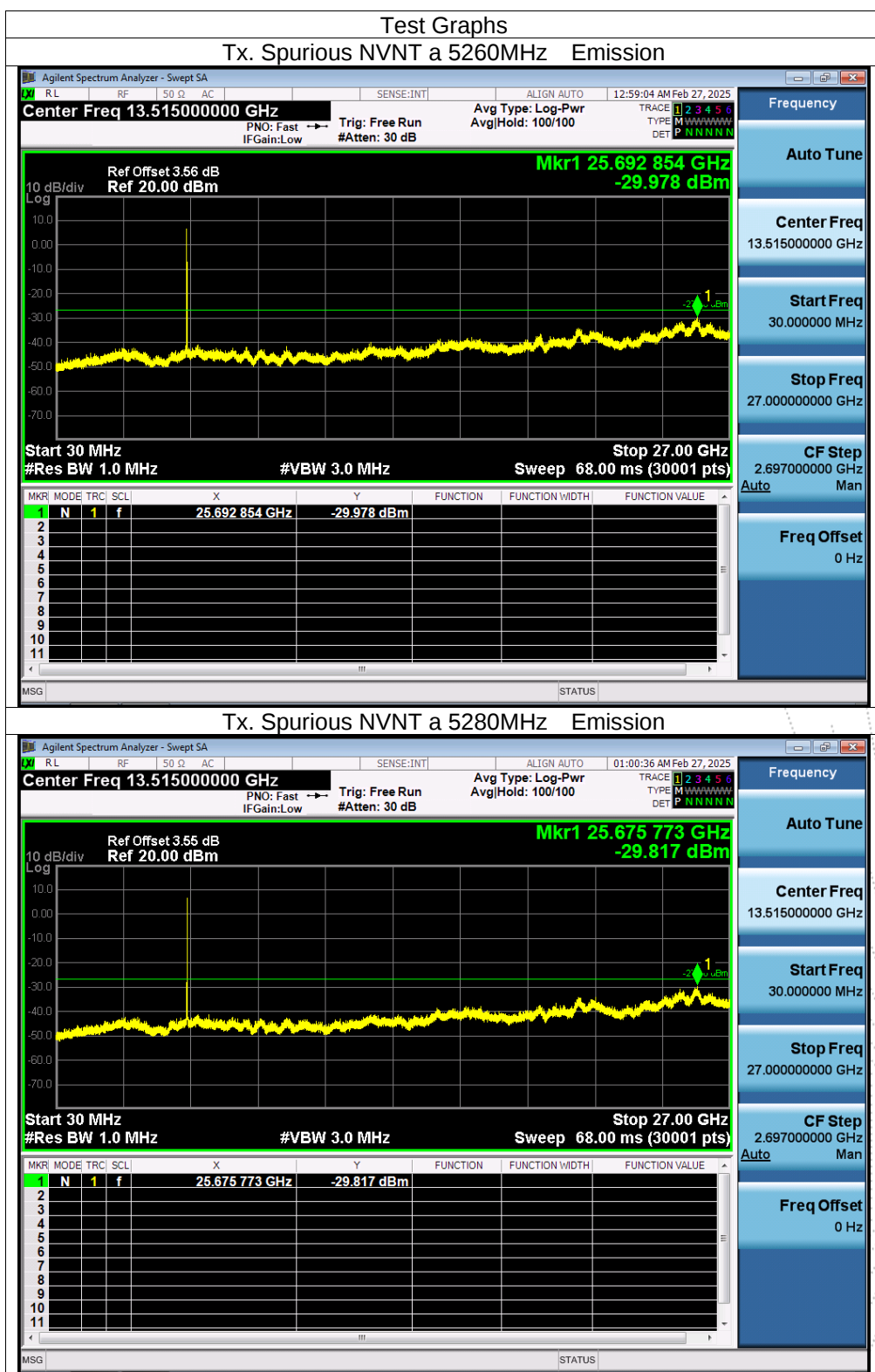
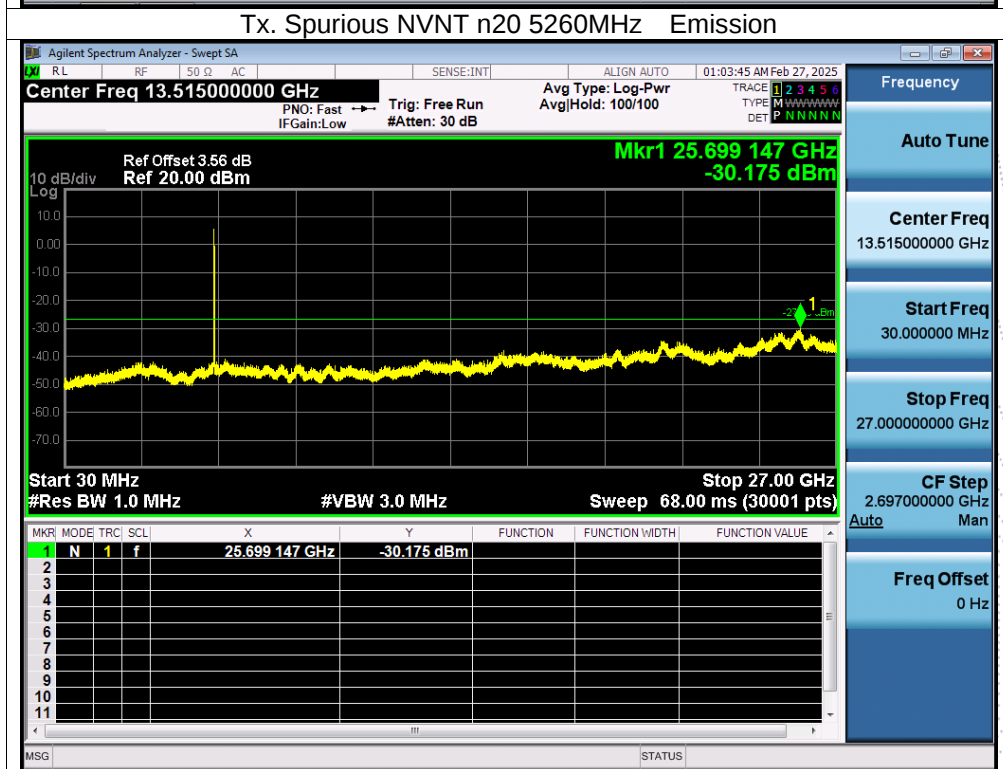
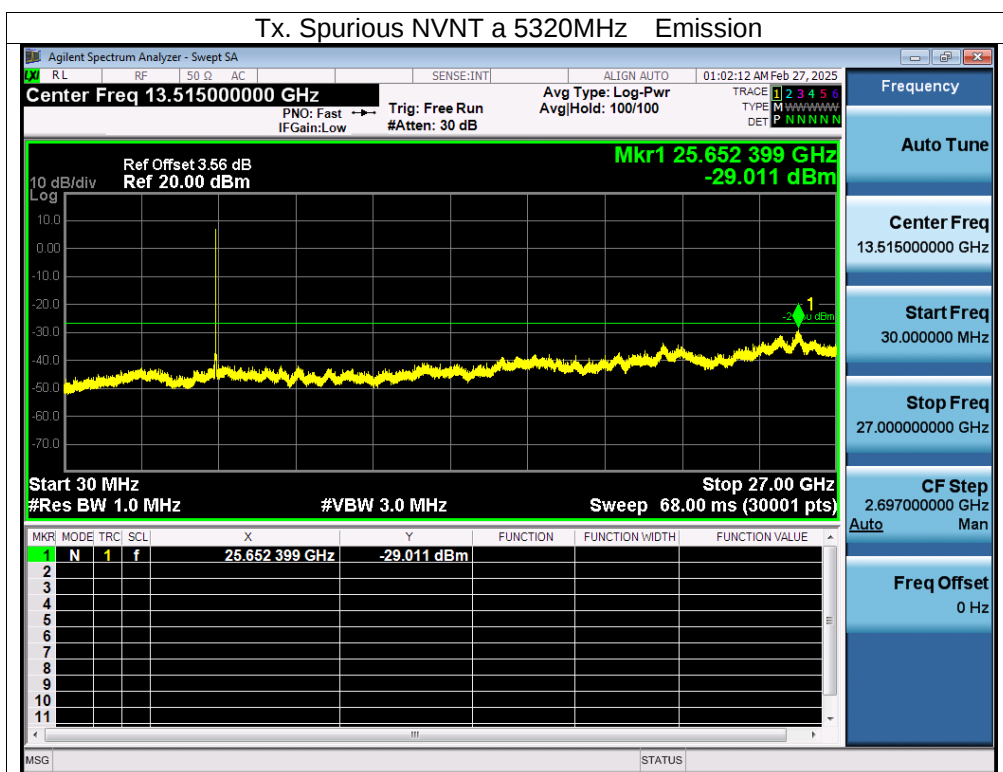
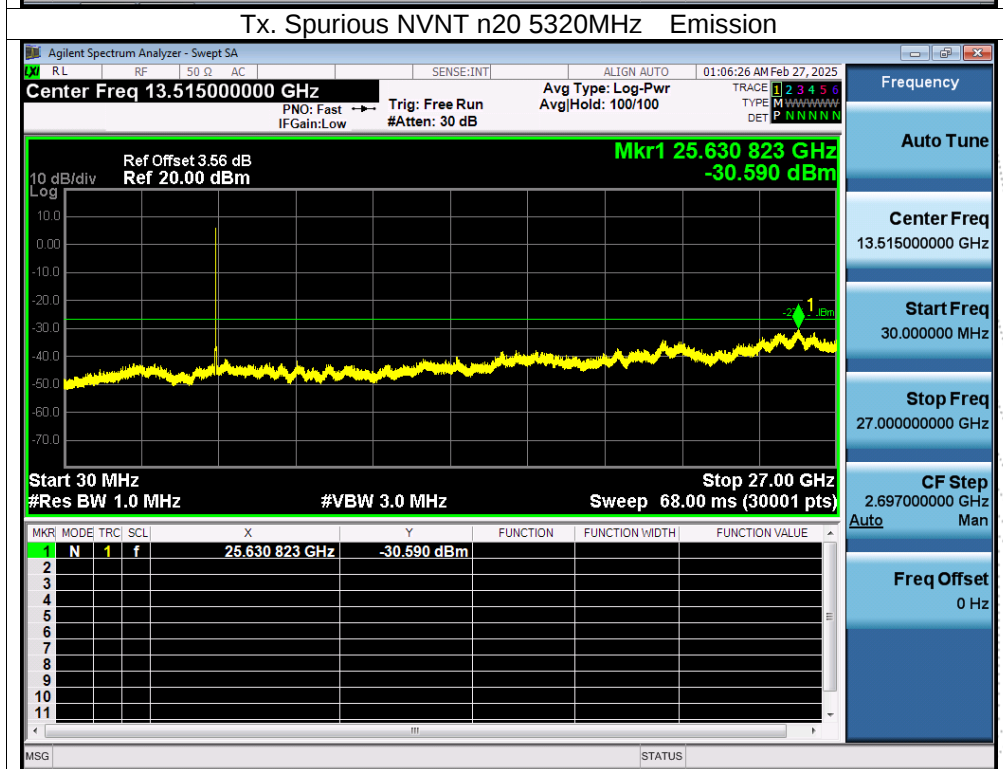
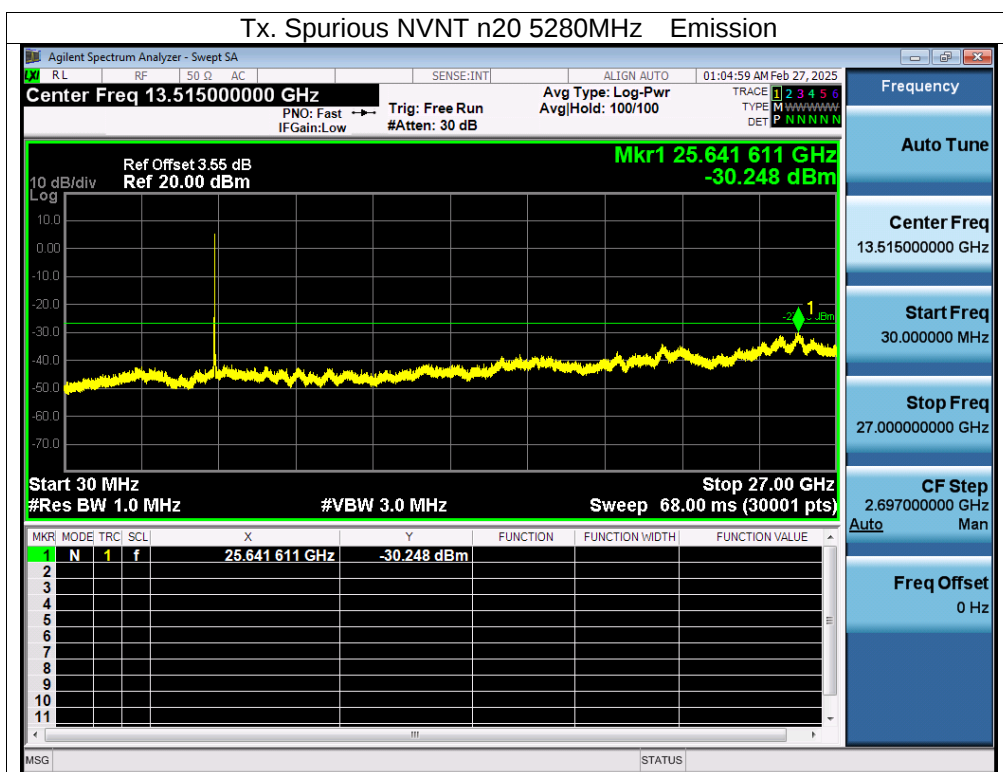
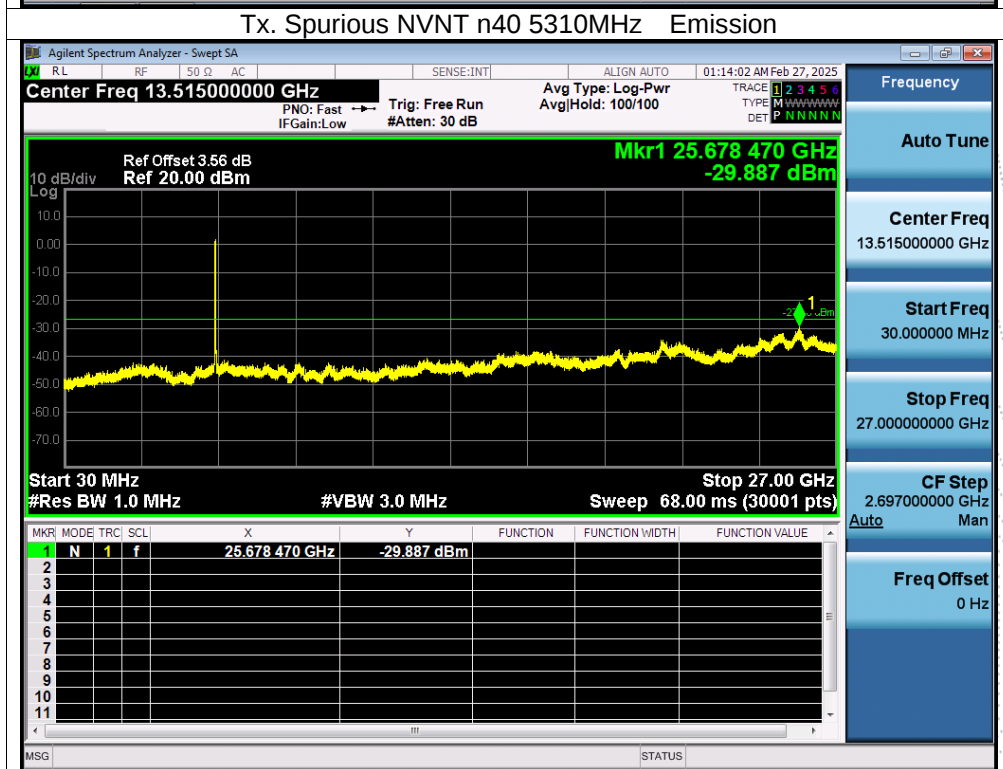
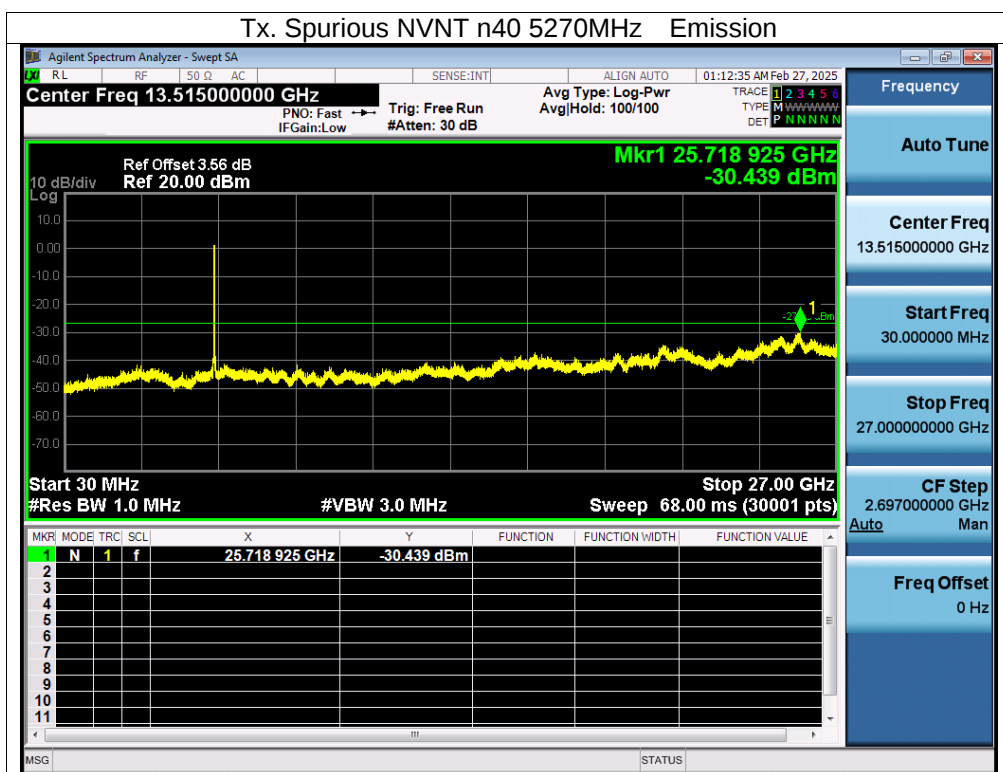


