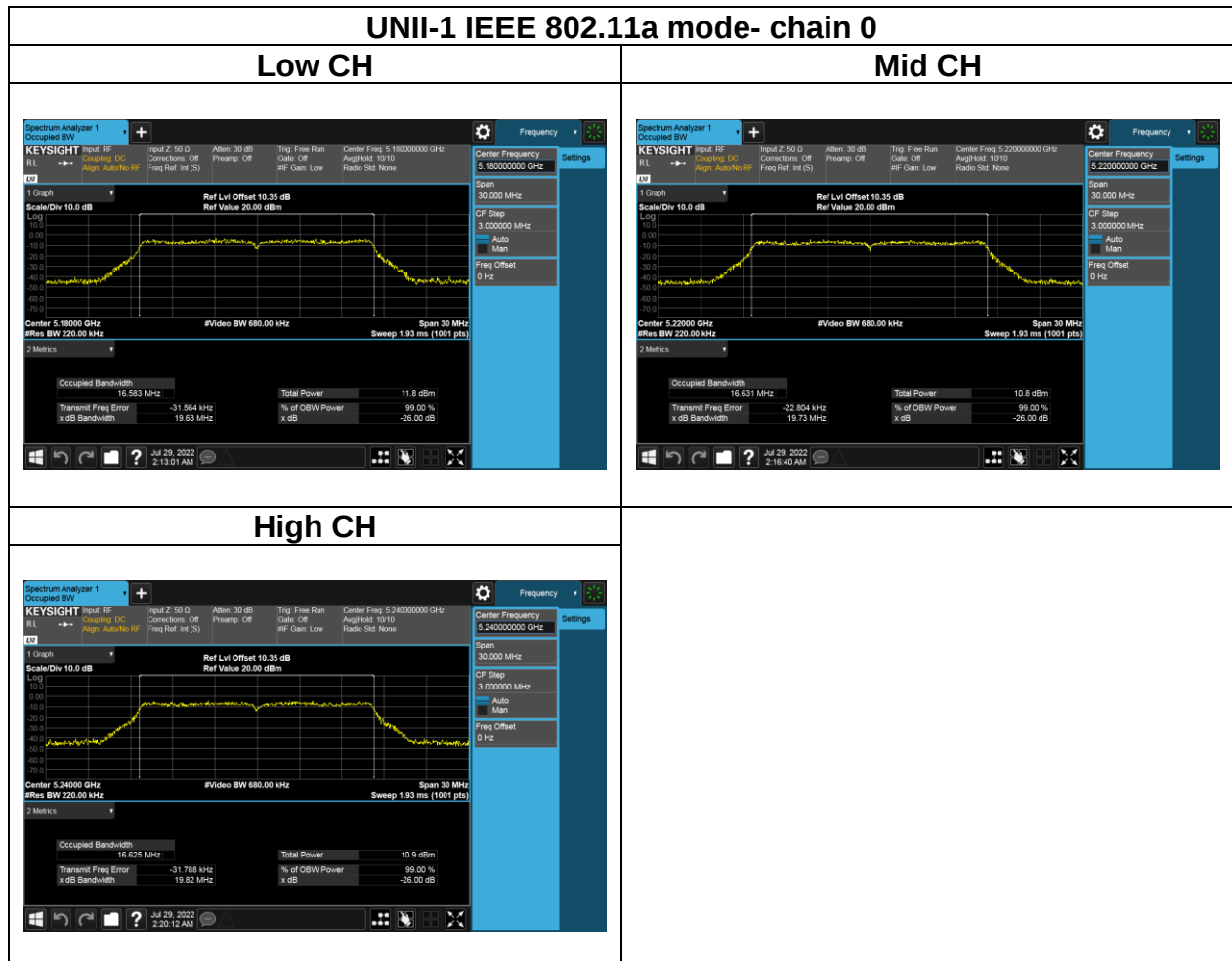
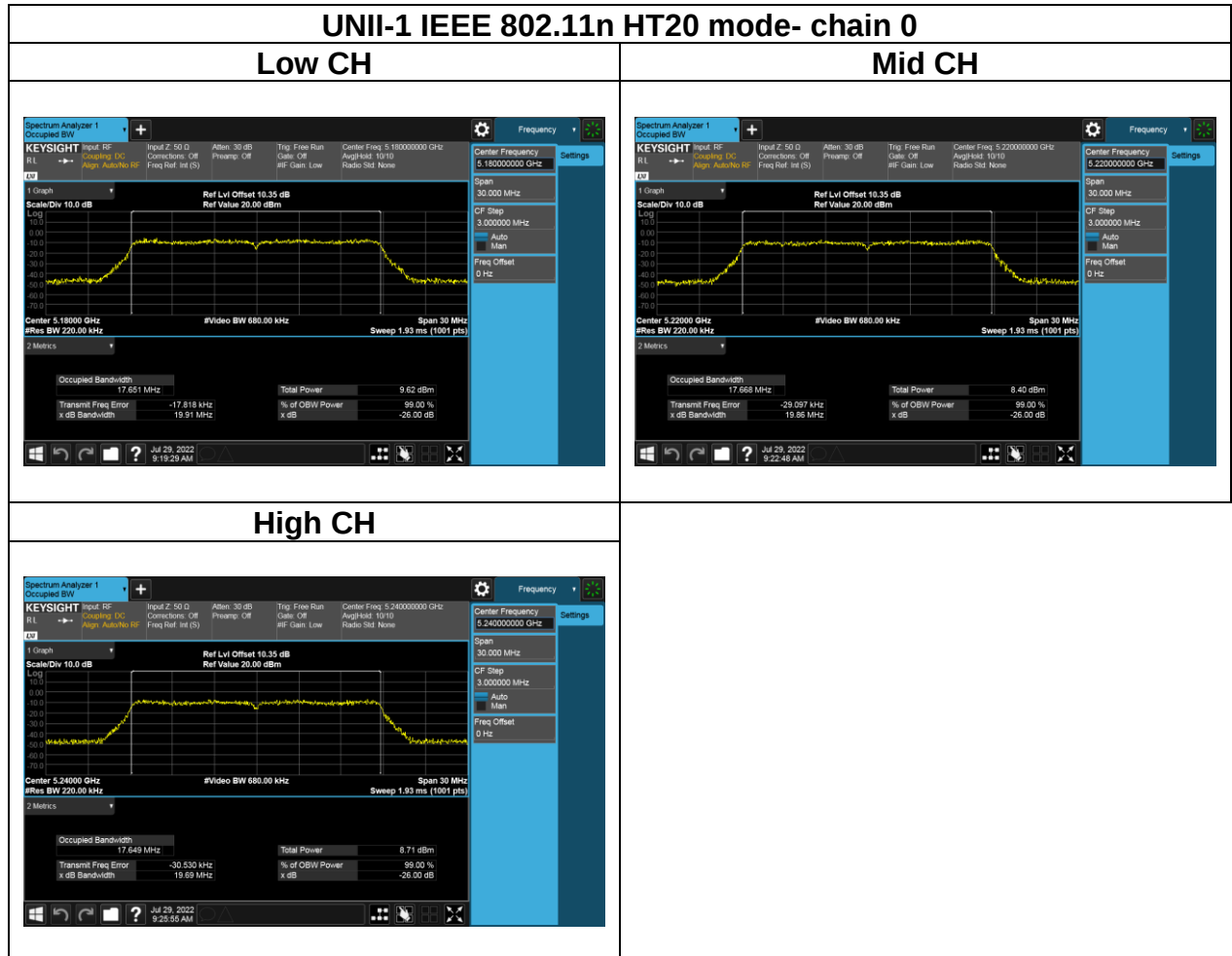
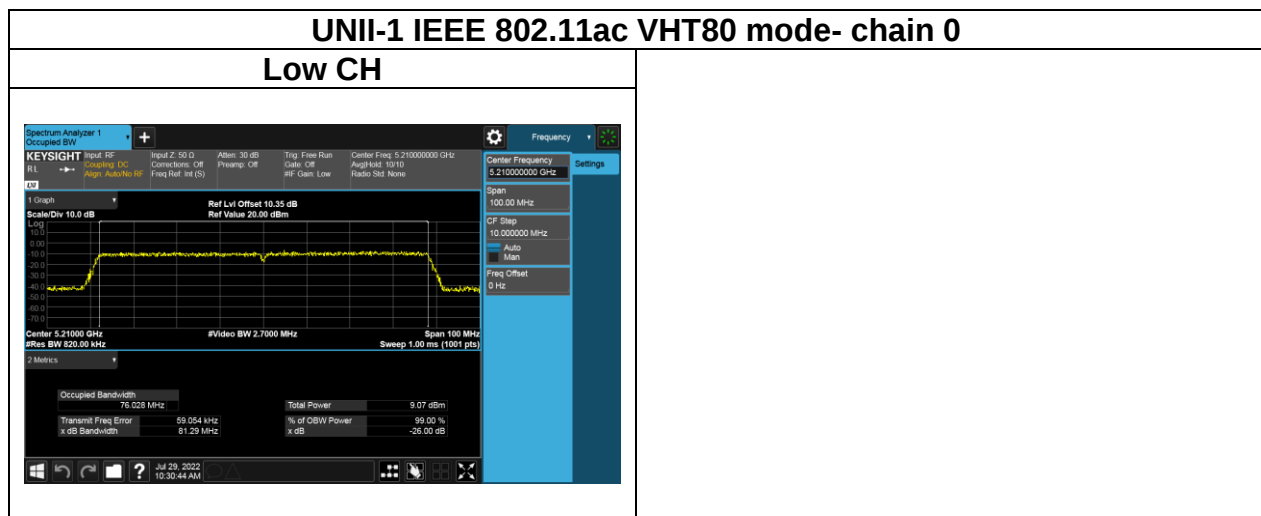
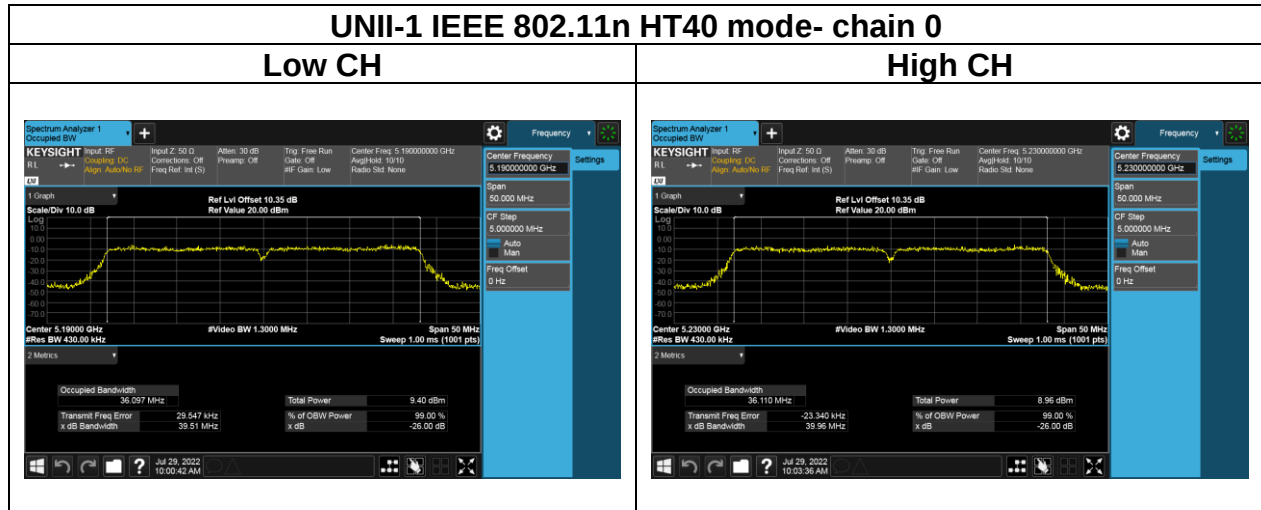
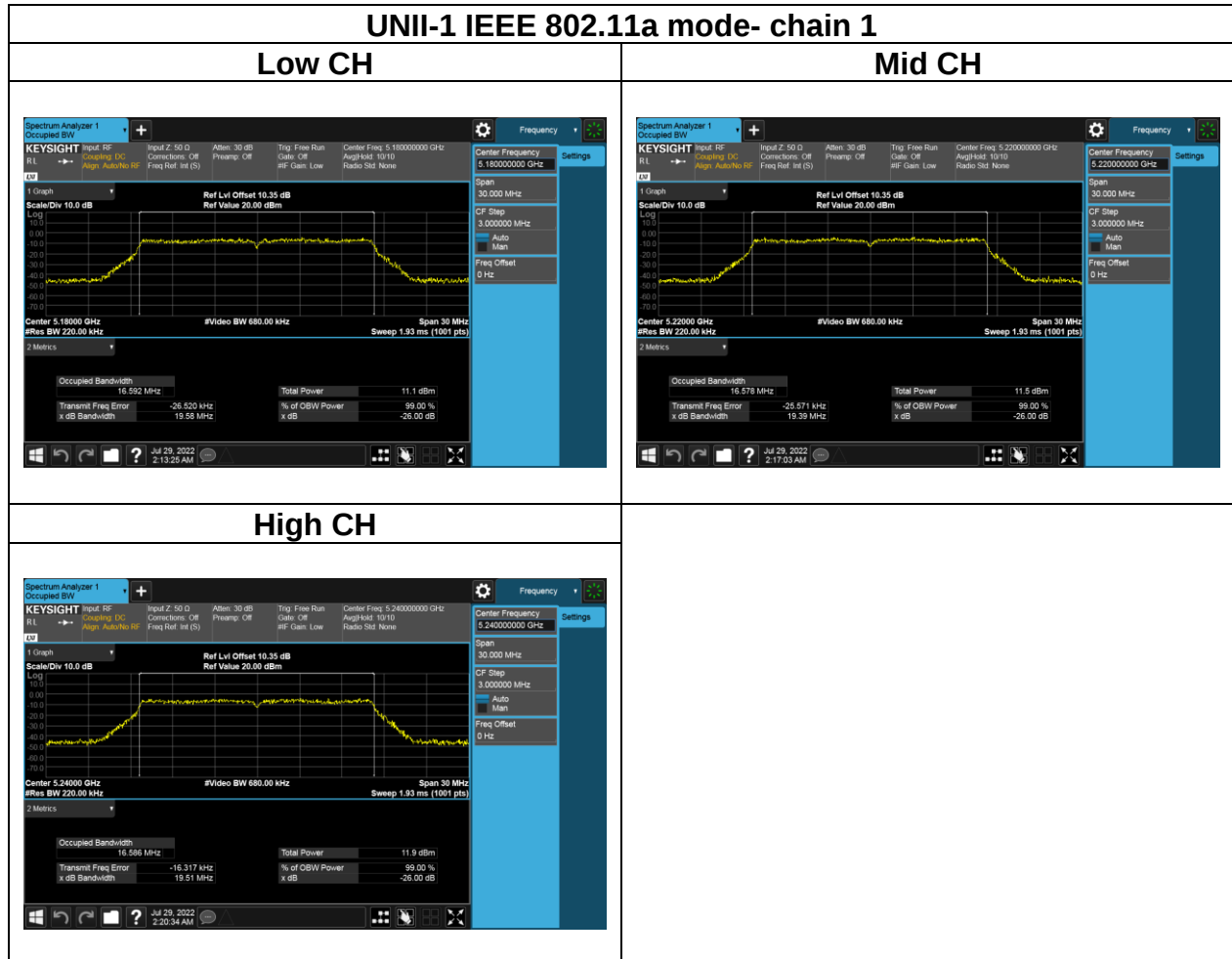


