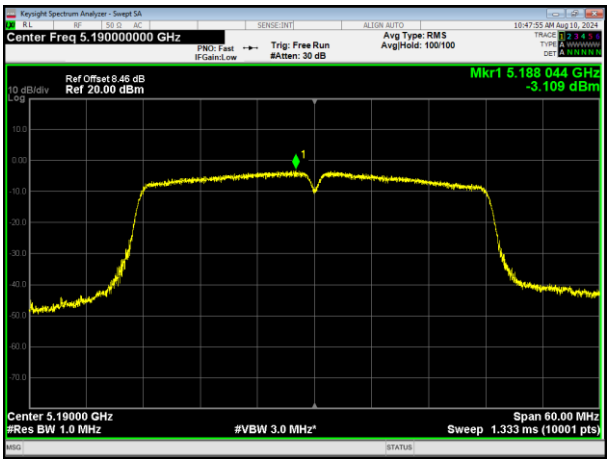
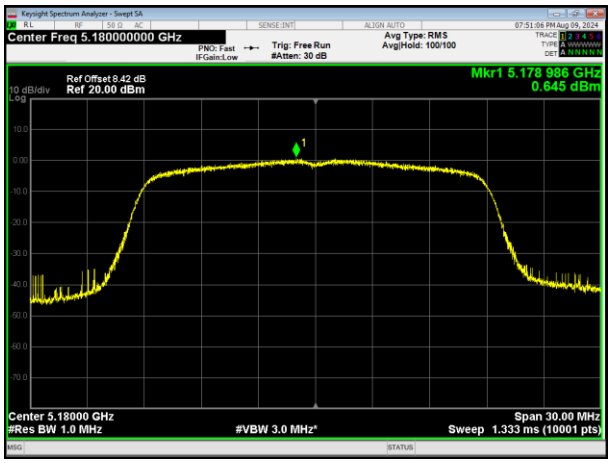
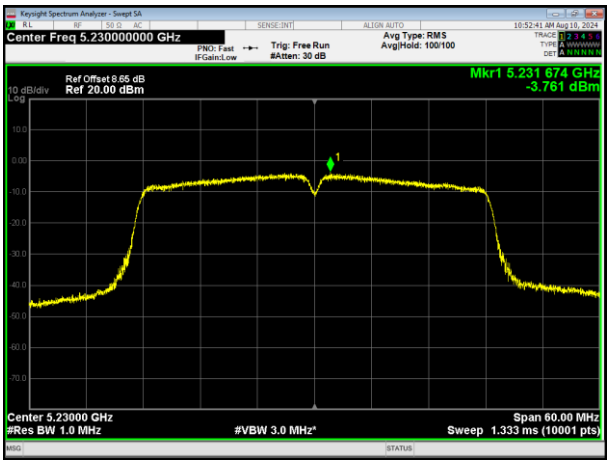
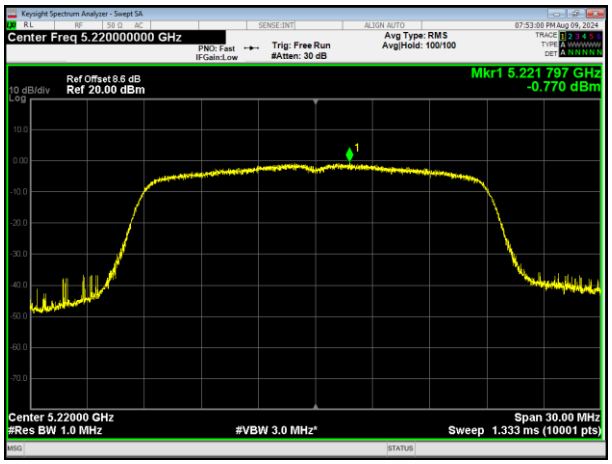
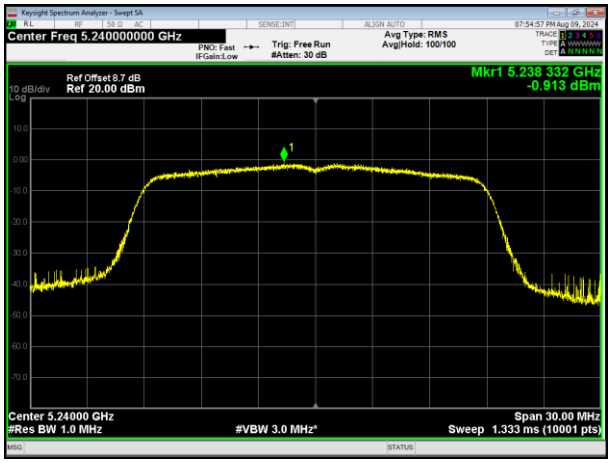
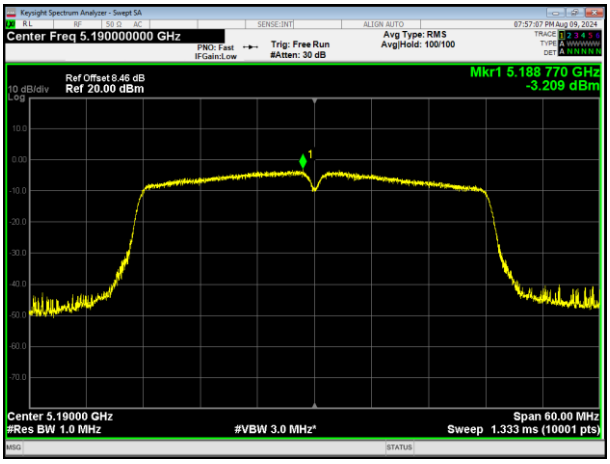
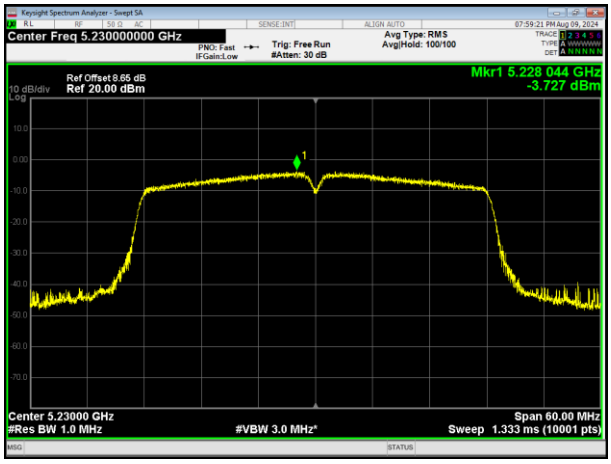
802.11ax HT40	802.11n HT20
	
