

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

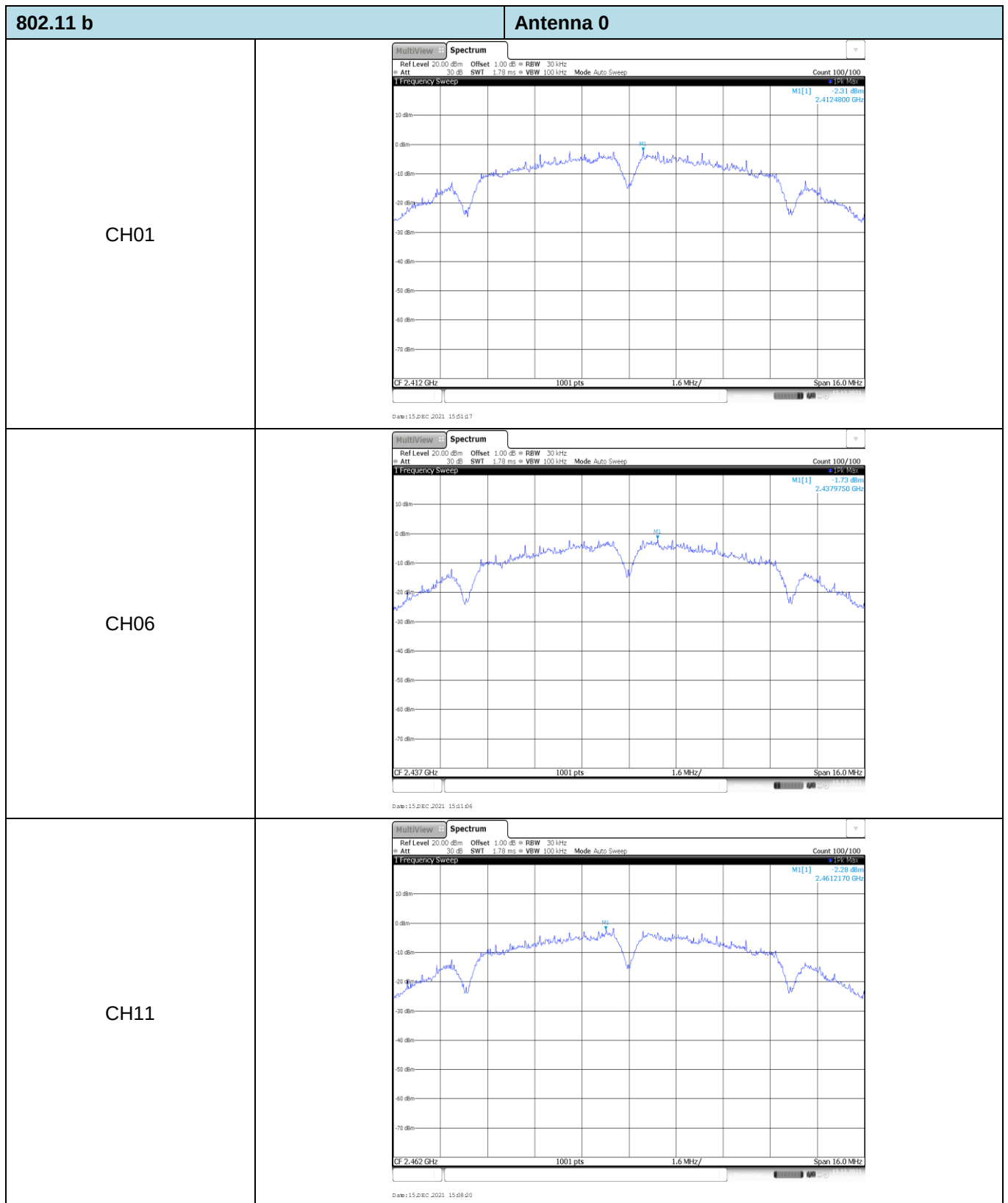
Appendix clause	Test item	Result
A	Conducted Peak Output Power	PASS
B	Power Spectral Density	PASS
C	6 dB Bandwidth	PASS
D	99% Occupied Bandwidth	PASS
E	Duty Cycle	PASS
F	Band edge and Spurious Emissions(coducted)	PASS

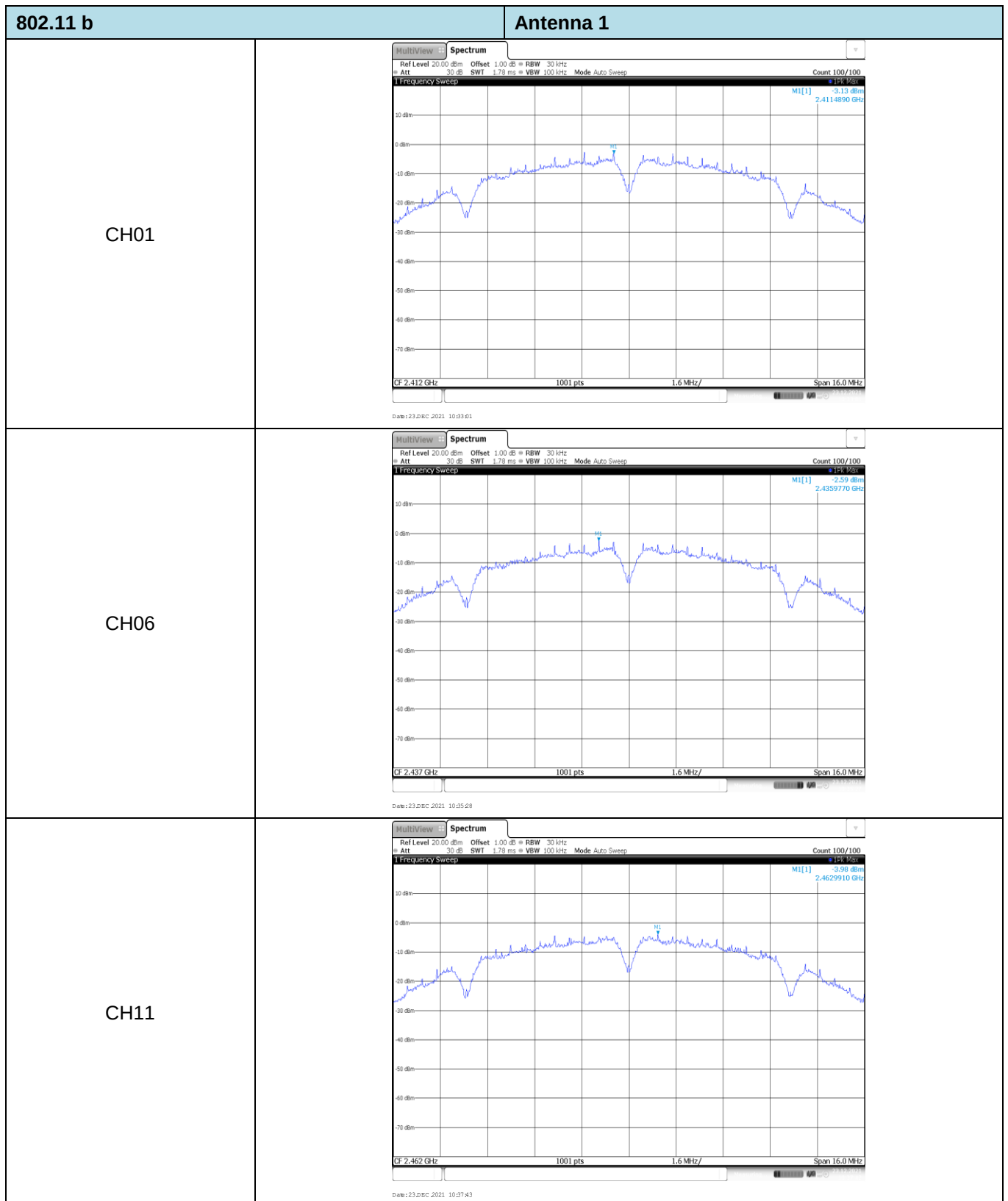
Appendix A: Conducted Peak Output Power

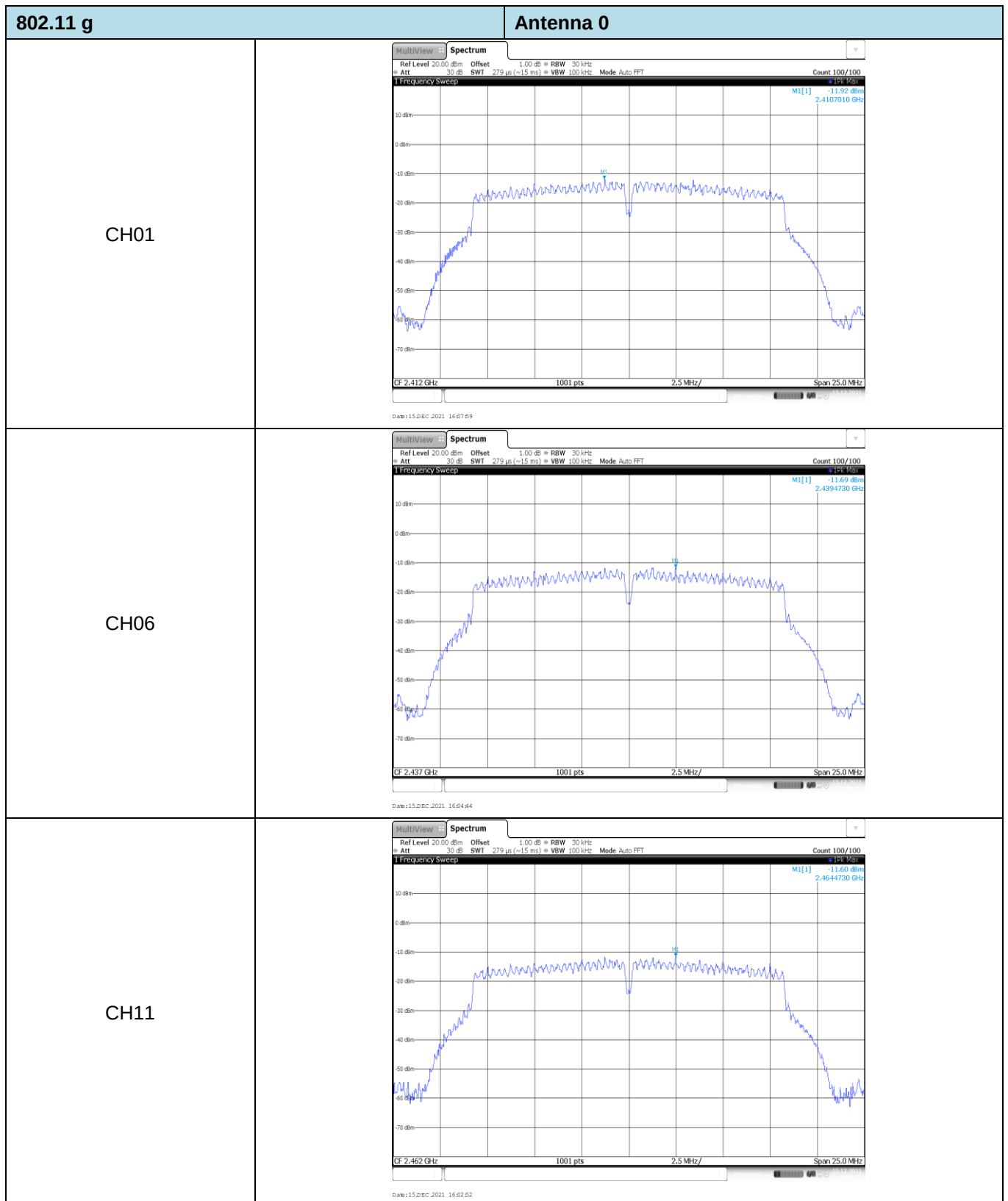
Type	Channel	Peak Output power (dBm)			Average Output power (dBm)			Limit (dBm)	Result
		Antenna 0	Antenna 1	Total	Antenna 0	Antenna 1	Total		
802.11b	01	12.12	9.85	-	9.80	7.45	-	≤30.00	Pass
	06	12.88	10.60	-	10.46	8.14	-		
	11	12.48	10.85	-	10.11	8.38	-		
802.11g	01	12.67	9.72	-	10.62	7.11	-	≤30.00	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		

