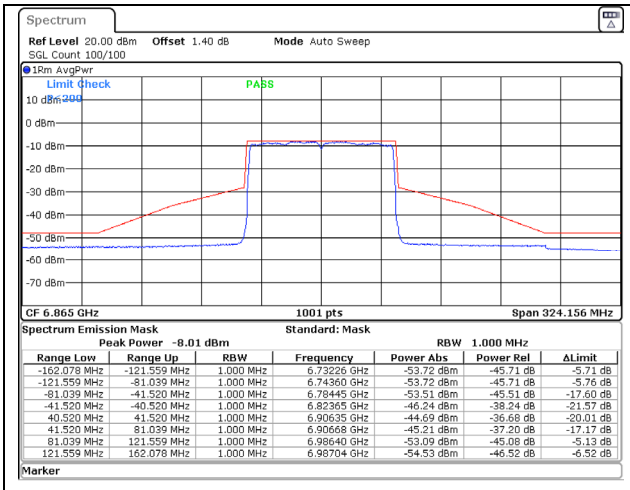
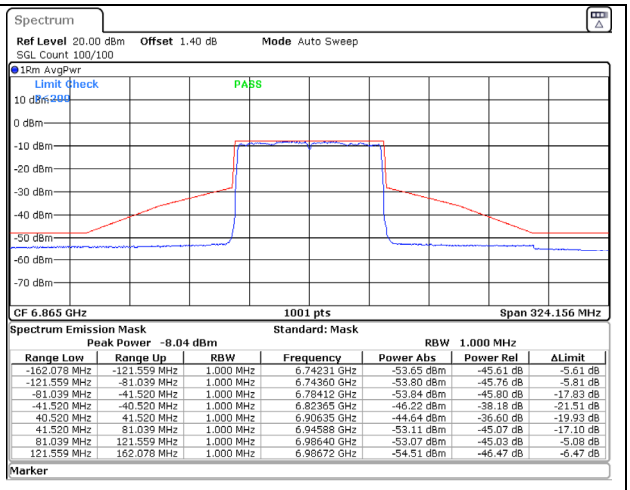
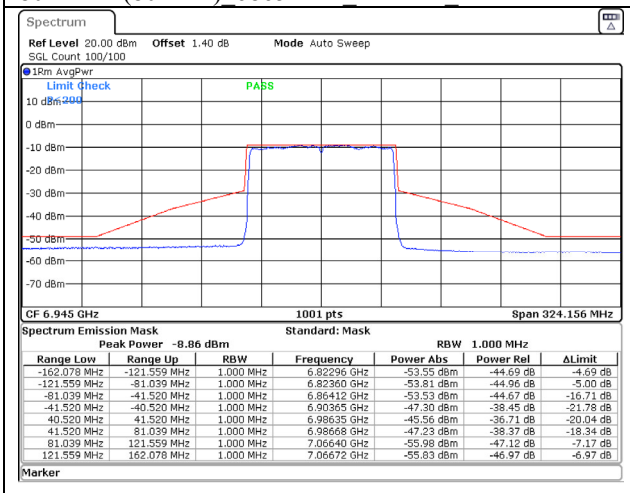


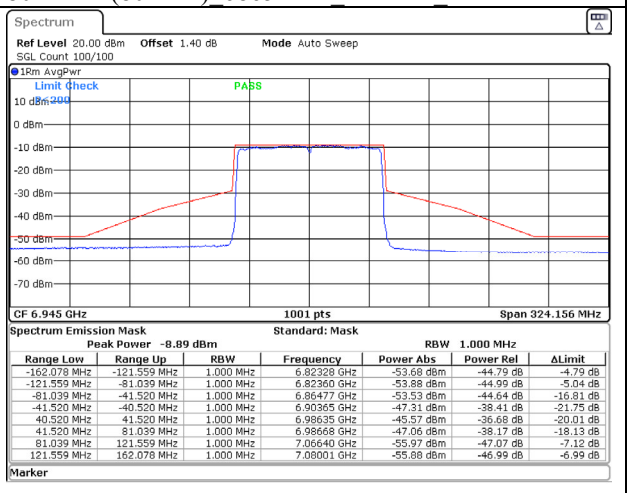
802.11ax (80MHz)_6865MHz_Chain C_NSS-2



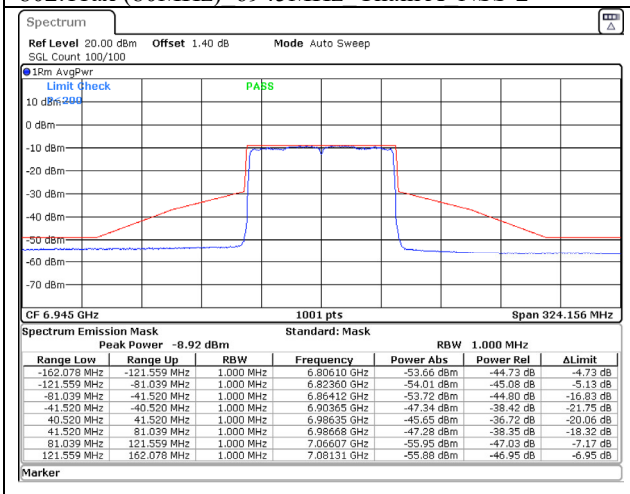
802.11ax (80MHz)_6865MHz_Chain D_NSS-2



802.11ax (80MHz)_6945MHz_Chain A_NSS-2



802.11ax (80MHz)_6945MHz_Chain B_NSS-2



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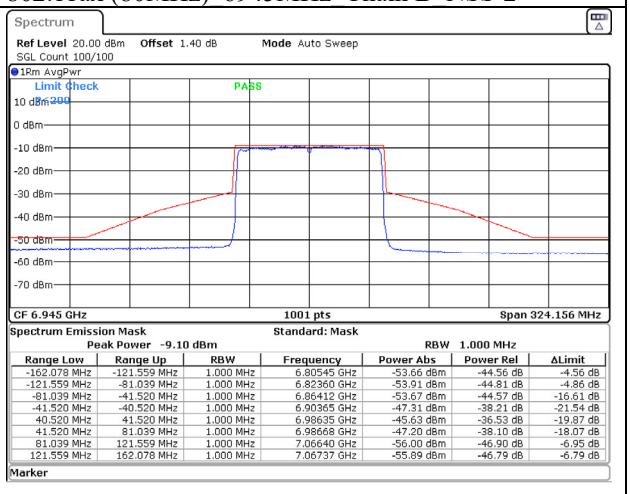
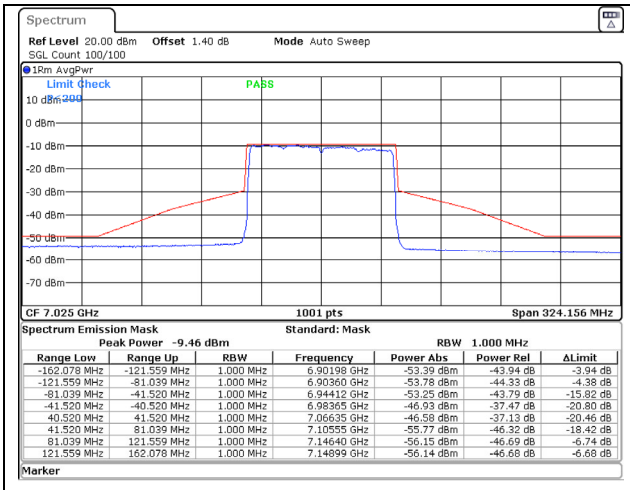
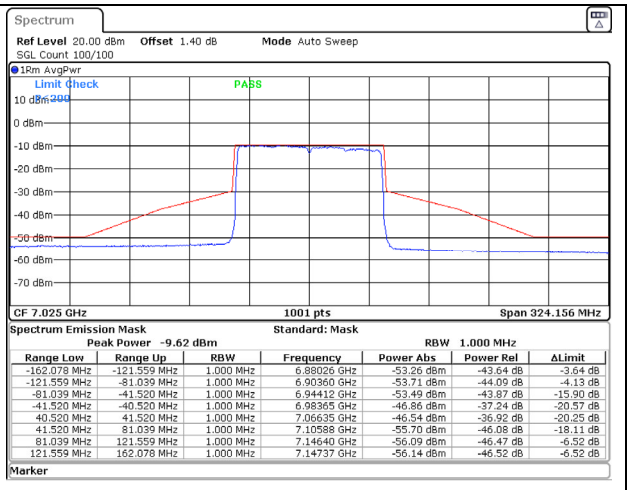


