



Appendix A

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: Action Camera

Test Model: FS01A-2

Environmental Conditions

Temperature:	23.5° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Bill Zhu
Supervised by:	Li Huan



A.1 6dB Bandwidth

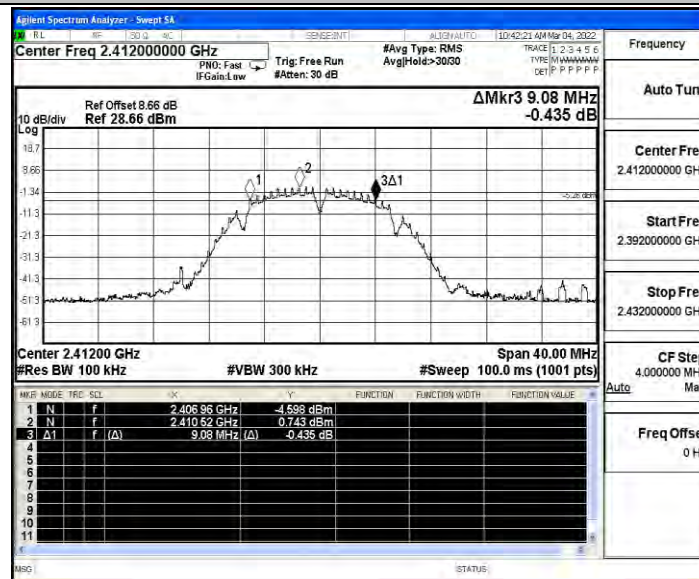
Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.080	2406.960	2416.040	0.5	PASS
		2437	9.560	2432.440	2442.000	0.5	PASS
		2462	9.080	2457.440	2466.520	0.5	PASS
11G	Ant1	2412	15.080	2404.440	2419.520	0.5	PASS
		2437	16.320	2428.840	2445.160	0.5	PASS
		2462	15.720	2453.840	2469.560	0.5	PASS
11N20SISO	Ant1	2412	16.360	2403.200	2419.560	0.5	PASS
		2437	17.600	2428.200	2445.800	0.5	PASS
		2462	16.040	2453.520	2469.560	0.5	PASS
11N40SISO	Ant1	2422	35.440	2404.080	2439.520	0.5	PASS
		2437	36.320	2418.840	2455.160	0.5	PASS
		2452	33.760	2435.760	2469.520	0.5	PASS

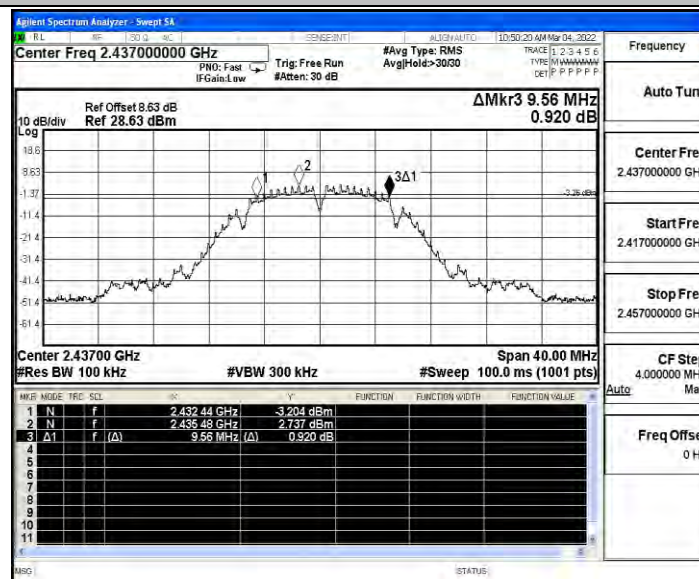


Test Graphs

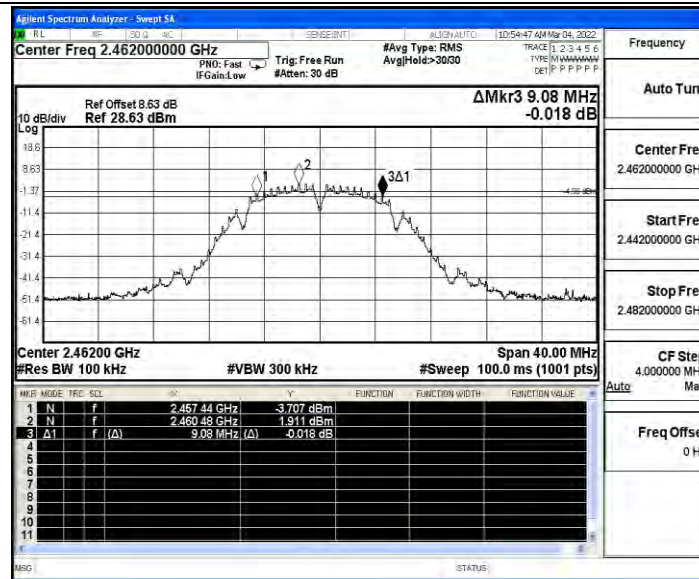
11B_Ant1_2412



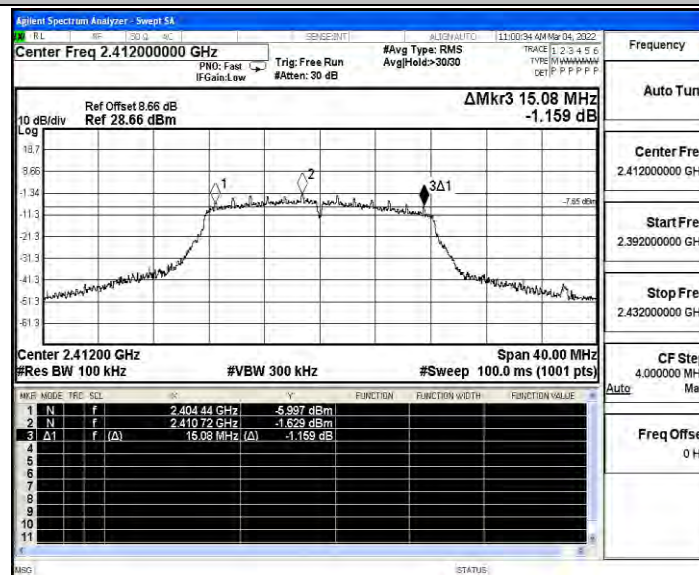
11B_Ant1_2437



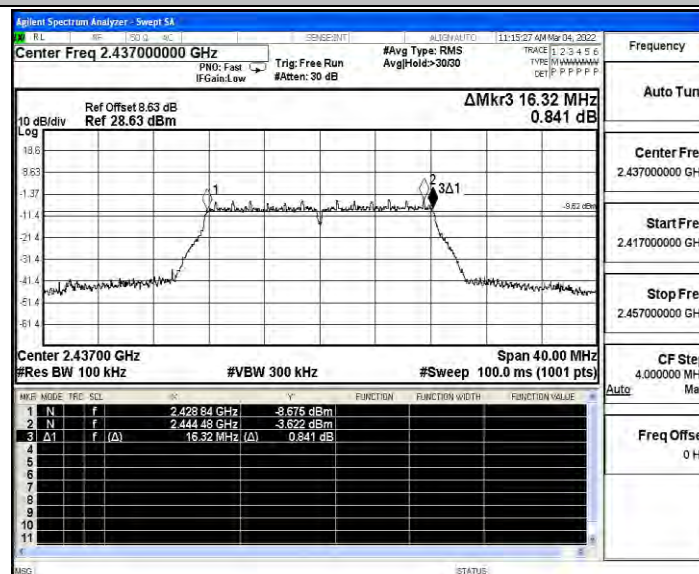
11B_Ant1_2462



11G_Ant1_2412

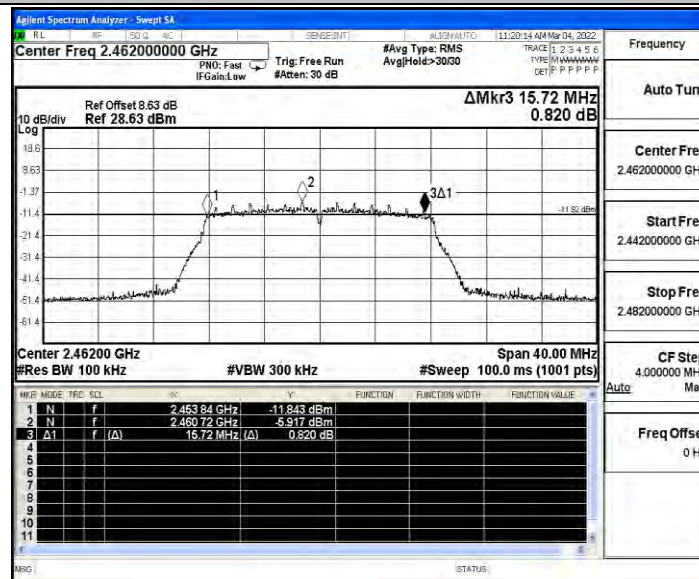


11G_Ant1_2437

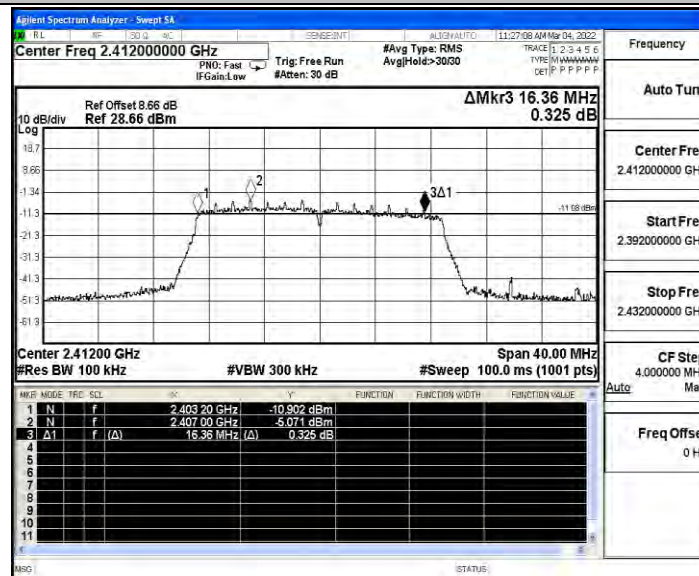




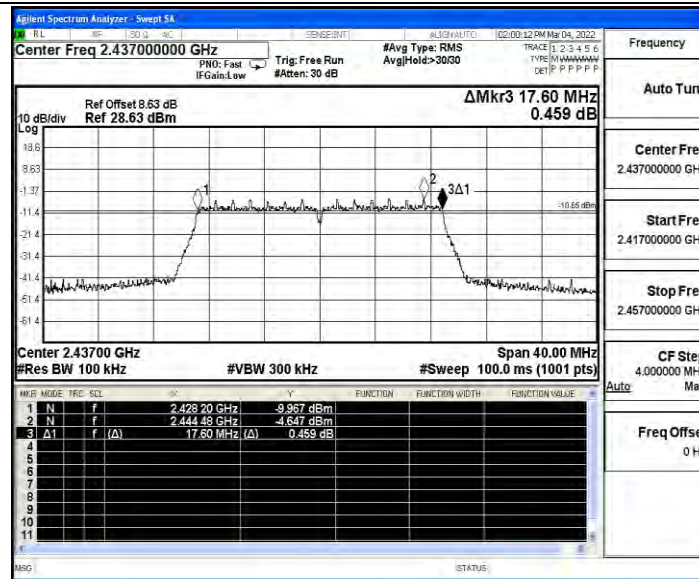
11G_Ant1_2462



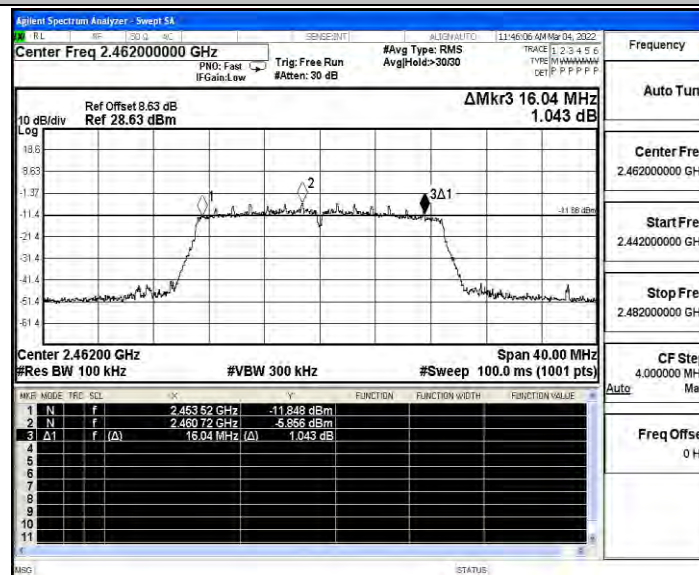
11N20SISO_Ant1_2412



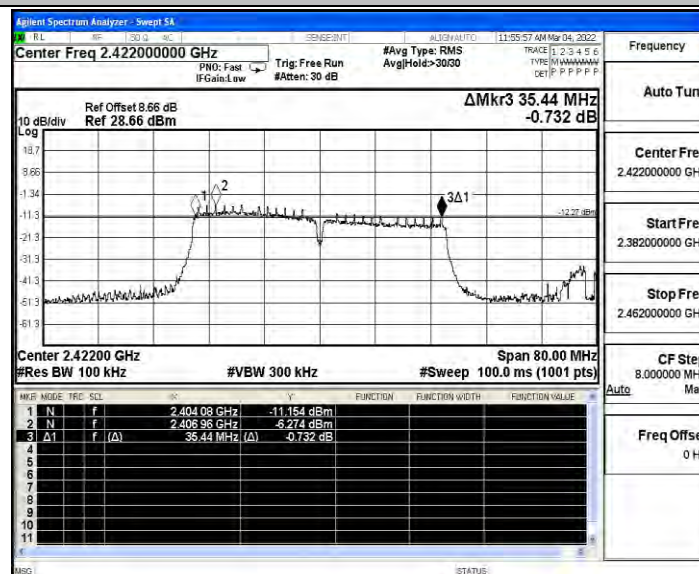
11N20SISO_Ant1_2437



11N20SISO_Ant1_2462

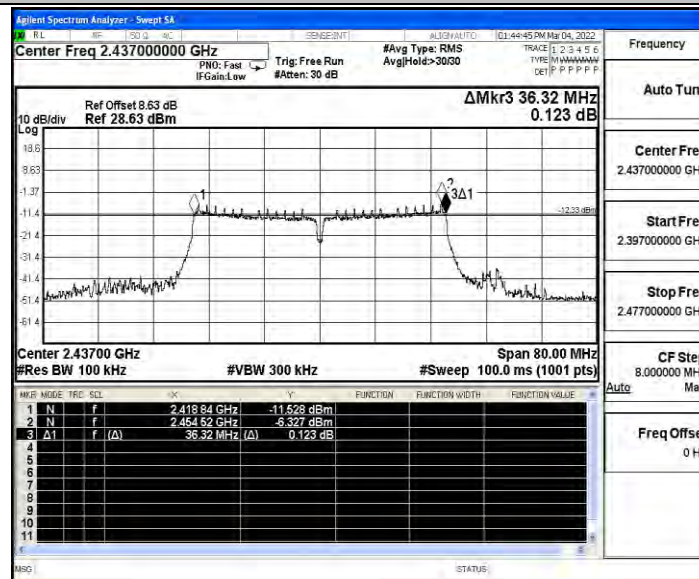


11N40SISO_Ant1_2422

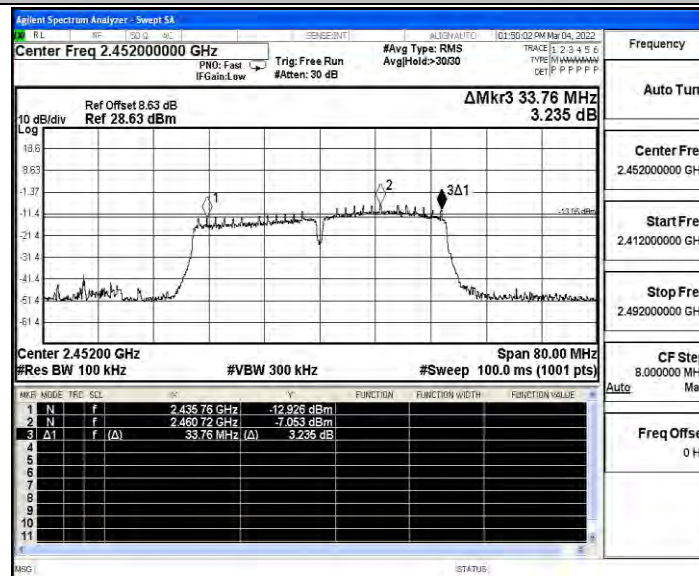




11N40SISO_Ant1_2437



11N40SISO_Ant1_2452





A.2 Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	8.03	≤30.00	PASS
		2437	8.80	≤30.00	PASS
		2462	8.61	≤30.00	PASS
11G	Ant1	2412	8.42	≤30.00	PASS
		2437	8.98	≤30.00	PASS
		2462	8.79	≤30.00	PASS
11N20SISO	Ant1	2412	8.31	≤30.00	PASS
		2437	8.44	≤30.00	PASS
		2462	8.66	≤30.00	PASS
11N40SISO	Ant1	2422	8.09	≤30.00	PASS
		2437	8.24	≤30.00	PASS
		2452	8.33	≤30.00	PASS