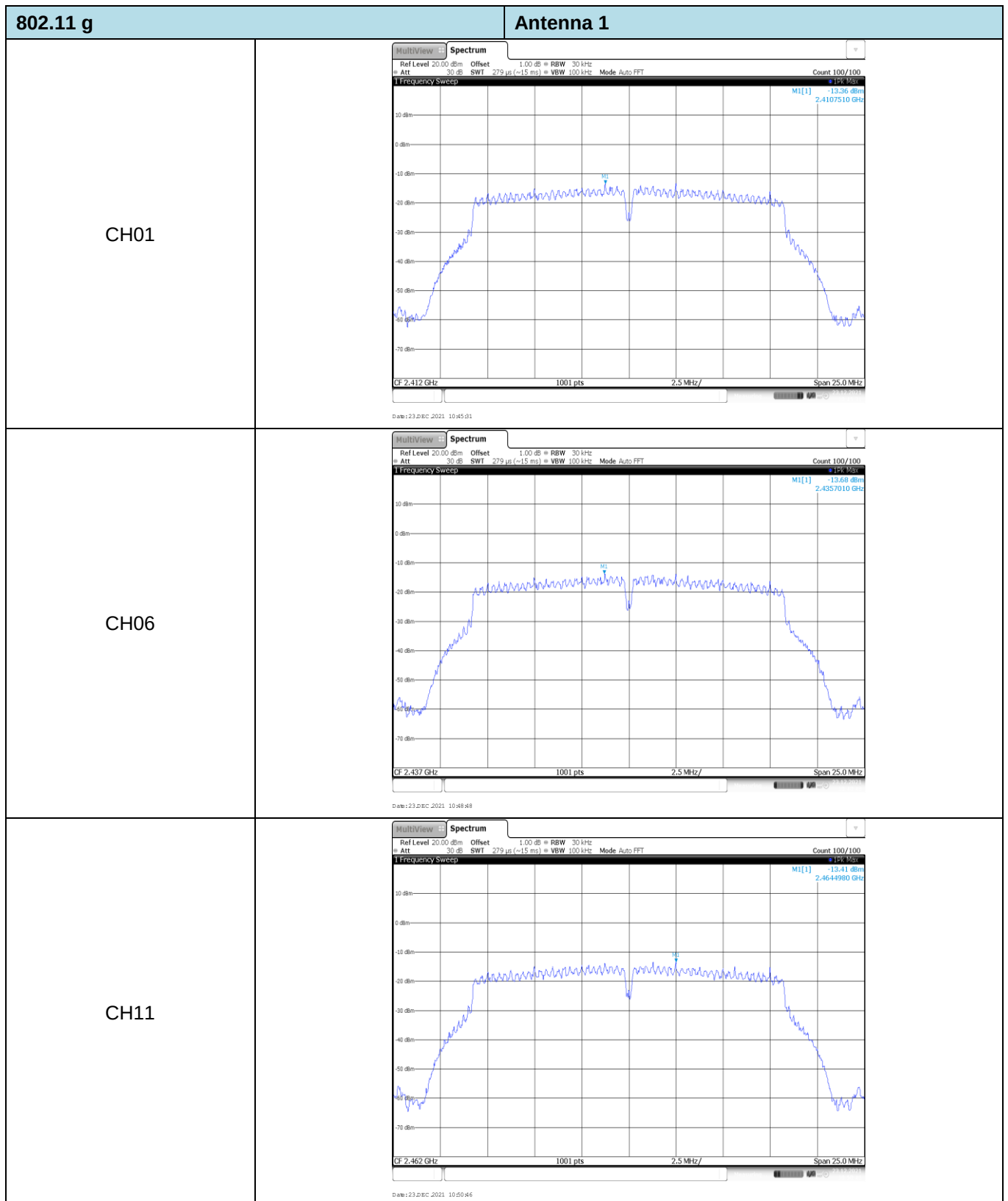
Appendix B: Power Spectral Density

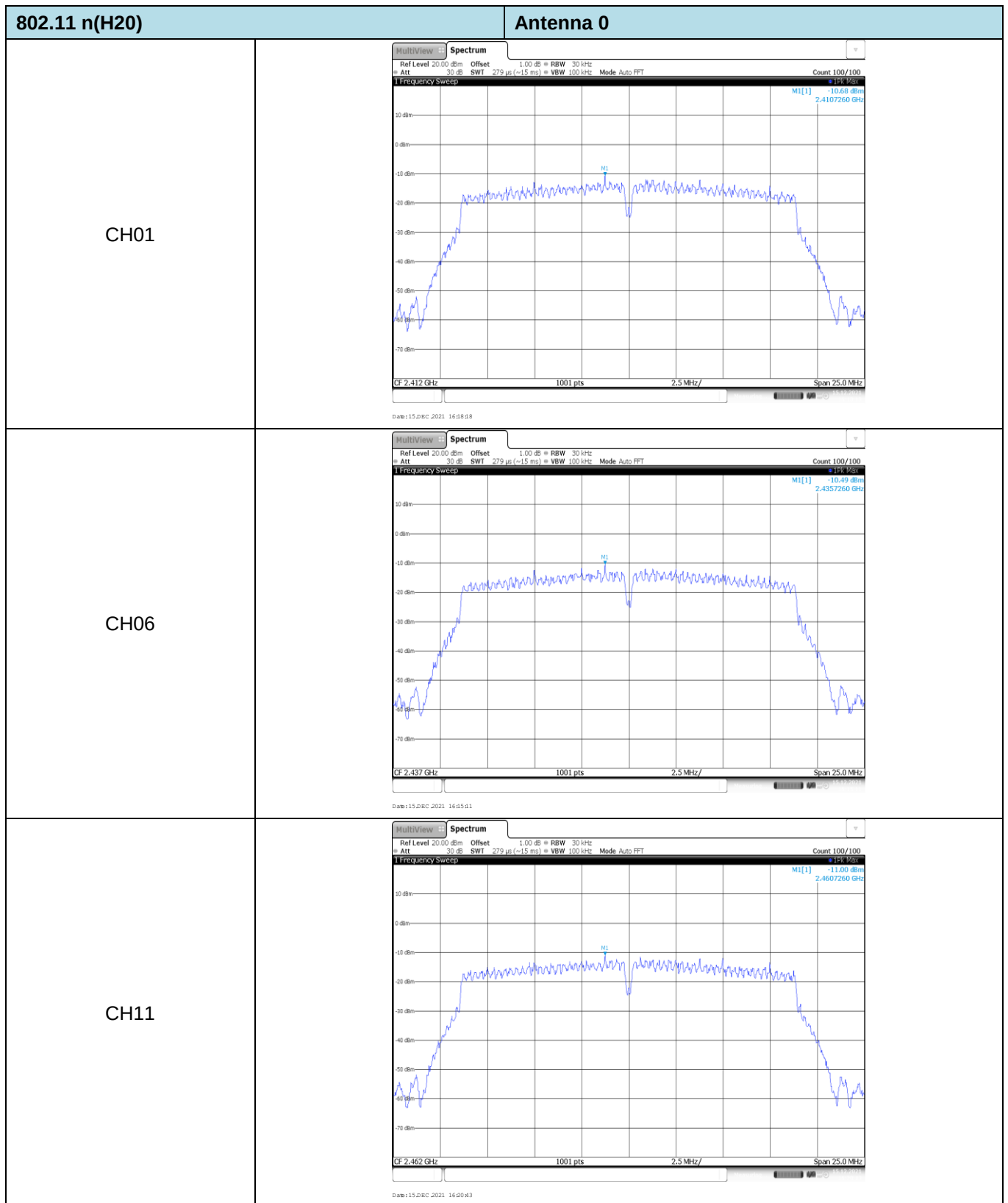
Type	Channel	Power Spectral Density (dBm/30KHz)		Total Power Spectral Density (dBm/30KHz)	Limit (dBm/3KHz)	Result
		Antenna 0	Antenna 1			
802.11b	01	-2.31	-3.13	-	≤8.00	Pass
	06	-1.73	-2.59	-		
	11	-2.28	-3.98	-		
802.11g	01	-11.92	-13.36	-	≤8.00	Pass
	06	-11.69	-13.68	-		
	11	-11.60	-13.41	-		
802.11n(HT20)	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		

