



Appendix C

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: OF2021 Control Center

Test Model: UR200878-CB

Environmental Conditions

Temperature:	21.1° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Carl Fu
Supervised by:	Li Huan

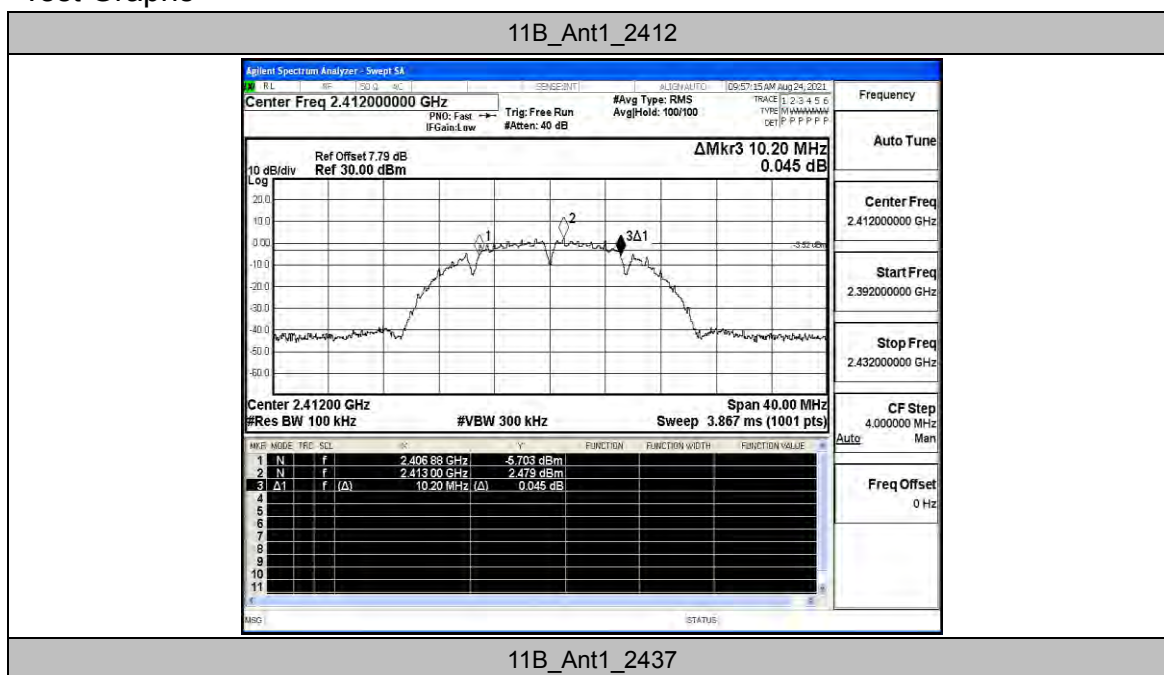


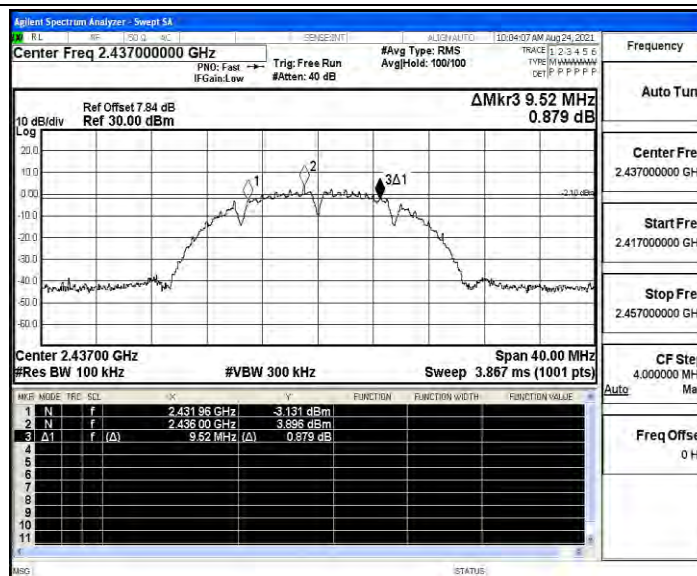
C.1 6dB Bandwidth

Test Result

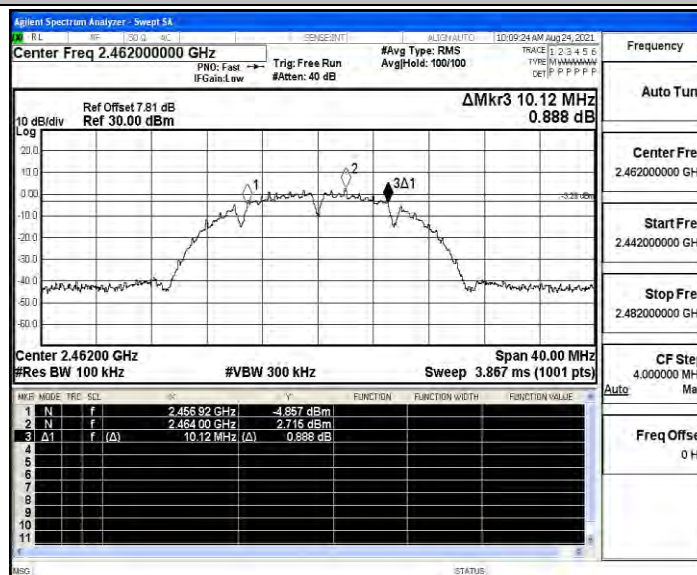
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	10.200	2406.880	2417.080	0.5	PASS
		2437	9.520	2431.960	2441.480	0.5	PASS
		2462	10.120	2456.920	2467.040	0.5	PASS
11G	Ant1	2412	16.400	2403.800	2420.200	0.5	PASS
		2437	16.400	2428.800	2445.200	0.5	PASS
		2462	16.440	2453.760	2470.200	0.5	PASS
11N20SISO	Ant1	2412	17.000	2403.440	2420.440	0.5	PASS
		2437	17.640	2428.160	2445.800	0.5	PASS
		2462	17.640	2453.160	2470.800	0.5	PASS
11N40SISO	Ant1	2422	35.840	2404.000	2439.840	0.5	PASS
		2437	36.000	2419.000	2455.000	0.5	PASS
		2452	35.920	2434.000	2469.920	0.5	PASS

Test Graphs

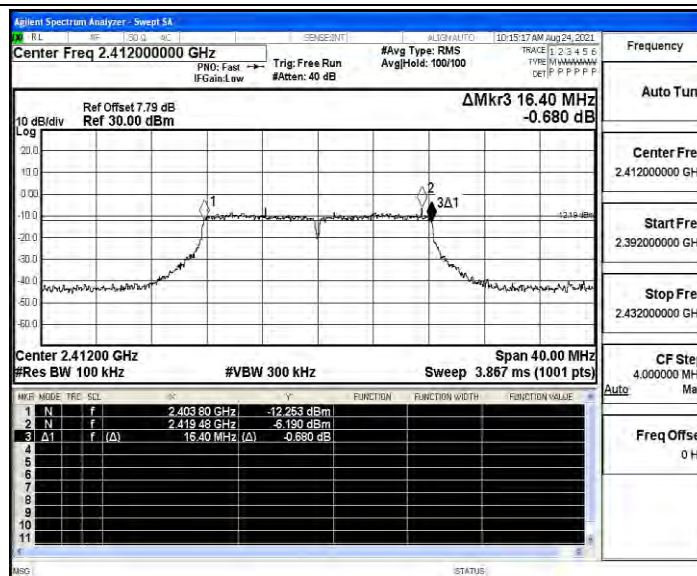




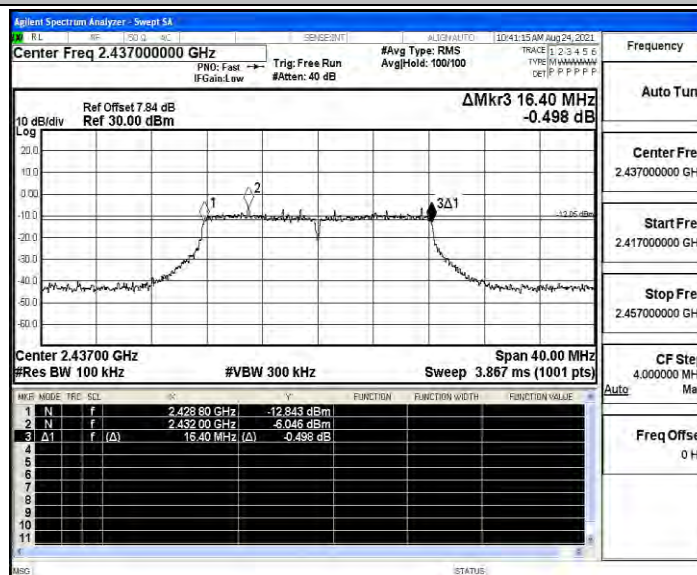
11B_Ant1_2462



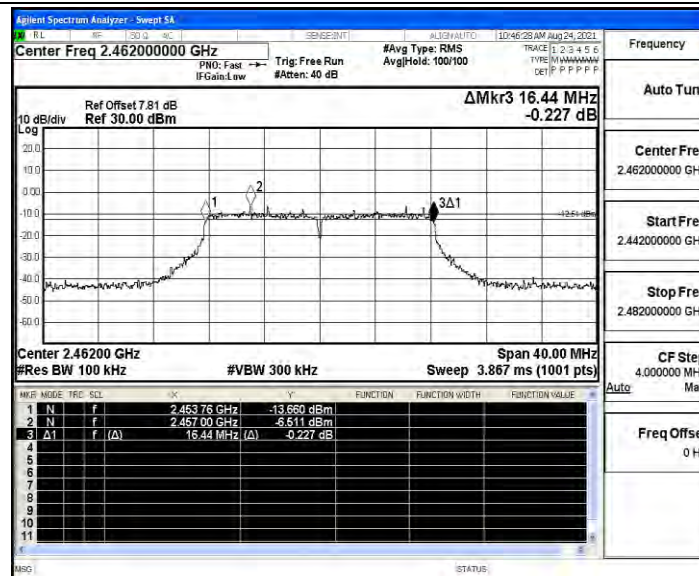
11G_Ant1_2412



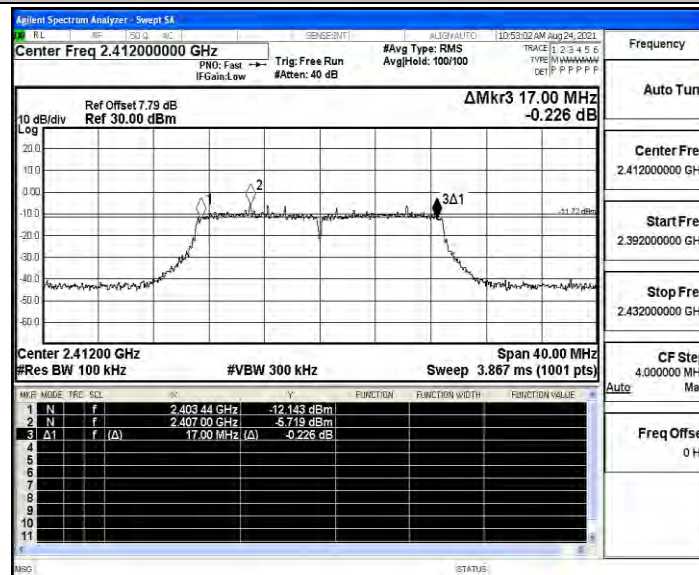
11G_Ant1_2437



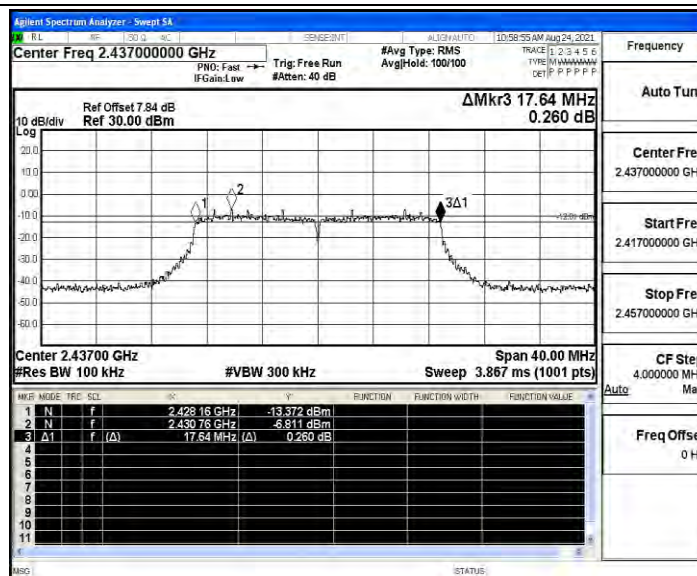
11G_Ant1_2462



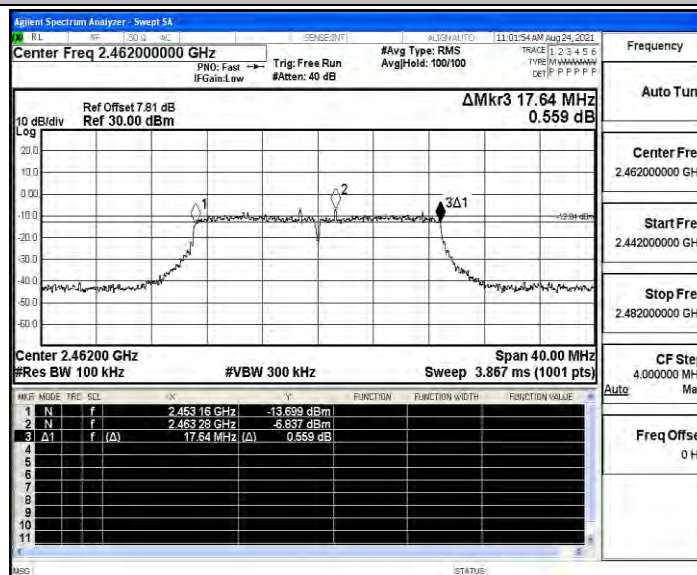
11N20SISO_Ant1_2412



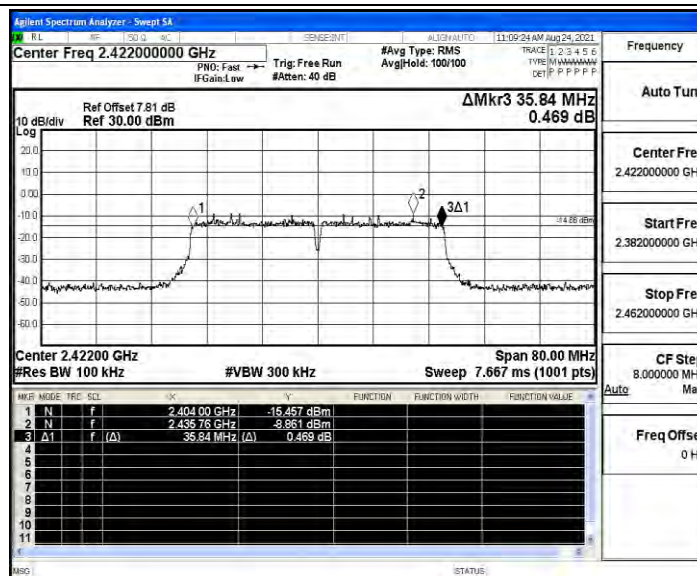
11N20SISO_Ant1_2437



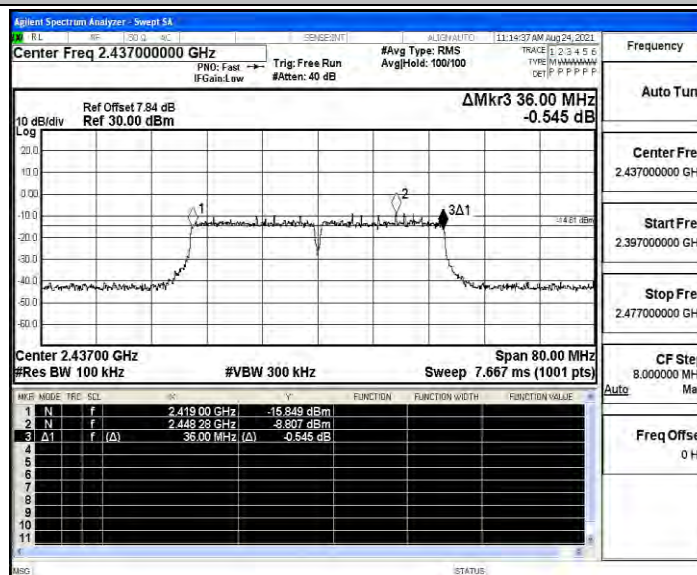
11N20SISO_Ant1_2462



11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



C.2 Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	15.67	≤30	PASS
		2437	16.03	≤30	PASS
		2462	15.28	≤30	PASS
11G	Ant1	2412	12.29	≤30	PASS
		2437	12.15	≤30	PASS
		2462	12.04	≤30	PASS
11N20SISO	Ant1	2412	12.72	≤30	PASS
		2437	12.43	≤30	PASS
		2462	12.35	≤30	PASS
11N40SISO	Ant1	2422	12.43	≤30	PASS
		2437	12.26	≤30	PASS
		2452	12.22	≤30	PASS



