

APPENDIX REPORT

Project No.	SHT2104053601EW	Radio Specification	WIFI 2.4G
Test sample No.	YPHT21040536002	Model No.	Star8vm
Start test date	2021-05-28	Finish date	2021-05-28
Temperature	25.5°C	Humidity	63%
Test Engineer	Qizhi Zhang	Auditor	Xiaodong Zhao

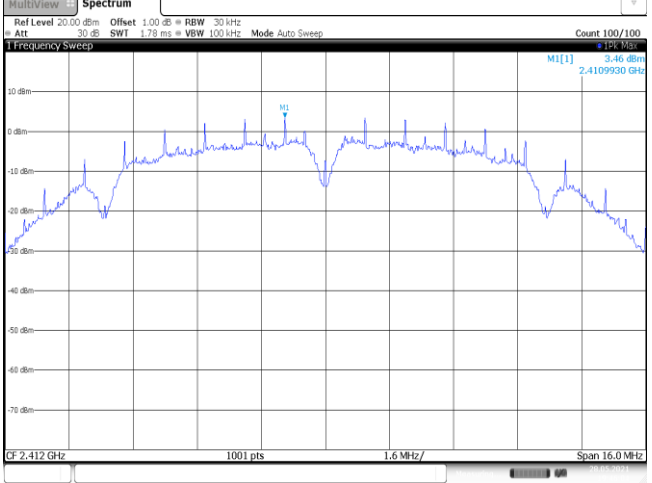
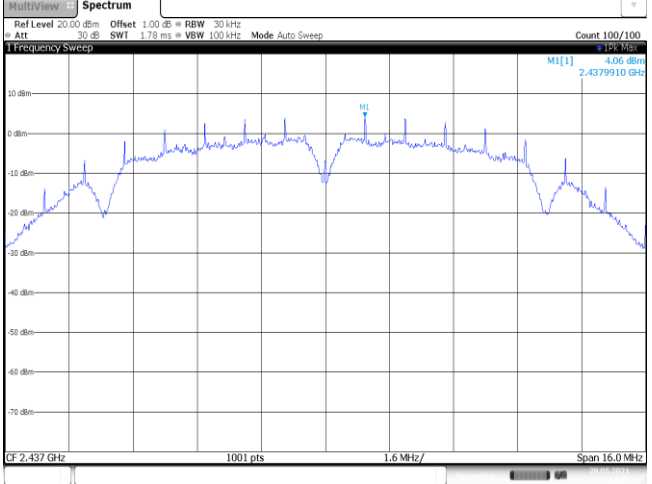
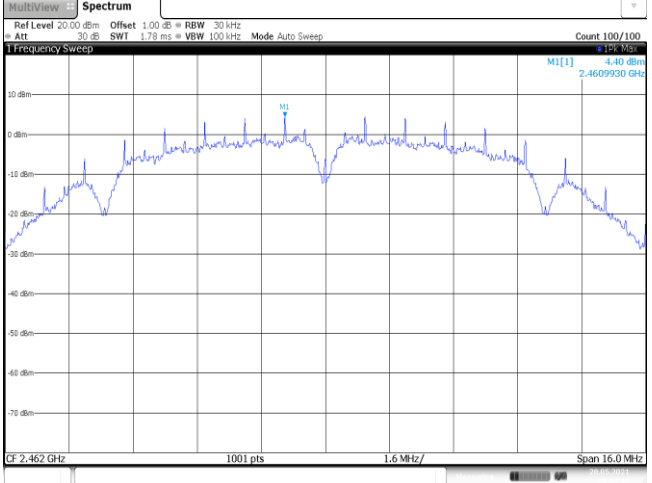
Appendix clause	Test item	Result
A	Conducted Peak Output Power	PASS
B	Power Spectral Density	PASS
C	6 dB Bandwidth	PASS
D	99% Occupied Bandwidth	PASS
E	Duty Cycle	PASS
F	Band edge and Spurious Emissions (conducted)	PASS

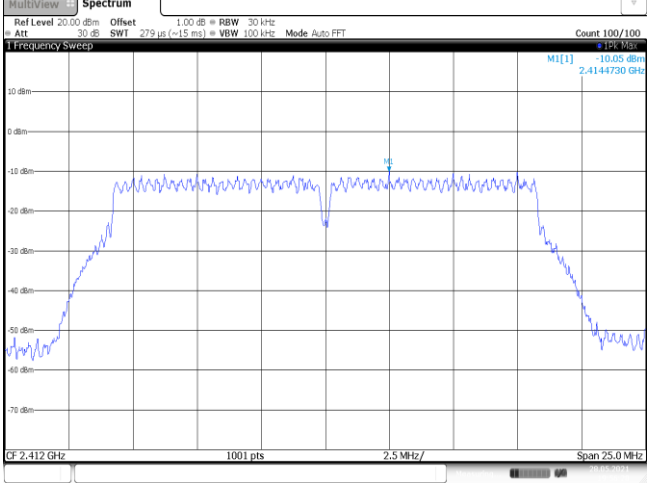
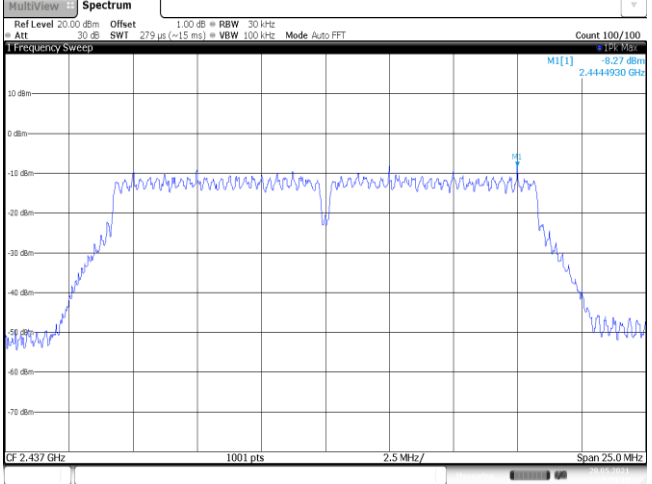
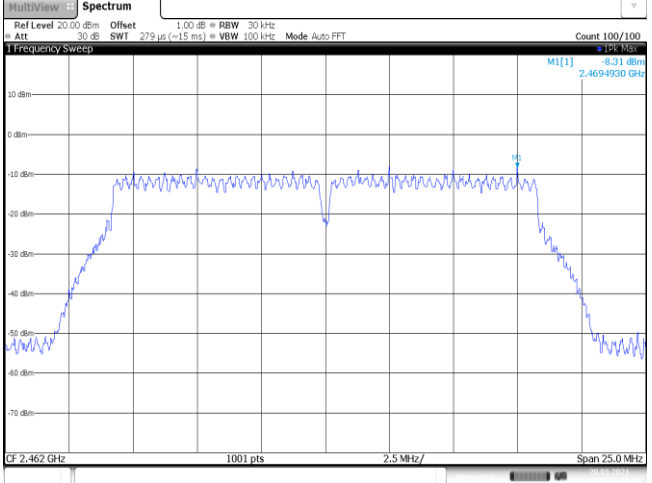
Appendix A: Conducted Peak Output Power

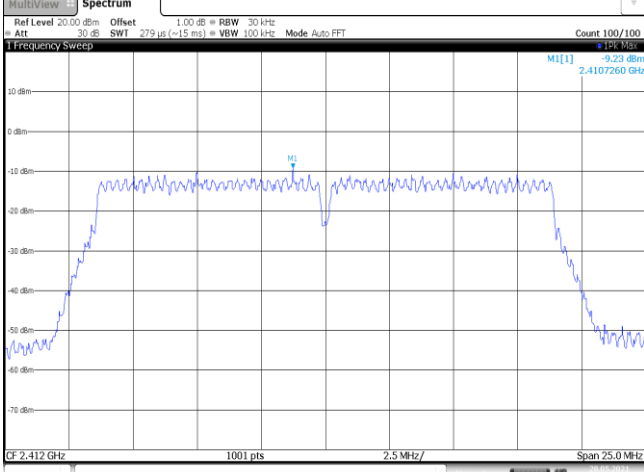
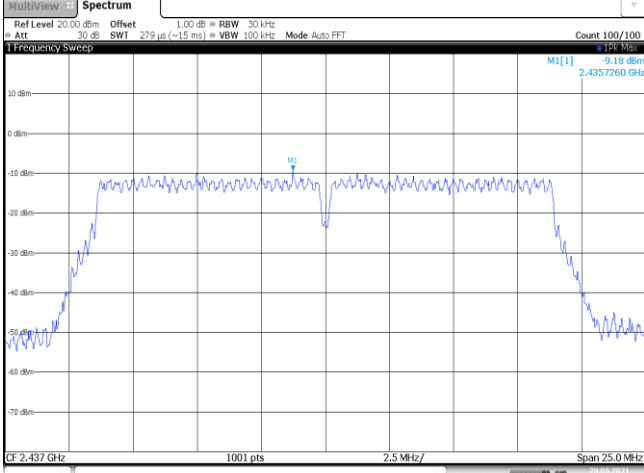
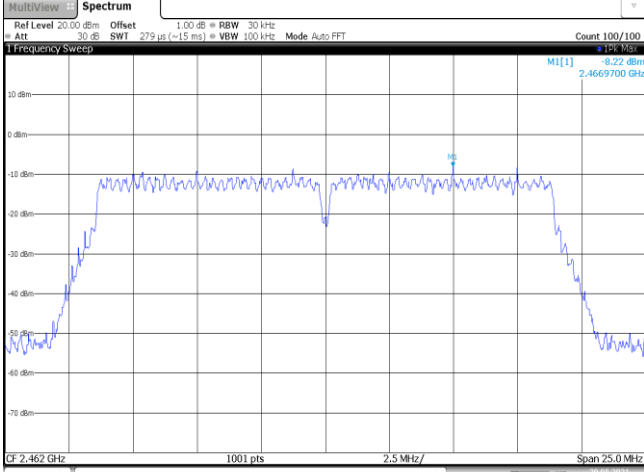
Type	Channel	Peak Output power (dBm)	Average Output power (dBm)	Limit (dBm)	Result
802.11b	01	15.17	12.74	≤ 30.00	Pass
	06	15.59	13.12		
	11	15.42	12.94		
802.11g	01	15.59	12.84	≤ 30.00	Pass
	06	15.96	12.97		
	11	15.69	12.74		
802.11n (HT20)	01	15.52	12.53	≤ 30.00	Pass
	06	16.00	12.99		
	11	15.73	12.77		
802.11n(HT40)	03	14.45	11.62	≤ 30.00	Pass
	06	14.67	11.82		
	09	14.50	11.58		

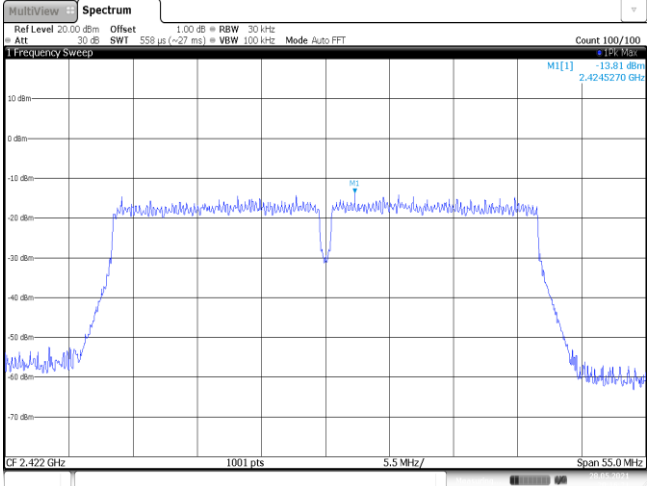
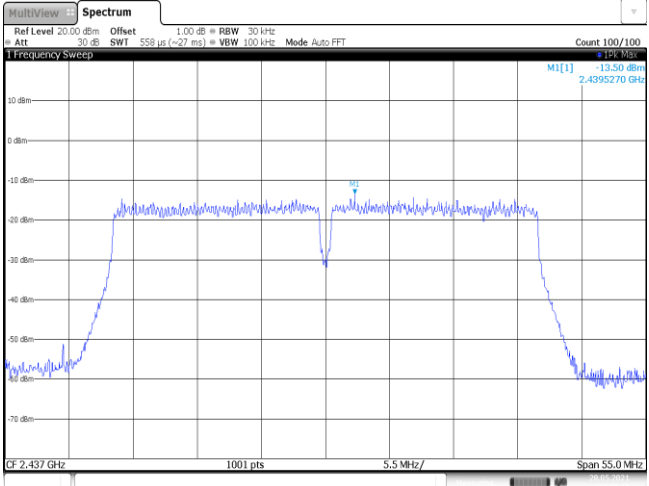
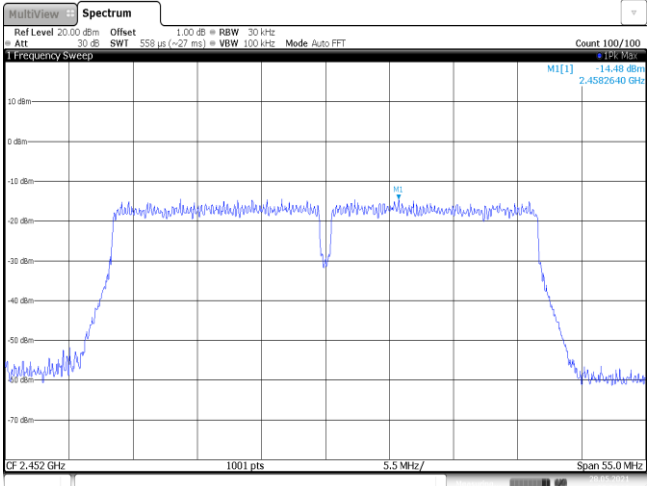
Appendix B: Power Spectral Density

