



8. On Time, Duty Cycle and Measurement methods

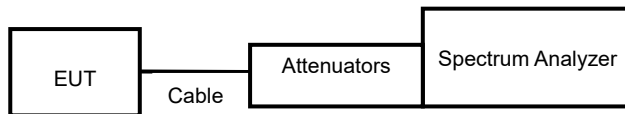
8.1 Test Limit

None; for reporting purposes only.

8.2 Test Procedure

Zero-Span Spectrum Analyzer Method.

8.3 Test Setup Layout

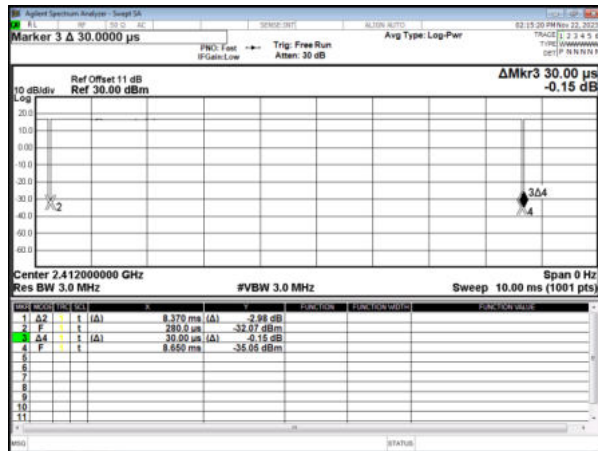


8.4 Test Result and Data

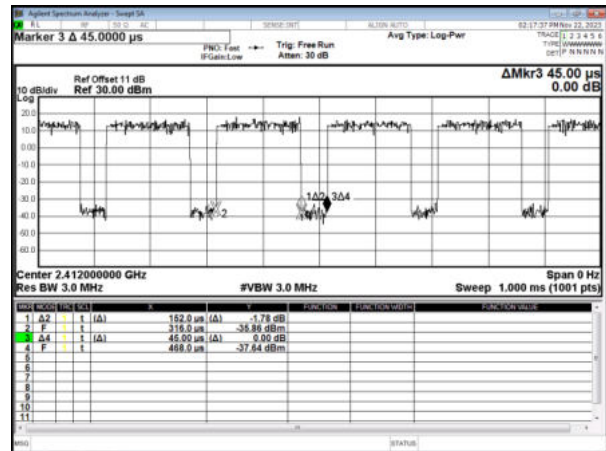
Modulation Type	On Time (ms)	Period Time (ms)	Duty Cycle (%)
11b	8.370	8.400	99.64%
11g	0.152	0.197	77.16%
11n HT20	0.178	0.224	79.46%
11n HT40	0.182	0.227	80.18%
11ax HE20	0.279	0.324	86.11%
11ax HE40	0.172	0.220	78.18%



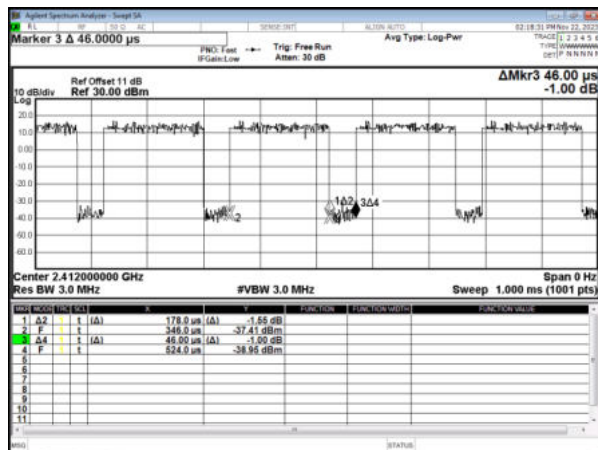
Modulation Type: 802.11b(1Mbps)



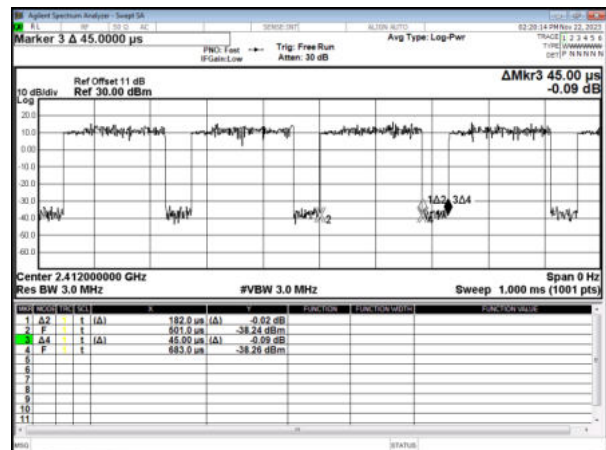
Modulation Type: 802.11g(6Mbps)



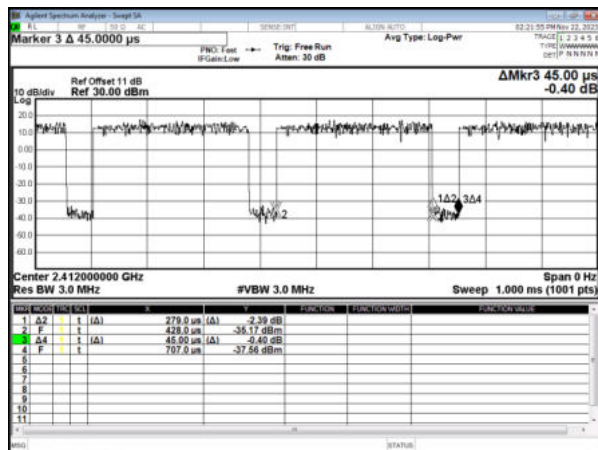
Modulation Type: 802.11n HT20(6.5Mbps)



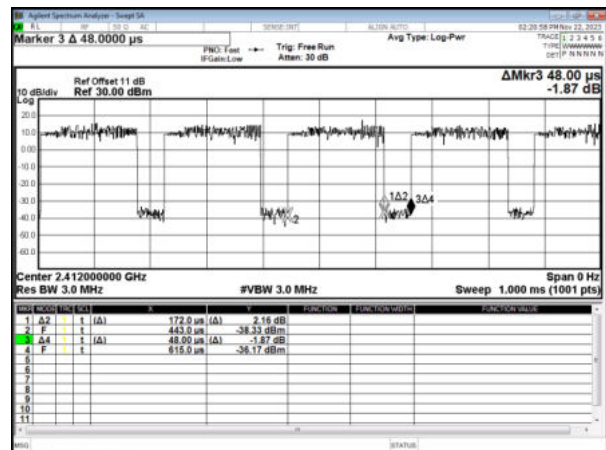
Modulation Type: 802.11n HT40(13.5Mbps)



Modulation Type: 802.11ax HE20 (7.3Mbps)



Modulation Type: 802.11 ax HE40(14.6Mbps)





9. 6dB Bandwidth Measurement Data

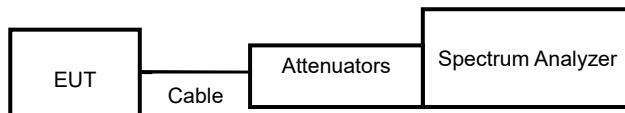
9.1 Test Limit

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

9.2 Test Procedures

- The transmitter output was connected to the spectrum analyzer.
- Set RBW of spectrum analyzer to 100 KHz and VBW to 300 KHz.
- Set spectrum analyzer X dB to 6 dB.
- Set spectrum analyzer peak detector with maximum hold.

9.3 Test Setup Layout





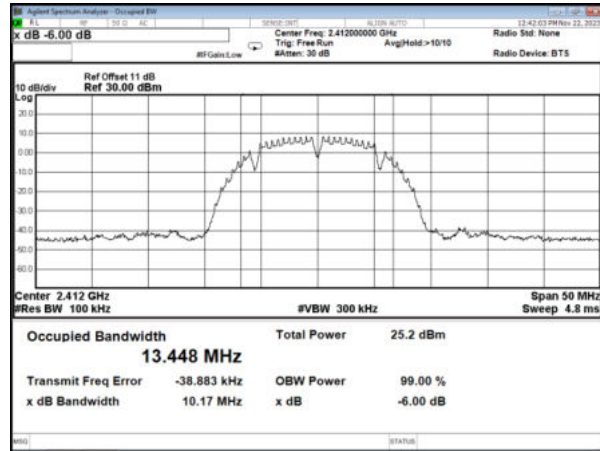
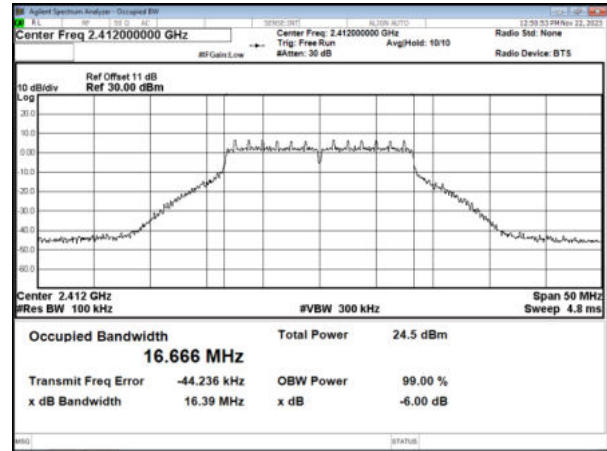
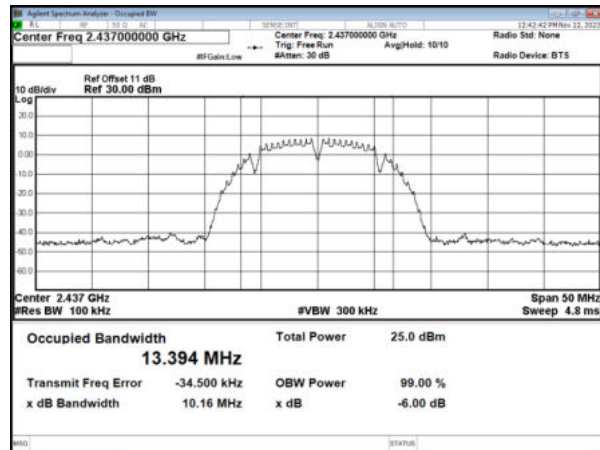
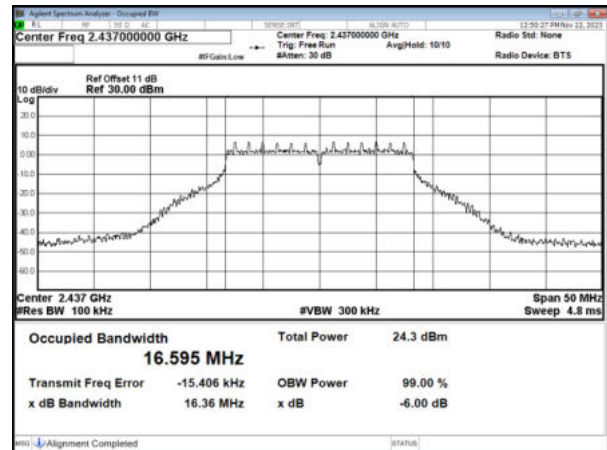
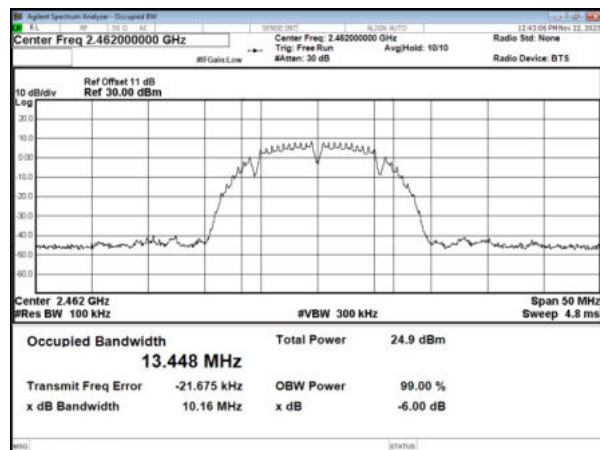
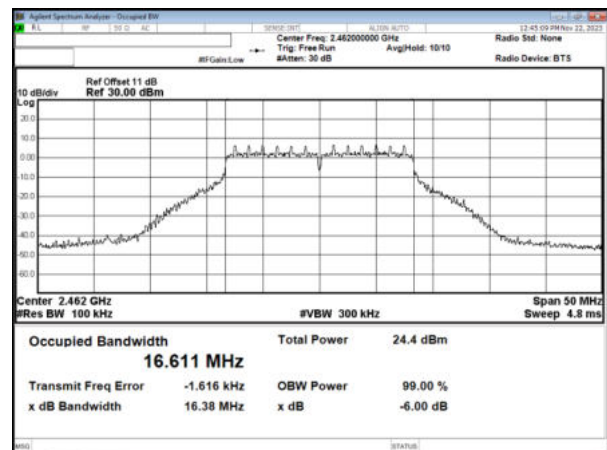
9.4 Test Result and Data

