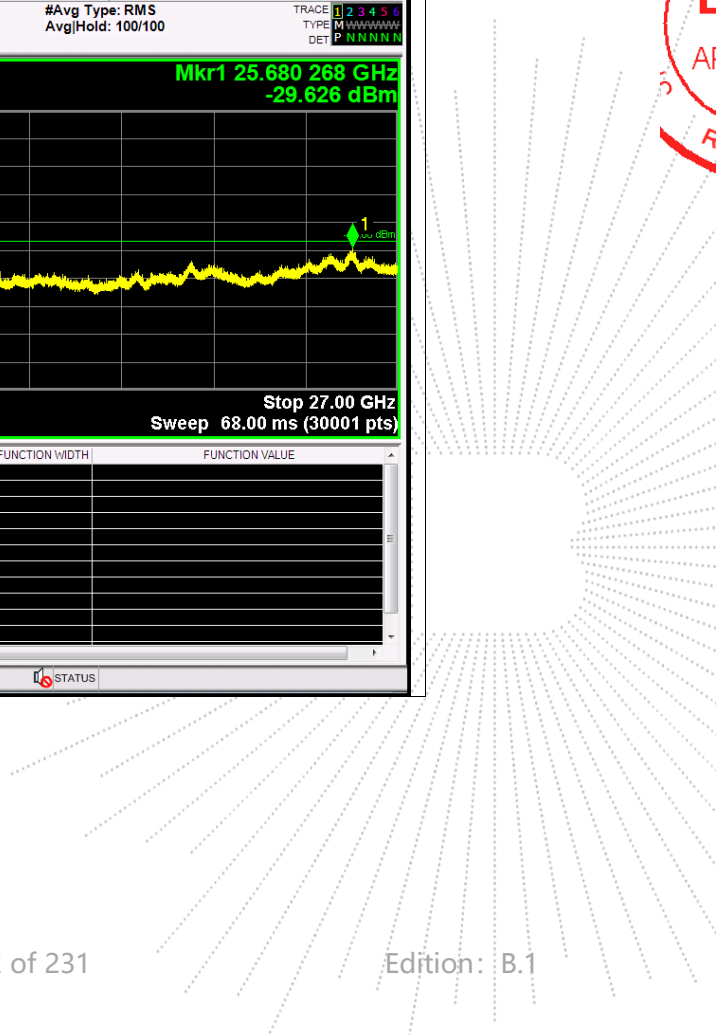
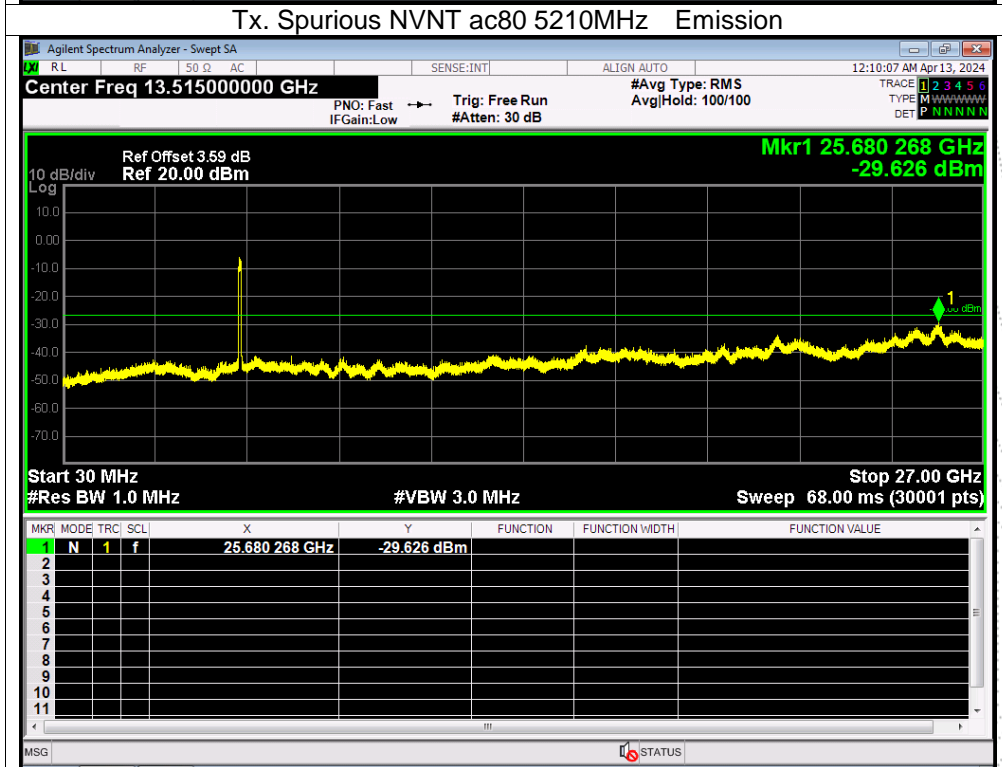
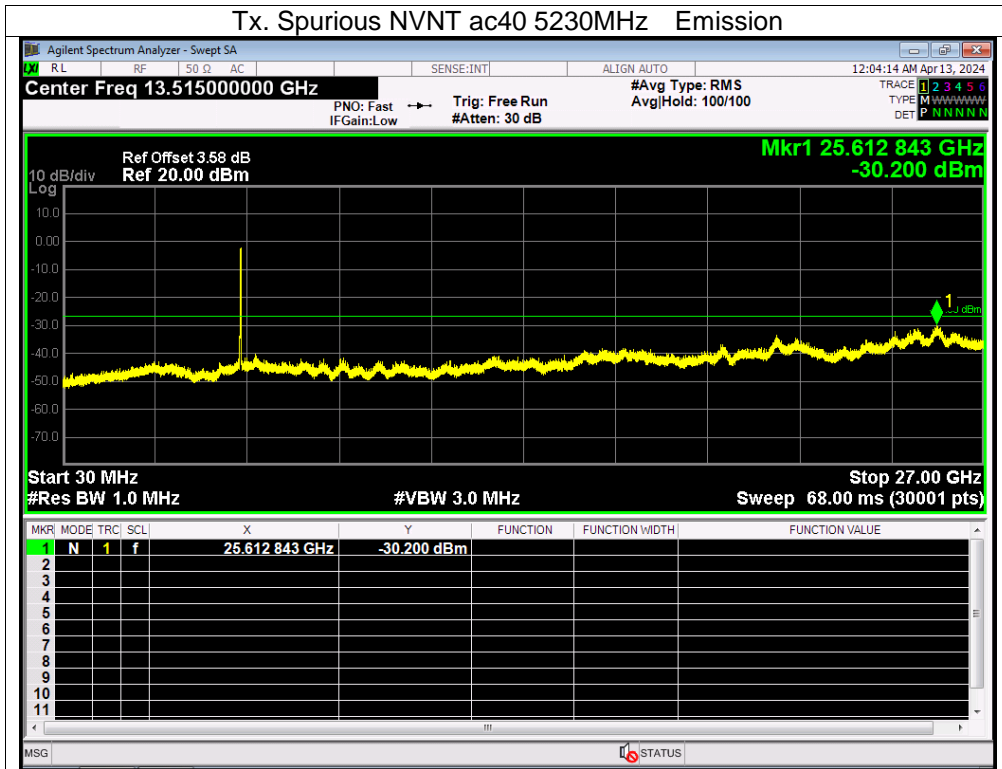
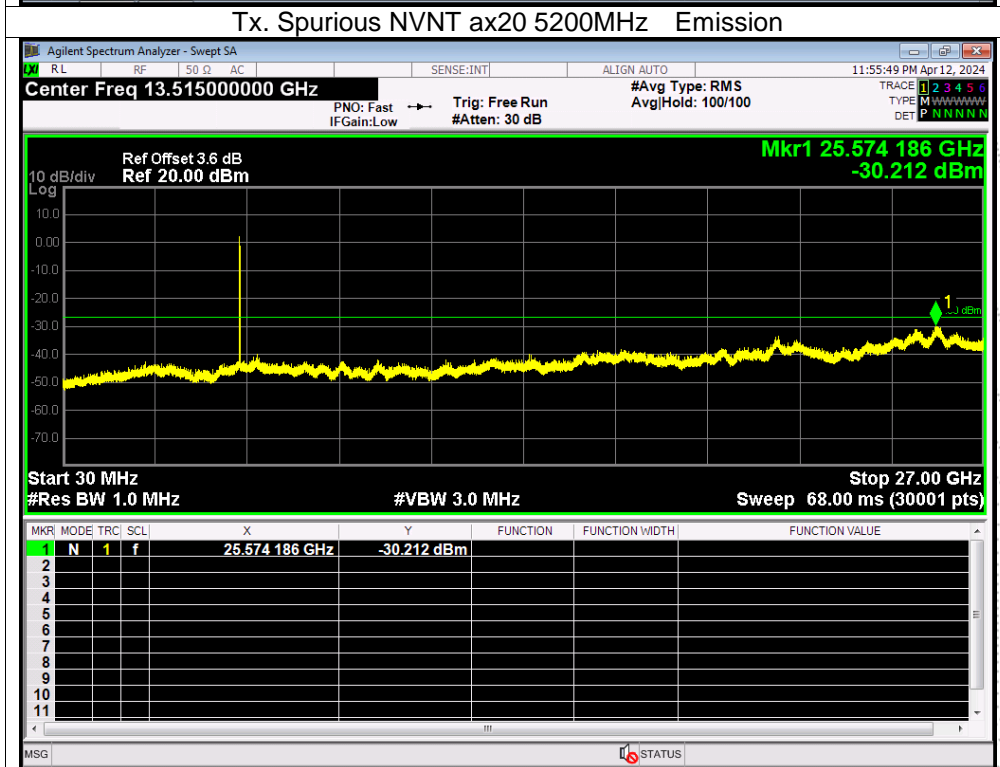
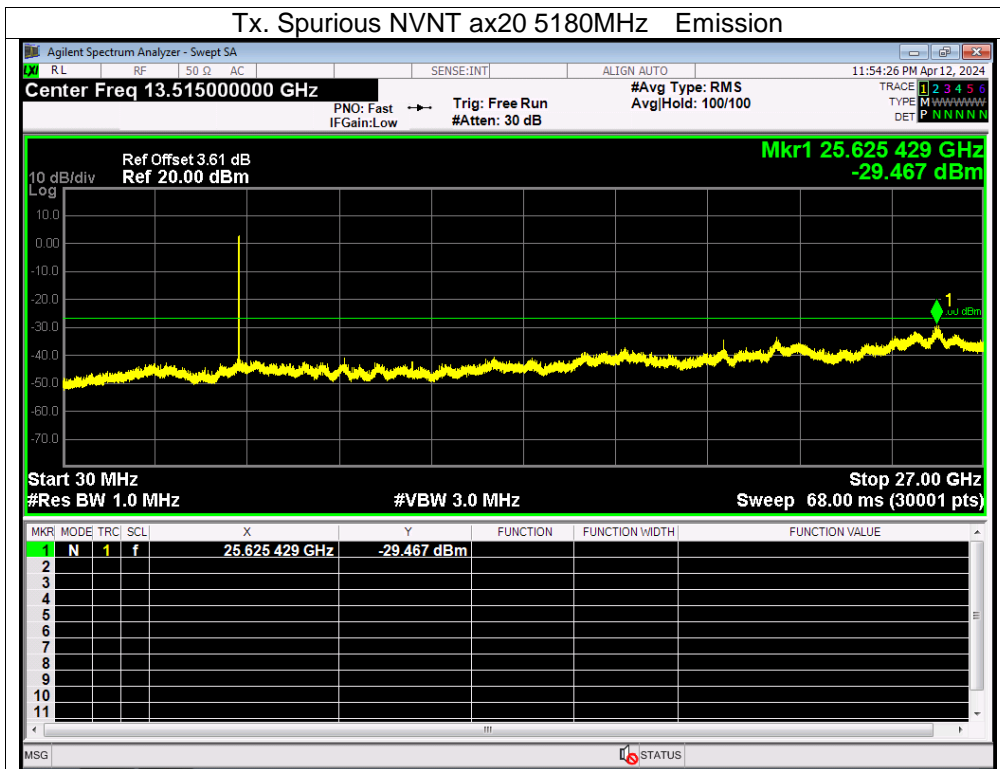
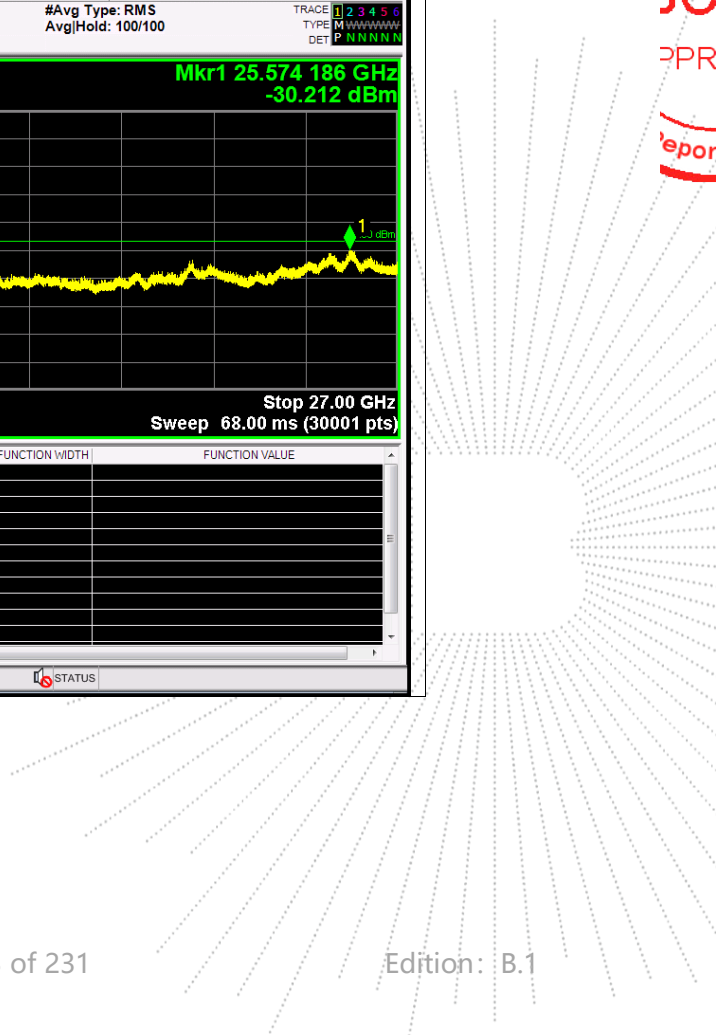