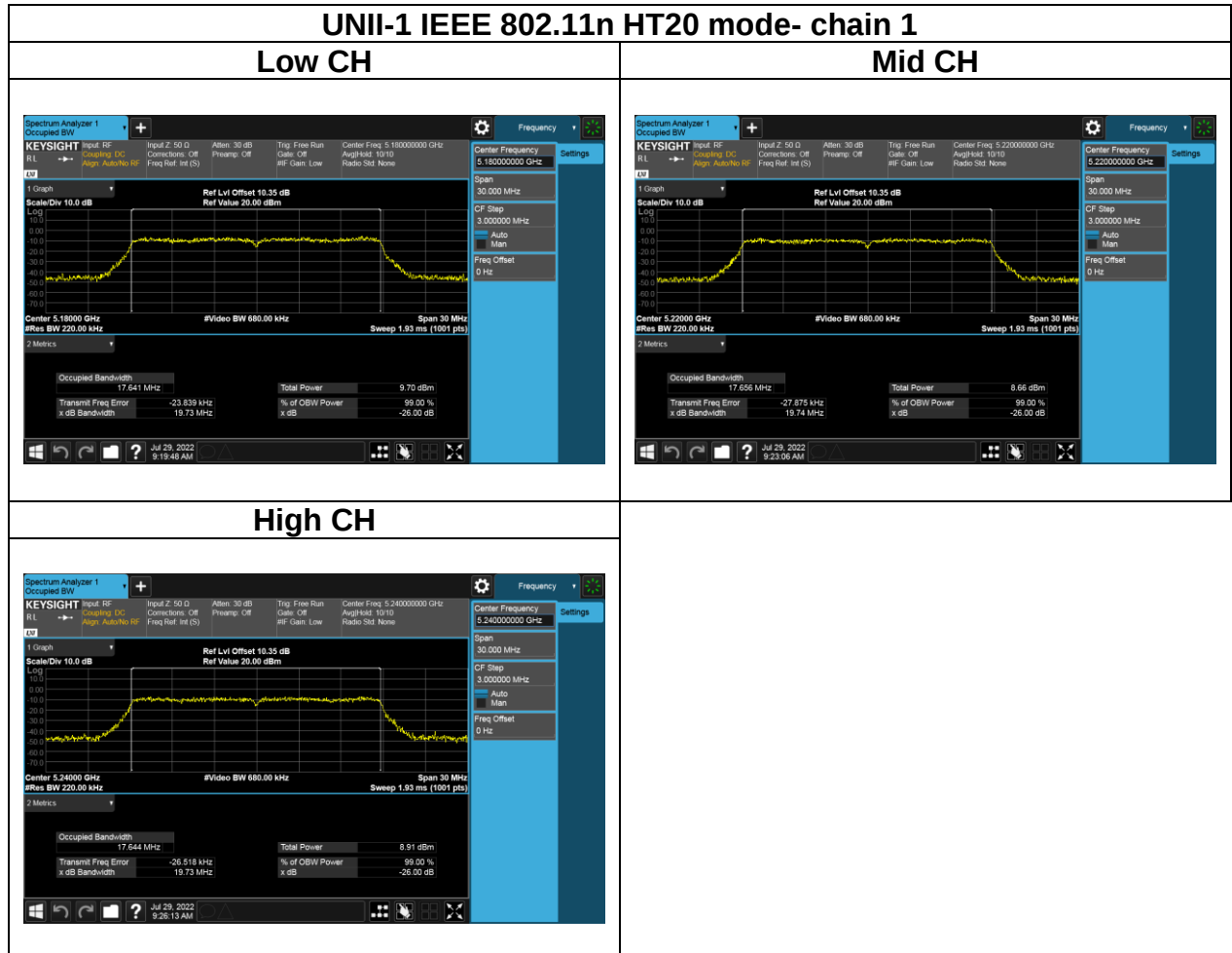
Test Plots (OBW 99%)

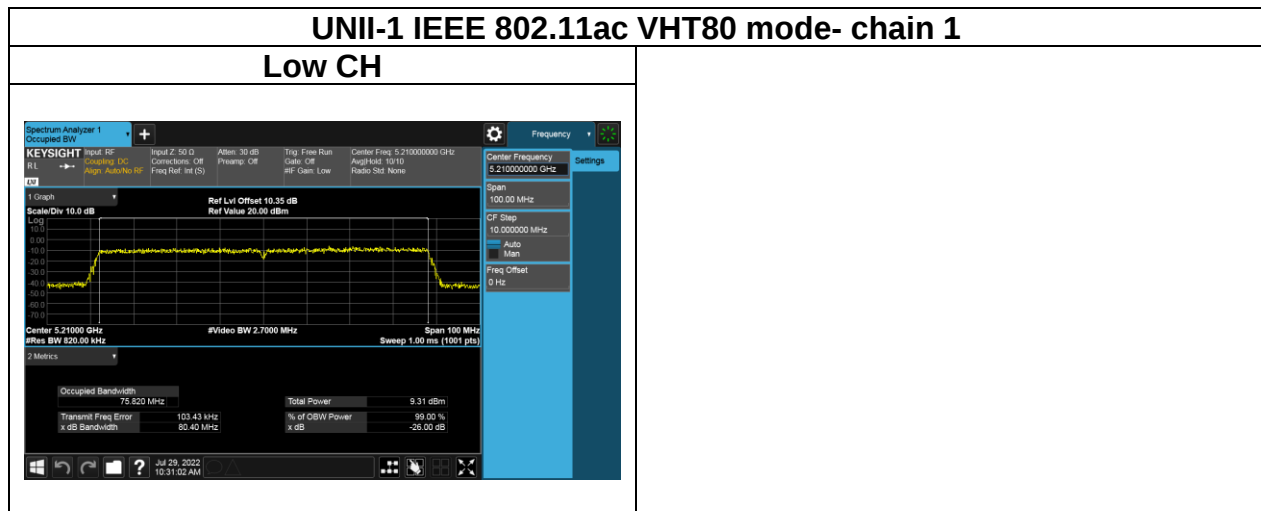
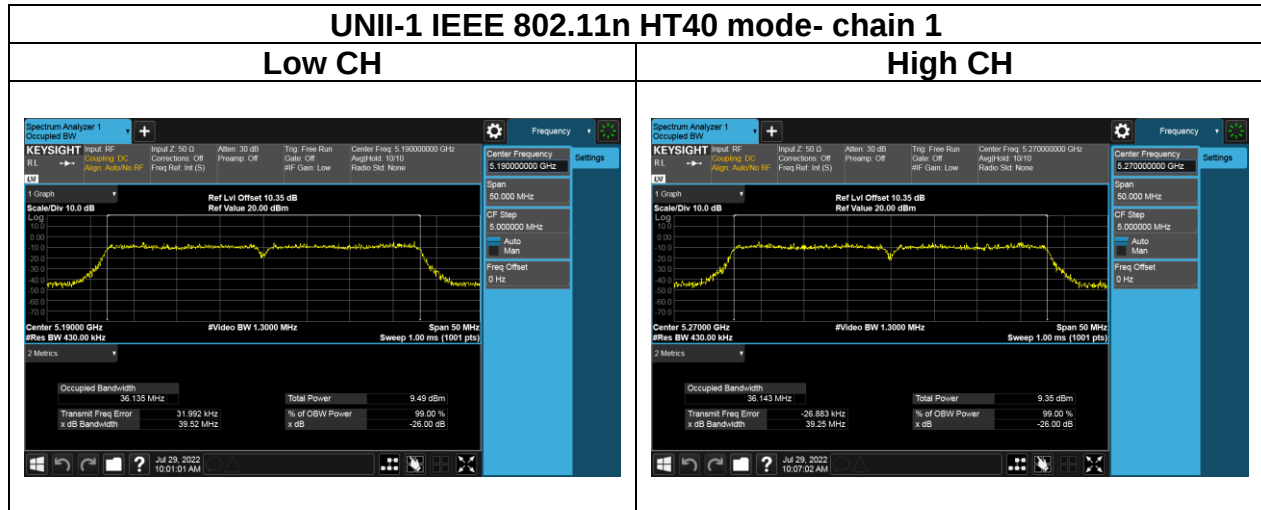




