

APPENDIX REPORT

Project No.	SHT2111035102EW	Radio Specification	WIFI 2.4G
Test sample No.	YPHT21110351010	Model No.	LitBike
Start test date	2021-12-15	Finish date	2021-12-23
Temperature	23.1℃	Humidity	31%
Test Engineer	Xiaoqin Li	Auditor	Xiaodong Zhuo

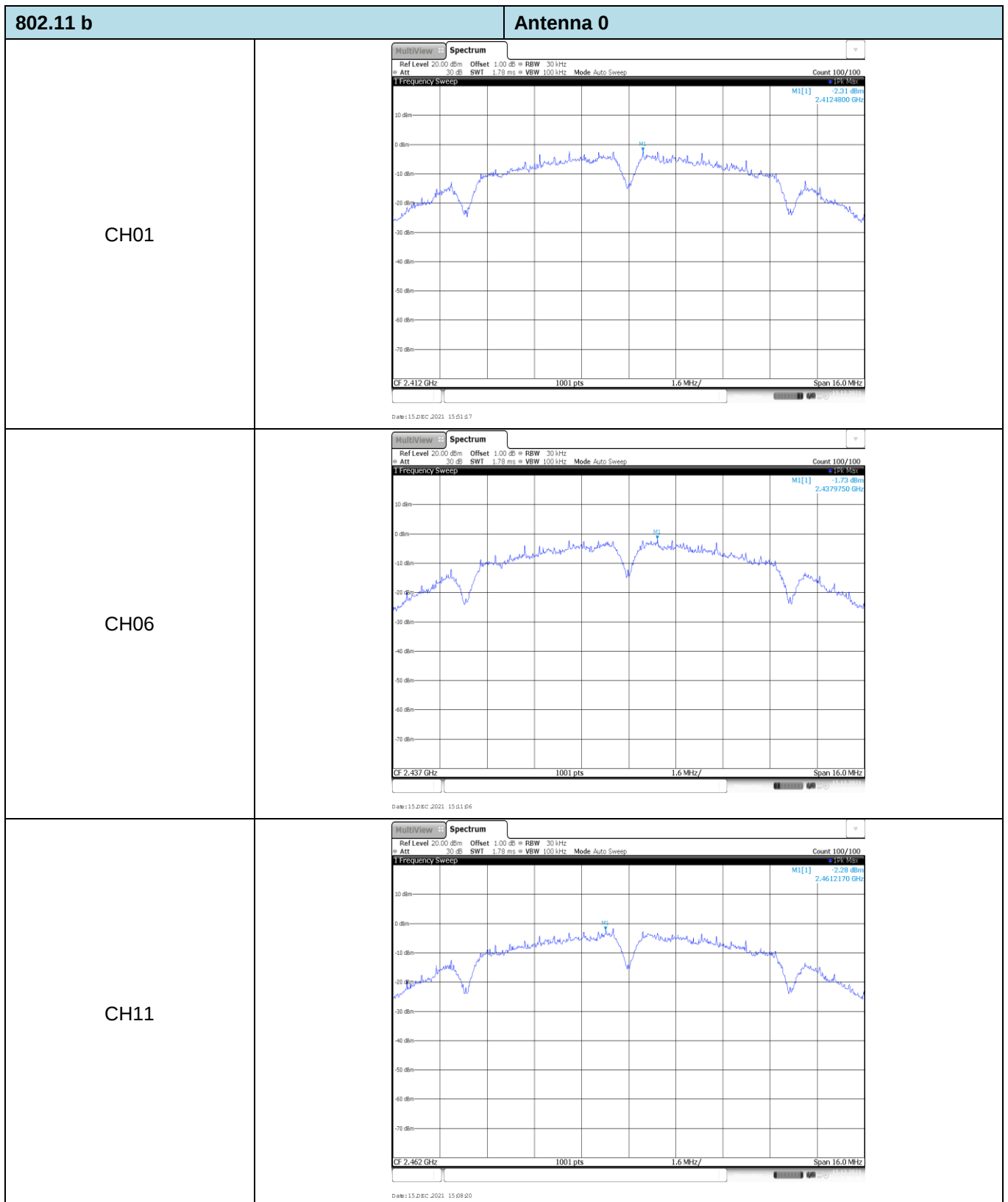
Appendix clause	Test item	Result
A	Conducted Peak Output Power	PASS
B	Power Spectral Density	PASS
C	6 dB Bandwidth	PASS
D	99% Occupied Bandwidth	PASS
E	Duty Cycle	PASS
F	Band edge and Spurious Emissions(coducted)	PASS

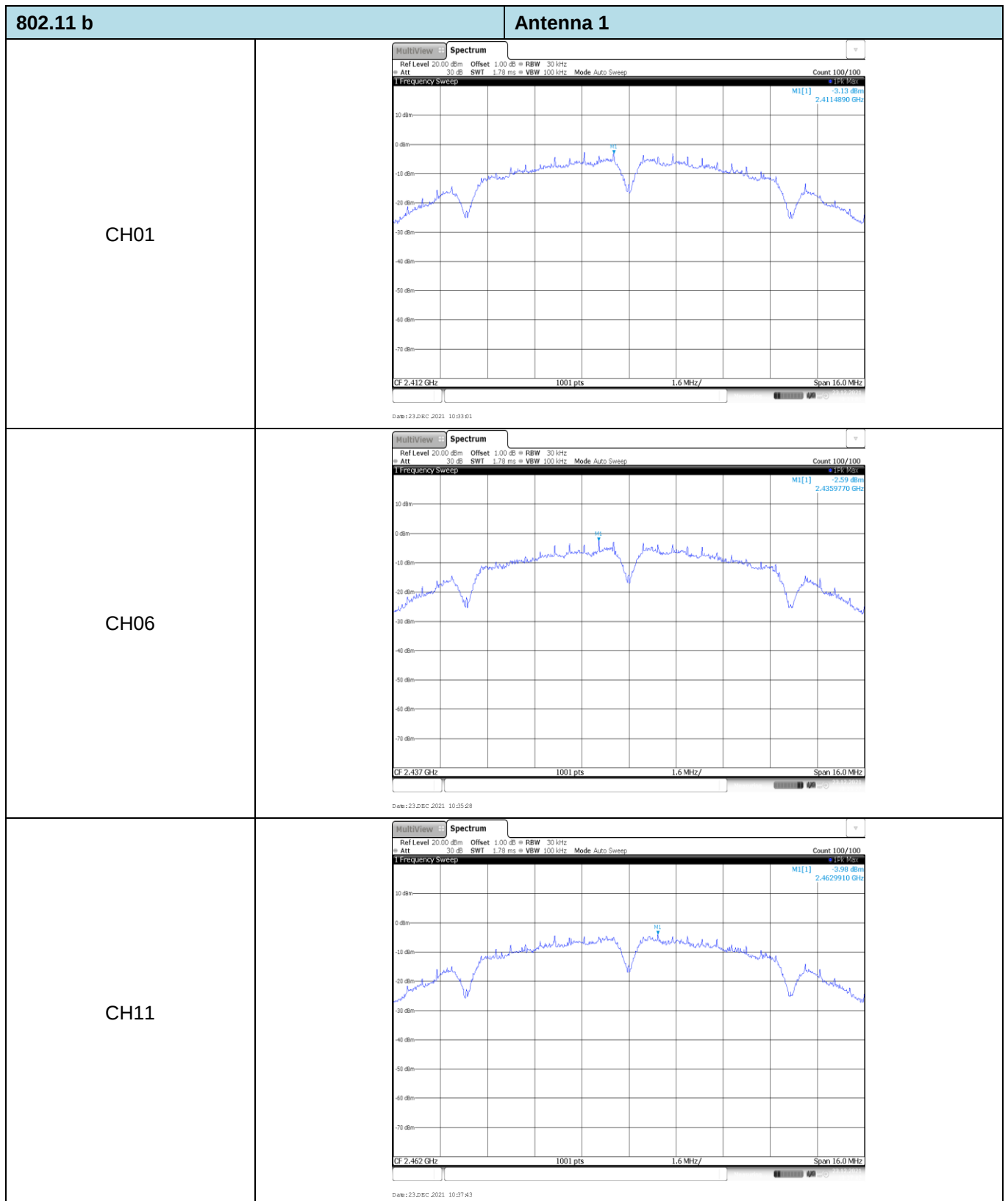
Appendix A: Conducted Peak Output Power

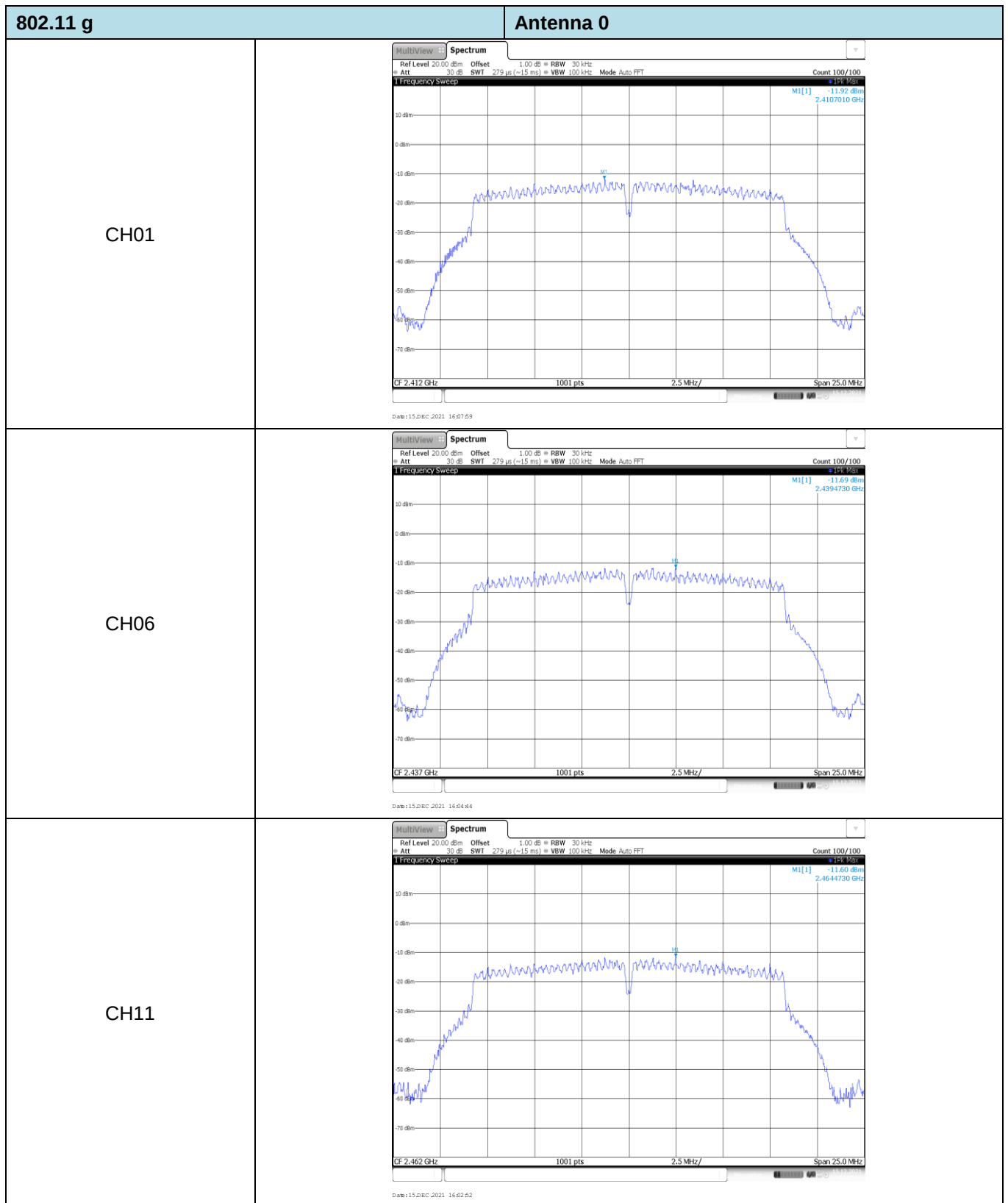
Type	Channel	Peak Output power (dBm)			Average Output power (dBm)			Limit (dBm)	Result
		Antenna 0	Antenna 1	Total	Antenna 0	Antenna 1	Total		
802.11b	01	12.12	9.85	-	9.80	7.45	-	≤30.00	Pass
	06	12.88	10.60	-	10.46	8.14	-		
	11	12.48	10.85	-	10.11	8.38	-		
802.11g	01	12.67	9.72	-	10.62	7.11	-	≤30.00	Pass
	06	12.89	10.18	-	10.82	7.51	-		
	11	12.93	10.64	-	10.98	8.08	-		
802.11n (HT20)	01	12.58	9.78	14.43	11.02	7.05	12.48	≤30.00	Pass
	06	12.77	10.28	14.74	11.26	7.42	12.76		
	11	12.91	10.83	14.99	11.42	8.10	13.08		
802.11n (HT40)	03	12.46	9.11	14.13	10.88	5.84	12.06	≤30.00	Pass
	06	12.45	9.51	14.26	11.02	6.23	12.26		
	09	12.62	9.68	14.40	11.08	6.41	12.35		