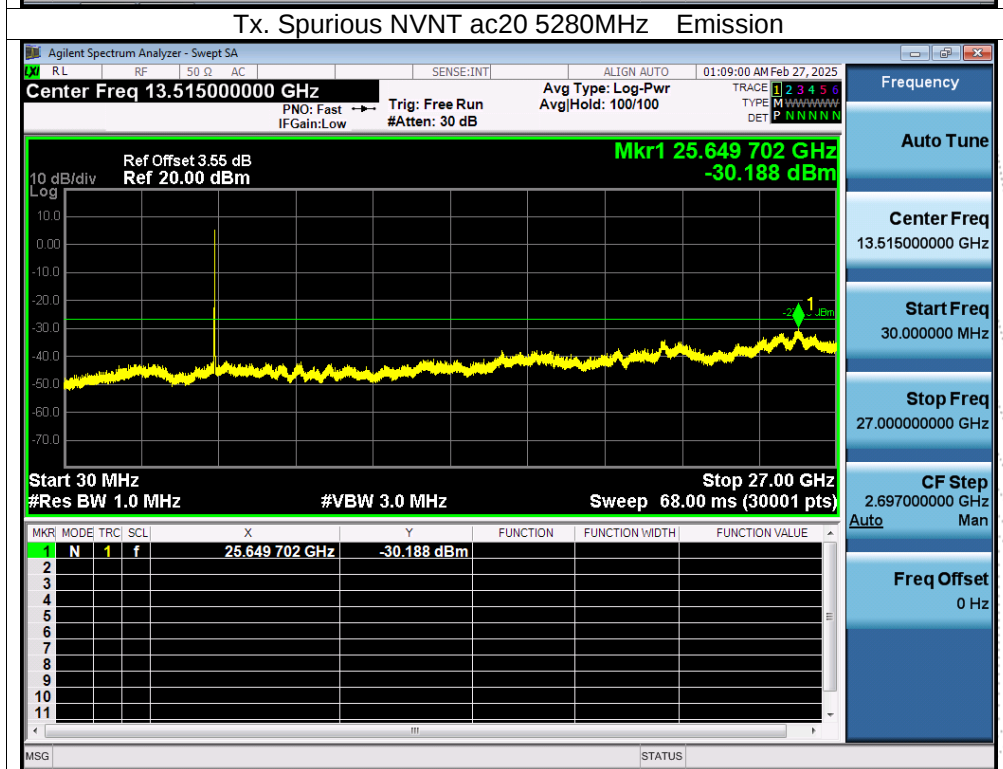
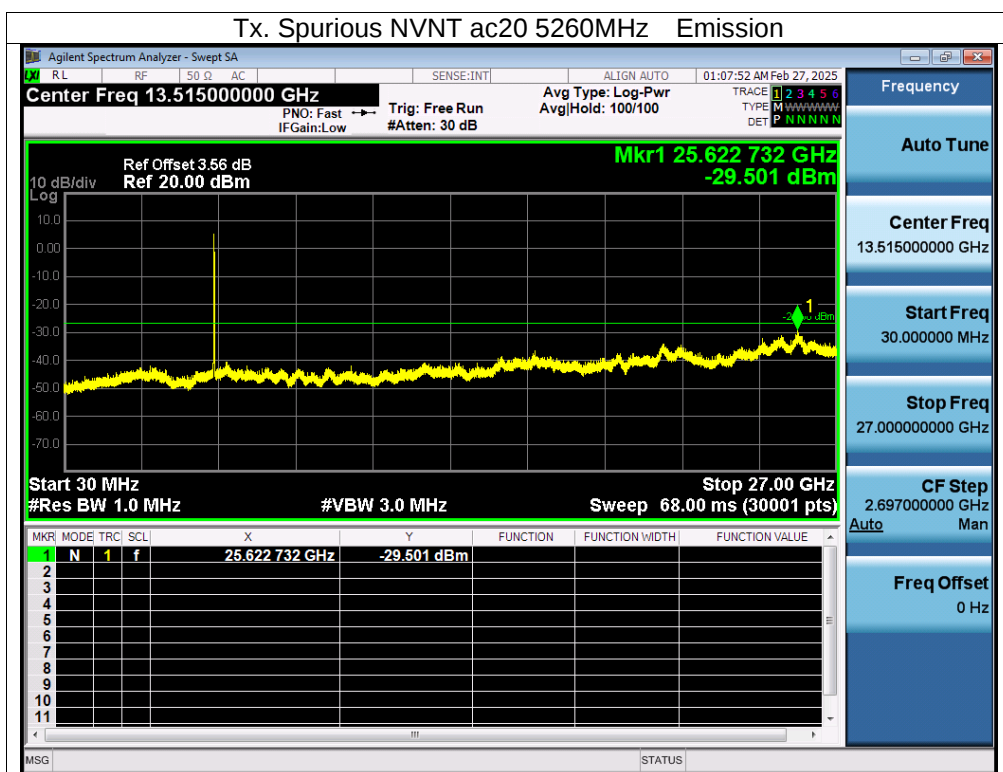
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A.
Antenna A: 5260-5320MHz

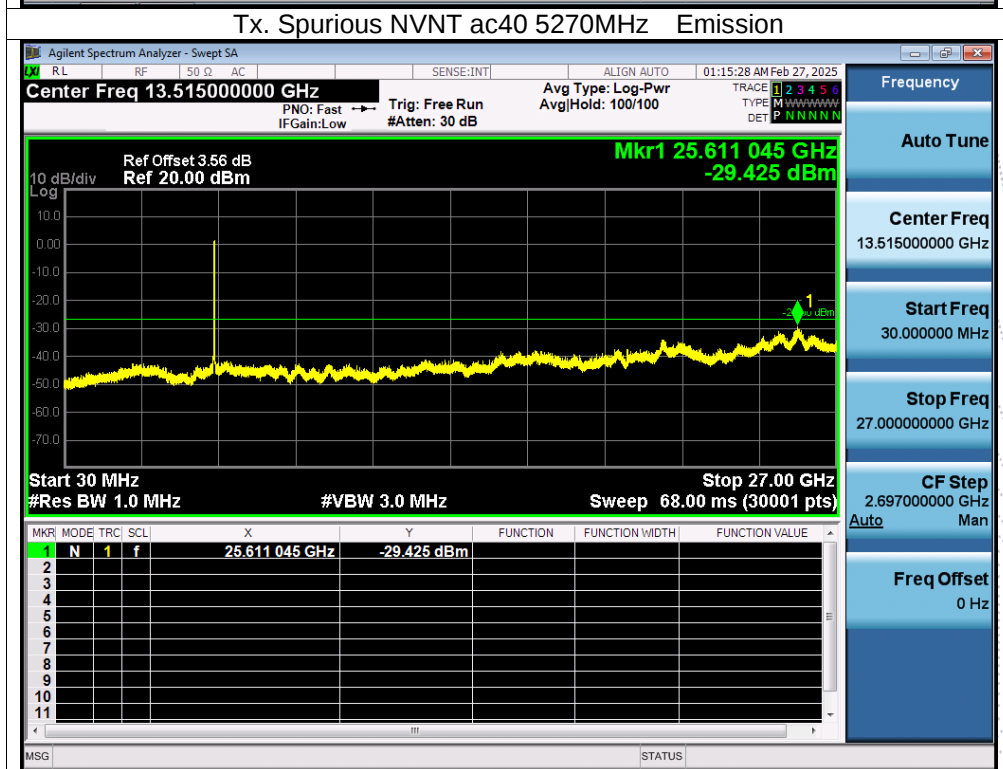
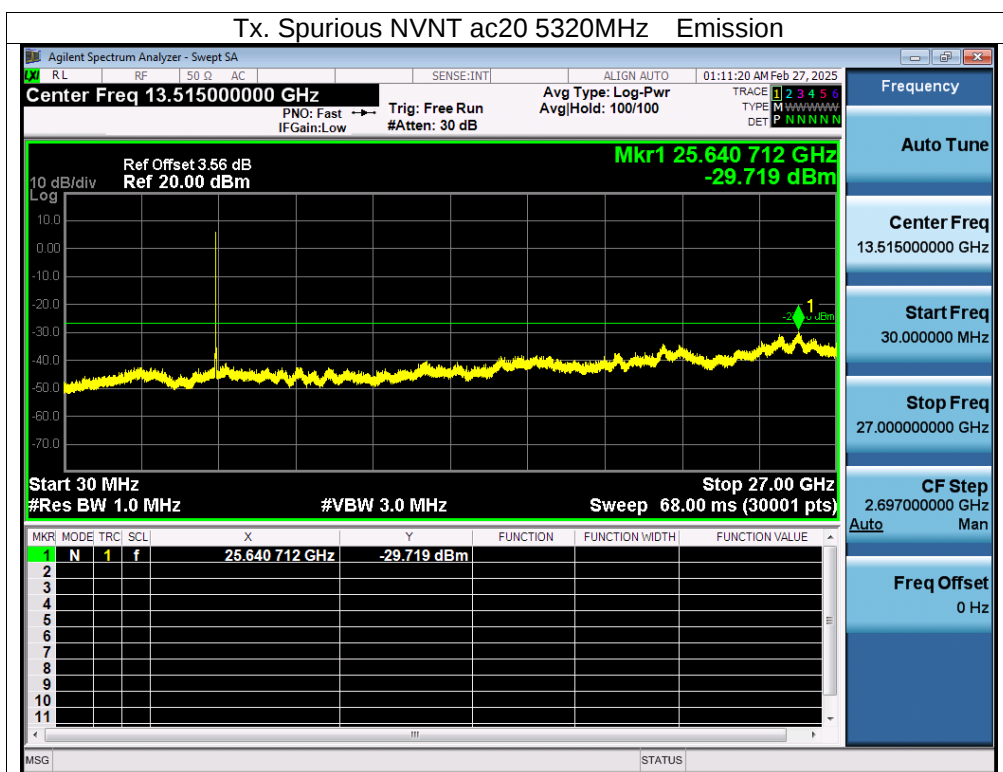


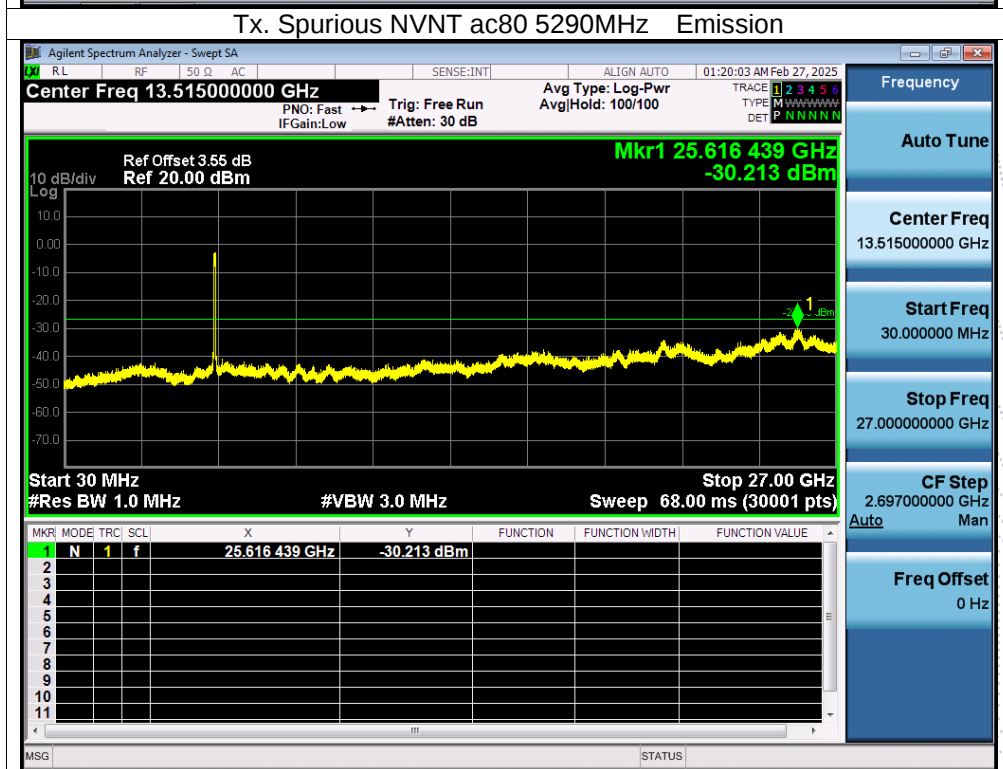
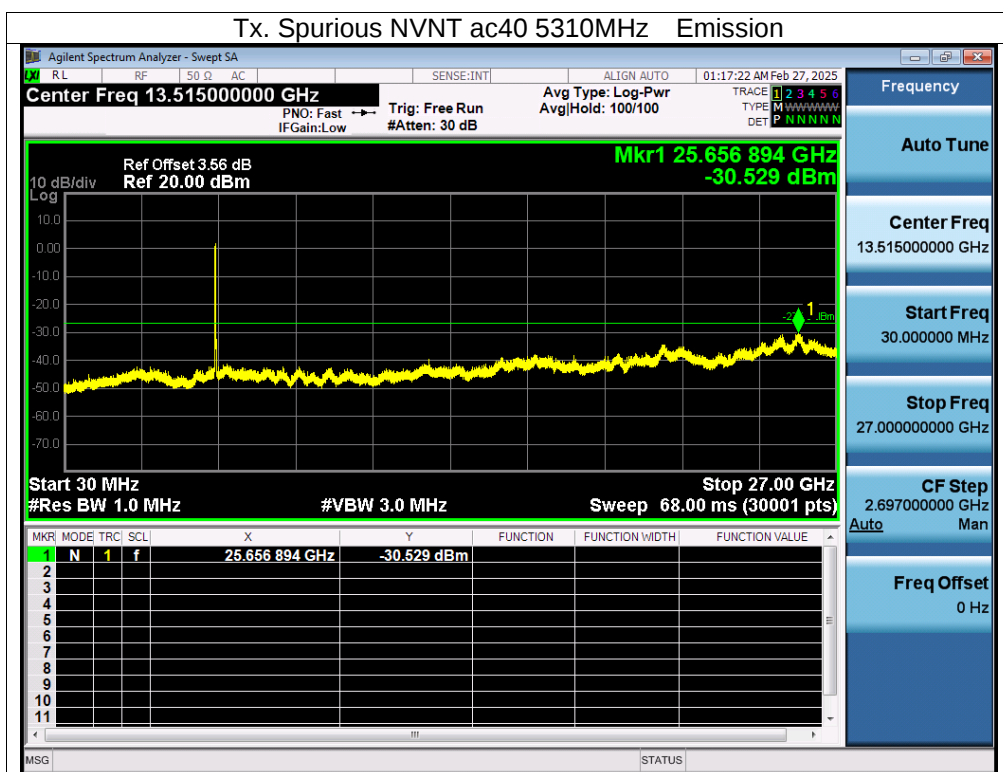




