

APPENDIX REPORT

Project No.	SHT2208209602EW	Radio Specification	WIFI 5G
Test sample No.	YPHT22082096001	Model No.	Boom Bike
Start test date	2022-09-21	Finish date	2022-09-22
Temperature	25.9℃	Humidity	31%
Test Engineer	Xiaoxiao Li	Auditor	Xiaodong Zheo

Appendix clause	Test item	Result
A	Maximum Conducted Output Power	PASS
B	Maximum Power Spectral Density	PASS
C	26 dB Bandwidth	PASS
D	99% Occupy bandwidth	PASS
E	6 dB Bandwidth	PASS
F	Frequency stability	PASS

Appendix A: Maximum Conducted Output Power

Band	Bandwidth (MHz)	Type	Channel	Reading (dBm)	Duty cycle (%)	Duty cycle factor (dB)	Conducted Output Power (dBm)	Limit (dBm)	Result
I	20	802.11n	CH _L	10.48	96.48	0.16	10.64	24.00	Pass
			CH _M	10.81	96.39	0.16	10.97		
			CH _H	11.61	96.39	0.16	11.77		
		802.11a	CH _L	10.35	96.69	0.15	10.50	24.00	Pass
			CH _M	11.10	96.69	0.15	11.25		
			CH _H	11.81	96.61	0.15	11.96		
II	20	802.11n	CH _L	12.32	96.48	0.16	12.48	24.00	Pass
			CH _M	12.50	96.48	0.16	12.66		
			CH _H	12.15	96.39	0.16	12.31		
		802.11a	CH _L	12.09	96.61	0.15	12.24	24.00	Pass
			CH _M	12.53	96.61	0.15	12.68		
			CH _H	12.09	96.69	0.15	12.24		
III	20	802.11n	CH _L	10.42	96.39	0.16	10.58	24.00	Pass
			CH _M	9.24	96.48	0.16	9.40		
			CH _H	9.94	96.39	0.16	10.10		
		802.11a	CH _L	11.17	96.61	0.15	11.32	24.00	Pass
			CH _M	10.00	96.61	0.15	10.15		
			CH _H	10.84	96.69	0.15	10.99		

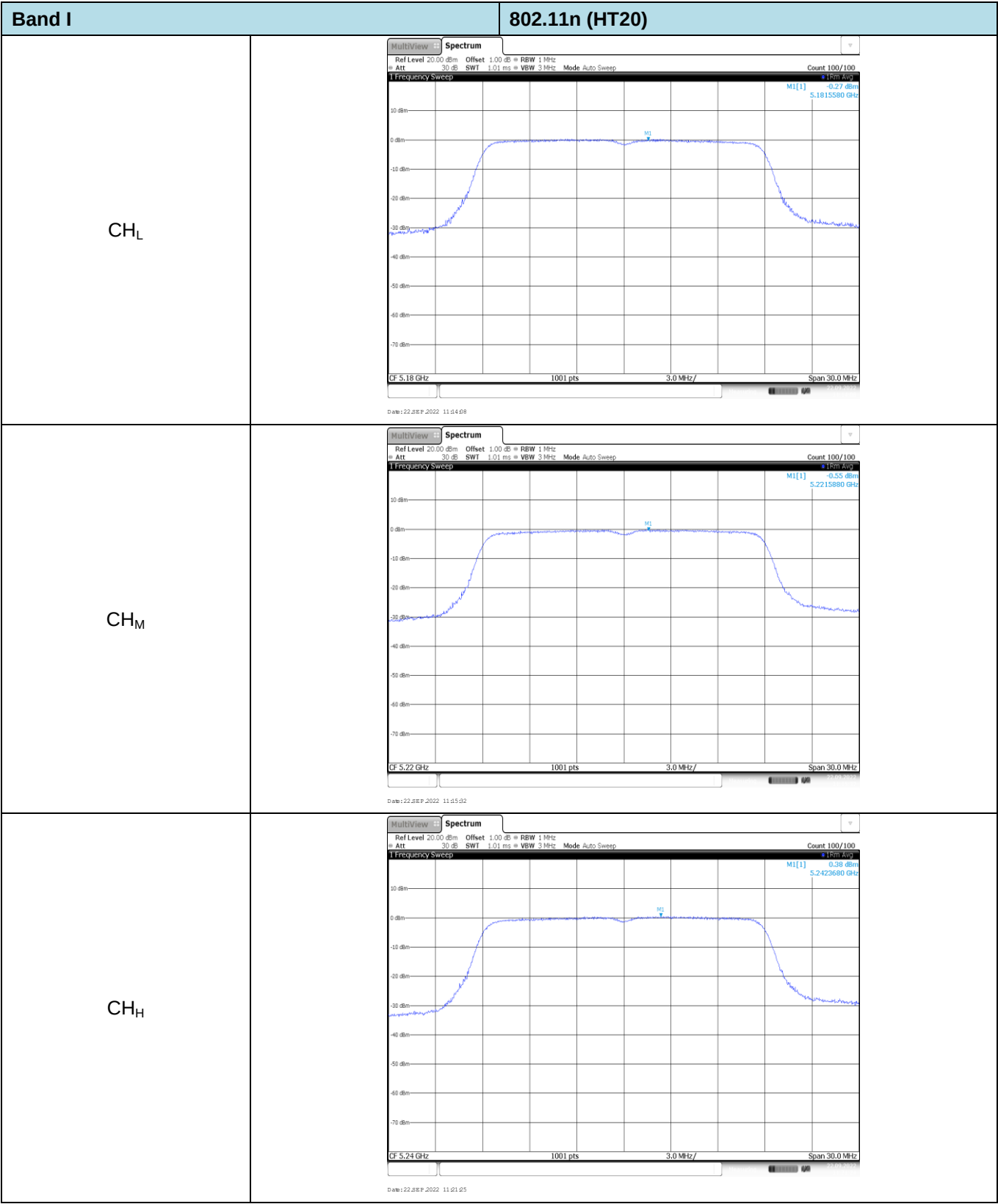
Band	Bandwidth (MHz)	Type	Channel	Reading (dBm)	Duty cycle (%)	Duty cycle factor (dB)	Conducted Output Power (dBm)	Limit (dBm)	Result
IV	20	802.11n	CH _L	11.36	96.39	0.16	11.52	30.00	Pass
			CH _M	12.43	96.48	0.16	12.59		
			CH _H	11.69	96.39	0.16	11.85		
		802.11a	CH _L	12.22	96.69	0.15	12.37	30.00	Pass
			CH _M	13.42	96.61	0.15	13.57		
			CH _H	12.44	96.69	0.15	12.59		

NOTE: duty cycle factor =10LOG(1/ duty cycle)

Appendix B: Maximum Power Spectral Density

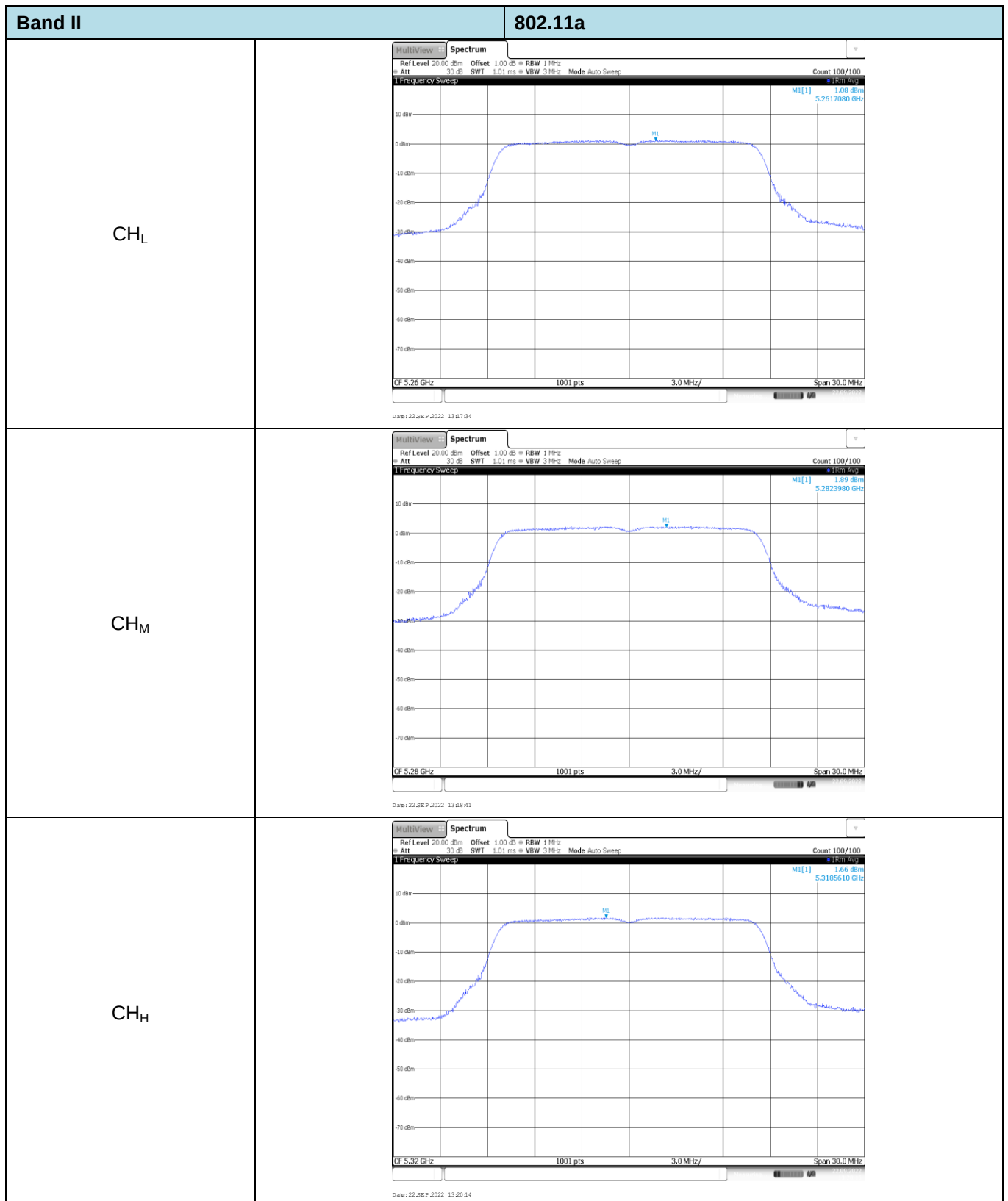
Band	Bandwidth (MHz)	Type	Channel	Reading (dBm)	Duty cycle (%)	Duty cycle factor (dB)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)	Result
I	20	802.11n	CH _L	-0.27	96.48	0.16	-0.11	11.00	Pass
			CH _M	-0.55	96.39	0.16	-0.39		
			CH _H	0.38	96.39	0.16	0.54		
		802.11a	CH _L	-0.01	96.69	0.15	0.14	11.00	Pass
			CH _M	-0.58	96.69	0.15	-0.43		
			CH _H	0.12	96.61	0.15	0.27		
II	20	802.11n	CH _L	0.98	96.48	0.16	1.14	11.00	Pass
			CH _M	1.42	96.48	0.16	1.58		
			CH _H	1.58	96.39	0.16	1.74		
		802.11a	CH _L	1.08	96.61	0.15	1.23	11.00	Pass
			CH _M	1.89	96.61	0.15	2.04		
			CH _H	1.66	96.69	0.15	1.81		
III	20	802.11n	CH _L	-2.18	96.39	0.16	-2.02	11.00	Pass
			CH _M	-2.03	96.48	0.16	-1.87		
			CH _H	-1.34	96.39	0.16	-1.18		
		802.11a	CH _L	0.44	96.61	0.15	0.59	11.00	Pass
			CH _M	-0.32	96.61	0.15	-0.17		
			CH _H	-0.50	96.69	0.15	-0.35		
IV	20	802.11n	CH _L	-2.73	96.39	0.16	-2.57	30.00	Pass
			CH _M	-2.19	96.48	0.16	-2.03		
			CH _H	-3.50	96.39	0.16	-3.34		
		802.11a	CH _L	-2.12	96.69	0.15	-1.97	30.00	Pass
			CH _M	-1.00	96.61	0.15	-0.85		
			CH _H	-2.40	96.69	0.15	-2.25		