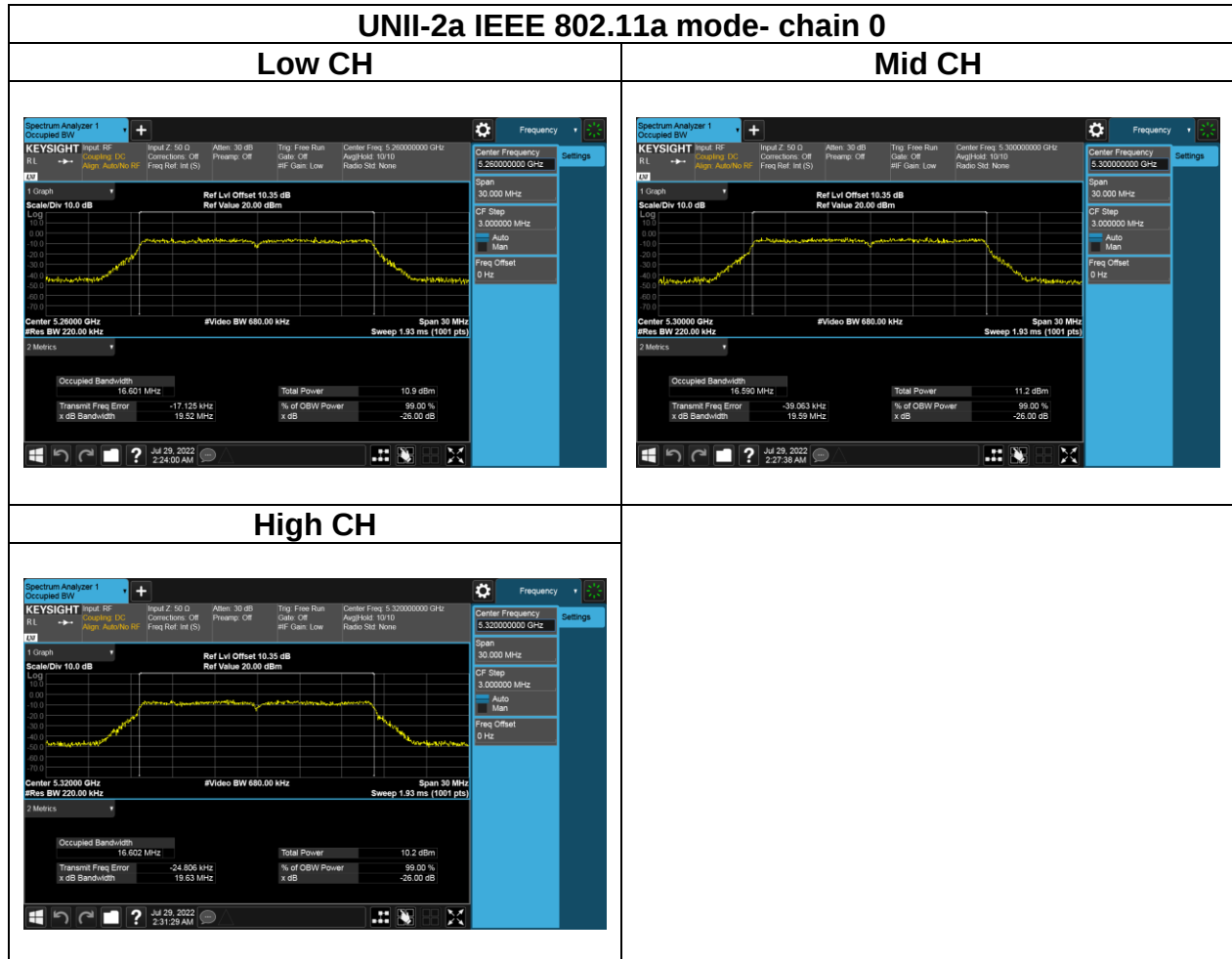


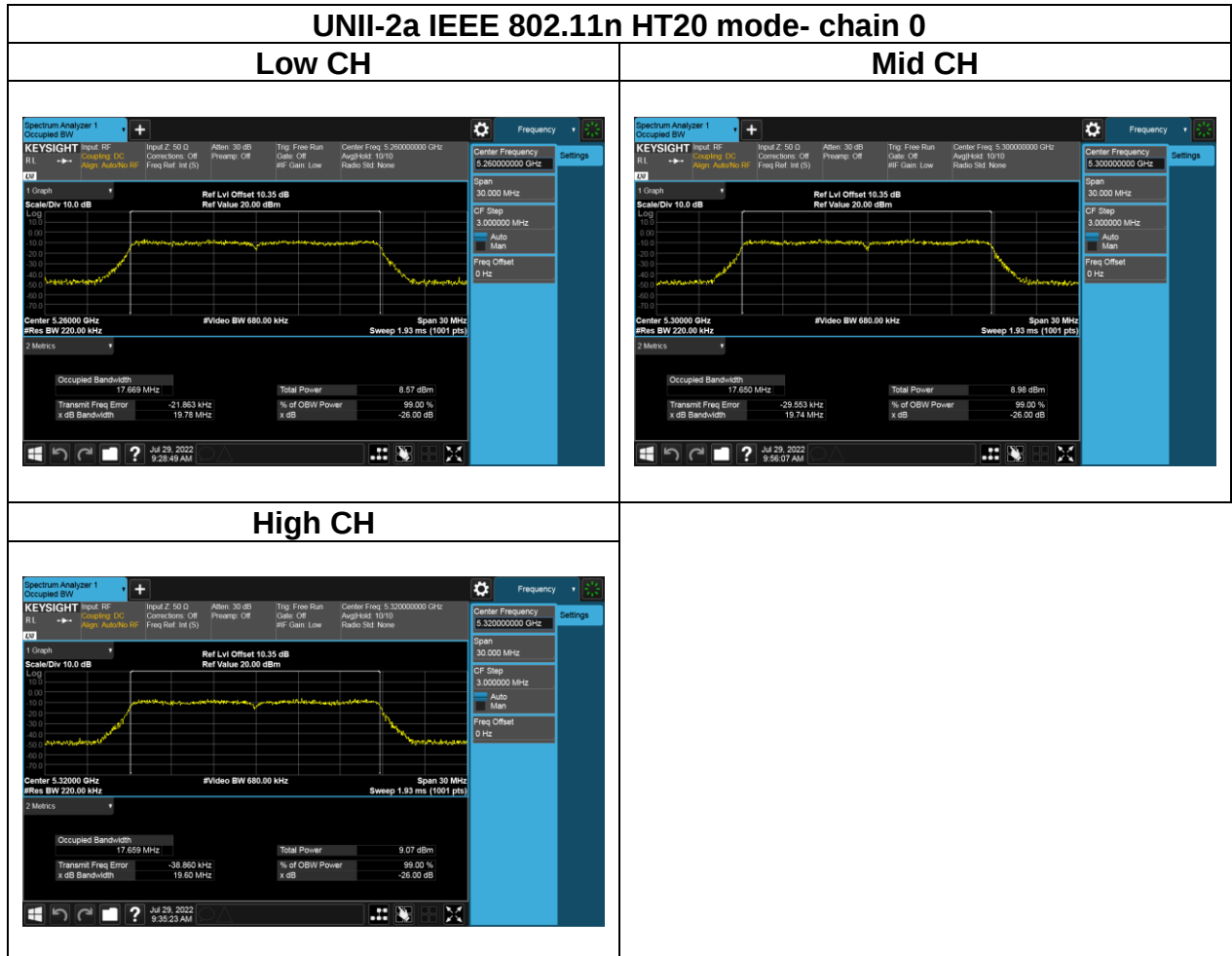


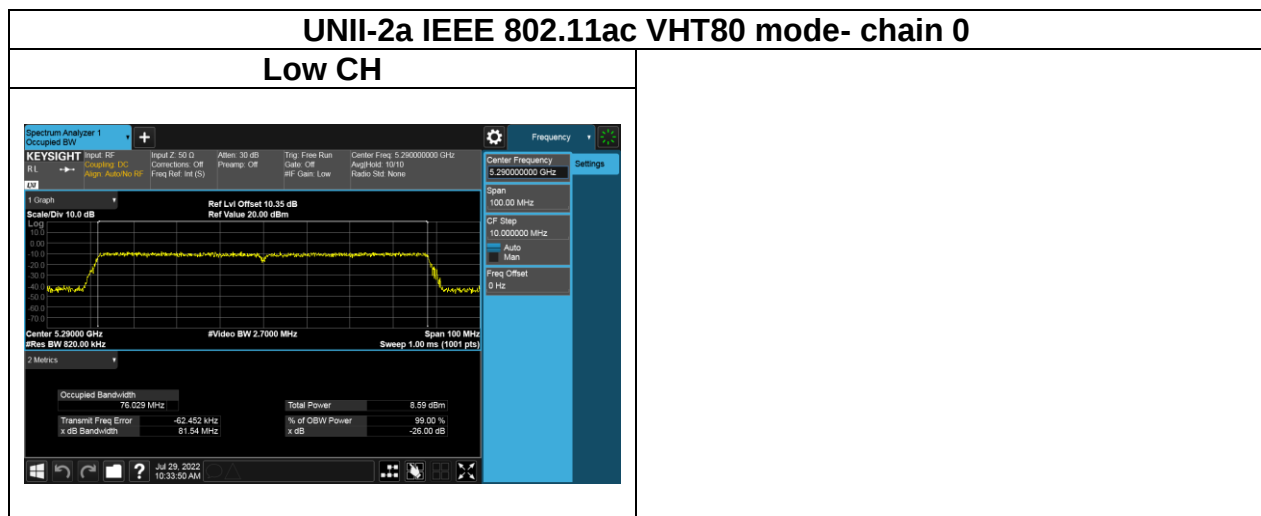
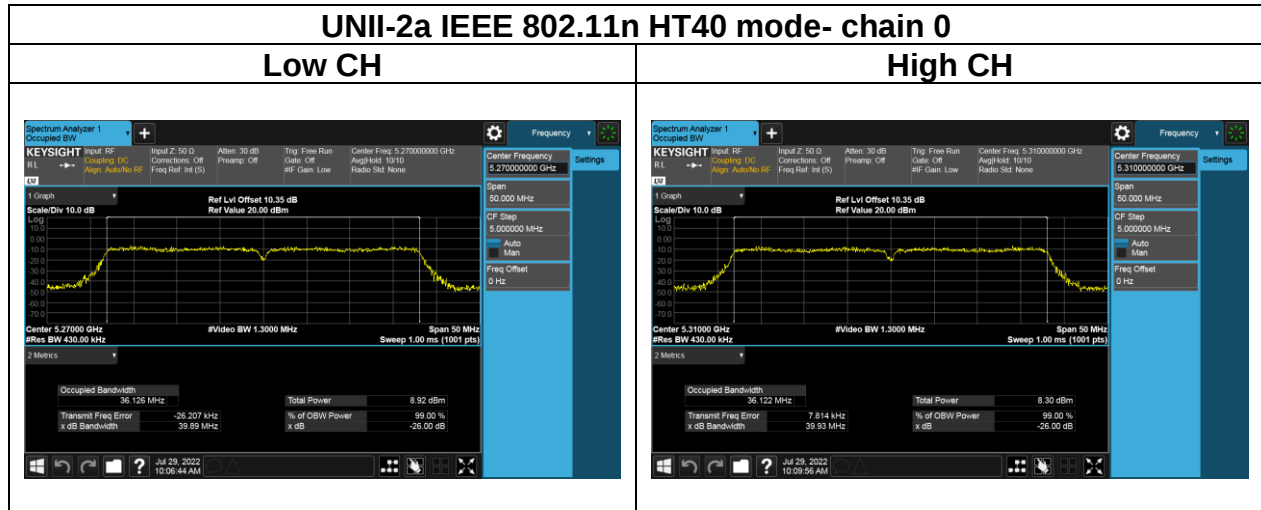