A.3 Maximum power spectral density

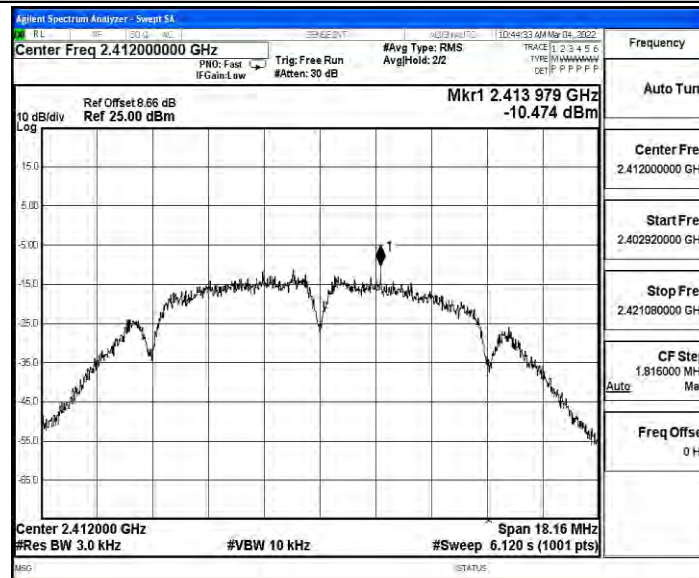
Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-10.47	≤8.00	PASS
		2437	-10.81	≤8.00	PASS
		2462	-11.98	≤8.00	PASS
11G	Ant1	2412	-19.21	≤8.00	PASS
		2437	-19.21	≤8.00	PASS
		2462	-19.86	≤8.00	PASS
11N20SISO	Ant1	2412	-20.03	≤8.00	PASS
		2437	-19.4	≤8.00	PASS
		2462	-19.48	≤8.00	PASS
11N40SISO	Ant1	2422	-19.92	≤8.00	PASS
		2437	-21.8	≤8.00	PASS
		2452	-21.31	≤8.00	PASS

