



Appendix C

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: HyBook

Trade Mark: HYUNDAI

Test Model: HT14CCIC44SG

Environmental Conditions

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



Appendix C.1: DTS Bandwidth

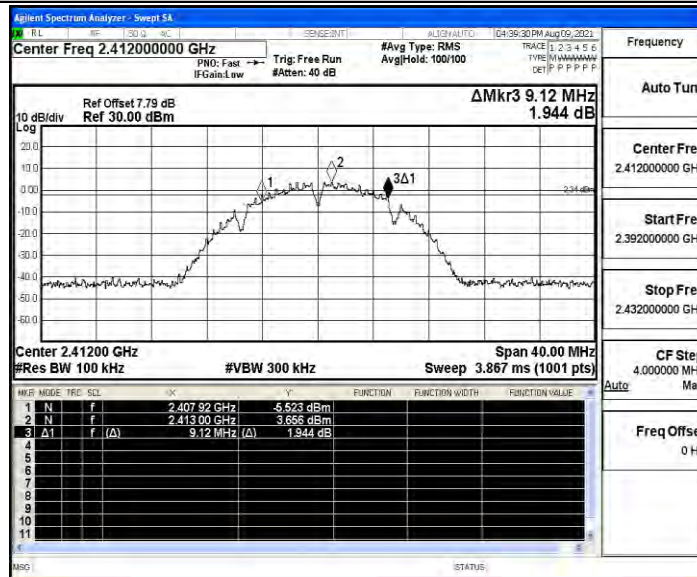
Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.120	2407.920	2417.040	0.5	PASS
		2437	9.120	2432.440	2441.560	0.5	PASS
		2462	8.160	2457.400	2465.560	0.5	PASS
11G	Ant1	2412	15.480	2404.440	2419.920	0.5	PASS
		2437	15.760	2429.440	2445.200	0.5	PASS
		2462	15.800	2453.800	2469.600	0.5	PASS
11N20SISO	Ant1	2412	13.880	2405.720	2419.600	0.5	PASS
		2437	17.360	2428.440	2445.800	0.5	PASS
		2462	15.200	2453.160	2468.360	0.5	PASS
11N40SISO	Ant1	2422	26.400	2408.160	2434.560	0.5	PASS
		2437	35.680	2419.320	2455.000	0.5	PASS
		2452	26.400	2438.160	2464.560	0.5	PASS

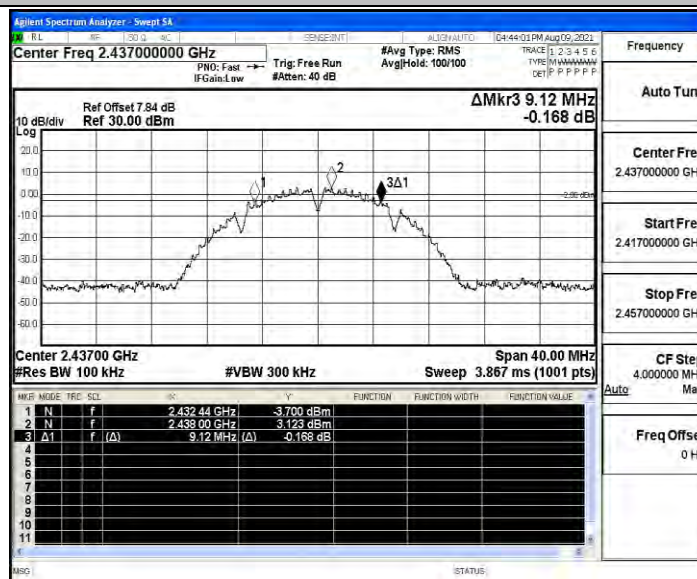


Test Graphs

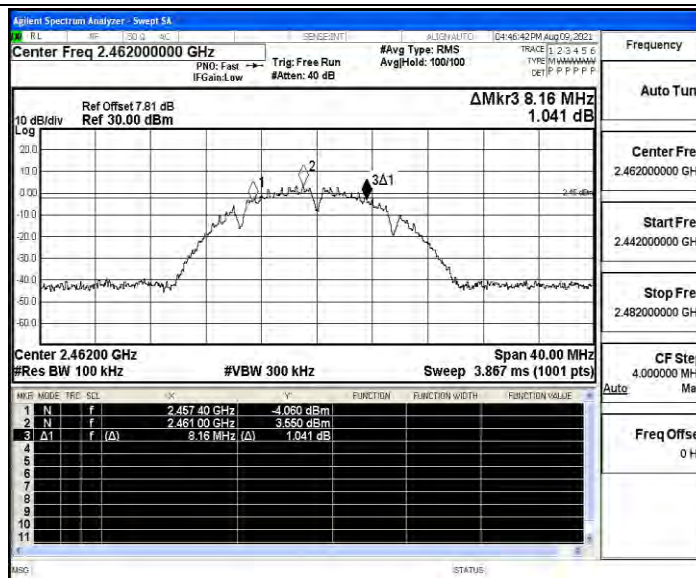
11B_Ant1_2412



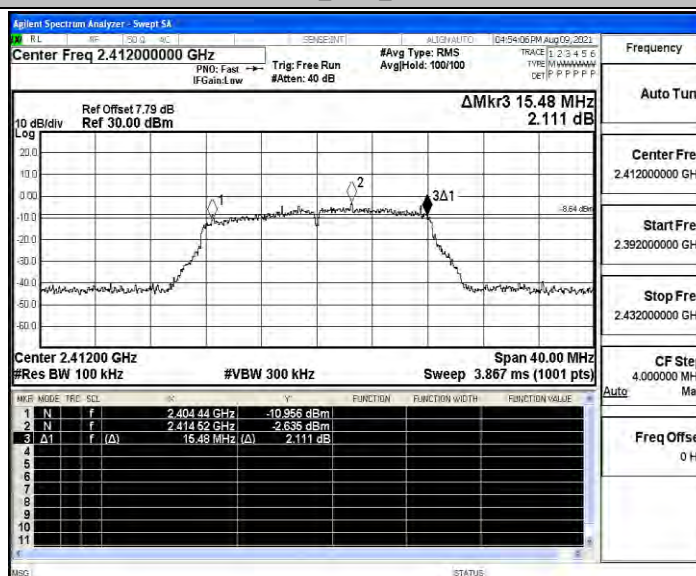
11B_Ant1_2437



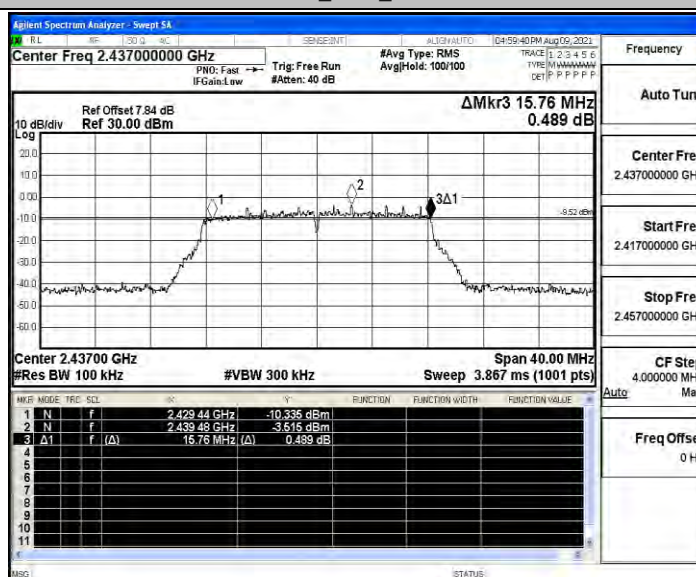
11B_Ant1_2462



11G_Ant1_2412

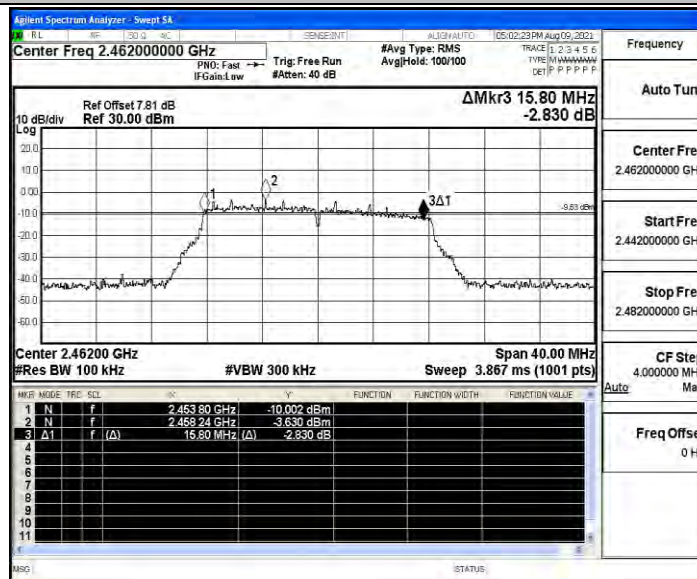


11G_Ant1_2437

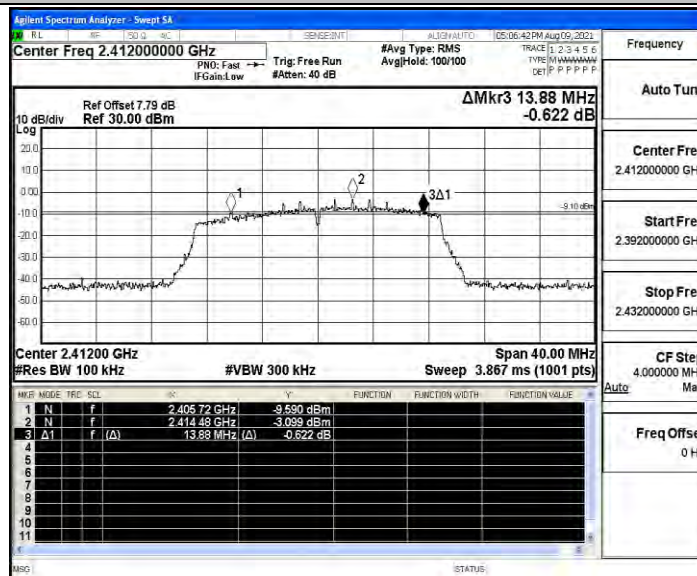




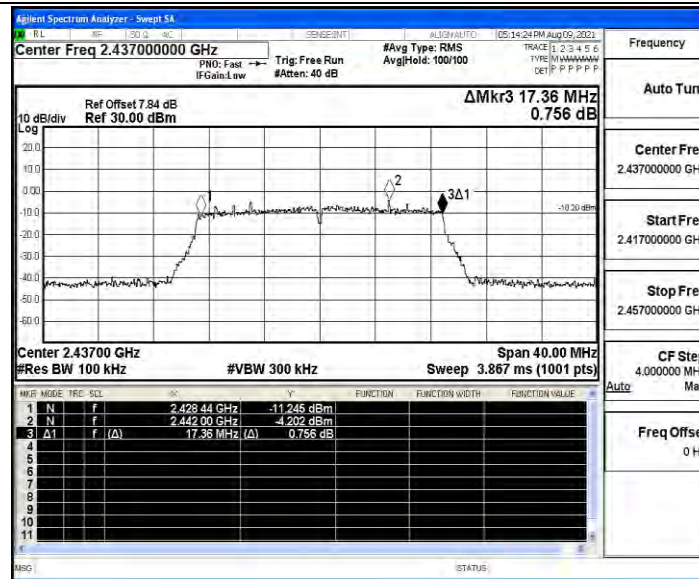
11G_Ant1_2462



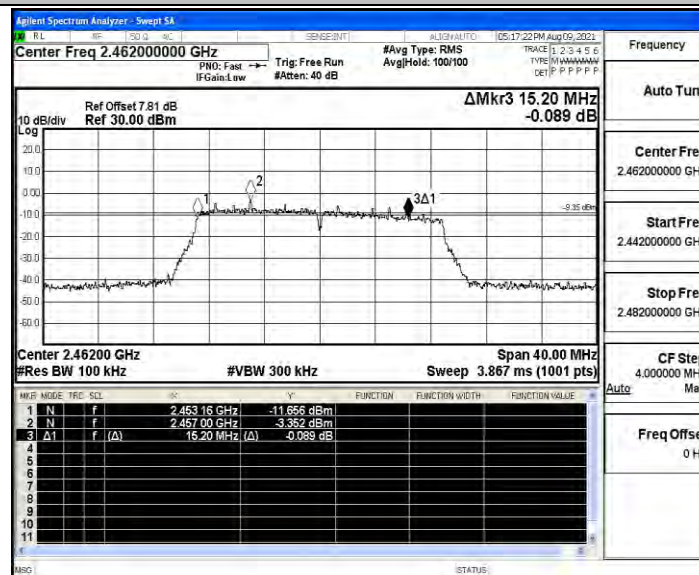
11N20SISO_Ant1_2412



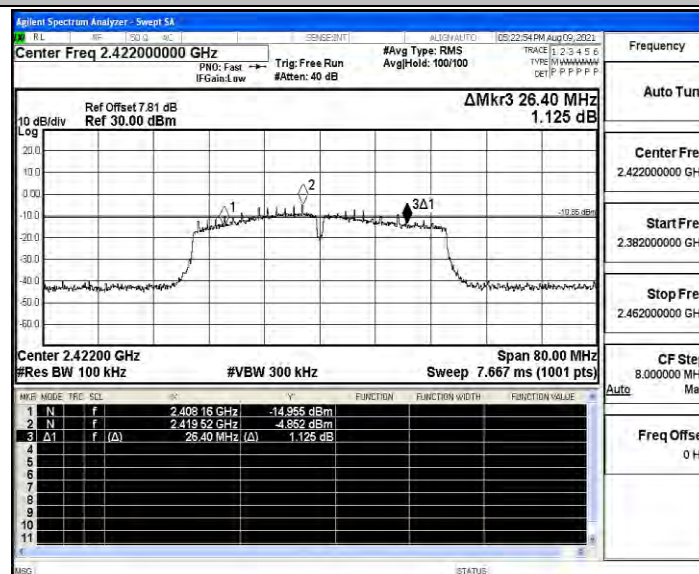
11N20SISO_Ant1_2437



11N20SISO_Ant1_2462

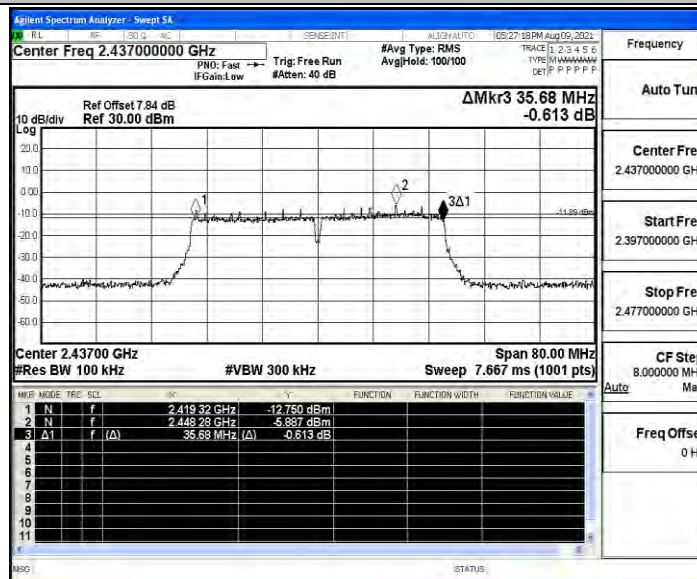


11N40SISO_Ant1_2422

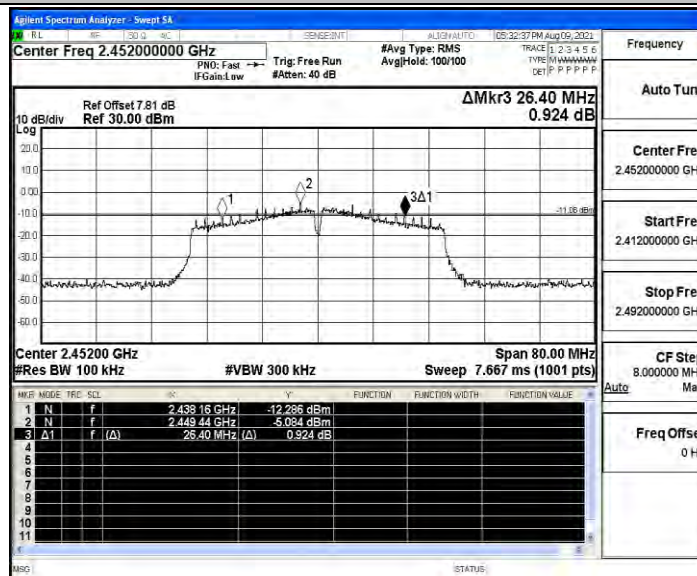




11N40SISO_Ant1_2437



11N40SISO_Ant1_2452





Appendix C.2: Maximum peak conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	8.73	≤ 30	PASS
		2437	8.24	≤ 30	PASS
		2462	8.16	≤ 30	PASS
11G	Ant1	2412	8.06	≤ 30	PASS
		2437	8.54	≤ 30	PASS
		2462	8.43	≤ 30	PASS
11N20SISO	Ant1	2412	8.07	≤ 30	PASS
		2437	8.22	≤ 30	PASS
		2462	8.00	≤ 30	PASS
11N40SISO	Ant1	2422	8.15	≤ 30	PASS
		2437	8.32	≤ 30	PASS
		2452	8.27	≤ 30	PASS