SISO

Modulation Type	Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
			ANT A	
IEEE 802.11b	01	2412	10.17	0.5
	06	2437	10.16	0.5
	11	2462	10.16	0.5
IEEE 802.11g	01	2412	16.39	0.5
	06	2437	16.36	0.5
	11	2462	16.38	0.5
IEEE 802.11n HT20	01	2412	17.60	0.5
	06	2437	17.61	0.5
	11	2462	17.58	0.5
IEEE 802.11n HT40	03	2422	36.08	0.5
	06	2437	36.10	0.5
	09	2452	35.81	0.5
IEEE 802.11ax HE20	01	2412	18.96	0.5
	06	2437	18.81	0.5
	11	2462	18.86	0.5
IEEE 802.11ax HE40	03	2422	37.89	0.5
	06	2437	37.87	0.5
	09	2452	37.86	0.5

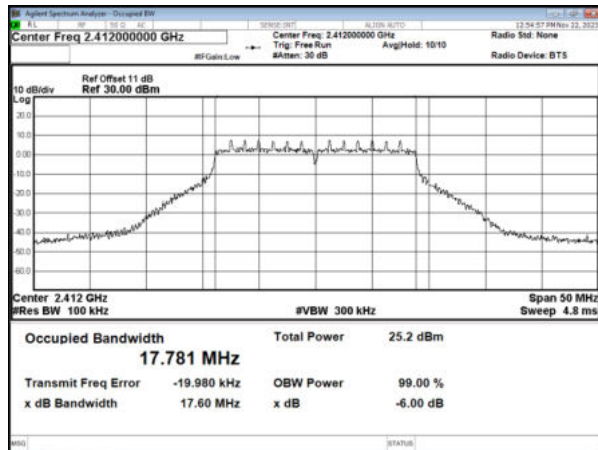
MIMO

Modulation Type	Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Limit (MHz)
			ANT A	ANT B	
IEEE 802.11n HT20	01	2412	17.64	17.66	0.5
	06	2437	17.63	17.64	0.5
	11	2462	17.63	17.65	0.5
IEEE 802.11n HT40	03	2422	35.81	36.42	0.5
	06	2437	35.80	36.39	0.5
	09	2452	36.09	36.38	0.5
IEEE 802.11ax HE20	01	2412	18.94	18.78	0.5
	06	2437	18.69	18.67	0.5
	11	2462	18.72	18.90	0.5
IEEE 802.11ax HE40	03	2422	37.25	37.44	0.5
	06	2437	37.47	37.83	0.5
	09	2452	37.89	37.72	0.5

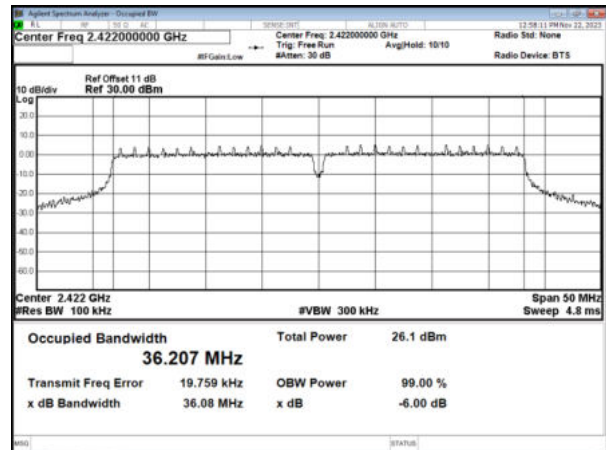
**SISO-ANT A**Modulation Type: 802.11b
CH01Modulation Type: 802.11g
CH01**CH06****CH06****CH11****CH11**



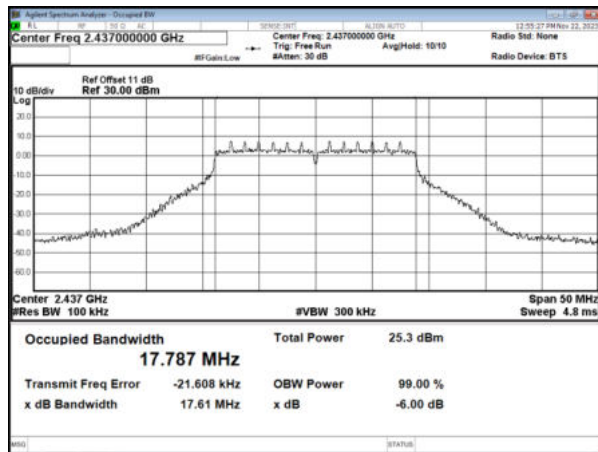
Modulation Type: IEEE 802.11n HT20
CH01



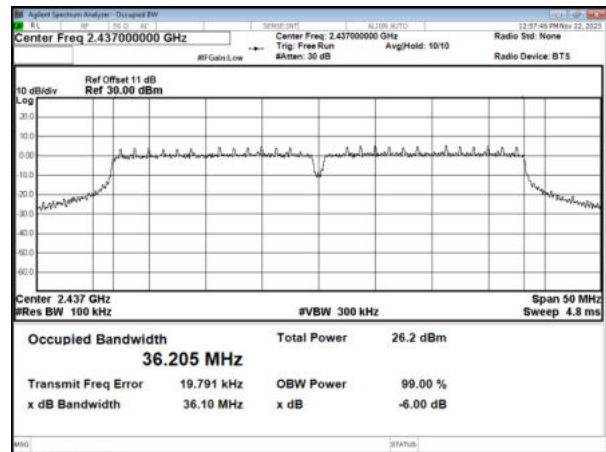
Modulation Type: IEEE 802.11n HT40
CH03



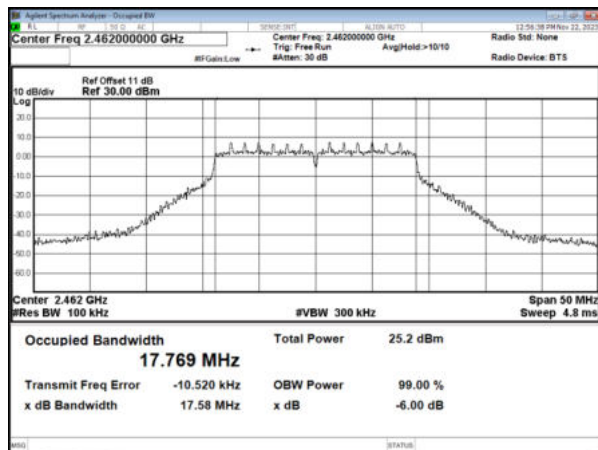
CH06



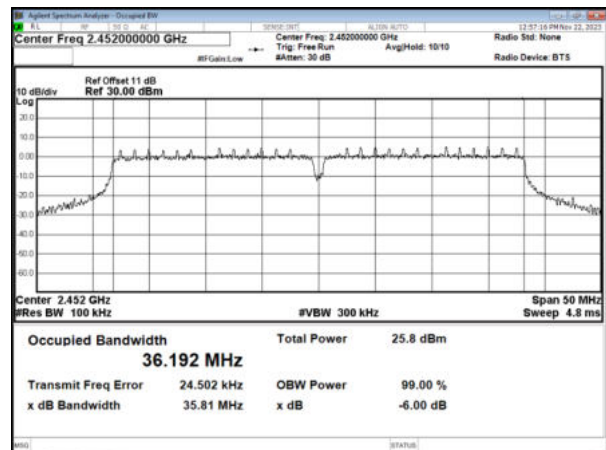
CH06



CH11

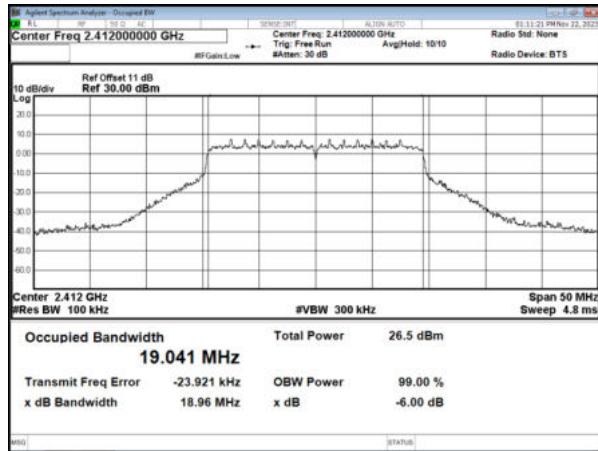


CH09

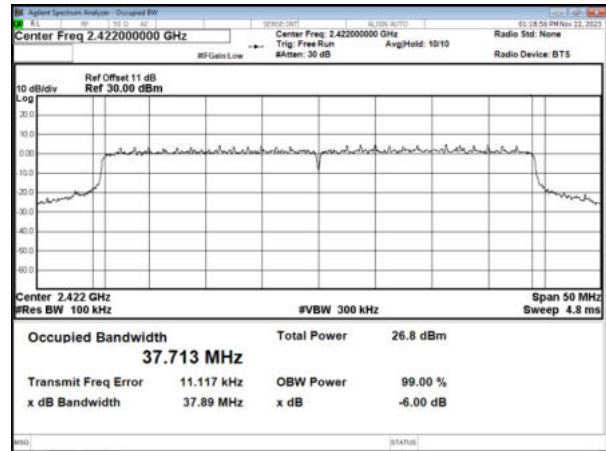




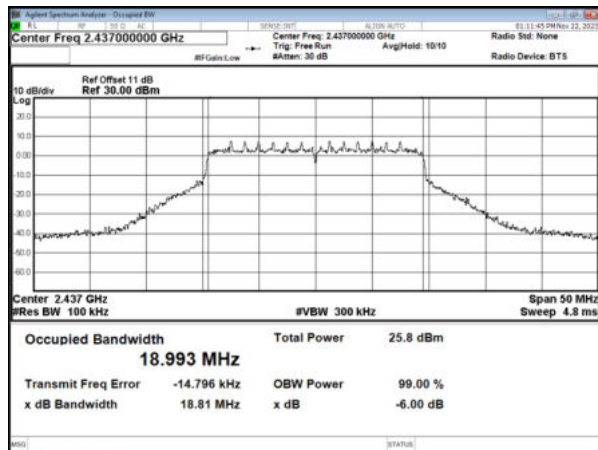
Modulation Type: IEEE 802.11ax HE20
CH01



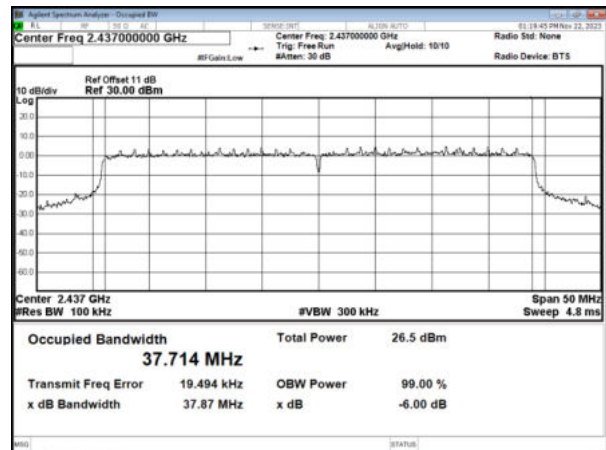
Modulation Type: IEEE 802.11ax HE40
CH03