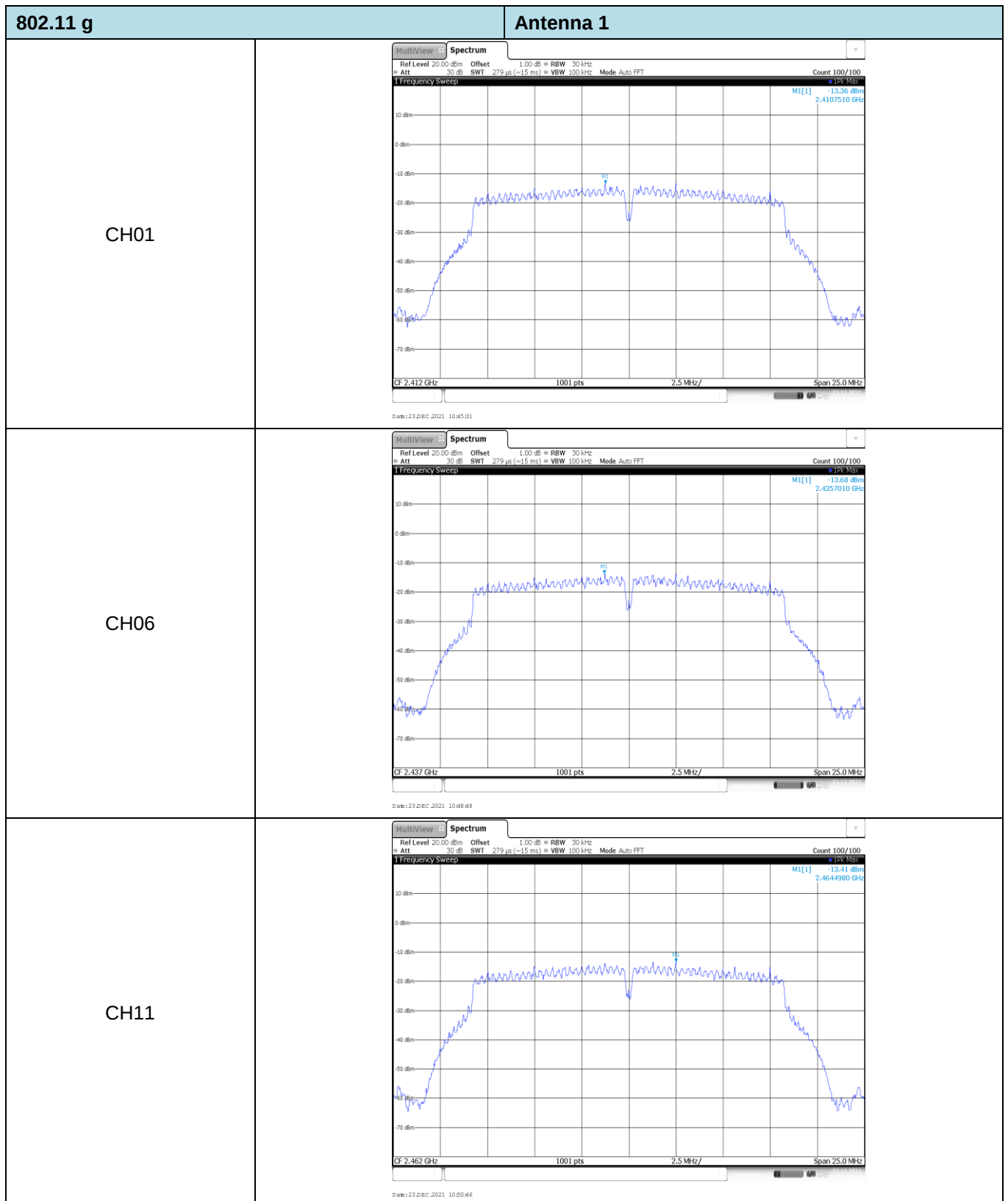
Appendix B: Power Spectral Density

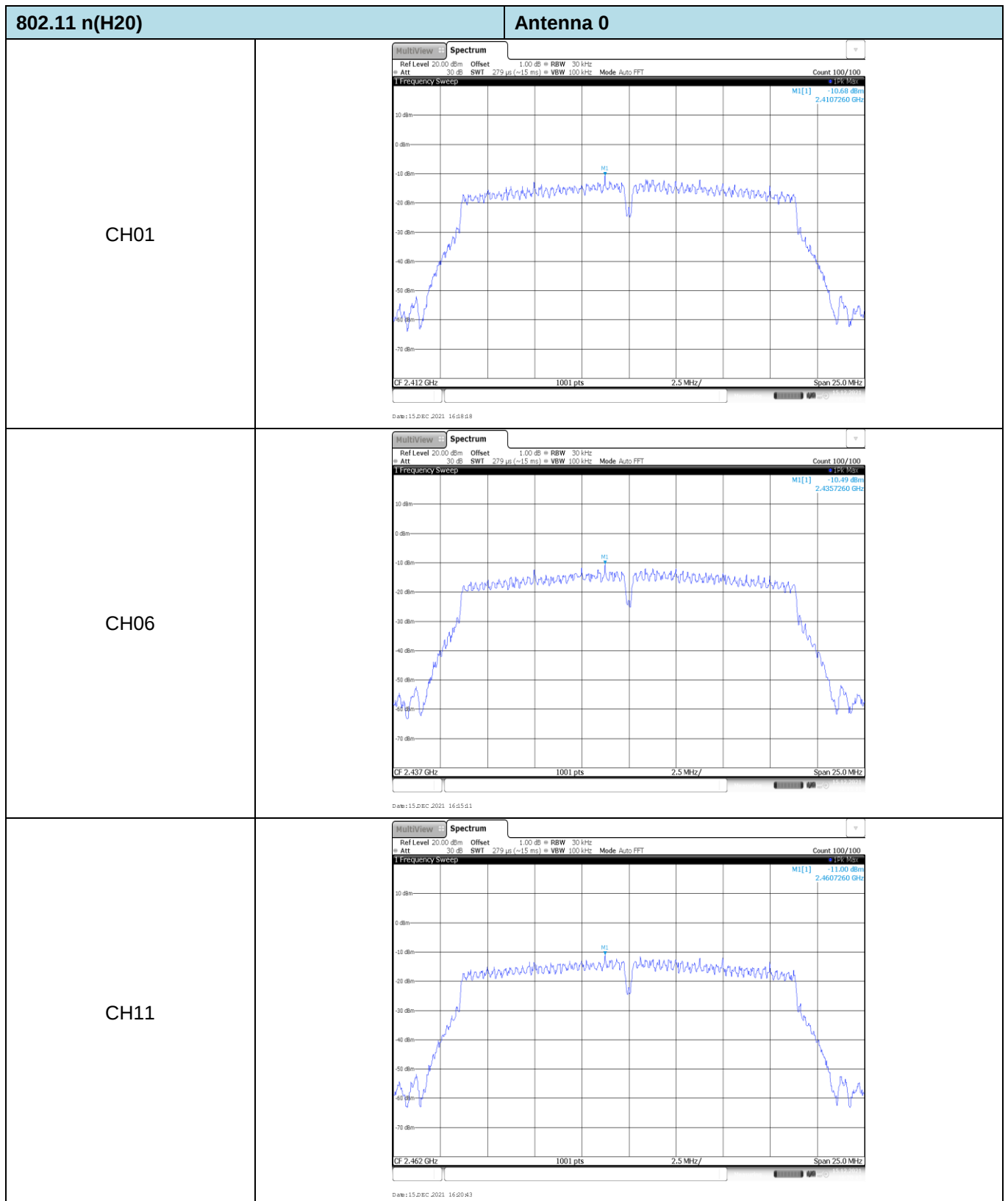
Type	Channel	Power Spectral Density (dBm/30KHz)		Total Power Spectral Density (dBm/30KHz)	Limit (dBm/3KHz)	Result
		Antenna 0	Antenna 1			
802.11b	01	-2.31	-3.13	-	≤8.00	Pass
	06	-1.73	-2.59	-		
	11	-2.28	-3.98	-		
802.11g	01	-11.92	-13.36	-	≤8.00	Pass
	06	-11.69	-13.68	-		
	11	-11.60	-13.41	-		
802.11n(HT20)	01	-10.68	-13.32	-8.79	≤8.00	Pass
	06	-10.49	-12.79	-8.48		
	11	-11.00	-12.70	-8.76		
802.11n(HT40)	03	-16.10	-16.65	-13.36	≤8.00	Pass
	06	-14.86	-16.44	-12.57		
	09	-15.61	-17.23	-13.33		