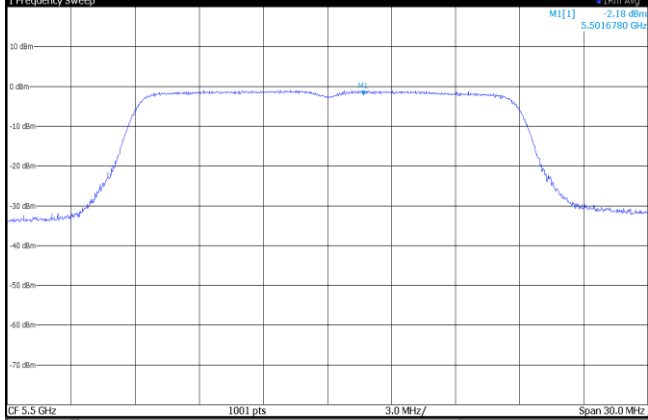
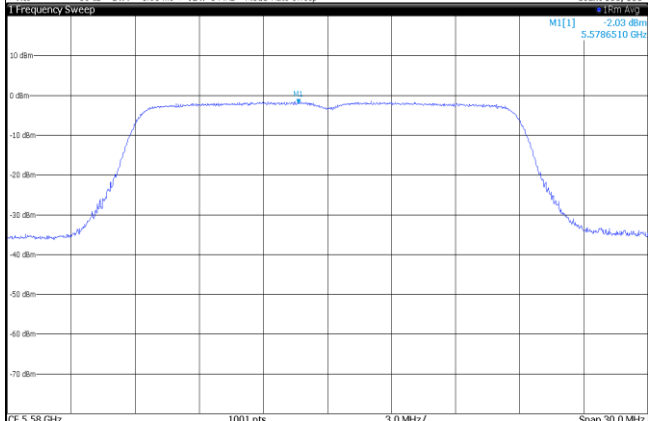
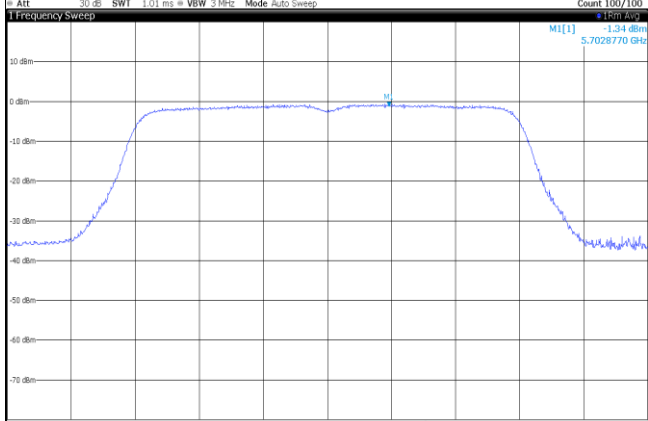
Test plot as follows:

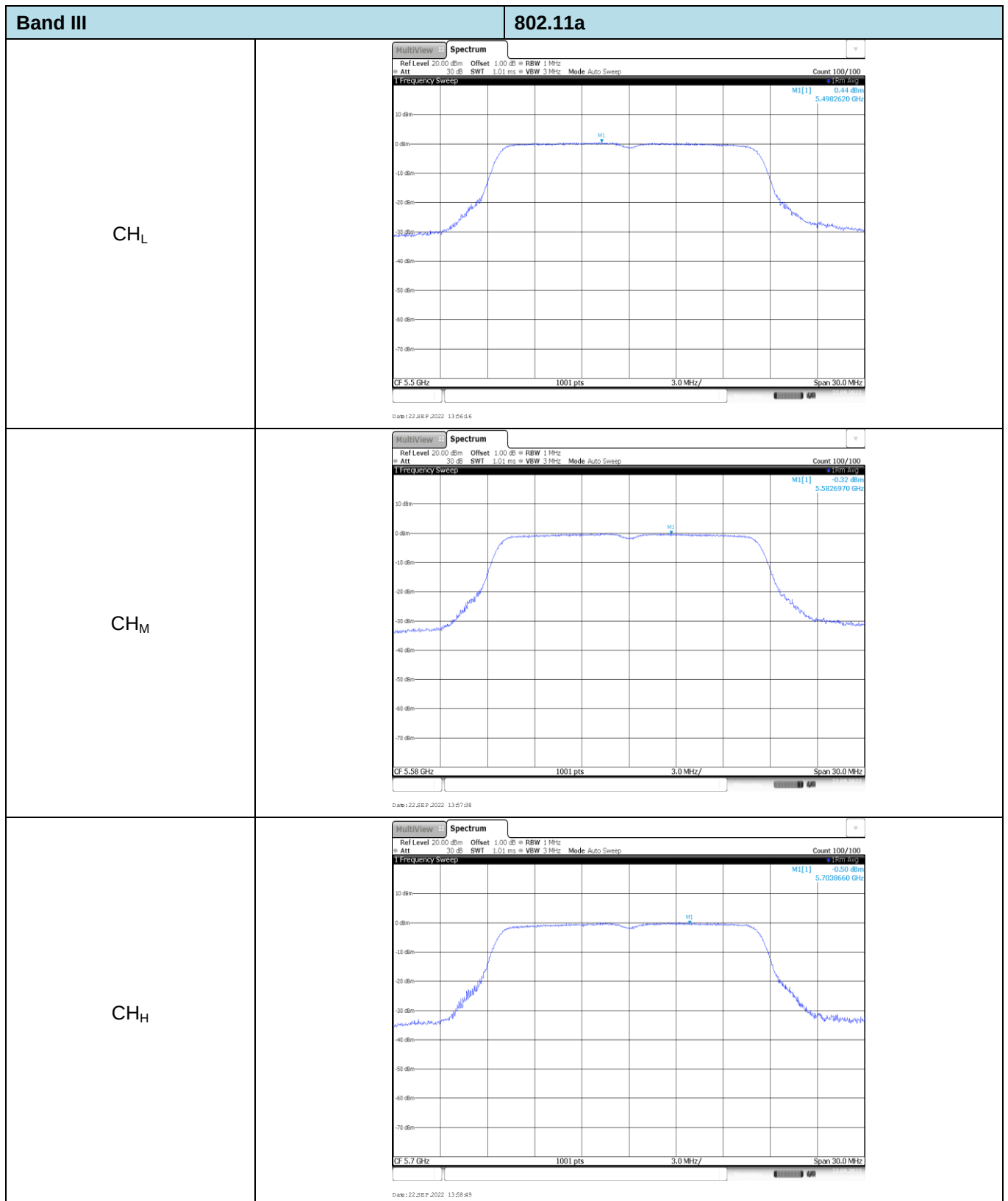


Band I		802.11a
CH _L	MultiView Spectrum 17 Ref Level 20.00 dBm Offset 1.00 dB RBW 1 MHz Att 30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep 1 From Avg M1[1] -0.01 dBm 5.1782620 GHz 20 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 5.18 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.SEP.2022 11:07:38	
CH _M	MultiView Spectrum 17 Ref Level 20.00 dBm Offset 1.00 dB RBW 1 MHz Att 30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep 1 From Avg M1[1] -0.58 dBm 5.2183520 GHz 20 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 5.22 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.SEP.2022 11:08:50	
CH _H	MultiView Spectrum 17 Ref Level 20.00 dBm Offset 1.00 dB RBW 1 MHz Att 30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep 1 From Avg M1[1] 0.12 dBm 5.2418280 GHz 20 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 5.24 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.SEP.2022 11:09:07	

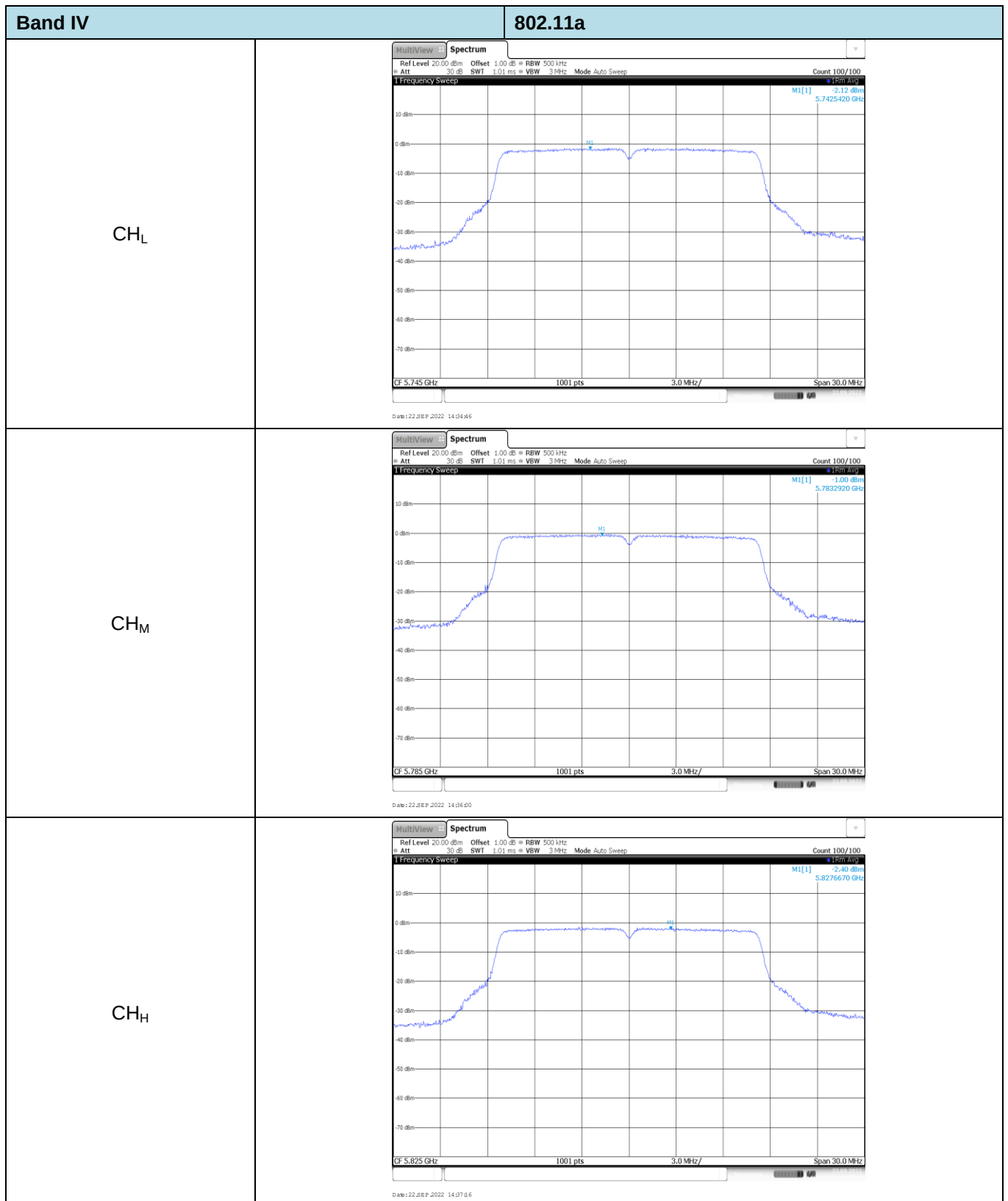
Band II		802.11n (HT20)
CH _L	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 1 MHz Att 30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 MI[1] 0.98 dBm 5.2621580 GHz Frequency Sweep 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 5.26 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.SEP.2022 13:25:52	
CH _M	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 1 MHz Att 30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 MI[1] 1.42 dBm 5.2833870 GHz Frequency Sweep 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 5.28 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.SEP.2022 13:27:02	
CH _H	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 1 MHz Att 30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 MI[1] 1.58 dBm 5.3232670 GHz Frequency Sweep 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 5.32 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.SEP.2022 13:29:02	



