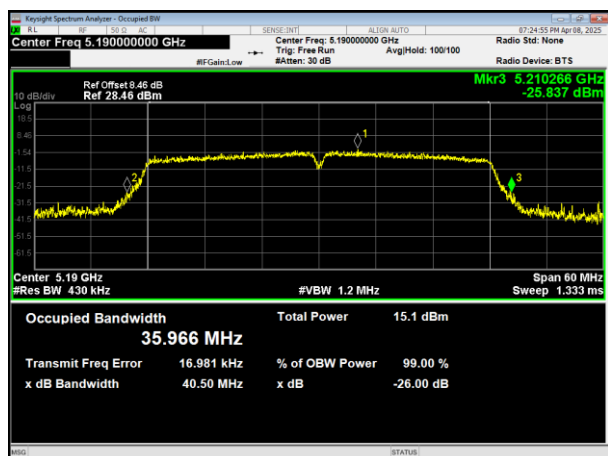
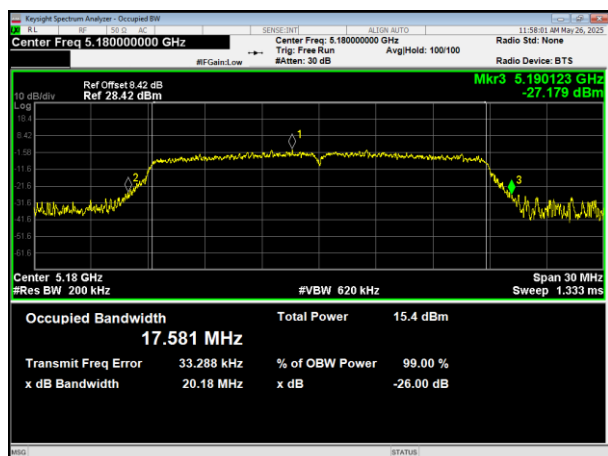




