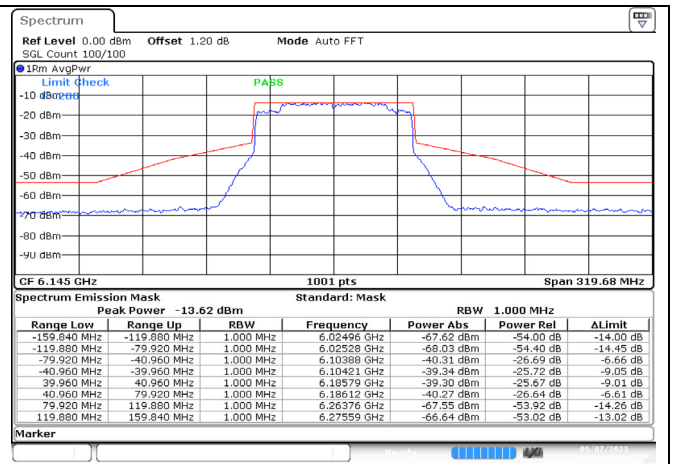
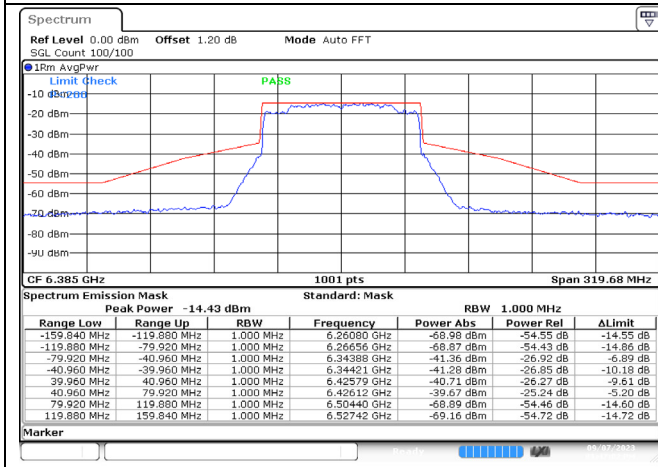


Date: 7.SEP.2023 13:45:43



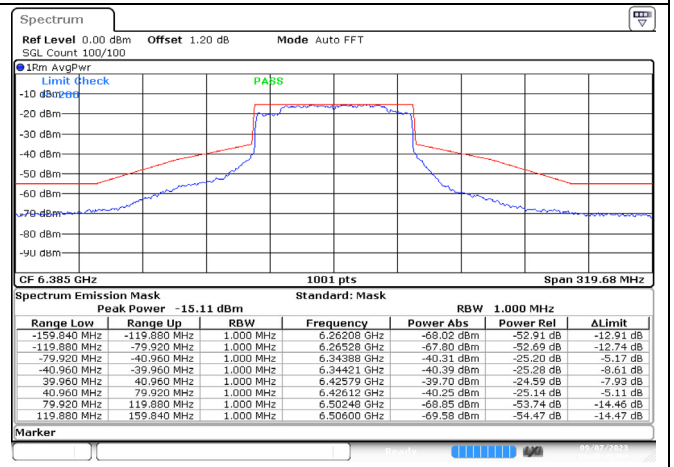
Date: 7.SEP.2023 13:44:08

802.11ax-80 MHz / 6145 MHz / Chain A



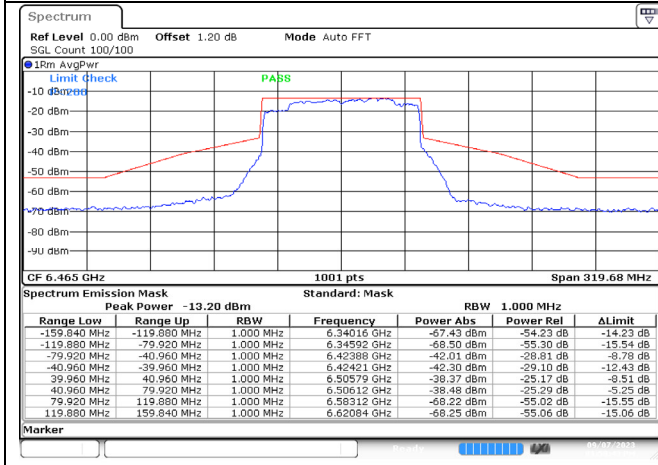
Date: 7.SEP.2023 13:47:03

802.11ax-80 MHz / 6145 MHz / Chain B



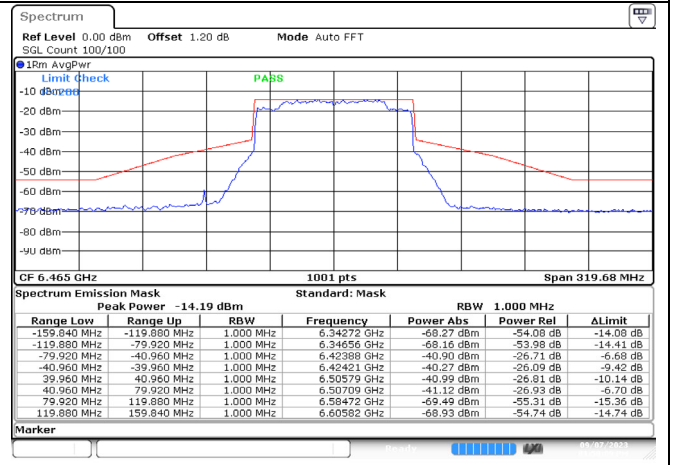
Date: 7.SEP.2023 13:47:45

802.11ax-80 MHz / 6385 MHz / Chain A



Date: 7.SEP.2023 13:50:43

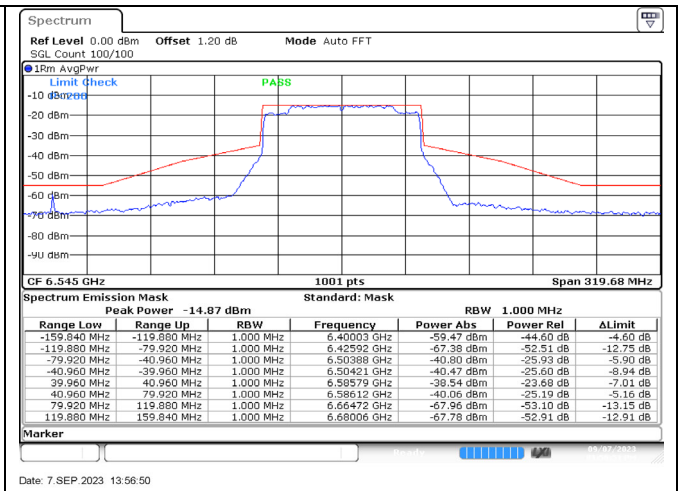
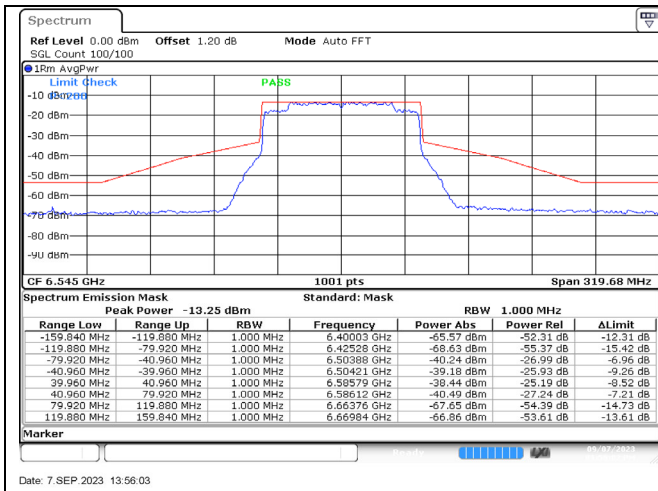
802.11ax-80 MHz / 6385 MHz / Chain B



