



Appendix B

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: 6inch Wifi-BLE recessed down light

Test Model: LJD006SMWH

Environmental Conditions

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

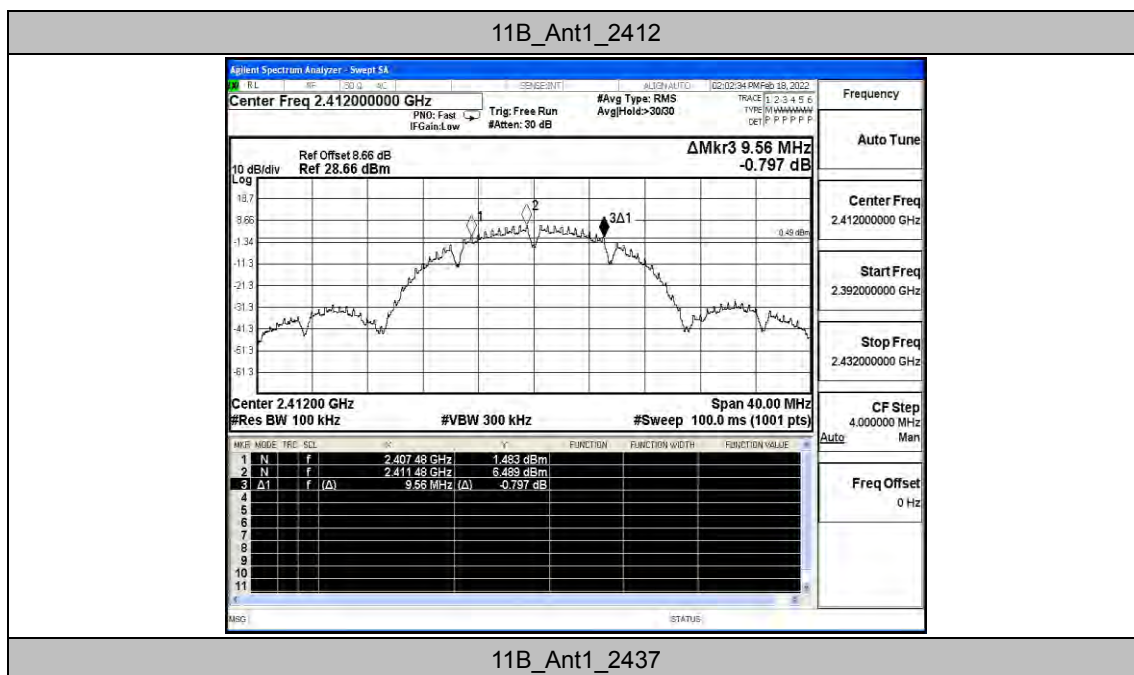


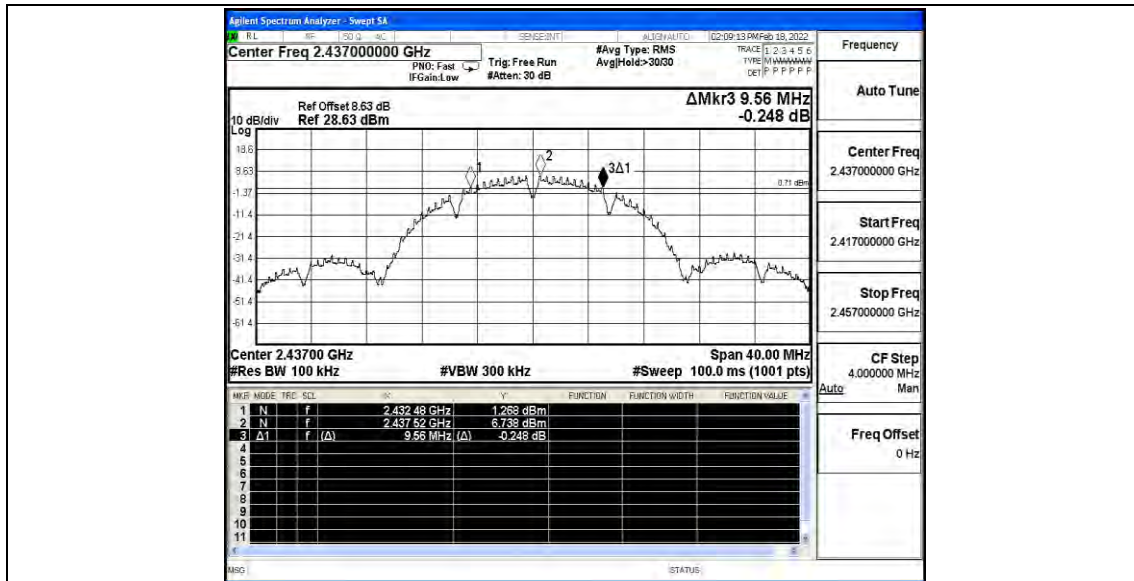
B.1 6dB Bandwidth

Test Result

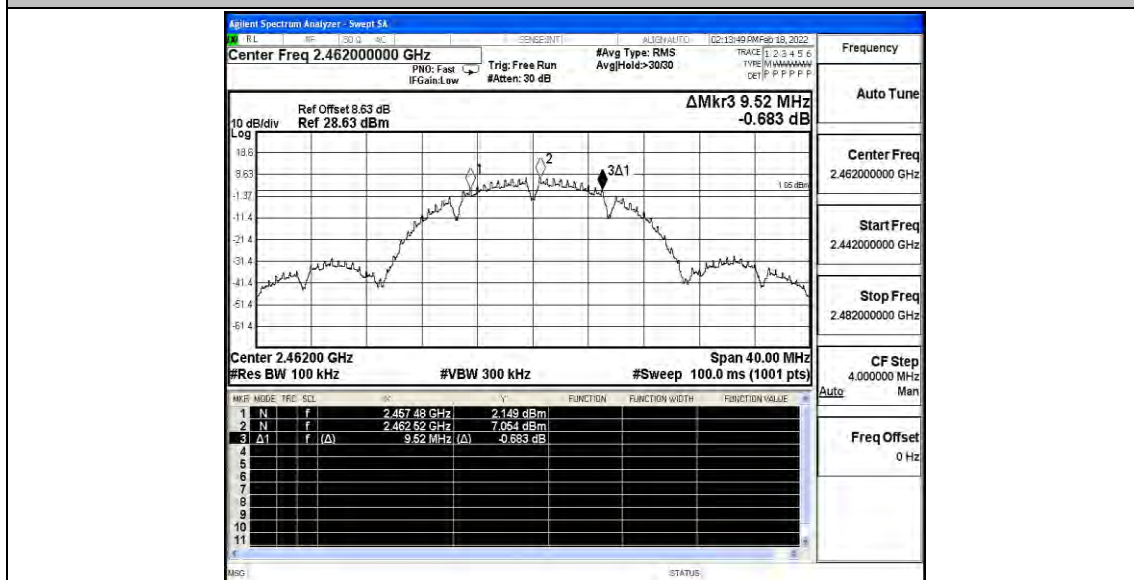
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.560	2407.480	2417.040	0.5	PASS
		2437	9.560	2432.480	2442.040	0.5	PASS
		2462	9.520	2457.480	2467.000	0.5	PASS
11G	Ant1	2412	13.800	2405.720	2419.520	0.5	PASS
		2437	13.800	2430.720	2444.520	0.5	PASS
		2462	13.800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

