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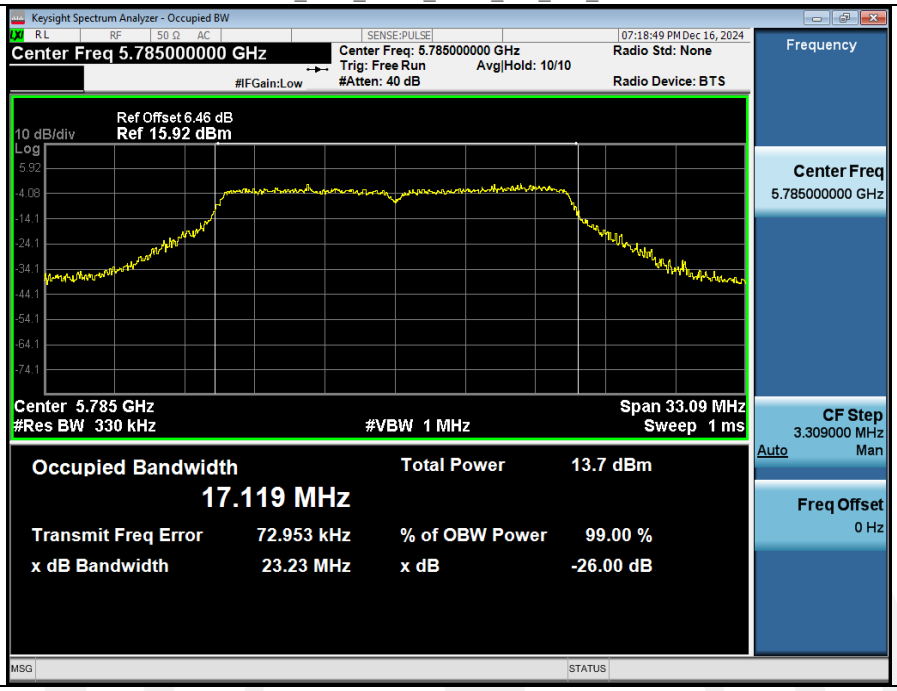

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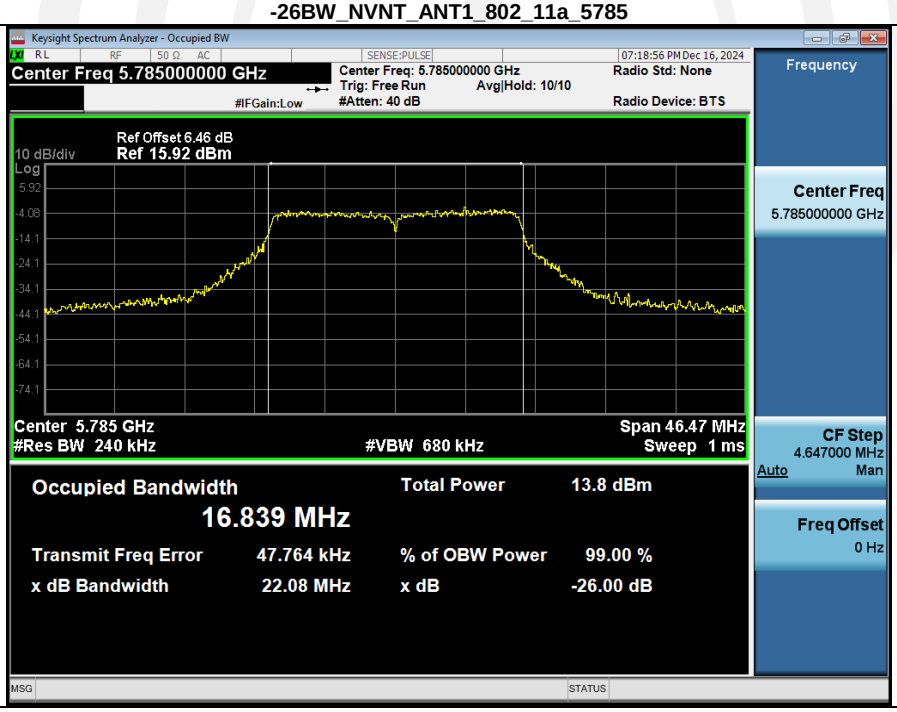

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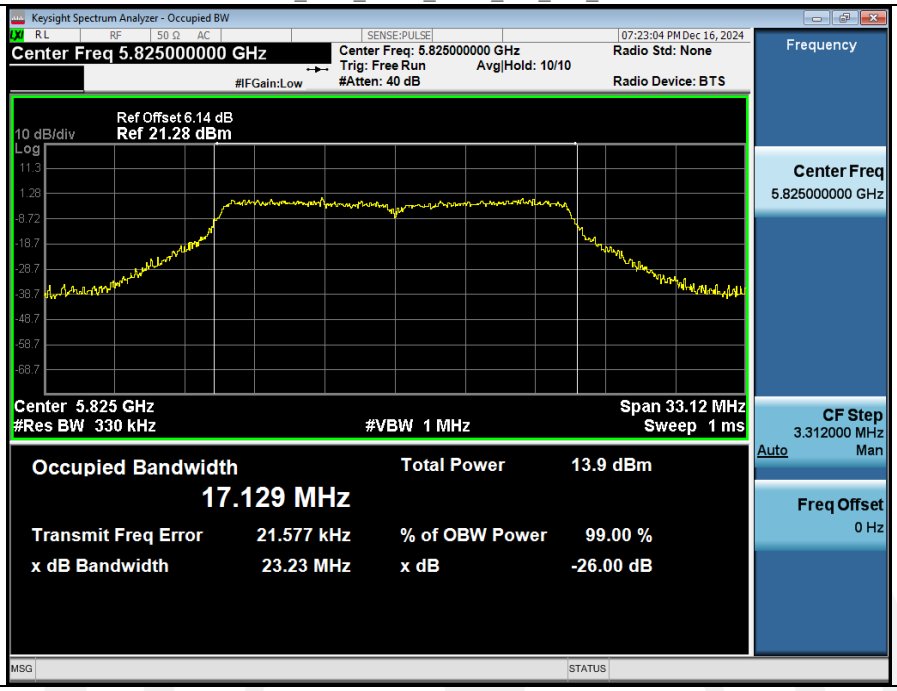

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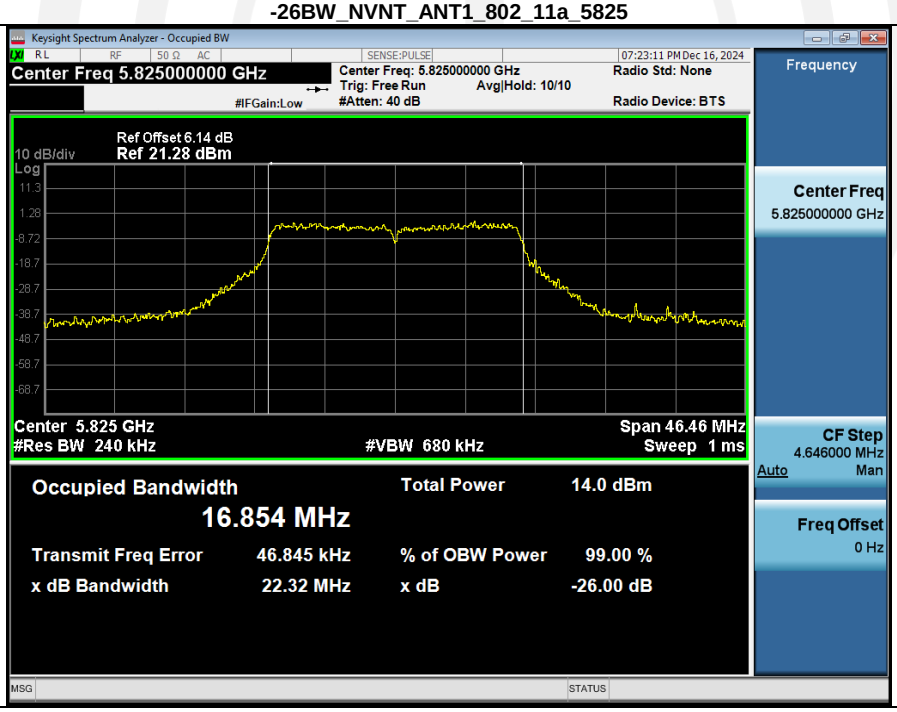

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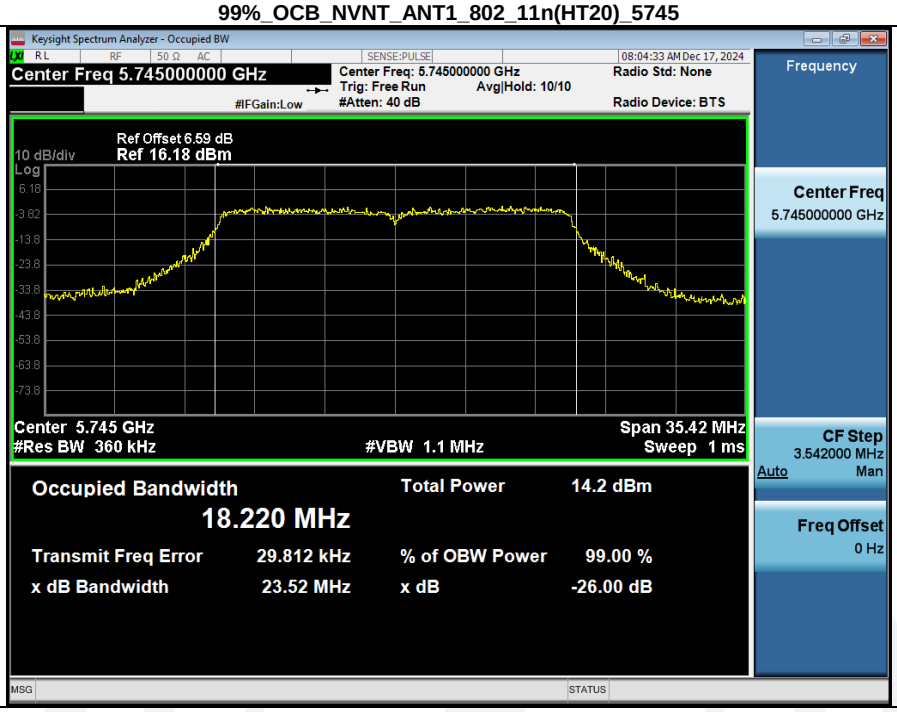

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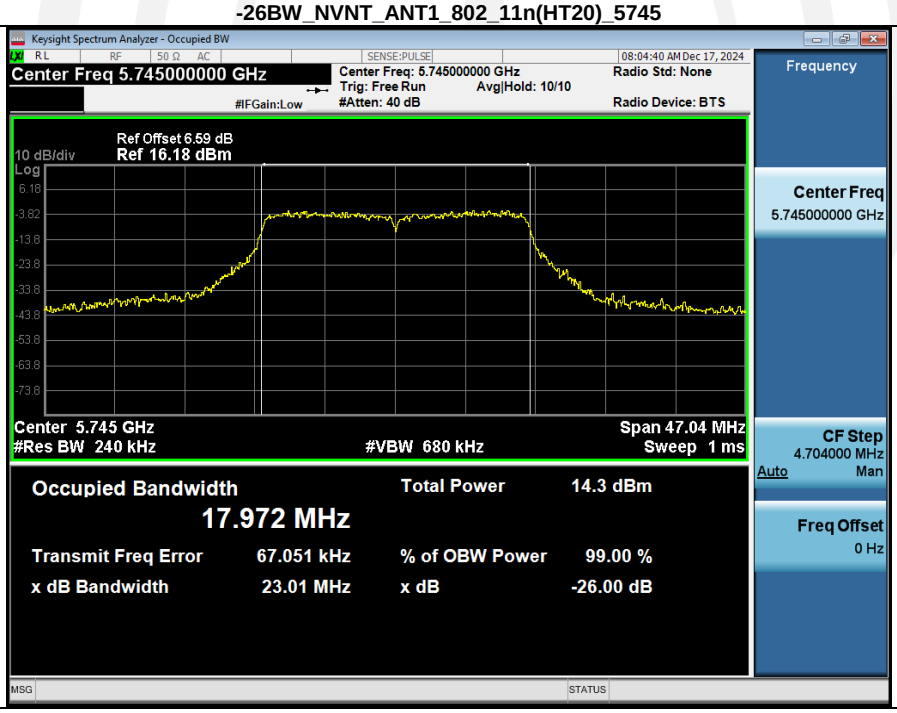

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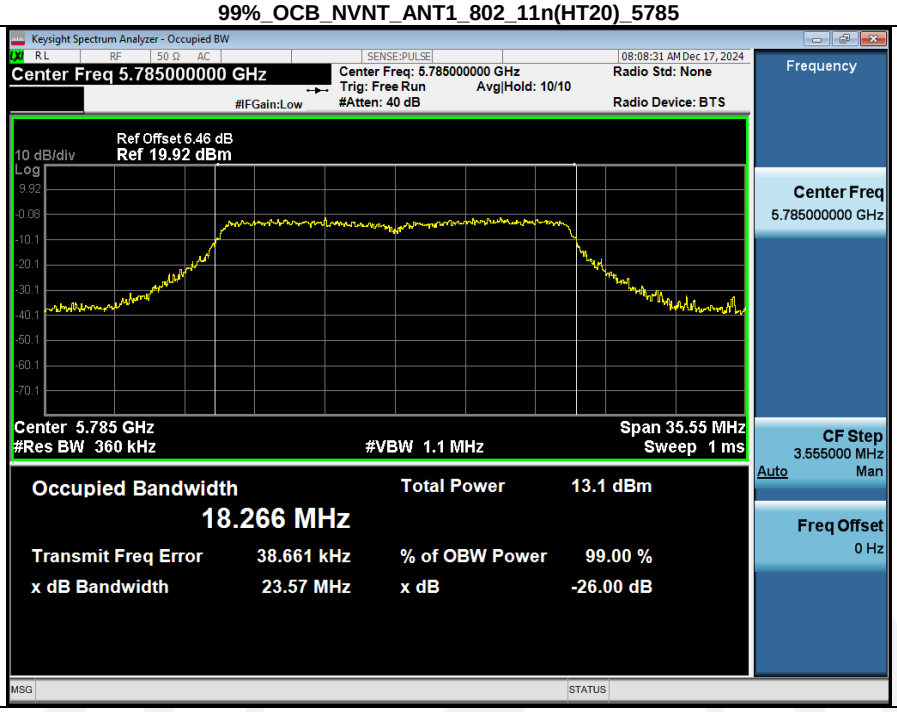

