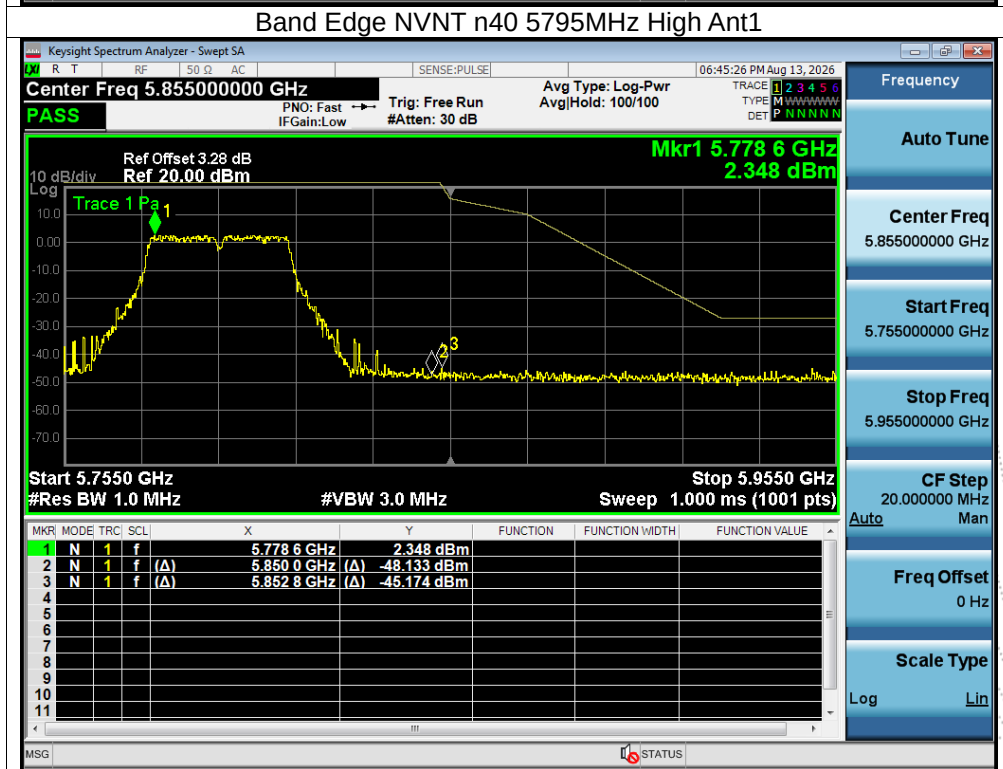
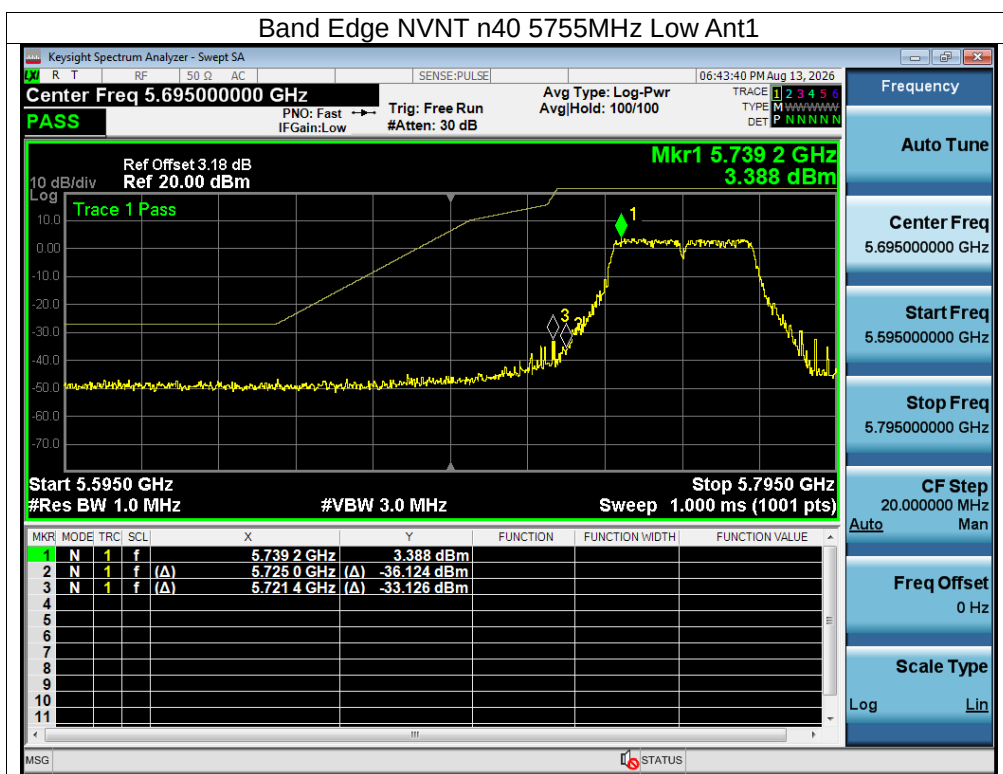
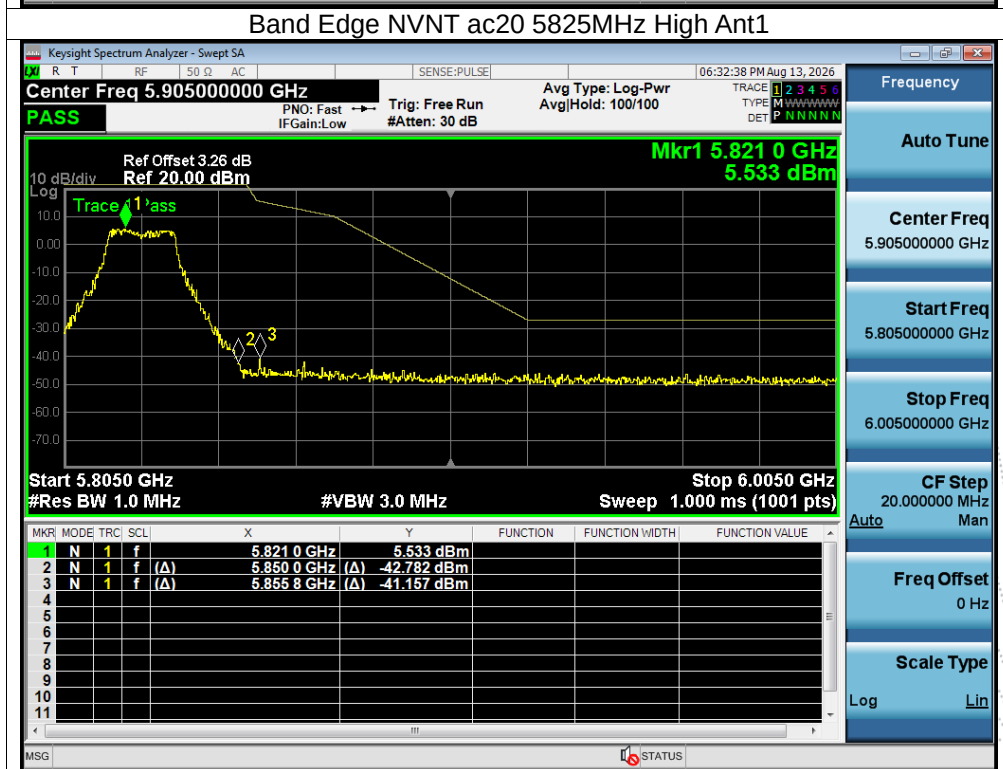
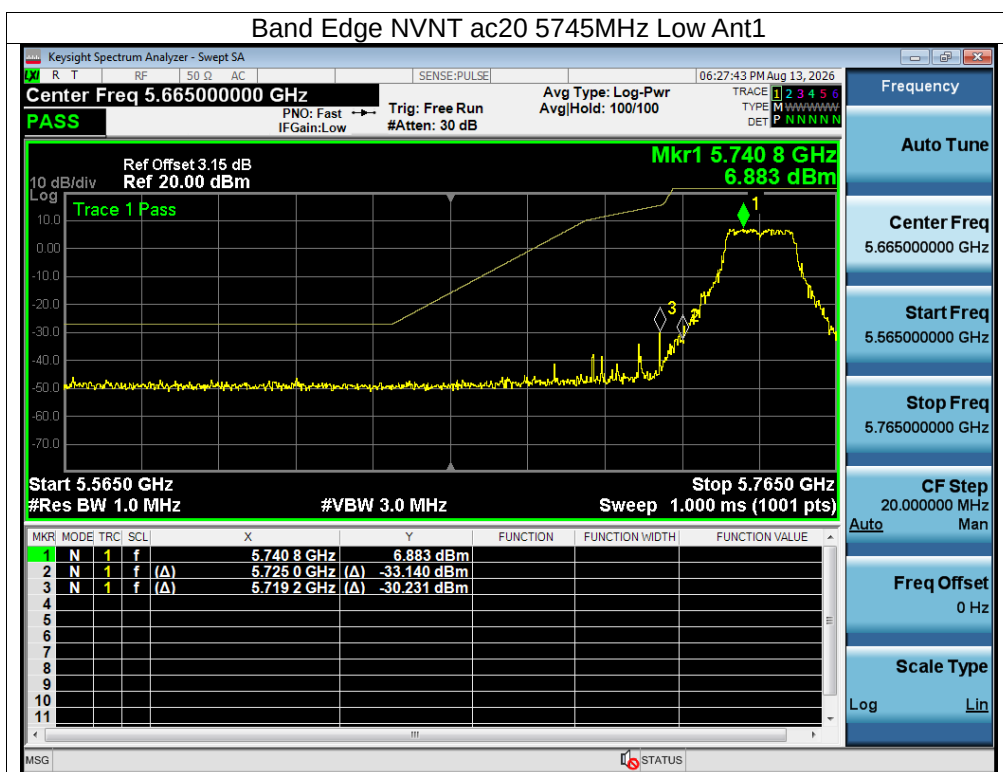
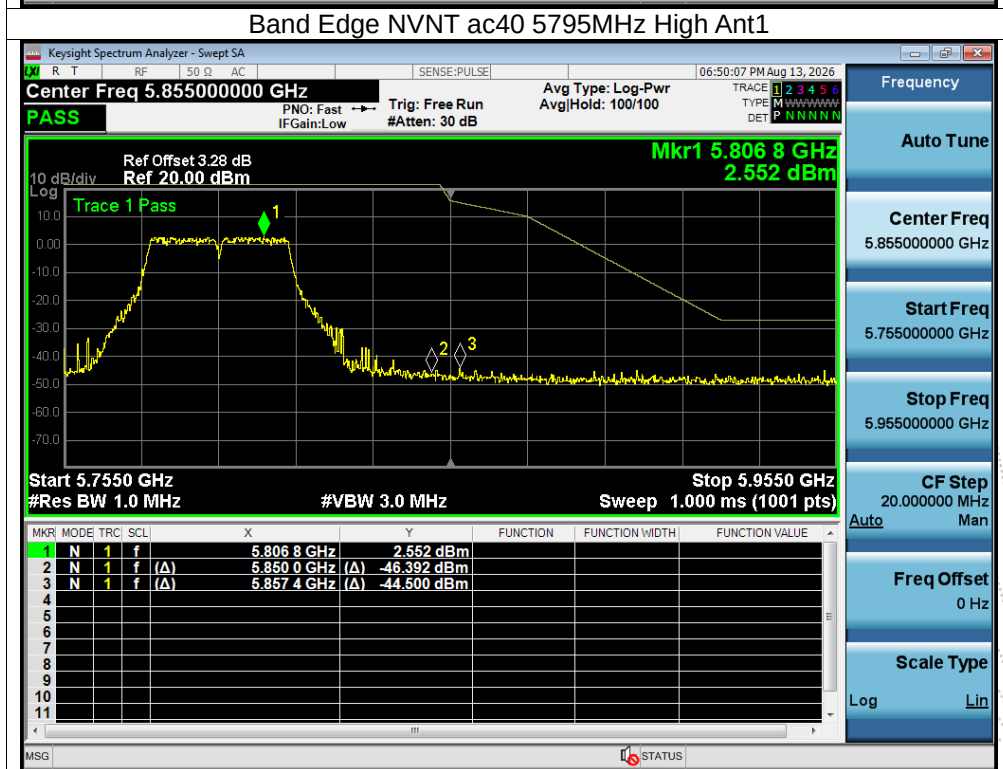
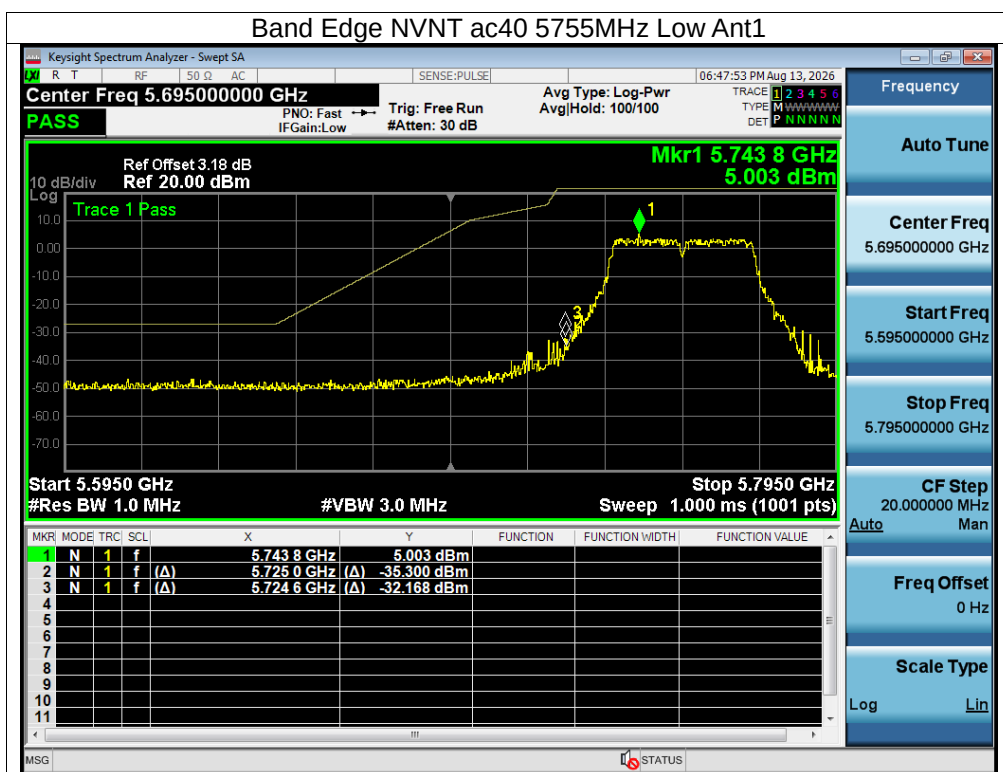
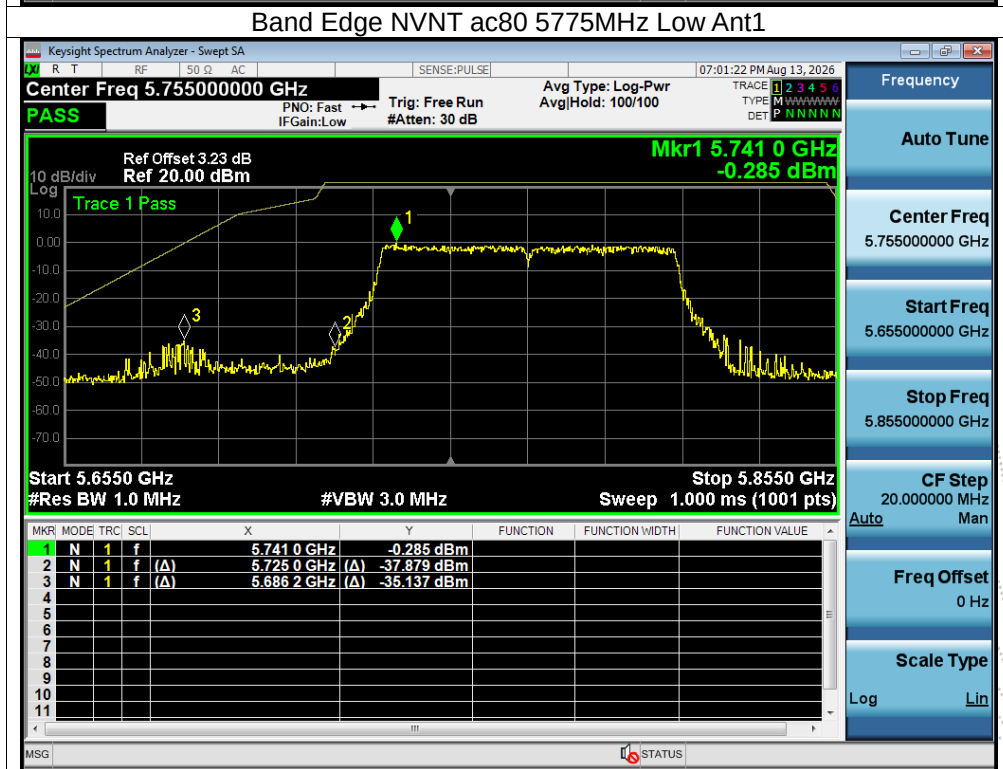
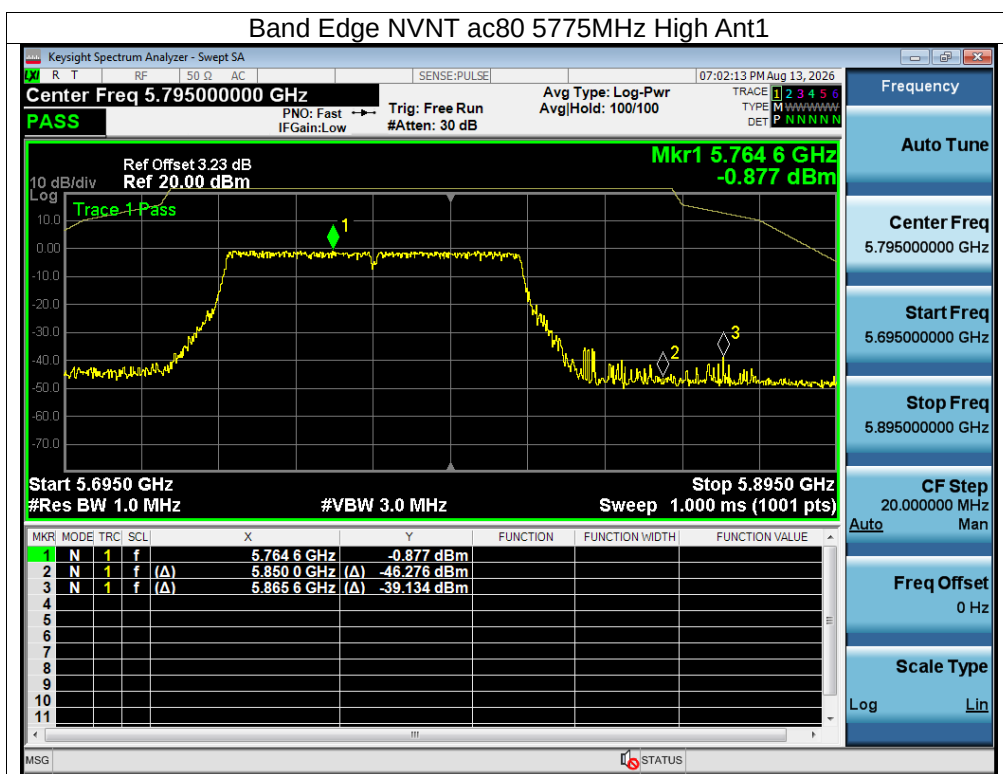
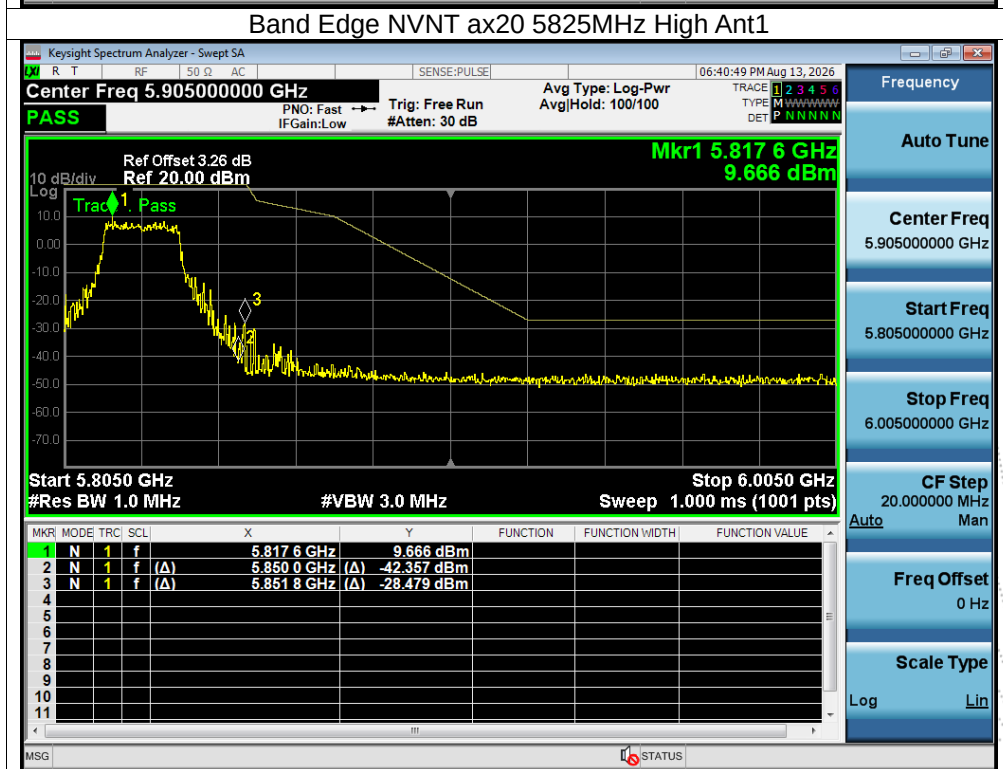
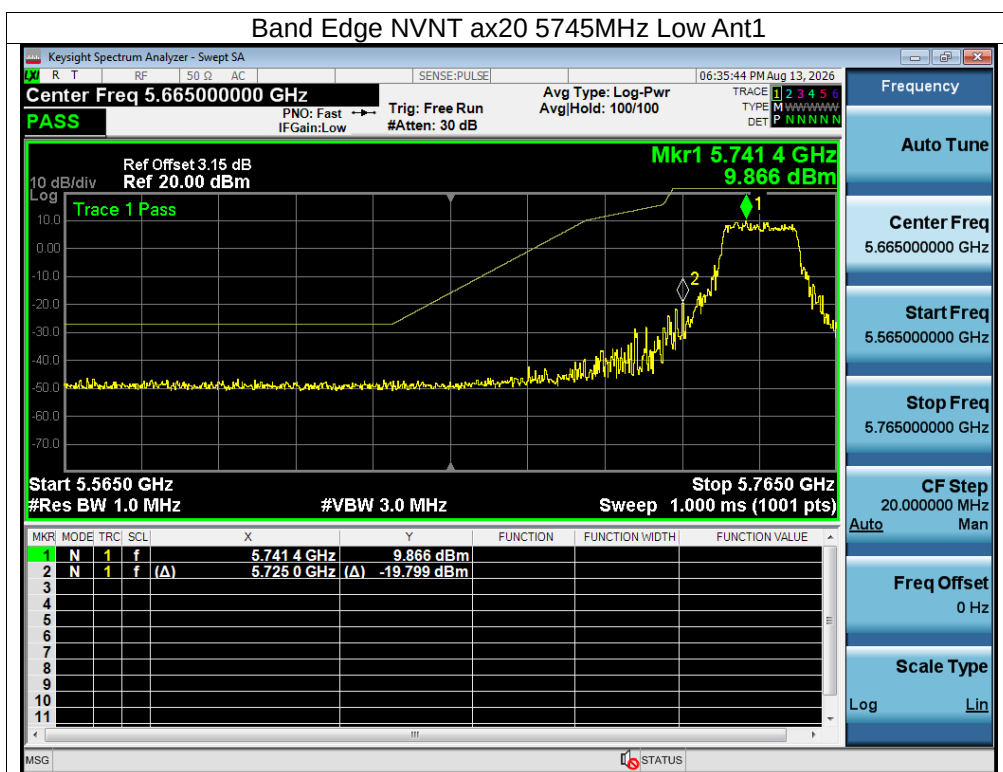