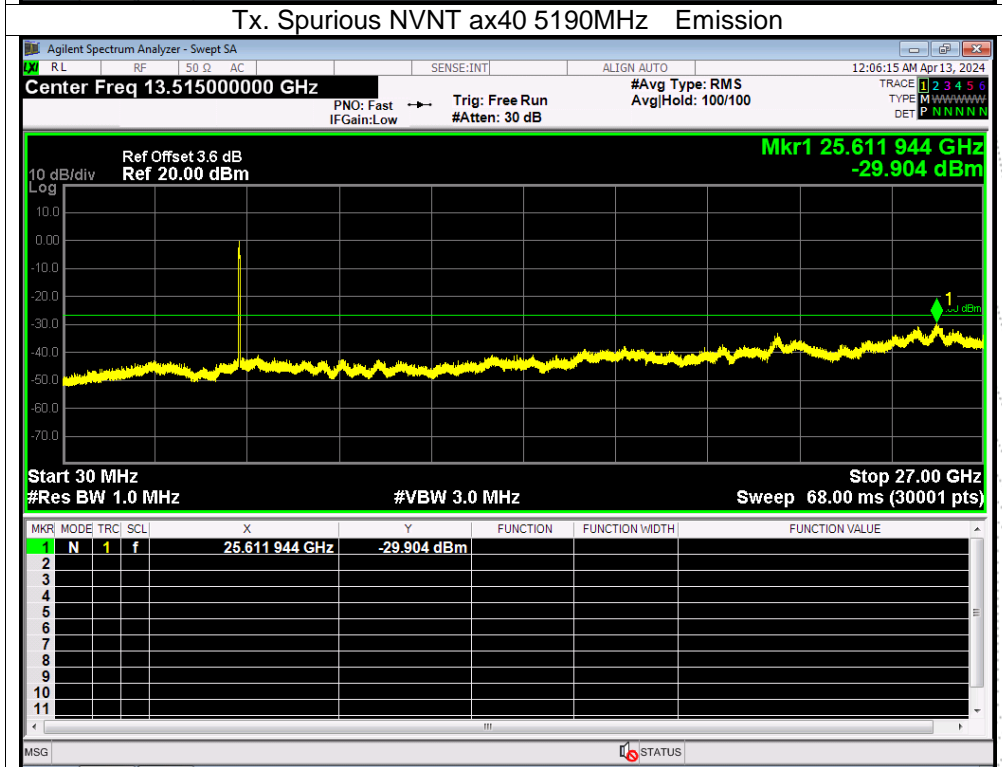
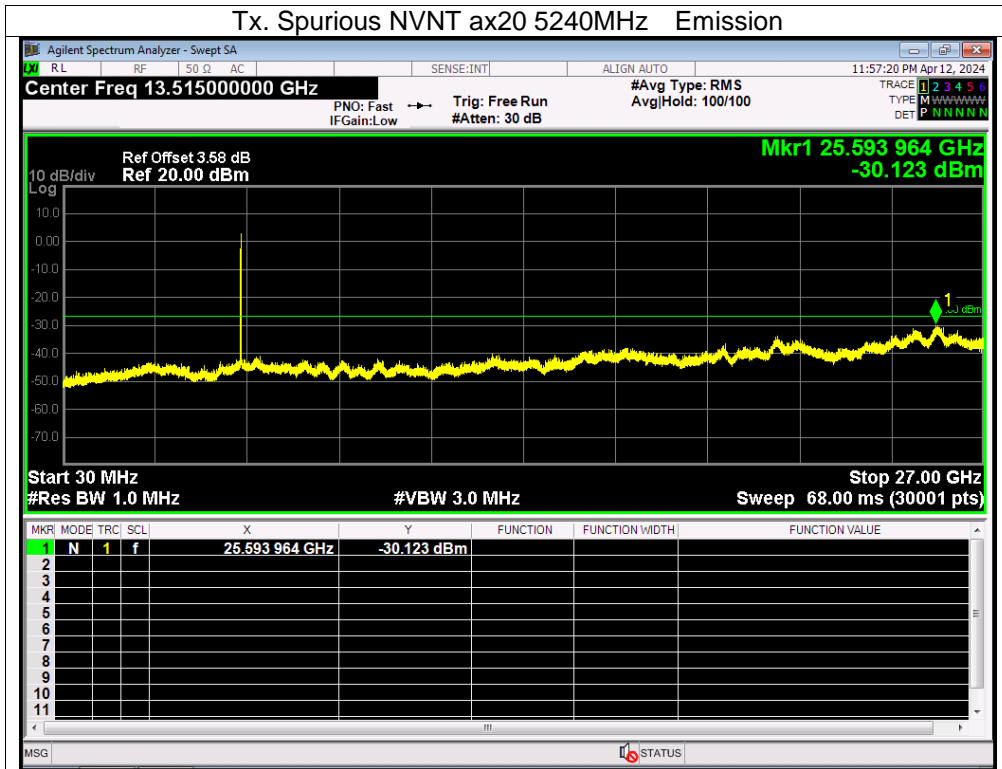
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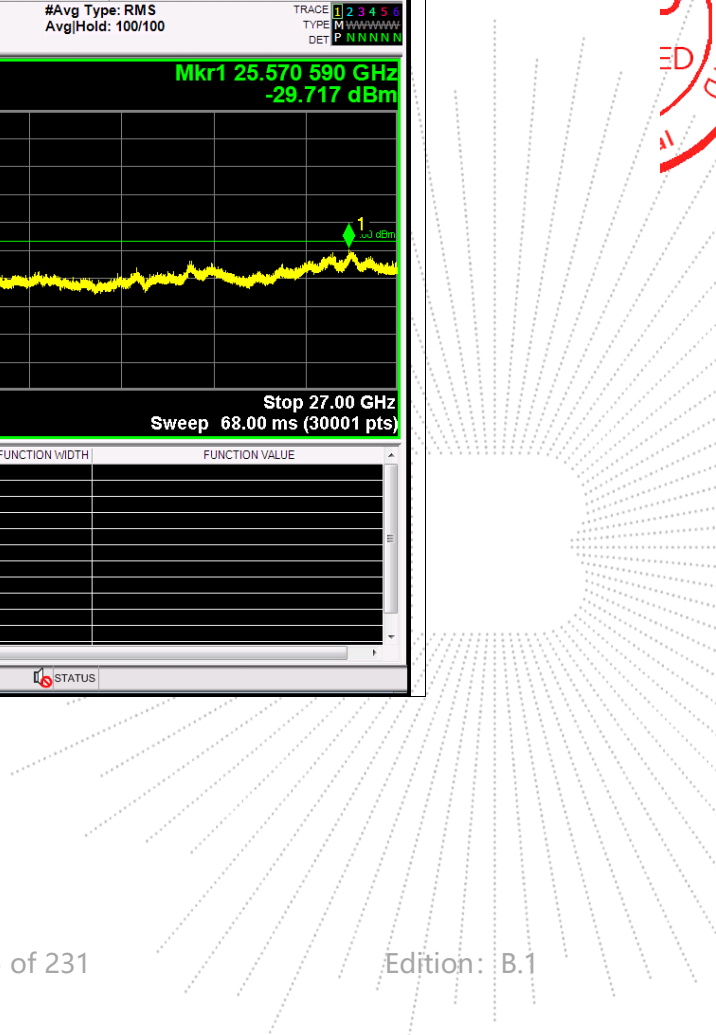
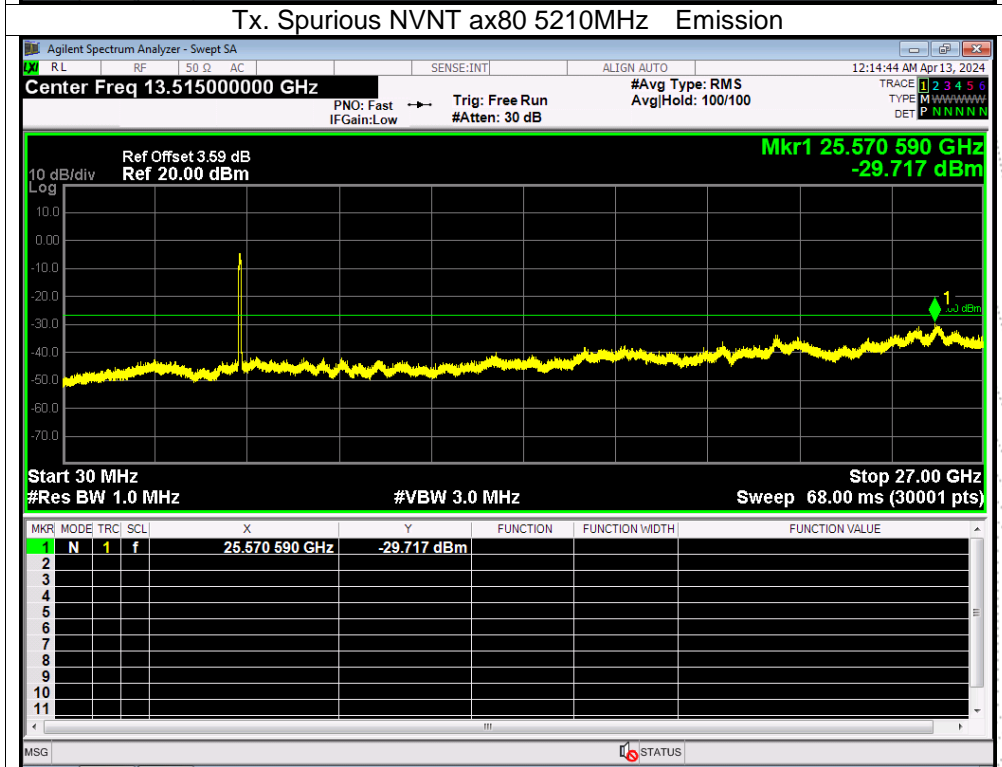
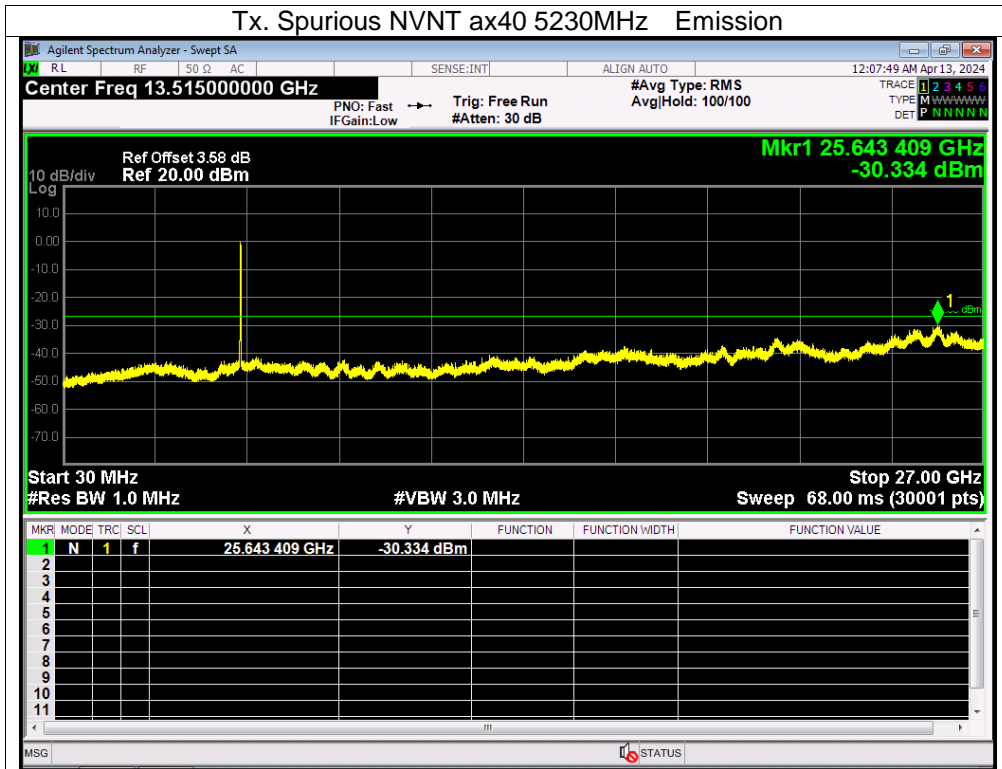