Band III		802.11n (HT20)
CH _L	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB BW 1 MHz Att 30 dB SW 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] -2.18 dBm 5.5016780 GHz Frequency Sweep  CF 5.5 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22 SEP 2022 14:13:52	
CH _M	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB BW 1 MHz Att 30 dB SW 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] -2.03 dBm 5.5786510 GHz Frequency Sweep  CF 5.58 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22 SEP 2022 14:14:42	
CH _H	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB BW 1 MHz Att 30 dB SW 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] -1.51 dBm 5.7028770 GHz Frequency Sweep  CF 5.7 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22 SEP 2022 14:16:04	



Band IV		802.11n (HT20)
CH _L	Ref Level 20.00 dBm Offset 1.00 dB RBW 500 kHz Att 30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 MI[1] -2.73 dBm 5.7462590 GHz Span 30.0 MHz 1001 pts 3.0 MHz/	
CH _M	Ref Level 20.00 dBm Offset 1.00 dB RBW 500 kHz Att 30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 MI[1] -2.19 dBm 5.7838310 GHz Span 30.0 MHz 1001 pts 3.0 MHz/	
CH _H	Ref Level 20.00 dBm Offset 1.00 dB RBW 500 kHz Att 30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 MI[1] -2.50 dBm 5.8209240 GHz Span 30.0 MHz 1001 pts 3.0 MHz/	

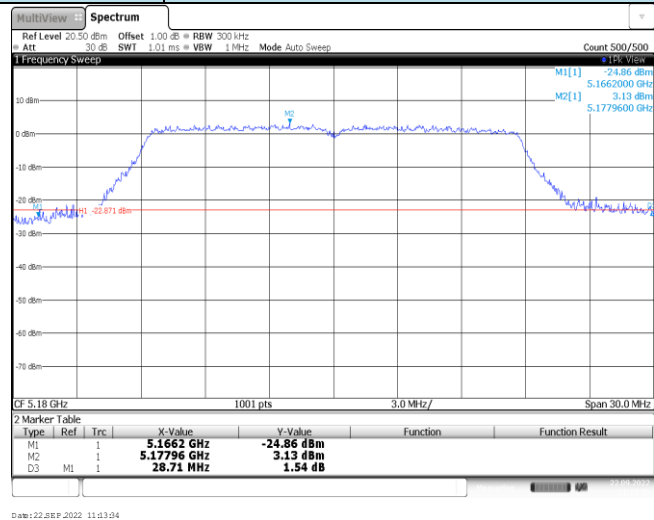
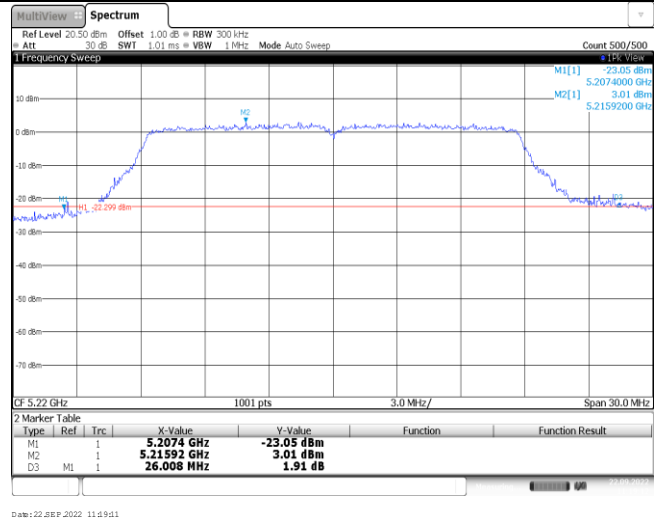
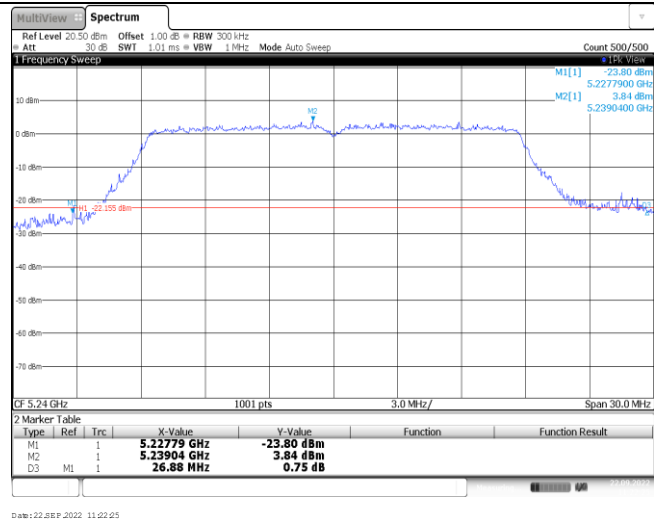


