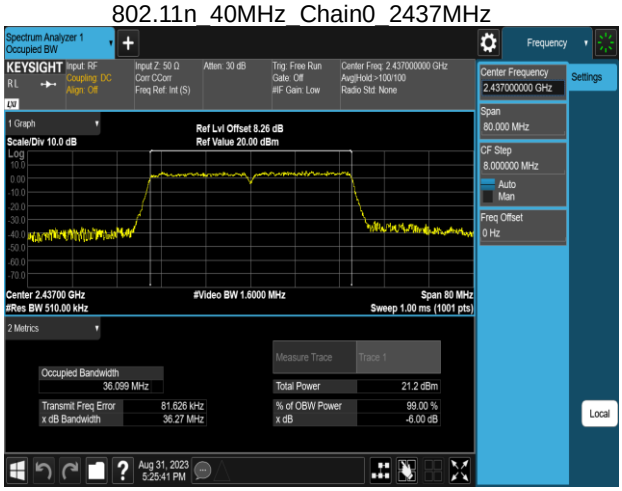
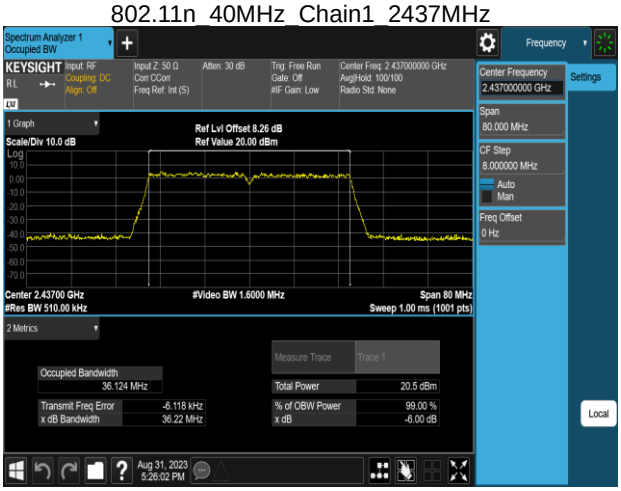
802.11n_40MHz_Chain0_2422MHz

802.11n_40MHz_Chain1_2422MHz

802.11n_40MHz_Chain0_2437MHz



802.11n_40MHz_Chain1_2437MHz



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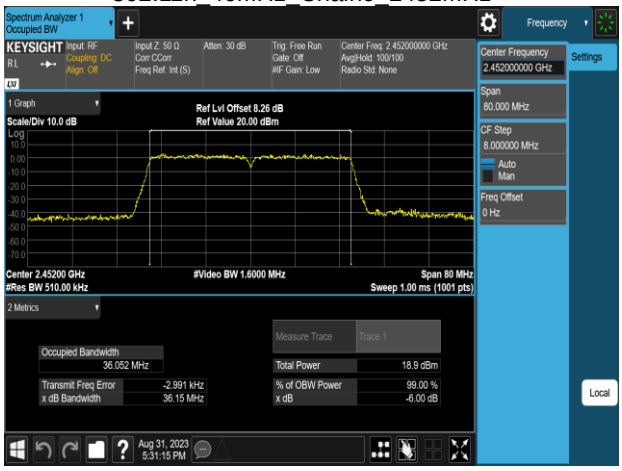
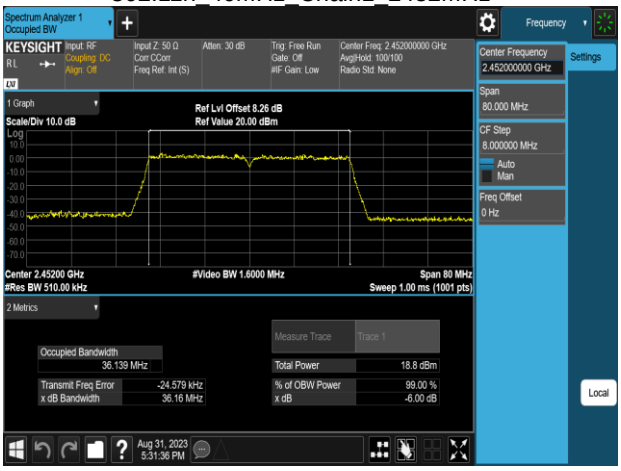
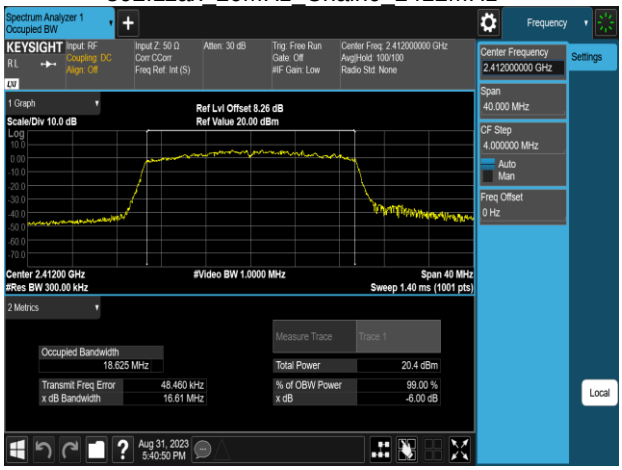


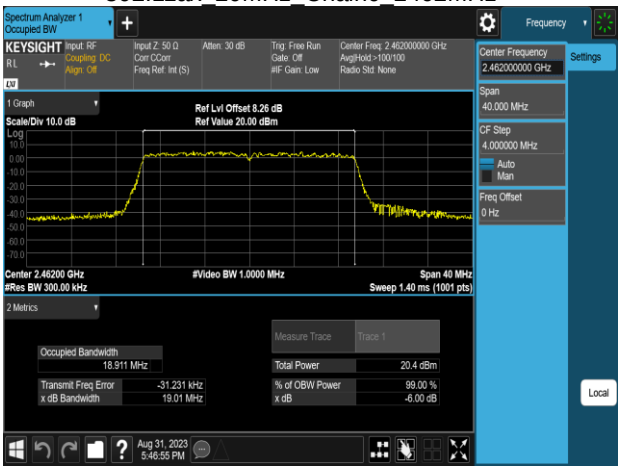
802.11n_40MHz_Chain1_2452MHz



802.11ax_20MHz_Chain0_2412MHz



802.11ax_20MHz_Chain0_2462MHz



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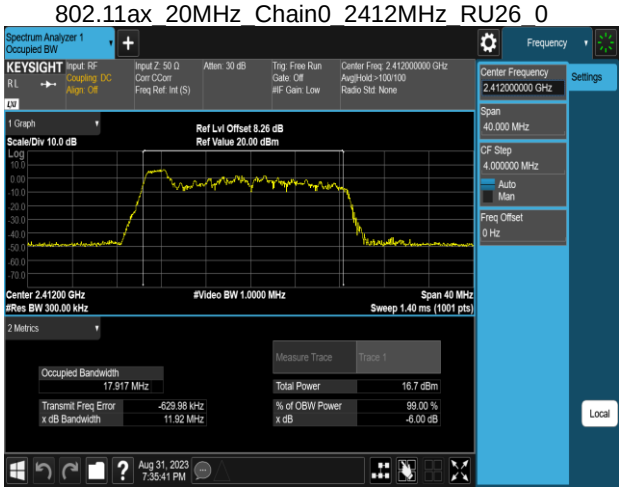
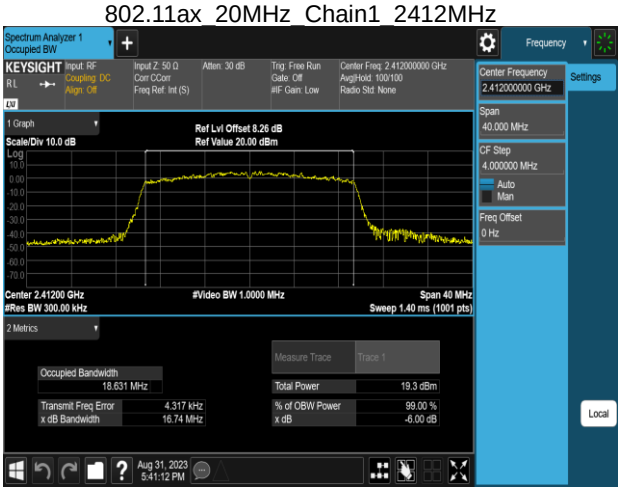
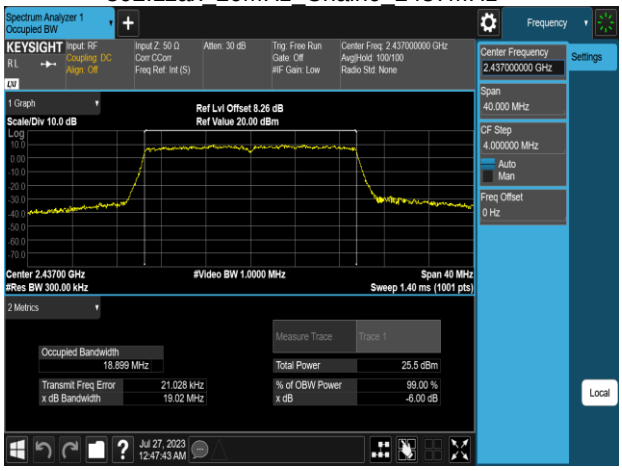