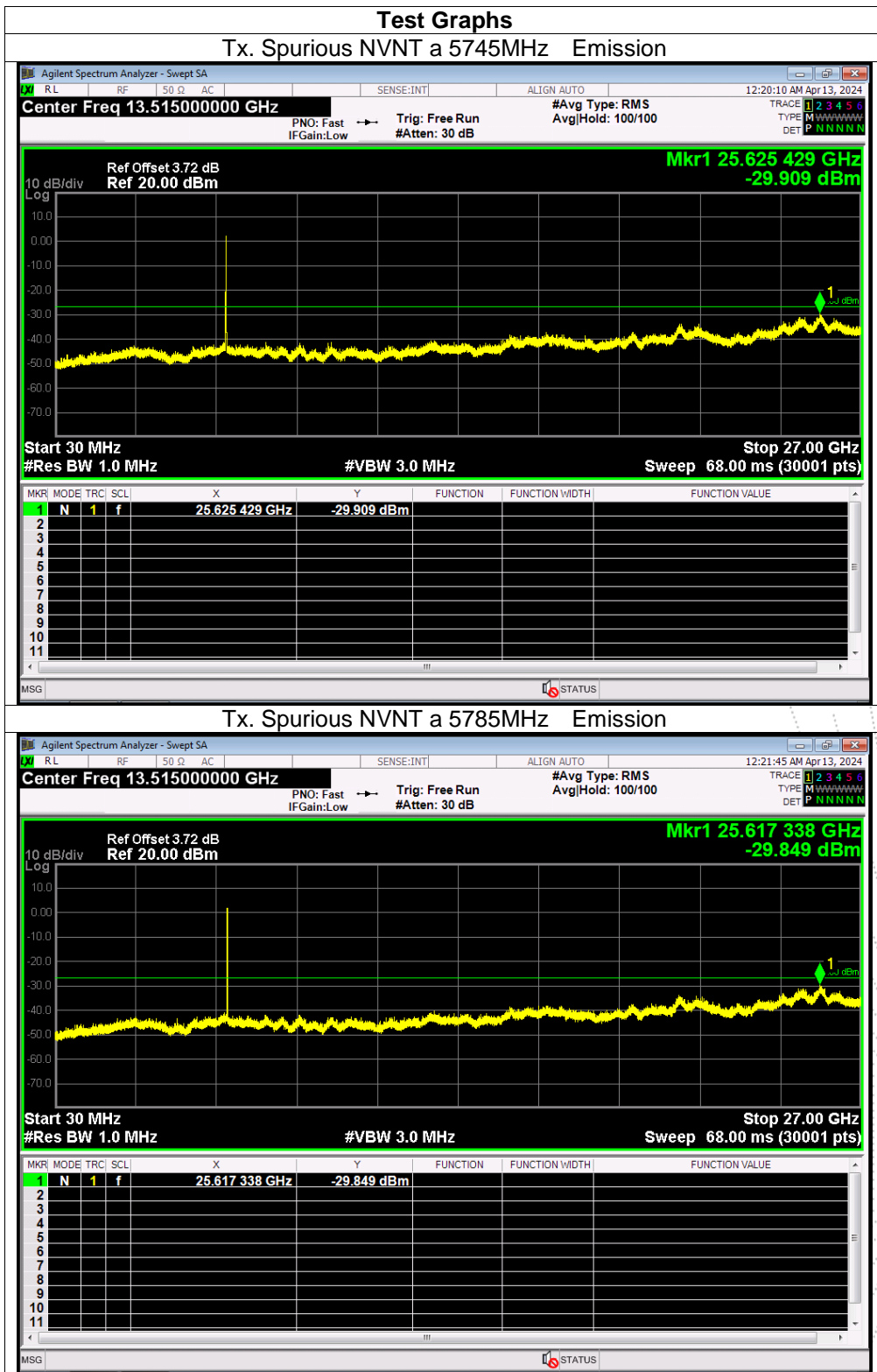
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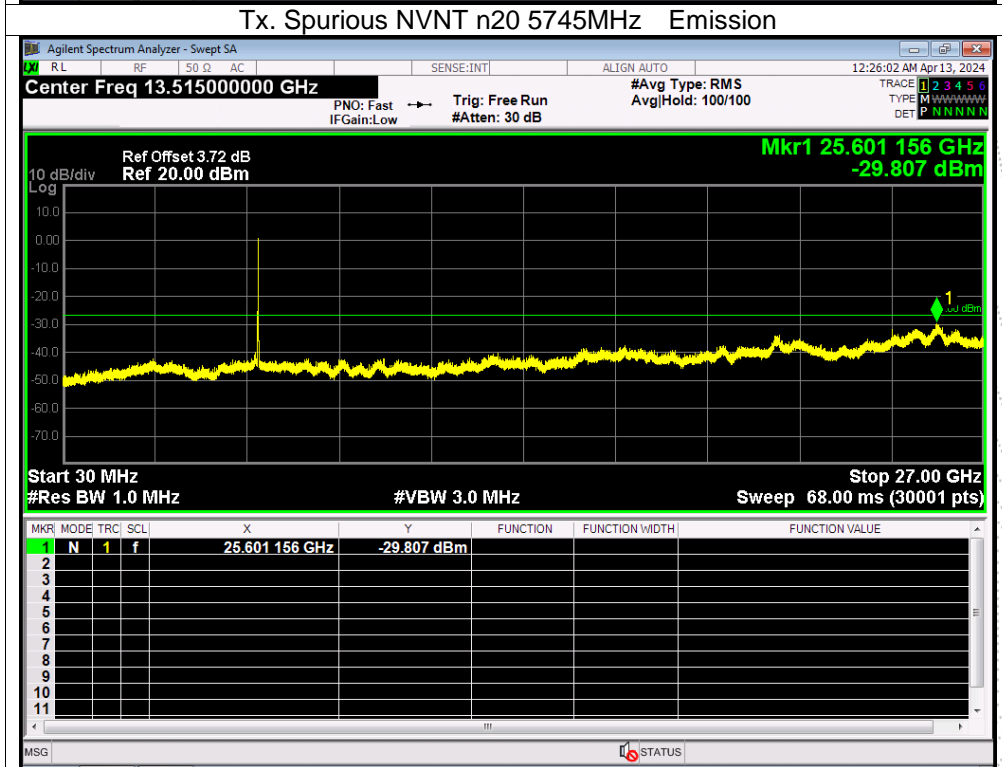
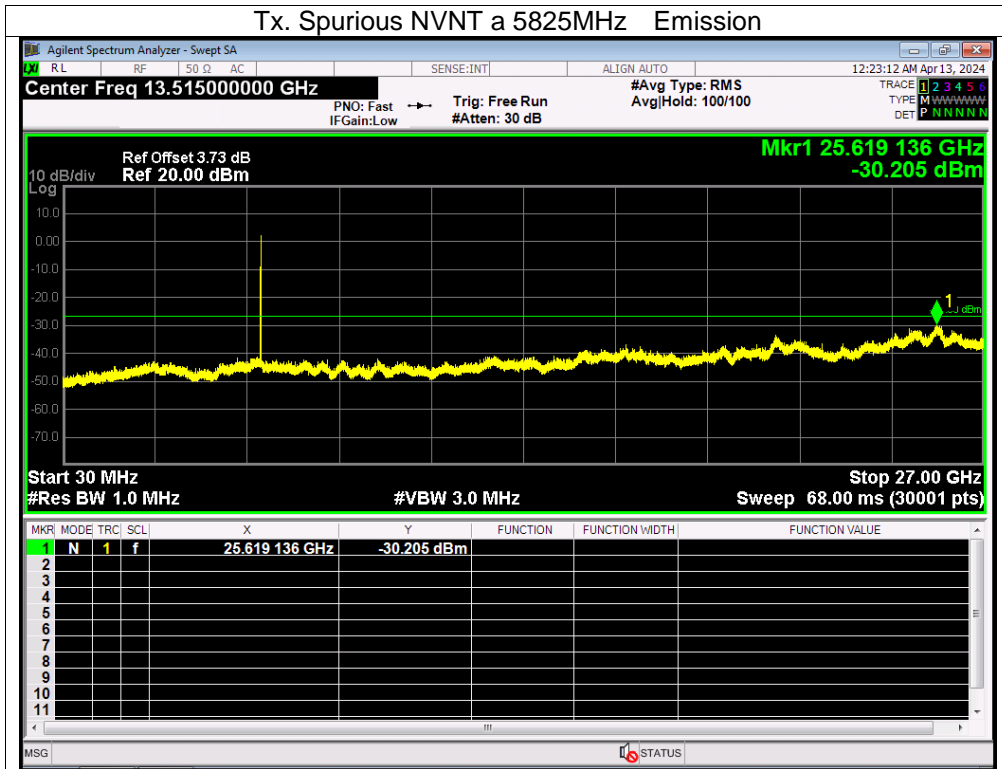




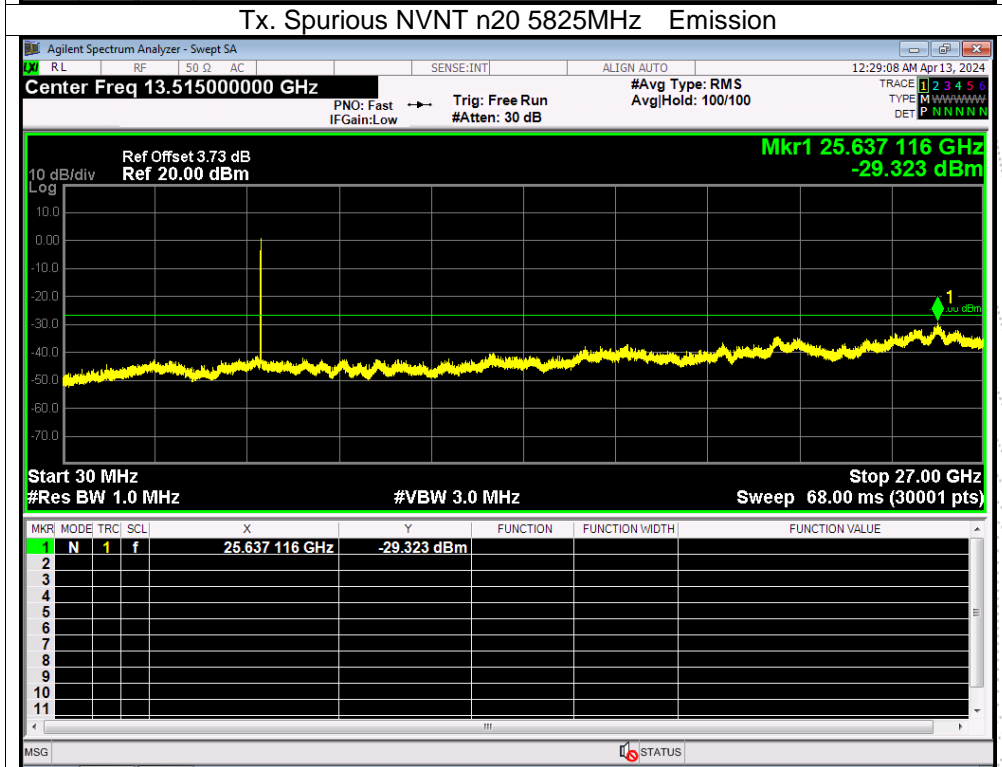
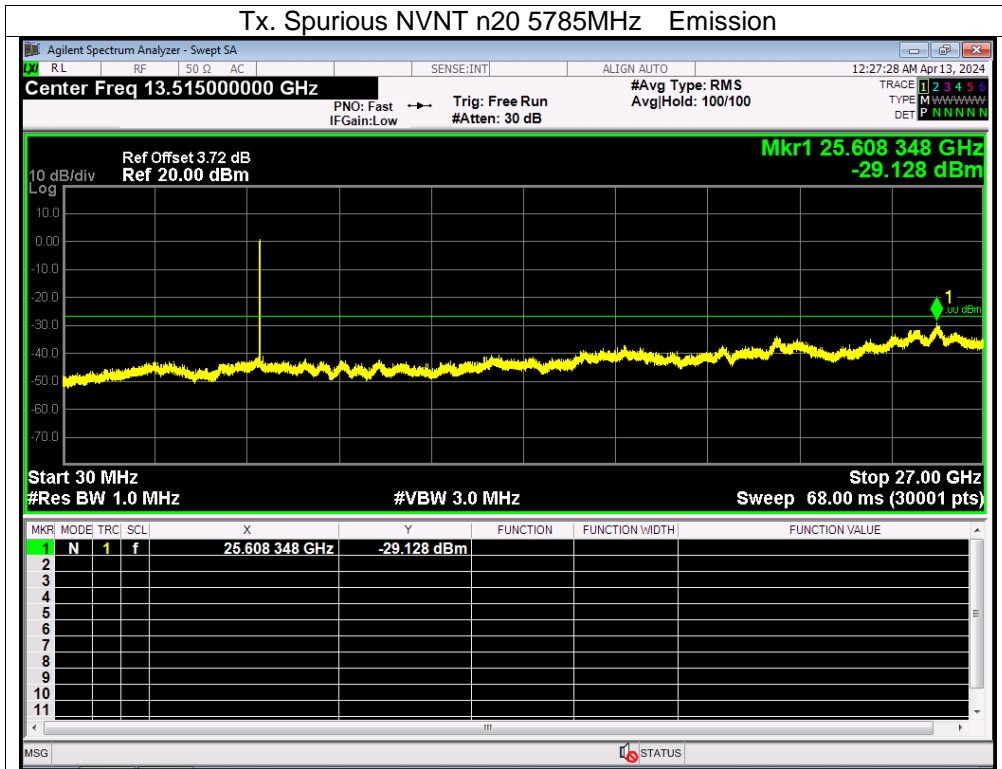
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A.
 Antenna A: 5745-58250MHz