Test Graphs

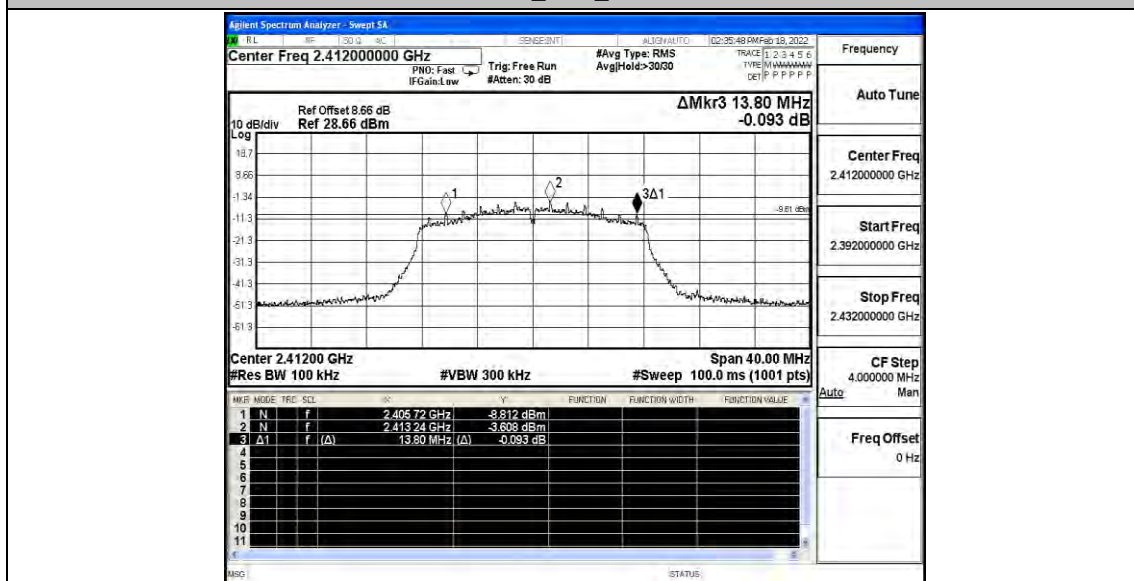




11B_Ant1_2462

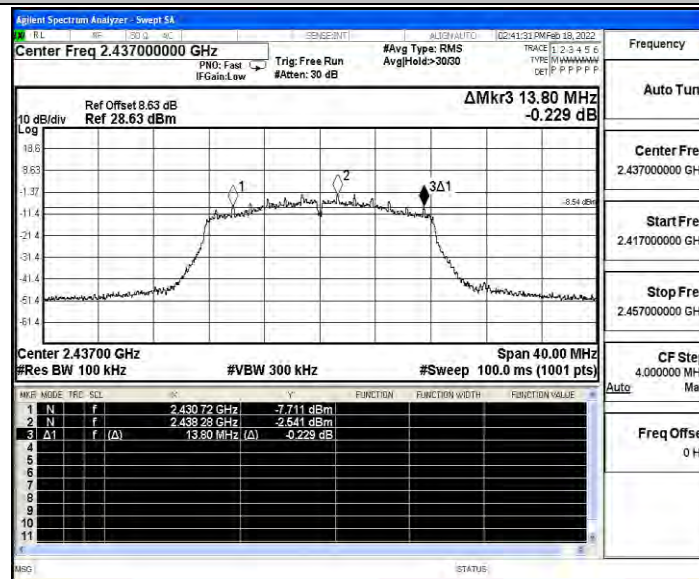


11G_Ant1_2412

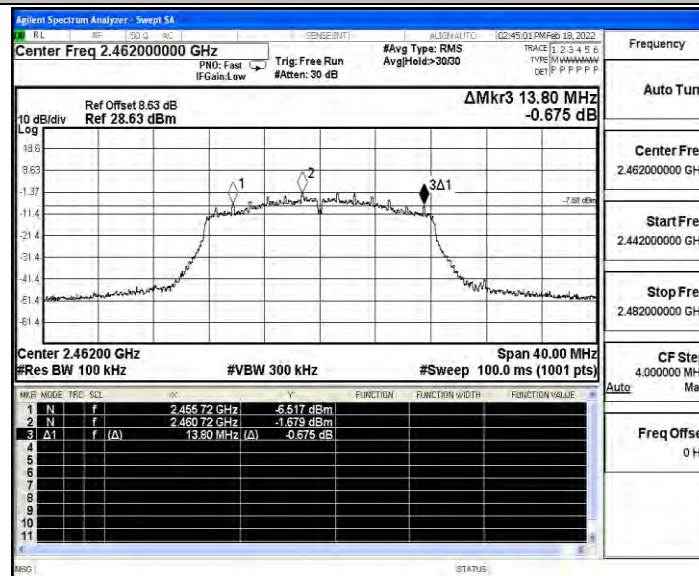




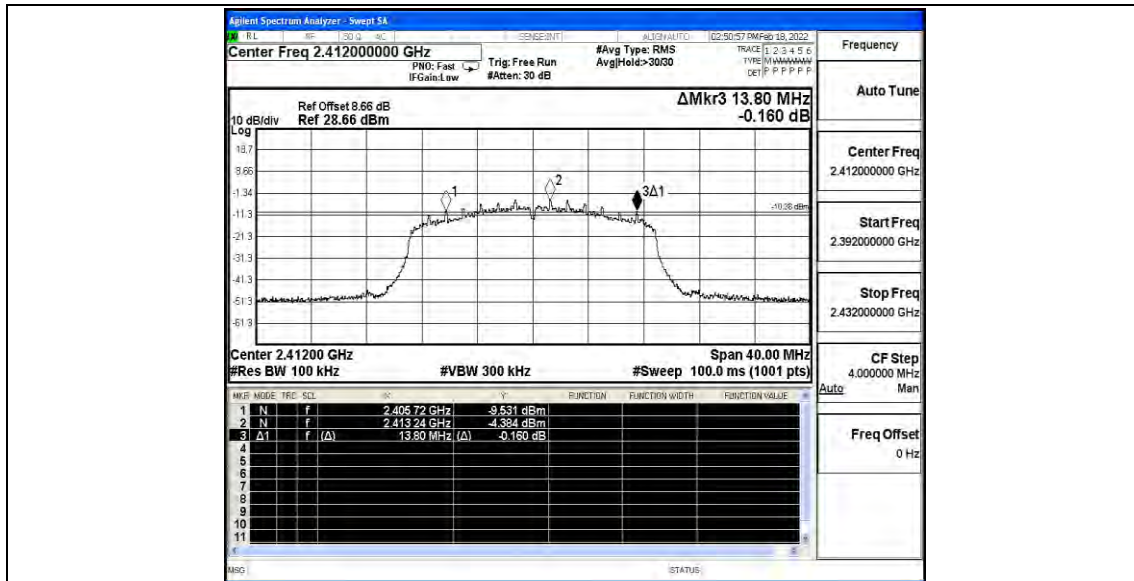
11G_Ant1_2437



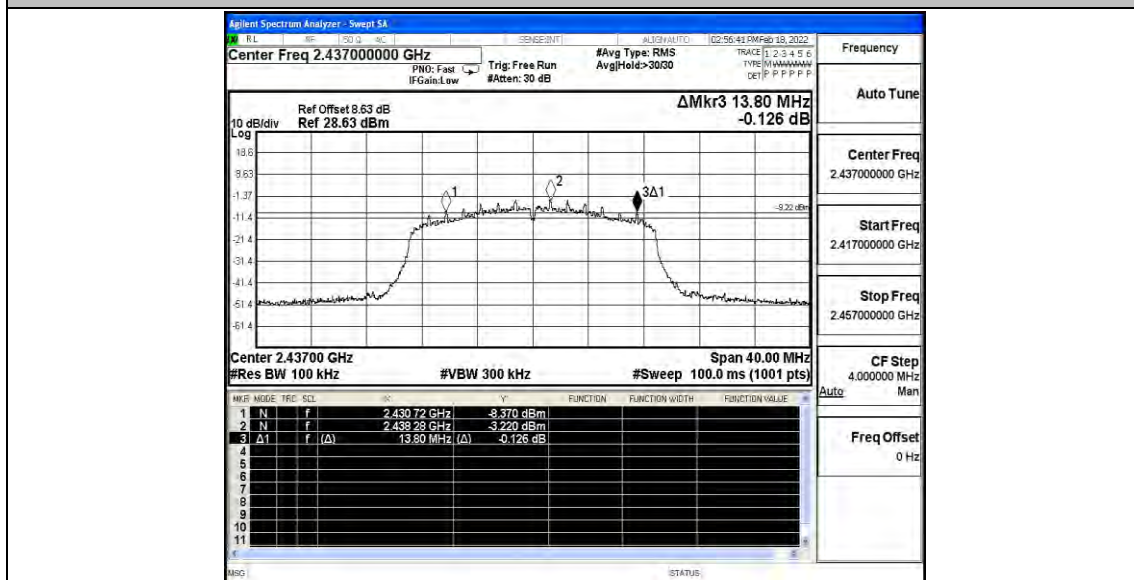
11G_Ant1_2462



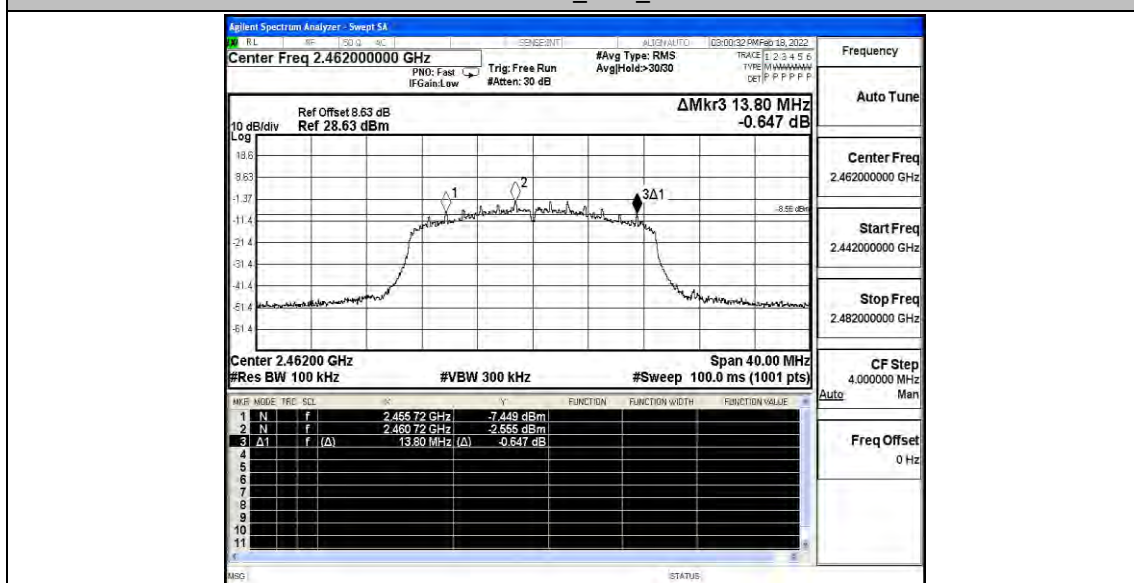
11N20SISO_Ant1_2412



11N20SISO_Ant1_2437

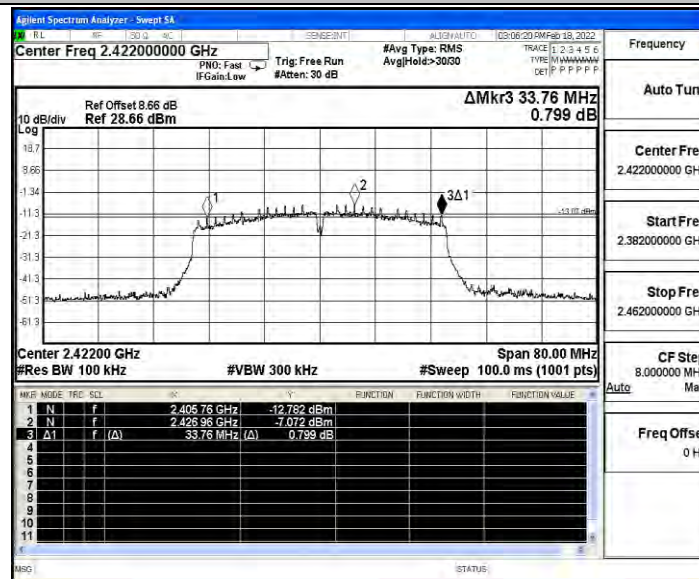


11N20SISO_Ant1_2462

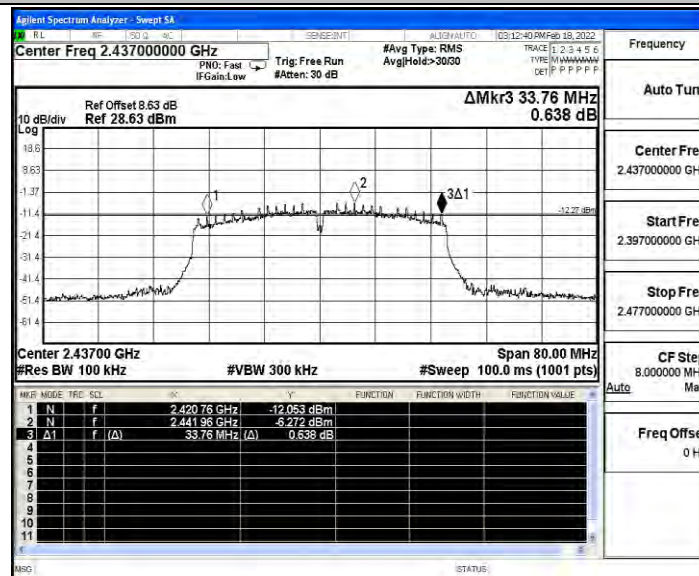




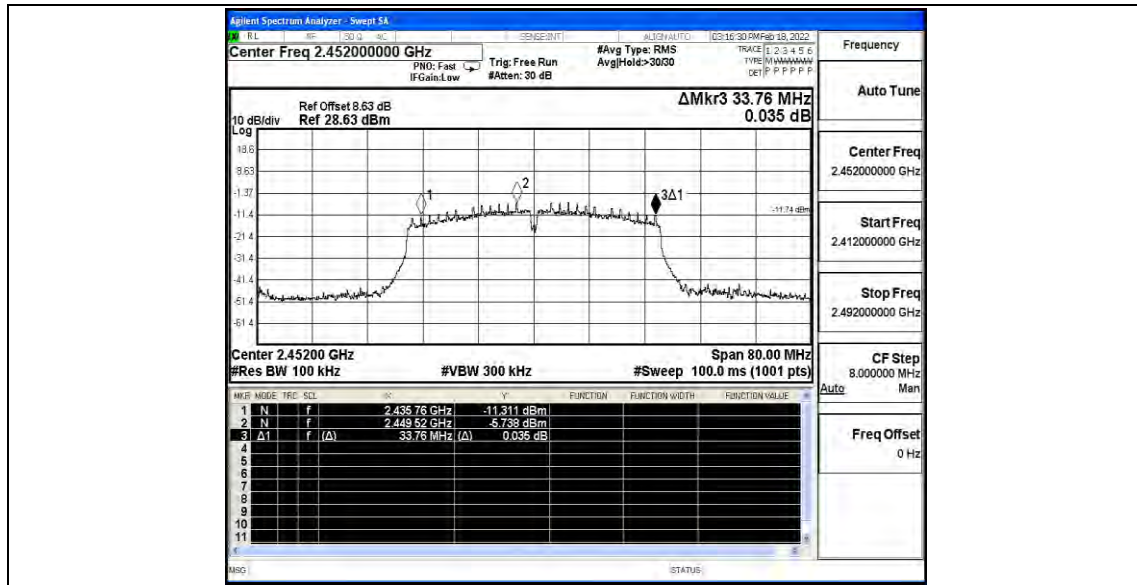
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452





B.2 Maximum conducted output power

Test Result

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

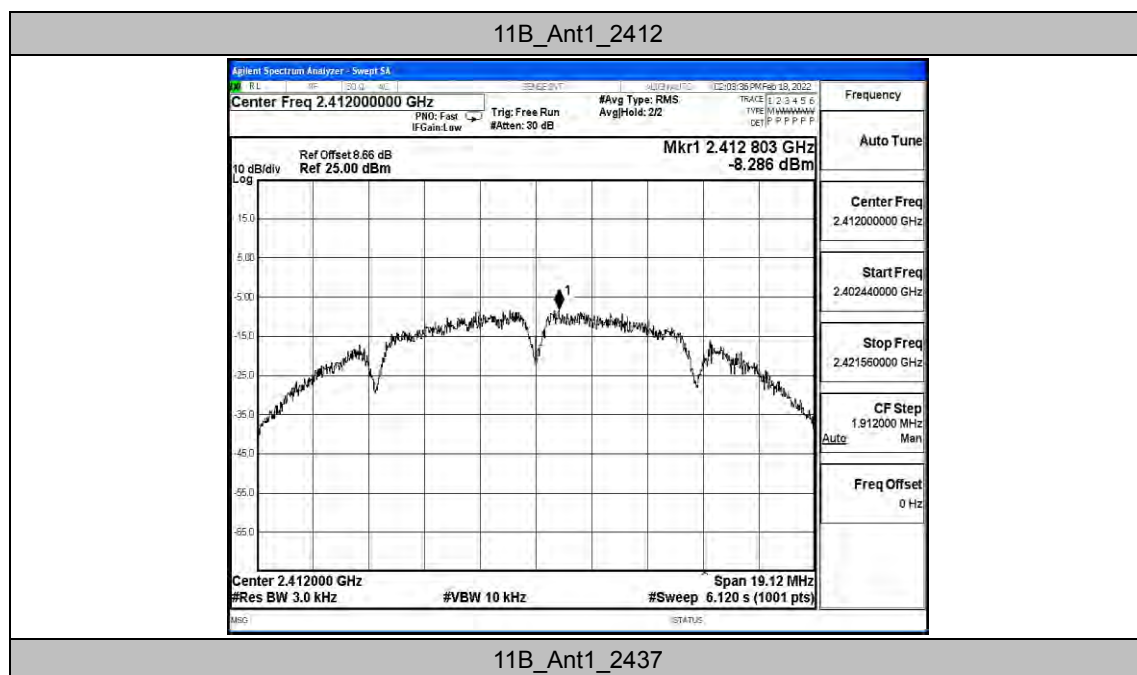


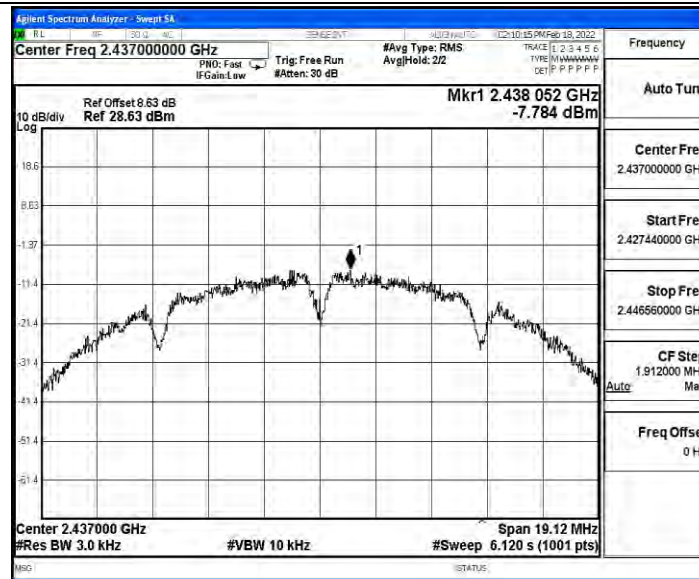
B.3 Maximum power spectral density

Test Result

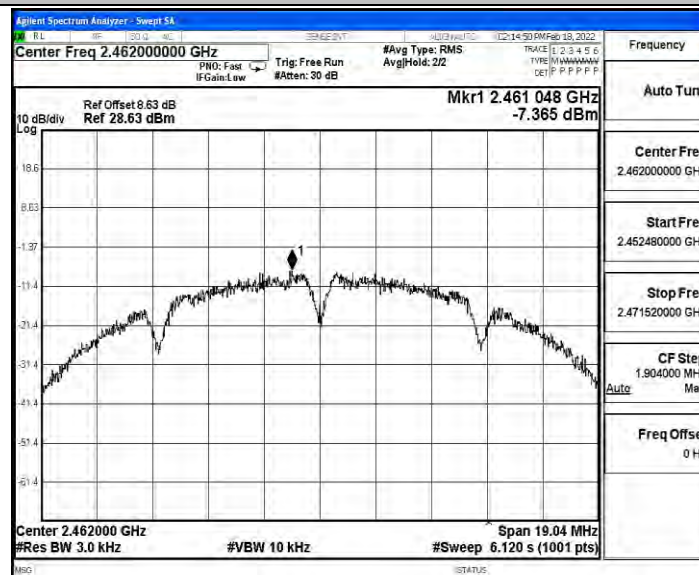
TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-8.29	≤8.00	PASS
		2437	-7.78	≤8.00	PASS
		2462	-7.37	≤8.00	PASS
11G	Ant1	2412	-17.35	≤8.00	PASS
		2437	-15.76	≤8.00	PASS
		2462	-15.96	≤8.00	PASS
11N20SISO	Ant1	2412	-18.27	≤8.00	PASS
		2437	-17.88	≤8.00	PASS
		2462	-16.29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

