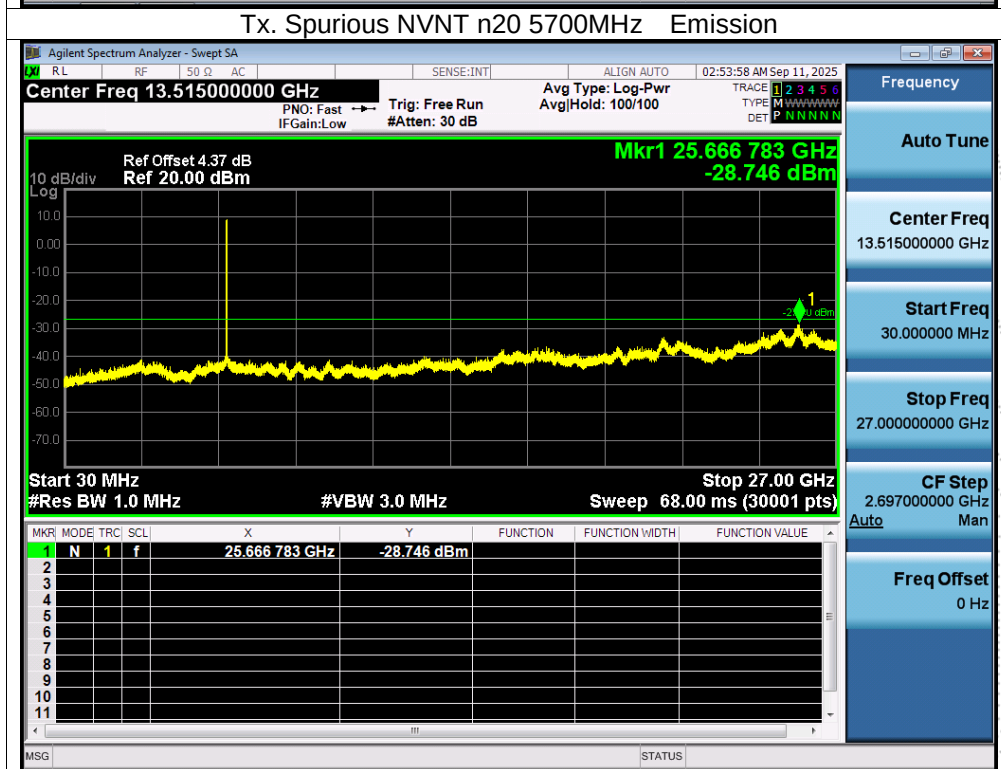
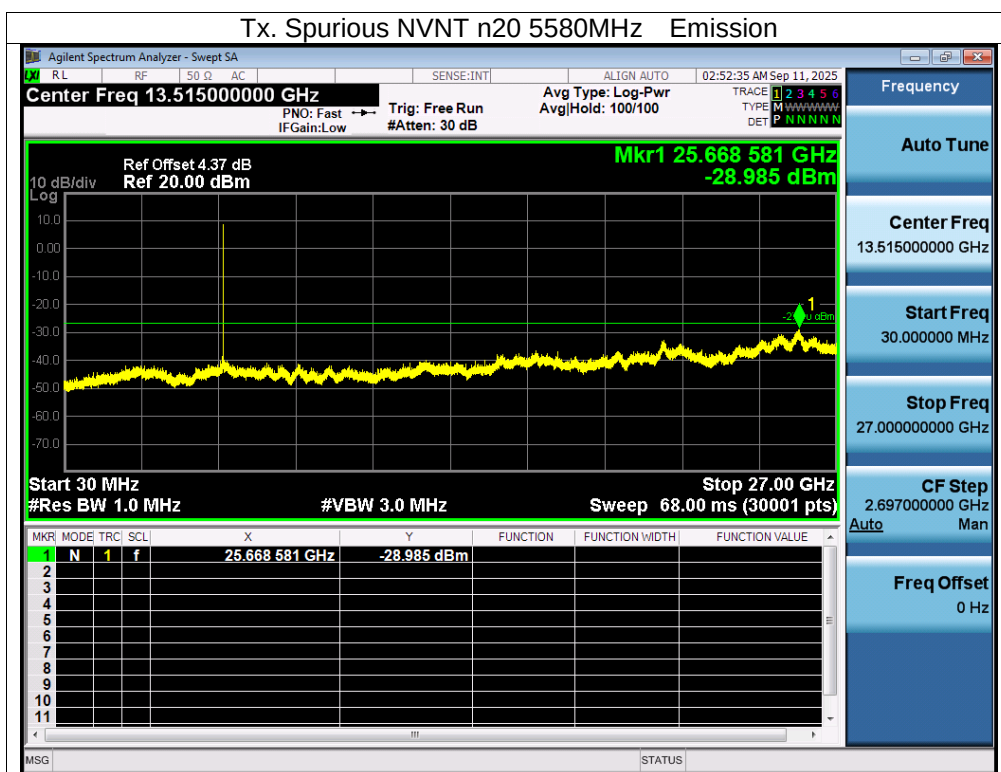
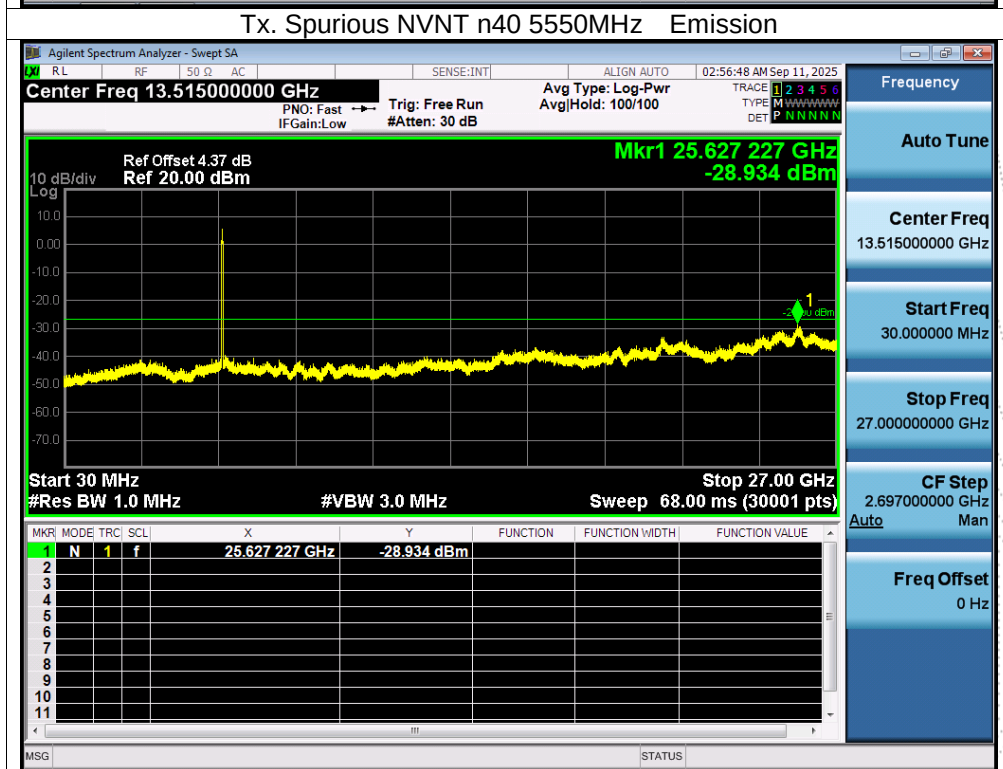
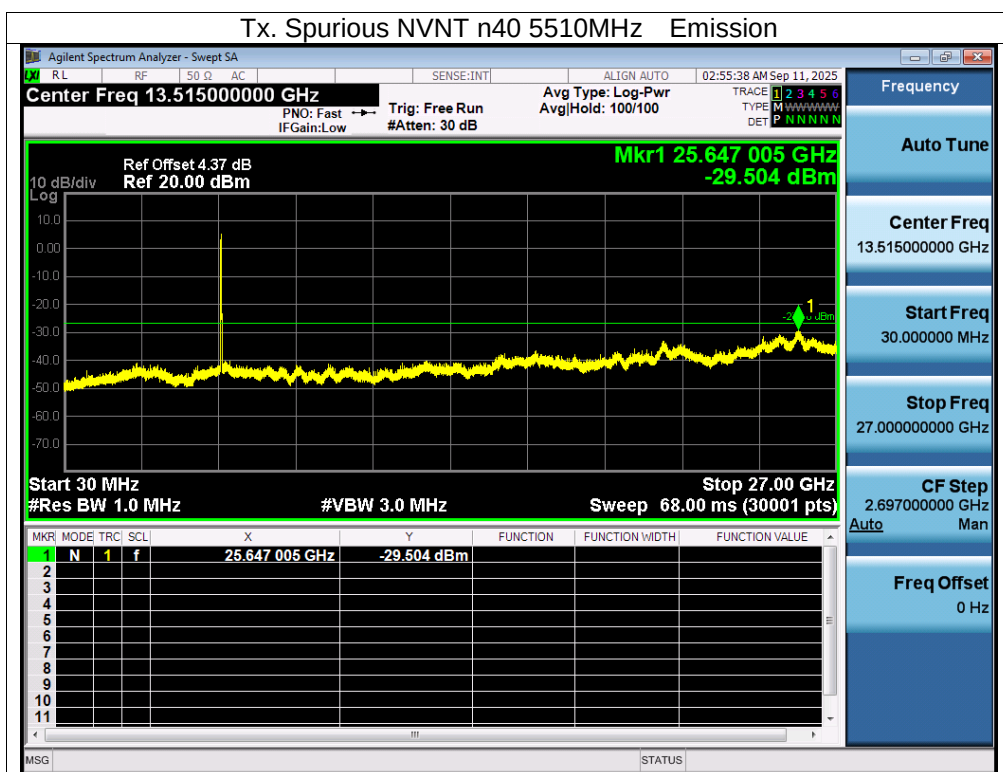
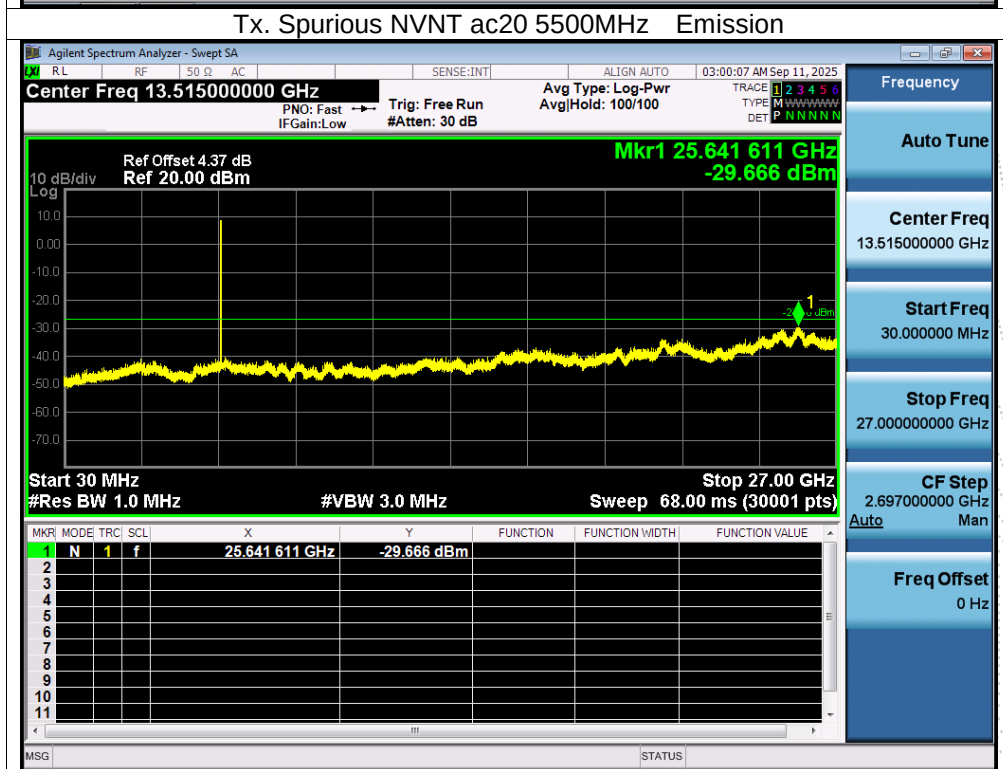
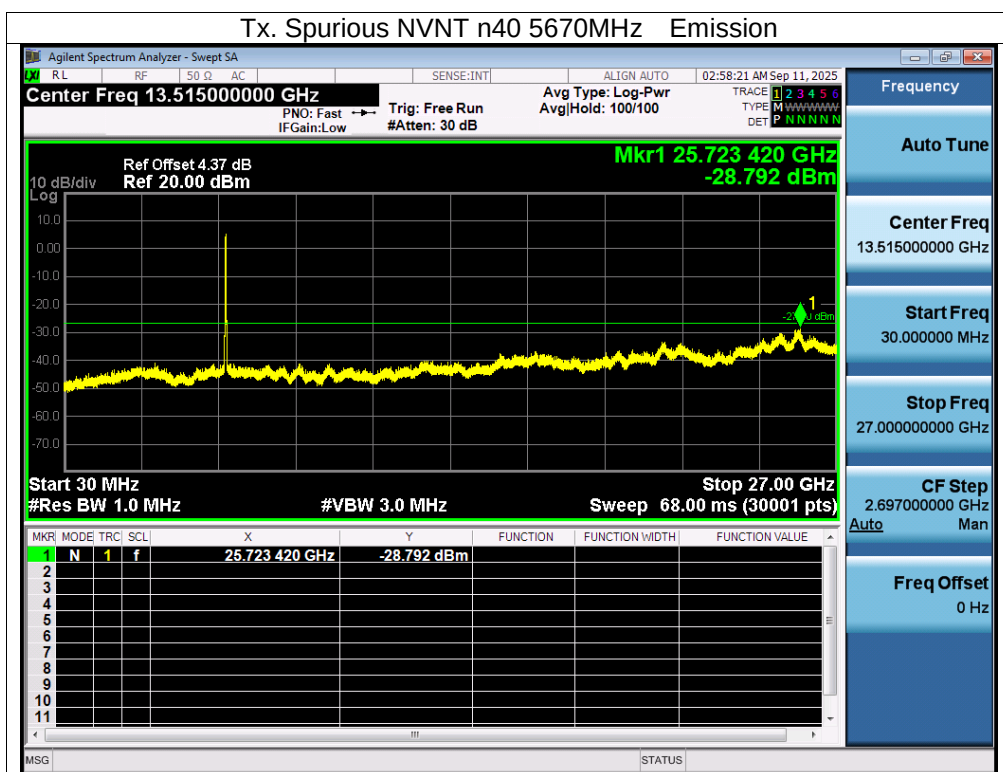
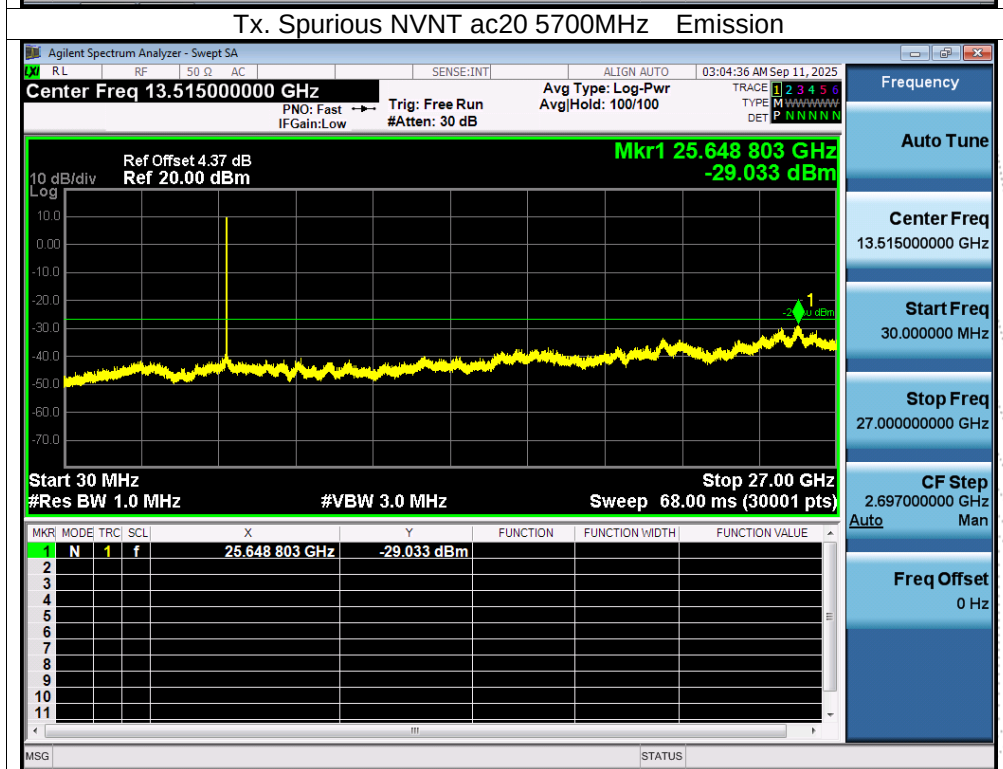
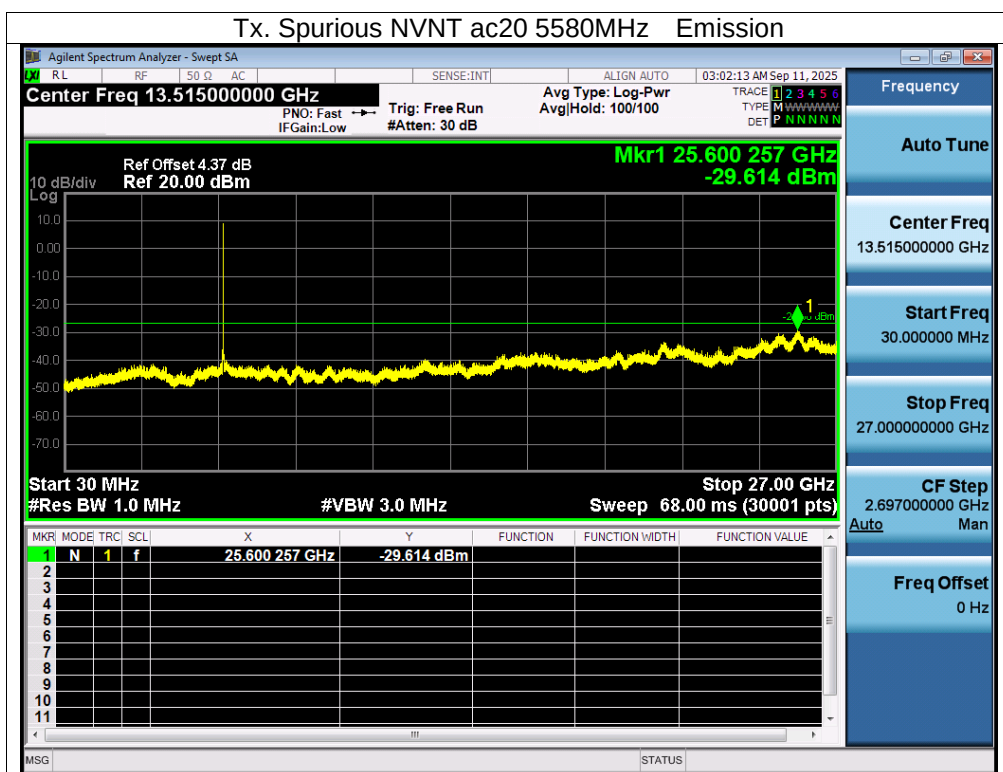
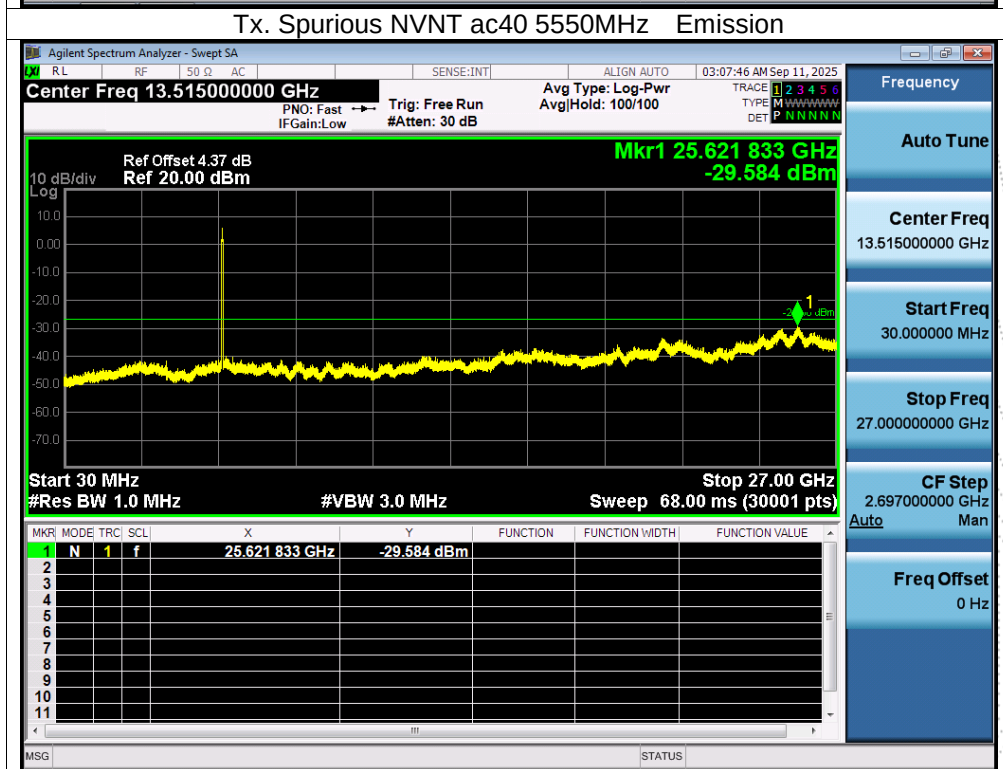
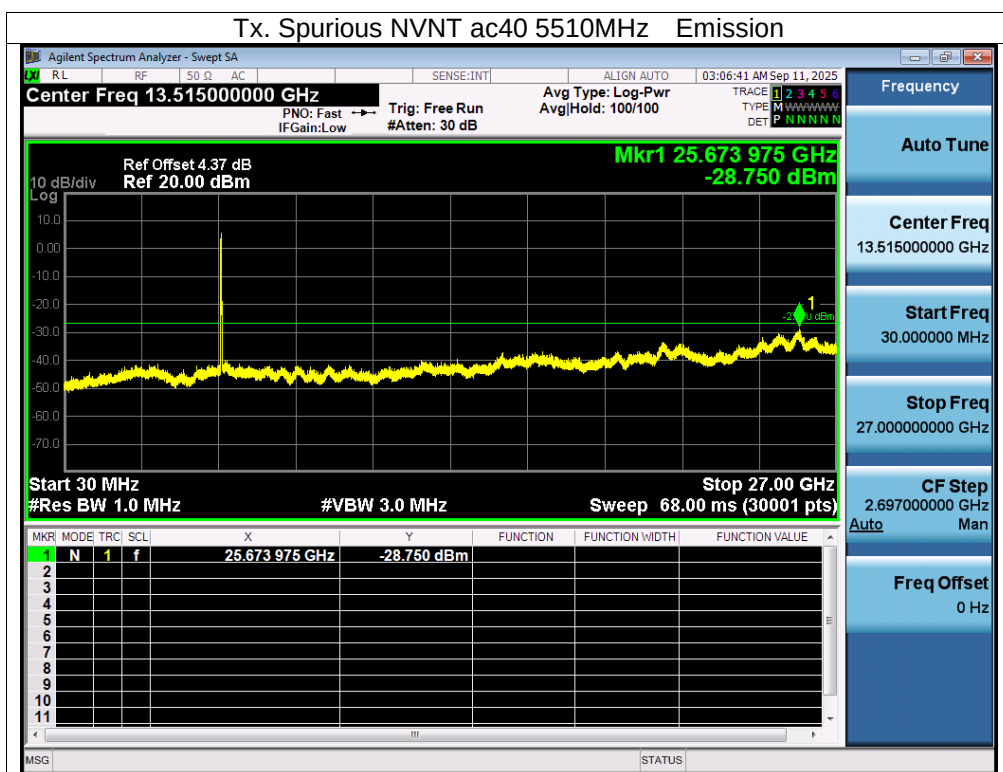


