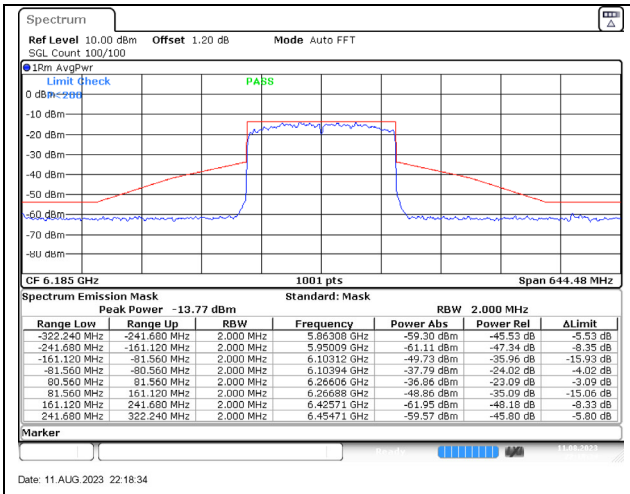
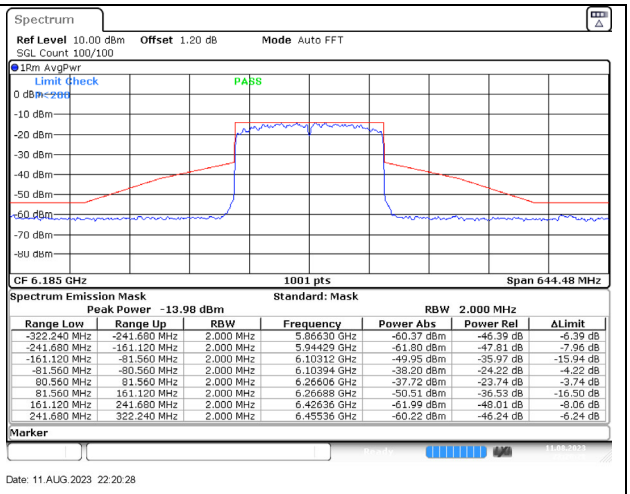
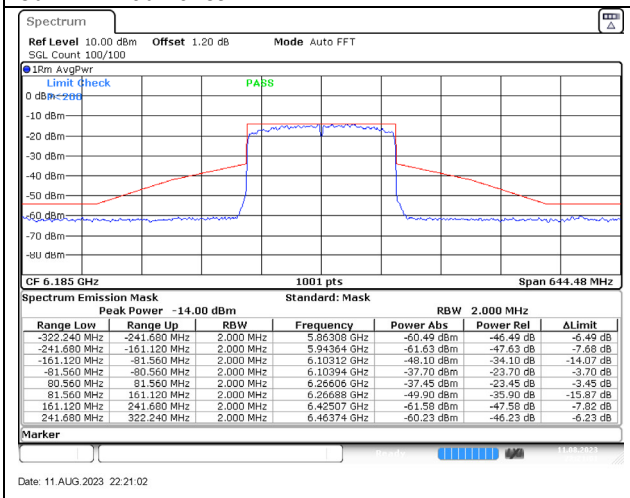