C.3 Maximum power spectral density

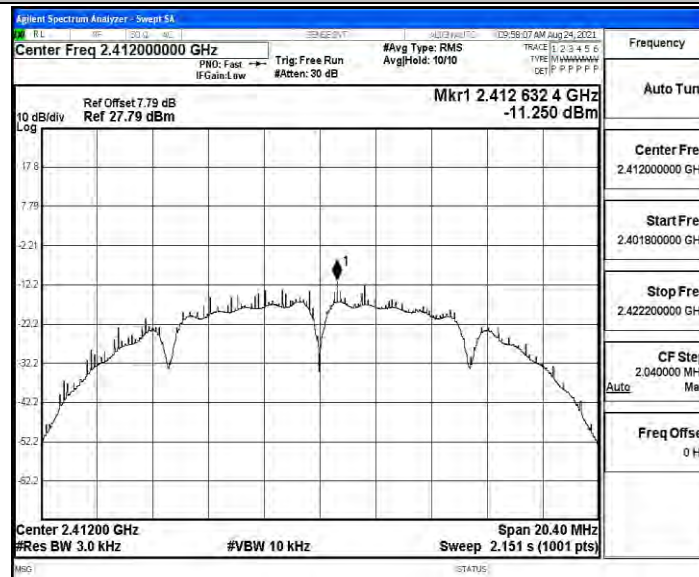
Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-11.25	≤8	PASS
		2437	-11.89	≤8	PASS
		2462	-12.87	≤8	PASS
11G	Ant1	2412	-22.54	≤8	PASS
		2437	-22.72	≤8	PASS
		2462	-22.94	≤8	PASS
11N20SISO	Ant1	2412	-22.21	≤8	PASS
		2437	-21.45	≤8	PASS
		2462	-21.69	≤8	PASS
11N40SISO	Ant1	2422	-24.27	≤8	PASS
		2437	-24.1	≤8	PASS
		2452	-24.13	≤8	PASS

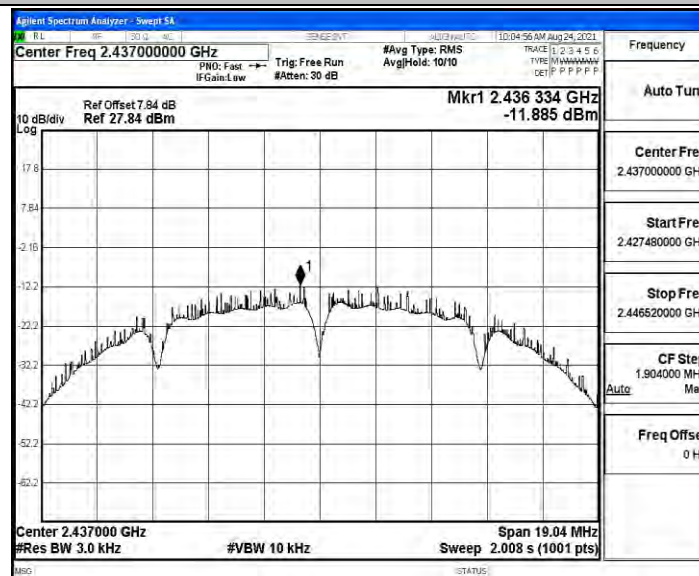


Test Graphs

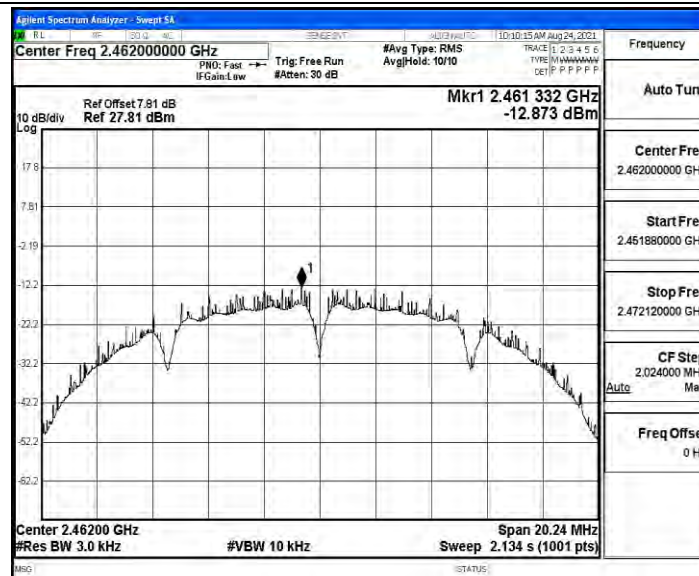
11B_Ant1_2412



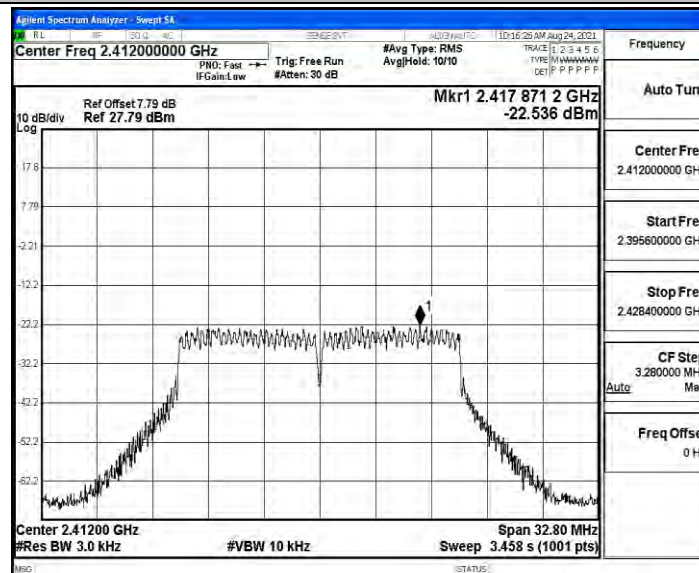
11B_Ant1_2437



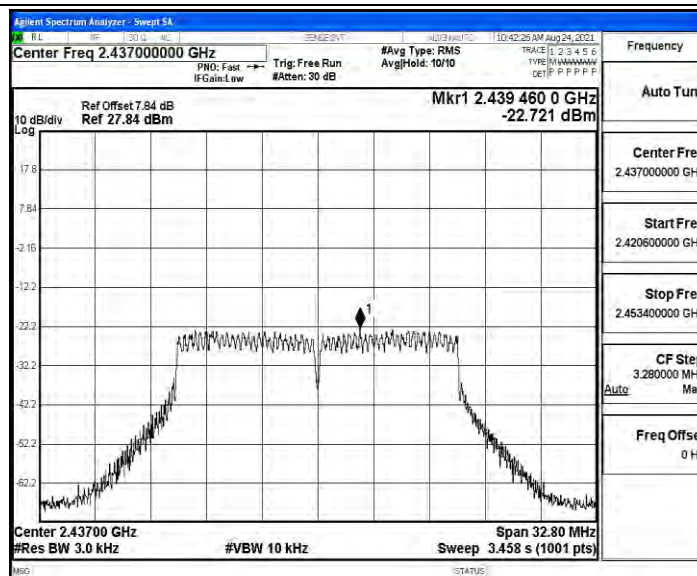
11B_Ant1_2462



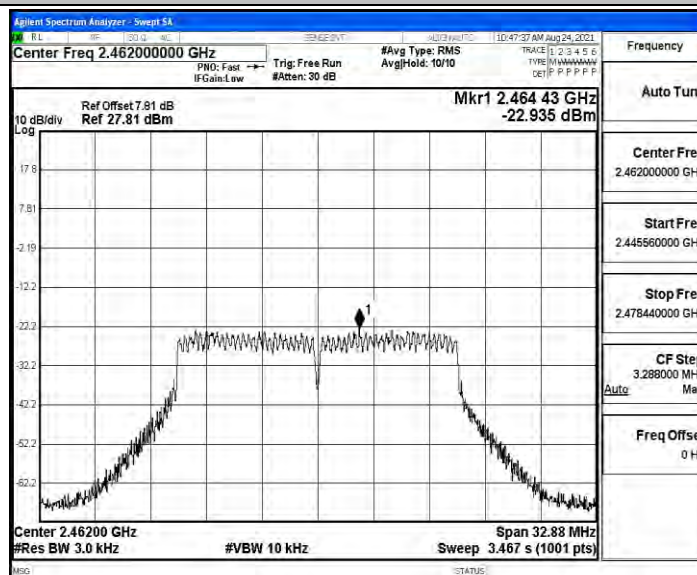
11G_Ant1_2412



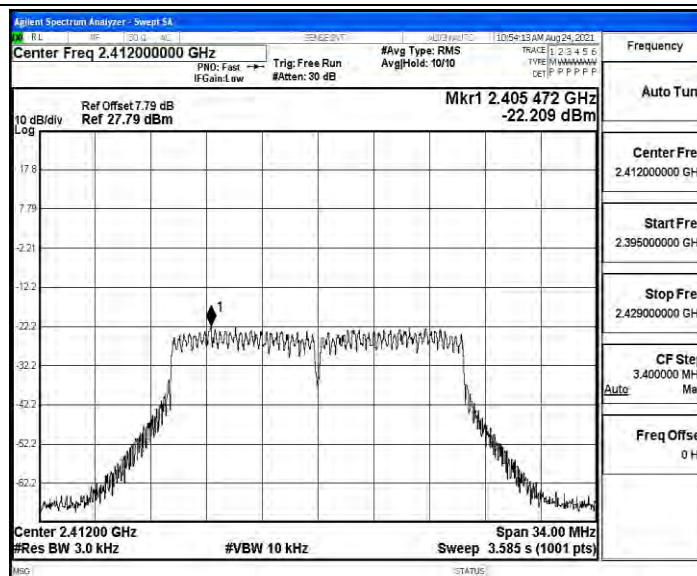
11G_Ant1_2437



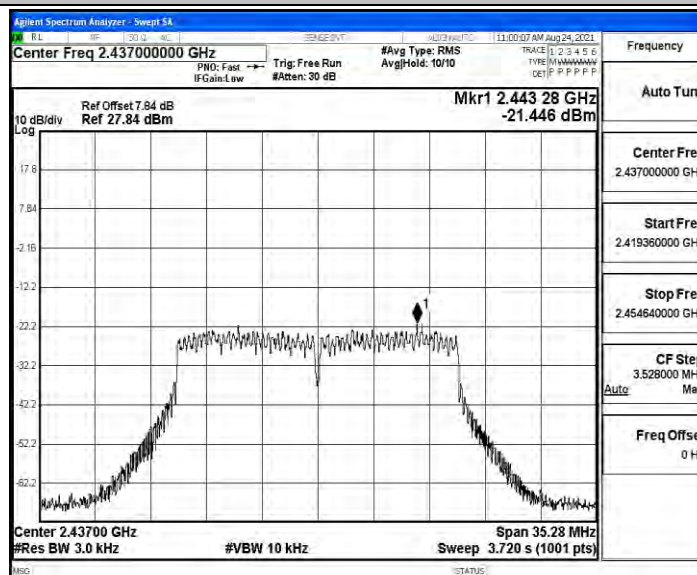
11G_Ant1_2462



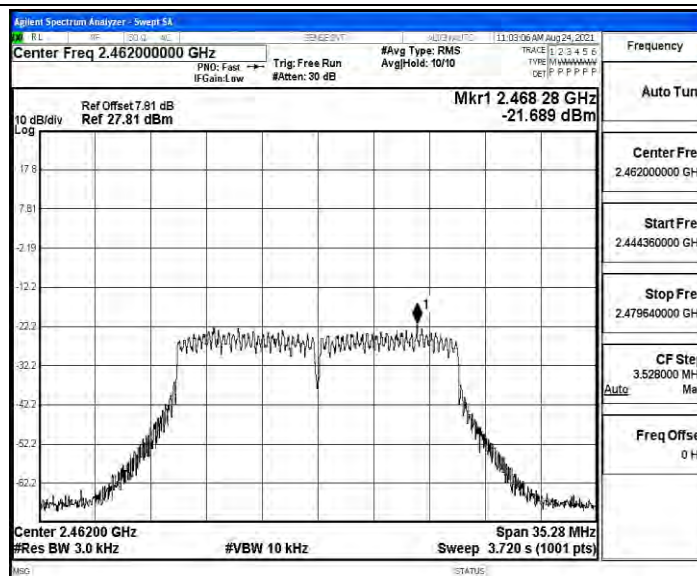
11N20SISO_Ant1_2412



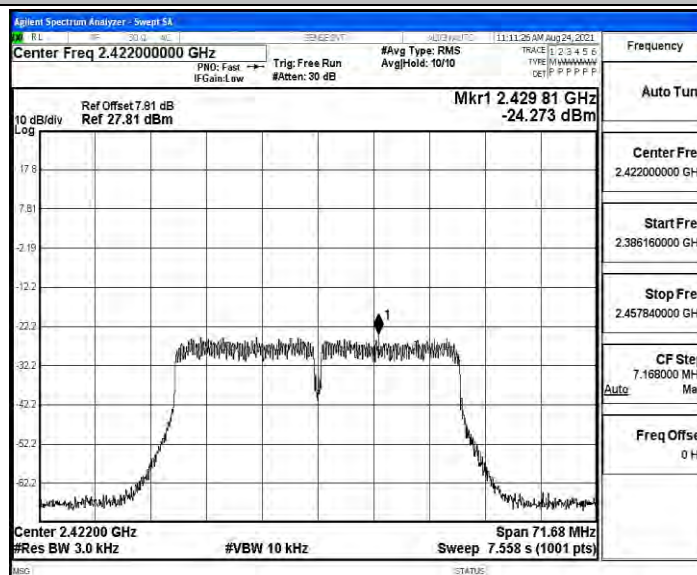
11N20SISO_Ant1_2437



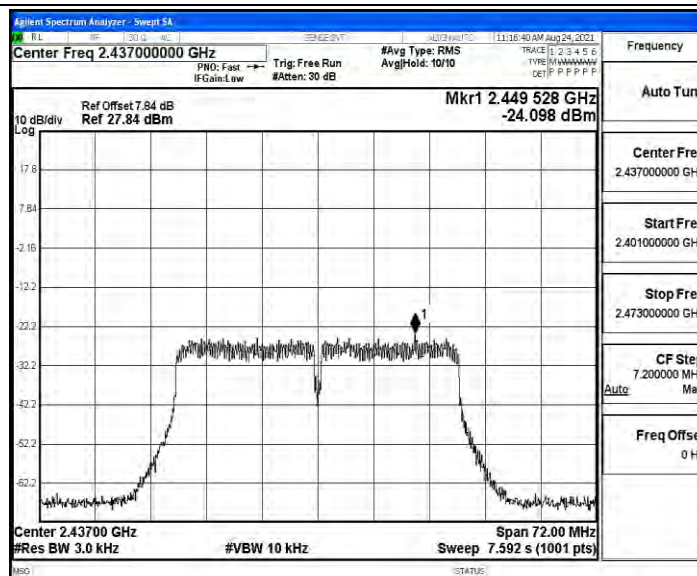
11N20SISO_Ant1_2462



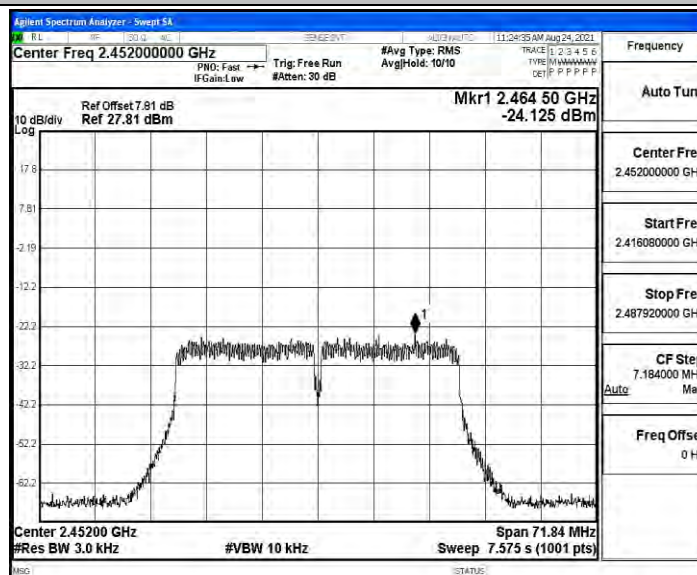
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