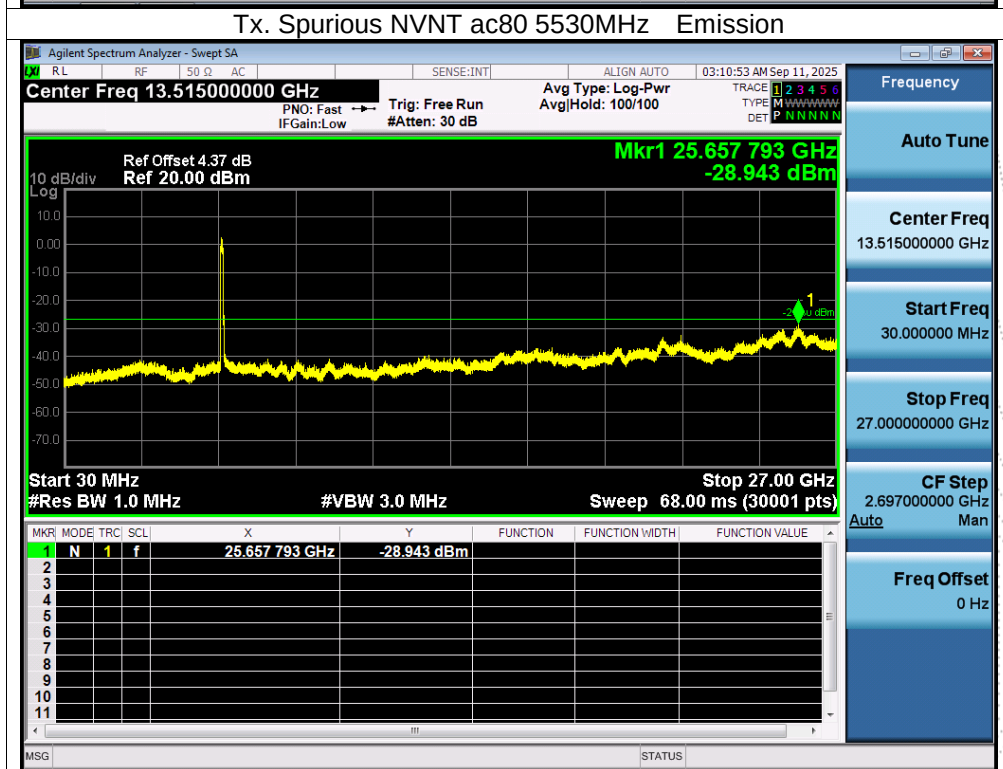
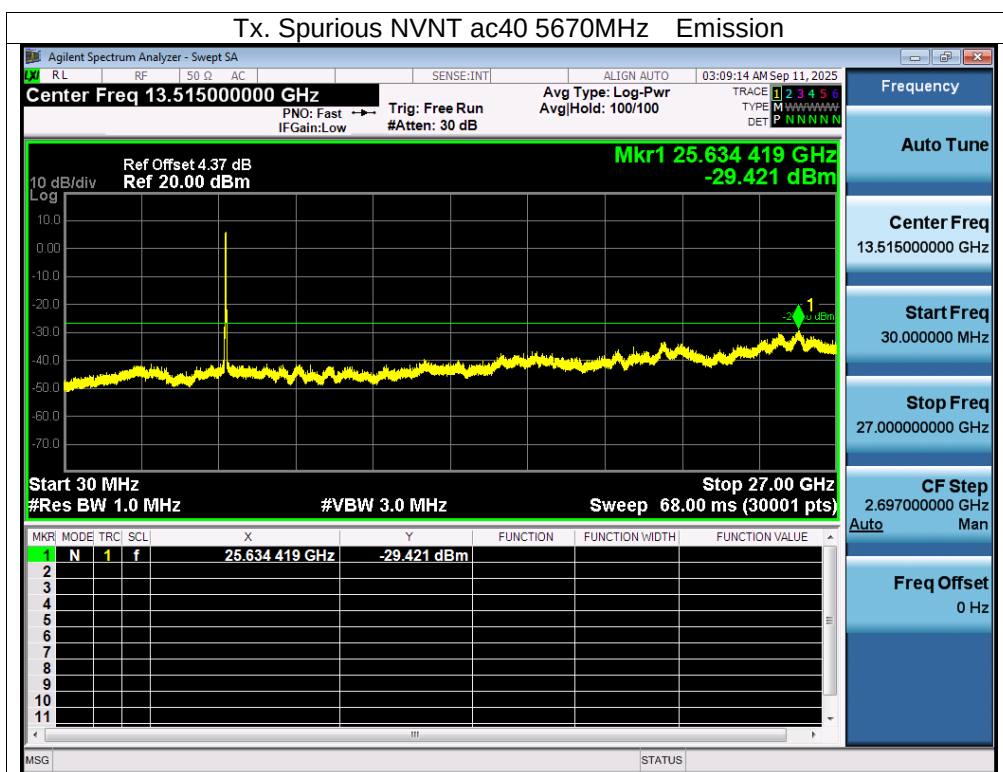


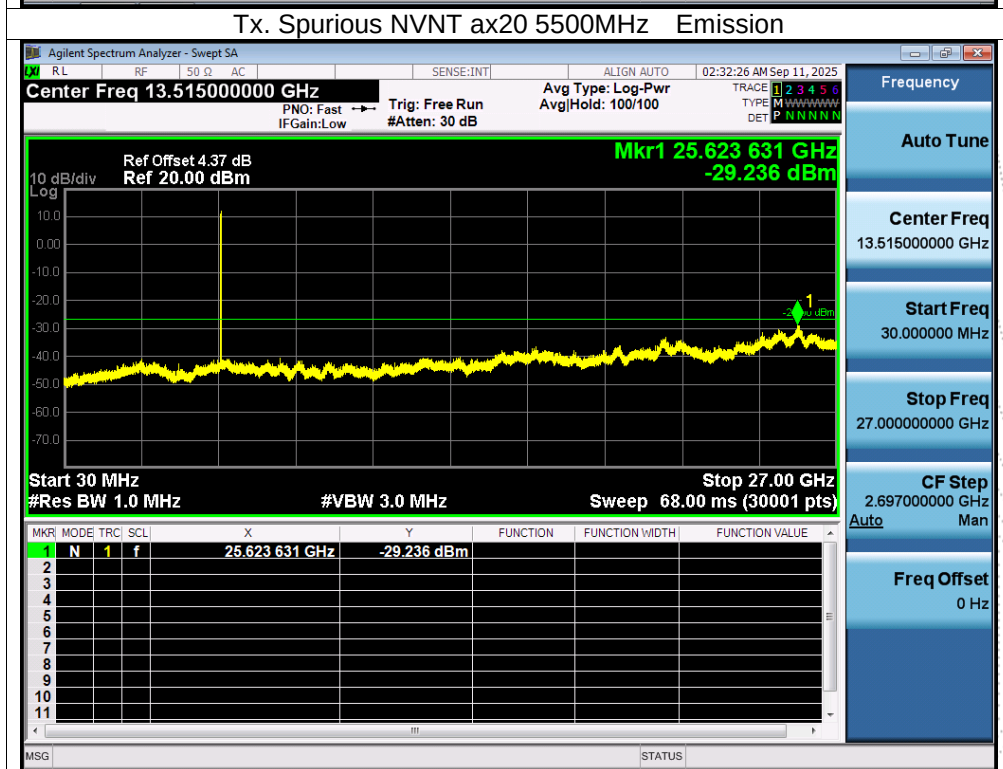
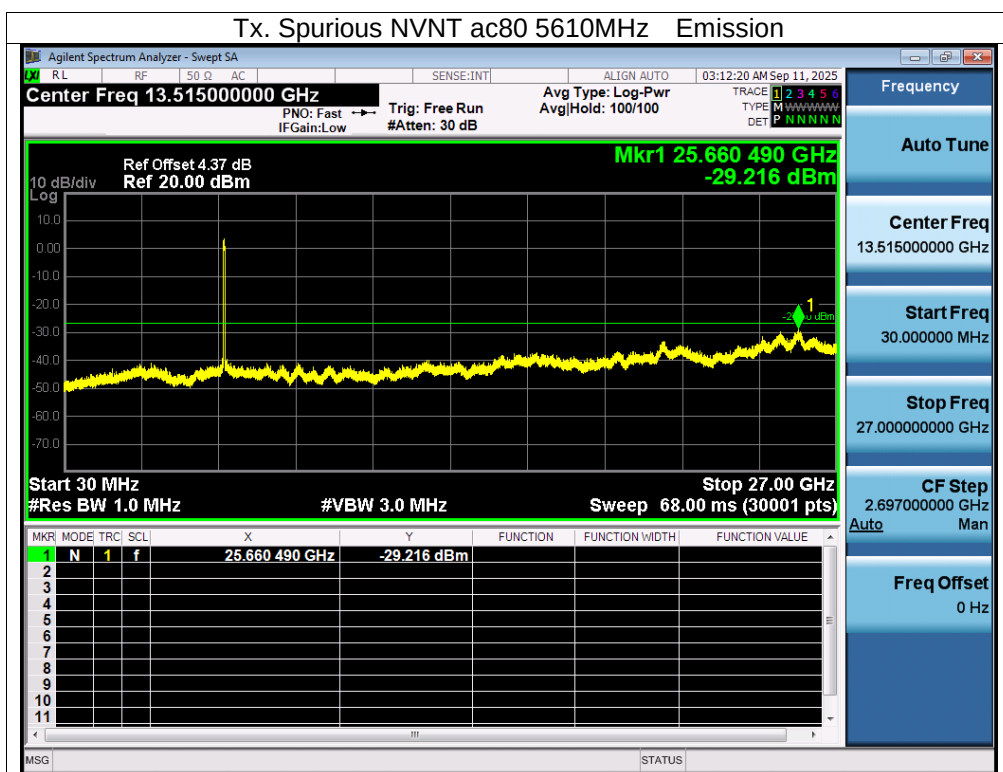


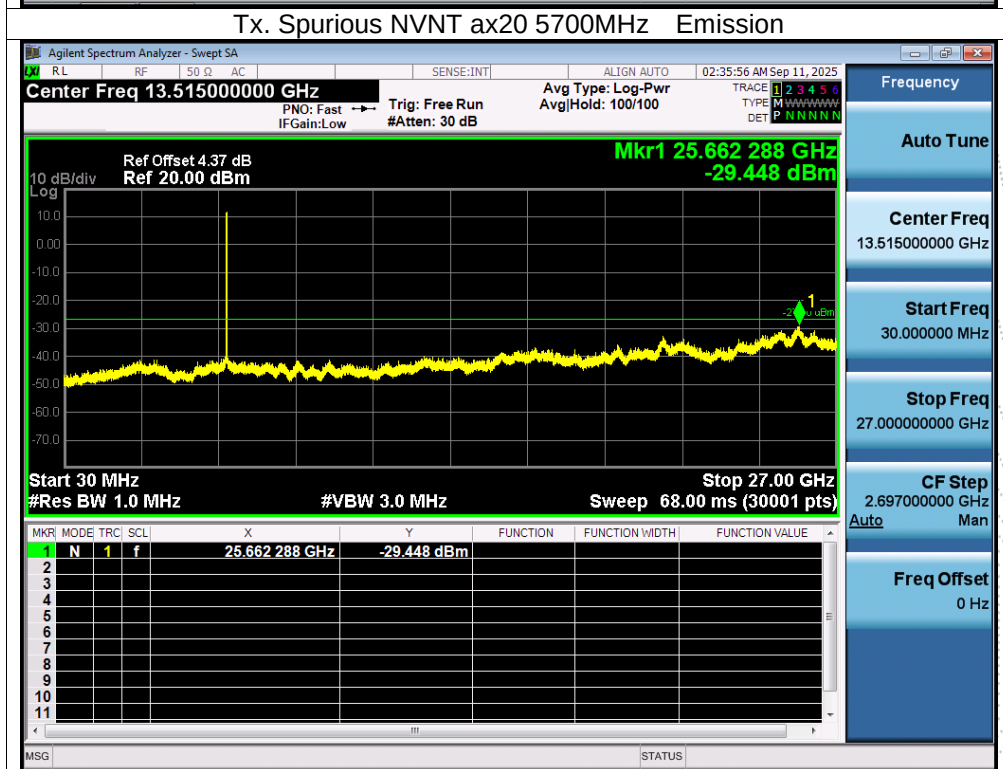
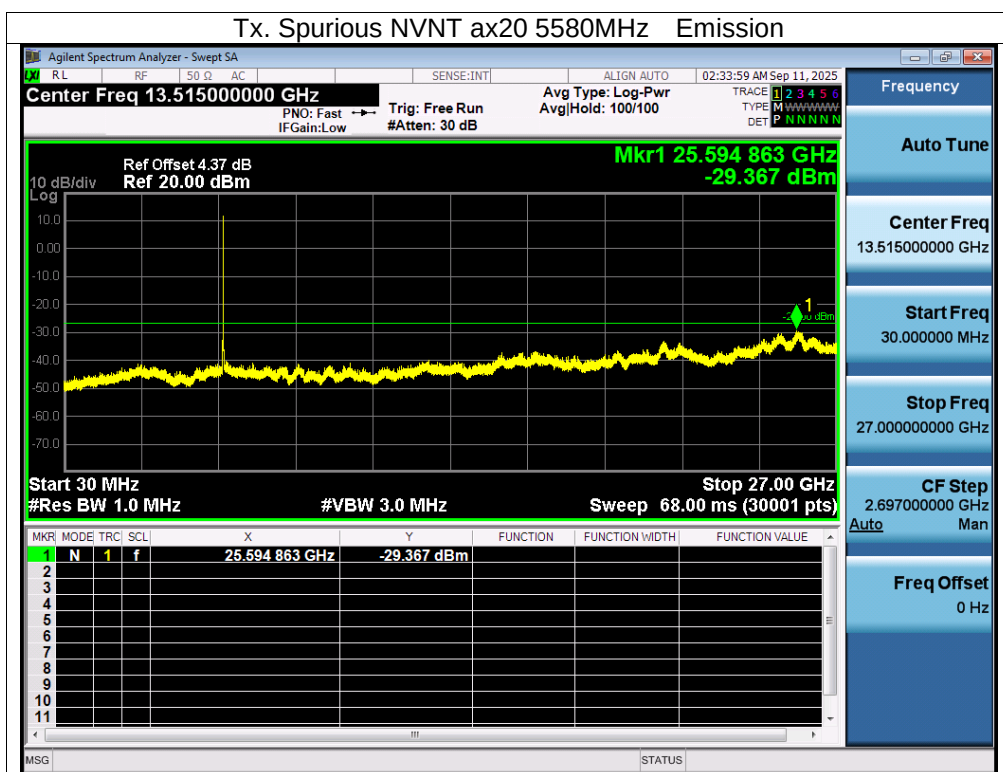