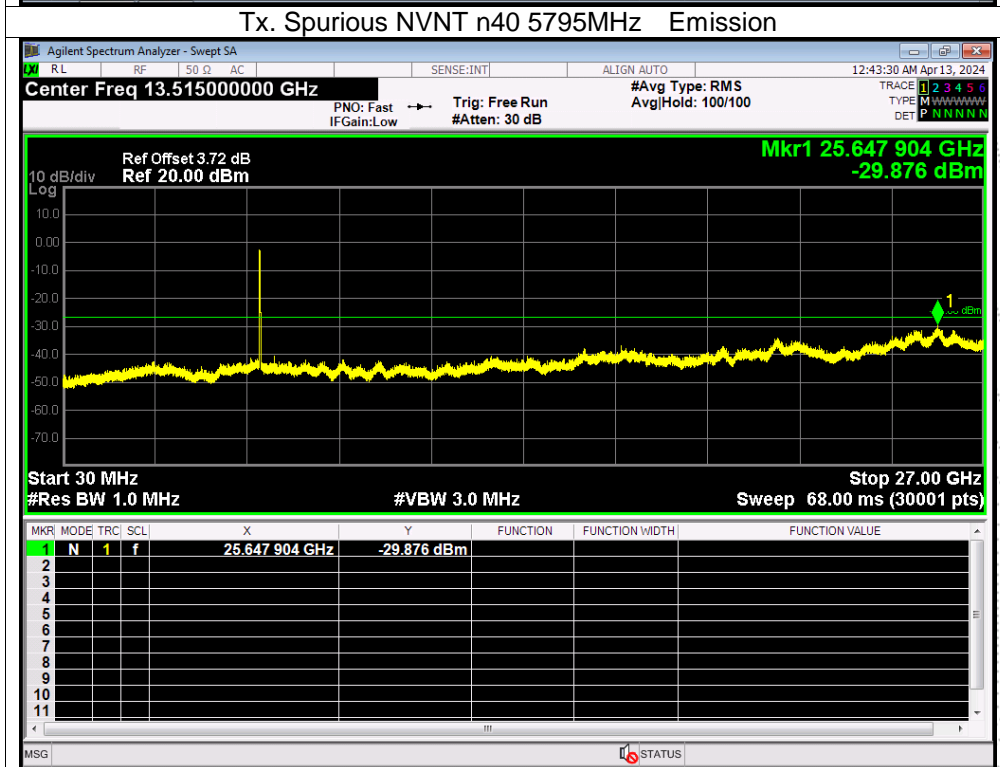
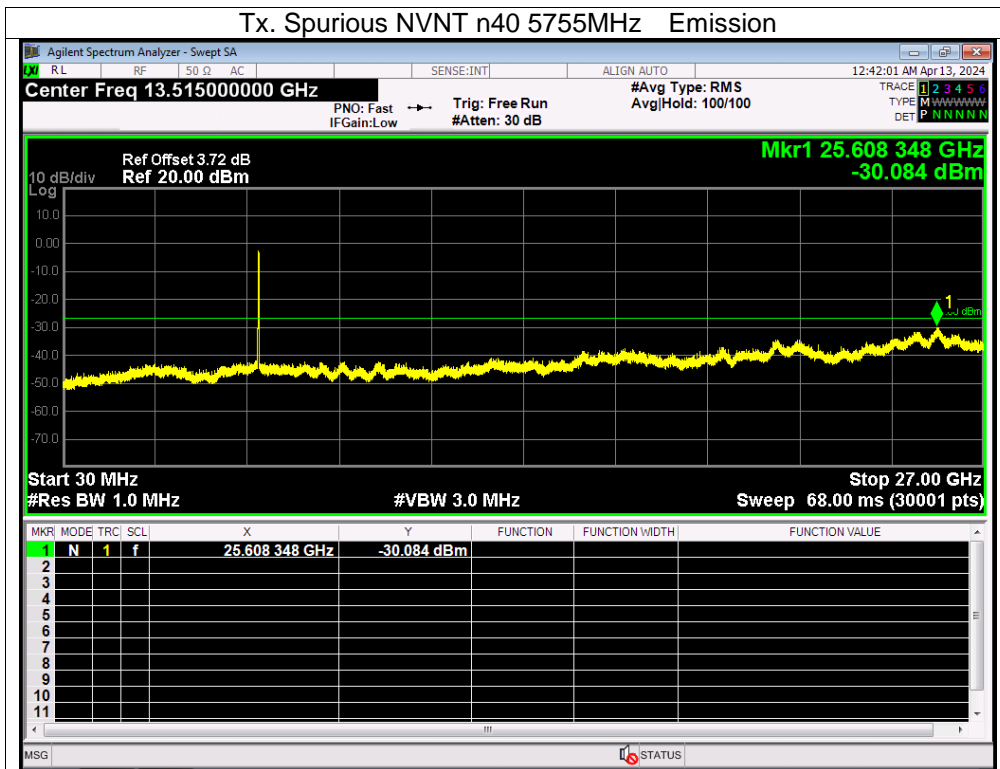


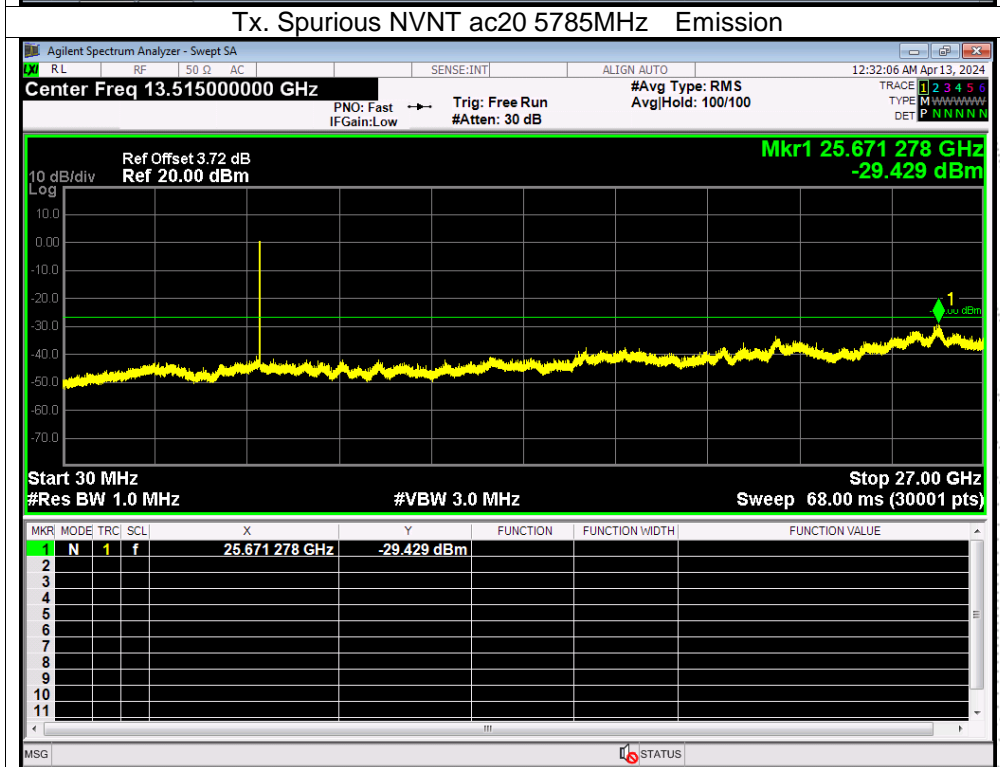
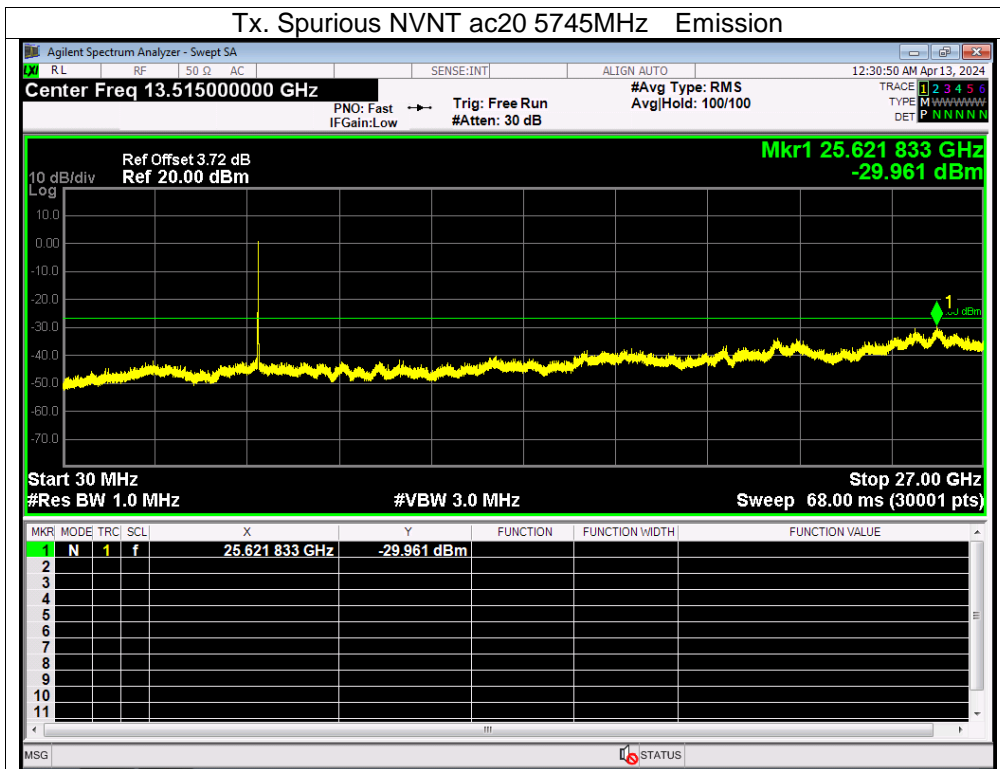
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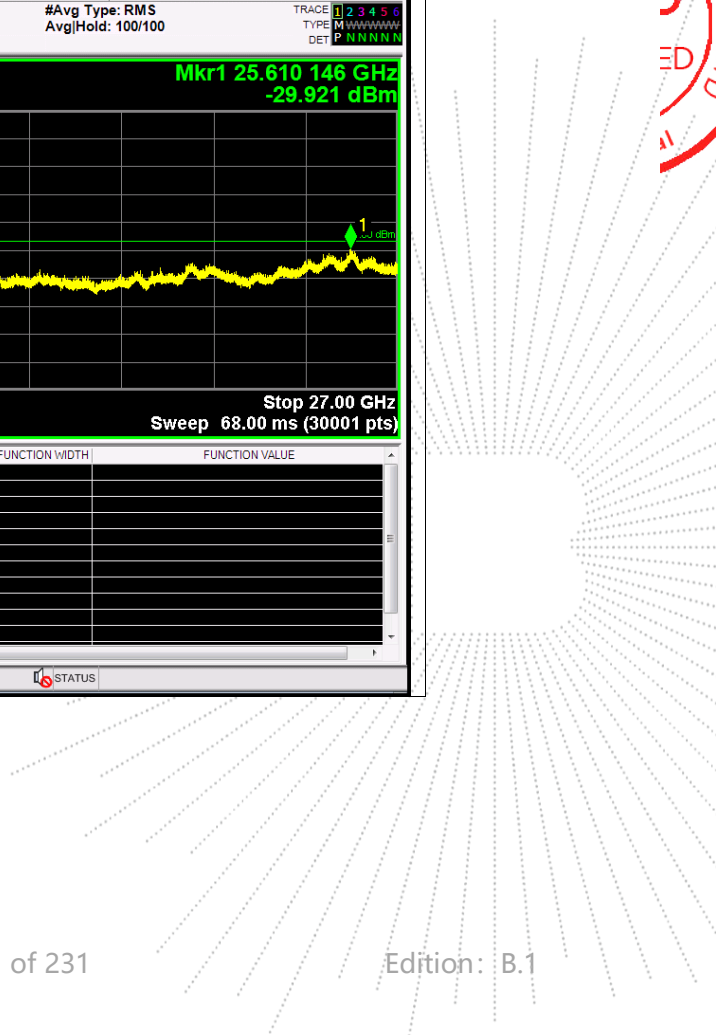
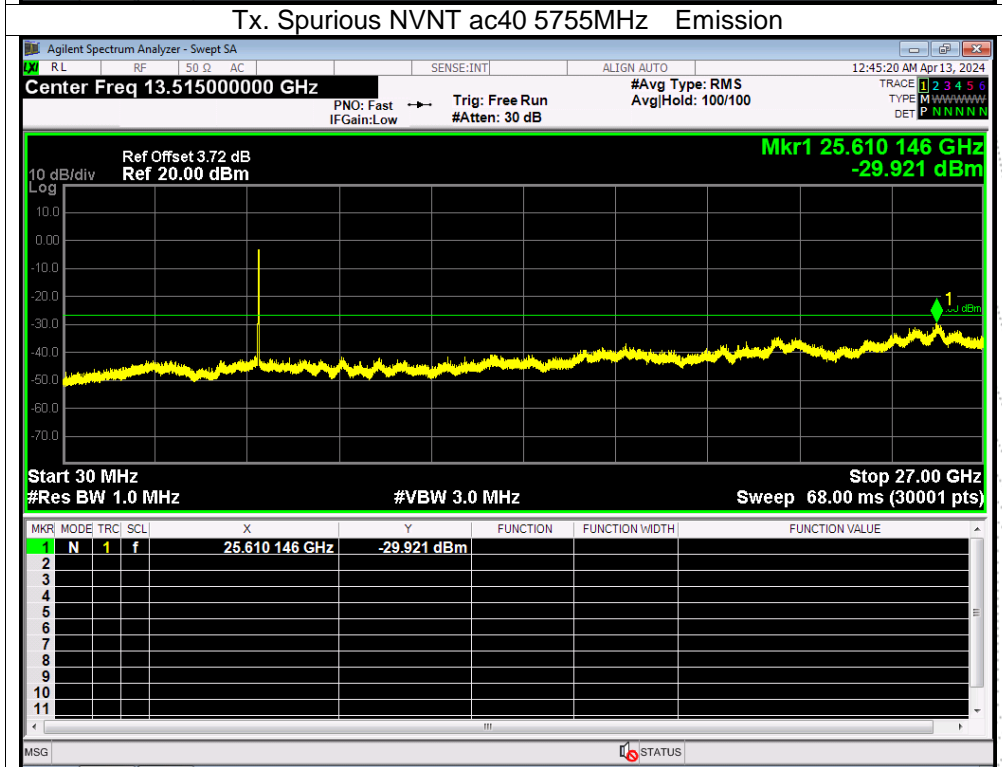
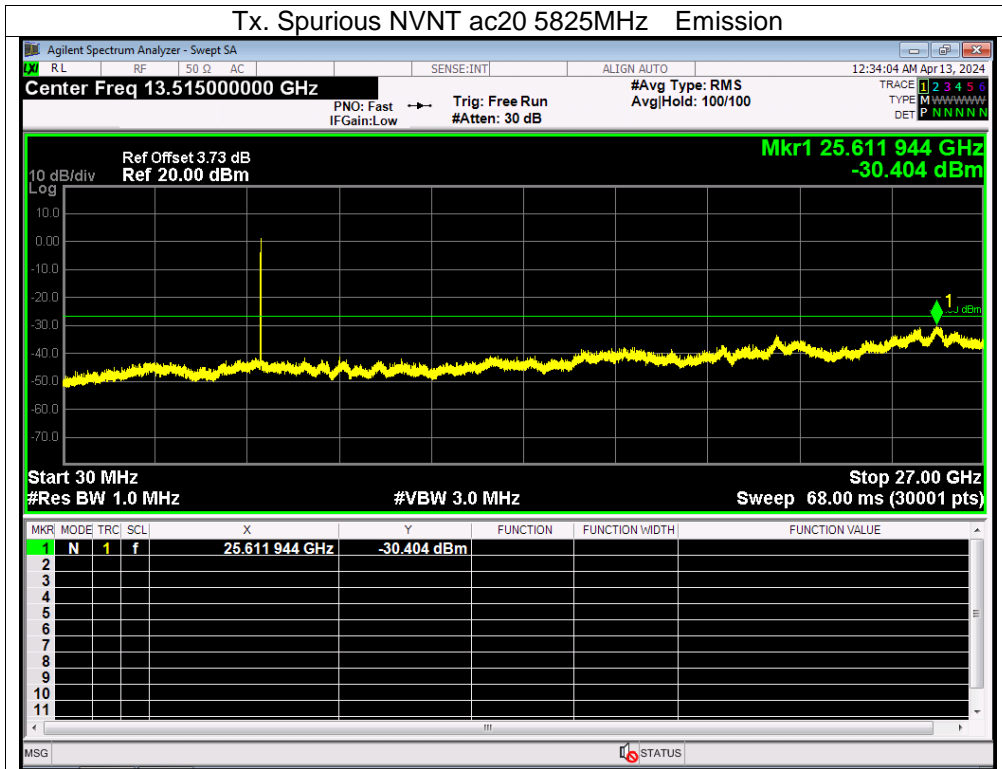