Type	Channel	Power Spectral Density (dBm/30KHz)	Limit (dBm/3KHz)	Result
802.11b	01	3.46	≤8.00	Pass
	06	4.06		
	11	4.40		
802.11g	01	-10.05	≤8.00	Pass
	06	-8.27		
	11	-8.31		
802.11n(HT20)	01	-8.65	≤8.00	Pass
	06	-8.77		
	11	-8.22		
802.11n(HT40)	03	-13.81	≤8.00	Pass
	06	-13.50		
	09	-14.48		

Type:	802.11 b
CH01	 Ref Level 20.00 dBm Offset 1.00 dB RBW 30 kHz Att 30 dB SWI 1.78 ms VBW 100 kHz Mode Auto Sweep Count 100/100 MI[1] 3.46 dBm 2.419930 GHz CF 2.412 GHz 1001 pts 1.6 MHz/ Span 16.0 MHz Date: 25 MAY 2021 19:46:04
CH06	 Ref Level 20.00 dBm Offset 1.00 dB RBW 30 kHz Att 30 dB SWI 1.78 ms VBW 100 kHz Mode Auto Sweep Count 100/100 MI[1] 4.06 dBm 2.4379910 GHz CF 2.437 GHz 1001 pts 1.6 MHz/ Span 16.0 MHz Date: 25 MAY 2021 19:50:21
CH11	 Ref Level 20.00 dBm Offset 1.00 dB RBW 30 kHz Att 30 dB SWI 1.78 ms VBW 100 kHz Mode Auto Sweep Count 100/100 MI[1] 4.40 dBm 2.4609930 GHz CF 2.462 GHz 1001 pts 1.6 MHz/ Span 16.0 MHz Date: 25 MAY 2021 19:53:40

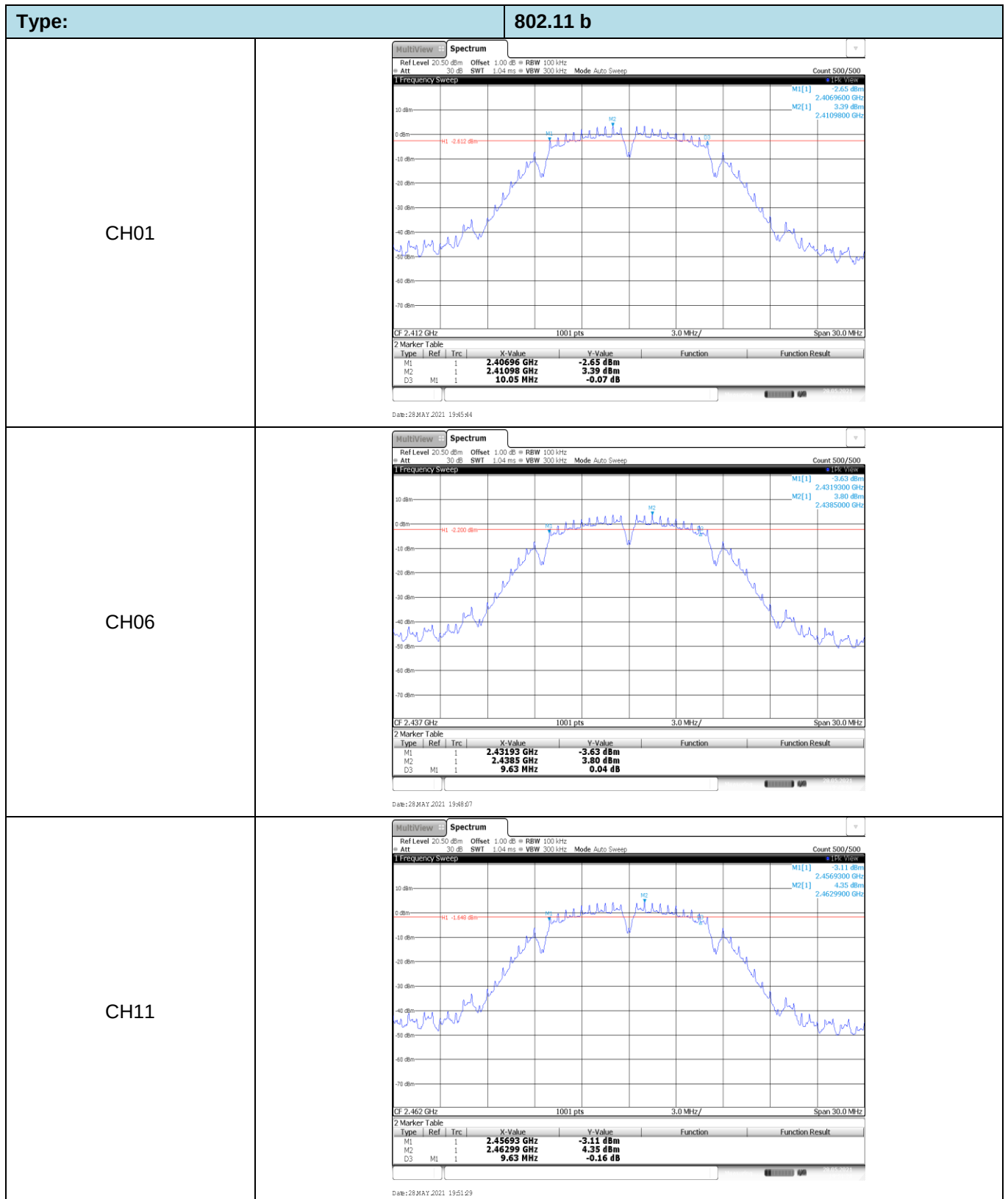
Type:	802.11 g
CH01	 Ref Level 20.00 dBm Offset 1.00 dB BW 30 kHz Att 30 dB SWI 279 us (~15 ms) VBW 100 kHz Mode Auto FFT Count 100/100 MI[1] -10.05 dBm 2.4144730 GHz CF 2.412 GHz 1001 pts 2.5 MHz/ Span 25.0 MHz Date: 25.MAY.2021 19:56:28
CH06	 Ref Level 20.00 dBm Offset 1.00 dB BW 30 kHz Att 30 dB SWI 279 us (~15 ms) VBW 100 kHz Mode Auto FFT Count 100/100 MI[1] -8.27 dBm 2.4444930 GHz CF 2.437 GHz 1001 pts 2.5 MHz/ Span 25.0 MHz Date: 25.MAY.2021 19:58:50
CH11	 Ref Level 20.00 dBm Offset 1.00 dB BW 30 kHz Att 30 dB SWI 279 us (~15 ms) VBW 100 kHz Mode Auto FFT Count 100/100 MI[1] -8.31 dBm 2.4694930 GHz CF 2.462 GHz 1001 pts 2.5 MHz/ Span 25.0 MHz Date: 25.MAY.2021 20:01:48

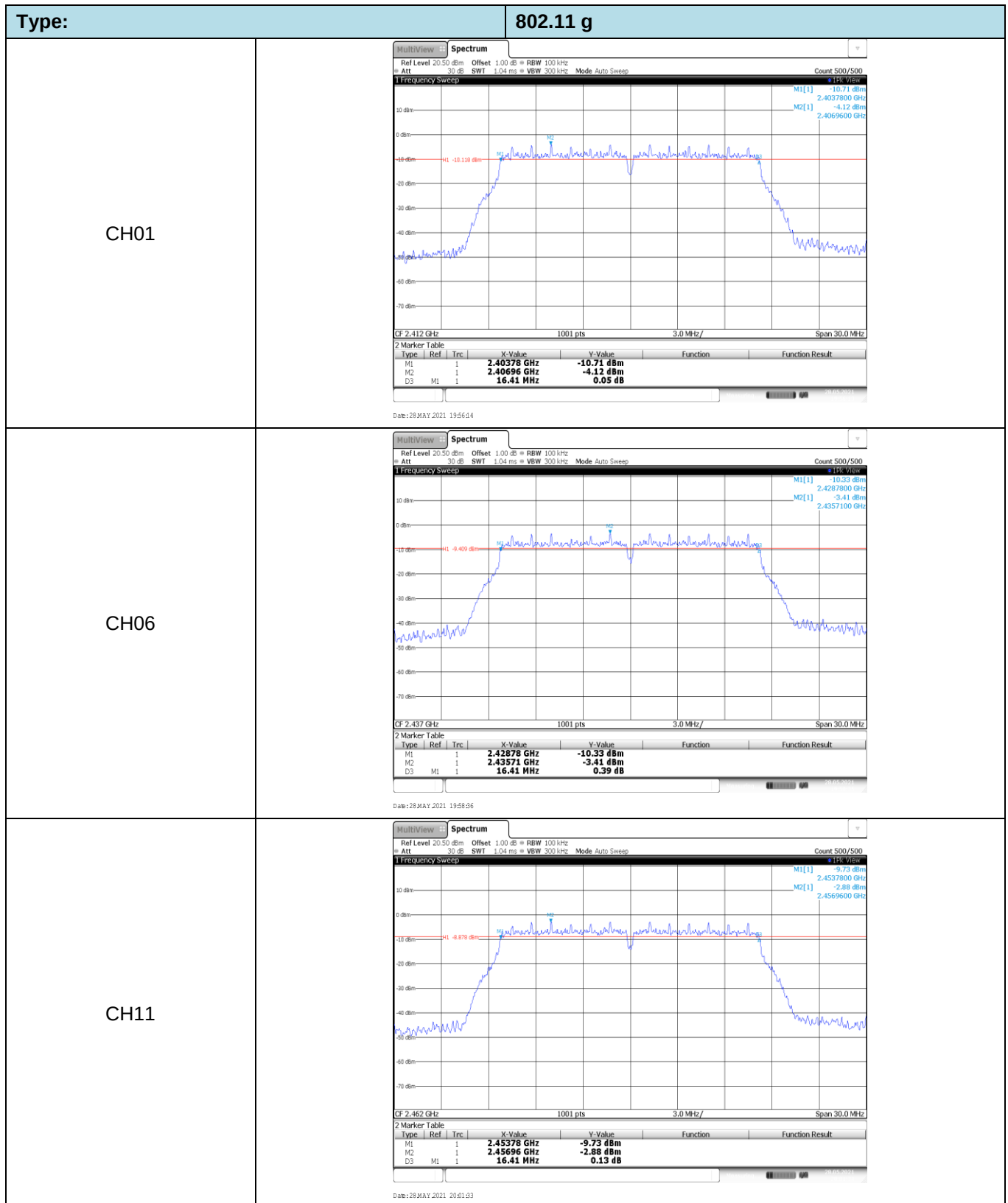
Type:	802.11n(HT20)
CH01	 Ref Level 20.00 dBm Offset 30 dB Att 30 dB SWI 279 us (~1.5 ms) BW 30 kHz VBW 100 kHz Mode Auto FFT Count 100/100 MI[1] 9.23 dBm 2.4167260 GHz CF 2.412 GHz 1001 pts 2.5 MHz/ Span 25.0 MHz Date: 26 MAY 2021 20:05:43
CH06	 Ref Level 20.00 dBm Offset 30 dB Att 30 dB SWI 279 us (~1.5 ms) BW 30 kHz VBW 100 kHz Mode Auto FFT Count 100/100 MI[1] -9.18 dBm 2.437260 GHz CF 2.437 GHz 1001 pts 2.5 MHz/ Span 25.0 MHz Date: 26 MAY 2021 20:08:53
CH11	 Ref Level 20.00 dBm Offset 30 dB Att 30 dB SWI 279 us (~1.5 ms) BW 30 kHz VBW 100 kHz Mode Auto FFT Count 100/100 MI[1] 8.22 dBm 2.4669700 GHz CF 2.462 GHz 1001 pts 2.5 MHz/ Span 25.0 MHz Date: 26 MAY 2021 20:11:11