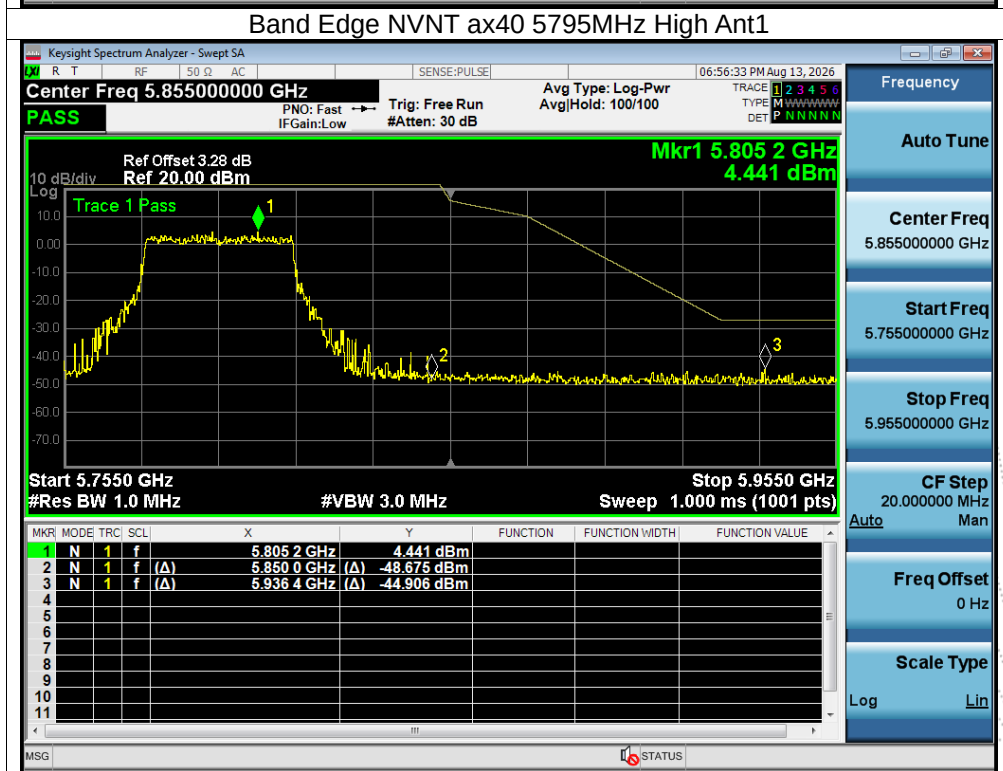
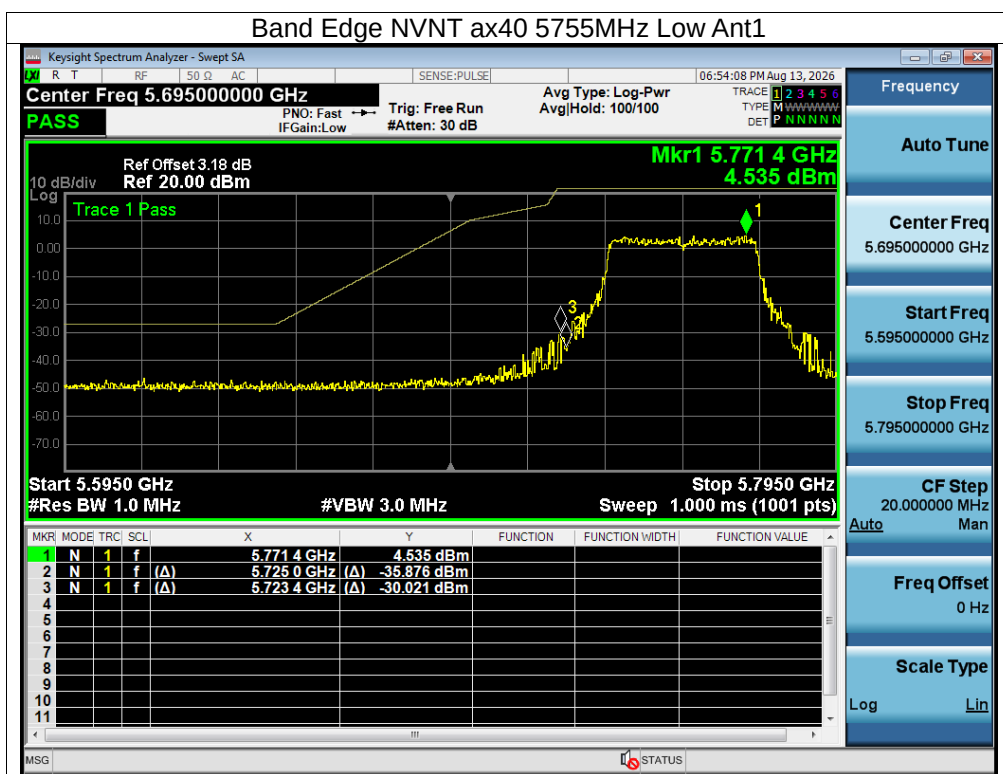


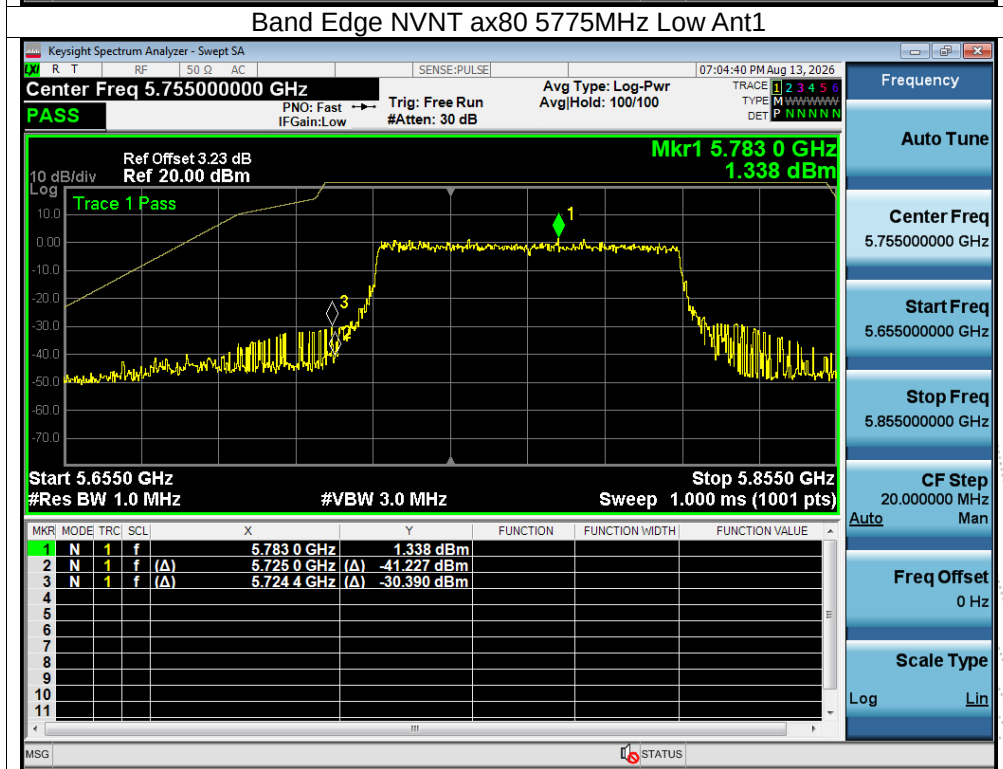
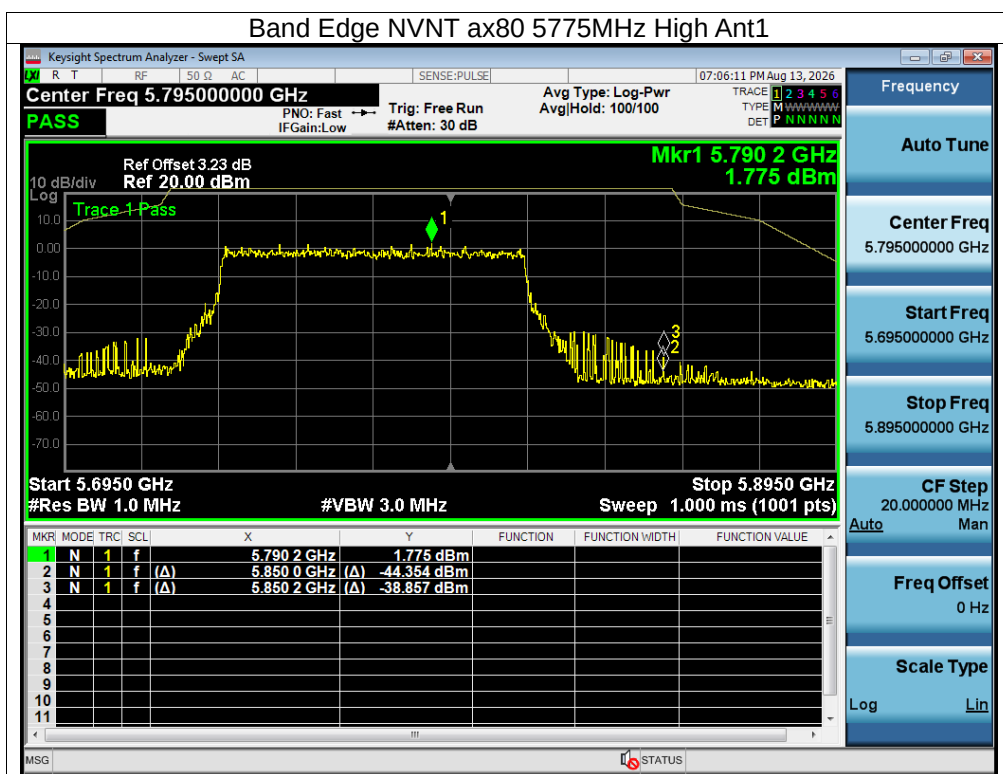












12. Spurious RF Conducted Emissions

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.

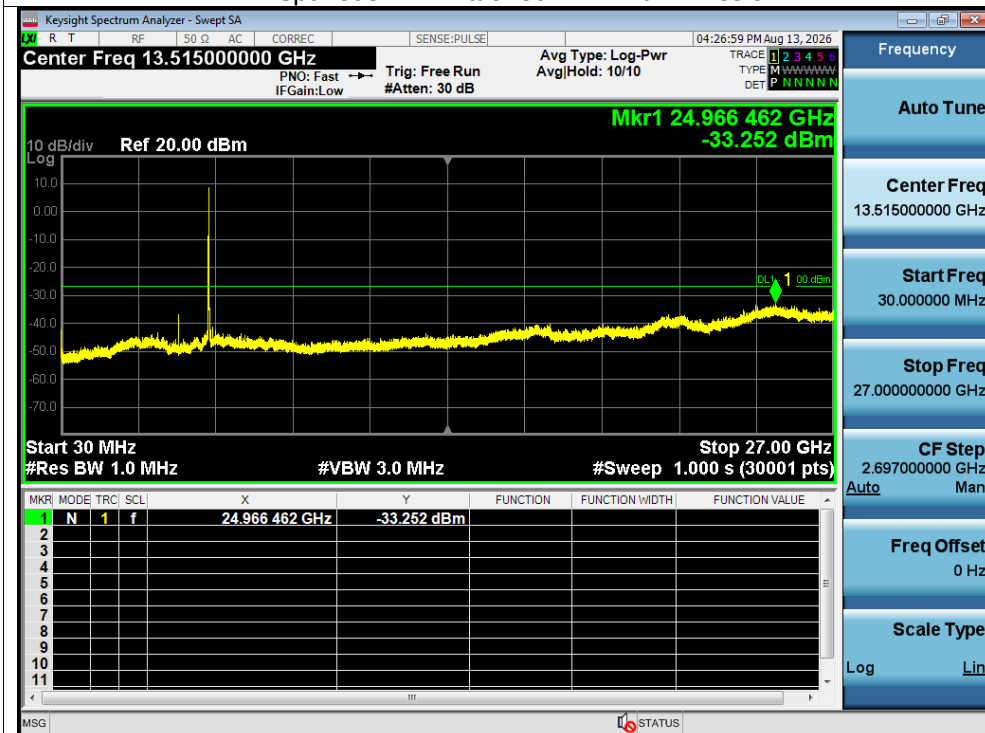
12.4 Test Result

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.