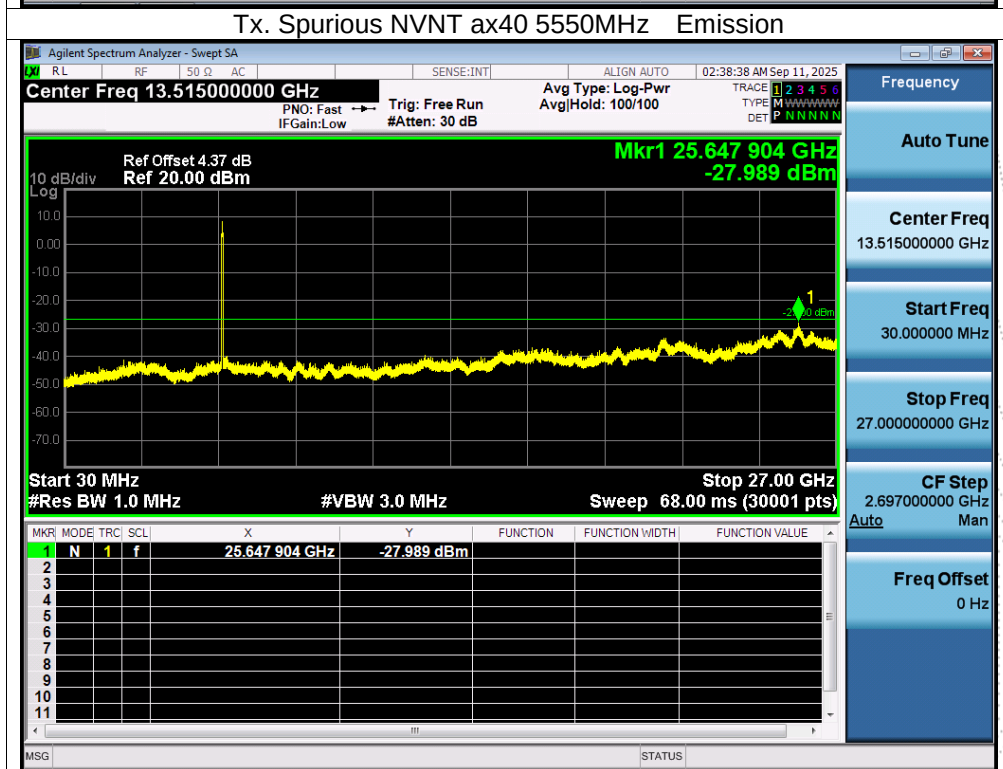
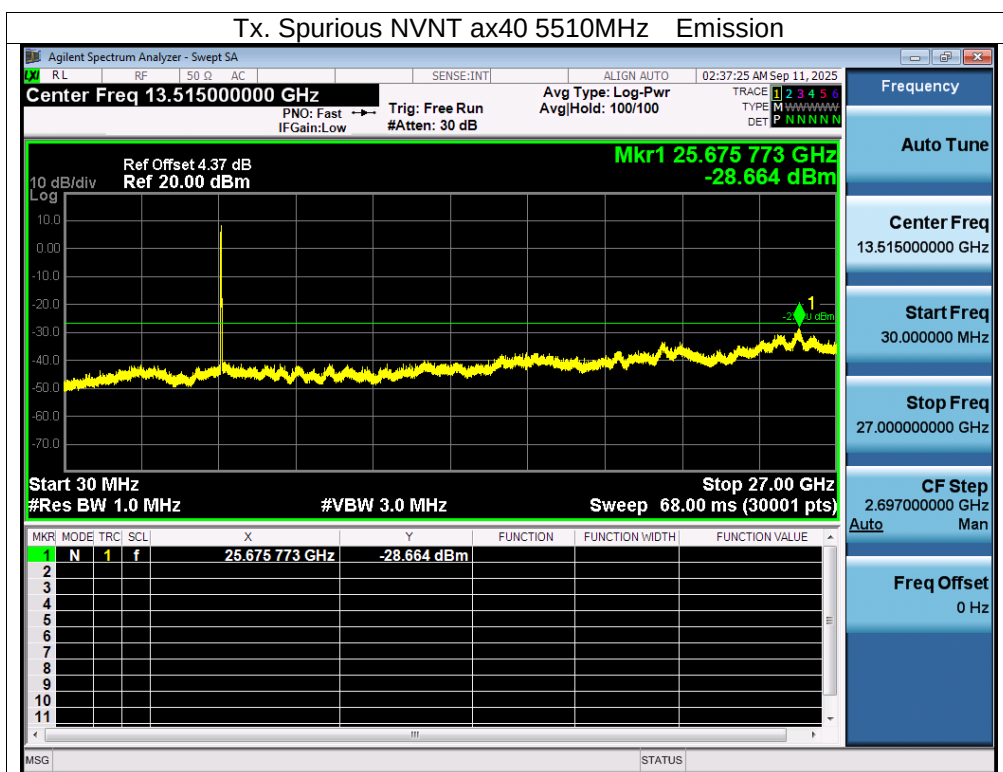


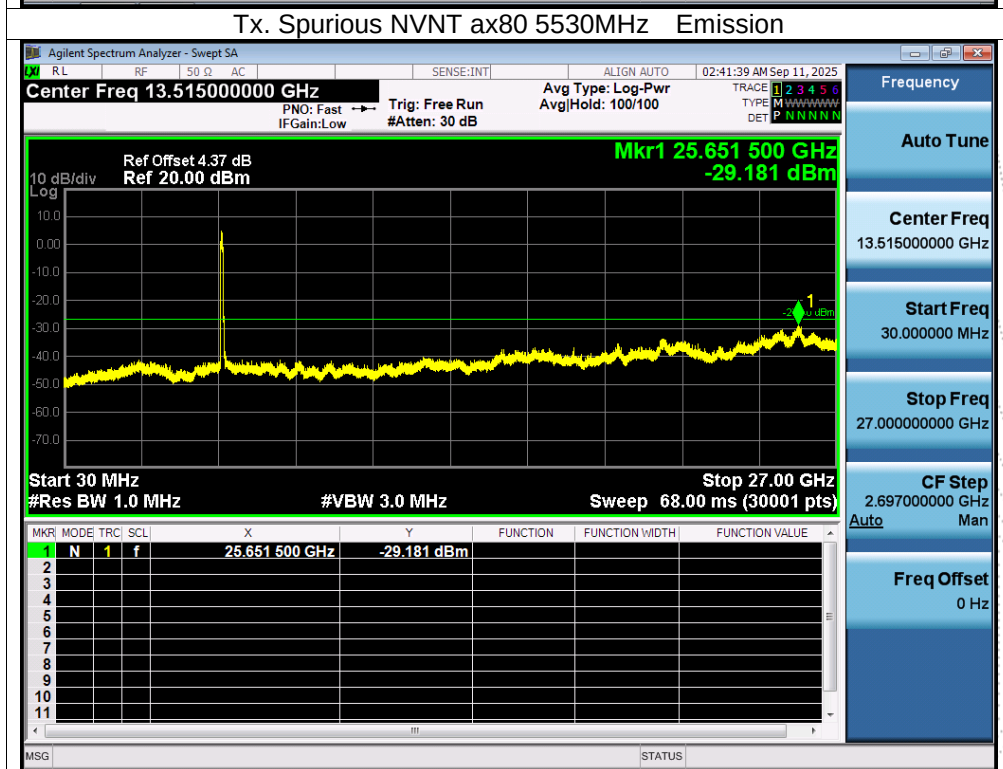
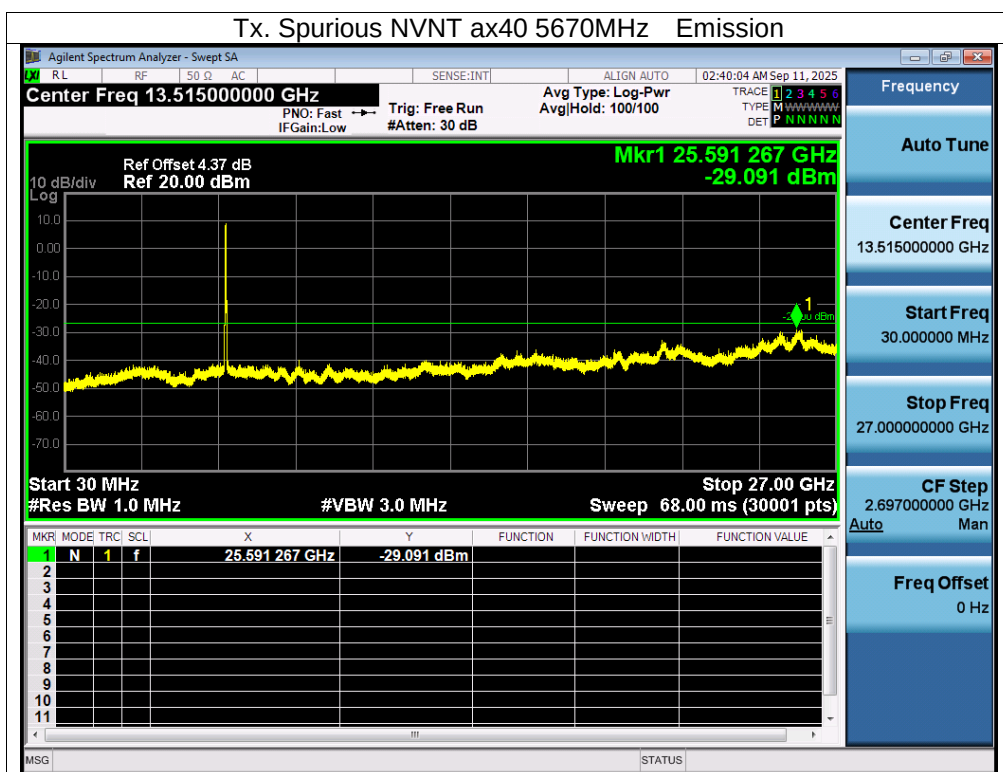


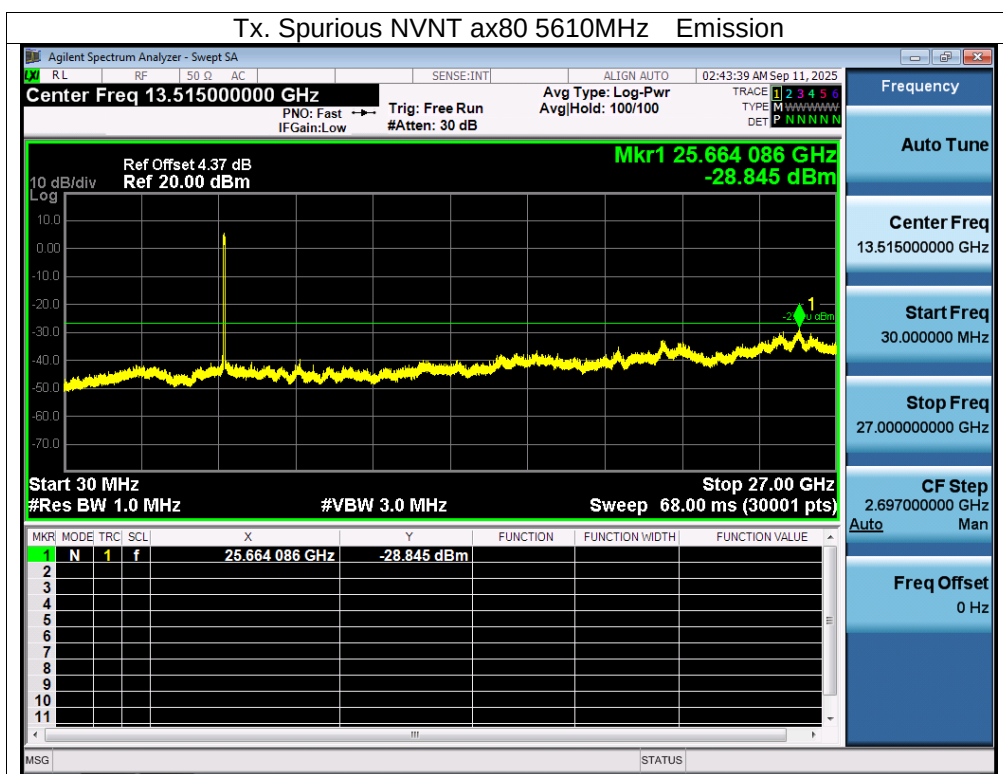




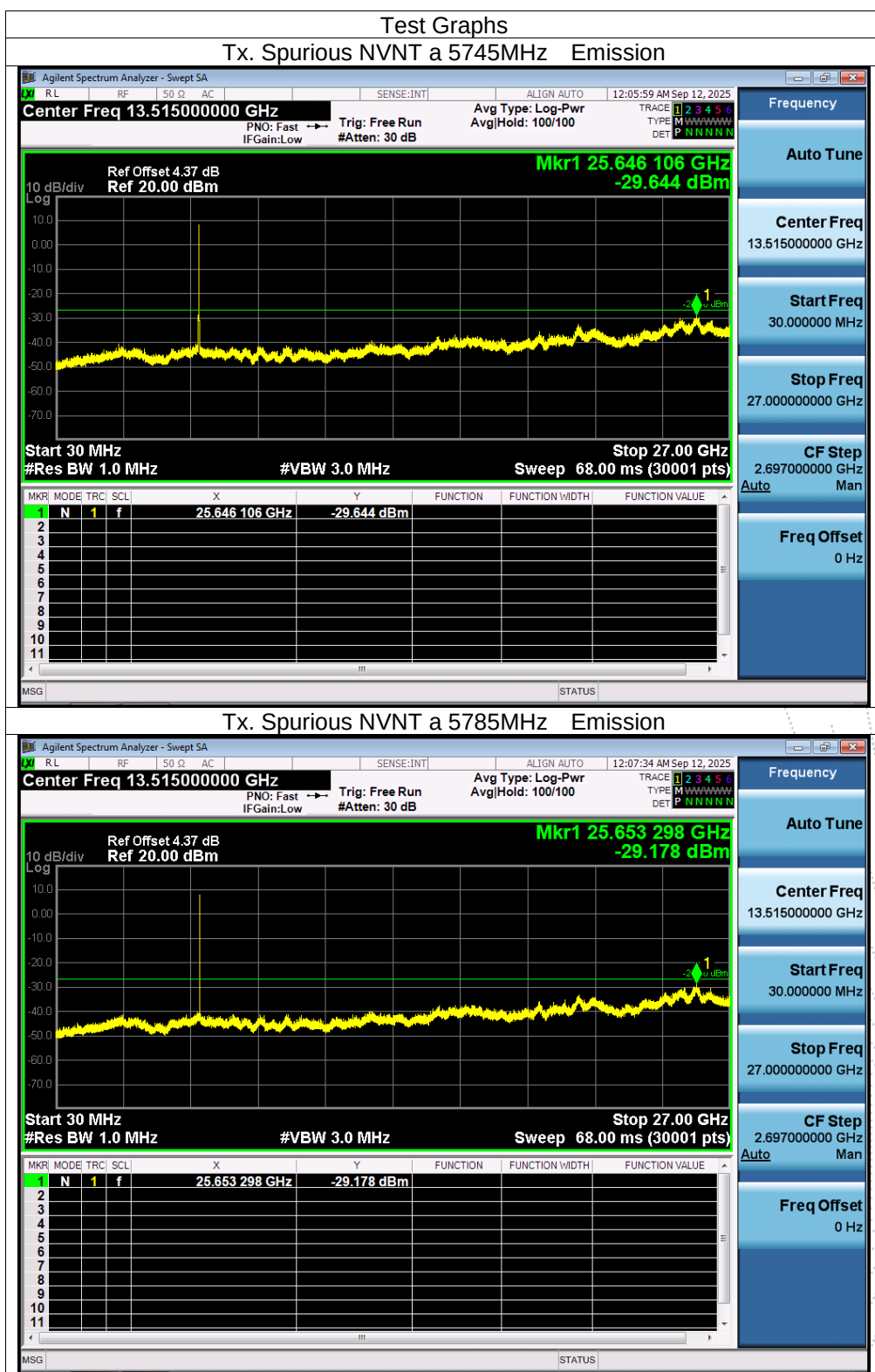


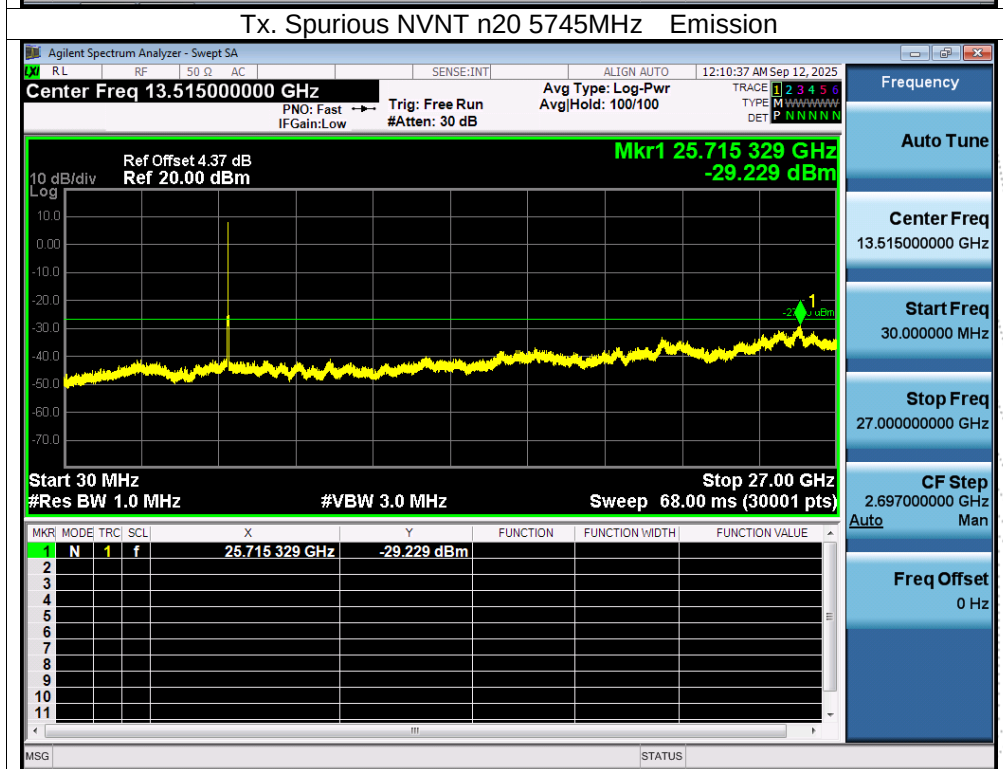
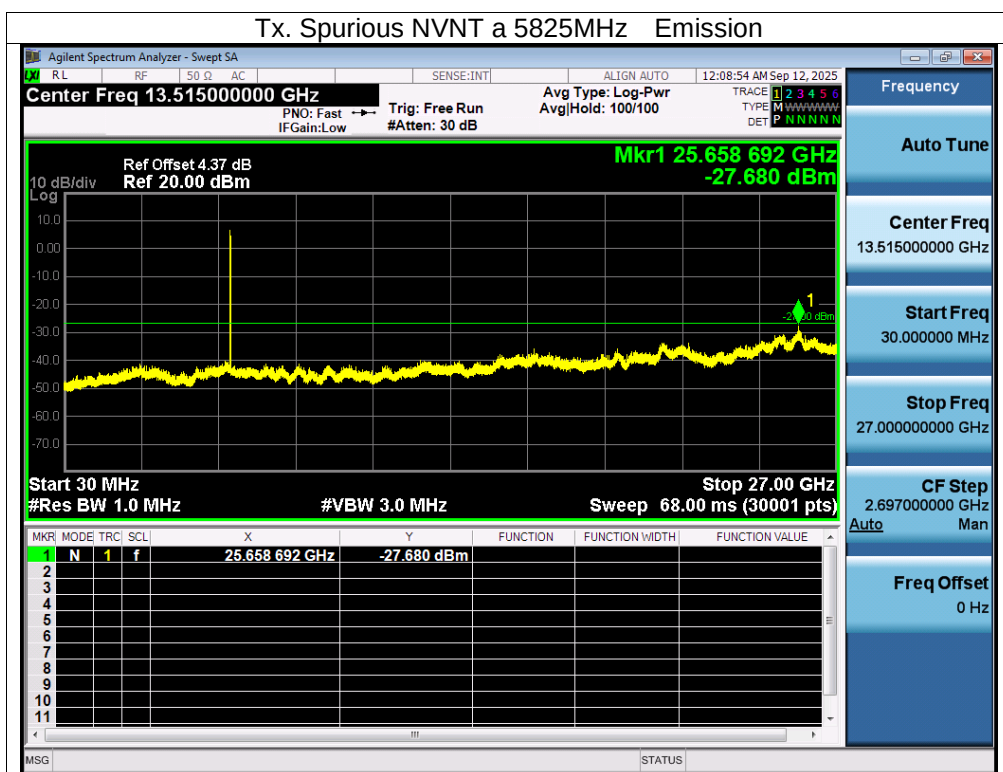


