

Test Mode: IEEE 802.11ac VHT80 mode

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				CH 0	CH 1				
42	5210	MCS0	19.5	17.15	16.39	19.87	96.993	29.79	PASS
155	5775	MCS0	23.5	19.11	18.91	22.09	161.880	29.79	PASS

Test Mode: IEEE 802.11ax 20 Mode

CH	Frequency (MHz)	Data Rate	RU config.	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
					CH 0	CH 1				
36	5180	MCS0	26/0	21.5	21.04	20.83	24.14	259.645	29.79	PASS
		MCS0	52/37	23.5	21.49	20.99	24.45	278.916	29.79	PASS
		MCS0	106/53	21.5	20.94	20.96	24.16	260.468	29.79	PASS
44	5220	MCS0	106/53	21.5	18.82	18.6	21.92	155.558	29.79	PASS
48	5240	MCS0	106/53	21.5	18.84	18.57	21.91	155.405	29.79	PASS
149	5745	MCS0	26/0	23.5	19.04	18.86	22.16	164.379	29.79	PASS
		MCS0	52/37	23.5	19.14	19.12	22.34	171.299	29.79	PASS
		MCS0	106/53	23.5	18.87	18.72	22.00	158.606	29.79	PASS
157	5785	MCS0	106/53	23.5	18.93	18.61	21.98	157.779	29.79	PASS
165	5825	MCS0	26/8	23.5	18.21	18.31	21.47	140.211	29.79	PASS
		MCS0	52/40	23.5	17.91	18.4	21.37	137.071	29.79	PASS
		MCS0	106/54	23.5	18.28	18.6	21.65	146.234	29.79	PASS

Test Mode: IEEE 802.11ax 40 Mode

CH	Frequency (MHz)	Data Rate	RU config.	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm) (dBm)	RESULT
					CH 0	CH 1				
38	5190	MCS0	106/53	23.5	20.38	20.06	24.51	282.370	29.79	PASS
46	5230	MCS0	106/53	23.5	18.5	18.61	22.84	192.335	29.79	PASS
151	5755	MCS0	106/53	23.5	18.83	18.33	22.87	193.751	29.79	PASS
159	5795	MCS0	106/56	23.5	18.74	18.72	23.02	200.228	29.79	PASS

Test Mode: IEEE 802.11ax 80 mode

CH	Frequency (MHz)	Data Rate	RU config.	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm) (dBm)	RESULT
					CH 0	CH 1				
42	5210	MCS0	106/53	23.5	21.48	20.32	25.26	335.883	29.79	PASS
155	5775	MCS0	106/53	23.5	18.25	17.72	22.32	170.465	29.79	PASS
		MCS0	106/60	23.5	18.13	17.96	22.37	172.548	29.79	PASS

For Client Device

Temperature: 25.6°C

Test date: June 7, 2021

Humidity: 49.3% RH

Tested by: Jerry Chang

Test Mode: IEEE 802.11a Mode

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				CH 0	CH 1				
36	5180	6	11	11.36	9.32	13.88	24.453	23.77	PASS
44	5220	6	11	11.85	9.91	14.41	27.619	23.77	PASS
48	5240	6	11	11.77	9.75	14.30	26.922	23.77	PASS

Test Mode: IEEE 802.11n HT20 MHz Mode

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				CH 0	CH 1				
36	5180	MCS8	11	11.58	9.55	13.94	24.792	23.77	PASS
44	5220	MCS8	11	11.99	9.78	14.28	26.820	23.77	PASS
48	5240	MCS8	11	11.92	9.92	14.29	26.883	23.77	PASS

Test Mode: IEEE 802.11n HT40 MHz Mode

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				CH 0	CH 1				
38	5190	MCS8	14	13.89	12.97	16.72	46.984	23.77	PASS
46	5230	MCS8	13.5	14.09	12.85	16.78	47.635	23.77	PASS

Test Mode: IEEE 802.11ac VHT 80 MHz mode

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				CH 0	CH 1				
42	5210	MCS0	13.5	13.71	12.76	16.55	45.177	23.77	PASS

Test Mode: IEEE 802.11ax 20 Mode

CH	Frequency (MHz)	Data Rate	RU config.	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
					CH 0	CH 1				
36	5180	MCS0	26/0	2	1.72	3.59	5.97	3.953	23.77	PASS
		MCS0	52/37	5	4.39	7.01	9.11	8.146	23.77	PASS
		MCS0	106/53	7	6.52	9.04	11.18	13.107	23.77	PASS
44	5220	MCS0	26/0	2	2.55	3.64	6.34	4.309	23.77	PASS
48	5240	MCS0	26/0	2	2.89	4.1	6.75	4.733	23.77	PASS

Test Mode: IEEE 802.11ax 40 Mode

CH	Frequency (MHz)	Data Rate	RU config.	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
					CH 0	CH 1				
38	5190	MCS0	26/0	2	1.35	3.44	5.73	3.741	23.77	PASS
46	5230	MCS0	26/0	2	2.07	3.59	6.11	4.080	23.77	PASS

Test Mode: IEEE 802.11ax 80 mode

CH	Frequency (MHz)	Data Rate	RU config.	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
					CH 0	CH 1				
42	5210	MCS0	26/0	2	1.41	3.35	5.69	3.710	23.77	PASS

4.4 POWER SPECTRAL DENSITY

4.4.1 Test Limit

According to §15.407 (a)(1), 15.407(a)(2) and 15.407(a)(3)

UNII-1 :

The maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.

For client devices, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

UNII-3:

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

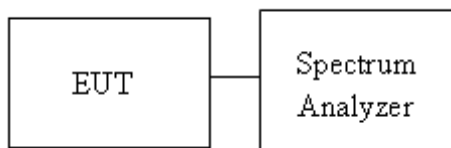
UNII-1 Limit	☐ Antenna not exceed 6 dBi : 17 dBm/MHz ☒ Antenna with DG greater than 6 dBi : [Limit = 17 – (DG – 6) dBm/MHz]
UNII-1 Limit (For client devices)	☐ Antenna not exceed 6 dBi : 11 dBm/MHz ☒ Antenna with DG greater than 6 dBi : [Limit = 11 – (DG – 6) dBm/MHz]
UNII-3 Limit	☐ Antenna not exceed 6 dBi : 30 dBm/500kHz ☒ Antenna with DG greater than 6 dBi : [Limit = 30 – (DG – 6) dBm/500kHz]

4.4.2 Test Procedure

Test method Refer as KDB 789033 D02

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. UNII-1, UNII-2a and UNII-2c, SA set RBW = 1MHz, VBW = 3MHz and Detector = RMS, to measurement Power Density.
4. UNII-3, SA set RBW = 500kHz, VBW = 2MHz and Detector = RMS, to measurement Power Density
5. The path loss and Duty Factor were compensated to the results for each measurement by SA.
6. Mark the maximum level.
7. Measure and record the result of power spectral density. in the test report.

4.4.3 Test Setup



4.4.4 Test Result

Temperature:	23.1°C	Test date:	April 19, 2021
Humidity:	49.9% RH	Tested by:	Jerry Chang
Temperature:	22.6°C	Test date:	April 20, 2021
Humidity:	50.2% RH	Tested by:	Jerry Chang
Temperature:	24.0°C	Test date:	April 21, 2021
Humidity:	52.1% RH	Tested by:	Jerry Chang
Temperature:	23.1°C	Test date:	April 26, 2021
Humidity:	49.4% RH	Tested by:	Jerry Chang
Temperature:	24.1°C	Test date:	May 5, 2021
Humidity:	48.1% RH	Tested by:	Jerry Chang
Temperature:	23.8°C	Test date:	May 29, 2021
Humidity:	46.4% RH	Tested by:	Jerry Chang
Temperature:	22.5°C	Test date:	June 15, 2021
Humidity:	51.7% RH	Tested by:	Jerry Chang