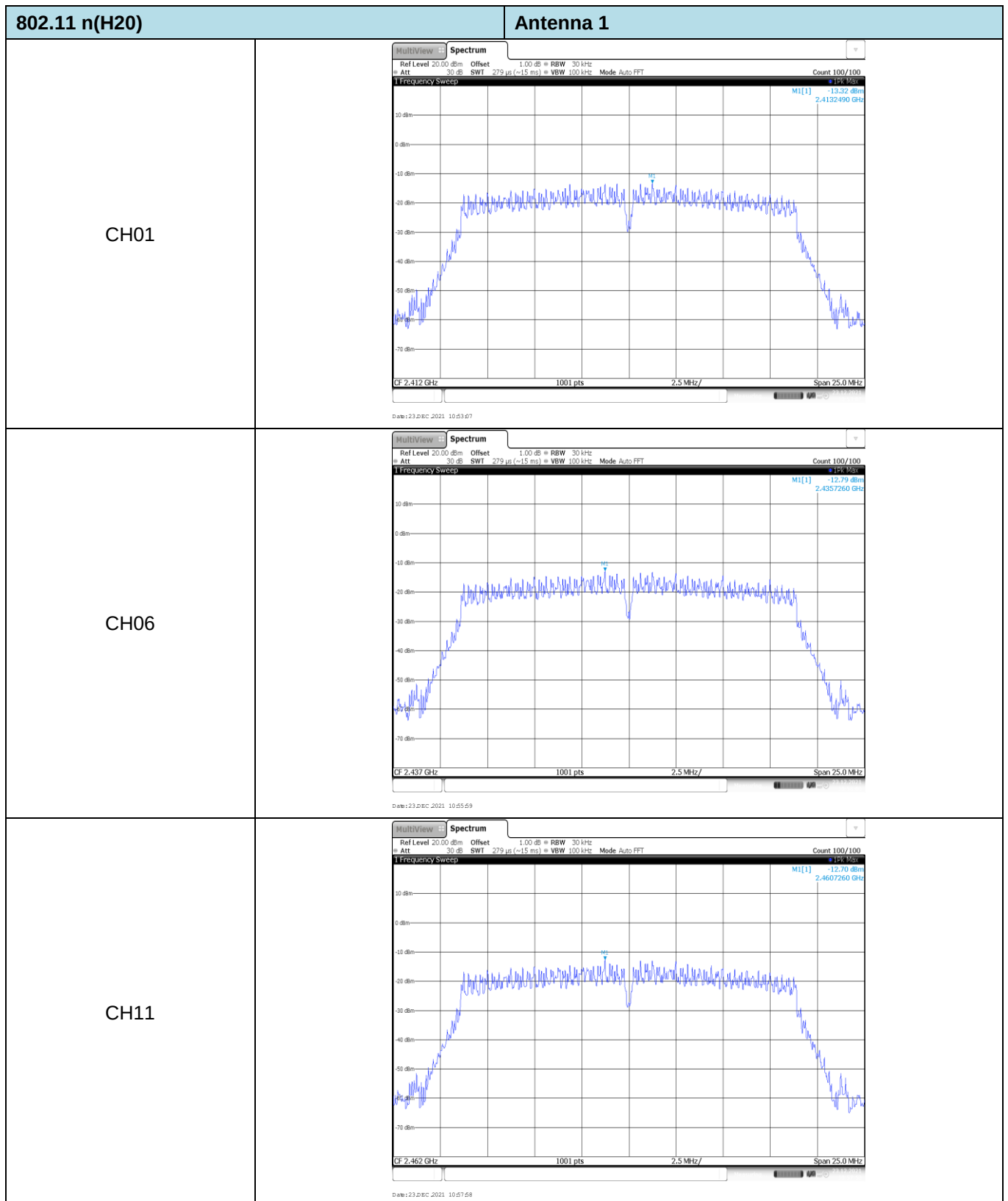


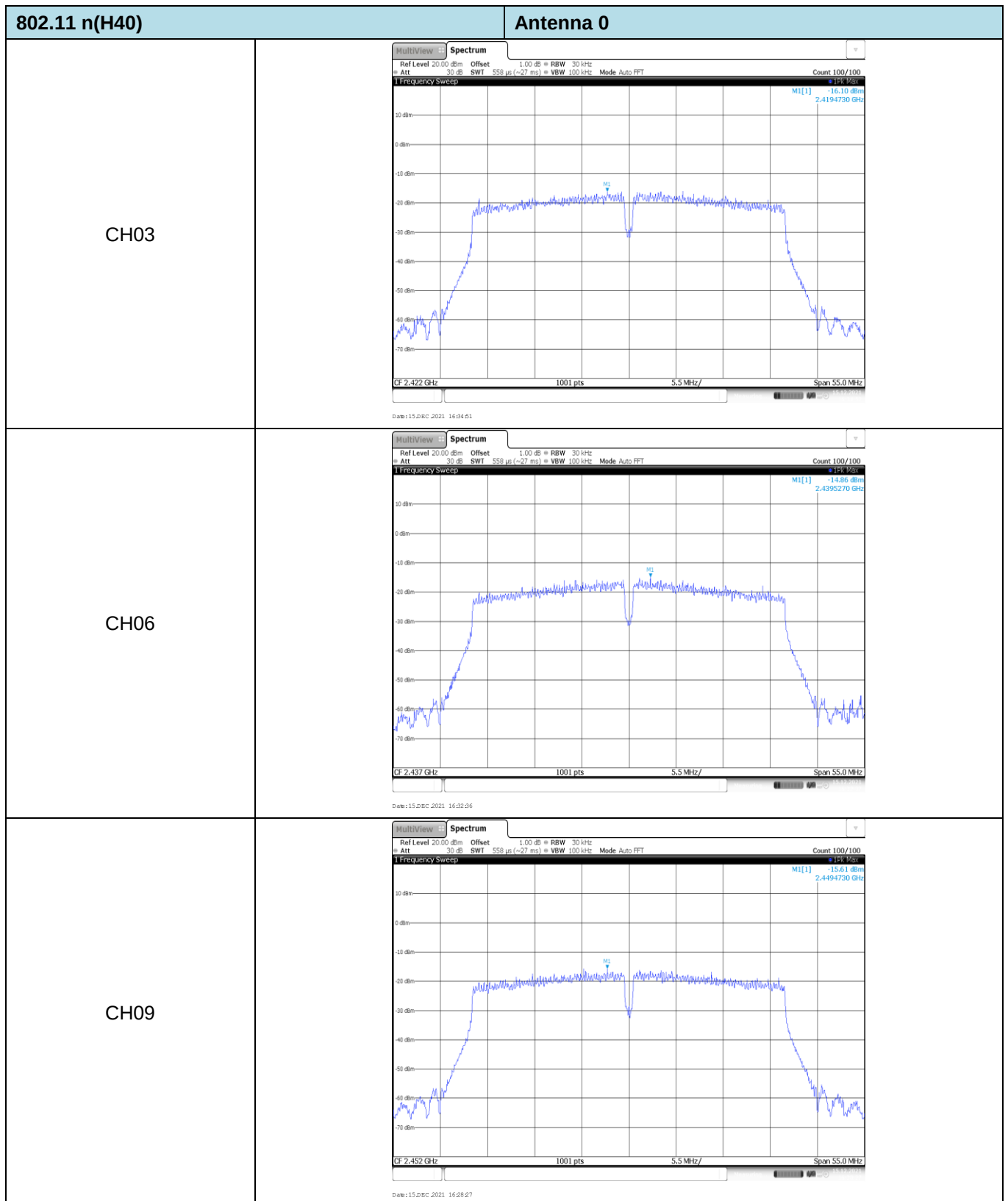


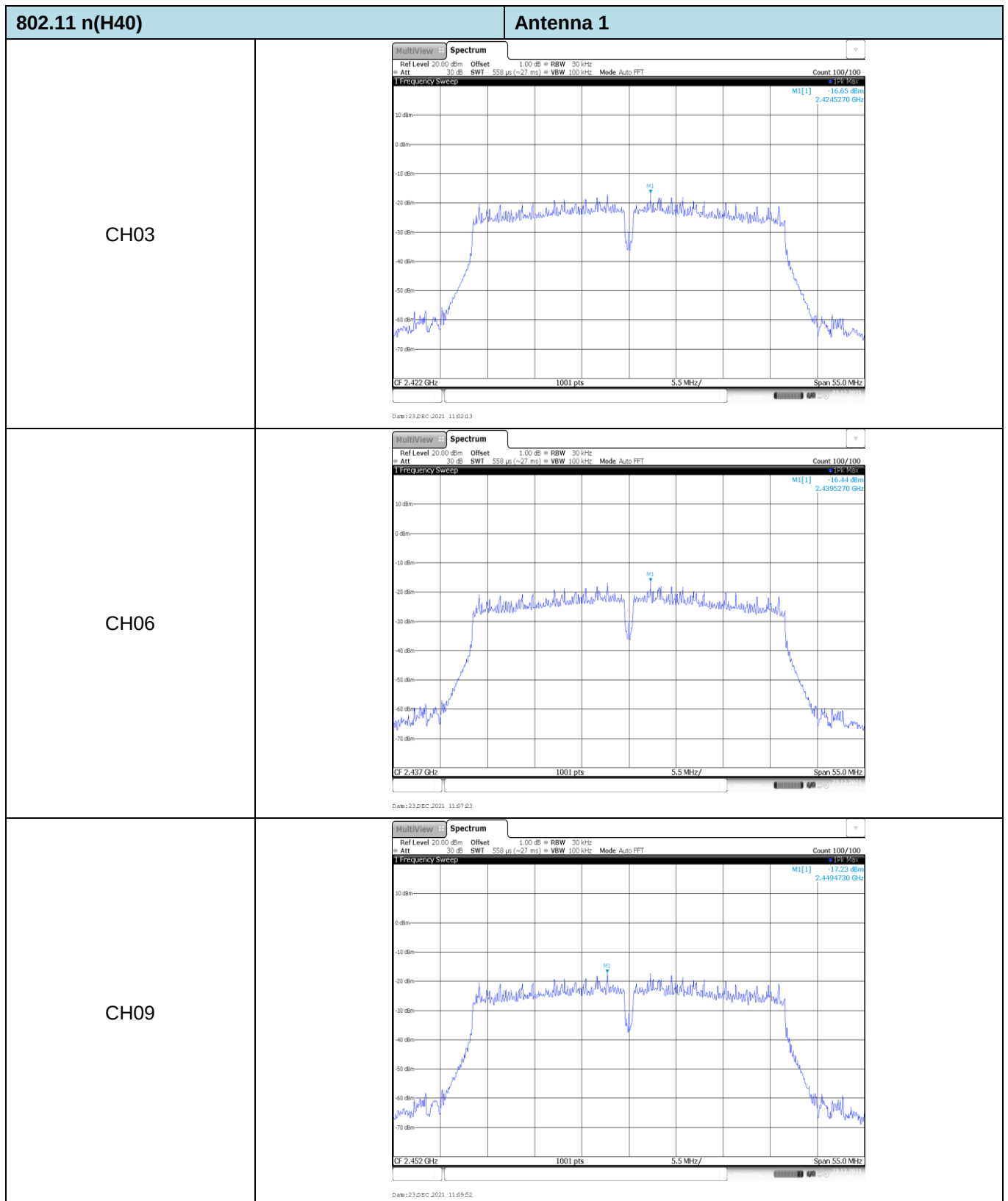










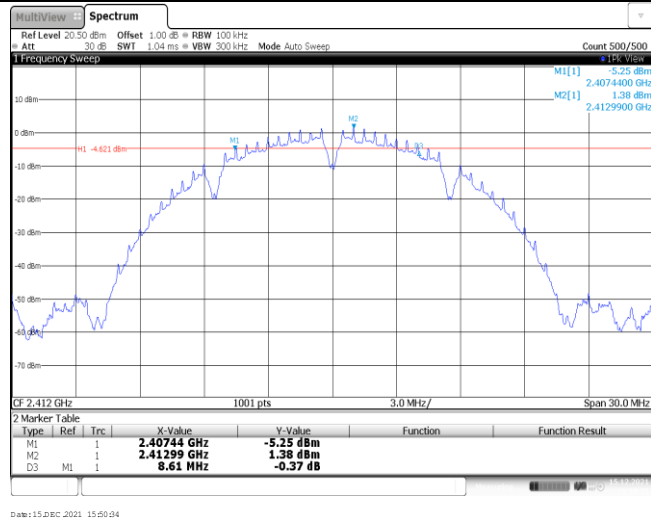


Appendix C: 6dB Bandwidth

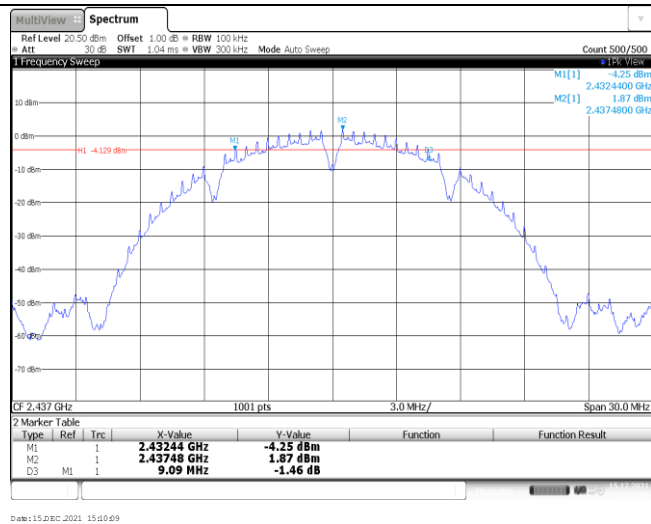
Type	Channel	6dB Bandwidth (MHz)	Limit (kHz)	Result
802.11b	01	8.61	≥500	Pass
	06	9.09		
	11	8.61		
802.11g	01	15.18	≥500	Pass
	06	15.18		
	11	15.18		
802.11n(HT20)	01	15.18	≥500	Pass
	06	15.75		
	11	15.18		
802.11n(HT40)	03	35.22	≥500	Pass
	06	35.22		
	09	35.22		

