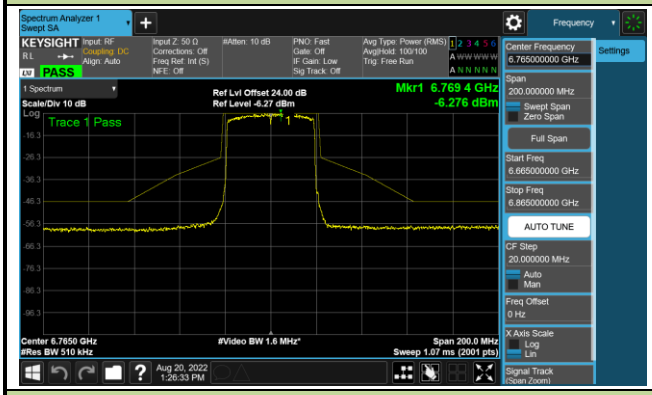
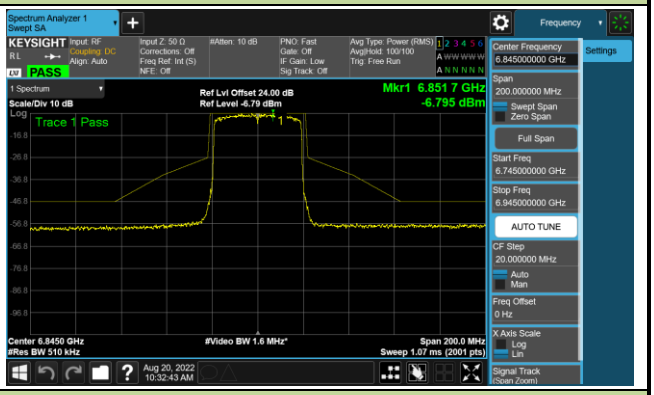
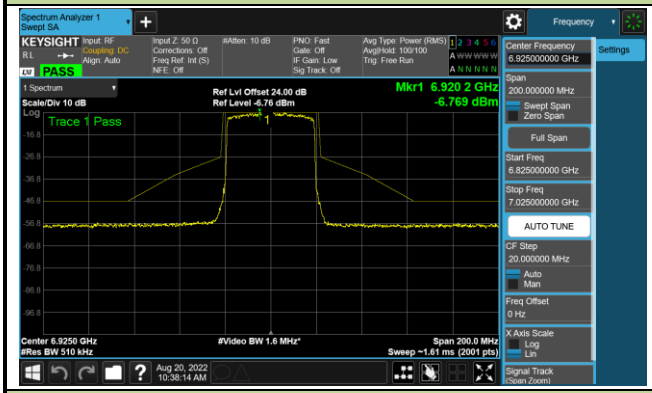
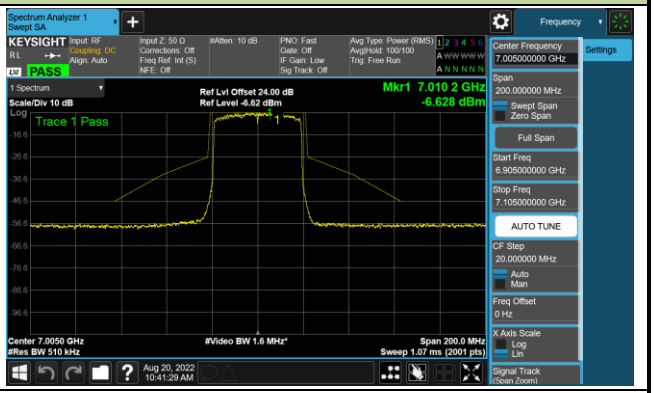
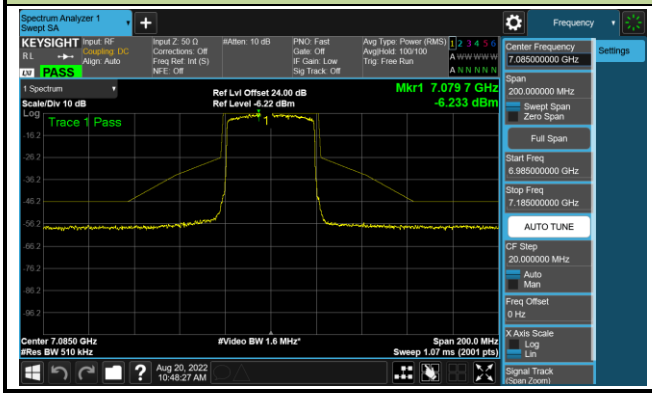
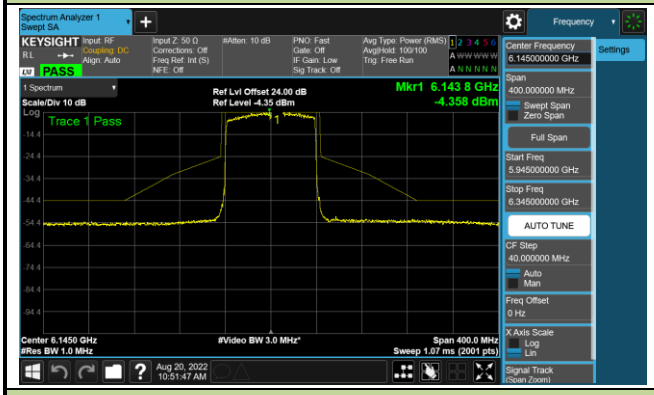
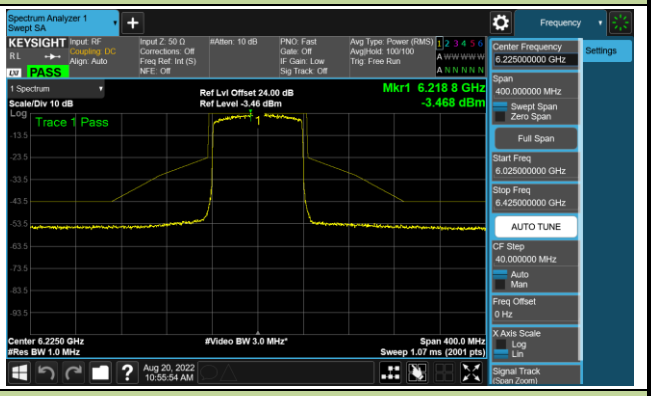
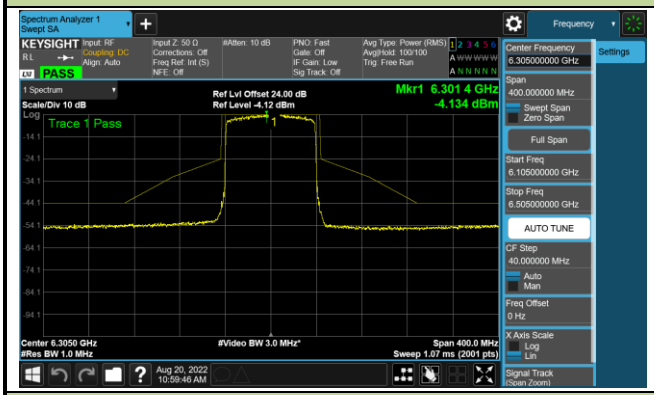
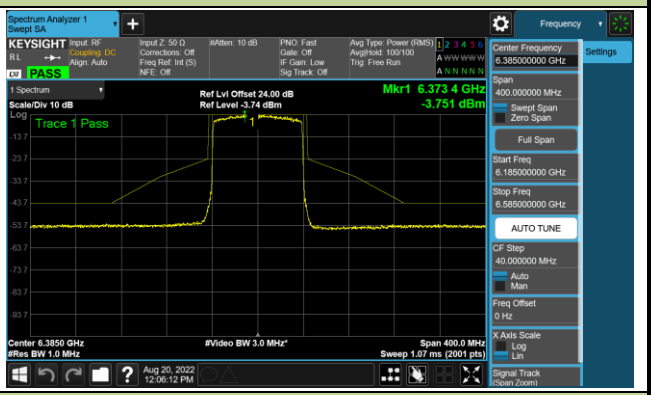
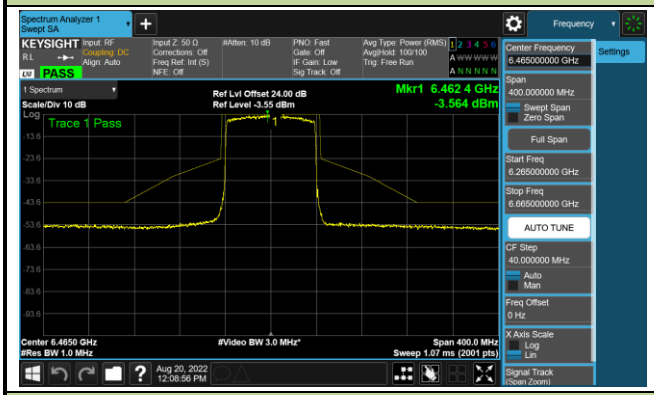
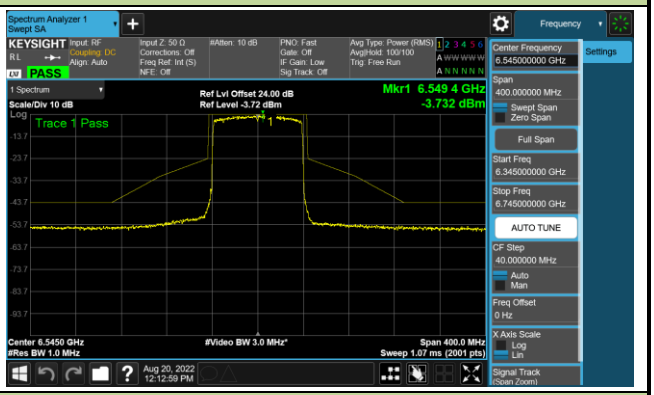
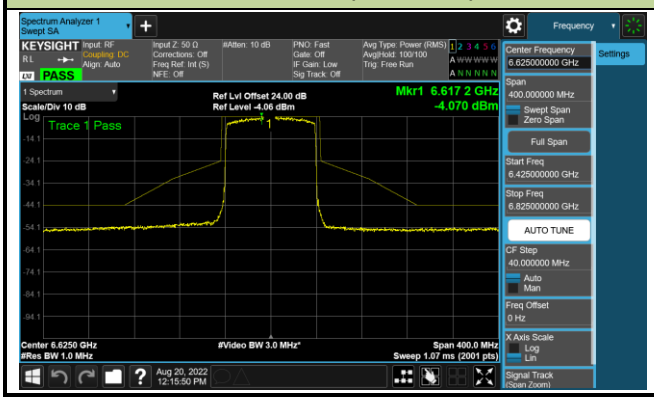
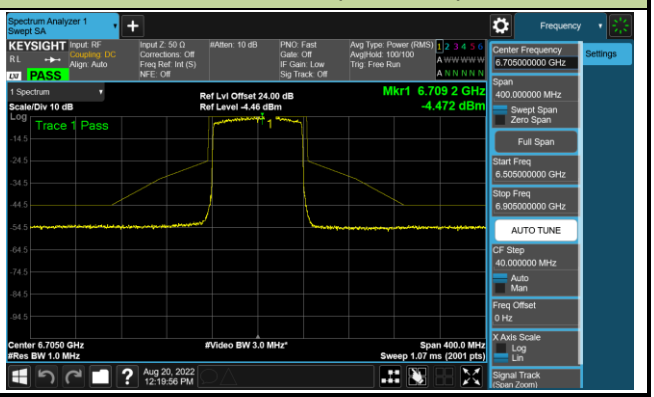
