

APPENDIX REPORT

Project No.	SHT2205032401EW	Radio Specification	WIFI 2.4G
Test sample No.	YPHT22050324003	Model No.	Tronik 12
Start test date	2022-05-27	Finish date	2022-05-27
Temperature	25.6℃	Humidity	44%
Test Engineer	Xiaoqin Li	Auditor	Xiaodong Zhuo

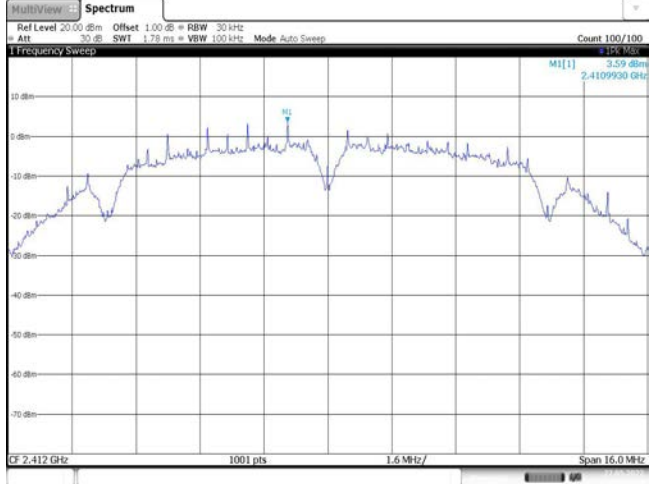
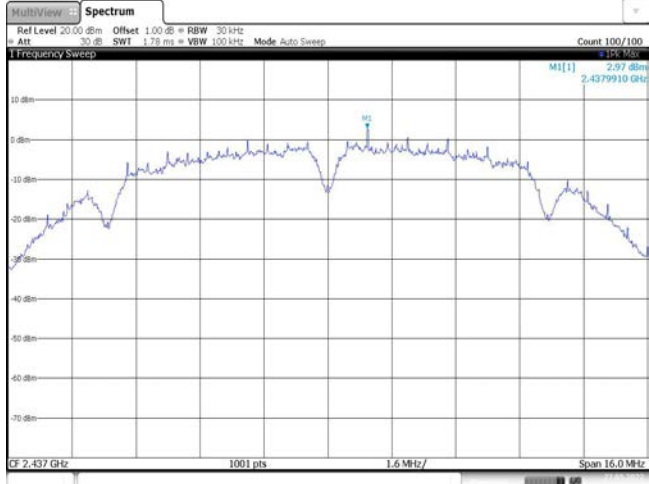
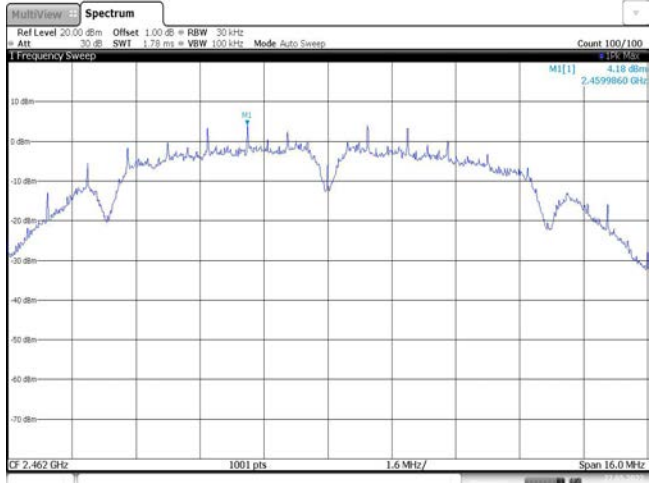
Appendix clause	Test item	Result
A	Conducted Peak Output Power	PASS
B	Power Spectral Density	PASS
C	6 dB Bandwidth	PASS
D	99% Occupied Bandwidth	PASS
E	Duty Cycle	PASS
F	Band edge and Spurious Emissions (conducted)	PASS

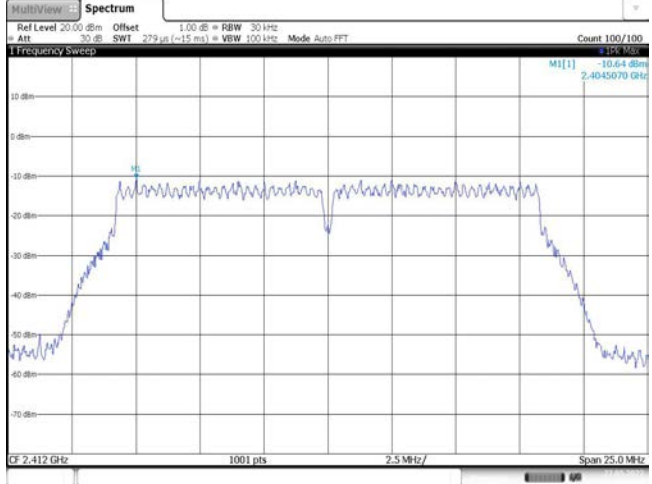
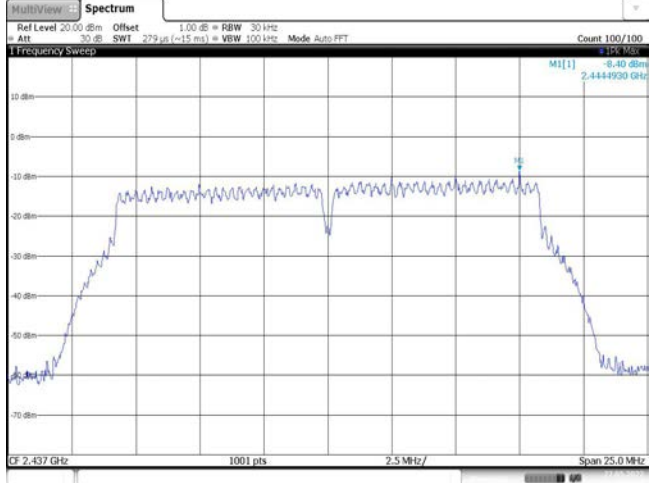
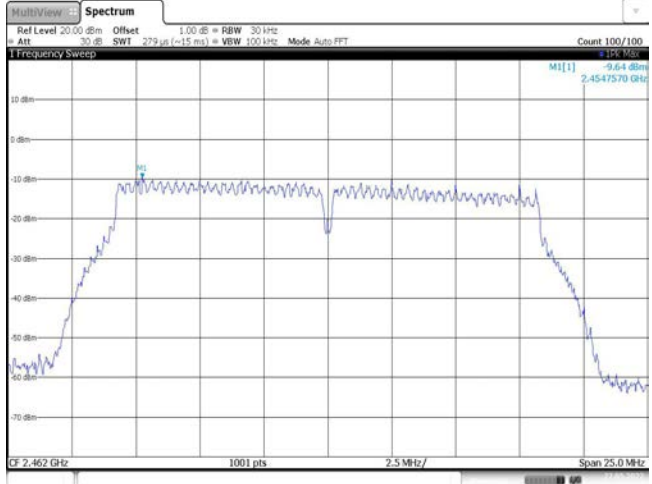
Appendix A: Conducted Peak Output Power

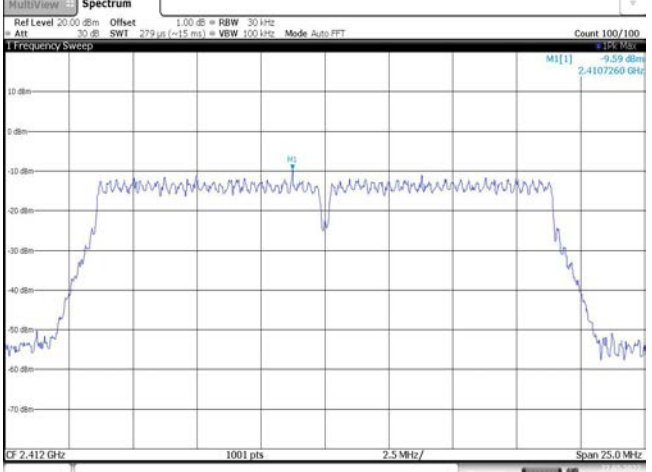
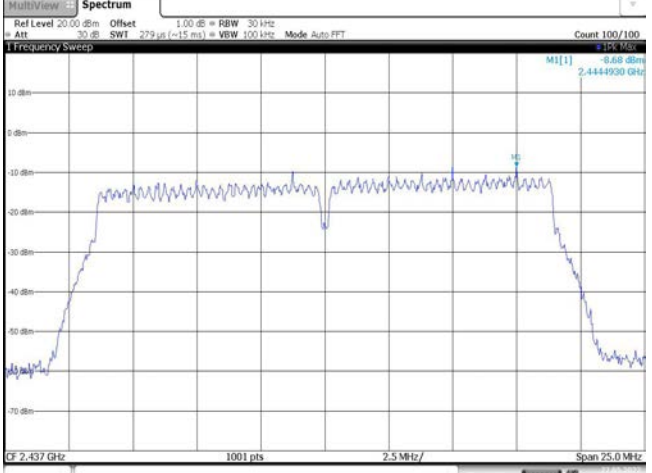
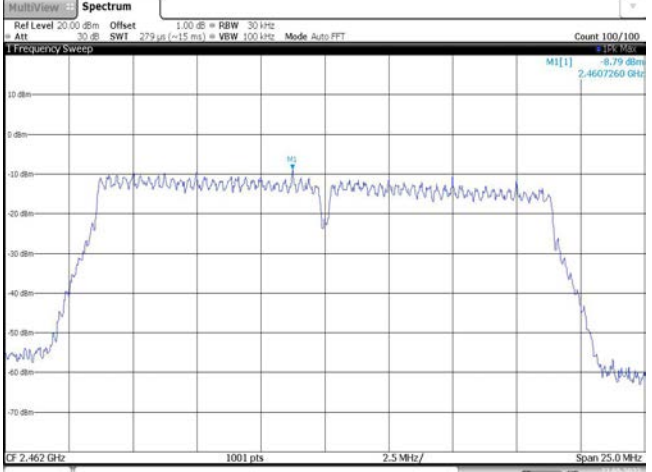
Type	Channel	Peak Output power (dBm)	Average Output power (dBm)	Limit (dBm)	Result
802.11b	01	14.63	12.32	≤ 30.00	Pass
	06	15.34	12.86		
	11	15.48	13.00		
802.11g	01	13.78	11.24	≤ 30.00	Pass
	06	14.25	11.72		
	11	15.05	12.86		
802.11n (HT20)	01	13.99	11.55	≤ 30.00	Pass
	06	14.49	12.06		
	11	15.25	12.78		
802.11n(HT40)	03	14.18	11.72	≤ 30.00	Pass
	06	14.92	12.58		
	09	15.11	12.95		

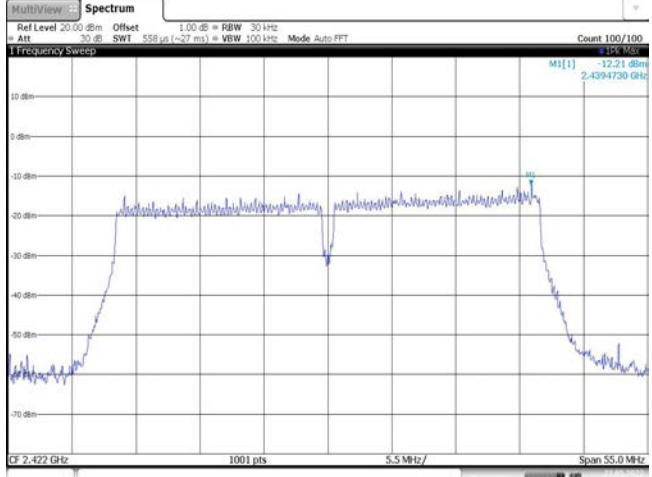
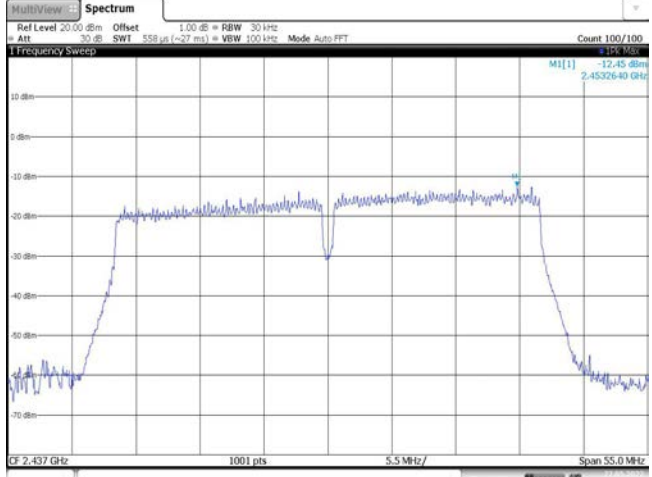
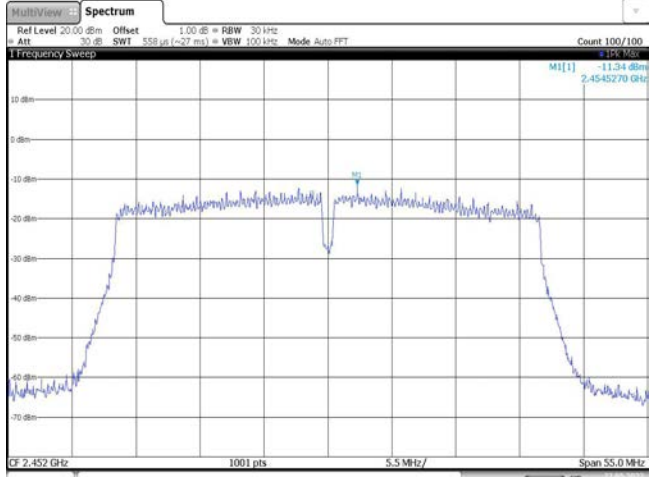
Appendix B: Power Spectral Density