802.11 b

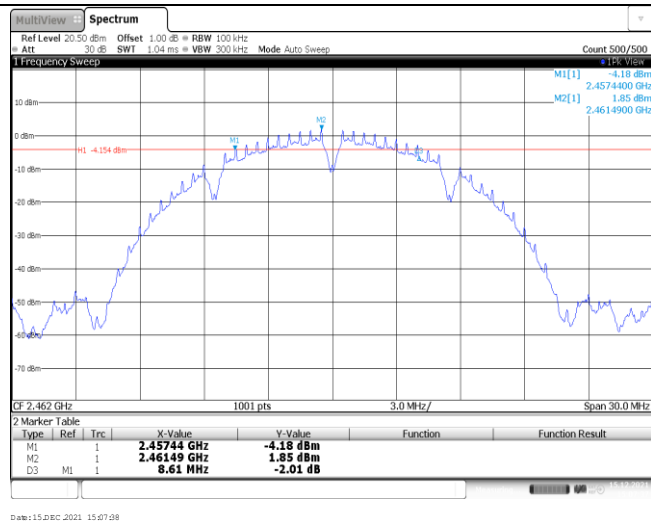
CH01



CH06

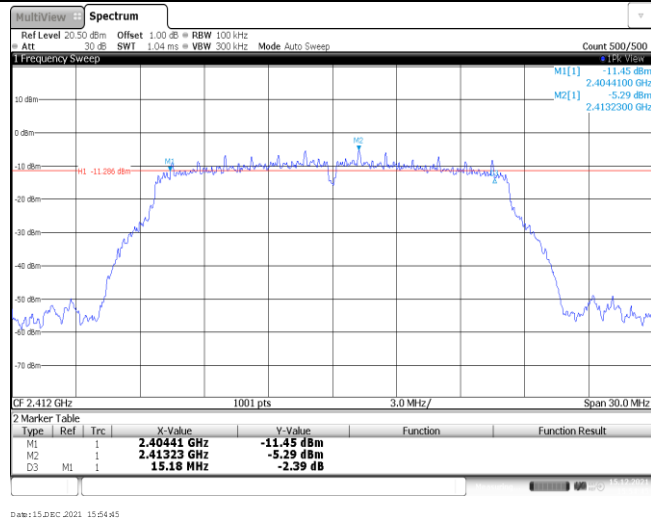


CH11

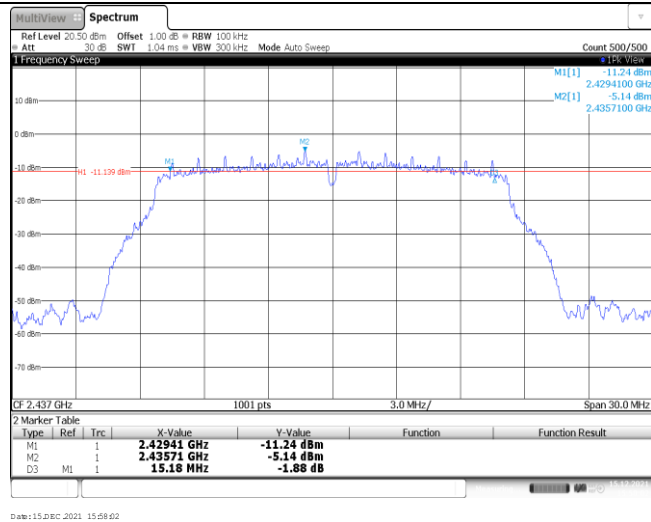


802.11 g

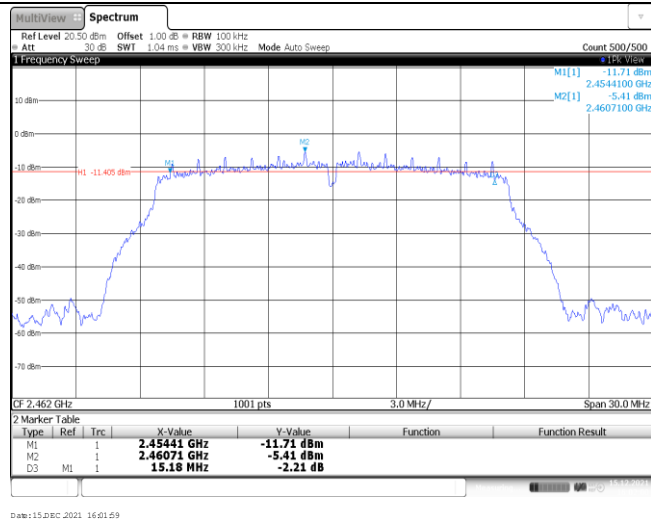
CH01



CH06

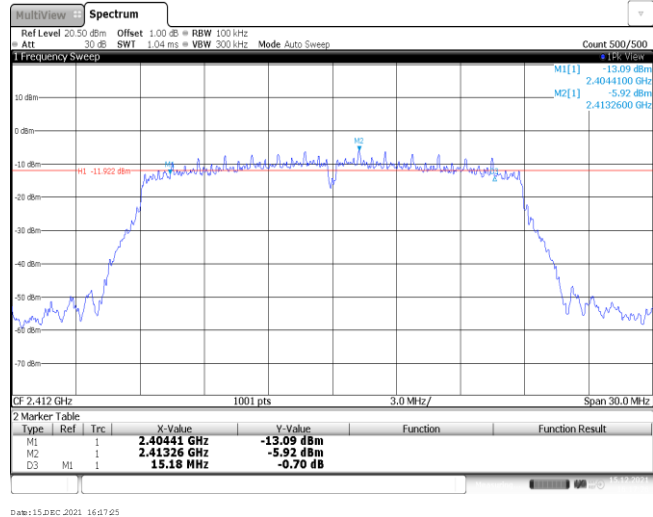


CH11

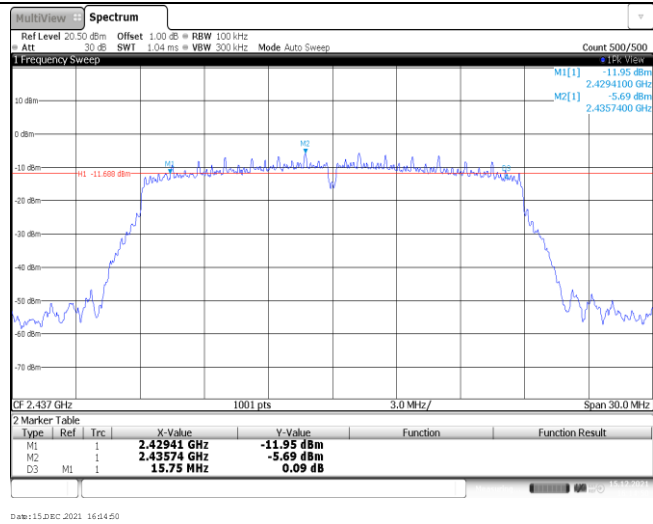


802.11n(HT20)

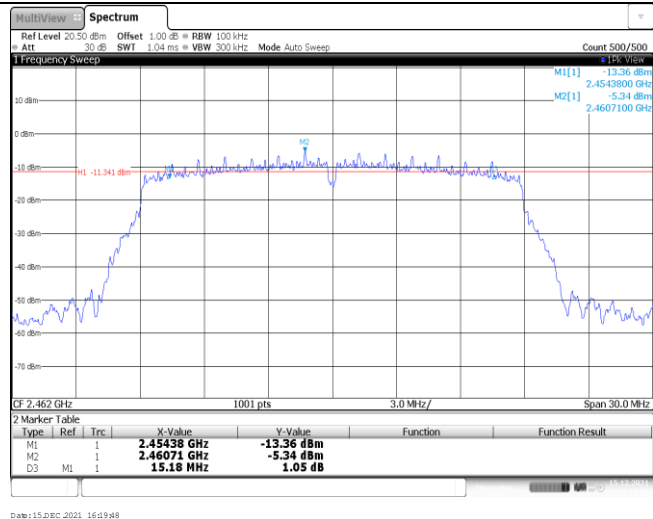
CH01



CH06

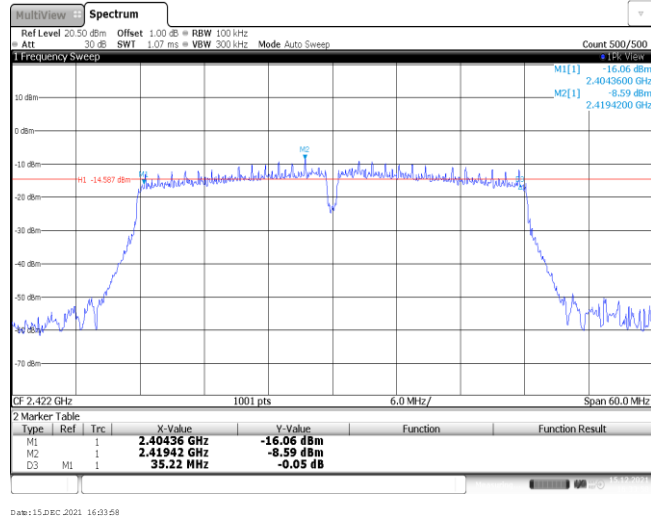


CH11

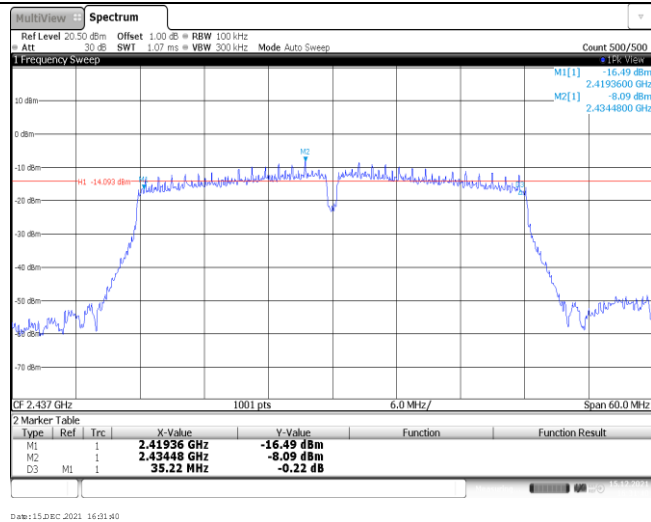


802.11n(HT40)

