

10.5 Test Result

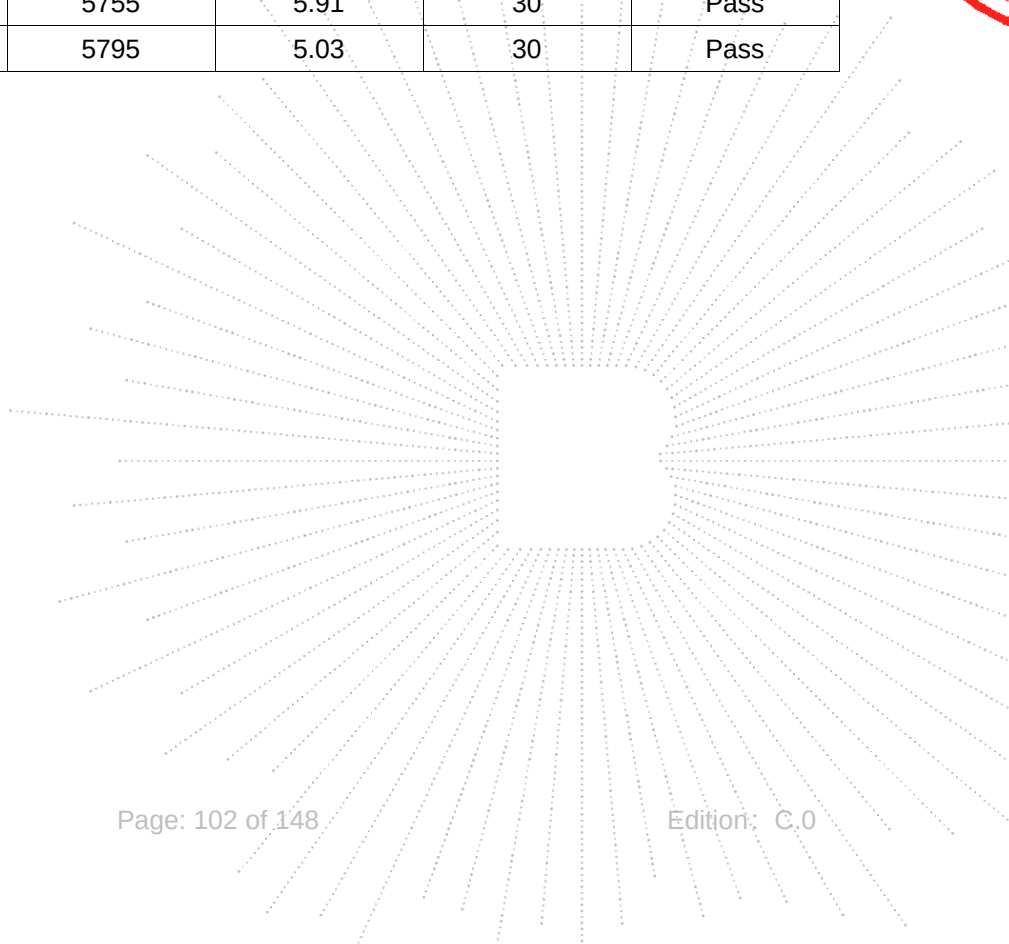
Temperature:	26 °C	Relative Humidity:	54%RH
Pressure:	101KPa	Test Voltage:	AC120V/60Hz
Test Mode:	(5180-5240MHz)		

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	11.81	24	Pass
NVNT	a	5200	11.19	24	Pass
NVNT	a	5240	11.07	24	Pass
NVNT	n20	5180	11.49	24	Pass
NVNT	n20	5200	10.72	24	Pass
NVNT	n20	5240	11.21	24	Pass
NVNT	n40	5190	9.80	24	Pass
NVNT	n40	5230	9.57	24	Pass
NVNT	ac20	5180	10.94	24	Pass
NVNT	ac20	5200	10.53	24	Pass
NVNT	ac20	5240	9.85	24	Pass
NVNT	ac40	5190	10.51	24	Pass
NVNT	ac40	5230	9.74	24	Pass
NVNT	ax20	5180	11.10	24	Pass
NVNT	ax20	5200	10.56	24	Pass
NVNT	ax20	5240	9.76	24	Pass
NVNT	ax40	5190	9.46	24	Pass
NVNT	ax40	5230	9.50	24	Pass

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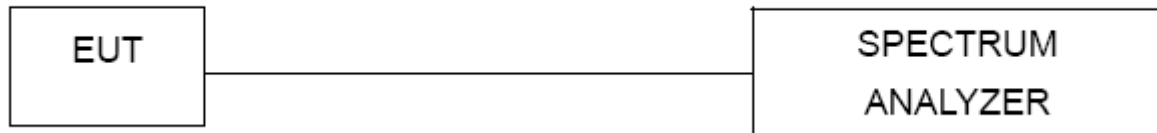
Temperature:	26 °C	Relative Humidity:	54%RH
Pressure:	101KPa	Test Voltage:	AC120V/60Hz
Test Mode:	(5745-5825MHz)		

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5745	9.25	30	Pass
NVNT	a	5785	8.66	30	Pass
NVNT	a	5825	7.97	30	Pass
NVNT	n20	5745	7.47	30	Pass
NVNT	n20	5785	6.66	30	Pass
NVNT	n20	5825	6.15	30	Pass
NVNT	n40	5755	5.63	30	Pass
NVNT	n40	5795	5.12	30	Pass
NVNT	ac20	5745	7.52	30	Pass
NVNT	ac20	5785	6.75	30	Pass
NVNT	ac20	5825	6.13	30	Pass
NVNT	ac40	5755	5.98	30	Pass
NVNT	ac40	5795	5.14	30	Pass
NVNT	ax20	5745	7.43	30	Pass
NVNT	ax20	5785	6.74	30	Pass
NVNT	ax20	5825	5.93	30	Pass
NVNT	ax40	5755	5.91	30	Pass
NVNT	ax40	5795	5.03	30	Pass



11. Out Of Band Emissions

11.1 Block Diagram Of Test Setup



11.2 Limit

According to FCC §15.407(b)

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

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

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

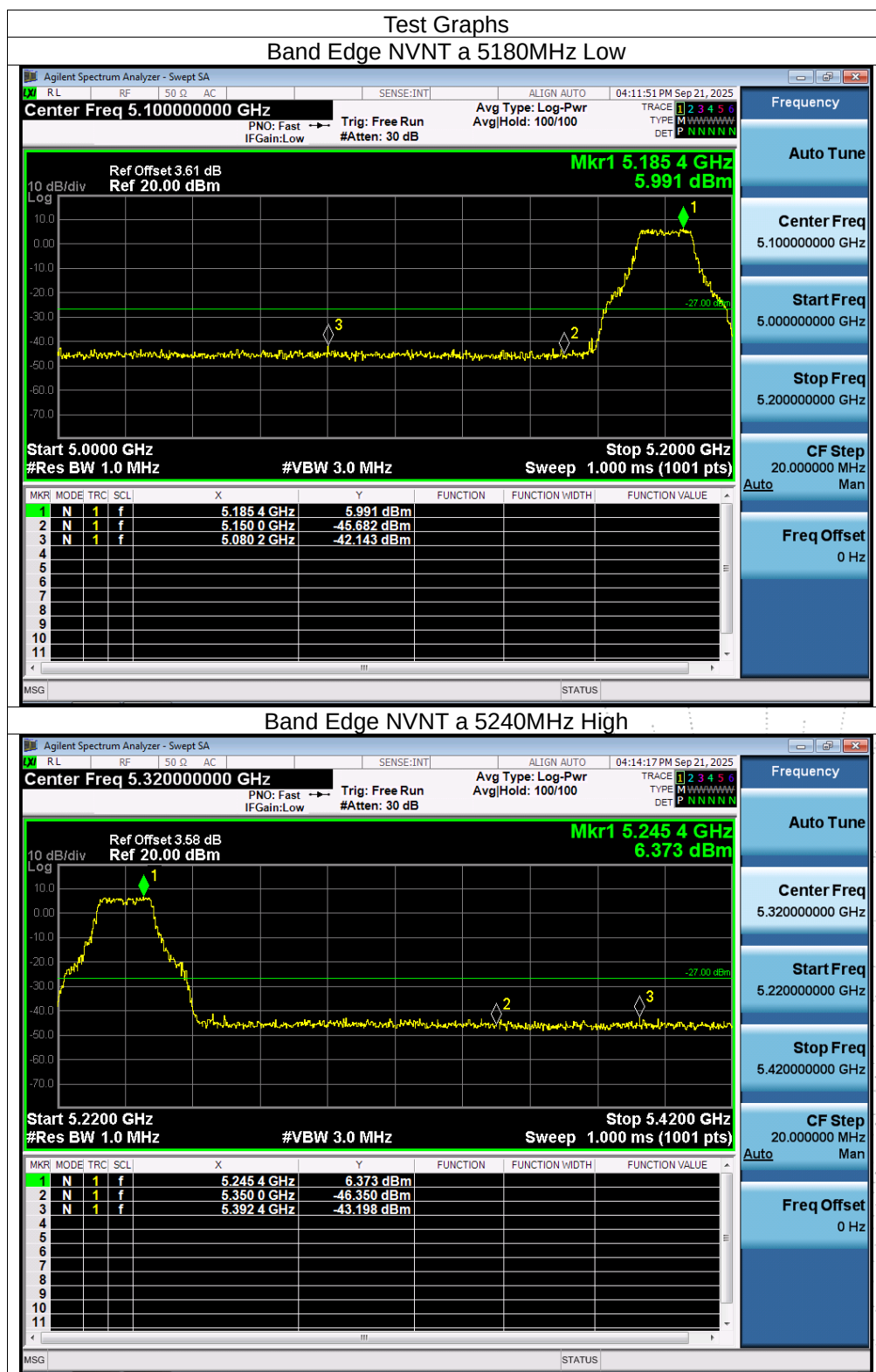
11.3 Test procedure

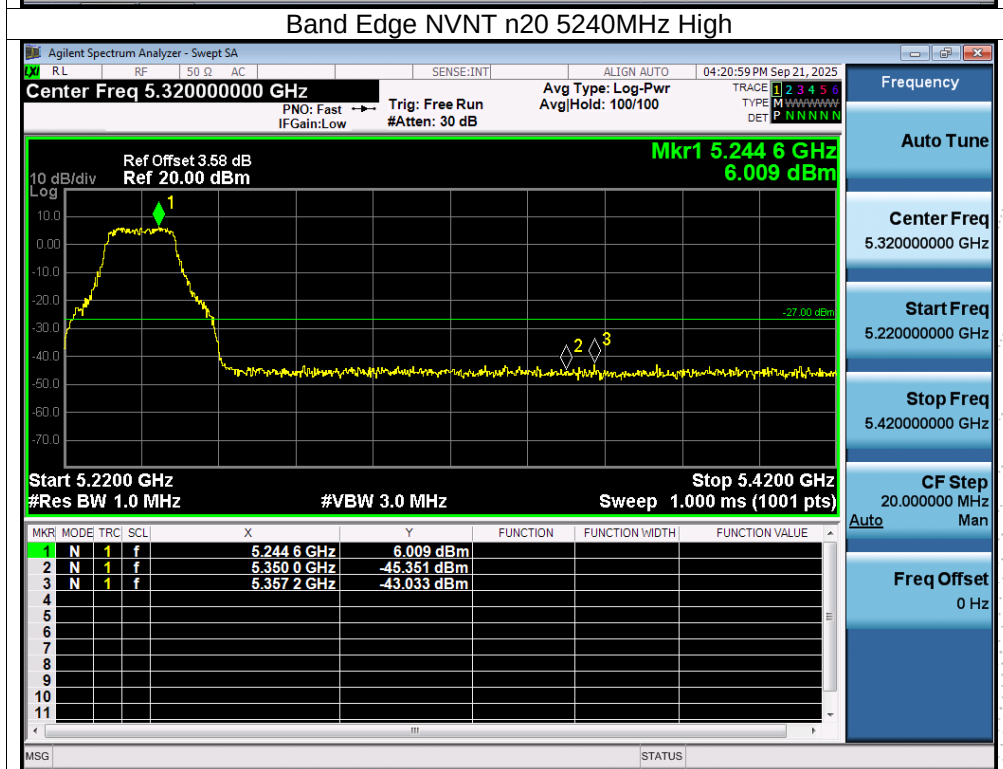
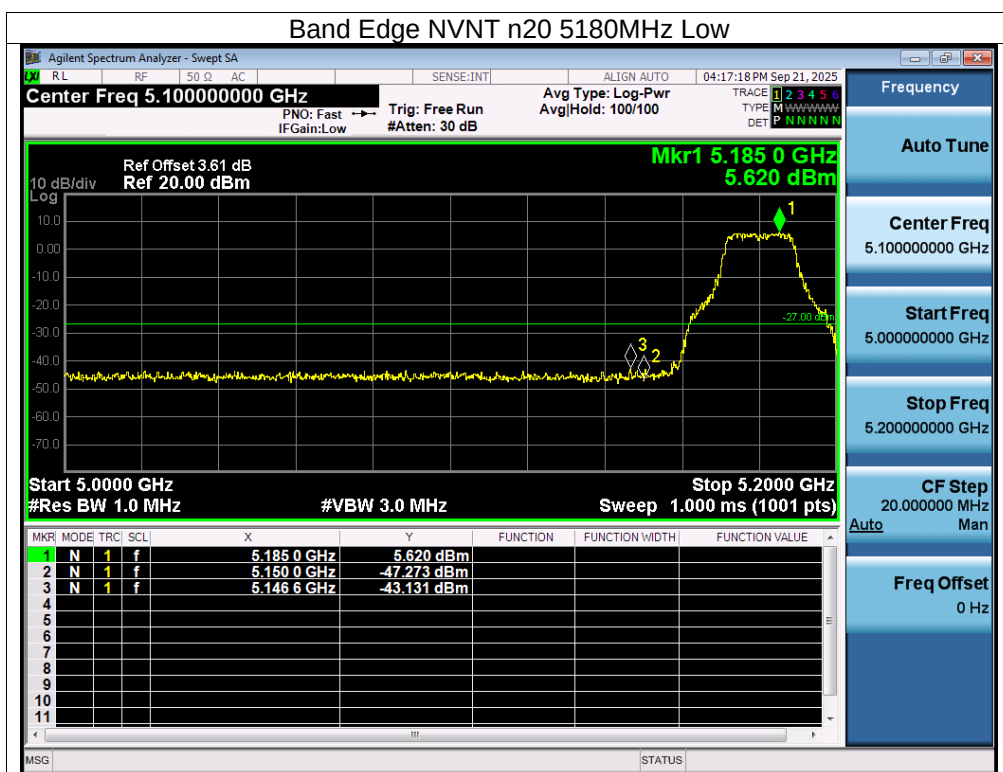
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then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

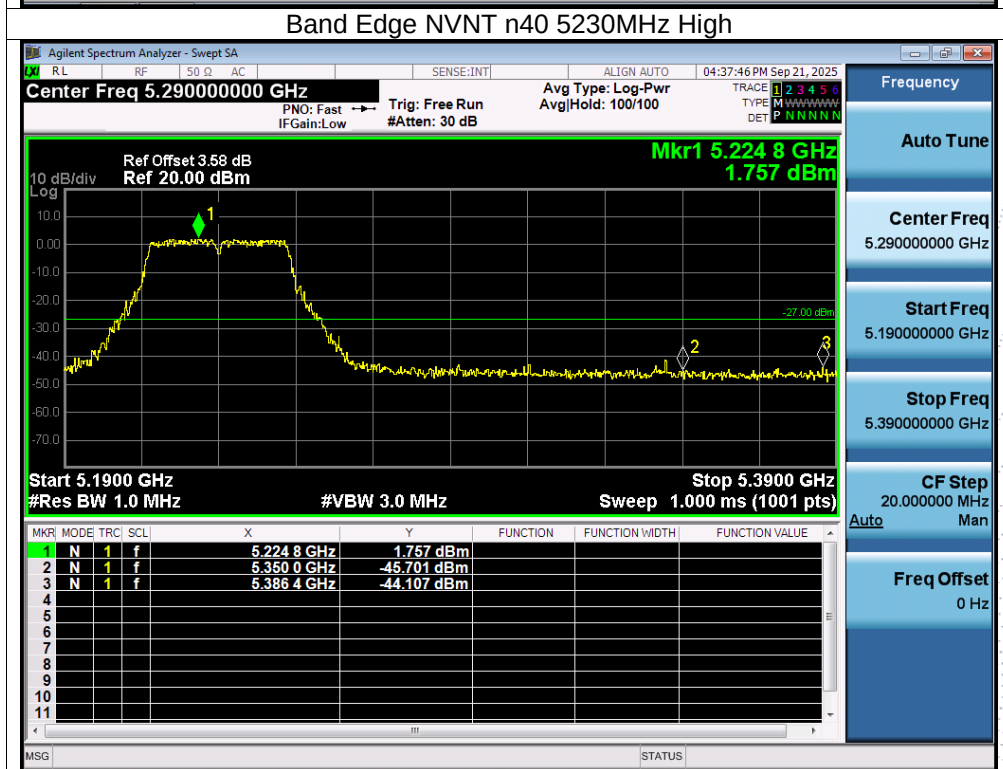
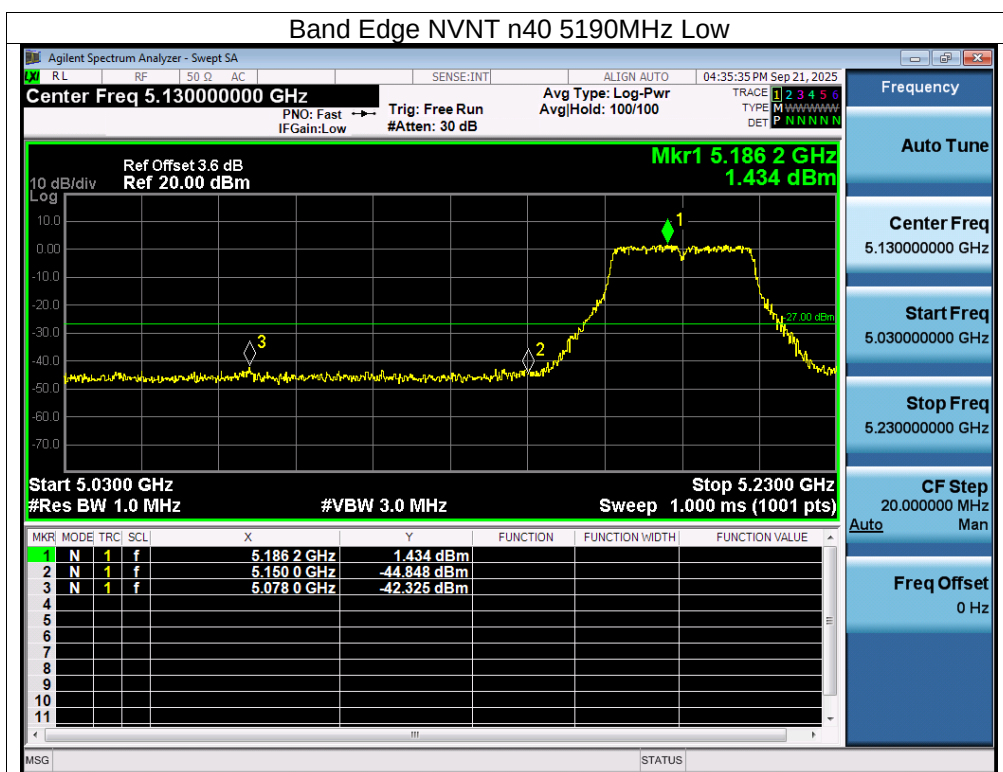
11.4 EUT operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data

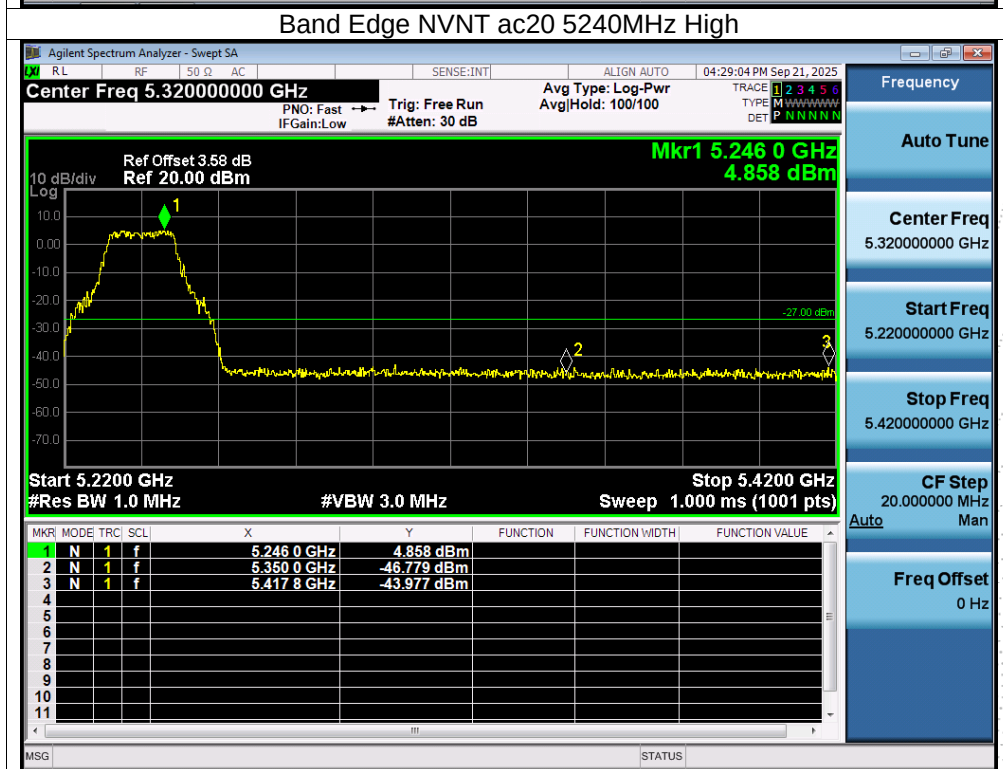
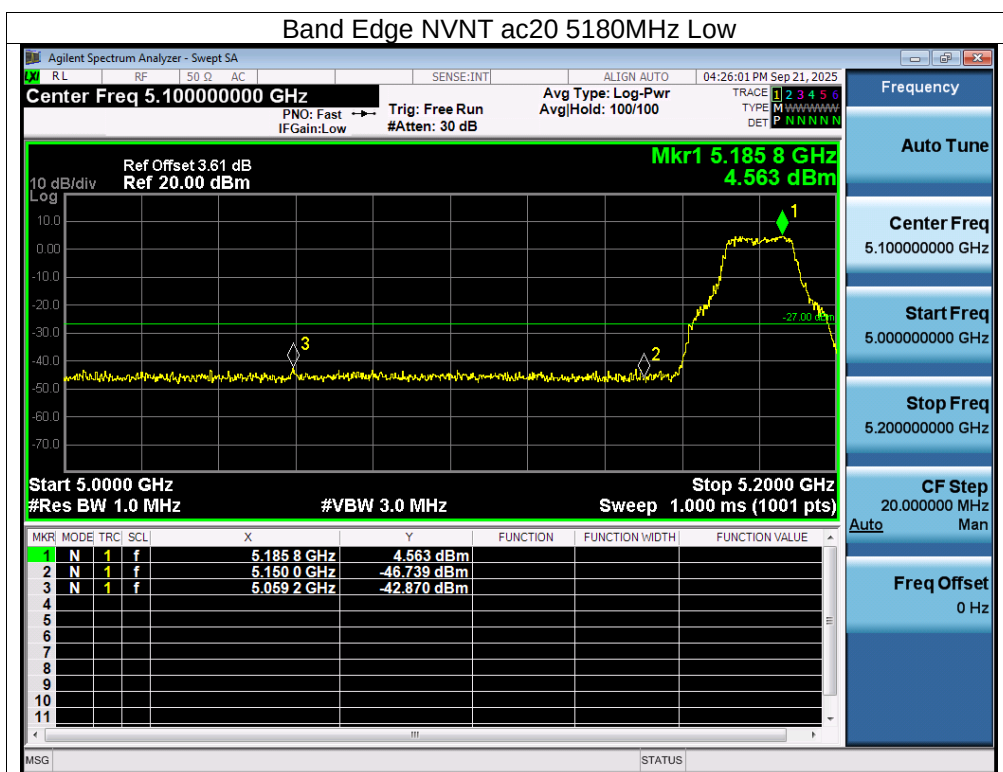
11.5 Test Result

