

APPENDIX REPORT

Project No.	SHT2104022901EW	Radio Specification	WIFI 5G
Test sample No.	YPHT21040229001	Model No.	VX3160
Start test date	2021-04-27	Finish date	2021-04-27
Temperature	25.8°C	Humidity	58%
Test Engineer	Hailey Chen	Auditor	Xiaodong Zhu

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	Band edge	PASS
G	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	802.11ac	CH _L	12.45	100	0	12.45	24.00	Pass
			CH _M	14.40	100	0	14.40		
			CH _H	15.43	100	0	15.43		
		802.11n	CH _L	12.93	100	0	12.93	24.00	Pass
			CH _M	14.92	100	0	14.92		
			CH _H	15.29	100	0	15.29		
		802.11a	CH _L	12.45	100	0	12.45	24.00	Pass
			CH _M	14.42	100	0	14.42		
			CH _H	15.53	100	0	15.53		
	40	802.11ac	CH _L	13.23	100	0	13.23	24.00	Pass
			CH _H	14.75	100	0	14.75		
		802.11n	CH _L	13.51	100	0	13.51	24.00	Pass
			CH _H	15.09	100	0	15.09		
	80	802.11ac	CH _M	14.83	100	0	14.83	24.00	Pass
II	20	802.11ac	CH _L	15.25	100	0	15.25	24.00	Pass
			CH _M	15.27	100	0	15.27		
			CH _H	14.29	100	0	14.29		
		802.11n	CH _L	14.98	100	0	14.98	24.00	Pass
			CH _M	15.29	100	0	15.29		
			CH _H	14.14	100	0	14.14		
		802.11a	CH _L	15.09	100	0	15.09	24.00	Pass
			CH _M	15.11	100	0	15.11		
			CH _H	14.09	100	0	14.09		
	40	802.11ac	CH _L	15.41	100	0	15.41	24.00	Pass
			CH _H	14.54	100	0	14.54		
		802.11n	CH _L	15.23	100	0	15.23	24.00	Pass
			CH _H	14.56	100	0	14.56		
	80	802.11ac	CH _M	15.11	100	0	15.11	24.00	Pass

Band	Bandwidth (MHz)	Type	Channel	Reading (dBm)	Duty cycle (%)	Duty cycle factor (dB)	Conducted Output Power (dBm)	Limit (dBm)	Result
III	20	802.11ac	CH _L	11.85	100	0	11.85	24.00	Pass
			CH _M	14.90	100	0	14.90		
			CH _H	15.58	100	0	15.58		
		802.11n	CH _L	11.81	100	0	11.81	24.00	Pass
			CH _M	14.67	100	0	14.67		
			CH _H	15.40	100	0	15.40		
		802.11a	CH _L	11.72	100	0	11.72	24.00	Pass
			CH _M	14.57	100	0	14.57		
			CH _H	15.13	100	0	15.13		
	40	802.11ac	CH _L	13.10	100	0	13.10	24.00	Pass
			CH _M	15.29	100	0	15.29		
			CH _H	15.45	100	0	15.45		
		802.11n	CH _L	12.76	100	0	12.76	24.00	Pass
			CH _M	15.24	100	0	15.24		
			CH _H	15.36	100	0	15.36		
	80	802.11ac	CH _L	13.88	100	0	13.88	24.00	Pass
			CH _H	15.62	100	0	15.62		
IV	20	802.11ac	CH _L	14.17	100	0	14.17	30.00	Pass
			CH _M	15.27	100	0	15.27		
			CH _H	15.72	100	0	15.72		
		802.11n	CH _L	14.16	100	0	14.16	30.00	Pass
			CH _M	15.38	100	0	15.38		
			CH _H	15.70	100	0	15.70		
		802.11a	CH _L	14.23	100	0	14.23	30.00	Pass
			CH _M	15.48	100	0	15.48		
			CH _H	15.50	100	0	15.50		
	40	802.11ac	CH _L	14.23	100	0	14.23	30.00	Pass
			CH _H	15.39	100	0	15.39		
		802.11n	CH _L	14.40	100	0	14.40	30.00	Pass
			CH _H	15.53	100	0	15.53		
	80	802.11ac	CH _M	15.43	100	0	15.43	30.00	Pass

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

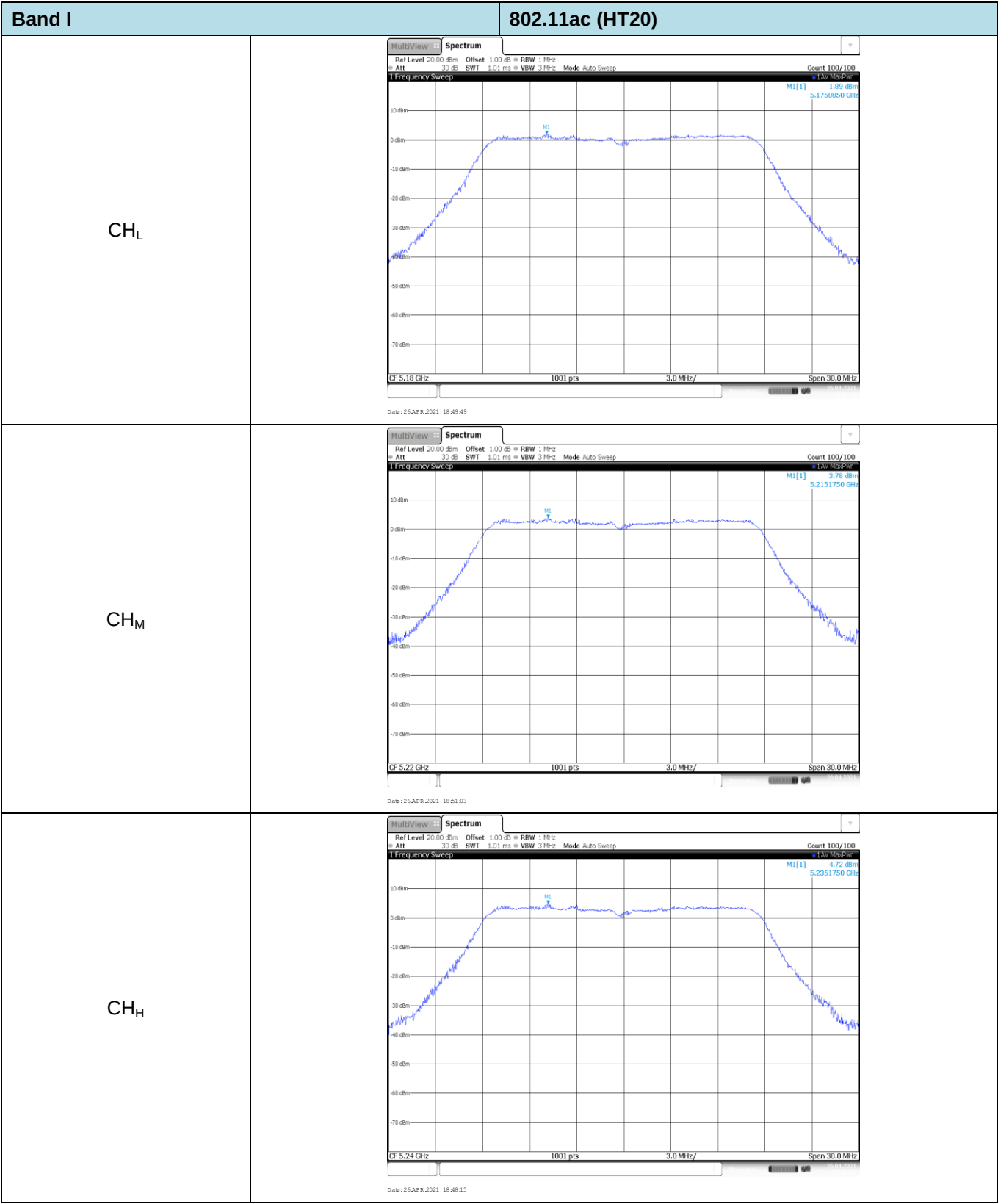
Appendix B: Maximum Power Spectral Density

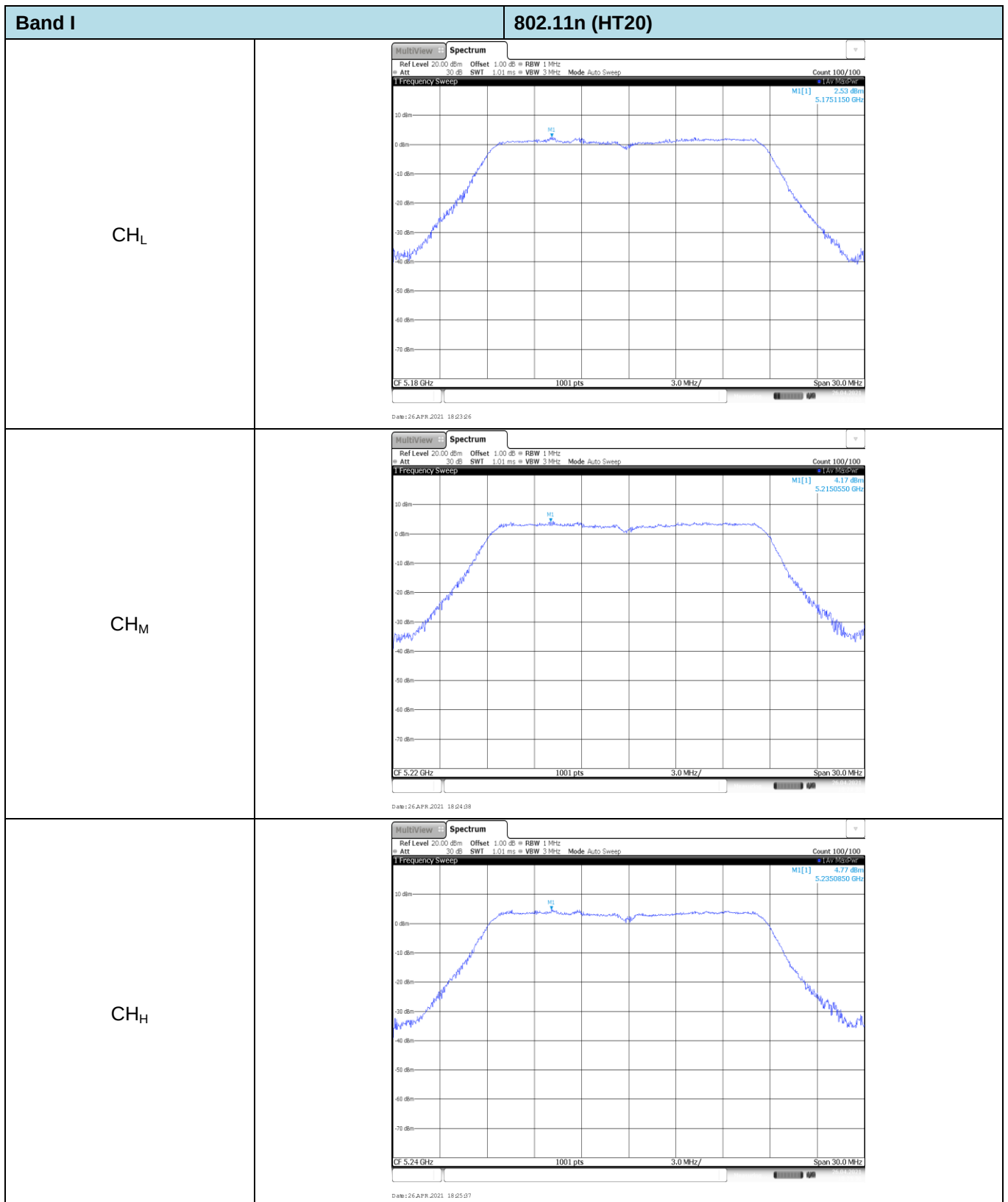
Band	Bandwidth (MHz)	Type	Channel	Reading (dBm)	Duty cycle (%)	Duty cycle factor (dB)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)	Result
I	20	802.11ac	CH _L	1.89	100	0	1.89	11.00	Pass
			CH _M	3.78	100	0	3.78		
			CH _H	4.72	100	0	4.72		
		802.11n	CH _L	2.53	100	0	2.53	11.00	Pass
			CH _M	4.17	100	0	4.17		
			CH _H	4.77	100	0	4.77		
		802.11a	CH _L	2.42	100	0	2.42	11.00	Pass
			CH _M	3.79	100	0	3.79		
			CH _H	4.87	100	0	4.87		
	40	802.11ac	CH _L	0.03	100	0	0.03	11.00	Pass
			CH _H	0.84	100	0	0.84		
		802.11n	CH _L	0.31	100	0	0.31	11.00	Pass
			CH _H	1.82	100	0	1.82		
	80	802.11ac	CH _M	-0.35	100	0	-0.35	11.00	Pass

Band	Bandwidth (MHz)	Type	Channel	Reading (dBm)	Duty cycle (%)	Duty cycle factor (dB)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)	Result
II	20	802.11ac	CH _L	4.42	100	0	4.42	11.00	Pass
			CH _M	4.87	100	0	4.87		
			CH _H	4.42	100	0	4.42		
		802.11n	CH _L	4.28	100	0	4.28	11.00	Pass
			CH _M	4.51	100	0	4.51		
			CH _H	4.09	100	0	4.09		
		802.11a	CH _L	4.53	100	0	4.53	11.00	Pass
			CH _M	4.68	100	0	4.68		
			CH _H	4.13	100	0	4.13		
	40	802.11ac	CH _L	1.65	100	0	1.65	11.00	Pass
			CH _H	1.91	100	0	1.91		
		802.11n	CH _L	1.84	100	0	1.84	11.00	Pass
			CH _H	1.75	100	0	1.75		
	80	802.11ac	CH _M	-0.48	100	0	-0.48	11.00	Pass

Band	Bandwidth (MHz)	Type	Channel	Reading (dBm)	Duty cycle (%)	Duty cycle factor (dB)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)	Result
III	20	802.11ac	CH _L	1.12	100	0	1.12	11.00	Pass
			CH _M	4.53	100	0	4.53		
			CH _H	4.82	100	0	4.82		
		802.11n	CH _L	0.66	100	0	0.66	11.00	Pass
			CH _M	4.34	100	0	4.34		
			CH _H	4.79	100	0	4.79		
		802.11a	CH _L	1.23	100	0	1.23	11.00	Pass
			CH _M	4.37	100	0	4.37		
			CH _H	5.06	100	0	5.06		
	40	802.11ac	CH _L	-0.44	100	0	-0.44	11.00	Pass
			CH _M	2.16	100	0	2.16		
			CH _H	1.46	100	0	1.46		
		802.11n	CH _L	-0.45	100	0	-0.45	11.00	Pass
			CH _M	1.78	100	0	1.78		
			CH _H	1.43	100	0	1.43		
	80	802.11ac	CH _L	-0.97	100	0	-0.97	11.00	Pass
			CH _H	-0.08	100	0	-0.08		
Band	Bandwidth (MHz)	Type	Channel	Reading (dBm)	Duty cycle (%)	Duty cycle factor (dB)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500K Hz)	Result
IV	20	802.11ac	CH _L	2.19	100	0	2.19	30.00	Pass
			CH _M	3.18	100	0	3.18		
			CH _H	3.36	100	0	3.36		
		802.11n	CH _L	2.53	100	0	2.53	30.00	Pass
			CH _M	3.20	100	0	3.20		
			CH _H	3.31	100	0	3.31		
		802.11a	CH _L	2.70	100	0	2.70	30.00	Pass
			CH _M	3.07	100	0	3.07		
			CH _H	3.43	100	0	3.43		
	40	802.11ac	CH _L	-1.13	100	0	-1.13	30.00	Pass
			CH _H	-0.20	100	0	-0.20		
		802.11n	CH _L	-0.77	100	0	-0.77	30.00	Pass
			CH _H	0.05	100	0	0.05		
	80	802.11ac	CH _M	-1.76	100	0	-1.76	30.00	Pass

