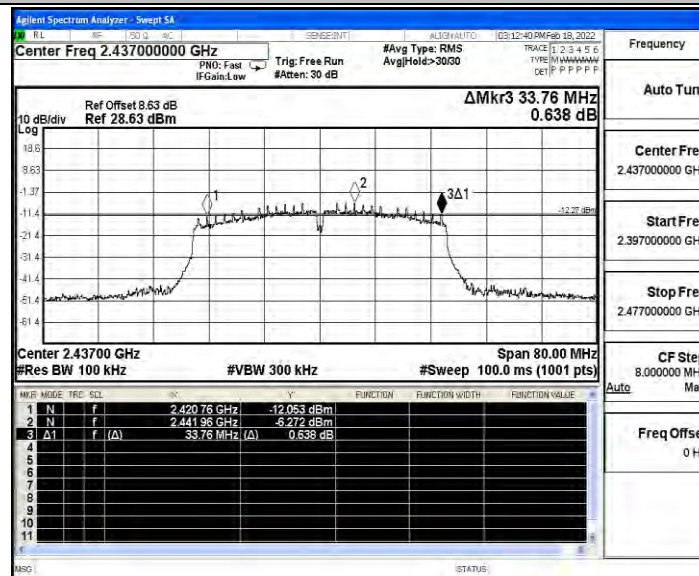




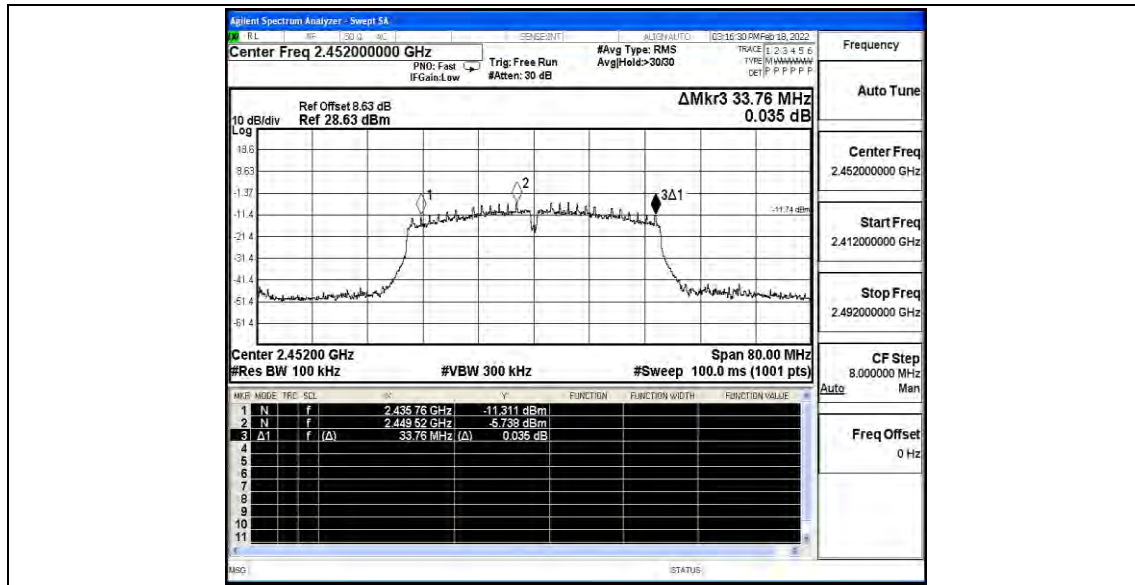
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452





B.2 Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	18.22	≤30.00	PASS
		2437	18.46	≤30.00	PASS
		2462	18.83	≤30.00	PASS
11G	Ant1	2412	13.99	≤30.00	PASS
		2437	15.09	≤30.00	PASS
		2462	16.05	≤30.00	PASS
11N20SISO	Ant1	2412	12.96	≤30.00	PASS
		2437	14.11	≤30.00	PASS
		2462	14.82	≤30.00	PASS
11N40SISO	Ant1	2422	13.74	≤30.00	PASS
		2437	14.47	≤30.00	PASS
		2452	15.10	≤30.00	PASS



Test Result

TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-8.29	≤8.00	PASS
		2437	-7.78	≤8.00	PASS
		2462	-7.37	≤8.00	PASS
11G	Ant1	2412	-17.35	≤8.00	PASS
		2437	-15.76	≤8.00	PASS
		2462	-15.96	≤8.00	PASS
11N20SISO	Ant1	2412	-18.27	≤8.00	PASS
		2437	-17.88	≤8.00	PASS
		2462	-16.29	≤8.00	PASS
11N40SISO	Ant1	2422	-21.15	≤8.00	PASS
		2437	-19.9	≤8.00	PASS
		2452	-19.62	≤8.00	PASS

Agilent Spectrum Analyzer - Sweet 5A

Center Freq 2.41200000 GHz PNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB #Avg Type: RMS Avg/Hold: 2/2

Ref Offset: 8.86 dB Ref 25.00 dBm Mkr1 2.412 803 GHz -8.286 dBm

10 dB/div Log

Center Freq 2.412000 GHz #Res BW 3.0 kHz #VBW 10 kHz #Sweep 6.120 s (1001 pts)