Date: 7.SEP.2023 13:50:09

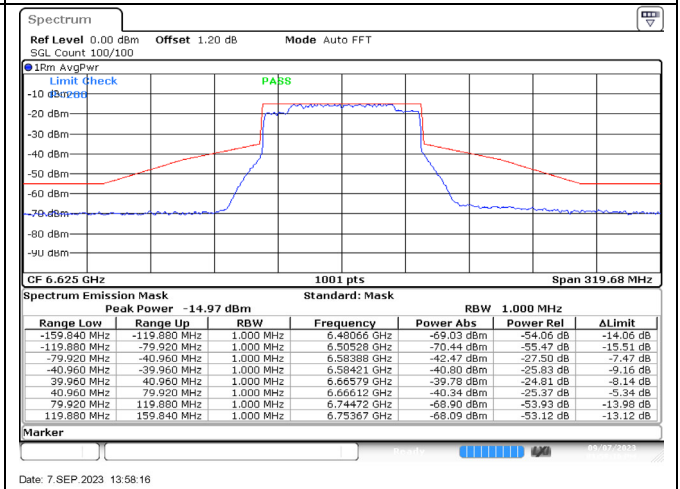
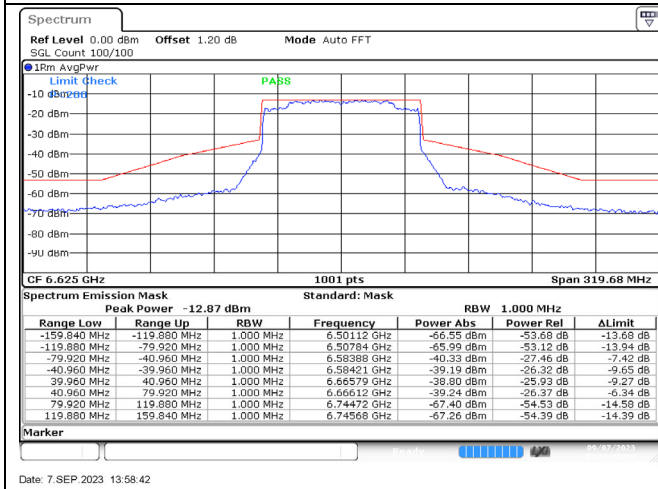
802.11ax-80 MHz / 6465 MHz / Chain A

802.11ax-80 MHz / 6465 MHz / Chain B



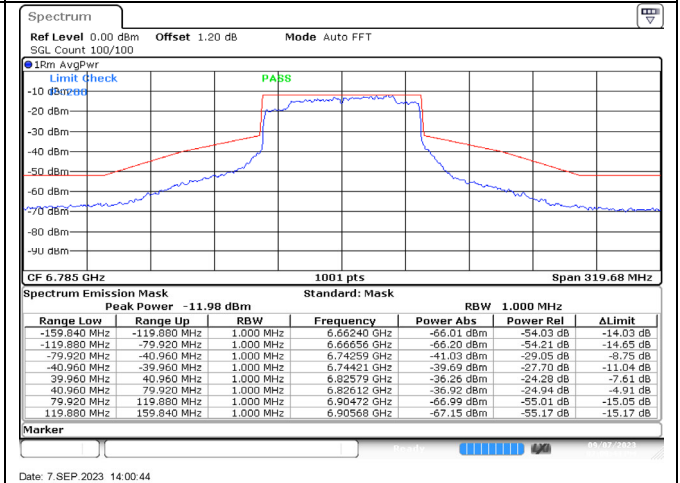
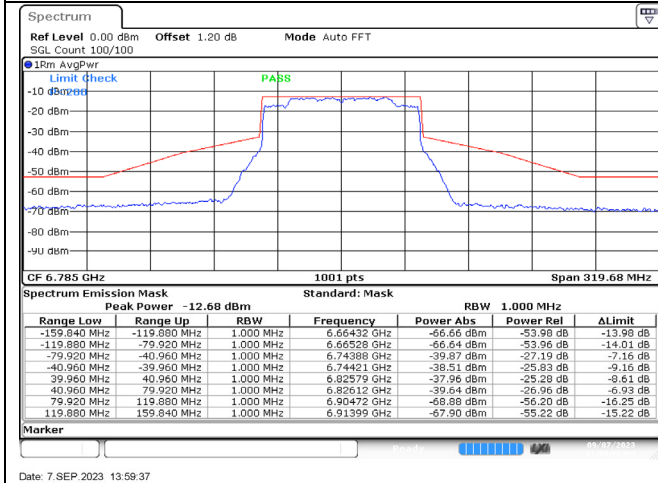
802.11ax-80 MHz / 6545 MHz / Chain A

802.11ax-80 MHz / 6545 MHz / Chain B



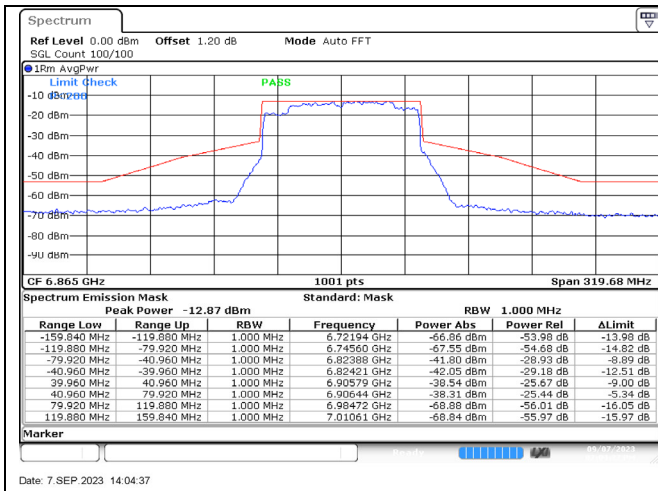
802.11ax-80 MHz / 6625 MHz / Chain A

802.11ax-80 MHz / 6625 MHz / Chain B



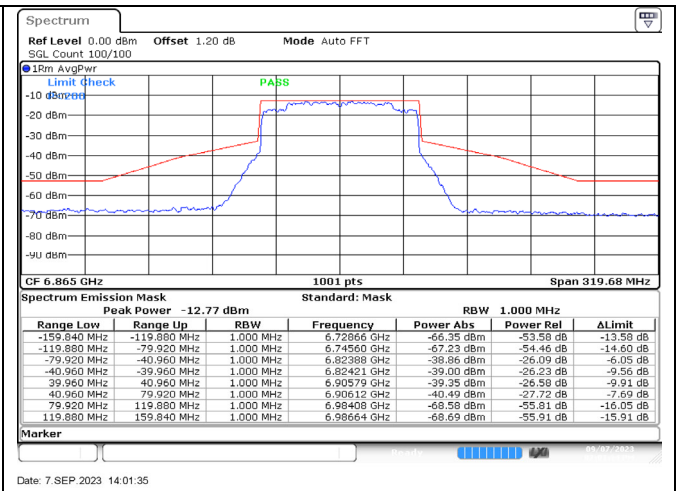
802.11ax-80 MHz / 6785 MHz / Chain A

802.11ax-80 MHz / 6785 MHz / Chain B



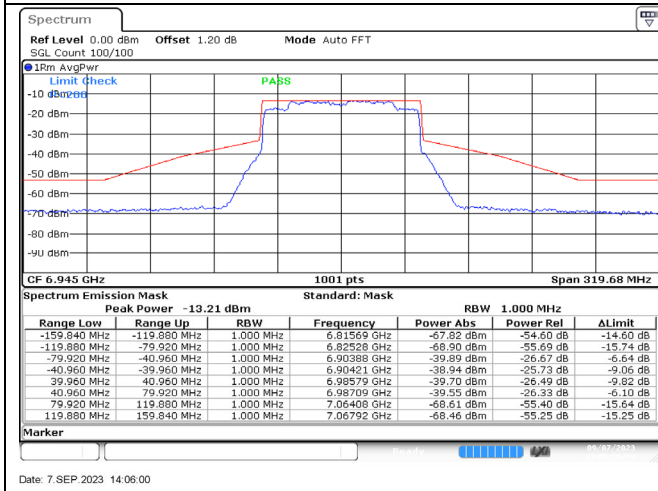
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802.11ax-80 MHz / 6865 MHz / Chain A