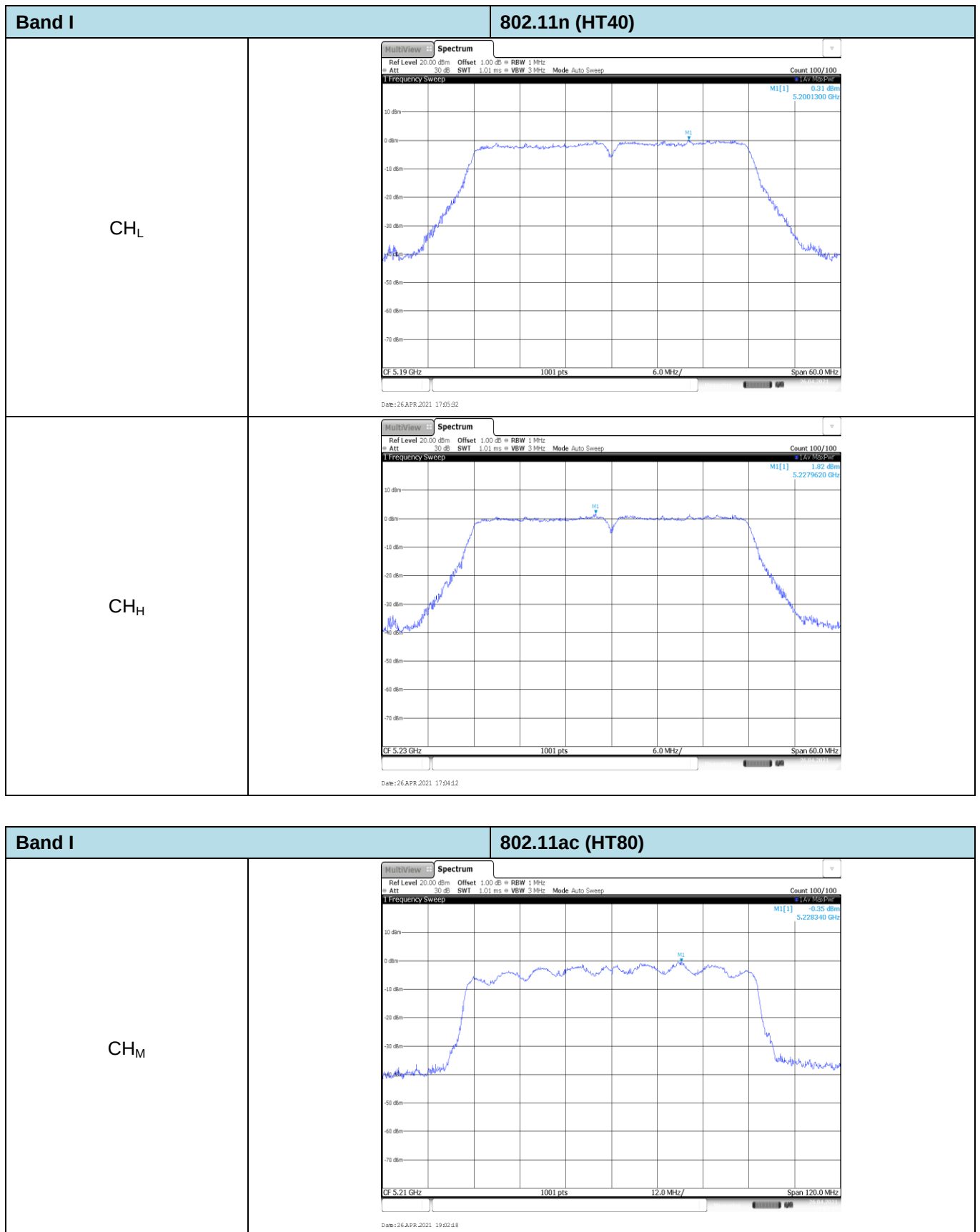
Test plot as follows:

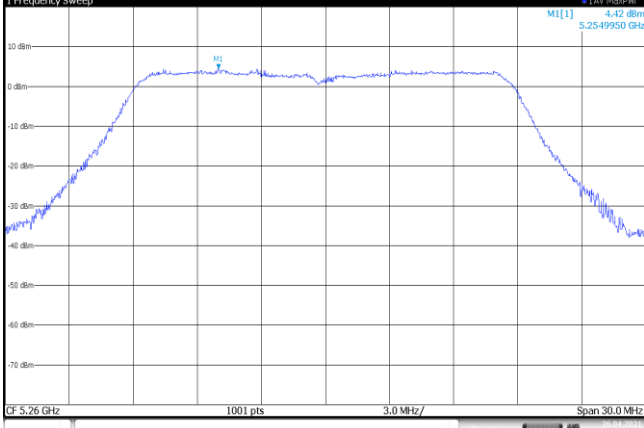
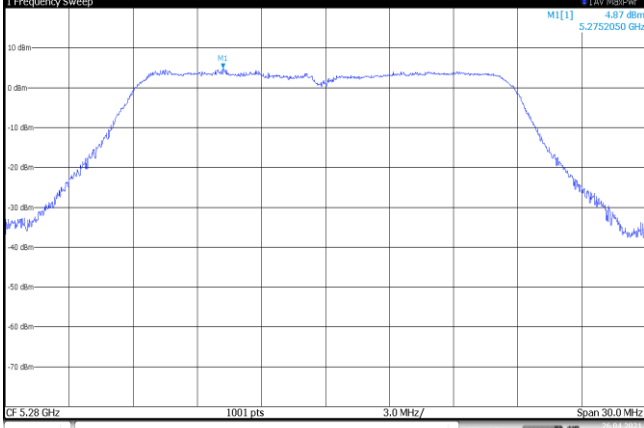
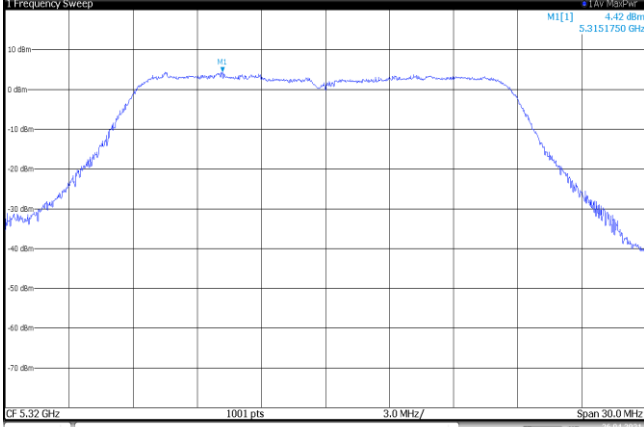


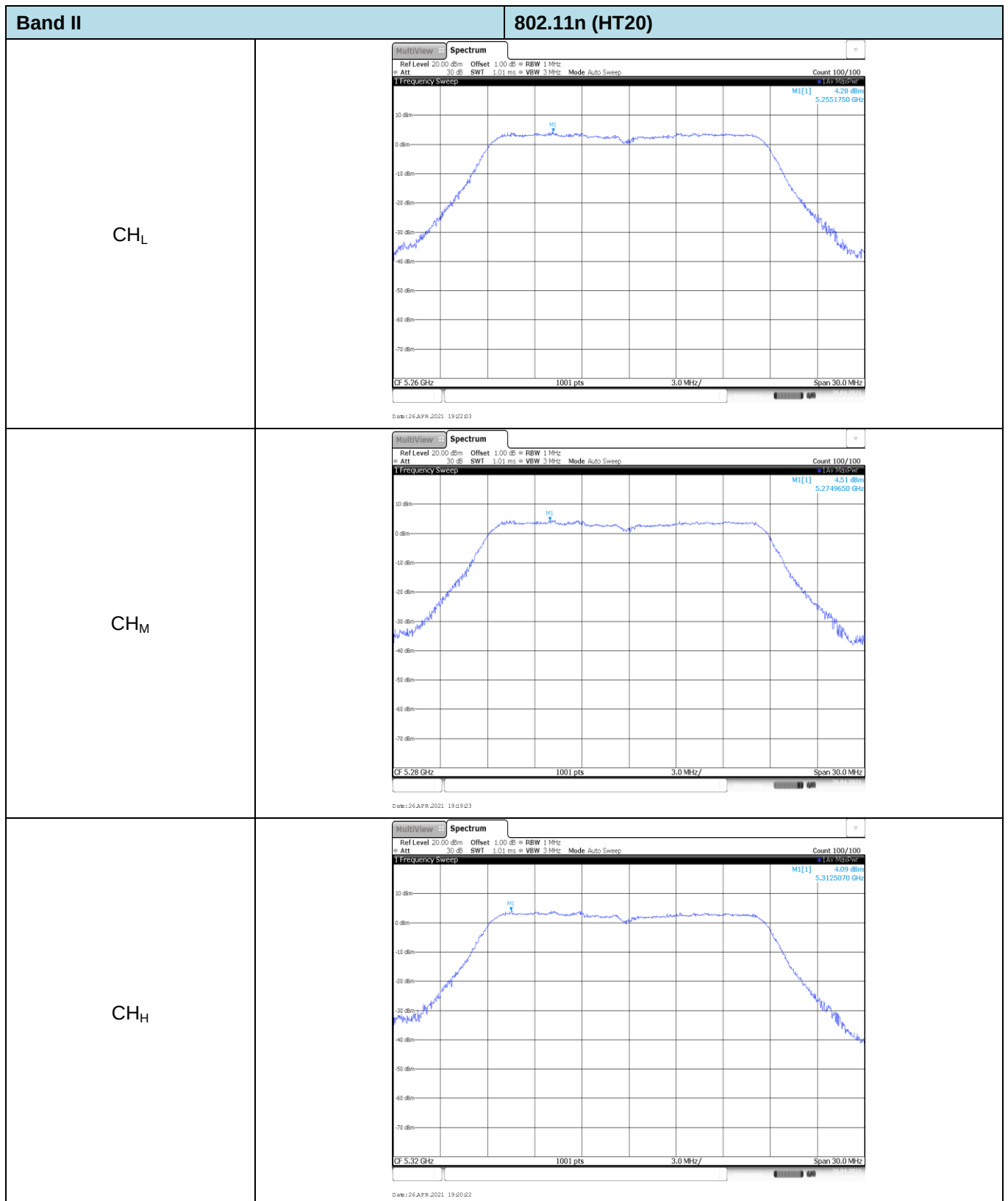


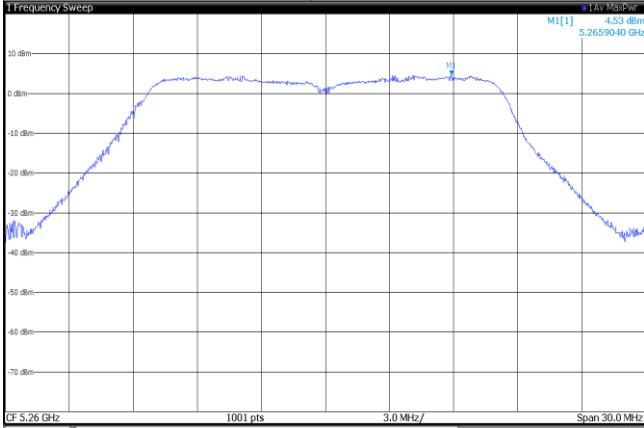
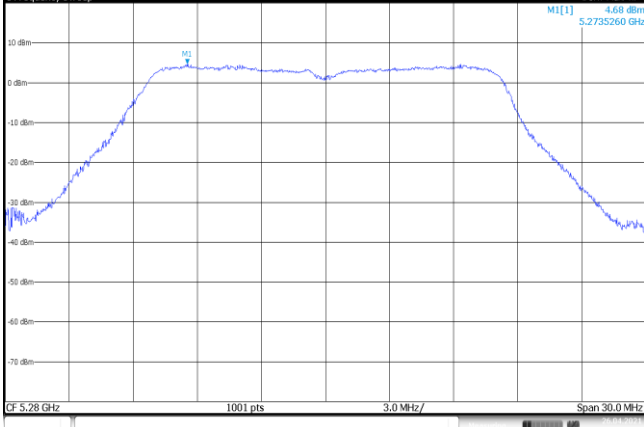
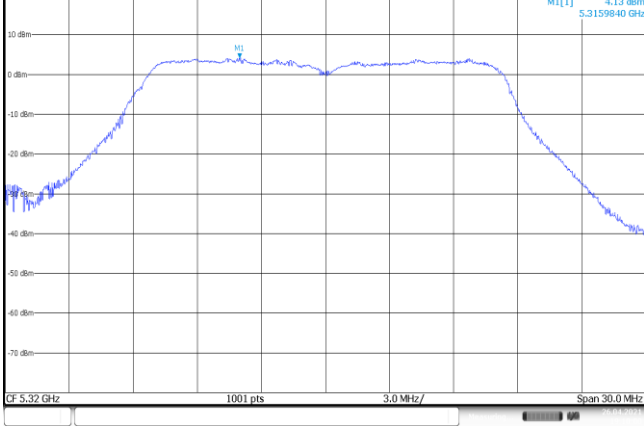
Band I		802.11a
CH _L	MultiView Spectrum Ref Level 20.00 dBm Att 30.0 dB Offset 1.00 dB RBW 1 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep M1[1] 2.42 dBm 5.1866530 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 5.18 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 26 APR 2021 18:18:15	
CH _M	MultiView Spectrum Ref Level 20.00 dBm Att 30.0 dB Offset 1.00 dB RBW 1 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep M1[1] 3.79 dBm 5.2161040 GHz 10 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: 26 APR 2021 18:19:04	
CH _H	MultiView Spectrum Ref Level 20.00 dBm Att 30.0 dB Offset 1.00 dB RBW 1 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep M1[1] 4.87 dBm 5.2334070 GHz 10 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: 26 APR 2021 18:15:43	

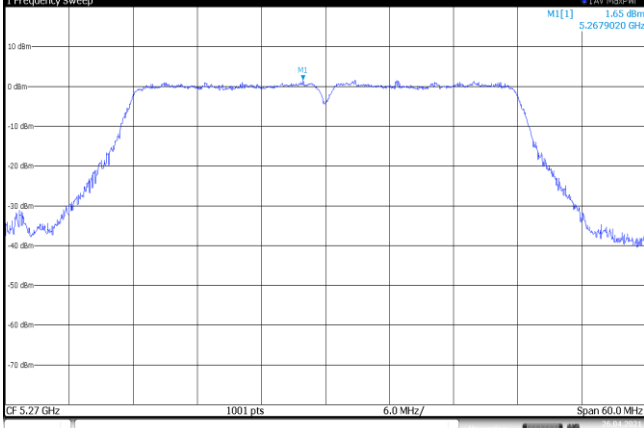
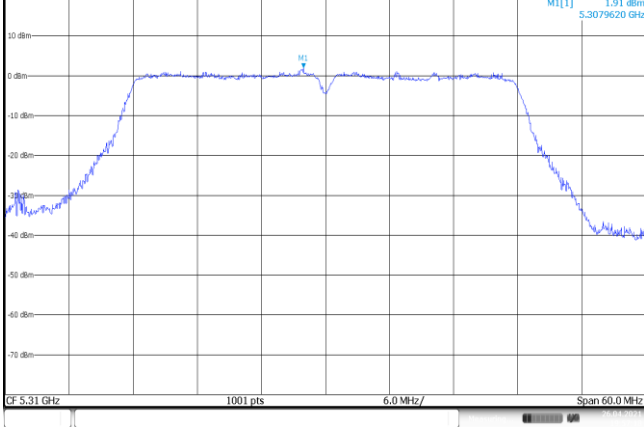
Band I		802.11ac (HT40)
CH _L	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 1 MHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 5.19 GHz 1001 pts 6.0 MHz/ Span 60.0 MHz MI[1] 0.03 dBm 5.2057040 GHz Date: 26 APR 2021 18:53:27	
CH _H	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 1 MHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 5.23 GHz 1001 pts 6.0 MHz/ Span 60.0 MHz MI[1] 0.84 dBm 5.2466630 GHz Date: 26 APR 2021 18:56:19	