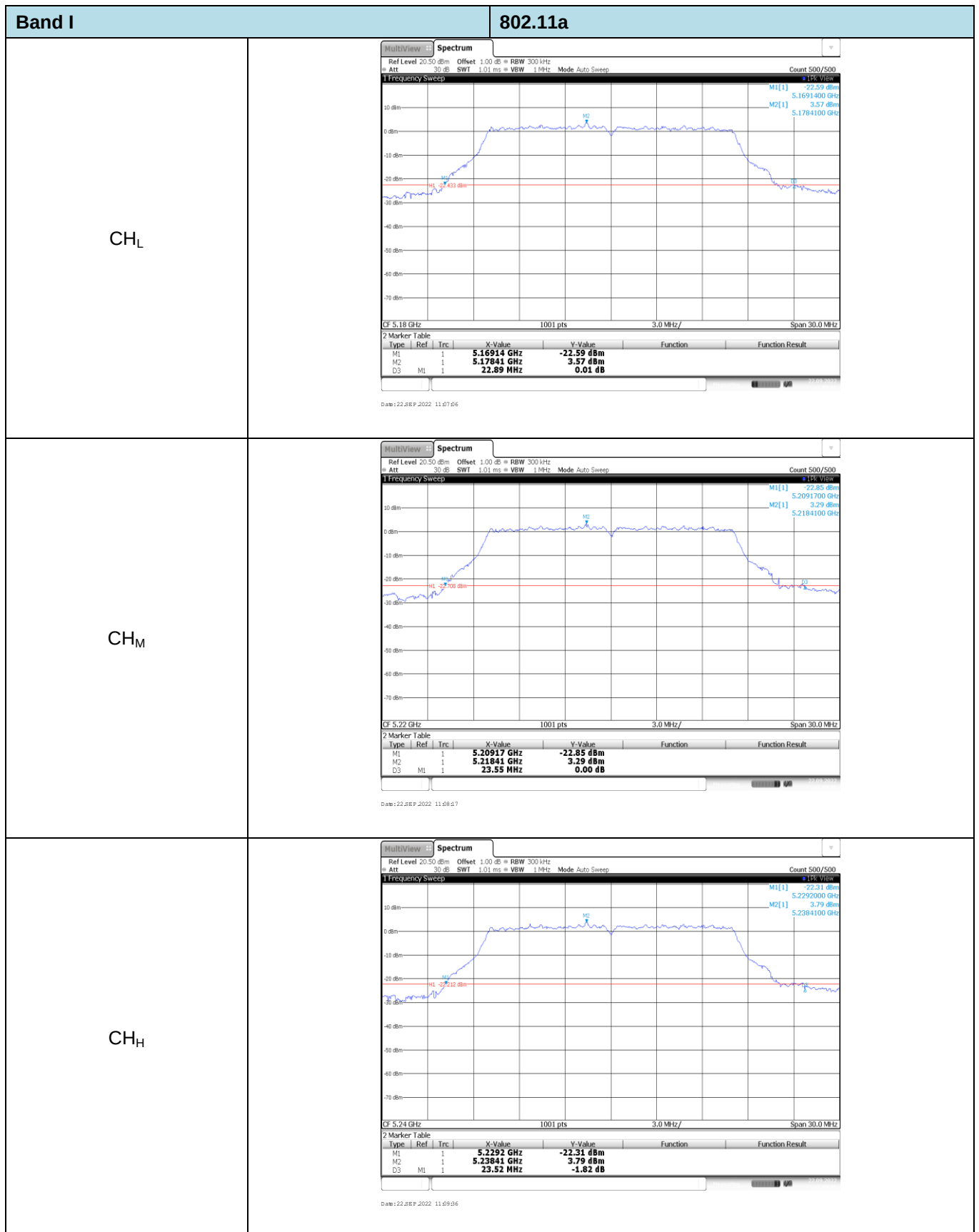
Appendix C: 26dB bandwidth

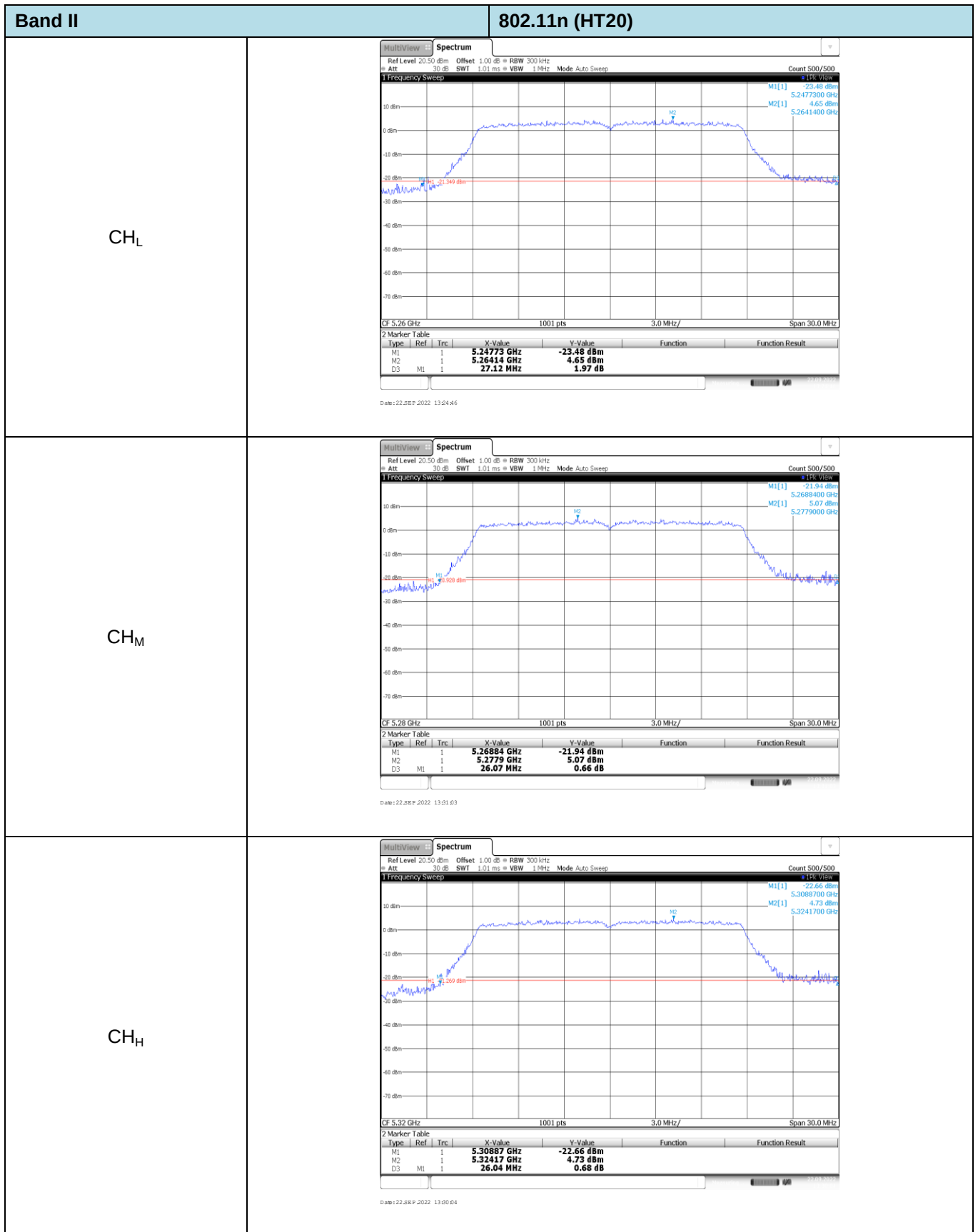
Band	Bandwidth (MHz)	Type	Channel	26dB bandwidth (MHz)	Result
I	20	802.11n	CH _L	28.71	Pass
			CH _M	26.00	
			CH _H	26.88	
		802.11a	CH _L	22.89	Pass
			CH _M	23.55	
			CH _H	23.52	
II	20	802.11n	CH _L	27.12	Pass
			CH _M	26.07	
			CH _H	26.04	
		802.11a	CH _L	23.67	Pass
			CH _M	24.24	
			CH _H	23.04	
III	20	802.11n	CH _L	26.61	Pass
			CH _M	26.91	
			CH _H	25.83	
		802.11a	CH _L	23.67	Pass
			CH _M	24.03	
			CH _H	23.58	

Band I

802.11n (HT20)

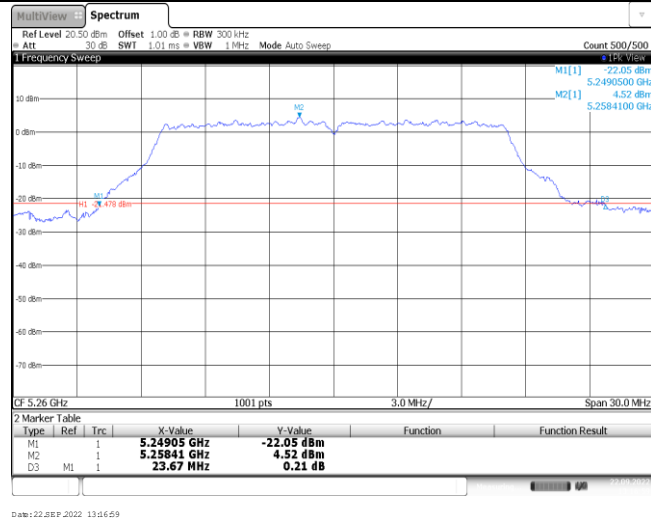
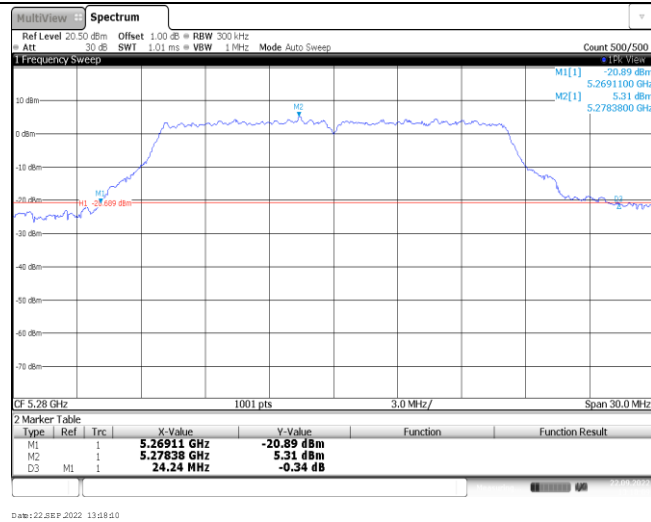
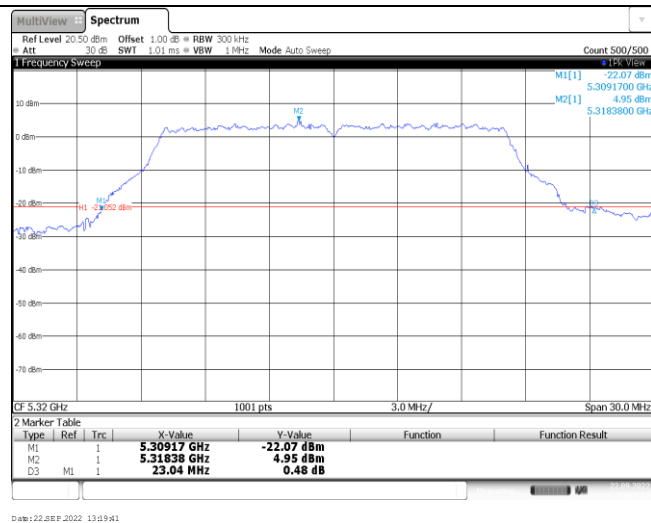
CH_LCH_MCH_H