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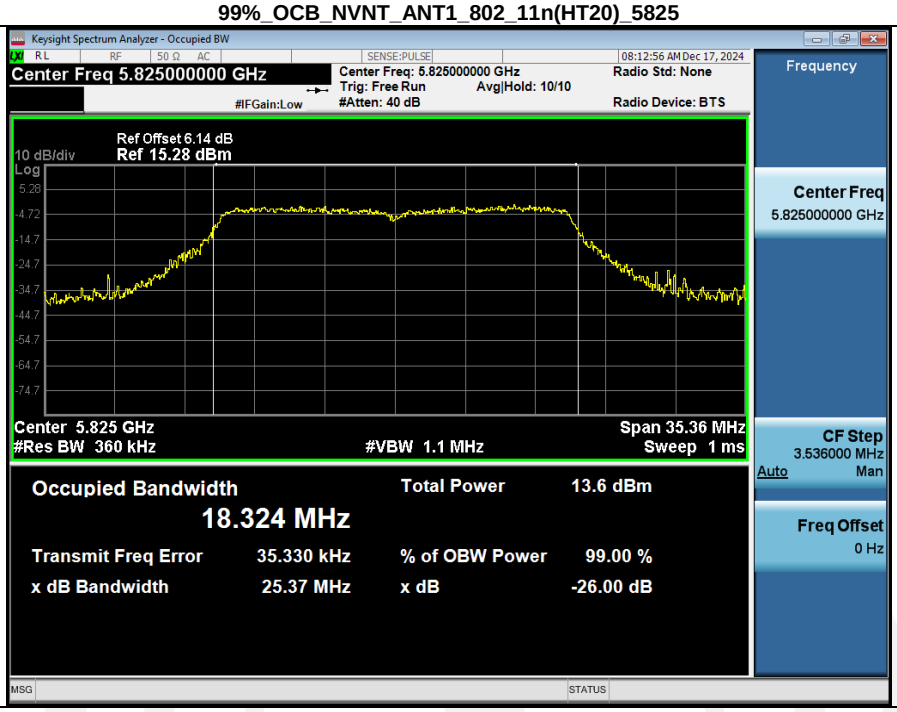

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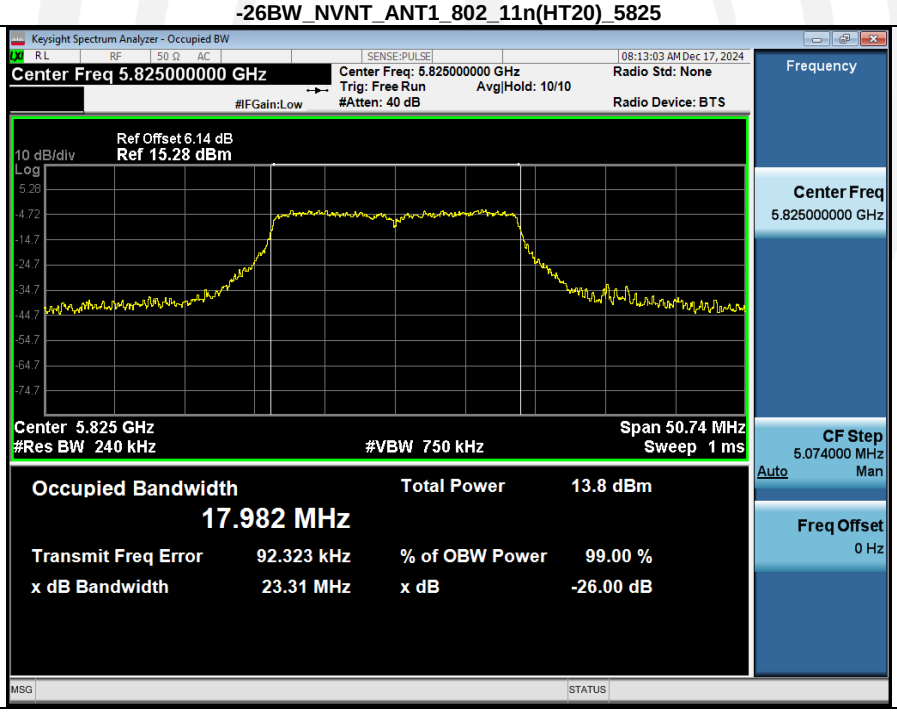

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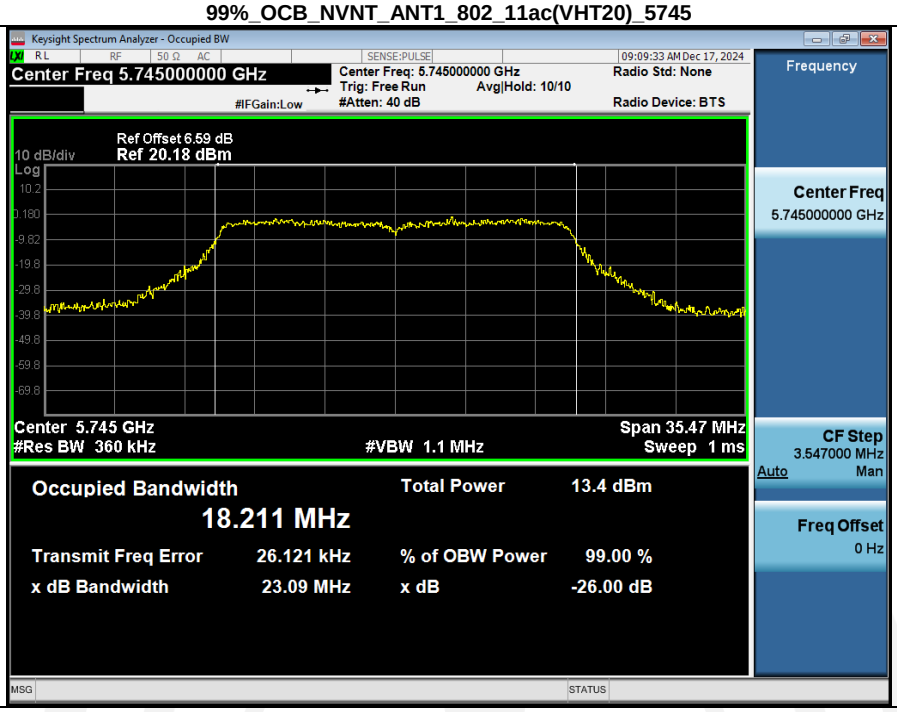

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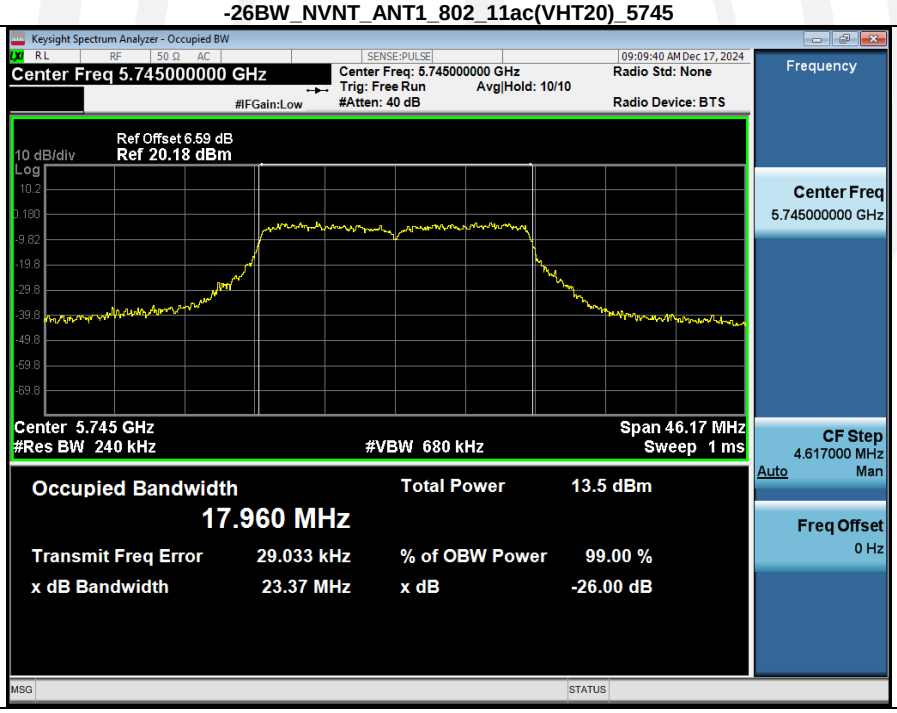

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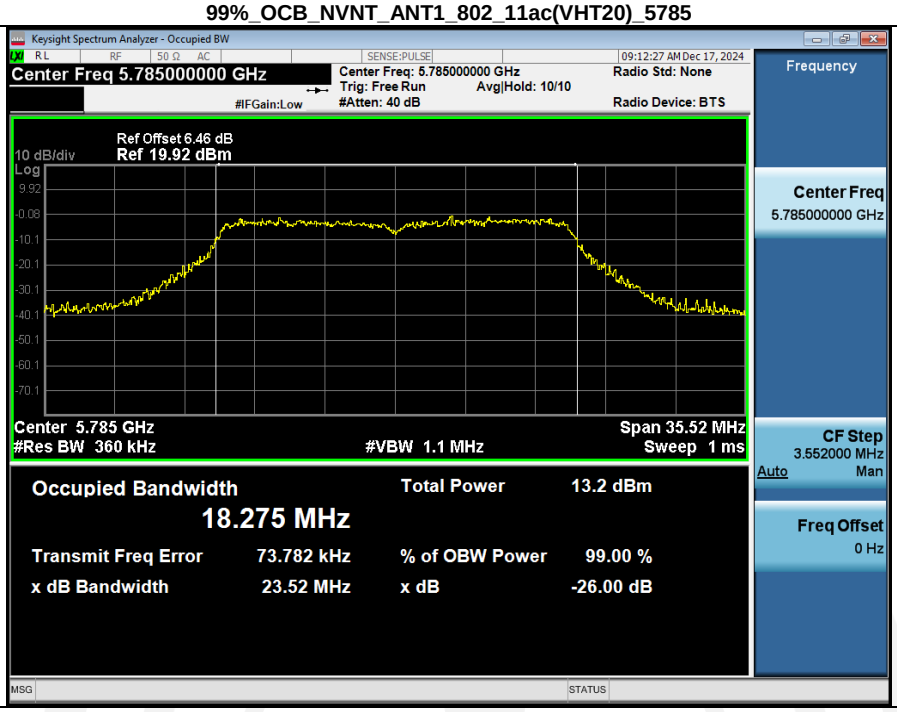

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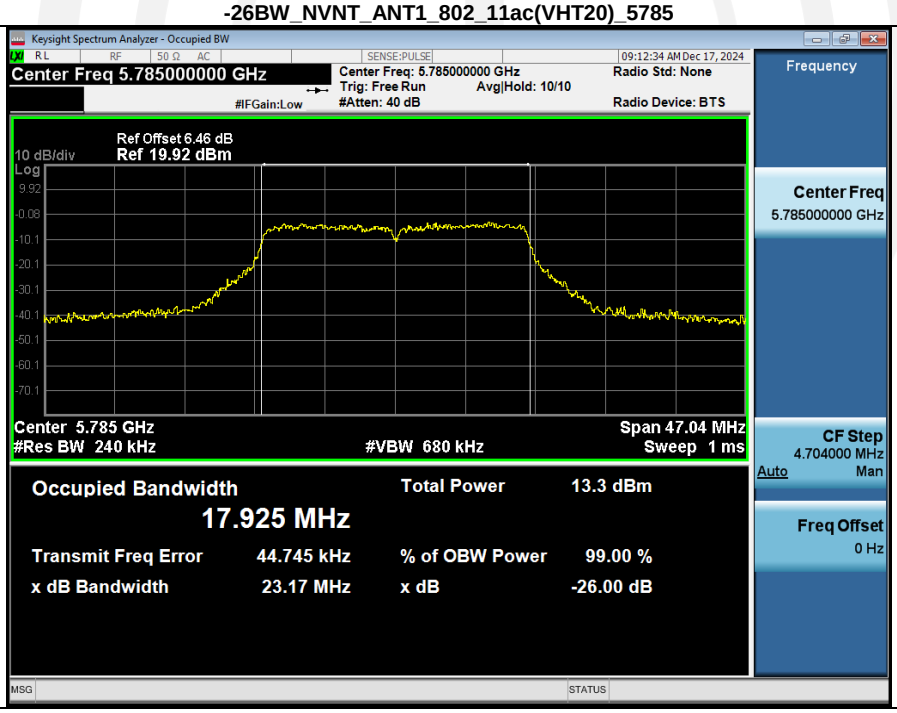