5190MHz	5180MHz
	
5230MHz	5200MHz
	
	5240MHz

802.11n HT40	
	
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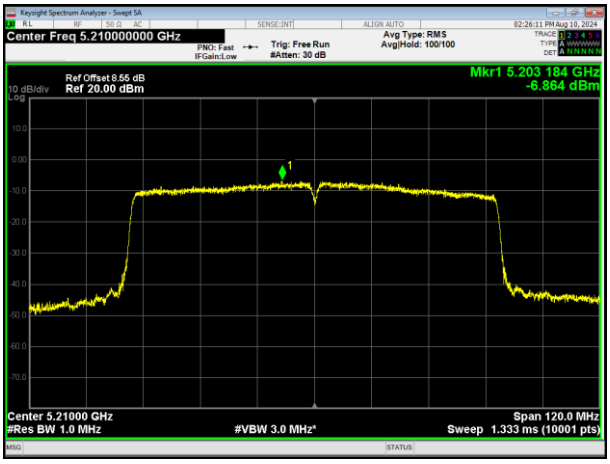
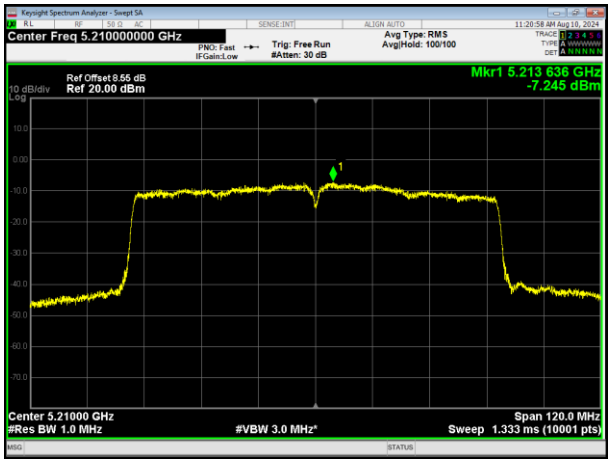
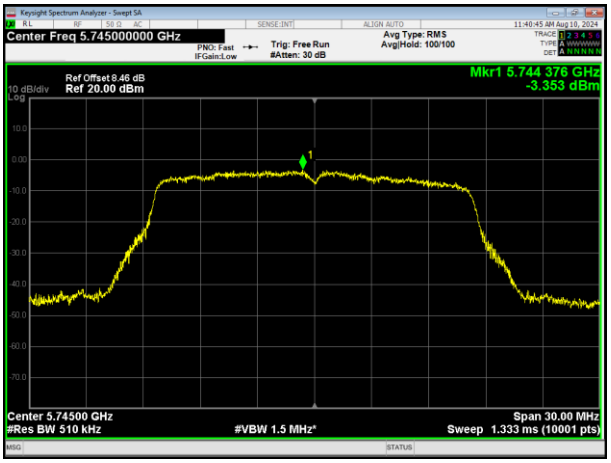
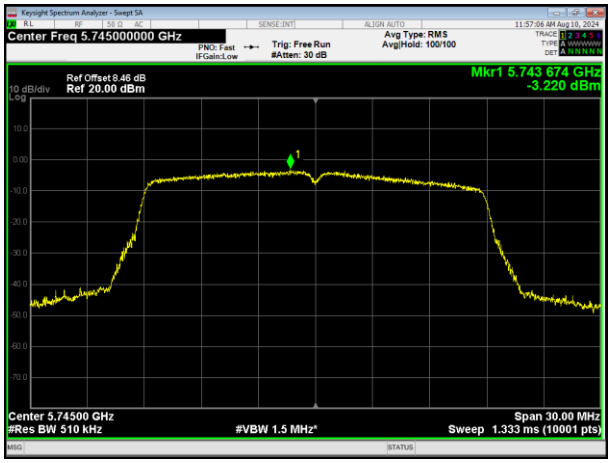
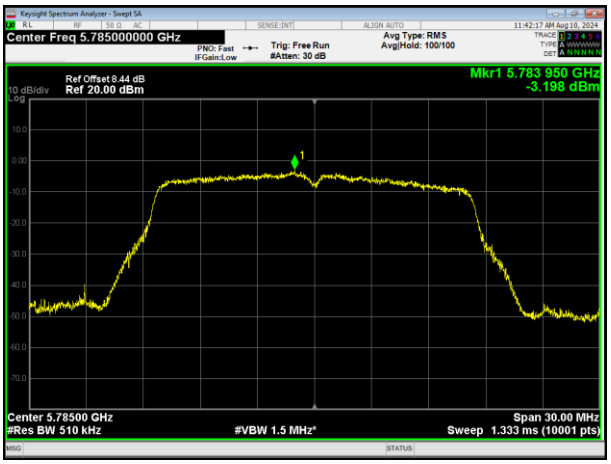
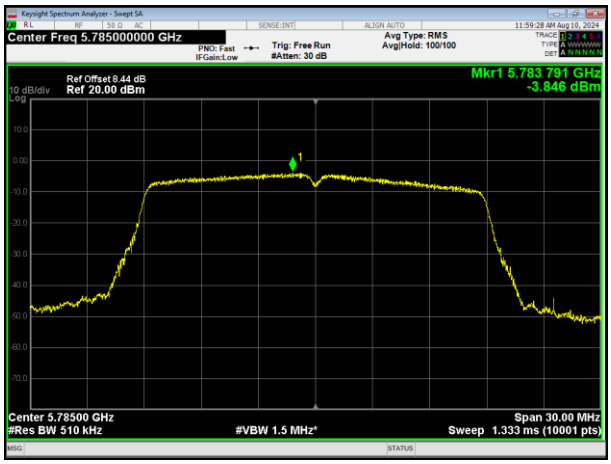
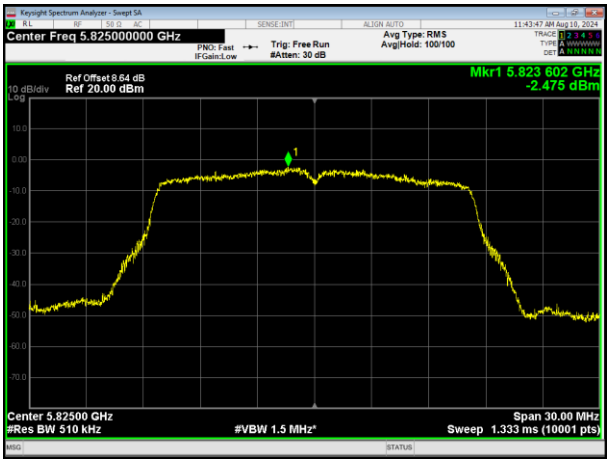
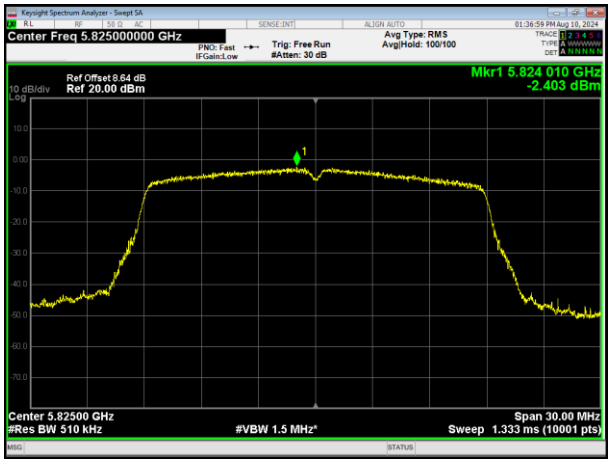
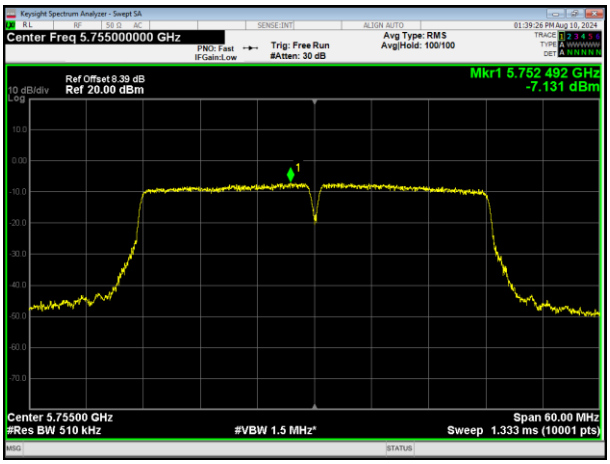
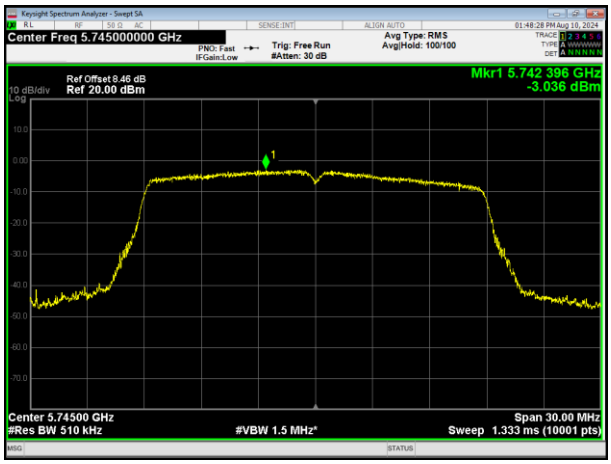
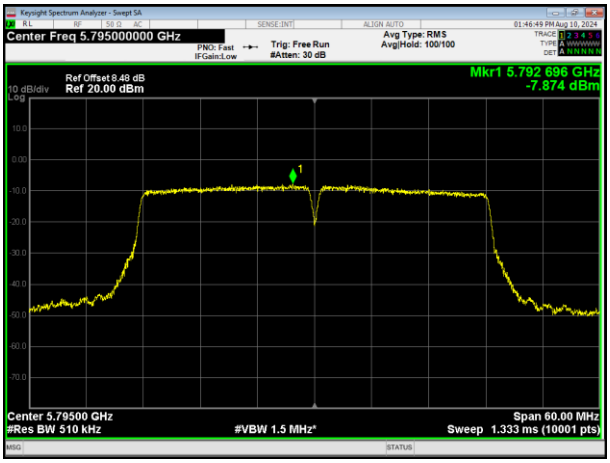
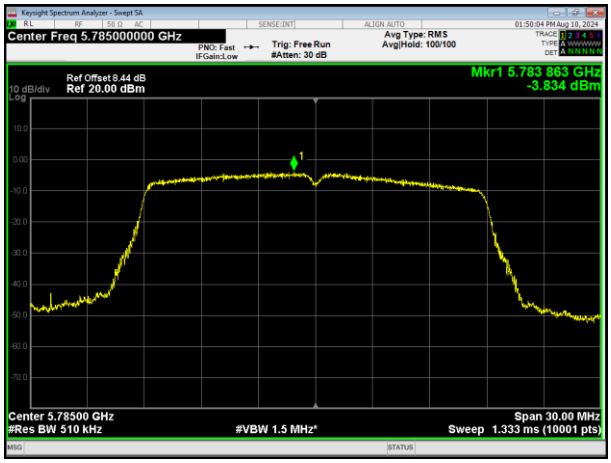
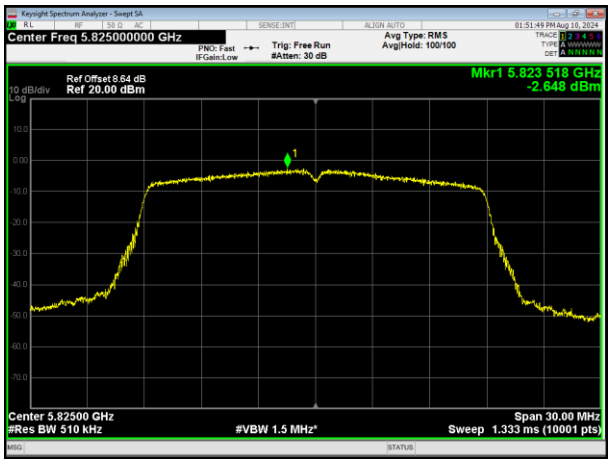
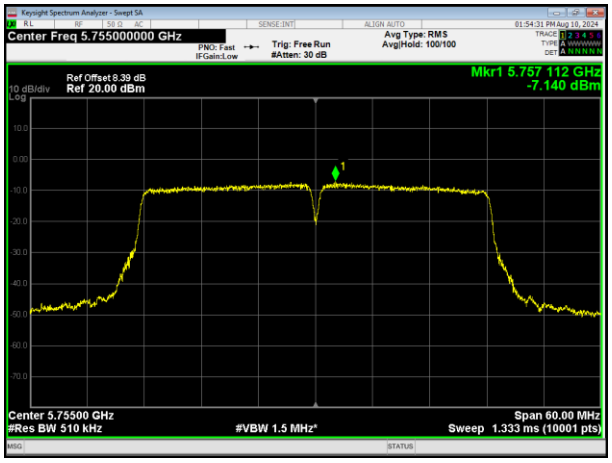
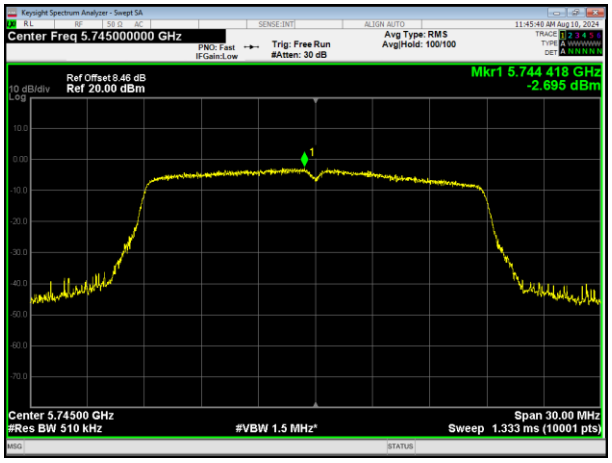
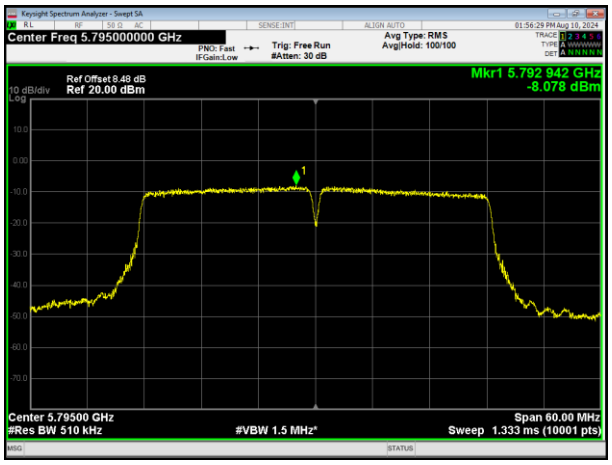
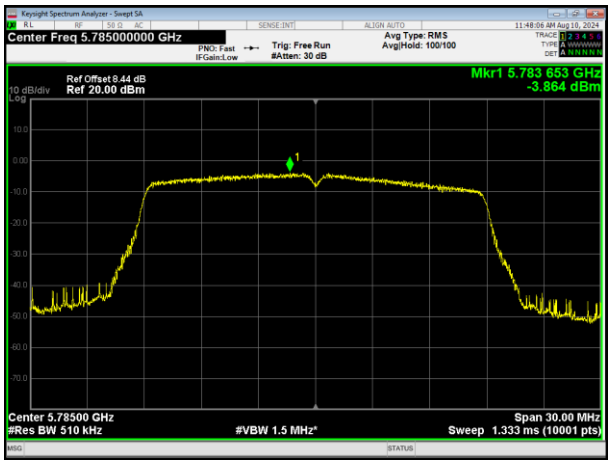
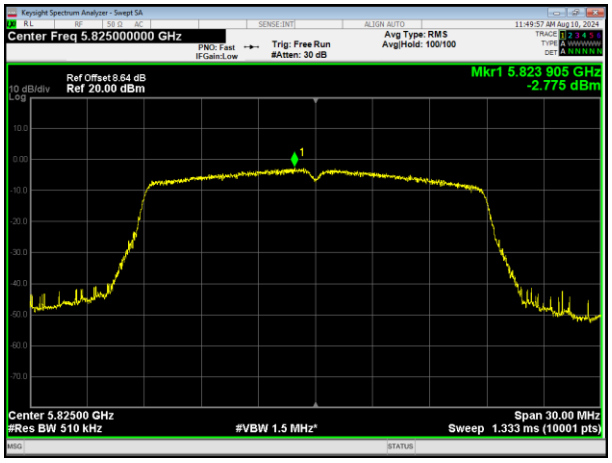
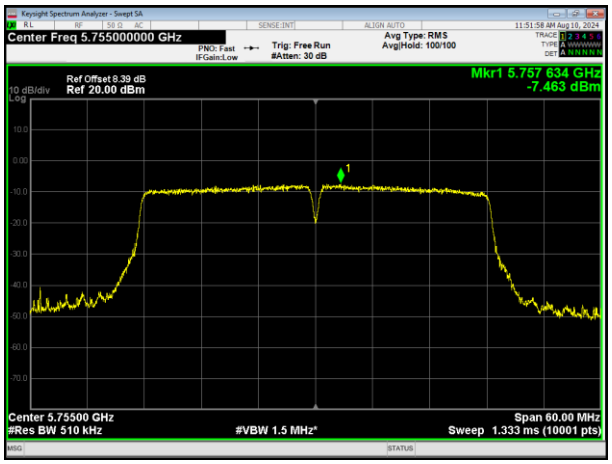
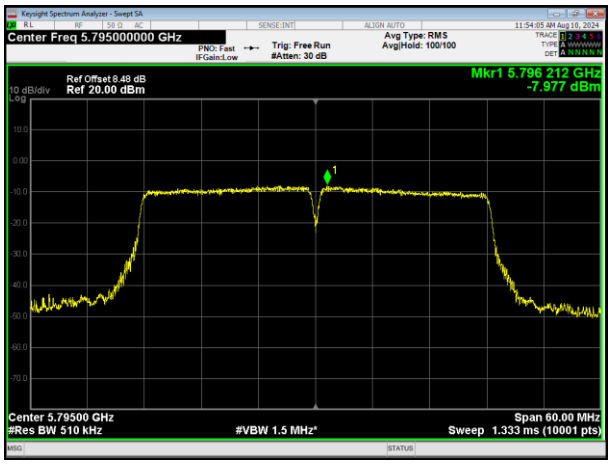
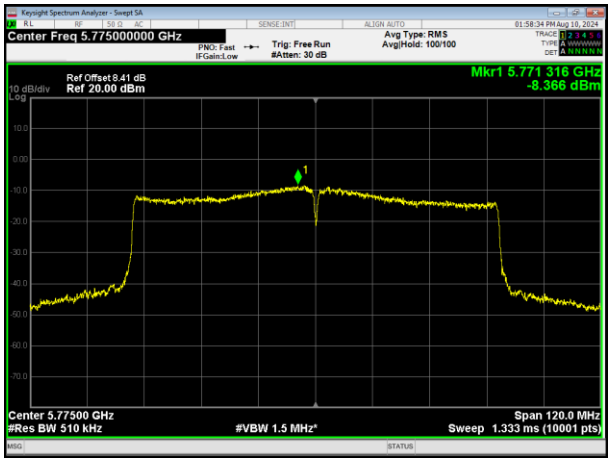
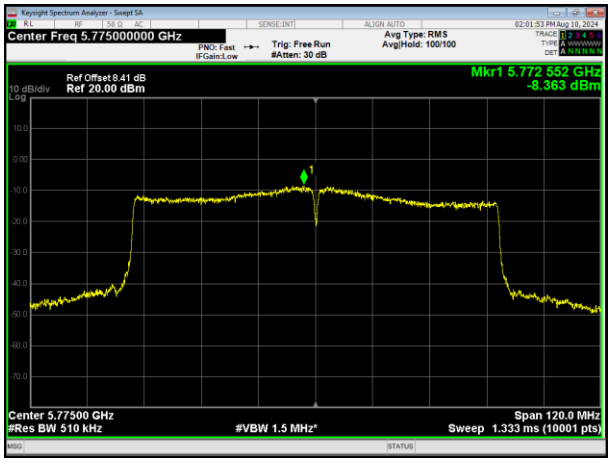
802.11ac HT80	802.11ax HT80
	