Type	Channel	Power Spectral Density (dBm/30KHz)	Limit (dBm/3KHz)	Result
802.11b	01	3.59	≤8.00	Pass
	06	2.97		
	11	4.18		
802.11g	01	-10.64	≤8.00	Pass
	06	-8.40		
	11	-9.64		
802.11n(HT20)	01	-9.59	≤8.00	Pass
	06	-8.68		
	11	-8.79		
802.11n(HT40)	03	-12.21	≤8.00	Pass
	06	-12.45		
	09	-11.34		

Type:	802.11 b
CH01	 Date: 27 MAY 2022 09:50:57
CH06	 Date: 27 MAY 2022 09:53:32
CH11	 Date: 27 MAY 2022 09:56:49

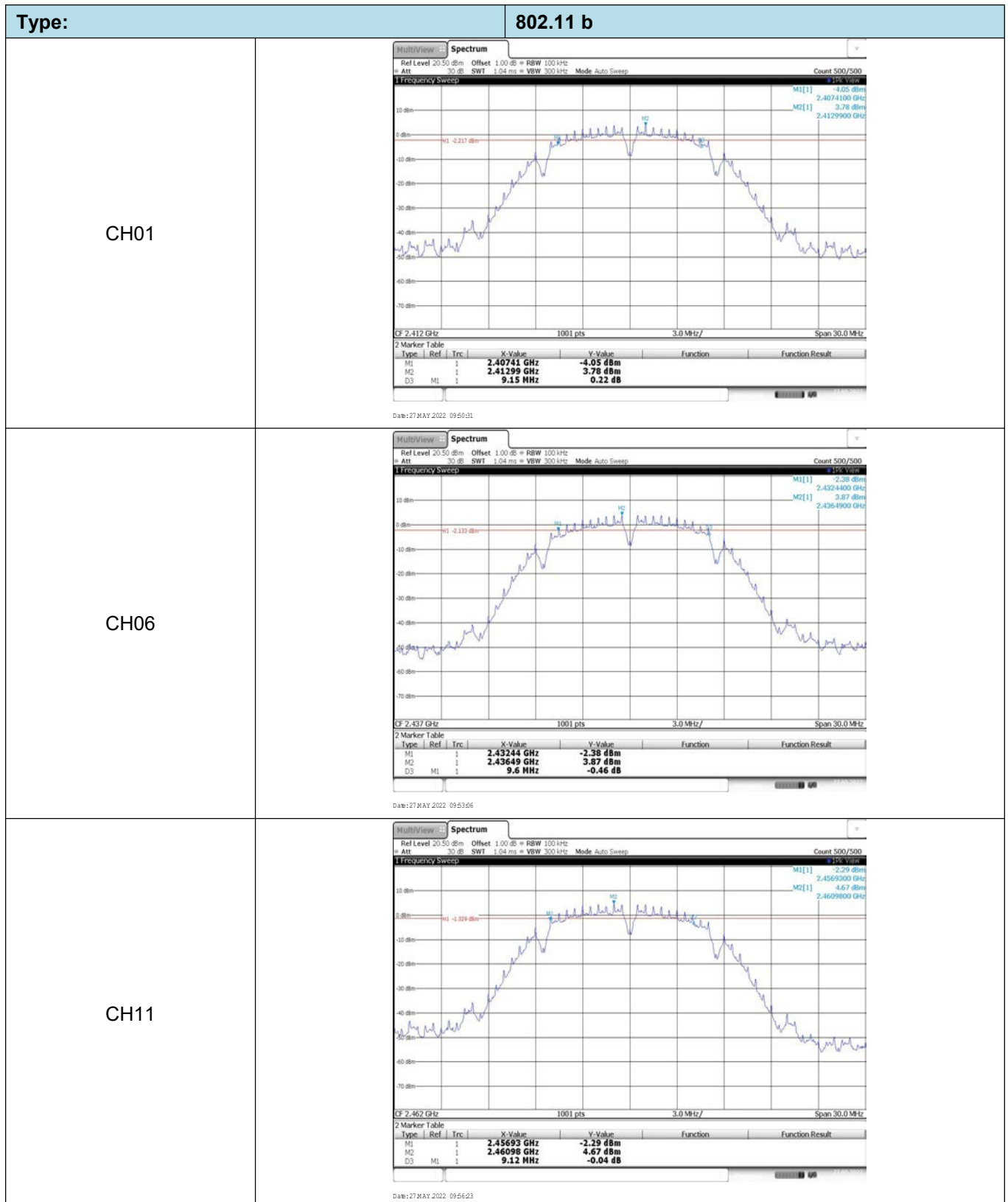
Type:	802.11 g
CH01	 Date: 27 MAY 2022 10:02:02
CH06	 Date: 27 MAY 2022 10:04:04
CH11	 Date: 27 MAY 2022 10:06:05

Type:	802.11n(HT20)
CH01	 Ref Level 20.00 dBm Offset 1.00 dB = RBW 30 kHz Att 30 dB SWI 279 μs (-15 ms) = VBW 100 kHz Mode Auto FFT Count 100/100 M1[1] -9.59 dBm 2.4107260 GHz 2.412 GHz 1001 pts 2.5 MHz/ Span 25.0 MHz Date: 27 MAY 2022 10:09:33
CH06	 Ref Level 20.00 dBm Offset 1.00 dB = RBW 30 kHz Att 30 dB SWI 279 μs (-15 ms) = VBW 100 kHz Mode Auto FFT Count 100/100 M1[1] -8.68 dBm 2.4444990 GHz 2.437 GHz 1001 pts 2.5 MHz/ Span 25.0 MHz Date: 27 MAY 2022 10:22:09
CH11	 Ref Level 20.00 dBm Offset 1.00 dB = RBW 30 kHz Att 30 dB SWI 279 μs (-15 ms) = VBW 100 kHz Mode Auto FFT Count 100/100 M1[1] -8.79 dBm 2.4607260 GHz 2.462 GHz 1001 pts 2.5 MHz/ Span 25.0 MHz Date: 27 MAY 2022 10:24:41

Type:	802.11n(HT40)
CH03	 Ref Level 20.00 dBm Offset 1.00 dB = RBW 30 kHz Att 30 dB SWI 558 us (~27 ms) = VBW 100 kHz Mode Auto FFT Count 100/100 MI[1] -12.21 dBm 2.4294730 GHz Date: 27 MAY 2022 09:44:46
CH06	 Ref Level 20.00 dBm Offset 1.00 dB = RBW 30 kHz Att 30 dB SWI 558 us (~27 ms) = VBW 100 kHz Mode Auto FFT Count 100/100 MI[1] -12.45 dBm 2.4532640 GHz Date: 27 MAY 2022 09:42:43
CH09	 Ref Level 20.00 dBm Offset 1.00 dB = RBW 30 kHz Att 30 dB SWI 558 us (~27 ms) = VBW 100 kHz Mode Auto FFT Count 100/100 MI[1] -11.34 dBm 2.4545270 GHz Date: 27 MAY 2022 09:47:42

Appendix C: 6dB bandwidth

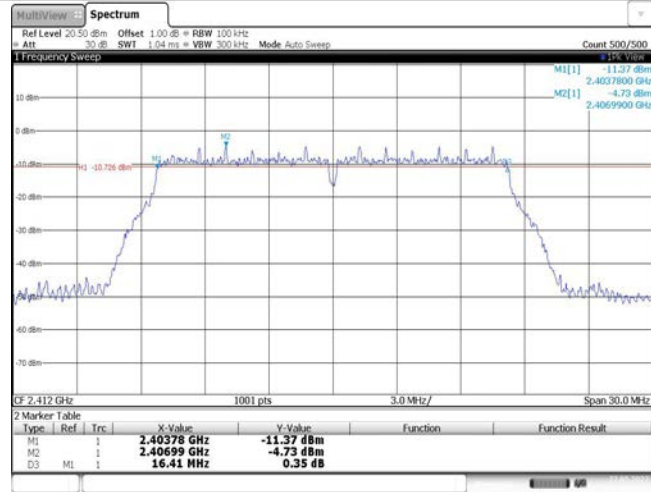
Type	Channel	6dB Bandwidth (MHz)	Limit (MHz)	Result
802.11b	01	9.15	≥0.5	Pass
	06	9.60		
	11	9.12		
802.11g	01	16.41	≥0.5	Pass
	06	15.78		
	11	15.81		
802.11n(HT20)	01	17.67	≥0.5	Pass
	06	16.41		
	11	16.41		
802.11n(HT40)	03	35.82	≥0.5	Pass
	06	35.82		
	09	35.22		



Type:

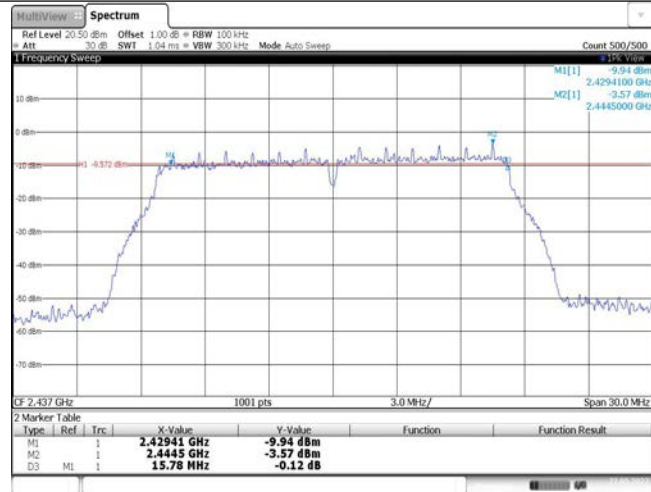
802.11 g

CH01



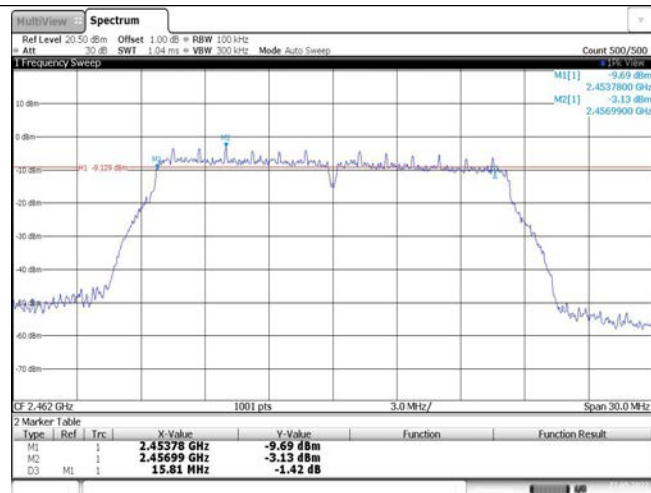
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CH06