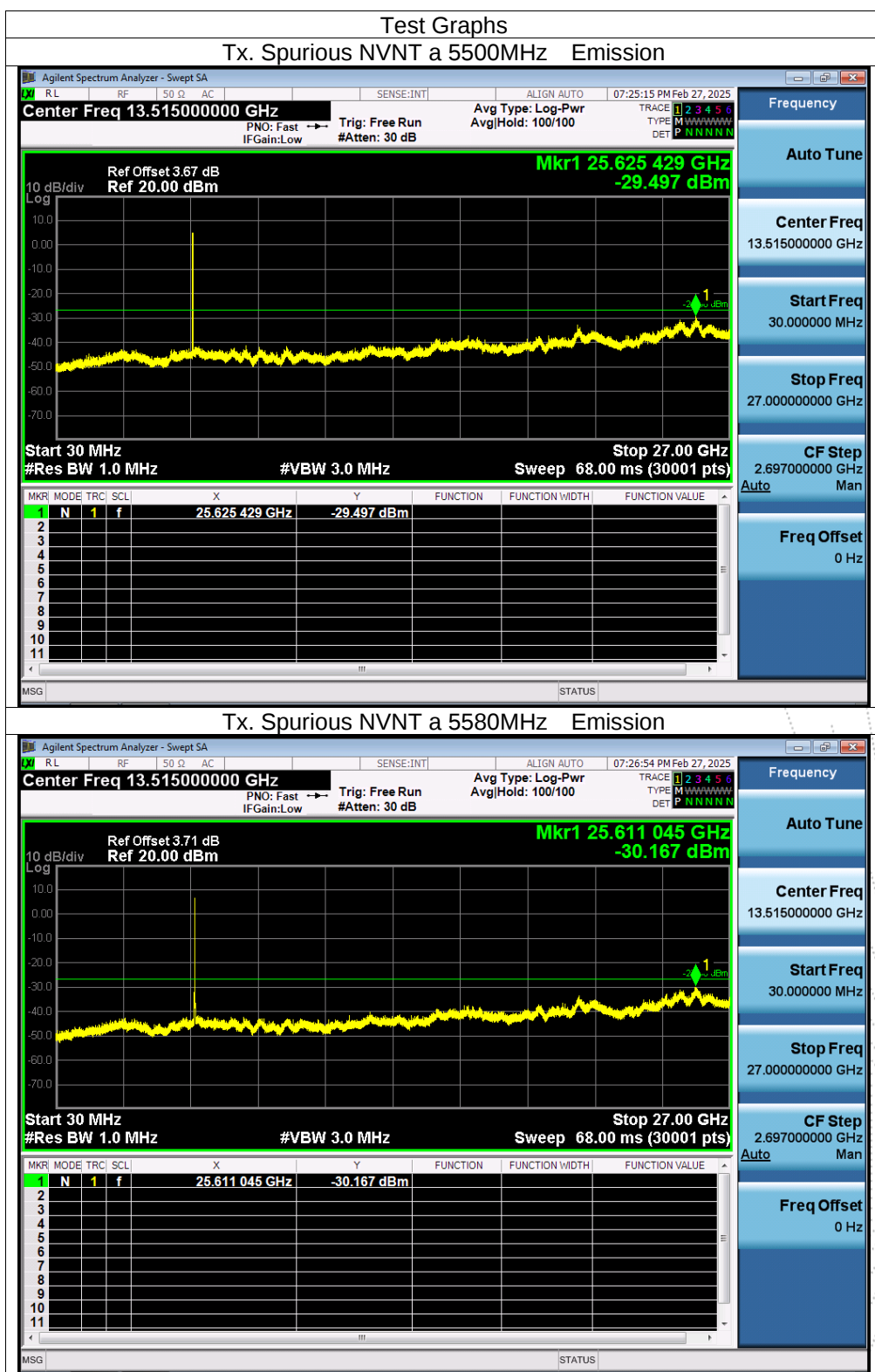


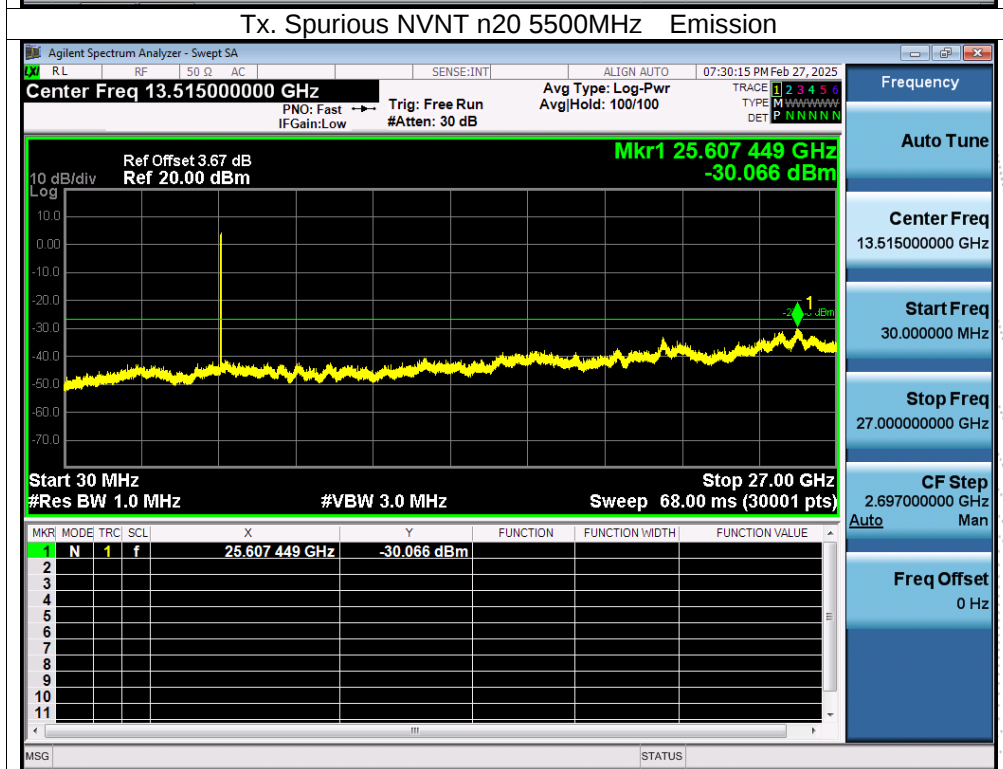
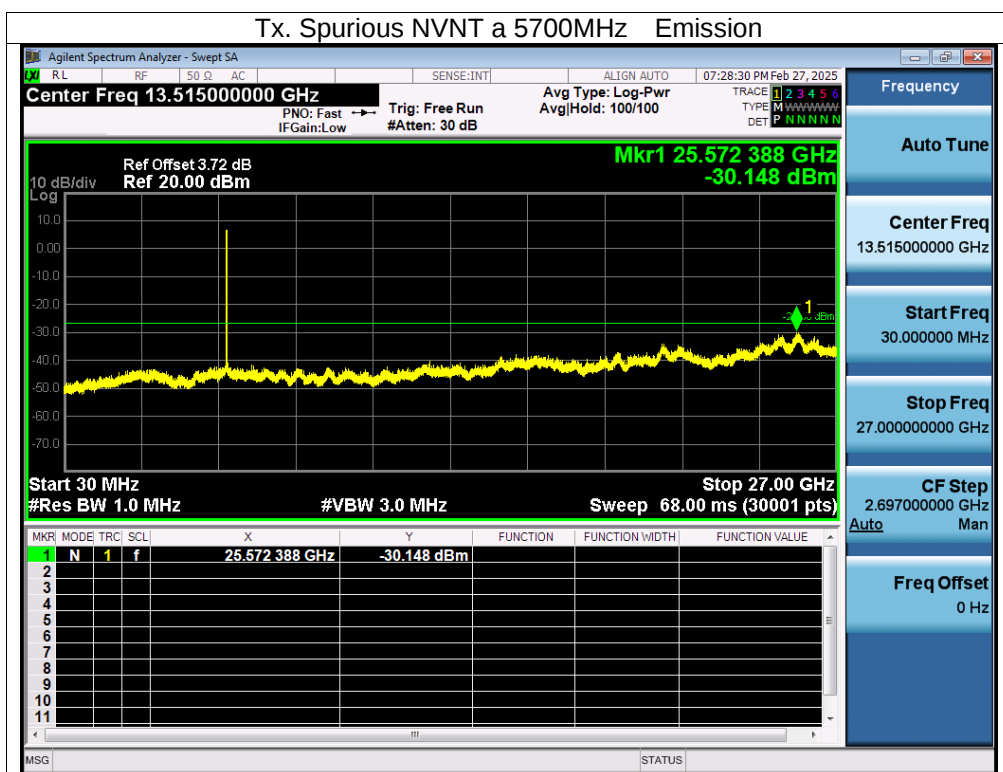


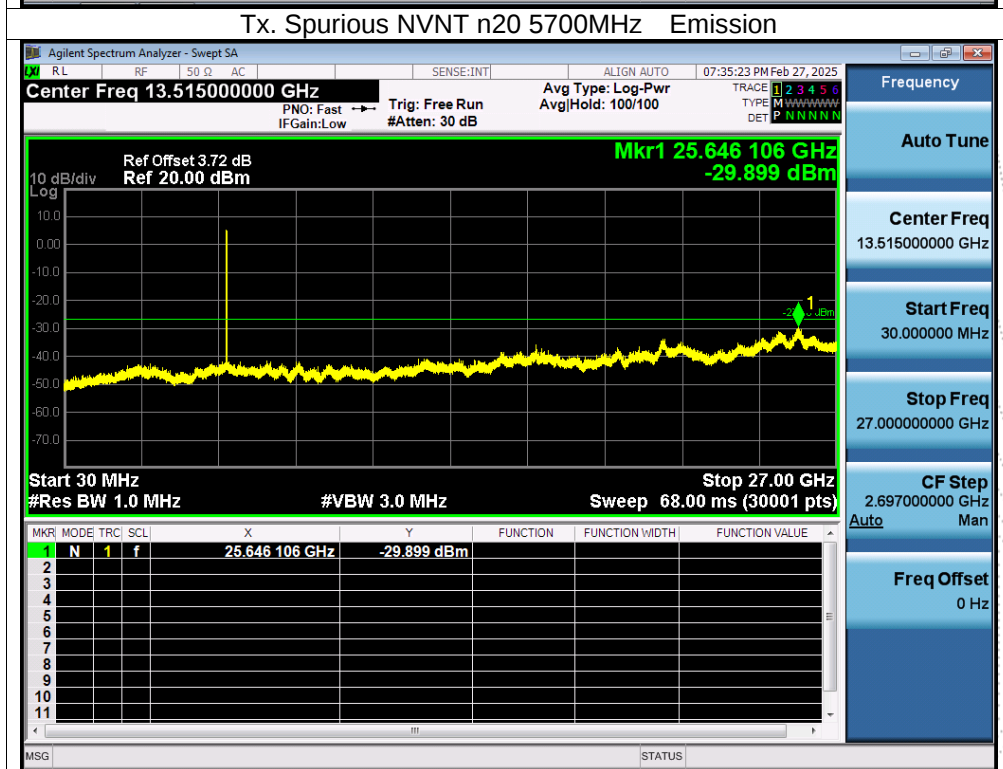
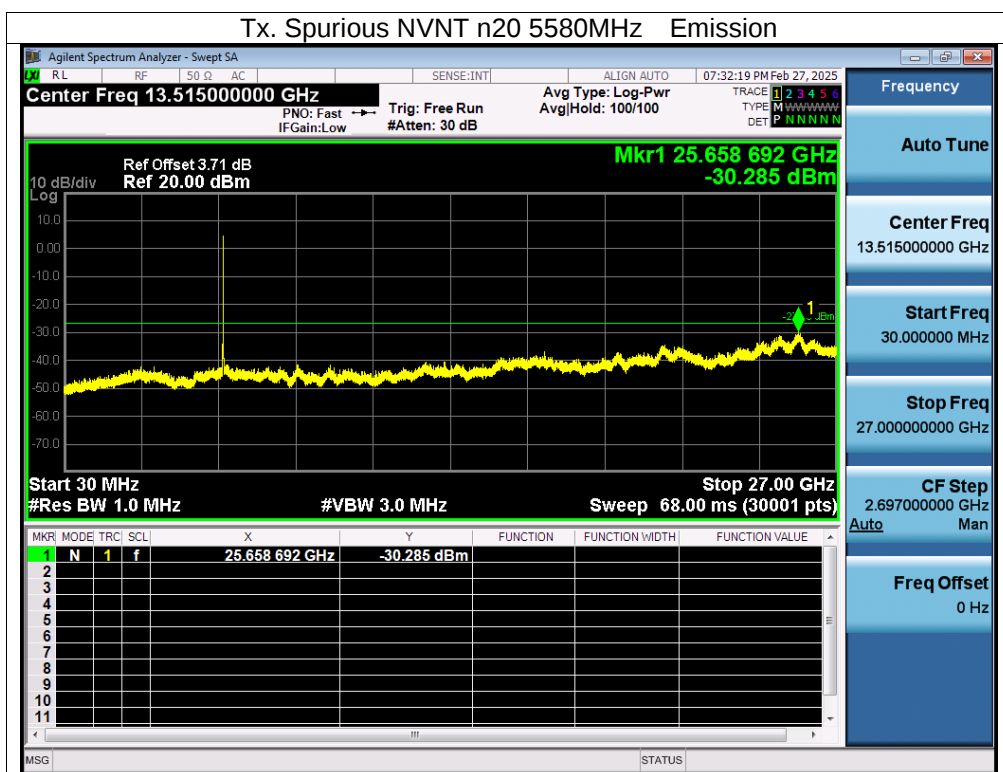


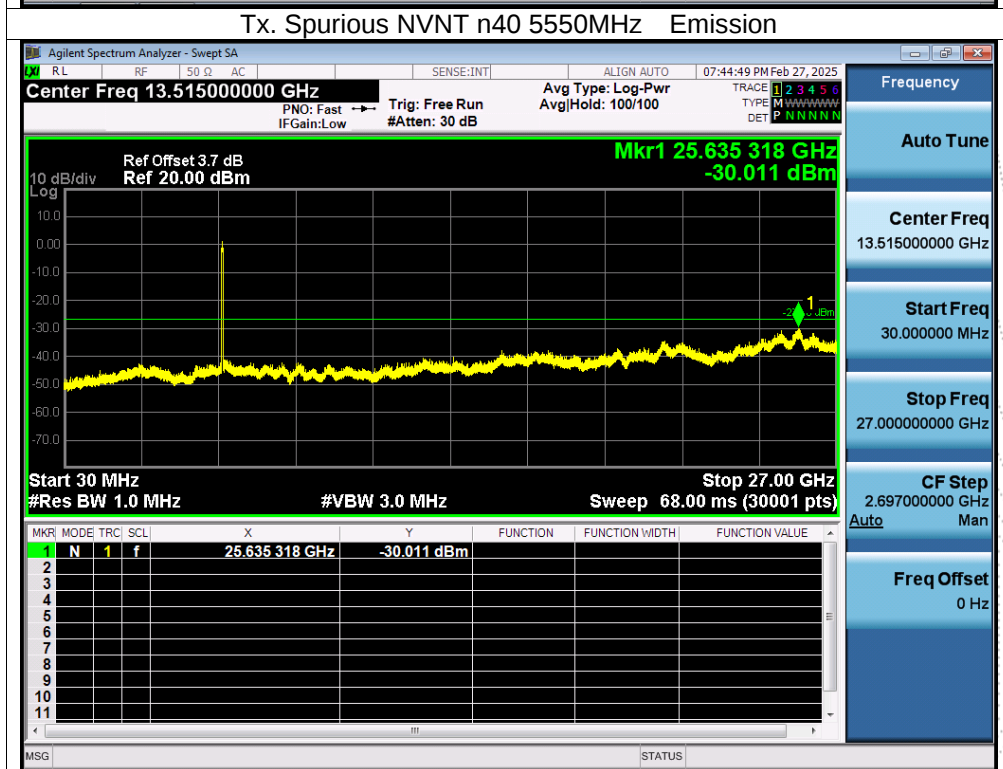
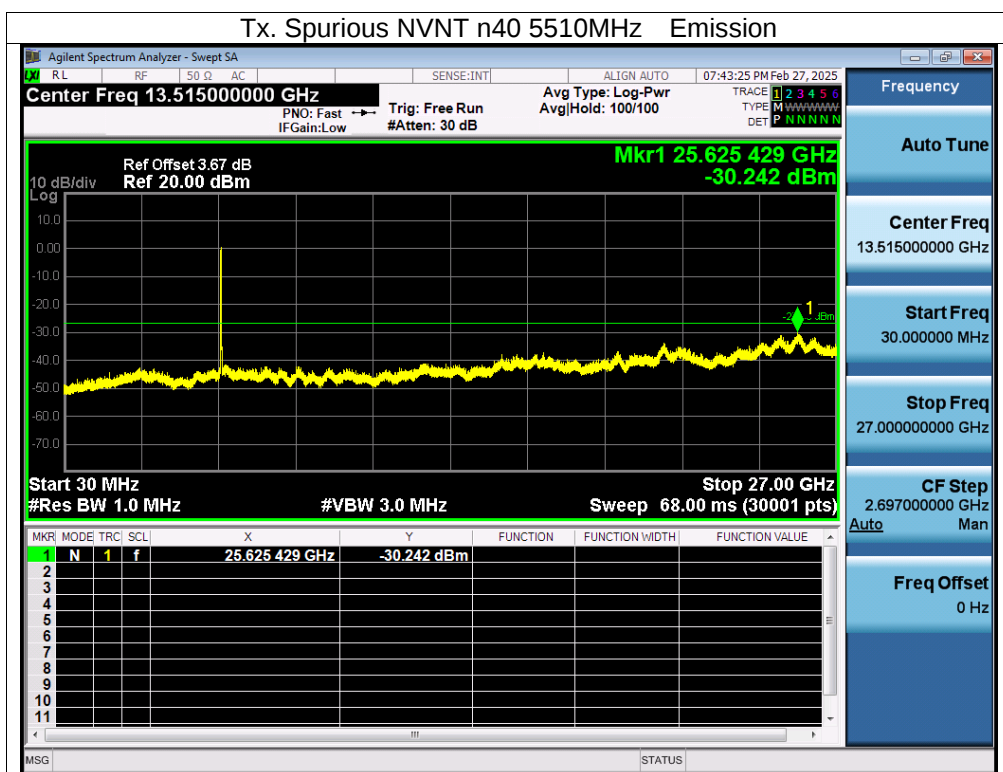


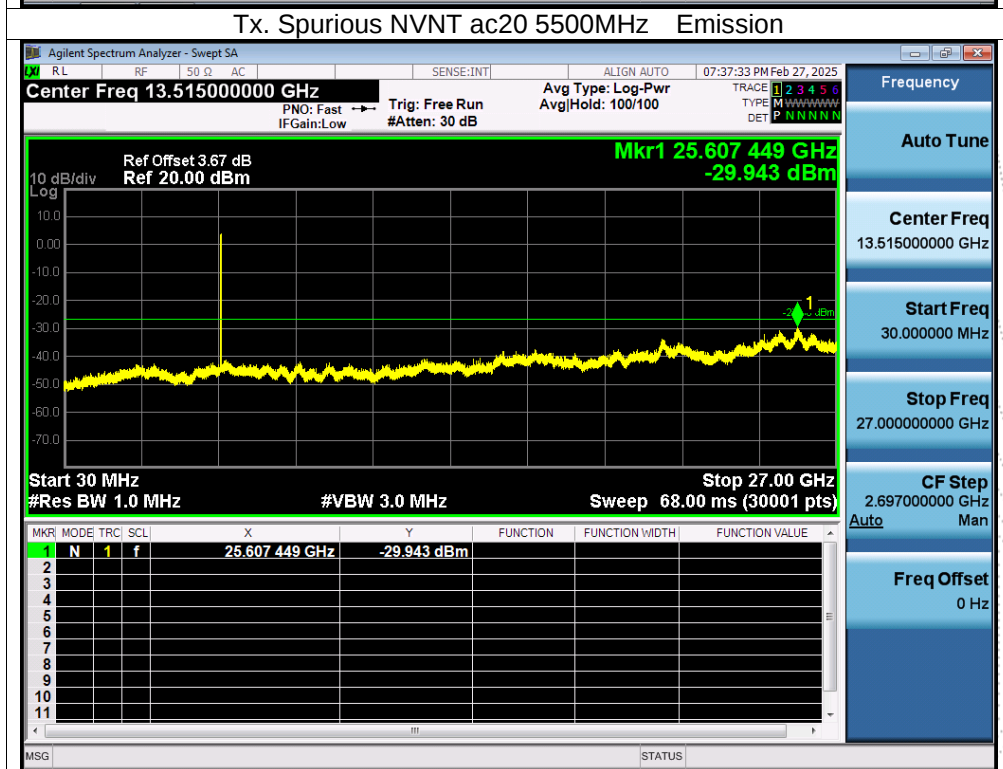
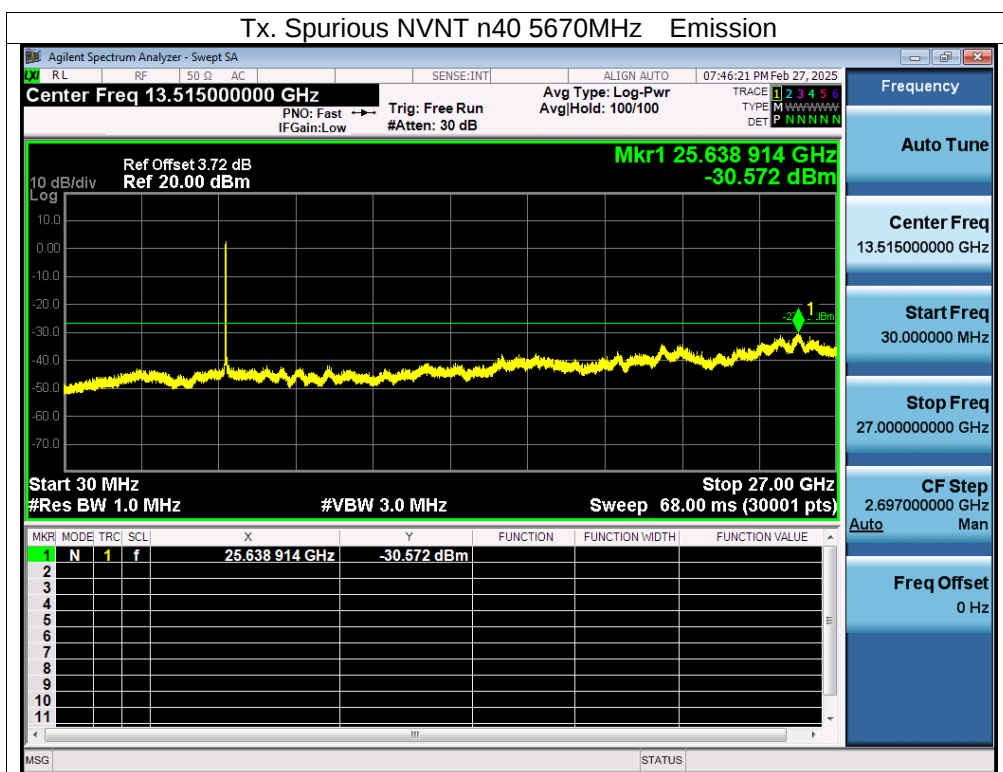
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A.
Antenna A: 5500-5700MHz