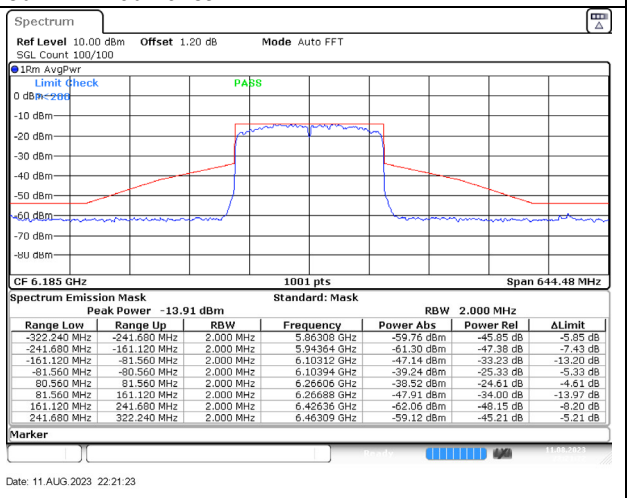
802.11ax160 / 6185 MHz / Chain A



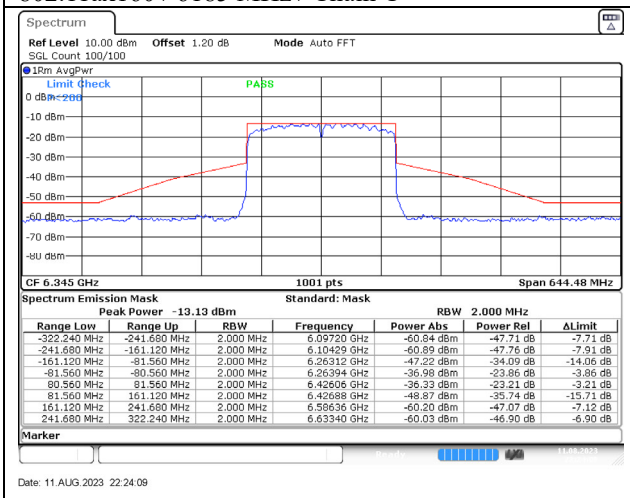
802.11ax160 / 6185 MHz / Chain B



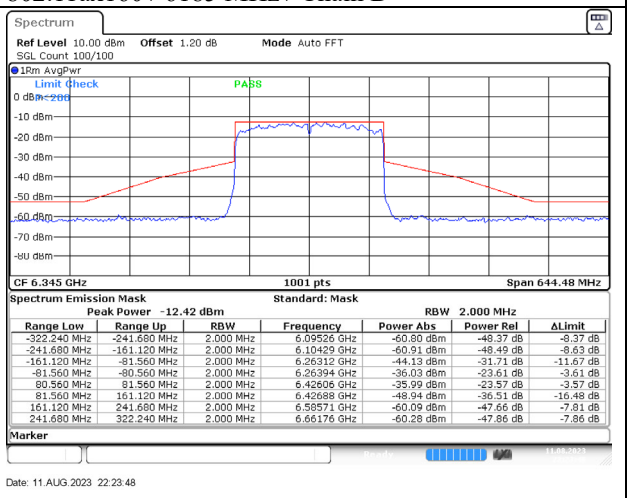
802.11ax160 / 6185 MHz / Chain C



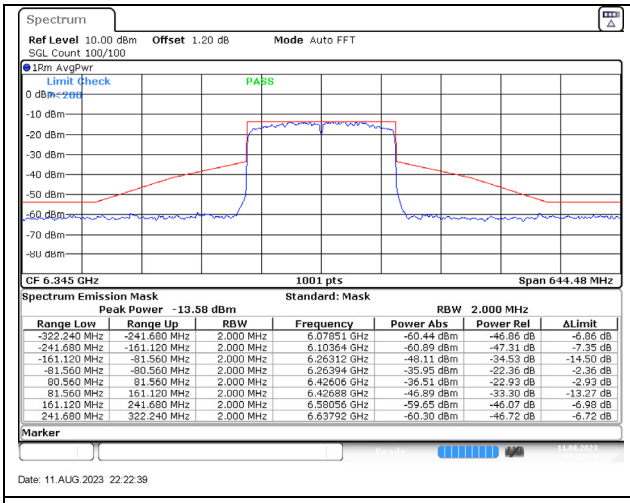
802.11ax160 / 6185 MHz / Chain D



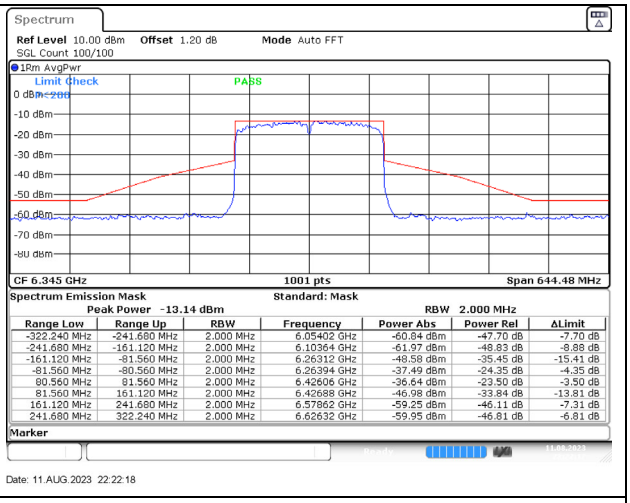
802.11ax160 / 6345 MHz / Chain A



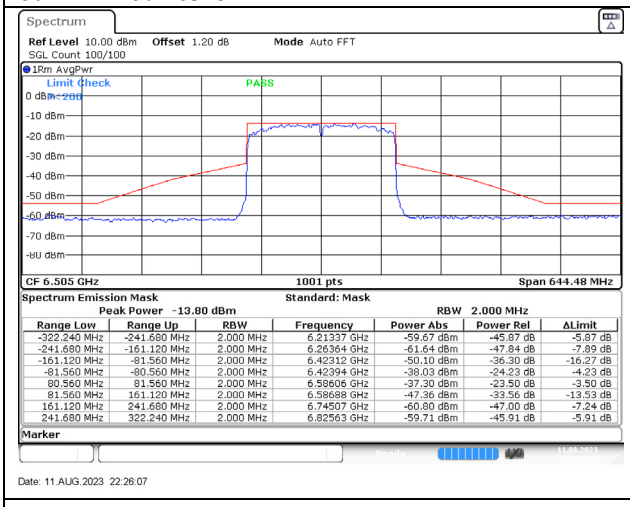
802.11ax160 / 6345 MHz / Chain B



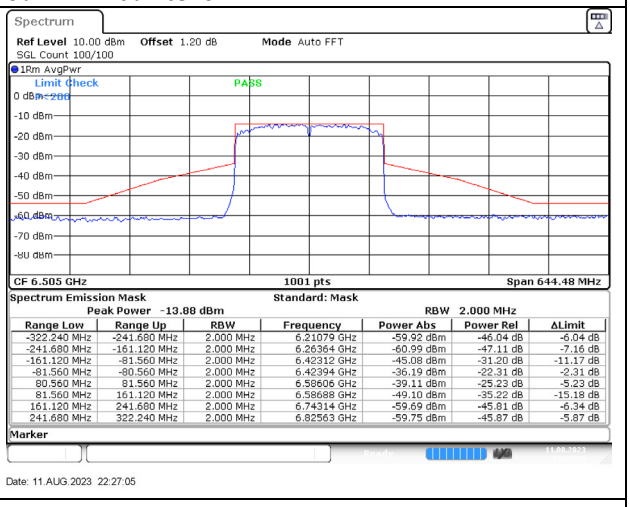
802.11ax160 / 6345 MHz / Chain C



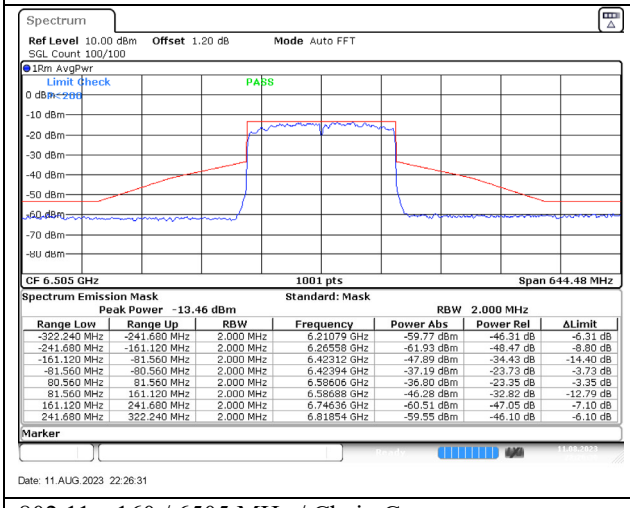
802.11ax160 / 6345 MHz / Chain D



