

Appendix A: Test Results of Wi-Fi 802.11 b/g/n

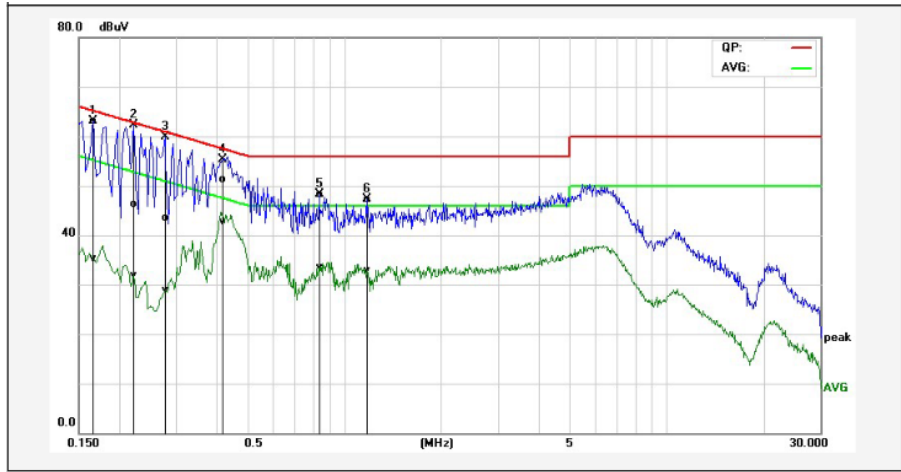
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Appendix A.1 Test Results of Conducted Emission on AC Mains

Test Mode:

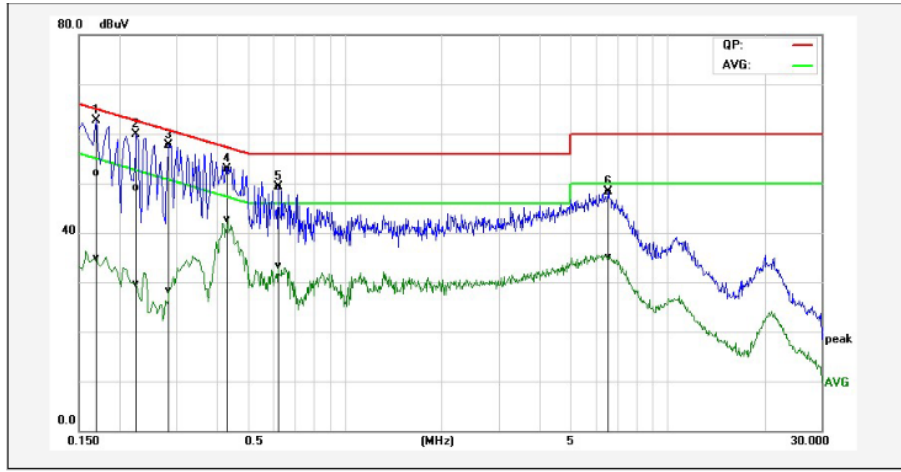
Mode13

L



No.	Frequency	QuasiPeak	Average	Correction	QuasiPeak	Average	QuasiPeak	Average	QuasiPeak	Average	Remark
	(MHz)	reading	reading	factor	result	result	limit	limit	margin	margin	
		(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1660	52.27	25.56	9.80	62.07	35.36	65.15	55.16	-3.08	-19.80	Pass
2P	0.2220	36.65	22.41	9.59	46.24	32.00	62.74	52.74	-16.50	-20.74	Pass
3P	0.2779	33.86	19.33	9.58	43.44	28.91	60.88	50.88	-17.44	-21.97	Pass
4P	0.4140	41.70	33.20	9.54	51.24	42.74	57.57	47.57	-6.33	-4.83	Pass
5P	0.8380	38.70	23.94	9.61	48.31	33.55	56.00	46.00	-7.69	-12.45	Pass
6P	1.1740	37.56	23.29	9.69	47.25	32.98	56.00	46.00	-8.75	-13.02	Pass

N



No.	Frequency	QuasiPeak	Average	Correction	QuasiPeak	Average	QuasiPeak	Average	QuasiPeak	Average	Remark
	(MHz)	reading	reading	factor	result	result	limit	limit	margin	margin	
		(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1P	0.1700	42.42	25.22	9.60	52.02	34.82	64.96	54.96	-12.94	-20.14	Pass
2P	0.2260	39.42	20.07	9.59	49.01	29.66	62.59	52.60	-13.58	-22.94	Pass
3*	0.2860	47.89	18.67	9.58	57.47	28.25	60.64	50.64	-3.17	-22.39	Pass
4P	0.4340	43.29	33.24	9.53	52.82	42.77	57.18	47.18	-4.36	-4.41	Pass
5P	0.6220	39.66	23.75	9.57	49.23	33.32	56.00	46.00	-6.77	-12.68	Pass
6P	6.5780	38.74	25.48	9.62	48.36	35.10	60.00	50.00	-11.64	-14.90	Pass

Appendix A.2 Test Results of Radiated Spurious Emission

Below 1GHz:

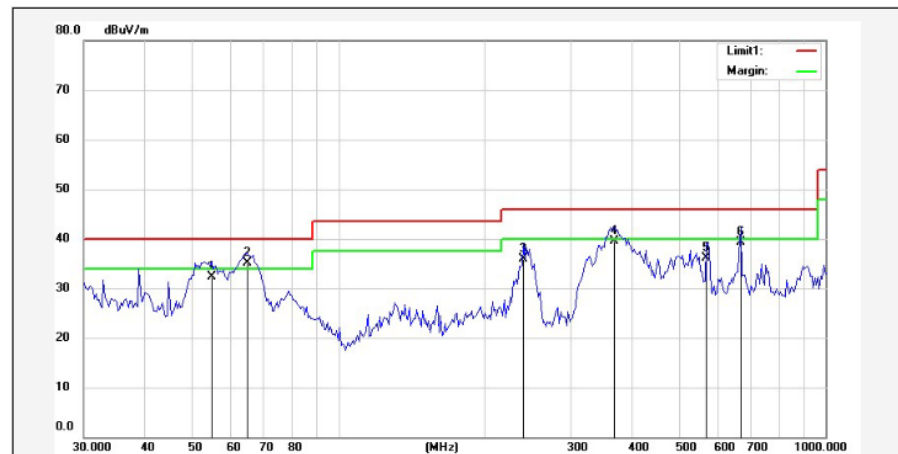
Test Mode: Mode 5(worst mode)

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1	70.2095	39.35	-14.06	25.29	40.00	-14.71	---	---	QP
2	213.1033	47.32	-14.39	32.93	43.50	-10.57	---	---	QP
3*	243.5431	54.27	-13.22	41.05	46.00	-4.95	---	---	QP
4	331.7857	50.21	-10.68	39.53	46.00	-6.47	---	---	QP
5!	368.6681	49.93	-9.62	40.31	46.00	-5.69	---	---	QP
6	669.9523	42.35	-3.59	38.76	46.00	-7.24	---	---	QP

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1	54.9010	44.54	-12.31	32.23	40.00	-7.77	---	---	QP
2*	64.9870	48.46	-13.31	35.15	40.00	-4.85	---	---	QP
3	240.1442	49.20	-13.35	35.85	46.00	-10.15	---	---	QP
4	368.6681	49.07	-9.62	39.45	46.00	-6.55	---	---	QP
5	569.9687	41.65	-5.48	36.17	46.00	-9.83	---	---	QP
6	669.9523	42.84	-3.59	39.25	46.00	-6.75	---	---	QP

Above 1GHz:
802.11 b-Low (worst mode) Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1328.1992	69.01	-24.59	44.42	74.00	-29.58	peak
2	1328.1992	48.85	-24.59	24.26	54.00	-29.74	AVG
3	1580.2672	68.46	-23.81	44.65	74.00	-29.35	peak
4	1580.2672	47.94	-23.81	24.13	54.00	-29.87	AVG
5	2630.8811	66.63	-19.77	46.86	74.00	-27.14	peak
6	2630.8811	46.18	-19.77	26.41	54.00	-27.59	AVG
7	12863.7942	57.13	-3.04	54.09	74.00	-19.91	peak
8	12863.7942	38.00	-3.04	34.96	54.00	-19.04	AVG
9	16791.3490	53.97	-0.77	53.20	74.00	-20.80	peak
10	16791.3490	34.47	-0.77	33.70	54.00	-20.30	AVG
11	17587.7465	50.95	3.35	54.30	74.00	-19.70	peak
12	17587.7465	31.17	3.35	34.52	54.00	-19.48	AVG

802.11 b-Low (worst mode) Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1182.9100	71.31	-25.87	45.44	74.00	-28.56	peak
2	1182.9100	51.23	-25.87	25.36	54.00	-28.64	AVG
3	1328.1992	69.21	-24.59	44.62	74.00	-29.38	peak
4	1328.1992	49.26	-24.59	24.67	54.00	-29.33	AVG
5	1992.2944	65.89	-21.49	44.40	74.00	-29.60	peak
6	1992.2944	45.68	-21.49	24.19	54.00	-29.81	AVG
7	13869.8440	54.15	-1.84	52.31	74.00	-21.69	peak
8	13869.8440	34.08	-1.84	32.24	54.00	-21.76	AVG
9	16791.3490	53.88	-0.77	53.11	74.00	-20.89	peak
10	16791.3490	34.86	-0.77	34.09	54.00	-19.91	AVG
11	17587.7465	50.90	3.35	54.25	74.00	-19.75	peak
12	17587.7465	31.25	3.35	34.60	54.00	-19.40	AVG