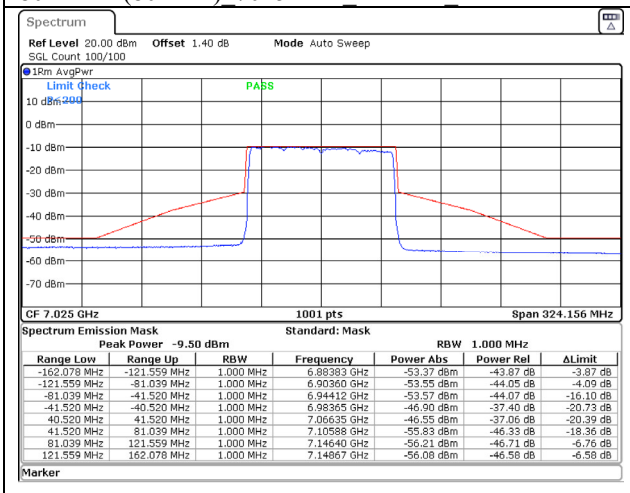
802.11ax (80MHz)_6945MHz_Chain D_NSS-2



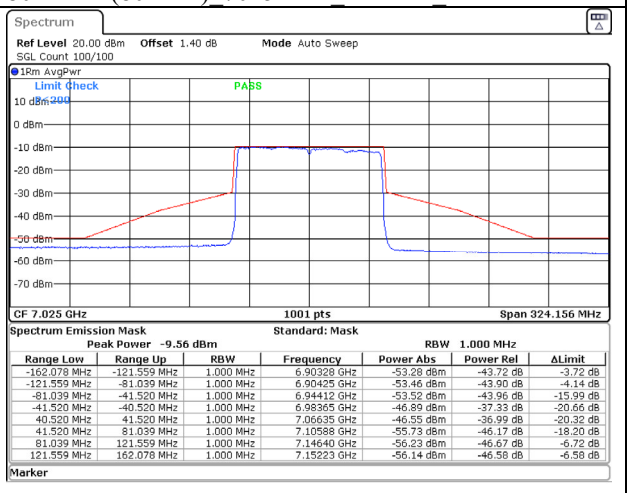
802.11ax (80MHz)_7025MHz_Chain A_NSS-2



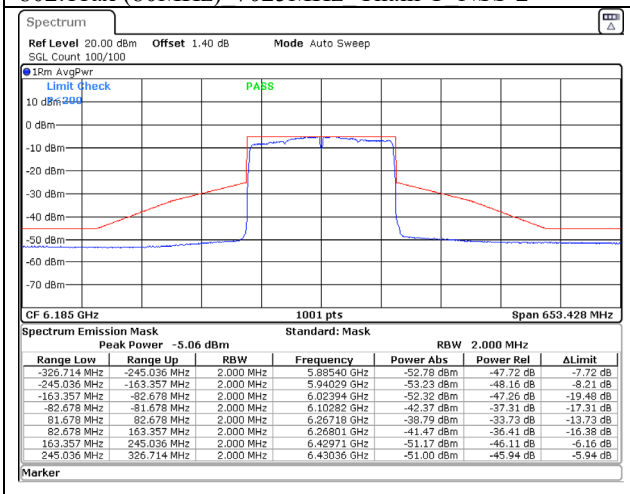
802.11ax (80MHz)_7025MHz_Chain B_NSS-2



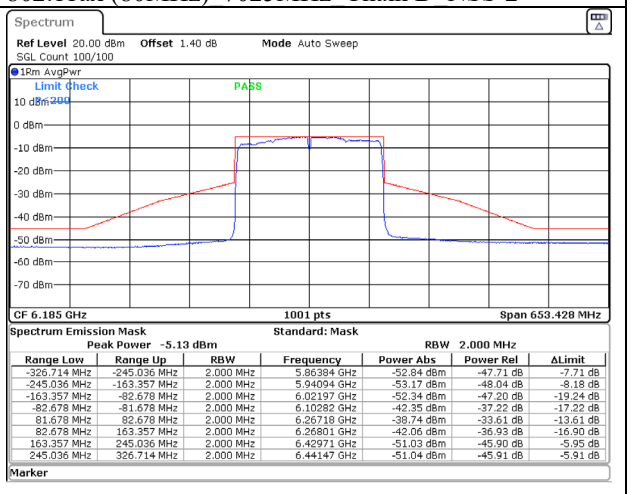
802.11ax (80MHz)_7025MHz_Chain C_NSS-2



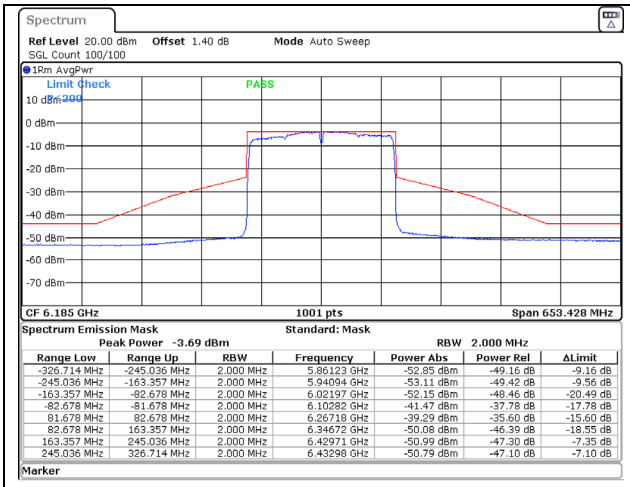
802.11ax (80MHz)_7025MHz_Chain D_NSS-2



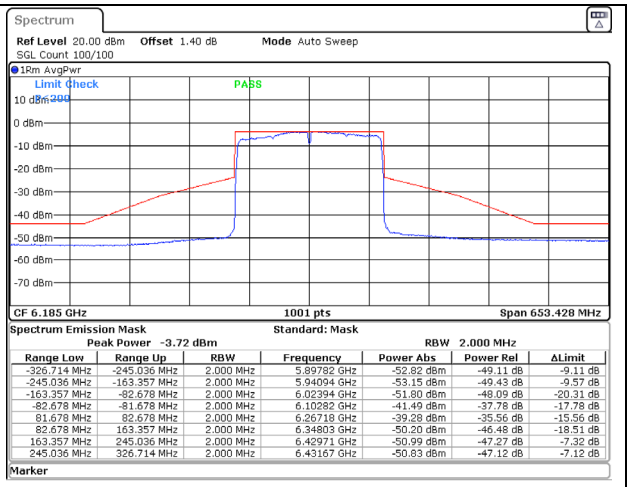
802.11ax (160MHz)_6185MHz_Chain A_NSS-2



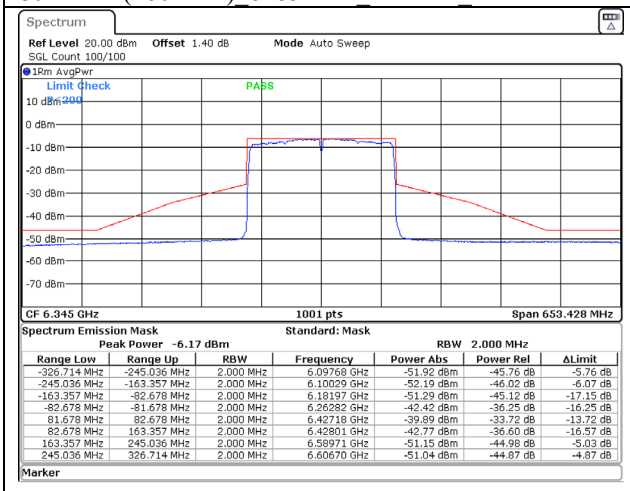
802.11ax (160MHz)_6185MHz_Chain B_NSS-2



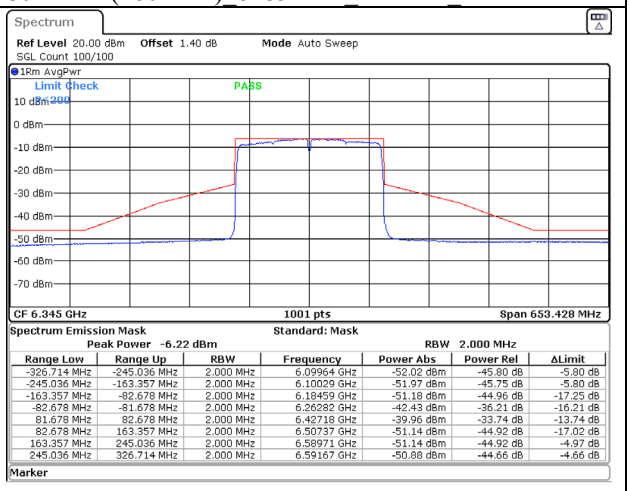
802.11ax (160MHz)_6185MHz_Chain C_NSS-2



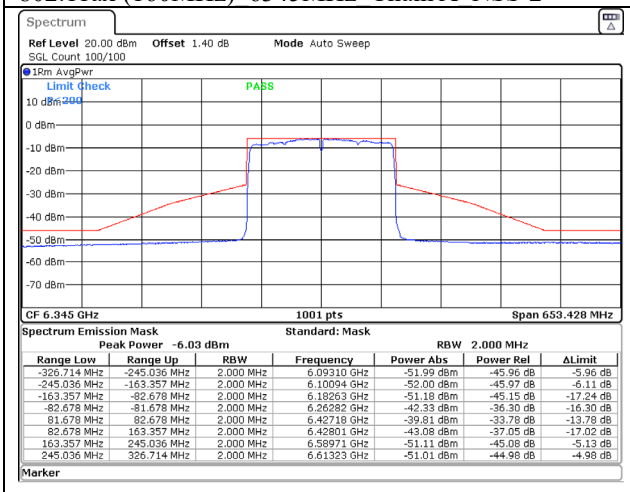
802.11ax (160MHz)_6185MHz_Chain D_NSS-2



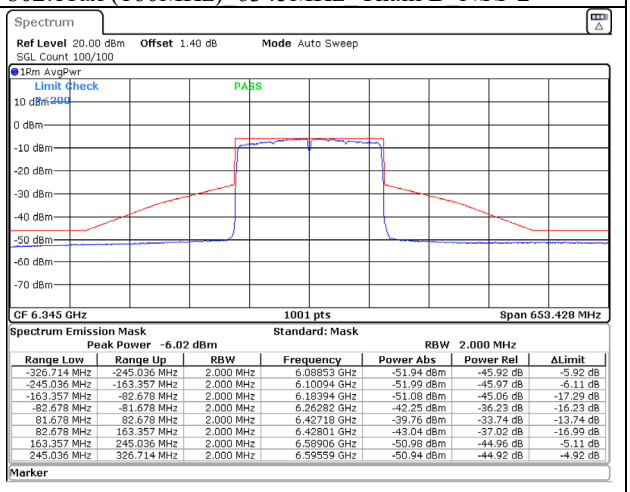
802.11ax (160MHz)_6345MHz_Chain A_NSS-2



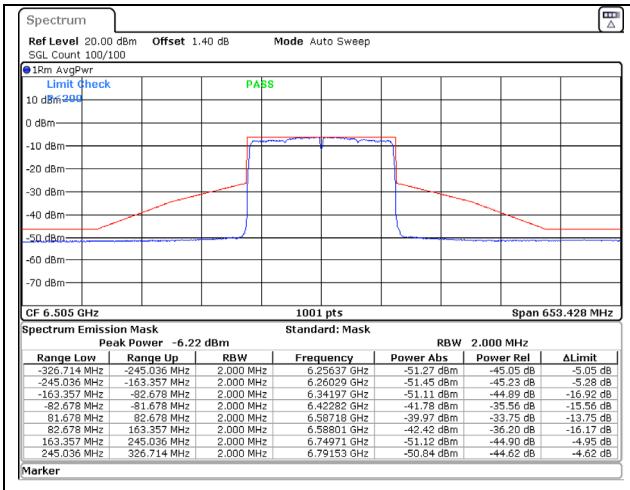
802.11ax (160MHz)_6345MHz_Chain B_NSS-2



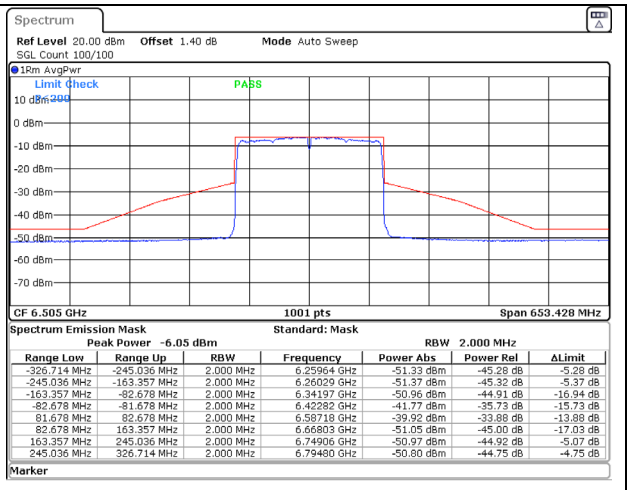
802.11ax (160MHz)_6345MHz_Chain C_NSS-2



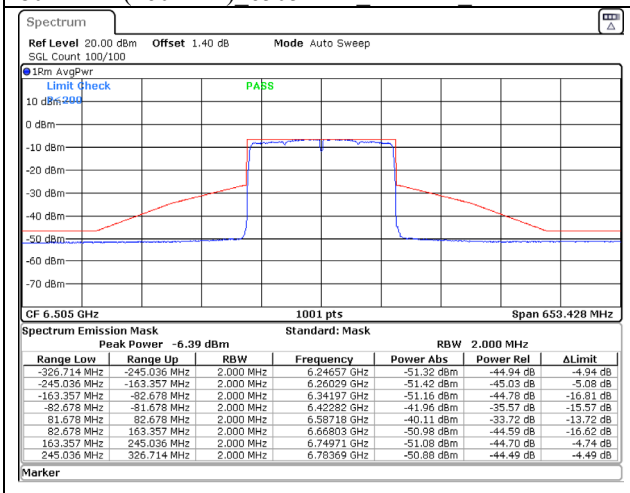
802.11ax (160MHz)_6345MHz_Chain D_NSS-2



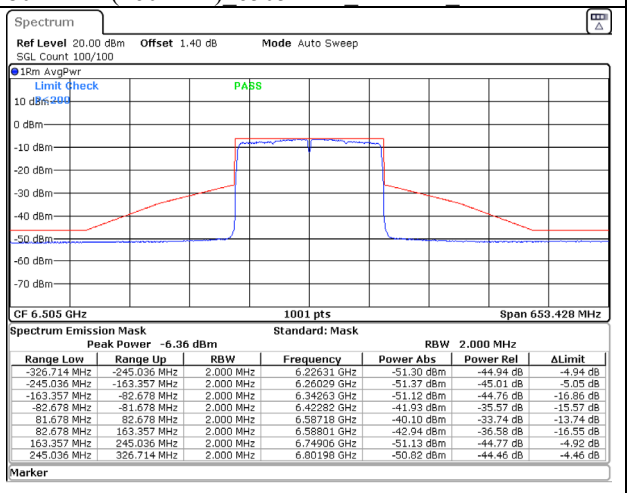
802.11ax (160MHz)_6505MHz_Chain A_NSS-2



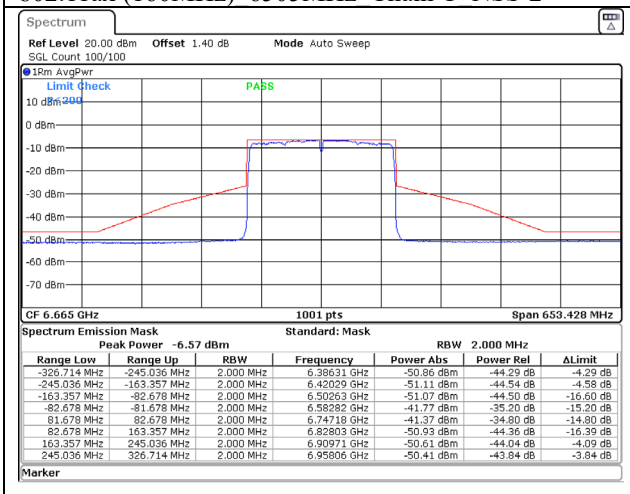