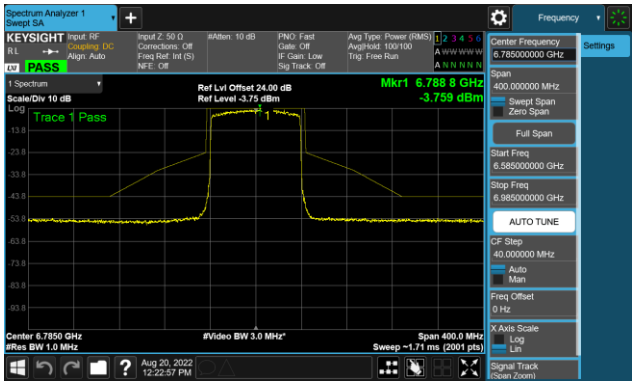
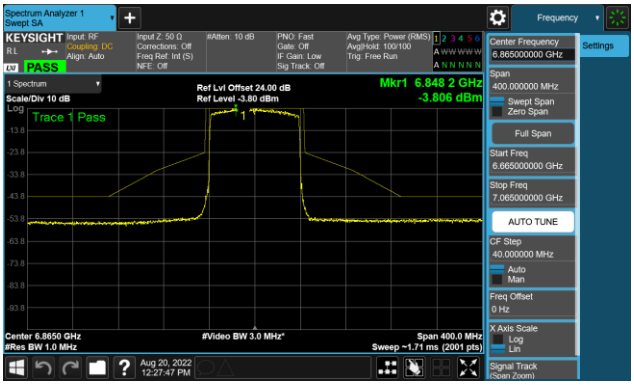
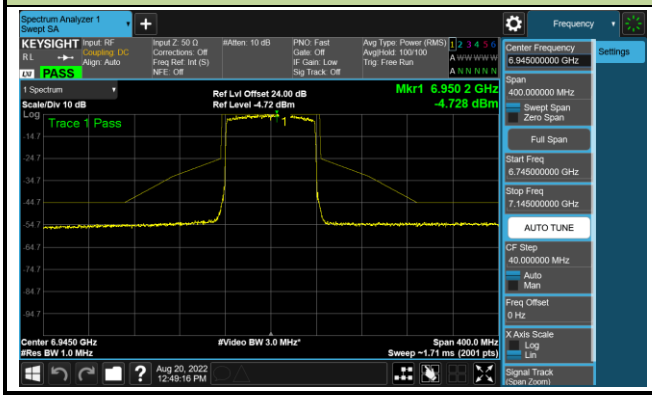
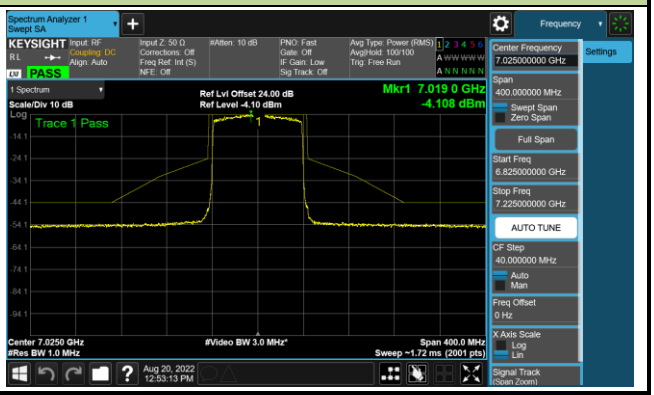
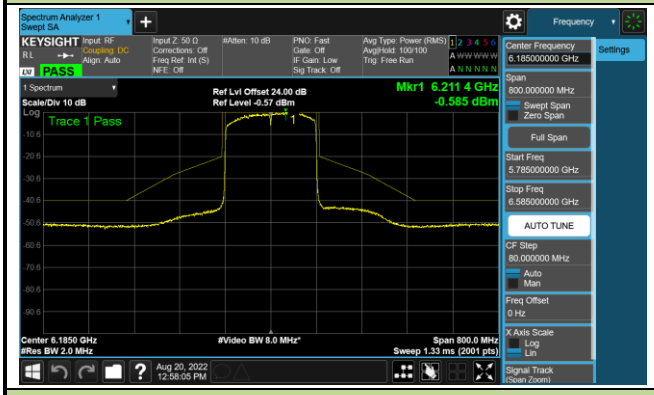
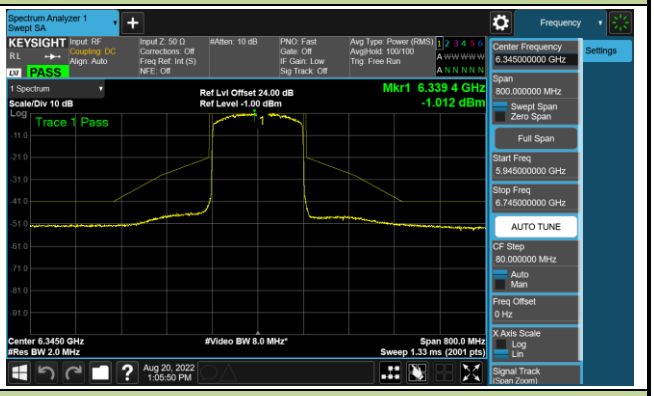
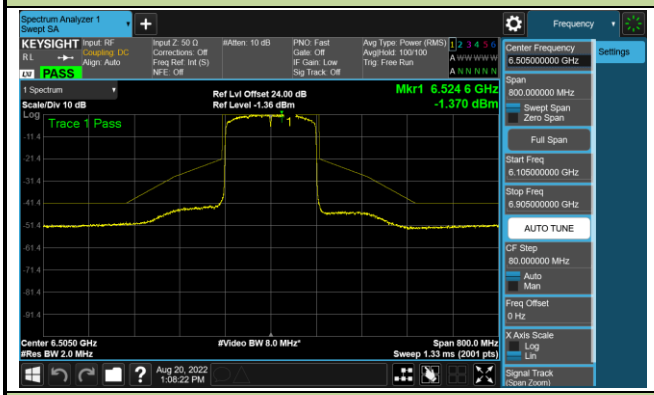
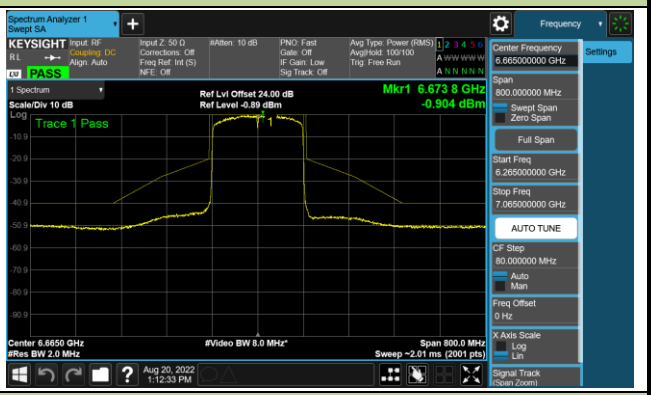
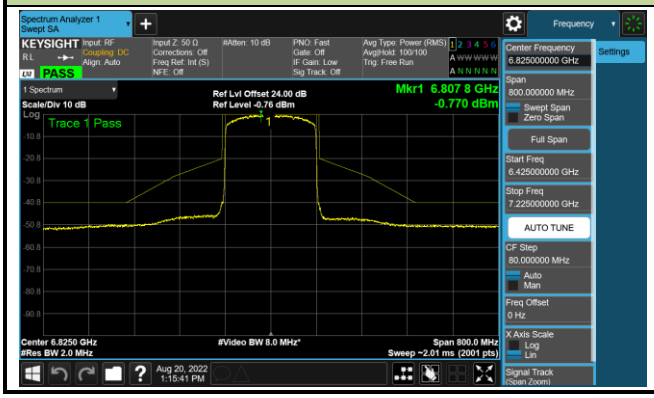
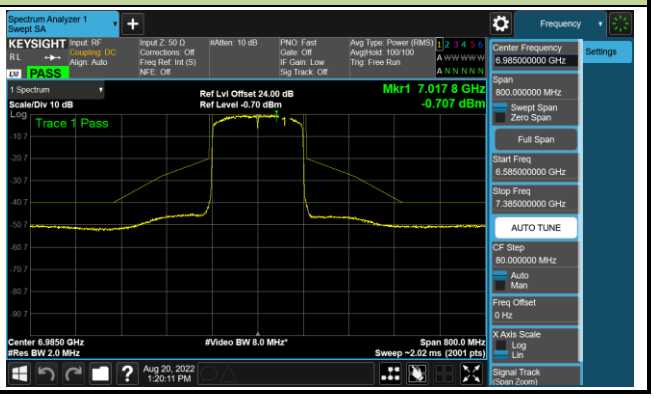
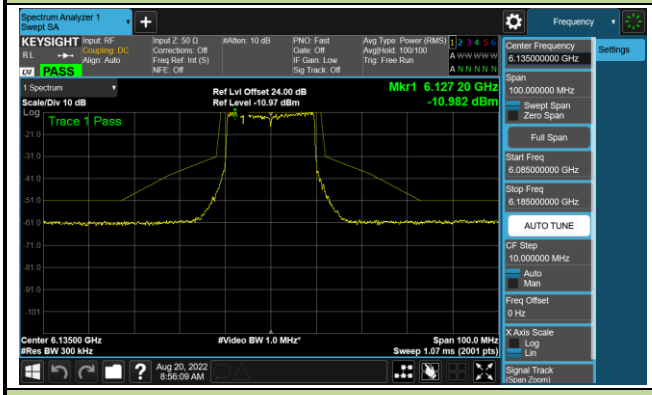
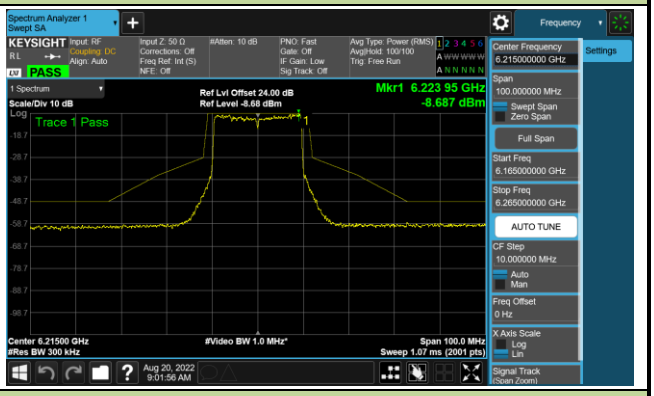