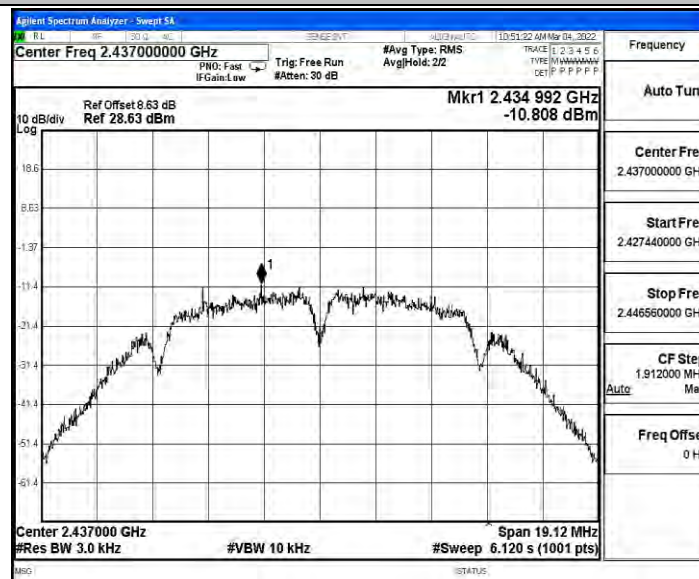


Test Graphs

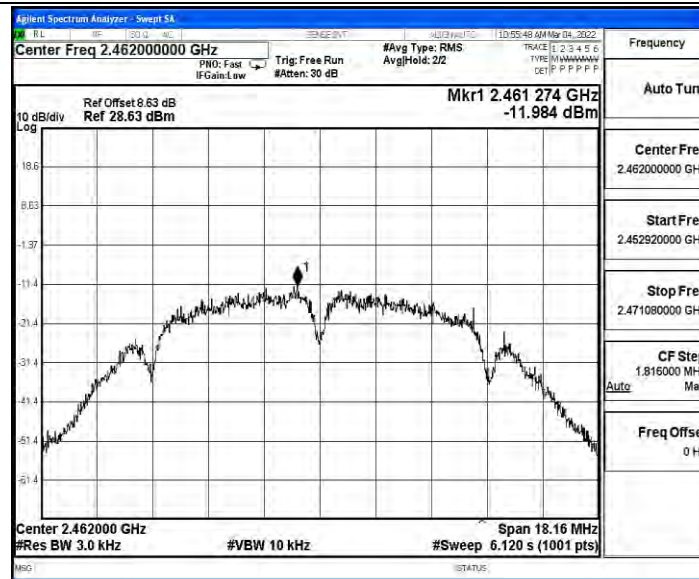
11B_Ant1_2412



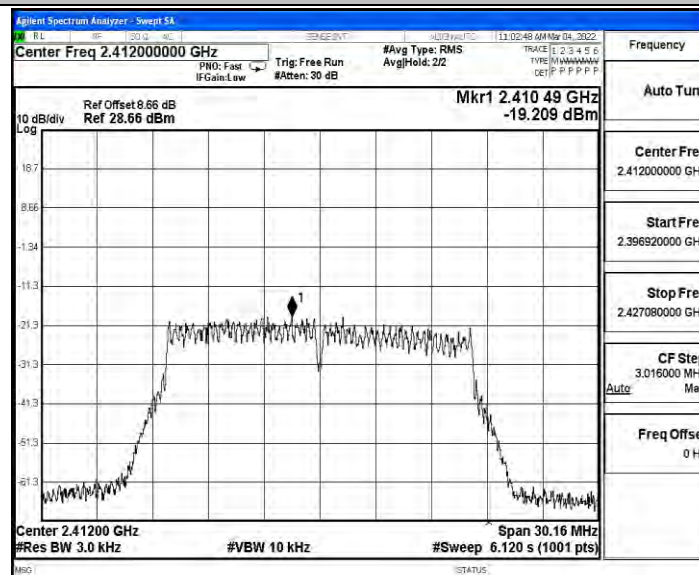
11B_Ant1_2437



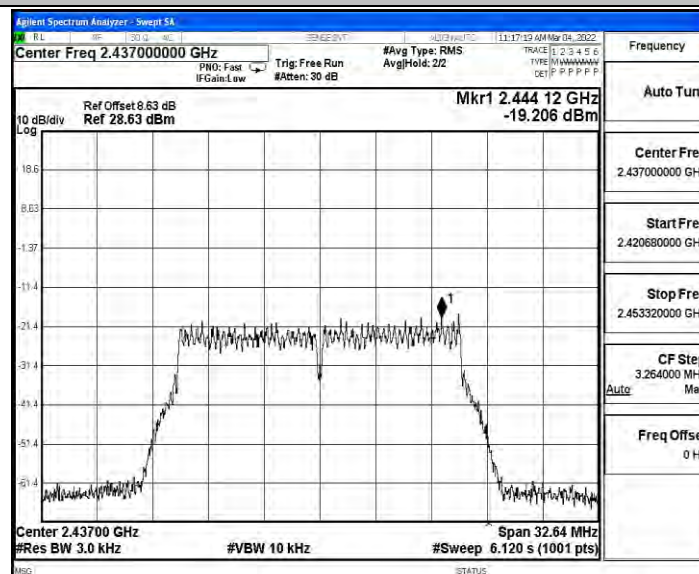
11B_Ant1_2462



11G_Ant1_2412

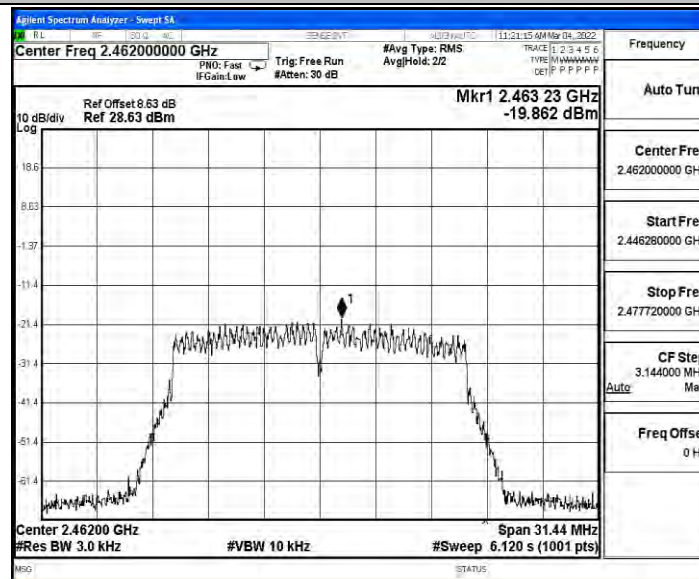


11G_Ant1_2437

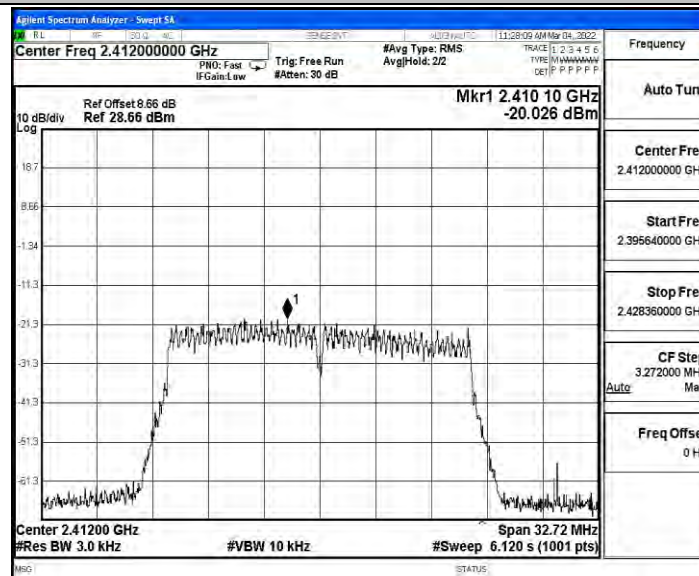




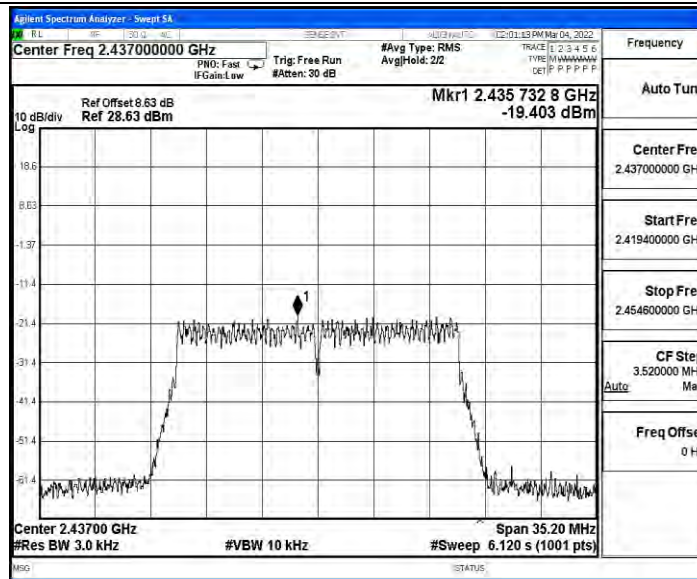
11G_Ant1_2462



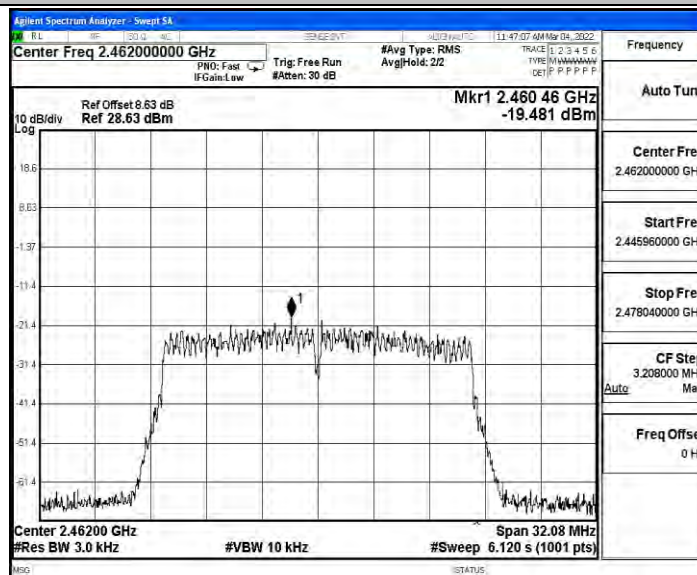
11N20SISO_Ant1_2412



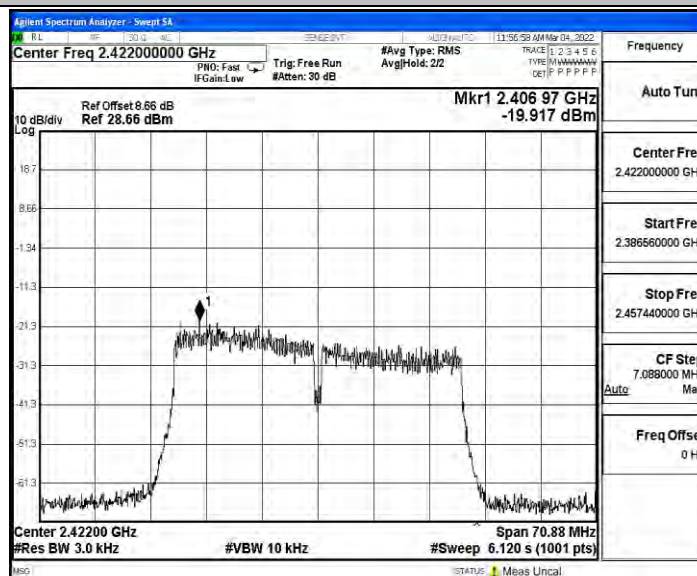
11N20SISO_Ant1_2437



11N20SISO_Ant1_2462

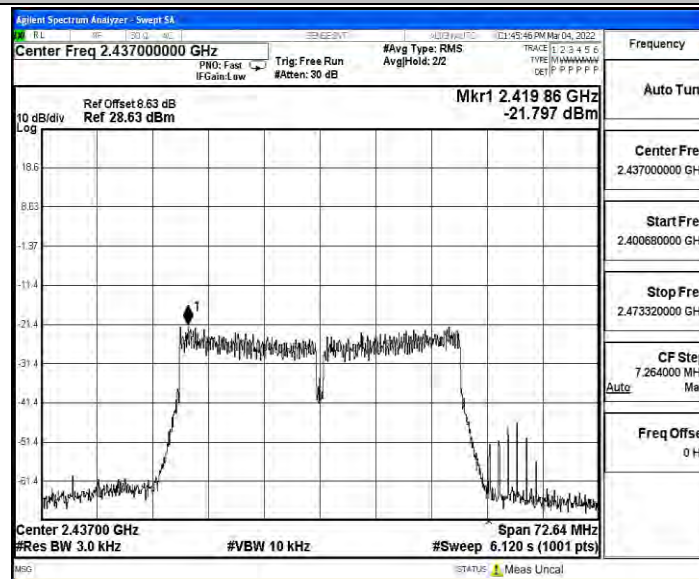


11N40SISO_Ant1_2422

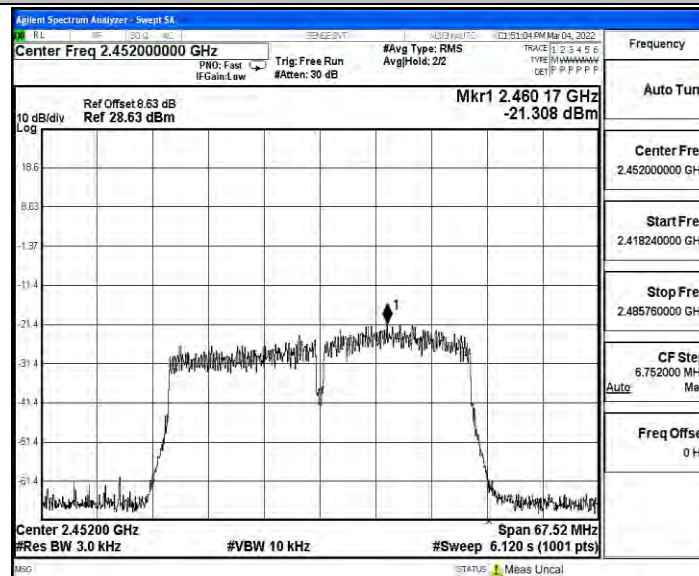




11N40SISO_Ant1_2437



11N40SISO_Ant1_2452





A.4 Band edge measurements

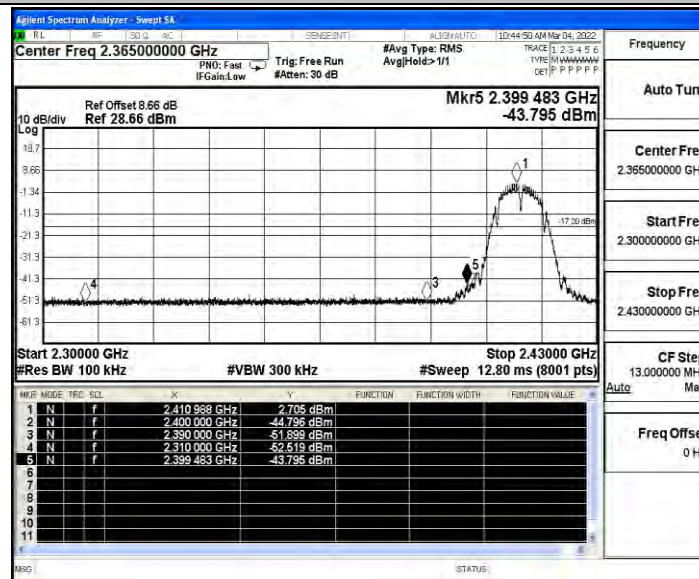
Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	2.71	-43.8	≤ -17.3	PASS
		High	2462	2.05	-47.6	≤ -17.95	PASS
11G	Ant1	Low	2412	-4.47	-42.8	≤ -24.47	PASS
		High	2462	-5.68	-47.91	≤ -25.68	PASS
11N20SISO	Ant1	Low	2412	-5.03	-43.89	≤ -25.03	PASS
		High	2462	-5.90	-48.08	≤ -25.9	PASS
11N40SISO	Ant1	Low	2422	-6.32	-44.32	≤ -26.32	PASS
		High	2452	-6.84	-47.32	≤ -26.84	PASS

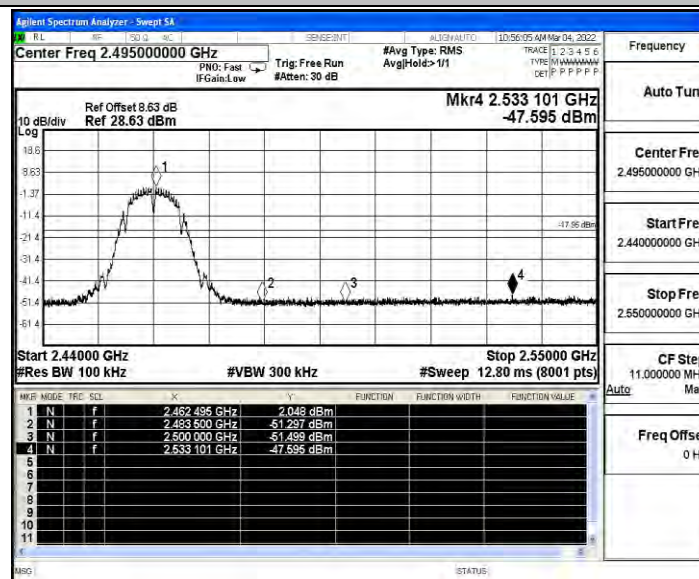


Test Graphs

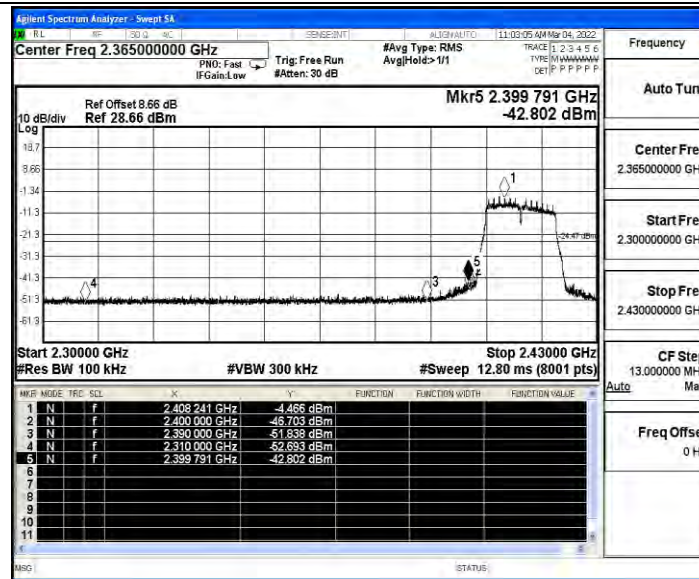
11B_Ant1_Low_2412



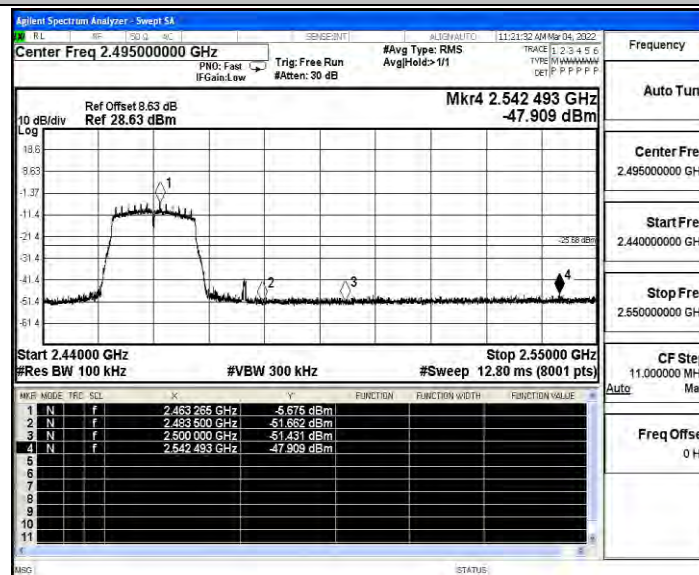
11B_Ant1_High_2462



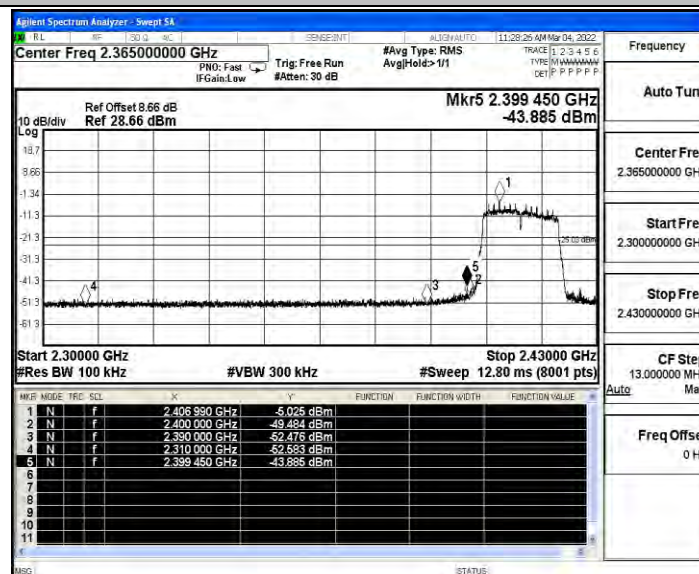
11G_Ant1_Low_2412



11G_Ant1_High_2462

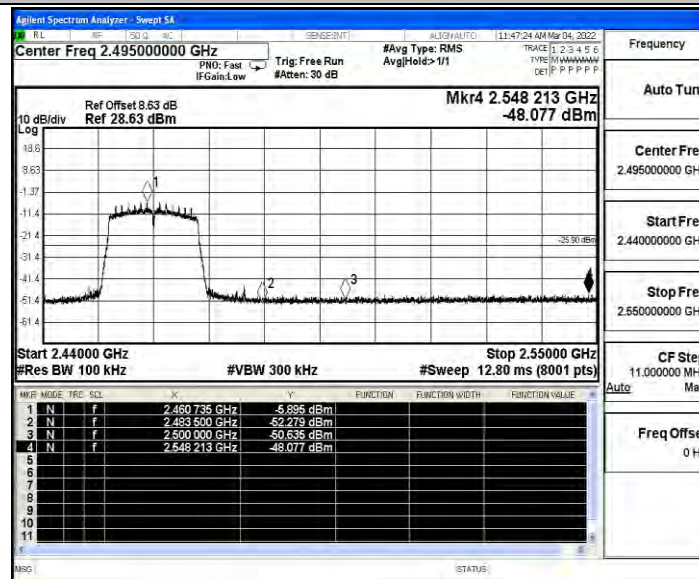


11N20SISO_Ant1_Low_2412

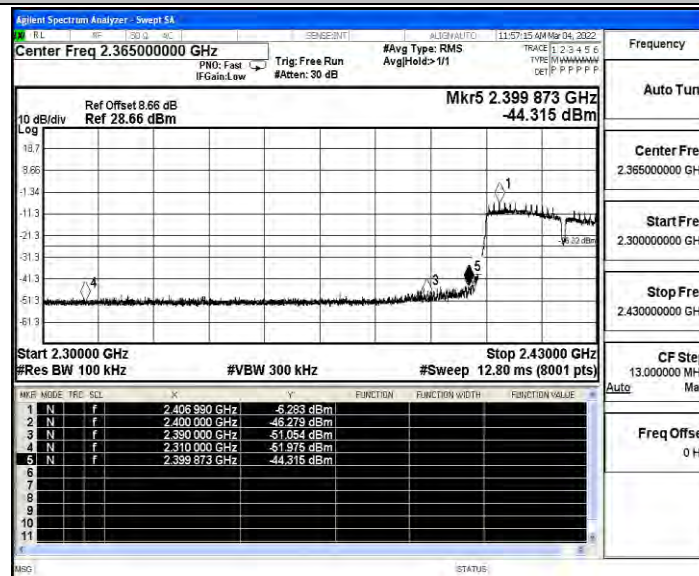




11N20SISO_Ant1_High_2462



11N40SISO_Ant1_Low_2422



11N40SISO_Ant1_High_2452



A.5 Conducted Spurious Emission

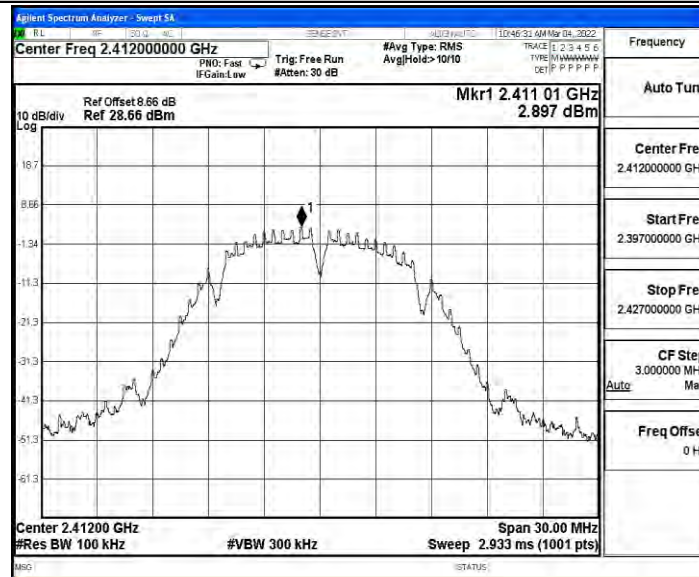
Test Result

TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	2.89	2.89	---	PASS
			30~1000	2.89	-45.75	≤-17.11	PASS
			1000~26500	2.89	-36.83	≤-17.11	PASS
		2437	Reference	3.06	3.06	---	PASS
			30~1000	3.06	-46.25	≤-16.94	PASS
			1000~26500	3.06	-37.39	≤-16.94	PASS
		2462	Reference	2.12	2.12	---	PASS
			30~1000	2.12	-47.39	≤-17.88	PASS
			1000~26500	2.12	-35.76	≤-17.88	PASS
11G	Ant1	2412	Reference	-5.15	-5.15	---	PASS
			30~1000	-5.15	-22.69	≤-25.15	FAIL
			1000~26500	-5.15	-39.84	≤-25.15	PASS
		2437	Reference	-5.09	-5.09	---	PASS
			30~1000	-5.09	-44.47	≤-25.09	PASS
			1000~26500	-5.09	-45.3	≤-25.09	PASS
		2462	Reference	-5.60	-5.60	---	PASS
			30~1000	-5.60	-46.2	≤-25.6	PASS
			1000~26500	-5.60	-42.2	≤-25.6	PASS
11N20SISO	Ant1	2412	Reference	-5.11	-5.11	---	PASS
			30~1000	-5.11	-45.22	≤-25.11	PASS
			1000~26500	-5.11	-36.44	≤-25.11	PASS
		2437	Reference	-4.31	-4.31	---	PASS
			30~1000	-4.31	-45.66	≤-24.31	PASS
			1000~26500	-4.31	-35.89	≤-24.31	PASS
		2462	Reference	-5.78	-5.78	---	PASS
			30~1000	-5.78	-44.62	≤-25.78	PASS
			1000~26500	-5.78	-42.36	≤-25.78	PASS
11N40SISO	Ant1	2422	Reference	-6.29	-6.29	---	PASS
			30~1000	-6.29	-45.24	≤-26.29	PASS
			1000~26500	-6.29	-46.06	≤-26.29	PASS
		2437	Reference	-6.24	-6.24	---	PASS
			30~1000	-6.24	-45.71	≤-26.24	PASS
			1000~26500	-6.24	-46.46	≤-26.24	PASS
		2452	Reference	-6.49	-6.49	---	PASS
			30~1000	-6.49	-47.05	≤-26.49	PASS
			1000~26500	-6.49	-33.32	≤-26.49	PASS