Appendix C.3: Maximum power spectral density

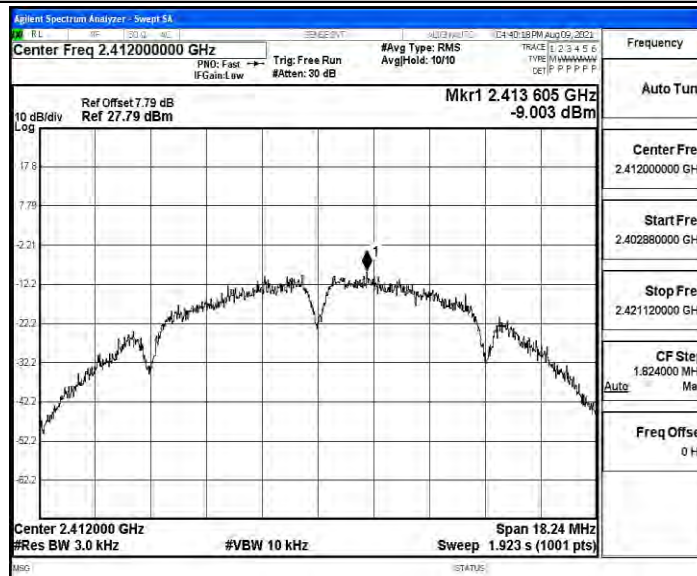
Test Result

TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-9.00	≤ 8	PASS
		2437	-10.33	≤ 8	PASS
		2462	-9.88	≤ 8	PASS
11G	Ant1	2412	-15.34	≤ 8	PASS
		2437	-16.73	≤ 8	PASS
		2462	-17.26	≤ 8	PASS
11N20SISO	Ant1	2412	-17.06	≤ 8	PASS
		2437	-18.31	≤ 8	PASS
		2462	-17.39	≤ 8	PASS
11N40SISO	Ant1	2422	-19.32	≤ 8	PASS
		2437	-20.07	≤ 8	PASS
		2452	-18.65	≤ 8	PASS

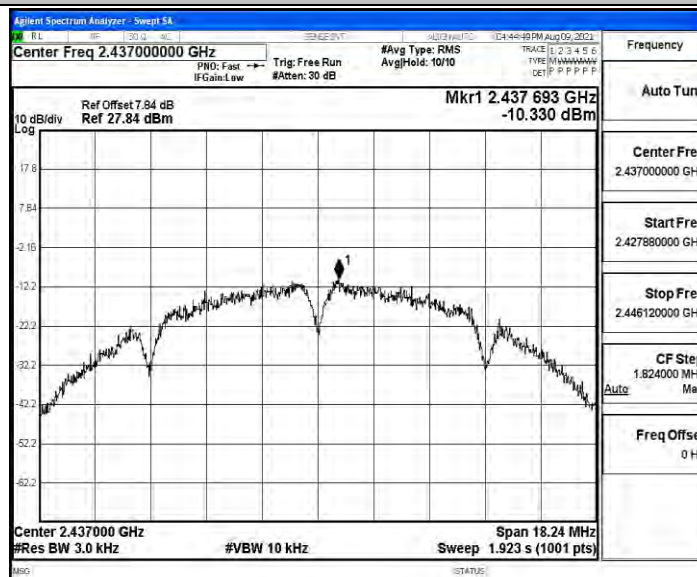


Test Graphs

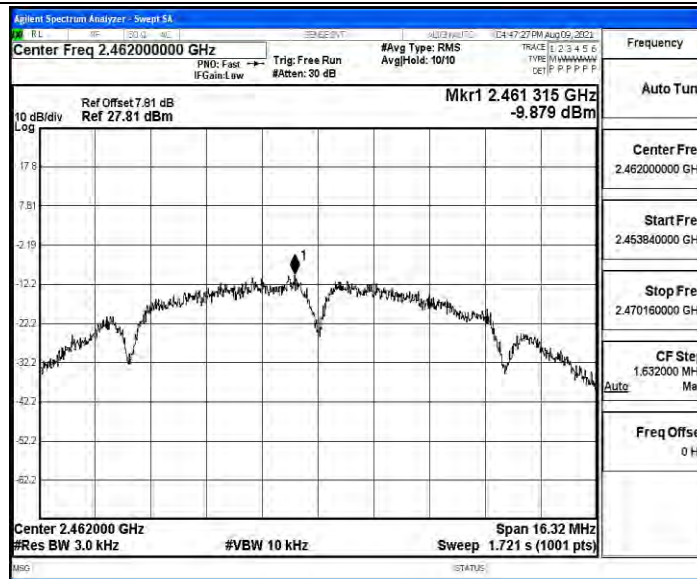
11B_Ant1_2412



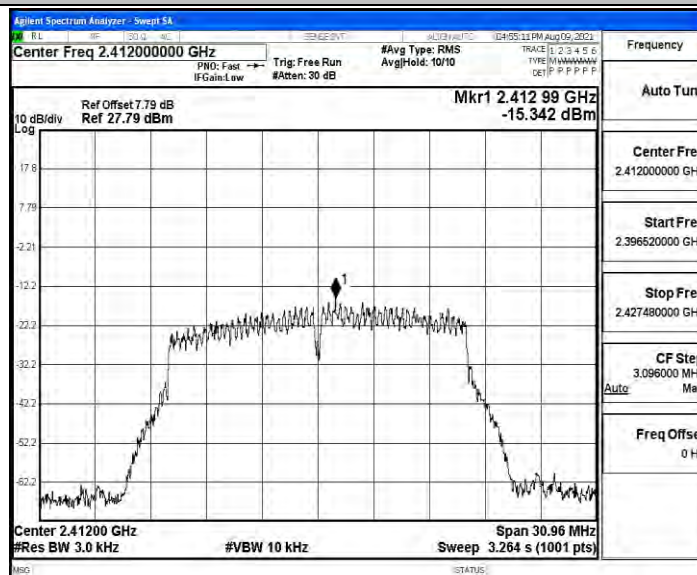
11B_Ant1_2437



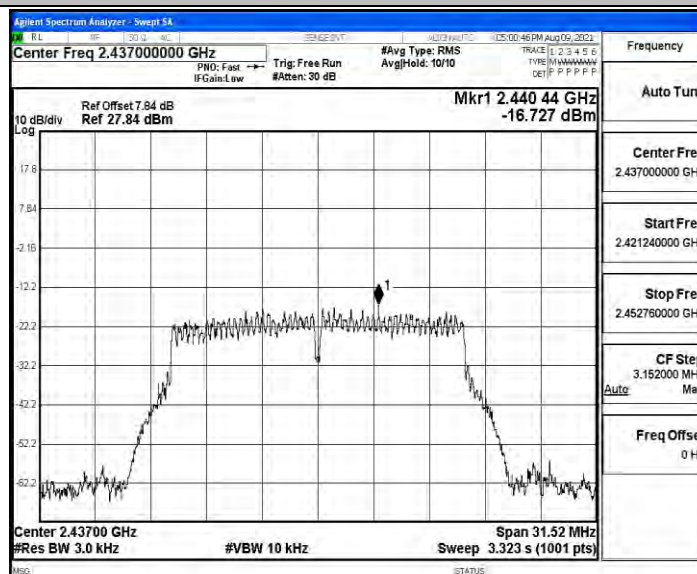
11B_Ant1_2462

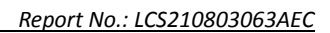


11G_Ant1_2412



11G_Ant1_2437





Agilent Spectrum Analyzer - Sweep SA

Center Freq 2.46200000 GHz

Ref Offset 7.81 dB
Ref 27.81 dBm

Trig: Free Run
#Atten: 30 dB

#Avg Type: RMS
Avg/Hold: 10/10

Frequency

Auto Tun

Mkr1 2.459 187.6 GHz
-17.257 dBm

10 dB/div
Log

Center 2.46200 GHz
#Res BW 3.0 kHz

#VBW 10 kHz

Span 31.60 MHz
Sweep 3.332 s (1001 pts)

CF Ste
3.160000 MHz
Auto
Ma

Freq Offs
0 Hz

Agilent Spectrum Analyzer - Sweep SA

Center Freq 2.412000000 GHz
 PNO: Fast IF Gain: Low
 Trig: Free Run #Atten: 30 dB

#Avg Type: RMS
 AvgHold: 10/10

DATE/TIME: 03-07-43 PM Aug 09, 2011
 TRACE: 1 2 3 4 5 6
 TYPE: N W W W W W W W
 DET: P P P P P P

Frequency
 Auto Tun

Ref Offset 7.79 dB
 Ref 27.79 dBm

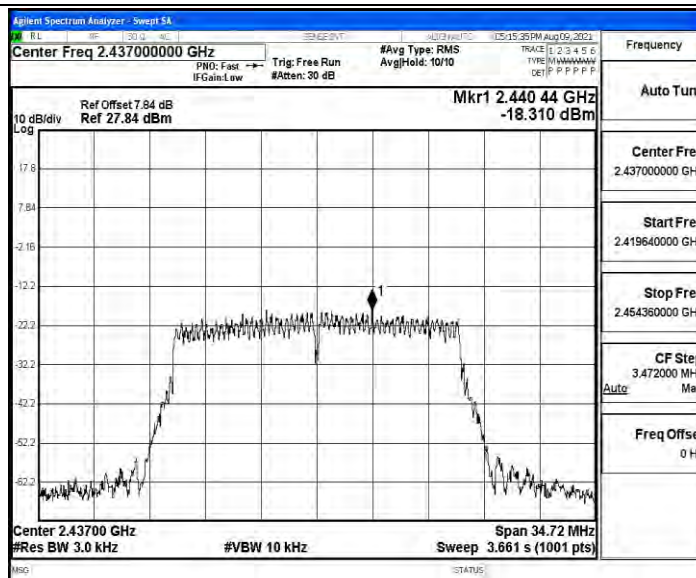
Mkr1 2.416 997 GHz
 -17.061 dBm

10 dB/div
 Log

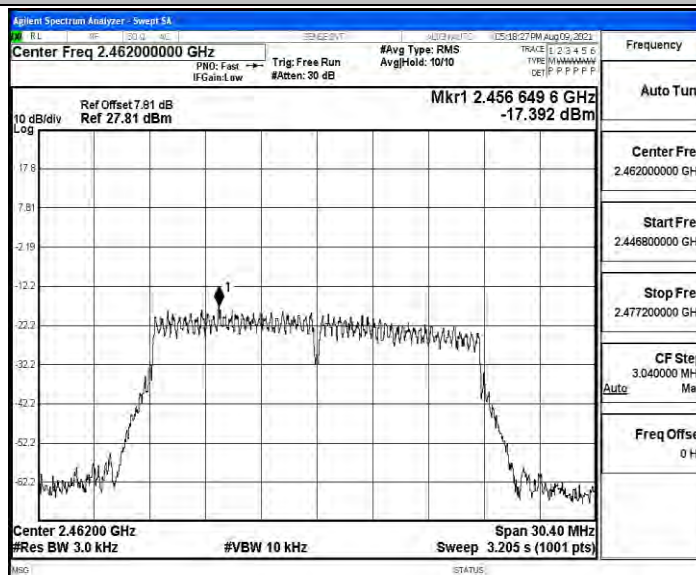
Center Freq 2.412000000 GHz
 Start Freq 2.396120000 GHz
 Stop Freq 2.425880000 GHz
 CF Ste 2.776000 MHz
 Auto Ma
 Freq Offset 0 Hz

Center 2.412000 GHz
 #Res BW 3.0 kHz
 #VBW 10 kHz
 Span 27.76 MHz
 Sweep 2.927 s (1001 pts)