Date: 27 MAY 2022 10:04:09

CH11

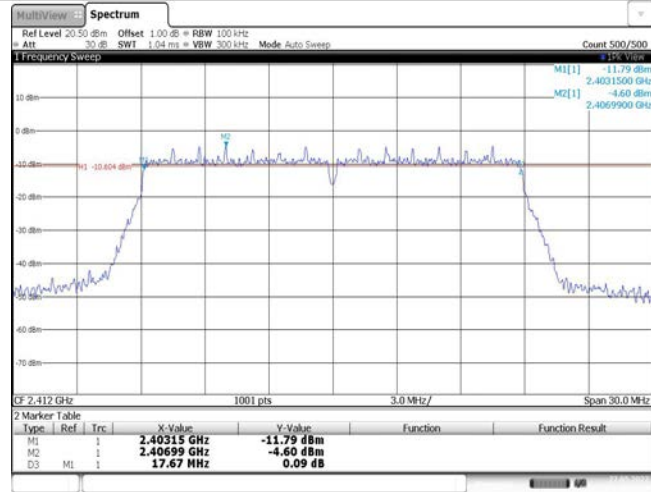


Date: 27 MAY 2022 10:06:09

Type:

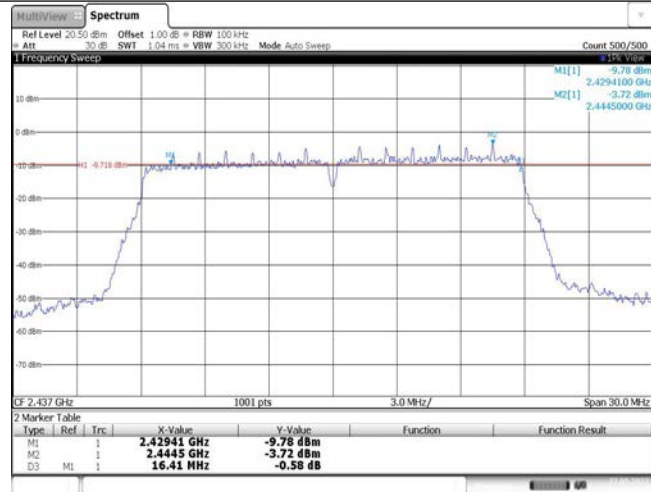
802.11n(HT20)

CH01



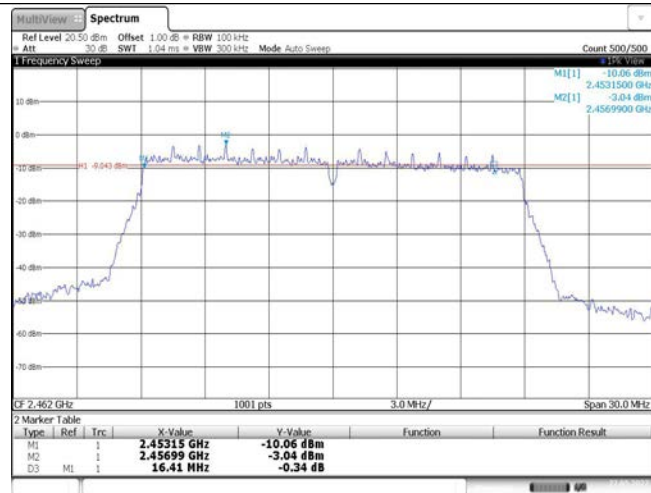
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CH06



Date: 27 MAY 2022 10:11:44

CH11

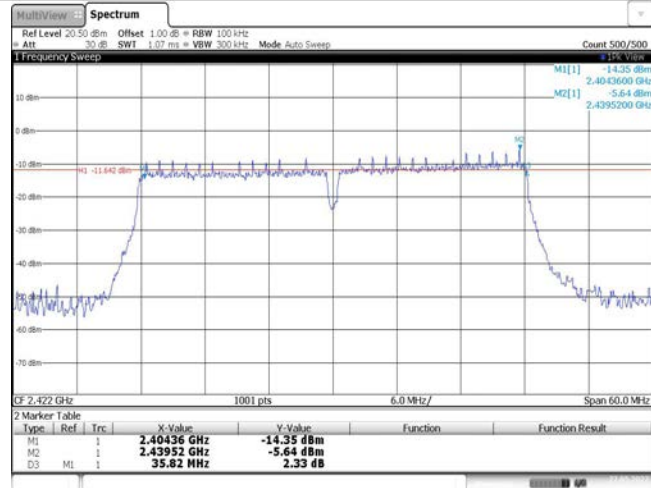


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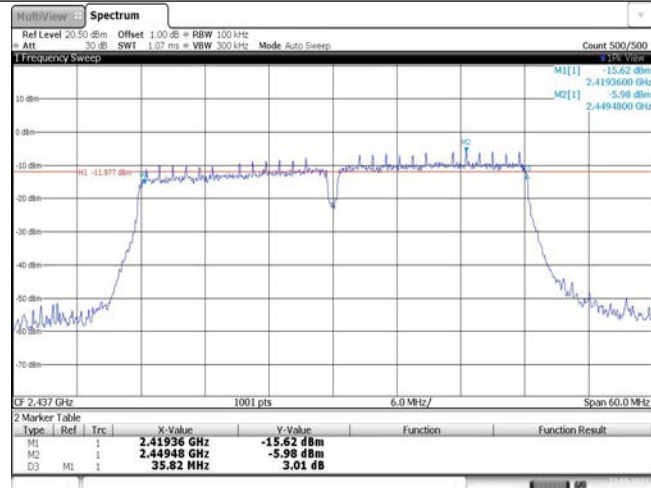
802.11n(HT40)

CH03



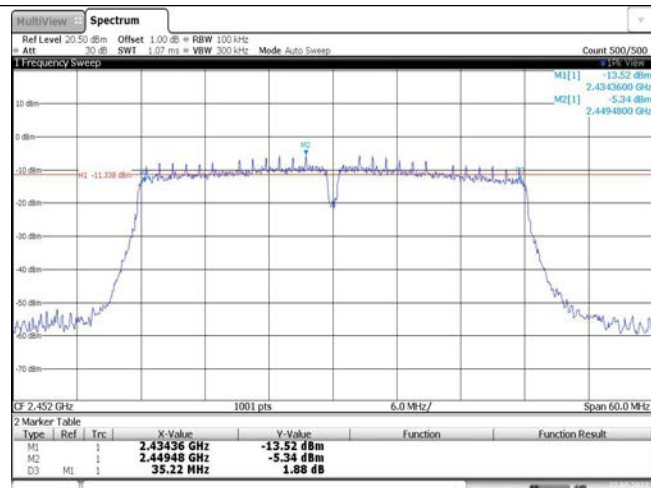
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CH06



Date: 27 MAY 2022 09:42:17

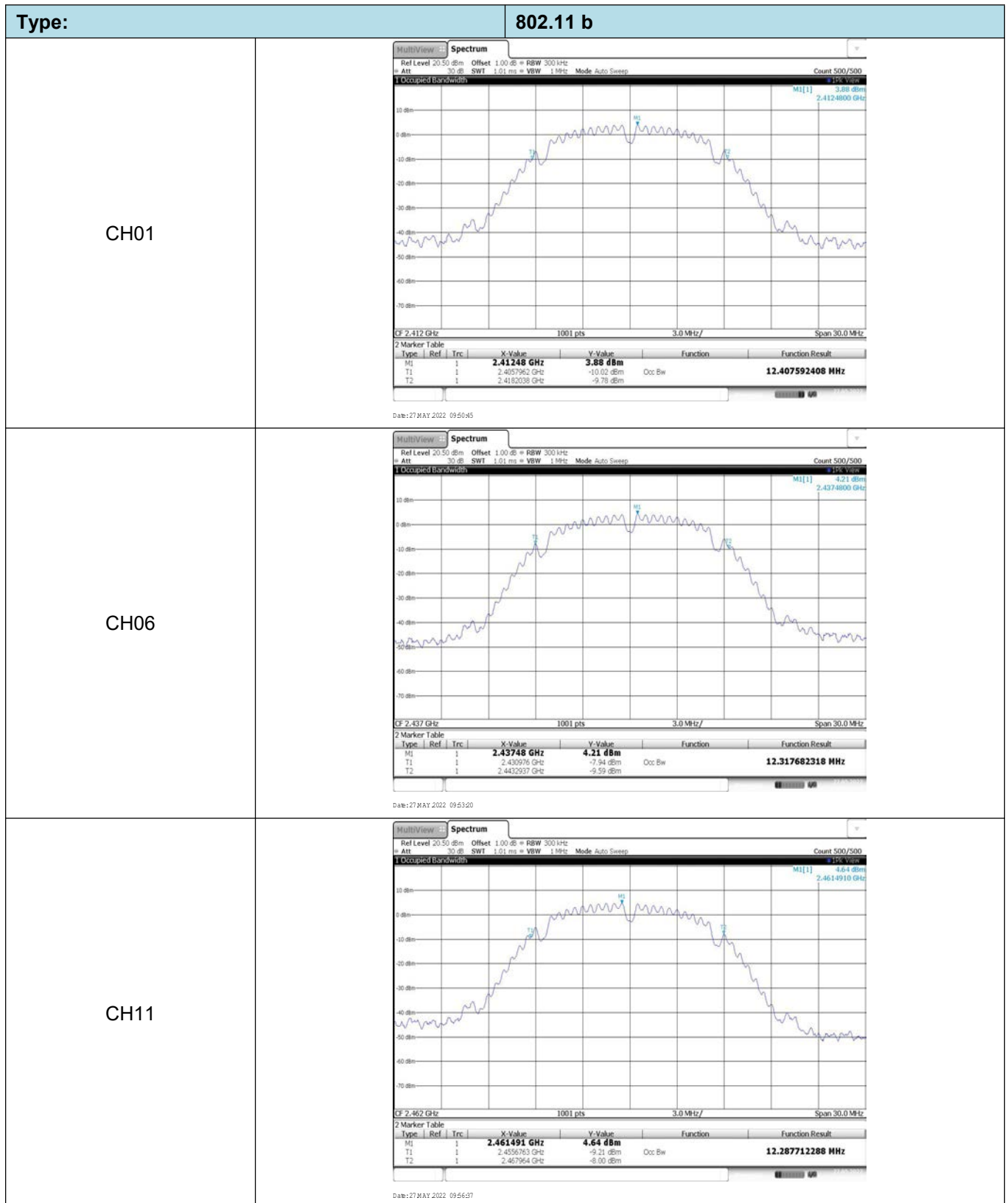
CH09



Date: 27 MAY 2022 09:47:16

Appendix D: 99% Occupied Bandwidth

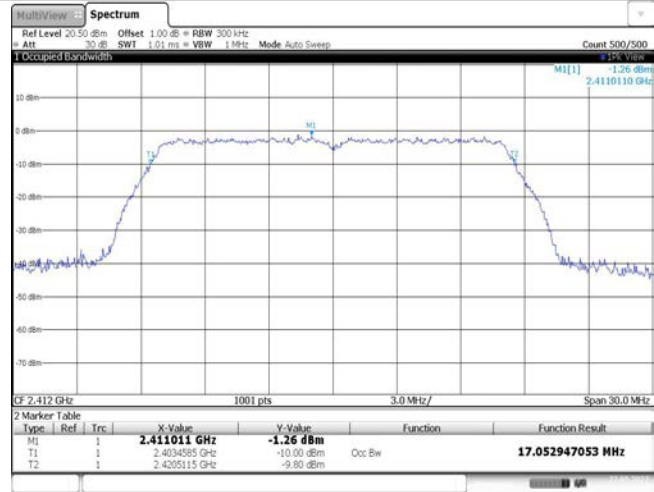
Type	Channel	99% Bandwidth (MHz)	Limit (kHz)	Result
802.11b	01	12.41	-	Pass
	06	12.32		
	11	12.29		
802.11g	01	17.05	-	Pass
	06	16.99		
	11	16.96		
802.11n(HT20)	01	17.92	-	Pass
	06	17.86		
	11	17.83		
802.11n(HT40)	03	36.44	-	Pass
	06	36.20		
	09	35.96		



Type:

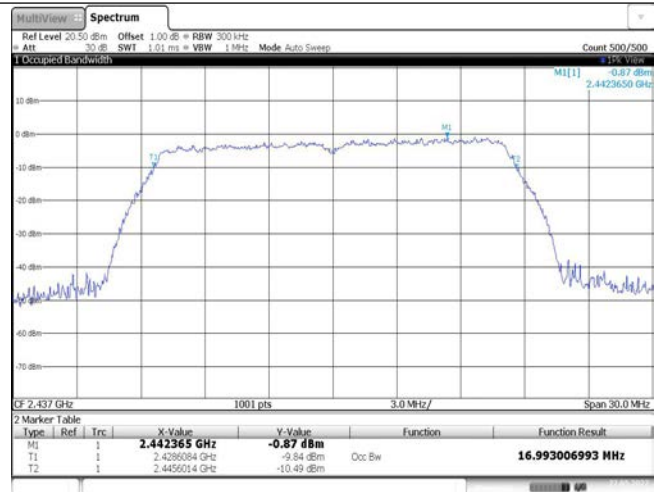
802.11 g

CH01



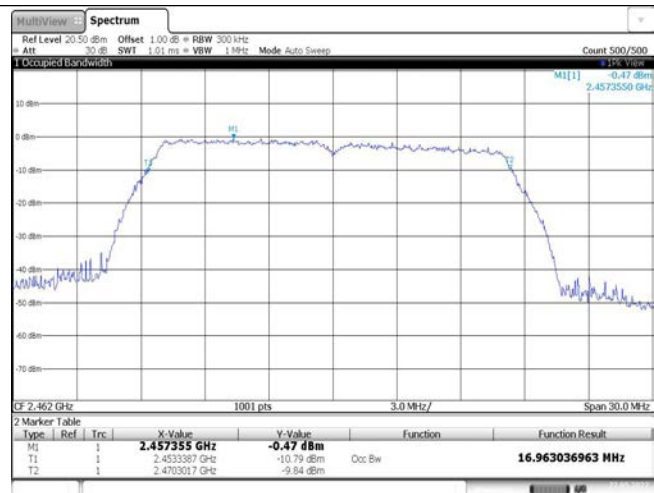
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CH06



Date: 27 MAY 2022 10:04:23

CH11

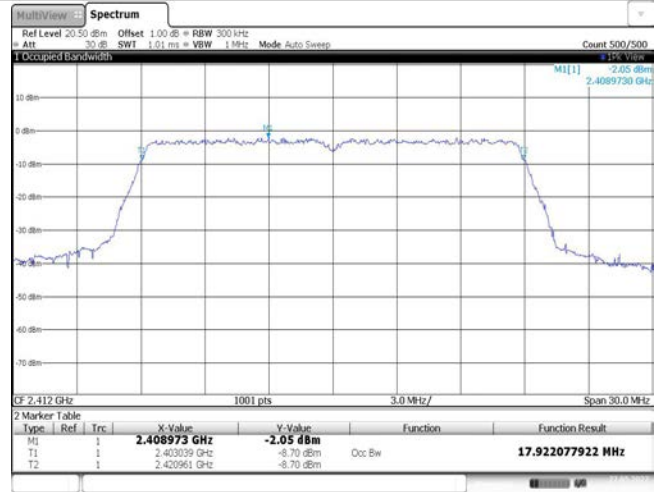


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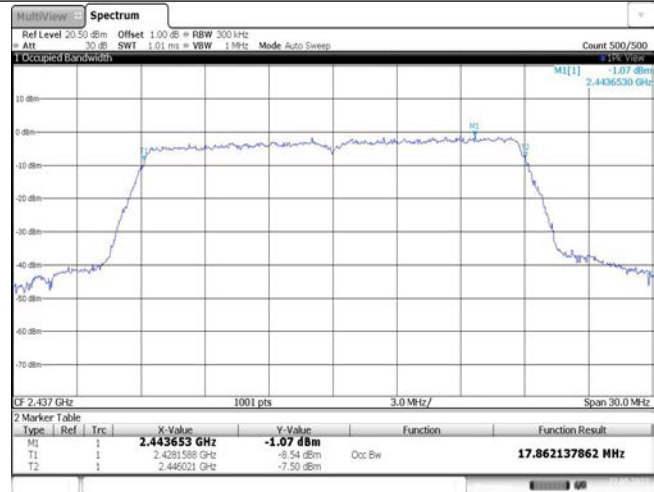
802.11n(HT20)

CH01



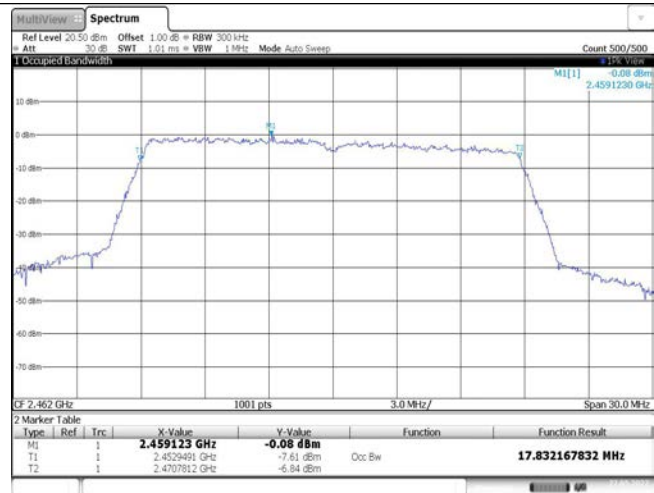
Date: 27 MAY 2022 10:09:21

CH06



Date: 27 MAY 2022 10:11:57

CH11

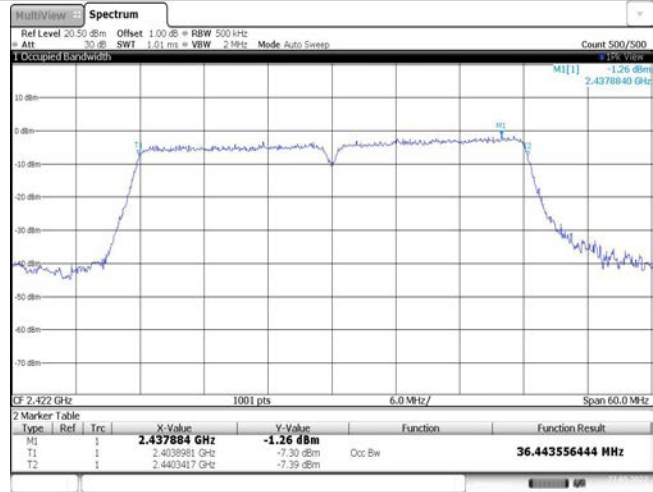


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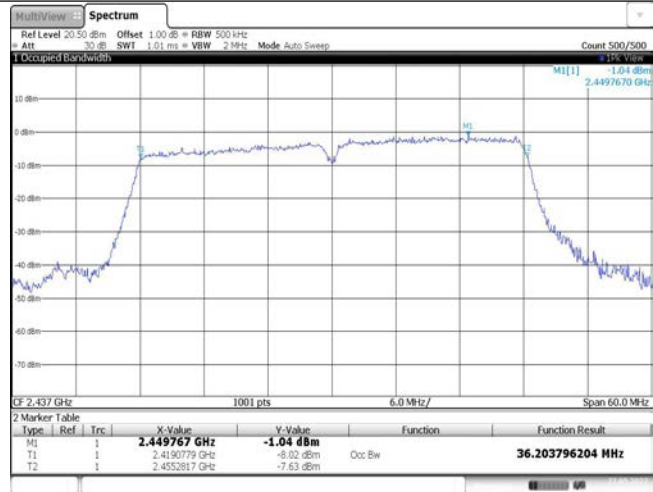
802.11n(HT40)

CH03



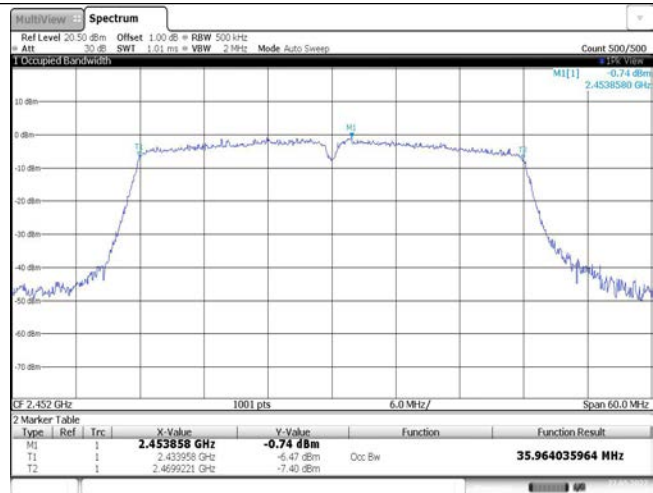
Date: 27 MAY 2022 09:44:34

CH06



Date: 27 MAY 2022 09:42:31

CH09

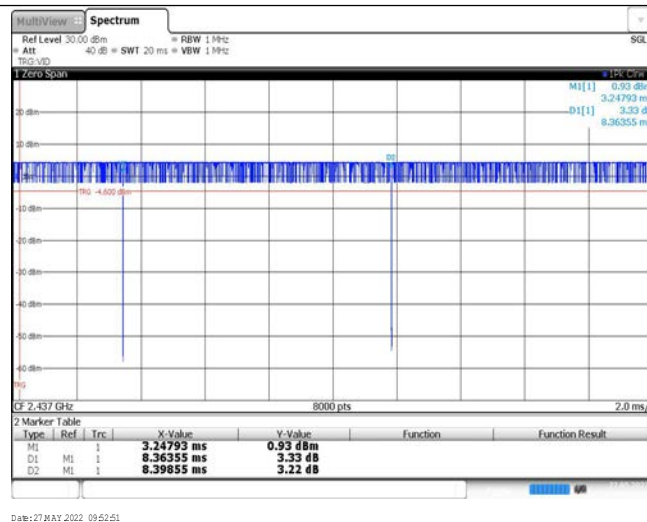


Date: 27 MAY 2022 09:47:30

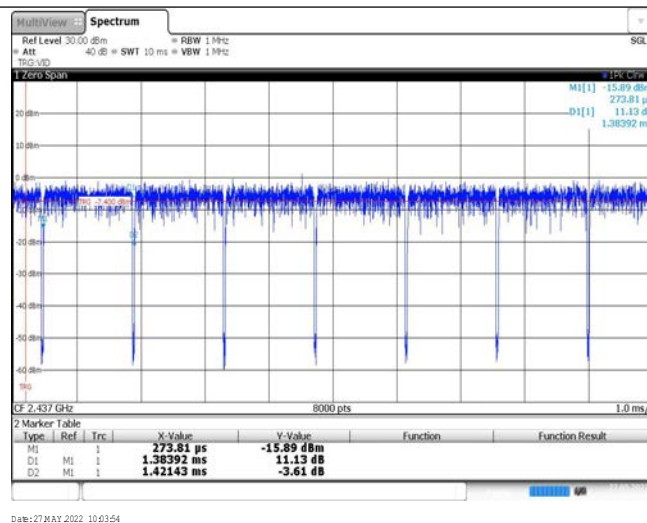
Appendix E: Duty Cycle

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	8.40	99.5%	0.1
11g	2437	1.38	1.42	97.2%	0.7
11n20	2437	1.29	1.33	97.0%	0.8
11n40	2437	0.64	0.72	88.9%	1.6