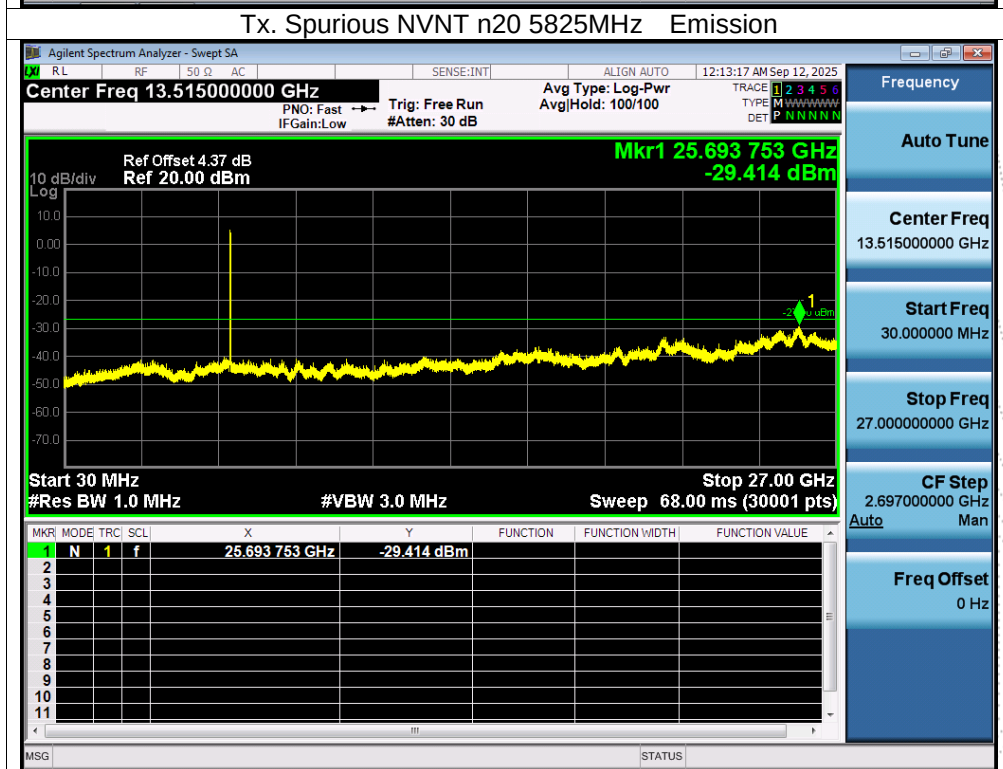
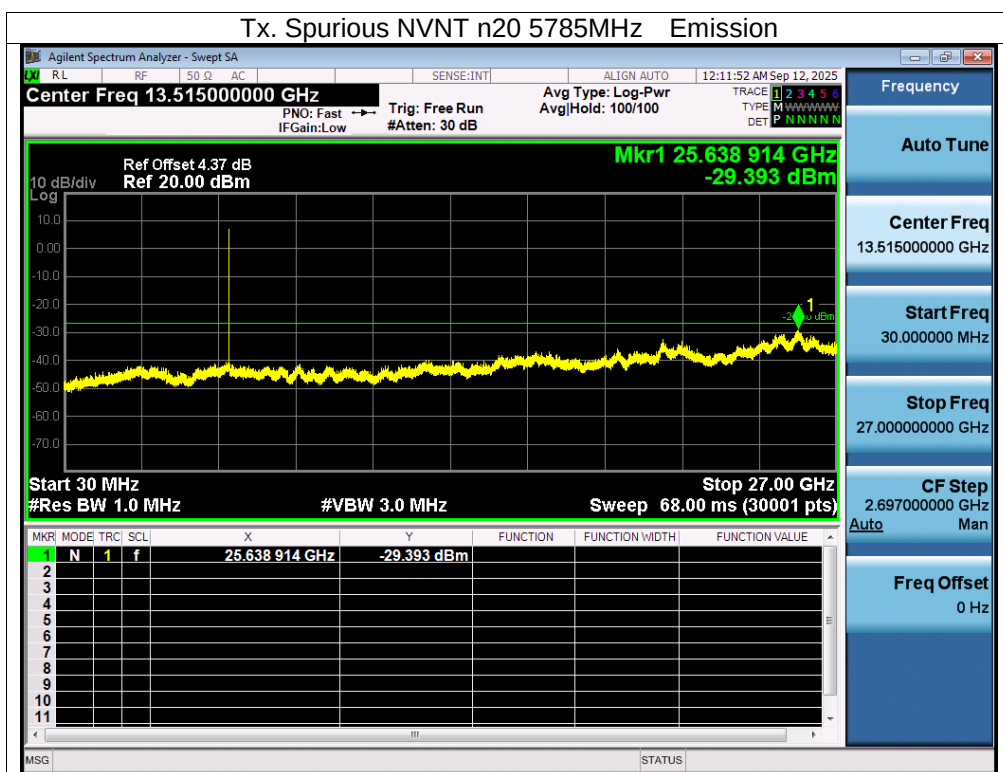


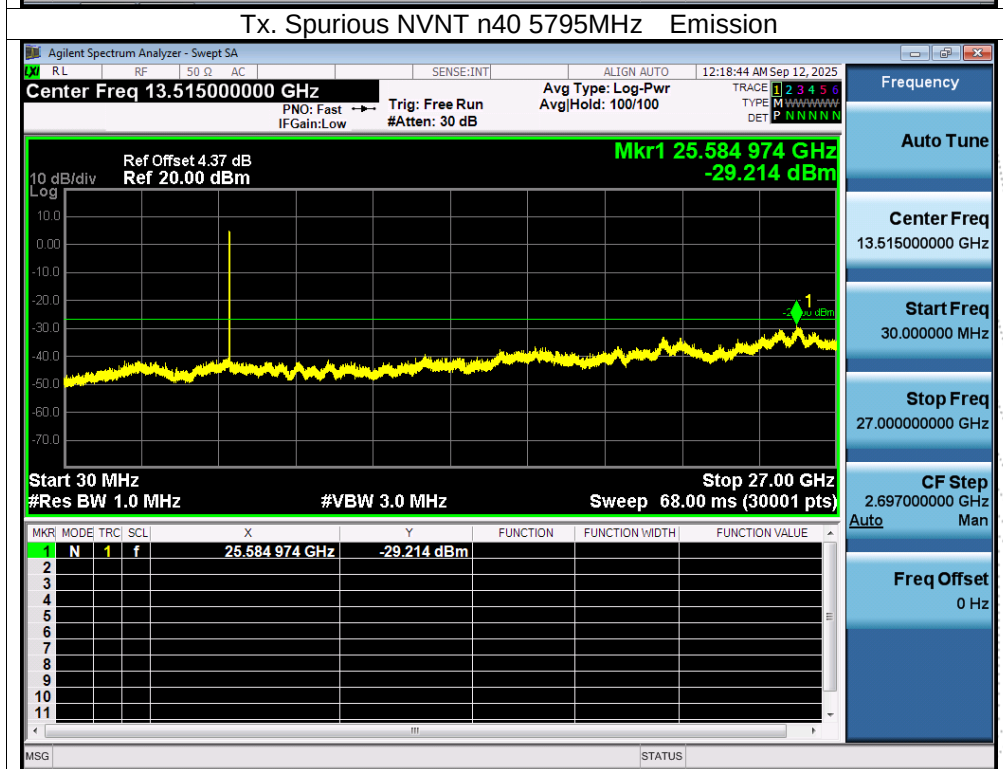
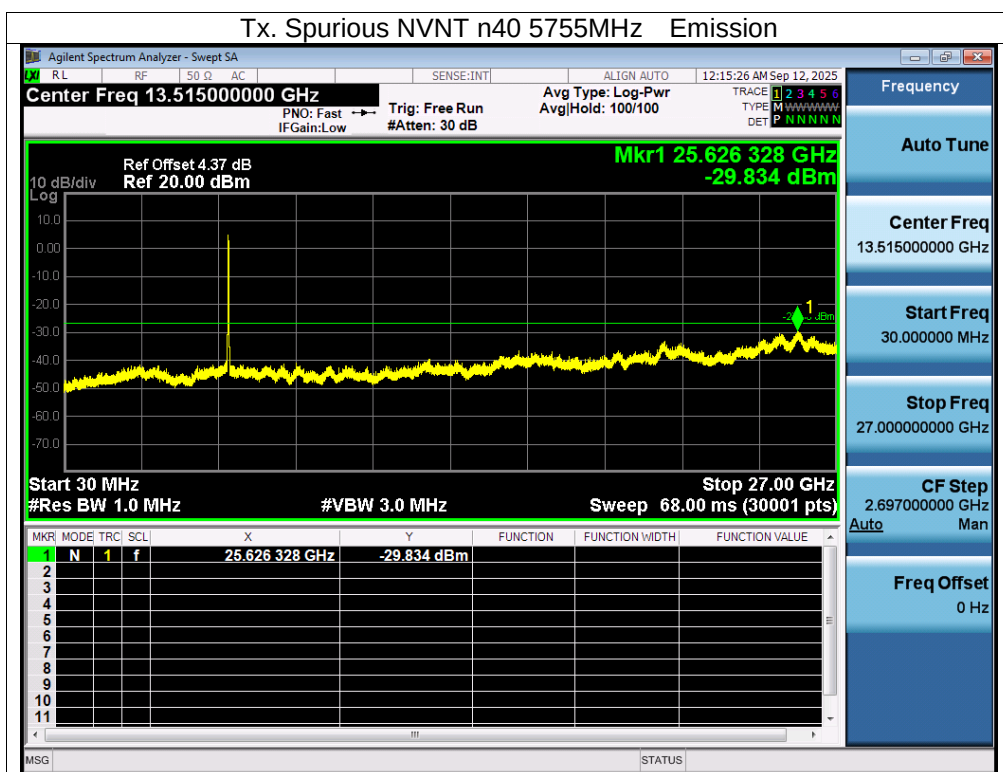


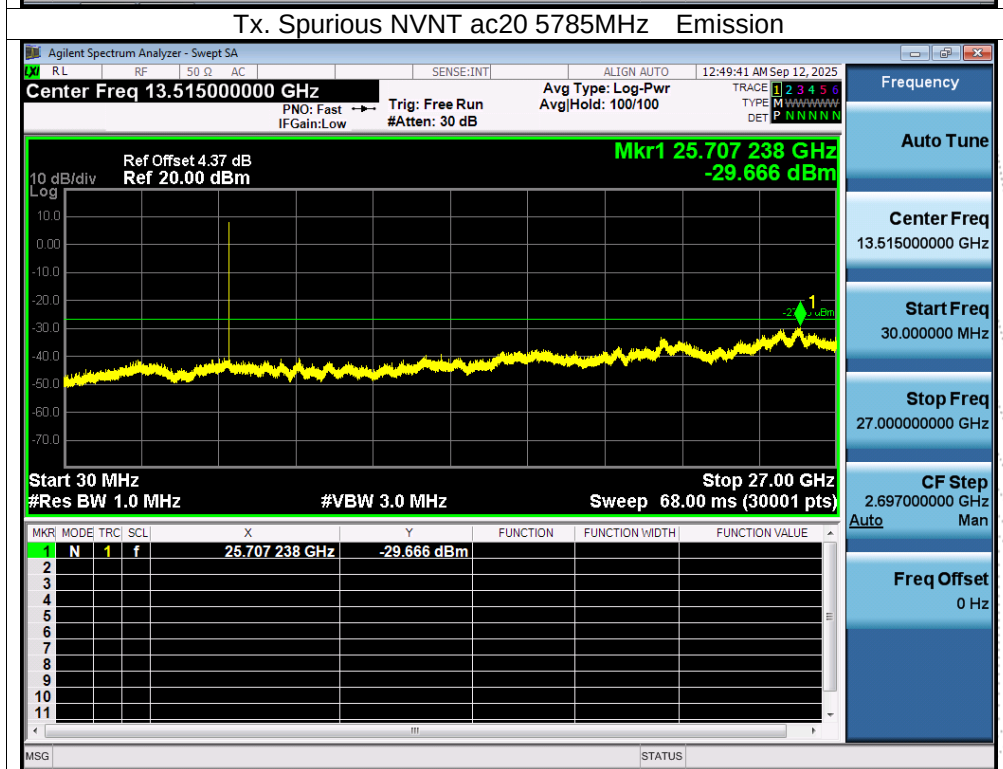
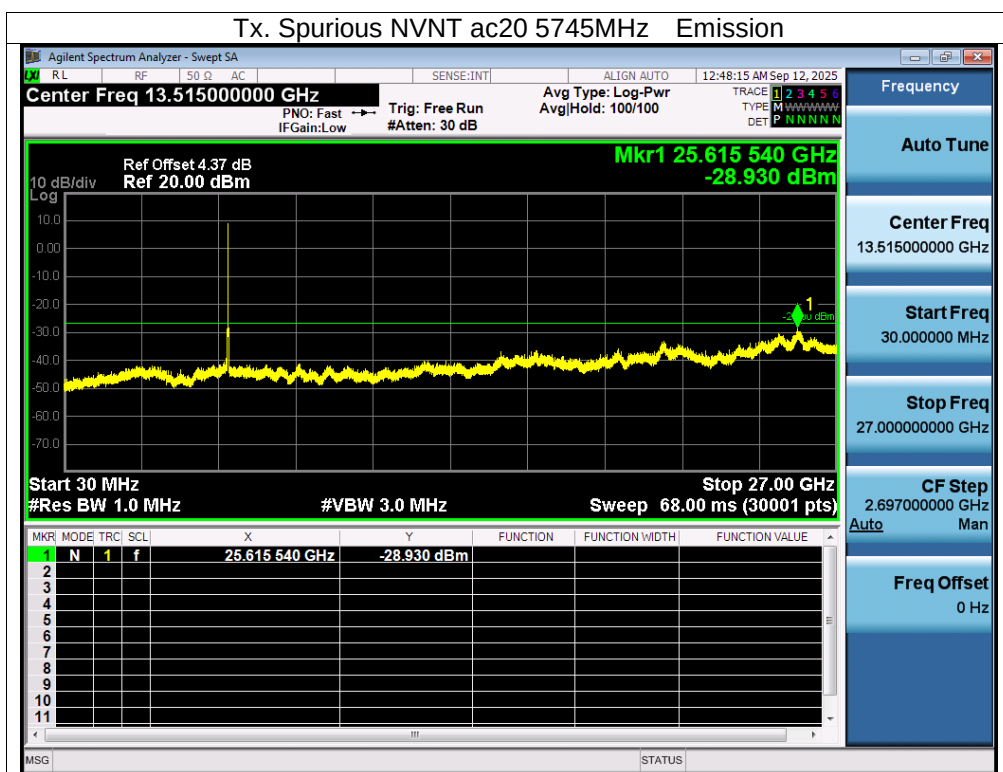
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A Plot.

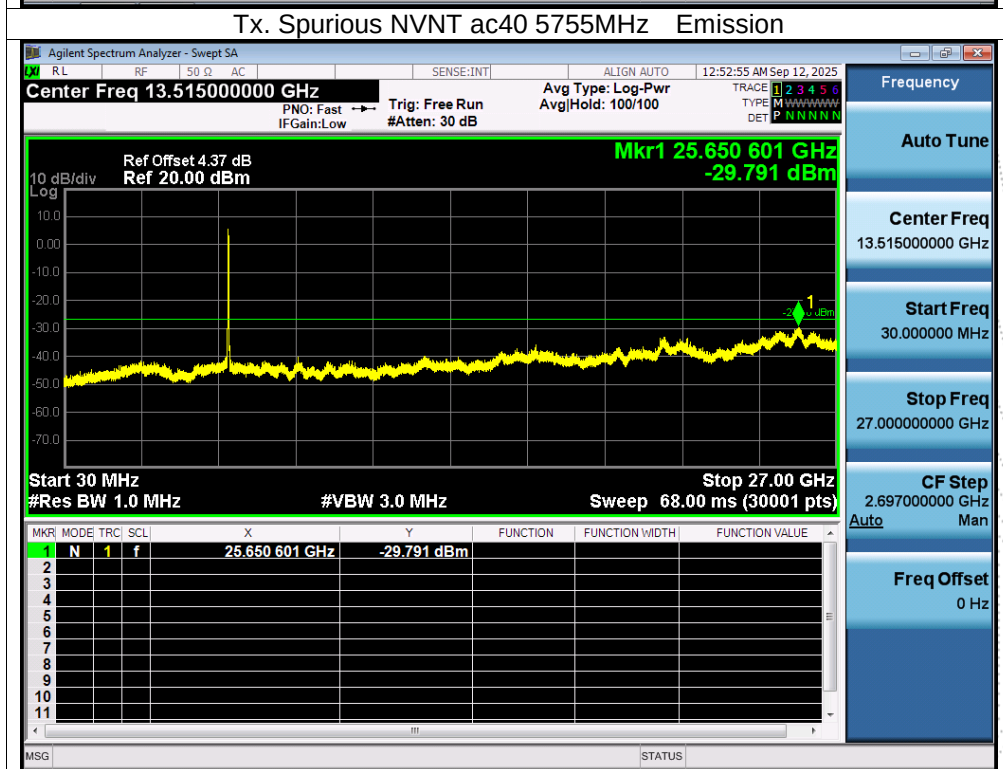
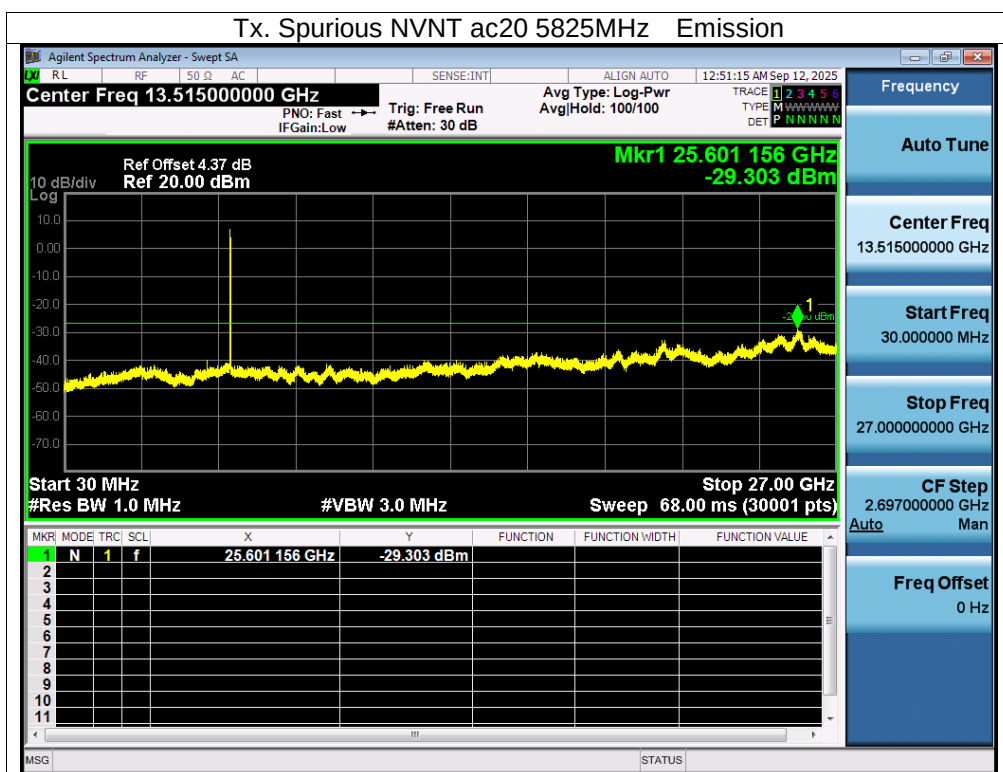