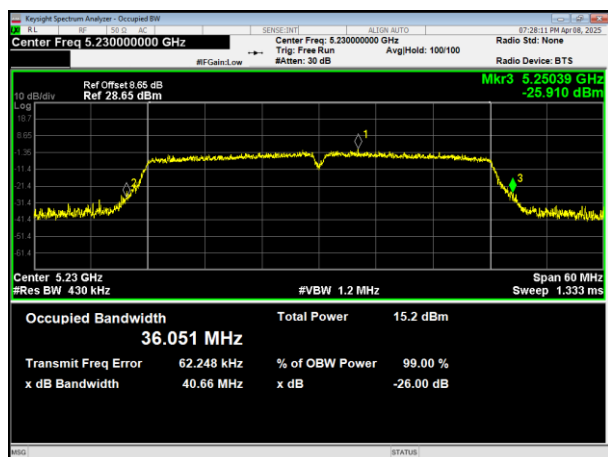
802.11ac HT40



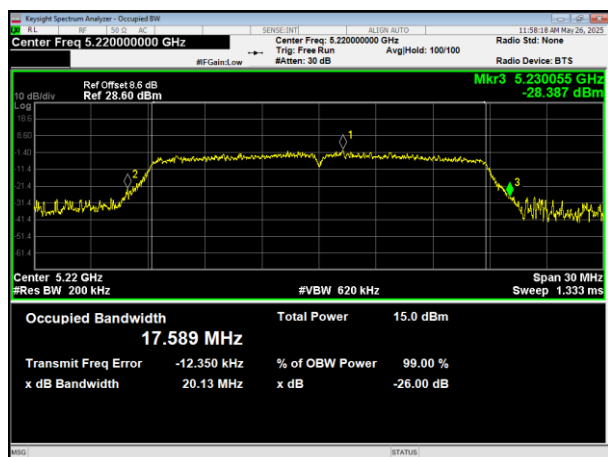
802.11n HT20



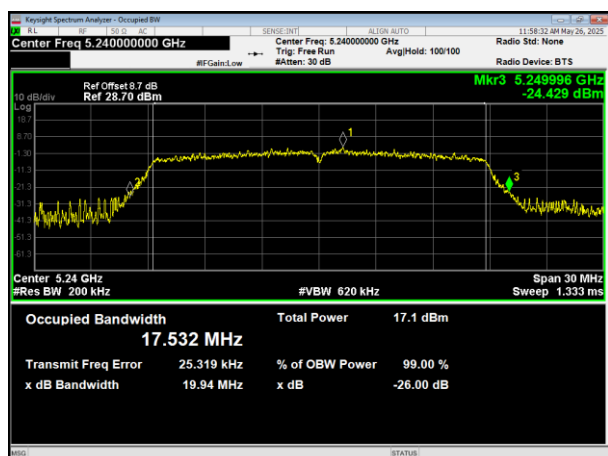
5190MHz



5180MHz



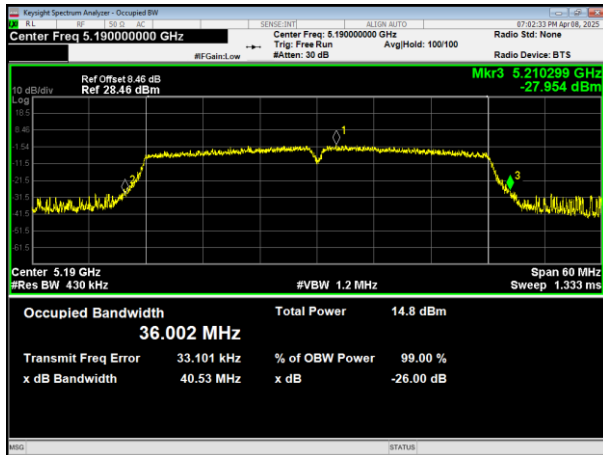
5230MHz



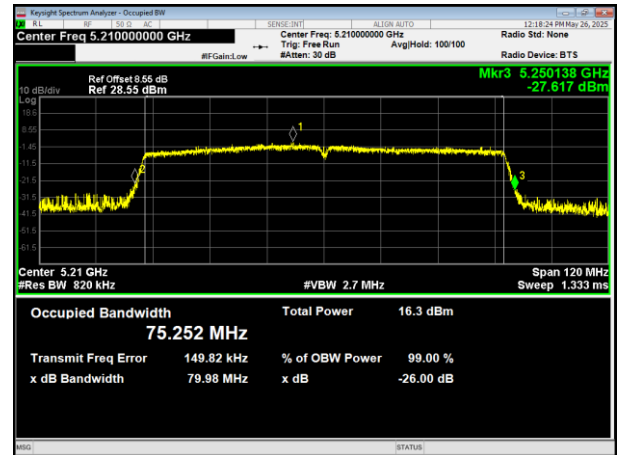
5240MHz



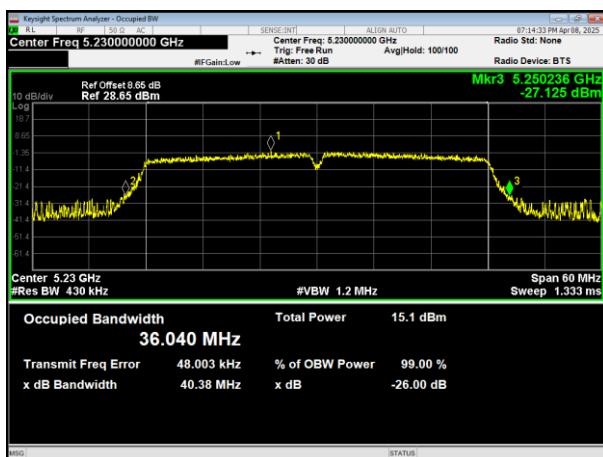
802.11n HT40



802.11ac HT80



5190MHz



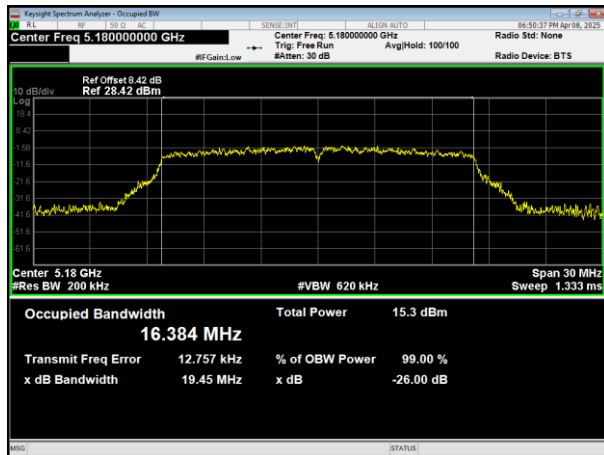
5210MHz

5230MHz

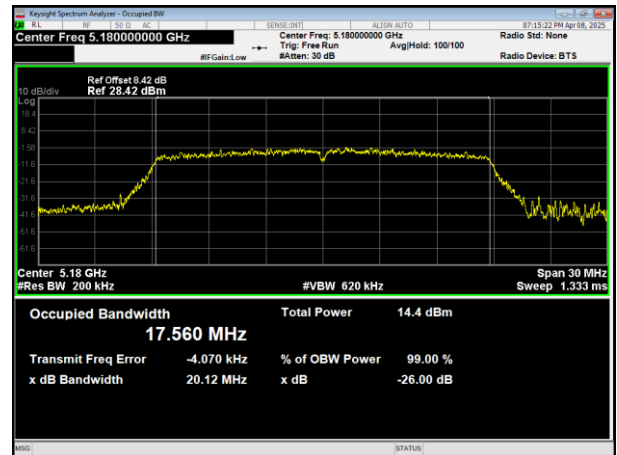


99% Bandwidth

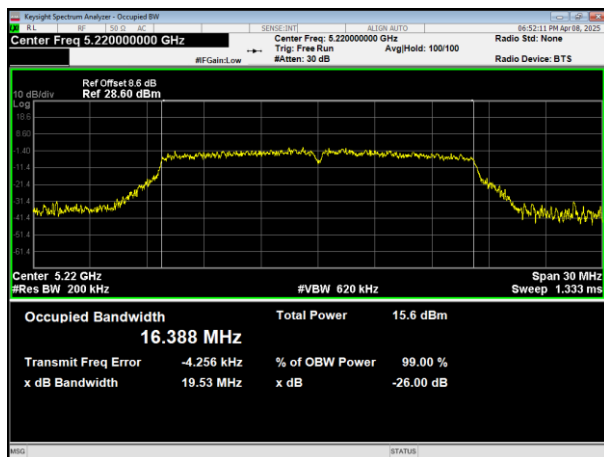
802.11a



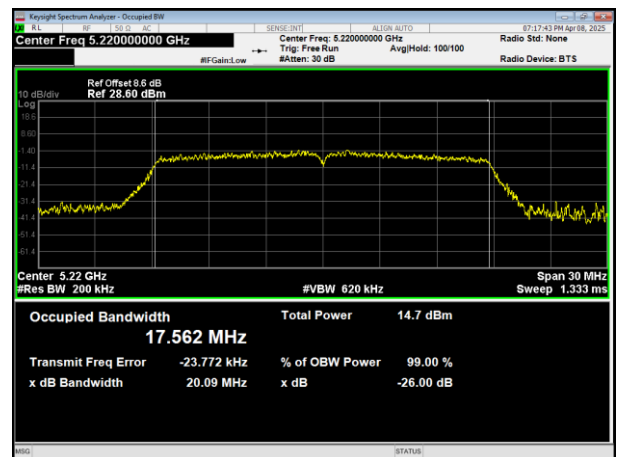
802.11ac HT20



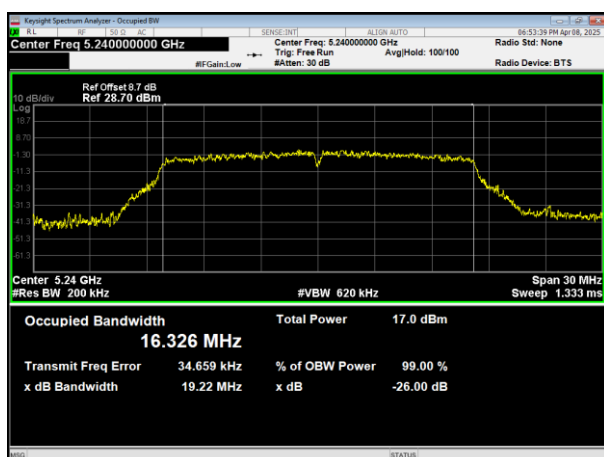
5180MHz



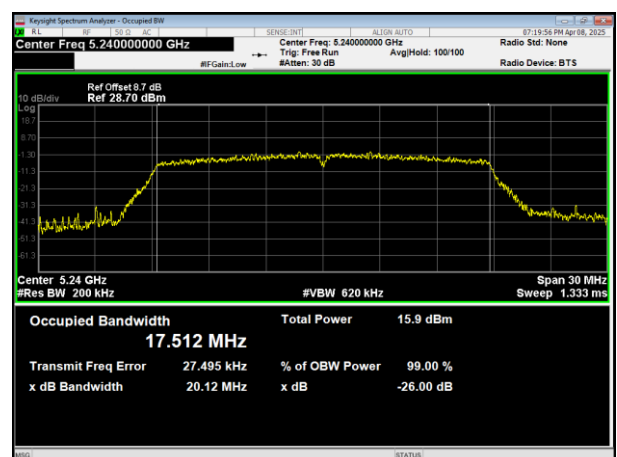
5180MHz



5200MHz



5200MHz

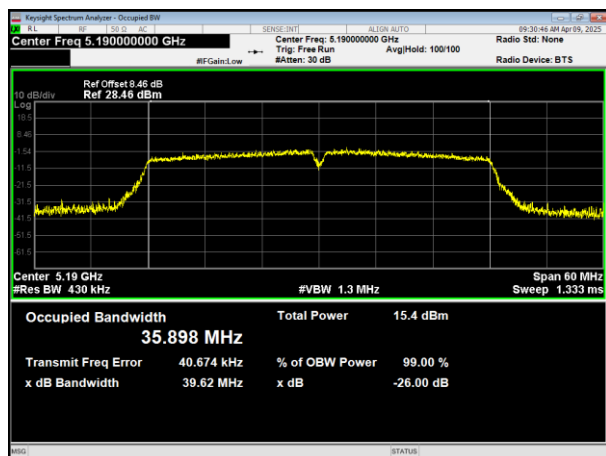


5240MHz

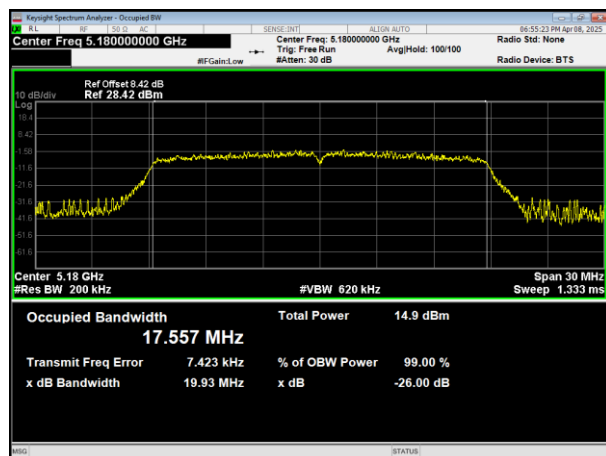
5240MHz



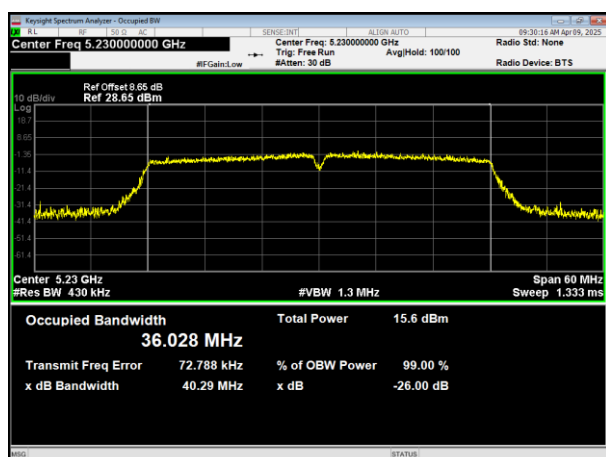
802.11ac HT40



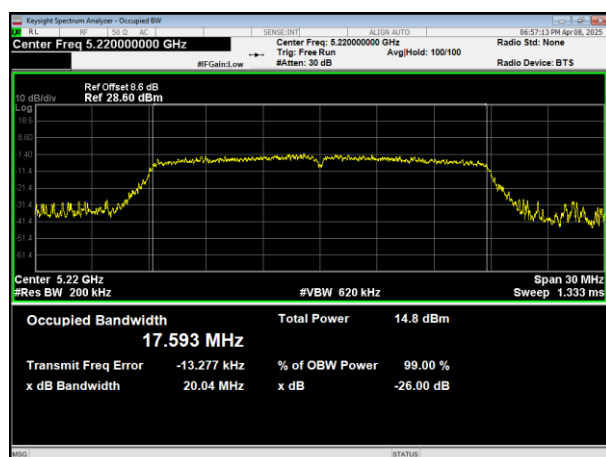
802.11n HT20



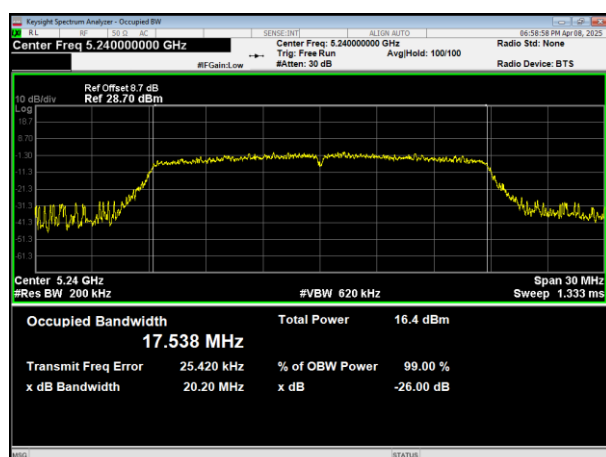
5190MHz



5180MHz