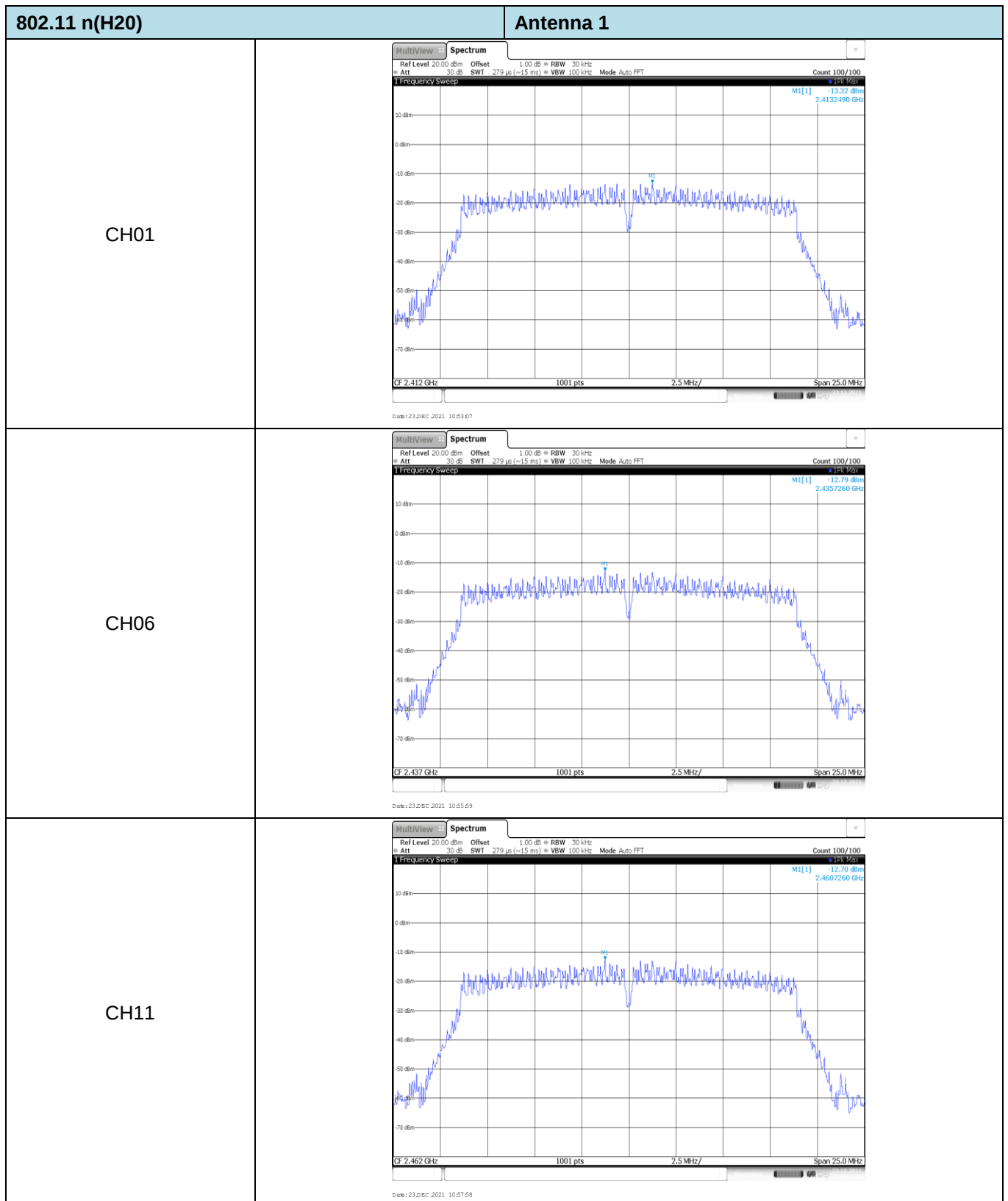


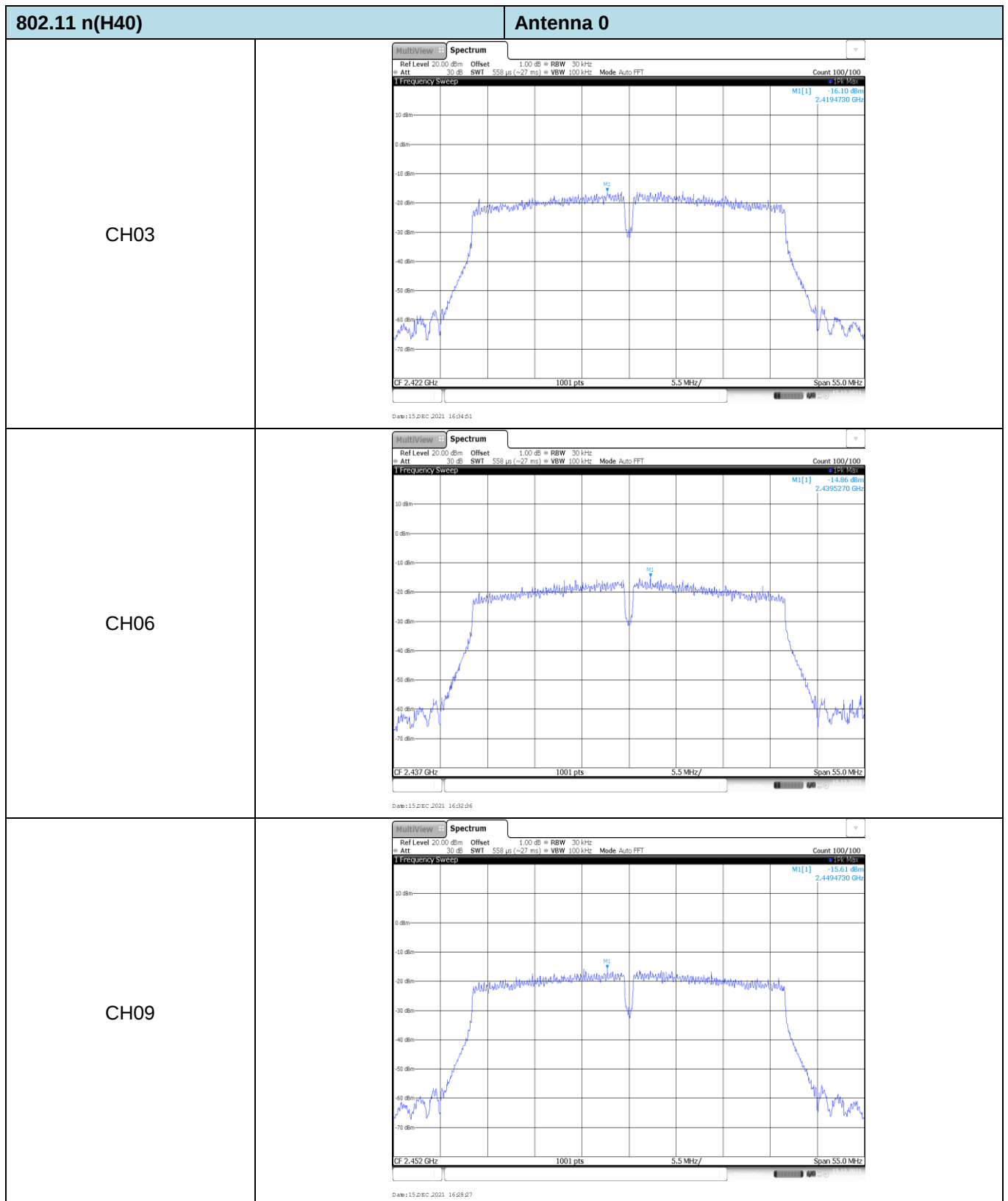


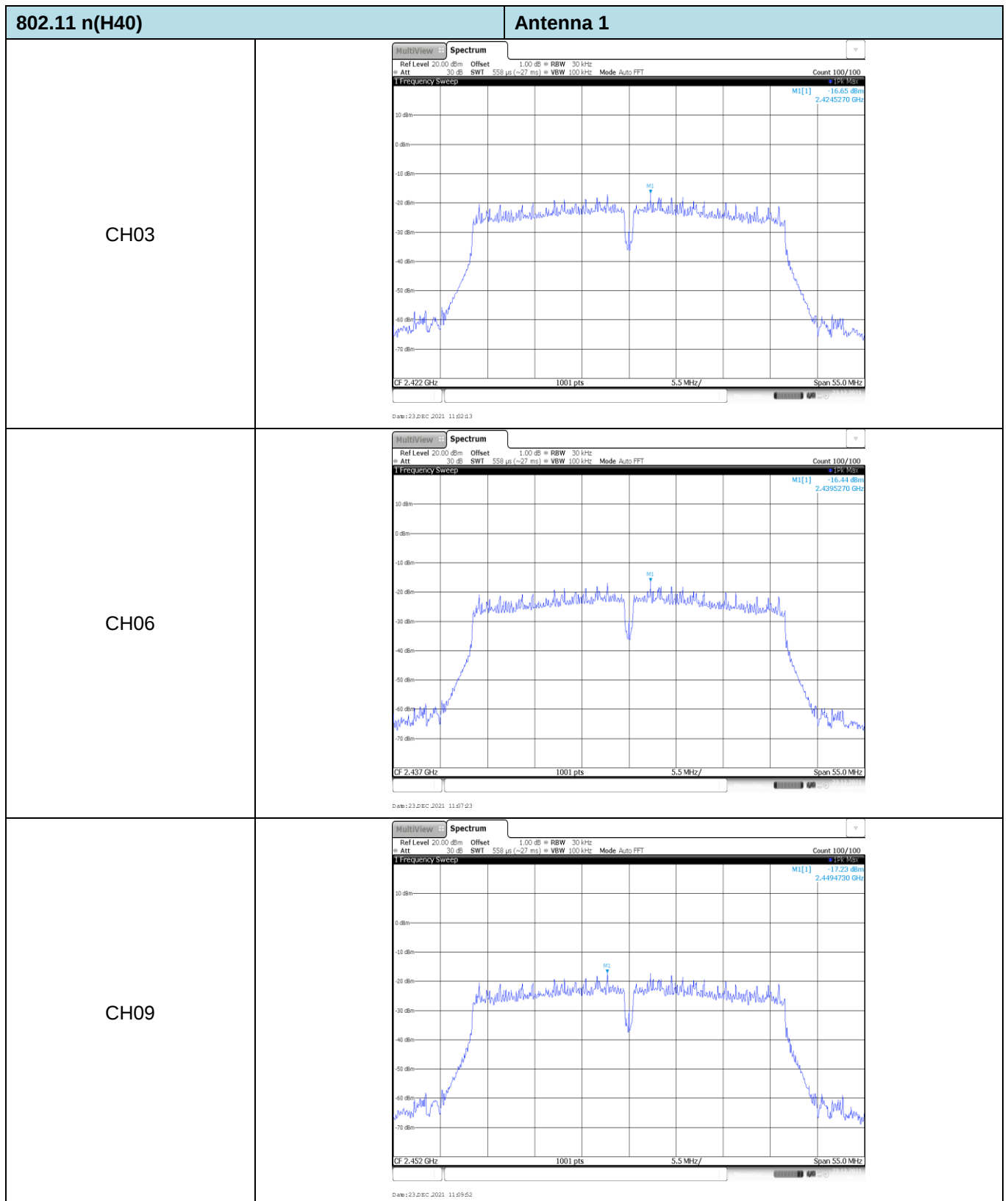










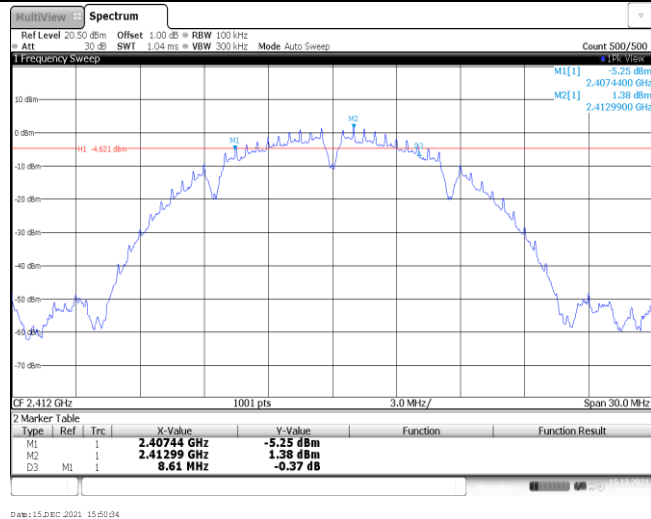


Appendix C: 6dB Bandwidth

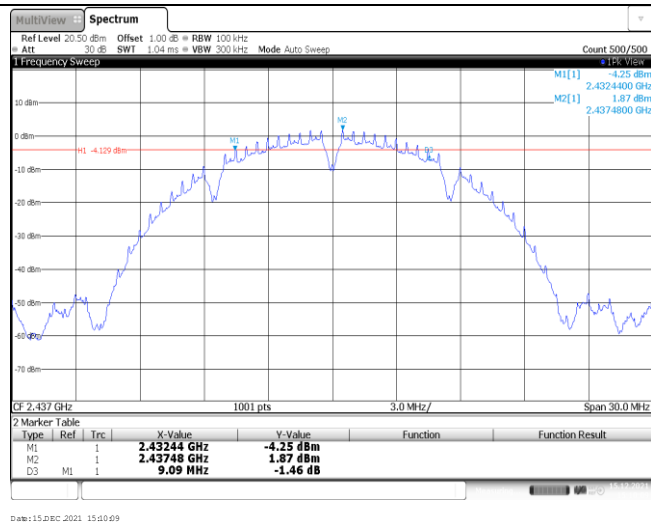
Type	Channel	6dB Bandwidth (MHz)	Limit (kHz)	Result
802.11b	01	8.61	≥500	Pass
	06	9.09		
	11	8.61		
802.11g	01	15.18	≥500	Pass
	06	15.18		
	11	15.18		
802.11n(HT20)	01	15.18	≥500	Pass
	06	15.75		
	11	15.18		
802.11n(HT40)	03	35.22	≥500	Pass
	06	35.22		
	09	35.22		