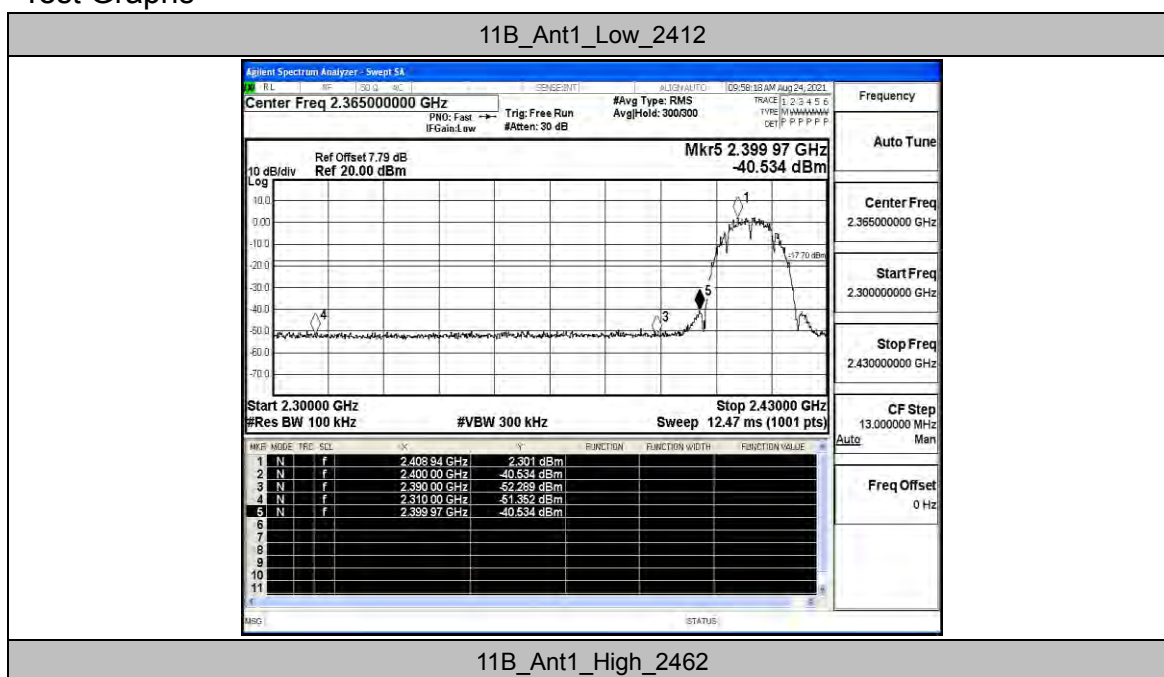


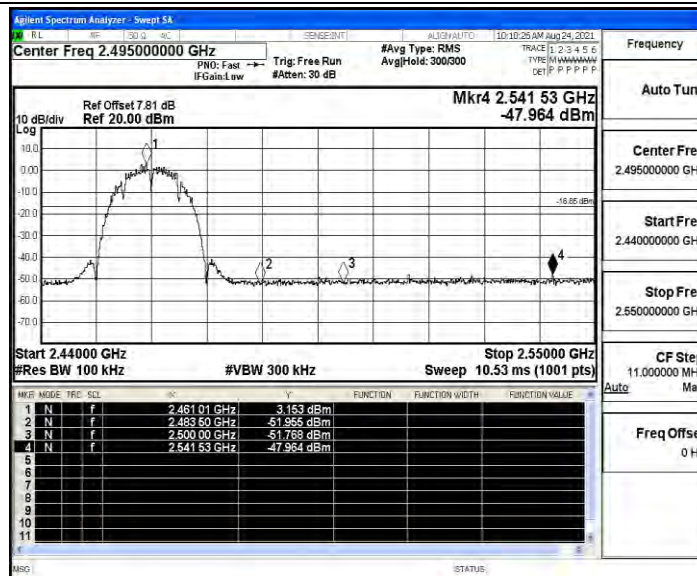
C.4 Band edge measurements

Test Result

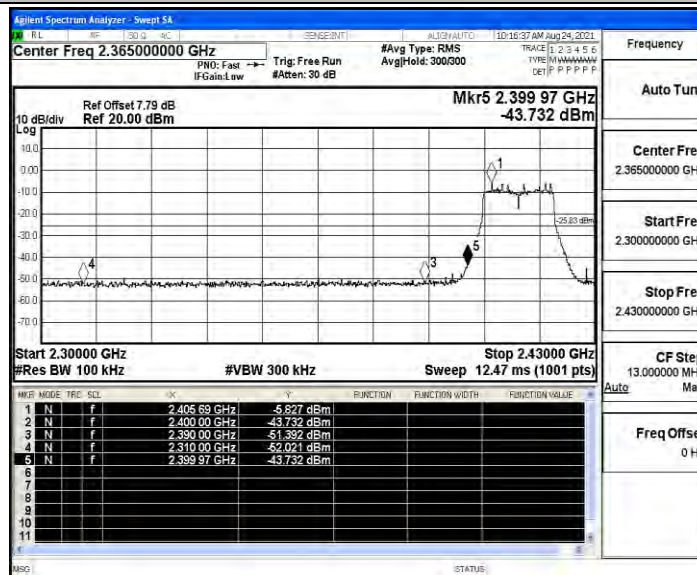
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	2.30	-40.53	≤-17.7	PASS
		High	2462	3.15	-47.96	≤-16.85	PASS
11G	Ant1	Low	2412	-5.83	-43.73	≤-25.83	PASS
		High	2462	-5.82	-48.3	≤-25.82	PASS
11N20SISO	Ant1	Low	2412	-6.65	-41.98	≤-26.65	PASS
		High	2462	-6.35	-47.22	≤-26.35	PASS
11N40SISO	Ant1	Low	2422	-8.69	-44.07	≤-28.69	PASS
		High	2452	-8.79	-48.73	≤-28.79	PASS

Test Graphs

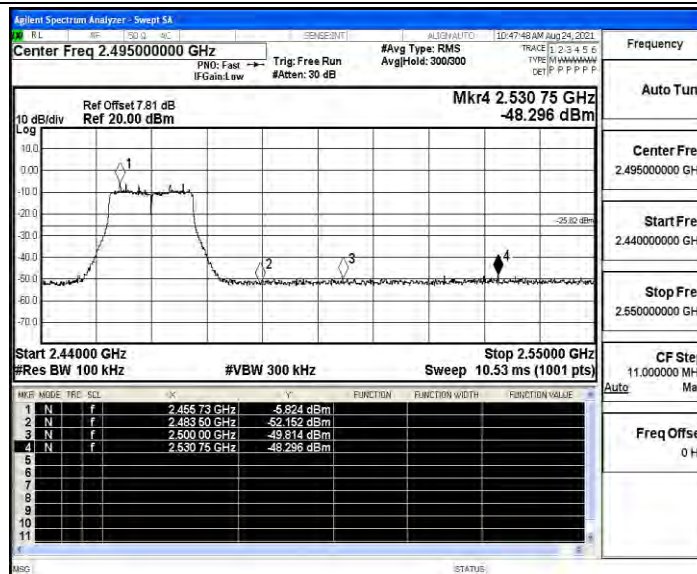




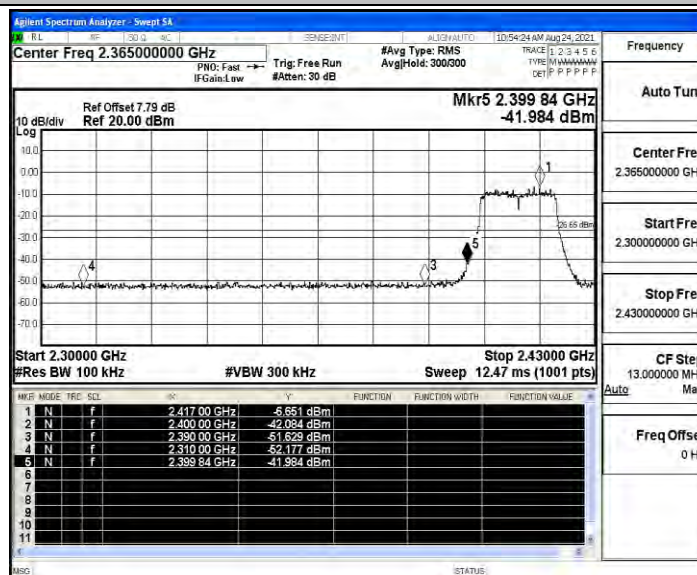
11G_Ant1_Low_2412



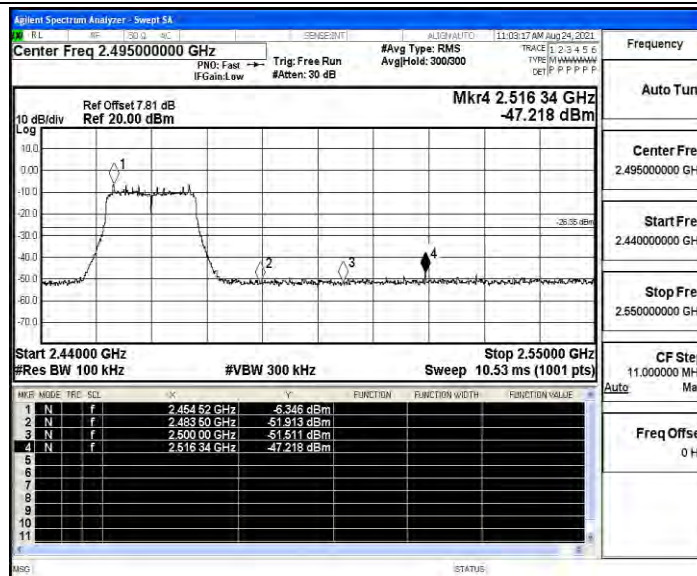
11G_Ant1_High_2462



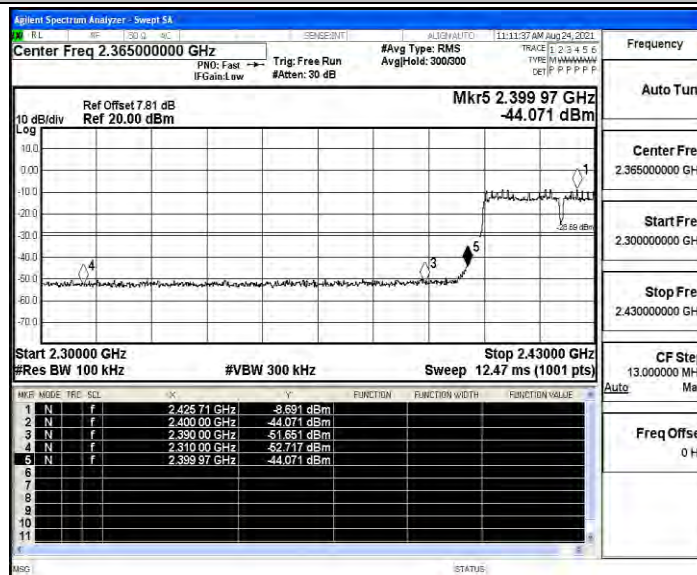
11N20SISO_Ant1_Low_2412



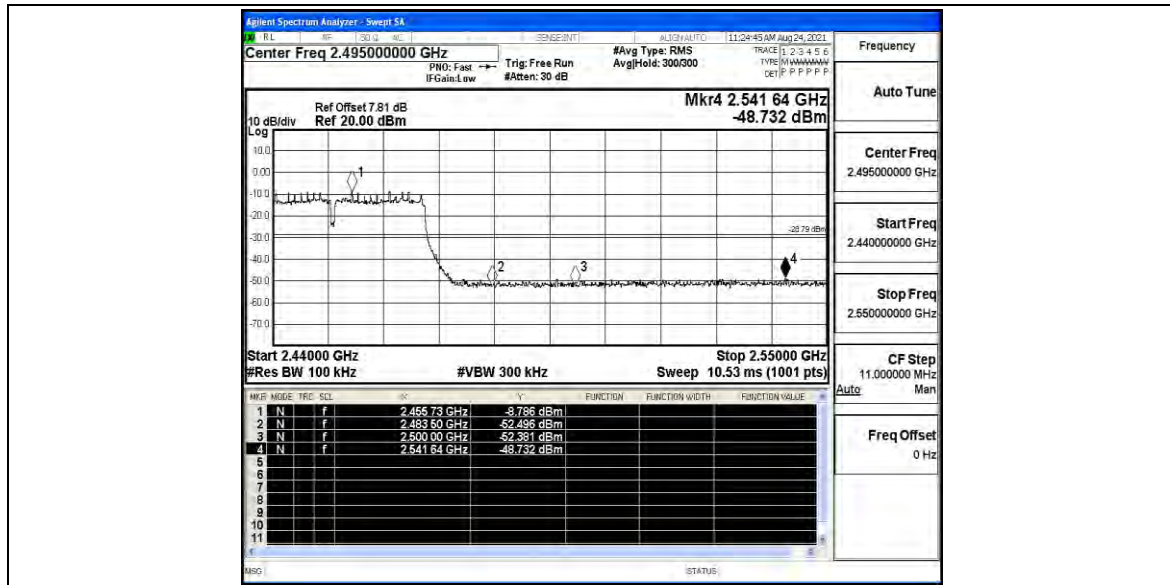
11N20SISO_Ant1_High_2462



11N40SISO_Ant1_Low_2422



11N40SISO_Ant1_High_2452





C.5 Conducted Spurious Emission

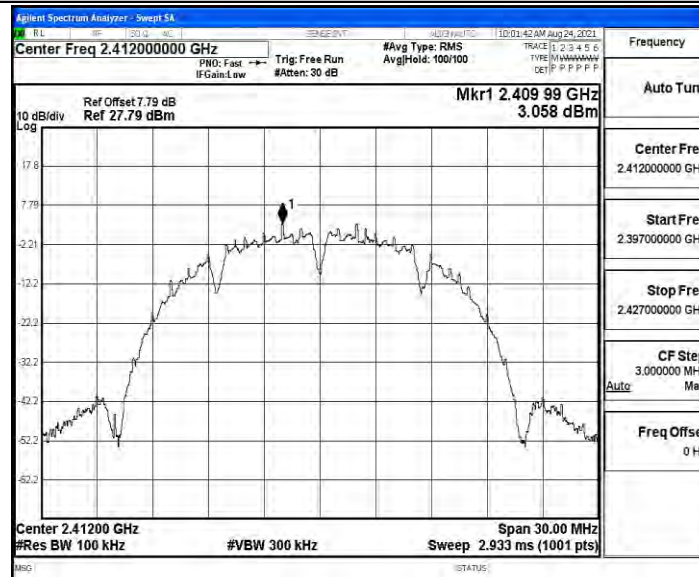
Test Result

TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	3.06	3.06	---	PASS
			30~1000	3.06	-61.22	≤-16.94	PASS
			1000~26500	3.06	-47.67	≤-16.94	PASS
		2437	Reference	2.60	2.60	---	PASS
			30~1000	2.60	-62.05	≤-17.4	PASS
			1000~26500	2.60	-47.52	≤-17.4	PASS
		2462	Reference	2.31	2.31	---	PASS
			30~1000	2.31	-61.35	≤-17.69	PASS
			1000~26500	2.31	-46.97	≤-17.69	PASS
11G	Ant1	2412	Reference	-6.21	-6.21	---	PASS
			30~1000	-6.21	-61.43	≤-26.21	PASS
			1000~26500	-6.21	-47.14	≤-26.21	PASS
		2437	Reference	-5.97	-5.97	---	PASS
			30~1000	-5.97	-61.13	≤-25.97	PASS
			1000~26500	-5.97	-47.15	≤-25.97	PASS
		2462	Reference	-5.97	-5.97	---	PASS
			30~1000	-5.97	-61.88	≤-25.97	PASS
			1000~26500	-5.97	-46.62	≤-25.97	PASS
11N20SISO	Ant1	2412	Reference	-5.69	-5.69	---	PASS
			30~1000	-5.69	-61.89	≤-25.69	PASS
			1000~26500	-5.69	-47.66	≤-25.69	PASS
		2437	Reference	-5.92	-5.92	---	PASS
			30~1000	-5.92	-61.42	≤-25.92	PASS
			1000~26500	-5.92	-47.8	≤-25.92	PASS
		2462	Reference	-6.42	-6.42	---	PASS
			30~1000	-6.42	-61.98	≤-26.42	PASS
			1000~26500	-6.42	-47.25	≤-26.42	PASS
11N40SISO	Ant1	2422	Reference	-8.70	-8.70	---	PASS
			30~1000	-8.70	-61.59	≤-28.7	PASS
			1000~26500	-8.70	-47	≤-28.7	PASS
		2437	Reference	-8.51	-8.51	---	PASS
			30~1000	-8.51	-61.77	≤-28.51	PASS
			1000~26500	-8.51	-47.18	≤-28.51	PASS
		2452	Reference	-8.86	-8.86	---	PASS
			30~1000	-8.86	-61.99	≤-28.86	PASS
			1000~26500	-8.86	-48	≤-28.86	PASS