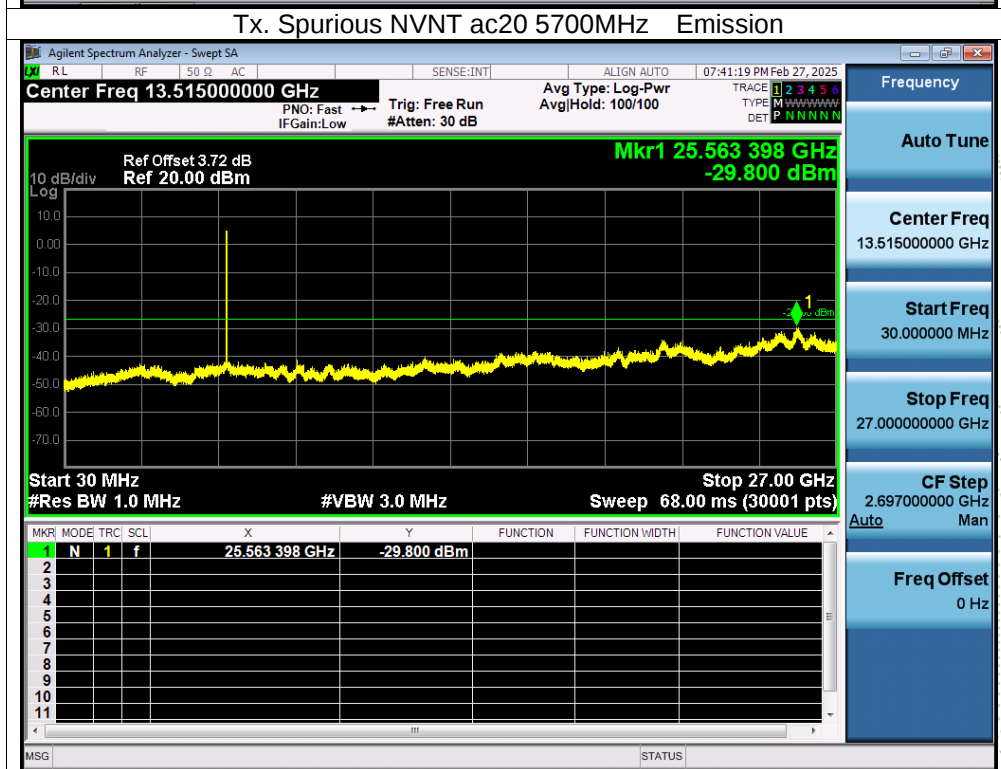
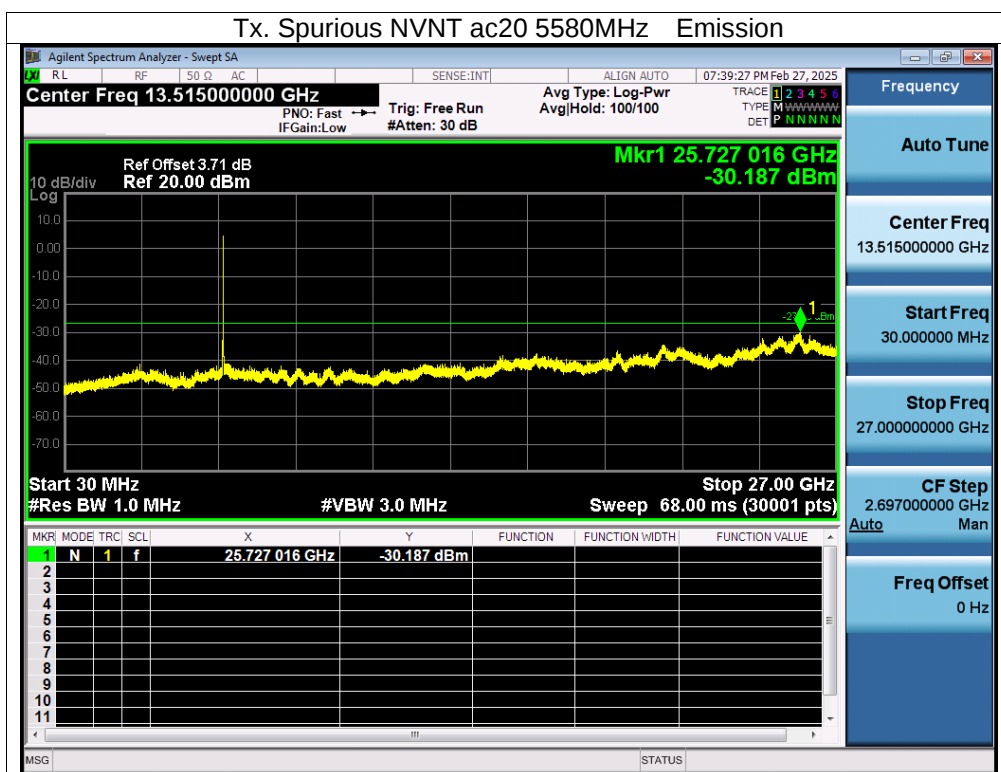


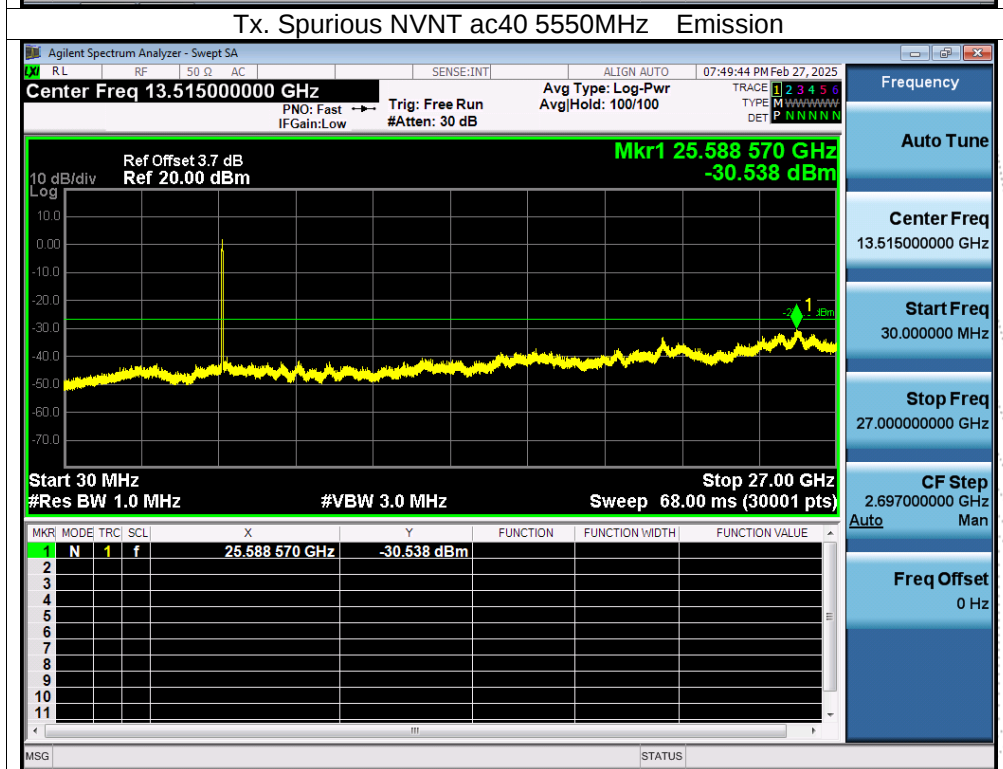
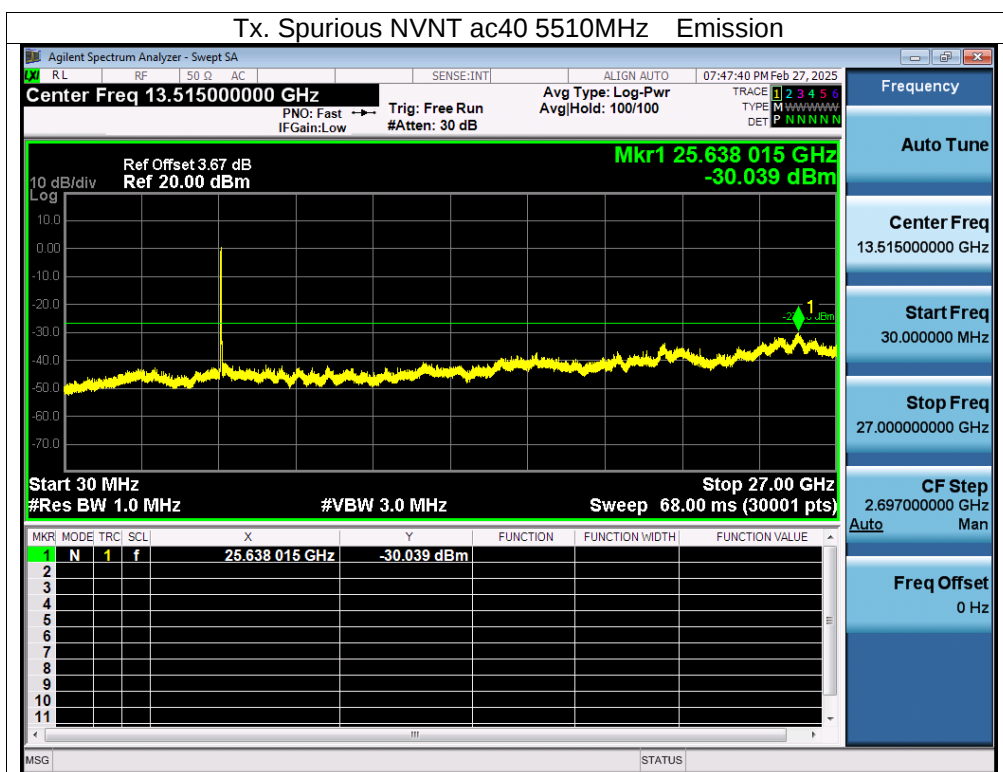


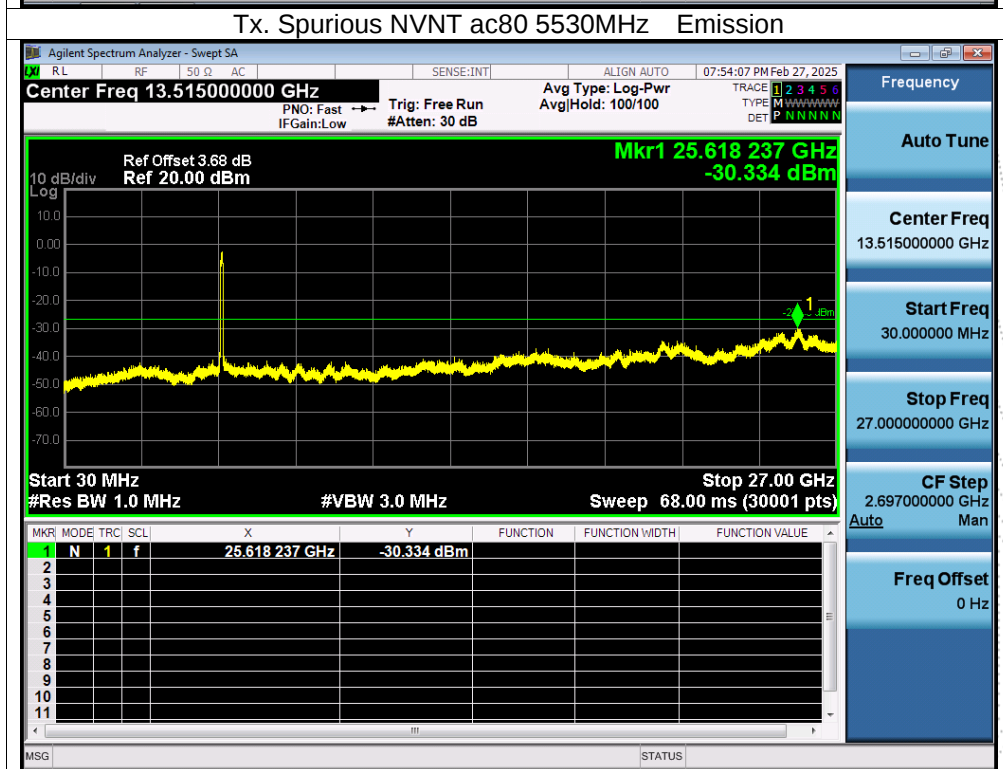
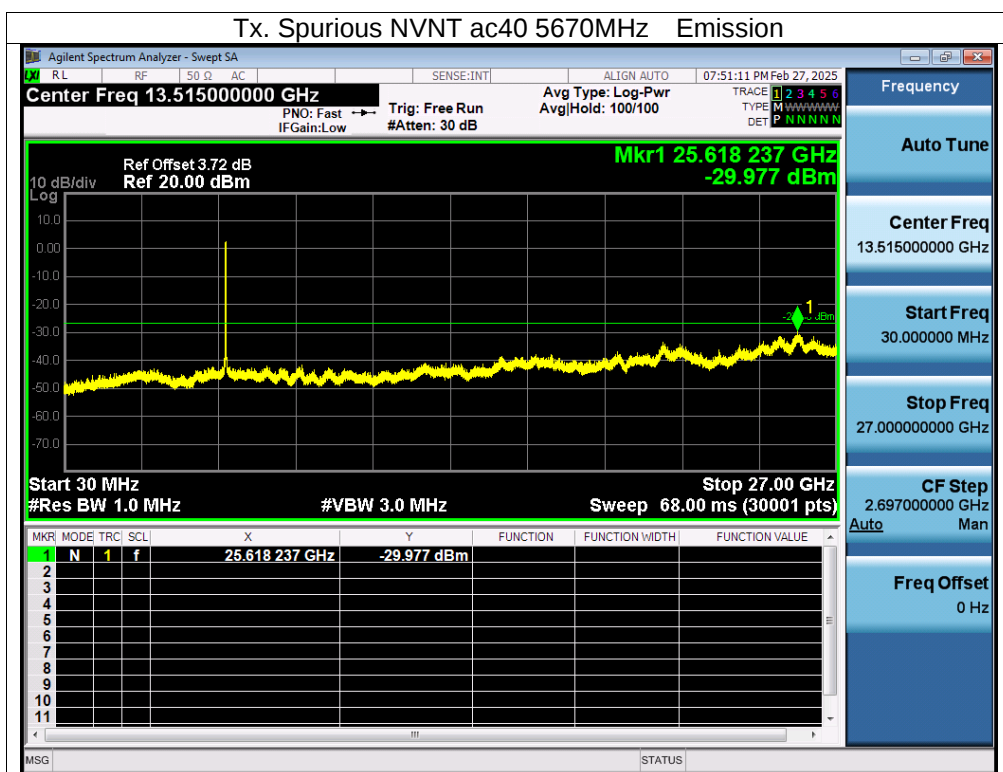