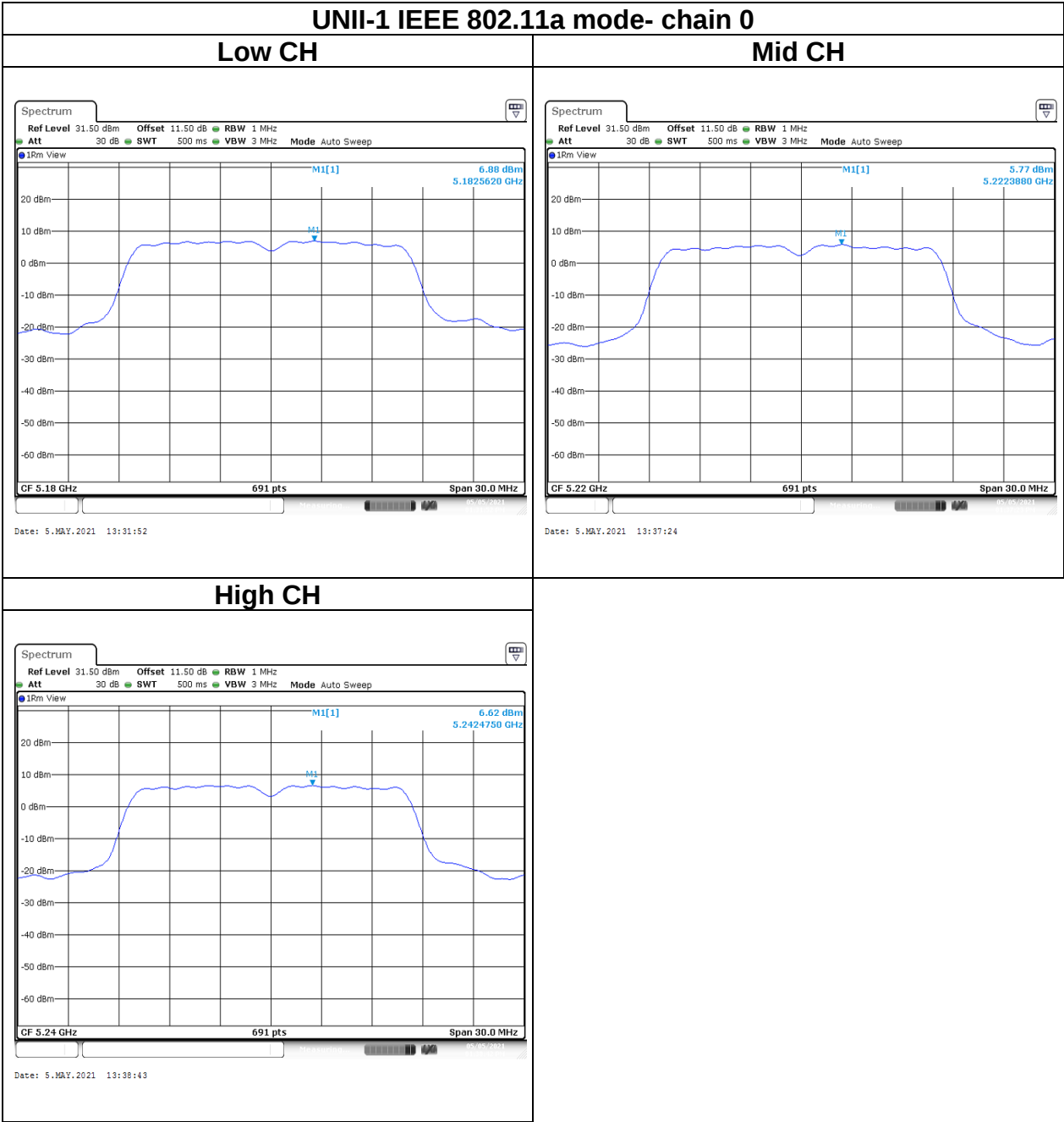
UNII-1 5150-5250 MHz						
Test mode: IEEE 802.11a mode						
Channel	Frequency (MHz)	Chain 0 PPSD (dBm/MHz)	Chain 1 PPSD (dBm/MHz)	Duty Factor (dBm/MHz)	Total Corr'd PSD (dBm/MHz)	Limit (dBm/MHz)
Low	5180	6.88	5.20	0.87	10.00	16.79
Mid	5220	5.77	7.08	0.87	10.35	
High	5240	6.62	8.78	0.87	11.71	
Test mode: IEEE 802.11n HT20 mode						
Channel	Frequency (MHz)	Chain 0 PPSD (dBm/MHz)	Chain 1 PPSD (dBm/MHz)	Duty Factor (dBm/MHz)	Total Corr'd PSD (dBm/MHz)	Limit (dBm/MHz)
Low	5180	6.34	6.32	0.11	9.45	16.79
Mid	5220	6.23	7.62	0.11	10.10	
High	5240	6.45	7.20	0.11	9.96	
Test mode: IEEE 802.11n HT40 mode						
Channel	Frequency (MHz)	Chain 0 PPSD (dBm/MHz)	Chain 1 PPSD (dBm/MHz)	Duty Factor (dBm/MHz)	Total Corr'd PSD (dBm/MHz)	Limit (dBm/MHz)
Low	5190	2.51	3.40	0.00	5.99	16.79
High	5230	3.13	4.62	0.00	6.95	
Test mode: IEEE 802.11ac VHT80 mode						
Channel	Frequency (MHz)	Chain 0 PPSD (dBm/MHz)	Chain 1 PPSD (dBm/MHz)	Duty Factor (dBm/MHz)	Total Corr'd PSD (dBm/MHz)	Limit (dBm/MHz)
Mid	5210	2.65	1.11	0.00	4.96	16.79

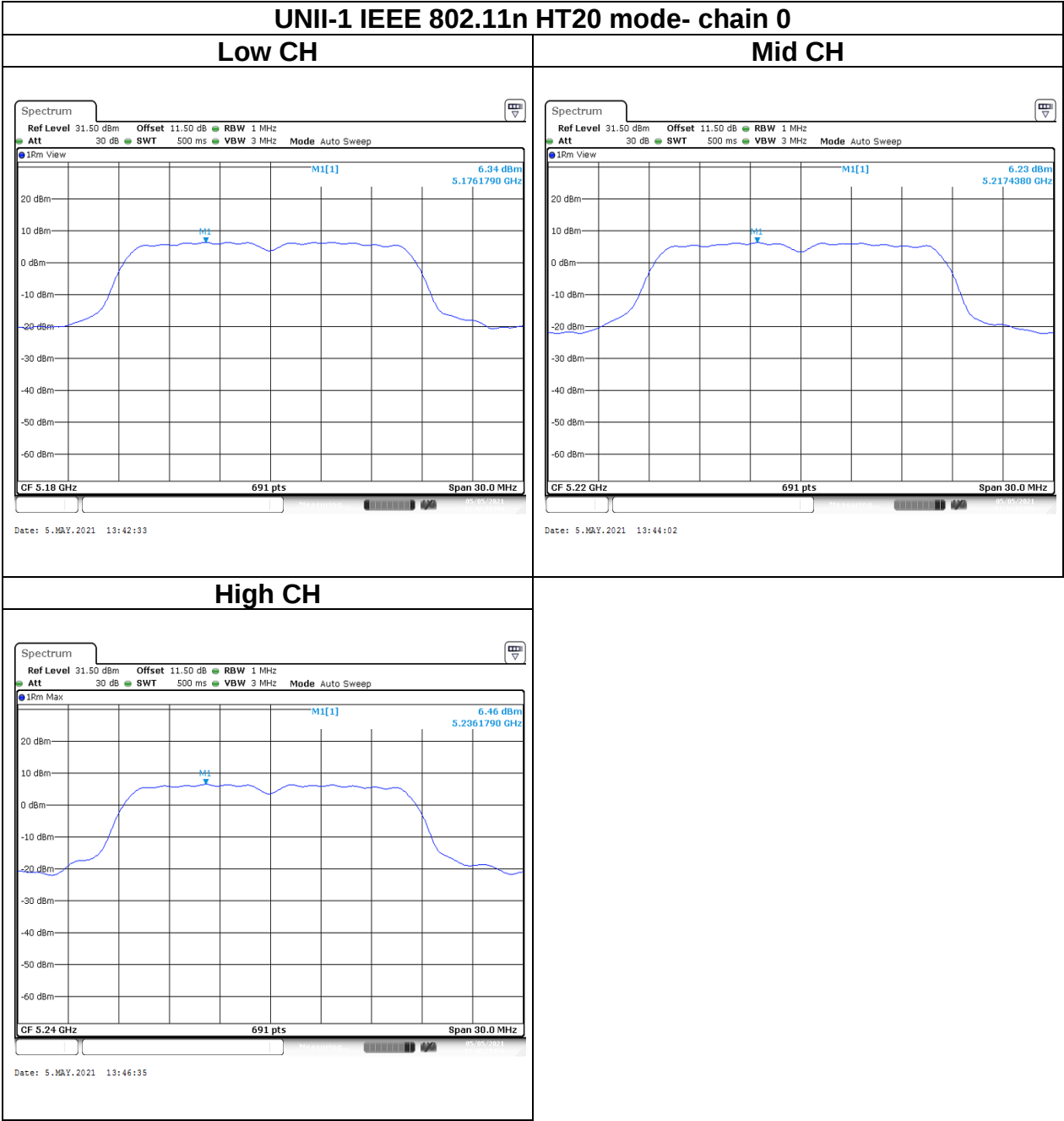
Test mode: IEEE 802.11ax 20 mode							
Channel	Frequency (MHz)	RU config.	Chain 0 PPSD (dBm/MHz)	Chain 1 PPSD (dBm/MHz)	Duty Factor (dBm/MHz)	Total Corr'd PSD (dBm/MHz)	Limit (dBm/MHz)
Low	5180	26/0	13.42	12.87	0.20	16.36	16.79
		52/37	10.83	9.57	0.20	13.46	16.79
		106/53	8.02	7.70	0.20	11.07	16.79
Mid	5220	106/53	12.06	11.49	0.20	14.99	16.79
High	5240	106/53	11.65	11.92	0.20	15.00	16.79
Test mode: IEEE 802.11ax 40 mode							
Channel	Frequency (MHz)	RU config.	Chain 0 PPSD (dBm/MHz)	Chain 1 PPSD (dBm/MHz)	Duty Factor (dBm/MHz)	Total Corr'd PSD (dBm/MHz)	Limit (dBm/MHz)
Low	5190	106/53	7.57	7.69	1.27	11.91	16.79
High	5230	106/53	11.23	13.01	1.27	16.49	16.79
Test mode: IEEE 802.11ax 80 mode							
Channel	Frequency (MHz)	RU config.	Chain 0 PPSD (dBm/MHz)	Chain 1 PPSD (dBm/MHz)	Duty Factor (dBm/MHz)	Total Corr'd PSD (dBm/MHz)	Limit (dBm/MHz)
Low	5210	106/53	7.48	6.12	1.31	11.17	16.79

UNII-3 5725-5825 MHz							
Test mode: IEEE 802.11a mode							
Channel	Frequency (MHz)	Chain 0 PPSD (dBm/300kHz)	Chain 1 PPSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW)	Total Corr'd PSD (dBm/500kHz)	Limit (dBm/500kHz)
Low	5745	9.79	9.12	0.87	2.22	15.57	29.79
Mid	5785	9.92	8.22	0.87	2.22	15.25	
High	5825	8.61	8.30	0.87	2.22	14.56	
Test mode: IEEE 802.11n HT20 mode							
Channel	Frequency (MHz)	Chain 0 PPSD (dBm/300kHz)	Chain 1 PPSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW)	Total Corr'd PSD (dBm/500kHz)	Limit (dBm/500kHz)
Low	5745	9.59	8.45	0.11	2.22	14.40	29.79
Mid	5785	9.25	8.09	0.11	2.22	14.05	
High	5825	7.24	7.59	0.11	2.22	12.76	
Test mode: IEEE 802.11n HT40 mode							
Channel	Frequency (MHz)	Chain 0 PPSD (dBm/300kHz)	Chain 1 PPSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW)	Total Corr'd PSD (dBm/500kHz)	Limit (dBm/500kHz)
Low	5755	4.53	4.04	0.00	2.22	9.52	29.79
High	5795	4.50	3.82	0.00	2.22	9.40	
Test mode: IEEE 802.11ac VHT80 mode							
Channel	Frequency (MHz)	Chain 0 PPSD (dBm/300kHz)	Chain 1 PPSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW)	Total Corr'd PSD (dBm/500kHz)	Limit (dBm/500kHz)
Mid	5775	2.79	0.18	0.00	2.22	6.91	29.79