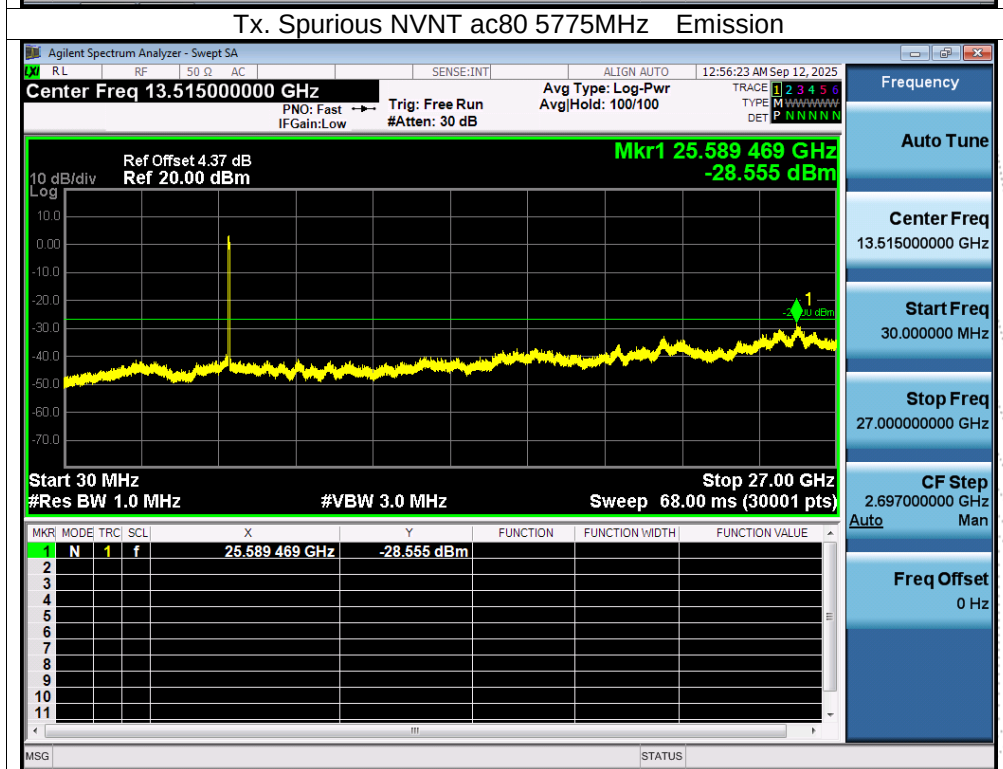
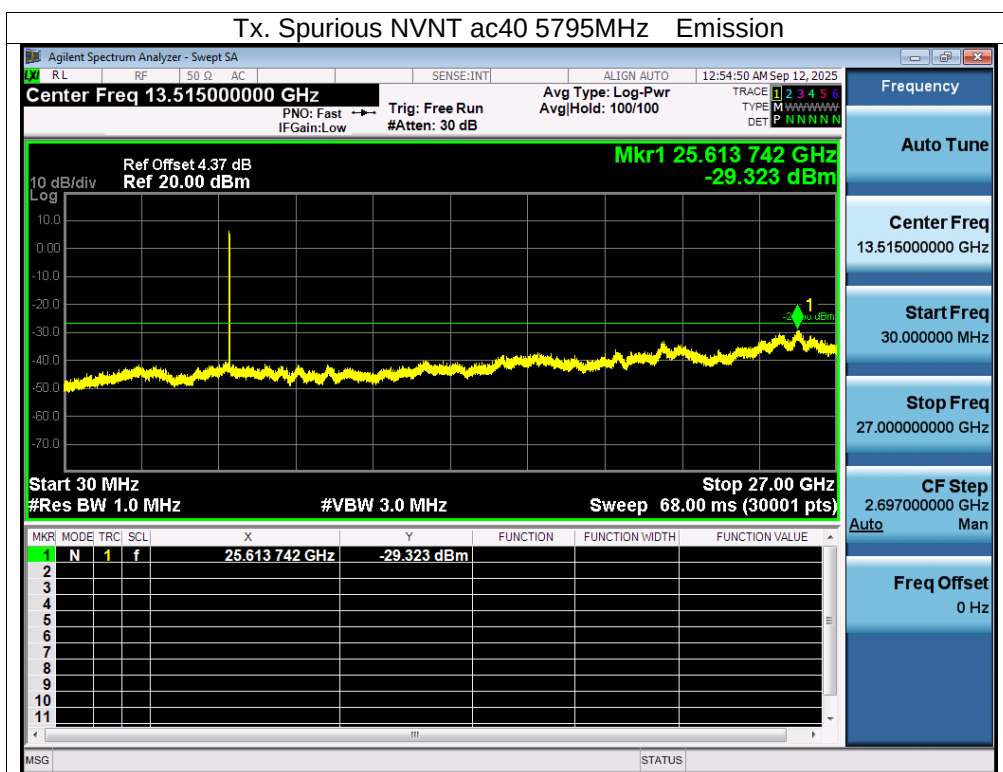


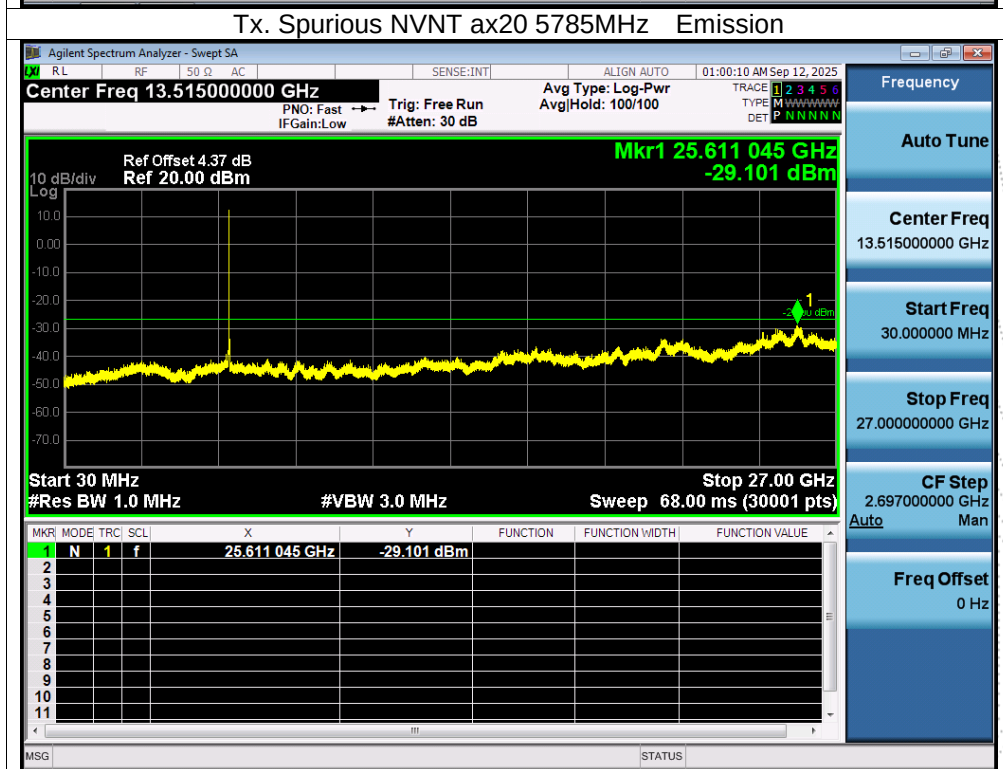
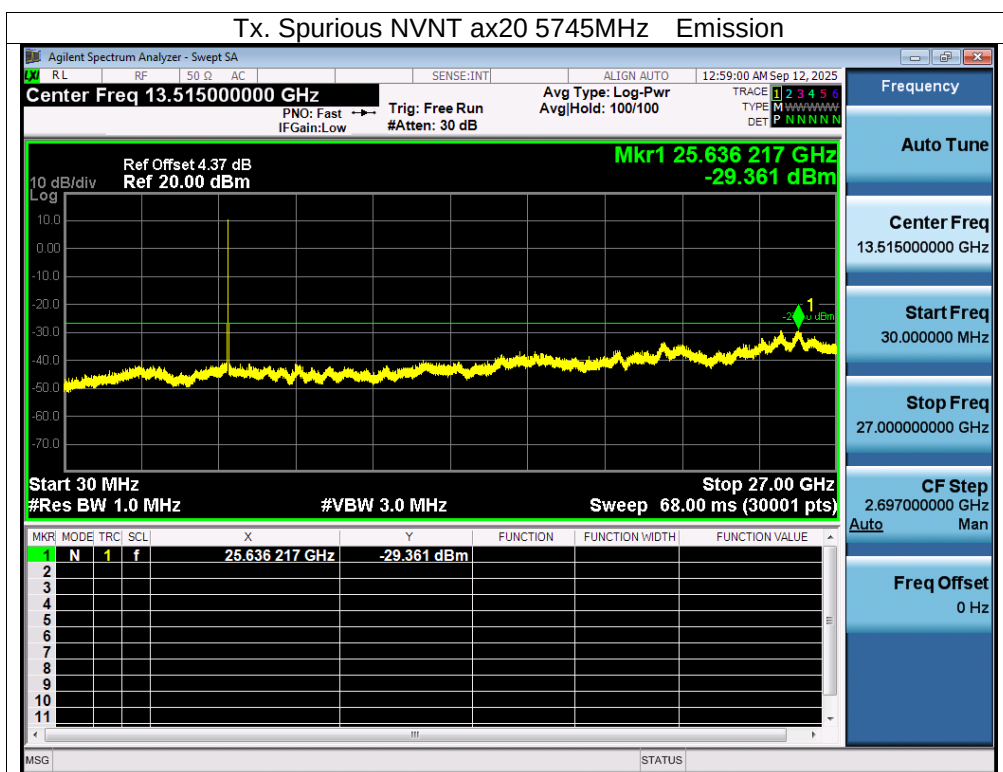


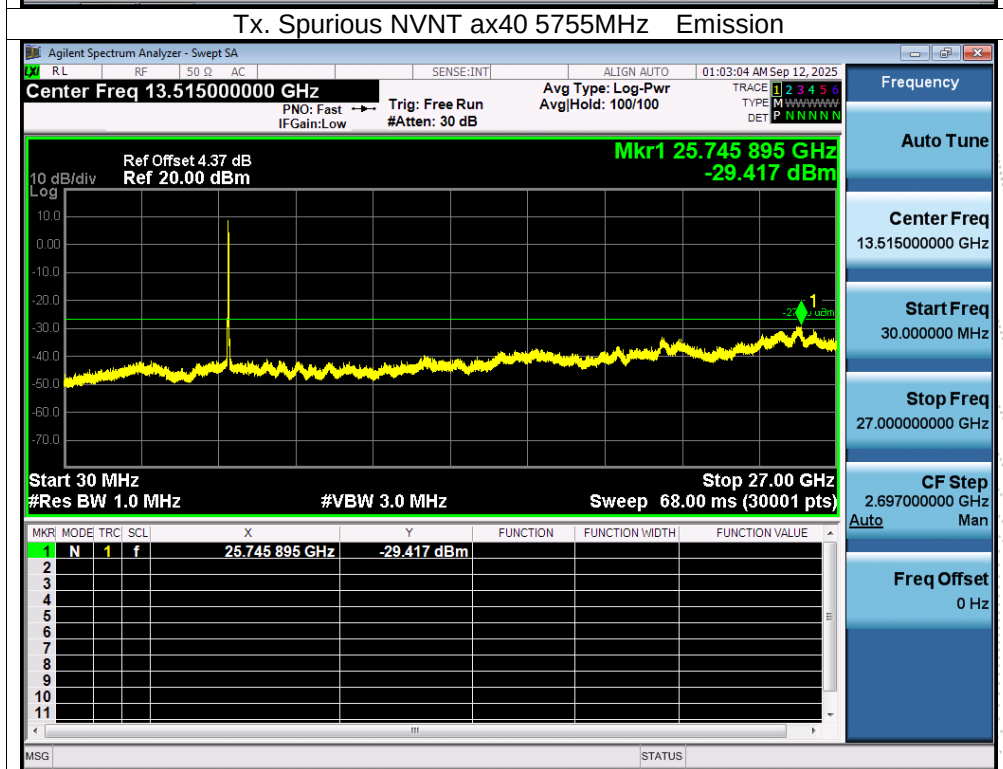
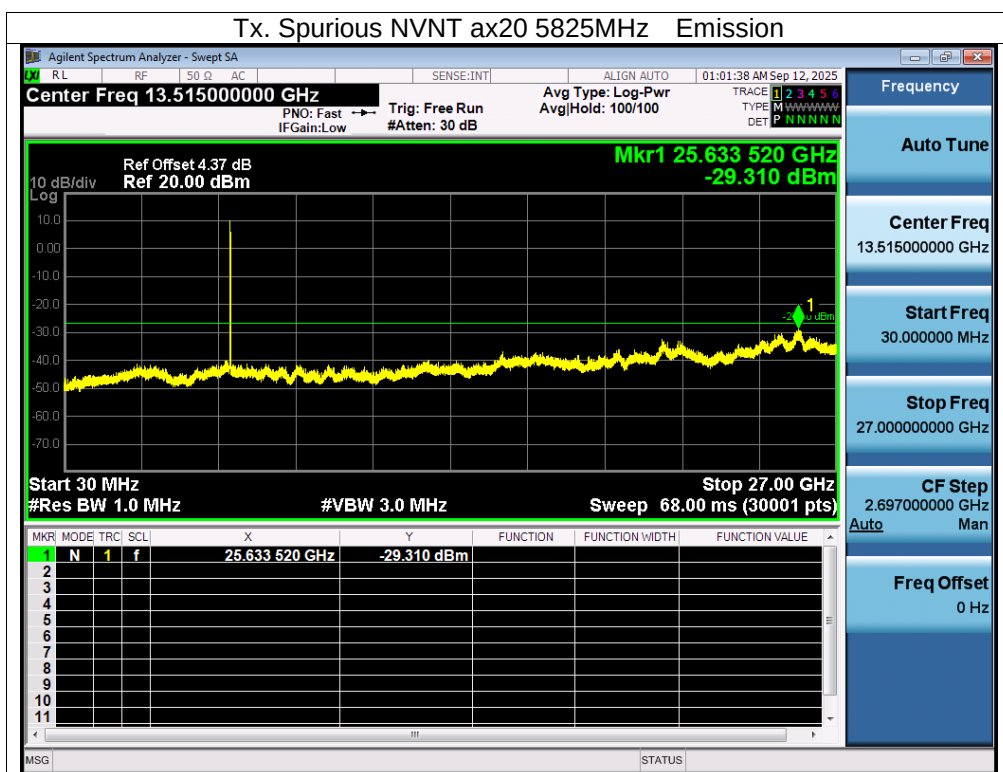


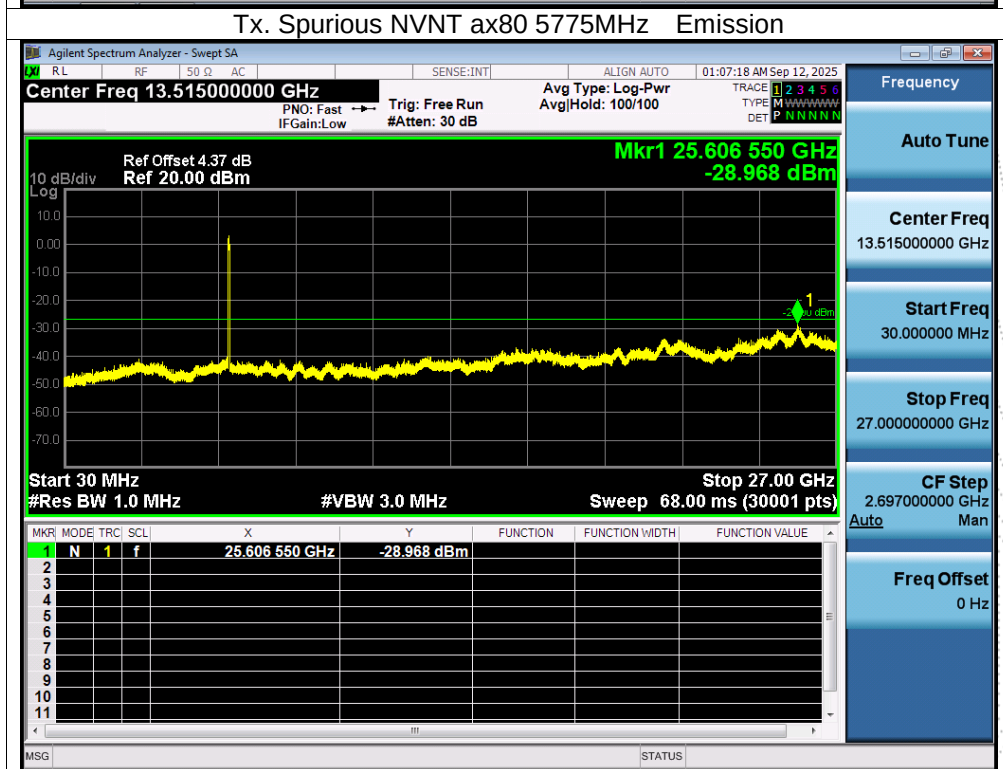
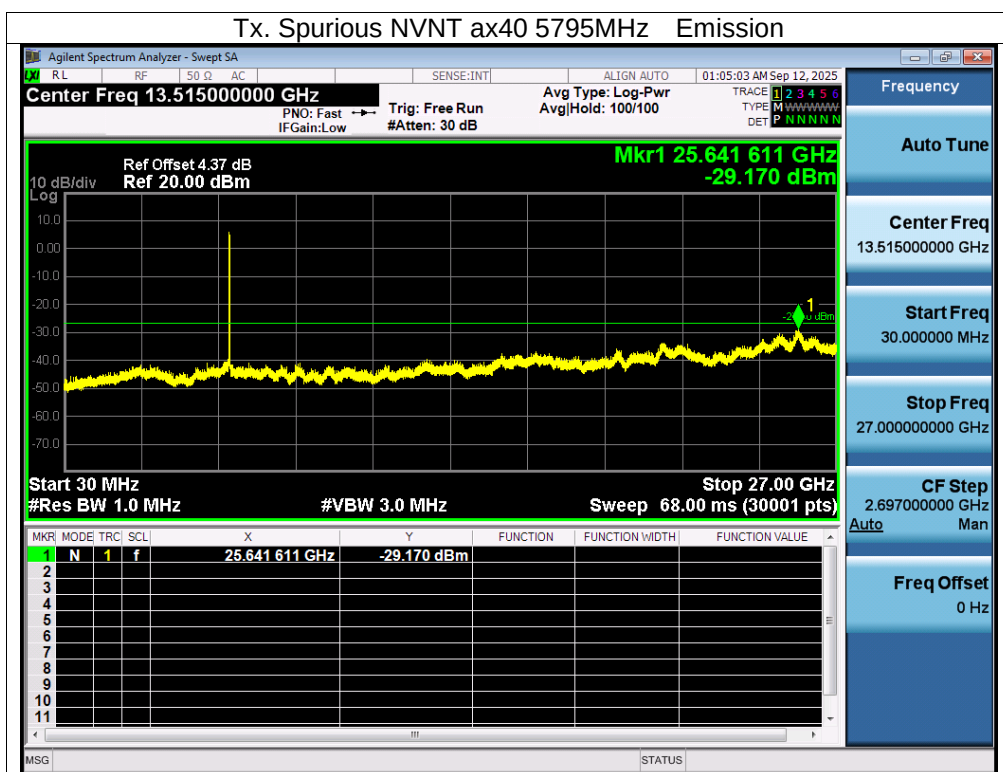