802.11ax (160MHz)_6505MHz_Chain B_NSS-2



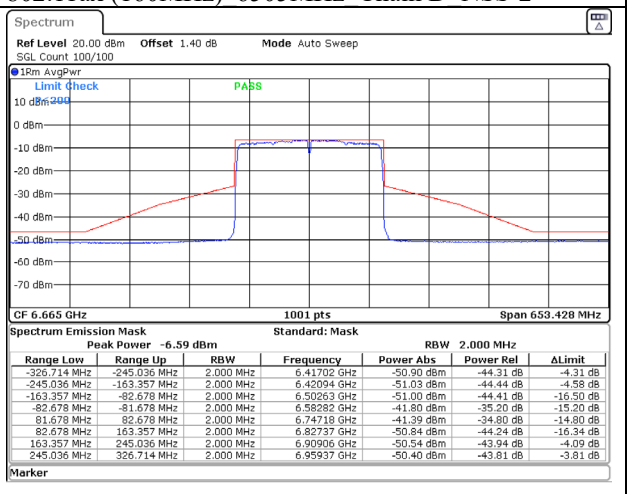
802.11ax (160MHz)_6505MHz_Chain C_NSS-2



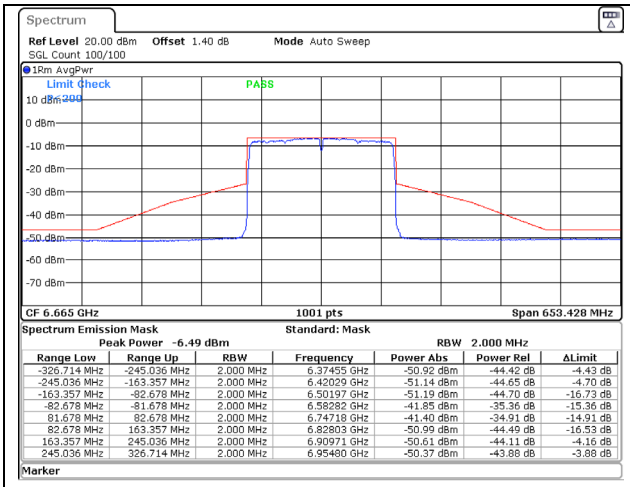
802.11ax (160MHz)_6505MHz_Chain D_NSS-2



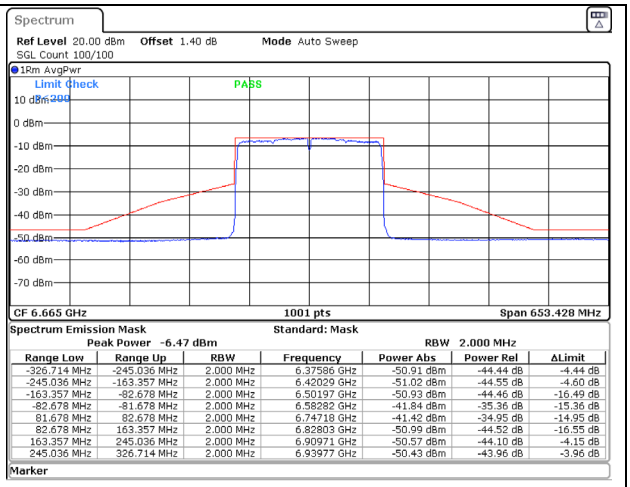
802.11ax (160MHz)_6665MHz_Chain A_NSS-2



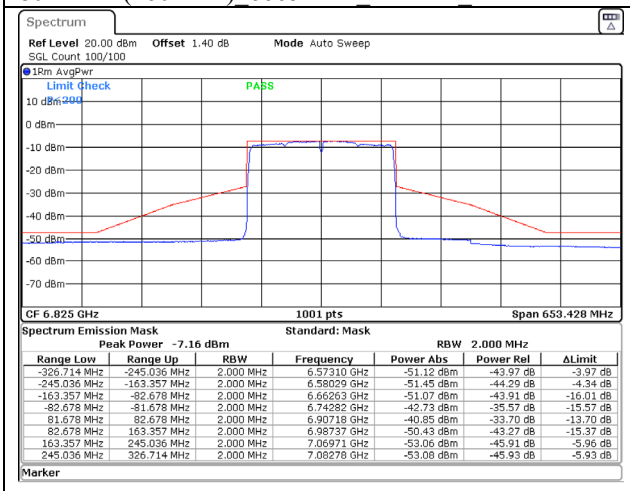
802.11ax (160MHz)_6665MHz_Chain B_NSS-2



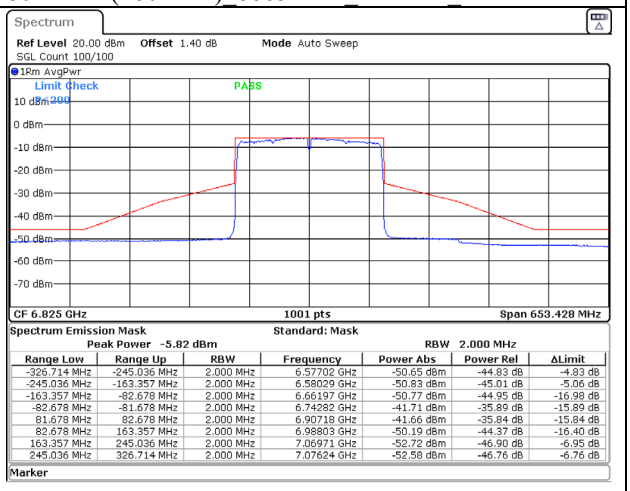
802.11ax (160MHz)_6665MHz_Chain C_NSS-2



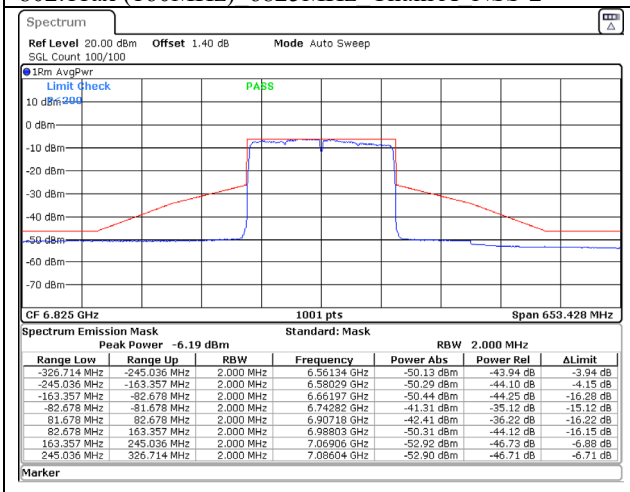
802.11ax (160MHz)_6665MHz_Chain D_NSS-2



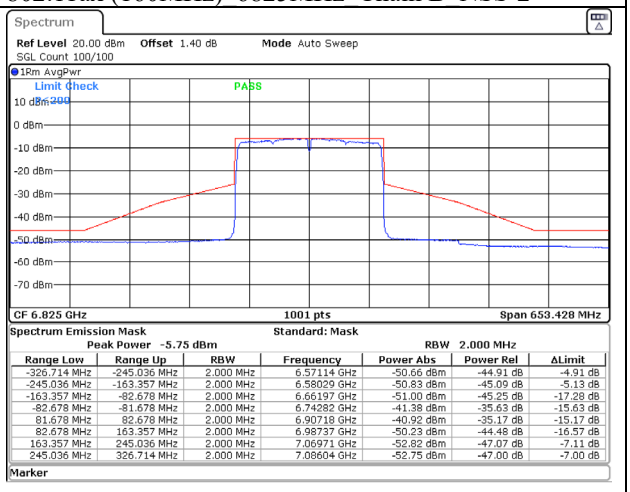
802.11ax (160MHz)_6825MHz_Chain A_NSS-2



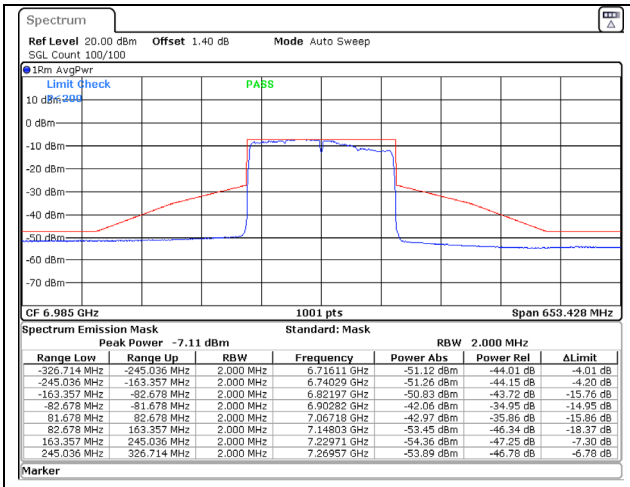
802.11ax (160MHz)_6825MHz_Chain B_NSS-2



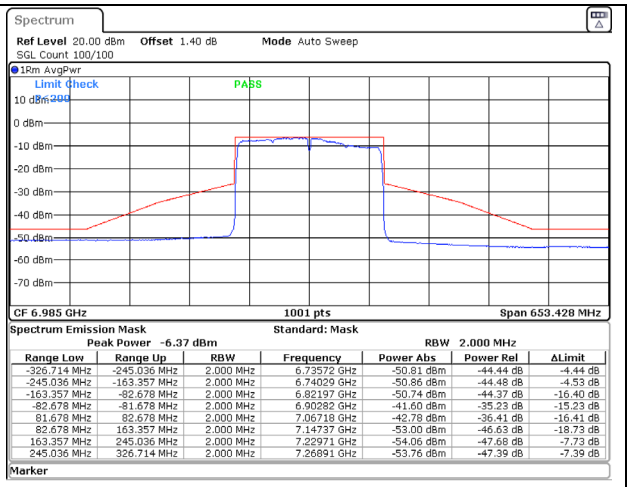
802.11ax (160MHz)_6825MHz_Chain C_NSS-2



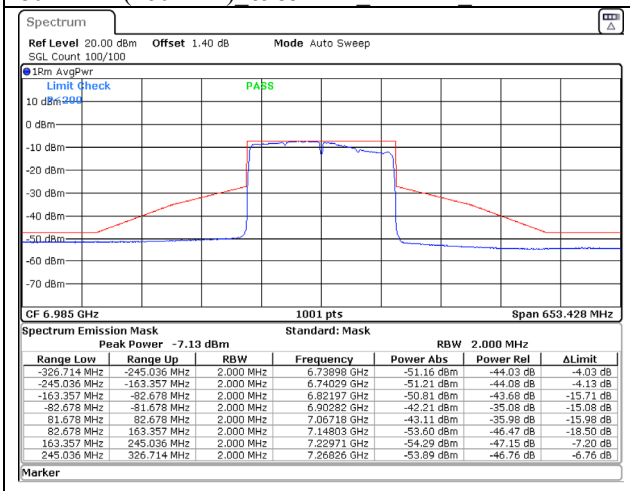
802.11ax (160MHz)_6825MHz_Chain D_NSS-2



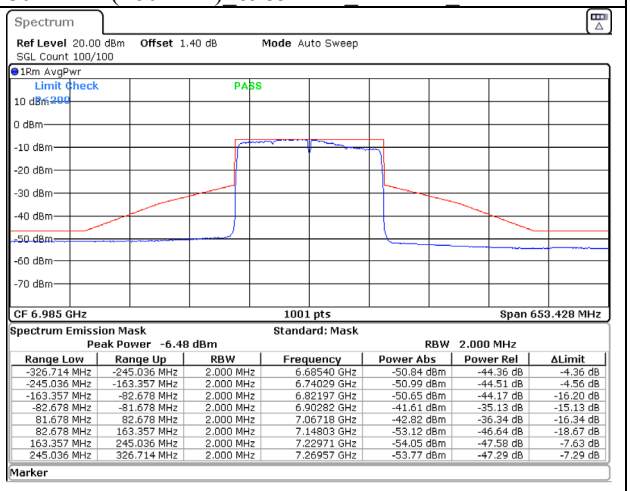
802.11ax (160MHz)_6985MHz_Chain A_NSS-2



802.11ax (160MHz)_6985MHz_Chain B_NSS-2



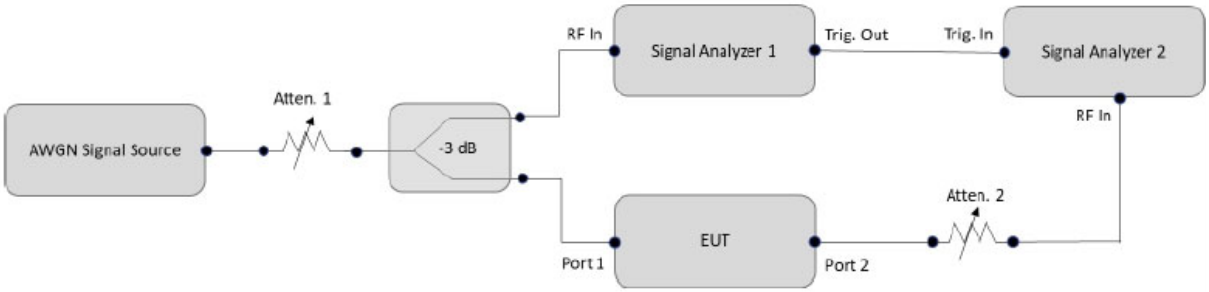
802.11ax (160MHz)_6985MHz_Chain C_NSS-2



802.11ax (160MHz)_6985MHz_Chain D_NSS-2

9. Contention Based Protocol

9.1. Test Setup



9.2. 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.

