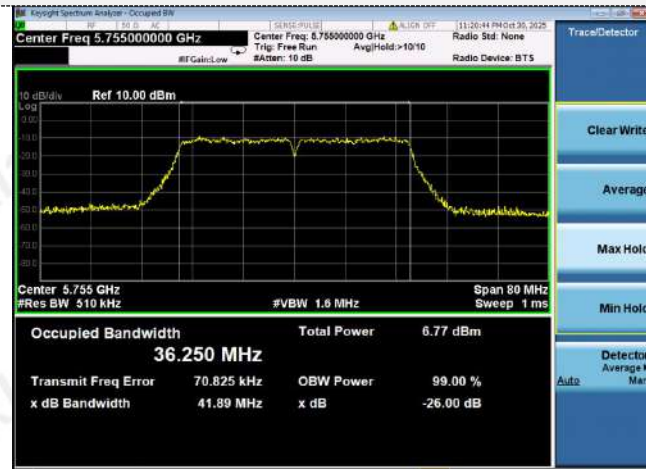


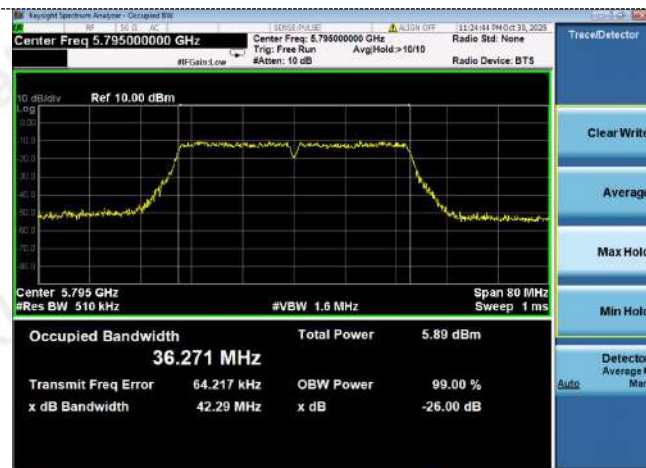
802.11n(HT40)



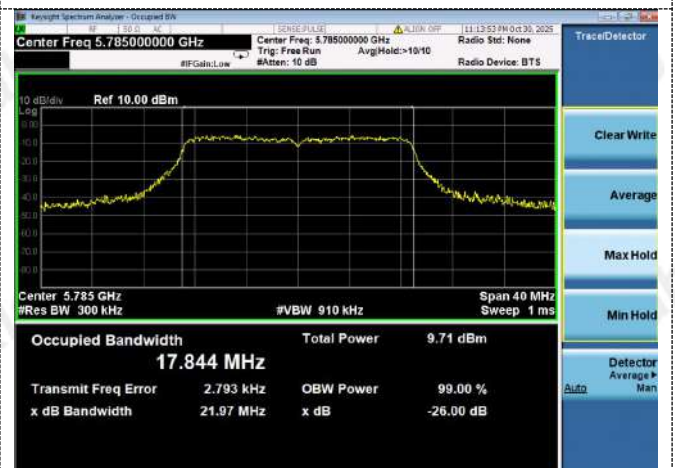
802.11ac(HT20)



CH151



CH149



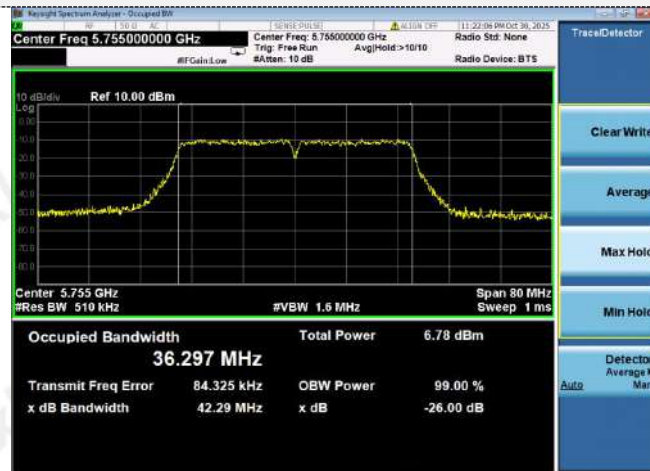
CH159



CH157

CH165

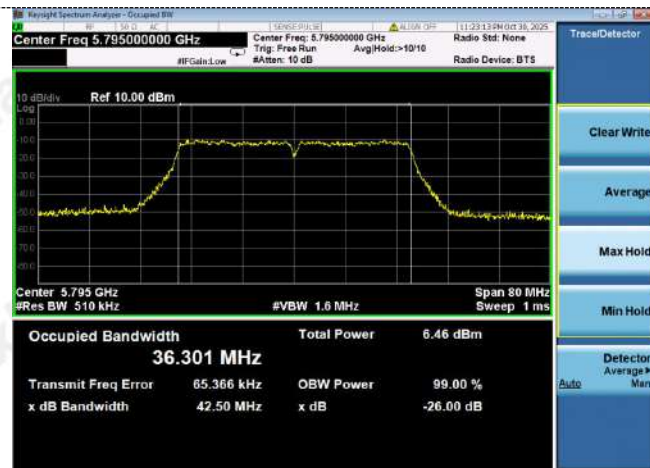
802.11ac(HT40)



802.11ac(HT80)



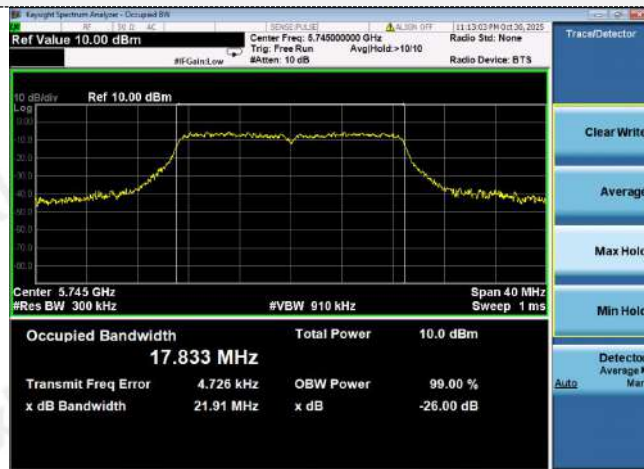
CH151



CH155

CH159

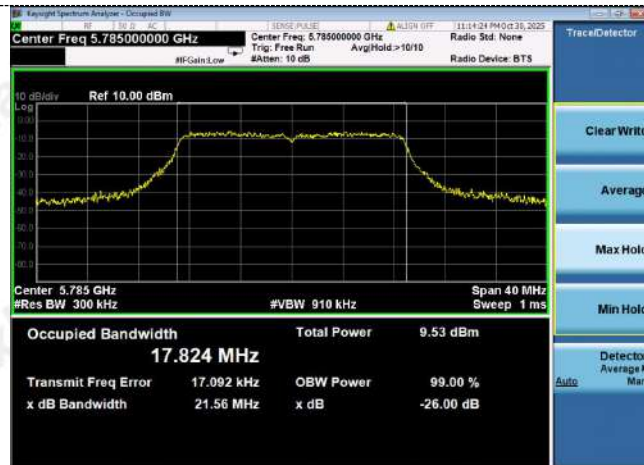
802.11ax(HT20)



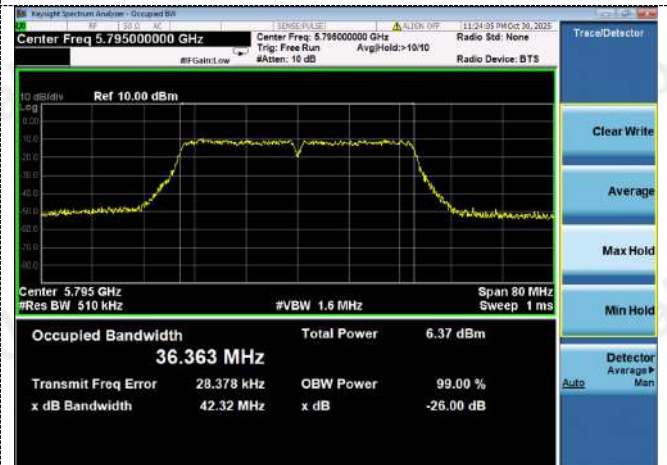
802.11ax(HT40)



CH149



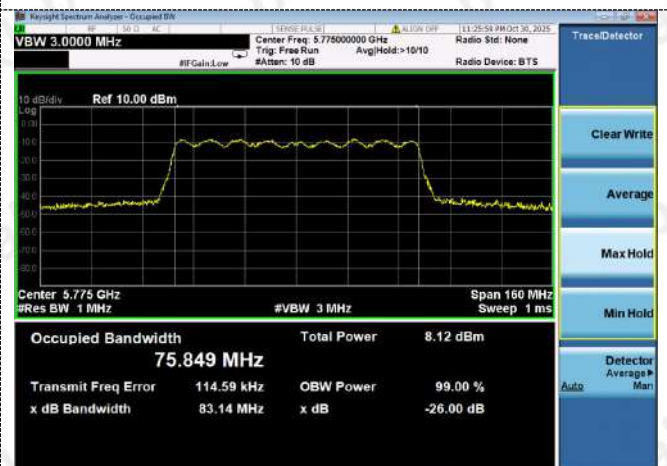
CH151



CH157



CH159



CH165

802.11ax(HT80)--CH159

4.6 Minimum Emission Bandwidth (6dBm Bandwidth)

Limit

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Test Procedure

1. Set resolution bandwidth (RBW) = 100 kHz
2. Set the video bandwidth 3 x RBW.
3. Detector = Peak.
4. Trace mode = Max hold.
5. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

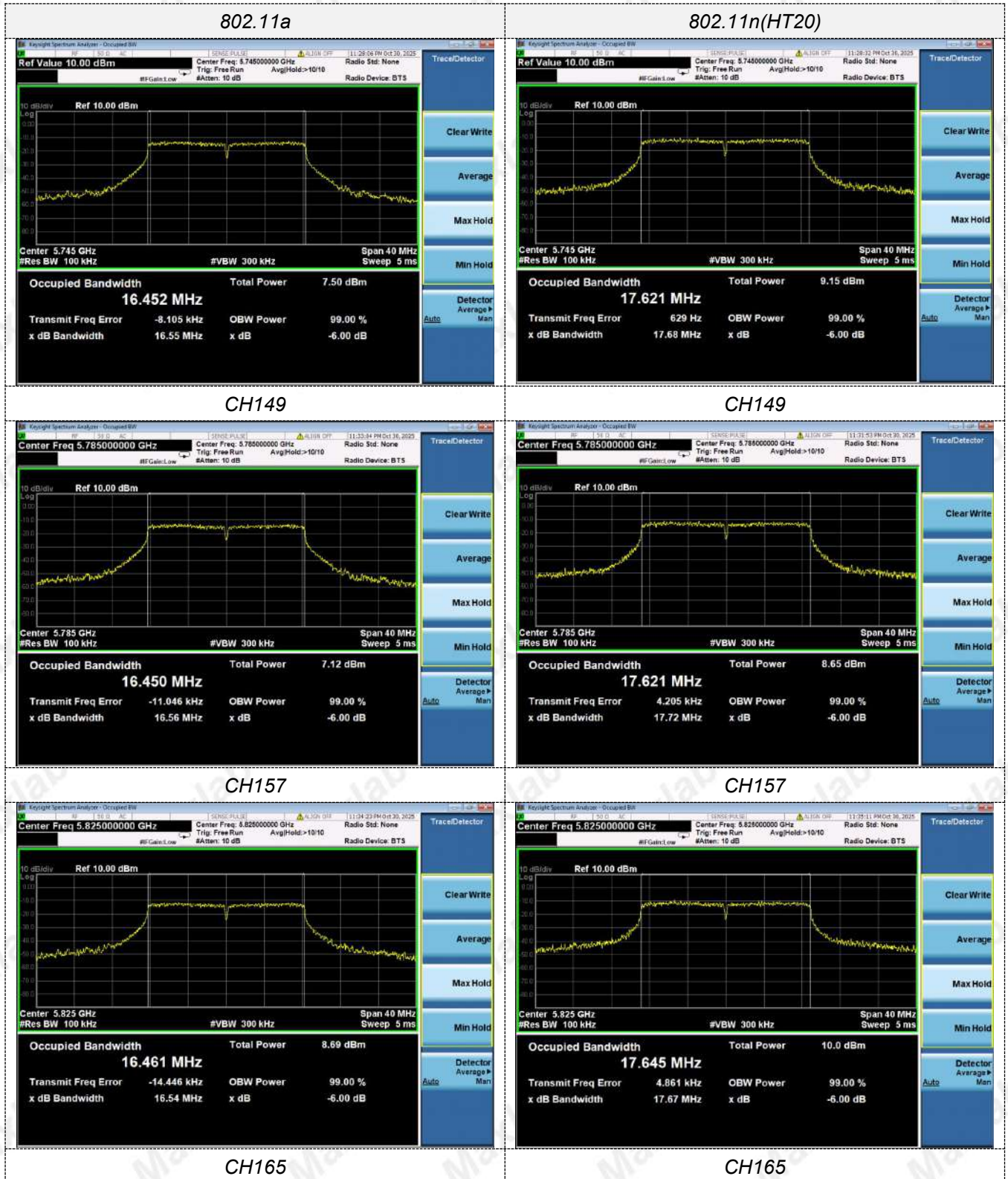
Test Configuration



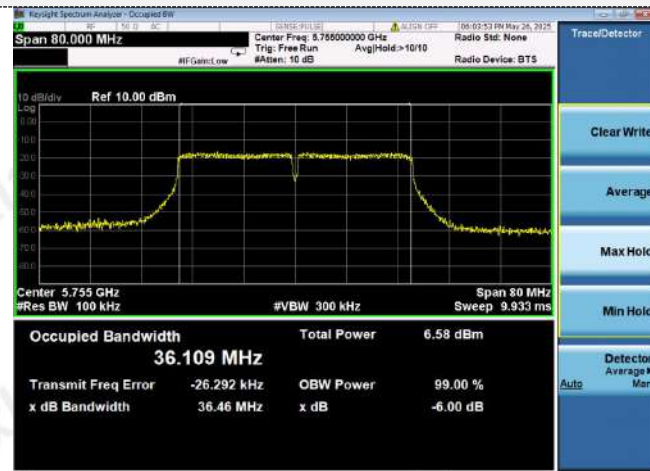
Test Results

Type	Bands	Channel	6dB Bandwidth (MHz)	Limit (KHz)	Result
802.11a	U-NII 3	149	16.55	≥500KHz	Pass
		157	16.56		
		165	16.54		
802.11n(HT20)	U-NII 3	149	17.68		
		157	17.72		
		165	17.67		
802.11n(HT40)	U-NII 3	151	36.46		
		159	36.48		
802.11ac(HT20)	U-NII 3	149	17.71		
		157	17.75		
		165	17.77		
802.11ac(HT40)	U-NII 3	151	36.47		
		159	36.49		
802.11ac(HT80)	U-NII 3	155	76.43		
802.11ax(HT20)	U-NII 3	149	17.71		
		157	17.69		
		165	17.76		
802.11ax(HT40)	U-NII 3	151	36.49		
		159	36.48		
802.11ax(HT80)	U-NII 3	155	76.44		

Test plot as follows:



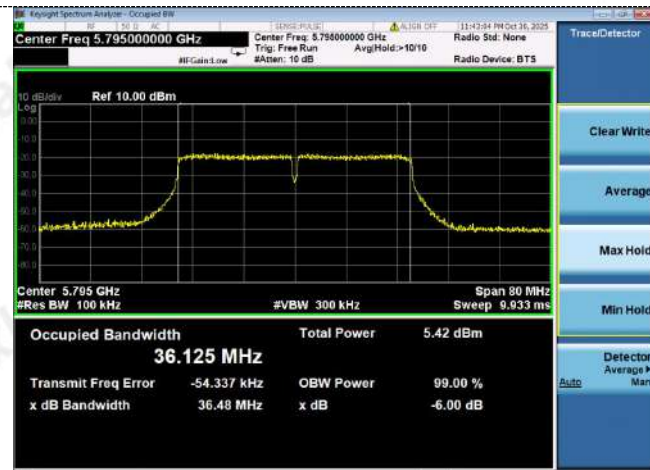
802.11n(HT40)



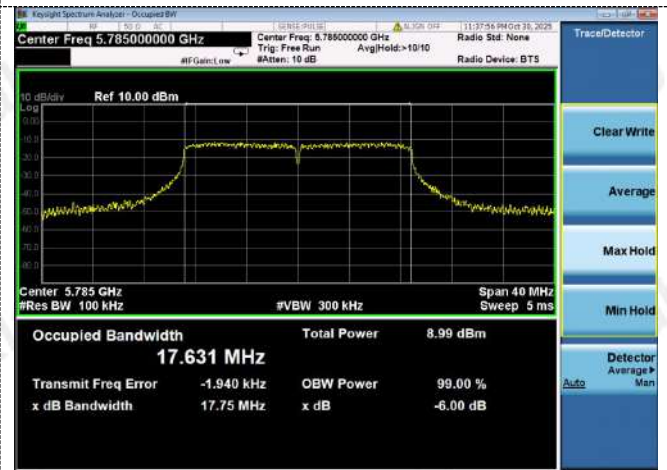
802.11ac(VHT20)



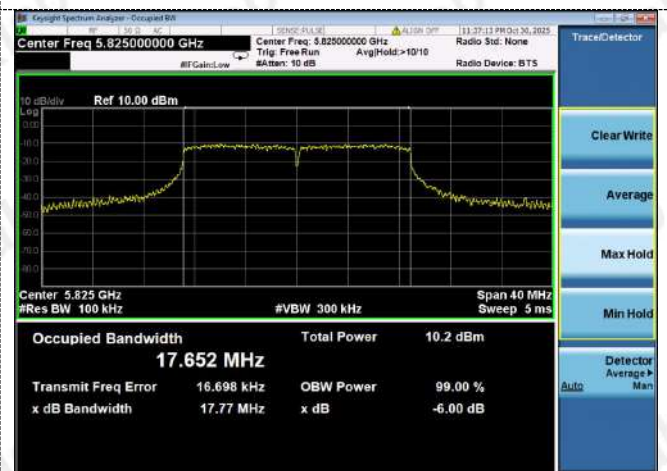
CH151



CH149

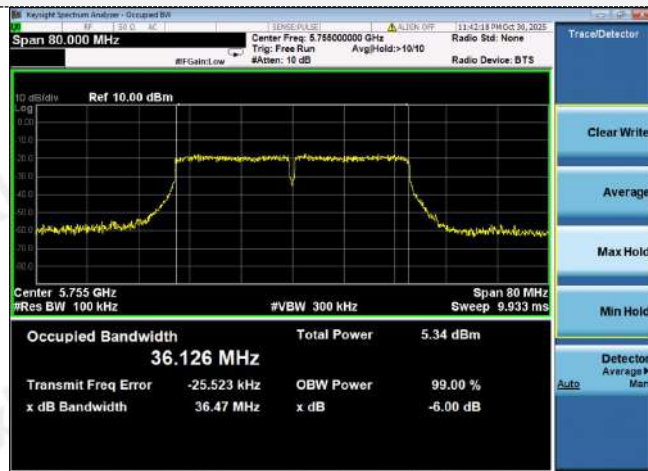


CH159

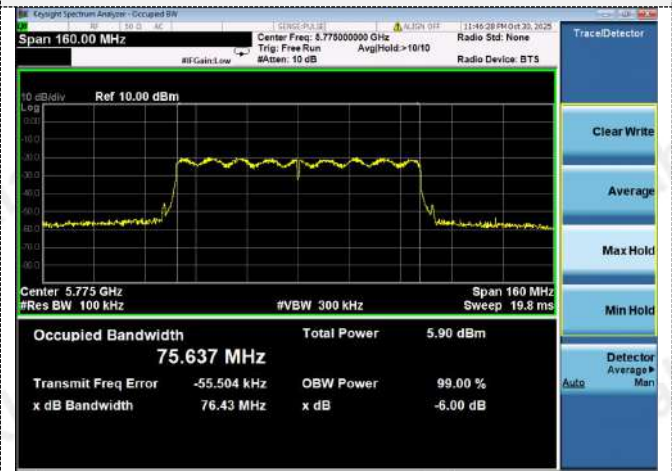


CH165

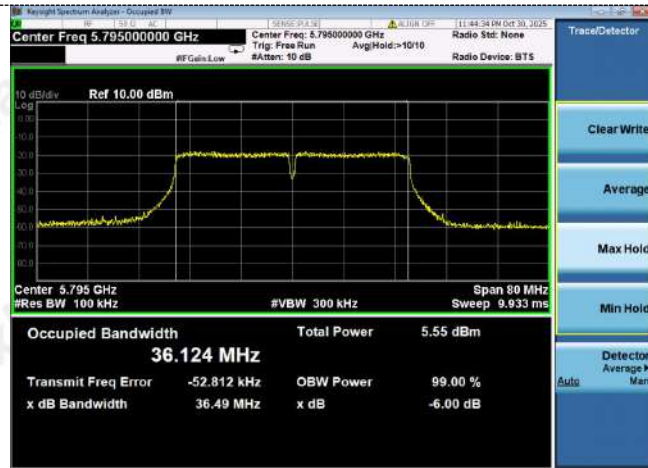
802.11ac(VHT40)



802.11ac(VHT80)