Test Graphs

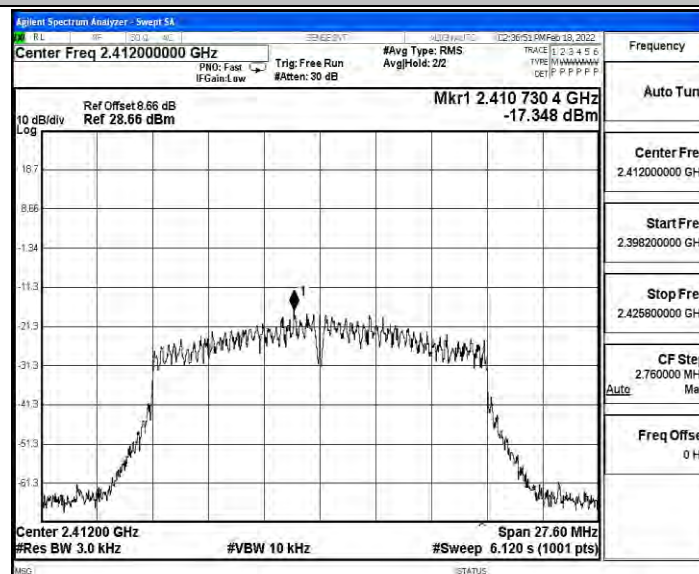




11B_Ant1_2462

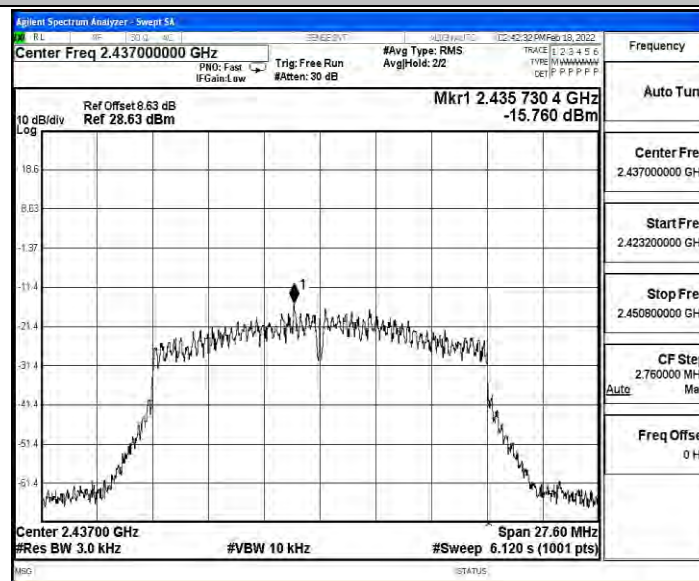


11G_Ant1_2412

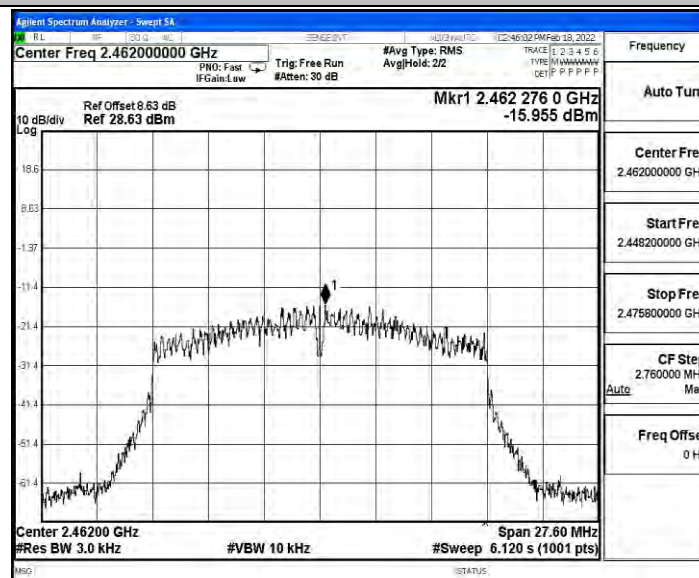




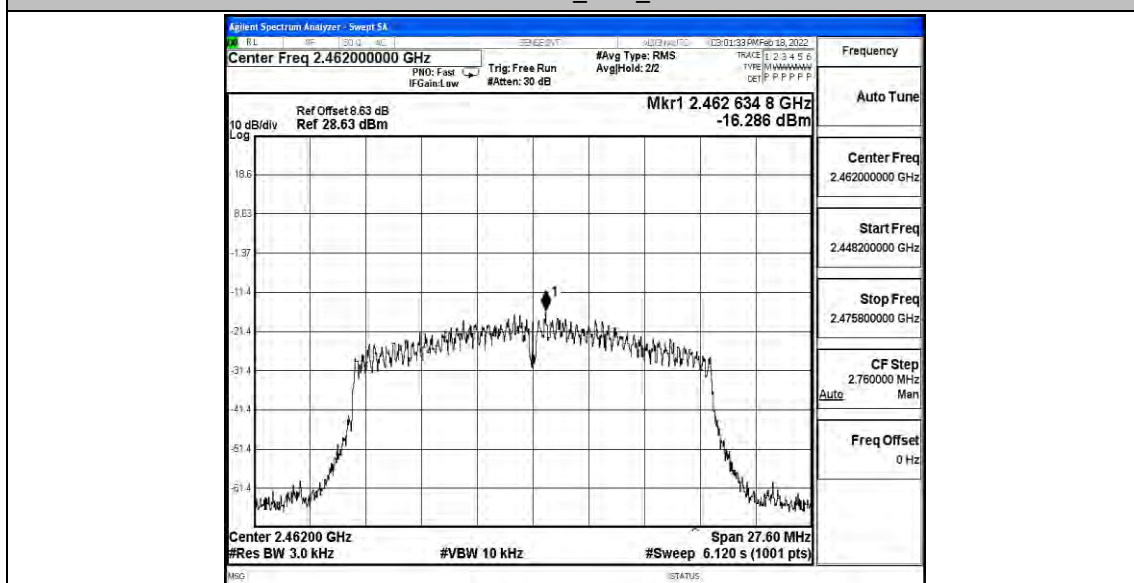
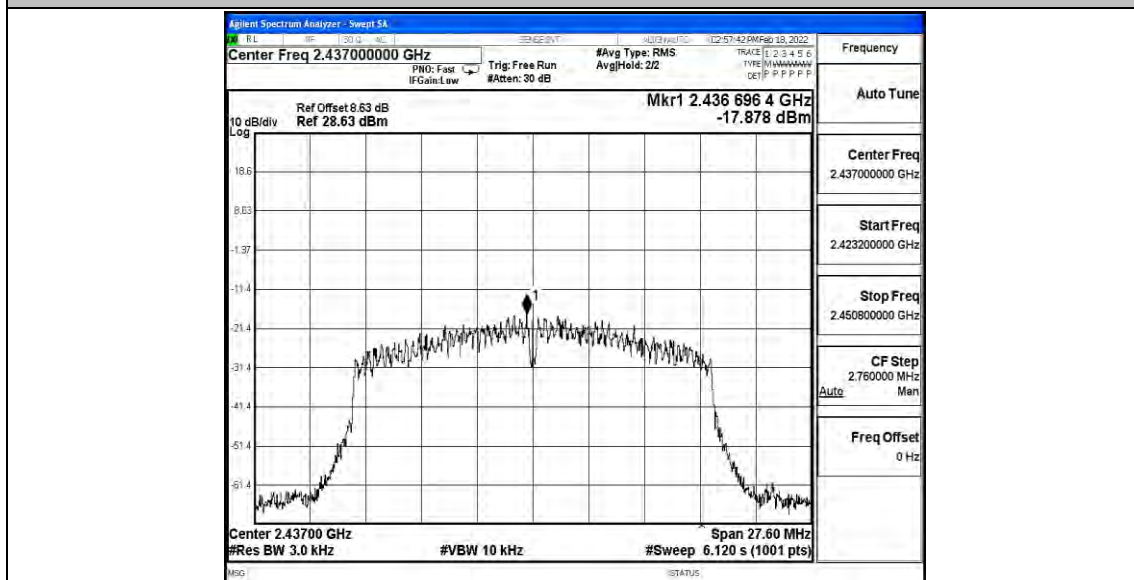
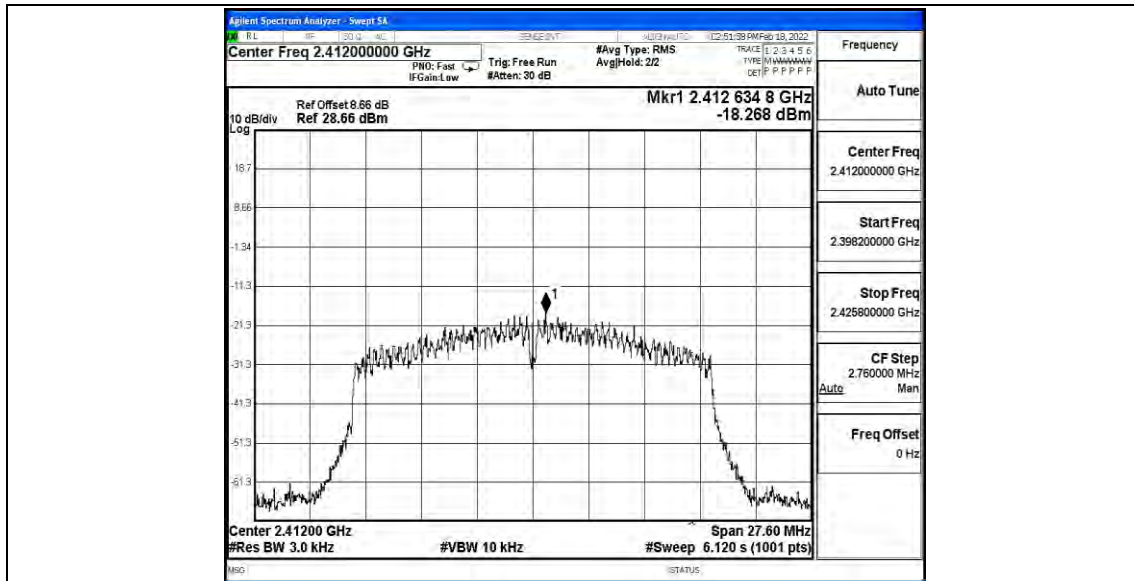
11G_Ant1_2437



11G_Ant1_2462

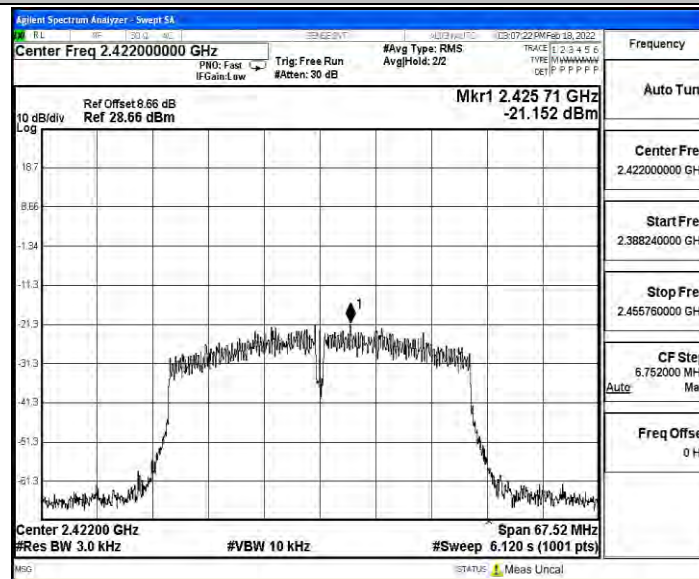


11N20SISO_Ant1_2412

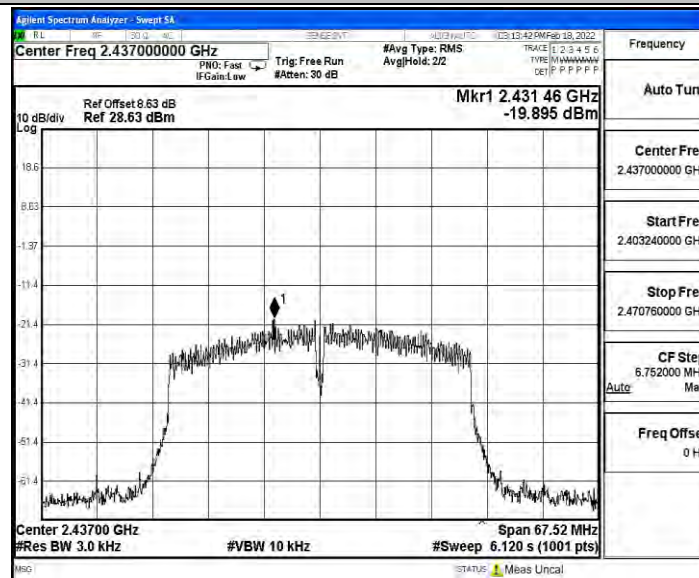




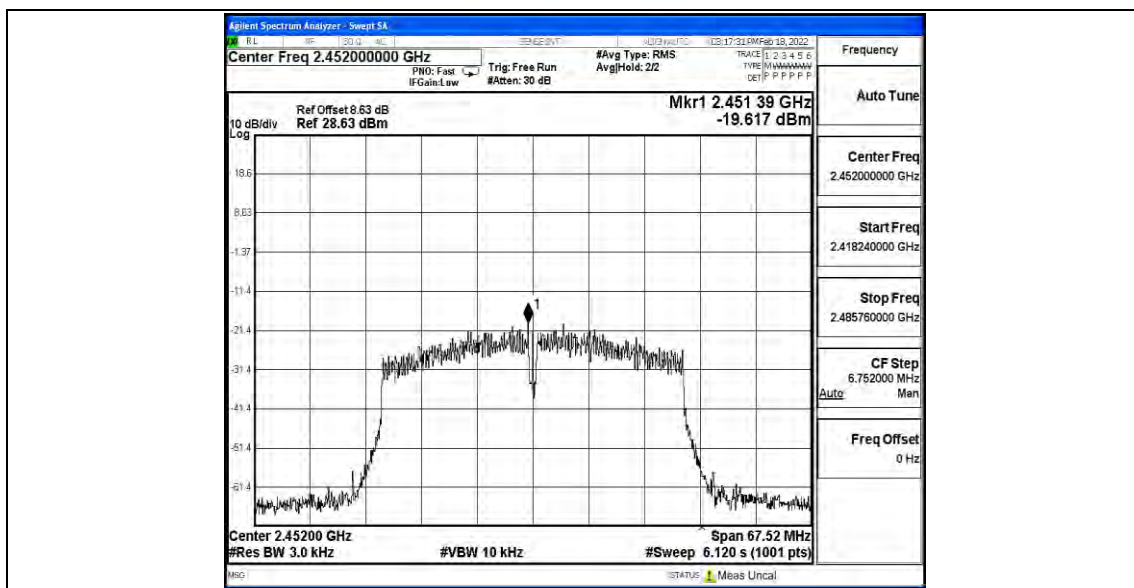
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



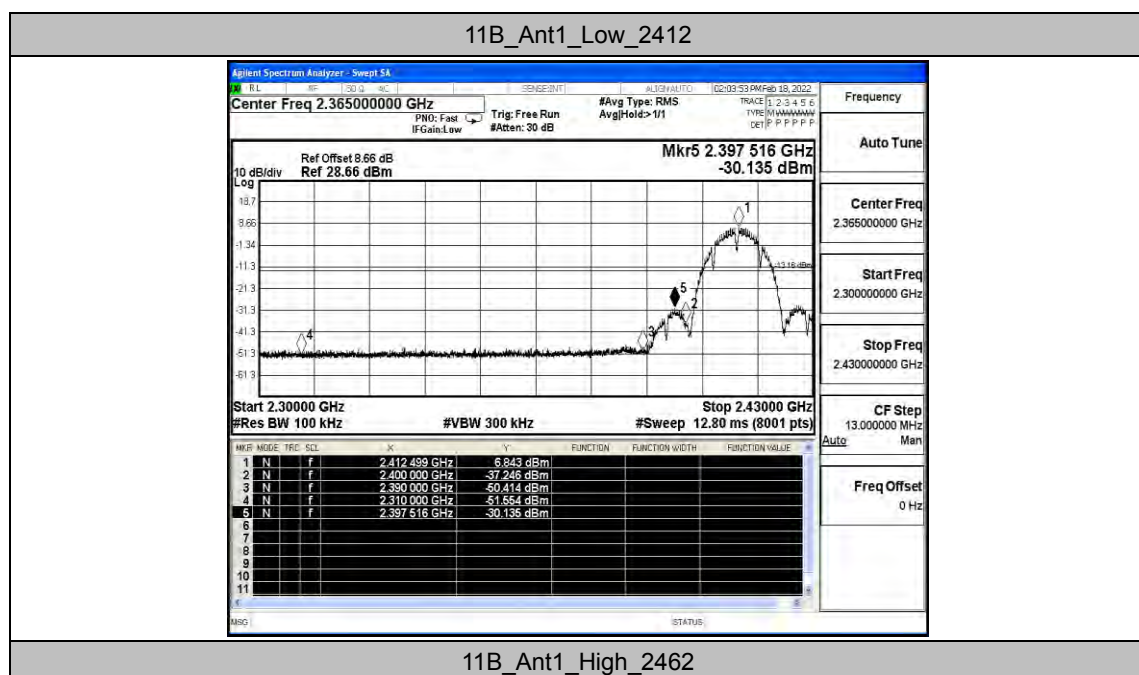


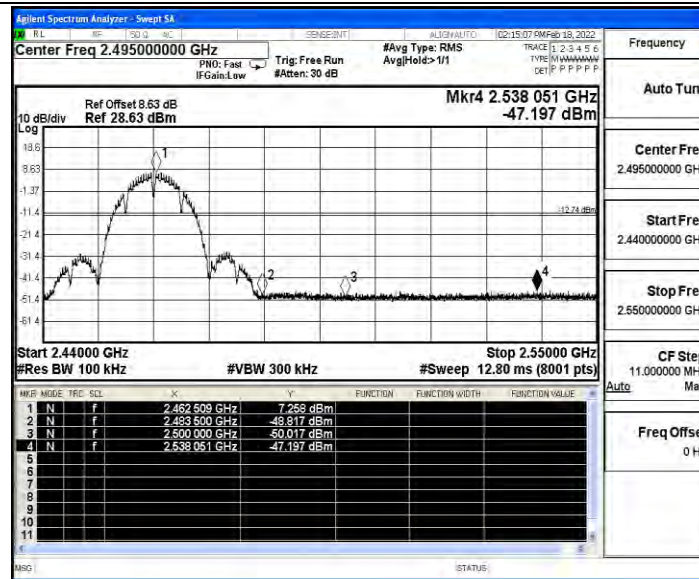
B.4 Band edge measurements

Test Result

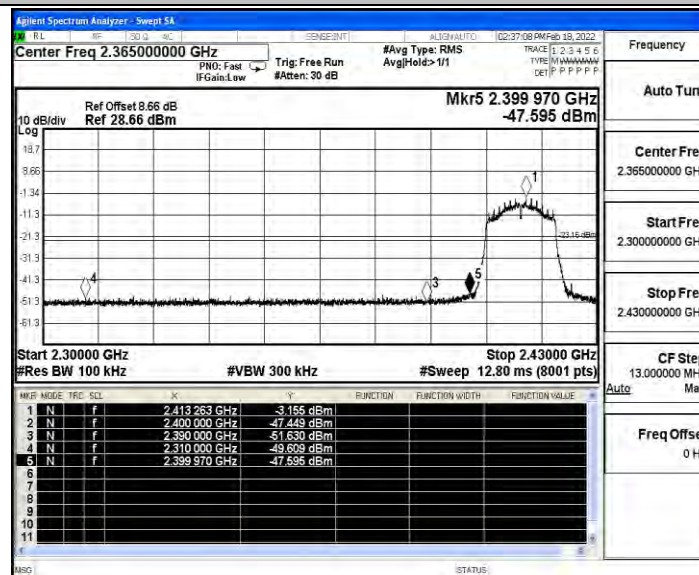
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	6.84	-30.14	≤-13.16	PASS
		High	2462	7.26	-47.2	≤-12.74	PASS
11G	Ant1	Low	2412	-3.16	-47.6	≤-23.16	PASS
		High	2462	-1.83	-47.6	≤-21.83	PASS
11N20SISO	Ant1	Low	2412	-3.90	-47.54	≤-23.9	PASS
		High	2462	-2.11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