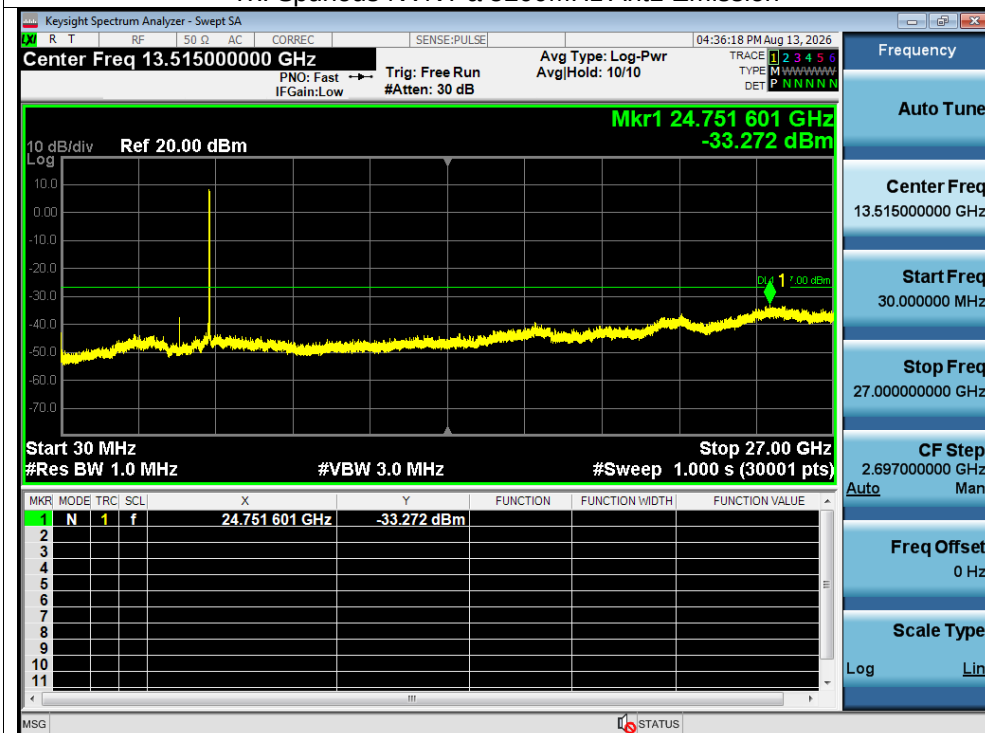
About:26.5GHz-40GHz, The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

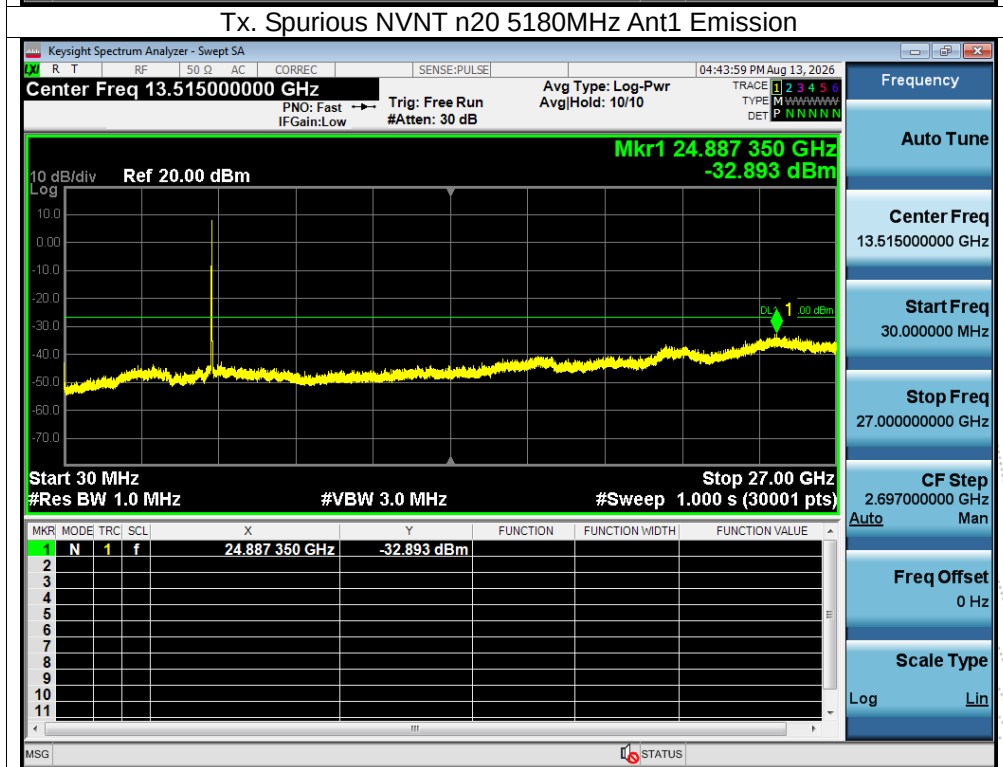
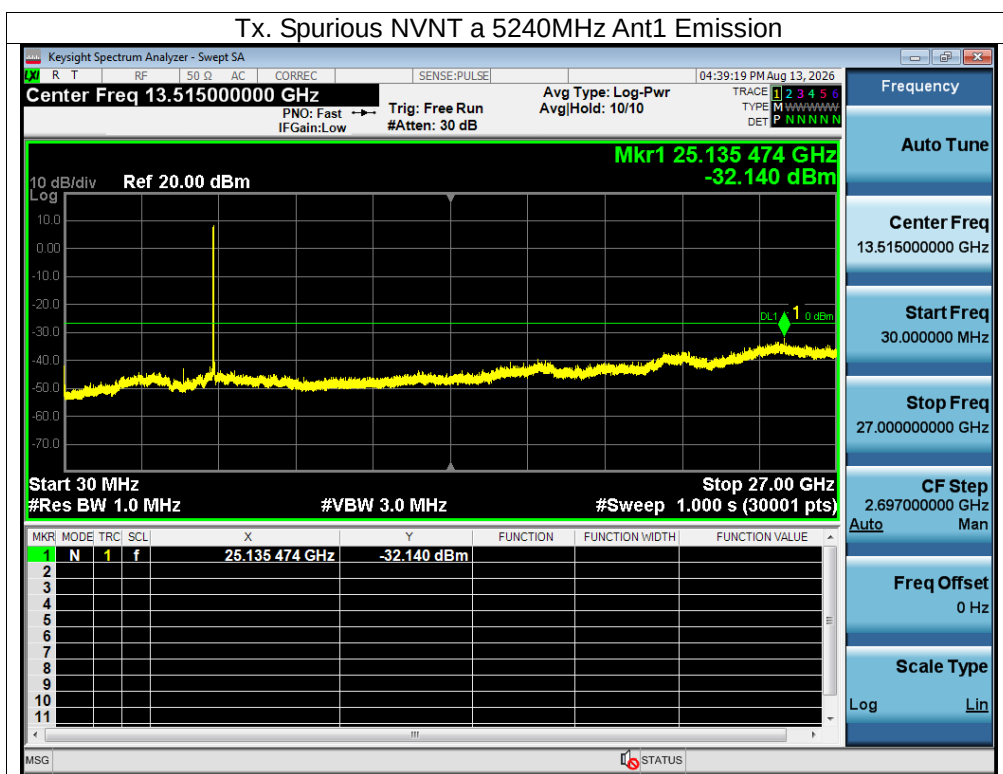
Test Graphs

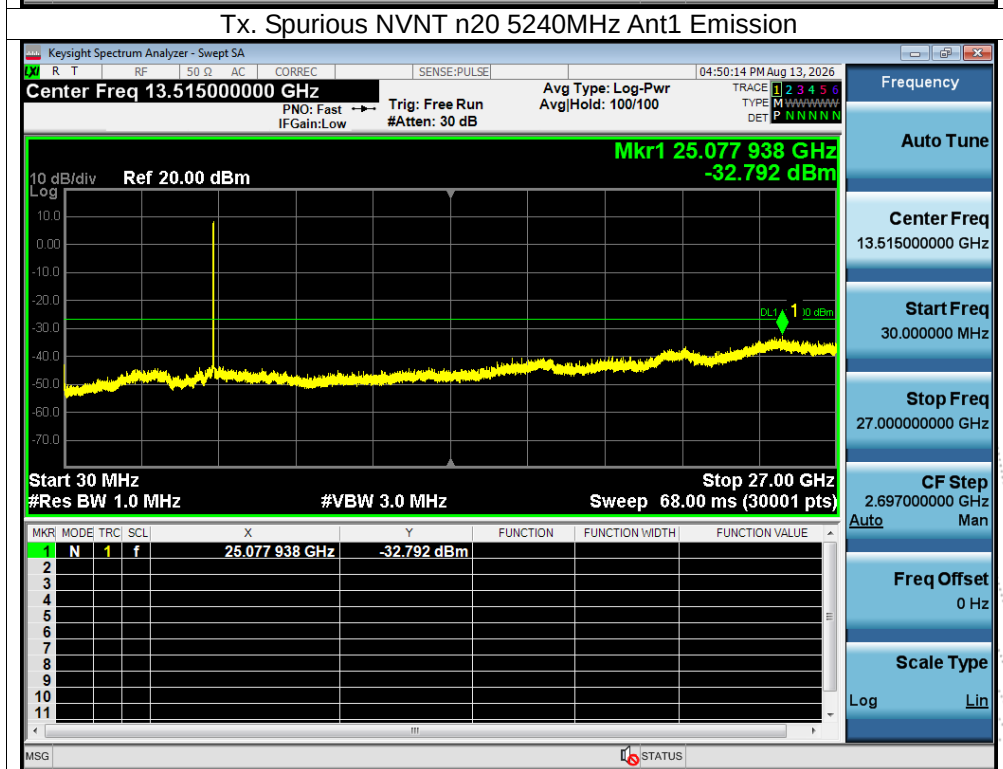
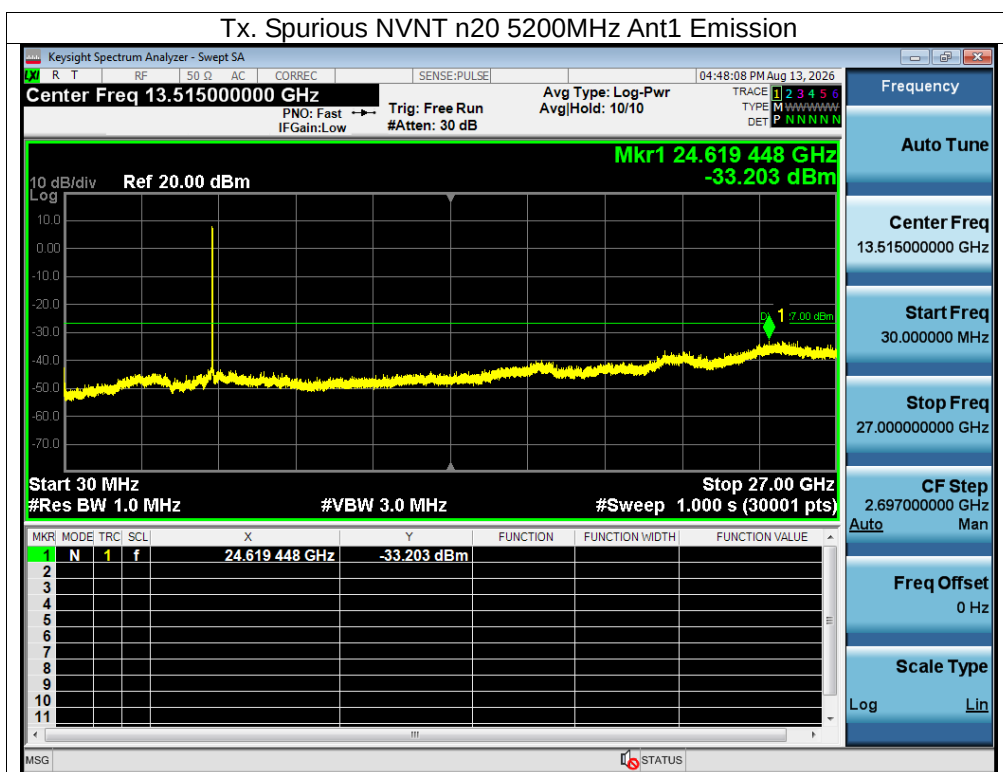
Tx. Spurious NVNT a 5180MHz Ant1 Emission

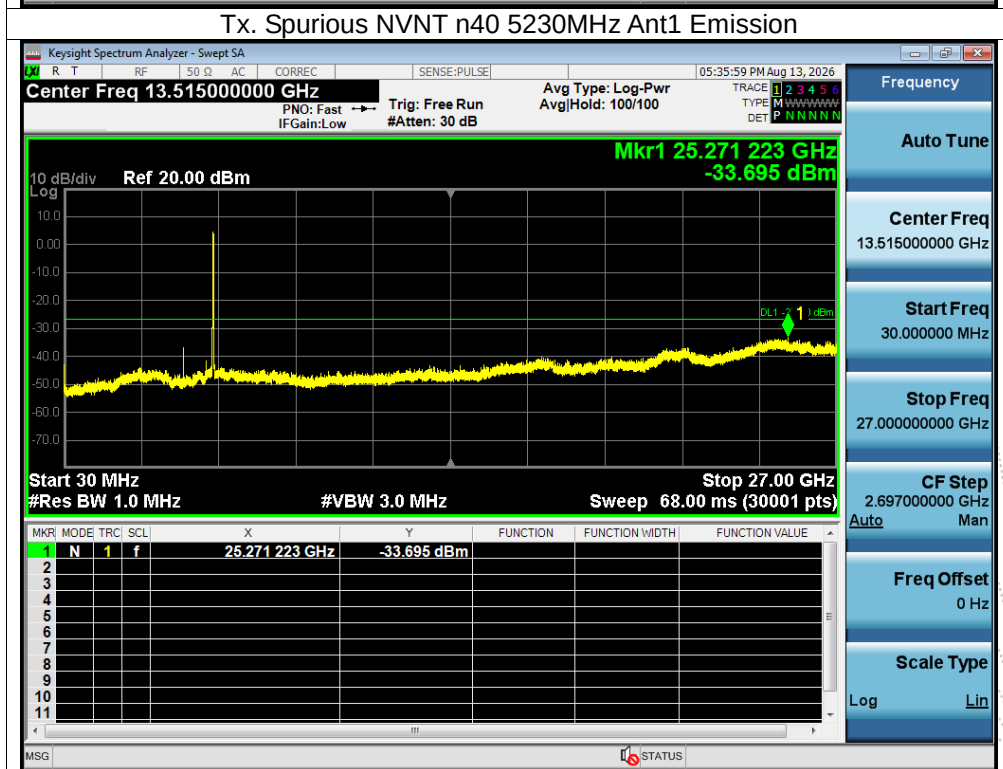
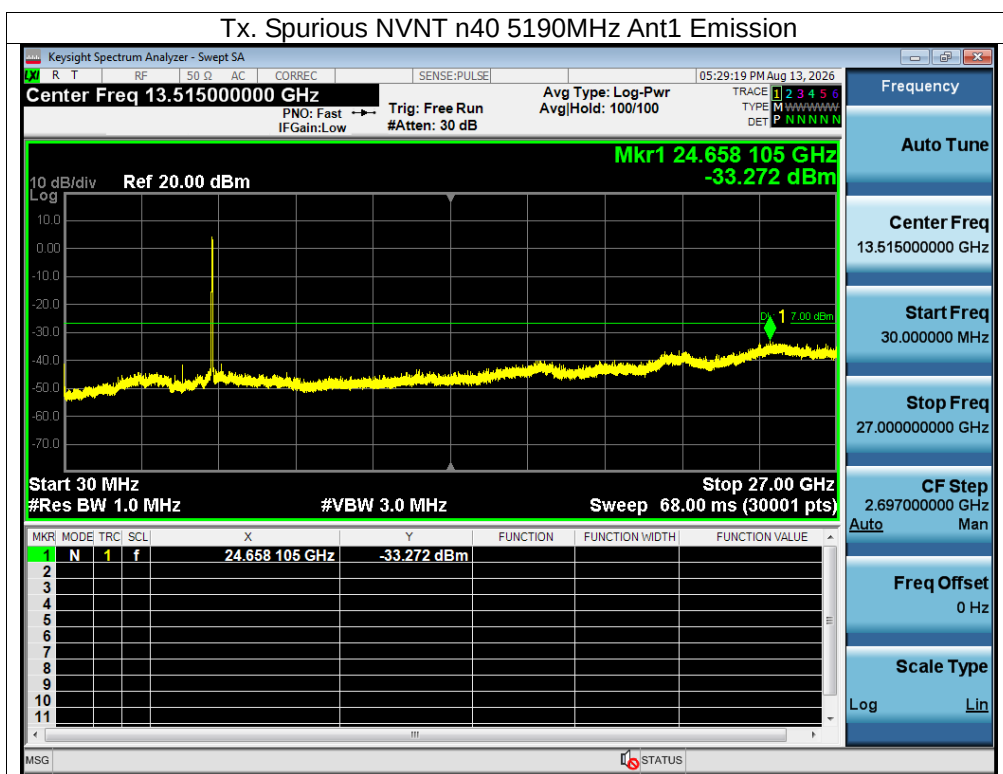