CH151



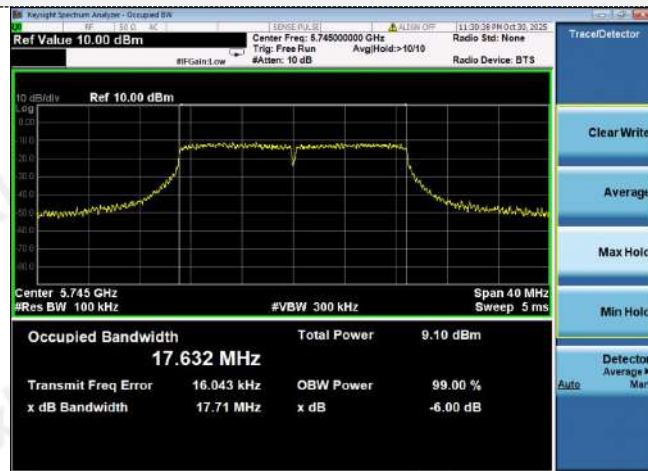
CH155



CH159



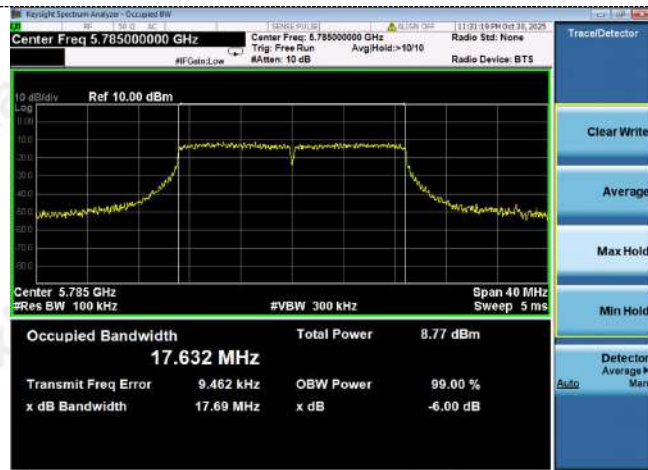
802.11ax(HE20)



802.11ax(HE40)



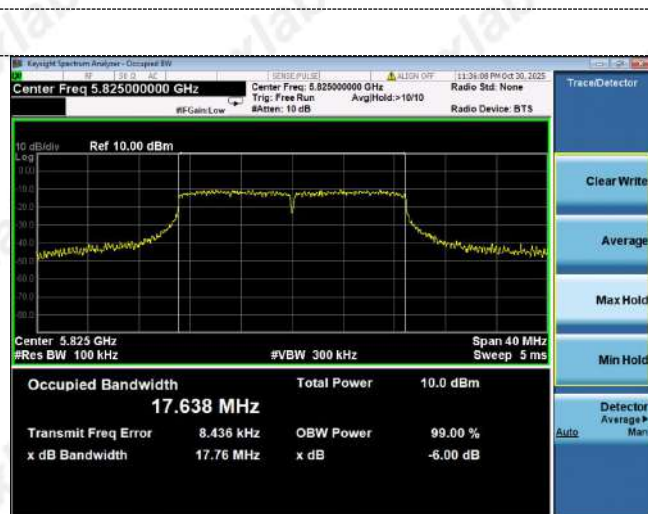
CH149



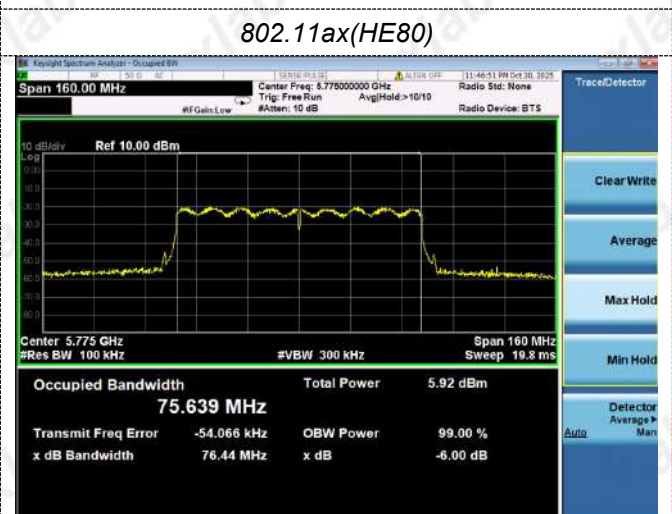
CH151



CH157



802.11ax(HE80)



CH165

CH155

4.7 Conducted Out Of Band Emission

4.7.1 Applicable Standard

According to FCC §15.407(b)

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2) For transmitters operating in the 5.725-5.850 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

4.7.2 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

4.7.3 DEVIATION FROM STANDARD

No deviation.

4.7.4 TEST SETUP

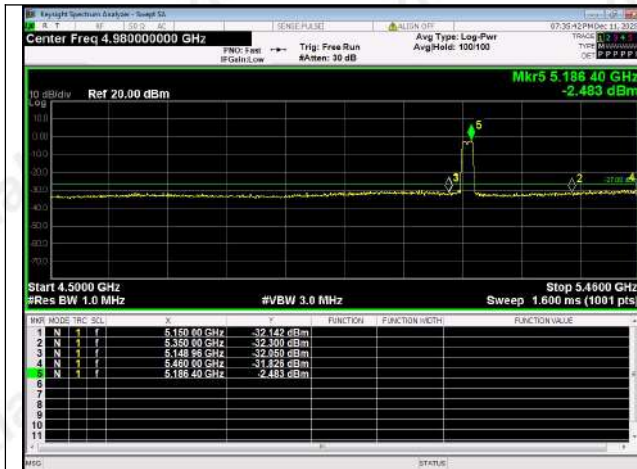


4.7.5 EUT OPERATION CONDITIONS

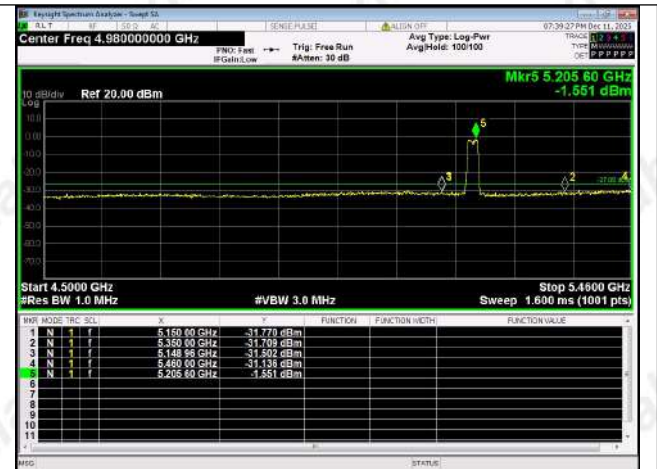
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

TEST RESULTS

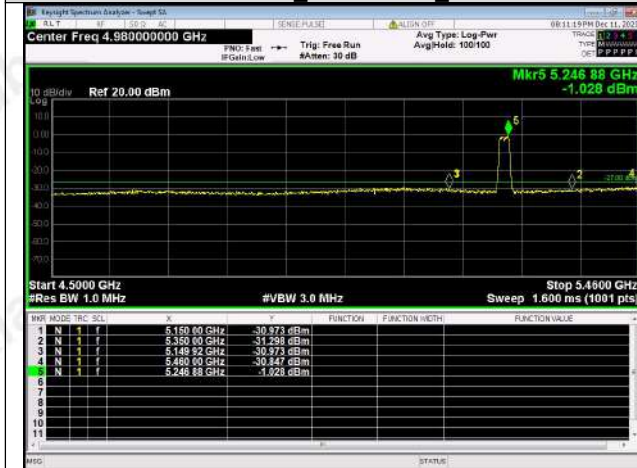
5.2G



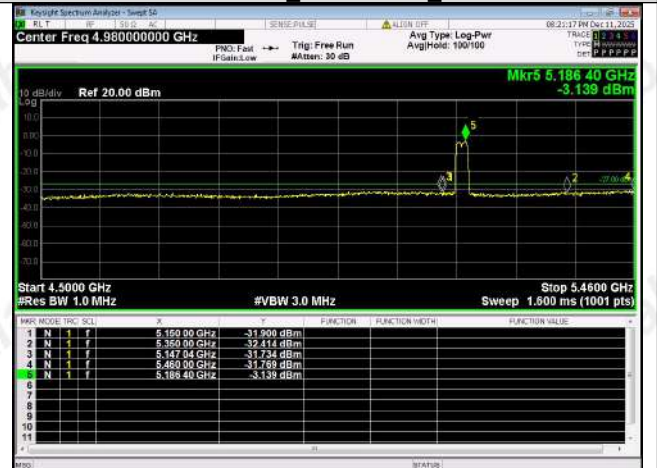
Out Of Band Emission
IEEE 802.11a Channel 36 20MHz



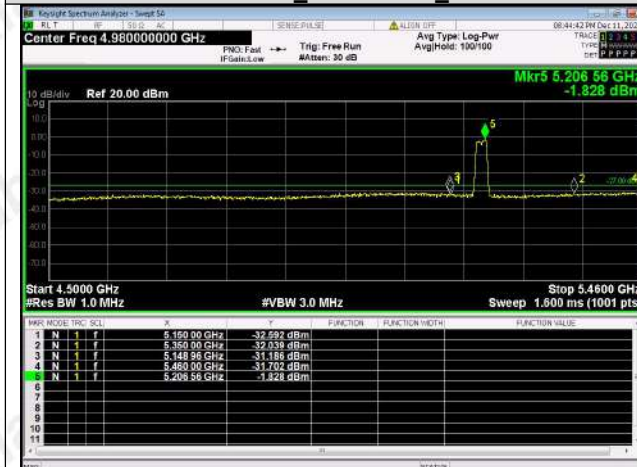
Out Of Band Emission
IEEE 802.11a Channel 40 20MHz



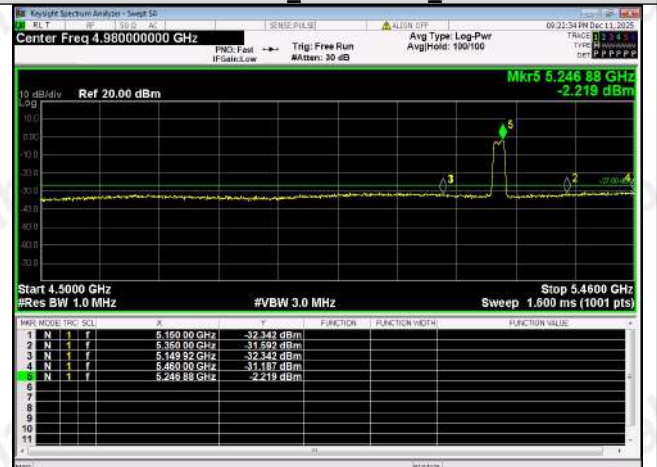
Out Of Band Emission
IEEE 802.11a Channel 48 20MHz



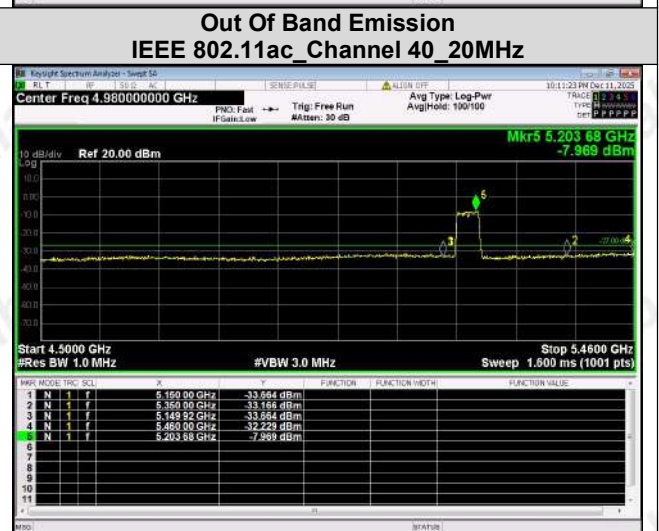
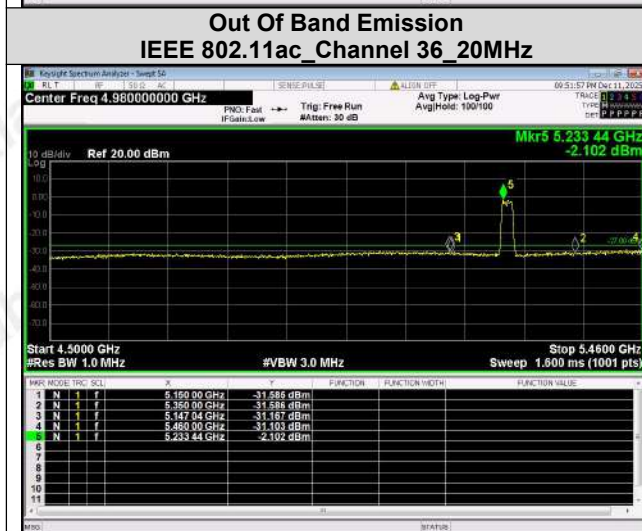
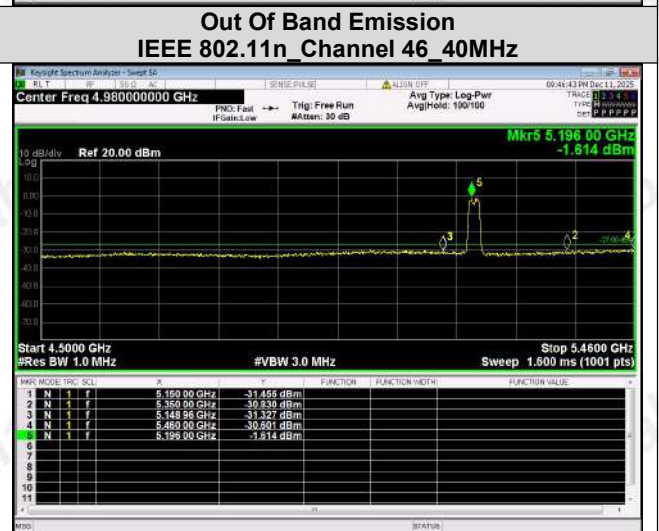
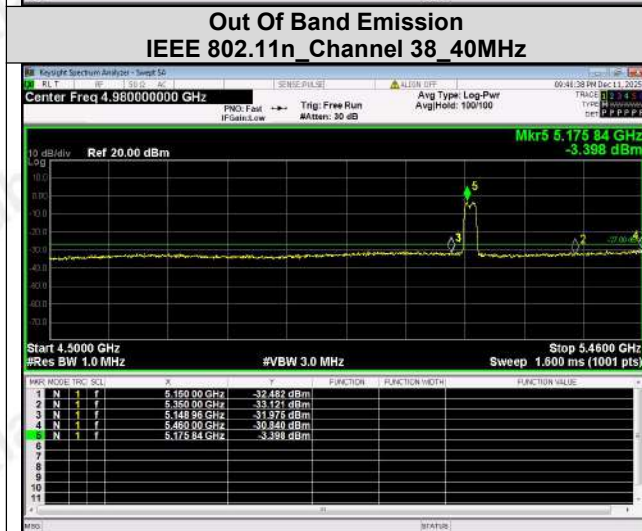
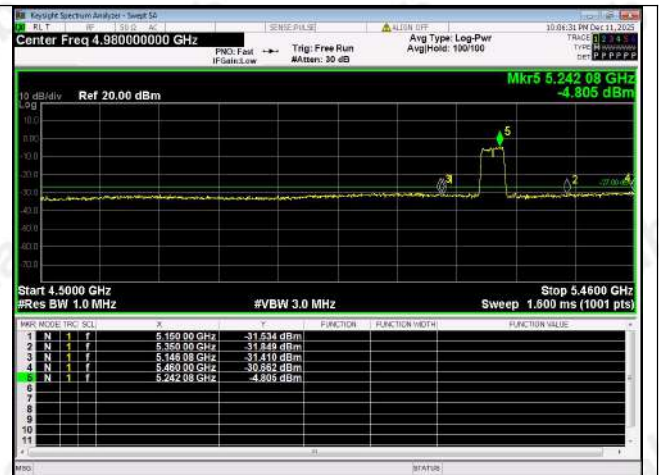
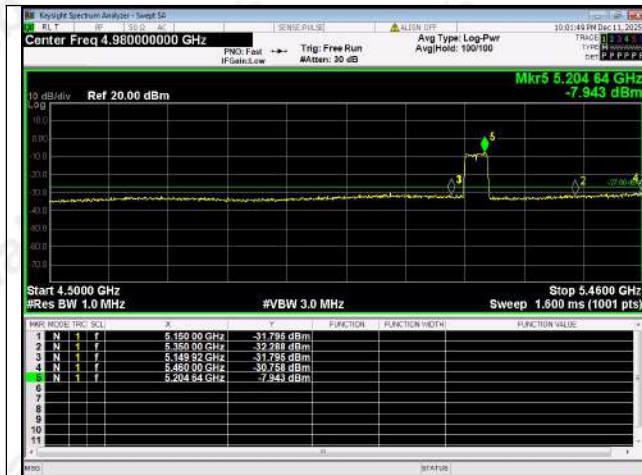
Out Of Band Emission
IEEE 802.11n Channel 36 20MHz

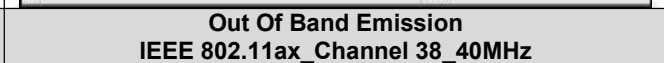
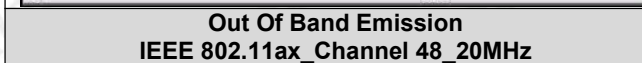
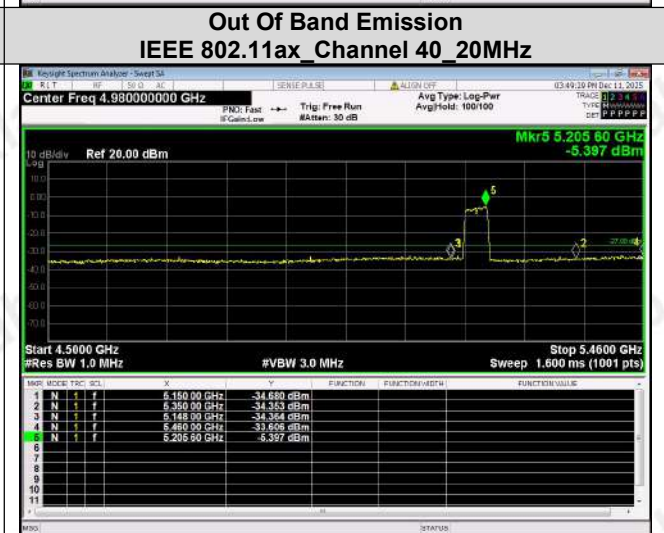
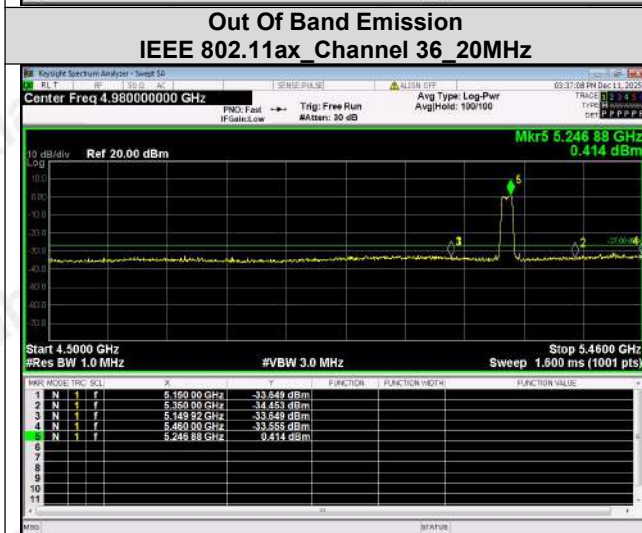
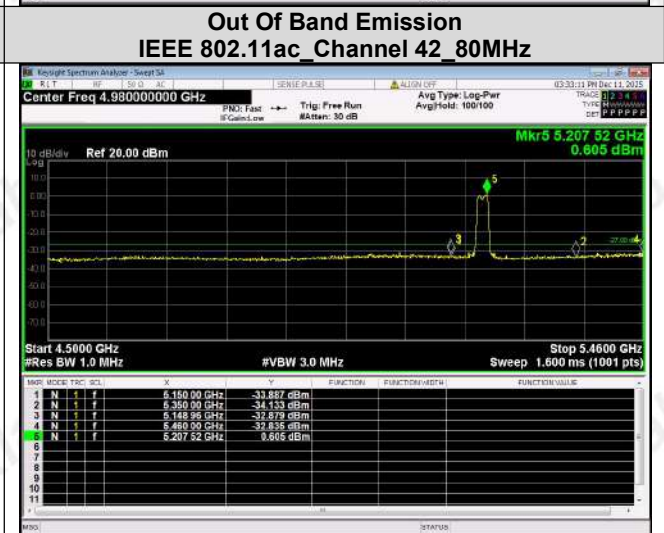
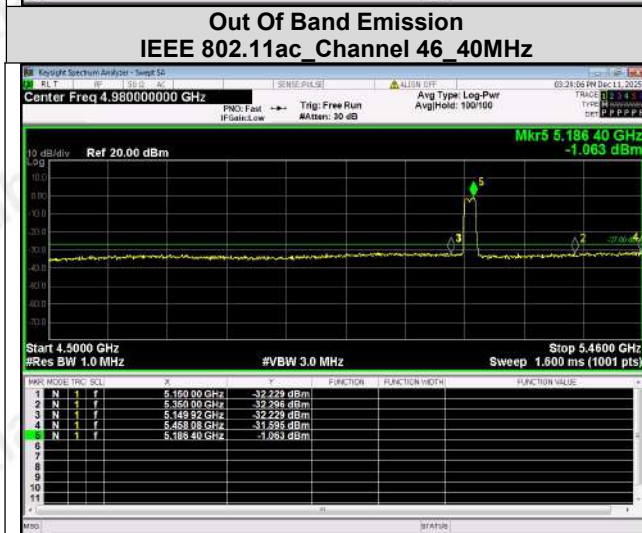
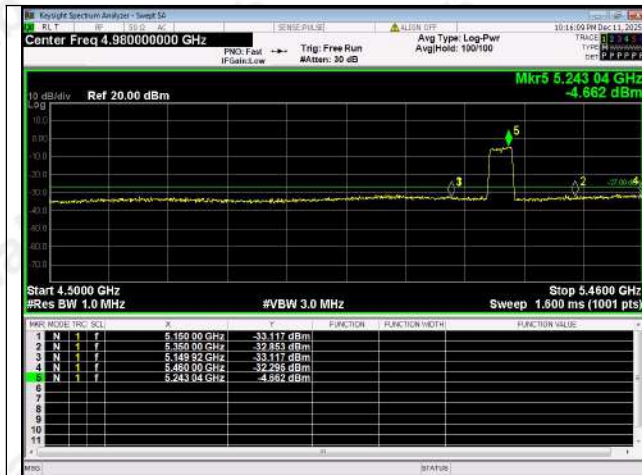