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
$BW_{EUT} \leqq BW_{Inc}$	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.

9.4. Test Result of Contention Based Protocol

Product : Wireless-AXE11000 Tri-band Gigabit Router,
ROG Rapture Tri-band Gaming Router,
ROG Rapture GT-AXE11000 tri-band Gaming Router,
WiFi 6E ROG Rapture GT-AXE11000 Tri-band Gaming Router
Test Item : Contention Based Protocol
Test Date : 2023/03/31

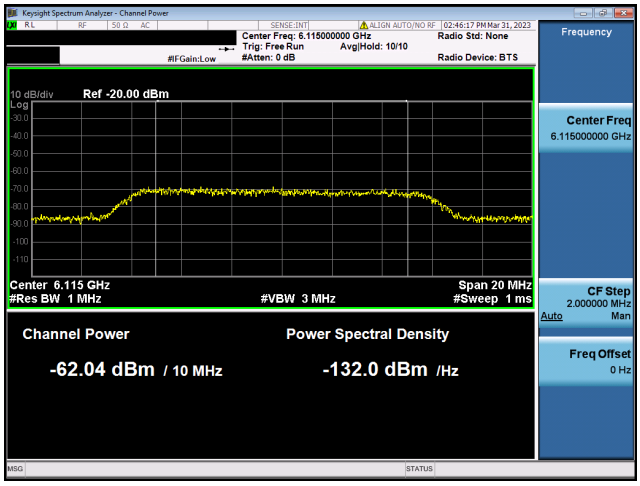
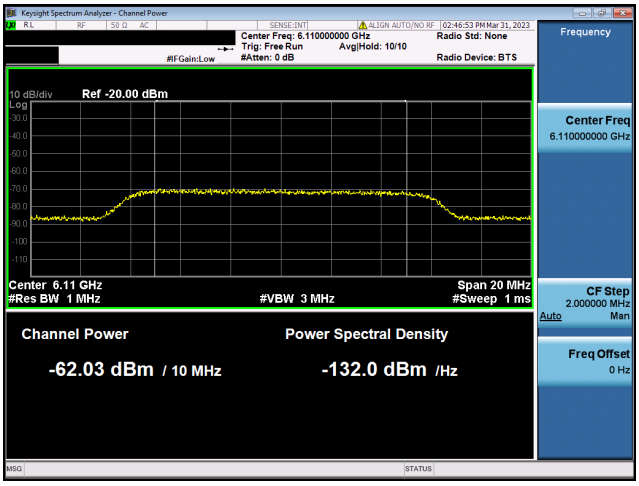
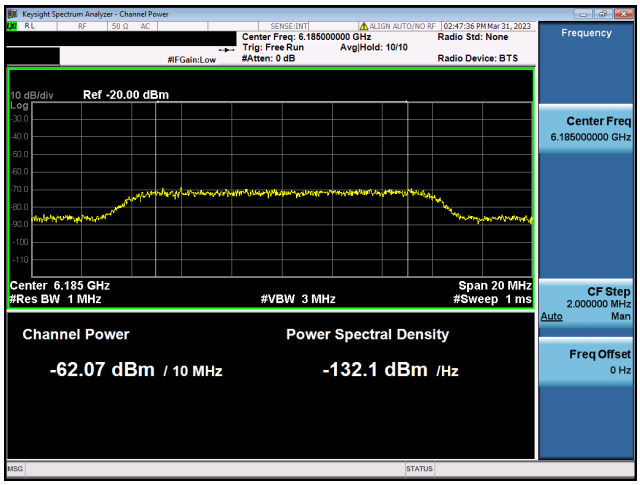
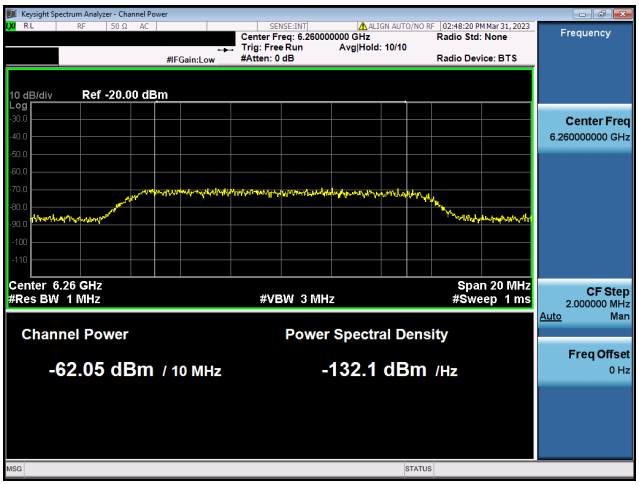
For U-NII-5 band

Contention Based Protocol Measurement										
Measurement Mode		Conducted measurement			Device Type		Indoor AP			
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	33	6115	6115	10	10	100%	90%	Pass
		160MHz	47	6185	6110	10	10	100%	90%	Pass
					6185	10	10	100%	90%	Pass
					6260	10	10	100%	90%	Pass

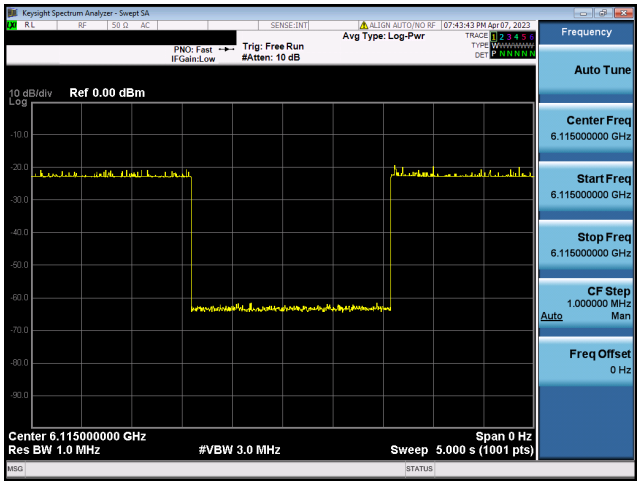
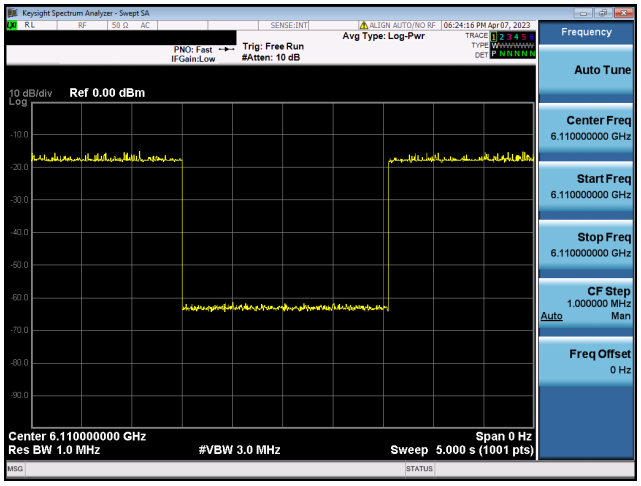
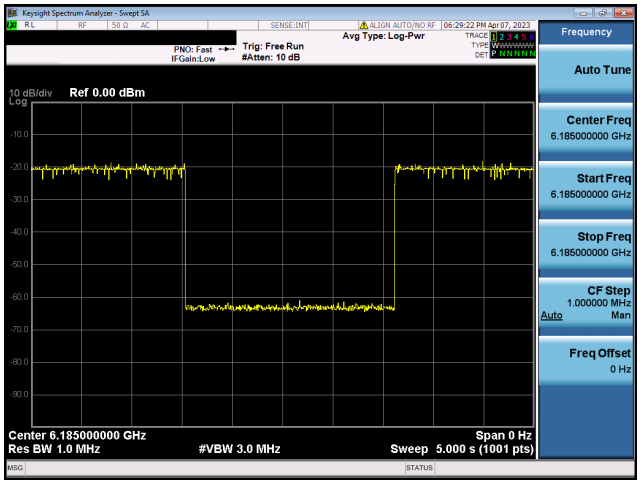
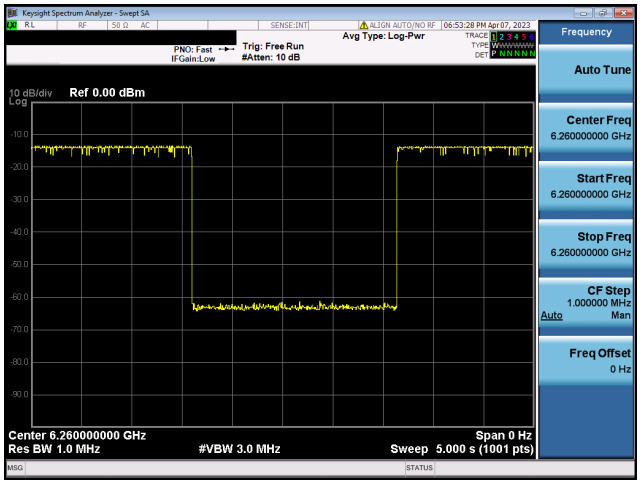
Lowest Interference (AWGN) Level Check							
Operation Band	Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Frequency (MHz)	AWGN Signals Frequency (MHz)	Threshold Level (dBm)	EUT Status
U-NII 5	802.11ax	20MHz	33	6115	6115	-62	OFF
						-65	Minimal
						-66	ON
		160MHz	47	6185	6110	-62	OFF
						-64	Minimal
						-65	ON
					6185	-62	OFF
						-63	Minimal
						-64	ON
					6260	-62	OFF
						-63	Minimal
						-64	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, gain 3.56 dBi is the lowest of the available antenna.
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.

