

APPENDIX REPORT

Project No.	SHT2302000902EW	Radio Specification	WIFI 2.4G
Test sample No.	YPHT23020009001	Model No.	8A.04.9.024.8320
Start test date	2023-2-08	Finish date	2023-2-09
Temperature	22.9℃	Humidity	67%
Test Engineer	Xiaoxiao 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 (conducted)	PASS

Appendix A: Conducted Peak Output Power

Type	Channel	Peak Output power (dBm)	Average Output power (dBm)	Limit (dBm)	Result
802.11b	01	16.35	14.61	≤ 30.00	Pass
	06	15.76	14.02		
	11	15.86	14.13		
802.11g	01	16.49	14.34	≤ 30.00	Pass
	06	16.38	14.26		
	11	16.68	14.50		
802.11n (HT20)	01	16.18	14.05	≤ 30.00	Pass
	06	16.26	14.08		
	11	16.21	14.14		

Appendix B: Power Spectral Density

Type	Channel	Power Spectral Density (dBm/30KHz)	Limit (dBm/3KHz)	Result
802.11b	01	-1.62	≤8.00	Pass
	06	-2.25		
	11	-2.93		
802.11g	01	-7.58	≤8.00	Pass
	06	-7.64		
	11	-7.08		
802.11n(HT20)	01	-6.46	≤8.00	Pass
	06	-6.30		
	11	-7.49		

Type:		802.11 b
CH01	MultiView Spectrum 17 Ref Level 20.00 dBm Offset 1.00 dB RBW 30 kHz Att 30 dB SWT 1.78 ms VBW 100 kHz Mode Auto Sweep Count 100/100 1 PE Mag 1 Frequency Sweep MI[1] -1.62 dBm 2.4120640 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 2.412 GHz 1001 pts 1.6 MHz/ Span 16.0 MHz Date: 9 FEB 2023 12:58:04	
CH06	MultiView Spectrum 17 Ref Level 20.00 dBm Offset 1.00 dB RBW 30 kHz Att 30 dB SWT 1.78 ms VBW 100 kHz Mode Auto Sweep Count 100/100 1 PE Mag 1 Frequency Sweep MI[1] -2.25 dBm 2.4374480 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 2.437 GHz 1001 pts 1.6 MHz/ Span 16.0 MHz Date: 9 FEB 2023 13:02:13	
CH11	MultiView Spectrum 17 Ref Level 20.00 dBm Offset 1.00 dB RBW 30 kHz Att 30 dB SWT 1.78 ms VBW 100 kHz Mode Auto Sweep Count 100/100 1 PE Mag 1 Frequency Sweep MI[1] -2.93 dBm 2.4621120 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 2.462 GHz 1001 pts 1.6 MHz/ Span 16.0 MHz Date: 9 FEB 2023 13:04:08	

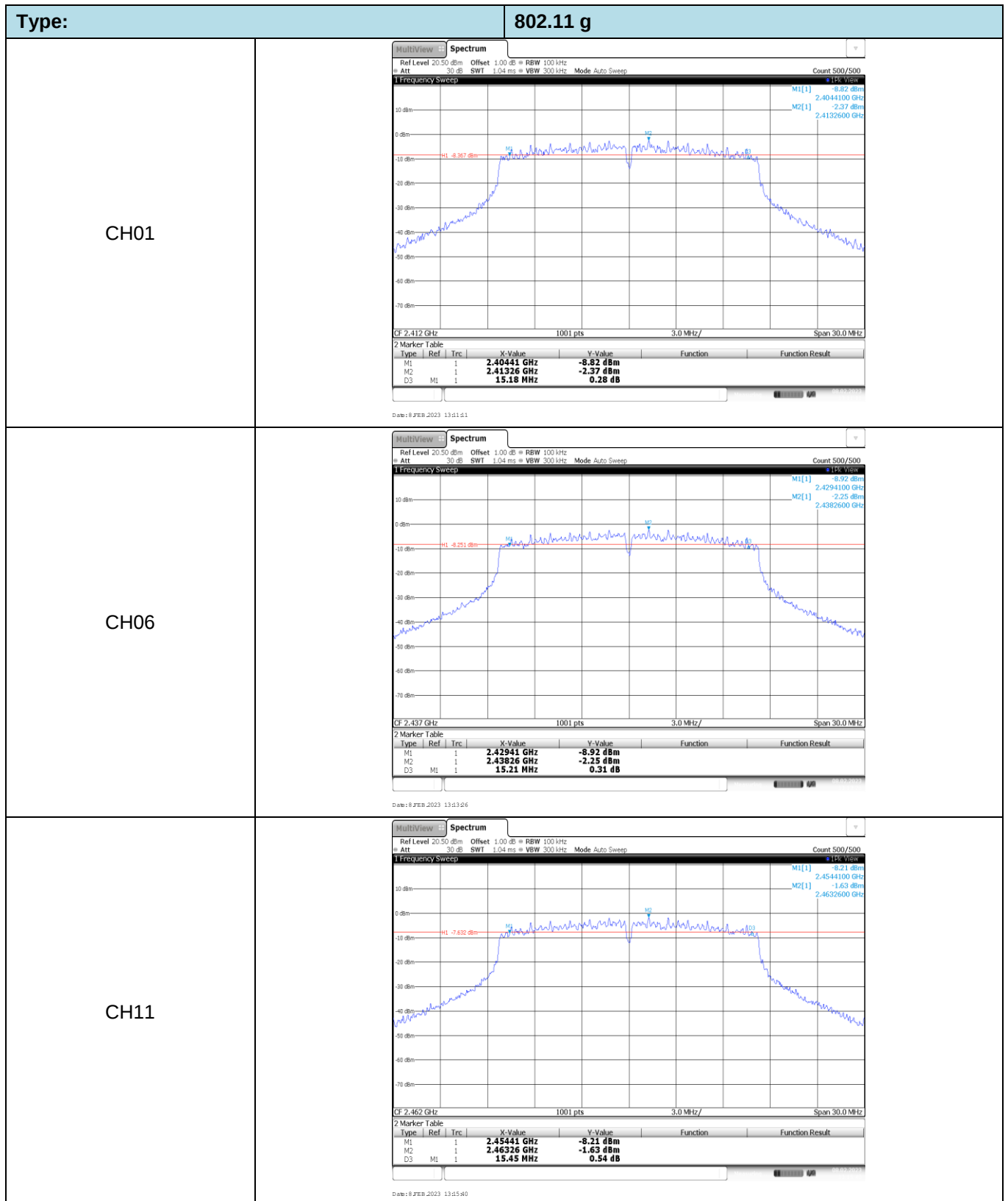
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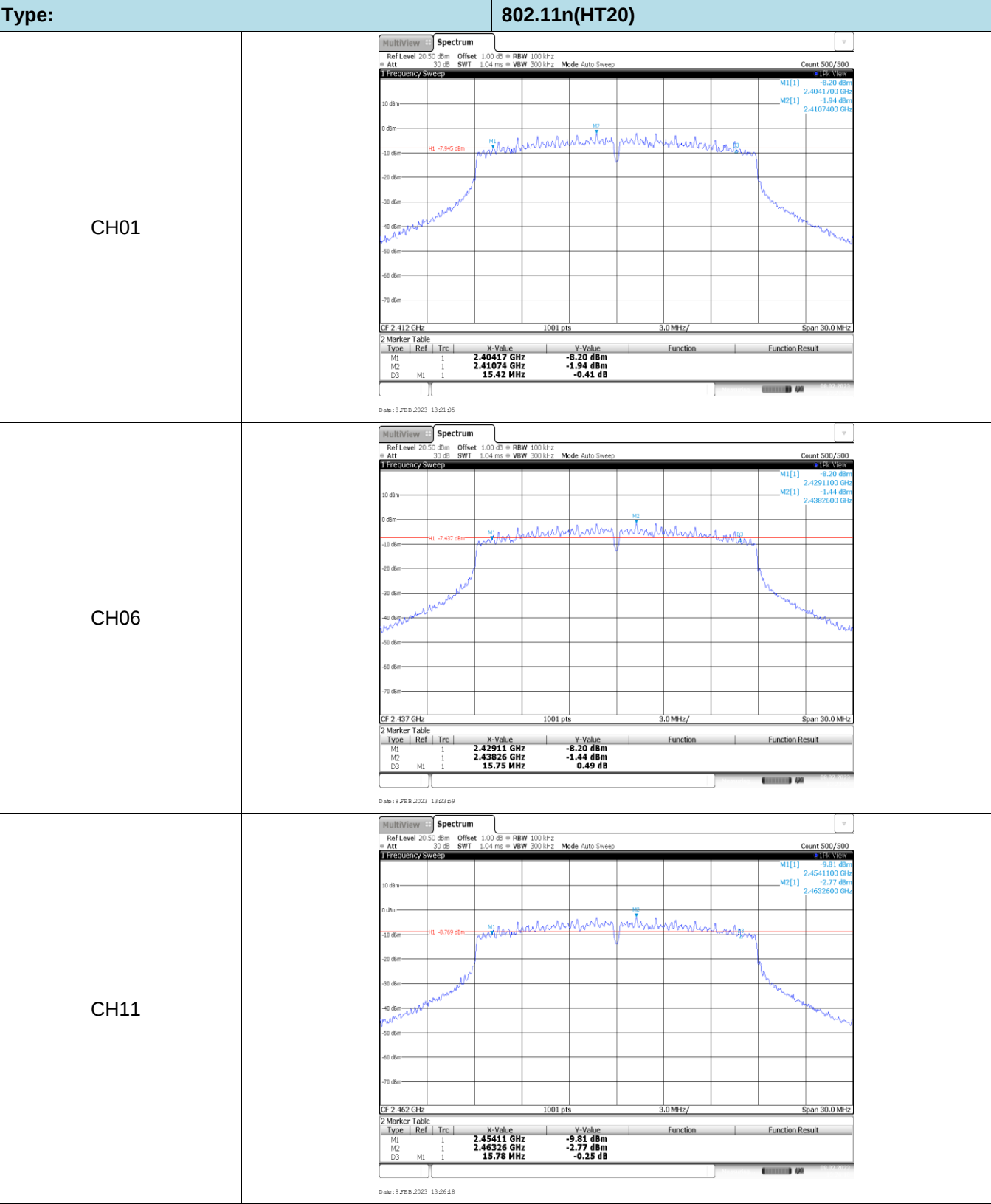
Type:		802.11n(HT20)
CH01	<	