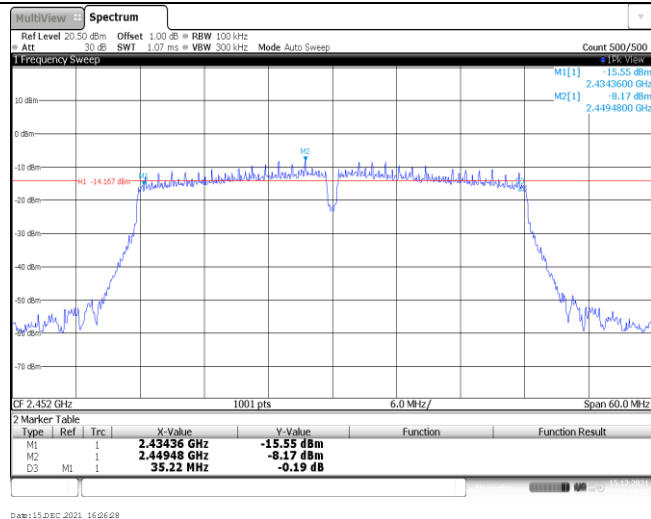
CH03



CH06



CH09

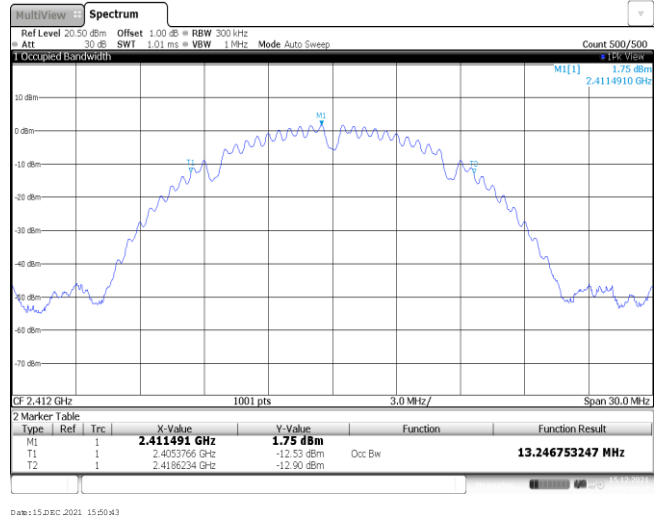


Appendix D: 99% Occupied Bandwidth

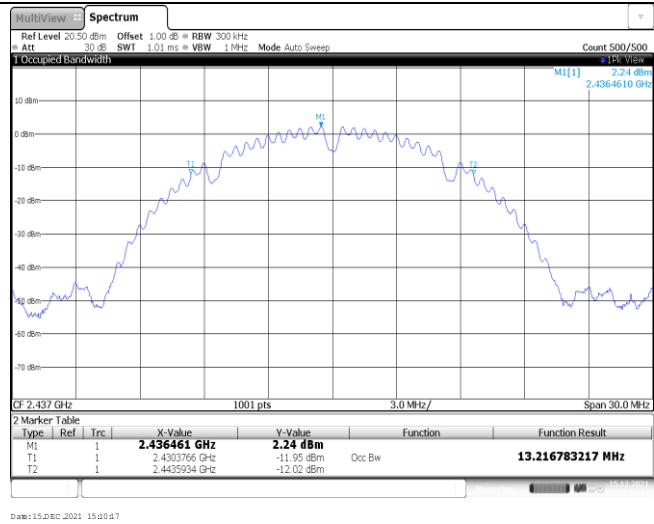
Type	Channel	99% Bandwidth (MHz)	Limit (kHz)	Result
802.11b	01	13.25	-	Pass
	06	13.22		
	11	13.34		
802.11g	01	16.69	-	Pass
	06	16.69		
	11	16.69		
802.11n(HT20)	01	17.59	-	Pass
	06	17.56		
	11	17.59		
802.11n(HT40)	03	35.96	-	Pass
	06	35.90		
	09	35.96		

802.11 b

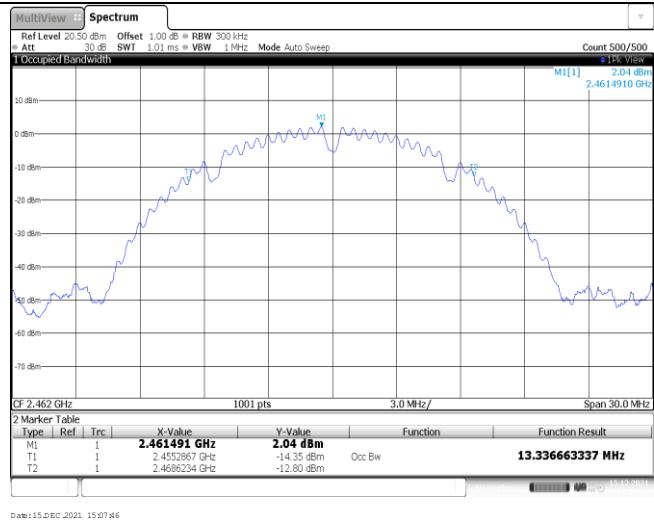
CH01



CH06

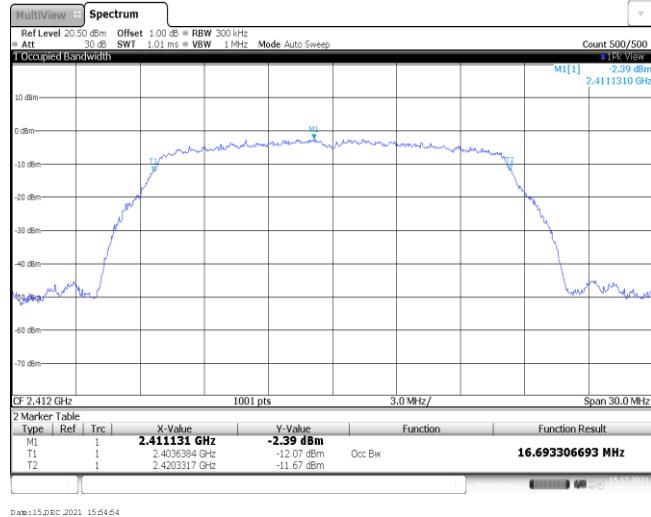


CH11

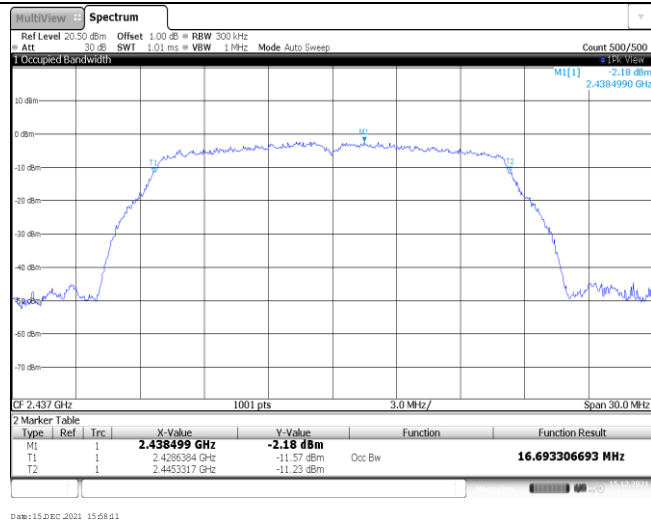


802.11 g

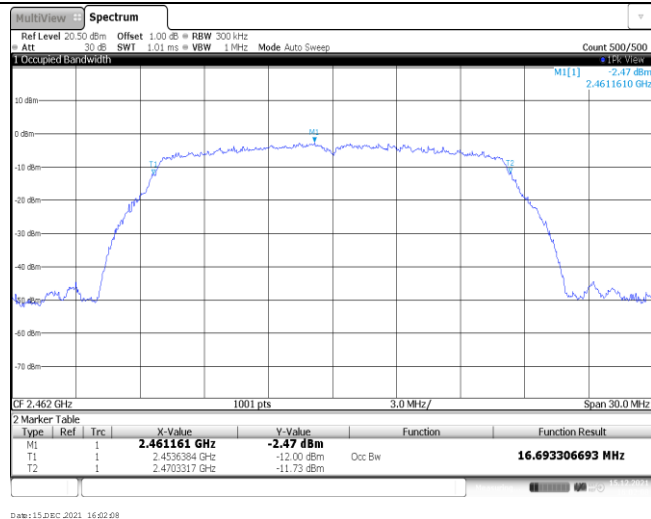
CH01



CH06

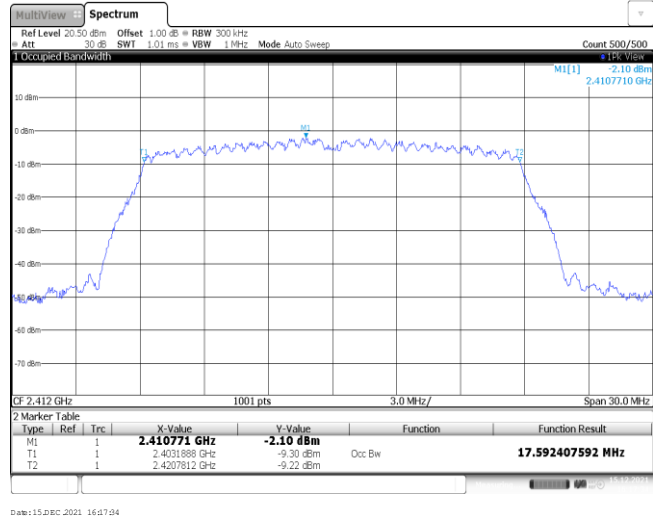


CH11

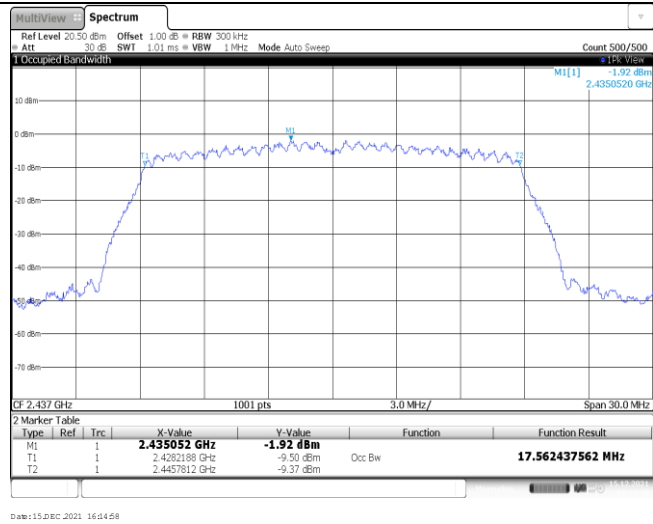


802.11n(HT20)