Frequency

Auto Tune

Center Freq 2.41200000 GHz

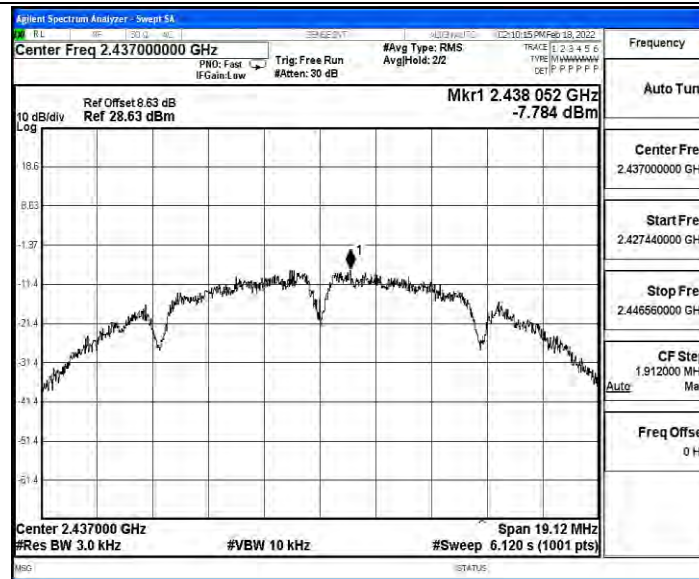
Start Freq 2.40240000 GHz

Stop Freq 2.42160000 GHz

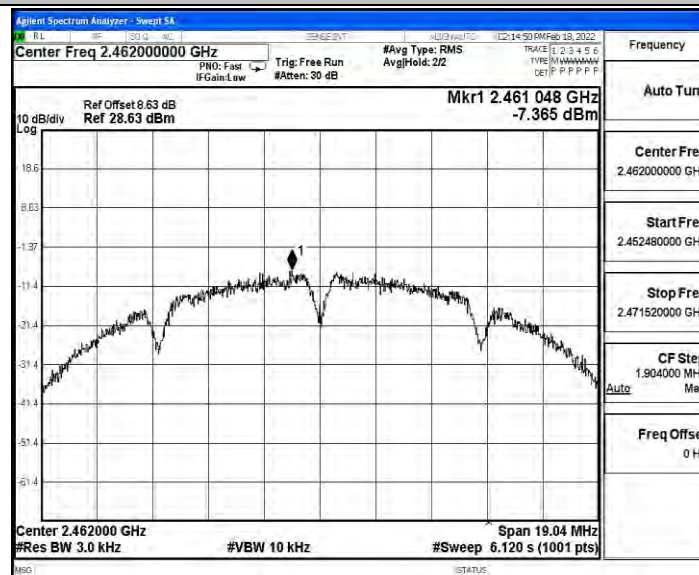
CF Step 1.912000 MHz Man

Freq Offset 0 Hz

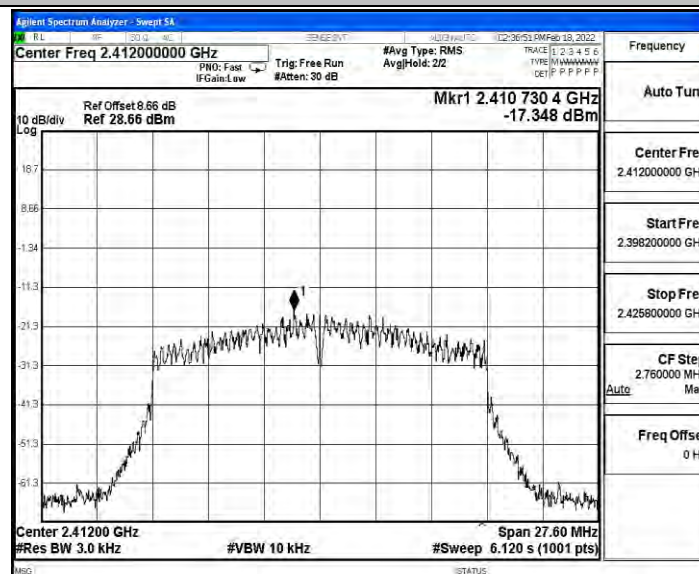
MAG STATUS



11B_Ant1_2462

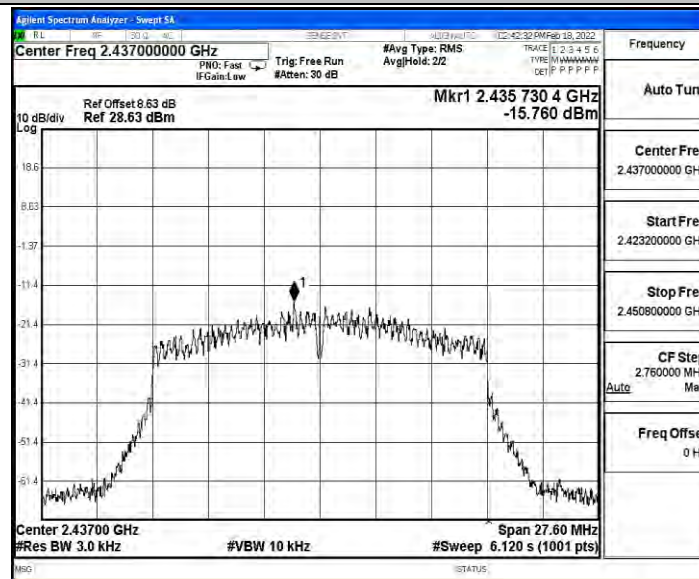


11G_Ant1_2412

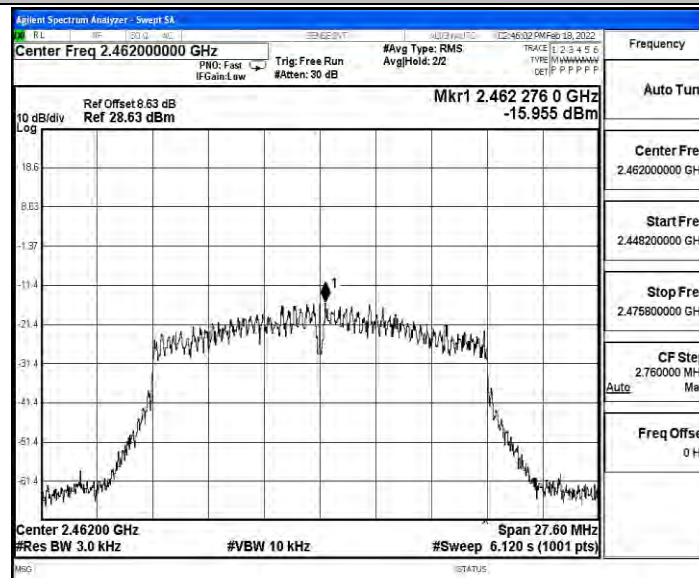




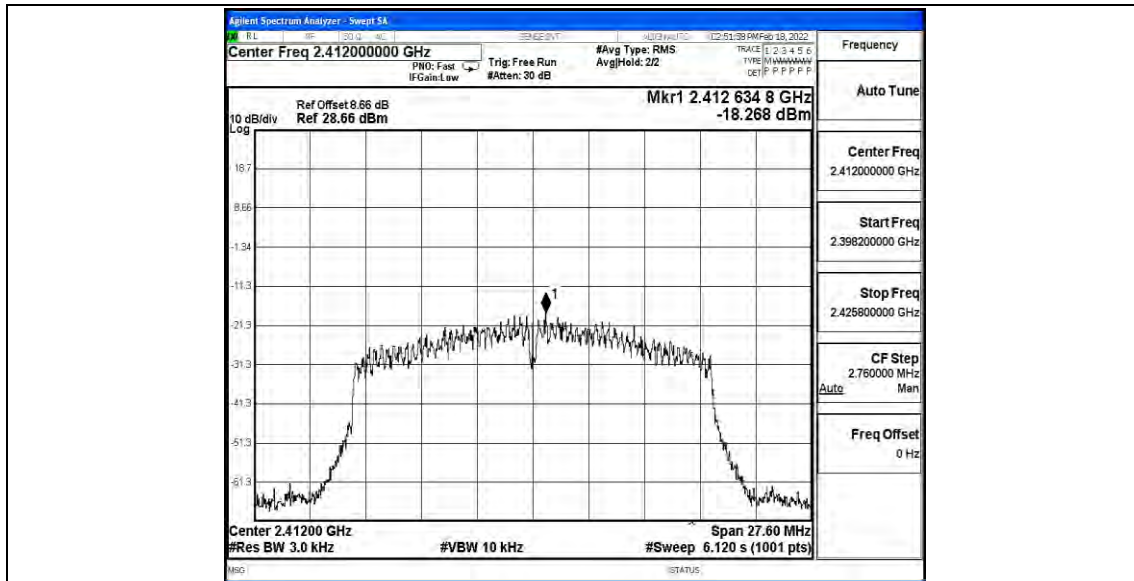
11G_Ant1_2437



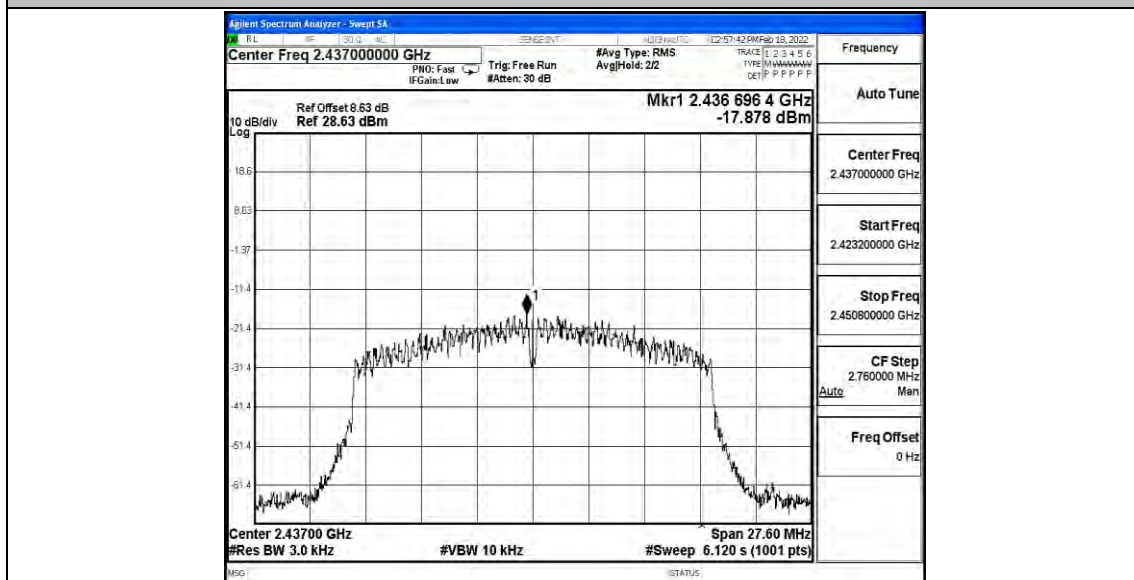
11G_Ant1_2462



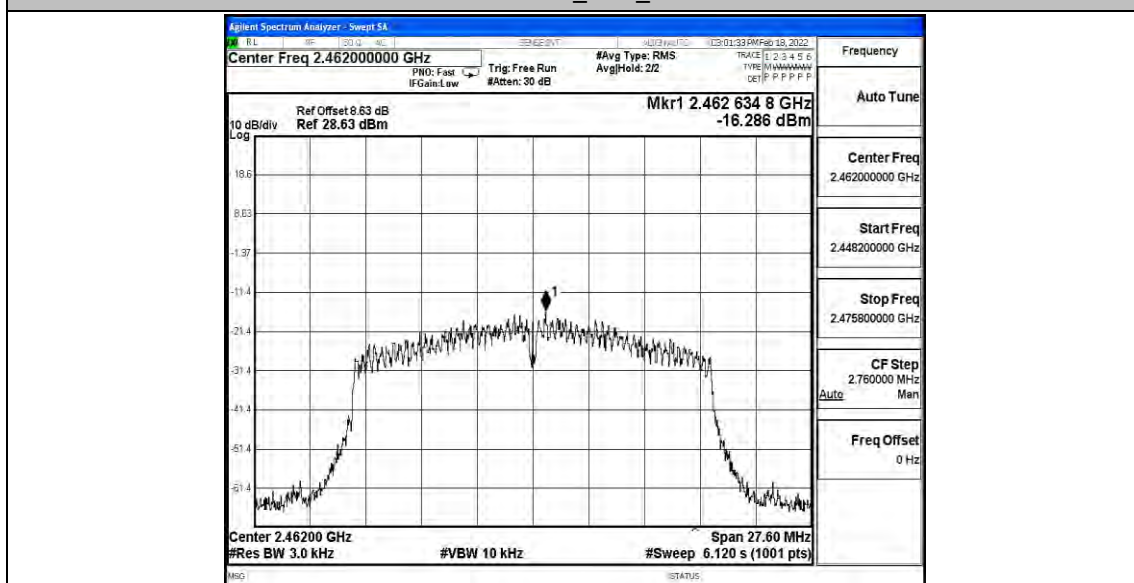
11N20SISO_Ant1_2412



11N20SISO_Ant1_2437

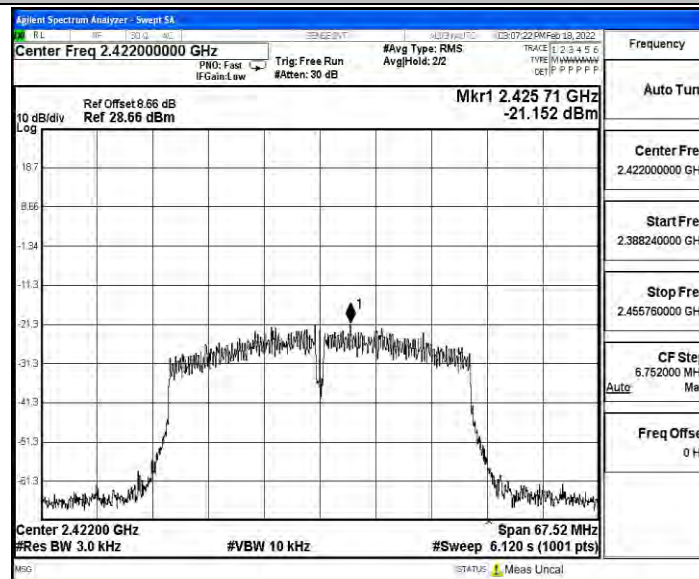


11N20SISO_Ant1_2462

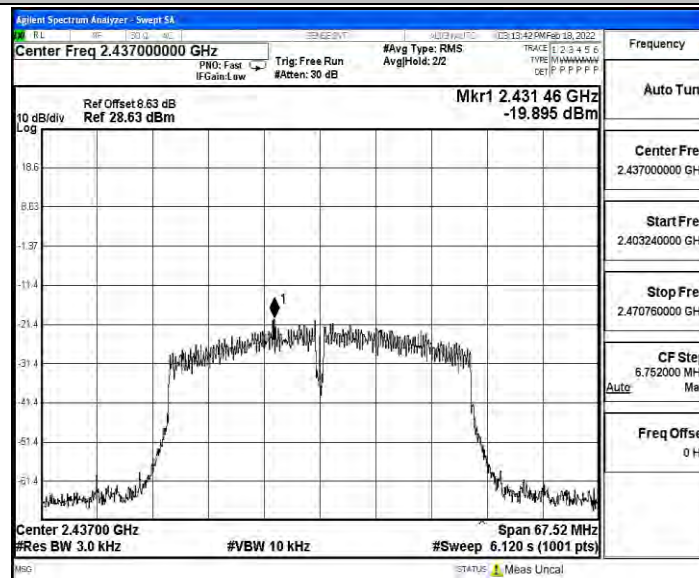




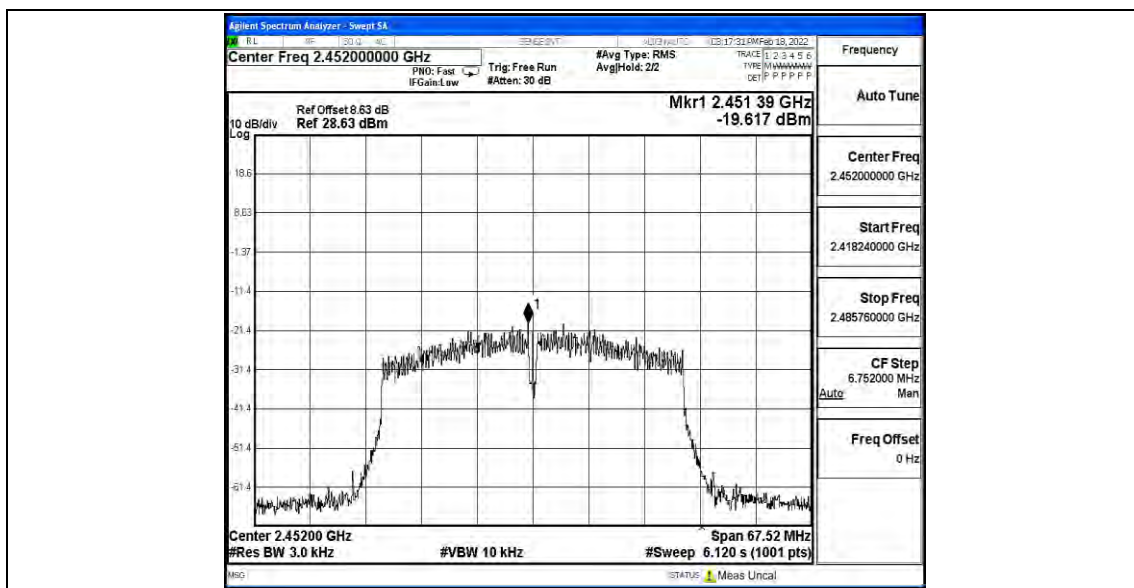
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



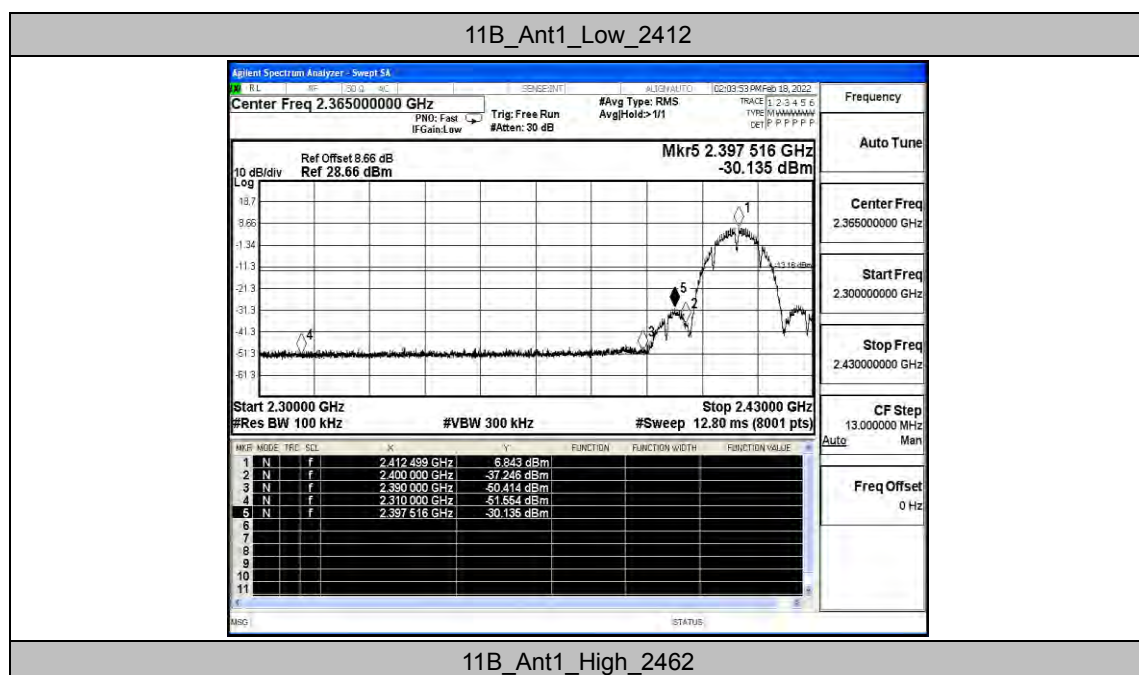


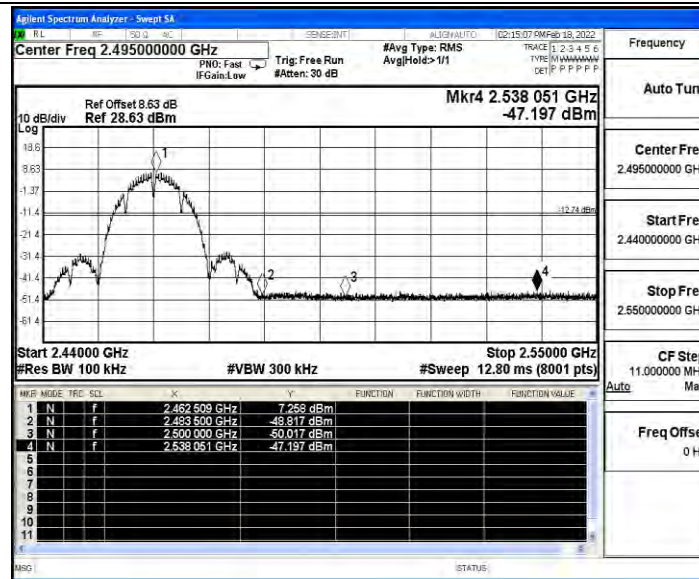
B.4 Band edge measurements

Test Result

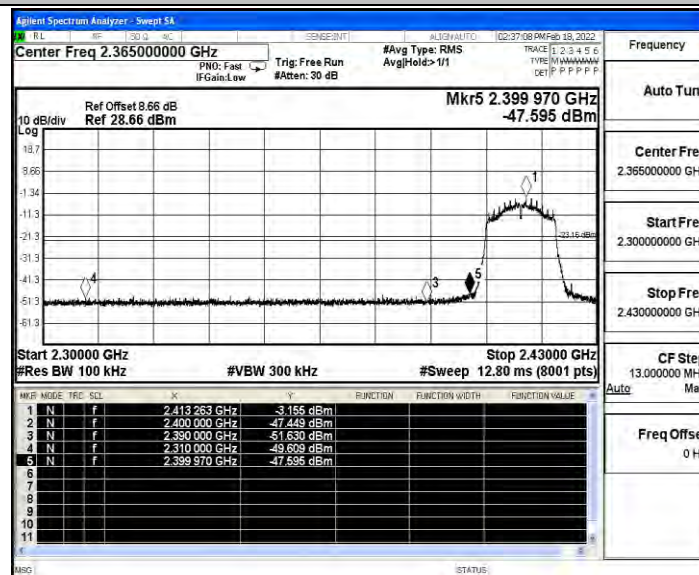
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	6.84	-30.14	≤-13.16	PASS
		High	2462	7.26	-47.2	≤-12.74	PASS
11G	Ant1	Low	2412	-3.16	-47.6	≤-23.16	PASS
		High	2462	-1.83	-47.6	≤-21.83	PASS
11N20SISO	Ant1	Low	2412	-3.90	-47.54	≤-23.9	PASS
		High	2462	-2.11	-46.81	≤-22.11	PASS
11N40SISO	Ant1	Low	2422	-6.91	-46.3	≤-26.91	PASS
		High	2452	-5.57	-46.94	≤-25.57	PASS