802.11 b-Middle (worst mode) Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1328.199	67.05	-24.59	42.46	74	-31.54	peak
2	1328.199	48.04	-24.59	23.45	54	-30.55	AVG
3	1482.72	67.92	-24.71	43.21	74	-30.79	peak
4	1482.72	49.52	-24.71	24.81	54	-29.19	AVG
5	2646.164	62.09	-19.86	42.23	74	-31.77	peak
6	2646.164	42.81	-19.86	22.95	54	-31.05	AVG
7	5004.148	61.28	-15.59	45.69	74	-28.31	peak
8	5004.148	41.2	-15.59	25.61	54	-28.39	AVG
9	9408.664	55.58	-6.22	49.36	74	-24.64	peak
10	9408.664	35.58	-6.22	29.36	54	-24.64	AVG
11	13869.84	54.76	-1.84	52.92	74	-21.08	peak
12	13869.84	24.31	-1.84	22.47	54	-31.53	AVG



802.11 b-Middle (worst mode) Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1162.532	73.22	-26.22	47	74	-27	peak
2	1162.532	54.35	-26.22	28.13	54	-25.87	AVG
3	1231.858	71.13	-25.17	45.96	74	-28.04	peak
4	1231.858	50.65	-25.17	25.48	54	-28.52	AVG
5	1826.501	68.14	-22.56	45.58	74	-28.42	peak
6	1826.501	48.2	-22.56	25.64	54	-28.36	AVG
7	3638.928	61.39	-17.17	44.22	74	-29.78	peak
8	3638.928	42.06	-17.17	24.89	54	-29.11	AVG
9	5004.148	62.26	-15.59	46.67	74	-27.33	peak
10	5004.148	42.39	-15.59	26.8	54	-27.2	AVG
11	12069.74	55.21	-3.09	52.12	74	-21.88	peak
12	12069.74	36.05	-3.09	32.96	54	-21.04	AVG

802.11 b-High (worst mode) Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1320.5280	68.04	-24.55	43.49	74.00	-30.51	peak
2	1320.5280	48.44	-24.55	23.89	54.00	-30.11	AVG
3	2316.1066	63.75	-20.24	43.51	74.00	-30.49	peak
4	2316.1066	43.98	-20.24	23.74	54.00	-30.26	AVG
5	5004.1481	61.57	-15.59	45.98	74.00	-28.02	peak
6	5004.1481	41.46	-15.59	25.87	54.00	-28.13	AVG
7	12424.4058	55.06	-3.18	51.88	74.00	-22.12	peak
8	12424.4058	34.64	-3.18	31.46	54.00	-22.54	AVG
9	13869.8440	54.60	-1.84	52.76	74.00	-21.24	peak
10	13869.8440	34.36	-1.84	32.52	54.00	-21.48	AVG
11	17587.7465	51.60	3.35	54.95	74.00	-19.05	peak
12	17587.7465	29.82	3.35	33.17	54.00	-20.83	AVG

802.11 b-High (worst mode) Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1203.6450	72.37	-25.54	46.83	74.00	-27.17	peak
2	1203.6450	52.25	-25.54	26.71	54.00	-27.29	AVG
3	1992.2943	67.88	-21.49	46.39	74.00	-27.61	peak
4	1992.2943	48.04	-21.49	26.55	54.00	-27.45	AVG
5	8879.1668	56.45	-7.81	48.64	74.00	-25.36	peak
6	8879.1668	36.83	-7.81	29.02	54.00	-24.98	AVG
7	12863.7942	55.27	-3.04	52.23	74.00	-21.77	peak
8	12863.7942	35.20	-3.04	32.16	54.00	-21.84	AVG
9	14782.3307	53.39	-0.99	52.40	74.00	-21.60	peak
10	14782.3307	33.83	-0.99	32.84	54.00	-21.16	AVG
11	17587.7465	50.65	3.35	54.00	74.00	-20.00	peak
12	17587.7465	31.64	3.35	34.99	54.00	-19.01	AVG

Node:

- 1、 Testing was carried out within frequency range 9kHz to the tenth harmonics. The measurement results below 30MHz and 18GHz - 26.5GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported..
- 2、 Radiated emissions measured in frequency above 1GHz were made with an instrument using peak/average detector mode.
- 3、 Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- 4、 Margin (dB), result in dBuV/m – limit in dBuV/m.

**Restricted band Requirements
802.11 n(HT20)-Low (worst mode)**

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2387.896	79.50	-19.92	59.58	74.00	-14.42	peak
2	2387.896	61.44	-19.92	41.52	54.00	-12.48	AVG
3	2390.000	82.89	-19.91	62.98	74.00	-11.02	peak
4	2390.000	64.81	-19.91	44.90	54.00	-9.10	AVG

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2388.417	82.24	-19.92	62.32	74.00	-11.68	peak
2	2388.417	64.18	-19.92	44.26	54.00	-9.74	AVG
3	2390.000	85.07	-19.91	65.16	74.00	-8.84	peak
4	2390.000	67.01	-19.91	47.10	54.00	-6.90	AVG

802.11 n(HT20)-High (worst mode)

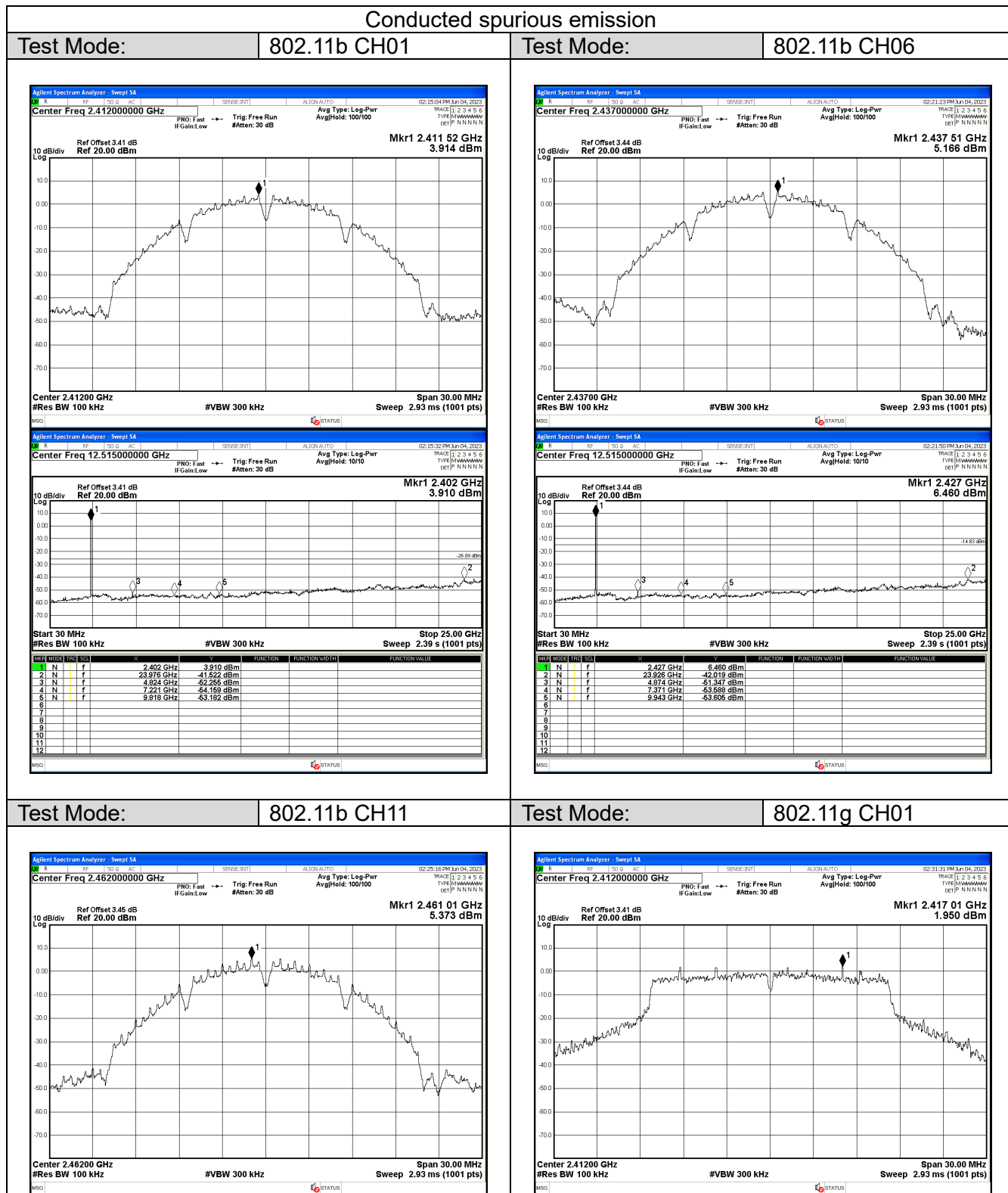
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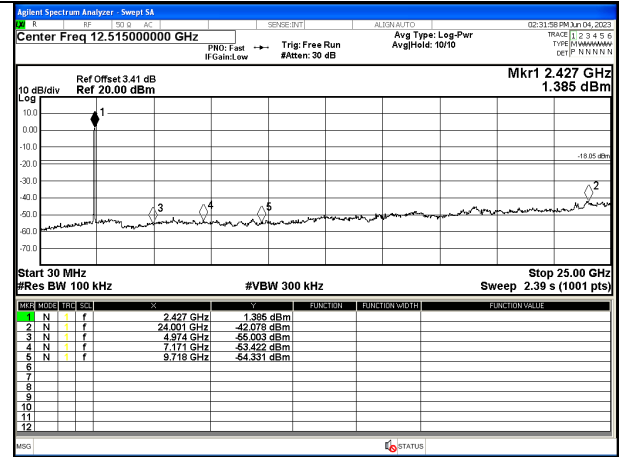
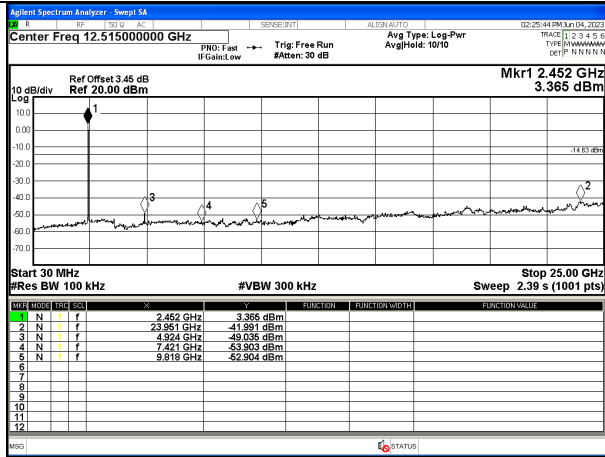
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	77.38	-19.91	57.47	74.00	-16.53	peak
2	2483.500	59.32	-19.91	39.41	54.00	-14.59	AVG
3	2484.850	78.90	-19.91	58.99	74.00	-15.01	peak
4	2484.850	60.87	-19.91	40.96	54.00	-13.04	AVG