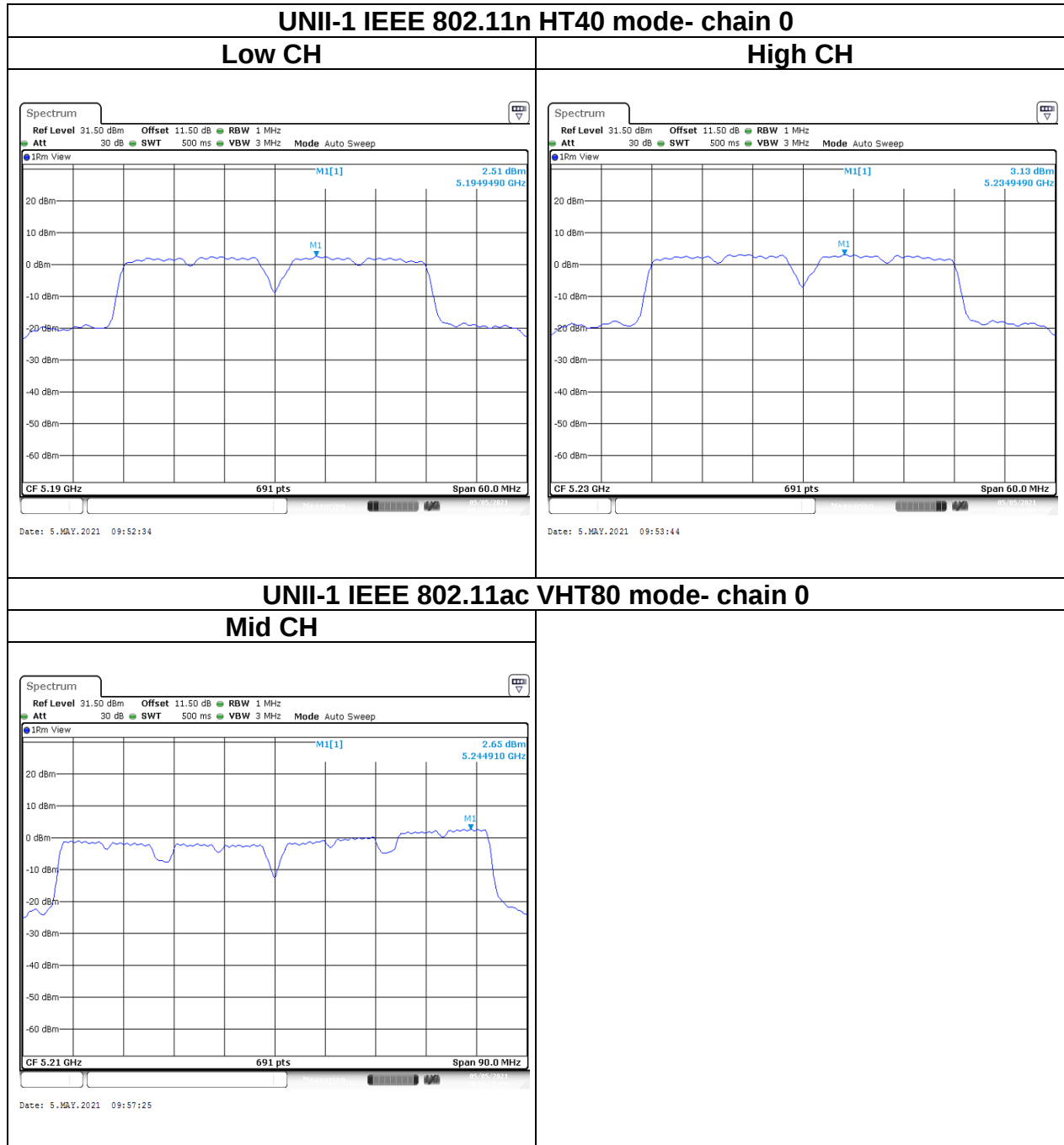
Test mode: IEEE 802.11ax 20 mode								
CH	Frequency (MHz)	RU config.	Chain 0 PPSD (dBm/300kHz)	Chain 1 PPSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW)	Total Corr'd PSD (dBm/500kHz)	Limit (dBm/500kHz)
Low	5745	26/0	12.62	12.06	0.20	2.22	17.78	29.79
		52/37	10.95	10.64	0.20	2.22	16.23	29.79
		106/53	8.19	7.30	0.20	2.22	13.20	29.79
Mid	5785	106/53	7.50	7.39	0.20	2.22	12.88	29.79
High	5825	26/8	12.41	11.26	0.20	2.22	17.30	29.79
		52/40	9.36	8.64	0.20	2.22	14.45	29.79
		106/54	7.39	6.66	0.20	2.22	12.47	29.79
Test mode: IEEE 802.11ax 40 mode								
CH	Frequency (MHz)	RU config.	Chain 0 PPSD (dBm/300kHz)	Chain 1 PPSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW)	Total Corr'd PSD (dBm/500kHz)	Limit (dBm/500kHz)
Low	5755	106/53	6.71	5.63	1.27	2.22	12.70	29.79
High	5795	106/56	6.26	5.78	1.27	2.22	12.53	29.79
Test mode: IEEE 802.11ax 80 mode								
CH	Frequency (MHz)	RU config.	Chain 0 PPSD (dBm/300kHz)	Chain 1 PPSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW)	Total Corr'd PSD (dBm/500kHz)	Limit (dBm/500kHz)
Low	5775	106/53	6.18	6.06	1.31	2.22	12.66	29.79
		106/60	6.03	5.69	1.31	2.22	12.41	29.79