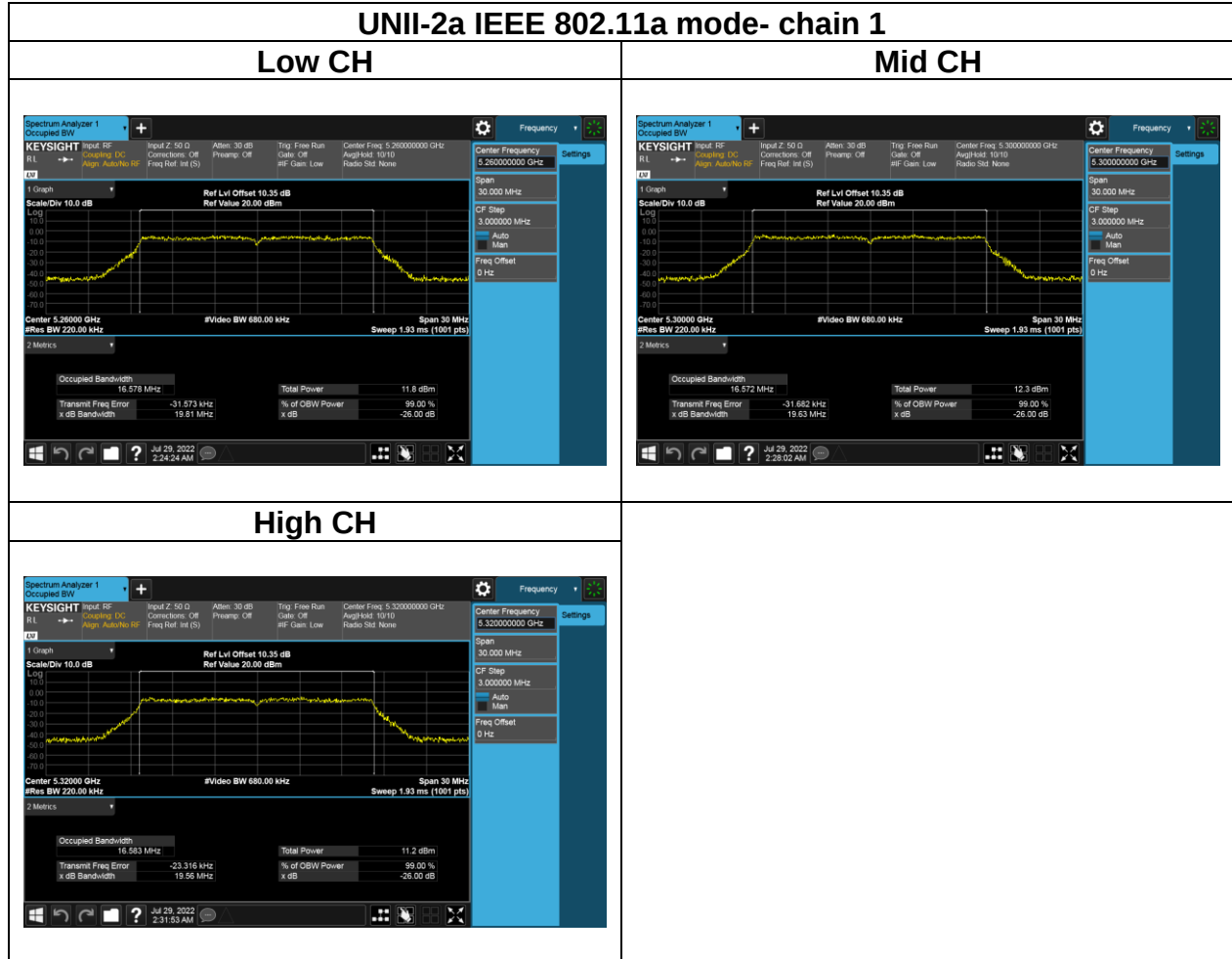


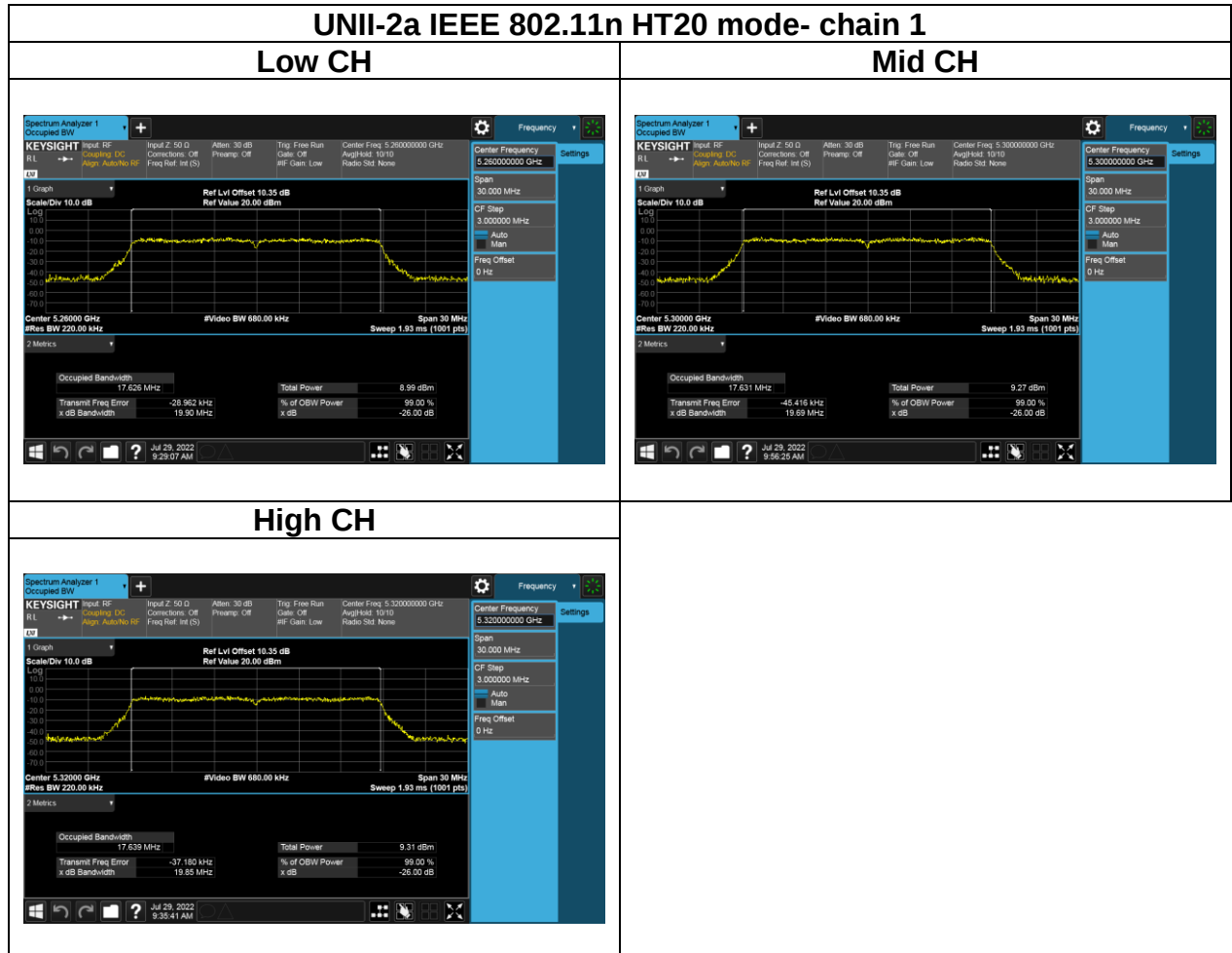
Test Plots (OBW 99%)

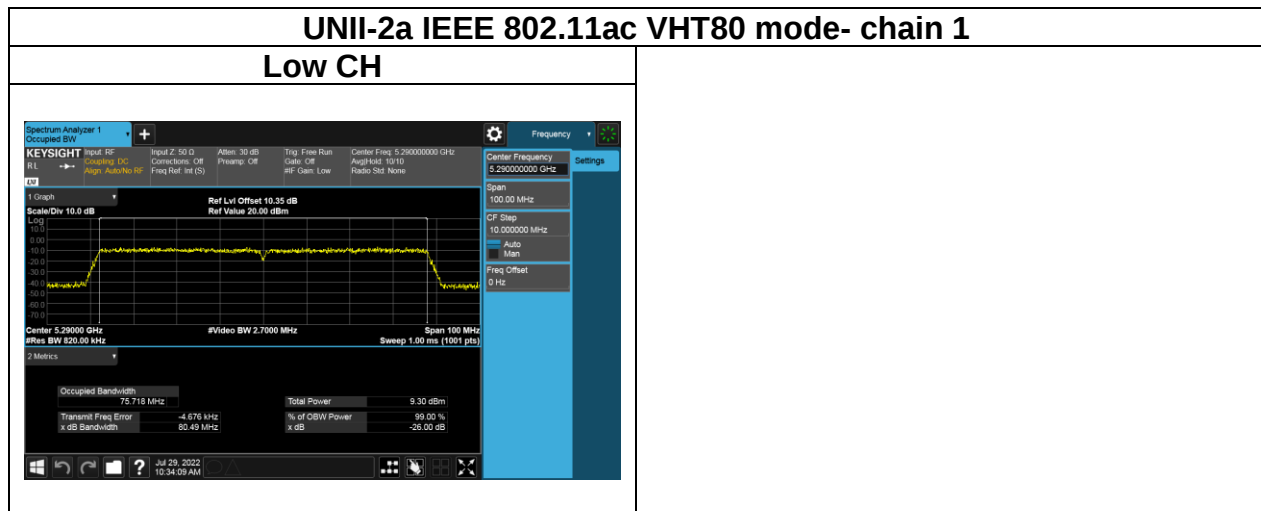
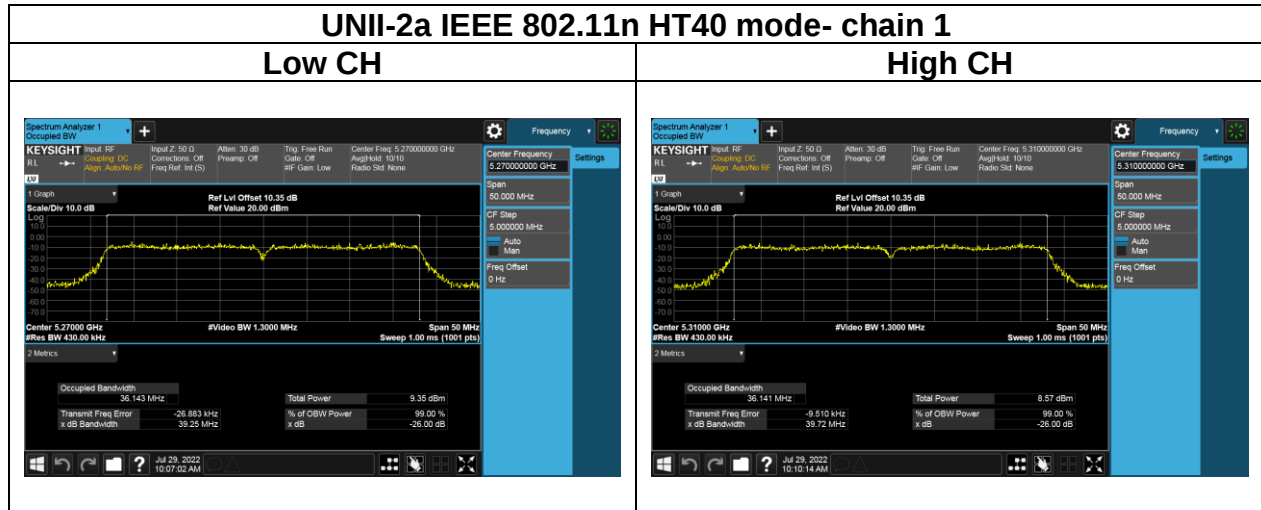