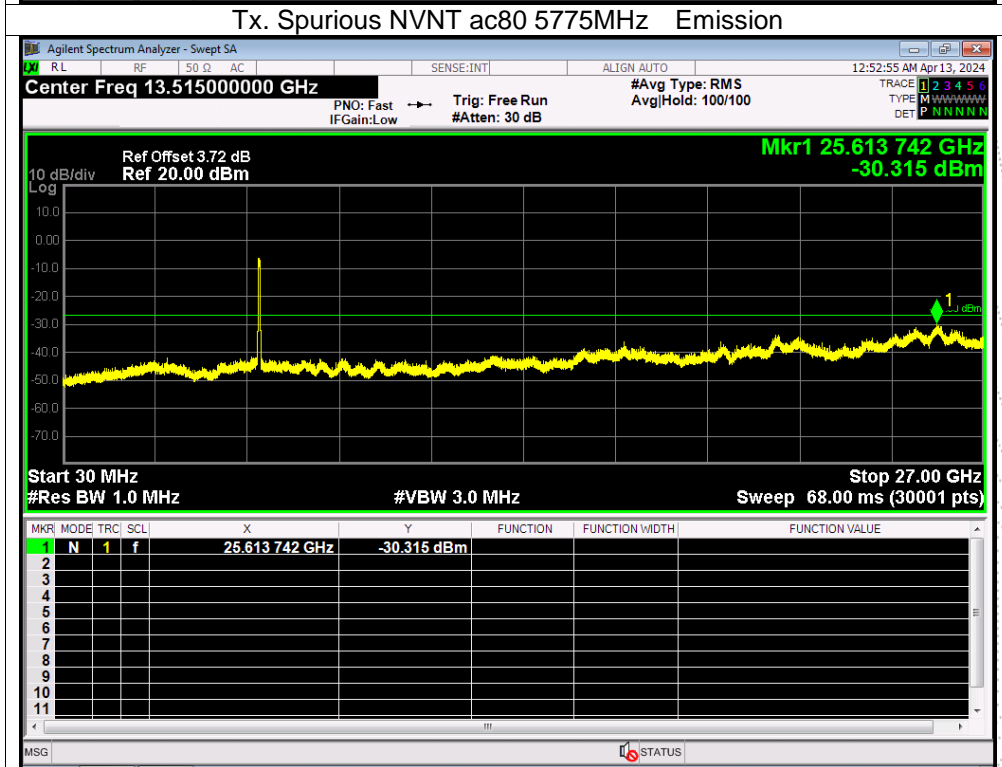
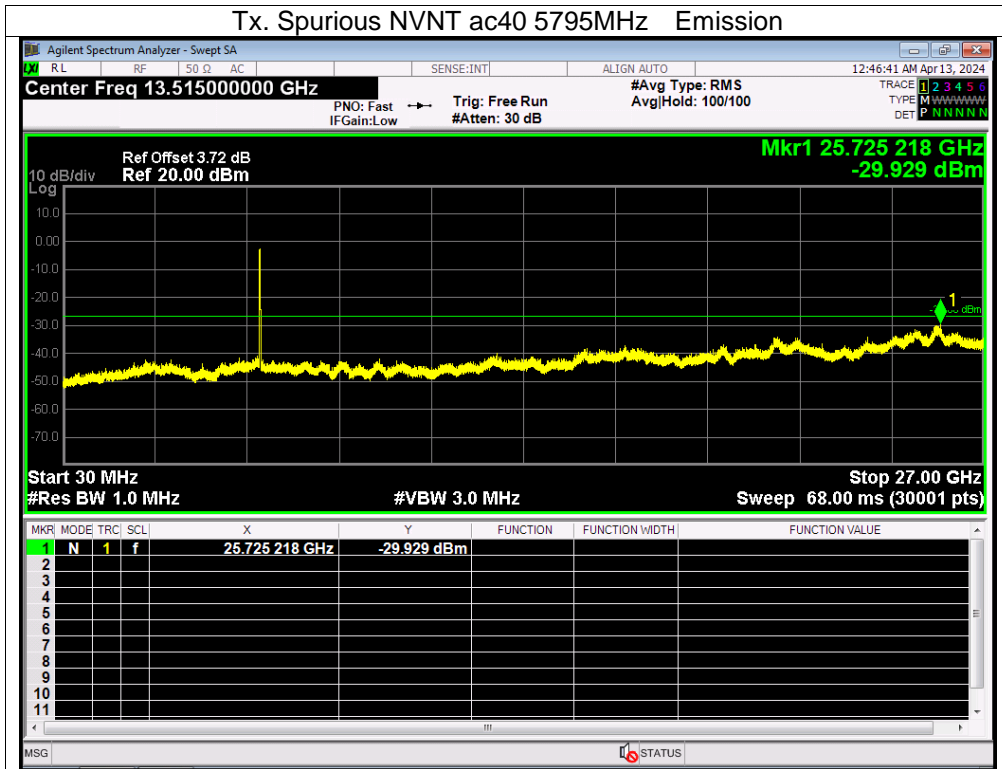
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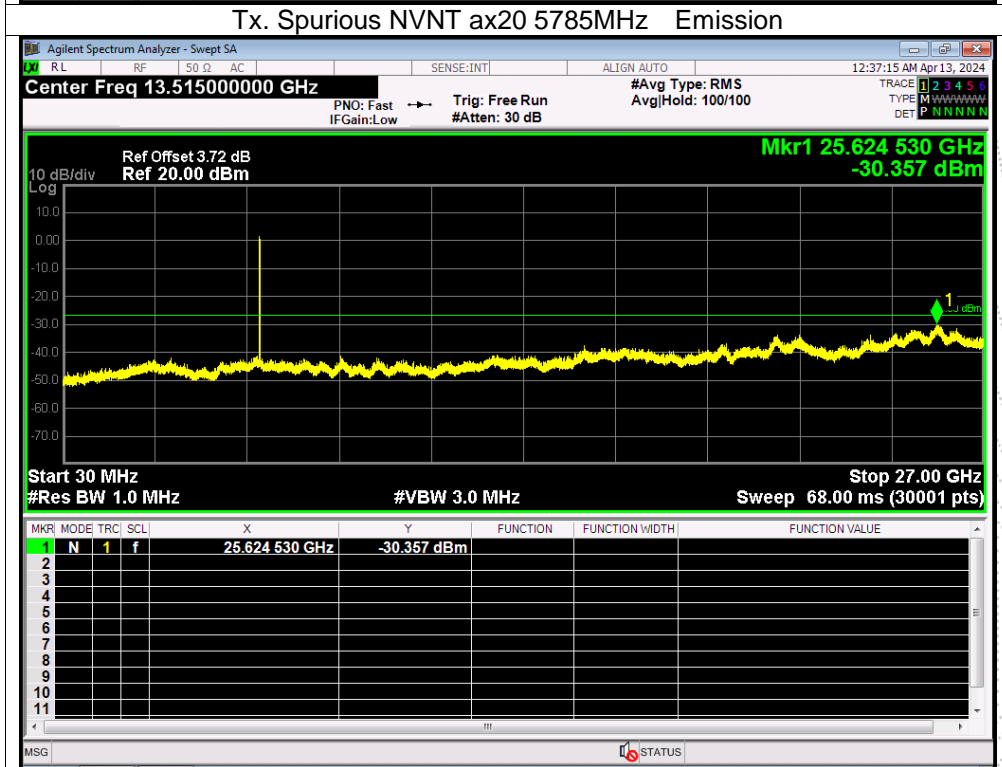
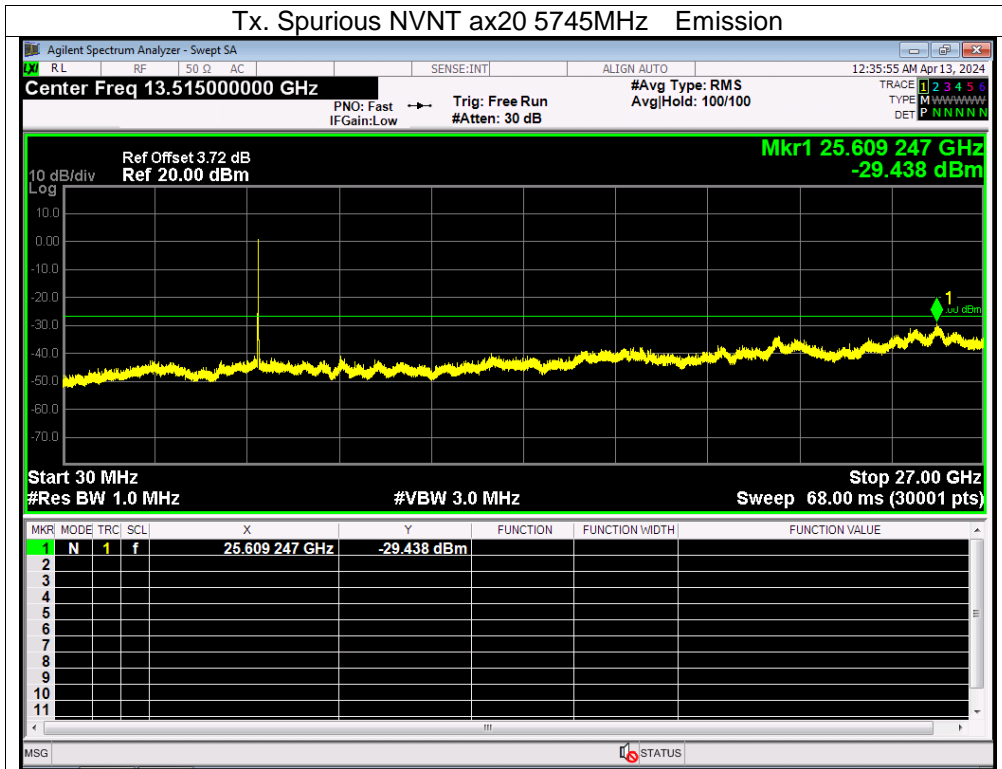