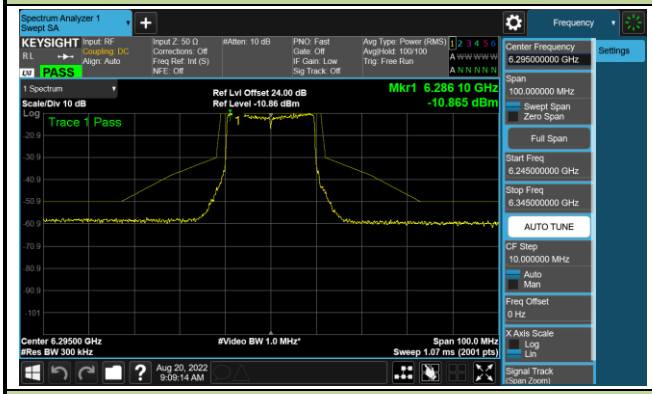
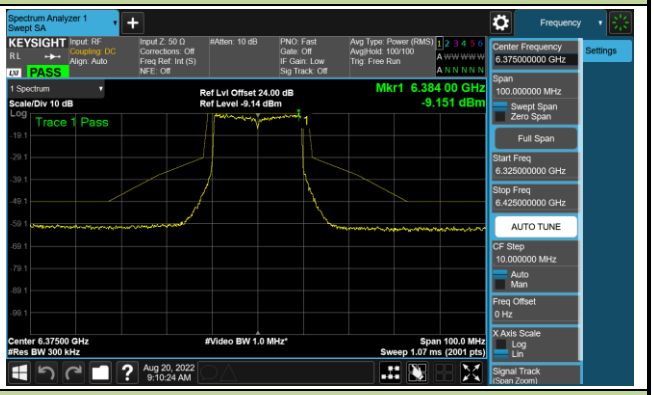
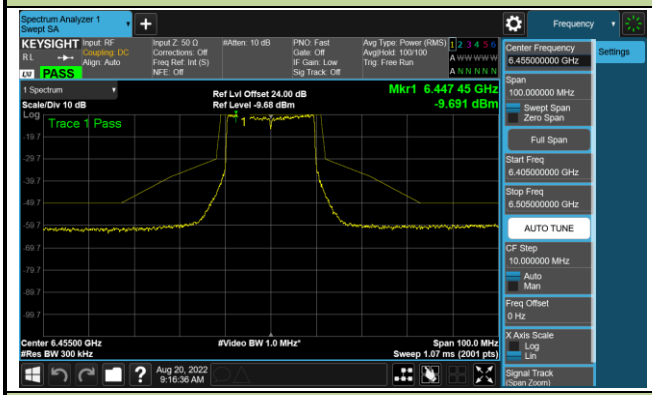
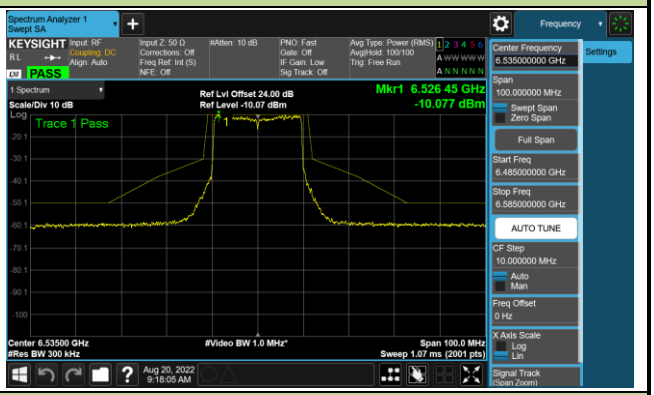
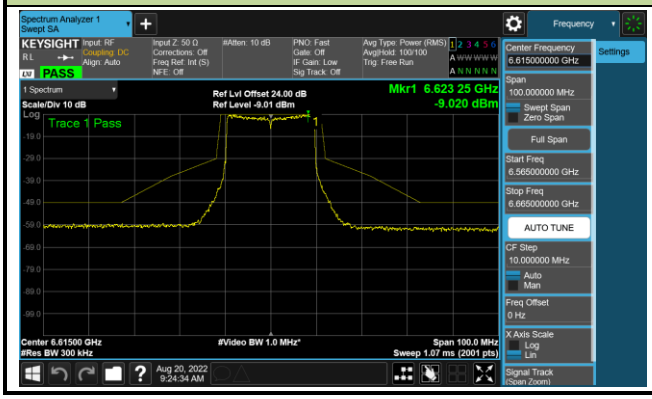
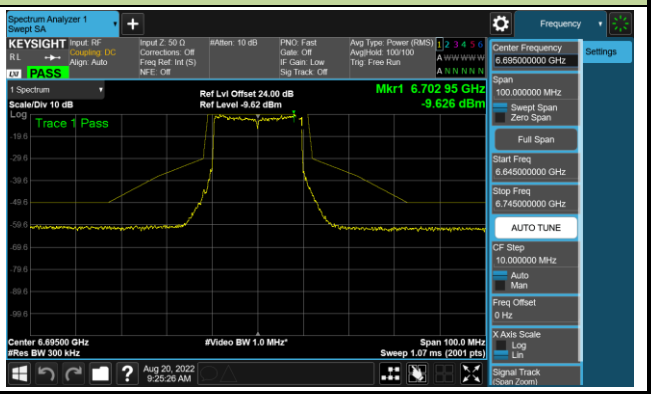
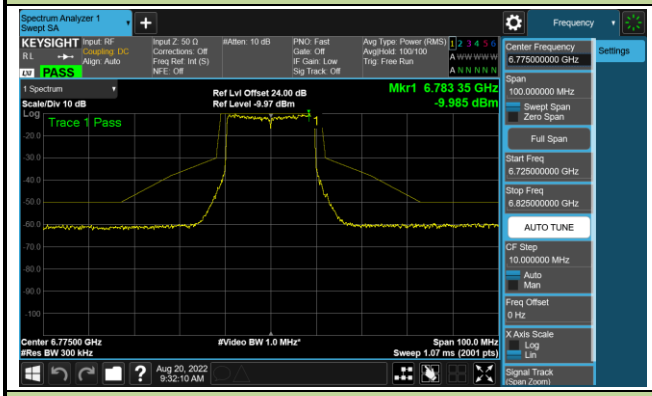
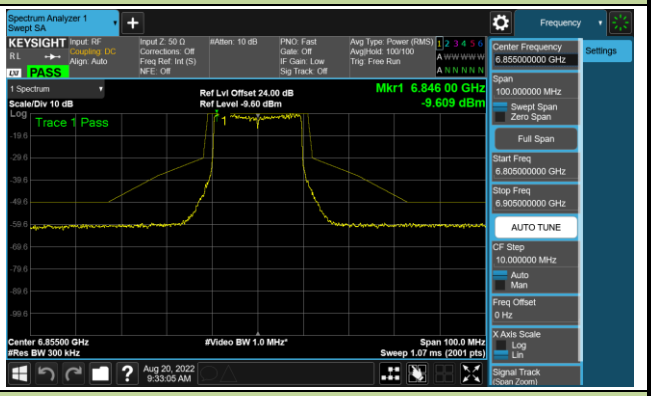
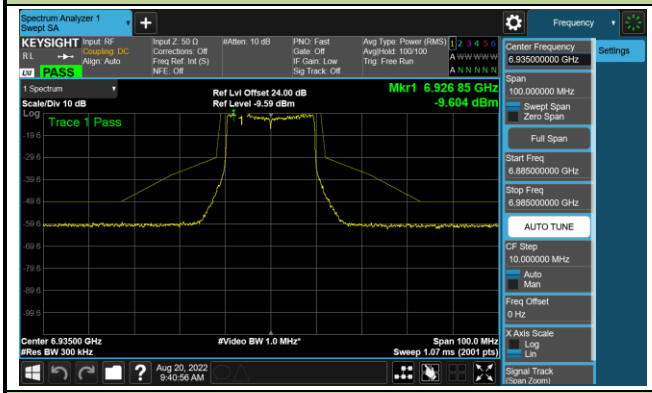
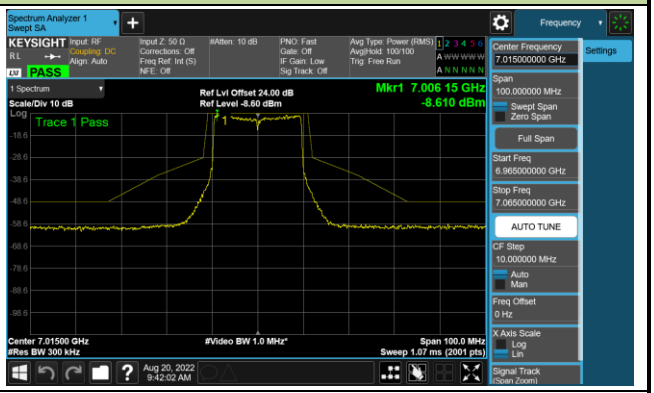
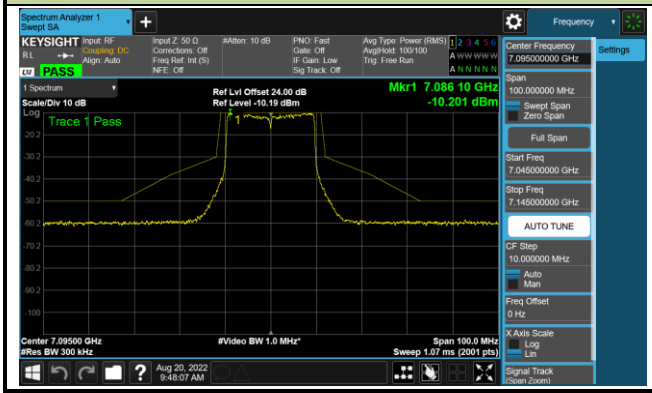
802.11ax-HE40 - Ant 2 (Nss = 4)	
Channel 163 (6765MHz)	Channel 179 (6845MHz)
	