Appendix C: 6dB bandwidth

Type	Channel	6dB Bandwidth (MHz)	Limit (MHz)	Result
802.11b	01	9.06	≥0.5	Pass
	06	8.55		
	11	7.98		
802.11g	01	15.18	≥0.5	Pass
	06	15.21		
	11	15.45		
802.11n(HT20)	01	15.42	≥0.5	Pass
	06	15.75		
	11	15.78		

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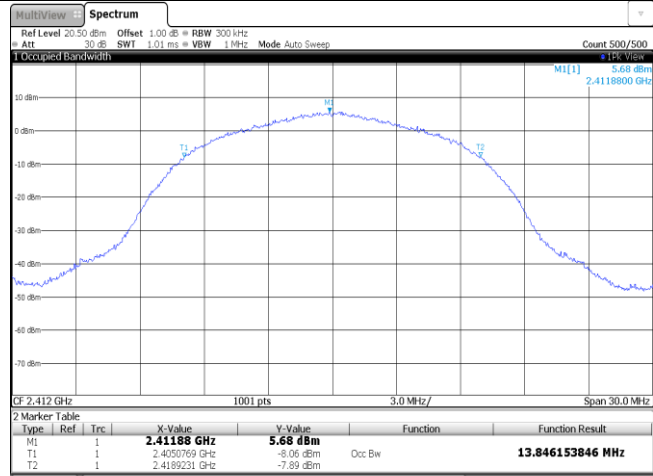
Appendix D: 99% Occupied Bandwidth

Type	Channel	99% Bandwidth (MHz)	Limit (MHz)	Result
802.11b	01	13.85	-	Pass
	06	13.82		
	11	13.85		
802.11g	01	16.45	-	Pass
	06	16.48		
	11	16.48		
802.11n(HT20)	01	17.56	-	Pass
	06	17.59		
	11	17.56		

Type:

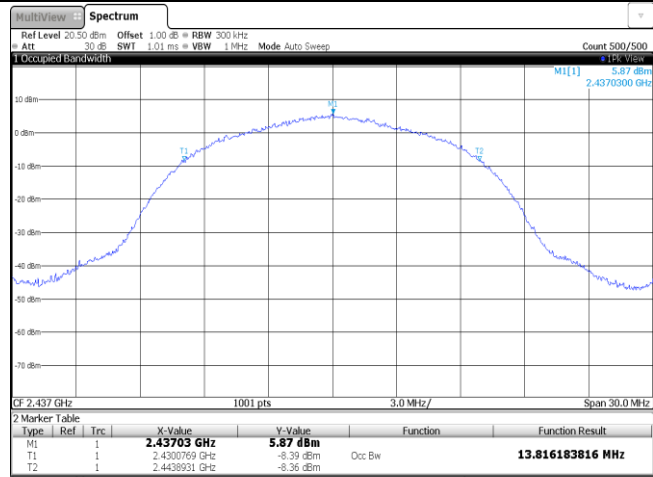
802.11 b

CH01



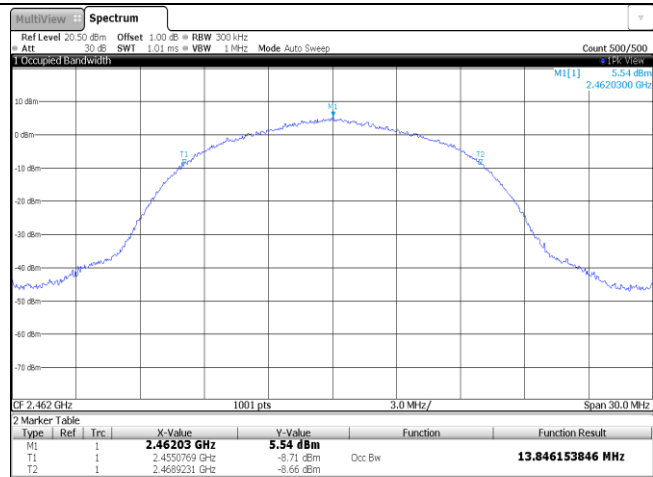
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CH06



