





## Appendix A

### RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: 3D Printer

Test Model: Adventurer 4

#### Environmental Conditions

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



## A.1 DTS Bandwidth

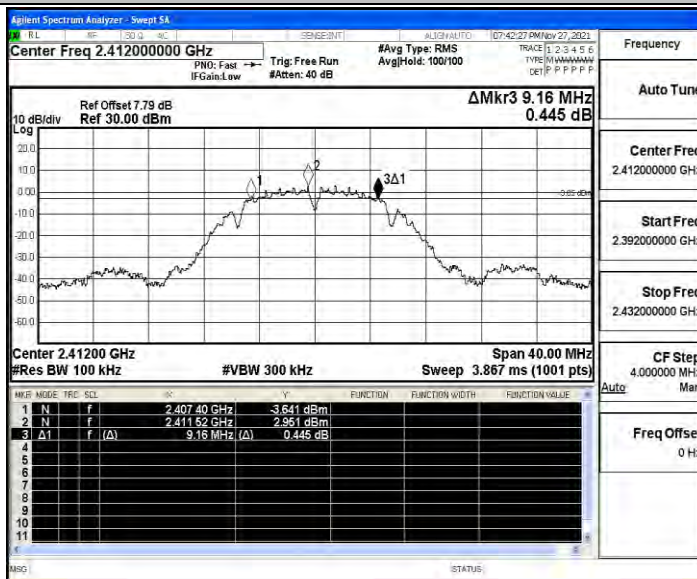
### Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.160	2407.400	2416.560	0.5	PASS
		2437	9.560	2432.040	2441.600	0.5	PASS
		2462	9.160	2457.440	2466.600	0.5	PASS
11G	Ant1	2412	12.360	2405.680	2418.040	0.5	PASS
		2437	15.760	2429.040	2444.800	0.5	PASS
		2462	12.280	2455.640	2467.920	0.5	PASS
11N20SISO	Ant1	2412	14.760	2405.640	2420.400	0.5	PASS
		2437	15.480	2429.440	2444.920	0.5	PASS
		2462	15.200	2454.360	2469.560	0.5	PASS
11N40SISO	Ant1	2422	35.200	2404.400	2439.600	0.5	PASS
		2437	31.440	2423.160	2454.600	0.5	PASS
		2452	34.000	2435.600	2469.600	0.5	PASS

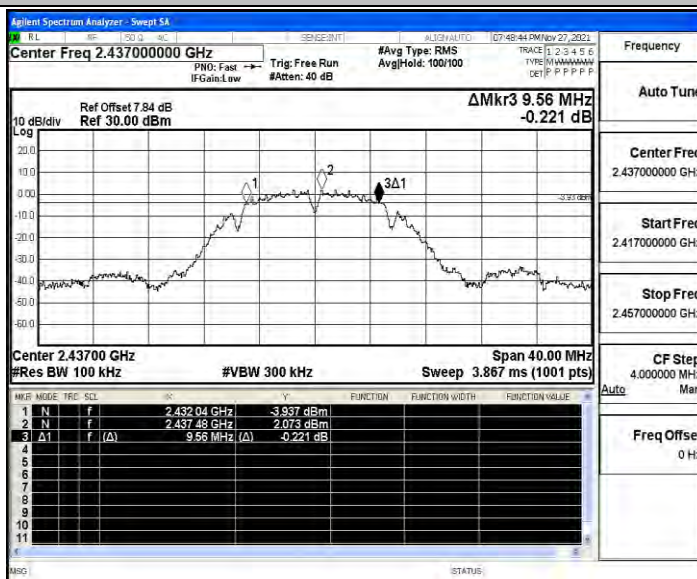


Test Graphs

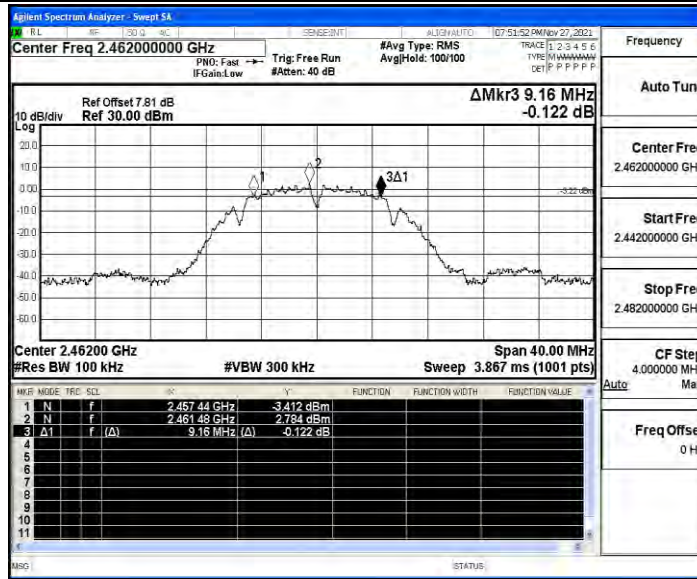
11B\_Ant1\_2412



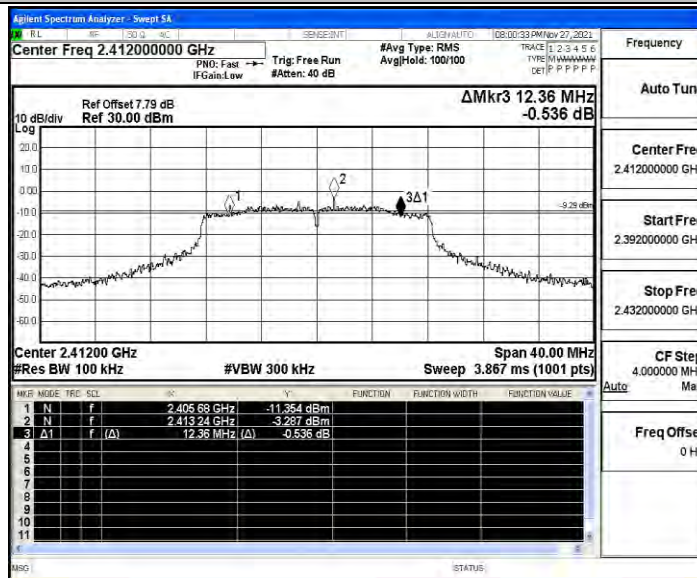
11B\_Ant1\_2437



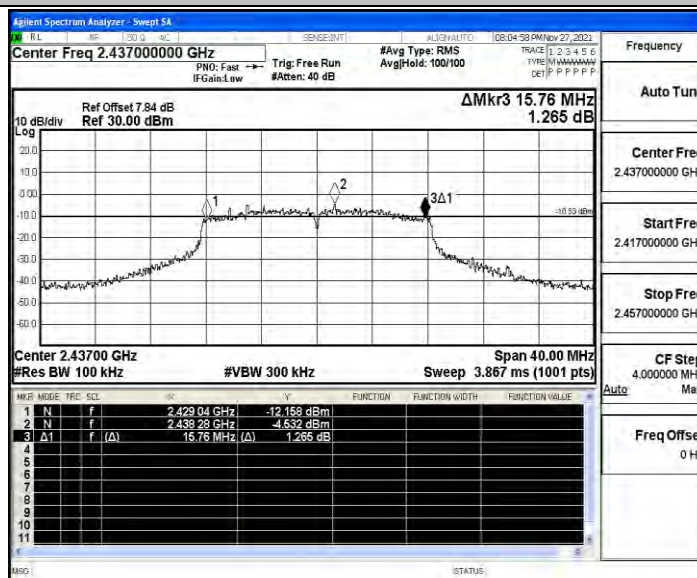
11B\_Ant1\_2462



11G\_Ant1\_2412

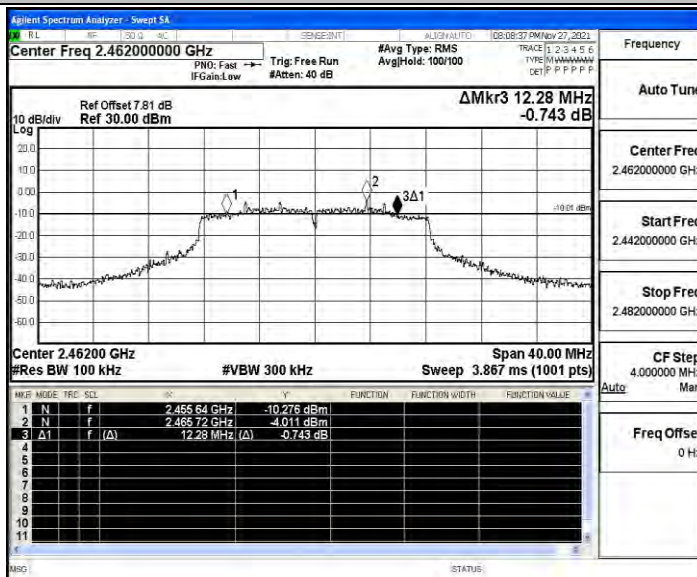


11G\_Ant1\_2437

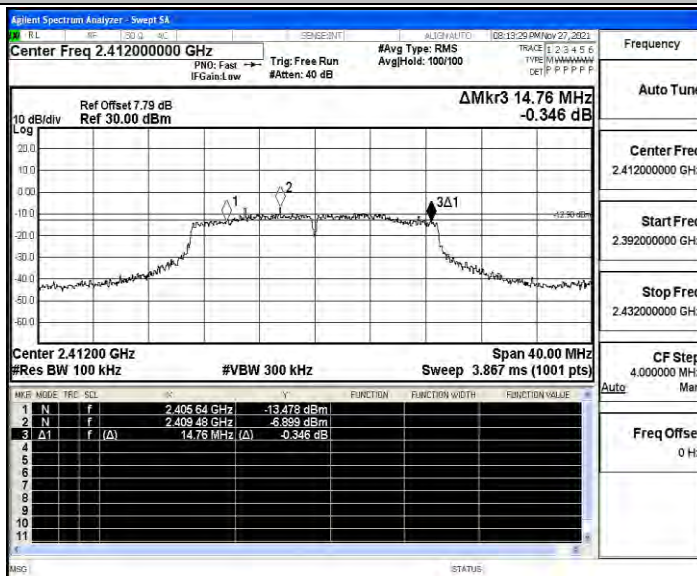




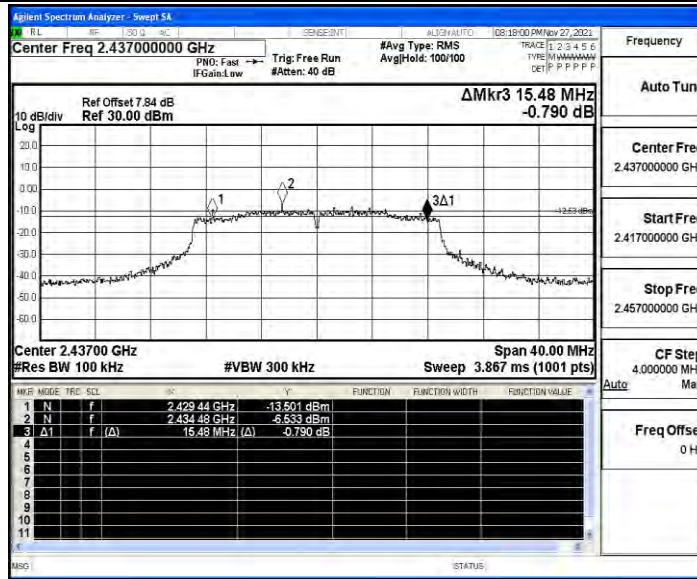
### 11G\_Ant1\_2462



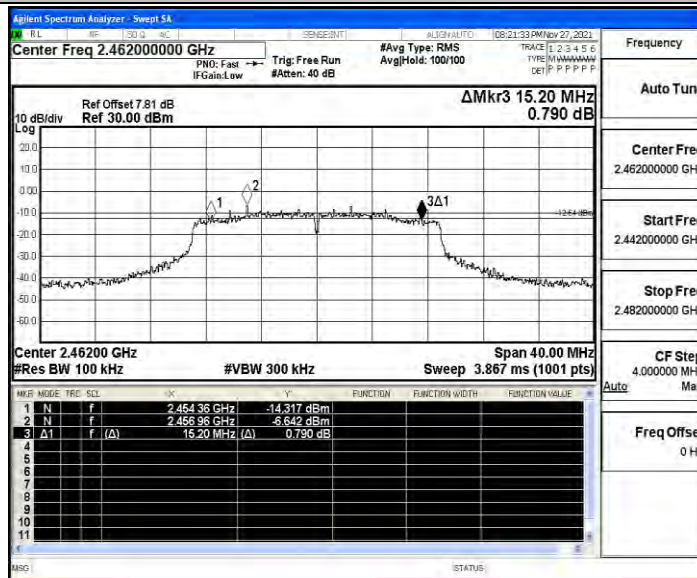
### 11N20SISO\_Ant1\_2412



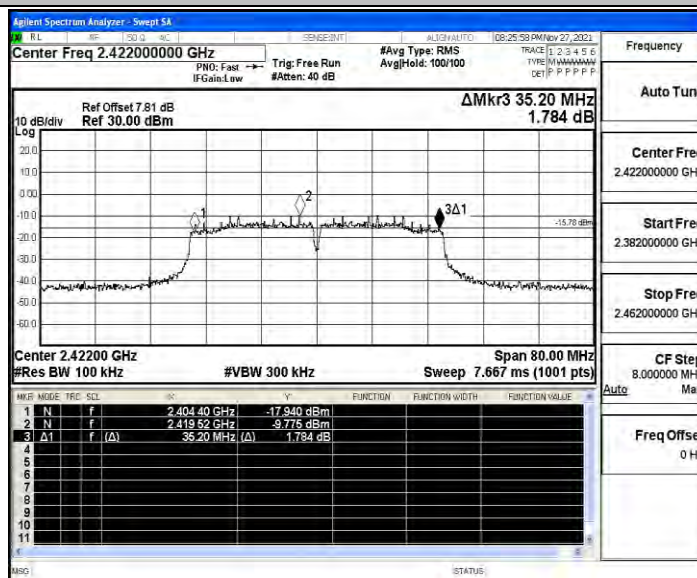
### 11N20SISO\_Ant1\_2437



11N20SISO\_Ant1\_2462

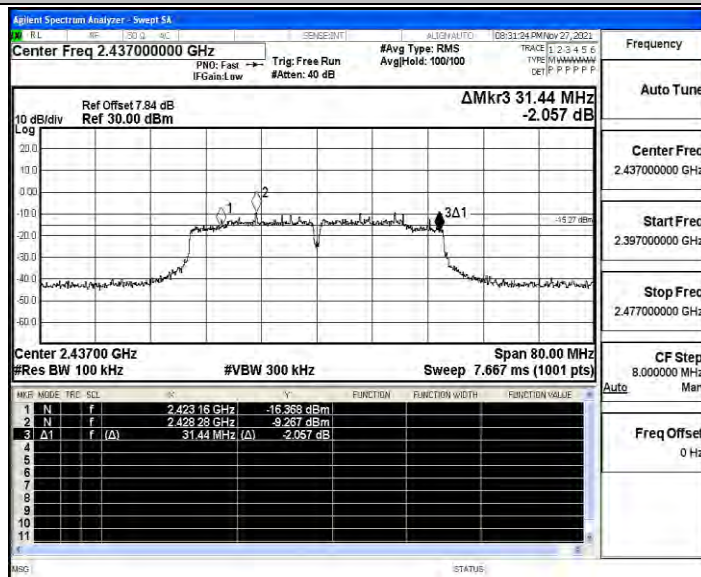


11N40SISO\_Ant1\_2422

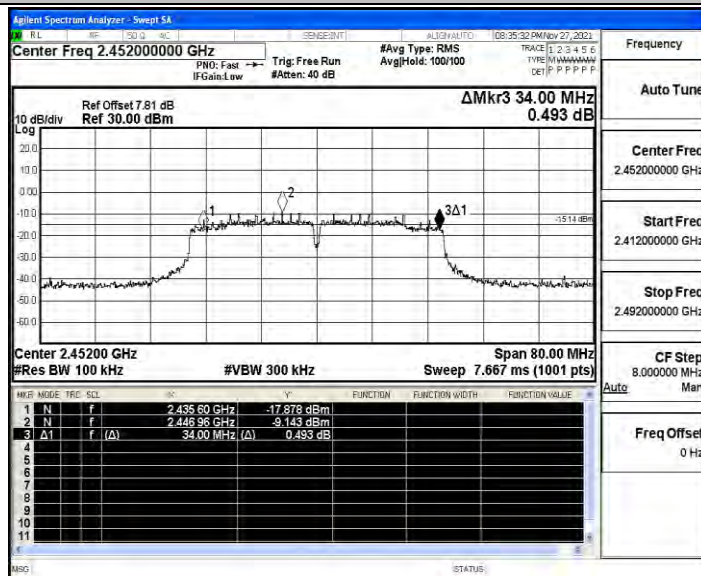




### 11N40SISO\_Ant1\_2437



### 11N40SISO\_Ant1\_2452





## A.2 Maximum peak conducted output power

### Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	15.33	≤30	PASS
		2437	15.14	≤30	PASS
		2462	15.52	≤30	PASS
11G	Ant1	2412	14.28	≤30	PASS
		2437	14.20	≤30	PASS
		2462	14.07	≤30	PASS
11N20SISO	Ant1	2412	11.62	≤30	PASS
		2437	11.92	≤30	PASS
		2462	12.63	≤30	PASS
11N40SISO	Ant1	2422	11.77	≤30	PASS
		2437	11.90	≤30	PASS
		2452	11.88	≤30	PASS





