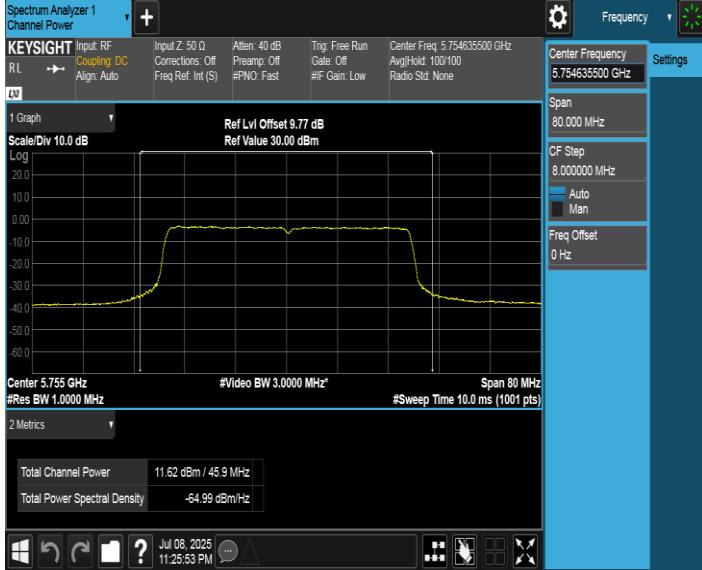
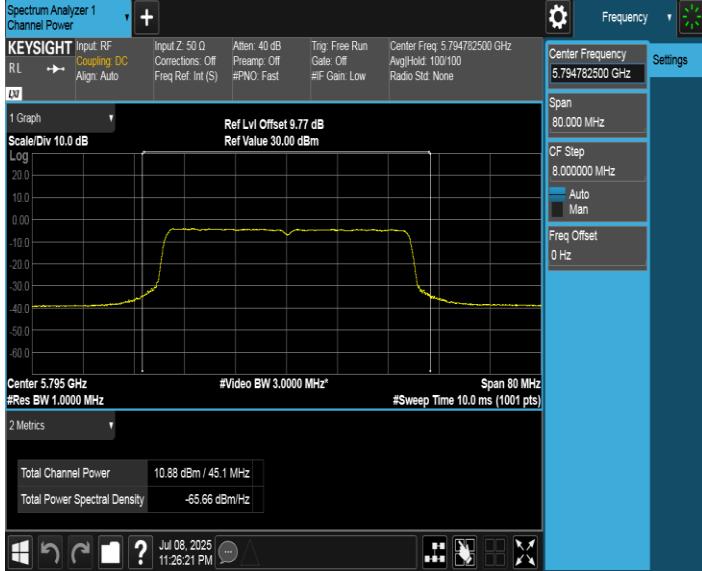


Test Mode	Test Channel	Verdict
11ax HE40	5755	PASS
		

Test Mode	Test Channel	Verdict
11ax HE40	5795	PASS
		

## 6.4. POWER SPECTRAL DENSITY

### LIMITS

47 CFR FCC Part15, Subpart E		
Test Item	Limit	Frequency Range (MHz)
Power Spectral Density	<input type="checkbox"/> Outdoor Access Point: 17 dBm/MHz <input type="checkbox"/> Indoor Access Point: 17 dBm/MHz <input type="checkbox"/> Fixed Point-To-Point Access Points: 17 dBm/MHz <input checked="" type="checkbox"/> Client Devices: 11 dBm/MHz	5150 ~ 5250
	11 dBm/MHz	5250 ~ 5350 5470 ~ 5725
	30 dBm/500kHz	5725 ~ 5850

ISED RSS-247 ISSUE 3		
Test Item	Limit	Frequency Range (MHz)
Power Spectral Density	The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.	5150 ~ 5250
	The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.	5250 ~ 5350 5470 ~ 5600 5650 ~ 5725
	30 dBm / 500 kHz	5725 ~ 5850

#### Note:

The above limits are based upon the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### TEST PROCEDURE

Refer to KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 section II.F.

Connect the EUT to the spectrum analyser and use the following settings:

For U-NII-1, U-NII-2A and U-NII-2C band:

Center Frequency	The center frequency of the channel under test
Detector	RMS
RBW	1 MHz
VBW	$\geq 3 \times$ RBW
Span	Encompass the entire emissions bandwidth (EBW) of the signal
Trace	Max hold
Sweep time	Auto

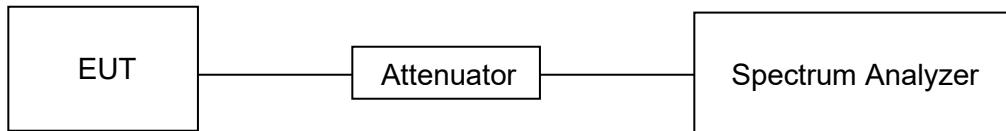
For U-NII-3:

Center Frequency	The center frequency of the channel under test
Detector	RMS
RBW	500 kHz
VBW	$\geq 3 \times$ RBW
Span	Encompass the entire emissions bandwidth (EBW) of the signal
Trace	Max hold
Sweep time	Auto

Allow trace to fully stabilize and Use the peak search function on the instrument to find the peak of the spectrum and record its value.

Add  $10 \log (1/x)$ , where x is the duty cycle, to the peak of the spectrum, the result is the Maximum PSD over 1 MHz / 500 kHz reference bandwidth.

## TEST SETUP



## TEST ENVIRONMENT

Environment Parameter	Selected Values During Tests
Relative Humidity	60%
Atmospheric Pressure:	101kPa
Temperature	22.2°C
Test Voltage	AC 120V
Test Date	06/08/2025 - 06/30/2025

## RESULTS

Band 1 & Band 2:

Mode	Frequency	Measurement Value	Duty Cycle Correction Factor	PSD /MHz	FCC PSD Limit	ISED PSD Limit	Antenna Gain	EIRP PSD	ISED EIRP PSD Limit
	MHz	dBm	dB	dBm	dBm	dBm	dBi	dBm	dBm
11a	5180	0.514	0.22	0.734	11	/	3.40	4.134	10
	5200	0.859	0.22	1.079	11	/	3.40	4.479	10
	5240	0.691	0.22	0.911	11	/	3.40	4.311	10
	5260	0.604	0.22	0.824	11	11	3.40	4.224	/
	5280	0.922	0.22	1.142	11	11	3.40	4.542	/
	5320	1.456	0.22	1.676	11	11	3.40	5.076	/
	5500	2.637	0.22	2.857	11	11	3.40	6.257	/
	5580	3.460	0.22	3.680	11	11	3.40	7.080	/
	5700	3.355	0.22	3.575	11	11	3.40	6.975	/
	5720_UNII-2C	2.498	0.22	2.718	11	11	3.40	6.118	/

Mode	Frequency	Measurement Value	Duty Cycle Correction Factor	PSD /MHz	FCC PSD Limit	ISED PSD Limit	Antenna Gain	EIRP PSD	ISED EIRP PSD Limit
	MHz	dBm	dB	dBm	dBm	dBm	dBi	dBm	dBm
11ac VHT20	5180	0.669	0.51	1.179	11	/	3.40	4.579	10
	5200	0.532	0.51	1.042	11	/	3.40	4.442	10
	5240	0.531	0.51	1.041	11	/	3.40	4.441	10
	5260	0.436	0.51	0.946	11	11	3.40	4.346	/
	5280	0.873	0.51	1.383	11	11	3.40	4.783	/
	5320	1.197	0.51	1.707	11	11	3.40	5.107	/
	5500	3.304	0.51	3.814	11	11	3.40	7.214	/
	5580	2.614	0.51	3.124	11	11	3.40	6.524	/
	5700	3.065	0.51	3.575	11	11	3.40	6.975	/
	5720_UNII-2C	2.417	0.51	2.927	11	11	3.40	6.327	/

Mode	Frequency	Measurement Value	Duty Cycle Correction Factor	PSD /MHz	FCC PSD Limit	ISED PSD Limit	Antenna Gain	EIRP PSD	ISED EIRP PSD Limit
	MHz	dBm	dB	dBm	dBm	dBm	dBi	dBm	dBm
11ac VHT40	5190	-1.902	0.45	-1.452	11	/	3.40	1.948	10
	5230	-2.356	0.45	-1.906	11	/	3.40	1.494	10
	5270	-1.813	0.45	-1.363	11	/	3.40	2.037	/
	5310	-1.911	0.45	-1.461	11	11	3.40	1.939	/
	5510	-0.370	0.45	0.080	11	11	3.40	3.480	/
	5550	1.440	0.45	1.890	11	11	3.40	5.290	/
	5670	1.706	0.45	2.156	11	11	3.40	5.556	/
	5710_UNII-2C	-1.186	0.45	-0.736	11	11	3.40	2.664	/

Mode	Frequency	Measurement Value	Duty Cycle Correction Factor	PSD /MHz	FCC PSD Limit	ISED PSD Limit	Antenna Gain	EIRP PSD	ISED EIRP PSD Limit
	MHz	dBm	dB	dBm	dBm	dBm	dBi	dBm	dBm
11ax HE20	5180	0.243	0.34	0.583	11	/	3.40	3.983	10
	5200	0.587	0.34	0.927	11	/	3.40	4.327	10
	5240	0.145	0.34	0.485	11	/	3.40	3.885	10
	5260	0.545	0.34	0.885	11	11	3.40	4.285	/
	5280	1.185	0.34	1.525	11	11	3.40	4.925	/
	5320	0.806	0.34	1.146	11	11	3.40	4.546	/
	5500	2.318	0.34	2.658	11	11	3.40	6.058	/
	5580	2.281	0.34	2.621	11	11	3.40	6.021	/
	5700	2.299	0.34	2.639	11	11	3.40	6.039	/
	5720_UNII-2C	2.006	0.34	2.346	11	11	3.40	5.746	/

Mode	Frequency	Measurement Value	Duty Cycle Correction Factor	PSD /MHz	FCC PSD Limit	ISED PSD Limit	Antenna Gain	EIRP PSD	ISED EIRP PSD Limit
	MHz	dBm	dB	dBm	dBm	dBm	dBi	dBm	dBm
11ax HE40	5190	-2.546	0.54	-2.006	11	/	3.40	1.394	10
	5230	-1.855	0.54	-1.315	11	/	3.40	2.085	10
	5270	-1.845	0.54	-1.305	11	/	3.40	2.095	/
	5310	-1.562	0.54	-1.022	11	11	3.40	2.378	/
	5510	-0.353	0.54	0.187	11	11	3.40	3.587	/
	5550	0.880	0.54	1.420	11	11	3.40	4.820	/
	5670	0.895	0.54	1.420	11	11	3.40	4.820	/
	5710_UNII-2C	0.669	0.54	1.435	11	11	3.40	4.835	/

### Band 3:

Mode	Frequency	Measurement Value	Duty Cycle Correction Factor	PSD/300 kHz	Correct Factor	PSD/500 kHz	Limit
	MHz	dBm	dBm	dBm	dB	dBm	dBm
11a	5720_UNII-3	-0.390	0.22	-0.170	2.22	2.050	30.00
	5745	-1.038	0.22	-0.818	2.22	1.402	30.00
	5785	-1.607	0.22	-1.387	2.22	0.833	30.00
	5825	-2.184	0.22	-1.964	2.22	0.256	30.00

Mode	Frequency	Measurement Value	Duty Cycle Correction Factor	PSD/300 kHz	Correct Factor	PSD/500 kHz	Limit
	MHz	dBm	dBm	dBm	dB	dBm	dBm
11ac VHT20	5720_UNII-3	-0.510	0.51	0	2.22	2.220	30.00
	5745	-1.481	0.51	-0.971	2.22	1.249	30.00
	5785	-1.589	0.51	-1.079	2.22	1.141	30.00
	5825	-2.001	0.51	-1.491	2.22	0.729	30.00

Mode	Frequency	Measurement Value	Duty Cycle Correction Factor	PSD/300 kHz	Correct Factor	PSD/500 kHz	Limit
	MHz	dBm	dBm	dBm	dB	dBm	dBm
11ac VHT40	5710_UNII-3	-4.651	0.45	-4.201	2.22	-1.981	30.00
	5755	-4.425	0.45	-3.975	2.22	-1.755	30.00
	5795	-4.351	0.45	-3.901	2.22	-1.681	30.00

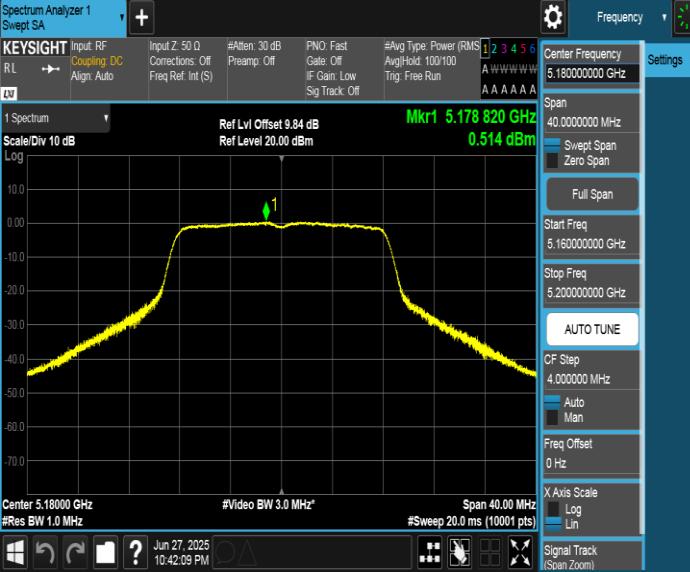
Mode	Frequency	Measurement Value	Duty Cycle Correction Factor	PSD/300 kHz	Correct Factor	PSD/500 kHz	Limit
	MHz	dBm	dBm	dBm	dB	dBm	dBm
11ax HE20	5720_UNII-3	-1.029	0.34	-0.689	2.22	1.531	30.00
	5745	-1.561	0.34	-1.221	2.22	0.999	30.00
	5785	-1.939	0.34	-1.599	2.22	0.621	30.00
	5825	-1.478	0.34	-1.138	2.22	1.082	30.00

Mode	Frequency	Measurement Value	Duty Cycle Correction Factor	PSD/300 kHz	Correct Factor	PSD/500 kHz	Limit
	MHz	dBm	dBm	dBm	dB	dBm	dBm
11ax HE40	5710_UNII-3	-3.107	0.54	-2.567	2.22	-0.347	30.00
	5755	-4.309	0.54	-3.769	2.22	-1.549	30.00
	5795	-5.041	0.54	-4.501	2.22	-2.281	30.00