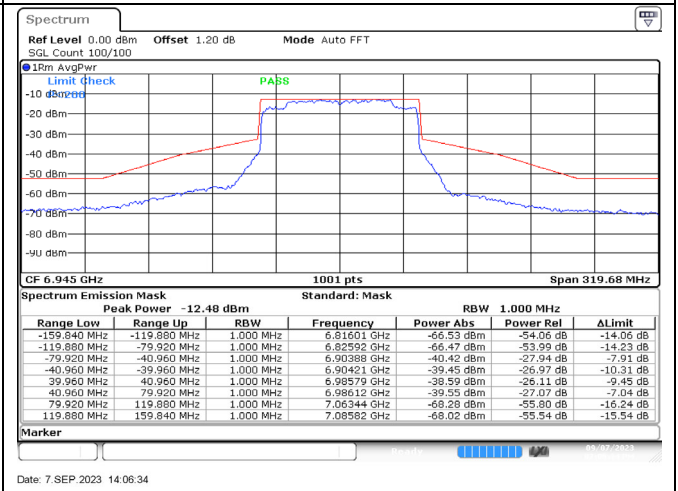
Date: 7.SEP.2023 14:01:35

802.11ax-80 MHz / 6865 MHz / Chain B



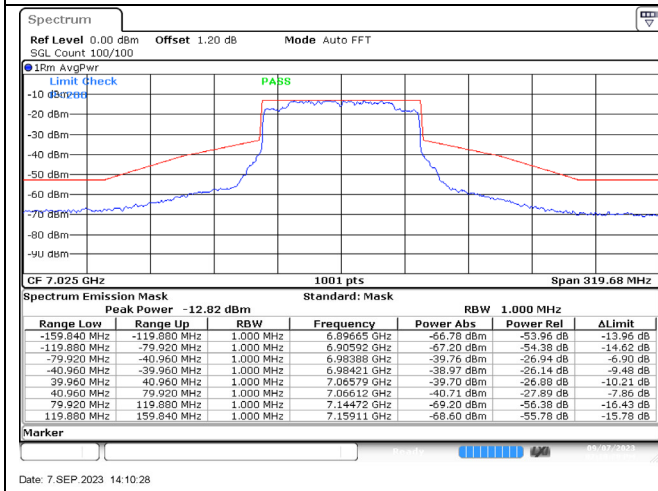
Date: 7.SEP.2023 14:06:00

802.11ax-80 MHz / 6945 MHz / Chain A



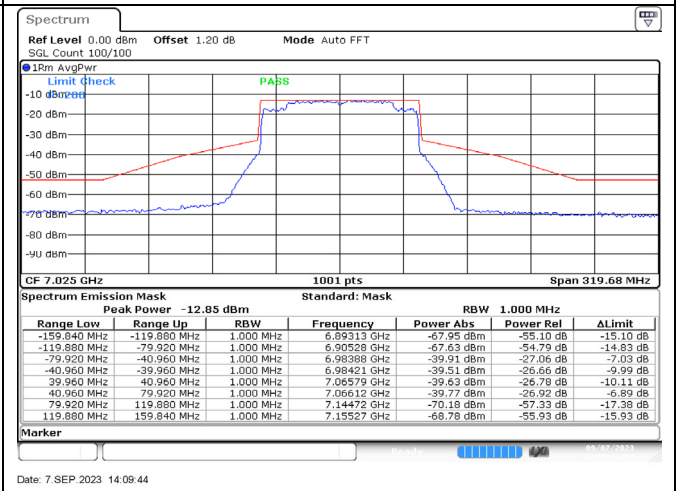
Date: 7.SEP.2023 14:06:34

802.11ax-80 MHz / 6945 MHz / Chain B



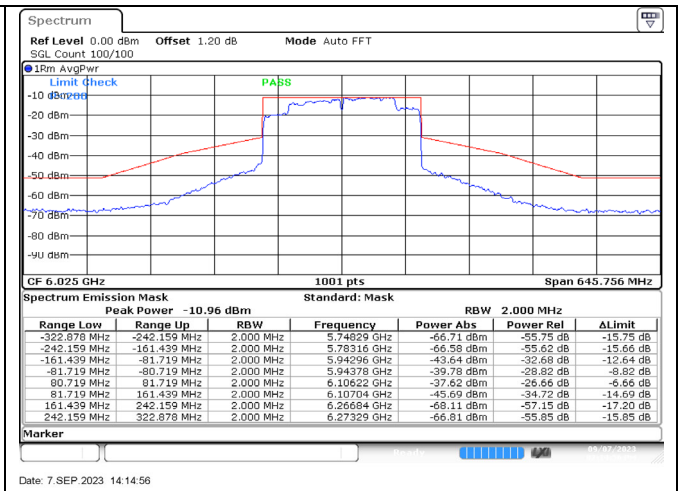
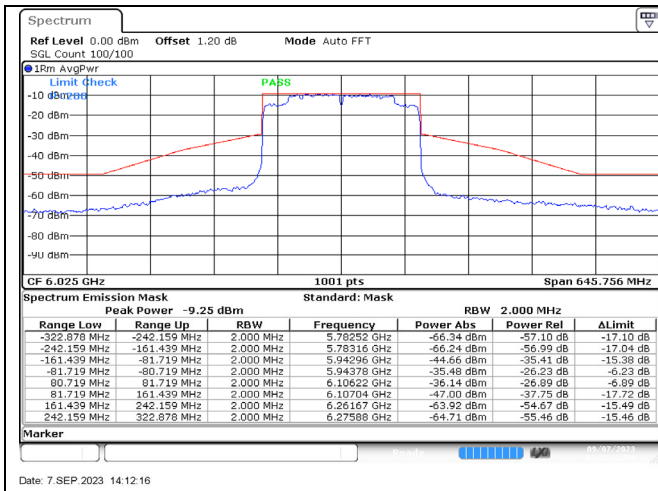
Date: 7.SEP.2023 14:10:28

802.11ax-80 MHz / 7025 MHz / Chain A



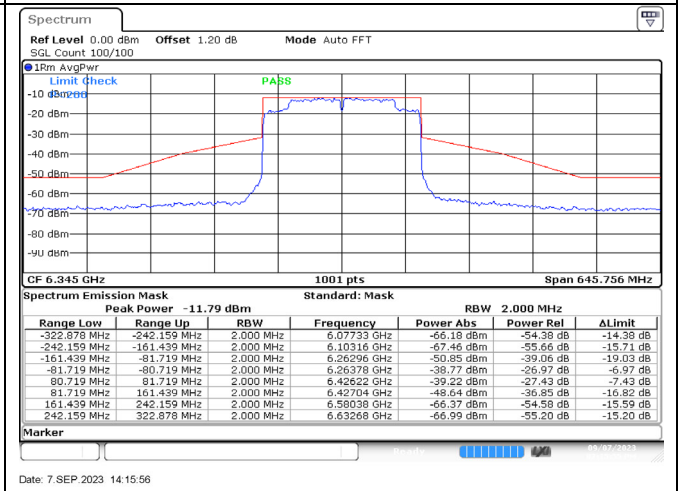
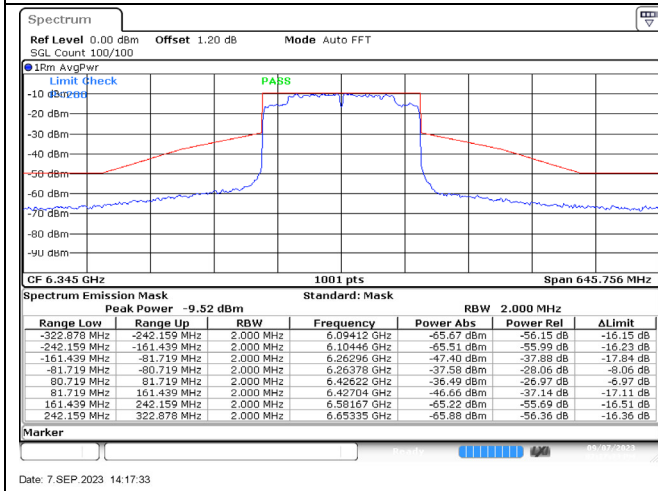
Date: 7.SEP.2023 14:09:44