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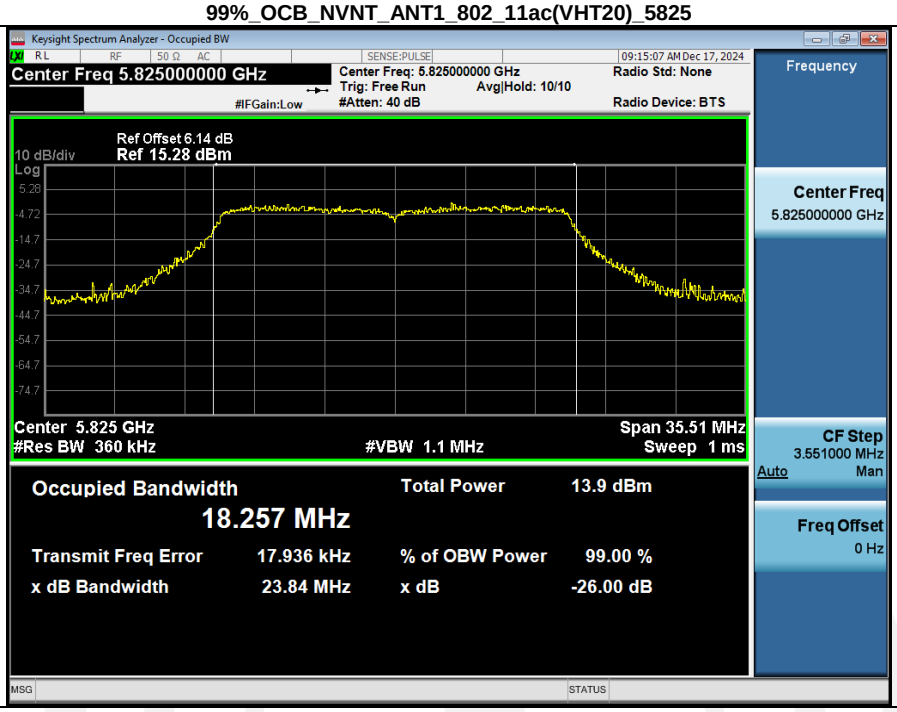

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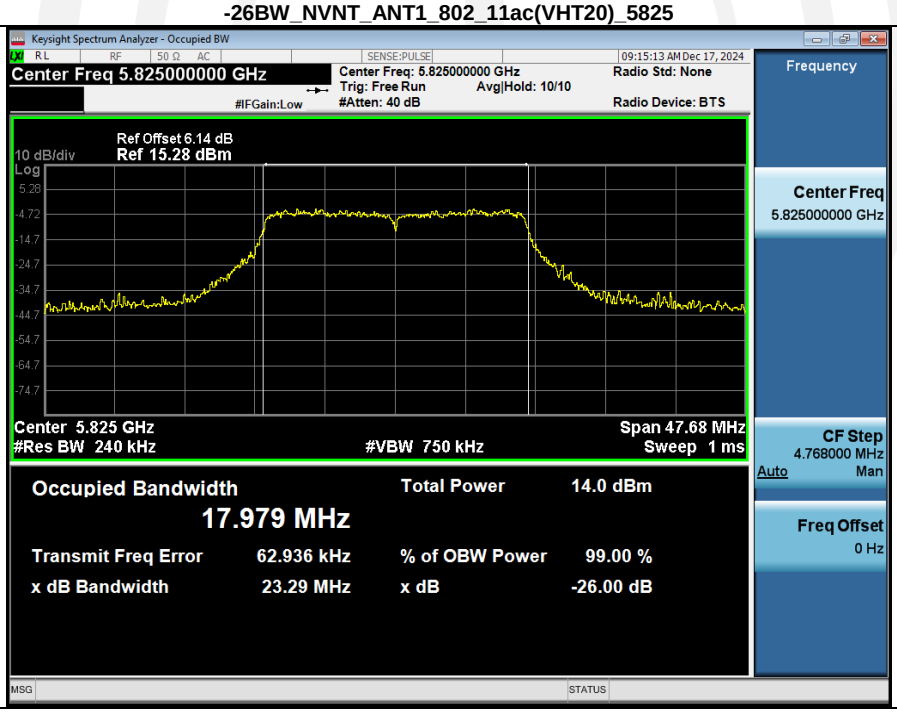

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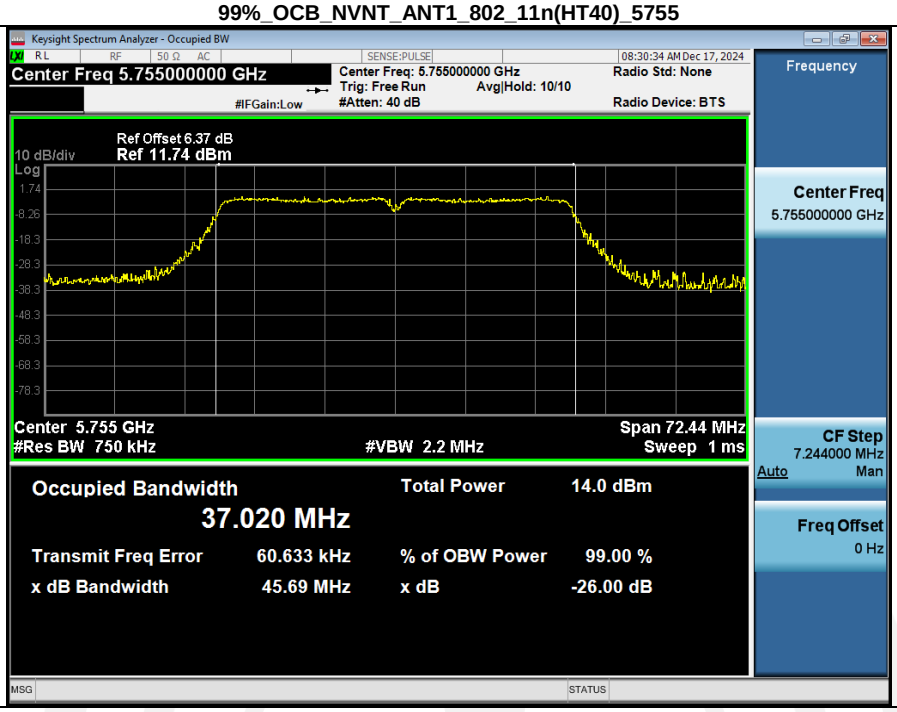

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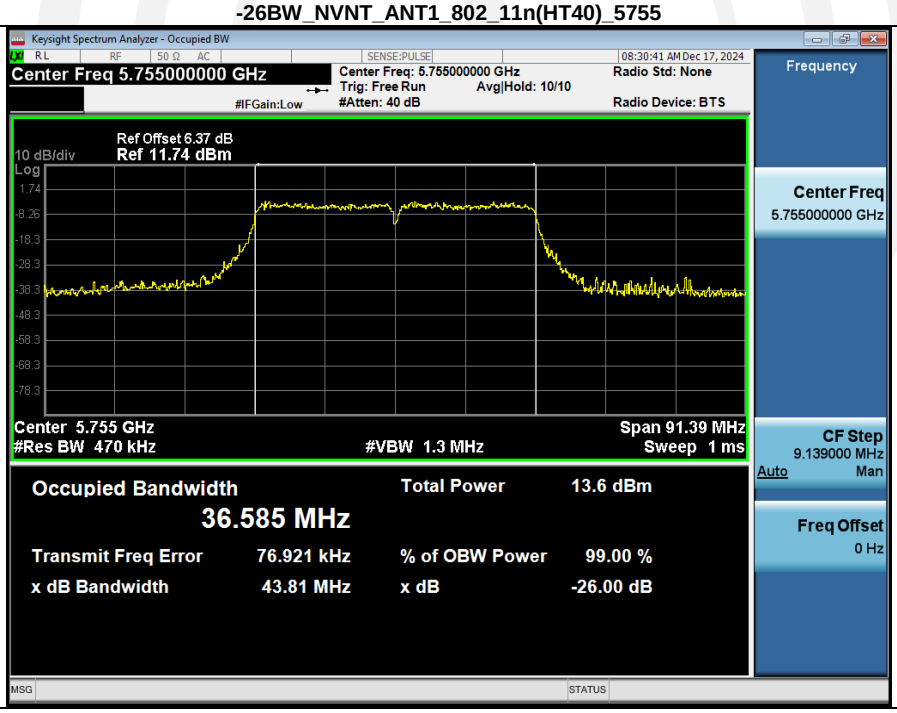

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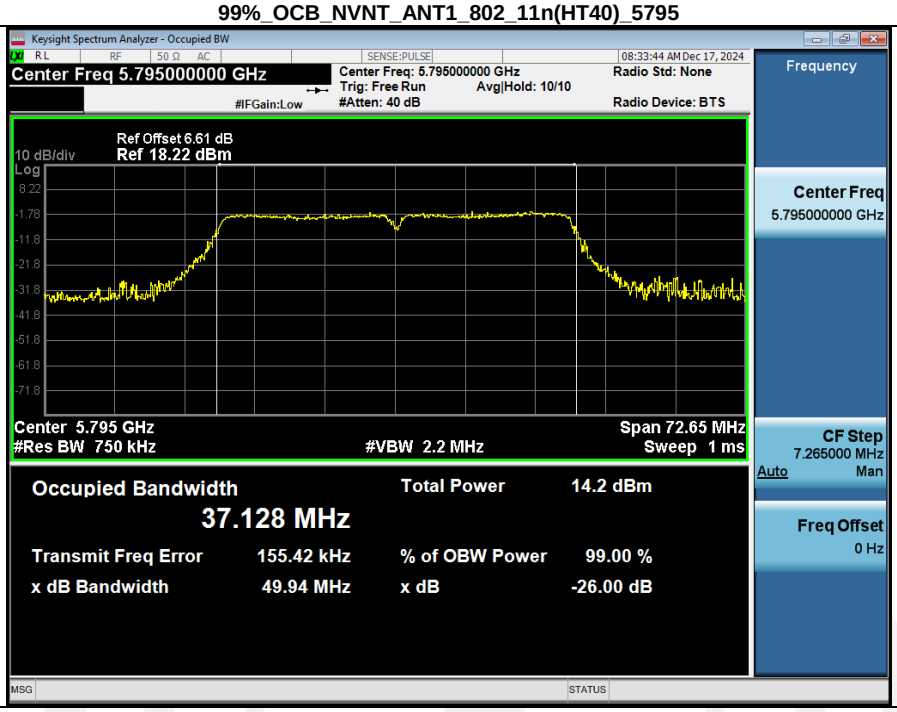

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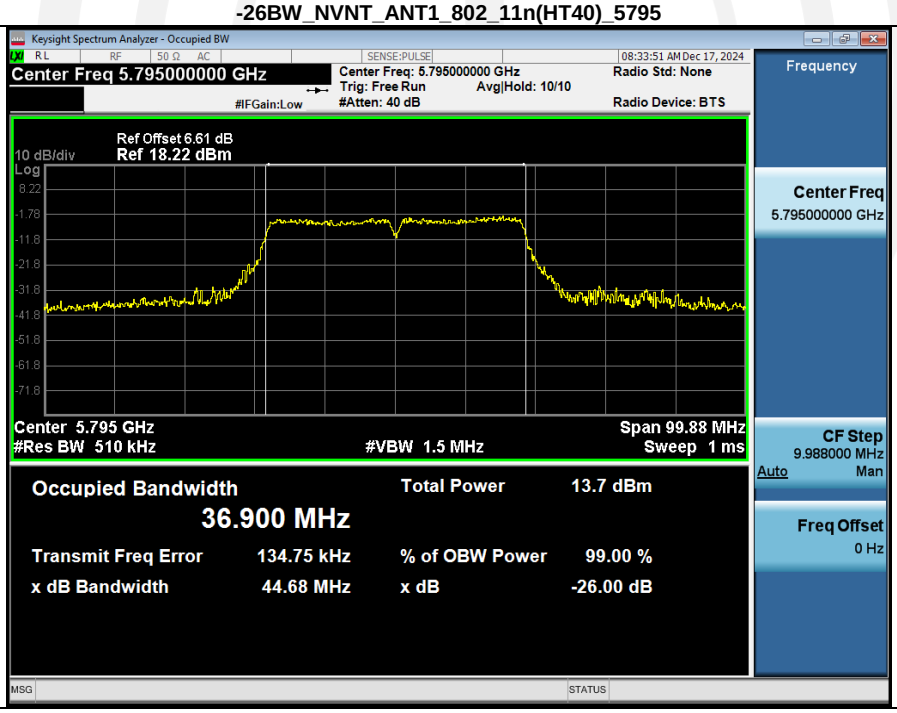

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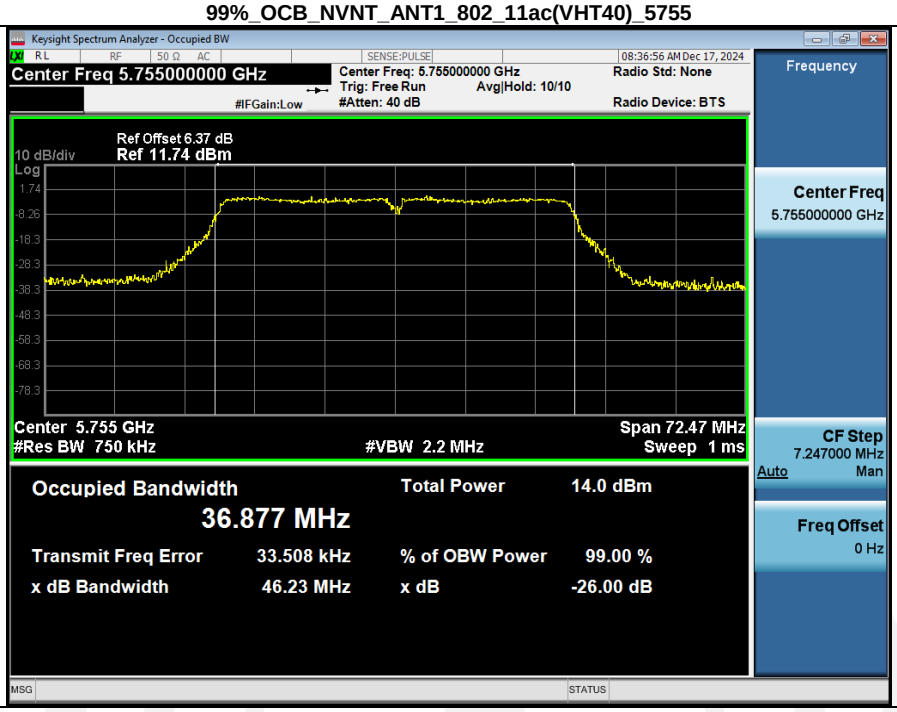