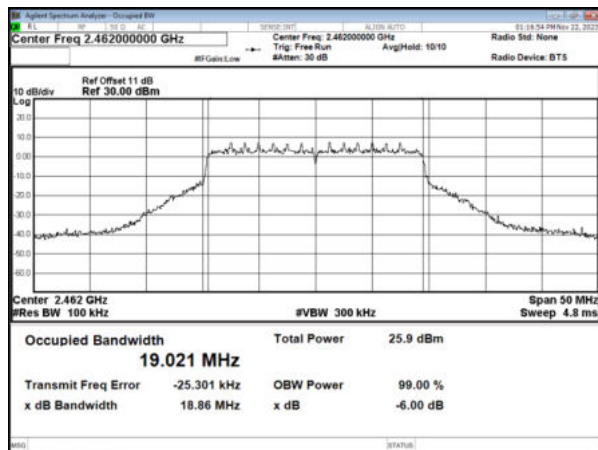
CH06



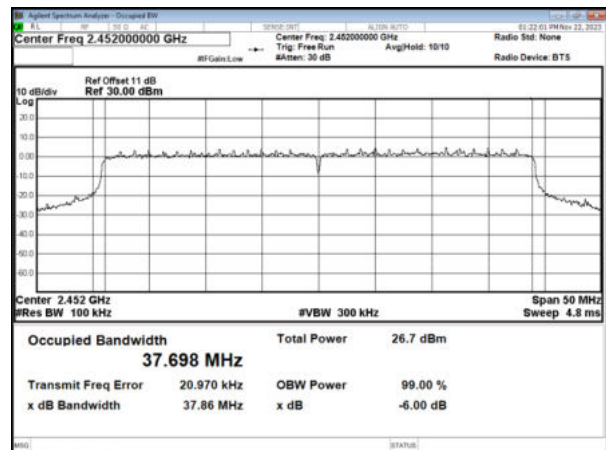
CH06

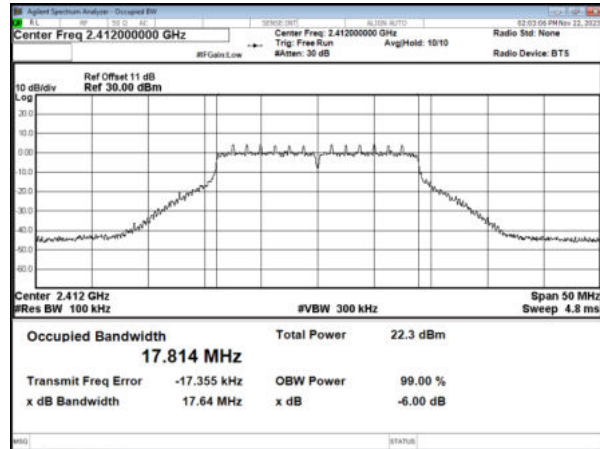
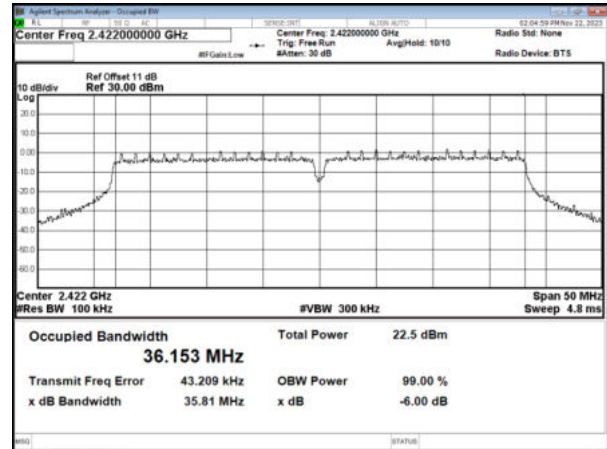
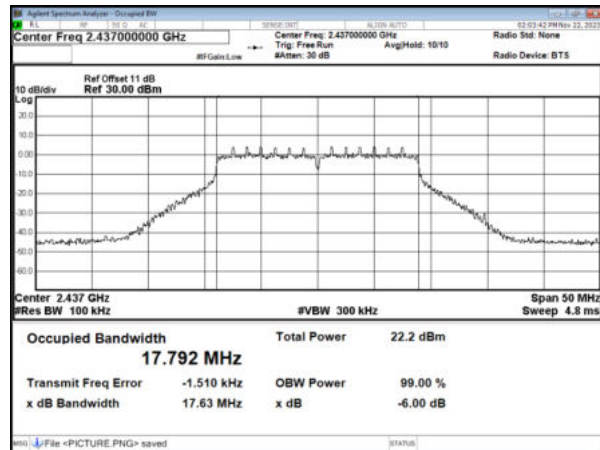
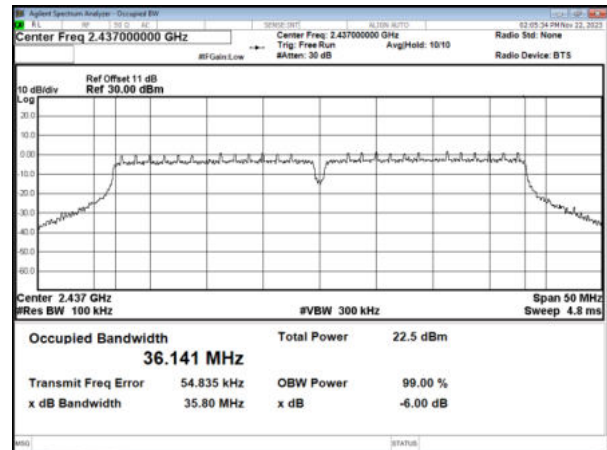
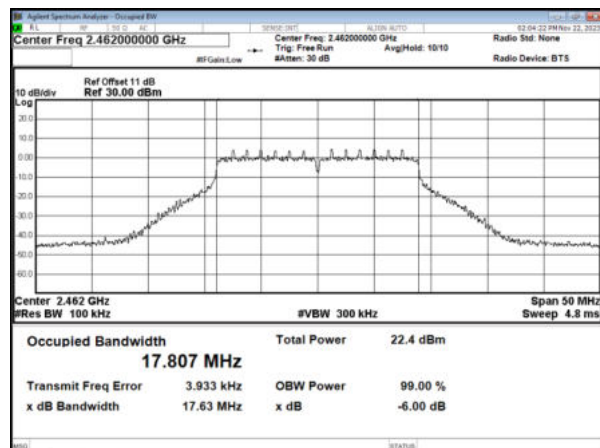
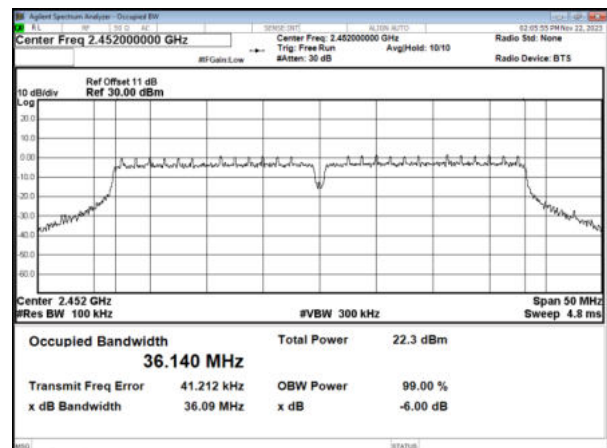


CH11



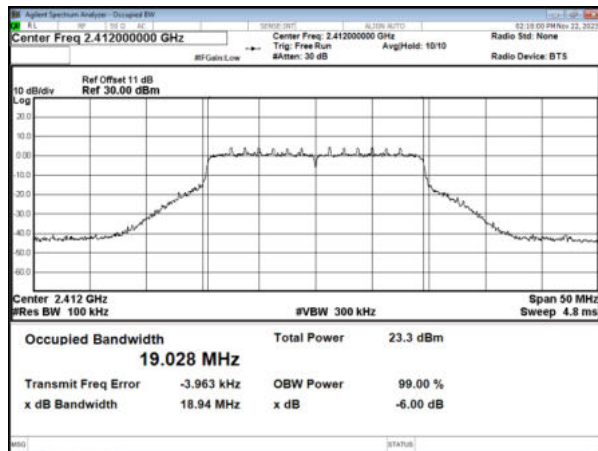
CH09



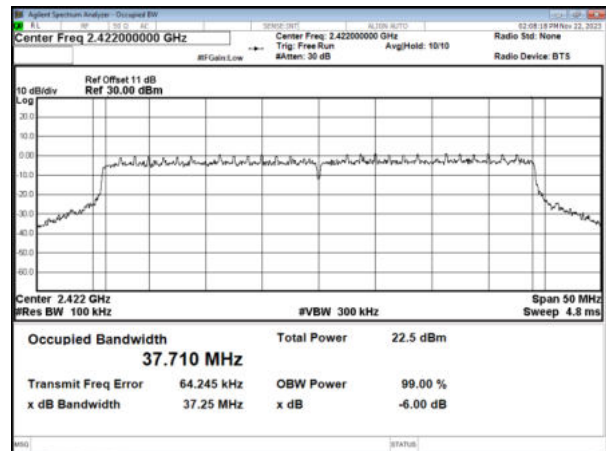
**MIMO-ANT A**Modulation Type: IEEE 802.11n HT20
CH01Modulation Type: IEEE 802.11n HT40
CH03**CH06****CH06****CH11****CH09**



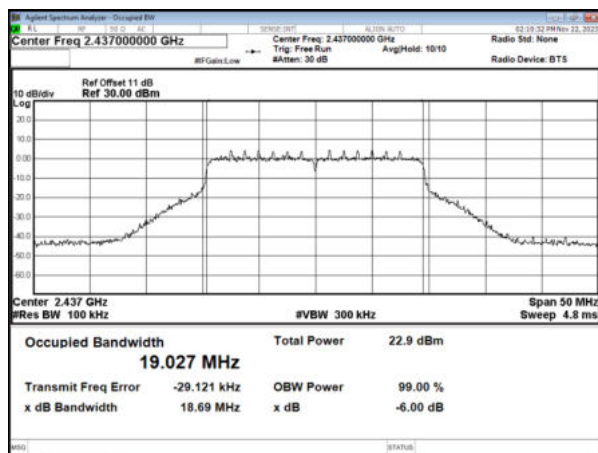
Modulation Type: IEEE 802.11ax HE20
CH01



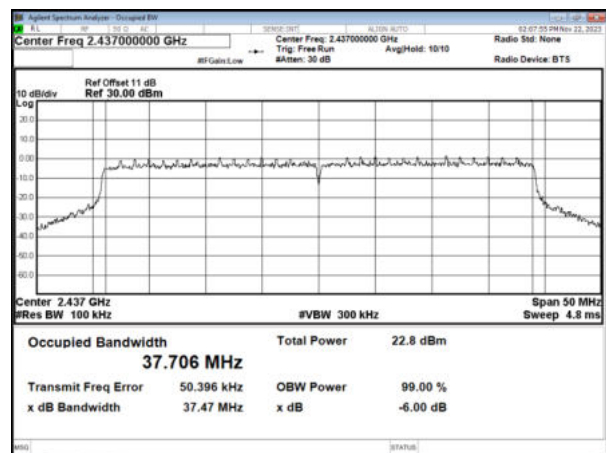
Modulation Type: IEEE 802.11ax HE40
CH03