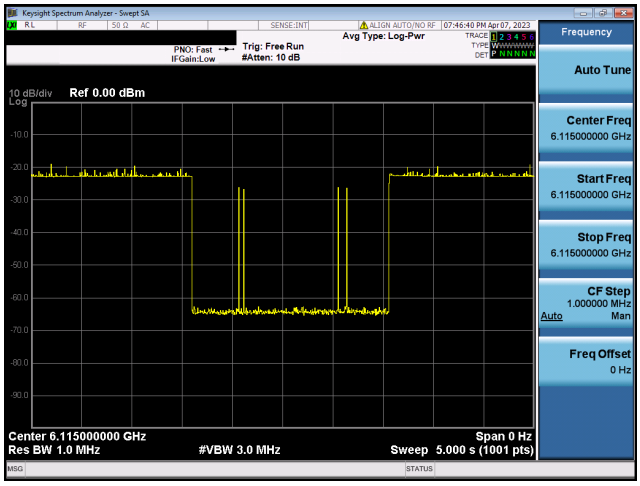
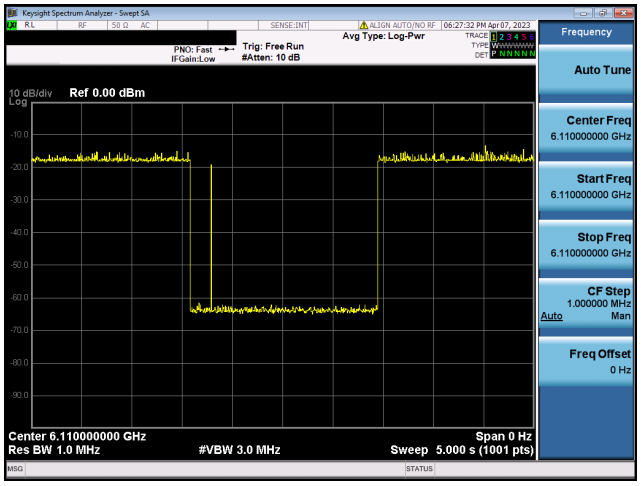
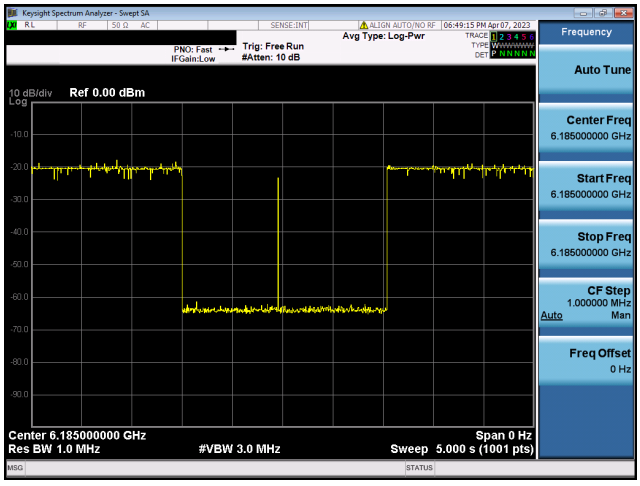
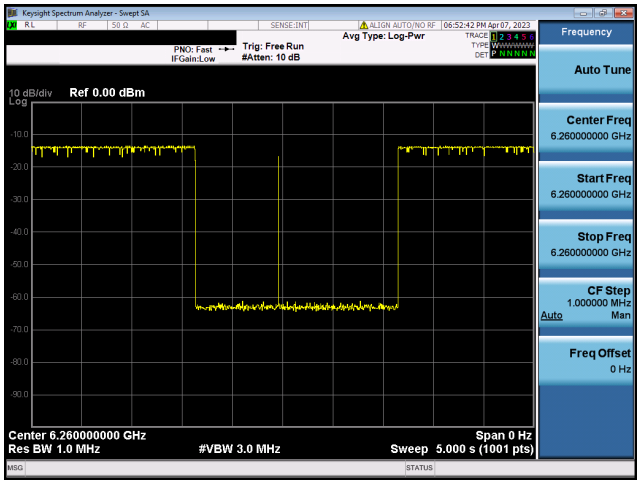
Plots of shows Incumbent signal level	
802.11ax (20MHz) / 6115MHz	802.11ax (160MHz) / 6110MHz (Lower Edge)
	
802.11ax (160MHz) / 6185MHz (Middle)	802.11ax (160MHz) / 6260MHz (Upper Edge)
	

Note: The Incumbent Signal Level is -62 dBm.

Plots of EUT ceased transmission in the time domain (Status Off)	
802.11ax (20MHz) / 6115MHz	802.11ax (160MHz) / 6110MHz (Low Edge - 6110MHz)
	
802.11ax (160MHz) / 6185MHz (Middle - 6185MHz)	802.11ax (160MHz) / 6260MHz (High Edge - 6260MHz)
	

Note:

1. 6115 MHz Threshold Level is -62 dBm.
2. 6110 MHz Threshold Level is -62 dBm.
3. 6185 MHz Threshold Level is -62 dBm.
4. 6260 MHz Threshold Level is -62 dBm.

Plots of Start transmitting (Status Minimal)	
802.11ax (20MHz) / 6115MHz	802.11ax (160MHz) / 6110MHz (Low Edge - 6110MHz)
	
802.11ax (160MHz) / 6185MH (Middle - 6185MHz)	802.11ax (160MHz) / 6260MHz (High Edge - 6260MHz)
	

Note:

1. 6115 MHz Threshold Level is -65 dBm.
2. 6110 MHz Threshold Level is -64 dBm.
3. 6185 MHz Threshold Level is -63 dBm.
4. 6260 MHz Threshold Level is -63 dBm.

Product	:	Wireless-AXE11000 Tri-band Gigabit Router, ROG Rapture Tri-band Gaming Router, ROG Rapture GT-AXE11000 tri-band Gaming Router, WiFi 6E ROG Rapture GT-AXE11000 Tri-band Gaming Router
Test Item	:	Contention Based Protocol
Test Date	:	2023/03/31

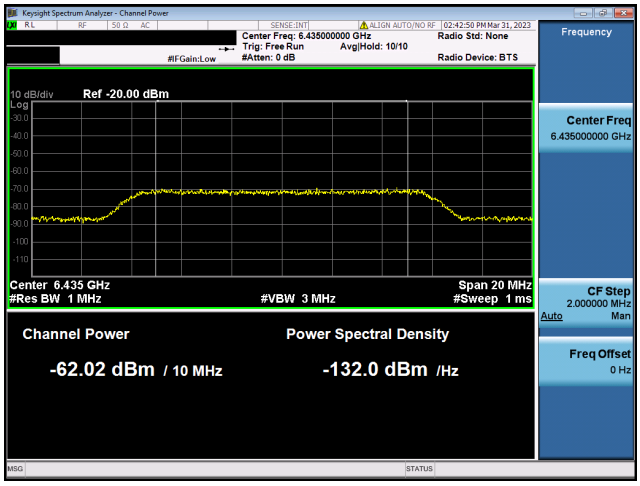
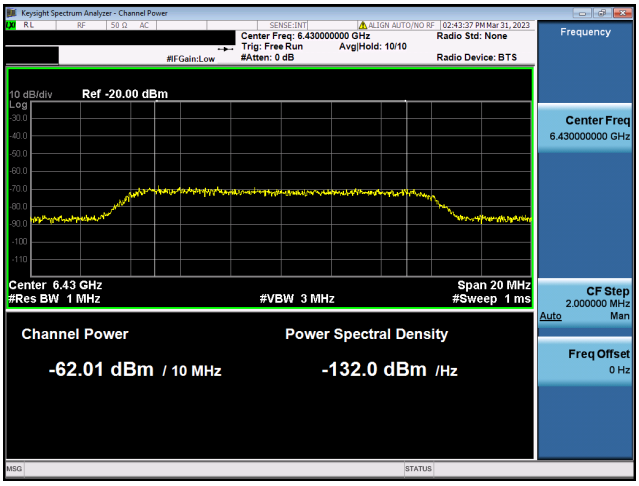
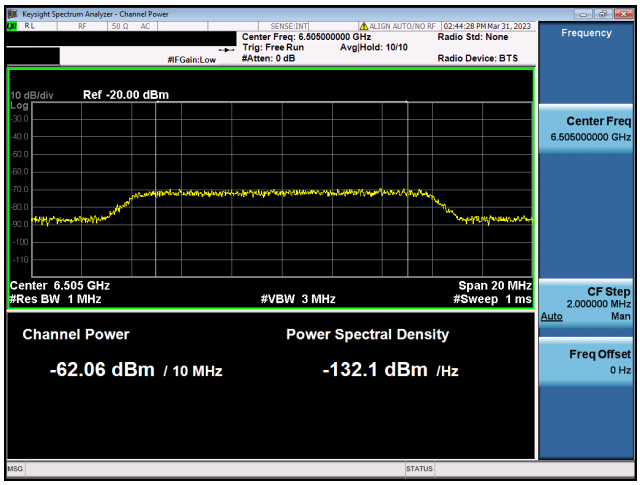
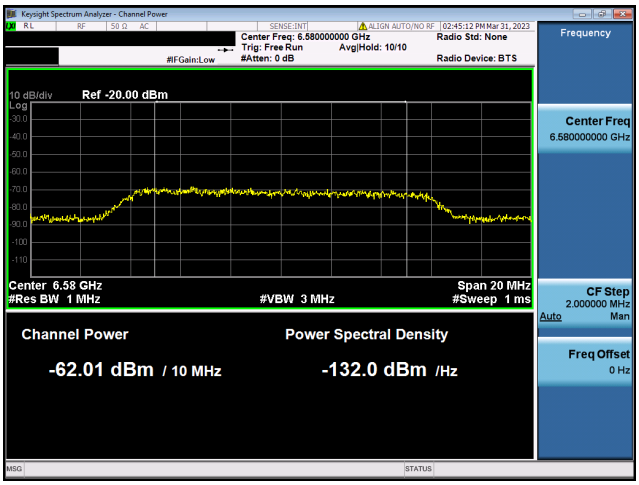
For U-NII-6 band

Contention Based Protocol Measurement										
Measurement Mode		Conducted measurement			Device Type		Indoor AP			
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

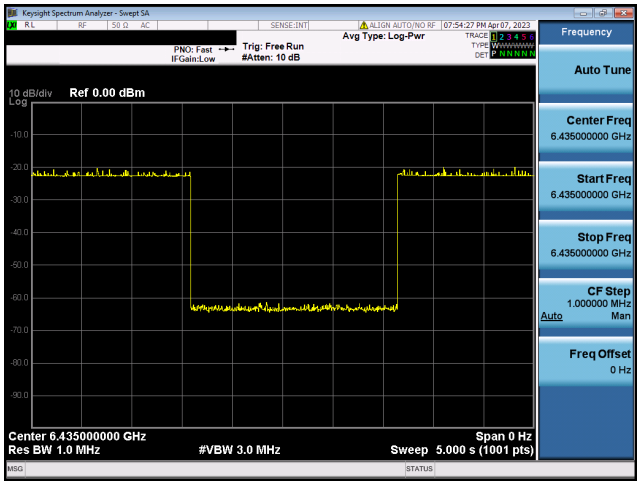
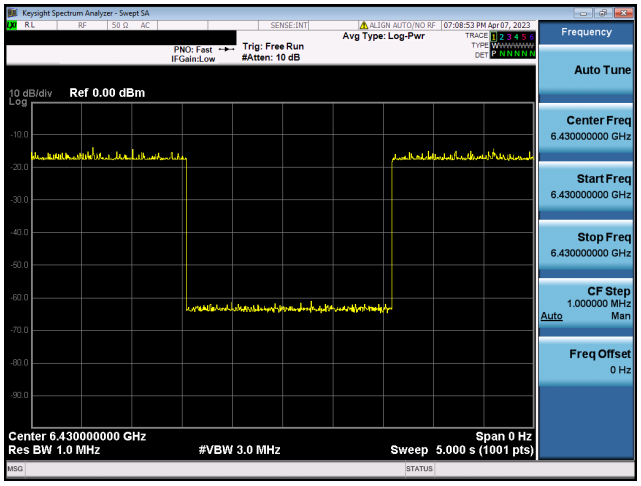
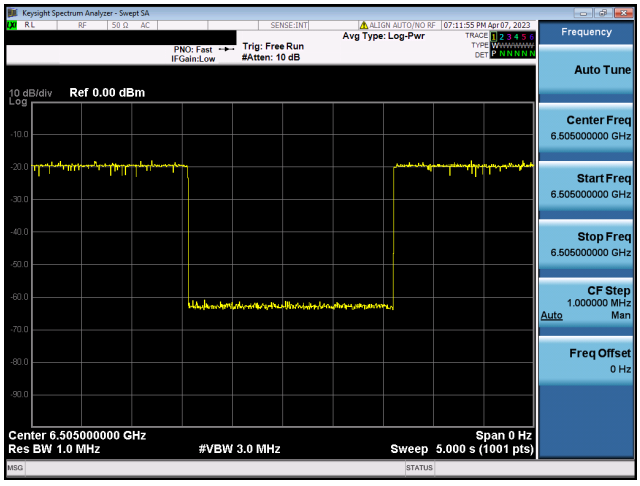
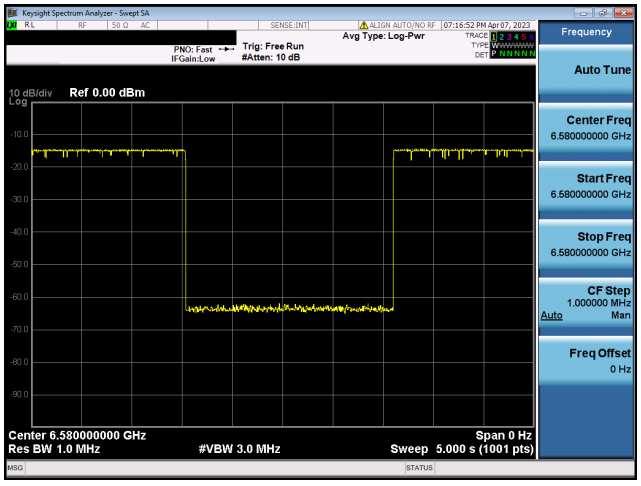
Lowest Interference (AWGN) Level Check							
Operation Band	Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Frequency (MHz)	AWGN Signals Frequency (MHz)	Threshold Level (dBm)	EUT Status
U-NII 6	802.11ax	20MHz	97	6435	6435	-62	OFF
						-65	Minimal
						-66	ON
		160MHz	111	6505	6430	-62	OFF
						-63	Minimal
						-64	ON
					6505	-62	OFF
						-64	Minimal
						-65	ON
					6580	-62	OFF
						-63	Minimal
						-64	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, gain 3.56 dBi is the lowest of the available antenna.
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.