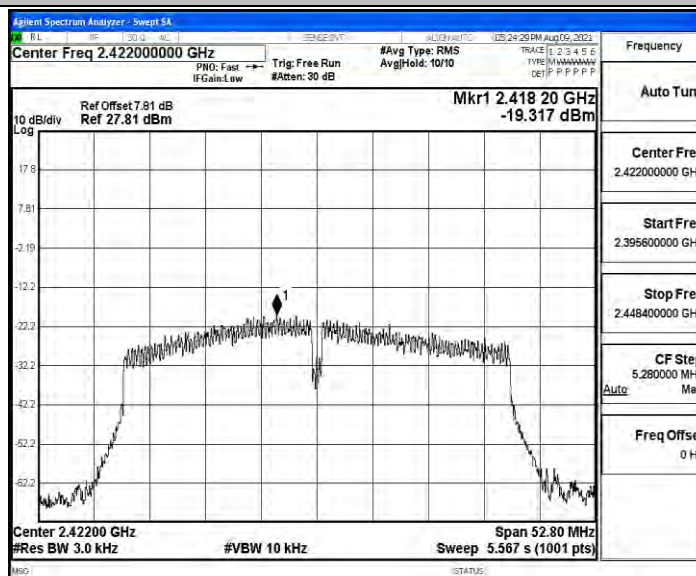
12 / 50



11N20SISO_Ant1_2462

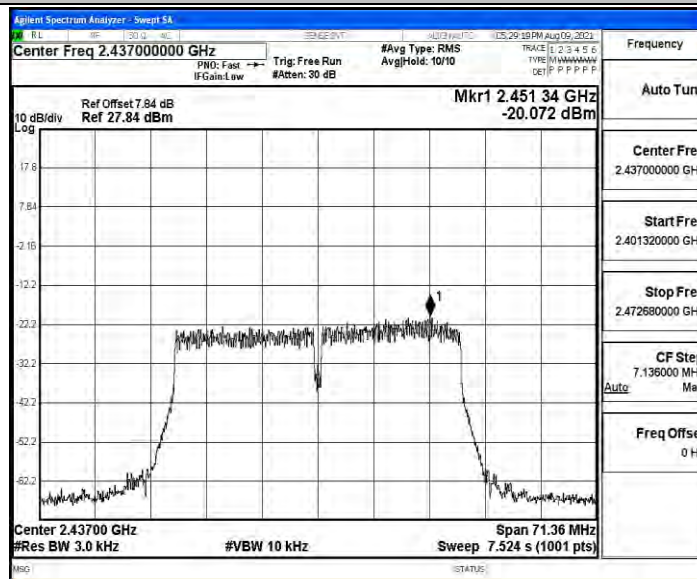


11N40SISO_Ant1_2422

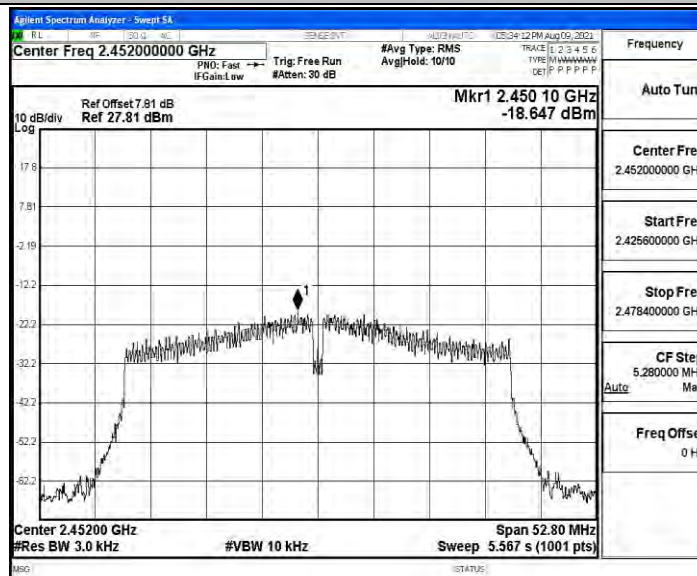




11N40SISO_Ant1_2437



11N40SISO_Ant1_2452

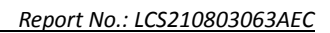


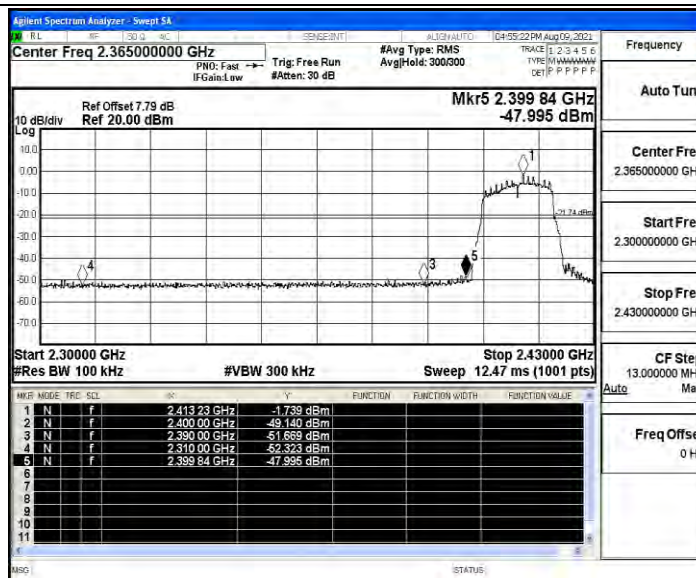


Appendix C.4: Band edge measurements

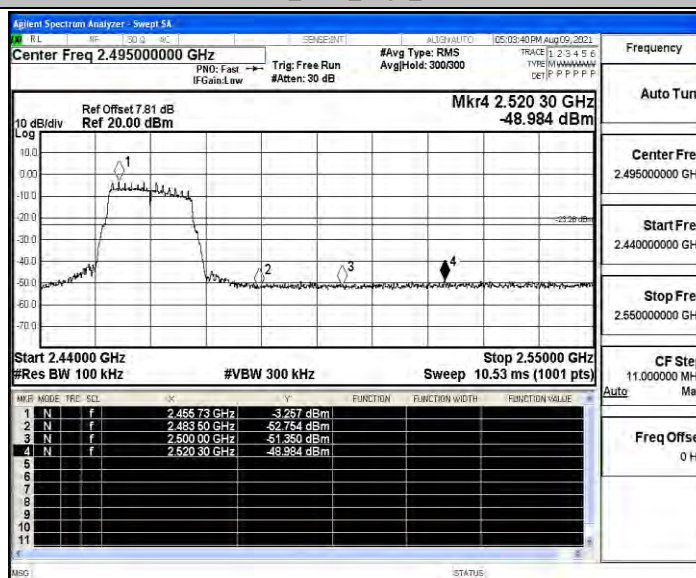
Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	5.02	-48.22	≤ -14.98	PASS
		High	2462	4.14	-48.69	≤ -15.86	PASS
11G	Ant1	Low	2412	-1.74	-48	≤ -21.74	PASS
		High	2462	-3.26	-48.98	≤ -23.26	PASS
11N20SISO	Ant1	Low	2412	-2.75	-49.34	≤ -22.75	PASS
		High	2462	-3.63	-48.94	≤ -23.63	PASS
11N40SISO	Ant1	Low	2422	-4.93	-47.85	≤ -24.93	PASS
		High	2452	-4.43	-49.15	≤ -24.43	PASS

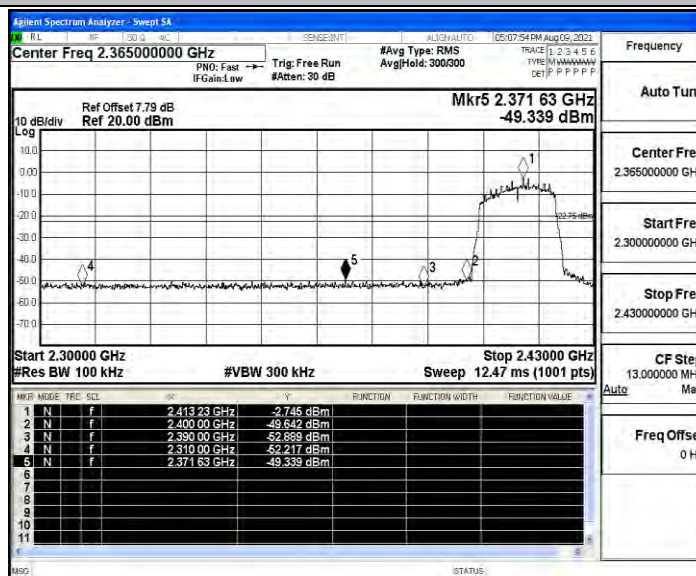




11G_Ant1_High_2462

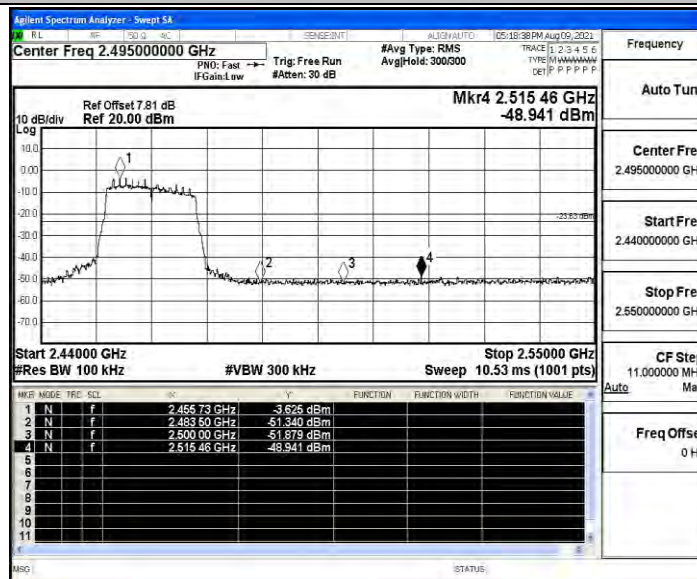


11N20SISO_Ant1_Low_2412

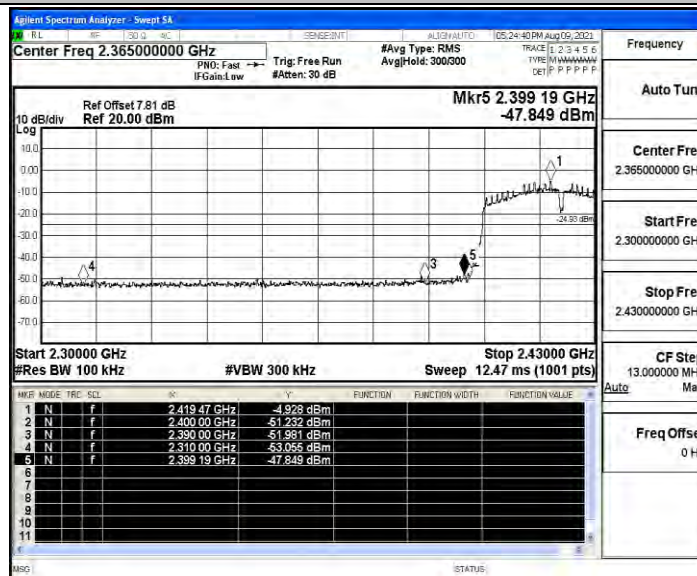




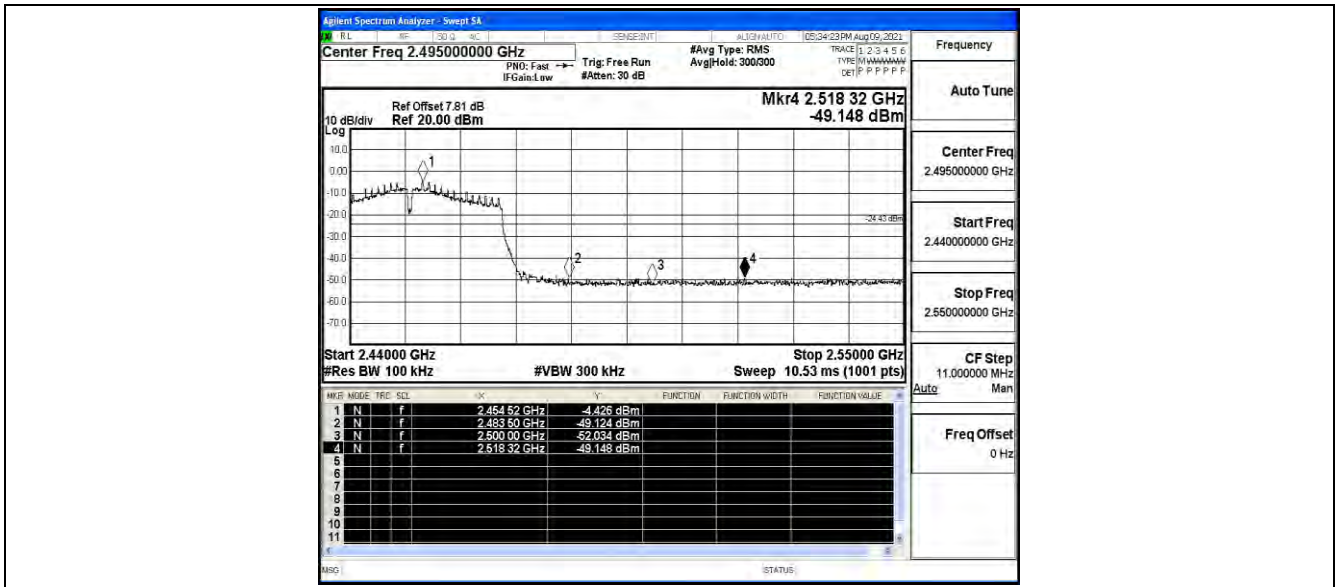
11N20SISO_Ant1_High_2462



11N40SISO_Ant1_Low_2422



11N40SISO_Ant1_High_2452





Appendix C.5: Conducted Spurious Emission

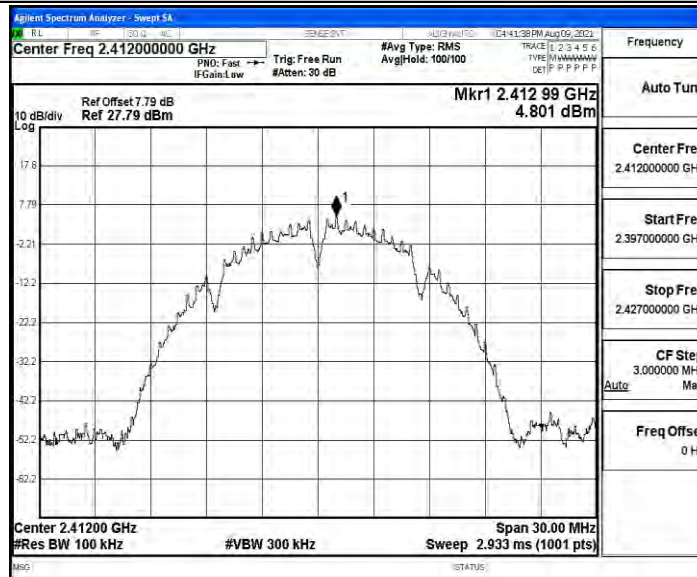
Test Result

TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	4.80	4.80	---	PASS
			30~1000	4.80	-60.38	≤ -15.2	PASS
			1000~26500	4.80	-46.84	≤ -15.2	PASS
		2437	Reference	4.01	4.01	---	PASS
			30~1000	4.01	-59.66	≤ -15.99	PASS
			1000~26500	4.01	-47.24	≤ -15.99	PASS
		2462	Reference	3.89	3.89	---	PASS
			30~1000	3.89	-60.44	≤ -16.11	PASS
			1000~26500	3.89	-46.65	≤ -16.11	PASS
11G	Ant1	2412	Reference	-2.53	-2.53	---	PASS
			30~1000	-2.53	-62.29	≤ -22.53	PASS
			1000~26500	-2.53	-46.84	≤ -22.53	PASS
		2437	Reference	-3.38	-3.38	---	PASS
			30~1000	-3.38	-57.93	≤ -23.38	PASS
			1000~26500	-3.38	-47.5	≤ -23.38	PASS
		2462	Reference	-3.18	-3.18	---	PASS
			30~1000	-3.18	-60.5	≤ -23.18	PASS
			1000~26500	-3.18	-47.8	≤ -23.18	PASS
11N20SISO	Ant1	2412	Reference	-2.56	-2.56	---	PASS
			30~1000	-2.56	-58.68	≤ -22.56	PASS
			1000~26500	-2.56	-47.51	≤ -22.56	PASS
		2437	Reference	-4.23	-4.23	---	PASS
			30~1000	-4.23	-61.11	≤ -24.23	PASS
			1000~26500	-4.23	-47.13	≤ -24.23	PASS
		2462	Reference	-3.45	-3.45	---	PASS
			30~1000	-3.45	-60.96	≤ -23.45	PASS
			1000~26500	-3.45	-47.6	≤ -23.45	PASS
11N40SISO	Ant1	2422	Reference	-4.90	-4.90	---	PASS
			30~1000	-4.90	-59.23	≤ -24.9	PASS
			1000~26500	-4.90	-46.29	≤ -24.9	PASS
		2437	Reference	-6.10	-6.10	---	PASS
			30~1000	-6.10	-61.02	≤ -26.1	PASS
			1000~26500	-6.10	-46.44	≤ -26.1	PASS
		2452	Reference	-4.76	-4.76	---	PASS
			30~1000	-4.76	-59.75	≤ -24.76	PASS
			1000~26500	-4.76	-47	≤ -24.76	PASS