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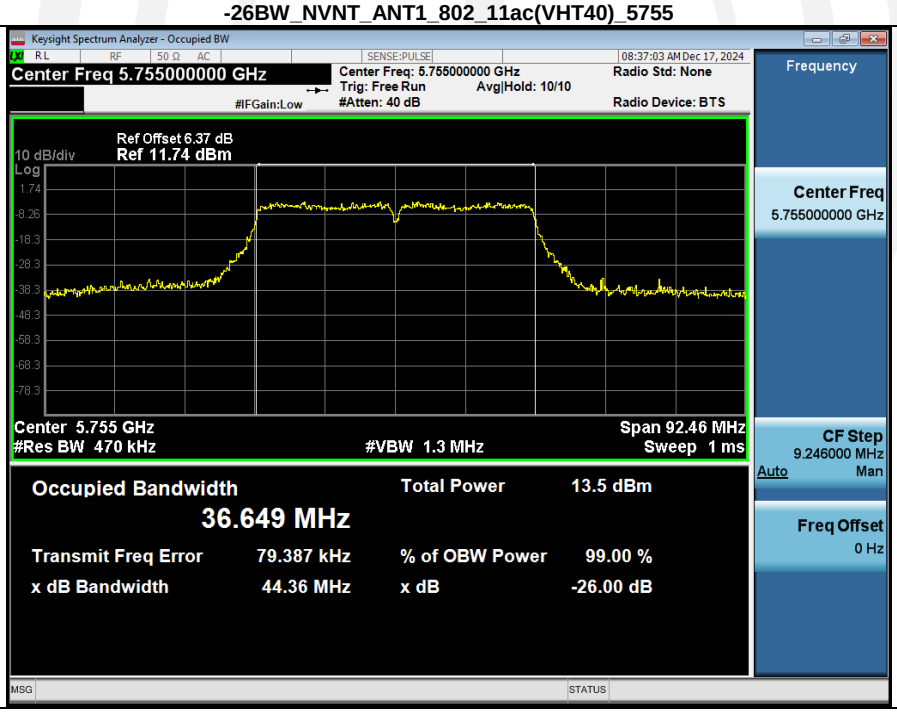

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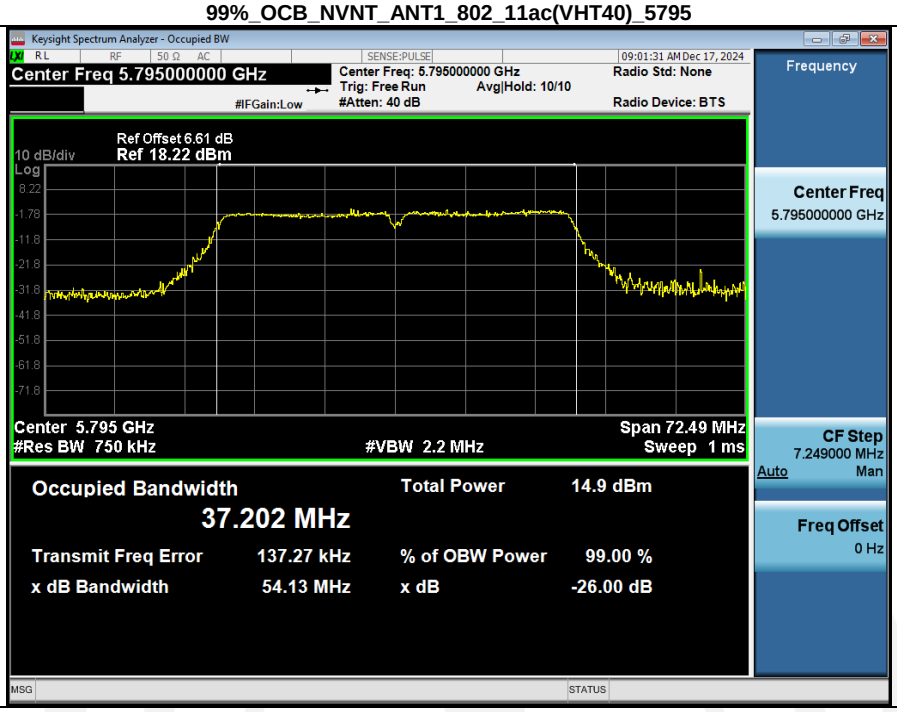

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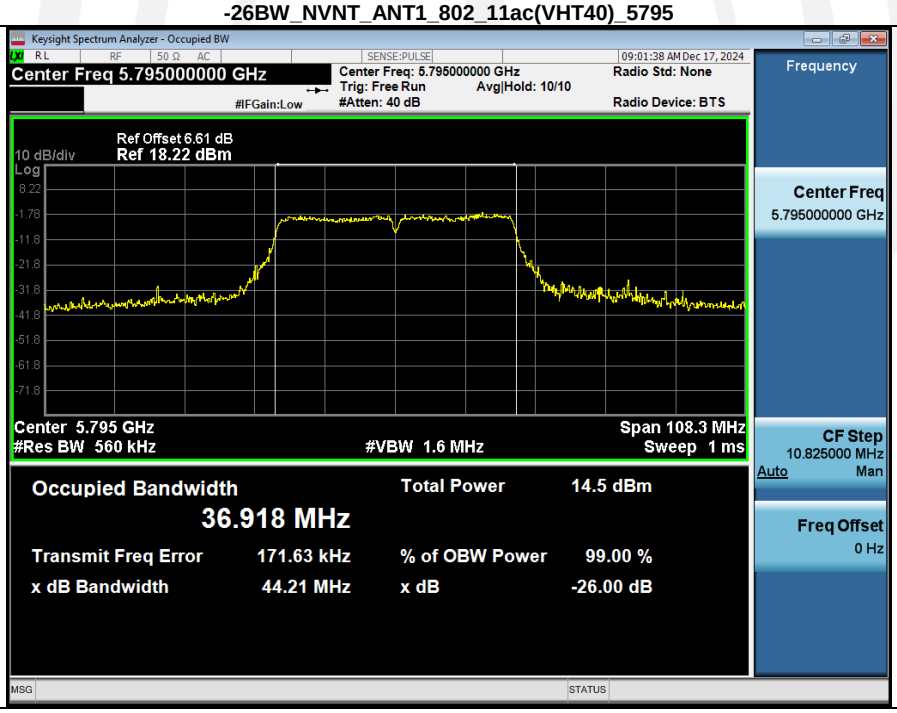

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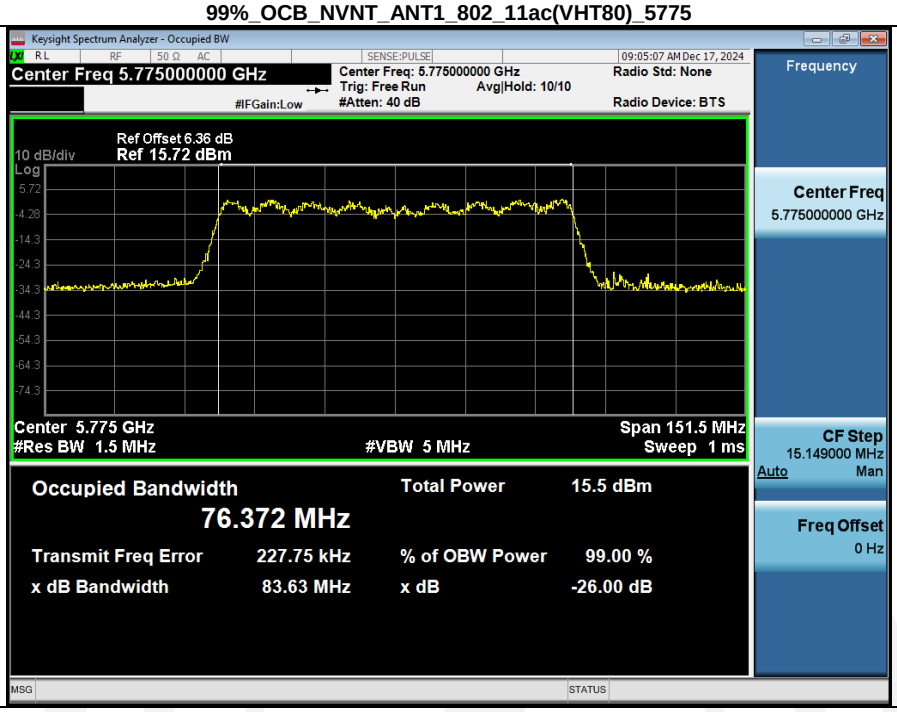

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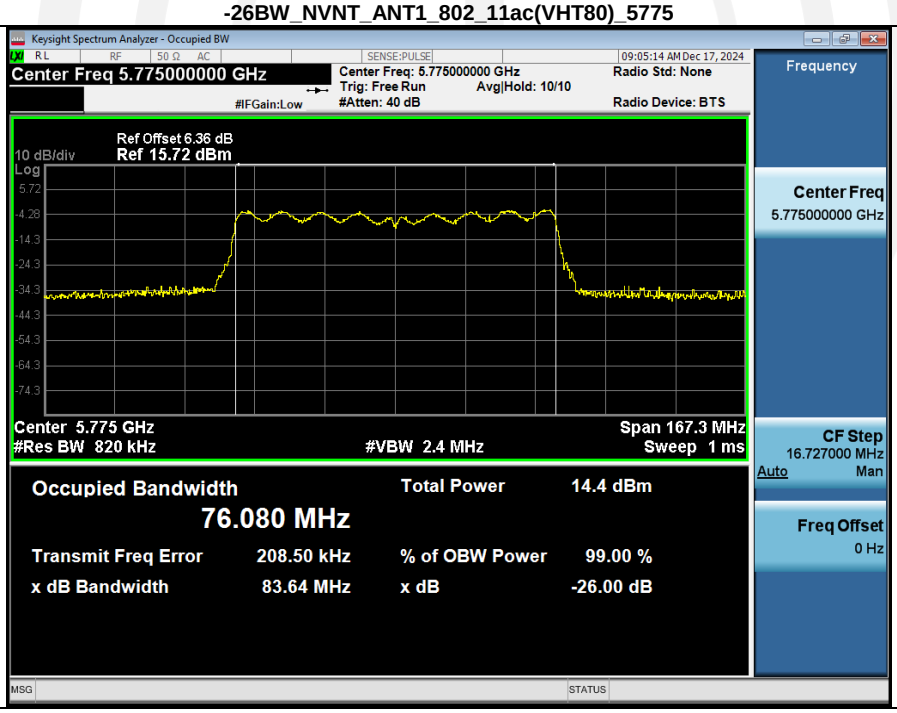
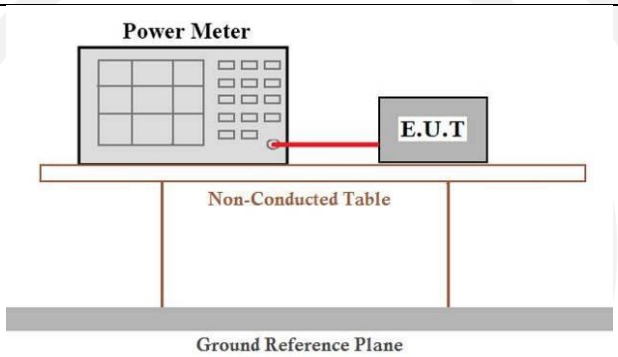


4.4 Peak Transmit Power

Test Requirement:	FCC Part15 E Section 15.407, RSS-247 §6.2
Test Method:	KDB 789033 D02 General UNII Test Procedures New Rules v02r01
Limit:	For the band 5.15-5.25GHz, 5.25-5.35GHz, 5.47-5.725GHz, the maximum conducted output power over the frequency bands of operation shall not exceed 250mW. For the band 5.725-5.85GHz, the maximum conducted output power over the frequency bands of operation shall not exceed 1W. IC:

Section	Test Item	Limit	Frequency Range (MHz)	Result
6.2.1.1	Peak Output Power	200 mW or 10 + 10 $\log_{10}$B, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz	5150-5250	PASS
6.2.2.1 6.2.3.1		The lesser of 250 mW or 11 dBm + 10 log (26 dB emission bandwidth)	5250-5350 5470-5725	
6.2.4.1		1 watt	5725-5825	

Test setup:



Test procedure:

Measurement using an RF average power meter

(i) Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied

a) The EUT is configured to transmit continuously or to transmit with a constant duty cycle.

b) At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.

c) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.

(ii) If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in section B).

(iii) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.

(iv) Adjust the measurement in dBm by adding 10 log(1/x) where x is the duty cycle (e.g., 10log(1/0.25) if the duty cycle is 25 percent).