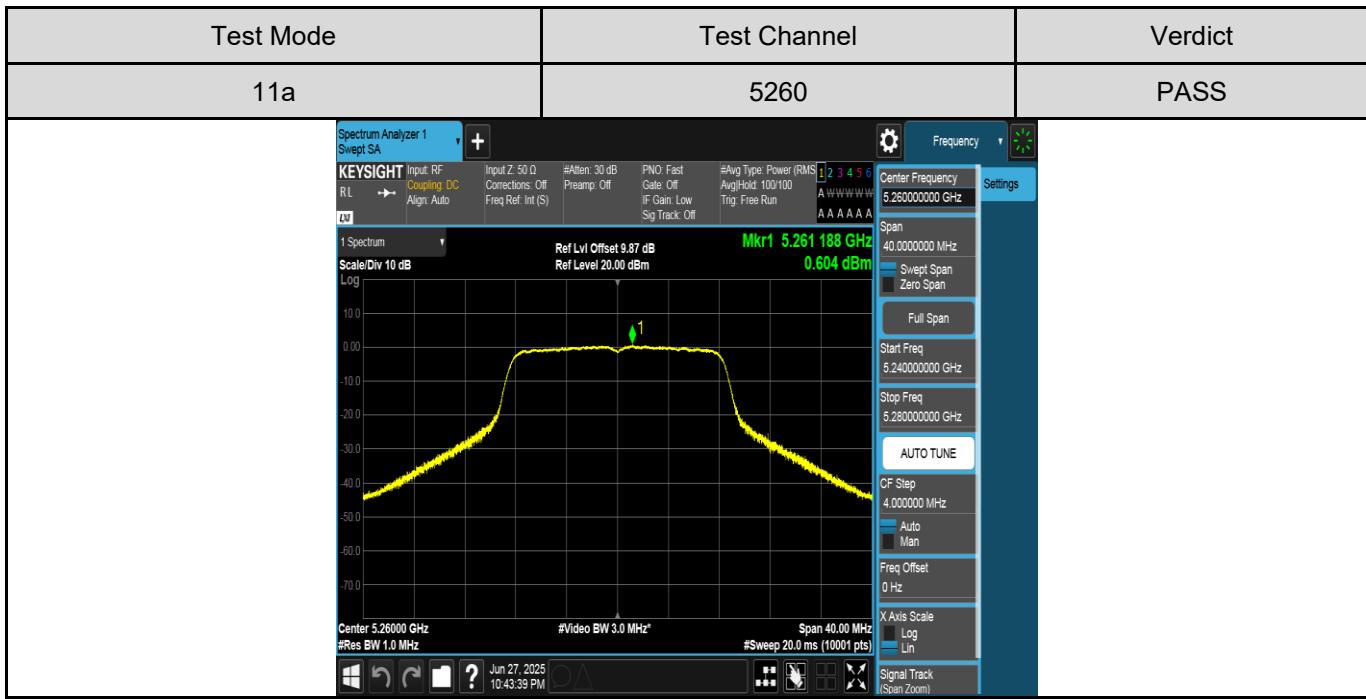
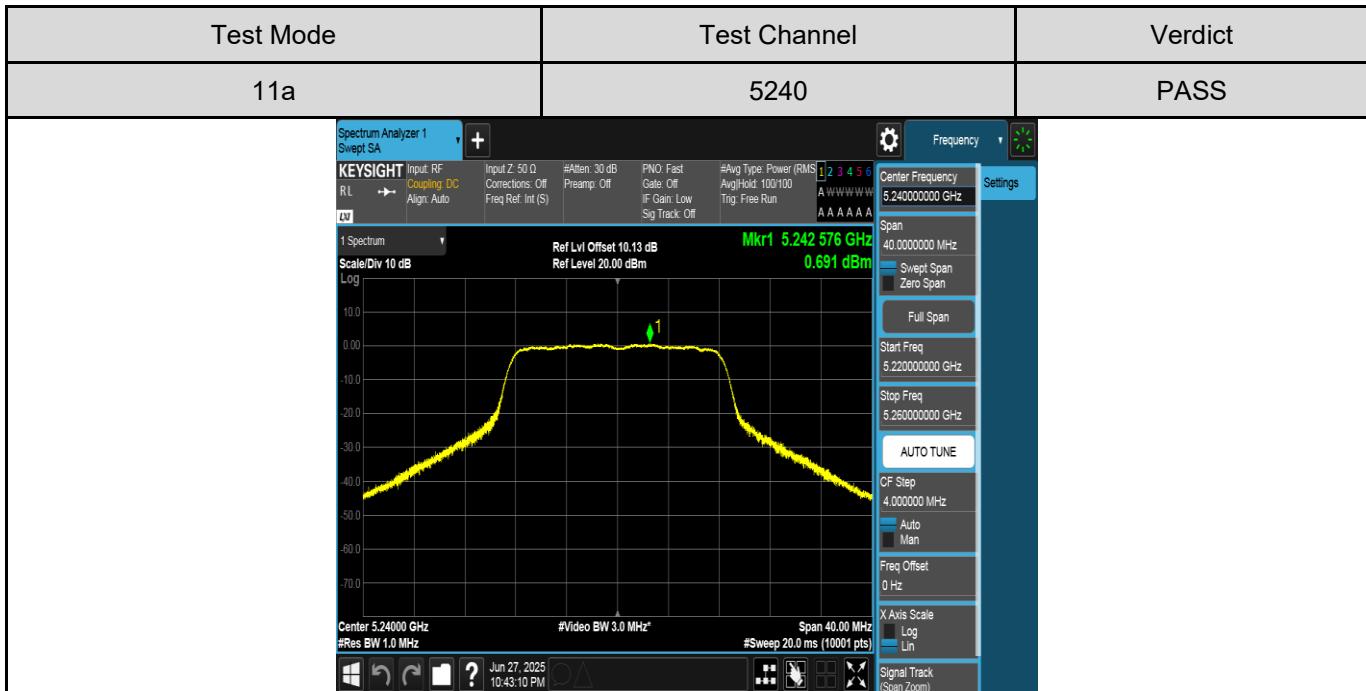
**Note:**

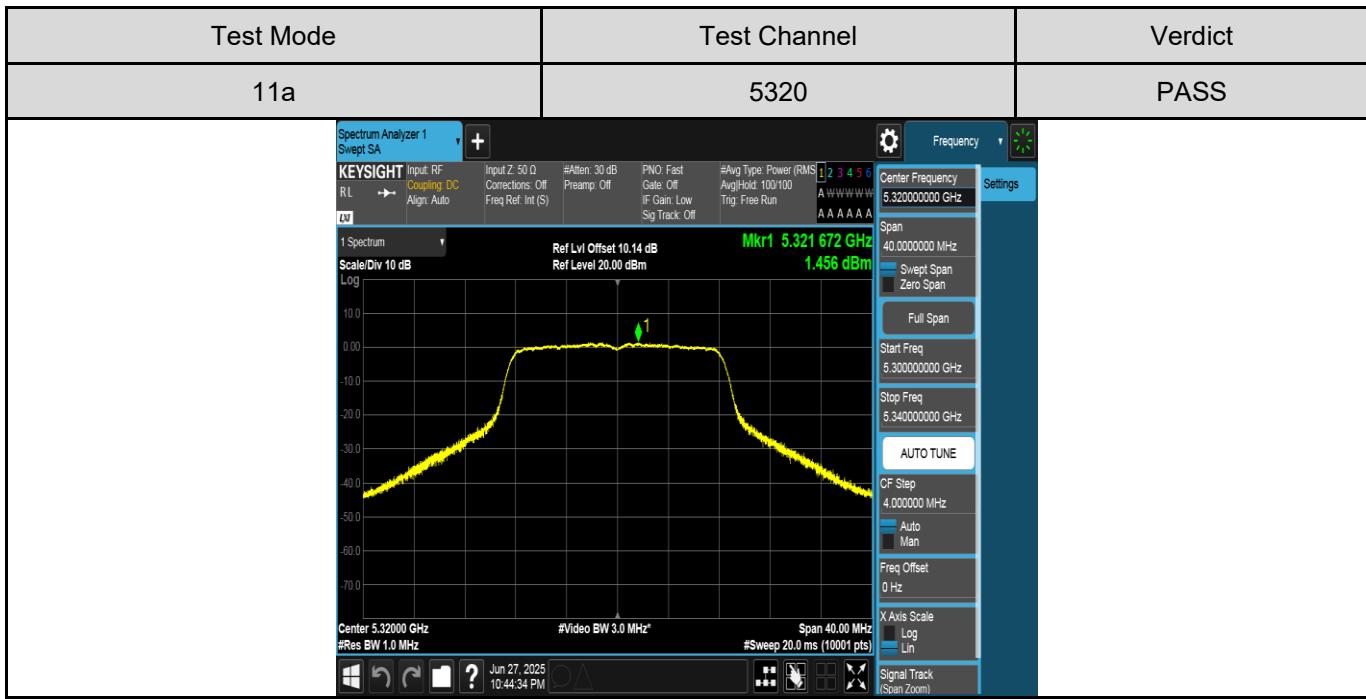
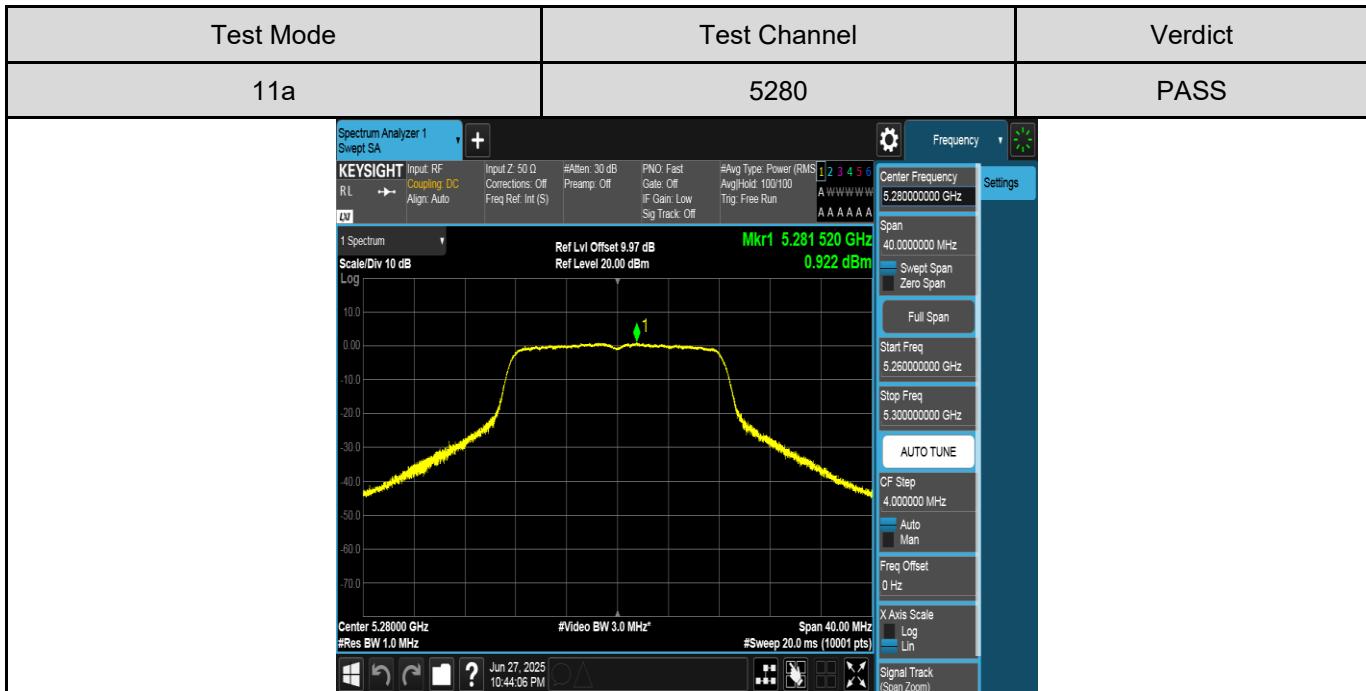
1. The Result and Limit Unit is dBm/500 kHz in the band 5.725 - 5.85 GHz.
2. PSD/500 kHz =  $10^{\log((PSD/300\ kHz)^{10})/300*500}}$   
 $= PSD/300\ kHz + 2.22\ dB$

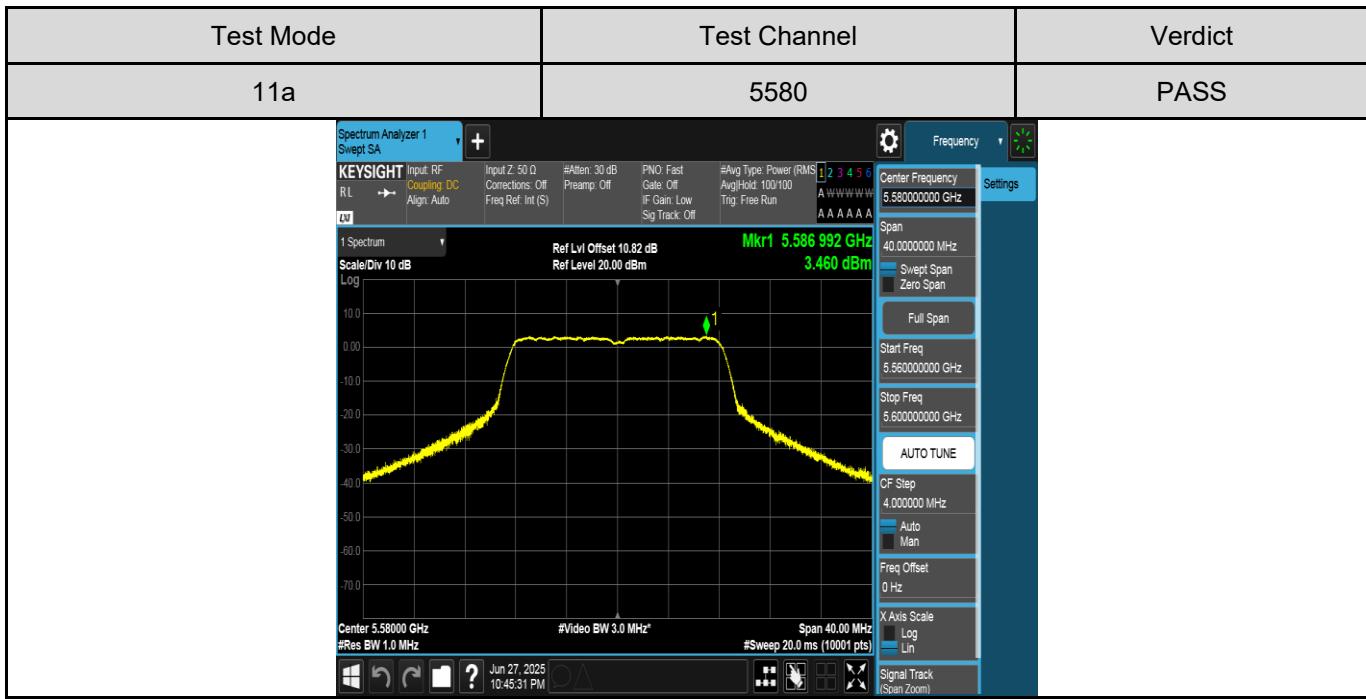
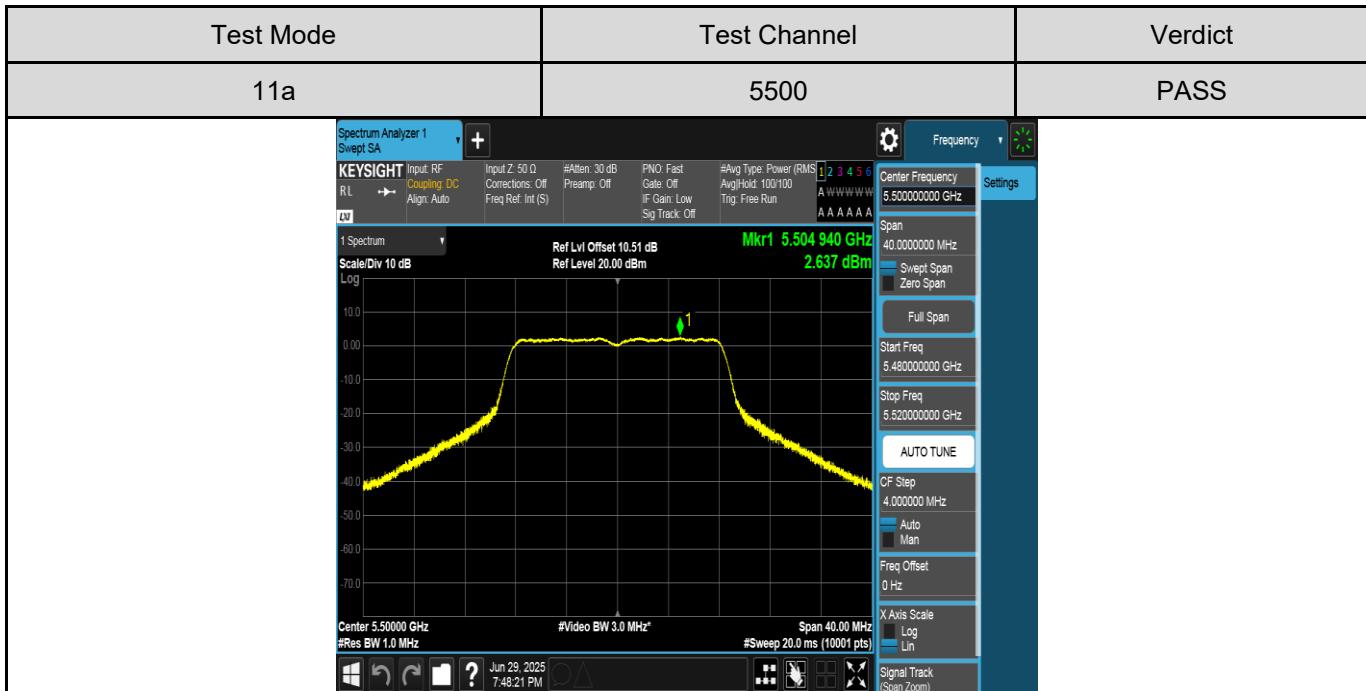
TEST GRAPHS