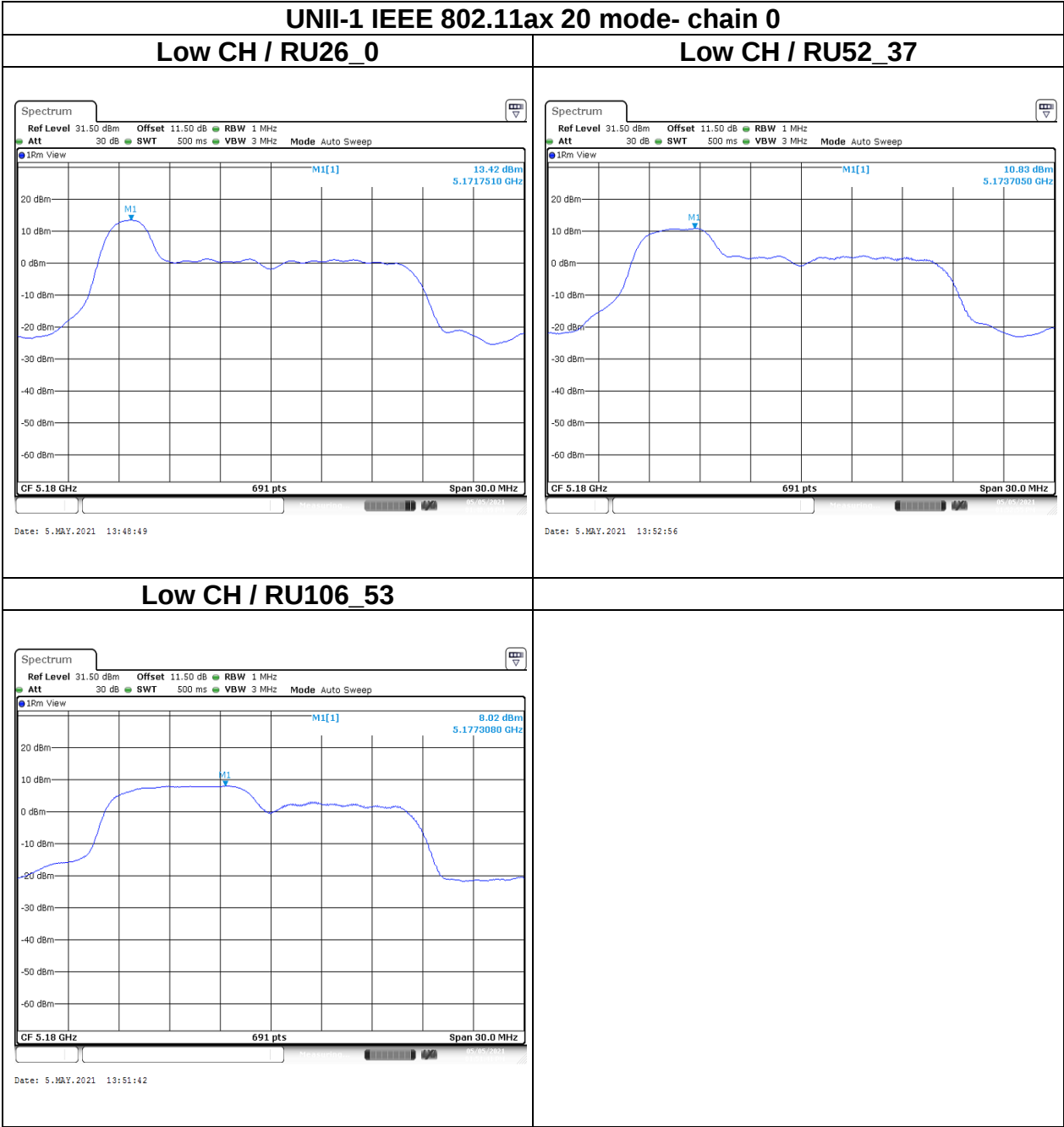
Test Plots

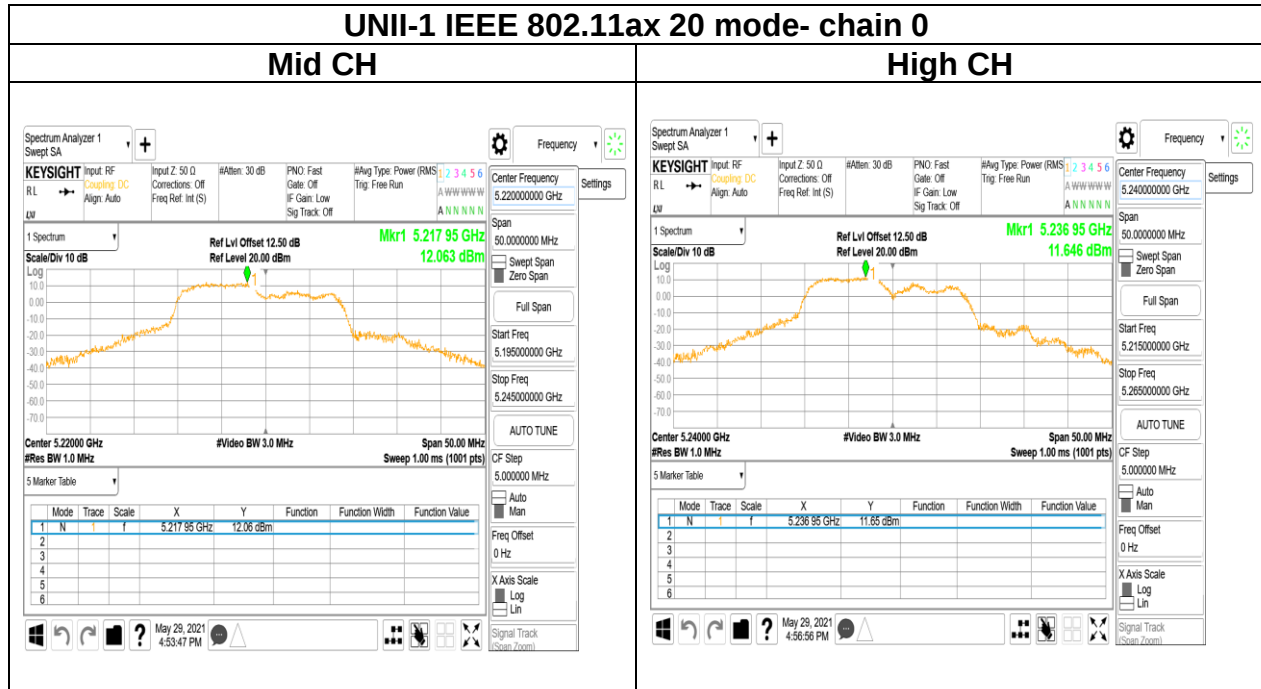


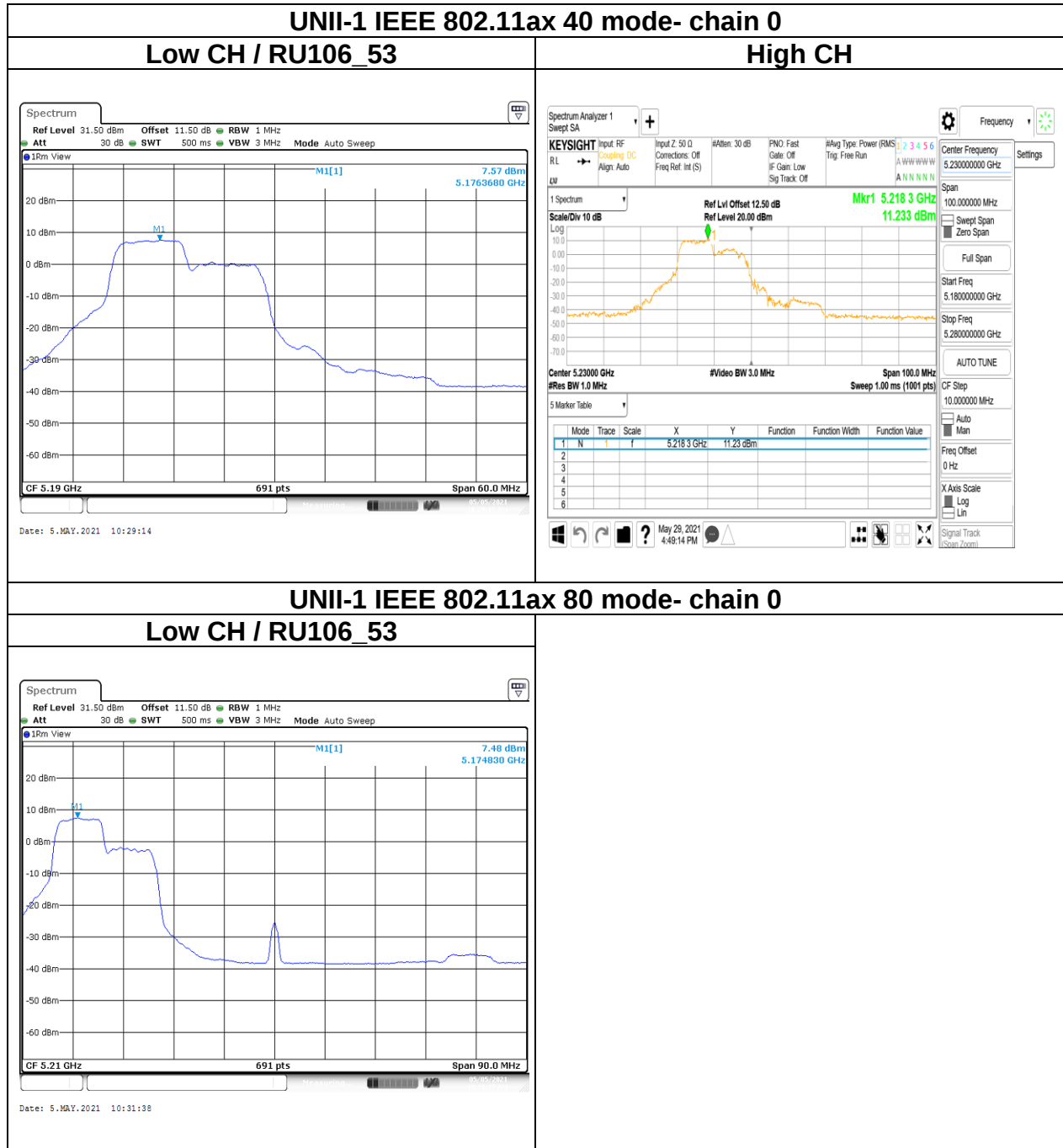