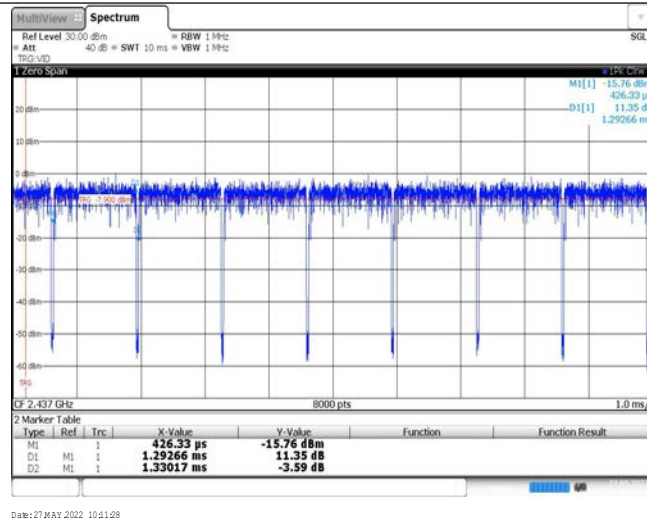
11b



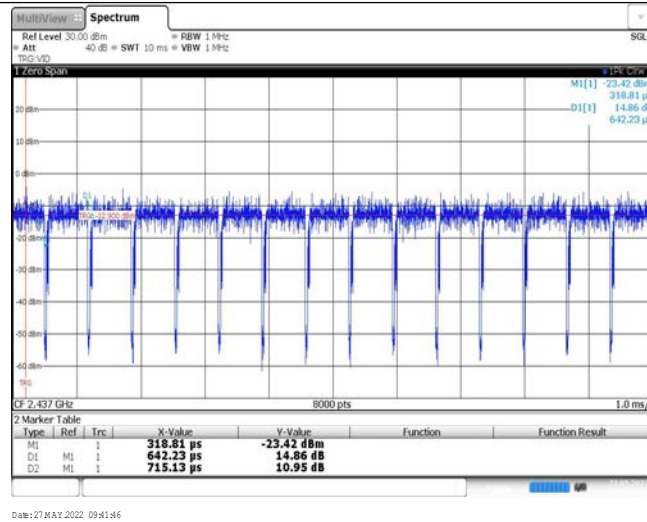
11g



11n20

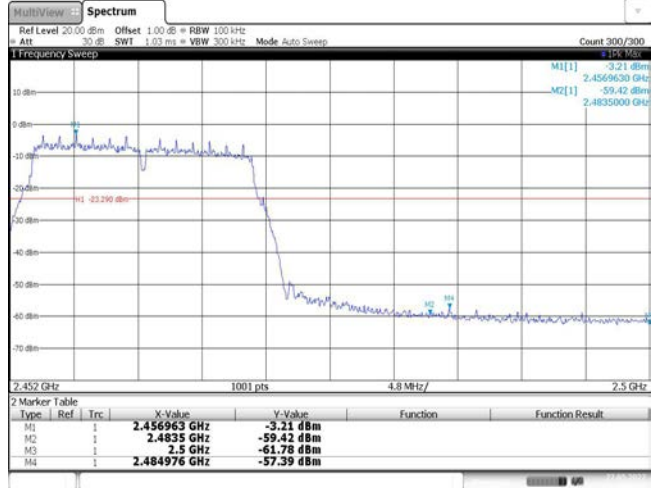


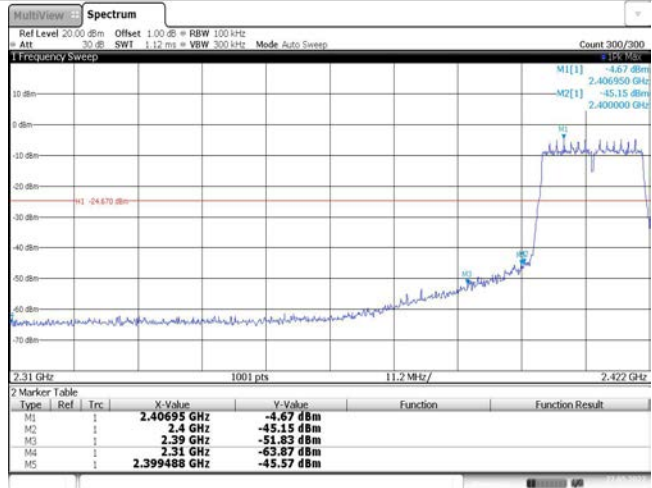
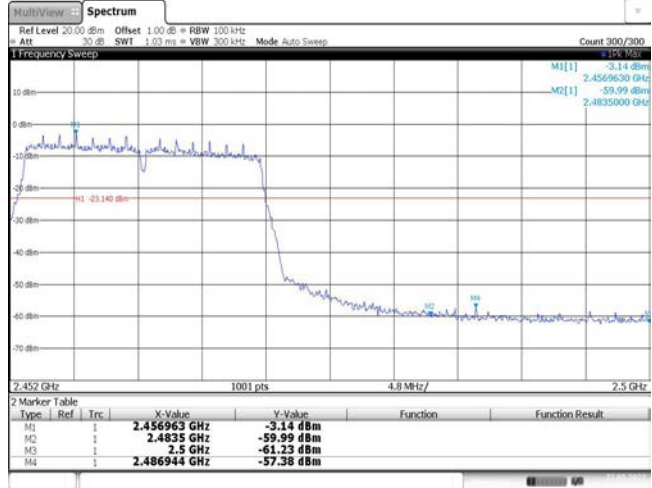
11n40



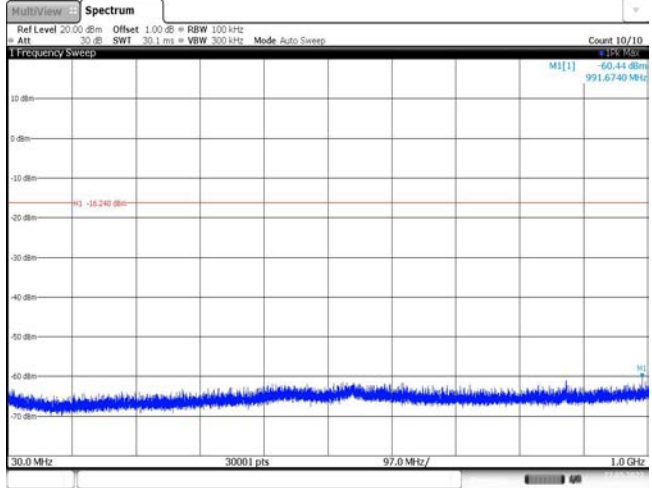
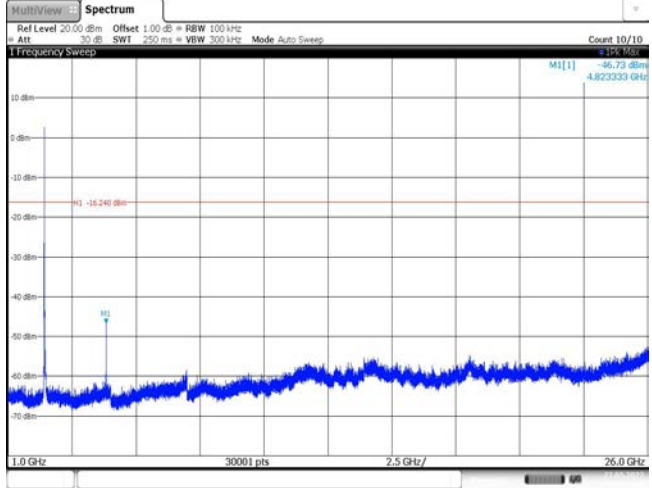
Appendix F: Band edge and Spurious Emissions (conducted)

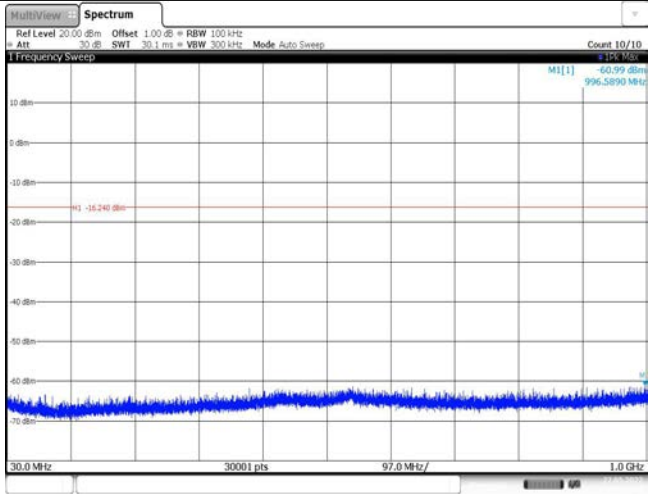
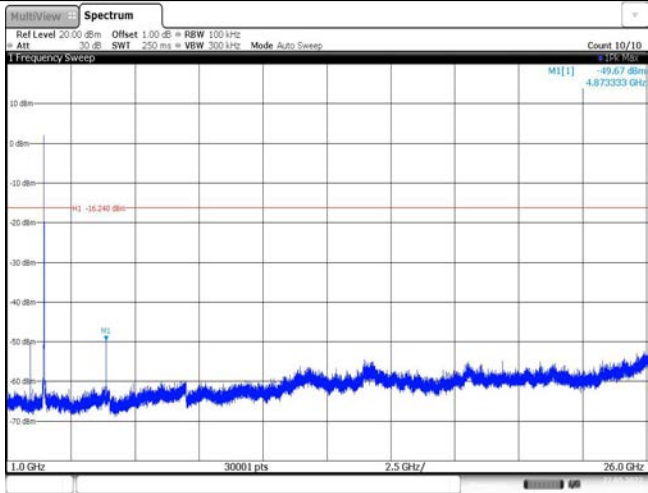
Test Item:	Bandedge	Type:	802.11 b
CH01	</		