Date: 8 FEB 2023 13:01:09

CH11

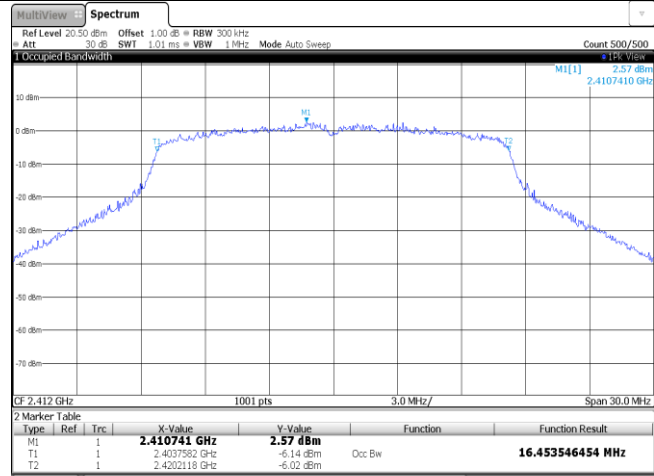


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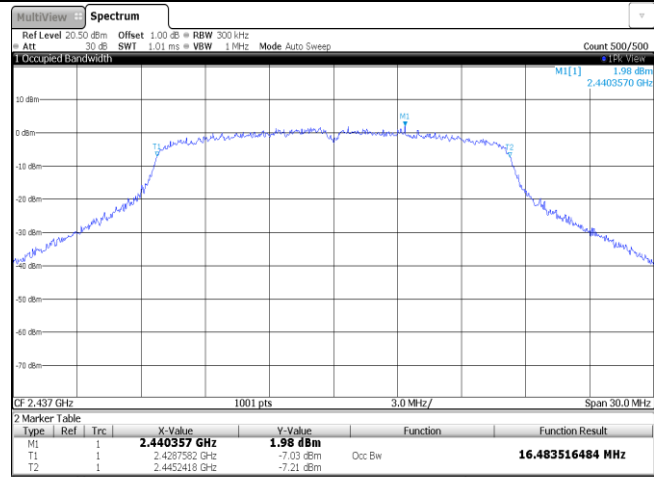
802.11 g