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	81.70	-19.91	61.79	74.00	-12.21	peak
2	2483.500	63.75	-19.91	43.84	54.00	-10.16	AVG
3	2484.128	81.28	-19.91	61.37	74.00	-12.63	peak
4	2484.128	63.22	-19.91	43.31	54.00	-10.69	AVG

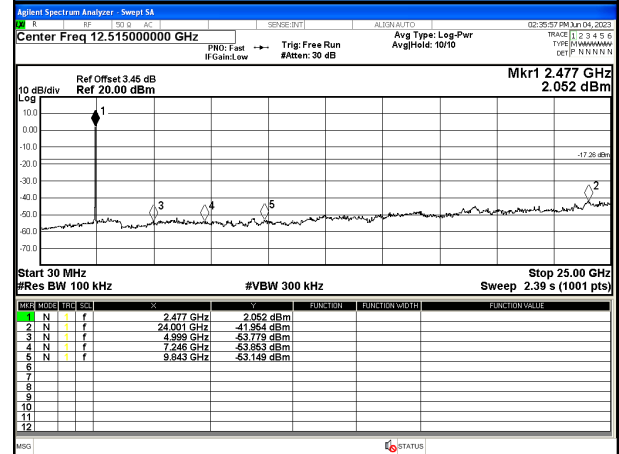
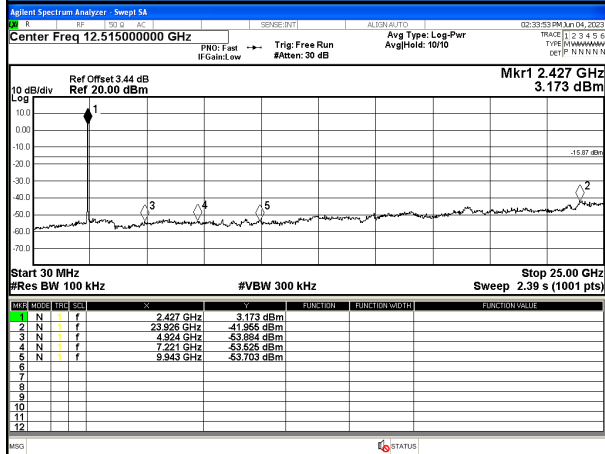
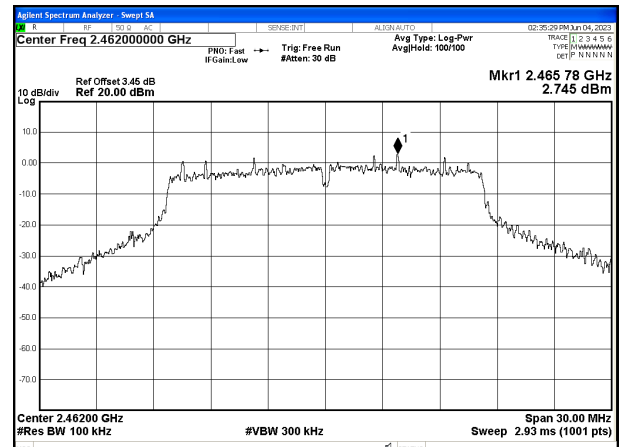
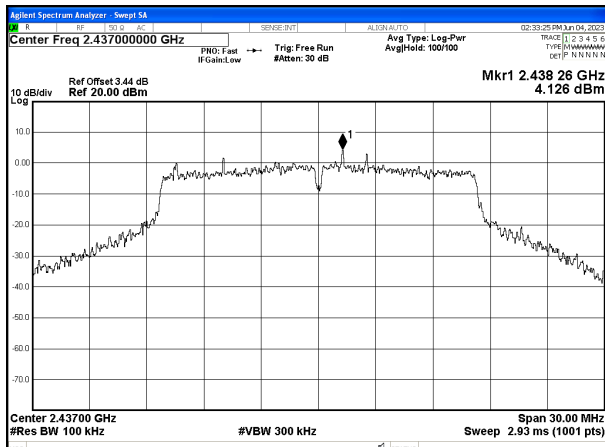
Appendix A.3 Test Results of Conducted Spurious Emissions Measured in 100 kHz Bandwidth