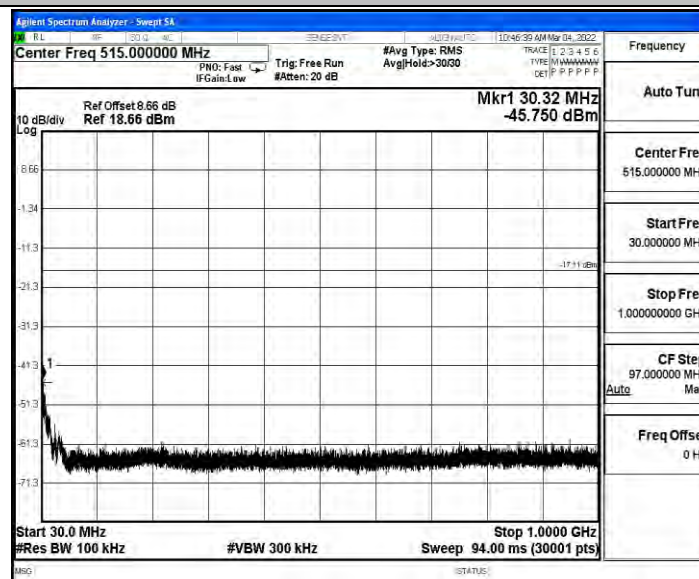


Test Graphs

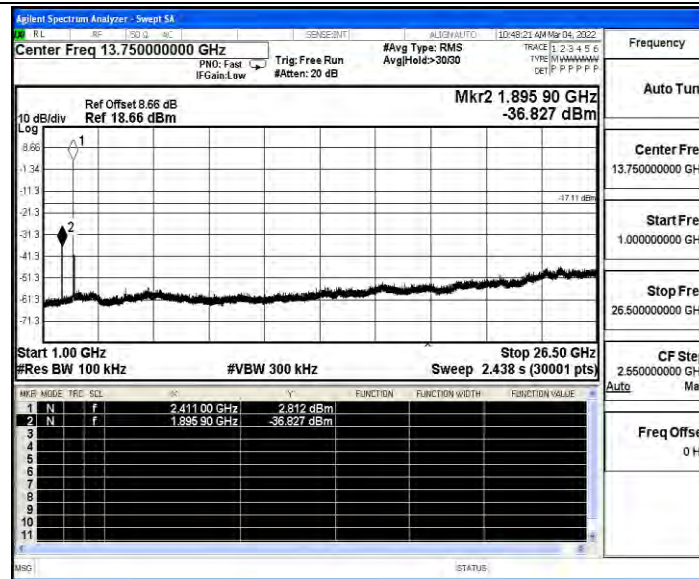
11B_Ant1_2412_0~Reference



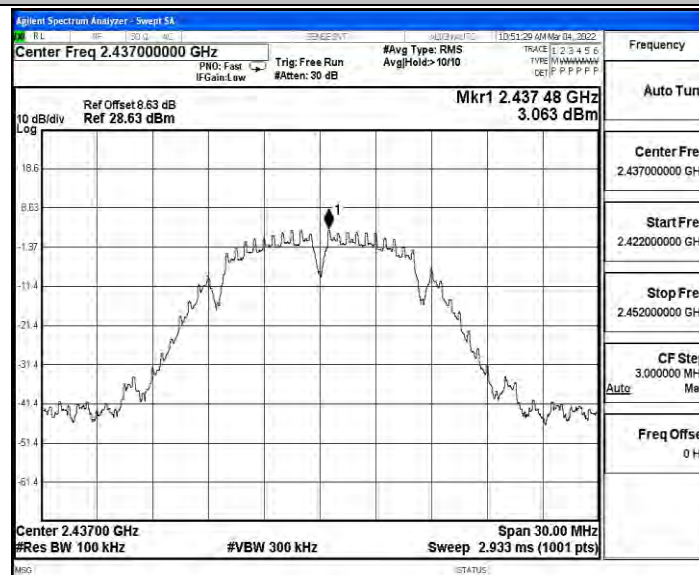
11B_Ant1_2412_30~1000



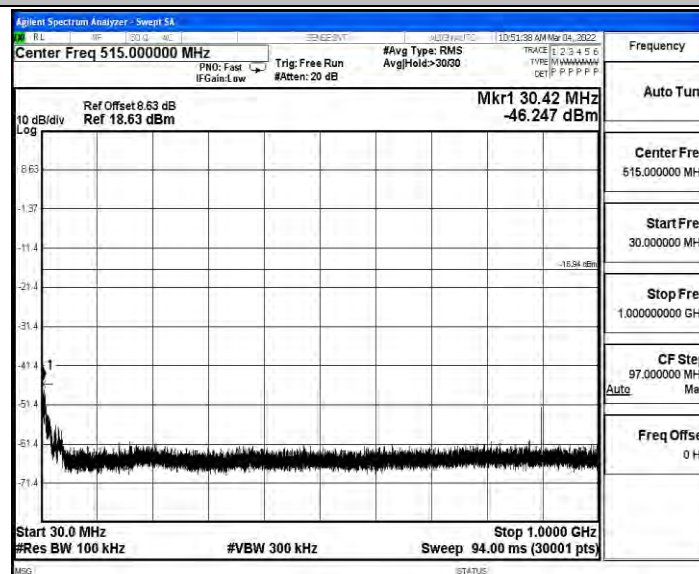
11B_Ant1_2412_1000~26500



11B_Ant1_2437_0~Reference

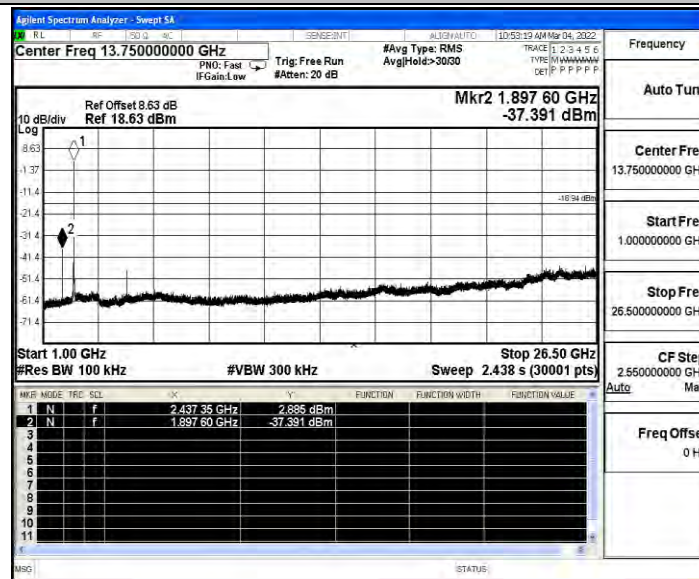


11B_Ant1_2437_30~1000

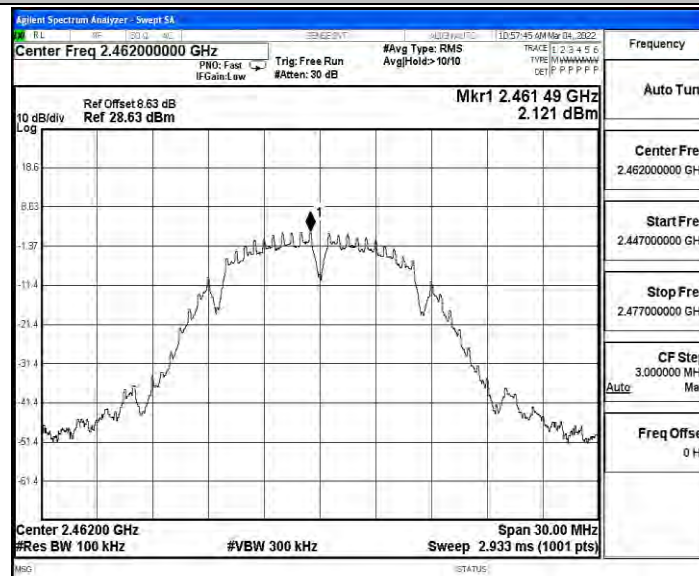




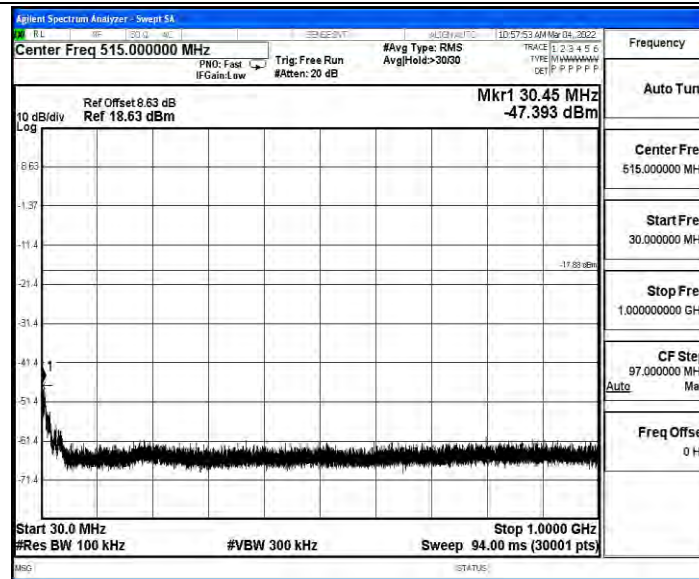
11B_Ant1_2437_1000~26500



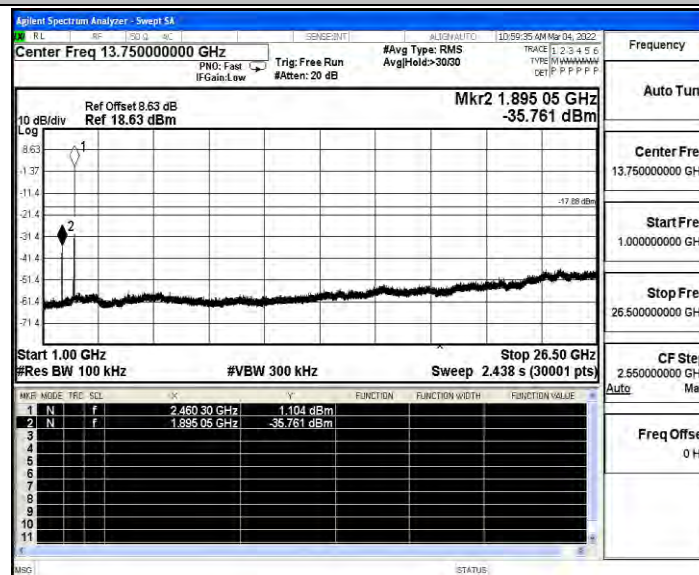
11B_Ant1_2462_0~Reference



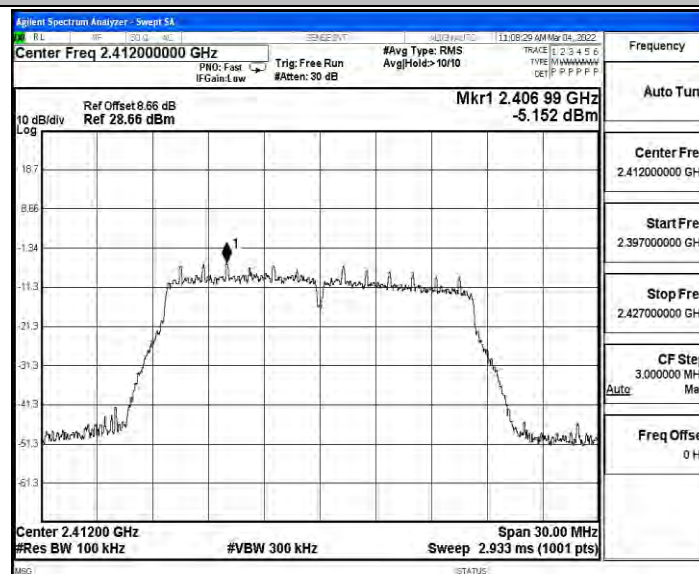
11B_Ant1_2462_30~1000



11B_Ant1_2462_1000~26500

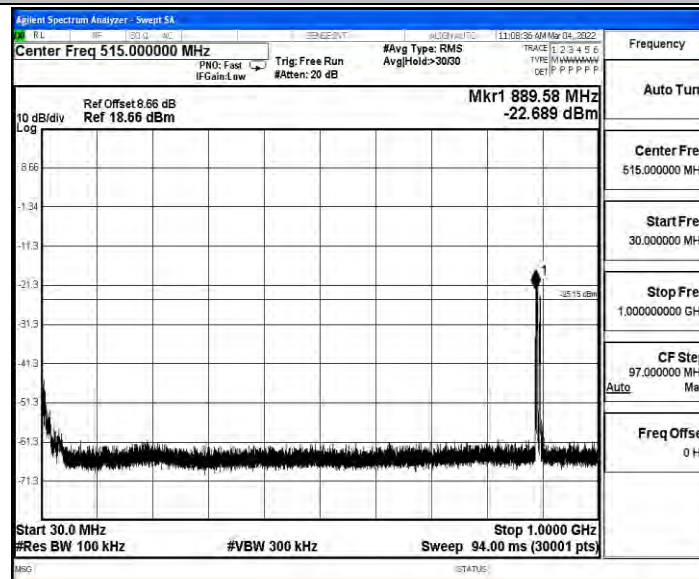


11G_Ant1_2412_0~Reference

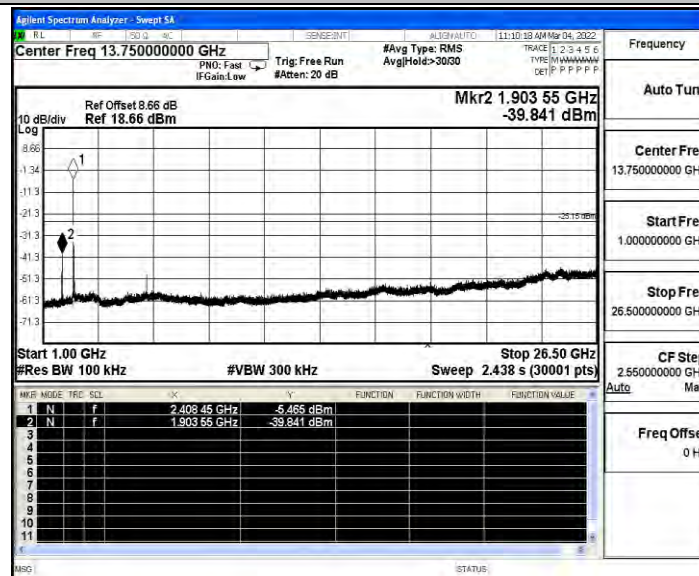




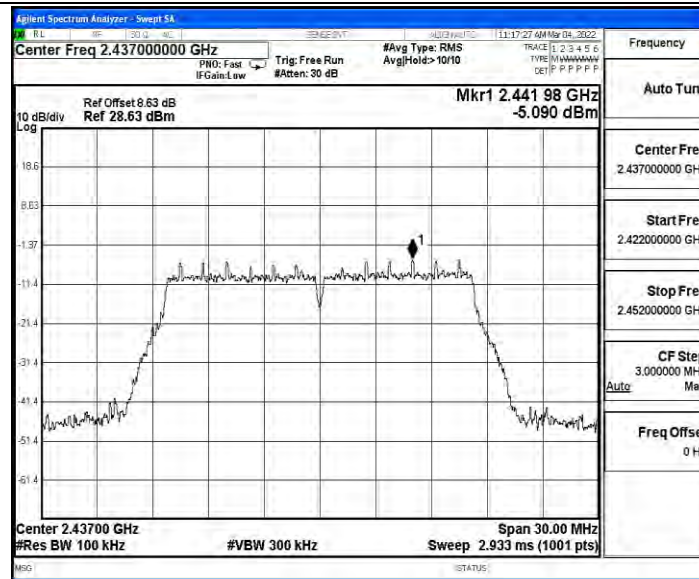
11G_Ant1_2412_30~1000



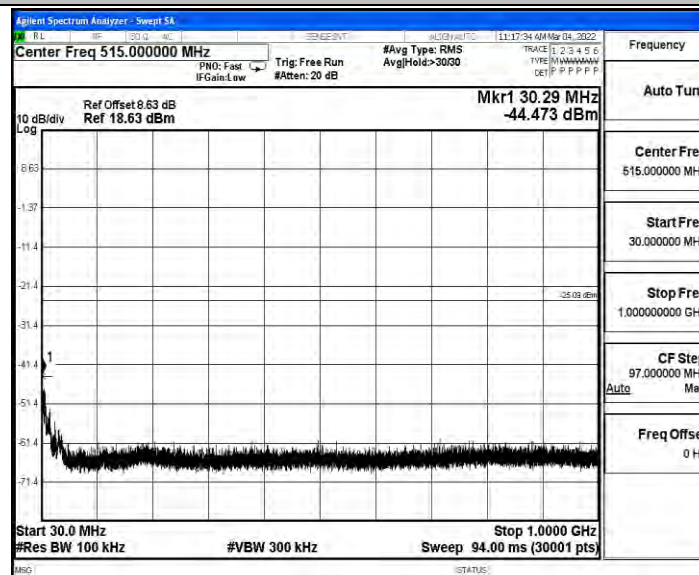
11G_Ant1_2412_1000~26500



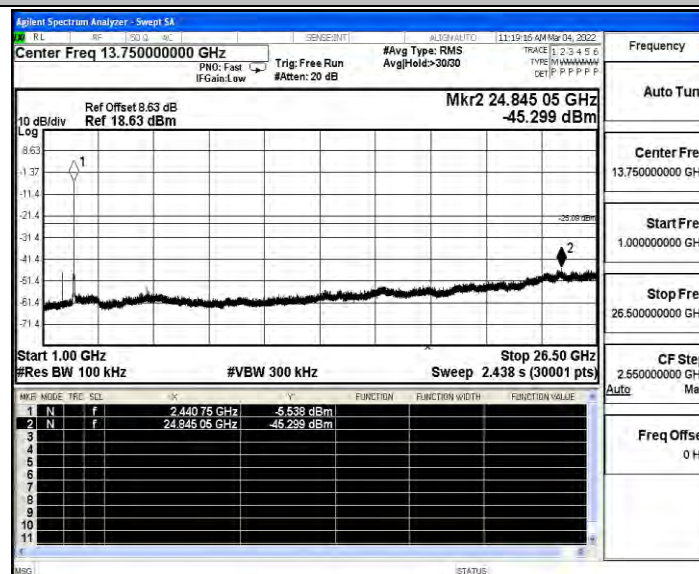
11G_Ant1_2437_0~Reference



11G_Ant1_2437_30~1000