CH01



Date: 8 FEB 2023 13:11:09

CH06



Date: 8 FEB 2023 13:13:04

CH11

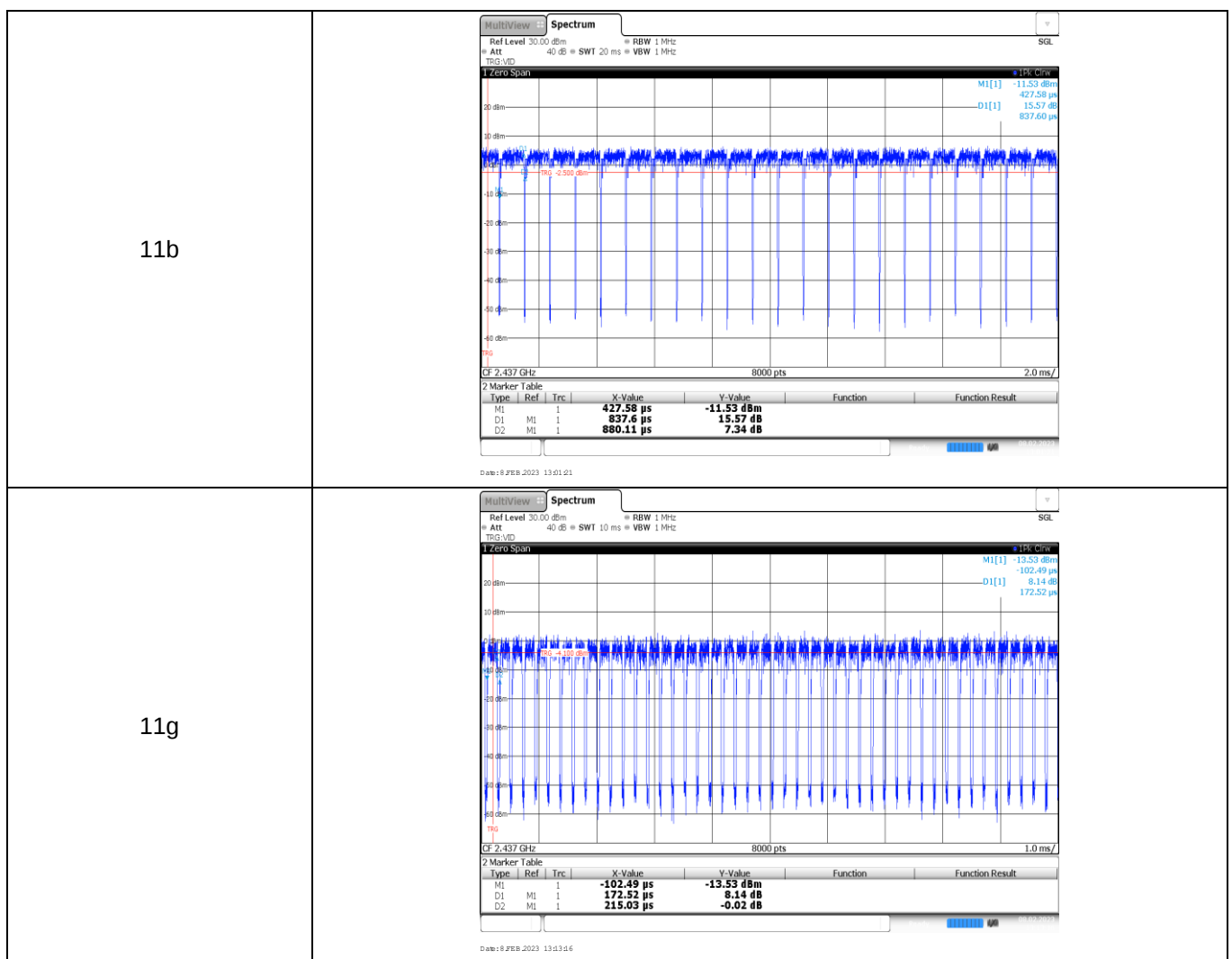


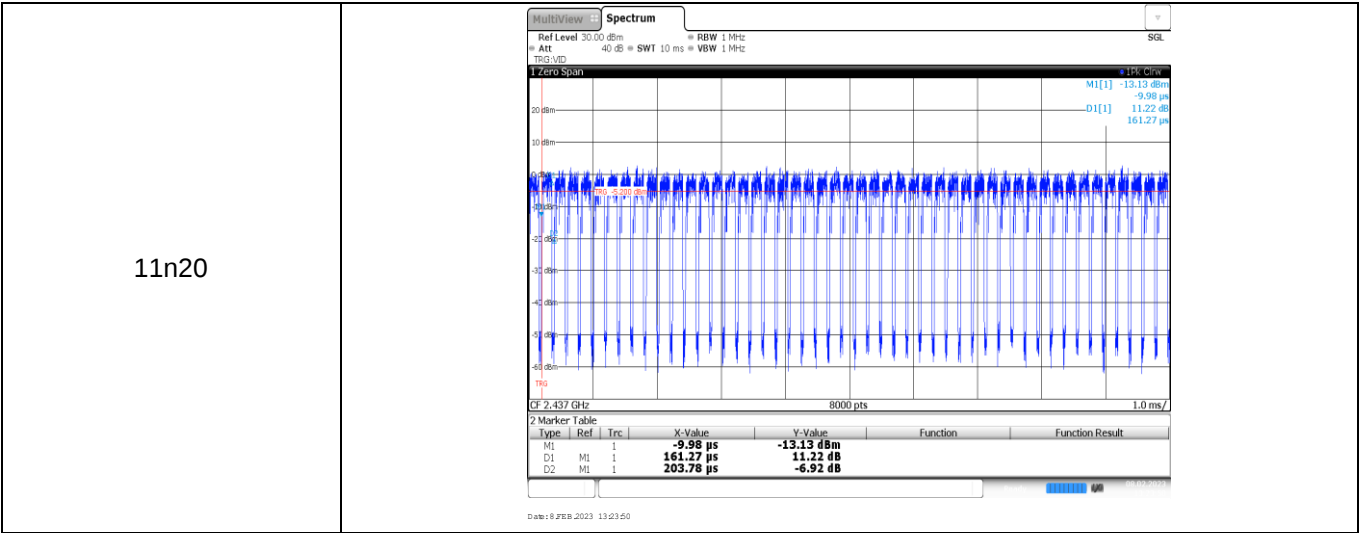
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Appendix E: Duty Cycle

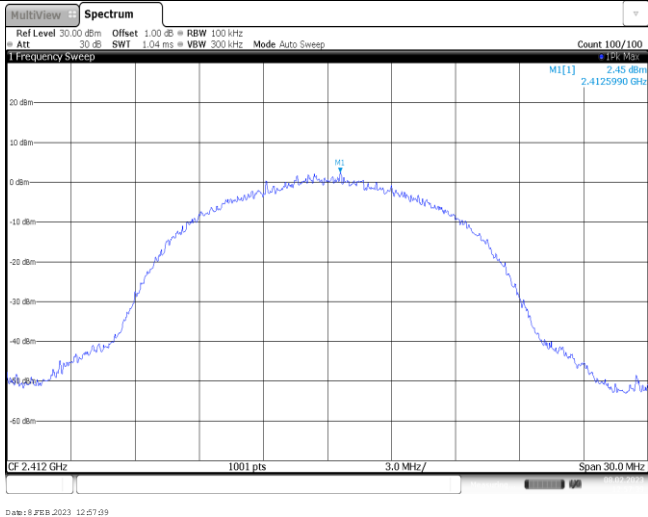
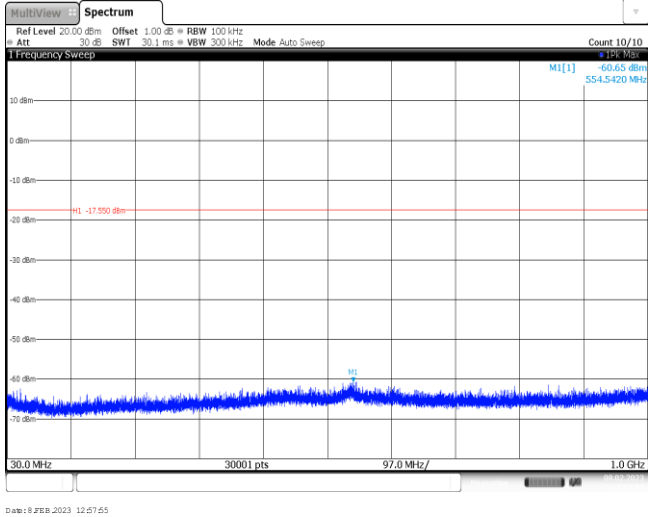
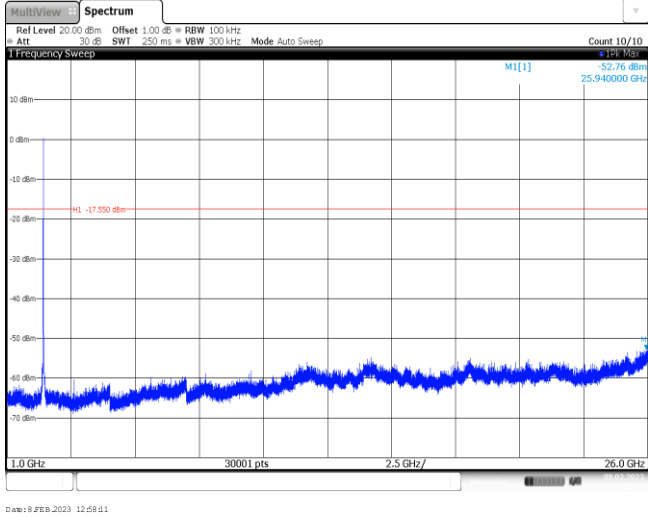
Modulation Type	Test Frequency (MHz)	T _{on time} for single burst (ms)	T _{period} (ms)	Duty cycle	1/T _{on time} (kHz)
11b	2437	0.84	0.88	95.5%	1.2
11g	2437	0.17	0.22	77.3%	5.9
11n20	2437	0.16	0.20	80.0%	6.3