### A.3 Maximum power spectral density

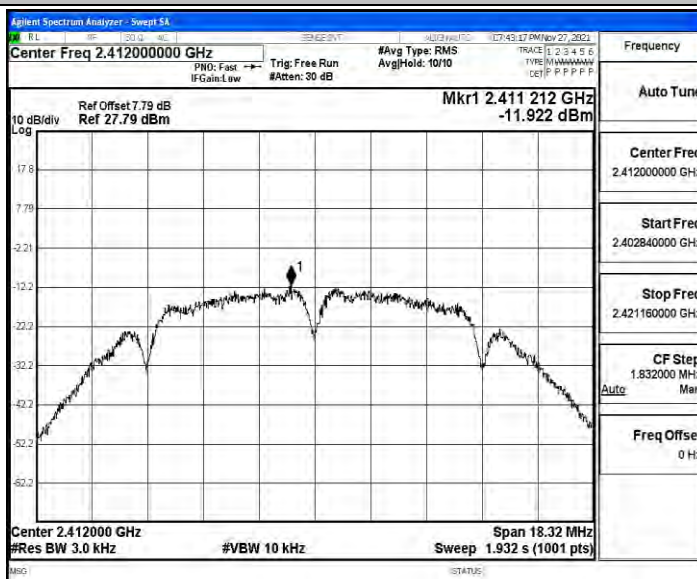
#### Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-11.92	≤8	PASS
		2437	-12.03	≤8	PASS
		2462	-11.74	≤8	PASS
11G	Ant1	2412	-17.78	≤8	PASS
		2437	-17.61	≤8	PASS
		2462	-17.58	≤8	PASS
11N20SISO	Ant1	2412	-19.95	≤8	PASS
		2437	-19.56	≤8	PASS
		2462	-18.26	≤8	PASS
11N40SISO	Ant1	2422	-22.34	≤8	PASS
		2437	-22.18	≤8	PASS
		2452	-22.02	≤8	PASS

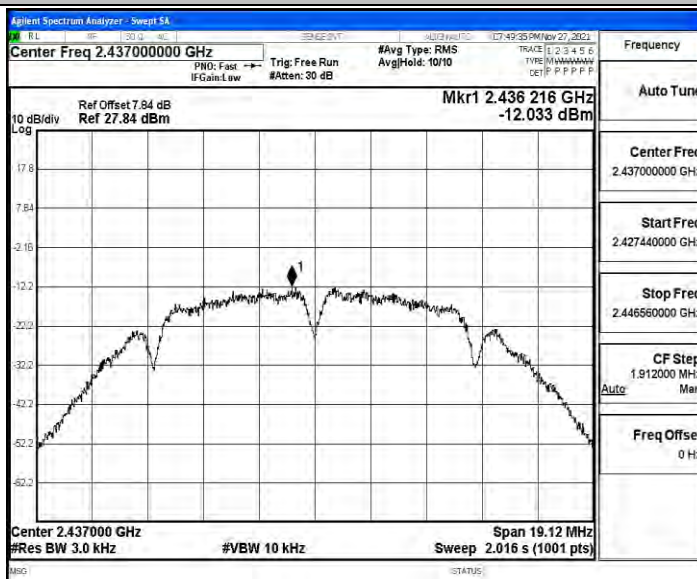


### Test Graphs

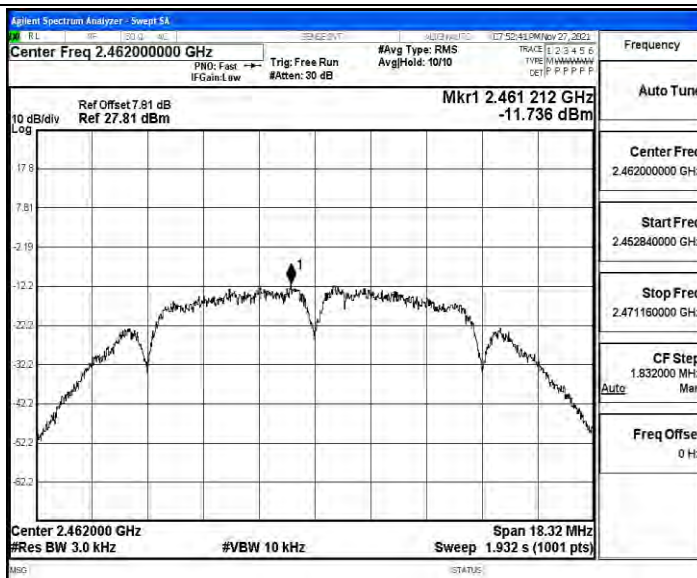
11B\_Ant1\_2412



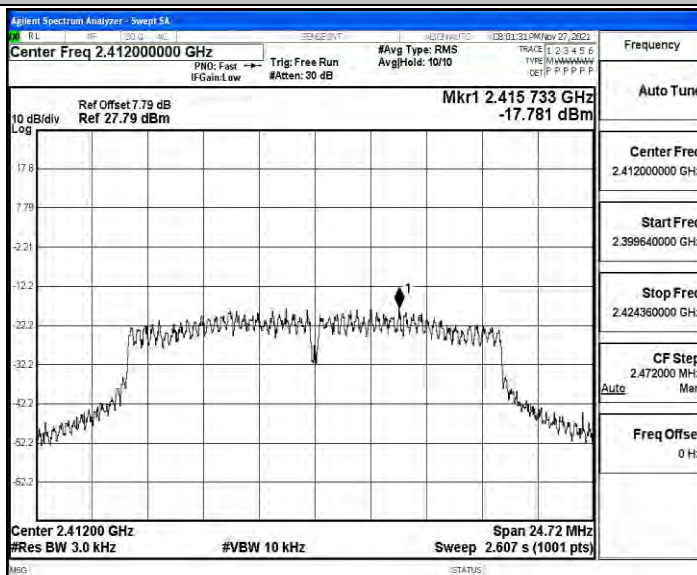
11B\_Ant1\_2437



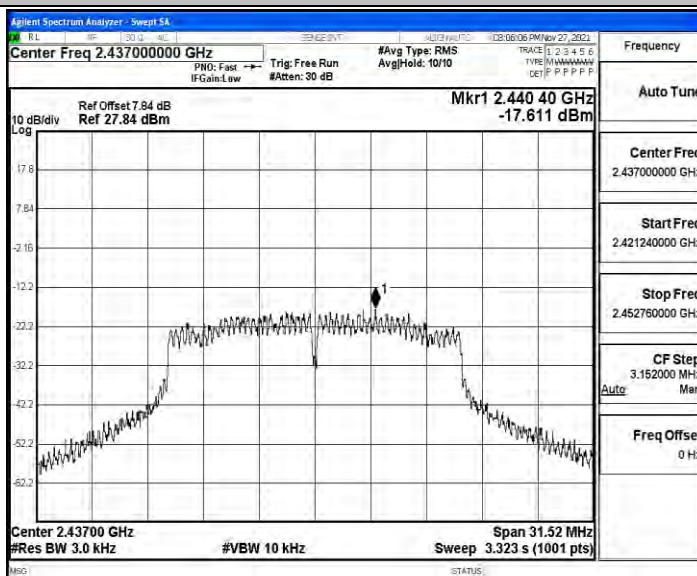
11B\_Ant1\_2462



11G\_Ant1\_2412

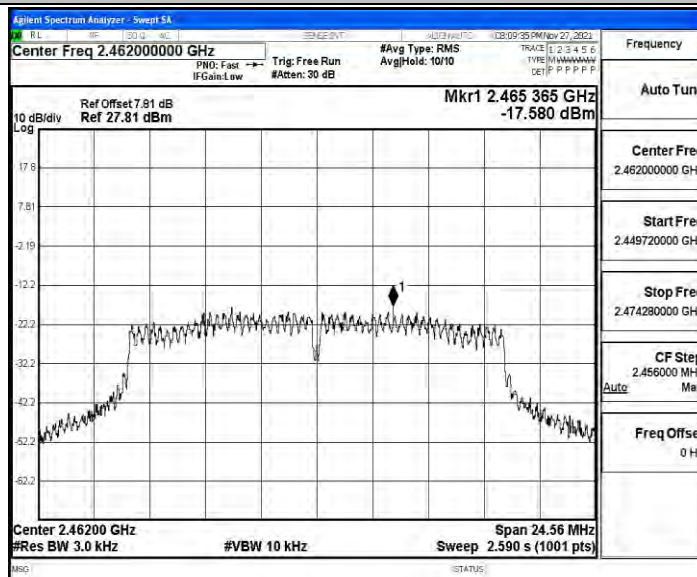


11G\_Ant1\_2437

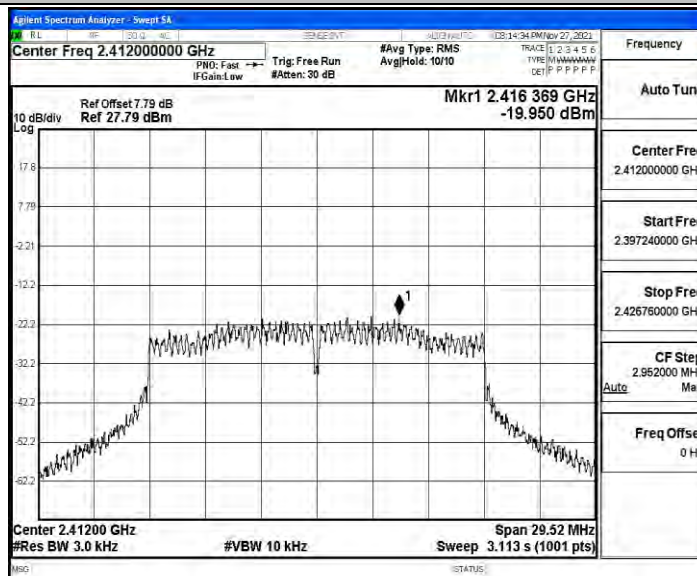




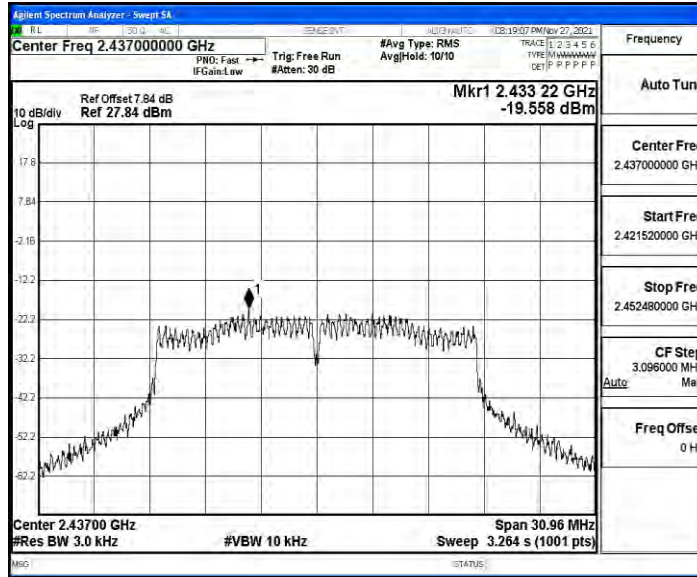
11G\_Ant1\_2462



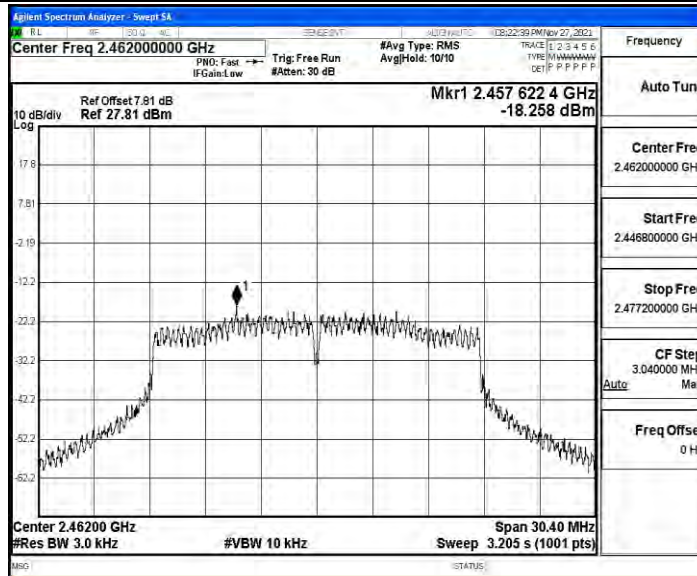
11N20SISO\_Ant1\_2412



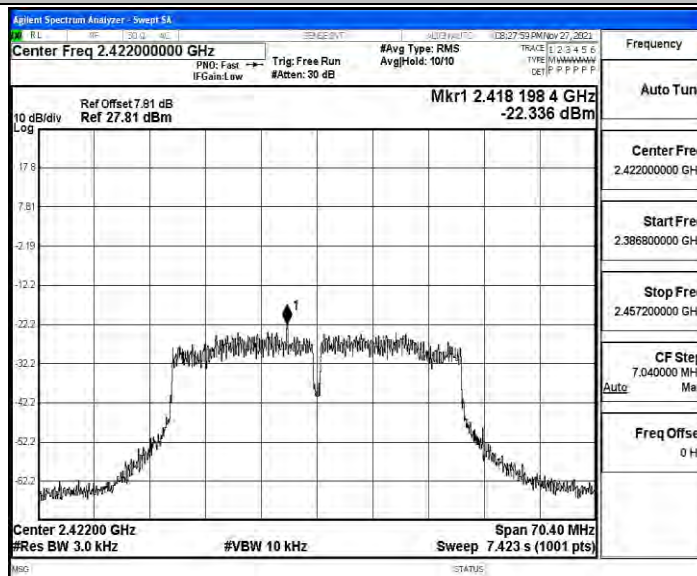
11N20SISO\_Ant1\_2437



11N20SISO\_Ant1\_2462

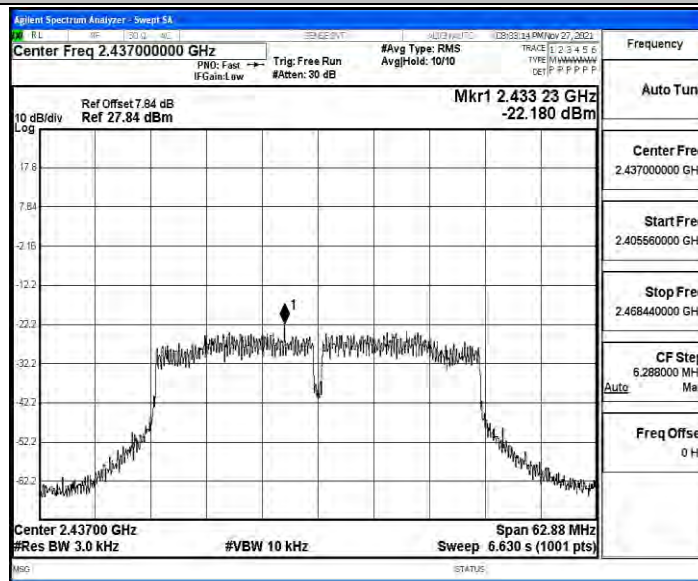


11N40SISO\_Ant1\_2422

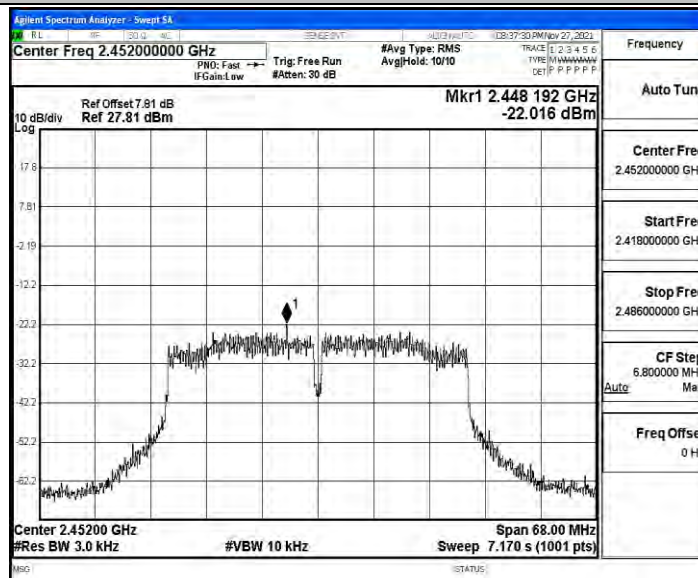




### 11N40SISO\_Ant1\_2437



### 11N40SISO\_Ant1\_2452





## A.4 Band edge measurements

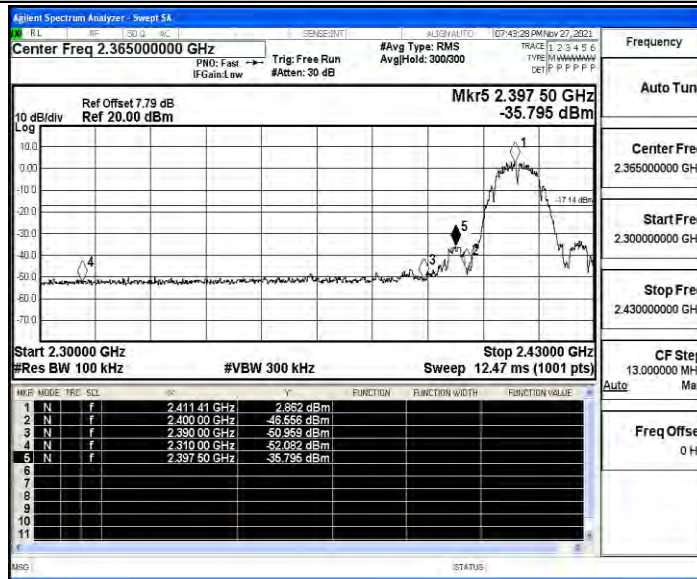
### Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	2.86	-35.8	$\leq -17.14$	PASS
		High	2462	3.12	-45.83	$\leq -16.88$	PASS
11G	Ant1	Low	2412	-3.25	-33.53	$\leq -23.25$	PASS
		High	2462	-3.66	-48.36	$\leq -23.66$	PASS
11N20SISO	Ant1	Low	2412	-5.65	-36.06	$\leq -25.65$	PASS
		High	2462	-4.81	-48.39	$\leq -24.81$	PASS
11N40SISO	Ant1	Low	2422	-8.95	-39.05	$\leq -28.95$	PASS
		High	2452	-8.70	-46.13	$\leq -28.7$	PASS