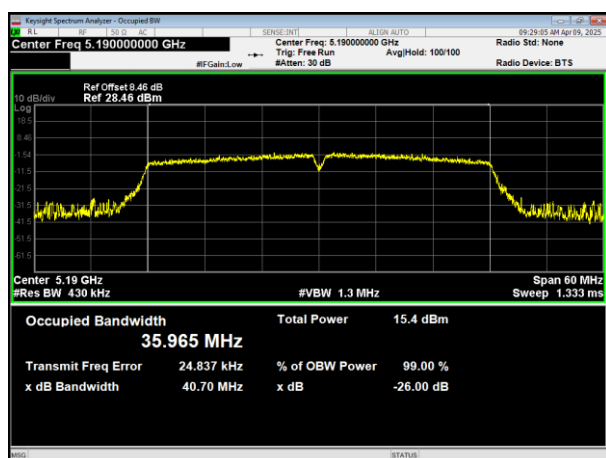
5230MHz



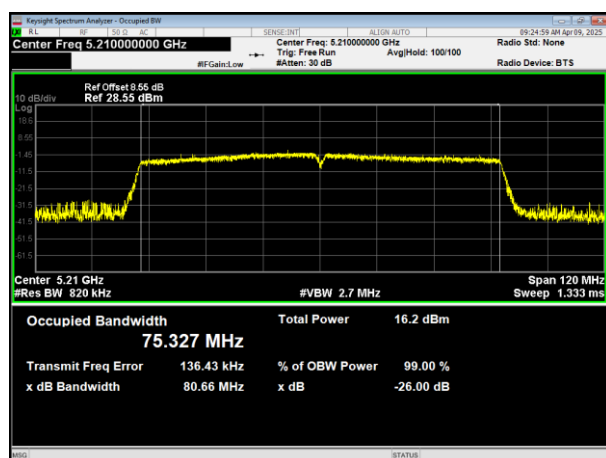
5240MHz



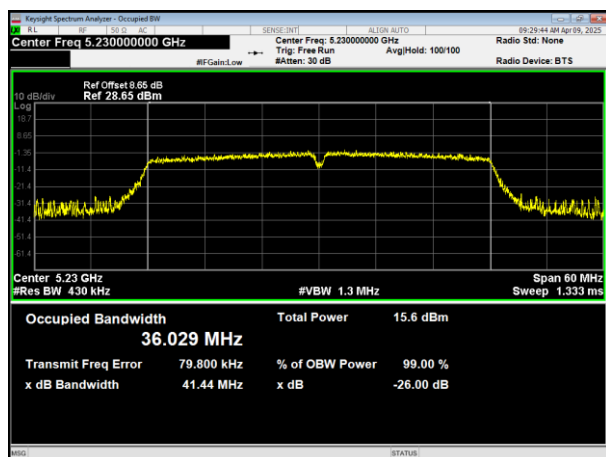
802.11n HT40



802.11ac HT80



5190MHz



5210MHz



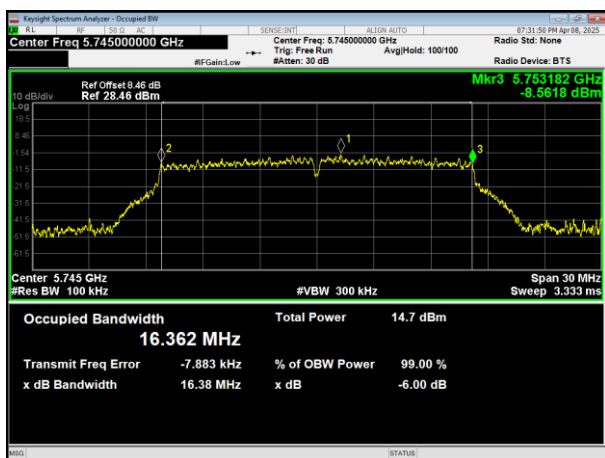
5230MHz



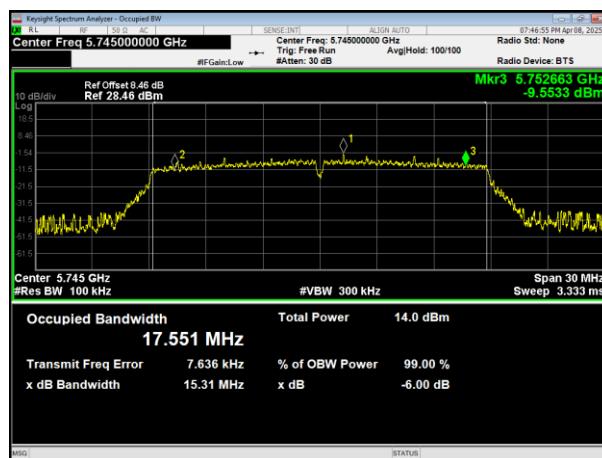


6dB Bandwidth

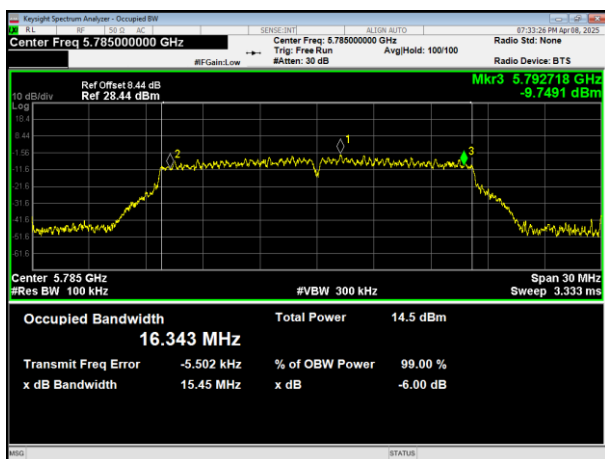
802.11a



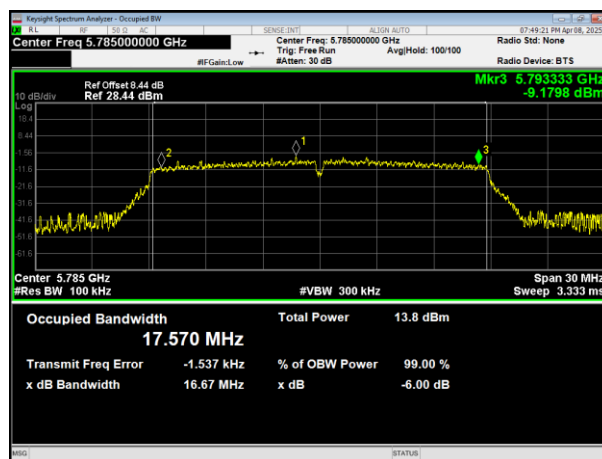
802.11ac HT20



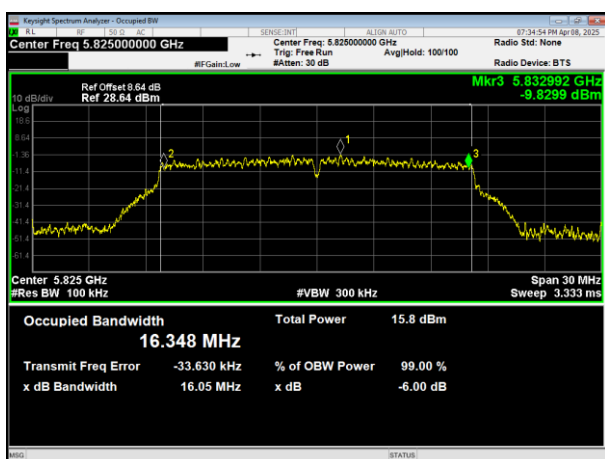
5745MHz



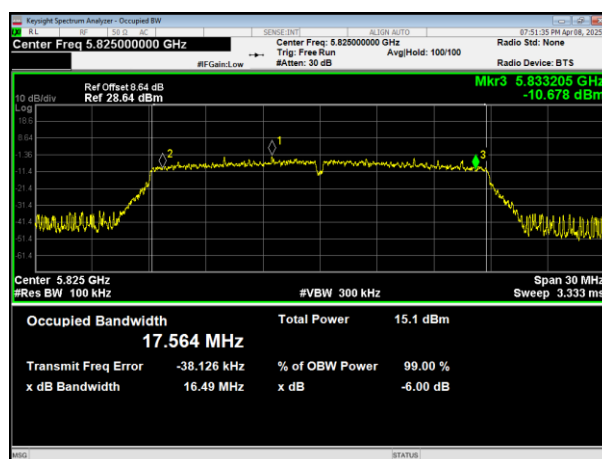
5745MHz



5785MHz



5785MHz

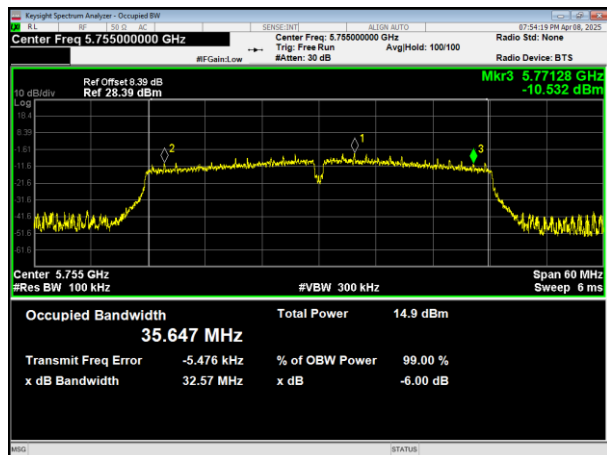


5825MHz

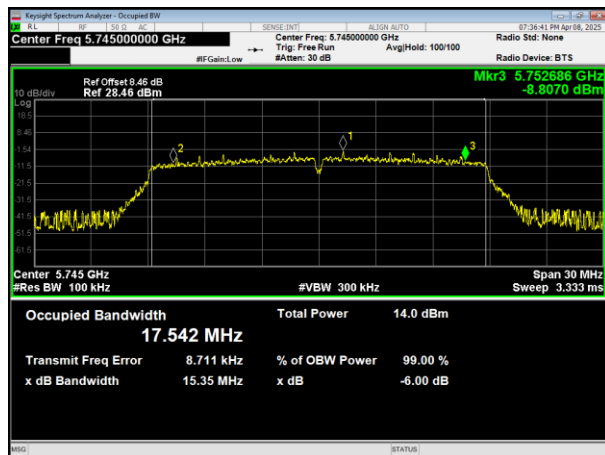
5825MHz



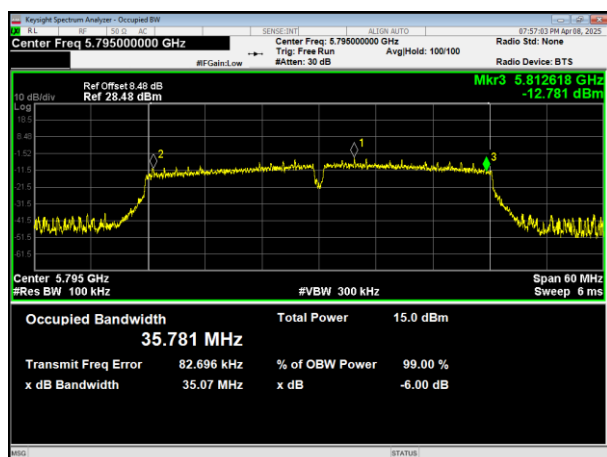
802.11ac HT40



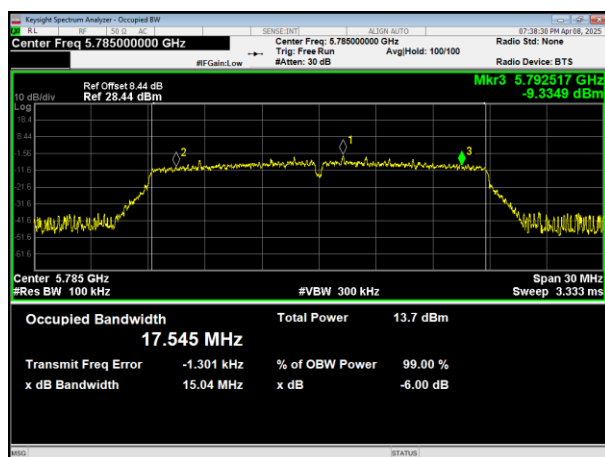
802.11n HT20



5755MHz



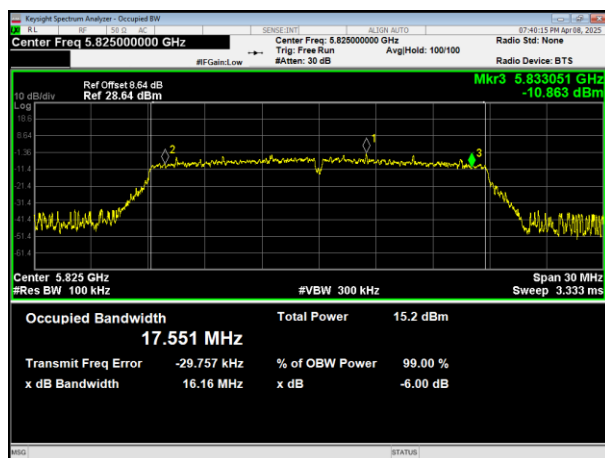
5745MHz



5795MHz



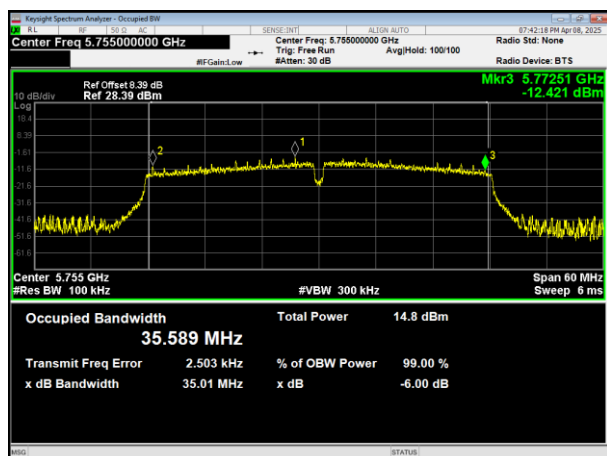
5785MHz



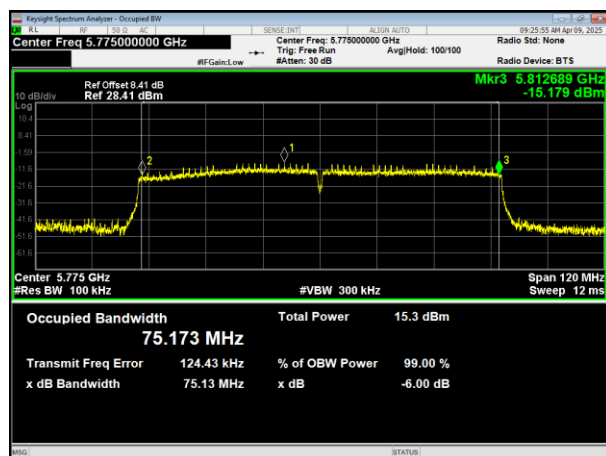
5825MHz



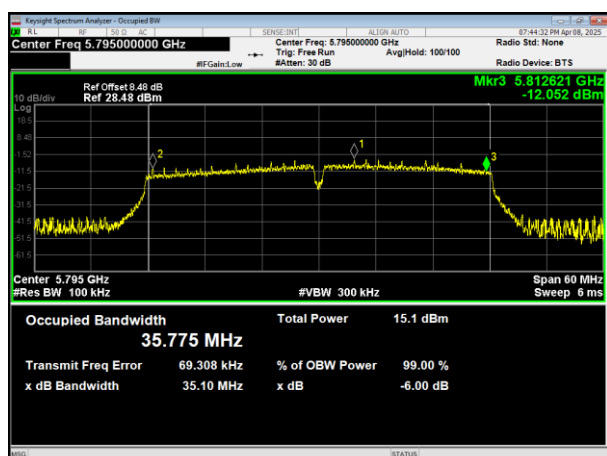
802.11n HT40