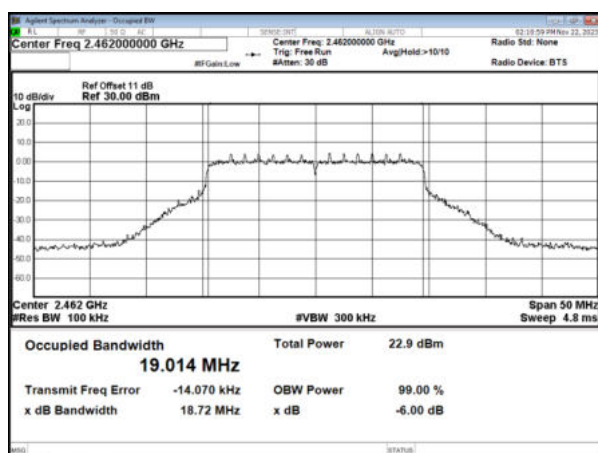
CH06



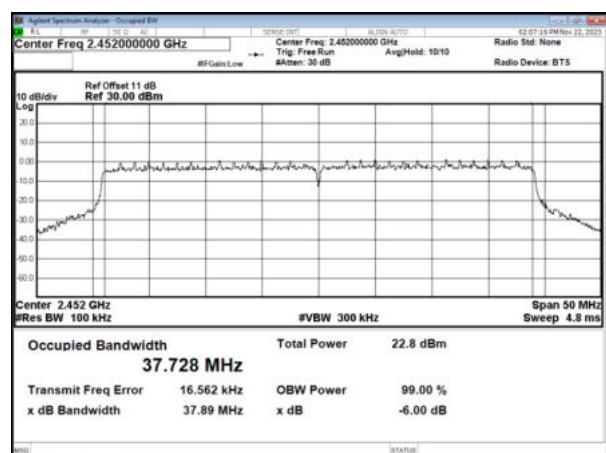
CH06

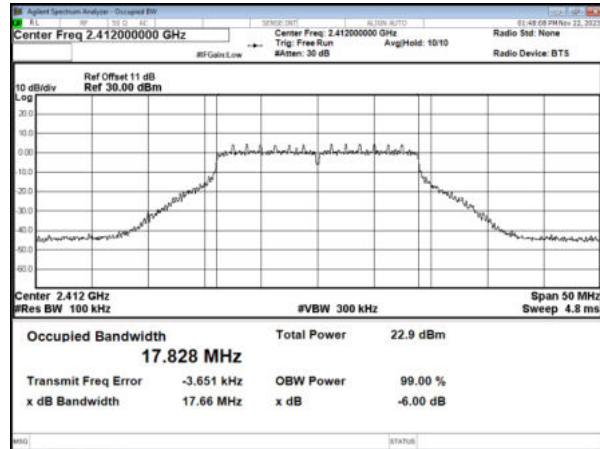
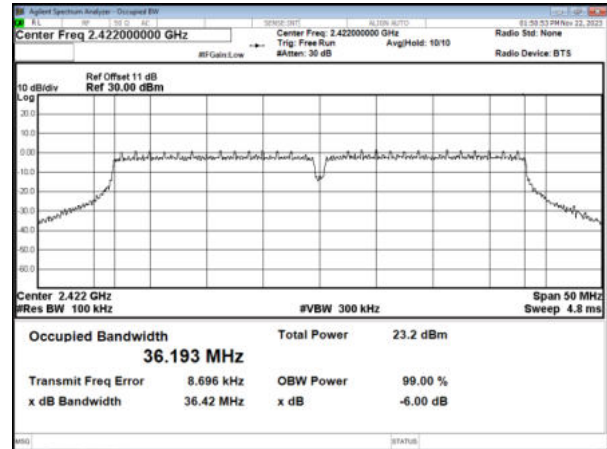
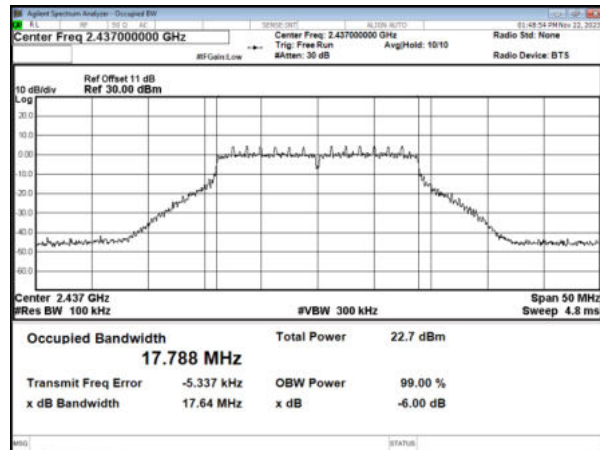
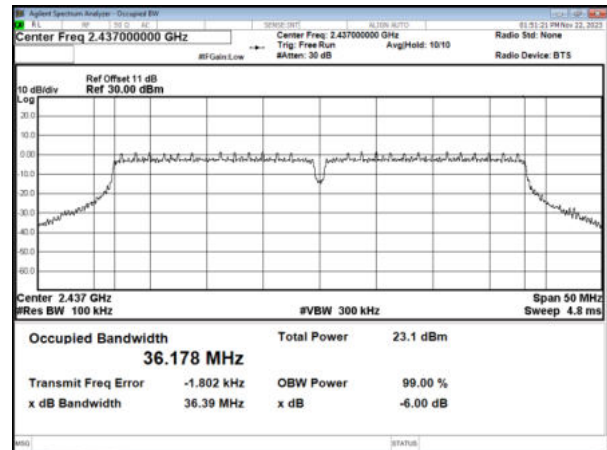
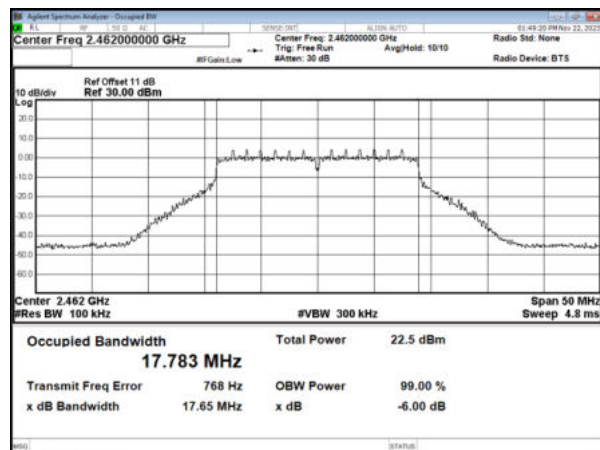
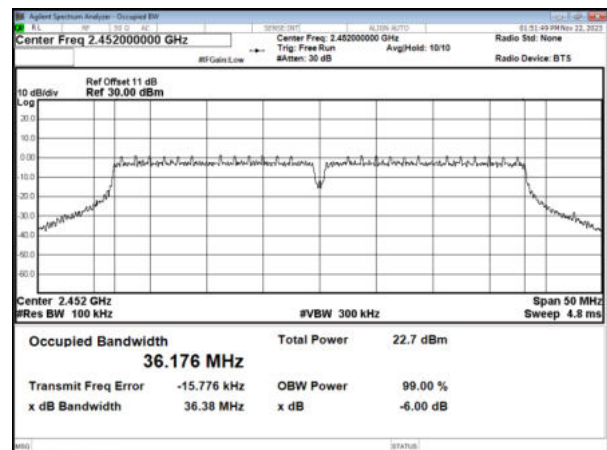


CH11



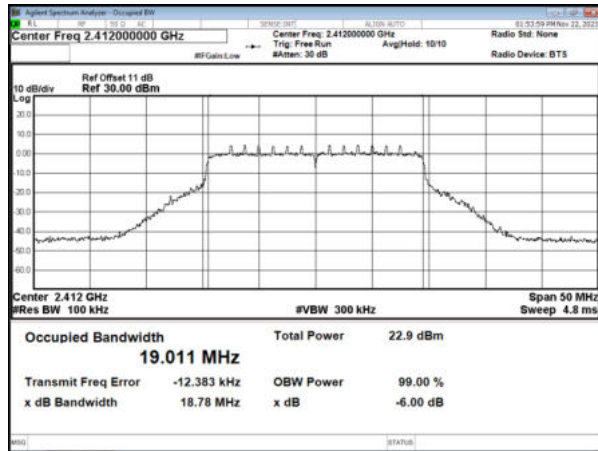
CH09



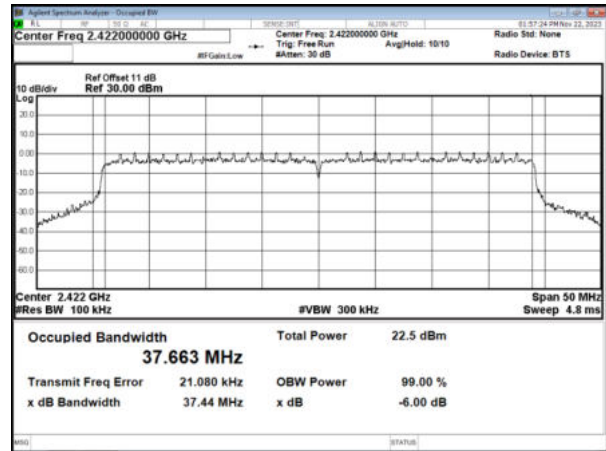
**MIMO-ANT B**Modulation Type: IEEE 802.11n HT20
CH01Modulation Type: IEEE 802.11n HT40
CH03**CH06****CH06****CH11****CH09**



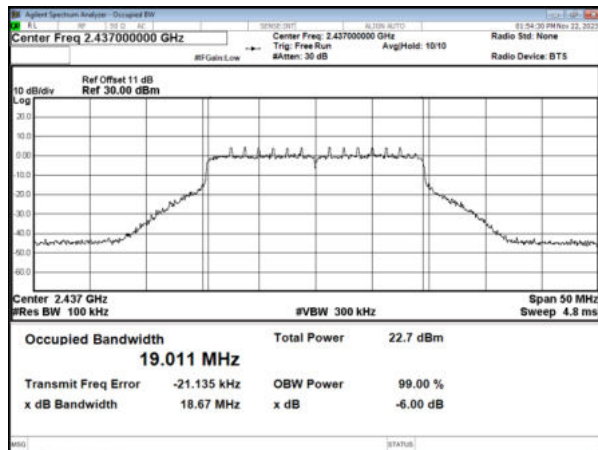
Modulation Type: IEEE 802.11ax HE20
CH01



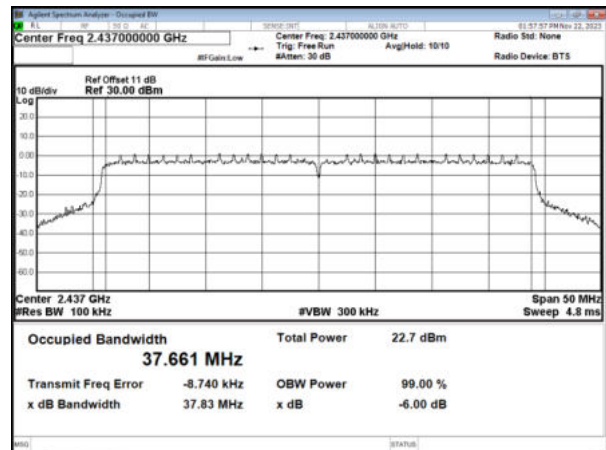
Modulation Type: IEEE 802.11ax HE40
CH03



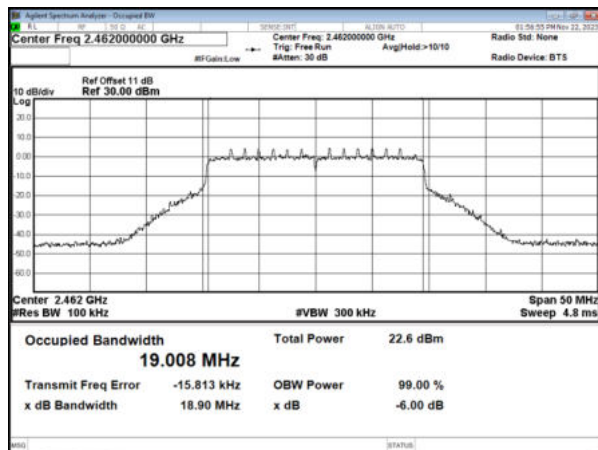
CH06



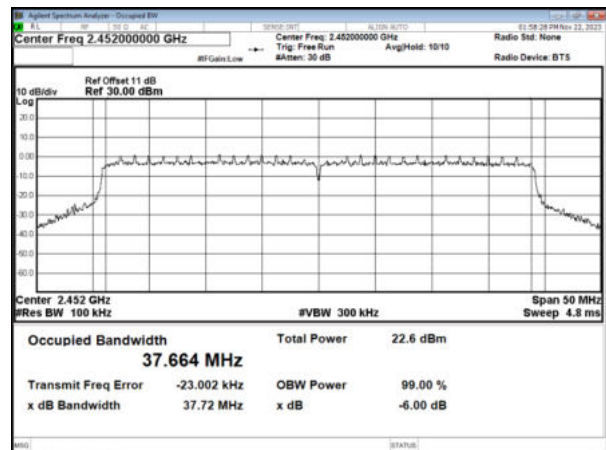
CH06



CH11



CH09





10. Maximum Peak Output Power

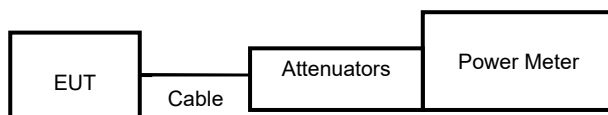
10.1 Test Limit

The Maximum Peak Output Power Measurement is 30dBm.

10.2 Test Procedures

The antenna port (RF output) of the EUT was connected to the input (RF input) of a power meter. Power was read directly from the meter and cable loss connection was added to the reading to obtain power at the EUT antenna terminal. The EUT Output Power was set to maximum to produce the worse case test result.

10.3 Test Setup Layout



**10.4 Test Result and Data****SISO-ANT A**

Modulation Type	Channel	Frequency (MHz)	Conduct ed(peak) output power (dBm)	Total peak power (mW)	Power Limit (dBm)
			ANT A		
11b	1	2412	20.19	104.472	30.00
	6	2437	20.13	103.039	30.00
	11	2462	20.15	103.514	30.00
11g	1	2412	25.34	341.979	30.00
	6	2437	25.34	341.979	30.00
	11	2462	25.27	336.512	30.00
11n HT20	1	2412	25.50	354.813	30.00
	6	2437	25.42	348.337	30.00
	11	2462	25.35	342.768	30.00
11n HT40	3	2422	26.76	474.242	30.00
	6	2437	26.27	423.643	30.00
	9	2452	25.97	395.367	30.00
802.11ax HE20	1	2412	26.16	413.048	30.00
	6	2437	26.05	402.717	30.00
	11	2462	25.86	385.478	30.00
802.11ax HE40	3	2422	26.88	487.528	30.00
	6	2437	26.72	469.894	30.00
	9	2452	26.52	448.745	30.00

**SISO-ANT B**

Modulation Type	Channel	Frequency (MHz)	Conducted(peak) output power	Total peak power (mW)	Power Limit (dBm)
			(dBm) ANT B		
11b	1	2412	20.05	101.158	30.00
	6	2437	20.09	102.094	30.00
	11	2462	20.06	101.391	30.00
11g	1	2412	25.25	334.965	30.00
	6	2437	25.27	336.512	30.00
	11	2462	25.21	331.894	30.00
11n HT20	1	2412	25.29	338.065	30.00
	6	2437	25.22	332.660	30.00
	11	2462	25.14	326.588	30.00
11n HT40	3	2422	25.67	368.978	30.00
	6	2437	25.71	372.392	30.00
	9	2452	25.70	371.535	30.00
802.11ax HE20	1	2412	25.82	381.944	30.00
	6	2437	25.82	381.944	30.00
	11	2462	26.34	430.527	30.00
802.11ax HE40	3	2422	26.20	416.869	30.00
	6	2437	26.24	420.727	30.00
	9	2452	26.28	424.620	30.00

MIMO

Modulation Type	Channel	Frequency (MHz)	Conducted(peak) output power (dBm)		Total peak power (dBm)	Total peak power (mW)	Power Limit (dBm)
			ANT A	ANT B			
11n HT20	1	2412	22.570	22.71	25.65	367.355	28.94
	6	2437	22.540	22.48	25.52	356.484	28.94
	11	2462	22.500	22.34	25.43	349.224	28.94
11n HT40	3	2422	23.240	23.21	26.24	420.274	28.94
	6	2437	23.100	23.12	26.12	409.290	28.94
	9	2452	23.140	22.65	25.91	390.140	28.94
802.11ax HE20	1	2412	23.120	22.82	25.98	396.542	28.94
	6	2437	23.390	23.02	26.22	418.720	28.94
	11	2462	23.470	23.04	26.27	423.703	28.94
802.11ax HE40	3	2422	23.310	23.41	26.37	433.570	28.94
	6	2437	23.720	23.26	26.51	447.341	28.94
	9	2452	23.720	23.21	26.48	444.916	28.94



11. Power Spectral Density

11.1 Test Limit

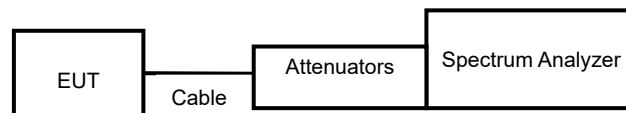
The Maximum of Power Spectral Density Measurement is 8dBm.

If transmitting antennas of directional gain greater than 6 dBi are used, the power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi

11.2 Test Procedures

- The transmitter output was connected to spectrum analyzer.
- The spectrum analyzer's resolution bandwidth were set at 3kHz RBW and 10KHz VBW as that of the fundamental frequency. Set the sweep time=auto couple.
- The power spectral density was measured and recorded.