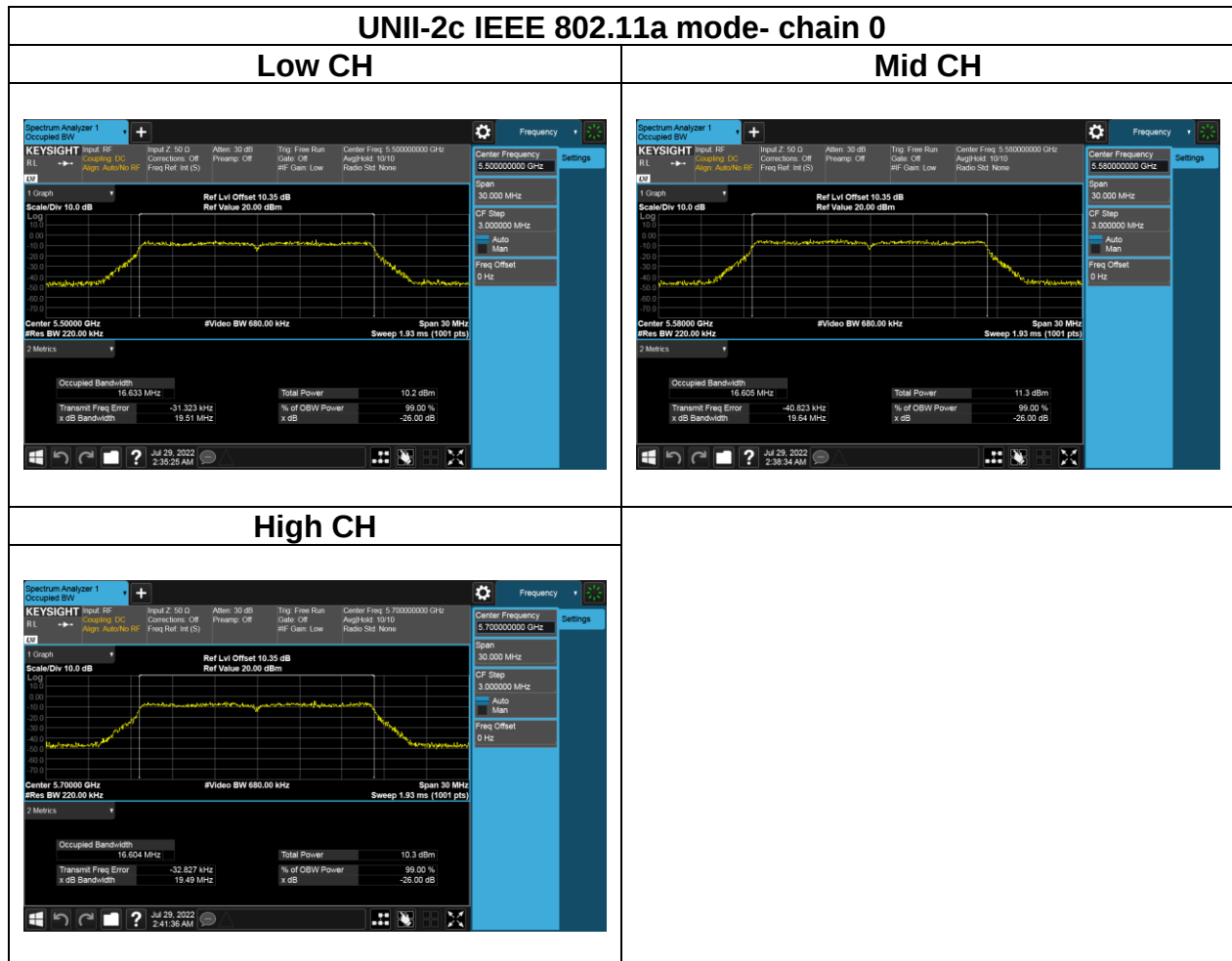


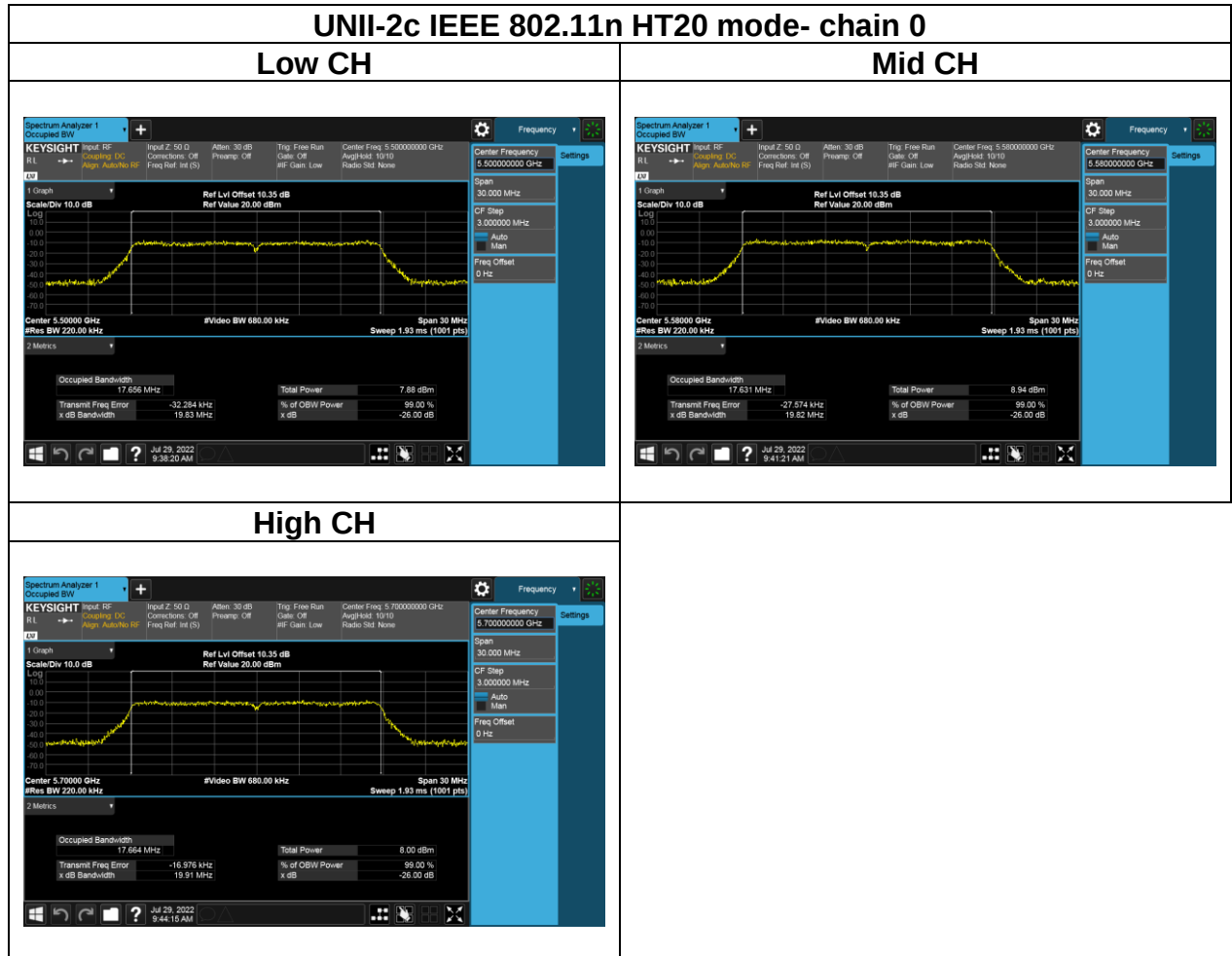


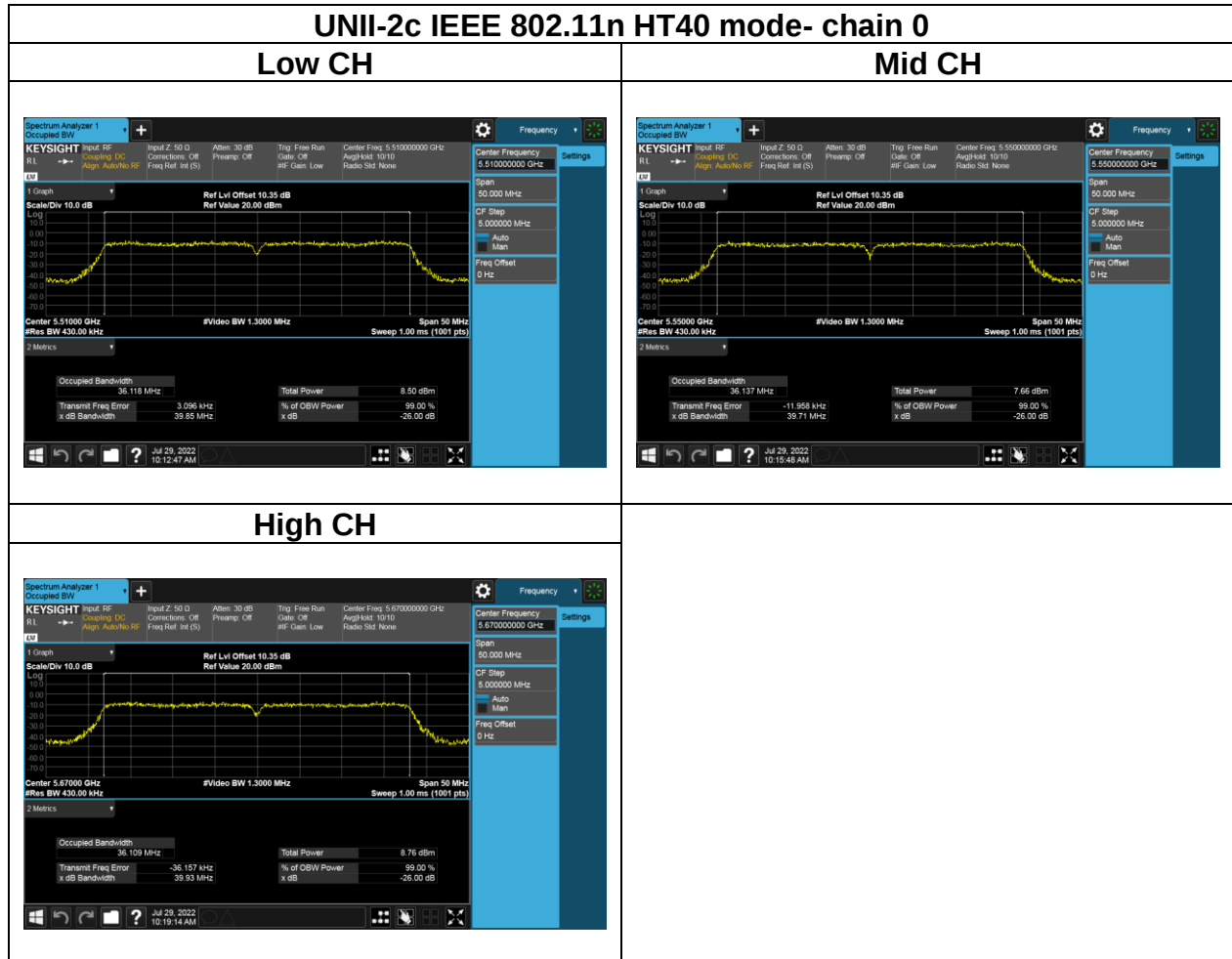


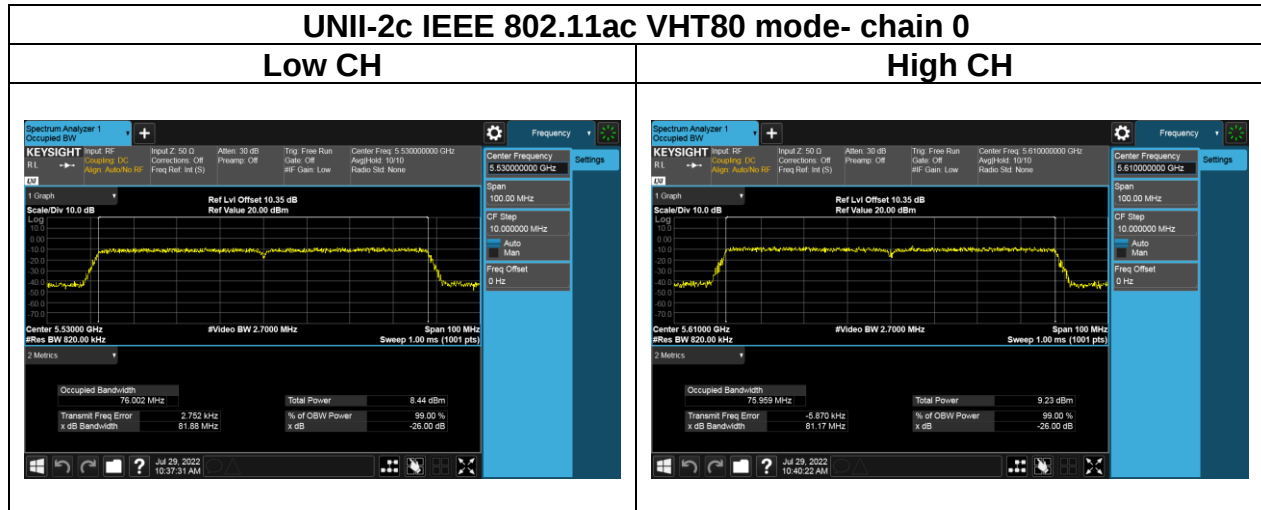


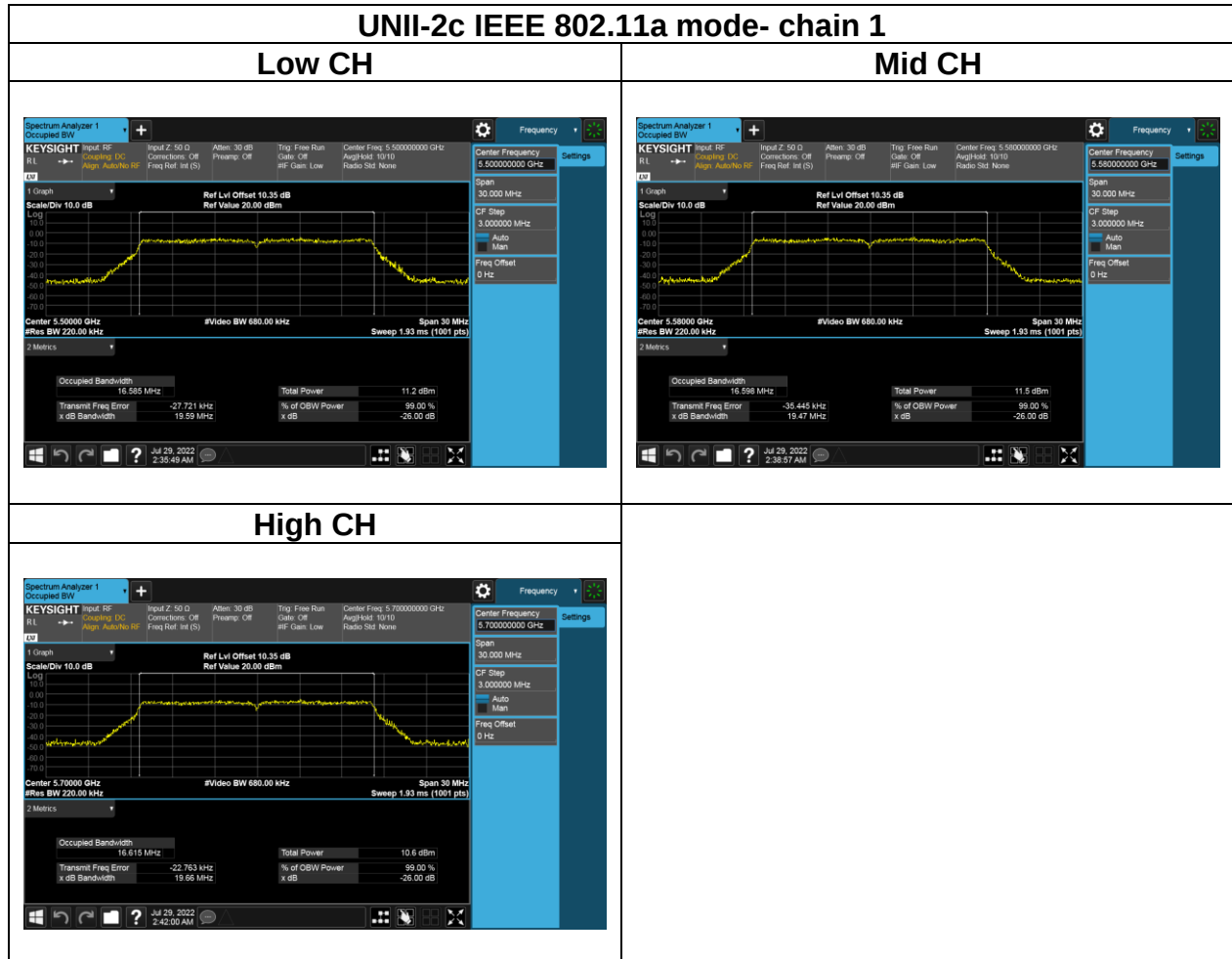
Test Plots (OBW 99%)