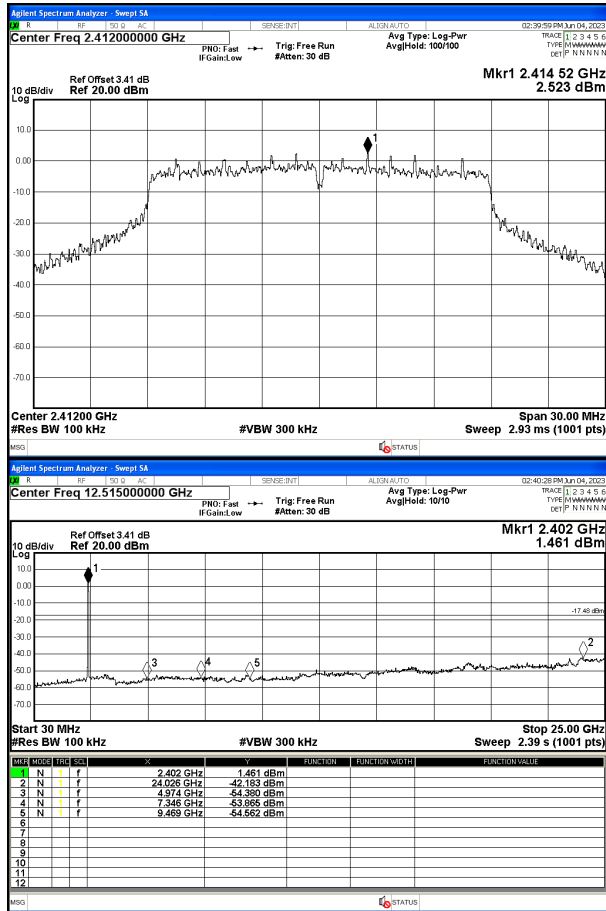
Test Mode: 802.11g CH06

Test Mode: 802.11g CH11

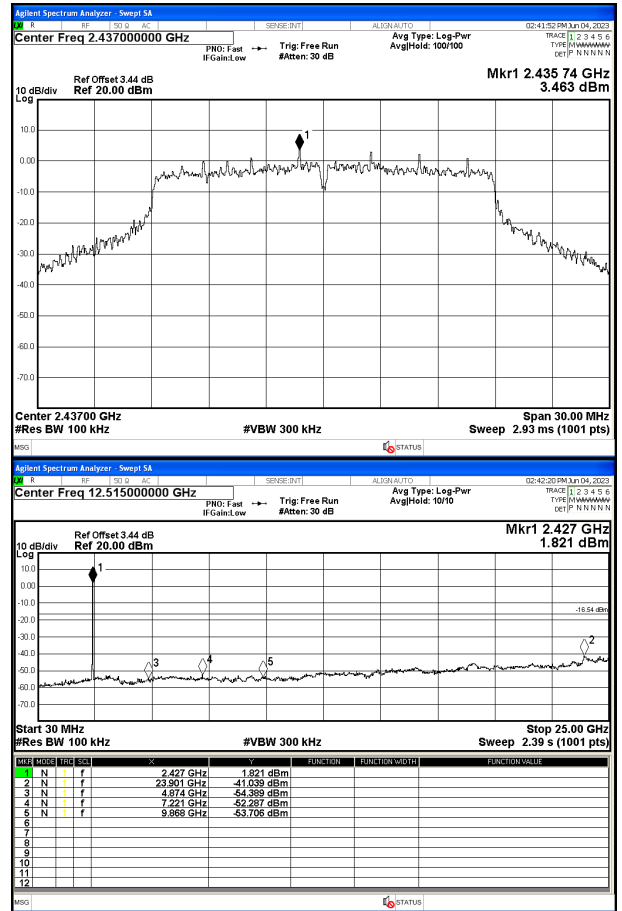




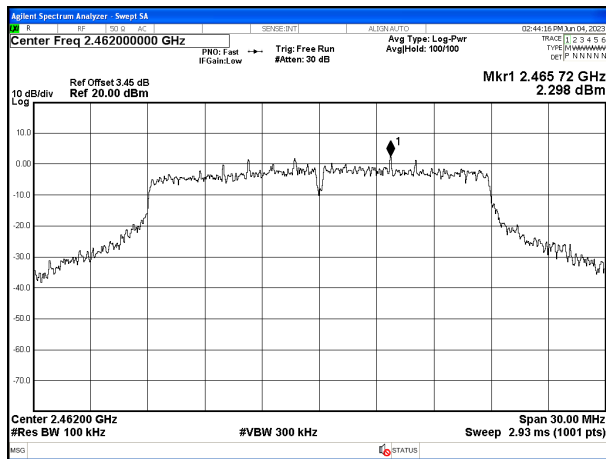
Test Mode: 802.11n20 CH01



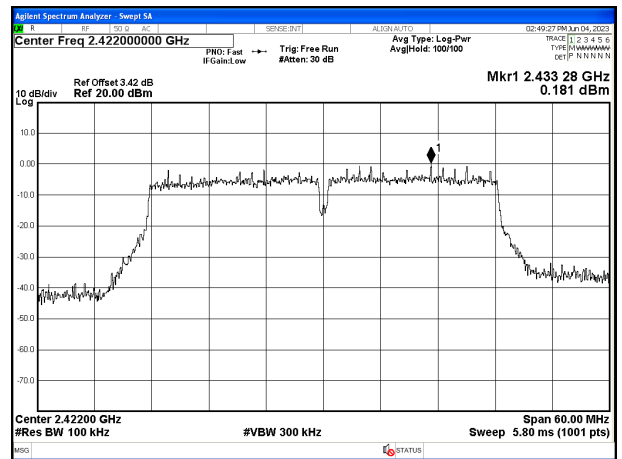
Test Mode: 802.11n20 CH06

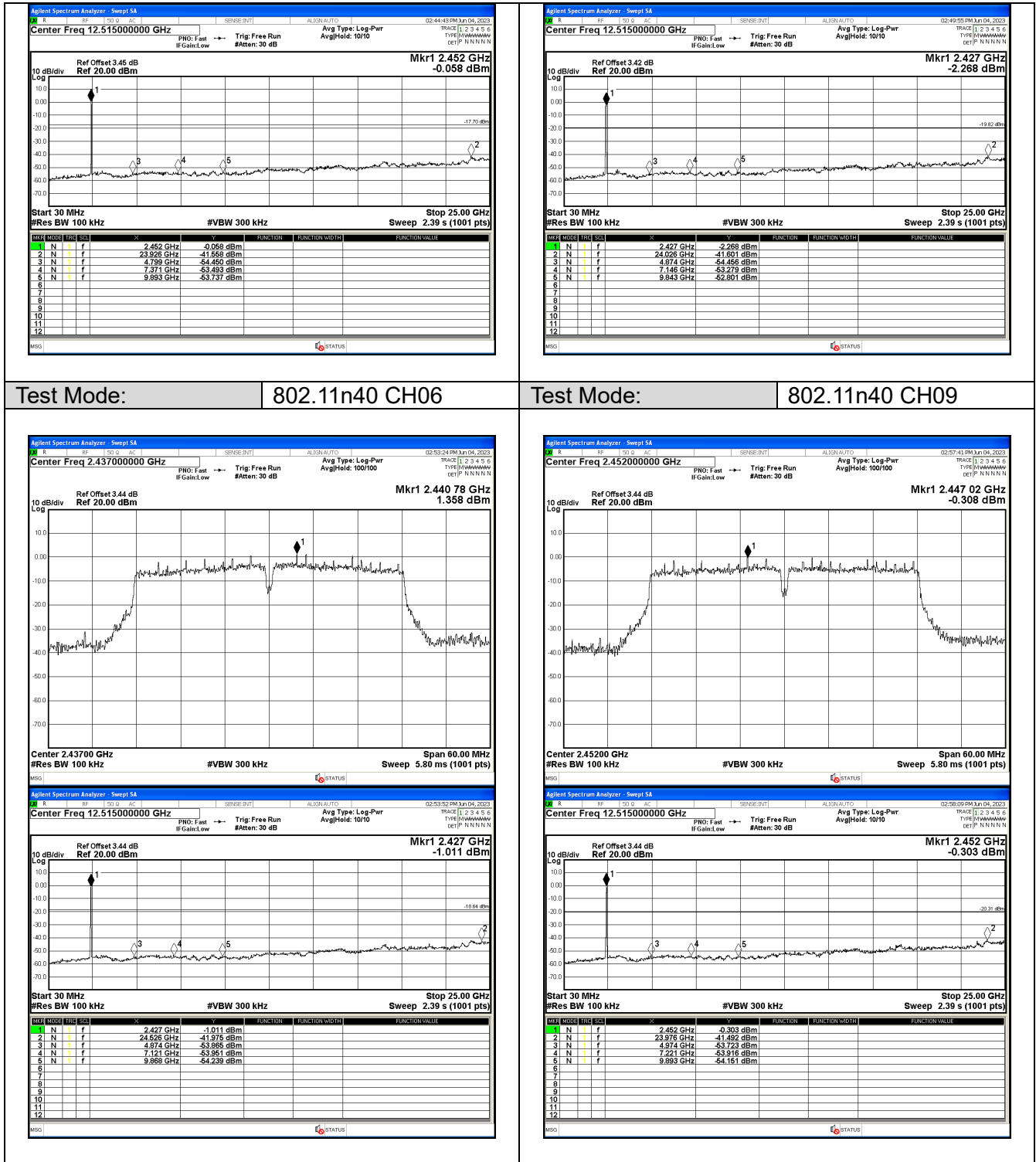


Test Mode: 802.11n20 CH11



Test Mode: 802.11n40 CH3



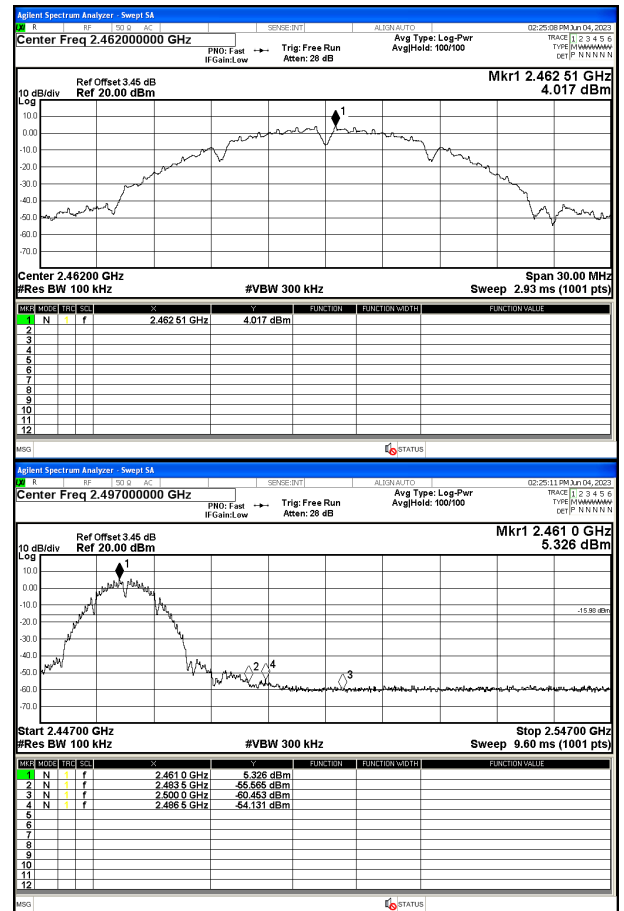
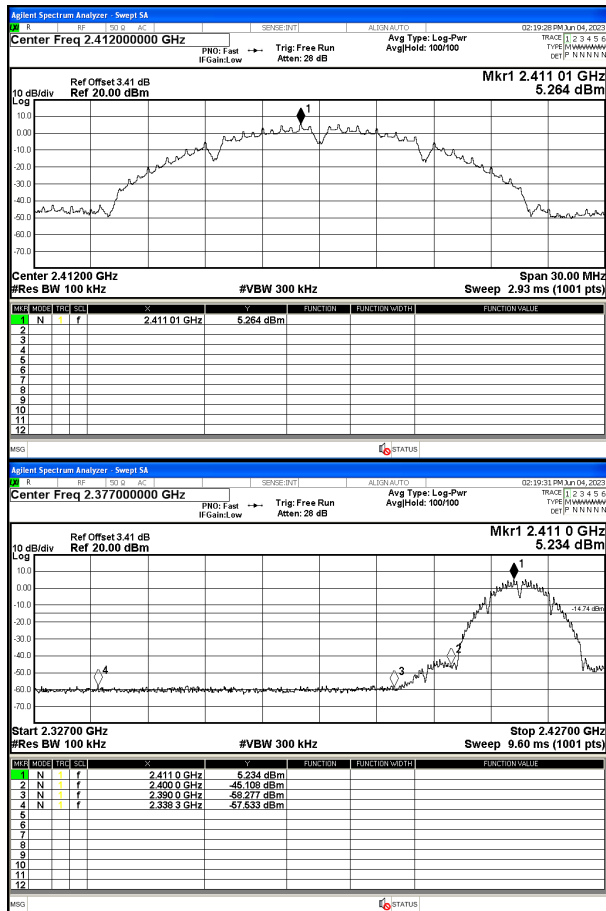