5210MHz	5210MHz

802.11a	802.11ac HT20
	
5745MHz	5745MHz
	
5785MHz	5785MHz
	
5825MHz	5825MHz

802.11ac HT40	802.11ax HT20
	
5755MHz	5745MHz
	
5795MHz	5785MHz
	
	5825MHz

802.11ax HT40	802.11n HT20
	
5755MHz	5745MHz
	
5795MHz	5785MHz
	
	5825MHz

802.11n HT40	
	
5755MHz	5795MHz
802.11ac HT80	802.11ax HT80
	
5775MHz	5775MHz

6. 6DB&26DB&99% BANDWIDTH TEST

6.1 APPLIED PROCEDURES / LIMIT

The 26 dB bandwidth is used to determine the conducted power limits. There is no limit bandwidth for U-NII-1, U-NII-2-A and U-NII-2-C. The minimum of 6dB Bandwidth measurement is 0.5 MHz for U-NII-3

6.1.1 TEST PROCEDURE

6dB Bandwidth	
Spectrum Parameters	Setting
RBW	100KHz
VBW	300KHz
Span	30MHz(20MHz Bandwidth mode) 60MHz(40MHz Bandwidth mode) 120MHz(80MHz Bandwidth mode)
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

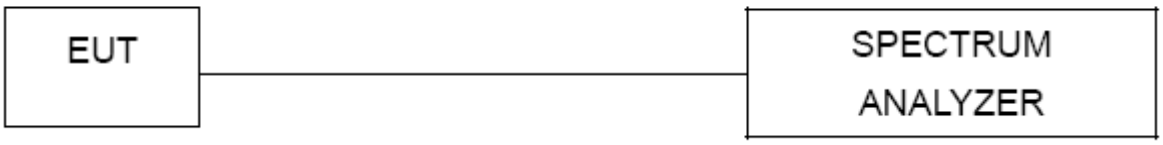
26dB Bandwidth	
Spectrum Parameters	Setting
RBW	approximately 1% of the emission bandwidth
VBW	>RBW
Span	30MHz(20MHz Bandwidth mode) 60MHz(40MHz Bandwidth mode) 120MHz(80MHz Bandwidth mode)
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

99% Occupied Bandwidth	
Spectrum Parameters	Setting
RBW	1% to 5% of the OBW
VBW	Approximately three times the RBW
Span	between 1.5 times and 5.0 times the OBW
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



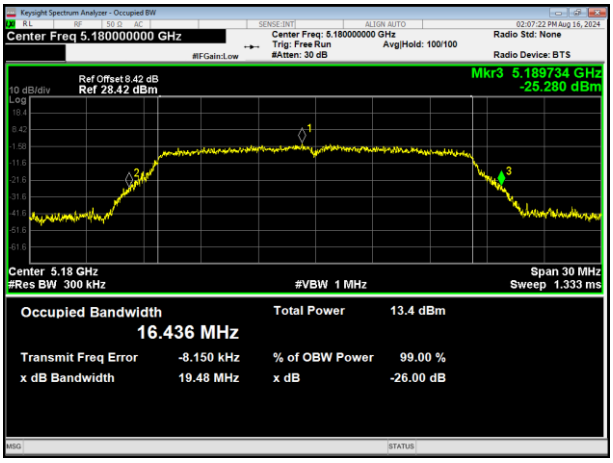
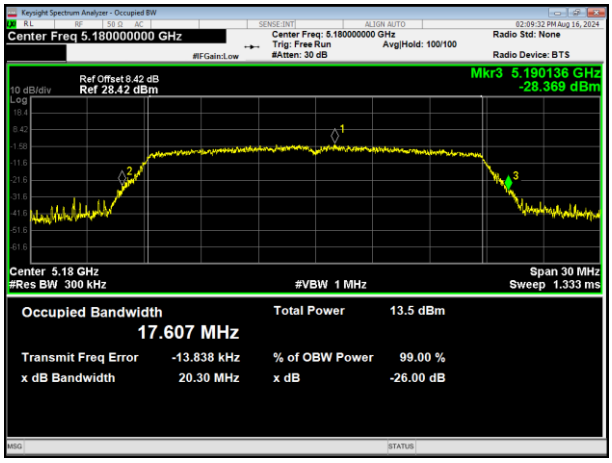
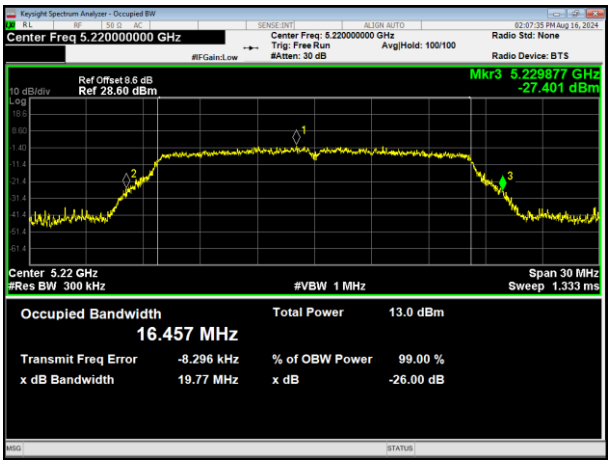
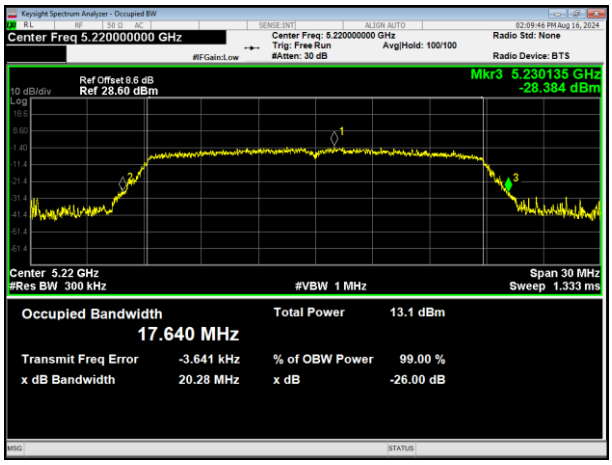
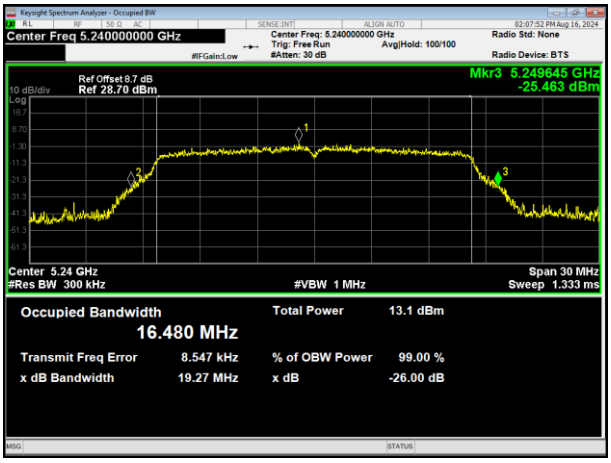
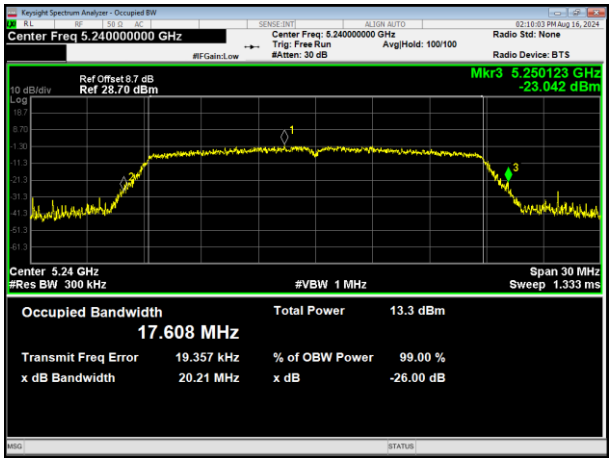
6.1.4 EUT OPERATION CONDITIONS