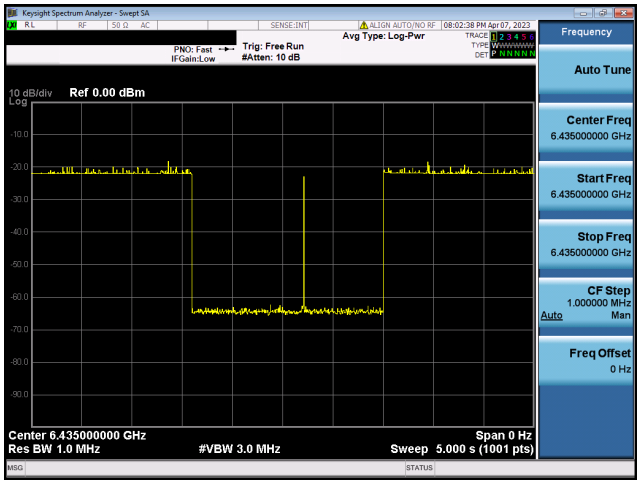
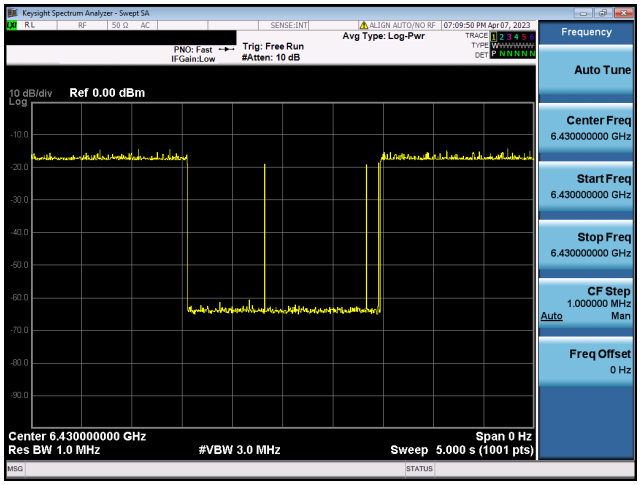
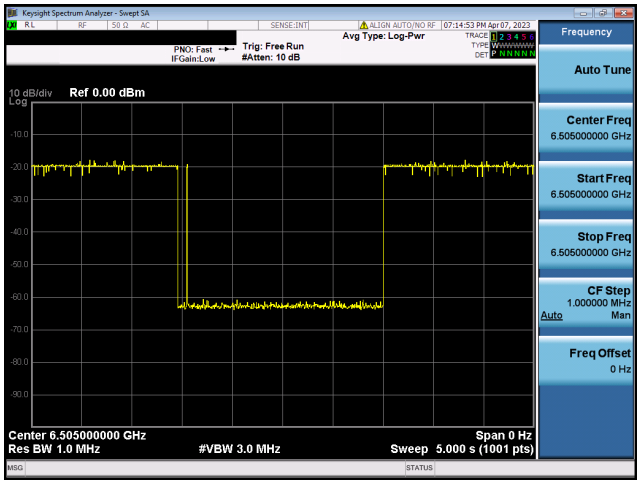
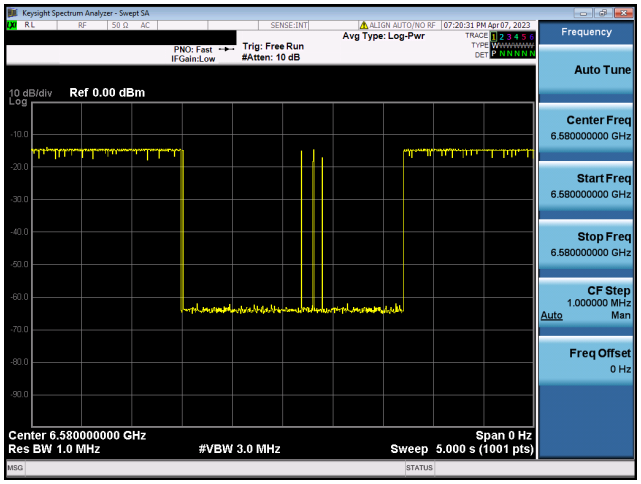
Plots of shows Incumbent signal level	
802.11ax (20MHz) / 6435MHz	802.11ax (160MHz) / 6430MHz(Lower Edge)
	
802.11ax (160MHz) / 6505MHz (Middle)	802.11ax (160MHz) / 6580MHz (Upper Edge)
	

Note: The Incumbent Signal Level is -62 dBm.

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

Note:

1. 6435 MHz Threshold Level is -62 dBm.
2. 6430 MHz Threshold Level is -62 dBm.
3. 6505 MHz Threshold Level is -62 dBm.
4. 6580 MHz Threshold Level is -62 dBm.

Plots of Start transmitting (Status Minimal)	
802.11ax (20MHz) / 6435MHz	802.11ax (160MHz) / 6430MHz (Low Edge - 6430MHz)
	
802.11ax (160MHz) / 6505MHz (Middle - 6505MHz)	802.11ax (160MHz) / 6580MHz (High Edge - 6580MHz)
	

Note:

1. 6435 MHz Threshold Level is -65 dBm.
2. 6430 MHz Threshold Level is -63 dBm.
3. 6505 MHz Threshold Level is -64 dBm.
4. 6580 MHz Threshold Level is -63 dBm.

Product : Wireless-AXE11000 Tri-band Gigabit Router,
ROG Rapture Tri-band Gaming Router,
ROG Rapture GT-AXE11000 tri-band Gaming Router,
WiFi 6E ROG Rapture GT-AXE11000 Tri-band Gaming Router
Test Item : Contention Based Protocol
Test Date : 2023/03/31

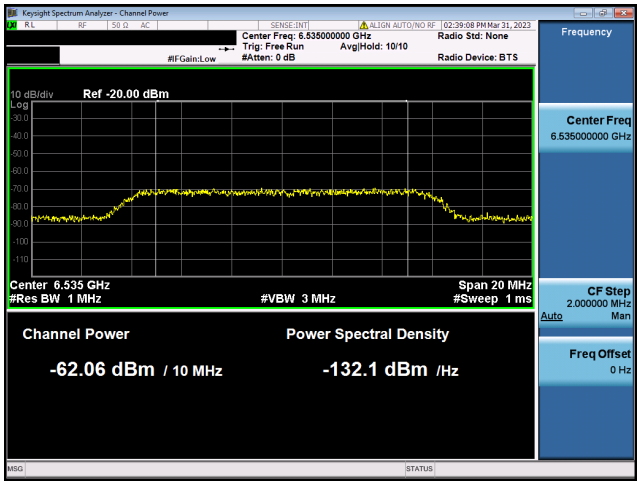
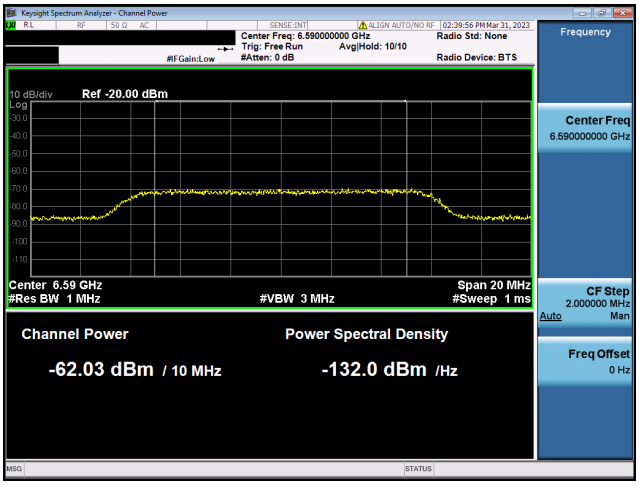
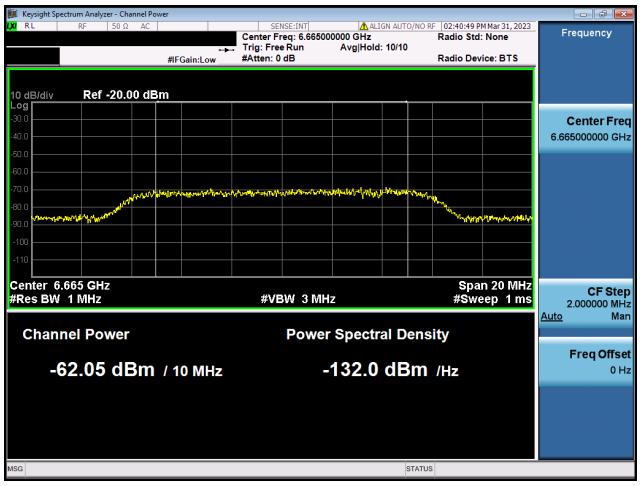
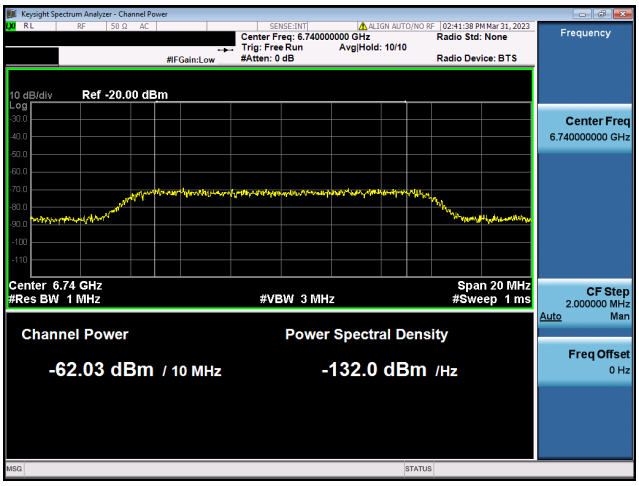
For U-NII-7 band

Contention Based Protocol Measurement										
Measurement Mode		Conducted measurement			Device Type		Indoor AP			
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 7	802.11ax	20MHz	117	6535	6535	10	10	100%	90%	Pass
		160MHz	143	6665	6590	10	10	100%	90%	Pass
					6665	10	10	100%	90%	Pass
					6740	10	10	100%	90%	Pass