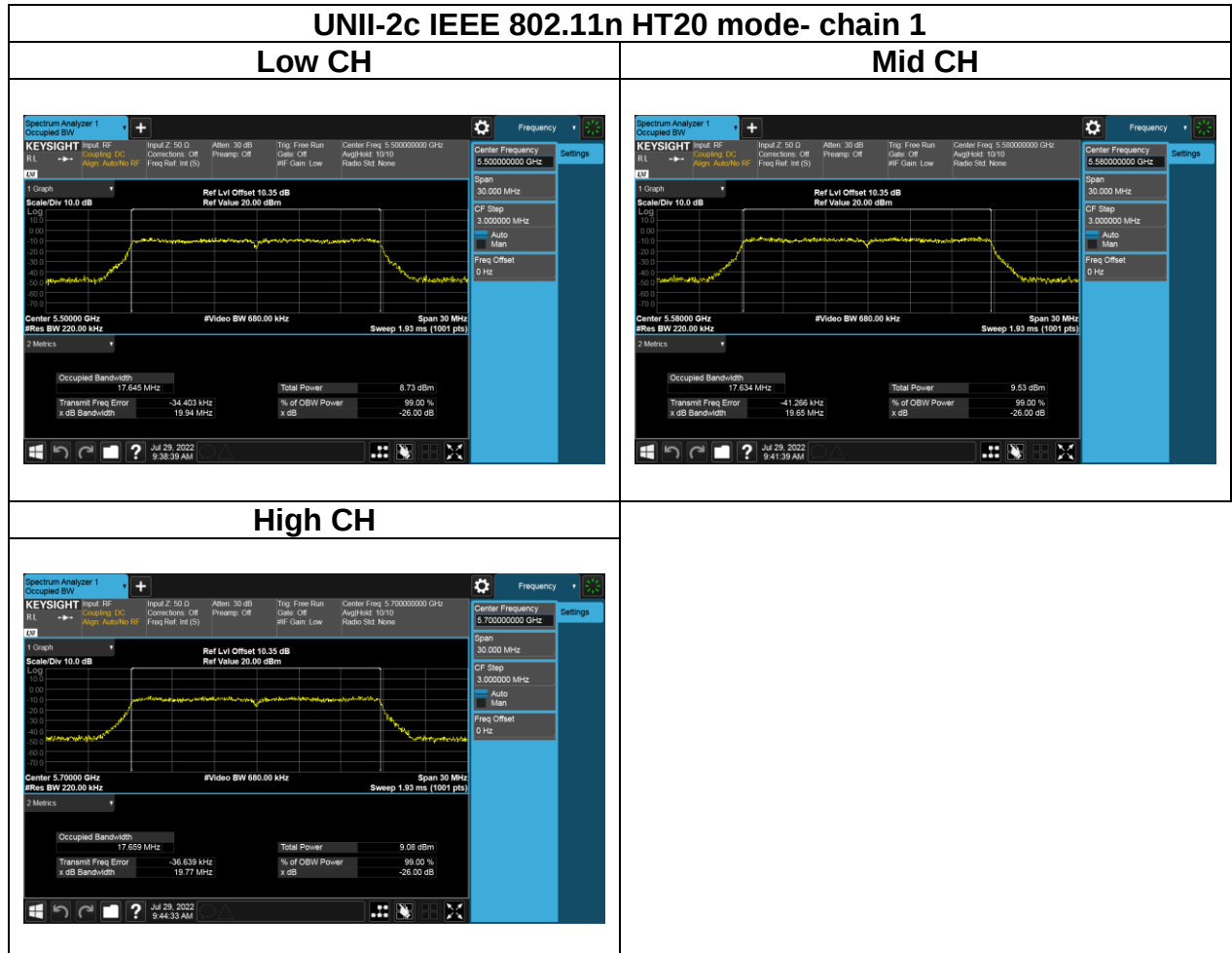


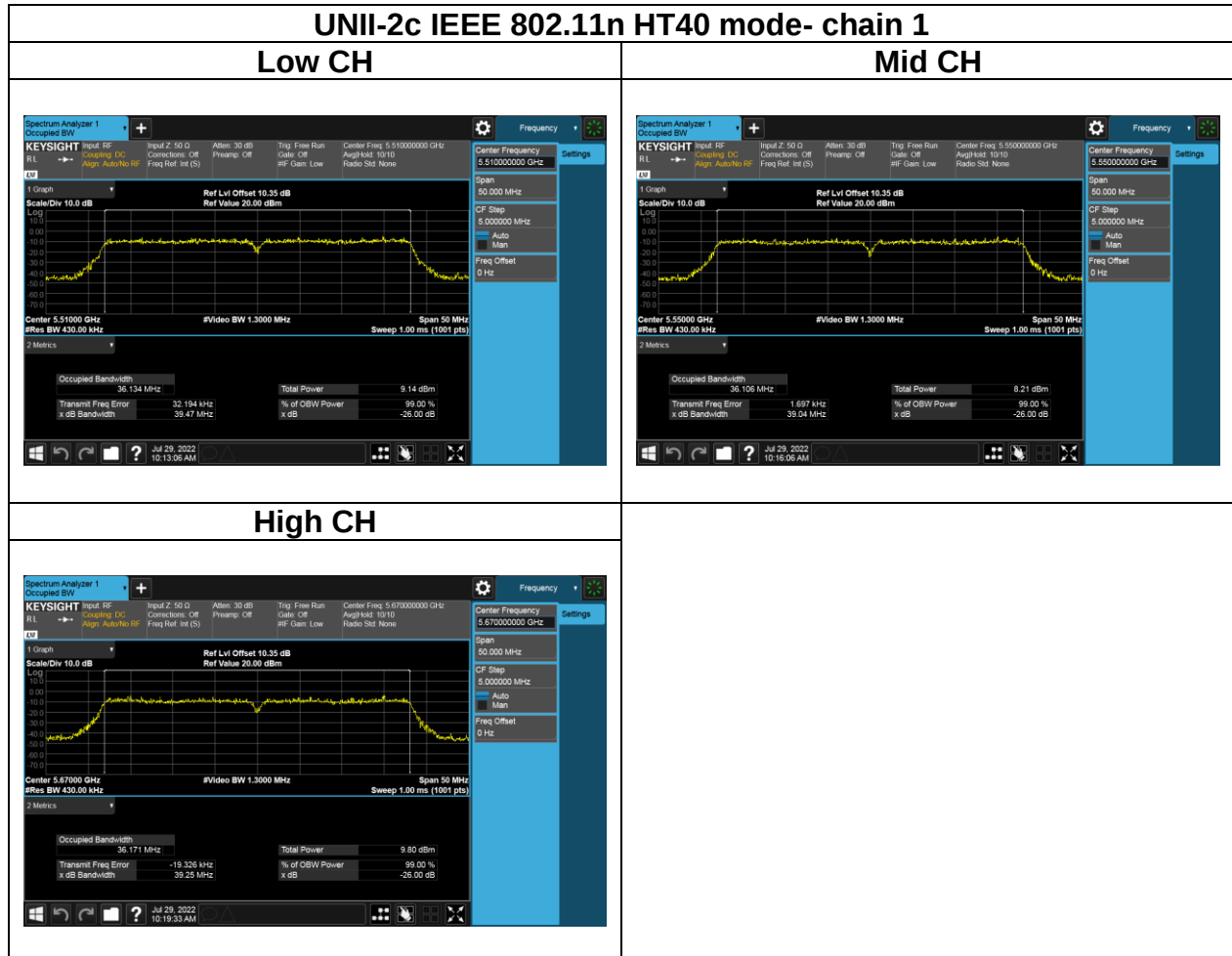


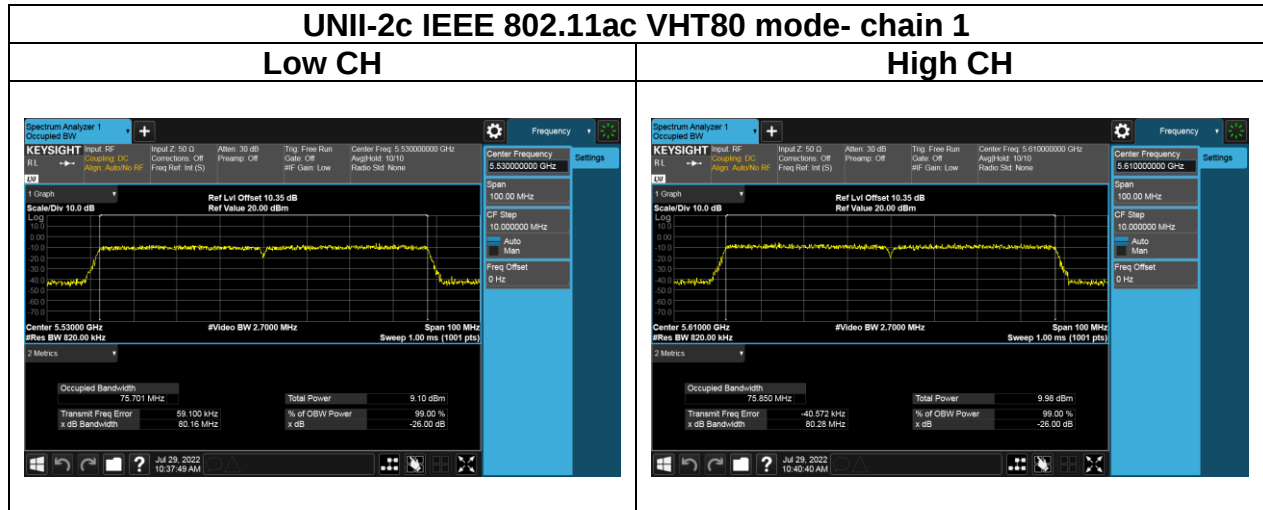












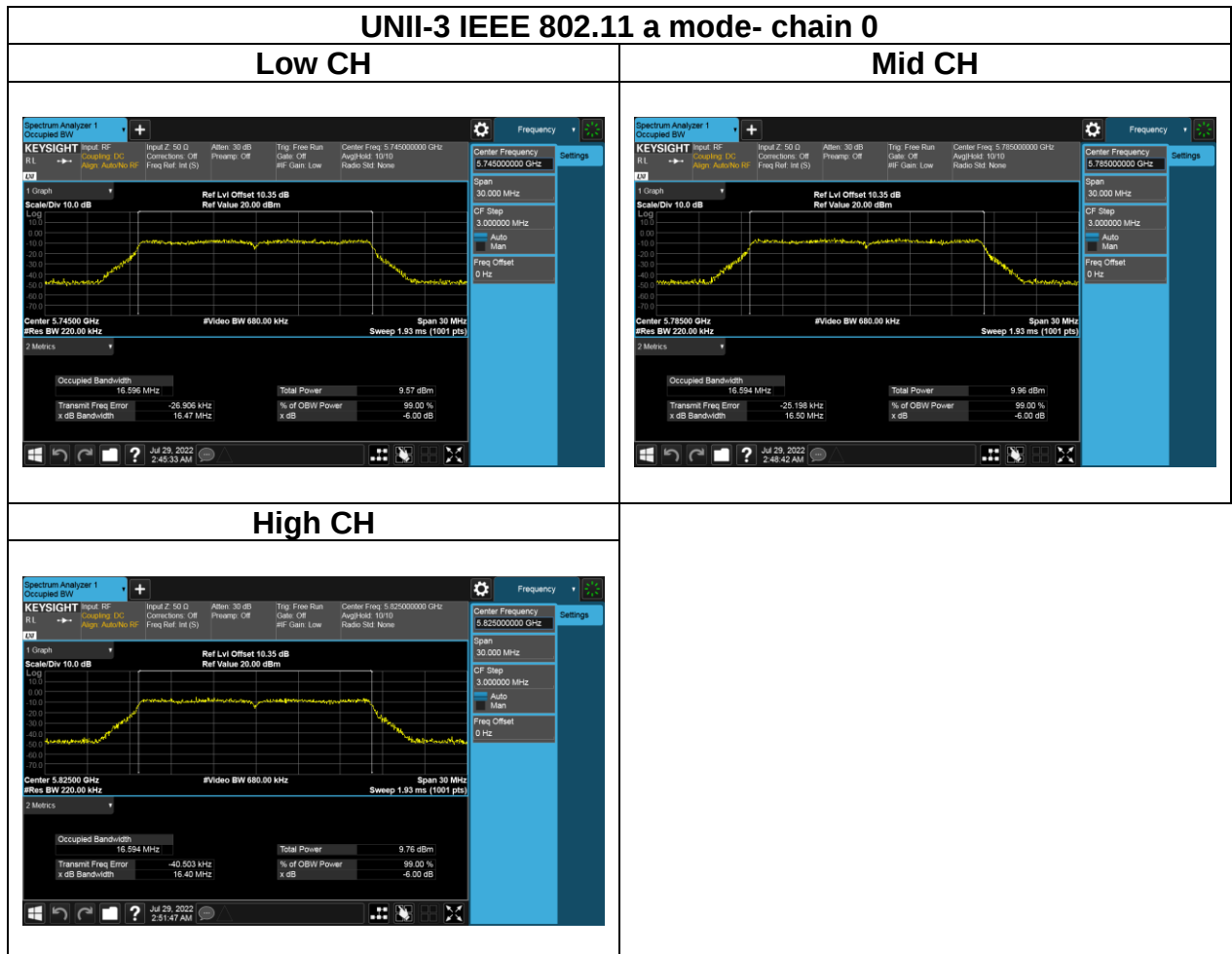


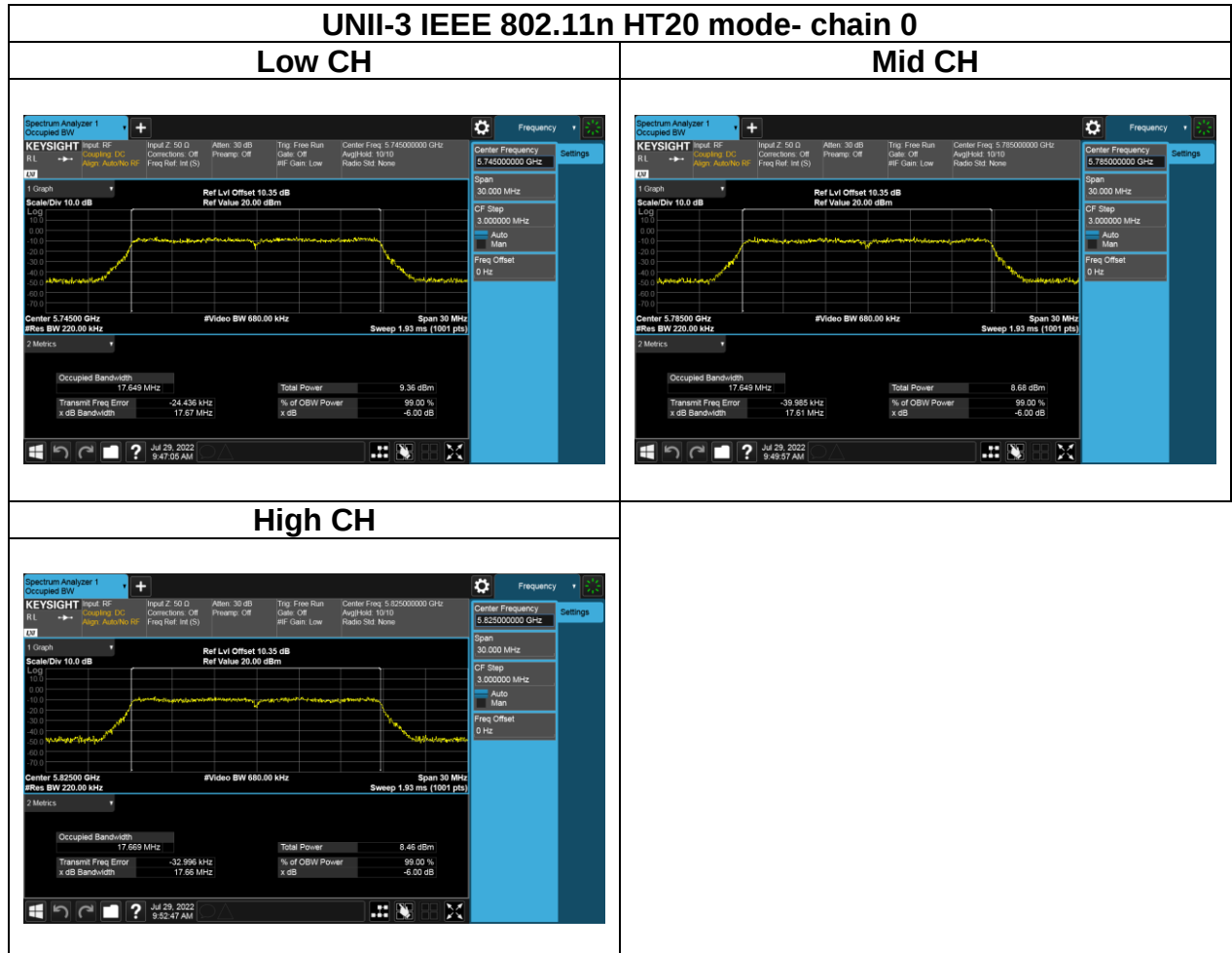
Report No.: TMWK2207002920KR

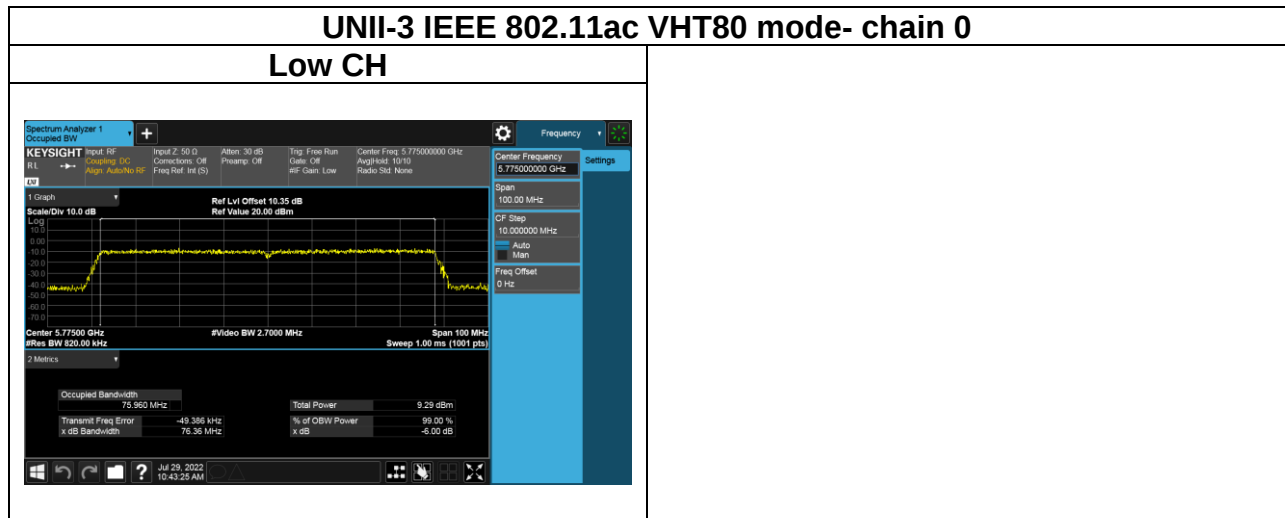
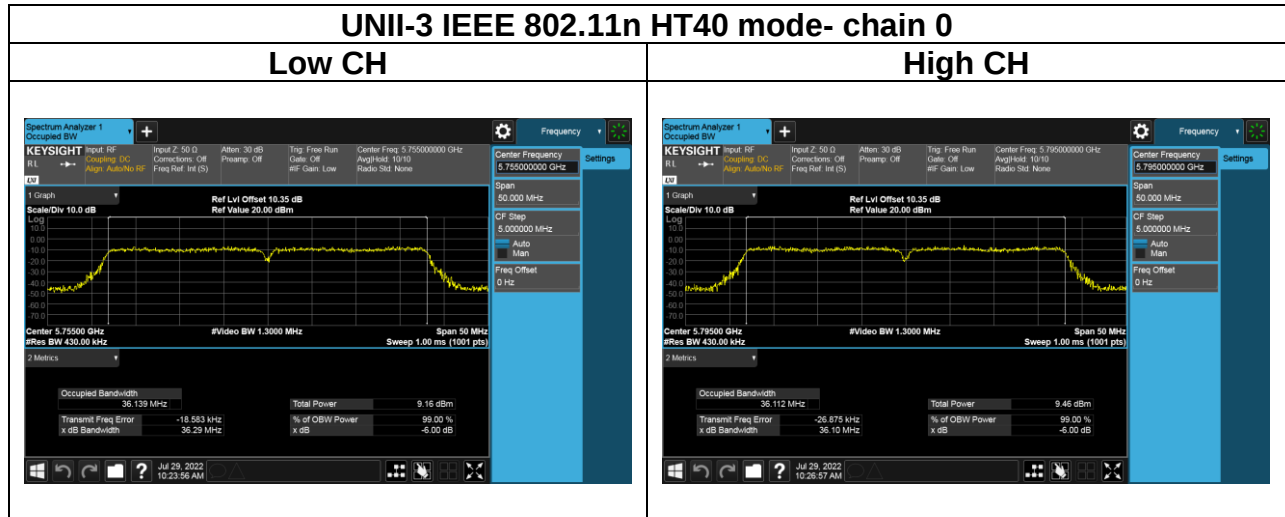
Page: 74 / 264