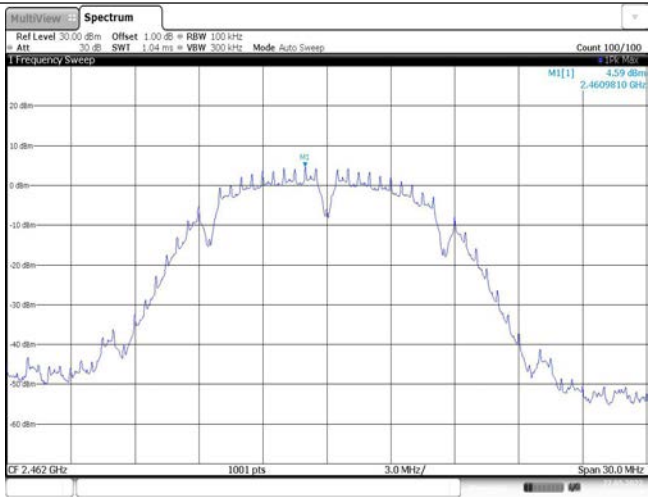
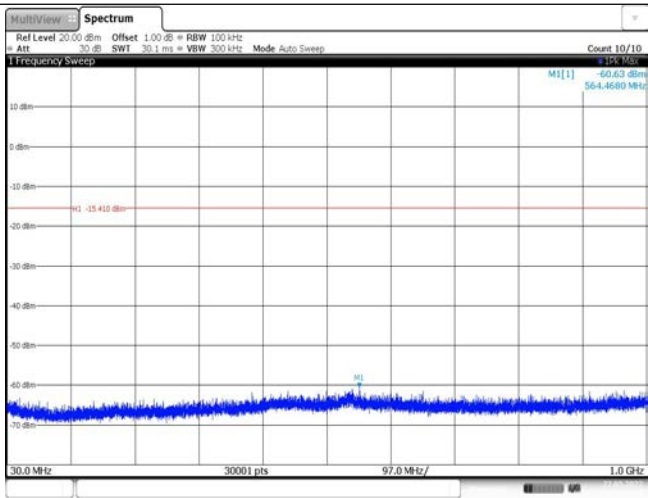
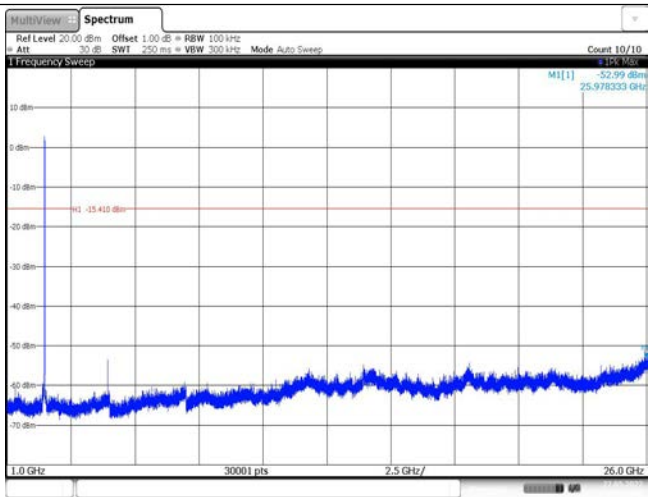
Test Item:	Bandedge	Type:	802.11 g																																										
CH01	MultiViewSpectrum Ref Level 20.00 dBm Offset 1.00 dB = RBW 100 kHz = Att 30 dB SWI 1.12 ms = VBW 300 kHz Mode Auto Sweep Count 300/300 1 Frequency Sweep  2.31 GHz 1001 pts 11.2 MHz/ 2.422 GHz 2 Marker Table <table><tr><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>2.40695 GHz</td><td>-4.75 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4 GHz</td><td>-44.75 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.39 GHz</td><td>-52.96 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.31 GHz</td><td>-63.77 dBm</td><td></td><td></td></tr><tr><td>M5</td><td>1</td><td></td><td>2.399488 GHz</td><td>-44.56 dBm</td><td></td><td></td></tr></table> Date: 27 MAY 2022 10:02:17			Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		2.40695 GHz	-4.75 dBm			M2	1		2.4 GHz	-44.75 dBm			M3	1		2.39 GHz	-52.96 dBm			M4	1		2.31 GHz	-63.77 dBm			M5	1		2.399488 GHz	-44.56 dBm		
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CH11	MultiViewSpectrum Ref Level 20.00 dBm Offset 1.00 dB = RBW 100 kHz = Att 30 dB SWI 1.03 ms = VBW 300 kHz Mode Auto Sweep Count 300/300 1 Frequency Sweep  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>2.456963 GHz</td><td>-3.21 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4835 GHz</td><td>-59.42 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.5 GHz</td><td>-61.78 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.484976 GHz</td><td>-57.39 dBm</td><td></td><td></td></tr></table> Date: 27 MAY 2022 10:06:50			Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		2.456963 GHz	-3.21 dBm			M2	1		2.4835 GHz	-59.42 dBm			M3	1		2.5 GHz	-61.78 dBm			M4	1		2.484976 GHz	-57.39 dBm									
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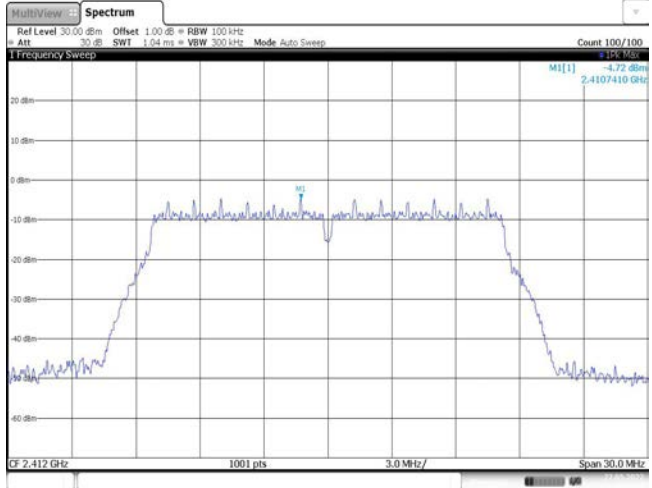
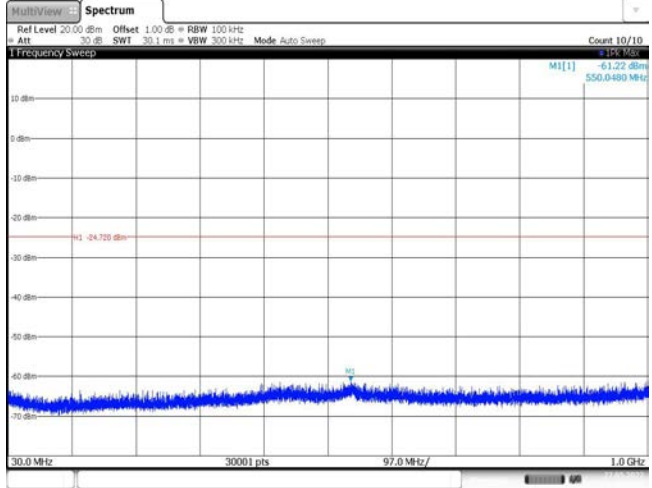
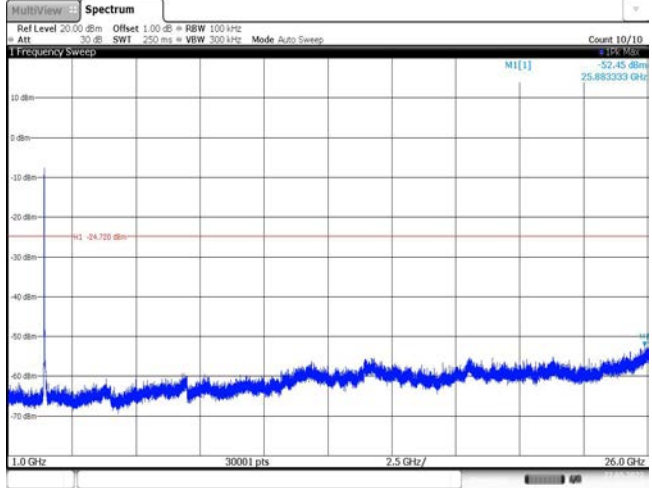
Test Item:	Bandedge	Type:	802.11 n(HT20)																																										
CH01	MultiViewSpectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWT 1.12 ms VBW 300 kHz Mode Auto Sweep Count 200/200 1 Frequency Sweep  2 Marker Table <table><thead><tr><th>Type</th><th>Ref</th><th>Trc</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>2.40695 GHz</td><td>-4.67 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4 GHz</td><td>-45.15 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.39 GHz</td><td>-51.83 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.31 GHz</td><td>-63.87 dBm</td><td></td><td></td></tr><tr><td>M5</td><td>1</td><td></td><td>2.399488 GHz</td><td>-45.57 dBm</td><td></td><td></td></tr></tbody></table> Date: 27 MAY 2022 10:09:46			Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		2.40695 GHz	-4.67 dBm			M2	1		2.4 GHz	-45.15 dBm			M3	1		2.39 GHz	-51.83 dBm			M4	1		2.31 GHz	-63.87 dBm			M5	1		2.399488 GHz	-45.57 dBm		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																							
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M4	1		2.31 GHz	-63.87 dBm																																									
M5	1		2.399488 GHz	-45.57 dBm																																									
CH11	MultiViewSpectrum 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 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>2.456963 GHz</td><td>-3.14 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4835 GHz</td><td>-59.99 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.5 GHz</td><td>-61.23 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.486944 GHz</td><td>-57.38 dBm</td><td></td><td></td></tr></tbody></table> Date: 27 MAY 2022 10:04:56			Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		2.456963 GHz	-3.14 dBm			M2	1		2.4835 GHz	-59.99 dBm			M3	1		2.5 GHz	-61.23 dBm			M4	1		2.486944 GHz	-57.38 dBm									
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Test Item:	Bandedge	Type:	802.11 n(HT40)
CH03	MultiViewSpectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30.00 SWI 1.32 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 M1 -5.99 dBm 2.439430 GHz -49.86 dBm 2.400000 GHz M1 -5.		

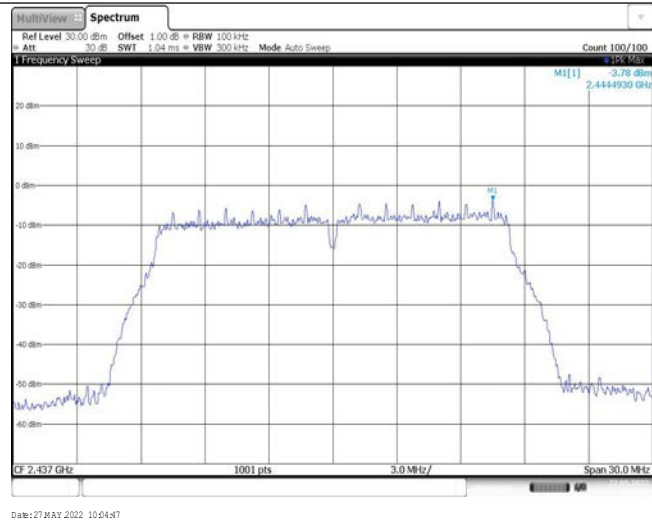
Test Item:	SE	Type:	802.11b
CH01 Reference level		 Date: 27 MAY 2022 09:51:24	
CH01 30MHz~1000MHz		 Date: 27 MAY 2022 09:51:46	
CH01 1GHz~26GHz		 Date: 27 MAY 2022 09:52:28	

CH06 Reference level	 Date: 27 MAY 2022 09:53:43
CH06 30MHz~1000MHz	 Date: 27 MAY 2022 09:54:05
CH06 1GHz~26GHz	 Date: 27 MAY 2022 09:54:27

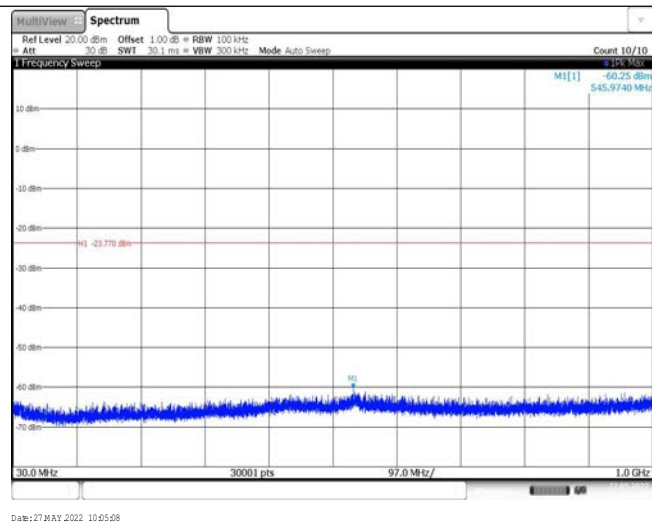
CH11 Reference level	 MultiView Spectrum Ref Level 30.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWF 1.04 ms VBW 300 kHz Mode Auto Sweep Frequency Sweep Count 100/100 M1[1] -4.59 dBm 2.4609810 GHz 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm CF 2.457 GHz 1000 pts 3.0 MHz/ Span 30.0 MHz Date: 27 MAY 2022 09:57:17
CH11 30MHz~1000MHz	 MultiView Spectrum 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 Frequency Sweep Count 10/10 M1[1] -60.63 dBm 56.4680 MHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm 30.0 MHz 30001 pts 97.0 MHz/ 1.0 GHz Date: 27 MAY 2022 09:57:38
CH11 1GHz~26GHz	 MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWF 250 ms VBW 300 kHz Mode Auto Sweep Frequency Sweep Count 10/10 M1[1] -52.99 dBm 25.978333 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm 1.0 GHz 30001 pts 2.5 GHz/ 26.0 GHz Date: 27 MAY 2022 09:58:00

Test Item:	SE	Type:	802.11g
CH01 Reference level		 Ref Level 30.00 dBm Offset 1.00 dB BW 100 kHz Att 30 dB SWI 1.04 ms VBW 300 kHz Mode Auto Sweep Count 100/100 MI[1] -47.2 dBm 2.4107410 GHz 2.412 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 27 MAY 2022 10:02:29	
CH01 30MHz~1000MHz		 Ref Level 20.00 dBm Offset 1.00 dB BW 100 kHz Att 30 dB SWI 30.1 ms VBW 300 kHz Mode Auto Sweep Count 10/10 MI[1] -61.22 dBm 550.0489 MHz 30.0 MHz 30001 pts 97.0 MHz/ 1.0 GHz Date: 27 MAY 2022 10:02:51	
CH01 1GHz~26GHz		 Ref Level 20.00 dBm Offset 1.00 dB BW 100 kHz Att 30 dB SWI 250 ms VBW 300 kHz Mode Auto Sweep Count 10/10 MI[1] -52.45 dBm 25.883333 GHz 1.0 GHz 30001 pts 2.5 GHz/ 26.0 GHz Date: 27 MAY 2022 10:03:03	