802.11ac HT80



5755MHz



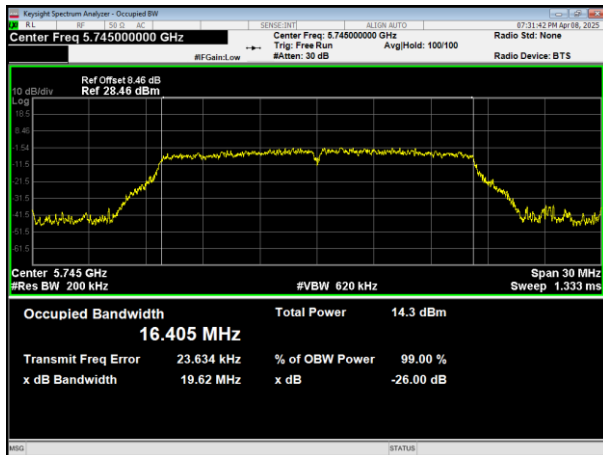
5775MHz

5795MHz

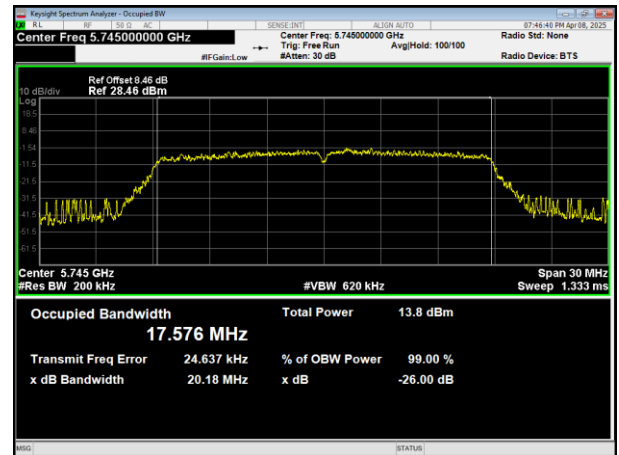


99% Bandwidth

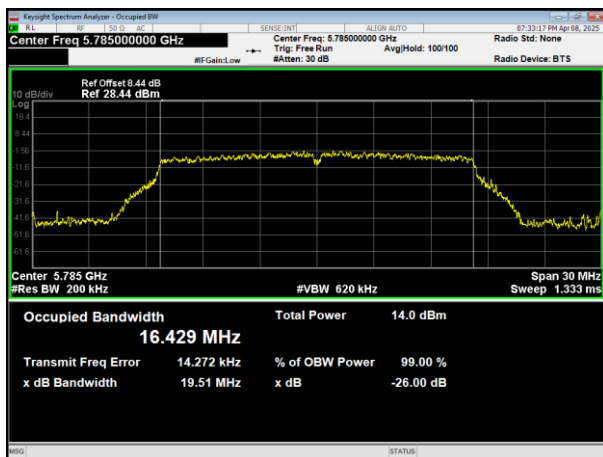
802.11a



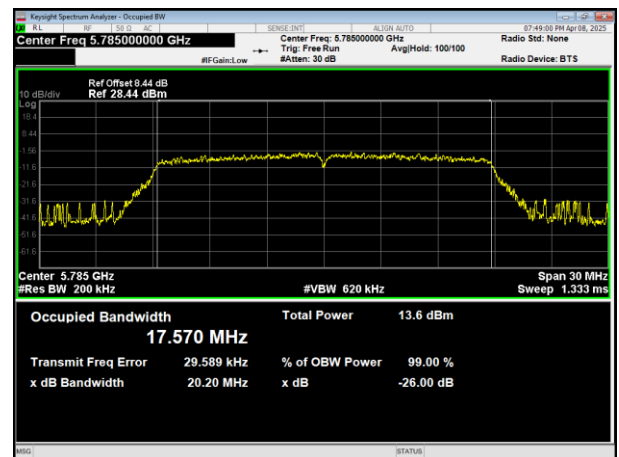
802.11ac HT20



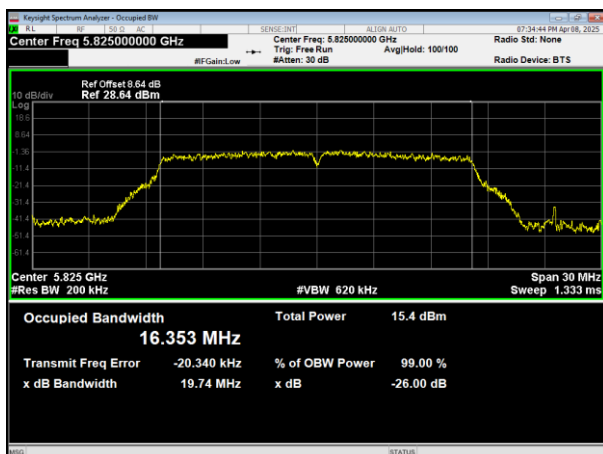
5745MHz



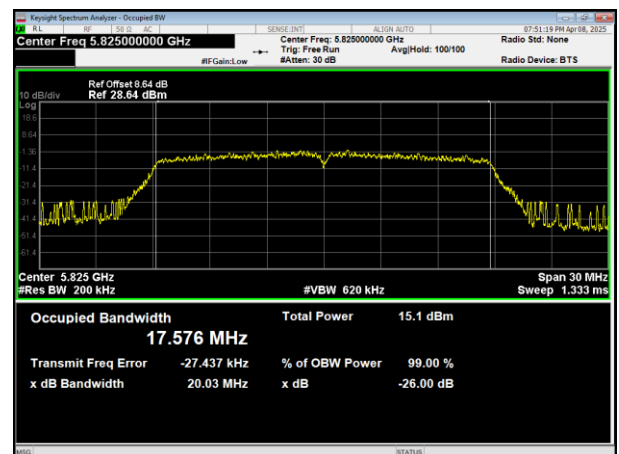
5745MHz



5785MHz



5785MHz

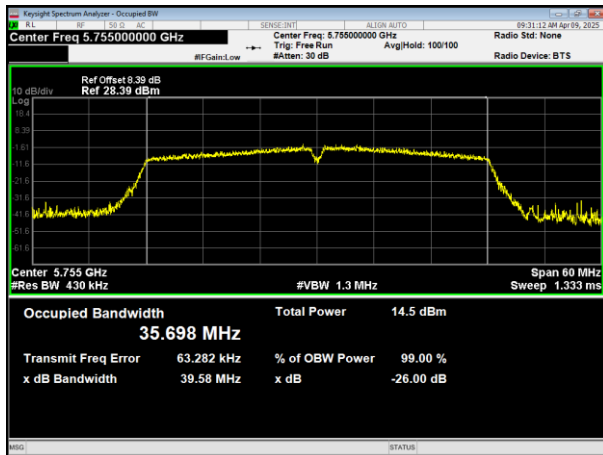


5825MHz

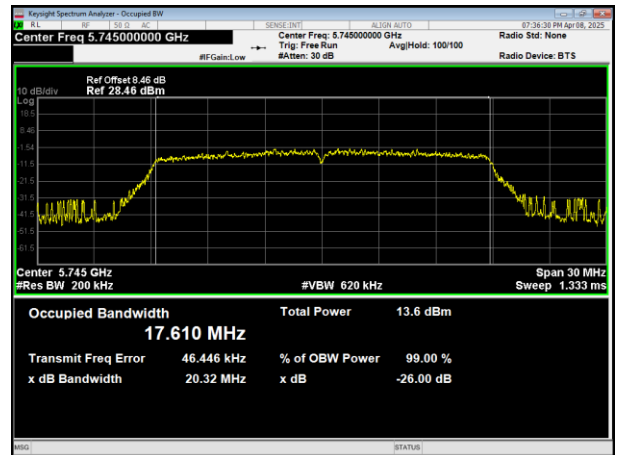
5825MHz



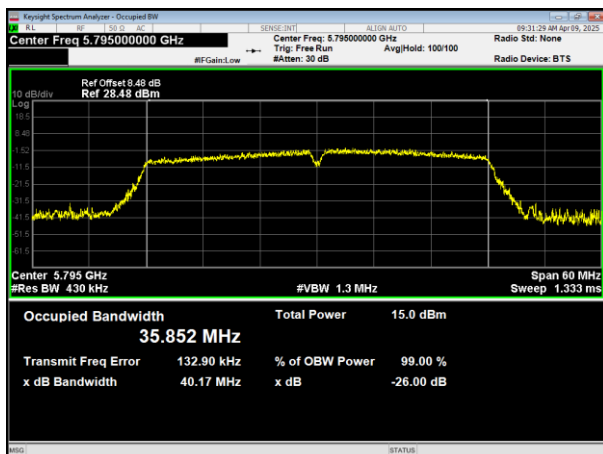
802.11ac HT40



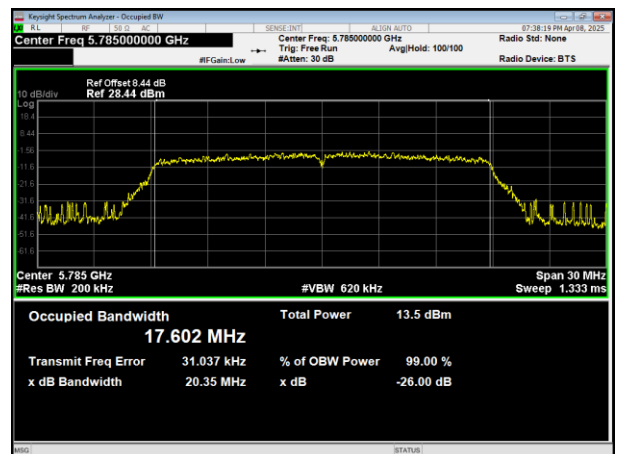
802.11n HT20



5755MHz



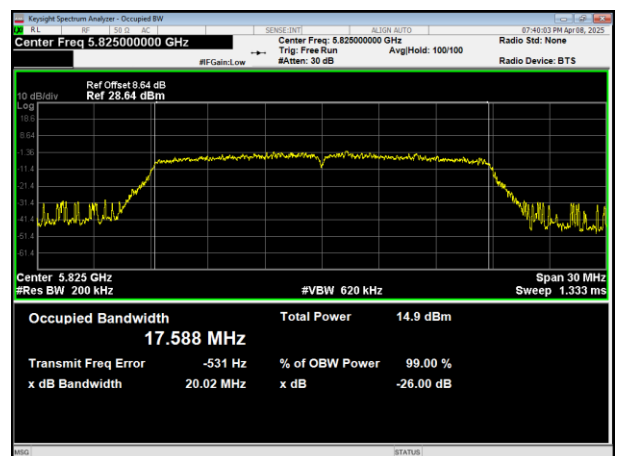
5745MHz



5795MHz



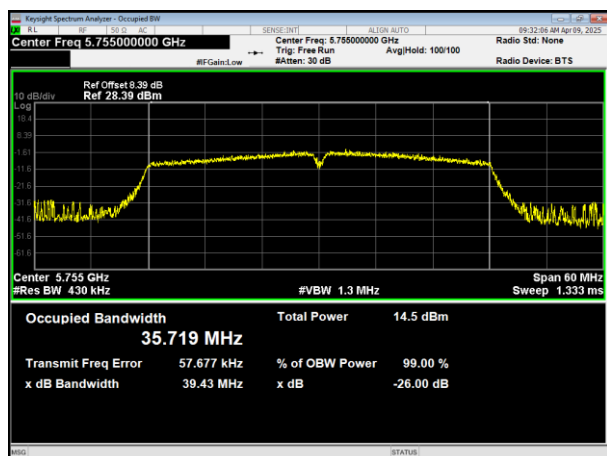
5785MHz



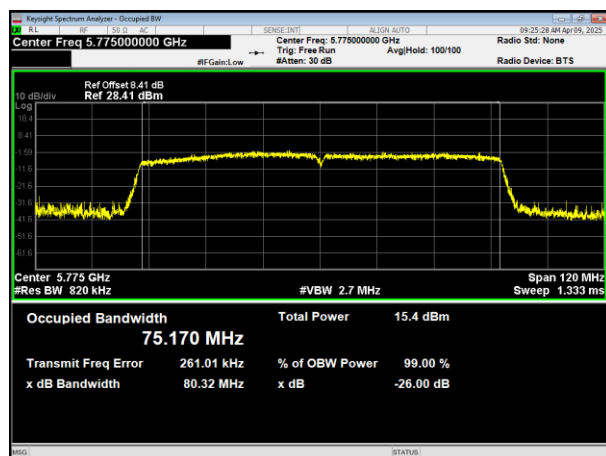
5825MHz



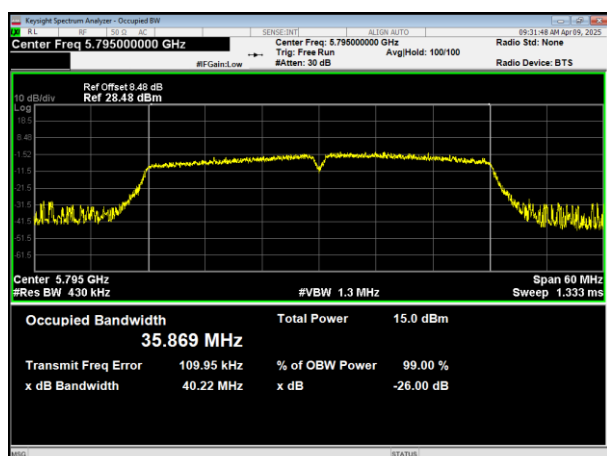
802.11n HT40



802.11ac HT80



5755MHz



5775MHz

5795MHz



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.

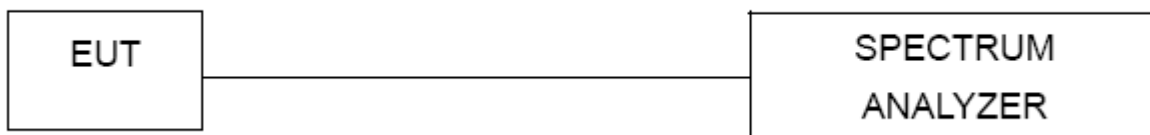
7.1.1. TEST PROCEDURE