802.11ax_20MHz_Chain1_2412MHz



802.11ax_20MHz_Chain0_2437MHz



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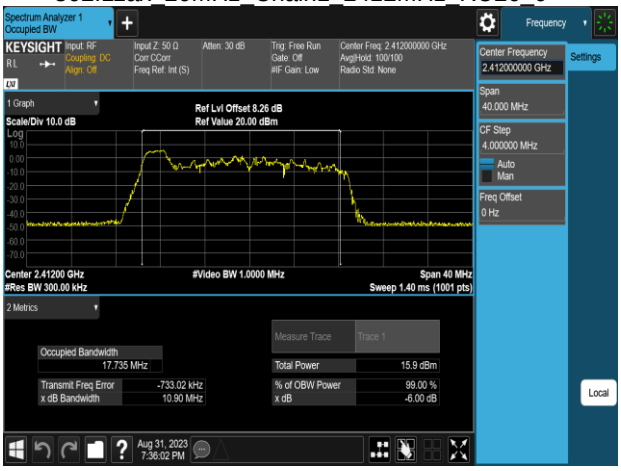
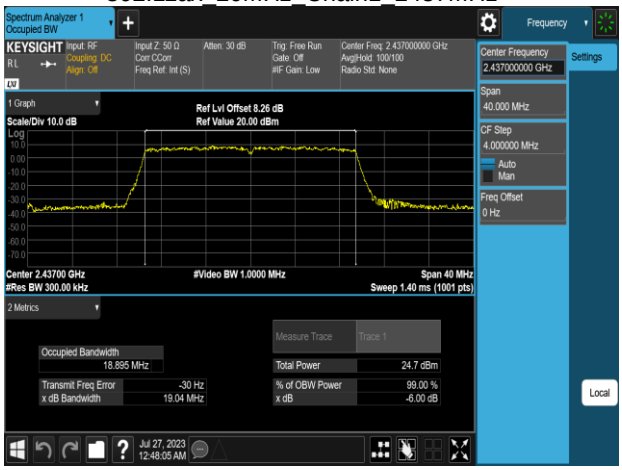
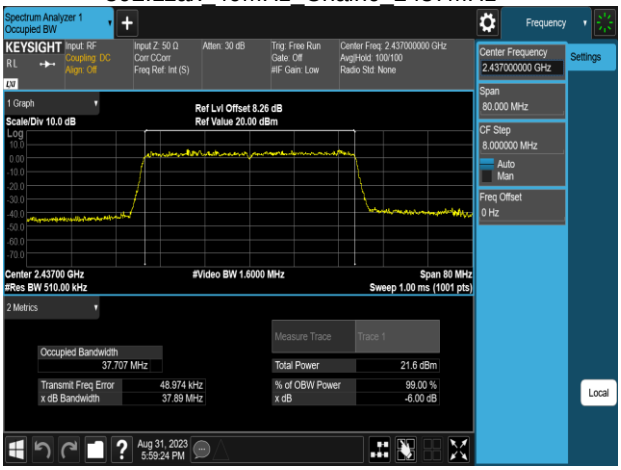