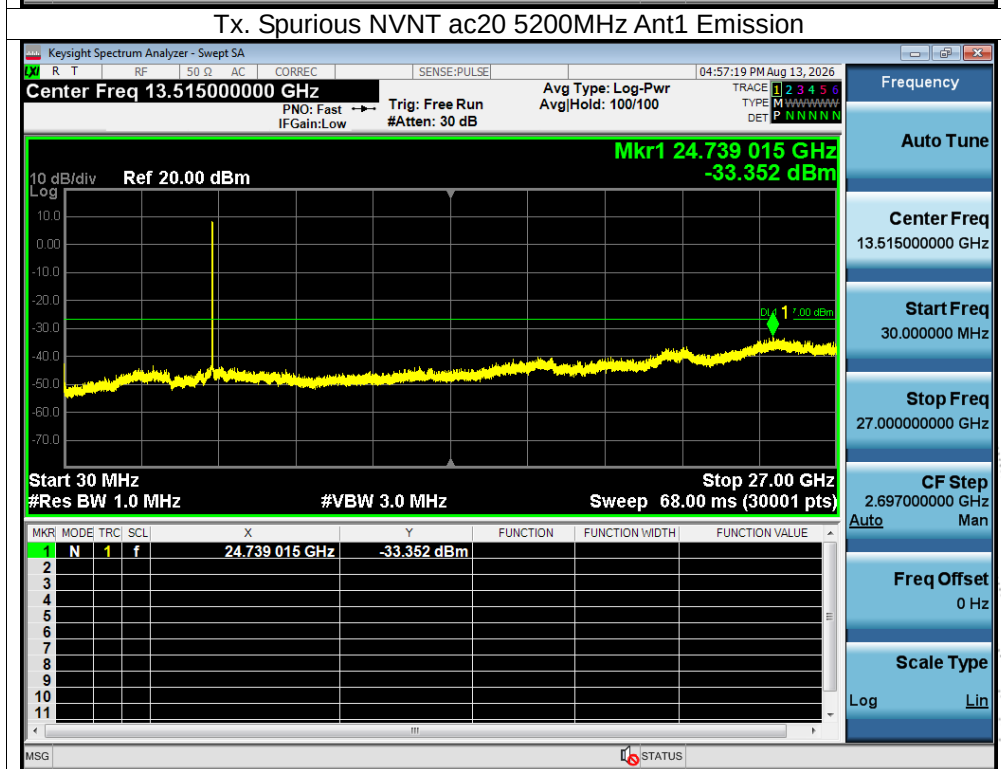
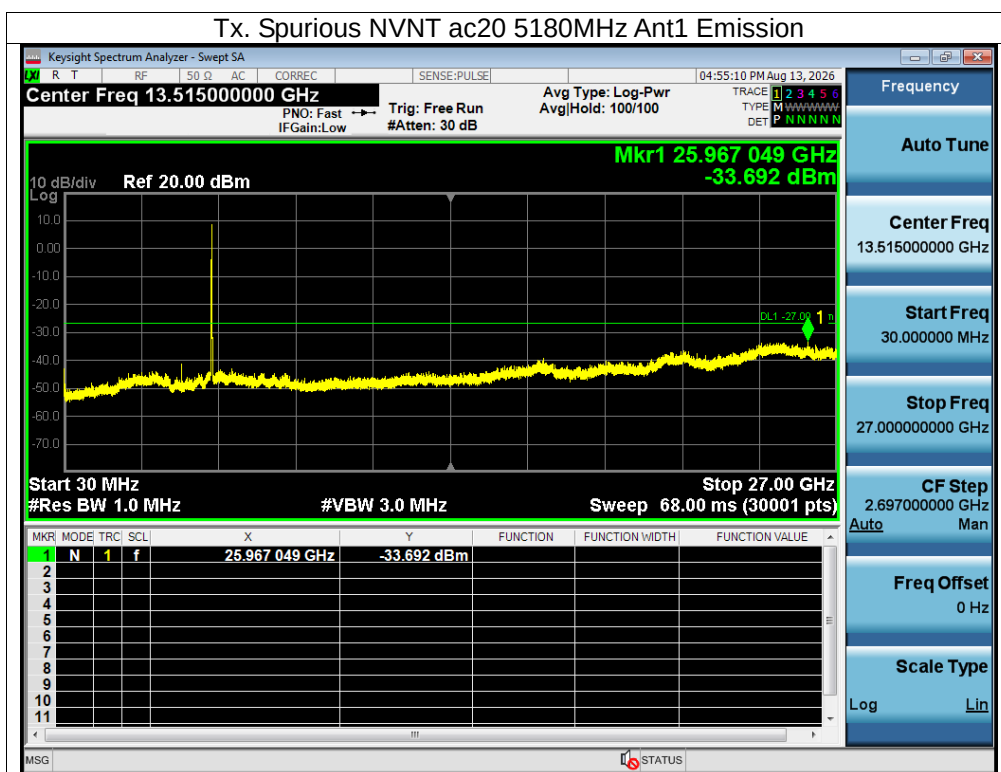
Tx. Spurious NVNT a 5200MHz Ant1 Emission

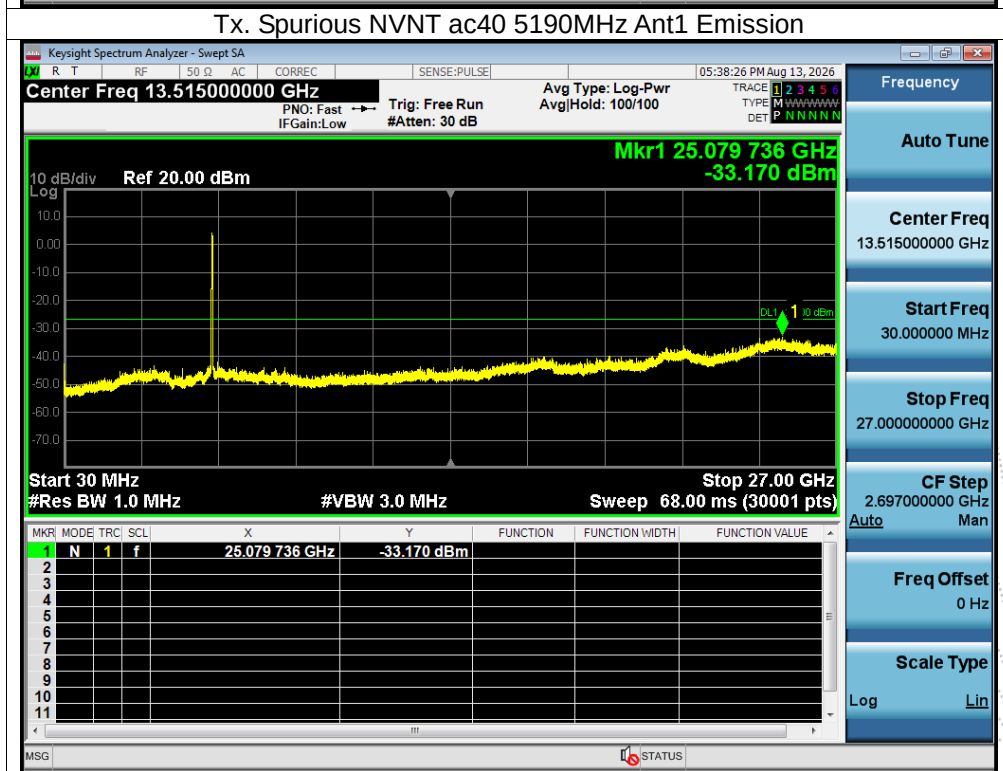
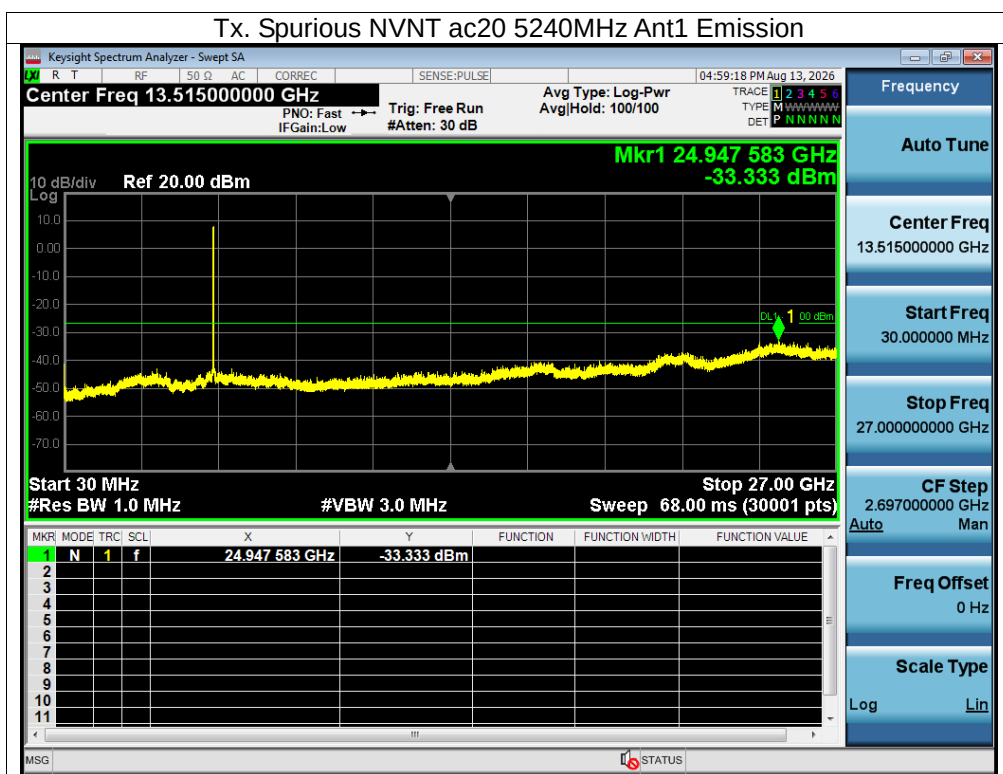


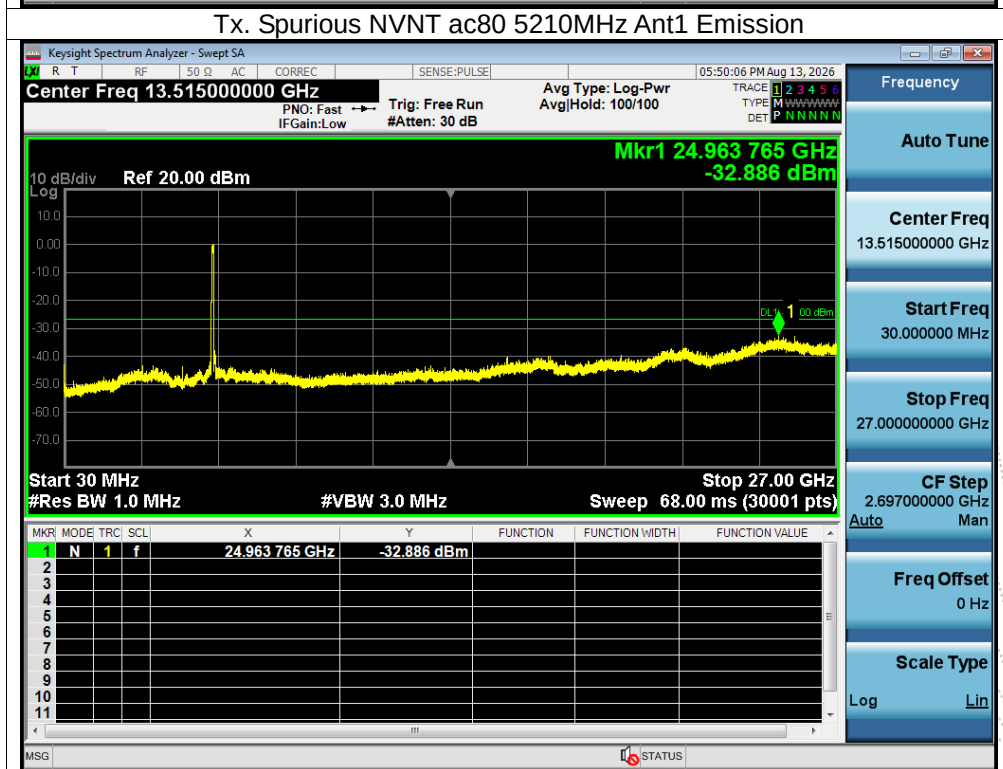
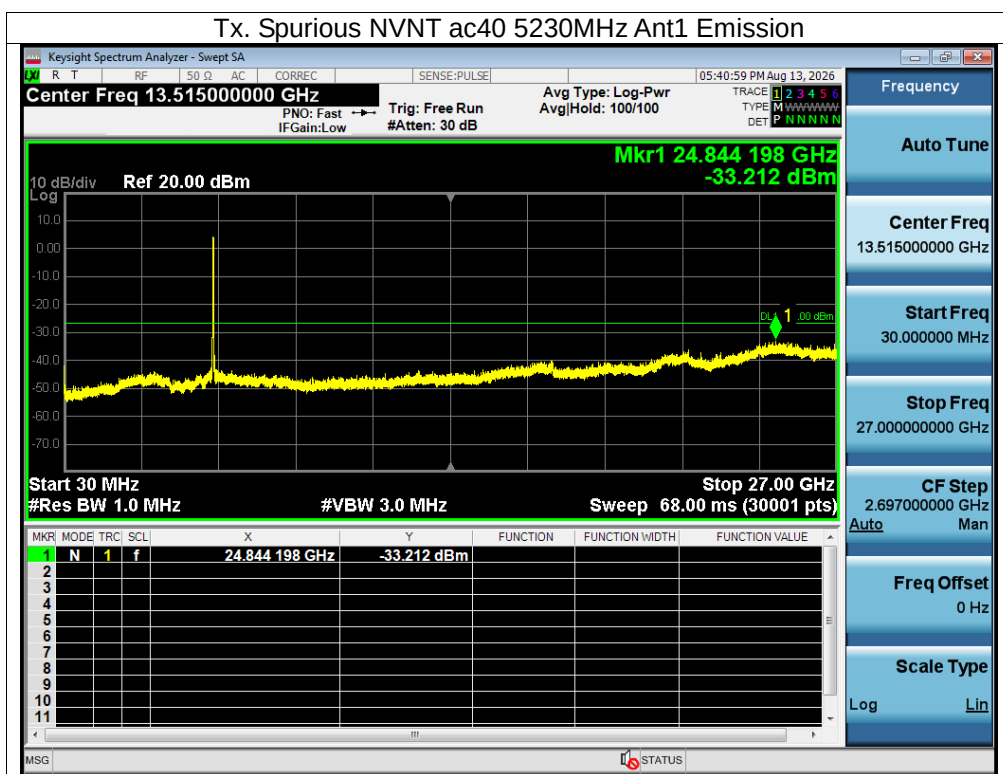


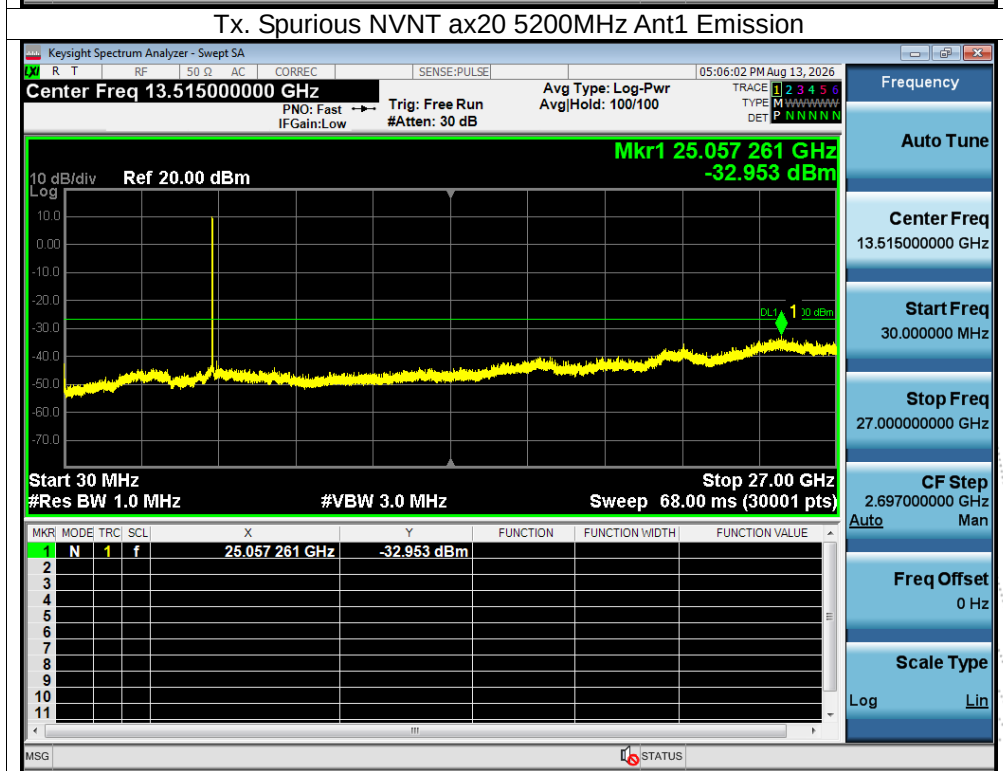
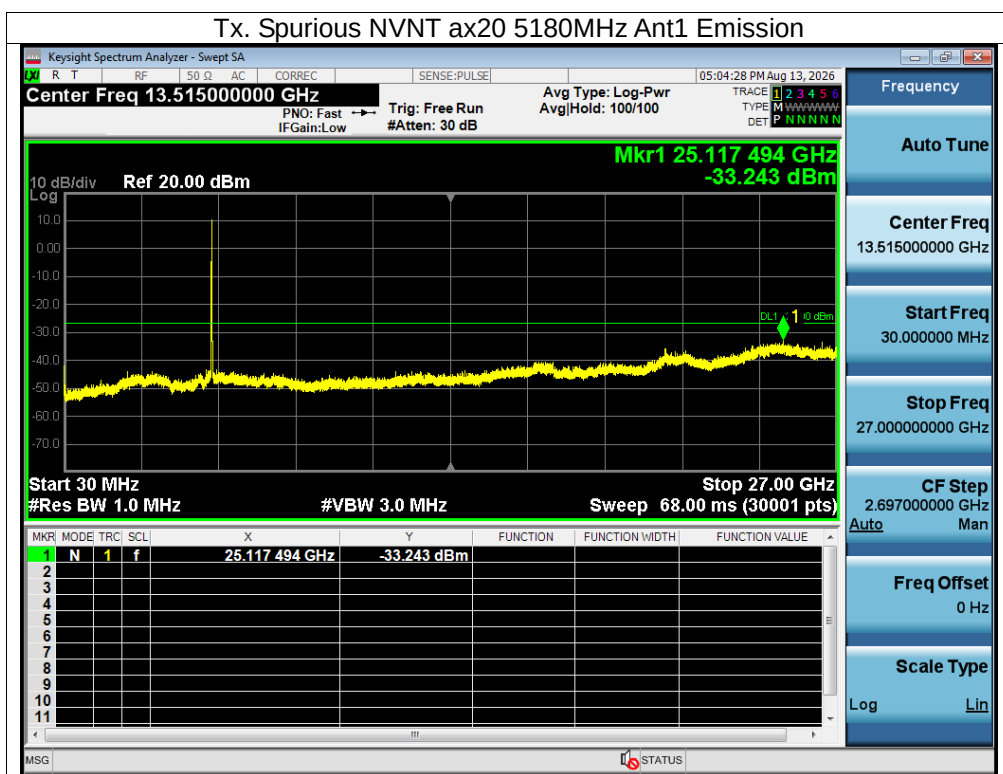