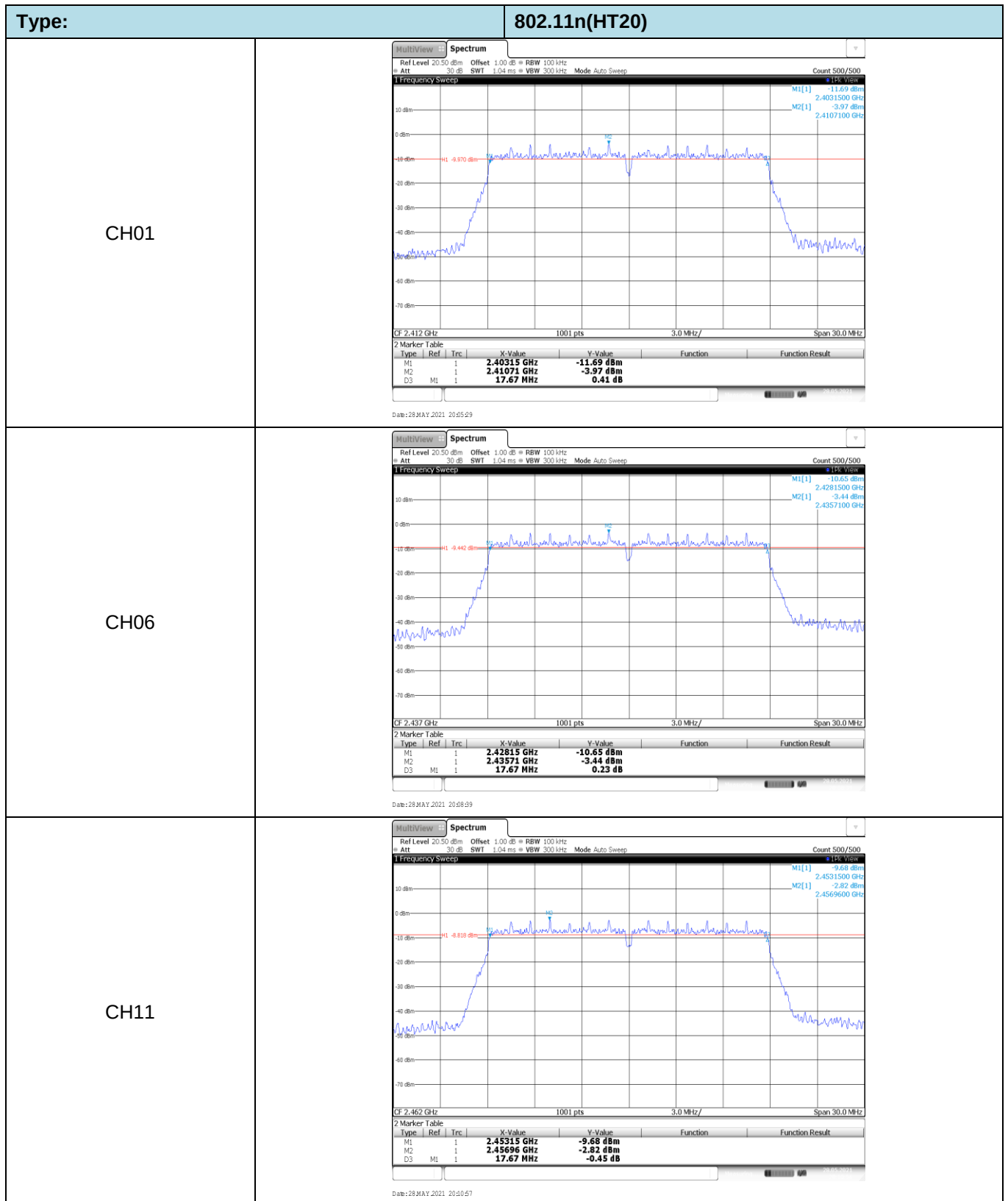
Type:	802.11n(HT40)
CH03	 Ref Level 20.00 dBm Offset 1.00 dB BW 30 kHz Att 30 dB SWI 558 us (~27 ms) VBW 100 kHz Mode Auto FFT Count 100/100 MI[1] -13.81 dBm 2.4245270 GHz Date: 25 MAY 2021 20:16:21
CH06	 Ref Level 20.00 dBm Offset 1.00 dB BW 30 kHz Att 30 dB SWI 558 us (~27 ms) VBW 100 kHz Mode Auto FFT Count 100/100 MI[1] -13.50 dBm 2.4395270 GHz Date: 25 MAY 2021 20:18:43
CH09	 Ref Level 20.00 dBm Offset 1.00 dB BW 30 kHz Att 30 dB SWI 558 us (~27 ms) VBW 100 kHz Mode Auto FFT Count 100/100 MI[1] -14.48 dBm 2.4582640 GHz Date: 25 MAY 2021 20:26:16

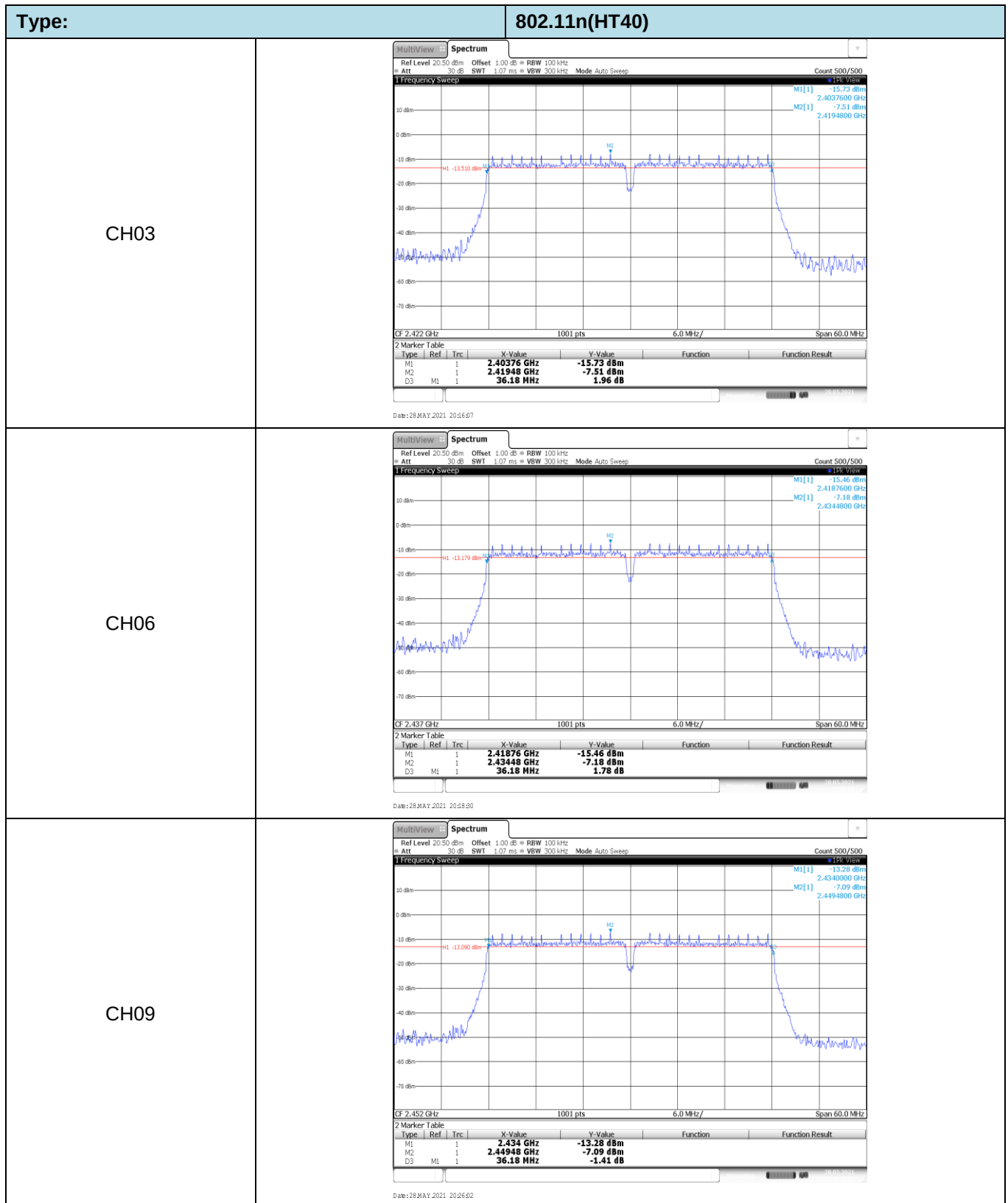
Appendix C: 6dB bandwidth

Type	Channel	6dB Bandwidth (MHz)	Limit (MHz)	Result
802.11b	01	10.05	≥0.5	Pass
	06	9.63		
	11	9.63		
802.11g	01	16.41	≥0.5	Pass
	06	16.41		
	11	16.41		
802.11n(HT20)	01	17.67	≥0.5	Pass
	06	17.67		
	11	17.67		
802.11n(HT40)	03	36.18	≥0.5	Pass
	06	36.18		
	09	36.18		