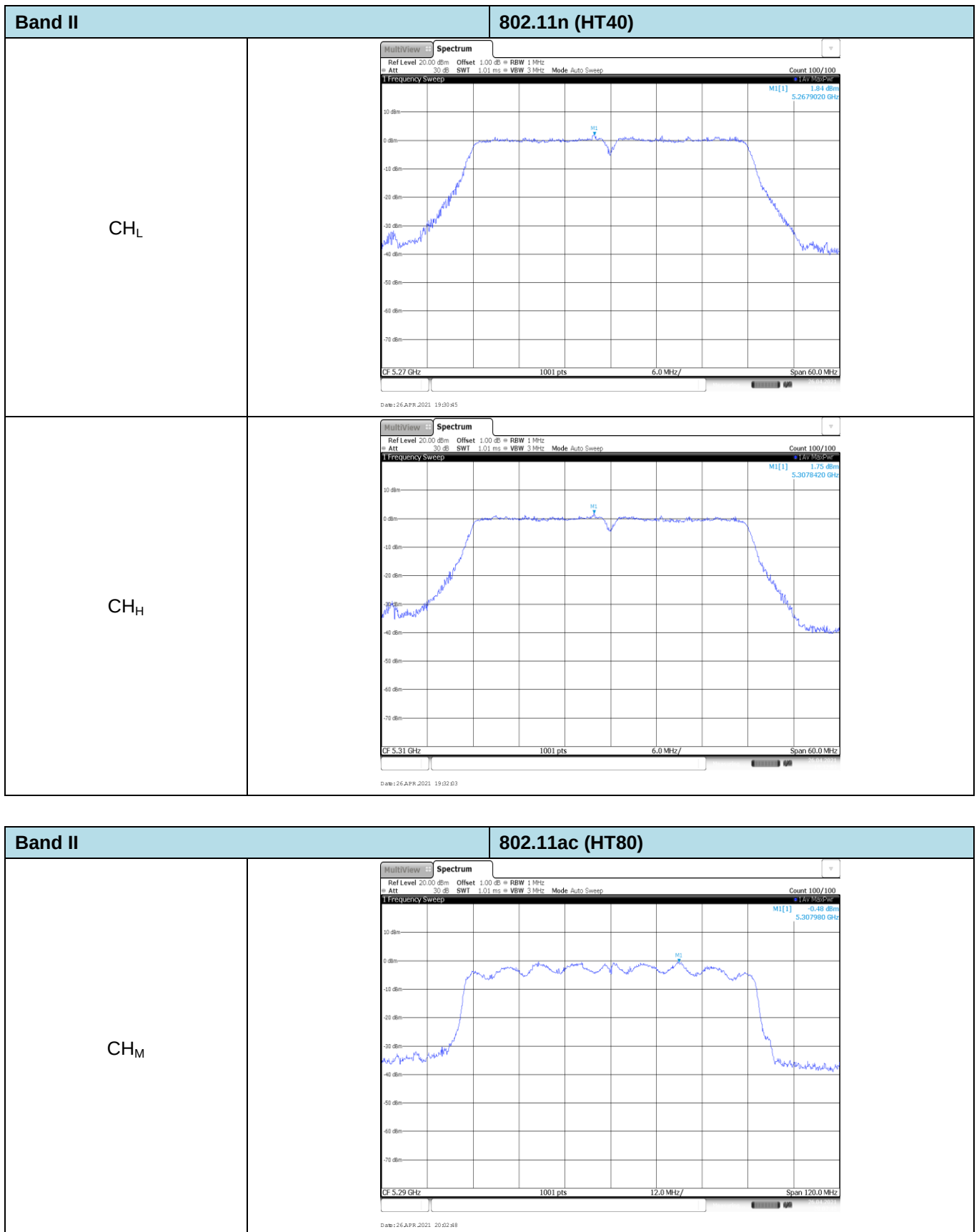


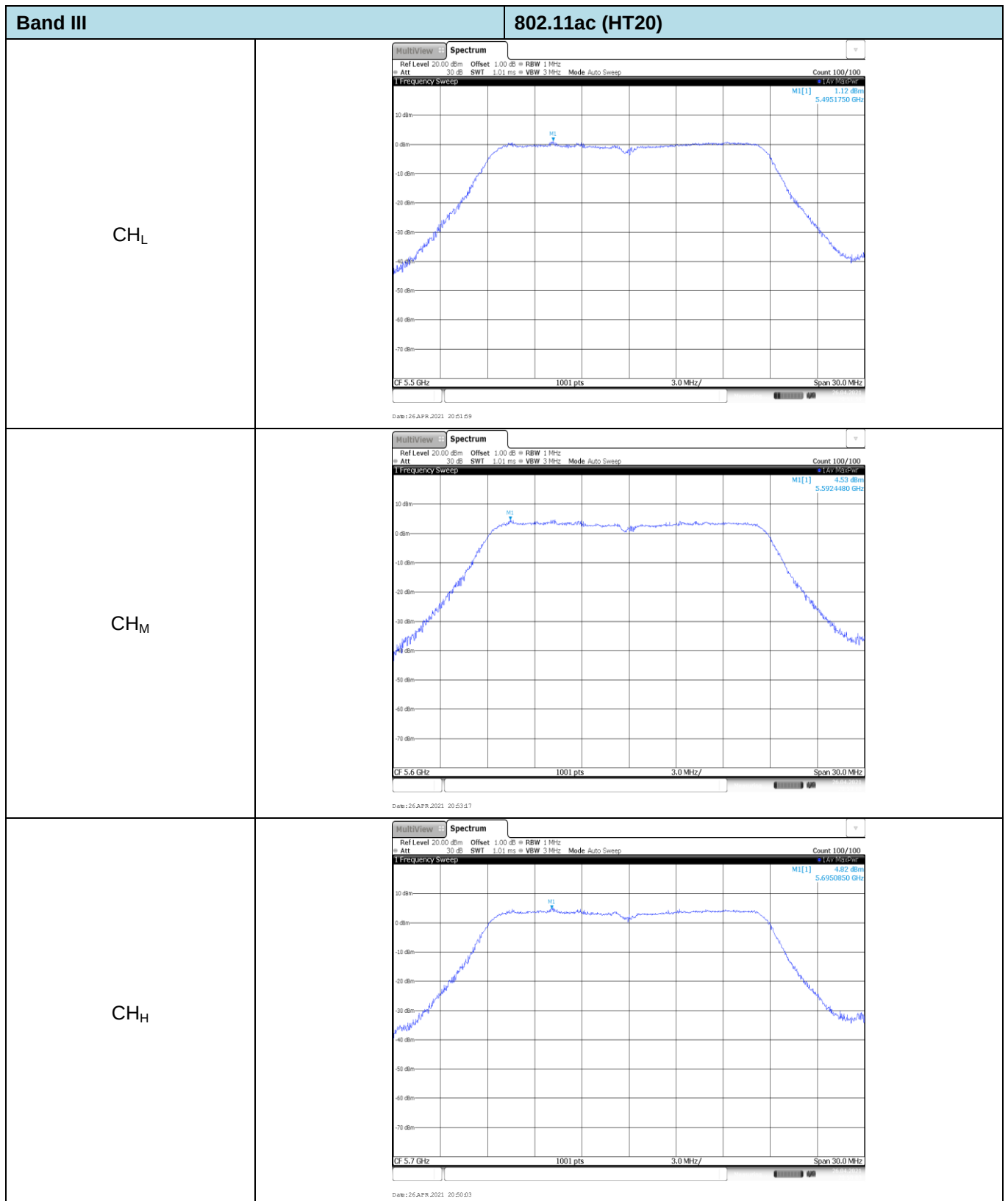
Band II		802.11ac (HT20)
CH _L	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 1 MHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 ↑TAT M5SPW ↑MU[1] 4.42 dBm 5.2549950 GHz  CF 5.26 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 26 APR 2021 19:51:11	
CH _M	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 1 MHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 ↑TAT M5SPW ↑MU[1] 4.87 dBm 5.2752050 GHz  CF 5.28 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 26 APR 2021 19:52:23	
CH _H	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 1 MHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 ↑TAT M5SPW ↑MU[1] 4.42 dBm 5.3151750 GHz  CF 5.32 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 26 APR 2021 19:53:26	

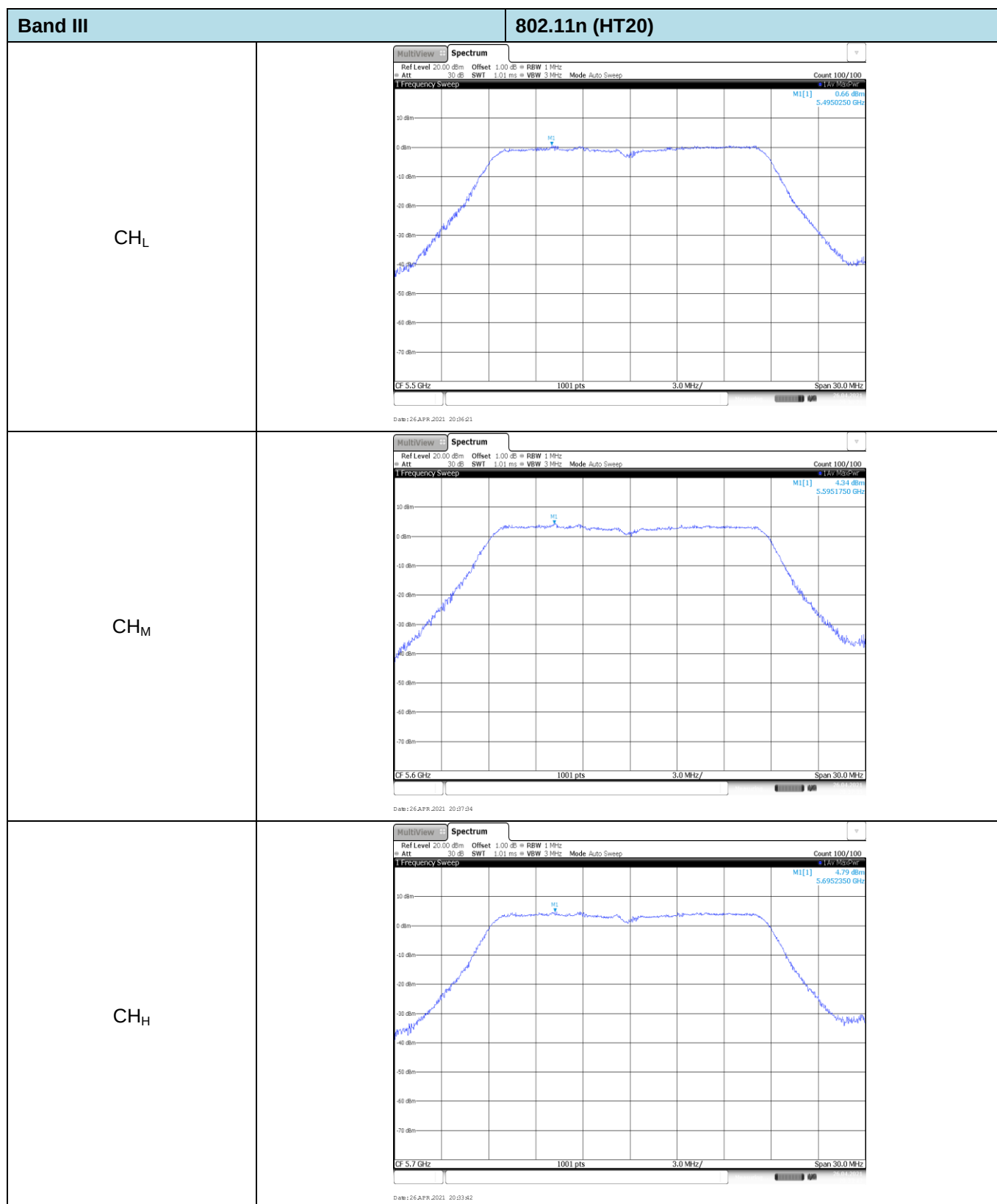


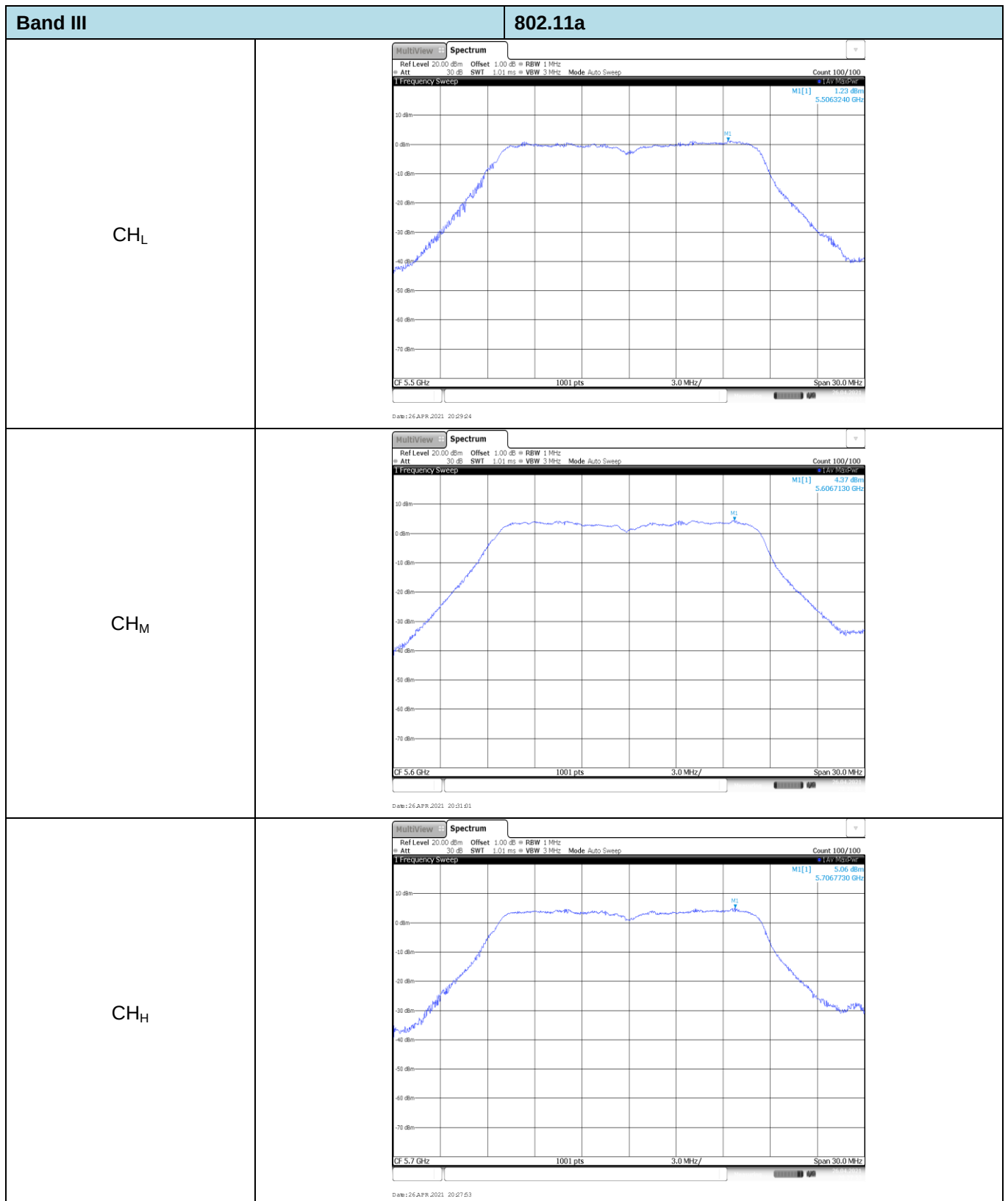
Band II		802.11a
CH _L	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 1 MHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 ↑TAT M50P40 1 Frequency Sweep MU[1] 4.53 dBm 5.2659040 GHz  CF 5.26 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 26 APR 2021 19:07:55	
CH _M	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 1 MHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 ↑TAT M50P40 1 Frequency Sweep MU[1] 4.68 dBm 5.2735260 GHz  CF 5.28 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 26 APR 2021 19:09:04	
CH _H	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 1 MHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 ↑TAT M50P40 1 Frequency Sweep MU[1] 4.13 dBm 5.3159840 GHz  CF 5.32 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 26 APR 2021 19:09:59	

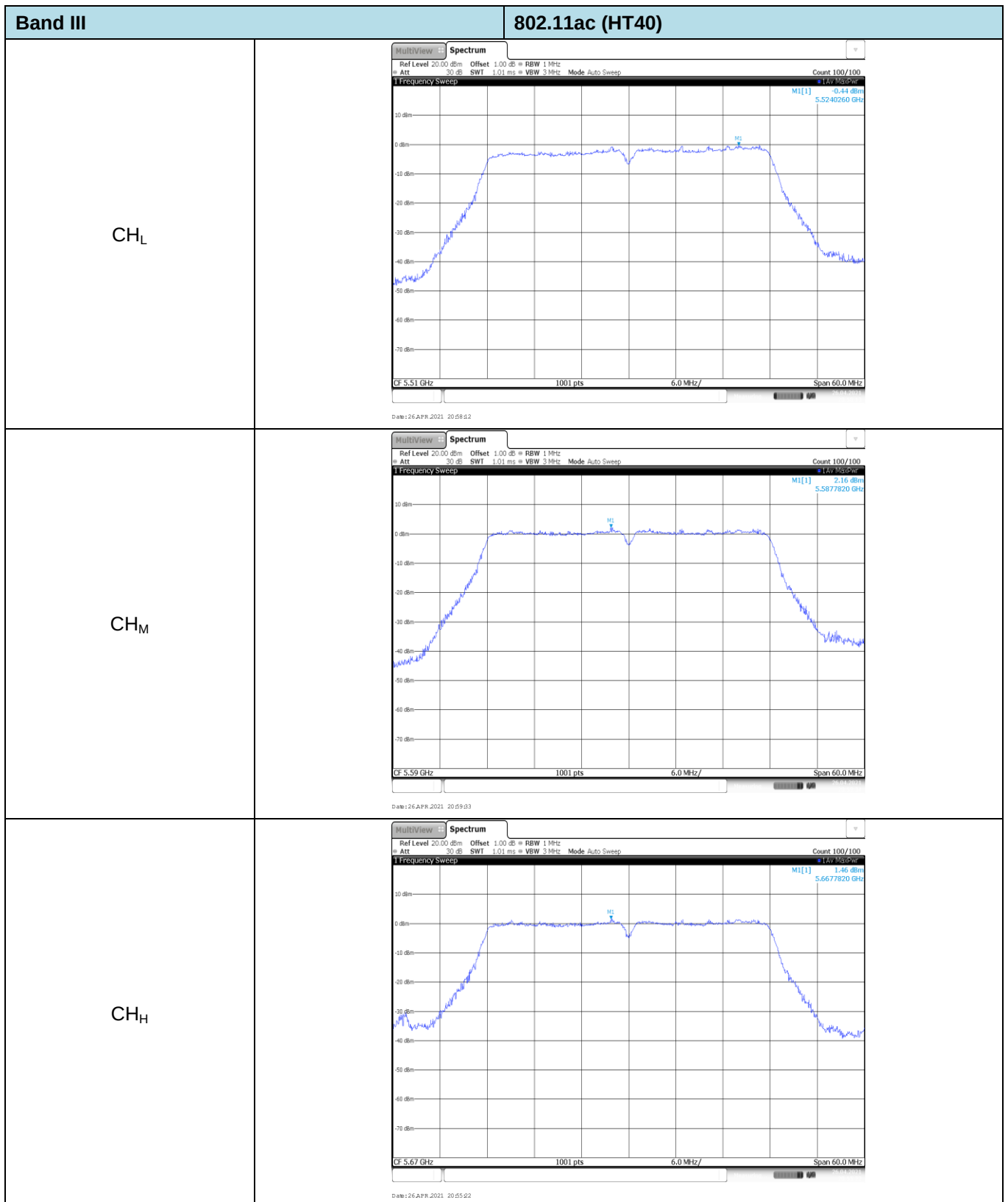
Band II		802.11ac (HT40)
CH _L	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 1 MHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep MU[1] 1.65 dBm 5.2679020 GHz  CF 5.27 GHz 1001 pts 6.0 MHz/ Span 60.0 MHz Date: 26 APR 2021 19:55:37	
CH _H	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 1 MHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep MU[1] 1.91 dBm 5.3079620 GHz  CF 5.31 GHz 1001 pts 6.0 MHz/ Span 60.0 MHz Date: 26 APR 2021 19:57:19	