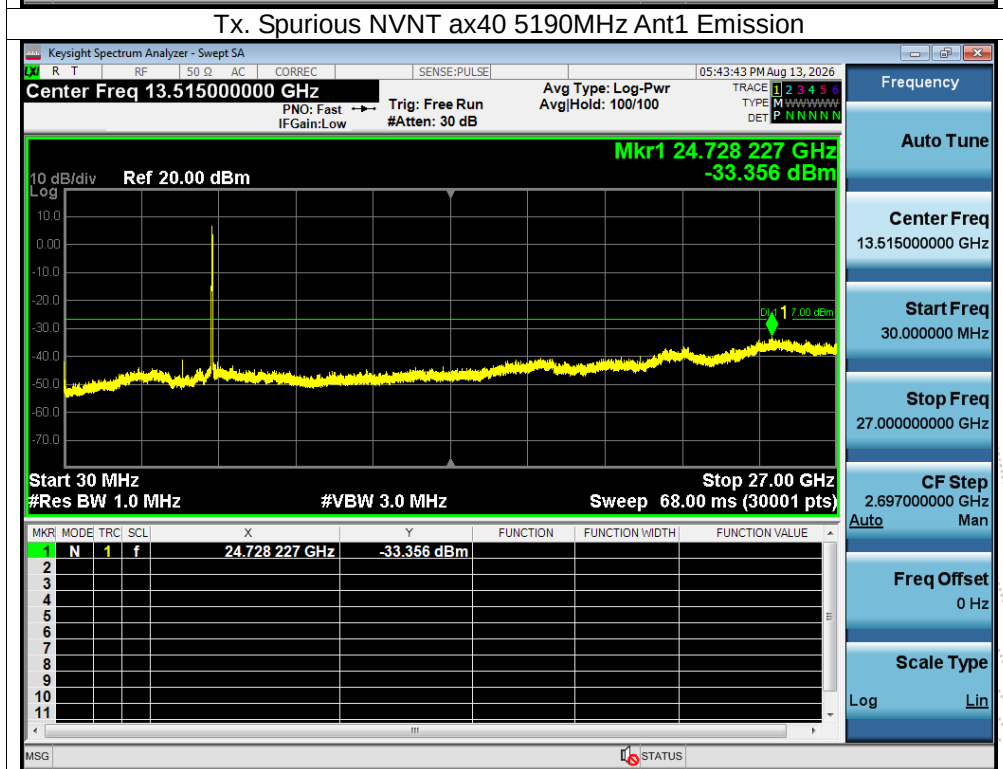
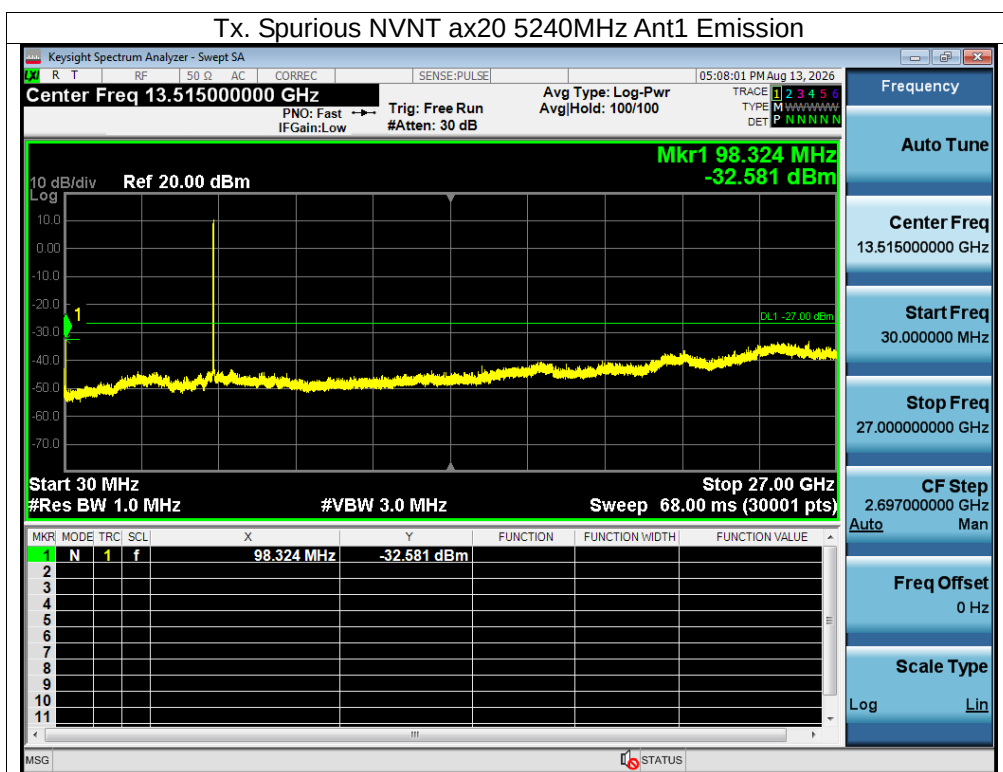


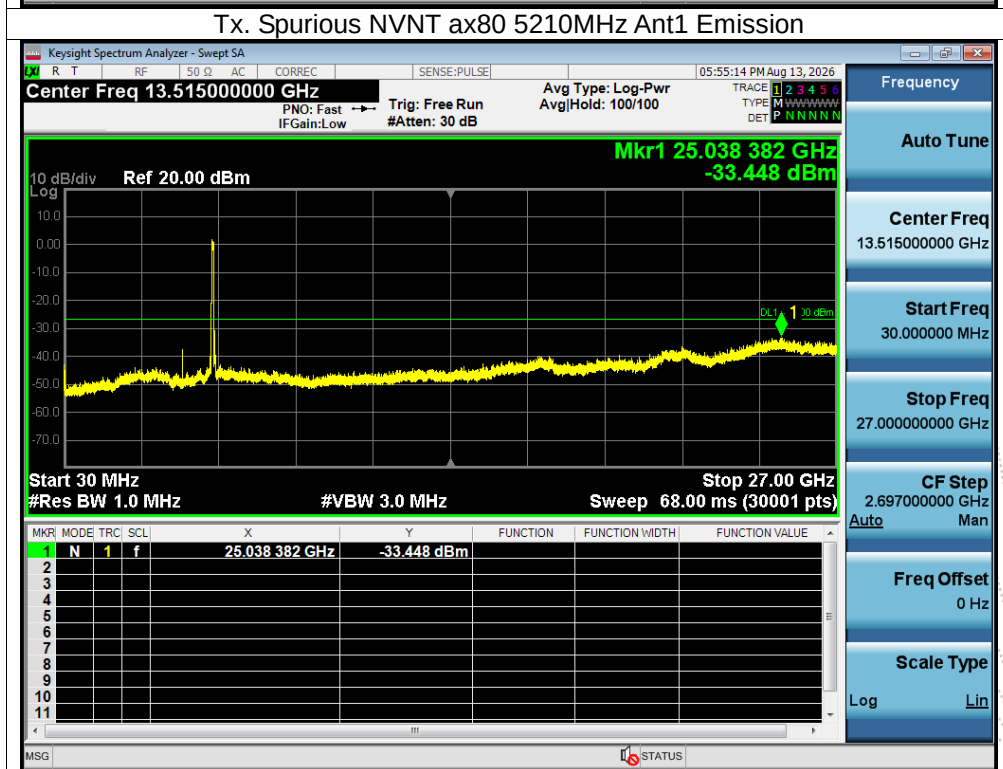
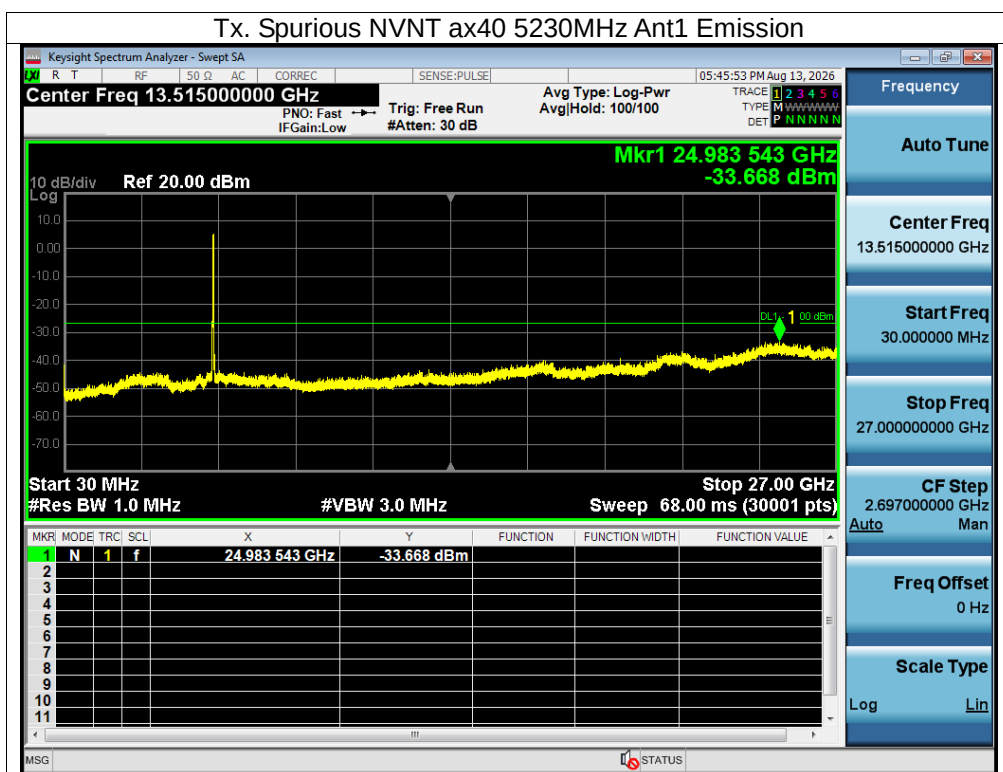