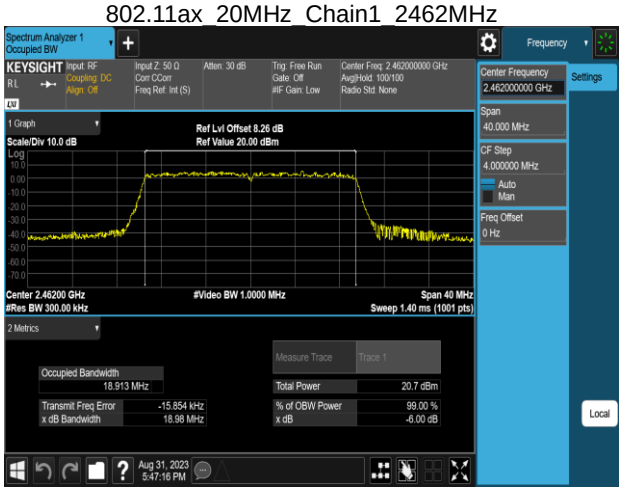
802.11ax_20MHz_Chain1_2437MHz



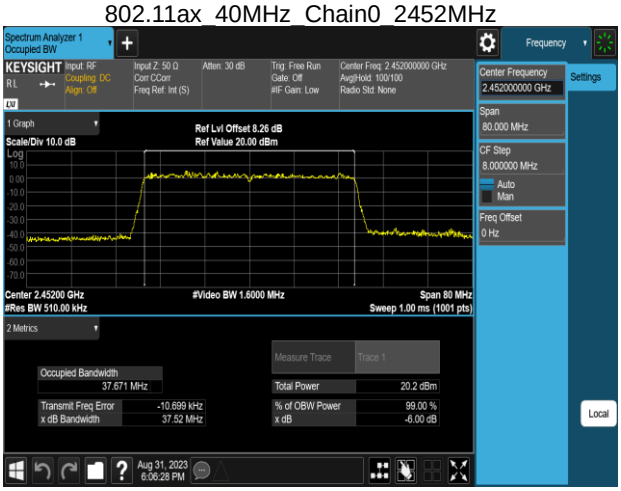
802.11ax_40MHz_Chain0_2437MHz



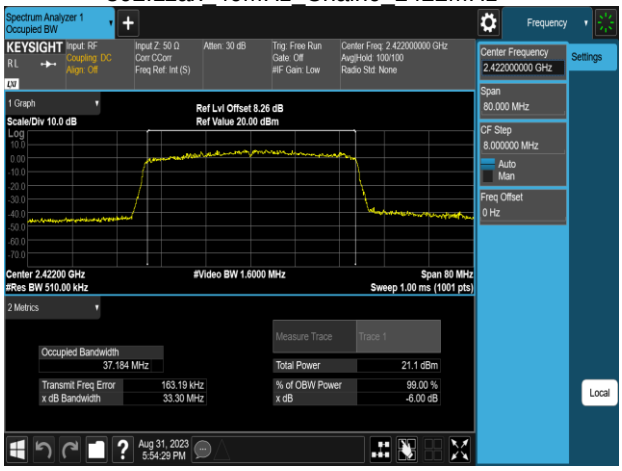
802.11ax_20MHz_Chain1_2462MHz



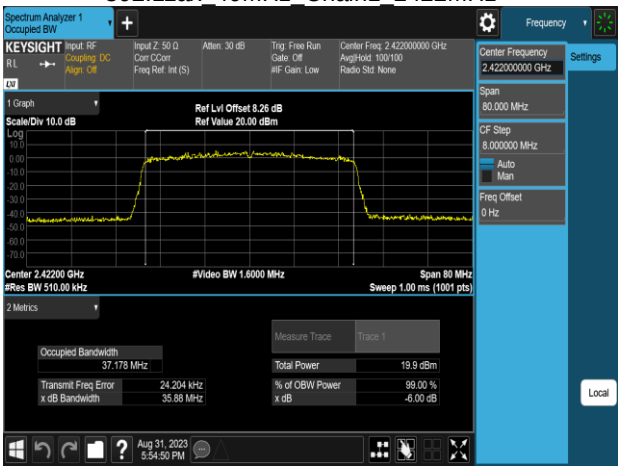
802.11ax_40MHz_Chain0_2452MHz



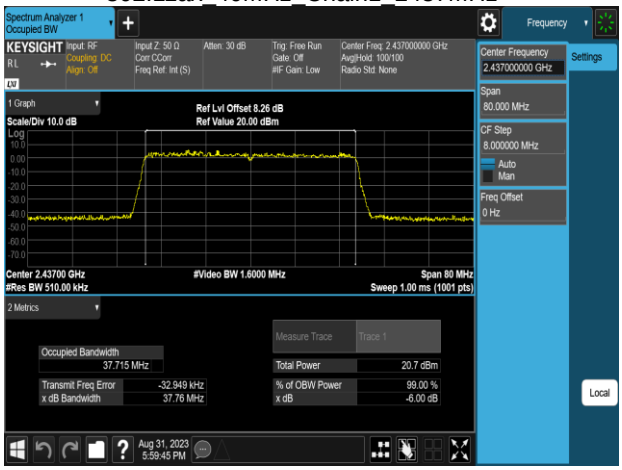
802.11ax_40MHz_Chain0_2422MHz



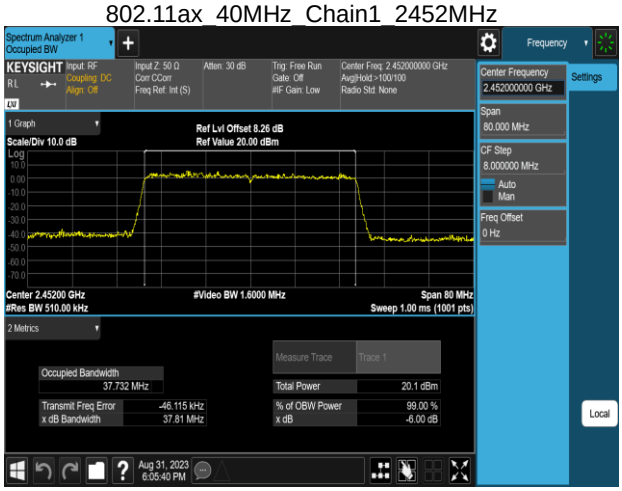
802.11ax_40MHz_Chain1_2422MHz



802.11ax_40MHz_Chain1_2437MHz



802.11ax_40MHz_Chain1_2452MHz



5.3 OUTPUT POWER MEASUREMENT

5.3.1 Test Limit

According to §15.247(b),

Peak output power：

For systems using digital modulation in the 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt(30 dBm) and the e.i.r.p. shall not exceed 4Watt(36 dBm), base on the use of antennas with directional gain not exceed 6 dBi If transmitting antennas of directional gain greater than 6dBi are used the peak output power the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Limit	☒ Antenna not exceed 6 dBi：30dBm ☐ Antenna with DG greater than 6 dBi： [Limit = 30 – (DG – 6)] ☐ Point-to-point operation：

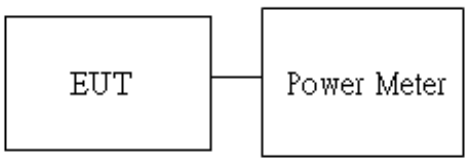
Average output power：For reporting purposes only.

5.3.2 Test Procedure

Test method Refer as KDB 558074 D01.

1. The EUT RF output connected to the power meter 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 Peak output power and Average output power. in the test report.

5.3.3 Test Setup



5.3.4 Test Result

Temperature: 24.3 ~ 28℃ **Test date:** July 26 ~ August 31, 2023

Humidity: 50 ~ 61% RH **Tested by:** Allen Shen

Peak & Average output power：

802.11b_2TX								
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)		Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1			
1	2412	1	16	18.66	18.20	21.45	30.00	PASS
6	2437	1	19.5	22.92	22.36	**25.66**	30.00	PASS
11	2462	1	17	19.67	20.19	22.95	30.00	PASS
802.11b_2TX								
CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)		Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1			
1	2412	1	16	17.80	17.23	20.53	30.00	PASS
6	2437	1	19.5	22.01	21.39	**24.72**	30.00	PASS
11	2462	1	17	18.75	19.25	22.02	30.00	PASS
802.11g_2TX								
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)		Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1			
1	2412	6	14	23.18	22.28	25.76	30.00	PASS
6	2437	6	19.5	26.97	26.54	**29.77**	30.00	PASS
11	2462	6	17	25.30	25.96	28.65	30.00	PASS
802.11g_2TX								
CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)		Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1			
1	2412	6	14	14.84	13.98	17.44	30.00	PASS
6	2437	6	19.5	19.15	18.28	**21.75**	30.00	PASS
11	2462	6	17	17.39	17.76	20.59	30.00	PASS

Note: Measured by power meter, cable loss + Duty cycle factor has been offseted to the power meter for Avg. power and cable loss has been offseted for Peak power measurement.

802.11n_HT20M_2TX								
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)		Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1			
1	2412	MCS0	14	23.90	23.21	26.58	30.00	PASS
6	2437	MCS0	19.5	26.81	26.59	**29.71**	30.00	PASS
11	2462	MCS0	14	23.54	24.02	26.80	30.00	PASS
802.11n_HT20M_2TX								
CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)		Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1			
1	2412	MCS0	14	15.09	14.34	17.75	30.00	PASS
6	2437	MCS0	19.5	19.25	18.44	**21.88**	30.00	PASS
11	2462	MCS0	14	14.89	15.21	18.07	30.00	PASS
802.11n_HT40M_2TX								
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)		Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1			
3	2422	MCS0	13.75	25.41	24.83	28.14	30.00	PASS
6	2437	MCS0	14	26.21	25.16	**28.73**	30.00	PASS
9	2452	MCS0	12	23.95	23.84	26.91	30.00	PASS
802.11n_HT40M_2TX								
CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)		Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1			
3	2422	MCS0	13.75	14.84	14.01	17.45	30.00	PASS
6	2437	MCS0	14	15.56	14.87	**18.23**	30.00	PASS
9	2452	MCS0	12	13.31	13.25	16.29	30.00	PASS

Note: Measured by power meter, cable loss + Duty cycle factor has been offseted to the power meter for Avg. power and cable loss has been offseted for Peak power measurement.

802.11ac_VHT20M_2TX								
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)		Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1			
1	2412	MCS0	14	23.73	23.06	26.42	30.00	PASS
6	2437	MCS0	19.5	26.73	26.51	**29.63**	30.00	PASS
11	2462	MCS0	14	23.50	24.01	26.77	30.00	PASS
802.11ac_VHT20M_2TX								
CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)		Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1			
1	2412	MCS0	14	14.98	14.10	17.58	30.00	PASS
6	2437	MCS0	19.5	19.17	18.32	**21.78**	30.00	PASS
11	2462	MCS0	14	14.85	15.17	18.03	30.00	PASS
802.11ac_VHT40M_2TX								
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)		Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1			
3	2422	MCS0	13.75	24.21	23.64	26.94	30.00	PASS
6	2437	MCS0	14	25.13	24.34	**27.76**	30.00	PASS
9	2452	MCS0	12	22.76	22.67	25.73	30.00	PASS
802.11ac_VHT40M_2TX								
CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)		Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1			
3	2422	MCS0	13.75	14.77	13.81	17.33	30.00	PASS
6	2437	MCS0	14	15.49	14.77	**18.16**	30.00	PASS
9	2452	MCS0	12	13.21	13.15	16.19	30.00	PASS

Note: Measured by power meter, cable loss + Duty cycle factor has been offseted to the power meter for Avg. power and cable loss has been offseted for Peak power measurement.

802.11ax_HE20M_2TX									
CH	Freq. (MHz)	Data Rate	RU Config	Power set	Peak Output Power (dBm)		Total Peak Output Power (dBm)	Limit (dBm)	RESULT
					Ch0	Ch1			
1	2412	MCS0	full	13.5	23.16	22.34	25.78	30.00	PASS
			26/0	12.25	20.24	19.20	22.76	30.00	PASS
			52/37	12.25	20.98	19.28	23.22	30.00	PASS
			106/53	12	21.59	20.22	23.97	30.00	PASS
6	2437	MCS0	full	19.5	26.83	26.64	**29.75**	30.00	PASS
11	2462	MCS0	full	13.5	22.70	22.38	25.55	30.00	PASS
			26/8	8	15.61	15.92	18.78	30.00	PASS
			52/40	8	17.12	17.45	20.30	30.00	PASS
			106/54	10	19.22	19.75	22.50	30.00	PASS

802.11ax_HE20M_2TX									
CH	Freq. (MHz)	Data Rate	RU Config	Power set	Avg. Output Power (dBm)		Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
					Ch0	Ch1			
1	2412	MCS0	full	13.5	14.23	13.42	16.86	30.00	PASS
			26/0	12.25	10.75	10.49	13.64	30.00	PASS
			52/37	12.25	11.05	10.81	13.94	30.00	PASS
			106/53	12	11.68	11.44	14.57	30.00	PASS
6	2437	MCS0	full	19.5	19.34	18.29	**21.86**	30.00	PASS
11	2462	MCS0	full	13.5	14.12	13.81	16.98	30.00	PASS
			26/8	8	9.21	10.30	12.80	30.00	PASS
			52/40	8	8.82	9.72	12.31	30.00	PASS
			106/54	10	10.60	11.55	14.11	30.00	PASS

Note: Measured by power meter, cable loss + Duty cycle factor has been offseted to the power meter for Avg. power and cable loss has been offseted for Peak power measurement.

802.11ax_HE40M_2TX									
CH	Freq. (MHz)	Data Rate	RU Config	Power set	Peak Output Power (dBm)		Total Peak Output Power (dBm)	Limit (dBm)	RESULT
					Ch0	Ch1			
3	2422	MCS0	full	13.5	23.05	22.21	25.66	30.00	PASS
			242/61	10.25	20.53	19.88	23.23	30.00	PASS
6	2437	MCS0	full	13.5	23.77	23.34	**26.57**	30.00	PASS
9	2452	MCS0	full	12.25	22.64	22.15	25.41	30.00	PASS
			242/62	10.25	21.06	20.81	23.95	30.00	PASS
802.11ax_HE40M_2TX									
CH	Freq. (MHz)	Data Rate	RU Config	Power set	Avg. Output Power (dBm)		Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
					Ch0	Ch1			
3	2422	MCS0	full	13.5	14.26	13.32	16.83	30.00	PASS
			242/61	10.25	11.58	10.50	14.09	30.00	PASS
6	2437	MCS0	full	13.5	14.66	13.90	**17.31**	30.00	PASS
9	2452	MCS0	full	12.25	13.17	13.11	16.15	30.00	PASS
			242/62	10.25	11.14	10.99	14.08	30.00	PASS

Note: Measured by power meter, cable loss + Duty cycle factor has been offseted to the power meter for Avg. power and cable loss has been offseted for Peak power measurement.