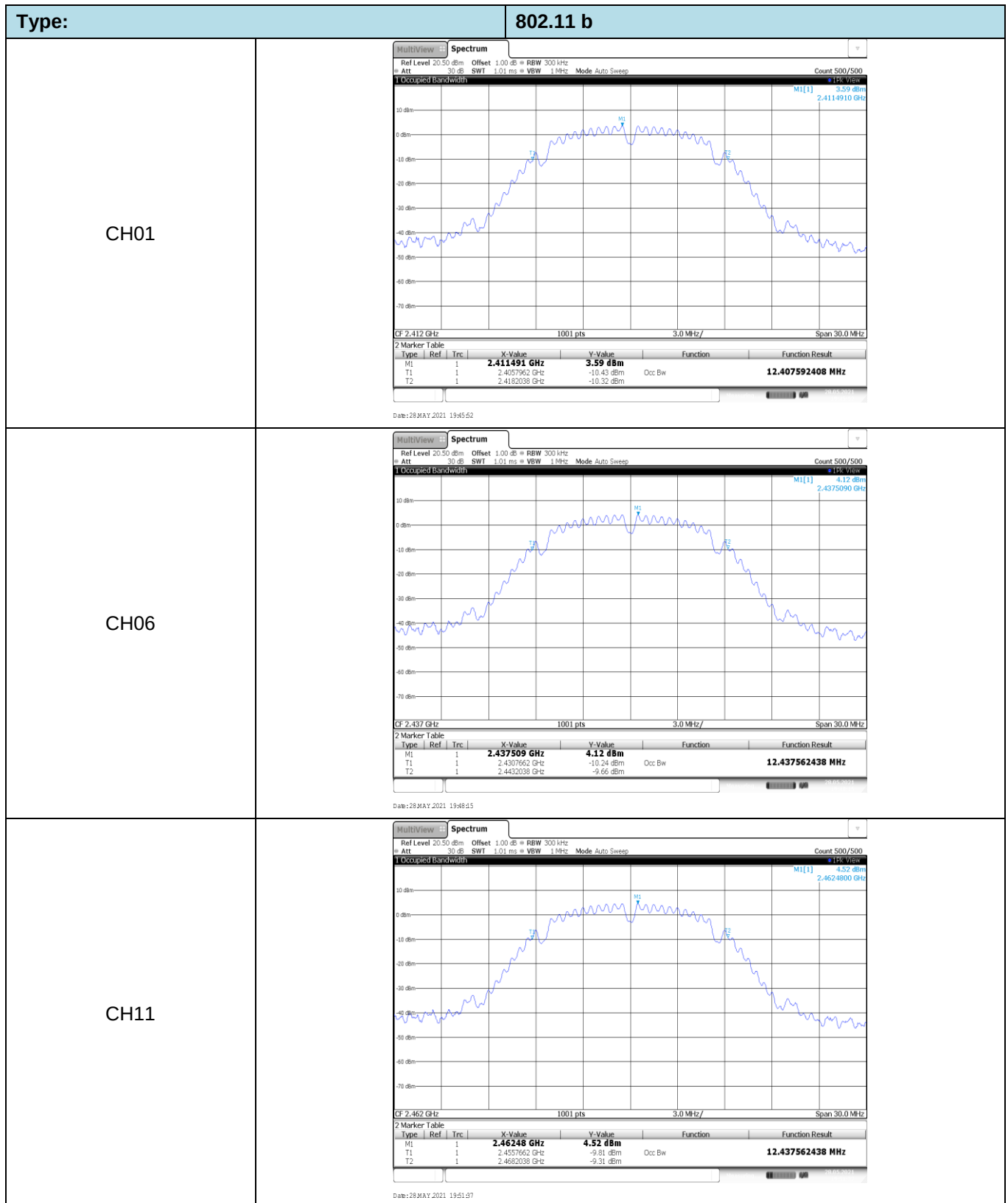


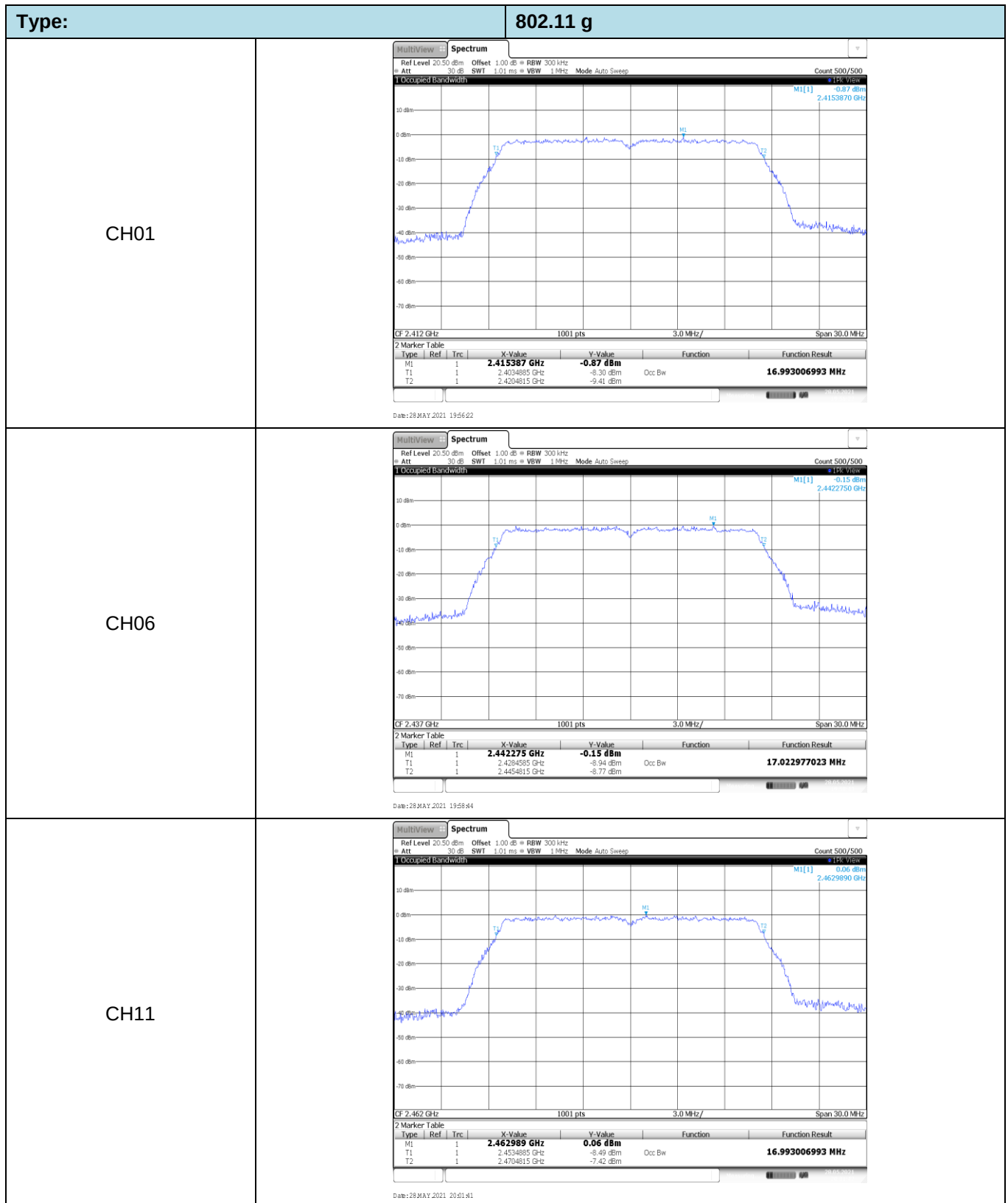


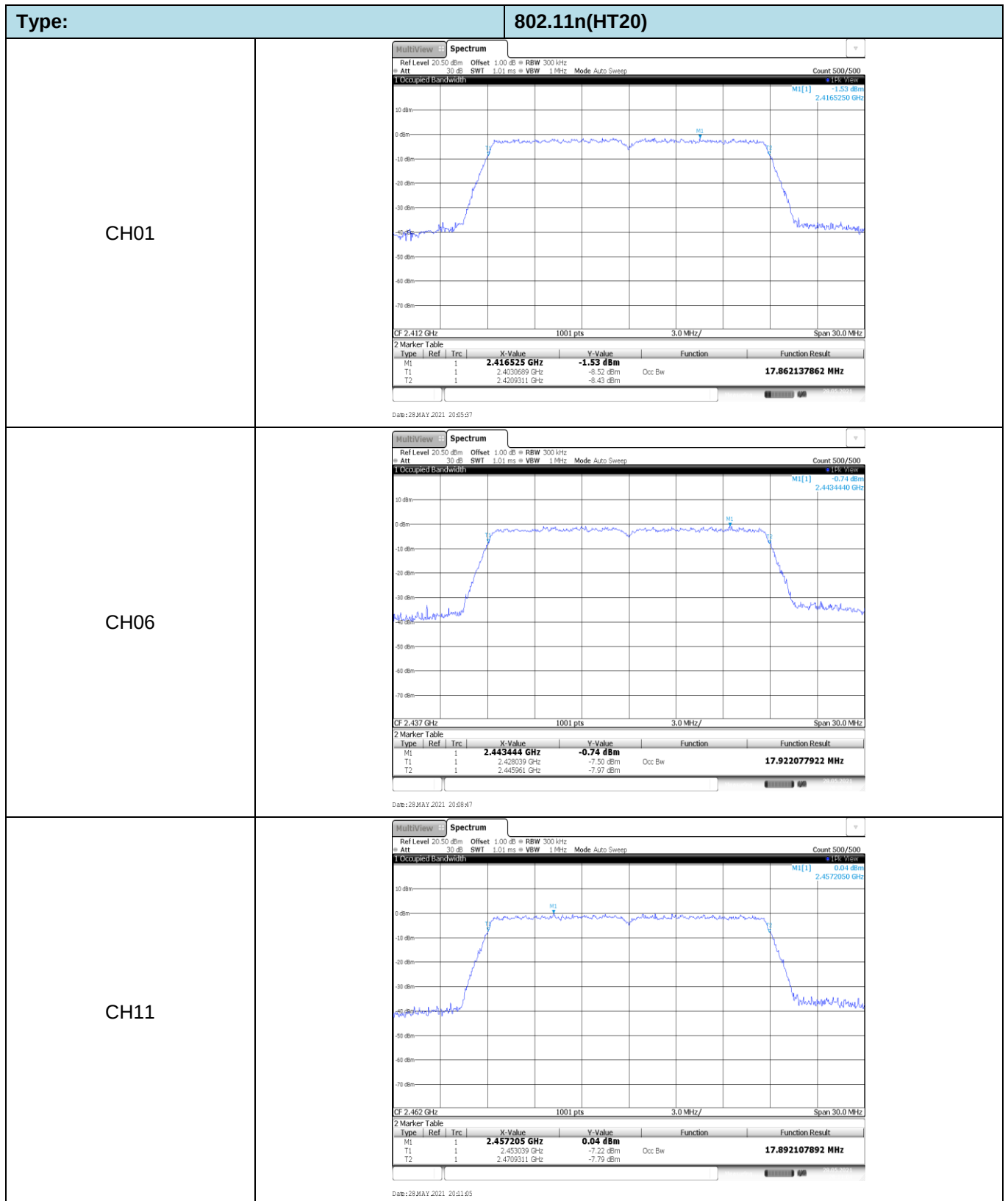


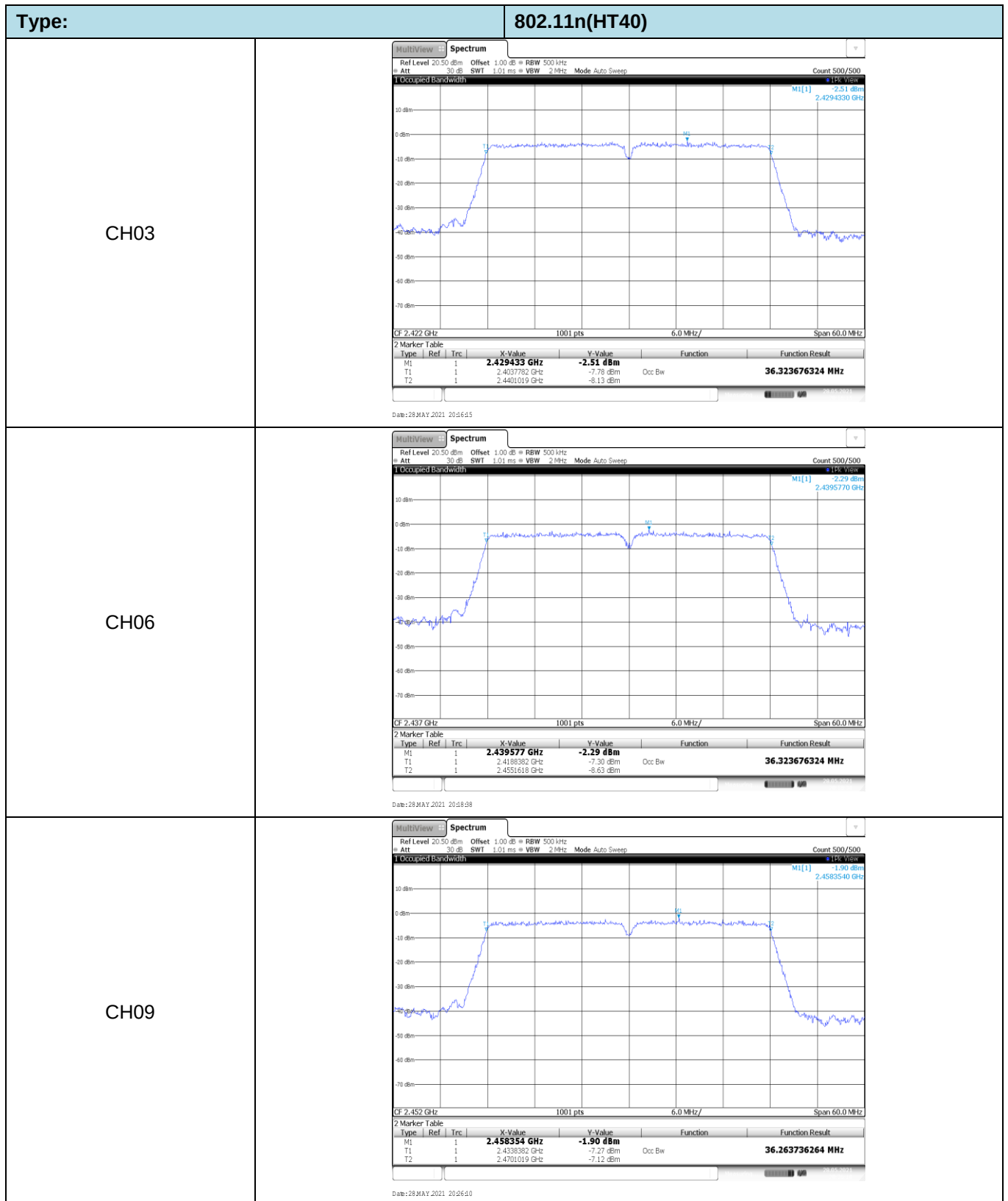
Appendix D: 99% Occupied Bandwidth

Type	Channel	99% Bandwidth (MHz)	Limit (kHz)	Result
802.11b	01	12.41	-	Pass
	06	12.44		
	11	12.44		
802.11g	01	16.99	-	Pass
	06	17.02		
	11	16.99		
802.11n(HT20)	01	17.86	-	Pass
	06	17.92		
	11	17.89		
802.11n(HT40)	03	36.32	-	Pass
	06	36.32		
	09	36.26		