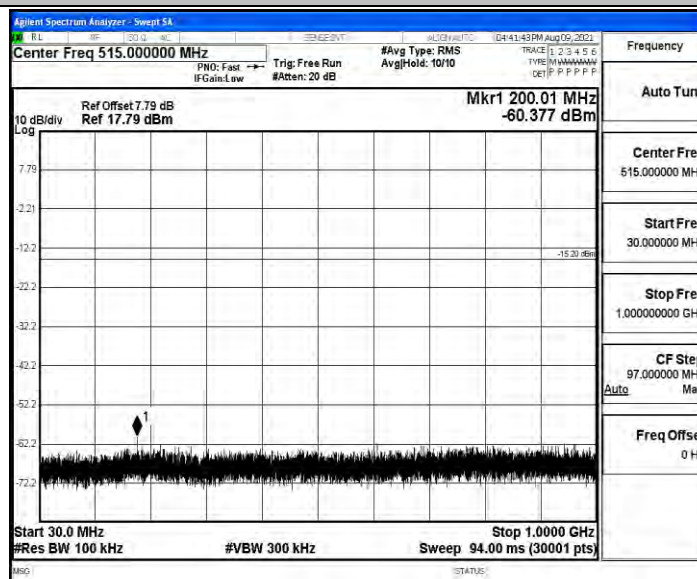


Test Graphs

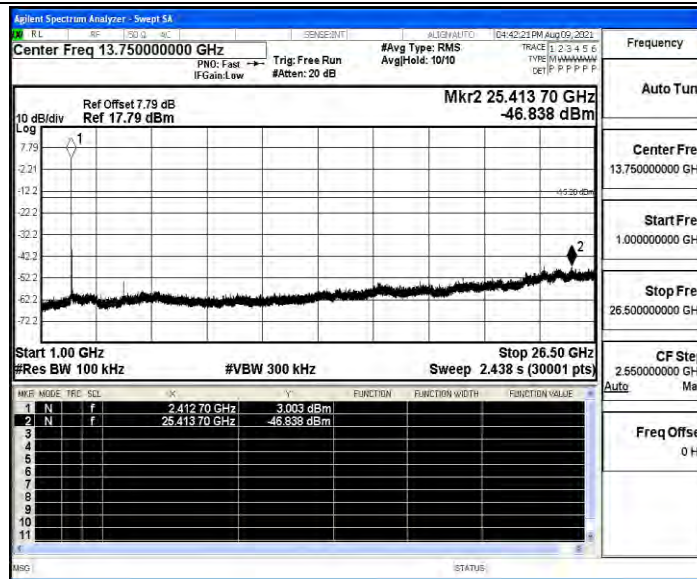
11B_Ant1_2412_0~Reference



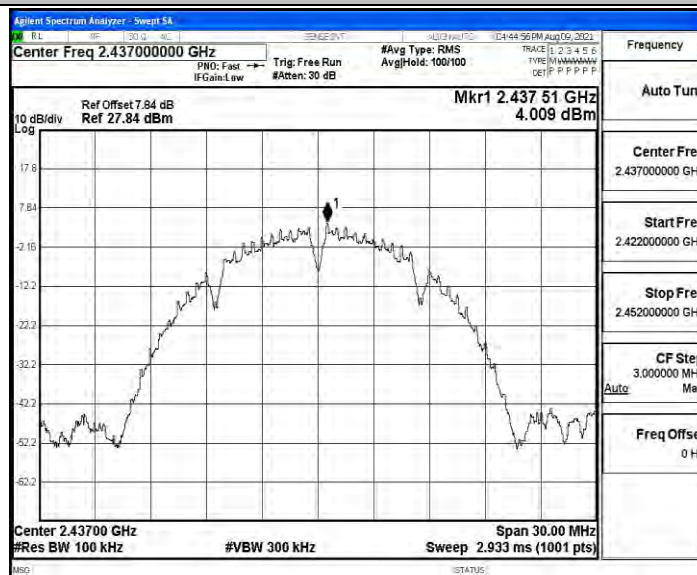
11B_Ant1_2412_30~1000



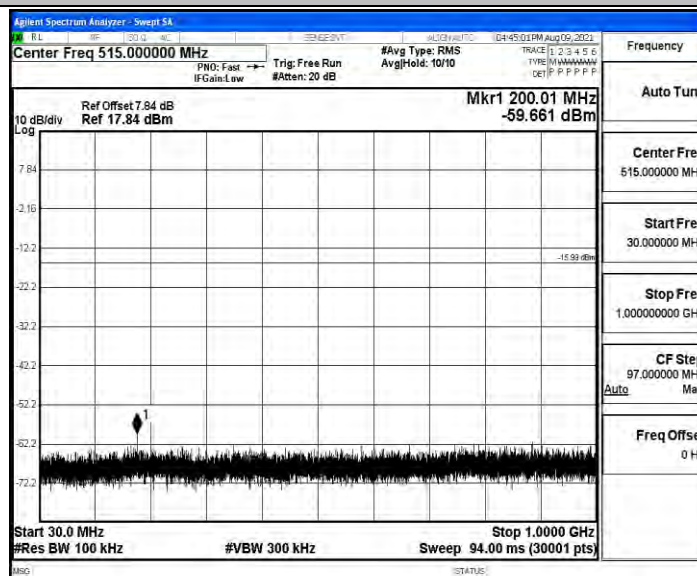
11B_Ant1_2412_1000~26500



11B_Ant1_2437_0~Reference

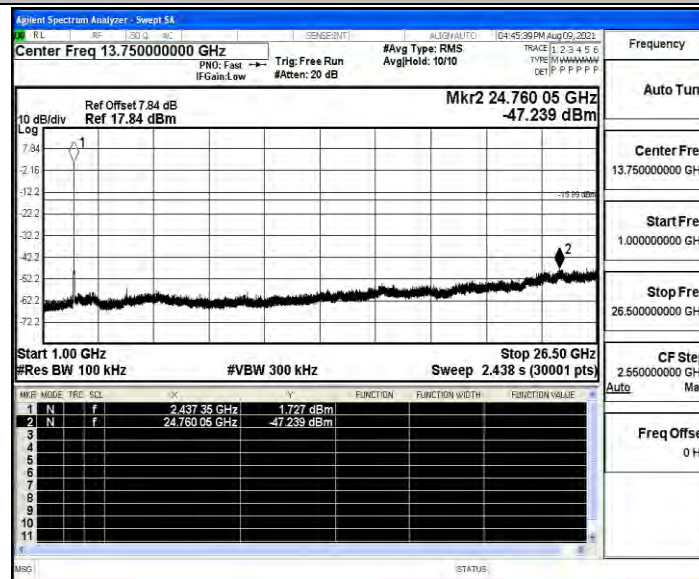


11B_Ant1_2437_30~1000

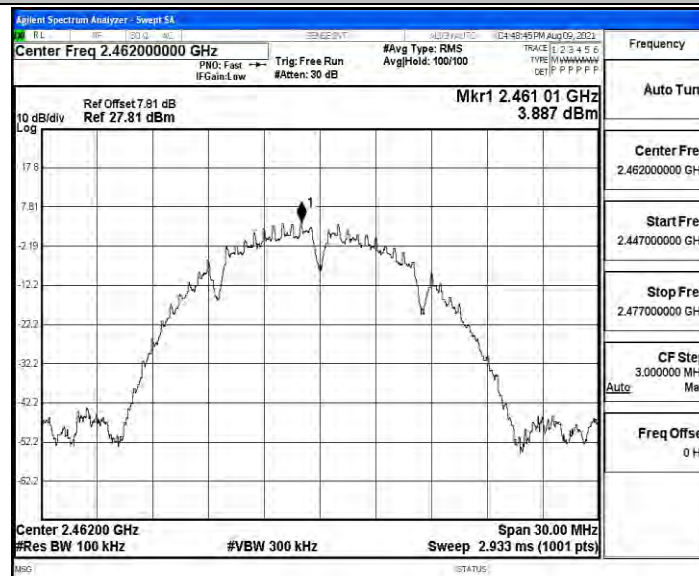




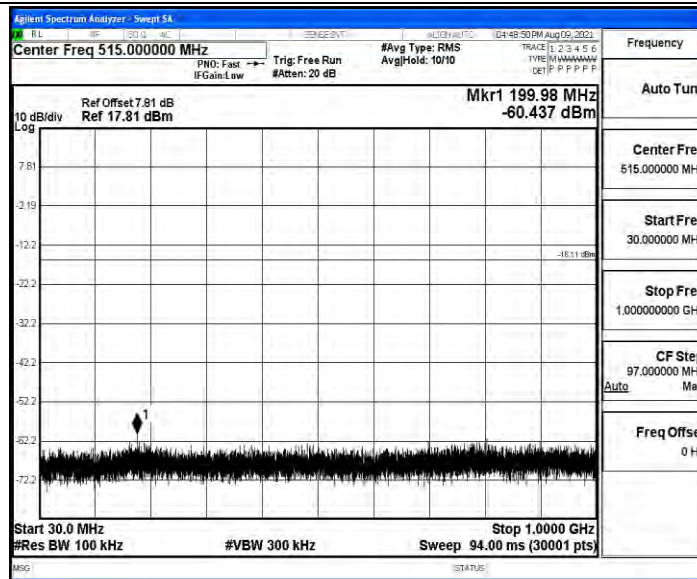
11B_Ant1_2437_1000~26500



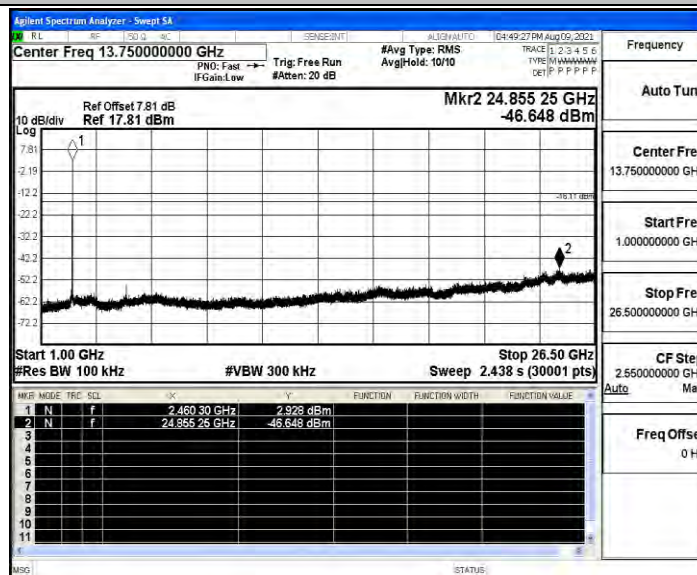
11B_Ant1_2462_0~Reference



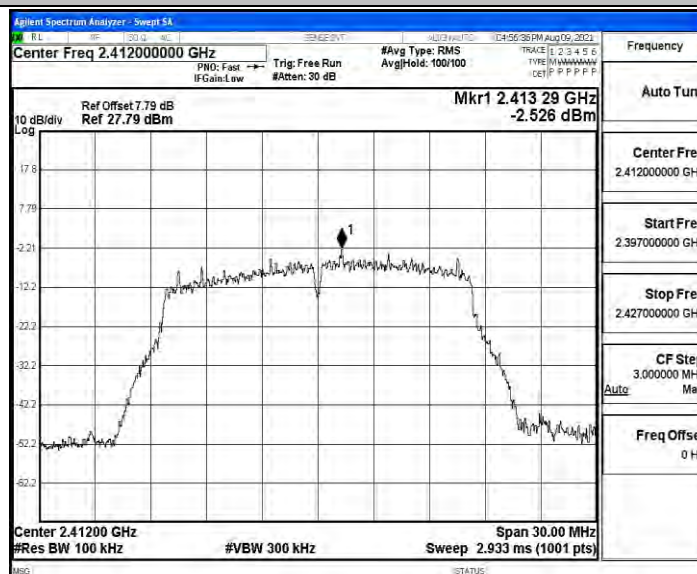
11B_Ant1_2462_30~1000



11B_Ant1_2462_1000~26500

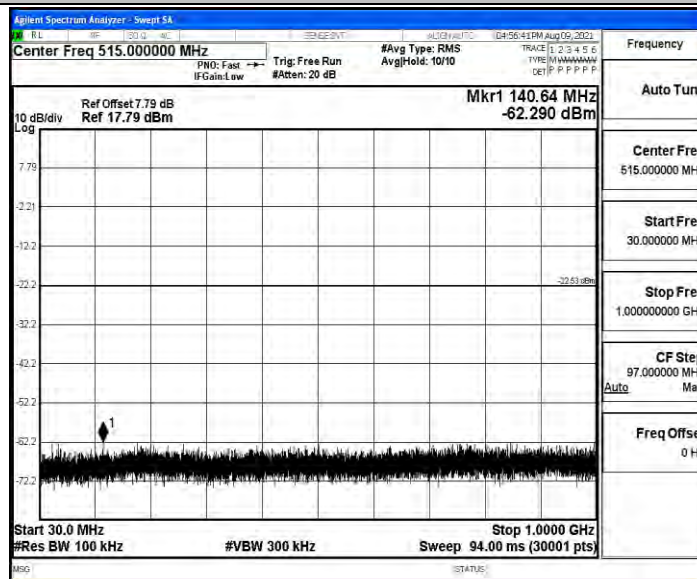


11G_Ant1_2412_0~Reference

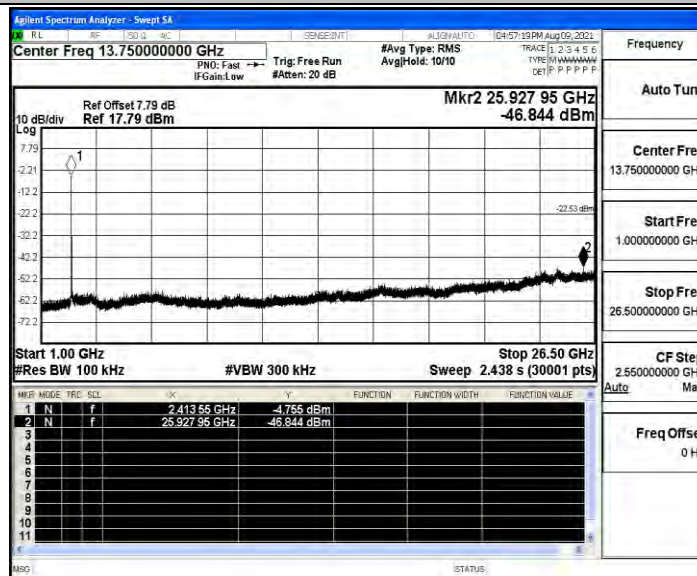




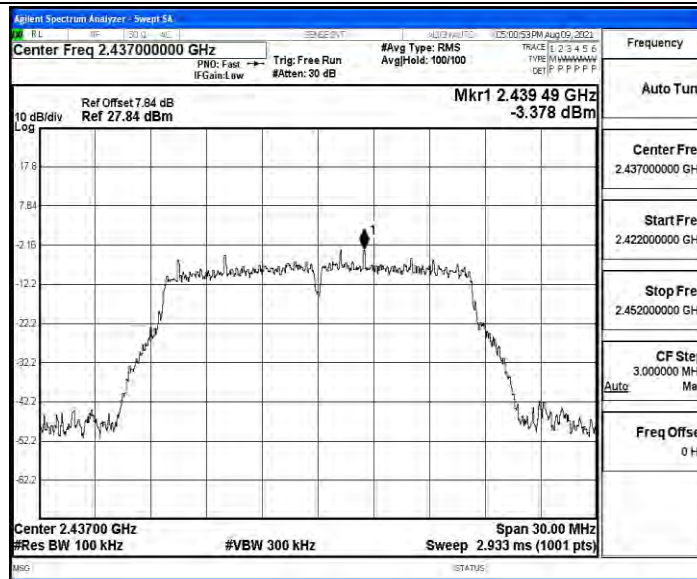
11G_Ant1_2412_30~1000



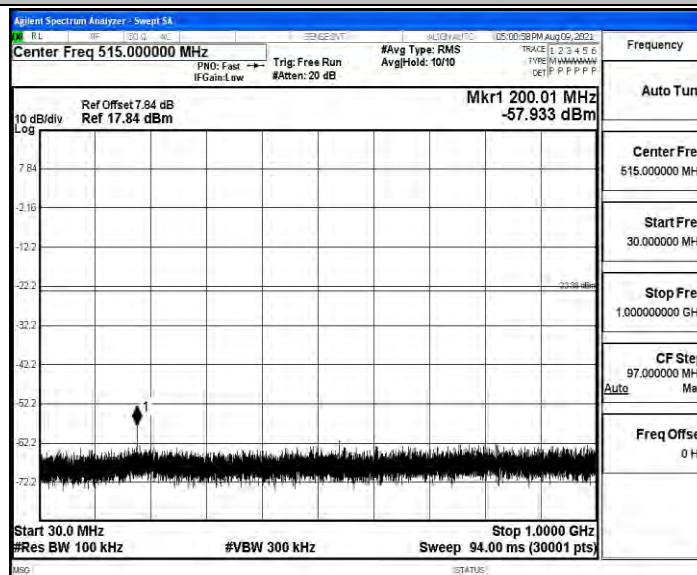
11G_Ant1_2412_1000~26500



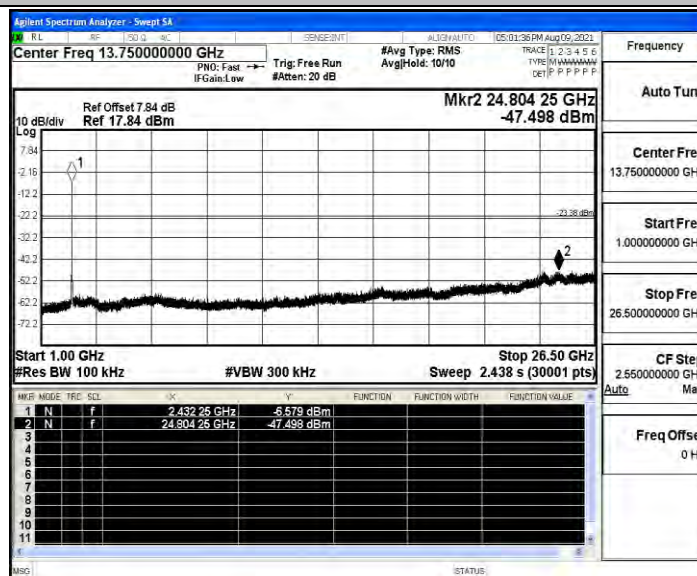
11G_Ant1_2437_0~Reference



11G_Ant1_2437_30~1000

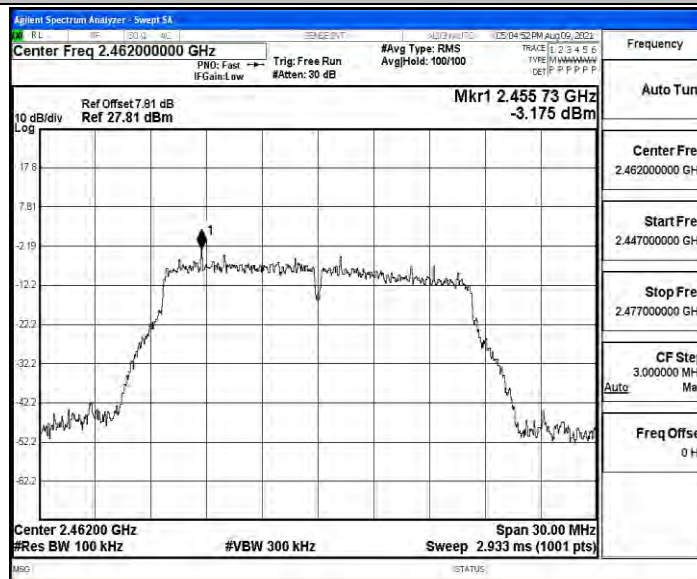


11G_Ant1_2437_1000~26500

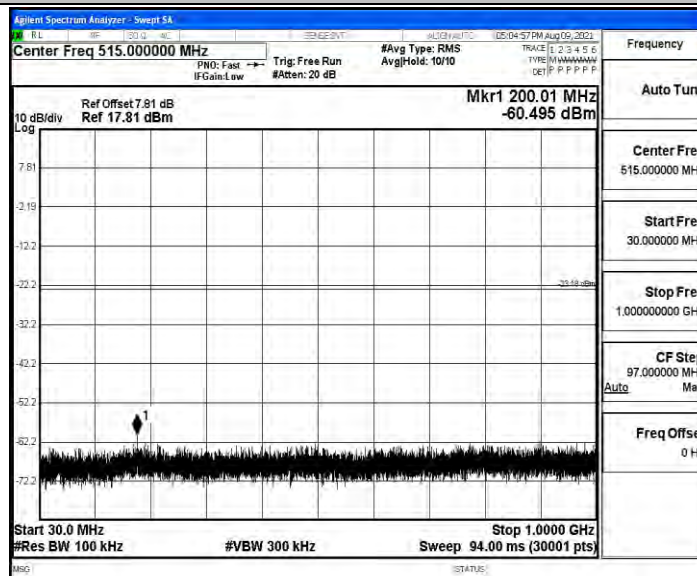