Test Graphs

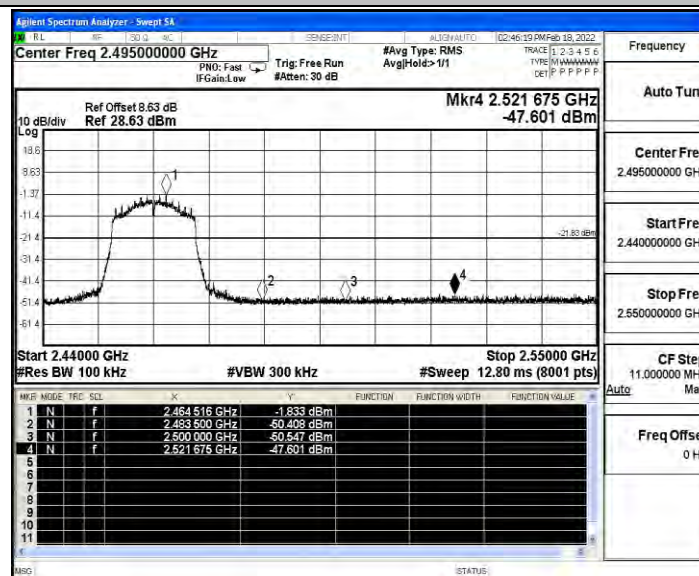




11G_Ant1_Low_2412

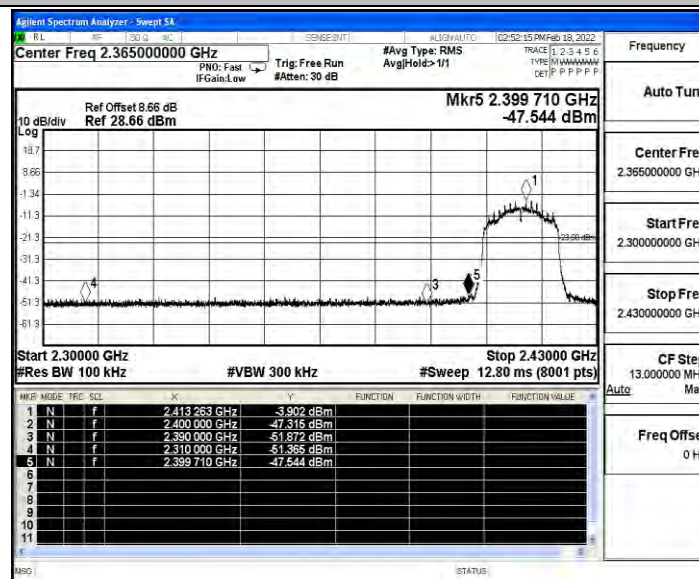


11G_Ant1_High_2462

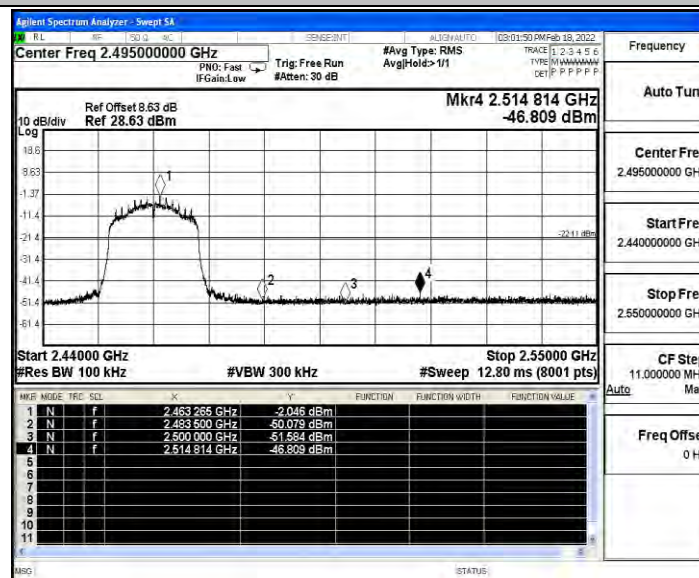




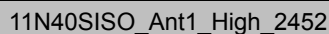
11N20SISO_Ant1_Low_2412



11N20SISO_Ant1_High_2462



11N40SISO_Ant1_Low_2422





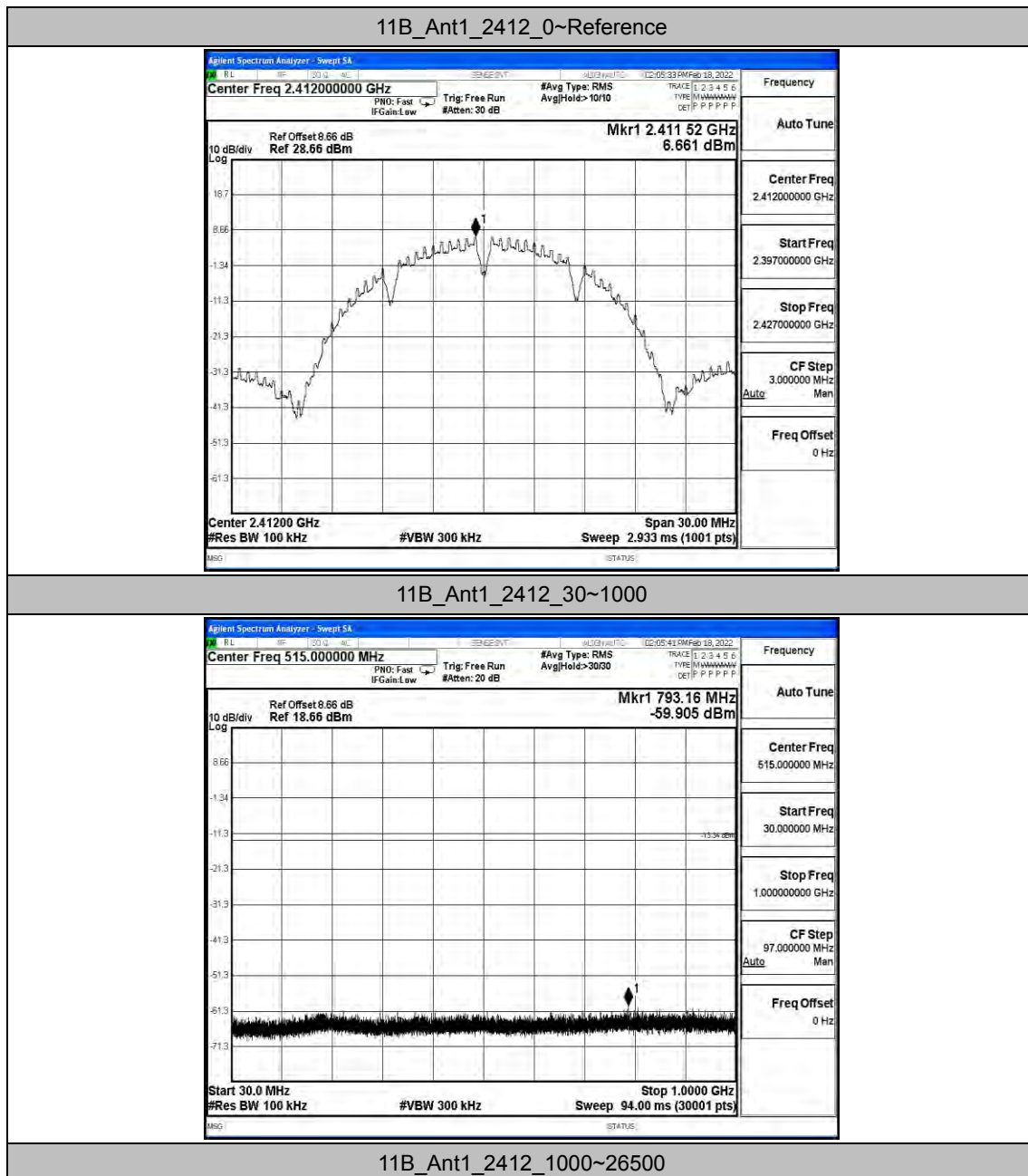
B.5 Conducted Spurious Emission

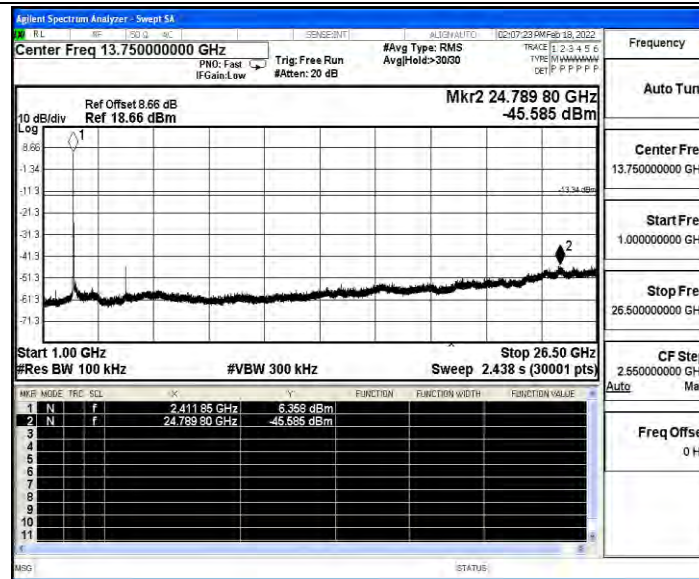
Test Result

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

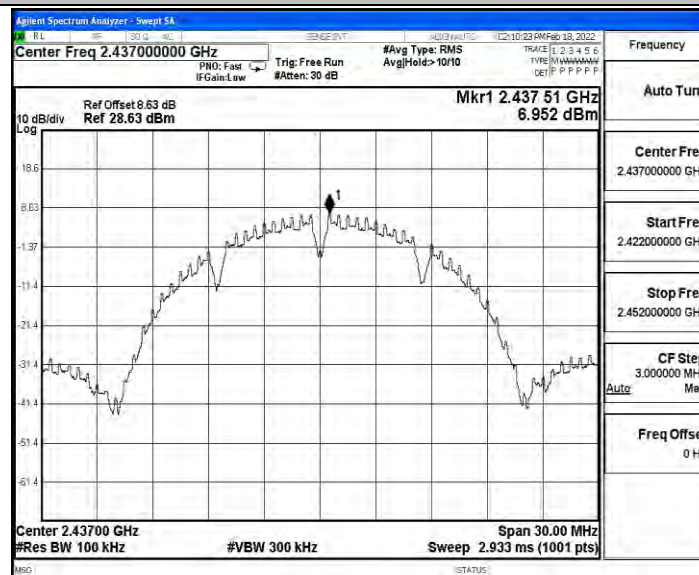


Test Graphs

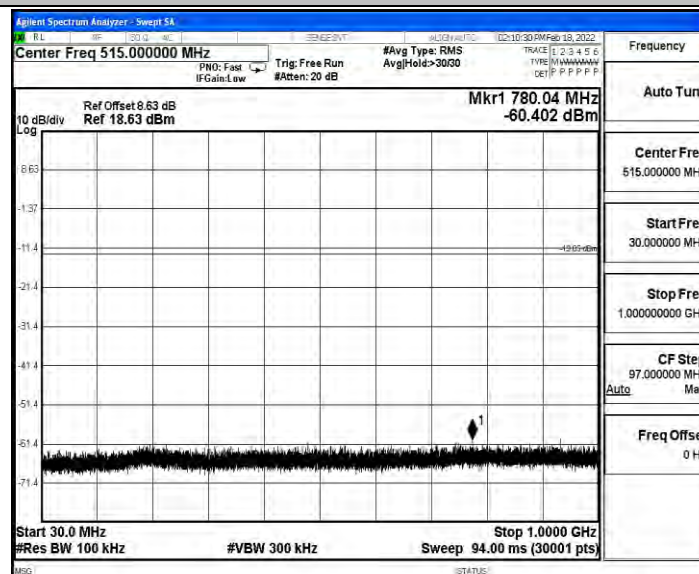




11B_Ant1_2437_0~Reference

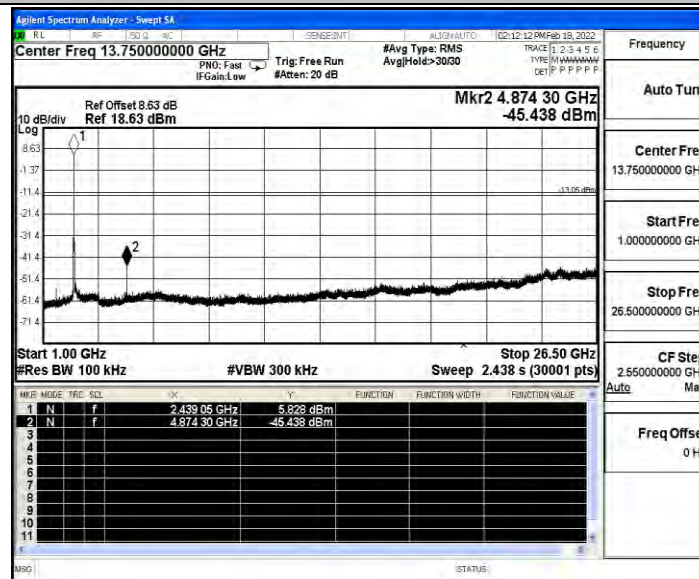


11B_Ant1_2437_30~1000

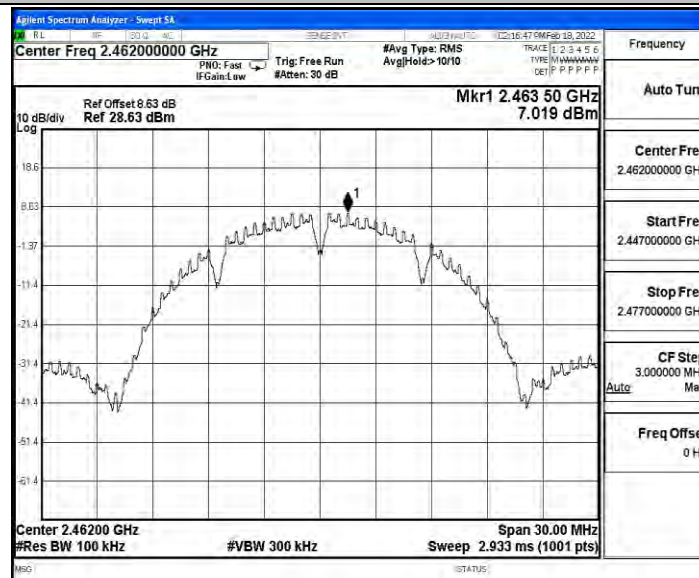




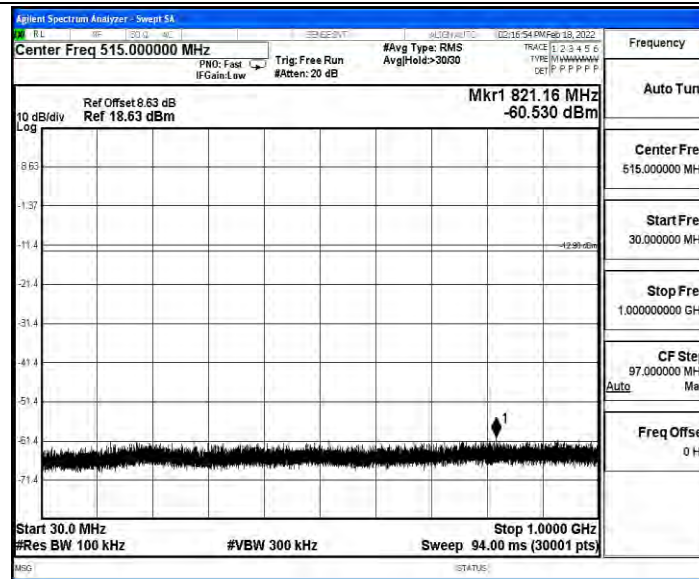
11B_Ant1_2437_1000~26500



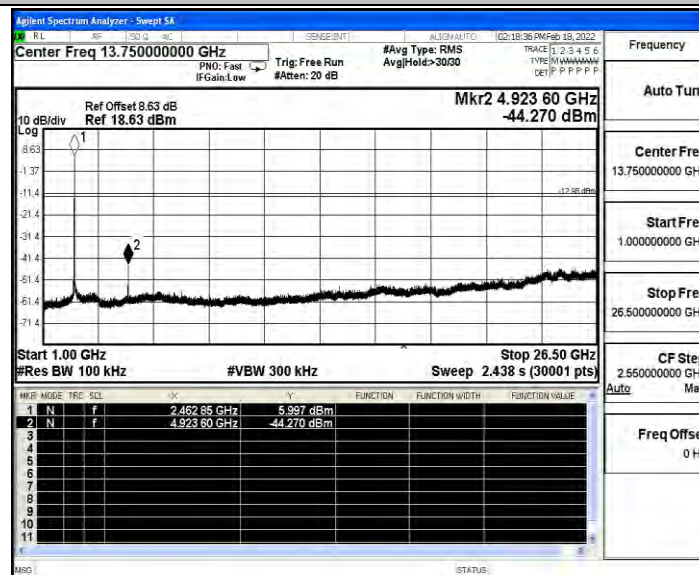
11B_Ant1_2462_0~Reference



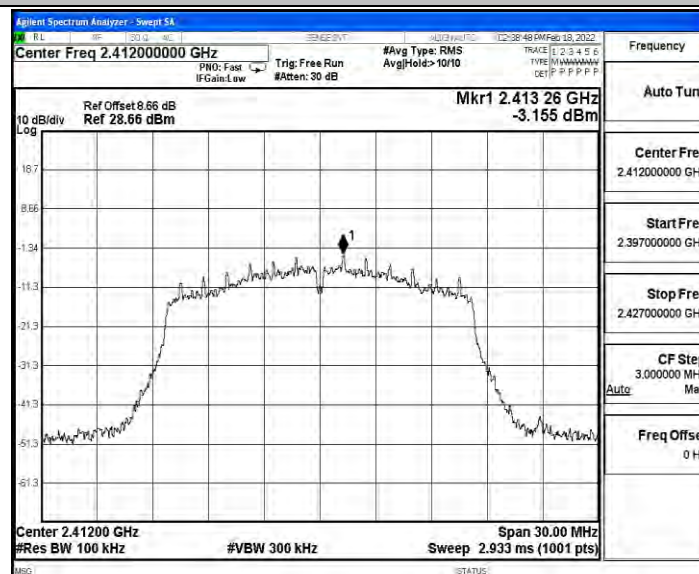
11B_Ant1_2462_30~1000



11B_Ant1_2462_1000~26500

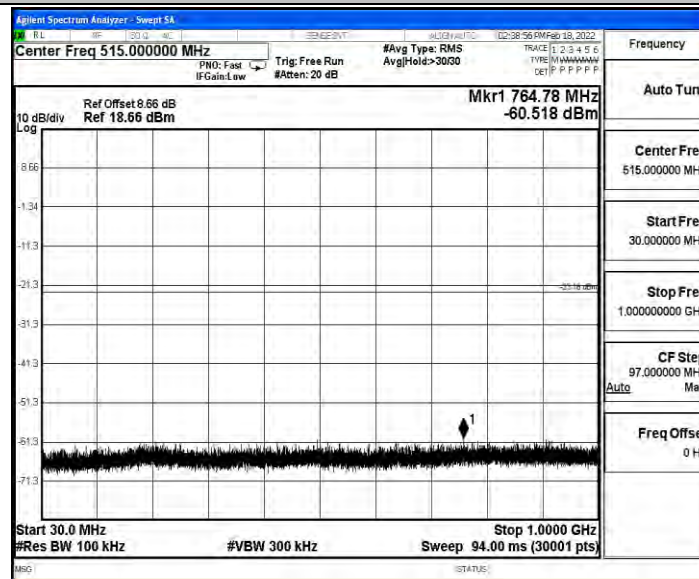