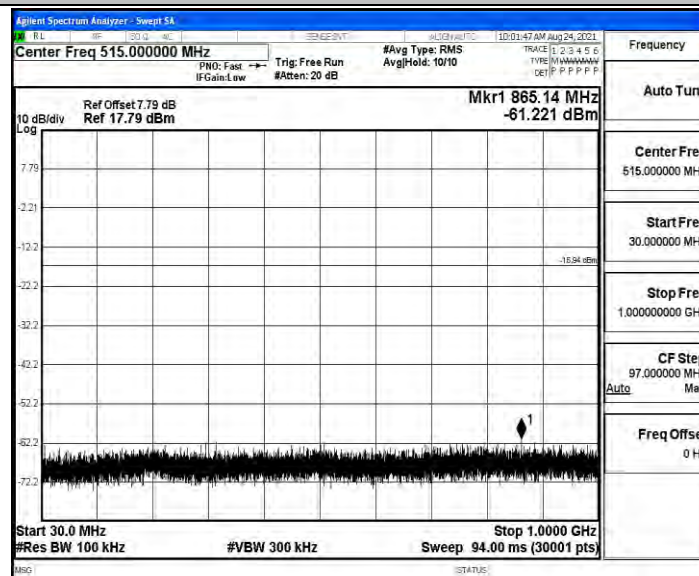


Test Graphs

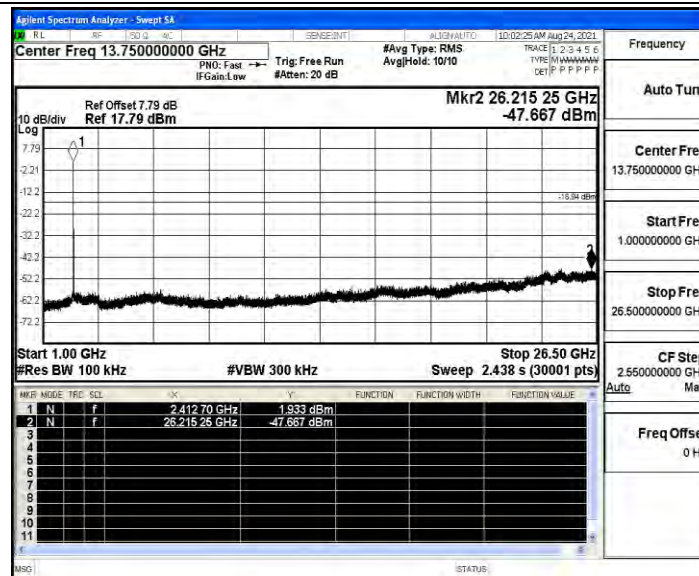
11B_Ant1_2412_0~Reference



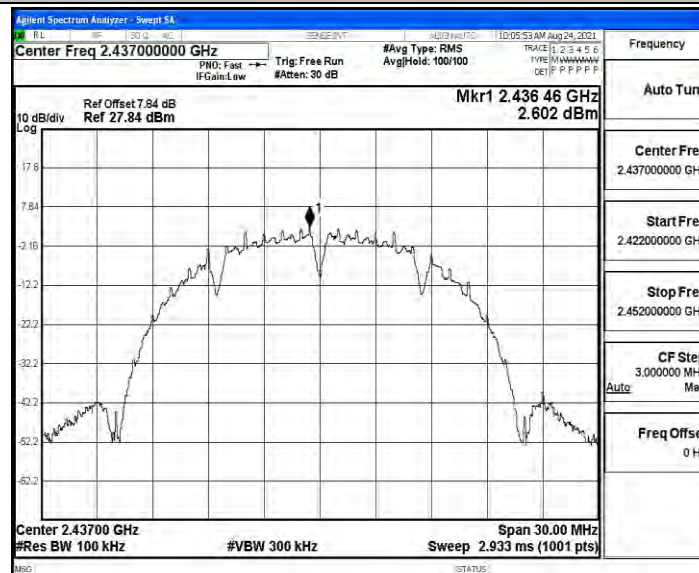
11B_Ant1_2412_30~1000



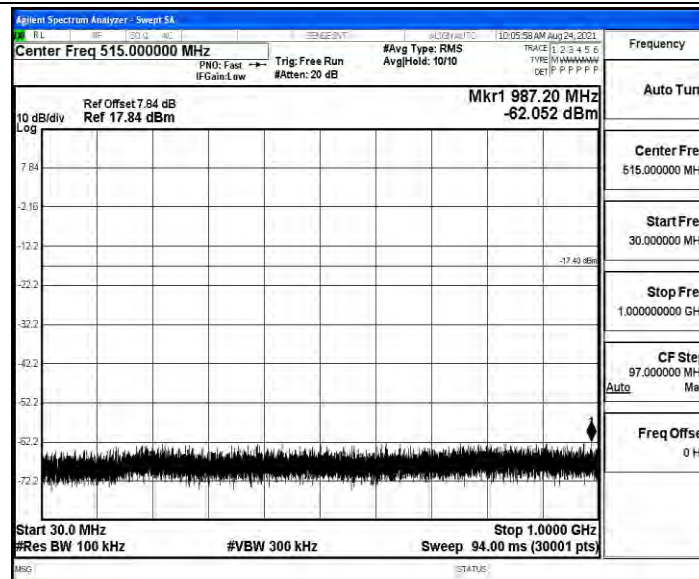
11B_Ant1_2412_1000~26500



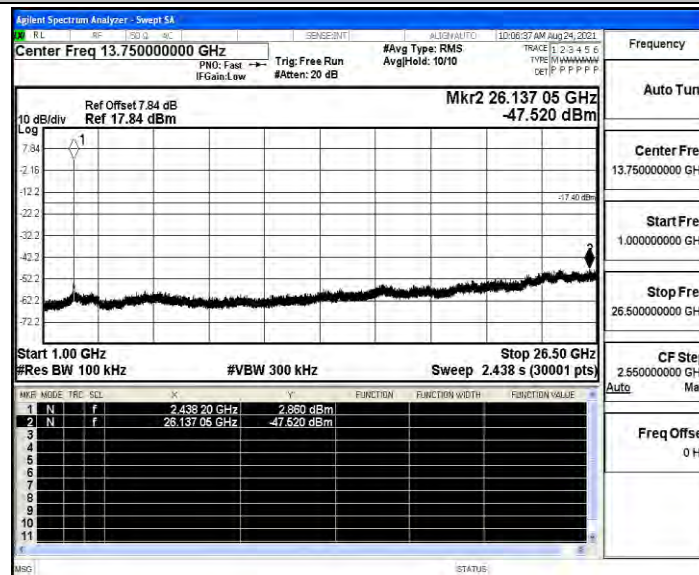
11B_Ant1_2437_0~Reference



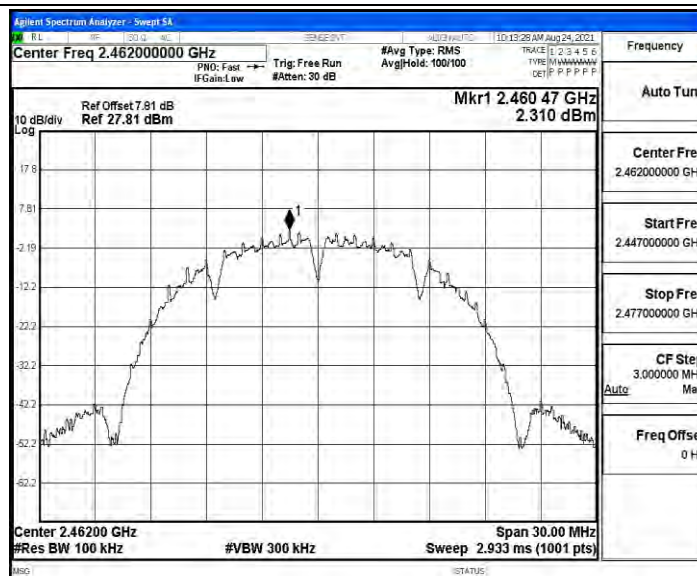
11B_Ant1_2437_30~1000



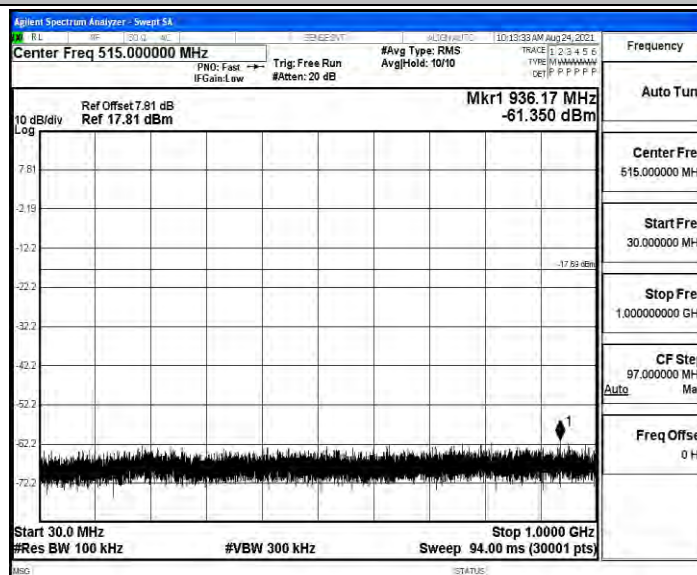
11B_Ant1_2437_1000~26500



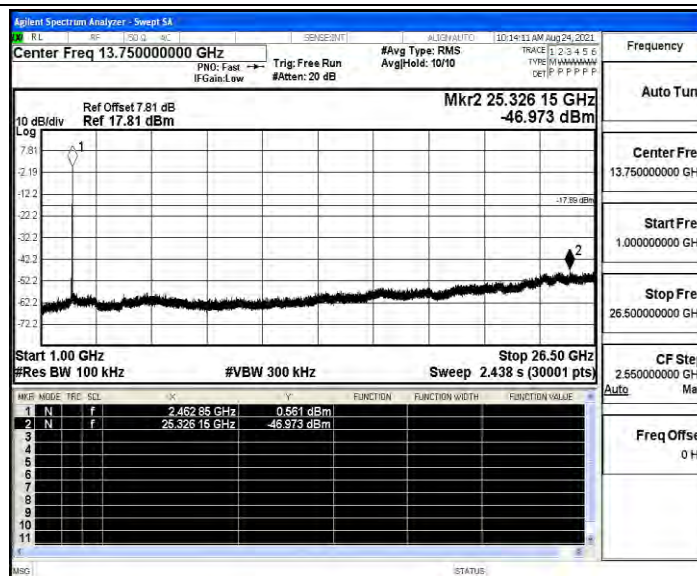
11B_Ant1_2462_0~Reference



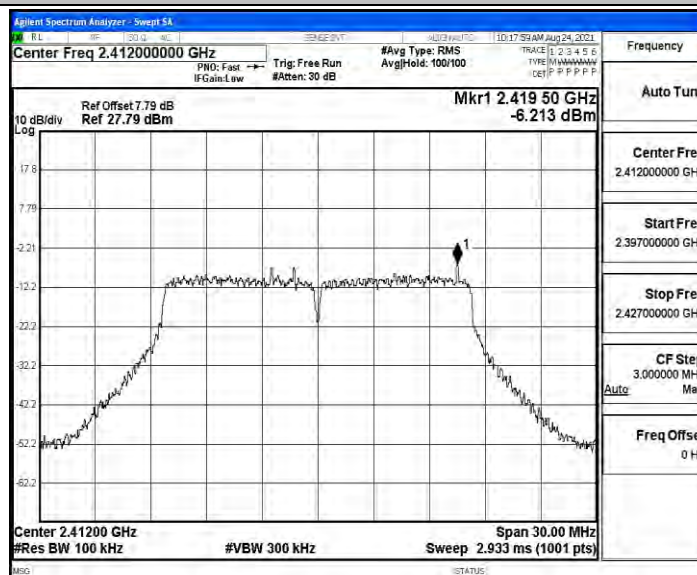
11B_Ant1_2462_30~1000



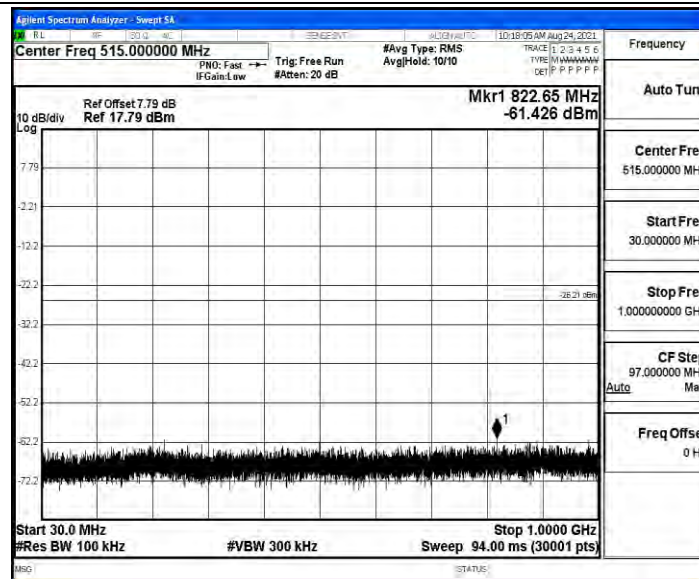
11B_Ant1_2462_1000~26500



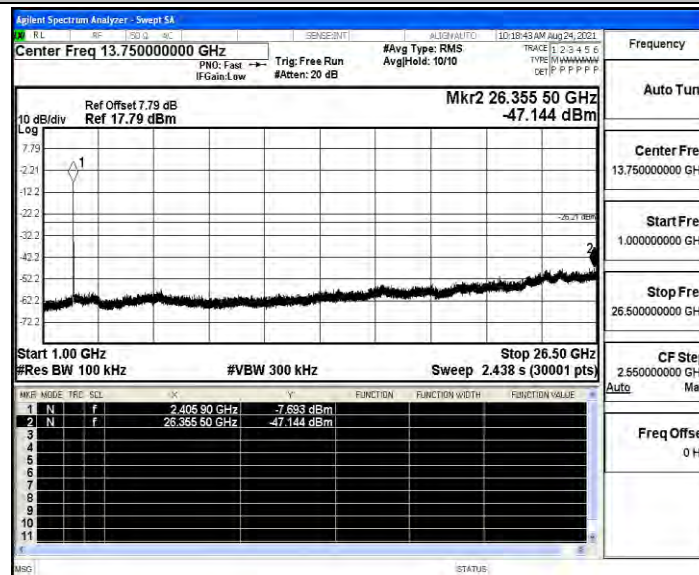