Test Instruments:	Refer to section 3.0 for details
Test mode:	Refer to section 2.2 for details
Test results:	Pass

Measurement Data:

Band 1 (5150-5250 MHz)

Condition	Antenna	Modulation	Frequency (MHz)	Conducted Power(dBm)	Duty factor(dB)	Total Power(dBm)	limit(dBm)	Result
NVNT	ANT1	802.11a	5180.00	6.37	0.54	**6.91**	24	Pass
NVNT	ANT1	802.11a	5200.00	6.46	0.13	6.59	24	Pass
NVNT	ANT1	802.11a	5240.00	6.46	0.37	6.83	24	Pass
NVNT	ANT1	802.11n(HT20)	5180.00	5.21	0.27	5.48	24	Pass
NVNT	ANT1	802.11n(HT20)	5200.00	5.30	0.13	5.43	24	Pass
NVNT	ANT1	802.11n(HT20)	5240.00	5.45	0.39	5.84	24	Pass
NVNT	ANT1	802.11ac(VHT20)	5180.00	5.40	0.33	5.73	24	Pass
NVNT	ANT1	802.11ac(VHT20)	5200.00	5.39	0.75	6.14	24	Pass
NVNT	ANT1	802.11ac(VHT20)	5240.00	5.59	0.26	5.85	24	Pass
NVNT	ANT1	802.11n(HT40)	5190.00	5.36	0.75	6.11	24	Pass
NVNT	ANT1	802.11n(HT40)	5230.00	5.93	0.53	6.46	24	Pass
NVNT	ANT1	802.11ac(VHT40)	5190.00	5.91	0.26	6.17	24	Pass
NVNT	ANT1	802.11ac(VHT40)	5230.00	5.88	0.39	6.27	24	Pass
NVNT	ANT1	802.11ac(VHT80)	5210.00	5.36	0.70	6.06	24	Pass

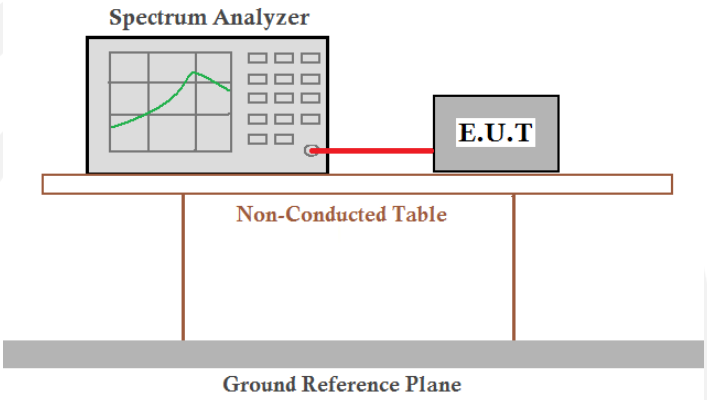
Condition	Antenna	Modulation	Frequency (MHz)	Duty cycle(%)	Duty_factor
NVNT	ANT1	802.11a	5180.00	88.31	0.54
NVNT	ANT1	802.11a	5200.00	97.14	0.13
NVNT	ANT1	802.11a	5240.00	91.89	0.37
NVNT	ANT1	802.11n(HT20)	5180.00	94.03	0.27
NVNT	ANT1	802.11n(HT20)	5200.00	96.97	0.13
NVNT	ANT1	802.11n(HT20)	5240.00	91.43	0.39
NVNT	ANT1	802.11ac(VHT20)	5180.00	92.75	0.33
NVNT	ANT1	802.11ac(VHT20)	5200.00	84.21	0.75
NVNT	ANT1	802.11ac(VHT20)	5240.00	94.12	0.26
NVNT	ANT1	802.11n(HT40)	5190.00	84.21	0.75
NVNT	ANT1	802.11n(HT40)	5230.00	88.57	0.53
NVNT	ANT1	802.11ac(VHT40)	5190.00	94.12	0.26
NVNT	ANT1	802.11ac(VHT40)	5230.00	91.43	0.39
NVNT	ANT1	802.11ac(VHT80)	5210.00	85.18	0.70

Band 4 (5725 – 5850 MHz)

Condition	Antenna	Modulation	Frequency (MHz)	Conducted Power(dBm)	Duty factor(dB)	Total Power(dBm)	limit(dBm)	Result
NVNT	ANT1	802.11a	5745.00	5.97	0.13	6.10	30	Pass
NVNT	ANT1	802.11a	5785.00	6.09	0.43	6.52	30	Pass
NVNT	ANT1	802.11a	5825.00	6.39	0.48	6.87	30	Pass
NVNT	ANT1	802.11n(HT20)	5745.00	6.41	0.33	6.74	30	Pass
NVNT	ANT1	802.11n(HT20)	5785.00	5.47	0.76	6.23	30	Pass
NVNT	ANT1	802.11n(HT20)	5825.00	5.79	0.46	6.25	30	Pass
NVNT	ANT1	802.11ac(VHT20)	5745.00	5.67	0.57	6.24	30	Pass
NVNT	ANT1	802.11ac(VHT20)	5785.00	5.54	0.13	5.67	30	Pass
NVNT	ANT1	802.11ac(VHT20)	5825.00	6.23	0.13	6.36	30	Pass
NVNT	ANT1	802.11n(HT40)	5755.00	5.15	0.65	5.80	30	Pass
NVNT	ANT1	802.11n(HT40)	5795.00	5.47	1.42	6.89	30	Pass
NVNT	ANT1	802.11ac(VHT40)	5755.00	5.24	1.76	**7.00**	30	Pass
NVNT	ANT1	802.11ac(VHT40)	5795.00	5.82	0.39	6.21	30	Pass
NVNT	ANT1	802.11ac(VHT80)	5775.00	4.84	1.38	6.22	30	Pass

Condition	Antenna	Modulation	Frequency (MHz)	Duty cycle(%)	Duty_factor
NVNT	ANT1	802.11a	5745.00	97.14	0.13
NVNT	ANT1	802.11a	5785.00	90.67	0.43
NVNT	ANT1	802.11a	5825.00	89.47	0.48
NVNT	ANT1	802.11n(HT20)	5745.00	92.65	0.33
NVNT	ANT1	802.11n(HT20)	5785.00	84.00	0.76
NVNT	ANT1	802.11n(HT20)	5825.00	90.00	0.46
NVNT	ANT1	802.11ac(VHT20)	5745.00	87.67	0.57
NVNT	ANT1	802.11ac(VHT20)	5785.00	96.97	0.13
NVNT	ANT1	802.11ac(VHT20)	5825.00	96.97	0.13
NVNT	ANT1	802.11n(HT40)	5755.00	86.11	0.65
NVNT	ANT1	802.11n(HT40)	5795.00	72.09	1.42
NVNT	ANT1	802.11ac(VHT40)	5755.00	66.67	1.76
NVNT	ANT1	802.11ac(VHT40)	5795.00	91.43	0.39
NVNT	ANT1	802.11ac(VHT80)	5775.00	72.73	1.38

4.5 Power Spectral Density

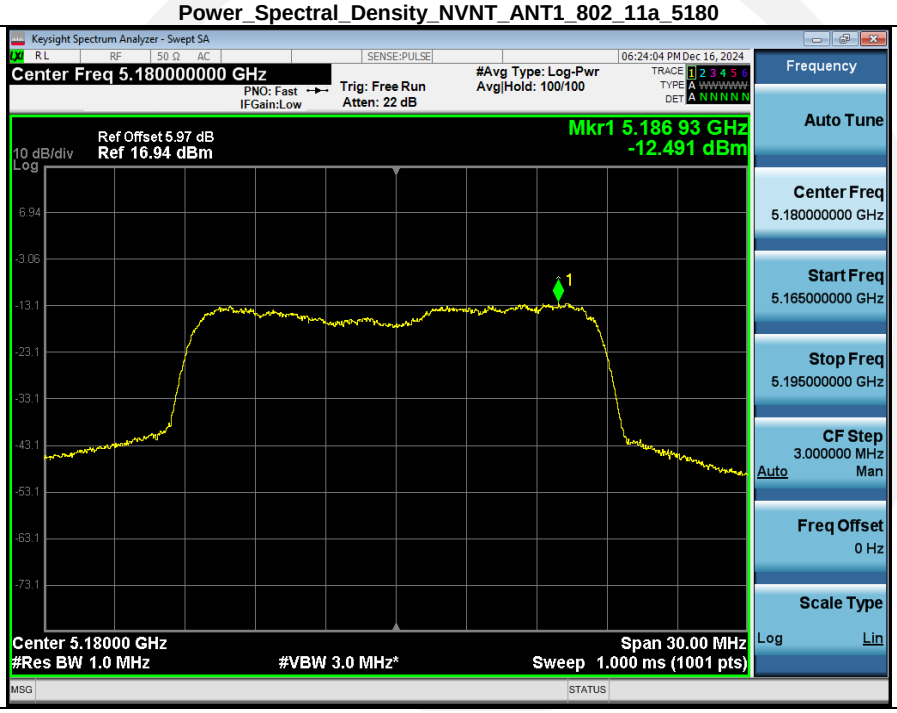
Test Requirement:	FCC Part15 E Section 15.407, RSS-247 §6.2
Test Method:	KDB 789033 D02 General UNII Test Procedures New Rules v02r01
Limit:	FCC: 1.≤11.00dBm/MHz for 5150MHz-5250MHz, 5250-5350MHz and 5470-5725 MHz 2.≤30.00dBm/500KHz for 5725MHz-5850MHz IC: 1.For the 5.15-5.25 GHz, The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band. 2. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
Test setup:	
Test procedure:	1) Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, “Compute power…”. 2) Use the peak search function on the instrument to find the peak of the spectrum. 3) Make the following adjustments to the peak value of the spectrum, if applicable: a) If Method SA-2 or SA-2 Alternative was used, add 10 log(1/x), where x is the duty cycle, to the peak of the spectrum. b) If Method SA-3 Alternative was used and the linear mode was used in step E)2)g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging. 4) The result is the PSD.
Test Instruments:	Refer to section 3.0 for details
Test mode:	Refer to section 2.2 for details
Test results:	Pass

Measurement Data

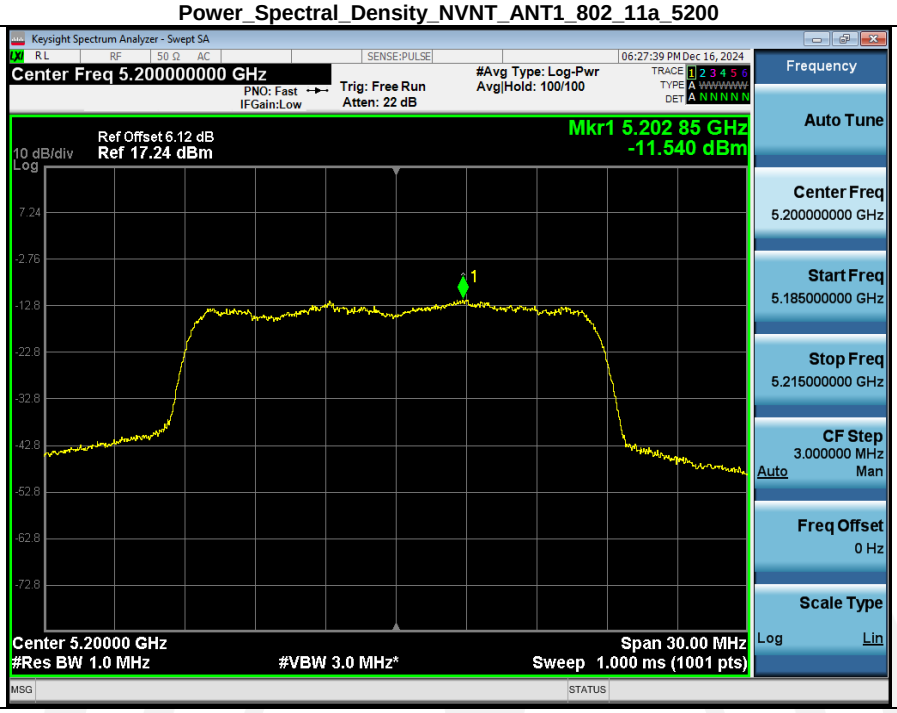
Band 1 (5150-5250 MHz)

Condition	Antenna	Modulation	Frequency (MHz)	PSD(dBm/MHz)	Duty factor(dB)	Total PSD(dBm/MHz)	limit(dBm)	Result
NVNT	ANT1	802.11a	5180.00	-12.49	0.54	-11.95	11	Pass
NVNT	ANT1	802.11a	5200.00	-11.54	0.13	-11.41	11	Pass
NVNT	ANT1	802.11a	5240.00	-10.29	0.37	-9.92	11	Pass
NVNT	ANT1	802.11n(HT20)	5180.00	-13.85	0.27	-13.58	11	Pass
NVNT	ANT1	802.11n(HT20)	5200.00	-13.19	0.13	-13.06	11	Pass
NVNT	ANT1	802.11n(HT20)	5240.00	-12.29	0.39	-11.90	11	Pass
NVNT	ANT1	802.11ac(VHT20)	5180.00	-13.08	0.33	-12.75	11	Pass
NVNT	ANT1	802.11ac(VHT20)	5200.00	-13.29	0.75	-12.54	11	Pass
NVNT	ANT1	802.11ac(VHT20)	5240.00	-13.51	0.26	-13.25	11	Pass
NVNT	ANT1	802.11n(HT40)	5190.00	-22.02	0.75	-21.27	11	Pass
NVNT	ANT1	802.11n(HT40)	5230.00	-18.54	0.53	-18.01	11	Pass
NVNT	ANT1	802.11ac(VHT40)	5190.00	-22.86	0.26	-22.59	11	Pass
NVNT	ANT1	802.11ac(VHT40)	5230.00	-21.50	0.39	-21.11	11	Pass
NVNT	ANT1	802.11ac(VHT80)	5210.00	-23.62	0.70	-22.92	11	Pass

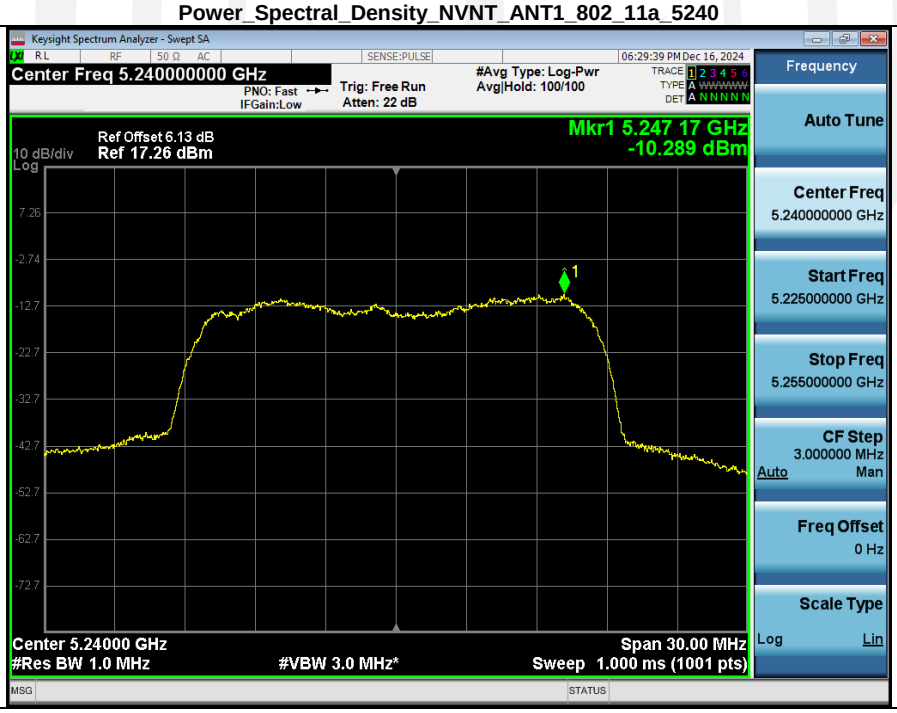
Power_Spectral_Density_NVNT_ANT1_802_11a_5180