Channel 195 (6925MHz)	Channel 211 (7005MHz)
	
Channel 227 (7085MHz)	
	

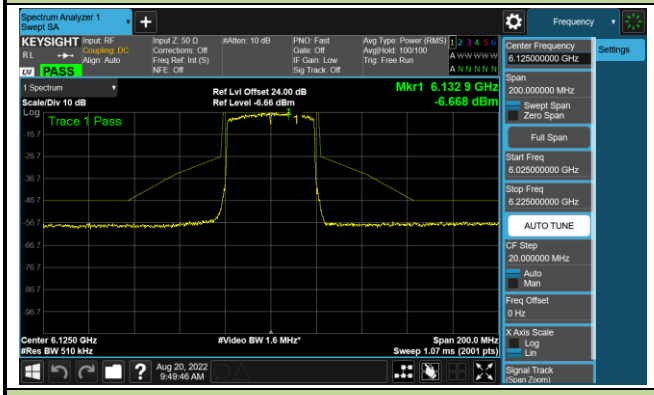
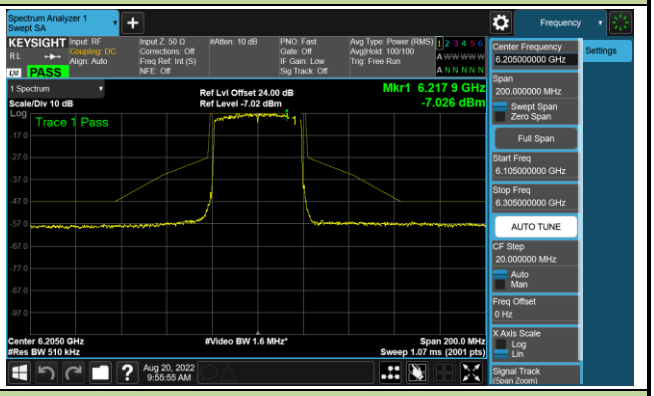
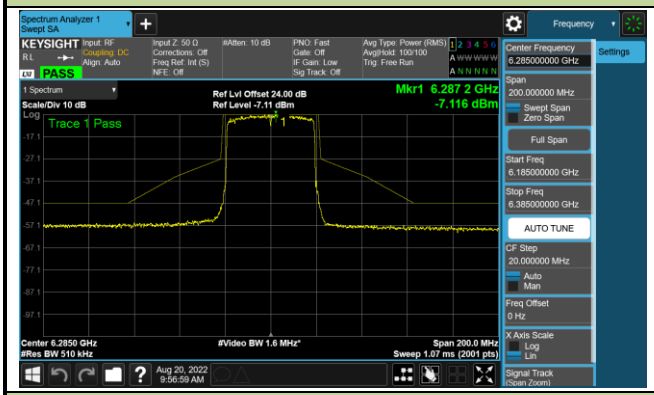
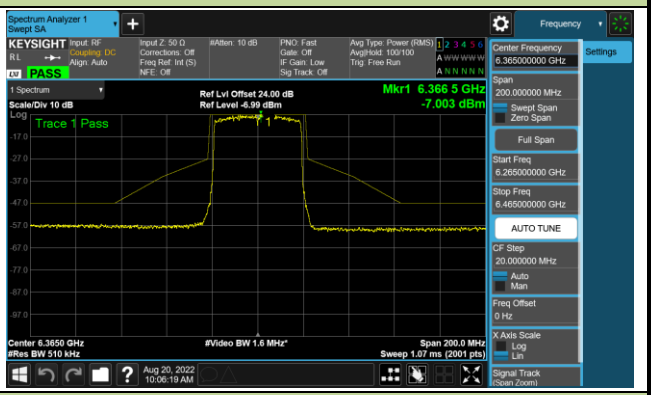
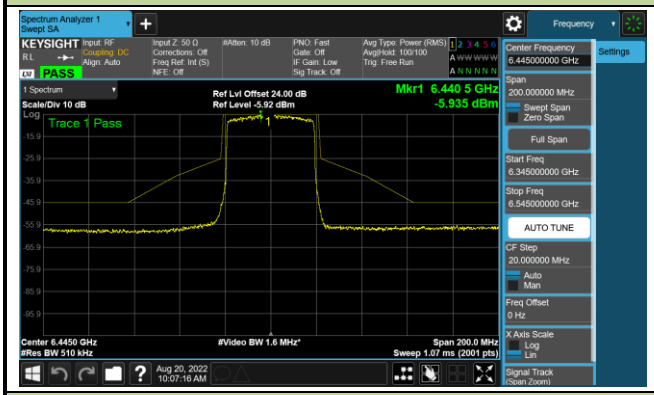
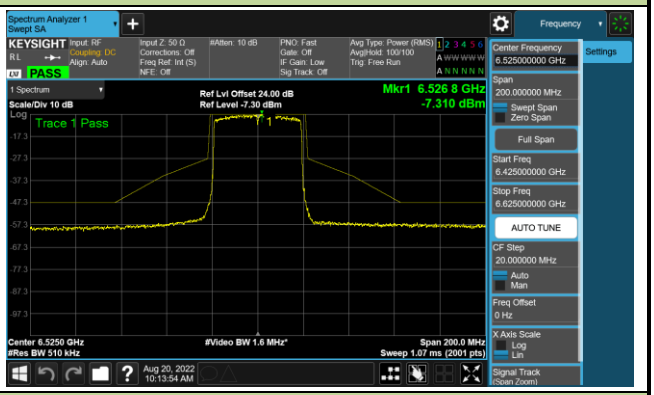
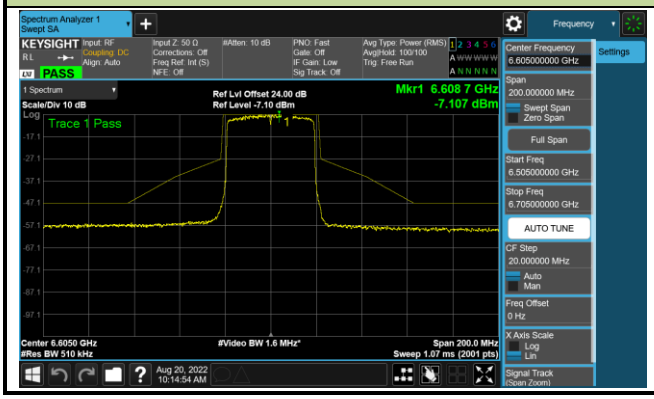
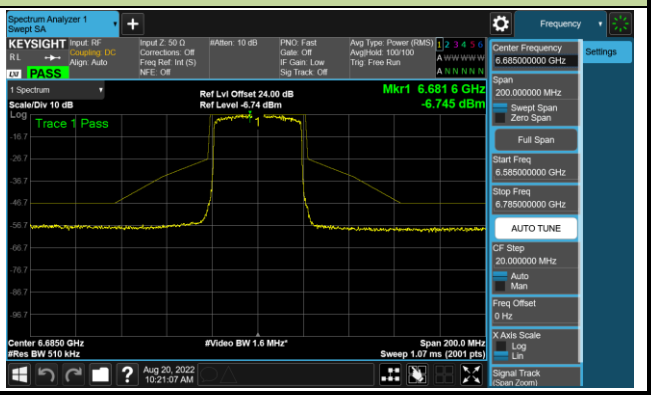
802.11ax-HE80 - Ant 2 (Nss = 4)	
Channel 39 (6145MHz)	Channel 55 (6225MHz)
	
Channel 71 (6305MHz)	Channel 87 (6385MHz)
	
Channel 103 (6465MHz)	Channel 119 (6545MHz)
	
Channel 135 (6625MHz)	Channel 151 (6705MHz)
	