11.3 Test Setup Layout





11.4 Test Result and Data

SISO

Modulation Type	Channel	Frequency (MHz)	Maximum Power Density of 3KHz Bandwidth(dBm)		Limit (dBm)
			ANT A	ANT B	
11b	1	2412	-7.12	-7.428	8.00
	6	2437	-6.856	-7.109	8.00
	11	2462	-6.086	-7.421	8.00
11g	1	2412	-7.525	-8.806	8.00
	6	2437	-8.163	-7.548	8.00
	11	2462	-8.531	-8.876	8.00
11n HT20	1	2412	-8.63	-10.129	8.00
	6	2437	-9.355	-8.702	8.00
	11	2462	-9.329	-8.837	8.00
11n HT40	3	2422	-12.751	-13.721	8.00
	6	2437	-12.547	-11.505	8.00
	9	2452	-12.321	-13.028	8.00
802.11ax HE20	1	2412	-9.541	-10.823	8.00
	6	2437	-10.176	-9.896	8.00
	11	2462	-10.018	-10.532	8.00
802.11ax HE40	3	2422	-11.726	-14.728	8.00
	6	2437	-13.16	-13.267	8.00
	9	2452	-13.3	-13.604	8.00

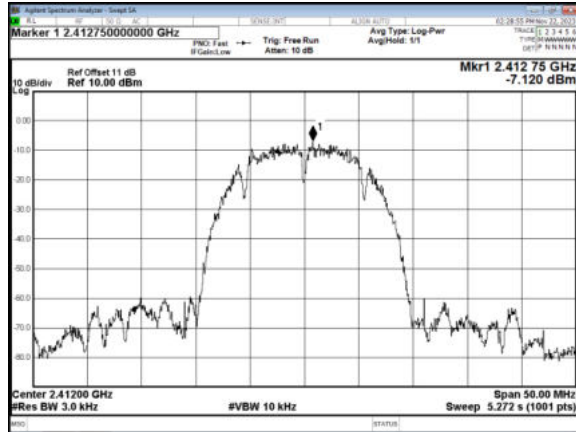
MIMO

Modulation Type	Channel	Frequency (MHz)	Maximum Power Density of 3KHz Bandwidth(dBm)		Sum chain (dBm)	Limit (dBm)
			ANT A	ANT B		
11n HT20	1	2412	-12.272	-10.454	-8.26	6.94
	6	2437	-11.216	-11.813	-8.49	6.94
	11	2462	-12.261	-11.483	-8.84	6.94
11n HT40	3	2422	-14.621	-14.221	-11.41	6.94
	6	2437	-12.347	-14.109	-10.13	6.94
	9	2452	-13.232	-13.892	-10.54	6.94
802.11ax HE20	1	2412	-12.524	-10.939	-8.65	6.94
	6	2437	-12.411	-12.436	-9.41	6.94
	11	2462	-12.922	-12.812	-9.86	6.94
802.11ax HE40	3	2422	-14.681	-14.791	-11.73	6.94
	6	2437	-14.064	-14.932	-11.47	6.94
	9	2452	-14.087	-14.18	-11.12	6.94

**SISO (ANT A)**

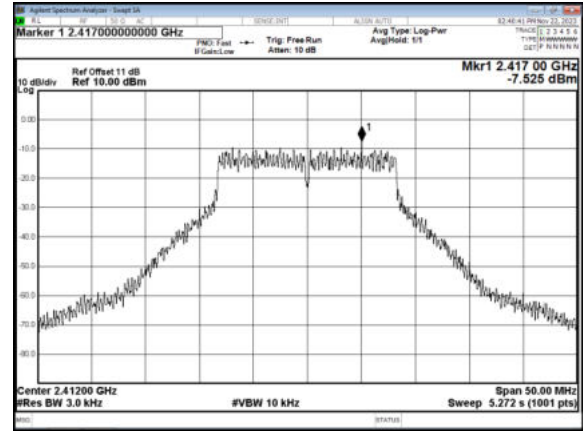
Modulation Type: 802.11b

CH01

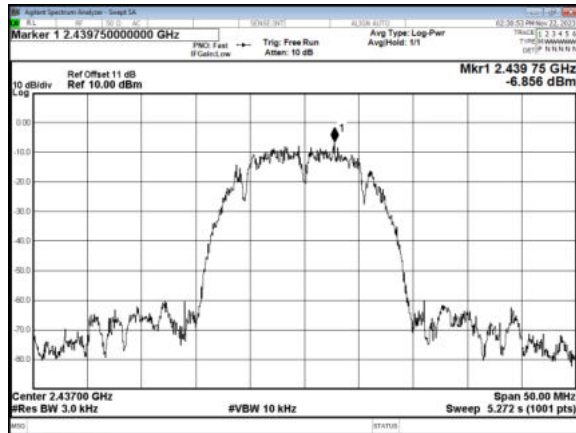


Modulation Type: 802.11g

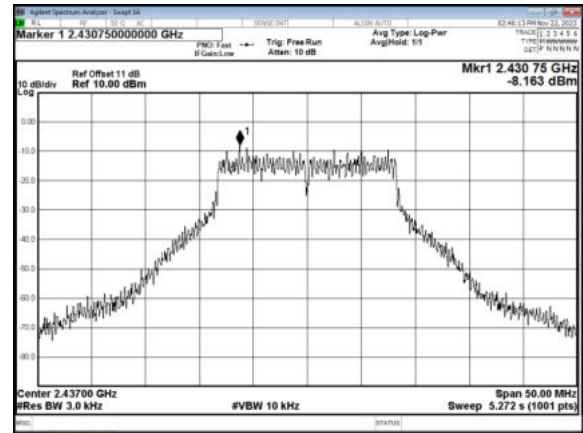
CH01



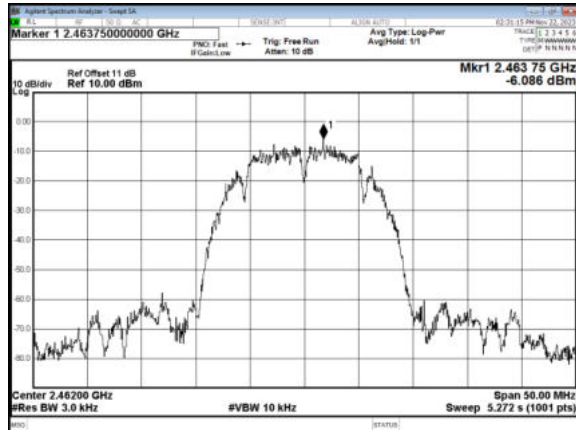
CH06



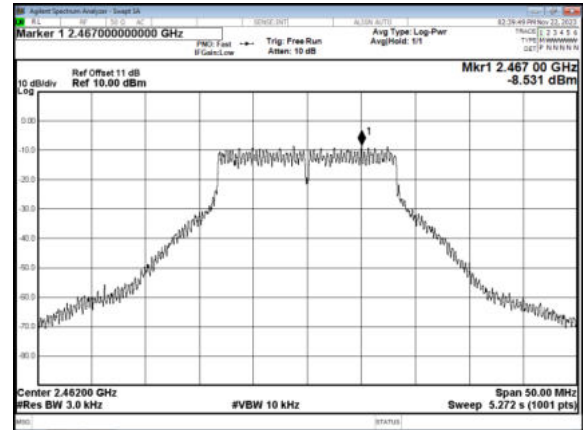
CH06

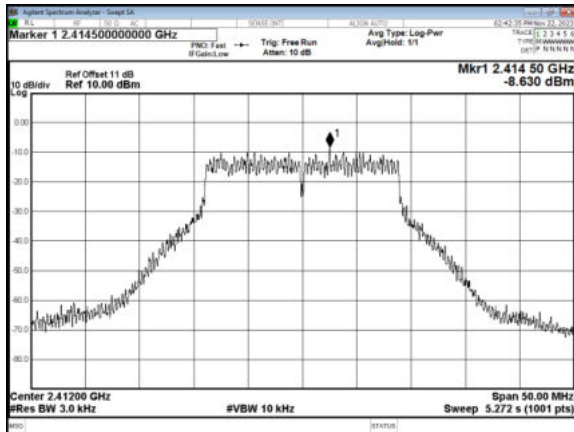
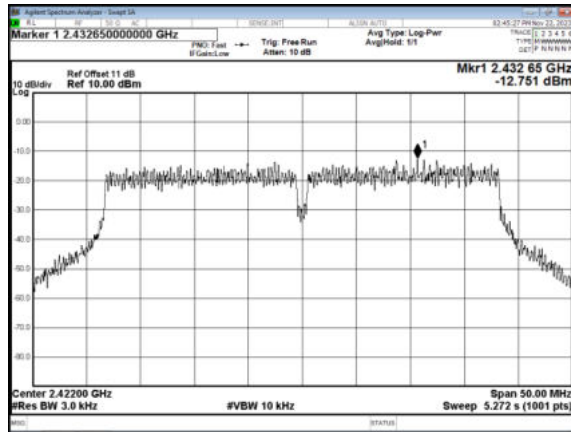