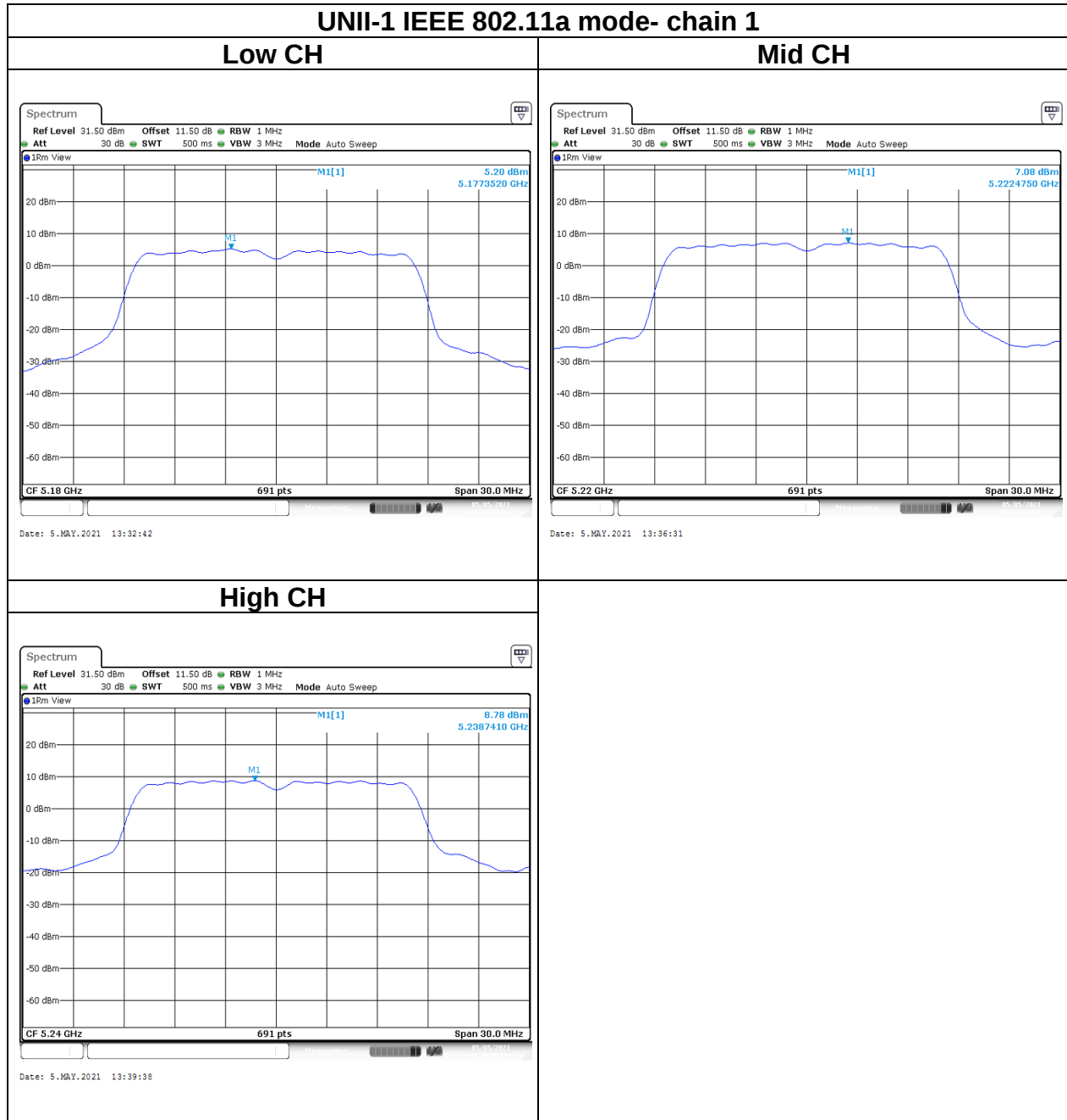
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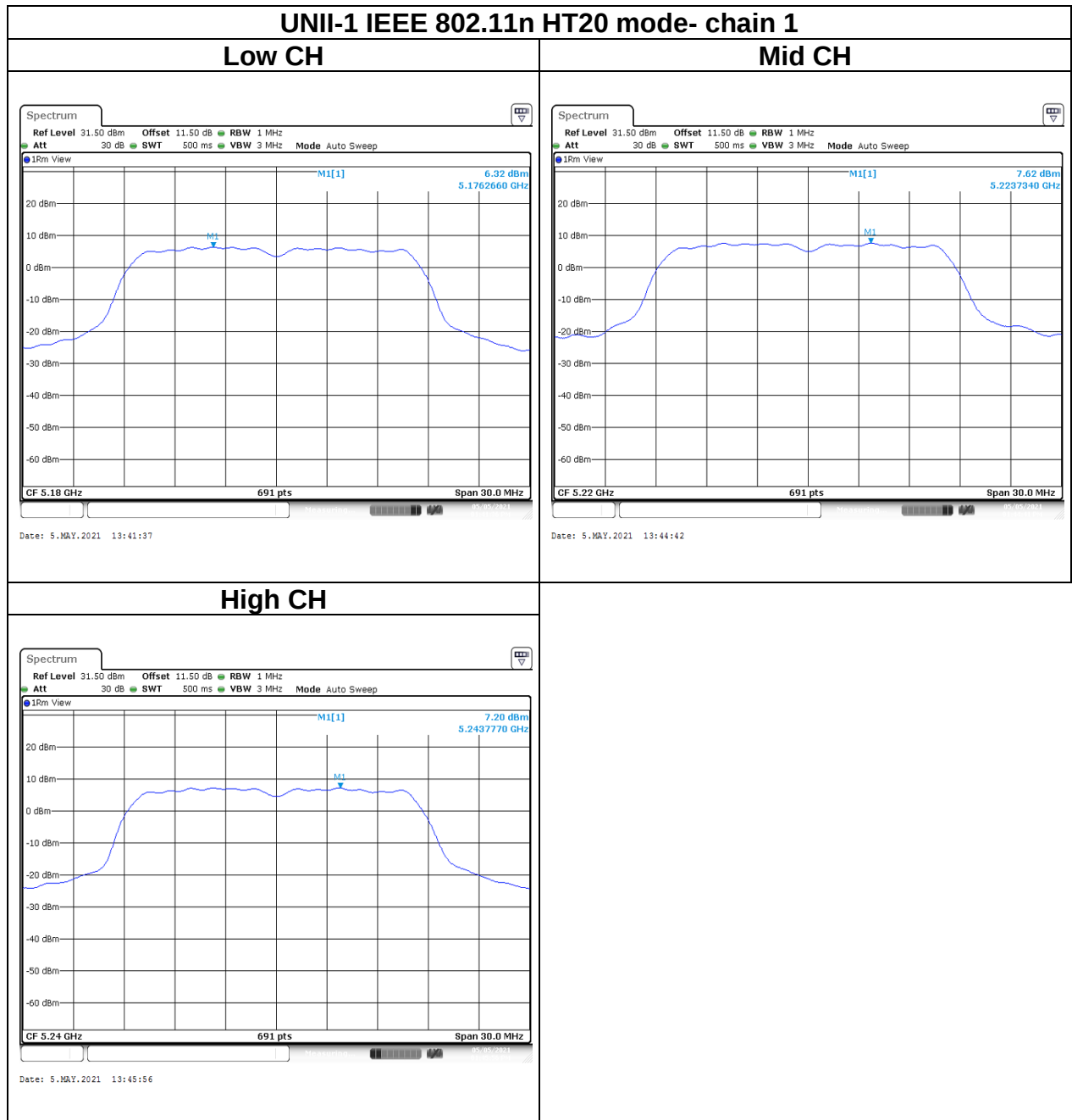