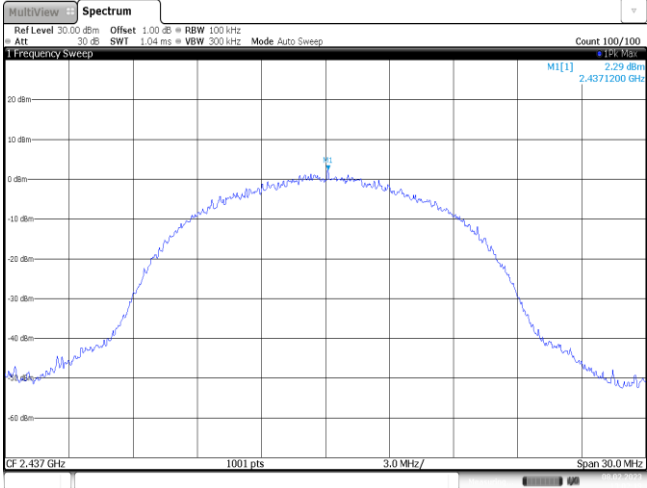
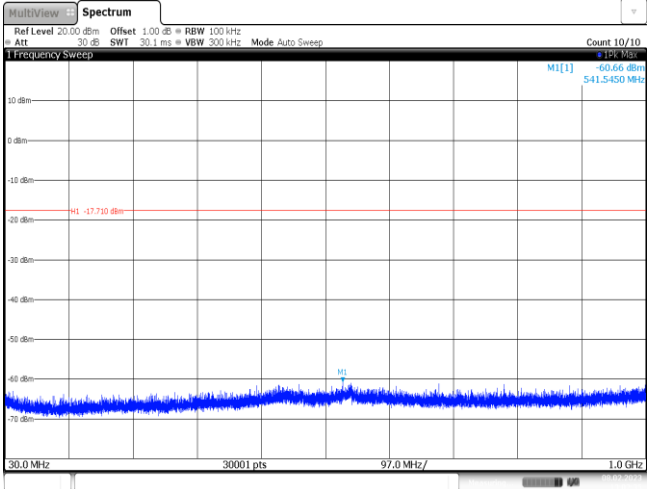
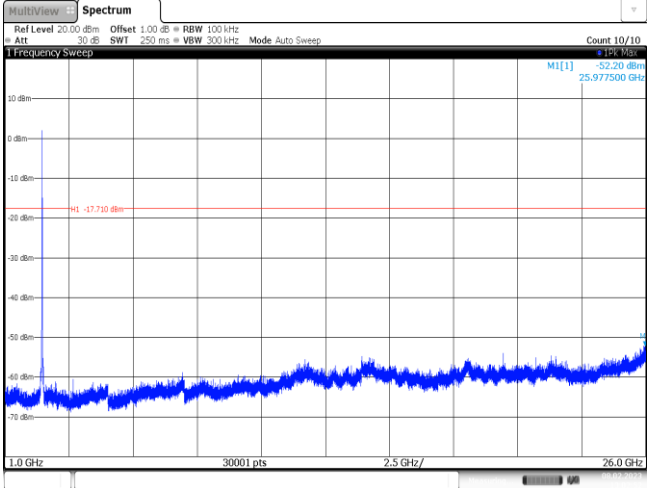


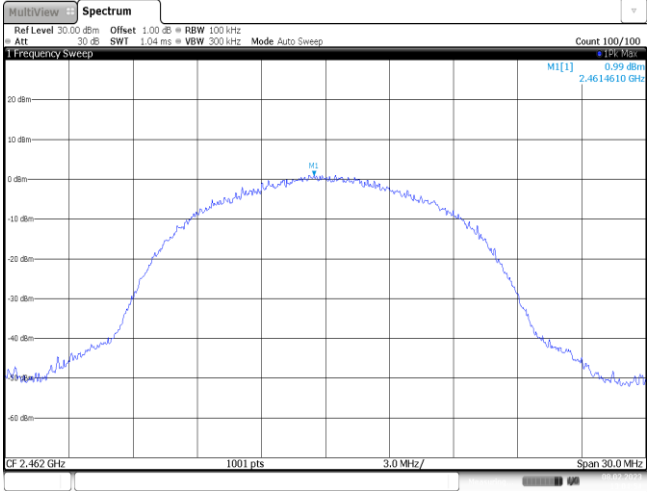
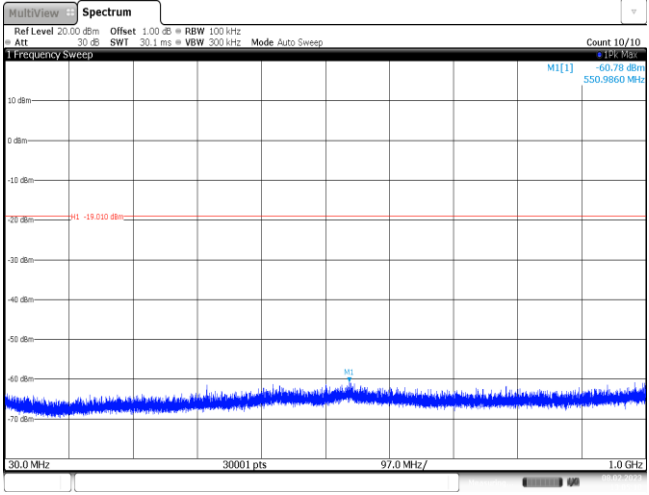
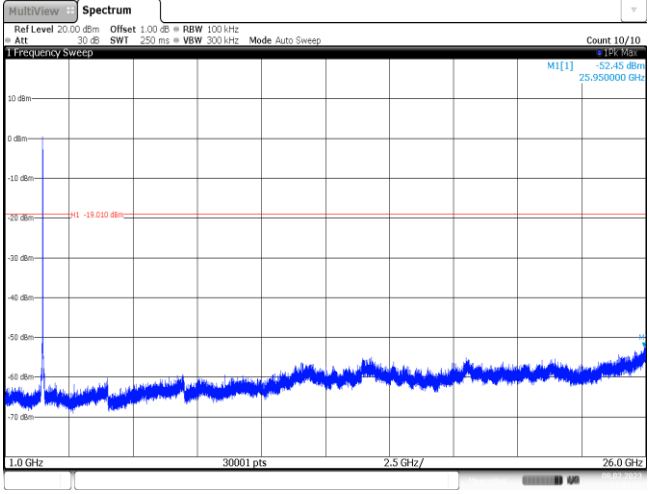