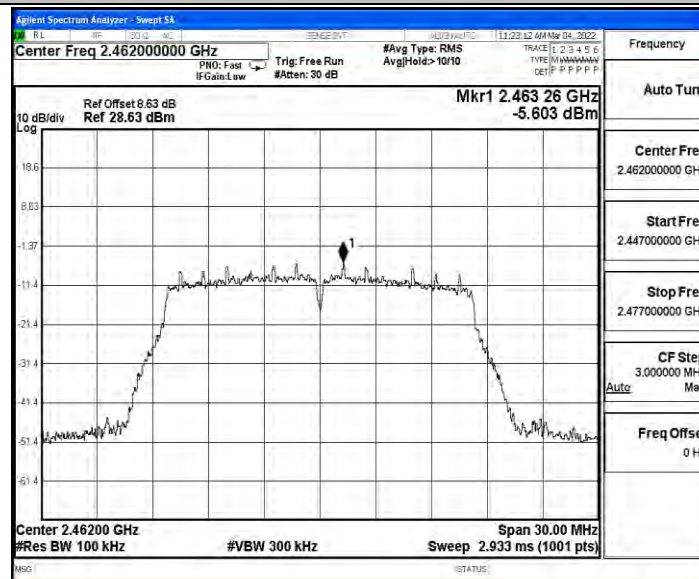


11G_Ant1_2437_1000~26500

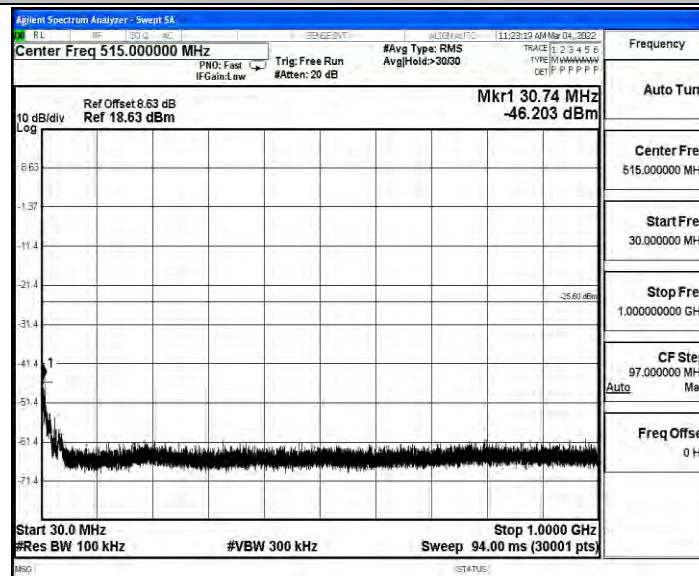




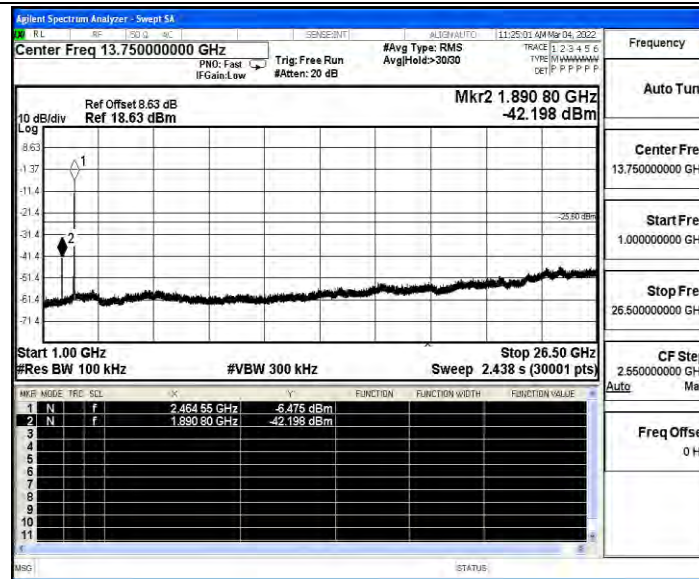
11G_Ant1_2462_0~Reference



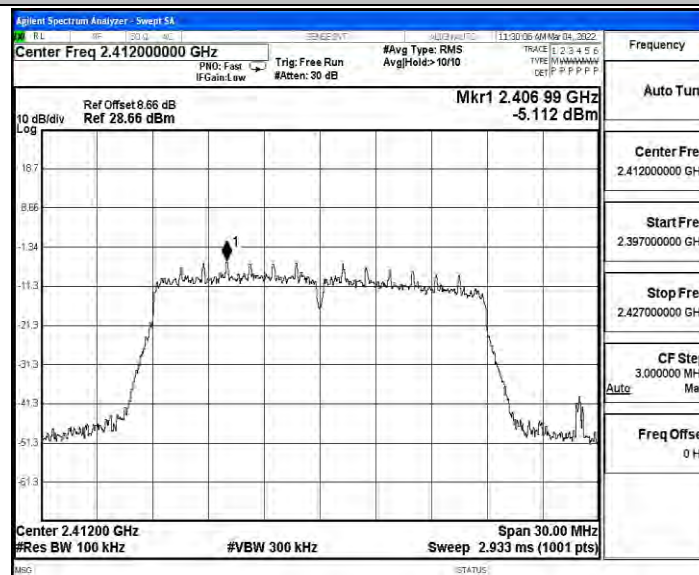
11G_Ant1_2462_30~1000



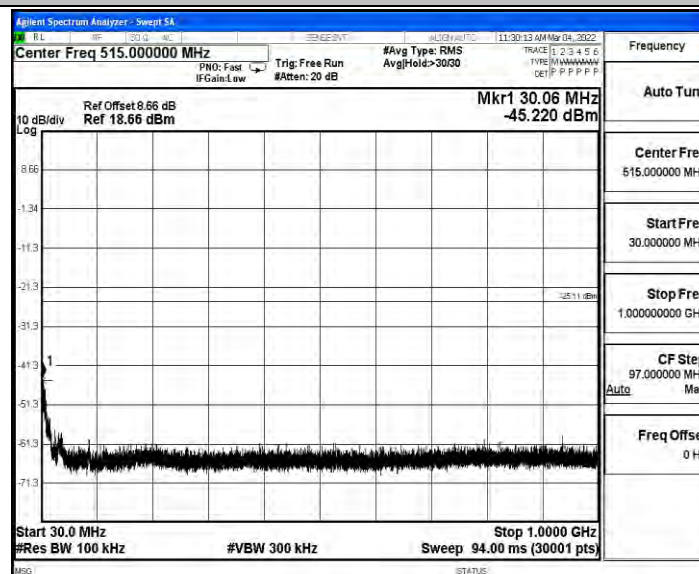
11G_Ant1_2462_1000~26500



11N20SISO_Ant1_2412_0~Reference

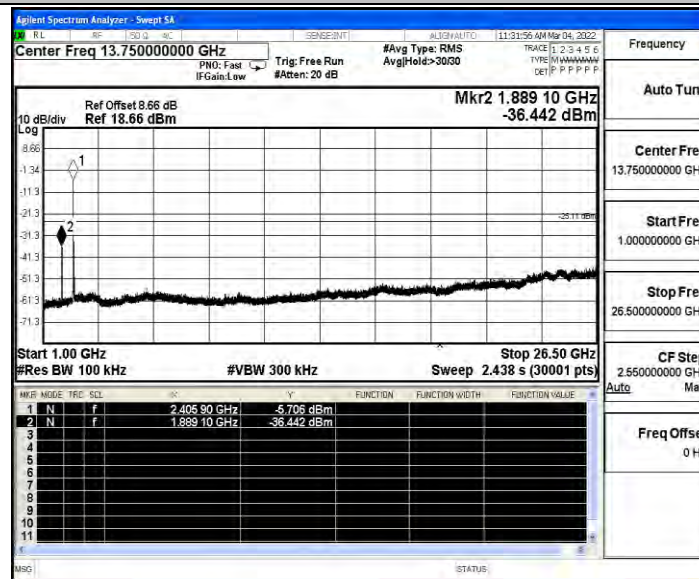


11N20SISO_Ant1_2412_30~1000

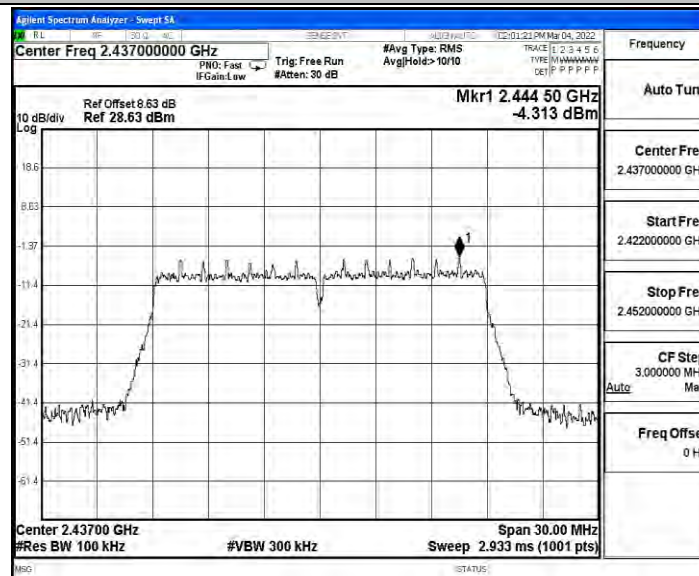




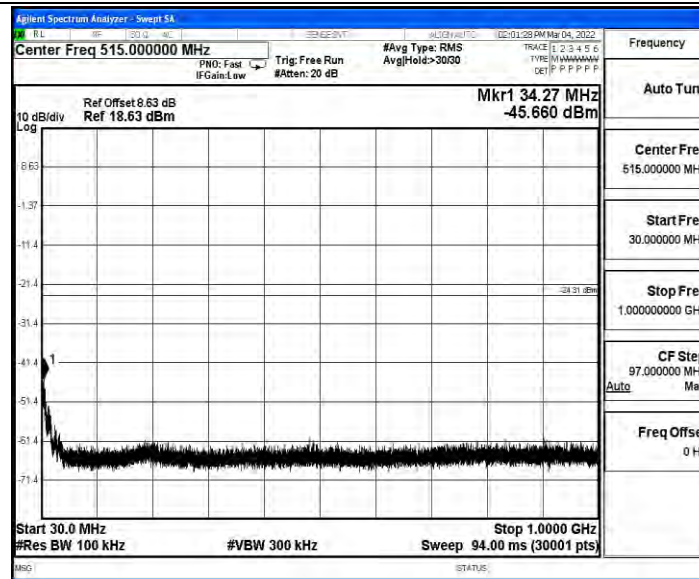
11N20SISO_Ant1_2412_1000~26500



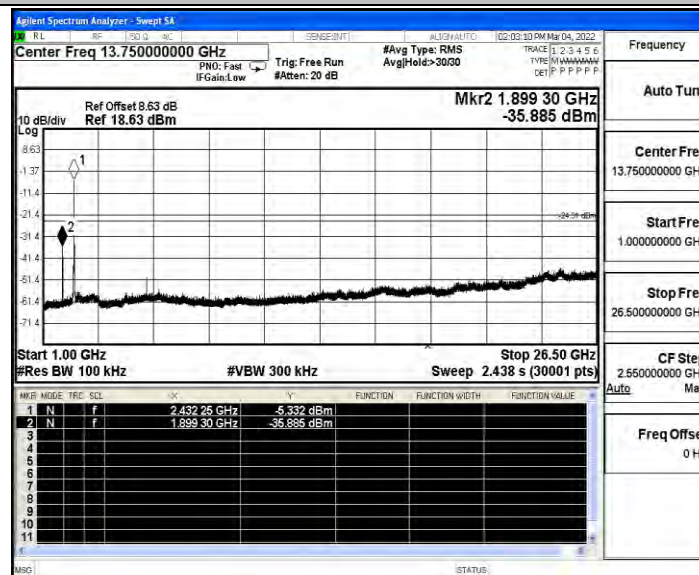
11N20SISO_Ant1_2437_0~Reference



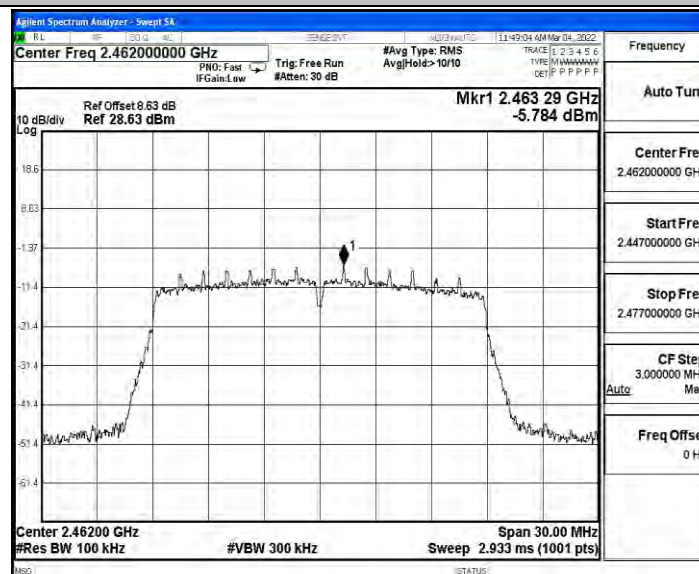
11N20SISO_Ant1_2437_30~1000



11N20SISO_Ant1_2437_1000~26500

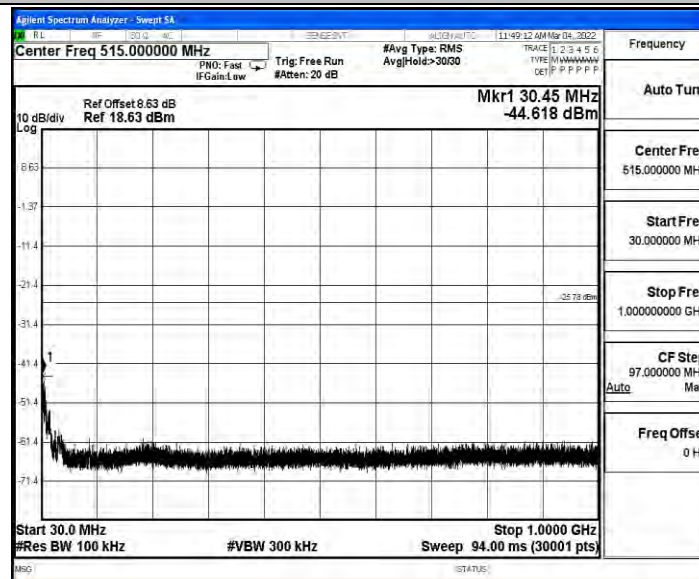


11N20SISO_Ant1_2462_0~Reference

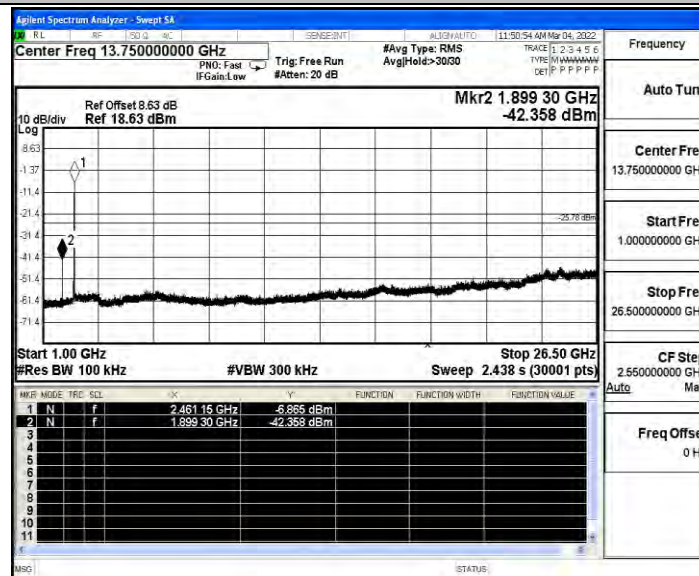




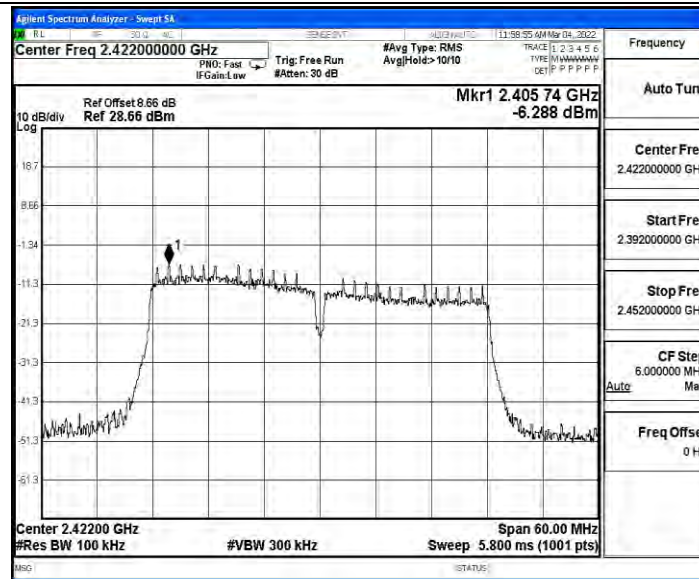
11N20SISO_Ant1_2462_30~1000



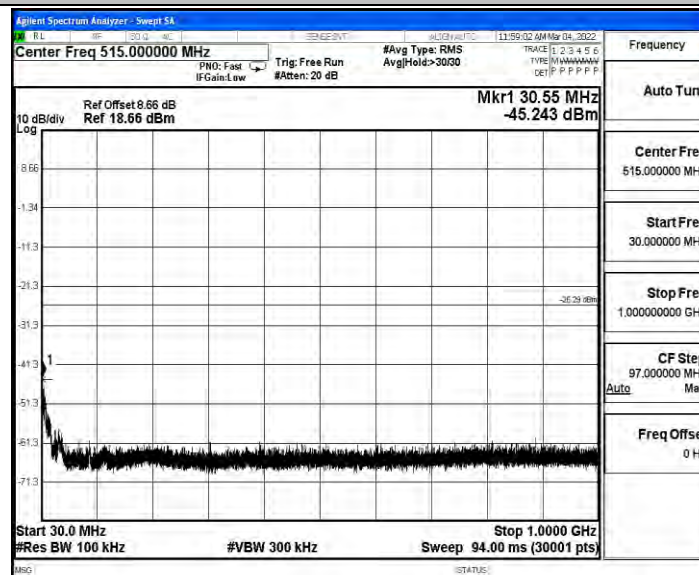
11N20SISO_Ant1_2462_1000~26500