802.11 b

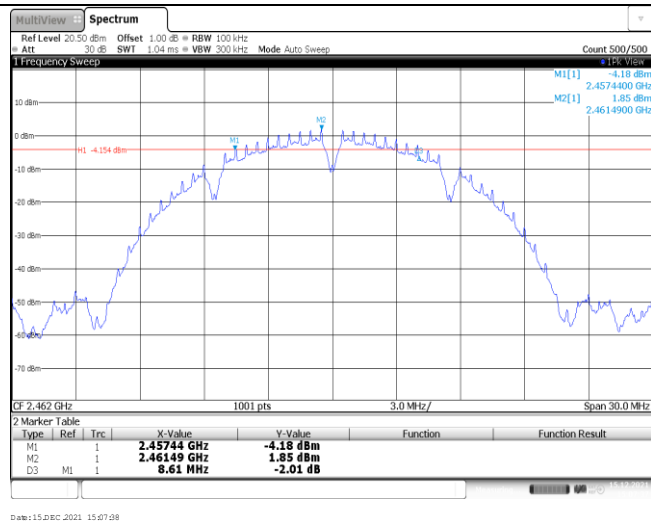
CH01



CH06

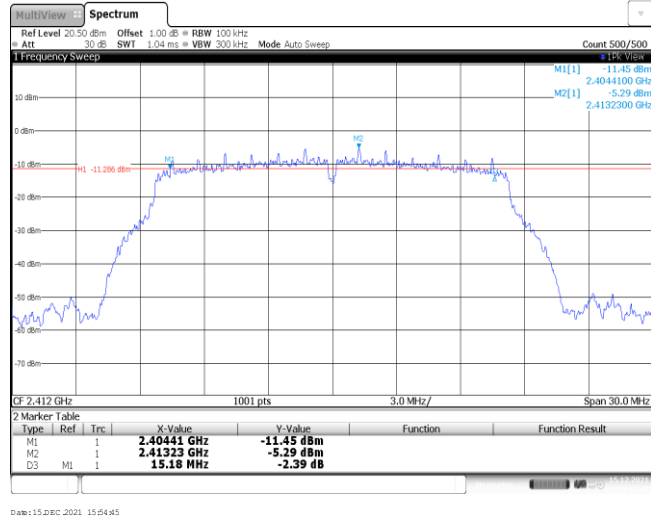


CH11

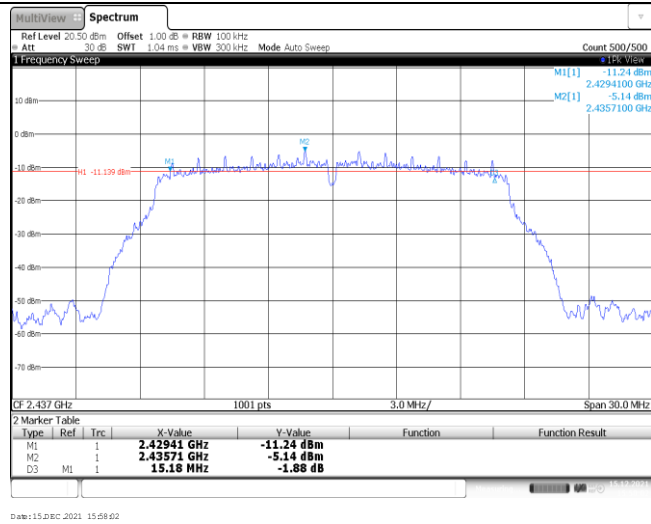


802.11 g

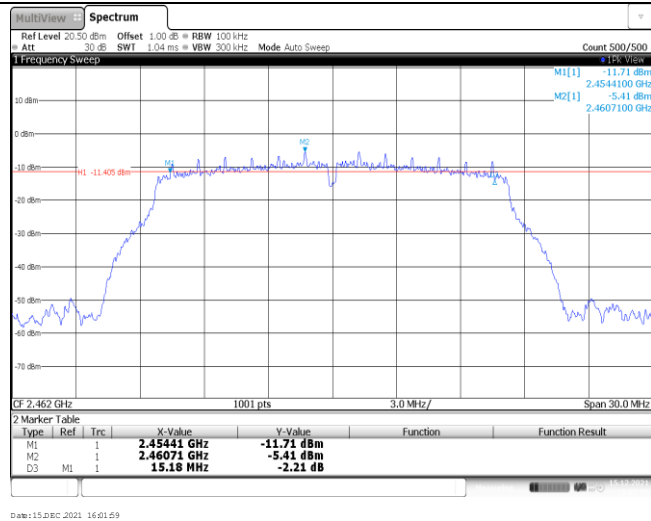
CH01



CH06

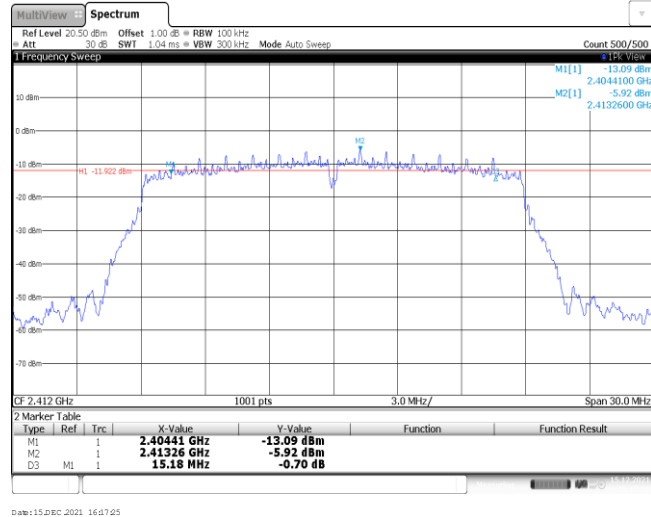


CH11

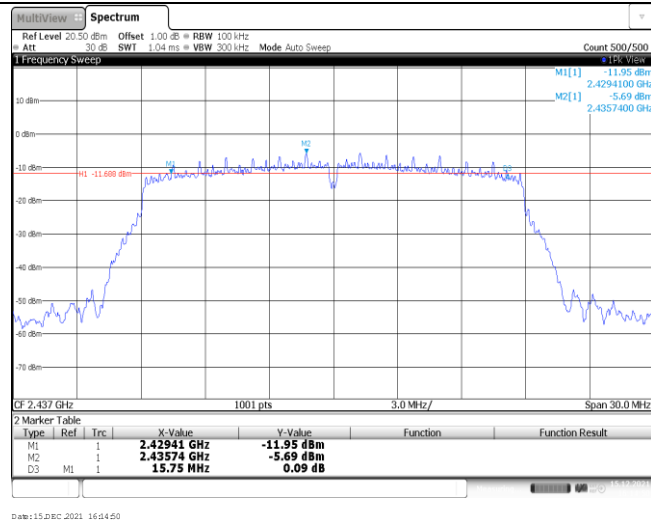


802.11n(HT20)

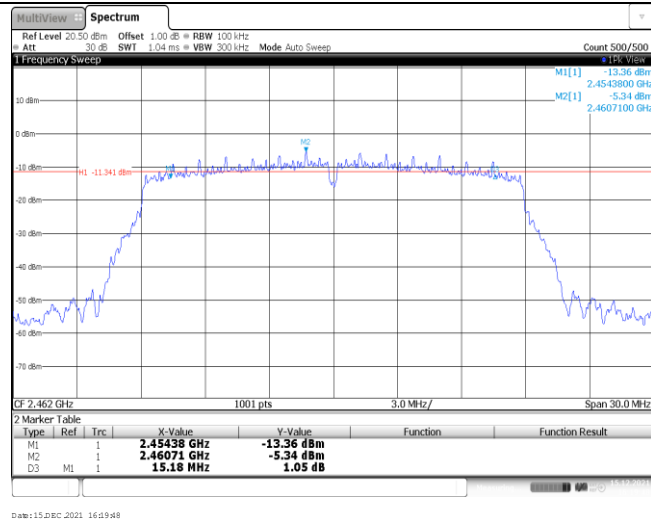
CH01



CH06

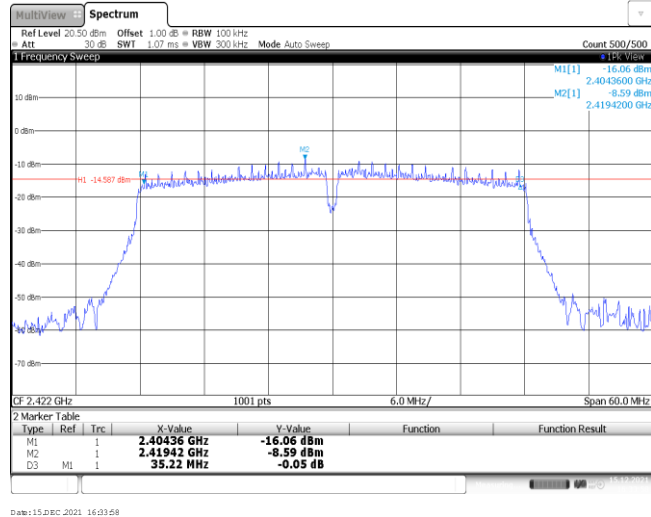


CH11

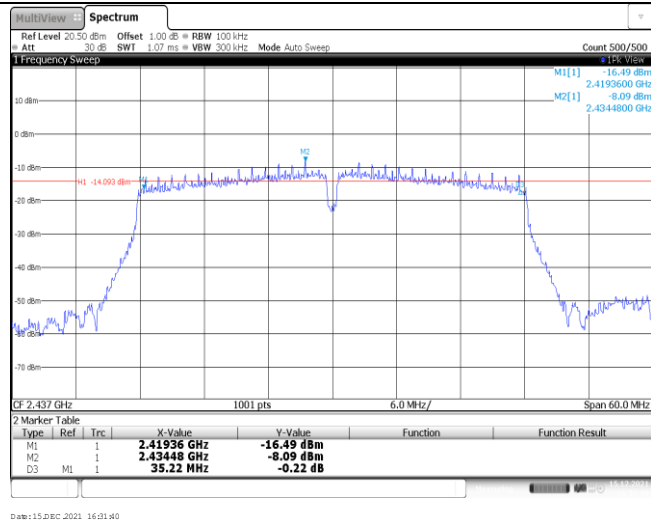


802.11n(HT40)

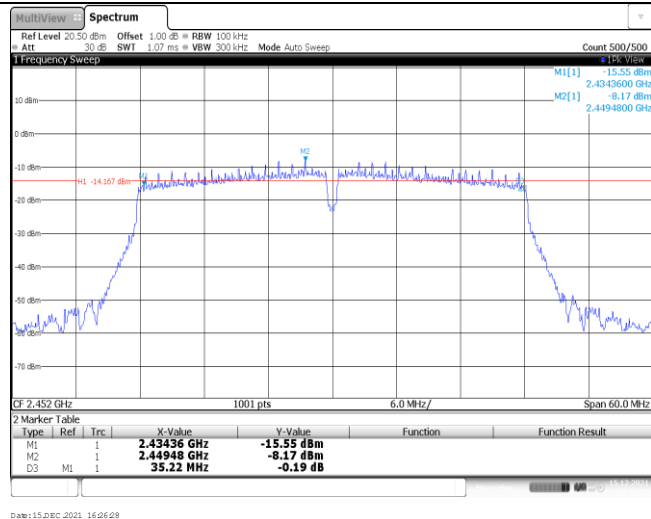
CH03



CH06



CH09

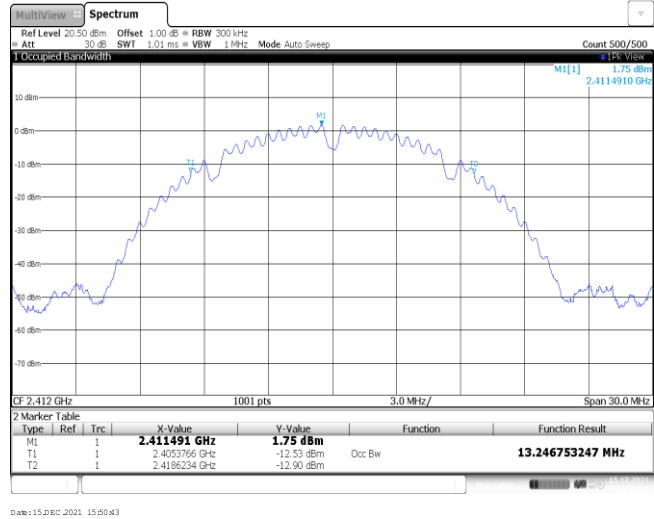


Appendix D: 99% Occupied Bandwidth

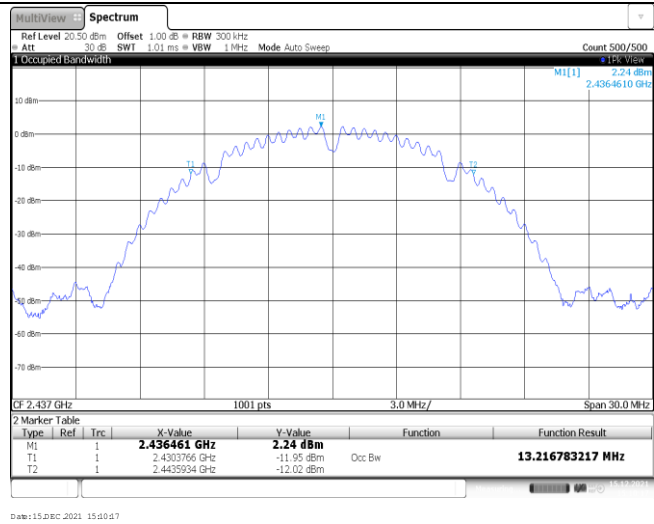
Type	Channel	99% Bandwidth (MHz)	Limit (kHz)	Result
802.11b	01	13.25	-	Pass
	06	13.22		
	11	13.34		
802.11g	01	16.69	-	Pass
	06	16.69		
	11	16.69		
802.11n(HT20)	01	17.59	-	Pass
	06	17.56		
	11	17.59		
802.11n(HT40)	03	35.96	-	Pass
	06	35.90		
	09	35.96		