11G_Ant1_2412_0~Reference

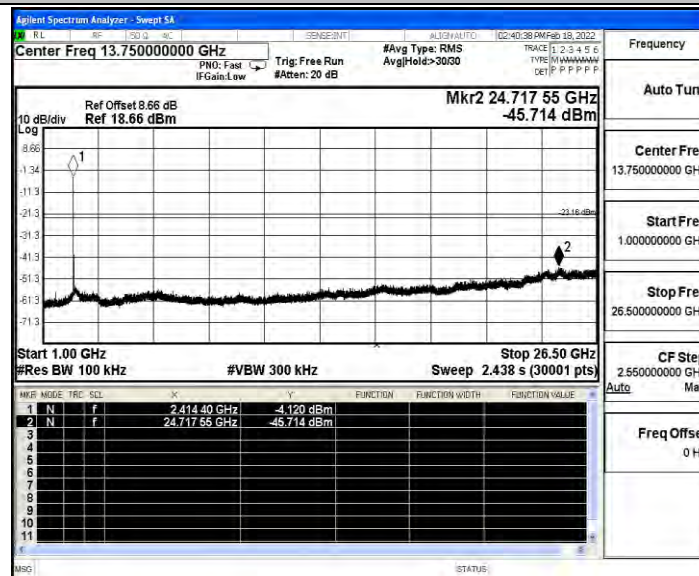




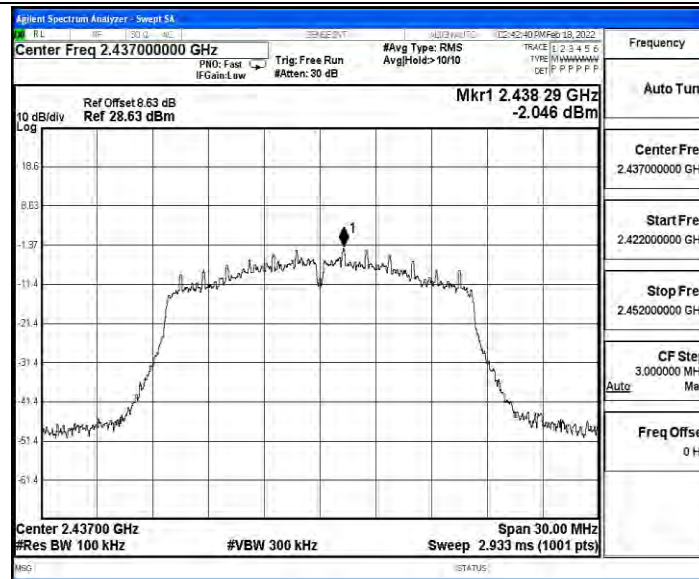
11G_Ant1_2412_30~1000



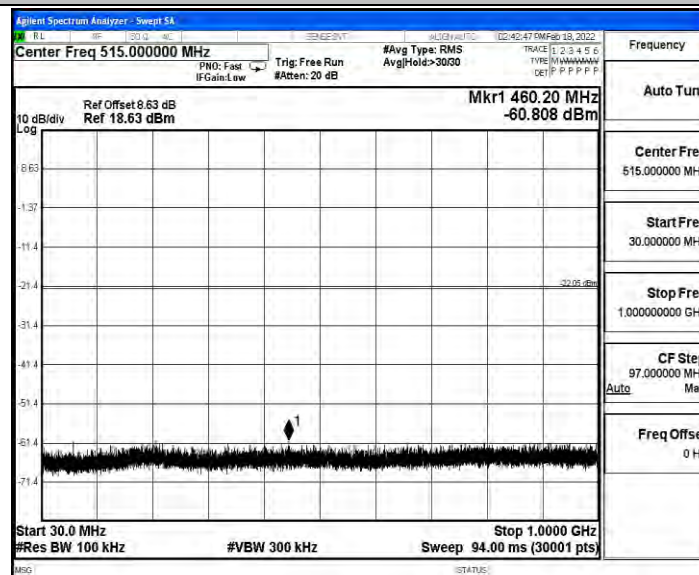
11G_Ant1_2412_1000~26500



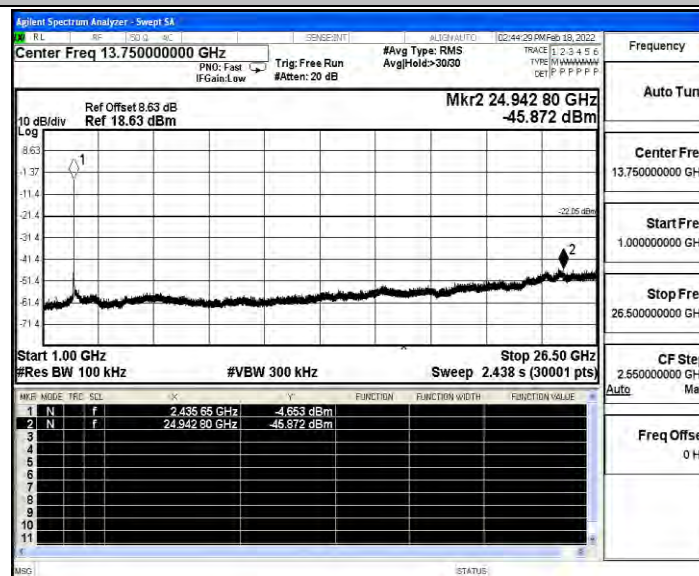
11G_Ant1_2437_0~Reference



11G_Ant1_2437_30~1000

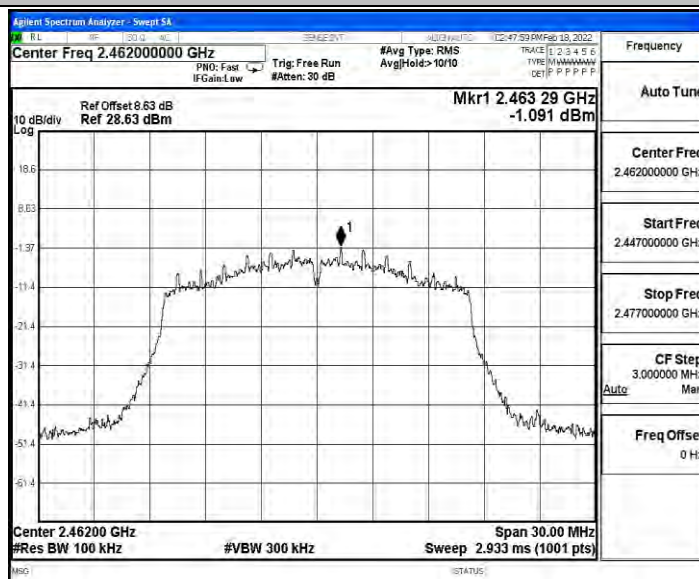


11G_Ant1_2437_1000~26500

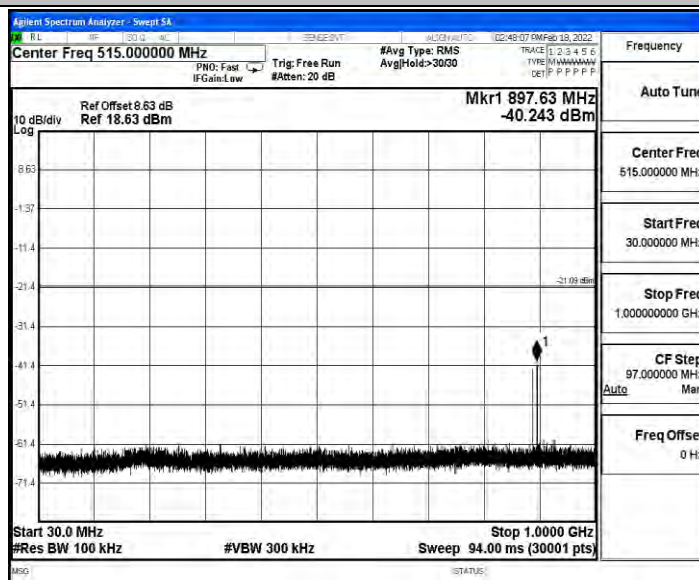




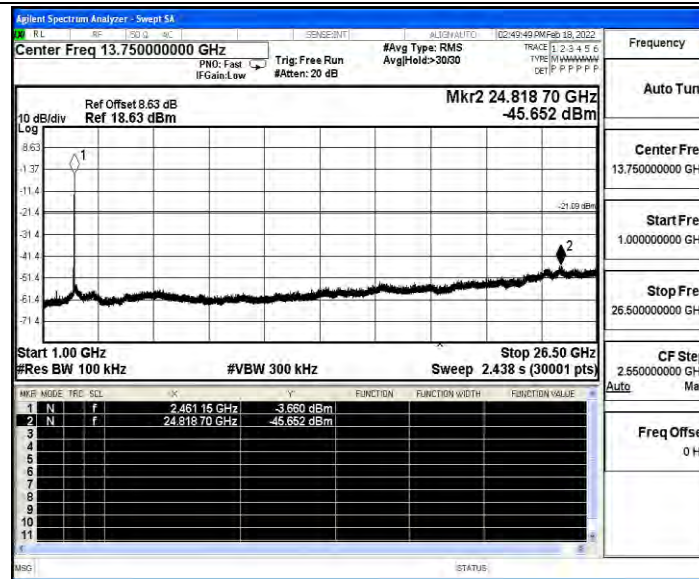
11G_Ant1_2462_0~Reference



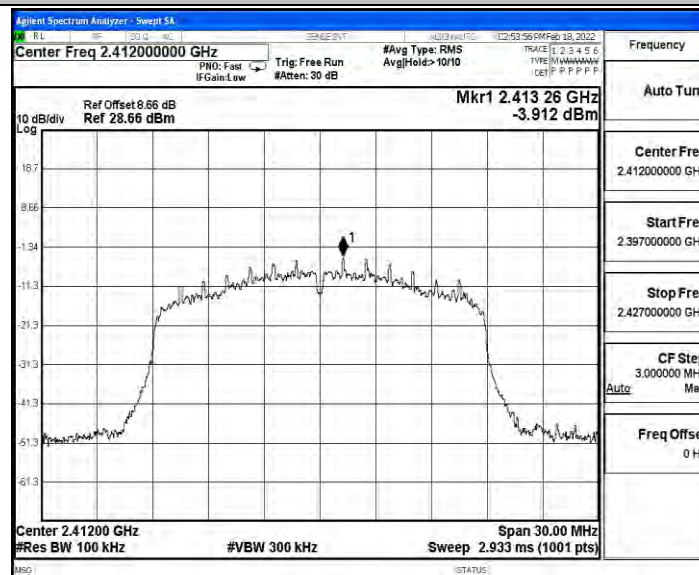
11G_Ant1_2462_30~1000



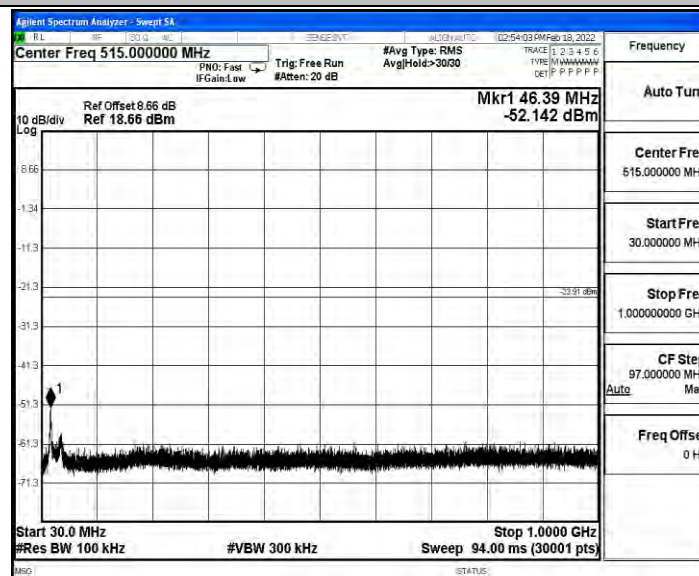
11G_Ant1_2462_1000~26500



11N20SISO_Ant1_2412_0~Reference

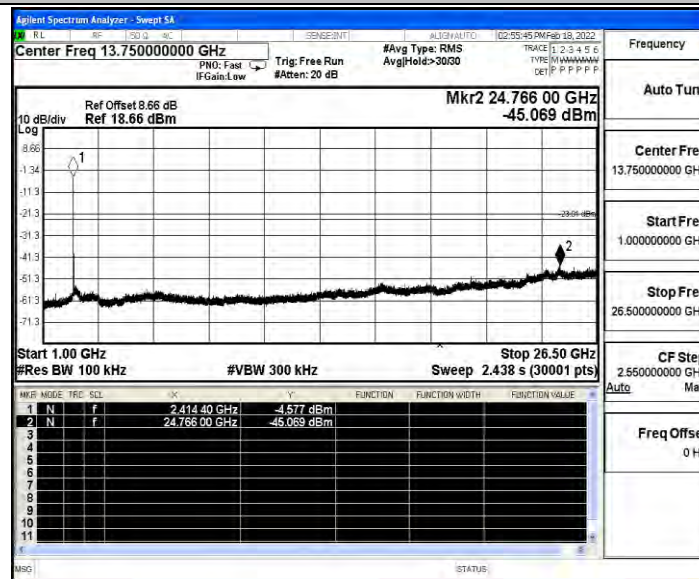


11N20SISO_Ant1_2412_30~1000

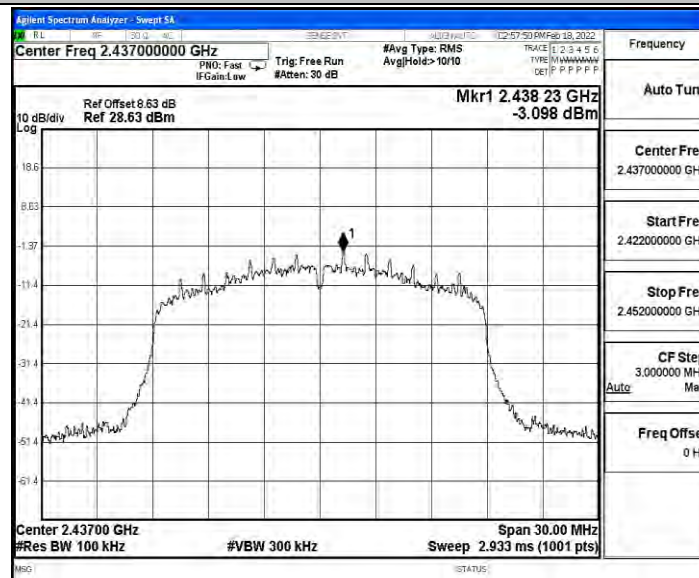




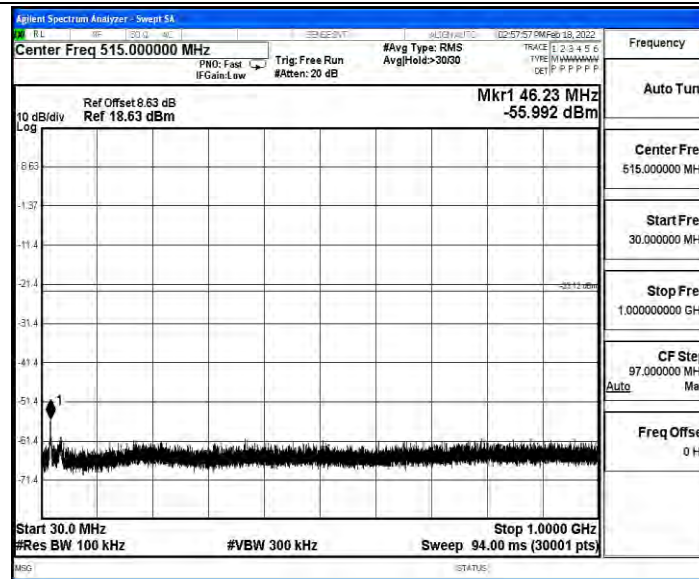
11N20SISO_Ant1_2412_1000~26500



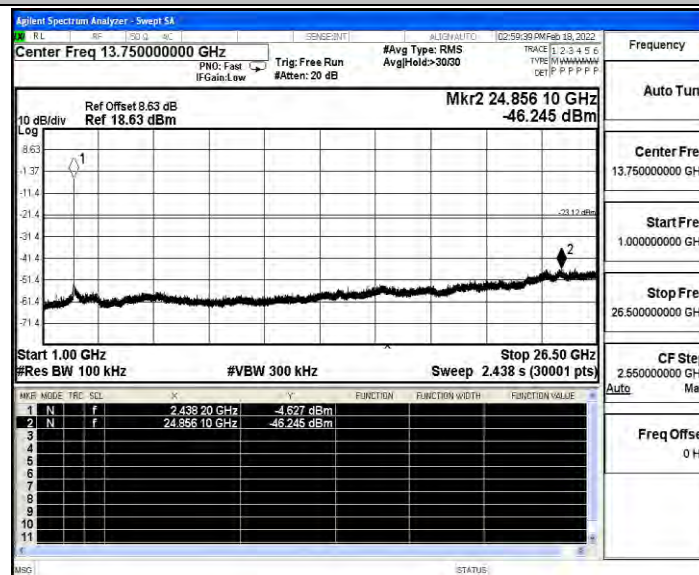
11N20SISO_Ant1_2437_0~Reference



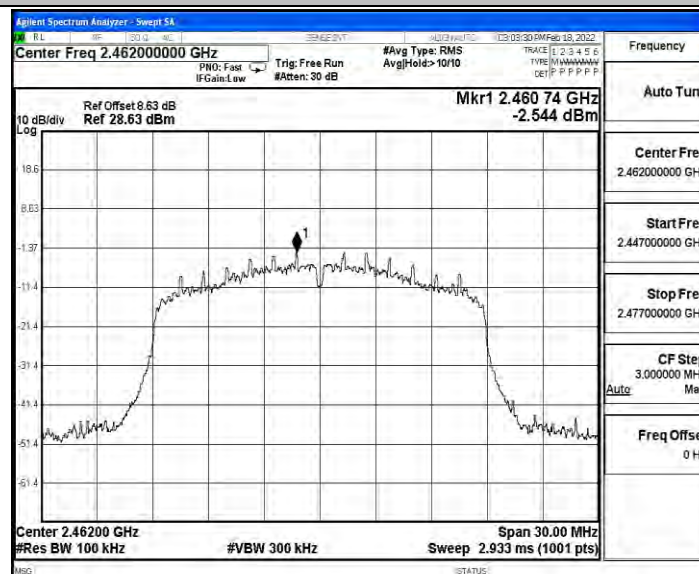
11N20SISO_Ant1_2437_30~1000