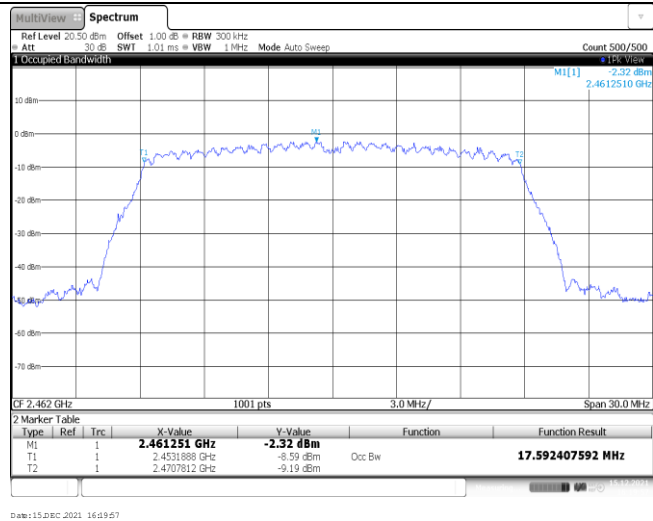
CH01



CH06

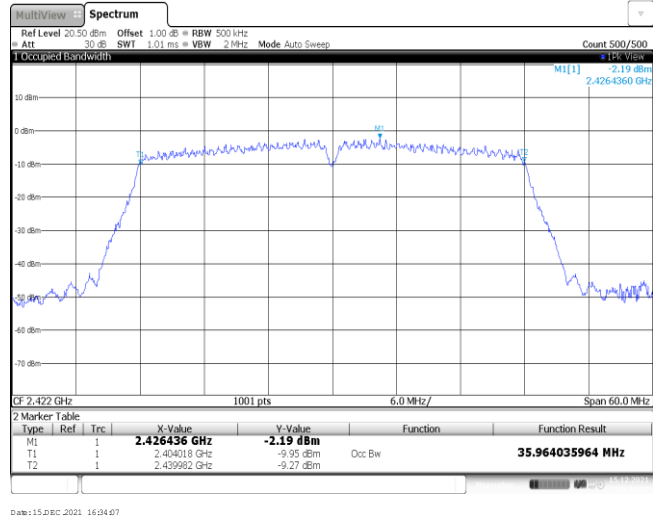


CH11

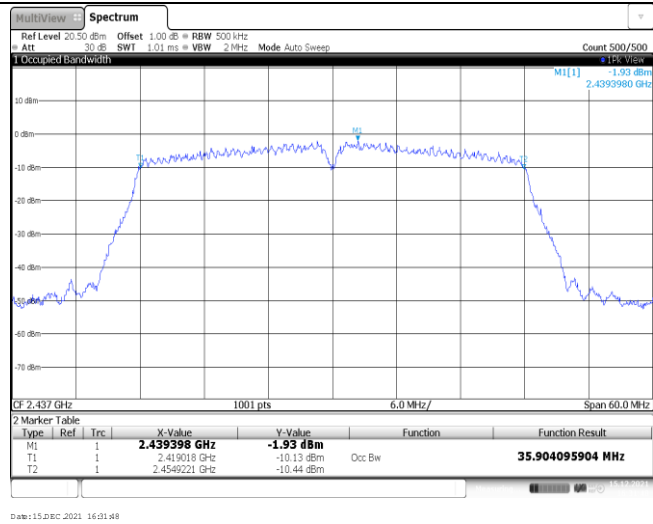


802.11n(HT40)

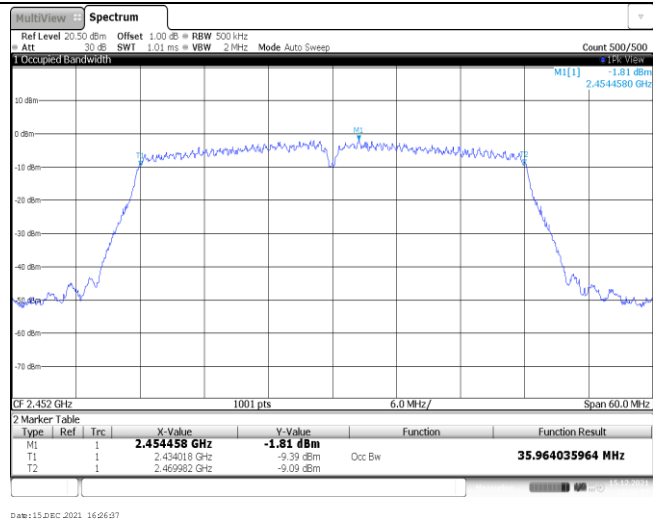
CH03



CH06



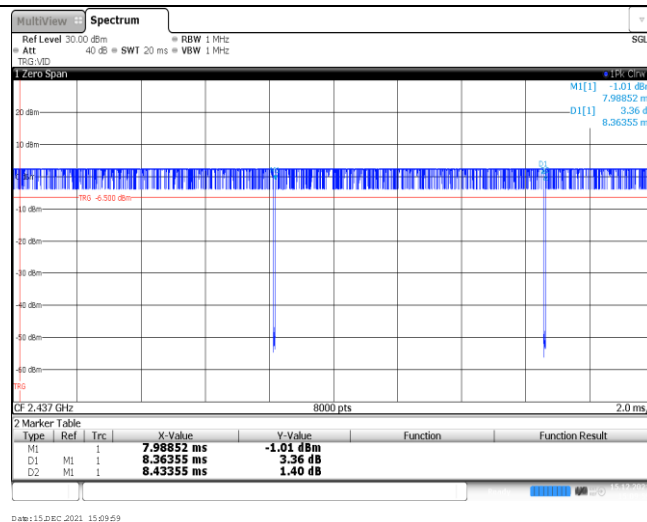
CH09



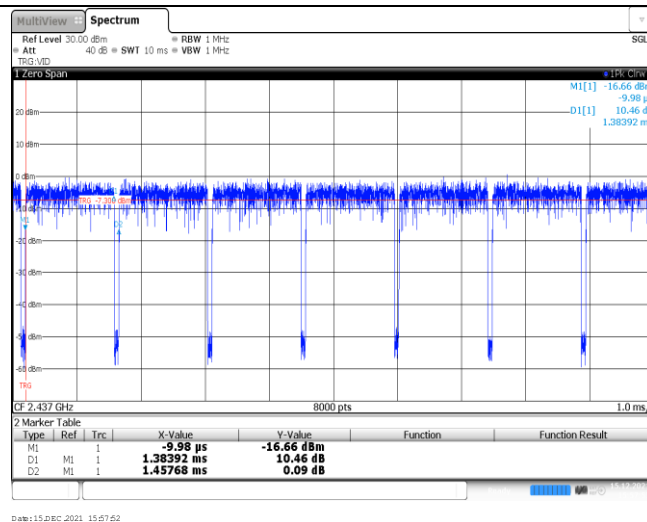
Appendix E: Duty Cycle

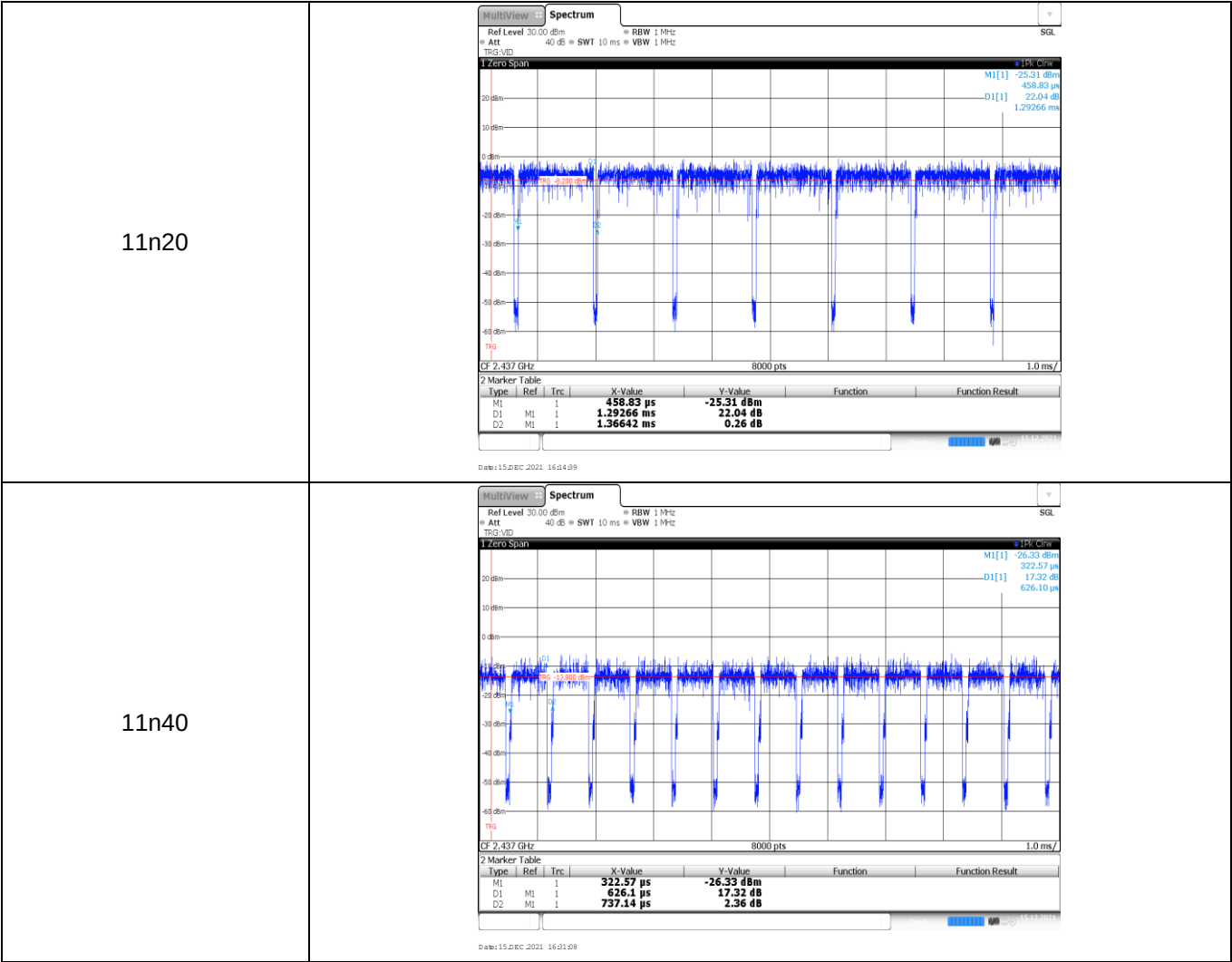
Modulation Type	Test Frequency (MHz)	T _{on time} for single burst (ms)	T _{period} (ms)	Duty cycle	1/T _{on time} (kHz)
11b	2437	8.36	8.43	99.2%	0.1
11g	2437	1.38	1.46	94.5%	0.7
11n20	2437	1.29	1.37	94.2%	0.8
11n40	2437	0.63	0.74	85.1%	1.6