5.4 POWER SPECTRAL DENSITY

5.4.1 Test Limit

According to §15.247(e),

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

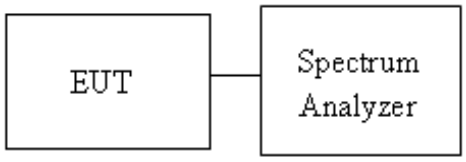
Limit	☒ Antenna not exceed 6 dBi：8dBm ☐ Antenna with DG greater than 6 dBi： [Limit = 8 – (DG – 6)] ☐ Point-to-point operation：

5.4.2 Test Procedure

Test method Refer as KDB 558074 D01

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW = 3kHz, VBW = 30kHz, Span = 1.5 times DTS Bandwidth (6 dB BW), Detector = Peak, Sweep Time = Auto and Trace = Max hold.
4. The path loss and Duty Factor were compensated to the results for each measurement by SA.
5. Mark the maximum level.
6. Measure and record the result of power spectral density. in the test report.

5.4.3 Test Setup



5.4.4 Test Result

Temperature: 24.3 ~ 28℃ **Test date:** July 26 ~ August 31, 2023

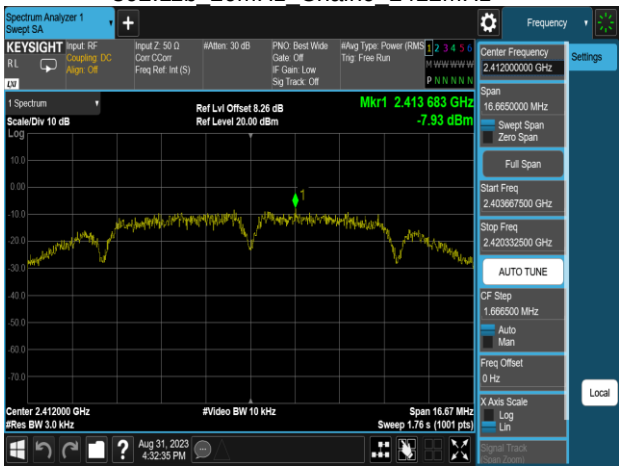
Humidity: 50 ~ 61% RH **Tested by:** Allen Shen

POWER DENSITY 802.11b					
Freq. (MHz)	Ch0 PSD	Ch1 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-7.93	-9.63	-5.69	8.00	PASS
2437	-4.10	-4.50	-1.29	8.00	PASS
2462	-7.40	-6.47	-3.90	8.00	PASS
POWER DENSITY 802.11g					
Freq. (MHz)	Ch0 PSD	Ch1 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-14.52	-15.86	-12.13	8.00	PASS
2437	-9.73	-10.43	-7.06	8.00	PASS
2462	-11.59	-11.71	-8.64	8.00	PASS
POWER DENSITY 802.11n HT20					
Freq. (MHz)	Ch0 PSD	Ch1 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-13.28	-14.01	-10.62	8.00	PASS
2437	-8.87	-9.03	-5.94	8.00	PASS
2462	-13.23	-13.92	-10.55	8.00	PASS
POWER DENSITY 802.11n HT40					
Freq. (MHz)	Ch0 PSD	Ch1 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2422	-14.57	-16.71	-12.50	8.00	PASS
2437	-15.04	-14.83	-11.92	8.00	PASS
2452	-17.95	-17.97	-14.95	8.00	PASS

POWER DENSITY 802.11ax HE20						
Freq. (MHz)	RU Config	Ch0 PSD	Ch1 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	full	-12.99	-12.95	-9.96	8.00	PASS
	26/0	-12.54	-14.10	-10.24	8.00	PASS
	52/37	-12.20	-13.97	-9.99	8.00	PASS
	106/53	-12.26	-13.91	-10.00	8.00	PASS
2437	full	-9.61	-9.82	-6.70	8.00	PASS
2462	full	-14.10	-14.01	-11.04	8.00	PASS
	26/8	-14.37	-14.48	-11.41	8.00	PASS
	52/40	-14.45	-13.95	-11.18	8.00	PASS
	106/54	-14.08	-14.77	-11.40	8.00	PASS
POWER DENSITY 802.11ax HE40						
Freq. (MHz)	RU Config	Ch0 PSD	Ch1 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2422	full	-16.44	-16.81	-13.61	8.00	PASS
	242/61	-16.77	-16.83	-13.79	8.00	PASS
2437	full	-16.40	-17.01	-13.68	8.00	PASS
2452	full	-17.72	-17.21	-14.45	8.00	PASS
	242/62	-17.86	-17.49	-14.66	8.00	PASS