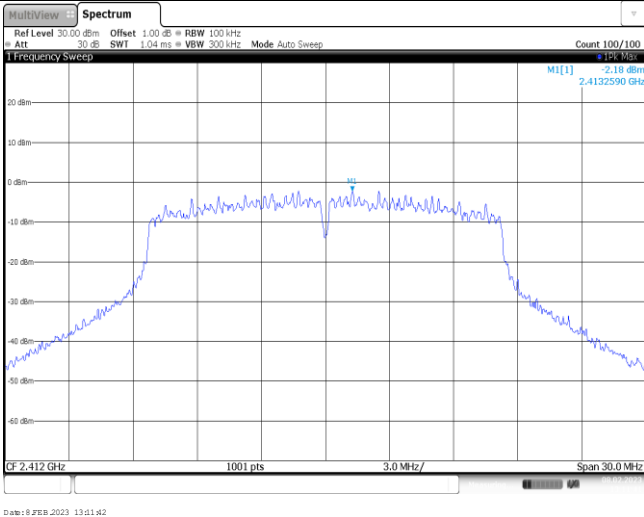
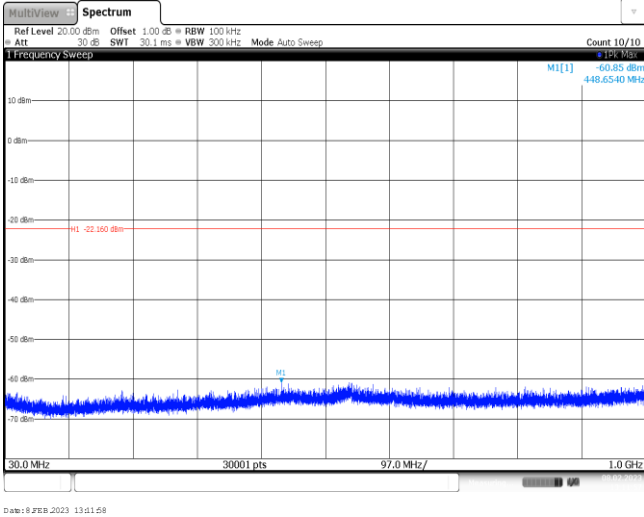
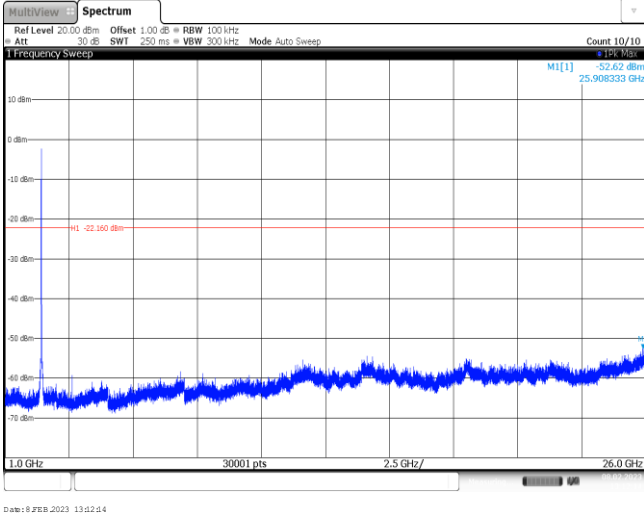
Test Item:	Bandedge	Type:	802.11 g																																										
CH01	MultiViewSpectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWI 1.12 ms VBW 300 kHz Mode Auto Sweep Count 300/300 1 Frequency Sweep 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm 2.31 GHz 1001 pts 11.2 MHz/ 2.422 GHz M1[1] 1.97 dBm 2.413220 GHz M2[1] -36.54 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>2.41322 GHz</td><td>-1.97 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4 GHz</td><td>-36.54 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.39 GHz</td><td>-51.39 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.31 GHz</td><td>-63.91 dBm</td><td></td><td></td></tr><tr><td>M5</td><td>1</td><td></td><td>2.399936 GHz</td><td>-36.96 dBm</td><td></td><td></td></tr></table> Date: 8 FEB 2023 13:11:05			Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		2.41322 GHz	-1.97 dBm			M2	1		2.4 GHz	-36.54 dBm			M3	1		2.39 GHz	-51.39 dBm			M4	1		2.31 GHz	-63.91 dBm			M5	1		2.399936 GHz	-36.96 dBm		
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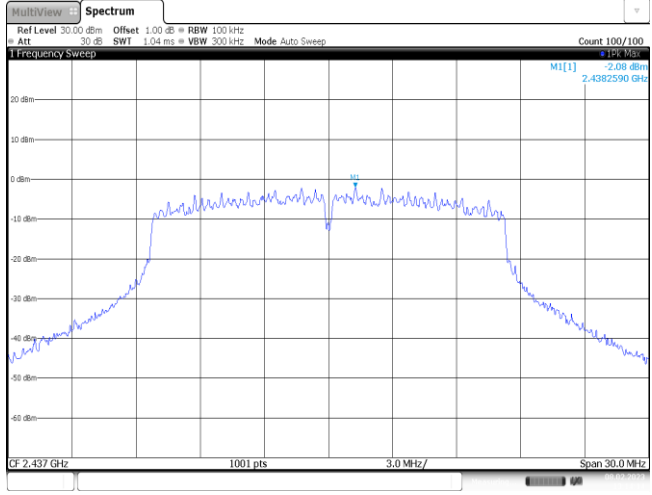
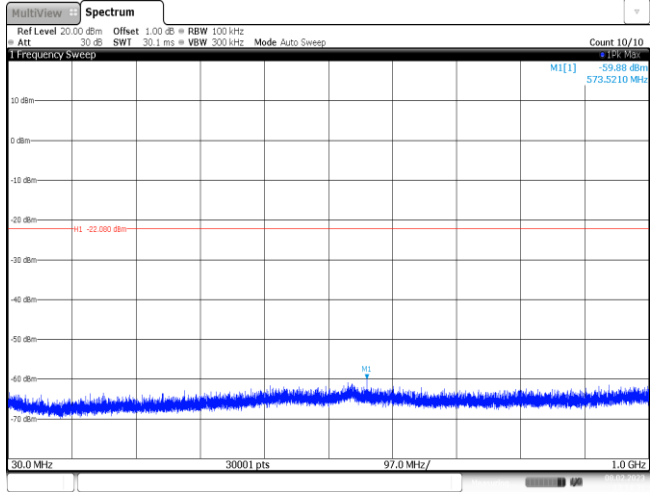
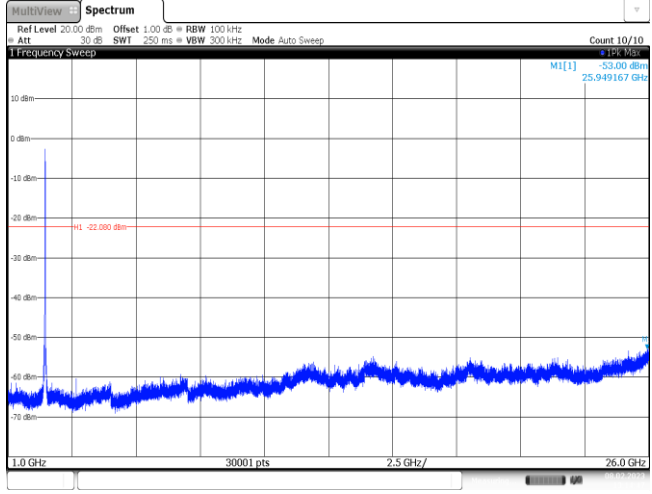
Test Item:	Bandedge	Type:	802.11 n(HT20)																																										
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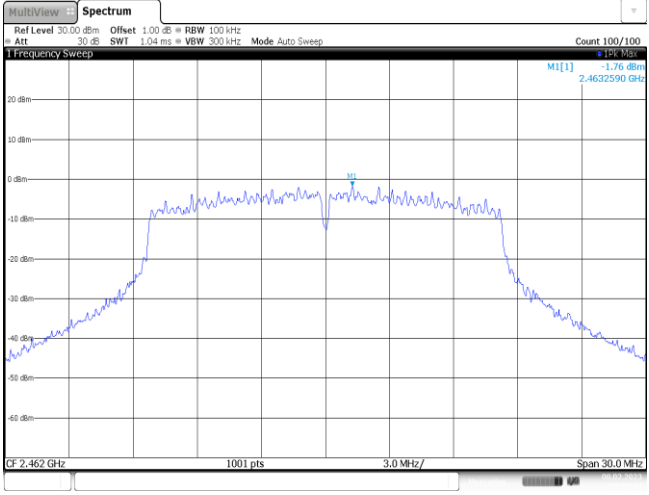
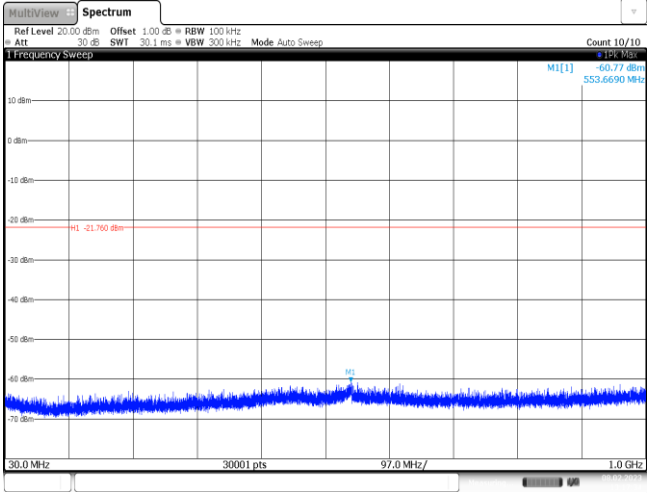
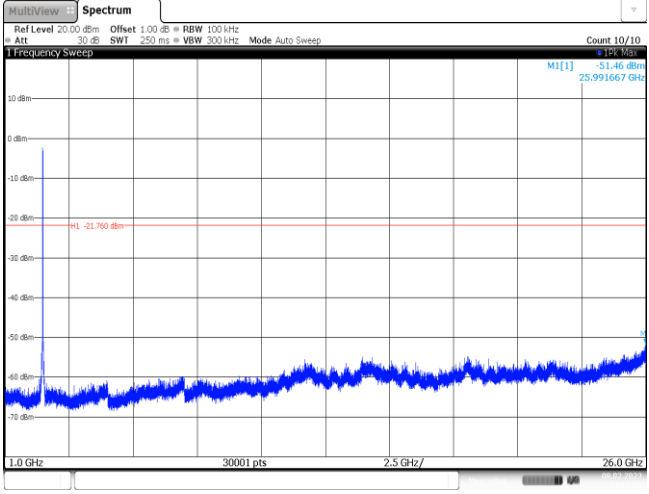
Test Item:	Spurious Emissions	Type:	802.11 b
CH01 Reference level			
CH01 30MHz~1000MHz			
CH01 1GHz~26GHz			