1. Set RBW = 1 MHz.
2. Set the video bandwidth (VBW) $\geq$ 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.



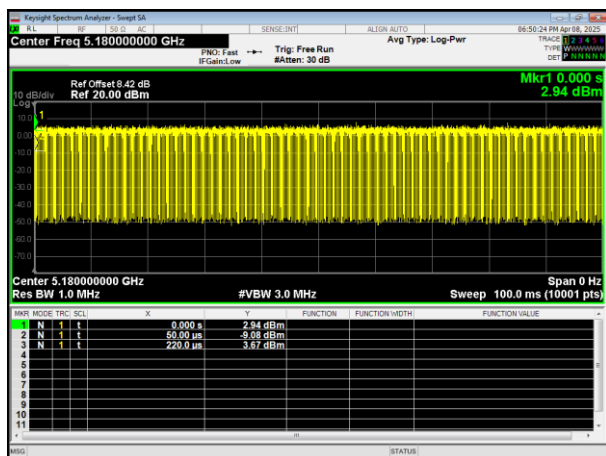
7.1.5. TEST RESULTS

		Test Channel	Duty Cycle(%)	Duty Fator (dB) 10 * log (1/ Duty cycle)
Band 1	802.11a	Low	77.27	1.12
		Middle	77.27	1.12
		High	77.27	1.12
	802.11ac HT20	Low	97.06	0.13
		Middle	97.06	0.13
		High	97.06	0.13
	802.11ac HT40	Low	94.2	0.26
		High	94.2	0.26
	802.11ac HT80	/	89.19	0.5
	802.11n HT20	Low	97.01	0.13
		Middle	96.3	0.16
		High	97.04	0.13
	802.11n HT40	Low	94.2	0.26
		High	94.2	0.26

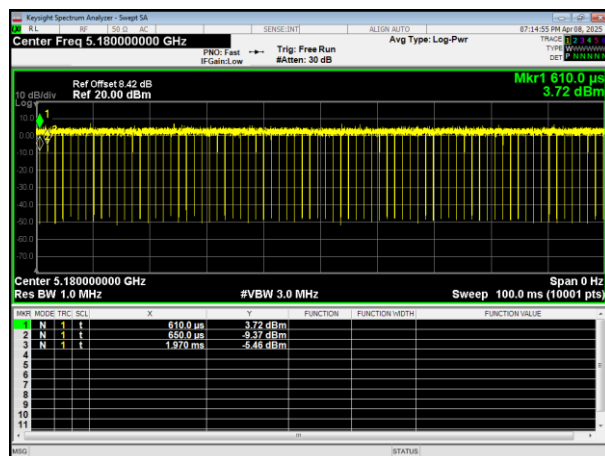
		Test Channel	Duty Cycle(%)	Duty Fator (dB) 10 * log (1/ Duty cycle)
Band 4	802.11a	Low	77.27	1.12
		Middle	77.27	1.12
		High	81.82	0.87
	802.11ac HT20	Low	96.3	0.16
		Middle	96.3	0.16
		High	96.3	0.16
	802.11ac HT40	Low	94.2	0.26
		High	92.86	0.32
	802.11ac HT80	/	86.49	0.63
	802.11n HT20	Low	97.04	0.13
		Middle	97.01	0.13
		High	97.04	0.13
	802.11n HT40	Low	94.2	0.26
		High	94.2	0.26