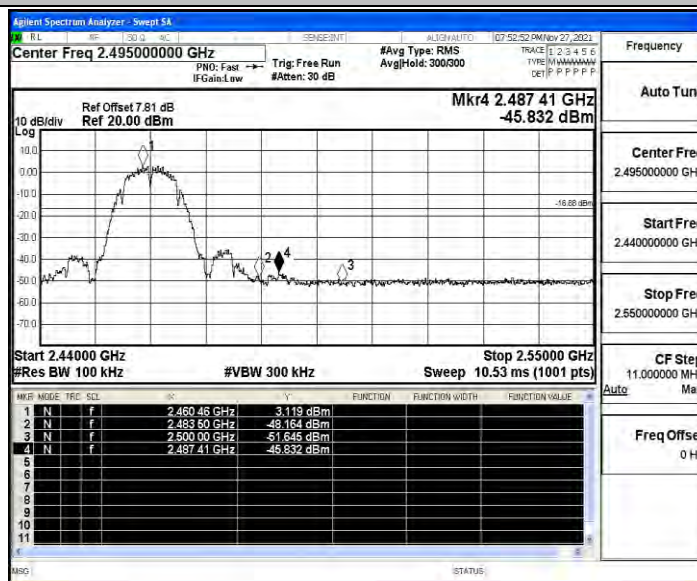


### Test Graphs

#### 11B\_Ant1\_Low\_2412

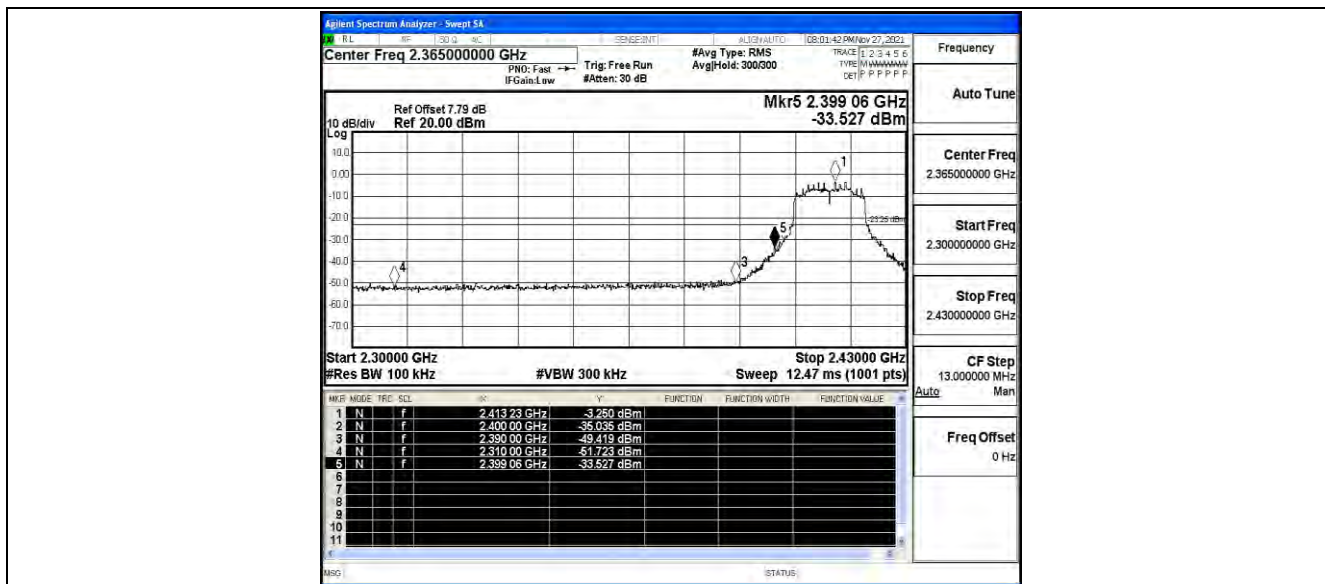


#### 11B\_Ant1\_High\_2462

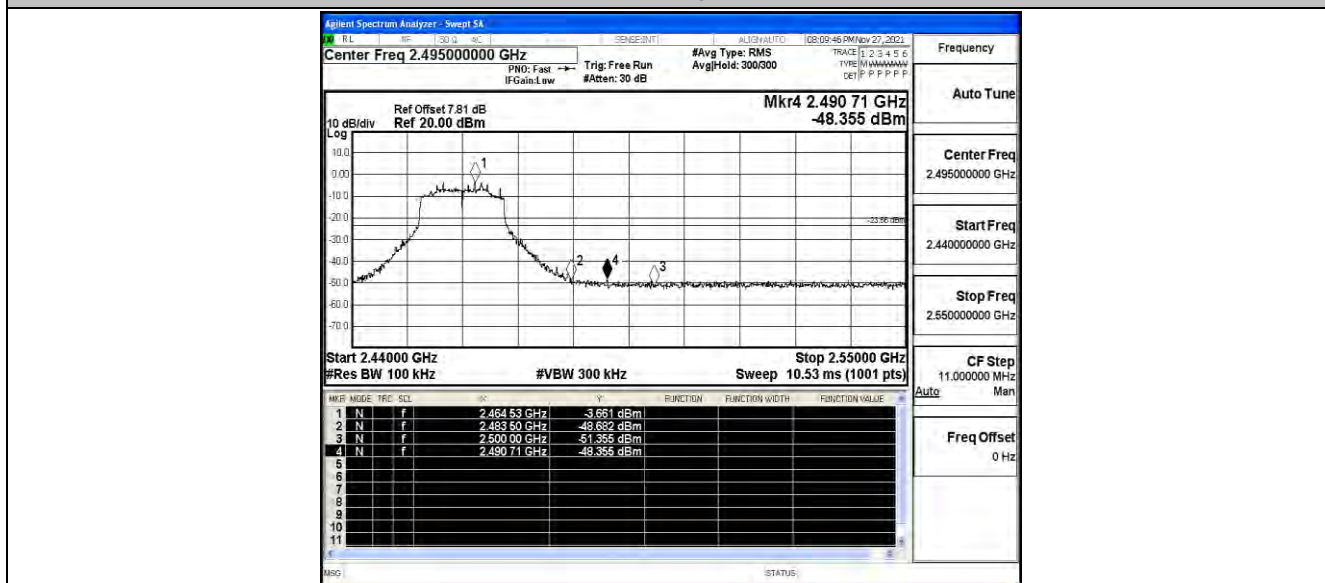


#### 11G\_Ant1\_Low\_2412

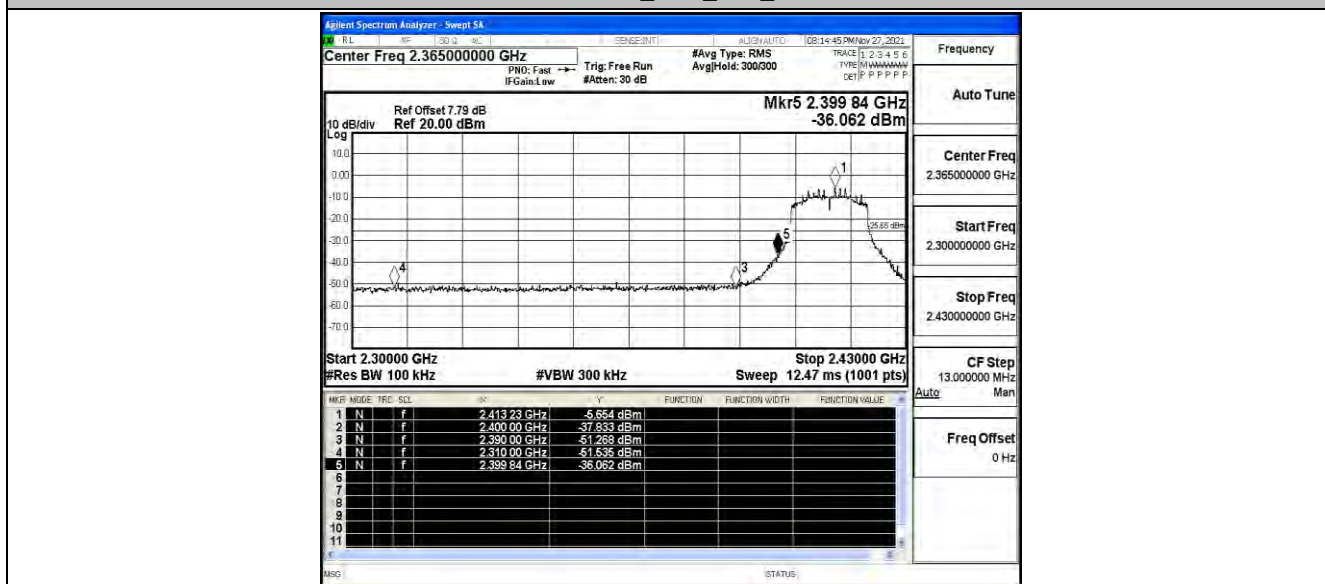




11G\_Ant1\_High\_2462

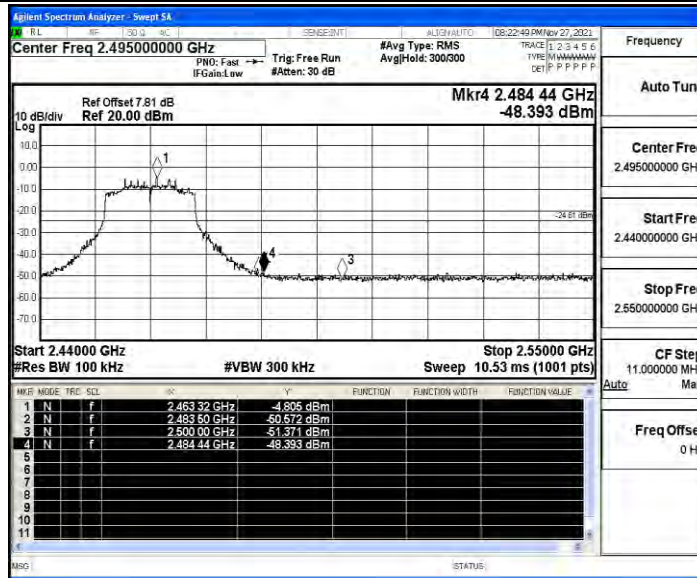


11N20SISO\_Ant1\_Low\_2412

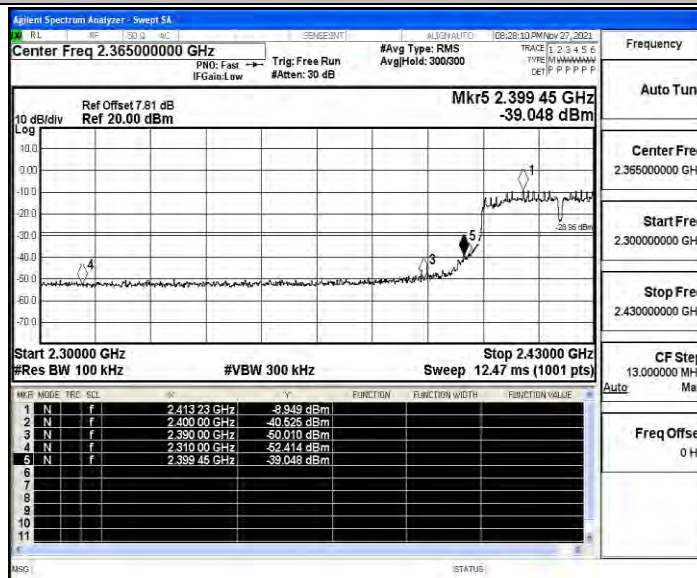




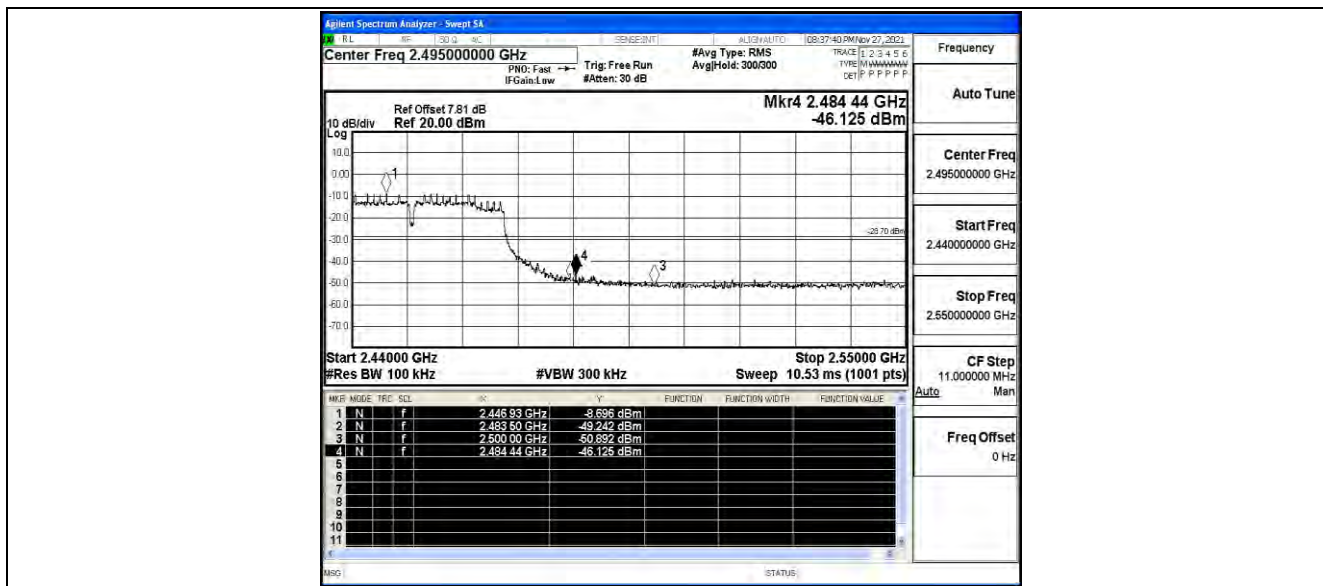
11N20SISO\_Ant1\_High\_2462



11N40SISO\_Ant1\_Low\_2422



11N40SISO\_Ant1\_High\_2452





## A.5 Conducted Spurious Emission

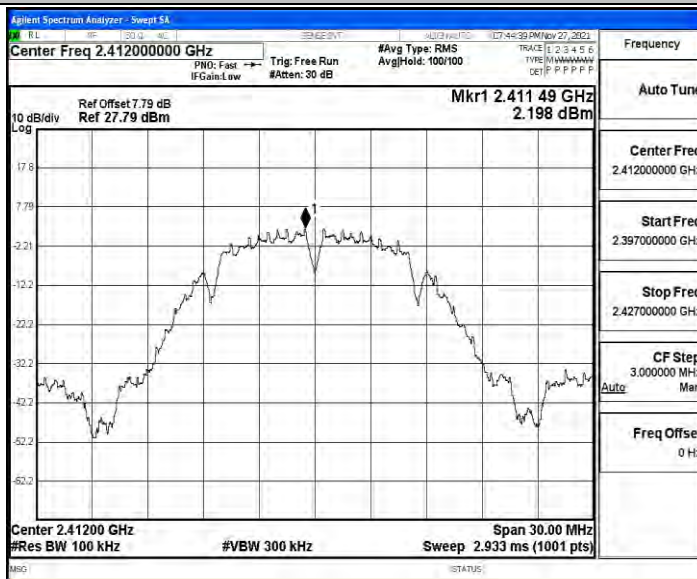
### Test Result

TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	2.20	2.20	---	PASS
			30~1000	2.20	-61.75	≤-17.8	PASS
			1000~26500	2.20	-46.7	≤-17.8	PASS
		2437	Reference	2.03	2.03	---	PASS
			30~1000	2.03	-61.15	≤-17.97	PASS
			1000~26500	2.03	-47.28	≤-17.97	PASS
		2462	Reference	3.37	3.37	---	PASS
			30~1000	3.37	-61.88	≤-16.63	PASS
			1000~26500	3.37	-46.83	≤-16.63	PASS
11G	Ant1	2412	Reference	-3.63	-3.63	---	PASS
			30~1000	-3.63	-61.49	≤-23.63	PASS
			1000~26500	-3.63	-47.2	≤-23.63	PASS
		2437	Reference	-3.03	-3.03	---	PASS
			30~1000	-3.03	-61.1	≤-23.03	PASS
			1000~26500	-3.03	-47.26	≤-23.03	PASS
		2462	Reference	-3.18	-3.18	---	PASS
			30~1000	-3.18	-62.01	≤-23.18	PASS
			1000~26500	-3.18	-47.19	≤-23.18	PASS
11N20SISO	Ant1	2412	Reference	-6.00	-6.00	---	PASS
			30~1000	-6.00	-61.75	≤-26	PASS
			1000~26500	-6.00	-47.43	≤-26	PASS
		2437	Reference	-5.64	-5.64	---	PASS
			30~1000	-5.64	-61.44	≤-25.64	PASS
			1000~26500	-5.64	-46.44	≤-25.64	PASS
		2462	Reference	-5.01	-5.01	---	PASS
			30~1000	-5.01	-61.53	≤-25.01	PASS
			1000~26500	-5.01	-47.08	≤-25.01	PASS
11N40SISO	Ant1	2422	Reference	-8.99	-8.99	---	PASS
			30~1000	-8.99	-61.73	≤-28.99	PASS
			1000~26500	-8.99	-46.15	≤-28.99	PASS
		2437	Reference	-8.99	-8.99	---	PASS
			30~1000	-8.99	-61.87	≤-28.99	PASS
			1000~26500	-8.99	-46.31	≤-28.99	PASS
		2452	Reference	-8.97	-8.97	---	PASS
			30~1000	-8.97	-60.99	≤-28.97	PASS
			1000~26500	-8.97	-46.88	≤-28.97	PASS