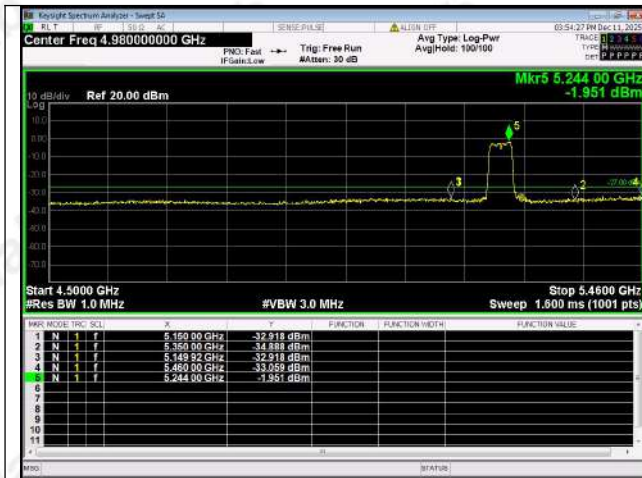
Out Of Band Emission
IEEE 802.11n Channel 40 20MHz



Out Of Band Emission
IEEE 802.11n Channel 48 20MHz





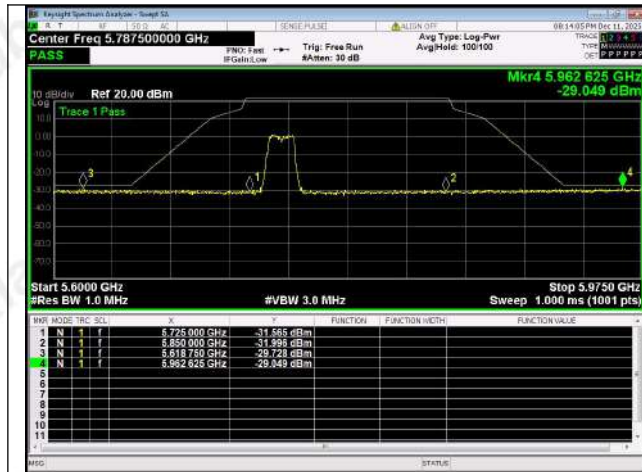


Out Of Band Emission
IEEE 802.11ax Channel 46 40MHz

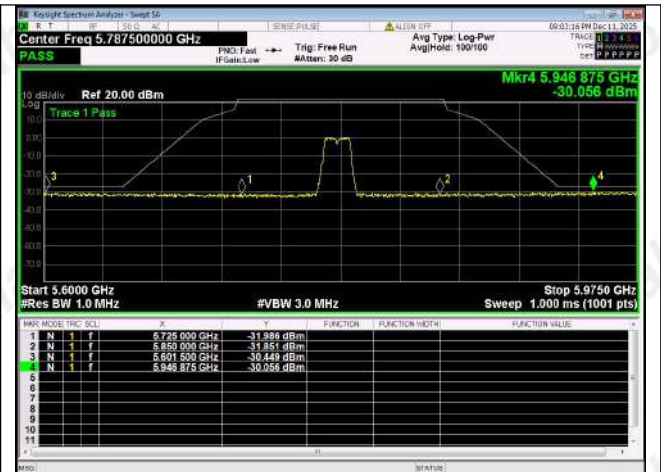


Out Of Band Emission
IEEE 802.11ax Channel 42 80MHz

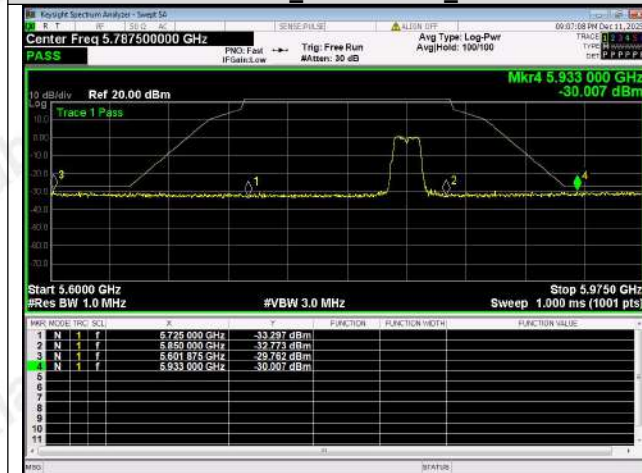
5.8G



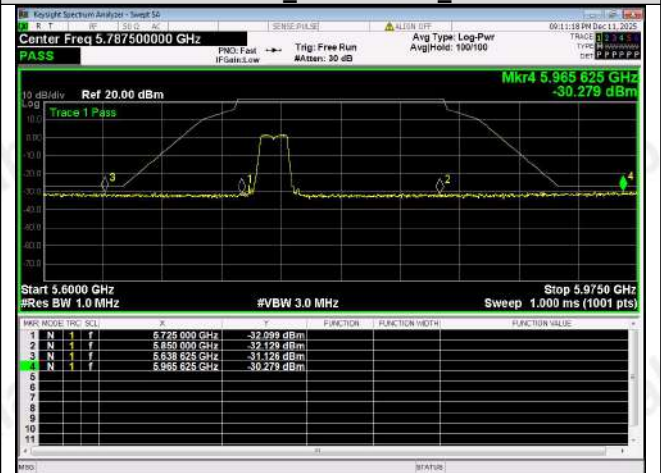
Out Of Band Emission
IEEE 802.11a Channel 149 20MHz



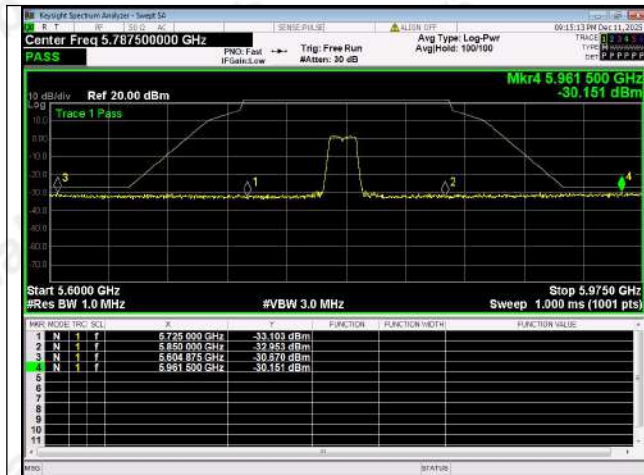
Out Of Band Emission
IEEE 802.11a Channel 157 20MHz



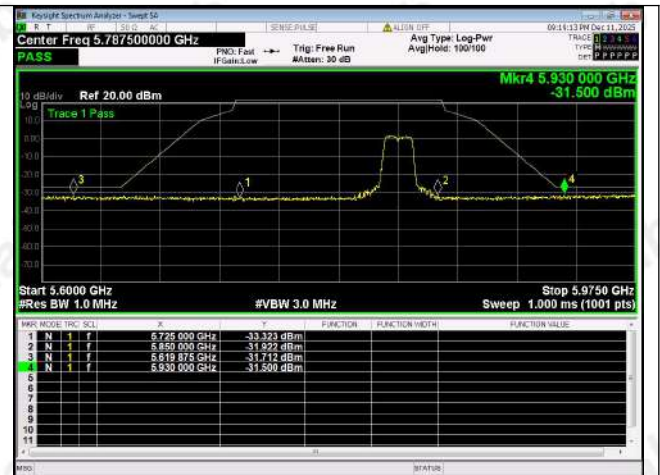
Out Of Band Emission
IEEE 802.11a Channel 165 20MHz



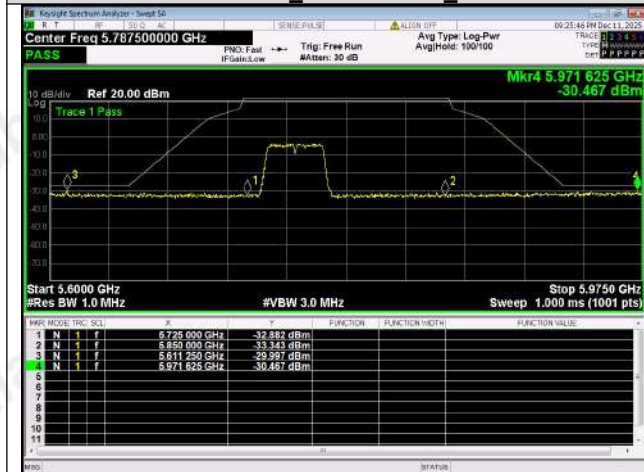
Out Of Band Emission
IEEE 802.11n Channel 149 20MHz



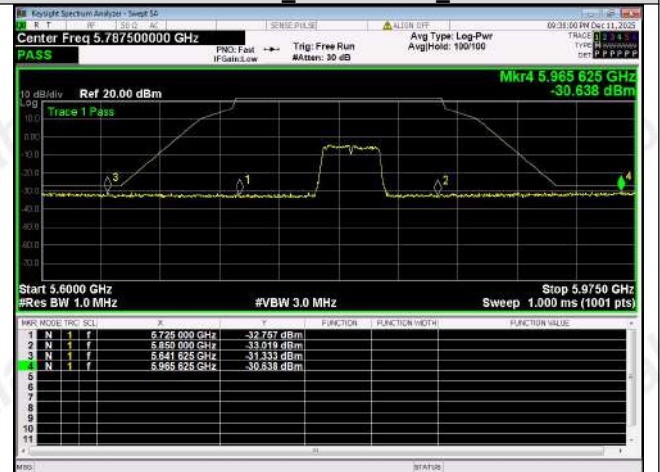
Out Of Band Emission
IEEE 802.11n_Channel 157_20MHz



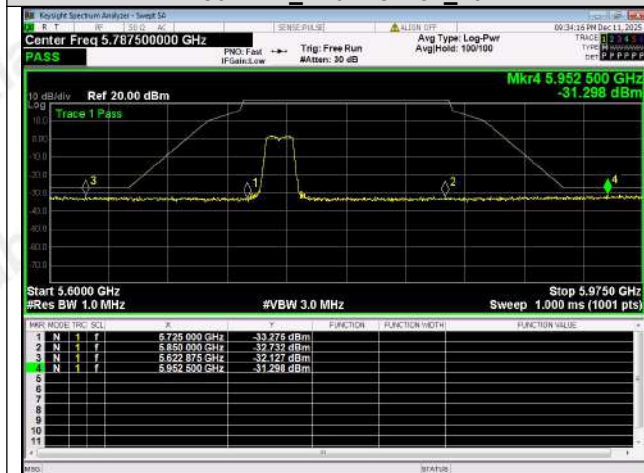
Out Of Band Emission
IEEE 802.11n_Channel 165_20MHz



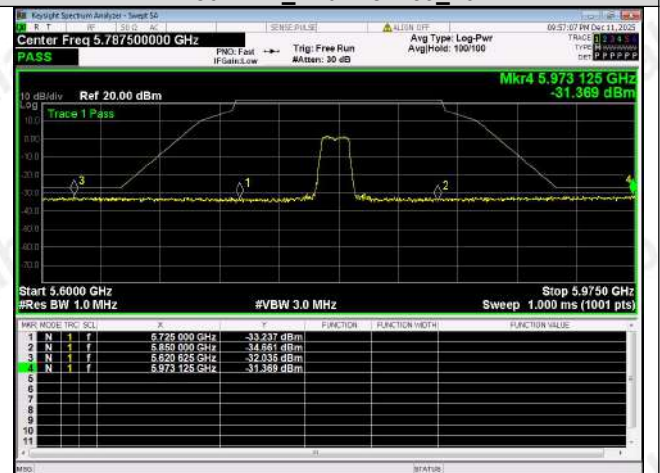
Out Of Band Emission
IEEE 802.11n_Channel 151_40MHz



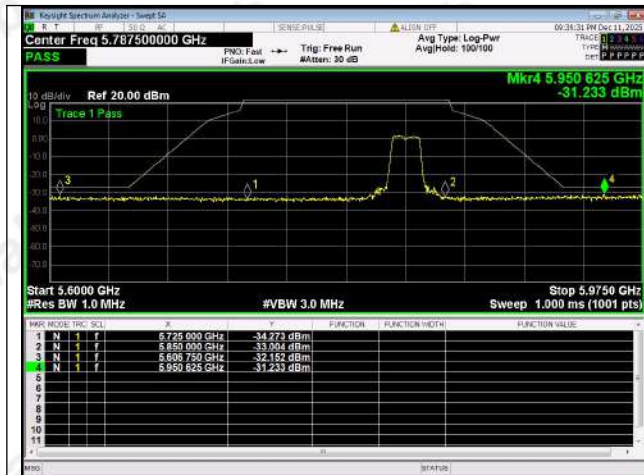
Out Of Band Emission
IEEE 802.11n_Channel 159_40MHz



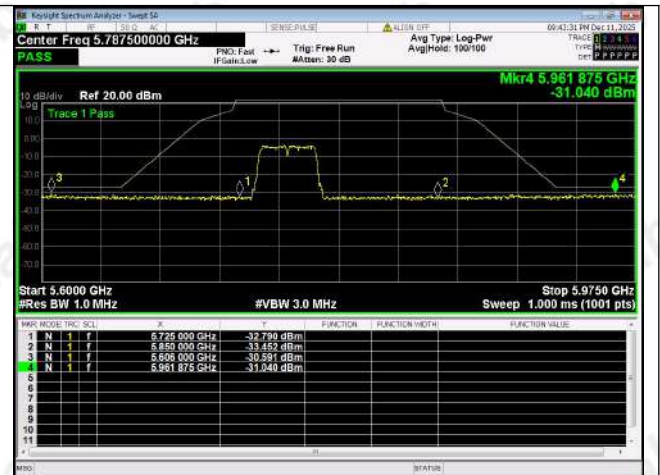
Out Of Band Emission
IEEE 802.11ac_Channel 149_20MHz



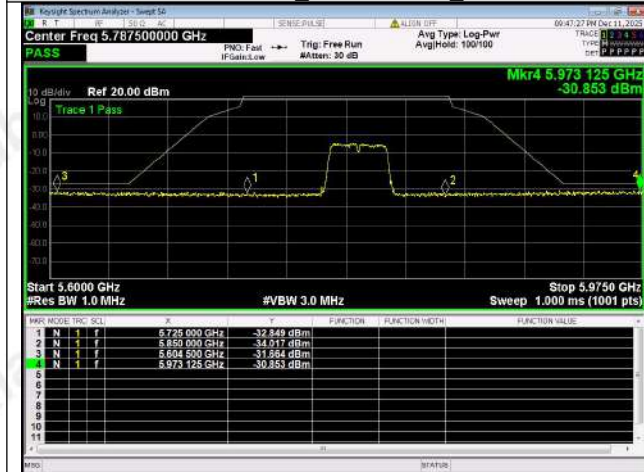
Out Of Band Emission
IEEE 802.11ac_Channel 157_20MHz



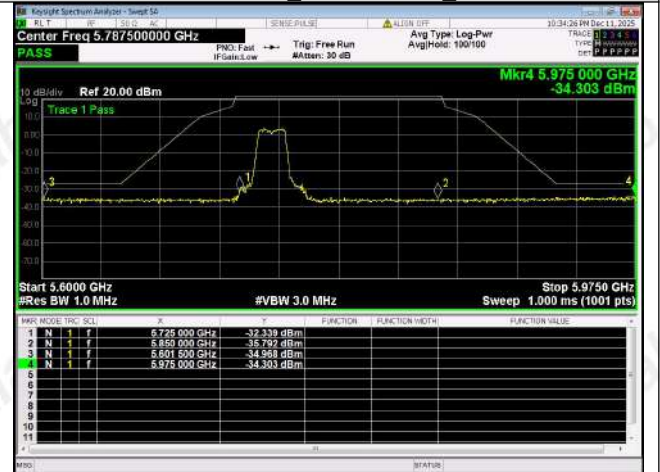
**Out Of Band Emission
IEEE 802.11ac Channel 165 20MHz**



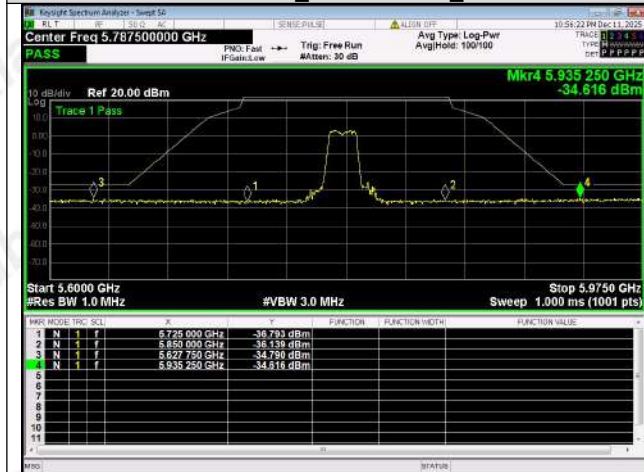
**Out Of Band Emission
IEEE 802.11ac Channel 151 40MHz**



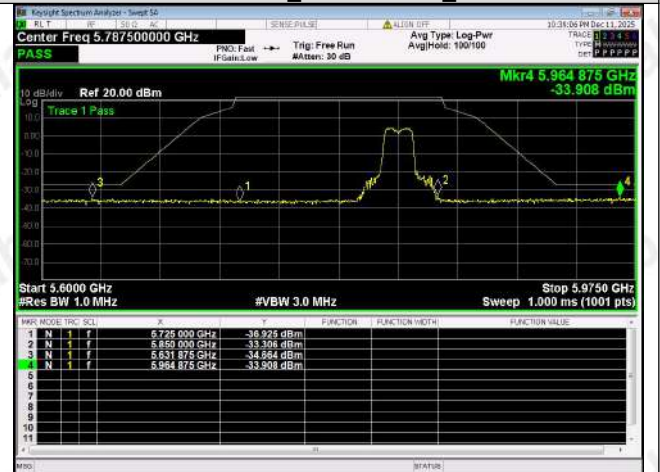
**Out Of Band Emission
IEEE 802.11ac Channel 159 40MHz**



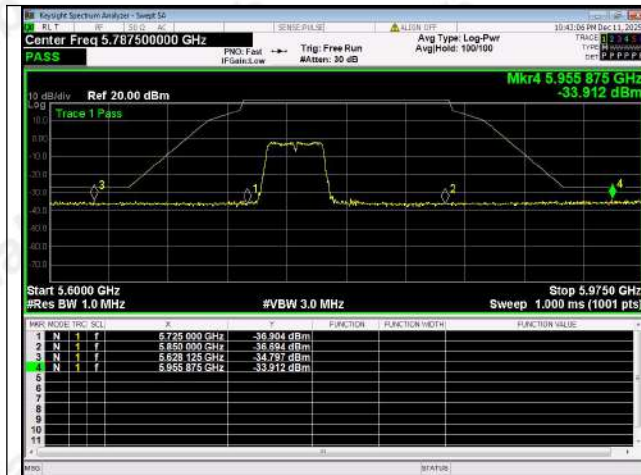
**Out Of Band Emission
IEEE 802.11ax Channel 149 20MHz**



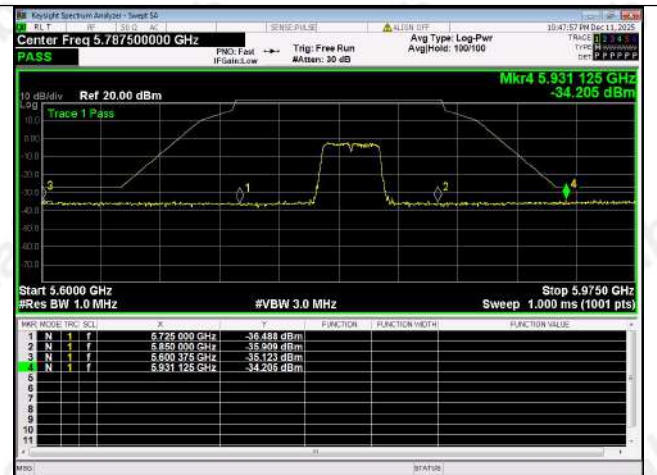
**Out Of Band Emission
IEEE 802.11ax Channel 157 20MHz**



**Out Of Band Emission
IEEE 802.11ax Channel 165 20MHz**



**Out Of Band Emission
IEEE 802.11ax Channel 151_40MHz**



**Out Of Band Emission
IEEE 802.11ax Channel 159_40MHz**



**Out Of Band Emission
IEEE 802.11ax Channel 155_80MHz**

4.8 SPURIOUS RF CONDUCTED EMISSIONS

4.8.1 Conformance Limit

Frequency Band (MHz)	Limit
5150 - 5250	Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm
5250 - 5350	Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm
5470 - 5725	Outside of the 5.47-5.725 GHz band: e.i.r.p. -27 dBm
5725 - 5850	All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

4.8.2 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

4.8.3 Test Setup



4.8.4 Test Procedure

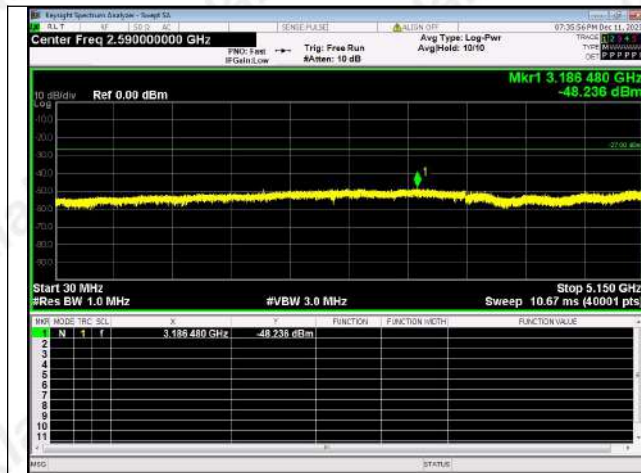
The Spurious RF conducted emissions compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10-2020 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW=1MHz and VBW= 3MHz to measure the peak field strength, and measure frequency range from 30MHz to 40GHz.