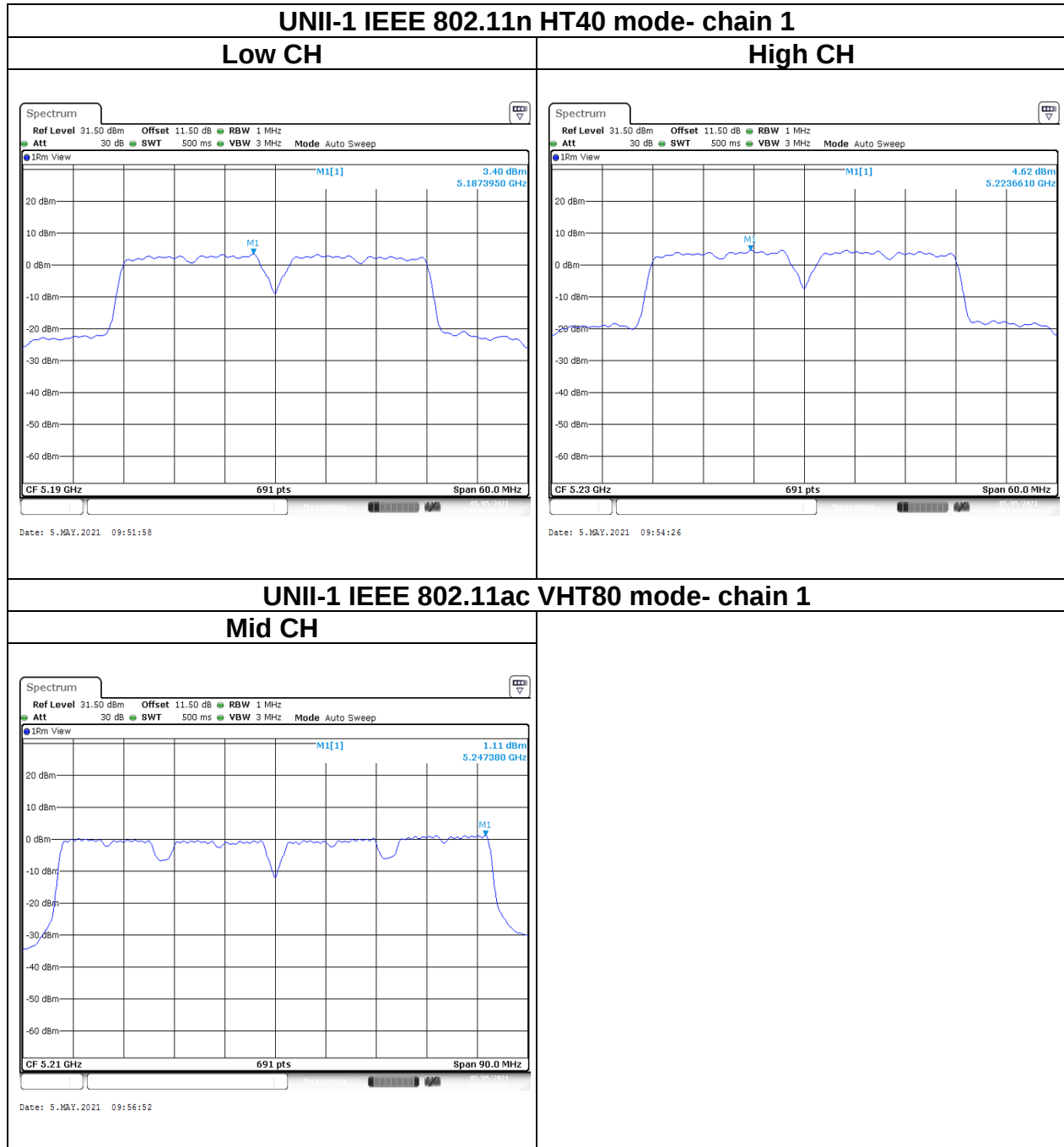


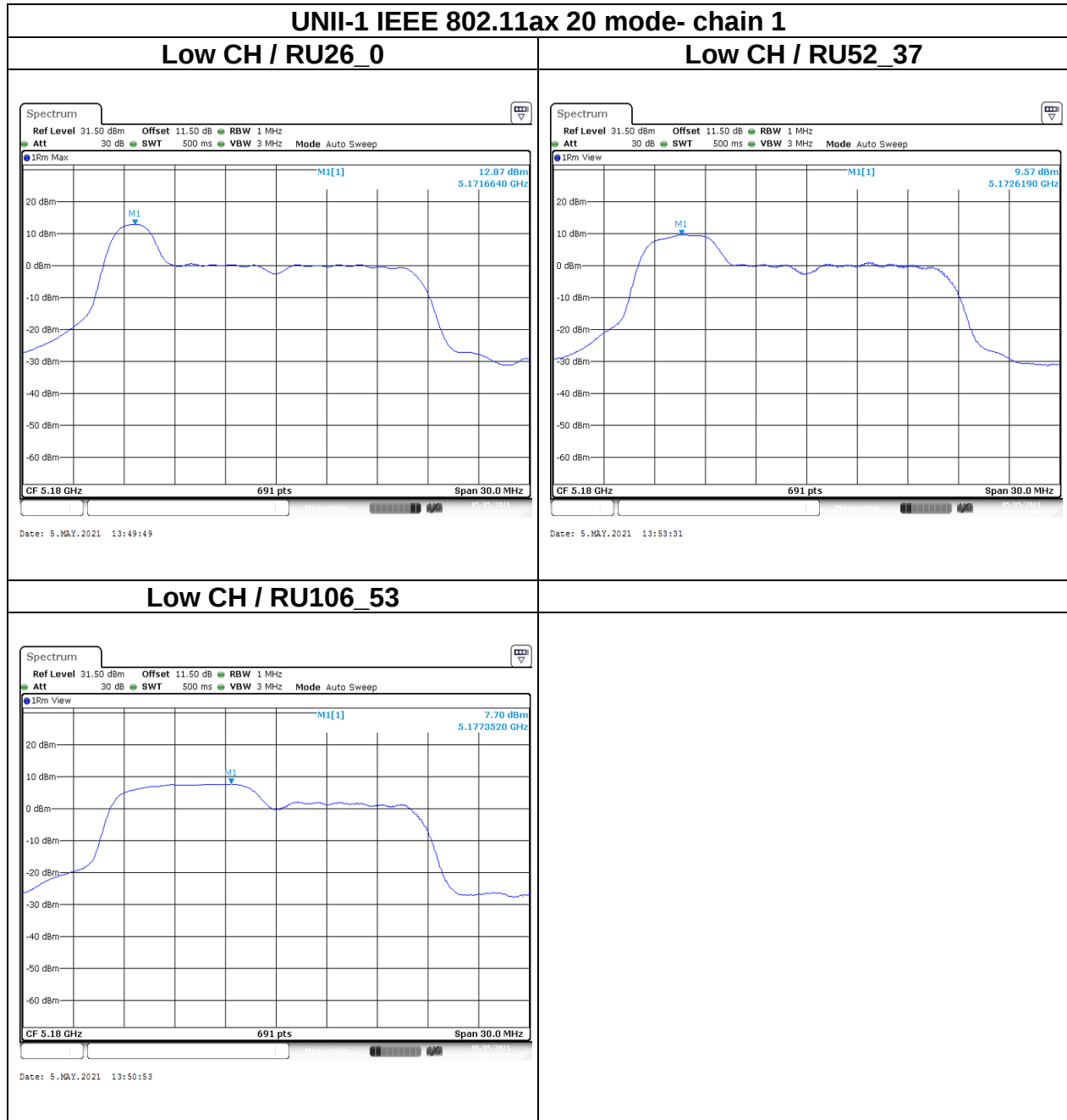


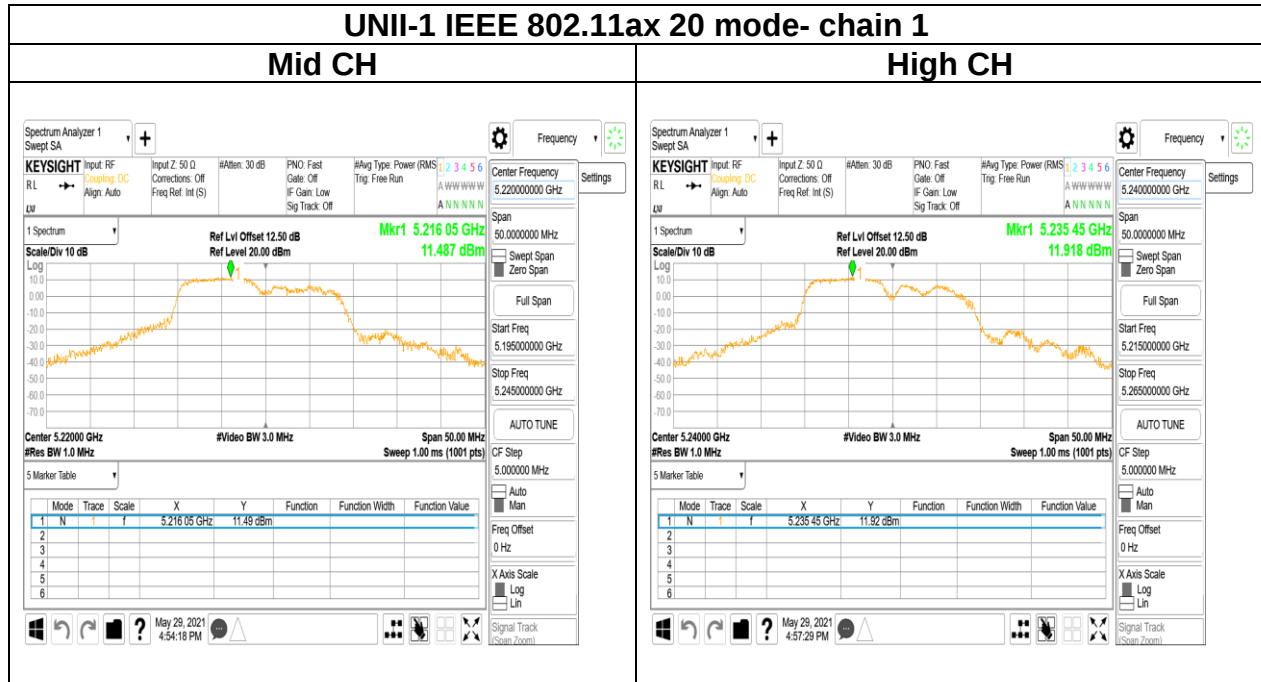


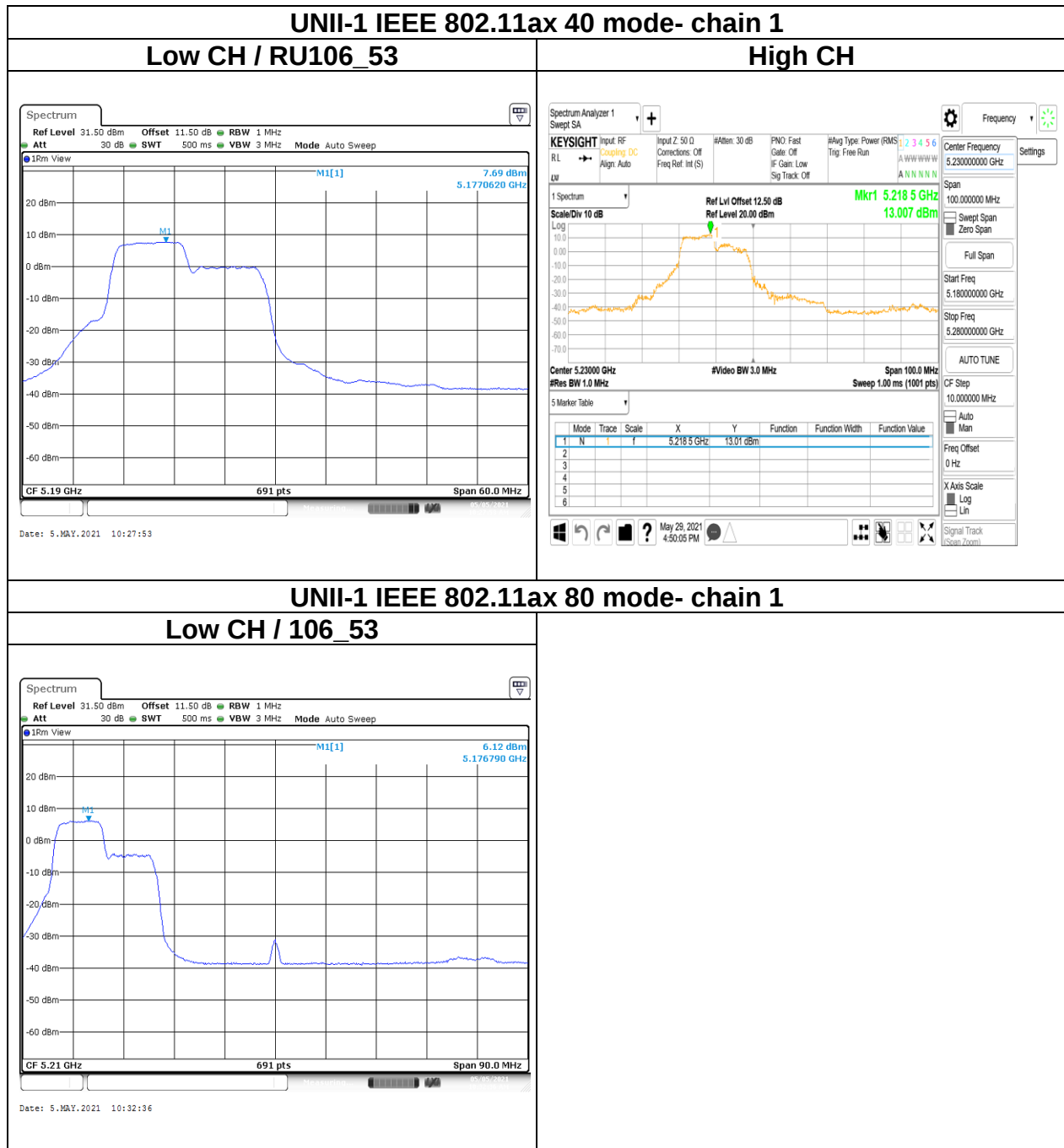




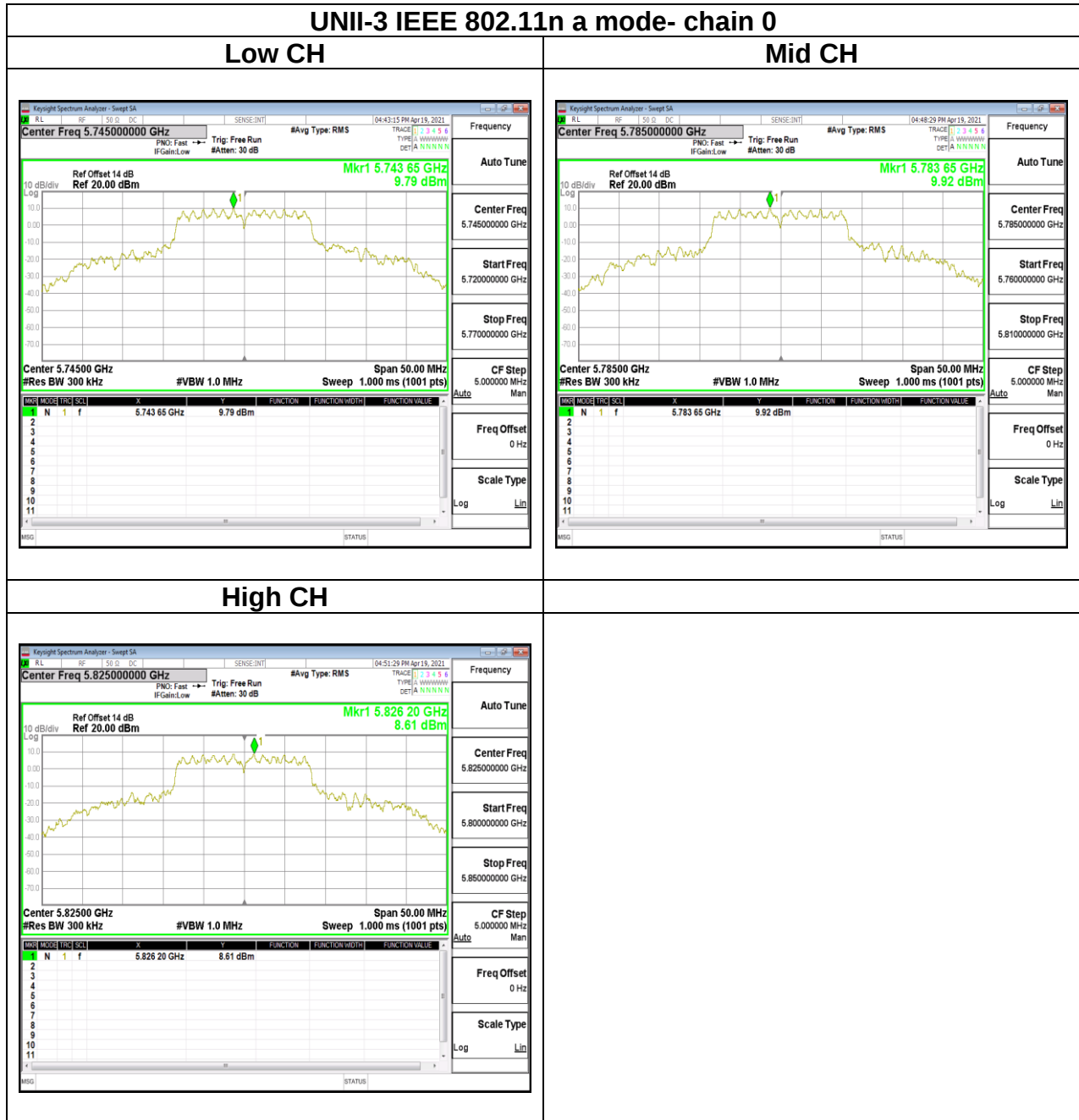








Test Plots