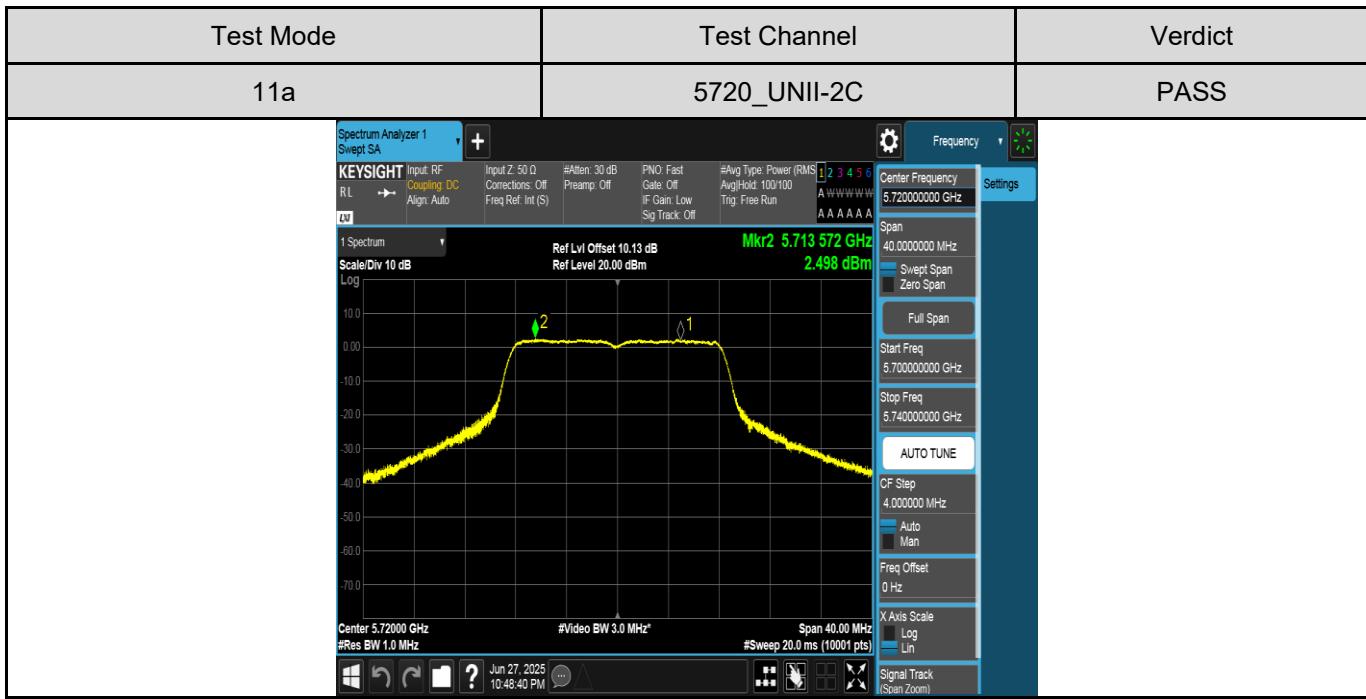
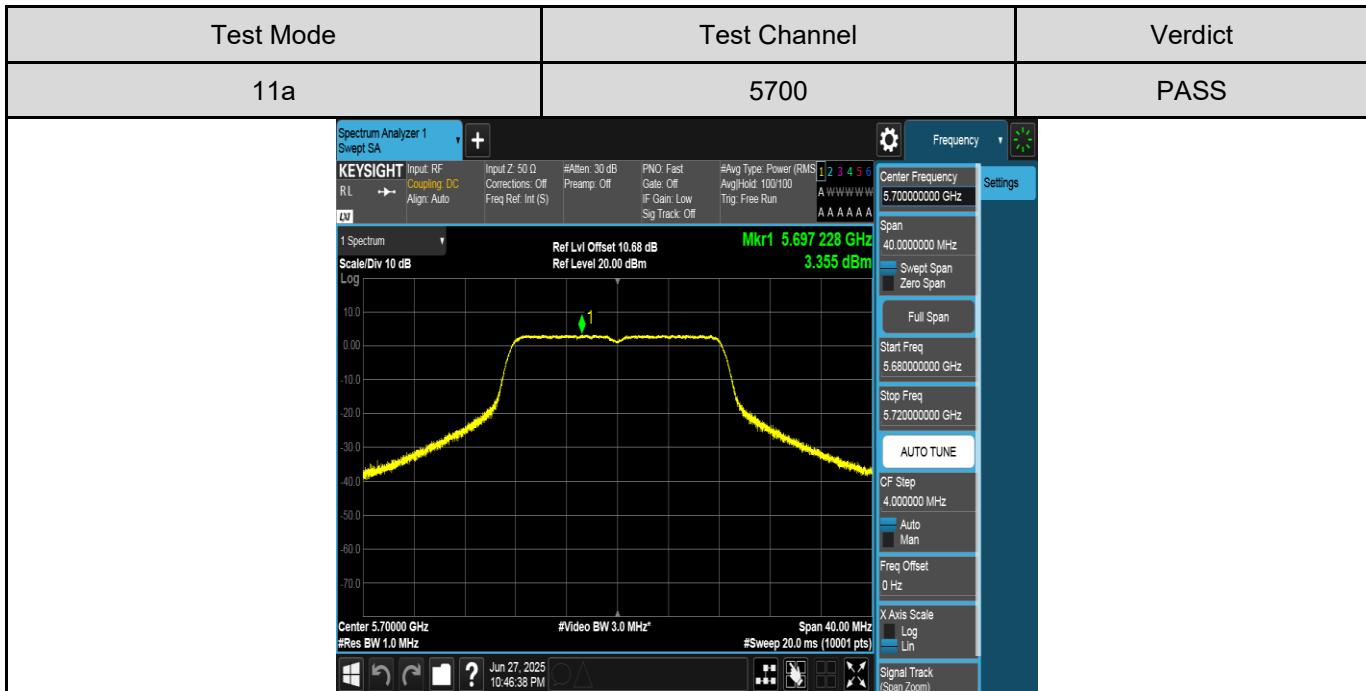
Test Mode	Test Channel	Verdict
11a	5180	PASS
 <p>Spectrum Analyzer 1    KEYSIGHT Input: RF Coupling: DC    RL → Align: Auto    Input Z: 50 Ω Corrections: Off    Freq Ref. int (S)    #Aften: 30 dB Preamp: Off    PNO: Fast Gate: Off    IF Gain: Low Avg/Type: Power (RMS)    Avg/Hold: 100/100 Tdg: Free Run    Sig Track: Off</p> <p>1 Spectrum Ref Lvl Offset 9.84 dB Mkr1 5.178820 GHz    Scale/Div 10 dB Ref Level 20.00 dBm 0.514 dBm    Log    Center 5.18000 GHz #Video BW 3.0 MHz Span 40.00 MHz    #Res BW 1.0 MHz #Sweep 20.0 ms (10001 pts)</p> <p>Jun 27, 2025 10:42:09 PM</p>		

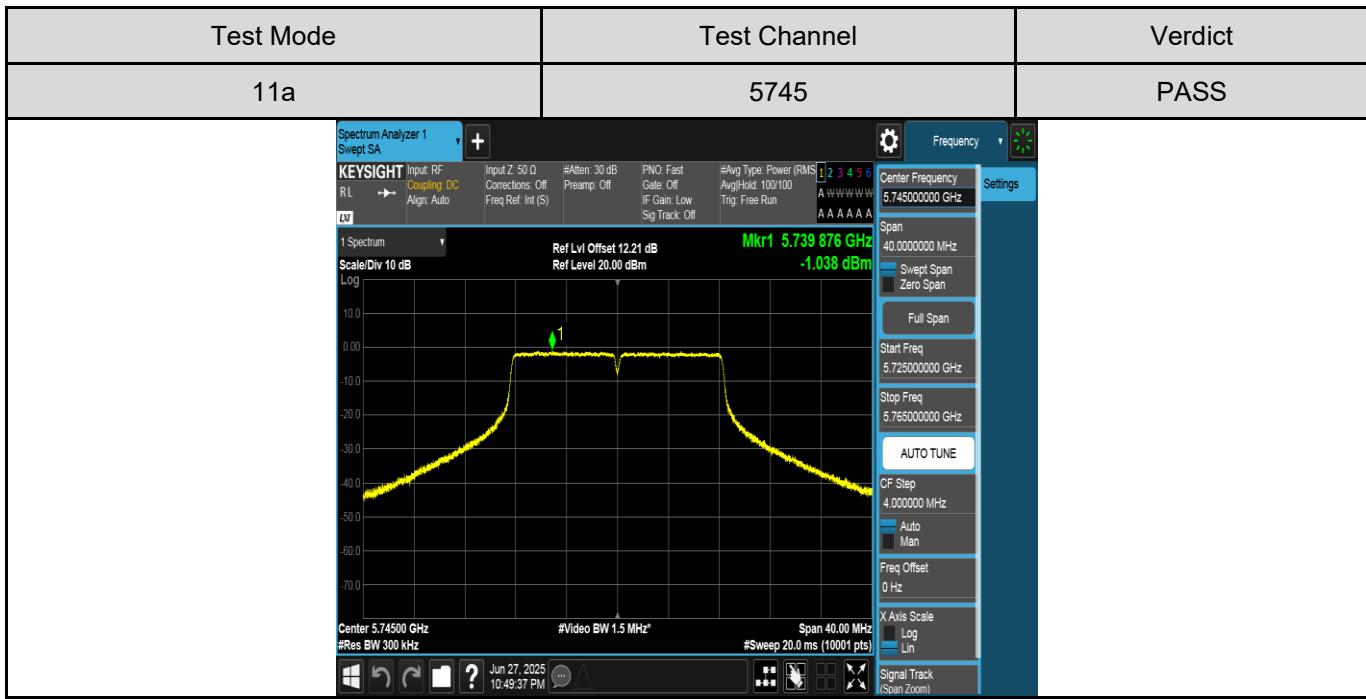
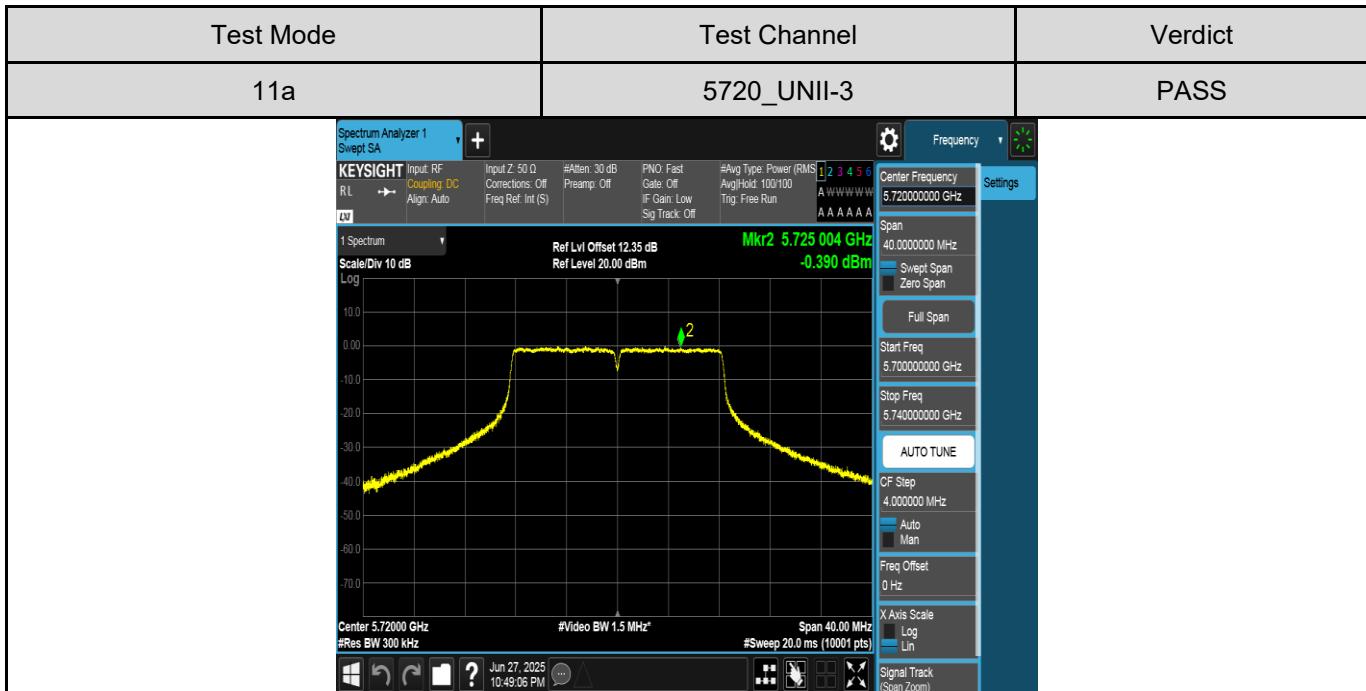
Test Mode	Test Channel	Verdict
11a	5200	PASS
 <p>Spectrum Analyzer 1    KEYSIGHT Input: RF Coupling: DC    RL → Align: Auto    Input Z: 50 Ω Corrections: Off    Freq Ref. int (S)    #Aften: 30 dB Preamp: Off    PNO: Fast Gate: Off    IF Gain: Low Avg/Type: Power (RMS)    Avg/Hold: 100/100 Tdg: Free Run    Sig Track: Off</p> <p>1 Spectrum Ref Lvl Offset 10.07 dB Mkr1 5.201708 GHz    Scale/Div 10 dB Ref Level 20.00 dBm 0.859 dBm    Log    Center 5.20000 GHz #Video BW 3.0 MHz Span 40.00 MHz    #Res BW 1.0 MHz #Sweep 20.0 ms (10001 pts)</p> <p>Jun 27, 2025 10:42:41 PM</p>		