4.8.5 Test Results

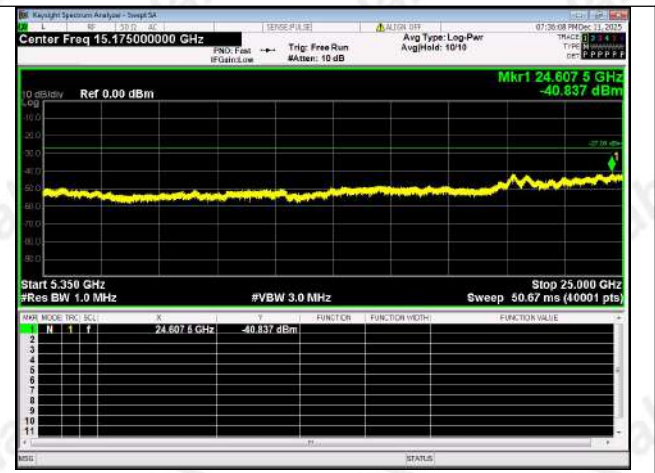
Remark: The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and band edge measurement data.

At 26.5GHz to 40GHz, the amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

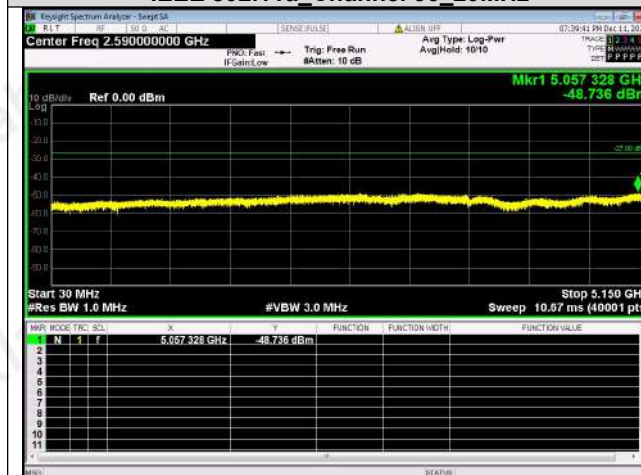
5.2G



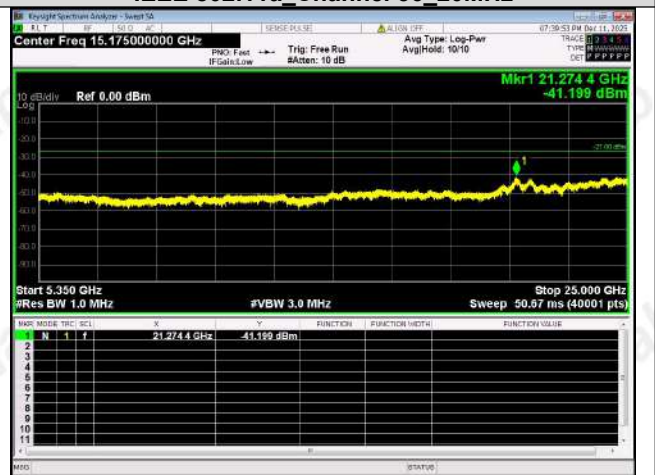
Spurious Emission:30.0~5150 MHz
IEEE 802.11a Channel 36 20MHz



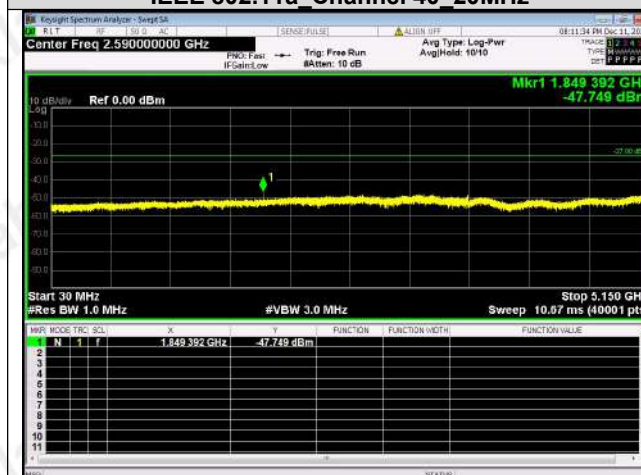
Spurious Emission:5350~25000.0 MHz
IEEE 802.11a Channel 36 20MHz



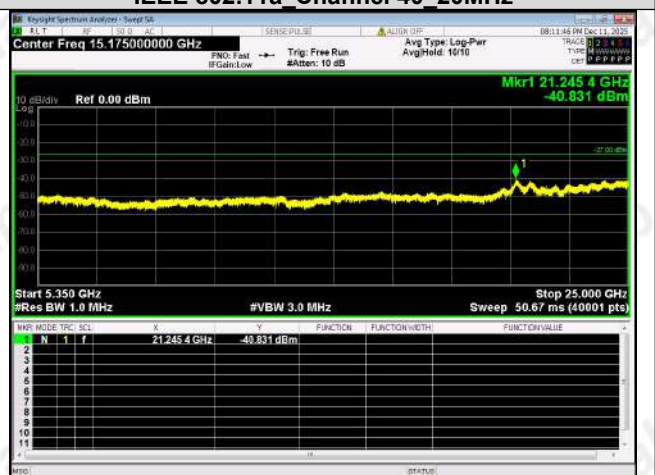
Spurious Emission:30.0~5150 MHz
IEEE 802.11a Channel 40 20MHz



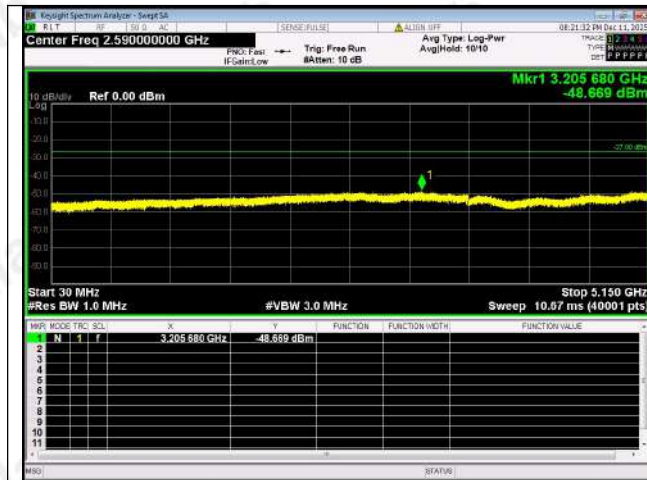
Spurious Emission:5350~25000.0 MHz
IEEE 802.11a Channel 40 20MHz



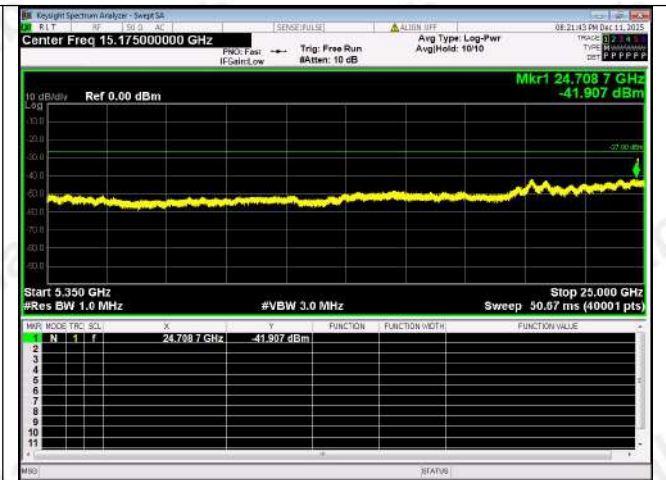
Spurious Emission:30.0~5150 MHz
IEEE 802.11a Channel 48 20MHz



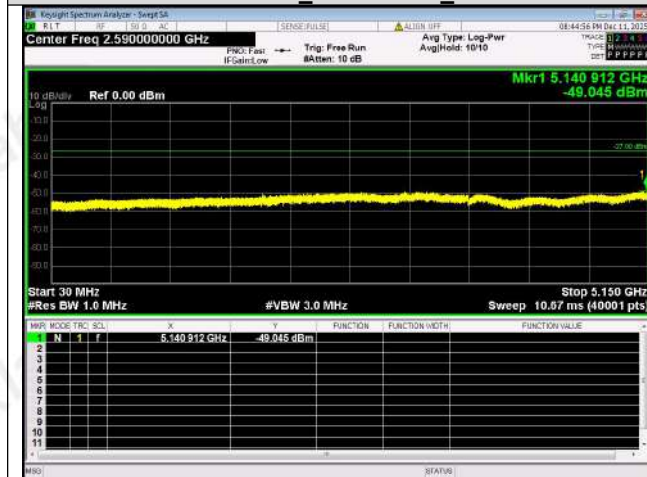
Spurious Emission:5350~25000.0 MHz
IEEE 802.11a Channel 48 20MHz



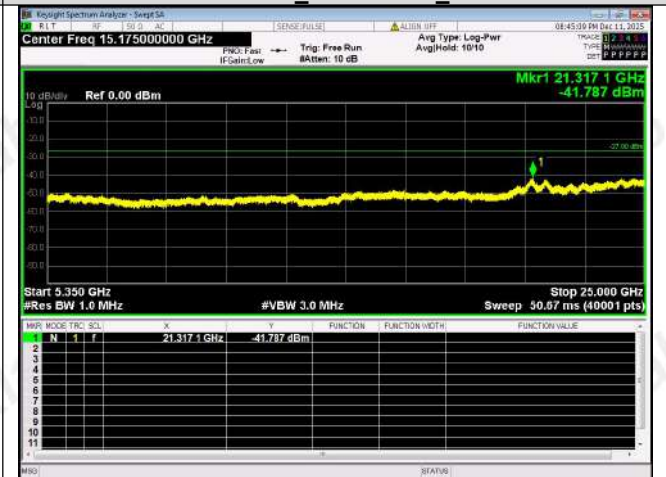
Spurious Emission:30.0~5150 MHz
IEEE 802.11n_Channel 36_20MHz



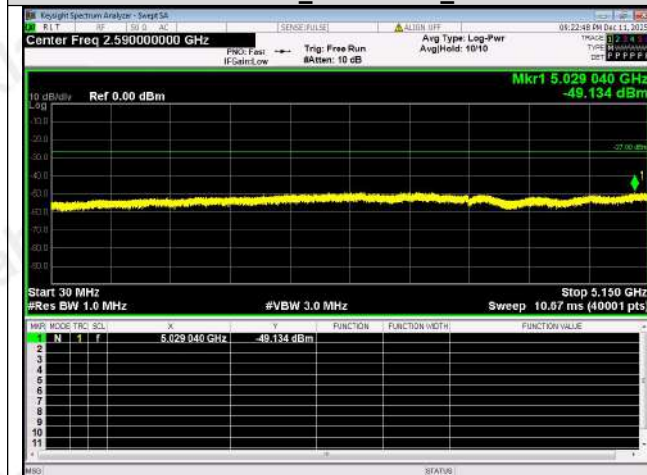
Spurious Emission:5350~25000.0 MHz
IEEE 802.11n_Channel 36_20MHz



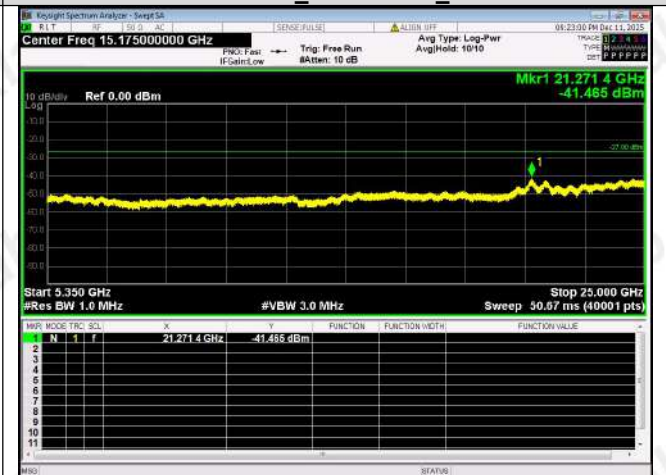
Spurious Emission:30.0~5150 MHz
IEEE 802.11n_Channel 40_20MHz



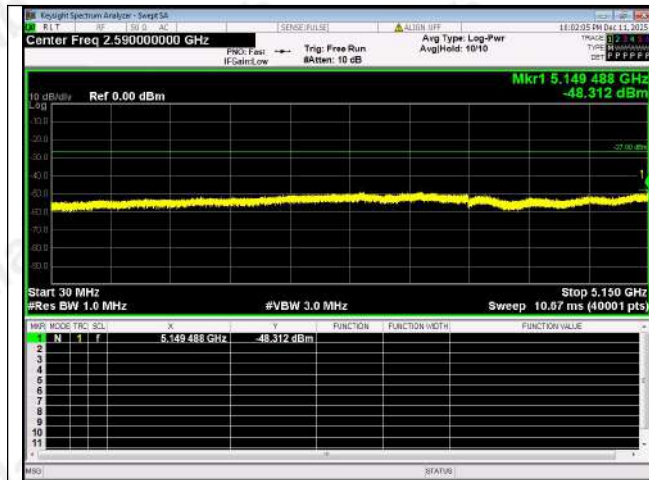
Spurious Emission:5350~25000.0 MHz
IEEE 802.11n_Channel 40_20MHz



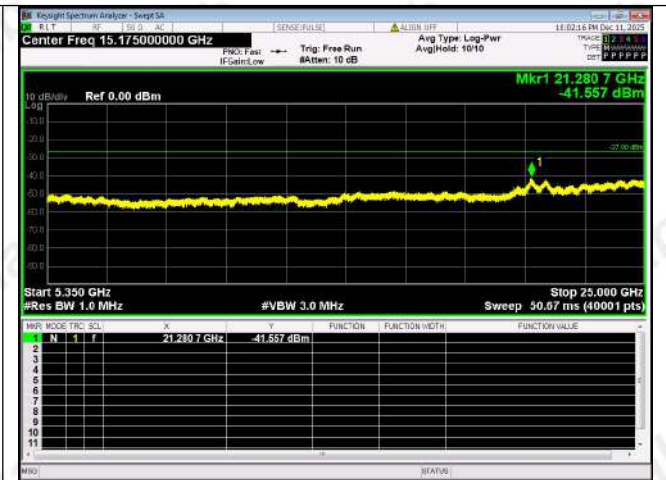
Spurious Emission:30.0~5150 MHz
IEEE 802.11n_Channel 48_20MHz



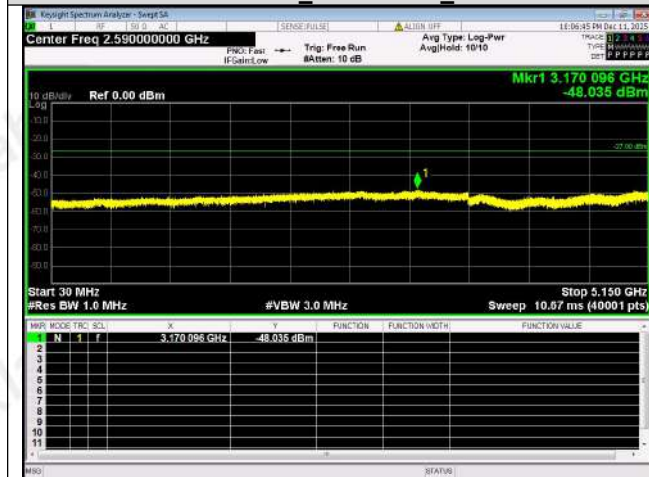
Spurious Emission:5350~25000.0 MHz
IEEE 802.11n_Channel 48_20MHz



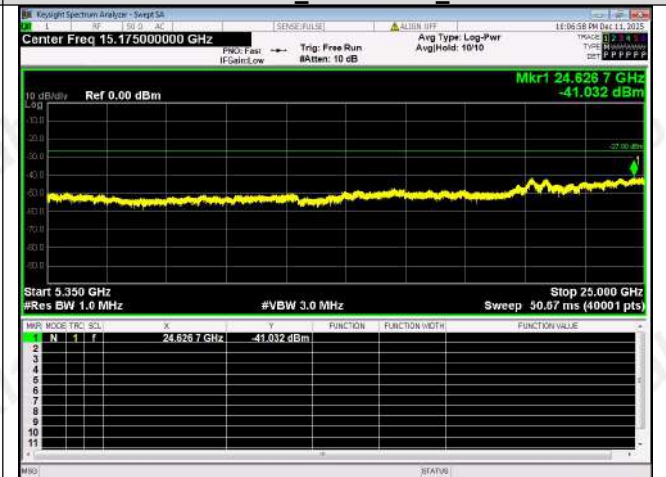
Spurious Emission:30.0~5150 MHz
IEEE 802.11n_Channel 38_40MHz



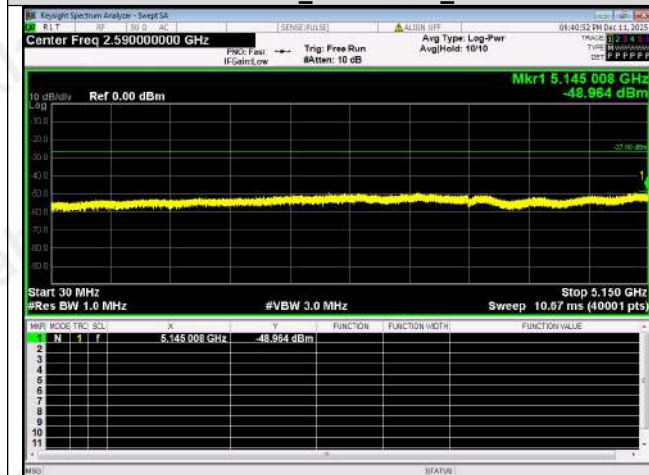
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IEEE 802.11n_Channel 38_40MHz



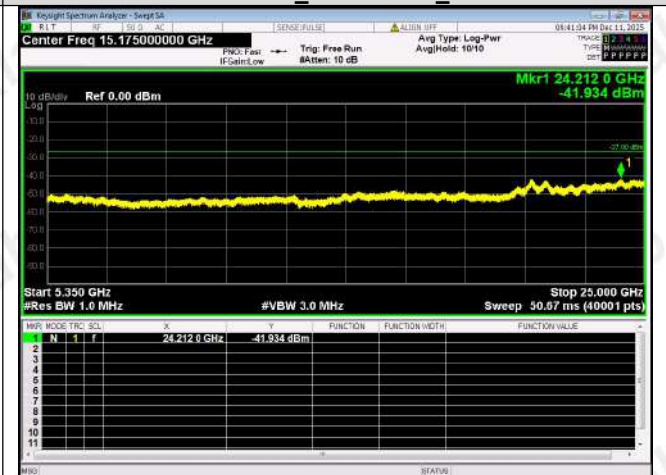
Spurious Emission:30.0~5150 MHz
IEEE 802.11n_Channel 46_40MHz



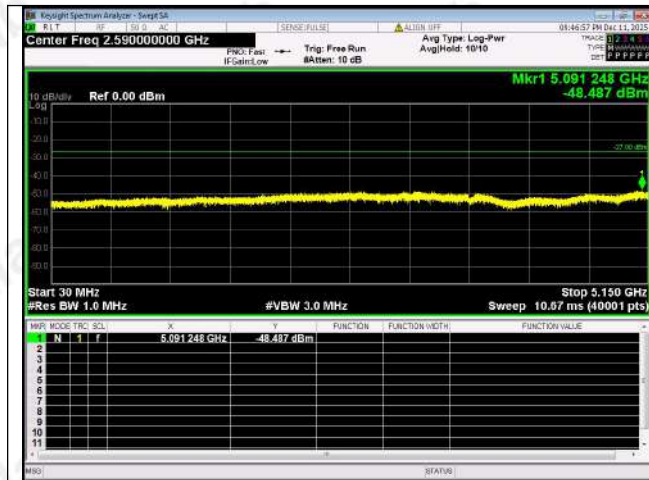
Spurious Emission:5350~25000.0 MHz
IEEE 802.11n_Channel 46_40MHz



