

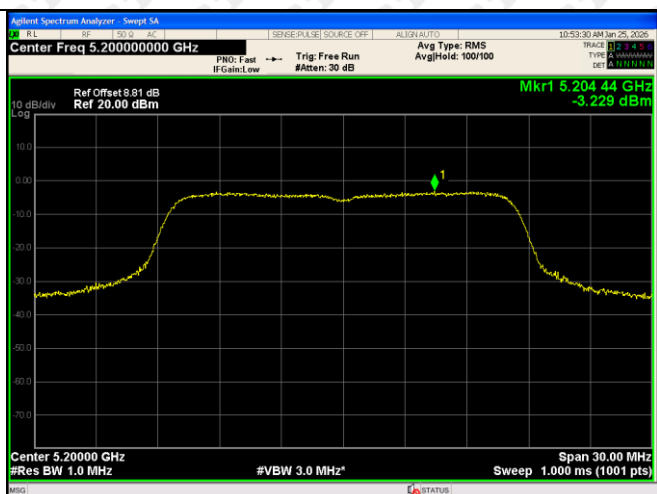
5180-5240MHz

ANT 1

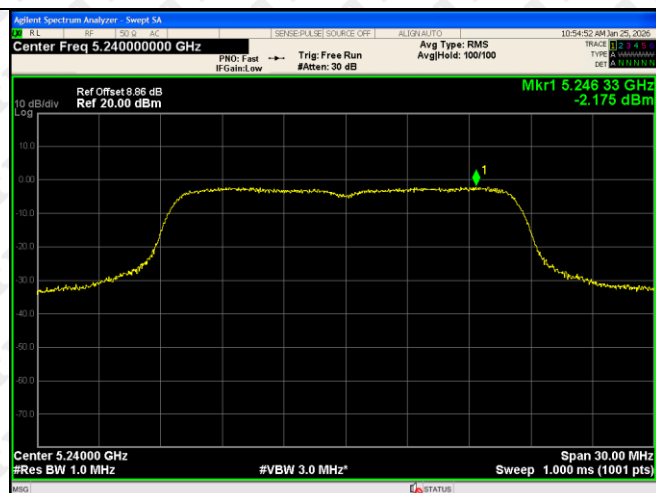
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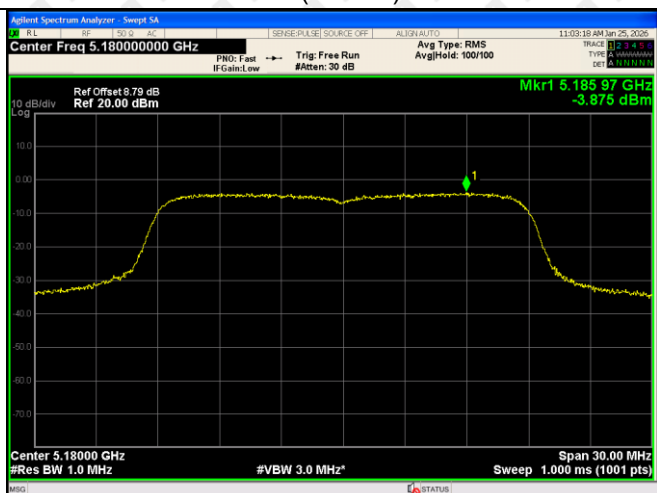
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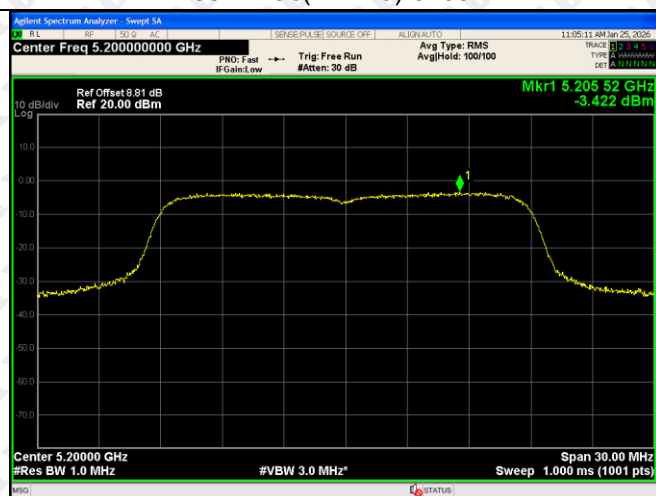
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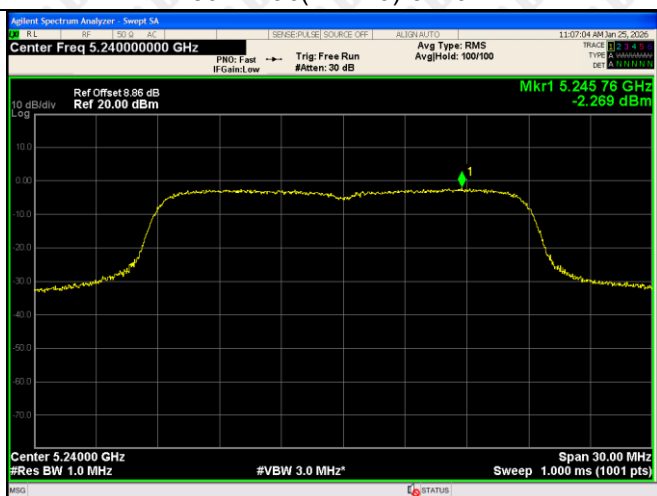
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802.11ac(VHT20)-5200