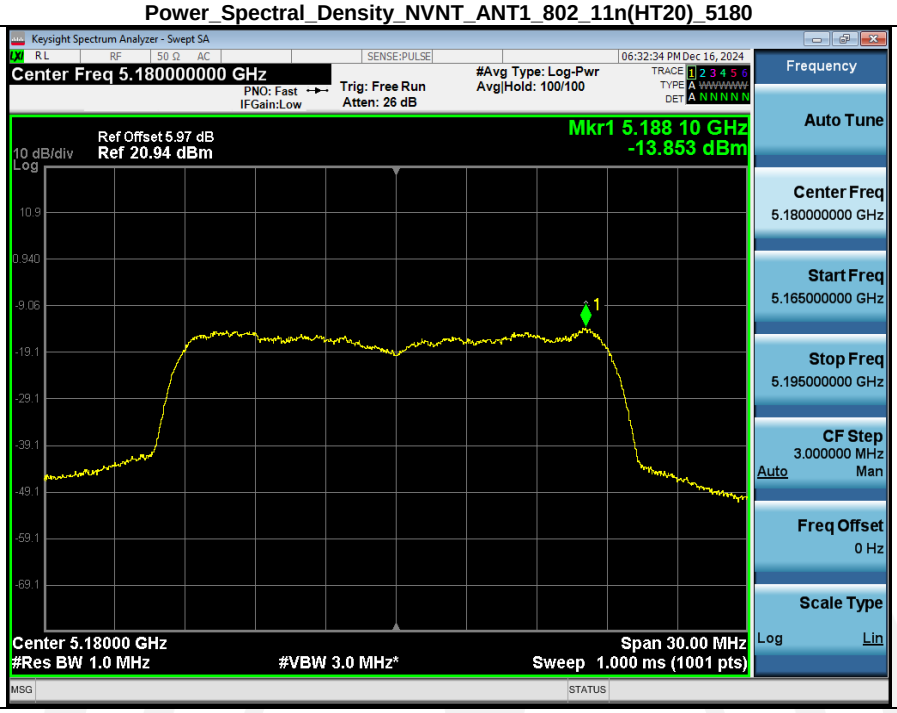
Power_Spectral_Density_NVNT_ANT1_802_11a_5200



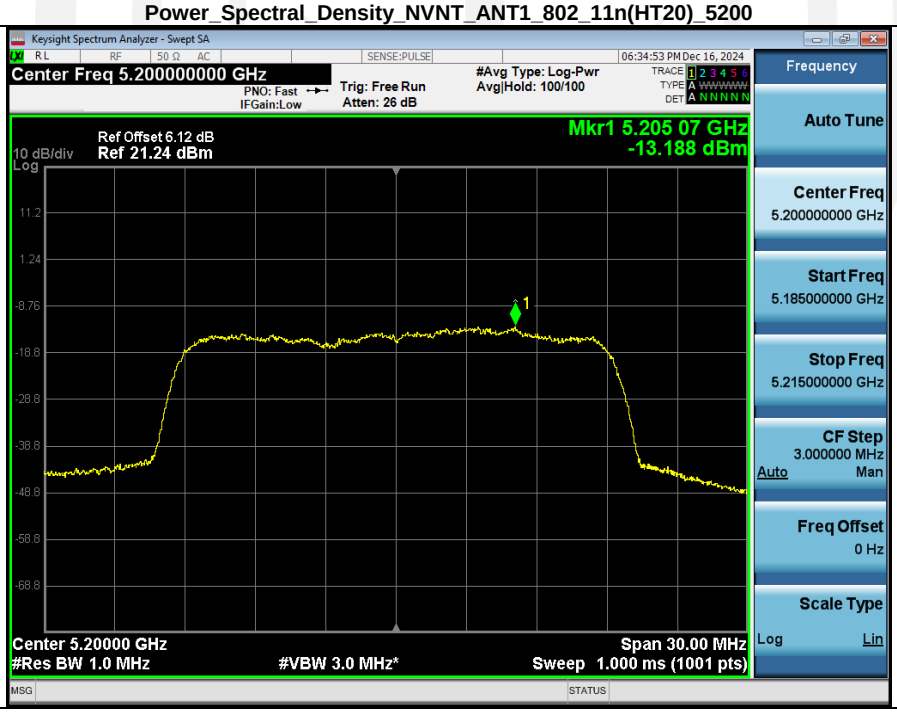
Power_Spectral_Density_NVNT_ANT1_802_11a_5240



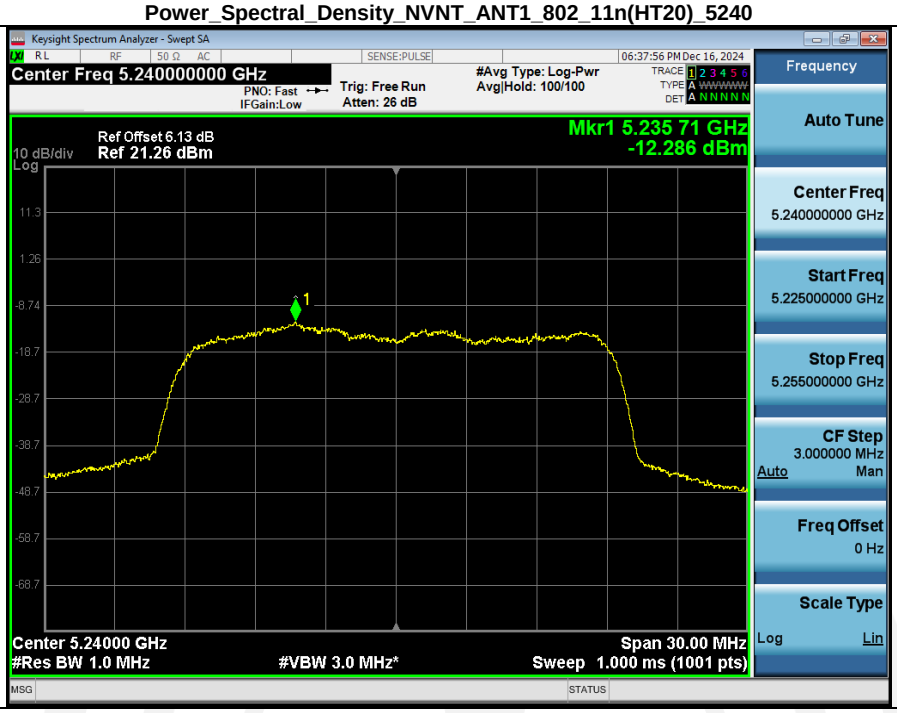
Power_Spectral_Density_NVNT_ANT1_802_11n(HT20)_5180



Power_Spectral_Density_NVNT_ANT1_802_11n(HT20)_5200

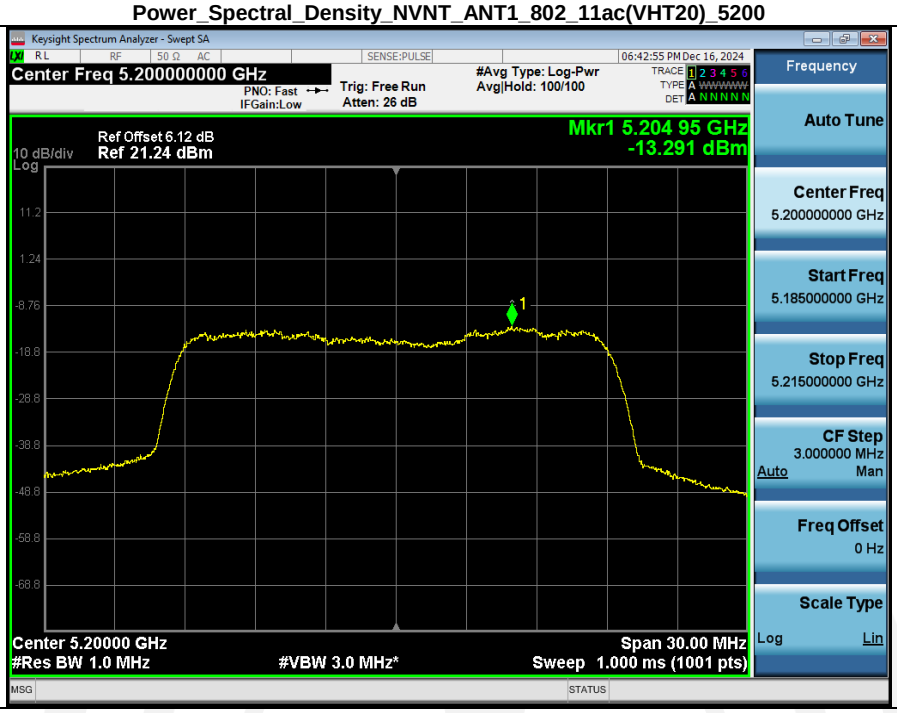


Power_Spectral_Density_NVNT_ANT1_802_11n(HT20)_5240

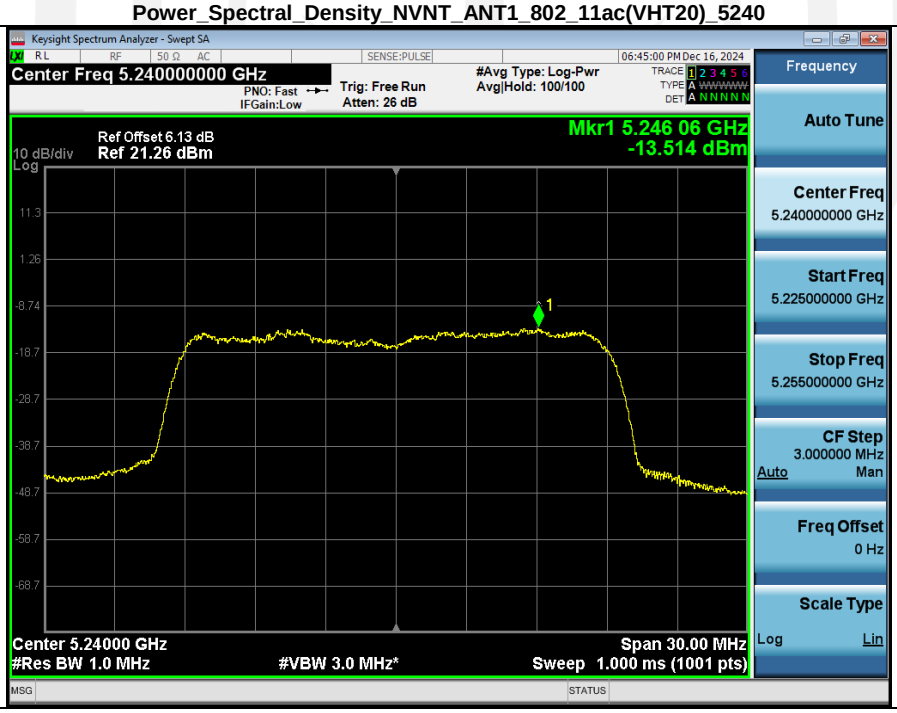


Power_Spectral_Density_NVNT_ANT1_802_11ac(VHT20)_5180

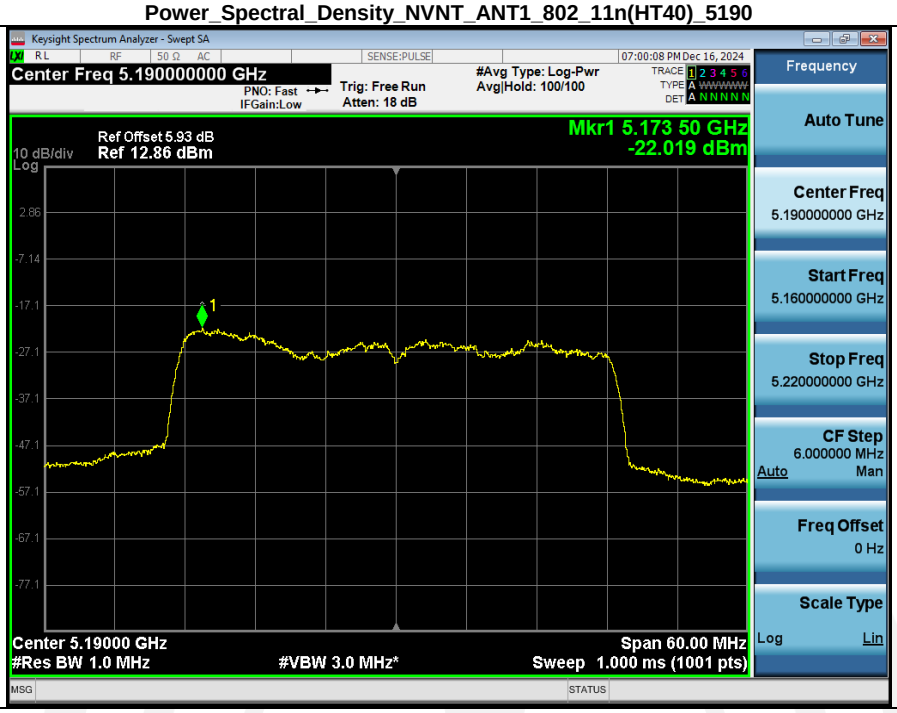
Power_Spectral_Density_NVNT_ANT1_802_11ac(VHT20)_5200