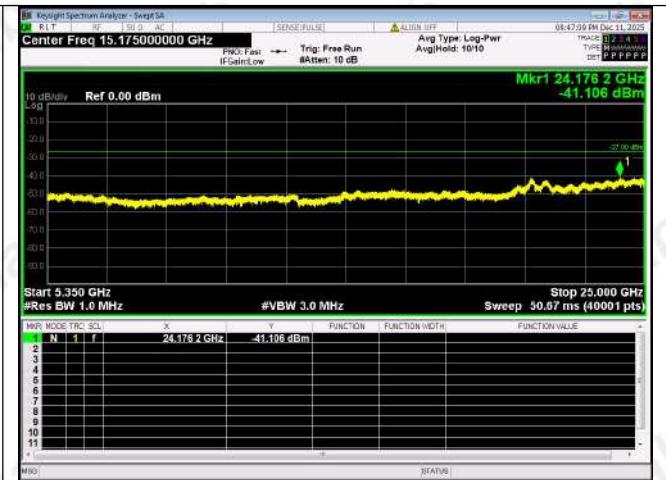
Spurious Emission:30.0~5150 MHz
IEEE 802.11ac_Channel 36_20MHz



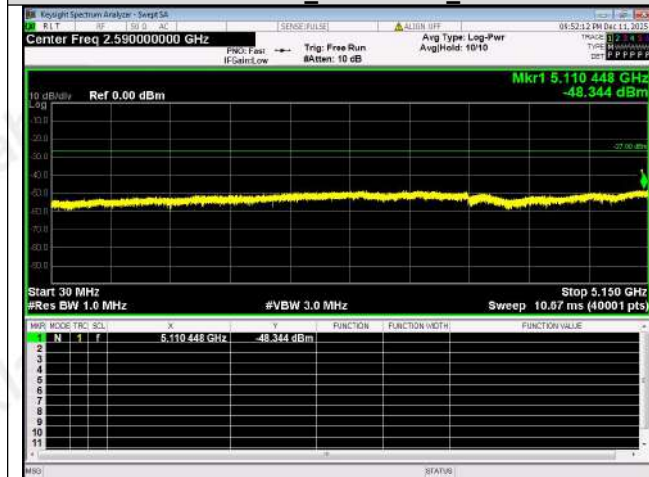
Spurious Emission:5350~25000.0 MHz
IEEE 802.11ac_Channel 36_20MHz



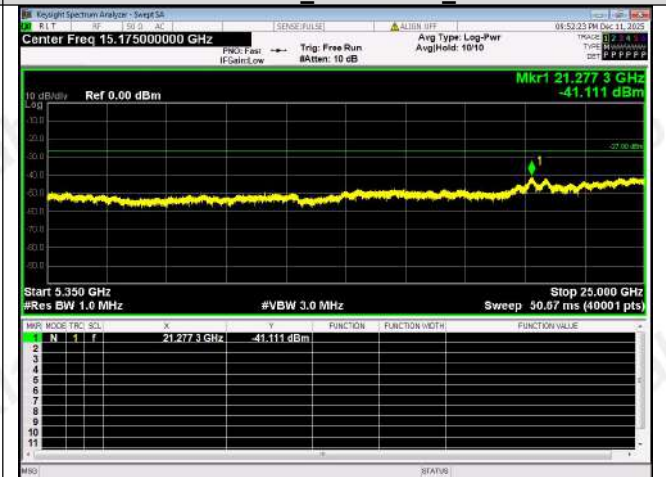
Spurious Emission:30.0~5150 MHz
IEEE 802.11ac_Channel 40_20MHz



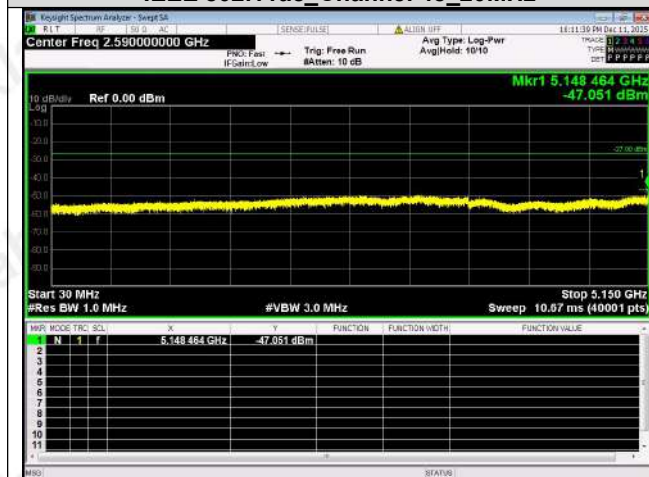
Spurious Emission:5350~25000.0 MHz
IEEE 802.11ac_Channel 40_20MHz



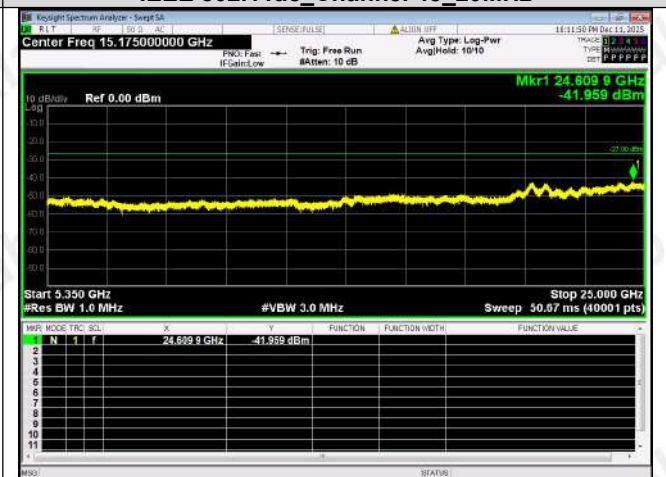
Spurious Emission:30.0~5150 MHz
IEEE 802.11ac_Channel 48_20MHz



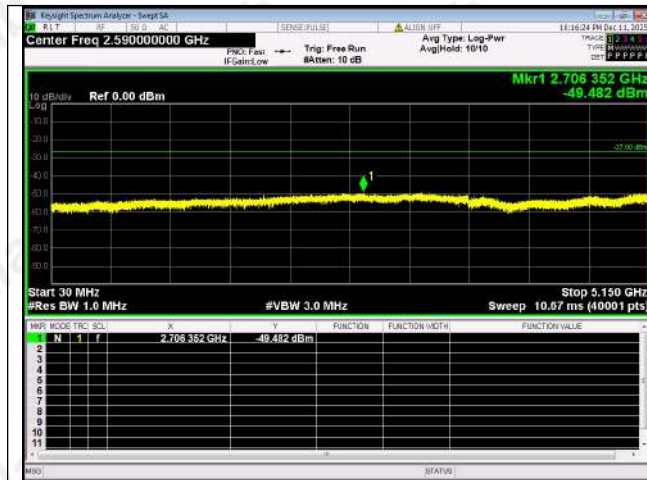
Spurious Emission:5350~25000.0 MHz
IEEE 802.11ac_Channel 48_20MHz



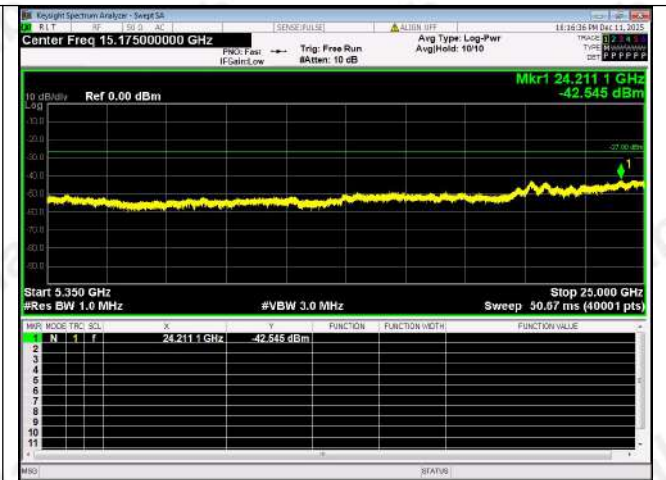
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IEEE 802.11ac_Channel 38_40MHz



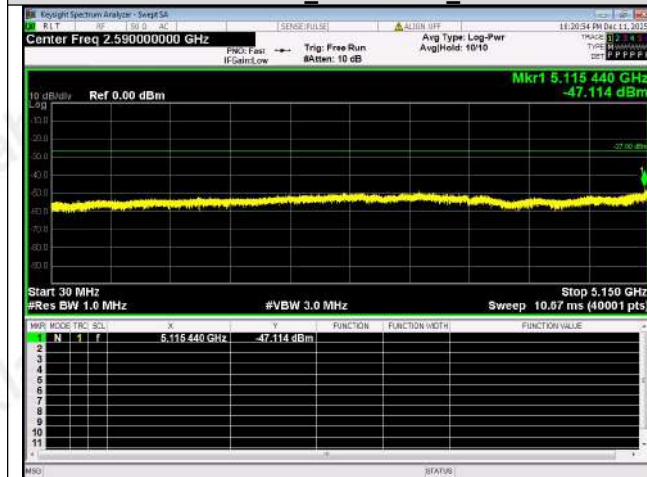
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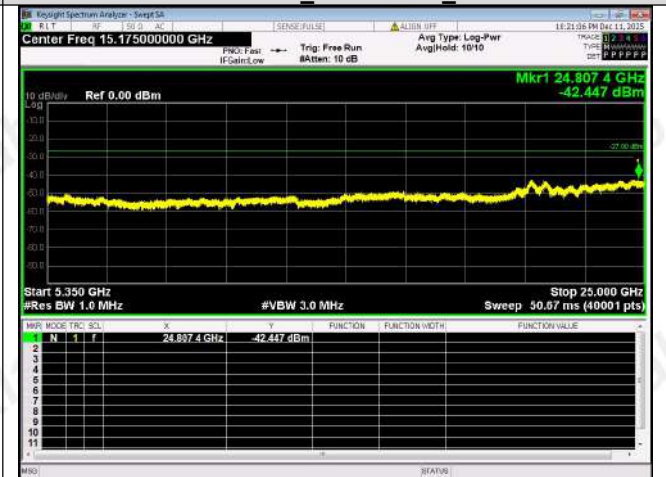
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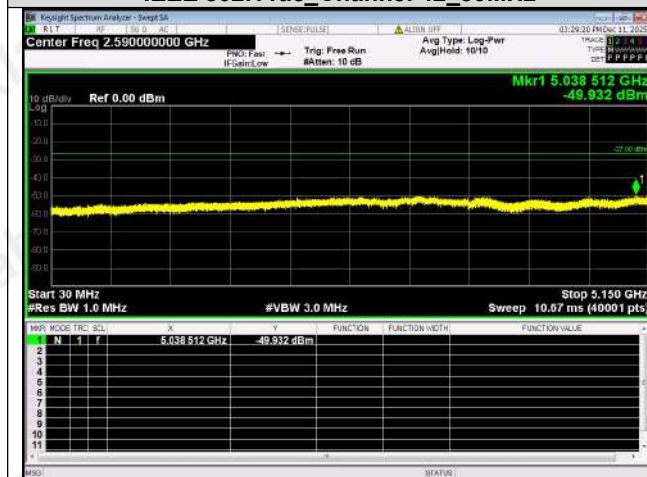
Spurious Emission:5350~25000.0 MHz
IEEE 802.11ac_Channel 46_40MHz



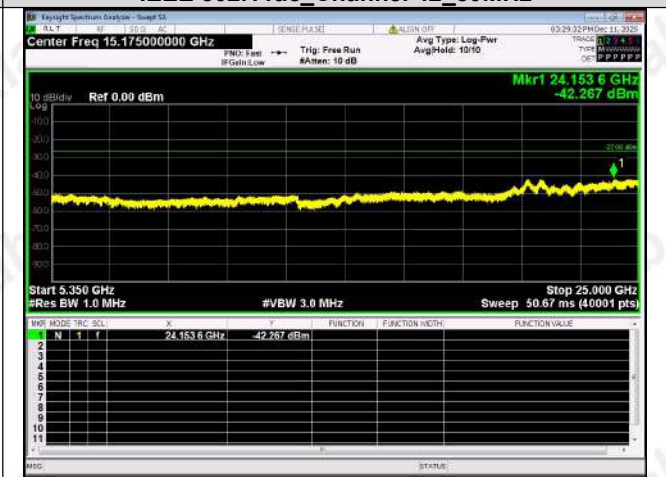
Spurious Emission:30.0~5150 MHz
IEEE 802.11ac_Channel 42_80MHz



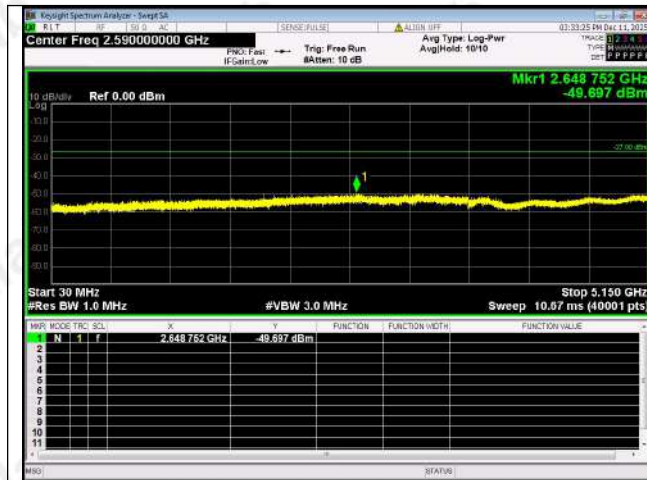
Spurious Emission:5350~25000.0 MHz
IEEE 802.11ac_Channel 42_80MHz



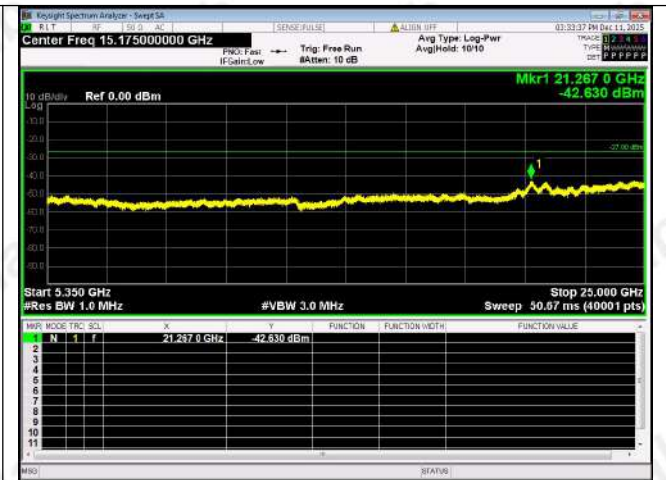
Spurious Emission:30.0~5150 MHz
IEEE 802.11ax_Channel 36_20MHz



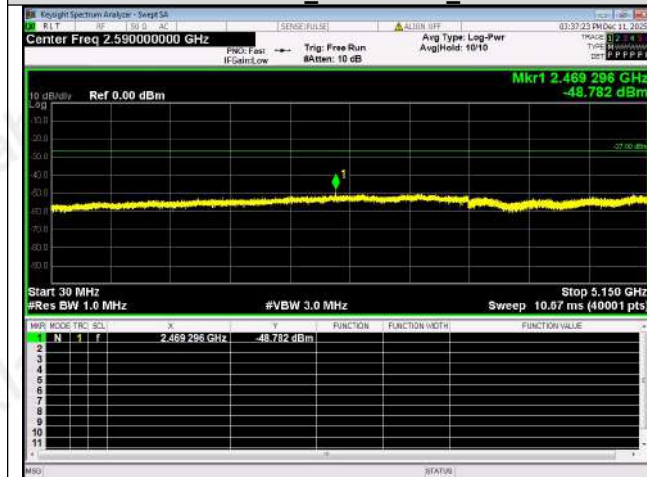
Spurious Emission:5350~25000.0 MHz
IEEE 802.11ax_Channel 36_20MHz



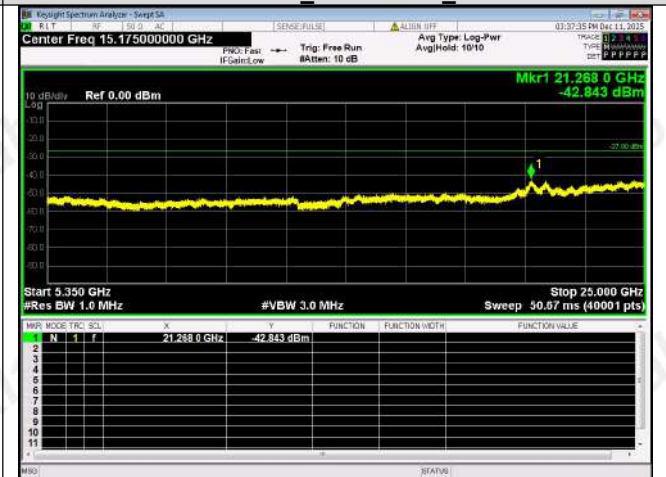
**Spurious Emission:30.0~5150 MHz
IEEE 802.11ax_Channel 40_20MHz**



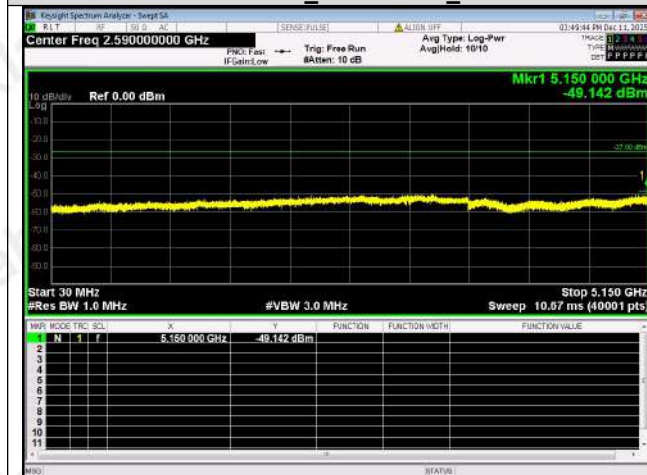
**Spurious Emission:5350~25000.0 MHz
IEEE 802.11ax_Channel 40_20MHz**



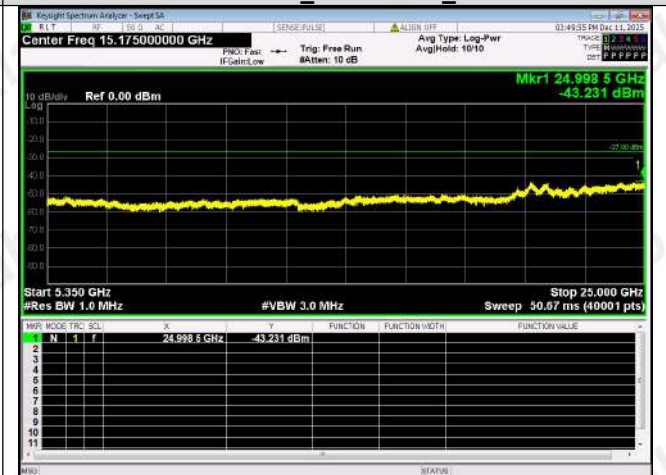
**Spurious Emission:30.0~5150 MHz
IEEE 802.11ax_Channel 48_20MHz**



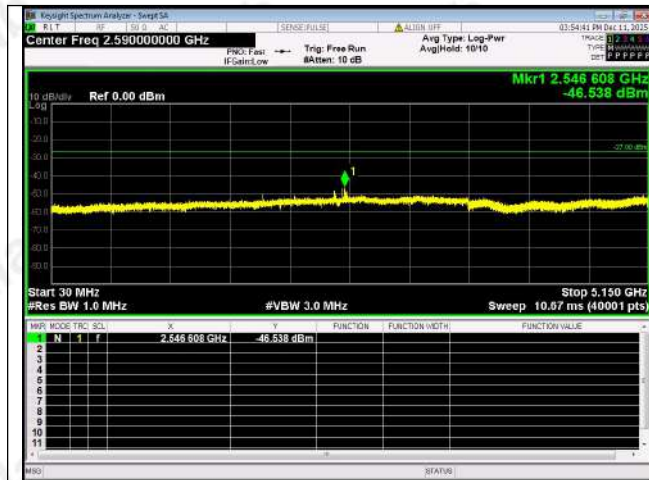
**Spurious Emission:5350~25000.0 MHz
IEEE 802.11ax_Channel 48_20MHz**



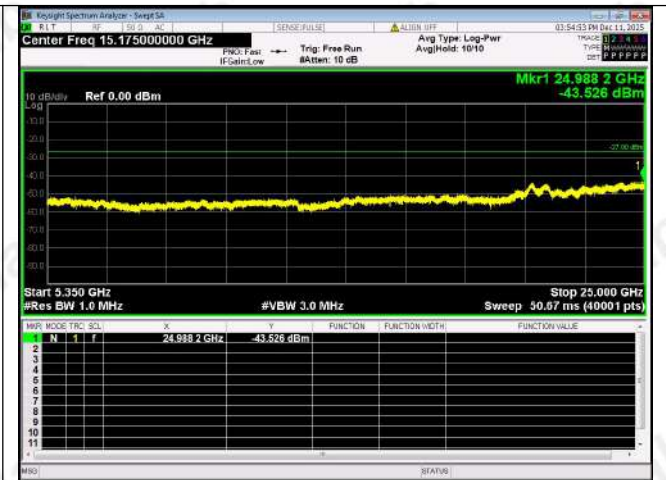
**Spurious Emission:30.0~5150 MHz
IEEE 802.11ax_Channel 38_40MHz**