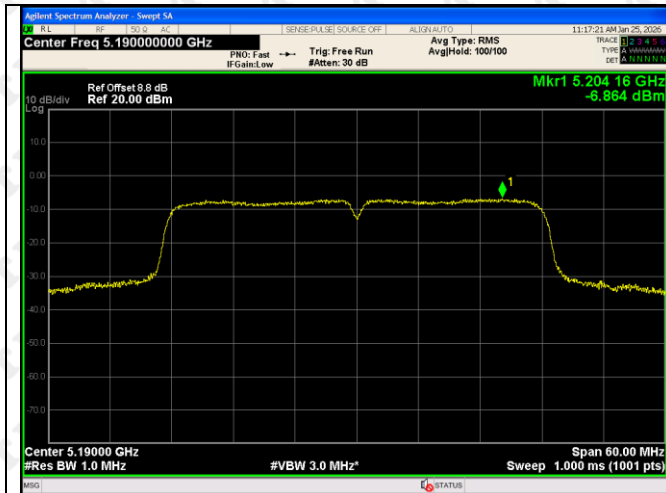


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802.11ac(VHT40)-5190

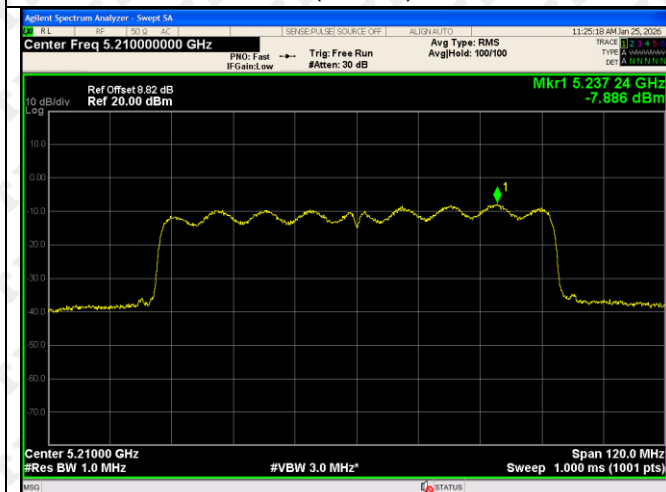
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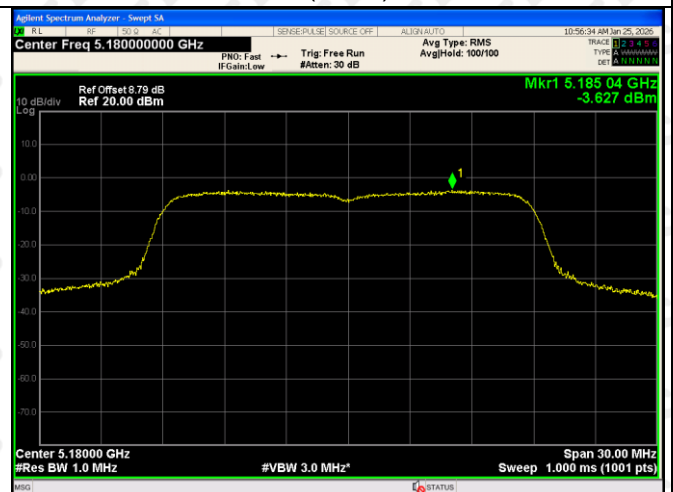
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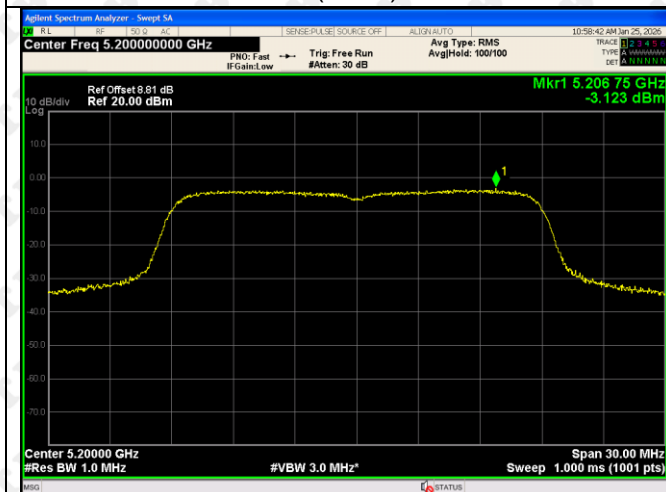
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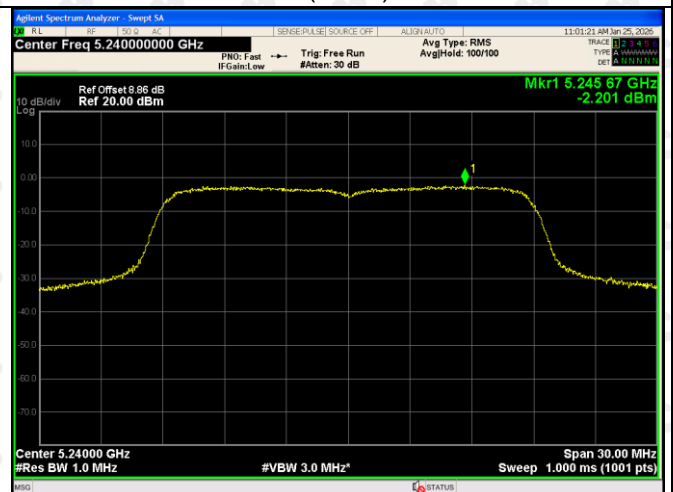