Test Graphs

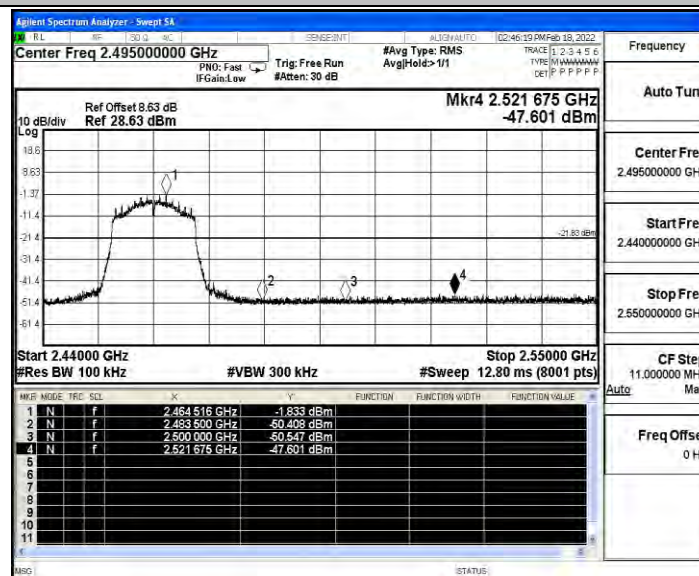




11G_Ant1_Low_2412

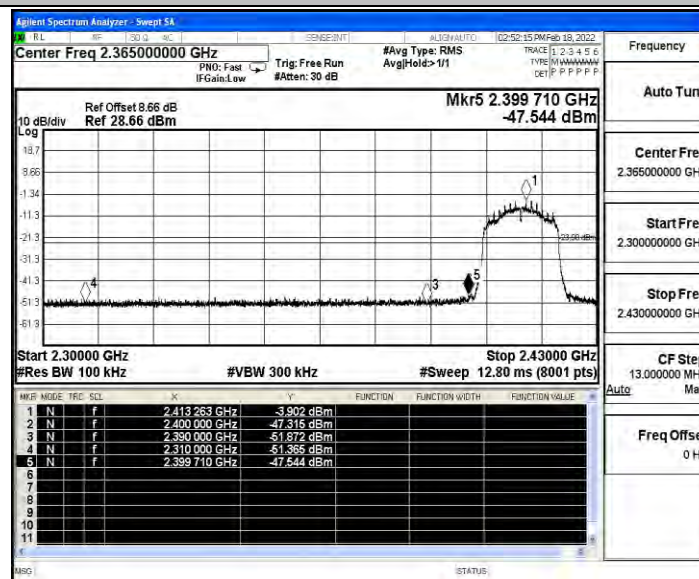


11G_Ant1_High_2462

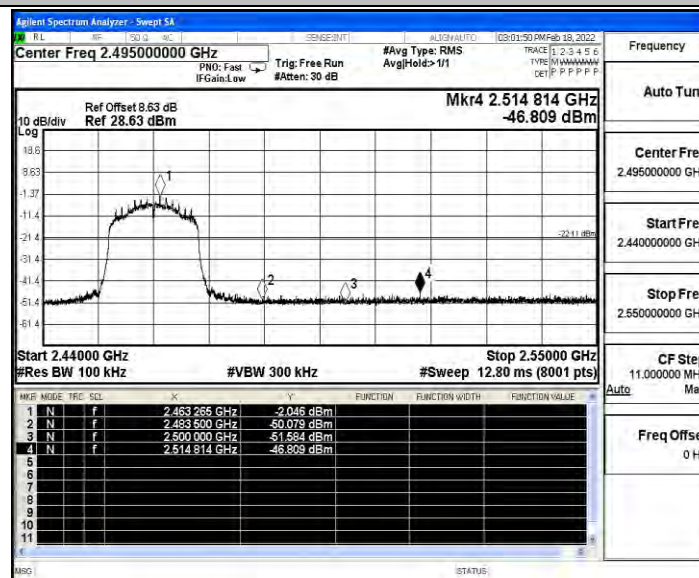




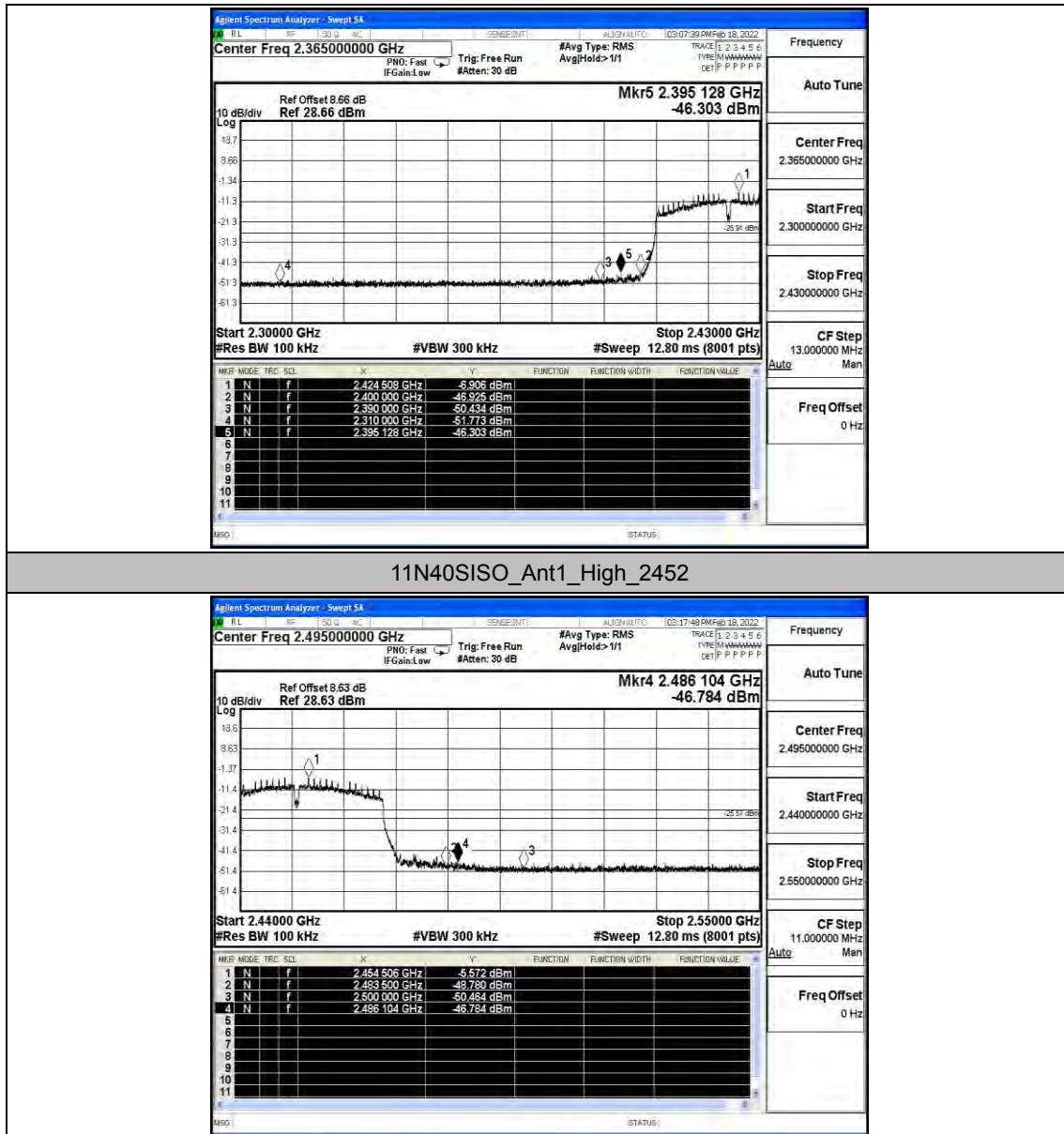
11N20SISO_Ant1_Low_2412



11N20SISO_Ant1_High_2462



11N40SISO_Ant1_Low_2422





B.5 Conducted Spurious Emission

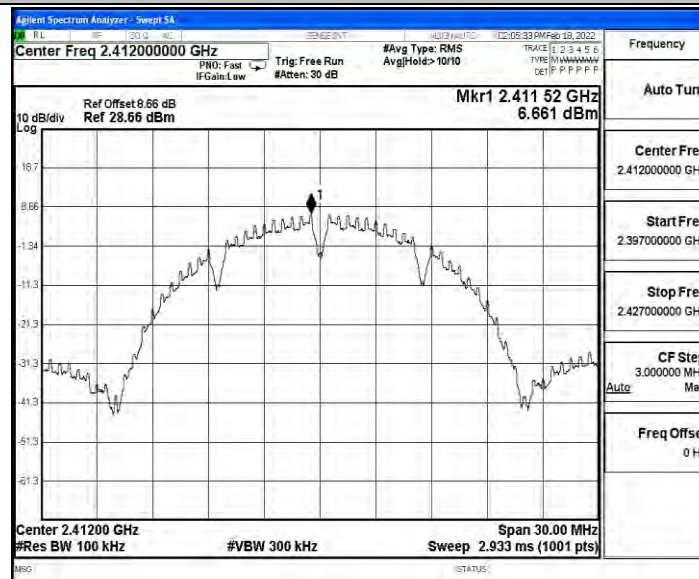
Test Result

TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	6.66	6.66	---	PASS
			30~1000	6.66	-59.91	≤-13.34	PASS
			1000~26500	6.66	-45.59	≤-13.34	PASS
		2437	Reference	6.95	6.95	---	PASS
			30~1000	6.95	-60.4	≤-13.05	PASS
			1000~26500	6.95	-45.44	≤-13.05	PASS
		2462	Reference	7.02	7.02	---	PASS
			30~1000	7.02	-60.53	≤-12.98	PASS
			1000~26500	7.02	-44.27	≤-12.98	PASS
11G	Ant1	2412	Reference	-3.16	-3.16	---	PASS
			30~1000	-3.16	-60.52	≤-23.16	PASS
			1000~26500	-3.16	-45.71	≤-23.16	PASS
		2437	Reference	-2.05	-2.05	---	PASS
			30~1000	-2.05	-60.81	≤-22.05	PASS
			1000~26500	-2.05	-45.87	≤-22.05	PASS
		2462	Reference	-1.09	-1.09	---	PASS
			30~1000	-1.09	-40.24	≤-21.09	PASS
			1000~26500	-1.09	-45.65	≤-21.09	PASS
11N20SISO	Ant1	2412	Reference	-3.91	-3.91	---	PASS
			30~1000	-3.91	-52.14	≤-23.91	PASS
			1000~26500	-3.91	-45.07	≤-23.91	PASS
		2437	Reference	-3.12	-3.12	---	PASS
			30~1000	-3.12	-55.99	≤-23.12	PASS
			1000~26500	-3.12	-46.25	≤-23.12	PASS
		2462	Reference	-2.54	-2.54	---	PASS
			30~1000	-2.54	-56.7	≤-22.54	PASS
			1000~26500	-2.54	-45.9	≤-22.54	PASS
11N40SISO	Ant1	2422	Reference	-6.94	-6.94	---	PASS
			30~1000	-6.94	-55.78	≤-26.94	PASS
			1000~26500	-6.94	-45.32	≤-26.94	PASS
		2437	Reference	-6.05	-6.05	---	PASS
			30~1000	-6.05	-57	≤-26.05	PASS
			1000~26500	-6.05	-46.32	≤-26.05	PASS
		2452	Reference	-5.50	-5.50	---	PASS
			30~1000	-5.50	-56.44	≤-25.5	PASS
			1000~26500	-5.50	-43.25	≤-25.5	PASS