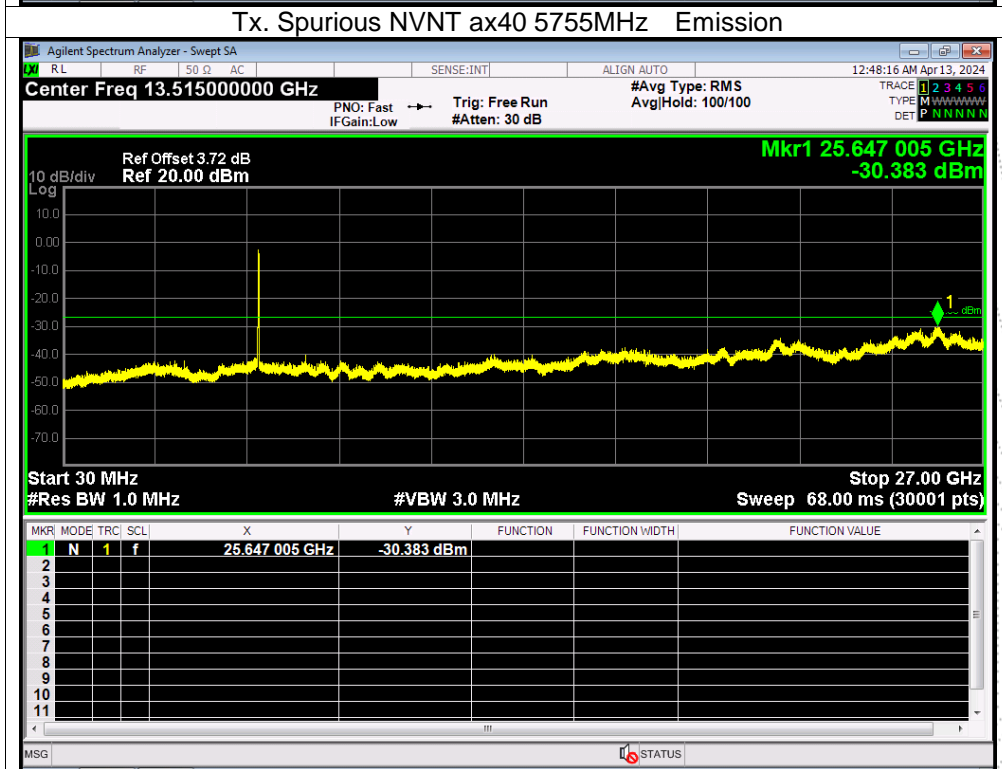
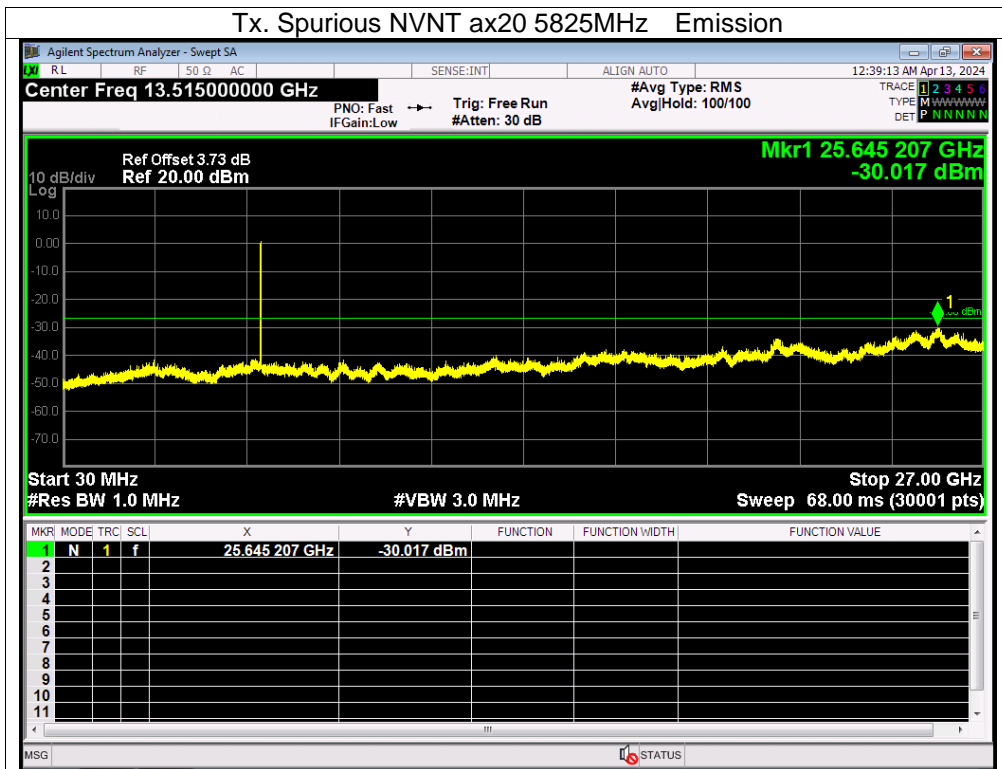


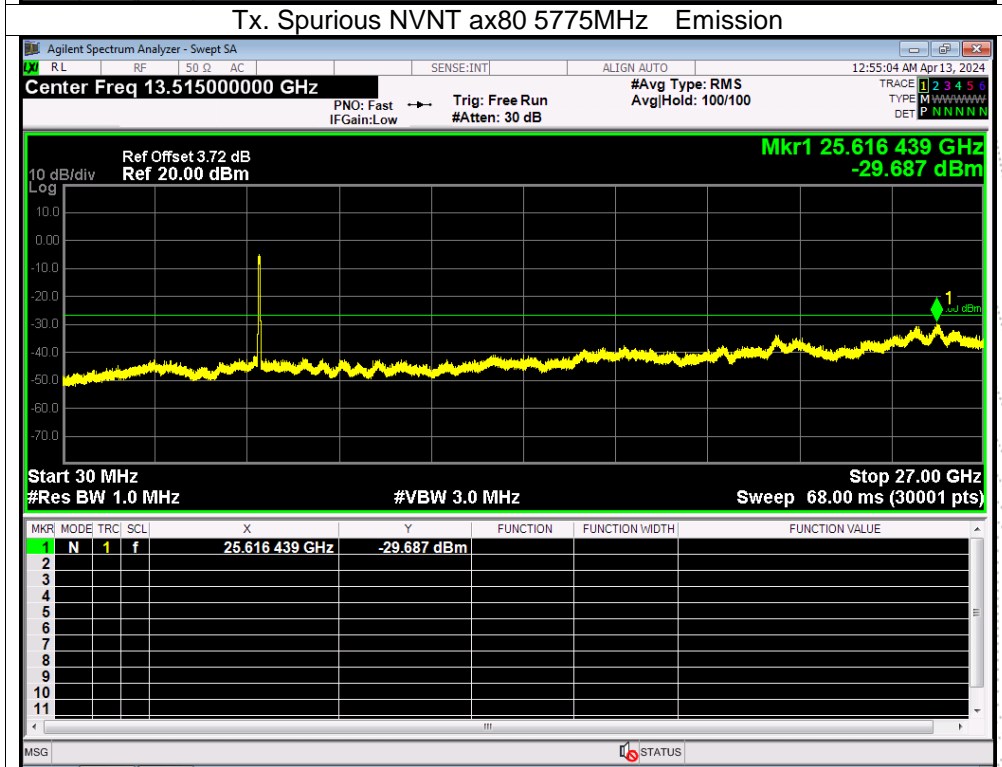
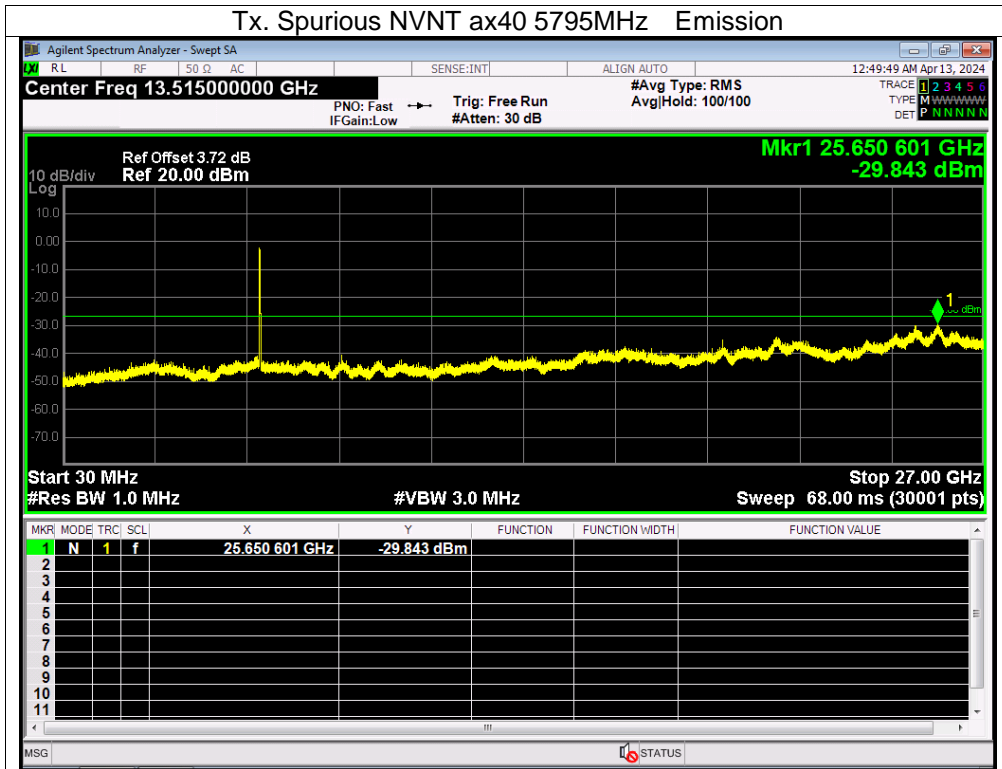


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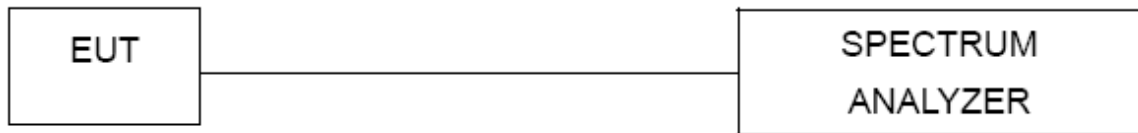
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13. Frequency Stability Measurement

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%
Pressure:	101kPa	Test Voltage:	DC 11.4V
Test Mode:	TX 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)	7.40	5180.0026	5180	0.0026	0.5019
		V max (V)	8.51	5180.0038	5180	0.0038	0.7336
		V min (V)	6.29	5180.0074	5180	0.0074	1.4286
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)	7.4	T (°C)	-20	5180.0112	5180	0.0112	2.1622
		T (°C)	-10	5180.0135	5180	0.0135	2.6062
		T (°C)	0	5180.0123	5180	0.0123	2.3745
		T (°C)	10	5180.0070	5180	0.0070	1.3514
		T (°C)	20	5180.0092	5180	0.0092	1.7761
		T (°C)	30	5180.0054	5180	0.0054	1.0425
		T (°C)	40	5180.0068	5180	0.0068	1.3127
		T (°C)	50	5180.0009	5180	0.0009	0.1737
		T (°C)	60	5180.0124	5180	0.0124	2.3938
		T (°C)	70	5180.0093	5180	0.0093	1.7954
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)	7.40	5200.0038	5200	0.0038	0.7308
		V max (V)	8.51	5200.0071	5200	0.0071	1.3654
		V min (V)	6.29	5200.0018	5200	0.0018	0.3462
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)	7.4	T (°C)	-20	5200.00810	5200	0.00810	1.5577
		T (°C)	-10	5200.01060	5200	0.01060	2.0385
		T (°C)	0	5200.01260	5200	0.01260	2.4231
		T (°C)	10	5200.00410	5200	0.00410	0.7885
		T (°C)	20	5200.00240	5200	0.00240	0.4615
		T (°C)	30	5200.00110	5200	0.00110	0.2115
		T (°C)	40	5200.00260	5200	0.00260	0.5000
		T (°C)	50	5200.00100	5200	0.00100	0.1923
		T (°C)	60	5200.00000	5200	0.00000	0.0000
		T (°C)	70	5200.00240	5200	0.00240	0.4615
Limits				5150-5250 MHz			
Result				Complies			