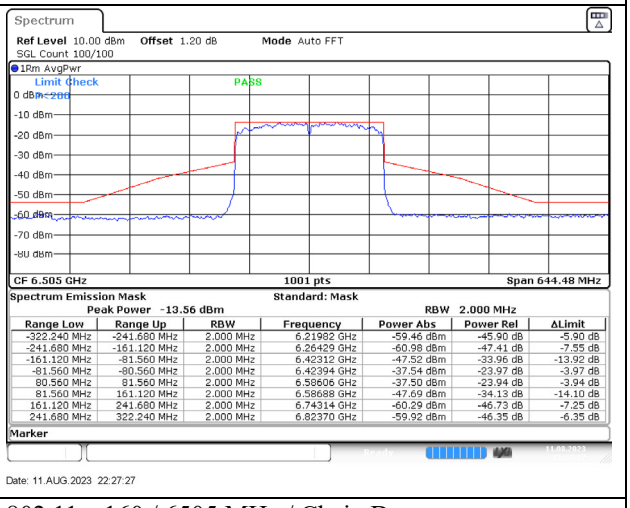
802.11ax160 / 6505 MHz / Chain A



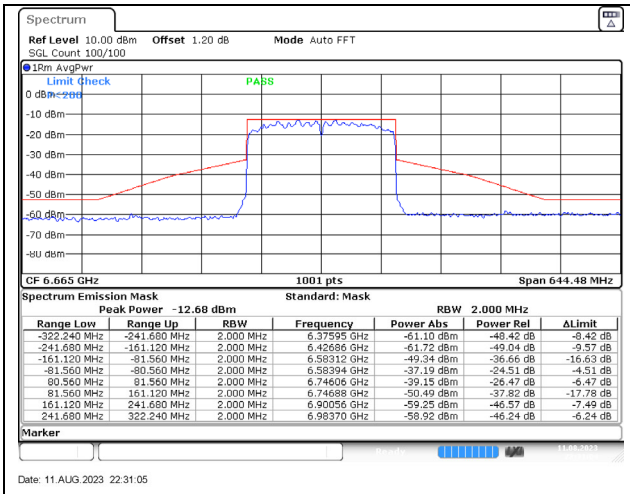
802.11ax160 / 6505 MHz / Chain B



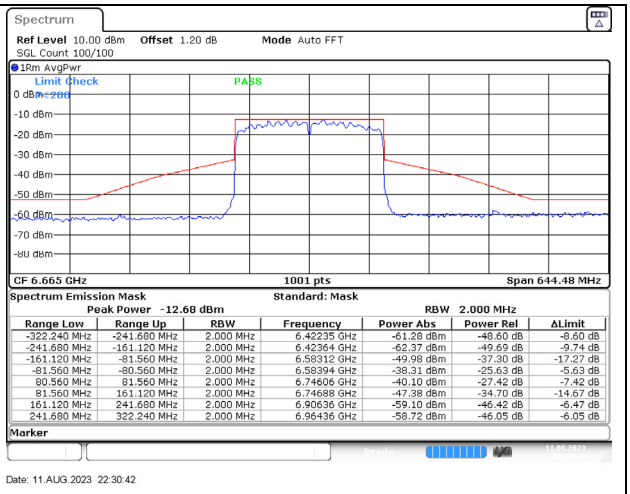
802.11ax160 / 6505 MHz / Chain C



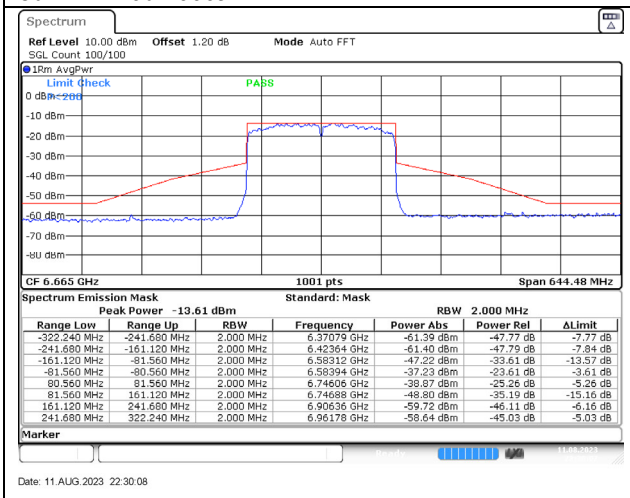
802.11ax160 / 6505 MHz / Chain D



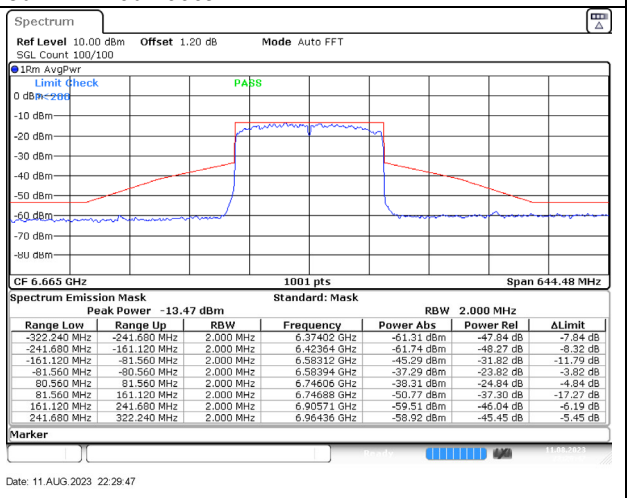
802.11ax160 / 6665 MHz / Chain A



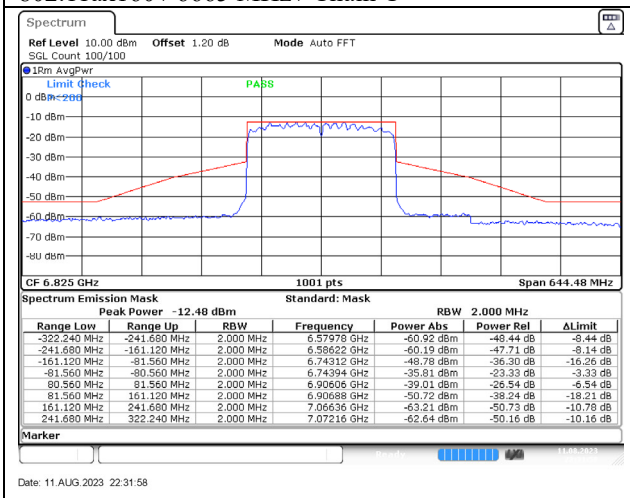
802.11ax160 / 6665 MHz / Chain B



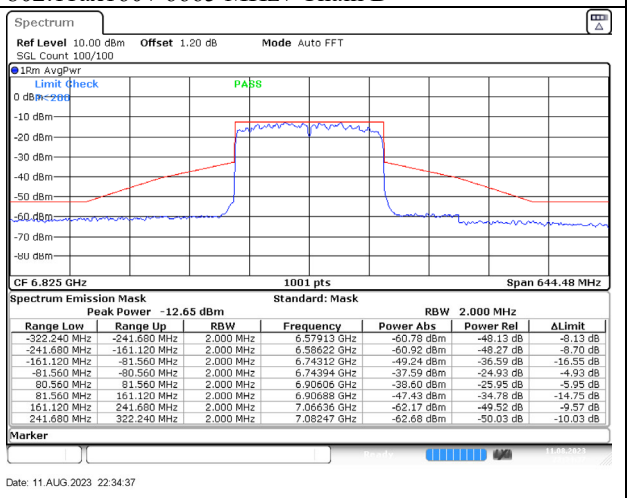
802.11ax160 / 6665 MHz / Chain C



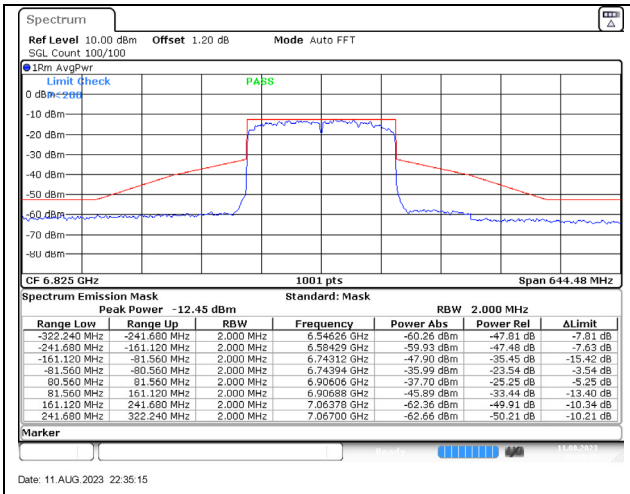
802.11ax160 / 6665 MHz / Chain D