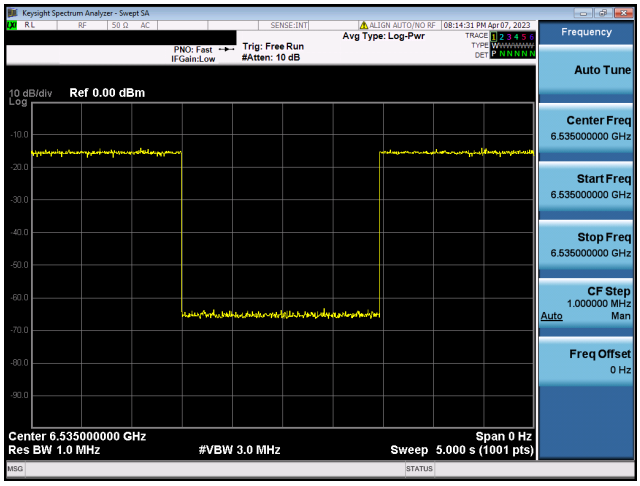
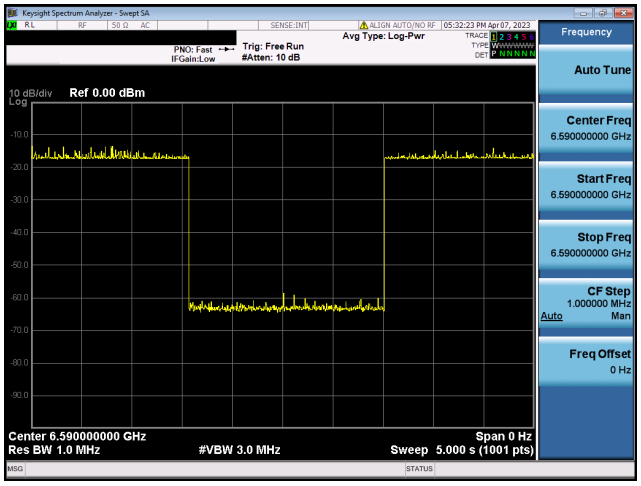
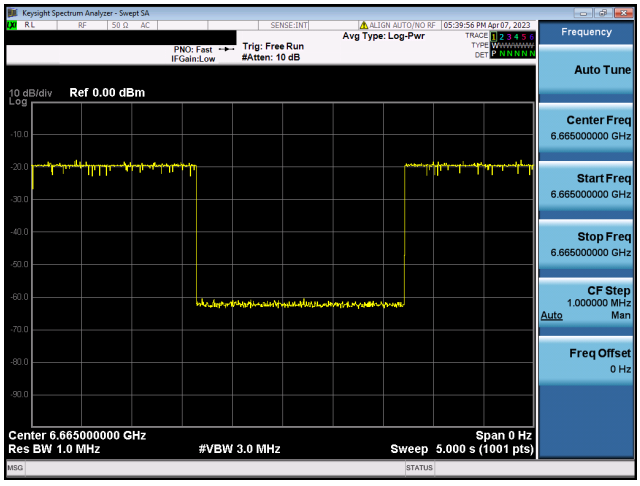
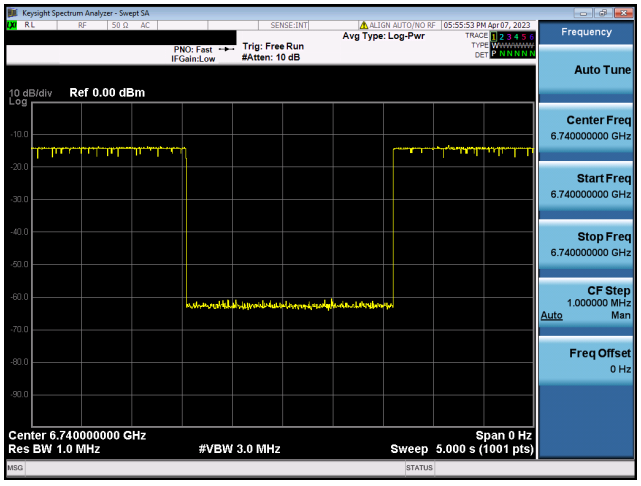
Lowest Interference (AWGN) Level Check							
Operation Band	Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Frequency (MHz)	AWGN Signals Frequency (MHz)	Threshold Level (dBm)	EUT Status
U-NII 7	802.11ax	20MHz	117	6535	6535	-66	OFF
						-68	Minimal
						-69	ON
		160MHz	143	6665	6590	-62	OFF
						-63	Minimal
						-64	ON
					6665	-62	OFF
						-64	Minimal
						-65	ON
					6740	-62	OFF
						-63	Minimal
						-64	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, gain 3.56 dBi is the lowest of the available antenna.
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.

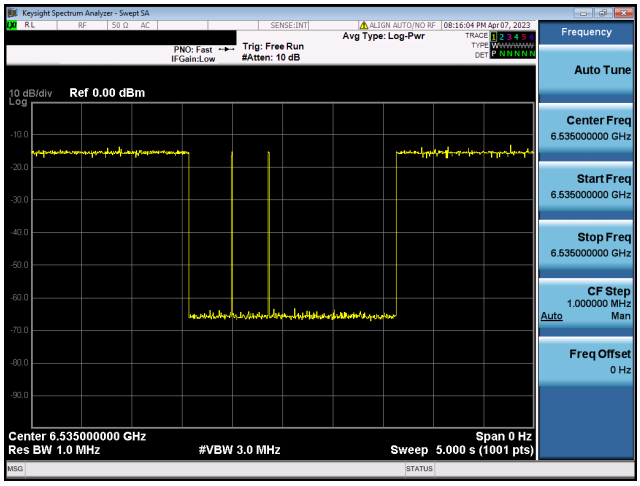
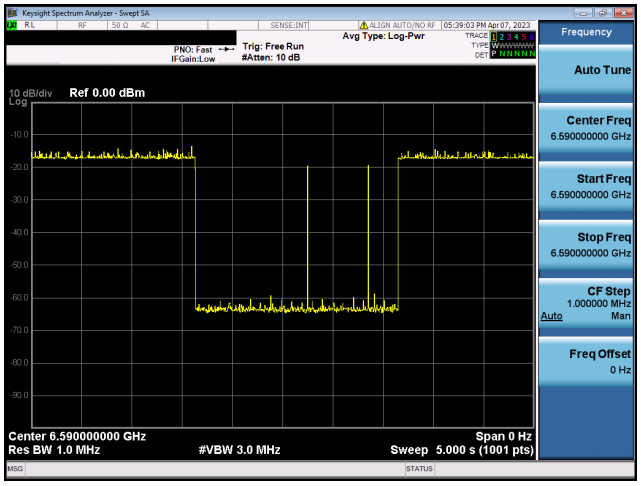
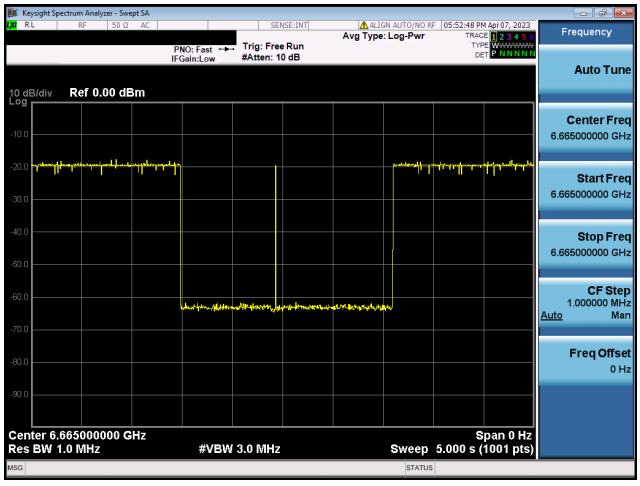
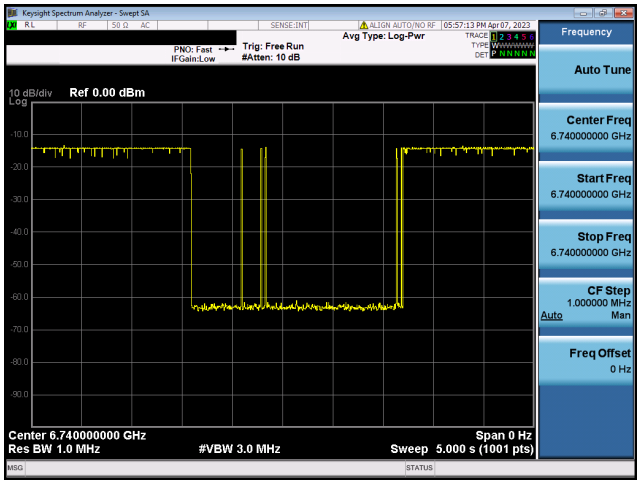
Plots of shows Incumbent signal level	
802.11ax (20MHz) / 6535MHz	802.11ax (160MHz) / 6590MHz (Lower Edge)
	
802.11ax (160MHz) / 6665MHz (Middle)	802.11ax (160MHz) / 6740MHz (Upper Edge)
	

Note: The Incumbent Signal Level is -62 dBm.

Plots of EUT ceased transmission in the time domain (Status Off)	
802.11ax (20MHz) / 6535MHz	802.11ax (160MHz) / 6590MHz (Low Edge - 6590MHz)
	
802.11ax (160MHz) / 6665MHz (Middle - 6665MHz)	802.11ax (160MHz) / 6740MHz (High Edge - 6740MHz)
	

Note:

1. 6535 MHz Threshold Level is -66 dBm.
2. 6590 MHz Threshold Level is -62 dBm.
3. 6665 MHz Threshold Level is -62 dBm.
4. 6740 MHz Threshold Level is -62 dBm.

Plots of Start transmitting (Status Minimal)	
802.11ax (20MHz) / 6535MHz	802.11ax (160MHz) / 6590MHz (Low Edge - 6590MHz)
	
802.11ax (160MHz) / 6665MHz (Middle - 6665MHz)	802.11ax (160MHz) / 6740MHz (High Edge - 6740MHz)
	

Note:

1. 6535 MHz Threshold Level is -68 dBm.
2. 6590 MHz Threshold Level is -63 dBm.
3. 6665 MHz Threshold Level is -64 dBm.
4. 6740 MHz Threshold Level is -63 dBm.

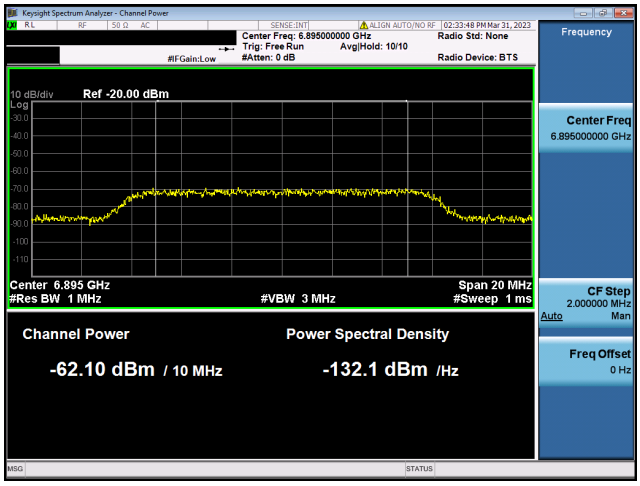
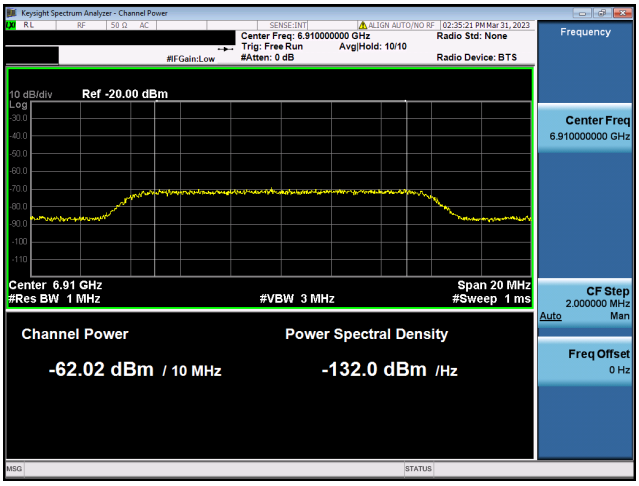
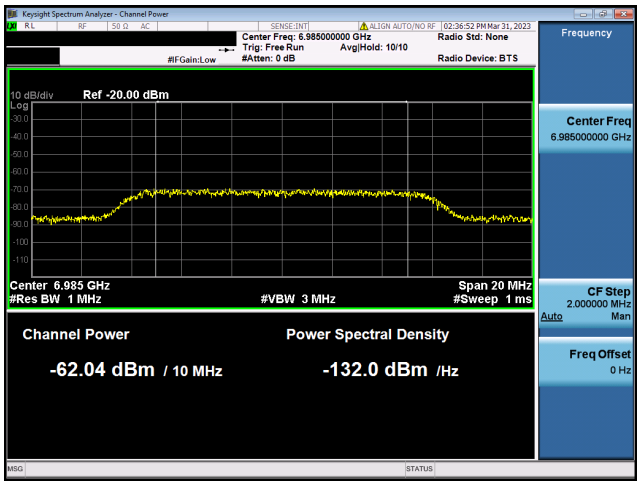
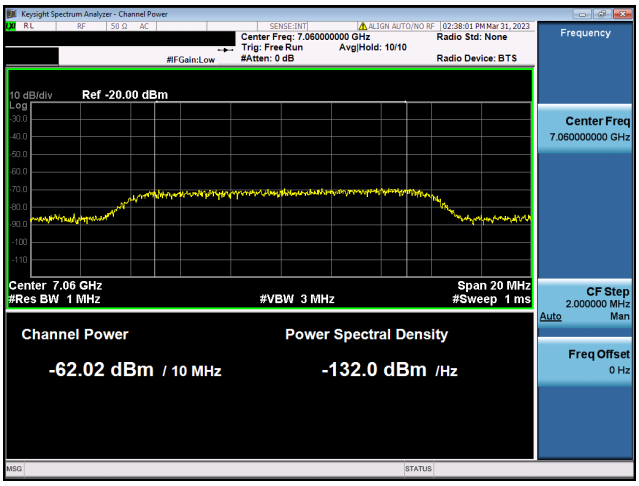
Product : Wireless-AXE11000 Tri-band Gigabit Router,
ROG Rapture Tri-band Gaming Router,
ROG Rapture GT-AXE11000 tri-band Gaming Router,
WiFi 6E ROG Rapture GT-AXE11000 Tri-band Gaming Router
Test Item : Contention Based Protocol
Test Date : 2023/03/31