CH11

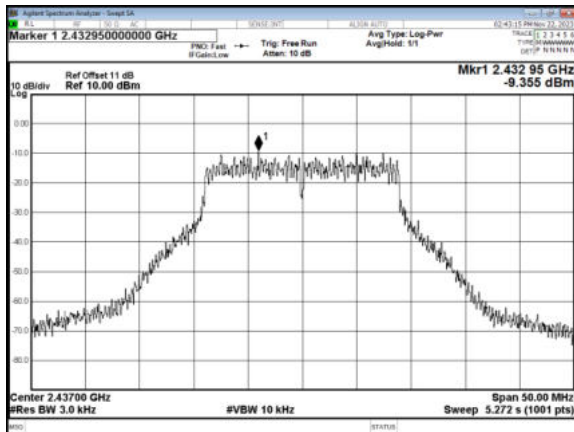


CH11

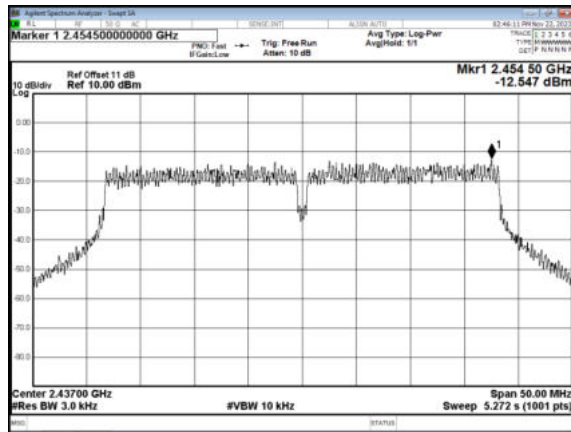


Modulation Type: 802.11n HT20
CH01Modulation Type: 802.11n HT40
CH03

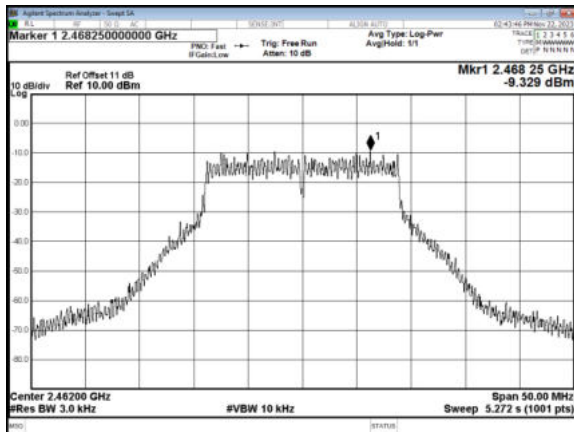
CH06



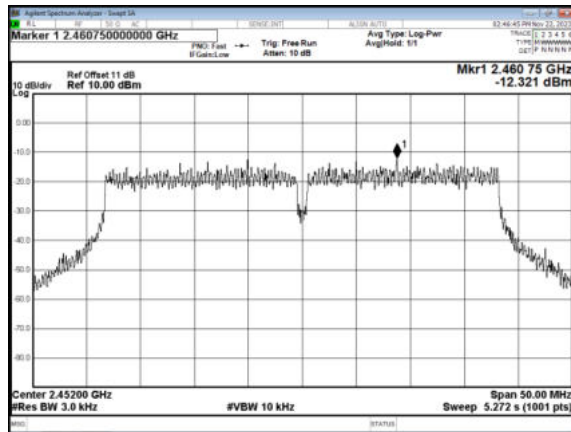
CH06



CH11

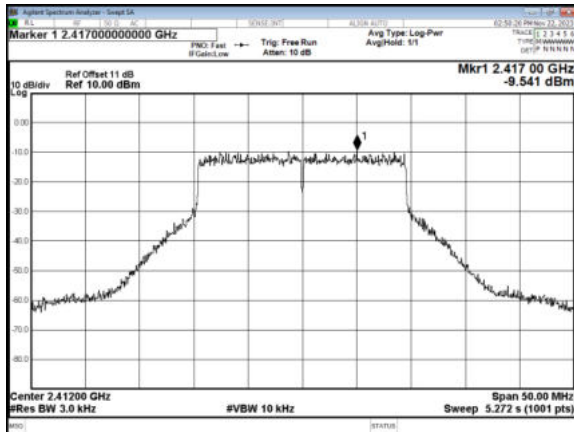


CH09

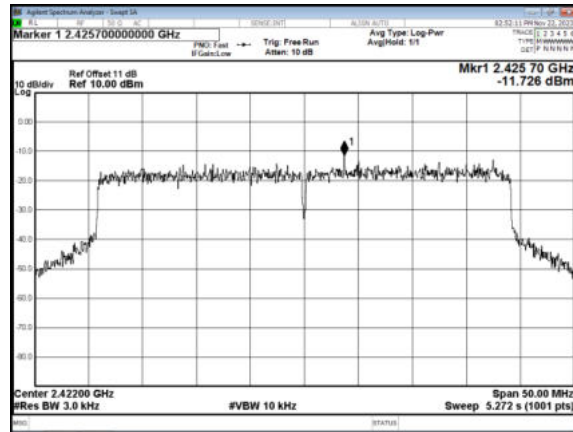




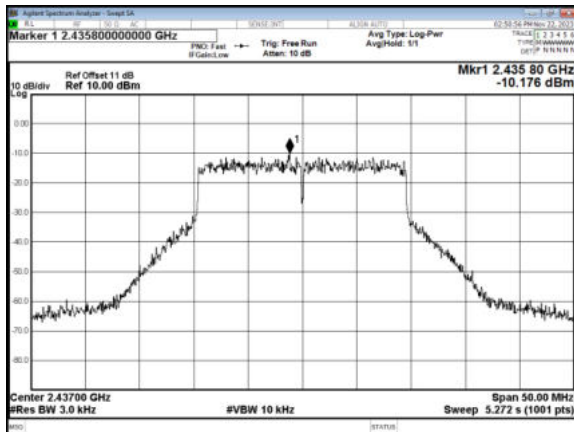
Modulation Type: 802.11ax HE20
CH01



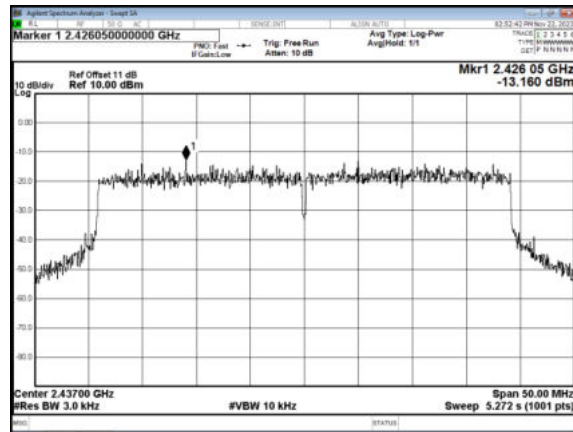
Modulation Type: 802.11ax HE40
CH03



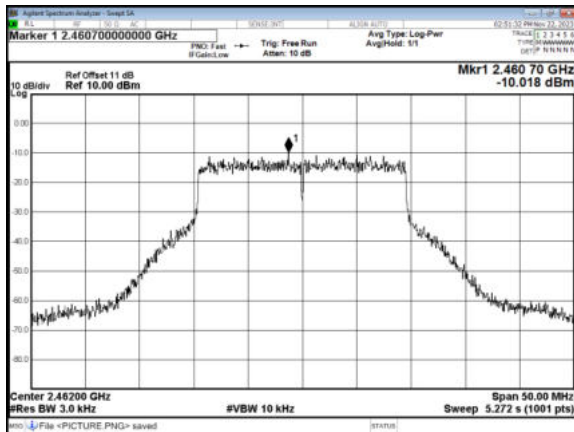
CH06



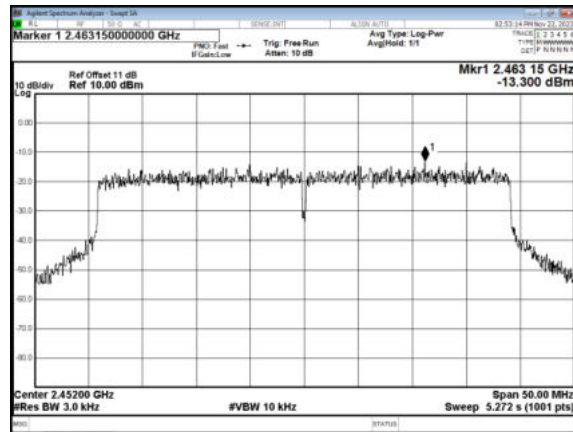
CH06



CH11



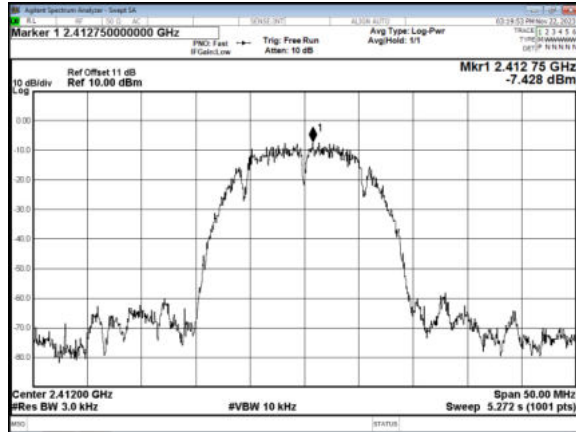
CH09



**SISO (ANT B)**

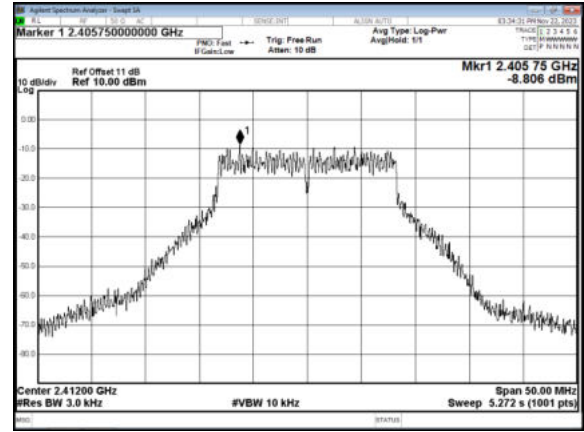
Modulation Type: 802.11b

CH01

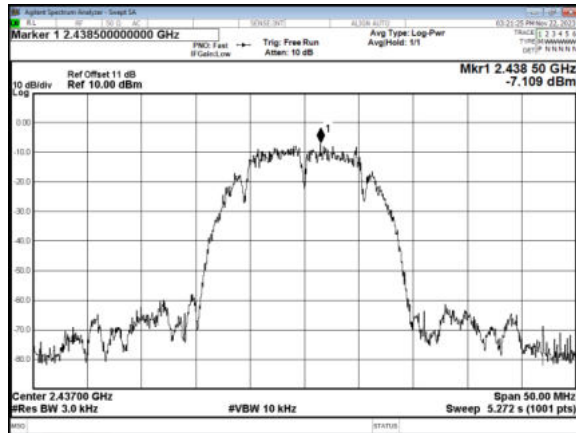


Modulation Type: 802.11g

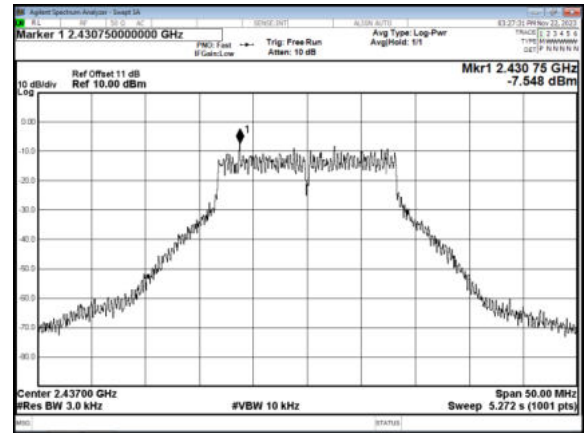
CH01



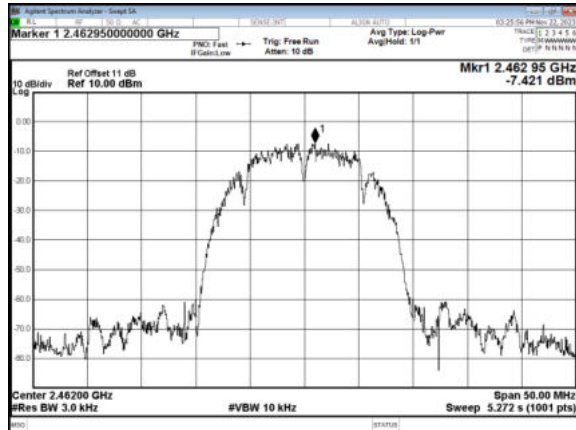
CH06



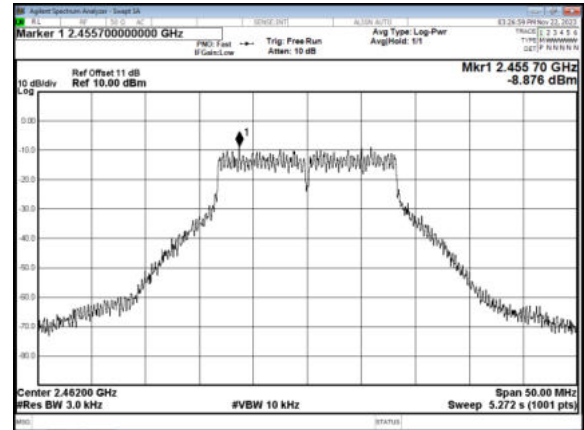