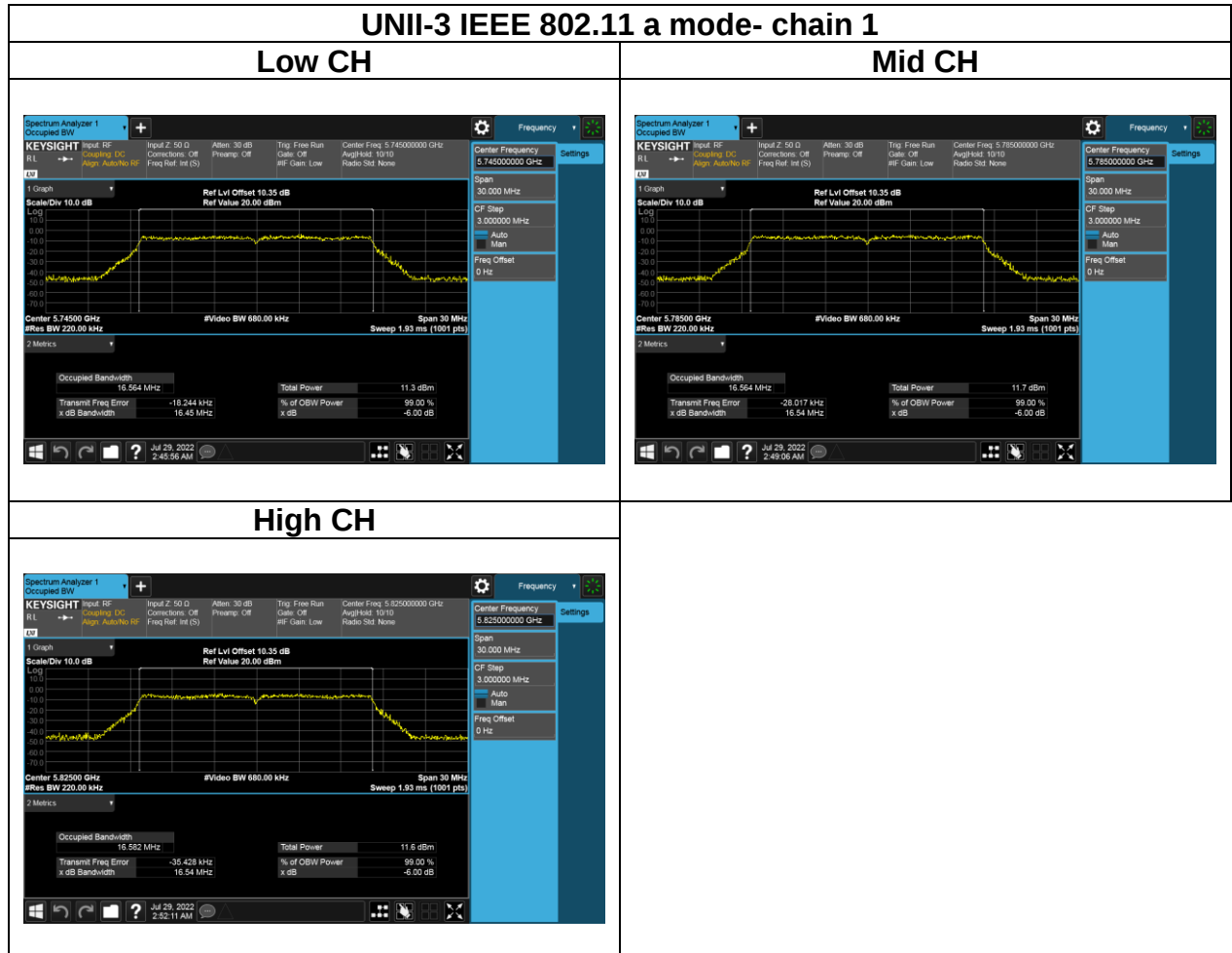
Rev.: 01

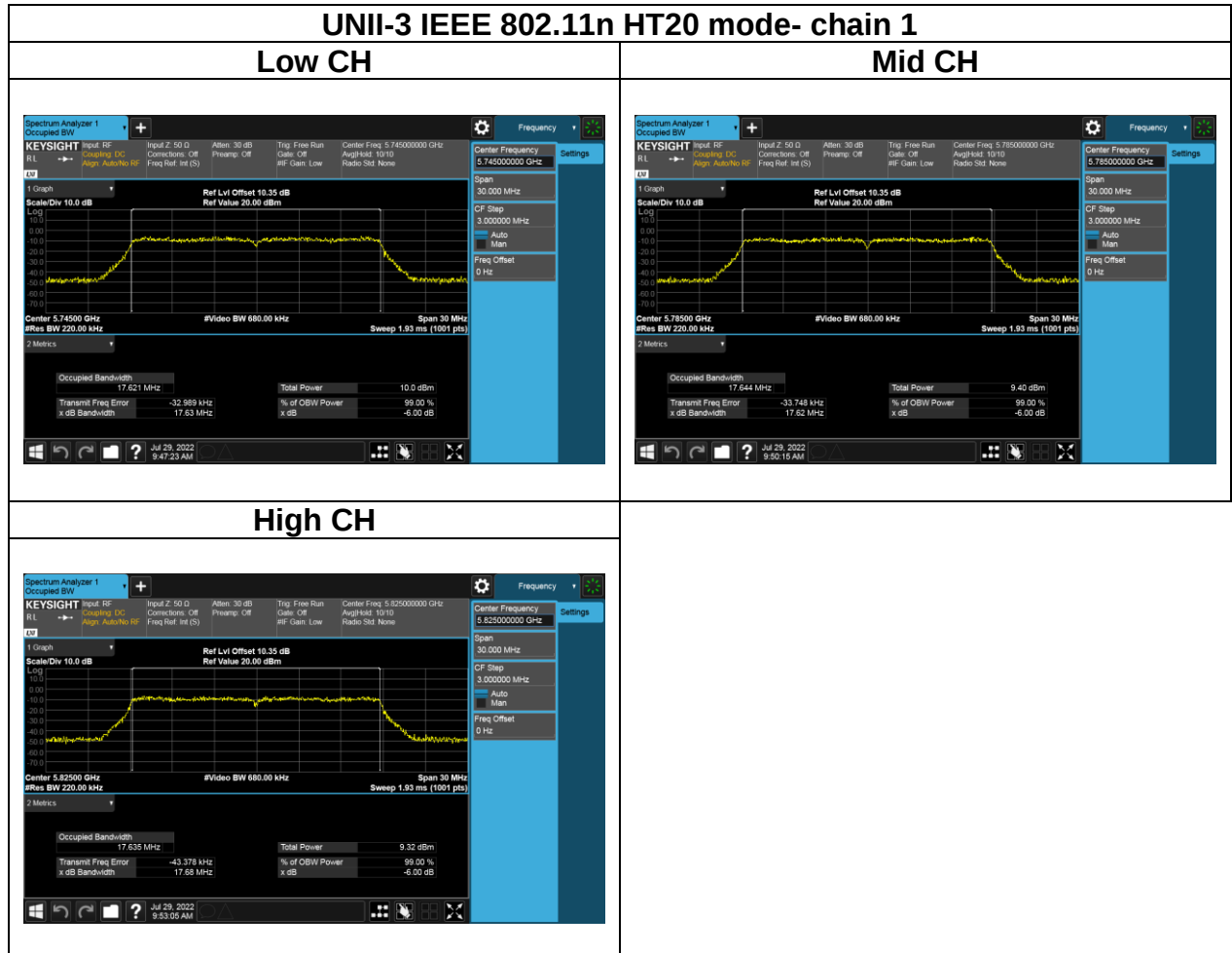
Test Plots (OBW 99%)

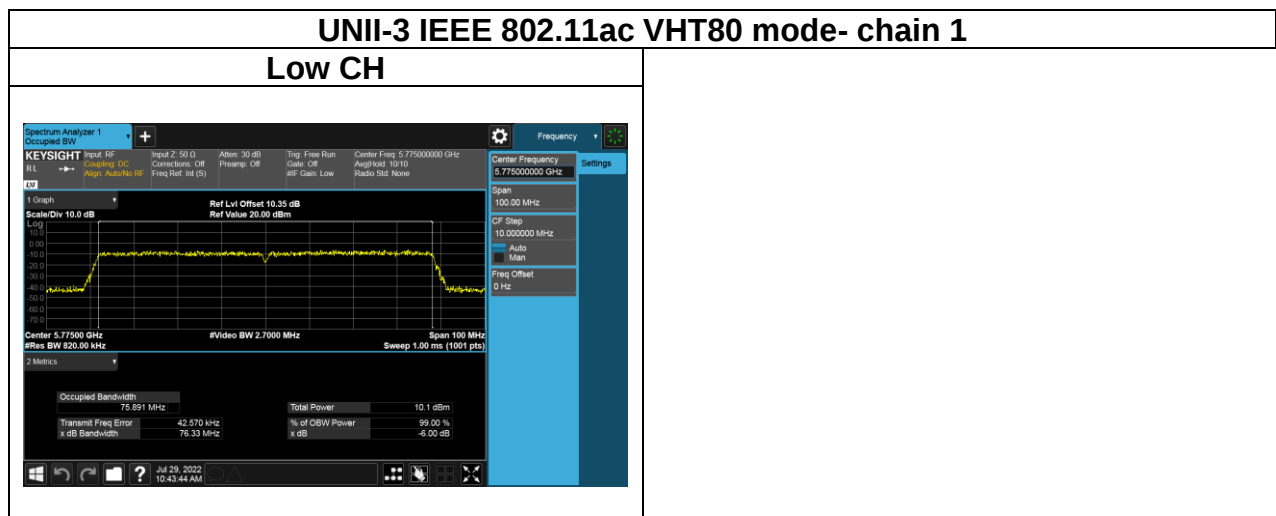
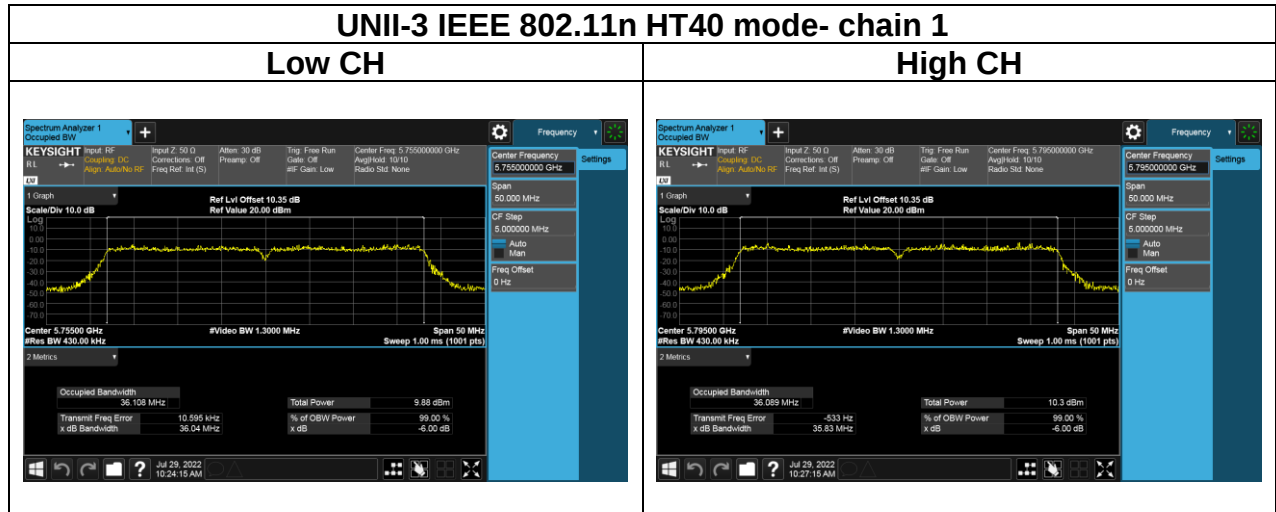












4.3 OUTPUT POWER MEASUREMENT

4.3.1 Test Limit

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

UNII-1 :

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW (24 dBm), whichever power is less. B is the 99% emission bandwidth in megahertz, provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz 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-2a and 2c:

the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz 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-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 : 24dBm ☒ Antenna with DG greater than 6 dBi : [Limit = 24 – (DG – 6)]
UNII-2a/2c Limit	☐ Antenna not exceed 6 dBi : 24dBm ☒ Antenna with DG greater than 6 dBi : [Limit = 24 – (DG – 6)]
UNII-3 Limit	☐ Antenna not exceed 6 dBi : 30dBm ☒ Antenna with DG greater than 6 dBi : [Limit = 30 – (DG – 6)]

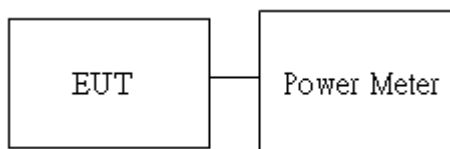
4.3.2 Test Procedure

Test method Refer as KDB 789033 D02, Section E.3.b for BW 20MHz and 40MHz, E.2.b for BW 80MHz.

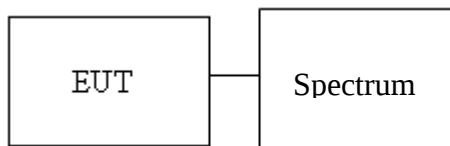
1. The EUT RF output connected to the power meter or spectrum by RF cable.
2. Setting maximum power transmit of EUT.
3. The path loss was compensated to the results for each measurement.
4. Measure and record the result of Average output power. in the test report.

4.3.3 Test Setup

For BW 20MHz and 40MHz



For BW 80MHz



4.3.4 Test Result

Temperature: 25.6~26.6°C

Test date: July 26~29, 2022

Humidity: 50~53% RH

Tested by: Marco Chan

FCC Conducted output power :

Test Mode: IEEE 802.11a mode_Ch0

CH	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	6	9	7.27	5.333	23.98	PASS
44	5220	6	7	7.42	5.521	23.98	PASS
48	5240	6	7	7.61	5.768	23.98	PASS
52	5260	6	7	7.51	5.636	23.94	PASS
60	5300	6	7	7.61	5.768	23.92	PASS
64	5320	6	7	6.98	4.989	23.89	PASS
100	5500	6	7	6.84	4.831	23.92	PASS
116	5580	6	7	6.72	4.699	23.90	PASS
140	5700	6	7	6.36	4.325	23.96	PASS
149	5745	6	6	6.49	4.457	30	PASS
157	5785	6	6	6.96	4.966	30	PASS
165	5825	6	6	6.83	4.819	30	PASS

Test Mode: IEEE 802.11a mode_Ch1

CH	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	6	9	7.58	5.728	23.98	PASS
44	5220	6	7	6.91	4.909	23.98	PASS
48	5240	6	7	7.20	5.248	23.98	PASS
52	5260	6	7	7.23	5.284	23.9	PASS
60	5300	6	7	7.53	5.662	23.89	PASS
64	5320	6	7	6.86	4.853	23.92	PASS
100	5500	6	7	7.18	5.224	23.92	PASS
116	5580	6	7	7.48	5.598	23.92	PASS
140	5700	6	7	7.46	5.572	23.93	PASS
149	5745	6	6	6.36	4.325	30	PASS
157	5785	6	6	6.89	4.887	30	PASS
165	5825	6	6	6.92	4.920	30	PASS

Remark:

1. For IEEE 802.11 a function, it supports SISO mode only.

Test Mode: IEEE 802.11n HT20 mode

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
36	5180	MCS0	7	5.47	5.91	8.71	7.430	23.64	PASS
44	5220	MCS0	6	5.64	5.21	8.44	6.982	23.64	PASS
48	5240	MCS0	6	5.83	5.51	8.68	7.379	23.64	PASS
52	5260	MCS0	6	5.74	5.58	8.67	7.362	23.64	PASS
60	5300	MCS0	7	5.91	5.84	8.89	7.745	23.64	PASS
64	5320	MCS0	7	5.92	5.85	8.90	7.762	23.64	PASS
100	5500	MCS0	5	4.8	5.52	8.19	6.592	23.64	PASS
116	5580	MCS0	5	5.62	5.89	8.77	7.534	23.64	PASS
140	5700	MCS0	5	5.11	5.48	8.31	6.776	23.64	PASS
149	5745	MCS0	6	6.01	7.68	9.94	9.863	29.66	PASS
157	5785	MCS0	5	5.43	7.28	9.46	8.831	29.66	PASS
165	5825	MCS0	5	5.31	7.26	9.40	8.710	29.66	PASS

Test Mode: IEEE 802.11n HT40 mode

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
38	5190	MCS0	6	5.36	4.74	8.07	6.412	23.64	PASS
46	5230	MCS0	6	5.13	5.89	8.54	7.145	23.64	PASS
54	5270	MCS0	6	5.06	5.9	8.51	7.096	23.64	PASS
62	5310	MCS0	6	4.51	5.57	8.08	6.427	23.64	PASS
102	5510	MCS0	5	4.85	5.81	8.37	6.871	23.64	PASS
110	5550	MCS0	4	3.75	5.12	7.50	5.623	23.64	PASS
134	5670	MCS0	5	4.98	5.26	8.13	6.501	23.64	PASS
151	5755	MCS0	5	5.11	6.64	8.95	7.852	29.66	PASS
159	5795	MCS0	5	5.46	6.81	9.20	8.318	29.66	PASS

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
				Ch0	Ch1				
42	5210	MCS0	5	5.27	4.78	8.04	6.368	23.64	PASS
58	5290	MCS0	5	4.51	5.46	8.02	6.339	23.64	PASS
106	5530	MCS0	4	4.48	5.43	7.99	6.295	23.64	PASS
122	5610	MCS0	4	4.84	5.03	7.95	6.237	23.64	PASS
155	5775	MCS0	4	4.82	6.4	8.69	7.396	29.66	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 :

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

UNII-2a and 2c:

The maximum power spectral density shall not exceed 11 dBm in any 1 megahertz 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-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.

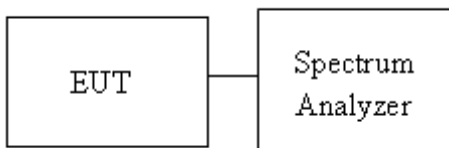
UNII-1 Limit	☐ Antenna not exceed 6 dBi : 11 dBm/MHz ☒ Antenna with DG greater than 6 dBi : [Limit = 11 – (DG – 6) dBm/MHz]
UNII-2a Limit	☐ Antenna not exceed 6 dBi : 11 dBm/MHz ☒ Antenna with DG greater than 6 dBi : [Limit = 11 – (DG – 6) dBm/MHz]
UNII-2c Limit	☐ Antenna not exceed 6 dBi : 11 dBm/MHz ☒ Antenna with DG greater than 6 dBi : [Limit = 11 – (DG – 6) dBm/MHz]
UNII-3 Limit	☐ Antenna not exceed 6 dBi : 30 dBm/MHz ☒ Antenna with DG greater than 6 dBi : [Limit = 30 – (DG – 6) dBm/MHz]

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



Report No.: TMWK2207002920KR

4.4.4 Test Result

Temperature: 25.6~26.6°C

Test date: July 26~29, 2022

Humidity: 50~53% RH

Tested by: Marco Chan

UNII-1 5150-5250 MHz

Test Mode: IEEE 802.11a mode

Channel	Frequency (MHz)	Chain 0 PSD (dBm/MHz)	Chain 1 PSD (dBm/MHz)	Duty Factor (dB)	Maximum Corr'd PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
Low	5180	-3.23	-3.90	0.00	-3.23	11.00	-14.23
Mid	5220	-4.56	-3.50	0.00	-3.50	11.00	-14.50
High	5240	-4.51	-3.50	0.00	-3.50	11.00	-14.50

Remark:

1. For IEEE 802.11 a function, it supports SISO mode only.

Test Mode: IEEE 802.11n HT20 mode

Channel	Frequency (MHz)	Chain 0 PSD (dBm/MHz)	Chain 1 PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
Low	5180	-5.04	-4.96	0.00	-1.99	10.66	-12.65
Mid	5220	-6.08	-6.16	0.00	-3.11	10.66	-13.77
High	5240	-6.22	-5.82	0.00	-3.01	10.66	-13.67

Test Mode: IEEE 802.11n HT40 mode

Channel	Frequency (MHz)	Chain 0 PSD (dBm/MHz)	Chain 1 PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
Low	5190	-8.50	-8.28	0.00	-5.38	10.66	-16.04
High	5230	-9.29	-8.36	0.00	-5.79	10.66	-16.45