802.11ax-80 MHz / 7025 MHz / Chain B



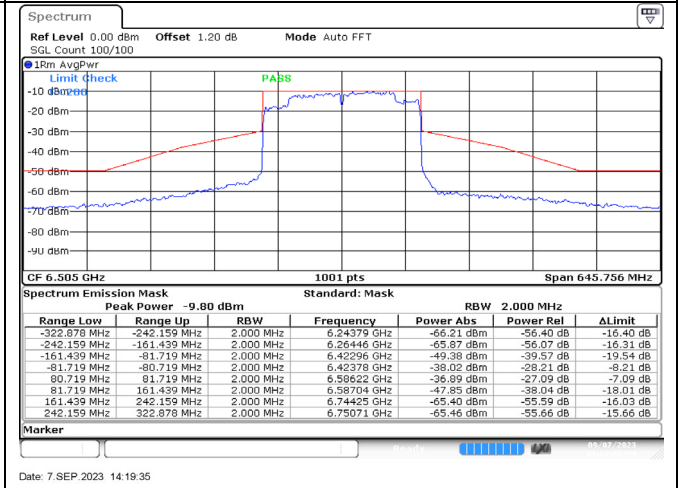
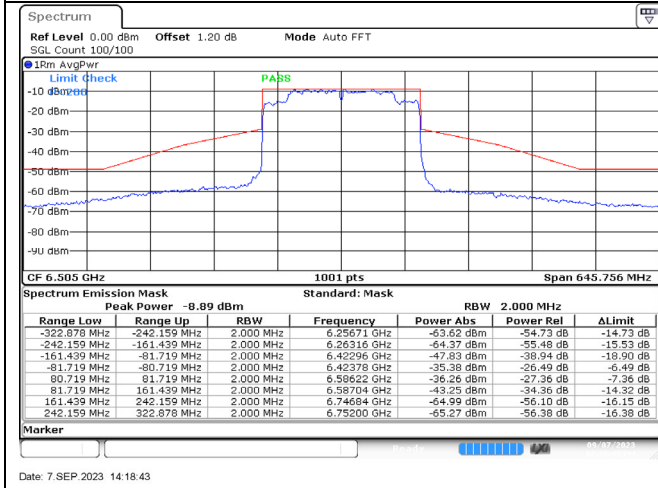
802.11ax-160 MHz / 6025 MHz / Chain A

802.11ax-160 MHz / 6025 MHz / Chain B



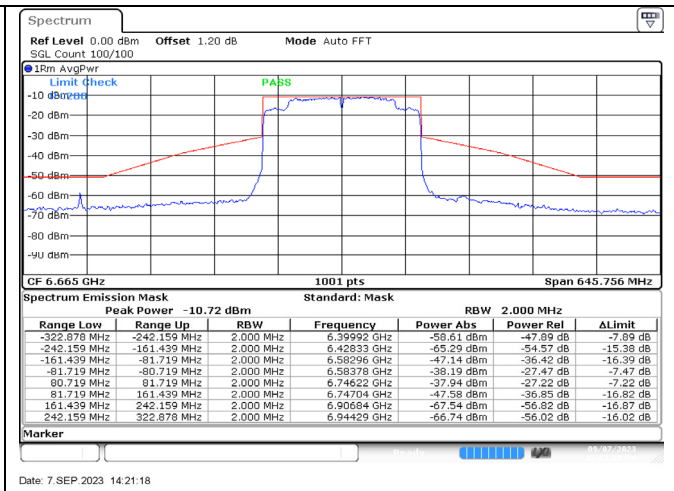
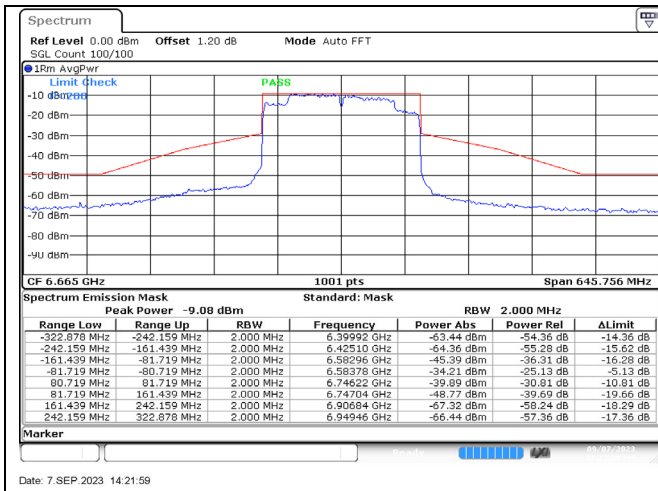
802.11ax-160 MHz / 6345 MHz / Chain A

802.11ax-160 MHz / 6345 MHz / Chain B



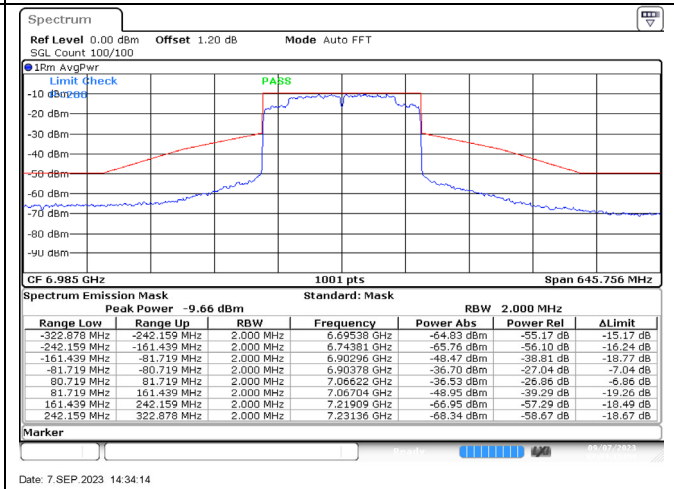
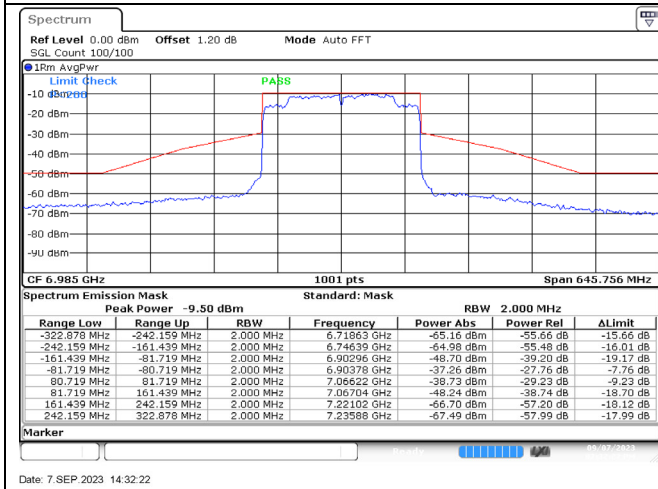
802.11ax-160 MHz / 6505 MHz / Chain A