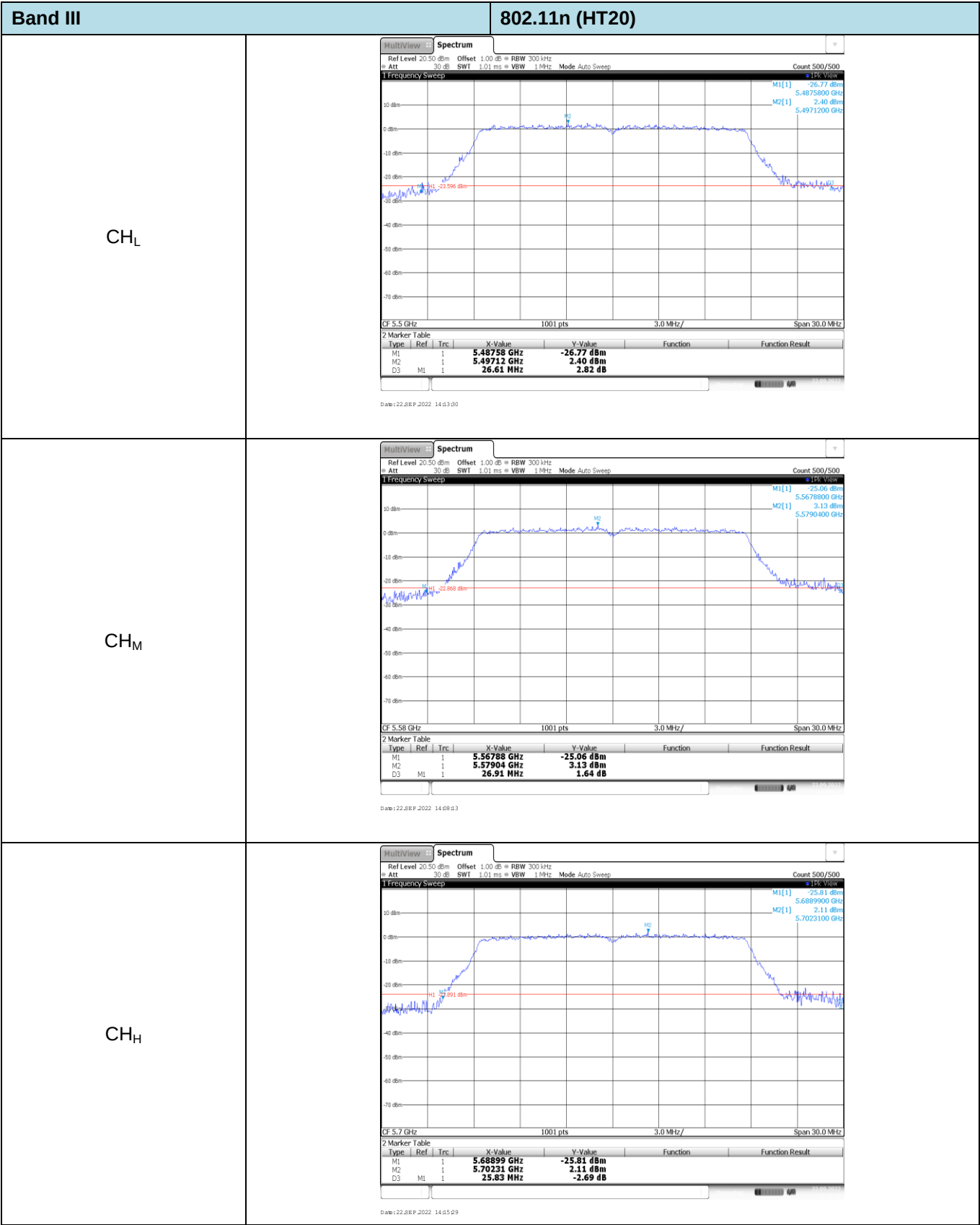


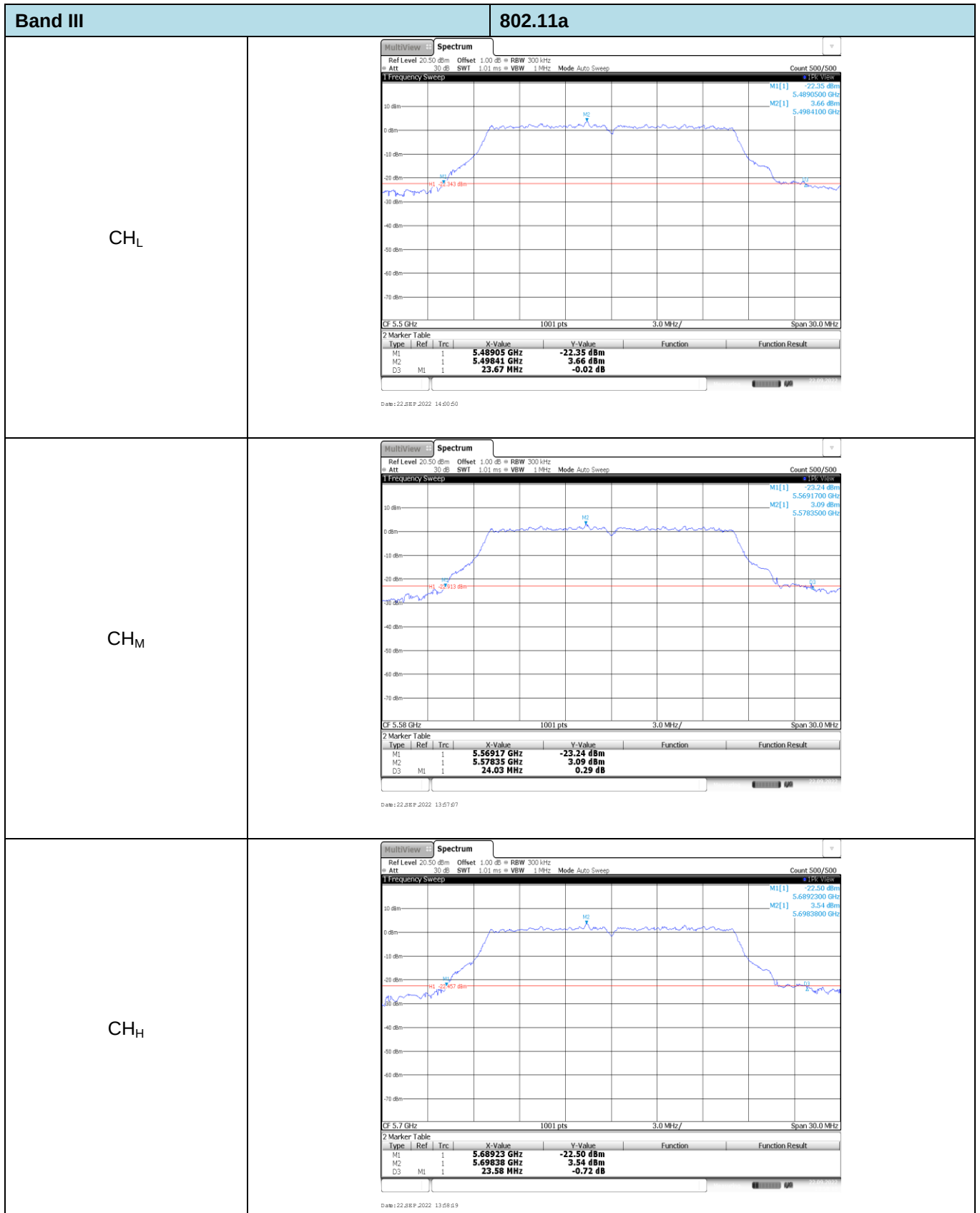


Band II

802.11a

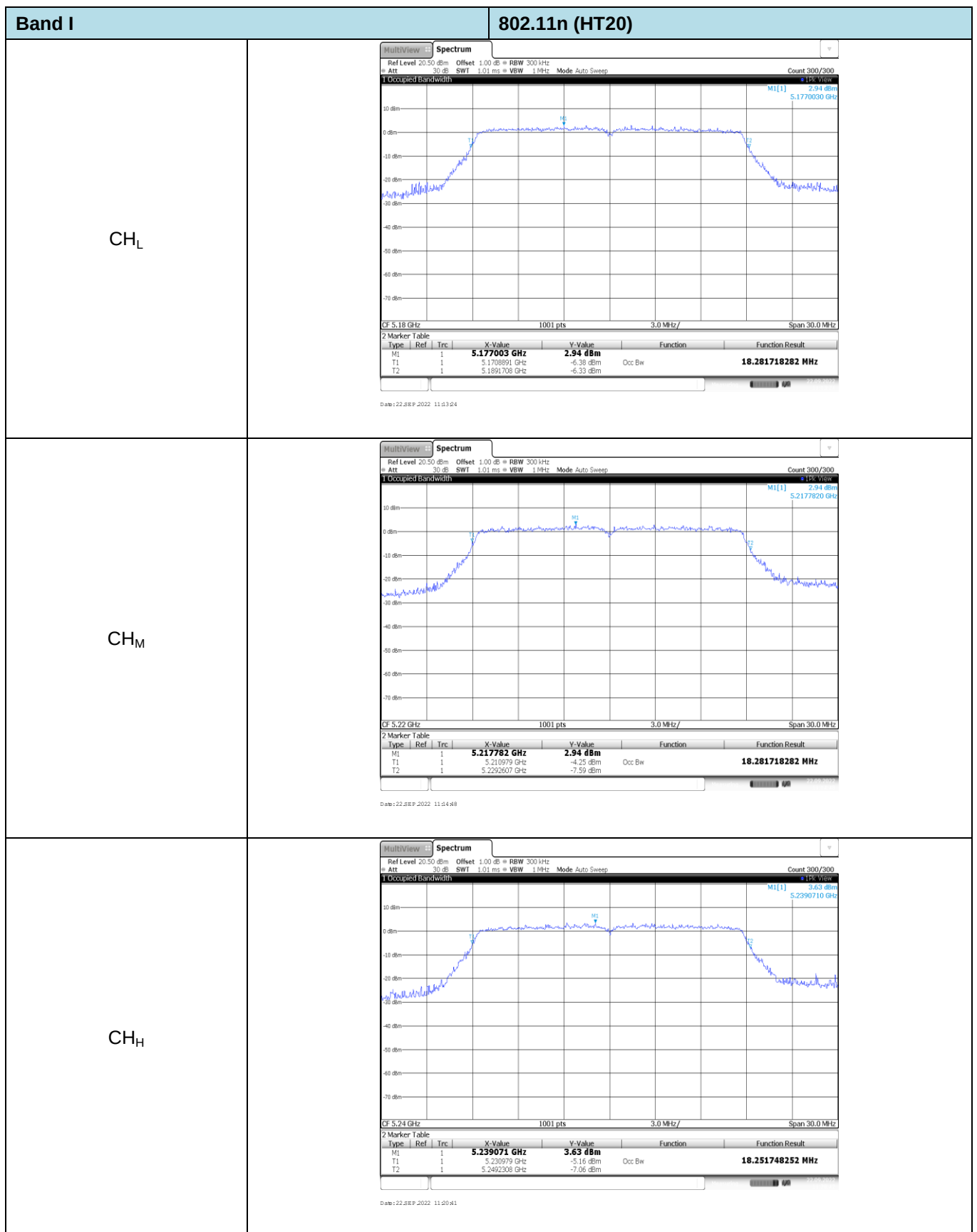
CH_LCH_MCH_H

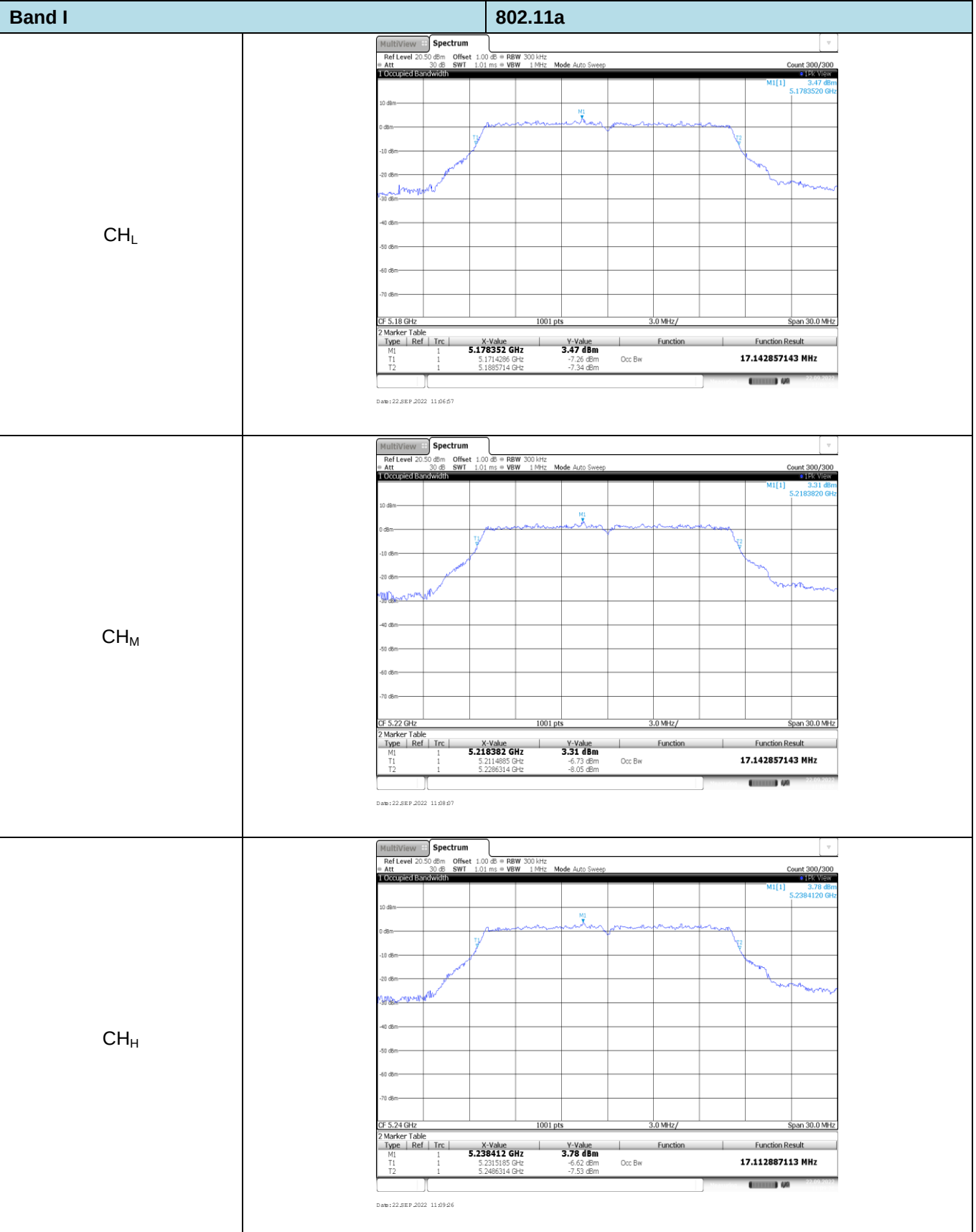




Appendix D: 99% Occupy bandwidth

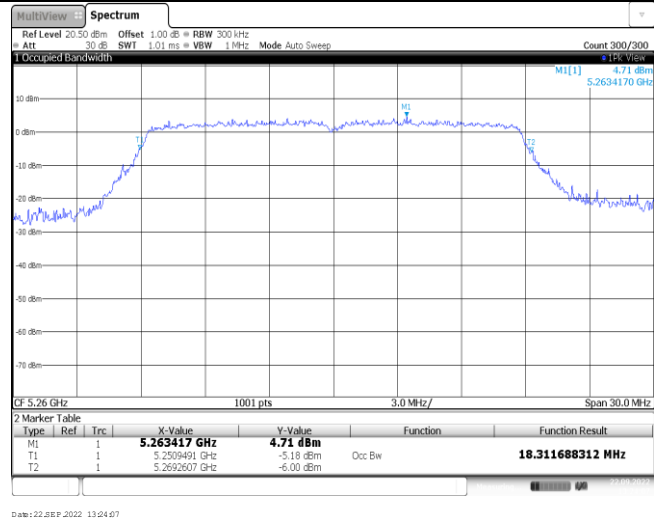
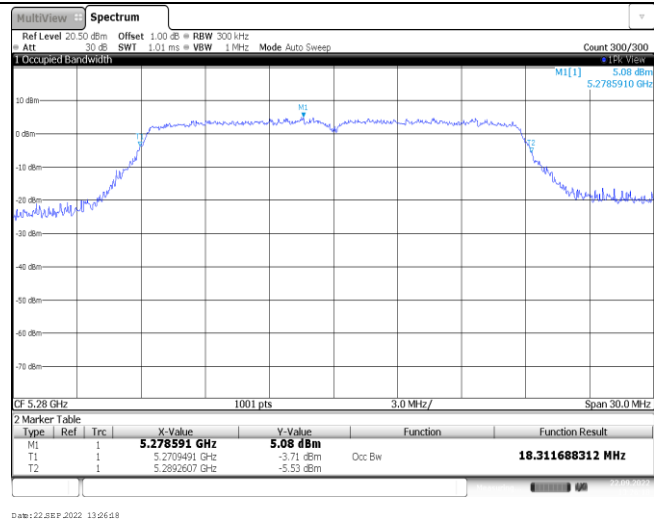
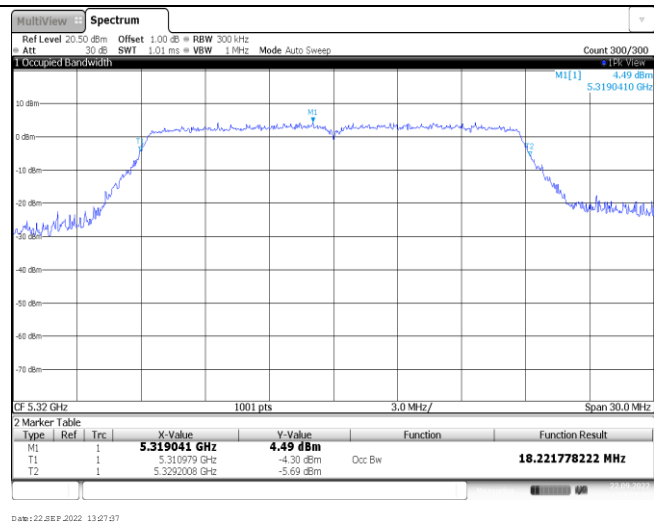
Band	Bandwidth (MHz)	Type	Channel	99% Occupy bandwidth (MHz)	Result
I	20	802.11n	CH _L	18.28	Pass
			CH _M	18.28	
			CH _H	18.25	
		802.11a	CH _L	17.14	Pass
			CH _M	17.14	
			CH _H	17.11	