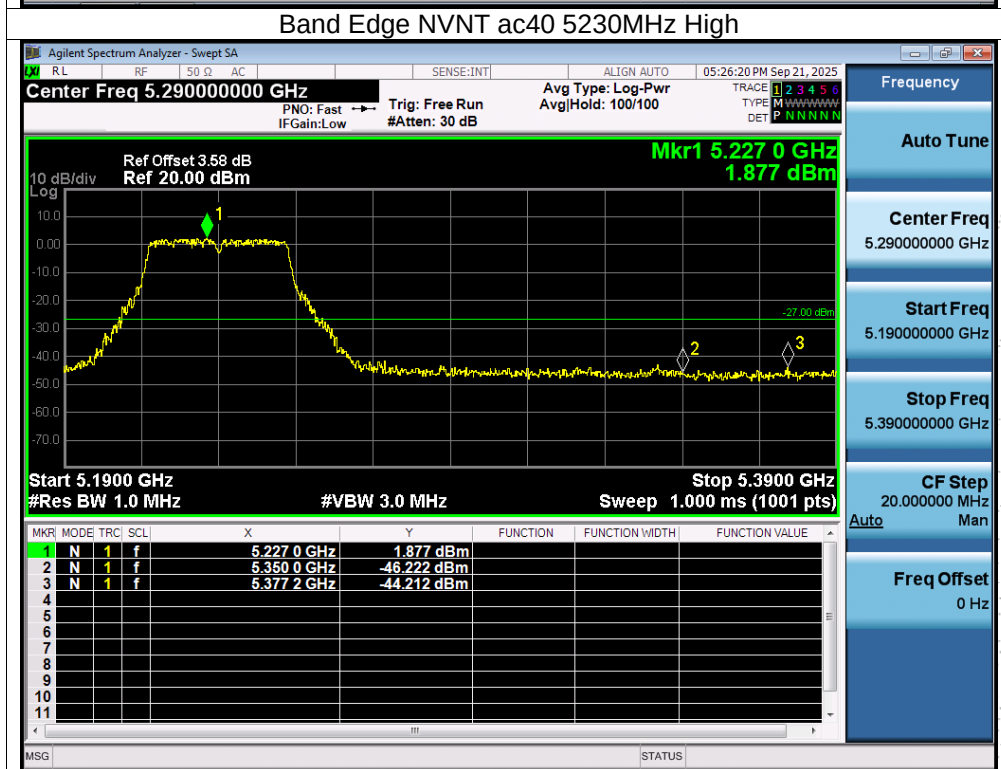
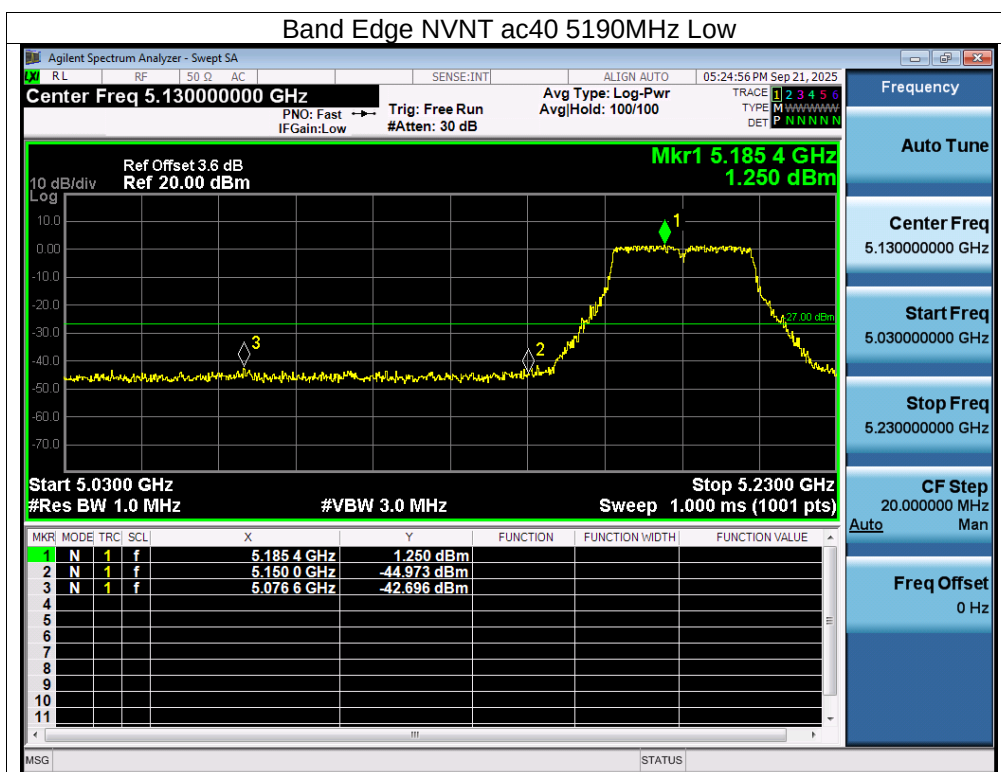


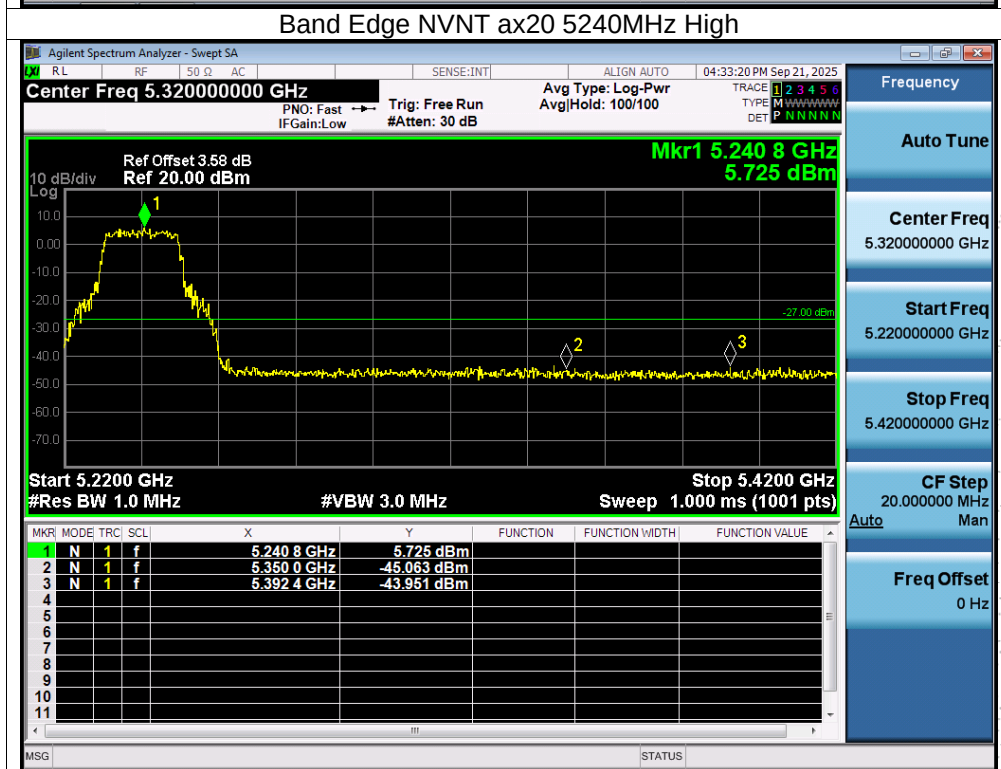
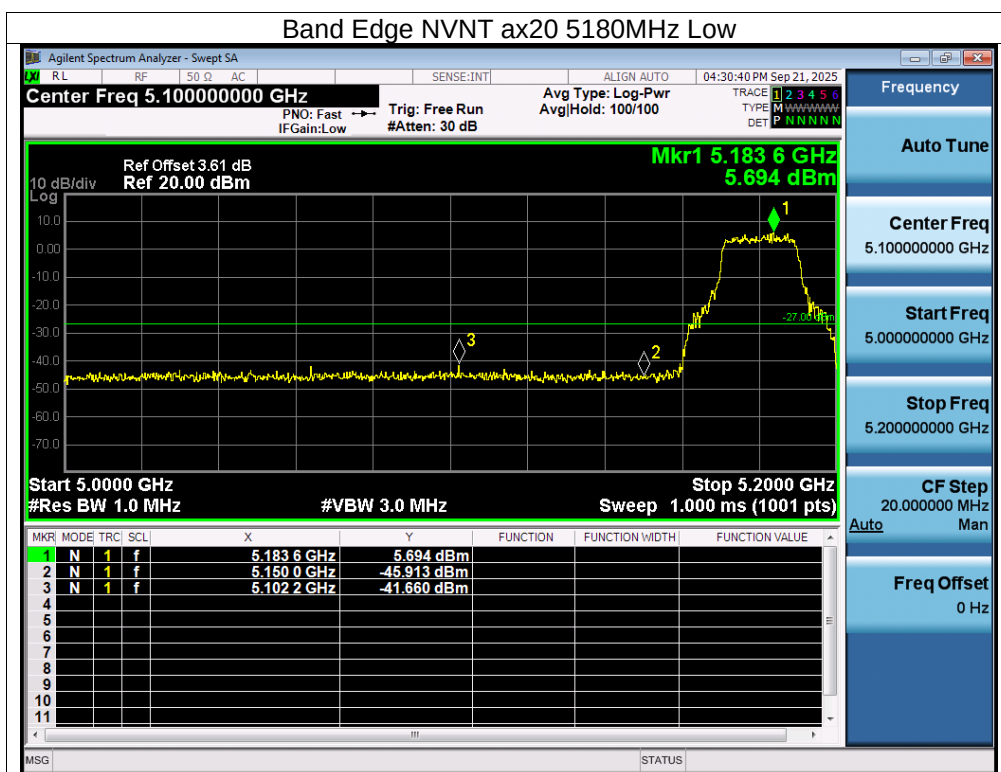


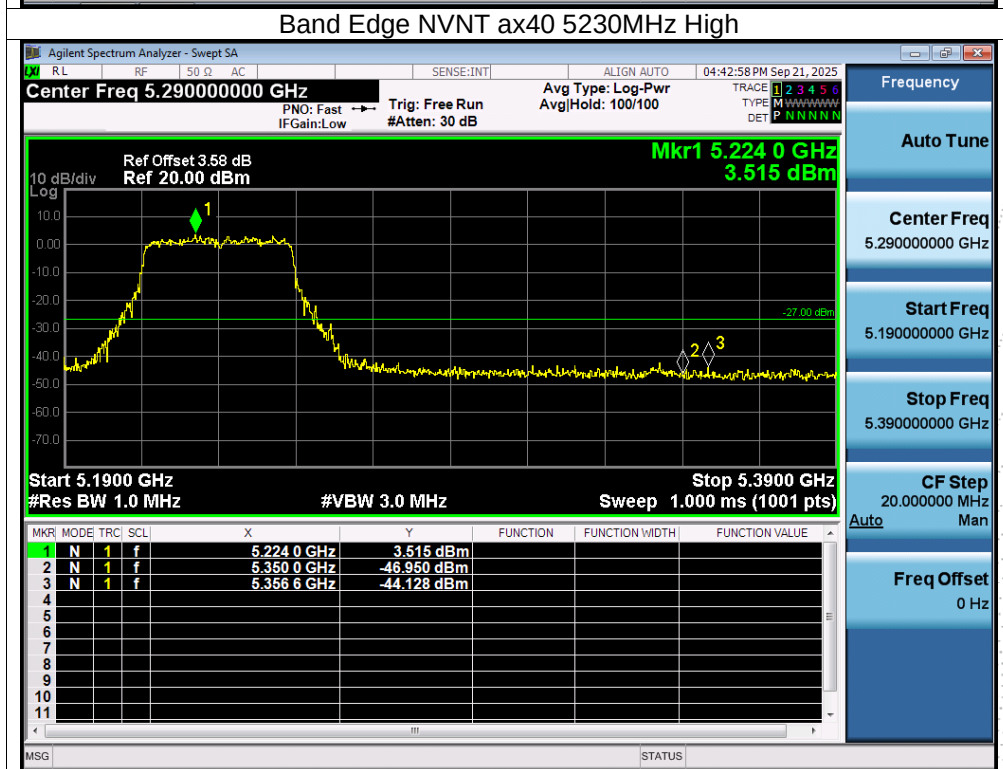
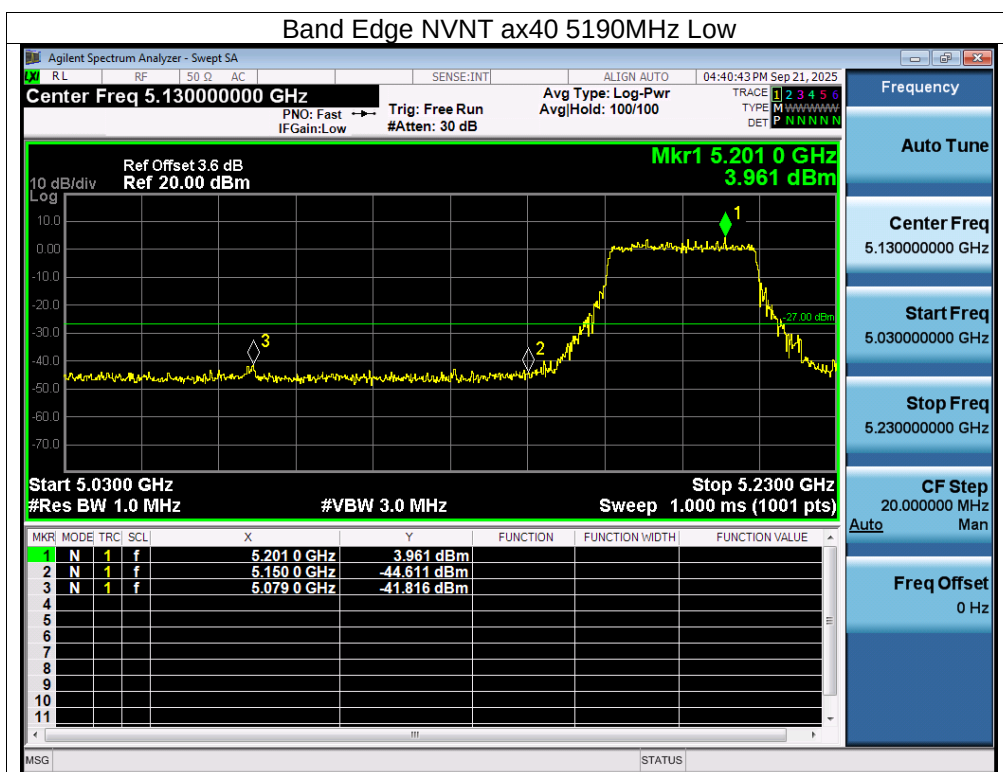


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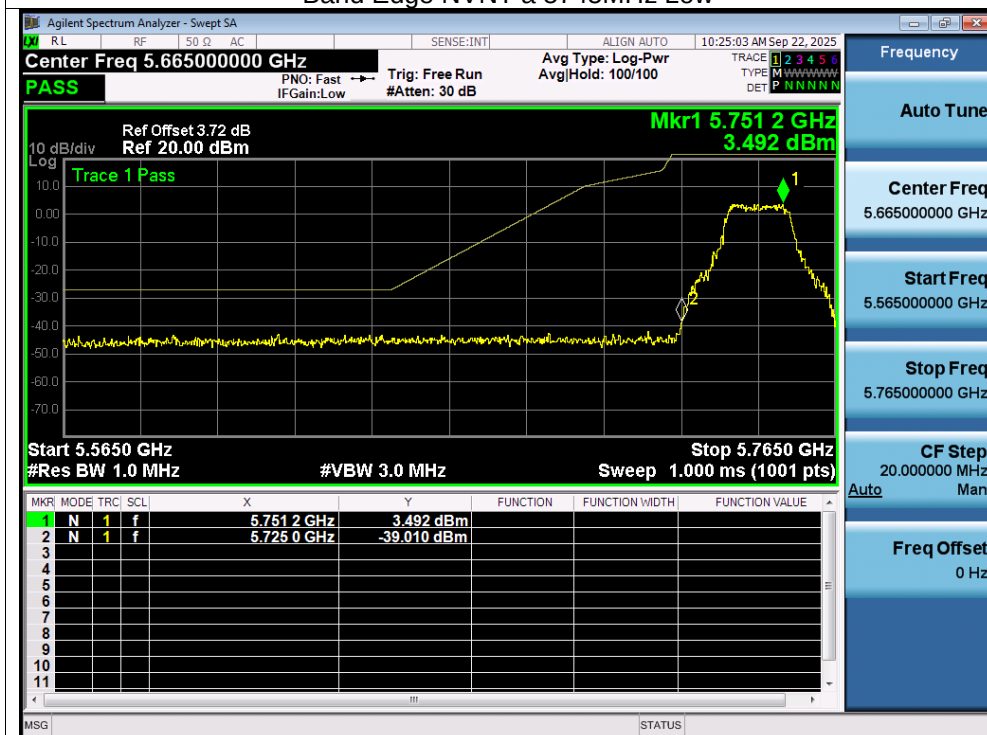