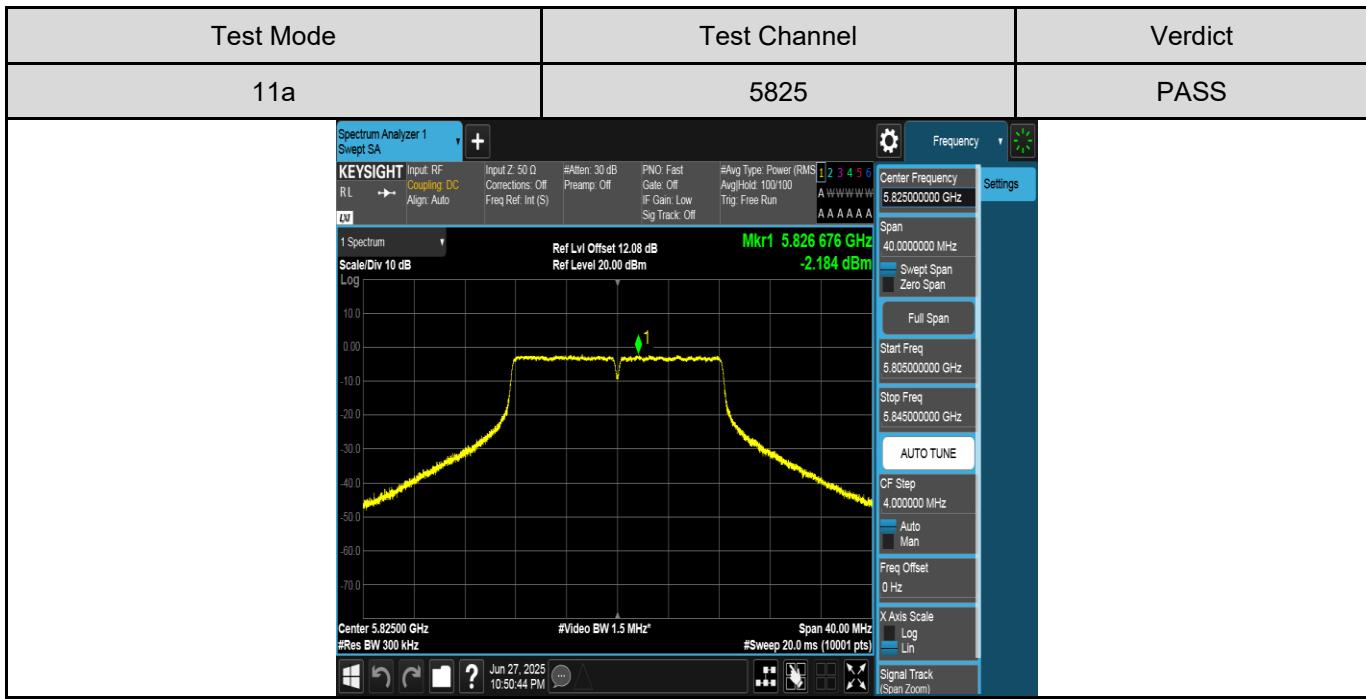
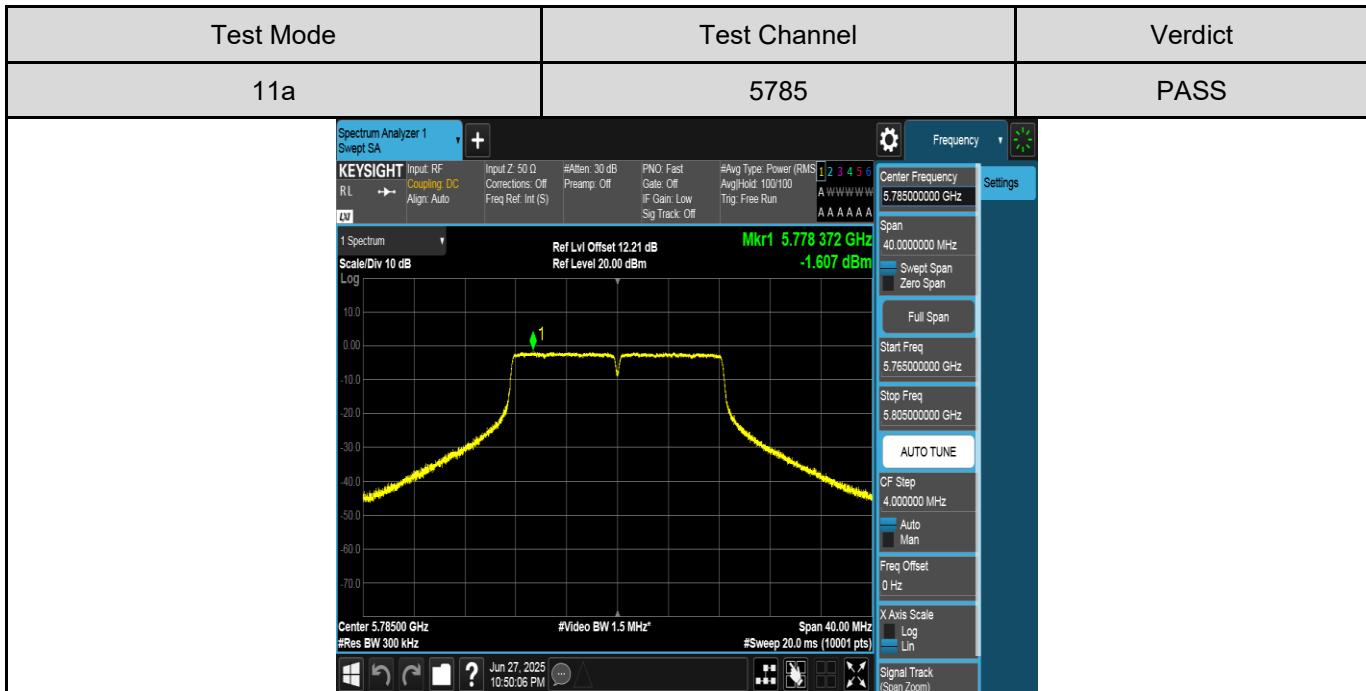


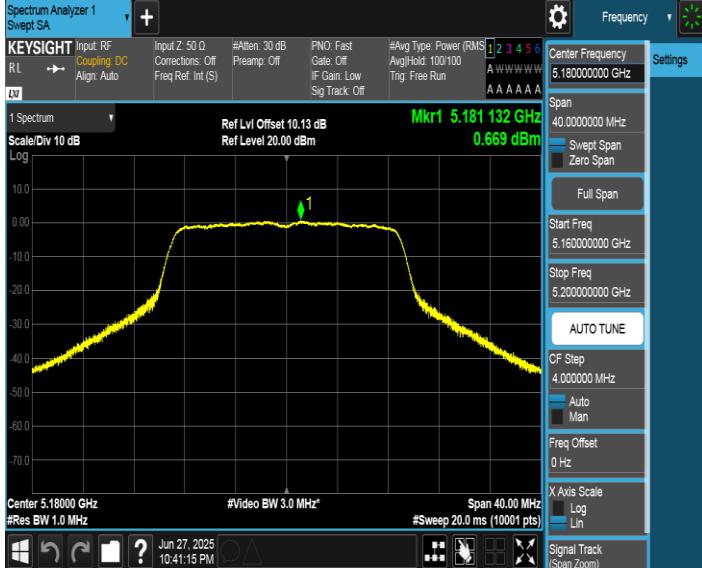


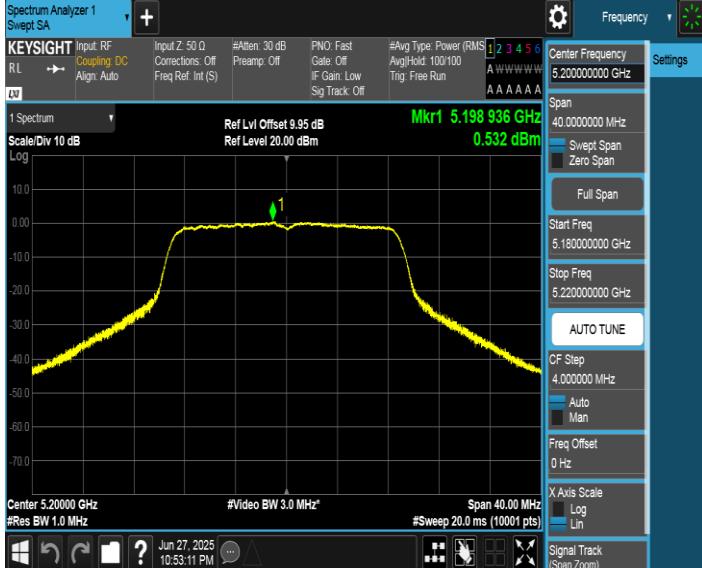


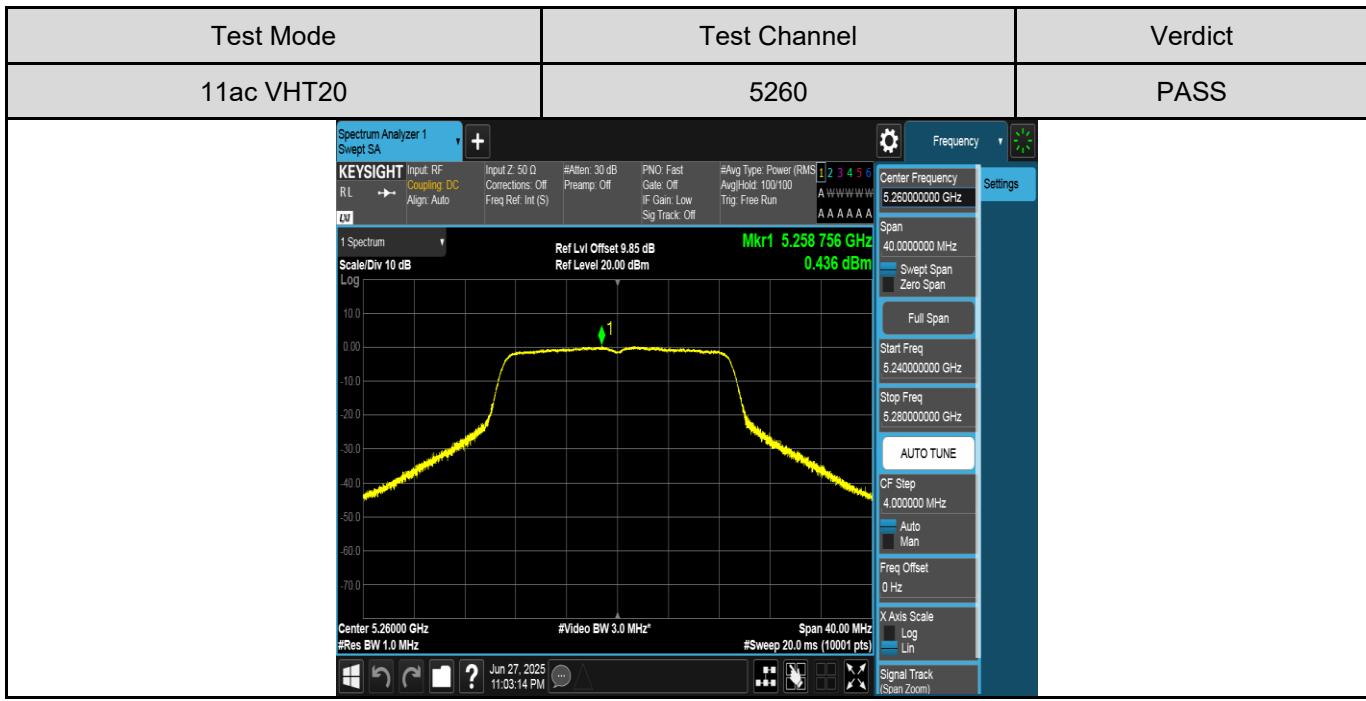
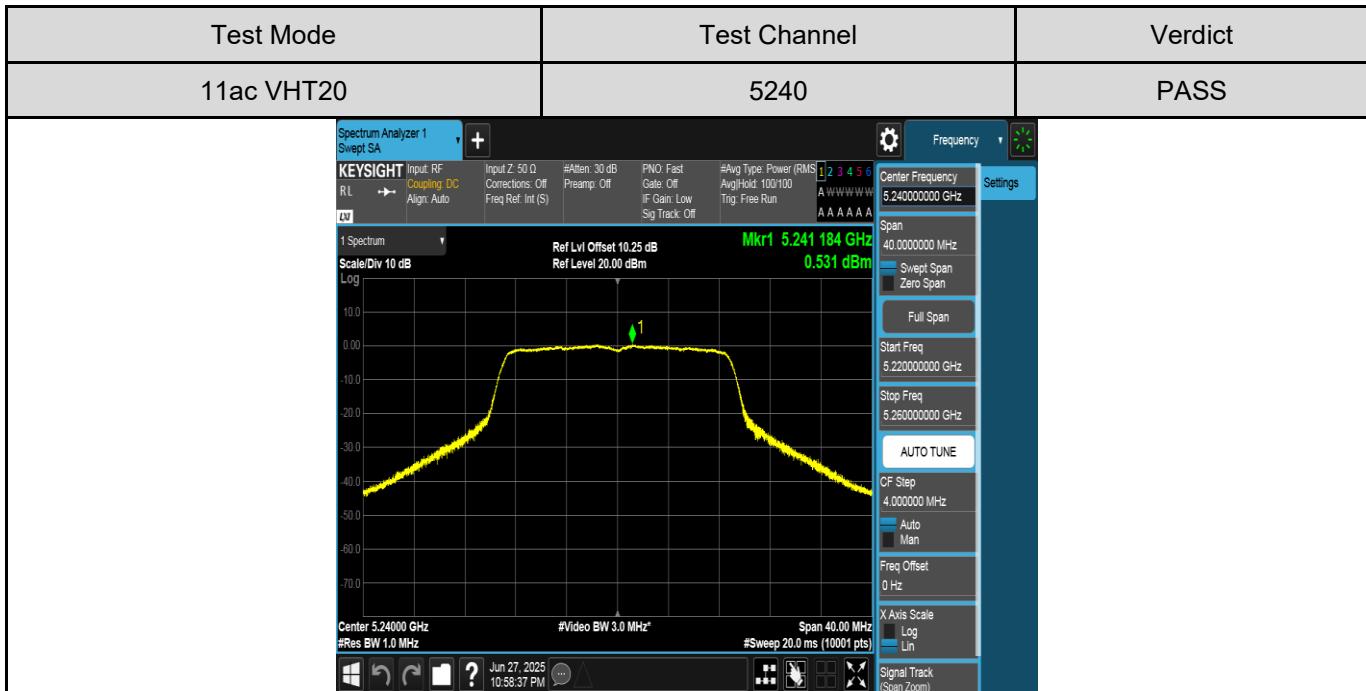