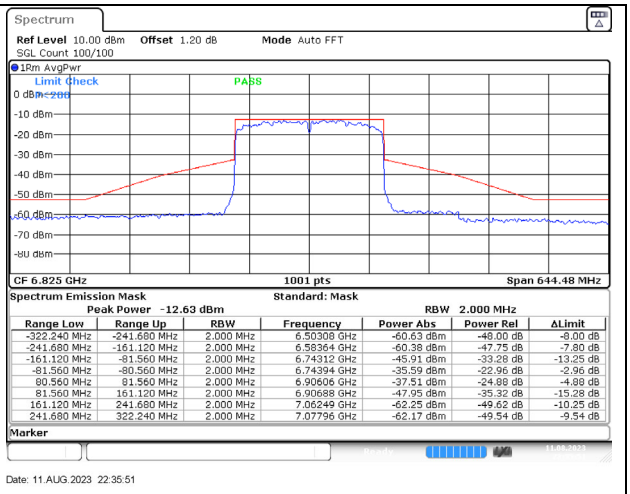
802.11ax160 / 6825 MHz / Chain A



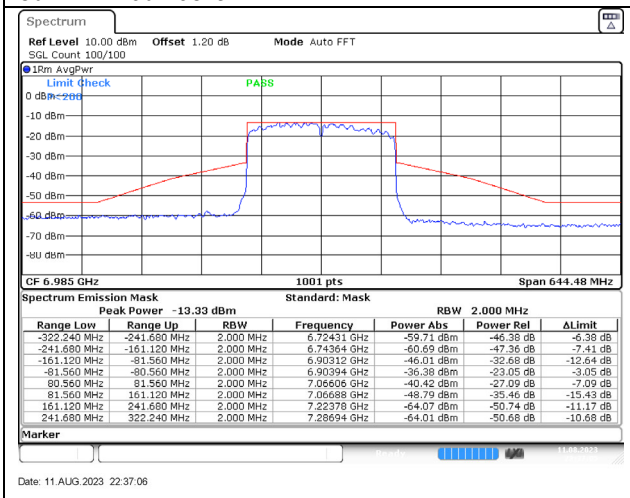
802.11ax160 / 6825 MHz / Chain B



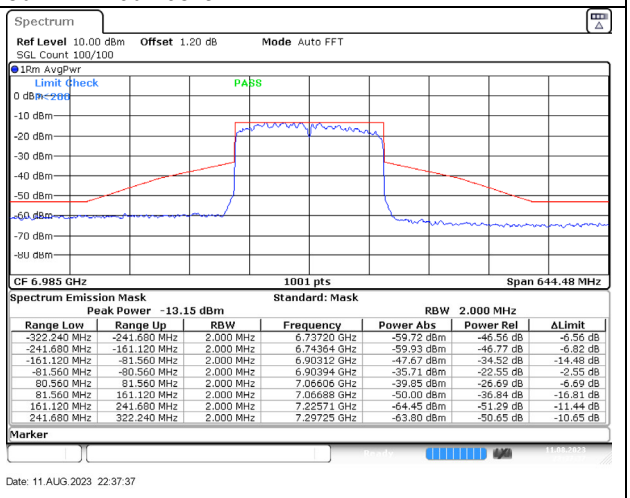
802.11ax160 / 6825 MHz / Chain C



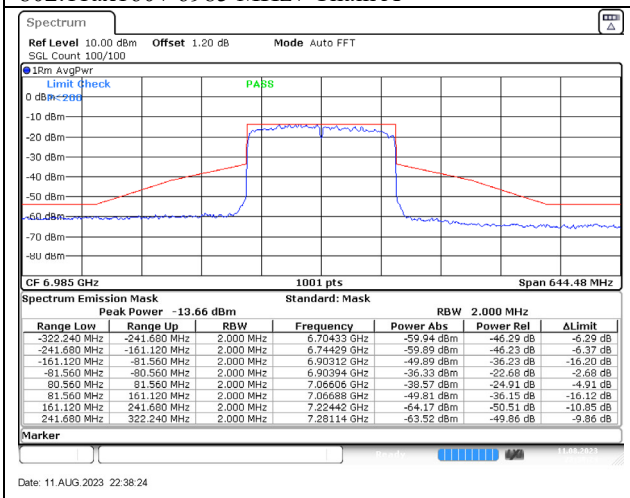
802.11ax160 / 6825 MHz / Chain D



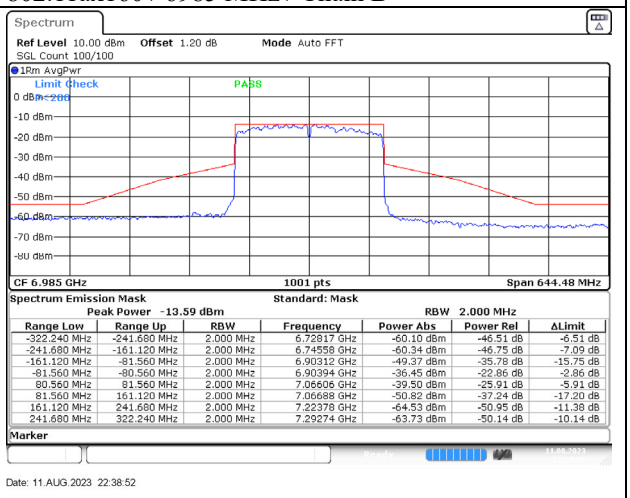
802.11ax160 / 6985 MHz / Chain A



802.11ax160 / 6985 MHz / Chain B



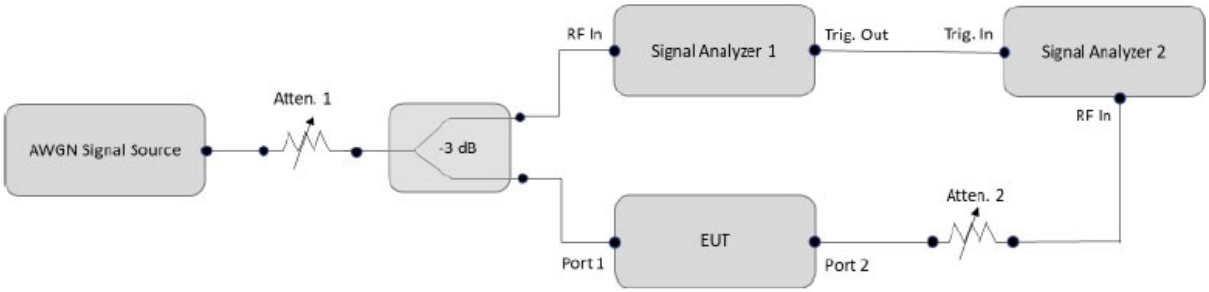
802.11ax160 / 6985 MHz / Chain C



802.11ax160 / 6985 MHz / Chain D

10. Contention Based Protocol

10.1. Test Setup



10.2. Limits