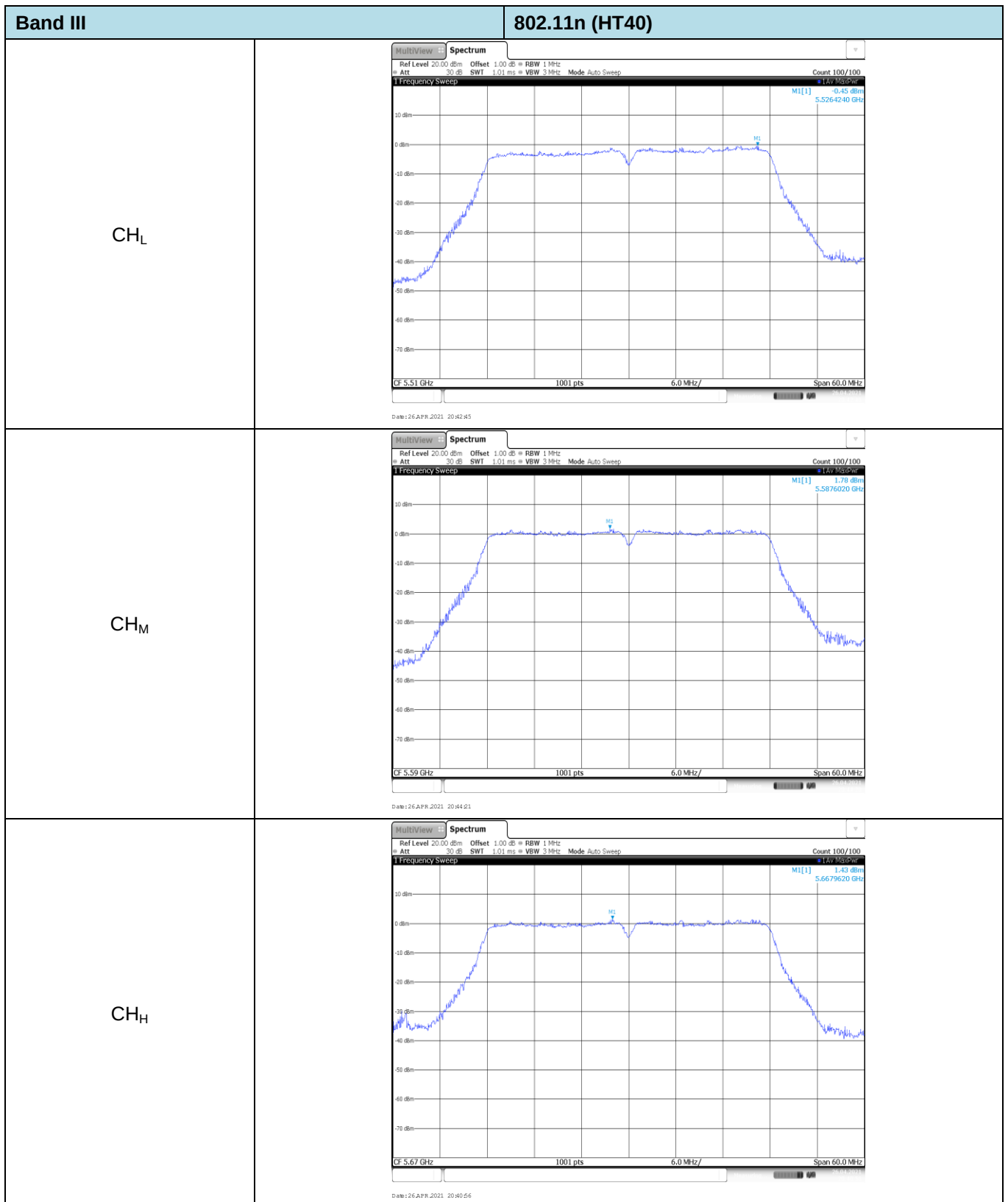


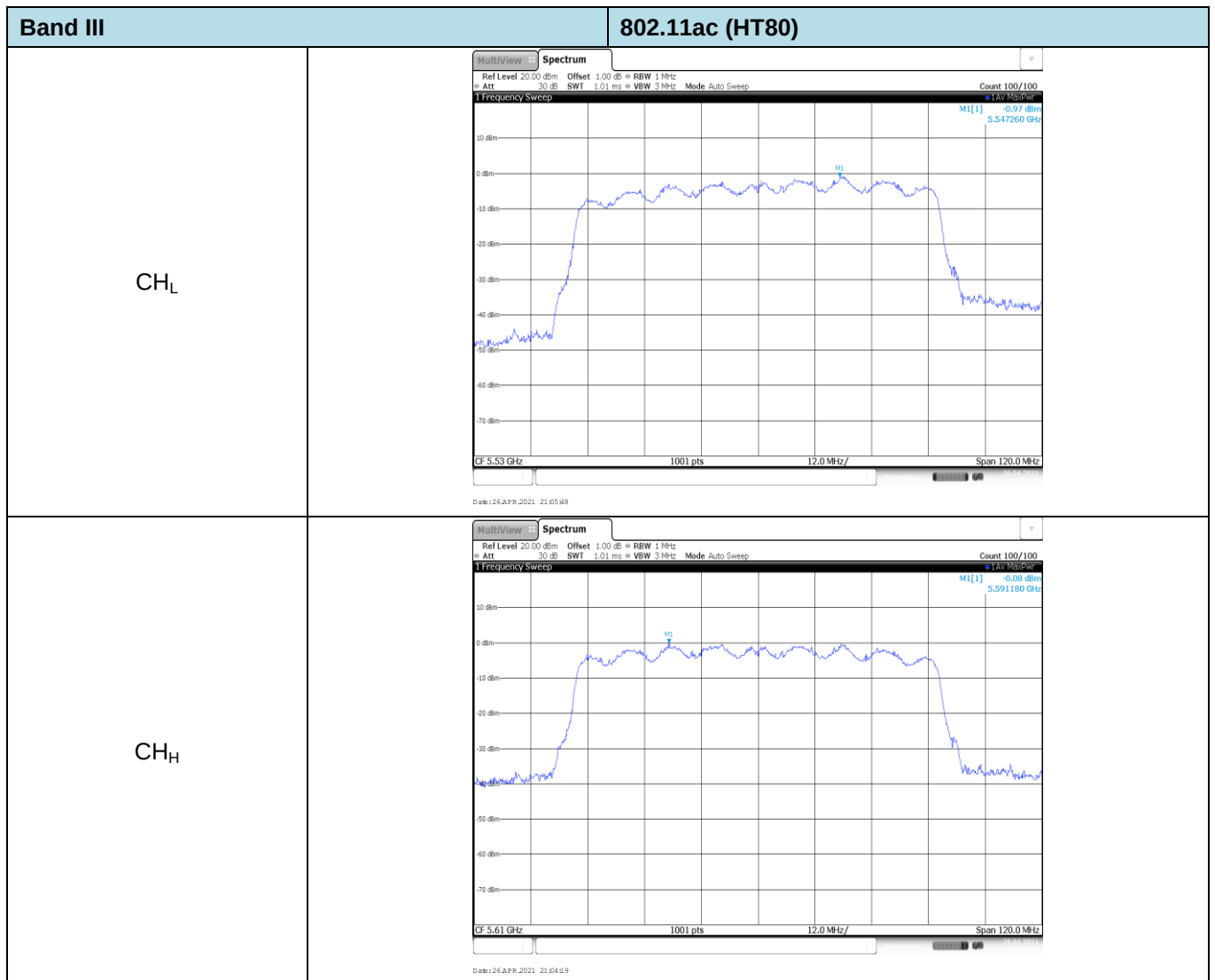


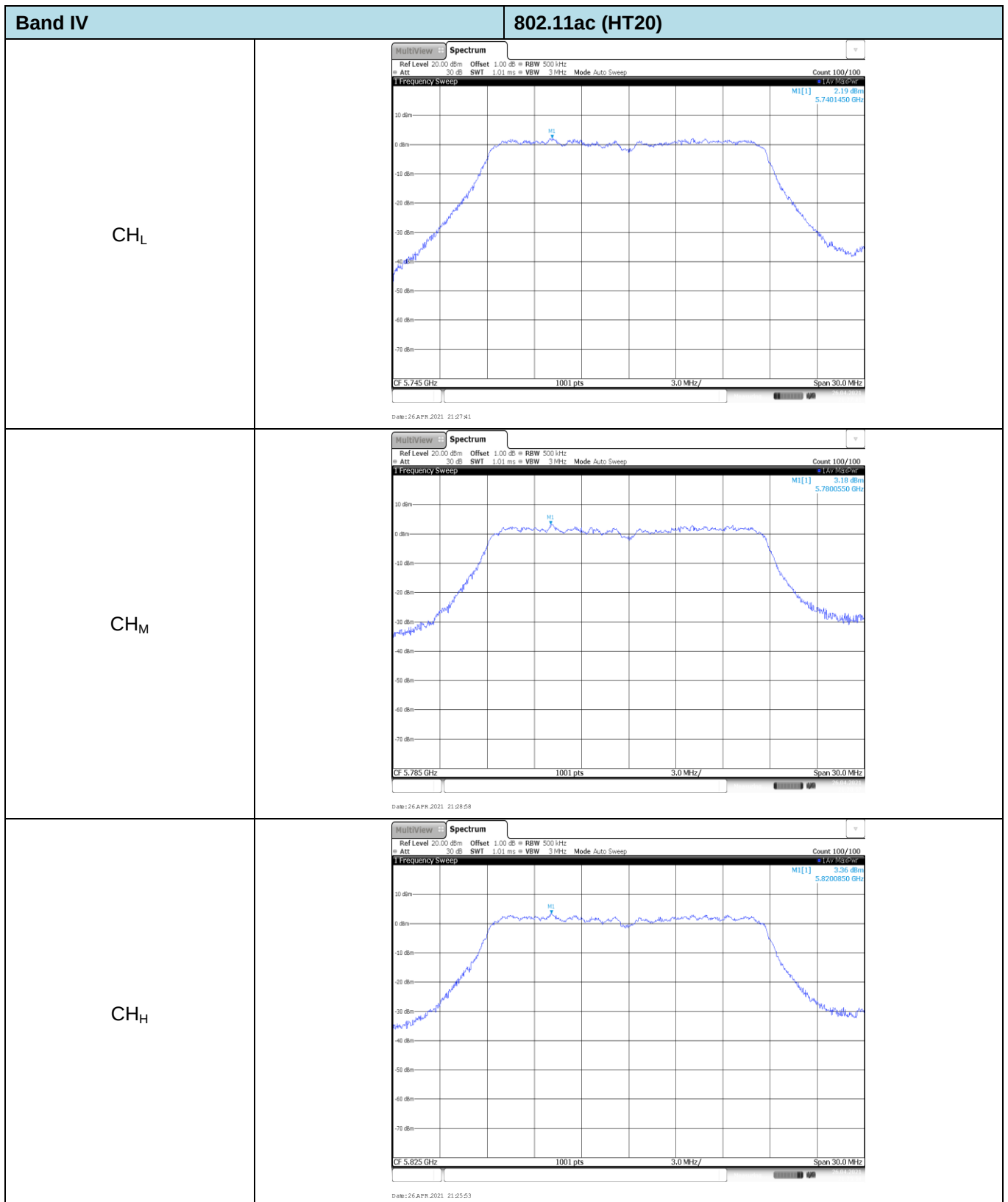


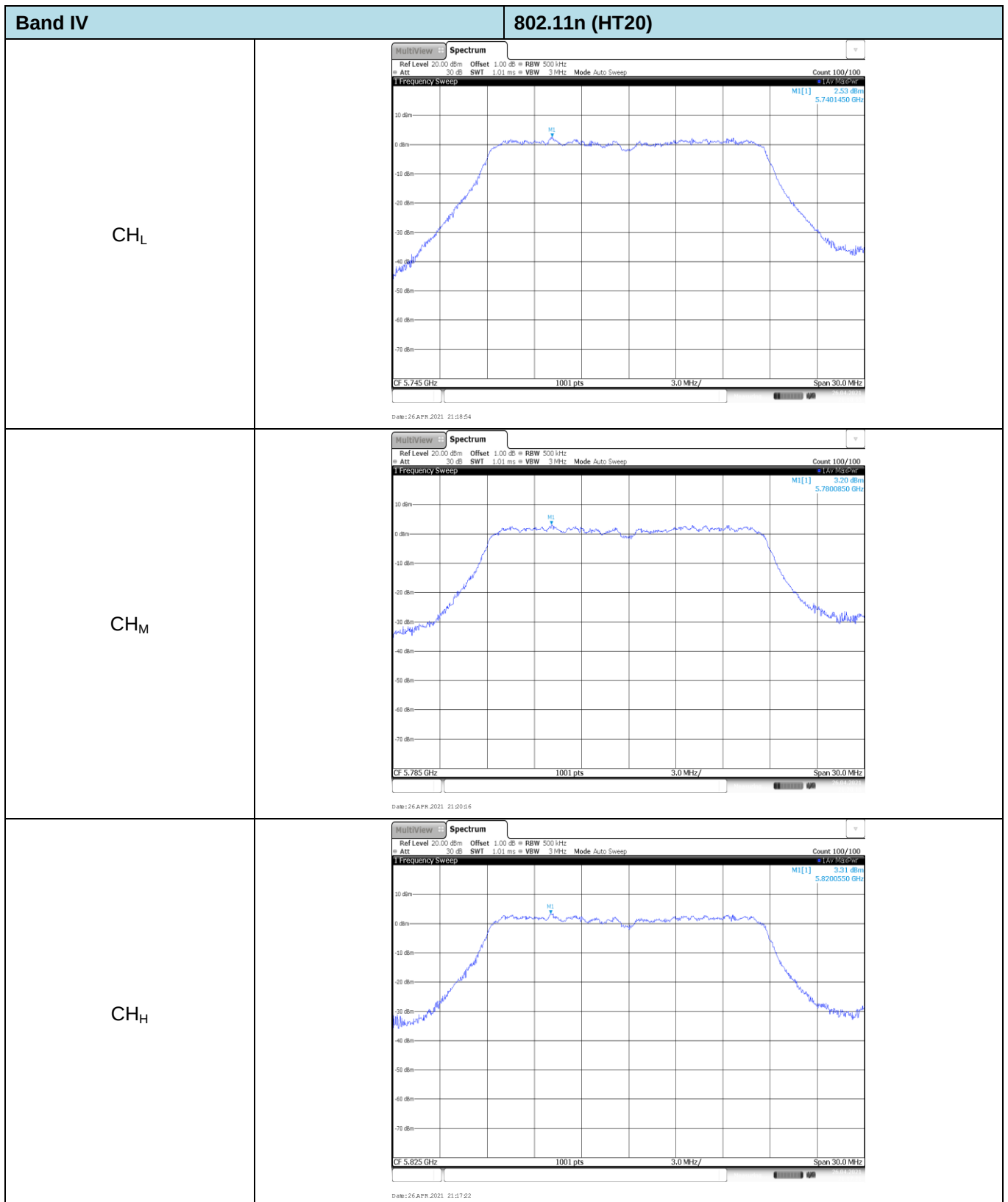


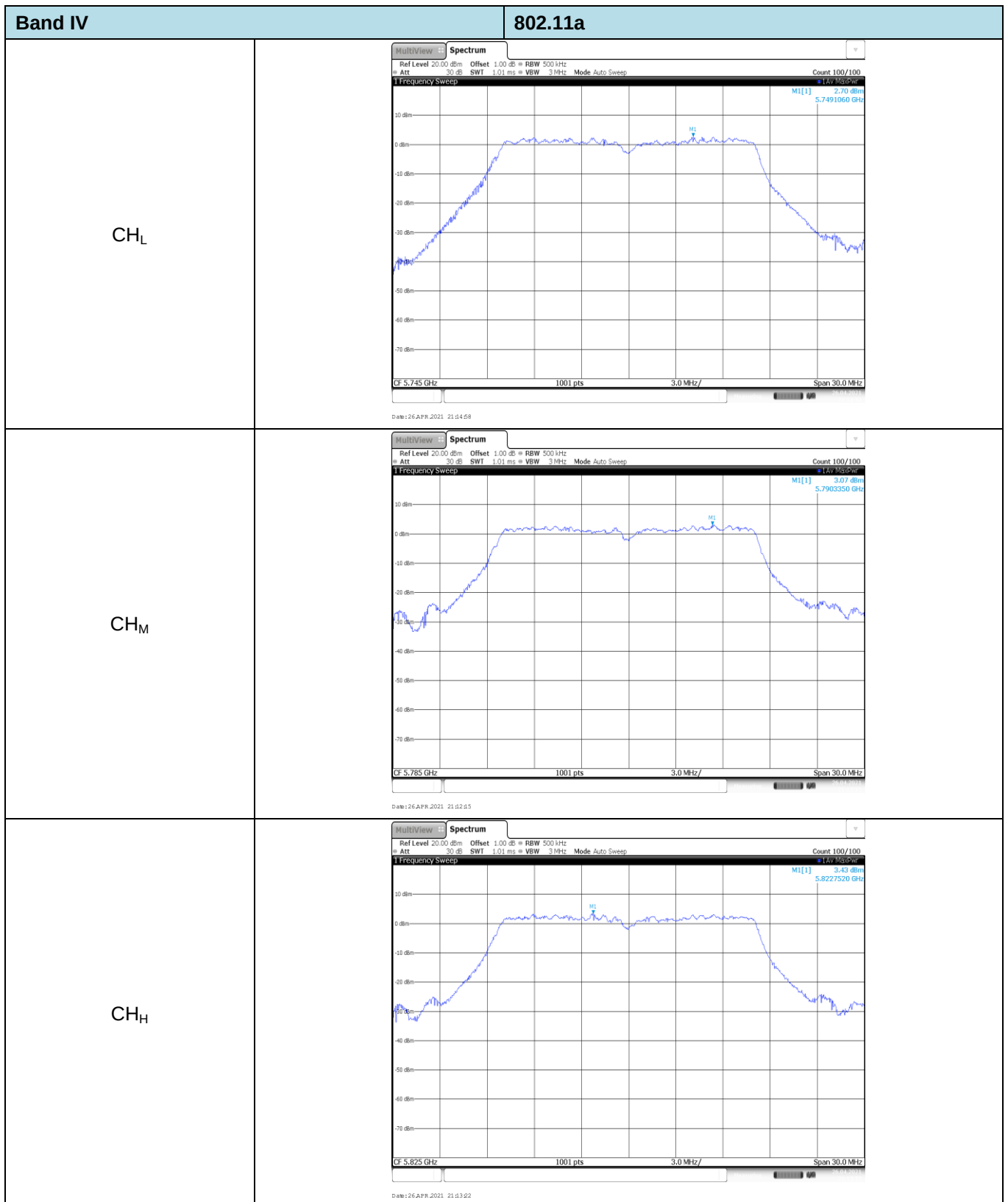




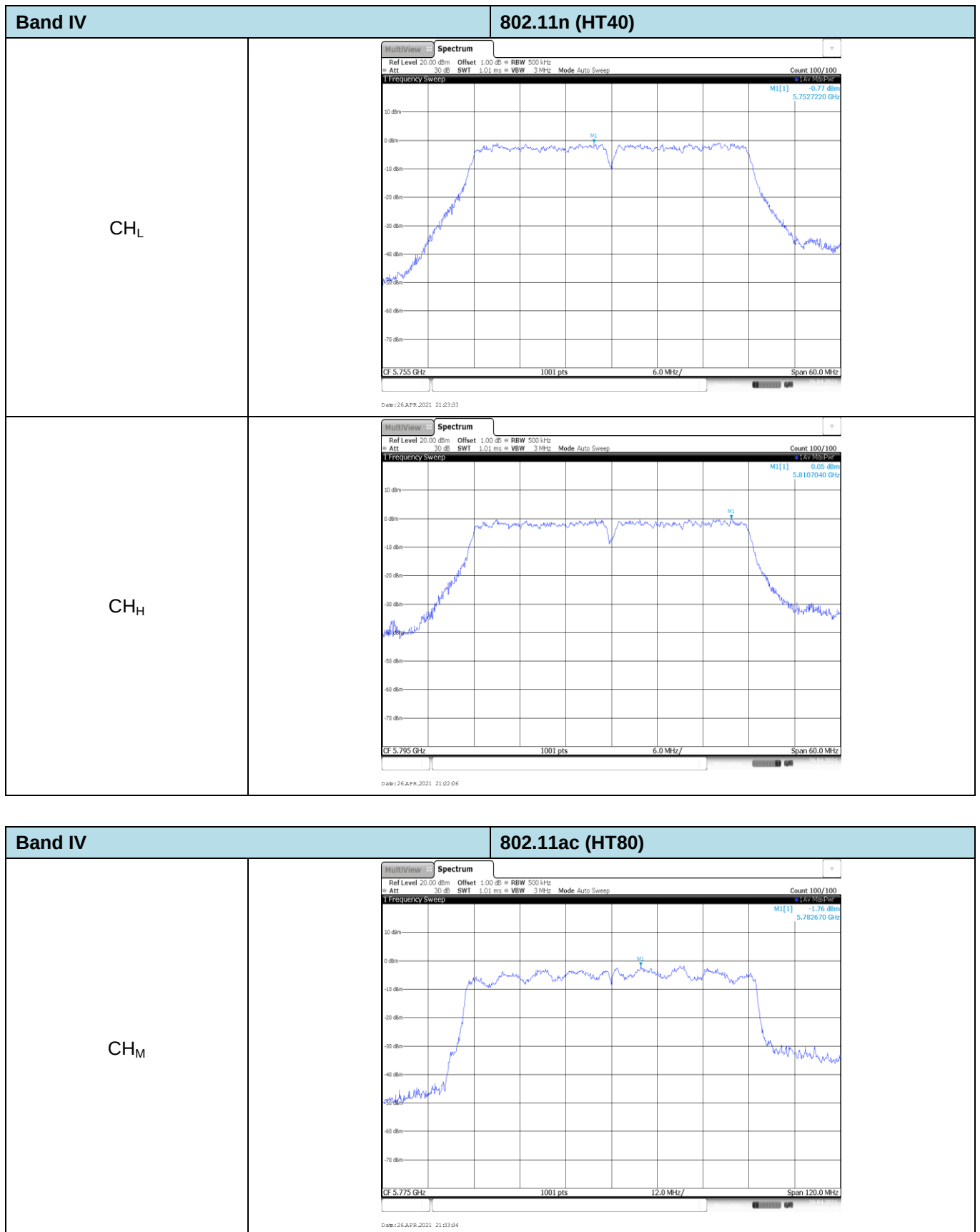








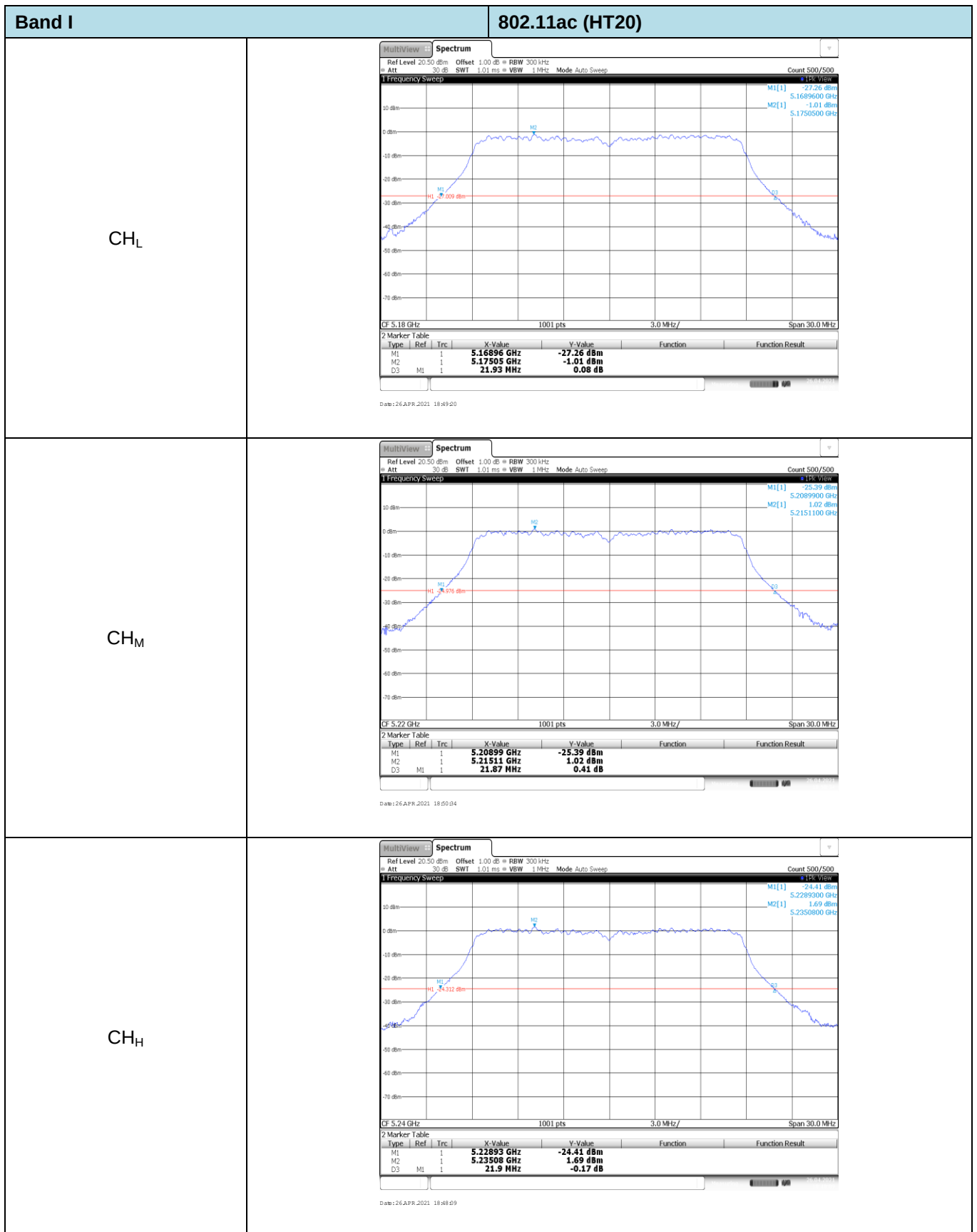
Band IV		802.11ac (HT40)
CH _L	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 500 kHz Att 30 dB SW1 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep M1 M1[1] -1.13 dBm 5.7527820 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 5.755 GHz 1001 pts 6.0 MHz/ Span 60.0 MHz Date: 26 APR 2021 21:02:06	
CH _H	MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 500 kHz Att 30 dB SW1 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep M1 M1[1] -0.20 dBm 5.8089660 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 5.795 GHz 1001 pts 6.0 MHz/ Span 60.0 MHz Date: 26 APR 2021 21:00:44	