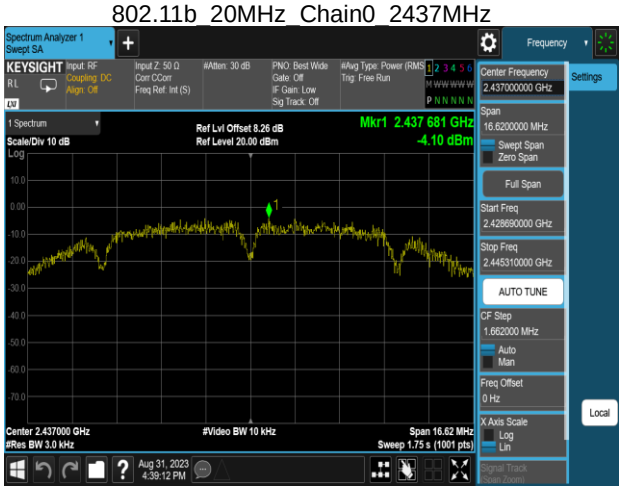
Test Data

802.11b_20MHz_Chain0_2412MHz

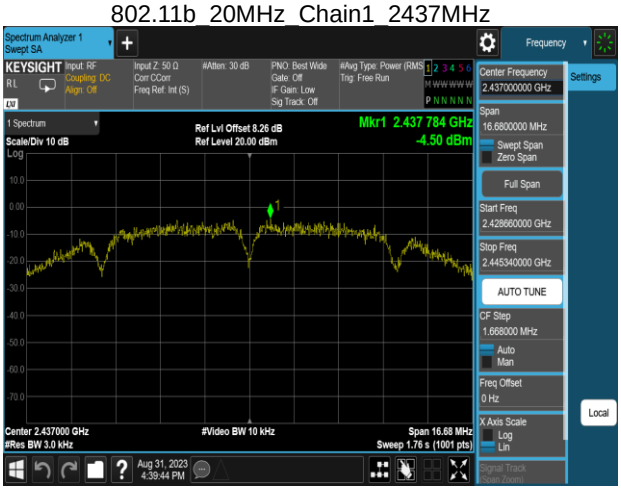


802.11b_20MHz_Chain1_2412MHz

802.11b_20MHz_Chain0_2437MHz



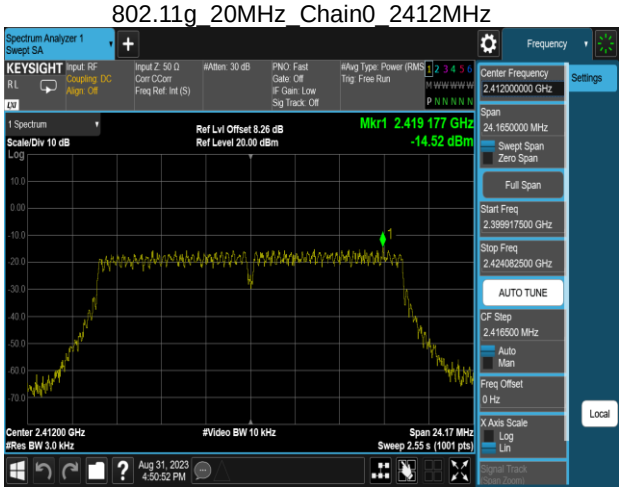
802.11b_20MHz_Chain1_2437MHz



802.11b_20MHz_Chain0_2462MHz

802.11b_20MHz_Chain1_2462MHz

802.11g_20MHz_Chain0_2412MHz



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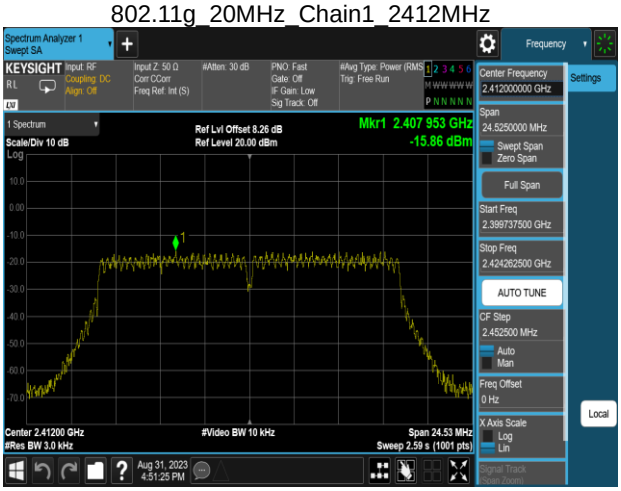
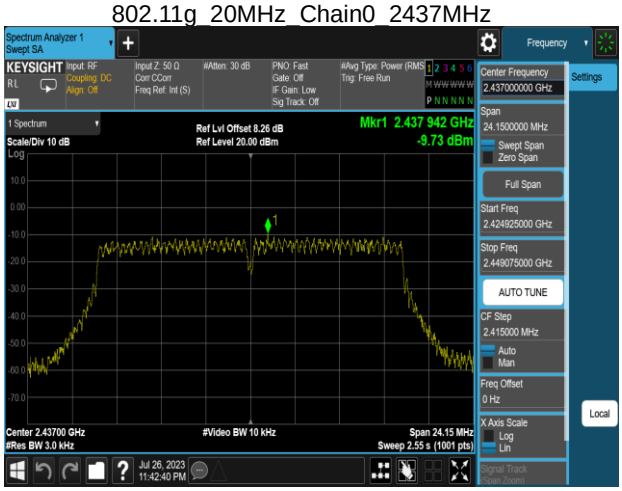
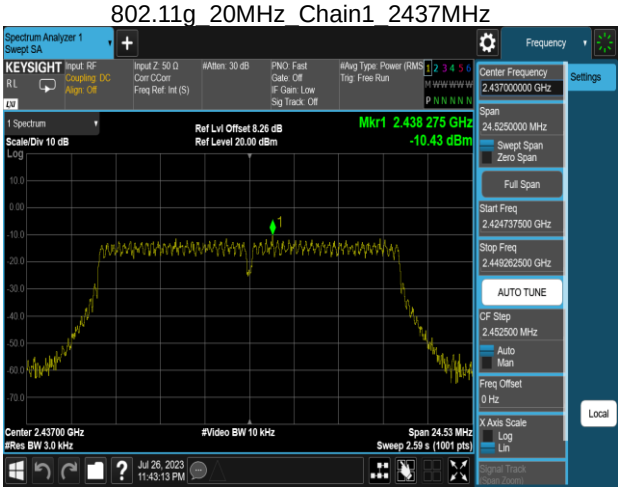