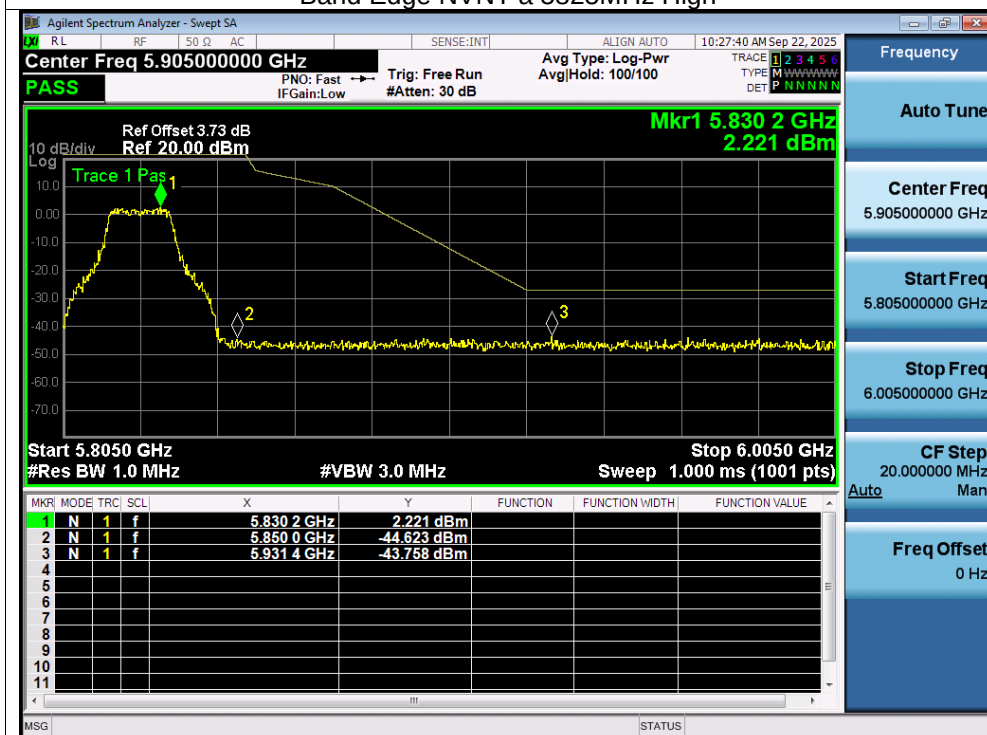


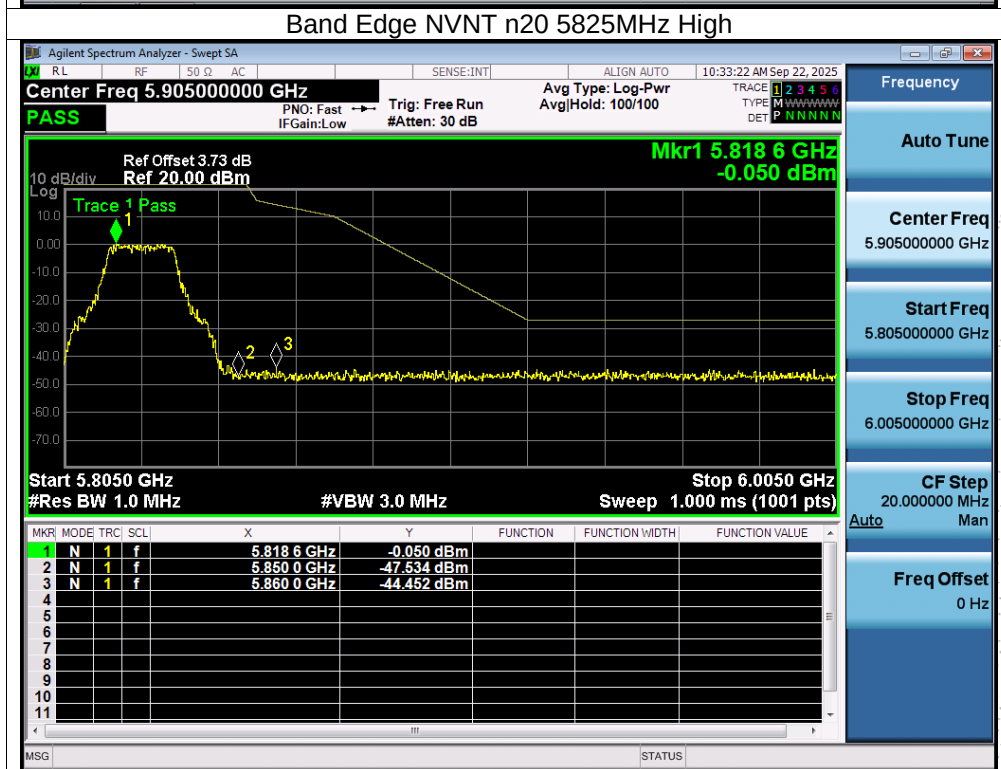
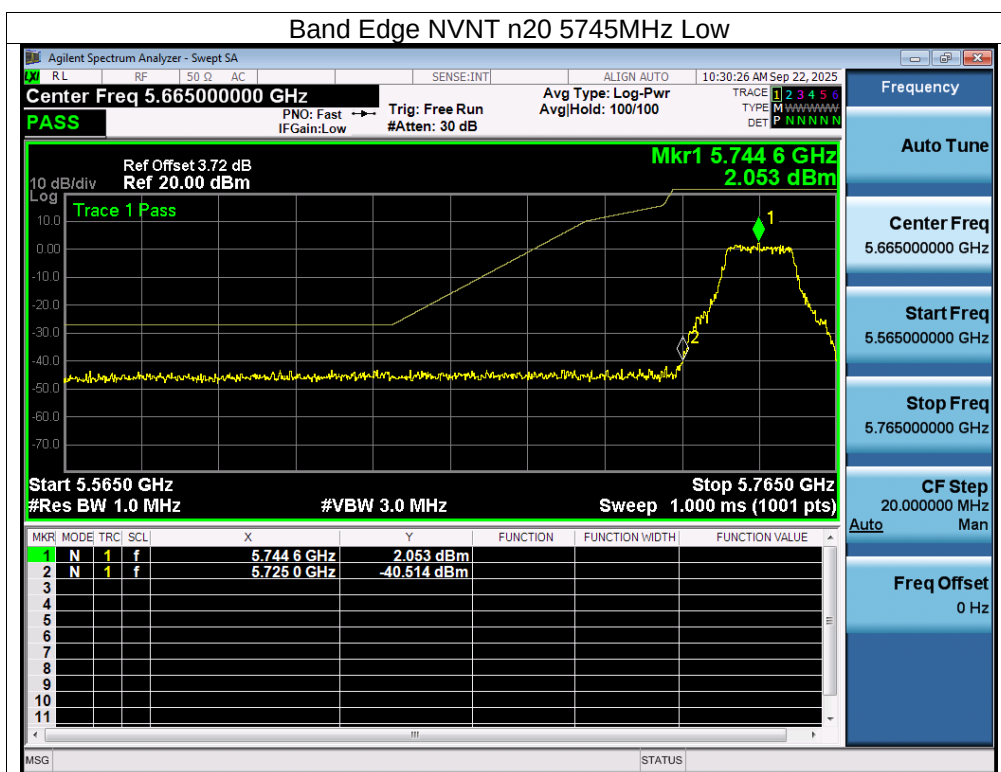
Test Graphs

Band Edge NVNT a 5745MHz Low

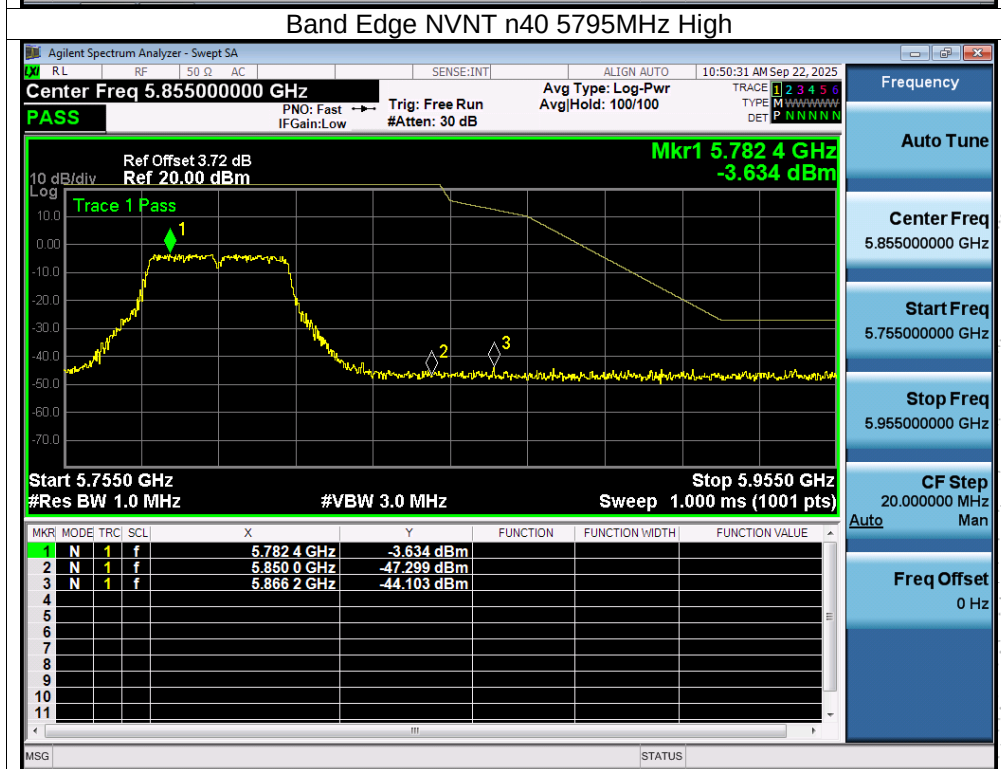
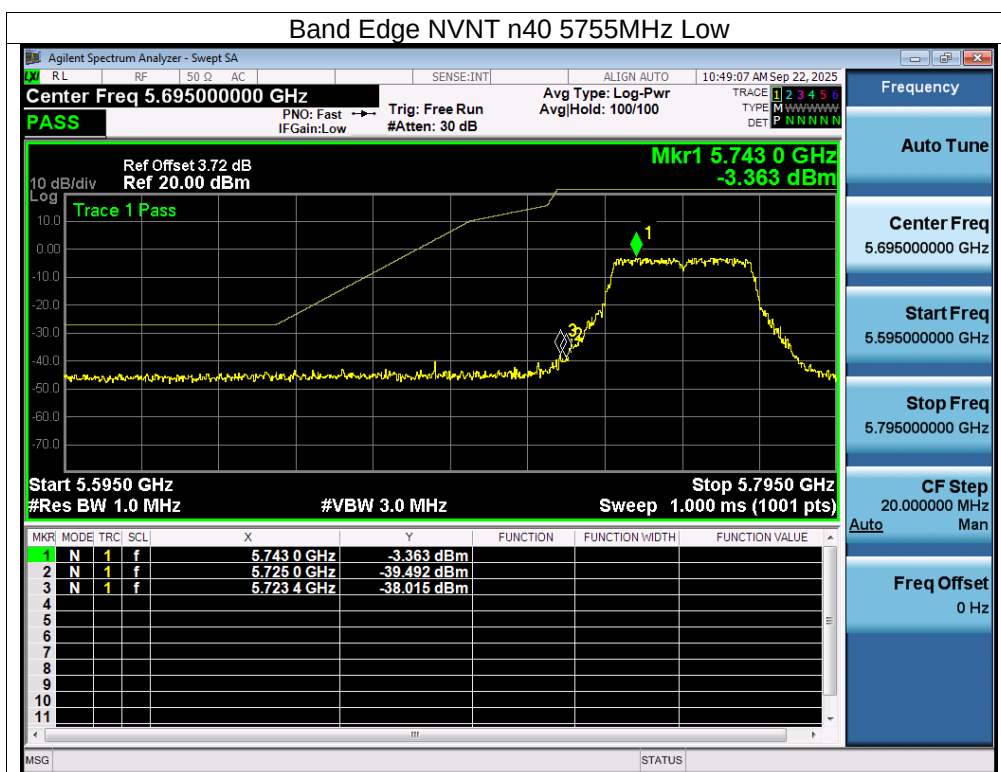


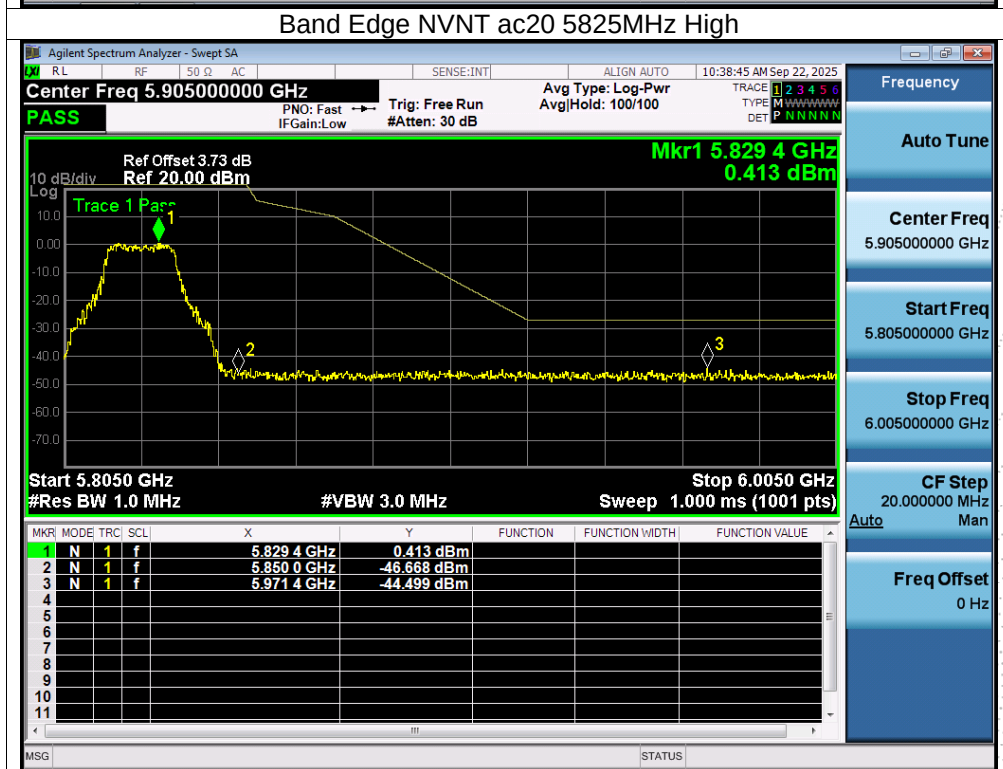
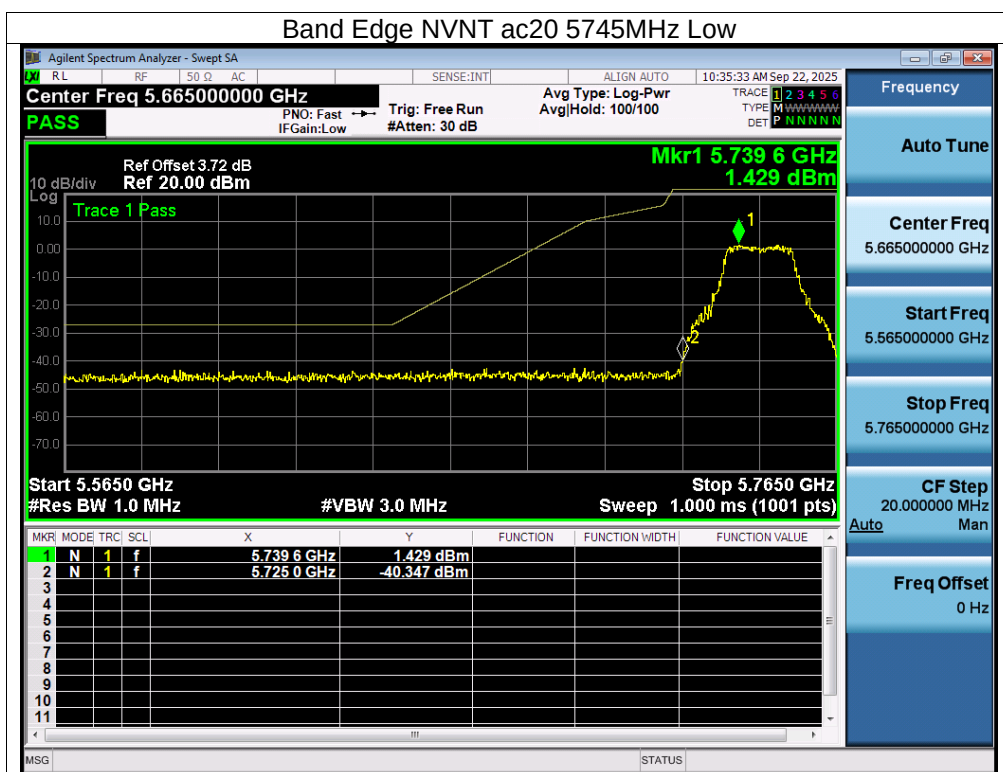
Band Edge NVNT a 5825MHz High

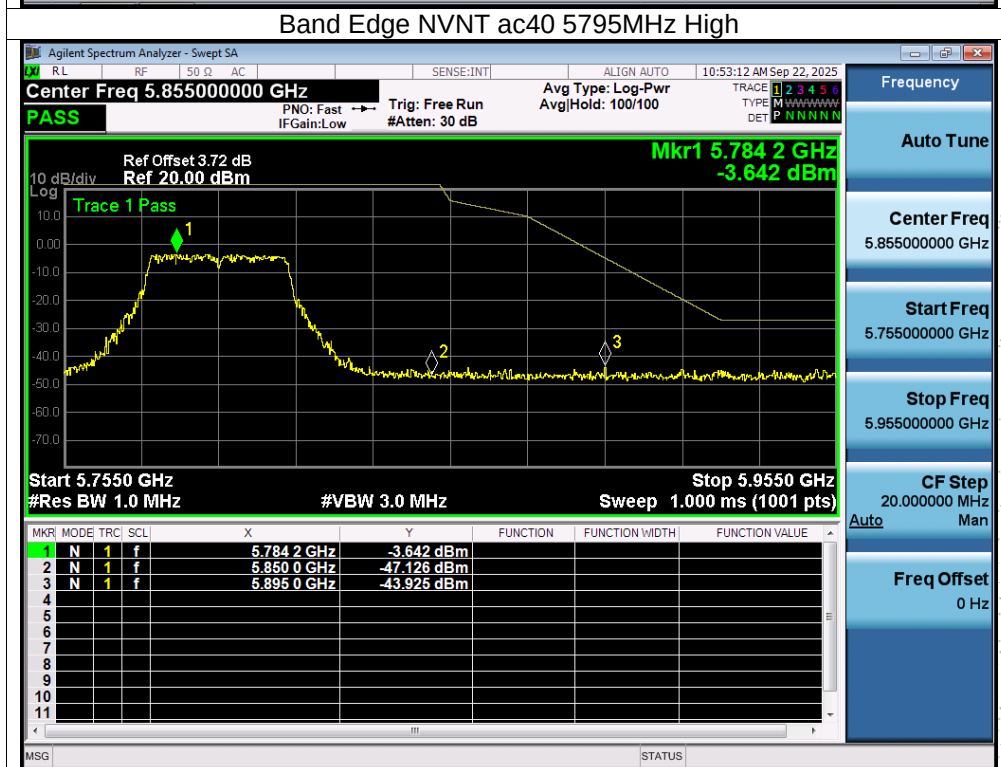
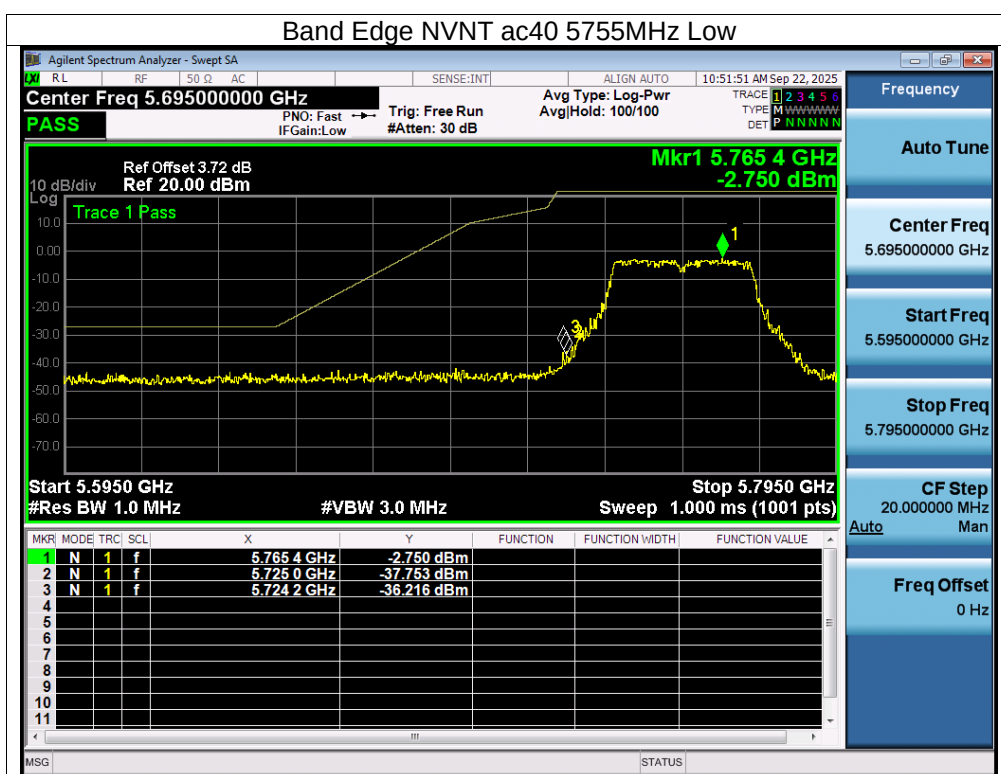


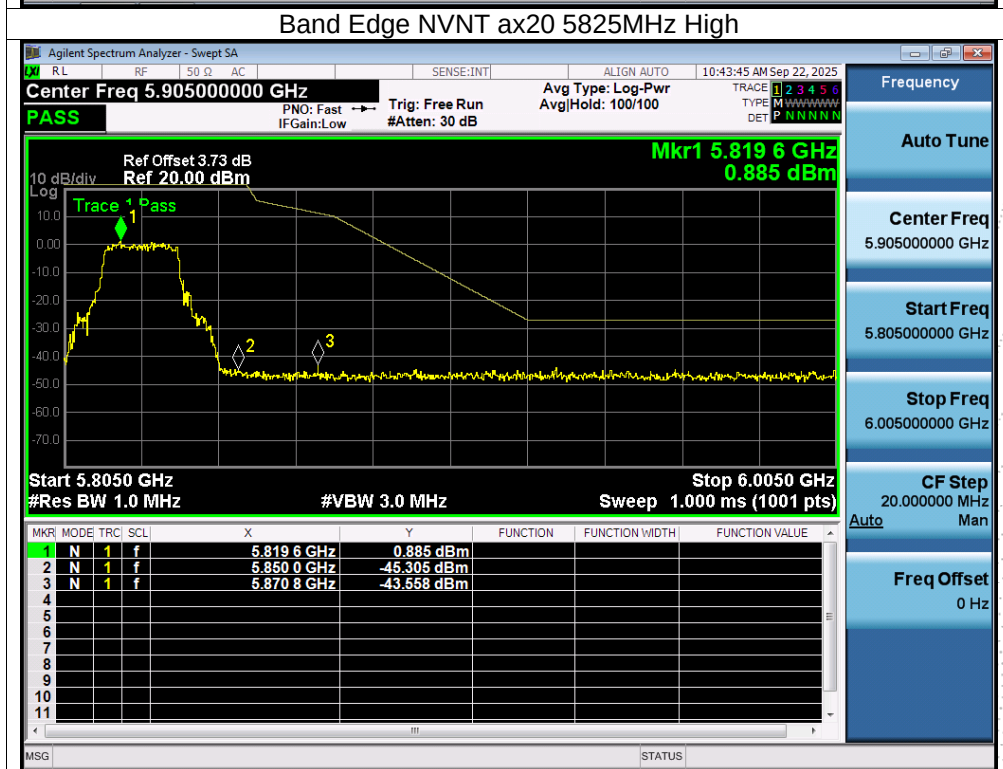
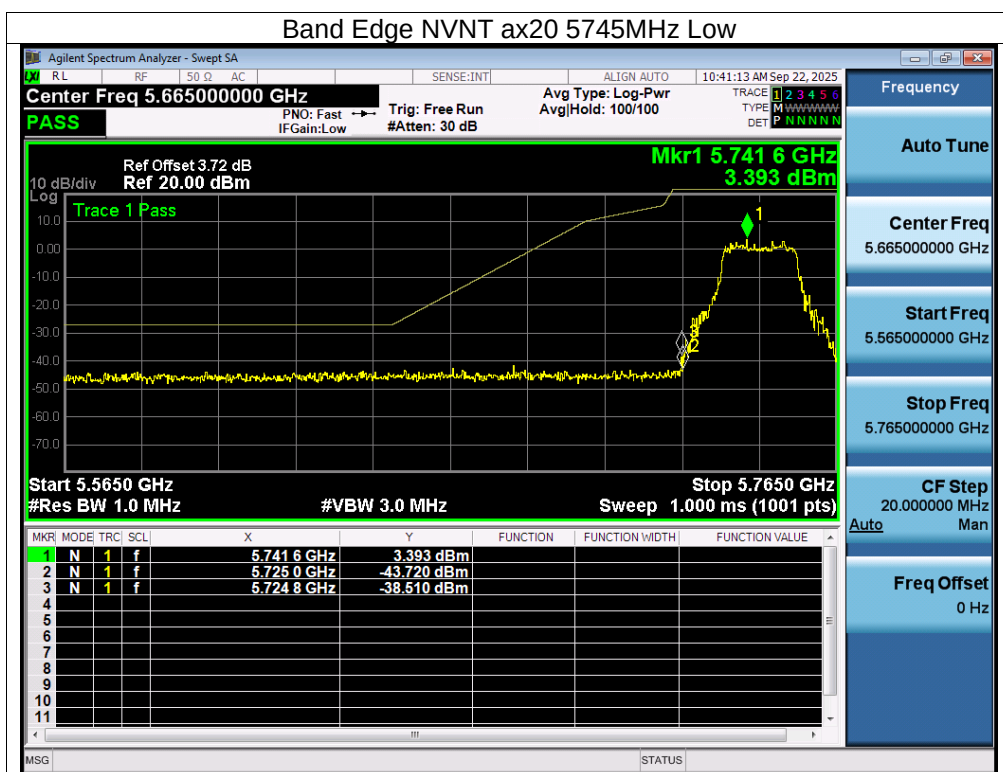