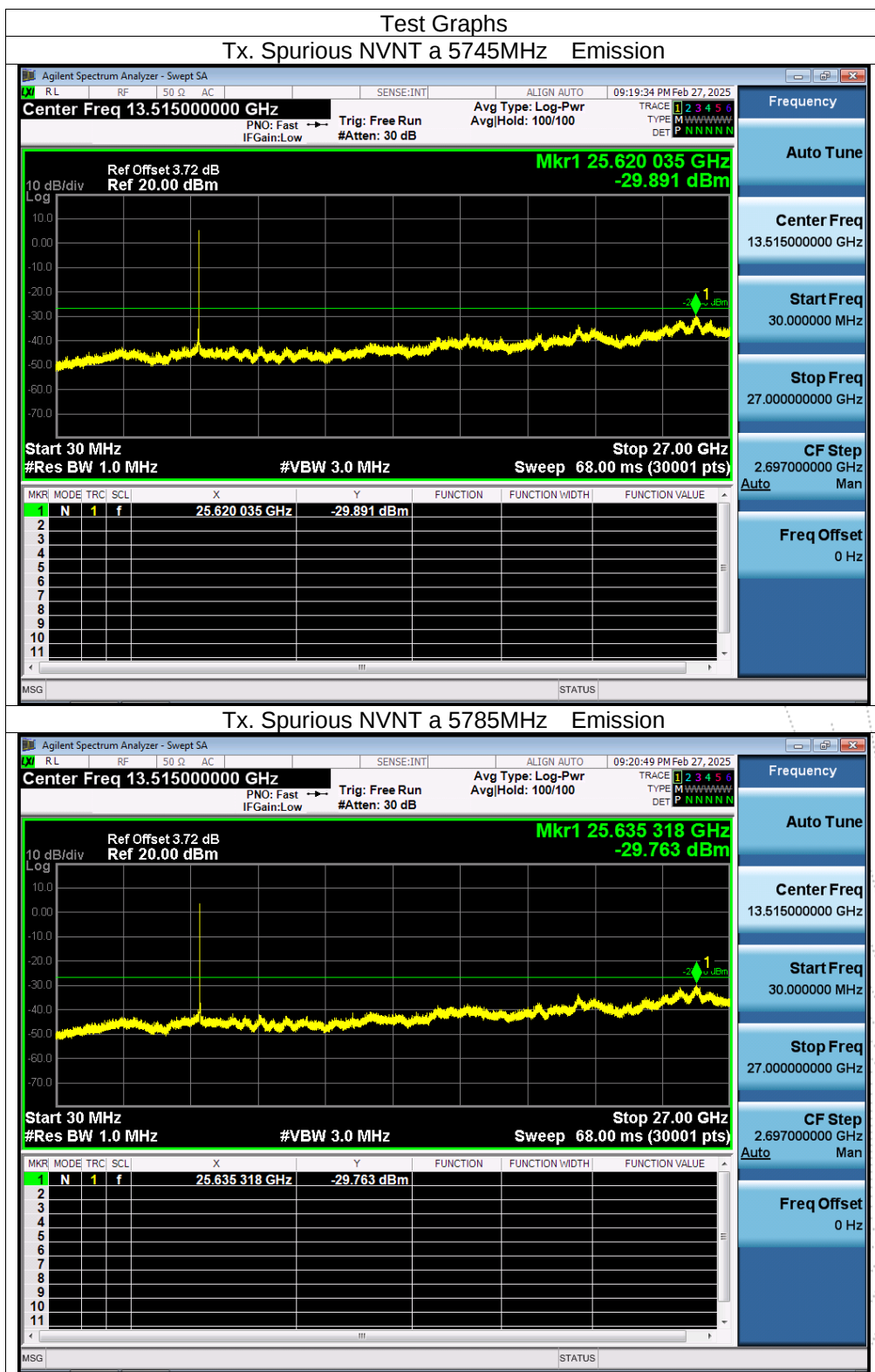


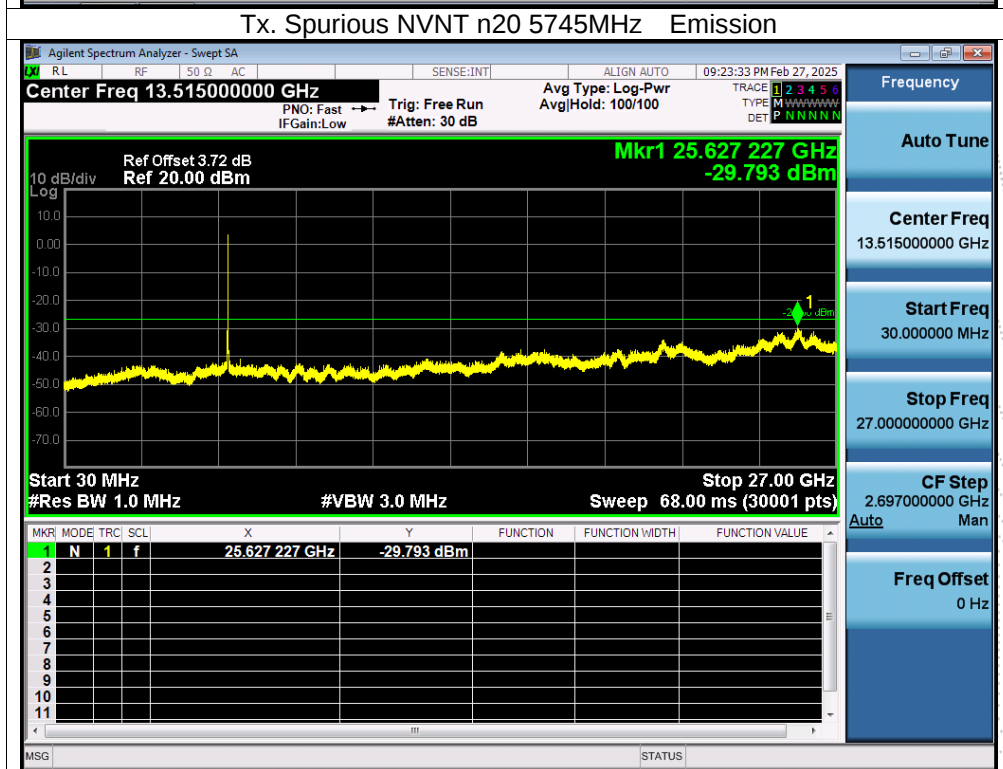
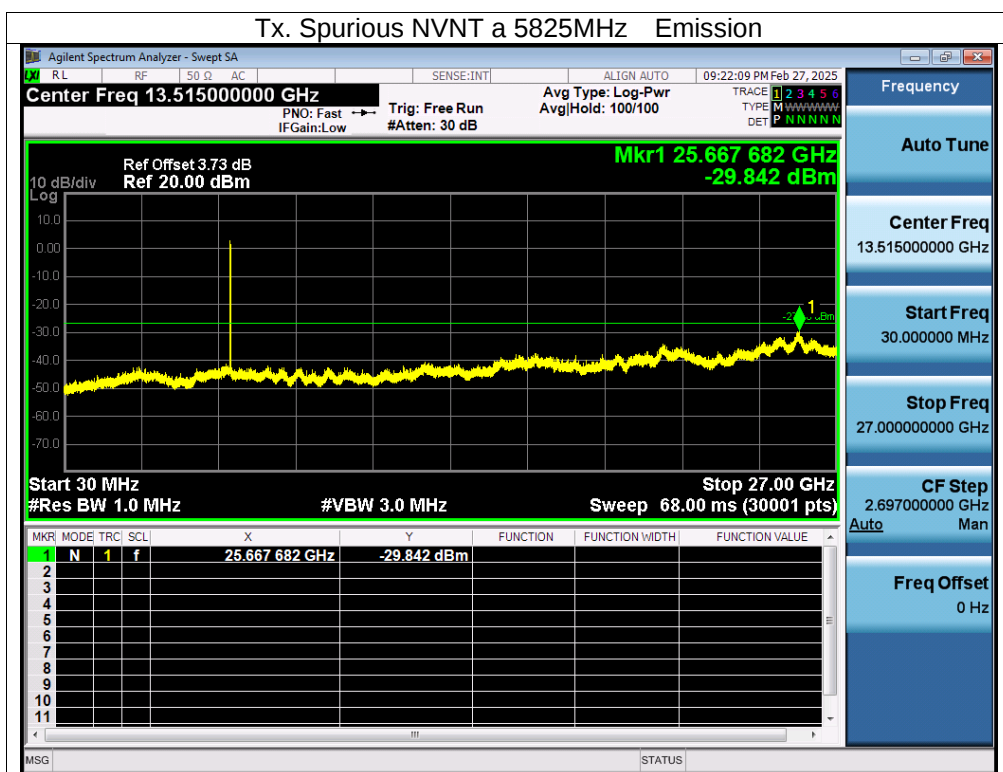


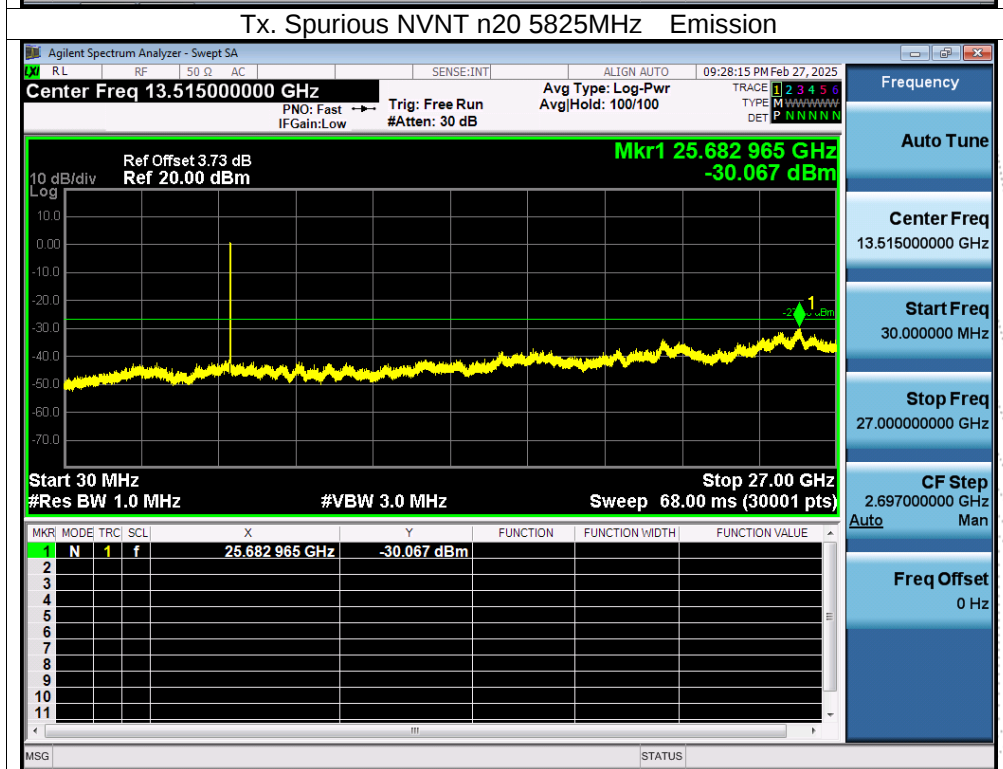
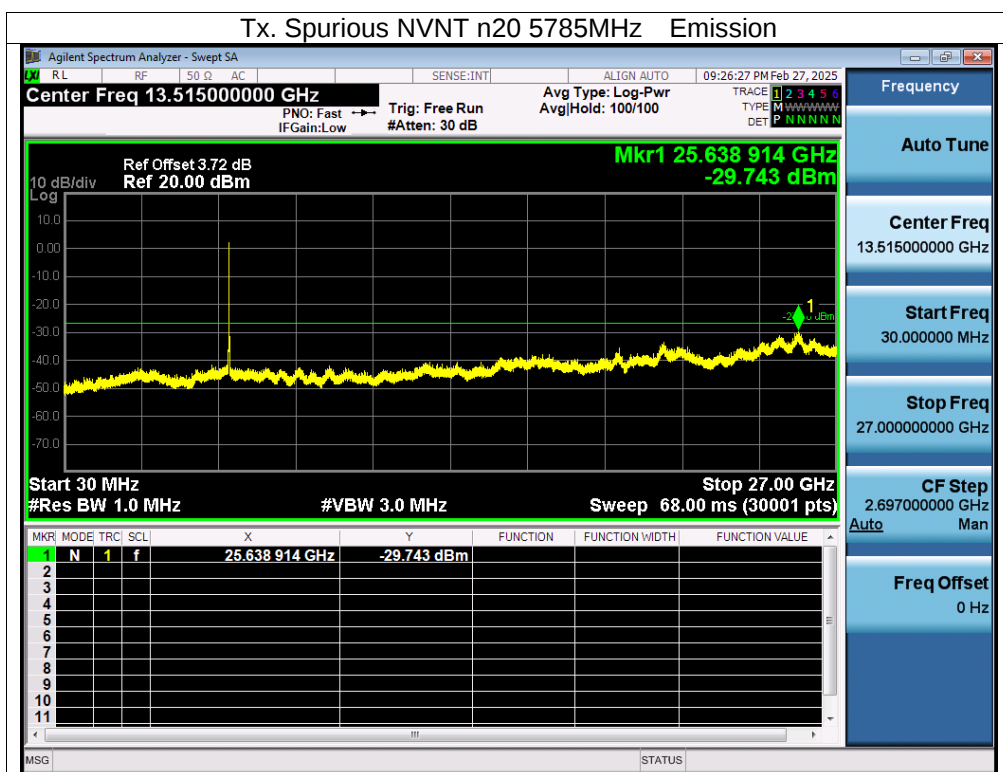


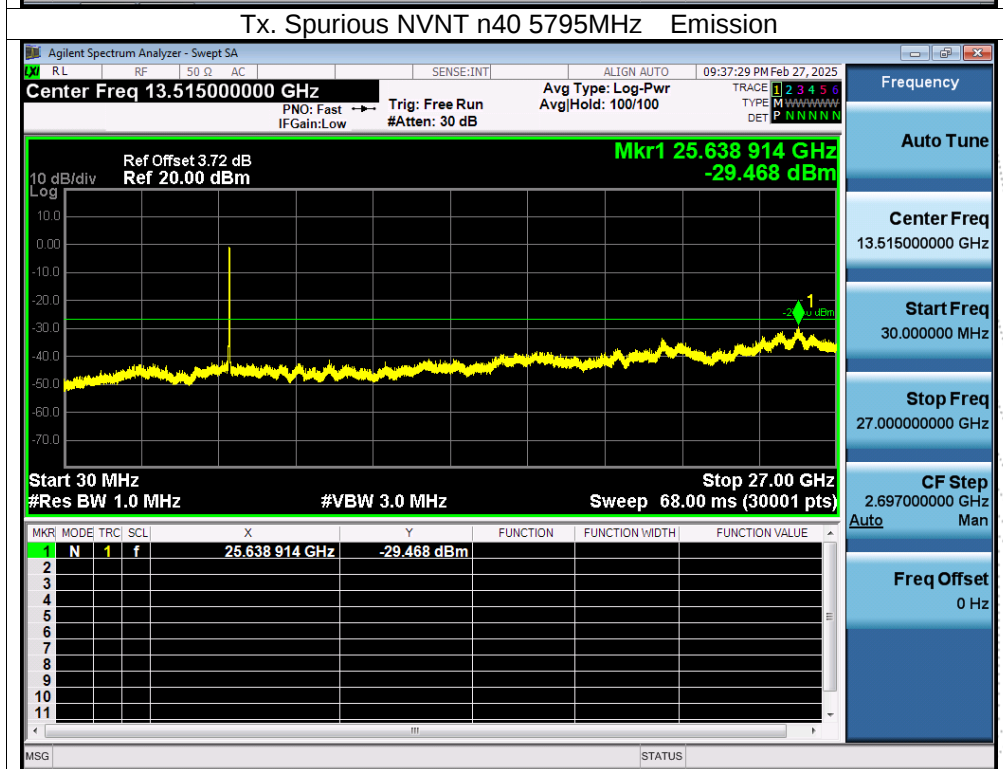
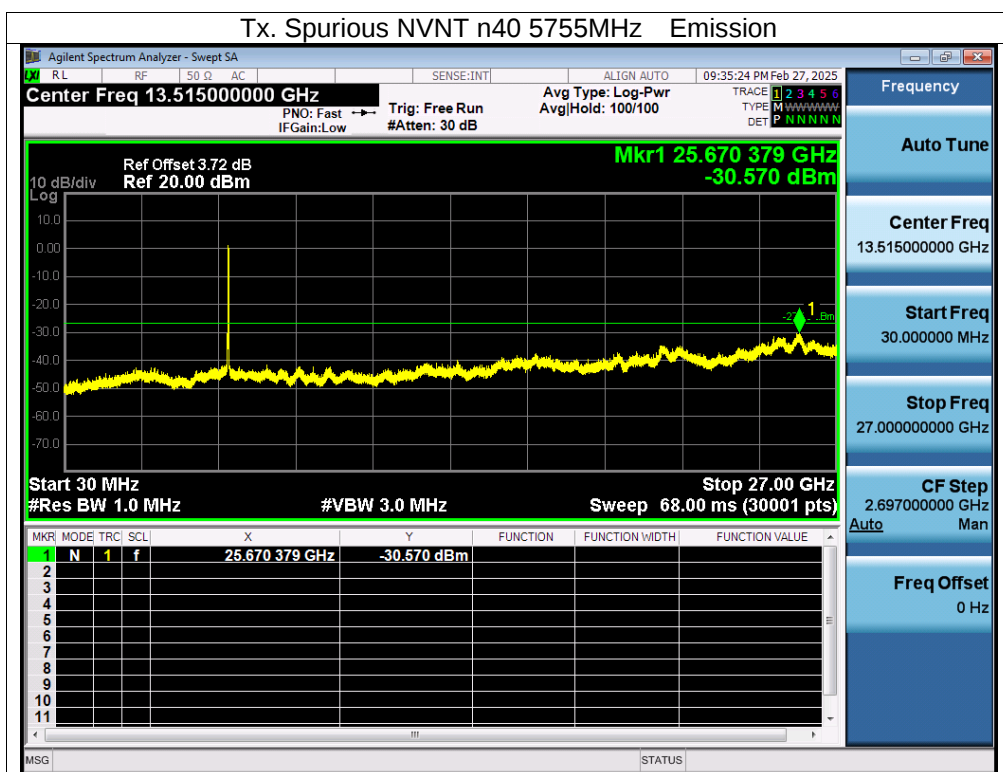