13. Frequency Stability Measurement

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 %
Pressure:	101KPa	Test Voltage:	DC 19V
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)	19.00	5180.0001	5180	0.0001	0.0193
		V max (V)	21.85	5180.0019	5180	0.0019	0.3668
		V min (V)	16.15	5180.0009	5180	0.0009	0.1737
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)	19	T (°C)	-20	5180.0008	5180	0.0008	0.1544
		T (°C)	-10	5180.0122	5180	0.0122	2.3552
		T (°C)	0	5180.0085	5180	0.0085	1.6409
		T (°C)	10	5180.0040	5180	0.0040	0.7722
		T (°C)	20	5180.0054	5180	0.0054	1.0425
		T (°C)	30	5180.0109	5180	0.0109	2.1042
		T (°C)	40	5180.0073	5180	0.0073	1.4093
		T (°C)	50	5180.0091	5180	0.0091	1.7568
		T (°C)	60	5180.0023	5180	0.0023	0.4440
		T (°C)	70	5180.0043	5180	0.0043	0.8301
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)	19.00	5200.0121	5200	0.0121	2.3269
		V max (V)	21.85	5200.0101	5200	0.0101	1.9423
		V min (V)	16.15	5200.0080	5200	0.0080	1.5385
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)	19	T (°C)	-20	5200.01150	5200	0.01150	2.2115
		T (°C)	-10	5200.00950	5200	0.00950	1.8269
		T (°C)	0	5200.00470	5200	0.00470	0.9038
		T (°C)	10	5200.00740	5200	0.00740	1.4231
		T (°C)	20	5200.00660	5200	0.00660	1.2692
		T (°C)	30	5200.00510	5200	0.00510	0.9808
		T (°C)	40	5200.00810	5200	0.00810	1.5577
		T (°C)	50	5200.00370	5200	0.00370	0.7115
		T (°C)	60	5200.00980	5200	0.00980	1.8846
		T (°C)	70	5200.01140	5200	0.01140	2.1923
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)	19.00	5240.0129	5240	0.0129	2.4618
		V max (V)	21.85	5240.0076	5240	0.0076	1.4504
		V min (V)	16.15	5240.0010	5240	0.0010	0.1908
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)	19	T (°C)	-20	5240.0009	5240	0.0009	0.1718
		T (°C)	-10	5240.0064	5240	0.0064	1.2214
		T (°C)	0	5240.0058	5240	0.0058	1.1069
		T (°C)	10	5240.0032	5240	0.0032	0.6107
		T (°C)	20	5240.0087	5240	0.0087	1.6603
		T (°C)	30	5240.0079	5240	0.0079	1.5076
		T (°C)	40	5240.0124	5240	0.0124	2.3664
		T (°C)	50	5240.0070	5240	0.0070	1.3359
		T (°C)	60	5240.0001	5240	0.0001	0.0191
		T (°C)	70	5240.0058	5240	0.0058	1.1069
Limits				5150-5250 MHz			
Result				Complies			

Temperature:	26 °C	Relative Humidity:	54 %
Pressure:	101KPa	Test Voltage:	DC 19V
Test Mode:	TX (5.3G) Mode Frequency U-NII-2A (5260-5320MHz)		

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	19.00	5260.0028	5260	0.0028	0.5323
		V max (V)	21.85	5260.0086	5260	0.0086	1.6350
		V min (V)	16.15	5260.0022	5260	0.0022	0.4183
Limits				5260-5320 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	19	T (°C)	-20	5260.0066	5260	0.0066	1.2548
		T (°C)	-10	5260.0050	5260	0.0050	0.9506
		T (°C)	0	5260.0012	5260	0.0012	0.2281
		T (°C)	10	5260.0027	5260	0.0027	0.5133
		T (°C)	20	5260.0062	5260	0.0062	1.1787
		T (°C)	30	5260.0124	5260	0.0124	2.3574
		T (°C)	40	5260.0129	5260	0.0129	2.4525
		T (°C)	50	5260.0112	5260	0.0112	2.1293
		T (°C)	60	5260.0043	5260	0.0043	0.8175
		T (°C)	70	5260.0135	5260	0.0135	2.5665
Limits				5260-5320 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)	19.00	5280.0112	5280	0.0112	2.1212
		V max (V)	21.85	5280.0123	5280	0.0123	2.3295
		V min (V)	16.15	5280.0027	5280	0.0027	0.5114
Limits				5260-5320 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	19	T (°C)	-20	5280.01240	5280	0.01240	2.3485
		T (°C)	-10	5280.01040	5280	0.01040	1.9697
		T (°C)	0	5280.00040	5280	0.00040	0.0758
		T (°C)	10	5280.01150	5280	0.01150	2.1780
		T (°C)	20	5280.01000	5280	0.01000	1.8939
		T (°C)	30	5280.01140	5280	0.01140	2.1591
		T (°C)	40	5280.00980	5280	0.00980	1.8561
		T (°C)	50	5280.01300	5280	0.01300	2.4621
		T (°C)	60	5280.00890	5280	0.00890	1.6856
		T (°C)	70	5280.00020	5280	0.00020	0.0379
Limits				5260-5320 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)	19.00	5320.0044	5320	0.0044	0.8271
		V max (V)	21.85	5320.0019	5320	0.0019	0.3571
		V min (V)	16.15	5320.0055	5320	0.0055	1.0338
Limits				5260-5320 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency : 5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	19	T (°C)	-20	5320.0031	5320	0.0031	0.5827
		T (°C)	-10	5320.0012	5320	0.0012	0.2256
		T (°C)	0	5320.0080	5320	0.0080	1.5038
		T (°C)	10	5320.0092	5320	0.0092	1.7293
		T (°C)	20	5320.0065	5320	0.0065	1.2218
		T (°C)	30	5320.0011	5320	0.0011	0.2068
		T (°C)	40	5320.0038	5320	0.0038	0.7143
		T (°C)	50	5320.0074	5320	0.0074	1.3910
		T (°C)	60	5320.0056	5320	0.0056	1.0526
		T (°C)	70	5320.0022	5320	0.0022	0.4135
Limits				5260-5320 MHz			
Result				Complies			

Temperature:	26 °C	Relative Humidity:	54 %
Pressure:	101KPa	Test Voltage:	DC 19V
Test Mode:	TX (5.6G) Mode Frequency U-NII-2C (5500-5700MHz)		

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5500MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	19.00	5500.0093	5500	0.0093	1.6909
		V max (V)	21.85	5500.0108	5500	0.0108	1.9636
		V min (V)	16.15	5500.0013	5500	0.0013	0.2364
Limits				5500-5700 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5500MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	19	T (°C)	-20	5500.0030	5500	0.0030	0.5455
		T (°C)	-10	5500.0067	5500	0.0067	1.2182
		T (°C)	0	5500.0122	5500	0.0122	2.2182
		T (°C)	10	5500.0104	5500	0.0104	1.8909
		T (°C)	20	5500.0084	5500	0.0084	1.5273
		T (°C)	30	5500.0096	5500	0.0096	1.7455
		T (°C)	40	5500.0123	5500	0.0123	2.2364
		T (°C)	50	5500.0011	5500	0.0011	0.2000
		T (°C)	60	5500.0099	5500	0.0099	1.8000
		T (°C)	70	5500.0129	5500	0.0129	2.3455
Limits				5500-5700 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5580MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	19.00	5580.0104	5580	0.0104	1.8638
		V max (V)	21.85	5580.0060	5580	0.0060	1.0753
		V min (V)	16.15	5580.0054	5580	0.0054	0.9677
Limits				5500-5700 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5580MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	19	T (°C)	-20	5580.00660	5580	0.00660	1.1828
		T (°C)	-10	5580.00190	5580	0.00190	0.3405
		T (°C)	0	5580.01030	5580	0.01030	1.8459
		T (°C)	10	5580.00820	5580	0.00820	1.4695
		T (°C)	20	5580.01160	5580	0.01160	2.0789
		T (°C)	30	5580.00620	5580	0.00620	1.1111
		T (°C)	40	5580.01310	5580	0.01310	2.3477
		T (°C)	50	5580.00710	5580	0.00710	1.2724
		T (°C)	60	5580.00560	5580	0.00560	1.0036
		T (°C)	70	5580.00580	5580	0.00580	1.0394
Limits				5500-5700 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5700MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	19.00	5700.0118	5700	0.0118	2.0702
		V max (V)	21.85	5700.0088	5700	0.0088	1.5439
		V min (V)	16.15	5700.0065	5700	0.0065	1.1404
Limits				5500-5700 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency : 5700MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	19	T (°C)	-20	5700.0120	5700	0.0120	2.1053
		T (°C)	-10	5700.0038	5700	0.0038	0.6667
		T (°C)	0	5700.0008	5700	0.0008	0.1404
		T (°C)	10	5700.0094	5700	0.0094	1.6491
		T (°C)	20	5700.0009	5700	0.0009	0.1579
		T (°C)	30	5700.0127	5700	0.0127	2.2281
		T (°C)	40	5700.0047	5700	0.0047	0.8246
		T (°C)	50	5700.0128	5700	0.0128	2.2456
		T (°C)	60	5700.0078	5700	0.0078	1.3684
		T (°C)	70	5700.0075	5700	0.0075	1.3158
Limits				5500-5700 MHz			
Result				Complies			

Temperature:	26 °C	Relative Humidity:	54 %
Pressure:	101KPa	Test Voltage:	DC 19V
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)	19.00	5745.00500	5745	0.00500	0.8703
		V max (V)	21.85	5745.00170	5745	0.00170	0.2959
		V min (V)	16.15	5745.00430	5745	0.00430	0.7485
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)	19	T (°C)	-20	5745.00650	5745	0.00650	1.1314
		T (°C)	-10	5745.00070	5745	0.00070	0.1218
		T (°C)	0	5745.00070	5745	0.00070	0.1218
		T (°C)	10	5745.00270	5745	0.00270	0.4700
		T (°C)	20	5745.00410	5745	0.00410	0.7137
		T (°C)	30	5745.01170	5745	0.01170	2.0366
		T (°C)	40	5745.01070	5745	0.01070	1.8625
		T (°C)	50	5745.01200	5745	0.01200	2.0888
		T (°C)	60	5745.00920	5745	0.00920	1.6014
		T (°C)	70	5745.01280	5745	0.01280	2.2280
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)	19.00	5785.00410	5785	0.00410	0.7087
		V max (V)	21.85	5785.01180	5785	0.01180	2.0398
		V min (V)	16.15	5785.00350	5785	0.00350	0.6050
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)	19	T (°C)	-20	5785.00890	5785	0.00890	1.5385
		T (°C)	-10	5785.00270	5785	0.00270	0.4667
		T (°C)	0	5785.00180	5785	0.00180	0.3111
		T (°C)	10	5785.00590	5785	0.00590	1.0199
		T (°C)	20	5785.01290	5785	0.01290	2.2299
		T (°C)	30	5785.00570	5785	0.00570	0.9853
		T (°C)	40	5785.00270	5785	0.00270	0.4667
		T (°C)	50	5785.00490	5785	0.00490	0.8470
		T (°C)	60	5785.00360	5785	0.00360	0.6223
		T (°C)	70	5785.00350	5785	0.00350	0.6050
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)	19.00	5825.01120	5825	0.01120	1.9227
		V max (V)	21.85	5825.00530	5825	0.00530	0.9099
		V min (V)	16.15	5825.00110	5825	0.00110	0.1888
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)	19	T (°C)	-20	5825.00220	5825	0.00220	0.3777
		T (°C)	-10	5825.00870	5825	0.00870	1.4936
		T (°C)	0	5825.01080	5825	0.01080	1.8541
		T (°C)	10	5825.00650	5825	0.00650	1.1159
		T (°C)	20	5825.00130	5825	0.00130	0.2232
		T (°C)	30	5825.01010	5825	0.01010	1.7339
		T (°C)	40	5825.00610	5825	0.00610	1.0472
		T (°C)	50	5825.00880	5825	0.00880	1.5107
		T (°C)	60	5825.00610	5825	0.00610	1.0472
		T (°C)	70	5825.01250	5825	0.01250	2.1459
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 = $T_{on} / (T_{on} + T_{off})$

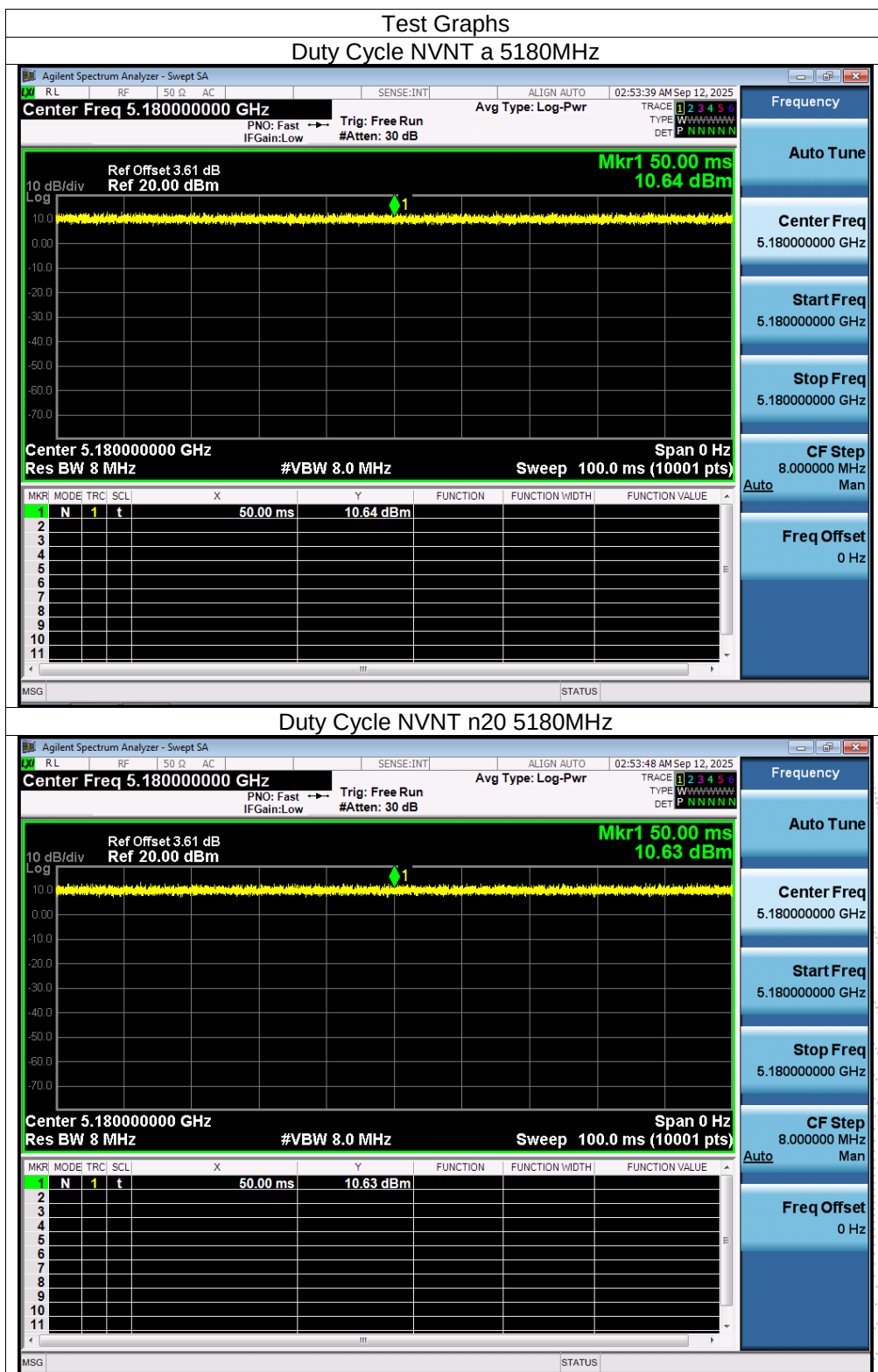
14.3 Test Procedure

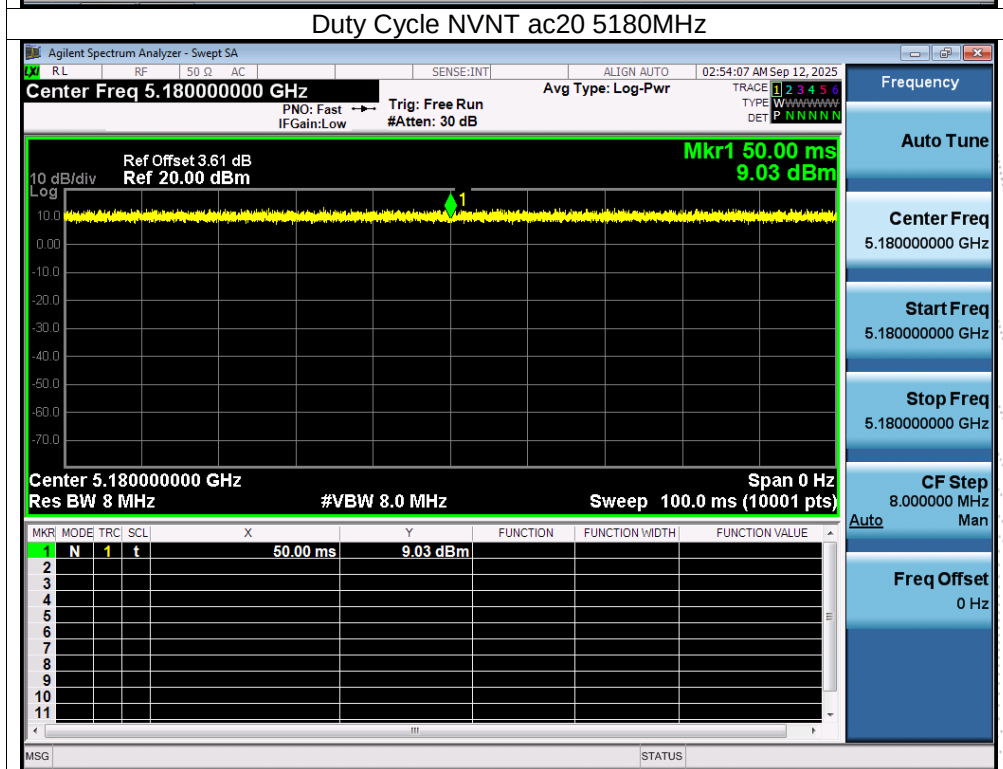
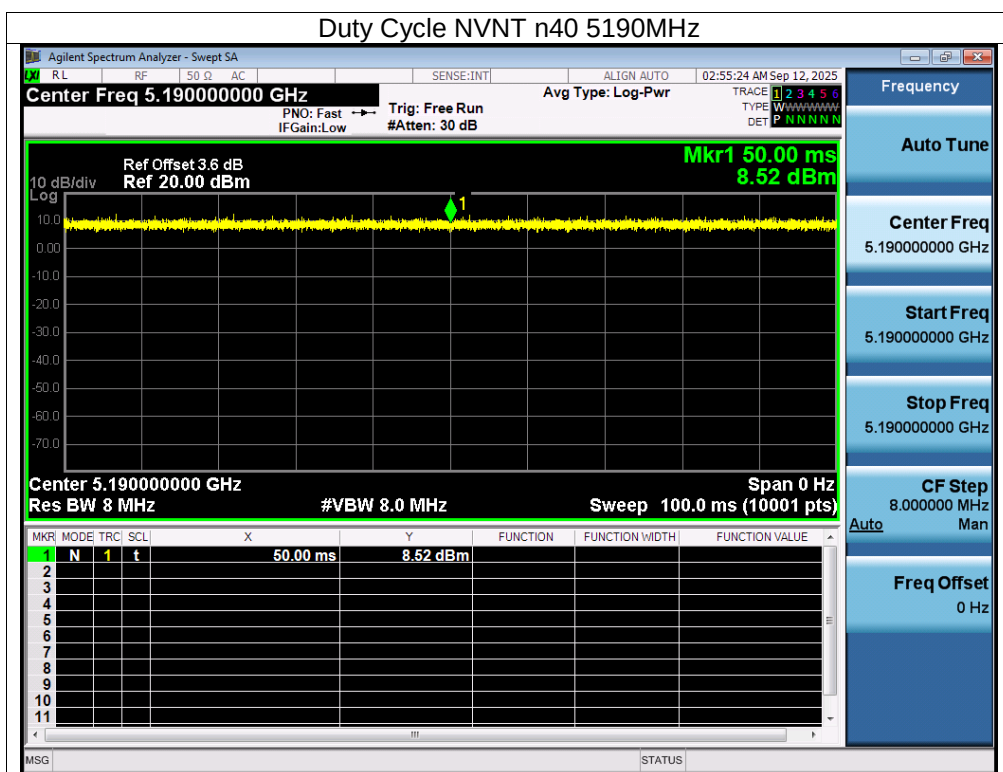
1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