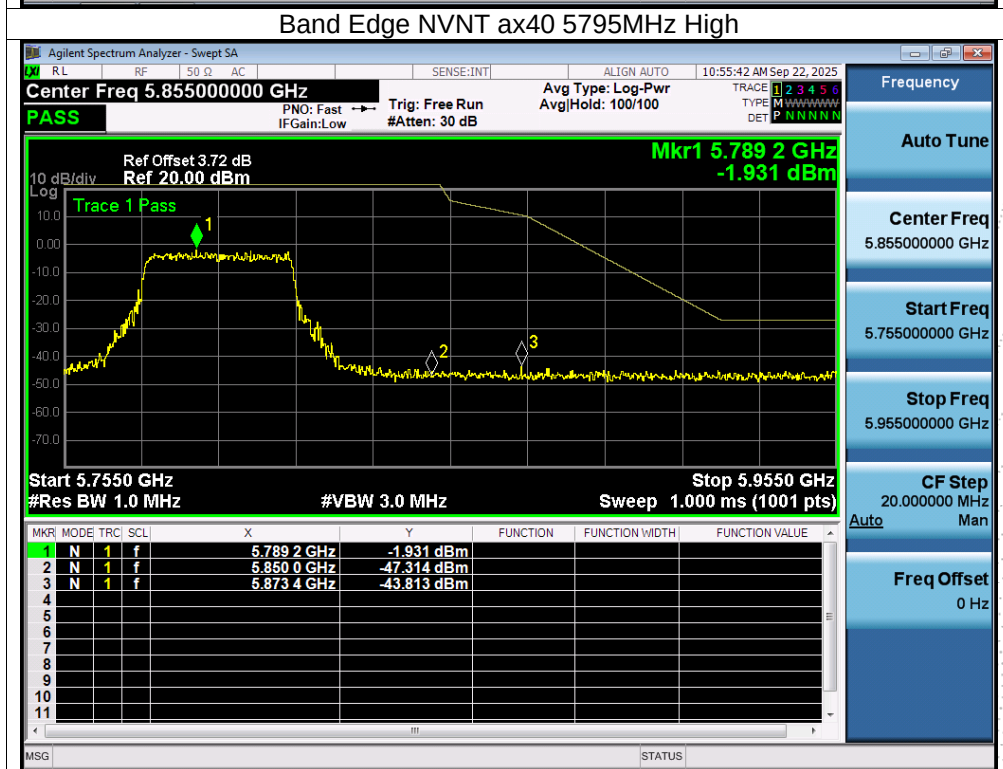
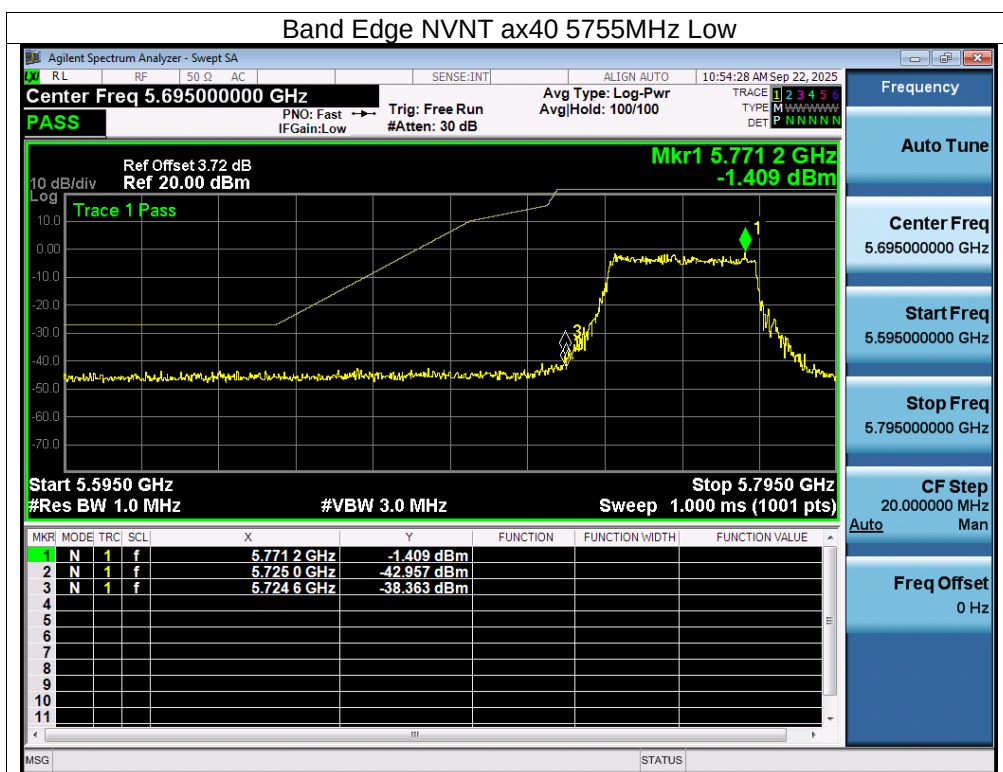
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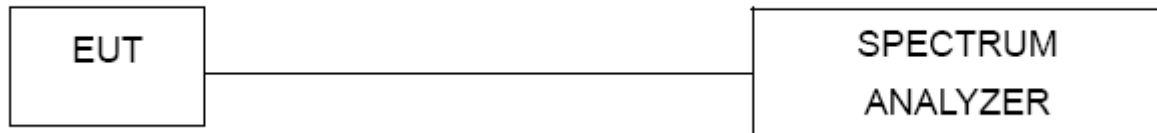






12. Spurious RF Conducted Emissions

12.1 Block Diagram Of Test Setup



12.2 Limit

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

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

(2) For transmitters operating in the 5.725-5.85 GHz band(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

12.3 Test procedure

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

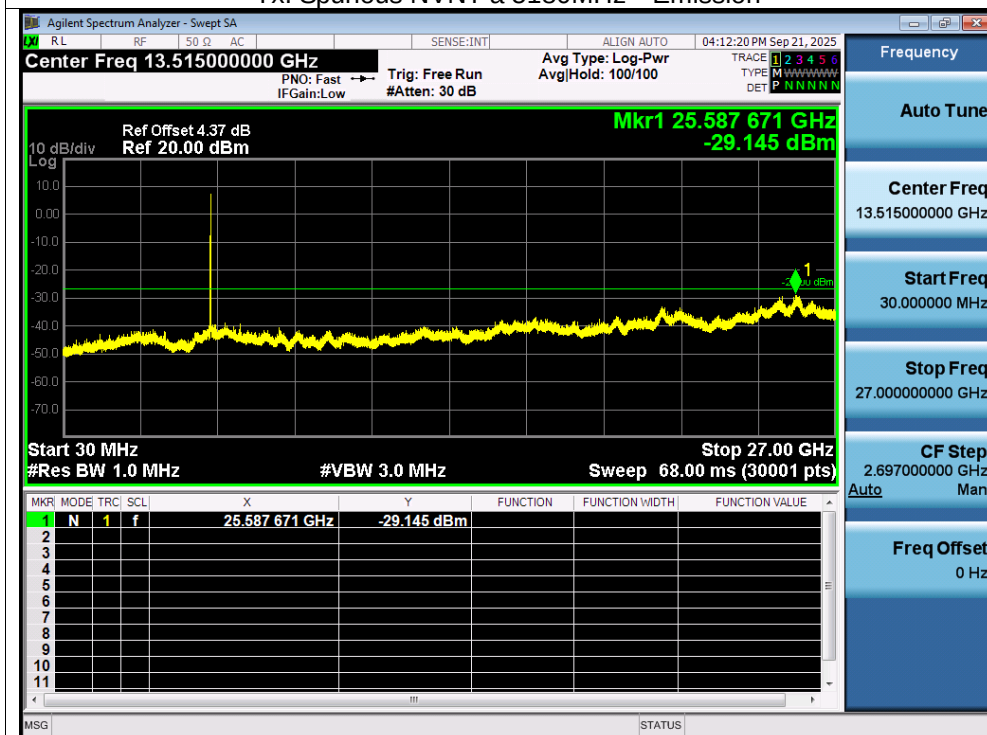
12.4 Test Result

Remark: The measurement frequency range is from 9KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandedge measurement data.

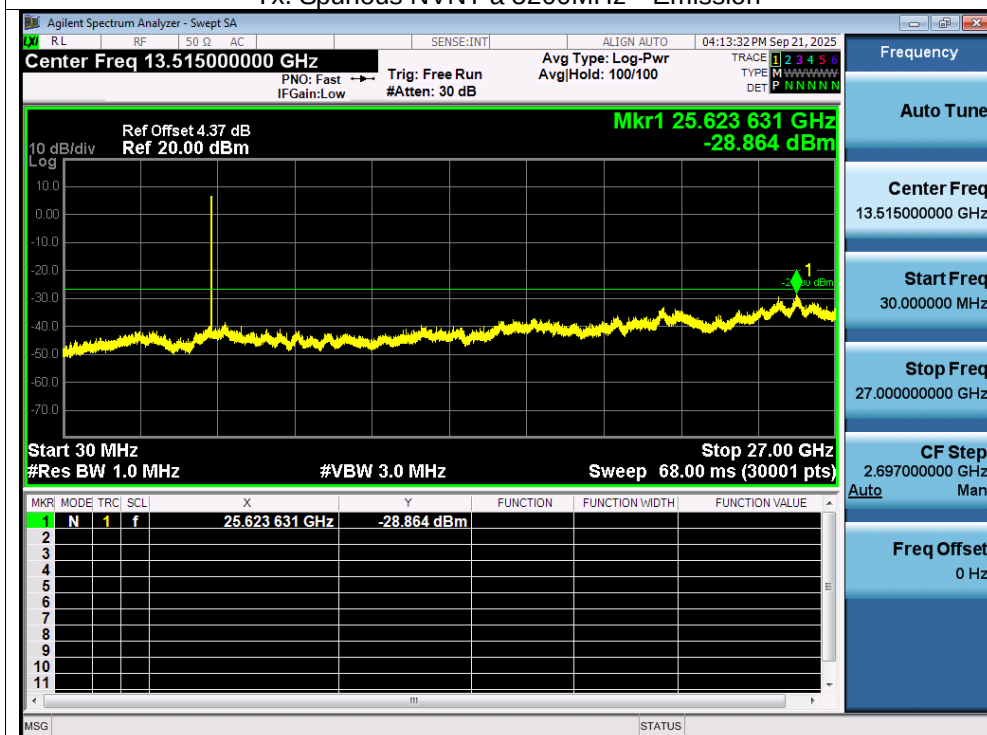
About: 26.5GHz-40GHz, The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

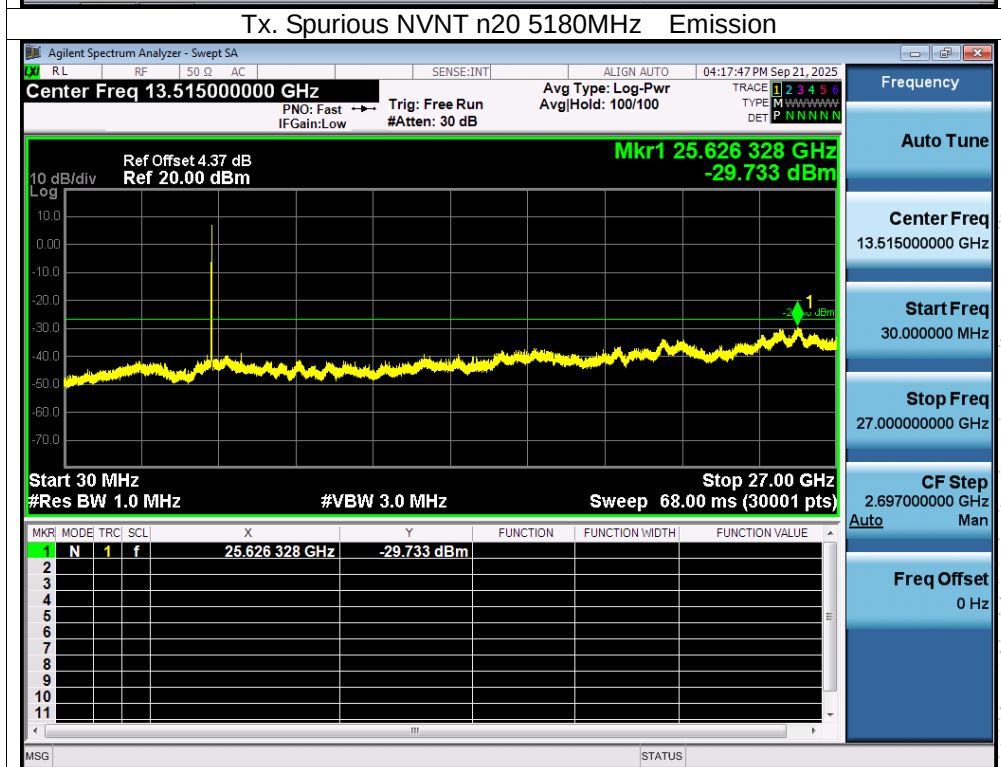
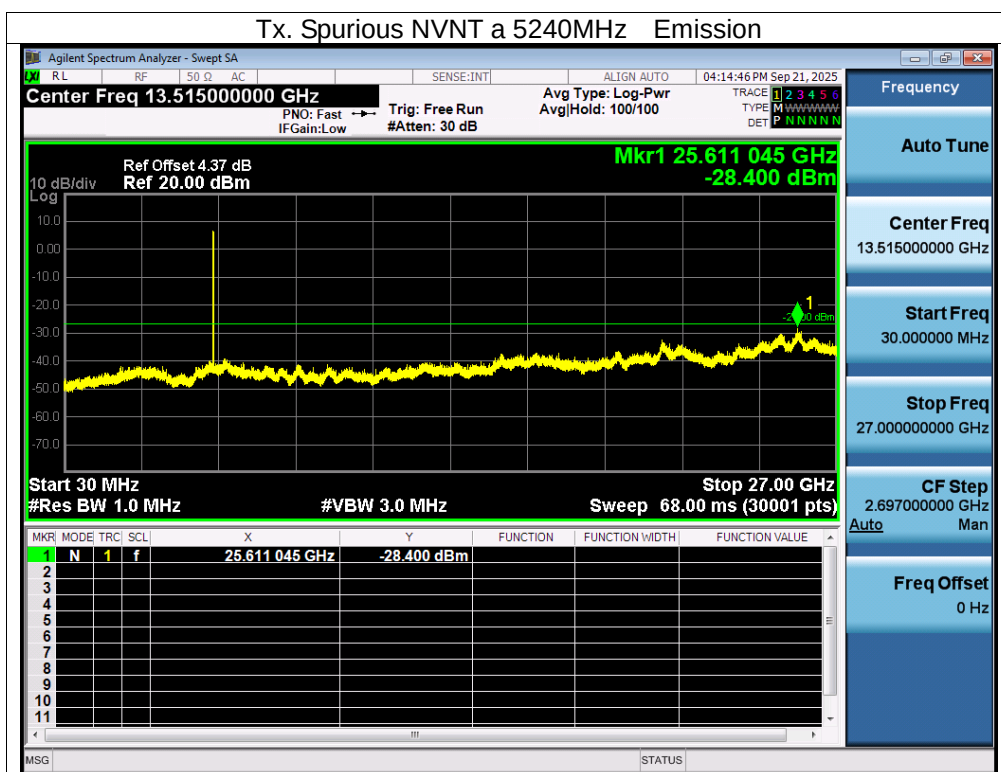
Test Graphs

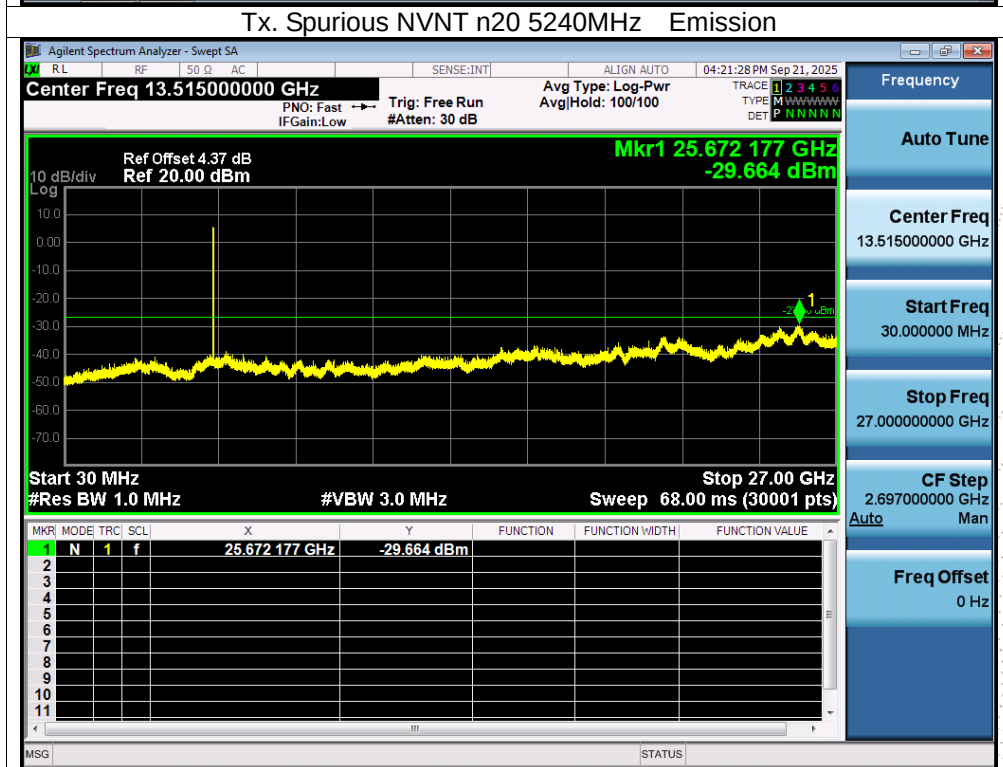
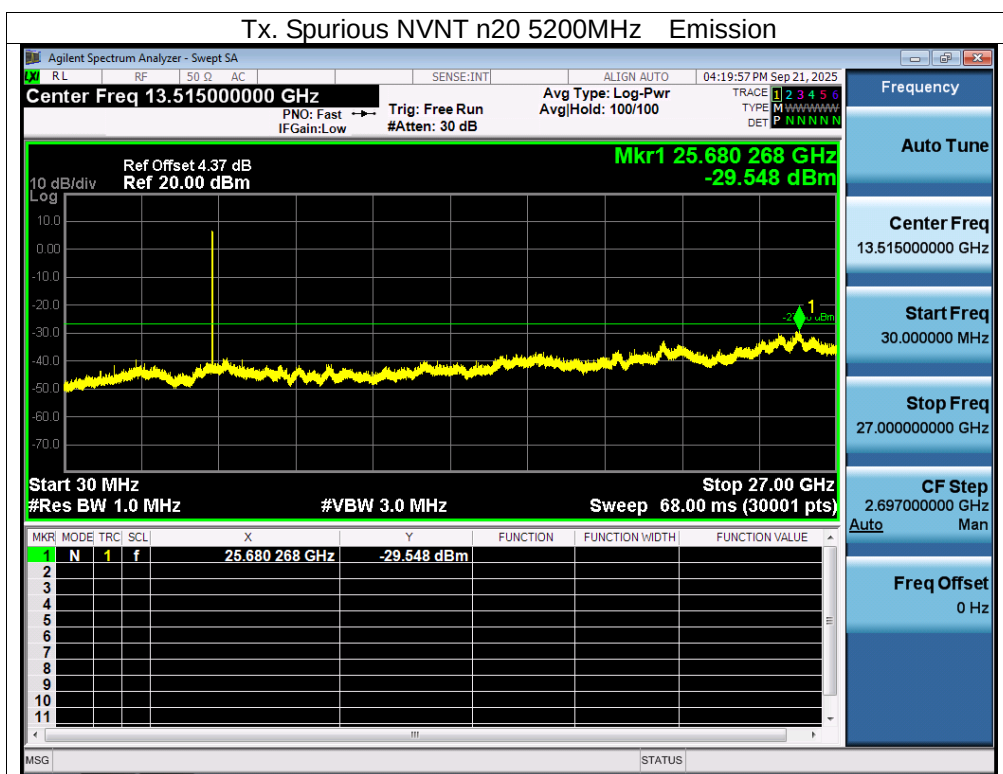
Tx. Spurious NVNT a 5180MHz Emission