CH06 Reference level	 The spectrum plot shows a frequency sweep from 2.437 GHz to 2.4371200 GHz. The y-axis represents power in dBm, ranging from -60 to 20. The plot shows a broad peak centered around 2.437 GHz, with a maximum power level of approximately 0 dBm. The plot is titled 'Spectrum' and includes parameters: Ref Level 30.00 dBm, Offset 1.00 dB, RBW 100 kHz, Att 30.0 dB, SWF 1.04 ms, VSW 300 kHz, Mode Auto Sweep. The x-axis is labeled 'CF 2.437 GHz' and 'Span 30.0 MHz'.
CH06 30MHz~1000MHz	 The spectrum plot shows a frequency sweep from 30.0 MHz to 1.0 GHz. The y-axis represents power in dBm, ranging from -70 to 10. The plot shows a relatively flat noise floor around -60 dBm. A red horizontal line is drawn at -47.710 dBm. The plot is titled 'Spectrum' and includes parameters: Ref Level 20.00 dBm, Offset 1.00 dB, RBW 100 kHz, Att 30.0 dB, SWF 30.1 ms, VSW 300 kHz, Mode Auto Sweep. The x-axis is labeled '30.0 MHz' and 'Span 97.0 MHz'.
CH06 1GHz~26GHz	 The spectrum plot shows a frequency sweep from 1.0 GHz to 26.0 GHz. The y-axis represents power in dBm, ranging from -70 to 10. The plot shows a relatively flat noise floor around -60 dBm. A red horizontal line is drawn at -47.710 dBm. The plot is titled 'Spectrum' and includes parameters: Ref Level 20.00 dBm, Offset 1.00 dB, RBW 100 kHz, Att 30.0 dB, SWF 250 ms, VSW 300 kHz, Mode Auto Sweep. The x-axis is labeled '1.0 GHz' and 'Span 25.0 GHz'.

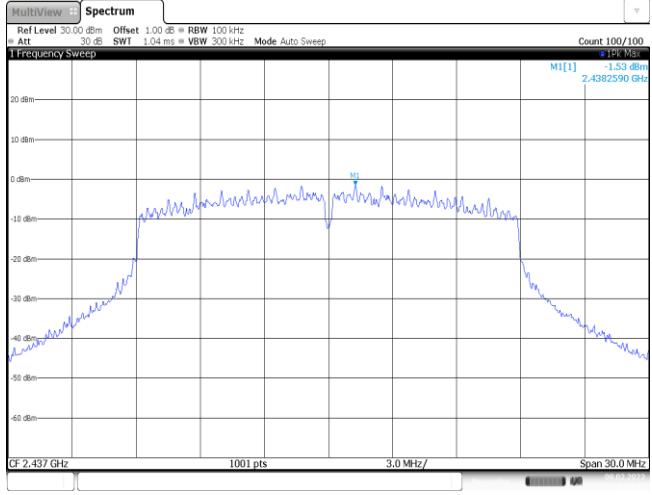
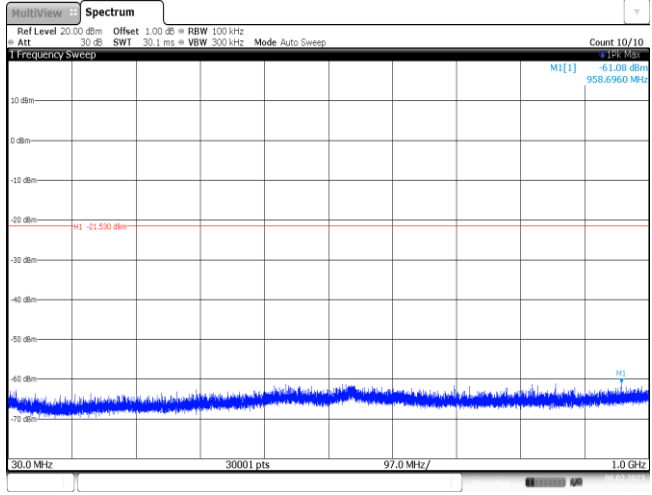
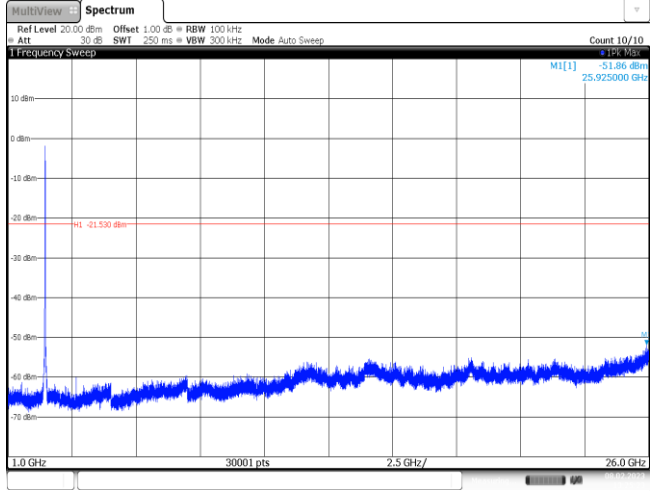
CH11 Reference level	 Ref Level 30.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWF 1.04 ms VBW 300 kHz Mode Auto Sweep Count 100/100 M1[1] 0.99 dBm 2.4614610 GHz CF 2.462 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 8 FEB 2023 13:04:54
CH11 30MHz~1000MHz	 Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWF 30.1 ms VBW 300 kHz Mode Auto Sweep Count 10/10 M1[1] -60.78 dBm 550.9860 MHz 30.0 MHz 30001 pts 97.0 MHz/ 1.0 GHz Date: 8 FEB 2023 13:05:10
CH11 1GHz~26GHz	 Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWF 250 ms VBW 300 kHz Mode Auto Sweep Count 10/10 M1[1] -52.45 dBm 25.950000 GHz 1.0 GHz 30001 pts 2.5 GHz/ 26.0 GHz Date: 8 FEB 2023 13:05:26