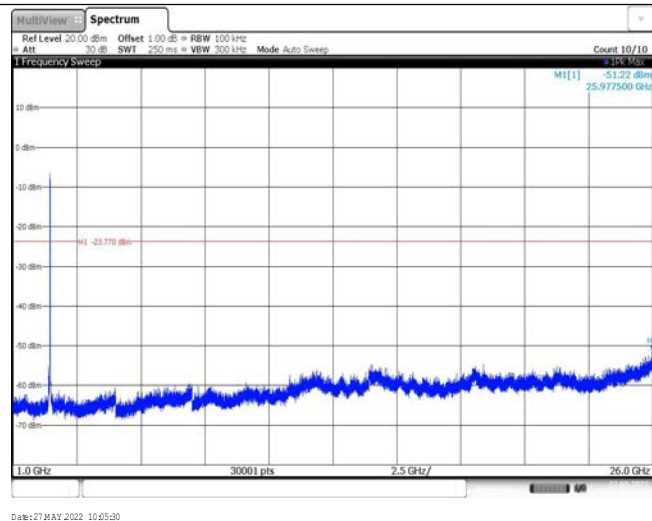
CH06
Reference level



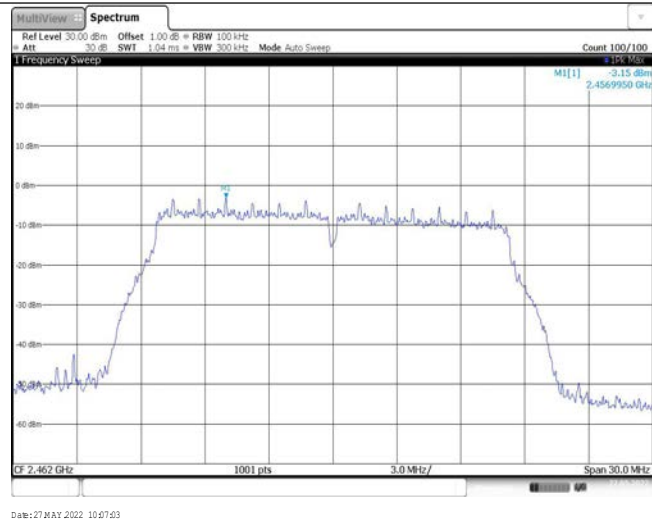
CH06
30MHz~1000MHz



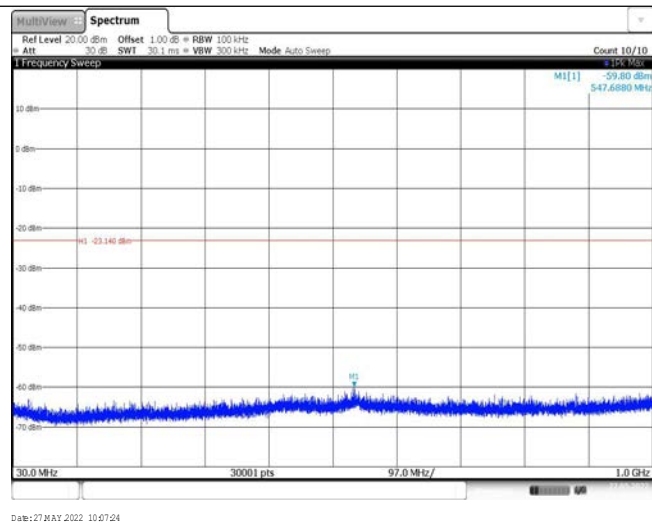
CH06
1GHz~26GHz



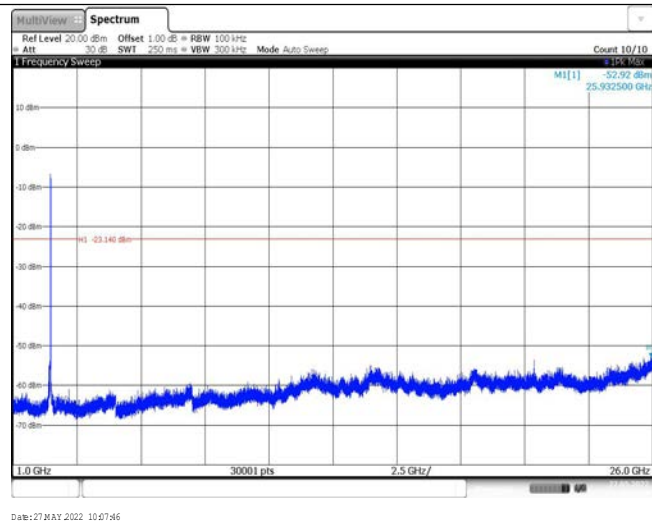
CH11
Reference level

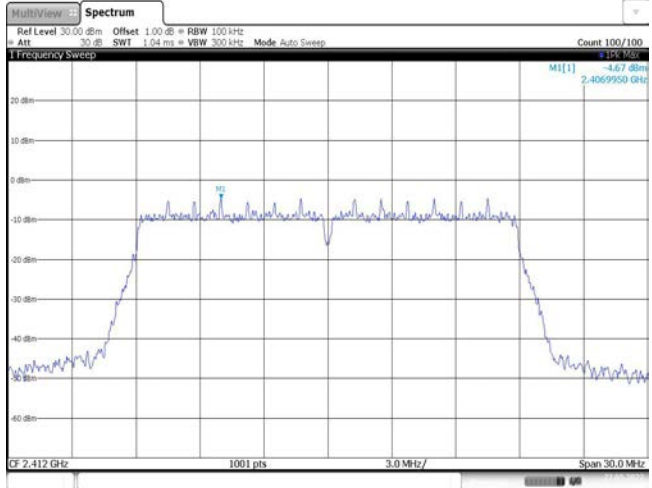
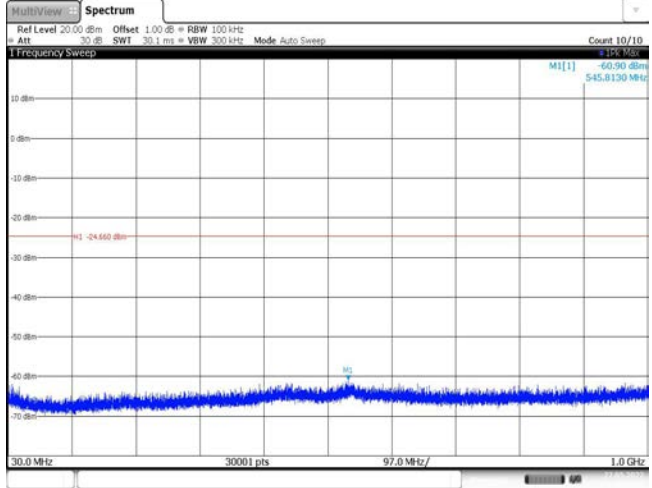
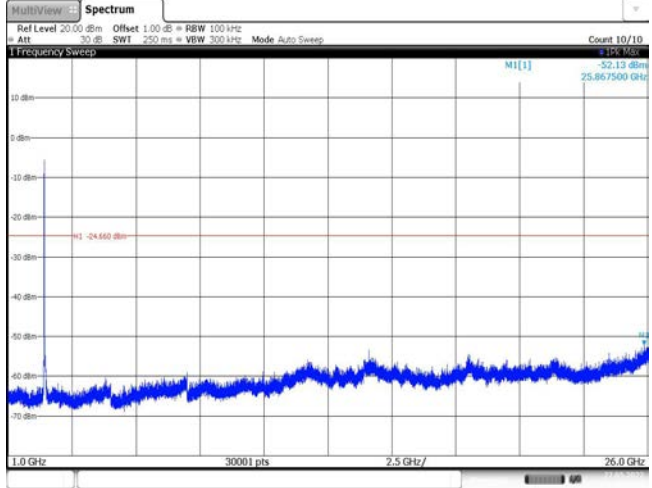


CH11
30MHz~1000MHz

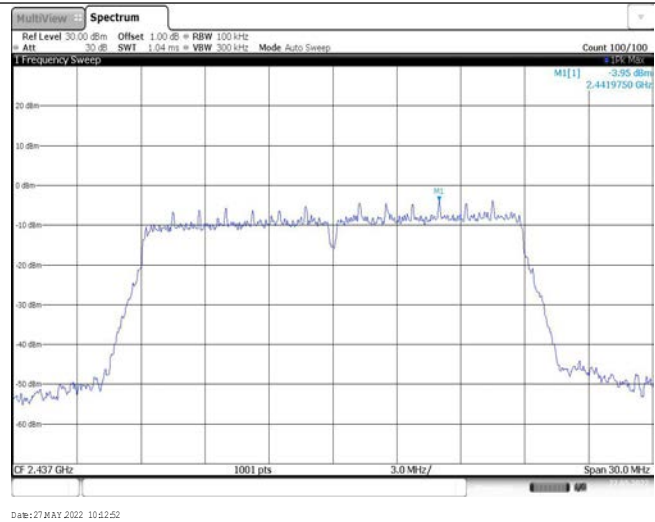


CH11
1GHz~26GHz

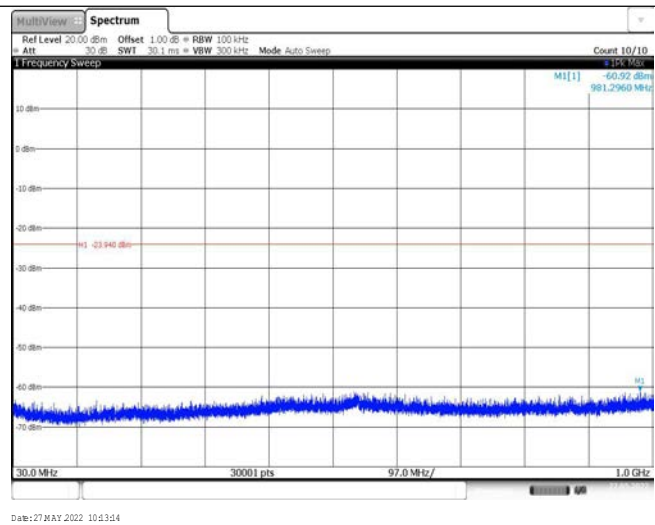


Test Item:	SE	Type:	802.11n(HT20)
CH01 Reference level		 CH01 Reference level	
CH01 30MHz~1000MHz		 CH01 30MHz~1000MHz	
CH01 1GHz~26GHz		 CH01 1GHz~26GHz	