11b



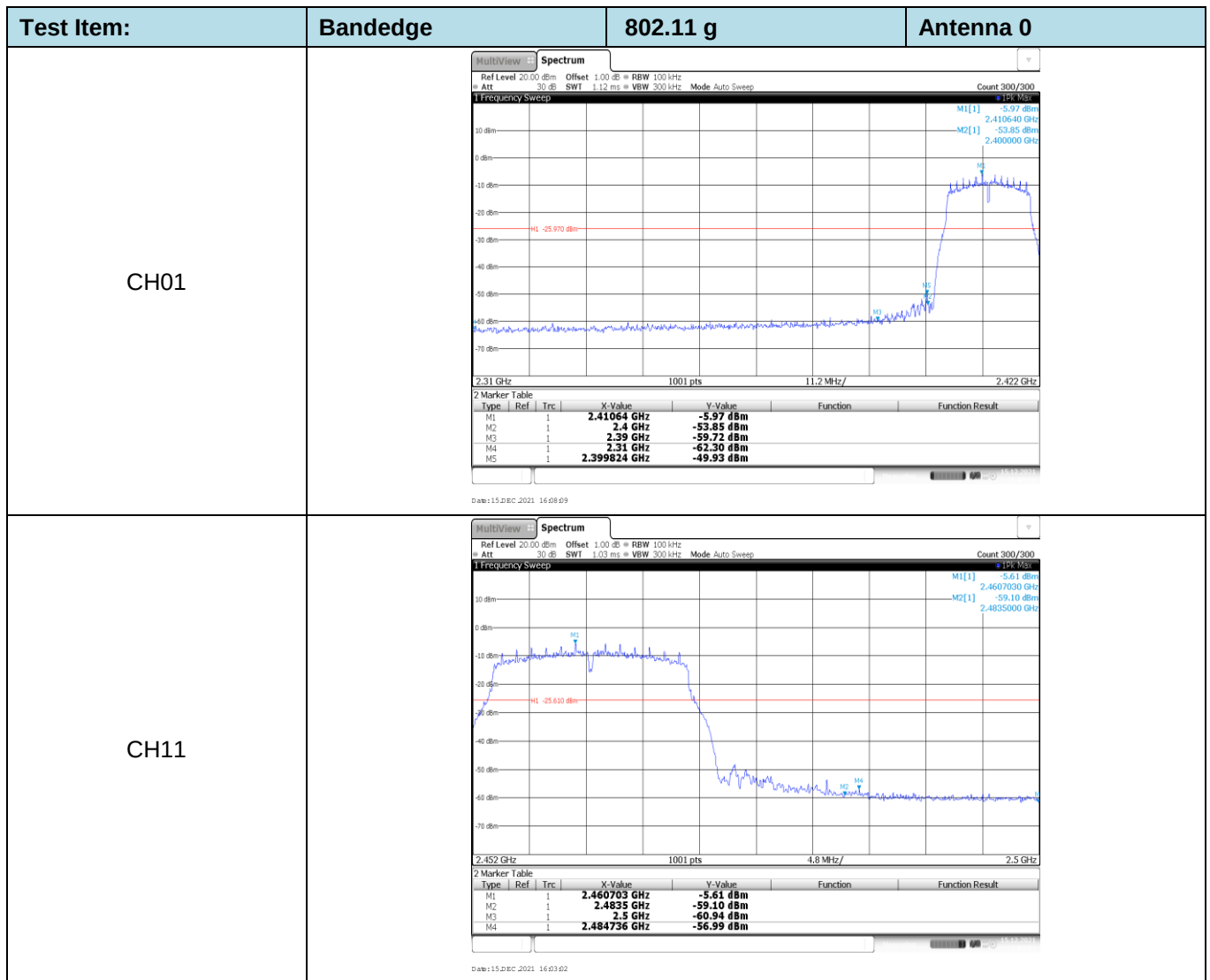
11g



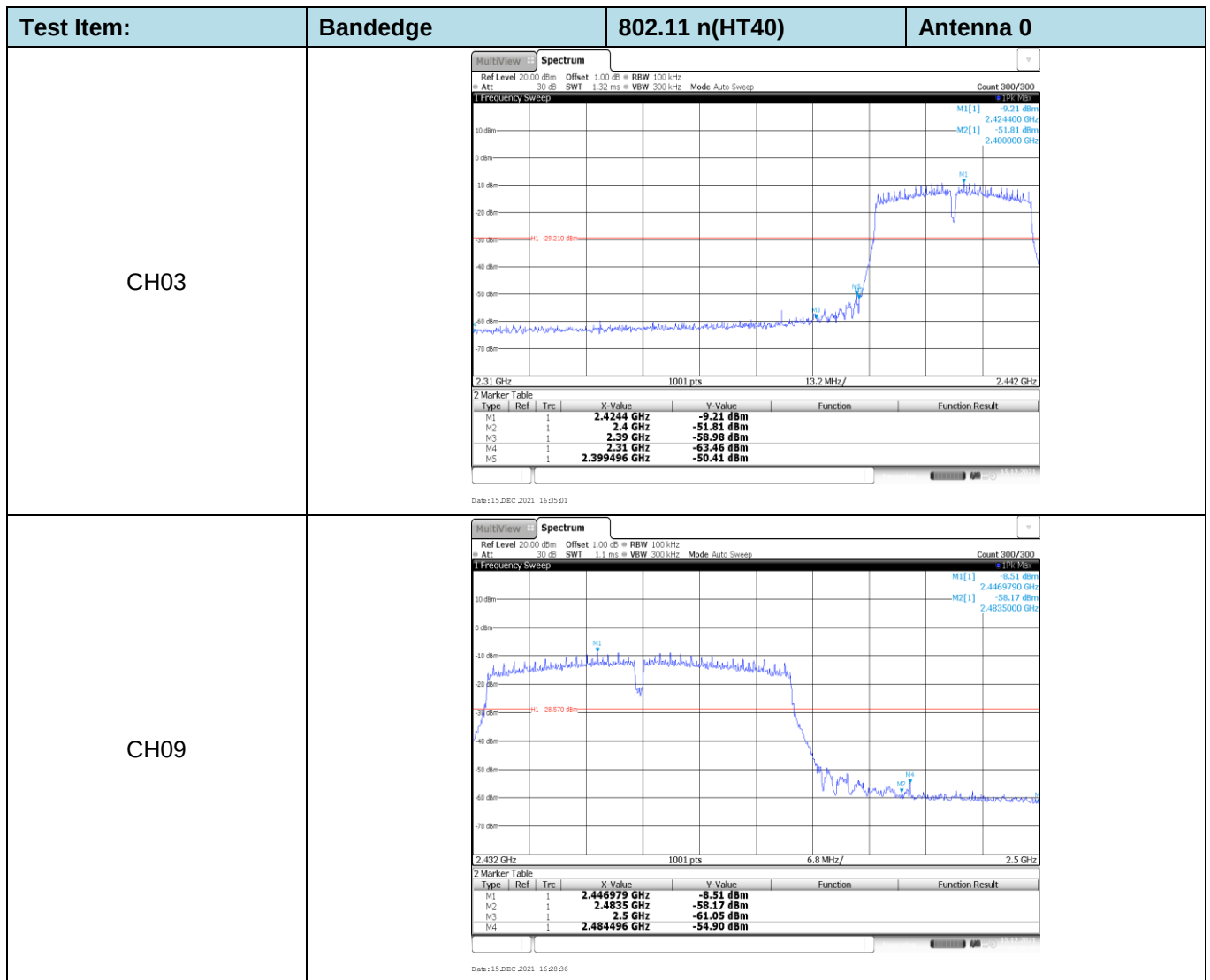


Appendix F: Band Edge and Spurious Emissions (Conducted)

Test Item:	Bandedge	802.11 b	Antenna 0
CH01	</		

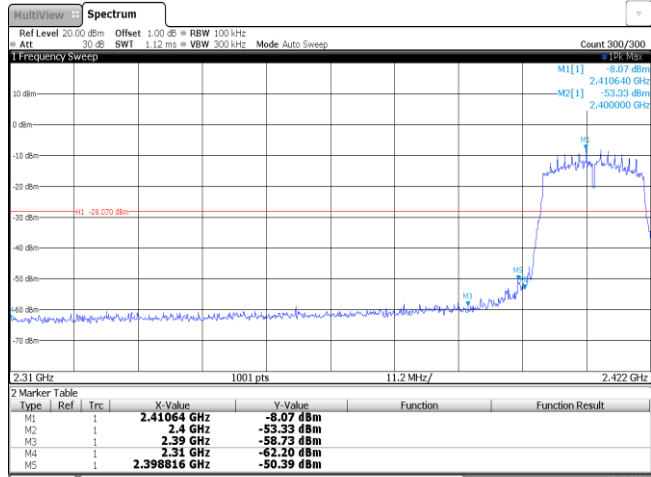
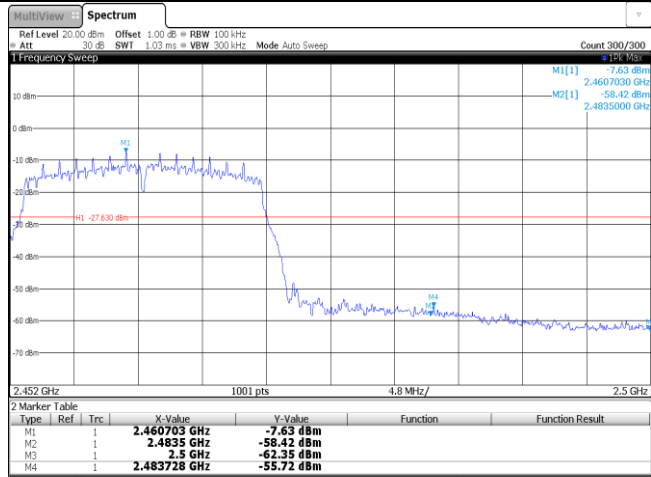