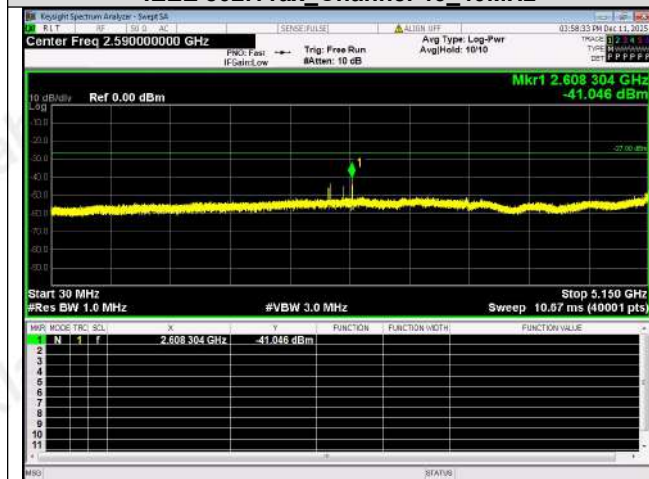
**Spurious Emission:5350~25000.0 MHz
IEEE 802.11ax_Channel 38_40MHz**



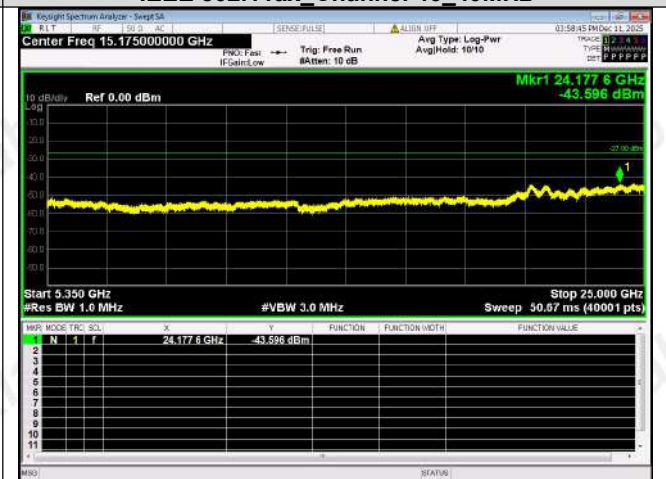
Spurious Emission:30.0~5150 MHz
IEEE 802.11ax_Channel 46_40MHz



Spurious Emission:5350~25000.0 MHz
IEEE 802.11ax_Channel 46_40MHz

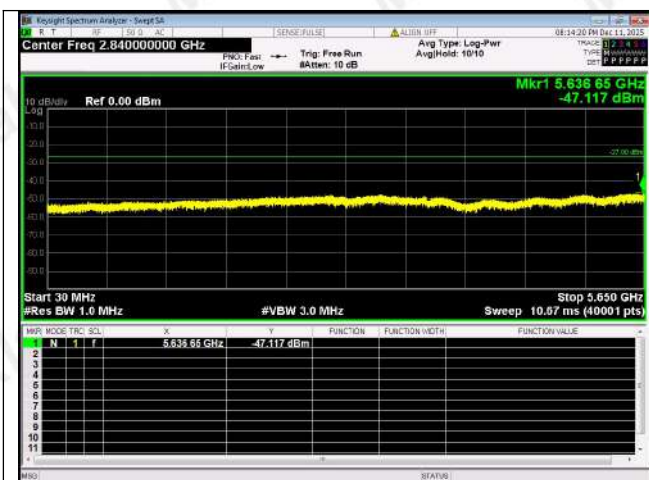


Spurious Emission:30.0~5150 MHz
IEEE 802.11ax_Channel 42_80MHz

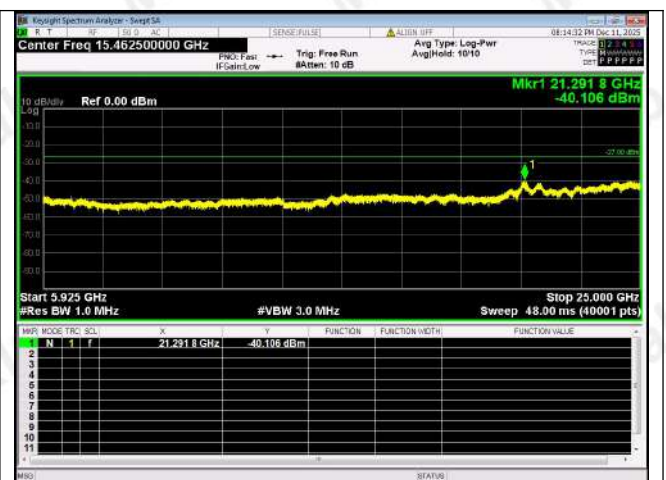


Spurious Emission:5350~25000.0 MHz
IEEE 802.11ax_Channel 42_80MHz

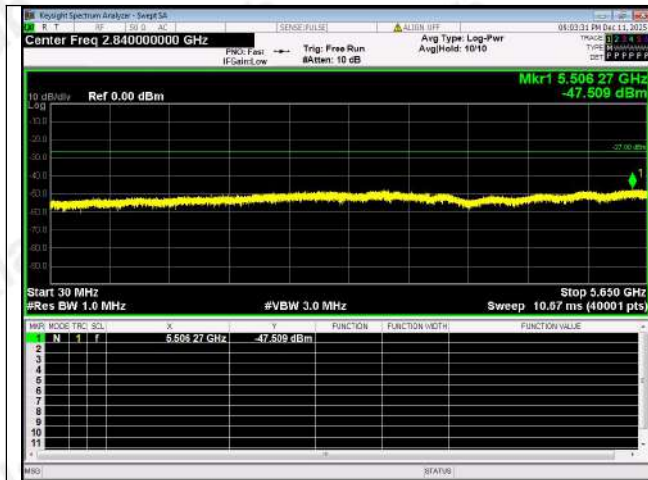
5.8G



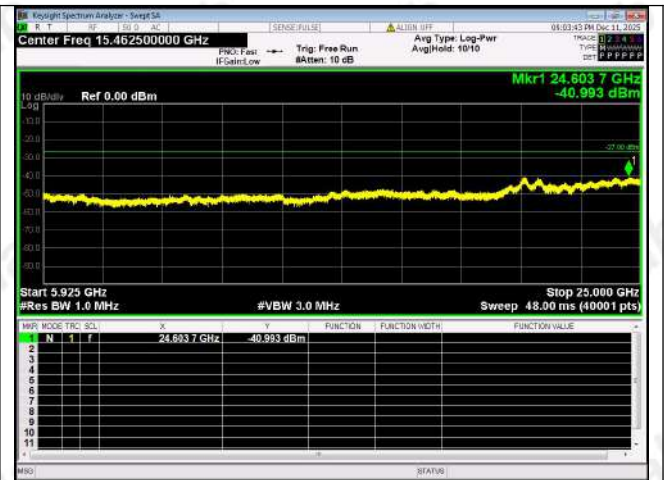
Spurious Emission:30.0~5650 MHz
IEEE 802.11a_Channel 149_20MHz



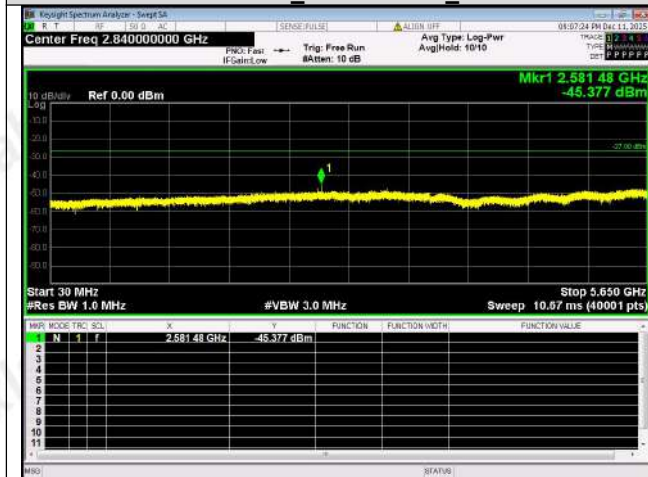
Spurious Emission:5925~25000.0 MHz
IEEE 802.11a_Channel 149_20MHz



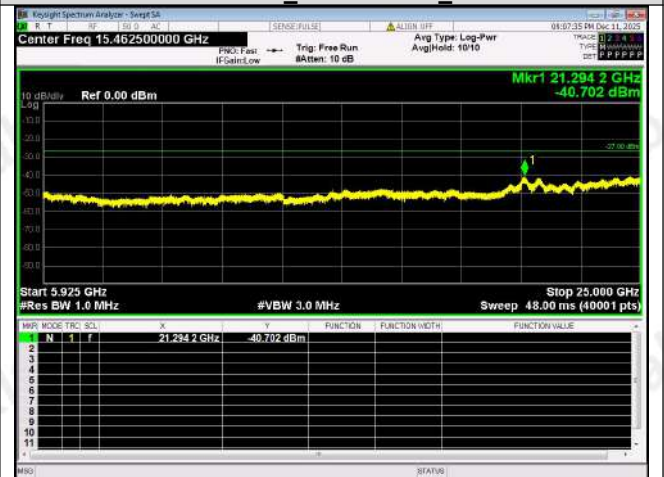
Spurious Emission:30.0~5650 MHz
IEEE 802.11a_Channel 157_20MHz



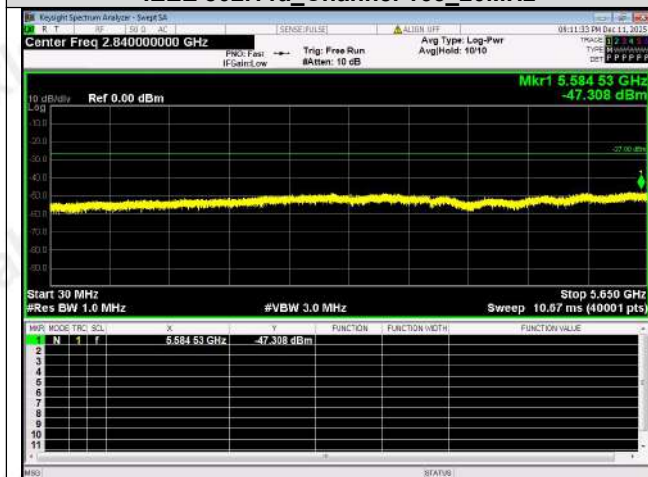
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IEEE 802.11a_Channel 157_20MHz



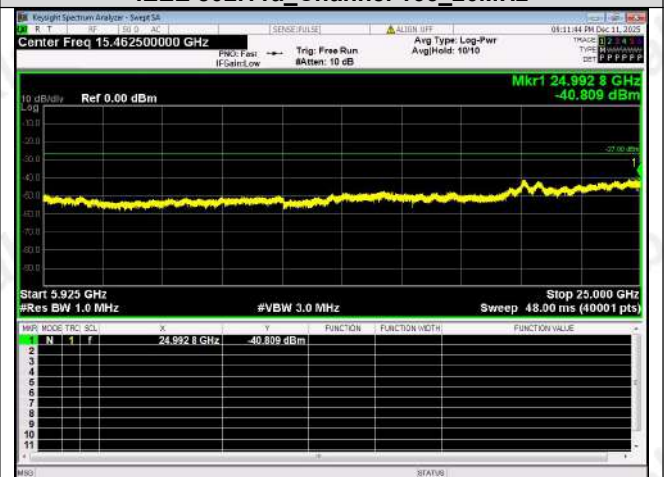
Spurious Emission:30.0~5650 MHz
IEEE 802.11a_Channel 165_20MHz



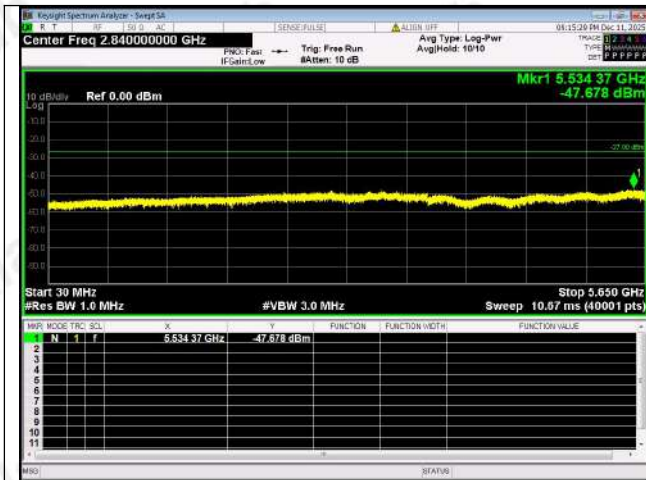
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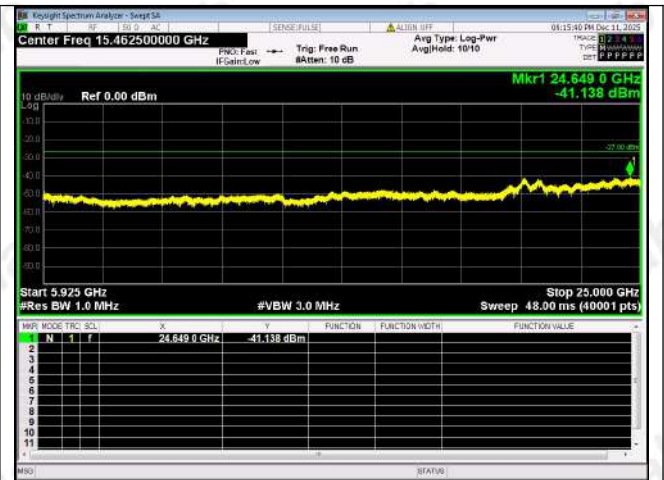
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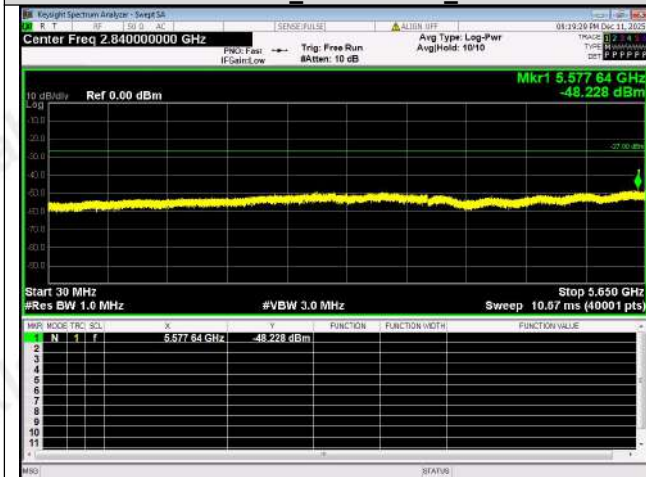
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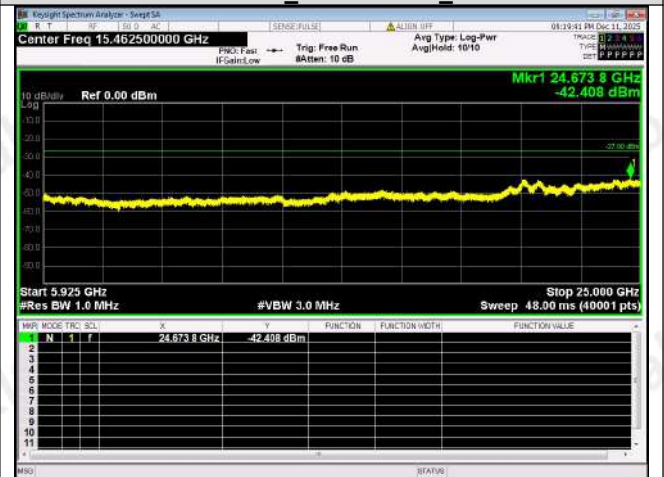
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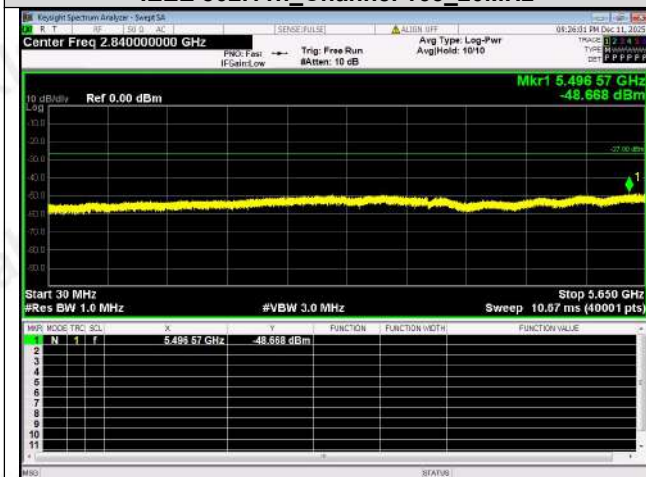
Spurious Emission:5925~25000.0 MHz
IEEE 802.11n_Channel 157_20MHz



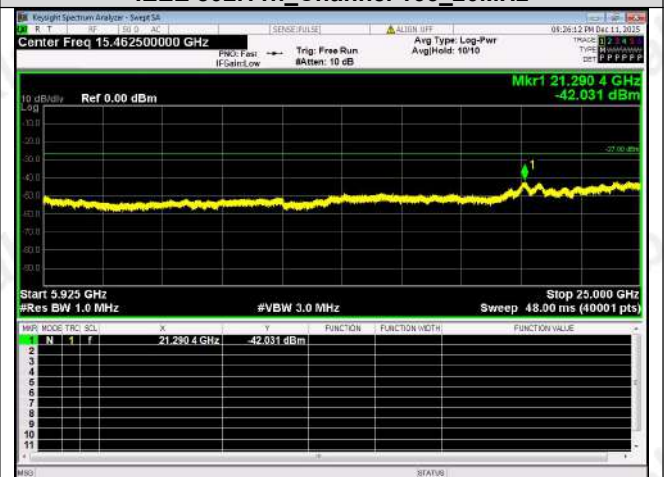
Spurious Emission:30.0~5650 MHz
IEEE 802.11n_Channel 165_20MHz



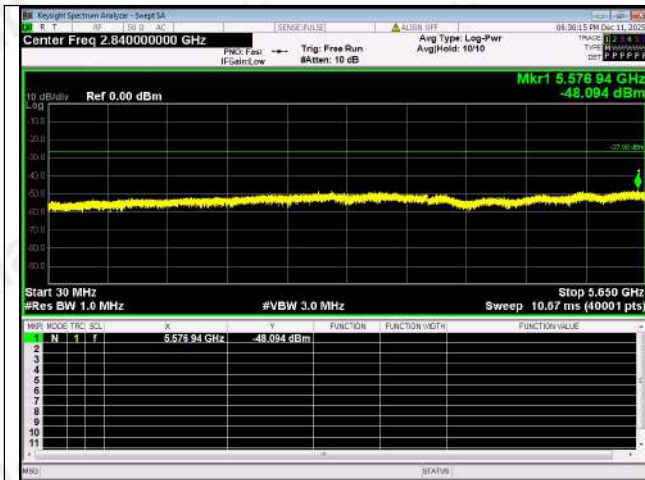
Spurious Emission:5925~25000.0 MHz
IEEE 802.11n_Channel 165_20MHz



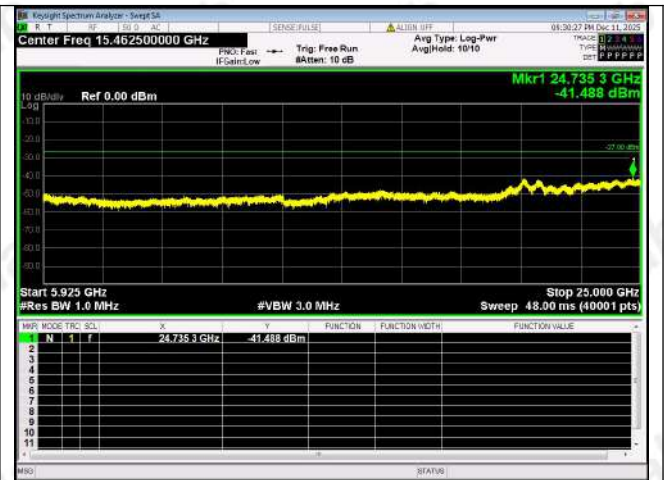
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IEEE 802.11n_Channel 151_40MHz



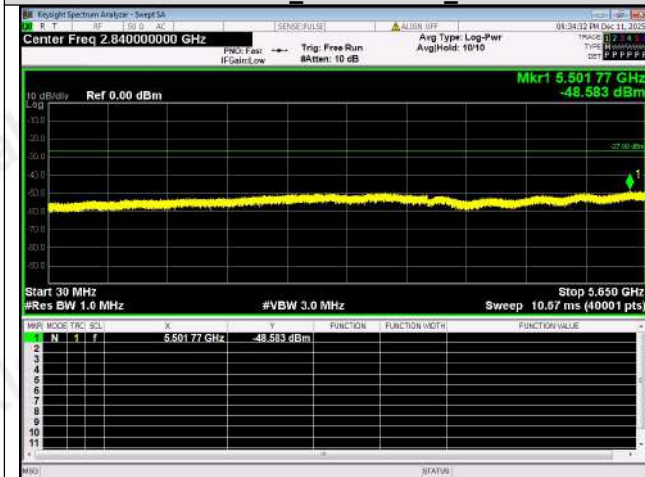
Spurious Emission:5925~25000.0 MHz
IEEE 802.11n_Channel 151_40MHz