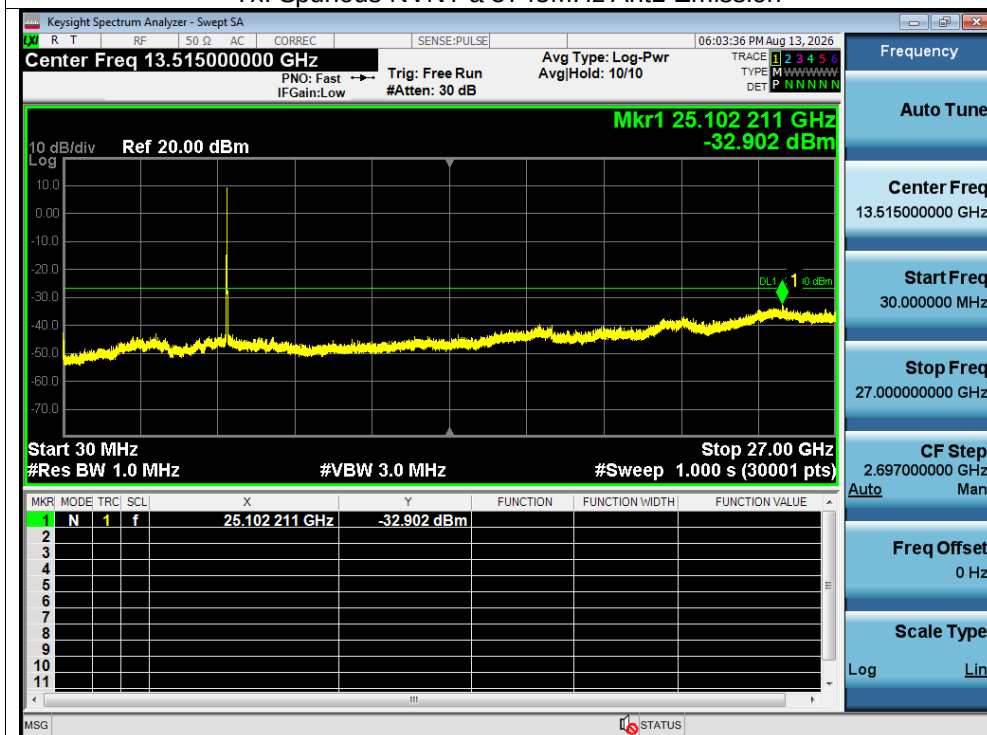




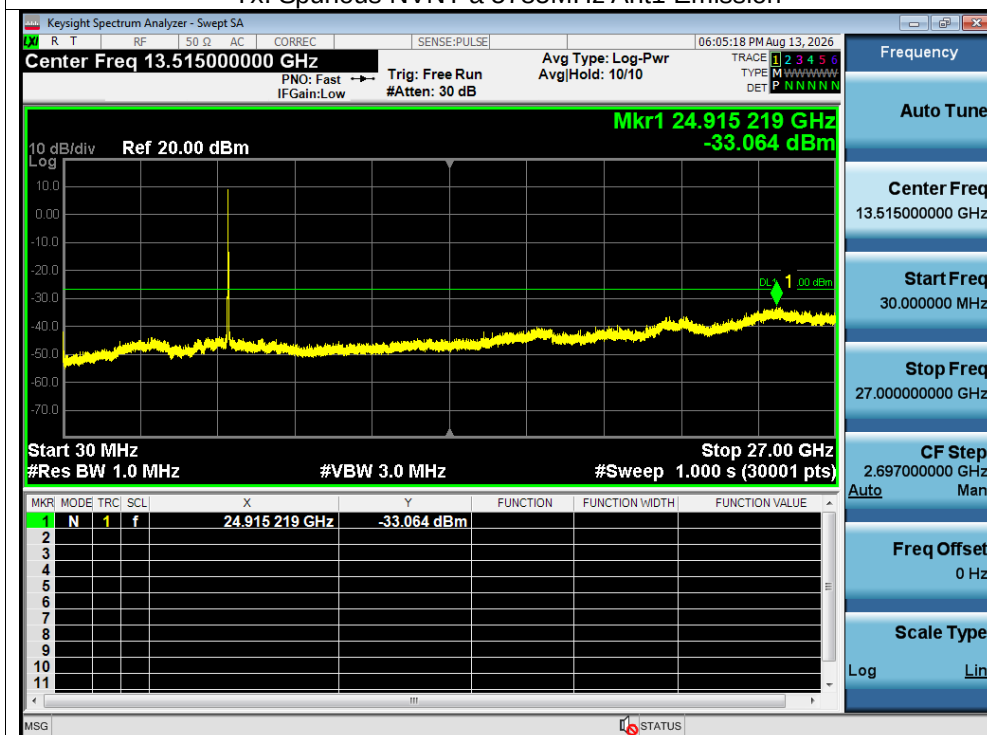
CO., LTD

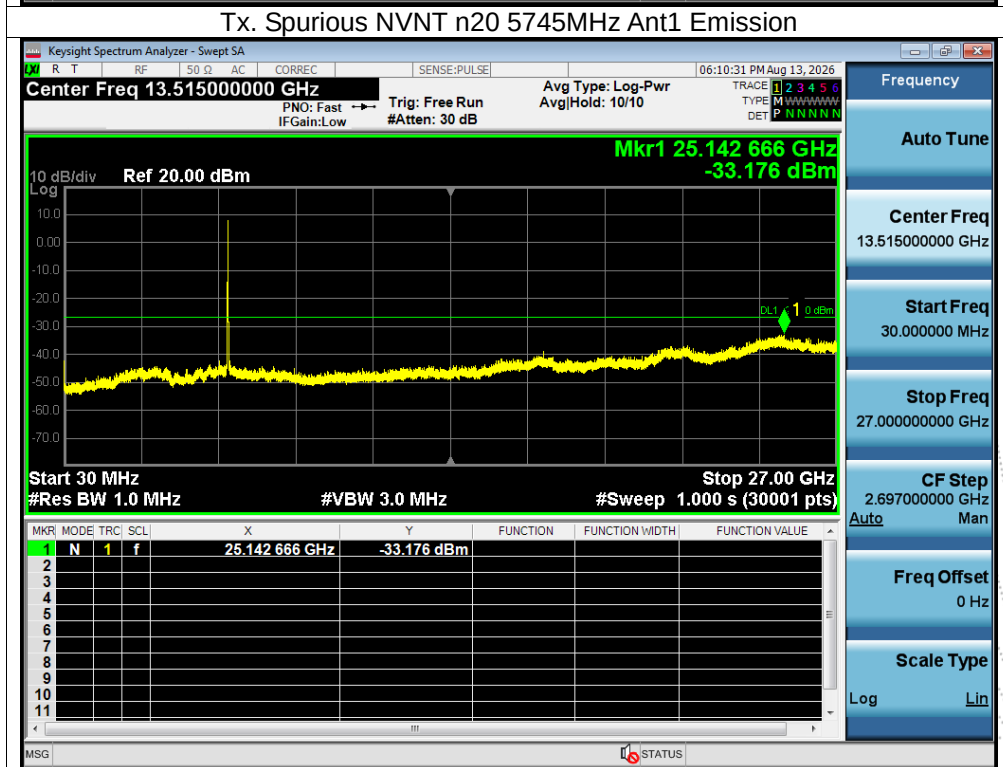
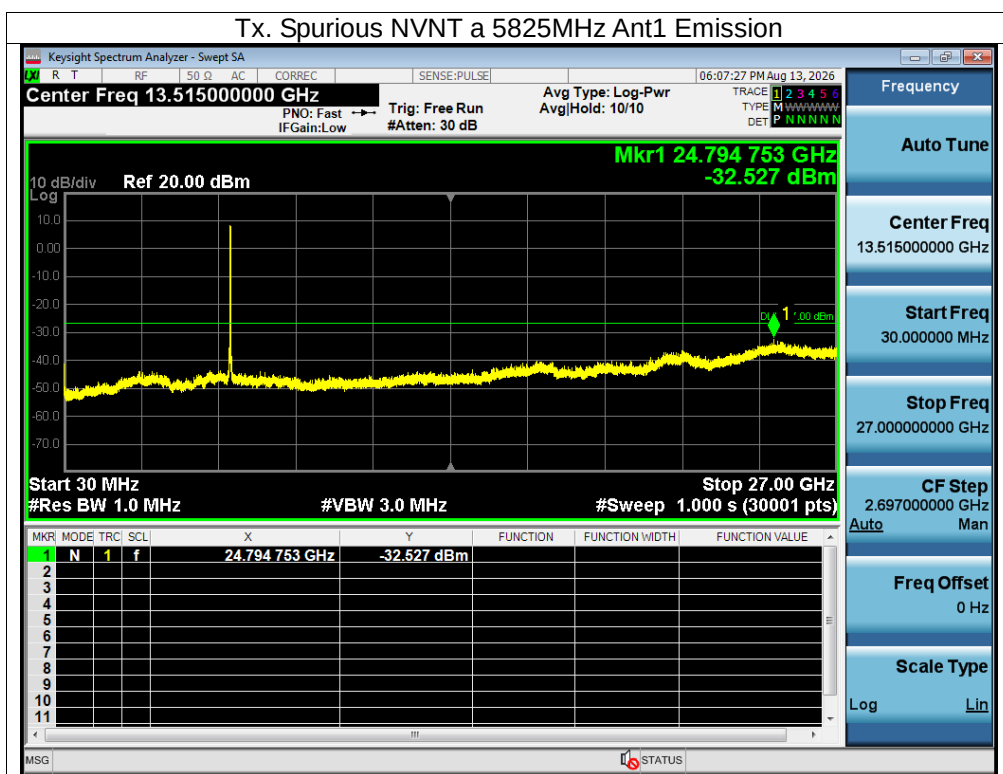
Test Graphs

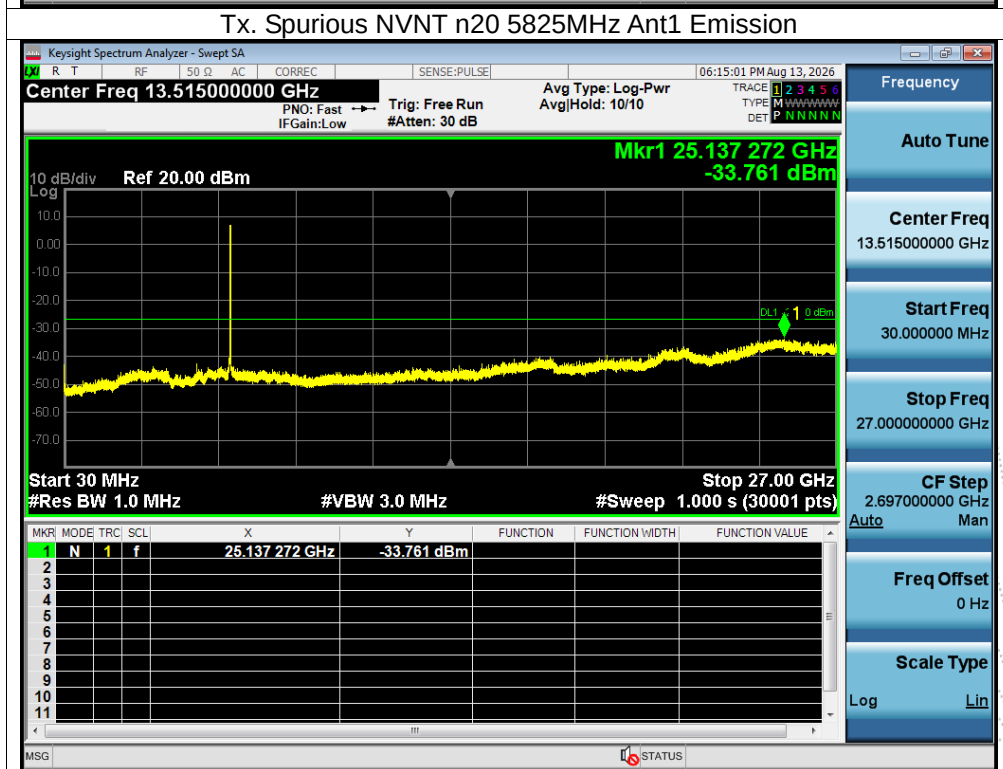
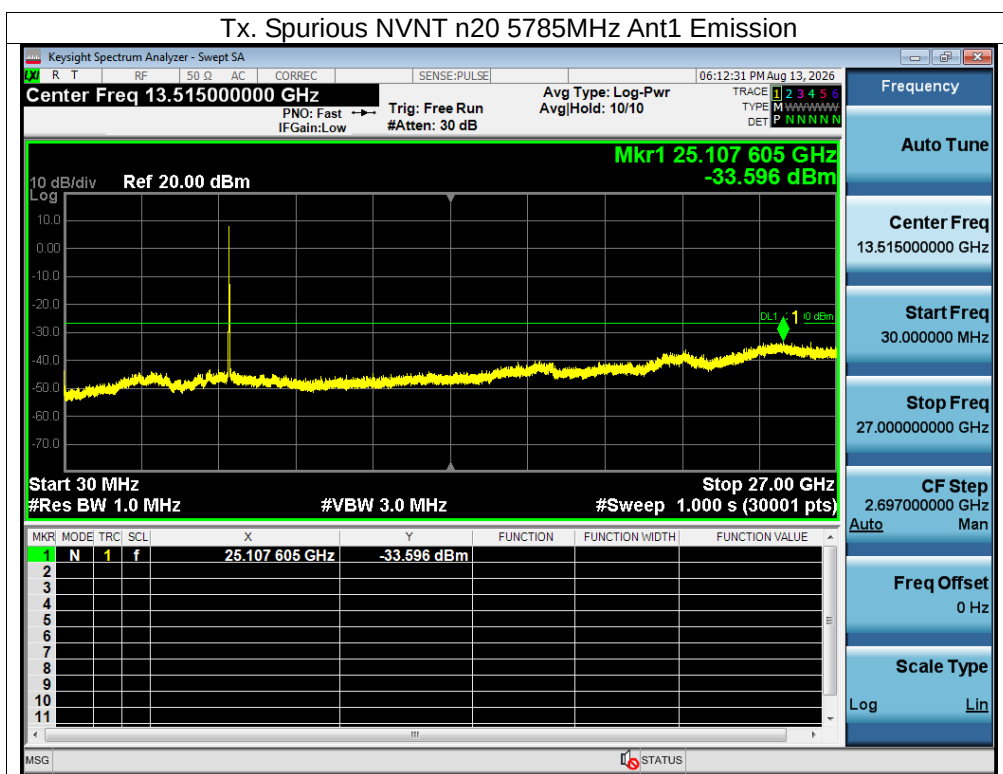
Tx. Spurious NVNT a 5745MHz Ant1 Emission

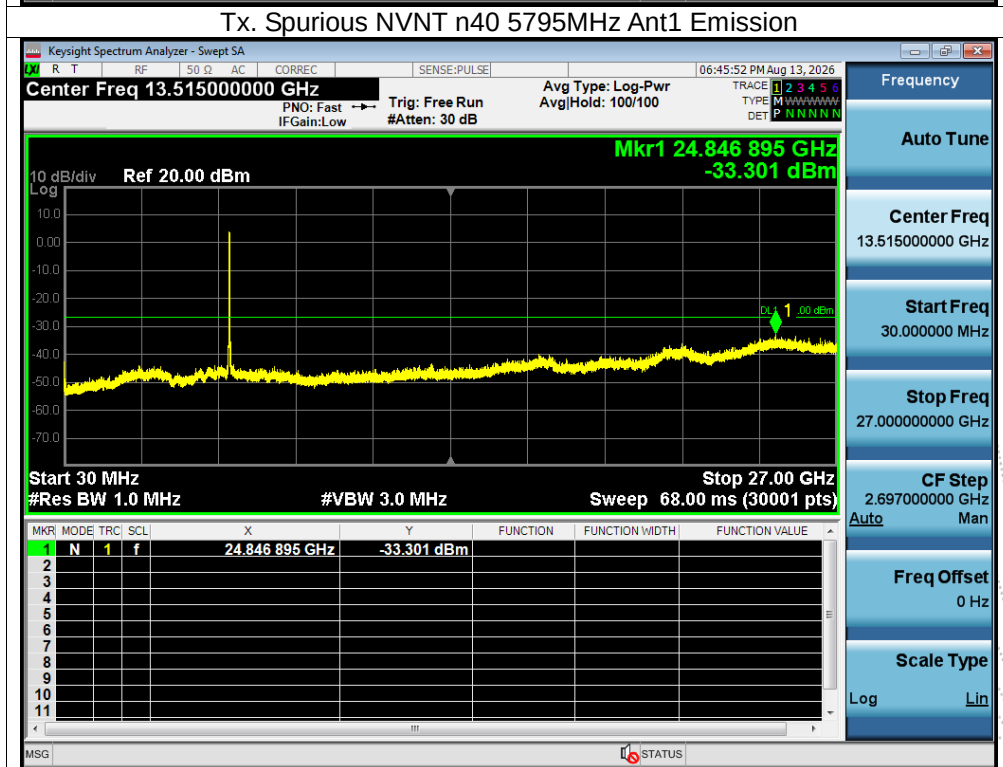
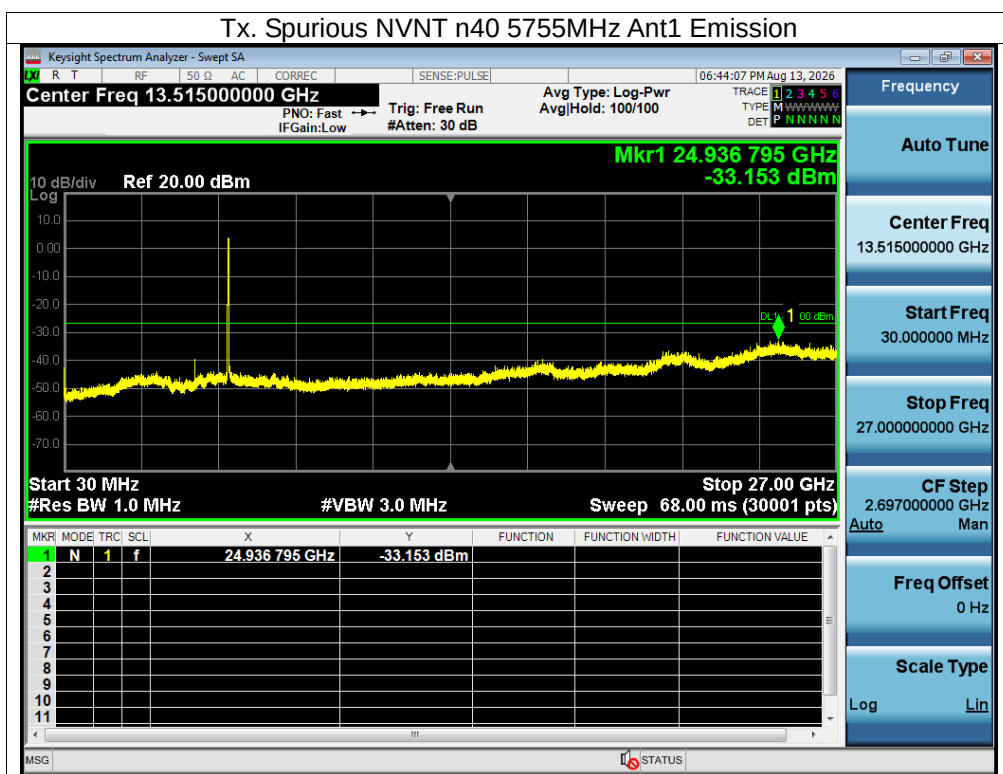


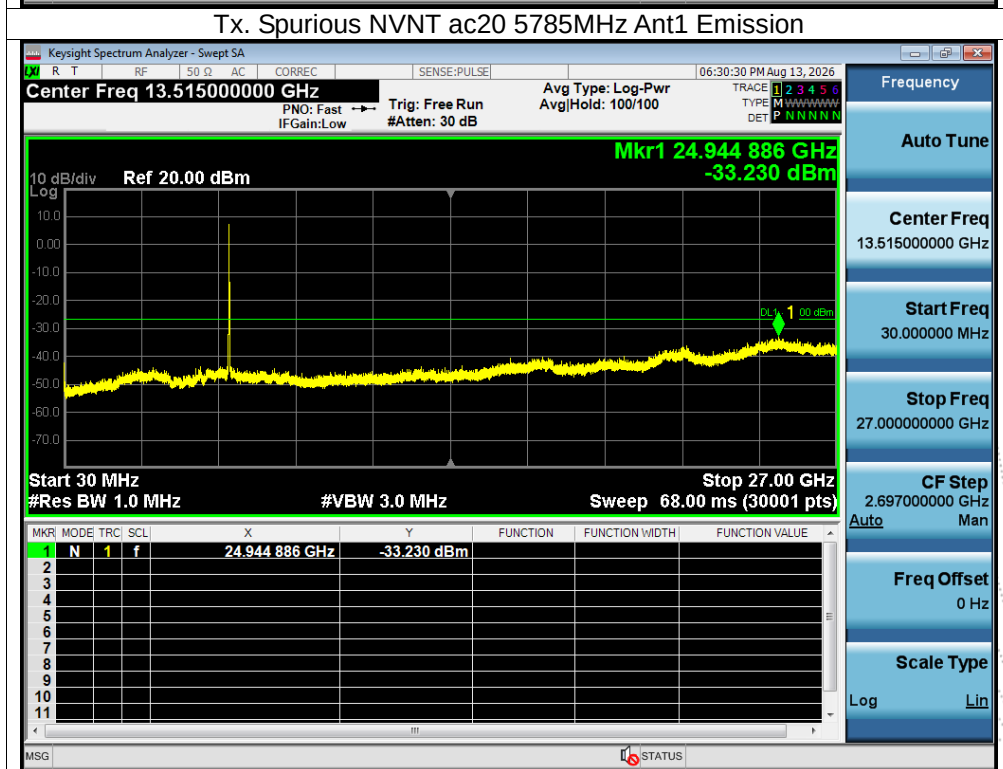
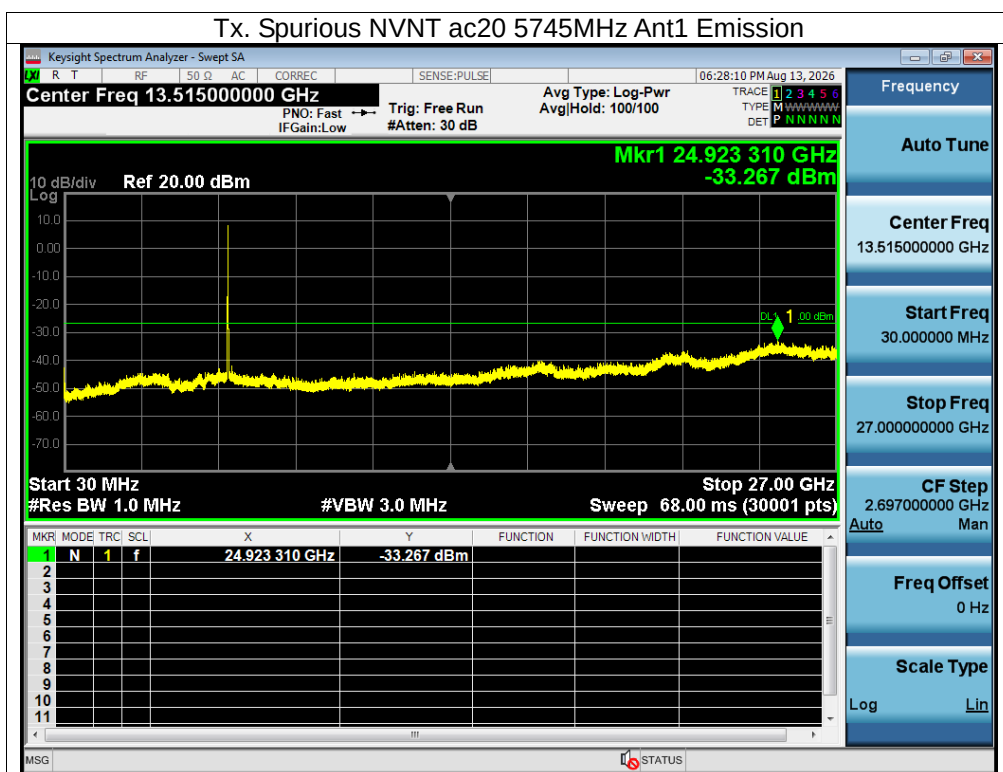
Tx. Spurious NVNT a 5785MHz Ant1 Emission