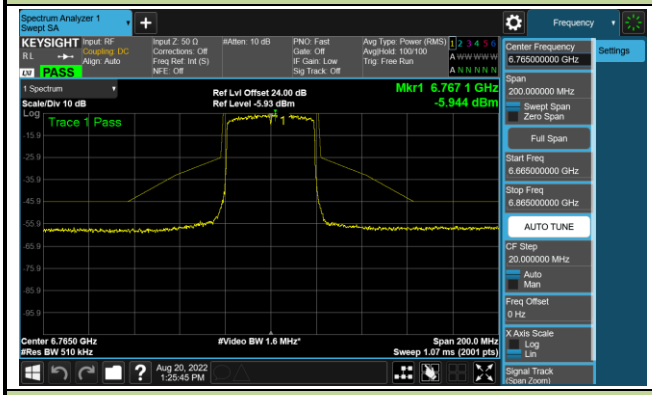
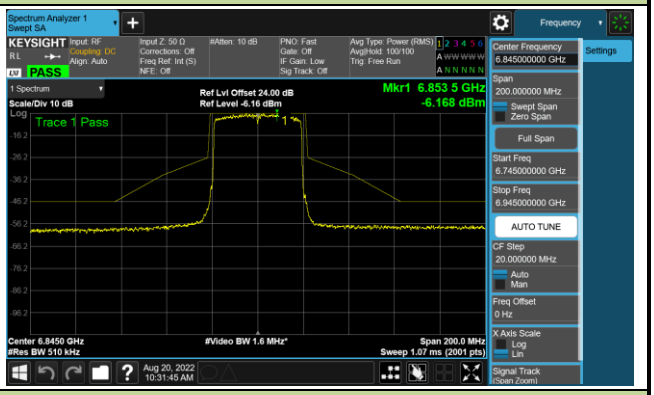
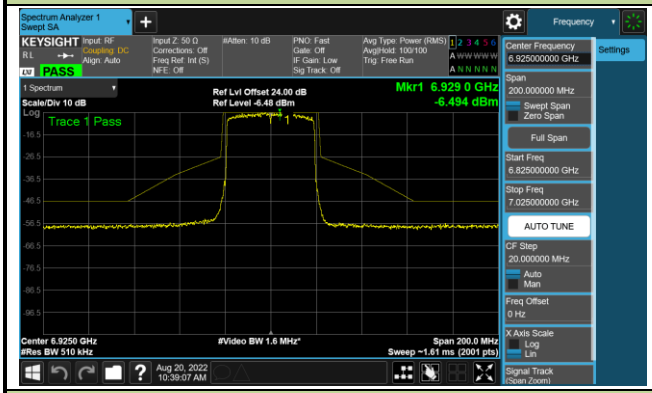
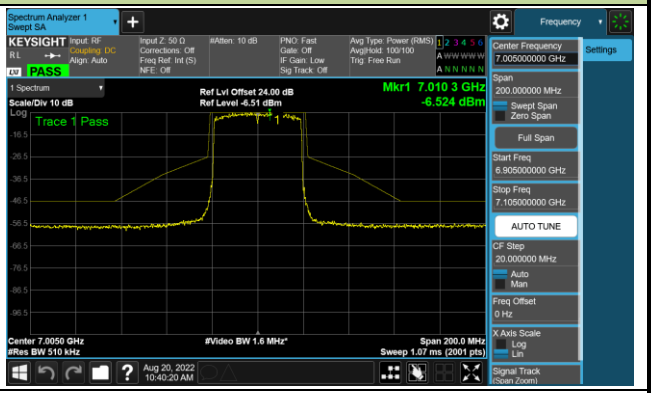
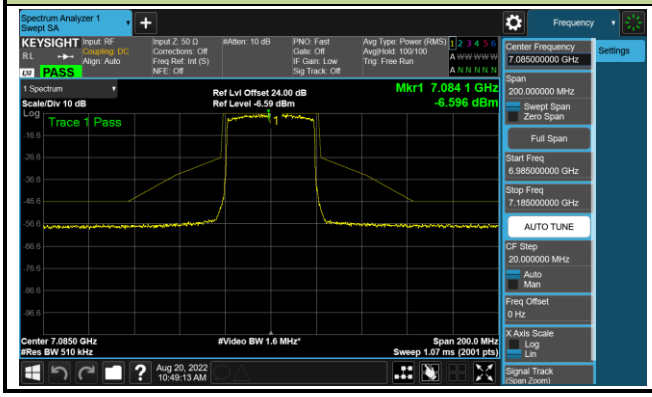
802.11ax-HE80 - Ant 2 (Nss = 4)	
Channel 167 (6785MHz)	Channel 183 (6865MHz)
	
Channel 199 (6945MHz)	Channel 215 (7025MHz)
	

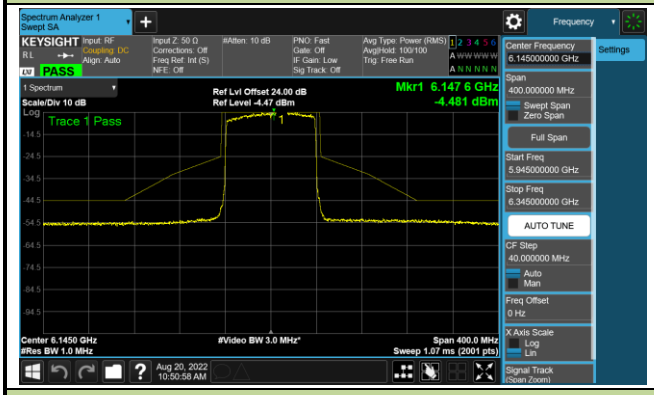
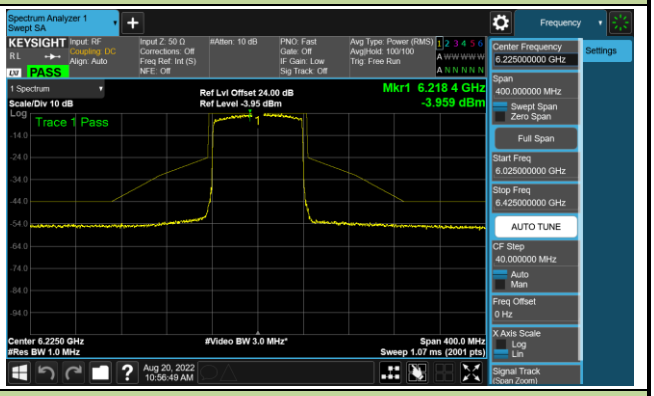
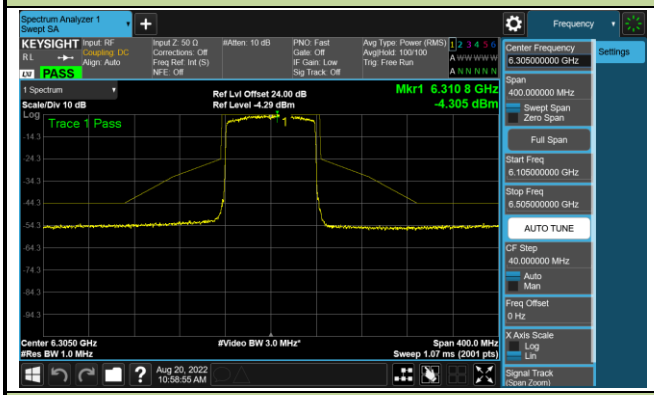
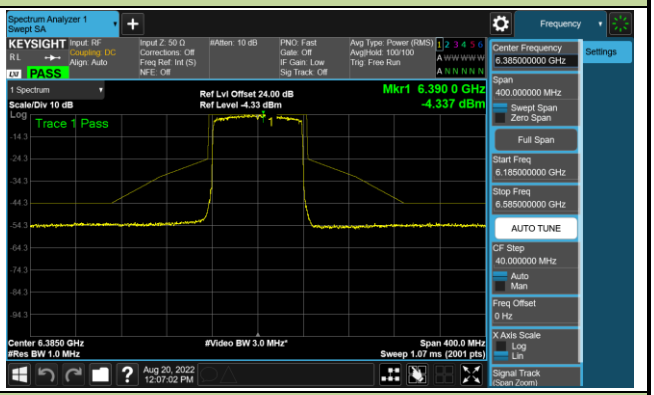
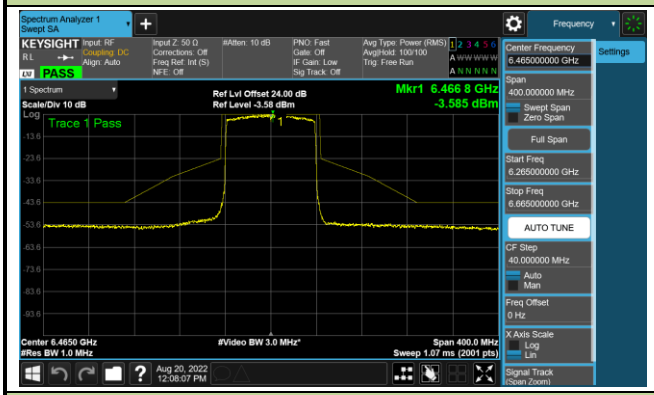
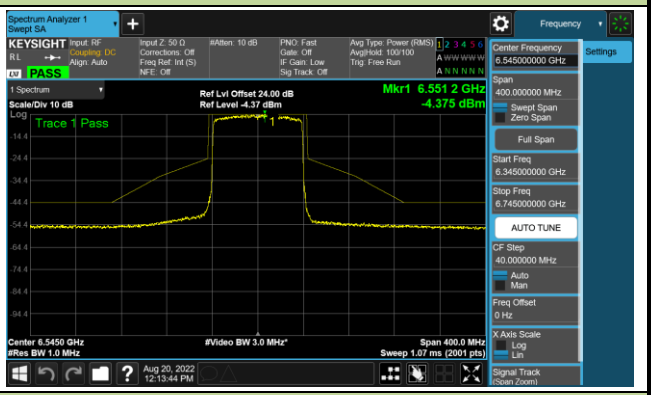
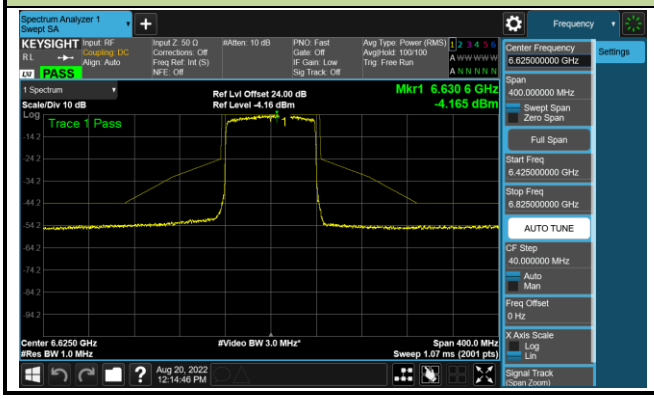
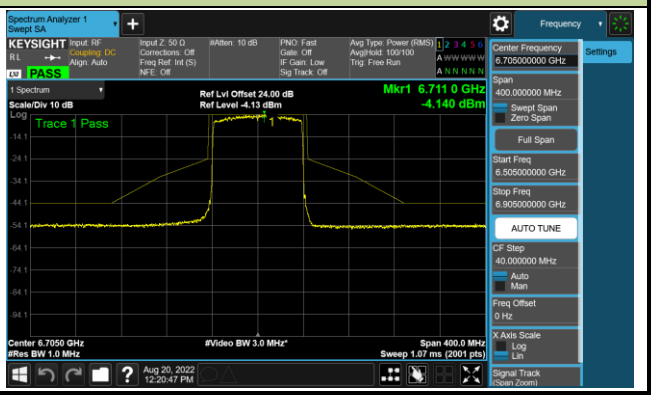
802.11ax-HE160 - Ant 2 (Nss = 4)	
Channel 47 (6185MHz)	Channel 79 (6345MHz)
	