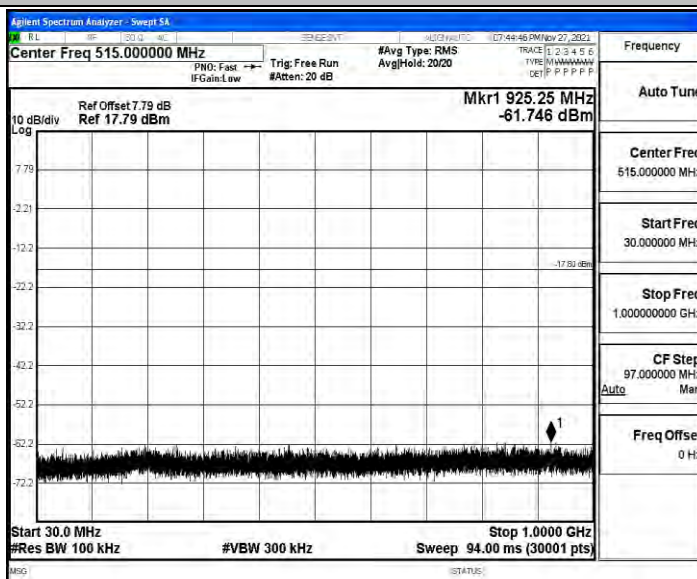


### Test Graphs

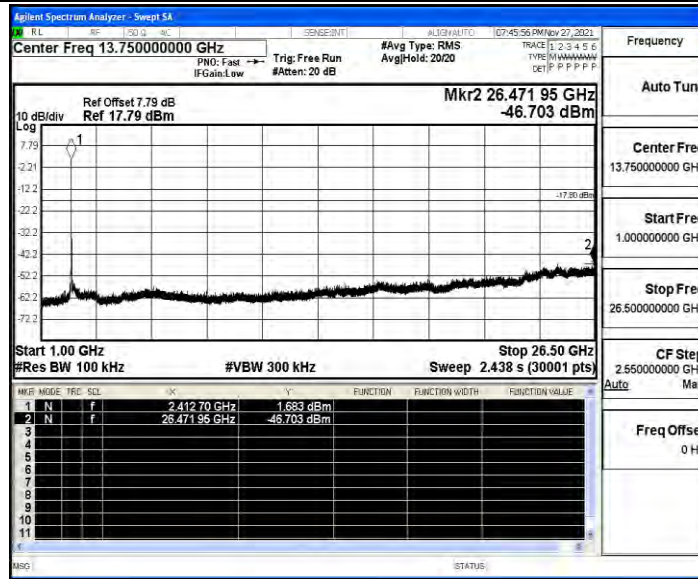
11B\_Ant1\_2412\_0~Reference



11B\_Ant1\_2412\_30~1000



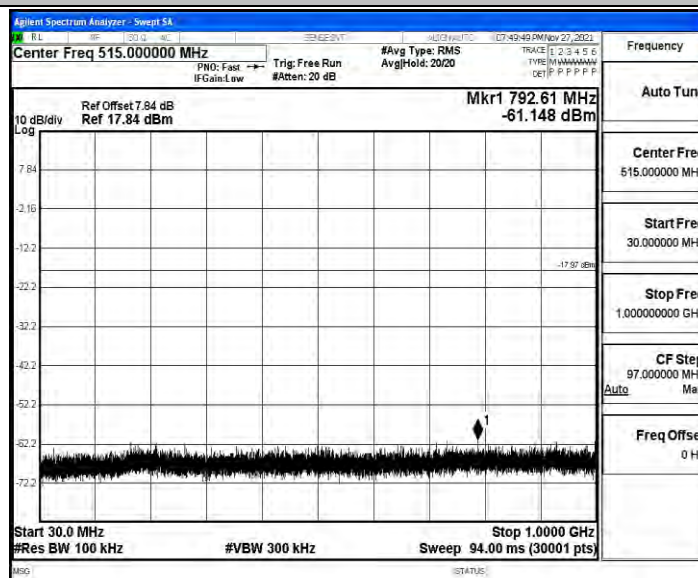
11B\_Ant1\_2412\_1000~26500



11B\_Ant1\_2437\_0~Reference

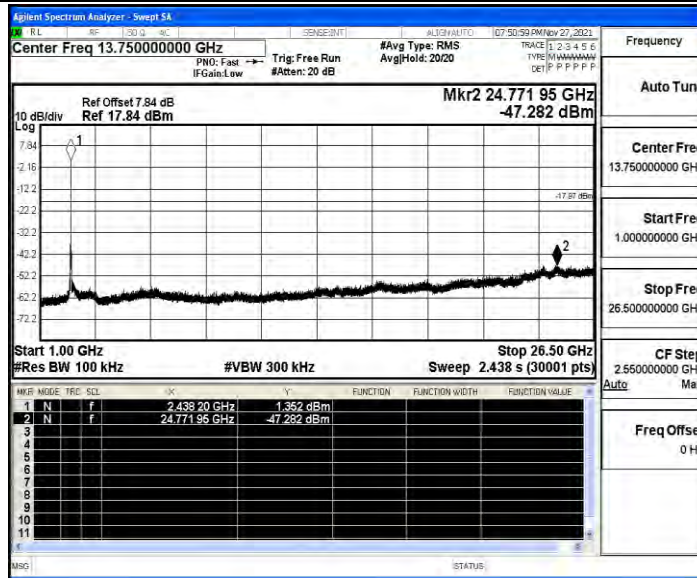


11B\_Ant1\_2437\_30~1000

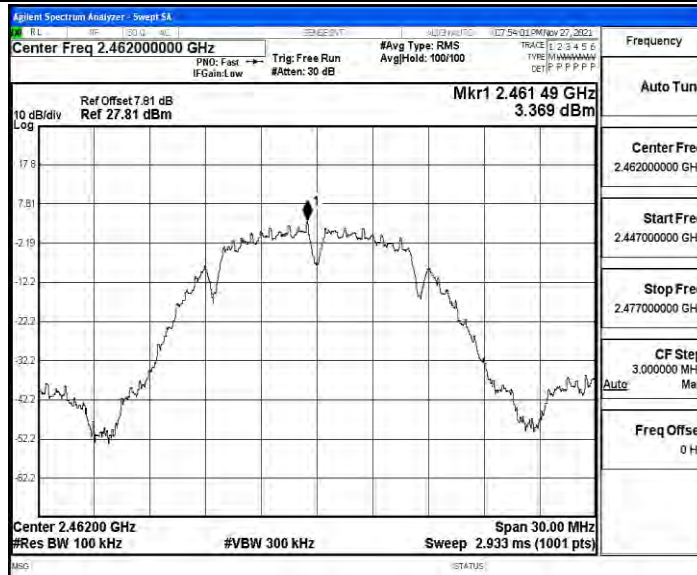




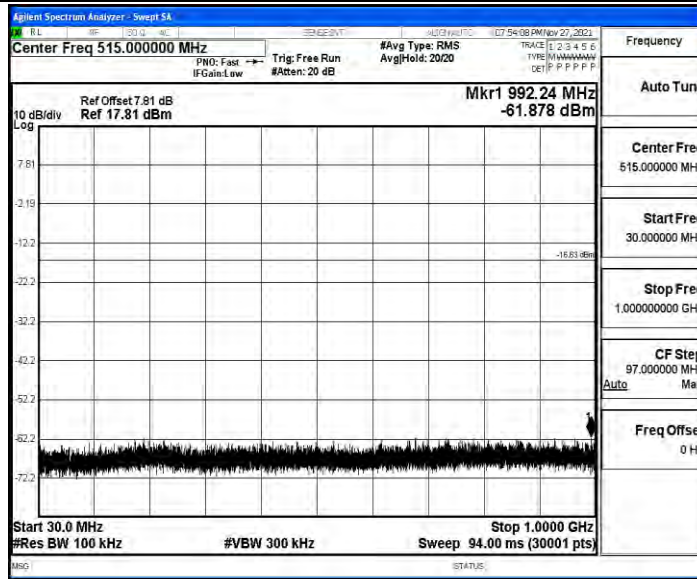
11B\_Ant1\_2437\_1000~26500



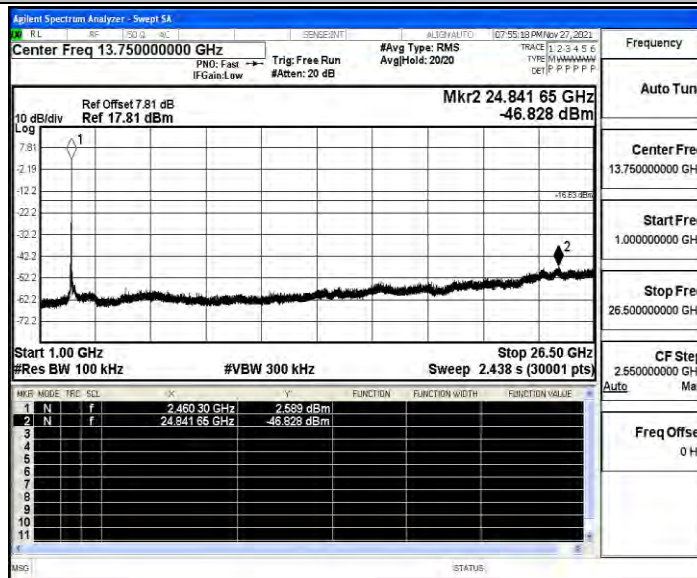
11B\_Ant1\_2462\_0~Reference



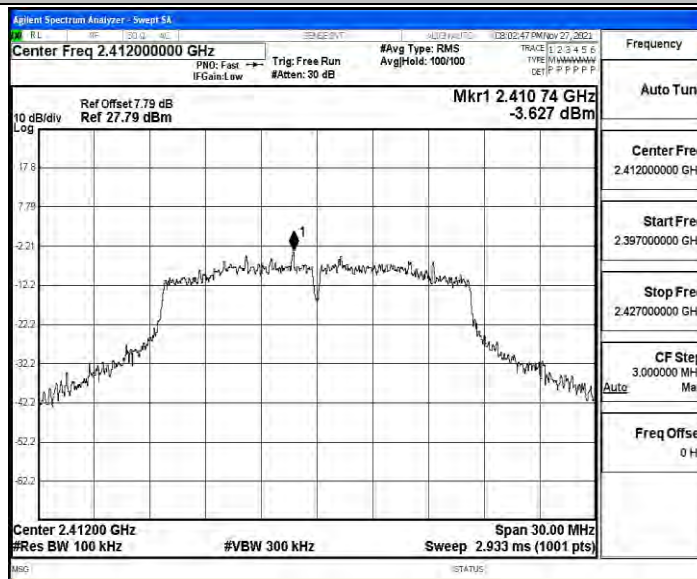
11B\_Ant1\_2462\_30~1000



11B\_Ant1\_2462\_1000~26500



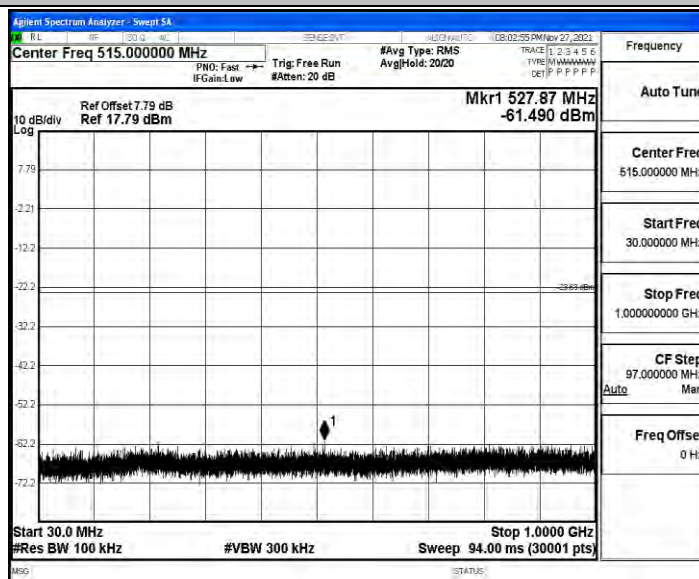
11G\_Ant1\_2412\_0~Reference