Unlicensed indoor low-power devices must detect co-channe 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-channek energy with 90% or greater certainty.

10.3. 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
$BW_{EUT} \leqq BW_{Inc}$	Once	Same as EUT transmission
$BW_{Inc} < BW_{EUT} \leqq 2xBW_{Inc}$	Once	Contained within BWEUT
$2xBW_{Inc} < BW_{EUT} \leqq 4xBW_{Inc}$	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.

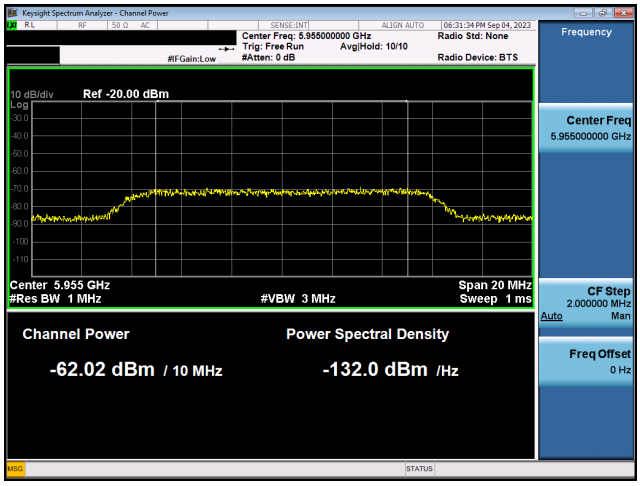
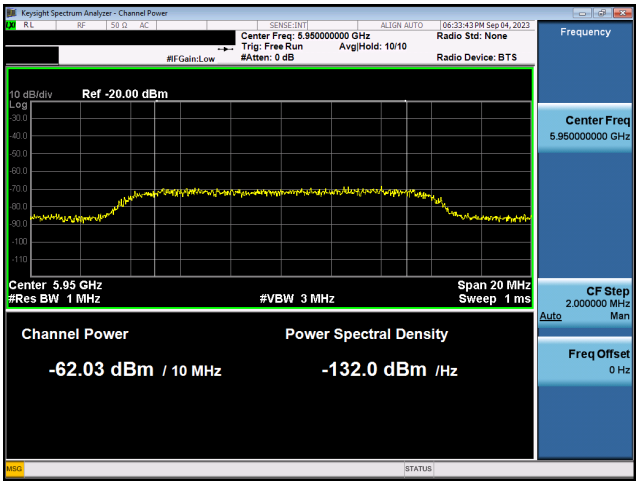
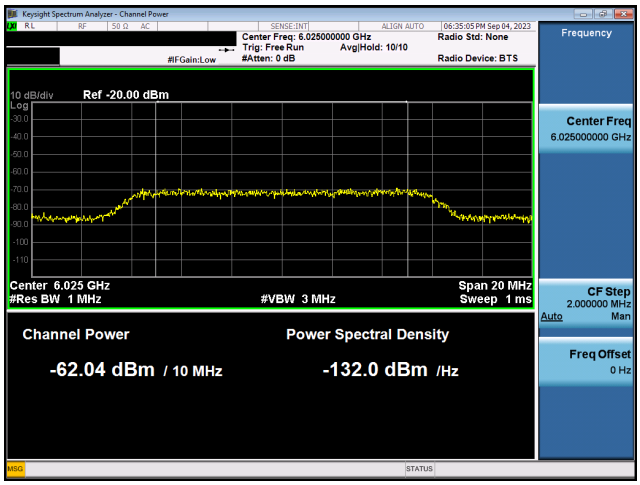
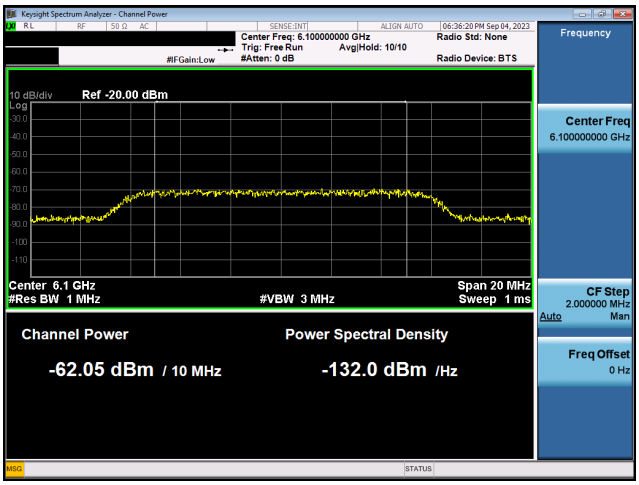
10.4. Test Result of Contention Based Protocol