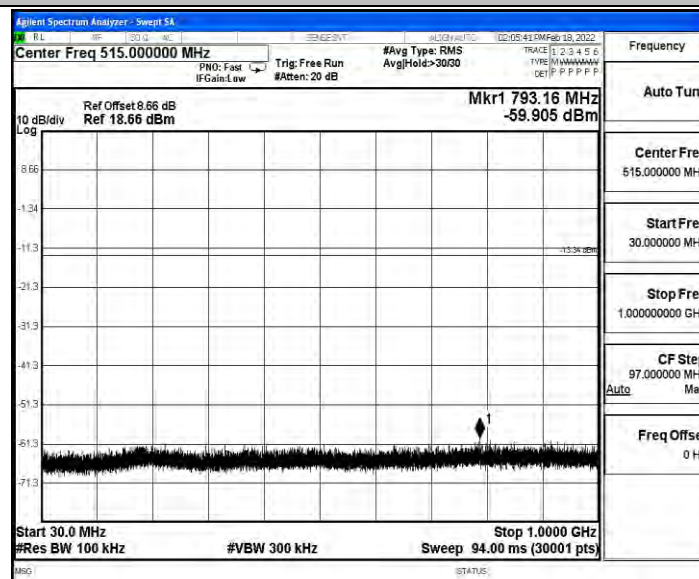


Test Graphs

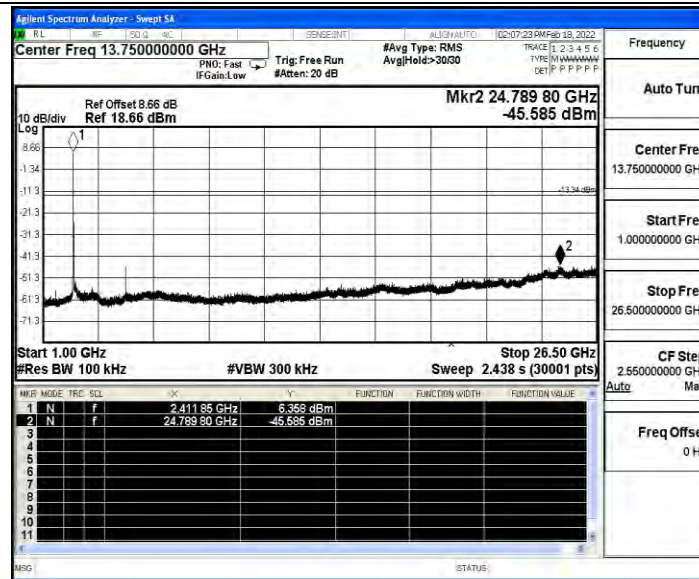
11B_Ant1_2412_0~Reference



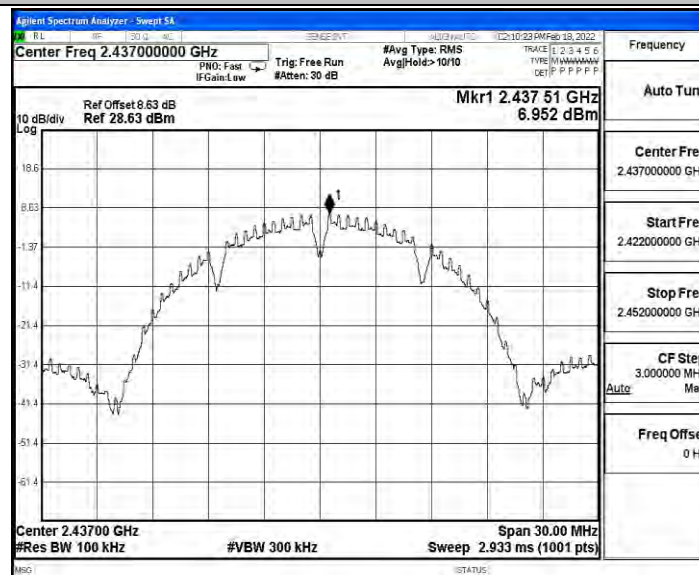
11B_Ant1_2412_30~1000



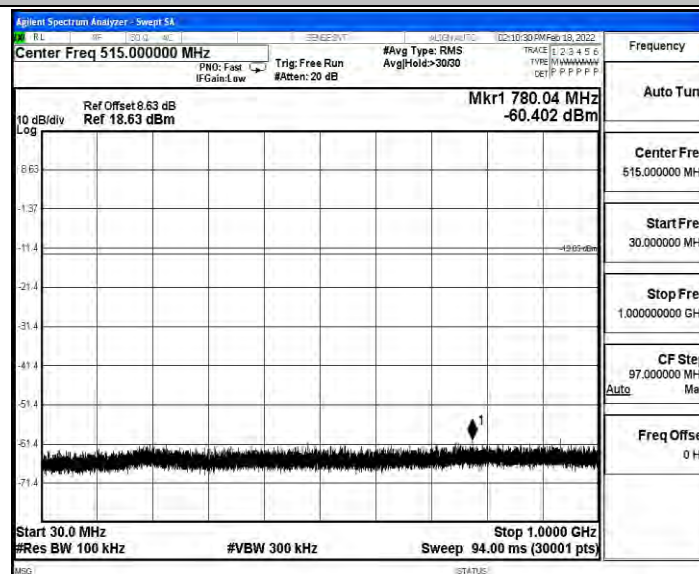
11B_Ant1_2412_1000~26500



11B_Ant1_2437_0~Reference

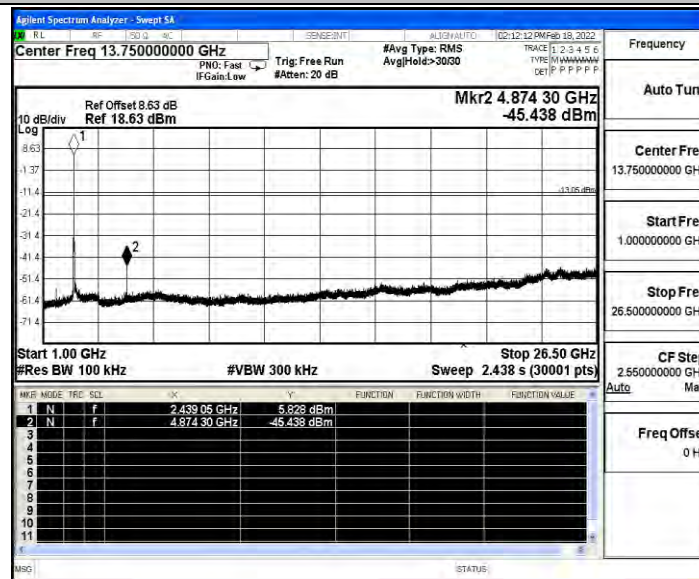


11B_Ant1_2437_30~1000

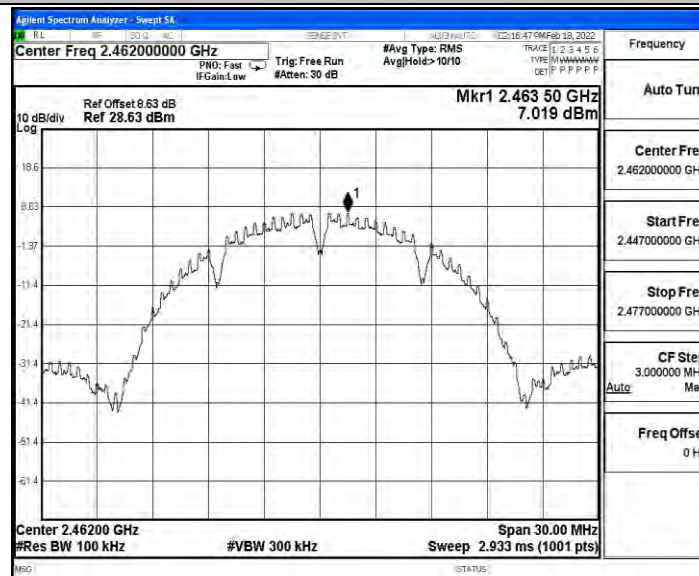




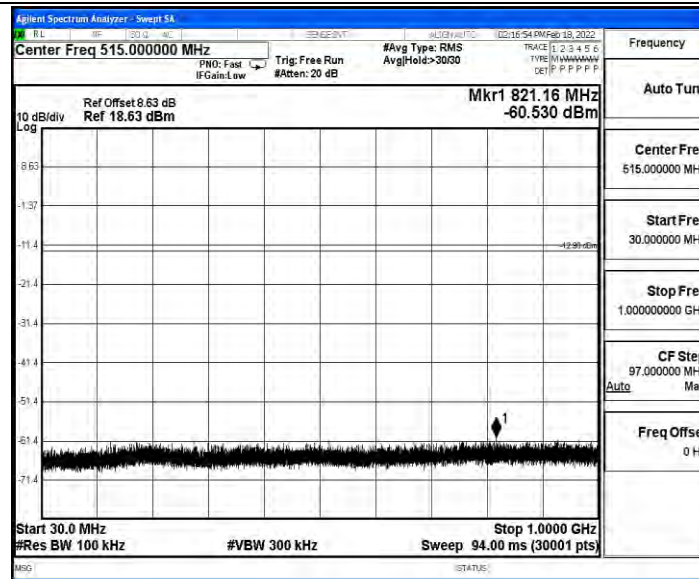
11B_Ant1_2437_1000~26500



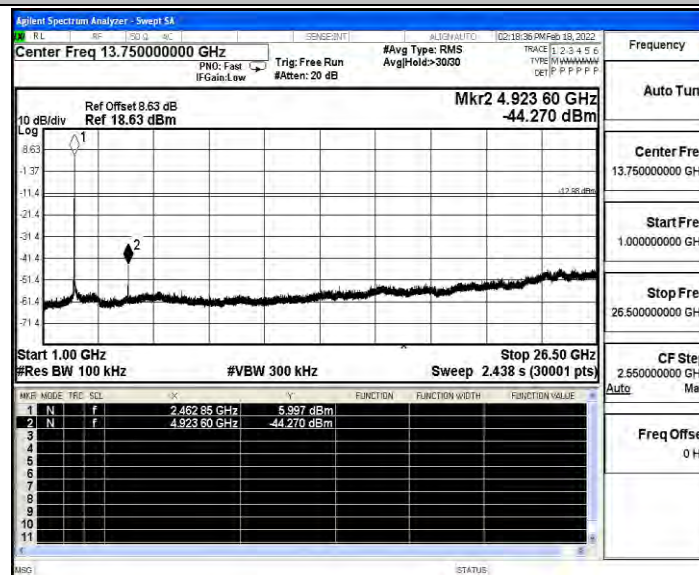
11B_Ant1_2462_0~Reference



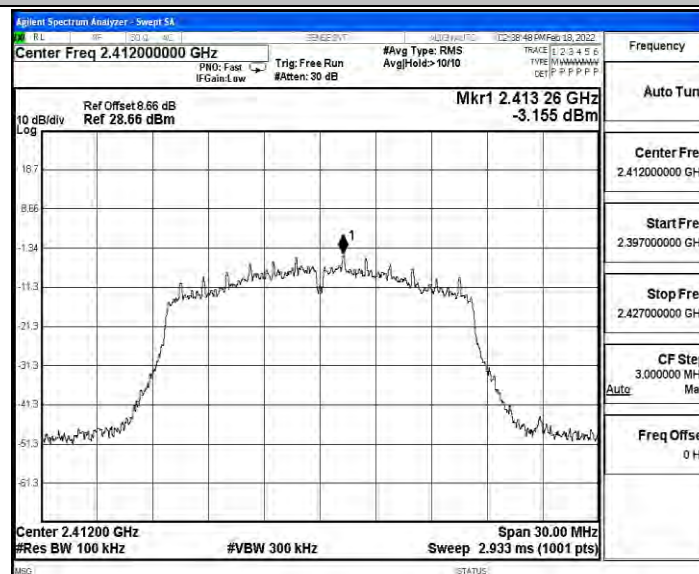
11B_Ant1_2462_30~1000



11B_Ant1_2462_1000~26500

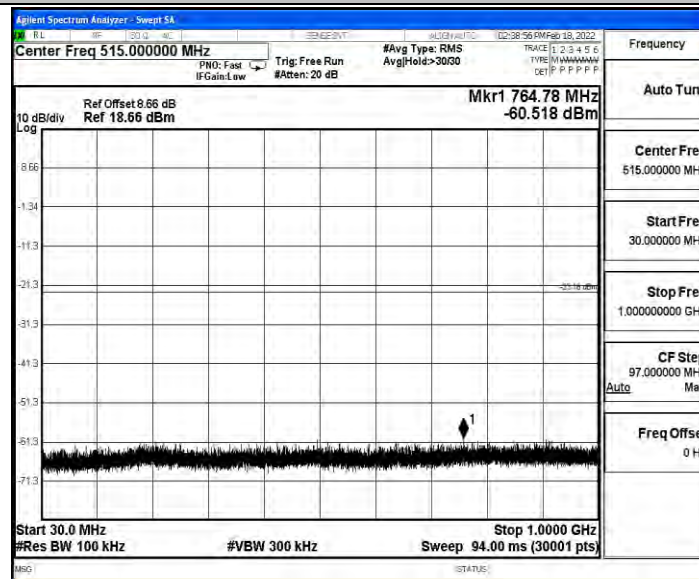


11G_Ant1_2412_0~Reference

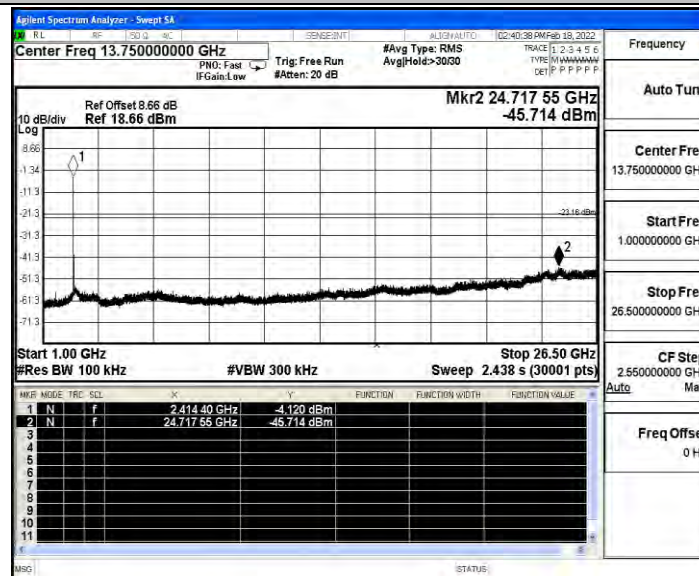




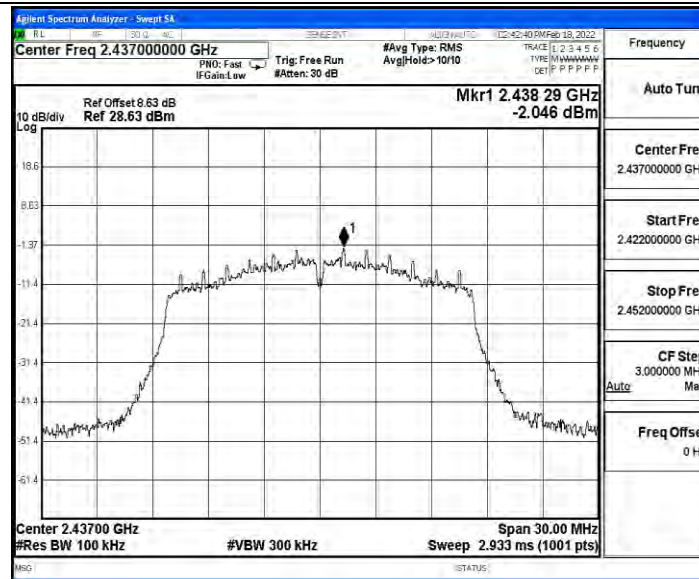
11G_Ant1_2412_30~1000



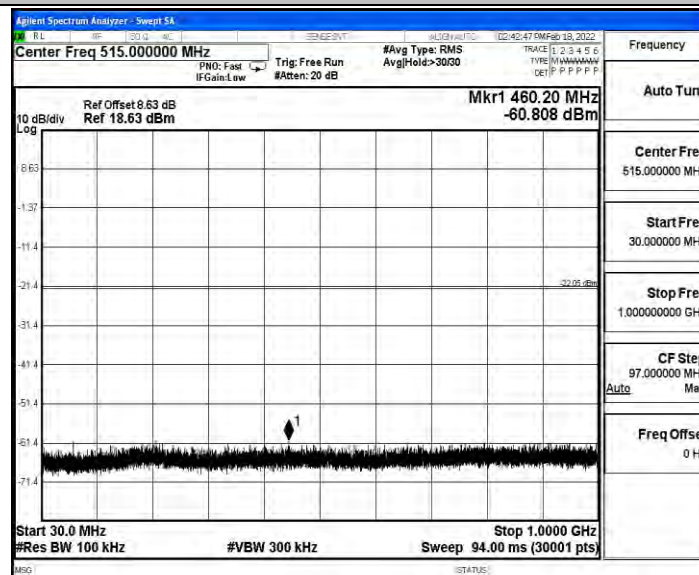