11N20SISO_Ant1_2437_1000~26500

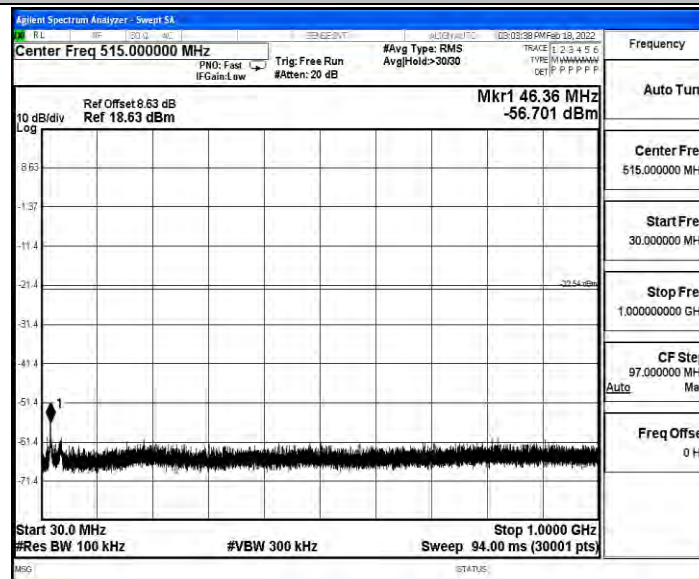


11N20SISO_Ant1_2462_0~Reference

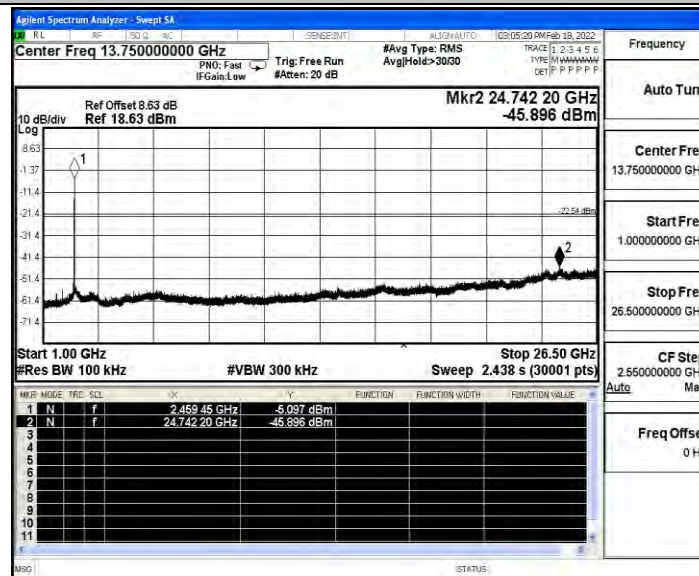




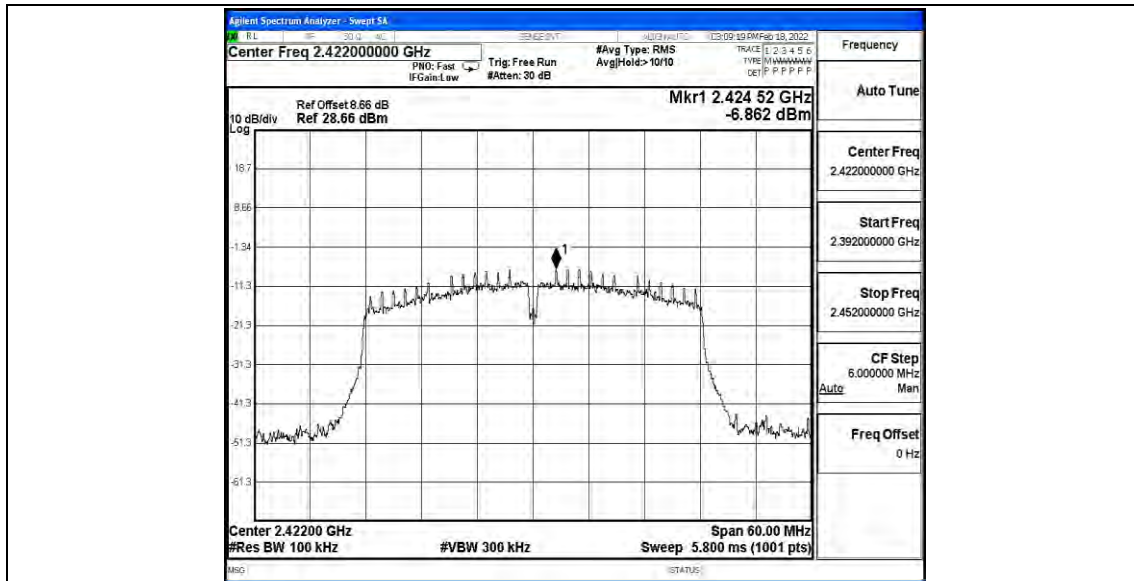
11N20SISO_Ant1_2462_30~1000



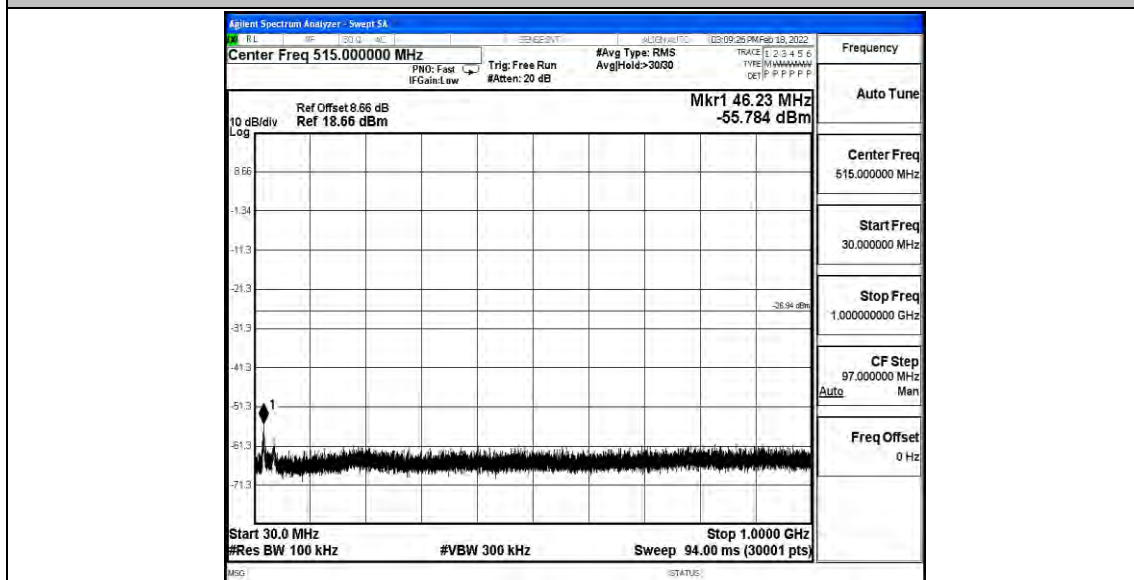
11N20SISO_Ant1_2462_1000~26500



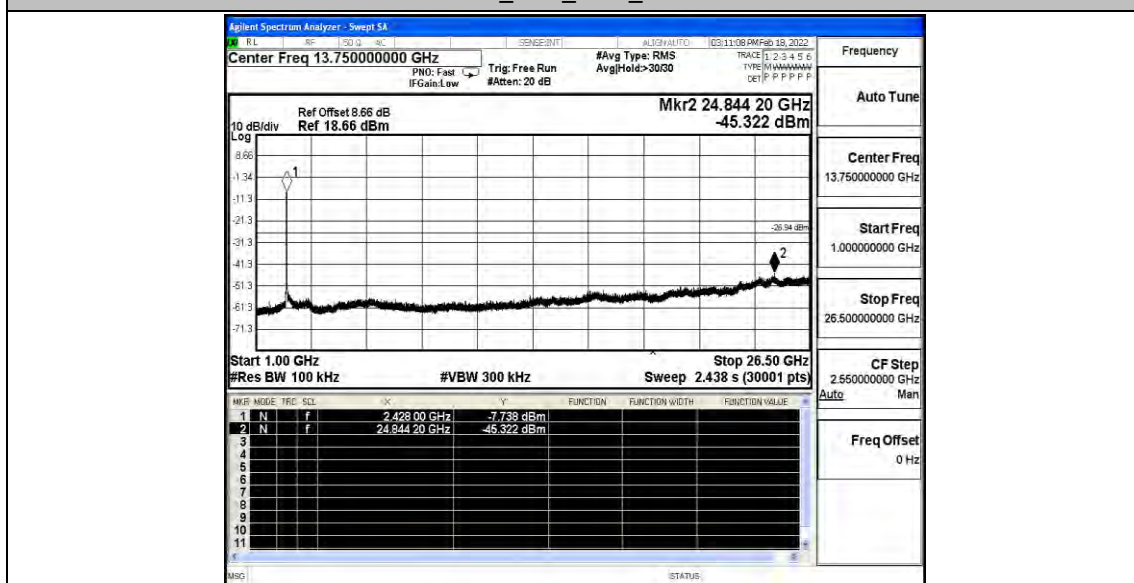
11N40SISO_Ant1_2422_0~Reference



11N40SISO_Ant1_2422_30~1000

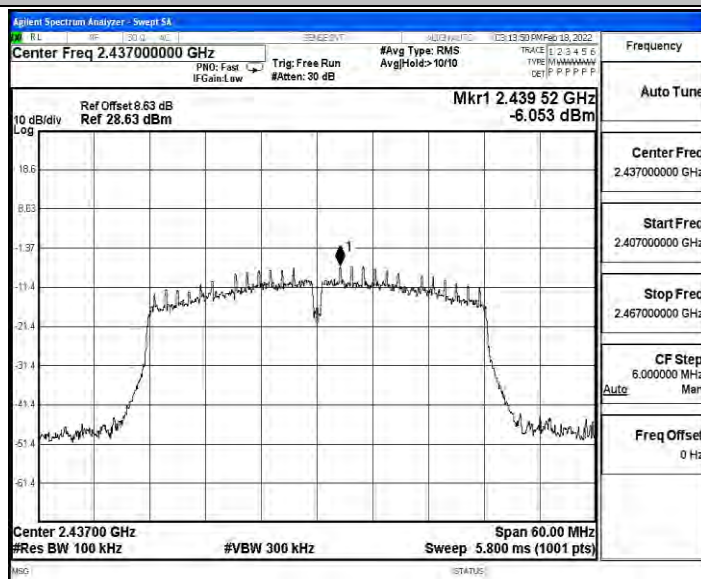


11N40SISO_Ant1_2422_1000~26500

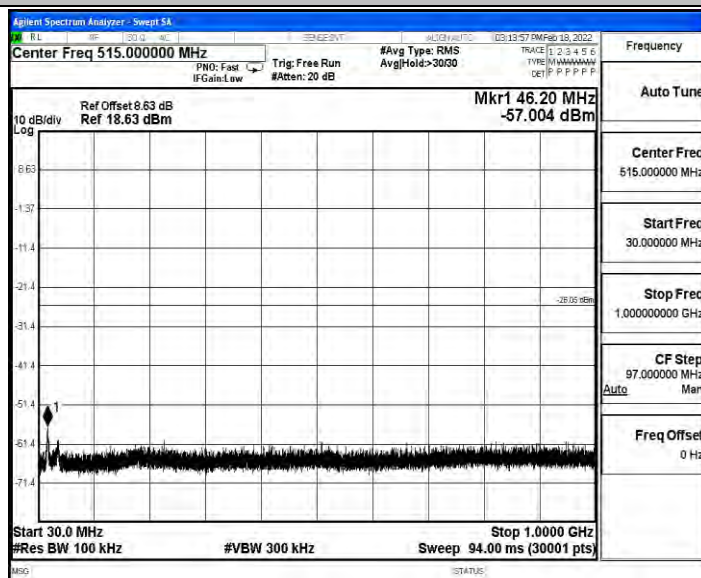




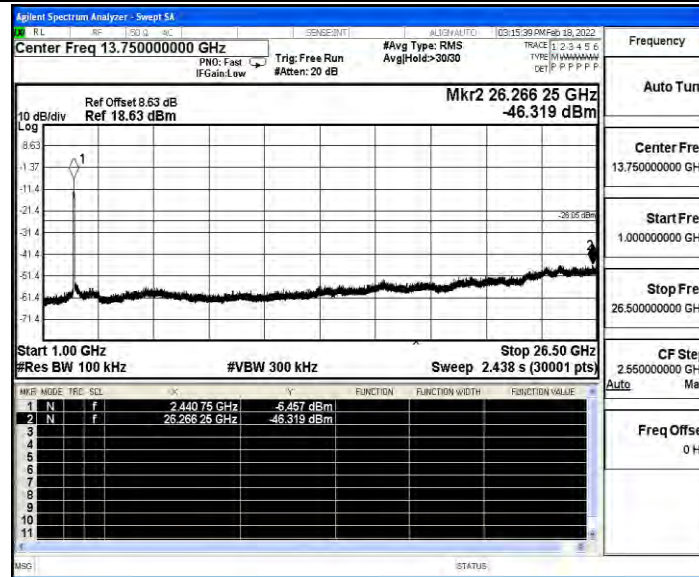
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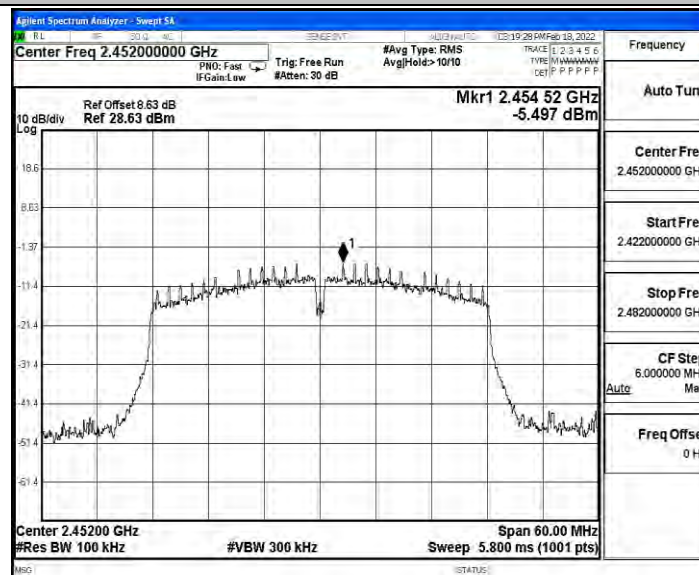
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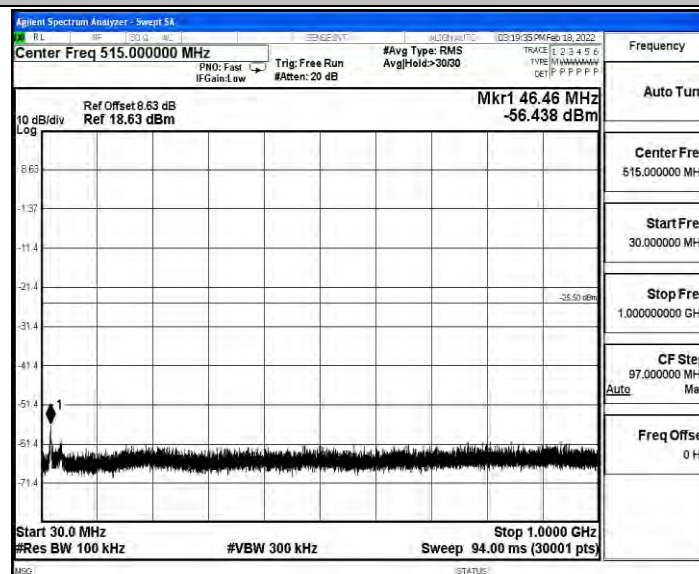
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11N40SISO_Ant1_2452_0~Reference

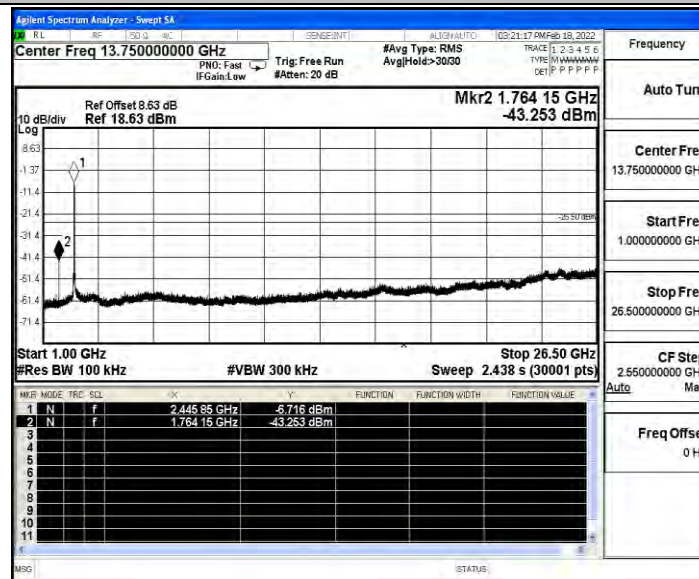


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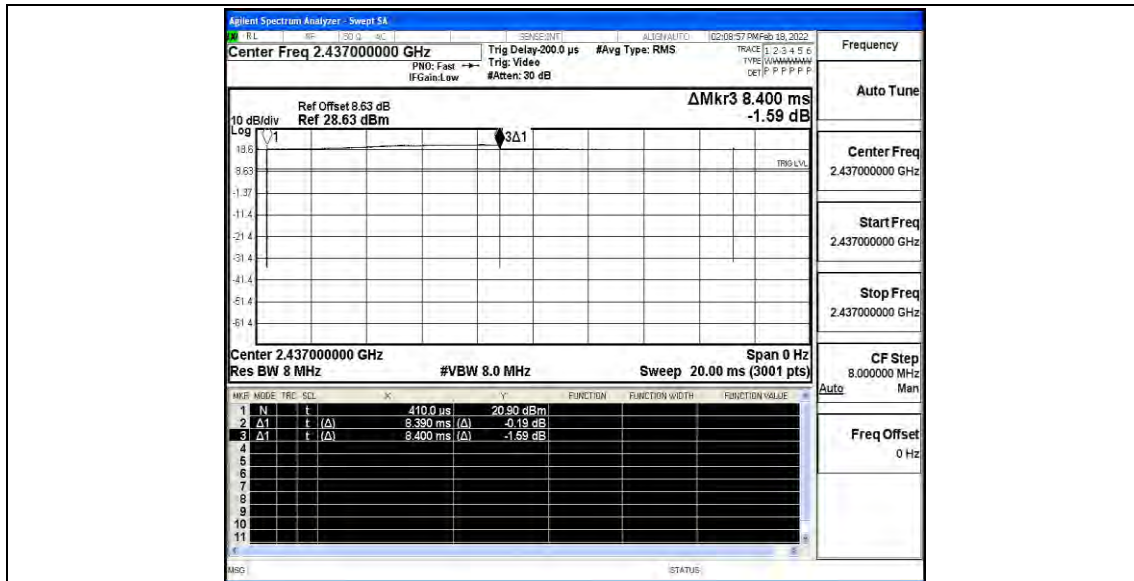