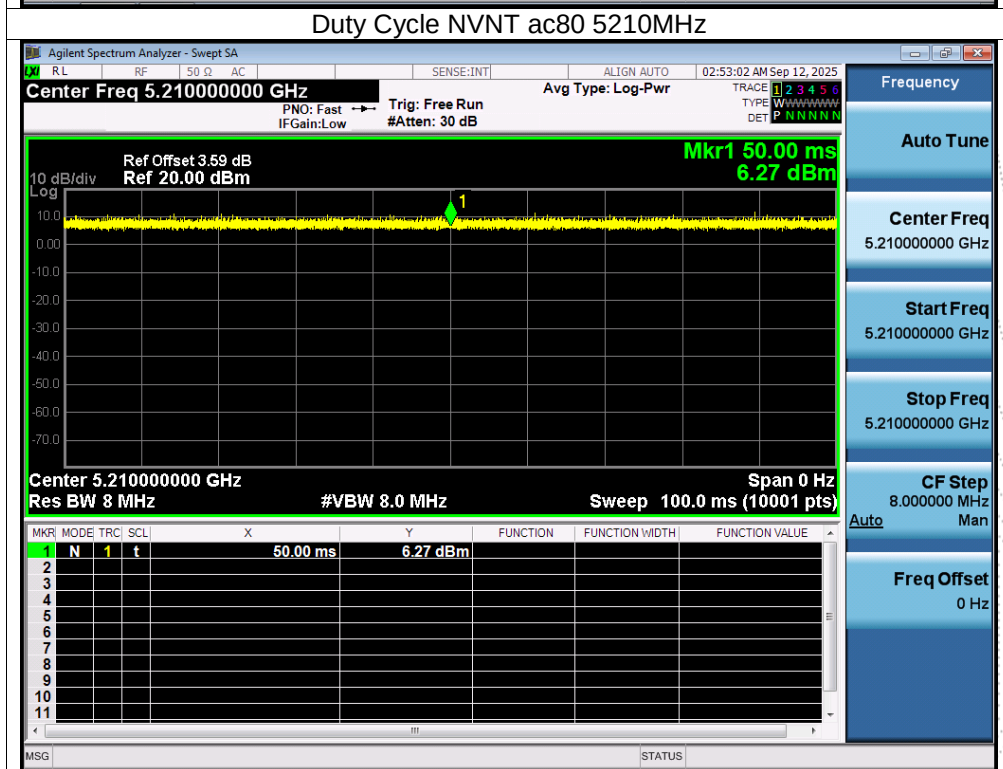
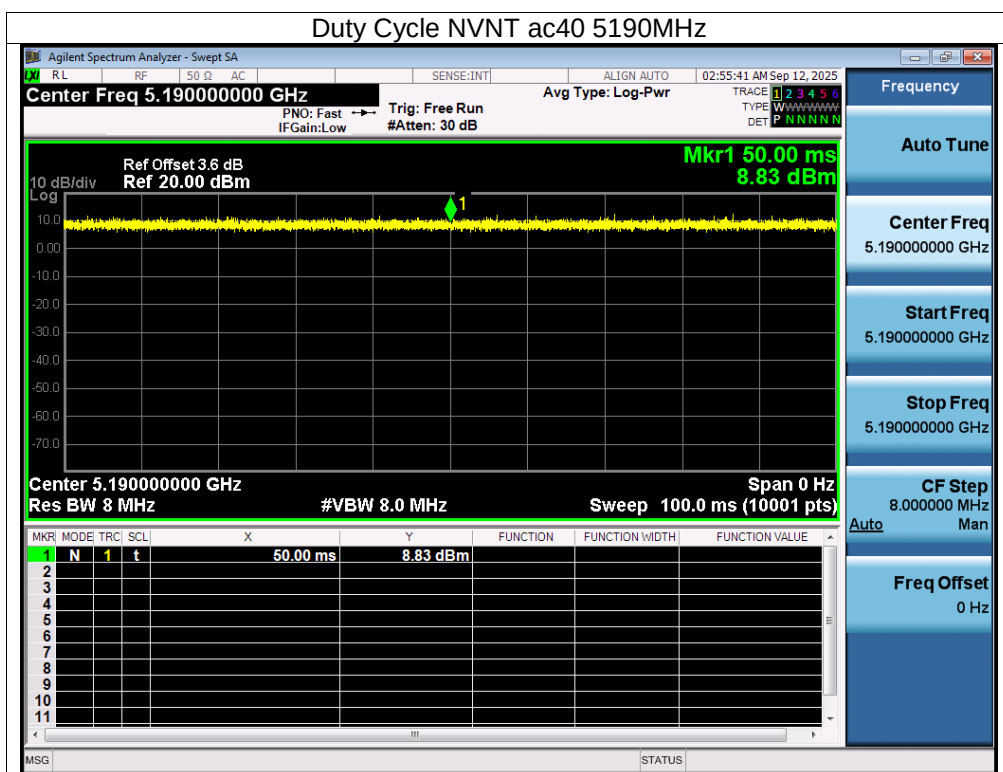
14.4 Test Result

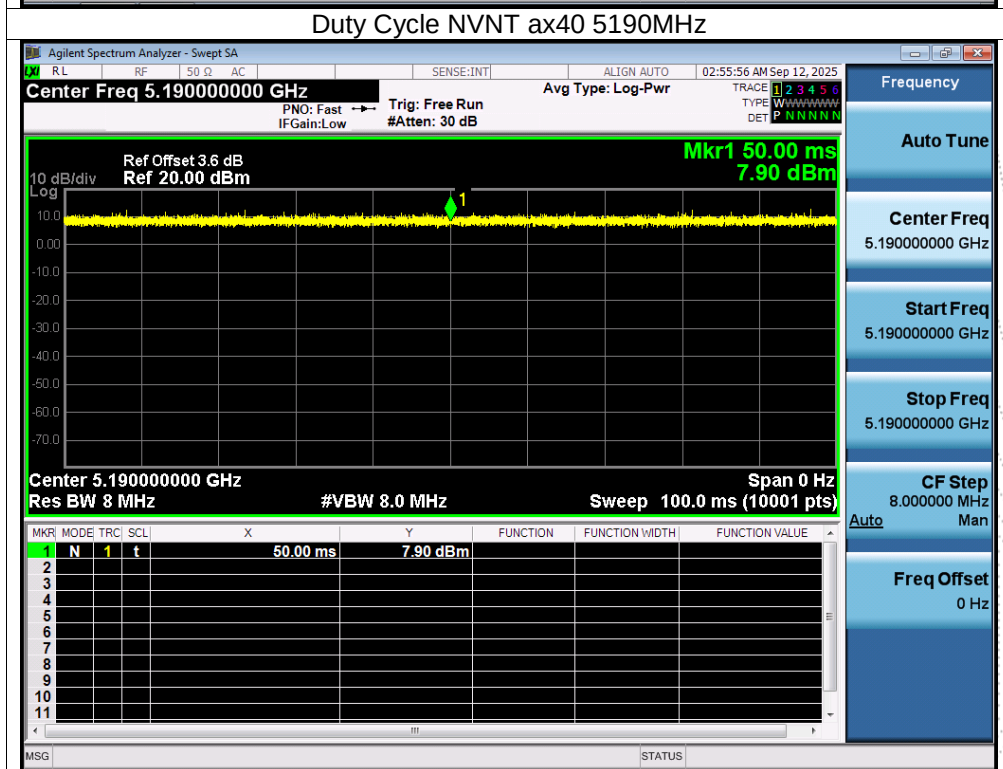
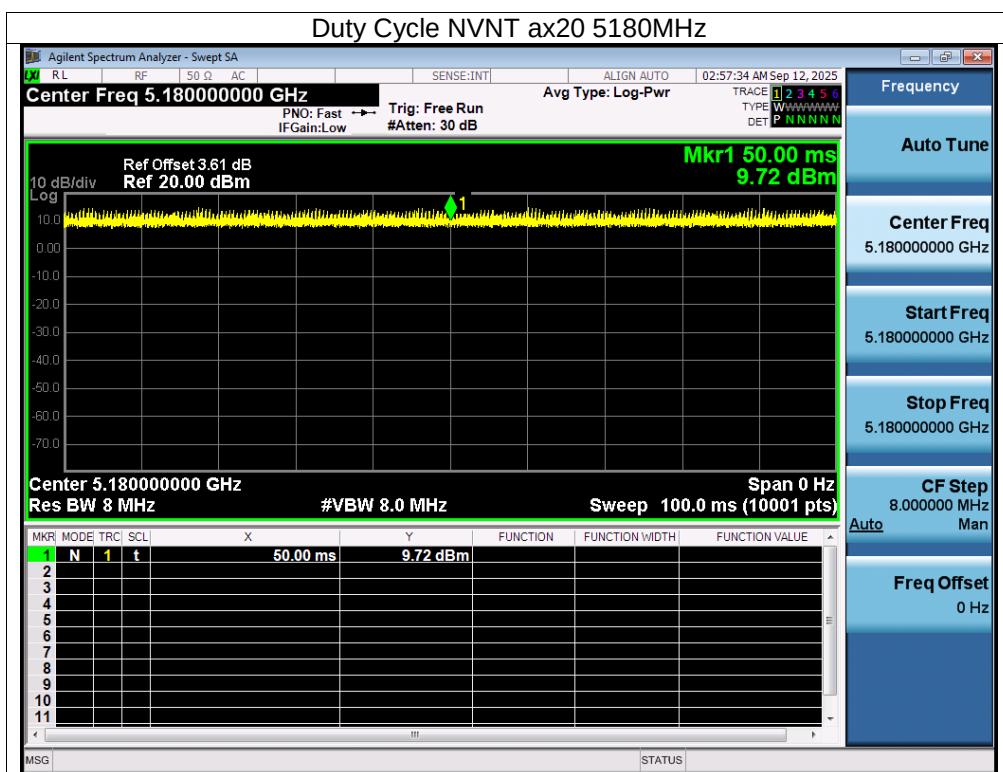
ANT A

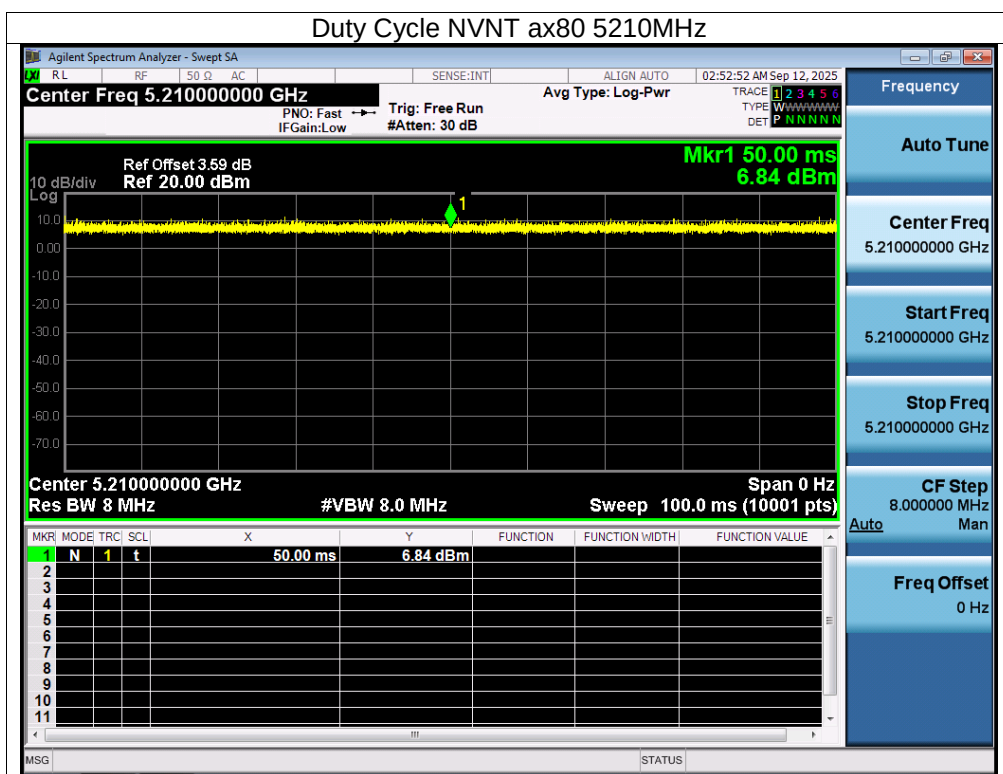
Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)
NVNT	a	5180	100	0
NVNT	n20	5180	100	0
NVNT	n40	5190	100	0
NVNT	ac20	5180	100	0
NVNT	ac40	5190	100	0
NVNT	ac80	5210	100	0
NVNT	ax20	5180	100	0
NVNT	ax40	5190	100	0
NVNT	ax80	5210	100	0