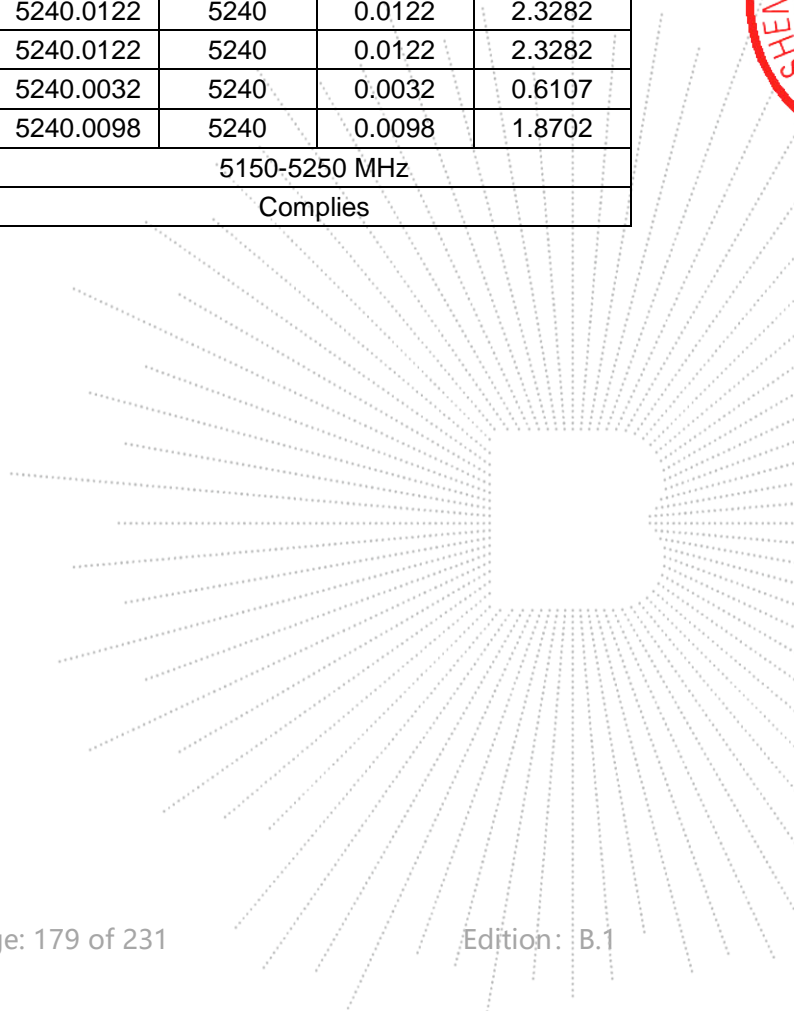
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Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	7.40	5240.0071	5240	0.0071	1.3550
		V max (V)	8.51	5240.0098	5240	0.0098	1.8702
		V min (V)	6.29	5240.0077	5240	0.0077	1.4695
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)	5	T (°C)	-20	5240.0130	5240	0.0130	2.4809
		T (°C)	-10	5240.0068	5240	0.0068	1.2977
		T (°C)	0	5240.0133	5240	0.0133	2.5382
		T (°C)	10	5240.0019	5240	0.0019	0.3626
		T (°C)	20	5240.0112	5240	0.0112	2.1374
		T (°C)	30	5240.0122	5240	0.0122	2.3282
		T (°C)	40	5240.0122	5240	0.0122	2.3282
		T (°C)	50	5240.0122	5240	0.0122	2.3282
		T (°C)	60	5240.0032	5240	0.0032	0.6107
		T (°C)	70	5240.0098	5240	0.0098	1.8702
Limits				5150-5250 MHz			
Result				Complies			

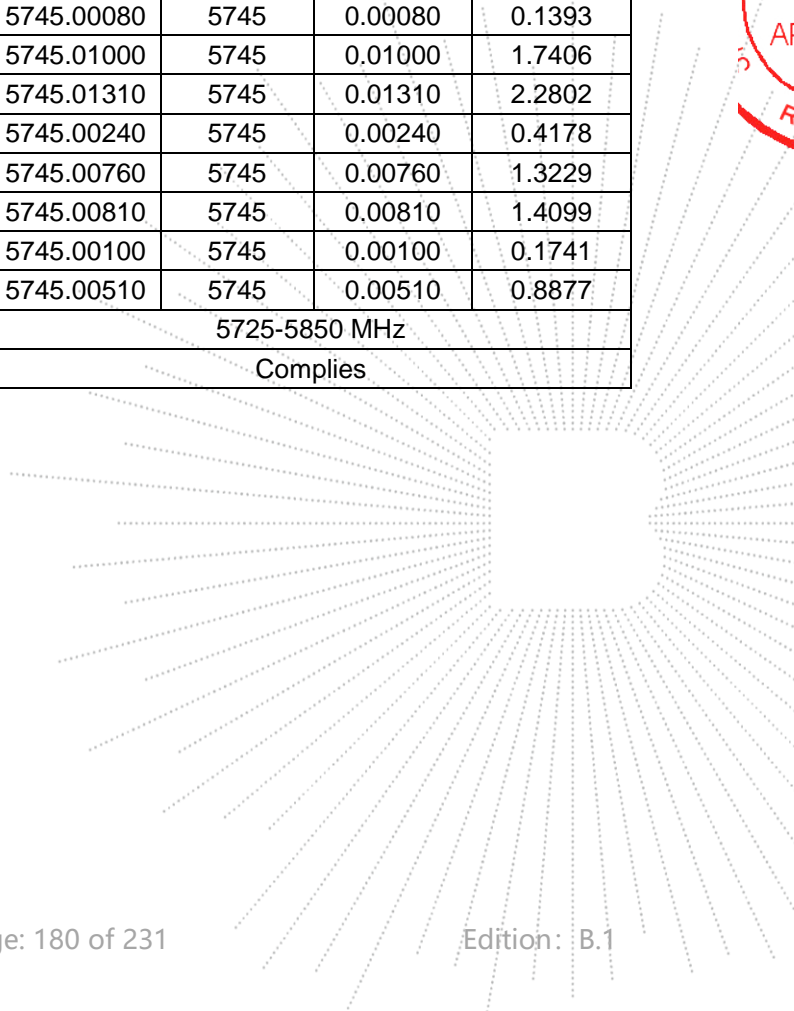
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Test Voltage:	DC 11.4V
Test Mode:	TX Frequency U-NII-3 (5745-5825MHz)		

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	7.40	5745.00260	5745	0.00260	0.4526
		V max (V)	8.51	5745.00690	5745	0.00690	1.2010
		V min (V)	6.29	5745.01320	5745	0.01320	2.2977
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)	7.4	T (°C)	-20	5745.00020	5745	0.00020	0.0348
		T (°C)	-10	5745.00490	5745	0.00490	0.8529
		T (°C)	0	5745.00080	5745	0.00080	0.1393
		T (°C)	10	5745.01000	5745	0.01000	1.7406
		T (°C)	20	5745.01310	5745	0.01310	2.2802
		T (°C)	30	5745.00240	5745	0.00240	0.4178
		T (°C)	40	5745.00760	5745	0.00760	1.3229
		T (°C)	50	5745.00810	5745	0.00810	1.4099
		T (°C)	60	5745.00100	5745	0.00100	0.1741
		T (°C)	70	5745.00510	5745	0.00510	0.8877
Limits				5725-5850 MHz			
Result				Complies			



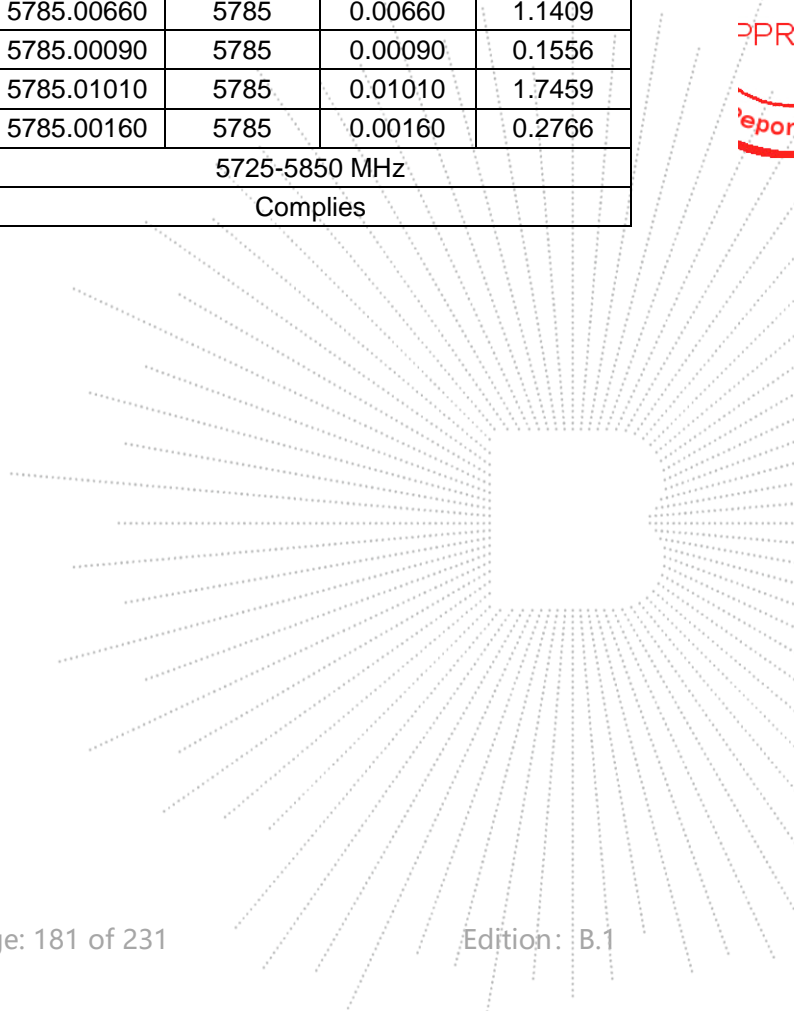
Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	7.40	5785.00890	5785	0.00890	1.5385
		V max (V)	8.51	5785.00740	5785	0.00740	1.2792
		V min (V)	6.29	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)	7.4	T (°C)	-20	5785.00500	5785	0.00500	0.8643
		T (°C)	-10	5785.00680	5785	0.00680	1.1755
		T (°C)	0	5785.00770	5785	0.00770	1.3310
		T (°C)	10	5785.00460	5785	0.00460	0.7952
		T (°C)	20	5785.00070	5785	0.00070	0.1210
		T (°C)	30	5785.00990	5785	0.00990	1.7113
		T (°C)	40	5785.00660	5785	0.00660	1.1409
		T (°C)	50	5785.00090	5785	0.00090	0.1556
		T (°C)	60	5785.01010	5785	0.01010	1.7459
		T (°C)	70	5785.00160	5785	0.00160	0.2766
Limits				5725-5850 MHz			
Result				Complies			

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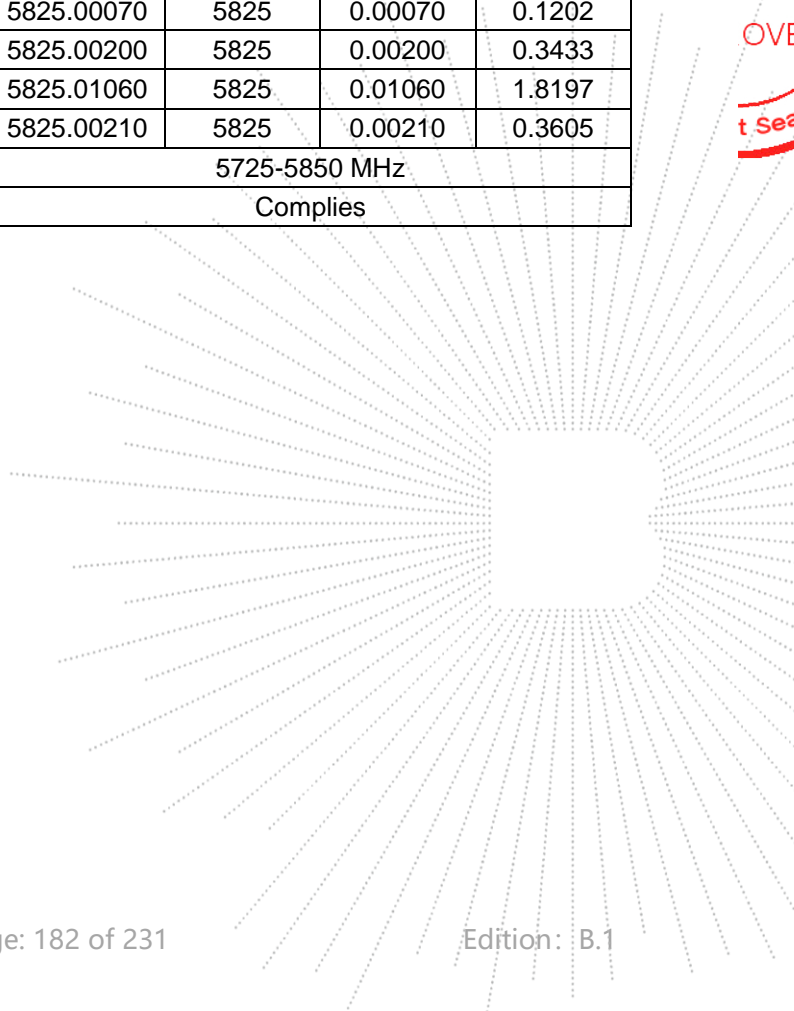
Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	7.40	5825.00880	5825	0.00880	1.5107
		V max (V)	8.51	5825.00750	5825	0.00750	1.2876
		V min (V)	6.29	5825.00120	5825	0.00120	0.2060
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)	5	T (°C)	-20	5825.00330	5825	0.00330	0.5665
		T (°C)	-10	5825.00030	5825	0.00030	0.0515
		T (°C)	0	5825.00860	5825	0.00860	1.4764
		T (°C)	10	5825.01340	5825	0.01340	2.3004
		T (°C)	20	5825.01010	5825	0.01010	1.7339
		T (°C)	30	5825.00070	5825	0.00070	0.1202
		T (°C)	40	5825.00070	5825	0.00070	0.1202
		T (°C)	50	5825.00200	5825	0.00200	0.3433
		T (°C)	60	5825.01060	5825	0.01060	1.8197
		T (°C)	70	5825.00210	5825	0.00210	0.3605
Limits				5725-5850 MHz			
Result				Complies			

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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