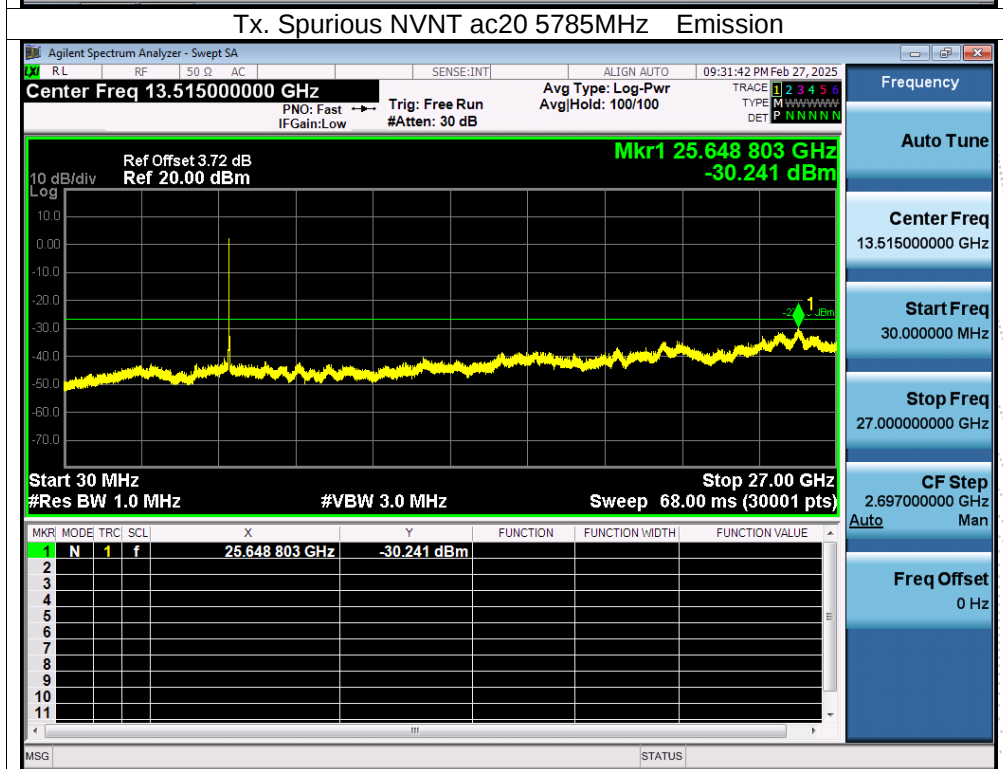
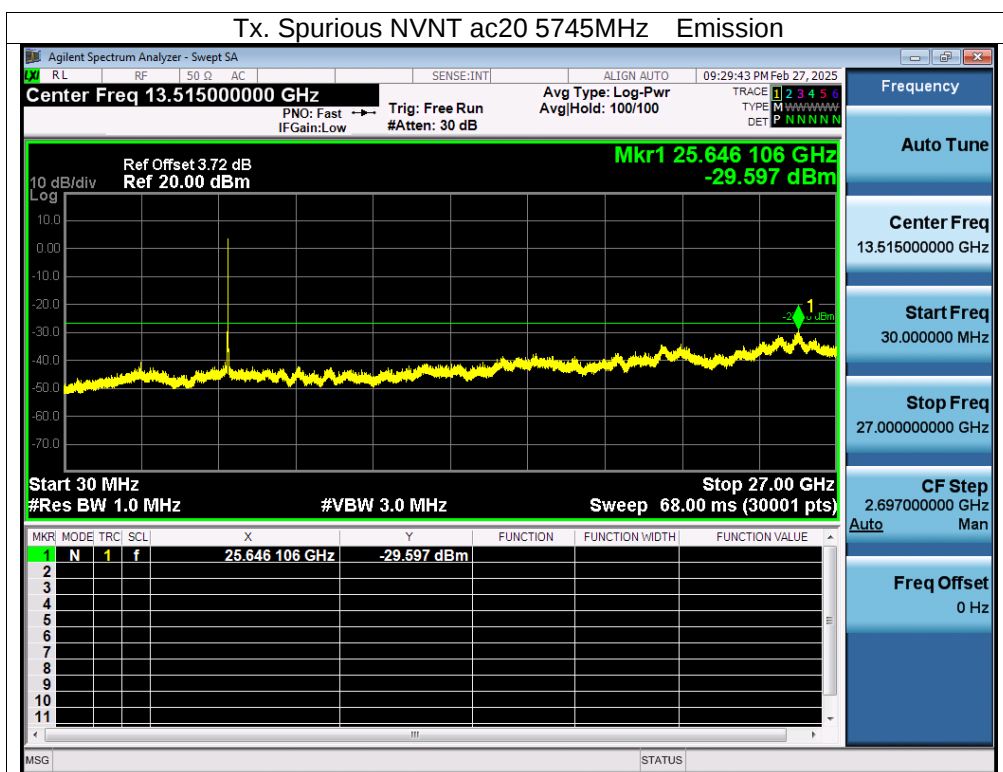
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A Plot. Antenna A: 5745-5825 MHz

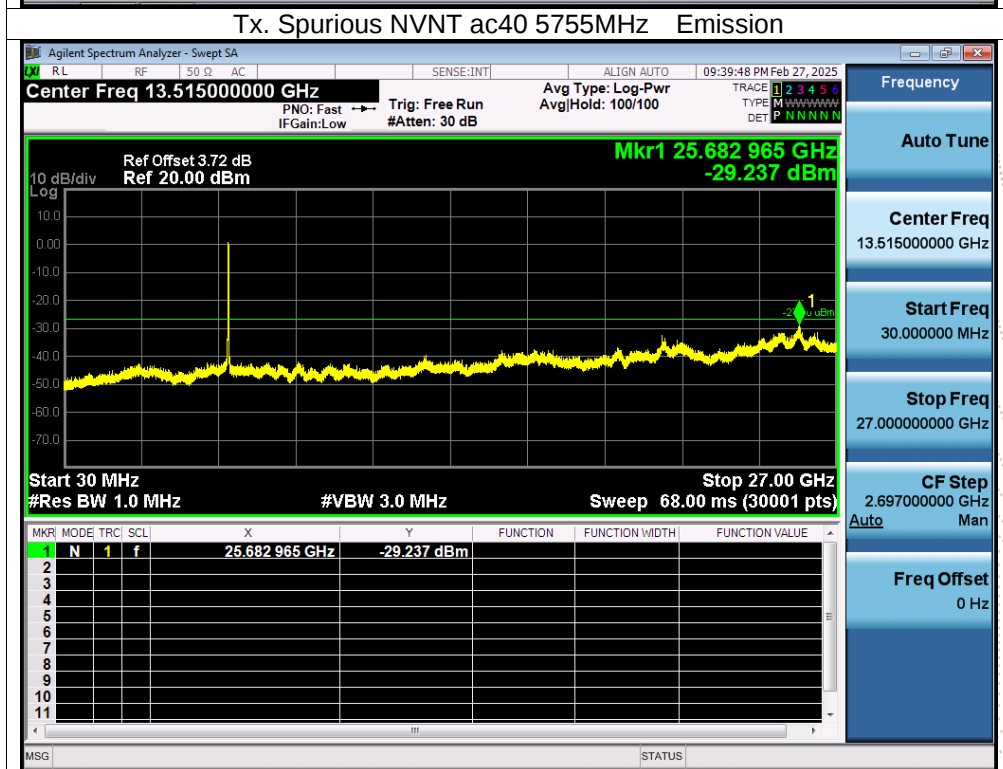
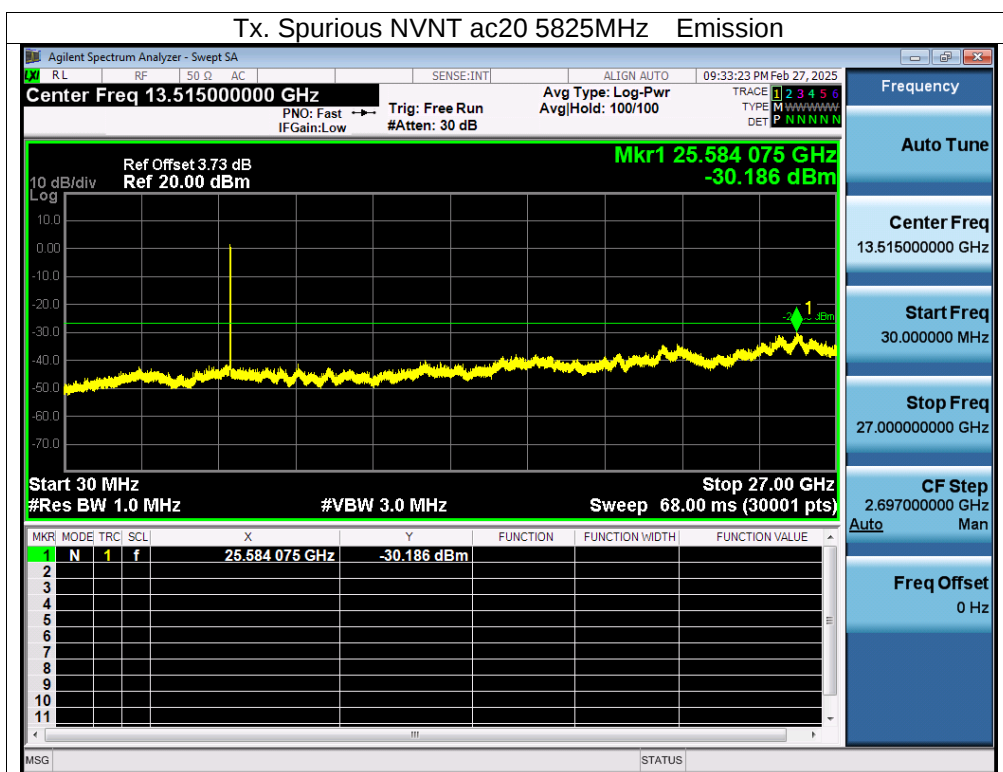


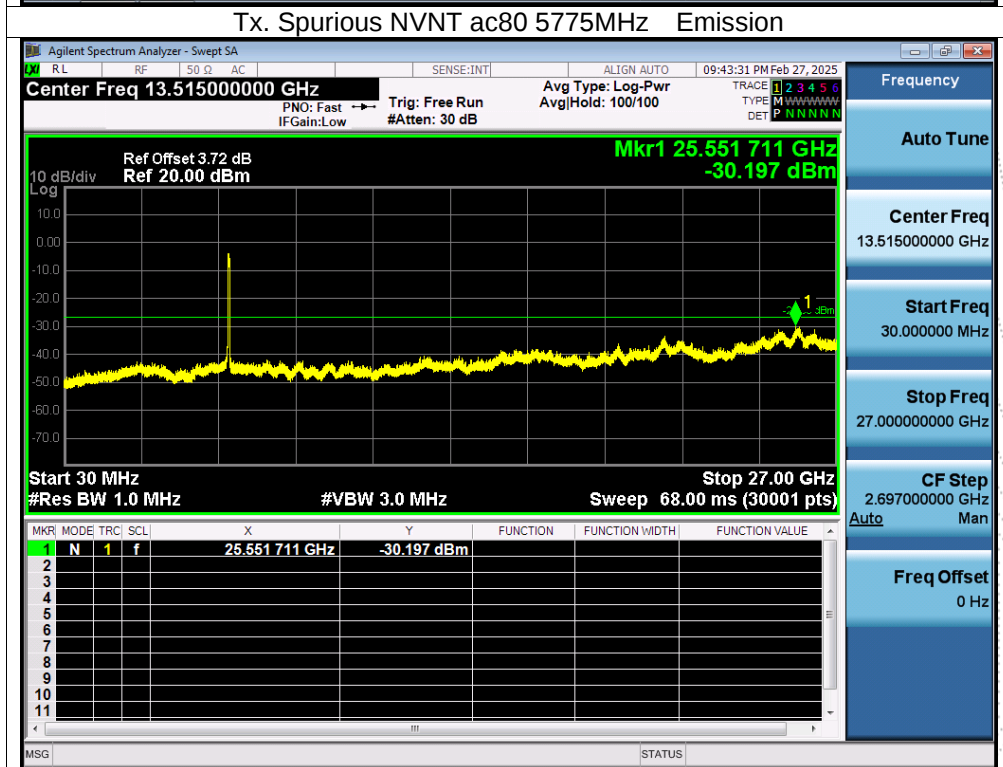
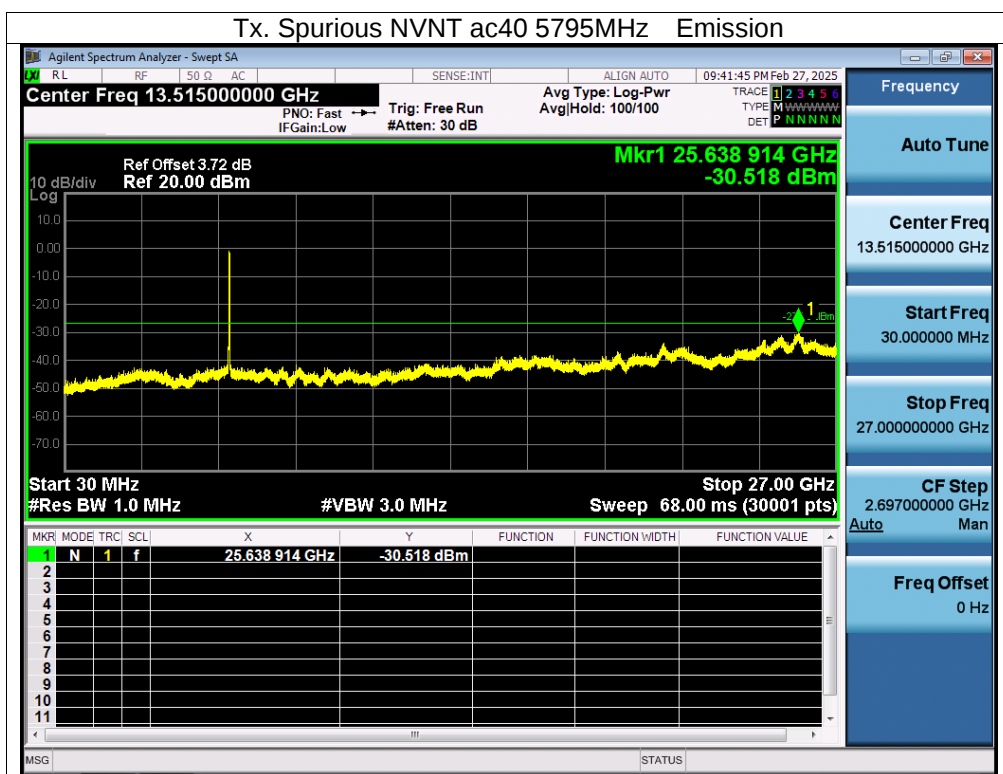






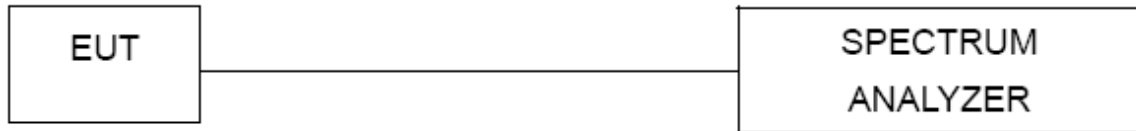






13. Frequency Stability Measurement

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:	AC 120V/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)	AC 120	5180.0059	5180	0.0059	1.1390
		V max (V)	AC 138	5180.0048	5180	0.0048	0.9266
		V min (V)	AC 102	5180.0027	5180	0.0027	0.5212
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)	AC 120	T (°C)	-20	5180.0073	5180	0.0073	1.4093
		T (°C)	-10	5180.0070	5180	0.0070	1.3514
		T (°C)	0	5180.0009	5180	0.0009	0.1737
		T (°C)	10	5180.0056	5180	0.0056	1.0811
		T (°C)	20	5180.0101	5180	0.0101	1.9498
		T (°C)	30	5180.0008	5180	0.0008	0.1544
		T (°C)	40	5180.0011	5180	0.0011	0.2124
		T (°C)	50	5180.0004	5180	0.0004	0.0772
		T (°C)	60	5180.0091	5180	0.0091	1.7568
		T (°C)	70	5180.0098	5180	0.0098	1.8919
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)	AC 120	5200.0039	5200	0.0039	0.7500
		V max (V)	AC 138	5200.0075	5200	0.0075	1.4423
		V min (V)	AC 102	5200.0075	5200	0.0075	1.4423
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency : 5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	AC 120	T (°C)	-20	5200.00770	5200	0.00770	1.4808
		T (°C)	-10	5200.00430	5200	0.00430	0.8269
		T (°C)	0	5200.01070	5200	0.01070	2.0577
		T (°C)	10	5200.00230	5200	0.00230	0.4423
		T (°C)	20	5200.00930	5200	0.00930	1.7885
		T (°C)	30	5200.00030	5200	0.00030	0.0577
		T (°C)	40	5200.01240	5200	0.01240	2.3846
		T (°C)	50	5200.00990	5200	0.00990	1.9038
		T (°C)	60	5200.01350	5200	0.01350	2.5962
		T (°C)	70	5200.00510	5200	0.00510	0.9808
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)	AC 120	5240.0099	5240	0.0099	1.8893
		V max (V)	AC 138	5240.0105	5240	0.0105	2.0038
		V min (V)	AC 102	5240.0078	5240	0.0078	1.4885
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)	AC 120	T (°C)	-20	5240.0092	5240	0.0092	1.7557
		T (°C)	-10	5240.0078	5240	0.0078	1.4885
		T (°C)	0	5240.0131	5240	0.0131	2.5000
		T (°C)	10	5240.0032	5240	0.0032	0.6107
		T (°C)	20	5240.0117	5240	0.0117	2.2328
		T (°C)	30	5240.0022	5240	0.0022	0.4198
		T (°C)	40	5240.0033	5240	0.0033	0.6298
		T (°C)	50	5240.0043	5240	0.0043	0.8206
		T (°C)	60	5240.0009	5240	0.0009	0.1718
		T (°C)	70	5240.0131	5240	0.0131	2.5000
Limits				5150-5250 MHz			
Result				Complies			

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
Test Mode:	TX (5.3G) Mode Frequency U-NII-2A (5260-5320MHz)		