11G_Ant1_2412_1000~26500



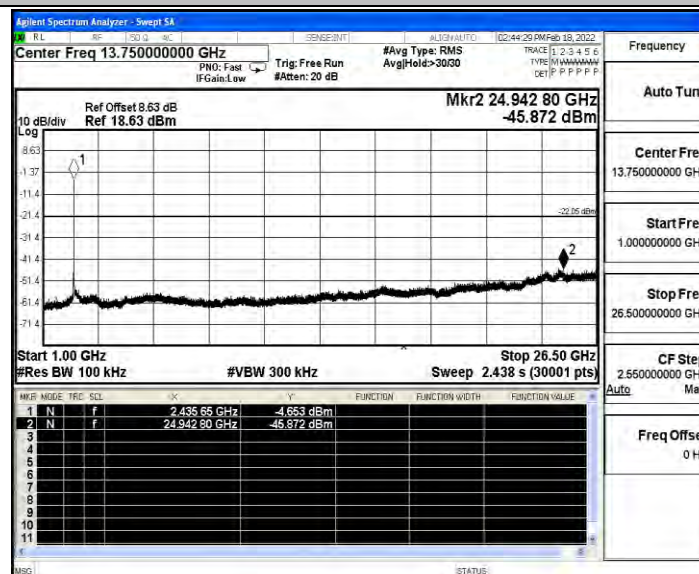
11G_Ant1_2437_0~Reference



11G_Ant1_2437_30~1000

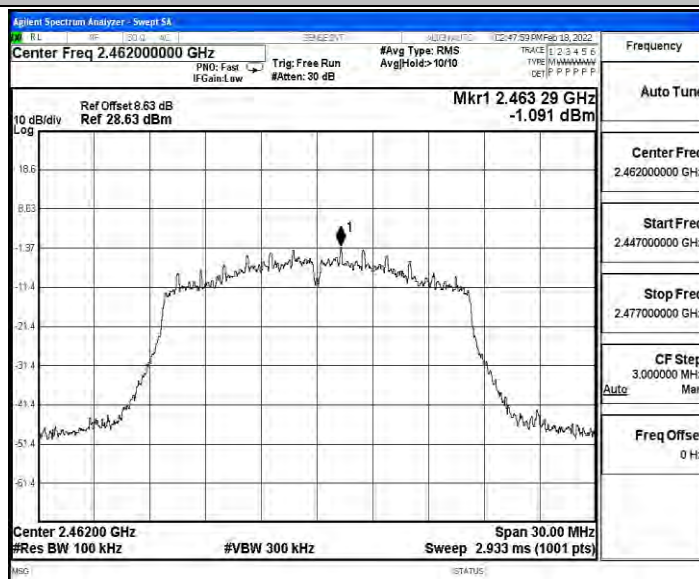


11G_Ant1_2437_1000~26500

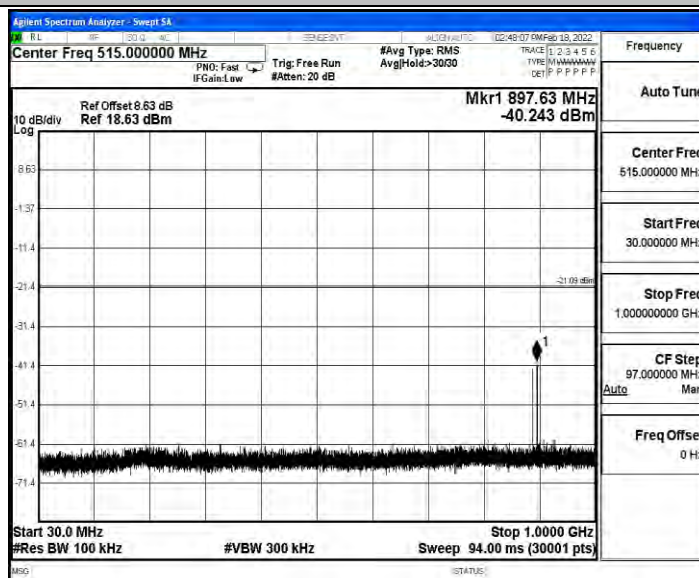




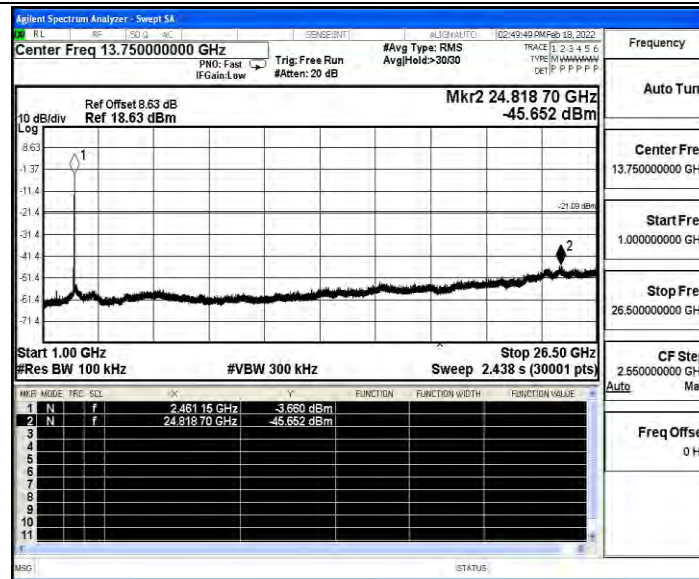
11G_Ant1_2462_0~Reference



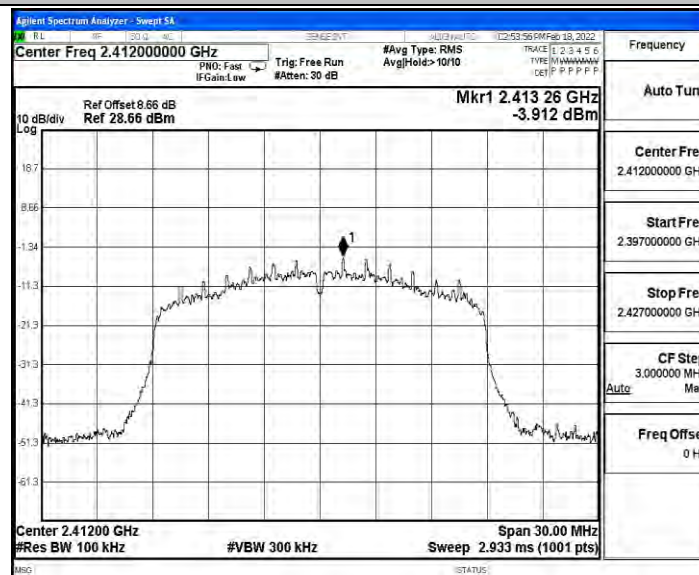
11G_Ant1_2462_30~1000



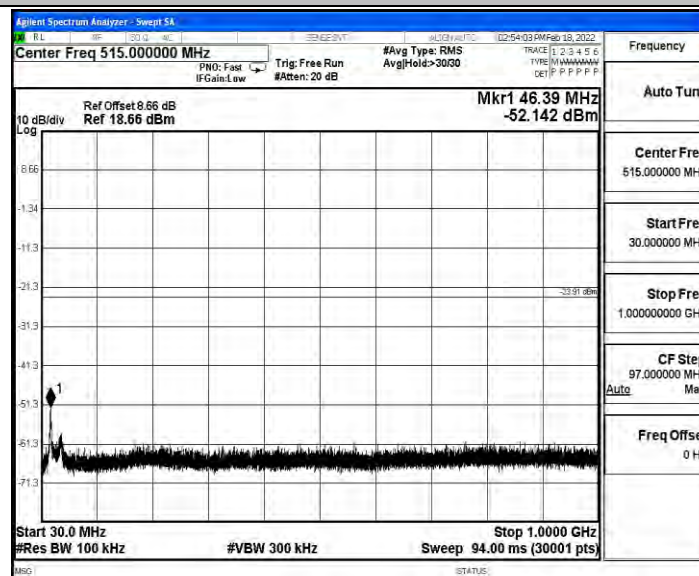
11G_Ant1_2462_1000~26500



11N20SISO_Ant1_2412_0~Reference

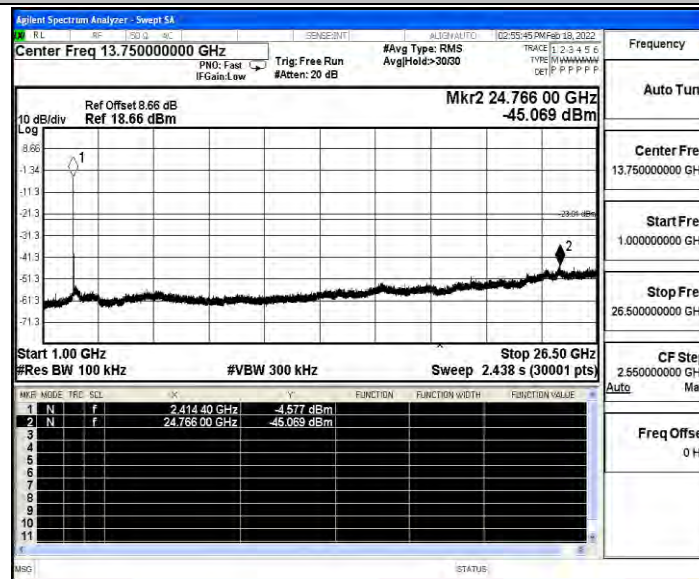


11N20SISO_Ant1_2412_30~1000

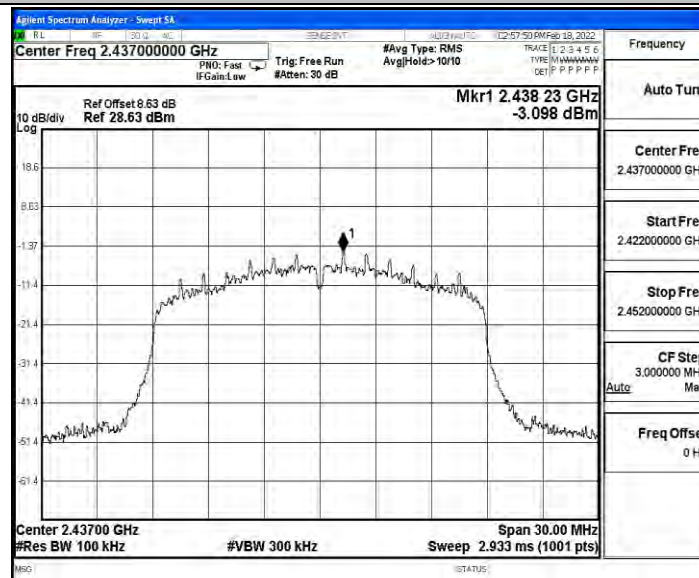




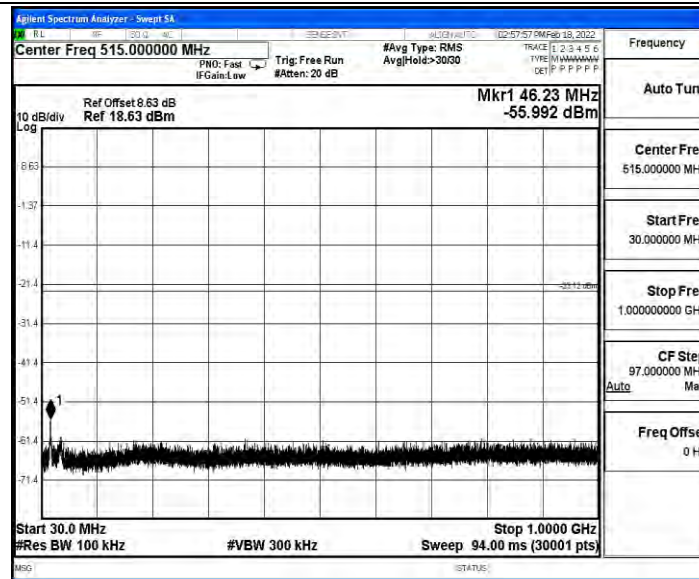
11N20SISO_Ant1_2412_1000~26500



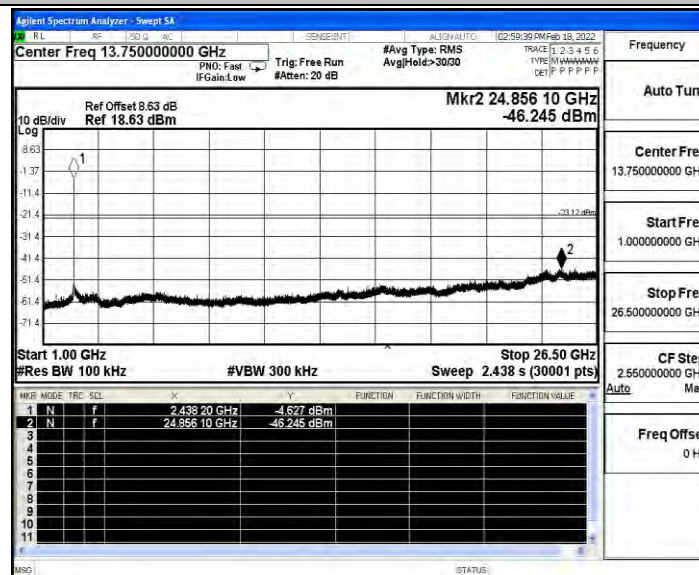
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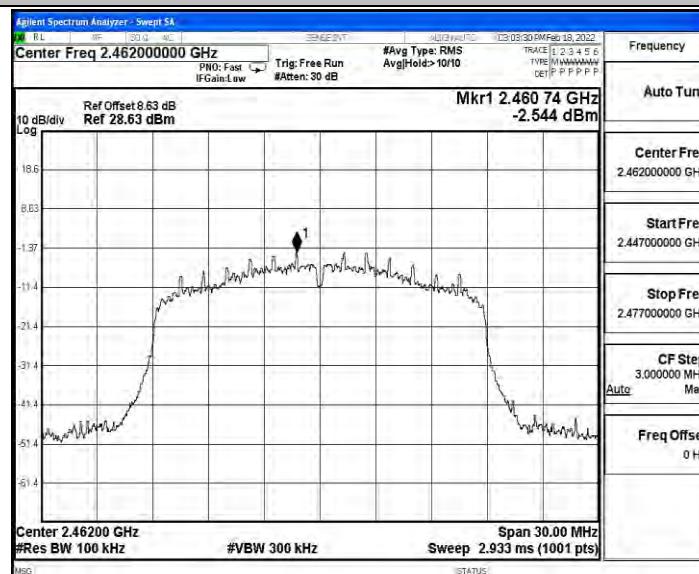
11N20SISO_Ant1_2437_30~1000