II	20	802.11n	CH _L	18.31	Pass
			CH _M	18.31	
			CH _H	18.22	
		802.11a	CH _L	17.17	Pass
			CH _M	17.26	
			CH _H	17.11	
III	20	802.11n	CH _L	18.34	Pass
			CH _M	18.19	
			CH _H	18.34	
		802.11a	CH _L	17.23	Pass
			CH _M	17.17	
			CH _H	17.14	
IV	20	802.11n	CH _L	18.22	Pass
			CH _M	18.28	
			CH _H	18.22	
		802.11a	CH _L	17.26	Pass
			CH _M	17.32	
			CH _H	17.23	

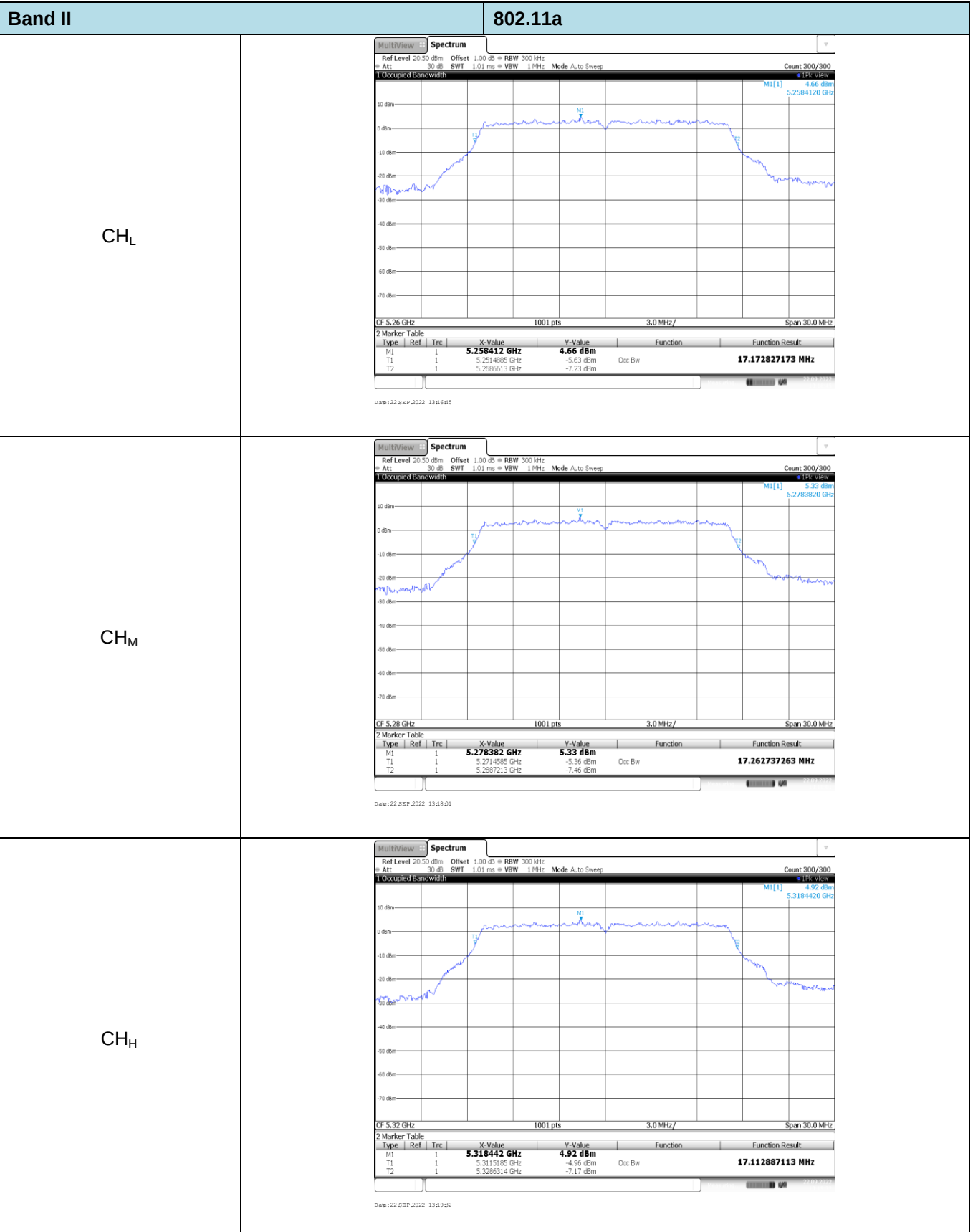




Band II

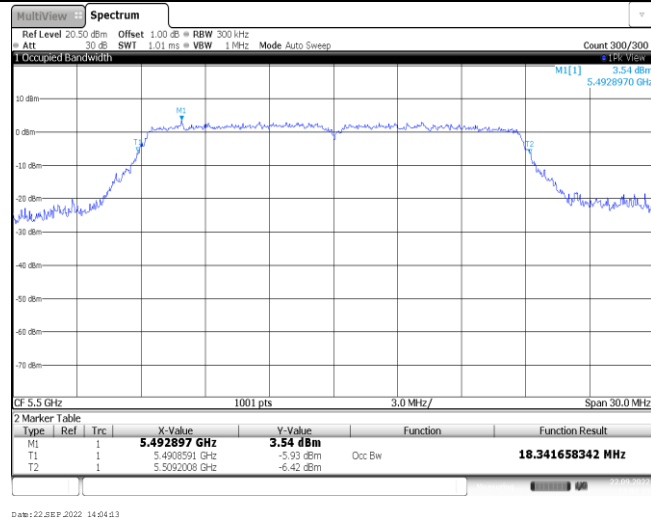
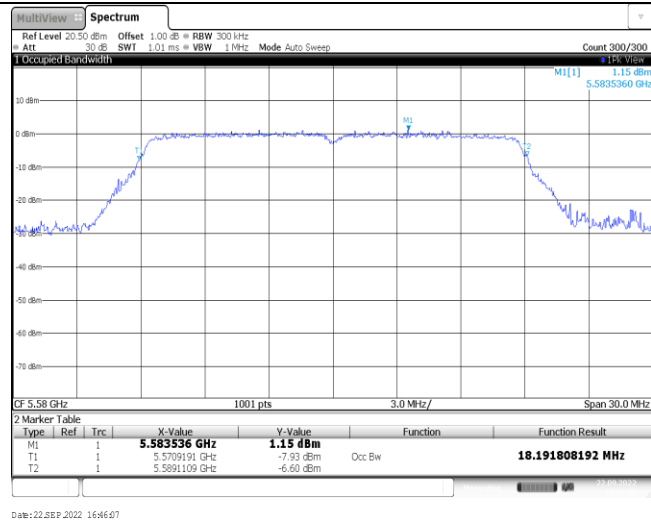
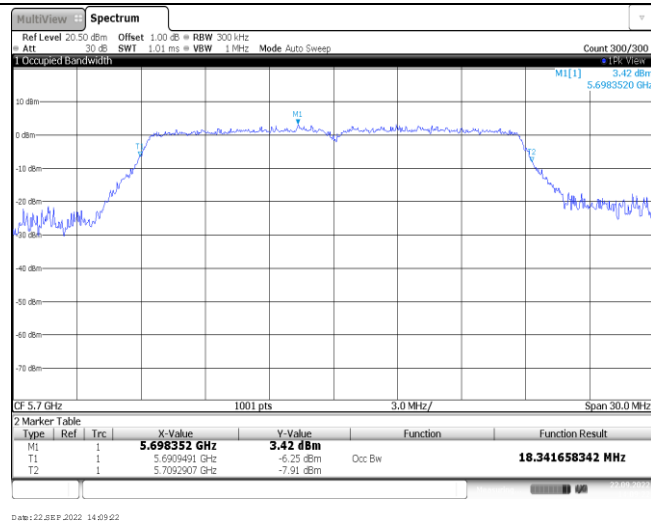
802.11n (HT20)