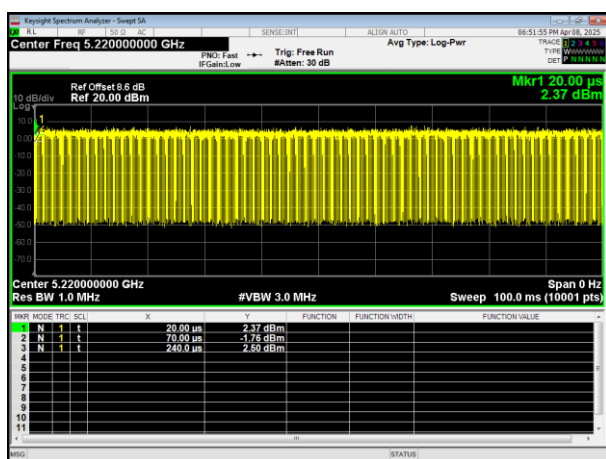
802.11a



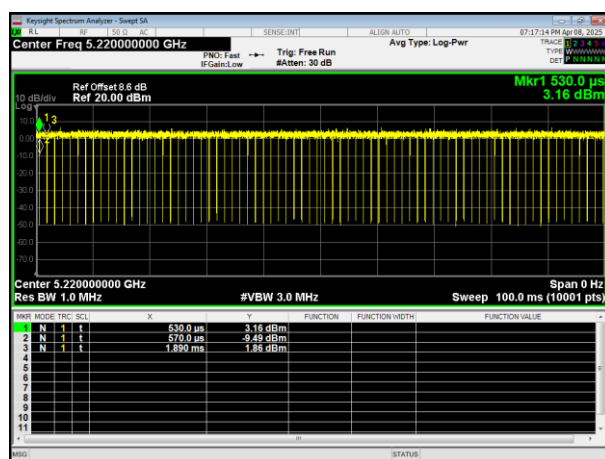
802.11ac HT20



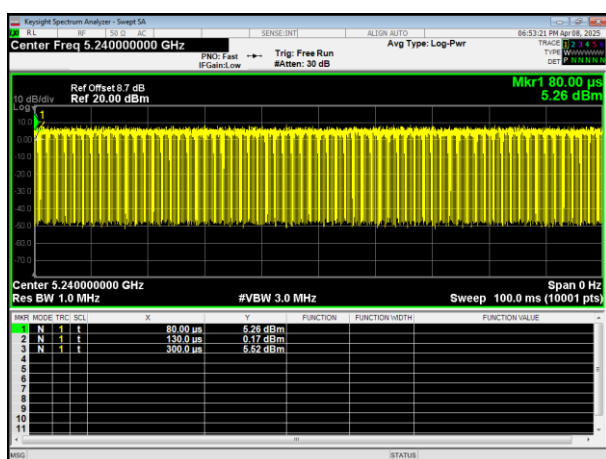
5180MHz



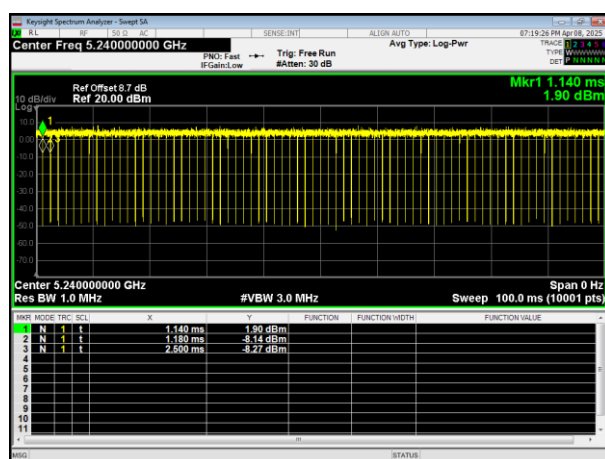
5180MHz



5200MHz



5200MHz

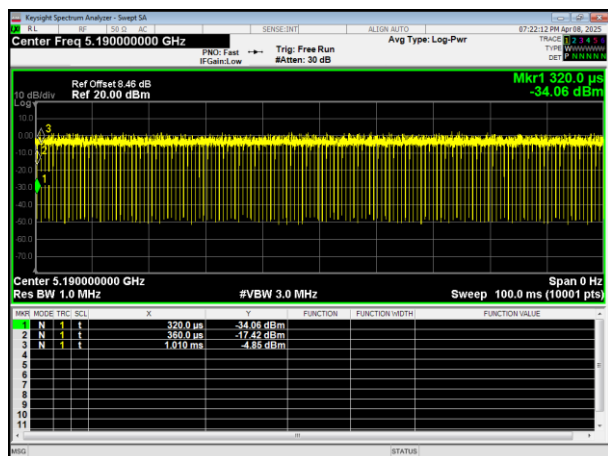


5240MHz

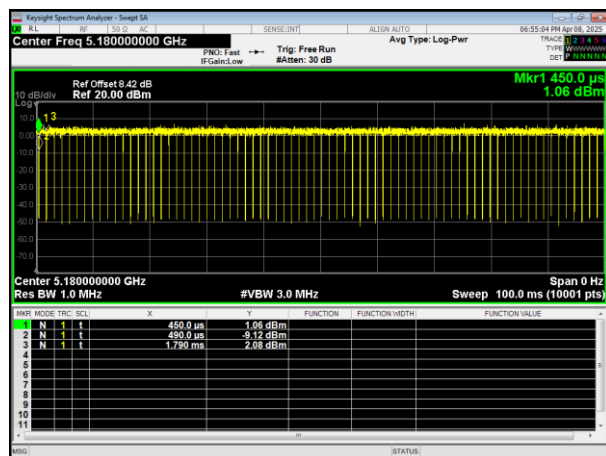
5240MHz



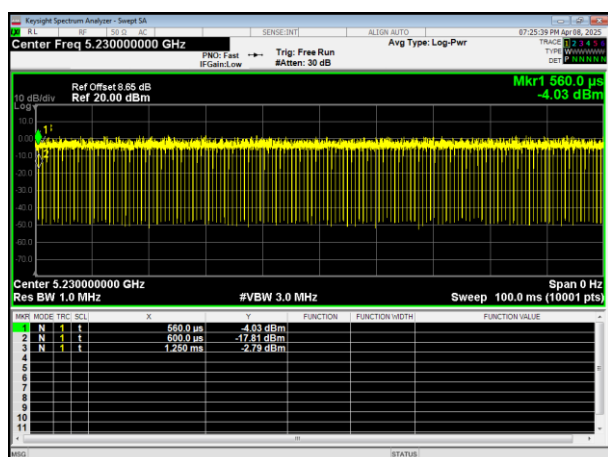
802.11ac HT40



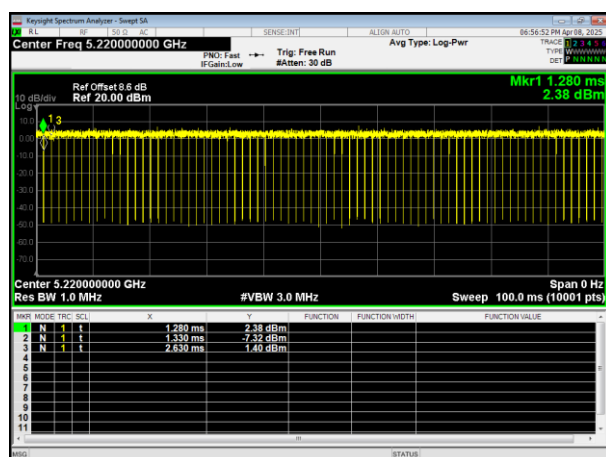
802.11n HT20



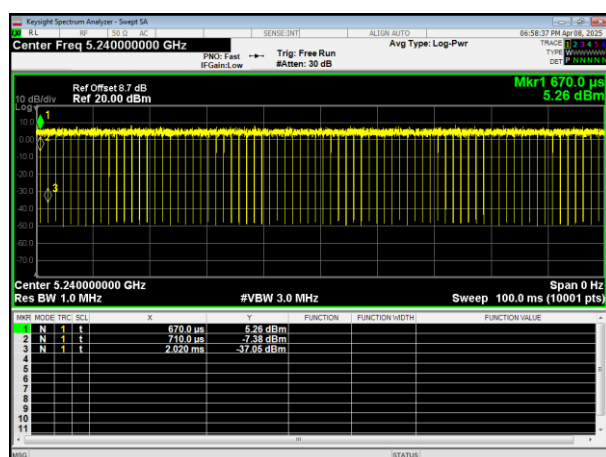
5190MHz



5180MHz



5230MHz

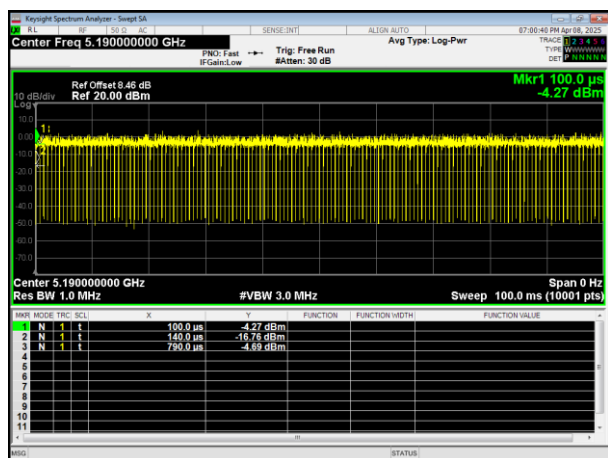


5200MHz

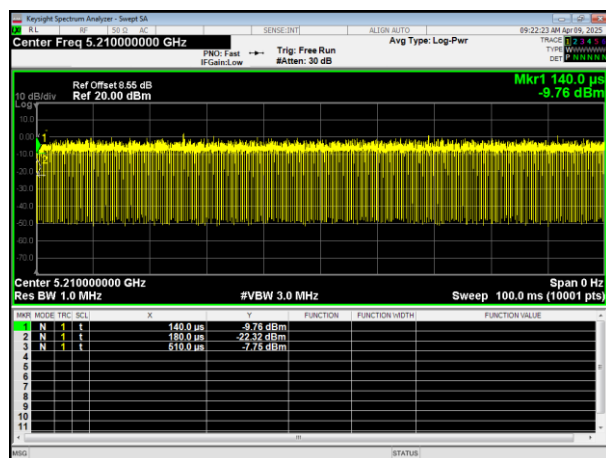
5240MHz



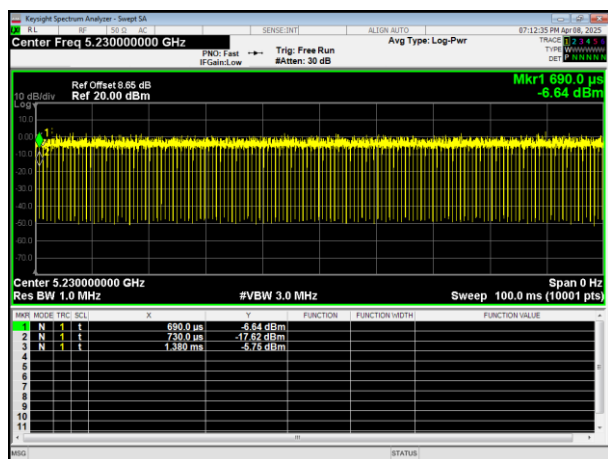
802.11n HT40



802.11ac HT80



5190MHz

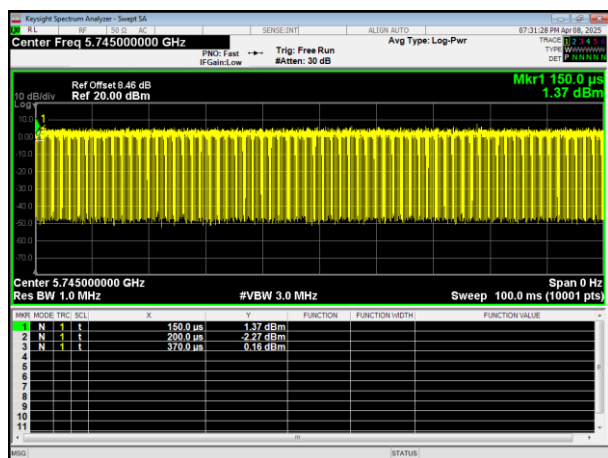


5210MHz

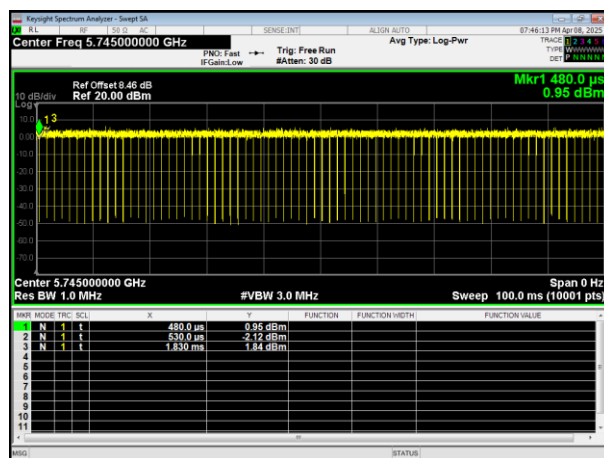
5230MHz



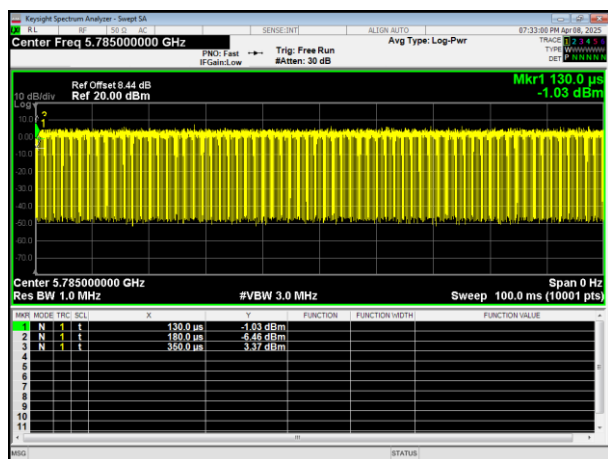
802.11a



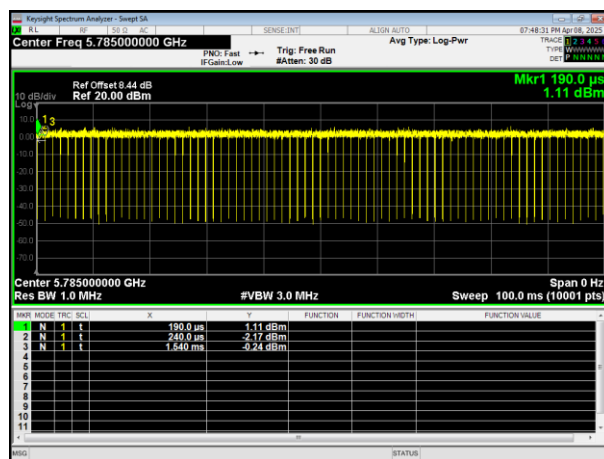
802.11ac HT20



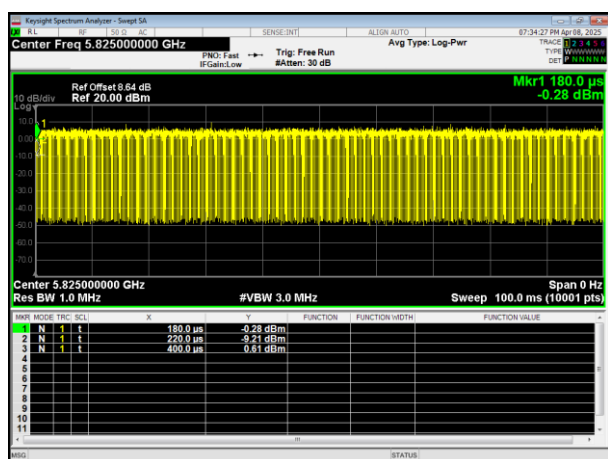
5745MHz



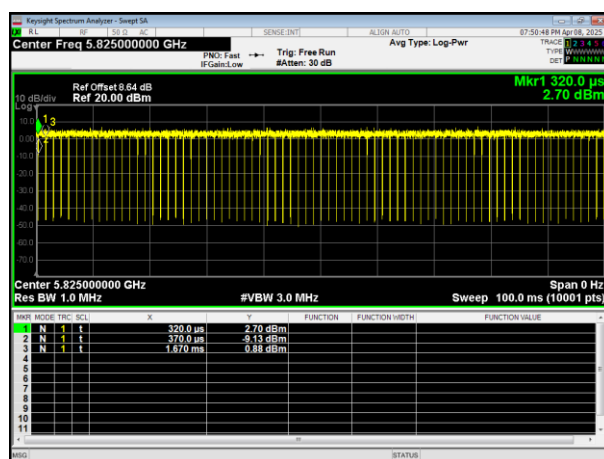
5745MHz



5785MHz



5785MHz

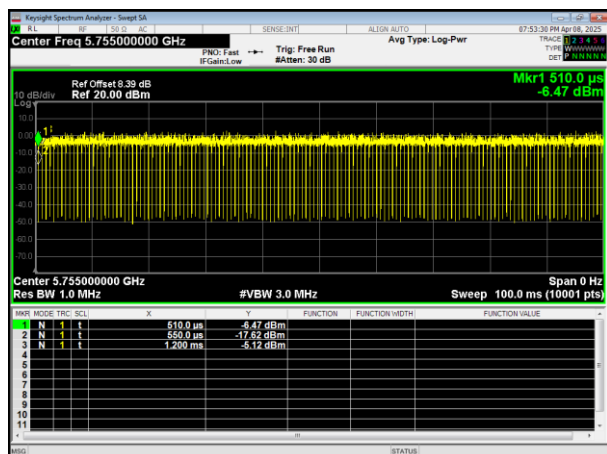


5825MHz

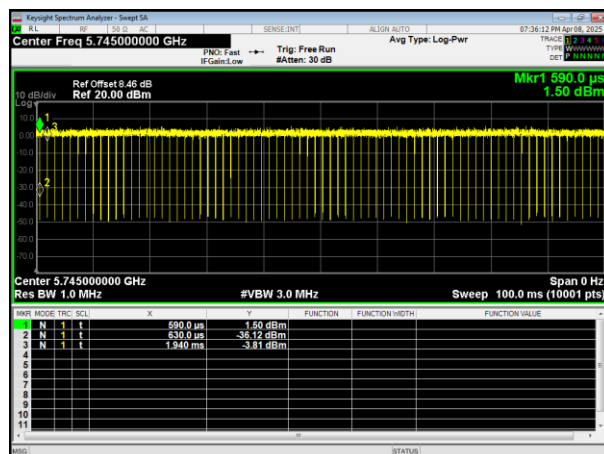
5825MHz



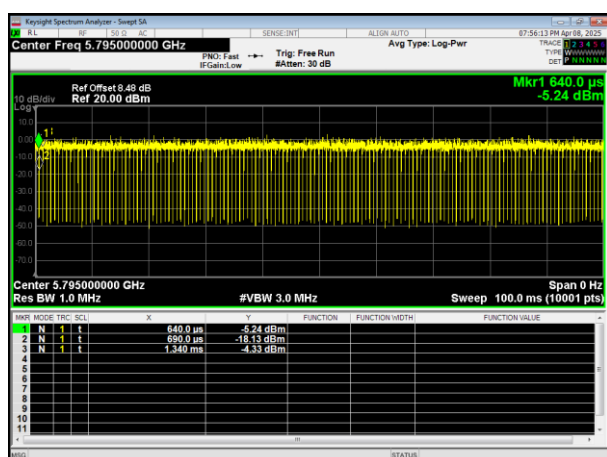
802.11ac HT40



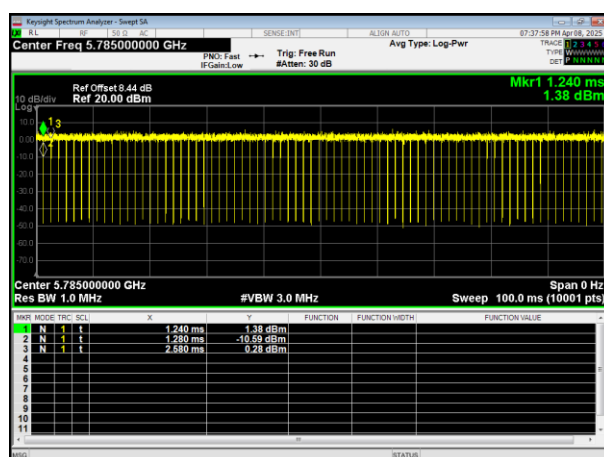
802.11n HT20



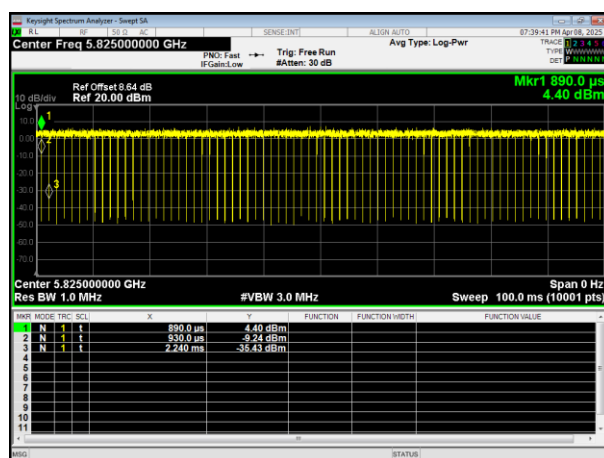
5755MHz



5745MHz



5795MHz

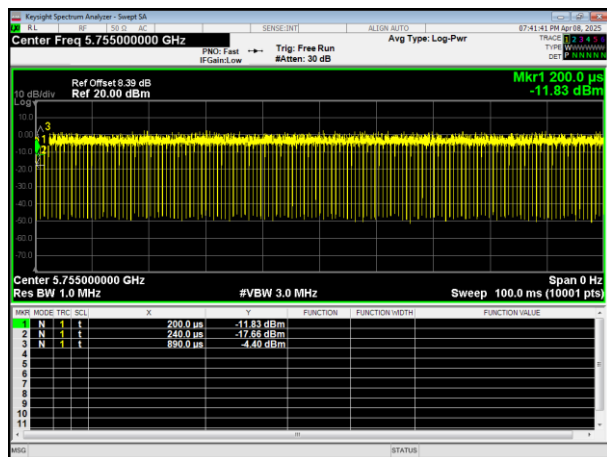


5785MHz

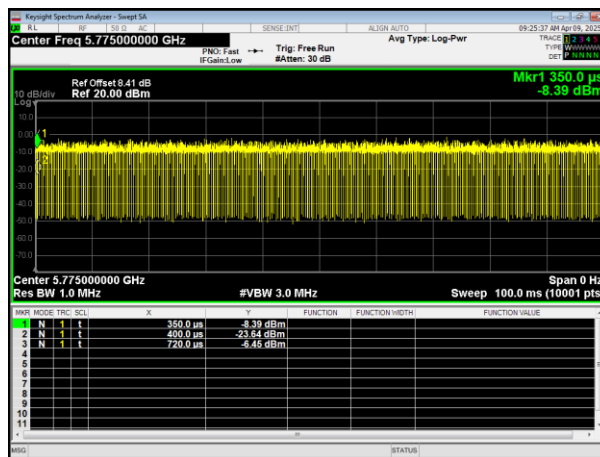
5825MHz



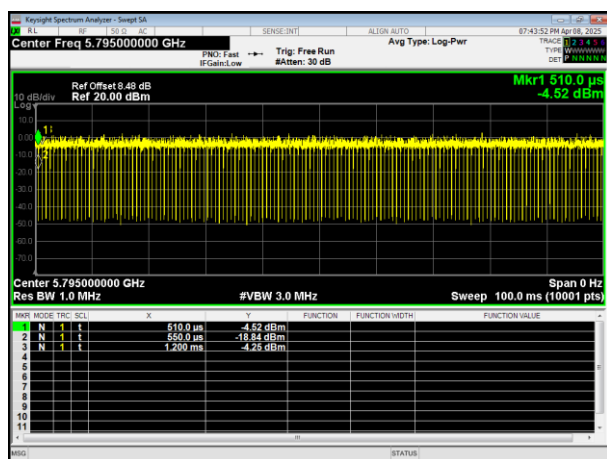
802.11n HT40



802.11ac HT80



5755MHz



5775MHz

5795MHz



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.

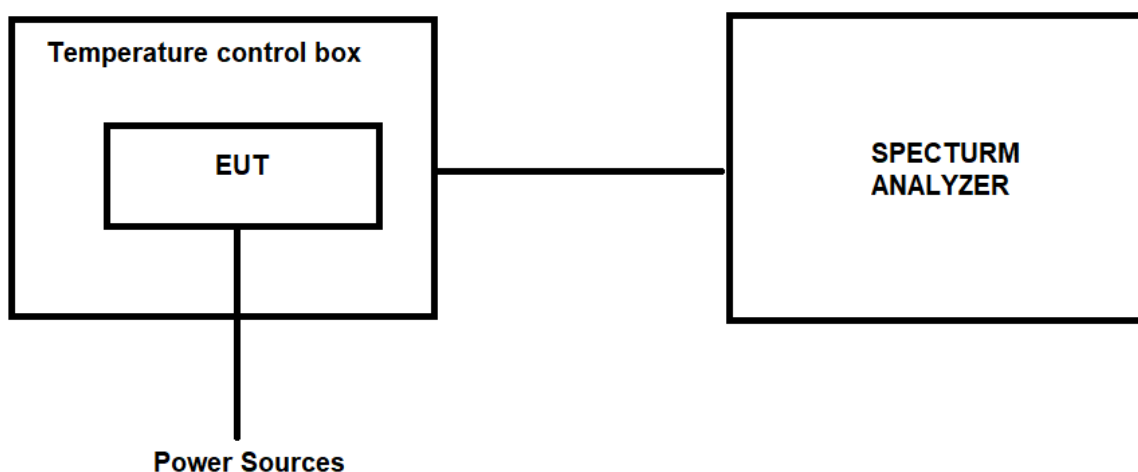
8.1.1. TEST PROCEDURE

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	Spectrum Frequency (MHz)			Δ Frequency (PPM)		
		(MHz)	802.11a	802.11n HT20	802.11ac HT20	802.11a	802.11n HT20	802.11ac HT20
132V	-20°C	5180	5180.0025	5180.0023	5180.0024	0.4826	0.4440	0.4633
		5220	5220.0034	5220.0014	5220.0025	0.6513	0.2682	0.4789
		5240	5240.0024	5240.0025	5240.0014	0.4580	0.4771	0.2672
		5745	5745.0013	5745.0014	5745.0027	0.2263	0.2437	0.4700
		5785	5785.0023	5785.0023	5785.0026	0.3976	0.3976	0.4494
		5825	5825.0014	5825.0014	5825.0014	0.2403	0.2403	0.2403
108V	-20°C	5180	5180.0051	5180.0015	5180.0028	0.9846	0.2896	0.5405
		5220	5220.0018	5220.0022	5220.0036	0.3448	0.4215	0.6897
		5240	5240.0023	5240.0023	5240.0027	0.4389	0.4389	0.5153
		5745	5745.0012	5745.0014	5745.0015	0.2089	0.2437	0.2611
		5785	5785.0041	5785.0015	5785.0025	0.7087	0.2593	0.4322
		5825	5825.0017	5825.0025	5825.0012	0.2918	0.4292	0.2060