Test Mode: IEEE 802.11ac VHT80 mode

Channel	Frequency (MHz)	Chain 0 PSD (dBm/MHz)	Chain 1 PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
Low	5210	-12.75	-12.72	0.00	-9.72	10.66	-20.38

UNII-2a 5250-5350 MHz

Test Mode: IEEE 802.11a mode

Channel	Frequency (MHz)	Chain 0 PSD (dBm/MHz)	Chain 1 PSD (dBm/MHz)	Duty Factor (dB)	Maximum Corr'd PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
Low	5260	-4.69	-3.62	0.00	-3.62	11.00	-14.62
Mid	5300	-4.42	-3.03	0.00	-3.03	11.00	-14.03
High	5320	-5.08	-4.09	0.00	-4.09	11.00	-15.09

Remark:

1. For IEEE 802.11 a function, it supports SISO mode only.

Test Mode: IEEE 802.11n HT20 mode

Channel	Frequency (MHz)	Chain 0 PSD (dBm/MHz)	Chain 1 PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
Low	5260	-6.31	-6.03	0.00	-3.16	10.66	-13.82
Mid	5300	-6.02	-5.67	0.00	-2.83	10.66	-13.49
High	5320	-5.71	-5.52	0.00	-2.60	10.66	-13.26

Test Mode: IEEE 802.11n HT40 mode

Channel	Frequency (MHz)	Chain 0 PSD (dBm/MHz)	Chain 1 PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
Low	5270	-9.22	-9.08	0.00	-6.14	10.66	-16.80
High	5310	-9.86	-9.24	0.00	-6.53	10.66	-17.19

Test Mode: IEEE 802.11ac VHT80 mode

Channel	Frequency (MHz)	Chain 0 PSD (dBm/MHz)	Chain 1 PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
Low	5290	-13.36	-12.83	0.00	-10.08	10.66	-20.74

UNII-2c 5470-5725 MHz

Test Mode: IEEE 802.11a mode

Channel	Frequency (MHz)	Chain 0 PSD (dBm/MHz)	Chain 1 PSD (dBm/MHz)	Duty Factor (dB)	Maximum Corr'd PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
Low	5500	-5.24	-3.91	0.00	-3.91	11.00	-14.91
Mid	5580	-3.86	-3.65	0.00	-3.65	11.00	-14.65
High	5700	-4.49	-4.50	0.00	-4.49	11.00	-15.49

Remark:

1. For IEEE 802.11 a function, it supports SISO mode only.

Test Mode: IEEE 802.11n HT20 mode

Channel	Frequency (MHz)	Chain 0 PSD (dBm/MHz)	Chain 1 PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
Low	5500	-6.92	-6.03	0.00	-3.44	10.66	-14.10
Mid	5580	-5.63	-5.14	0.00	-2.36	10.66	-13.02
High	5700	-6.36	-5.01	0.00	-2.62	10.66	-13.28

Test Mode: IEEE 802.11n HT40 mode

Channel	Frequency (MHz)	Chain 0 PSD (dBm/MHz)	Chain 1 PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
Low	5510	-9.39	-8.47	0.00	-5.89	10.66	-16.55
Mid	5550	-10.79	-9.85	0.00	-7.29	10.66	-17.95
High	5670	-9.38	-8.45	0.00	-5.88	10.66	-16.54

Test Mode: IEEE 802.11ac VHT80 mode

Channel	Frequency (MHz)	Chain 0 PSD (dBm/MHz)	Chain 1 PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
Low	5530	-13.31	-13.24	0.00	-10.26	10.66	-20.92
High	5610	-12.96	-12.32	0.00	-9.62	10.66	-20.28

UNII-3 5725-5850 MHz

Test Mode: IEEE 802.11a mode

Channel	Frequency (MHz)	Chain 0 PSD (dBm/300kHz)	Chain 1 PSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW)	Maximum Corr'd PSD (dBm/500kHz)	Limit (dBm/500kHz)	Margin (dB)
Low	5745	-10.30	-8.50	0.00	2.22	-6.28	30.00	-36.28
Mid	5785	-10.00	-8.49	0.00	2.22	-6.27	30.00	-36.27
High	5825	-10.36	-8.30	0.00	2.22	-6.08	30.00	-36.08

Remark:

1. For IEEE 802.11 a function, it supports SISO mode only.

Test Mode: IEEE 802.11n HT20 mode

Channel	Frequency (MHz)	Chain 0 PSD (dBm/300kHz)	Chain 1 PSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW)	Total Corr'd PSD (dBm/500kHz)	Limit (dBm/500kHz)	Margin (dB)
Low	5745	-9.85	-9.26	0.00	2.22	-4.32	29.66	-33.98
Mid	5785	-10.72	-9.08	0.00	2.22	-4.59	29.66	-34.25
High	5825	-10.89	-9.94	0.00	2.22	-5.16	29.66	-34.82

Test Mode: IEEE 802.11n HT40 mode

Channel	Frequency (MHz)	Chain 0 PSD (dBm/300kHz)	Chain 1 PSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW)	Total Corr'd PSD (dBm/500kHz)	Limit (dBm/500kHz)	Margin (dB)
Low	5755	-13.93	-13.67	0.00	2.22	-8.57	29.66	-38.23
High	5795	-13.91	-13.38	0.00	2.22	-8.41	29.66	-38.07

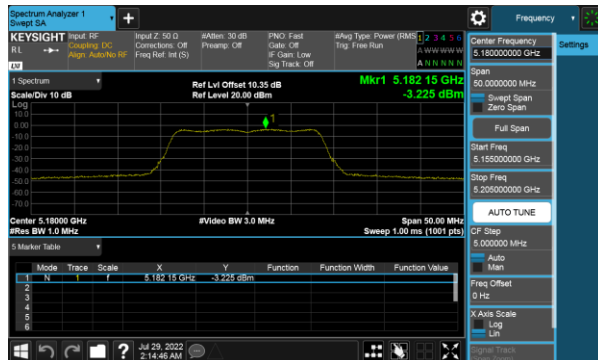
Test Mode: IEEE 802.11ac VHT80 mode

Channel	Frequency (MHz)	Chain 0 PSD (dBm/300kHz)	Chain 1 PSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW)	Total Corr'd PSD (dBm/500kHz)	Limit (dBm/500kHz)	Margin (dB)
Low	5775	-17.84	-17.31	0.00	2.22	-12.34	29.66	-42.00

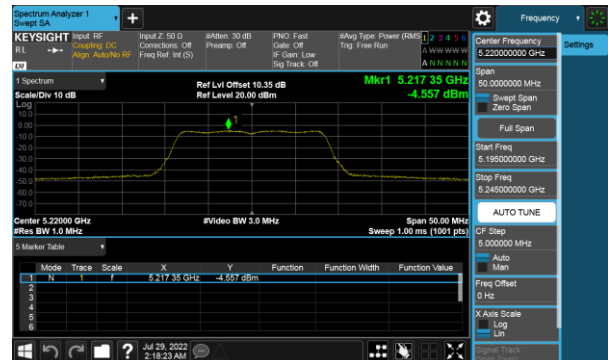
Test Plots

UNII-1 IEEE 802.11a mode- chain 0

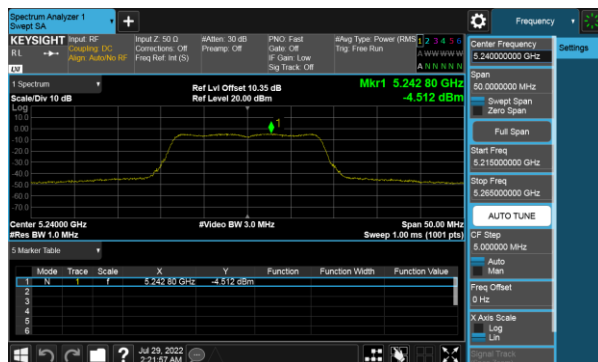
Low CH



Mid CH

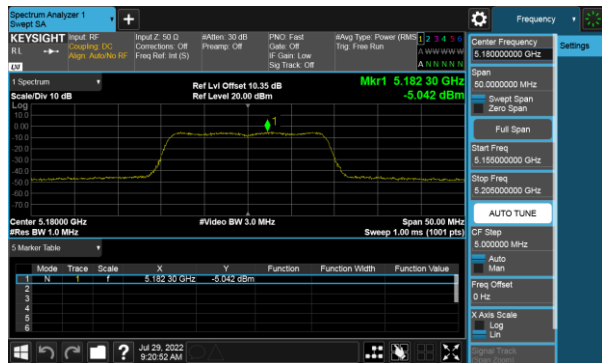


High CH

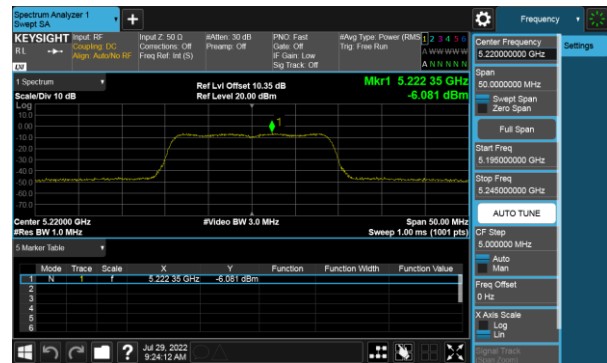


UNII-1 IEEE 802.11n HT20 mode- chain 0

Low CH

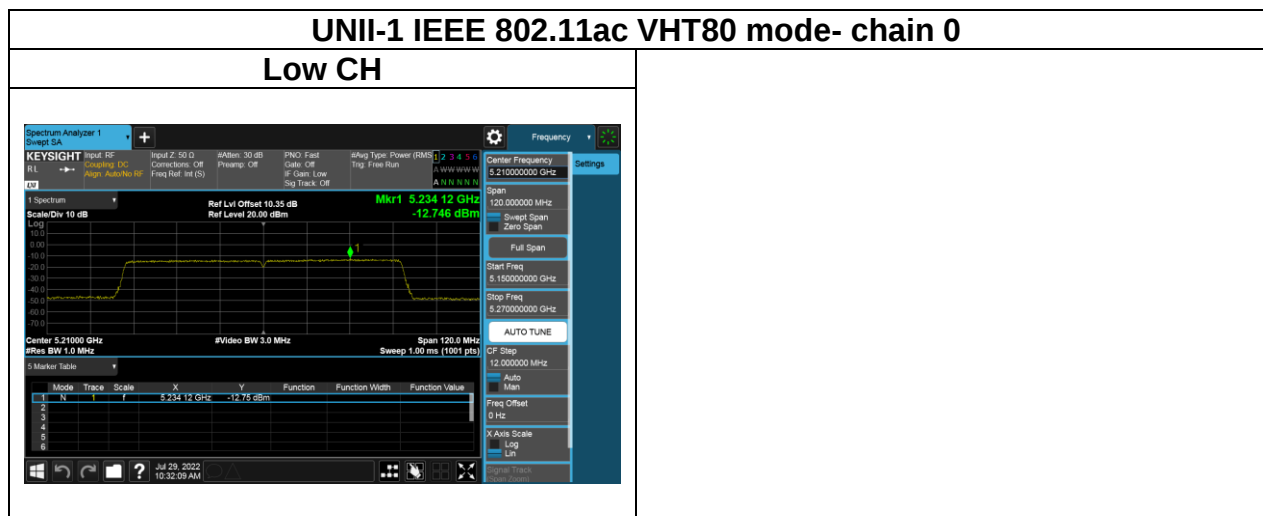
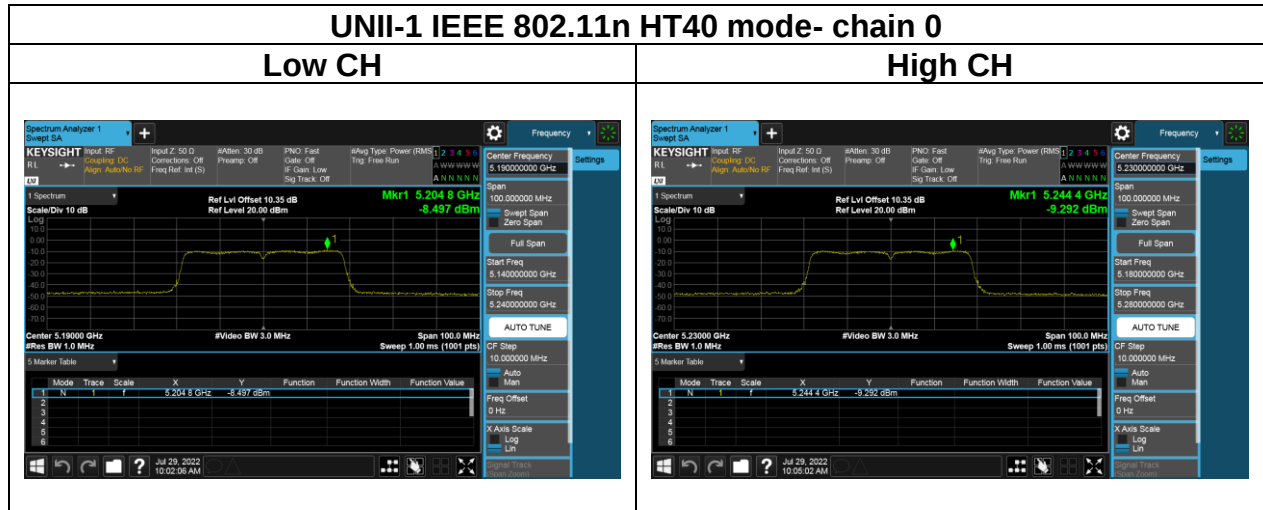


Mid CH



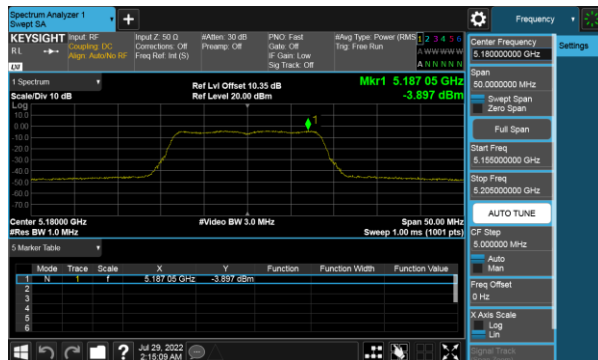
High CH



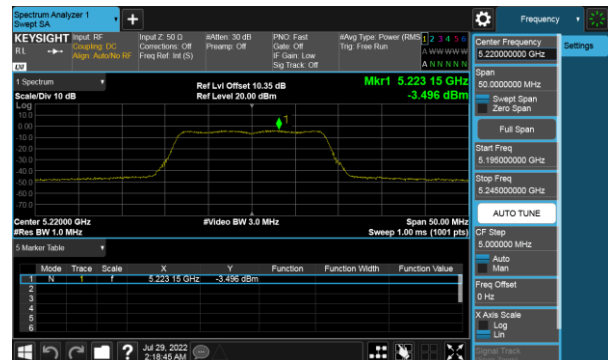


UNII-1 IEEE 802.11a mode- chain 1

Low CH



Mid CH



High CH