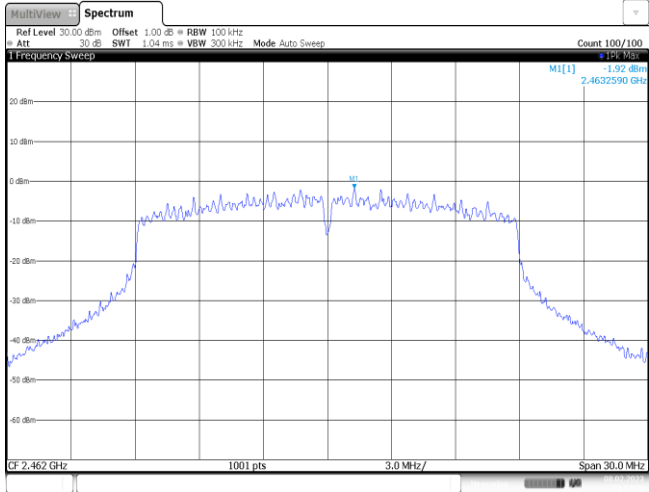
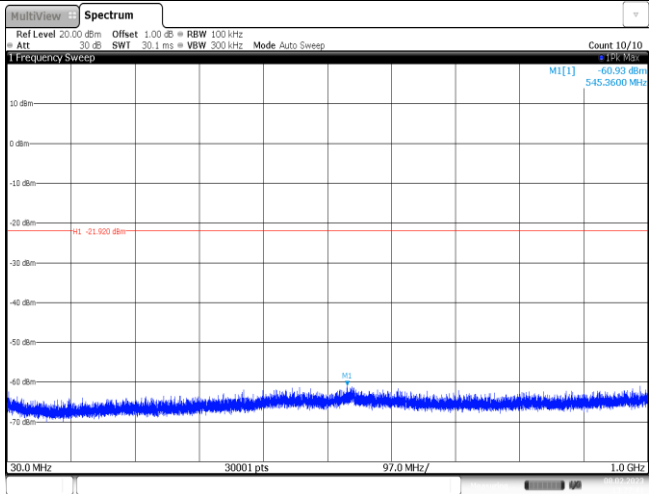
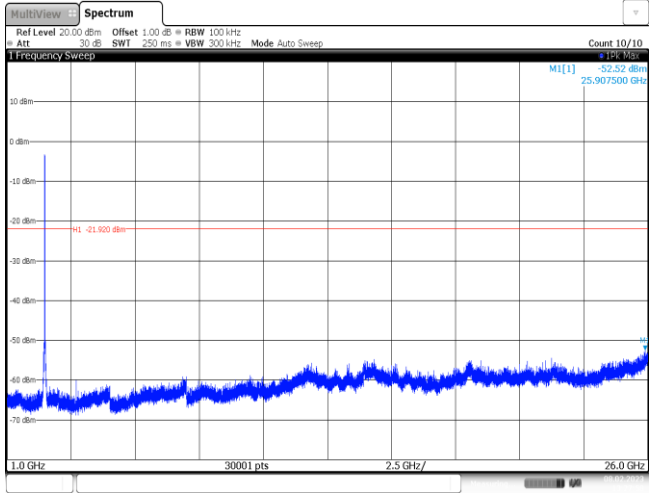
Test Item:	Spurious Emissions	Type:	802.11 g
CH01 Reference level			
CH01 30MHz~1000MHz			
CH01 1GHz~26GHz			

CH06 Reference level	
CH06 30MHz~1000MHz	
CH06 1GHz~26GHz	

CH11 Reference level	 Ref Level 30.00 dBm Offset 1.00 dB RBW 100 kHz Att 30.0 dB SWI 1.04 ms VBW 300 kHz Mode Auto Sweep Count 100/100 MI[1] -1.76 dBm 2.462590 GHz CF 2.462 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 8 FEB 2023 13:17:18
CH11 30MHz~1000MHz	 Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30.0 dB SWI 30.1 ms VBW 300 kHz Mode Auto Sweep Count 10/10 MI[1] -60.77 dBm 553.6690 MHz 30.0 MHz 30001 pts 97.0 MHz/ 1.0 GHz Date: 8 FEB 2023 13:17:04
CH11 1GHz~26GHz	 Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30.0 dB SWI 250 ms VBW 300 kHz Mode Auto Sweep Count 10/10 MI[1] -51.46 dBm 25.991667 GHz 1.0 GHz 30001 pts 2.5 GHz/ 26.0 GHz Date: 8 FEB 2023 13:17:50

Test Item:	Spurious Emissions	Type:	802.11 n(HT20)
CH01 Reference level	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] -1.88 dBm 2.4132590 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: 8 FEB 2023 13:22:06		
CH01 30MHz~1000MHz	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[1] -60.46 dBm 915.9160 MHz H1 -21.860 dBm 30.0 MHz 30001 pts 97.0 MHz/ 1.0 GHz Date: 8 FEB 2023 13:22:22		
CH01 1GHz~26GHz	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[1] -52.09 dBm 25.970633 GHz H1 -21.860 dBm 1.0 GHz 30001 pts 2.5 GHz/ 26.0 GHz Date: 8 FEB 2023 13:22:38		

CH06 Reference level	 Date: 8 FEB 2023 13:24:52
CH06 30MHz~1000MHz	 Date: 8 FEB 2023 13:25:08
CH06 1GHz~26GHz	 Date: 8 FEB 2023 13:25:24

CH11 Reference level	 MultiView Spectrum Ref Level 30.00 dBm Offset 1.00 dB RBW 100 kHz Count 100/100 Att 30 dB SWF 1.04 ms VBW 300 kHz Mode Auto Sweep Frequency Sweep M1[1] -1.92 dBm 2.462590 GHz CF 2.462 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 8 FEB 2023 13:27:26
CH11 30MHz~1000MHz	 MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Count 10/10 Att 30 dB SWF 30.1 ms VBW 300 kHz Mode Auto Sweep Frequency Sweep M1[1] -60.93 dBm 545.3600 MHz 30.0 MHz 30001 pts 97.0 MHz/ 1.0 GHz Date: 8 FEB 2023 13:27:41
CH11 1GHz~26GHz	 MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Count 10/10 Att 30 dB SWF 250 ms VBW 300 kHz Mode Auto Sweep Frequency Sweep M1[1] -52.52 dBm 25.907500 GHz 1.0 GHz 30001 pts 2.5 GHz/ 26.0 GHz Date: 8 FEB 2023 13:27:58

-----End of Report-----