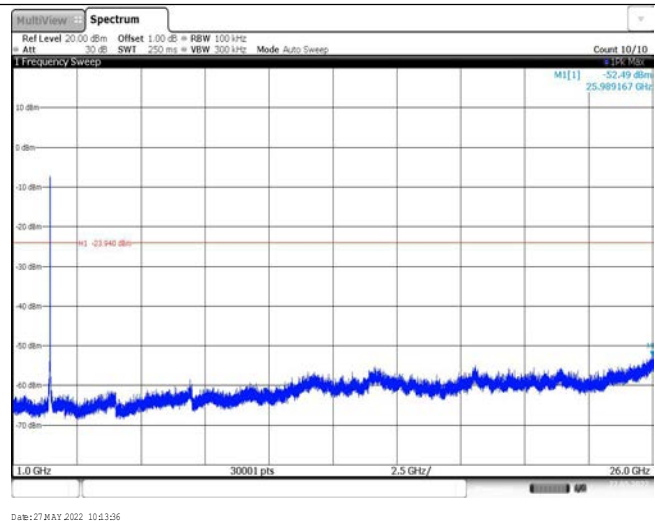
CH06
Reference level



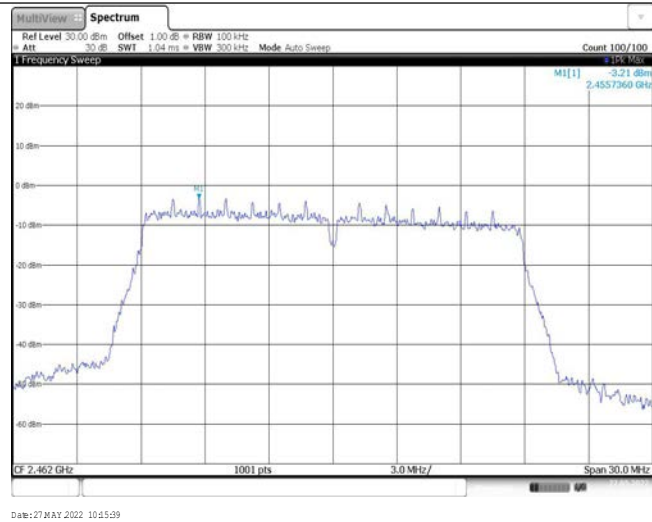
CH06
30MHz~1000MHz



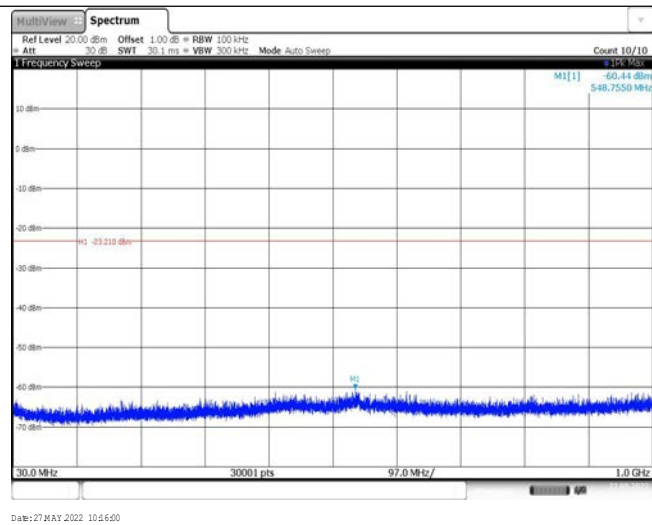
CH06
1GHz~26GHz



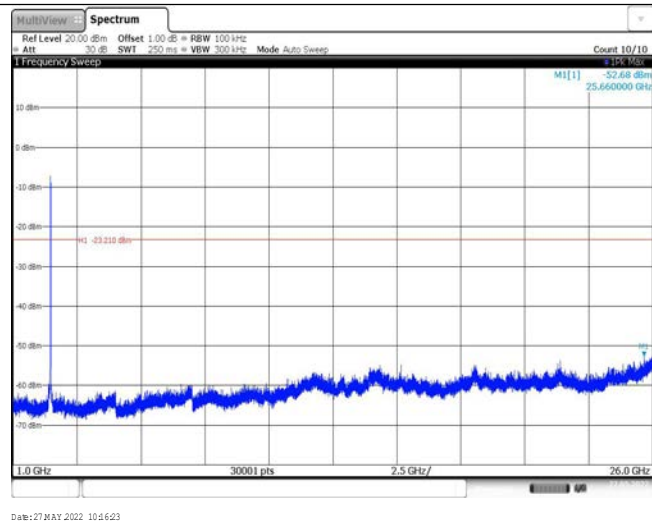
CH11
Reference level

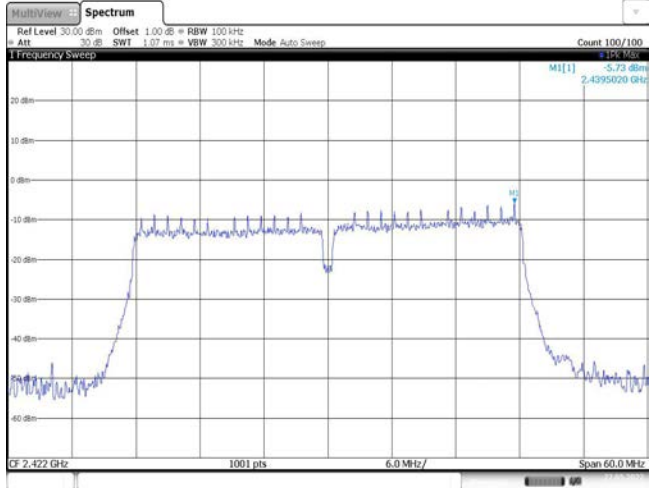
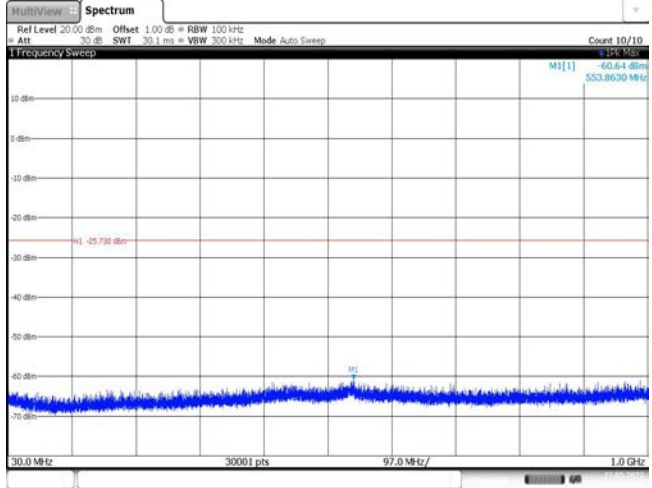
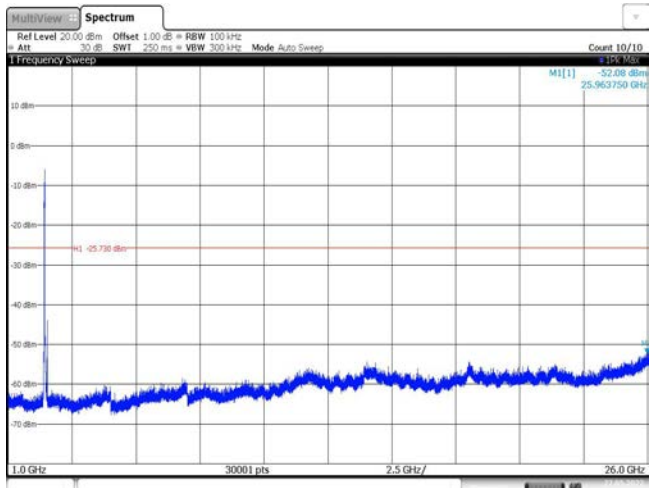


CH11
30MHz~1000MHz

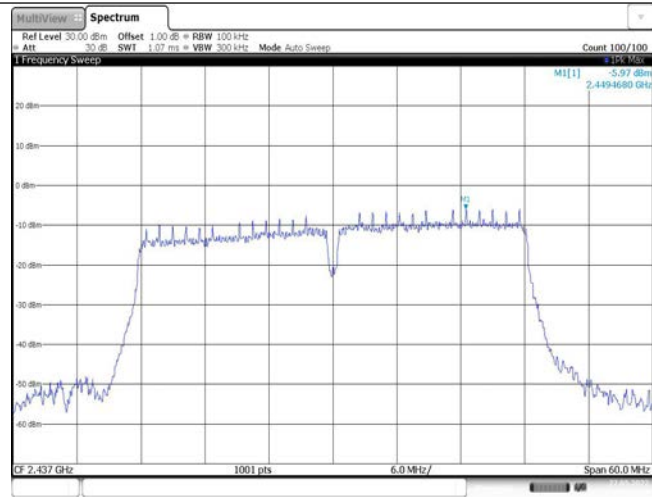


CH11
1GHz~26GHz



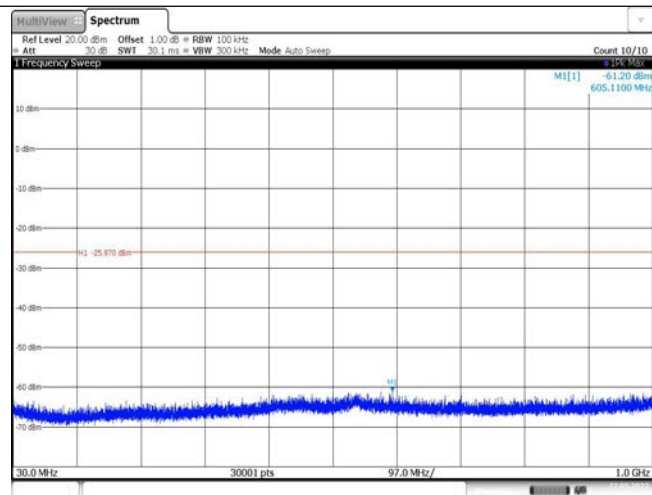
Test Item:	SE	Type:	802.11n(HT40)
CH03 Reference level		 Ref Level 30.00 dBm Offset 1.00 dB BW 100 kHz Att 30 dB SWI 1.07 ms VBW 300 kHz Mode Auto Sweep Count 100/100 M1[1] -5.72 dBm 2.4395020 GHz 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm 2.422 GHz 1001 pts 6.0 MHz/pt Span 60.0 MHz Date: 27 MAY 2022 09:45:14	
CH03 30MHz~1000MHz		 Ref Level 20.00 dBm Offset 1.00 dB BW 100 kHz Att 30 dB SWI 30.1 ms VBW 300 kHz Mode Auto Sweep Count 10/10 M1[1] -55.738 dBm 553.8630 MHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm 30.0 MHz 30001 pts 97.0 MHz/pt Span 1.0 GHz Date: 27 MAY 2022 09:45:35	
CH03 1GHz~26GHz		 Ref Level 20.00 dBm Offset 1.00 dB BW 100 kHz Att 30 dB SWI 250 ms VBW 300 kHz Mode Auto Sweep Count 10/10 M1[1] -55.738 dBm 25.963750 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm 1.0 GHz 30001 pts 2.5 GHz/pt Span 26.0 GHz Date: 27 MAY 2022 09:46:22	

CH06
Reference level



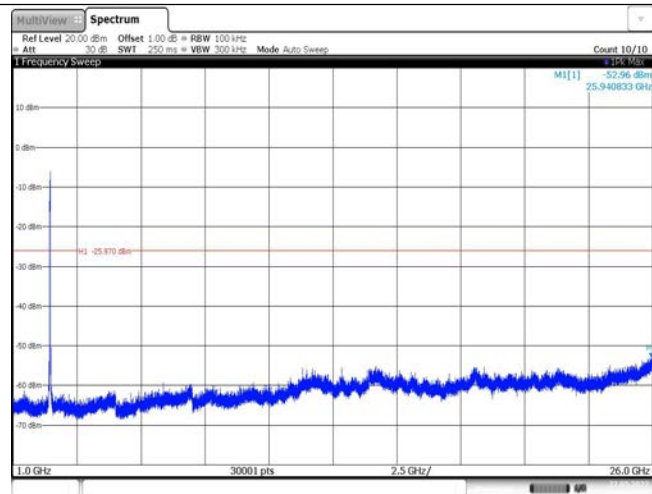
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CH06
30MHz~1000MHz



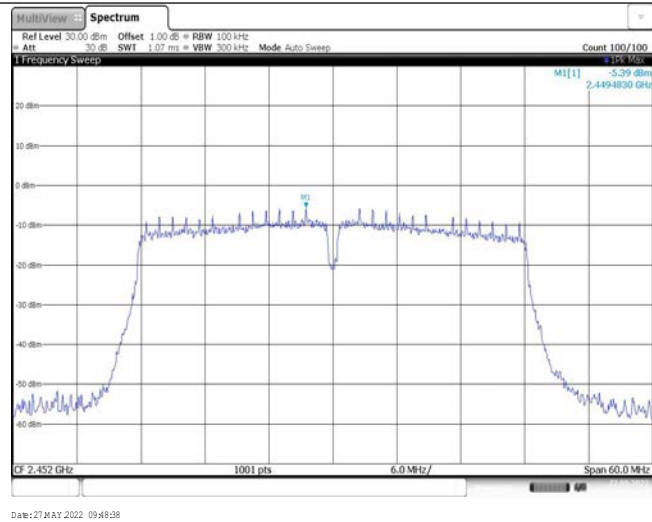
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CH06
1GHz~26GHz

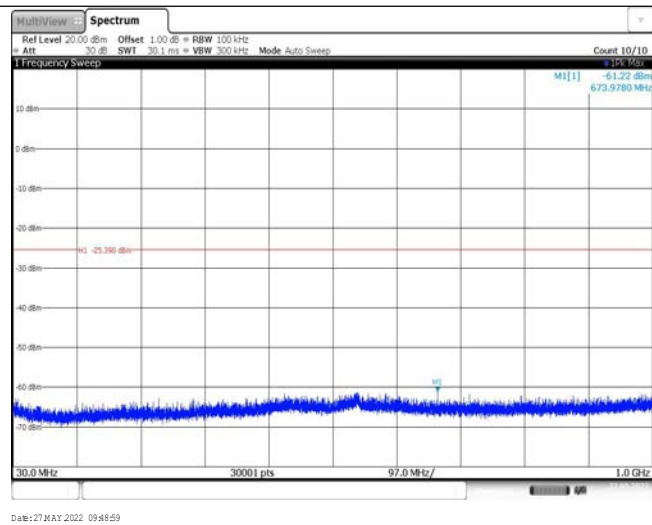


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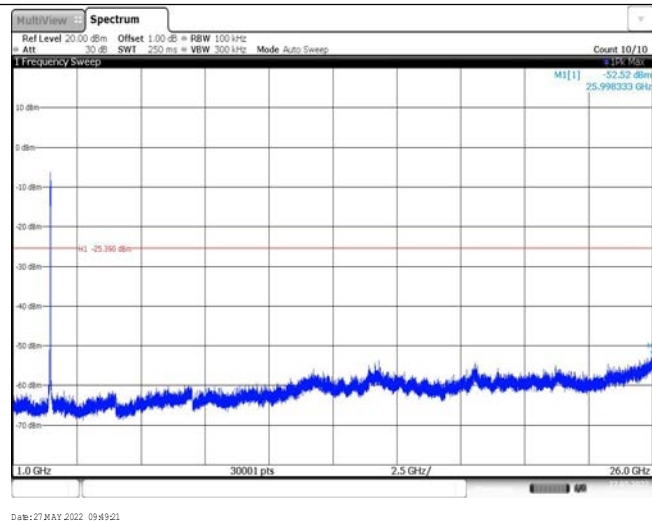
CH09
Reference level



CH09
30MHz~1000MHz



CH09
1GHz~26GHz



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