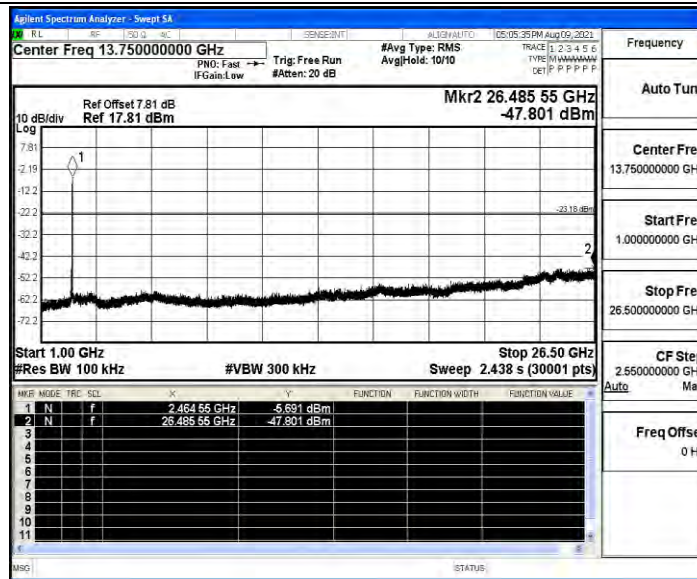
11G_Ant1_2462_0~Reference



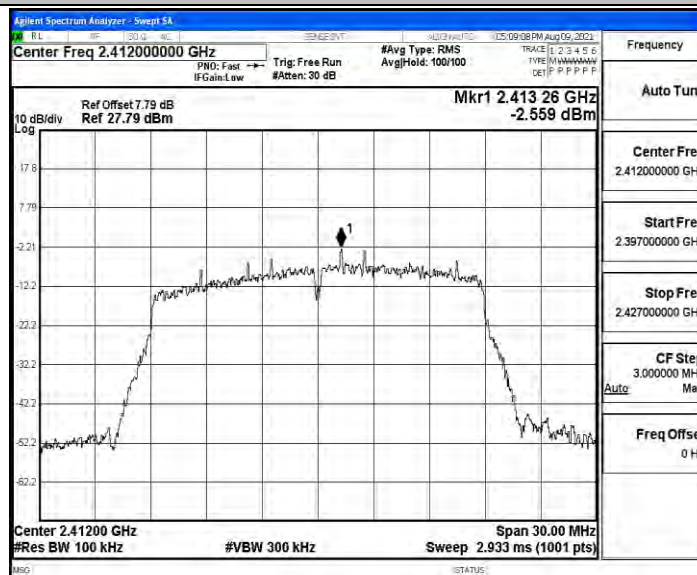
11G_Ant1_2462_30~1000



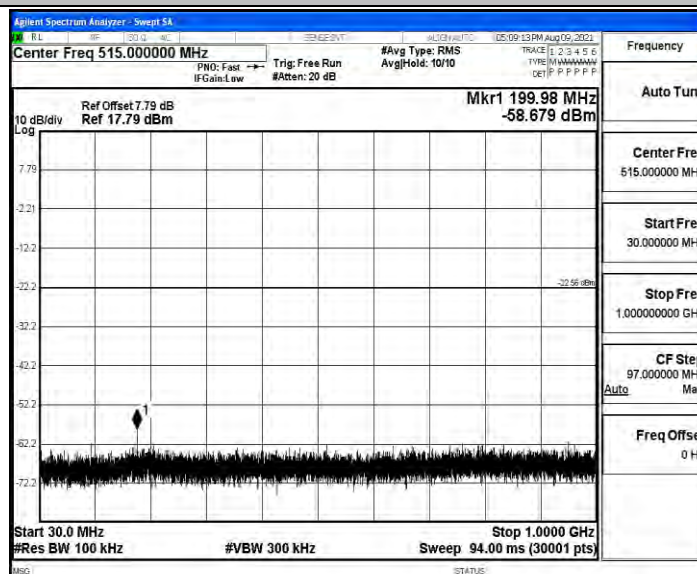
11G_Ant1_2462_1000~26500



11N20SISO_Ant1_2412_0~Reference

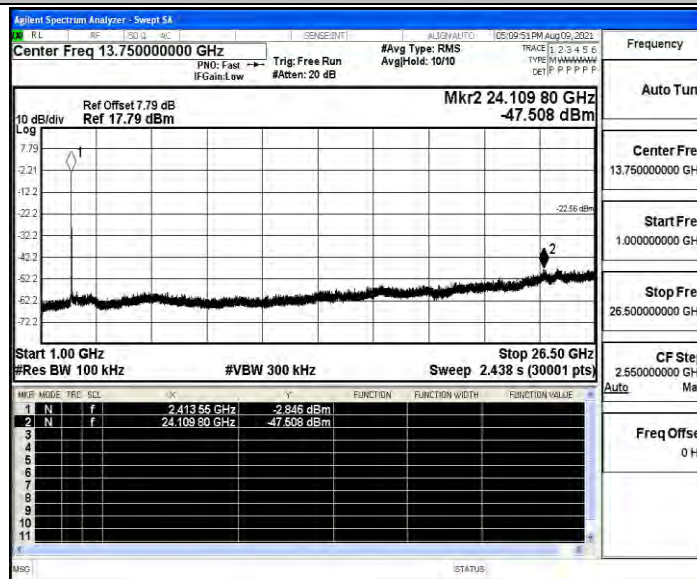


11N20SISO_Ant1_2412_30~1000

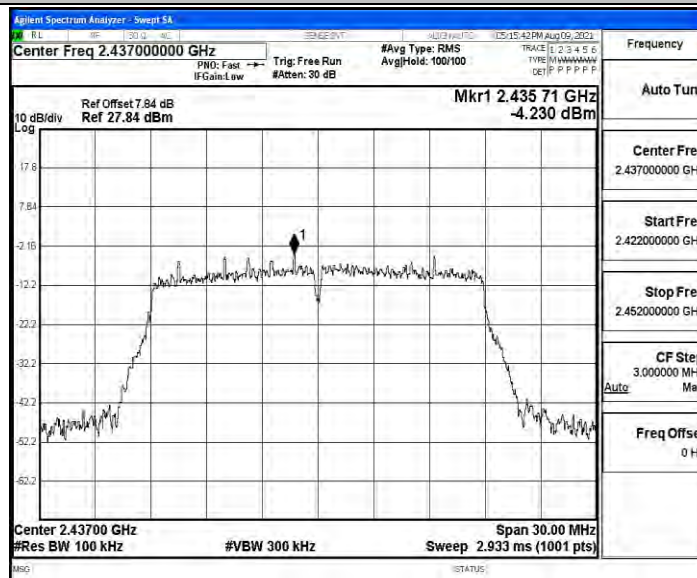




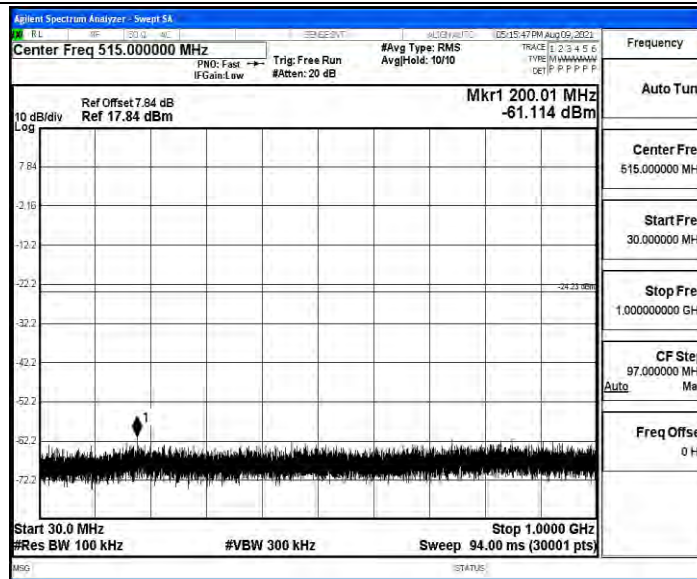
11N20SISO_Ant1_2412_1000~26500



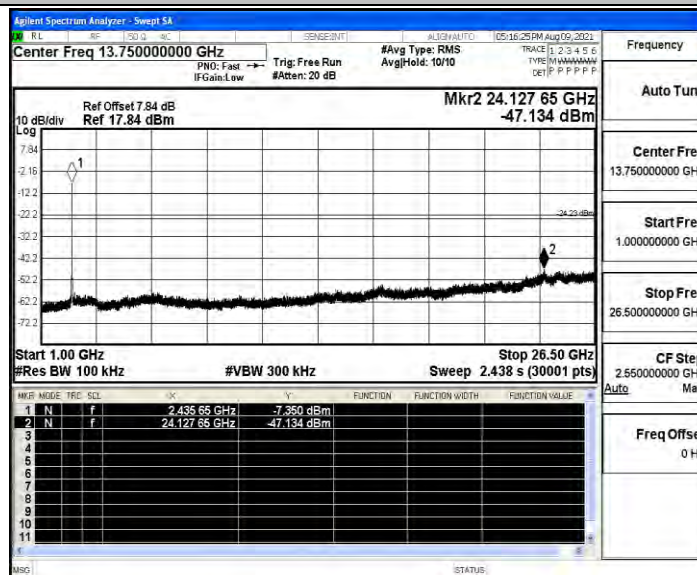
11N20SISO_Ant1_2437_0~Reference



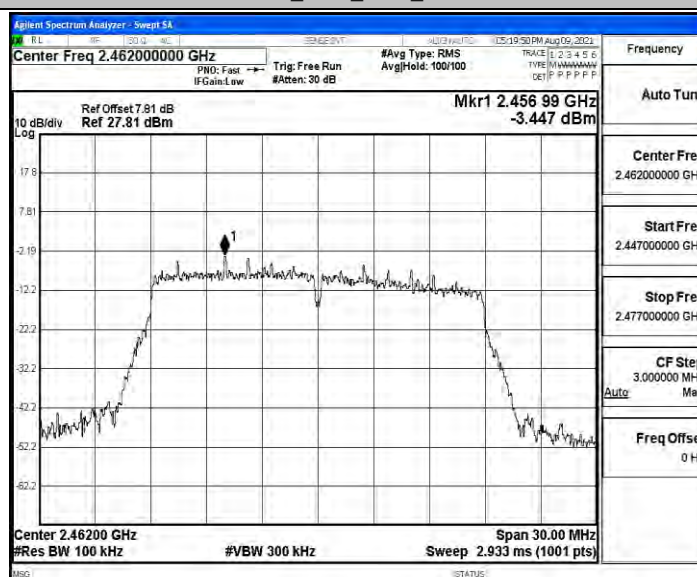
11N20SISO_Ant1_2437_30~1000



11N20SISO_Ant1_2437_1000~26500

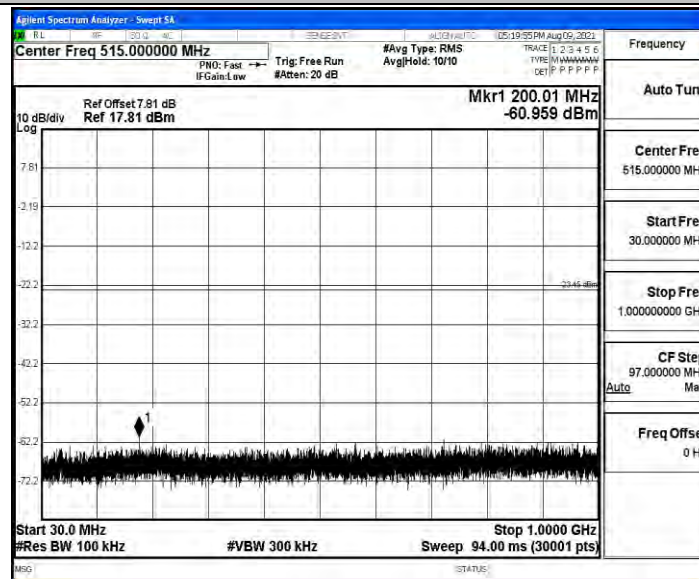


11N20SISO_Ant1_2462_0~Reference

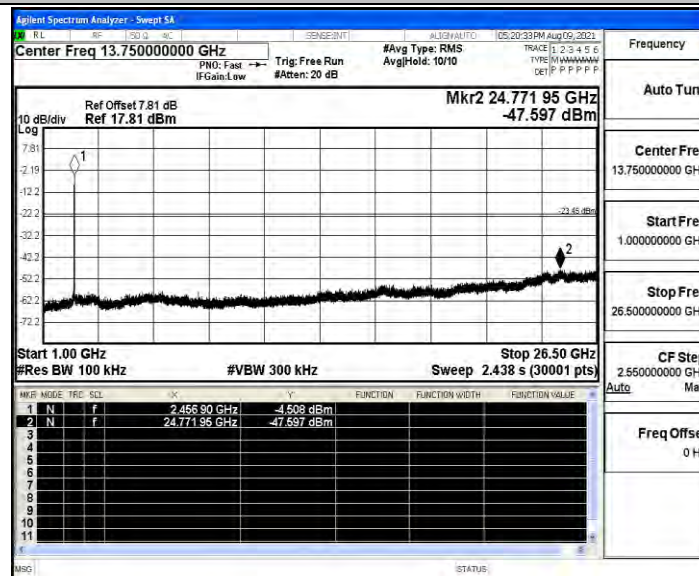




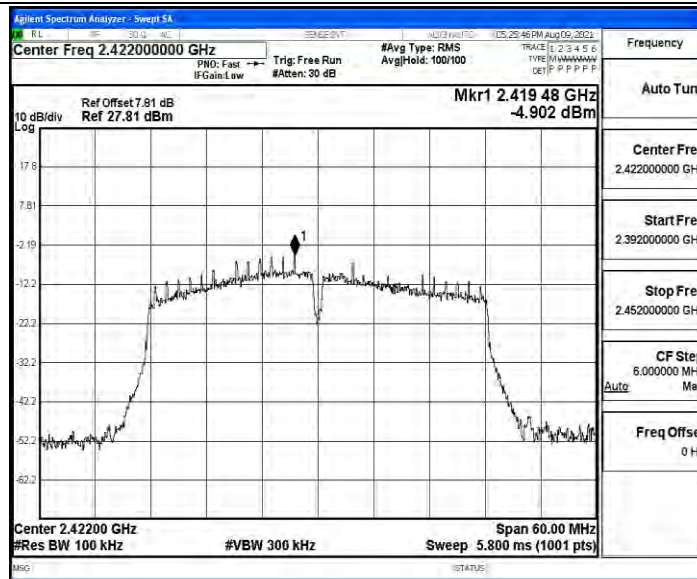
11N20SISO_Ant1_2462_30~1000



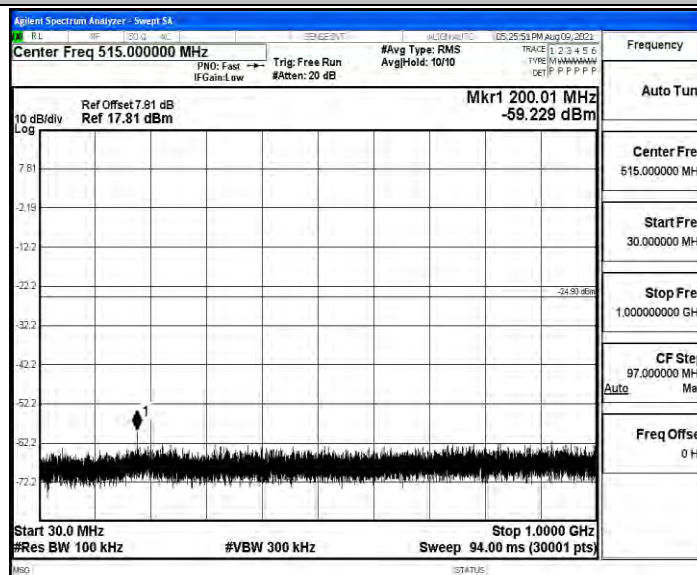
11N20SISO_Ant1_2462_1000~26500



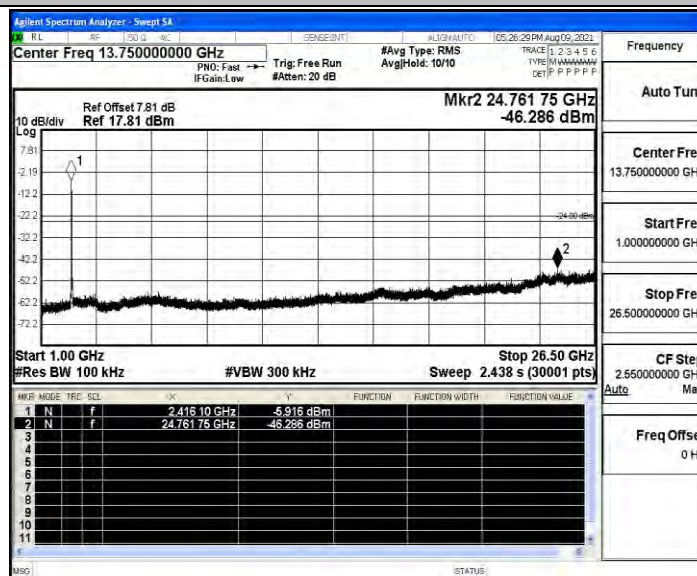
11N40SISO_Ant1_2422_0~Reference



11N40SISO_Ant1_2422_30~1000

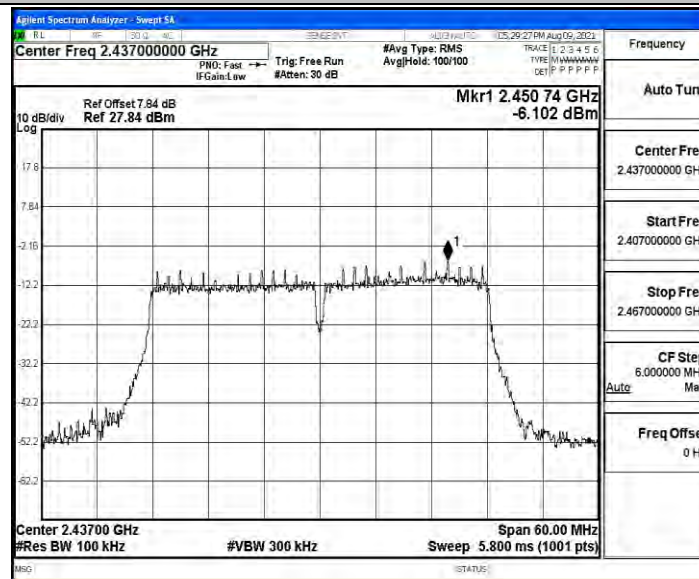


11N40SISO_Ant1_2422_1000~26500