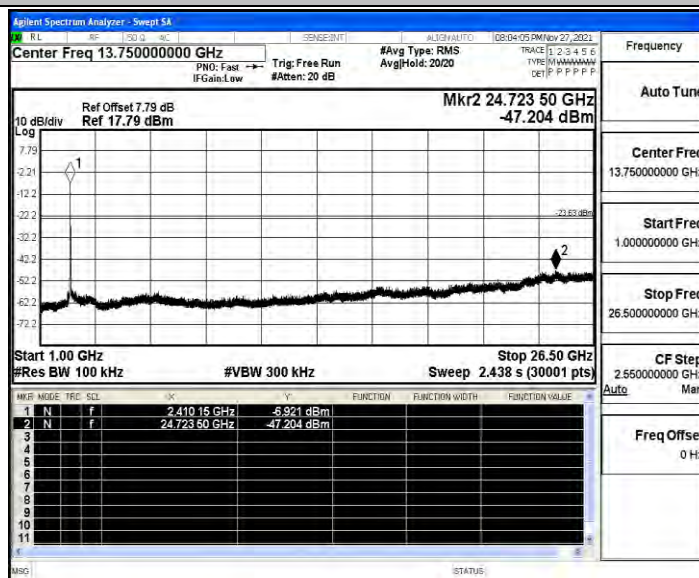




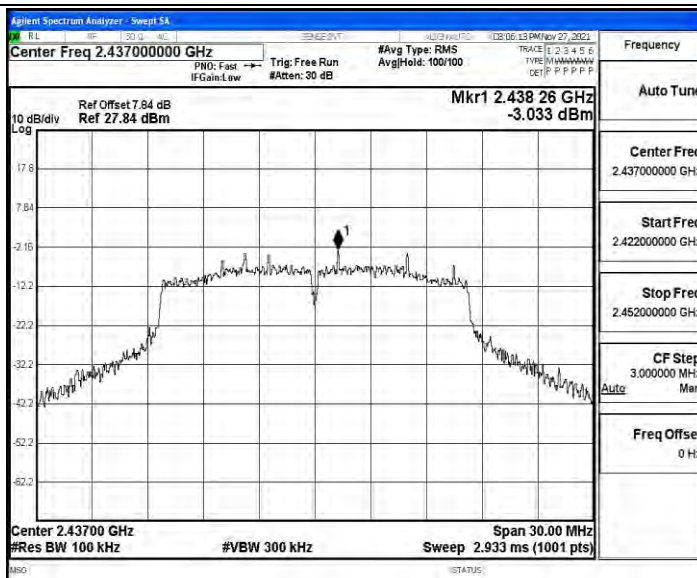
11G\_Ant1\_2412\_30~1000



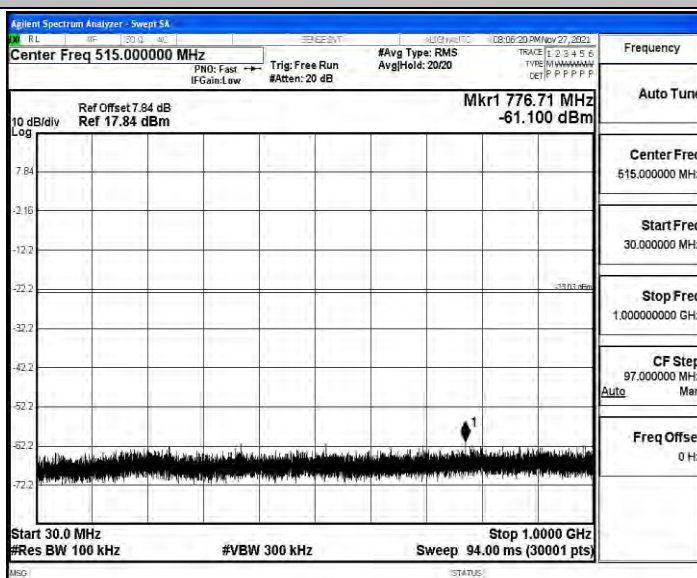
11G\_Ant1\_2412\_1000~26500



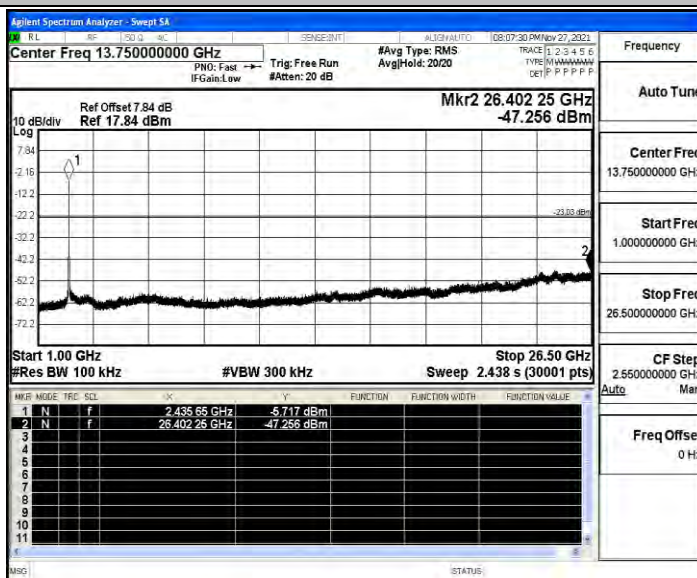
11G\_Ant1\_2437\_0~Reference



11G\_Ant1\_2437\_30~1000

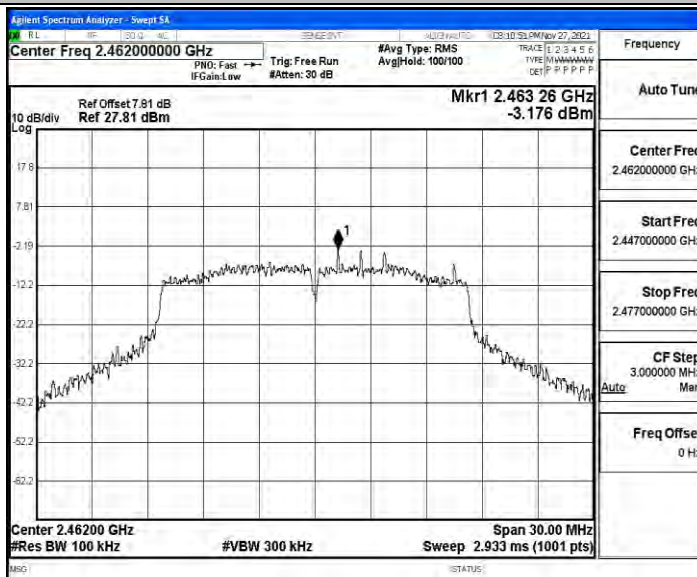


11G\_Ant1\_2437\_1000~26500

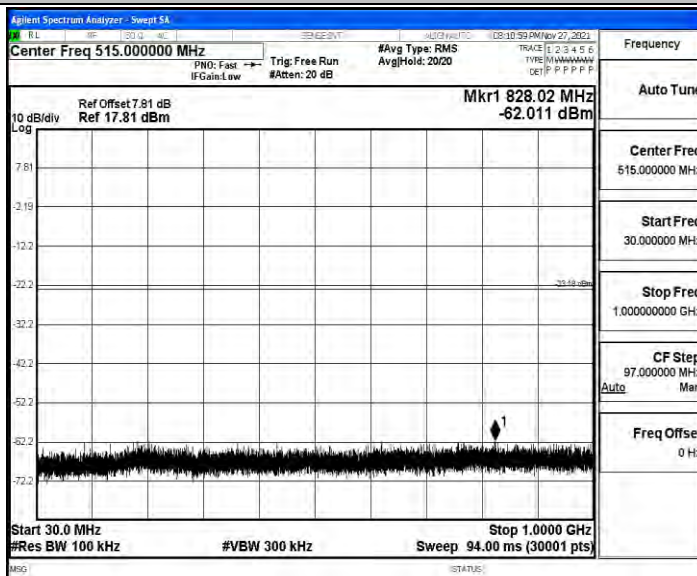




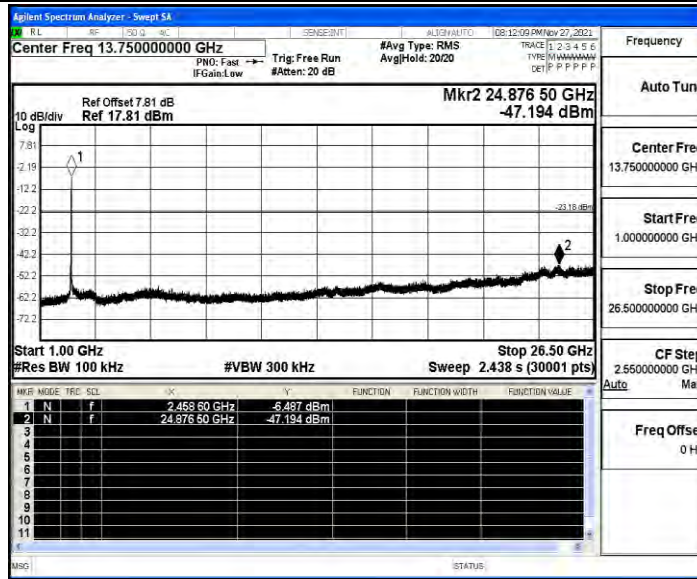
### 11G\_Ant1\_2462\_0~Reference



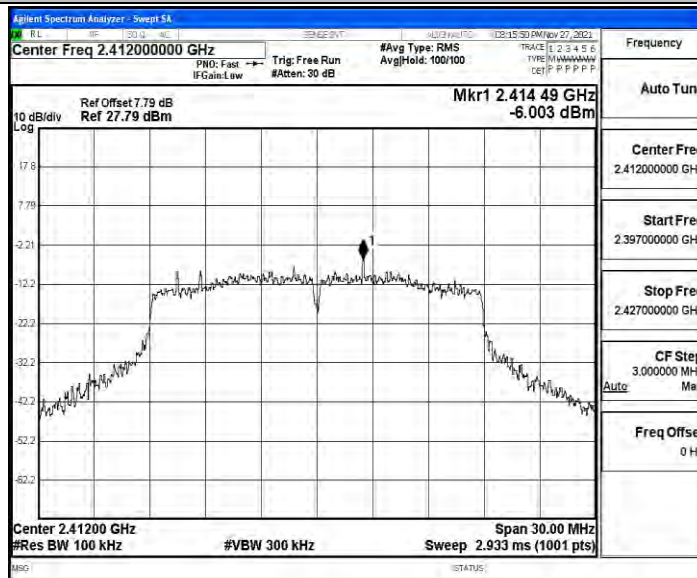
### 11G\_Ant1\_2462\_30~1000



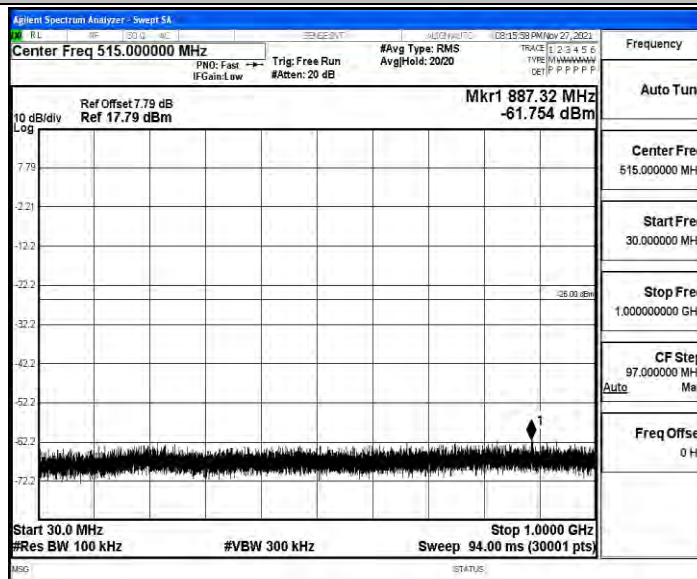
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11N20SISO\_Ant1\_2412\_0~Reference