Channel 111 (6505MHz)	Channel 143 (6665MHz)
	
Channel 175 (6825MHz)	Channel 175 (6985MHz)
	

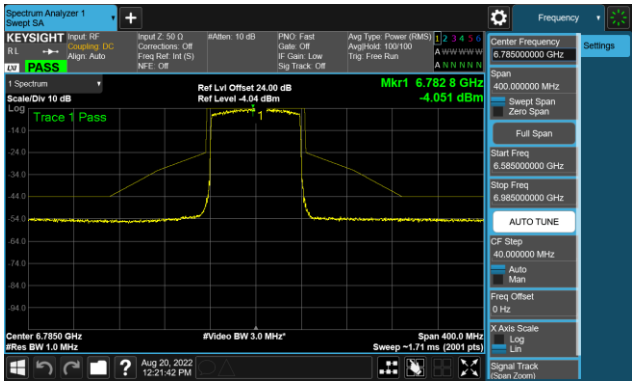
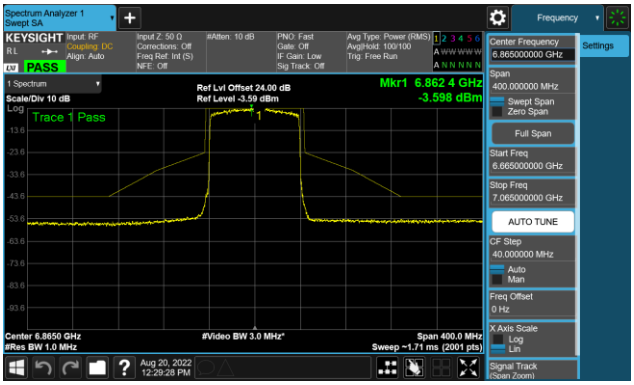
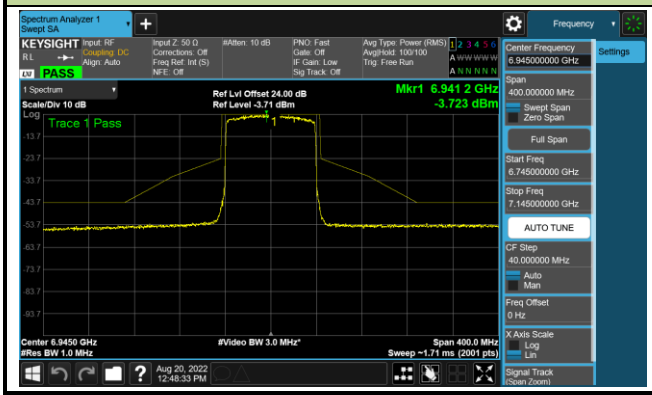
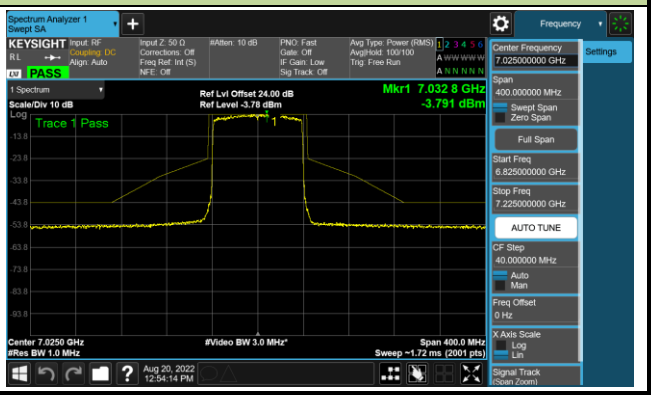
802.11ax-HE20 - Ant 3 (Nss = 4)	
Channel 37 (6135MHz)	Channel 53 (6215MHz)
	
Channel 69 (6295MHz)	Channel 85 (6375MHz)
	
Channel 101 (6455MHz)	Channel 117 (6535MHz)
	
Channel 133 (6615MHz)	Channel 149 (6695MHz)
	

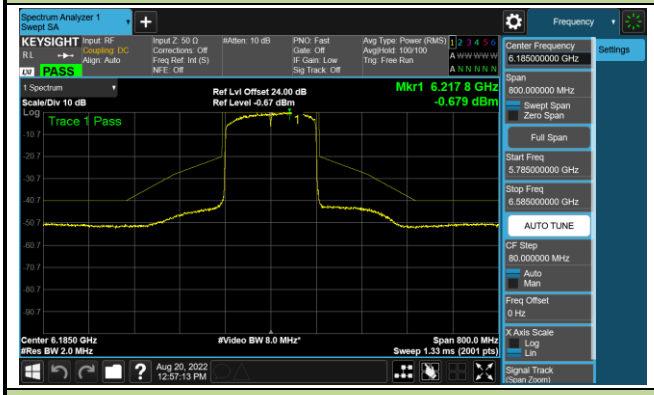
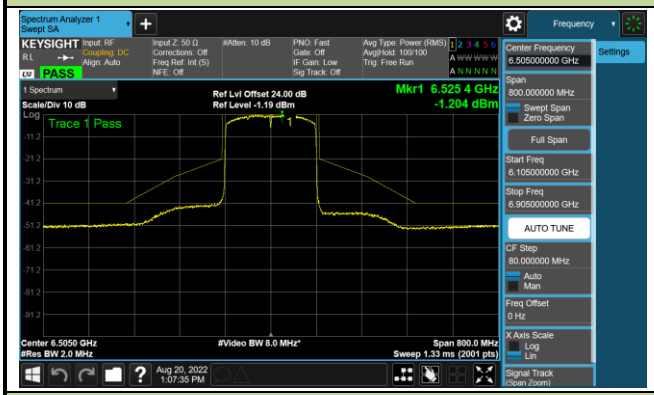
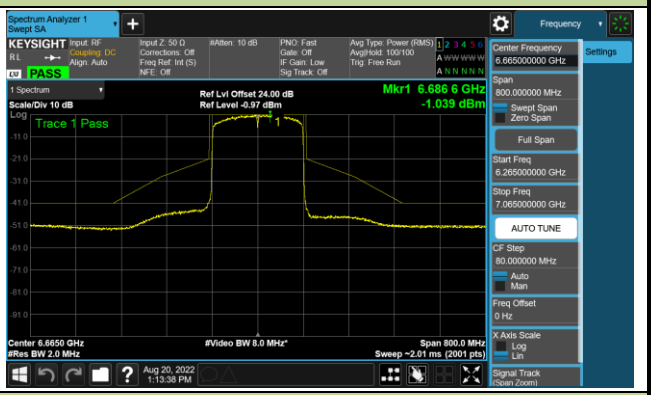
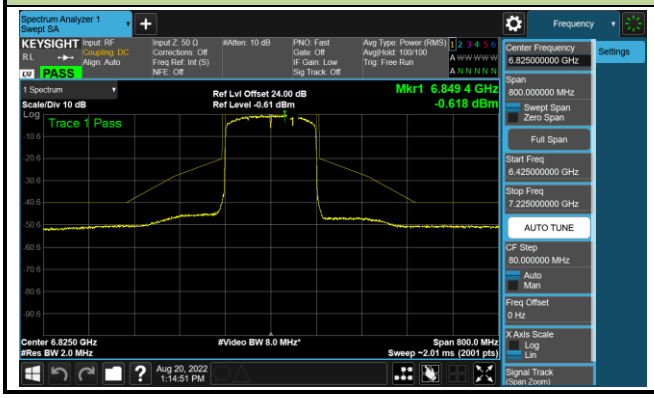
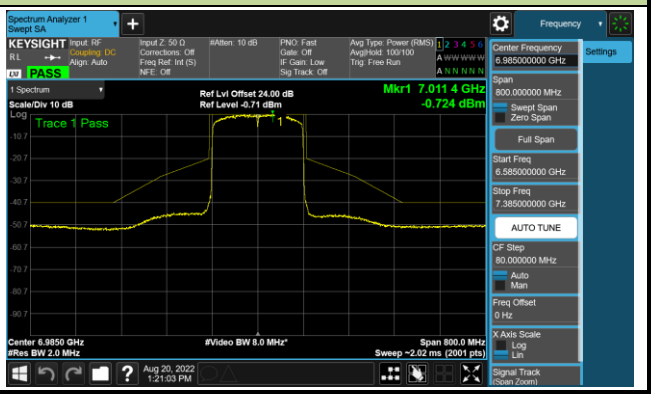
802.11ax-HE20 - Ant 3 (Nss = 4)	
Channel 165 (6775MHz)	Channel 181 (6855MHz)
	
Channel 197 (6935MHz)	Channel 213 (7015MHz)
	
Channel 229 (7095MHz)	
	

802.11ax-HE40 - Ant 3 (Nss = 4)	
Channel 35 (6125MHz)	Channel 51 (6205MHz)
	
Channel 67 (6285MHz)	Channel 83 (6365MHz)
	
Channel 99 (6445MHz)	Channel 115 (6525MHz)
	
Channel 131 (6605MHz)	Channel 147 (6685MHz)
	

802.11ax-HE40 - Ant 3 (Nss = 4)	
Channel 163 (6765MHz)	Channel 179 (6845MHz)
	
Channel 195 (6925MHz)	Channel 211 (7005MHz)
	
Channel 211 (7085MHz)	
	

802.11ax-HE80 - Ant 3 (Nss = 4)	
Channel 39 (6145MHz)	Channel 55 (6225MHz)
	
Channel 71 (6305MHz)	Channel 87 (6385MHz)
	
Channel 103 (6465MHz)	Channel 119 (6545MHz)
	
Channel 135 (6625MHz)	Channel 151 (6705MHz)
	

802.11ax-HE80 - Ant 3 (Nss = 4)	
Channel 167 (6785MHz)	Channel 183 (6865MHz)
	
Channel 199 (6945MHz)	Channel 215 (7025MHz)
	