802.11ax-160 MHz / 6505 MHz / Chain B



802.11ax-160 MHz / 665 MHz / Chain A

802.11ax-160 MHz / 665 MHz / Chain B

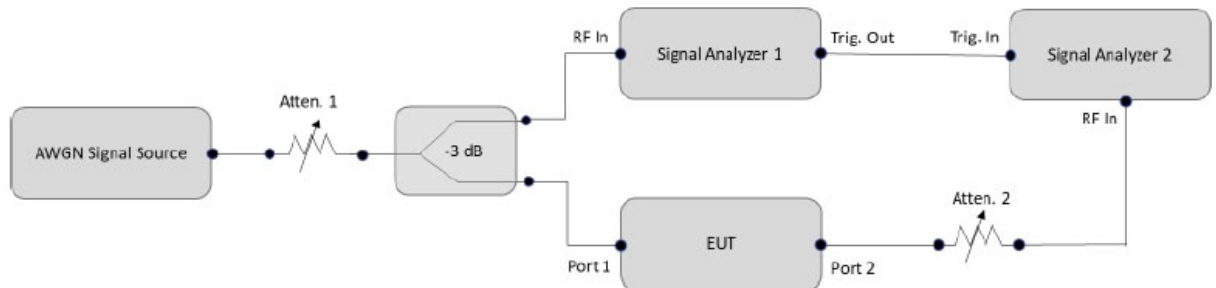


802.11ax-160 MHz / 695 MHz / Chain A

802.11ax-160 MHz / 695 MHz / Chain B

9. Contention Based Protocol

9.1. Test Setup



9.2. Limits

Unlicensed indoor low-power devices must detect co-channel radio frequency power that is at least -62 dBm (The threshold is referenced to a 0dBi antenna gain.) or lower. Additionally, indoor low-power devices must detect co-channel energy with 90% or greater certainty.

9.3. Test Procedure

1. Set the signal analyzer center frequency to the nominal EUT channel center frequency. The span range of the signal analyzer shall be between two times and five times the OBW of the EUT. Connect the output port of the EUT to the signal analyzer 2. Ensure that the attenuator 2 provides enough attenuation to not overload the signal analyzer 2 receiver.
2. Monitoring the signal analyzer 2, verify the EUT is operating and transmitting with the parameters (set as following section 4.7.5 EUT operating condition).
3. Determine number of times detection threshold test as following table

Test Items	Number of Tests	Placement of Incumbent Transmission
$BW_{EUT} \leq BW_{Inc}$	Once	Same as EUT transmission
$BW_{Inc} < BW_{EUT} \leq 2xBW_{Inc}$	Once	Contained within BWEUT
$2xBW_{Inc} < BW_{EUT} \leq 4xBW_{Inc}$	Twice. (Incumbent transmission is contained within BWEUT)	Closely to the lower edge and upper edge of the EUT Channel
$BW_{EUT} > 4xBW_{Inc}$	Three times	Closely to the lower edge ,in the middle and upper edge of the EUT Channel

4. Using an AWGN signal source, generate (but do not transmit, i.e., RF OFF) a 10 MHz-wide AWGN signal. Use step c table to determine the center frequency of the 10 MHz AWGN signal relative to the EUT's channel bandwidth and center frequency.
5. Set the AWGN signal power to an extremely low level (more than 20 dB below the -62 dBm threshold). Connect the AWGN signal source, via a -3 dB splitter, to the signal analyzer 1 and the EUT.
6. Transmit the AWGN signal (RF ON) and verify its characteristics on the signal analyzer 1.
7. Monitor the signal analyzer 2 to verify if the AWGN signal has been detected and the EUT has ceased transmission. If the EUT continues to transmit, then incrementally increase the AWGN signal power level until the EUT stops transmitting.
8. (Including all losses in the RF paths) Determine and record the AWGN signal power level (at the EUT's antenna port) at which the EUT ceased transmission. Repeat the procedure at least 10 times to verify the EUT can detect an AWGN signal with 90% (or better) level of certainty.
9. Refer to step c table to determine number of times the detection threshold testing needs to be repeated. If testing is required more than once, then go back to step d, choose a different center frequency for the AWGN signal and repeat the process.

9.4. Test Result of Contention Based Protocol

Product : Notebook Computer
 Test Item : Contention Based Protocol

Contention Based Protocol Probability											
Measurement Mode		Conducted measurement			Device Type			client			
Operation Band	Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Frequency (MHz)	Test Result						
					AWGN Signals Frequency (MHz)	The Incumbent Signal (AWGN) Level (dBm)	Number of Times	Number of Detected	Detection Rate	Limit	Pass/Fail
U-NII 5	802.11ax	20MHz	01	5955	5955	-66.75	10	10	100%	90%	Pass
		160MHz	15	6025	5950	-66.04	10	10	100%	90%	Pass
					6025	-66.51	10	10	100%	90%	Pass
					6100	-67.00	10	10	100%	90%	Pass

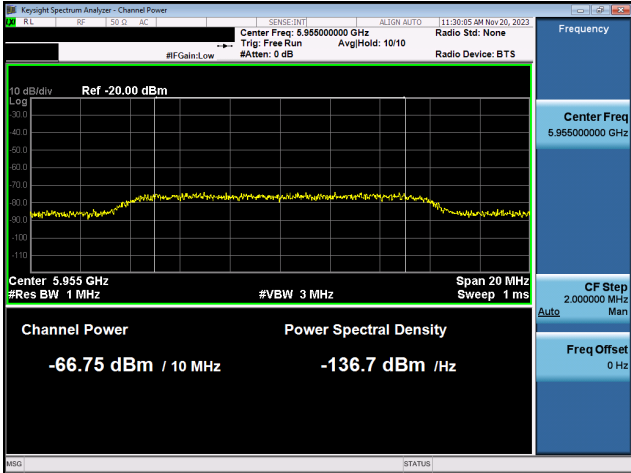
Contention Based Protocol Measurement											
Operation Band	Operation Mode	Channel Bandwidth	Channel Number	Channel Frequency	AWGN Signals Frequency (MHz)	Injected (AWGN) POWER (dBm)	Antenna Gain (dBi)	Path Loss (dB)	Adjusted Power (dBm)	Detection limit (dBm)	EUT Tx Status
U-NII 5	802.11ax	20MHz	1	5955	5955	-66.75	0.28	0	-67.03	-62	Ceased
						-68.10	0.28	0	-68.38	-62	Minimal
						-78.40	0.28	0	-78.68	-62	Normal
		160MHz	15	6025	5950	-66.04	0.28	0	-66.32	-62	Ceased
						-66.50	0.28	0	-66.78	-62	Minimal
						-68.30	0.28	0	-68.58	-62	Normal
					6025	-66.51	0.28	0	-66.79	-62	Ceased
						-68.80	0.28	0	-69.08	-62	Minimal
						-70.60	0.28	0	-70.88	-62	Normal
		6100	-67.00	0.28	0	-67.28	-62	Ceased			
			-67.90	0.28	0	-68.18	-62	Minimal			
			-72.00	0.28	0	-72.28	-62	Normal			

Note:

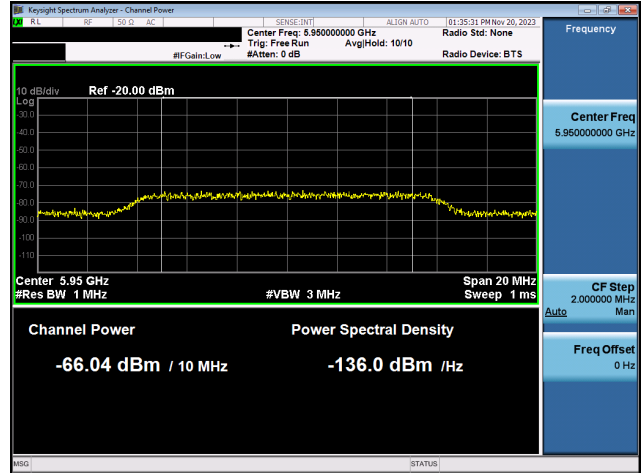
- Adjusted Power(dBm) = Injected (AWGN) Power - Antenna Gain + Path Loss
- Antenna Gain includes cable loss
- Only one chain was performed for testing.
- The AWGN level is reported for the following conditions:
 - Ceased = AWGN level at which no transmission is detected, consistently for a minimum period of 10 seconds.
 - Minimal = AWGN level at which the system begins to trigger the transmission switch-off, albeit not being kept off consistently.
 - Normal = AWGN level at which no impact on the transmission is detected, consistently for a minimum period of 10 seconds.