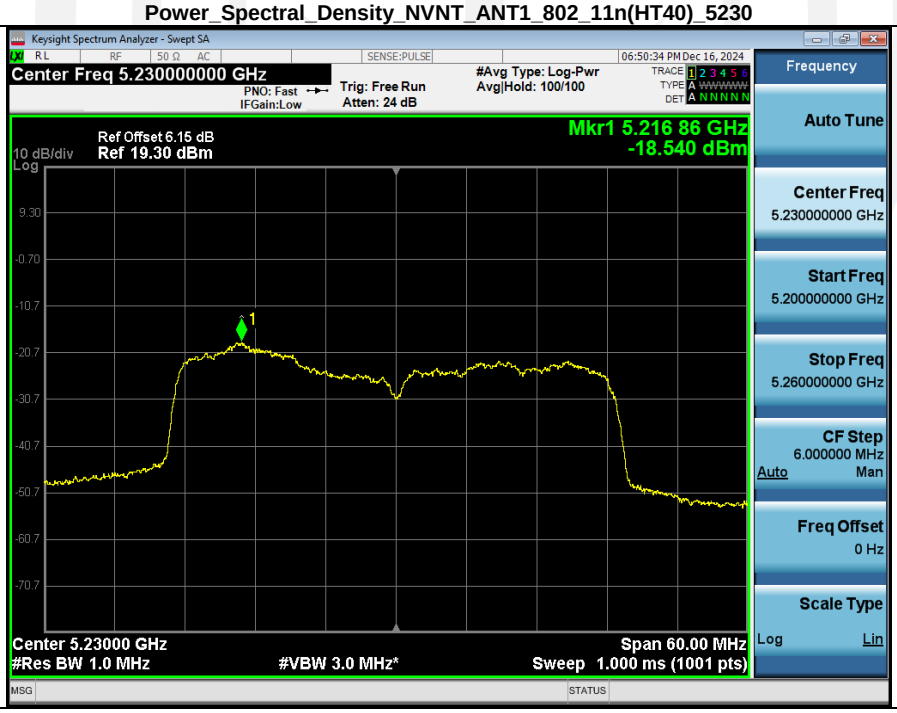
Power_Spectral_Density_NVNT_ANT1_802_11ac(VHT20)_5240



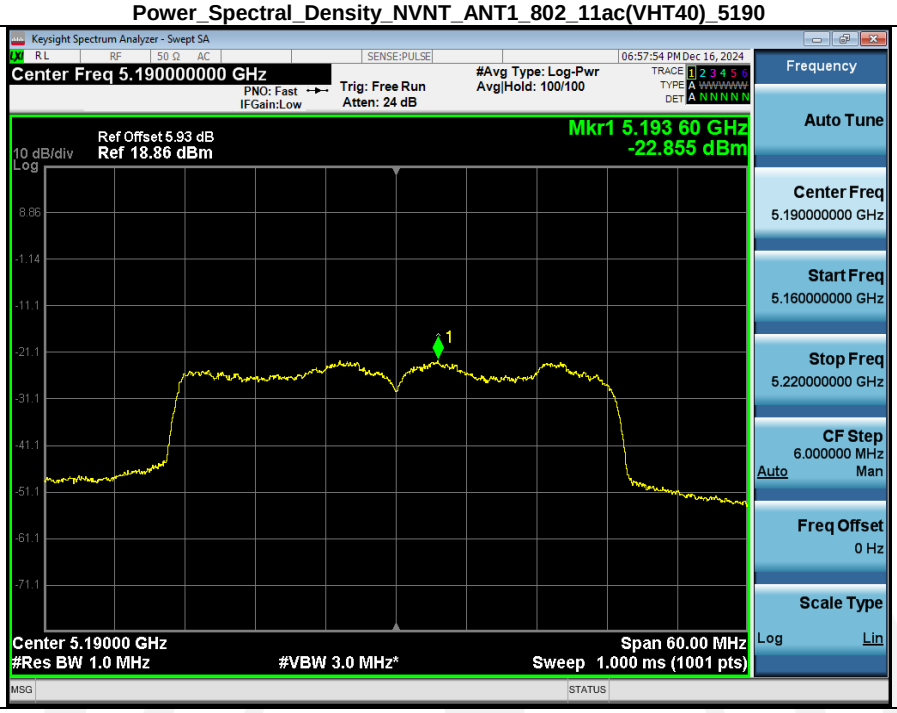
Power_Spectral_Density_NVNT_ANT1_802_11n(HT40)_5190



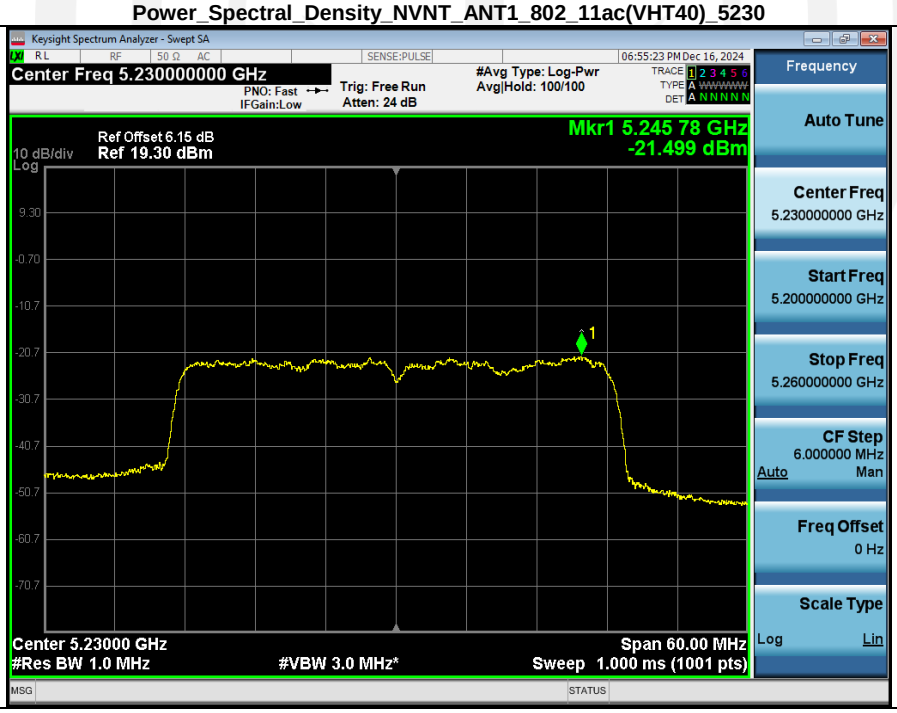
Power_Spectral_Density_NVNT_ANT1_802_11n(HT40)_5230



Power_Spectral_Density_NVNT_ANT1_802_11ac(VHT40)_5190



Power_Spectral_Density_NVNT_ANT1_802_11ac(VHT40)_5230

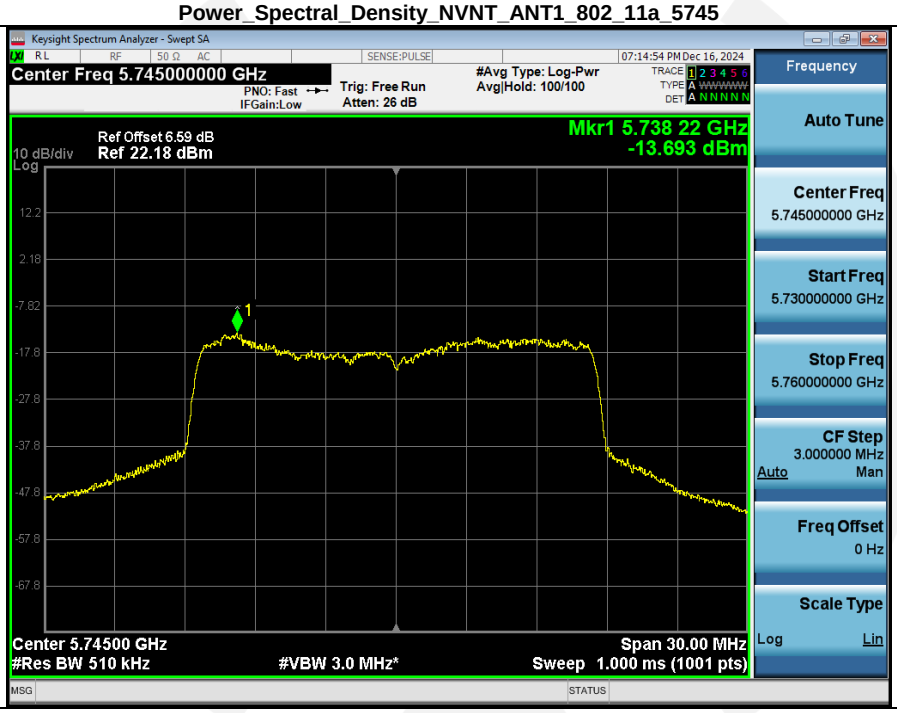


Power_Spectral_Density_NVNT_ANT1_802_11ac(VHT80)_5210

Band 4 (5725 – 5850 MHz)

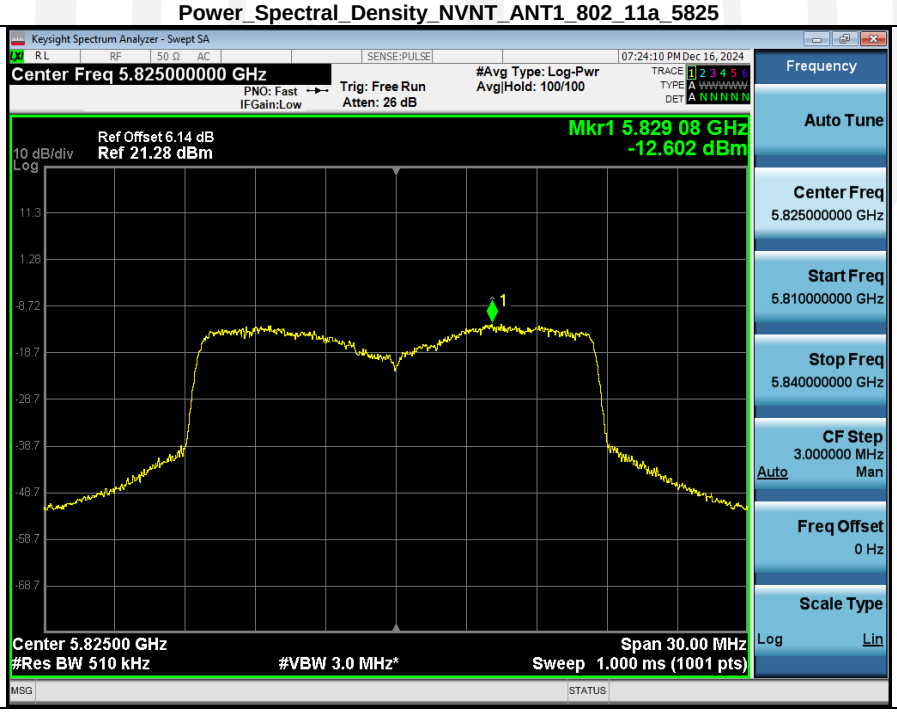
Condition	Antenna	Modulation	Frequency (MHz)	PSD_SA (dBm/RBW)	Duty factor (dB)	RB factor(dB)	PSD(dBm /500kHz)	Limit (dBm/500kHz)	Result
NVNT	ANT1	802.11a	5745.00	-13.69	0.13	-0	-13.65	30	Pass
NVNT	ANT1	802.11a	5785.00	-11.09	0.43	-0	-10.74	30	Pass
NVNT	ANT1	802.11a	5825.00	-12.60	0.48	-0	-12.21	30	Pass
NVNT	ANT1	802.11n(HT20)	5745.00	-12.71	0.33	-0	-12.47	30	Pass
NVNT	ANT1	802.11n(HT20)	5785.00	-12.21	0.76	-0	-11.54	30	Pass
NVNT	ANT1	802.11n(HT20)	5825.00	-14.93	0.46	-0	-14.56	30	Pass
NVNT	ANT1	802.11ac(VHT20)	5745.00	-14.78	0.57	-0	-14.30	30	Pass
NVNT	ANT1	802.11ac(VHT20)	5785.00	-15.45	0.13	-0	-15.41	30	Pass
NVNT	ANT1	802.11ac(VHT20)	5825.00	-12.64	0.13	-0	-12.59	30	Pass
NVNT	ANT1	802.11n(HT40)	5755.00	-23.96	0.65	-0	-23.40	30	Pass
NVNT	ANT1	802.11n(HT40)	5795.00	-26.33	1.42	-0	-25.00	30	Pass
NVNT	ANT1	802.11ac(VHT40)	5755.00	-22.66	1.76	-0	-20.98	30	Pass
NVNT	ANT1	802.11ac(VHT40)	5795.00	-23.13	0.39	-0	-22.83	30	Pass
NVNT	ANT1	802.11ac(VHT80)	5775.00	-27.91	1.38	-0	-26.62	30	Pass