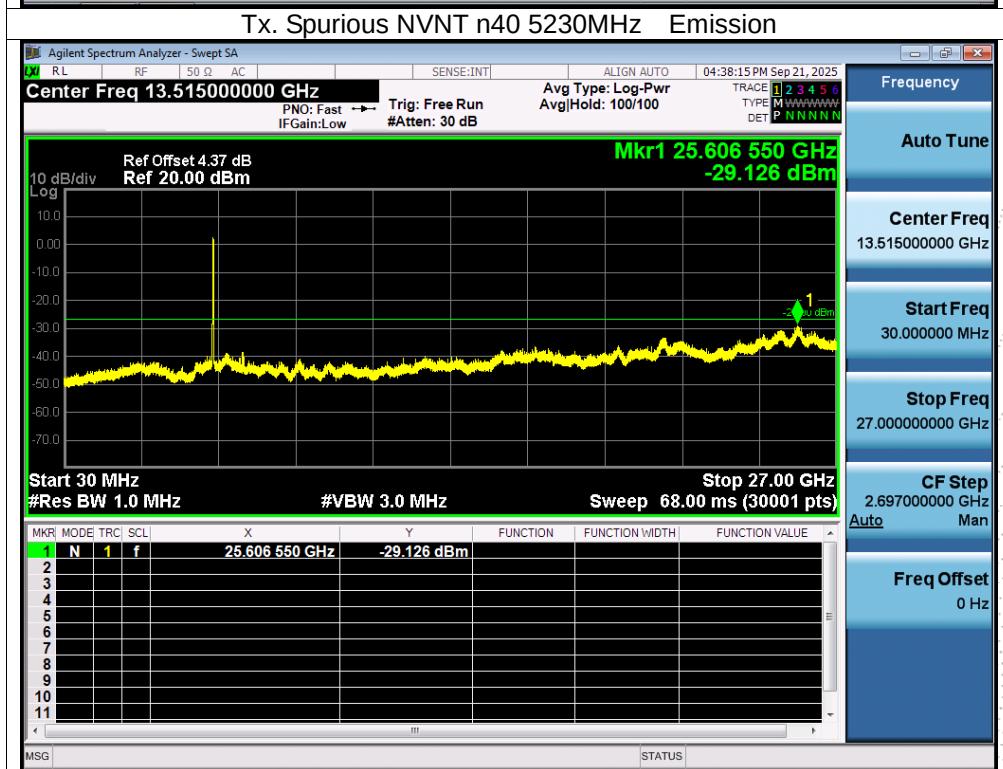
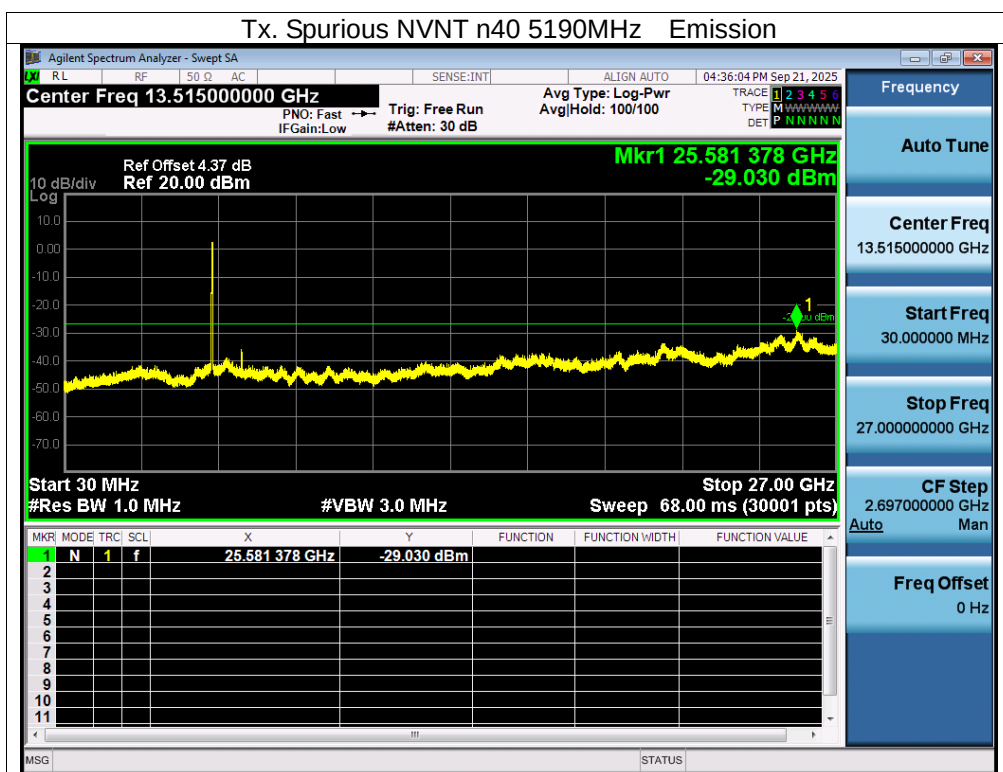


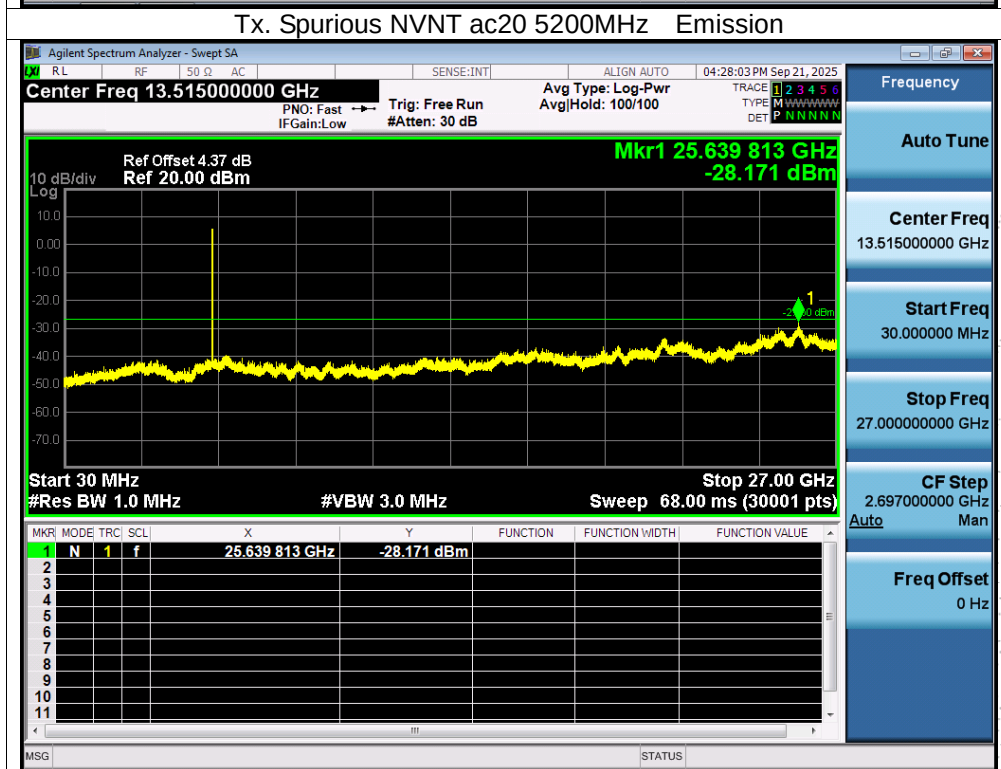
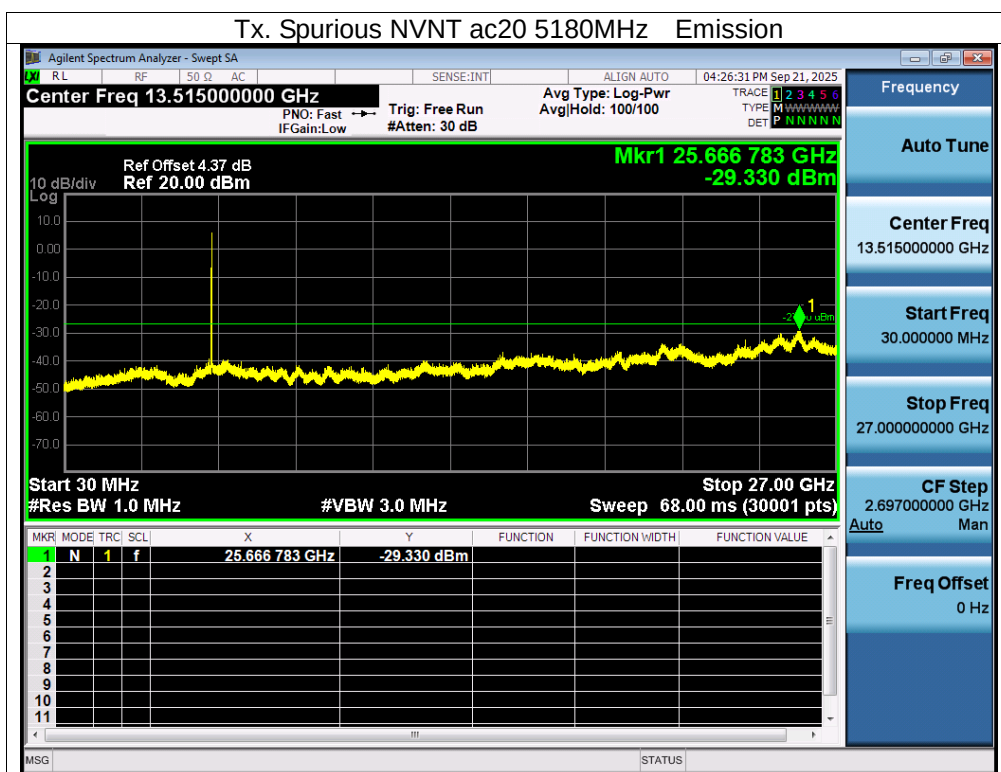
Tx. Spurious NVNT a 5200MHz Emission



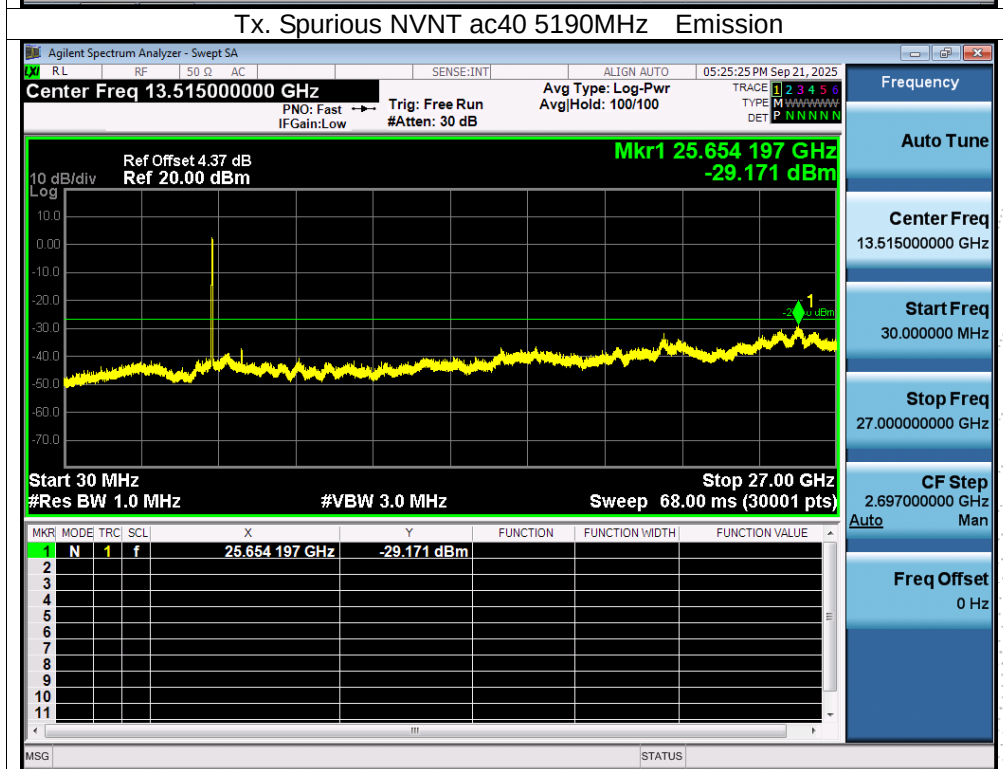
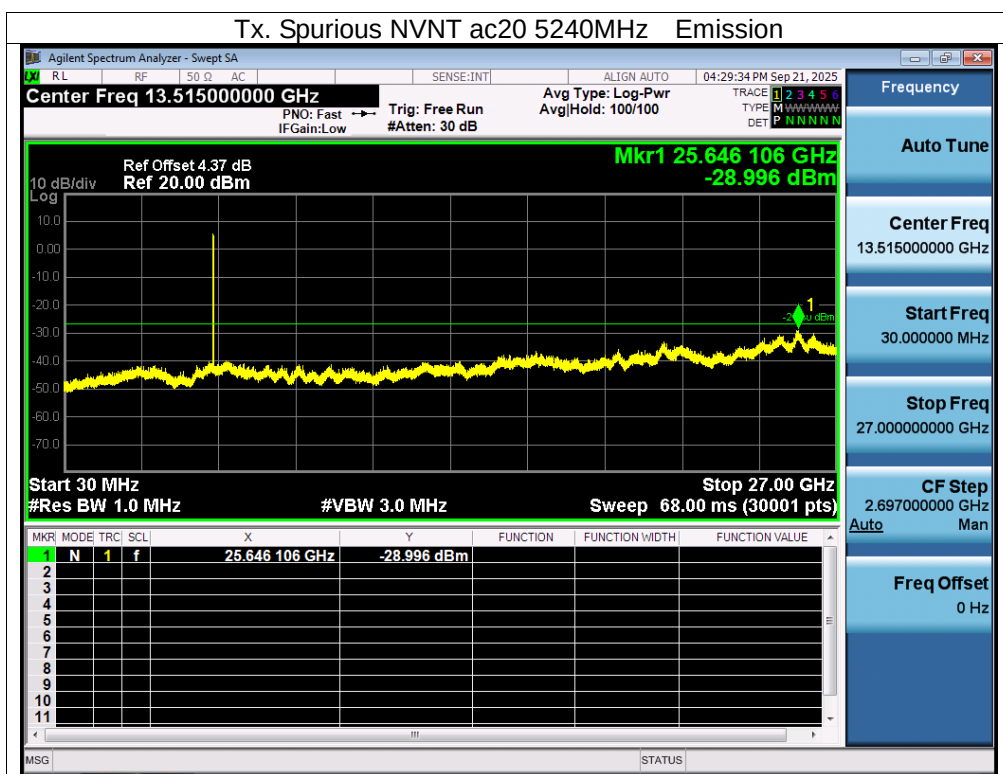


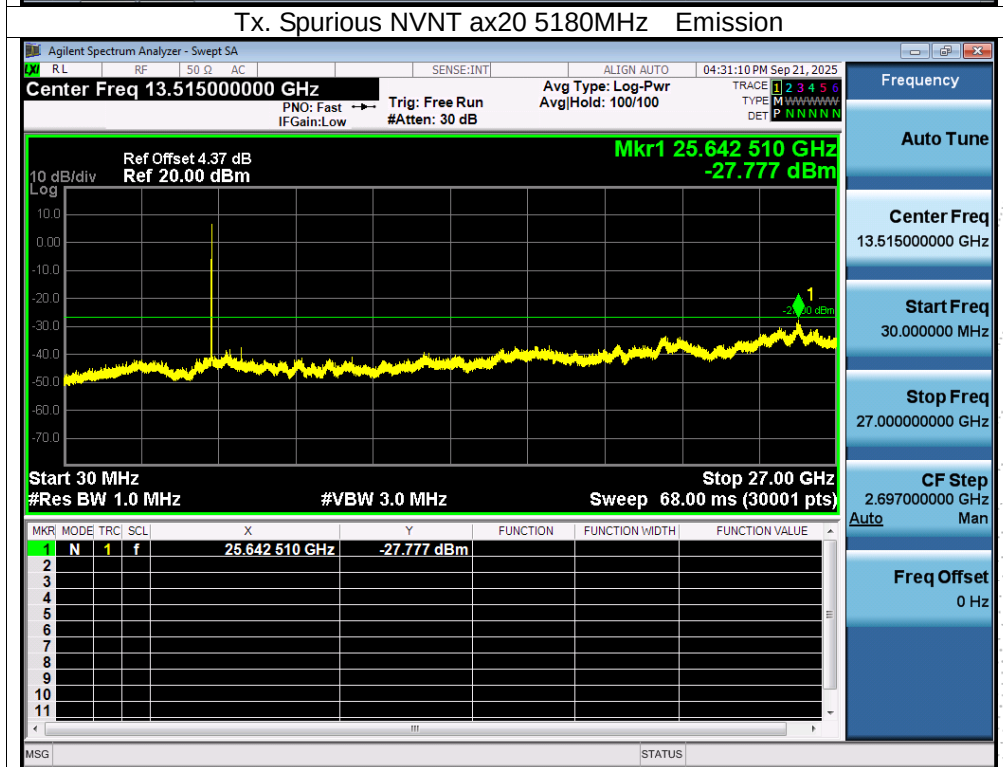
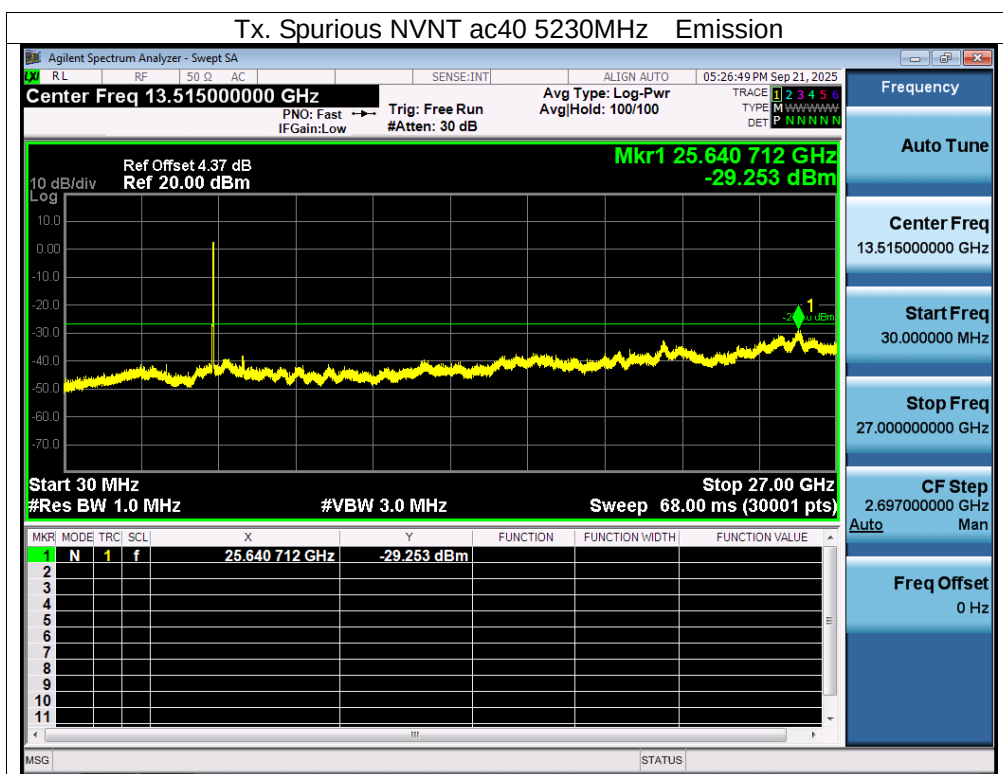


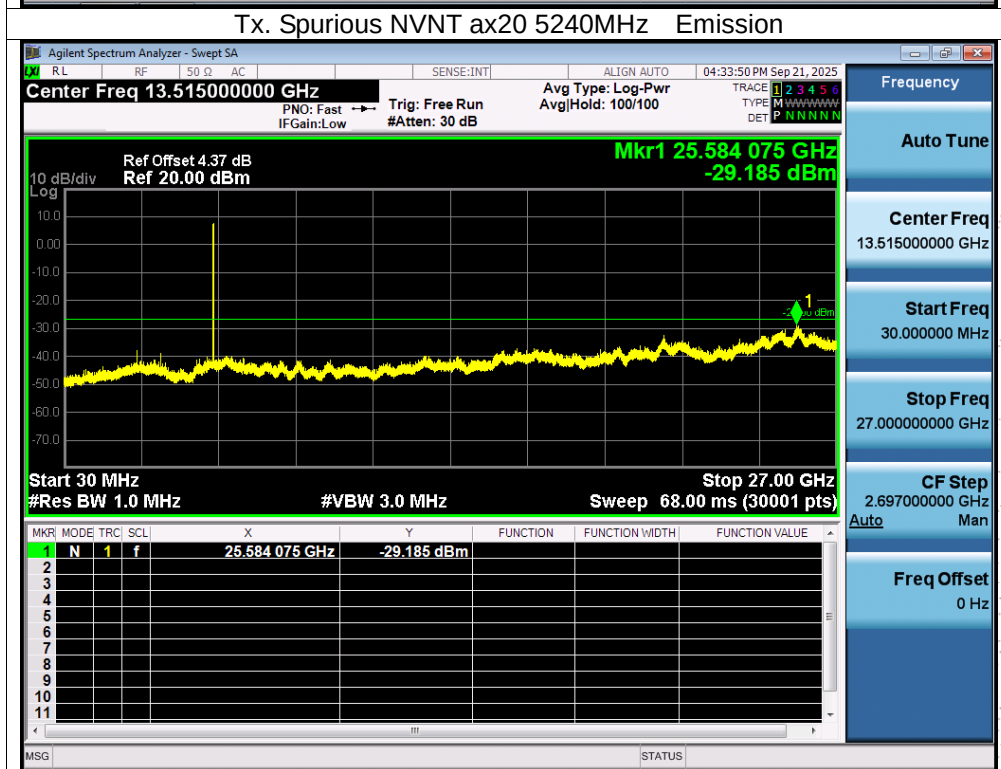
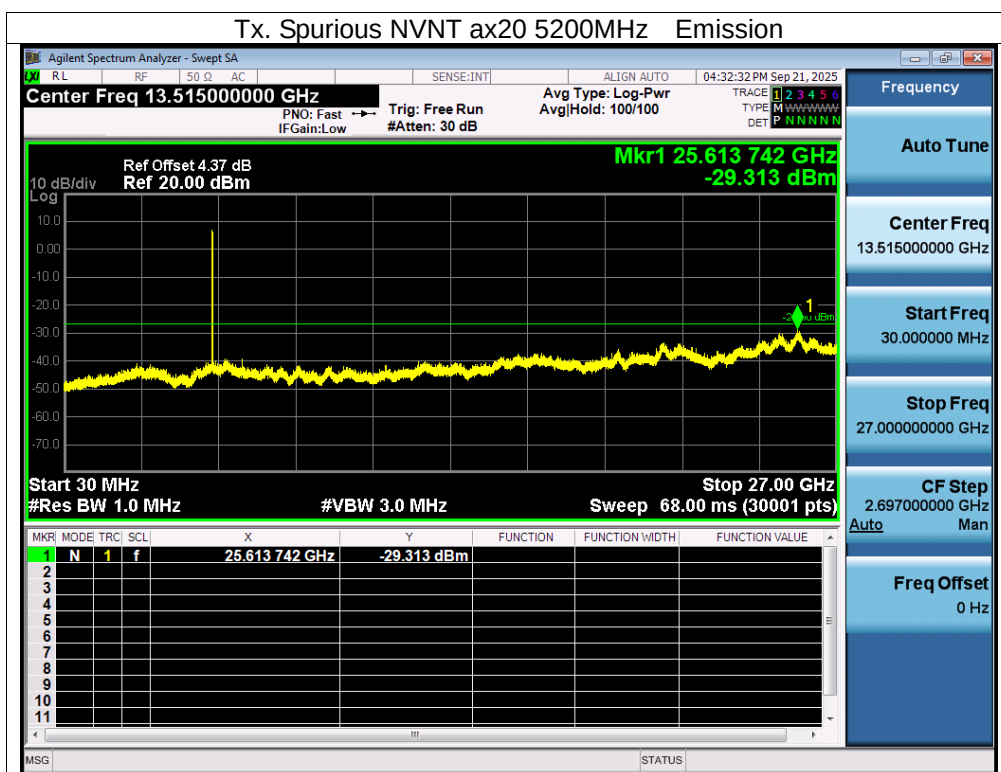