For Band edge(it's also the reference level for conducted spurious emission)

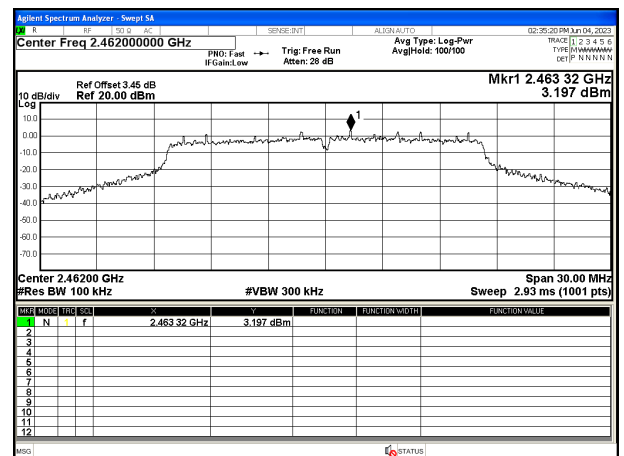
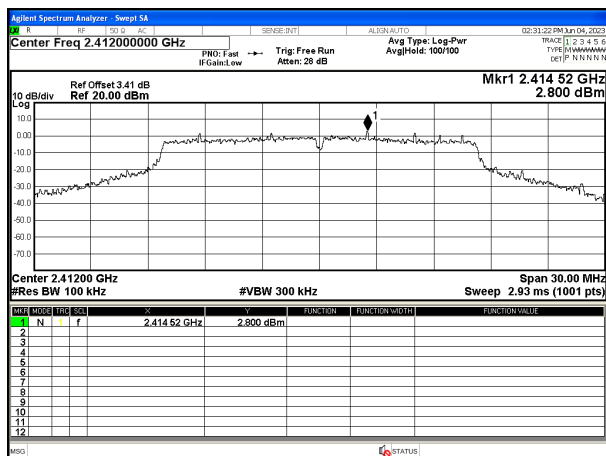
Test Mode: 802.11b CH01

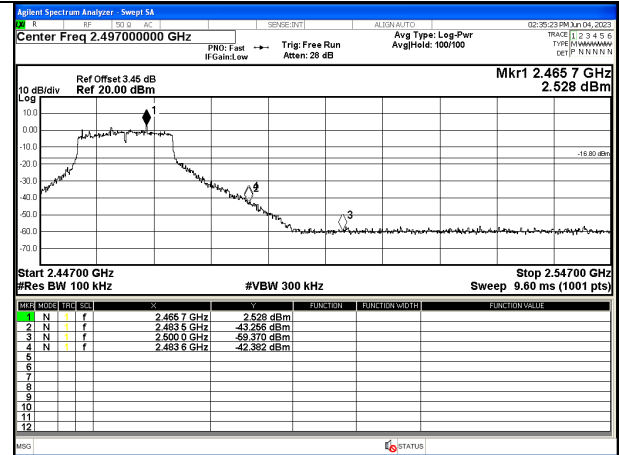
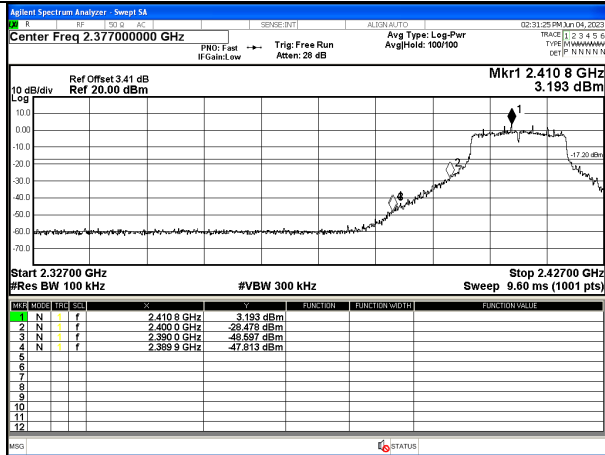
Test Mode: 802.11b CH11



Test Mode: 802.11g CH01

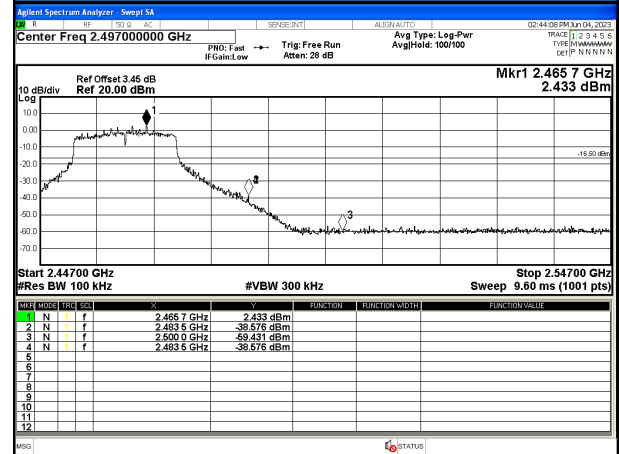
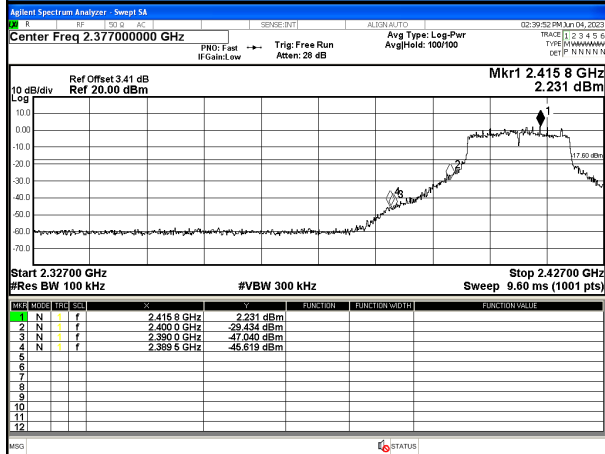
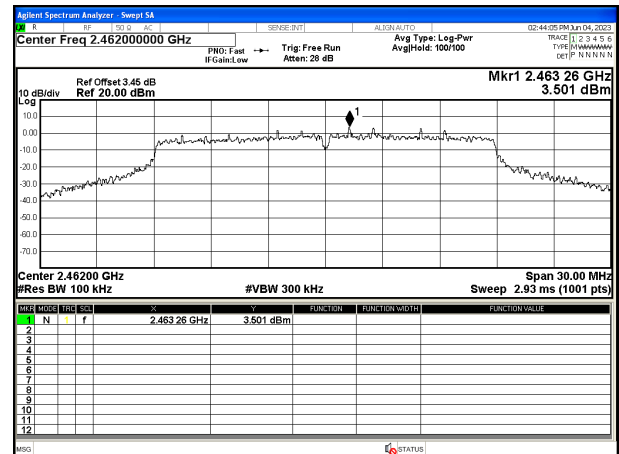
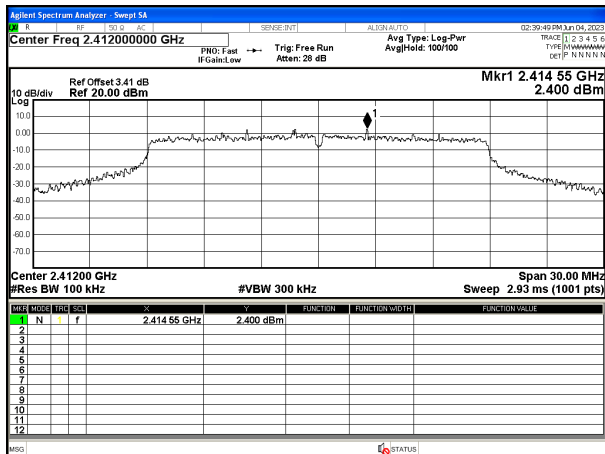
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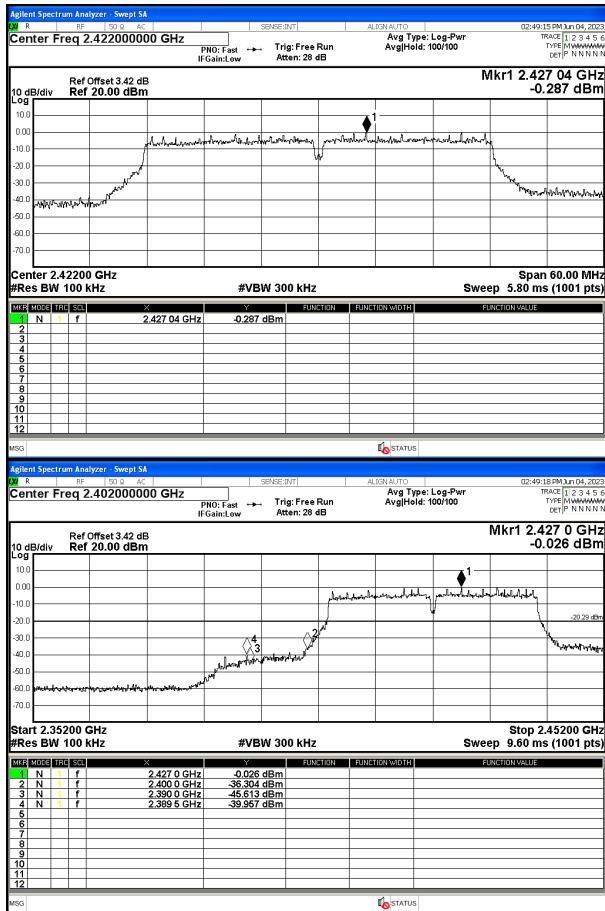