Report No.: T210319W02-RP2

UNII-3 IEEE 802.11n HT40 mode- chain 0

Low CH



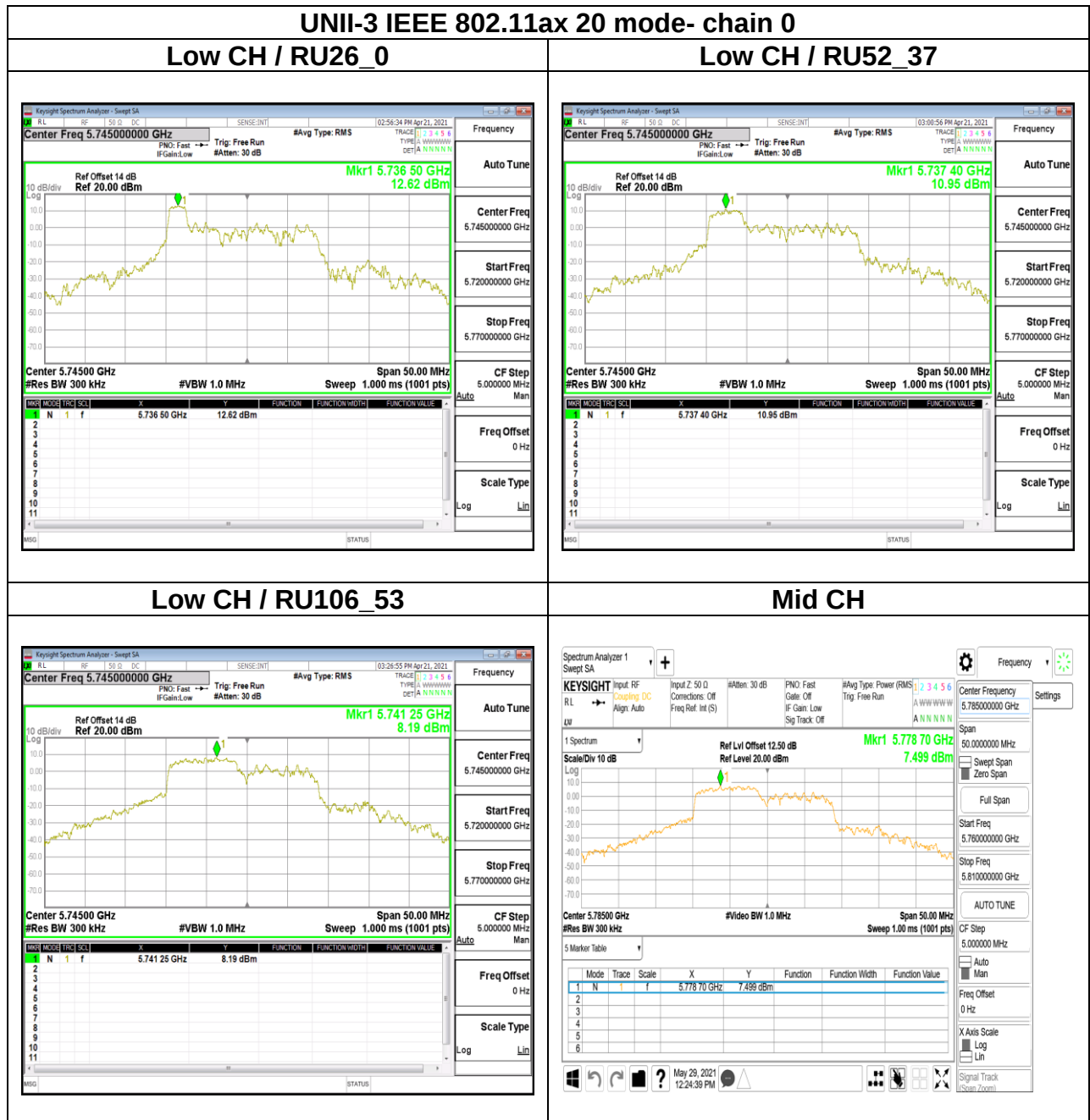
High CH

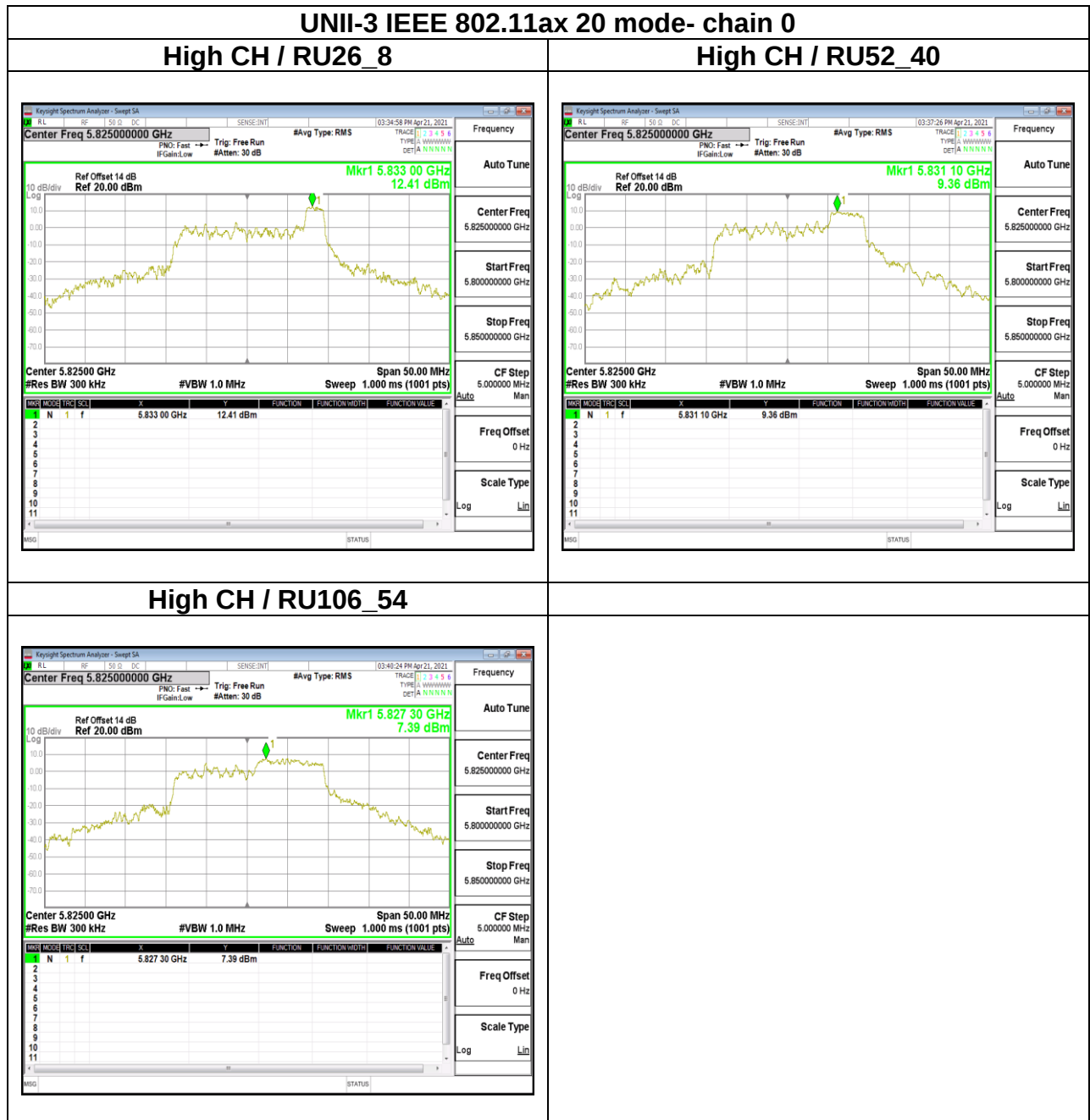


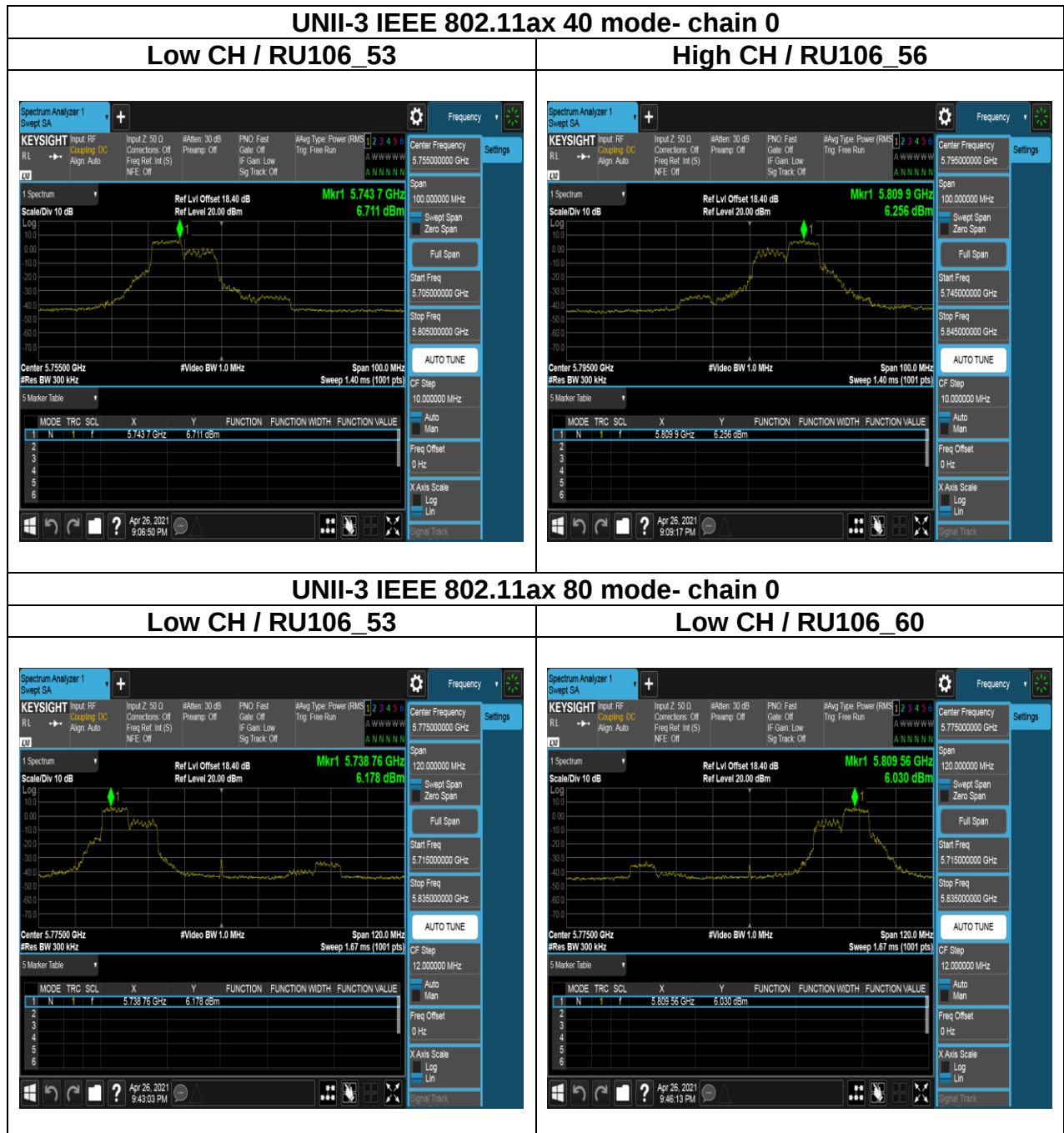