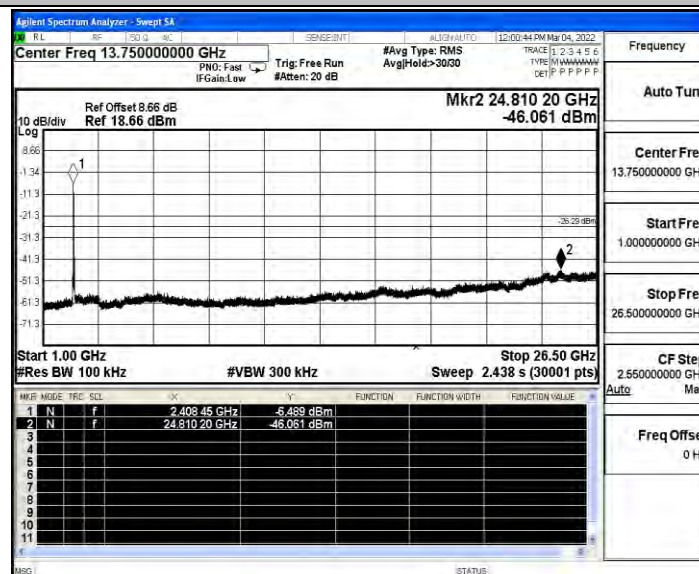
11N40SISO_Ant1_2422_0~Reference



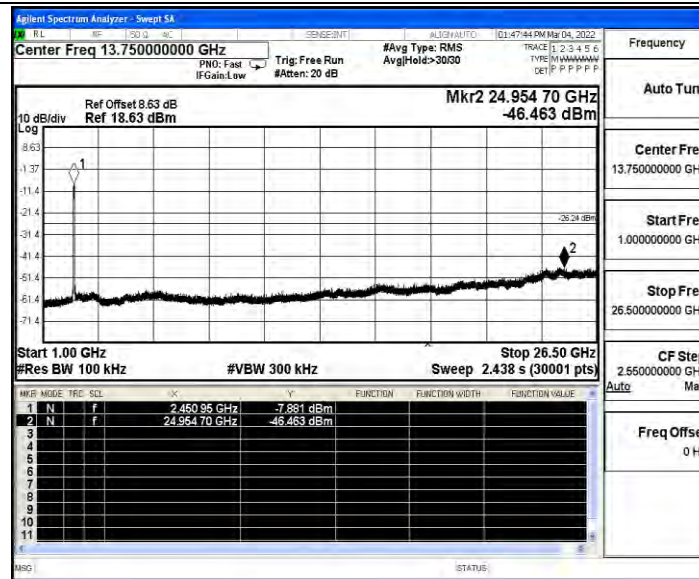
11N40SISO_Ant1_2422_30~1000



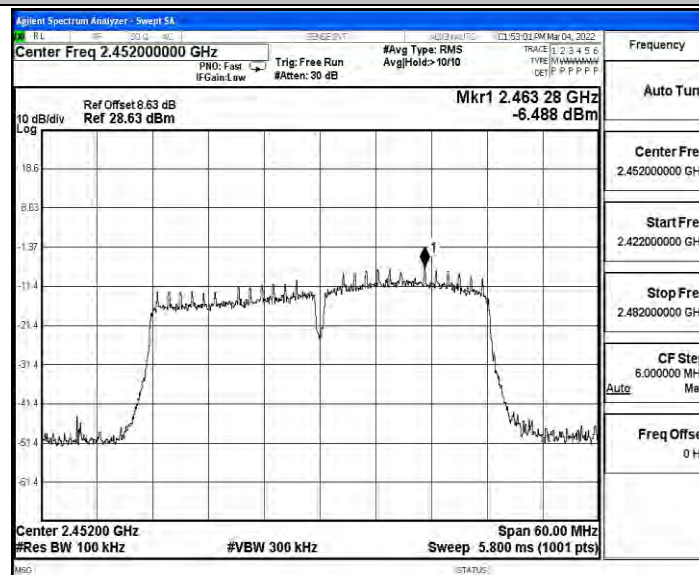
11N40SISO_Ant1_2422_1000~26500



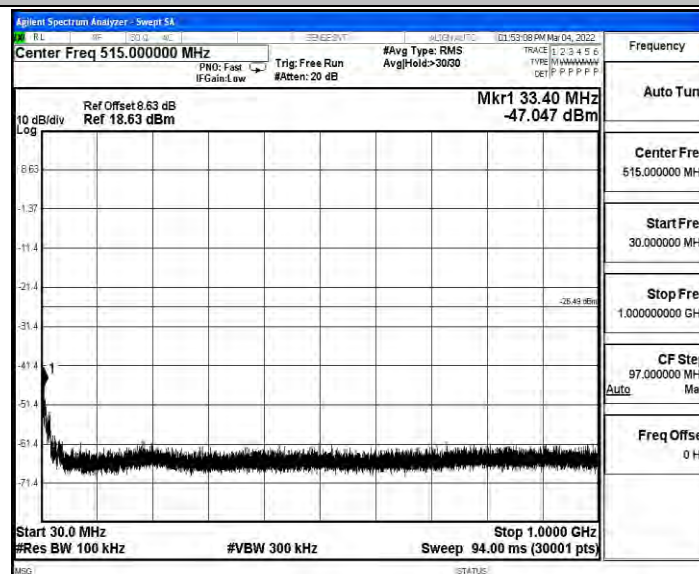
11N40SISO Ant1 2437 1000~26500



11N40SISO_Ant1_2452_0~Reference

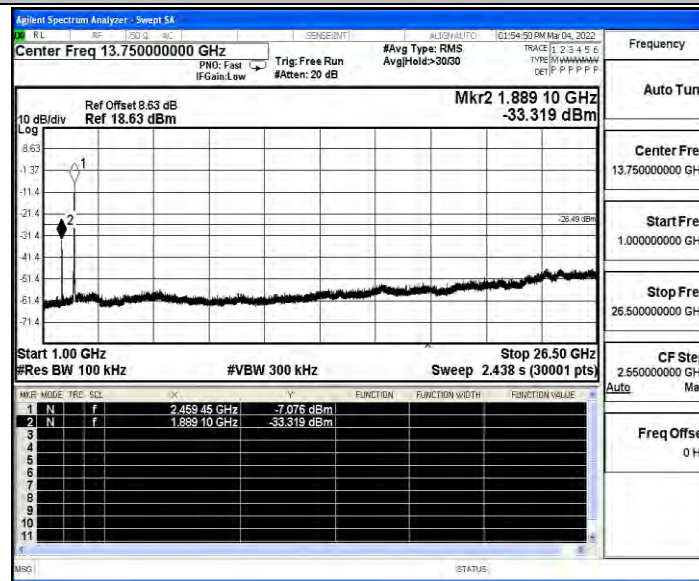


11N40SISO_Ant1_2452_30~1000





11N40SISO_Ant1_2452_1000~26500





A.6 Duty Cycle

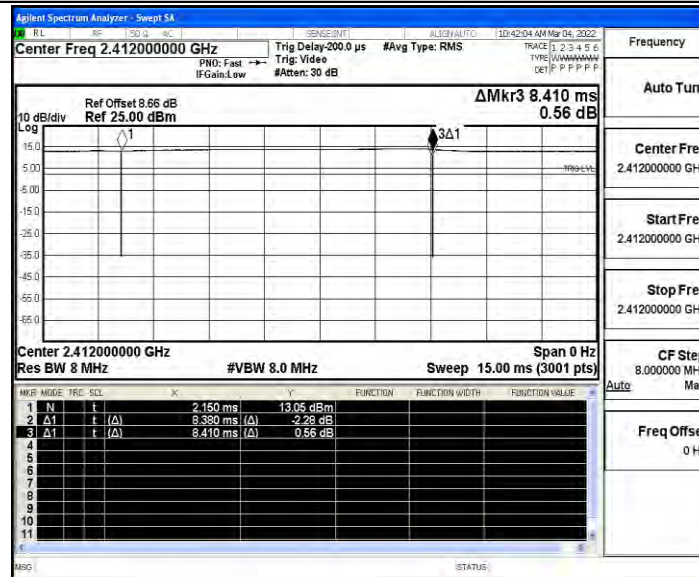
Test Result

TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Limit	Verdict
11B	Ant1	2412	8.38	8.41	99.64	---	---
		2437	8.39	8.42	99.64	---	---
		2462	8.39	8.42	99.64	---	---
11G	Ant1	2412	1.39	1.43	97.20	---	---
		2437	1.39	1.43	97.20	---	---
		2462	1.39	1.43	97.20	---	---
11N20SISO	Ant1	2412	1.30	1.33	97.74	---	---
		2437	1.30	1.34	97.01	---	---
		2462	1.30	1.33	97.74	---	---
11N40SISO	Ant1	2422	0.65	0.68	95.59	---	---
		2437	0.64	0.68	94.12	---	---
		2452	0.65	0.68	95.59	---	---