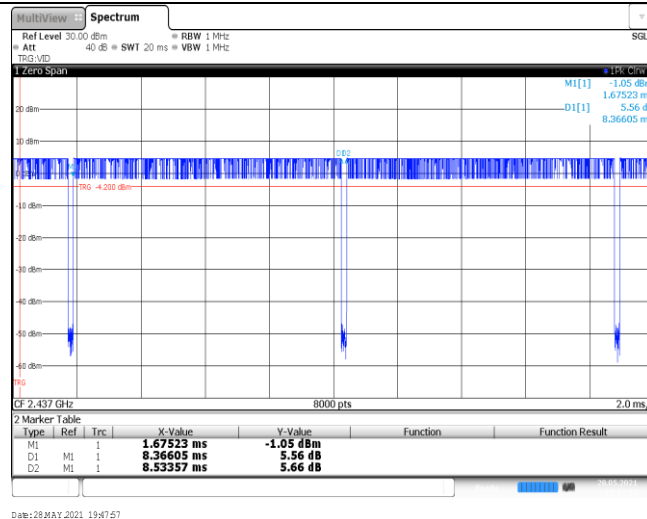




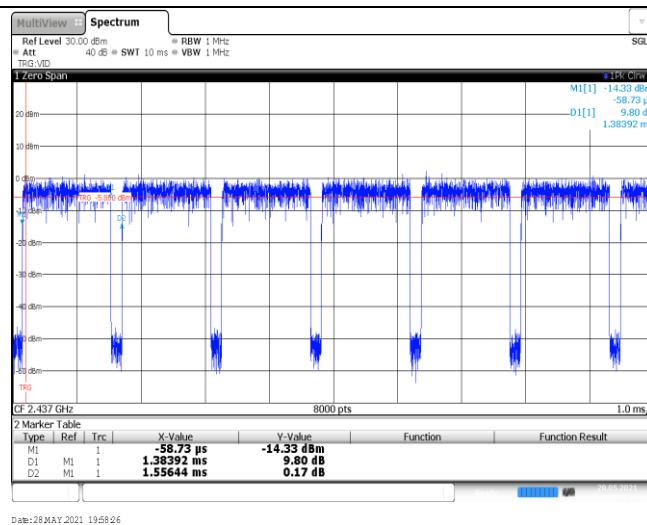
Appendix E: Duty Cycle

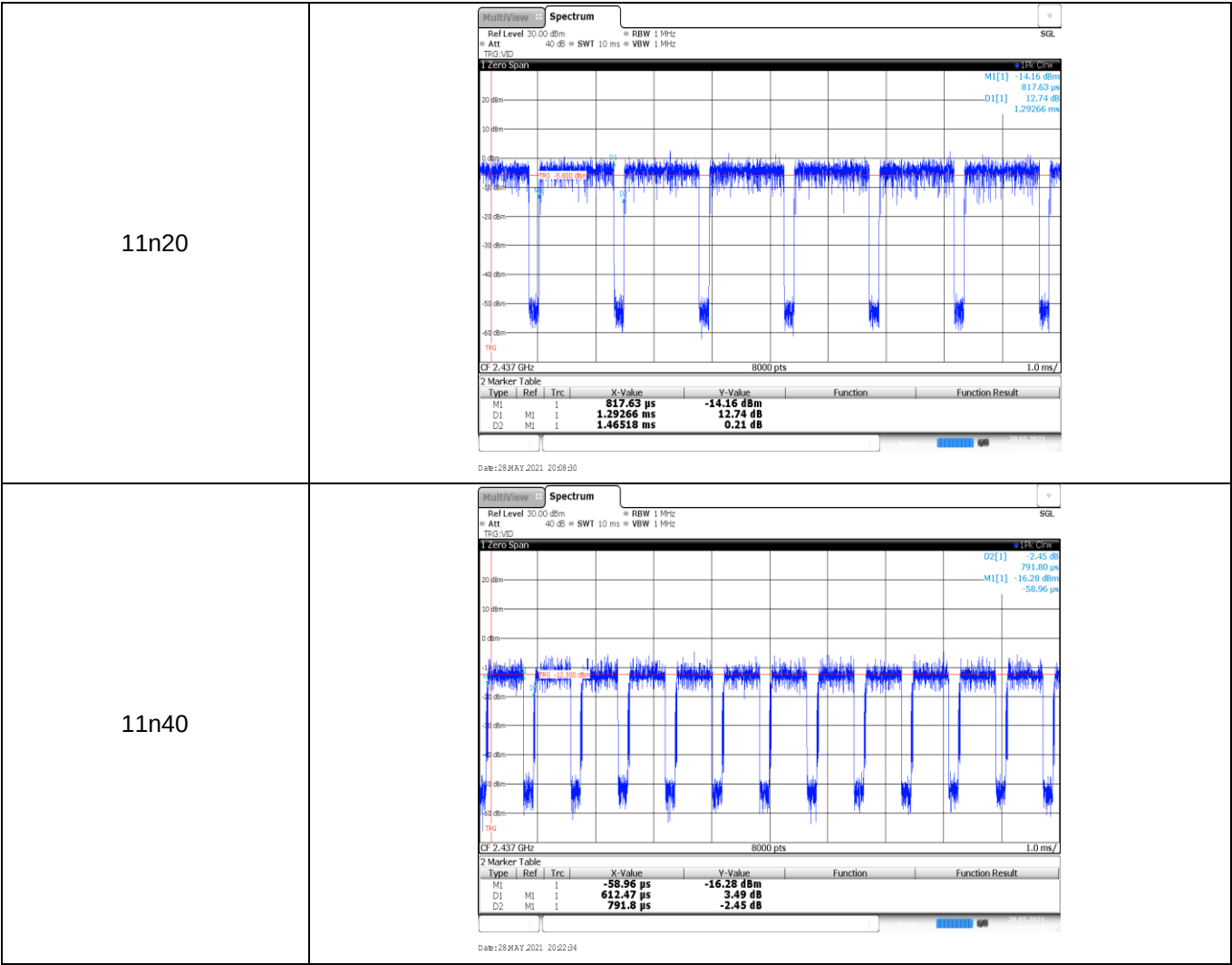
Modulation Type	Test Frequency (MHz)	T _{on time} for single burst (ms)	T _{period} (ms)	Duty cycle	1/T _{on time} (kHz)
11b	2437	8.37	8.53	98.1%	0.1
11g	2437	1.38	1.56	88.5%	0.7
11n20	2437	1.29	1.47	87.8%	0.8
11n40	2437	0.61	0.79	77.2%	1.6

11b



11g



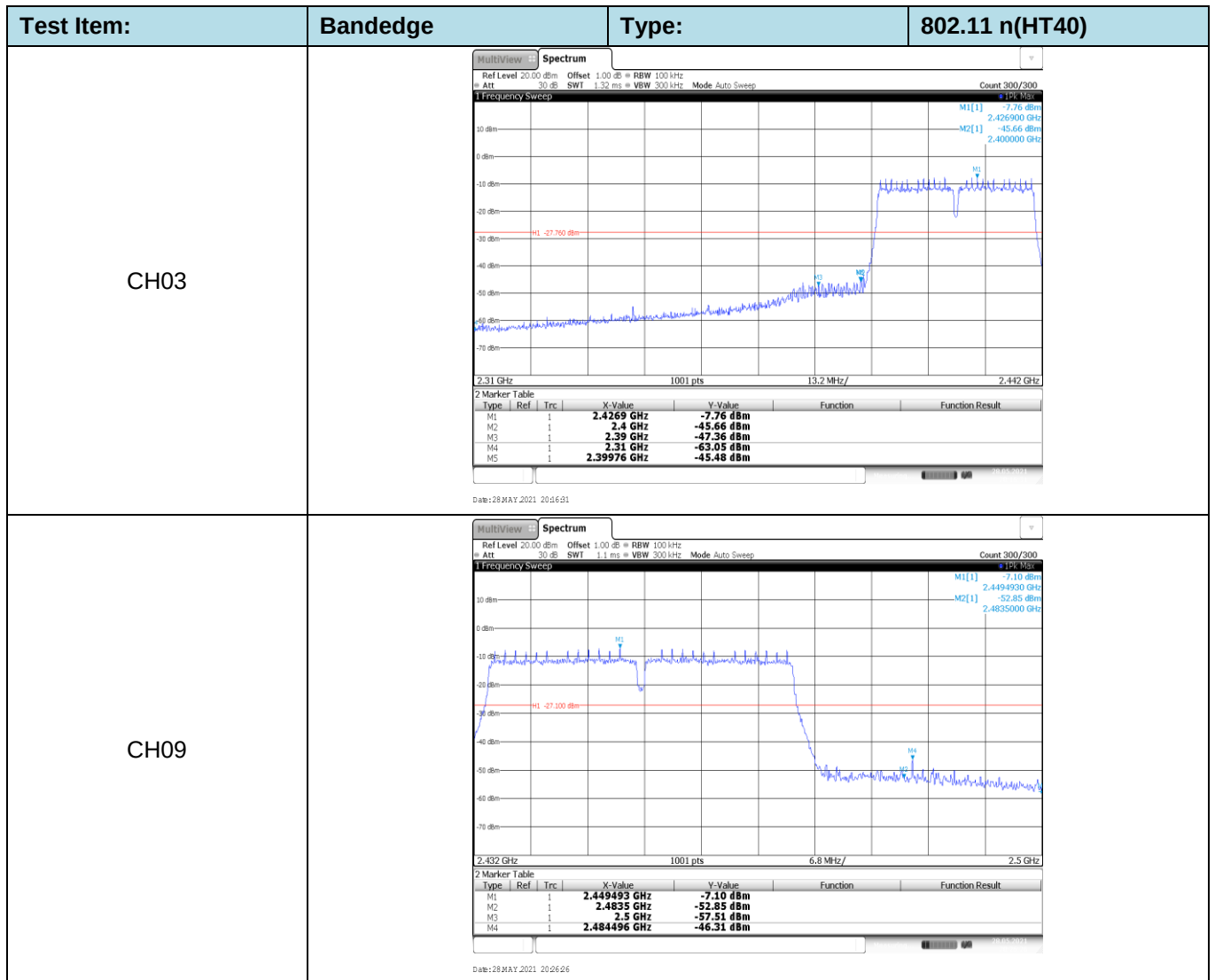


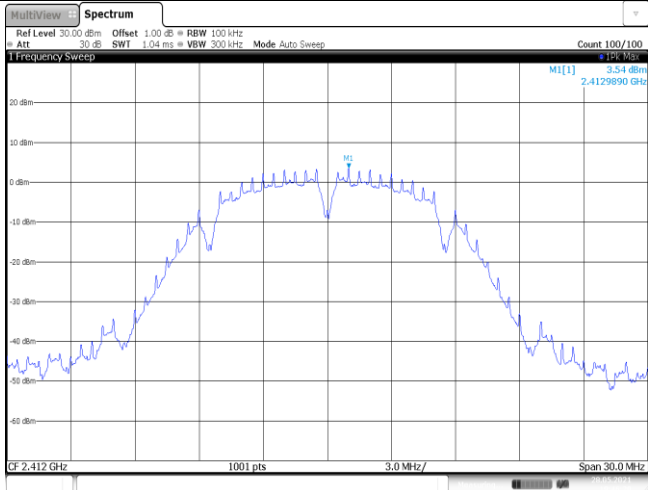
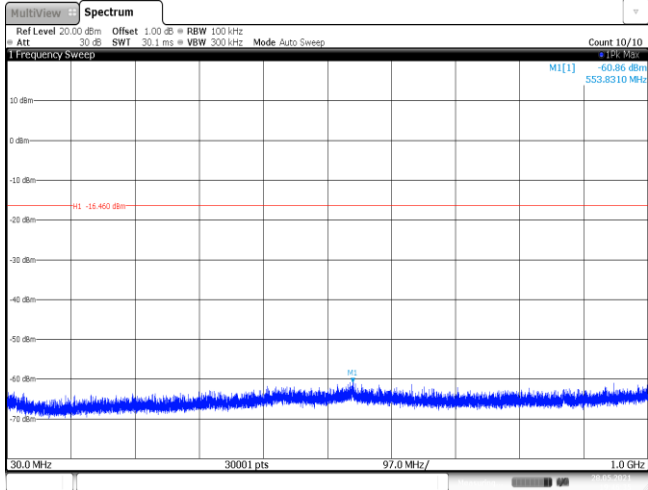
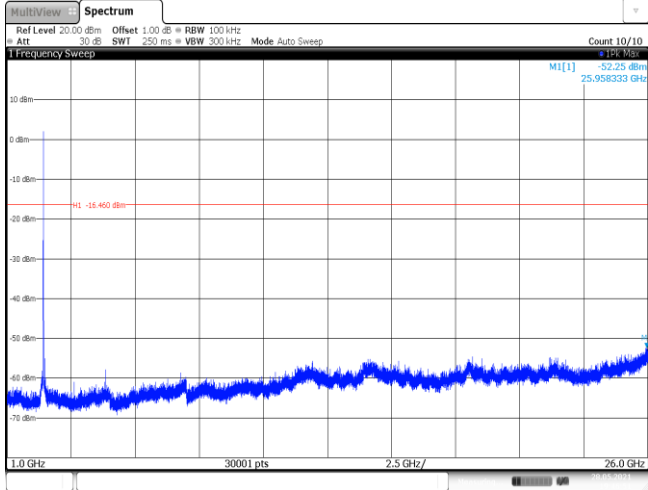
Appendix F: Band edge and Spurious Emissions (conducted)

Test Item:	Bandedge	Type:	802.11 b
CH01	</		

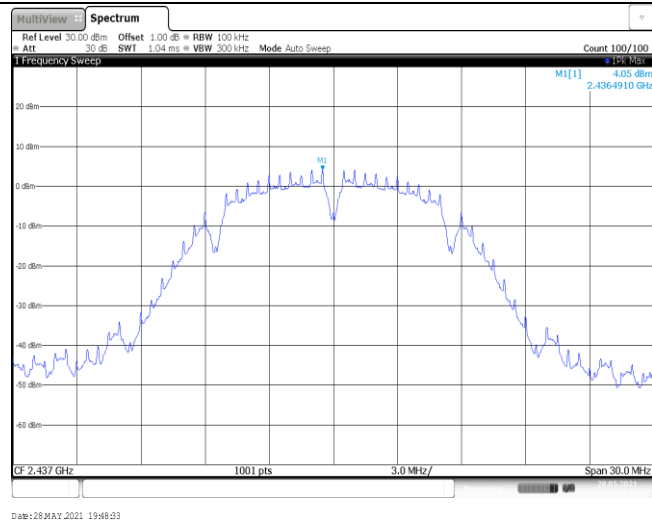
Test Item:	Bandedge	Type:	802.11 g
CH01	<		

Test Item:	Bandedge	Type:	802.11 n(HT20)																																										
CH01	MultViewSpectrum Ref Level 20.00 dBm Offset 1.00 dB BW 100 kHz Att 30 dB SWI 1.12 ms VBW 300 kHz Mode Auto Sweep Count 300/300 1 Frequency Sweep 2.31 GHz1001 pts11.2 MHz/2.422 GHz M1 -24.150 dBm M1[1] -4.15 dBm 2.416910 GHz M2[1] -47.08 dBm 2.400000 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>2.41691 GHz</td><td>-4.15 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4 GHz</td><td>-47.08 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.39 GHz</td><td>-49.99 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.31 GHz</td><td>-62.35 dBm</td><td></td><td></td></tr><tr><td>M5</td><td>1</td><td></td><td>2.398592 GHz</td><td>-47.24 dBm</td><td></td><td></td></tr></table> Date: 28 MAY 2021 20:05:53			Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		2.41691 GHz	-4.15 dBm			M2	1		2.4 GHz	-47.08 dBm			M3	1		2.39 GHz	-49.99 dBm			M4	1		2.31 GHz	-62.35 dBm			M5	1		2.398592 GHz	-47.24 dBm		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																							
M1	1		2.41691 GHz	-4.15 dBm																																									
M2	1		2.4 GHz	-47.08 dBm																																									
M3	1		2.39 GHz	-49.99 dBm																																									
M4	1		2.31 GHz	-62.35 dBm																																									
M5	1		2.398592 GHz	-47.24 dBm																																									
CH11	MultViewSpectrum Ref Level 20.00 dBm Offset 1.00 dB BW 100 kHz Att 30 dB SWI 1.03 ms VBW 300 kHz Mode Auto Sweep Count 300/300 1 Frequency Sweep 2.452 GHz1001 pts4.8 MHz/2.5 GHz M1 -22.850 dBm M1[1] -2.85 dBm 2.4569630 GHz M2[1] -48.47 dBm 2.4835000 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>-2.85 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4835 GHz</td><td>-48.47 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.5 GHz</td><td>-54.84 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.485744 GHz</td><td>-45.80 dBm</td><td></td><td></td></tr></table> Date: 28 MAY 2021 20:11:21			Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		2.456963 GHz	-2.85 dBm			M2	1		2.4835 GHz	-48.47 dBm			M3	1		2.5 GHz	-54.84 dBm			M4	1		2.485744 GHz	-45.80 dBm									
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																							
M1	1		2.456963 GHz	-2.85 dBm																																									
M2	1		2.4835 GHz	-48.47 dBm																																									
M3	1		2.5 GHz	-54.84 dBm																																									
M4	1		2.485744 GHz	-45.80 dBm																																									