11N20SISO_Ant1_2437_1000~26500

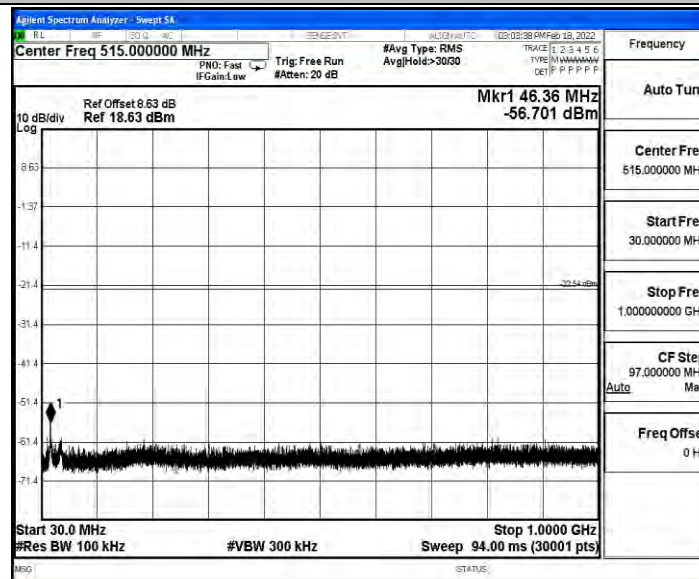


11N20SISO_Ant1_2462_0~Reference

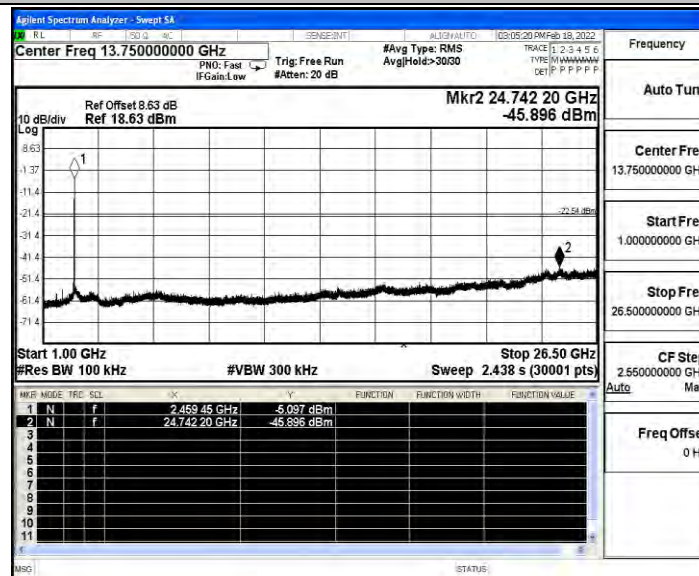




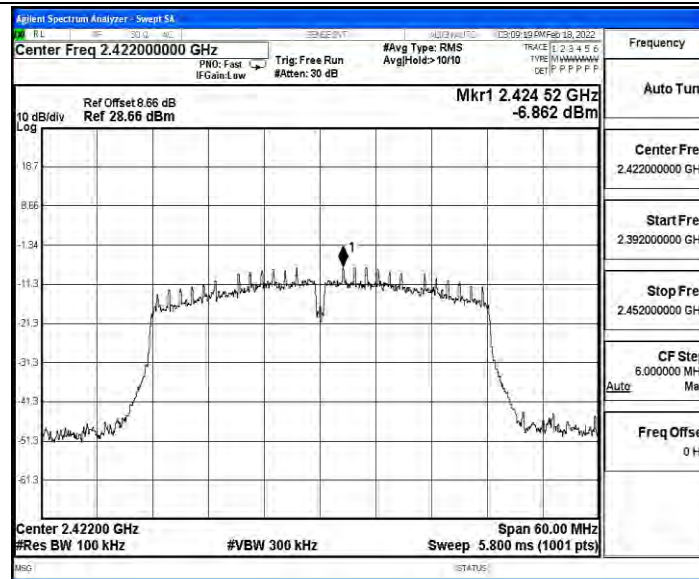
11N20SISO_Ant1_2462_30~1000



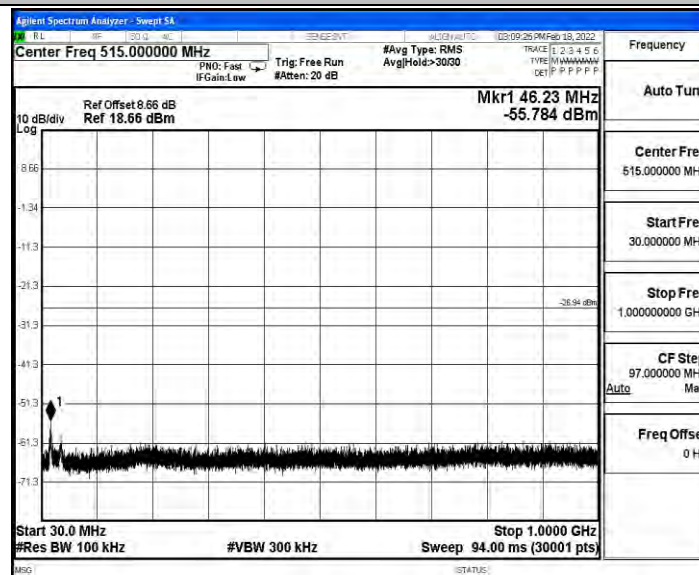
11N20SISO_Ant1_2462_1000~26500



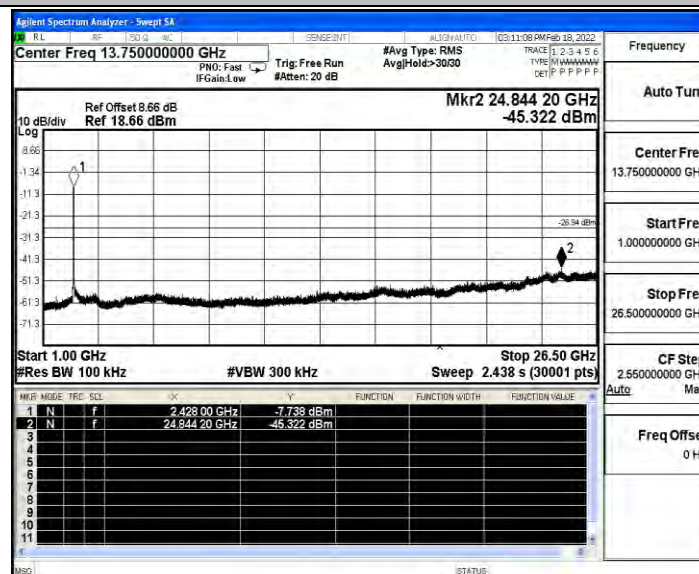
11N40SISO_Ant1_2422_0~Reference



11N40SISO_Ant1_2422_30~1000

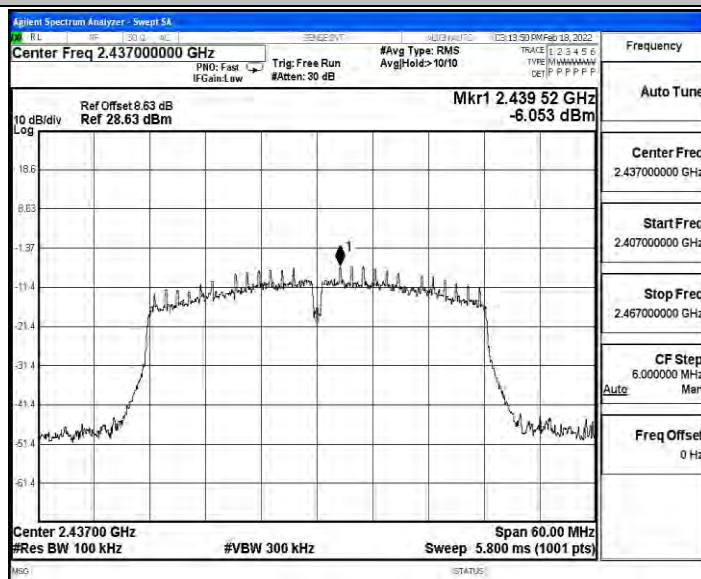


11N40SISO_Ant1_2422_1000~26500

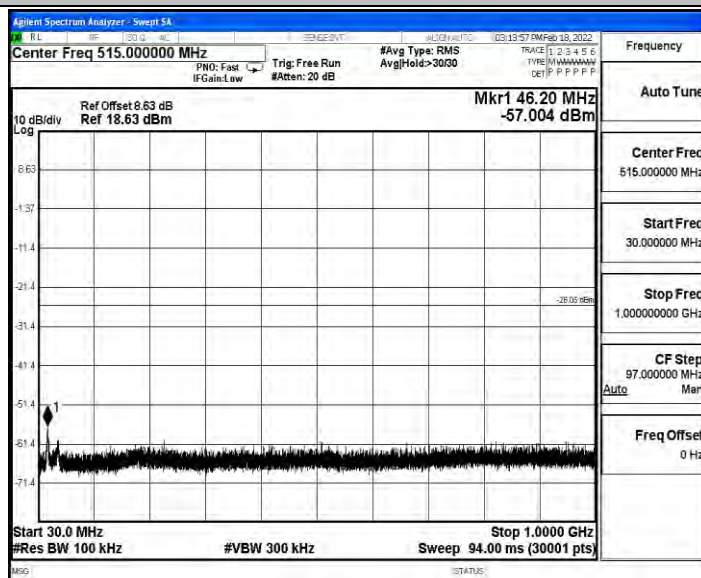




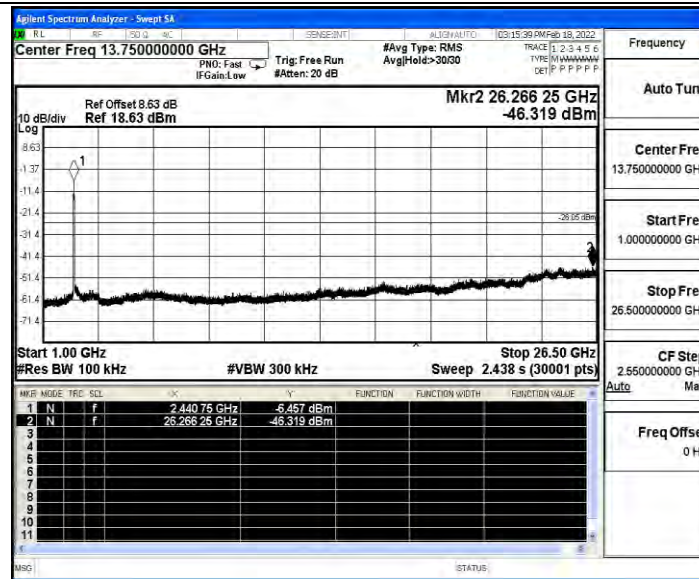
11N40SISO_Ant1_2437_0~Reference



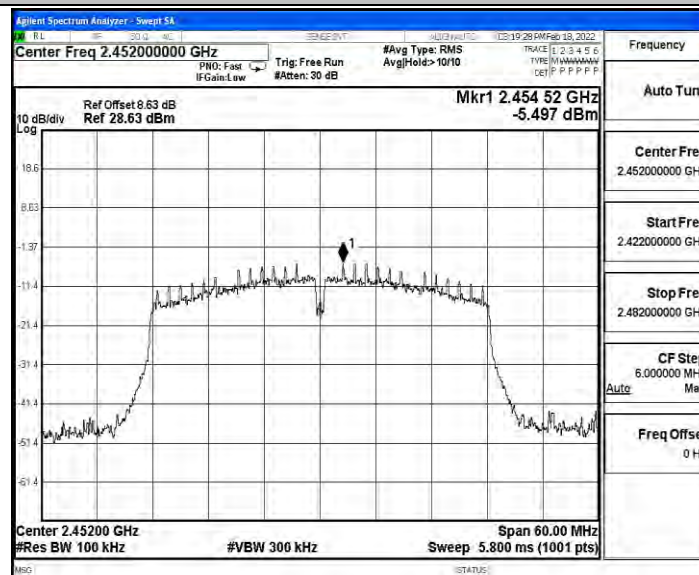
11N40SISO_Ant1_2437_30~1000



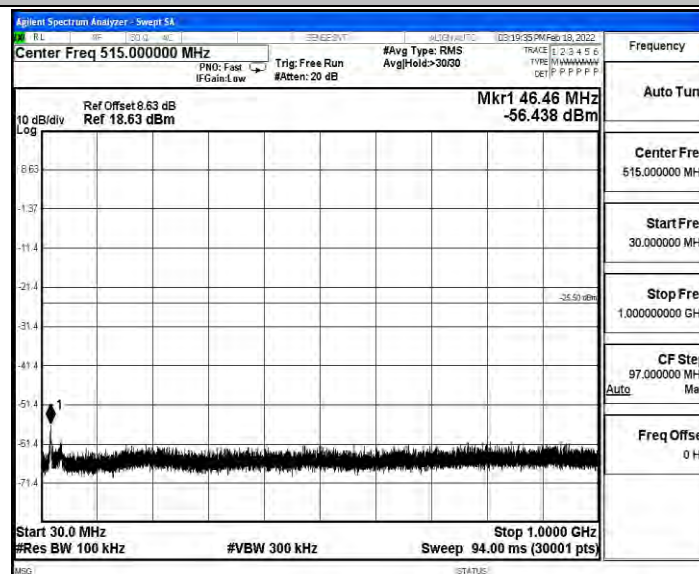
11N40SISO_Ant1_2437_1000~26500



11N40SISO_Ant1_2452_0~Reference

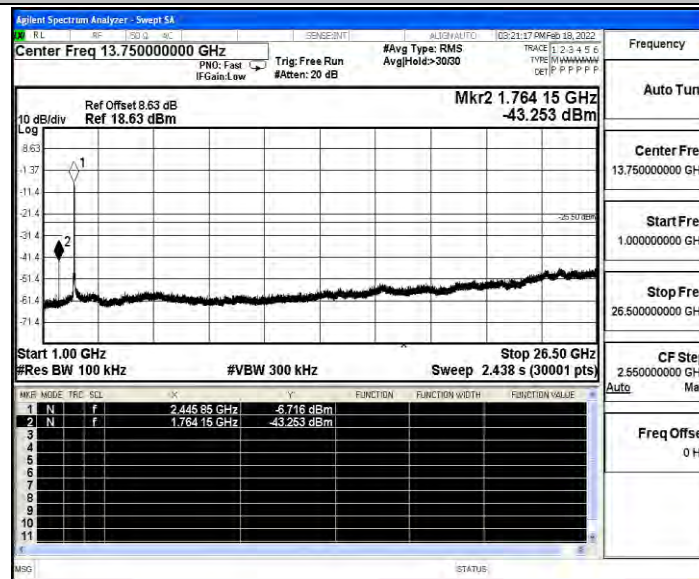


11N40SISO_Ant1_2452_30~1000





11N40SISO_Ant1_2452_1000~26500



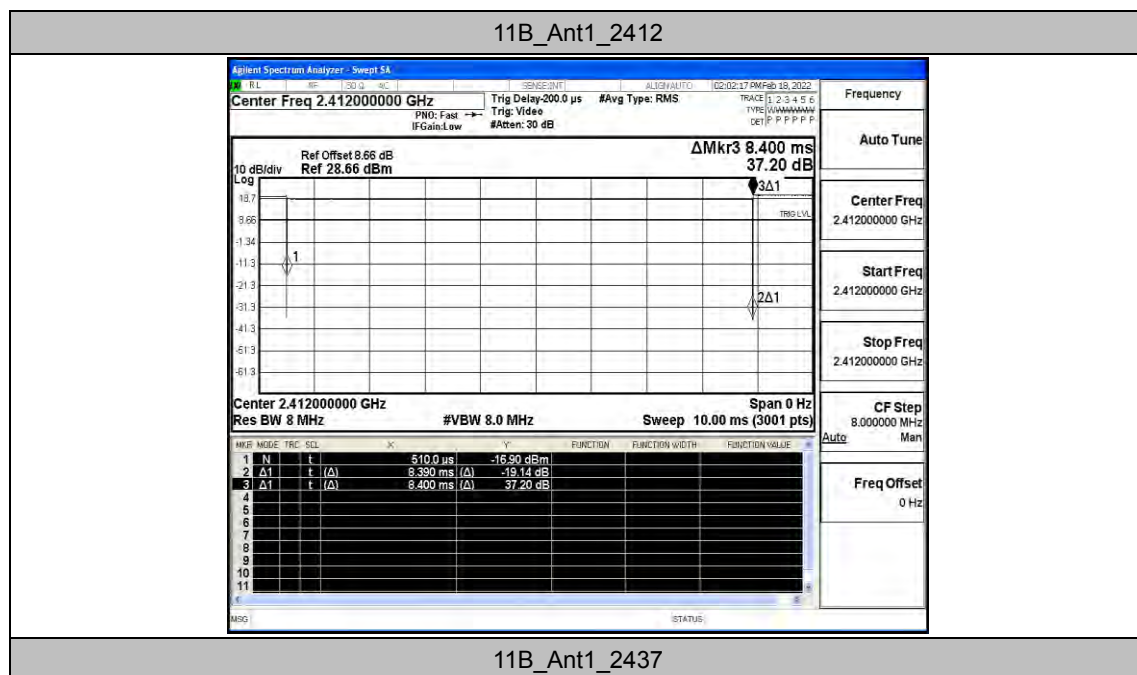


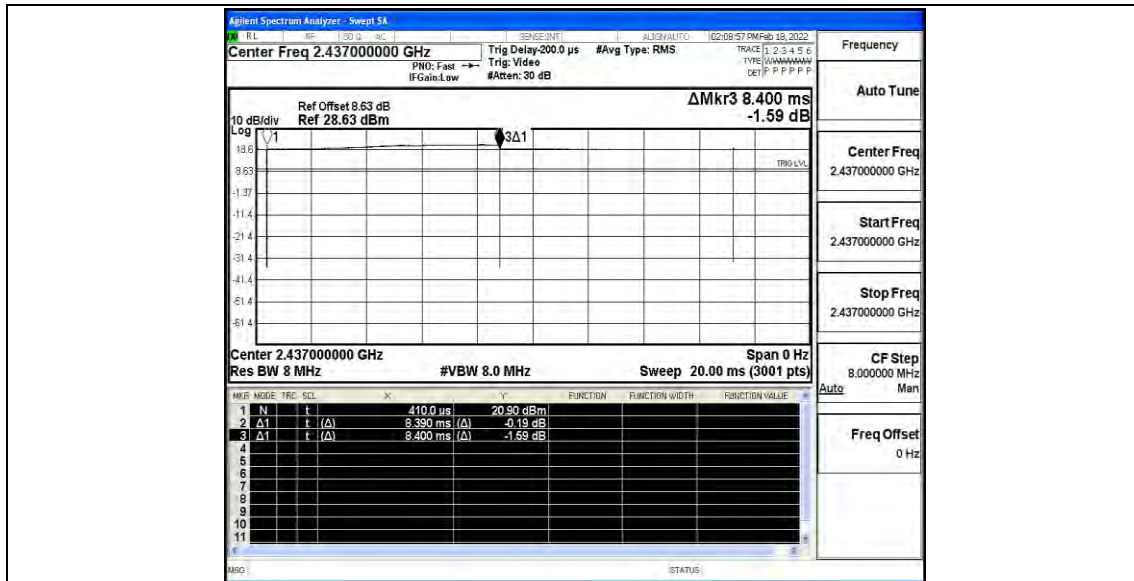
B.6 Duty Cycle

Test Result

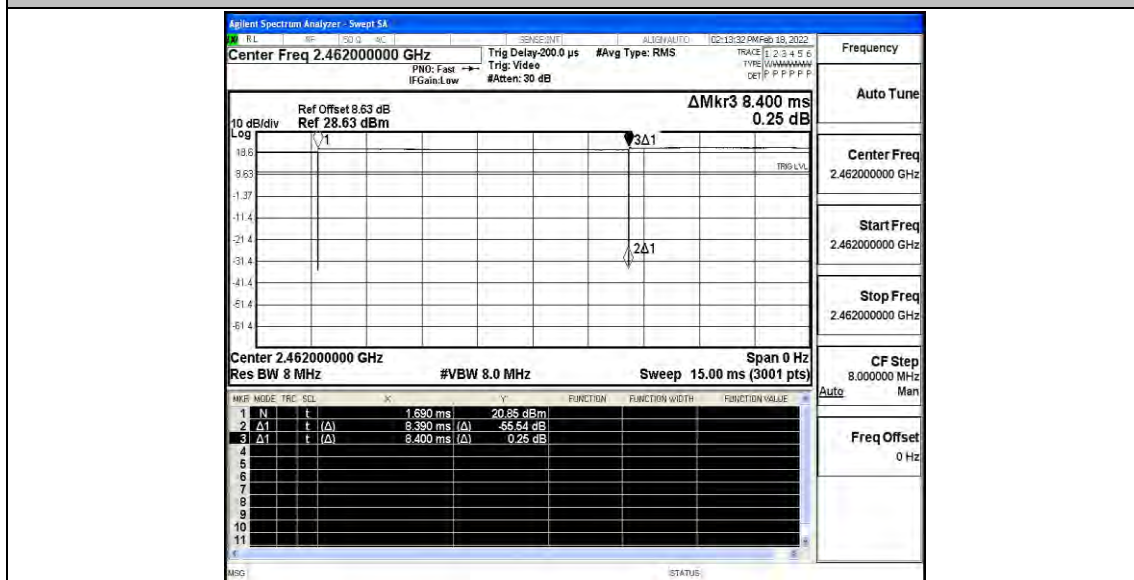
TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Limit	Verdict
11B	Ant1	2412	8.39	8.40	99.88	---	---
		2437	8.39	8.40	99.88	---	---
		2462	8.39	8.40	99.88	---	---
11G	Ant1	2412	1.39	1.40	99.29	---	---
		2437	1.39	1.41	98.58	---	---
		2462	1.39	1.41	98.58	---	---
11N20SISO	Ant1	2412	1.30	1.31	99.24	---	---
		2437	1.30	1.31	99.24	---	---
		2462	1.30	1.32	98.48	---	---
11N40SISO	Ant1	2422	0.64	0.65	98.46	---	---
		2437	0.65	0.66	98.48	---	---
		2452	0.64	0.65	98.46	---	---

Test Graphs

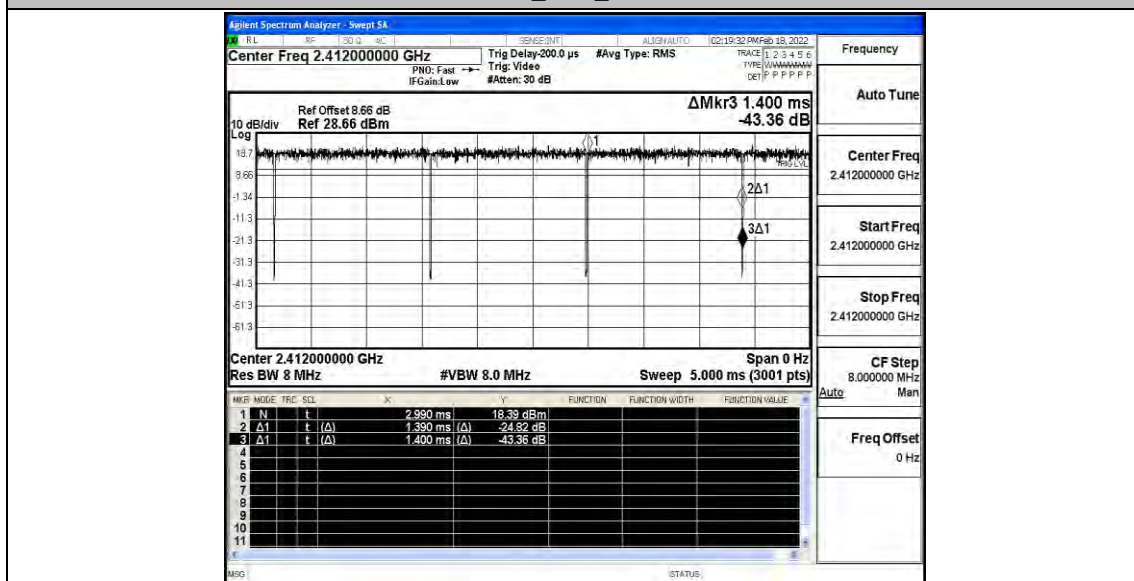




11B_Ant1_2462



11G_Ant1_2412



[illegible]

Agilent Spectrum Analyzer - Sweep SA

RL IF SQ G MC SPAN INT ALIGN AUTO C2:26.03 MHz 18, 2022

Center Freq 2.462000000 GHz Trig Delay: 200.0 μ s #Avg Type: RMS TRACE 1 2 3 4 5 6
 PNO: Fast IF Gain Low Trig: Video #Atten: 30 dB TYPE: (ANALOG) DET: P P P P P P

Ref Offset 8.63 dB Δ Mkr3 1.410 ms
 Ref 28.63 dBm 0.63 dB

10.0 dB/div
 Log
 1
 3Δ1
 8.63
 -1.37
 -11.4
 -21.4
 -31.4
 -41.4
 -51.4
 -61.4

Center 2.462000000 GHz Span 0 Hz
 Res BW 8 MHz #VBW 8.0 MHz Sweep 5.000 ms (3001 pts)