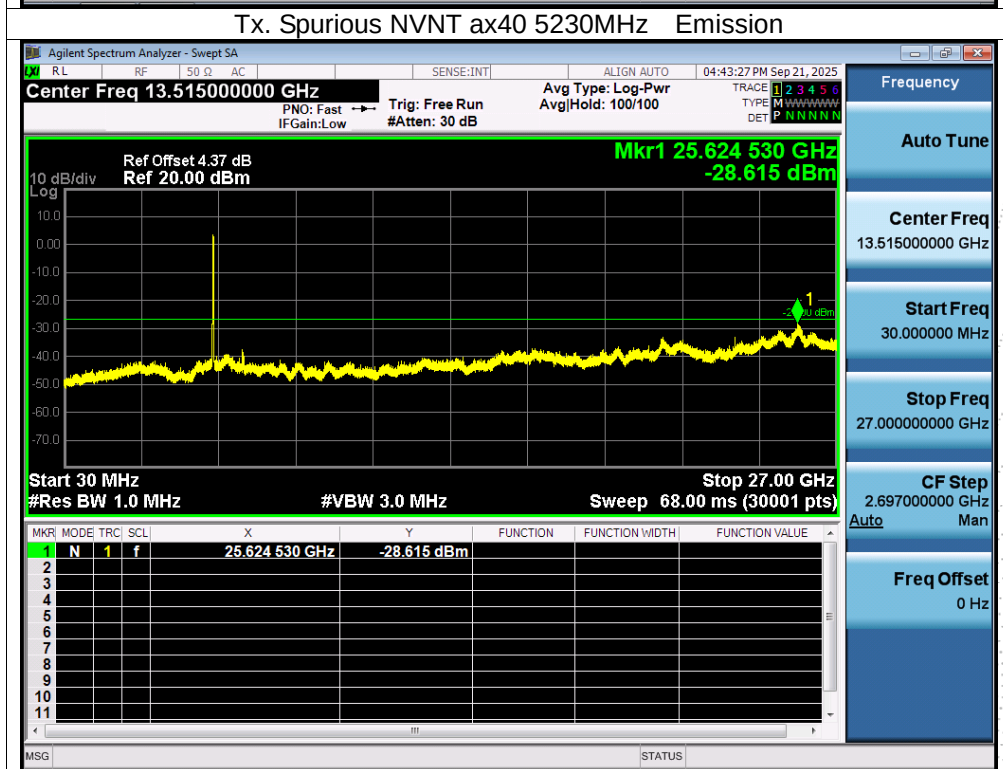
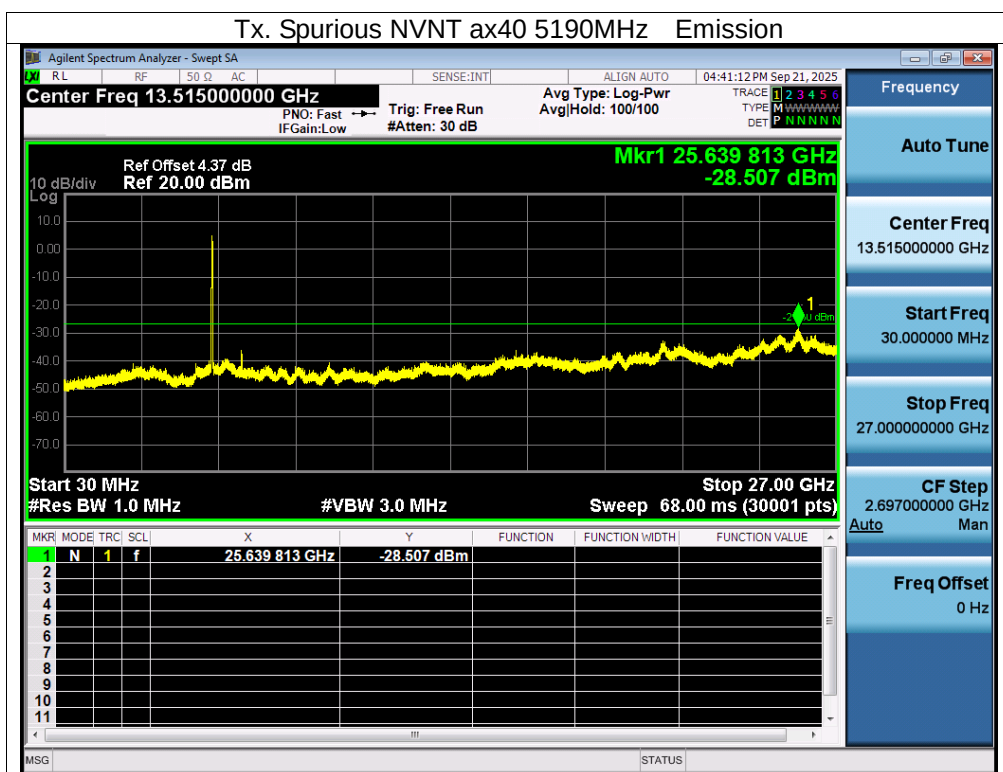


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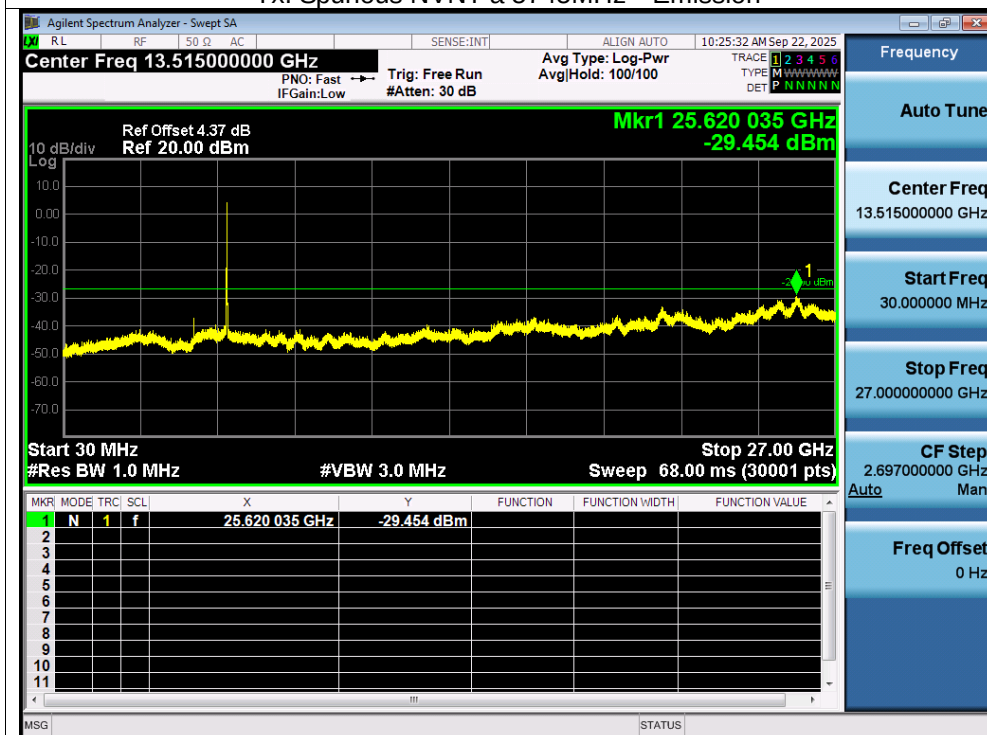




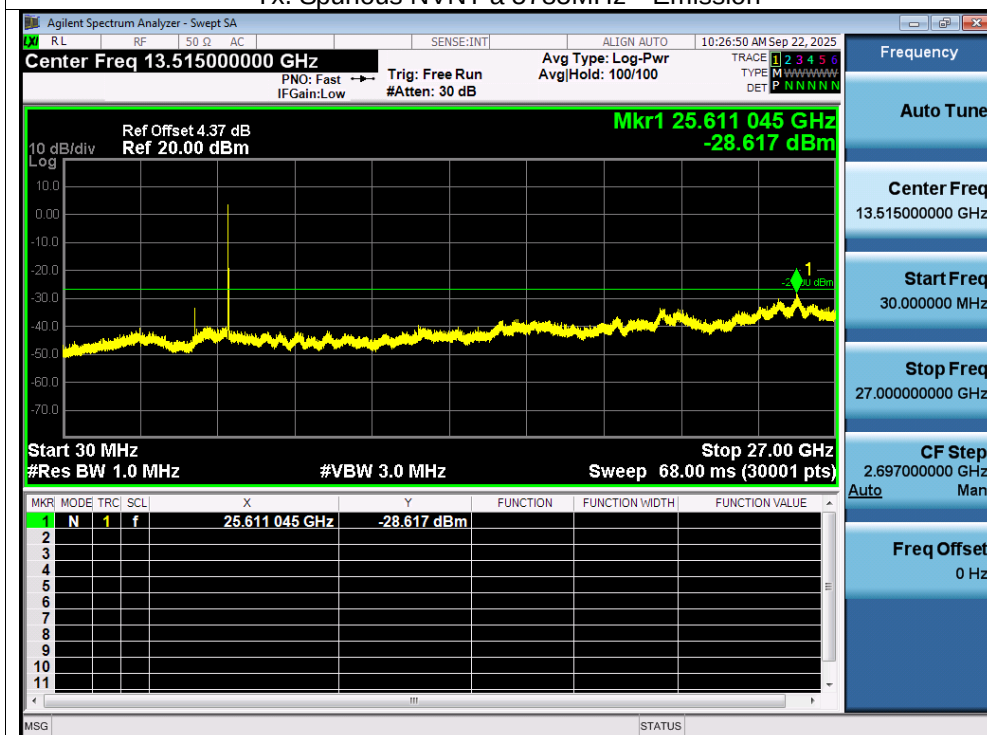


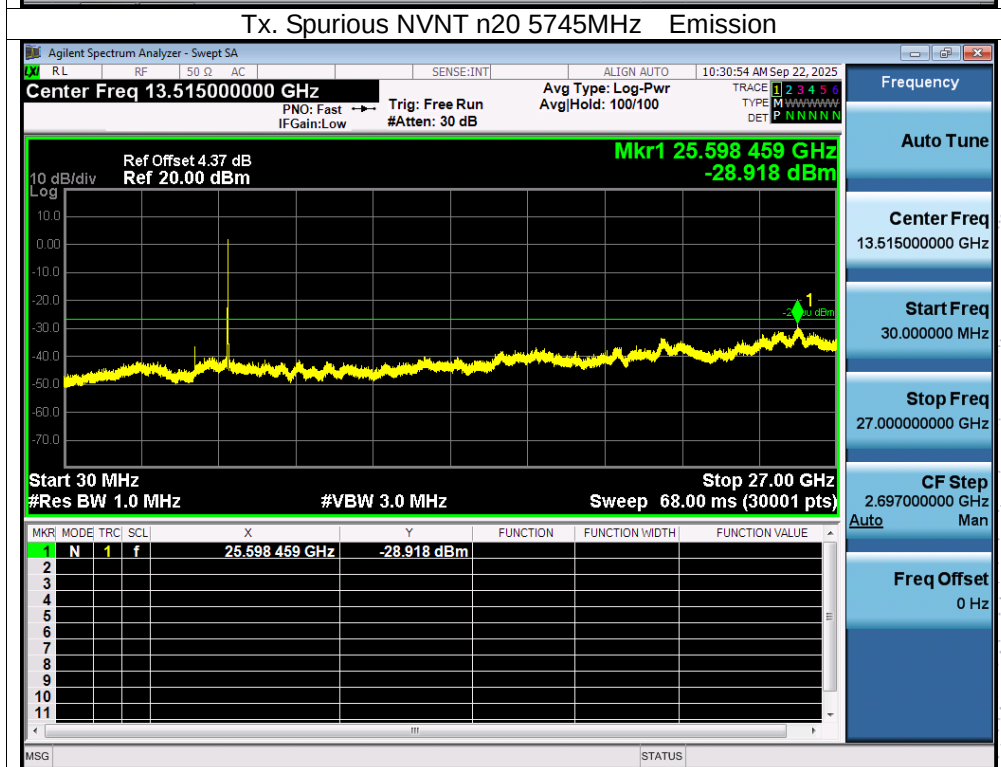
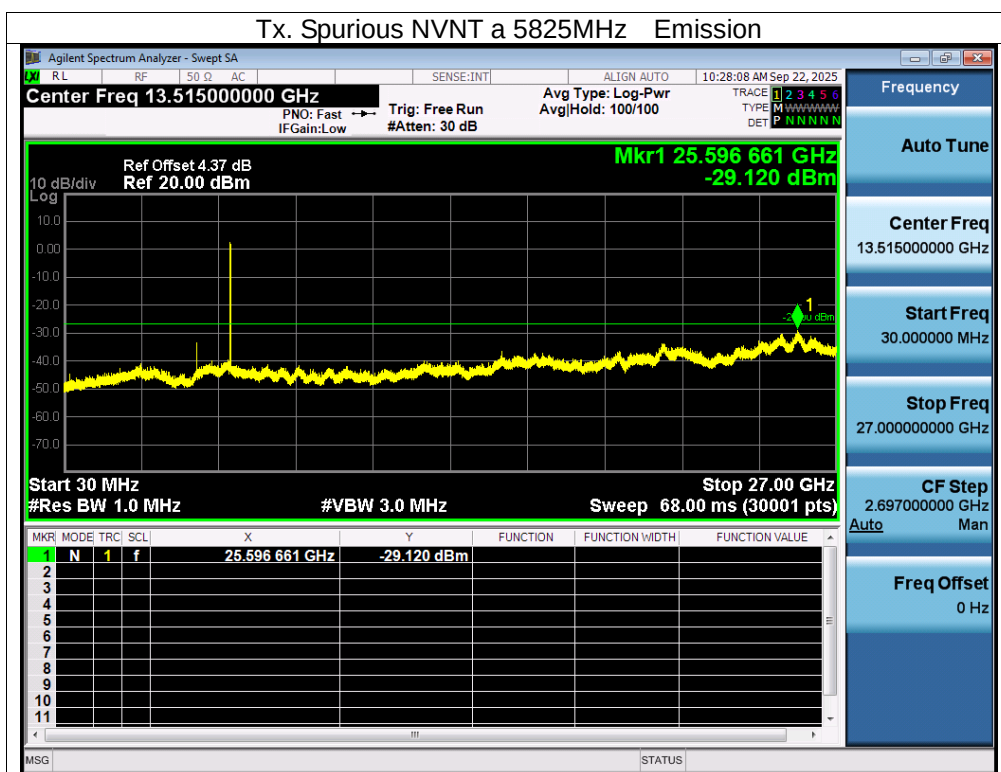
Test Graphs

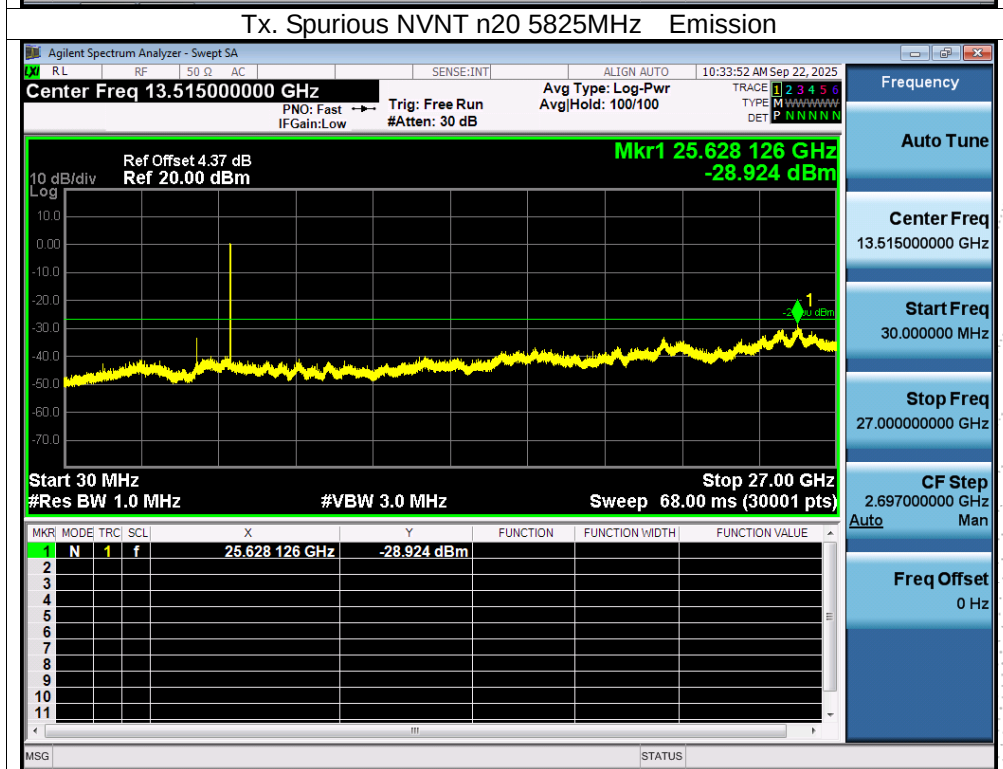
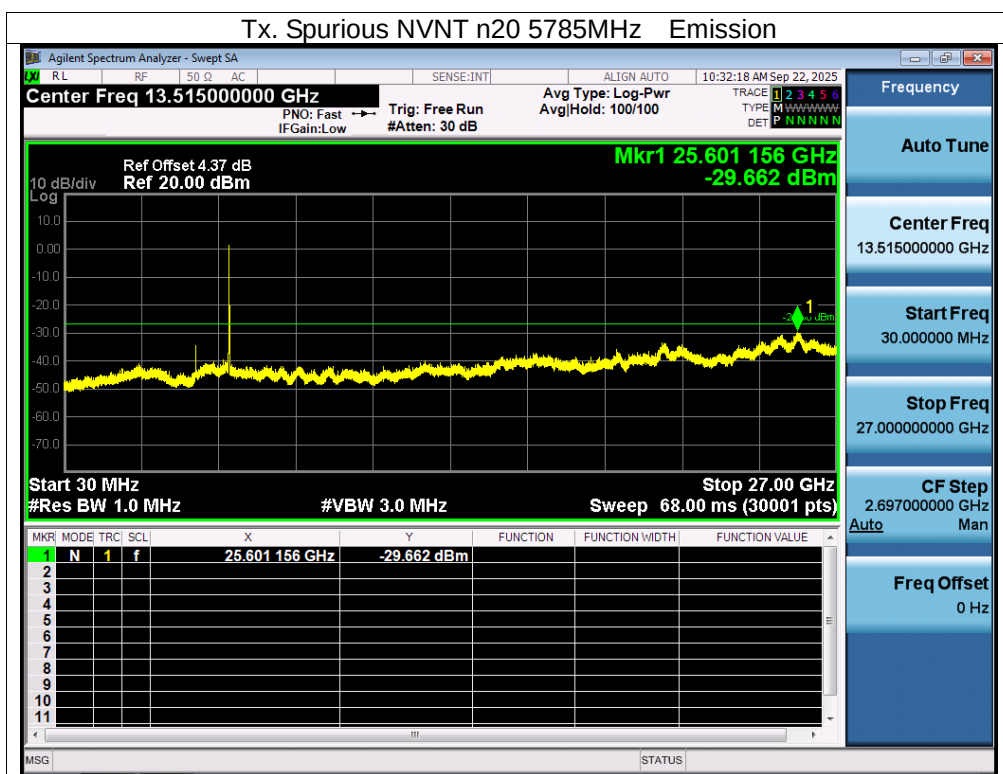
Tx. Spurious NVNT a 5745MHz Emission