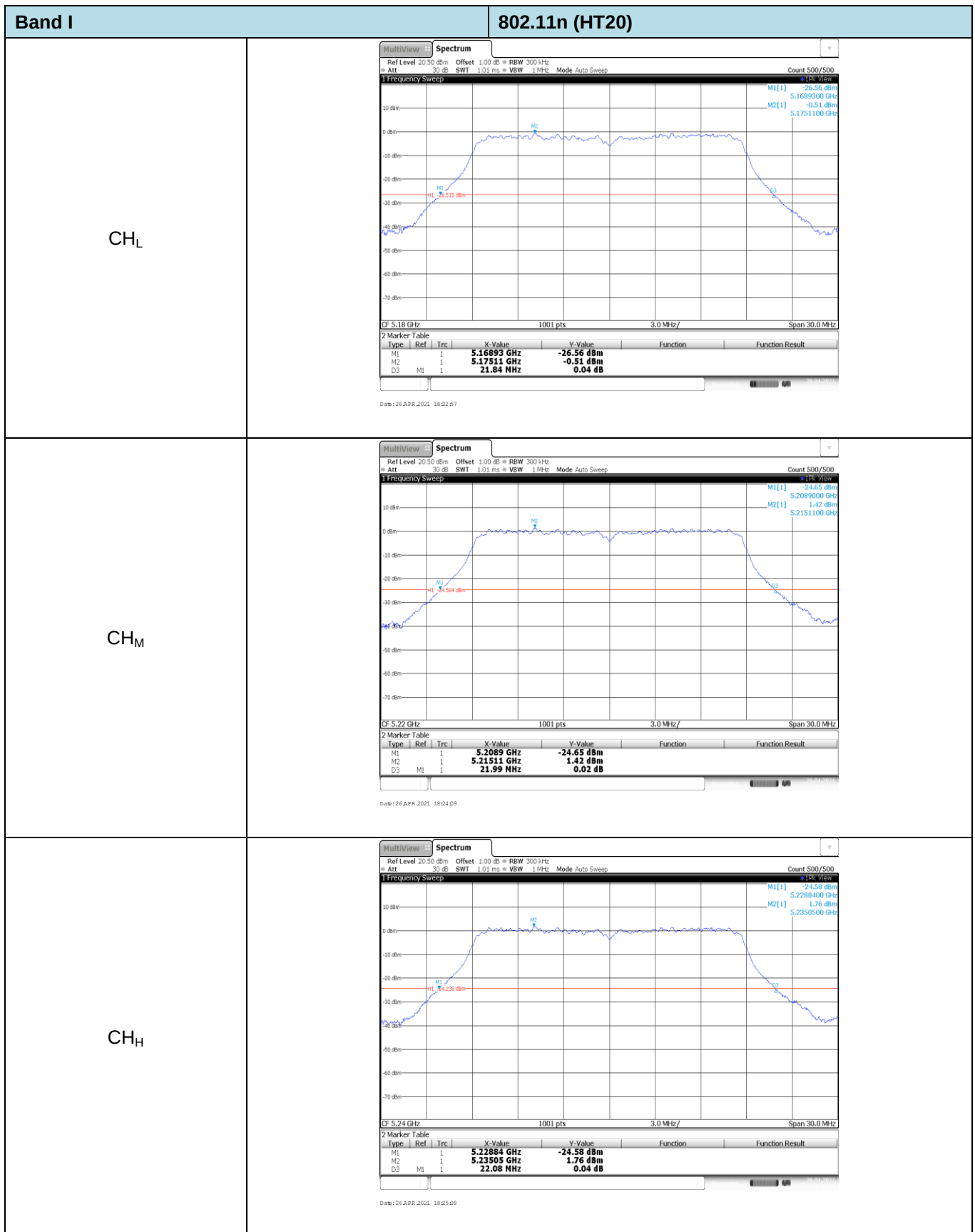


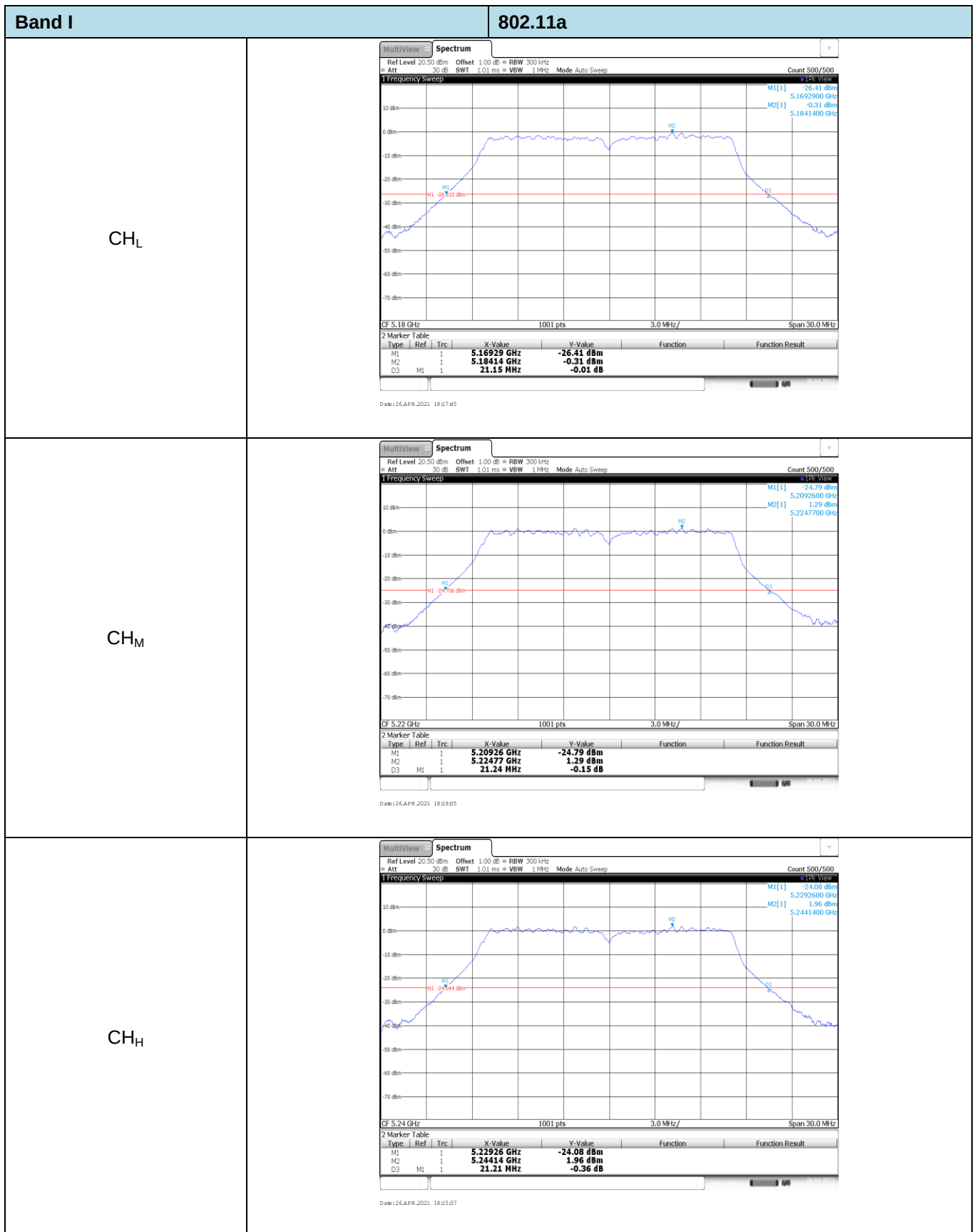
Appendix C: 26dB bandwidth

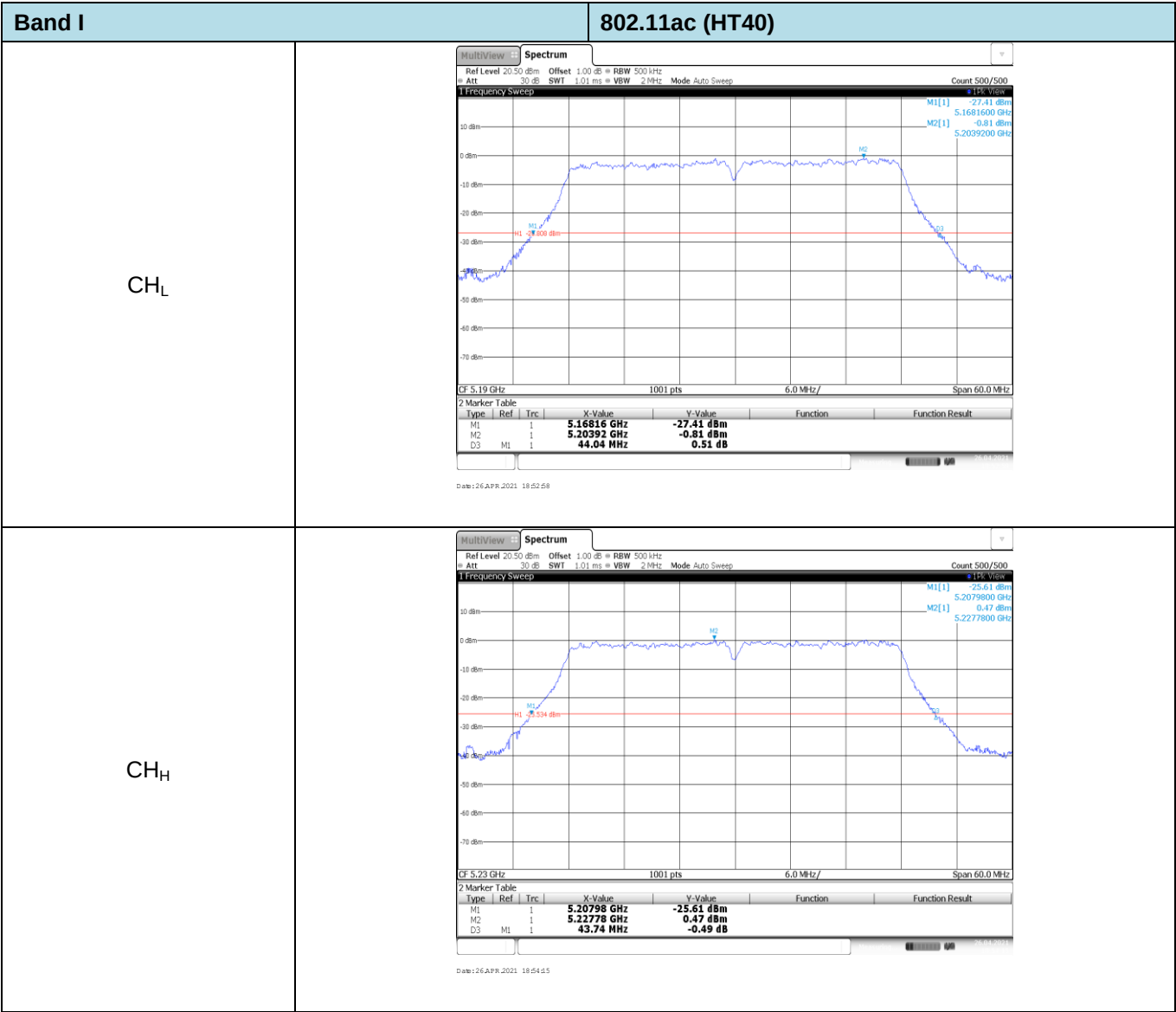
Band	Bandwidth (MHz)	Type	Channel	26dB bandwidth (MHz)	Result
I	20	802.11ac	CH _L	21.93	Pass
			CH _M	21.87	
			CH _H	21.90	
		802.11n	CH _L	21.84	Pass
			CH _M	21.99	
			CH _H	22.08	
		802.11a	CH _L	21.15	Pass
			CH _M	21.24	
			CH _H	21.21	
	40	802.11ac	CH _L	44.04	Pass
			CH _H	43.74	
		802.11n	CH _L	43.86	Pass
			CH _H	43.80	
	80	802.11ac	CH _M	82.20	Pass
II	20	802.11ac	CH _L	21.90	Pass
			CH _M	21.93	
			CH _H	21.93	
		802.11n	CH _L	21.81	Pass
			CH _M	22.05	
			CH _H	22.14	
		802.11a	CH _L	21.21	Pass
			CH _M	21.36	
			CH _H	21.00	
	40	802.11ac	CH _L	43.86	Pass
			CH _H	43.56	