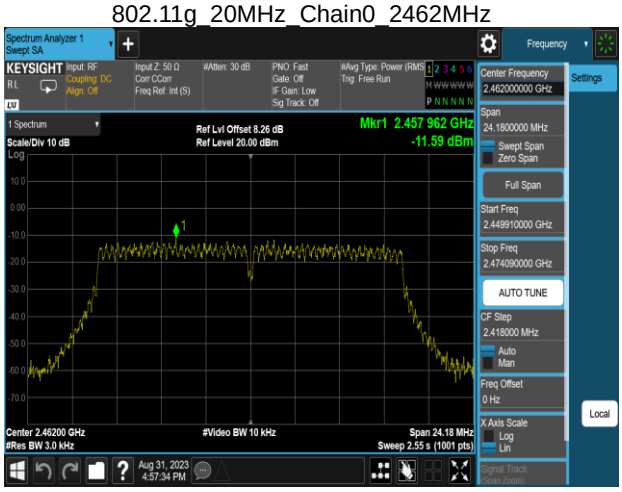
802.11g_20MHz_Chain0_2437MHz



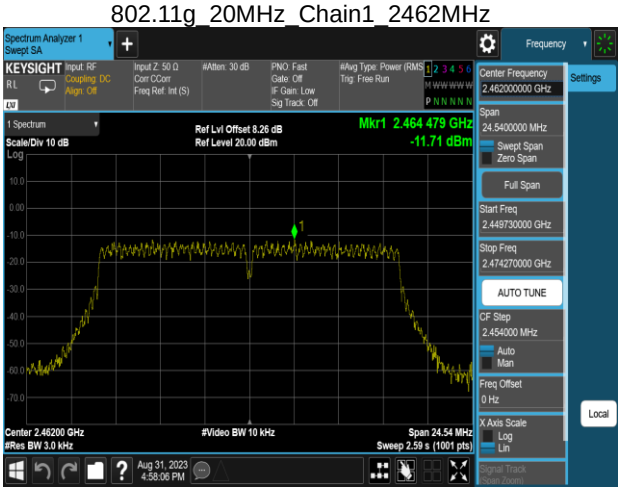
802.11g_20MHz_Chain1_2437MHz



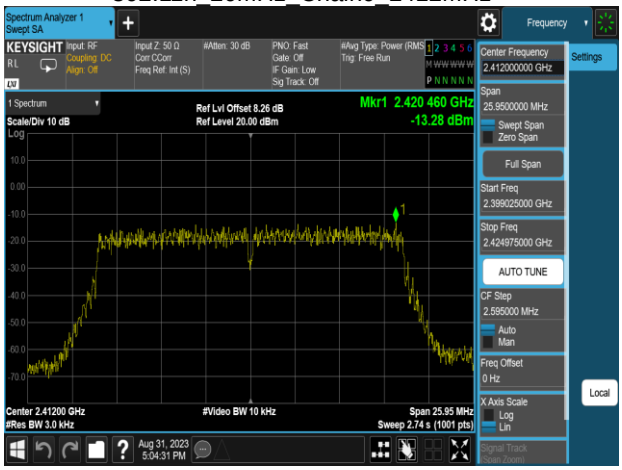
802.11g_20MHz_Chain0_2462MHz



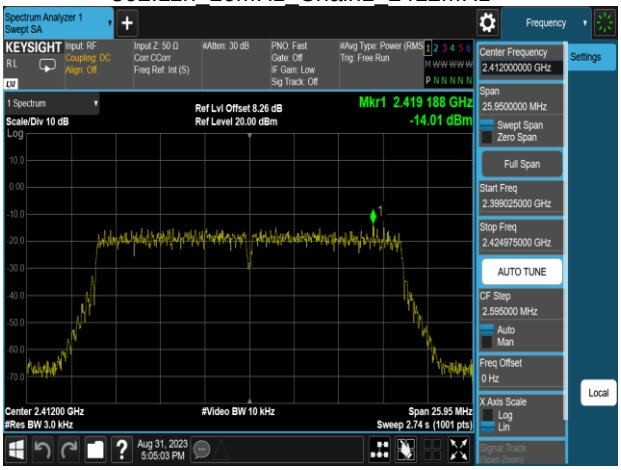
802.11g_20MHz_Chain1_2462MHz



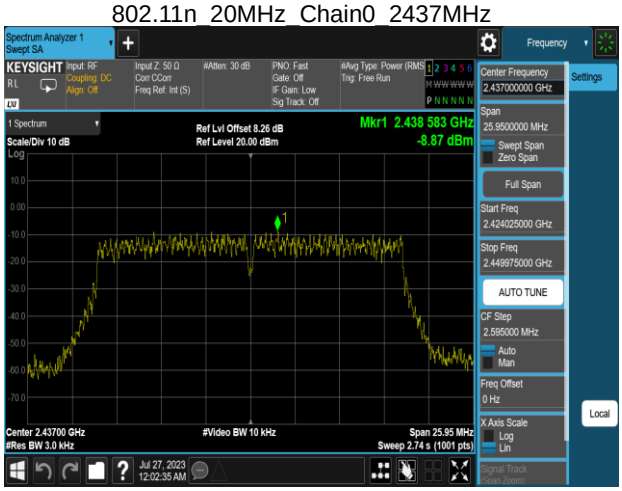
802.11n_20MHz_Chain0_2412MHz



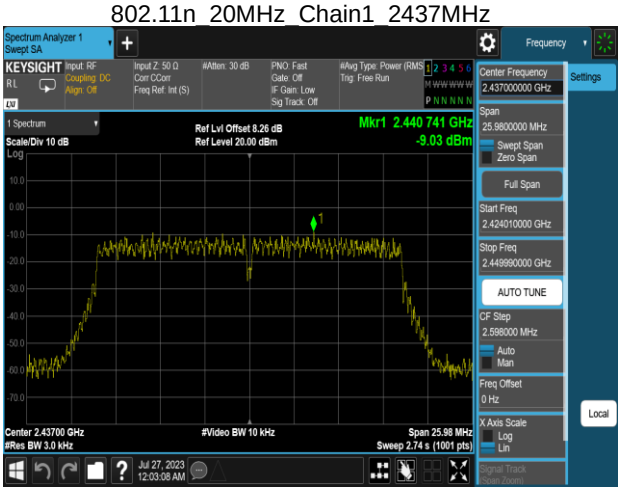
802.11n_20MHz_Chain1_2412MHz



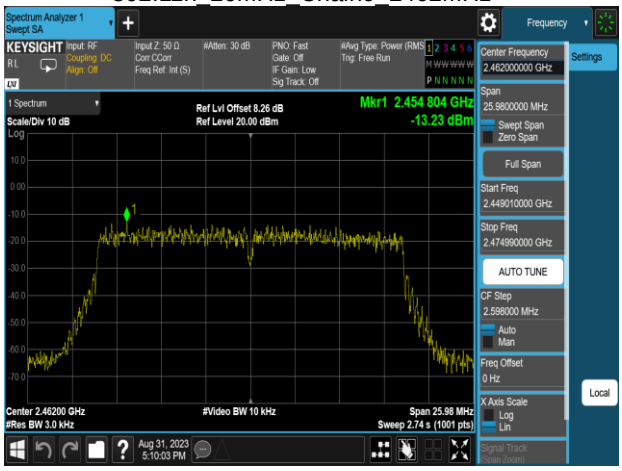
802.11n_20MHz_Chain0_2437MHz



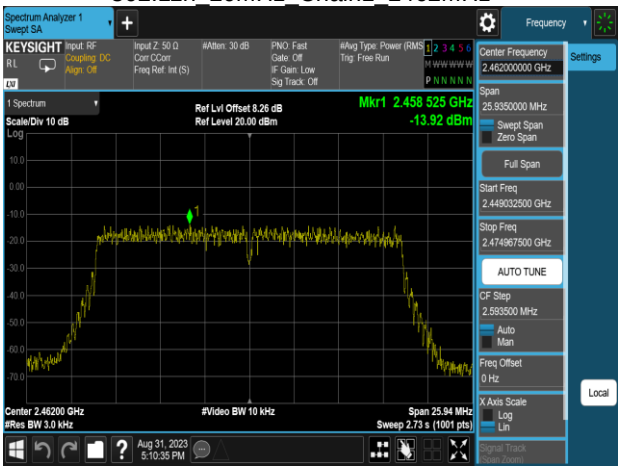
802.11n_20MHz_Chain1_2437MHz



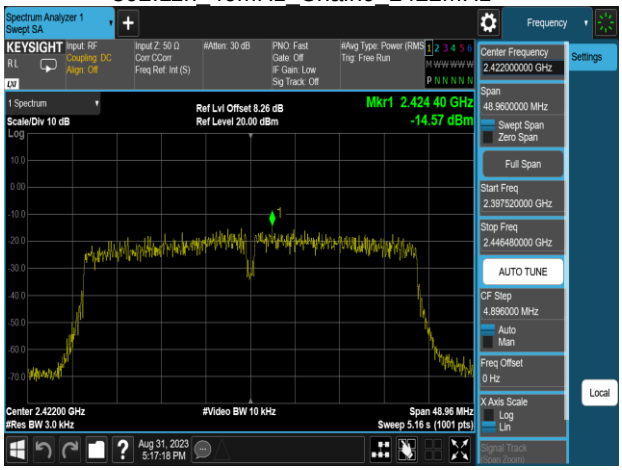
802.11n_20MHz_Chain0_2462MHz



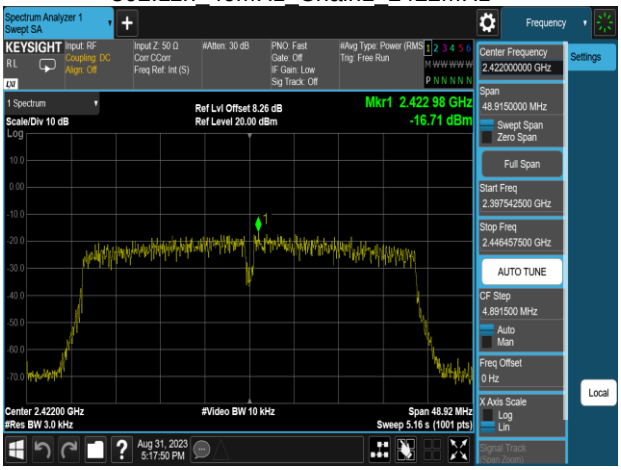
802.11n_20MHz_Chain1_2462MHz



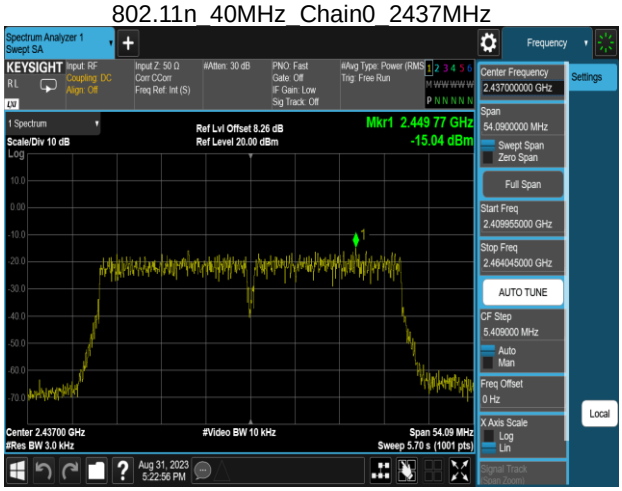
802.11n_40MHz_Chain0_2422MHz