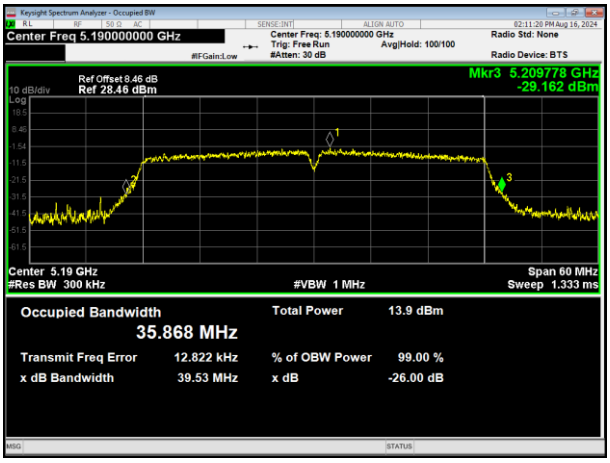
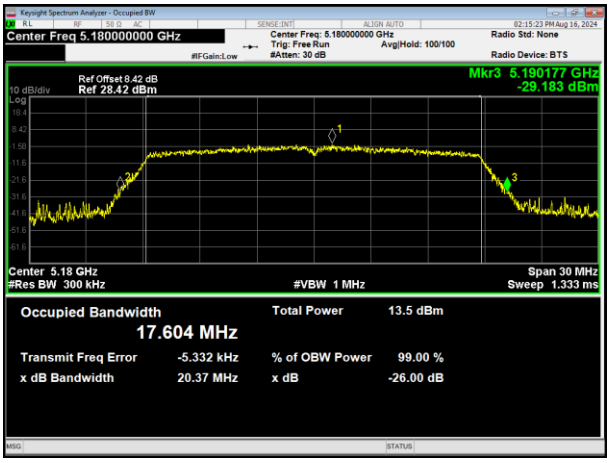
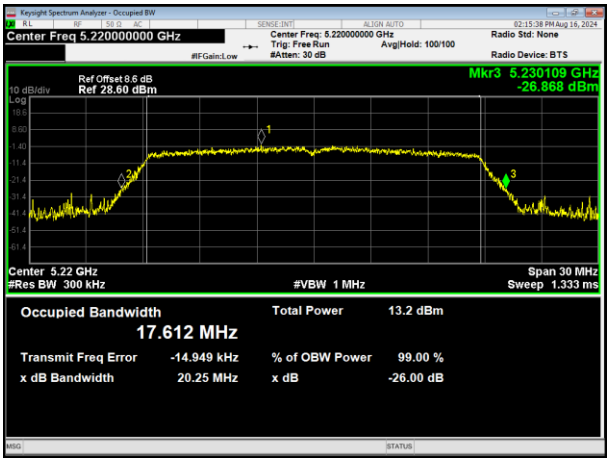
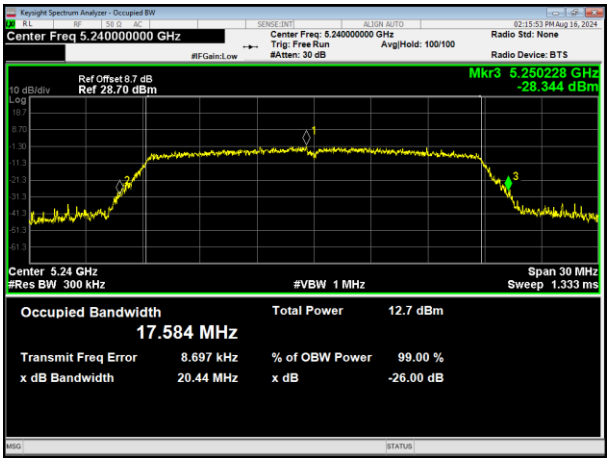
The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

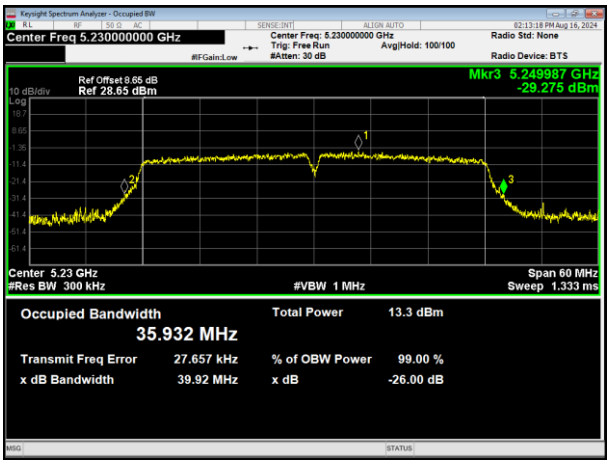
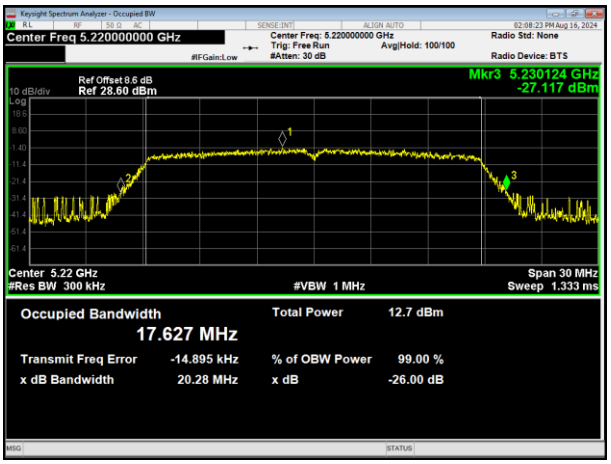
6.1.5 TEST RESULTS

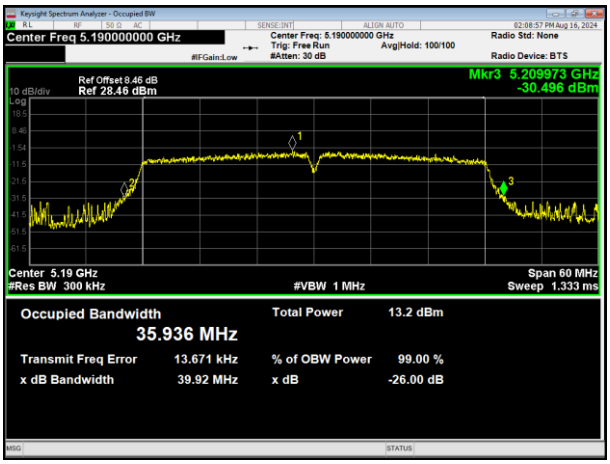
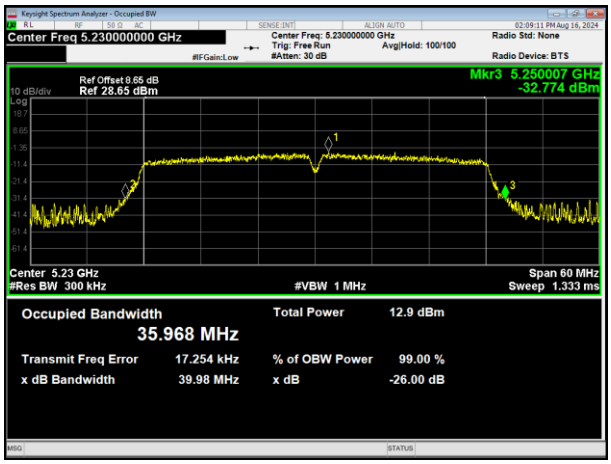
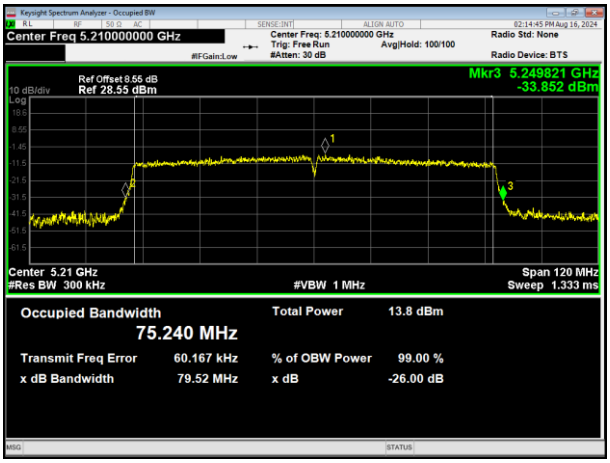
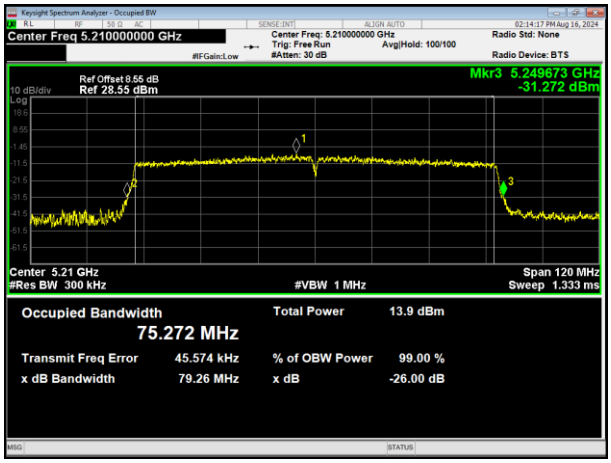
	Mode	Test Channel	26dB Bandwidth (MHz)	Result
Band 1	802.11a	Low	19.485	Pass
		Middle	19.770	Pass
		High	19.272	Pass
	802.11ac HT20	Low	20.299	Pass
		Middle	20.278	Pass
		High	20.208	Pass
	802.11ac HT40	Low	39.529	Pass
		High	39.753	Pass
	802.11ac HT80	/	79.521	Pass
	802.11ax HT20	Low	20.365	Pass
		Middle	20.248	Pass
		High	20.439	Pass
	802.11ax HT40	Low	39.75	Pass
		High	39.919	Pass
	802.11ac HT80	/	79.256	Pass
	802.11n HT20	Low	20.267	Pass
		Middle	20.277	Pass
		High	20.187	Pass
	802.11n HT40	Low	39.920	Pass
		High	39.979	Pass