11G_Ant1_2412_0~Reference



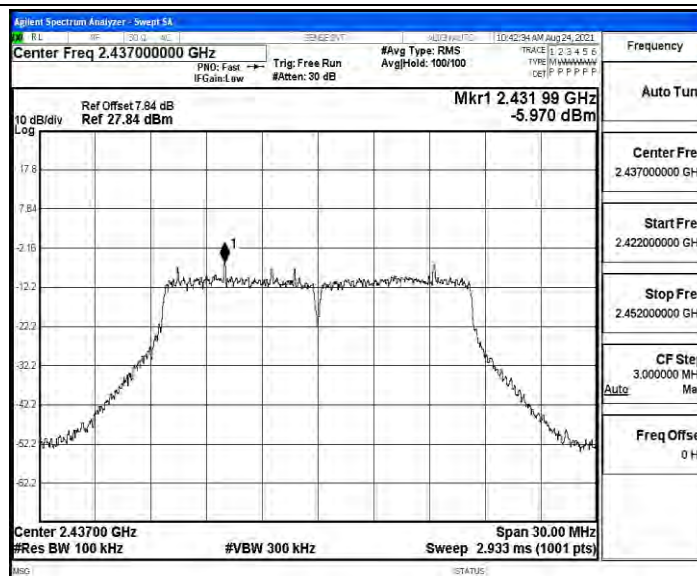
11G_Ant1_2412_30~1000



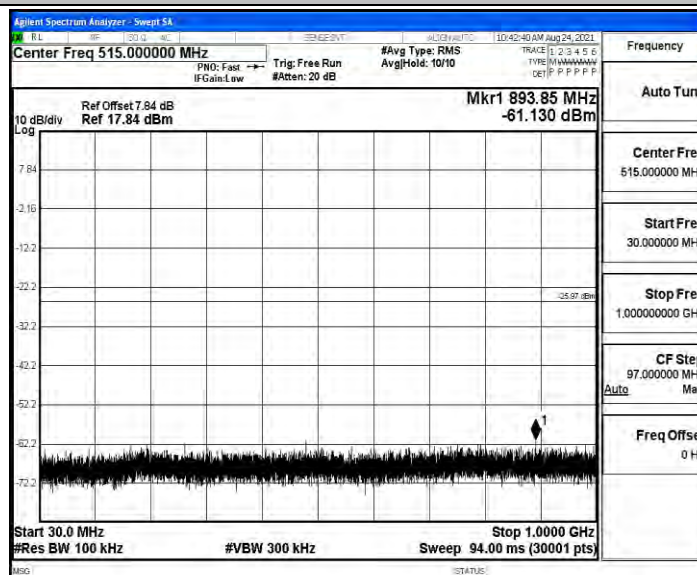
11G_Ant1_2412_1000~26500



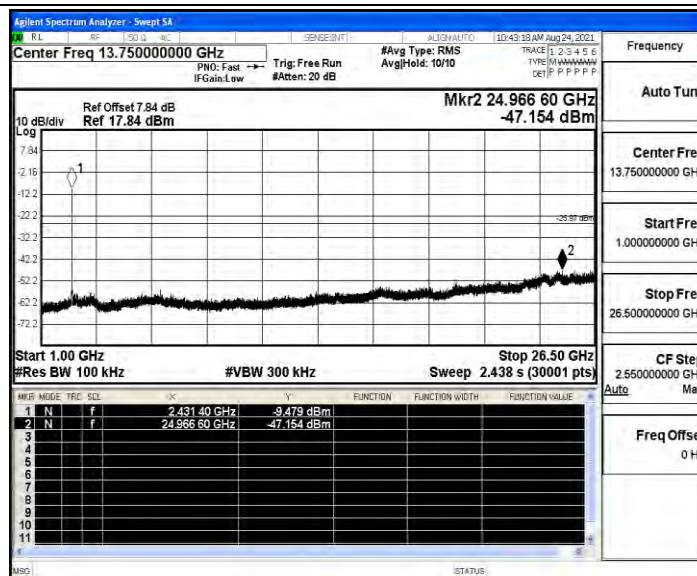
11G_Ant1_2437_0~Reference



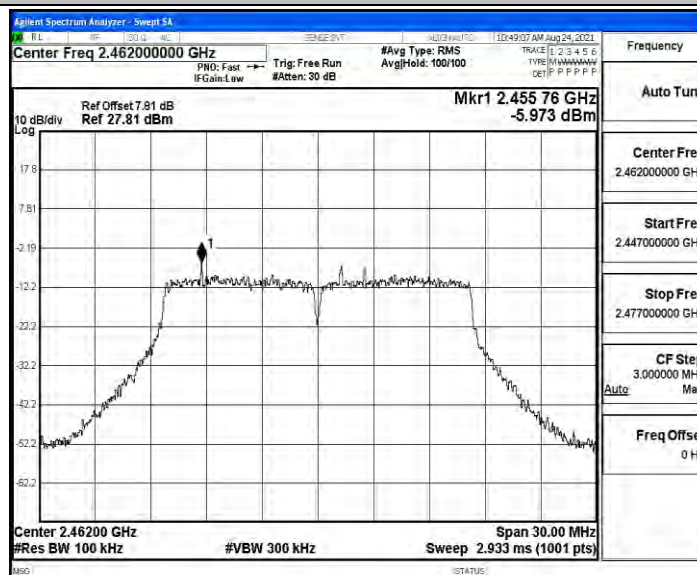
11G_Ant1_2437_30~1000



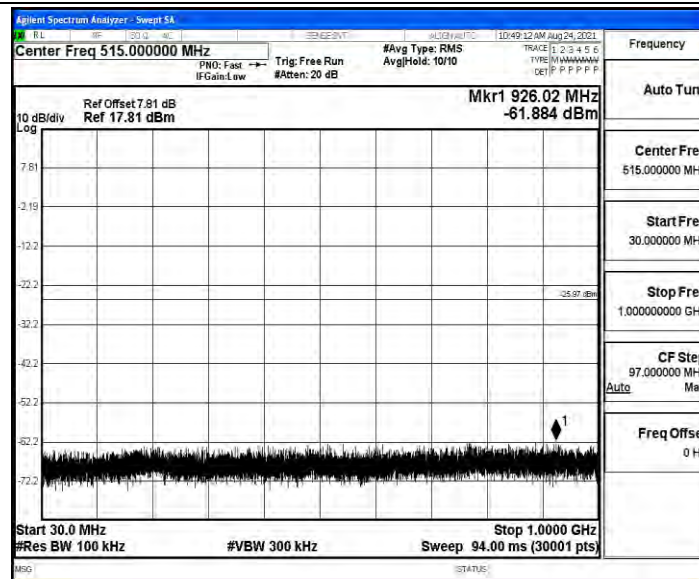
11G_Ant1_2437_1000~26500



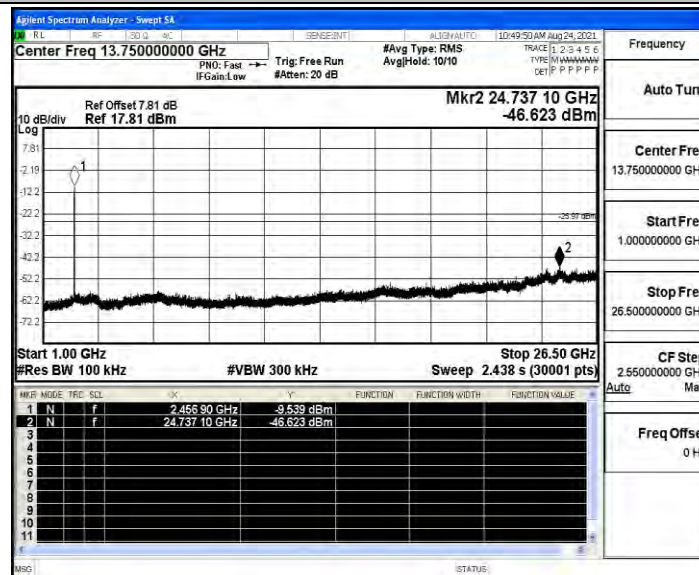
11G_Ant1_2462_0~Reference



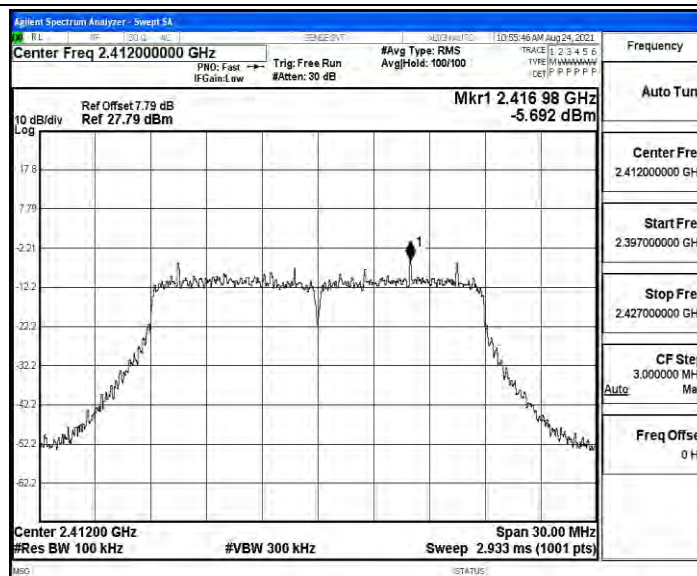
11G_Ant1_2462_30~1000



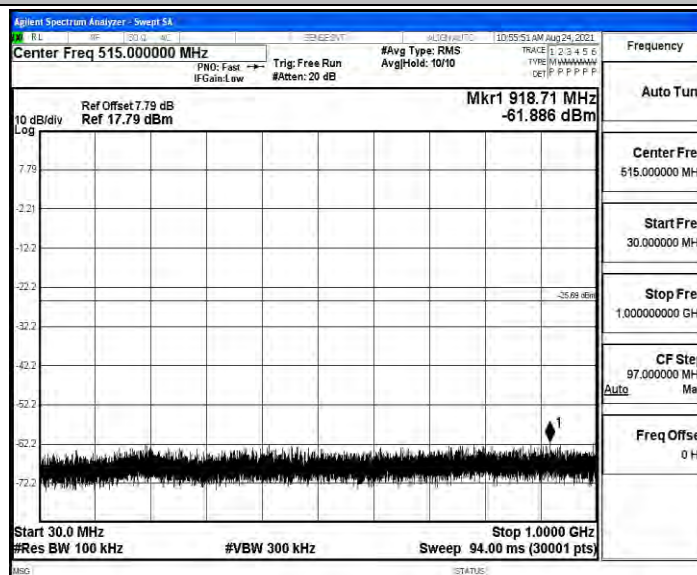
11G_Ant1_2462_1000~26500



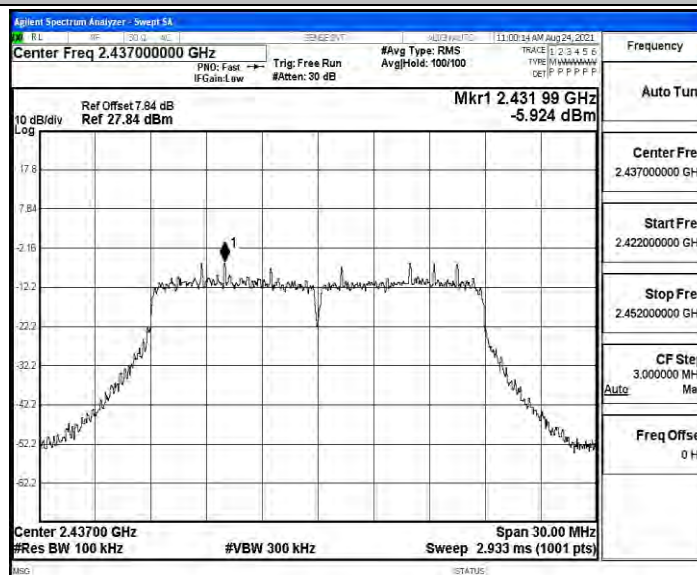
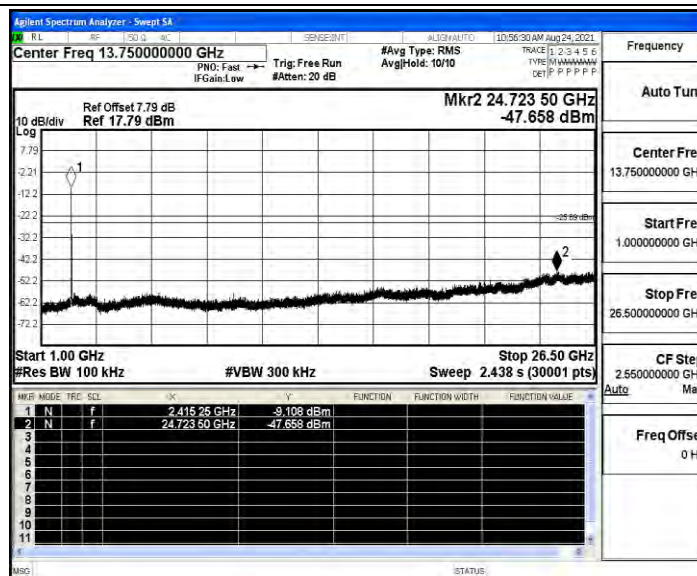
11N20SISO_Ant1_2412_0~Reference