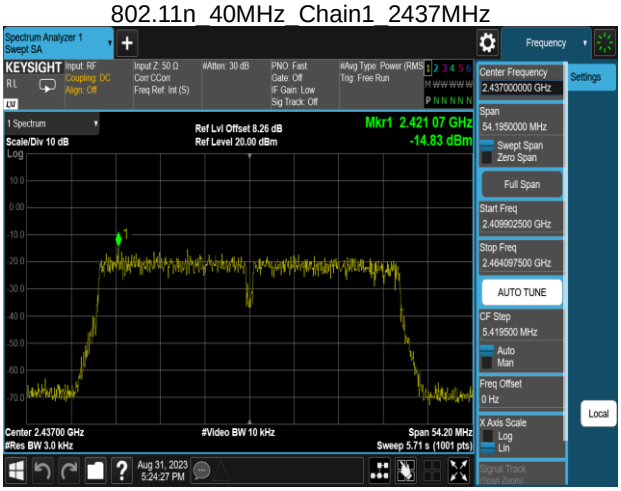
802.11n_40MHz_Chain1_2422MHz



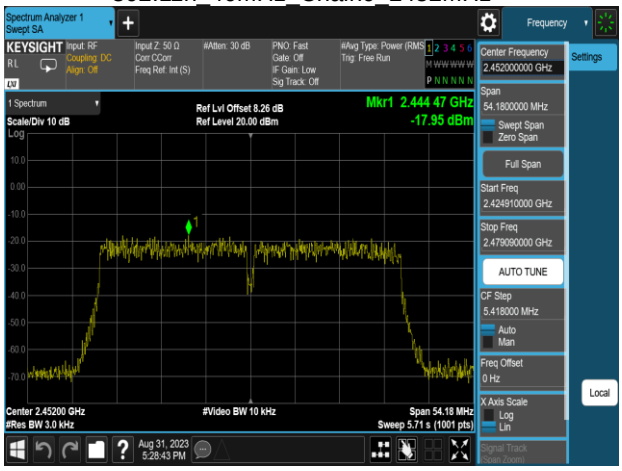
802.11n_40MHz_Chain0_2437MHz



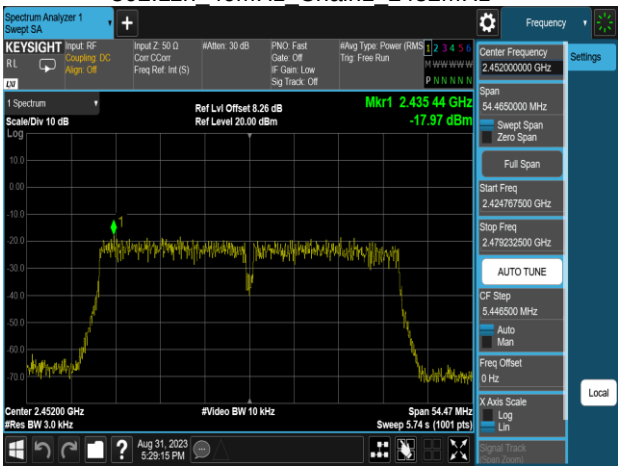
802.11n_40MHz_Chain1_2437MHz



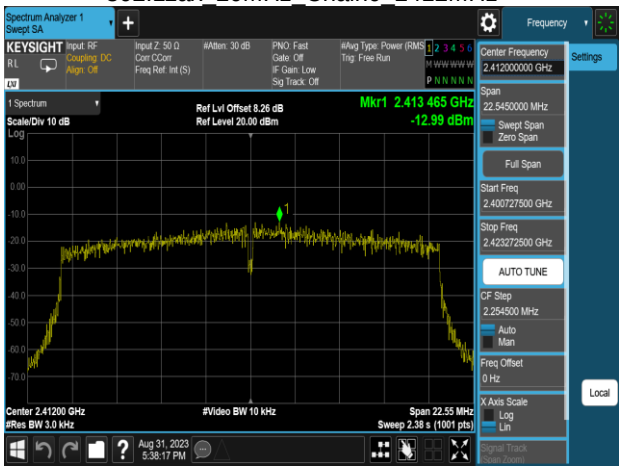
802.11n_40MHz_Chain0_2452MHz



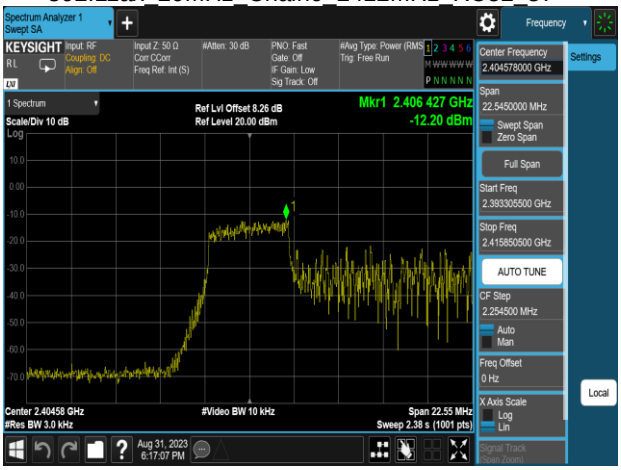
802.11n_40MHz_Chain1_2452MHz



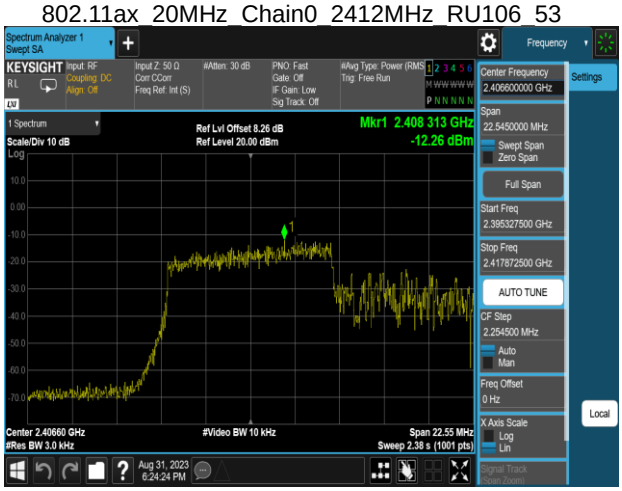
802.11ax_20MHz_Chain0_2412MHz



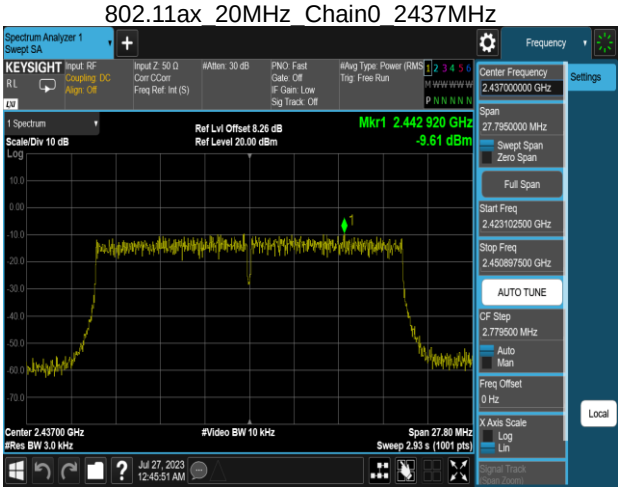
802.11ax_20MHz_Chain0_2412MHz_RU52_37



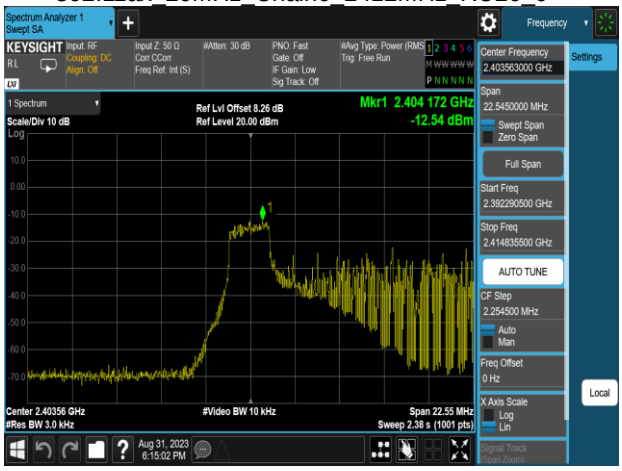
802.11ax_20MHz_Chain0_2412MHz_RU106_53



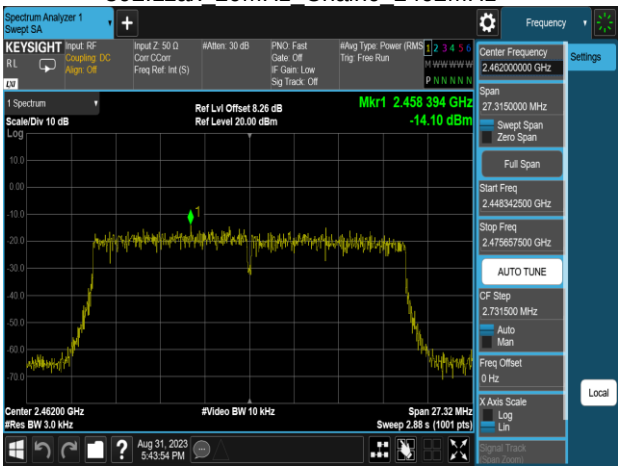
802.11ax_20MHz_Chain0_2437MHz



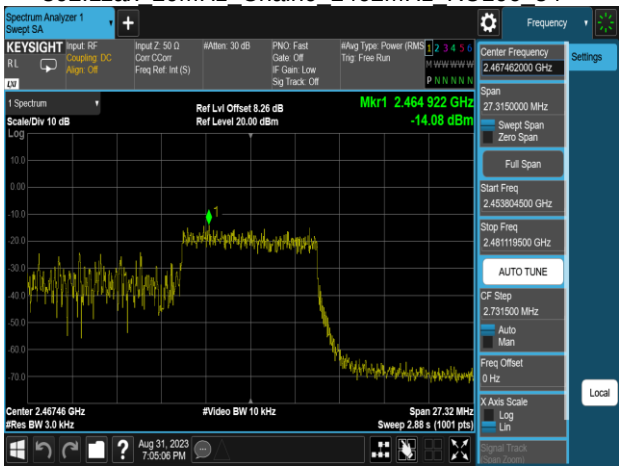
802.11ax_20MHz_Chain0_2412MHz_RU26_0



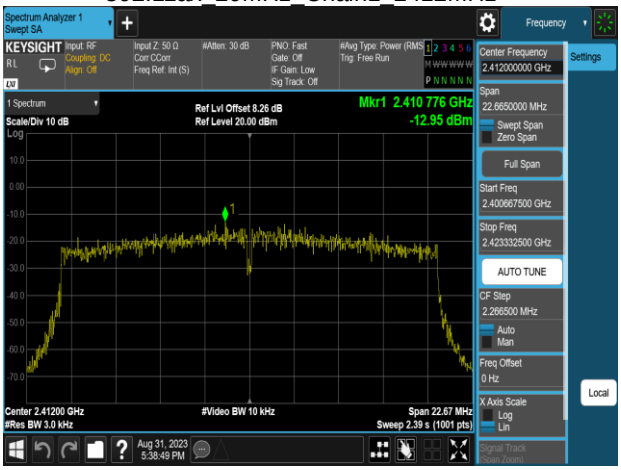
802.11ax_20MHz_Chain0_2462MHz