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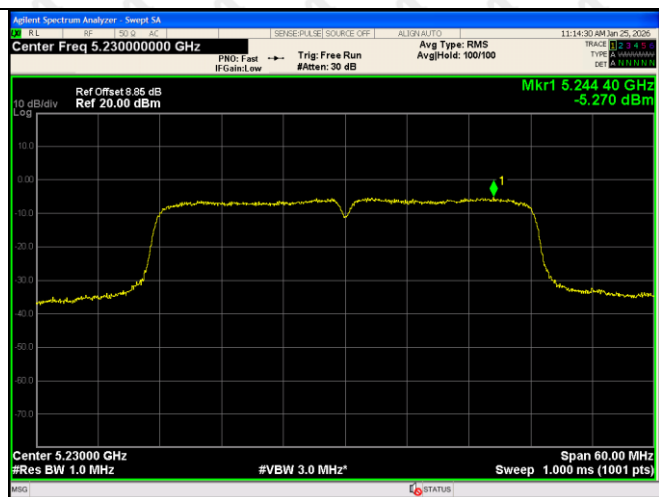
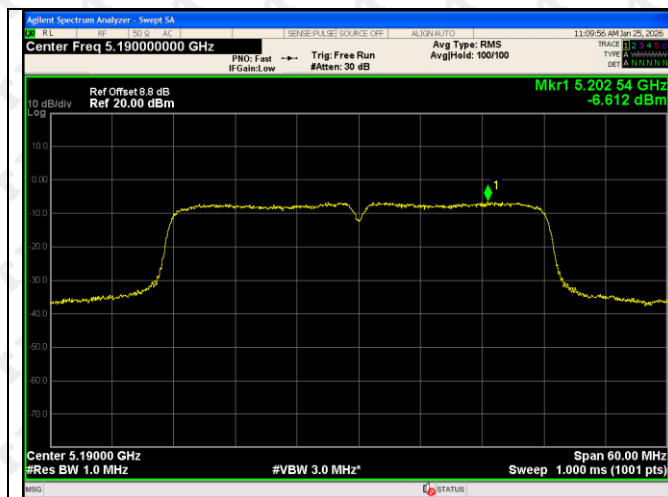
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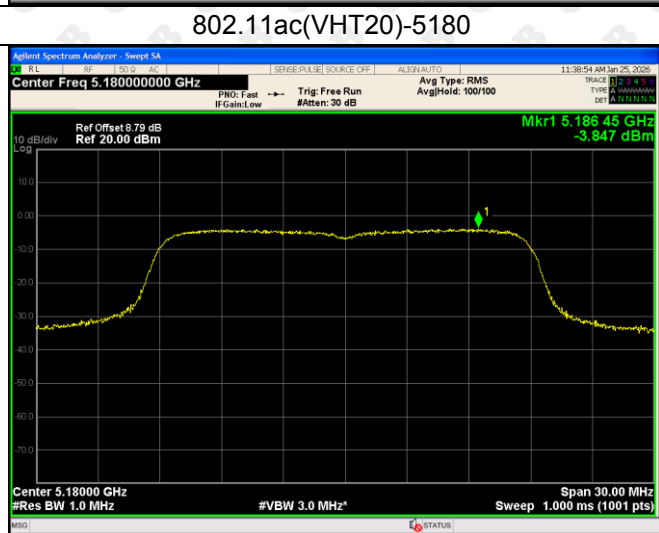
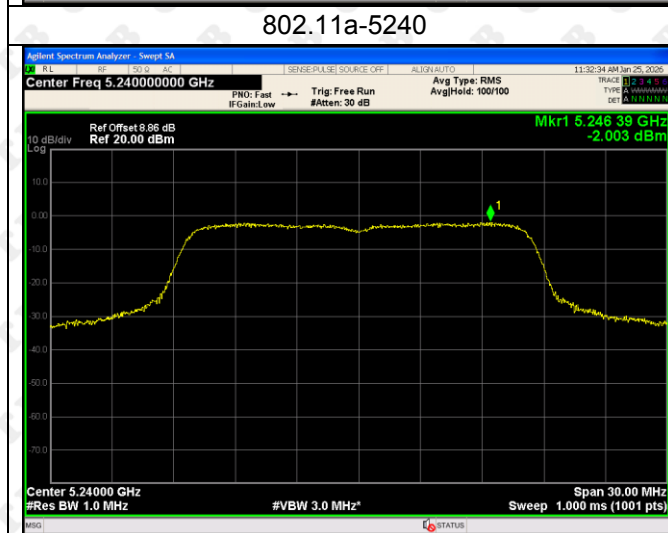
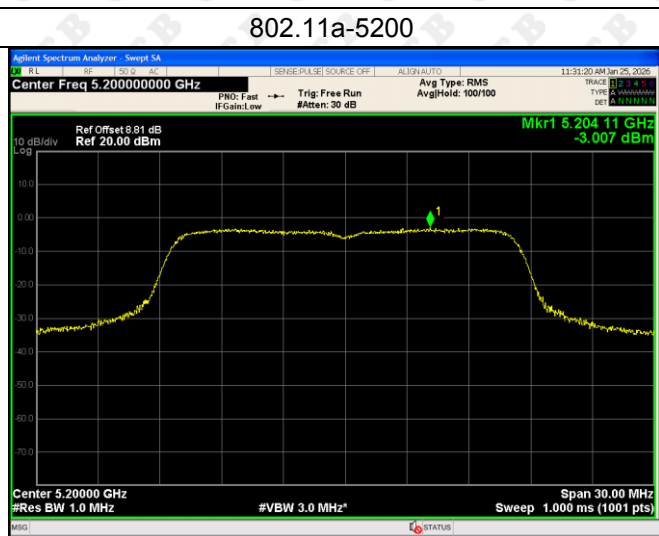
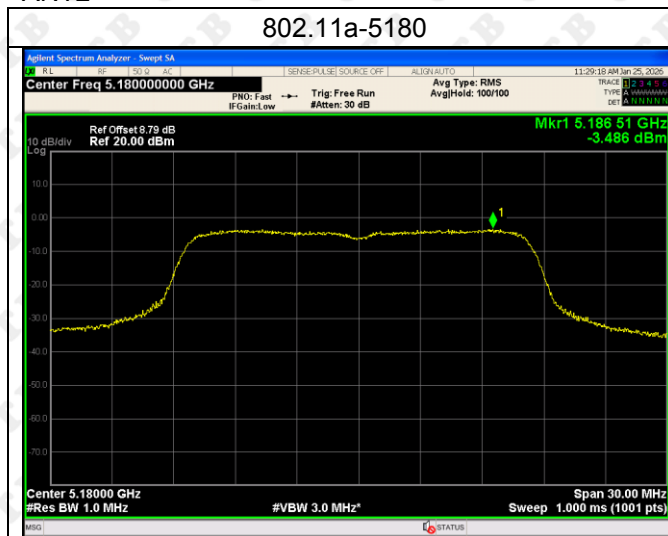
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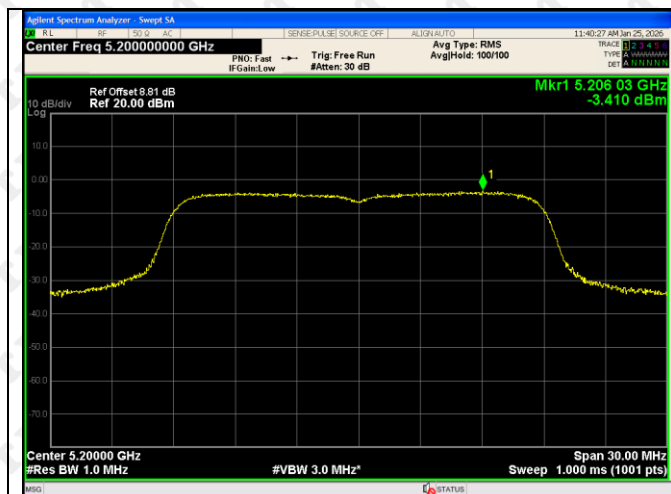