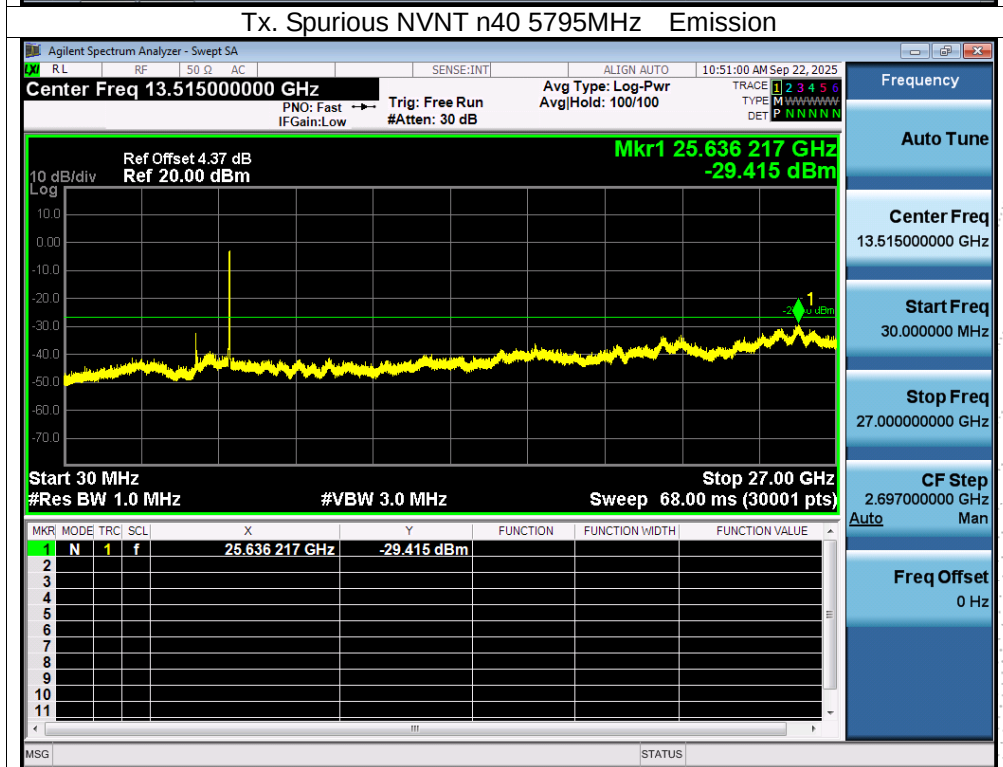
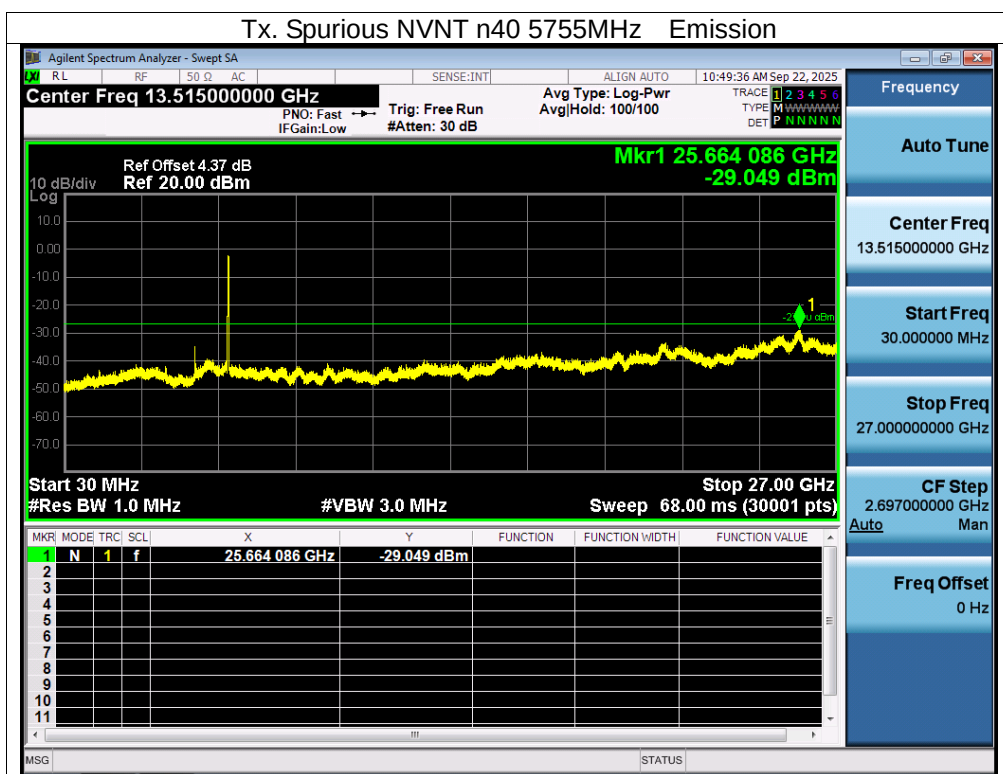
Tx. Spurious NVNT a 5785MHz Emission

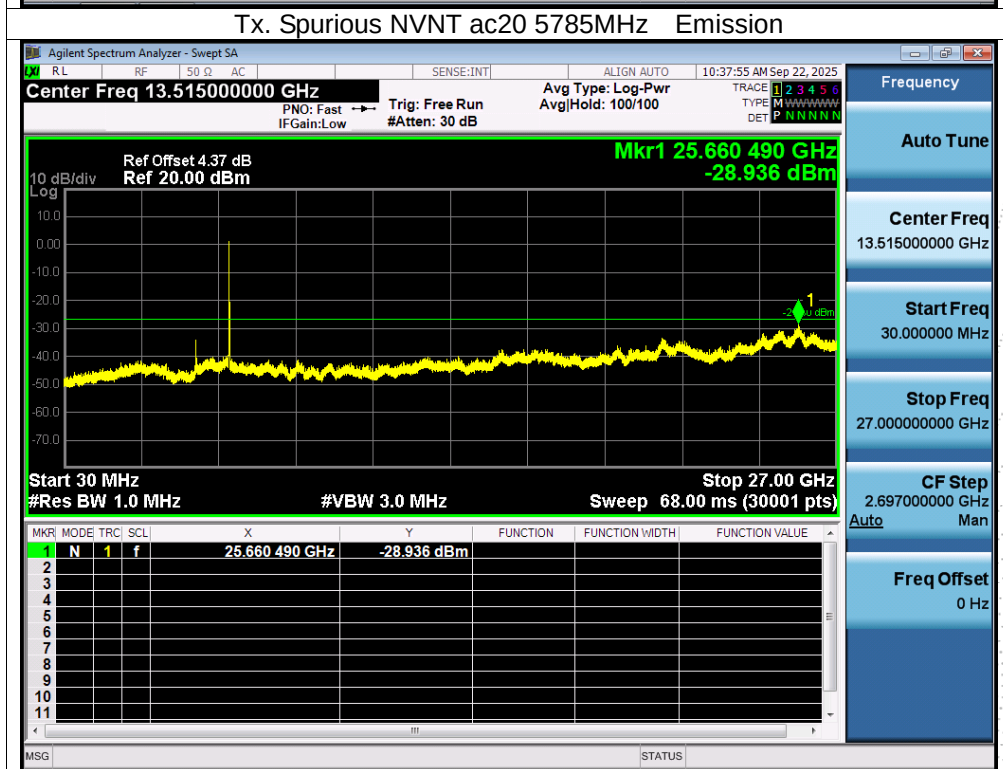
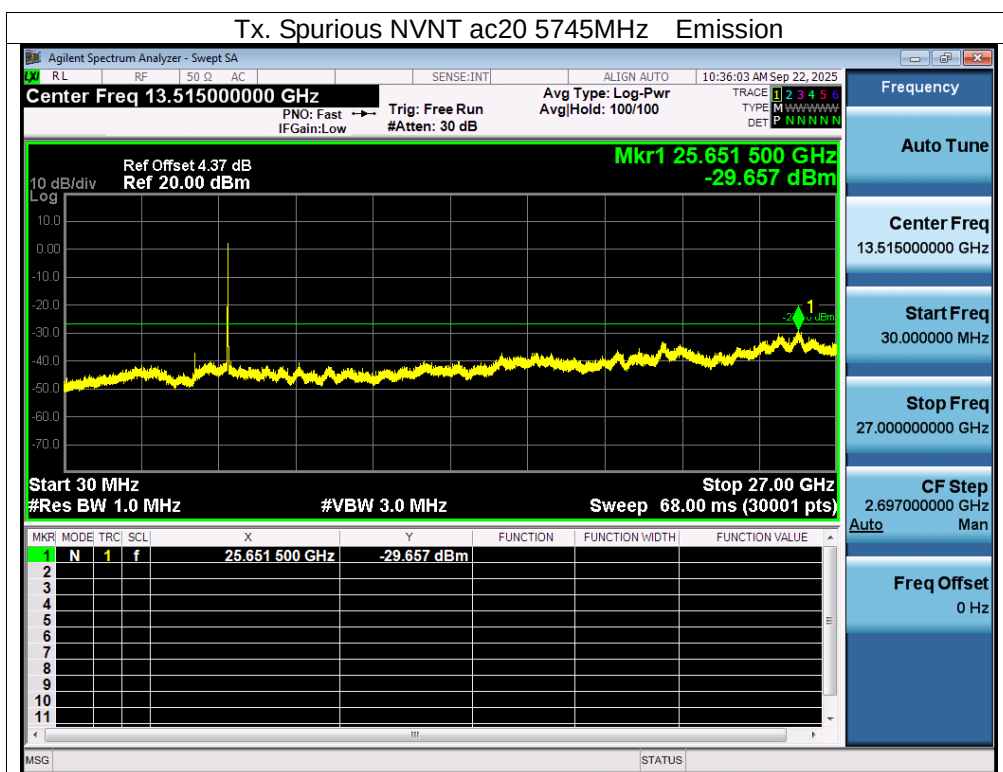


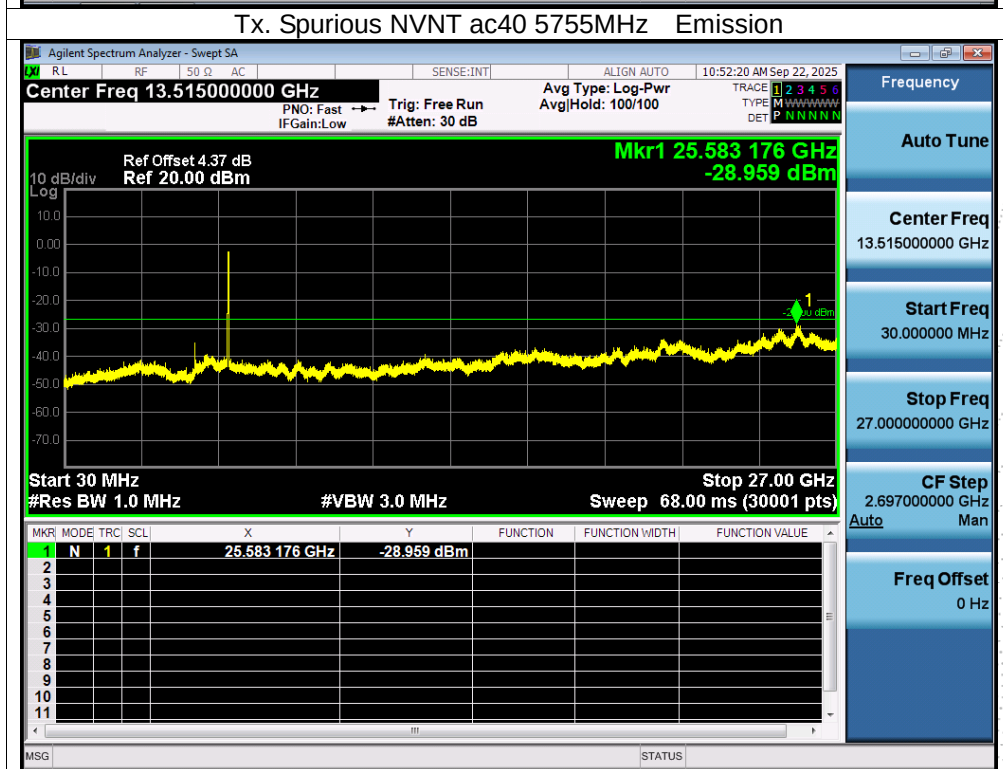
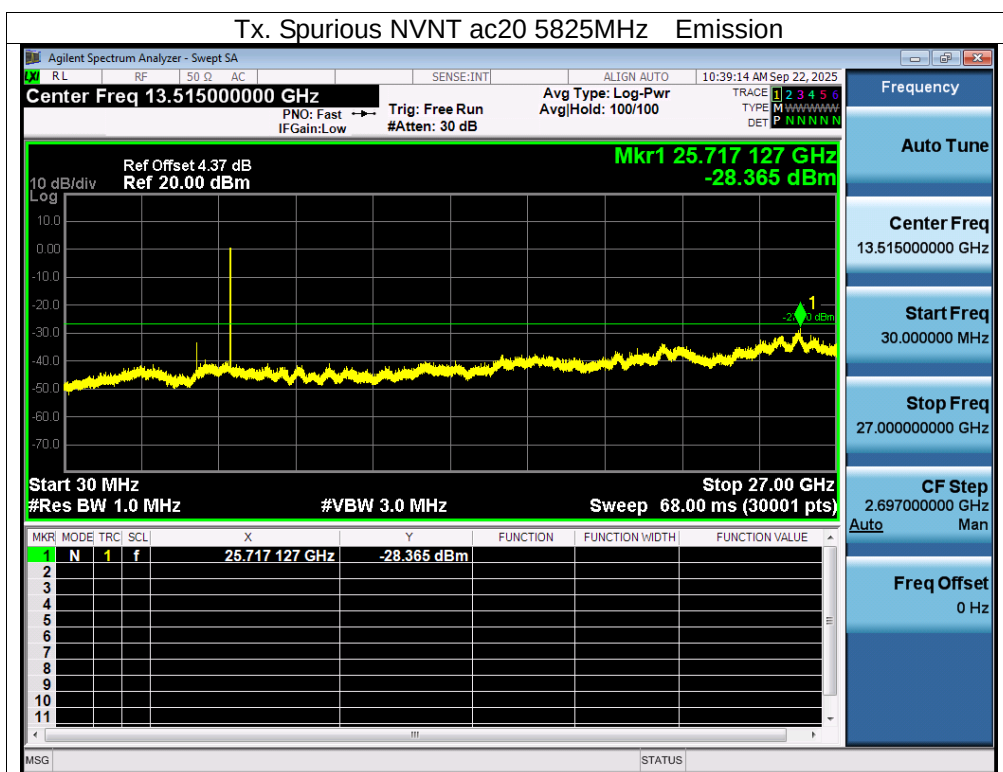


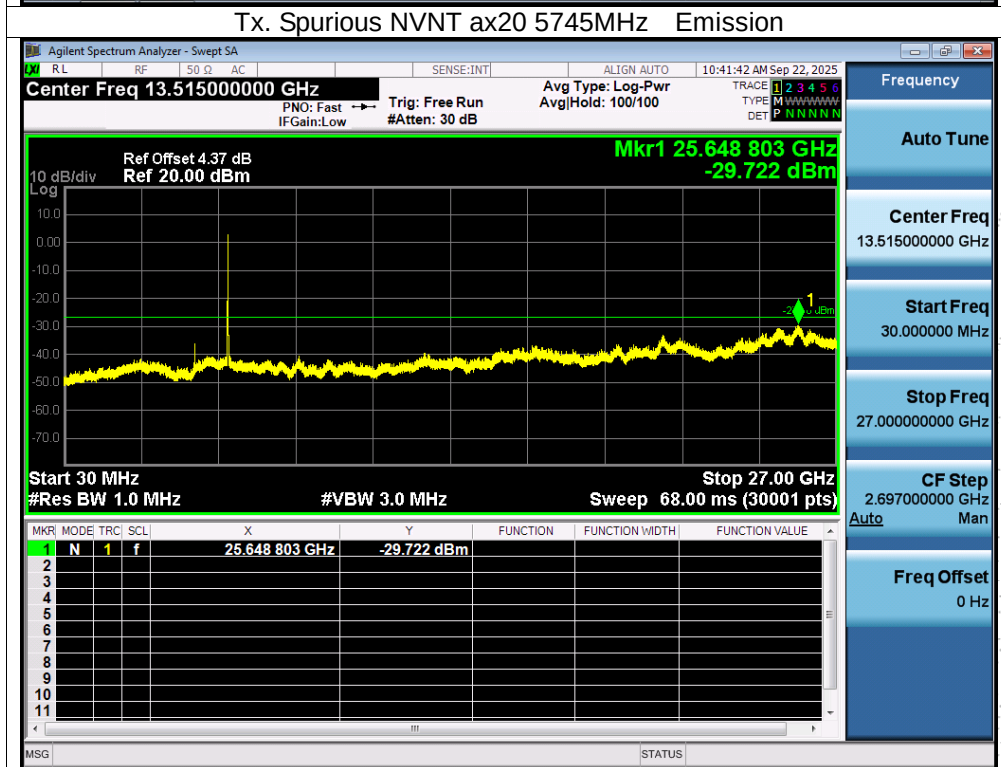
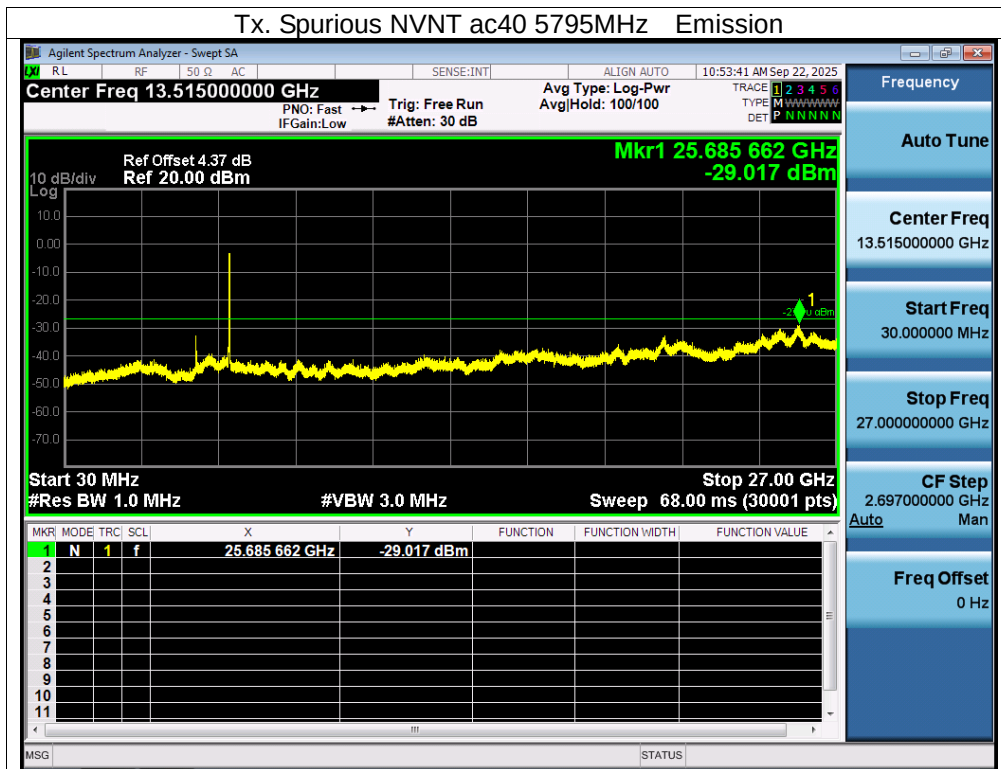