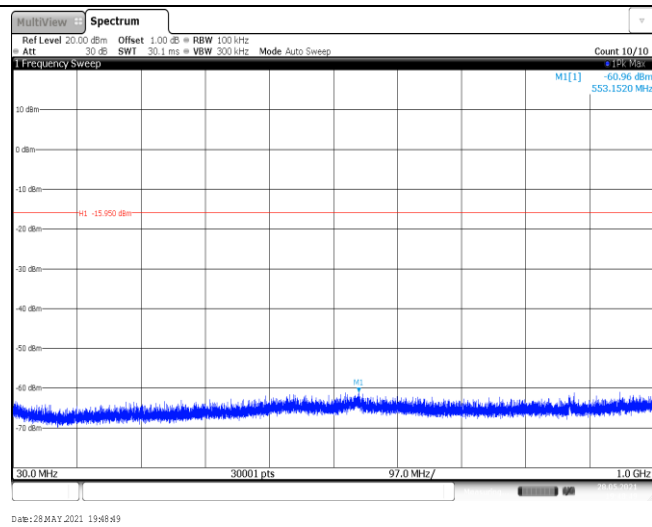


Test Item:	SE	Type:	802.11b
CH01 Reference level		 Date: 28.MAY.2021 19:46:20	
CH01 30MHz~1000MHz		 Date: 28.MAY.2021 19:46:25	
CH01 1GHz~26GHz		 Date: 28.MAY.2021 19:46:51	

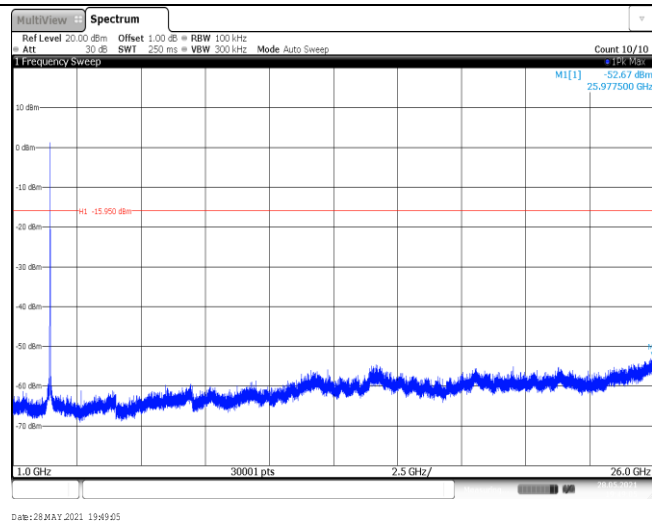
CH06
Reference level

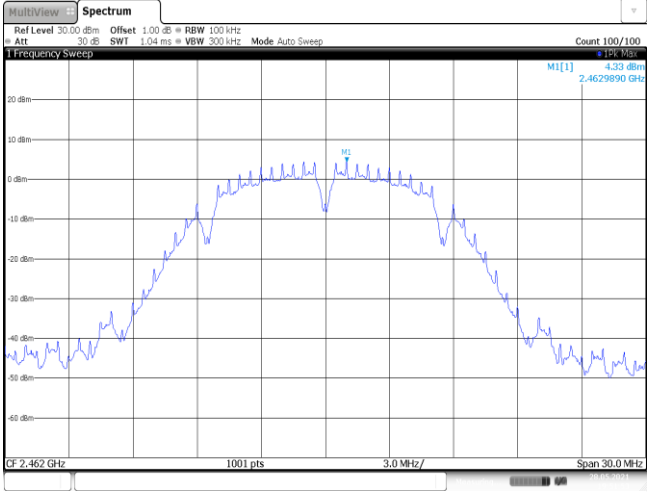
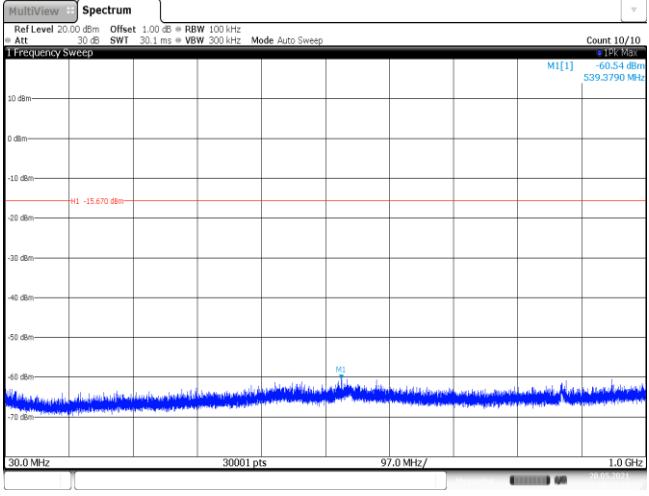
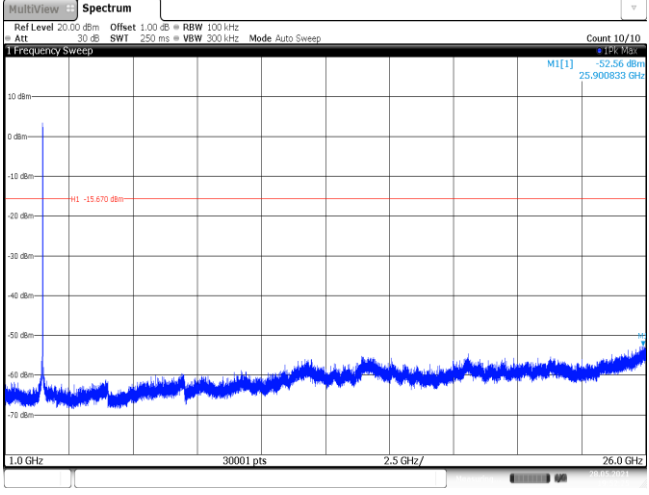


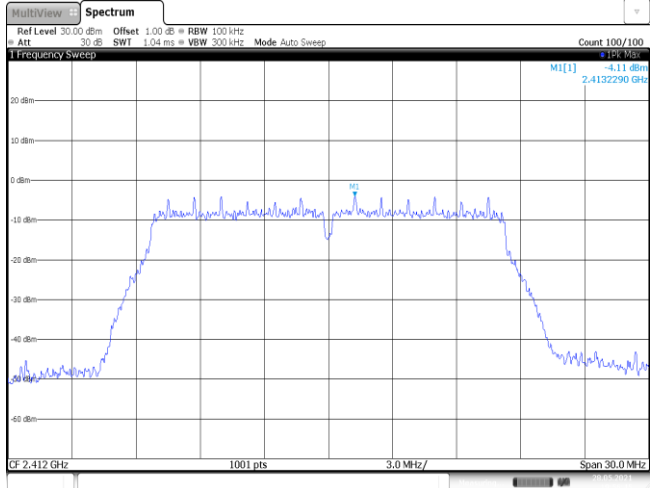
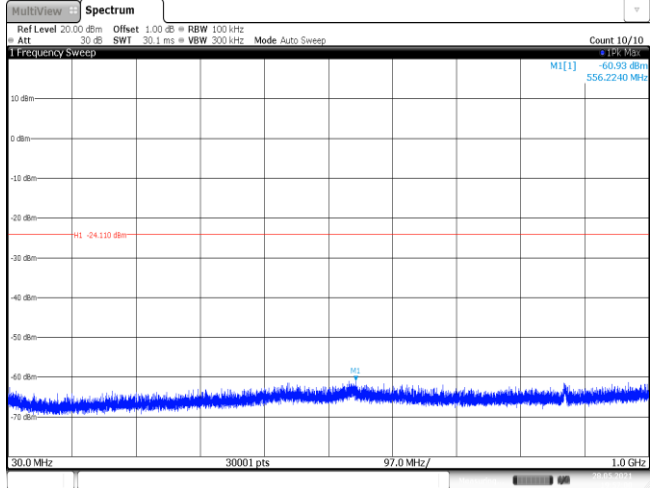
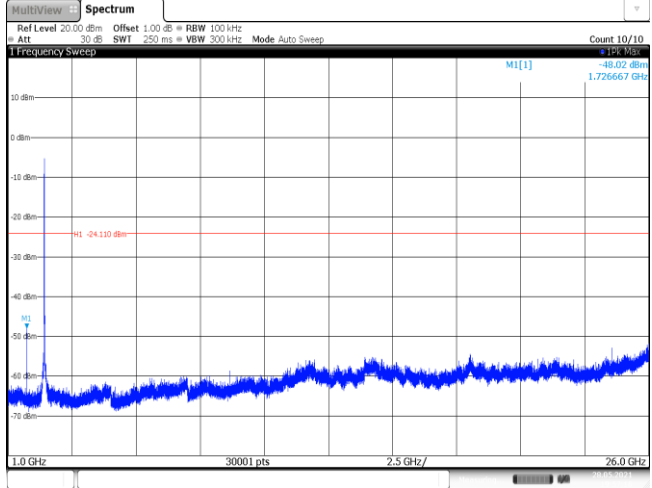
CH06
30MHz~1000MHz



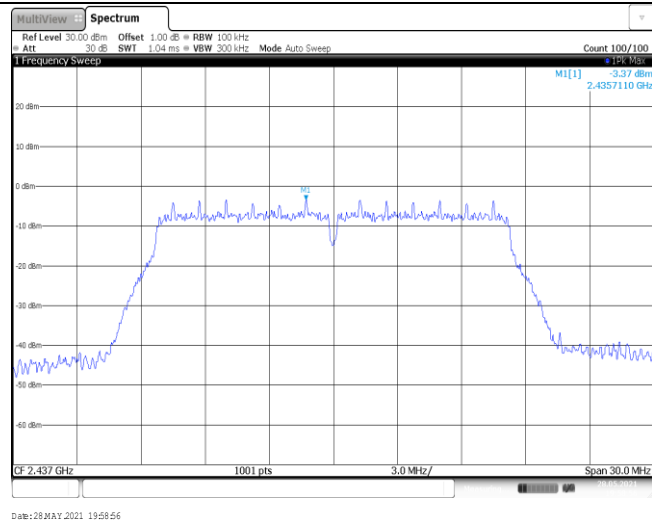
CH06
1GHz~26GHz



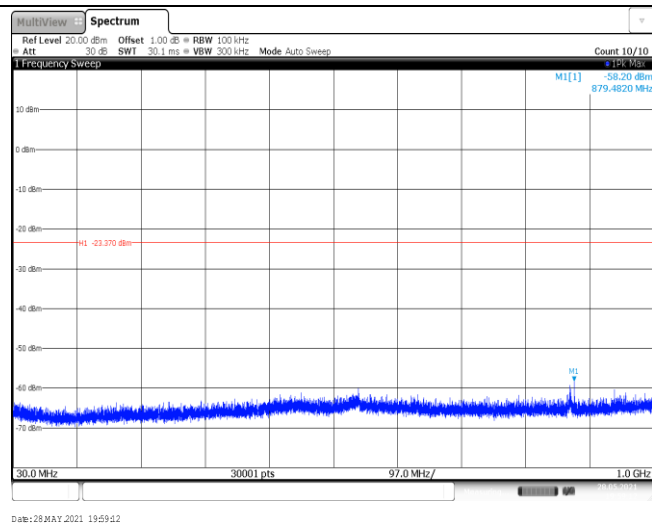
CH11 Reference level	 Ref Level 30.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWF 1.04 ms VBW 300 kHz Mode Auto Sweep Count 100/100 MI[1] 4.33 dBm 2.4629890 GHz CF 2.462 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 28 MAY 2021 19:51:53
CH11 30MHz~1000MHz	 Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWF 30.1 ms VBW 300 kHz Mode Auto Sweep Count 10/10 MI[1] -60.54 dBm 539.3790 MHz 30.0 MHz 30001 pts 97.0 MHz/ 1.0 GHz Date: 28 MAY 2021 19:52:49
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 MI[1] -52.56 dBm 25.900833 GHz 1.0 GHz 30001 pts 2.5 GHz/ 26.0 GHz Date: 28 MAY 2021 19:52:25

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 M1[1] 2.4122290 GHz -4.11 dBm 2.4122290 GHz 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm 2.402 GHz 2.412 GHz 2.422 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 28.MAY.2021 19:56:44	
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 M1[1] 556.2240 MHz -60.93 dBm 556.2240 MHz 20 dBm 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: 28.MAY.2021 19:57:00	
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 M1[1] 1.726667 GHz -46.02 dBm 1.726667 GHz 20 dBm 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: 28.MAY.2021 19:57:16	