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency :5260MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	AC 120	5260.0039	5260	0.0039	0.7414
		V max (V)	AC 138	5260.0052	5260	0.0052	0.9886
		V min (V)	AC 102	5260.0055	5260	0.0055	1.0456
Limits				5260-5320 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5260MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	AC 120	T (°C)	-20	5260.0022	5260	0.0022	0.4183
		T (°C)	-10	5260.0025	5260	0.0025	0.4753
		T (°C)	0	5260.0131	5260	0.0131	2.4905
		T (°C)	10	5260.0111	5260	0.0111	2.1103
		T (°C)	20	5260.0105	5260	0.0105	1.9962
		T (°C)	30	5260.0051	5260	0.0051	0.9696
		T (°C)	40	5260.0113	5260	0.0113	2.1483
		T (°C)	50	5260.0040	5260	0.0040	0.7605
		T (°C)	60	5260.0028	5260	0.0028	0.5323
		T (°C)	70	5260.0113	5260	0.0113	2.1483
Limits				5260-5320 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency : 5280MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	AC 120	5280.0049	5280	0.0049	0.9280
		V max (V)	AC 138	5280.0028	5280	0.0028	0.5303
		V min (V)	AC 102	5280.0111	5280	0.0111	2.1023
Limits				5260-5320 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency : 5280MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	AC 120	T (°C)	-20	5280.01190	5280	0.01190	2.2538
		T (°C)	-10	5280.00160	5280	0.00160	0.3030
		T (°C)	0	5280.00580	5280	0.00580	1.0985
		T (°C)	10	5280.00110	5280	0.00110	0.2083
		T (°C)	20	5280.01050	5280	0.01050	1.9886
		T (°C)	30	5280.00340	5280	0.00340	0.6439
		T (°C)	40	5280.00220	5280	0.00220	0.4167
		T (°C)	50	5280.00830	5280	0.00830	1.5720
		T (°C)	60	5280.00020	5280	0.00020	0.0379
		T (°C)	70	5280.00390	5280	0.00390	0.7386
Limits				5260-5320 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5320MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	AC 120	5320.0076	5320	0.0076	1.4286
		V max (V)	AC 138	5320.0121	5320	0.0121	2.2744
		V min (V)	AC 102	5320.0070	5320	0.0070	1.3158
Limits				5260-5320 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency : 5320MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	AC 120	T (°C)	-20	5320.0017	5320	0.0017	0.3195
		T (°C)	-10	5320.0007	5320	0.0007	0.1316
		T (°C)	0	5320.0030	5320	0.0030	0.5639
		T (°C)	10	5320.0034	5320	0.0034	0.6391
		T (°C)	20	5320.0087	5320	0.0087	1.6353
		T (°C)	30	5320.0012	5320	0.0012	0.2256
		T (°C)	40	5320.0052	5320	0.0052	0.9774
		T (°C)	50	5320.0000	5320	0.0000	0.0000
		T (°C)	60	5320.0114	5320	0.0114	2.1429
		T (°C)	70	5320.0014	5320	0.0014	0.2632
Limits				5260-5320 MHz			
Result				Complies			

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
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)	AC 120	5500.0112	5500	0.0112	2.0364
		V max (V)	AC 138	5500.0061	5500	0.0061	1.1091
		V min (V)	AC 102	5500.0061	5500	0.0061	1.1091
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)	AC 120	T (°C)	-20	5500.0070	5500	0.0070	1.2727
		T (°C)	-10	5500.0119	5500	0.0119	2.1636
		T (°C)	0	5500.0053	5500	0.0053	0.9636
		T (°C)	10	5500.0132	5500	0.0132	2.4000
		T (°C)	20	5500.0113	5500	0.0113	2.0545
		T (°C)	30	5500.0081	5500	0.0081	1.4727
		T (°C)	40	5500.0115	5500	0.0115	2.0909
		T (°C)	50	5500.0113	5500	0.0113	2.0545
		T (°C)	60	5500.0010	5500	0.0010	0.1818
		T (°C)	70	5500.0068	5500	0.0068	1.2364
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)	AC 120	5580.0109	5580	0.0109	1.9534
		V max (V)	AC 138	5580.0056	5580	0.0056	1.0036
		V min (V)	AC 102	5580.0114	5580	0.0114	2.0430
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)	AC 120	T (°C)	-20	5580.01350	5580	0.01350	2.4194
		T (°C)	-10	5580.00470	5580	0.00470	0.8423
		T (°C)	0	5580.00230	5580	0.00230	0.4122
		T (°C)	10	5580.00430	5580	0.00430	0.7706
		T (°C)	20	5580.01150	5580	0.01150	2.0609
		T (°C)	30	5580.00220	5580	0.00220	0.3943
		T (°C)	40	5580.00600	5580	0.00600	1.0753
		T (°C)	50	5580.00810	5580	0.00810	1.4516
		T (°C)	60	5580.00620	5580	0.00620	1.1111
		T (°C)	70	5580.00020	5580	0.00020	0.0358
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)	AC 120	5700.0118	5700	0.0118	2.0702
		V max (V)	AC 138	5700.0028	5700	0.0028	0.4912
		V min (V)	AC 102	5700.0076	5700	0.0076	1.3333
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)	AC 120	T (°C)	-20	5700.0094	5700	0.0094	1.6491
		T (°C)	-10	5700.0072	5700	0.0072	1.2632
		T (°C)	0	5700.0077	5700	0.0077	1.3509
		T (°C)	10	5700.0066	5700	0.0066	1.1579
		T (°C)	20	5700.0040	5700	0.0040	0.7018
		T (°C)	30	5700.0067	5700	0.0067	1.1754
		T (°C)	40	5700.0065	5700	0.0065	1.1404
		T (°C)	50	5700.0076	5700	0.0076	1.3333
		T (°C)	60	5700.0087	5700	0.0087	1.5263
		T (°C)	70	5700.0033	5700	0.0033	0.5789
Limits				5500-5700 MHz			
Result				Complies			

Temperature:	26 °C	Relative Humidity:	54%
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)	AC 120	5745.00890	5745	0.00890	1.5492
		V max (V)	AC 138	5745.01330	5745	0.01330	2.3151
		V min (V)	AC 102	5745.01190	5745	0.01190	2.0714
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)	AC 120	T (°C)	-20	5745.00600	5745	0.00600	1.0444
		T (°C)	-10	5745.00900	5745	0.00900	1.5666
		T (°C)	0	5745.00660	5745	0.00660	1.1488
		T (°C)	10	5745.01210	5745	0.01210	2.1062
		T (°C)	20	5745.00090	5745	0.00090	0.1567
		T (°C)	30	5745.00250	5745	0.00250	0.4352
		T (°C)	40	5745.00770	5745	0.00770	1.3403
		T (°C)	50	5745.01160	5745	0.01160	2.0191
		T (°C)	60	5745.00720	5745	0.00720	1.2533
		T (°C)	70	5745.01020	5745	0.01020	1.7755
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)	AC 120	5785.01170	5785	0.01170	2.0225
		V max (V)	AC 138	5785.00780	5785	0.00780	1.3483
		V min (V)	AC 102	5785.00550	5785	0.00550	0.9507
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)	AC 120	T (°C)	-20	5785.00080	5785	0.00080	0.1383
		T (°C)	-10	5785.00430	5785	0.00430	0.7433
		T (°C)	0	5785.00830	5785	0.00830	1.4347
		T (°C)	10	5785.00450	5785	0.00450	0.7779
		T (°C)	20	5785.00420	5785	0.00420	0.7260
		T (°C)	30	5785.00600	5785	0.00600	1.0372
		T (°C)	40	5785.01160	5785	0.01160	2.0052
		T (°C)	50	5785.01170	5785	0.01170	2.0225
		T (°C)	60	5785.00310	5785	0.00310	0.5359
		T (°C)	70	5785.00240	5785	0.00240	0.4149
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)	AC 120	5825.01180	5825	0.01180	2.0258
		V max (V)	AC 138	5825.01020	5825	0.01020	1.7511
		V min (V)	AC 102	5825.00040	5825	0.00040	0.0687
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)	AC 120	T (°C)	-20	5825.01340	5825	0.01340	2.3004
		T (°C)	-10	5825.00460	5825	0.00460	0.7897
		T (°C)	0	5825.00230	5825	0.00230	0.3948
		T (°C)	10	5825.01000	5825	0.01000	1.7167
		T (°C)	20	5825.01270	5825	0.01270	2.1803
		T (°C)	30	5825.01090	5825	0.01090	1.8712
		T (°C)	40	5825.00660	5825	0.00660	1.1330
		T (°C)	50	5825.00840	5825	0.00840	1.4421
		T (°C)	60	5825.00940	5825	0.00940	1.6137
		T (°C)	70	5825.01100	5825	0.01100	1.8884
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 = $T_{on} / (T_{on} + T_{off})$

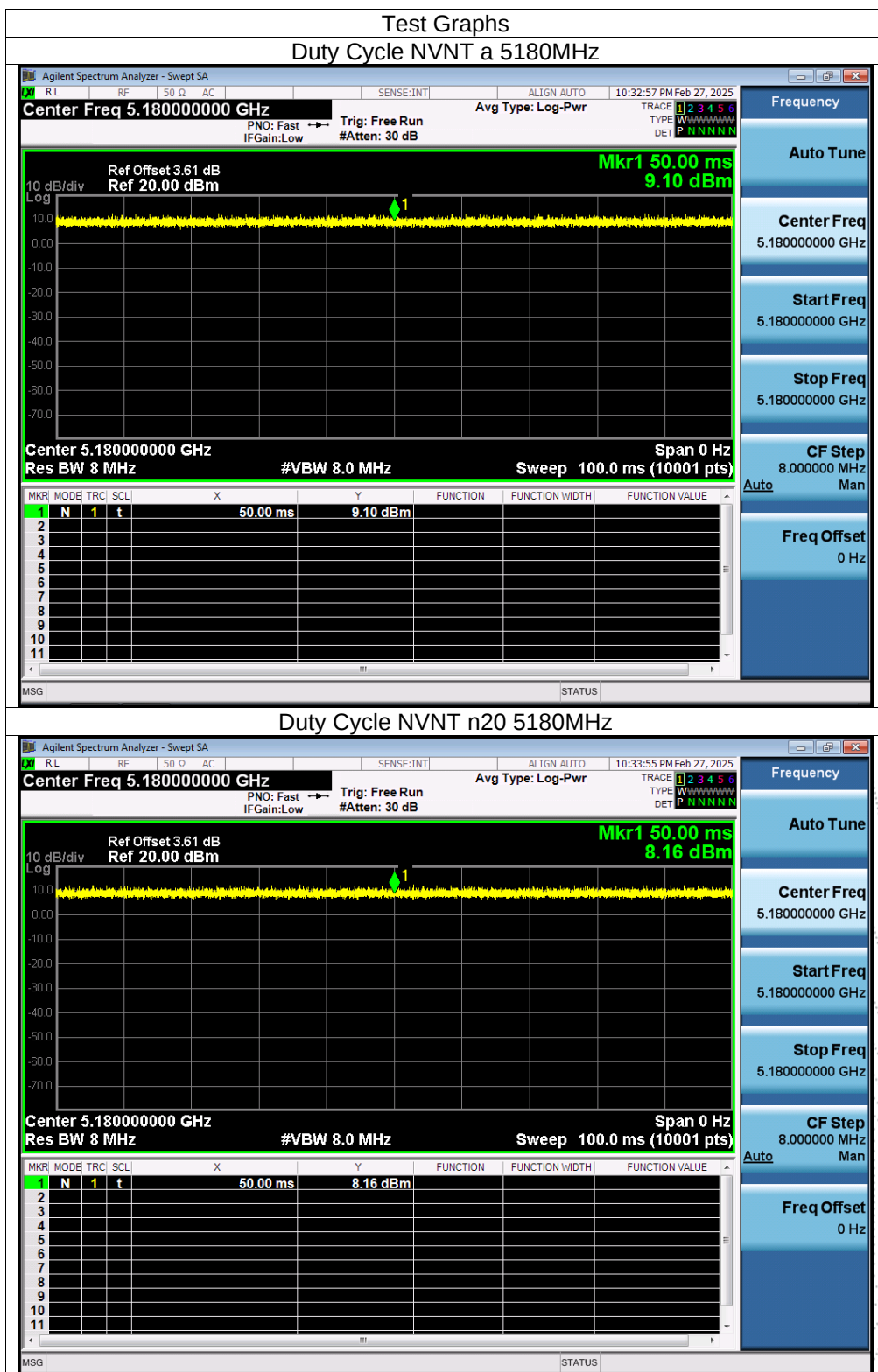
14.3 Test Procedure

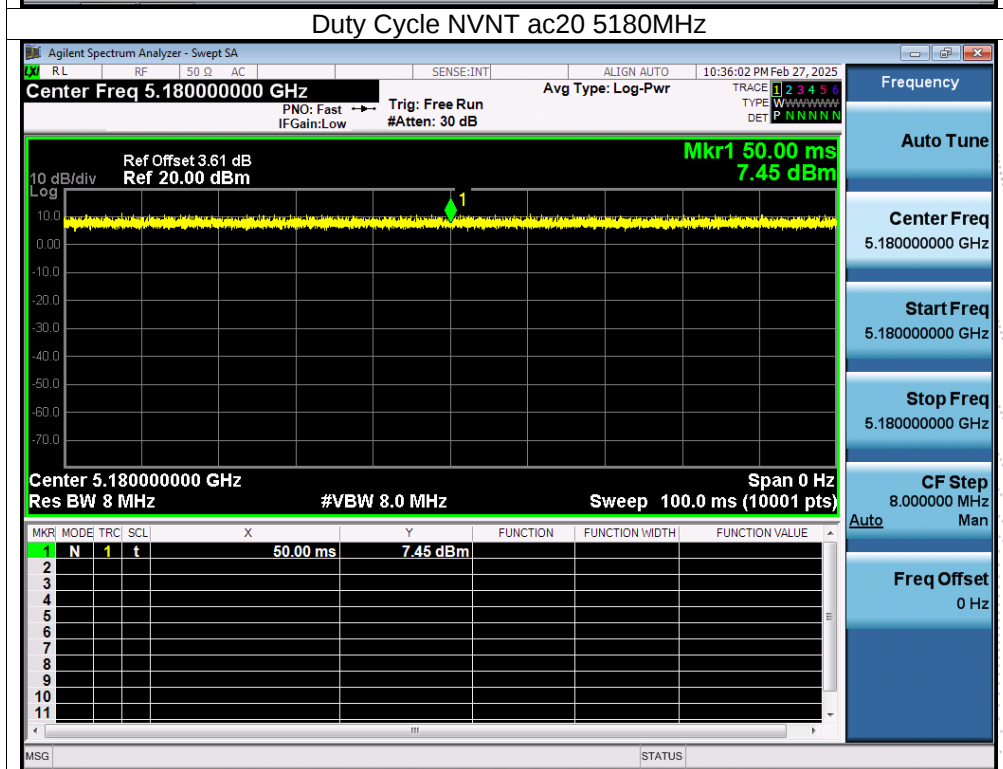
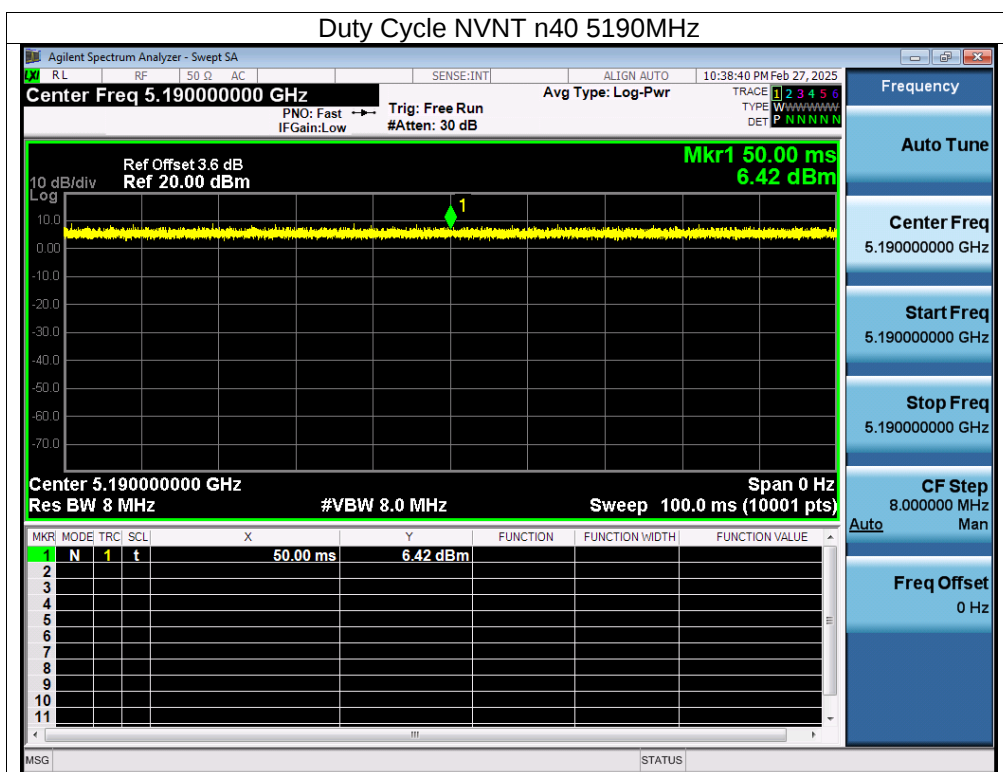
1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