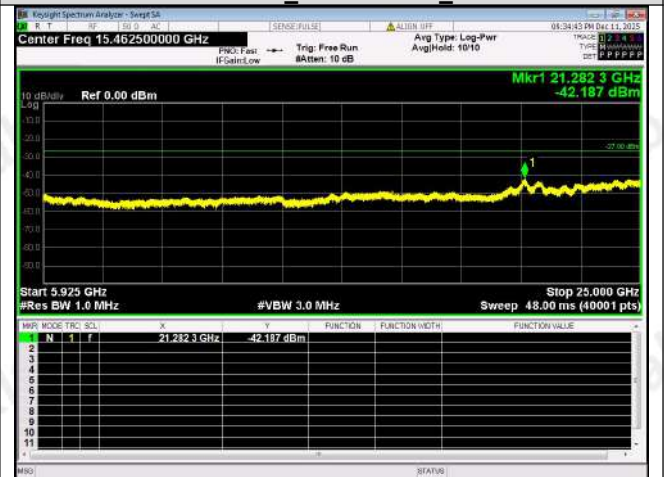
**Spurious Emission:30.0~5650 MHz
IEEE 802.11n_Channel 159_40MHz**



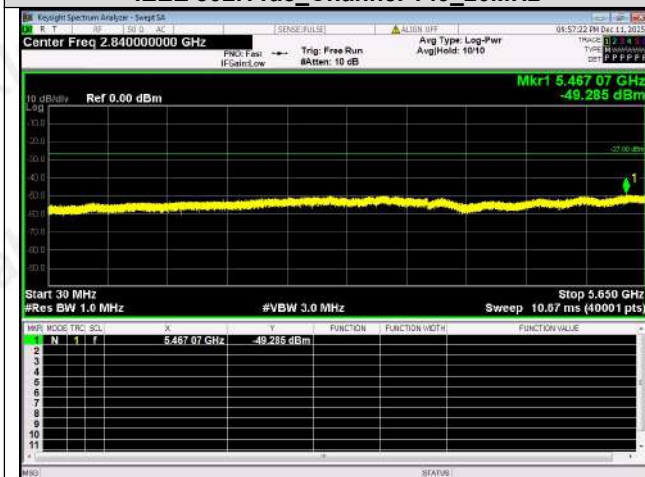
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IEEE 802.11n_Channel 159_40MHz**



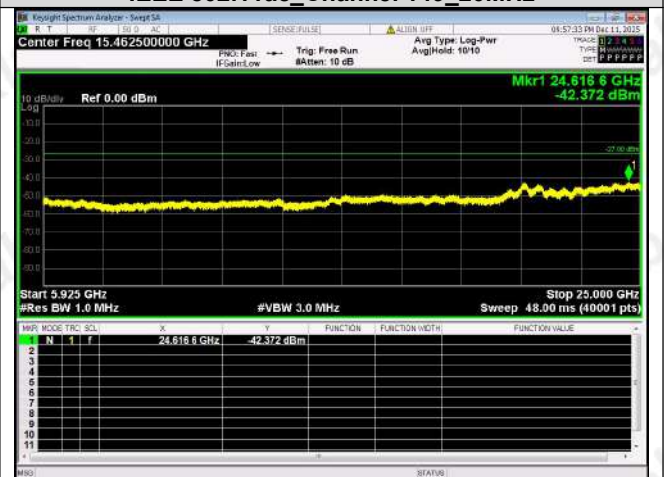
**Spurious Emission:30.0~5650 MHz
IEEE 802.11ac_Channel 149_20MHz**



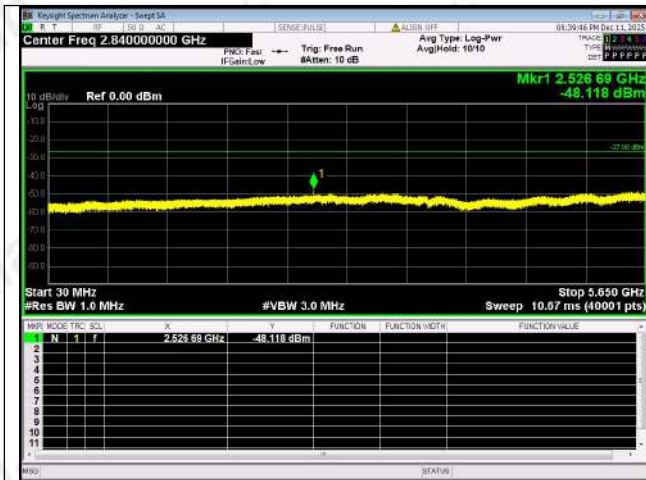
**Spurious Emission:5925~25000.0 MHz
IEEE 802.11ac_Channel 149_20MHz**



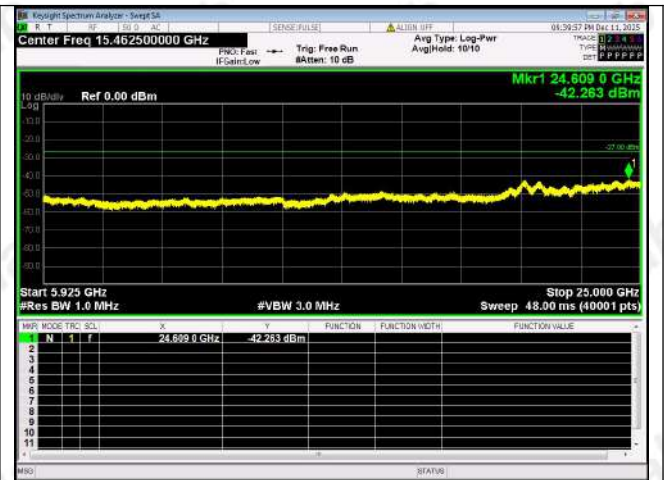
**Spurious Emission:30.0~5650 MHz
IEEE 802.11ac_Channel 157_20MHz**



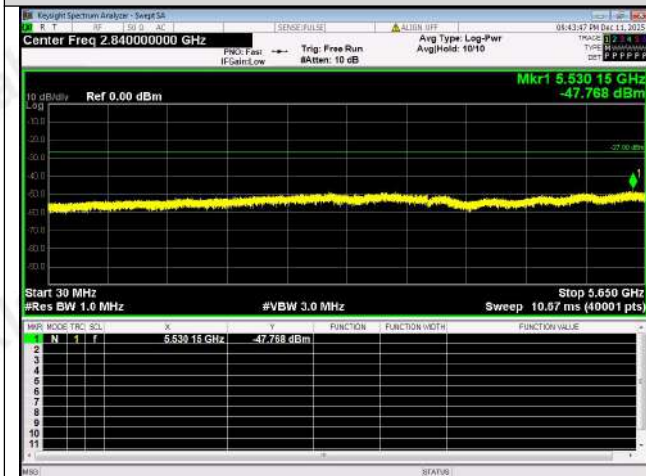
**Spurious Emission:5925~25000.0 MHz
IEEE 802.11ac_Channel 157_20MHz**



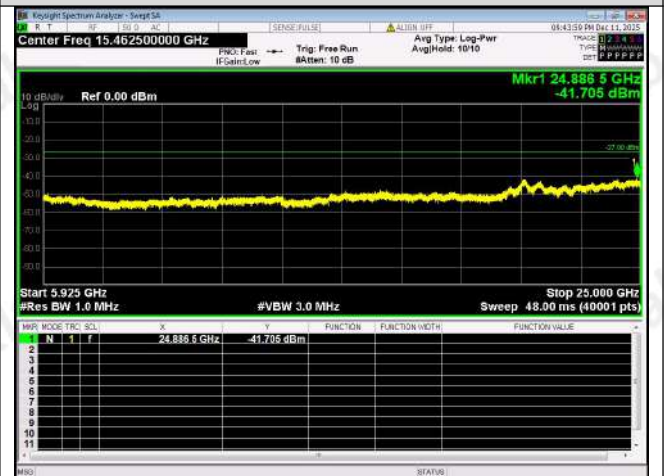
**Spurious Emission:30.0~5650 MHz
IEEE 802.11ac_Channel 165_20MHz**



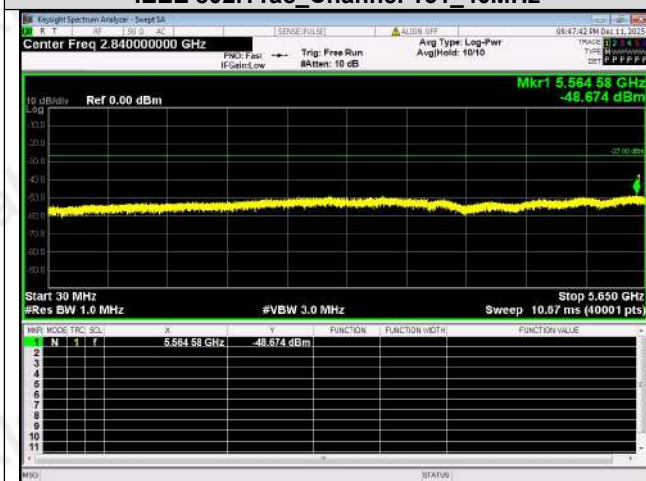
**Spurious Emission:5925~25000.0 MHz
IEEE 802.11ac_Channel 165_20MHz**



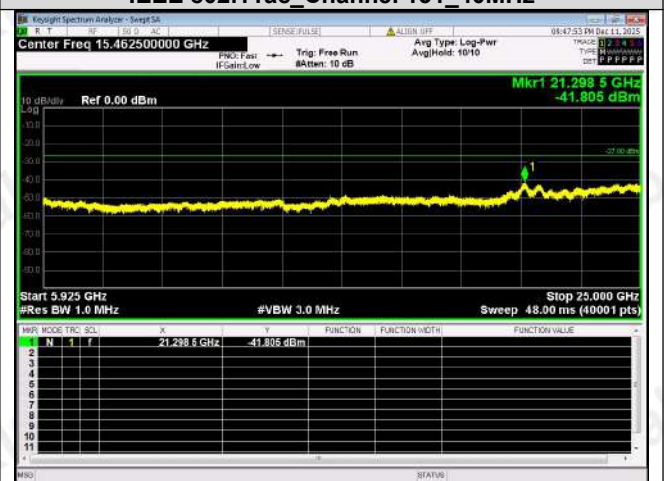
**Spurious Emission:30.0~5650 MHz
IEEE 802.11ac_Channel 151_40MHz**



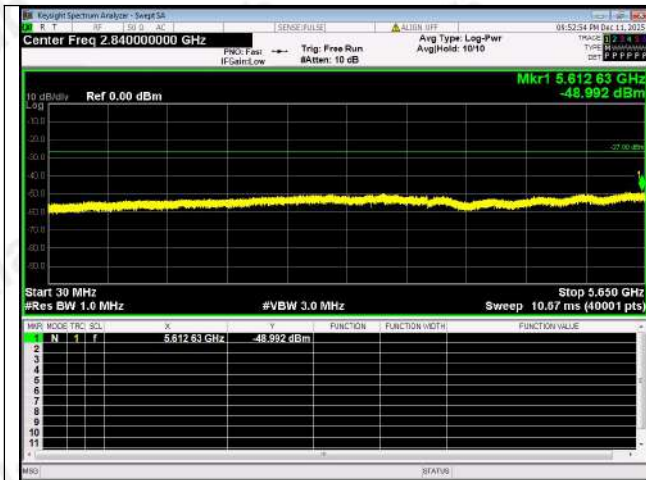
**Spurious Emission:5925~25000.0 MHz
IEEE 802.11ac_Channel 151_40MHz**



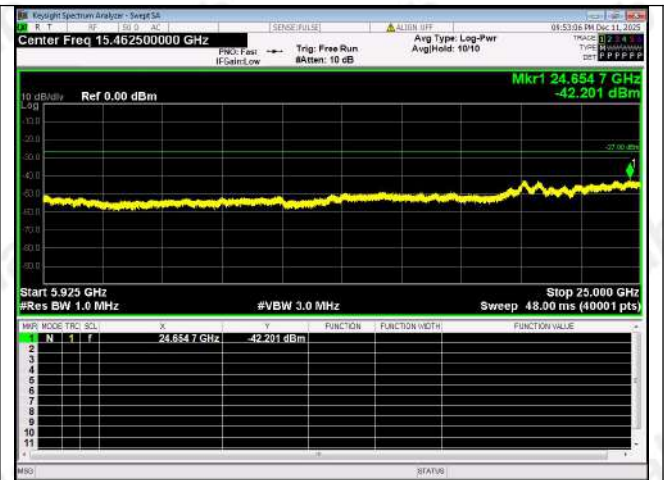
**Spurious Emission:30.0~5650 MHz
IEEE 802.11ac_Channel 159_40MHz**



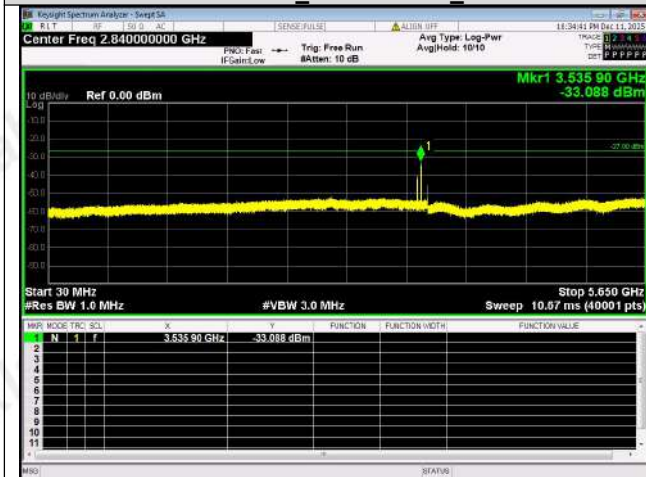
**Spurious Emission:5925~25000.0 MHz
IEEE 802.11ac_Channel 159_40MHz**



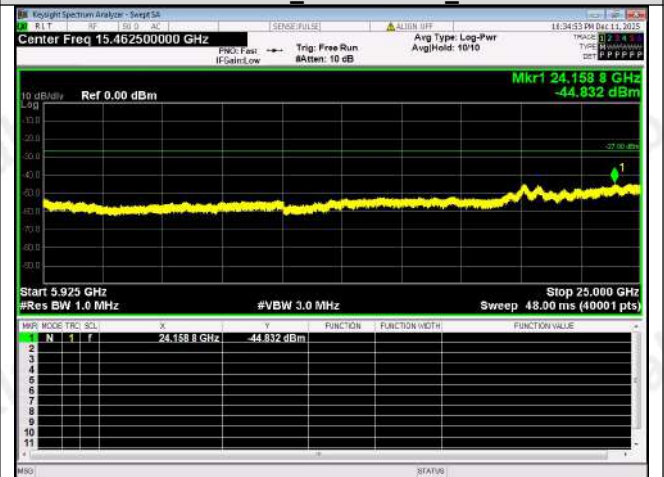
Spurious Emission:30.0~5650 MHz
IEEE 802.11ac_Channel 155_80MHz



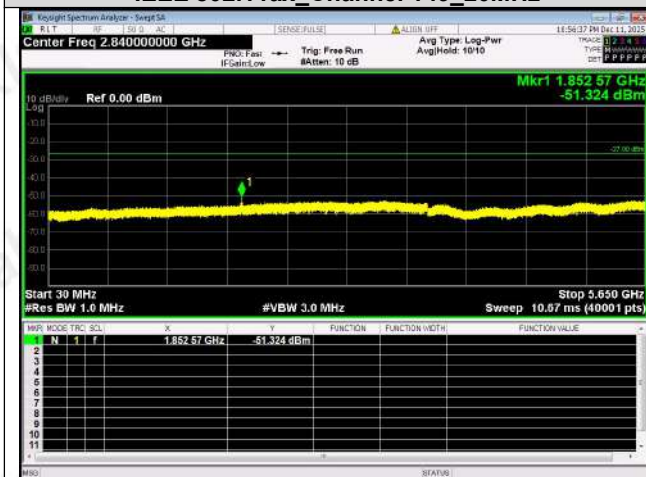
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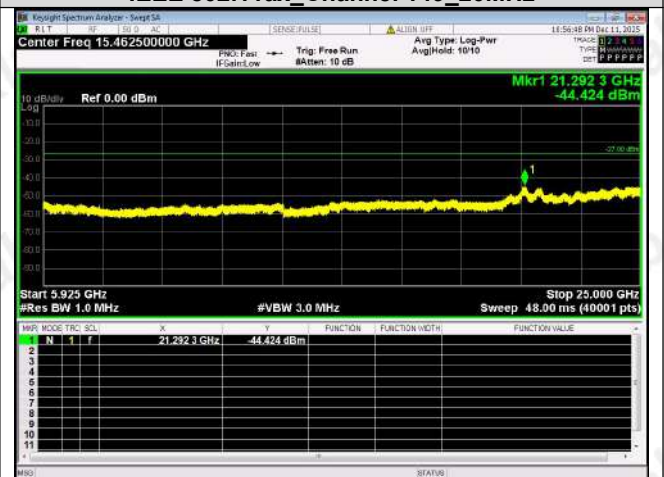
Spurious Emission:30.0~5650 MHz
IEEE 802.11ax_Channel 149_20MHz



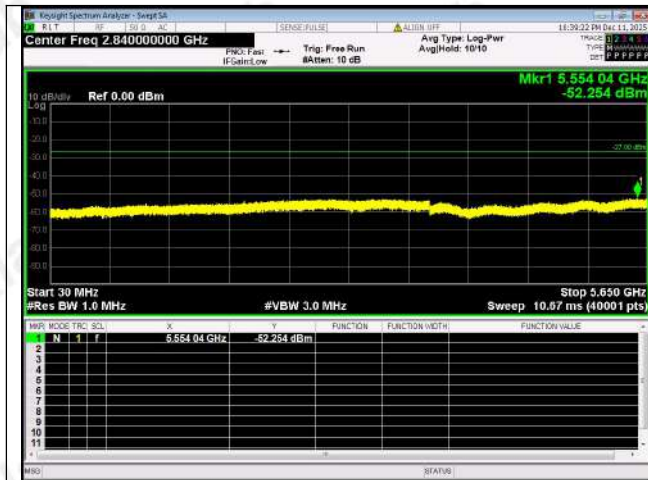
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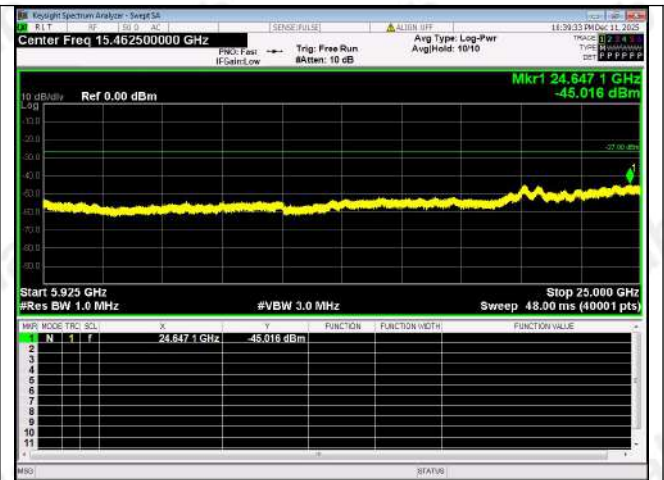
Spurious Emission:30.0~5650 MHz
IEEE 802.11ax_Channel 157_20MHz



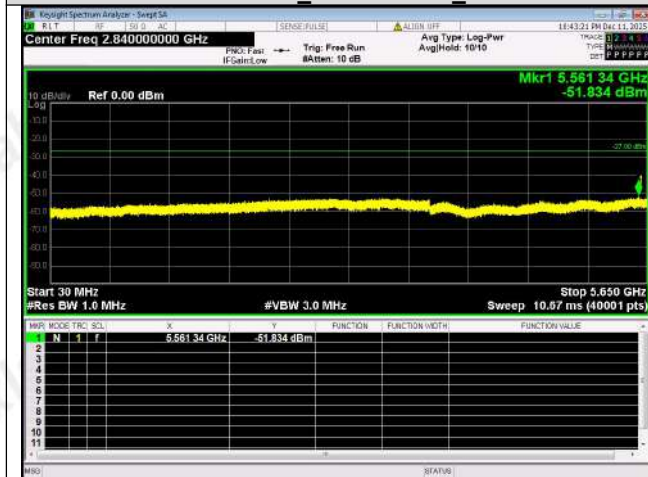
Spurious Emission:5925~25000.0 MHz
IEEE 802.11ax_Channel 157_20MHz



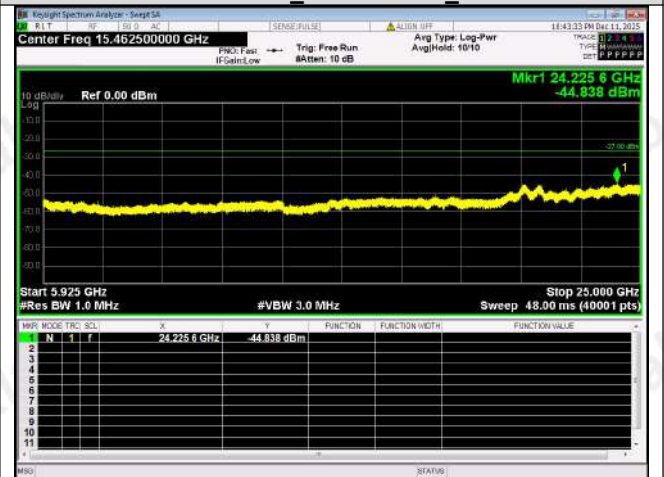
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IEEE 802.11ax_Channel 165_20MHz