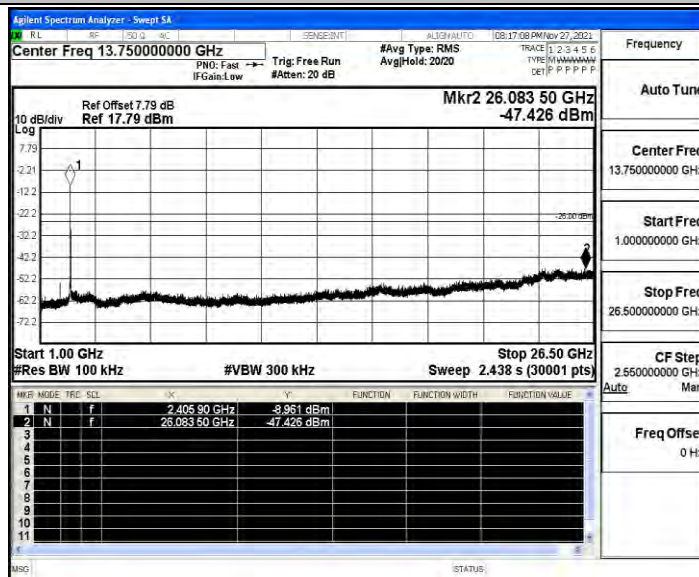


11N20SISO\_Ant1\_2412\_30~1000

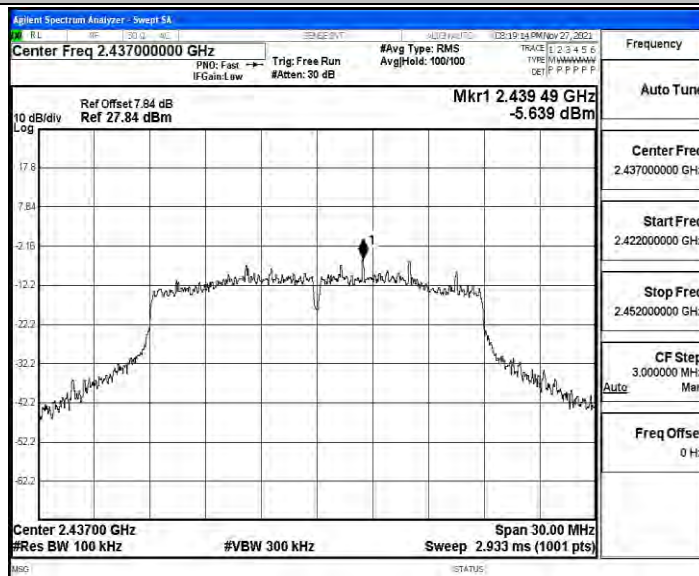




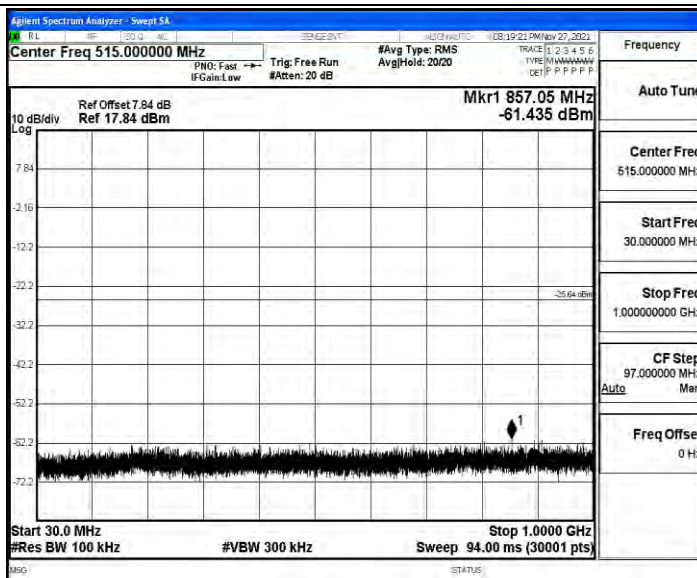
11N20SISO\_Ant1\_2412\_1000~26500



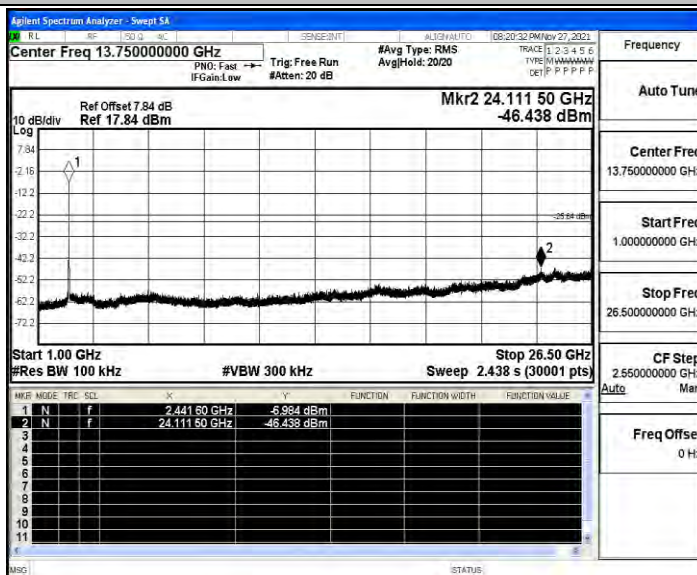
11N20SISO\_Ant1\_2437\_0~Reference



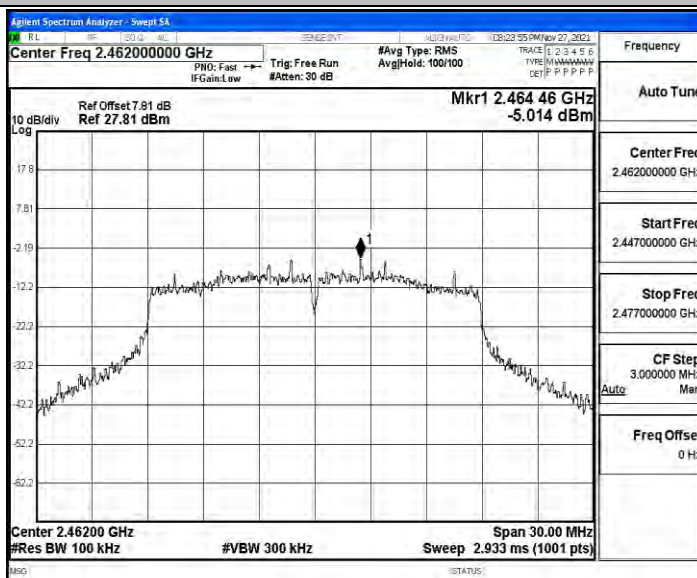
11N20SISO\_Ant1\_2437\_30~1000



11N20SISO\_Ant1\_2437\_1000~26500

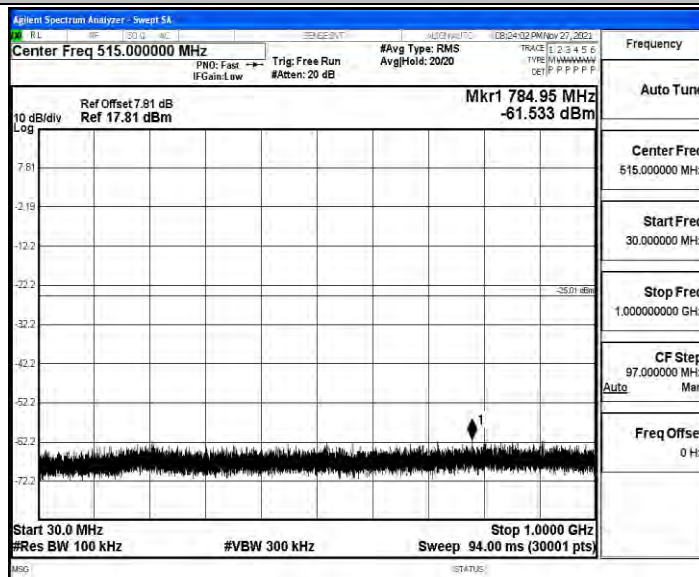


11N20SISO\_Ant1\_2462\_0~Reference

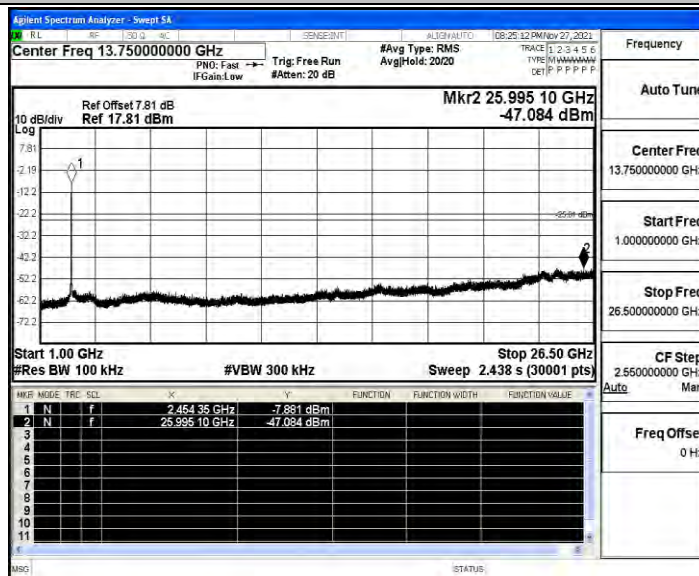




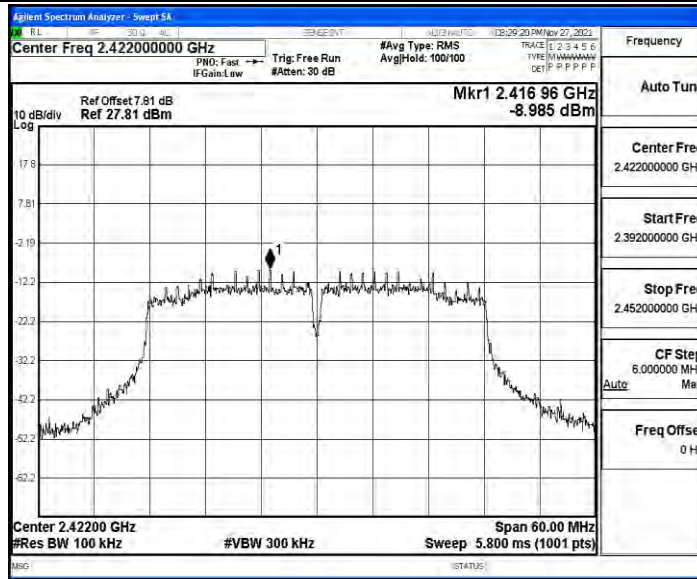
11N20SISO\_Ant1\_2462\_30~1000



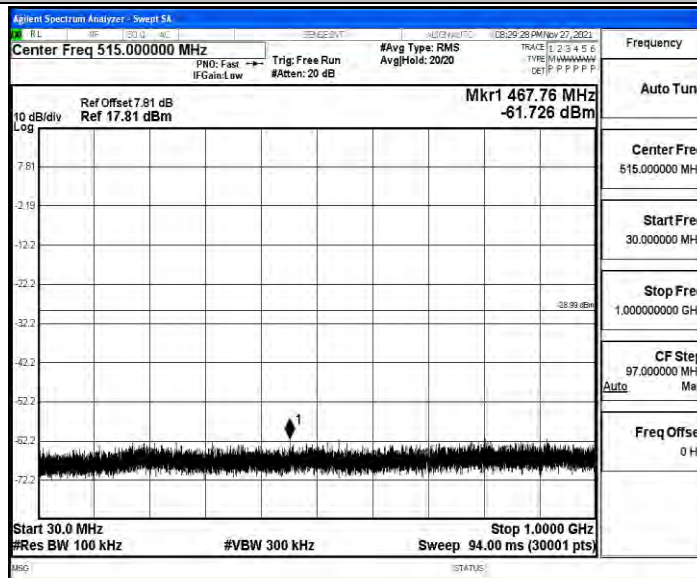
11N20SISO\_Ant1\_2462\_1000~26500



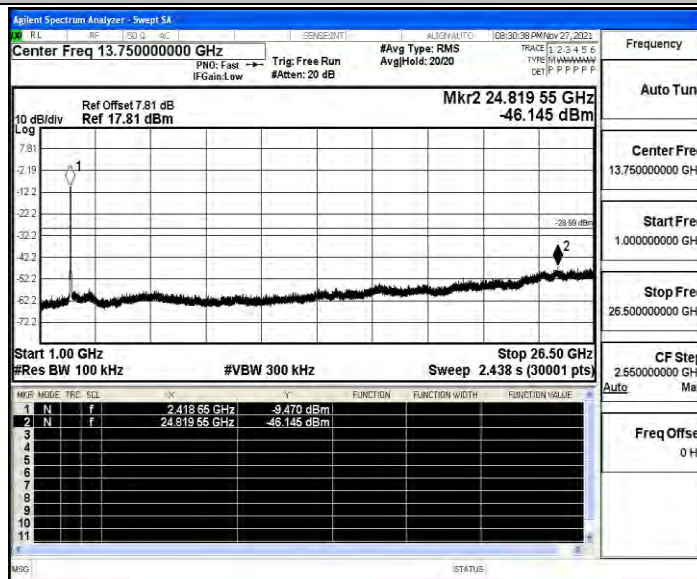
11N40SISO\_Ant1\_2422\_0~Reference



11N40SISO\_Ant1\_2422\_30~1000



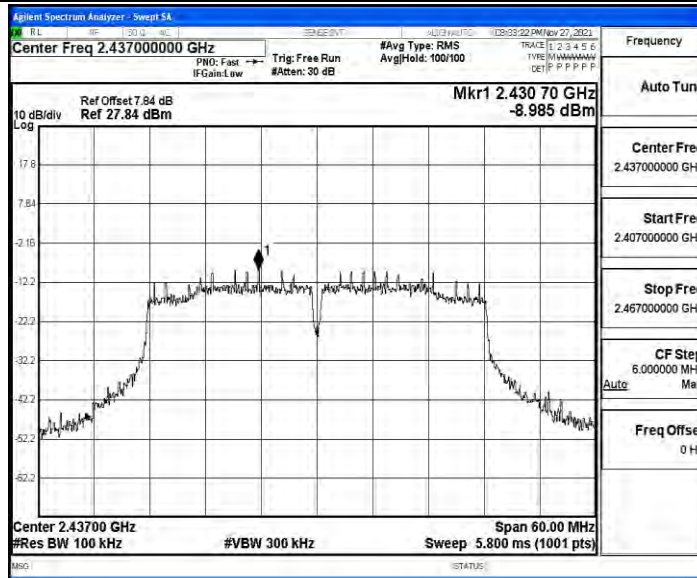
11N40SISO\_Ant1\_2422\_1000~26500



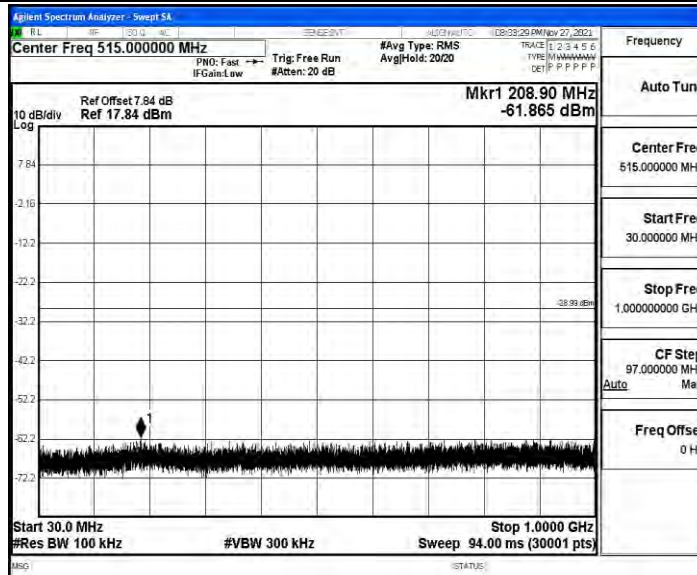




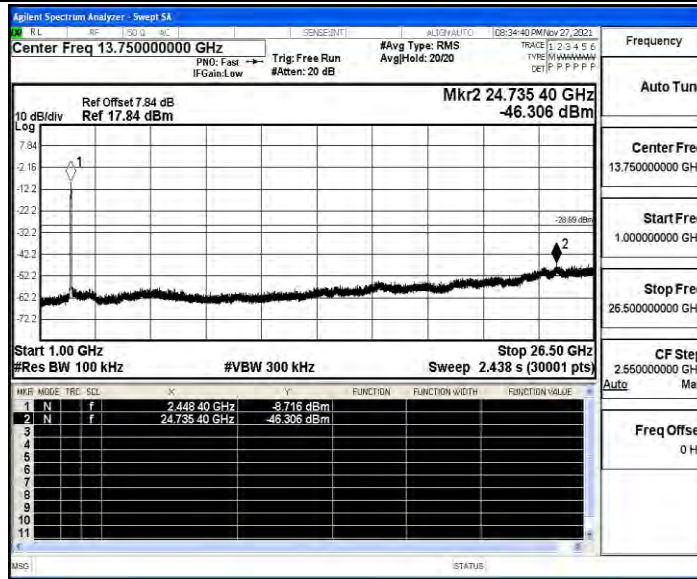
11N40SISO\_Ant1\_2437\_0~Reference



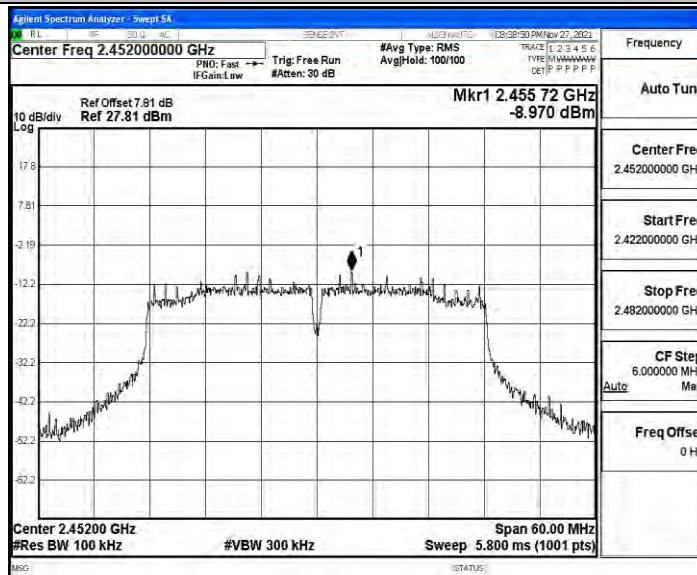
11N40SISO\_Ant1\_2437\_30~1000



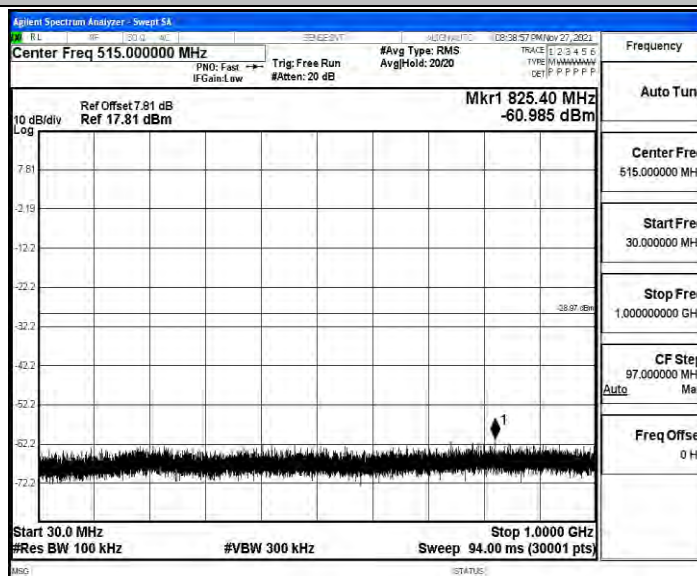
11N40SISO\_Ant1\_2437\_1000~26500



11N40SISO\_Ant1\_2452\_0~Reference

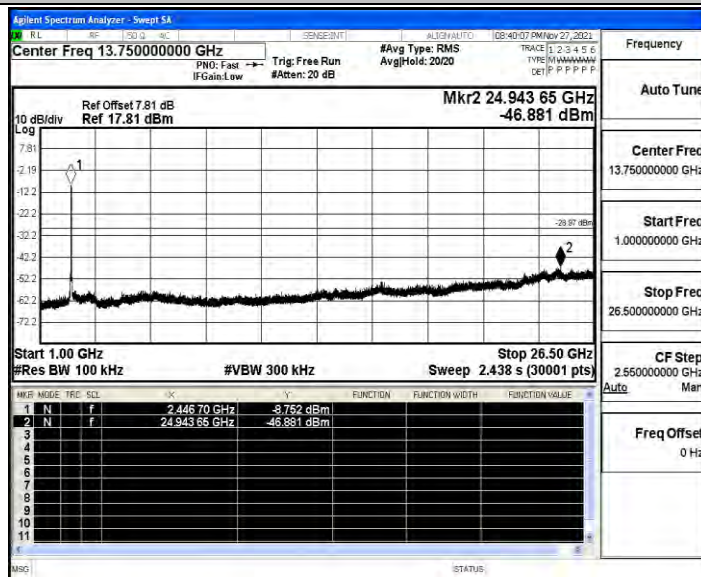


11N40SISO\_Ant1\_2452\_30~1000





11N40SISO\_Ant1\_2452\_1000~26500





## A.6 Duty Cycle

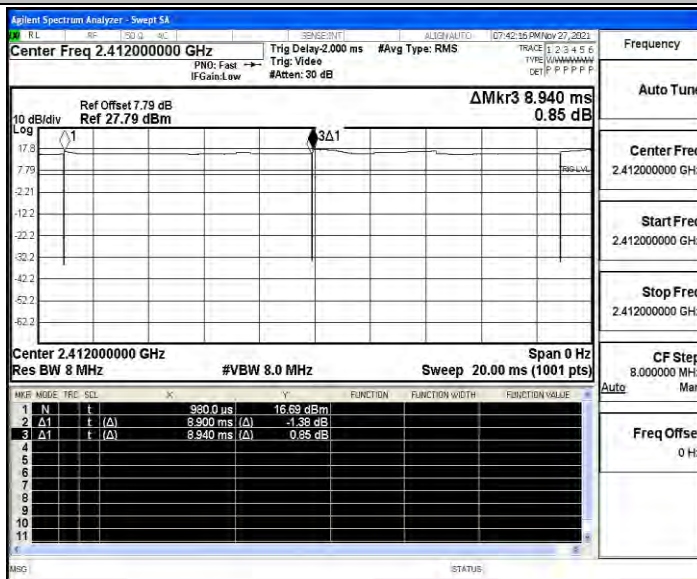
### Test Result

TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	1/T value [kHz]	Limit	Verdict
11B	Ant1	2412	8.90	8.94	99.55	0.11	---	PASS
		2437	8.90	8.94	99.55	0.11	---	PASS
		2462	8.90	8.94	99.55	0.11	---	PASS
11G	Ant1	2412	2.05	2.08	98.56	0.49	---	PASS
		2437	2.05	2.08	98.56	0.49	---	PASS
		2462	2.04	2.07	98.55	0.49	---	PASS
11N20SISO	Ant1	2412	1.91	1.94	98.45	0.52	---	PASS
		2437	1.91	1.94	98.45	0.52	---	PASS
		2462	1.91	1.94	98.45	0.52	---	PASS
11N40SISO	Ant1	2422	0.93	0.96	96.88	1.08	---	PASS
		2437	0.93	0.96	96.88	1.08	---	PASS
		2452	0.93	0.96	96.88	1.08	---	PASS