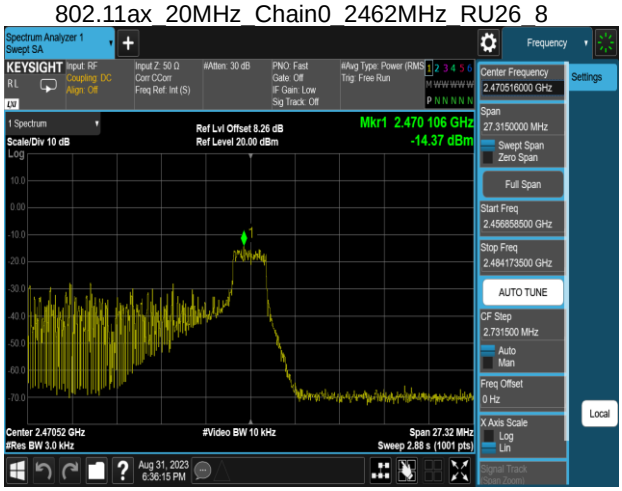
802.11ax_20MHz_Chain0_2462MHz_RU106_54



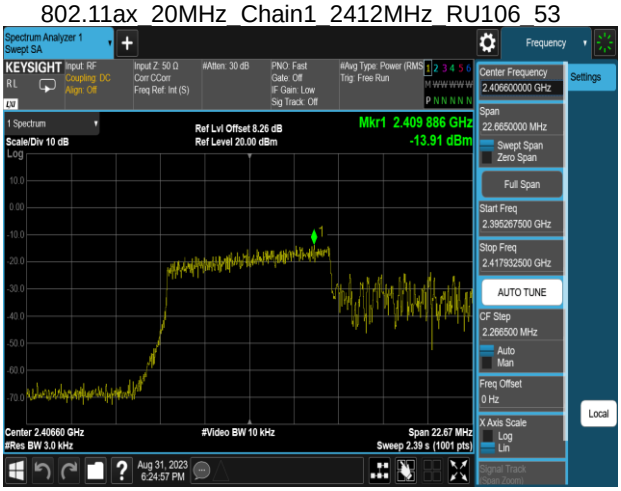
802.11ax_20MHz_Chain1_2412MHz



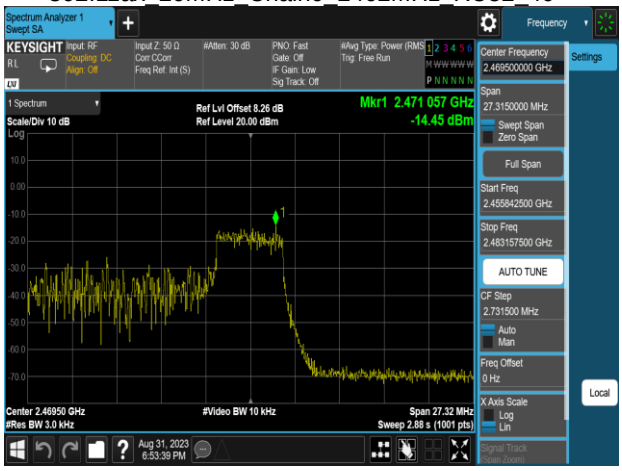
802.11ax_20MHz_Chain0_2462MHz_RU26_8



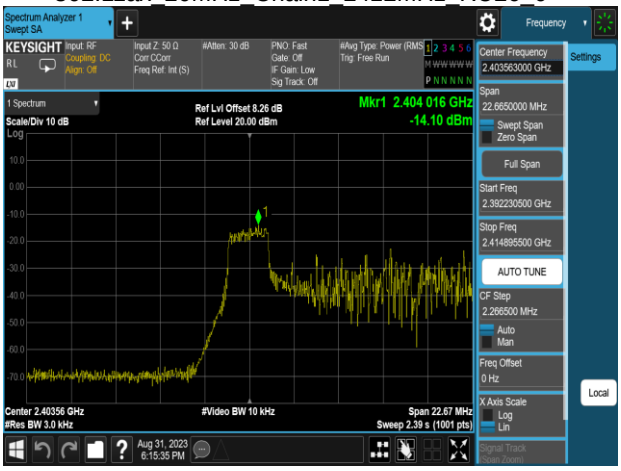
802.11ax_20MHz_Chain1_2412MHz_RU106_53



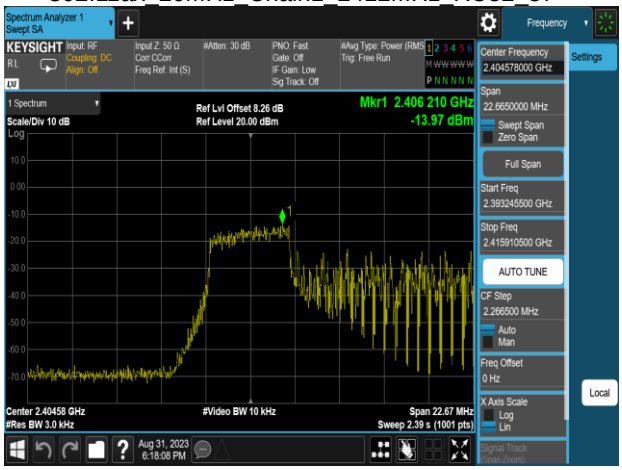
802.11ax_20MHz_Chain0_2462MHz_RU52_40



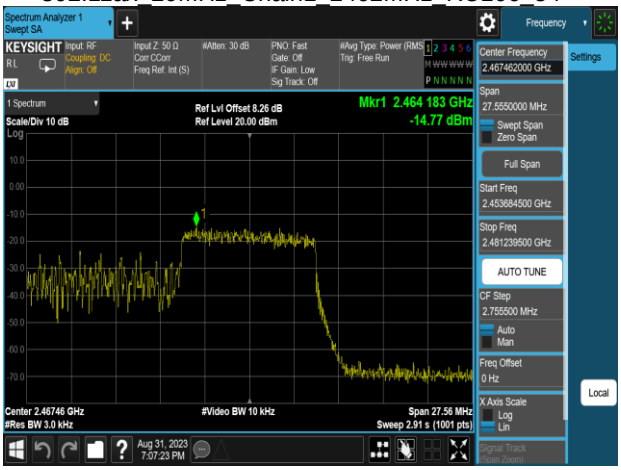
802.11ax_20MHz_Chain1_2412MHz_RU26_0



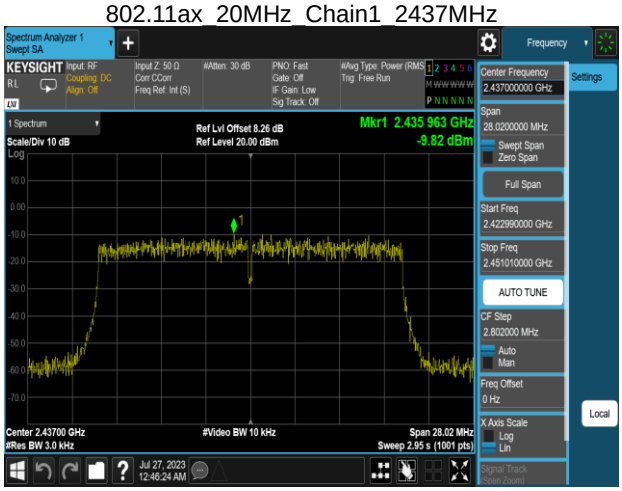
802.11ax_20MHz_Chain1_2412MHz_RU52_37



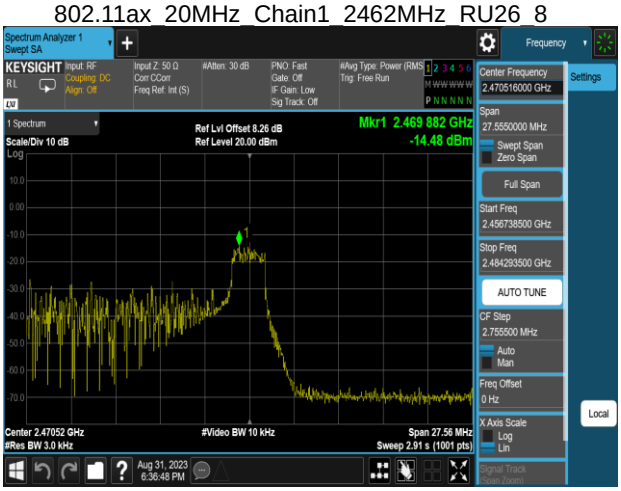
802.11ax_20MHz_Chain1_2462MHz_RU106_54



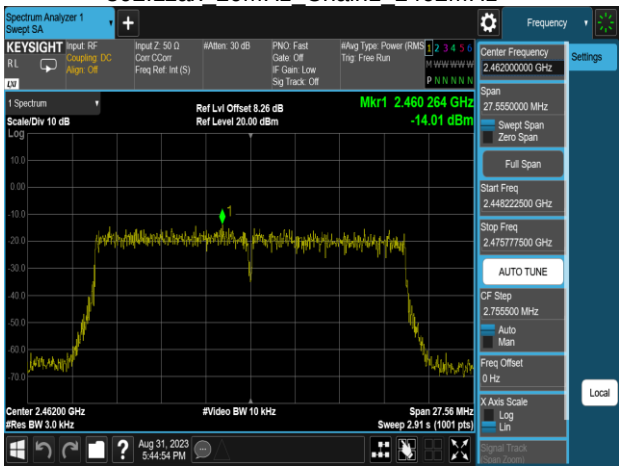
802.11ax_20MHz_Chain1_2437MHz



802.11ax_20MHz_Chain1_2462MHz_RU26_8



802.11ax_20MHz_Chain1_2462MHz



802.11ax_20MHz_Chain1_2462MHz_RU52_40