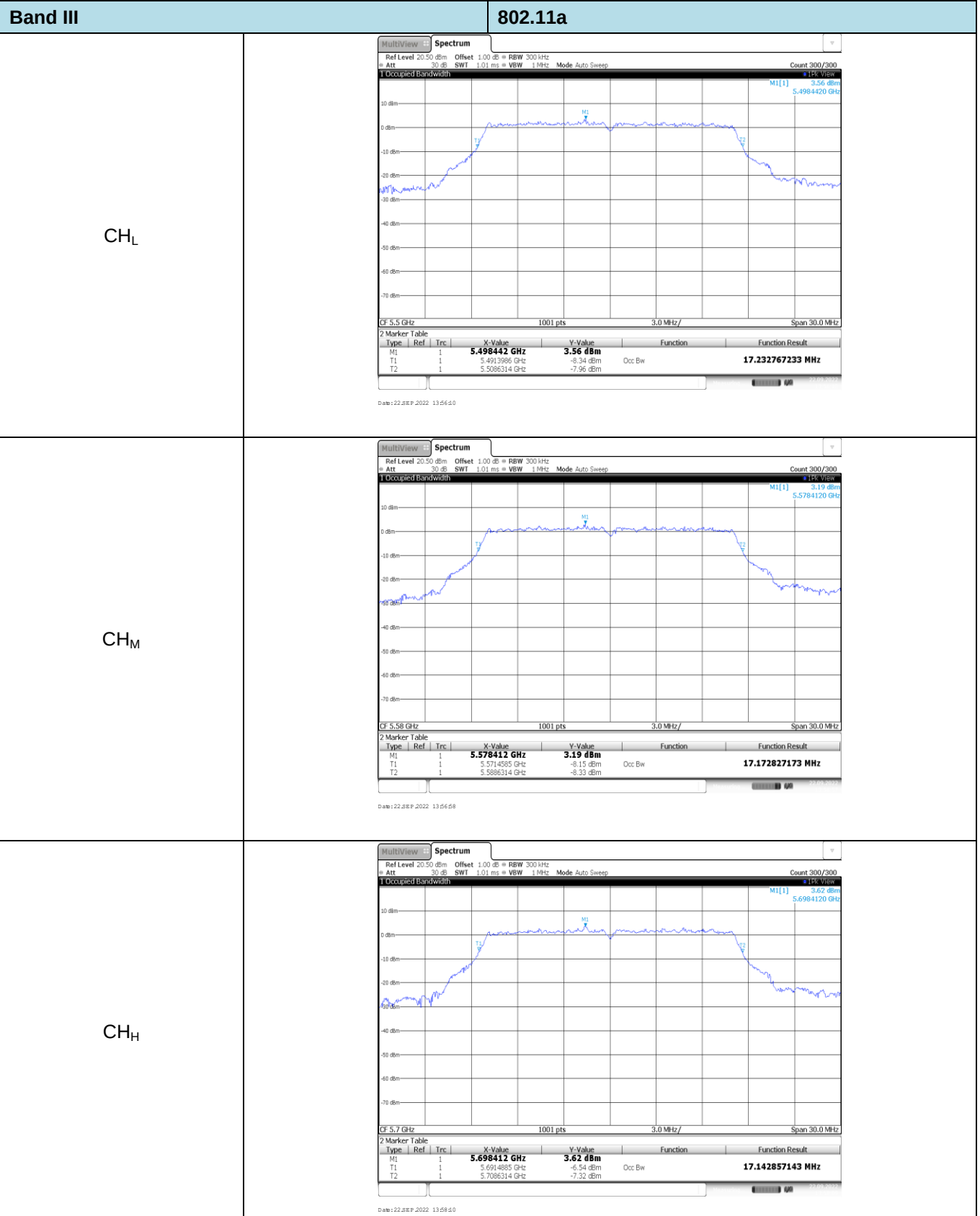
CH_LCH_MCH_H

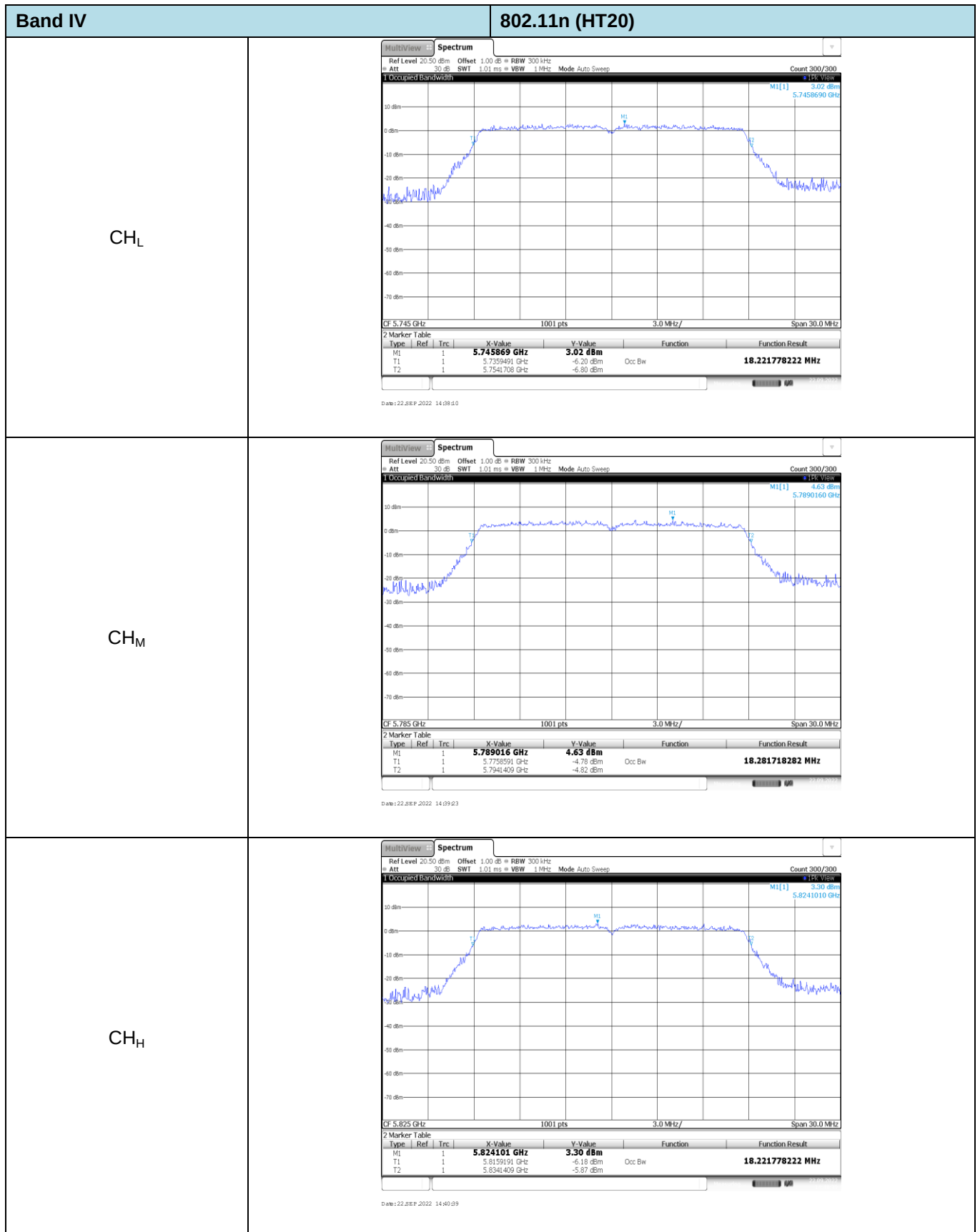


Band III

802.11n (HT20)

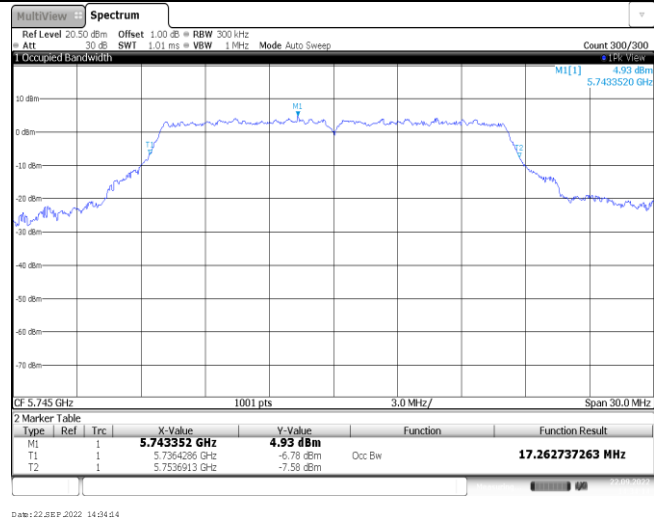
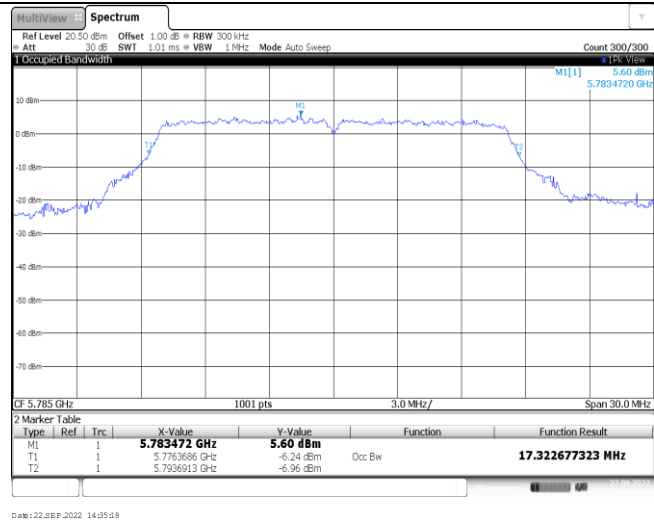
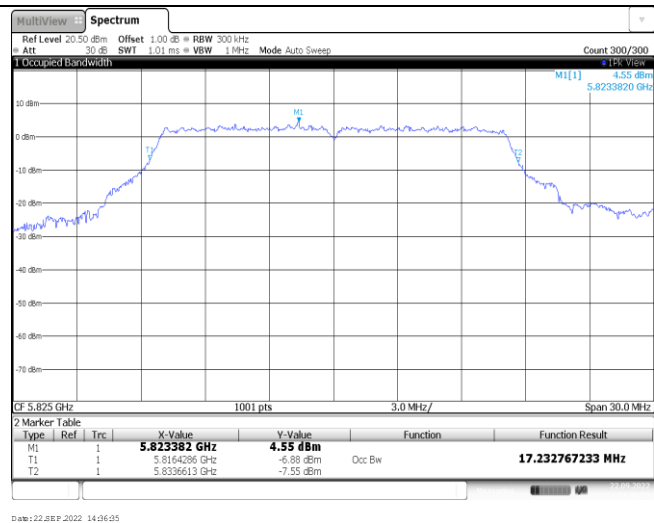
CH_LCH_MCH_H