For U-NII-8 band

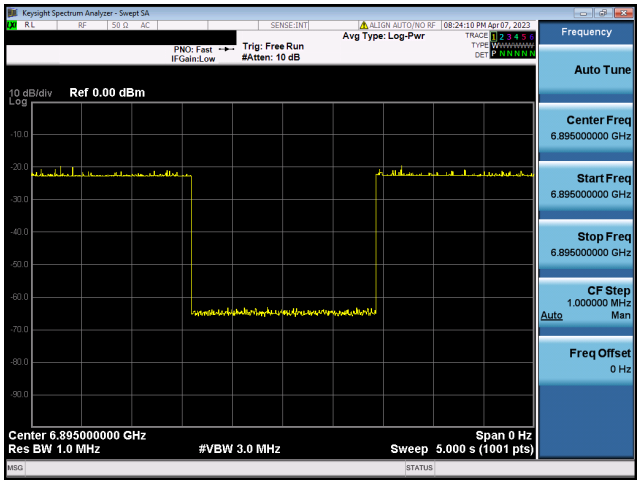
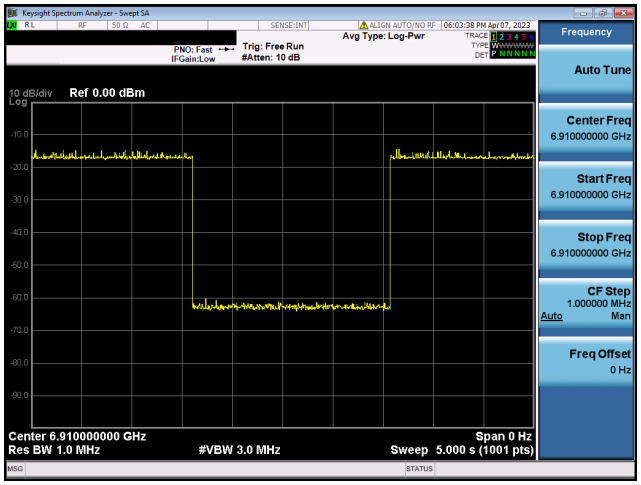
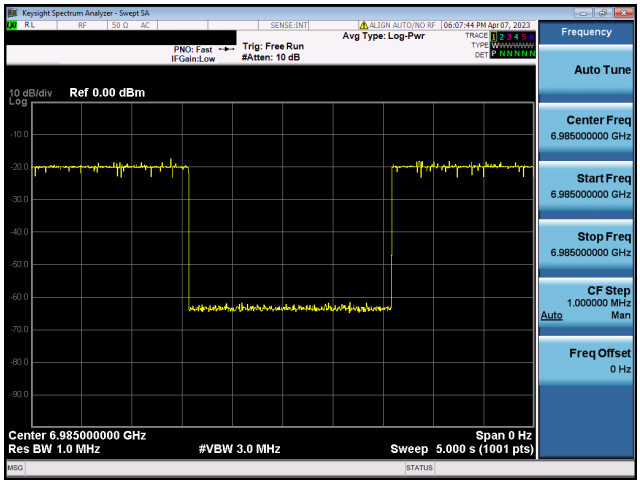
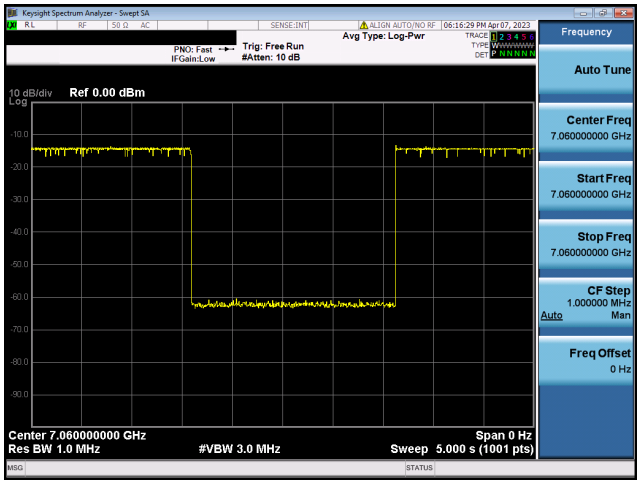
Contention Based Protocol Measurement										
Measurement Mode		Conducted measurement			Device Type		Indoor AP			
The Incumbent Signal (AWGN) Level (dBm)		-62 dBm (at the antenna connector)								
Operation Band	Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Frequency (MHz)	Test Result					
					AWGN Signals Frequency (MHz)	Number of Times	Number of Detected	Detection Rate	Limit	Pass/ Fail
U-NII 8	802.11ax	20MHz	189	6895	6895	10	10	100%	90%	Pass
		160MHz	207	6985	6910	10	10	100%	90%	Pass
					6985	10	10	100%	90%	Pass
					7060	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 8	802.11ax	20MHz	189	6895	6895	-64	OFF
						-65	Minimal
						-66	ON
		160MHz	207	6985	6910	-62	OFF
						-64	Minimal
						-65	ON
					6985	-62	OFF
						-64	Minimal
						-65	ON
					7060	-62	OFF
						-63	Minimal
						-64	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, gain 3.56 dBi is the lowest of the available antenna.
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.

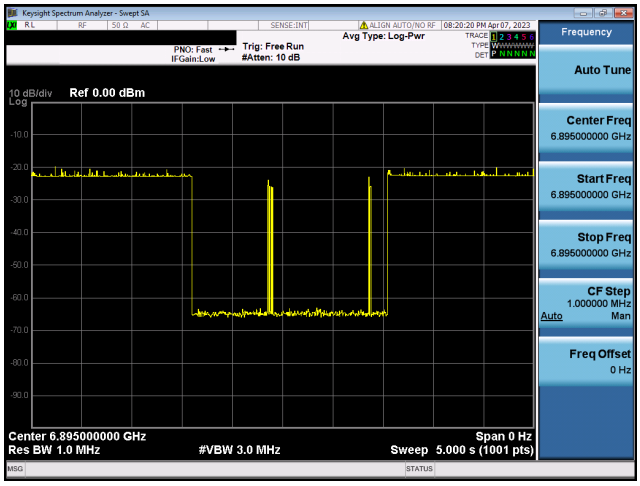
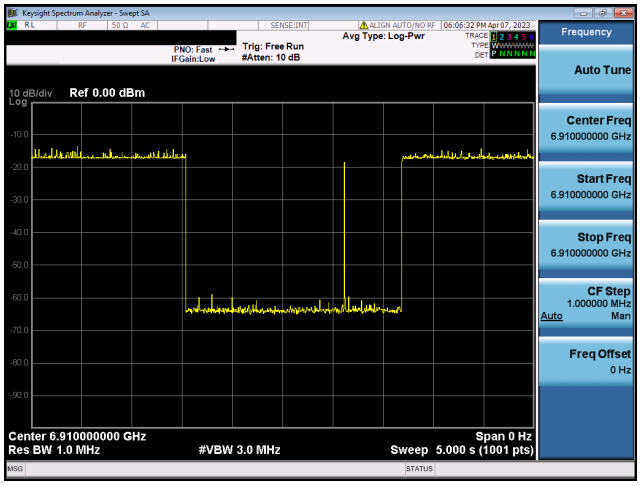
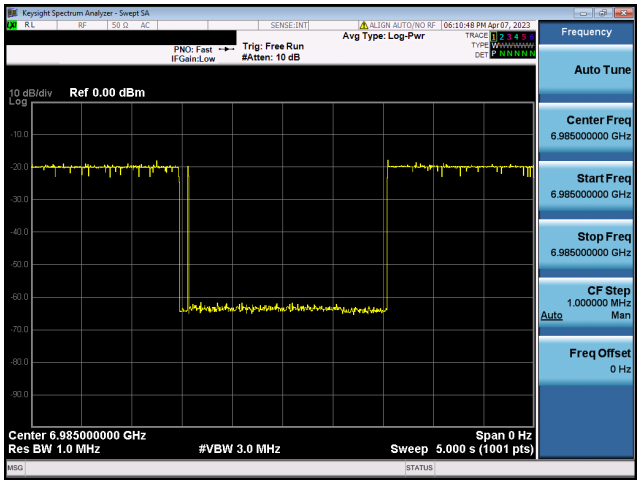
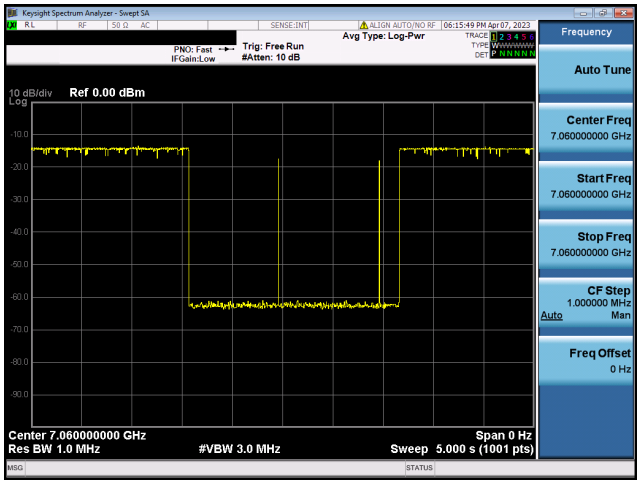
Plots of shows Incumbent signal level	
802.11ax (20MHz) / 6895MHz	802.11ax (160MHz) / 6910MHz (Lower Edge)
	
802.11ax (160MHz) / 6985MHz (Middle)	802.11ax (160MHz) / 7060MHz (Upper Edge)
	

Note: The Incumbent Signal Level is -62 dBm.

Plots of EUT ceased transmission in the time domain (Status Off)	
802.11ax (20MHz) / 6895MHz	802.11ax (160MHz) / 6910MHz (Low Edge - 6910MHz)
	
802.11ax (160MHz) / 6985MHz (Middle - 6985MHz)	802.11ax (160MHz) / 7060MHz (High Edge - 7060MHz)
	

Note:

1. 6895 MHz Threshold Level is -64 dBm.
2. 6910 MHz Threshold Level is -62 dBm.
3. 6985 MHz Threshold Level is -62 dBm.
4. 7060 MHz Threshold Level is -62 dBm.

Plots of Start transmitting (Status Minimal)	
802.11ax (20MHz) / 6895MHz	802.11ax (160MHz) / 6910MHz (Low Edge - 6910MHz)
	
802.11ax (160MHz) / 6985MHz (Middle - 6985MHz)	802.11ax (160MHz) / 7060MHz (High Edge - 7060MHz)
	

Note:

1. 6895 MHz Threshold Level is -65 dBm.
2. 6910 MHz Threshold Level is -64 dBm.
3. 6985 MHz Threshold Level is -64 dBm.
4. 7060 MHz Threshold Level is -63 dBm.

9.5. Duty Cycle

Product	:	Wireless-AXE11000 Tri-band Gigabit Router, ROG Rapture Tri-band Gaming Router, ROG Rapture GT-AXE11000 tri-band Gaming Router, WiFi 6E ROG Rapture GT-AXE11000 Tri-band Gaming Router
Test Item	:	Duty Cycle
Test Date	:	2023/04/07

Non-Beamforming_NSS-1

Mode	Time On (ms)	Time On + Time Off (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11 ax20	3.3007	3.3652	98.08	0.08
802.11 ax40	3.2464	3.3478	96.97	0.13
802.11 ax80	3.1594	3.2174	98.20	0.08
802.11 ax160	3.0000	3.0290	99.04	0.04

Note:

Offset = 20 log(1/duty cycle)

Accotding to KDB 789033

If power averaging (rms) mode was used in step (iv) above, the correction factor is 10 log (1/x), where x is the duty cycle. For example, if the transmit duty cycle was 50%, then 3 dB must be added to the measured emission levels.

If linear voltage averaging mode was used in step (iv) above, the correction factor is 20 log (1/x), where x is the duty cycle. For example, if the transmit duty cycle was 50%, then 6 dB must be added to the measured emission levels.