120V	25°C	5180	5180.0026	5180.0014	5180.0025	0.5019	0.2703	0.4826
		5220	5220.0014	5220.0039	5220.0014	0.2682	0.7471	0.2682
		5240	5240.0052	5240.0014	5240.0022	0.9924	0.2672	0.4198
		5745	5745.0054	5745.0022	5745.0041	0.9399	0.3829	0.7137
		5785	5785.0036	5785.0015	5785.0023	0.6223	0.2593	0.3976
		5825	5825.0018	5825.0013	5825.0041	0.3090	0.2232	0.7039
132V	50°C	5180	5180.0014	5180.0038	5180.0025	0.2703	0.7336	0.4826
		5220	5220.0036	5220.0044	5220.0024	0.6897	0.8429	0.4598
		5240	5240.0051	5240.0023	5240.0023	0.9733	0.4389	0.4389
		5745	5745.0021	5745.0041	5745.0024	0.3655	0.7137	0.4178
		5785	5785.0028	5785.0026	5785.0022	0.4840	0.4494	0.3803
		5825	5825.0044	5825.0041	5825.0023	0.7554	0.7039	0.3948
108V	50°C	5180	5180.0036	5180.0025	5180.0024	0.6950	0.4826	0.4633
		5220	5220.0051	5220.0011	5220.0023	0.9770	0.2107	0.4406
		5240	5240.0017	5240.0023	5240.0041	0.3244	0.4389	0.7824
		5745	5745.0014	5745.0025	5745.0021	0.2437	0.4352	0.3655
		5785	5785.0054	5785.0028	5785.0023	0.9334	0.4840	0.3976
		5825	5825.0039	5825.0036	5825.0041	0.6695	0.6180	0.7039



Test Voltage	Test Temp.	Measured Frequency (MHz)	Spectrum Frequency (MHz)		Δ Frequency (PPM)	
			802.11n HT40	802.11ac HT40	802.11n HT40	802.11ac HT40
132V	-20℃	5190	5190.0025	5190.0025	0.4817	0.4817
		5230	5230.0036	5230.0036	0.6883	0.6883
		5755	5755.0026	5755.0012	0.4518	0.2085
		5795	5795.0052	5795.0025	0.8973	0.4314
108V		5190	5190.0014	5190.0024	0.2697	0.4624
		5230	5230.0046	5230.0048	0.8795	0.9178
		5755	5755.0033	5755.0023	0.5734	0.3997
		5795	5795.0041	5795.0044	0.7075	0.7593
120V	25℃	5190	5190.0025	5190.0023	0.4817	0.4432
		5230	5230.0041	5230.0032	0.7839	0.6119
		5755	5755.0023	5755.0014	0.3997	0.2433
		5795	5795.0011	5795.0034	0.1898	0.5867
132V	50℃	5190	5190.0012	5190.0021	0.2312	0.4046
		5230	5230.0014	5230.0012	0.2677	0.2294
		5755	5755.0032	5755.0023	0.5560	0.3997
		5795	5795.0026	5795.0035	0.4487	0.6040
108V	50℃	5190	5190.0025	5190.0014	0.4817	0.2697
		5230	5230.0014	5230.0012	0.2677	0.2294
		5755	5755.0023	5755.0014	0.3997	0.2433
		5795	5795.0012	5795.0015	0.2071	0.2588



Test Voltage	Test Temp.	Measured Frequency (MHz)	Spectrum Frequency (MHz)	Δ Frequency (PPM)
			802.11ac HT80	802.11ac HT80
132V	-20℃	5210	5210.0002	0.0384
		5775	5775.0014	0.2424
108V		5210	5210.0023	0.4415
		5775	5775.0043	0.7446
120V	25℃	5210	5210.0014	0.2687
		5775	5775.0032	0.5541
132V	50℃	5210	5210.0047	0.9021
		5775	5775.0012	0.2078
108V	50℃	5210	5210.0036	0.6910
		5775	5775.0047	0.8139



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.