802.11 b

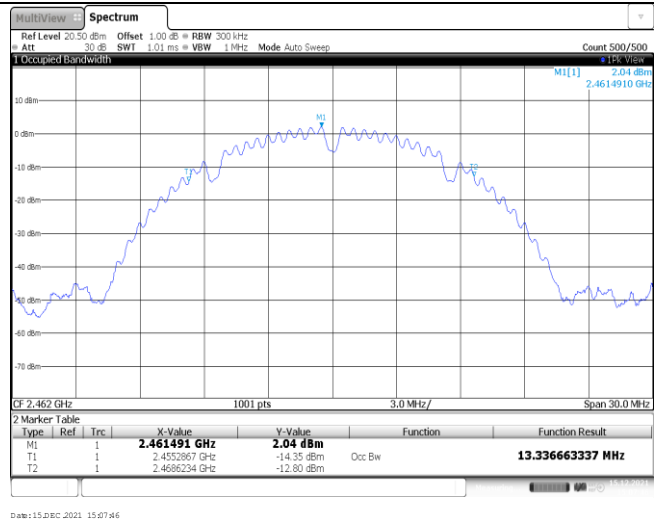
CH01



CH06

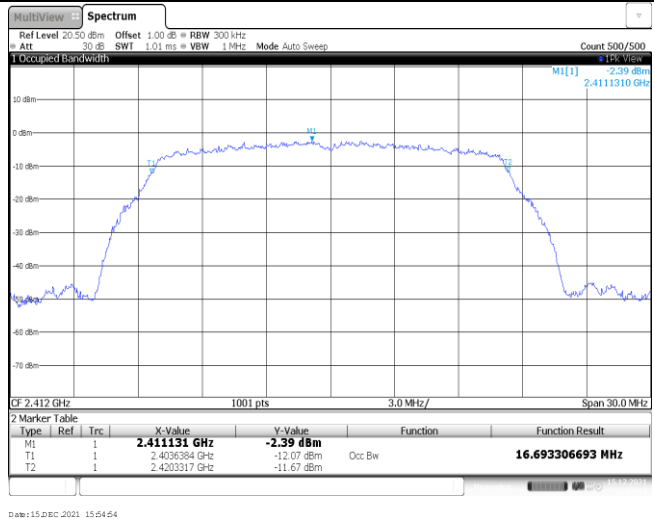


CH11

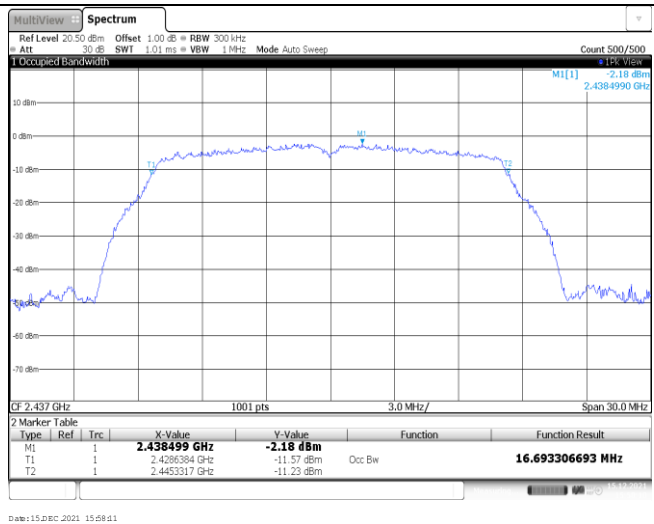


802.11 g

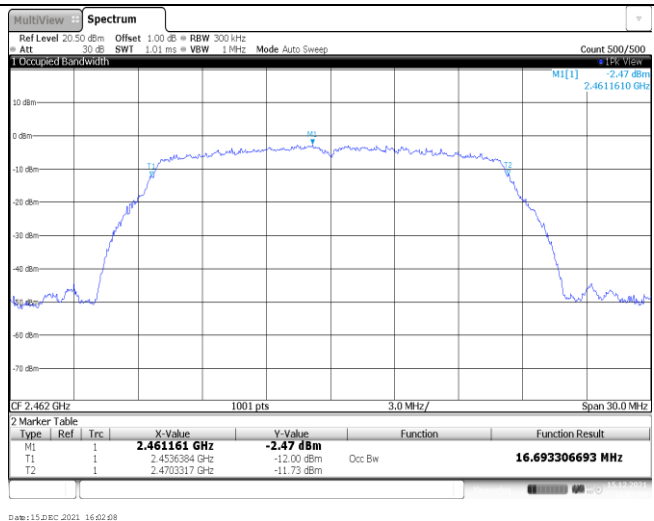
CH01



CH06

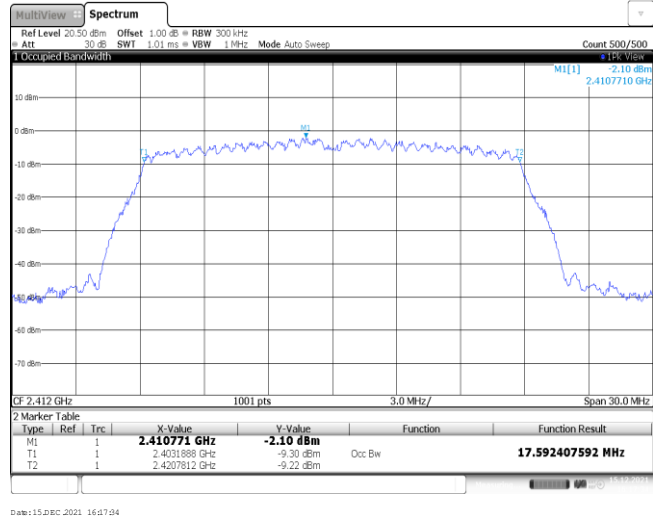


CH11

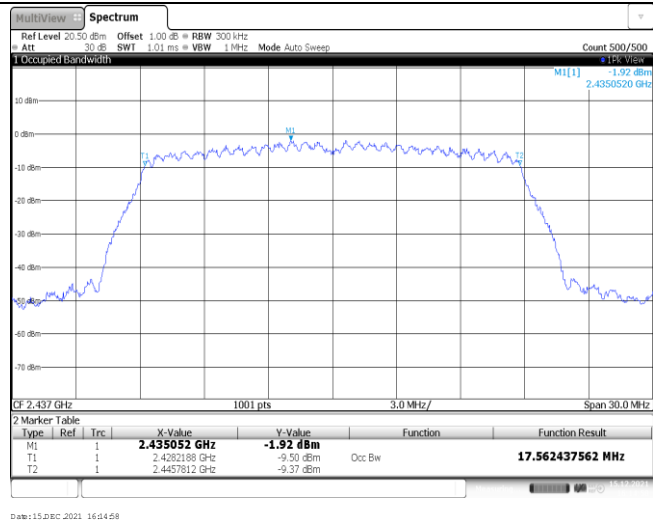


802.11n(HT20)

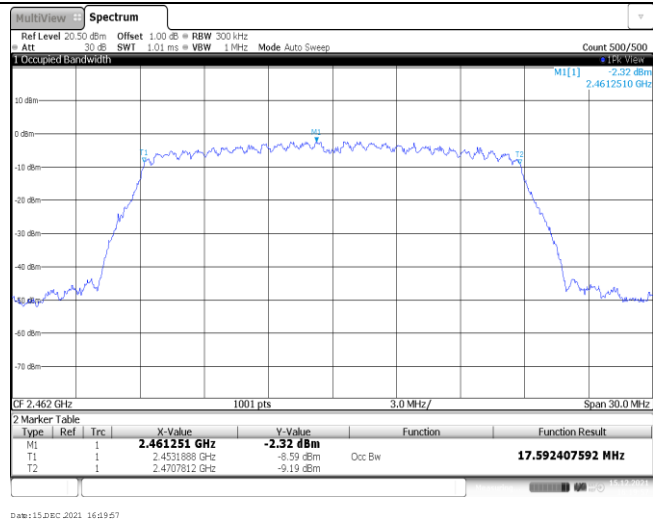
CH01



CH06

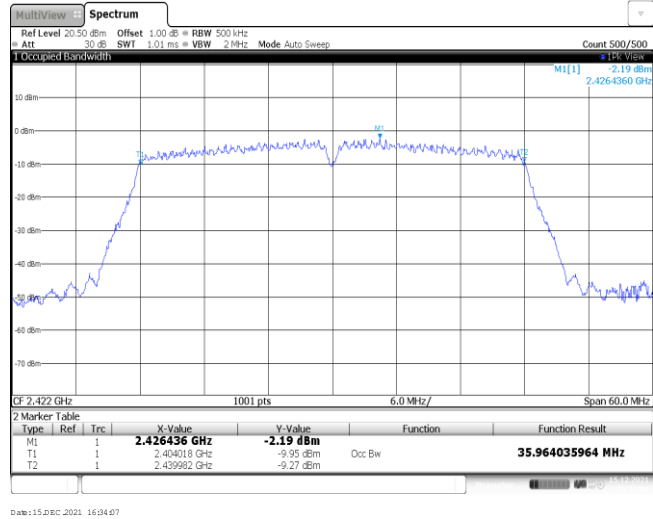


CH11

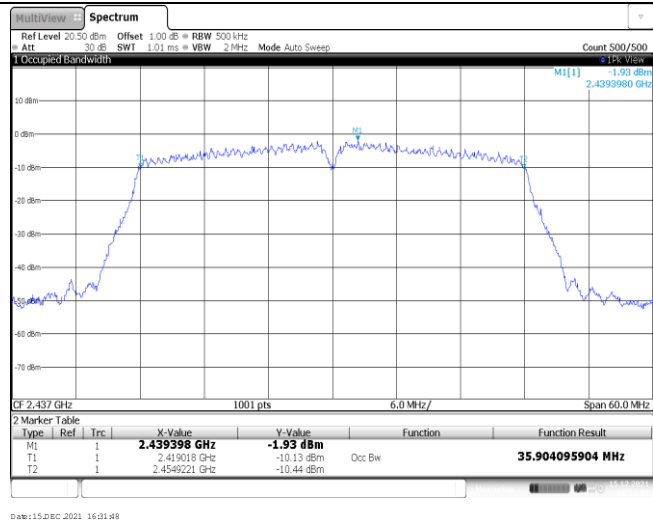


802.11n(HT40)

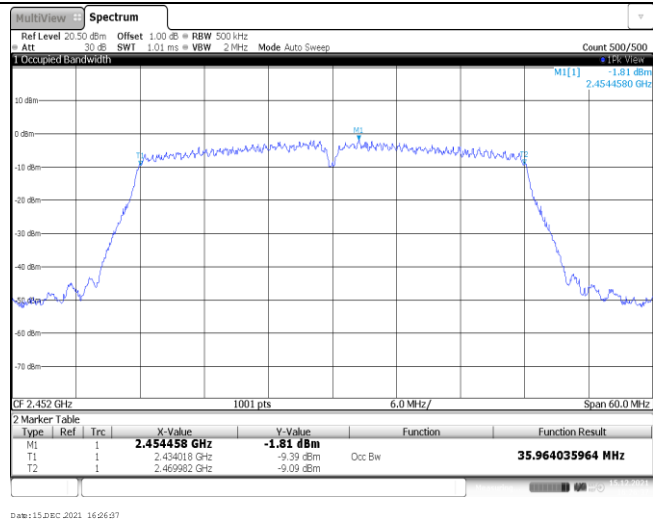
CH03



CH06



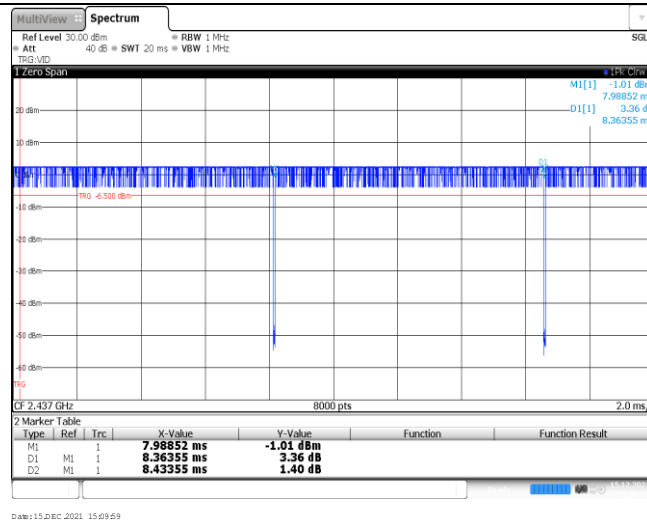
CH09



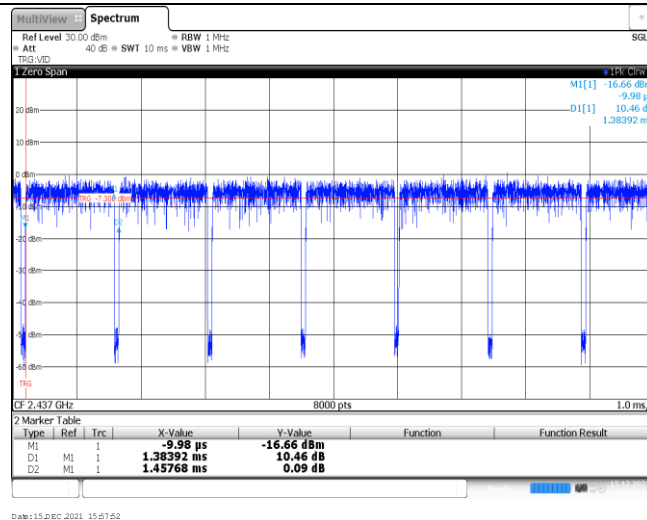
Appendix E: Duty Cycle

Modulation Type	Test Frequency (MHz)	T _{on time} for single burst (ms)	T _{period} (ms)	Duty cycle	1/T _{on time} (kHz)
11b	2437	8.36	8.43	99.2%	0.1
11g	2437	1.38	1.46	94.5%	0.7
11n20	2437	1.29	1.37	94.2%	0.8
11n40	2437	0.63	0.74	85.1%	1.6