		802.11n	CH _L	43.86	Pass
			CH _H	43.92	
	80	802.11ac	CH _M	82.56	Pass

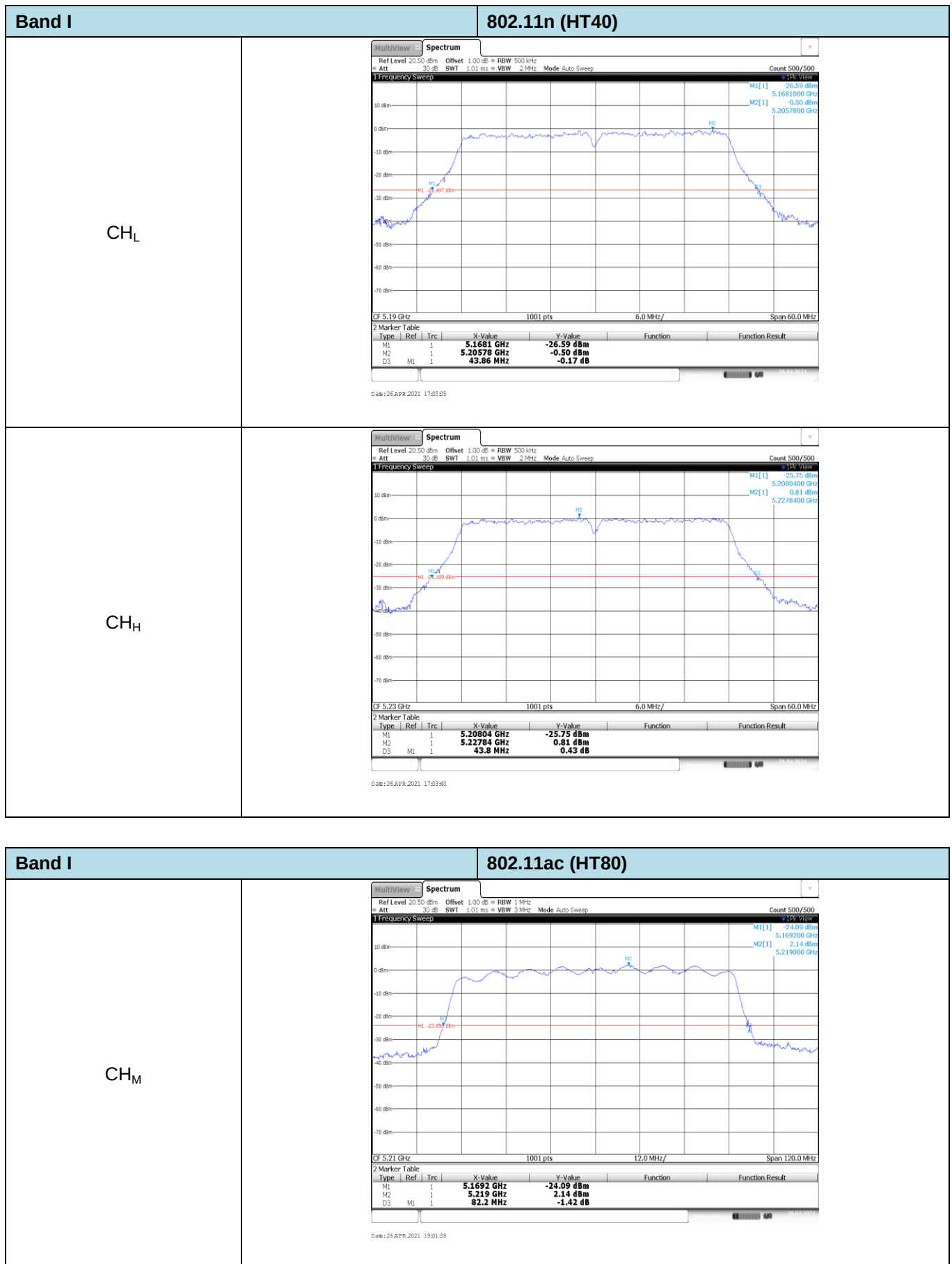
Band	Bandwidth (MHz)	Type	Channel	26dB bandwidth (MHz)	Result
III	20	802.11ac	CH _L	21.96	Pass
			CH _M	21.90	
			CH _H	21.93	
		802.11n	CH _L	21.90	Pass
			CH _M	21.90	
			CH _H	21.72	
		802.11a	CH _L	21.18	Pass
			CH _M	21.12	
			CH _H	21.15	
	40	802.11ac	CH _L	43.74	Pass
			CH _M	43.74	
			CH _H	44.16	
		802.11n	CH _L	44.04	Pass
			CH _M	44.28	
			CH _H	44.04	
	80	802.11ac	CH _L	82.32	Pass
			CH _H	82.92	

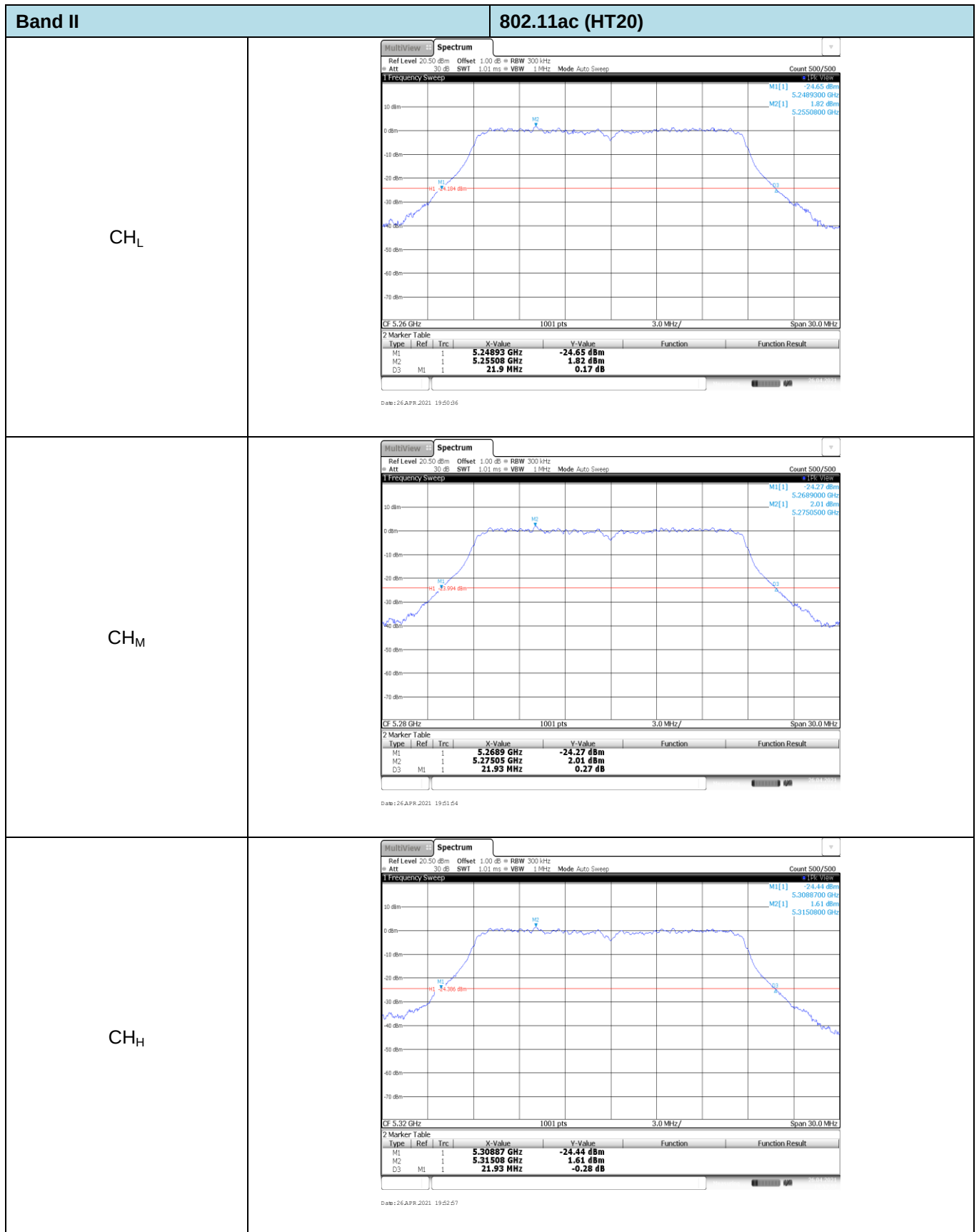


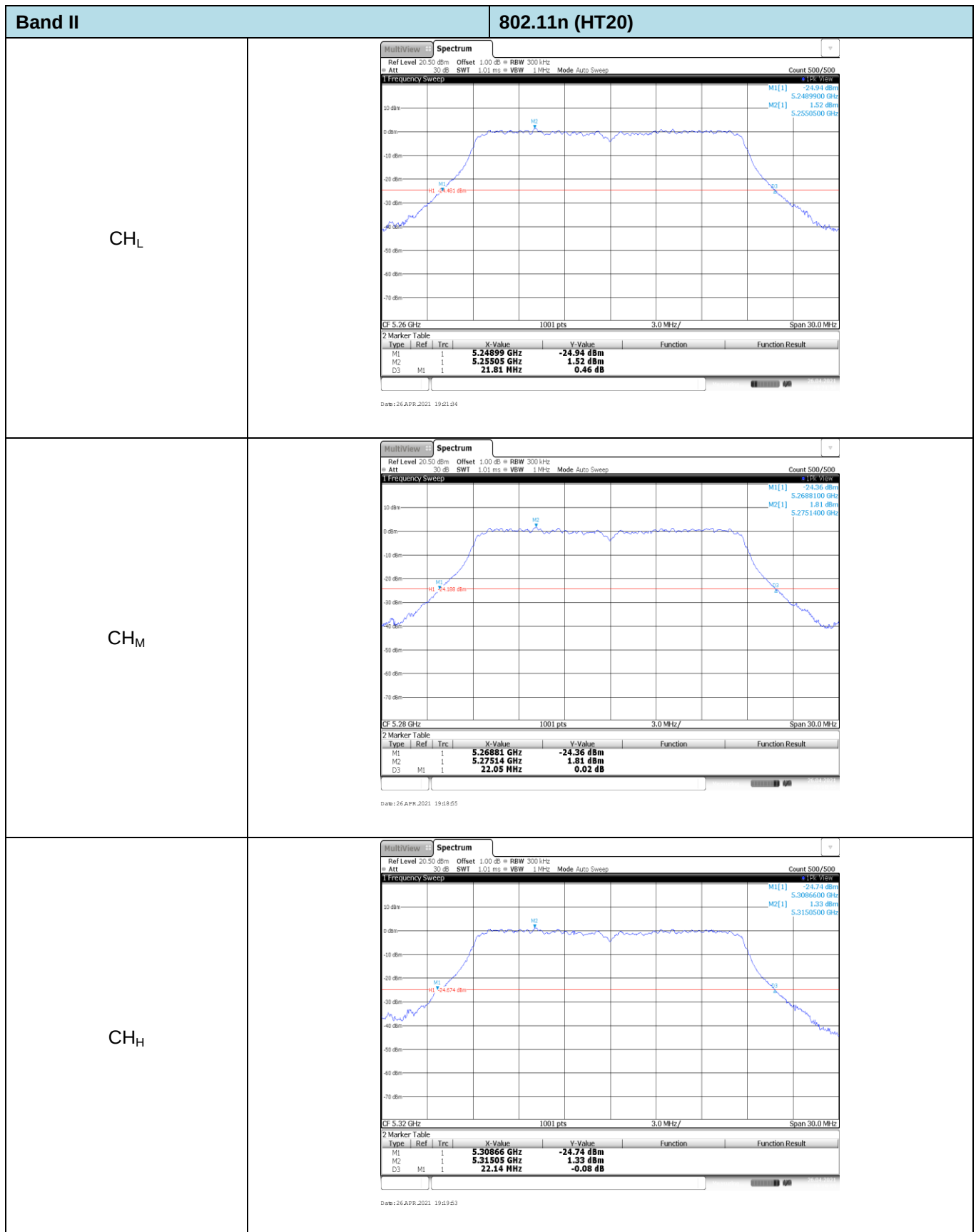






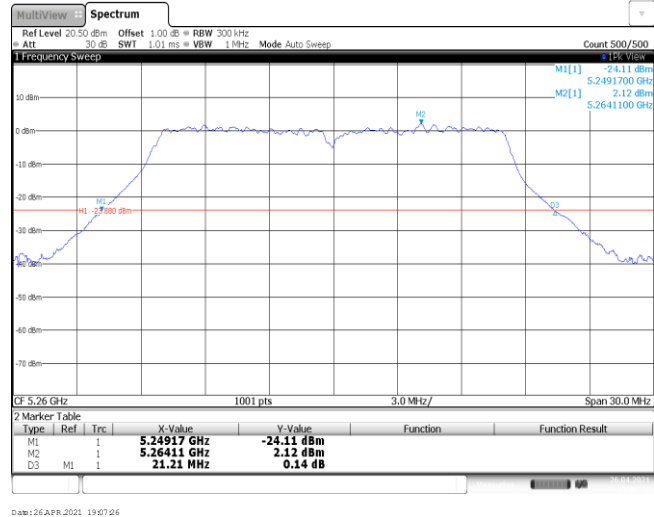
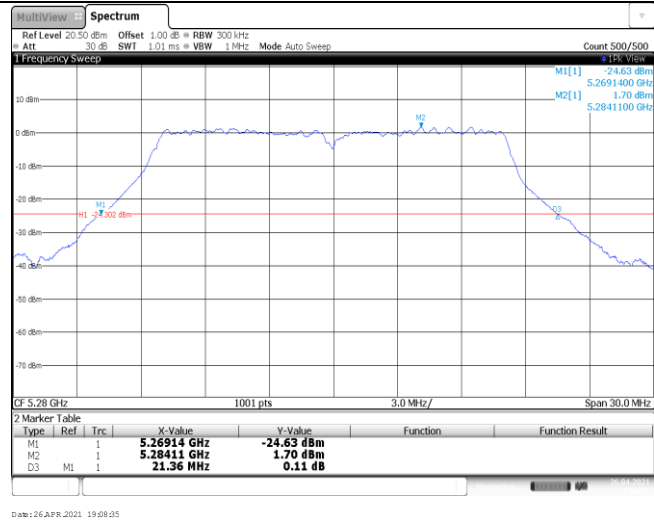
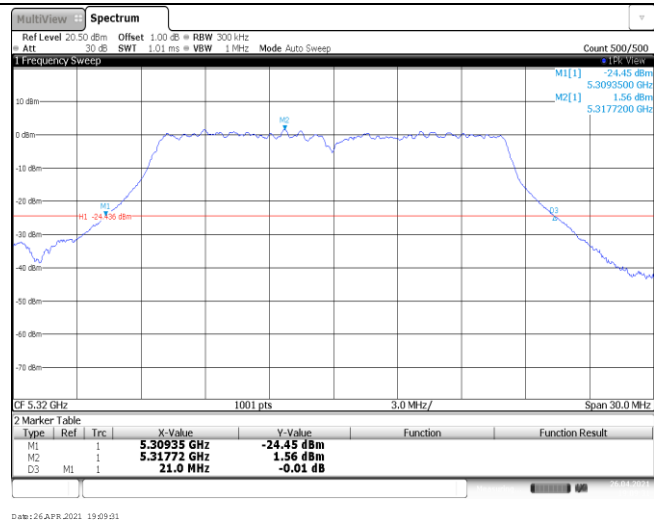