802.11ax-HE160 - Ant 3 (Nss = 4)	
Channel 47 (6185MHz)	Channel 79 (6345MHz)
	
Channel 111 (6505MHz)	Channel 143 (6665MHz)
	
Channel 175 (6825MHz)	Channel 207 (6985MHz)
	

6.6. Frequency Stability Measurement

6.6.1. Test Limit

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

6.6.2. Test Limit

Frequency Stability Under Temperature Variations:

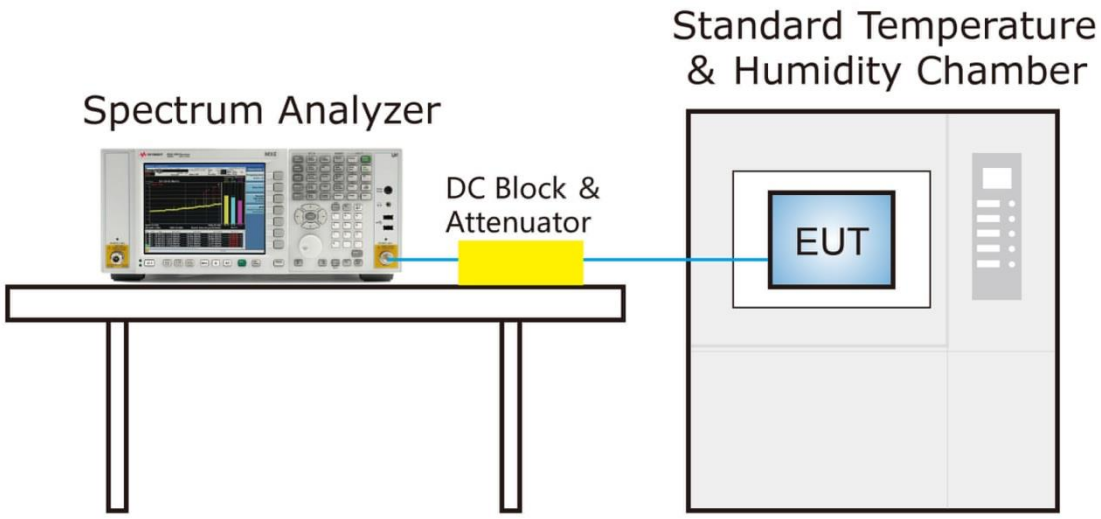
The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to highest. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C decreased per stage until the lowest temperature reached.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation (±15%) and endpoint, recordthe maximum frequency change.

6.6.3. Test Setup



6.6.4. Test Result

Grantee ensure that the product meets e-CFR Title 47 section 15.407(g) and KDB 789033 D02v02r01 frequency stability such that the emissions are maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

6.7. Contention Based Protocol

6.7.1. Test Limit

Unlicensed indoor low power device must detect co-channel radio frequency power that is at least -62dBm (The threshold is referenced to a 0dBi antenna gain.) or low.

Indoor low power device must detect an AWGN signal with 90% (or better) level of certainty.

6.7.2. Test Procedure Used

KDB 987594 D02v01- Section I

6.7.3. Test Setting

1. Configure the EUT to transmit with a constant duty cycle.

2. Set the operating parameters of the EUT including power level, operating frequency, modulation and bandwidth.

3. 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.

4. Monitoring the signal analyzer 2, verify the EUT is operating and transmitting with the parameters set at step two.

5. Using an AWGN signal source, generate a 10 MHz-wide AWGN signal. Use Table 1 of KDB 987594 to determine the center frequency of the 10 MHz AWGN signal relative to the EUT's channel bandwidth and center frequency.

6. Set the AWGN signal power to an extremely low level. Connect the AWGN signal source, via a 3-dB splitter, to the signal analyzer 1 and the EUT as shown in below figure.

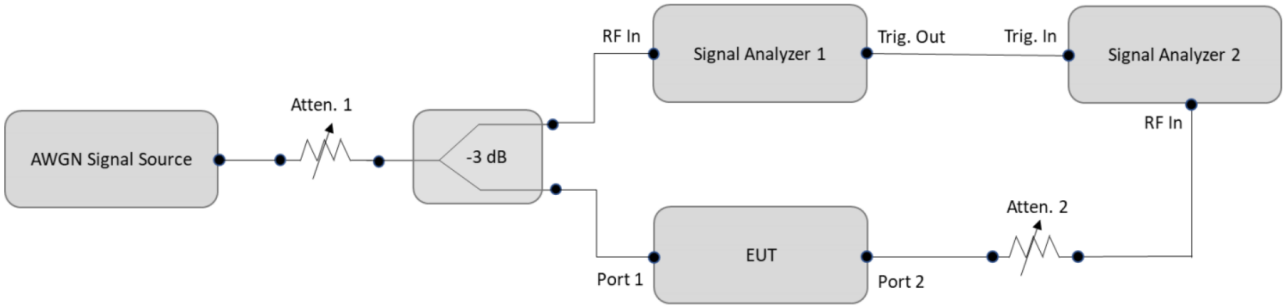
7. Transmit the AWGN signal (RF ON) and verify its characteristics on the signal analyzer 1.

8. 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.

9. 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.

10. Refer to Table 1 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 5, choose a different center frequency for the AWGN signal and repeat the process.

6.7.4. Test Setup



6.7.5. Test Result

Test Site	SR5	Test Engineer	Peter
Test Date	2022/8/10		
Test Mode	Master		

Test Channel	Bandwidth (MHz)	Freq. (MHz)	AWGN Freq. (MHz)	AWGN Power (dBm)	Ant. Gain (dBi)	Adjust Power (dBm)	Detection Limit (dBm)	Detected Number	Detection Probability (%)	Limit (%)	Test Result
Operation Band: U-NII 5											
37	20	6135	6135	-60	2	-62	≤ -62.0	10	100	90	Pass
47	160	6185	6110	-61	2	-63	≤ -62.0	10	100	90	Pass
47	160	6185	6185	-61	2	-63	≤ -62.0	10	100	90	Pass
47	160	6185	6260	-60	2	-62	≤ -62.0	10	100	90	Pass
Operation Band: U-NII 6											
101	20	6455	6455	-61	2	-63	≤ -62.0	10	100	90	Pass
103	80	6465	6430	-60	2	-62	≤ -62.0	10	100	90	Pass
103	80	6465	6465	-60	2	-62	≤ -62.0	10	100	90	Pass
103	80	6465	6500	-60	2	-62	≤ -62.0	10	100	90	Pass
Operation Band: U-NII 7											
133	20	6615	6615	-60	2	-62	≤ -62.0	10	100	90	Pass
143	160	6665	6590	-61	2	-63	≤ -62.0	10	100	90	Pass
143	160	6665	6665	-61	2	-63	≤ -62.0	10	100	90	Pass
143	160	6665	6740	-61	2	-63	≤ -62.0	10	100	90	Pass
Operation Band: U-NII 8											
213	20	7015	7015	-61	2	-63	≤ -62.0	10	100	90	Pass
207	160	6985	6910	-61	2	-63	≤ -62.0	10	100	90	Pass
207	160	6985	6985	-61	2	-63	≤ -62.0	10	100	90	Pass
207	160	6985	7060	-61	2	-63	≤ -62.0	10	100	90	Pass

Note 1: Adjust Power (dBm) = AWGN Power (dBm) – Antenna Gain (dBi).

Note 2: Conducted measurements are used.

Test Site	SR5	Test Engineer	Peter
Test Date	2022/8/10		
Remark	Lowest Interference (AWGN) Level Check		
Test Mode	Master		

Test Channel	Bandwidth (MHz)	Freq. (MHz)	AWGN Freq. (MHz)	Adjust Power (dBm)	EUT Tx Status
Operation Band: U-NII 5					
33	20	6115	6115	-70	ON
				-63	Minimal
				-62	OFF
47	160	6185	6110	-72	ON
				-64	Minimal
				-63	OFF
47	160	6185	6185	-69	ON
				-64	Minimal
				-63	OFF
47	160	6185	6260	-71	ON
				-63	Minimal
				-62	OFF
Operation Band: U-NII 6					
101	20	6455	6455	-68	ON
				-64	Minimal
				-63	OFF
103	80	6465	6430	-70	ON
				-63	Minimal
				-62	OFF
103	80	6465	6465	-70	ON
				-63	Minimal
				-62	OFF
103	80	6465	6500	-70	ON
				-63	Minimal
				-62	OFF

Test Channel	Bandwidth (MHz)	Freq. (MHz)	AWGN Freq. (MHz)	Adjust Power (dBm)	EUT Tx Status
Operation Band: U-NII 7					
133	20	6615	6615	-70	ON
				-63	Minimal
				-62	OFF
143	160	6665	6590	-69	ON
				-64	Minimal
				-63	OFF
143	160	6665	6665	-71	ON
				-64	Minimal
				-63	OFF
143	160	6665	6740	-69	ON
				-64	Minimal
				-63	OFF
Operation Band: U-NII 8					
213	20	7015	7015	-71	ON
				-64	Minimal
				-63	OFF
207	160	6985	6910	-71	ON
				-64	Minimal
				-63	OFF
207	160	6985	6985	-69	ON
				-64	Minimal
				-63	OFF
207	160	6985	7060	-69	ON
				-64	Minimal
				-63	OFF

Note:

OFF: 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

ON: AWGN level at which no impact on the transmission is detected, consistently for a minimum period of 10 seconds

Test Site	SR5	Test Engineer	Peter
Test Date	2022/8/16		
Test Mode	Mesh		

Test Channel	Bandwidth (MHz)	Freq. (MHz)	AWGN Freq. (MHz)	AWGN Power (dBm)	Ant. Gain (dBi)	Adjust Power (dBm)	Detection Limit (dBm)	Detected Number	Detection Probability (%)	Limit (%)	Test Result
Operation Band: U-NII 5											
37	20	6135	6135	-60	2	-62	≤ -62.0	10	100	90	Pass
47	160	6185	6110	-61	2	-63	≤ -62.0	10	100	90	Pass
47	160	6185	6185	-61	2	-63	≤ -62.0	10	100	90	Pass
47	160	6185	6260	-60	2	-62	≤ -62.0	10	100	90	Pass
Operation Band: U-NII 6											
101	20	6455	6455	-61	2	-63	≤ -62.0	10	100	90	Pass
103	80	6465	6430	-60	2	-62	≤ -62.0	10	100	90	Pass
103	80	6465	6465	-60	2	-62	≤ -62.0	10	100	90	Pass
103	80	6465	6500	-60	2	-62	≤ -62.0	10	100	90	Pass
Operation Band: U-NII 7											
133	20	6615	6615	-60	2	-62	≤ -62.0	10	100	90	Pass
143	160	6665	6590	-61	2	-63	≤ -62.0	10	100	90	Pass
143	160	6665	6665	-61	2	-63	≤ -62.0	10	100	90	Pass
143	160	6665	6740	-61	2	-63	≤ -62.0	10	100	90	Pass
Operation Band: U-NII 8											
213	20	7015	7015	-61	2	-63	≤ -62.0	10	100	90	Pass
207	160	6985	6910	-61	2	-63	≤ -62.0	10	100	90	Pass
207	160	6985	6985	-61	2	-63	≤ -62.0	10	100	90	Pass
207	160	6985	7060	-61	2	-63	≤ -62.0	10	100	90	Pass

Note 1: Adjust Power (dBm) = AWGN Power (dBm) – Antenna Gain (dBi).