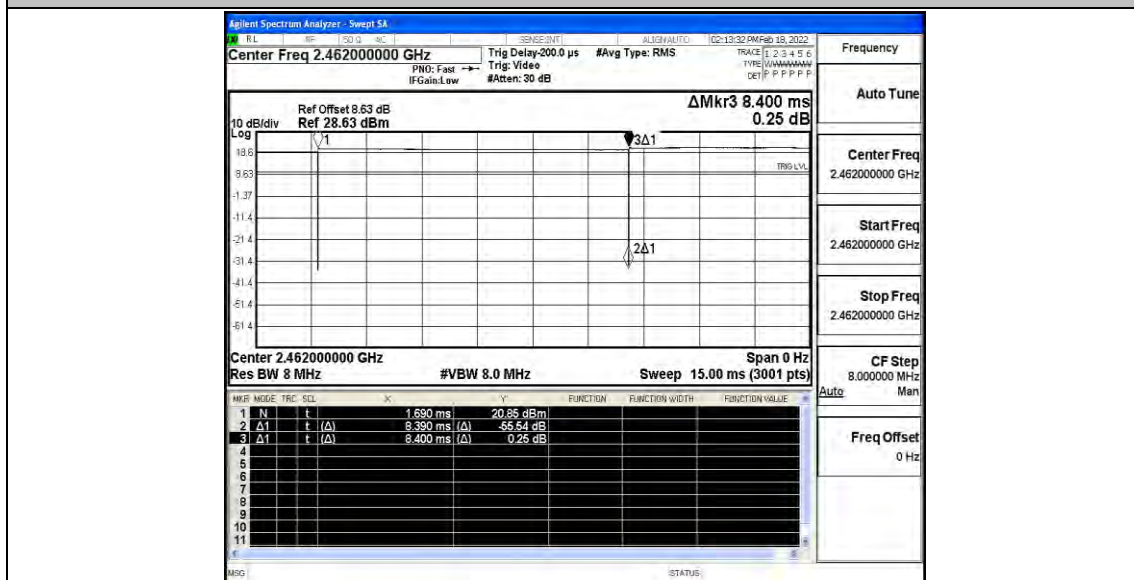
11N40SISO_Ant1_2452_1000~26500



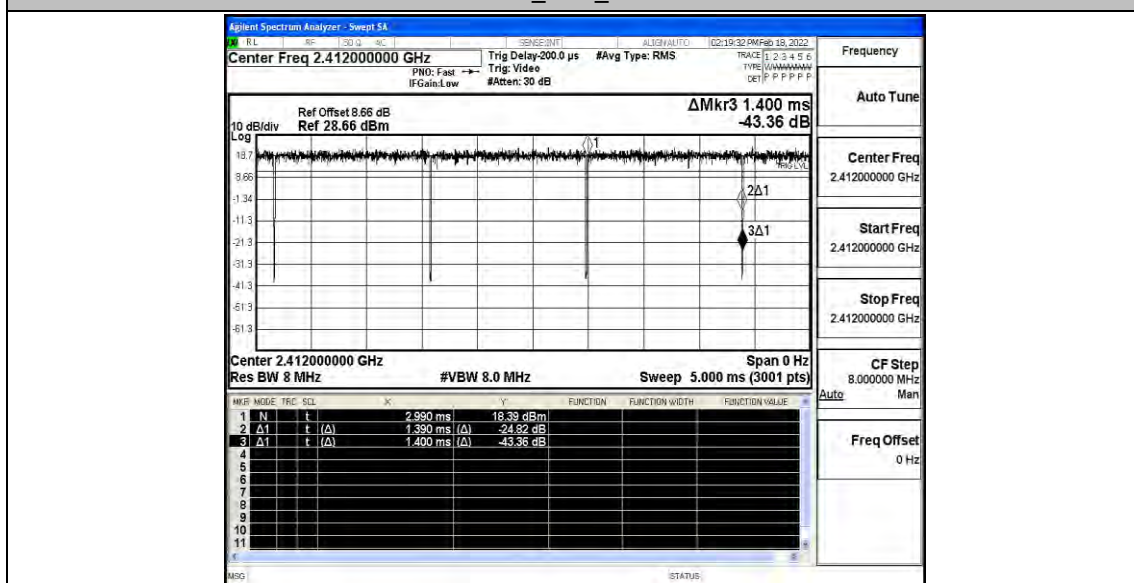




11B_Ant1_2462



11G_Ant1_2412





Impedance Spectrum Analyzer - Sweep SA
 FREQ: 100.0 MHz SENSE: INT ALG: AUTO CO: 25.13 MHz Feb 18, 2022
 Center Freq 2.437000000 GHz Trig Delay: 200.0 μ s #Avg Type: RMS TRACE: [1 2 3 4 5 6] TYPE: [ANALOG] DET: [PPPP] P
 PNO: Fast IF Gain: Low #Atten: 30 dB

Ref Offset: 8.63 dB
 Ref: 28.63 dBm
 Δ Mkr3 1.410 ms
 0.37 dB

10 dB/div
 Log
 -1.37
 -11.4
 -21.4
 -31.4
 -41.4
 -51.4
 -61.4

Center 2.437000000 GHz Span 0 Hz
 Res BW 8 MHz #VBW 8.0 MHz Sweep 5.000 ms (3001 pts)

MWR	MODE	FREQ	SCN	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	t		2.790 ms	18.79 dBm			
2	Δ 1	t	(Δ)	1.390 ms	0.30 dB			
3	Δ 1	t	(Δ)	1.410 ms	0.37 dB			
4								
5								
6								
7								
8								
9								
10								
11								

Auto
 CF Step: 8.000000 MHz
 Freq Offset: 0 Hz

Agilent Spectrum Analyzer - Sweep SA

File ML MF SO G WC SPEN:INT1 ALIGN: AUTO C2:20.03 PM Feb 18, 2022

Center Freq 2.462000000 GHz Trig Delay: 200.0 μ s #Avg Type: RMS TRACE [1 2 3 4 5 6] TYPE [ANALOG] DEF [P P P P P P]

PNO: Fast Trig: Video #Atten: 30 dB

IF Gain: Low

Ref Offset 8.63 dB Δ Mkr3 1.410 ms 0.63 dB

Ref 28.63 dBm

10 dB/div

Log

18.6

16.3

13.7

11.4

9.1

6.8

4.5

2.2

0

-2.1

-4.4

-6.7

-9.0

-11.3

-13.6

-15.9

-18.2

-20.5

-22.8

-25.1

-27.4

-29.7

-32.0

-34.3

-36.6

-38.9

-41.2

-43.5

-45.8

-48.1

-50.4

-52.7

-55.0

-57.3

-59.6

-61.9

Center 2.462000000 GHz Span 0 Hz

Res BW 8 MHz #VBW 8.0 MHz Sweep 5.000 ms (3001 pts)

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

MSG

STATUS:

Frequency

Auto Tun

Center Freq

2.462000000 GHz

Start Freq

2.462000000 GHz

Stop Freq

2.462000000 GHz

CF Step

8.000000 MHz

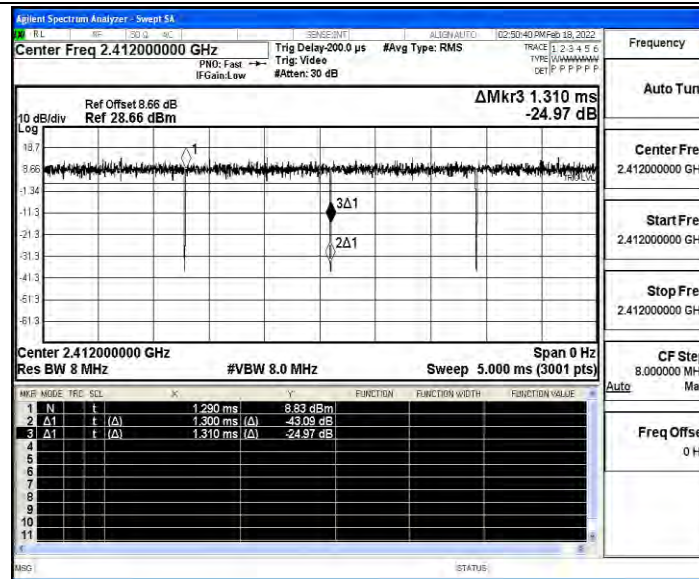
Auto

Ma

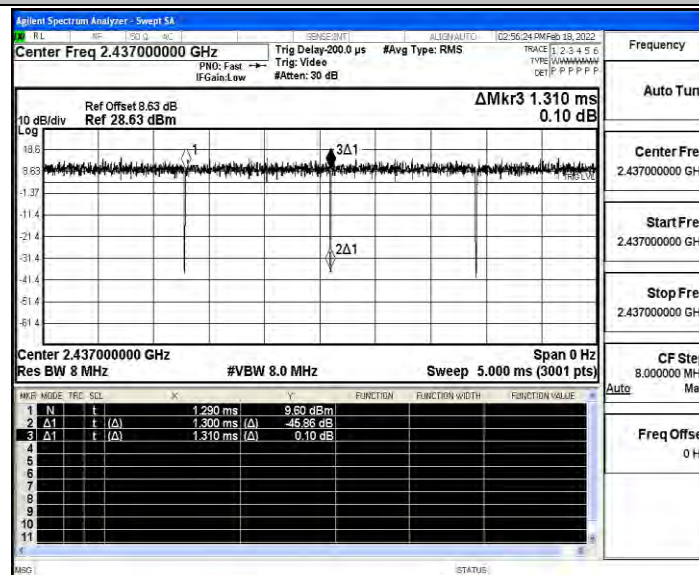
Freq Offset

0 Hz

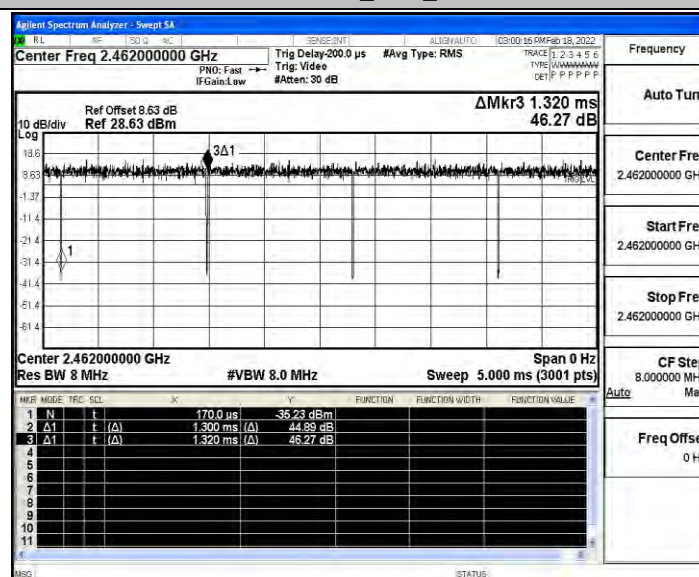
37



11N20SISO_Ant1_2437



11N20SISO_Ant1_2462





Agilent Spectrum Analyzer - Swept SA

Center Freq 2.422000000 GHz Trig Delay: 630.0 µs #Avg Type: RMS
 PNO: Fast → IF Gain: Low #Atten: 30 dB

Frequency Span: 80 MHz Span 0 Hz Res BW 8 MHz Sweep 5.000 ms (3001 pts)

Ref Offset 8.66 dBm ΔMkr3 650.0 dB Ref 28.66 dBm -26.83 dB

MWR	MIDG	FREQ	SCL	X:	Y:	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	t		630.0 µs	2.12 dBm			
2	Δ1	t (Δ)		640.0 µs (Δ)	1.76 dB			
3	Δ1	t (Δ)		650.0 µs (Δ)	-26.83 dB			

Agilent Spectrum Analyzer - Sweep SA

Center Freq 2.437000000 GHz

Trig Delay: 200.0 μ s

#Avg Type: RMS

Trace 1: 2.3456

Type: WAVEFORM

DE: P P P P P

Ref Offset 8.63 dB

Ref 28.63 dBm

Δ Mkr3 660.0 dB

38.37 dB

Center 2.437000000 GHz

Span 0 Hz

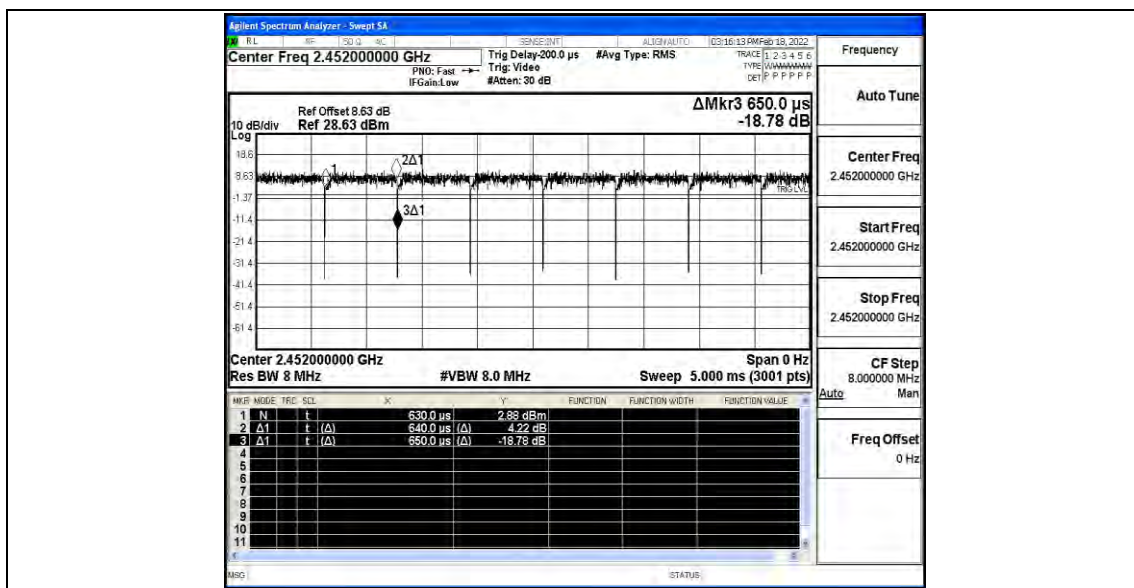
Res BW 8 MHz

#VBW 8.0 MHz

Sweep 5.000 ms (3001 pts)

Mkr	Mode	Freq	Level	Y	Function	Function Width	Function Value
1	N	t		4.060 ms			
2	Δ 1	t (Δ)		650.0 μ s (Δ)			-36.26 dBm
3	Δ 1	t (Δ)		660.0 μ s (Δ)			40.87 dB
4							
5							
6							
7							
8							
9							
10							
11							

39





B.7 Emissions in Restricted Bands

Test Result

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



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

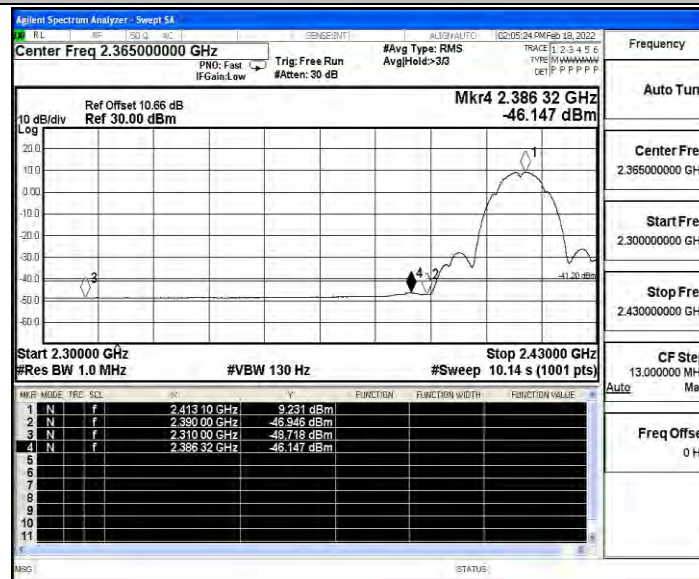
Note:

1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

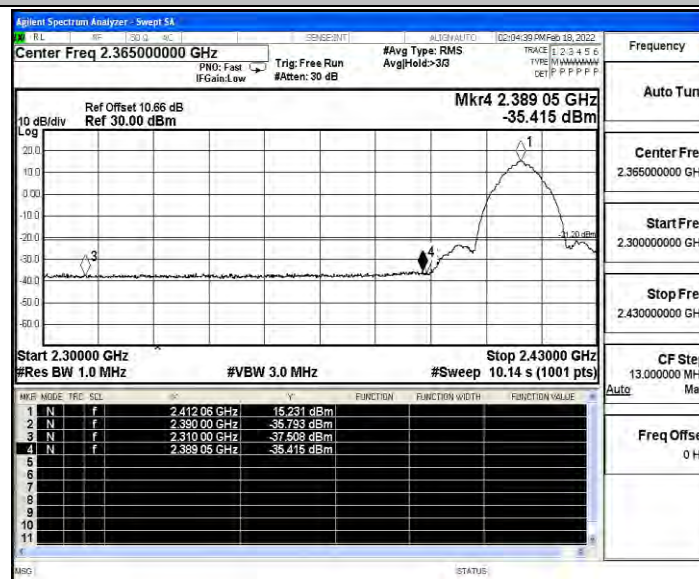


Test Graphs

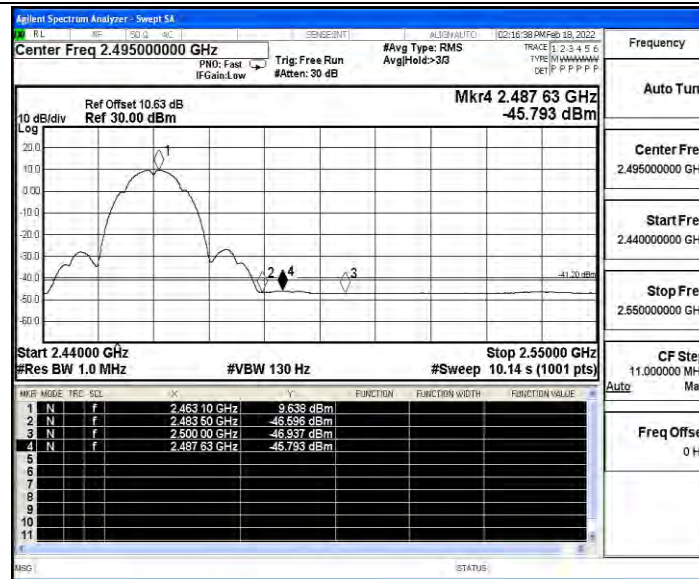
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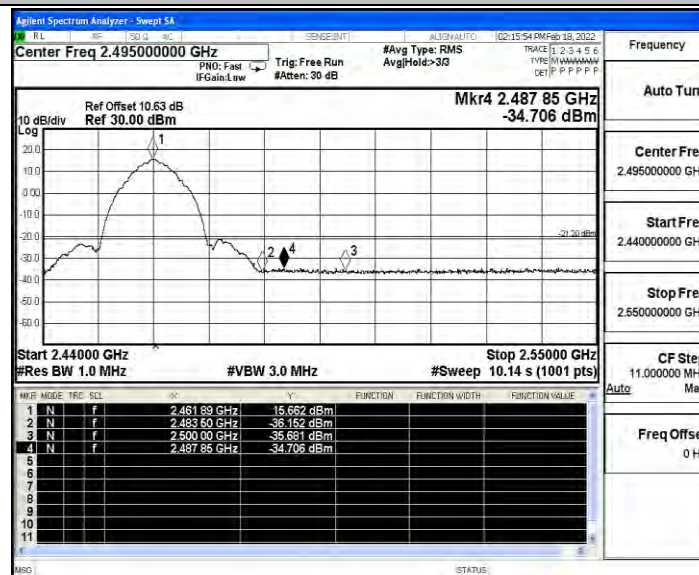
11B_Ant1_Low_2412_Peak



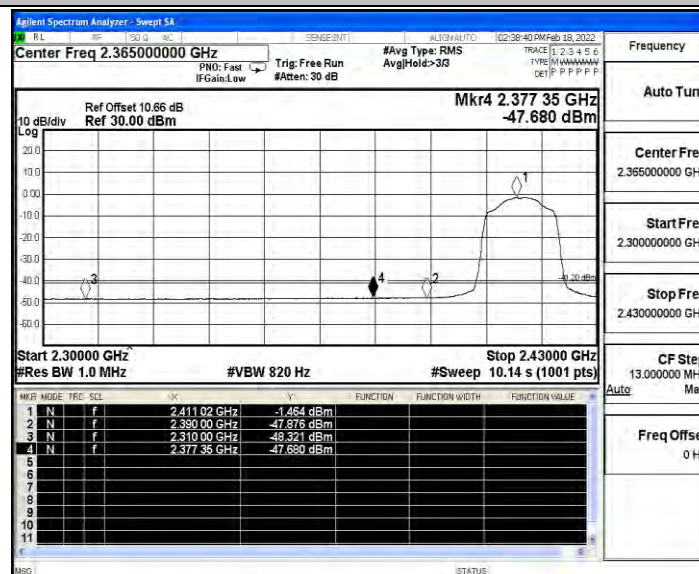
11B_Ant1_High_2462_AV



11B_Ant1_High_2462_Peak

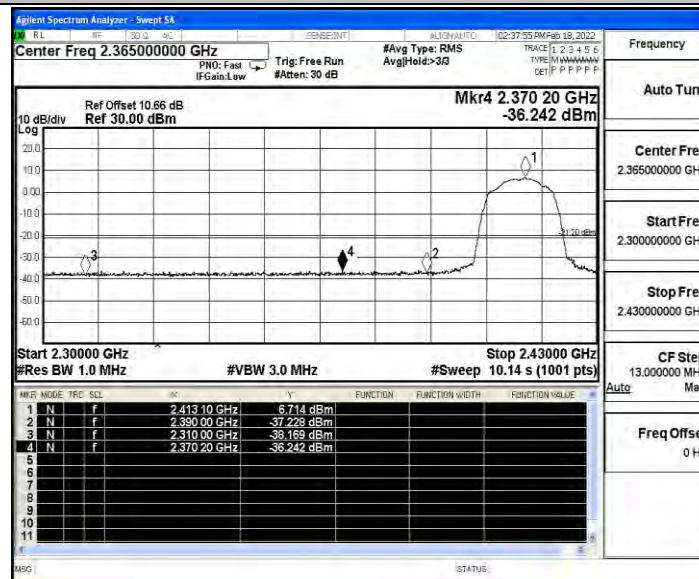


11G_Ant1_Low_2412_AV

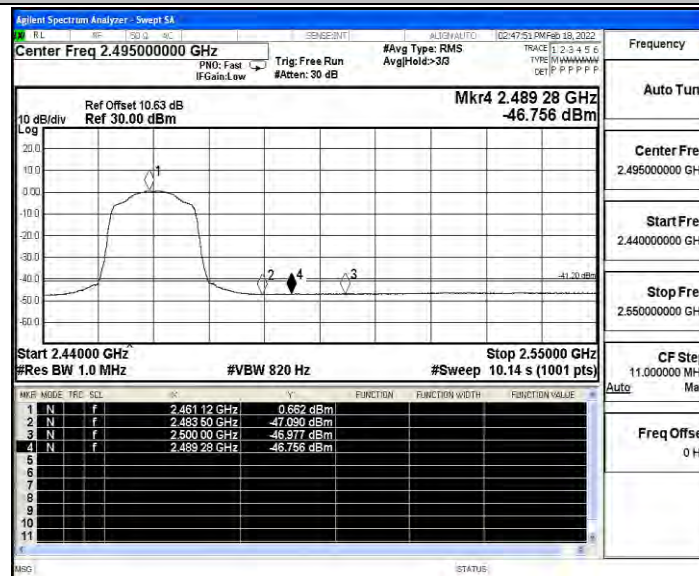




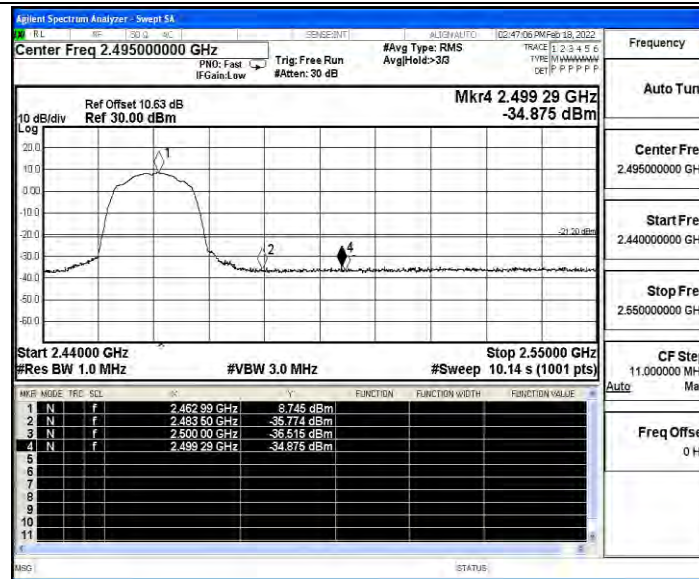
11G_Ant1_Low_2412_Peak



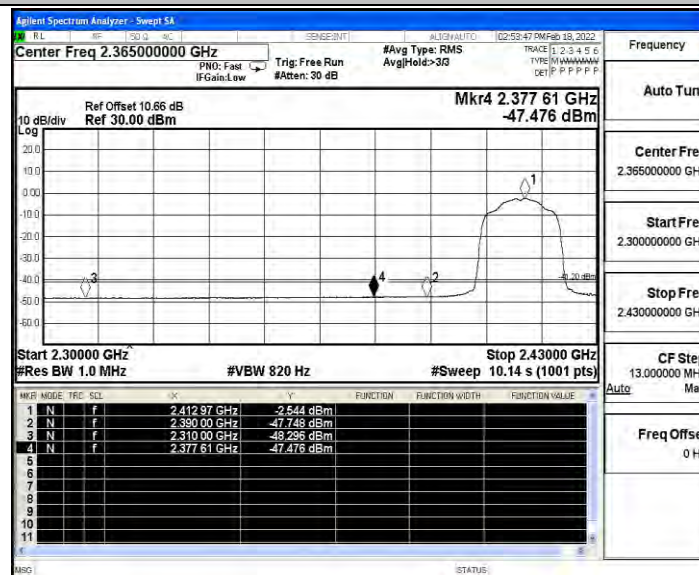
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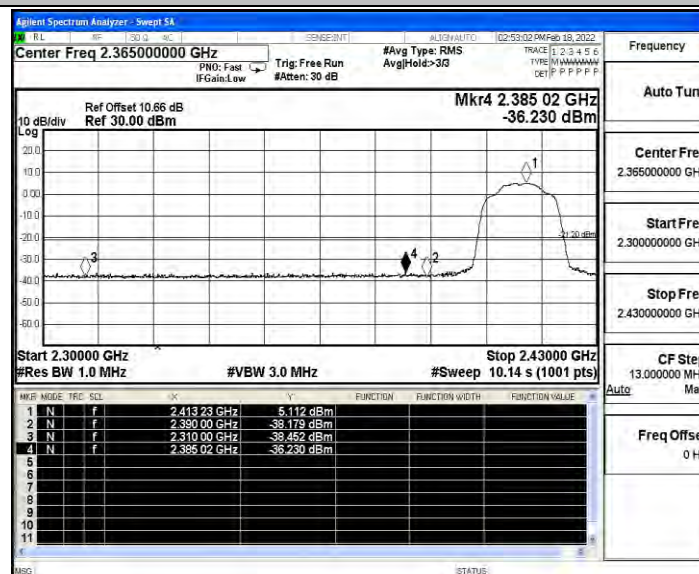
11G_Ant1_High_2462_Peak



11N20SISO_Ant1_Low_2412_AV

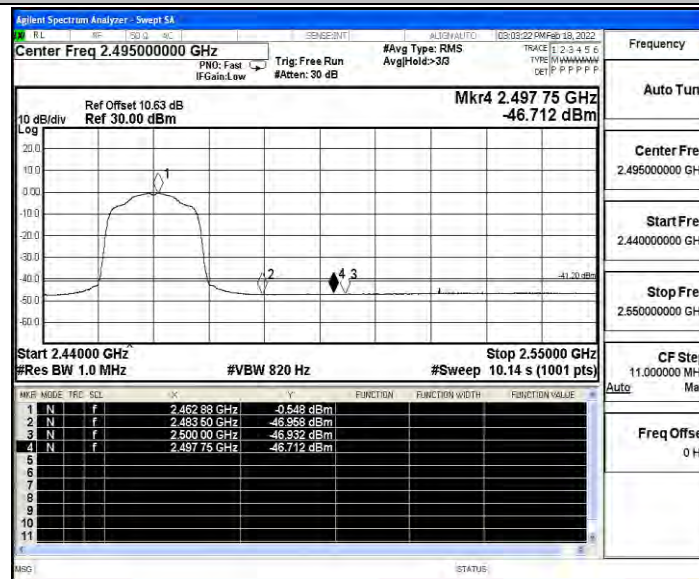


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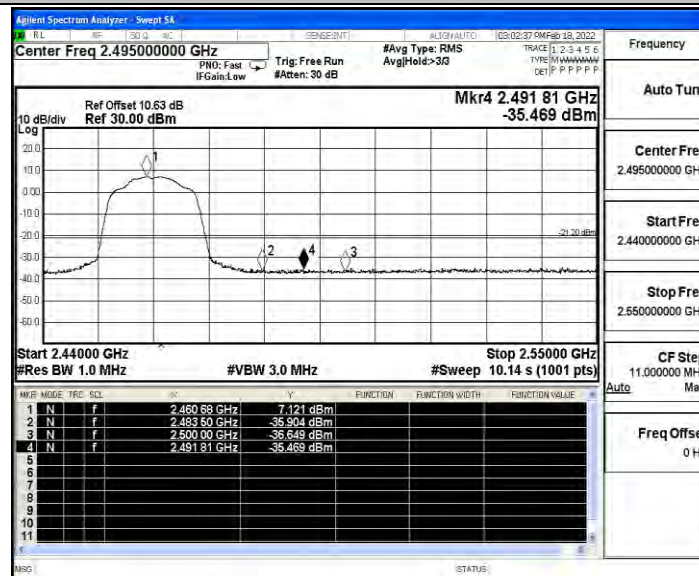




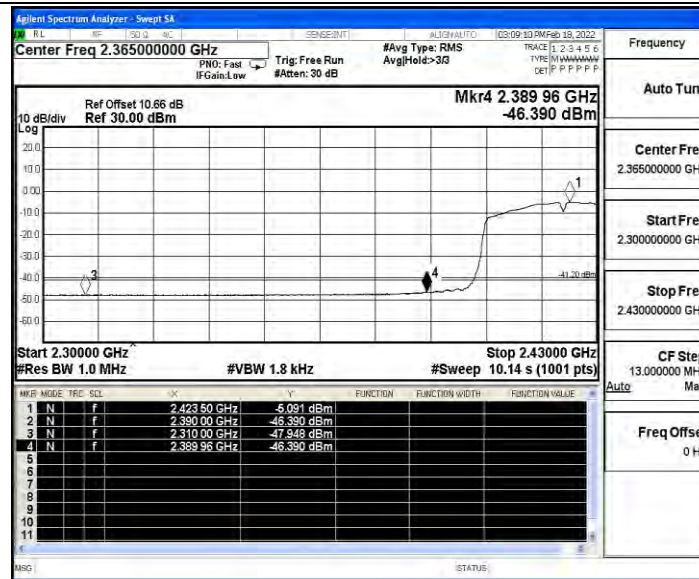
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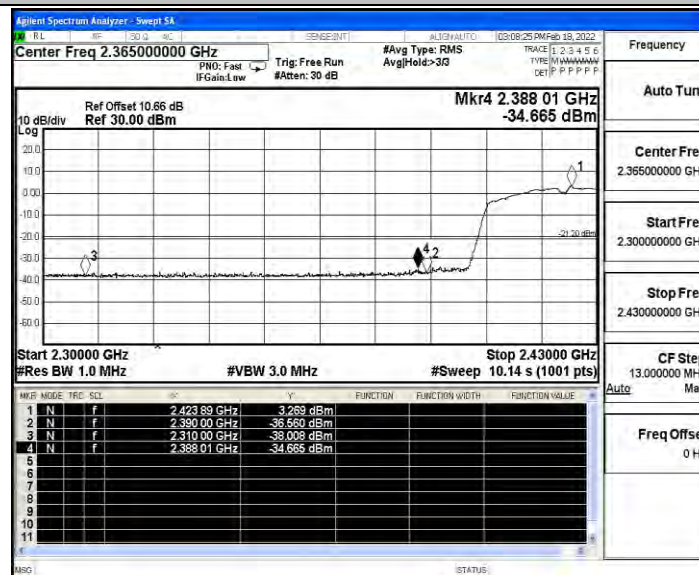
11N20SISO_Ant1_High_2462_Peak



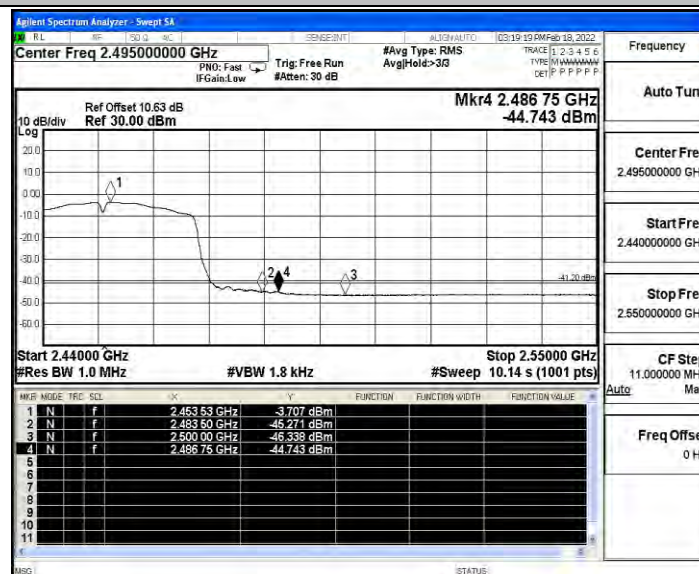
11N40SISO_Ant1_Low_2422_AV



11N40SISO_Ant1_Low_2422_Peak



11N40SISO_Ant1_High_2452_AV





11N40SISO_Ant1_High_2452_Peak