The following requirements shall apply:

a) The device shall automatically discontinue transmission in cases of absence of information to transmit, or operational failure. A description on how this is done shall accompany the application for equipment certification. Note that this is not intended to prohibit transmission of control or signalling information or the use of repetitive codes where required by the technology.

b) All LE-LAN devices must contain security features to protect against modification of software by unauthorized parties.

Manufacturers must implement security features in any digitally modulated devices capable of operating in any of the frequency ranges within the 5 GHz band, so that third parties are not able to reprogram the device to operate outside the parameters for which the device was certified. The software must prevent the user from operating the transmitter with operating frequencies, output power, modulation types or other radio frequency parameters outside those that were approved for the device. Manufacturers may use various means, including the use of a private network that allows only authenticated users to download software, electronic signatures in software or coding in hardware that is decoded by software to verify that new software can be legally loaded into a device to meet these requirements and must describe the methods in their application for equipment certification.

Manufacturers must take steps to ensure that DFS functionality cannot be disabled by the operator of the LE-LAN device.

9.2. TEST RESULT

Pass.

Note:

- Antenna use a permanently attached antenna which is not replaceable.
 - ☐ Not using a standard antenna jack or electrical connector for antenna replacement
 - ☐ The antenna has to be professionally installed (please provide method of installation)
- Please refer to the attached document Internal Photos to show the antenna connector.



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.

RSS-Gen Section 6.8 requirement: The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.

The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.

For licence-exempt equipment with detachable antennas, the user manual shall also contain the following notice in a conspicuous location:

This radio transmitter [enter the device's ISED certification number] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna type.

10.2. EUT ANTENNA

The EUT antenna is Internal 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 *****