Test Mode: 802.11n20 CH01

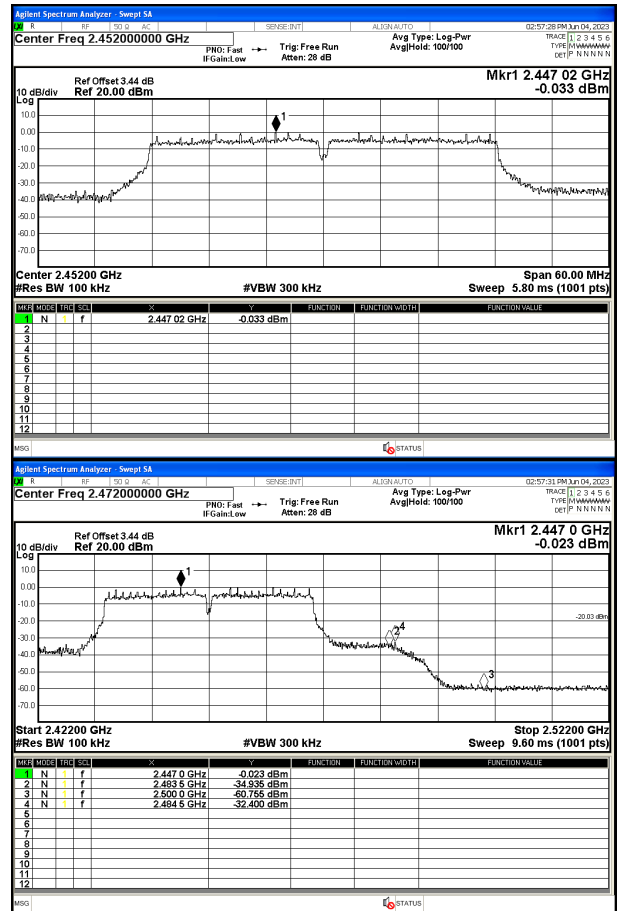
Test Mode: 802.11n20 CH11



Test Mode: 802.11n40 CH3



Test Mode: 802.11n40 CH09



Appendix A.4 Test Results of Conducted Power Spectral Density

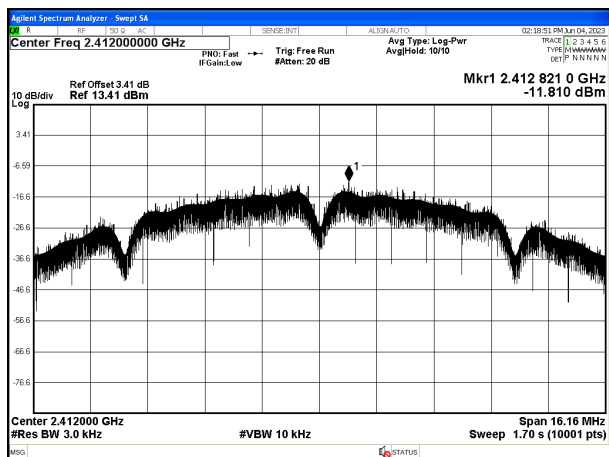
802.11b					
Frequency	Power Density			Limit (dBm/3KHz)	Result
	(dBm/3kHz)				
	Ant1	Ant2	Total		
CH01	-11.810	/	/	8	Pass
CH06	-10.163	/	/	8	Pass
CH11	-11.595	/	/	8	Pass

802.11g					
Frequency	Power Density			Limit (dBm/3KHz)	Result
	(dBm/3kHz)				
	Ant1	Ant2	Total		
CH01	-12.827	/	/	8	Pass
CH06	-12.208	/	/	8	Pass
CH11	-11.807	/	/	8	Pass

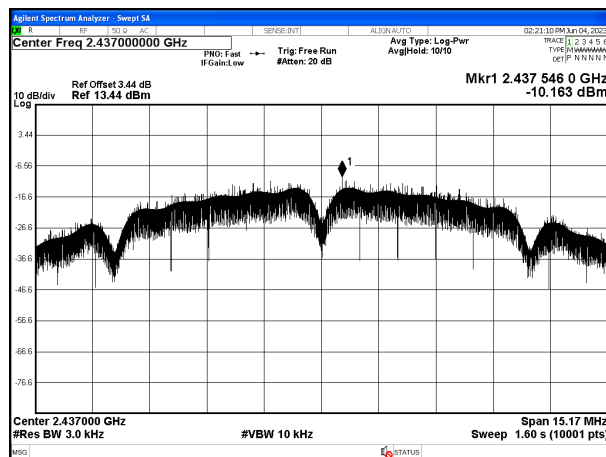
802.11n20					
Frequency	Power Density			Limit (dBm/3KHz)	Result
	(dBm/3kHz)				
	Ant1	Ant2	Total		
CH01	-13.624	/	/	8	Pass
CH06	-12.888	/	/	8	Pass
CH11	-13.335	/	/	8	Pass

802.11n40					
Frequency	Power Density			Limit (dBm/3KHz)	Result
	(dBm/3kHz)				
	Ant1	Ant2	Total		
CH3	-14.968	/	/	8	Pass
CH06	-14.371	/	/	8	Pass
CH09	-14.652	/	/	8	Pass