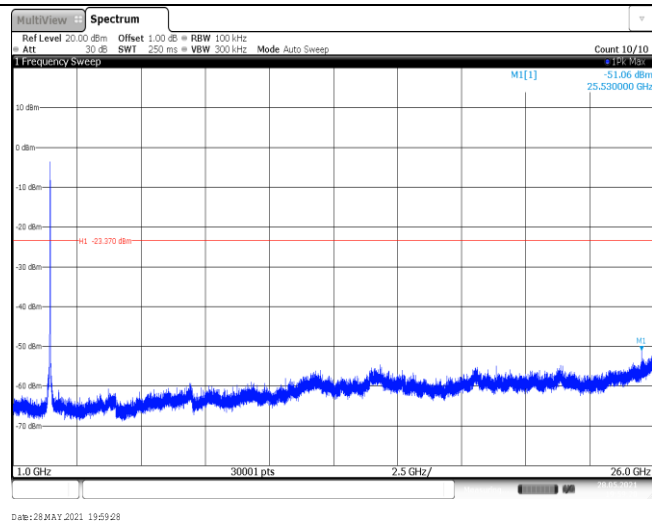
CH06
Reference level



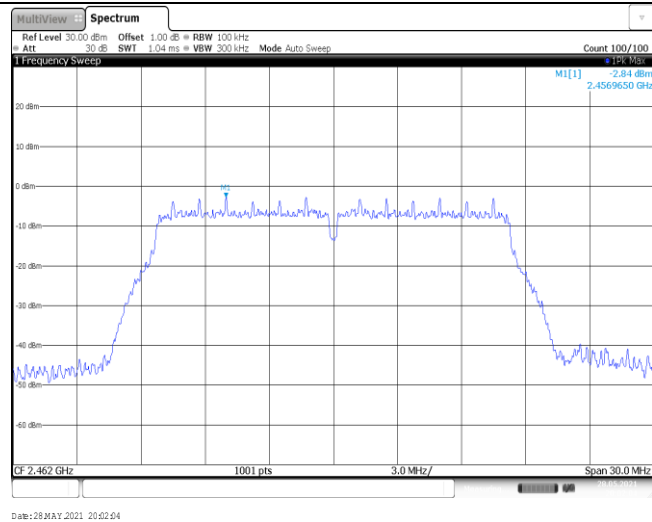
CH06
30MHz~1000MHz



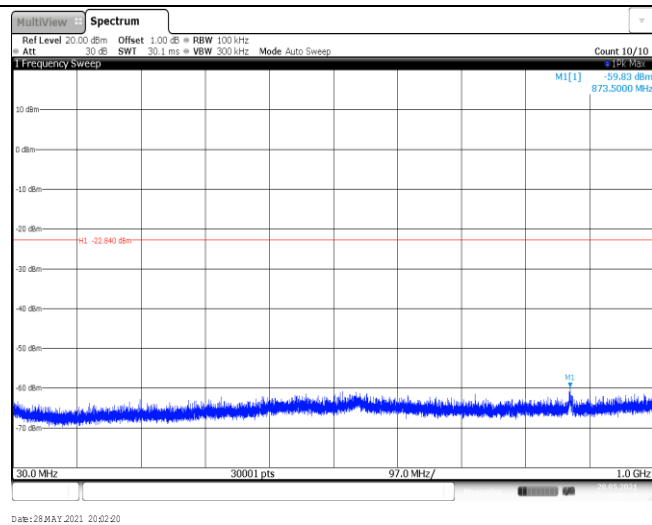
CH06
1GHz~26GHz



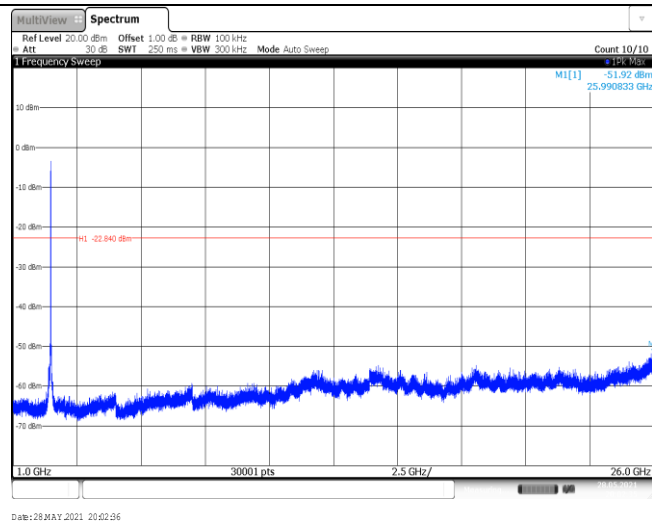
CH11
Reference level

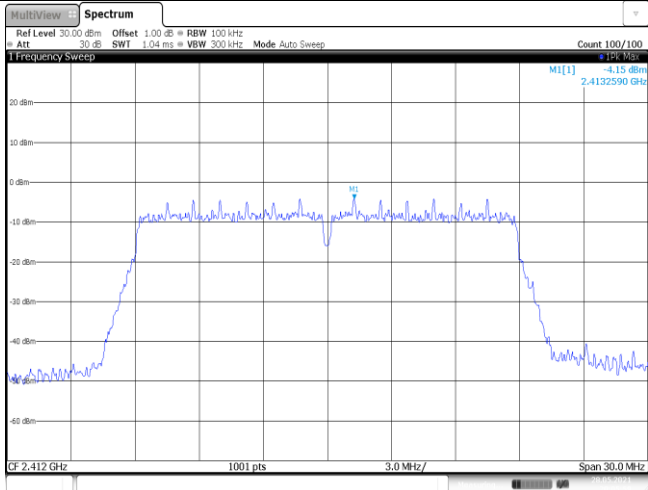
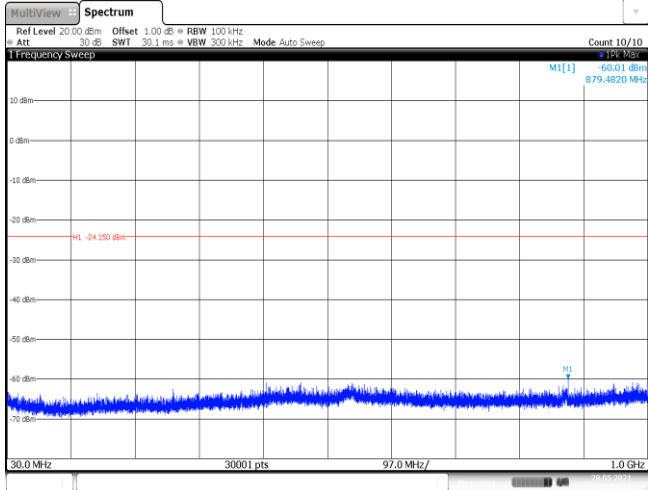
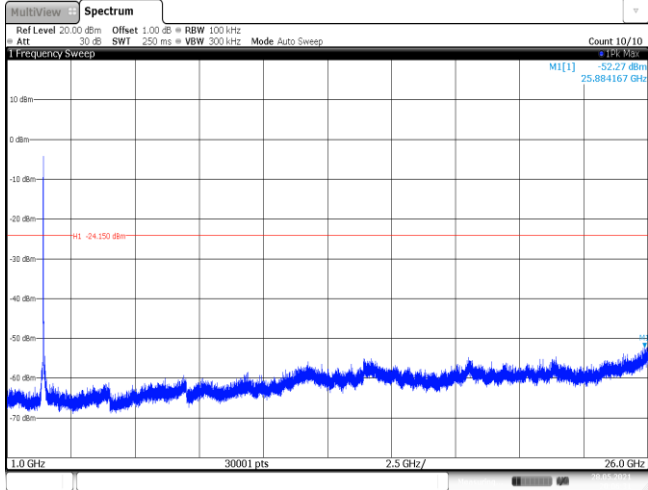


CH11
30MHz~1000MHz

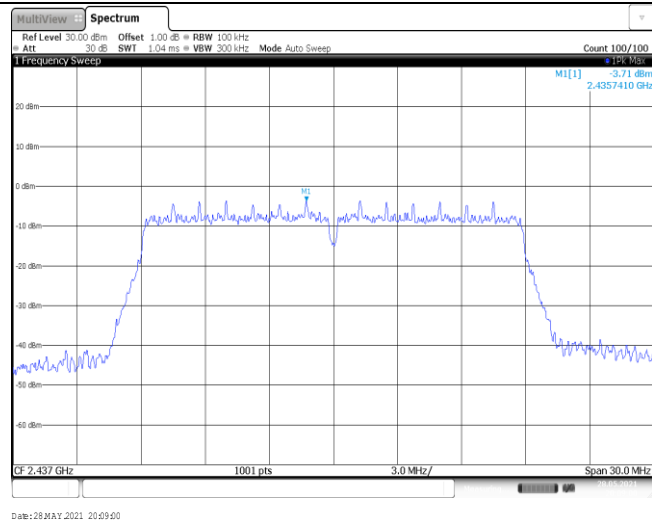


CH11
1GHz~26GHz

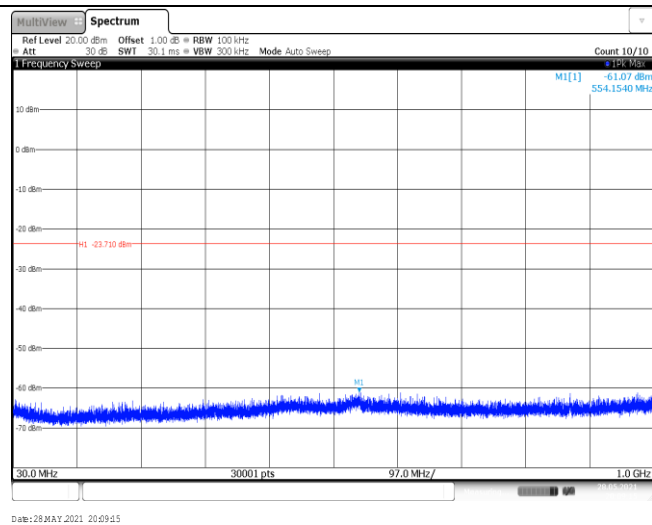


Test Item:	SE	Type:	802.11n(HT20)
CH01 Reference level		 Ref Level 30.00 dBm Offset 1.00 dB BW 100 kHz Att 30 dB SWI 1.04 ms VBW 300 kHz Mode Auto Sweep Count 100/100 M1[1] -4.15 dBm 2.4122590 GHz 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm 2.402 GHz 2.422 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 28.MAY.2021 20:05:59	
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 M1[1] -60.01 dBm 979.4820 MHz 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm 30.0 MHz 1000.0 MHz 30001 pts 97.0 MHz/ Span 1.0 GHz Date: 28.MAY.2021 20:06:15	
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 M1[1] -52.27 dBm 25.884167 GHz 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm 1.0 GHz 26.0 GHz 30001 pts 2.5 GHz/ Span 26.0 GHz Date: 28.MAY.2021 20:06:21	