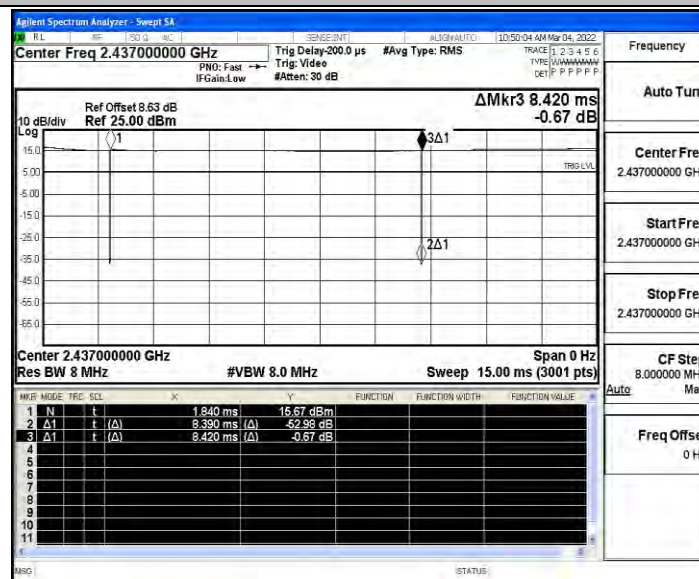


Test Graphs

11B_Ant1_2412



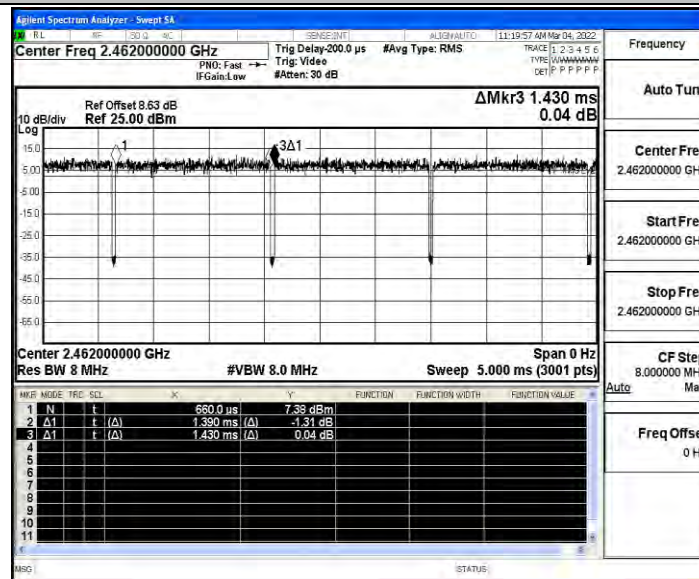
11B_Ant1_2437



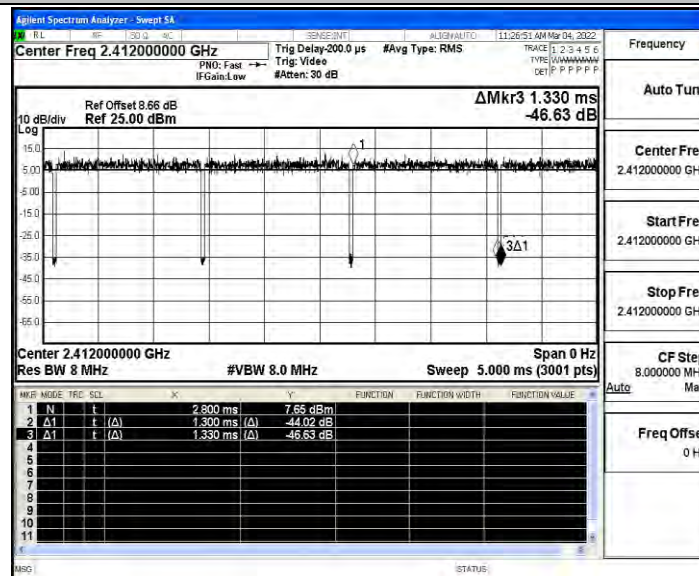
11B_Ant1_2462



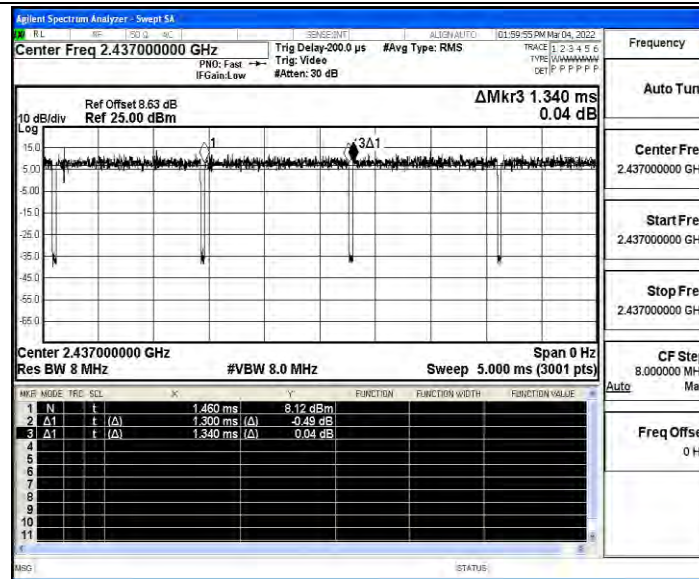
11G_Ant1_2462



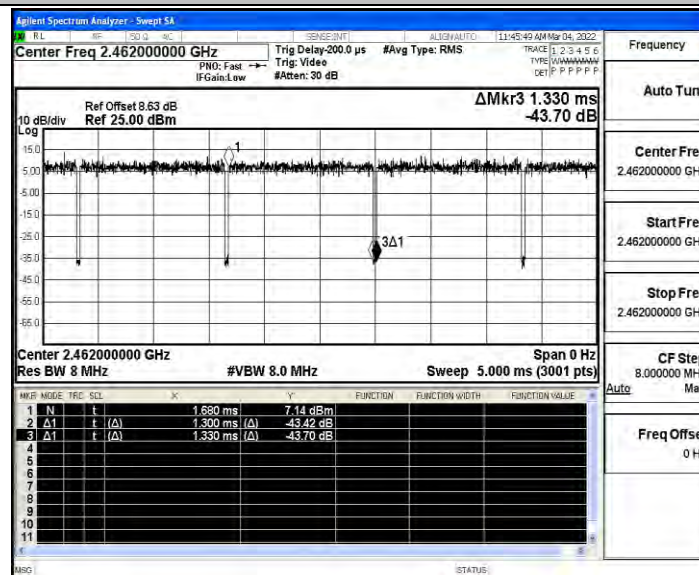
11N20SISO_Ant1_2412



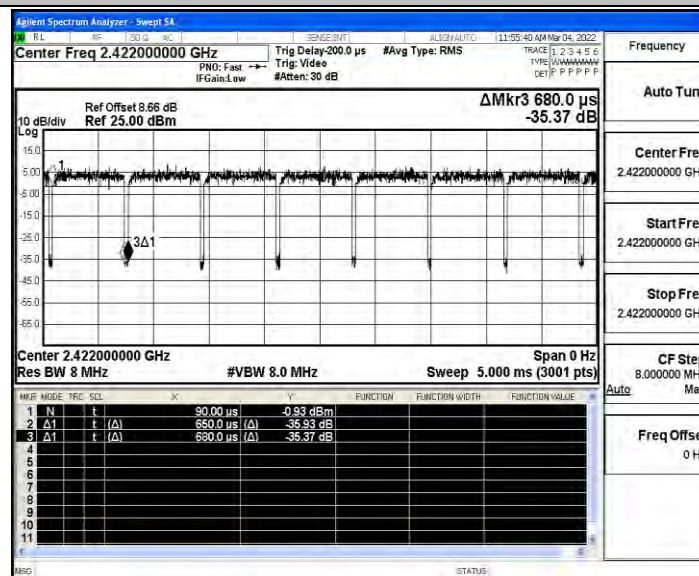
11N20SISO_Ant1_2437



11N20SISO_Ant1_2462



11N40SISO_Ant1_2422



Agilent Spectrum Analyzer - Sweep SA

File Edit View Options Help

Center Freq 2.452000000 GHz Span 8.0 MHz

Trace 1: 2.3456
Type: (ANALOG)
Def: P P P P P

Ref Offset 8.63 dB
Ref 25.00 dBm

Trig Delay: 200.0 μ s
Trig: Video
IF Gain: Low
#Avg Type: RMS
PNO: Fast
IF Atten: 30 dB

Δ Mkr3 680.0 μ s
-6.14 dB

Center 2.452000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Sweep 5.000 ms (3001 Pts)

MNR	MIDG	FREQ	SCN	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	t	(A)	2.000 ms	0.20 dBm			
2	Δ 1	t	(A)	650.0 μ s	-36.17 dB			
3	Δ 1	t	(A)	680.0 μ s	-6.14 dB			
4								
5								
6								
7								
8								
9								
10								
11								

Auto

Freq Offset 0 Hz



A.7 Emissions in Restricted Bands

Test Result

TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
11B	Ant1	Low	2412	AV	2310.000	-48.87	≤-41.20	46.33	≤54	PASS
				AV	2386.840	-48.39	≤-41.20	46.81	≤54	PASS
				AV	2390.000	-48.45	≤-41.20	46.75	≤54	PASS
				Peak	2310.000	-38.83	≤-21.20	56.37	≤74	PASS
				Peak	2382.810	-36.46	≤-21.20	58.74	≤74	PASS
				Peak	2390.000	-37.59	≤-21.20	57.61	≤74	PASS
		High	2462	AV	2483.500	-48.04	≤-41.20	47.16	≤54	PASS
				AV	2483.780	-47.89	≤-41.20	47.31	≤54	PASS
				AV	2500.000	-48.03	≤-41.20	47.17	≤54	PASS
				Peak	2483.500	-37.39	≤-21.20	57.81	≤74	PASS
				Peak	2484.990	-35.69	≤-21.20	59.51	≤74	PASS
				Peak	2500.000	-36.67	≤-21.20	58.53	≤74	PASS
11G	Ant1	Low	2412	AV	2310.000	-48.49	≤-41.20	46.71	≤54	PASS
				AV	2389.830	-47.69	≤-41.20	47.51	≤54	PASS
				AV	2390.000	-47.75	≤-41.20	47.45	≤54	PASS
				Peak	2310.000	-38.27	≤-21.20	56.93	≤74	PASS
				Peak	2311.310	-36.51	≤-21.20	58.69	≤74	PASS
				Peak	2390.000	-37.36	≤-21.20	57.84	≤74	PASS
		High	2462	AV	2483.500	-47.51	≤-41.20	47.69	≤54	PASS
				AV	2483.560	-47.33	≤-41.20	47.87	≤54	PASS
				AV	2500.000	-47.47	≤-41.20	47.73	≤54	PASS
				Peak	2483.500	-37.33	≤-21.20	57.87	≤74	PASS
				Peak	2492.910	-36.02	≤-21.20	59.18	≤74	PASS
				Peak	2500.000	-37.56	≤-21.20	57.64	≤74	PASS
11N20SIS O	Ant1	Low	2412	AV	2310.000	-48.5	≤-41.20	46.70	≤54	PASS
				AV	2389.700	-47.72	≤-41.20	47.48	≤54	PASS
				AV	2390.000	-47.84	≤-41.20	47.36	≤54	PASS
				Peak	2310.000	-38.4	≤-21.20	56.80	≤74	PASS
				Peak	2386.450	-36.04	≤-21.20	59.16	≤74	PASS
				Peak	2390.000	-37.31	≤-21.20	57.89	≤74	PASS
		High	2462	AV	2483.500	-47.45	≤-41.20	47.75	≤54	PASS
				AV	2485.760	-47.37	≤-41.20	47.83	≤54	PASS
				AV	2500.000	-47.54	≤-41.20	47.66	≤54	PASS
				Peak	2483.500	-37.38	≤-21.20	57.82	≤74	PASS
				Peak	2499.730	-35.81	≤-21.20	59.39	≤74	PASS
				Peak	2500.000	-37.33	≤-21.20	57.87	≤74	PASS
11N40SIS	Ant1	Low	2422	AV	2310.000	-48.23	≤-41.20	46.97	≤54	PASS



O				AV	2388.270	-45.93	≤ -41.20	49.27	≤ 54	PASS
				AV	2390.000	-46.38	≤ -41.20	48.82	≤ 54	PASS
				Peak	2310.000	-38.51	≤ -21.20	56.69	≤ 74	PASS
				Peak	2388.660	-30.56	≤ -21.20	64.64	≤ 74	PASS
				Peak	2390.000	-31.59	≤ -21.20	63.61	≤ 74	PASS
		High	2452	AV	2483.500	-46.64	≤ -41.20	48.56	≤ 54	PASS
				AV	2484.330	-46.27	≤ -41.20	48.93	≤ 54	PASS
				AV	2500.000	-47.52	≤ -41.20	47.68	≤ 54	PASS
				Peak	2483.500	-32.44	≤ -21.20	62.76	≤ 74	PASS
				Peak	2484.440	-31.29	≤ -21.20	63.91	≤ 74	PASS
				Peak	2500.000	-38.04	≤ -21.20	57.16	≤ 74	PASS

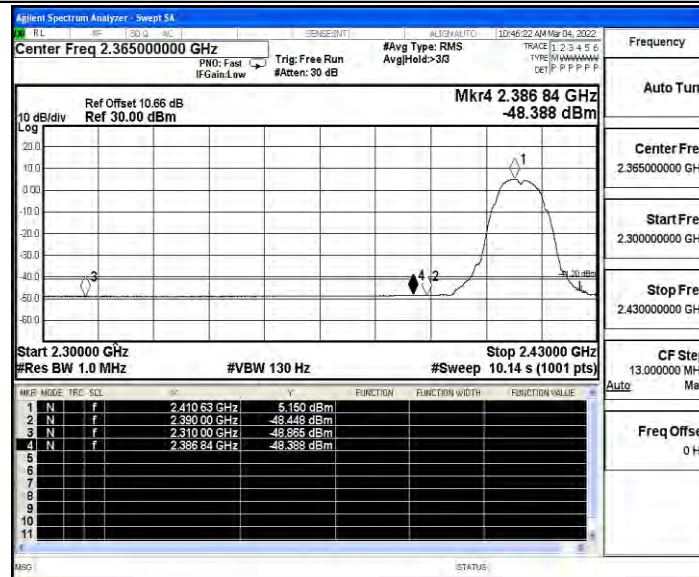
Note:

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.