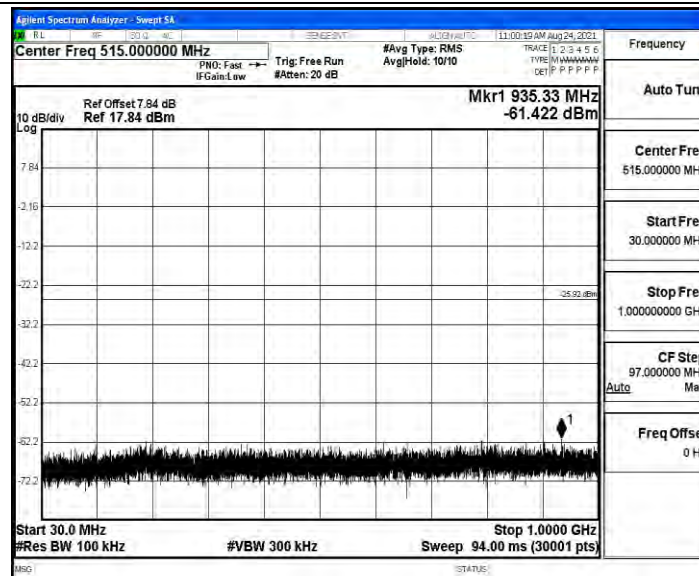


11N20SISO_Ant1_2412_30~1000

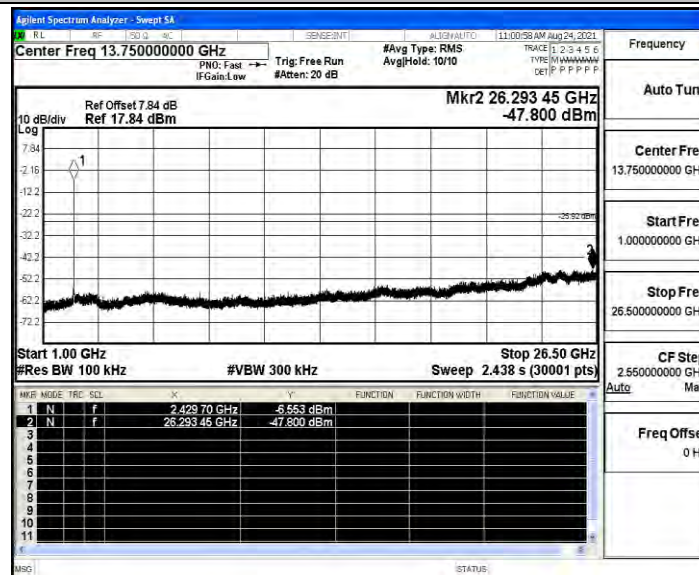


11N20SISO_Ant1_2412_1000~26500

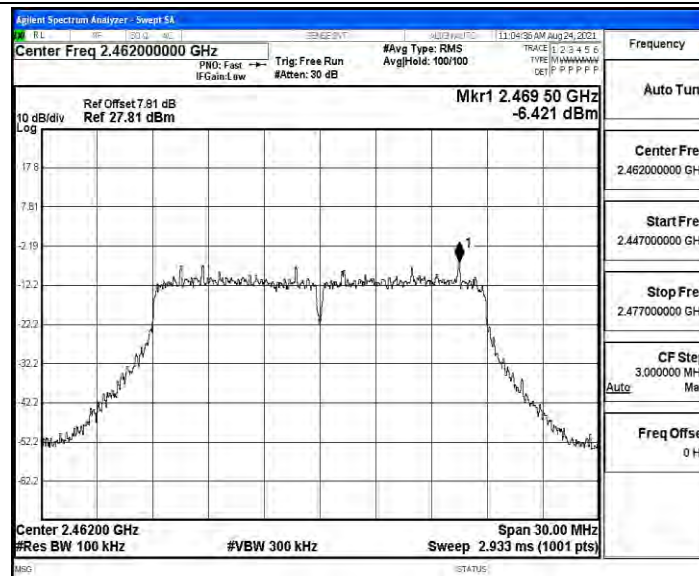




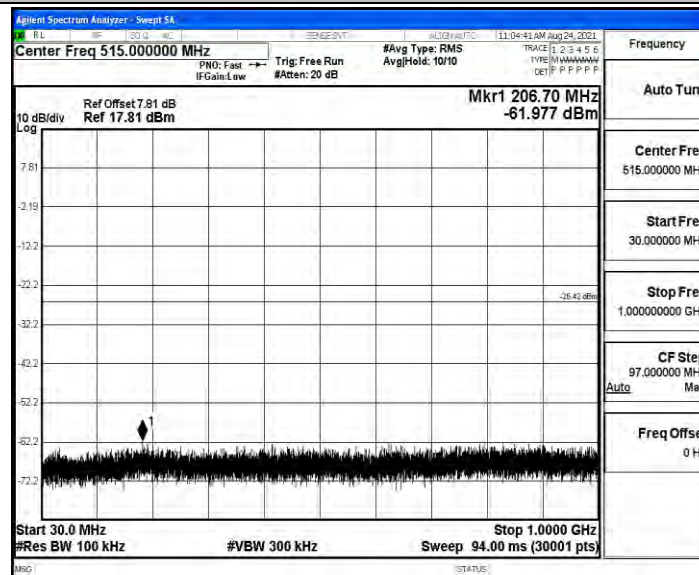
11N20SISO_Ant1_2437_1000~26500



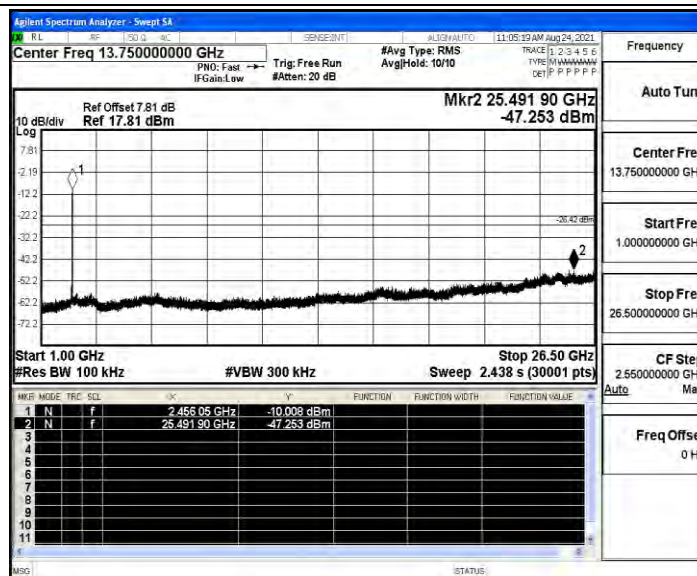
11N20SISO_Ant1_2462_0~Reference



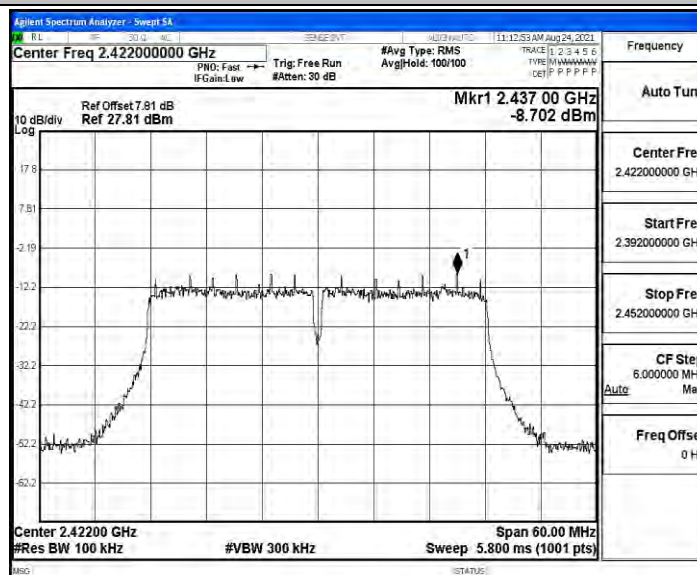
11N20SISO_Ant1_2462_30~1000



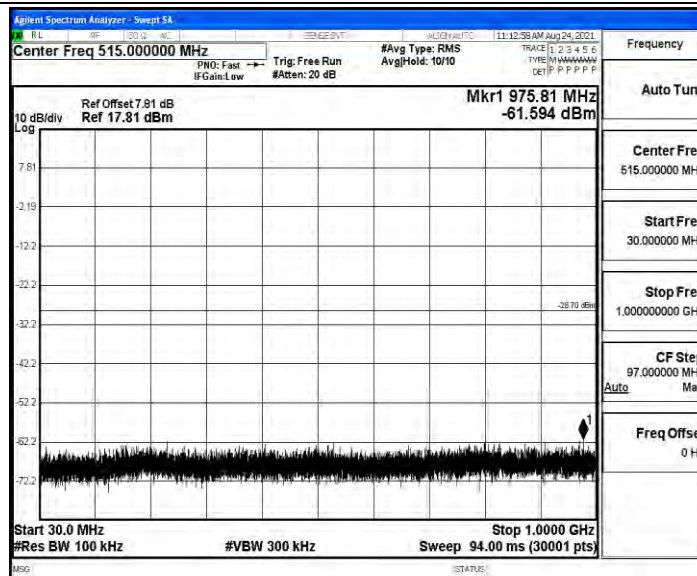
11N20SISO_Ant1_2462_1000~26500



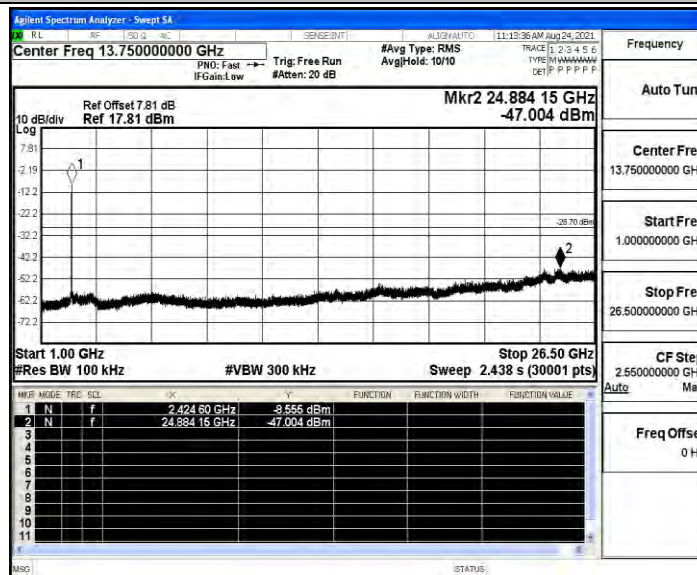
11N40SISO_Ant1_2422_0~Reference



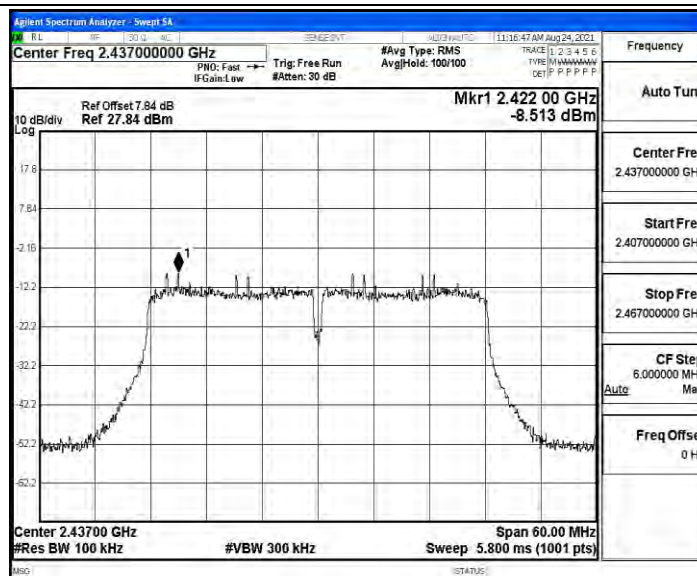
11N40SISO_Ant1_2422_30~1000



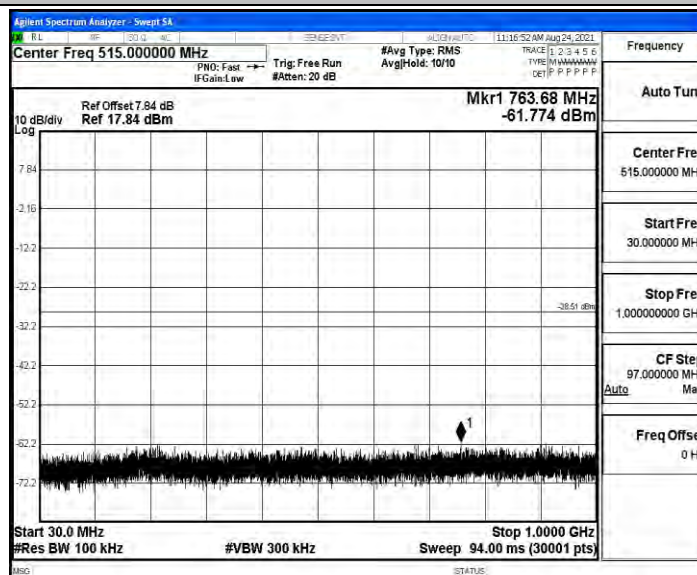
11N40SISO_Ant1_2422_1000~26500



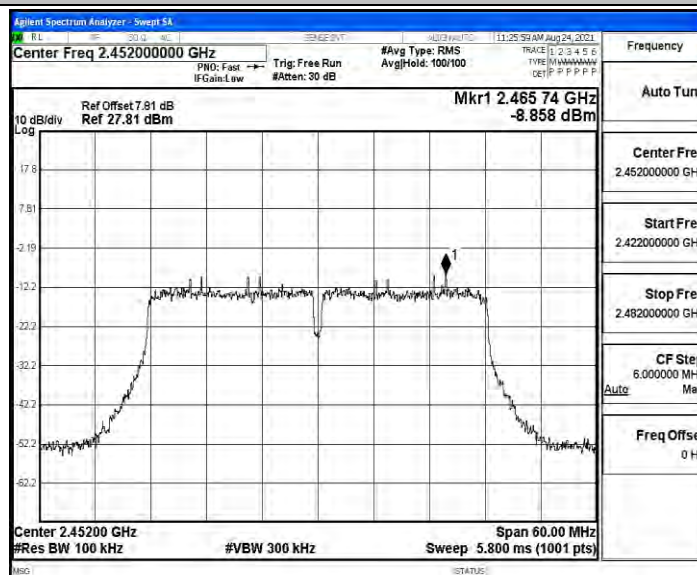
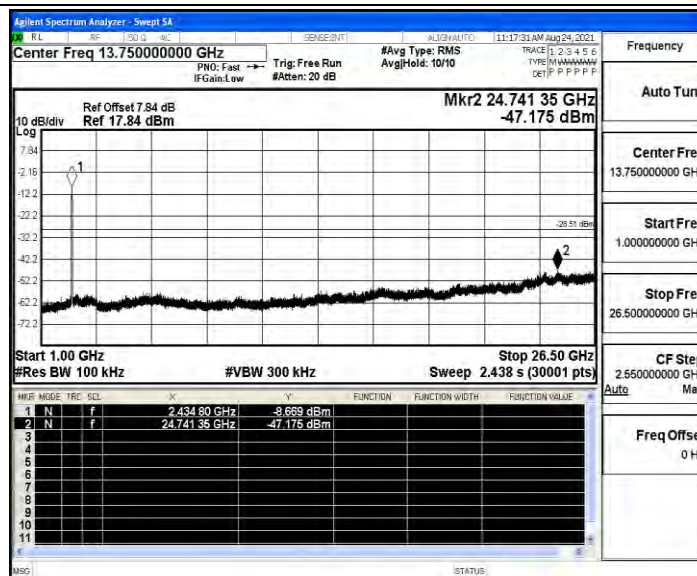
11N40SISO_Ant1_2437_0~Reference



11N40SISO_Ant1_2437_30~1000



11N40SISO_Ant1_2437_1000~26500



Agilent Spectrum Analyzer - Sweep SA

RL RF 50 Ω MC SENSE INT ALG: B/AUTO 11:26:42 AM Aug 24, 2021

Center Freq 13.750000000 GHz PNO: Fast IF Gain: Low Trig: Free Run #Avt: 20 dB #Avg Type: RMS Avg Hold: 10/10 TRACE 1: 2, 3, 4, 5 TYPE: TV N/A N/A N/A N/A DET: P P P P P

Ref Offset 7.81 dB Ref 17.81 dB Mkr2 24.797 45 GHz -47.996 dBm

Mk	FREQ	TYPE	VAL	UNIT	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	F	24.565 GHz	-9.266 dBm			
2	N	F	24.797 46 GHz	-47.996 dBm			

Start 1.00 GHz Stop 26.50 GHz
#Res BW 100 kHz #VBW 300 kHz Sweep 2.438 s (30001 pts)



C.6 Duty Cycle

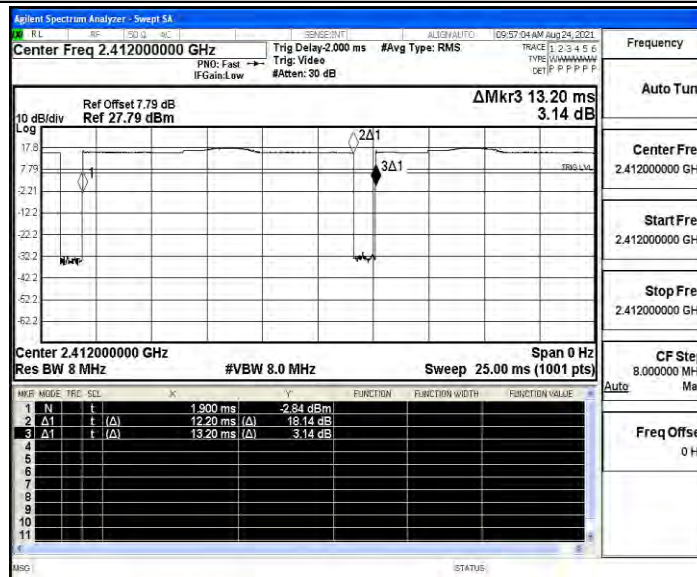
Test Result

TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Limit	Verdict
11B	Ant1	2412	12.20	13.20	92.42	---	PASS
		2437	12.20	13.20	92.42	---	PASS
		2462	12.20	13.20	92.42	---	PASS
11G	Ant1	2412	2.03	3.03	67.00	---	PASS
		2437	2.03	3.03	67.00	---	PASS
		2462	2.03	3.03	67.00	---	PASS
11N20SISO	Ant1	2412	1.89	2.90	65.17	---	PASS
		2437	1.89	2.89	65.40	---	PASS
		2462	1.89	2.90	65.17	---	PASS
11N40SISO	Ant1	2422	0.93	1.94	47.94	---	PASS
		2437	0.93	1.94	47.94	---	PASS
		2452	0.93	1.94	47.94	---	PASS