Plots of shows Incumbent signal level

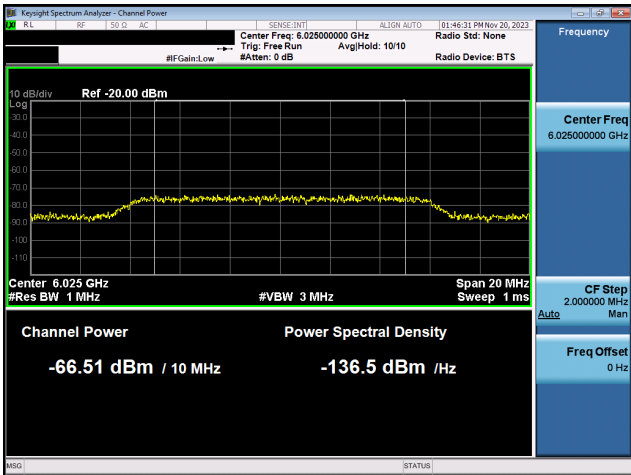
802.11ax-20 MHz / 5955 MHz



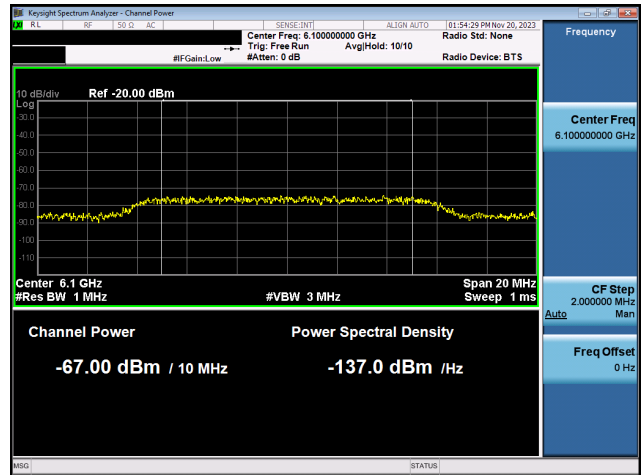
802.11ax-160 MHz / 5950 MHz (Lower Edge)



802.11ax-160 MHz / 6025 MHz (Middle)

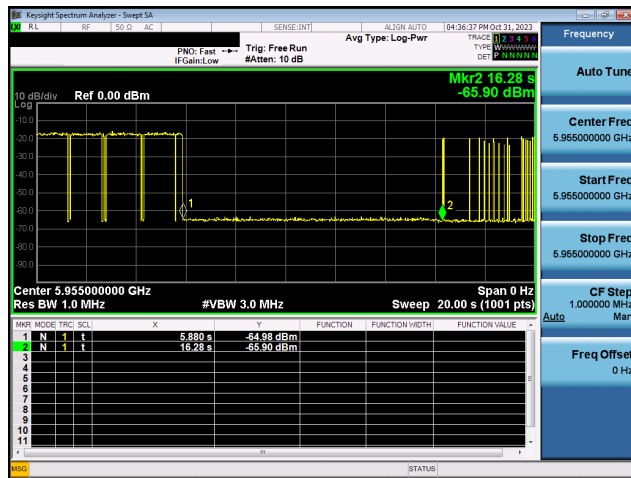


802.11ax-160 MHz / 6100 MHz (Upper Edge)

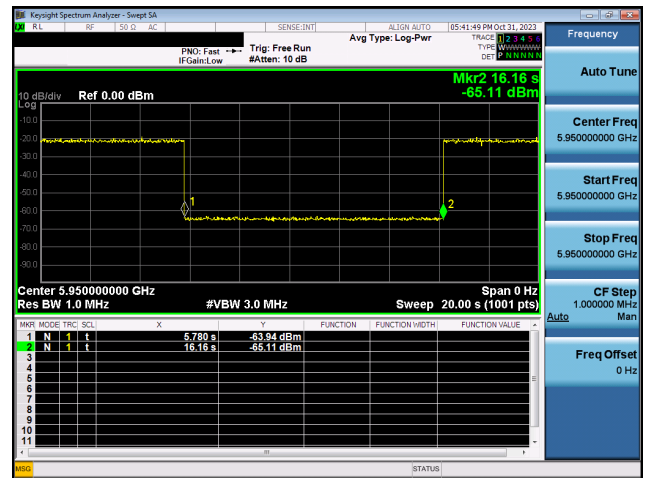


Plots of EUT ceased transmission in the time domain

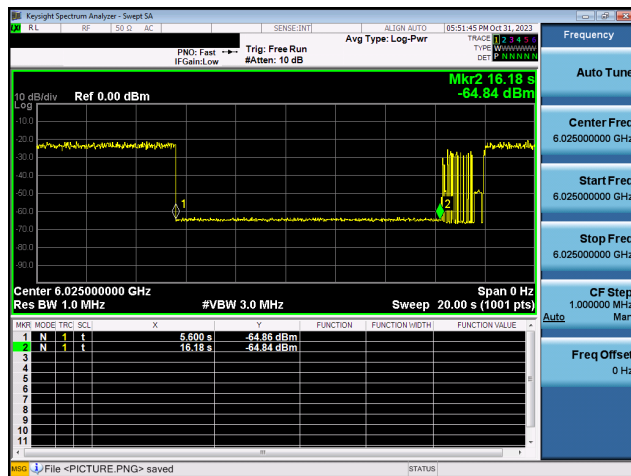
802.11ax-20 MHz / 5955 MHz



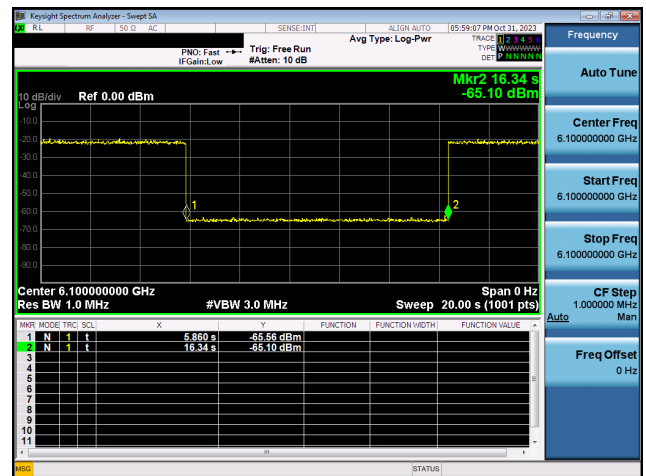
802.11ax-160 MHz / 5950 MHz
(Low Edge - 5950 MHz)



802.11ax-160 MHz / 6025 MHz
(Middle - 6025 MHz)