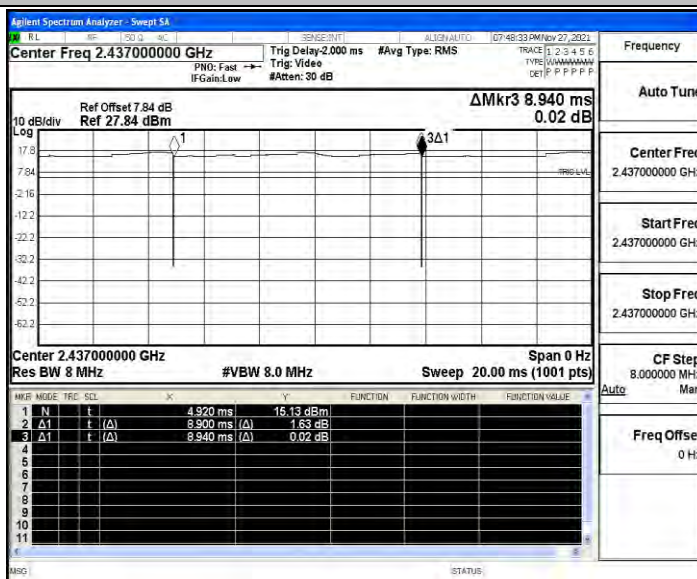


### Test Graphs

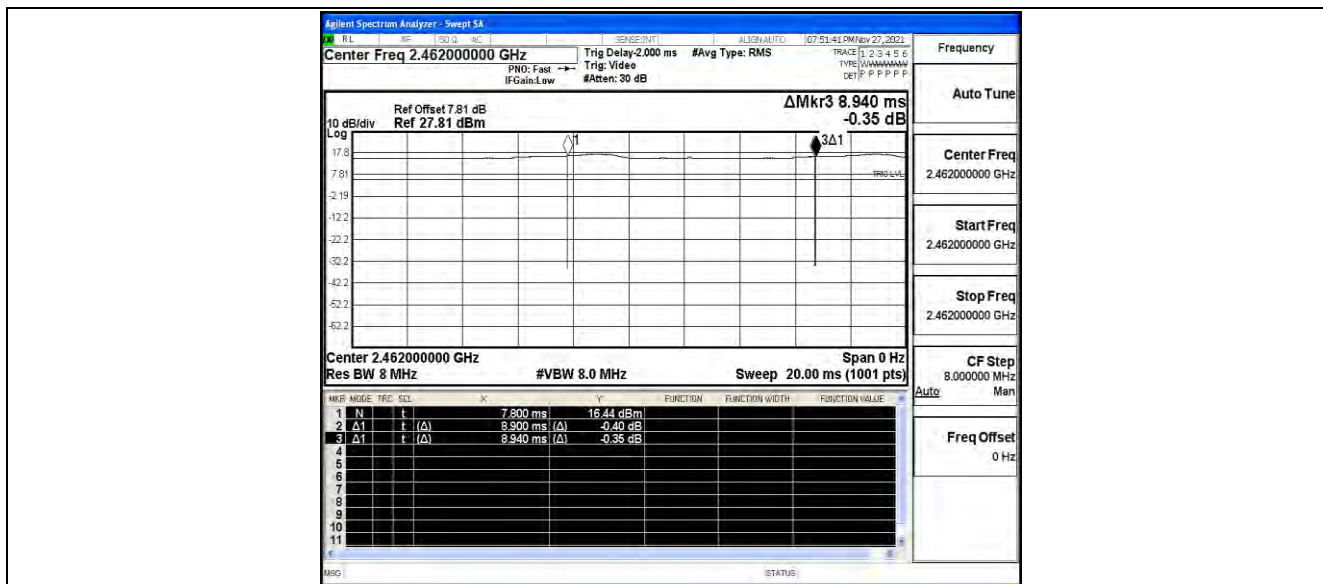
11B\_Ant1\_2412



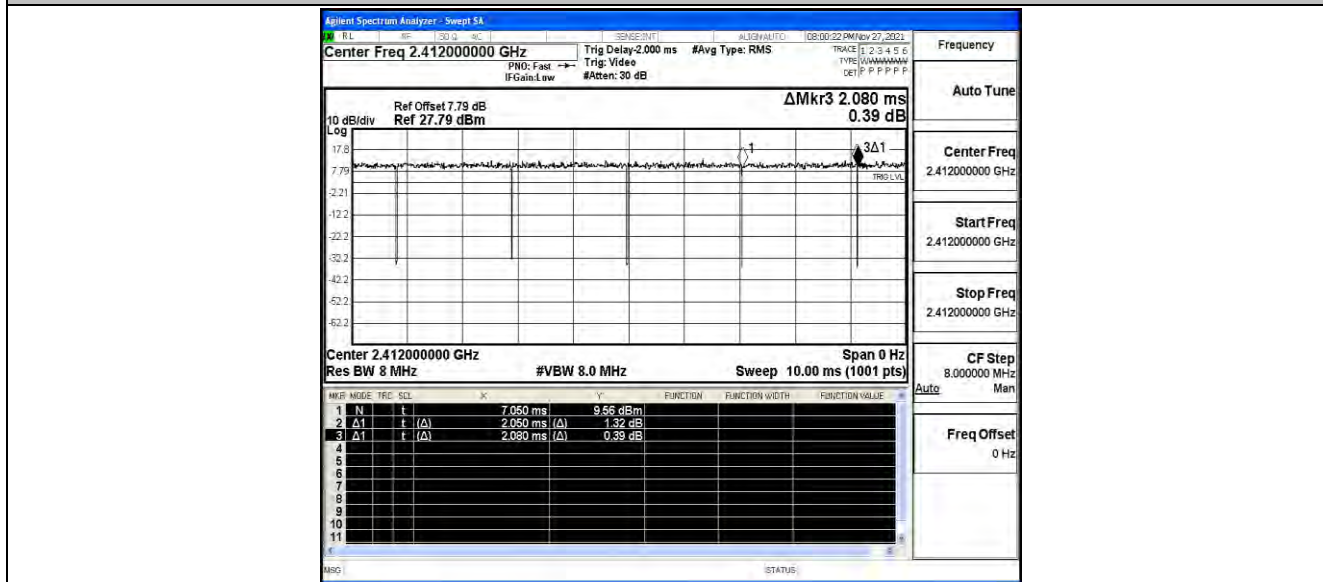
11B\_Ant1\_2437



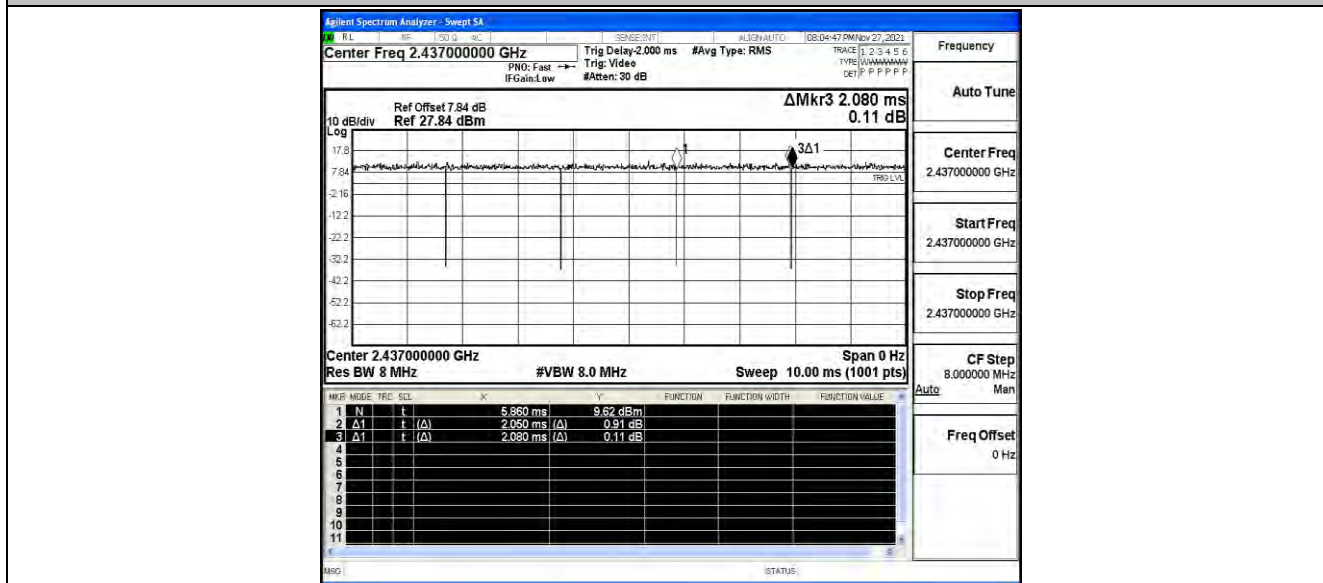
11B\_Ant1\_2462



11G\_Ant1\_2412

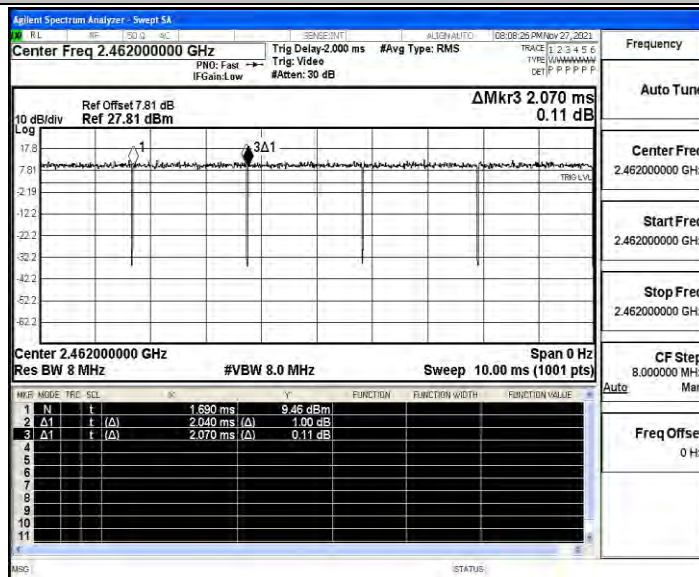


11G\_Ant1\_2437

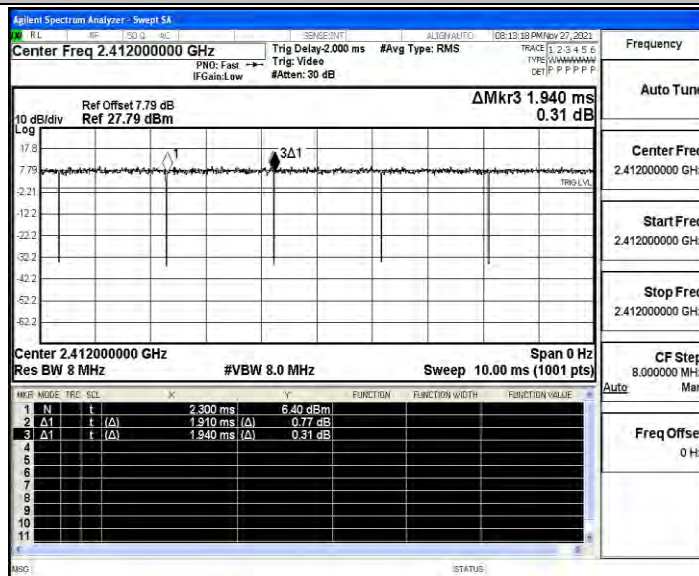




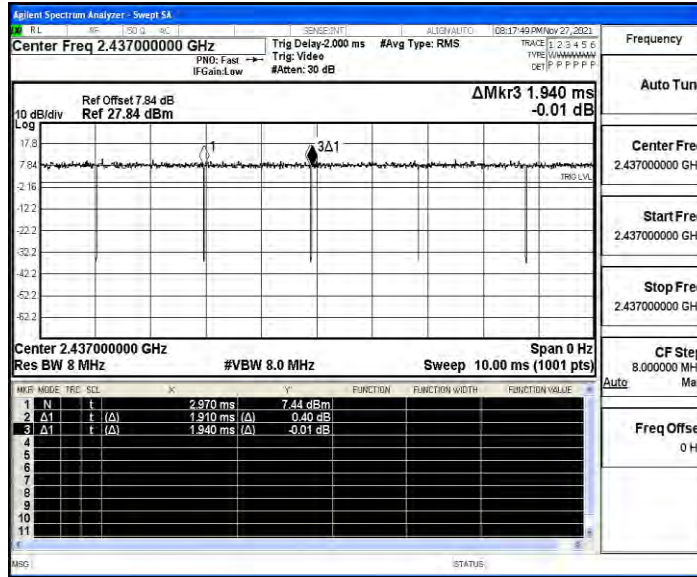
11G\_Ant1\_2462



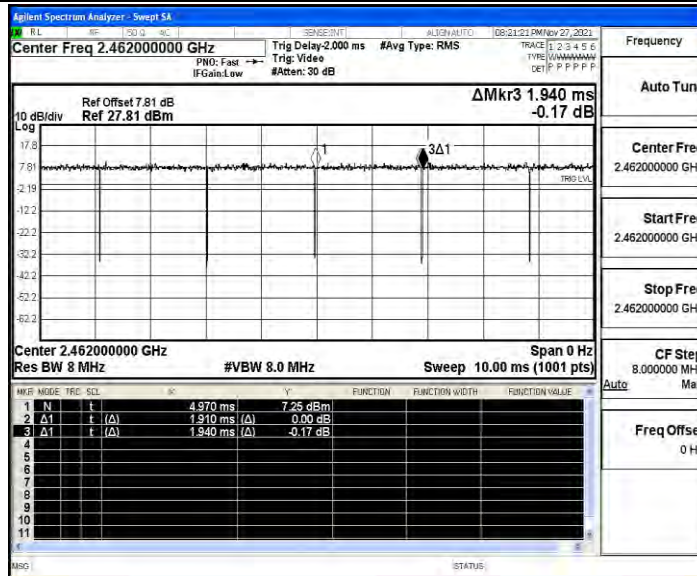
11N20SISO\_Ant1\_2412



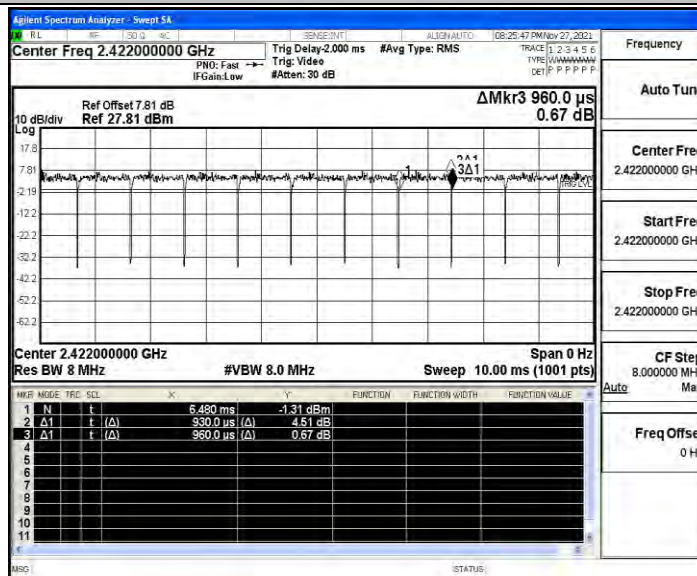
11N20SISO\_Ant1\_2437



11N20SISO\_Ant1\_2462



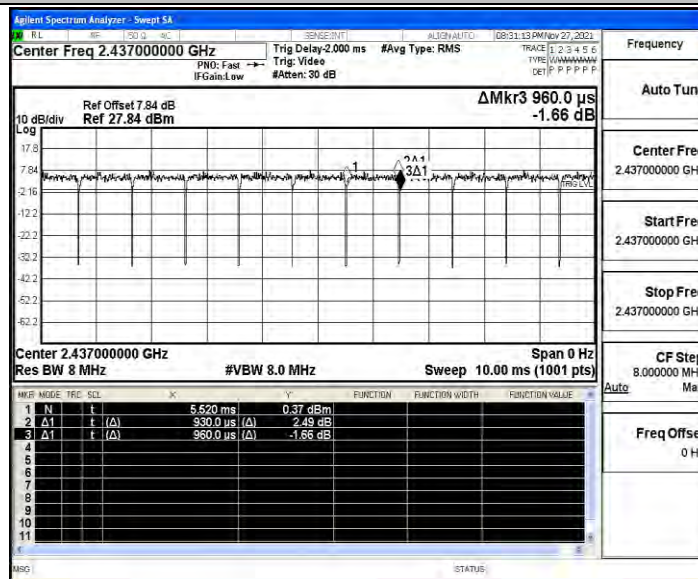
11N40SISO\_Ant1\_2422



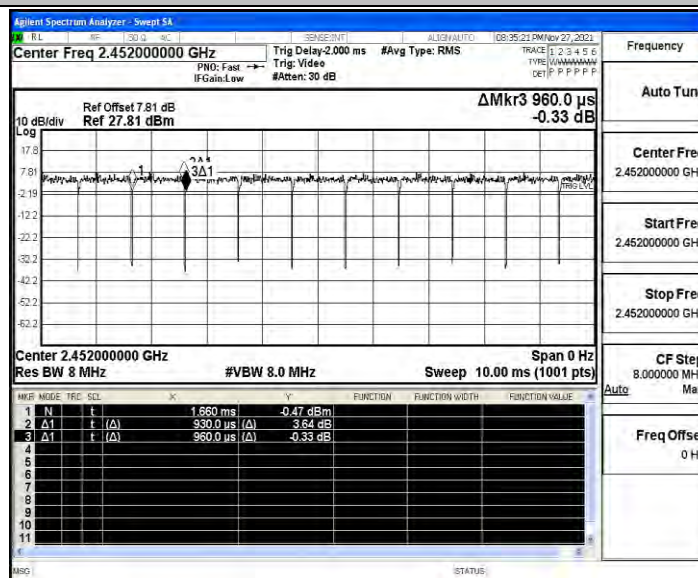




11N40SISO\_Ant1\_2437



11N40SISO\_Ant1\_2452





## A.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	-49.1	≤-41.20	46.10	≤54	PASS
				AV	2386.840	-44.56	≤-41.20	50.64	≤54	PASS
				AV	2390.000	-47.36	≤-41.20	47.84	≤54	PASS
				Peak	2310.000	-43.12	≤-21.20	52.08	≤74	PASS
				Peak	2386.320	-38.72	≤-21.20	56.48	≤74	PASS
				Peak	2390.000	-41.63	≤-21.20	53.57	≤74	PASS
		High	2462	AV	2483.500	-45.71	≤-41.20	49.49	≤54	PASS
				AV	2487.740	-43.98	≤-41.20	51.22	≤54	PASS
				AV	2500.000	-47.47	≤-41.20	47.73	≤54	PASS
				Peak	2483.500	-40.38	≤-21.20	54.82	≤74	PASS
				Peak	2489.060	-36.86	≤-21.20	58.34	≤74	PASS
				Peak	2500.000	-42.74	≤-21.20	52.46	≤74	PASS
11G	Ant1	Low	2412	AV	2310.000	-48.91	≤-41.20	46.29	≤54	PASS
				AV	2389.960	-46.48	≤-41.20	48.72	≤54	PASS
				AV	2390.000	-46.48	≤-41.20	48.72	≤54	PASS
				Peak	2310.000	-45.76	≤-21.20	49.44	≤74	PASS
				Peak	2313.390	-39.22	≤-21.20	55.98	≤74	PASS
				Peak	2390.000	-41.79	≤-21.20	53.41	≤74	PASS
		High	2462	AV	2483.500	-45.34	≤-41.20	49.86	≤54	PASS
				AV	2483.560	-45.55	≤-41.20	49.65	≤54	PASS
				AV	2500.000	-47.52	≤-41.20	47.68	≤54	PASS
				Peak	2483.500	-41.11	≤-21.20	54.09	≤74	PASS
				Peak	2496.870	-38.48	≤-21.20	56.72	≤74	PASS
				Peak	2500.000	-42	≤-21.20	53.20	≤74	PASS
11N20SI SO	Ant1	Low	2412	AV	2310.000	-48.97	≤-41.20	46.23	≤54	PASS
				AV	2389.960	-47.56	≤-41.20	47.64	≤54	PASS
				AV	2390.000	-47.56	≤-41.20	47.64	≤54	PASS
				Peak	2310.000	-45.07	≤-21.20	50.13	≤74	PASS
				Peak	2367.600	-39.11	≤-21.20	56.09	≤74	PASS
				Peak	2390.000	-43.43	≤-21.20	51.77	≤74	PASS
		High	2462	AV	2483.500	-45.79	≤-41.20	49.41	≤54	PASS
				AV	2483.560	-45.81	≤-41.20	49.39	≤54	PASS
				AV	2500.000	-47.67	≤-41.20	47.53	≤54	PASS
				Peak	2483.500	-38.76	≤-21.20	56.44	≤74	PASS
				Peak	2483.670	-38.6	≤-21.20	56.60	≤74	PASS
				Peak	2500.000	-43.59	≤-21.20	51.61	≤74	PASS
11N40SI	Ant1	Low	2422	AV	2310.000	-48.69	≤-41.20	46.51	≤54	PASS



SO			AV	2389.180	-45.48	$\leq -41.20$	49.72	$\leq 54$	PASS
			AV	2390.000	-45.78	$\leq -41.20$	49.42	$\leq 54$	PASS
			Peak	2310.000	-42.38	$\leq -21.20$	52.82	$\leq 74$	PASS
			Peak	2389.180	-36.94	$\leq -21.20$	58.26	$\leq 74$	PASS
			Peak	2390.000	-39.24	$\leq -21.20$	55.96	$\leq 74$	PASS
			Peak	2390.000	-39.24	$\leq -21.20$	55.96	$\leq 74$	PASS
	High	2452	AV	2483.500	-44.54	$\leq -41.20$	50.66	$\leq 54$	PASS
			AV	2484.110	-44.03	$\leq -41.20$	51.17	$\leq 54$	PASS
			AV	2500.000	-47.15	$\leq -41.20$	48.05	$\leq 54$	PASS
			Peak	2483.500	-38.29	$\leq -21.20$	56.91	$\leq 74$	PASS
			Peak	2486.420	-36.1	$\leq -21.20$	59.10	$\leq 74$	PASS
			Peak	2500.000	-40.23	$\leq -21.20$	54.97	$\leq 74$	PASS

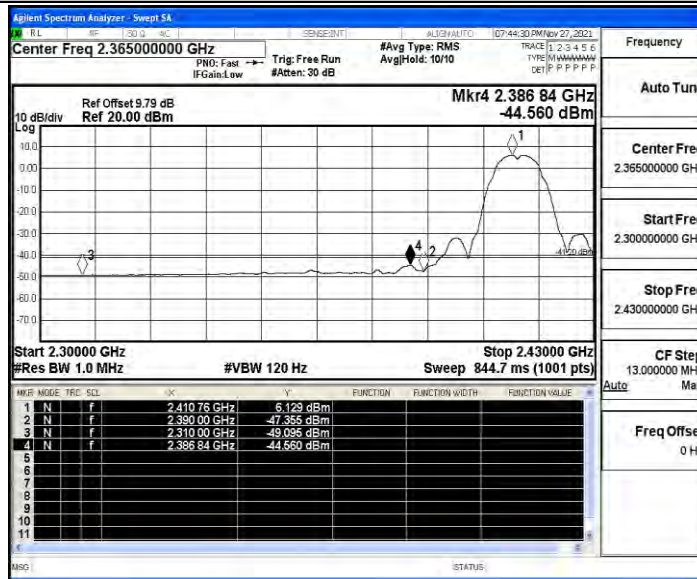
## Note:

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.