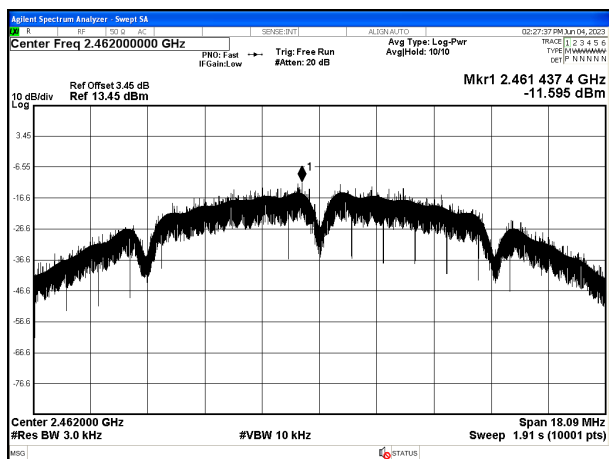
Test Mode: 802.11b CH01



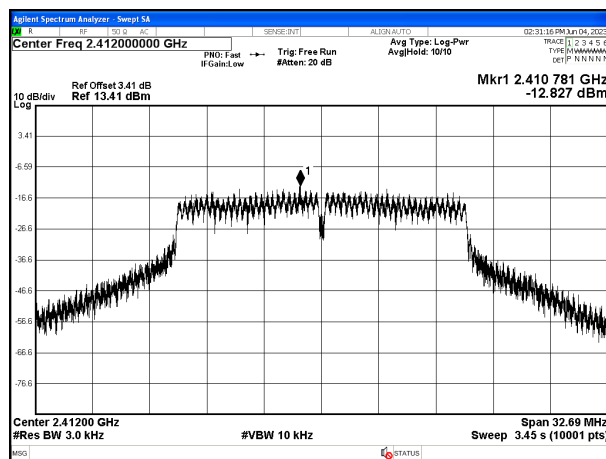
Test Mode: 802.11b CH06



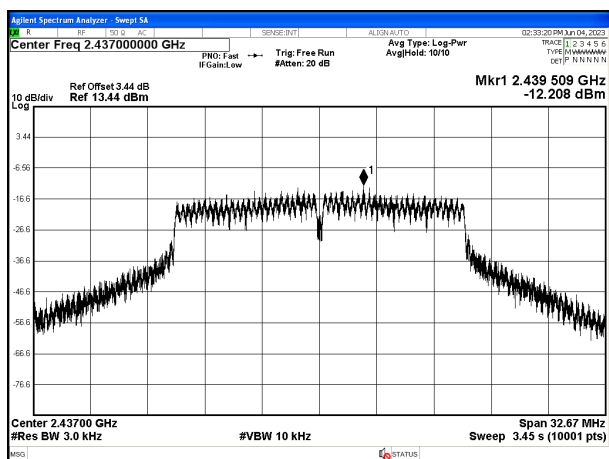
Test Mode: 802.11b CH11



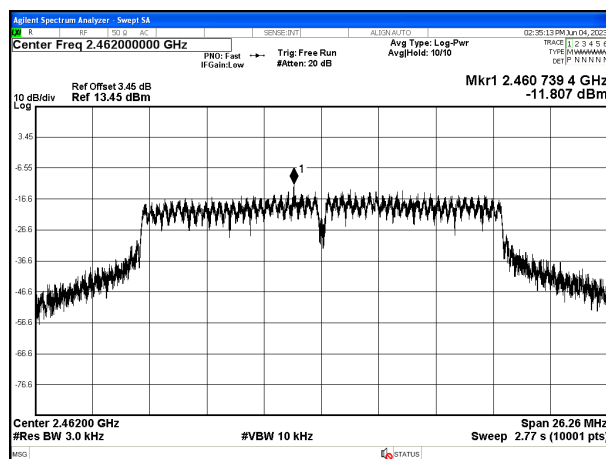
Test Mode: 802.11g CH01



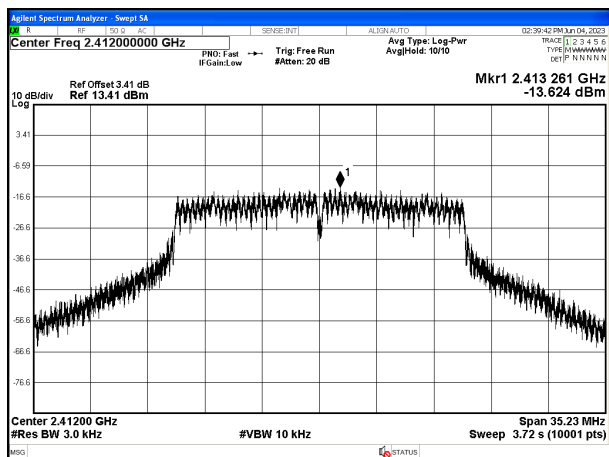
Test Mode: 802.11g CH06



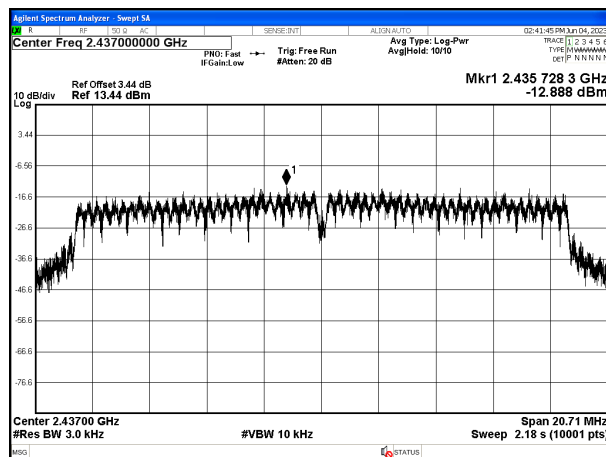
Test Mode: 802.11g CH11



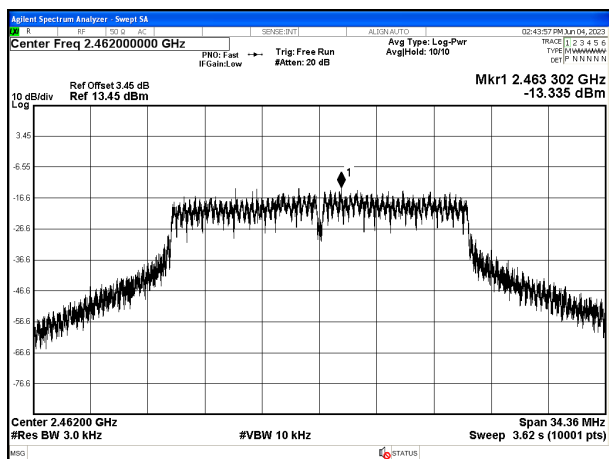
Test Mode: 802.11n20 CH01



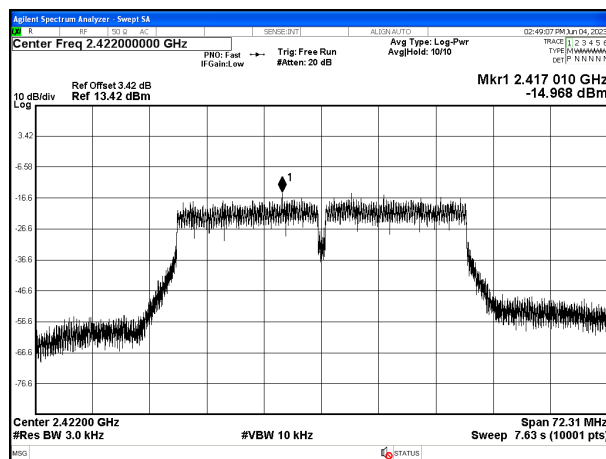
Test Mode: 802.11n20 CH06



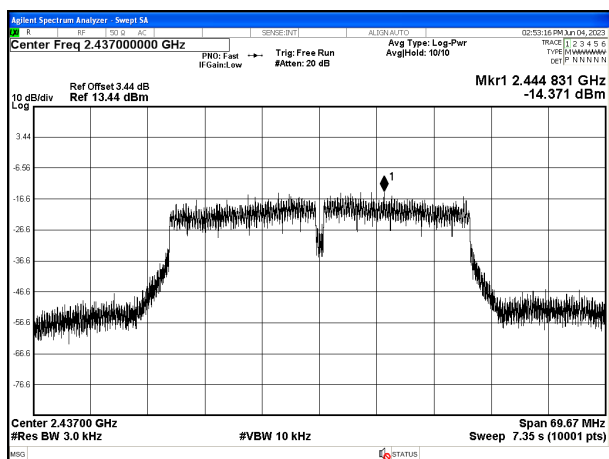
Test Mode: 802.11n20 CH11



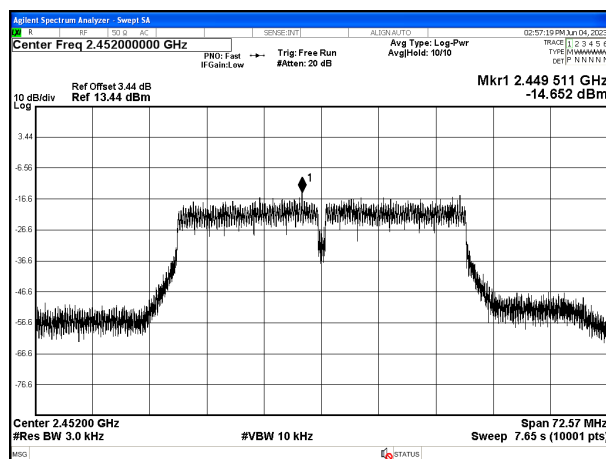
Test Mode: 802.11n40 CH3



Test Mode: 802.11n40 CH06



Test Mode: 802.11n40 CH09



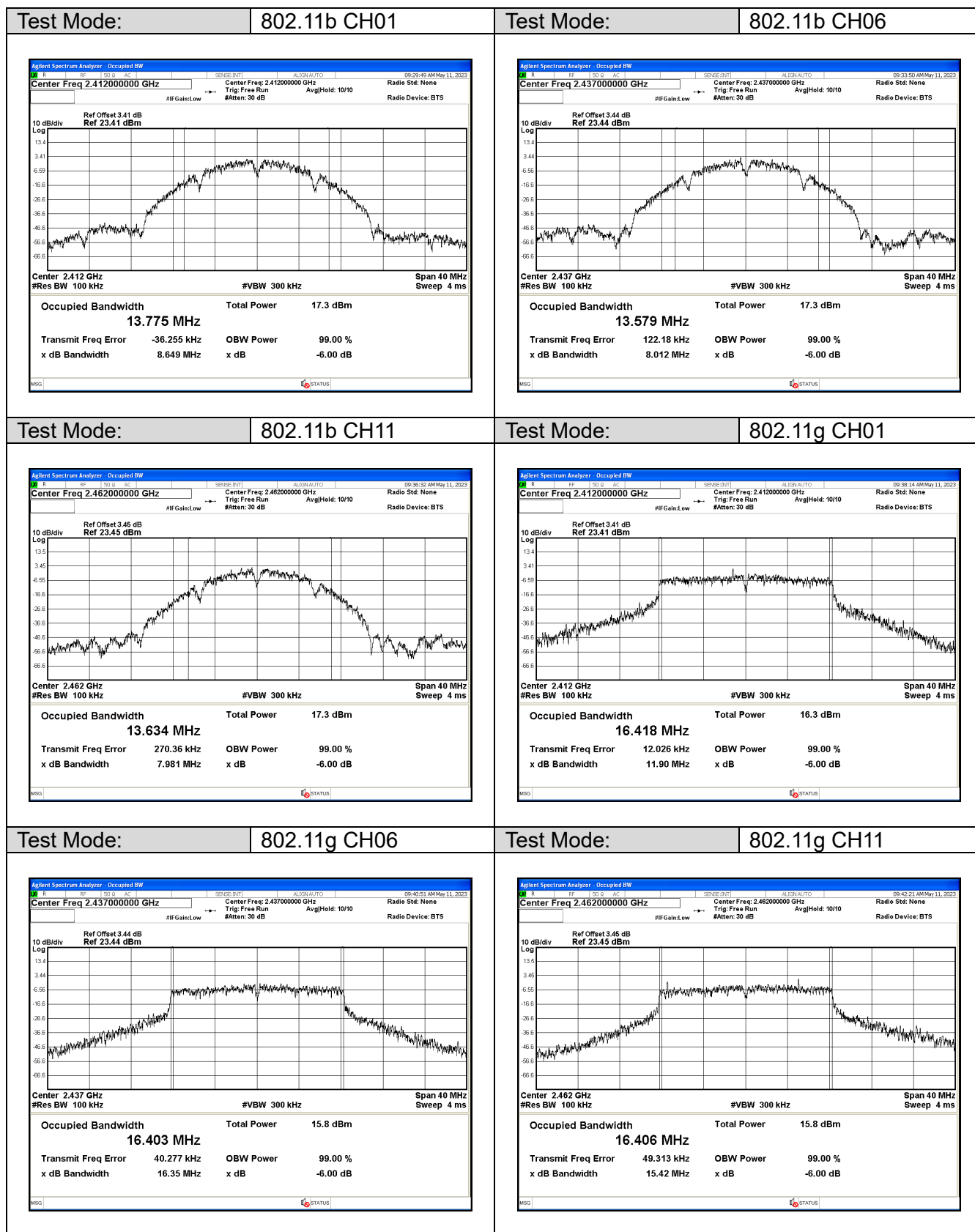
Appendix A.5 Test Results of 6dB BANDWIDTH