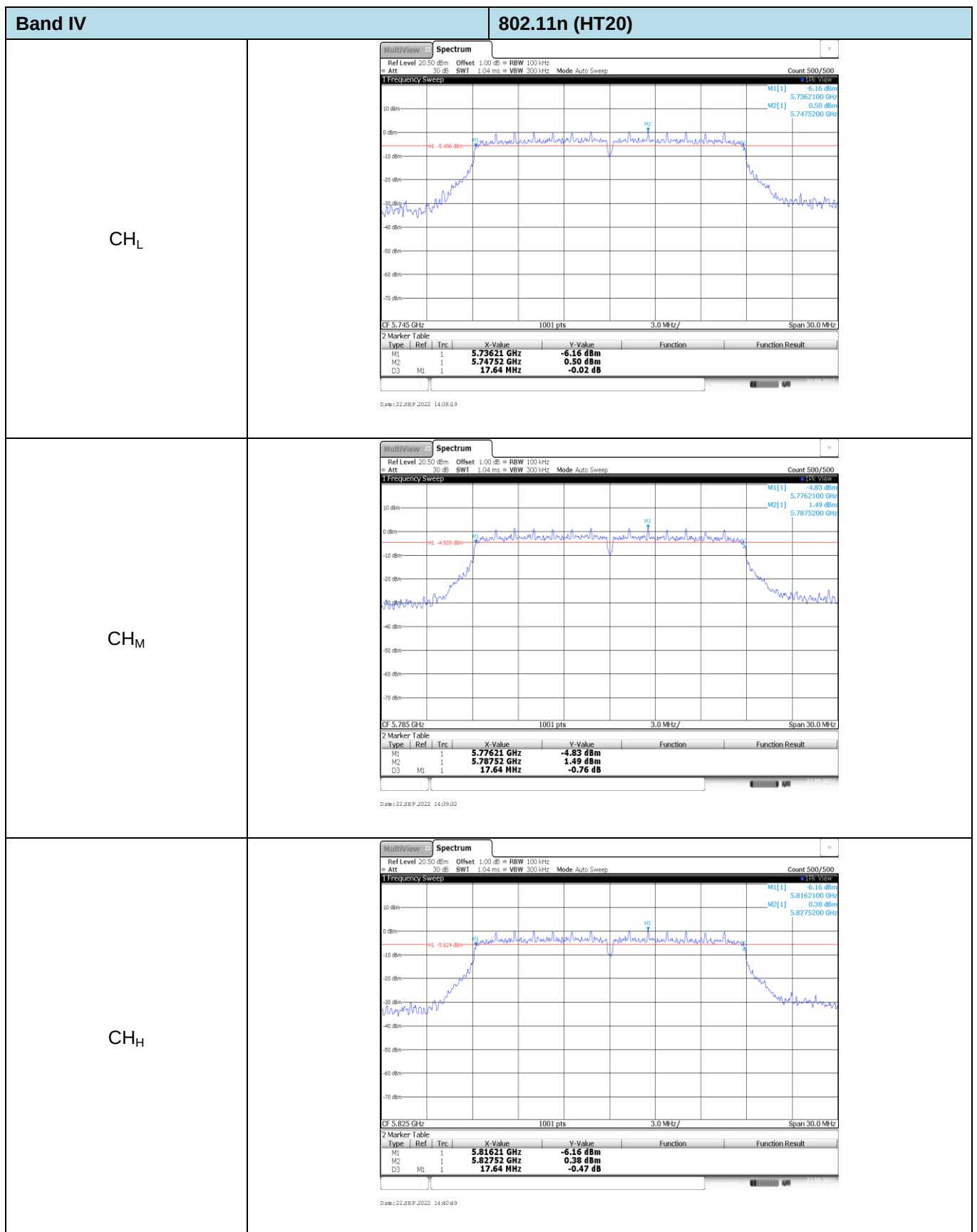
Band IV

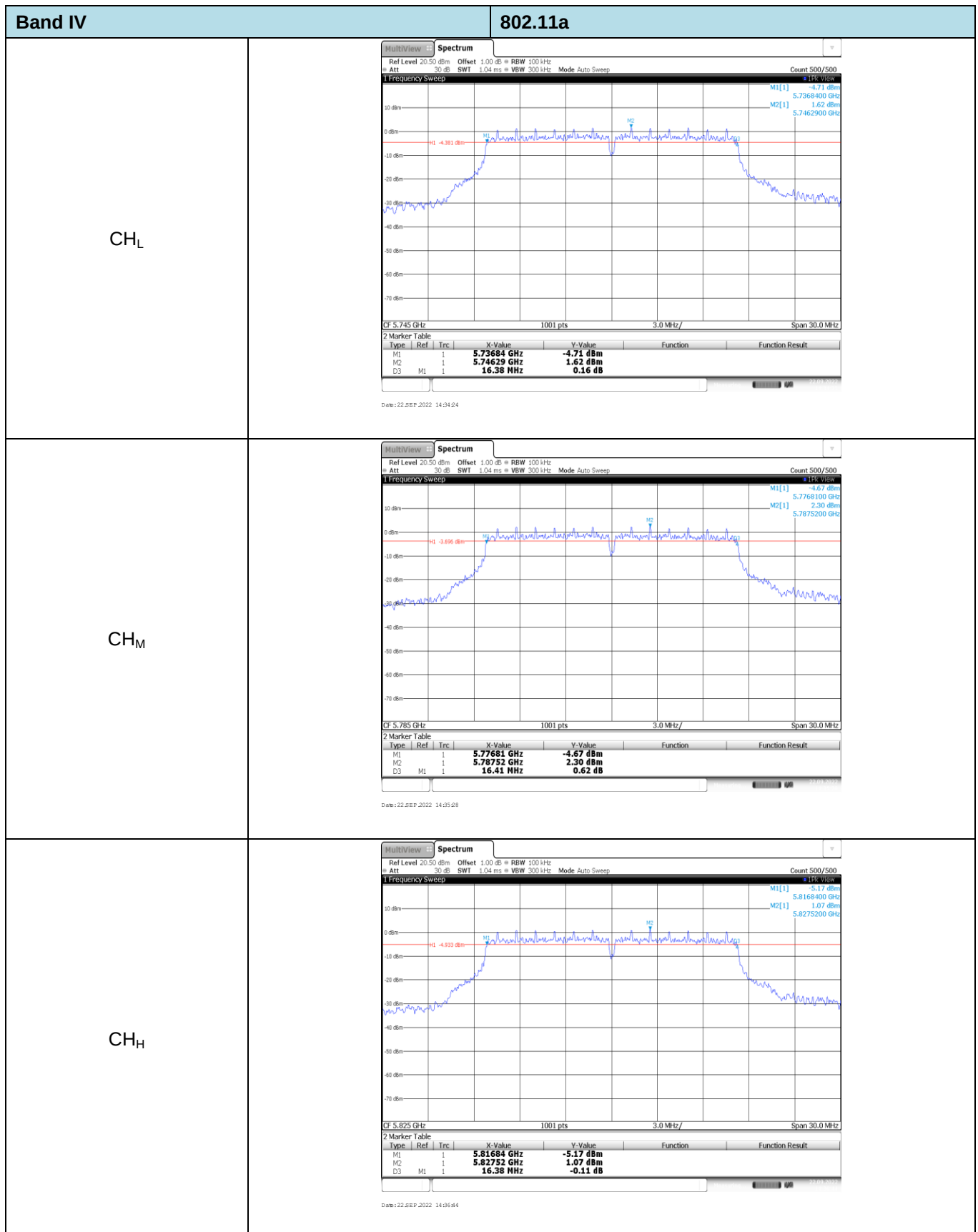
802.11a

CH_LCH_MCH_H

Appendix E: 6dB Bandwidth

Band	Bandwidth (MHz)	Type	Channel	6dB bandwidth (MHz)	Result
IV	20	802.11n	CH _L	17.64	Pass
			CH _M	17.64	
			CH _H	17.64	
		802.11a	CH _L	16.38	Pass
			CH _M	16.41	
			CH _H	16.38	





Appendix F: Frequency stability

Voltage VS Frequency stability

Band: I			Test Frequency: 5180.00MHz	
Temperature (°C)	Voltage (V)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
T _N	V _L	31000.00	5.98456	PASS
T _N	V _N	31000.00	5.98456	PASS
T _N	V _H	31000.00	5.98456	PASS

Band: II			Test Frequency: 5260.00MHz	
Temperature (°C)	Voltage (V)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
T _N	V _L	31000.00	5.89354	PASS
T _N	V _N	32000.00	6.08365	PASS
T _N	V _H	31000.00	5.89354	PASS

Band: III			Test Frequency: 5500.00MHz	
Temperature (°C)	Voltage (V)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
T _N	V _L	33000.00	6.00000	PASS
T _N	V _N	33000.00	6.00000	PASS
T _N	V _H	33000.00	6.00000	PASS

Band: IV			Test Frequency: 5745.00MHz	
Temperature (°C)	Voltage (V)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
T _N	V _L	35000.00	6.09225	PASS
T _N	V _N	35000.00	6.09225	PASS
T _N	V _H	35000.00	6.09225	PASS

Temperature VS Frequency stability

Band: I			Test Frequency: 5180.00MHz	
Voltage (V)	Temperature (°C)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
V _N	-20	31000.00	5.98456	PASS
V _N	-10	31000.00	5.98456	PASS
V _N	0	31000.00	5.98456	PASS
V _N	10	31000.00	5.98456	PASS
V _N	20	31000.00	5.98456	PASS
V _N	30	31000.00	5.98456	PASS
V _N	40	31000.00	5.98456	PASS
V _N	50	31000.00	5.98456	PASS

Band: II			Test Frequency: 5260.00MHz	
Voltage (V)	Temperature (°C)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
V _N	-20	32000.00	6.08365	PASS
V _N	-10	31000.00	5.89354	PASS
V _N	0	31000.00	5.89354	PASS
V _N	10	31000.00	5.89354	PASS
V _N	20	31000.00	5.89354	PASS
V _N	30	31000.00	5.89354	PASS
V _N	40	31000.00	5.89354	PASS
V _N	50	31000.00	5.89354	PASS

Band: III			Test Frequency: 5500.00MHz	
Voltage (V)	Temperature (°C)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
V _N	-20	33000.00	6.00000	PASS
V _N	-10	33000.00	6.00000	PASS
V _N	0	33000.00	6.00000	PASS
V _N	10	33000.00	6.00000	PASS
V _N	20	33000.00	6.00000	PASS
V _N	30	33000.00	6.00000	PASS
V _N	40	33000.00	6.00000	PASS
V _N	50	33000.00	6.00000	PASS

Band: IV			Test Frequency: 5745.00MHz	
Voltage (V)	Temperature (°C)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
V _N	-20	34000.00	5.91819	PASS
V _N	-10	34000.00	5.91819	PASS
V _N	0	34000.00	5.91819	PASS
V _N	10	34000.00	5.91819	PASS
V _N	20	34000.00	5.91819	PASS
V _N	30	34000.00	5.91819	PASS
V _N	40	34000.00	5.91819	PASS
V _N	50	34000.00	5.91819	PASS

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