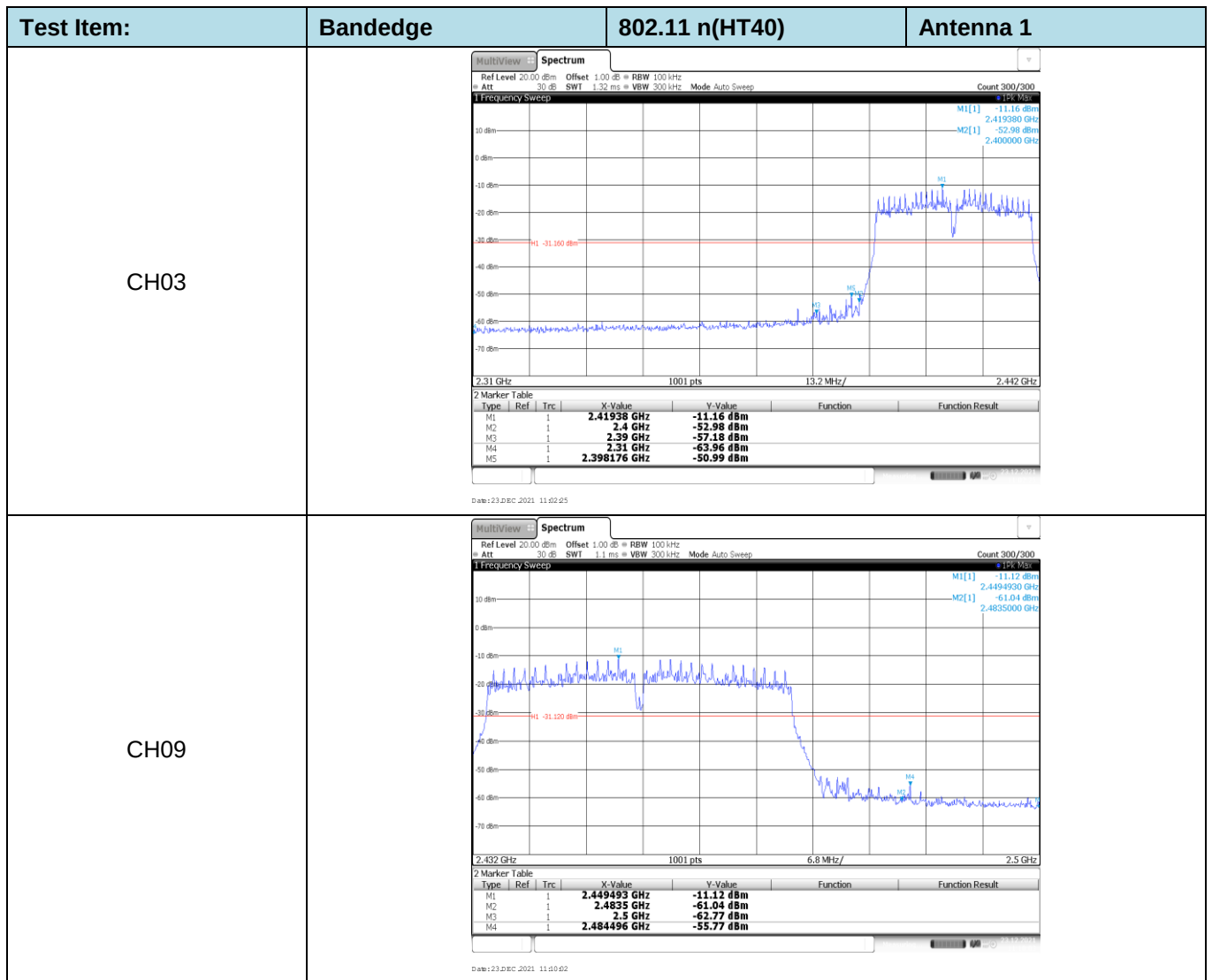
Test Item:	Bandedge	802.11 n(HT20)	Antenna 0																																										
CH01	MultiViewSpectrum Ref Level 20.00 dBm Offset 1.00 dB BW 100 kHz Att 30 dB SWT 1.12 ms VBW 300 kHz Mode Auto Sweep Count 300/300 1 Frequency Sweep 2 Marker Table <table><thead><tr><th>Type</th><th>Ref</th><th>Trc</th><th>X-Value</th><th>Y-Value</th><th>Function</th><th>Function Result</th></tr></thead><tbody><tr><td>M1</td><td>1</td><td></td><td>2.41322 GHz</td><td>-6.14 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4 GHz</td><td>-51.99 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.39 GHz</td><td>-58.46 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.31 GHz</td><td>-63.41 dBm</td><td></td><td></td></tr><tr><td>M5</td><td>1</td><td></td><td>2.399712 GHz</td><td>-50.13 dBm</td><td></td><td></td></tr></tbody></table> Date: 15 DEC 2021 16:18:28			Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		2.41322 GHz	-6.14 dBm			M2	1		2.4 GHz	-51.99 dBm			M3	1		2.39 GHz	-58.46 dBm			M4	1		2.31 GHz	-63.41 dBm			M5	1		2.399712 GHz	-50.13 dBm		
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CH11	MultiViewSpectrum 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 1 Frequency Sweep 2 Marker Table <table><thead><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></thead><tbody><tr><td>M1</td><td>1</td><td></td><td>2.460703 GHz</td><td>-5.52 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4835 GHz</td><td>-59.23 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.5 GHz</td><td>-60.28 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.484448 GHz</td><td>-57.63 dBm</td><td></td><td></td></tr></tbody></table> Date: 15 DEC 2021 16:20:53			Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		2.460703 GHz	-5.52 dBm			M2	1		2.4835 GHz	-59.23 dBm			M3	1		2.5 GHz	-60.28 dBm			M4	1		2.484448 GHz	-57.63 dBm									
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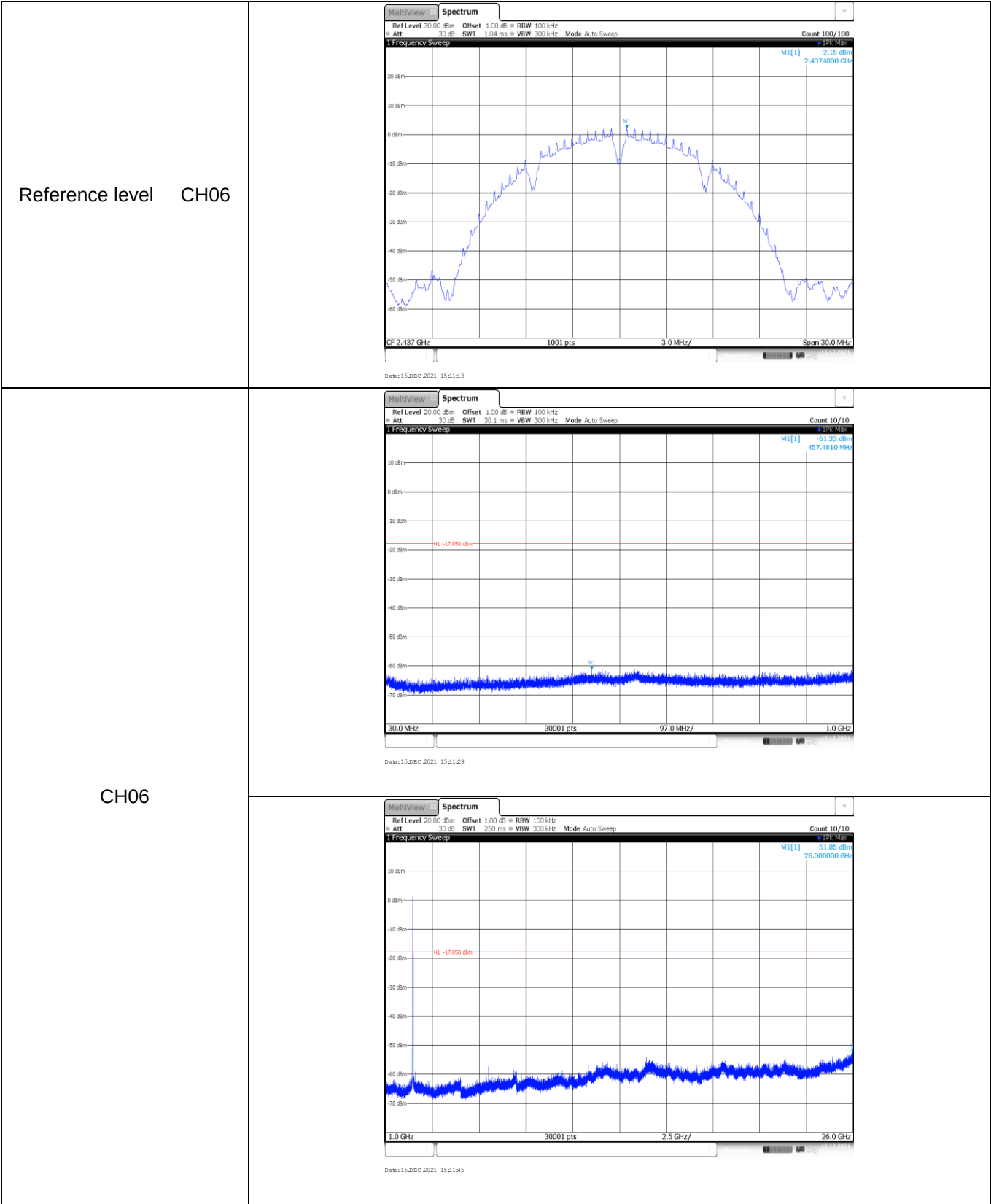
Test Item:	Bandedge	802.11 b	Antenna 1
CH01			

Test Item:	Bandedge	802.11 g	Antenna 1
CH01			

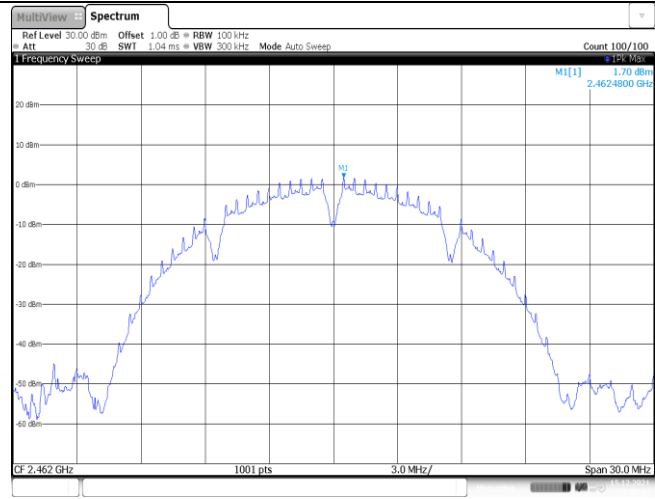
Test Item:	Bandedge	802.11 n(HT20)	Antenna 1																																										
CH01	MultiViewSpectrum Ref Level 20.00 dBm Offset 1.00 dB BW 100 kHz ATT 30 dB SWT 1.12 ms VBW 300 kHz Mode Auto Sweep Count 200/200 1 Frequency Sweep  2 Marker Table <table><tr><th>Type</th><th>Ref</th><th>Trc</th><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		
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M4	1		2.483728 GHz	-55.72 dBm																																									



Test Item:	SE	802.11 b	Antenna 0
Reference level CH01	MultiView Spectrum Ref Level 30.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWI 1.04 ms VBW 300 kHz Mode Auto Sweep Count 100/100 1 Frequency Sweep M1 1.64 dBm 2.4124800 GHz 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm CF 2.412 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date:15 DEC 2021 15:51:34		
	CH01	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWI 30.1 ms VBW 300 kHz Mode Auto Sweep Count 10/10 1 Frequency Sweep M1 -60.97 dBm 554.2190 MHz M1 -18.360 dBm 30.0 MHz 30001 pts 97.0 MHz/ 1.0 GHz Date:15 DEC 2021 15:51:50	
MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWI 250 ms VBW 300 kHz Mode Auto Sweep Count 10/10 1 Frequency Sweep M1 -52.19 dBm 25.972500 GHz M1 -18.360 dBm 1.0 GHz 30001 pts 2.5 GHz/ 26.0 GHz Date:15 DEC 2021 15:52:27			



Reference level CH11



CH11