Note 2: Conducted measurements are used.

Test Site	SR5	Test Engineer	Peter
Test Date	2022/8/16		
Remark	Lowest Interference (AWGN) Level Check		
Test Mode	Mesh		

Test Channel	Bandwidth (MHz)	Freq. (MHz)	AWGN Freq. (MHz)	Adjust Power (dBm)	EUT Tx Status
Operation Band: U-NII 5					
33	20	6115	6115	-70	ON
				-63	Minimal
				-62	OFF
47	160	6185	6110	-72	ON
				-64	Minimal
				-63	OFF
47	160	6185	6185	-69	ON
				-64	Minimal
				-63	OFF
47	160	6185	6260	-71	ON
				-63	Minimal
				-62	OFF
Operation Band: U-NII 6					
101	20	6455	6455	-68	ON
				-64	Minimal
				-63	OFF
103	80	6465	6430	-70	ON
				-63	Minimal
				-62	OFF
103	80	6465	6465	-70	ON
				-63	Minimal
				-62	OFF
103	80	6465	6500	-70	ON
				-63	Minimal
				-62	OFF

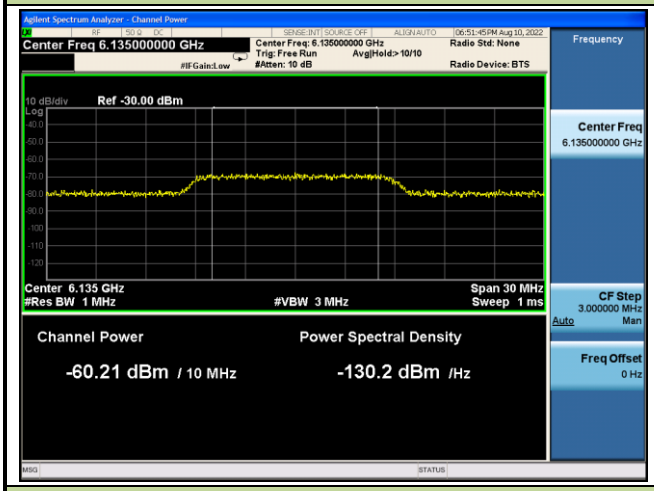
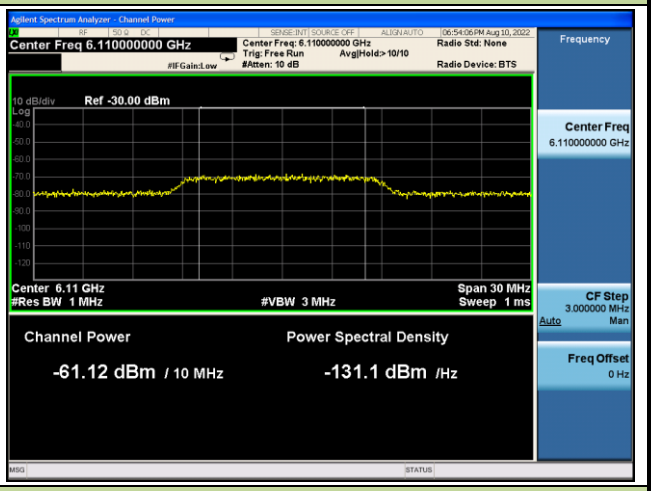
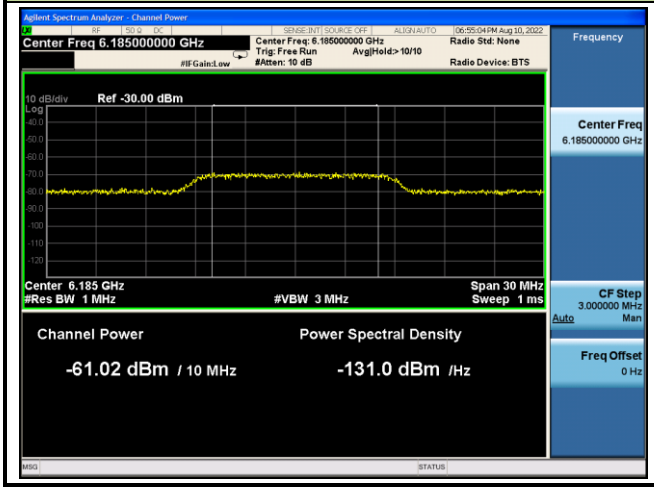
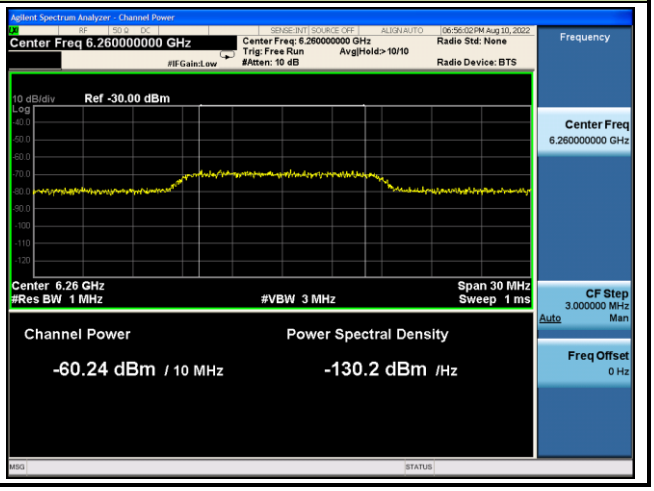
Test Channel	Bandwidth (MHz)	Freq. (MHz)	AWGN Freq. (MHz)	Adjust Power (dBm)	EUT Tx Status
Operation Band: U-NII 7					
133	20	6615	6615	-70	ON
				-63	Minimal
				-62	OFF
143	160	6665	6590	-69	ON
				-64	Minimal
				-63	OFF
143	160	6665	6665	-71	ON
				-64	Minimal
				-63	OFF
143	160	6665	6740	-69	ON
				-64	Minimal
				-63	OFF
Operation Band: U-NII 8					
213	20	7015	7015	-71	ON
				-64	Minimal
				-63	OFF
207	160	6985	6910	-71	ON
				-64	Minimal
				-63	OFF
207	160	6985	6985	-69	ON
				-64	Minimal
				-63	OFF
207	160	6985	7060	-69	ON
				-64	Minimal
				-63	OFF

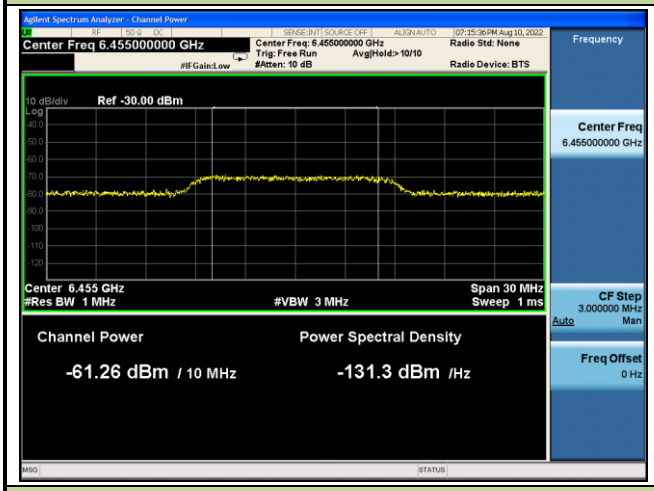
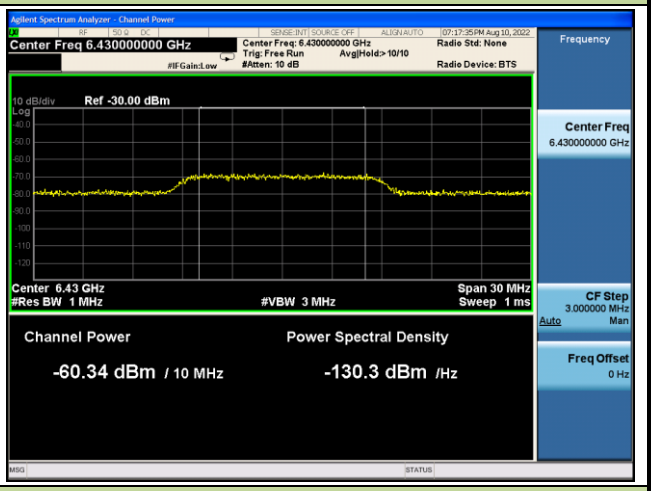
Note:

OFF: 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

ON: AWGN level at which no impact on the transmission is detected, consistently for a minimum period of 10 seconds

AWGN Signal Level Calibration Plots (NII-5 Band) _ Master	
802.11ax-HE20 / CH37	802.11ax-HE160 / CH47 (Low Edge)
	
802.11ax-HE160 / CH47 (Middle)	802.11ax-HE160 / CH47 (High Edge)
	

AWGN Signal Level Calibration Plots (NII-6 Band) _ Master	
802.11ax-HE20 / CH101	802.11ax-HE80 / CH103 (Low Edge)
	
802.11ax-HE80 / CH103 (Middle)	802.11ax-HE80 / CH103 (High Edge)