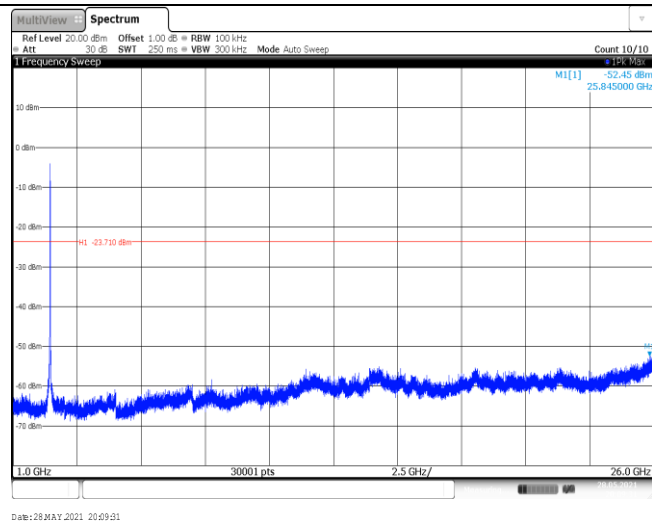
CH06
Reference level



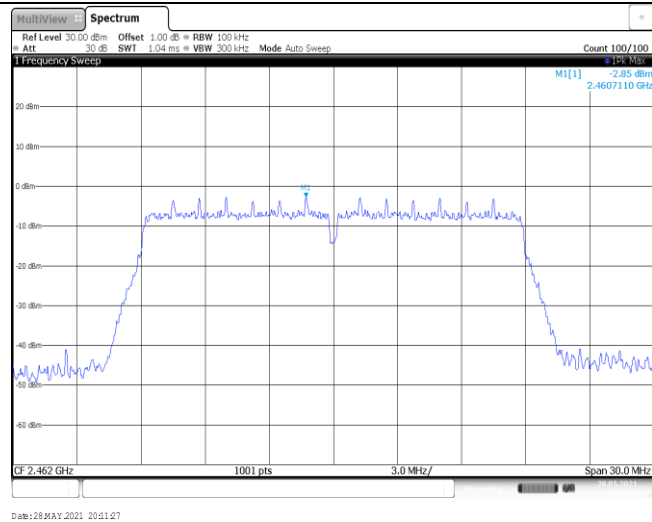
CH06
30MHz~1000MHz



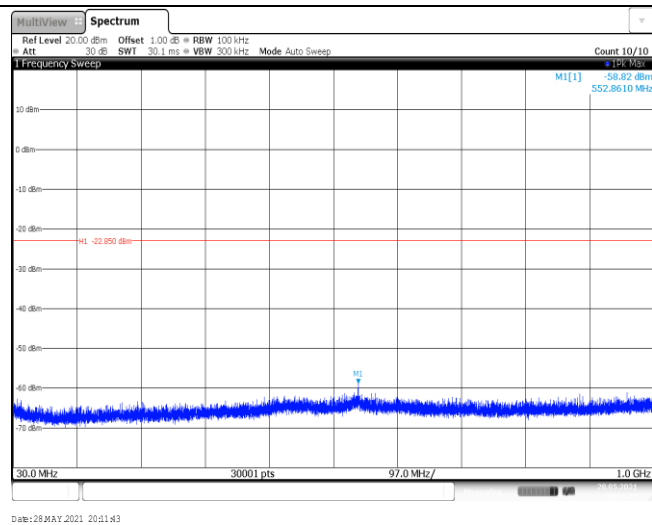
CH06
1GHz~26GHz



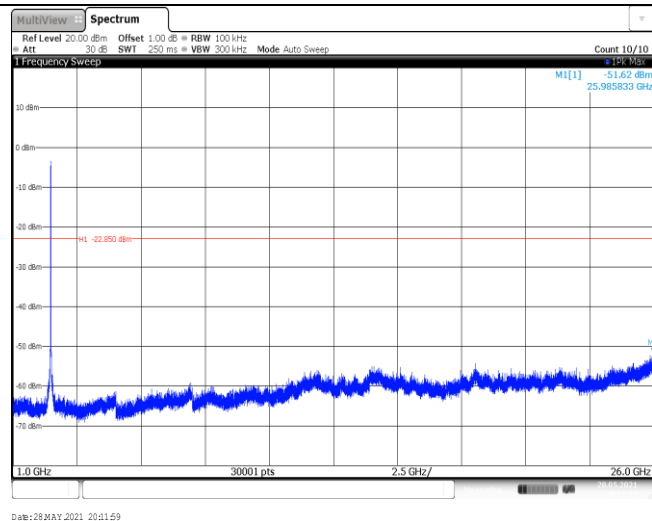
CH11
Reference level

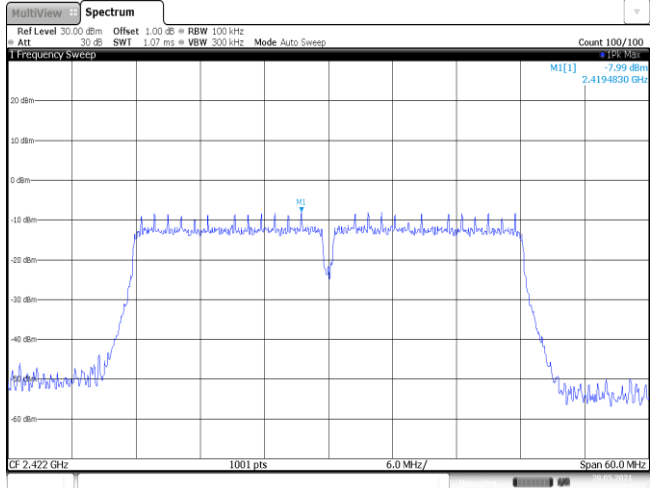
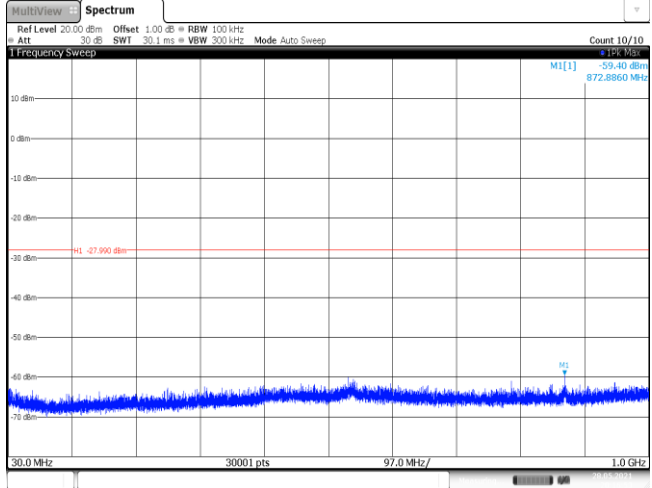
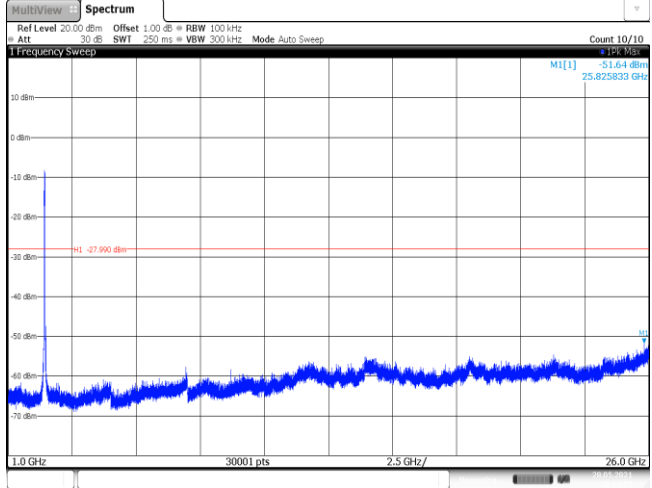


CH11
30MHz~1000MHz

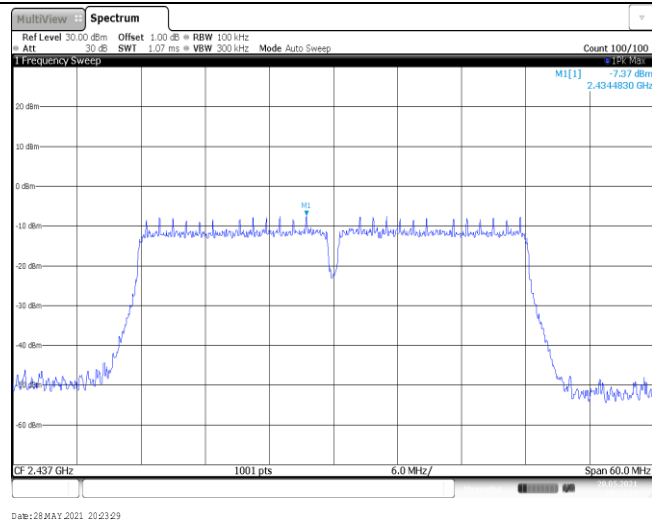


CH11
1GHz~26GHz

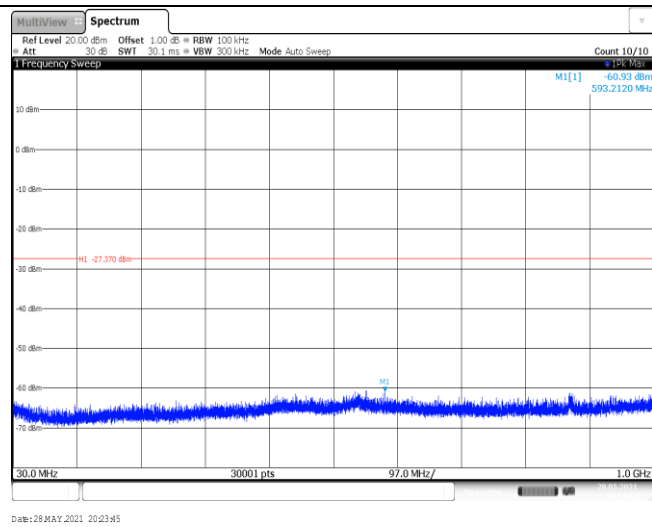


Test Item:	SE	Type:	802.11n(HT40)
CH03 Reference level		 Ref Level 30.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWI 1.07 ms VSW 300 kHz Mode Auto Sweep Count 100/100 M1[1] -7.99 dBm 2.4194830 GHz CF 2.422 GHz 1001 pts 6.0 MHz/ Span 60.0 MHz Date: 28.MAY.2021 20:16:38	
CH03 30MHz~1000MHz		 Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWI 30.1 ms VSW 300 kHz Mode Auto Sweep Count 10/10 M1[1] -59.40 dBm 972.8860 MHz 30.0 MHz 30001 pts 97.0 MHz/ 1.0 GHz Date: 28.MAY.2021 20:16:53	
CH03 1GHz~26GHz		 Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWI 250 ms VSW 300 kHz Mode Auto Sweep Count 10/10 M1[1] -51.64 dBm 25.625633 GHz 1.0 GHz 30001 pts 2.5 GHz/ 26.0 GHz Date: 28.MAY.2021 20:17:49	

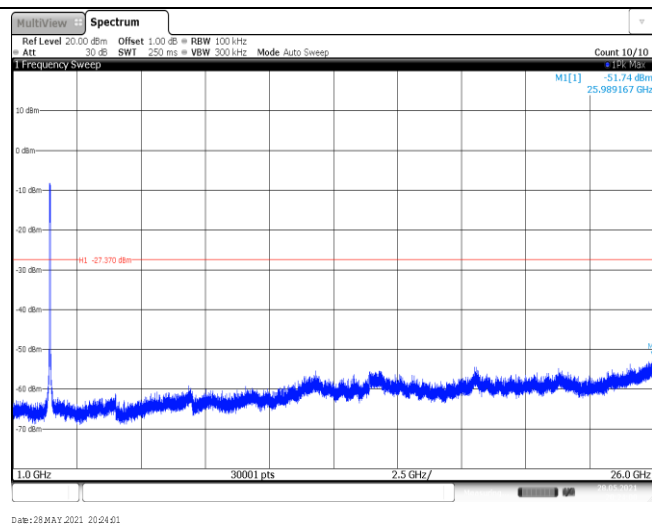
CH06
Reference level

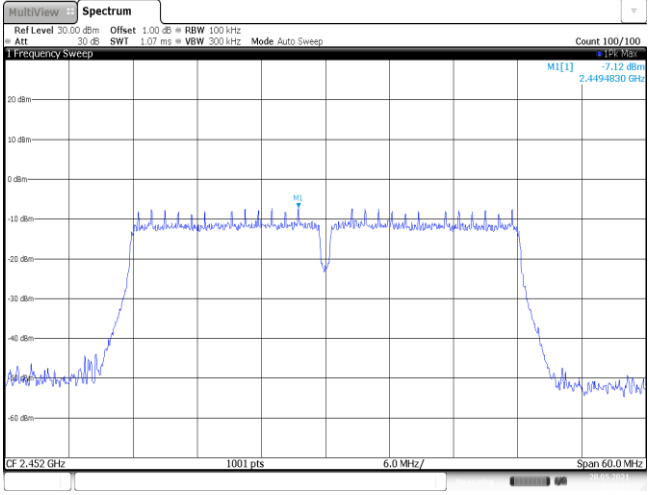
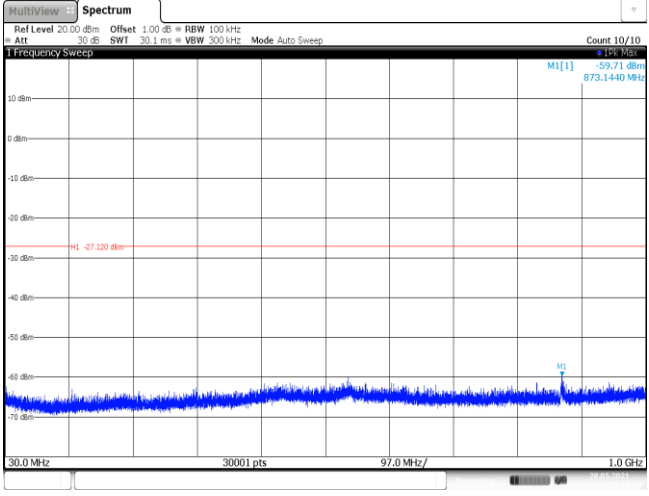
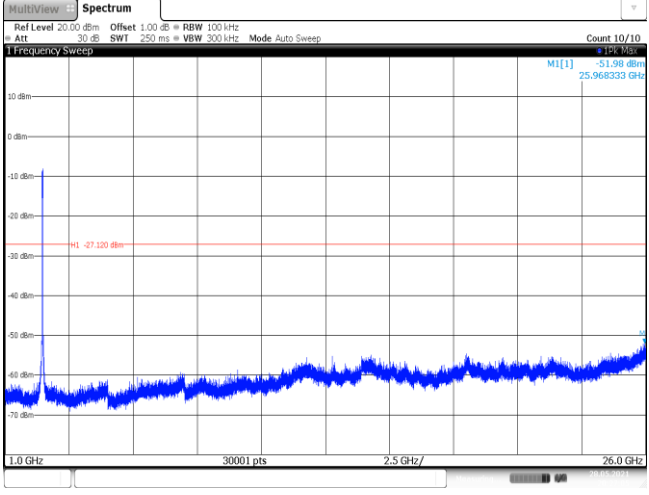


CH06
30MHz~1000MHz



CH06
1GHz~26GHz



CH09 Reference level	
CH09 30MHz~1000MHz	
CH09 1GHz~26GHz	

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