CH06



CH11

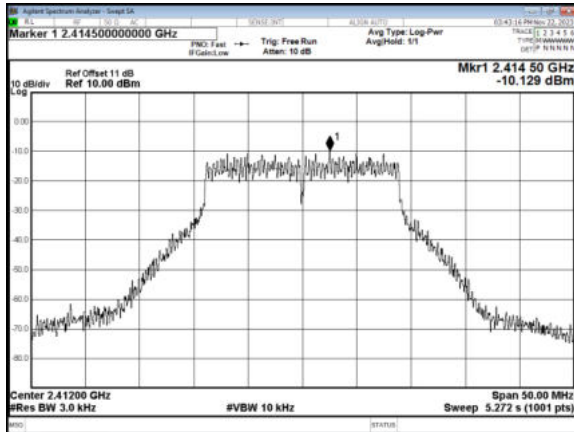


CH11

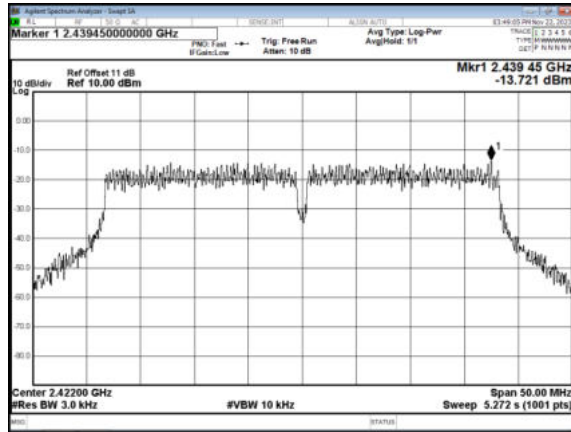




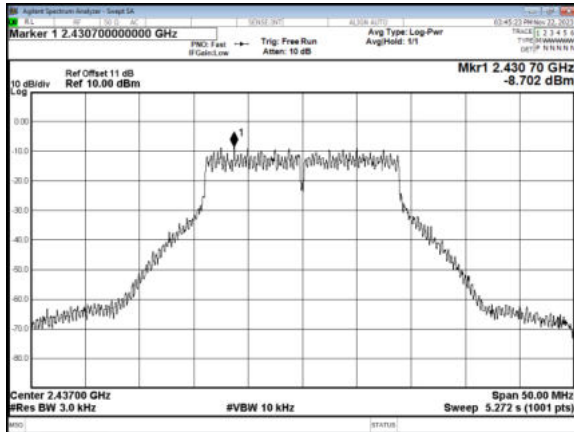
Modulation Type: 802.11n HT20
CH01



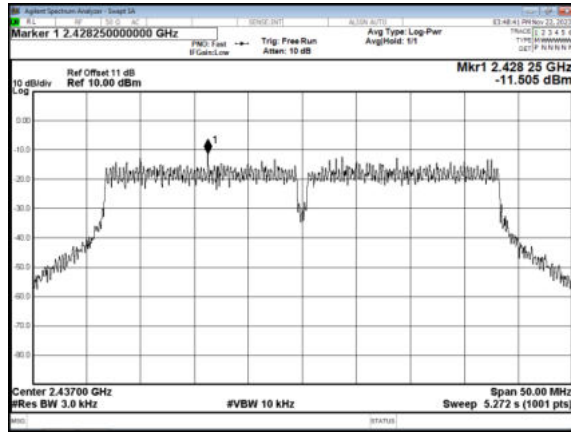
Modulation Type: 802.11n HT40
CH03



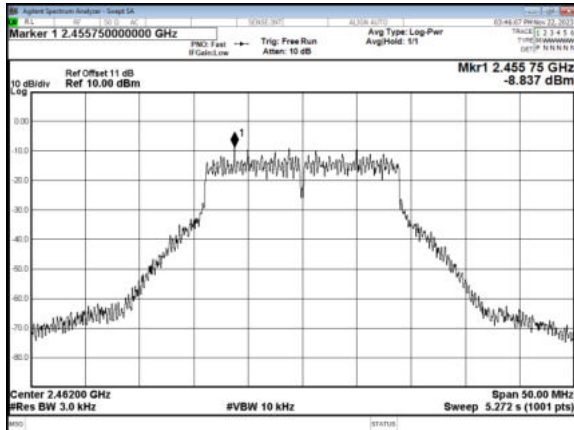
CH06



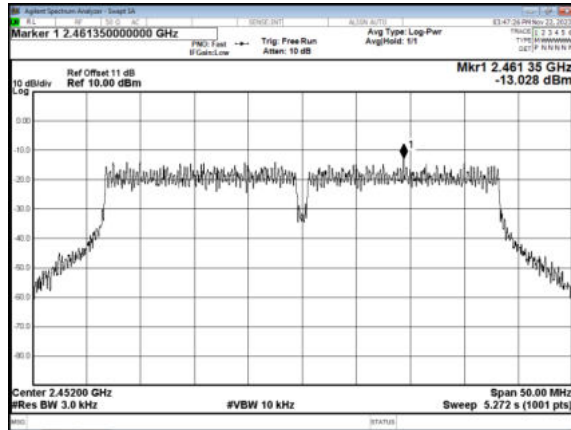
CH06



CH11

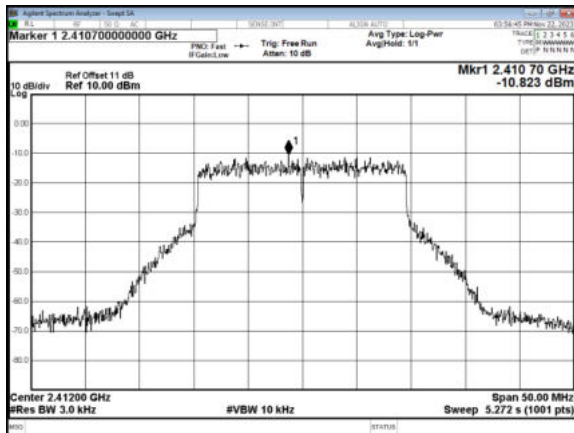


CH09

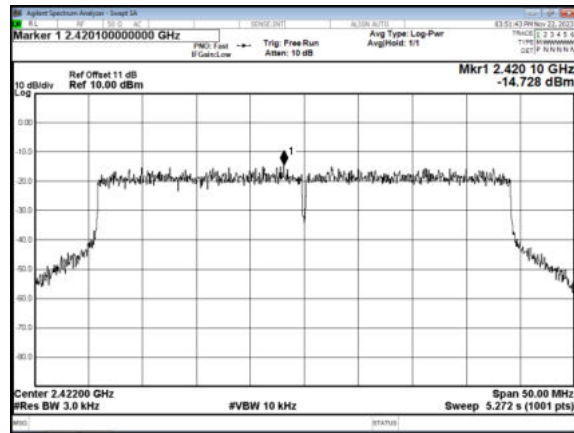




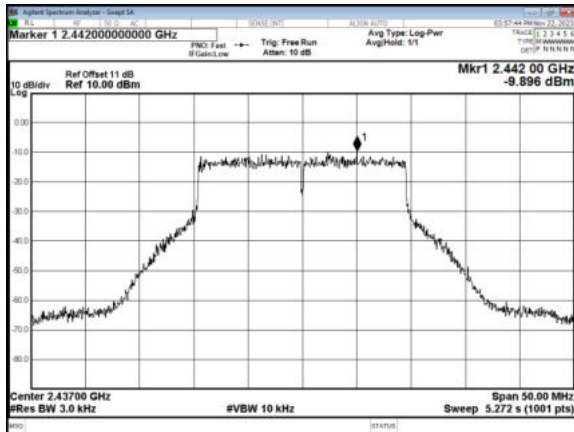
Modulation Type: 802.11ax HE20
CH01



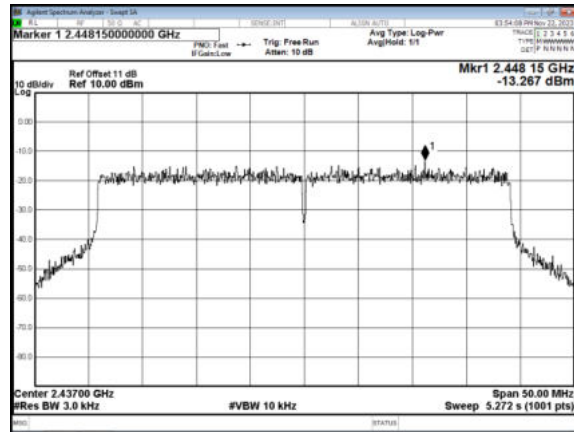
Modulation Type: 802.11ax HE40
CH03



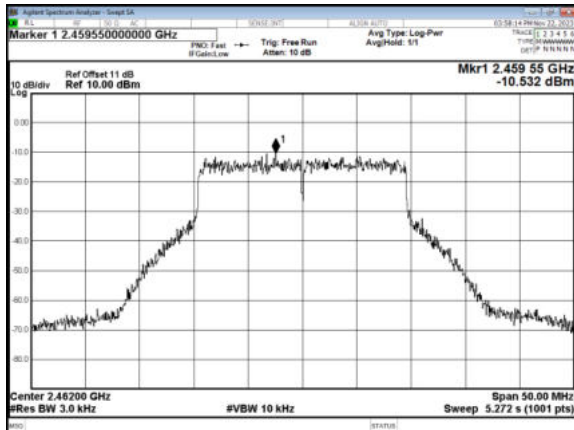
CH06



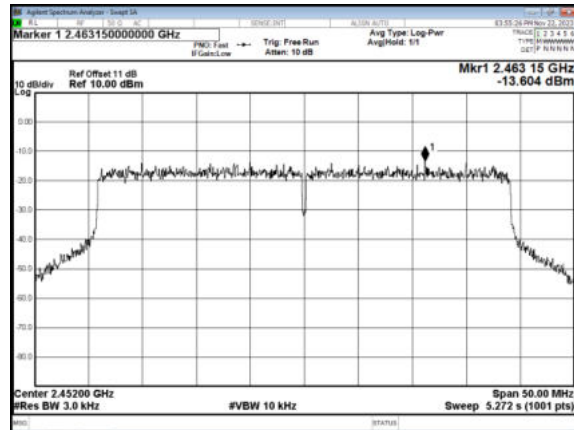
CH06

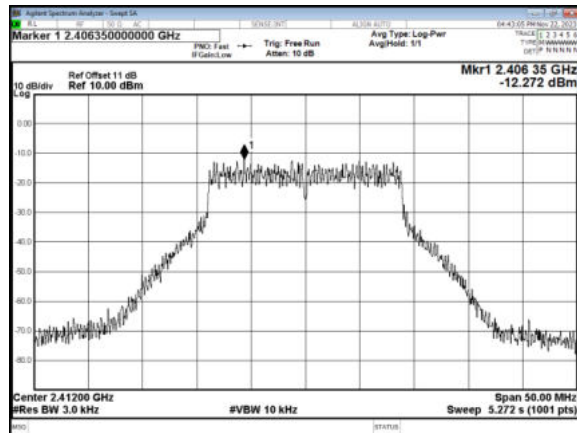
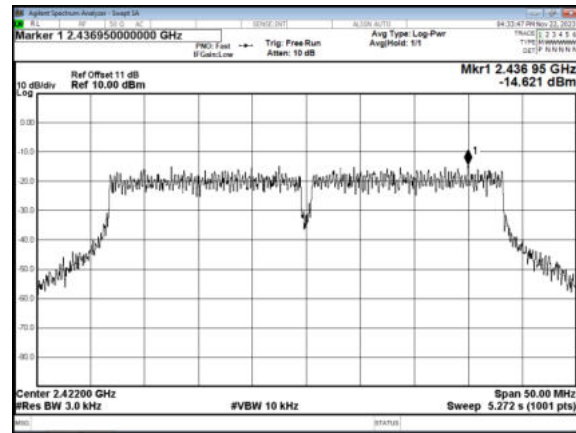
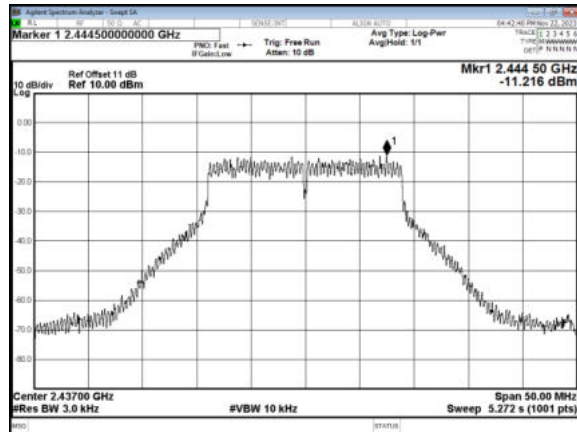
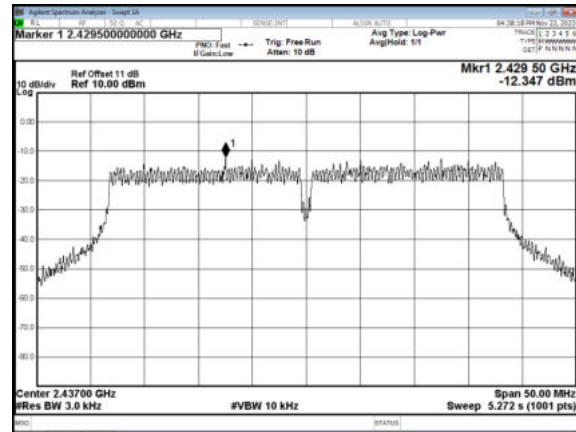
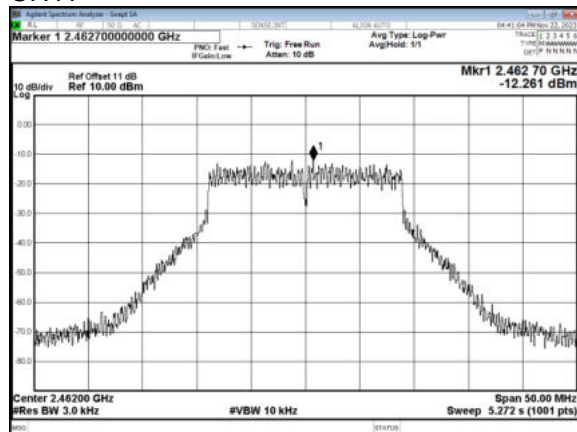
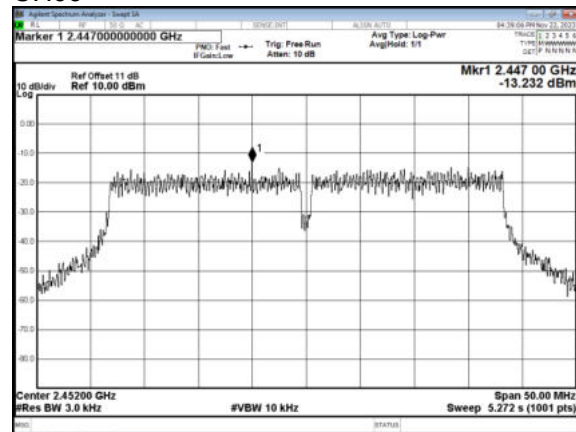