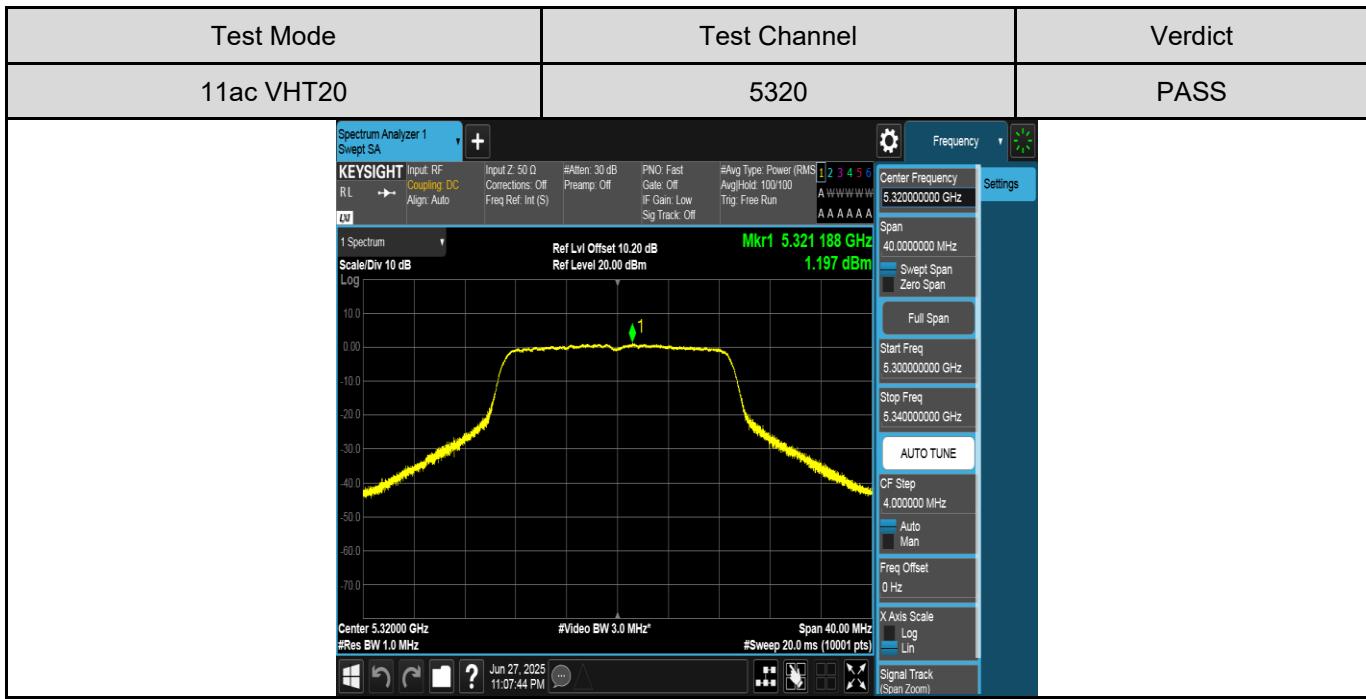
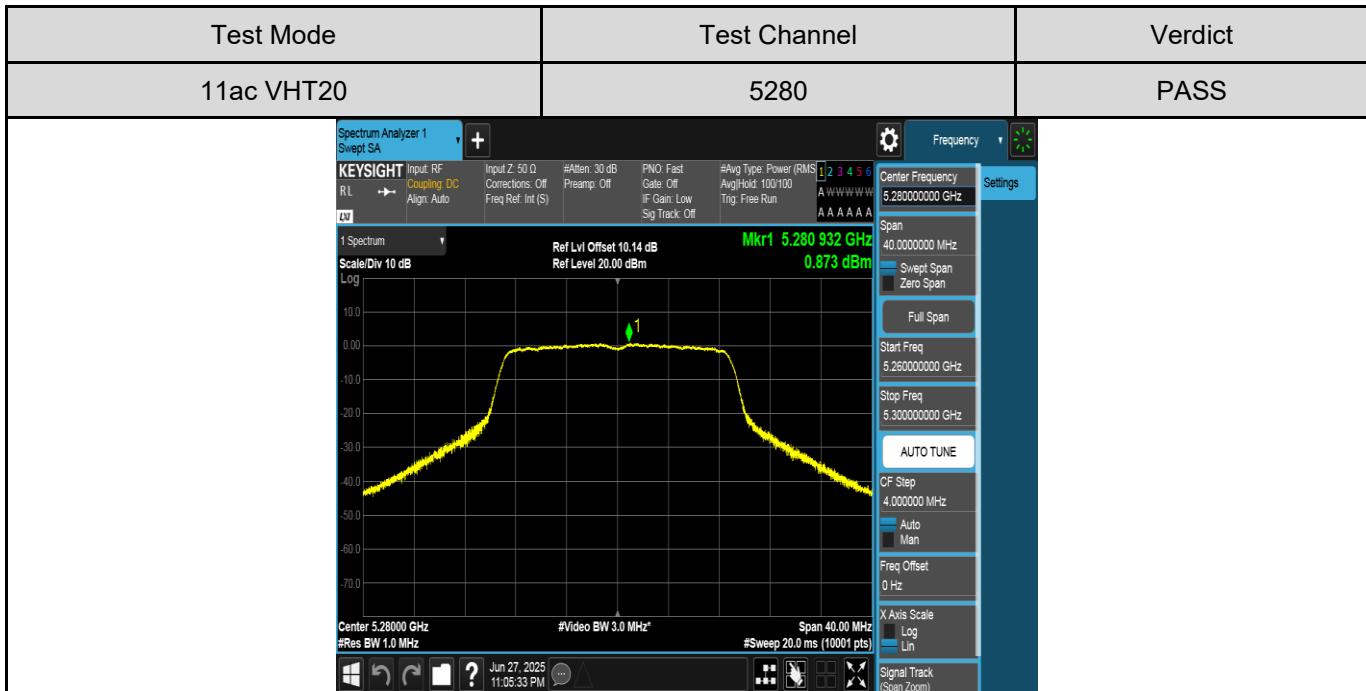


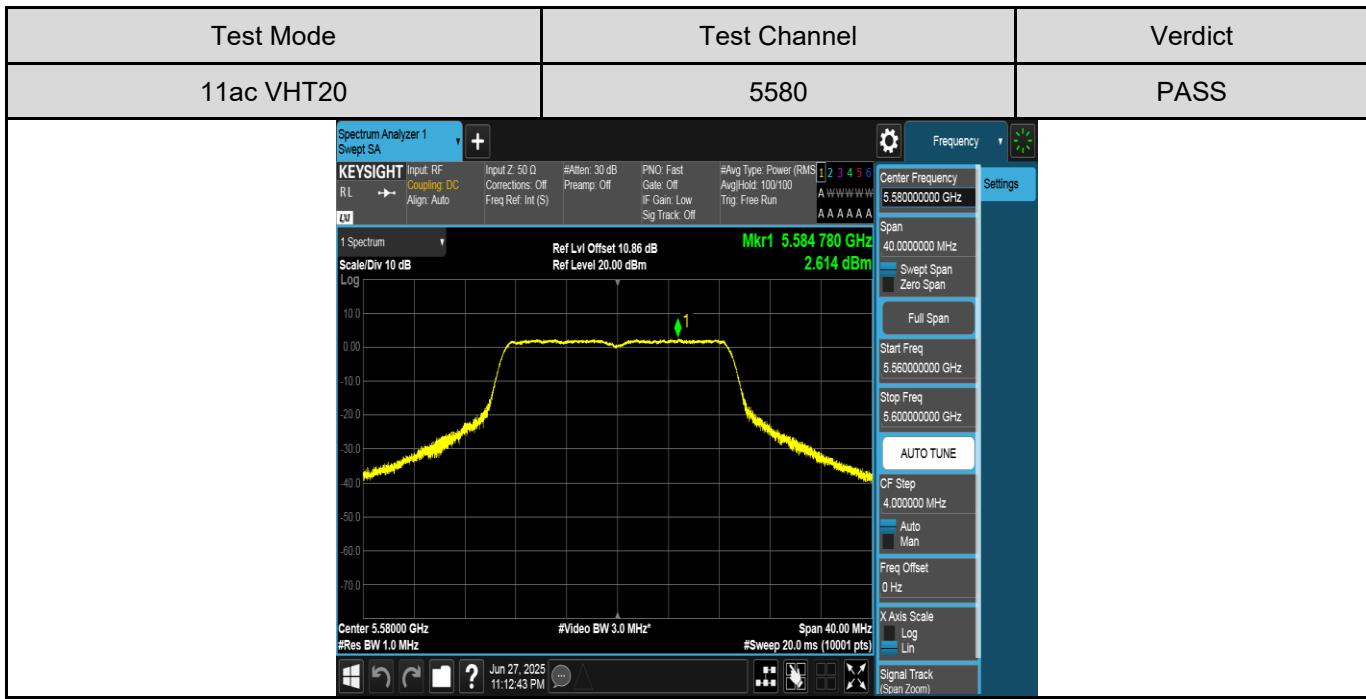
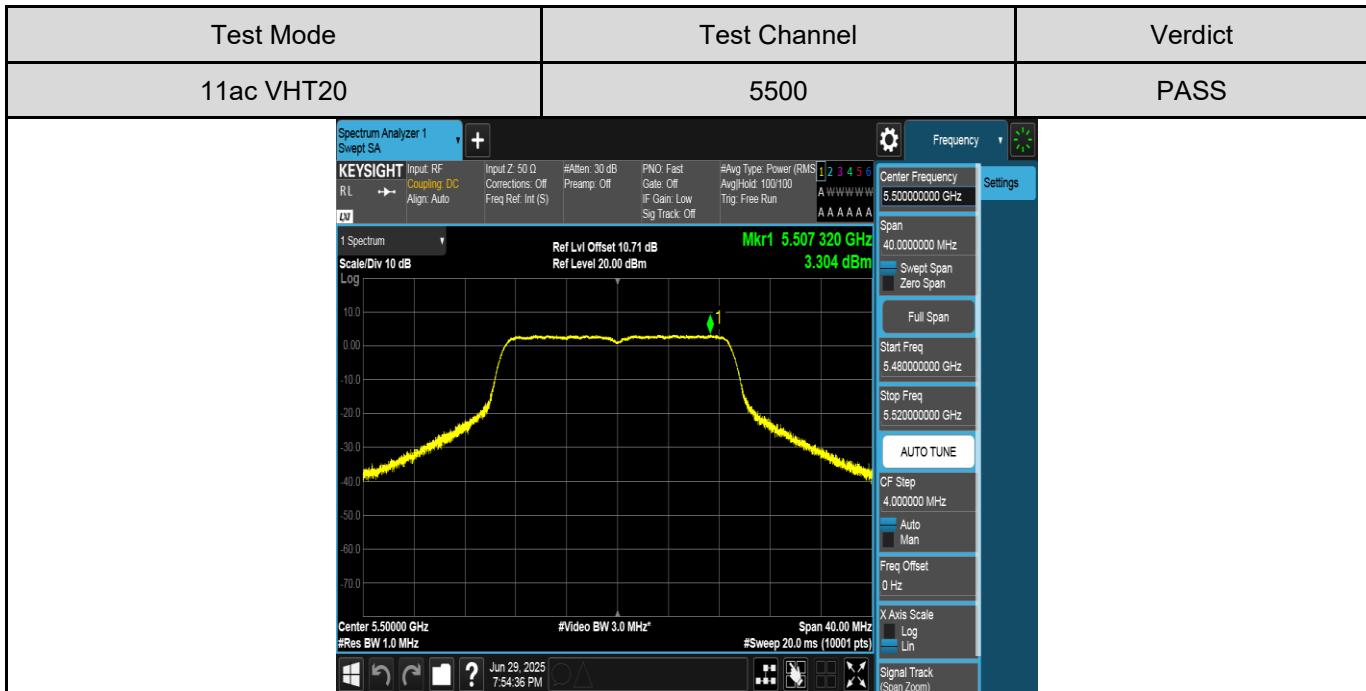


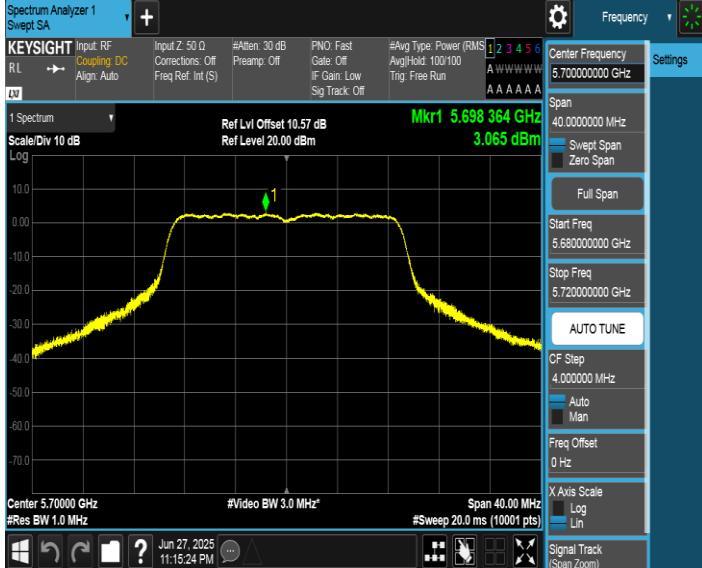
Test Mode	Test Channel	Verdict
11ac VHT20	5180	PASS
	 <p>Detailed description: This screenshot shows a Keysight Spectrum Analyzer interface. The main display shows a yellow spectrum line with a peak at 5.181132 GHz. The left panel displays various measurement parameters: Input: RF, Coupling: DC, RL: Align: Auto, Input Z: 50 Ω, Corrections: Off, Freq Ref. Int (S): 1, #Aver: 30 dB, PNO: Fast, Gate: Off, IF Gain: Low, Sig Track: Off. The right panel shows the frequency range from 5.16000000 GHz to 5.20000000 GHz, with the center frequency set to 5.18000000 GHz. The spectrum is a log scale from -70.0 to 10.0 dB. The x-axis shows a span of 40.00 MHz, a video bandwidth of 3.0 MHz, and a sweep time of 20.0 ms (10001 pts). The signal level is 0.669 dBm. The date and time are Jun 27, 2025, 10:41:15 PM.</p>	