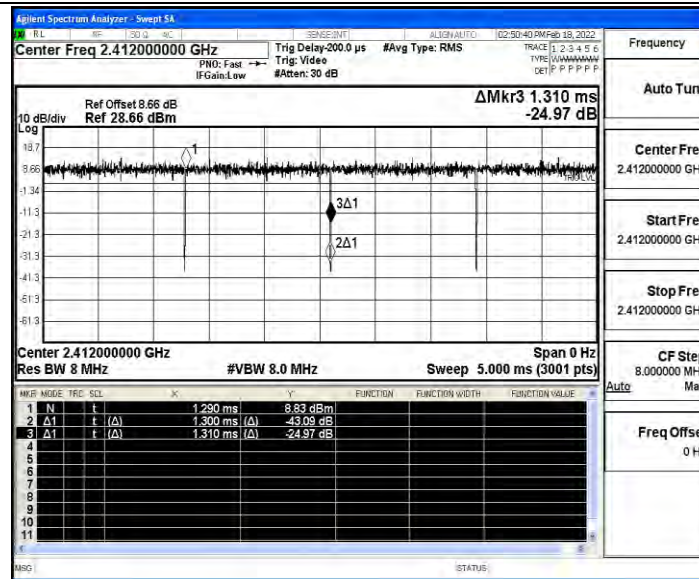
MNR	MDEG	FREQ	SCN	X:	Y:	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	t		780.0 μ s	19.66 dBm			
2	Δ 1	t	(Δ)	1.390 ms	0.23 dB			
3	Δ 1	t	(Δ)	1.410 ms	0.63 dB			
4								
5								
6								
7								
8								
9								
10								
11								

Auto Mar

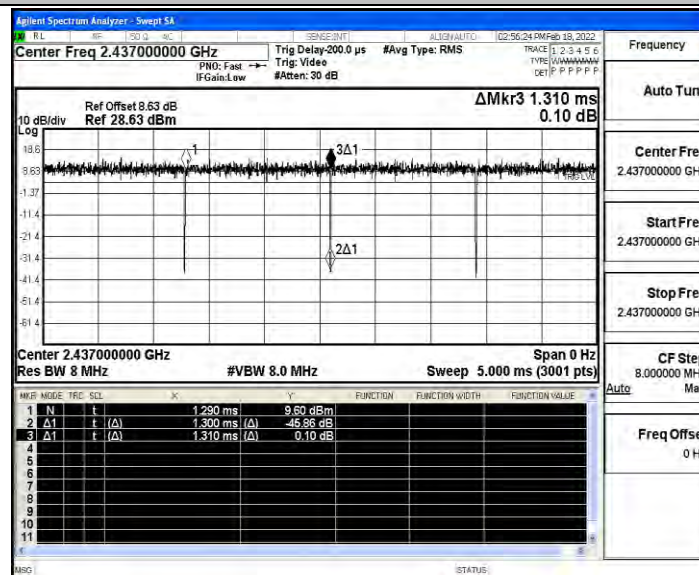
Freq Offset 0 Hz

STATUS

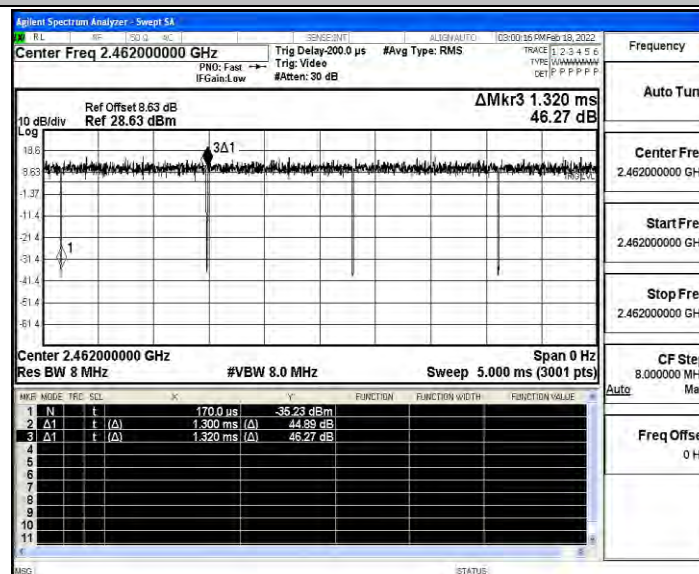
37



11N20SISO_Ant1_2437

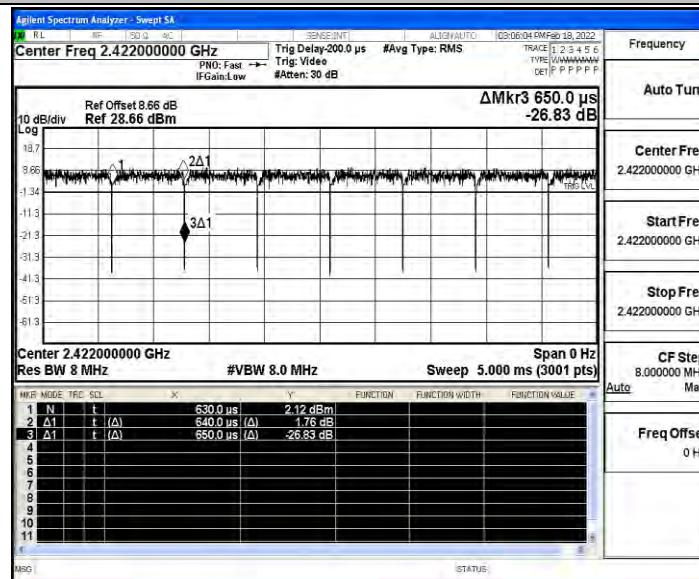


11N20SISO_Ant1_2462

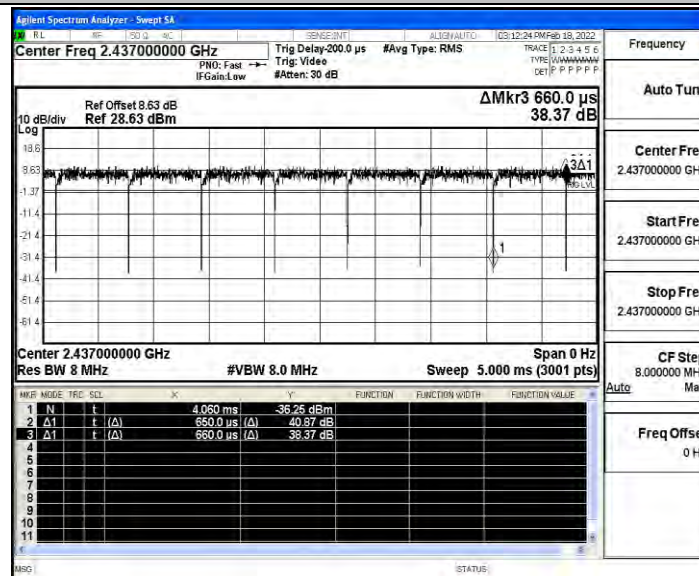




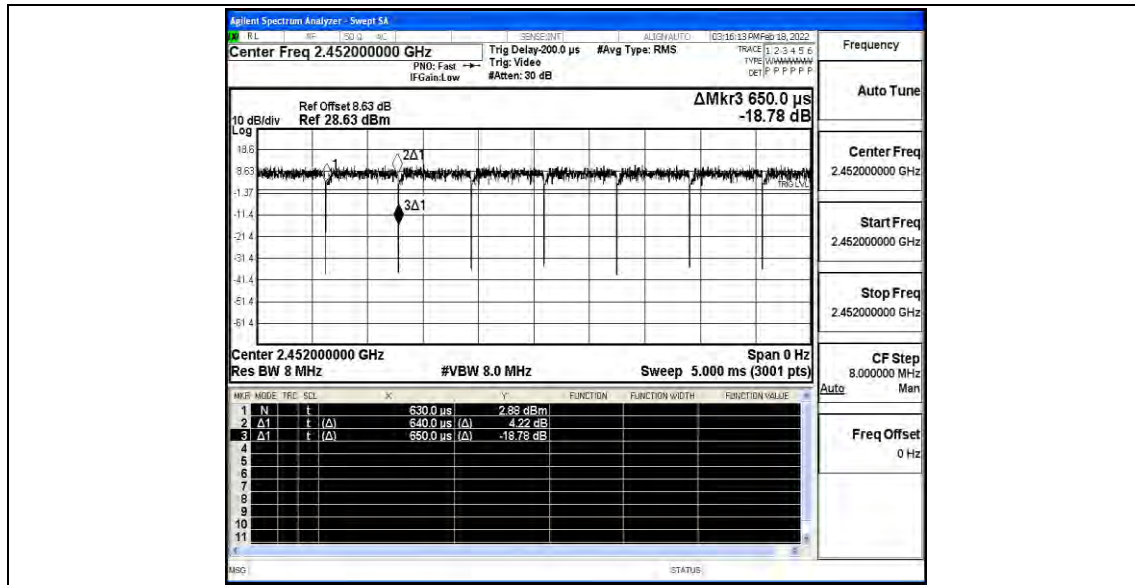
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452





B.7 Emissions in Restricted Bands

Test Result

TestMode	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
11B	2412	AV	2310.000	-48.72	≤-41.20	46.48	≤54	PASS
		AV	2386.320	-46.15	≤-41.20	49.05	≤54	PASS
		AV	2390.000	-46.95	≤-41.20	48.25	≤54	PASS
		Peak	2310.000	-37.57	≤-21.20	57.63	≤74	PASS
		Peak	2389.050	-35.41	≤-21.20	59.79	≤74	PASS
		Peak	2390.000	-35.79	≤-21.20	59.41	≤74	PASS
	2462	AV	2483.500	-46.6	≤-41.20	48.60	≤54	PASS
		AV	2487.630	-45.79	≤-41.20	49.41	≤54	PASS
		AV	2500.000	-46.94	≤-41.20	48.26	≤54	PASS
		Peak	2483.500	-36.15	≤-21.20	59.05	≤74	PASS
		Peak	2487.850	-34.71	≤-21.20	60.49	≤74	PASS
		Peak	2500.000	-35.68	≤-21.20	59.52	≤74	PASS
11G	2412	AV	2310.000	-48.32	≤-41.20	46.88	≤54	PASS
		AV	2377.350	-47.68	≤-41.20	47.52	≤54	PASS
		AV	2390.000	-47.88	≤-41.20	47.32	≤54	PASS
		Peak	2310.000	-38.18	≤-21.20	57.02	≤74	PASS
		Peak	2370.200	-36.24	≤-21.20	58.96	≤74	PASS
		Peak	2390.000	-37.23	≤-21.20	57.97	≤74	PASS
	2462	AV	2483.500	-47.09	≤-41.20	48.11	≤54	PASS
		AV	2489.280	-46.76	≤-41.20	48.44	≤54	PASS
		AV	2500.000	-46.98	≤-41.20	48.22	≤54	PASS
		Peak	2483.500	-35.77	≤-21.20	59.43	≤74	PASS
		Peak	2499.290	-34.88	≤-21.20	60.32	≤74	PASS
		Peak	2500.000	-36.52	≤-21.20	58.68	≤74	PASS
11N20SIS O	2412	AV	2310.000	-48.3	≤-41.20	46.90	≤54	PASS
		AV	2377.610	-47.48	≤-41.20	47.72	≤54	PASS
		AV	2390.000	-47.75	≤-41.20	47.45	≤54	PASS
		Peak	2310.000	-38.45	≤-21.20	56.75	≤74	PASS
		Peak	2385.020	-36.23	≤-21.20	58.97	≤74	PASS
		Peak	2390.000	-38.18	≤-21.20	57.02	≤74	PASS
	2462	AV	2483.500	-46.96	≤-41.20	48.24	≤54	PASS
		AV	2497.750	-46.71	≤-41.20	48.49	≤54	PASS
		AV	2500.000	-46.93	≤-41.20	48.27	≤54	PASS
		Peak	2483.500	-35.9	≤-21.20	59.30	≤74	PASS
		Peak	2491.810	-35.47	≤-21.20	59.73	≤74	PASS
		Peak	2500.000	-36.65	≤-21.20	58.55	≤74	PASS
11N40SIS	2422	AV	2310.000	-47.95	≤-41.20	47.25	≤54	PASS



O		AV	2389.960	-46.39	≤ -41.20	48.81	≤ 54	PASS
		AV	2390.000	-46.39	≤ -41.20	48.81	≤ 54	PASS
		Peak	2310.000	-38.01	≤ -21.20	57.19	≤ 74	PASS
		Peak	2388.010	-34.67	≤ -21.20	60.53	≤ 74	PASS
		Peak	2390.000	-36.56	≤ -21.20	58.64	≤ 74	PASS
	2452	AV	2483.500	-45.27	≤ -41.20	49.93	≤ 54	PASS
		AV	2486.750	-44.74	≤ -41.20	50.46	≤ 54	PASS
		AV	2500.000	-46.34	≤ -41.20	48.86	≤ 54	PASS
		Peak	2483.500	-31.83	≤ -21.20	63.37	≤ 74	PASS
		Peak	2485.540	-31.56	≤ -21.20	63.64	≤ 74	PASS
		Peak	2500.000	-36.55	≤ -21.20	58.65	≤ 74	PASS

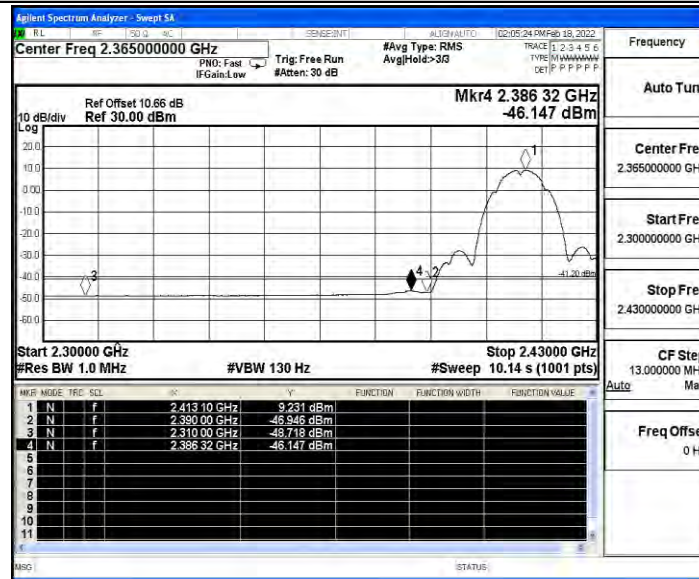
Note:

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.