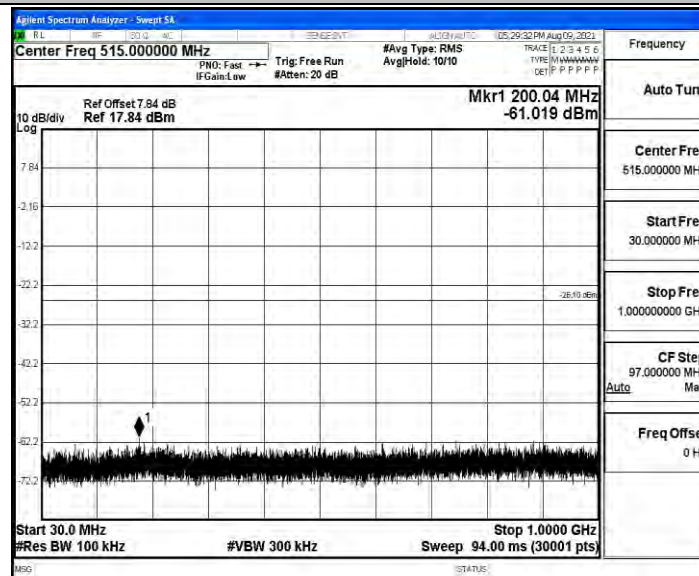




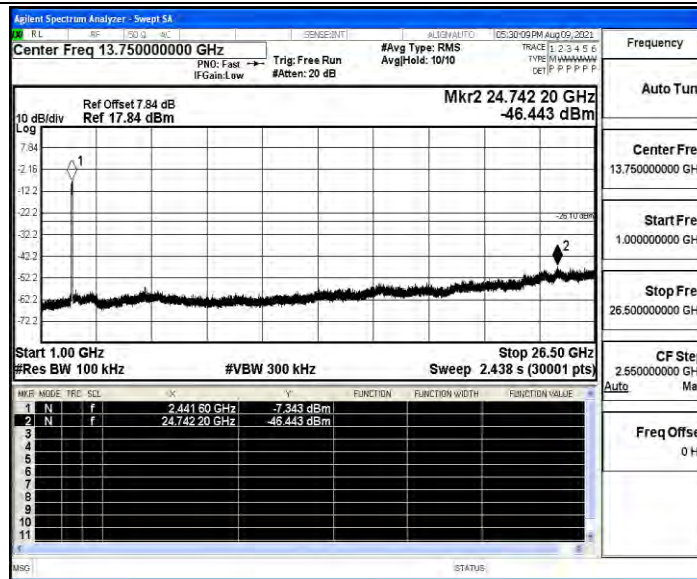
11N40SISO_Ant1_2437_0~Reference



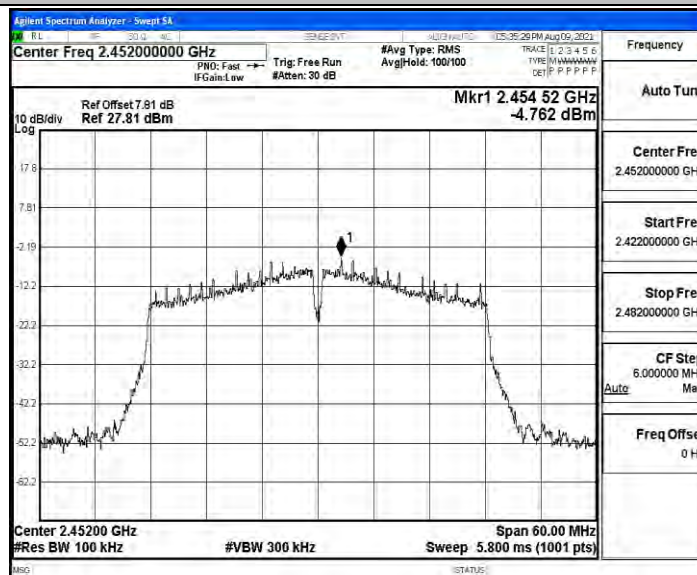
11N40SISO_Ant1_2437_30~1000



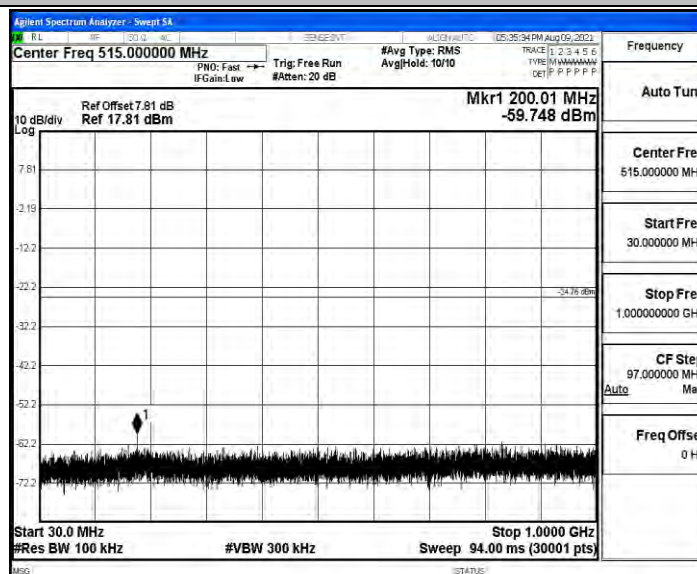
11N40SISO_Ant1_2437_1000~26500



11N40SISO_Ant1_2452_0~Reference

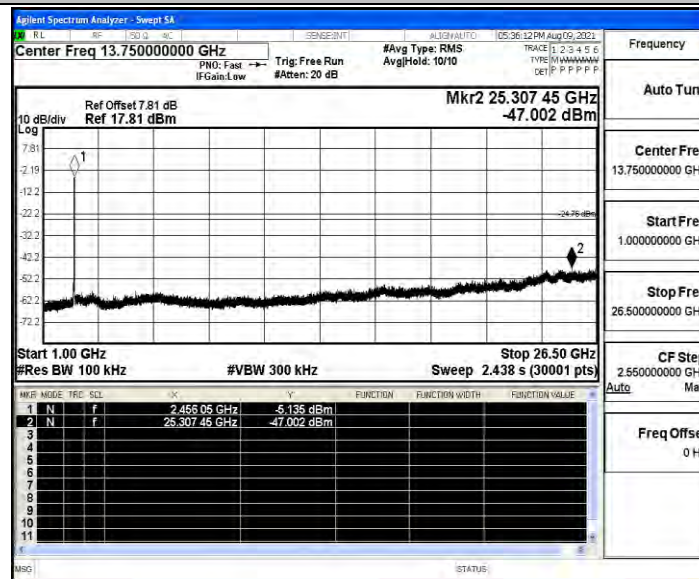


11N40SISO_Ant1_2452_30~1000





11N40SISO_Ant1_2452_1000~26500

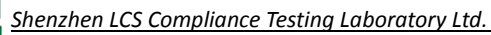




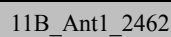
Appendix C.6: Duty Cycle

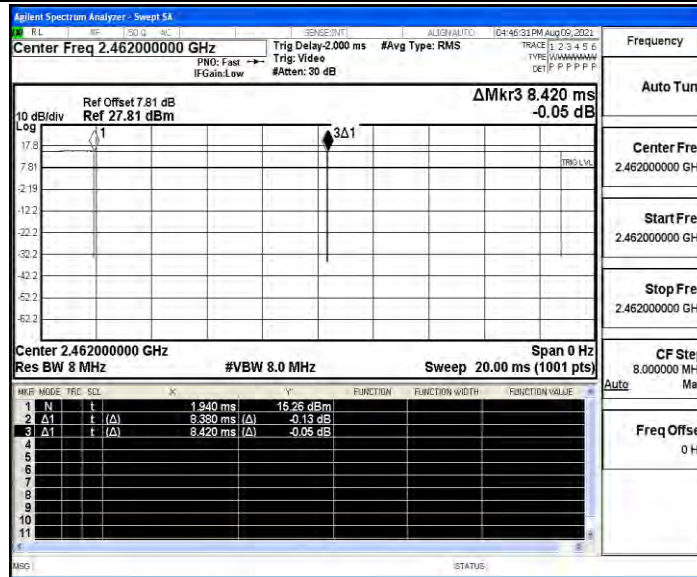
Test Result

TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Limit	Verdict
11B	Ant1	2412	8.38	8.42	99.52	---	PASS
		2437	30.00	30.00	100.00	---	PASS
		2462	8.38	8.42	99.52	---	PASS
11G	Ant1	2412	1.39	1.44	96.53	---	PASS
		2437	1.39	1.44	96.53	---	PASS
		2462	1.39	1.44	96.53	---	PASS
11N20SISO	Ant1	2412	1.30	1.35	96.30	---	PASS
		2437	1.30	1.35	96.30	---	PASS
		2462	1.30	1.35	96.30	---	PASS
11N40SISO	Ant1	2422	0.64	0.69	92.75	---	PASS
		2437	0.64	0.69	92.75	---	PASS
		2452	0.64	0.69	92.75	---	PASS