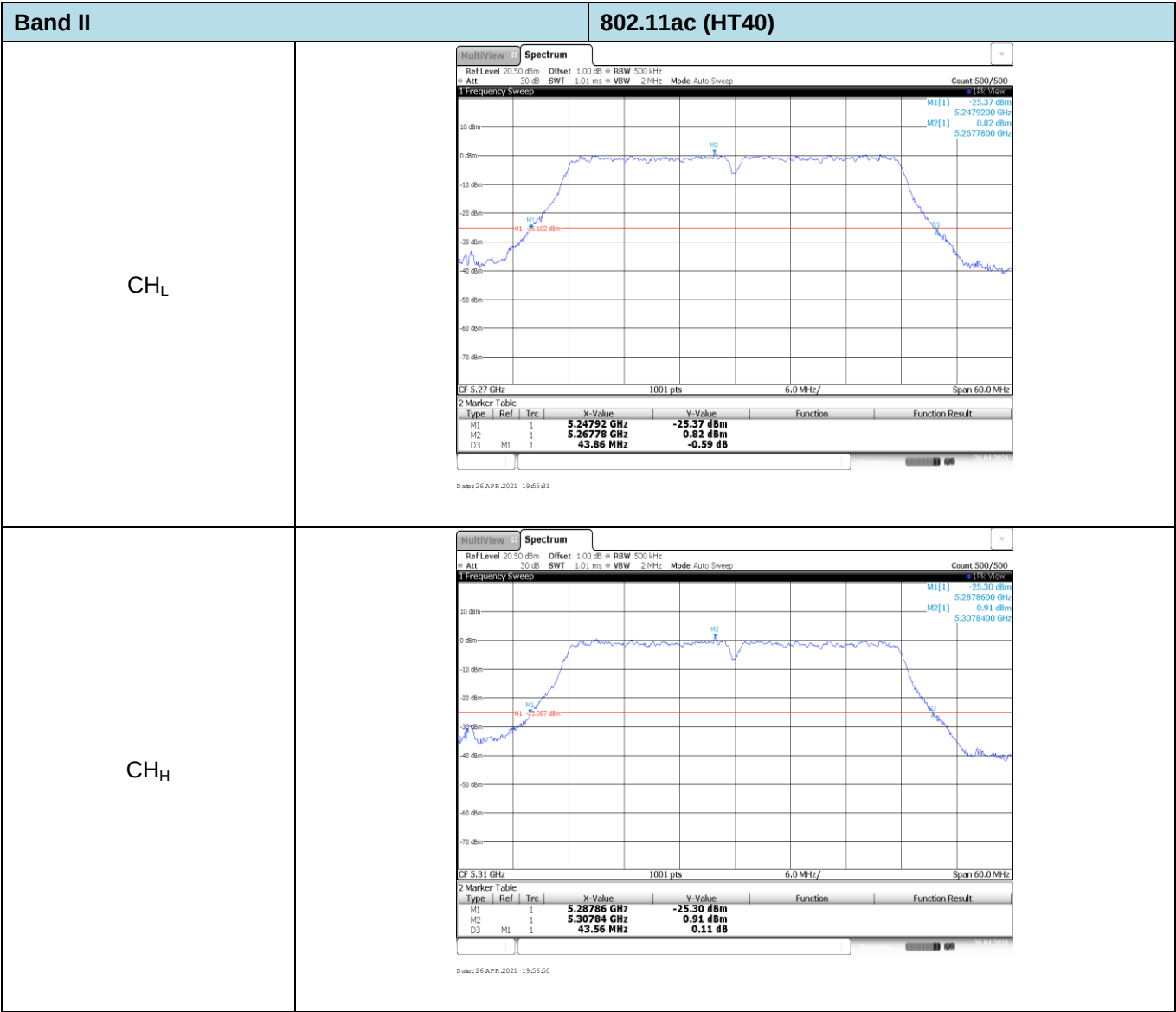


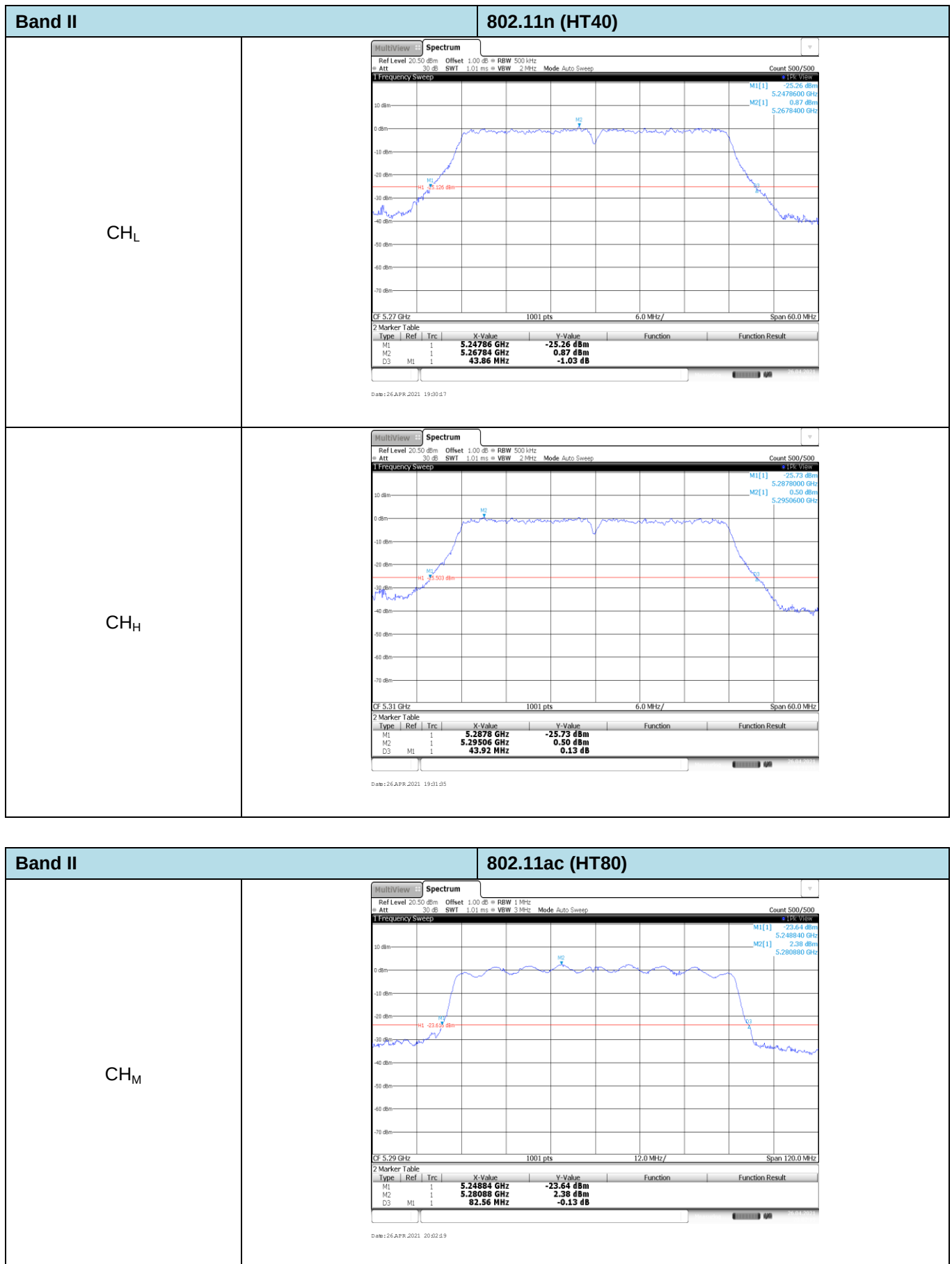


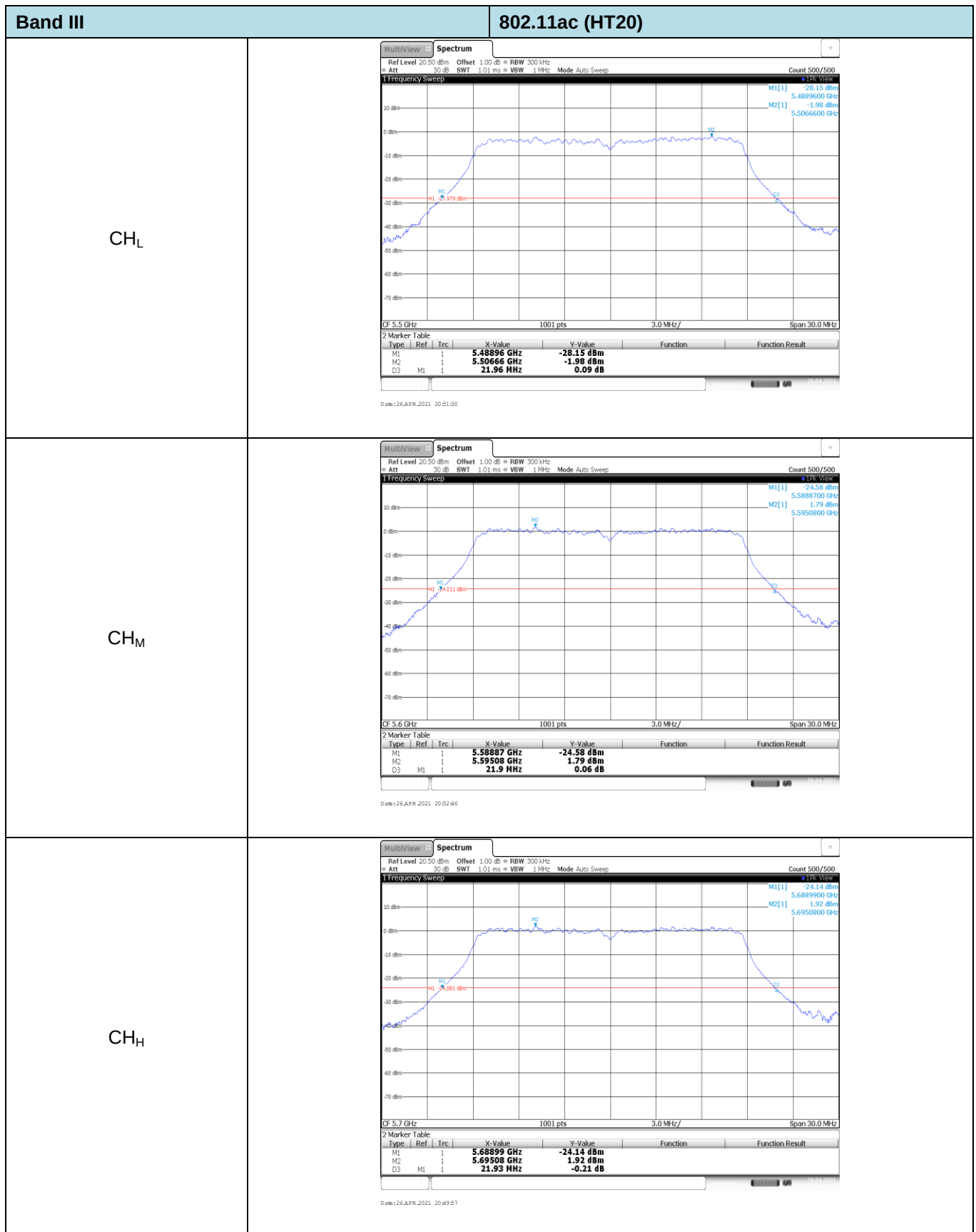
Band II

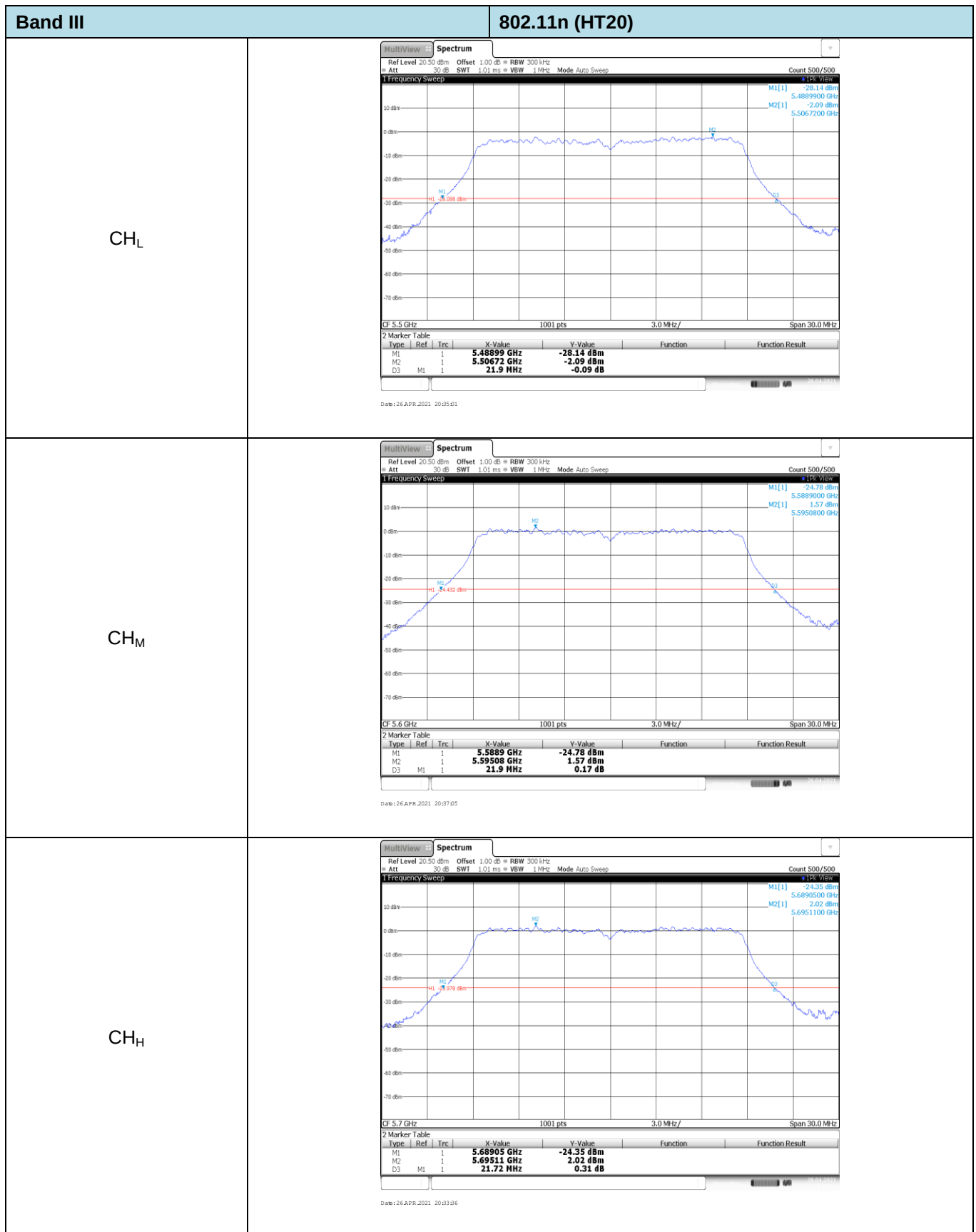
802.11a

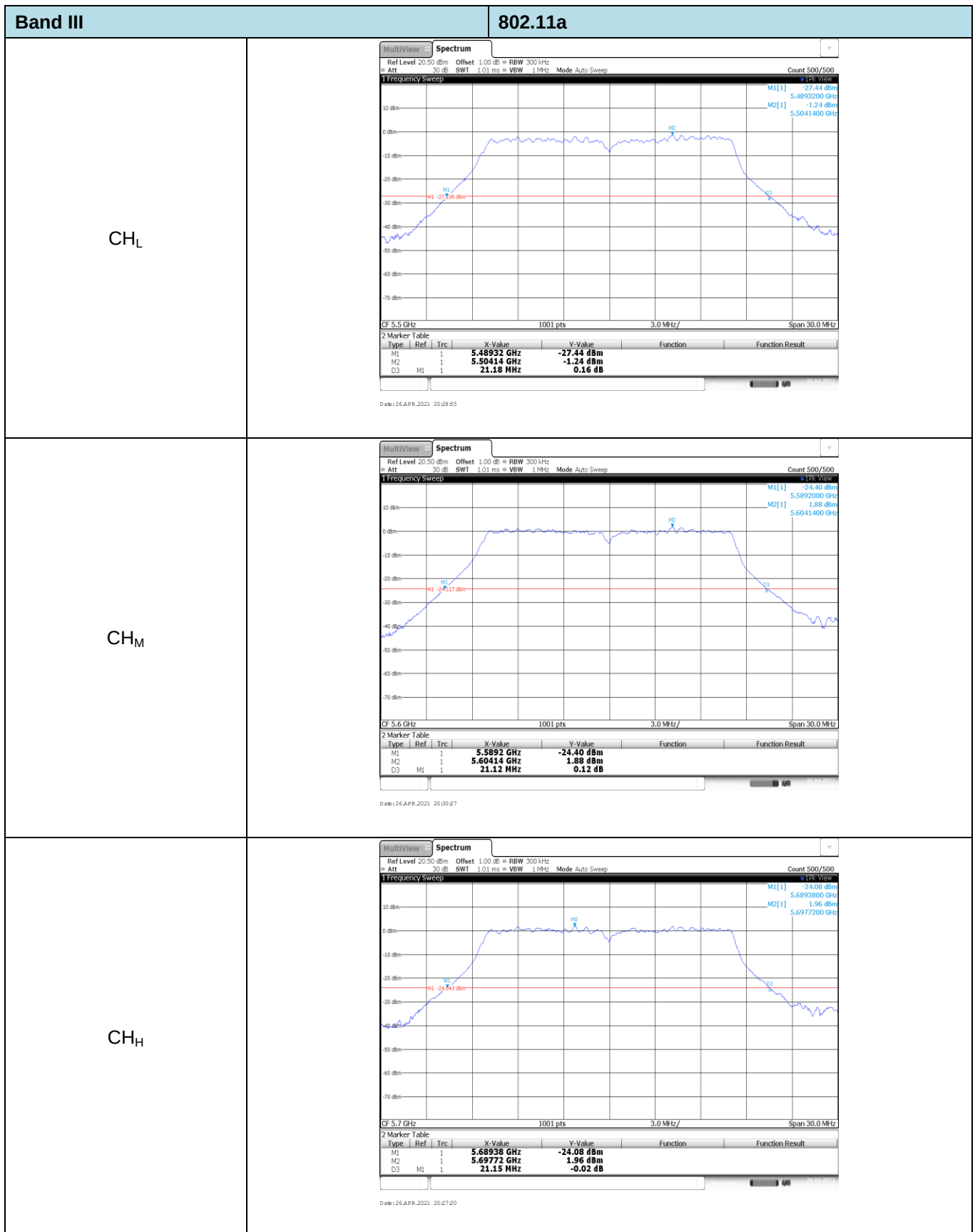
CH_LCH_MCH_H

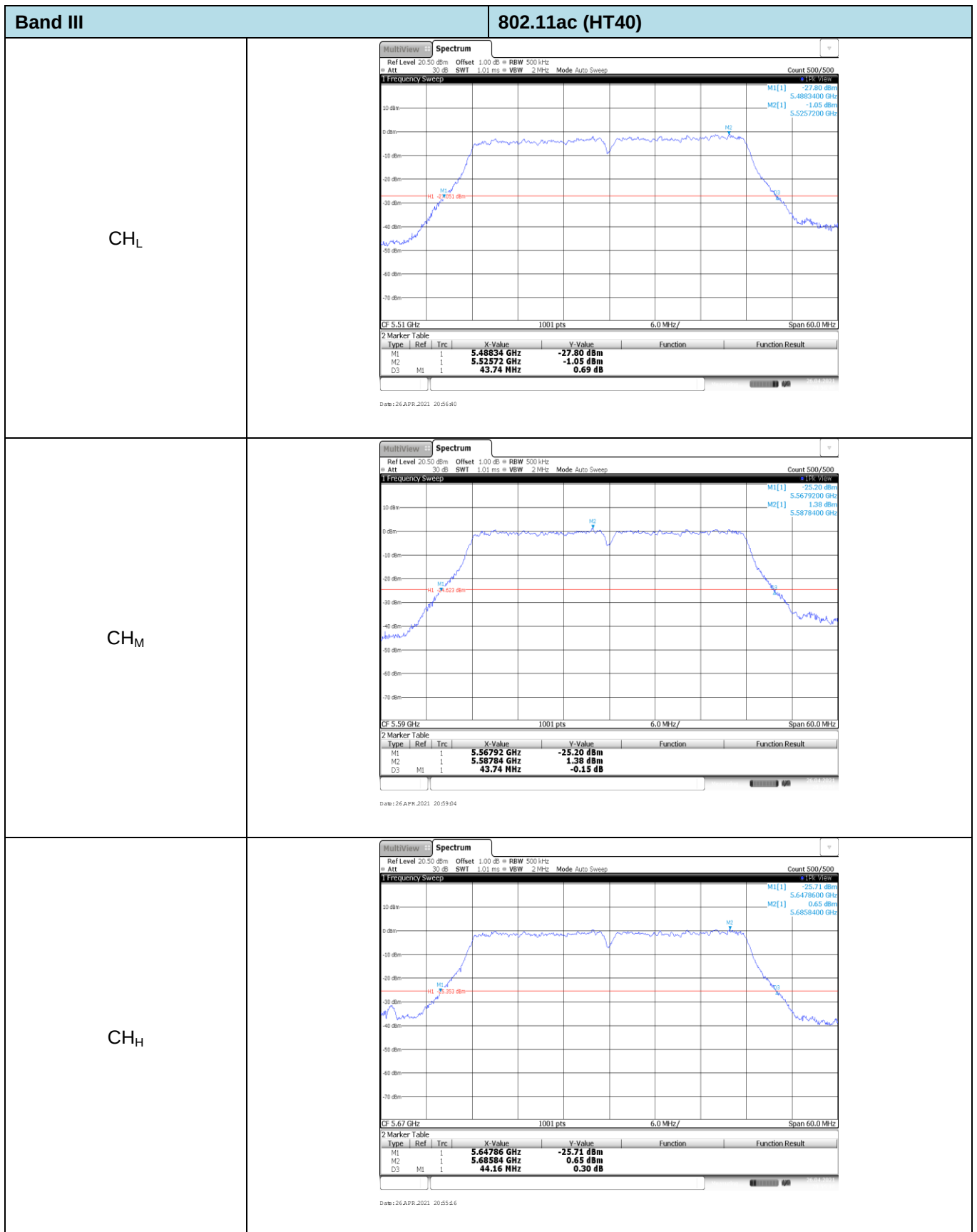


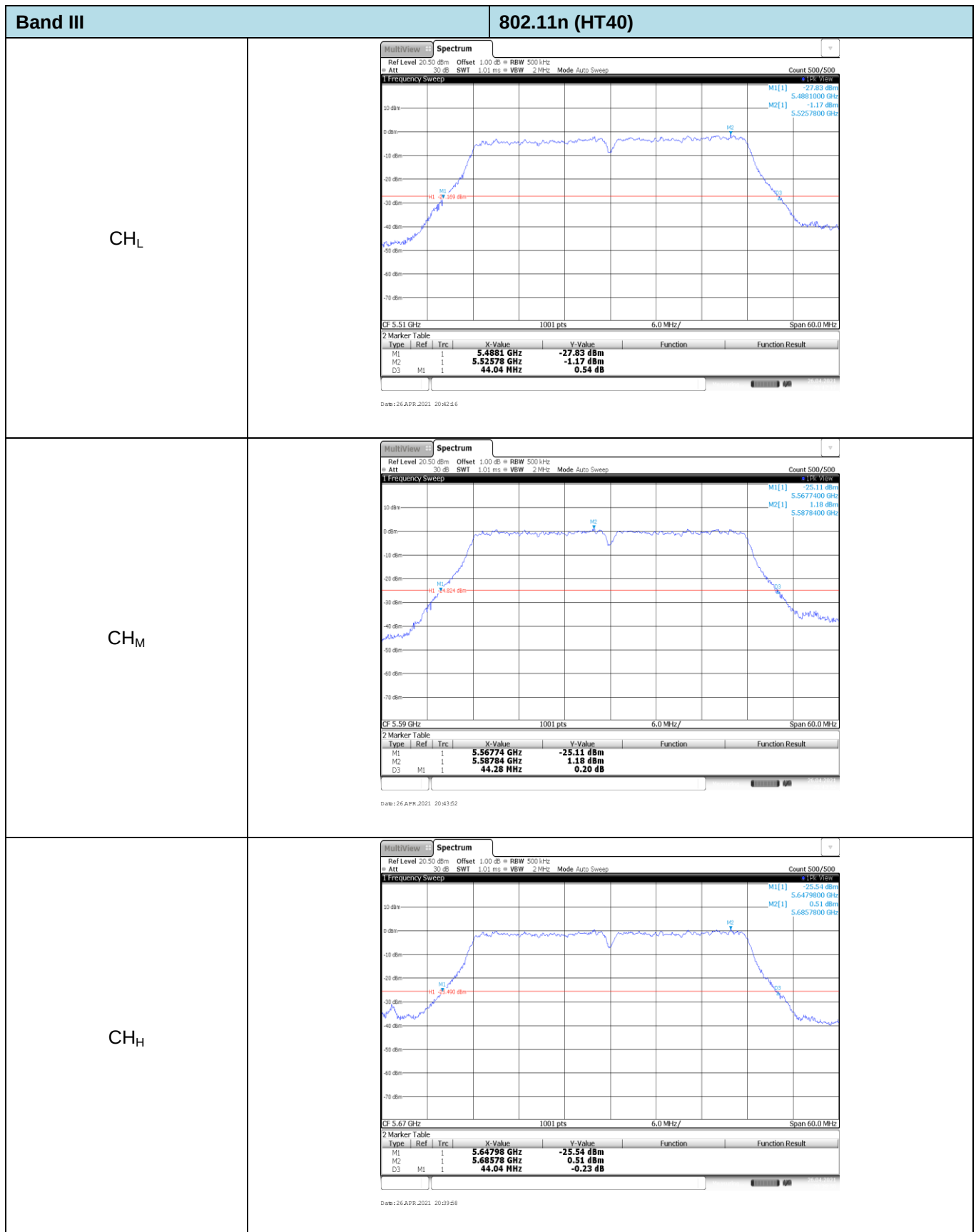


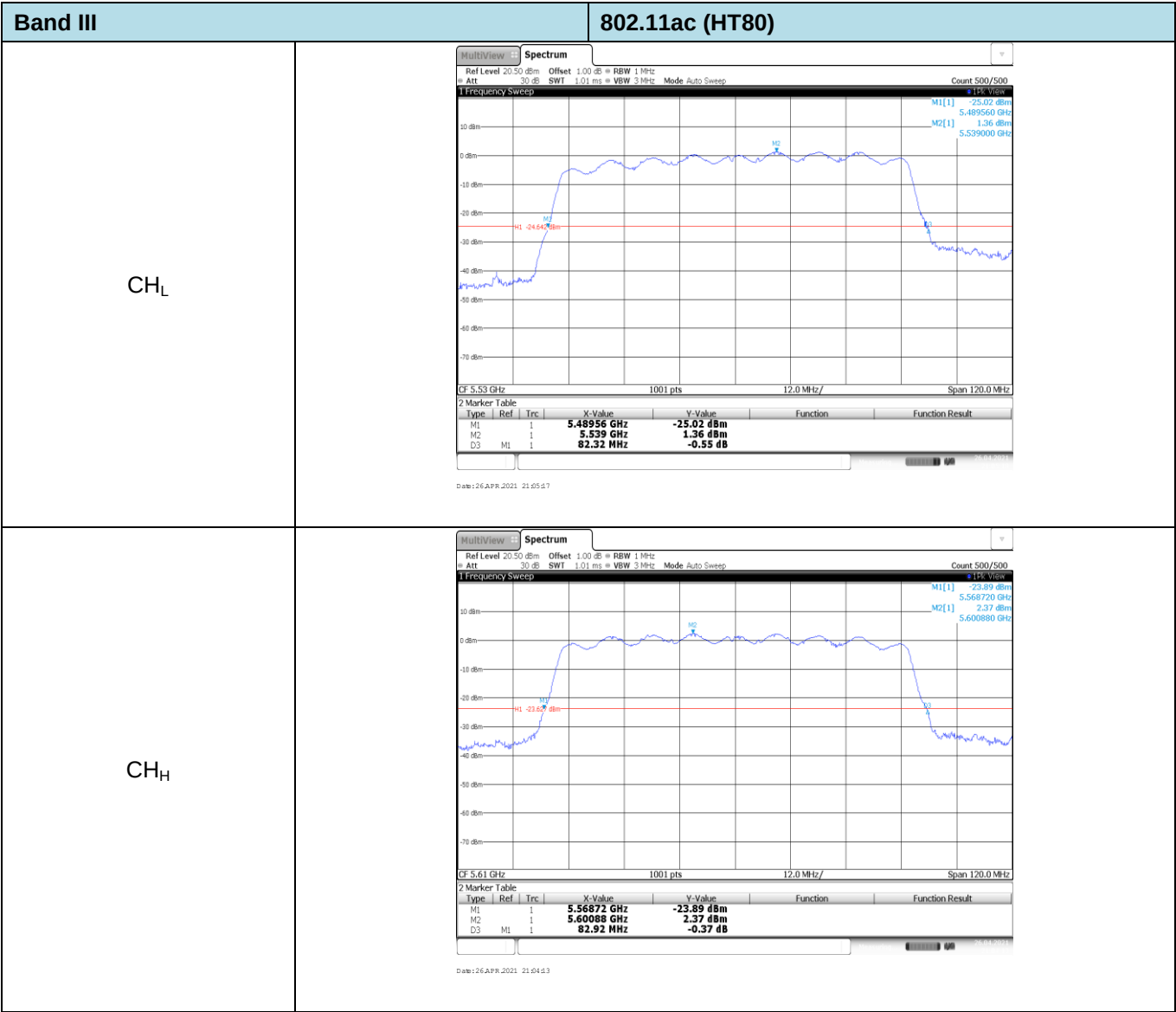












Appendix D: 99% Occupy bandwidth

Band	Bandwidth (MHz)	Type	Channel	99% Occupy bandwidth (MHz)	Result
I	20	802.11ac	CH _L	17.89	Pass
			CH _M	17.86	
			CH _H	17.89	
		802.11n	CH _L	17.89	Pass
			CH _M	17.86	
			CH _H	17.86	
		802.11a	CH _L	16.87	Pass
			CH _M	16.81	
			CH _H	16.81	
	40	802.11ac	CH _L	36.56	Pass
			CH _H	36.62	
		802.11n	CH _L	36.62	Pass
			CH _H	36.62	
	80	802.11ac	CH _M	74.93	Pass
II	20	802.11ac	CH _L	17.89	Pass
			CH _M	17.86	
			CH _H	17.89	
		802.11n	CH _L	17.89	Pass
			CH _M	17.89	
			CH _H	17.92	
		802.11a	CH _L	16.84	Pass