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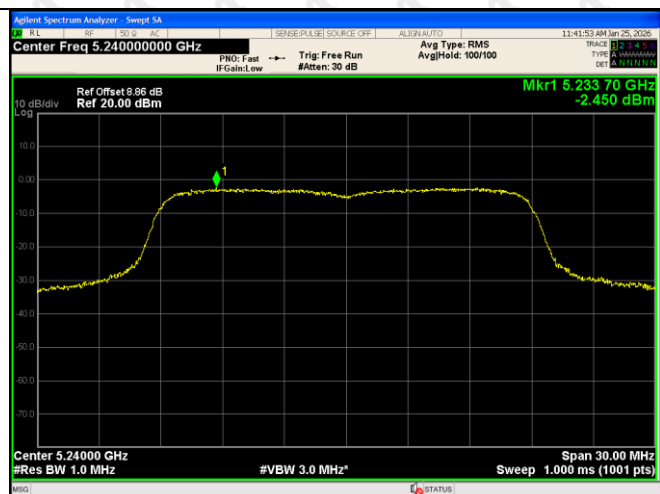


ANT2

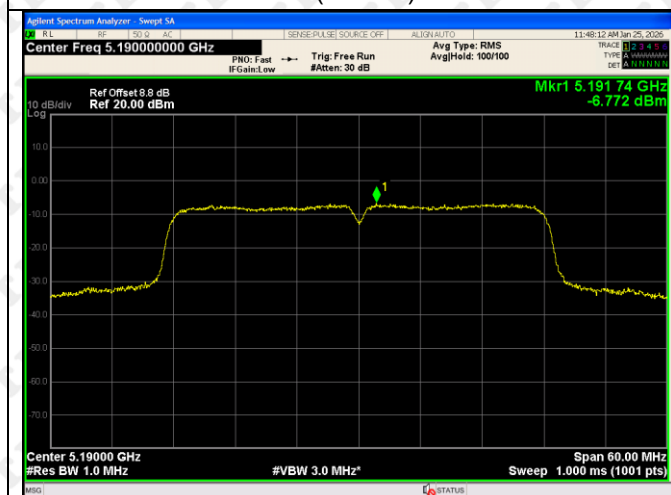




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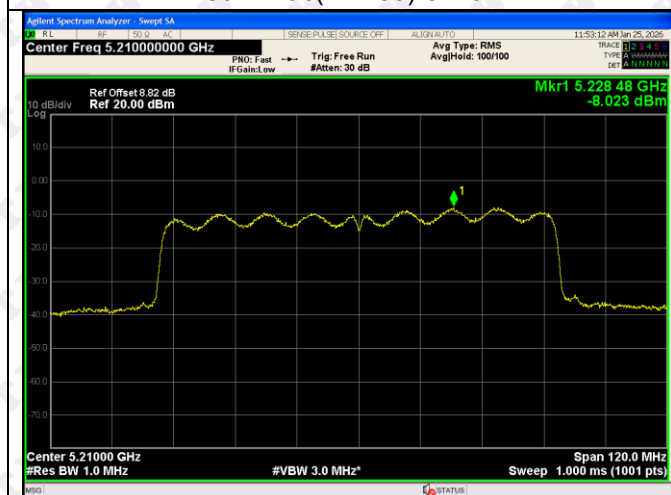
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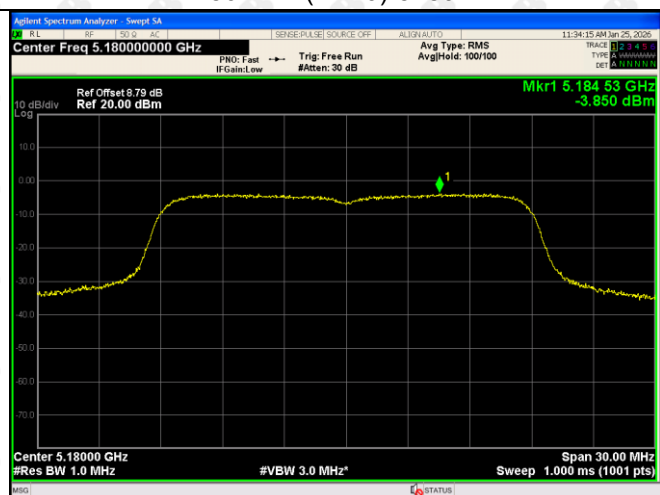
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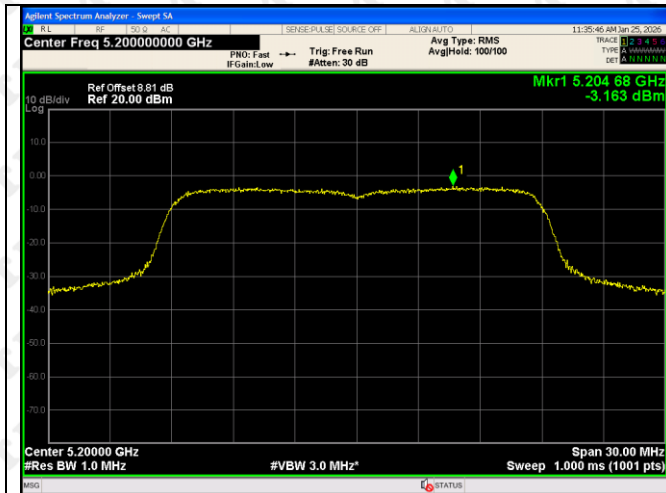
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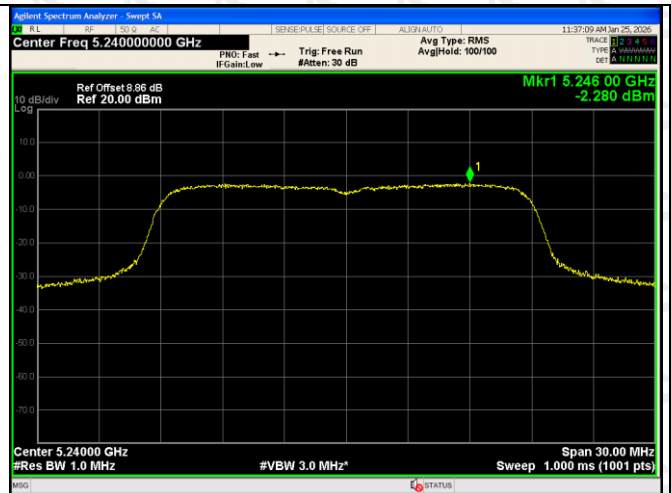
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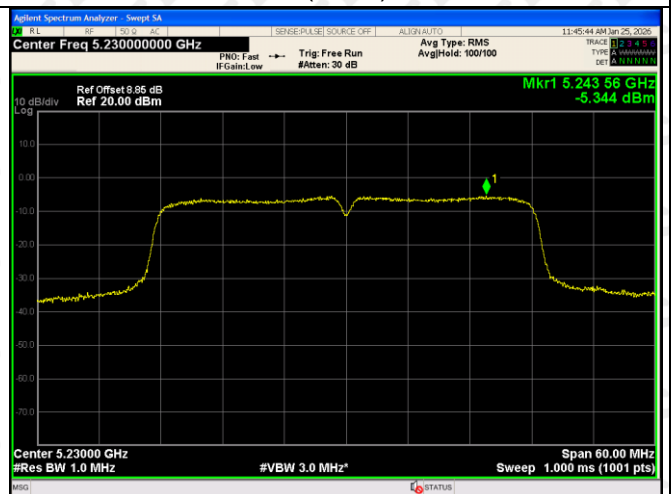
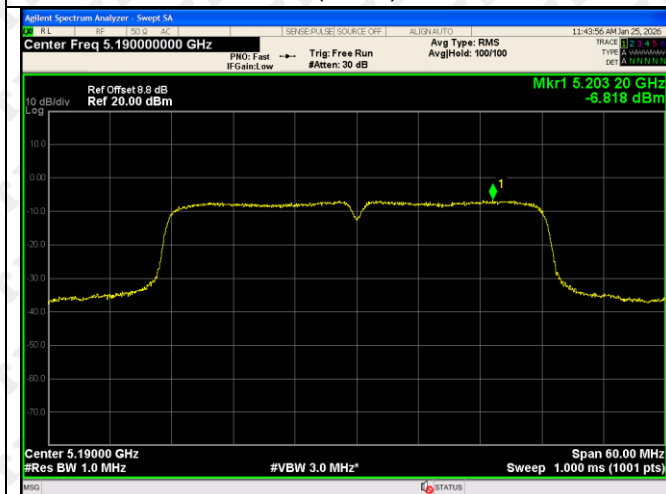
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802.11n(HT40)-5190