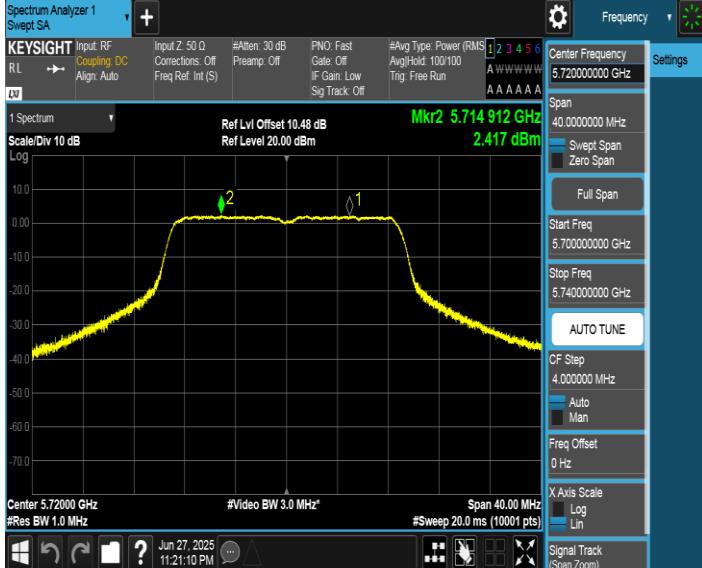
Test Mode	Test Channel	Verdict
11ac VHT20	5200	PASS
	 <p>Detailed description: This screenshot shows a Keysight Spectrum Analyzer interface. The main display shows a yellow spectrum line with a peak at 5.198936 GHz. The left panel displays various measurement parameters: Input: RF, Coupling: DC, RL: Align: Auto, Input Z: 50 Ω, Corrections: Off, Freq Ref. Int (S): 1, #Aver: 30 dB, PNO: Fast, Gate: Off, IF Gain: Low, Sig Track: Off. The right panel shows the frequency range from 5.18000000 GHz to 5.22000000 GHz, with the center frequency set to 5.20000000 GHz. The spectrum is a log scale from -70.0 to 10.0 dB. The x-axis shows a span of 40.00 MHz, a video bandwidth of 3.0 MHz, and a sweep time of 20.0 ms (10001 pts). The signal level is 0.532 dBm. The date and time are Jun 27, 2025, 10:53:11 PM.</p>	

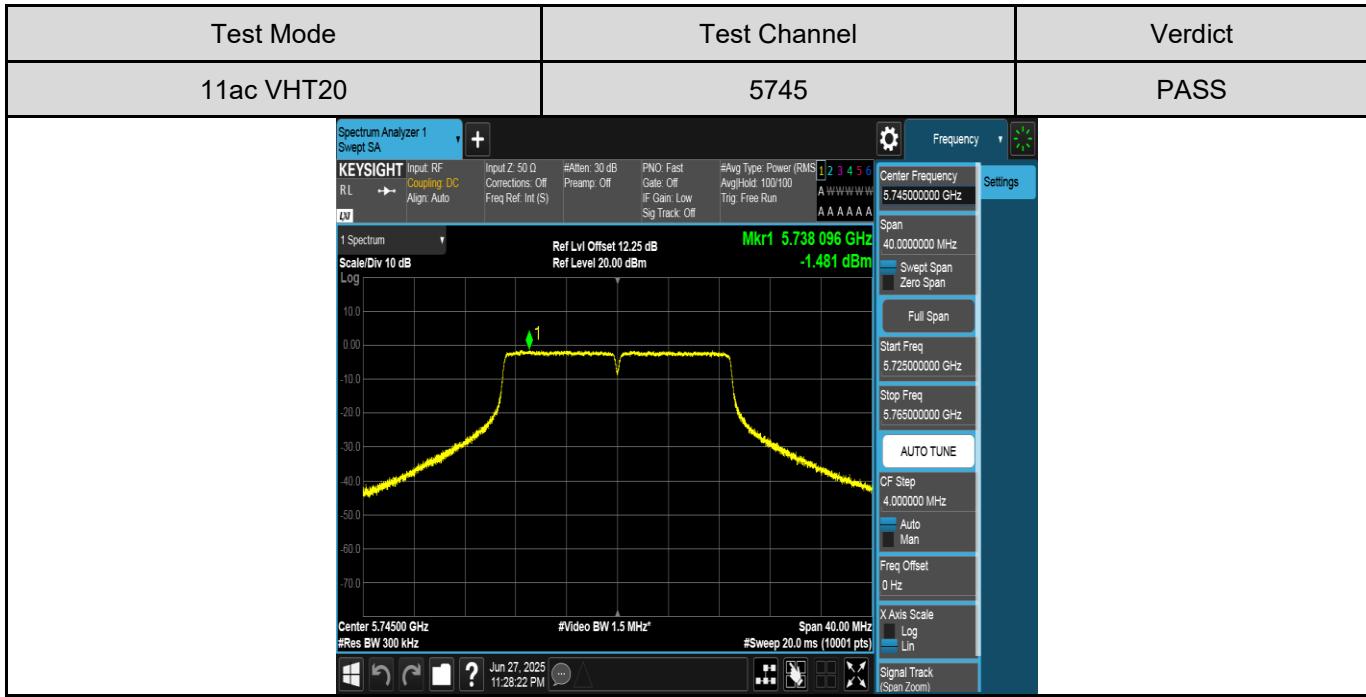
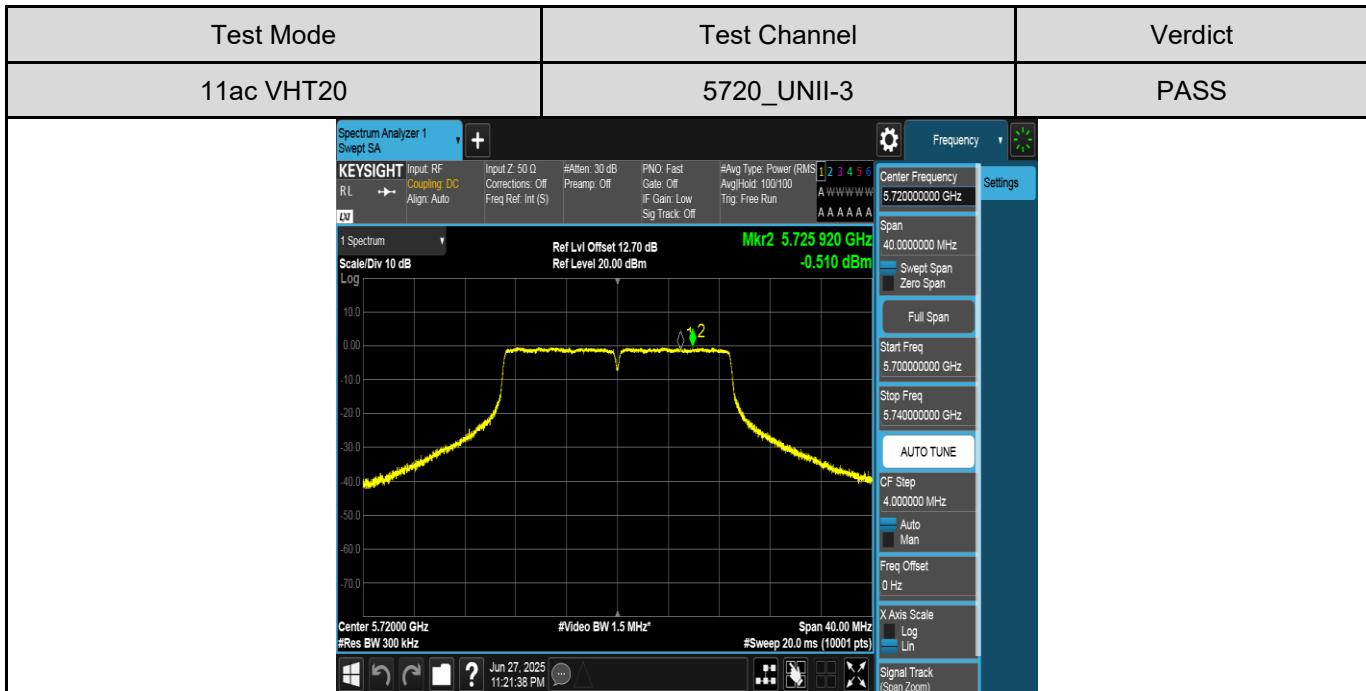


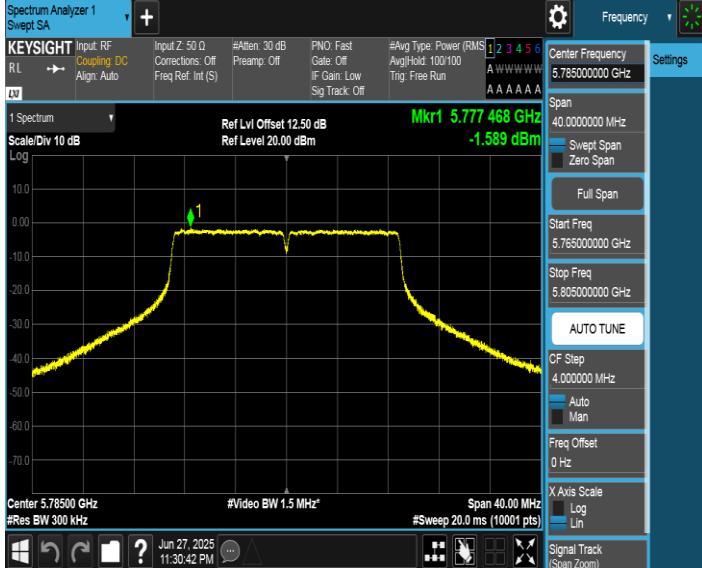


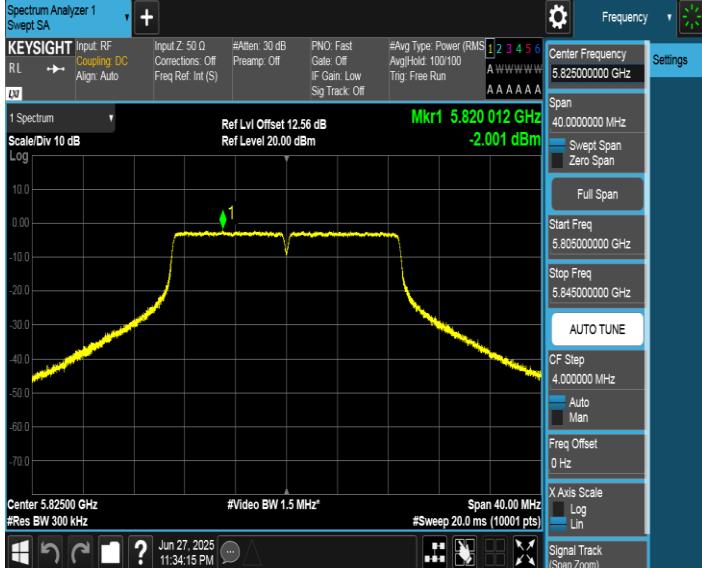


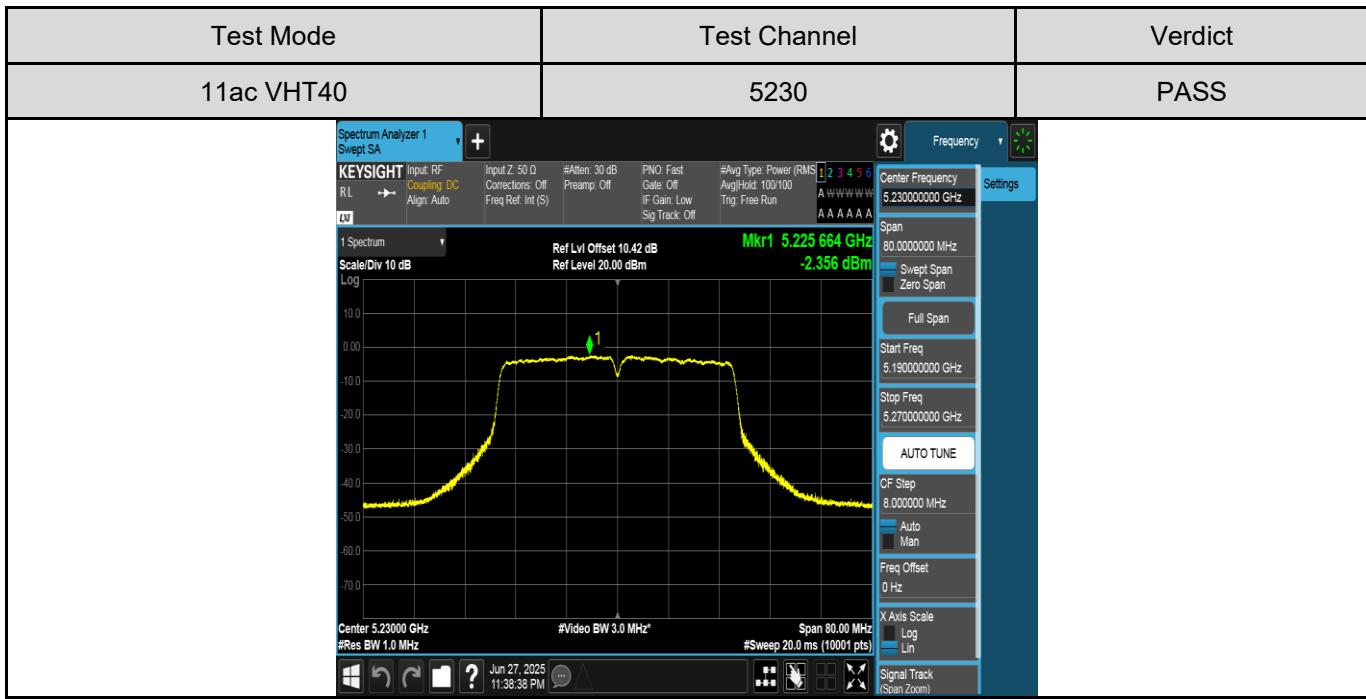
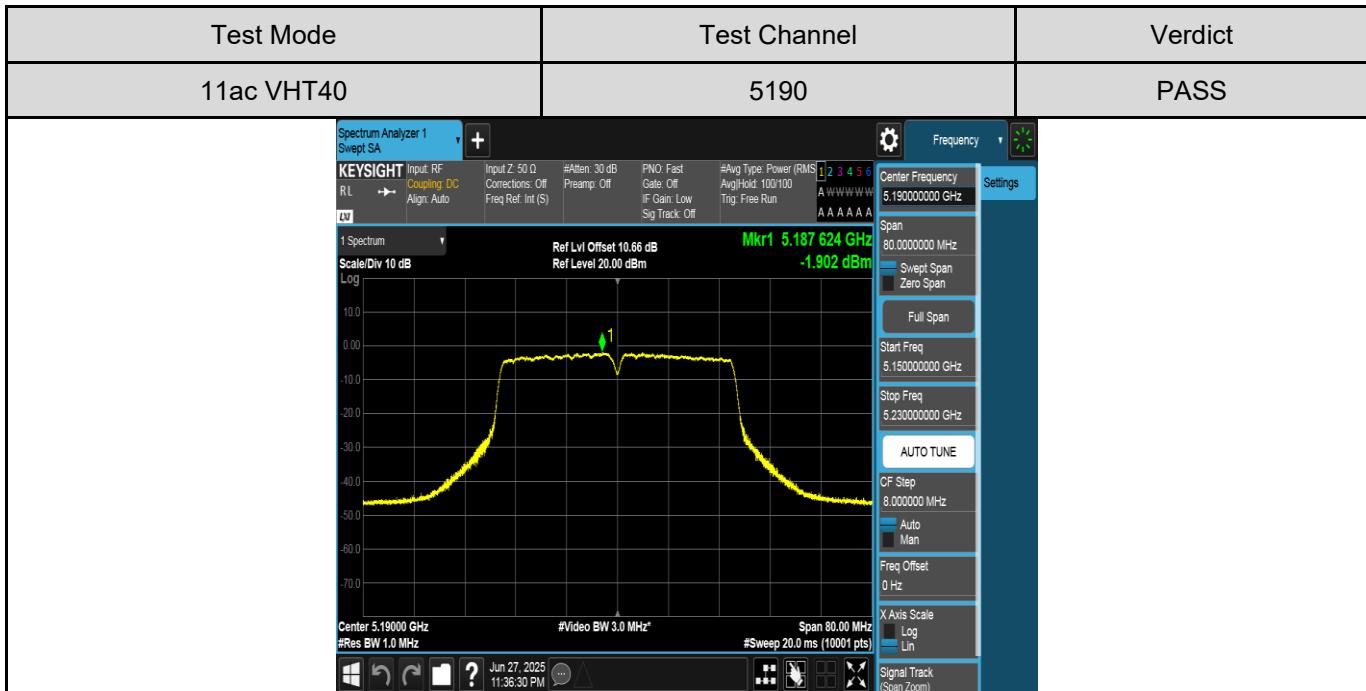
Test Mode	Test Channel	Verdict
11ac VHT20	5700	PASS
		