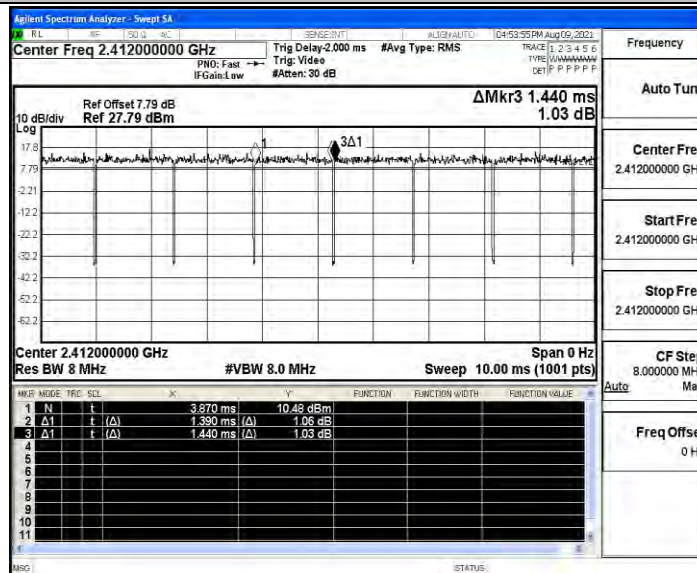


11B_Ant1_2412

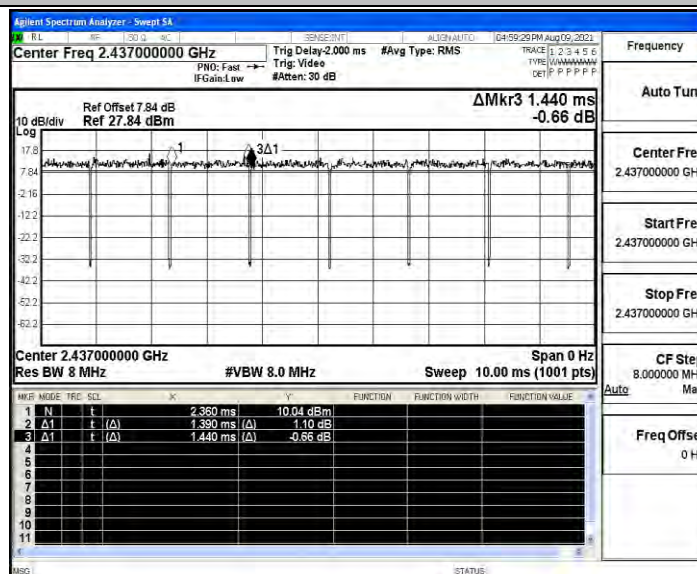




11G_Ant1_2412

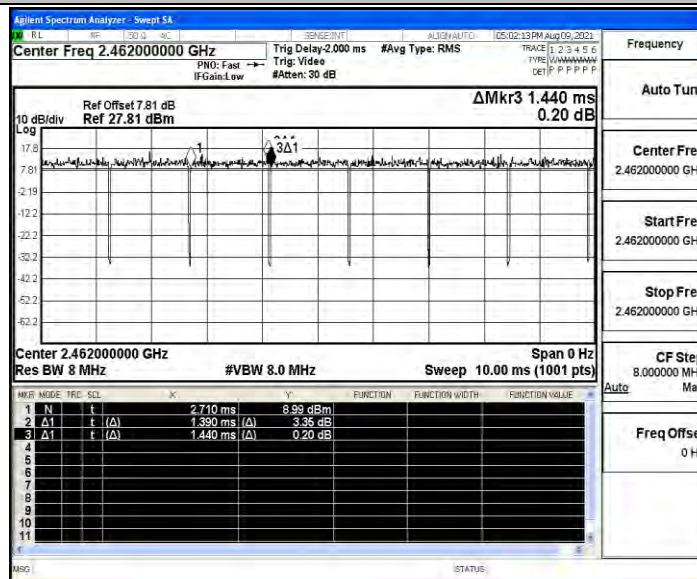


11G_Ant1_2437

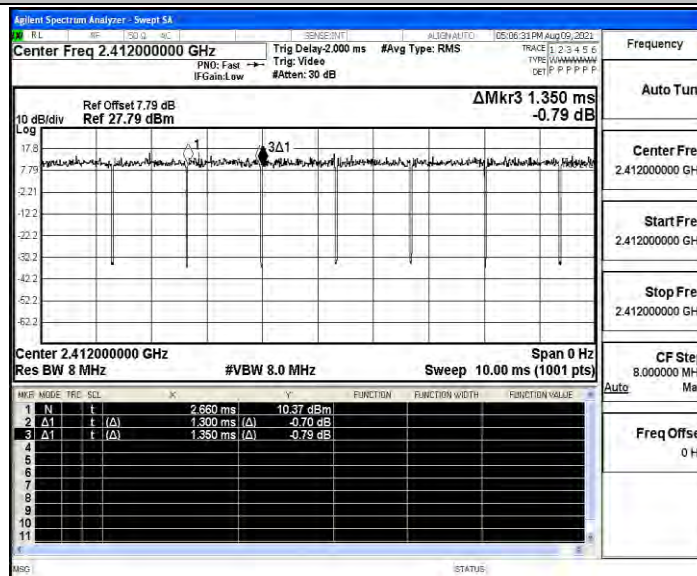




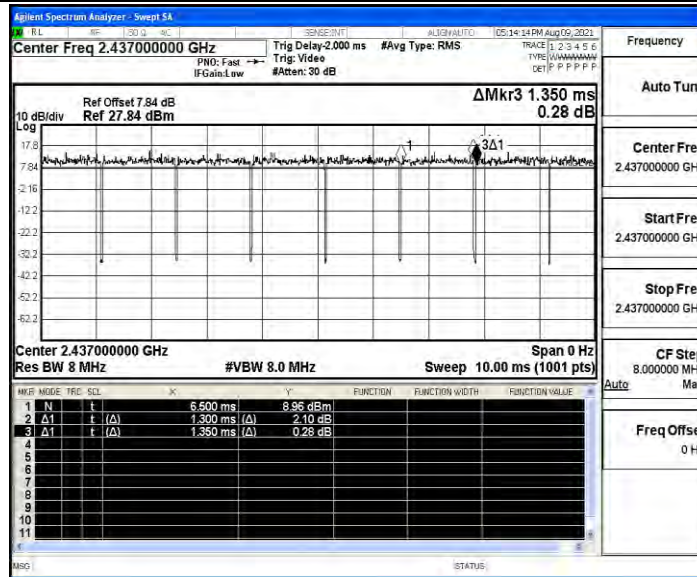
11G_Ant1_2462



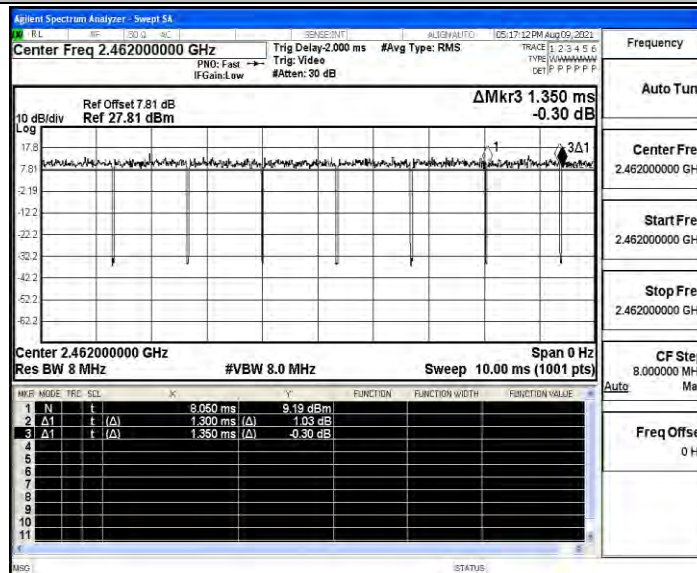
11N20SISO_Ant1_2412



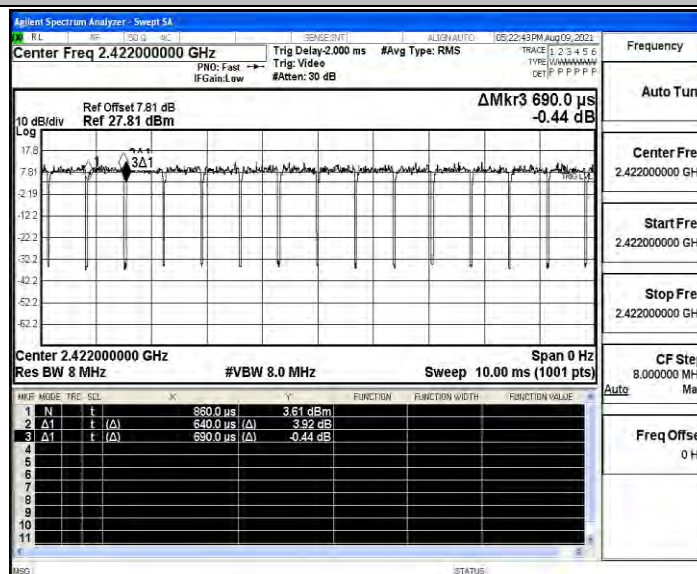
11N20SISO_Ant1_2437



11N20SISO_Ant1_2462

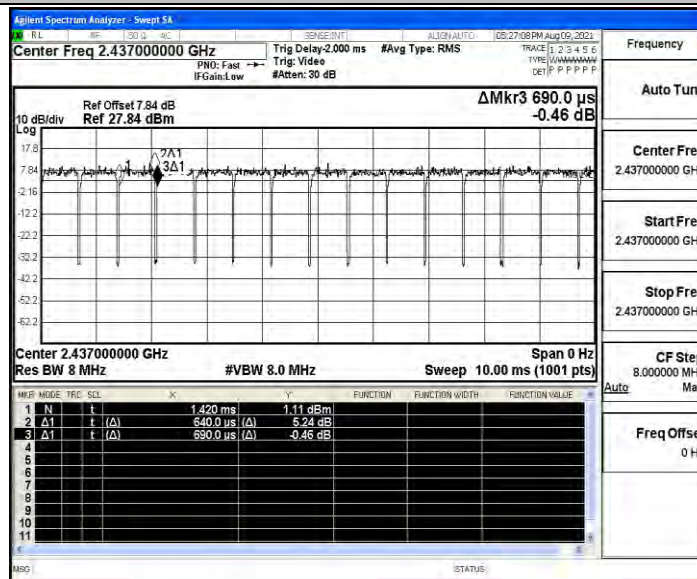


11N40SISO_Ant1_2422

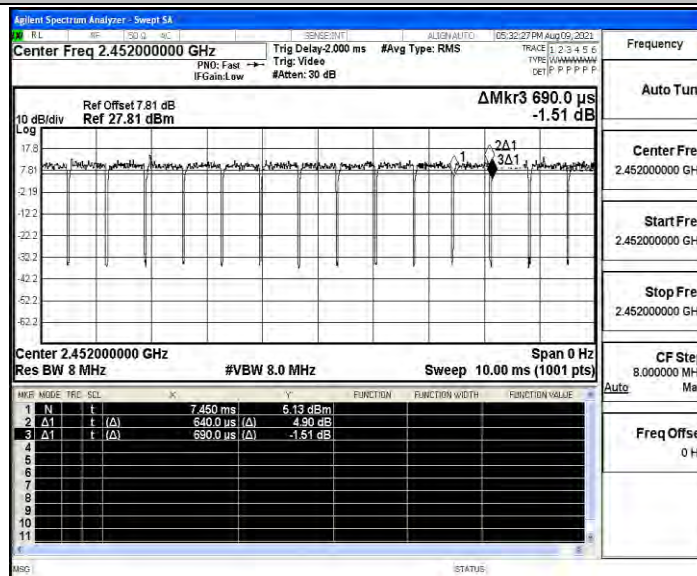




11N40SISO_Ant1_2437



11N40SISO_Ant1_2452





Appendix C.7: Emissions in Restricted Bands

Test Result

TestMode	Antenna	ChannelName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
11B	Ant1	Low	2412	AV	2310.000	-49.29	≤-41.20	45.91	≤54	PASS
				AV	2388.270	-48.51	≤-41.20	46.69	≤54	PASS
				AV	2390.000	-48.6	≤-41.20	46.60	≤54	PASS
				Peak	2310.000	-44.84	≤-21.20	50.36	≤74	PASS
				Peak	2331.980	-39.77	≤-21.20	55.43	≤74	PASS
				Peak	2390.000	-45.56	≤-21.20	49.64	≤74	PASS
		High	2462	AV	2483.500	-48.19	≤-41.20	47.01	≤54	PASS
				AV	2487.190	-48.08	≤-41.20	47.12	≤54	PASS
				AV	2500.000	-48.14	≤-41.20	47.06	≤54	PASS
				Peak	2483.500	-43.95	≤-21.20	51.25	≤74	PASS
				Peak	2487.410	-39.75	≤-21.20	55.45	≤74	PASS
				Peak	2500.000	-42.73	≤-21.20	52.47	≤74	PASS
11G	Ant1	Low	2412	AV	2310.000	-48.82	≤-41.20	46.38	≤54	PASS
				AV	2389.700	-47.93	≤-41.20	47.27	≤54	PASS
				AV	2390.000	-48.11	≤-41.20	47.09	≤54	PASS
				Peak	2310.000	-41.93	≤-21.20	53.27	≤74	PASS
				Peak	2314.430	-38.74	≤-21.20	56.46	≤74	PASS
				Peak	2390.000	-42.75	≤-21.20	52.45	≤74	PASS
		High	2462	AV	2483.500	-47.78	≤-41.20	47.42	≤54	PASS
				AV	2489.940	-47.57	≤-41.20	47.63	≤54	PASS
				AV	2500.000	-47.83	≤-41.20	47.37	≤54	PASS
				Peak	2483.500	-40.77	≤-21.20	54.43	≤74	PASS
				Peak	2489.060	-37.64	≤-21.20	57.56	≤74	PASS
				Peak	2500.000	-40.12	≤-21.20	55.08	≤74	PASS
11N20SI SO	Ant1	Low	2412	AV	2310.000	-48.76	≤-41.20	46.44	≤54	PASS
				AV	2388.920	-48.12	≤-41.20	47.08	≤54	PASS
				AV	2390.000	-48.24	≤-41.20	46.96	≤54	PASS
				Peak	2310.000	-42.55	≤-21.20	52.65	≤74	PASS
				Peak	2332.500	-39.04	≤-21.20	56.16	≤74	PASS
				Peak	2390.000	-40.22	≤-21.20	54.98	≤74	PASS
		High	2462	AV	2483.500	-47.83	≤-41.20	47.37	≤54	PASS
				AV	2484.330	-47.56	≤-41.20	47.64	≤54	PASS
				AV	2500.000	-47.89	≤-41.20	47.31	≤54	PASS
				Peak	2483.500	-39.01	≤-21.20	56.19	≤74	PASS
				Peak	2484.330	-39.06	≤-21.20	56.14	≤74	PASS
				Peak	2500.000	-42.32	≤-21.20	52.88	≤74	PASS



11N40SI SO	Ant1	Low	2422	AV	2310.000	-48.61	≤ -41.20	46.59	≤ 54	PASS
				AV	2389.440	-47.46	≤ -41.20	47.74	≤ 54	PASS
				AV	2390.000	-47.67	≤ -41.20	47.53	≤ 54	PASS
				Peak	2310.000	-42.23	≤ -21.20	52.97	≤ 74	PASS
				Peak	2356.680	-38.58	≤ -21.20	56.62	≤ 74	PASS
				Peak	2390.000	-40.88	≤ -21.20	54.32	≤ 74	PASS
		High	2452	AV	2483.500	-47.44	≤ -41.20	47.76	≤ 54	PASS
				AV	2484.660	-47.11	≤ -41.20	48.09	≤ 54	PASS
				AV	2500.000	-47.53	≤ -41.20	47.67	≤ 54	PASS
				Peak	2483.500	-41.8	≤ -21.20	53.40	≤ 74	PASS
				Peak	2483.890	-38.71	≤ -21.20	56.49	≤ 74	PASS
				Peak	2500.000	-42.18	≤ -21.20	53.02	≤ 74	PASS

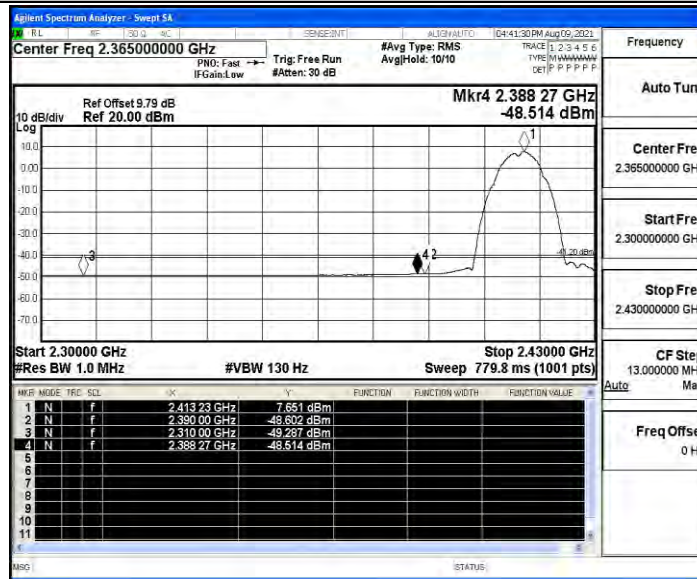
Note:

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.