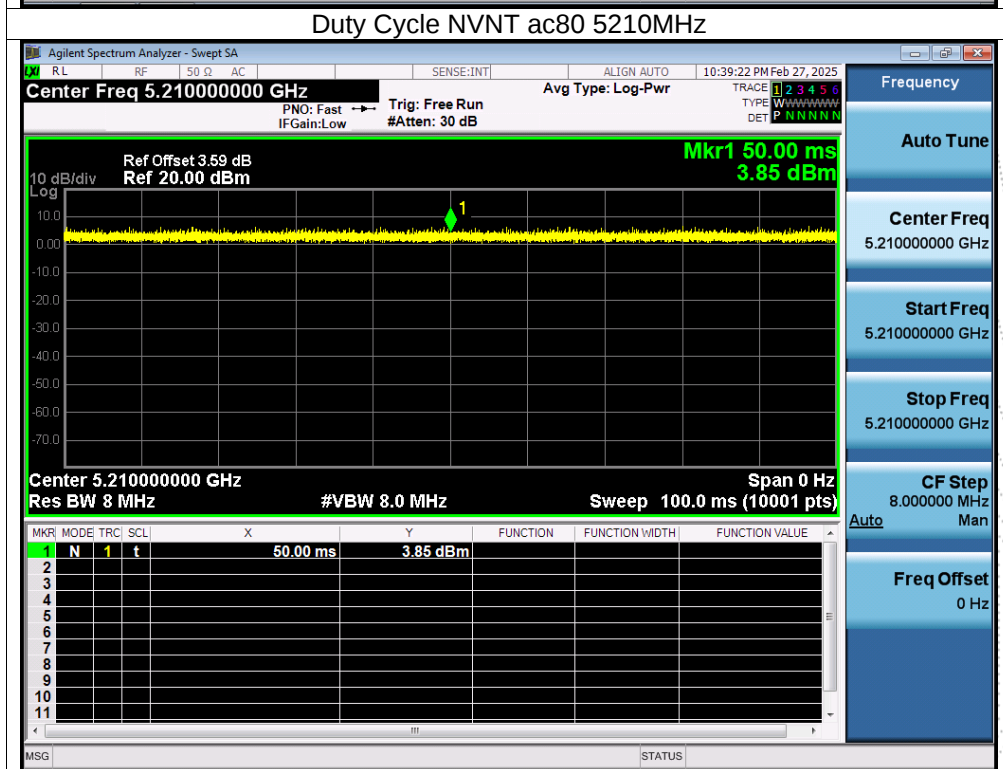
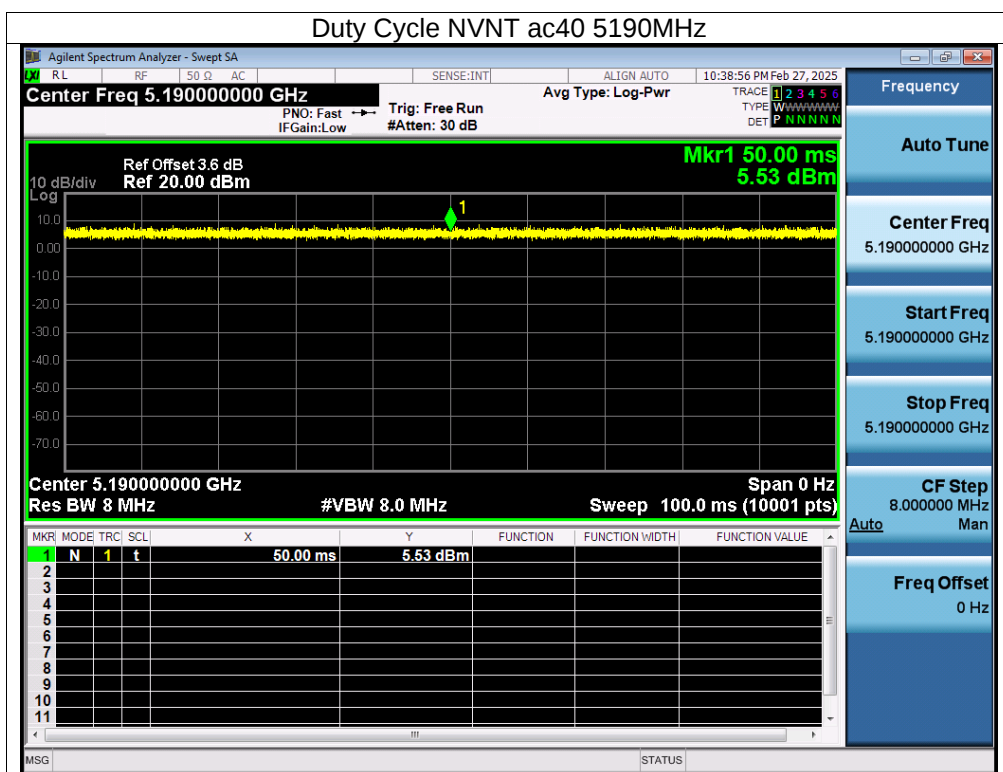
14.4 Test Result

5.1G
ANT A

Condition	Mode	Duty Cycle (%)
NVNT	a	100
NVNT	n20	100
NVNT	n40	100
NVNT	ac20	100
NVNT	ac40	100
NVNT	ac80	100

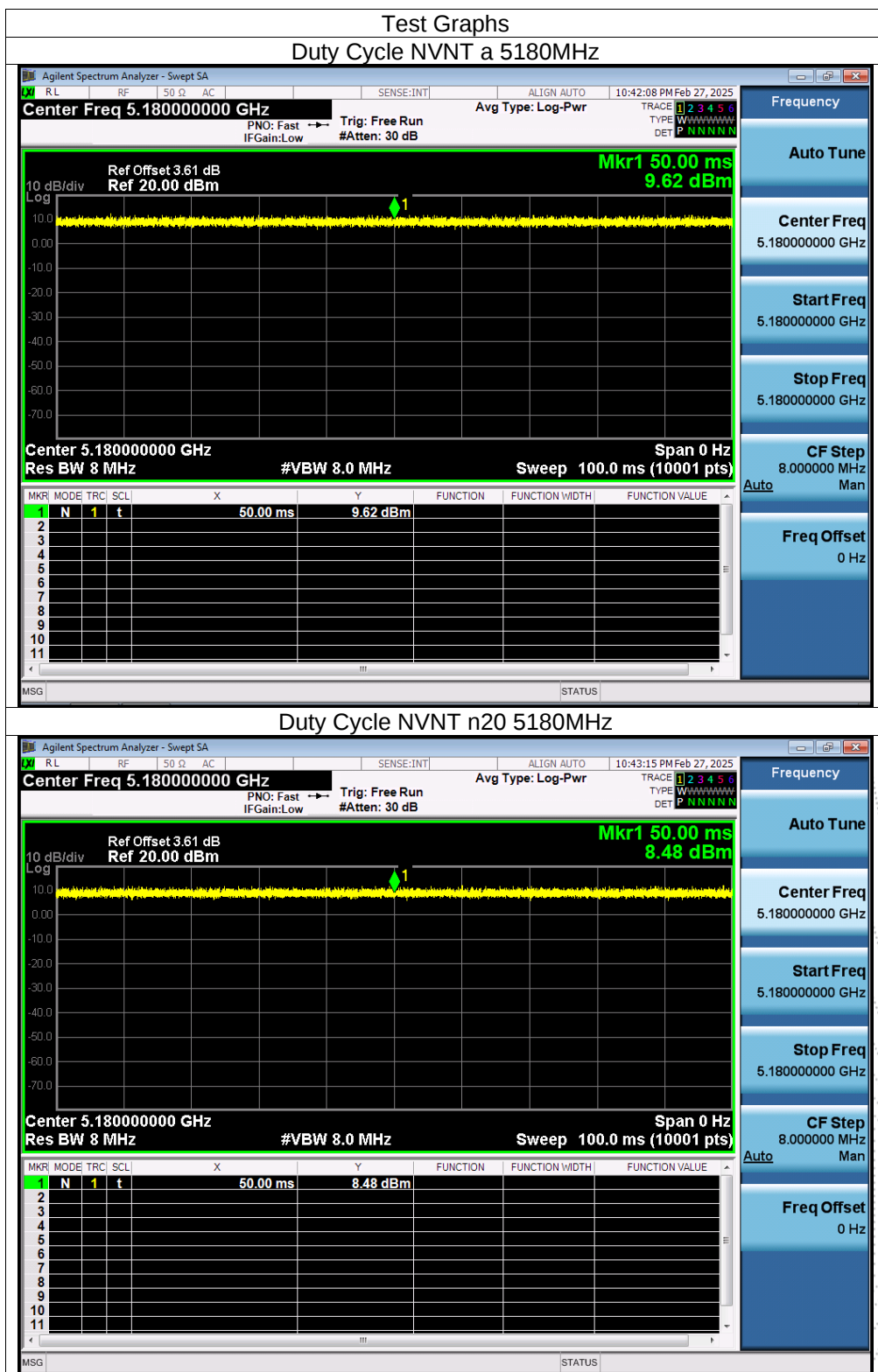


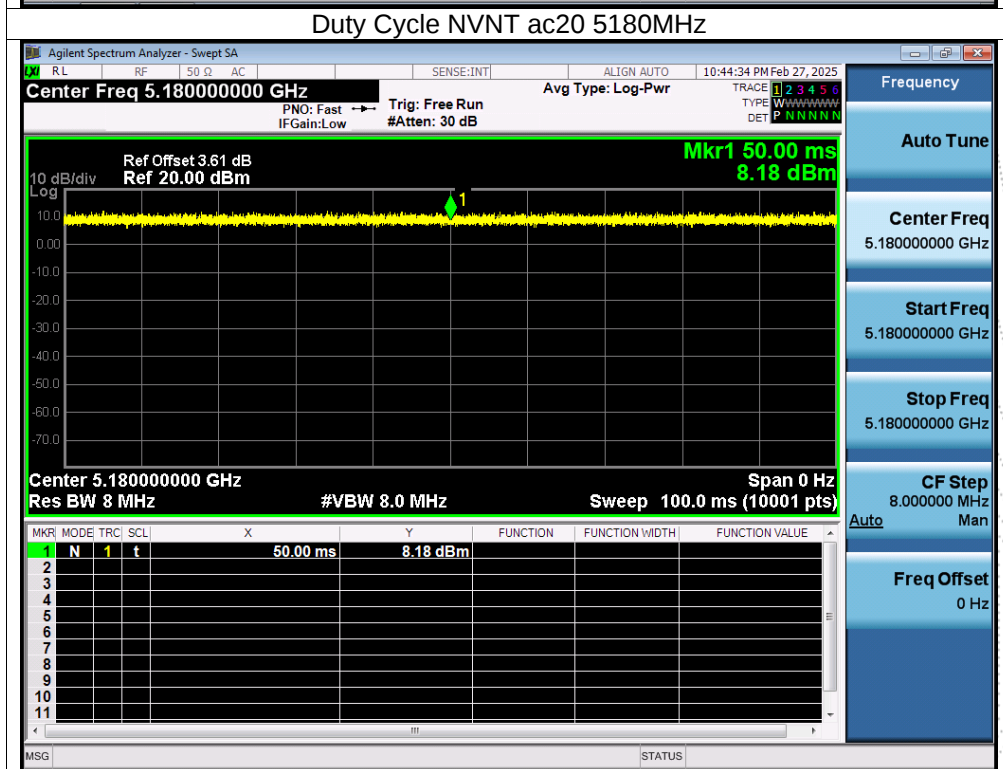
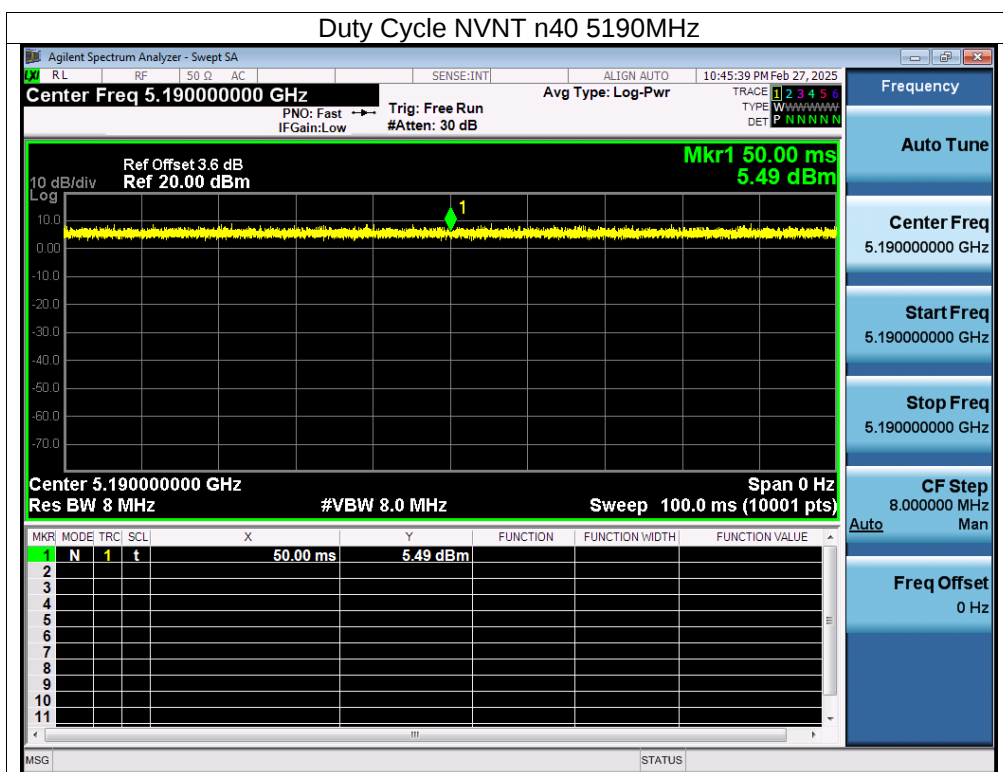


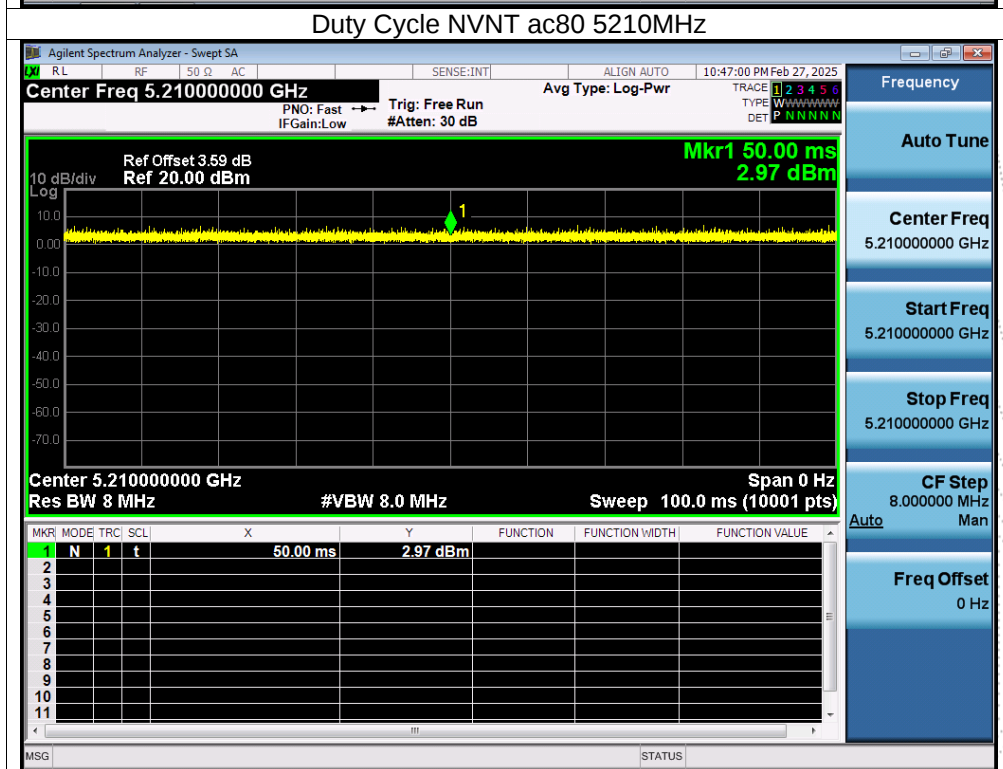
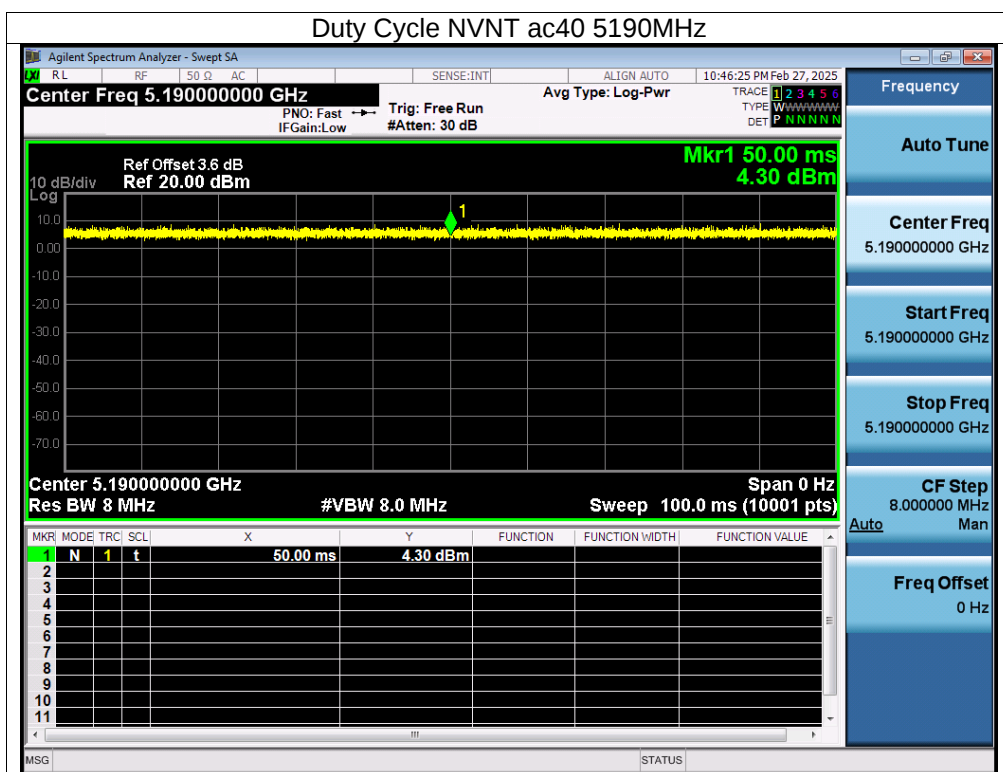


ANT B

Condition	Mode	Duty Cycle (%)
NVNT	a	100
NVNT	n20	100
NVNT	n40	100
NVNT	ac20	100
NVNT	ac40	100
NVNT	ac80	100







5.3G
ANT A

Condition	Mode	Duty Cycle (%)
NVNT	a	100
NVNT	n20	100
NVNT	n40	100
NVNT	ac20	100
NVNT	ac40	100
NVNT	ac80	100