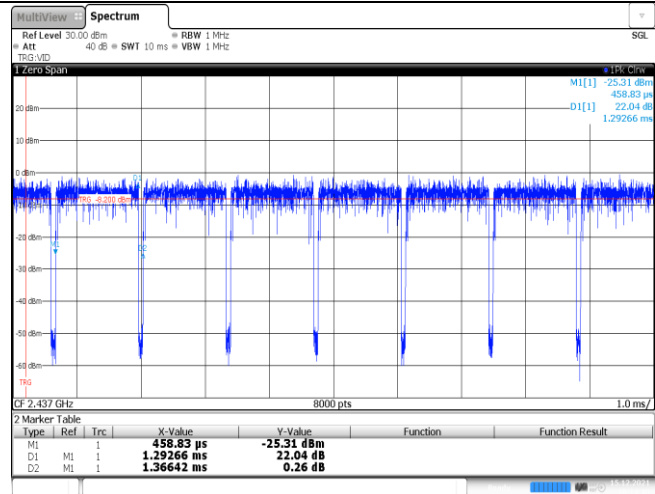
11b



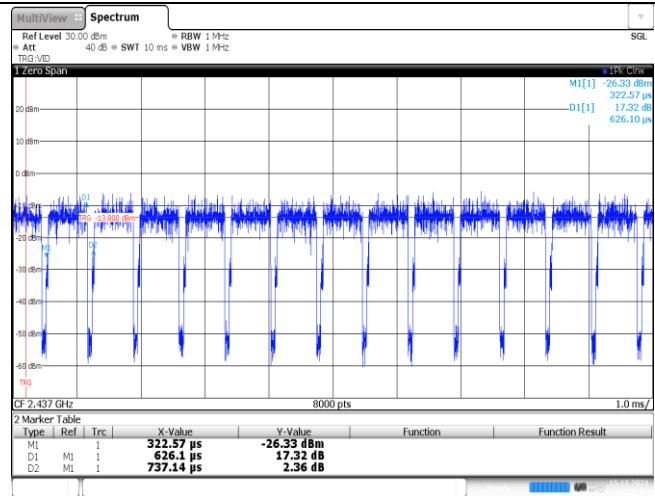
11g



11n20

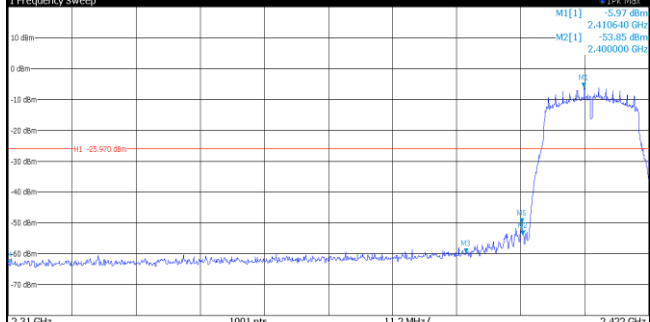
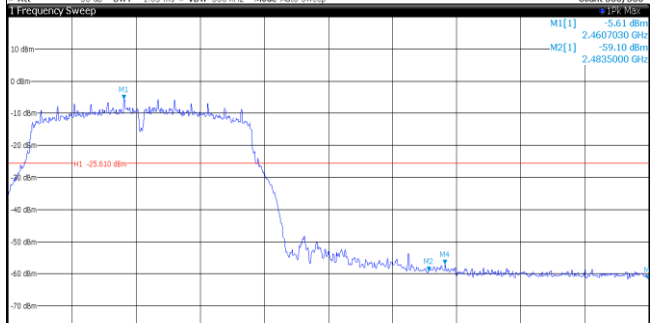


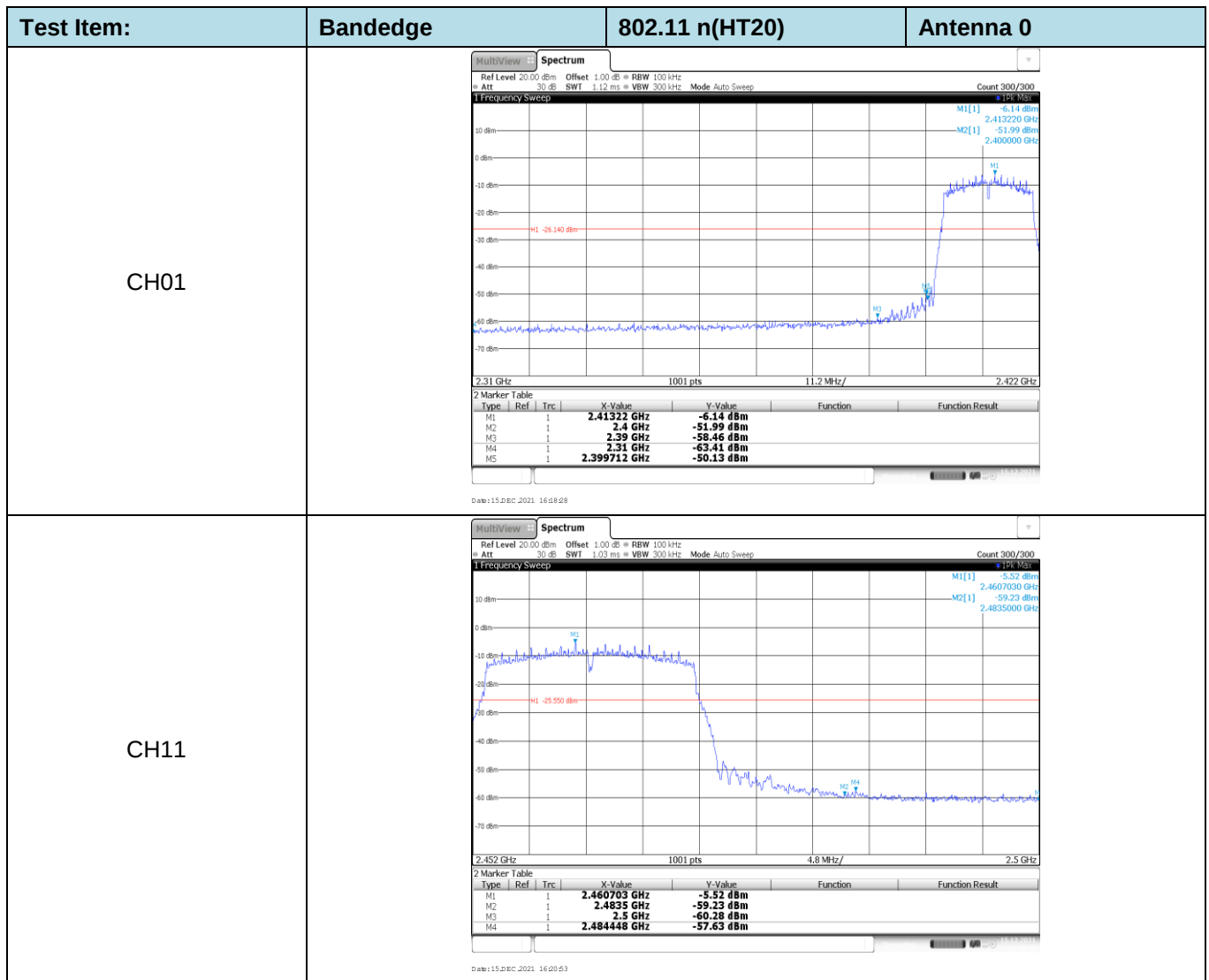
11n40



Appendix F: Band Edge and Spurious Emissions (Conducted)

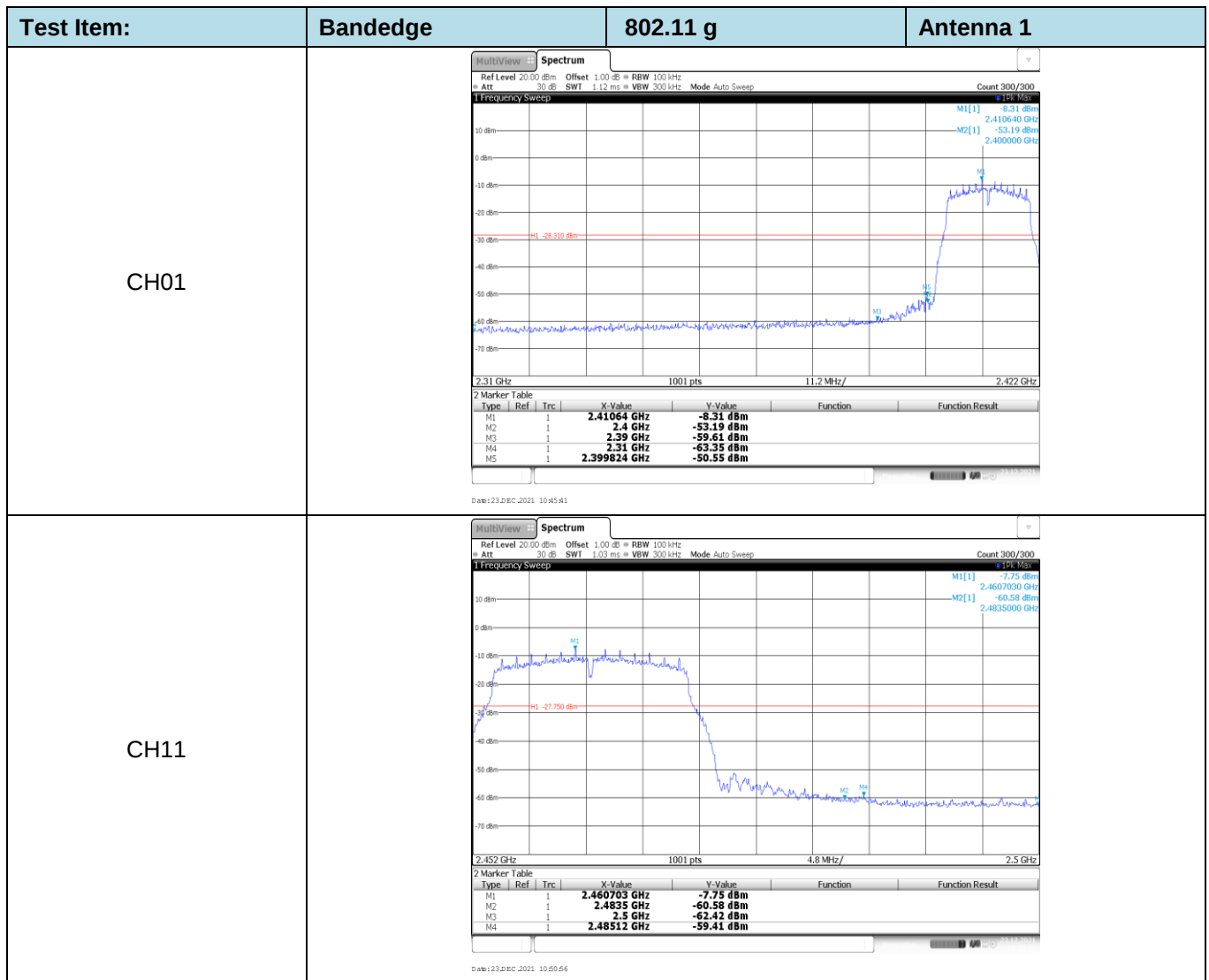
Test Item:	Bandedge	802.11 b	Antenna 0
CH01	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWT 1.12 ms VBW 300 kHz Mode Auto Sweep Count 300/300 1 Frequency Sweep <		