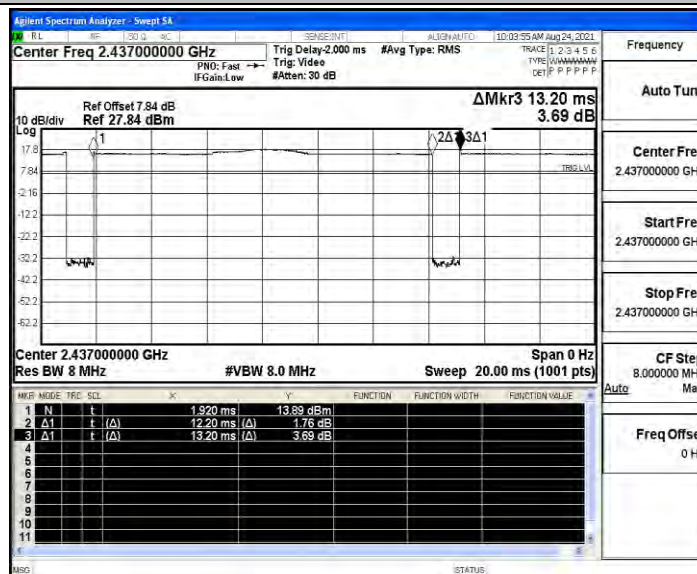


Test Graphs

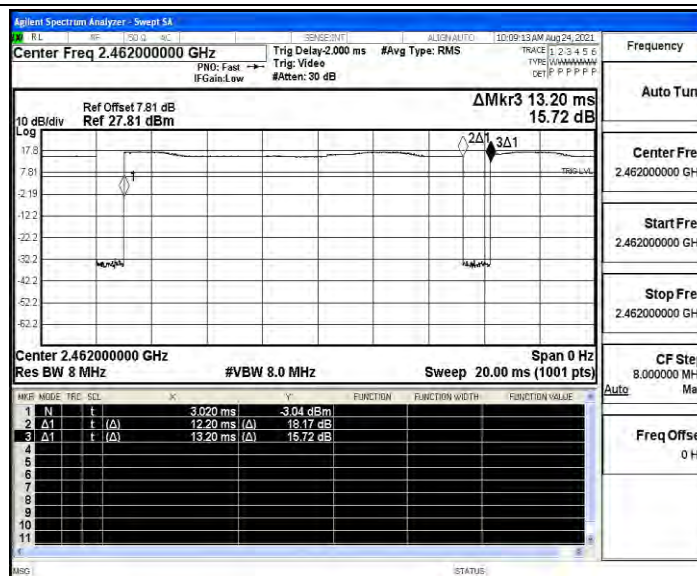
11B_Ant1_2412



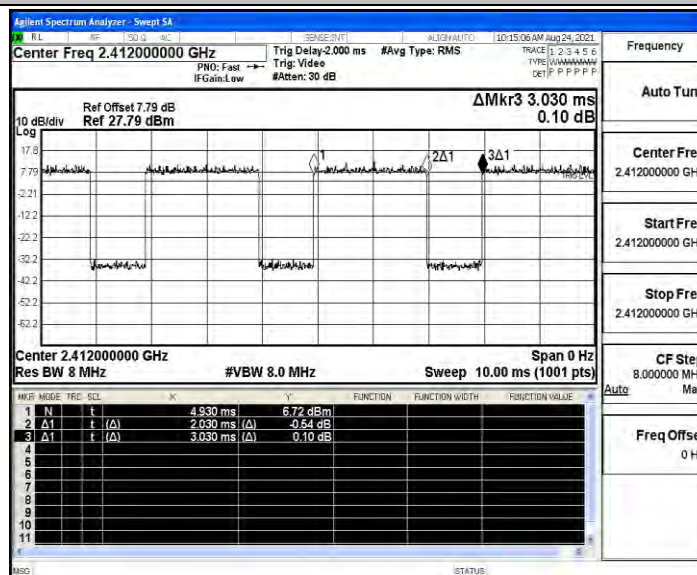
11B_Ant1_2437



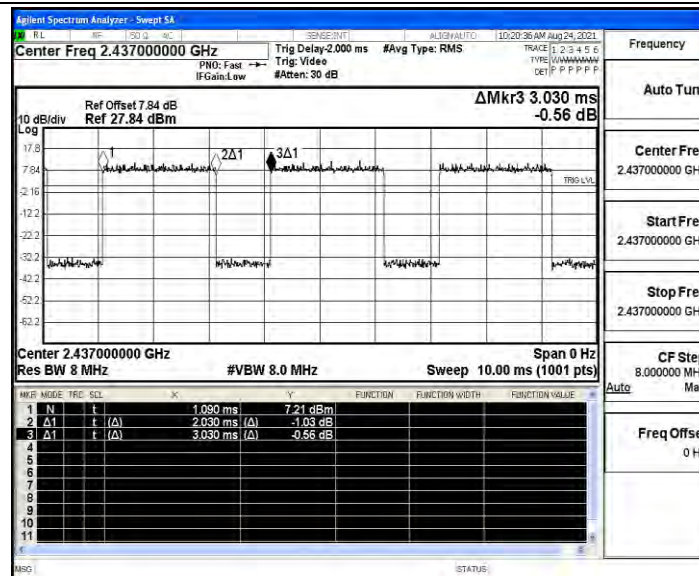
11B_Ant1_2462



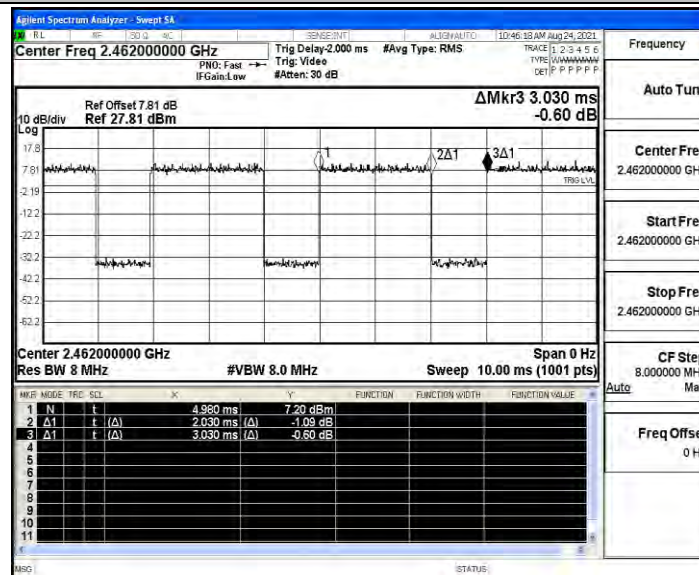
11G_Ant1_2412



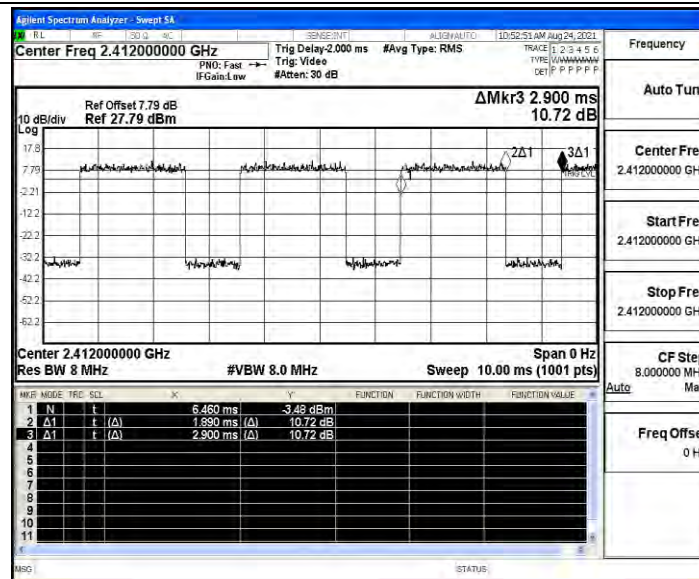
11G_Ant1_2437



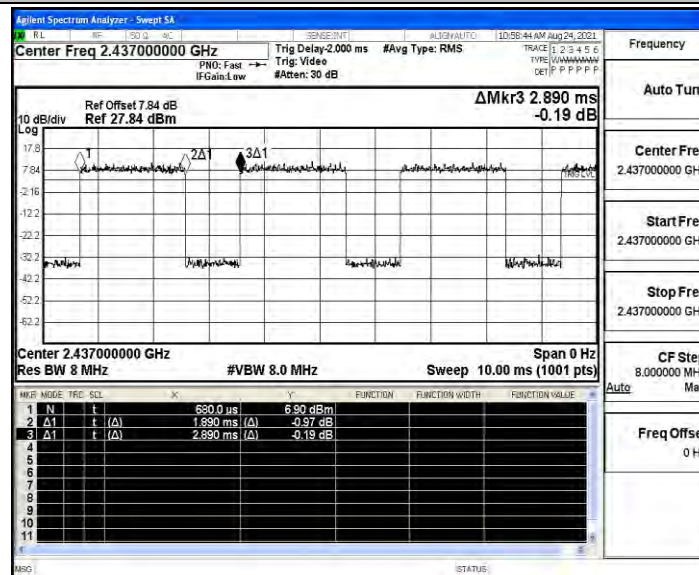
11G_Ant1_2462



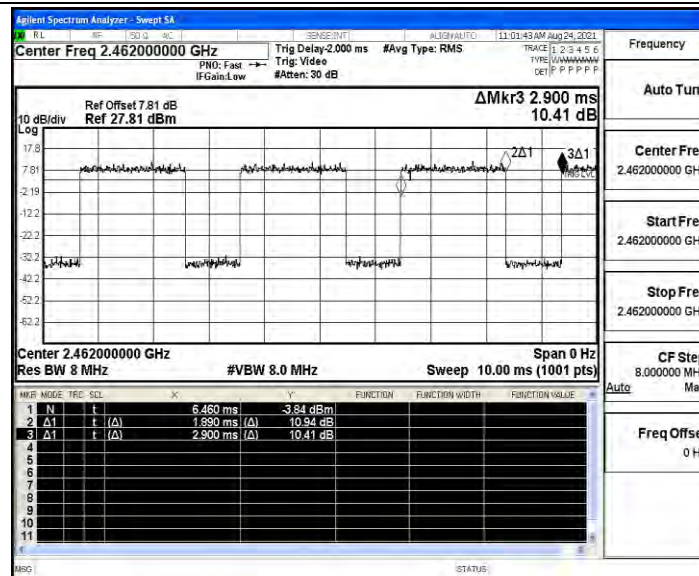
11N20SISO_Ant1_2412



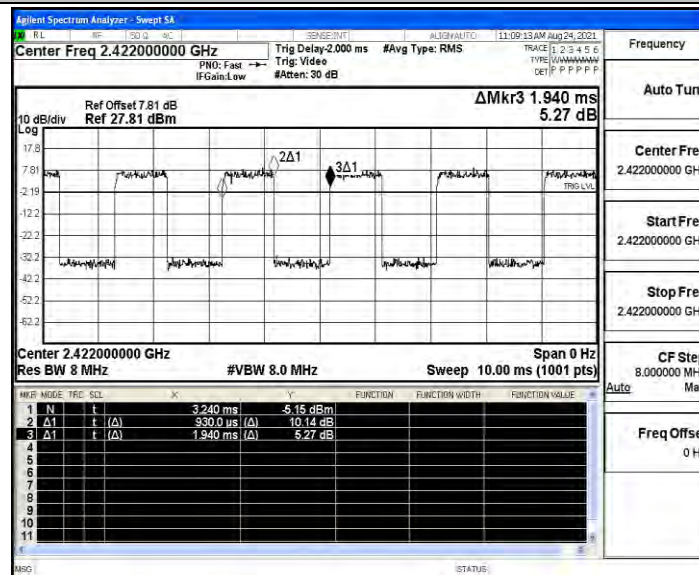
11N20SISO_Ant1_2437



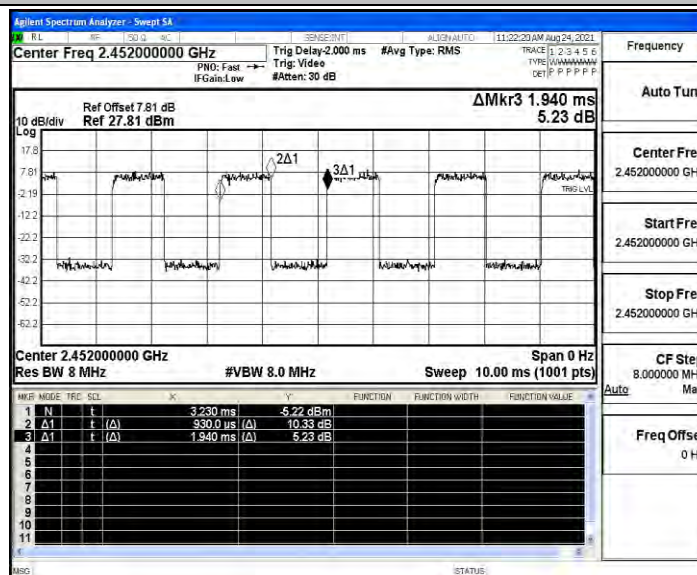
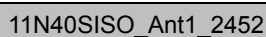
11N20SISO_Ant1_2462



11N40SISO_Ant1_2422



11N40SISO_Ant1_2437





C.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	-49.03	≤-41.20	46.17	≤54	PASS
				AV	2389.050	-48.33	≤-41.20	46.87	≤54	PASS
				AV	2390.000	-48.39	≤-41.20	46.81	≤54	PASS
				Peak	2310.000	-42.24	≤-21.20	52.96	≤74	PASS
				Peak	2354.730	-38.47	≤-21.20	56.73	≤74	PASS
				Peak	2390.000	-41.84	≤-21.20	53.36	≤74	PASS
		High	2462	AV	2483.500	-48.16	≤-41.20	47.04	≤54	PASS
				AV	2495.660	-47.97	≤-41.20	47.23	≤54	PASS
				AV	2500.000	-48.03	≤-41.20	47.17	≤54	PASS
				Peak	2483.500	-40.93	≤-21.20	54.27	≤74	PASS
				Peak	2484.990	-37.78	≤-21.20	57.42	≤74	PASS
				Peak	2500.000	-40.93	≤-21.20	54.27	≤74	PASS
11G	Ant1	Low	2412	AV	2310.000	-48.88	≤-41.20	46.32	≤54	PASS
				AV	2389.700	-48.23	≤-41.20	46.97	≤54	PASS
				AV	2390.000	-48.29	≤-41.20	46.91	≤54	PASS
				Peak	2310.000	-41.59	≤-21.20	53.61	≤74	PASS
				Peak	2376.700	-38.51	≤-21.20	56.69	≤74	PASS
				Peak	2390.000	-40.61	≤-21.20	54.59	≤74	PASS
		High	2462	AV	2483.500	-48.06	≤-41.20	47.14	≤54	PASS
				AV	2491.810	-47.77	≤-41.20	47.43	≤54	PASS
				AV	2500.000	-47.79	≤-41.20	47.41	≤54	PASS
				Peak	2483.500	-40.39	≤-21.20	54.81	≤74	PASS
				Peak	2490.490	-38.25	≤-21.20	56.95	≤74	PASS
				Peak	2500.000	-40.77	≤-21.20	54.43	≤74	PASS
11N20SIS O	Ant1	Low	2412	AV	2310.000	-49.02	≤-41.20	46.18	≤54	PASS
				AV	2389.830	-48.25	≤-41.20	46.95	≤54	PASS
				AV	2390.000	-48.34	≤-41.20	46.86	≤54	PASS
				Peak	2310.000	-41.55	≤-21.20	53.65	≤74	PASS
				Peak	2388.400	-38.36	≤-21.20	56.84	≤74	PASS
				Peak	2390.000	-41.41	≤-21.20	53.79	≤74	PASS
		High	2462	AV	2483.500	-48.02	≤-41.20	47.18	≤54	PASS
				AV	2498.080	-47.79	≤-41.20	47.41	≤54	PASS
				AV	2500.000	-47.81	≤-41.20	47.39	≤54	PASS
				Peak	2483.500	-41.15	≤-21.20	54.05	≤74	PASS
				Peak	2490.380	-37.42	≤-21.20	57.78	≤74	PASS
				Peak	2500.000	-41.27	≤-21.20	53.93	≤74	PASS



11N40SIS O	Ant1	Low	2422	AV	2310.000	-48.63	≤ -41.20	46.57	≤ 54	PASS
				AV	2389.310	-47.54	≤ -41.20	47.66	≤ 54	PASS
				AV	2390.000	-47.83	≤ -41.20	47.37	≤ 54	PASS
				Peak	2310.000	-41.36	≤ -21.20	53.84	≤ 74	PASS
				Peak	2373.190	-38.27	≤ -21.20	56.93	≤ 74	PASS
				Peak	2390.000	-40.6	≤ -21.20	54.60	≤ 74	PASS
		High	2452	AV	2483.500	-47.66	≤ -41.20	47.54	≤ 54	PASS
				AV	2498.960	-47.48	≤ -41.20	47.72	≤ 54	PASS
				AV	2500.000	-47.7	≤ -41.20	47.50	≤ 54	PASS
				Peak	2483.500	-40.87	≤ -21.20	54.33	≤ 74	PASS
				Peak	2498.080	-38.83	≤ -21.20	56.37	≤ 74	PASS
				Peak	2500.000	-40.61	≤ -21.20	54.59	≤ 74	PASS

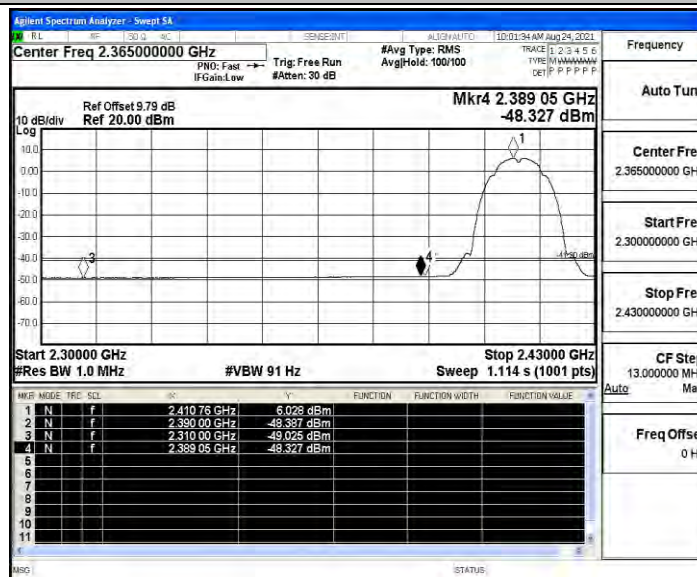
Note:

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.