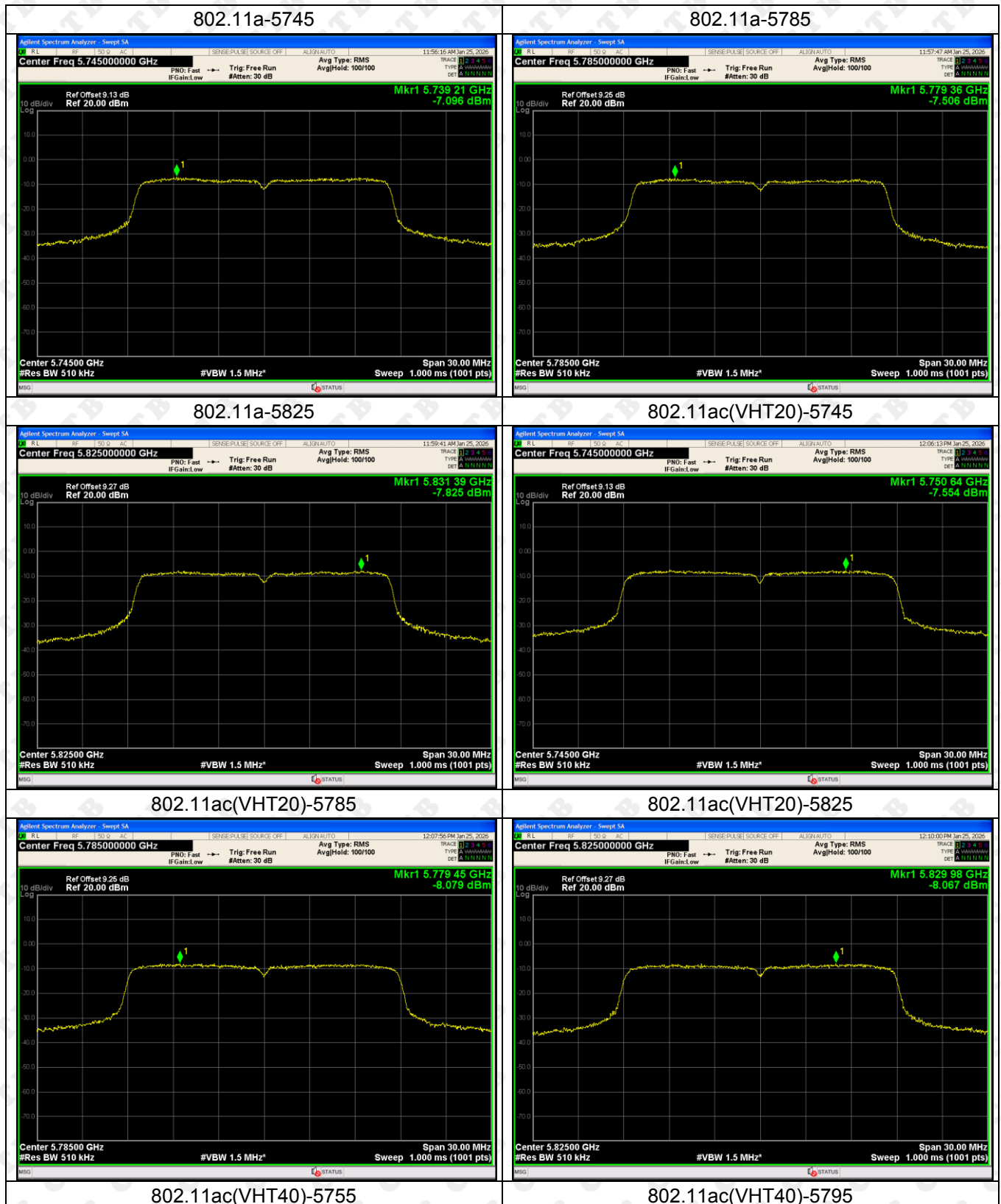


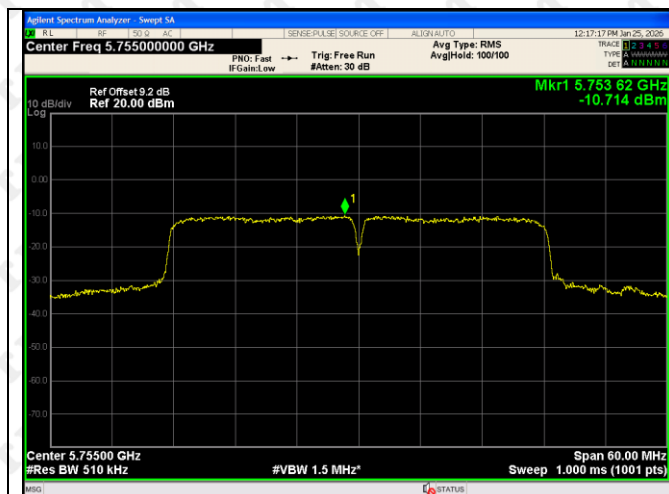
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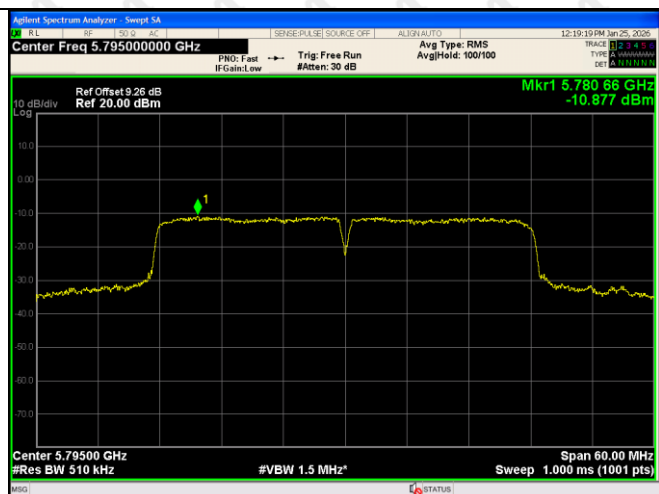
5745-5825MHz

ANT 1:

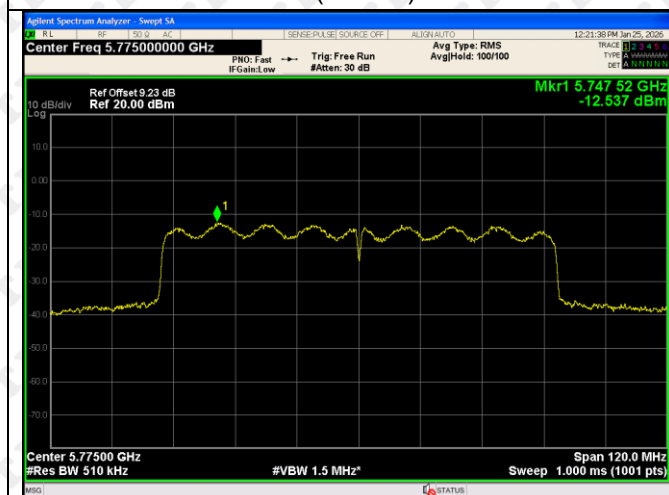




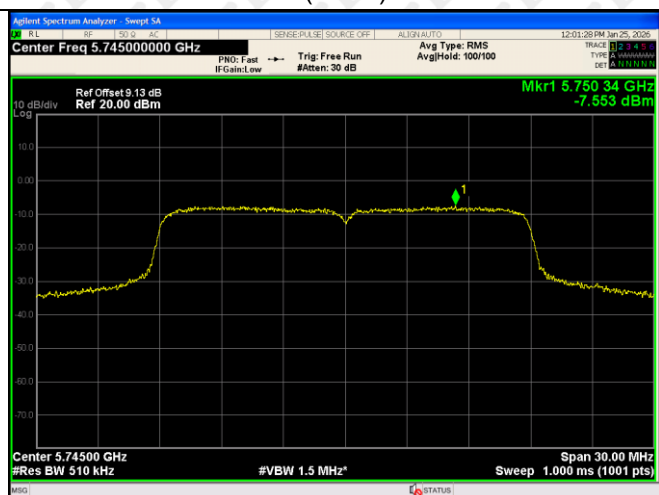
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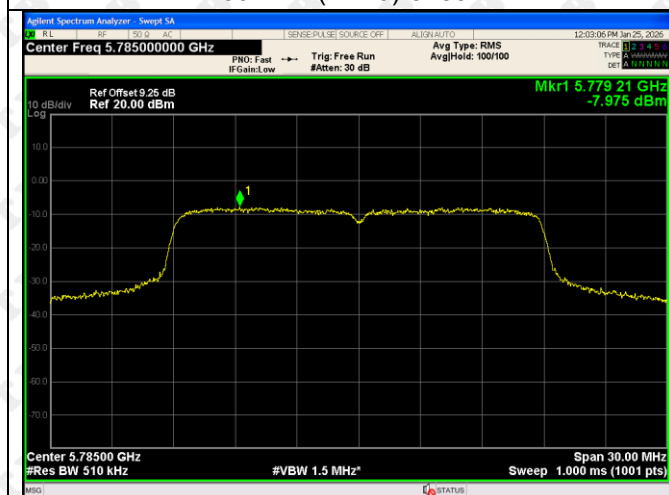
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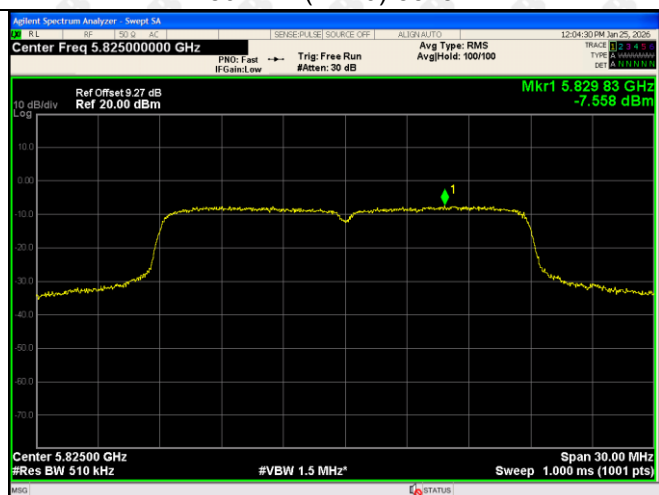
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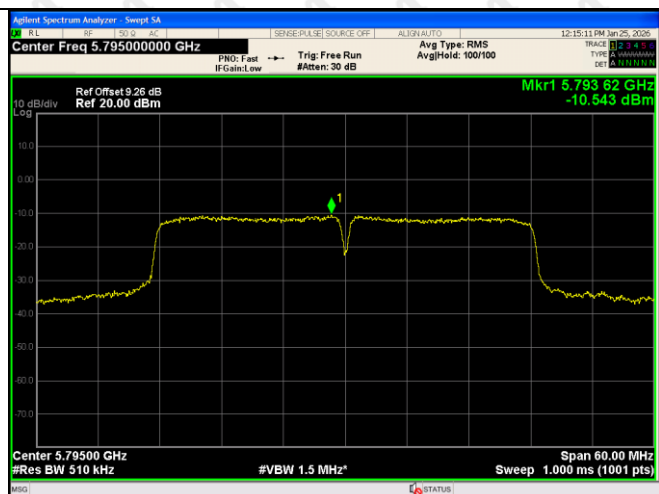
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5802.11n(HT40)-5755