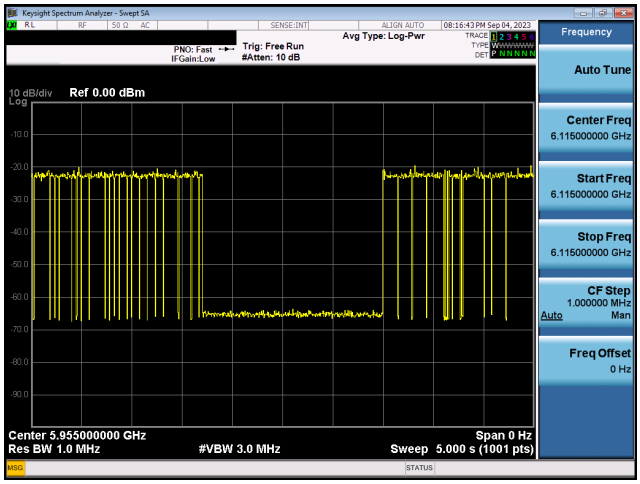
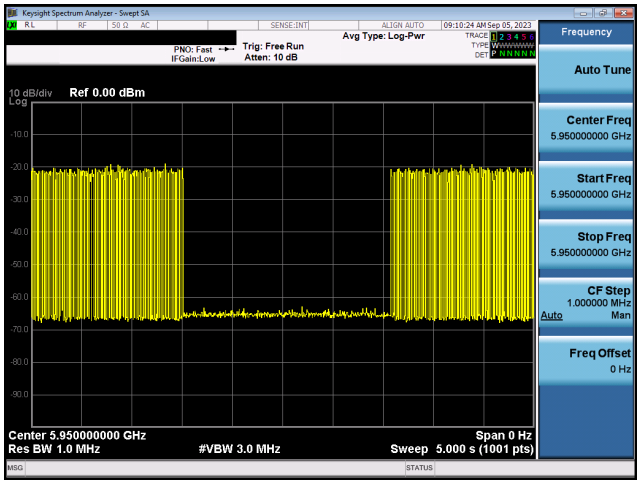
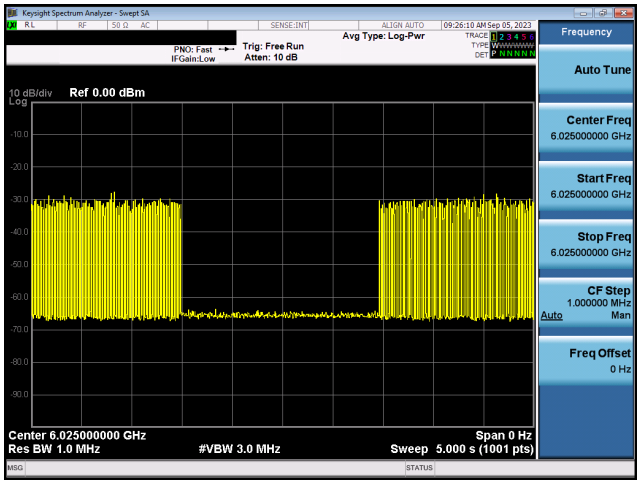
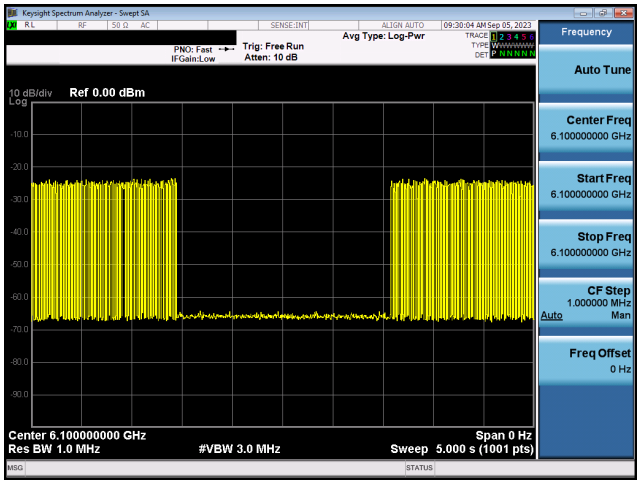
For U-NII-5 band

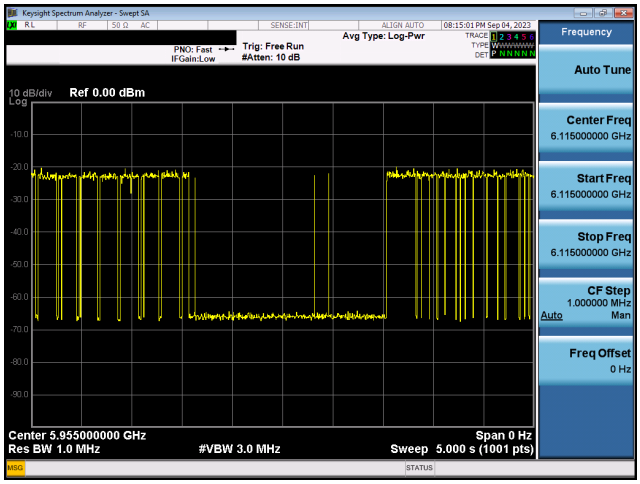
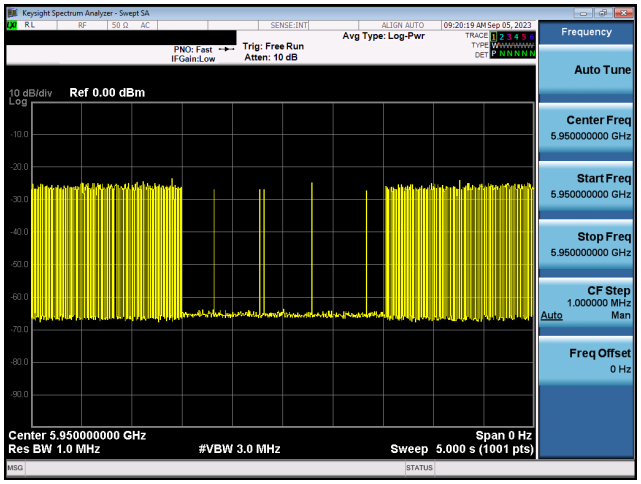
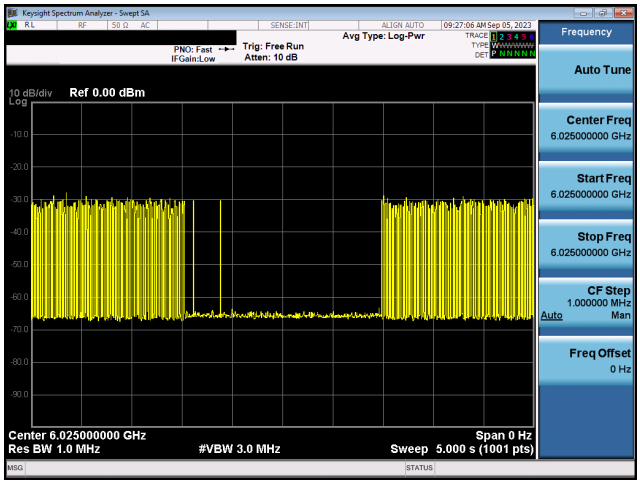
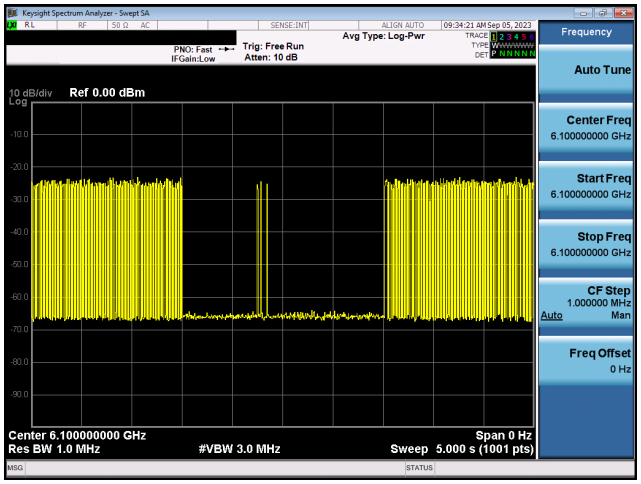
Contention Based Protocol Measurement										
Measurement Mode		Conducted measurement			Device Type		Client			
The Incumbent Signal (AWGN) Level (dBm)		-62 dBm (at the antenna connector)								
Operation Band	Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Frequency (MHz)	Test Result					
					AWGN Signals Frequency (MHz)	Number of Times	Number of Detected	Detection Rate	Limit	Pass/ Fail
U-NII 5	802.11ax	20MHz	1	5955	5955	10	10	100%	90%	Pass
		160MHz	15	6025	5950	10	10	100%	90%	Pass
					6025	10	10	100%	90%	Pass
					6100	10	10	100%	90%	Pass