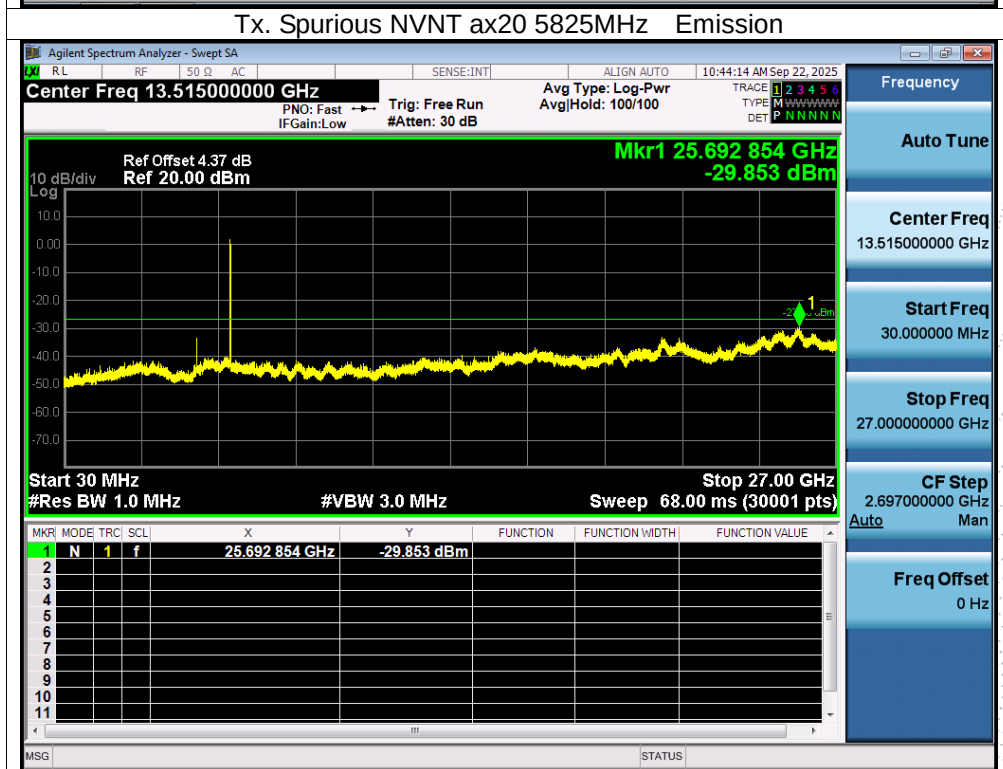
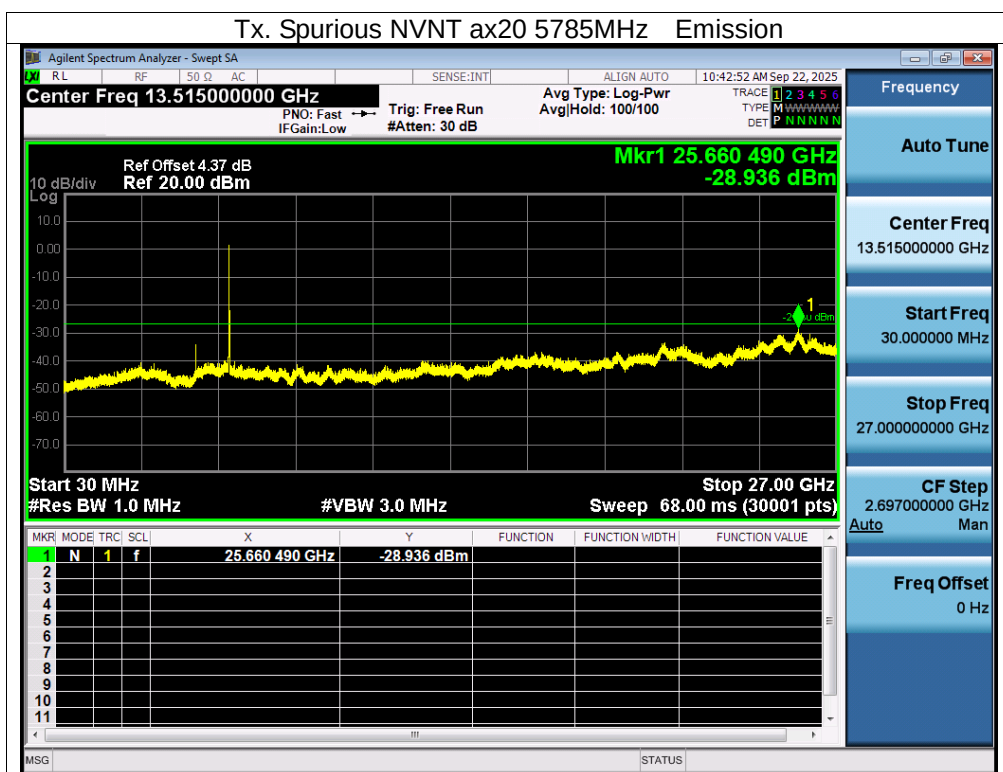
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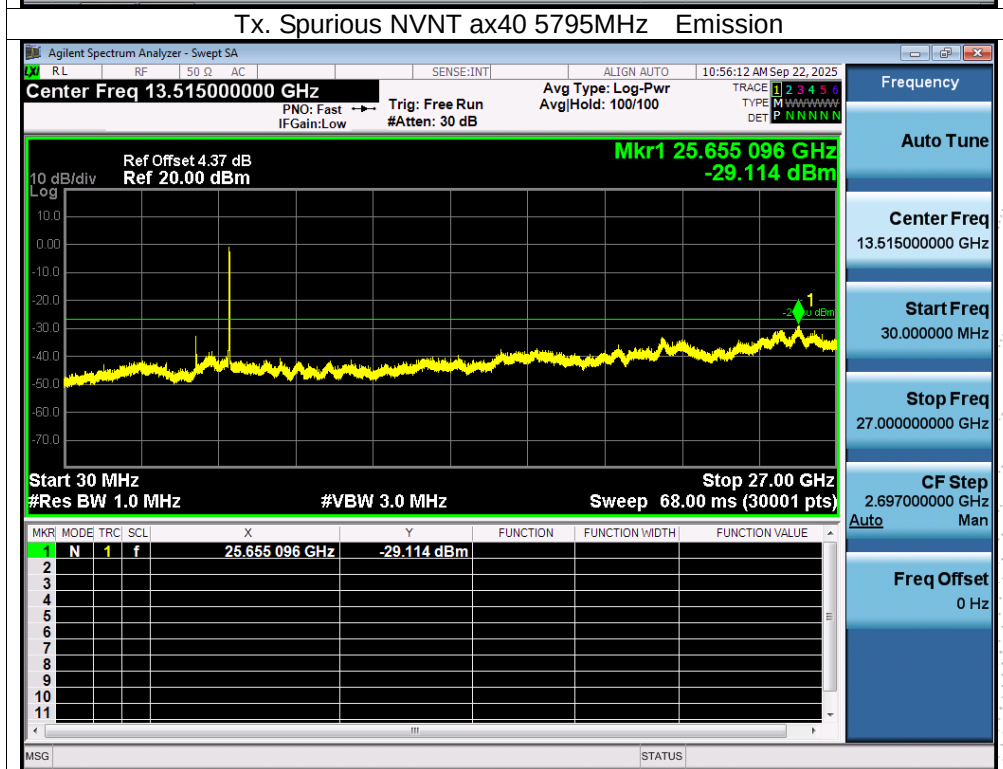
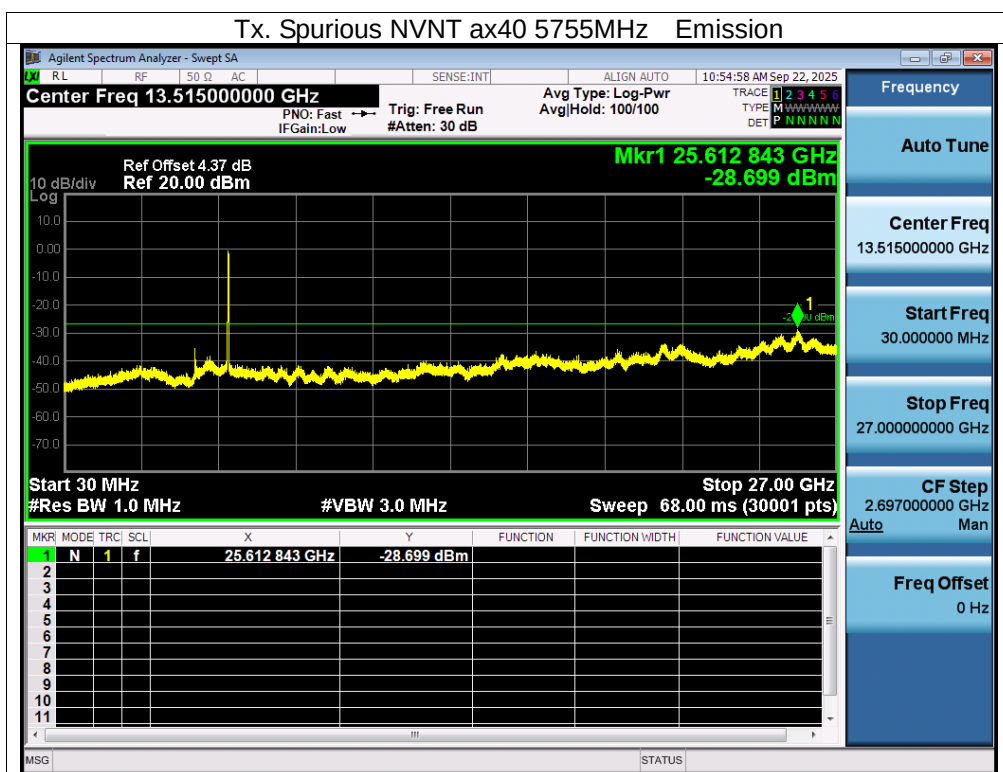












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13. Frequency Stability Measurement

13.1 Block Diagram Of Test Setup



13.2 Limit

Manufactures 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.

The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band (IEEE 802.11n specification).

13.3 Test procedure

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. f_c is declaring of channel frequency. Then the frequency error formula is $(f_c - f)/f_c \times 10^6$ ppm and he limit is less than ± 20 ppm (IEEE 802.11n specification).
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
7. Extreme temperature is $-20^{\circ}\text{C} \sim 70^{\circ}\text{C}$.

13.4 Test Result

Temperature:	26 °C	Relative Humidity:	54%RH
Pressure:	101KPa	Test Voltage:	AC120V/60Hz
Test Mode:	TX (5.1G) Mode Frequency U-NII-1 (5180-5240MHz)		

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5180.0075	5180	0.0075	1.4479
		V max (V)	138.00	5180.0007	5180	0.0007	0.1351
		V min (V)	102.00	5180.0125	5180	0.0125	2.4131
Limits				5150-5250 MHz			
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)	-20	5180.0097	5180	0.0097	1.8726
		T (°C)	-10	5180.0011	5180	0.0011	0.2124
		T (°C)	0	5180.0065	5180	0.0065	1.2548
		T (°C)	10	5180.0053	5180	0.0053	1.0232
		T (°C)	20	5180.0047	5180	0.0047	0.9073
		T (°C)	30	5180.0039	5180	0.0039	0.7529
		T (°C)	40	5180.0059	5180	0.0059	1.1390
		T (°C)	50	5180.0096	5180	0.0096	1.8533
		T (°C)	60	5180.0103	5180	0.0103	1.9884
		T (°C)	70	5180.0049	5180	0.0049	0.9459
Limits				5150-5250 MHz			
Result				Complies			

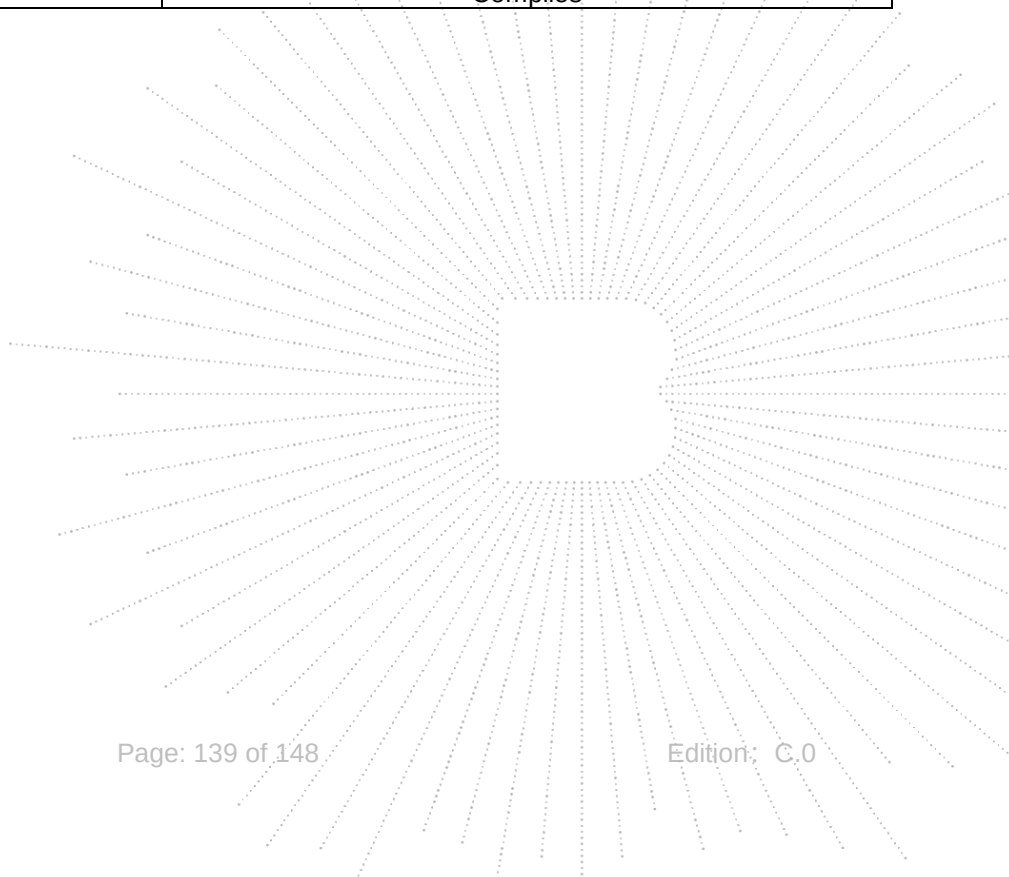
Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5200.0042	5200	0.0042	0.8077
		V max (V)	138.00	5200.0010	5200	0.0010	0.1923
		V min (V)	102.00	5200.0072	5200	0.0072	1.3846
Limits				5150-5250 MHz			
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)	-20	5200.0123	5200	0.0123	2.3654
		T (°C)	-10	5200.0037	5200	0.0037	0.7115
		T (°C)	0	5200.0110	5200	0.0110	2.1154
		T (°C)	10	5200.0125	5200	0.0125	2.4038
		T (°C)	20	5200.0062	5200	0.0062	1.1923
		T (°C)	30	5200.0082	5200	0.0082	1.5769
		T (°C)	40	5200.0005	5200	0.0005	0.0962
		T (°C)	50	5200.0038	5200	0.0038	0.7308
		T (°C)	60	5200.0128	5200	0.0128	2.4615
		T (°C)	70	5200.0003	5200	0.0003	0.0577
Limits				5150-5250 MHz			
Result				Complies			

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Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5240.0117	5240	0.0117	2.2328
		V max (V)	138.00	5240.0099	5240	0.0099	1.8893
		V min (V)	102.00	5240.0027	5240	0.0027	0.5153
Limits				5150-5250 MHz			
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)	-20	5240.0111	5240	0.0111	2.1183
		T (°C)	-10	5240.0132	5240	0.0132	2.5191
		T (°C)	0	5240.0095	5240	0.0095	1.8130
		T (°C)	10	5240.0053	5240	0.0053	1.0115
		T (°C)	20	5240.0017	5240	0.0017	0.3244
		T (°C)	30	5240.0041	5240	0.0041	0.7824
		T (°C)	40	5240.0090	5240	0.0090	1.7176
		T (°C)	50	5240.0073	5240	0.0073	1.3931
		T (°C)	60	5240.0052	5240	0.0052	0.9924
		T (°C)	70	5240.0107	5240	0.0107	2.0420
Limits				5150-5250 MHz			
Result				Complies			

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Temperature:	26 °C	Relative Humidity:	54%RH
Pressure:	101KPa	Test Voltage:	AC120V/60Hz
Test Mode:	TX (5.8G) Mode Frequency U-NII-3 (5745-5825MHz)		

Voltage vs. Frequency Stabilit

TEST CONDITIONS				Reference Frequency: 5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5745.0027	5745	0.0027	0.4700
		V max (V)	138.00	5745.0059	5745	0.0059	1.0270
		V min (V)	102.00	5745.0064	5745	0.0064	1.1140
Limits				5725-5850 MHz			
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)	-20	5745.0016	5745	0.0016	0.2785
		T (°C)	-10	5745.0016	5745	0.0016	0.2785
		T (°C)	0	5745.0071	5745	0.0071	1.2359
		T (°C)	10	5745.0080	5745	0.0080	1.3925
		T (°C)	20	5745.0015	5745	0.0015	0.2611
		T (°C)	30	5745.0118	5745	0.0118	2.0540
		T (°C)	40	5745.0123	5745	0.0123	2.1410
		T (°C)	50	5745.0060	5745	0.0060	1.0444
		T (°C)	60	5745.0020	5745	0.0020	0.3481
		T (°C)	70	5745.0045	5745	0.0045	0.7833
Limits				5725-5850 MHz			
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)	120.00	5785.0093	5785	0.0093	1.6076
		V max (V)	138.00	5785.0080	5785	0.0080	1.3829
		V min (V)	102.00	5785.0020	5785	0.0020	0.3457
Limits				5725-5850 MHz			
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)	-20	5785.0046	5785	0.0046	0.7952
		T (°C)	-10	5785.0023	5785	0.0023	0.3976
		T (°C)	0	5785.0122	5785	0.0122	2.1089
		T (°C)	10	5785.0126	5785	0.0126	2.1780
		T (°C)	20	5785.0004	5785	0.0004	0.0691
		T (°C)	30	5785.0050	5785	0.0050	0.8643
		T (°C)	40	5785.0073	5785	0.0073	1.2619
		T (°C)	50	5785.0004	5785	0.0004	0.0691
		T (°C)	60	5785.0069	5785	0.0069	1.1927
		T (°C)	70	5785.0032	5785	0.0032	0.5532
Limits				5725-5850 MHz			
Result				Complies			

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Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5825.0039	5825	0.0039	0.6695
		V max (V)	138.00	5825.0124	5825	0.0124	2.1288
		V min (V)	102.00	5825.0135	5825	0.0135	2.3176
Limits				5725-5850 MHz			
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)	-20	5825.0087	5825	0.0087	1.4936
		T (°C)	-10	5825.0046	5825	0.0046	0.7897
		T (°C)	0	5825.0064	5825	0.0064	1.0987
		T (°C)	10	5825.0125	5825	0.0125	2.1459
		T (°C)	20	5825.0015	5825	0.0015	0.2575
		T (°C)	30	5825.0055	5825	0.0055	0.9442
		T (°C)	40	5825.0078	5825	0.0078	1.3391
		T (°C)	50	5825.0070	5825	0.0070	1.2017
		T (°C)	60	5825.0121	5825	0.0121	2.0773
		T (°C)	70	5825.0109	5825	0.0109	1.8712
Limits				5725-5850 MHz			
Result				Complies			

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14. Antenna Requirement

14.1 Limit

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.

14.2 Test Antenna

The EUT antenna is External antenna, antenna connector type is RP-SMA, and it is inside the EUT, fulfill the requirement of this section.



15. EUT Photographs

EUT Photo



NOTE: Appendix-Photographs Of EUT Constructional Details
(DE043CLW_External & Internal Photos)

BCTC
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PPR
Report

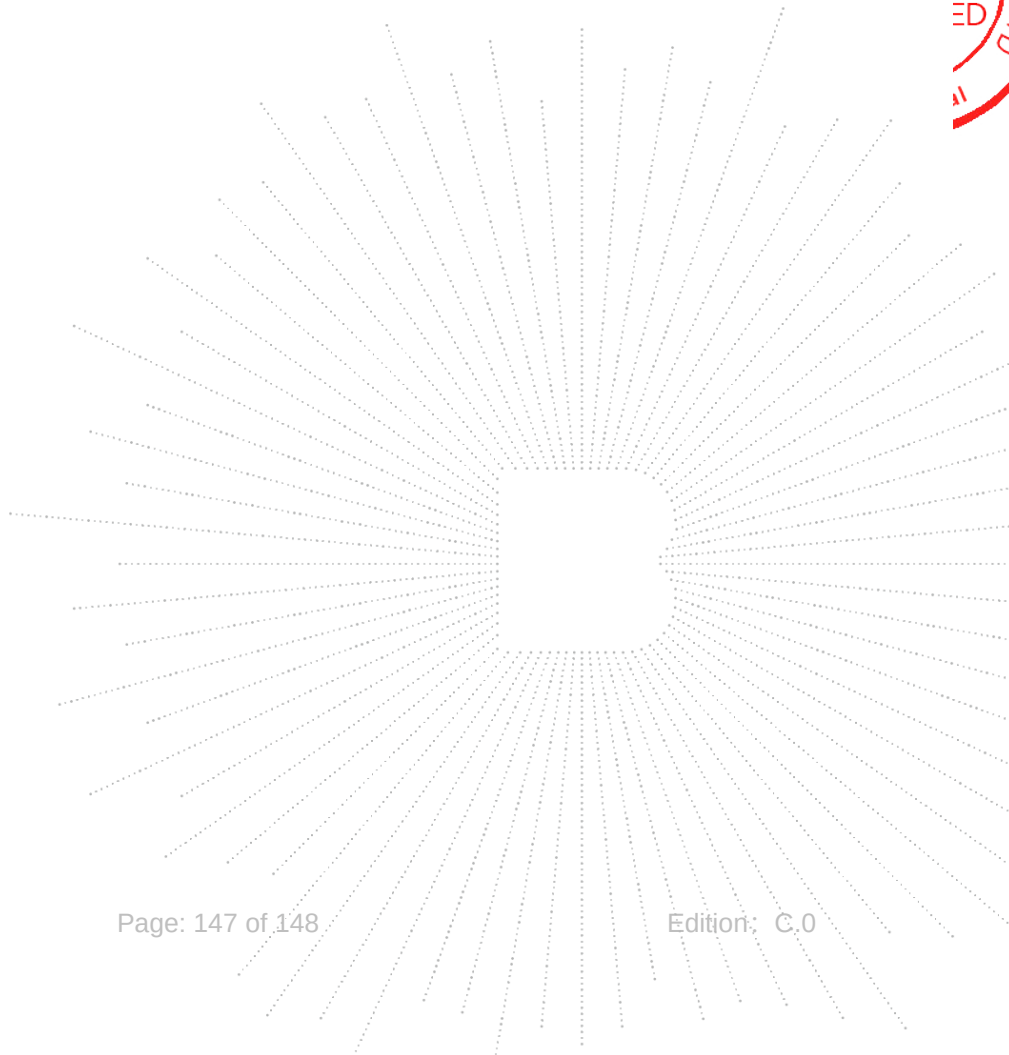
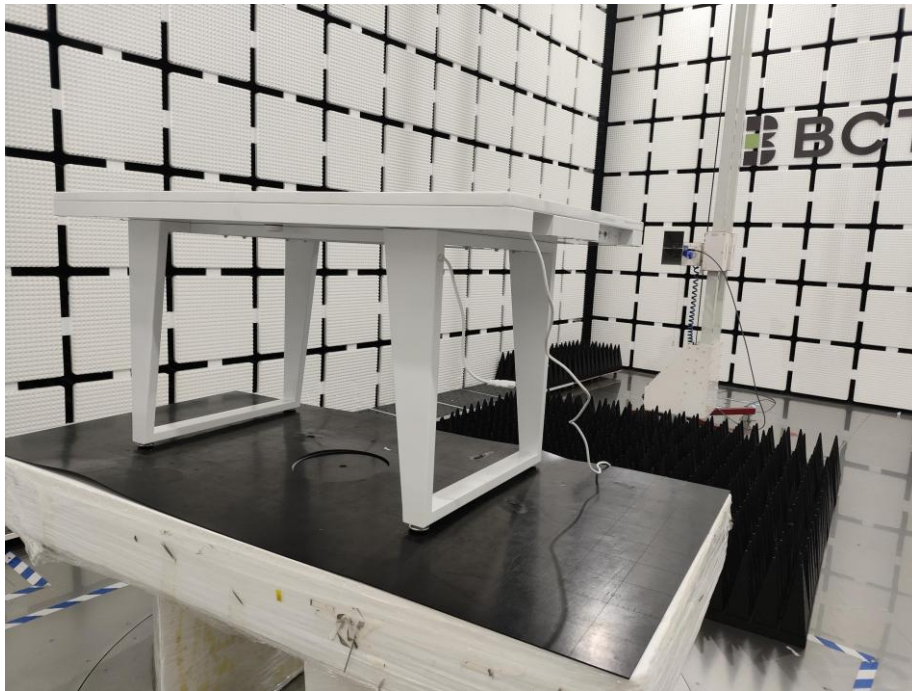
16. EUT Test Setup Photographs

Conducted emissions



Radiated Measurement Photos





STATEMENT

1. The equipment lists are traceable to the national reference standards.
2. The test report can not be partially copied unless prior written approval is issued from our lab.
3. The test report is invalid without the "special seal for inspection and testing".
4. The test report is invalid without the signature of the approver.
5. The test process and test result is only related to the Unit Under Test.
6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.
7. The quality system of our laboratory is in accordance with ISO/IEC17025.
8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

Address:

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***** END *****