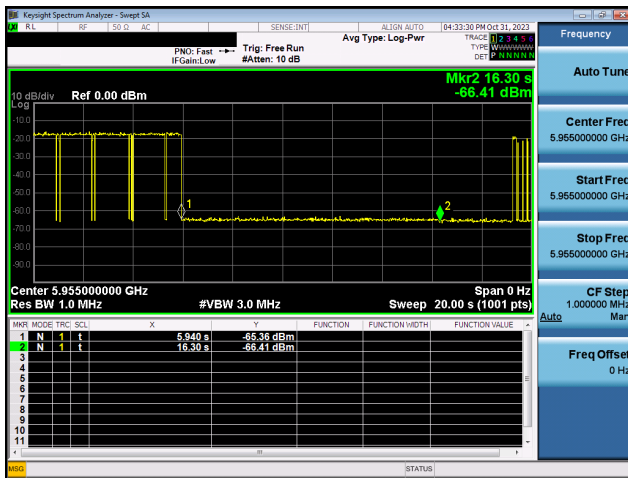
802.11ax-160 MHz / 6100 MHz
(High Edge - 6100 MHz)



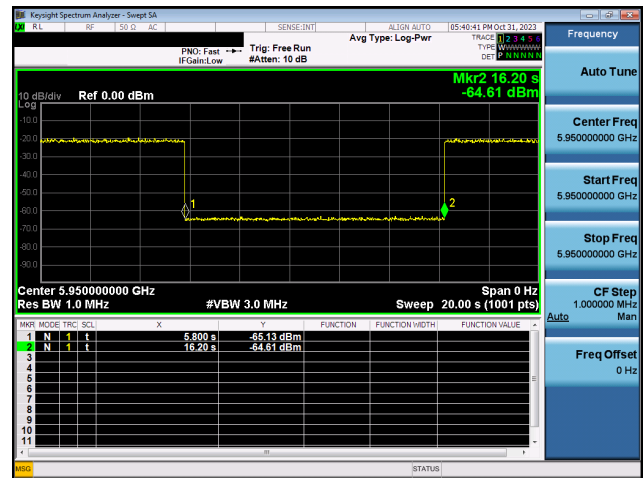
Note: Injected Interference signal at 10 sec.

Plots of Start transmitting

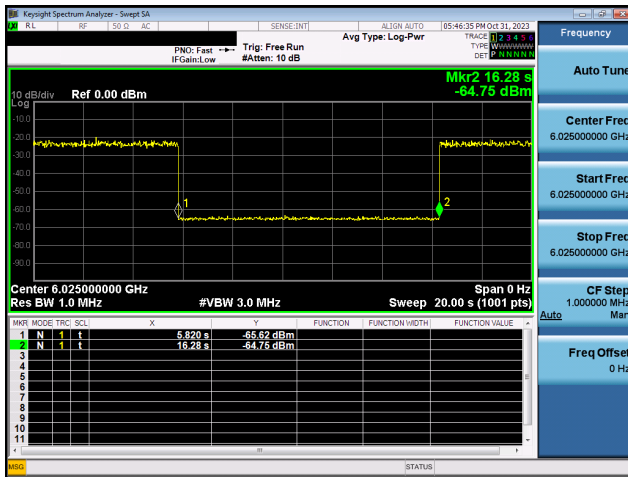
802.11ax-20 MHz / 5955 MHz



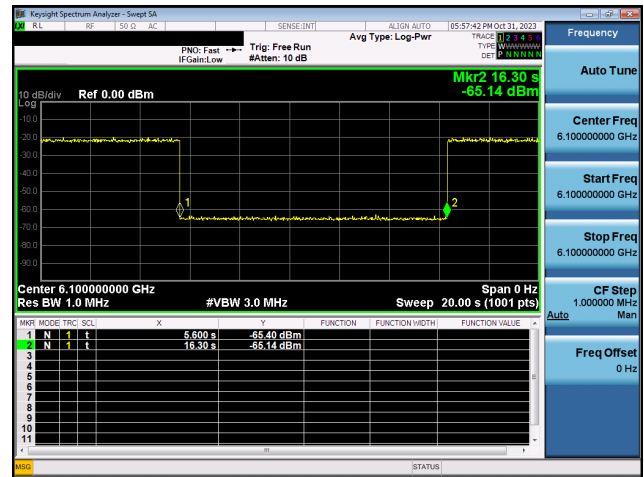
802.11ax-160 MHz / 5950 MHz
(Low Edge - 5950 MHz)



802.11ax-160 MHz / 6025 MHz
(Middle - 6025 MHz)



802.11ax-160 MHz / 6100 MHz
(High Edge - 6100 MHz)



Product : Notebook Computer
 Test Item : Contention Based Protocol

Contention Based Protocol Probability											
Measurement Mode		Conducted measurement			Device Type		client				
Operation Band	Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Frequency (MHz)	Test Result						
					AWGN Signals Frequency (MHz)	The Incumbent Signal (AWGN) Level (dBm)	Number of Times	Number of Detected	Detection Rate	Limit	Pass/Fail
U-NII 6	802.11ax	20MHz	97	6435	6435	-66.92	10	10	100%	90%	Pass
					6430	-70.21	10	10	100%	90%	Pass
		160MHz	111	6505	6505	-66.62	10	10	100%	90%	Pass
					6580	-65.62	10	10	100%	90%	Pass

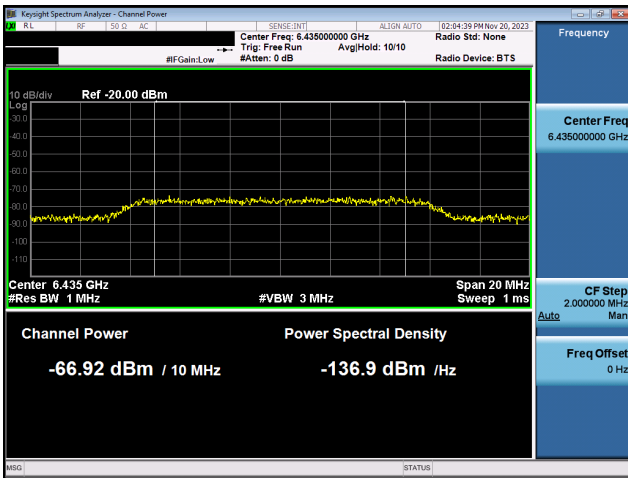
Contention Based Protocol Measurement												
Operation Band	Operation Mode	Channel Bandwidth	Channel Number	Channel Frequency	AWGN Signals Frequency (MHz)	Injected (AWGN) POWER (dBm)	Antenna Gain (dBi)	Path Loss (dB)	Adjusted Power (dBm)	Detection limit (dBm)	EUT Tx Status	
U-NII 6	802.11ax	20MHz	97	6435	6435	-66.92	0.28	0	-67.20	-62	Ceased	
						-68.40	0.28	0	-68.68	-62	Minimal	
						-72.50	0.28	0	-72.78	-62	Normal	
		160MHz	111	6505	6430	-70.21	0.28	0	-70.49	-62	Ceased	
						-71.00	0.28	0	-71.28	-62	Minimal	
						-72.50	0.28	0	-72.78	-62	Normal	
						6505	-66.62	0.28	0	-66.90	-62	Ceased
							-67.60	0.28	0	-67.88	-62	Minimal
							-69.70	0.28	0	-69.98	-62	Normal
		6580	-65.62	0.28	0	-65.90	-62	Ceased				
			-66.20	0.28	0	-66.48	-62	Minimal				
			-67.80	0.28	0	-68.08	-62	Normal				

Note:

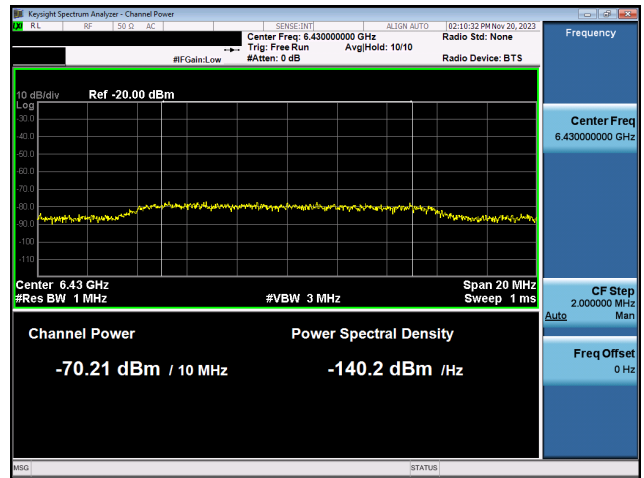
1. Adjusted Power(dBm) = Injected (AWGN) Power - Antenna Gain + Path Loss
2. Antenna Gain includes cable loss
3. Only one chain was performed for testing.
4. The AWGN level is reported for the following conditions:
 - Ceased = AWGN level at which no transmission is detected, consistently for a minimum period of 10 seconds.
 - Minimal = AWGN level at which the system begins to trigger the transmission switch-off, albeit not being kept off consistently.
 - Normal = AWGN level at which no impact on the transmission is detected, consistently for a minimum period of 10 seconds.