Lowest Interference (AWGN) Level Check							
Operation Band	Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Frequency (MHz)	AWGN Signals Frequency (MHz)	Threshold Level (dBm)	EUT Status
U-NII 5	802.11ax	20MHz	1	5955	5955	-68	OFF
						-71	Minimal
						-73	ON
		160MHz	15	6025	5950	-69	OFF
						-70	Minimal
						-71	ON
					6025	-71	OFF
						-72	Minimal
						-74	ON
					6100	-72	OFF
						-73	Minimal
						-75	ON

Note:
1. Injected (AWGN) POWER at the antenna connector (dBm) = S.G. (dBm) - Cable loss (dB) - Splitter loss (dB) - lowest antenna gain (dB)
2. Only one chain was performed for testing.
3. The AWGN level is reported for the following conditions:
   - OFF = AWGN level at which no transmission is detected, consistently for a minimum period of 5 seconds.
   - Minimal = AWGN level at which the system begins to trigger the transmission switch-off, albeit not being kept off consistently.
   - ON = AWGN level at which no impact on the transmission is detected, consistently for a minimum period of 5 seconds.

Plots of shows Incumbent signal level	
802.11ax (20MHz) / 5955MHz	802.11ax (160MHz) / 5950MHz (Lower Edge)
	
802.11ax (160MHz) / 6025MHz (Middle)	802.11ax (160MHz) / 6100MHz (Upper Edge)
	

Plots of EUT ceased transmission in the time domain	
802.11ax (20MHz) / 5955MHz	802.11ax (160MHz) / 6025MHz (Lower Edge - 5950 MHz)
	
802.11ax (160MHz) / 6025MHz (Middle - 6025 MHz)	802.11ax (160MHz) / 6025MHz (Upper Edge - 6100 MHz)
	

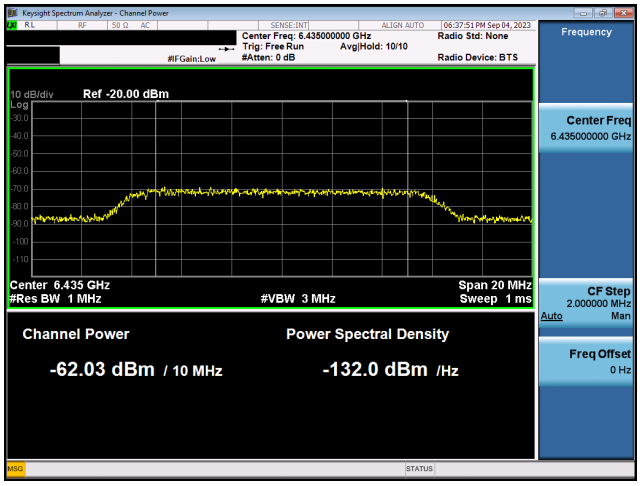
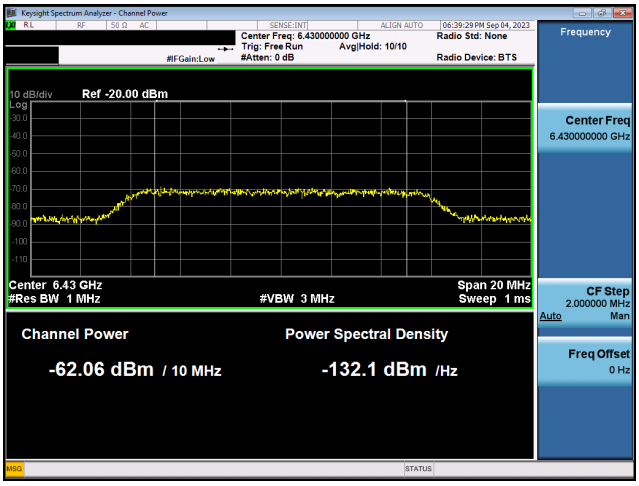
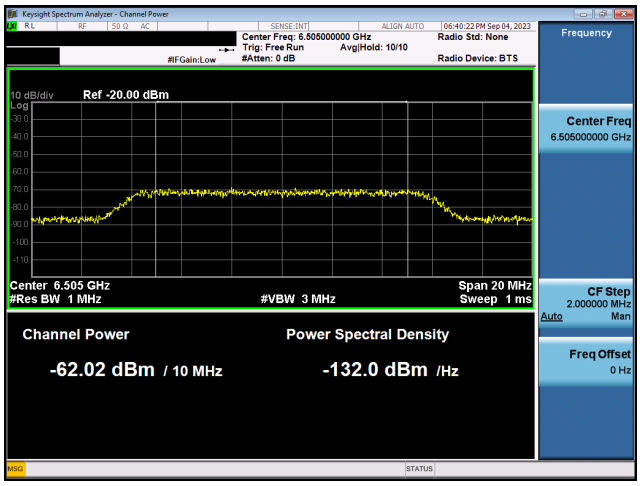
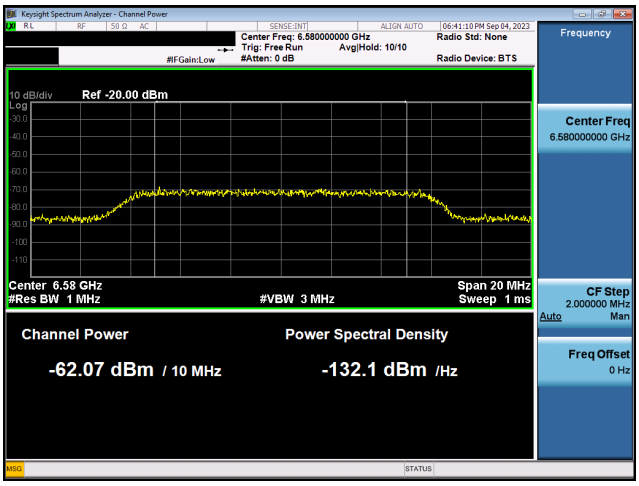
Plots of Start transmitting	
802.11ax (20MHz) / 5955MHz	802.11ax (160MHz) / 6025MHz (Lower Edge - 5950 MHz)
	