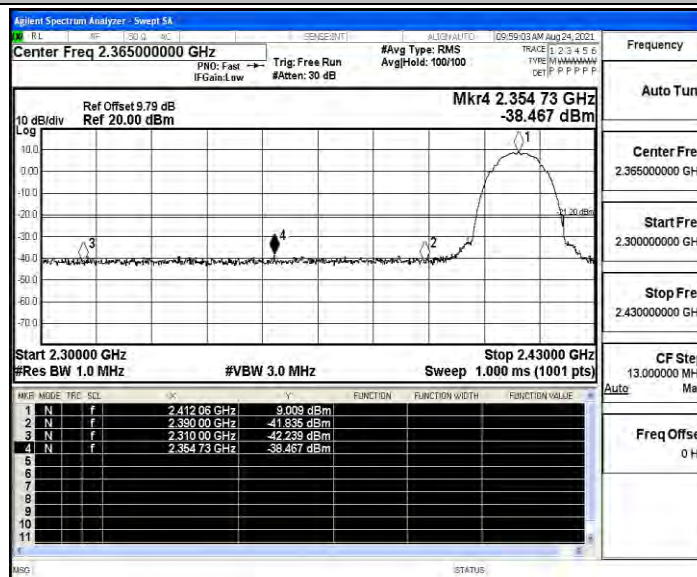


Test Graphs

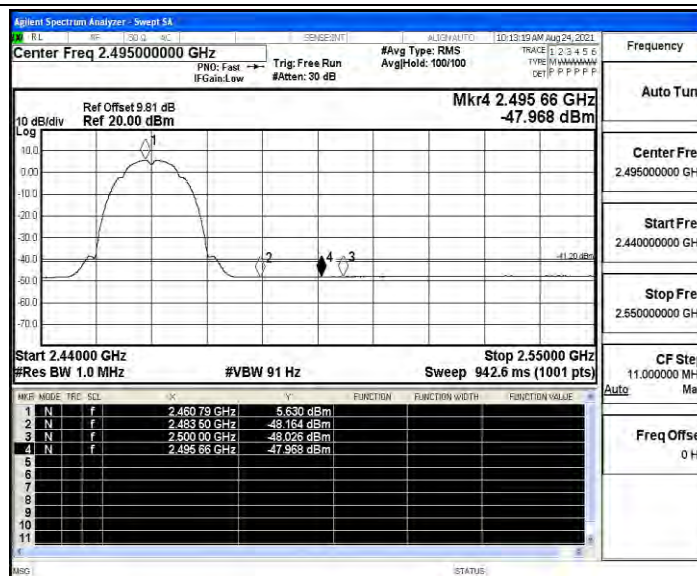
11B_Ant1_Low_2412_AV



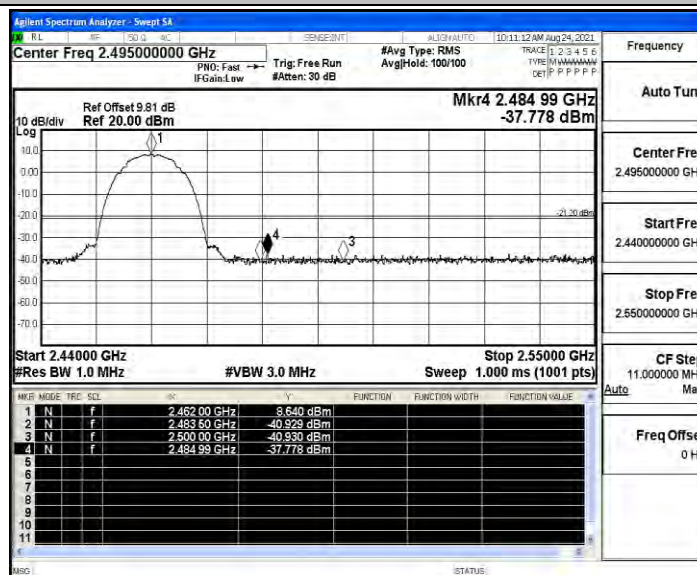
11B_Ant1_Low_2412_Peak



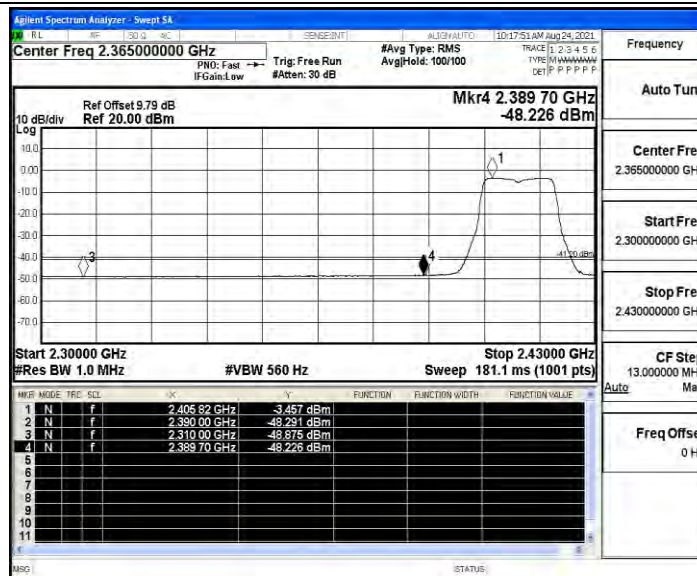
11B_Ant1_High_2462_AV



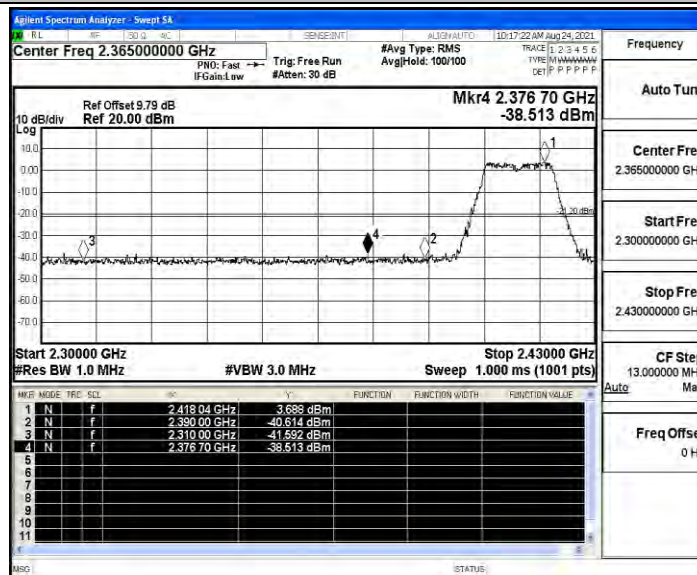
11B_Ant1_High_2462_Peak



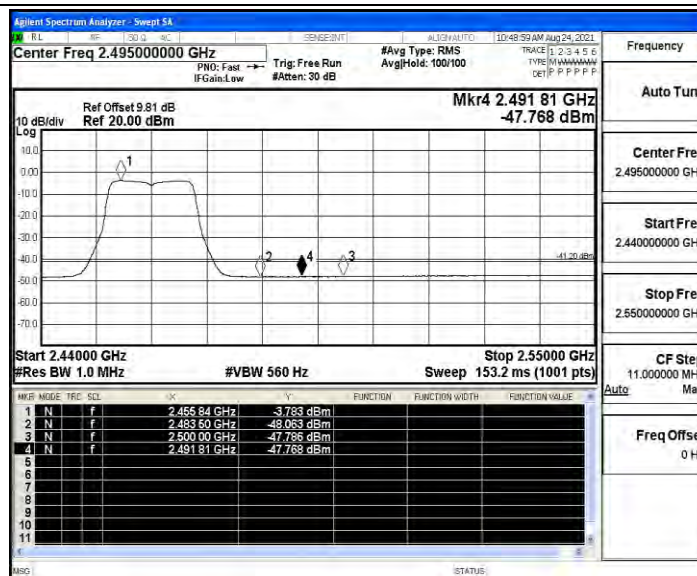
11G_Ant1_Low_2412_AV



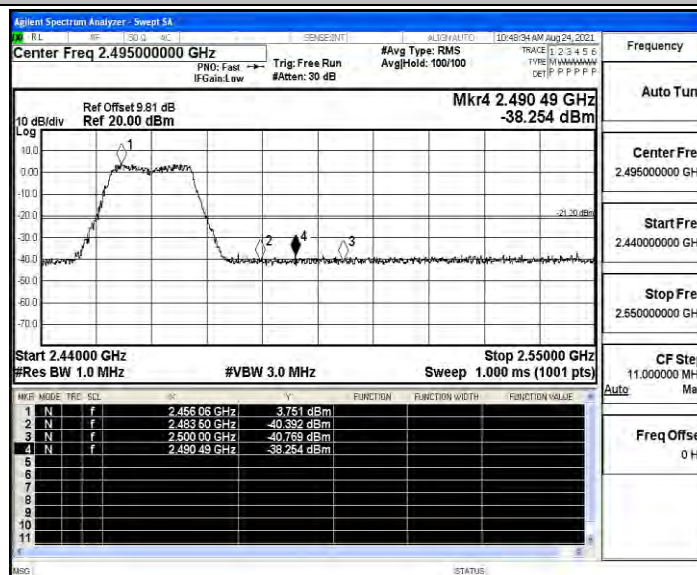
11G_Ant1_Low_2412_Peak



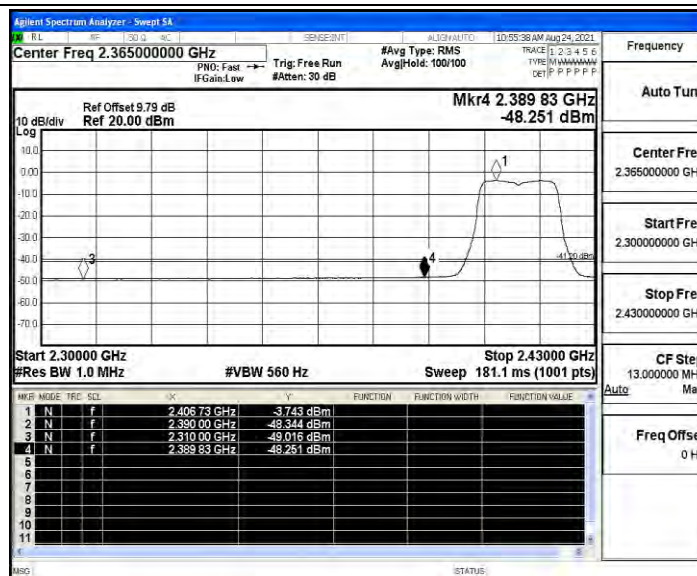
11G_Ant1_High_2462_AV



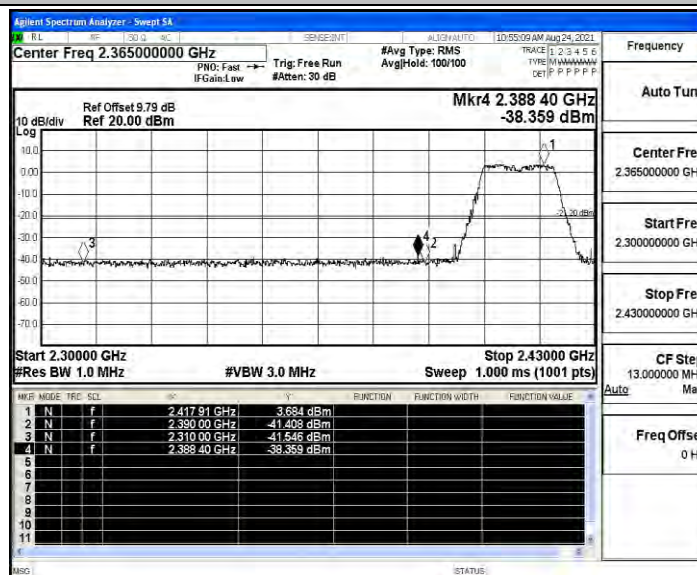
11G_Ant1_High_2462_Peak



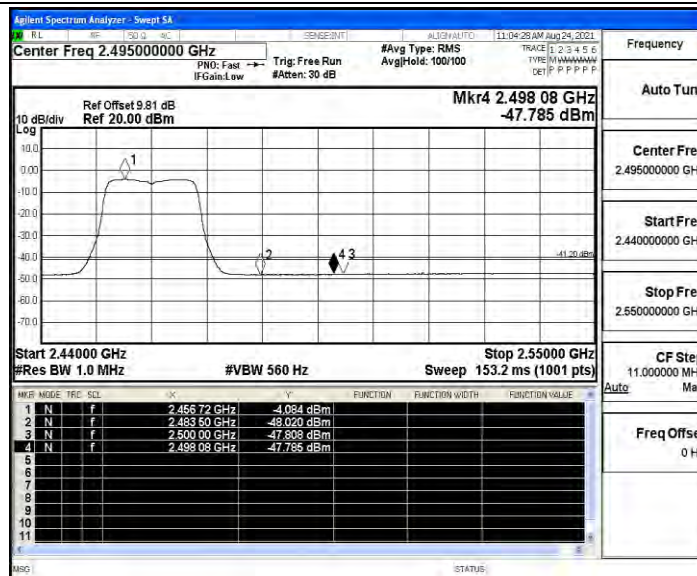
11N20SISO_Ant1_Low_2412_AV



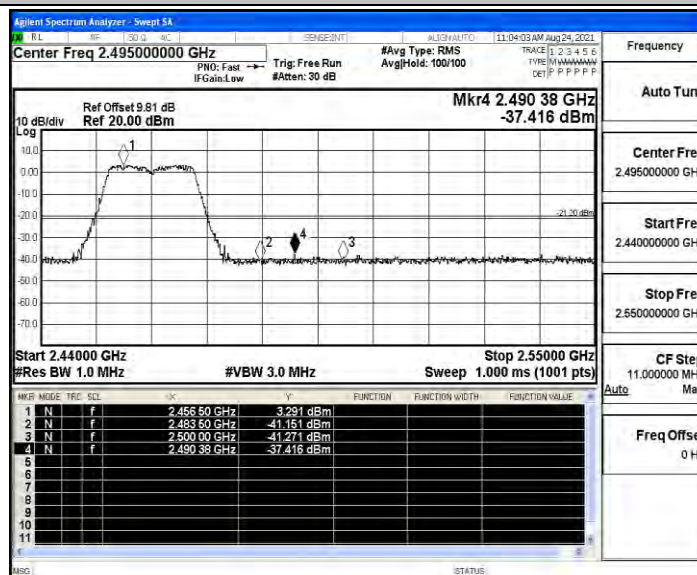
11N20SISO_Ant1_Low_2412_Peak



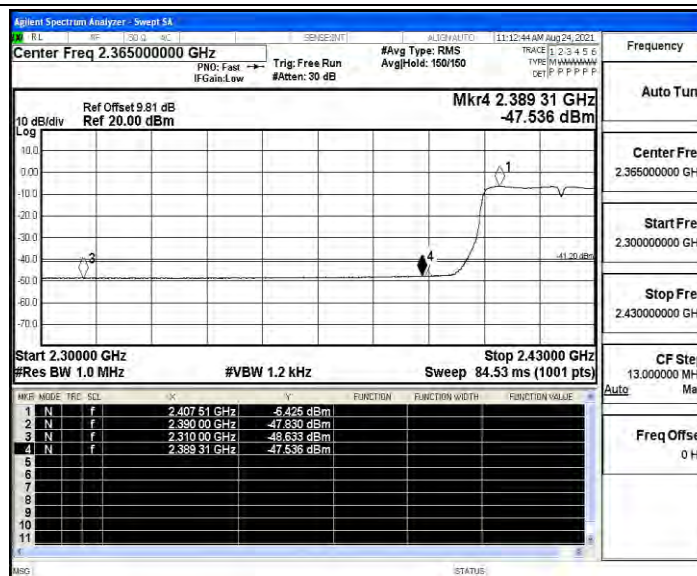
11N20SISO_Ant1_High_2462_AV



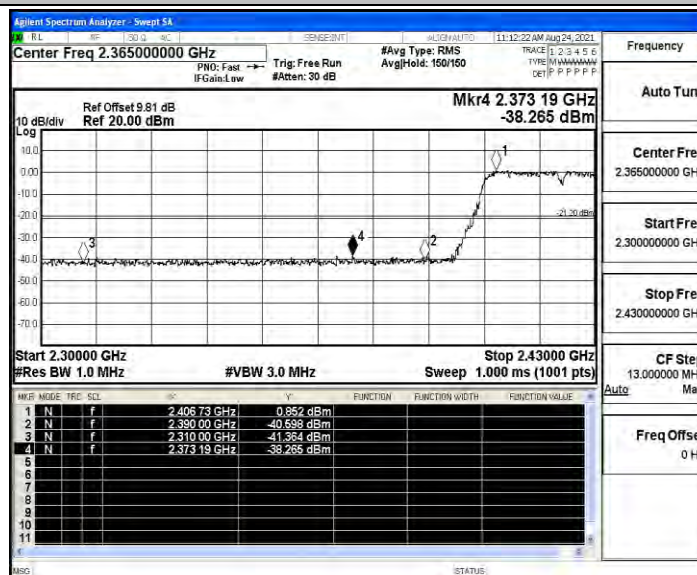
11N20SISO_Ant1_High_2462_Peak



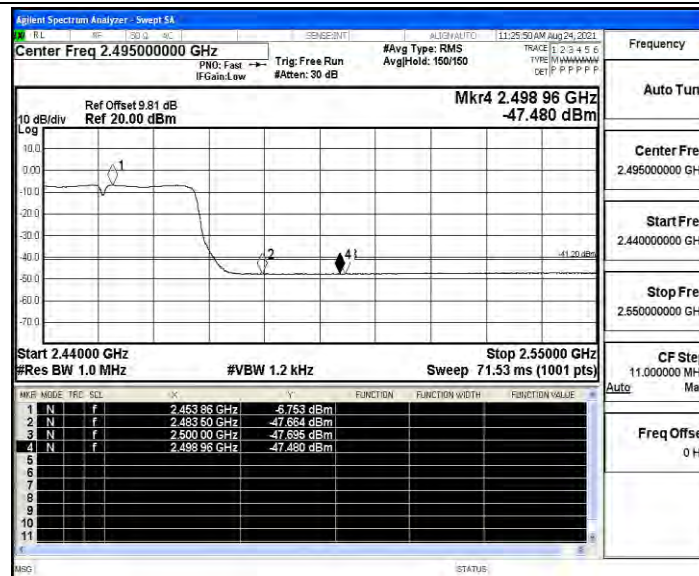
11N40SISO_Ant1_Low_2422_AV



11N40SISO_Ant1_Low_2422_Peak



11N40SISO_Ant1_High_2452_AV



11N40SISO_Ant1_High_2452_Peak