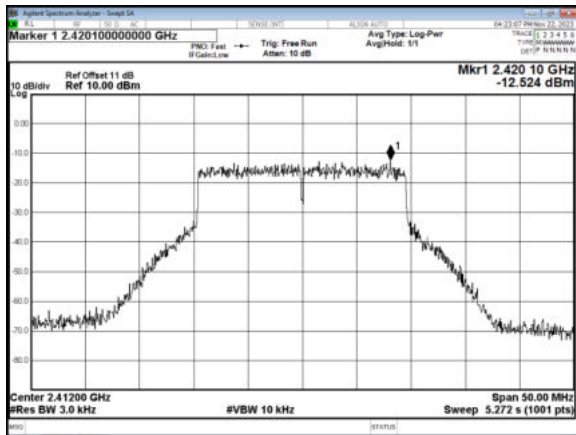
CH11



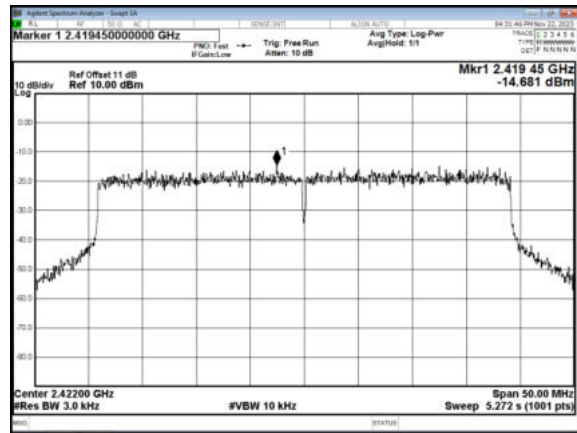
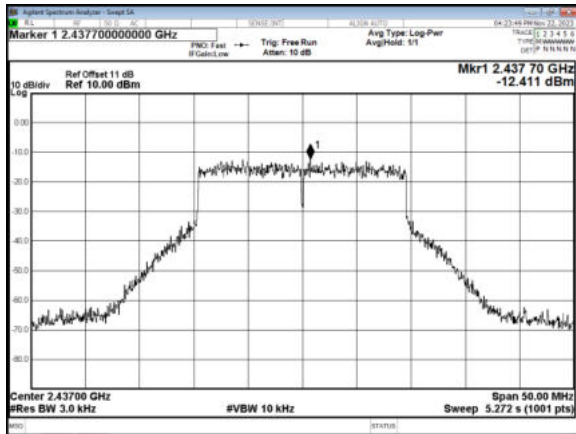
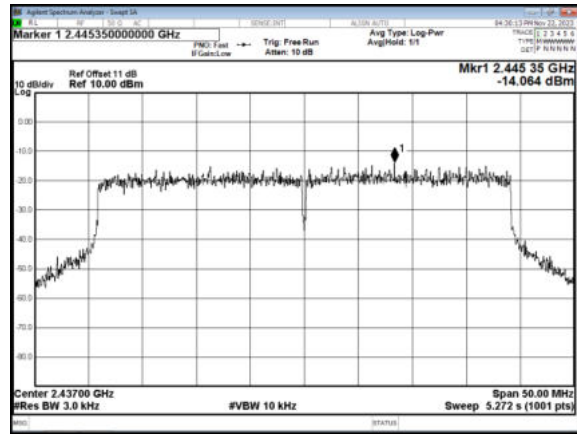
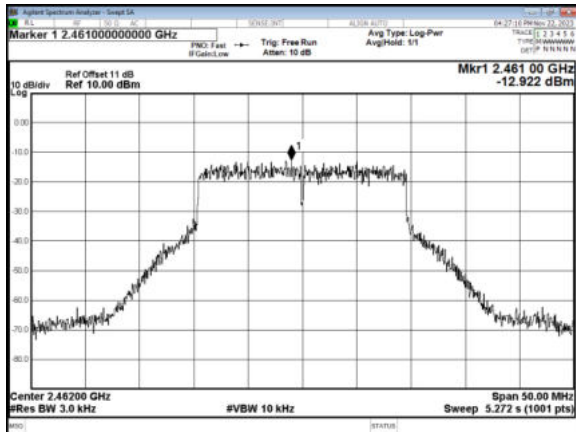
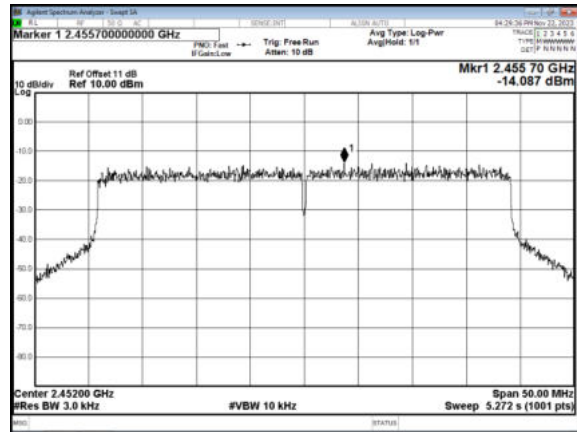
CH09

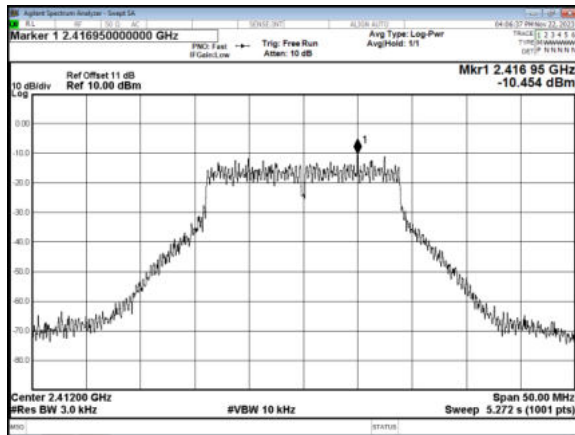
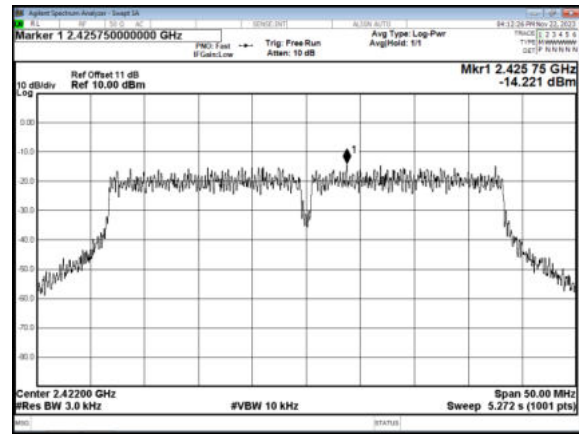
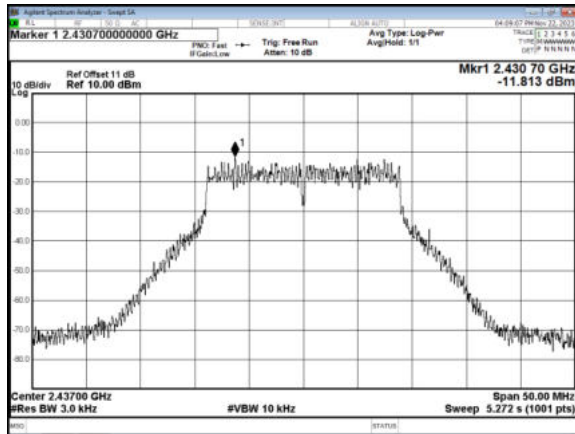
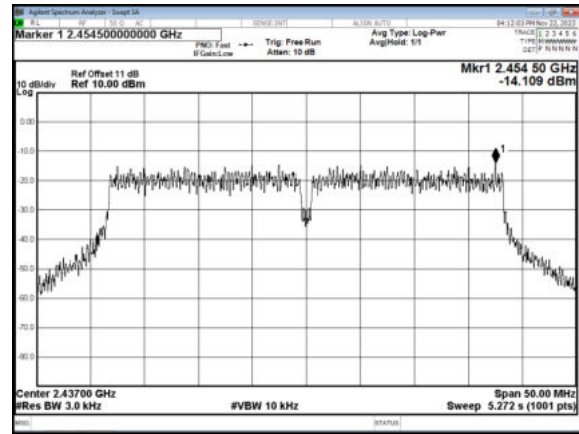
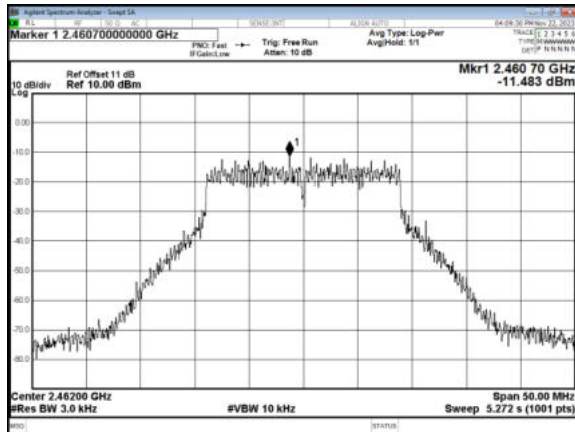
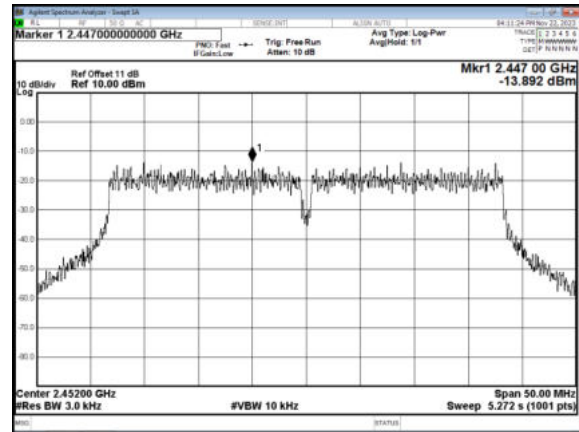


**MIMO (ANT A)**Modulation Type: 802.11n HT20
CH01Modulation Type: 802.11n HT40
CH03**CH06****CH06****CH11****CH09**

Modulation Type: 802.11ax HE20
CH01

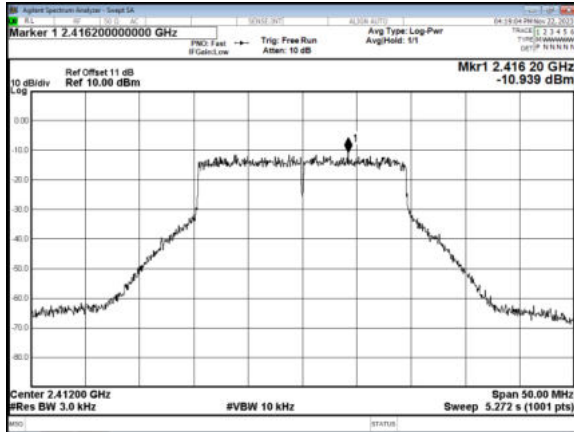
Modulation Type: 802.11ax HE40
CH03

CH06CH06CH11CH09

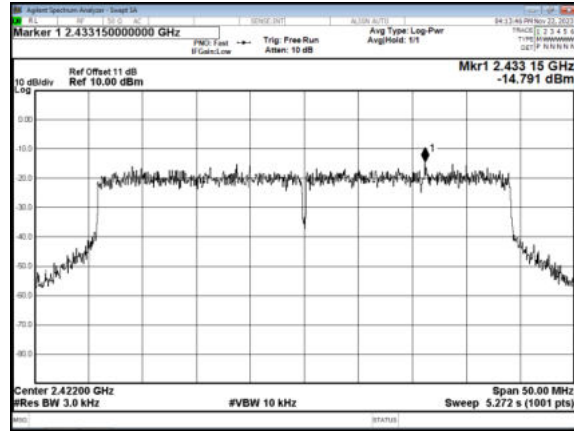
**MIMO (ANT B)**Modulation Type: 802.11n HT20
CH01Modulation Type: 802.11n HT40
CH03**CH06****CH06****CH11****CH09**



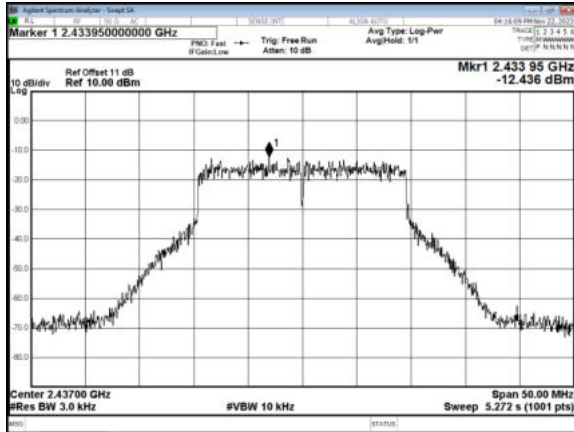
Modulation Type: 802.11ax HE20
CH01



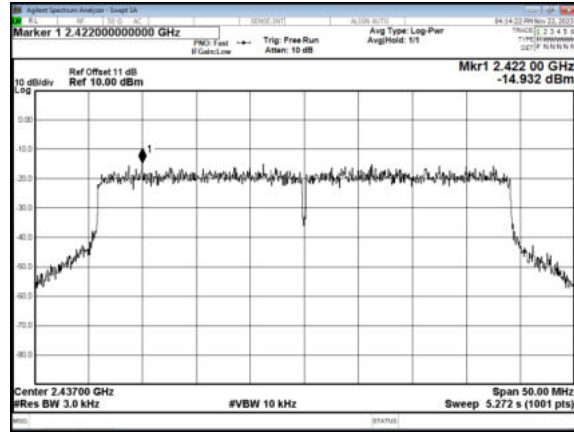
Modulation Type: 802.11ax HE40
CH03



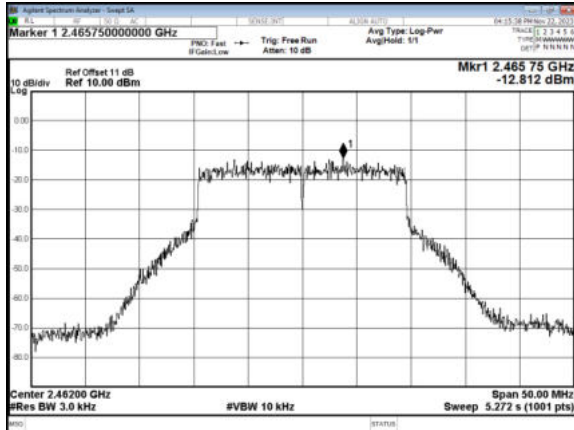
CH06



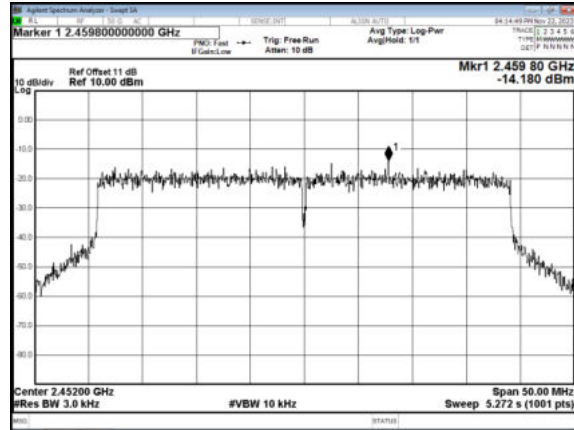
CH06



CH11



CH09



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