802.11ax (160MHz) / 6025MHz (Middle - 6025 MHz)	802.11ax (160MHz) / 6025MHz (Upper Edge - 6100 MHz)
	

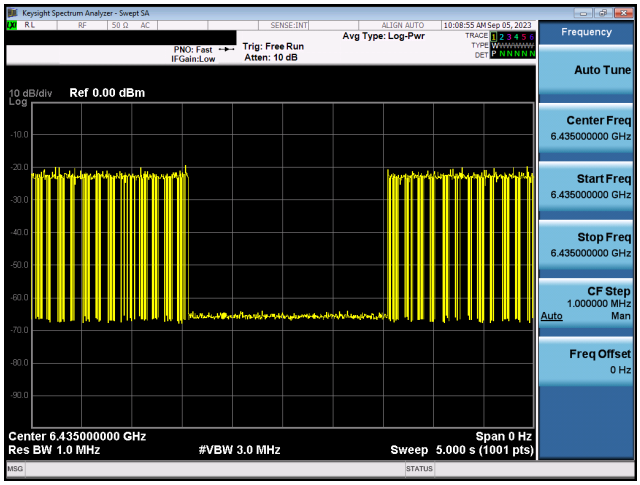
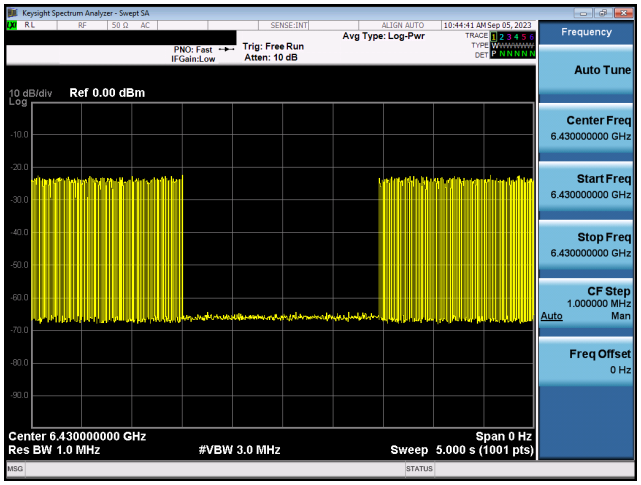
For U-NII-6 band

Contention Based Protocol Measurement										
Measurement Mode		Conducted measurement			Device Type		Client			
The Incumbent Signal (AWGN) Level (dBm)		-62 dBm (at the antenna connector)								
Operation Band	Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Frequency (MHz)	Test Result					
					AWGN Signals Frequency (MHz)	Number of Times	Number of Detected	Detection Rate	Limit	Pass/ Fail
U-NII 6	802.11ax	20MHz	97	6435	6435	10	10	100%	90%	Pass
		160MHz	111	6505	6430	10	10	100%	90%	Pass
					6505	10	10	100%	90%	Pass
					6580	10	10	100%	90%	Pass

Lowest Interference (AWGN) Level Check							
Operation Band	Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Frequency (MHz)	AWGN Signals Frequency (MHz)	Threshold Level (dBm)	EUT Status
U-NII 6	802.11ax	20MHz	97	6435	6435	-70	OFF
						-71	Minimal
						-74	ON
		160MHz	111	6505	6430	-71	OFF
						-73	Minimal
						-74	ON
					6505	-71	OFF
						-72	Minimal
						-73	ON
					6580	-66	OFF
						-68	Minimal
						-69	ON

Note:
1. Injected (AWGN) POWER at the antenna connector (dBm) = S.G. (dBm) - Cable loss (dB) - Splitter loss (dB) - lowest antenna gain (dB)
2. Only one chain was performed for testing.
3. The AWGN level is reported for the following conditions:
   - OFF = AWGN level at which no transmission is detected, consistently for a minimum period of 5 seconds.
   - Minimal = AWGN level at which the system begins to trigger the transmission switch-off, albeit not being kept off consistently.
   - ON = AWGN level at which no impact on the transmission is detected, consistently for a minimum period of 5 seconds.

Plots of shows Incumbent signal level	
802.11ax (20MHz) / 6435MHz	802.11ax (160MHz) / 6430MHz (Lower Edge)
	
802.11ax (160MHz) / 6505MHz (Middle)	802.11ax (160MHz) / 6580MHz (Upper Edge)
	

Plots of EUT ceased transmission in the time domain	
802.11ax (20MHz) / 6435MHz	802.11ax (160MHz) / 6505MHz (Lower Edge - 6430 MHz)
	
802.11ax (160MHz) / 6505MHz (Middle - 6505 MHz)	802.11ax (160MHz) / 6505MHz (Upper Edge - 6580 MHz)