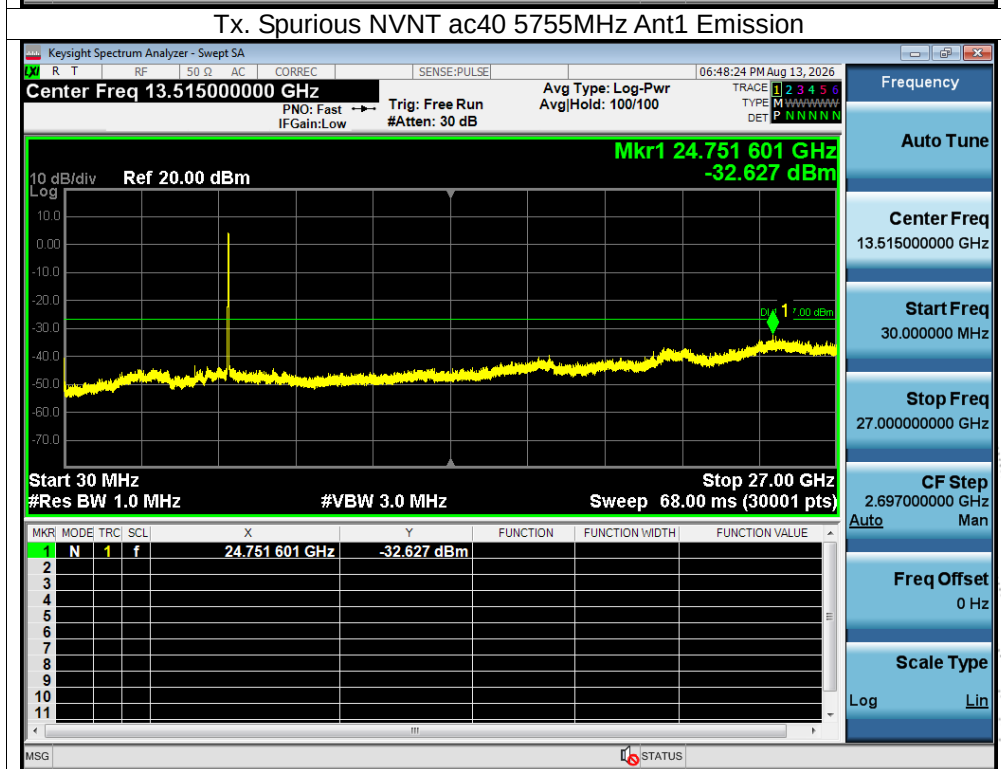
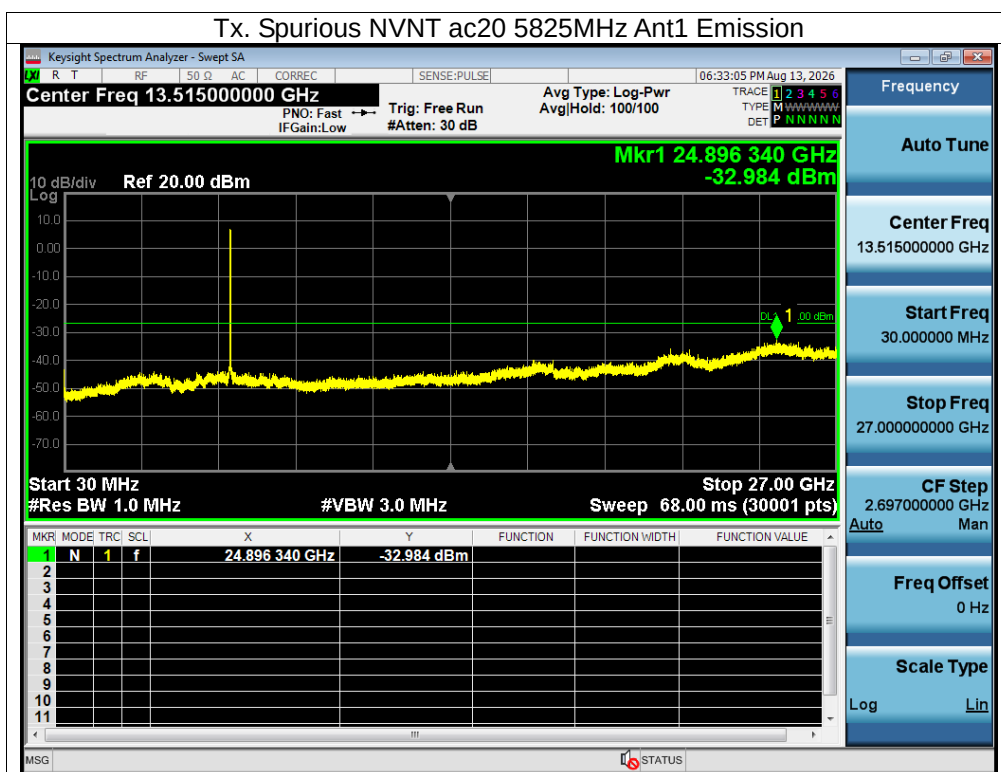




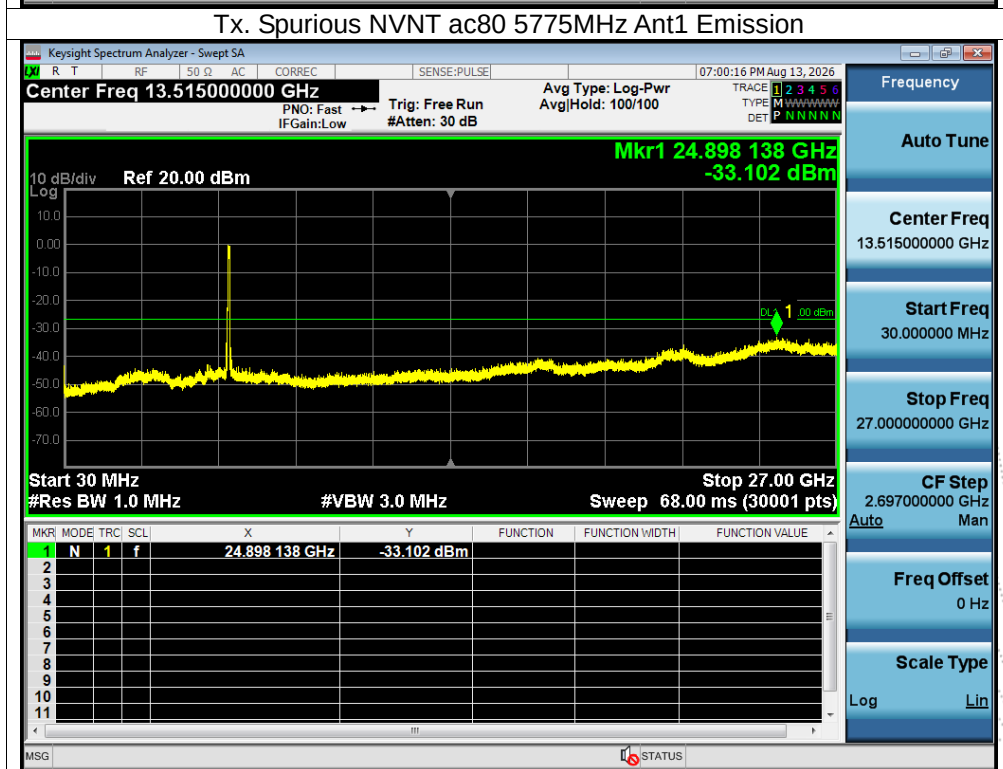
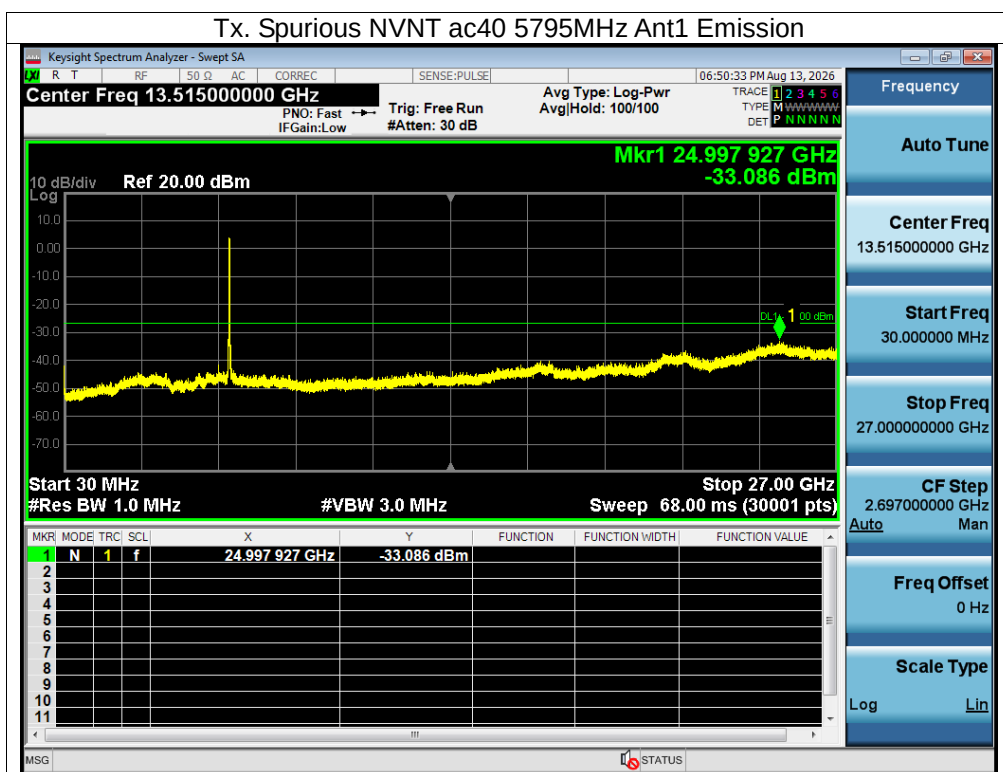


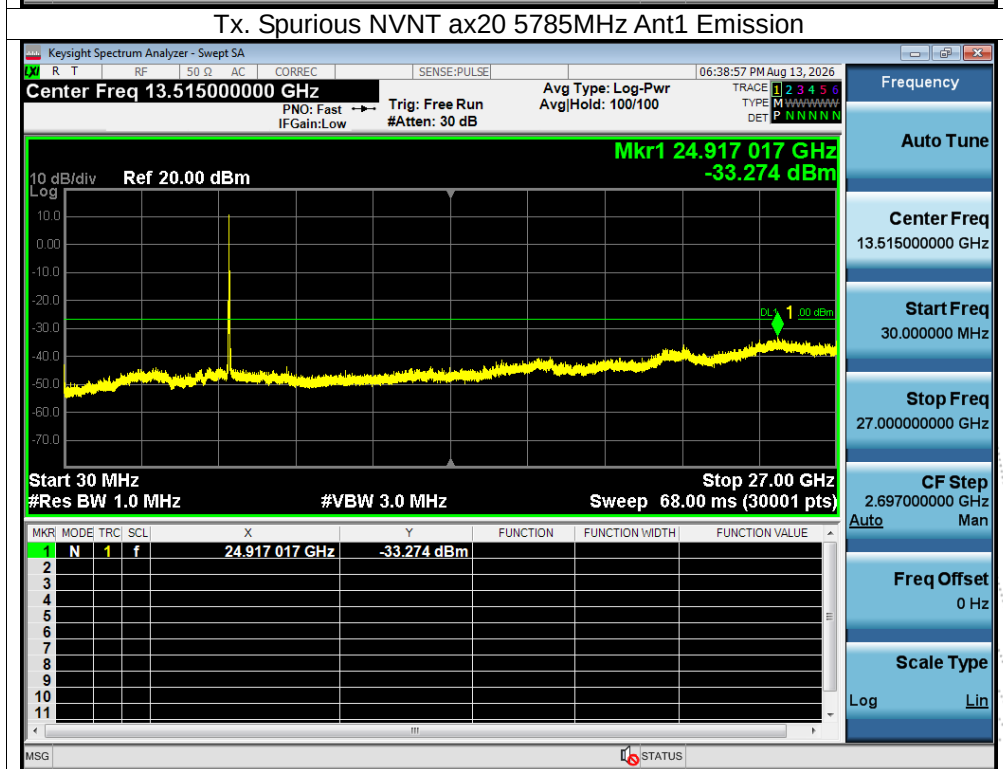
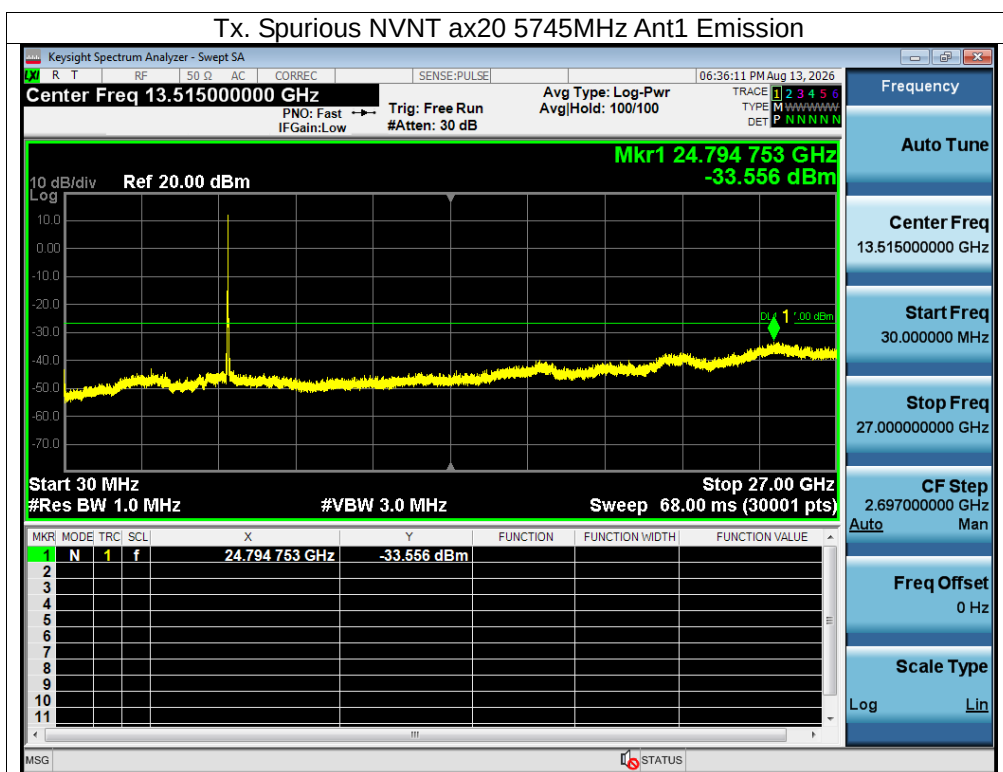