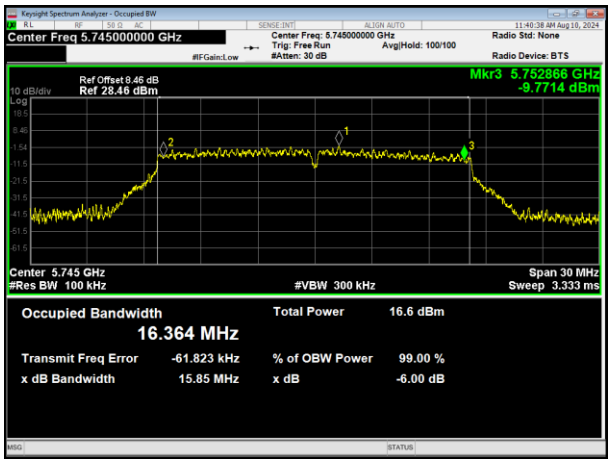
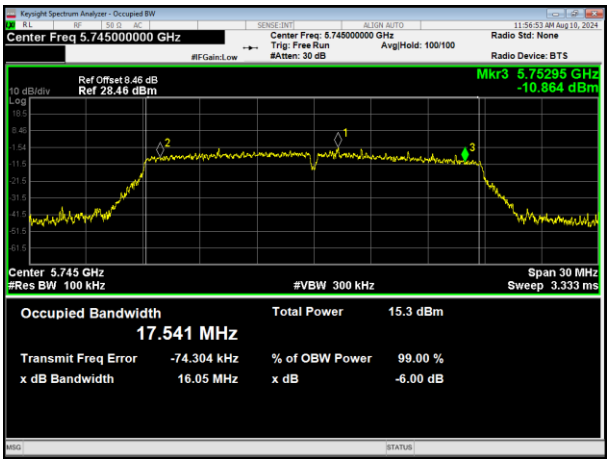
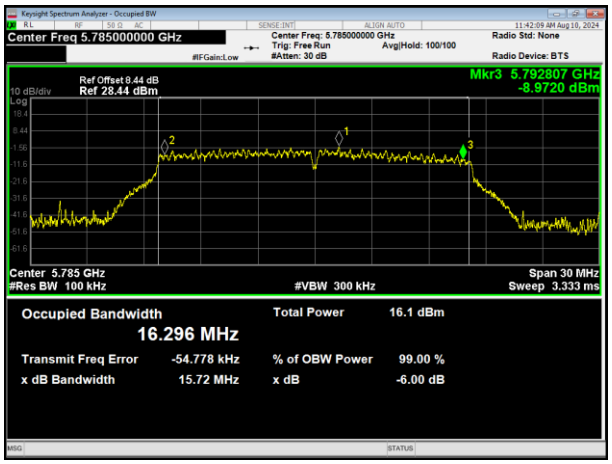
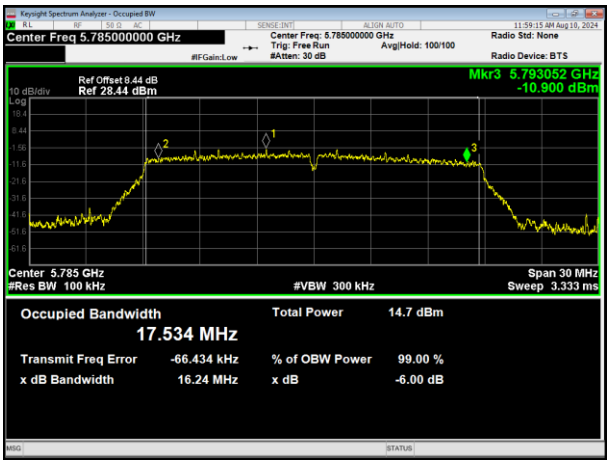
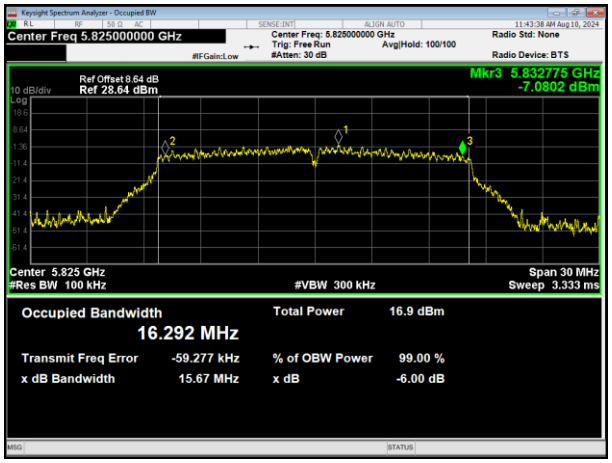
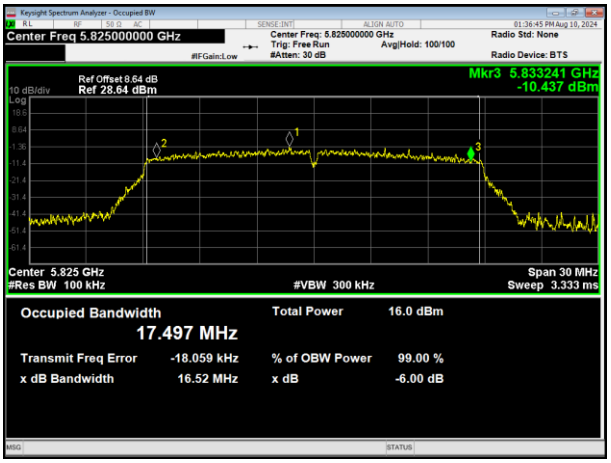
	Mode	Test Channel	6dB Bandwidth (MHz)	6dB Bandwidth Limit (MHz)	Result
Band 4	802.11a	Low	15.855	>0.5	Pass
		Middle	15.723	>0.5	Pass
		High	15.669	>0.5	Pass
	802.11ac HT20	Low	16.049	>0.5	Pass
		Middle	16.237	>0.5	Pass
		High	16.517	>0.5	Pass
	802.11ac HT40	Low	35.526	>0.5	Pass
		High	35.653	>0.5	Pass
	802.11ac HT80	/	75.094	>0.5	Pass
	802.11ax HT20	Low	15.700	>0.5	Pass
		Middle	16.243	>0.5	Pass
		High	16.297	>0.5	Pass
	802.11ax HT40	Low	35.779	>0.5	Pass
		High	35.879	>0.5	Pass
	802.11ax HT80	/	75.095	>0.5	Pass
	802.11n HT20	Low	16.056	>0.5	Pass
		Middle	16.305	>0.5	Pass
		High	14.794	>0.5	Pass
	802.11n HT40	Low	35.639	>0.5	Pass
		High	35.635	>0.5	Pass

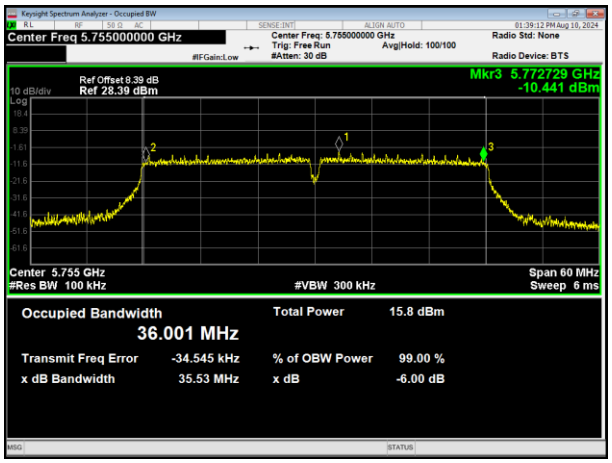
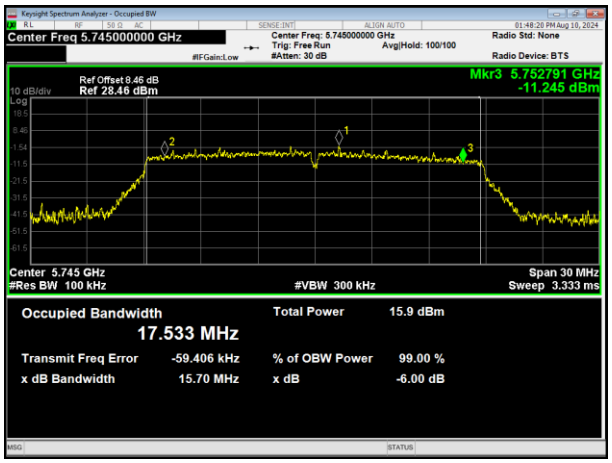
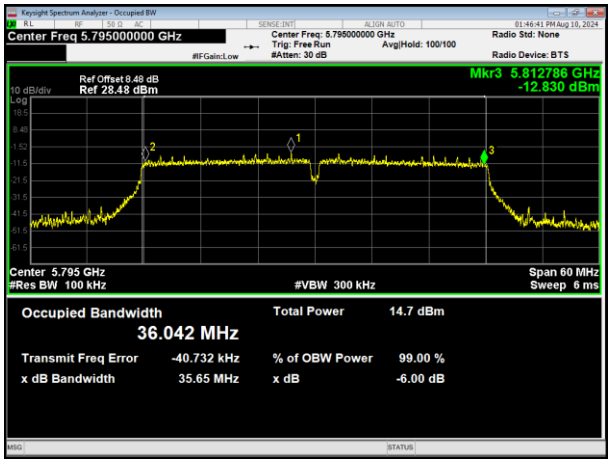
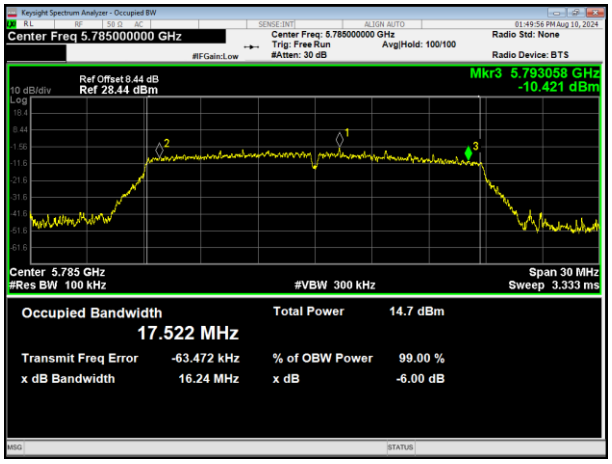
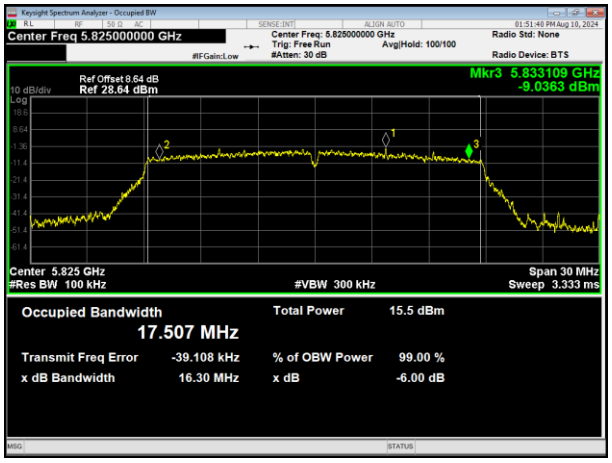
802.11a	802.11ac HT20
	
5180MHz	5180MHz
	
5200MHz	5200MHz
	
5240MHz	5240MHz

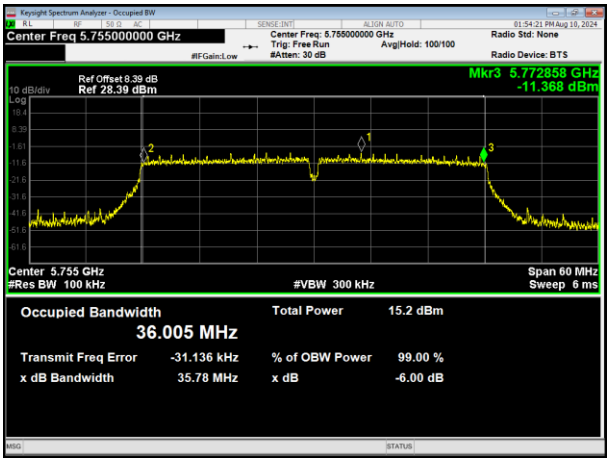
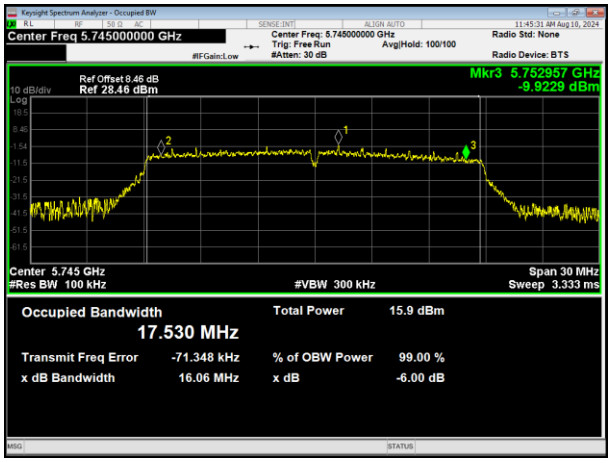
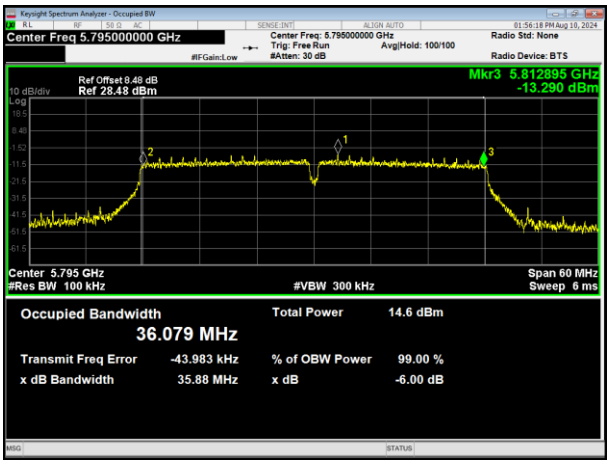
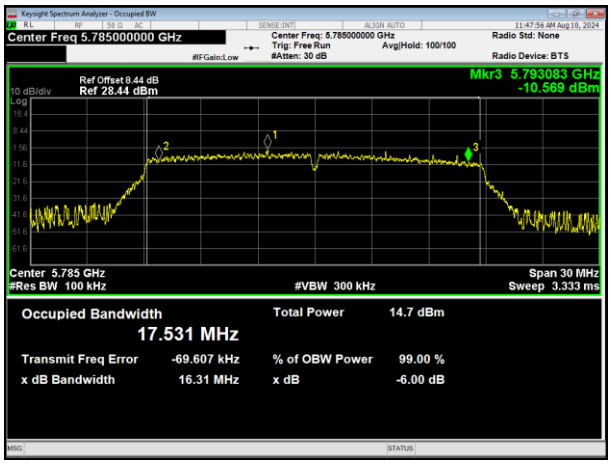
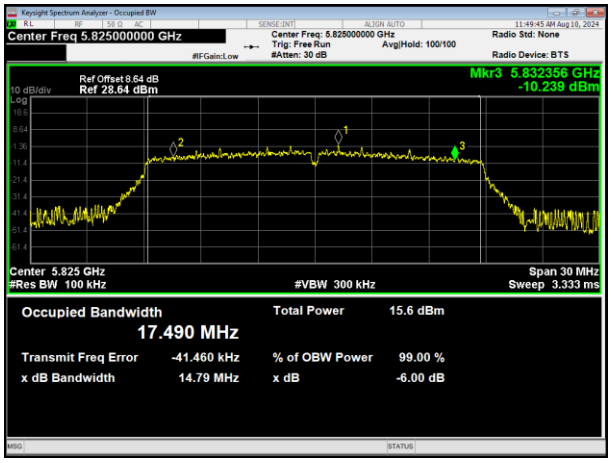
802.11ac HT40	802.11ax HT20
	