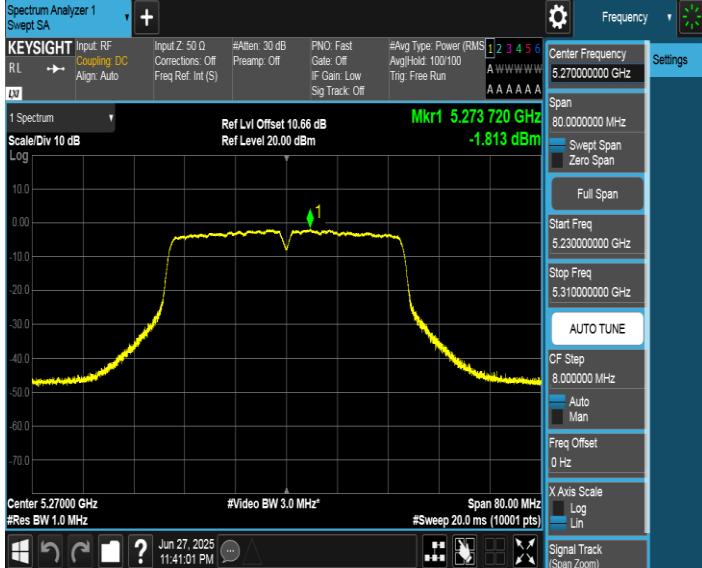
Test Mode	Test Channel	Verdict
11ac VHT20	5720_UNII-2C	PASS
		



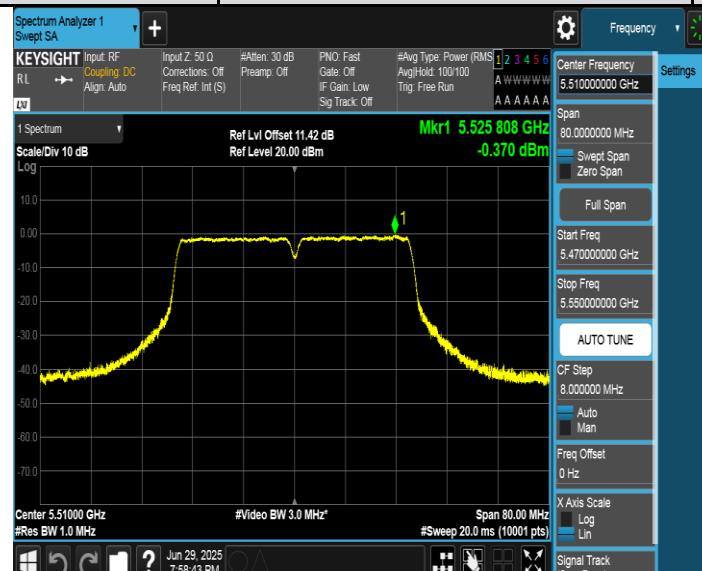
Test Mode	Test Channel	Verdict
11ac VHT20	5785	PASS
		

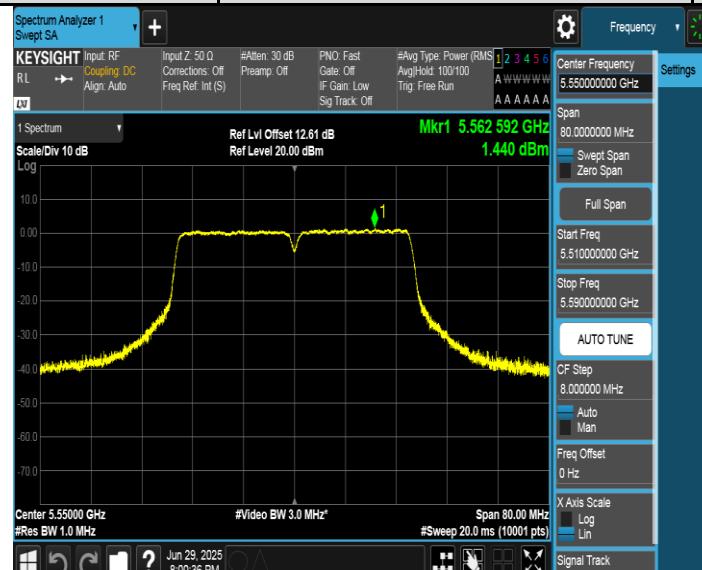
Test Mode	Test Channel	Verdict
11ac VHT20	5825	PASS
		

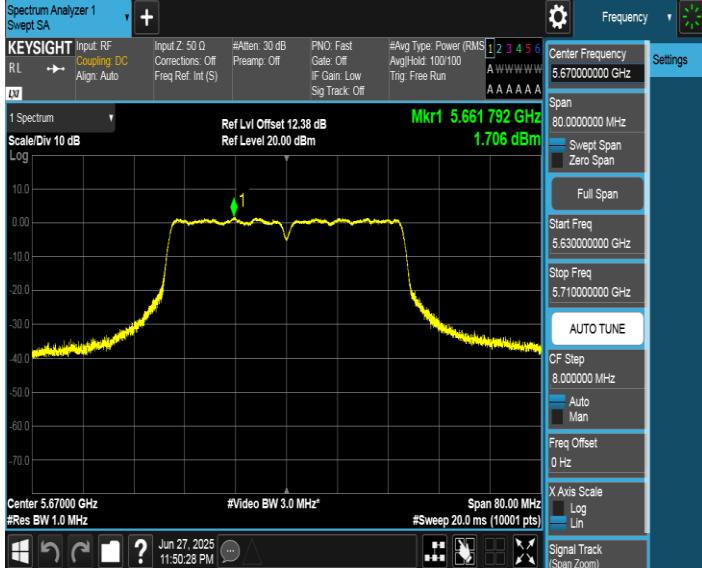


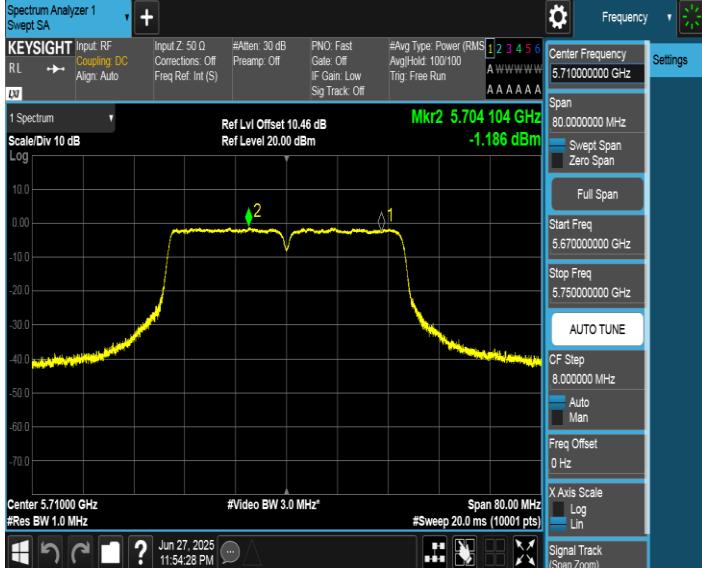
Test Mode	Test Channel	Verdict
11ac VHT40	5270	PASS
 <p>This screenshot shows a Keysight Spectrum Analyzer interface. The main display shows a spectrum plot with a yellow line representing the signal. The plot includes a reference level of 10.66 dB and a reference level of 20.00 dBm. The center frequency is 5.273720 GHz, and the span is 80.00 MHz. The x-axis scale is logarithmic (Log). The right side of the screen displays various settings and status indicators, including the date (Jun 27, 2025) and time (11:41:01 PM).</p>		

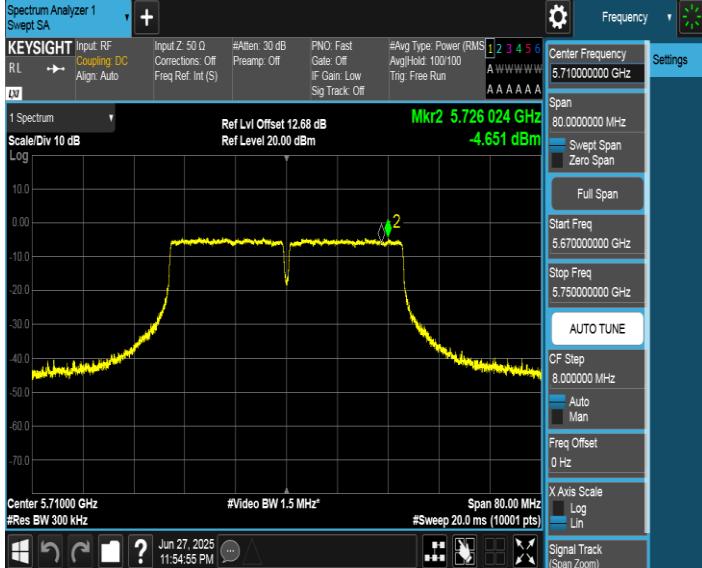
Test Mode	Test Channel	Verdict
11ac VHT40	5310	PASS
 <p>This screenshot shows a Keysight Spectrum Analyzer interface. The main display shows a spectrum plot with a yellow line representing the signal. The plot includes a reference level of 10.66 dB and a reference level of 20.00 dBm. The center frequency is 5.307360 GHz, and the span is 80.00 MHz. The x-axis scale is logarithmic (Log). The right side of the screen displays various settings and status indicators, including the date (Jun 27, 2025) and time (11:43:46 PM).</p>		

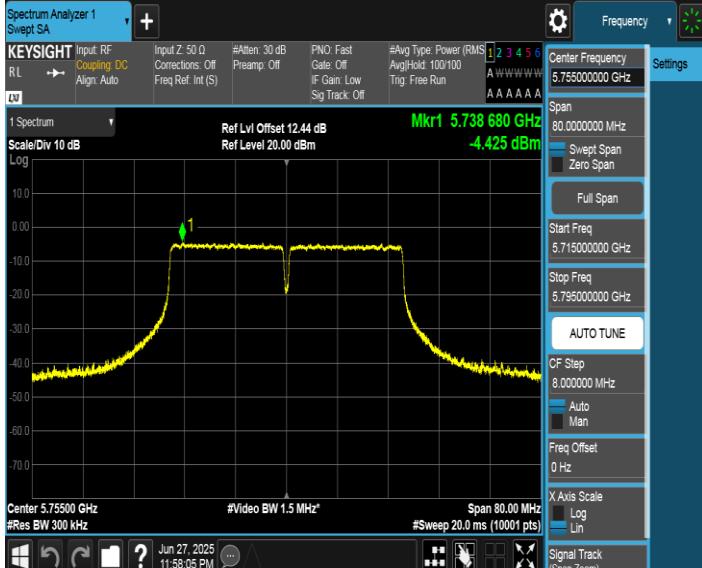
Test Mode	Test Channel	Verdict
11ac VHT40	5510	PASS
	 <p>Detailed description: This screenshot shows a Keysight Spectrum Analyzer interface. The main display shows a spectrum with a single strong signal at 5.525 GHz. The signal power is -0.370 dBm. The center frequency is set to 5.5100000 GHz, and the span is 80.00 MHz. The x-axis scale is logarithmic. The left panel displays various measurement parameters and status indicators. The right panel shows a detailed settings menu for frequency, span, and other parameters. The bottom of the screen shows the date (Jun 29, 2025) and time (7:58:43 PM).</p>	