Test Item:	Bandedge	802.11 g	Antenna 0																																										
CH01	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB BW 100 kHz Att 30 dB SWT 1.12 ms VBW 300 kHz Mode Auto Sweep Count 300/300 9.15x 100% 1 Frequency Sweep M1[1] -5.97 dBm 2.410640 GHz M2[1] -53.85 dBm 2.400000 GHz  2.31 GHz 1001 pts 11.2 MHz/ 2.422 GHz 2 Marker Table <table><tr><th>Type</th><th>Ref</th><th>Trc</th><th>X-Value</th><th>Y-Value</th><th>Function</th><th>Function Result</th></tr><tr><td>M1</td><td>1</td><td></td><td>2.41064 GHz</td><td>-5.97 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4 GHz</td><td>-53.85 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.39 GHz</td><td>-59.72 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.31 GHz</td><td>-62.30 dBm</td><td></td><td></td></tr><tr><td>M5</td><td>1</td><td></td><td>2.399824 GHz</td><td>-49.93 dBm</td><td></td><td></td></tr></table> Date: 15 DEC 2021 16:08:49			Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		2.41064 GHz	-5.97 dBm			M2	1		2.4 GHz	-53.85 dBm			M3	1		2.39 GHz	-59.72 dBm			M4	1		2.31 GHz	-62.30 dBm			M5	1		2.399824 GHz	-49.93 dBm		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																							
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M4	1		2.31 GHz	-62.30 dBm																																									
M5	1		2.399824 GHz	-49.93 dBm																																									
CH11	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB BW 100 kHz Att 30 dB SWT 1.03 ms VBW 300 kHz Mode Auto Sweep Count 300/300 15.4x 100% 1 Frequency Sweep M1[1] -5.61 dBm 2.460703 GHz M2[1] -59.10 dBm 2.483500 GHz  2.452 GHz 1001 pts 4.8 MHz/ 2.5 GHz 2 Marker Table <table><tr><th>Type</th><th>Ref</th><th>Trc</th><th>X-Value</th><th>Y-Value</th><th>Function</th><th>Function Result</th></tr><tr><td>M1</td><td>1</td><td></td><td>2.460703 GHz</td><td>-5.61 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4835 GHz</td><td>-59.10 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.5 GHz</td><td>-60.94 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.484736 GHz</td><td>-56.99 dBm</td><td></td><td></td></tr></table> Date: 15 DEC 2021 16:03:02			Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		2.460703 GHz	-5.61 dBm			M2	1		2.4835 GHz	-59.10 dBm			M3	1		2.5 GHz	-60.94 dBm			M4	1		2.484736 GHz	-56.99 dBm									
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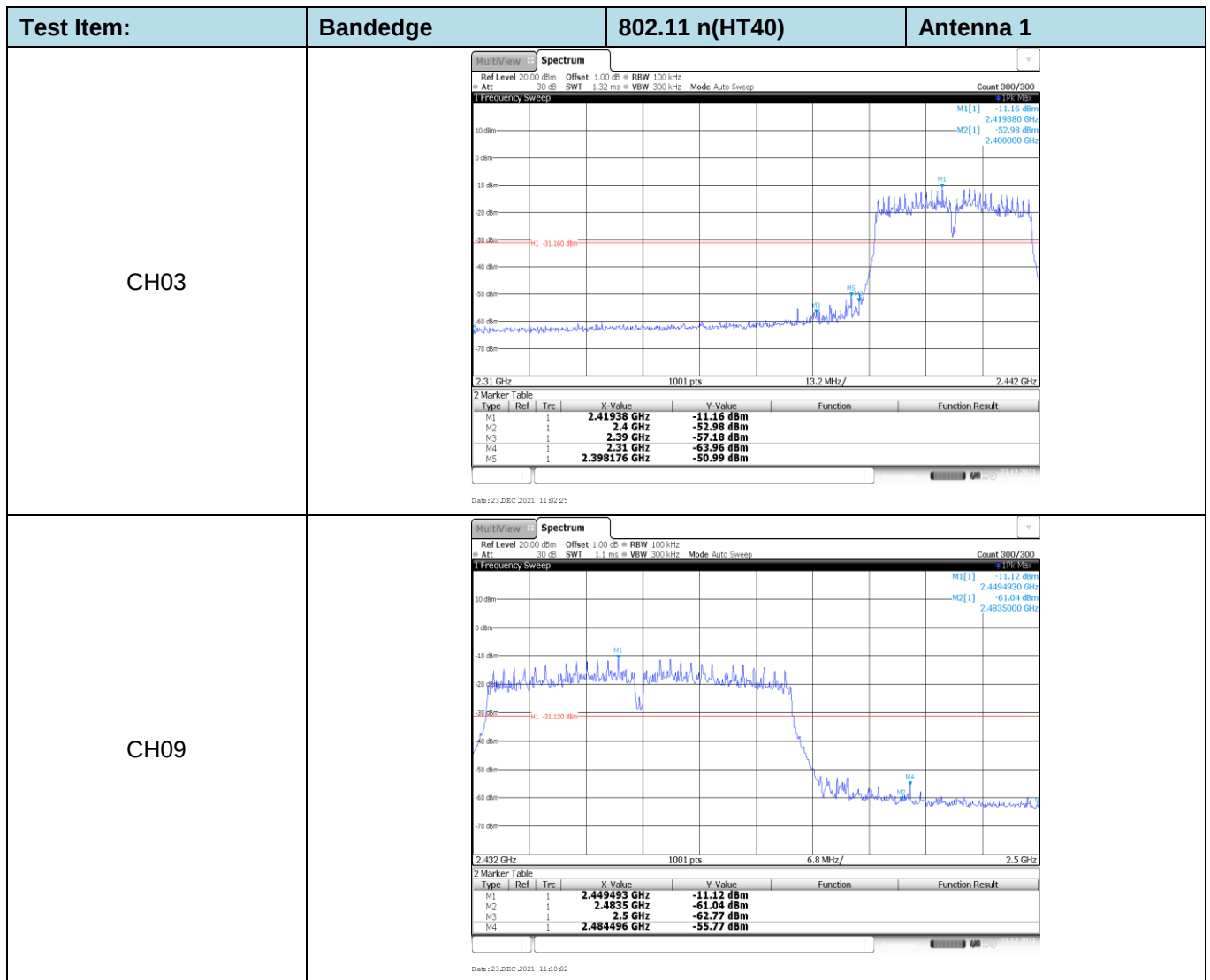


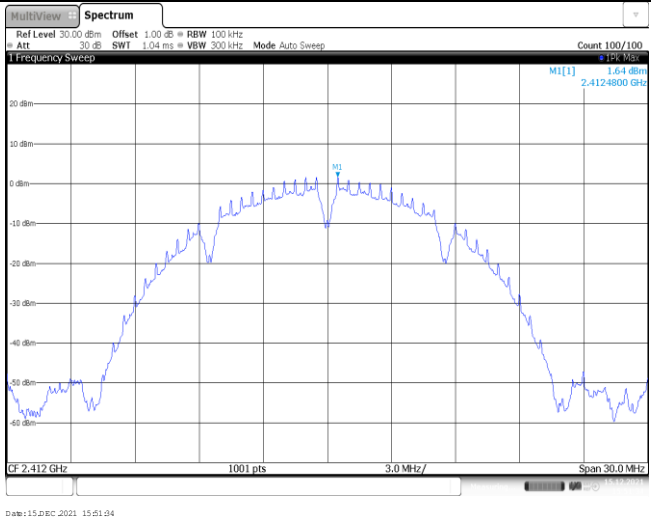
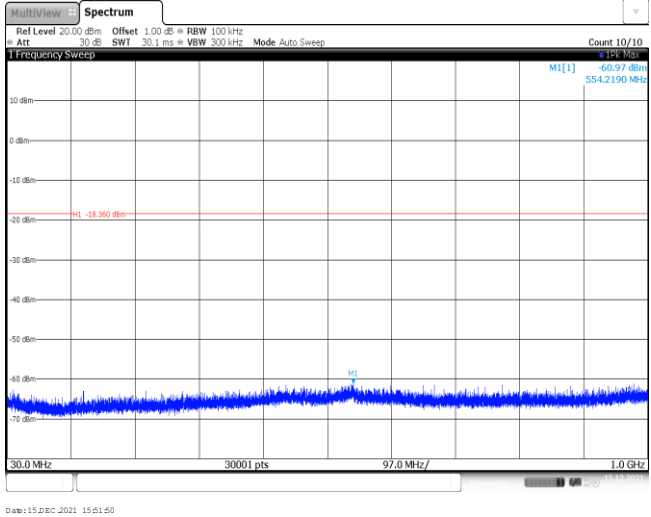
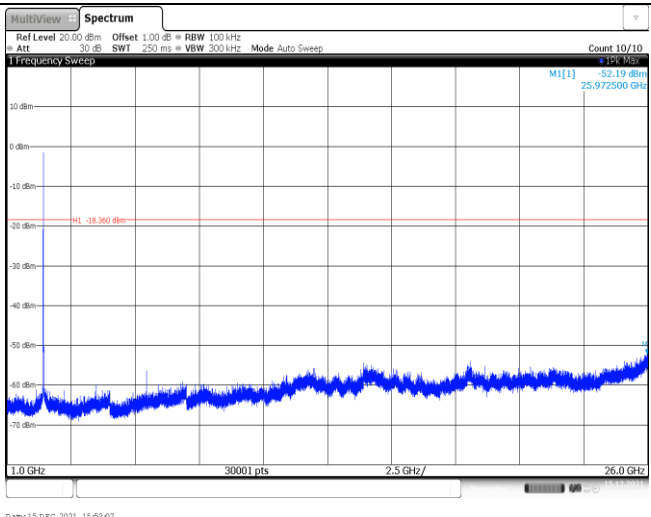
Test Item:	Bandedge	802.11 n(HT40)	Antenna 0																																										
CH03	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB BW 100 kHz Count 300/300 Att 30 dB SWT 1.52 ms VBW 300 kHz Mode Auto Sweep 1 Frequency Sweep 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm 2.31 GHz 1001 pts 13.2 MHz/ 2.442 GHz M1 -9.21 dBm 2.424400 GHz -51.81 dBm 2.400000 GHz M2 -51.81 dBm 2.400000 GHz <table><tr><th>Type</th><th>Ref</th><th>Trc</th><th>X-Value</th><th>Y-Value</th><th>Function</th><th>Function Result</th></tr><tr><td>M1</td><td>1</td><td></td><td>2.4244 GHz</td><td>-9.21 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4 GHz</td><td>-51.81 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.39 GHz</td><td>-58.98 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.31 GHz</td><td>-63.46 dBm</td><td></td><td></td></tr><tr><td>M5</td><td>1</td><td></td><td>2.399496 GHz</td><td>-50.41 dBm</td><td></td><td></td></tr></table> Date: 15 DEC 2021 16:05:01			Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		2.4244 GHz	-9.21 dBm			M2	1		2.4 GHz	-51.81 dBm			M3	1		2.39 GHz	-58.98 dBm			M4	1		2.31 GHz	-63.46 dBm			M5	1		2.399496 GHz	-50.41 dBm		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																							
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M2	1		2.4 GHz	-51.81 dBm																																									
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M4	1		2.31 GHz	-63.46 dBm																																									
M5	1		2.399496 GHz	-50.41 dBm																																									
CH09	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB BW 100 kHz Count 300/300 Att 30 dB SWT 1.1 ms VBW 300 kHz Mode Auto Sweep 1 Frequency Sweep 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm 2.432 GHz 1001 pts 6.8 MHz/ 2.5 GHz M1 -8.51 dBm 2.4469790 GHz -58.17 dBm 2.4835000 GHz M2 -58.17 dBm 2.4835000 GHz <table><tr><th>Type</th><th>Ref</th><th>Trc</th><th>X-Value</th><th>Y-Value</th><th>Function</th><th>Function Result</th></tr><tr><td>M1</td><td>1</td><td></td><td>2.446979 GHz</td><td>-8.51 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4835 GHz</td><td>-58.17 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.5 GHz</td><td>-61.05 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.484496 GHz</td><td>-54.90 dBm</td><td></td><td></td></tr></table> Date: 15 DEC 2021 16:28:06			Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		2.446979 GHz	-8.51 dBm			M2	1		2.4835 GHz	-58.17 dBm			M3	1		2.5 GHz	-61.05 dBm			M4	1		2.484496 GHz	-54.90 dBm									
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																							
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M2	1		2.4835 GHz	-58.17 dBm																																									
M3	1		2.5 GHz	-61.05 dBm																																									
M4	1		2.484496 GHz	-54.90 dBm																																									