5190MHz	5180MHz
	
5230MHz	5200MHz
	
	5240MHz

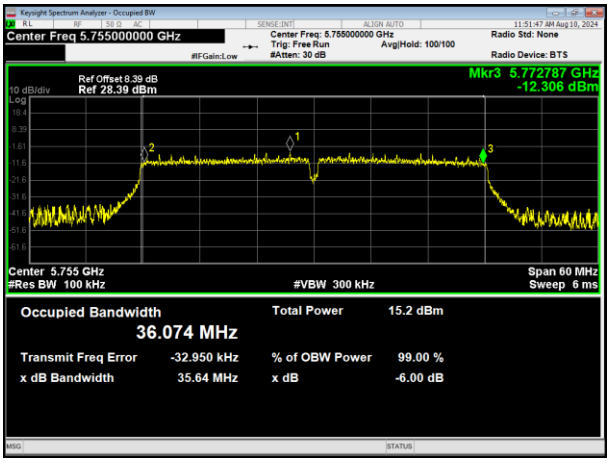
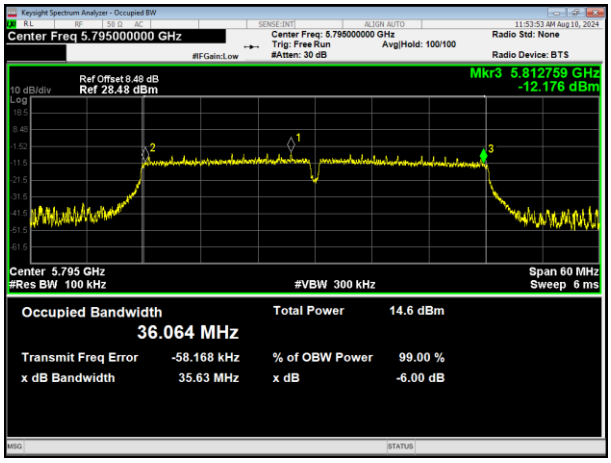
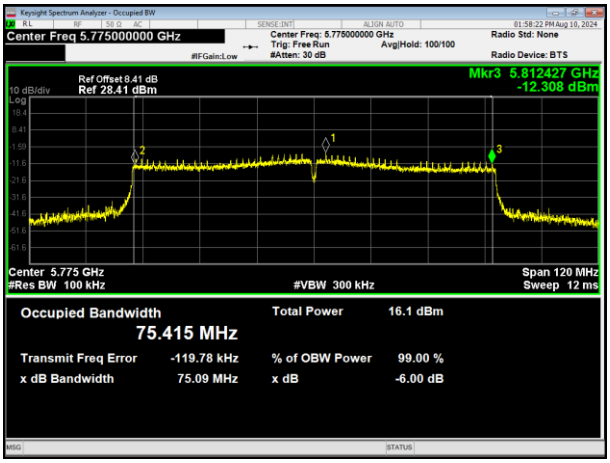
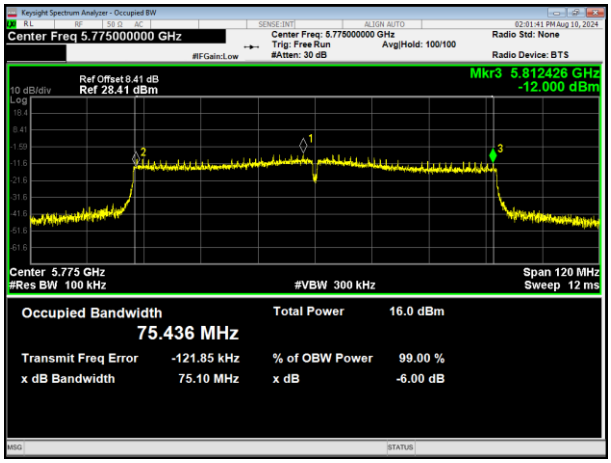
802.11ax HT40	802.11n HT20
5190MHz	5180MHz
	
5230MHz	5200MHz
	5240MHz

802.11n HT40	
	
5190MHz	5230MHz
802.11ac HT80	802.11ax HT80
	
5210MHz	5210MHz

802.11a	802.11ac HT20
	
5745MHz	5745MHz
	
5785MHz	5785MHz
	
5825MHz	5825MHz

802.11ac HT40	802.11ax HT20
	
5755MHz	5745MHz
	
5795MHz	5785MHz
	
	5825MHz

802.11ax HT40	802.11n HT20
	
5755MHz	5745MHz
	
5795MHz	5785MHz
	
	5825MHz

802.11n HT40	
	
5755MHz	5795MHz
802.11ac HT80	802.11ax HT80
	
5775MHz	5775MHz

7. DUTY CYCLE TEST SIGNAL

7.1 APPLIED PROCEDURES / LIMIT

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.

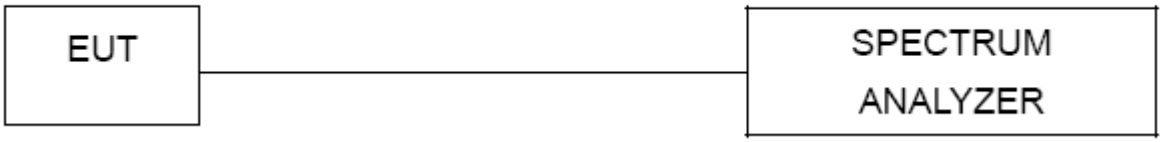
7.1.1 TEST PROCEDURE

1. Set RBW = 1 MHz.
2. Set the video bandwidth (VBW) ≥RBW.
3. Detector = Peak.
4. Sweep = auto couple.
5. Allow the trace to stabilize.
6. Span=0

7.1.2 DEVIATION FROM STANDARD

No deviation.

7.1.3 TEST SETUP



7.1.4 EUT OPERATION CONDITIONS

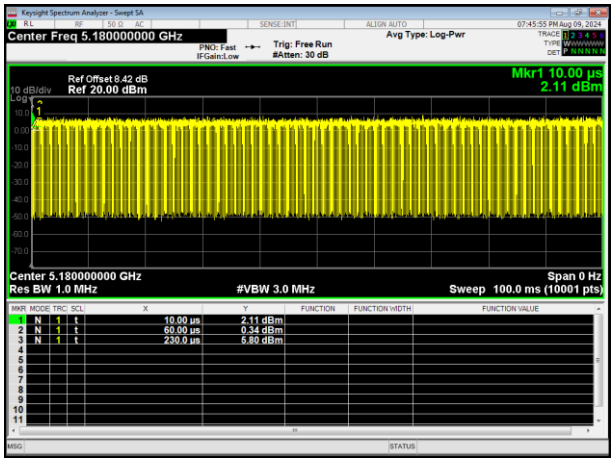
The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

7.1.5 TEST RESULTS

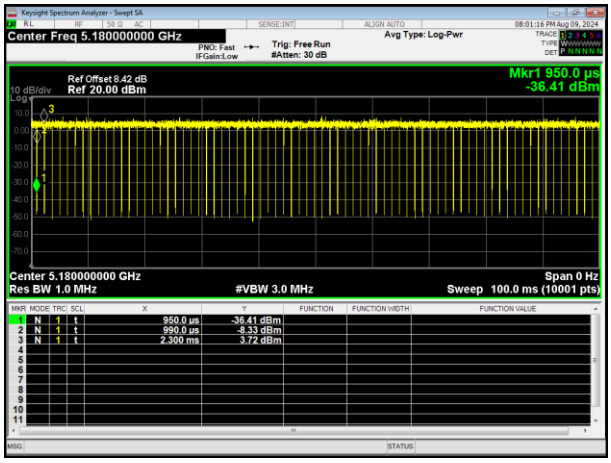
Operation Mode		Duty Cycle(%)	Duty Fator (dB) 10 * log (1/ Duty cycle)
Band 1	802.11a	77.27	1.12
	802.11ac(HT20)	97.04	0.13
	802.11ac(HT40)	94.2	0.26
	802.11ac(HT80)	89.19	0.5
	802.11ax(HT20)	94.44	0.25
	802.11ax(HT40)	92.86	0.32
	802.11ax(HT80)	78.26	1.06
	802.11n(HT20)	97.04	0.13
	802.11n(HT40)	94.2	0.26

Operation Mode		Duty Cycle(%)	Duty Fator (dB) 10 * log (1/ Duty cycle)
Band 4	802.11a	81.82	0.87
	802.11ac(HT20)	96.32	0.16
	802.11ac(HT40)	92.86	0.32
	802.11ac(HT80)	89.19	0.50
	802.11ax(HT20)	97.06	0.13
	802.11ax(HT40)	94.29	0.26
	802.11ax(HT80)	89.19	0.50
	802.11n(HT20)	97.01	0.13
	802.11n(HT40)	94.2	0.26