802.11n(HT40)-5795



ANT2:

802.11a-5745



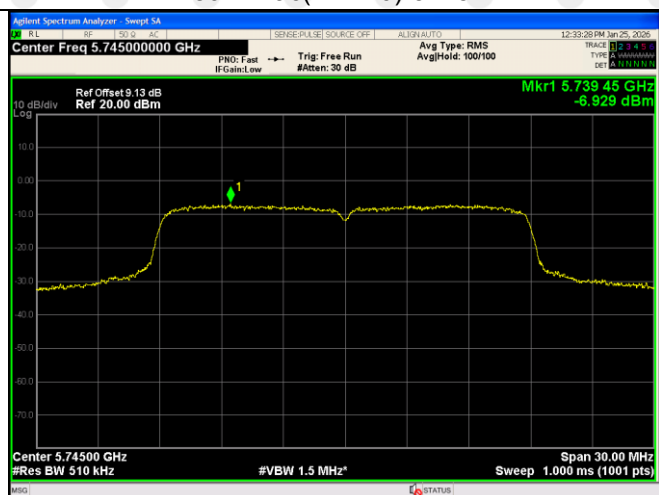
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802.11a-5825

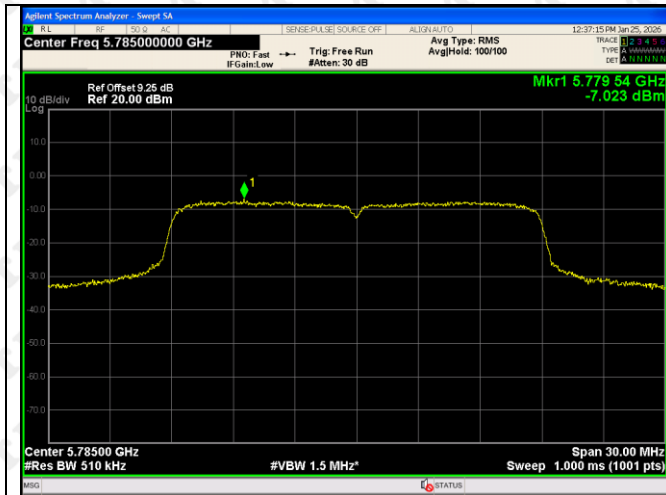


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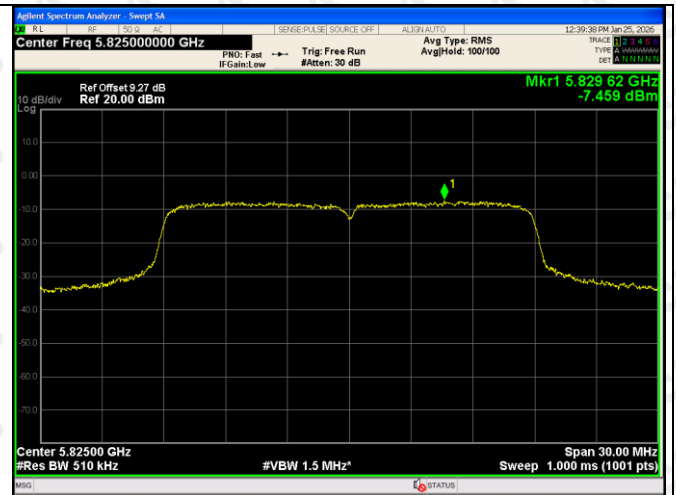