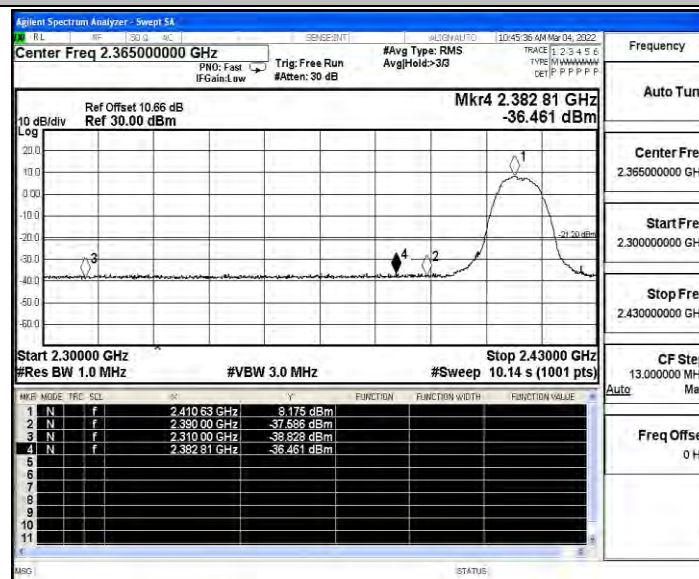


Test Graphs

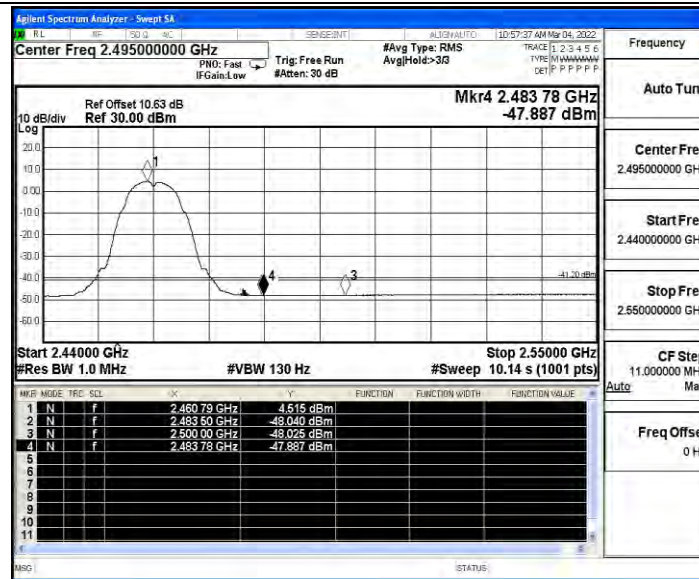
11B_Ant1_Low_2412_AV



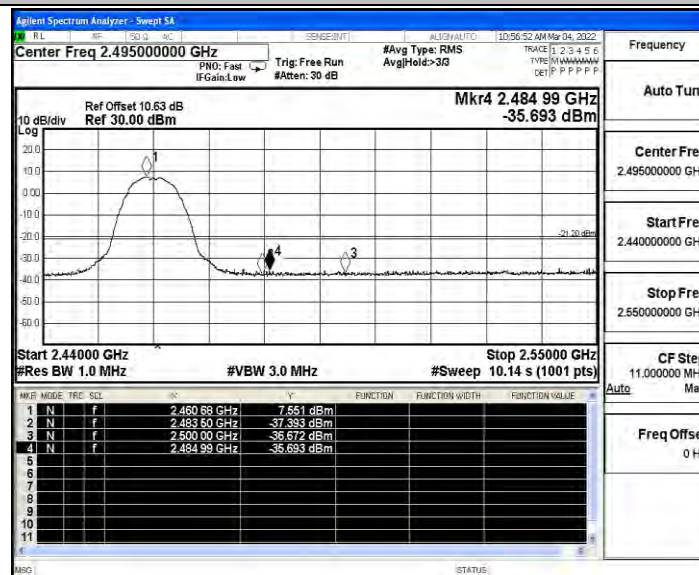
11B_Ant1_Low_2412_Peak



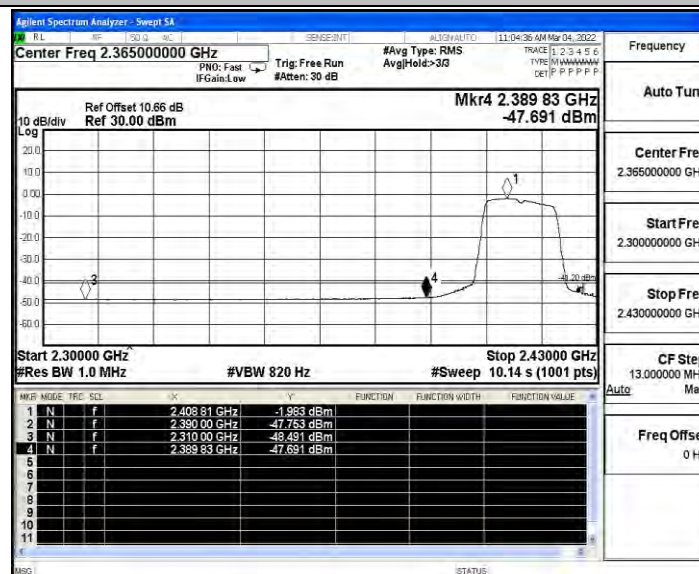
11B_Ant1_High_2462_AV



11B_Ant1_High_2462_Peak

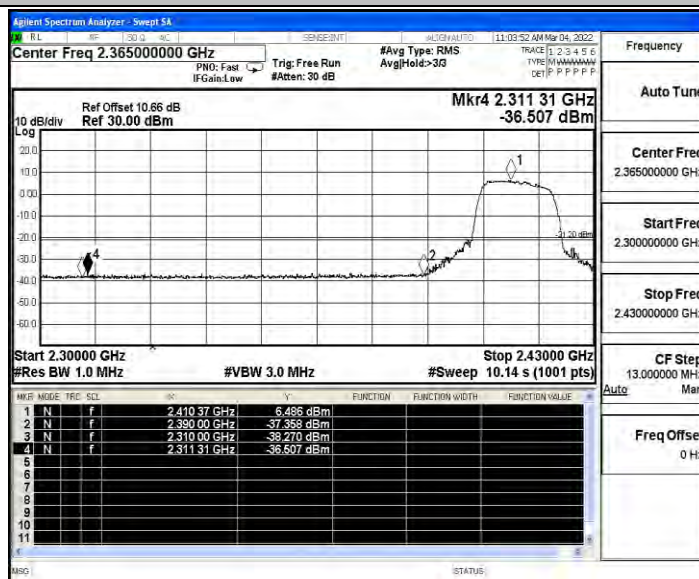


11G_Ant1_Low_2412_AV

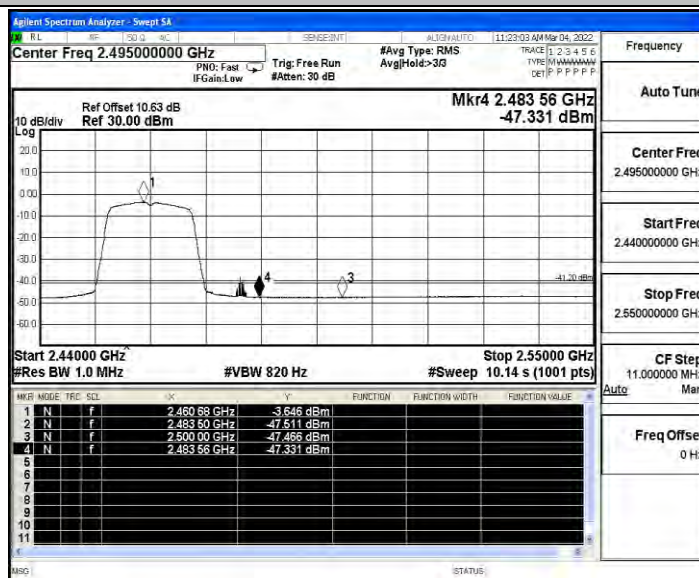




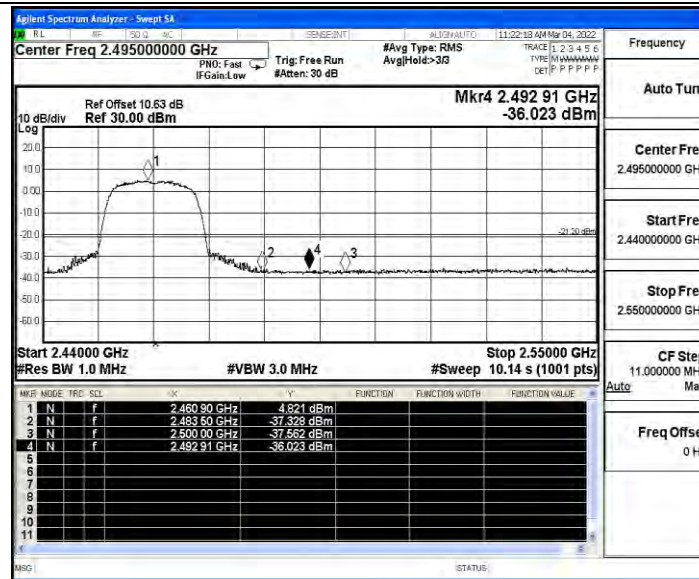
11G_Ant1_Low_2412_Peak



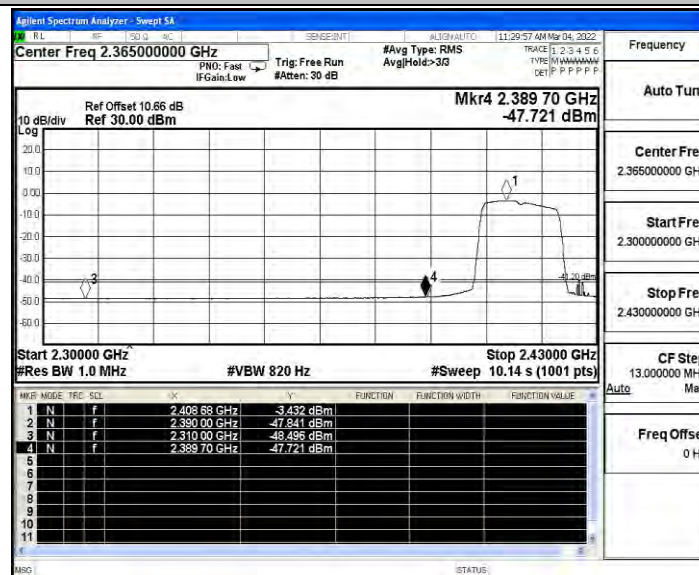
11G_Ant1_High_2462_AV



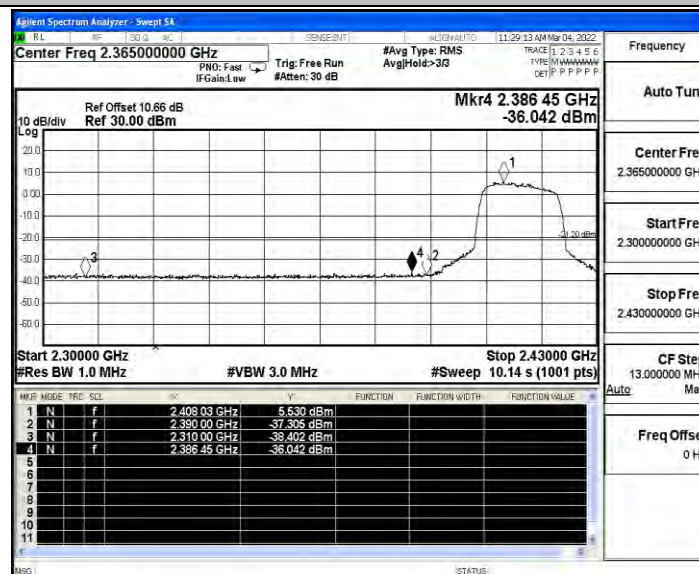
11G_Ant1_High_2462_Peak



11N20SISO_Ant1_Low_2412_AV

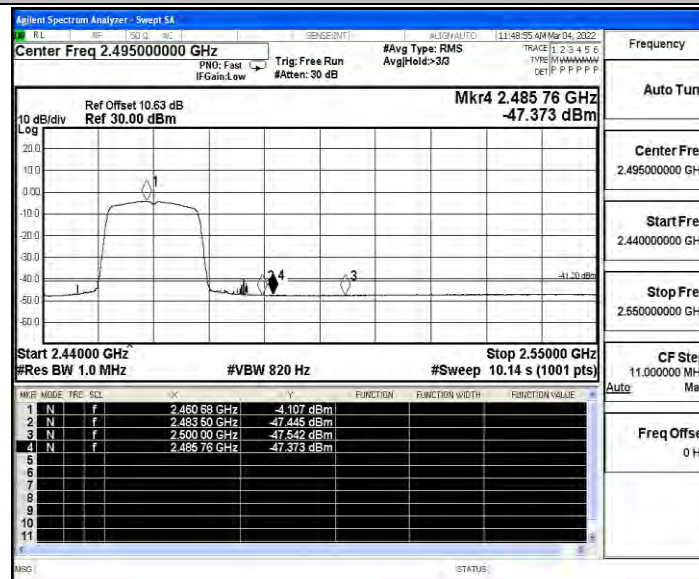


11N20SISO_Ant1_Low_2412_Peak

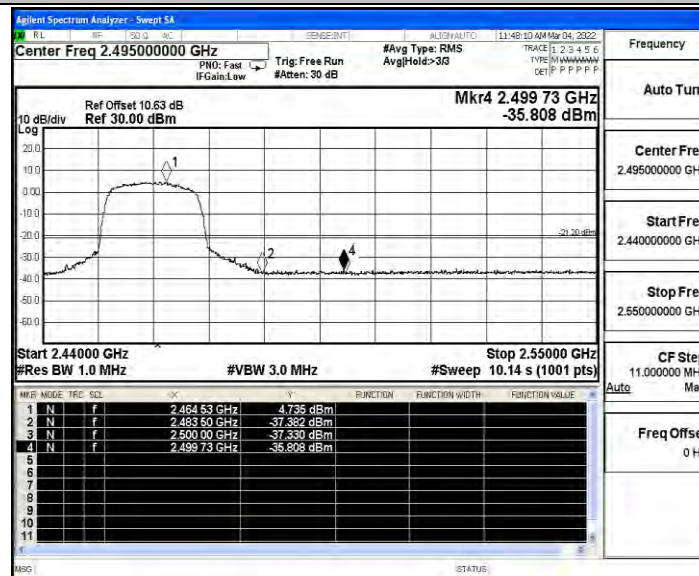




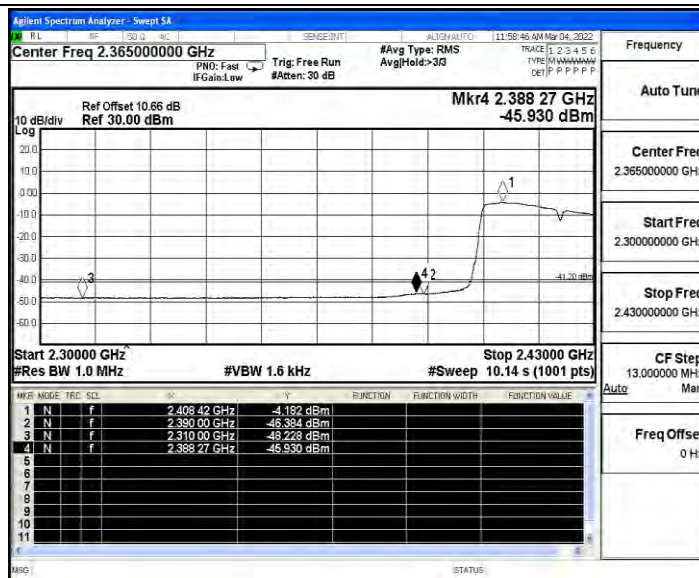
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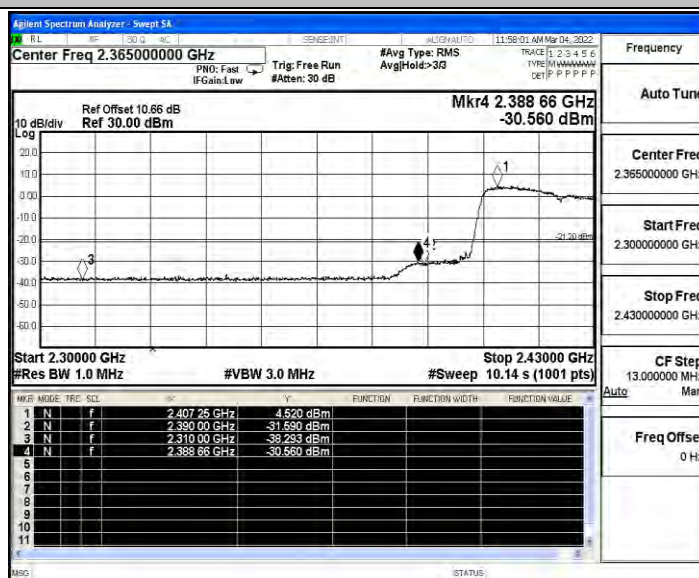
11N20SISO_Ant1_High_2462_Peak



11N40SISO_Ant1_Low_2422_AV



11N40SISO_Ant1_Low_2422_Peak



11N40SISO_Ant1_High_2452_AV