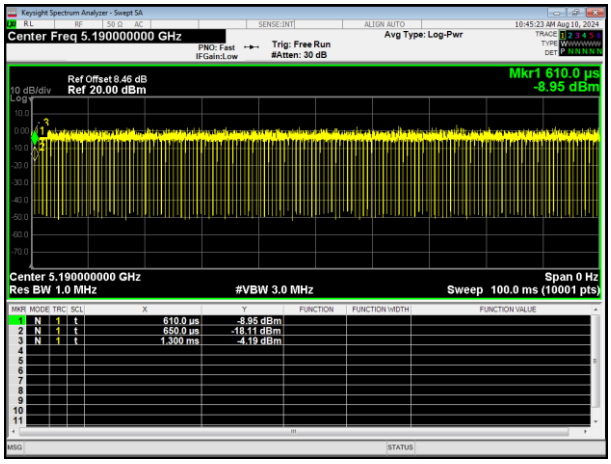
802.11a



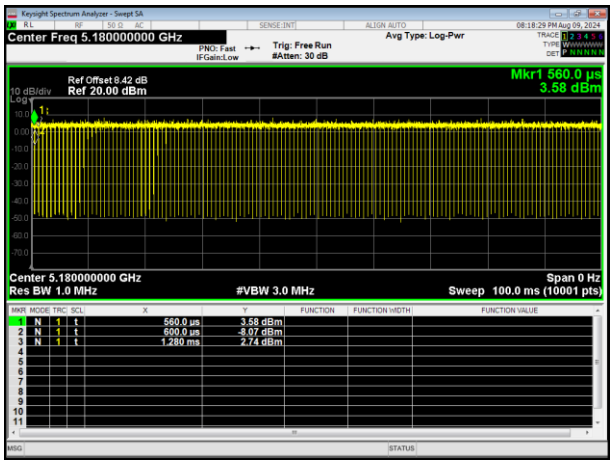
802.11ac HT20



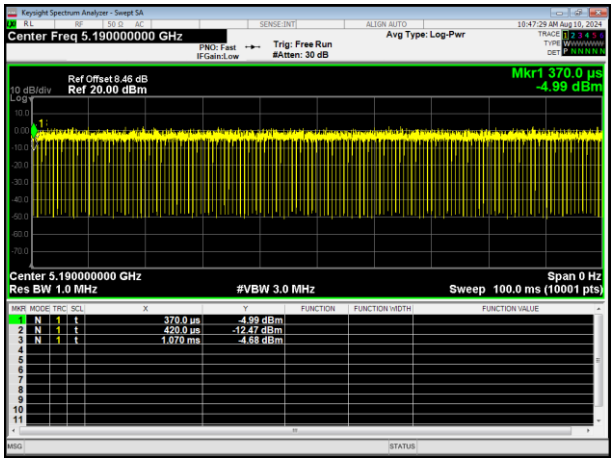
802.11ac HT40



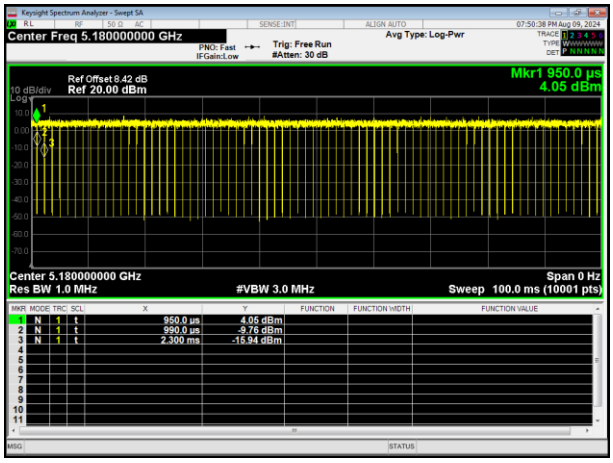
802.11ax HT20

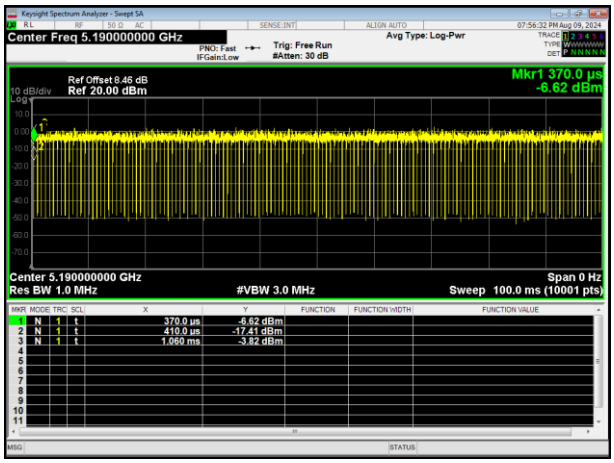
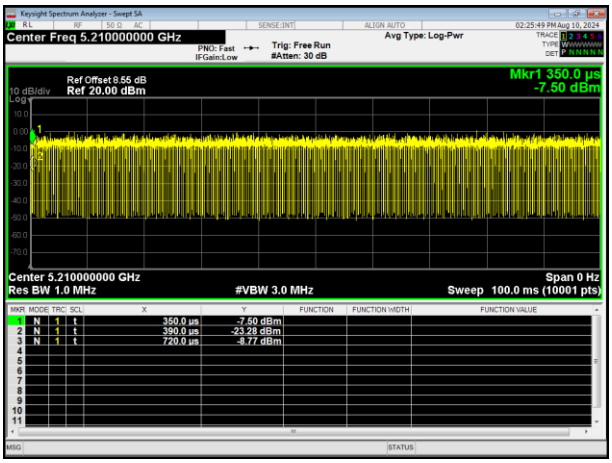
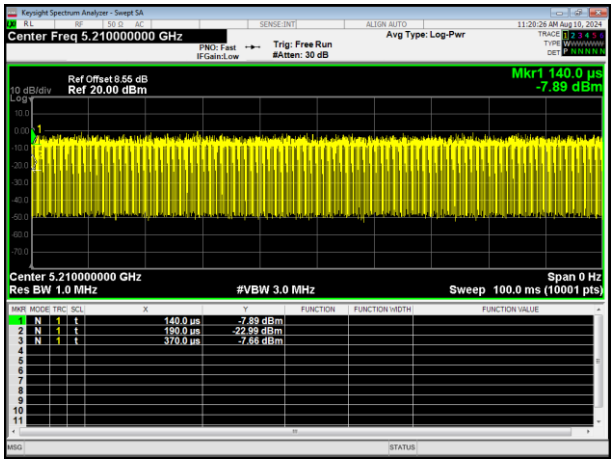


802.11ax HT40

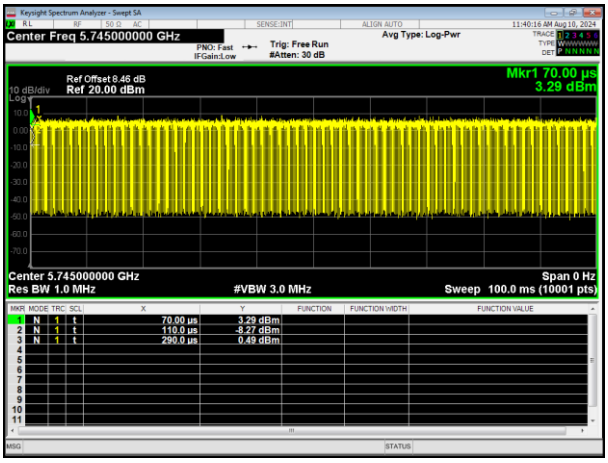


802.11n HT20

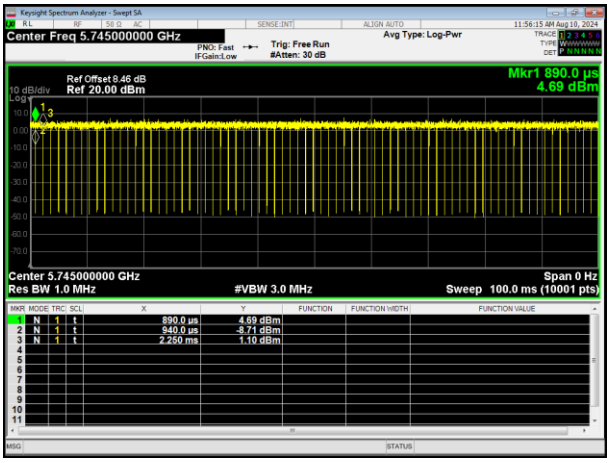


802.11n HT40	802.11ac HT80
	
802.11ax HT80	
	

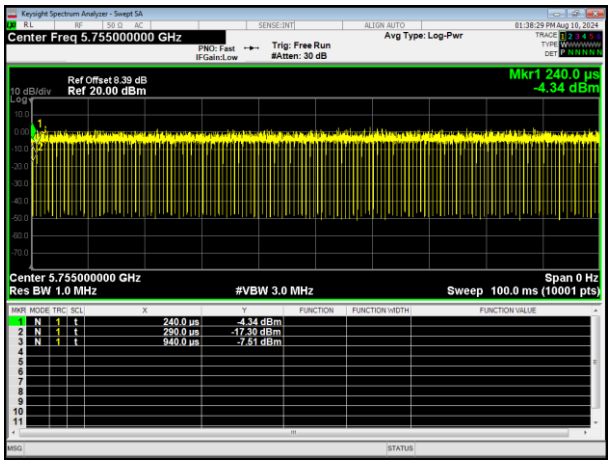
802.11a



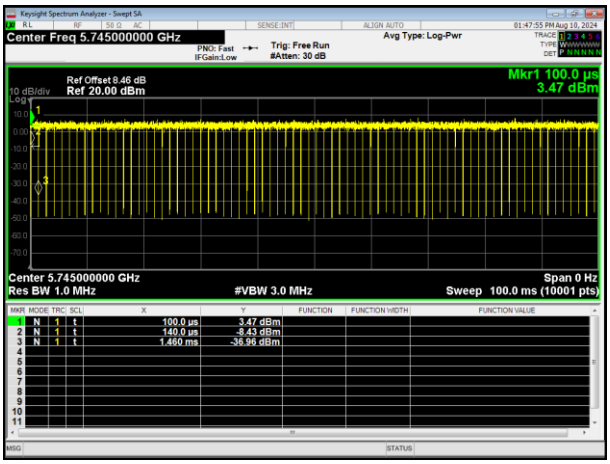
802.11ac HT20



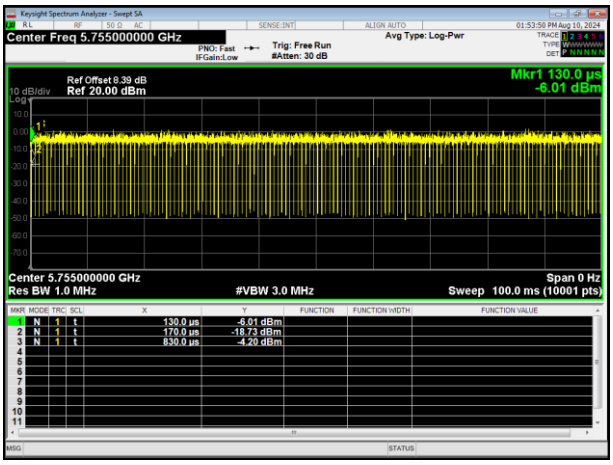
802.11ac HT40



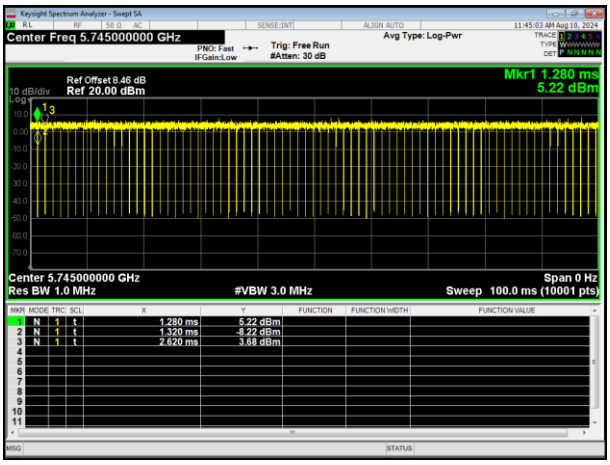
802.11ax HT20

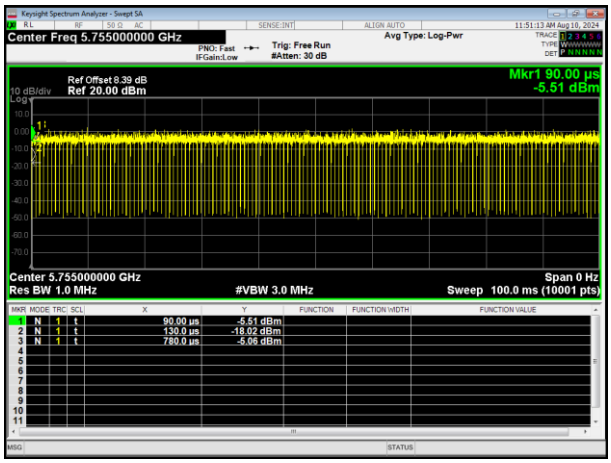
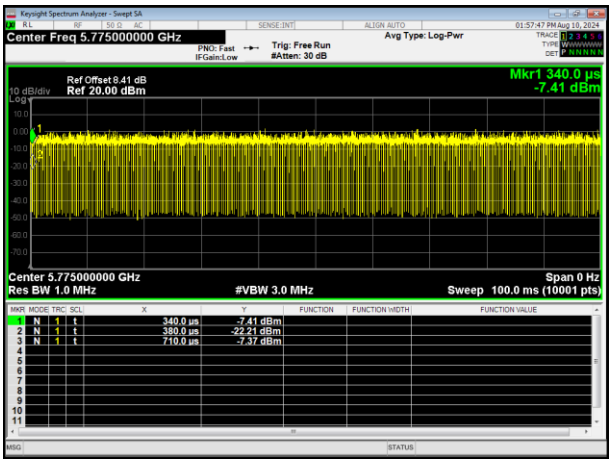