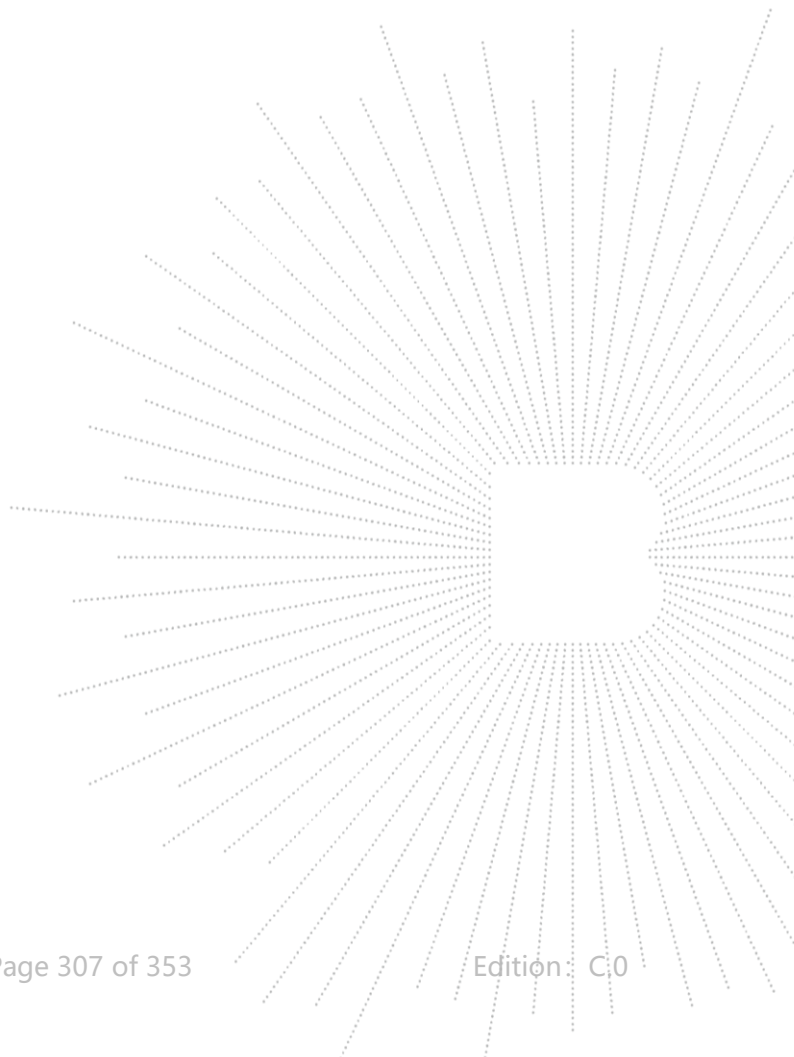


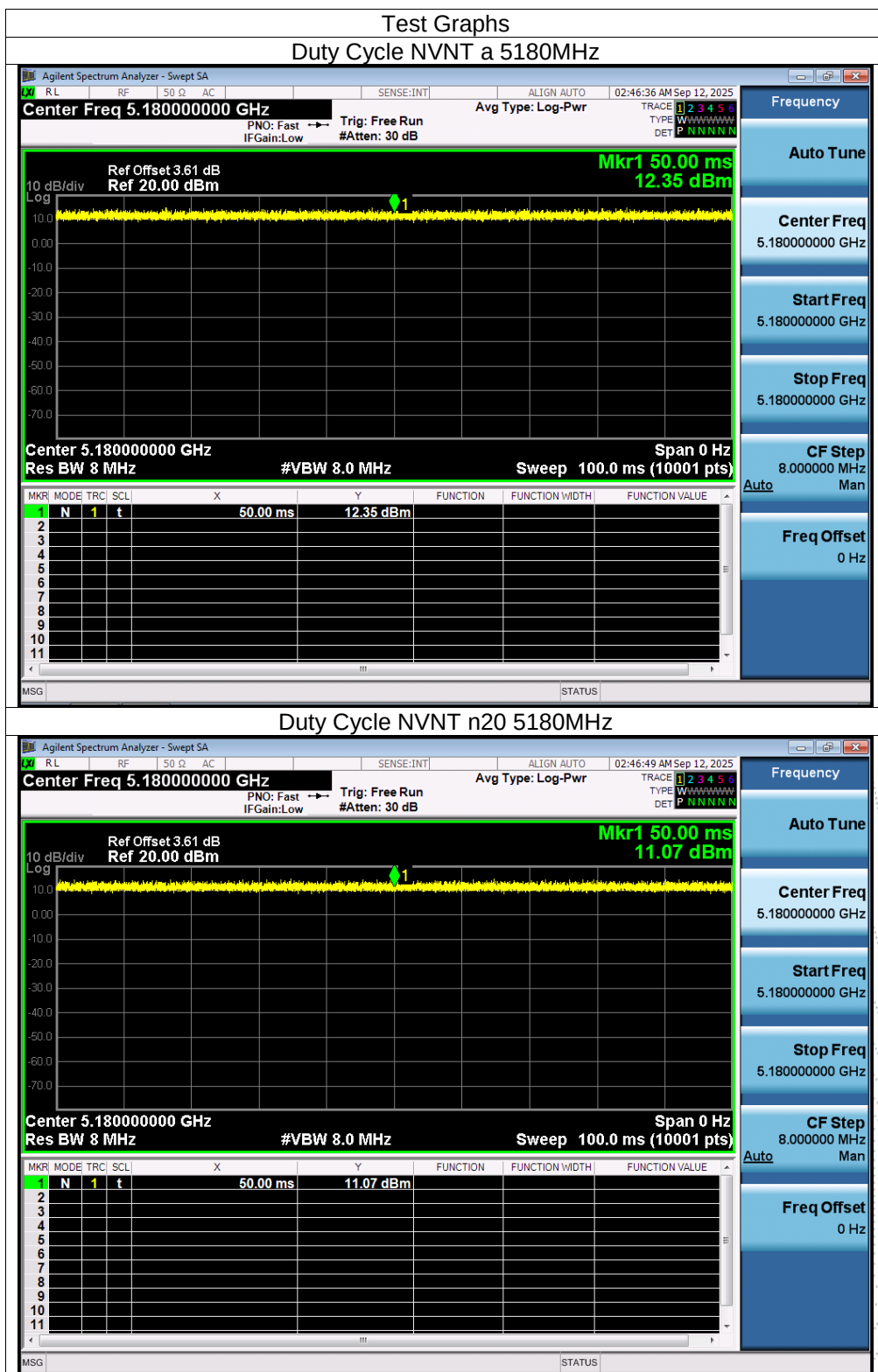


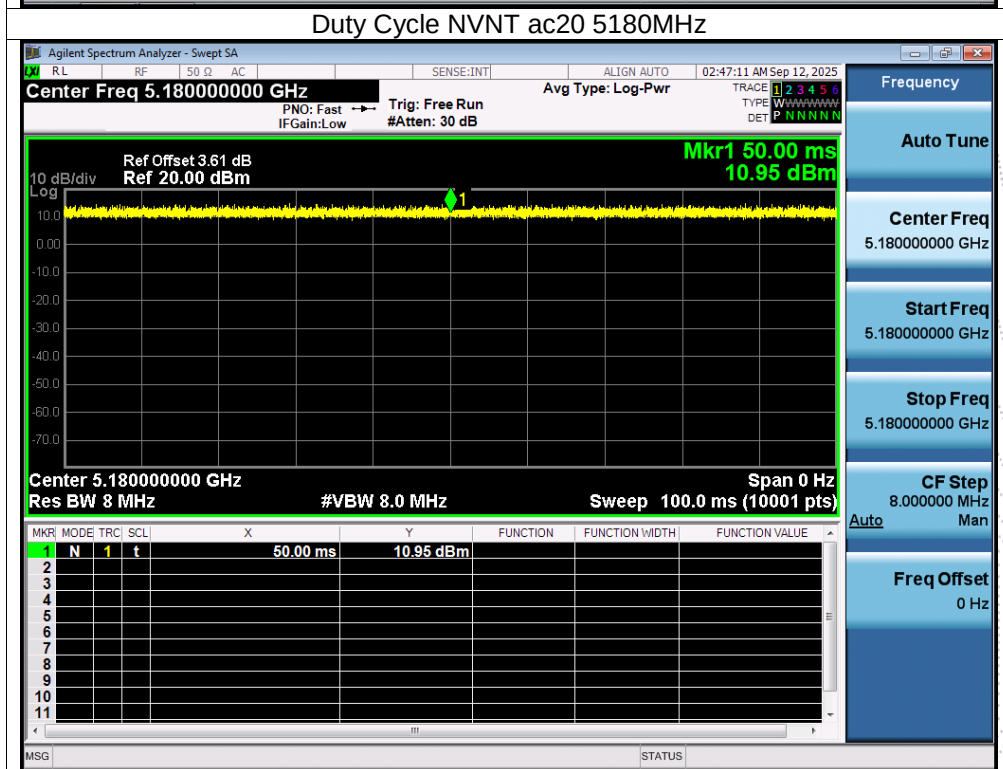
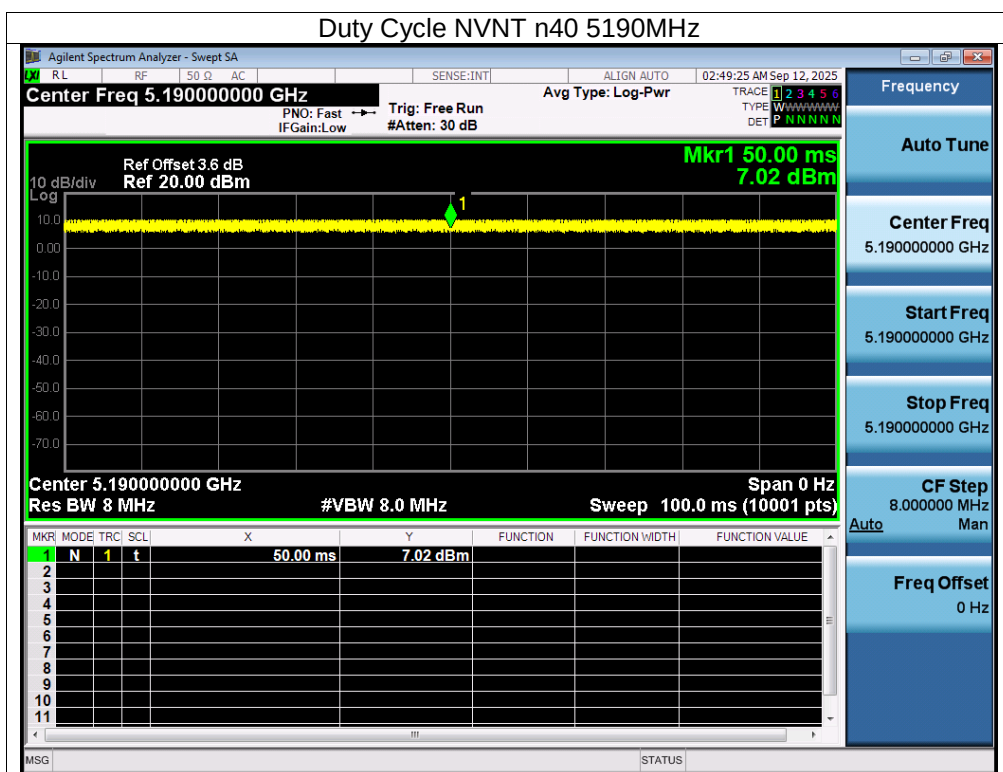


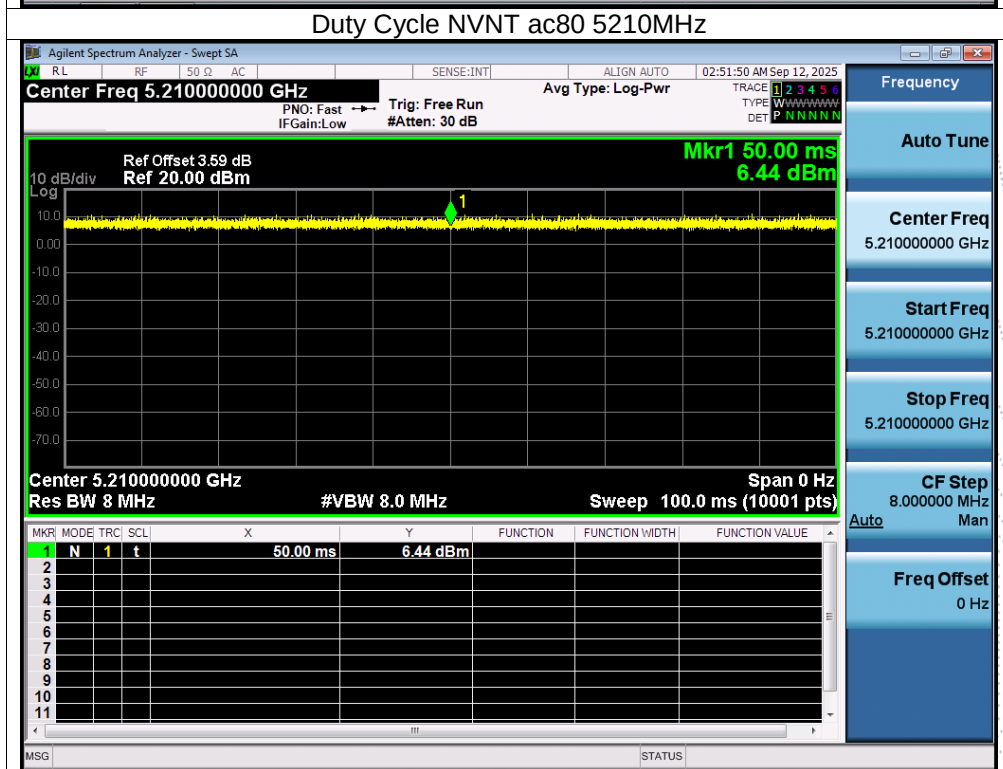
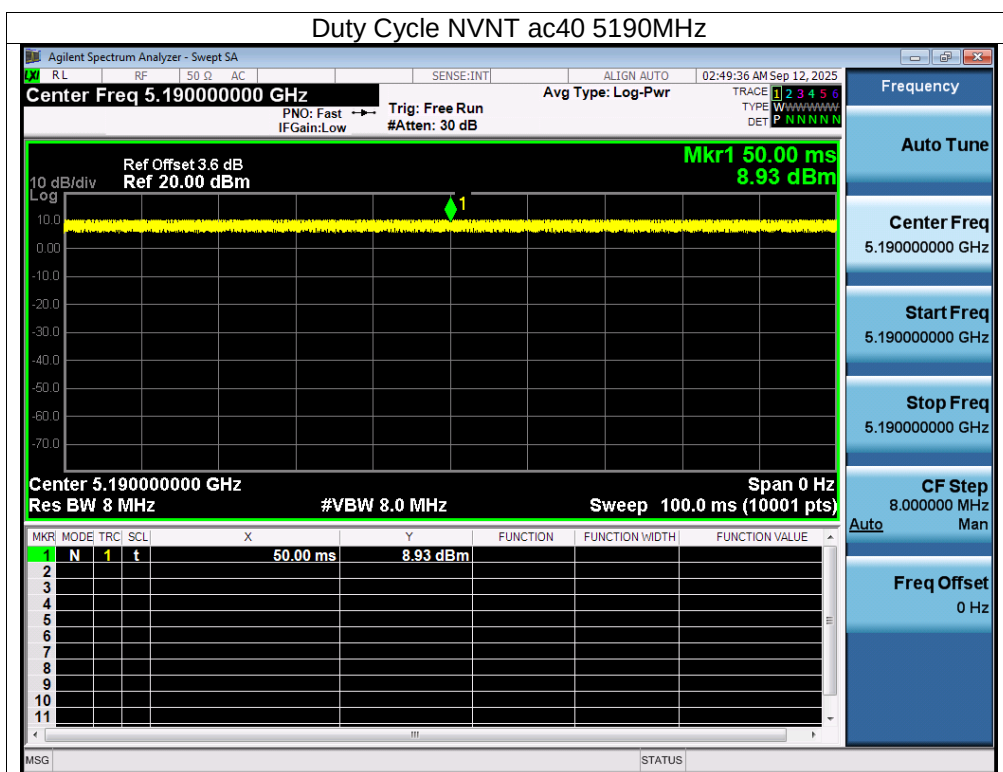


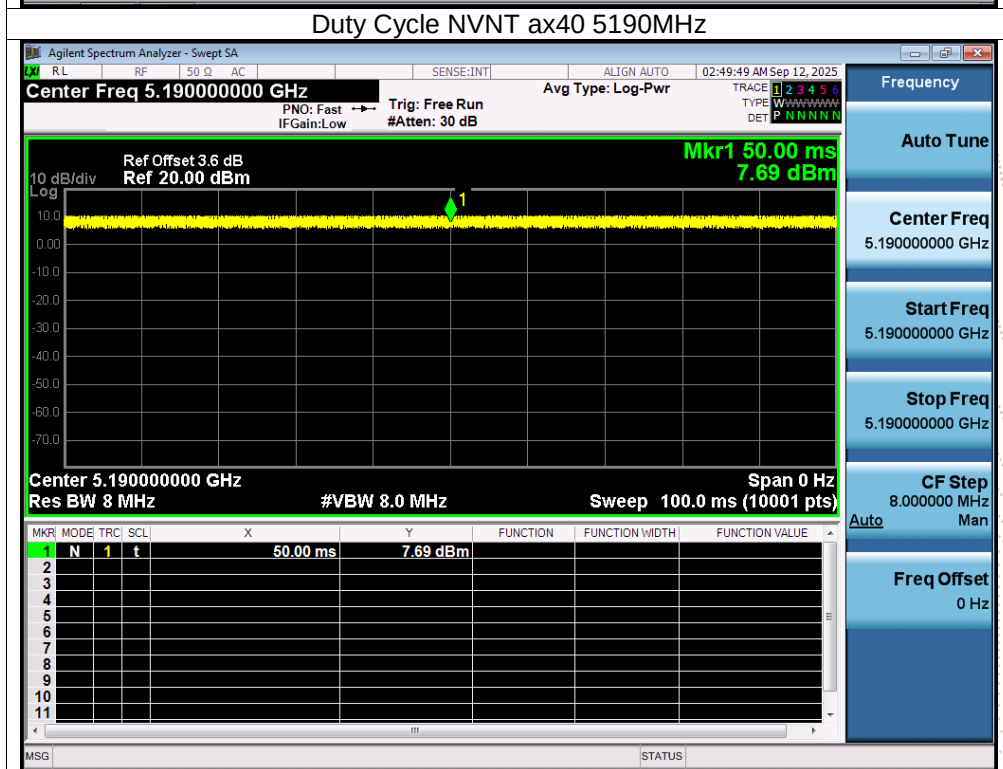
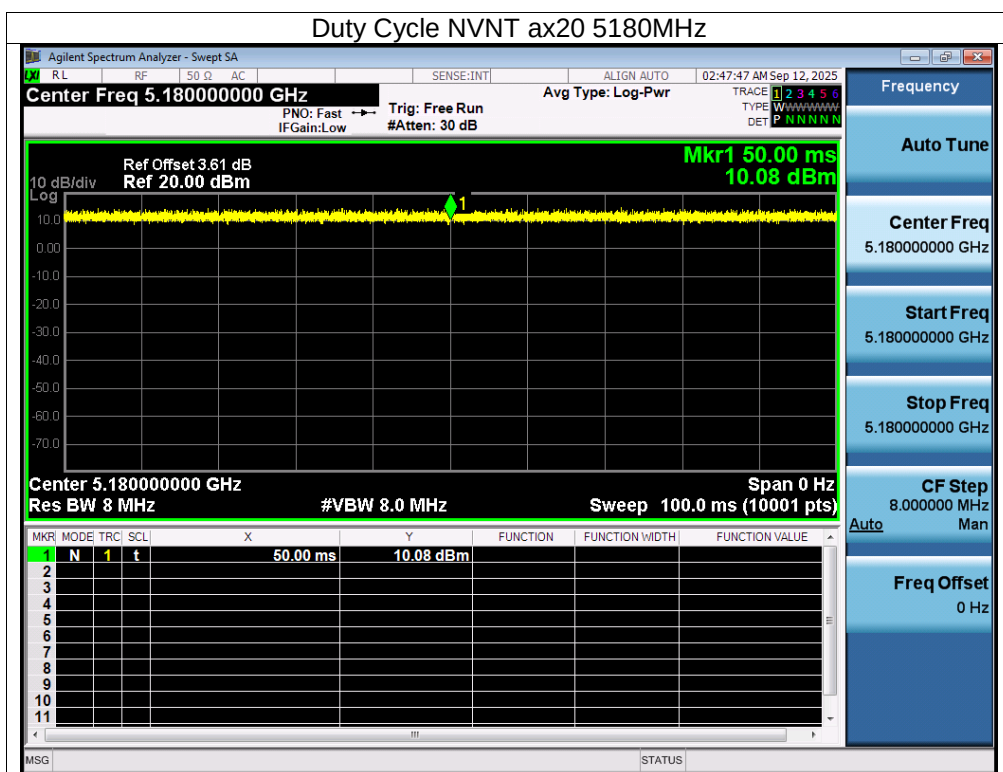
Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)
NVNT	a	5180	100	0
NVNT	n20	5180	100	0
NVNT	n40	5190	100	0
NVNT	ac20	5180	100	0
NVNT	ac40	5190	100	0
NVNT	ac80	5210	100	0
NVNT	ax20	5180	100	0
NVNT	ax40	5190	100	0
NVNT	ax80	5210	100	0

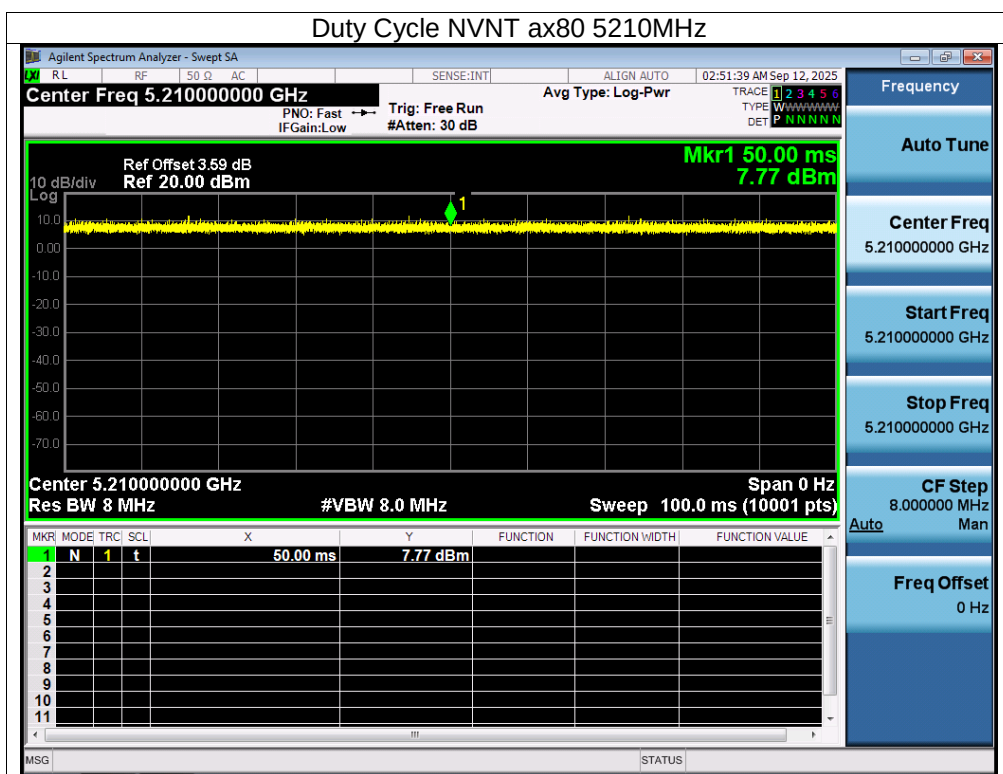












Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)
NVNT	a	5260	100	0
NVNT	n20	5260	100	0
NVNT	n40	5270	100	0
NVNT	ac20	5260	100	0
NVNT	ac40	5270	100	0
NVNT	ac80	5290	100	0
NVNT	ax20	5260	100	0
NVNT	ax40	5270	100	0
NVNT	ax80	5290	100	0