Plots of shows Incumbent signal level

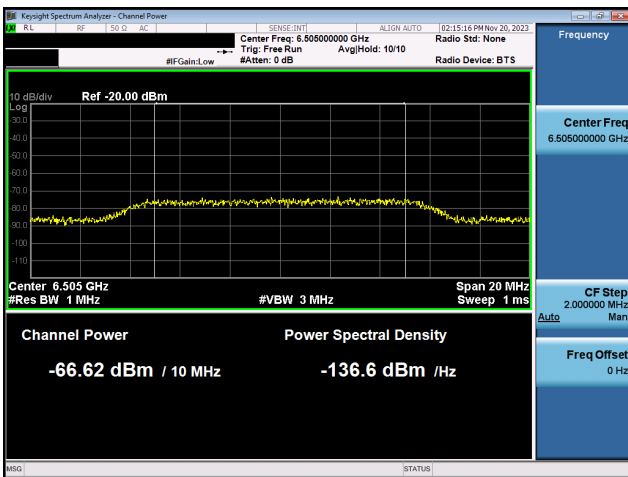
802.11ax-20 MHz / 6435 MHz



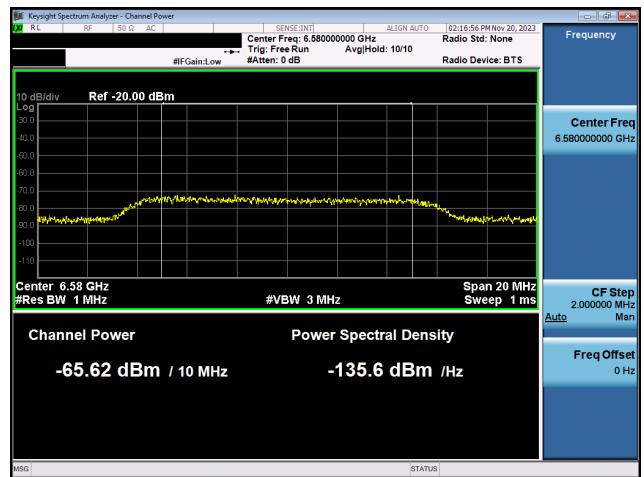
802.11ax-160 MHz / 6430 MHz (Lower Edge)



802.11ax-160 MHz / 6505 MHz (Middle)

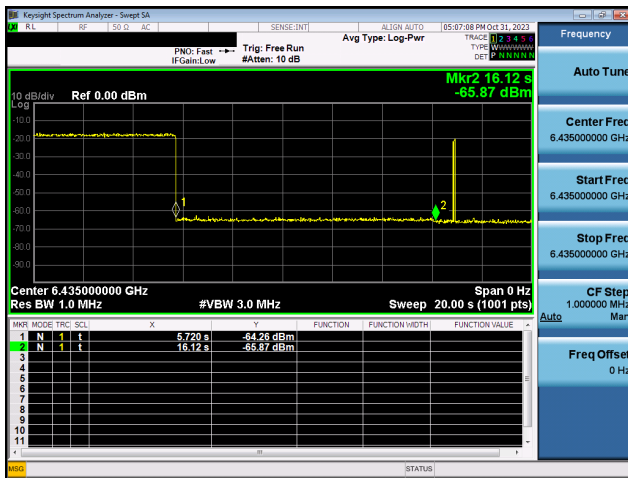


802.11ax-160 MHz / 6580 MHz (Upper Edge)

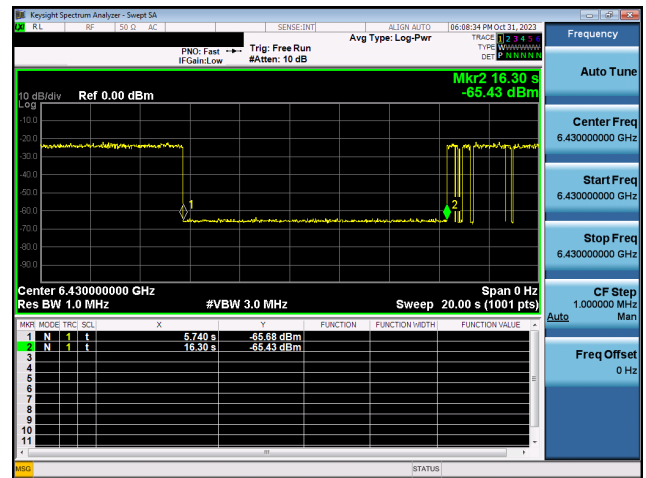


Plots of EUT ceased transmission in the time domain

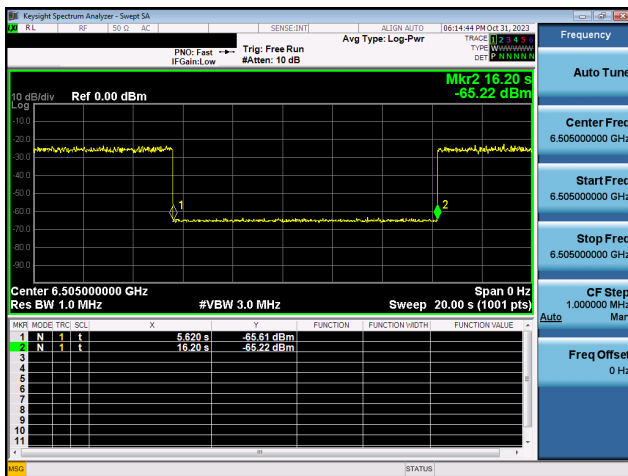
802.11ax-20 MHz / 6435 MHz



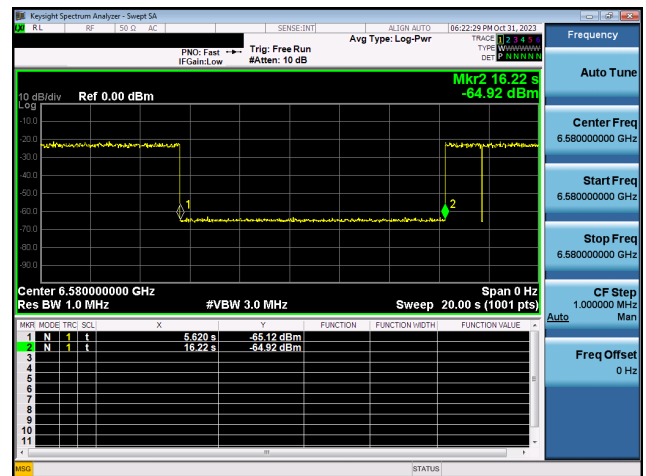
802.11ax-160 MHz / 6430 MHz
(Low Edge - 6430 MHz)



802.11ax-160 MHz / 6505 MHz
(Middle - 6505 MHz)



802.11ax-160 MHz / 6580 MHz
(High Edge - 6580 MHz)



Note: Injected Interference signal at 10 sec.