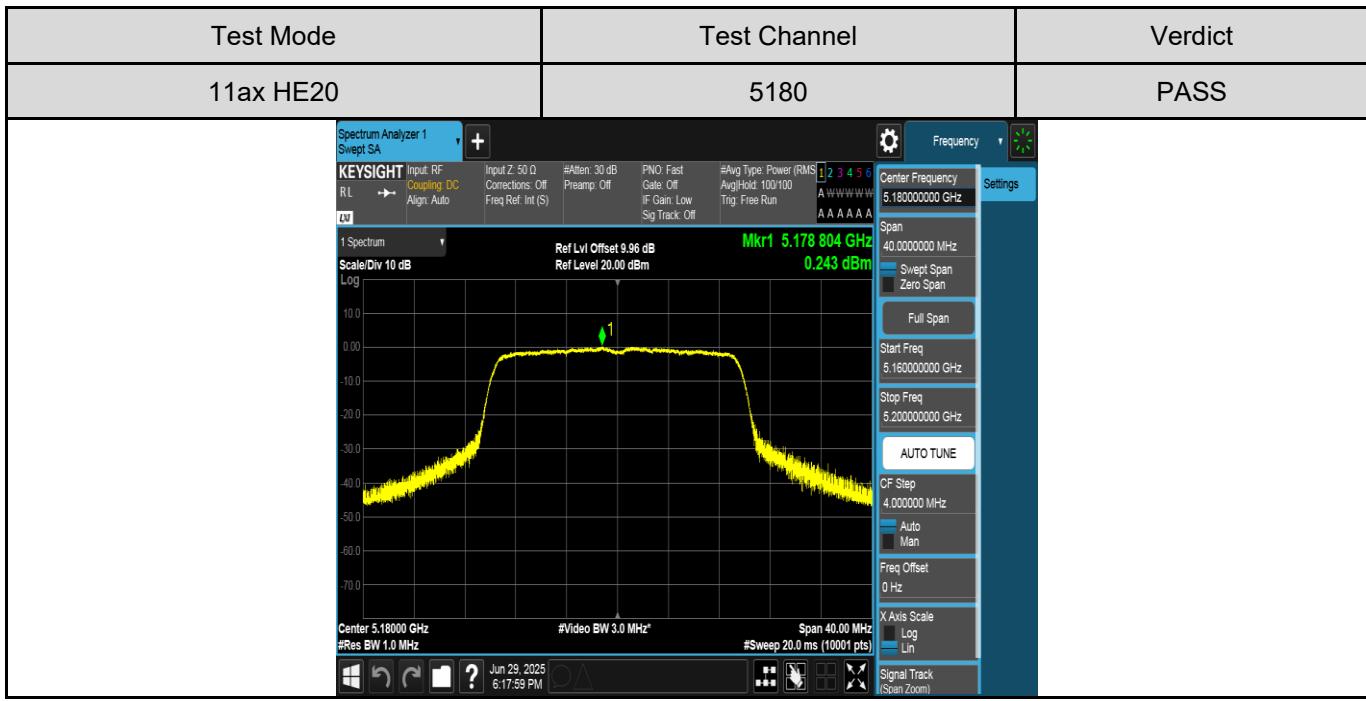
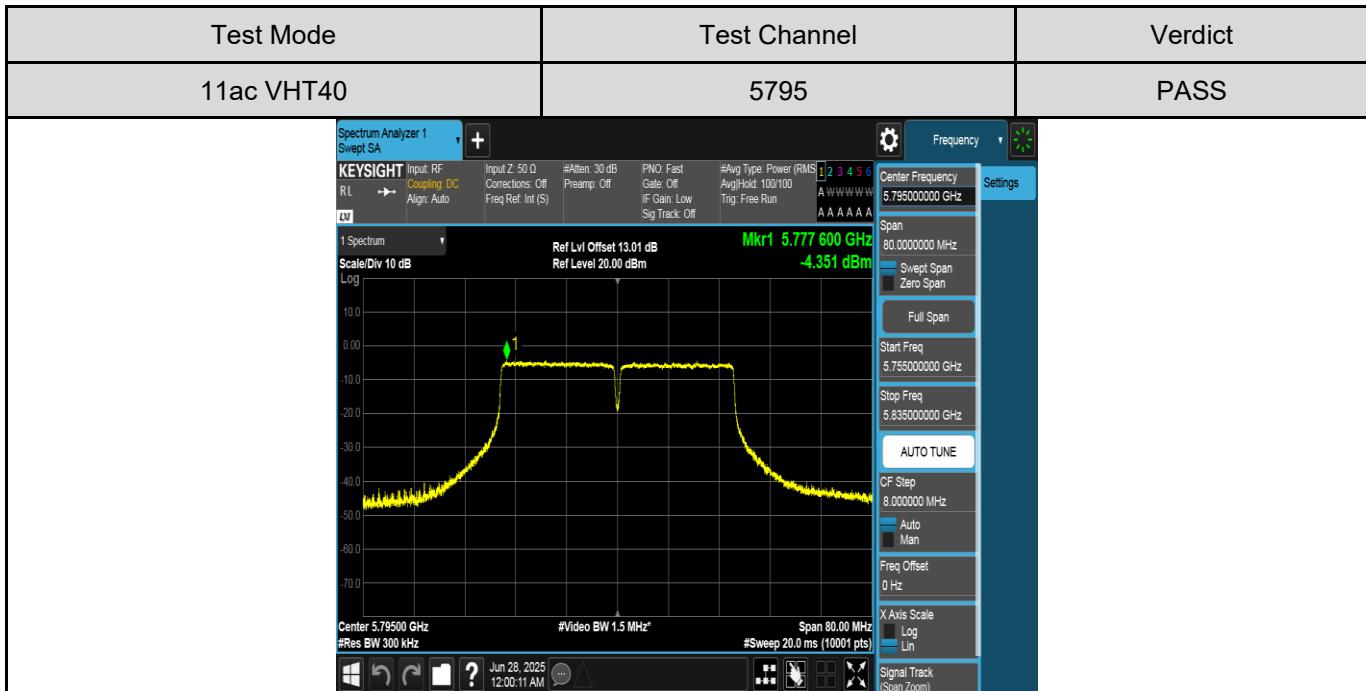
Test Mode	Test Channel	Verdict
11ac VHT40	5550	PASS
	 <p>Detailed description: This screenshot shows a Keysight Spectrum Analyzer interface. The main display shows a spectrum with a single strong signal at 5.562 GHz. The signal power is 1.440 dBm. The center frequency is set to 5.5500000 GHz, and the span is 80.00 MHz. The x-axis scale is logarithmic. The left panel displays various measurement parameters and status indicators. The right panel shows a detailed settings menu for frequency, span, and other parameters. The bottom of the screen shows the date (Jun 29, 2025) and time (8:00:36 PM).</p>	

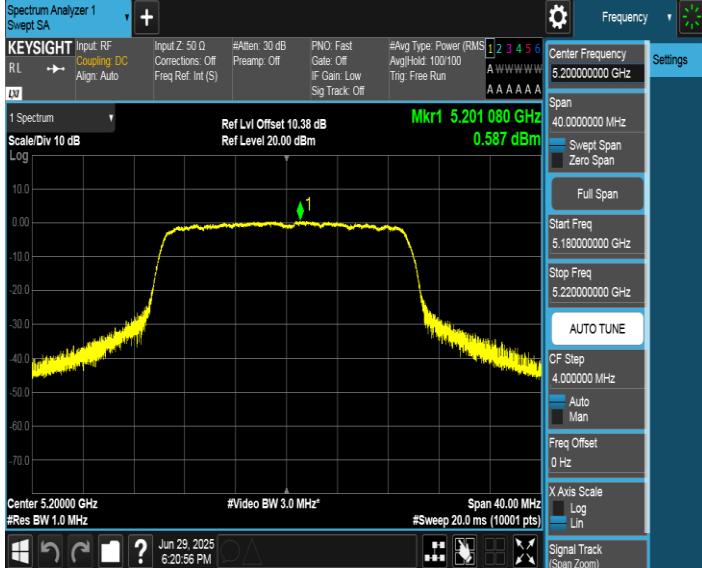
Test Mode	Test Channel	Verdict
11ac VHT40	5670	PASS
		

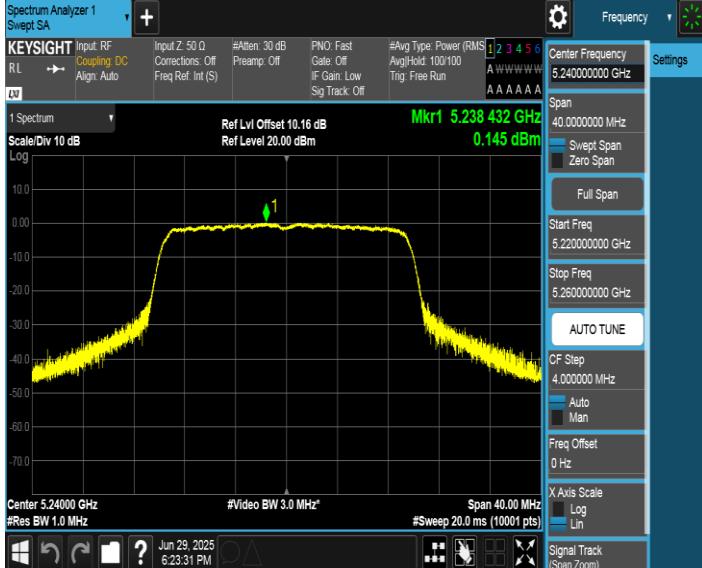
Test Mode	Test Channel	Verdict
11ac VHT40	5710_UNII-2C	PASS
		

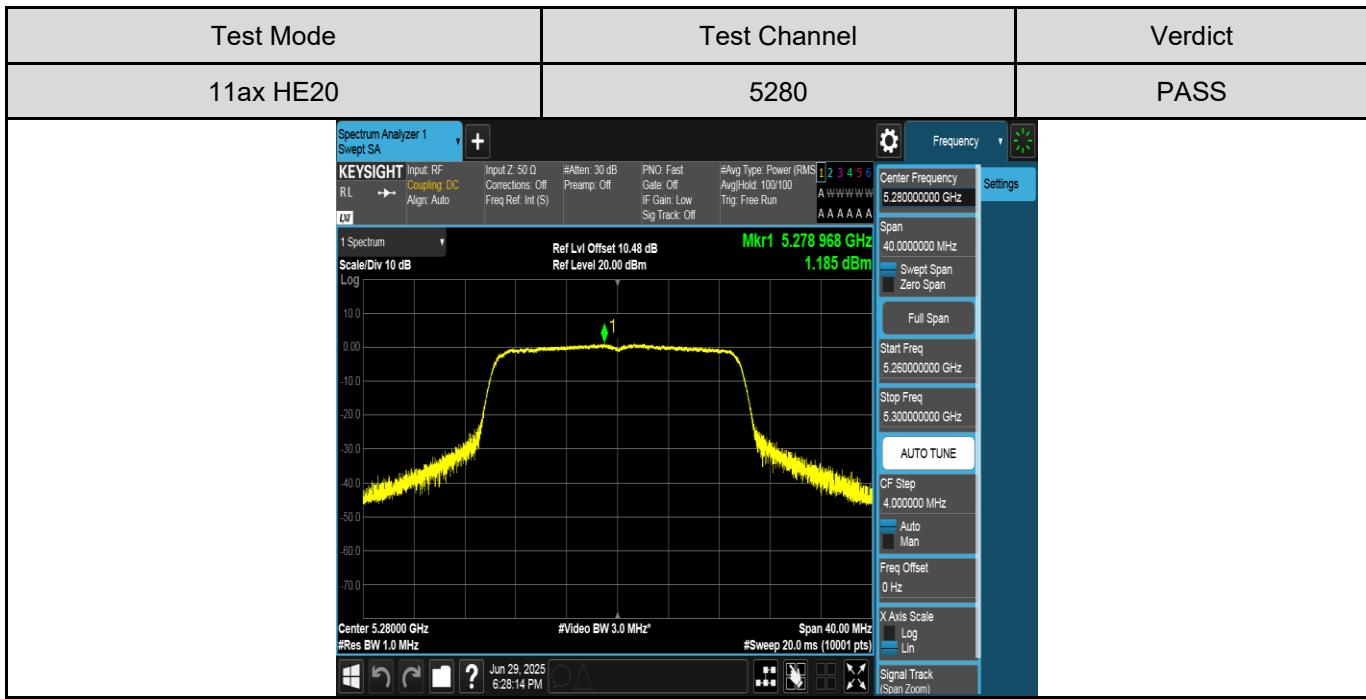
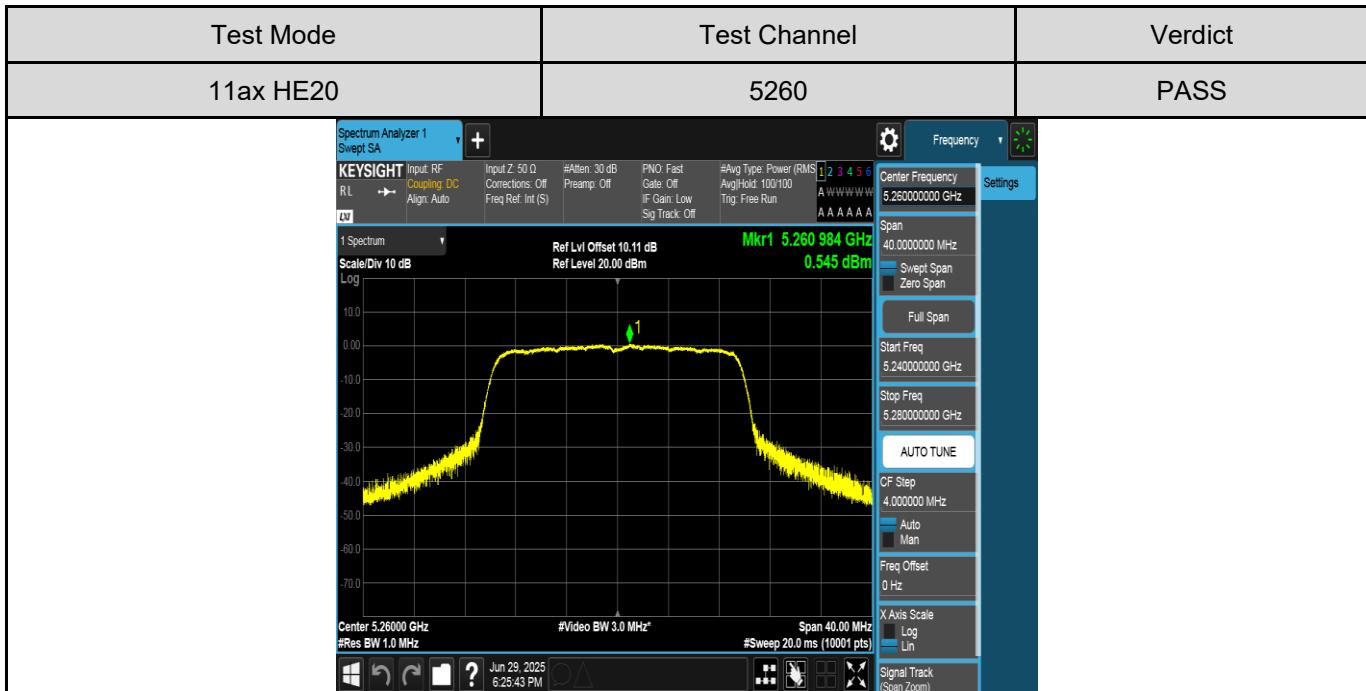
Test Mode	Test Channel	Verdict
11ac VHT40	5710_UNII-3	PASS
 <p>Detailed description: This screenshot shows a Keysight Spectrum Analyzer interface. The main display shows a spectrum with a central peak at 5.726024 GHz. The y-axis is logarithmic, ranging from -70 dB to 10 dB. The x-axis shows a 20.00 ms sweep. The center frequency is set to 5.71000000 GHz, and the span is 80.00 MHz. The signal level is -4.651 dBm. The left panel displays various measurement parameters and status indicators. The right panel shows a detailed settings menu for the spectrum analysis.</p>		

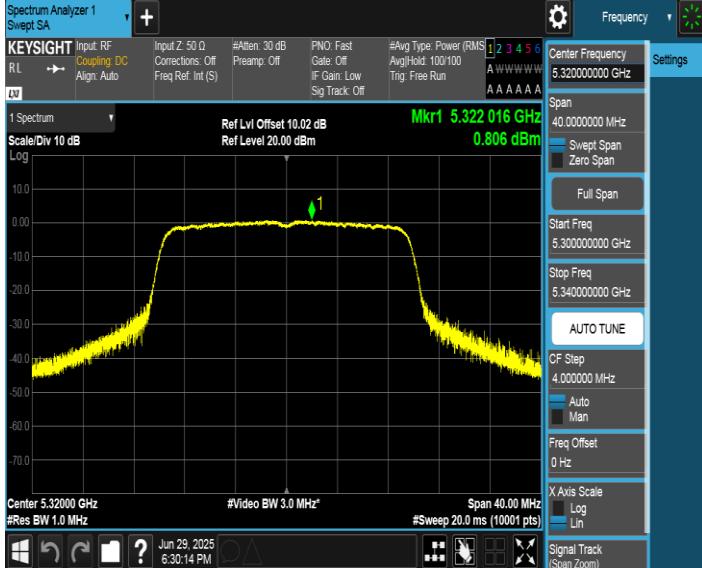
Test Mode	Test Channel	Verdict
11ac VHT40	5755	PASS
 <p>Detailed description: This screenshot shows a Keysight Spectrum Analyzer interface. The main display shows a spectrum with a central peak at 5.738680 GHz. The y-axis is logarithmic, ranging from -70 dB to 10 dB. The x-axis shows a 20.00 ms sweep. The center frequency is set to 5.75500000 GHz, and the span is 80.00 MHz. The signal level is -4.425 dBm. The left panel displays various measurement parameters and status indicators. The right panel shows a detailed settings menu for the spectrum analysis.</p>		



Test Mode	Test Channel	Verdict
11ax HE20	5200	PASS
		

Test Mode	Test Channel	Verdict
11ax HE20	5240	PASS
		



Test Mode	Test Channel	Verdict
11ax HE20	5320	PASS
		

Test Mode	Test Channel	Verdict
11ax HE20	5500	PASS