Power_Spectral_Density_NVNT_ANT1_802_11a_5745

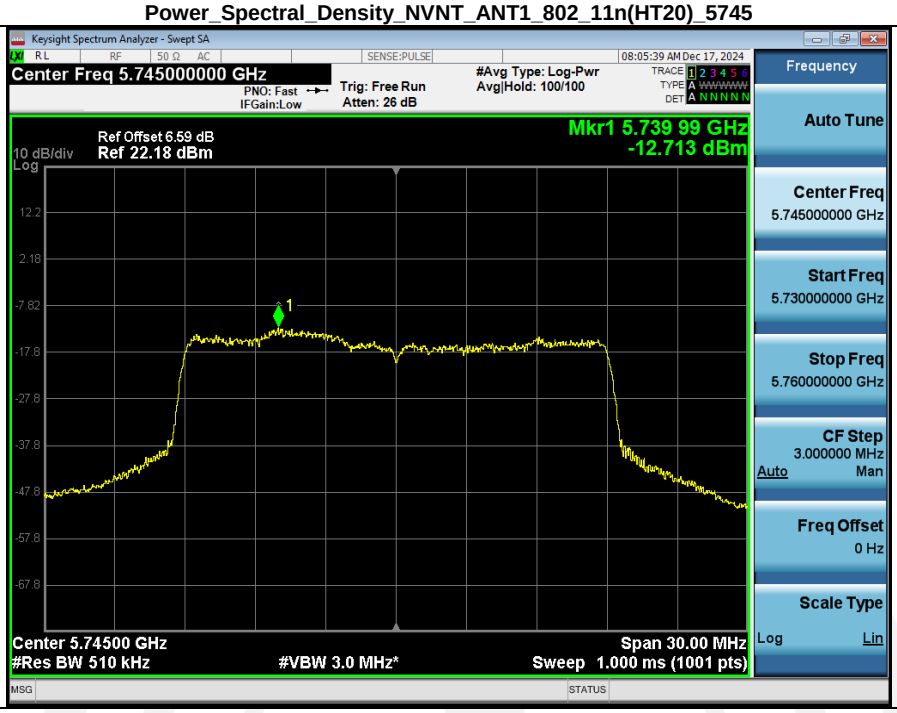


Power_Spectral_Density_NVNT_ANT1_802_11a_5785

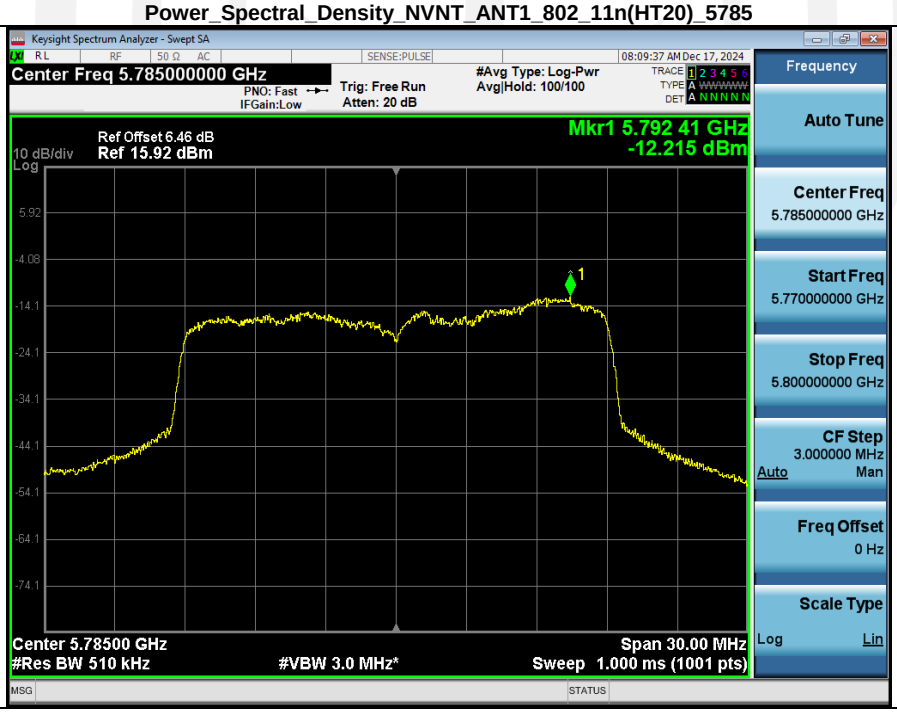
Power_Spectral_Density_NVNT_ANT1_802_11a_5825



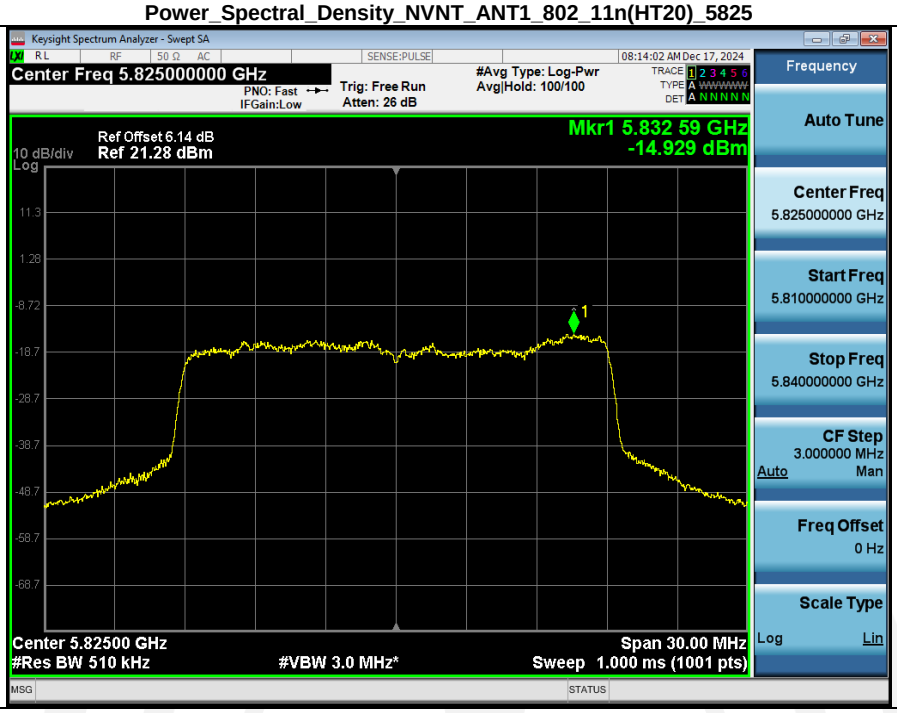
Power_Spectral_Density_NVNT_ANT1_802_11n(HT20)_5745



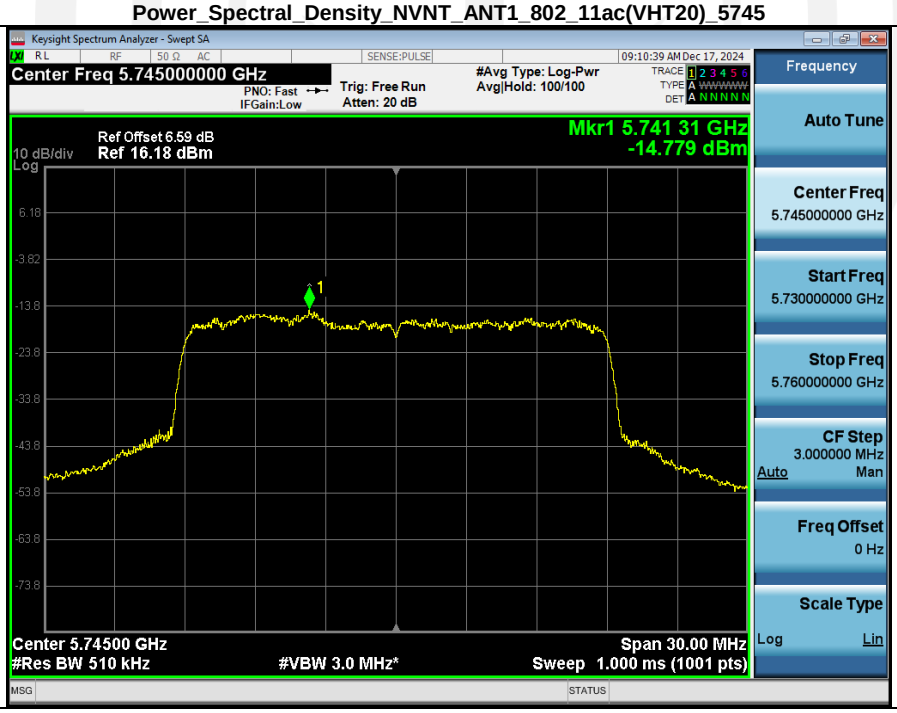
Power_Spectral_Density_NVNT_ANT1_802_11n(HT20)_5785



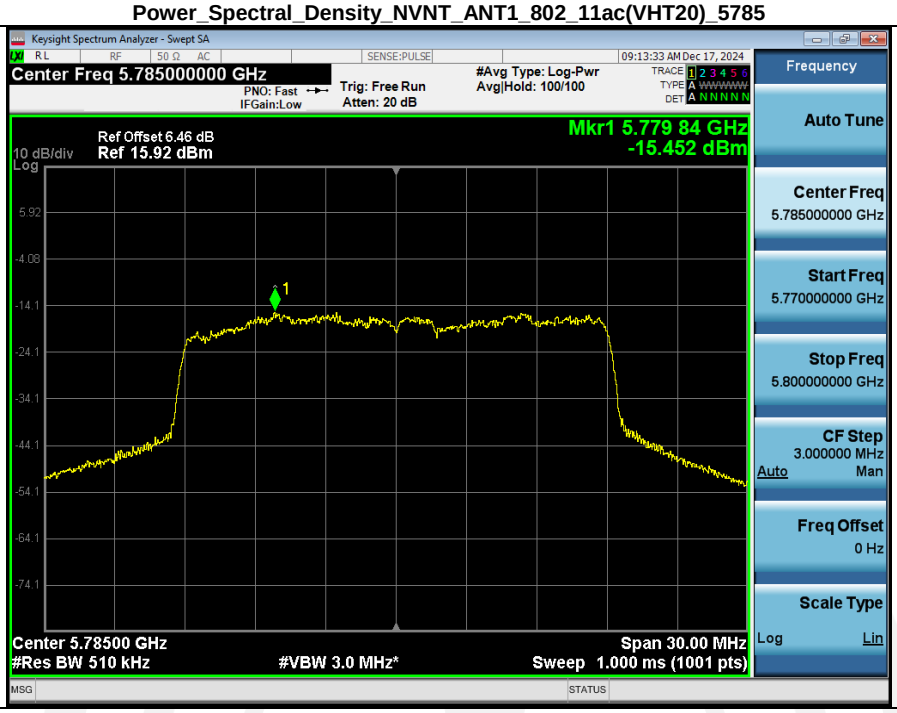
Power_Spectral_Density_NVNT_ANT1_802_11n(HT20)_5825



Power_Spectral_Density_NVNT_ANT1_802_11ac(VHT20)_5745

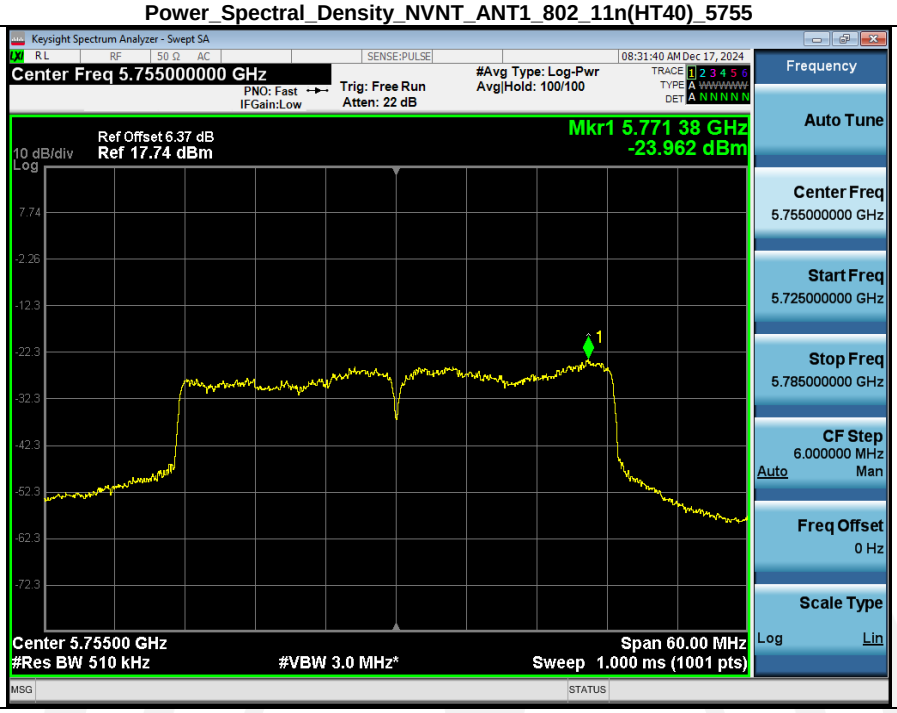
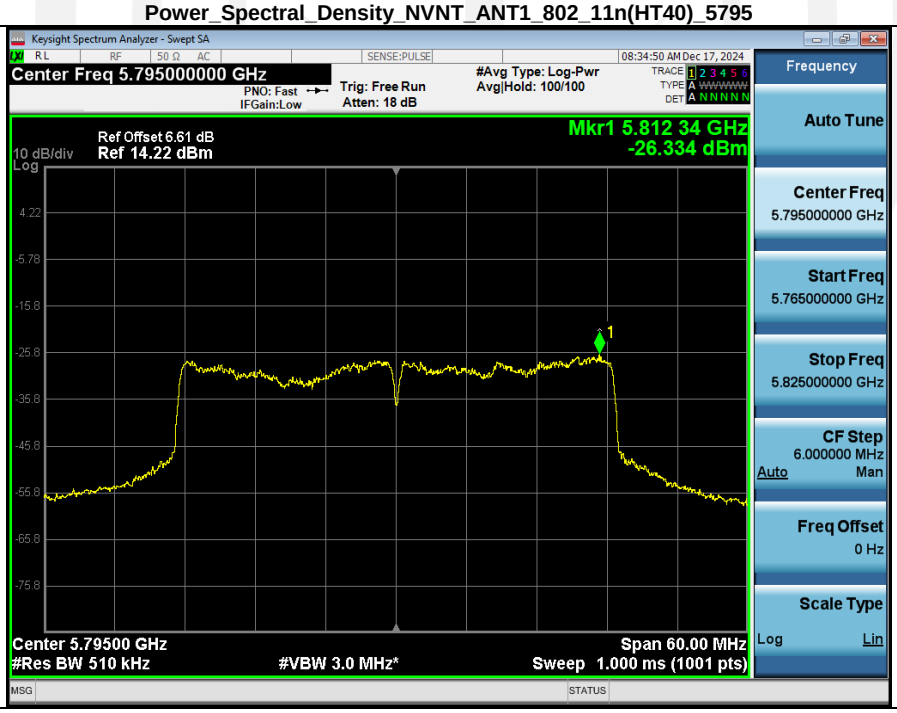


Power_Spectral_Density_NVNT_ANT1_802_11ac(VHT20)_5785



Power_Spectral_Density_NVNT_ANT1_802_11ac(VHT20)_5825

Power_Spectral_Density_NVNT_ANT1_802_11n(HT40)_5755



Power_Spectral_Density_NVNT_ANT1_802_11n(HT40)_5795