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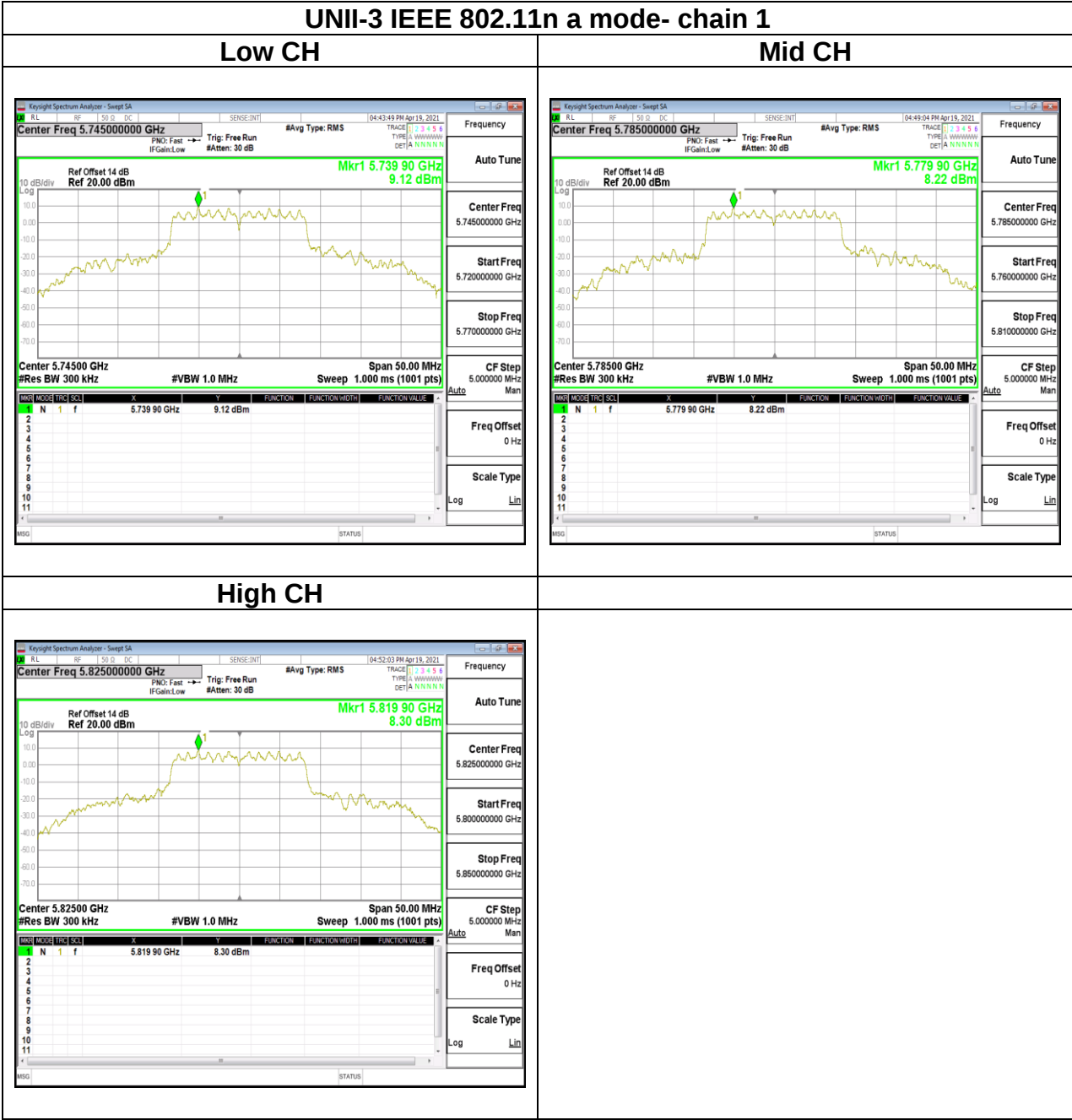
Mid CH





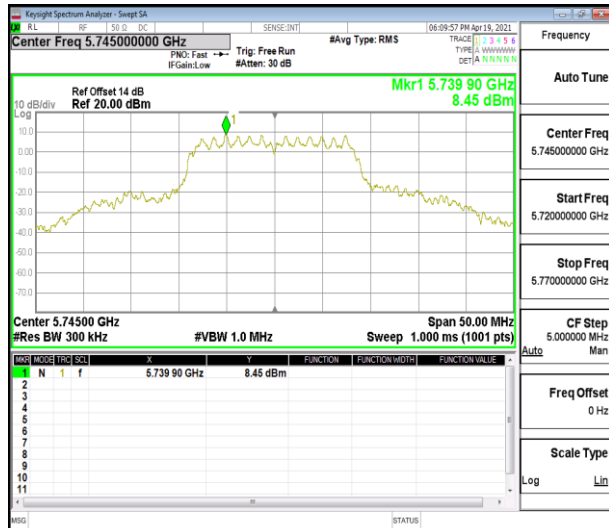




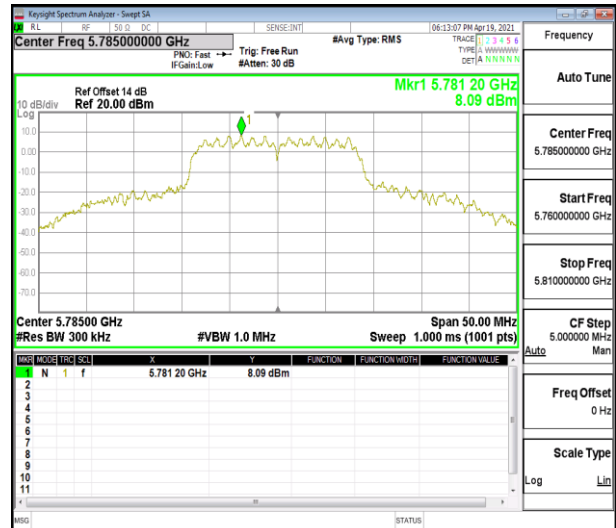


UNII-3 IEEE 802.11n HT20 mode- chain 1

Low CH



Mid CH



High CH