802.11b			
Frequency	6dB Bandwidth (MHz)	6dB limit (KHz)	Result
CH01	8.6494	0.5	Pass
CH06	8.0119	0.5	Pass
CH11	7.981	0.5	Pass

802.11g			
Frequency	6dB Bandwidth (MHz)	6dB limit (KHz)	Result
CH01	11.8993	0.5	Pass
CH06	16.352	0.5	Pass
CH11	15.4154	0.5	Pass

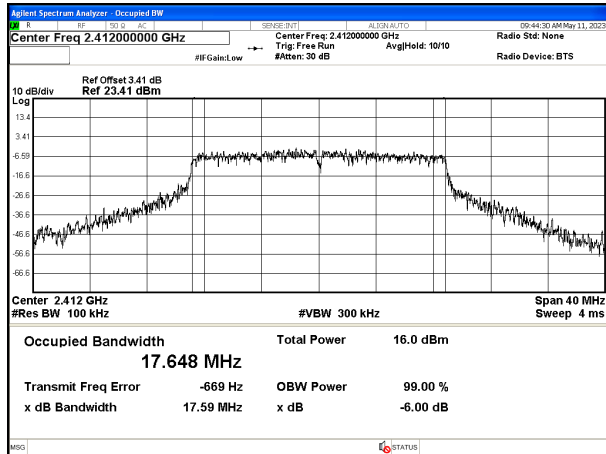
802.11n20			
Frequency	6dB Bandwidth (MHz)	6dB limit (KHz)	Result
CH01	17.5907	0.5	Pass
CH06	13.1871	0.5	Pass
CH11	17.5768	0.5	Pass

802.11n40			
Frequency	6dB Bandwidth (MHz)	6dB limit (KHz)	Result
CH3	36.4615	0.5	Pass
CH06	33.5196	0.5	Pass
CH09	36.033	0.5	Pass

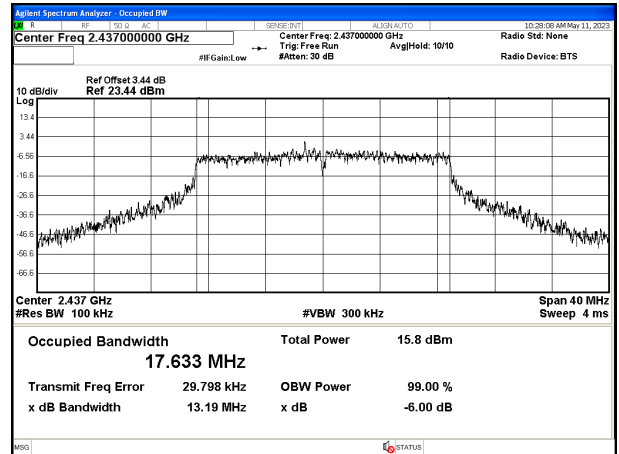




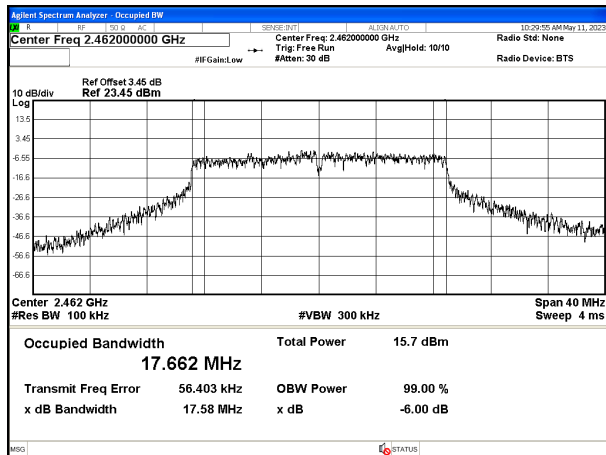
Test Mode: 802.11n20 CH01



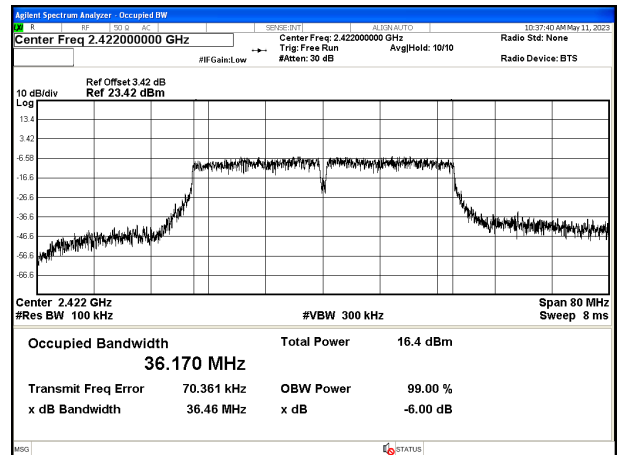
Test Mode: 802.11n20 CH06



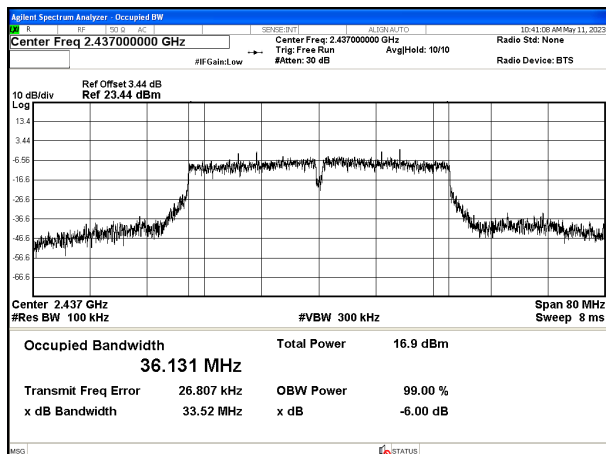
Test Mode: 802.11n20 CH11



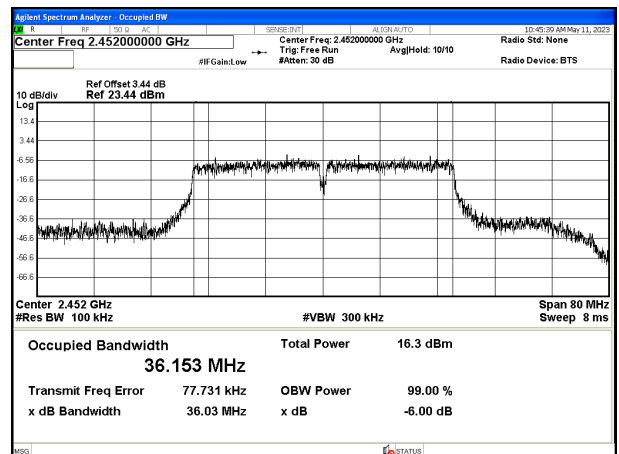
Test Mode: 802.11n40 CH03



Test Mode: 802.11n40 CH06



Test Mode: 802.11n40 CH09



Appendix A.6 Test Results of Maximum Conducted Output Power

802.11b							
Test Channel	Frequency	Conducted Peak Power (dBm)			W	Limit	Result
	(MHz)	Ant1	Ant2	Total		W	
CH01	2412	14.98	/	/	0.0315	1	Pass
CH06	2437	14.73	/	/	0.0297	1	Pass
CH11	2462	14.53	/	/	0.0284	1	Pass

802.11g							
Test Channel	Frequency	Conducted Peak Power (dBm)			W	Limit	Result
	(MHz)	Ant1	Ant2	Total		W	
CH01	2412	17.44	/	/	0.0555	1	Pass
CH06	2437	16.98	/	/	0.0499	1	Pass
CH11	2462	16.88	/	/	0.0488	1	Pass

802.11n20							
Test Channel	Frequency	Conducted Peak Power (dBm)			W	Limit	Result
	(MHz)	Ant1	Ant2	Total		W	
CH01	2412	17.34	/	/	0.0542	1	Pass
CH06	2437	16.48	/	/	0.0445	1	Pass
CH11	2462	16.53	/	/	0.0450	1	Pass

802.11n40							
Test Channel	Frequency	Conducted Peak Power (dBm)			W	Limit	Result
	(MHz)	Ant1	Ant2	Total		W	
CH03	2422	18.64	/	/	0.0731	1	Pass
CH06	2437	18.95	/	/	0.0785	1	Pass
CH09	2452	19.02	/	/	0.0798	1	Pass

Note:

- 1) The cable loss is taken into account in results.
- 2) Antenna gain(G) of 802.11 b/g/n: 3.54 dBi(ANT1)
e.i.r.p.=P(Peak power)+ G, which is far below the 4 W.