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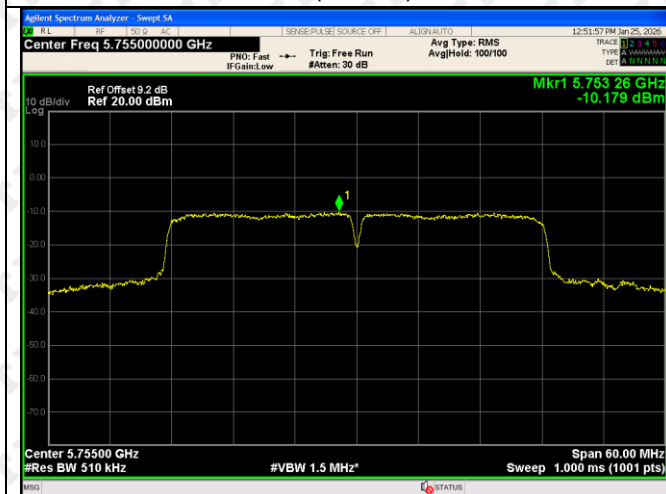
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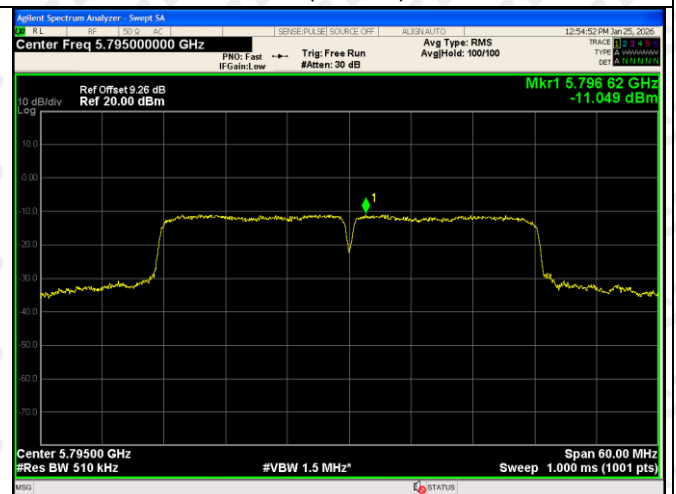
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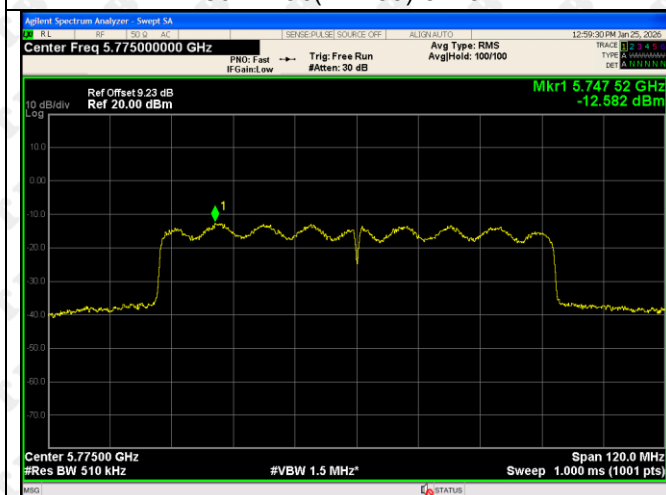
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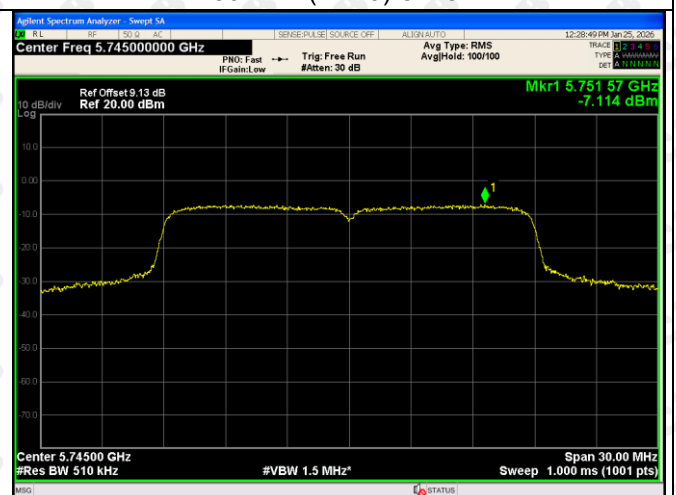
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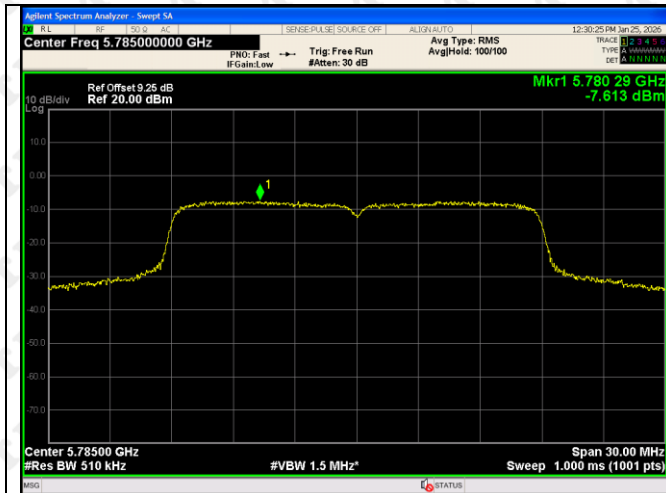
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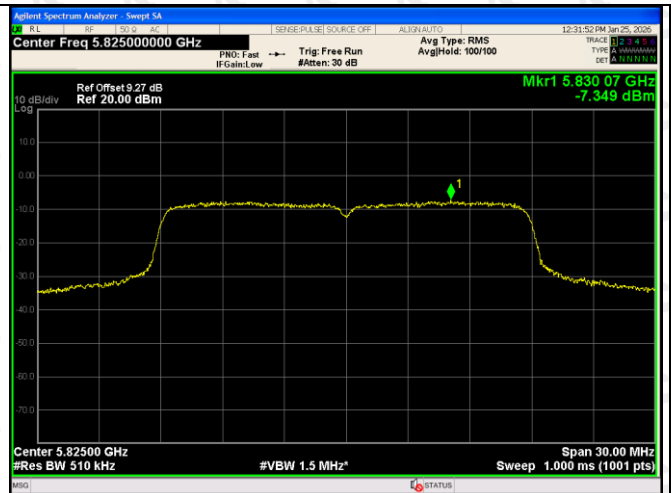
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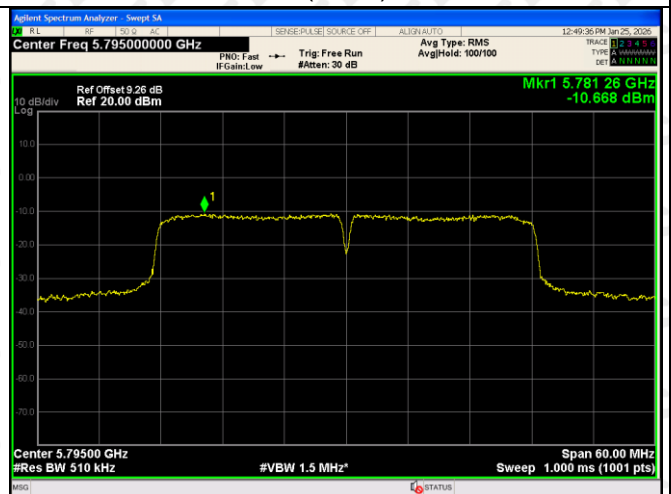
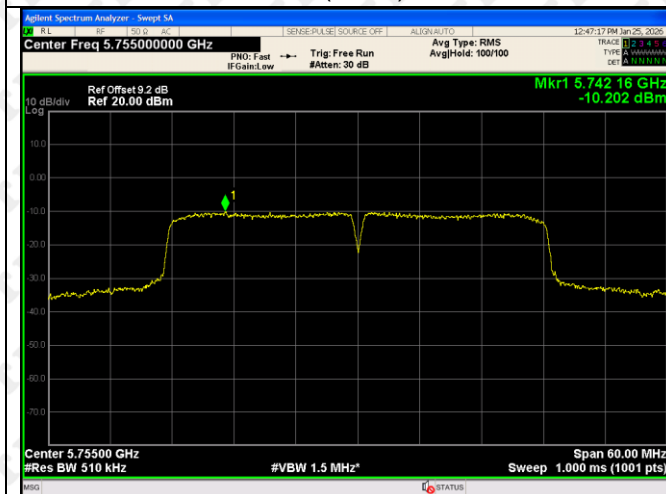
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5802.11n(HT40)-5755

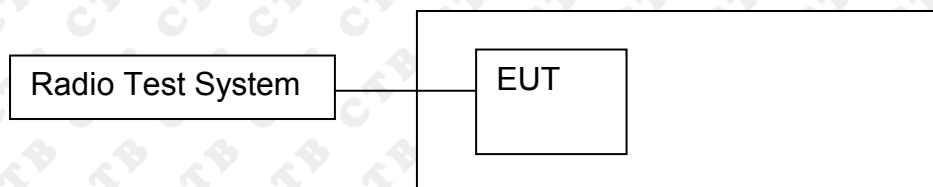


802.11n(HT40)-5795



12. FREQUENCY STABILITY

12.1 Block Diagram Of Test Setup



12.2 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.

12.3 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.