			CH _M	16.81	
			CH _H	16.78	
	40	802.11ac	CH _L	36.62	Pass
			CH _H	36.62	
		802.11n	CH _L	36.68	Pass
			CH _H	36.68	
	80	802.11ac	CH _M	74.93	Pass

Band	Bandwidth (MHz)	Type	Channel	99% Occupy bandwidth (MHz)	Result
III	20	802.11ac	CH _L	17.86	Pass
			CH _M	17.86	
			CH _H	17.89	
		802.11n	CH _L	17.89	Pass
			CH _M	17.89	
			CH _H	17.89	
		802.11a	CH _L	16.81	Pass
			CH _M	16.87	
			CH _H	16.78	
	40	802.11ac	CH _L	36.62	Pass
			CH _M	36.62	
			CH _H	36.68	
		802.11n	CH _L	36.62	Pass
			CH _M	36.62	
			CH _H	36.68	
	80	802.11ac	CH _L	74.69	Pass
			CH _H	74.93	

Band	Bandwidth (MHz)	Type	Channel	99% Occupy bandwidth (MHz)	Result
IV	20	802.11ac	CH _L	17.89	Pass
			CH _M	17.92	
			CH _H	17.92	
		802.11n	CH _L	17.89	Pass
			CH _M	17.89	
			CH _H	17.92	
		802.11a	CH _L	16.84	Pass
			CH _M	16.87	
			CH _H	16.81	
	40	802.11ac	CH _L	36.68	Pass
			CH _H	36.68	
		802.11n	CH _L	36.73	Pass
			CH _H	36.73	
	80	802.11ac	CH _M	75.16	Pass