Test Item:	Bandedge	802.11 b	Antenna 1																																										
CH01	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWT 1.12 ms VBW 300 kHz Mode Auto Sweep Count 300/300 150 MHz Frequency Sweep M1[1] -0.69 dBm M2[1] 2.411430 GHz -49.61 dBm 2.400000 GHz 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm 2.31 GHz 1001 pts 11.2 MHz/ 2.422 GHz 2 Marker Table <table><tr><th>Type</th><th>Ref</th><th>Trc</th><th>X-Value</th><th>Y-Value</th><th>Function</th><th>Function Result</th></tr><tr><td>M1</td><td>1</td><td></td><td>2.41143 GHz</td><td>-0.69 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4 GHz</td><td>-49.61 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.39 GHz</td><td>-60.26 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.31 GHz</td><td>-62.75 dBm</td><td></td><td></td></tr><tr><td>M5</td><td>1</td><td></td><td>2.396464 GHz</td><td>-48.40 dBm</td><td></td><td></td></tr></table> Date: 23 DEC 2021 10:33:12			Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		2.41143 GHz	-0.69 dBm			M2	1		2.4 GHz	-49.61 dBm			M3	1		2.39 GHz	-60.26 dBm			M4	1		2.31 GHz	-62.75 dBm			M5	1		2.396464 GHz	-48.40 dBm		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																							
M1	1		2.41143 GHz	-0.69 dBm																																									
M2	1		2.4 GHz	-49.61 dBm																																									
M3	1		2.39 GHz	-60.26 dBm																																									
M4	1		2.31 GHz	-62.75 dBm																																									
M5	1		2.396464 GHz	-48.40 dBm																																									
CH11	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWT 1.03 ms VBW 300 kHz Mode Auto Sweep Count 300/300 150 MHz Frequency Sweep M1[1] -0.33 dBm M2[1] 2.4624780 GHz -61.41 dBm 2.4835000 GHz 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm 2.452 GHz 1001 pts 4.8 MHz/ 2.5 GHz 2 Marker Table <table><tr><th>Type</th><th>Ref</th><th>Trc</th><th>X-Value</th><th>Y-Value</th><th>Function</th><th>Function Result</th></tr><tr><td>M1</td><td>1</td><td></td><td>2.462478 GHz</td><td>-0.33 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4835 GHz</td><td>-61.41 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.5 GHz</td><td>-58.83 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.499664 GHz</td><td>-60.29 dBm</td><td></td><td></td></tr></table> Date: 23 DEC 2021 10:37:52			Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		2.462478 GHz	-0.33 dBm			M2	1		2.4835 GHz	-61.41 dBm			M3	1		2.5 GHz	-58.83 dBm			M4	1		2.499664 GHz	-60.29 dBm									
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																							
M1	1		2.462478 GHz	-0.33 dBm																																									
M2	1		2.4835 GHz	-61.41 dBm																																									
M3	1		2.5 GHz	-58.83 dBm																																									
M4	1		2.499664 GHz	-60.29 dBm																																									

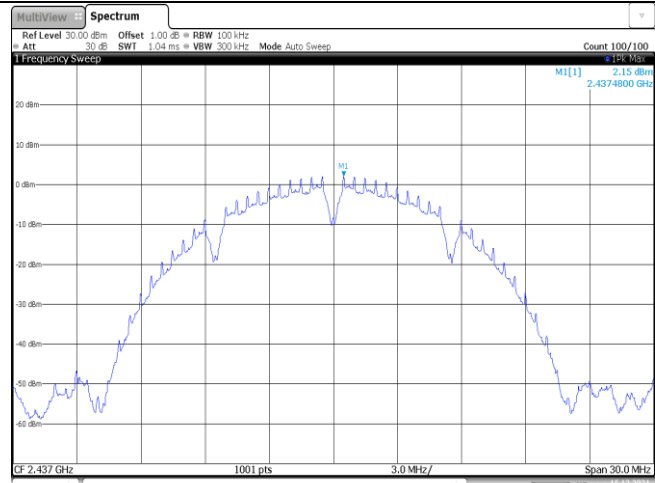


Test Item:	Bandedge	802.11 n(HT20)	Antenna 1																																										
CH01	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWT 1.12 ms VBW 300 kHz Mode Auto Sweep Count 200/300 150 MHz Frequency Sweep M1[1] -8.07 dBm M2[1] 2.410640 GHz M3[1] -53.33 dBm M4[1] 2.400000 GHz 2.31 GHz 1001 pts 11.2 MHz/ 2.422 GHz 2 Marker Table <table><tr><th>Type</th><th>Ref</th><th>Trc</th><th>X-Value</th><th>Y-Value</th><th>Function</th><th>Function Result</th></tr><tr><td>M1</td><td>1</td><td></td><td>2.41064 GHz</td><td>-8.07 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4 GHz</td><td>-53.33 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.39 GHz</td><td>-58.73 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.31 GHz</td><td>-62.20 dBm</td><td></td><td></td></tr><tr><td>M5</td><td>1</td><td></td><td>2.398816 GHz</td><td>-50.39 dBm</td><td></td><td></td></tr></table> Date: 23 DEC 2021 10:53:17			Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		2.41064 GHz	-8.07 dBm			M2	1		2.4 GHz	-53.33 dBm			M3	1		2.39 GHz	-58.73 dBm			M4	1		2.31 GHz	-62.20 dBm			M5	1		2.398816 GHz	-50.39 dBm		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																							
M1	1		2.41064 GHz	-8.07 dBm																																									
M2	1		2.4 GHz	-53.33 dBm																																									
M3	1		2.39 GHz	-58.73 dBm																																									
M4	1		2.31 GHz	-62.20 dBm																																									
M5	1		2.398816 GHz	-50.39 dBm																																									
CH11	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWT 1.03 ms VBW 300 kHz Mode Auto Sweep Count 300/300 150 MHz Frequency Sweep M1[1] -7.63 dBm M2[1] 2.4607030 GHz M3[1] -58.42 dBm M4[1] 2.4835000 GHz 2.452 GHz 1001 pts 4.8 MHz/ 2.5 GHz 2 Marker Table <table><tr><th>Type</th><th>Ref</th><th>Trc</th><th>X-Value</th><th>Y-Value</th><th>Function</th><th>Function Result</th></tr><tr><td>M1</td><td>1</td><td></td><td>2.460703 GHz</td><td>-7.63 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4835 GHz</td><td>-58.42 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.5 GHz</td><td>-62.35 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.483728 GHz</td><td>-55.72 dBm</td><td></td><td></td></tr></table> Date: 23 DEC 2021 10:58:08			Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		2.460703 GHz	-7.63 dBm			M2	1		2.4835 GHz	-58.42 dBm			M3	1		2.5 GHz	-62.35 dBm			M4	1		2.483728 GHz	-55.72 dBm									
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																							
M1	1		2.460703 GHz	-7.63 dBm																																									
M2	1		2.4835 GHz	-58.42 dBm																																									
M3	1		2.5 GHz	-62.35 dBm																																									
M4	1		2.483728 GHz	-55.72 dBm																																									



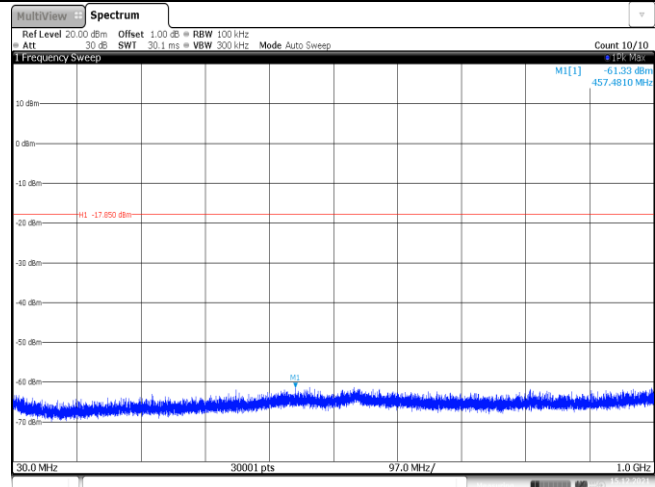
Test Item:	SE	802.11 b	Antenna 0
Reference level CH01			
CH01			
			

Reference level CH06

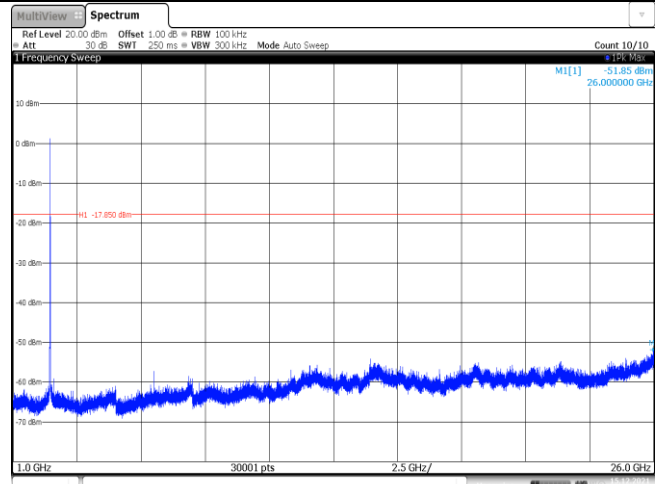


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CH06

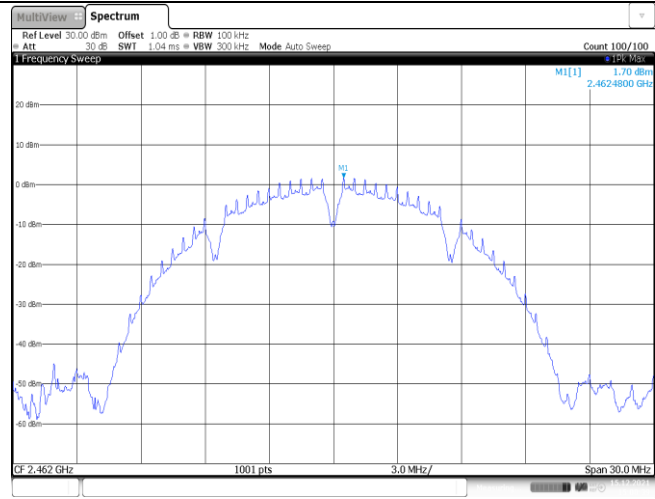


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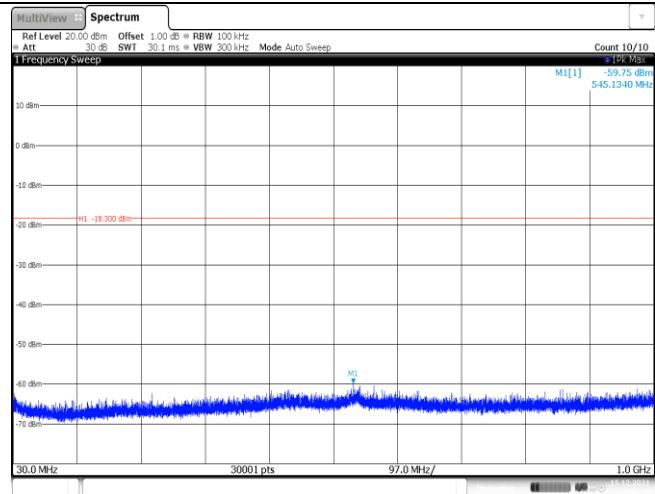
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Reference level CH11

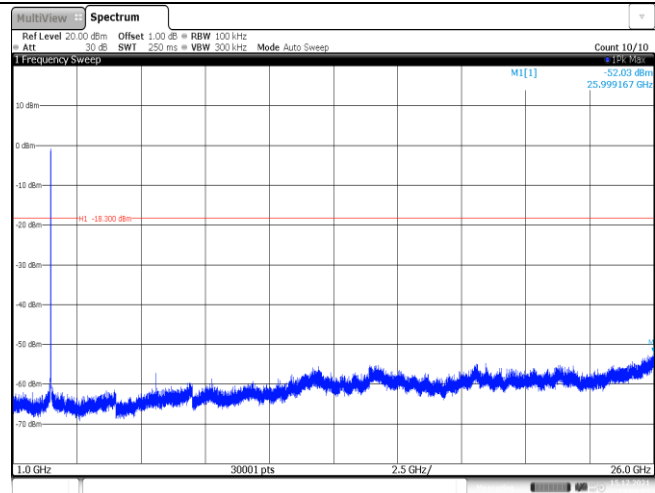


Date: 15.DEC.2021 15:08:39

CH11



Date: 15.DEC.2021 15:08:56



Date: 15.DEC.2021 15:09:12