12.4 Test Result

ANT1:

TX Frequency (5150-5250MHz)

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5180.0065	5180	0.0065	1.2510
		V max (V)	132	5180.0206	5180	0.0206	3.9796
		V min (V)	108	5180.0371	5180	0.0371	7.1564
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5180.0081	5180	0.0081	1.5668
		T (°C)	10	5180.0261	5180	0.0261	5.0317
		T (°C)	20	5180.0170	5180	0.0170	3.2865
		T (°C)	30	5180.0240	5180	0.0240	4.6301
		T (°C)	40	5180.0416	5180	0.0416	8.0265
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5200.0205	5200	0.0205	3.9460
		V max (V)	132	5200.0264	5200	0.0264	5.0753
		V min (V)	108	5200.0416	5200	0.0416	8.0093
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5200.0184	5200	0.0184	3.5478
		T (°C)	10	5200.0373	5200	0.0373	7.1732
		T (°C)	20	5200.0264	5200	0.0264	5.0751
		T (°C)	30	5200.0208	5200	0.0208	3.9905
		T (°C)	40	5200.0179	5200	0.0179	3.4329
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5240.0455	5240	0.0455	8.6738
		V max (V)	132	5240.0432	5240	0.0432	8.2524
		V min (V)	108	5240.0199	5240	0.0199	3.8055
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5240.0409	5240	0.0409	7.8143
		T (°C)	10	5240.0233	5240	0.0233	4.4546
		T (°C)	20	5240.0495	5240	0.0495	9.4374
		T (°C)	30	5240.0308	5240	0.0308	5.8721
		T (°C)	40	5240.0112	5240	0.0112	2.1464
Limits				±20ppm			
Result				Complies			

ANT2:

TX Frequency (5150-5250MHz)

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5180.0699	5180	0.0699	13.4878
		V max (V)	132	5180.0646	5180	0.0646	12.4782
		V min (V)	108	5180.0260	5180	0.0260	5.0123
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5180.0683	5180	0.0683	13.1842
		T (°C)	10	5180.0218	5180	0.0218	4.2024
		T (°C)	20	5180.0388	5180	0.0388	7.4947
		T (°C)	30	5180.0292	5180	0.0292	5.6440
		T (°C)	40	5180.0805	5180	0.0805	15.5368
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5200.0725	5200	0.0725	13.9491
		V max (V)	132	5200.0411	5200	0.0411	7.8958
		V min (V)	108	5200.0760	5200	0.0760	14.6223
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5200.0489	5200	0.0489	9.3975
		T (°C)	10	5200.0347	5200	0.0347	6.6698
		T (°C)	20	5200.0807	5200	0.0807	15.5174
		T (°C)	30	5200.0641	5200	0.0641	12.3324
		T (°C)	40	5200.0581	5200	0.0581	11.1822
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5240.0261	5240	0.0261	4.9737
		V max (V)	132	5240.0339	5240	0.0339	6.4663
		V min (V)	108	5240.0903	5240	0.0903	17.2353
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5240.0154	5240	0.0154	2.9303
		T (°C)	10	5240.0250	5240	0.0250	4.7650
		T (°C)	20	5240.0673	5240	0.0673	12.8393
		T (°C)	30	5240.0307	5240	0.0307	5.8505
		T (°C)	40	5240.0117	5240	0.0117	2.2269
Limits				±20ppm			
Result				Complies			

ANT1:

TX Frequency (5725-5850MHz)

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5745.0113	5745	0.0113	1.9658
		V max (V)	132	5745.0111	5745	0.0111	1.9292
		V min (V)	108	5745.0113	5745	0.0113	1.9658
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5745.0595	5745	0.0595	10.3617
		T (°C)	10	5745.0279	5745	0.0279	4.8607
		T (°C)	20	5745.0858	5745	0.0858	14.9407
		T (°C)	30	5745.0532	5745	0.0532	9.2683
		T (°C)	40	5745.0397	5745	0.0397	6.9169
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5785.0264	5785	0.0264	4.5599
		V max (V)	132	5785.0036	5785	0.0036	0.6261
		V min (V)	108	5785.0713	5785	0.0713	12.3233
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5785.0696	5785	0.0696	12.0336
		T (°C)	10	5785.0278	5785	0.0278	4.8093
		T (°C)	20	5785.0885	5785	0.0885	15.2945
		T (°C)	30	5785.0738	5785	0.0738	12.7586
		T (°C)	40	5785.0247	5785	0.0247	4.2765
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5825.0018	5825	0.0018	0.3056
		V max (V)	132	5825.0263	5825	0.0263	4.5092
		V min (V)	108	5825.0670	5825	0.0670	11.4946
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5825.0722	5825	0.0722	12.3936
		T (°C)	10	5825.0067	5825	0.0067	1.1491
		T (°C)	20	5825.0656	5825	0.0656	11.2692
		T (°C)	30	5825.0823	5825	0.0823	14.1362
		T (°C)	40	5825.0177	5825	0.0177	3.0367
Limits				±20ppm			
Result				Complies			

ANT2:

TX Frequency (5725-5850MHz)

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5745.0079	5745	0.0079	1.3678
		V max (V)	132	5745.0270	5745	0.0270	4.7028
		V min (V)	108	5745.0038	5745	0.0038	0.6624
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5745.0802	5745	0.0802	13.9563
		T (°C)	10	5745.0350	5745	0.0350	6.0846
		T (°C)	20	5745.0285	5745	0.0285	4.9623
		T (°C)	30	5745.0813	5745	0.0813	14.1460
		T (°C)	40	5745.0401	5745	0.0401	6.9871
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5785.0371	5785	0.0371	6.4115
		V max (V)	132	5785.0733	5785	0.0733	12.6748
		V min (V)	108	5785.0258	5785	0.0258	4.4551
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5785.0741	5785	0.0741	12.8018
		T (°C)	10	5785.0892	5785	0.0892	15.4196
		T (°C)	20	5785.0112	5785	0.0112	1.9359
		T (°C)	30	5785.0888	5785	0.0888	15.3528
		T (°C)	40	5785.0188	5785	0.0188	3.2469
		T (°C)	50	5785.0163	5785	0.0163	2.8214
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5825.0438	5825	0.0438	7.5108
		V max (V)	132	5825.0620	5825	0.0620	10.6497
		V min (V)	108	5825.0650	5825	0.0650	11.1667
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5825.0099	5825	0.0099	1.7013
		T (°C)	10	5825.0447	5825	0.0447	7.6789
		T (°C)	20	5825.0083	5825	0.0083	1.4281
		T (°C)	30	5825.0765	5825	0.0765	13.1311
		T (°C)	40	5825.0801	5825	0.0801	13.7467
Limits				±20ppm			
Result				Complies			

13. OPERATION IN THE ABSENCE OF INFORMATION TO THE TRANSMIT

13.1 Requirement

15.407(c) requirement:

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 signal ling 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.

13.2 Test Results

Operation in the absence of information to the transmit:

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ASK message transmitting from remote device and verify whether it shall resend or discontinue transmission. (manufacturer declare)

14. ANTENNA REQUIREMENT

15.203 requirement:

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.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:

The antenna is External antenna and no consideration of replacement. The best case gain of the antenna is WiFi (5.2G):Ant1: 1.67dBi, Ant2: 1.67dBi, WiFi (5.8G):Ant1: 1.12dBi, Ant2: 1.12dBi.

15. EUT TEST SETUP PHOTOGRAPHS

Spurious emissions

Below 1GHz



Above 1GHz



Conducted Emission



***** END OF REPORT *****