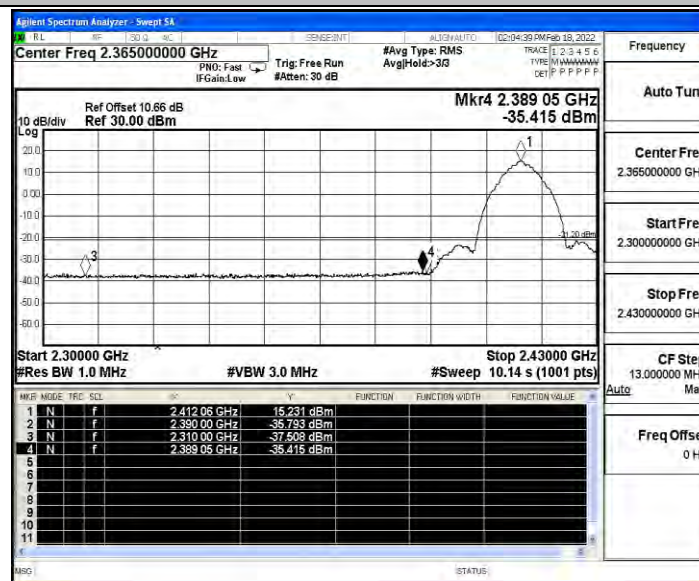


Test Graphs

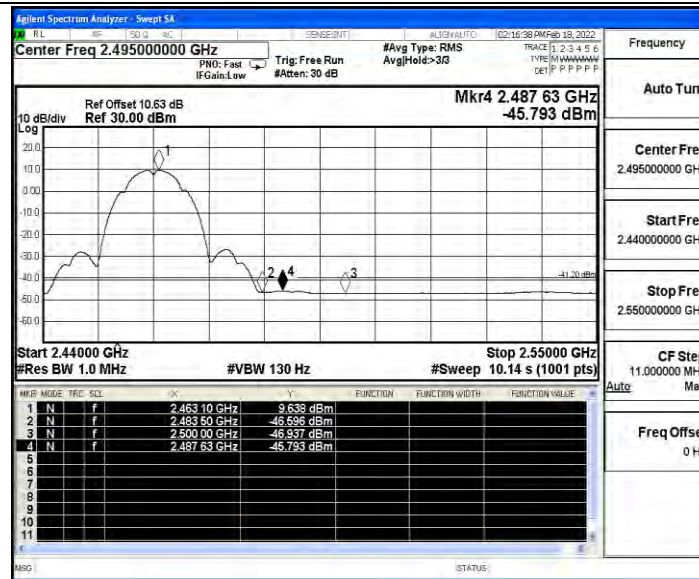
11B_Ant1_Low_2412_AV



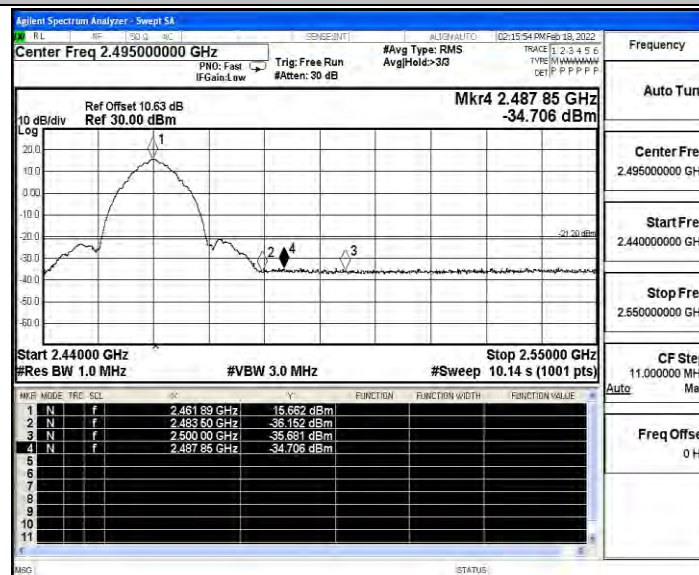
11B_Ant1_Low_2412_Peak



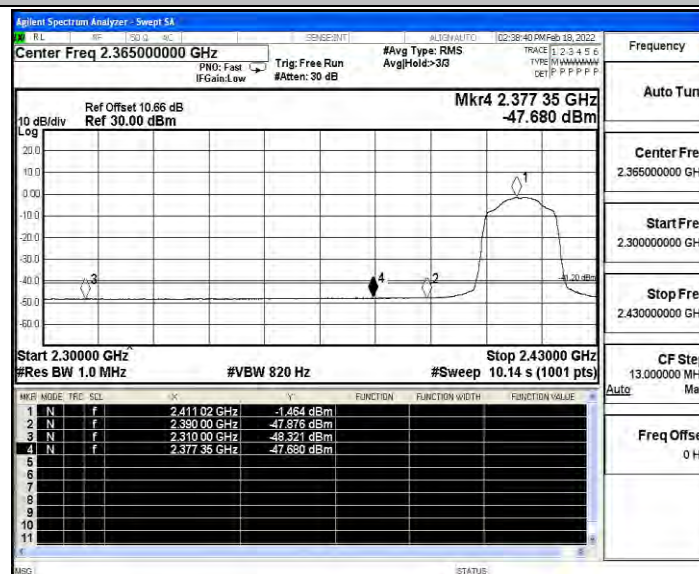
11B_Ant1_High_2462_AV



11B_Ant1_High_2462_Peak

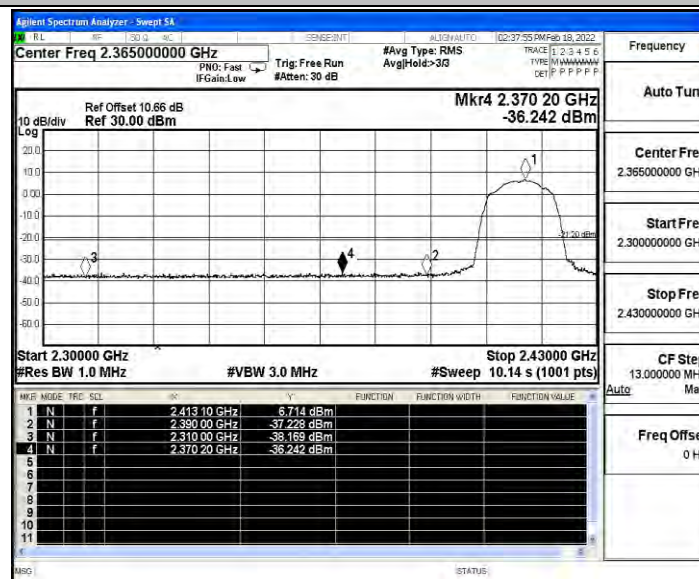


11G_Ant1_Low_2412_AV

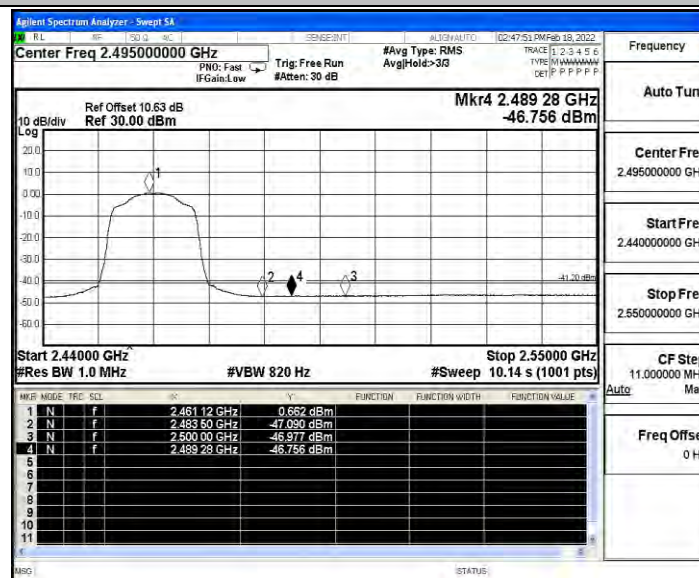




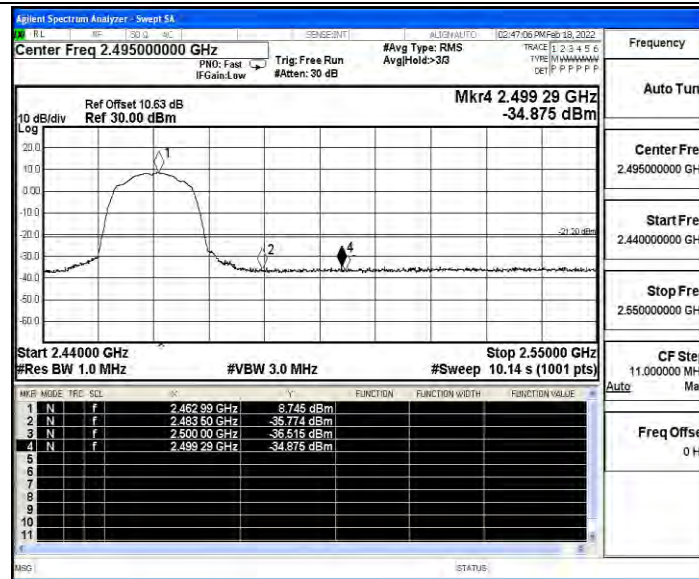
11G_Ant1_Low_2412_Peak



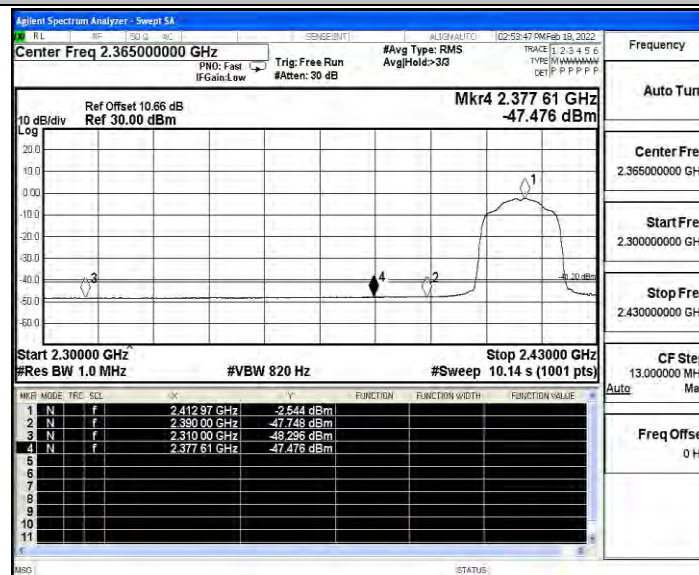
11G_Ant1_High_2462_AV



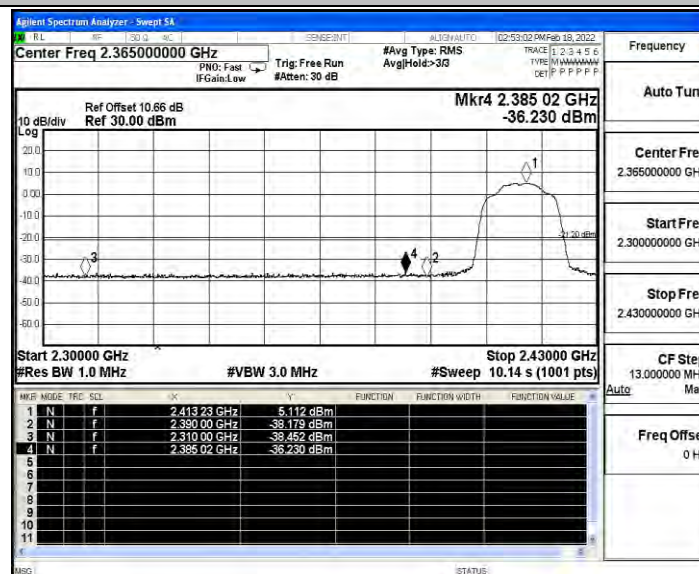
11G_Ant1_High_2462_Peak



11N20SISO_Ant1_Low_2412_AV

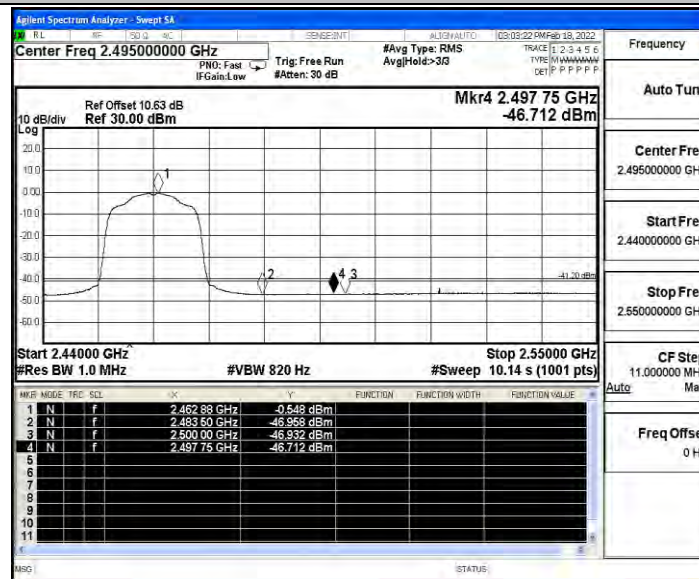


11N20SISO_Ant1_Low_2412_Peak

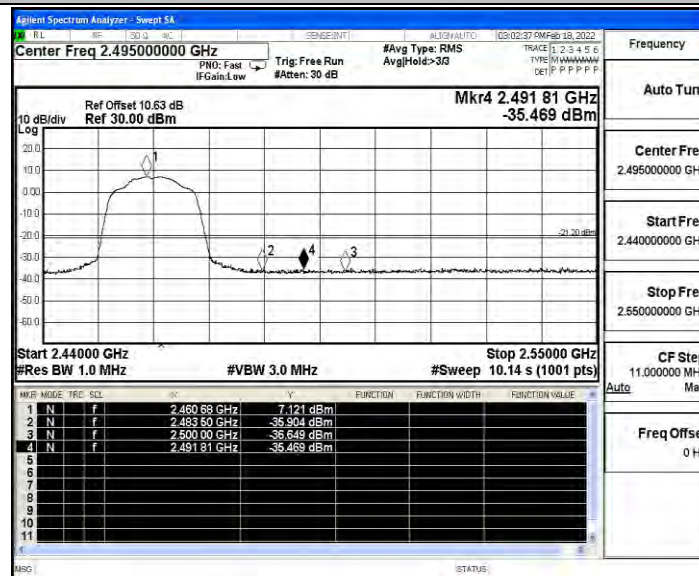




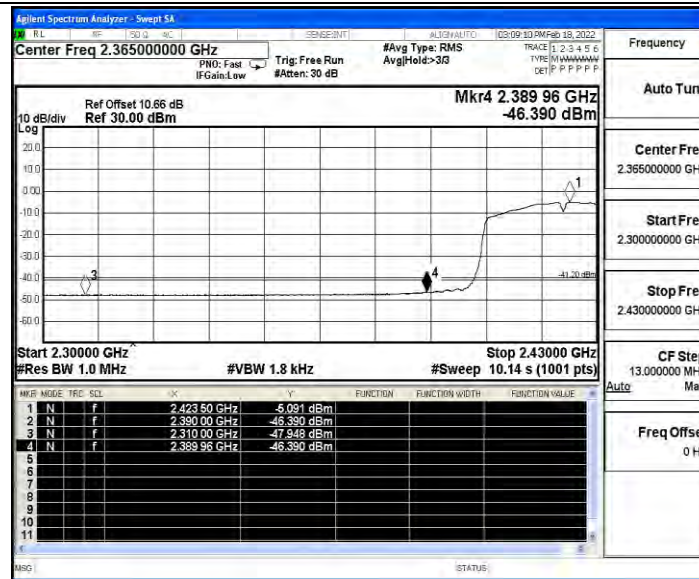
11N20SISO_Ant1_High_2462_AV



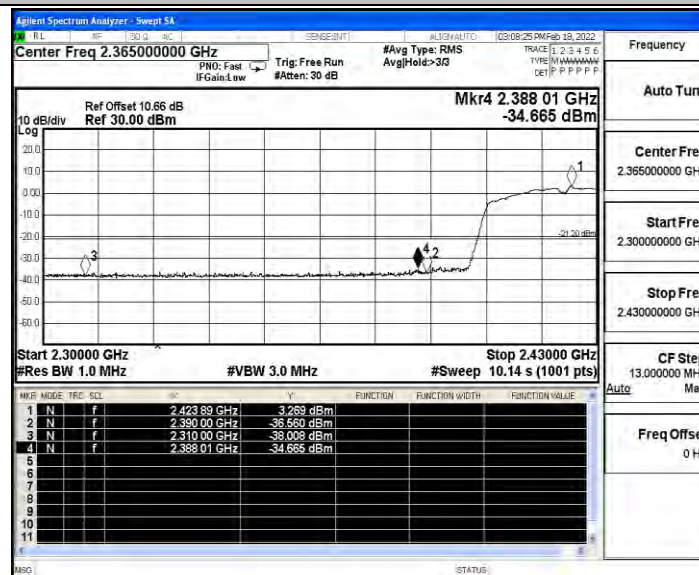
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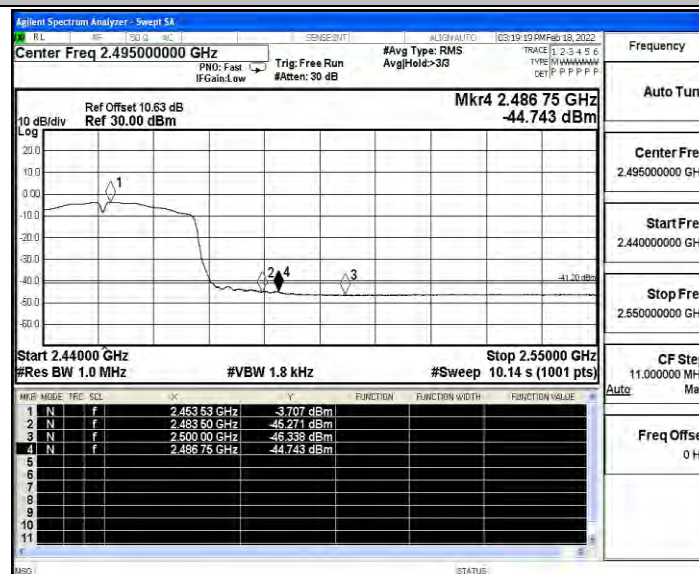
11N40SISO_Ant1_Low_2422_AV



11N40SISO_Ant1_Low_2422_Peak



11N40SISO_Ant1_High_2452_AV





11N40SISO_Ant1_High_2452_Peak