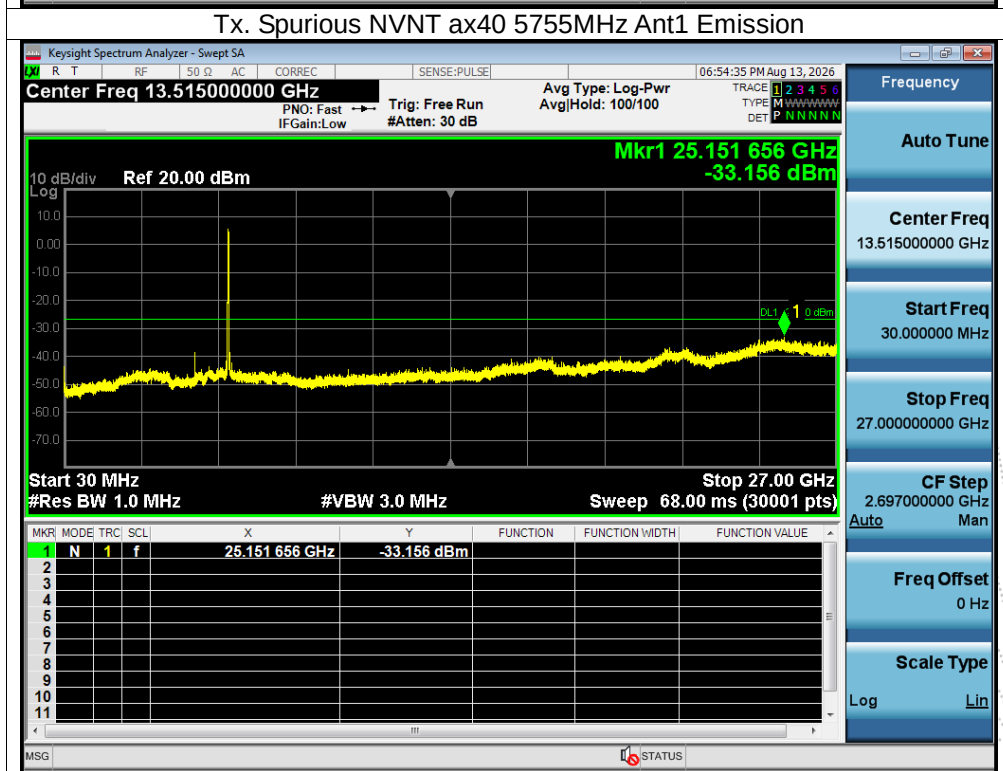
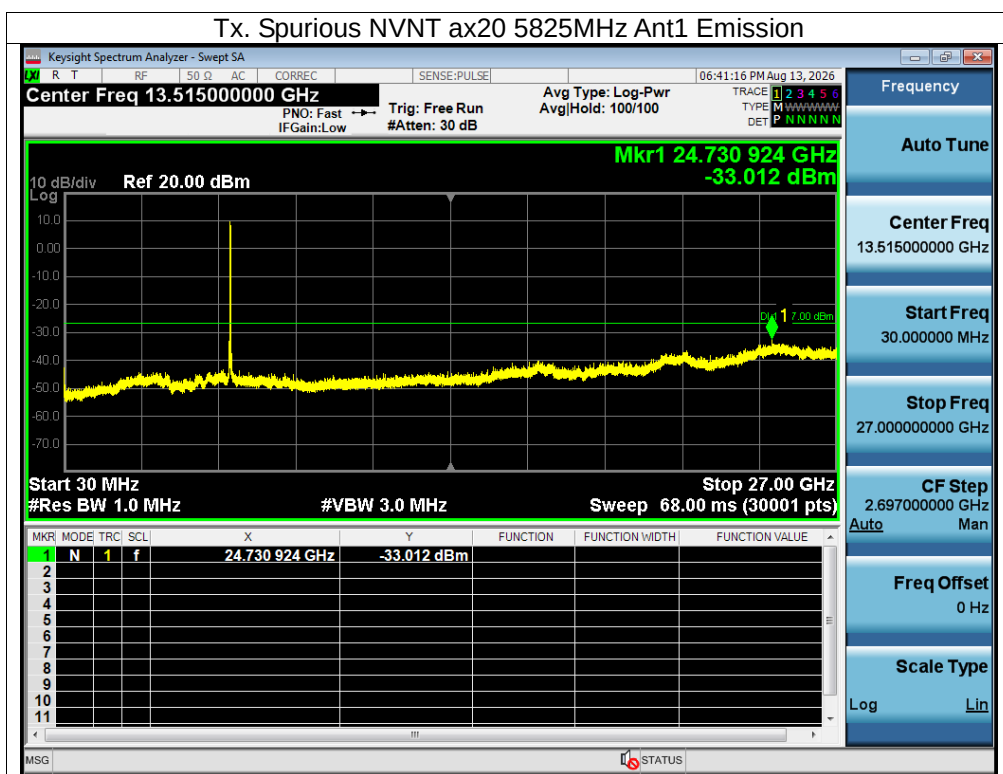


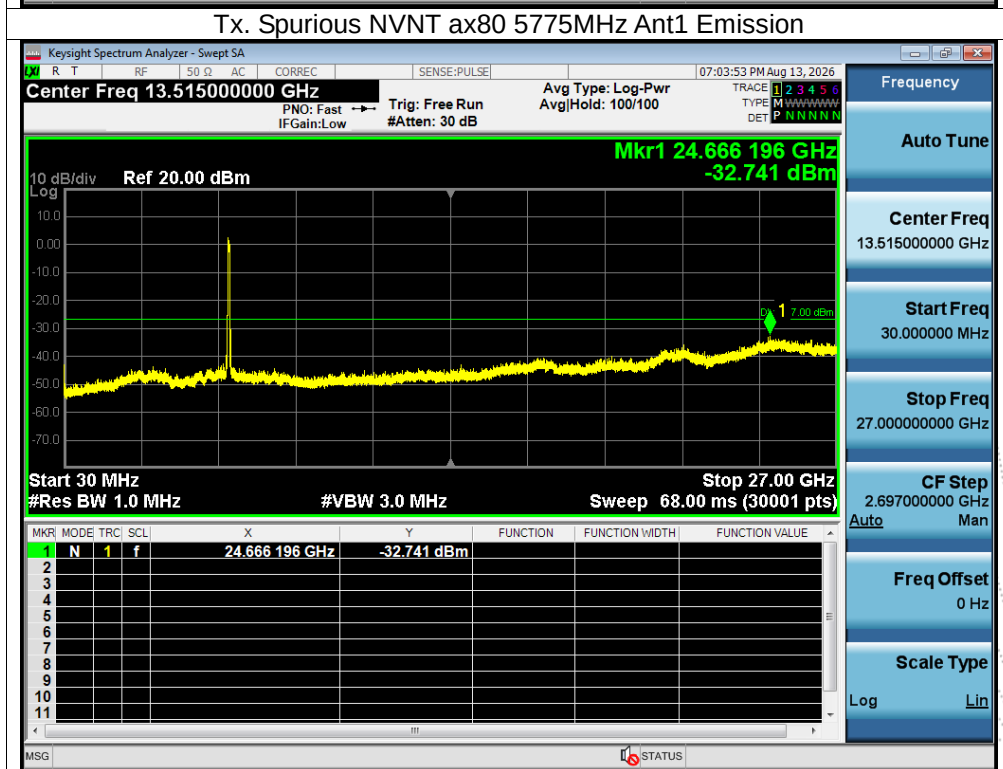
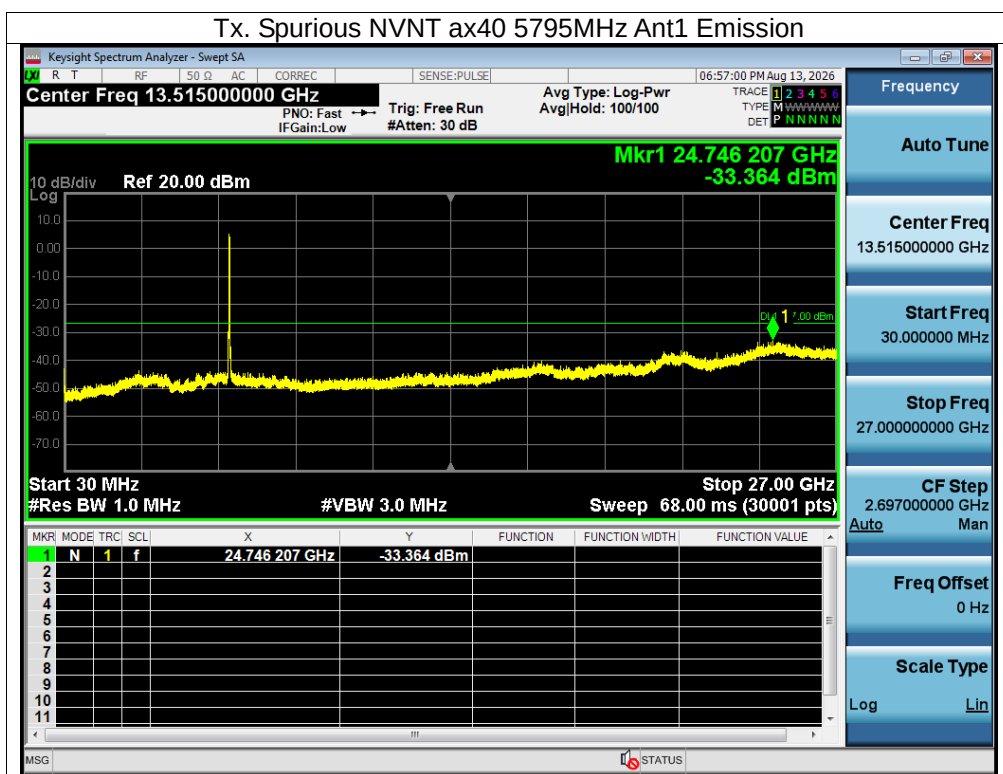


CO., LTD



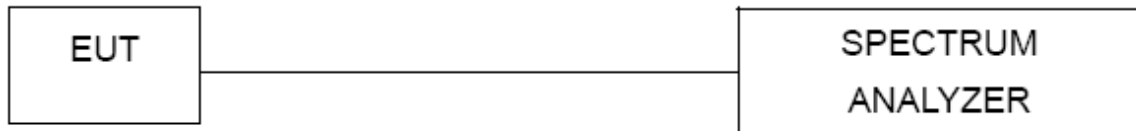






13. Frequency Stability Measurement

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:	23.2 °C	Relative Humidity:	51%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
Test Mode:	TX (5.1G) Mode Frequency U-NII-1 (5180-5240MHz)		

Note: (A)(B) Represent the value of antenna A and B , The worst data is Antenna A, only shown Antenna A .

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	12.00	5180.0091	5180	0.0091	1.7617
		V max (V)	13.80	5180.0039	5180	0.0039	0.7531
		V min (V)	10.20	5180.0069	5180	0.0069	1.3405
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 (DV)	12	T (°C)	-20	5180.0075	5180	0.0075	1.4397
		T (°C)	-10	5180.0126	5180	0.0126	2.4305
		T (°C)	0	5180.0012	5180	0.0012	0.2397
		T (°C)	10	5180.0000	5180	0.0000	0.0012
		T (°C)	20	5180.0077	5180	0.0077	1.4797
		T (°C)	30	5180.0047	5180	0.0047	0.9151
		T (°C)	40	5180.0099	5180	0.0099	1.9086
		T (°C)	50	5180.0027	5180	0.0027	0.5245
		T (°C)	60	5180.0113	5180	0.0113	2.1795
		T (°C)	70	5180.0093	5180	0.0093	1.8036
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)	12.00	5200.0054	5200	0.0054	1.0367
		V max (V)	13.80	5200.0026	5200	0.0026	0.5062
		V min (V)	10.20	5200.0111	5200	0.0111	2.1337
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 (DV)	12	T (°C)	-20	5200.00379	5200	0.00379	0.7286
		T (°C)	-10	5200.00726	5200	0.00726	1.3961
		T (°C)	0	5200.00388	5200	0.00388	0.7460
		T (°C)	10	5200.00356	5200	0.00356	0.6838
		T (°C)	20	5200.00273	5200	0.00273	0.5242
		T (°C)	30	5200.01246	5200	0.01246	2.3955
		T (°C)	40	5200.01312	5200	0.01312	2.5231
		T (°C)	50	5200.00196	5200	0.00196	0.3767
		T (°C)	60	5200.00781	5200	0.00781	1.5024
		T (°C)	70	5200.00906	5200	0.00906	1.7420
Limits				5150-5250 MHz			
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)	12.00	5240.0104	5240	0.0104	1.9867
		V max (V)	13.80	5240.0134	5240	0.0134	2.5575
		V min (V)	10.20	5240.0126	5240	0.0126	2.4093
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 (DV)	12	T (°C)	-20	5240.0128	5240	0.0128	2.4451
		T (°C)	-10	5240.0043	5240	0.0043	0.8209
		T (°C)	0	5240.0116	5240	0.0116	2.2110
		T (°C)	10	5240.0125	5240	0.0125	2.3943
		T (°C)	20	5240.0129	5240	0.0129	2.4575
		T (°C)	30	5240.0061	5240	0.0061	1.1678
		T (°C)	40	5240.0015	5240	0.0015	0.2923
		T (°C)	50	5240.0121	5240	0.0121	2.3032
		T (°C)	60	5240.0125	5240	0.0125	2.3918
		T (°C)	70	5240.0130	5240	0.0130	2.4858
Limits				5150-5250 MHz			
Result				Complies			

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Temperature:	23.2 °C	Relative Humidity:	51%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
Test Mode:	TX (5.8G) Mode Frequency U-NII-3 (5745-5825MHz)		

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency:5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	12.00	5745.00955	5745	0.00955	1.6618
		V max (V)	13.80	5745.01081	5745	0.01081	1.8812
		V min (V)	10.20	5745.00216	5745	0.00216	0.3760
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 (DV)	12	T (°C)	-20	5745.00931	5745	0.00931	1.6203
		T (°C)	-10	5745.00041	5745	0.00041	0.0715
		T (°C)	0	5745.00883	5745	0.00883	1.5375
		T (°C)	10	5745.00787	5745	0.00787	1.3696
		T (°C)	20	5745.00868	5745	0.00868	1.5106
		T (°C)	30	5745.00196	5745	0.00196	0.3404
		T (°C)	40	5745.00951	5745	0.00951	1.6552
		T (°C)	50	5745.00457	5745	0.00457	0.7958
		T (°C)	60	5745.00403	5745	0.00403	0.7023
		T (°C)	70	5745.00196	5745	0.00196	0.3409
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)	12.00	5785.01077	5785	0.01077	1.8624
		V max (V)	13.80	5785.01050	5785	0.01050	1.8150
		V min (V)	10.20	5785.00685	5785	0.00685	1.1833
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 (DV)	12	T (°C)	-20	5785.00772	5785	0.00772	1.3344
		T (°C)	-10	5785.01041	5785	0.01041	1.8000
		T (°C)	0	5785.00124	5785	0.00124	0.2135
		T (°C)	10	5785.01193	5785	0.01193	2.0615
		T (°C)	20	5785.00697	5785	0.00697	1.2055
		T (°C)	30	5785.01035	5785	0.01035	1.7883
		T (°C)	40	5785.00827	5785	0.00827	1.4301
		T (°C)	50	5785.00659	5785	0.00659	1.1391
		T (°C)	60	5785.00279	5785	0.00279	0.4819
		T (°C)	70	5785.01147	5785	0.01147	1.9824
Limits				5725-5850 MHz			
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)	12.00	5825.01096	5825	0.01096	1.8816
		V max (V)	13.80	5825.00535	5825	0.00535	0.9178
		V min (V)	10.20	5825.00160	5825	0.00160	0.2754
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 (DV)	12	T (°C)	-20	5825.00738	5825	0.00738	1.2667
		T (°C)	-10	5825.01296	5825	0.01296	2.2254
		T (°C)	0	5825.00263	5825	0.00263	0.4508
		T (°C)	10	5825.01094	5825	0.01094	1.8775
		T (°C)	20	5825.00247	5825	0.00247	0.4244
		T (°C)	30	5825.00251	5825	0.00251	0.4316
		T (°C)	40	5825.00586	5825	0.00586	1.0067
		T (°C)	50	5825.01155	5825	0.01155	1.9825
		T (°C)	60	5825.00864	5825	0.00864	1.4825
		T (°C)	70	5825.00693	5825	0.00693	1.1900
Limits				5725-5850 MHz			
Result				Complies			

14. Duty Cycle Of Test Signal

14.1 Standard Requirement

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.

14.2 Formula

Duty Cycle = $T_{on} / (T_{on} + T_{off})$

14.3 Test Procedure

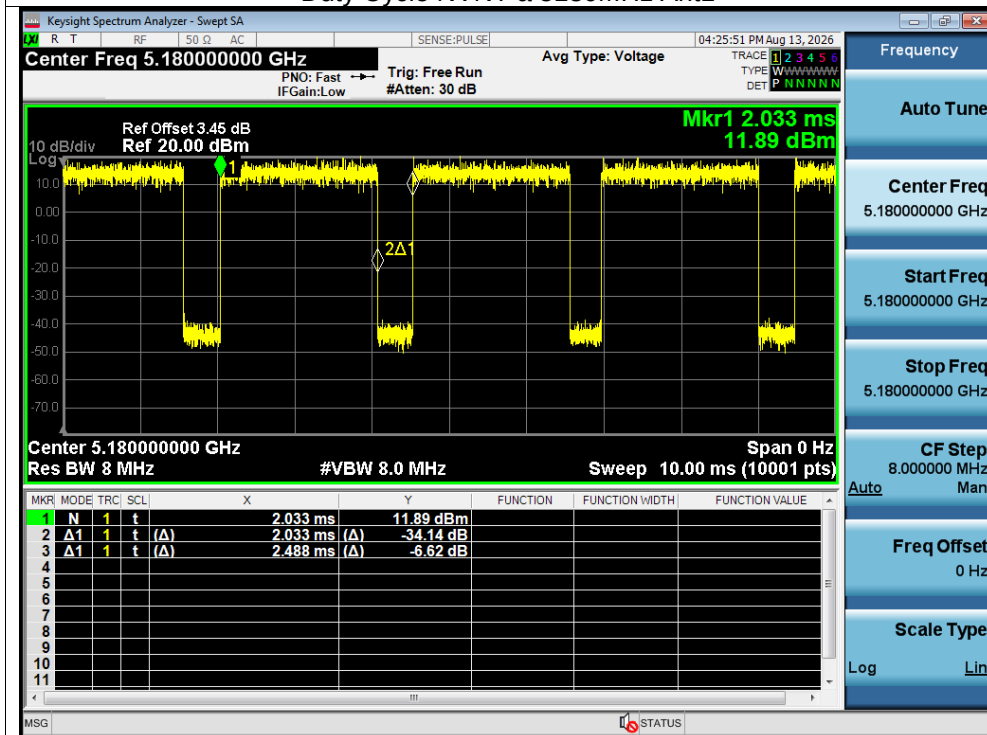
1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

14.4 Test Result

Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)
NVNT	a	5180	81.71	0.88
NVNT	a	5200	96.17	0.17
NVNT	a	5240	96.58	0.15
NVNT	n20	5180	91.31	0.39
NVNT	n20	5200	89.97	0.46
NVNT	n20	5240	91.32	0.39
NVNT	n40	5190	66.2	1.79
NVNT	n40	5230	92.08	0.36
NVNT	ac20	5180	96.35	0.16
NVNT	ac20	5200	89.67	0.47
NVNT	ac20	5240	93.37	0.3
NVNT	ac40	5190	89.42	0.49
NVNT	ac40	5230	83.78	0.77
NVNT	ac80	5210	76.67	1.15
NVNT	ax20	5180	89.56	0.48
NVNT	ax20	5200	92.05	0.36
NVNT	ax20	5240	92.87	0.32
NVNT	ax40	5190	85.88	0.66
NVNT	ax40	5230	87.36	0.59
NVNT	ax80	5210	65.12	1.86

Test Graphs

Duty Cycle NVNT a 5180MHz Ant1



Duty Cycle NVNT a 5200MHz Ant1