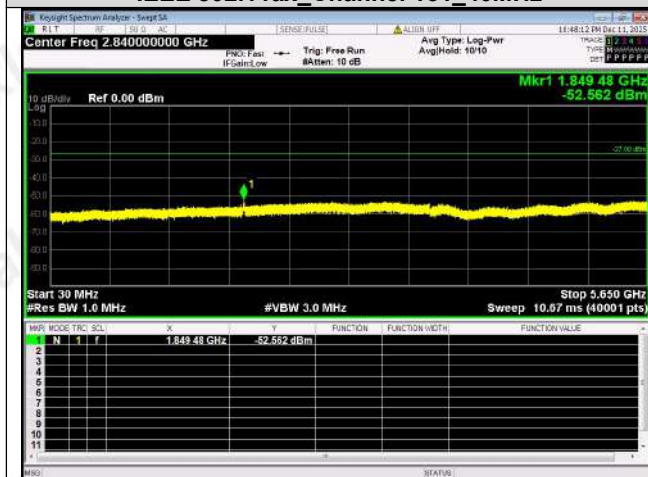
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IEEE 802.11ax_Channel 165_20MHz



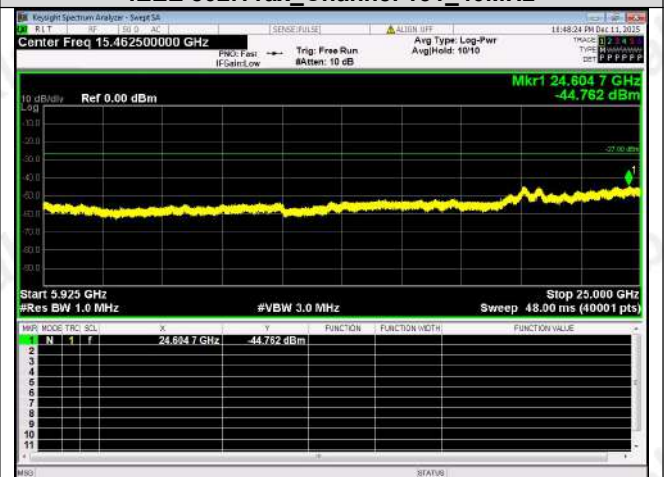
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IEEE 802.11ax_Channel 151_40MHz



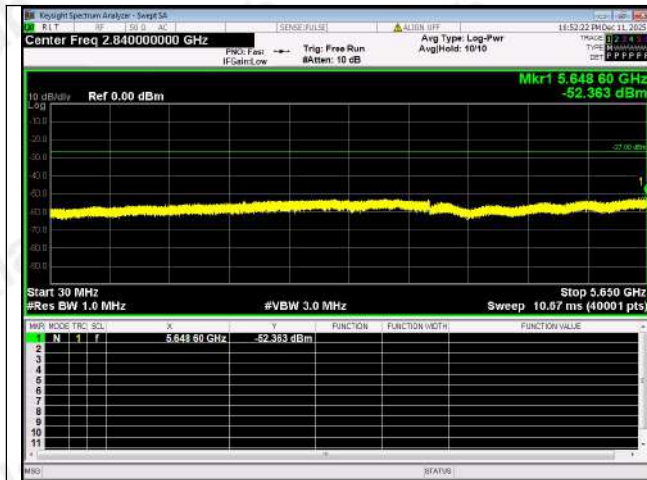
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IEEE 802.11ax_Channel 151_40MHz



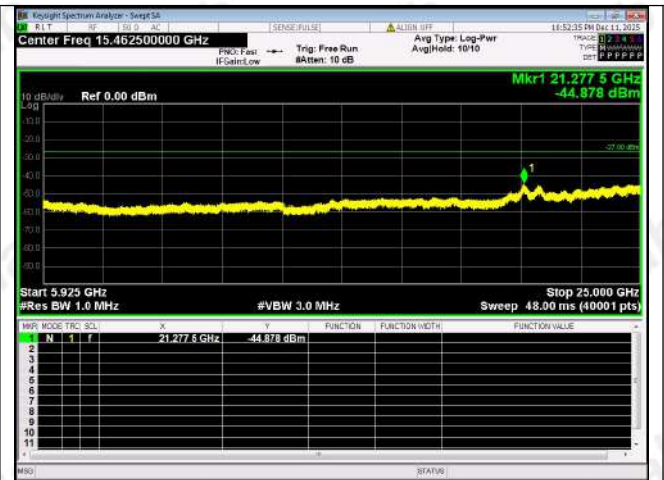
Spurious Emission:30.0~5650 MHz
IEEE 802.11ax_Channel 159_40MHz



Spurious Emission:5925~25000.0 MHz
IEEE 802.11ax_Channel 159_40MHz



Spurious Emission:30.0~5650 MHz
IEEE 802.11ax_Channel 155_80MHz



Spurious Emission:5925~25000.0 MHz
IEEE 802.11ax_Channel 155_80MHz

5.2G

Mode	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Ant. (dBi)	Correct OOB Emission Level(dBm)	Limit (dBm)	Over Limit (dB)	Result
IEEE 802.11a	36	3186.48	-48.236	4.45	-43.786	-27	-16.786	PASS
		24607.5	-40.837	4.45	-36.387	-27	-9.387	PASS
	40	5057.33	-48.736	4.45	-44.286	-27	-17.286	PASS
		21274.4	-41.199	4.45	-36.749	-27	-9.749	PASS
	48	1849.39	-47.749	4.45	-43.299	-27	-16.299	PASS
		21245.4	-40.831	4.45	-36.381	-27	-9.381	PASS
IEEE 802.11n_20	36	3205.68	-48.669	4.45	-44.219	-27	-17.219	PASS
		24708.7	-41.907	4.45	-37.457	-27	-10.457	PASS
	40	5140.91	-49.045	4.45	-44.595	-27	-17.595	PASS
		21317.1	-41.787	4.45	-37.337	-27	-10.337	PASS
	48	5029.04	-49.134	4.45	-44.684	-27	-17.684	PASS
		21271.4	-41.465	4.45	-37.015	-27	-10.015	PASS
IEEE 802.11n_40	38	5149.49	-48.312	4.45	-43.862	-27	-16.862	PASS
		21280.7	-41.557	4.45	-37.107	-27	-10.107	PASS
	46	3170.10	-48.035	4.45	-43.585	-27	-16.585	PASS
		24626.7	-41.032	4.45	-36.582	-27	-9.582	PASS
IEEE 802.11ac_20	36	5145.01	-48.964	4.45	-44.514	-27	-17.514	PASS
		24212.0	-41.934	4.45	-37.484	-27	-10.484	PASS
	40	5091.25	-48.487	4.45	-44.037	-27	-17.037	PASS
		24176.2	-41.106	4.45	-36.656	-27	-9.656	PASS
	48	5110.45	-48.344	4.45	-43.894	-27	-16.894	PASS
		21277.3	-41.111	4.45	-36.661	-27	-9.661	PASS
IEEE 802.11ac_40	38	5148.46	-47.051	4.45	-42.601	-27	-15.601	PASS
		24609.9	-41.959	4.45	-37.509	-27	-10.509	PASS
	46	2706.35	-49.482	4.45	-45.032	-27	-18.032	PASS
		24211.1	-42.545	4.45	-38.095	-27	-11.095	PASS
IEEE 802.11ac_80	42	5115.44	-47.114	4.45	-42.664	-27	-15.664	PASS
		24807.4	-42.447	4.45	-37.997	-27	-10.997	PASS
IEEE 802.11ax_20	36	5038.51	-49.932	4.45	-45.482	-27	-18.482	PASS
		24153.6	-42.267	4.45	-37.817	-27	-10.817	PASS
	40	2648.75	-49.697	4.45	-45.247	-27	-18.247	PASS
		21267.0	-42.630	4.45	-38.18	-27	-11.18	PASS
	48	2469.30	-48.782	4.45	-44.332	-27	-17.332	PASS
		21268.0	-42.843	4.45	-38.393	-27	-11.393	PASS
IEEE 802.11ax_40	38	5150.00	-49.142	4.45	-44.692	-27	-17.692	PASS
		24998.5	-43.231	4.45	-38.781	-27	-11.781	PASS
	46	2546.61	-46.538	4.45	-42.088	-27	-15.088	PASS
		24988.2	-43.526	4.45	-39.076	-27	-12.076	PASS
IEEE 802.11ax_80	42	2608.30	-41.046	4.45	-36.596	-27	-9.596	PASS
		24177.6	-43.596	4.45	-39.146	-27	-12.146	PASS

5.8G

Mode	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Ant. (dBi)	Correct OOB Emission Level(dBm)	Limit (dBm)	Over Limit (dB)	Result
IEEE 802.11a	149	5636.65	-47.117	4.45	-42.667	-27	-15.667	PASS
		21291.8	-40.106	4.45	-35.656	-27	-8.656	PASS
	157	5506.27	-47.509	4.45	-43.059	-27	-16.059	PASS
		24603.7	-40.993	4.45	-36.543	-27	-9.543	PASS
	165	2581.48	-45.377	4.45	-40.927	-27	-13.927	PASS
		21294.2	-40.702	4.45	-36.252	-27	-9.252	PASS
IEEE 802.11n_20	149	5584.53	-47.308	4.45	-42.858	-27	-15.858	PASS
		24992.8	-40.809	4.45	-36.359	-27	-9.359	PASS
	157	5534.37	-47.678	4.45	-43.228	-27	-16.228	PASS
		24649.0	-41.138	4.45	-36.688	-27	-9.688	PASS
	165	5577.64	-48.228	4.45	-43.778	-27	-16.778	PASS
		24673.8	-42.408	4.45	-37.958	-27	-10.958	PASS
IEEE 802.11n_40	151	5496.57	-48.668	4.45	-44.218	-27	-17.218	PASS
		21290.4	-42.031	4.45	-37.581	-27	-10.581	PASS
	159	5576.94	-48.094	4.45	-43.644	-27	-16.644	PASS
		24735.3	-41.488	4.45	-37.038	-27	-10.038	PASS
IEEE 802.11ac_20	149	5501.77	-48.583	4.45	-44.133	-27	-17.133	PASS
		21282.3	-42.187	4.45	-37.737	-27	-10.737	PASS
	157	5467.07	-49.285	4.45	-44.835	-27	-17.835	PASS
		24616.6	-42.372	4.45	-37.922	-27	-10.922	PASS
	165	2526.68	-48.118	4.45	-43.668	-27	-16.668	PASS
		24609.0	-42.263	4.45	-37.813	-27	-10.813	PASS
IEEE 802.11ac_40	151	5530.15	-47.768	4.45	-43.318	-27	-16.318	PASS
		24886.5	-41.705	4.45	-37.255	-27	-10.255	PASS
	159	5564.58	-48.674	4.45	-44.224	-27	-17.224	PASS
		21298.5	-41.805	4.45	-37.355	-27	-10.355	PASS
IEEE 802.11ac_80	155	5612.63	-48.992	4.45	-44.542	-27	-17.542	PASS
		24654.7	-42.201	4.45	-37.751	-27	-10.751	PASS
IEEE 802.11ax_20	149	3535.90	-33.088	4.45	-28.638	-27	-1.638	PASS
		24158.8	-44.832	4.45	-40.382	-27	-13.382	PASS
	157	1852.57	-51.324	4.45	-46.874	-27	-19.874	PASS
		21292.3	-44.424	4.45	-39.974	-27	-12.974	PASS
	165	5554.04	-52.254	4.45	-47.804	-27	-20.804	PASS
		24647.1	-45.016	4.45	-40.566	-27	-13.566	PASS
IEEE 802.11ax_40	151	5561.34	-51.834	4.45	-47.384	-27	-20.384	PASS
		24225.6	-44.838	4.45	-40.388	-27	-13.388	PASS
	159	1849.47	-52.562	4.45	-48.112	-27	-21.112	PASS
		24604.7	-44.762	4.45	-40.312	-27	-13.312	PASS
IEEE 802.11ax_80	155	5648.60	-52.363	4.45	-47.913	-27	-20.913	PASS
		21277.5	-44.878	4.45	-40.428	-27	-13.428	PASS

4.9 Duty Cycle

Standard Requirement

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle.

All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

Formula

Duty Cycle = $T_{on} / (T_{on} + T_{off})$

Test Procedure

1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

Test Result

Mode	Bands	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Correction Factor (dB)
802.11a	U-NII 1	36	10.000	10.000	100	0
		40	10.000	10.000	100	0
		48	10.000	10.000	100	0
802.11n (HT20)	U-NII 1	36	10.000	10.000	100	0
		40	10.000	10.000	100	0
		48	10.000	10.000	100	0
802.11n (HT40)	U-NII 1	38	10.000	10.000	100	0
		46	10.000	10.000	100	0
802.11ac (HT20)	U-NII 1	36	10.000	10.000	100	0
		40	10.000	10.000	100	0
		48	10.000	10.000	100	0
802.11ac (HT40)	U-NII 1	38	10.000	10.000	100	0
		46	10.000	10.000	100	0
802.11ac(HT80)	U-NII 1	42	10.000	10.000	100	0
802.11ax(HT20)	U-NII 1	36	10.000	10.000	100	0
		40	10.000	10.000	100	0
		48	10.000	10.000	100	0
802.11ax(HT40)	U-NII 1	38	10.000	10.000	100	0
		46	10.000	10.000	100	0
802.11ax(HT80)	U-NII 1	42	10.000	10.000	100	0

Mode	Bands	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Correction Factor (dB)
802.11a	U-NII 3	149	10.000	10.000	100	0
		157	10.000	10.000	100	0
		165	10.000	10.000	100	0
802.11n(HT20)	U-NII 3	149	10.000	10.000	100	0
		157	10.000	10.000	100	0
		165	10.000	10.000	100	0
802.11n(HT40)	U-NII 3	151	10.000	10.000	100	0
		159	10.000	10.000	100	0
802.11ac(VHT20)	U-NII 3	149	10.000	10.000	100	0
		157	10.000	10.000	100	0
		165	10.000	10.000	100	0
802.11ac(VHT40)	U-NII 3	151	10.000	10.000	100	0
		159	10.000	10.000	100	0
802.11ac(VHT80)	U-NII 3	155	10.000	10.000	100	0
802.11ax(HE20)	U-NII 3	149	10.000	10.000	100	0
		157	10.000	10.000	100	0
		165	10.000	10.000	100	0
802.11ax(HE40)	U-NII 3	151	10.000	10.000	100	0
		159	10.000	10.000	100	0
802.11ax(HE80)	U-NII 3	155	10.000	10.000	100	0

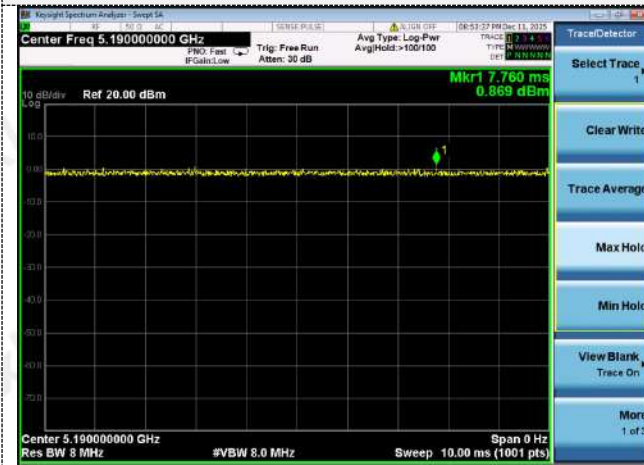
Test plot as follows:

5.2G



802.11n(HT40)

U-NII 1



802.11ac(VHT20)

U-NII 1



CH38



CH36



CH46



CH40



CH48





5.8G



802.11n(VHT40)

U-NII 3

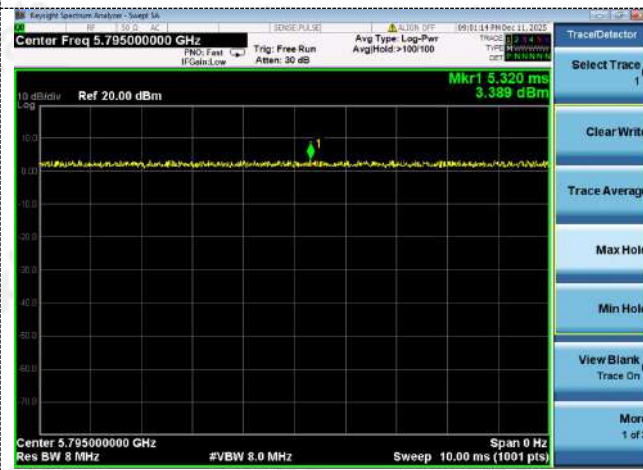


802.11ac(HT20)

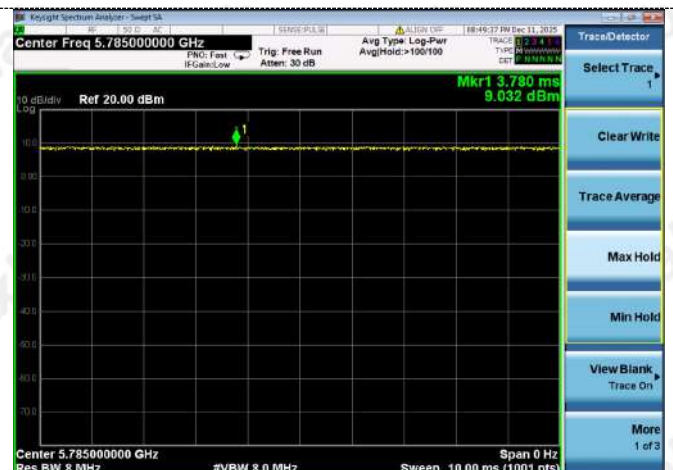
U-NII 3



CH151



CH149



CH159



CH157



CH165



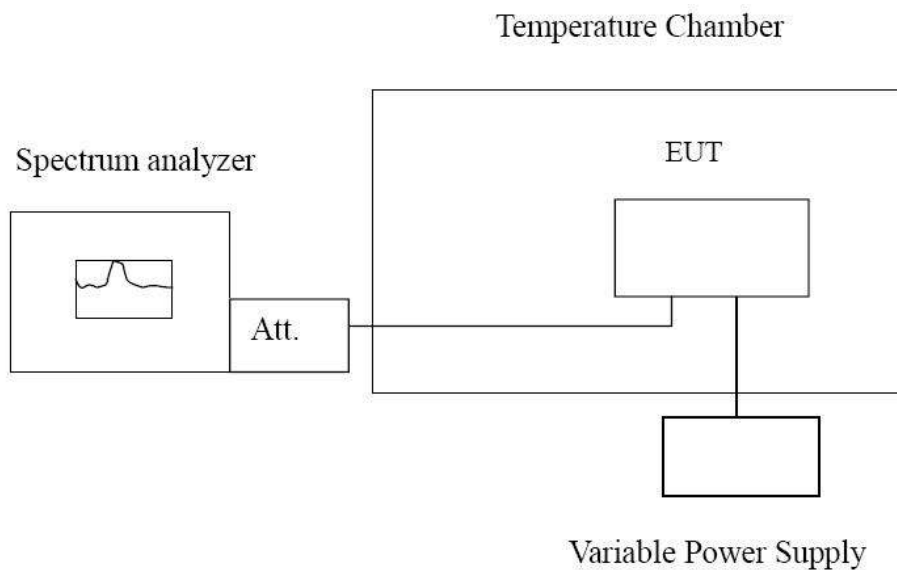


4.10 Frequency Stability

Limit

Manufacturers 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 users manual.

TEST CONFIGURATION



TEST PROCEDURE

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 25°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

Frequency Stability under Voltage Variations:

Set chamber temperature to 25°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 ($\pm 15\%$) and endpoint, record the maximum frequency change.

Reference Frequency: 802.11ac channel=36 frequency=5180MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
120.0	-30	67.71	0.013	Within the band of operation	Pass
	-20	81.35	0.016		
	-10	104.13	0.020		
	0	82.95	0.016		
	10	93.44	0.018		
	20	48.27	0.009		
	30	71.92	0.014		
	40	77.52	0.015		
	50	82.22	0.016		
138.0	25	97.84	0.019		
102.0	25	54.38	0.010		

Reference Frequency: 802.11ac channel=149 frequency=5745MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
120.0	-30	108.22	0.019	Within the band of operation	Pass
	-20	89.51	0.016		
	-10	49.27	0.009		
	0	62.58	0.011		
	10	56.98	0.010		
	20	51.16	0.009		
	30	52.57	0.009		
	40	84.92	0.015		
	50	109.91	0.019		
138.0	25	54.60	0.010		
102.0	25	53.89	0.009		

4.11 Antenna Requirement

Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited

Test Result:

The maximum gain of antenna is 4.45 dBi.

Remark: The antenna gain is provided by the customer, if the data provided by the customer is not accurate, MAXLAB Testing Co.,Ltd. does not assume any responsibility.

5 Test Setup Photos of the EUT

Reference to the appendix I for details.

6 Photos of the EUT

Reference to the appendix II for details.

***** End of Report *****