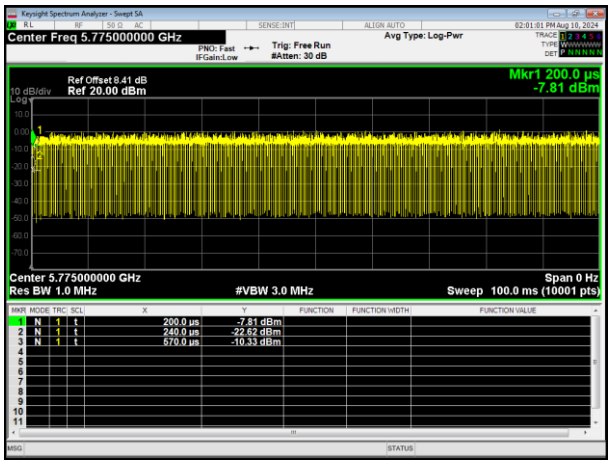
802.11ax HT40



802.11n HT20



802.11n HT40	802.11ac HT80
	

802.11ax HT80	
	

8. FREQUENCY STABILITY

8.1 APPLIED PROCEDURES / 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 user's manual.

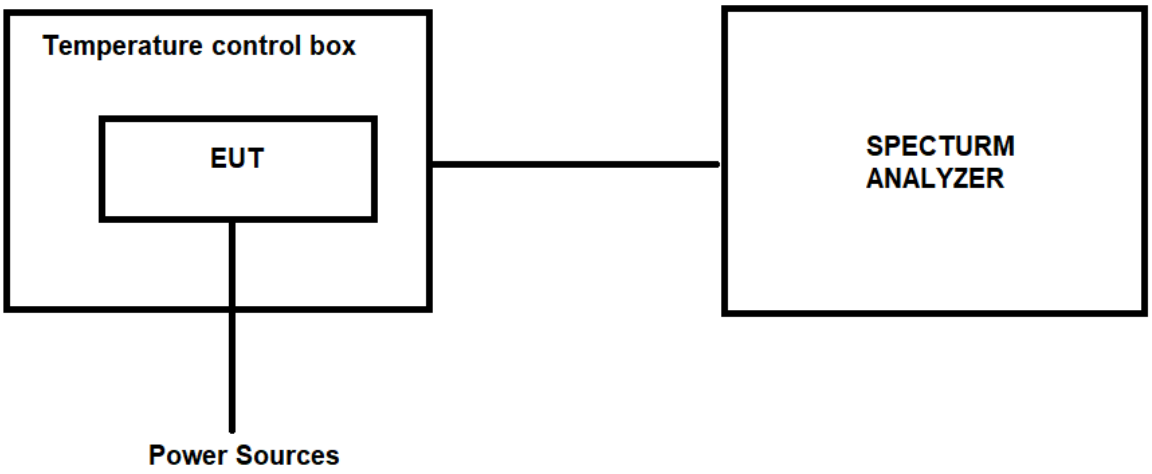
8.1.1 TEST PROCEDURE

1. The EUT was placed inside temperature chamber and powered and powered by nominal DC voltage.
2. Set EUT as normal operation.
3. Turn the EUT on and couple its output to spectrum.
4. Turn the EUT off and set the chamber to the highest temperature specified.
5. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT and measure the operating frequency.
6. Repeat step with the temperature chamber set to the lowest temperature.

8.1.2 DEVIATION FROM STANDARD

No deviation.

8.1.3 TEST SETUP



8.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

8.1.5 TEST RESULTS

Test Voltage	Test Temp.	Measured Frequency (MHz)	Spectrum Frequency (MHz)			Δ Frequency (MHz)		
			802.11a	802.11n HT20	802.11ac HT20	802.11a	802.11n HT20	802.11ac HT20
132V	-20℃	5180	5180.0335	5180.0354	5180.0355	-6.4672	-6.8340	-6.8533
		5220	5220.0364	5220.0316	5220.0373	-6.9732	-6.0536	-7.1456
		5240	5240.0240	5240.0262	5240.0258	-4.5802	-5.0000	-4.9237
		5745	5745.0376	5745.0339	5745.0322	-6.5448	-5.9008	-5.6049
		5785	5785.0400	5785.0347	5785.0341	-6.9144	-5.9983	-5.8946
		5825	5825.0354	5825.0377	5825.0360	-6.0773	-6.4721	-6.1803
108V		5180	5180.0243	5180.0236	5180.0239	-4.6911	-4.5560	-4.6139
		5220	5220.0334	5220.0354	5220.0356	-6.3985	-6.7816	-6.8199
		5240	5240.0274	5240.0264	5240.0242	-5.2290	-5.0382	-4.6183
		5745	5745.0229	5745.0225	5745.0234	-3.9861	-3.9164	-4.0731
		5785	5785.0397	5785.0314	5785.0352	-6.8626	-5.4278	-6.0847
		5825	5825.0463	5825.0459	5825.0480	-7.9485	-7.8798	-8.2403
120V	25℃	5180	5180.0563	5180.0533	5180.0587	-10.8687	-10.2896	-11.3320
		5220	5220.0270	5220.0288	5220.0269	-5.1724	-5.5172	-5.1533
		5240	5240.0371	5240.0350	5240.0353	-7.0802	-6.6794	-6.7366
		5745	5745.0355	5745.0332	5745.0362	-6.1793	-5.7789	-6.3011
		5785	5785.0501	5785.0427	5785.0478	-8.6603	-7.3812	-8.2627
		5825	5825.0234	5825.0291	5825.0247	-4.0172	-4.9957	-4.2403
132V	50℃	5180	5180.0329	5180.0373	5180.0362	-6.3514	-7.2008	-6.9884
		5220	5220.0285	5220.0248	5220.0244	-5.4598	-4.7510	-4.6743
		5240	5240.0338	5240.0362	5240.0384	-6.4504	-6.9084	-7.3282
		5745	5745.0687	5745.0655	5745.0673	-11.9582	-11.4012	-11.7145
		5785	5785.0438	5785.0435	5785.0453	-7.5713	-7.5194	-7.8306
		5825	5825.0697	5825.0636	5825.0665	-11.9657	-10.9185	-11.4163
108V	50℃	5180	5180.0324	5180.0330	5180.0373	-6.2548	-6.3707	-7.2008
		5220	5220.0222	5220.0272	5220.0283	-4.2529	-5.2107	-5.4215
		5240	5240.0337	5240.0363	5240.0363	-6.4313	-6.9275	-6.9275
		5745	5745.0447	5745.0447	5745.0447	-7.7807	-7.7807	-7.7807
		5785	5785.0261	5785.0261	5785.0249	-4.5117	-4.5117	-4.3042
		5825	5825.0752	5825.0747	5825.0774	-12.9099	-12.8240	-13.2876

Test Voltage	Test Temp.	Measured Frequency	Spectrum Frequency (MHz)			Δ Frequency (MHz)		
		(MHz)	802.11ax HT20	/	/	802.11ax HT20	/	/
132V	-20℃	5180	5180.0342	/	/	-6.6023	/	/
		5220	5220.0372	/	/	-7.1264	/	/
		5240	5240.0245	/	/	-4.6756	/	/
		5745	5745.0384	/	/	-6.6841	/	/
		5785	5785.0408	/	/	-7.0527	/	/
		5825	5825.0361	/	/	-6.1974	/	/
108V		5180	5180.0248	/	/	-4.7876	/	/
		5220	5220.0341	/	/	-6.5326	/	/
		5240	5240.0280	/	/	-5.3435	/	/
		5745	5745.0233	/	/	-4.0557	/	/
		5785	5785.0405	/	/	-7.0009	/	/
		5825	5825.0473	/	/	-8.1202	/	/
120V	25℃	5180	5180.0574	/	/	-11.0811	/	/
		5220	5220.0276	/	/	-5.2874	/	/
		5240	5240.0379	/	/	-7.2328	/	/
		5745	5745.0362	/	/	-6.3011	/	/
		5785	5785.0511	/	/	-8.8332	/	/
		5825	5825.0238	/	/	-4.0858	/	/
132V	50℃	5180	5180.0335	/	/	-6.4672	/	/
		5220	5220.0291	/	/	-5.5747	/	/
		5240	5240.0345	/	/	-6.5840	/	/
		5745	5745.0701	/	/	-12.2019	/	/
		5785	5785.0447	/	/	-7.7269	/	/
		5825	5825.0711	/	/	-12.2060	/	/
108V	50℃	5180	5180.0330	/	/	-6.3707	/	/
		5220	5220.0226	/	/	-4.3295	/	/
		5240	5240.0344	/	/	-6.5649	/	/
		5745	5745.0456	/	/	-7.9373	/	/
		5785	5785.0266	/	/	-4.5981	/	/
		5825	5825.0767	/	/	-13.1674	/	/

Test Voltage	Test Temp.	Measured Frequency (MHz)	Spectrum Frequency (MHz)			ΔFrequency (MHz)		
			802.11n HT40	802.11ac HT40	802.11ax HT40	802.11n HT40	802.11ac HT40	802.11ax HT40
132V	-20℃	5190	5190.0222	5190.0241	5190.0256	-4.2775	-4.6435	-4.9326
		5230	5230.0341	5230.0379	5230.0402	-6.5201	-7.2467	-7.6864
		5755	5755.0575	5755.0573	5755.0608	-9.9913	-9.9566	-10.5647
		5795	5795.0640	5795.0633	5795.0672	-11.0440	-10.9232	-11.5962
108V		5190	5190.0263	5190.0239	5190.0254	-5.0674	-4.6050	-4.8940
		5230	5230.0338	5230.0357	5230.0379	-6.4627	-6.8260	-7.2467
		5755	5755.0253	5755.0689	5755.0731	-4.3962	-11.9722	-12.7020
		5795	5795.0464	5795.0492	5795.0522	-8.0069	-8.4901	-9.0078
120V	25℃	5190	5190.0284	5190.0264	5190.0280	-5.4721	-5.0867	-5.3950
		5230	5230.0693	5230.0674	5230.0715	-13.2505	-12.8872	-13.6711
		5755	5755.0262	5755.0276	5755.0293	-4.5526	-4.7958	-5.0912
		5795	5795.0586	5795.0552	5795.0585	-10.1122	-9.5255	-10.0949
132V	50℃	5190	5190.0681	5190.0664	5190.0704	-13.1214	-12.7938	-13.5645
		5230	5230.0585	5230.0573	5230.0608	-11.1855	-10.9560	-11.6252
		5755	5755.0487	5755.0451	5755.0478	-8.4622	-7.8367	-8.3058
		5795	5795.0378	5795.0334	5795.0354	-6.5229	-5.7636	-6.1087
108V		5190	5190.0574	5190.0566	5190.0600	-11.0597	-10.9056	-11.5607
		5230	5230.0350	5230.0346	5230.0367	-6.6922	-6.6157	-7.0172
		5755	5755.0325	5755.0347	5755.0368	-5.6473	-6.0295	-6.3944
		5795	5795.0484	5795.0459	5795.0487	-8.3520	-7.9206	-8.4038

Test Voltage	Test Temp.	Measured Frequency (MHz)	Spectrum Frequency (MHz)		Δ Frequency (MHz)	
			802.11ac HT80	802.11ax HT80	802.11ac HT80	802.11ax HT80
132V	-20℃	5210	5210.0260	5210.0237	-4.9904	-4.5489
		5775	5775.0300	5775.0274	-5.1948	-4.7446
108V		5210	5210.0274	5210.0250	-5.2591	-4.7985
		5775	5775.0366	5775.0334	-6.3377	-5.7835
120V	25℃	5210	5210.0241	5210.0220	-4.6257	-4.2226
		5775	5775.0409	5775.0374	-7.0823	-6.4762
132V	50℃	5210	5210.0352	5210.0321	-6.7562	-6.1612
		5775	5775.0295	5775.0270	-5.1082	-4.6753
108V		5210	5210.0373	5210.0340	-7.1593	-6.5259
		5775	5775.0284	5775.0260	-4.9177	-4.5022

9. TRANSMISSION IN THE ABSENCE OF DATA

9.1 STANDARD REQUIREMENT

According to §15.407(c)
The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

9.2 TEST RESULT

No non-compliance noted:
Refer to the theory of operation.

10. ANTENNA REQUIREMENT

10.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 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.

10.2 EUT ANTENNA

The EUT antenna is FPC Antenna, It comply with the standard requirement.

11. TEST SEUUP PHOTO

Reference to the appendix I for details.

12. EUT PHOTO

Reference to the appendix II for details.

※※※※※ **END OF REPORT** ※※※※※