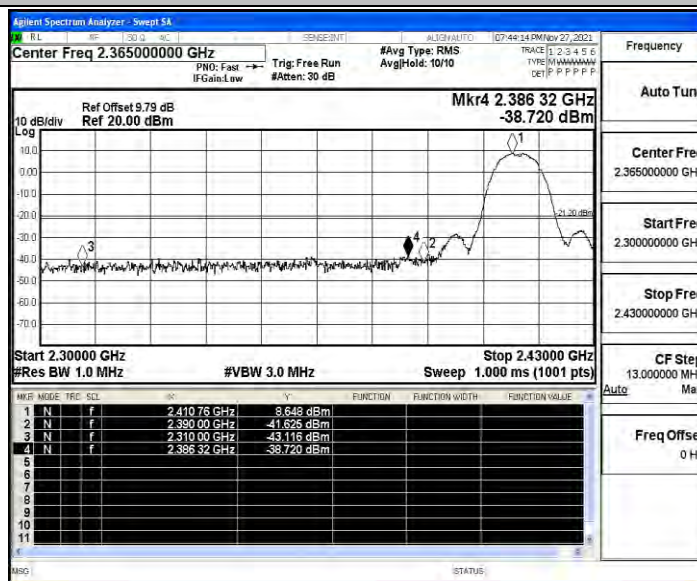


### Test Graphs

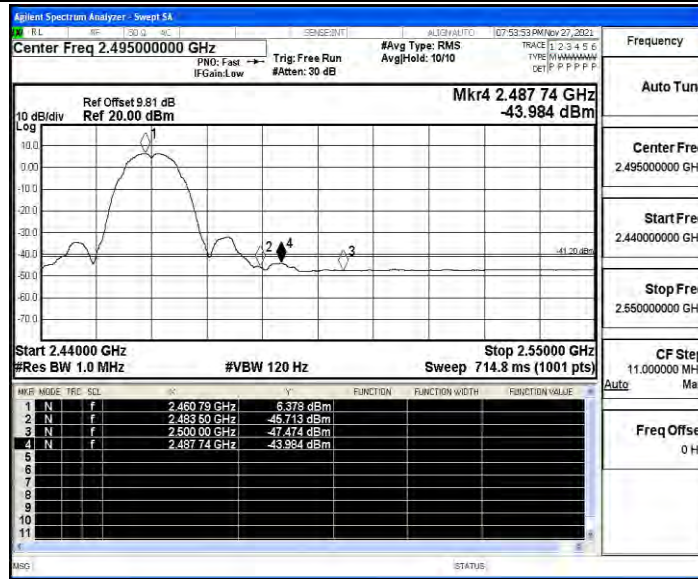
#### 11B\_Ant1\_Low\_2412\_AV



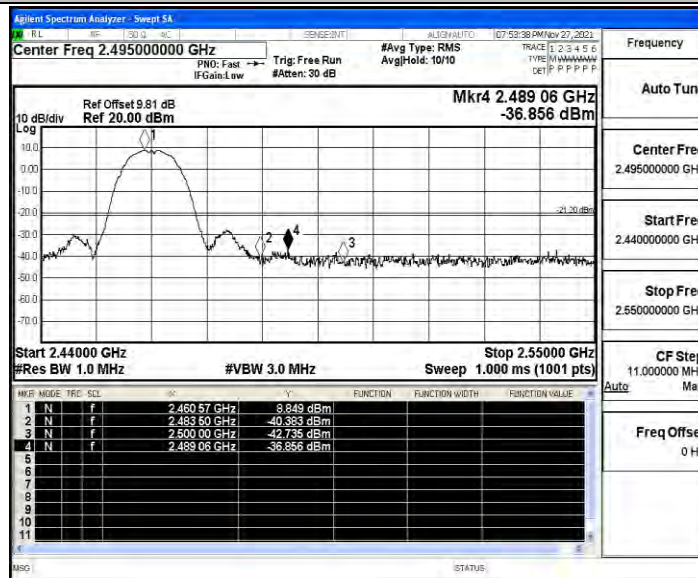
#### 11B\_Ant1\_Low\_2412\_Peak



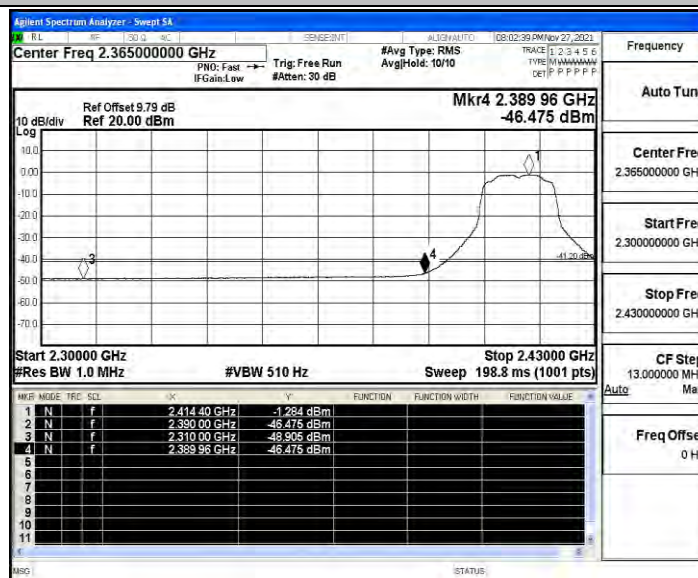
#### 11B\_Ant1\_High\_2462\_AV



11B\_Ant1\_High\_2462\_Peak

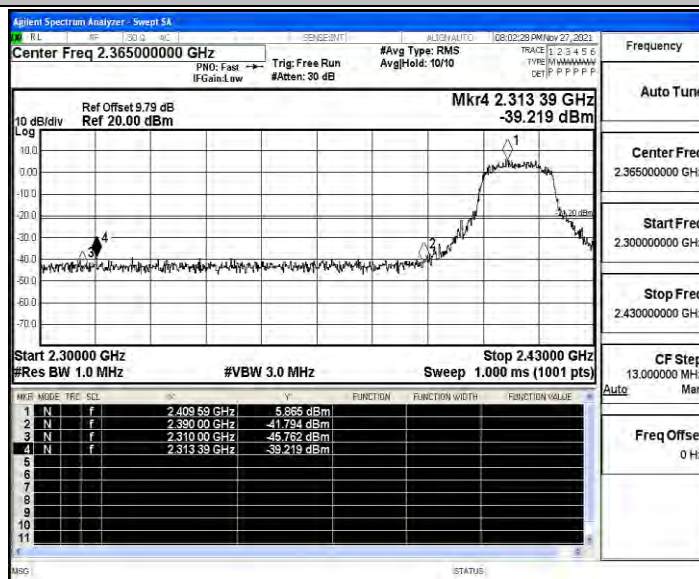


11G\_Ant1\_Low\_2412\_AV

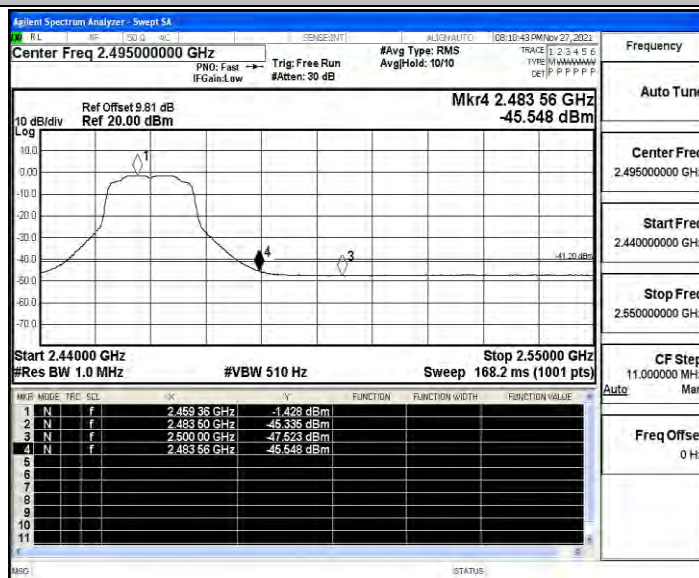




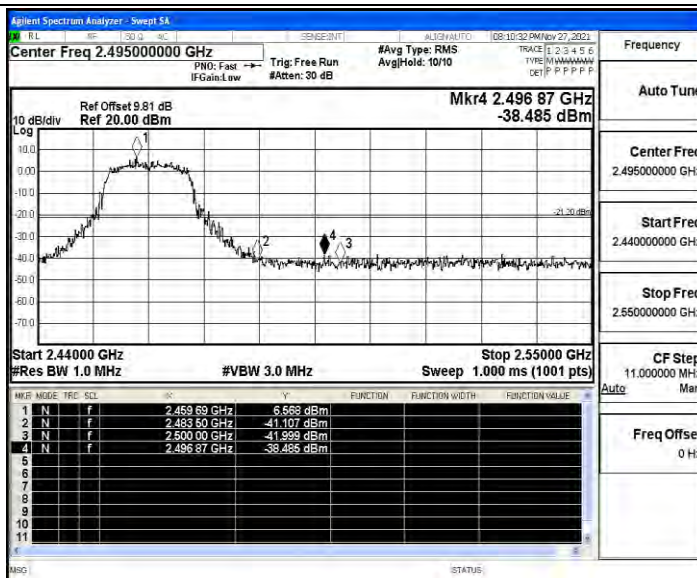
### 11G\_Ant1\_Low\_2412\_Peak



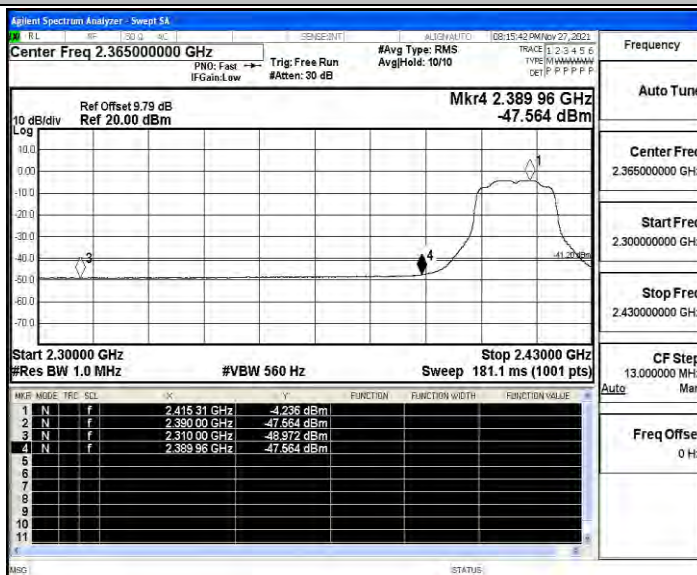
### 11G\_Ant1\_High\_2462\_AV



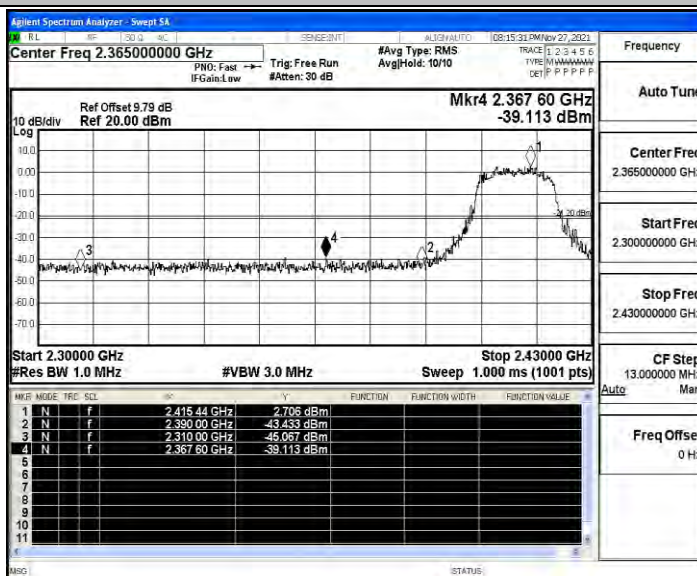
### 11G\_Ant1\_High\_2462\_Peak



11N20SISO\_Ant1\_Low\_2412\_AV

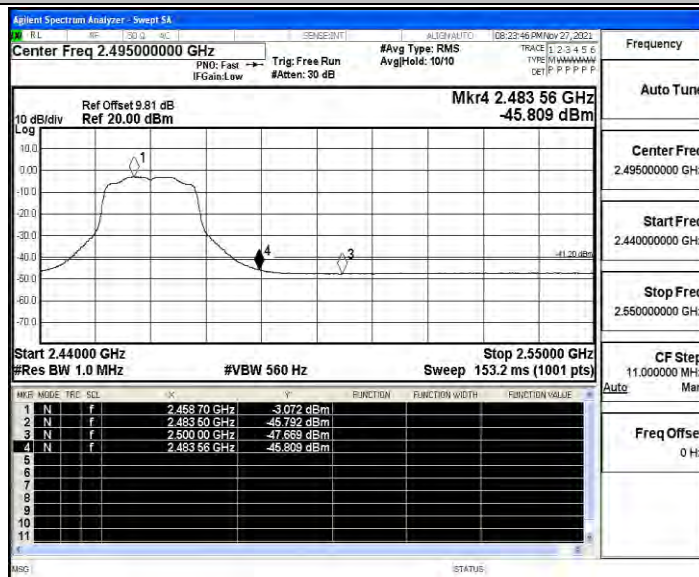


11N20SISO\_Ant1\_Low\_2412\_Peak

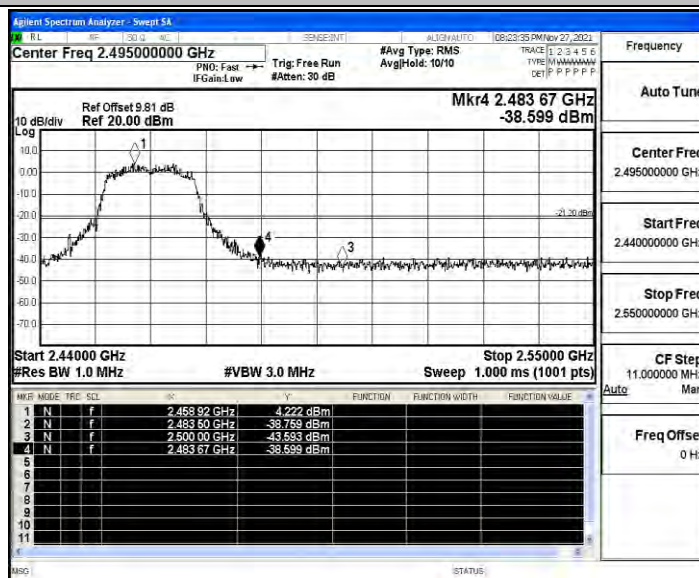




11N20SISO\_Ant1\_High\_2462\_AV

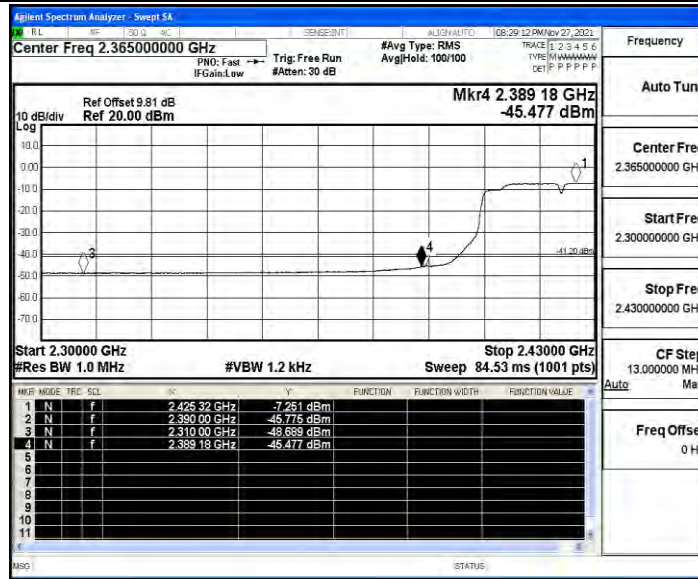


11N20SISO\_Ant1\_High\_2462\_Peak

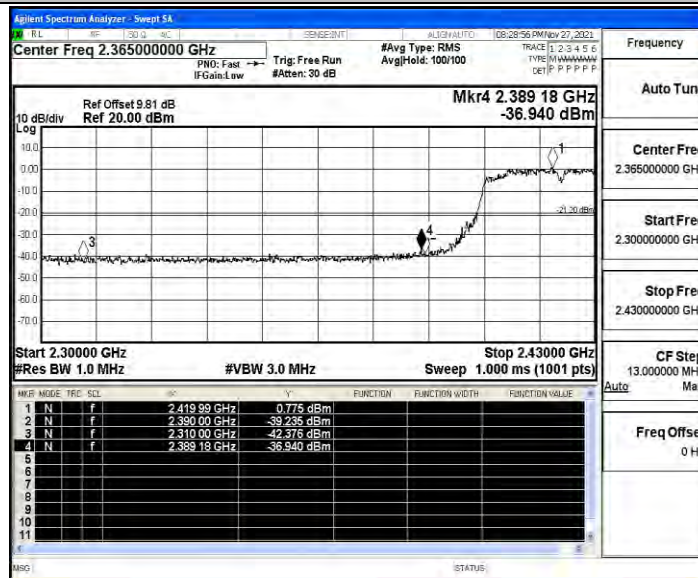


11N40SISO\_Ant1\_Low\_2422\_AV

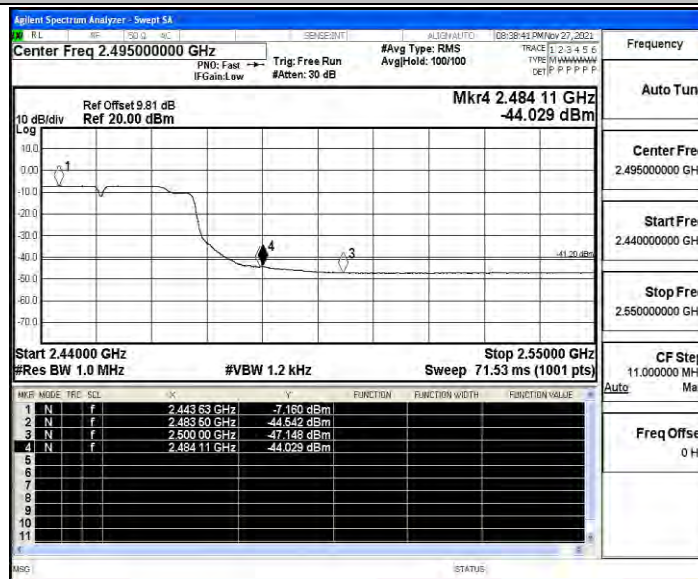




11N40SISO\_Ant1\_Low\_2422\_Peak



11N40SISO\_Ant1\_High\_2452\_AV





### 11N40SISO\_Ant1\_High\_2452\_Peak