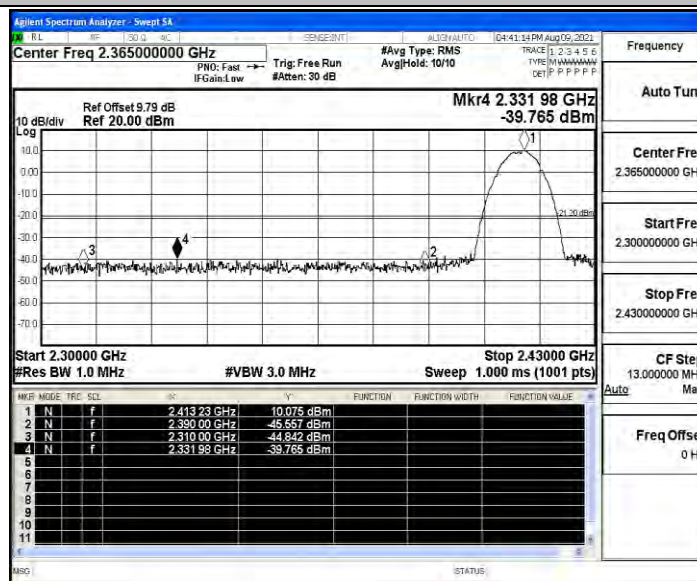


Test Graphs

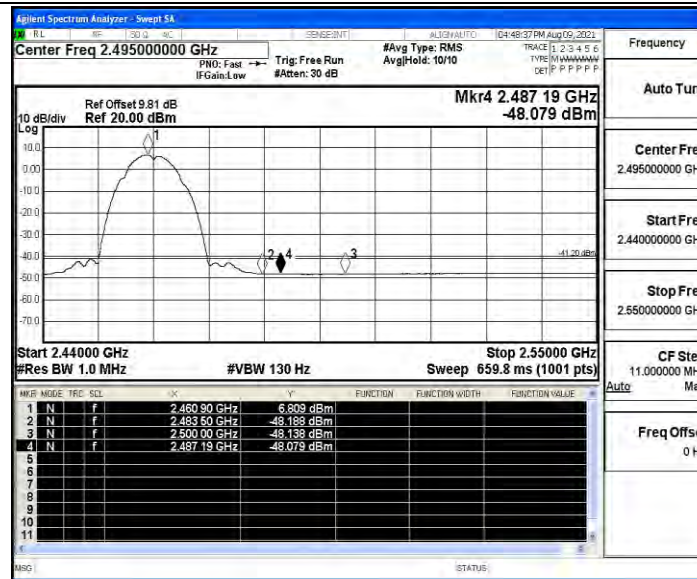
11B_Ant1_Low_2412_AV



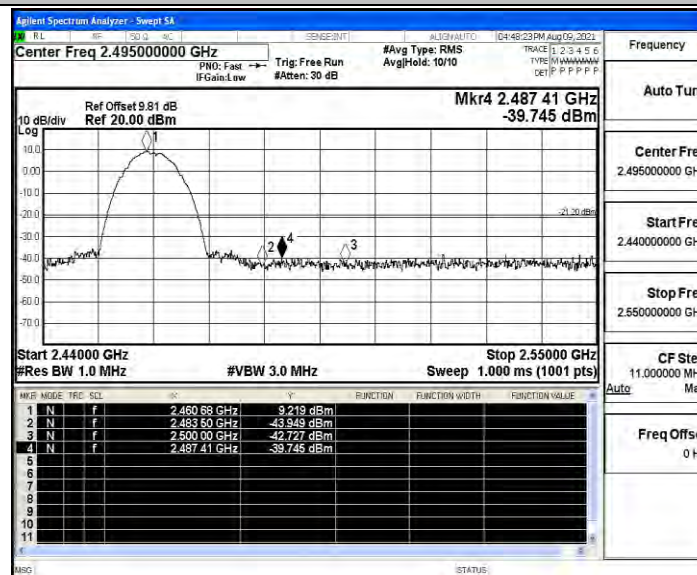
11B_Ant1_Low_2412_Peak



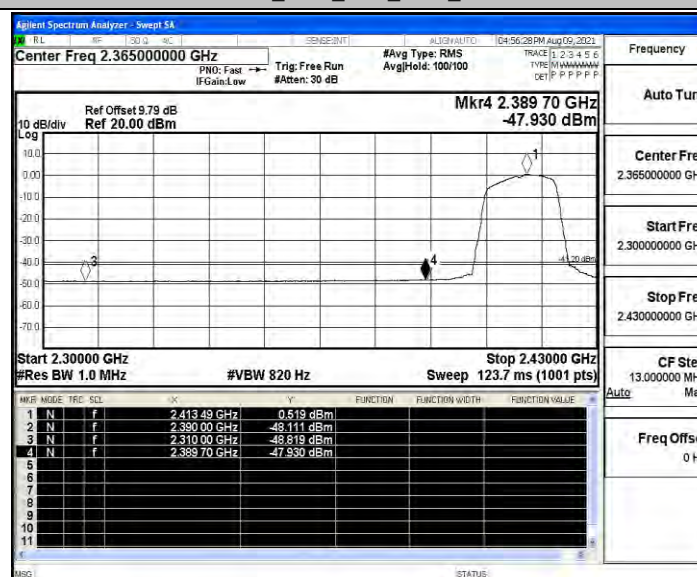
11B_Ant1_High_2462_AV



11B_Ant1_High_2462_Peak

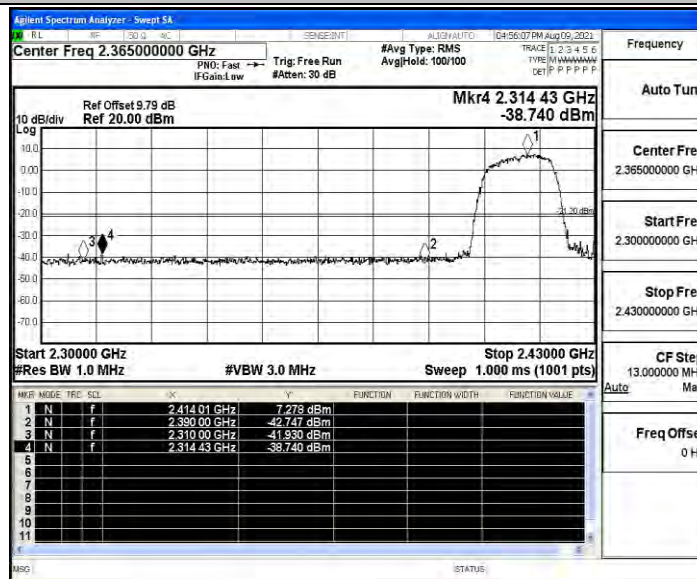


11G_Ant1_Low_2412_AV

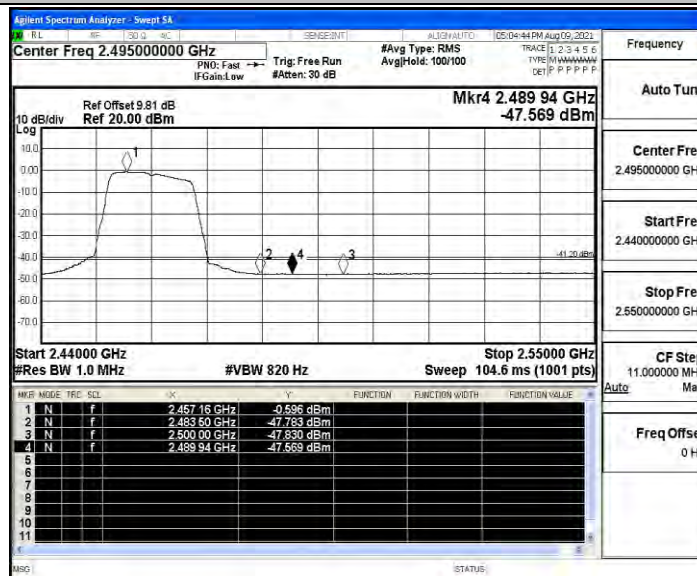




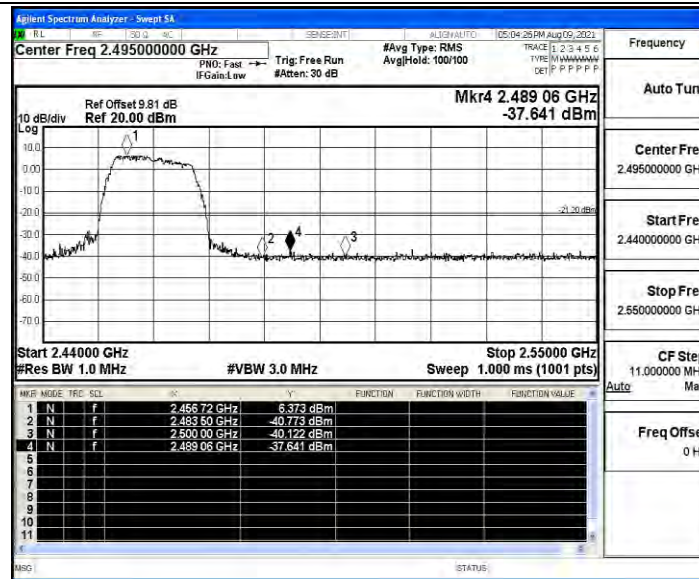
11G_Ant1_Low_2412_Peak



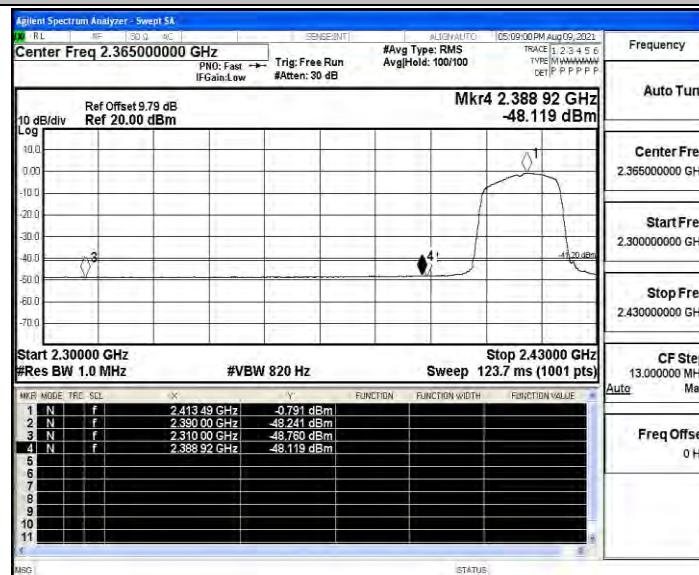
11G_Ant1_High_2462_AV



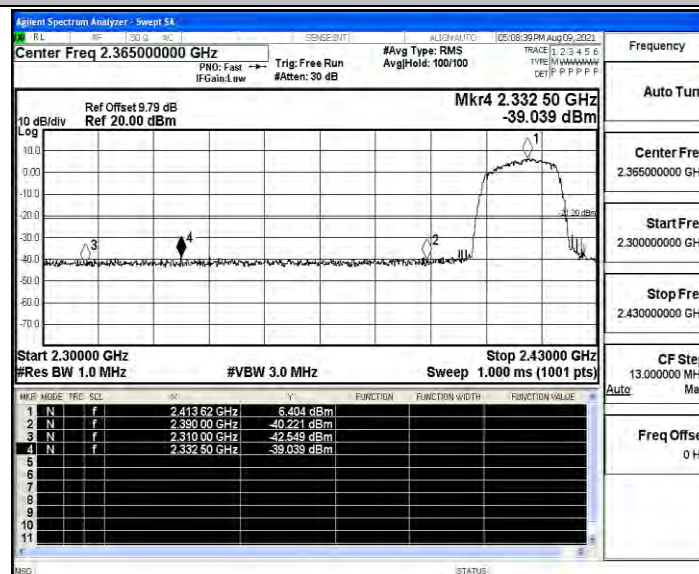
11G_Ant1_High_2462_Peak



11N20SISO_Ant1_Low_2412_AV

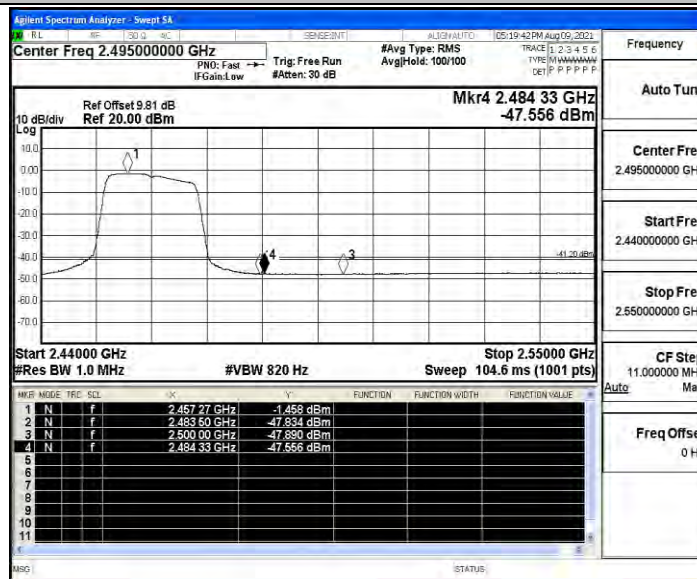


11N20SISO_Ant1_Low_2412_Peak

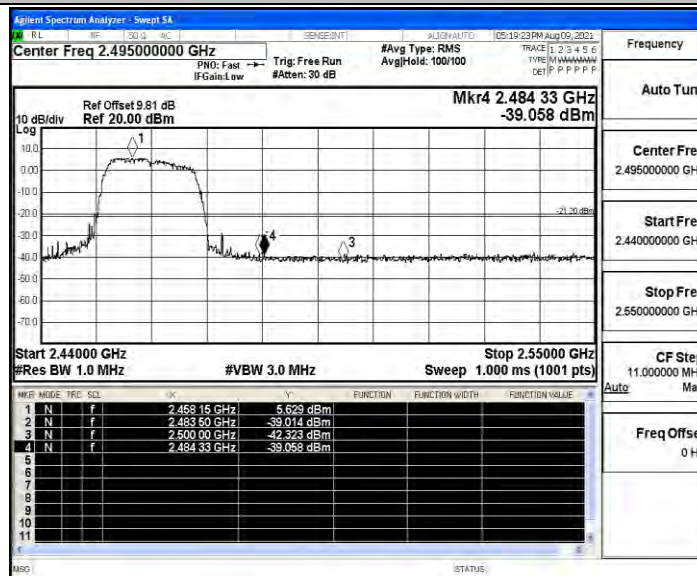




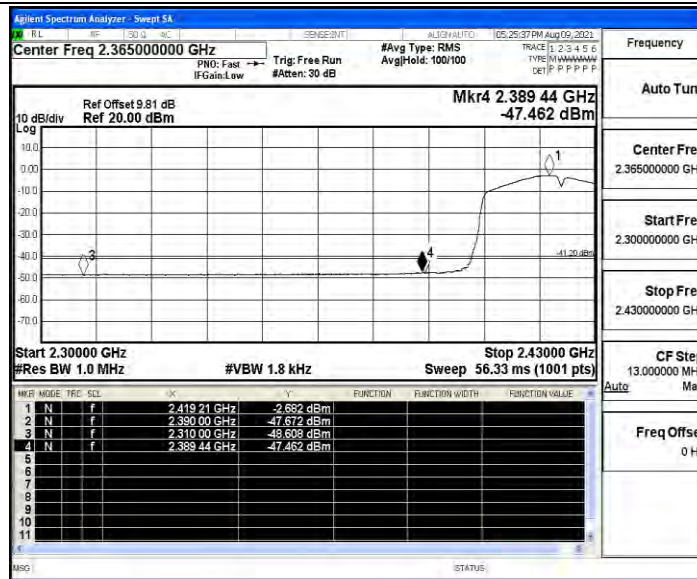
11N20SISO_Ant1_High_2462_AV



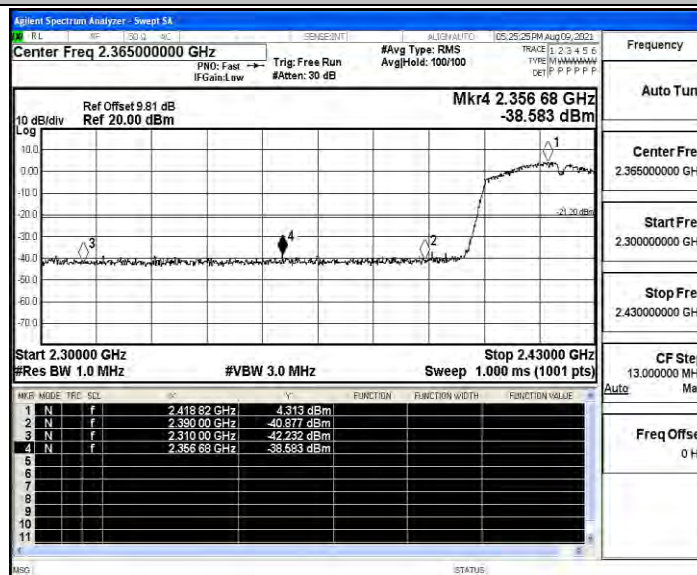
11N20SISO_Ant1_High_2462_Peak



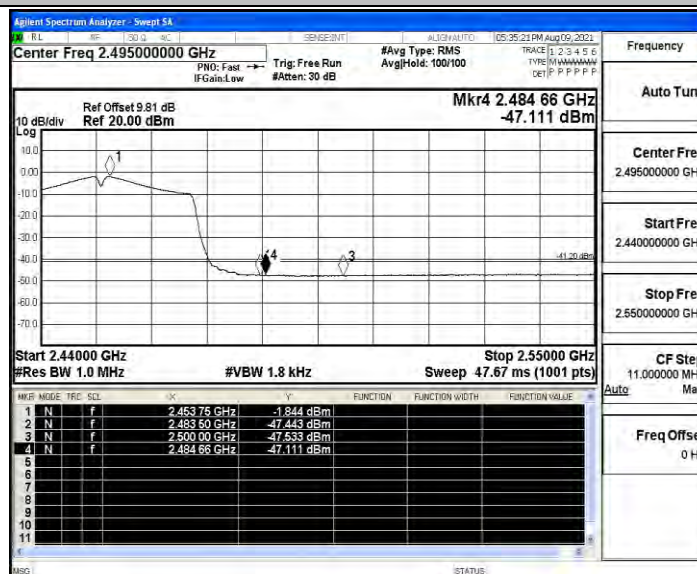
11N40SISO_Ant1_Low_2422_AV



11N40SISO_Ant1_Low_2422_Peak



11N40SISO_Ant1_High_2452_AV





11N40SISO_Ant1_High_2452_Peak