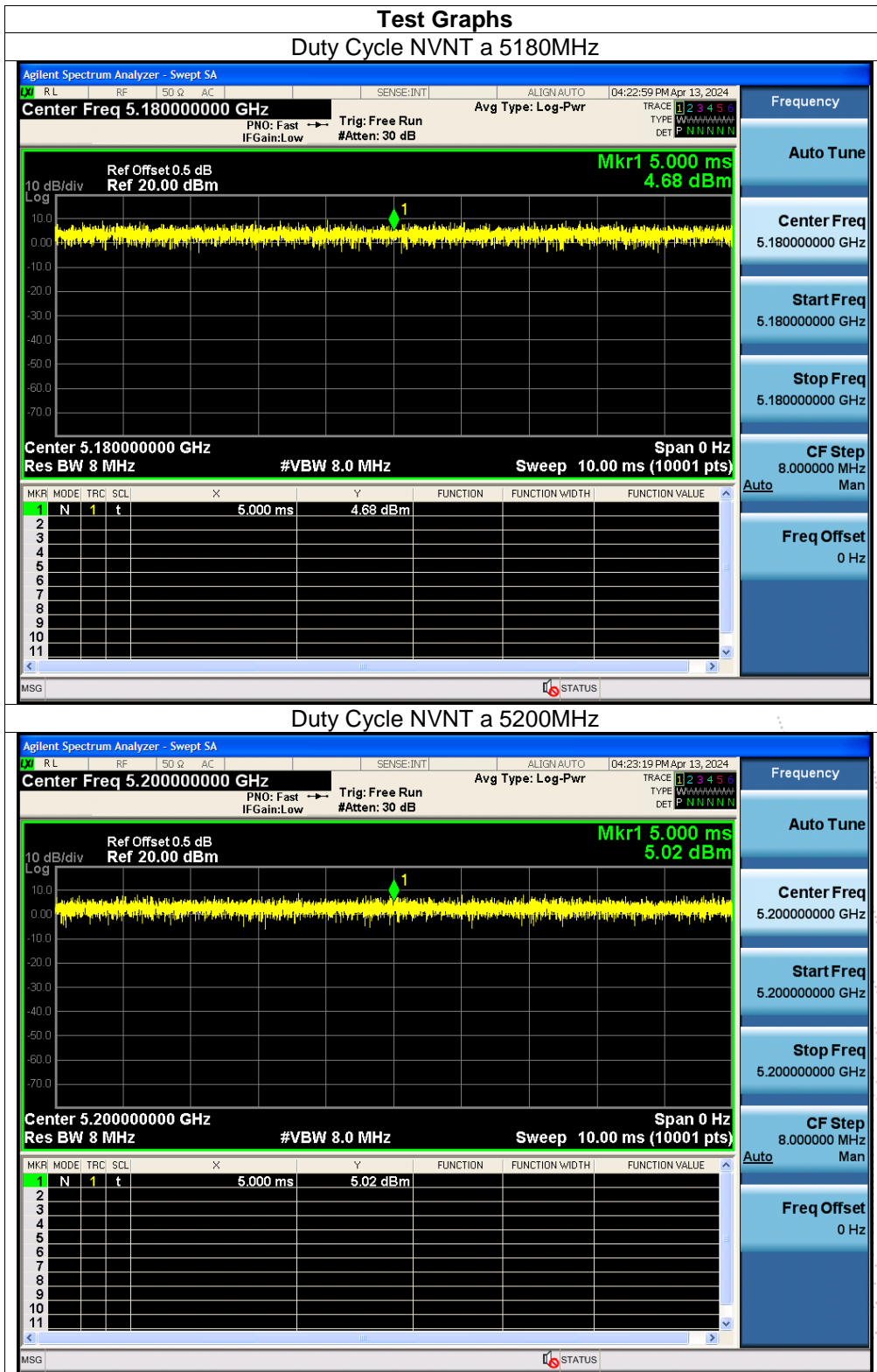
14.4 Test Result

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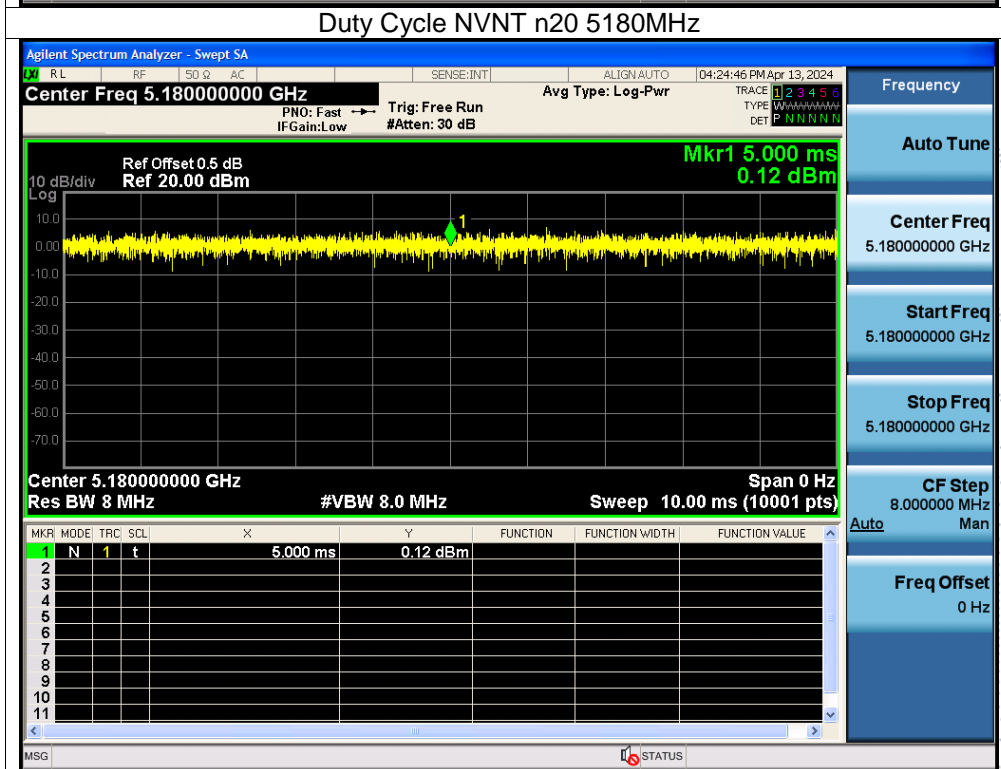
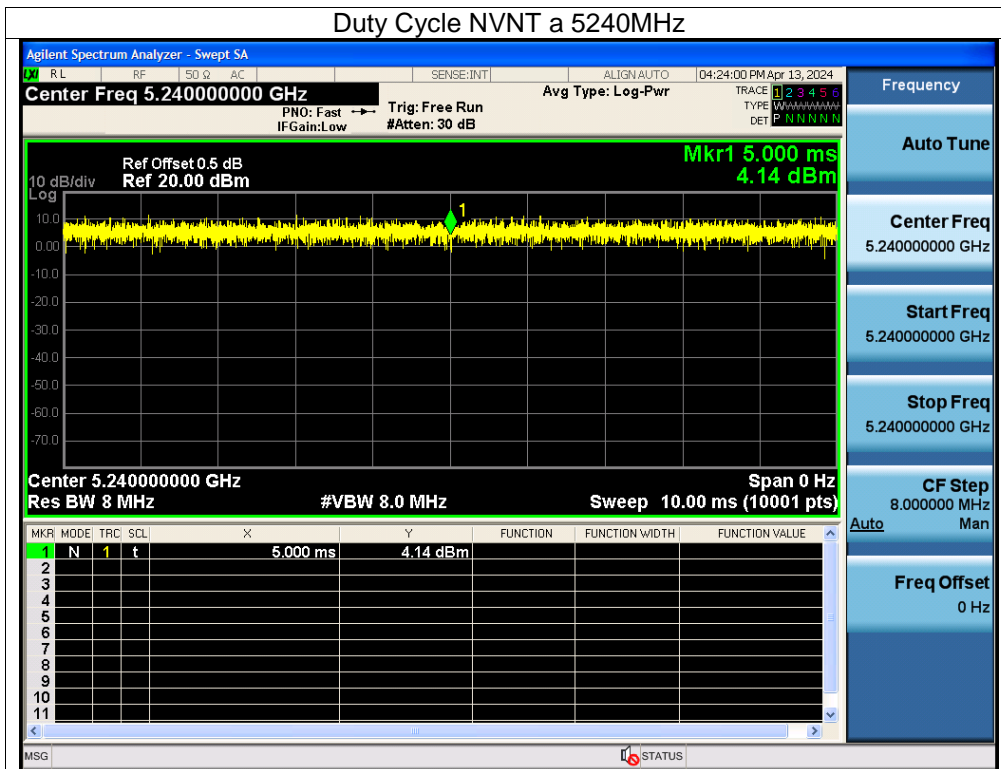
Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5180	100	0	0
NVNT	a	5200	100	0	0
NVNT	a	5240	100	0	0
NVNT	n20	5180	100	0	0
NVNT	n20	5200	100	0	0
NVNT	n20	5240	100	0	0
NVNT	n40	5190	100	0	0
NVNT	n40	5230	100	0	0
NVNT	ac20	5180	100	0	0
NVNT	ac20	5200	100	0	0
NVNT	ac20	5240	100	0	0
NVNT	ac40	5190	100	0	0
NVNT	ac40	5230	100	0	0
NVNT	ac80	5210	100	0	0
NVNT	ax20	5180	100	0	0
NVNT	ax20	5200	100	0	0
NVNT	ax20	5240	100	0	0
NVNT	ax40	5190	100	0	0
NVNT	ax40	5230	100	0	0



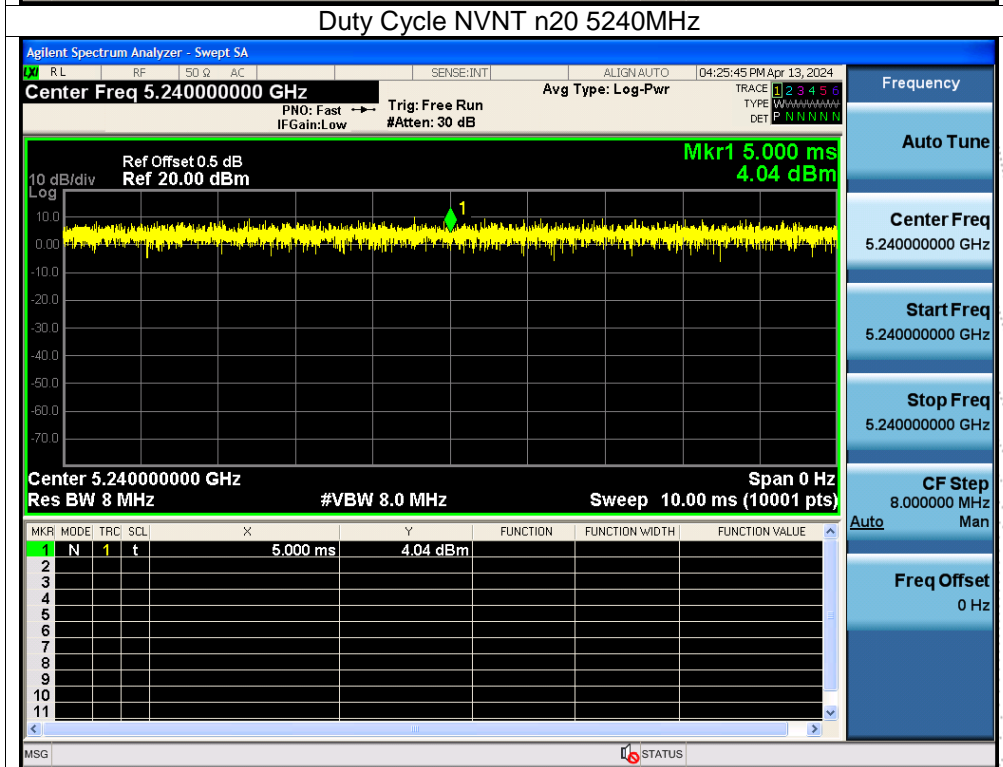
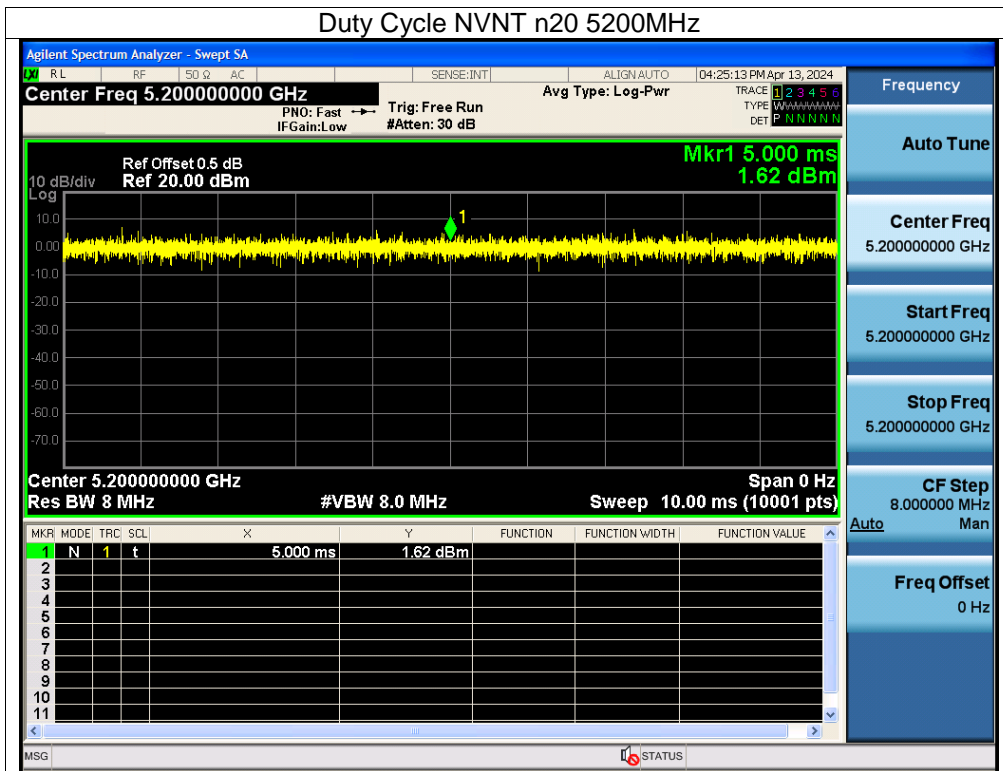
NVNT	ax80	5210	100	0	0
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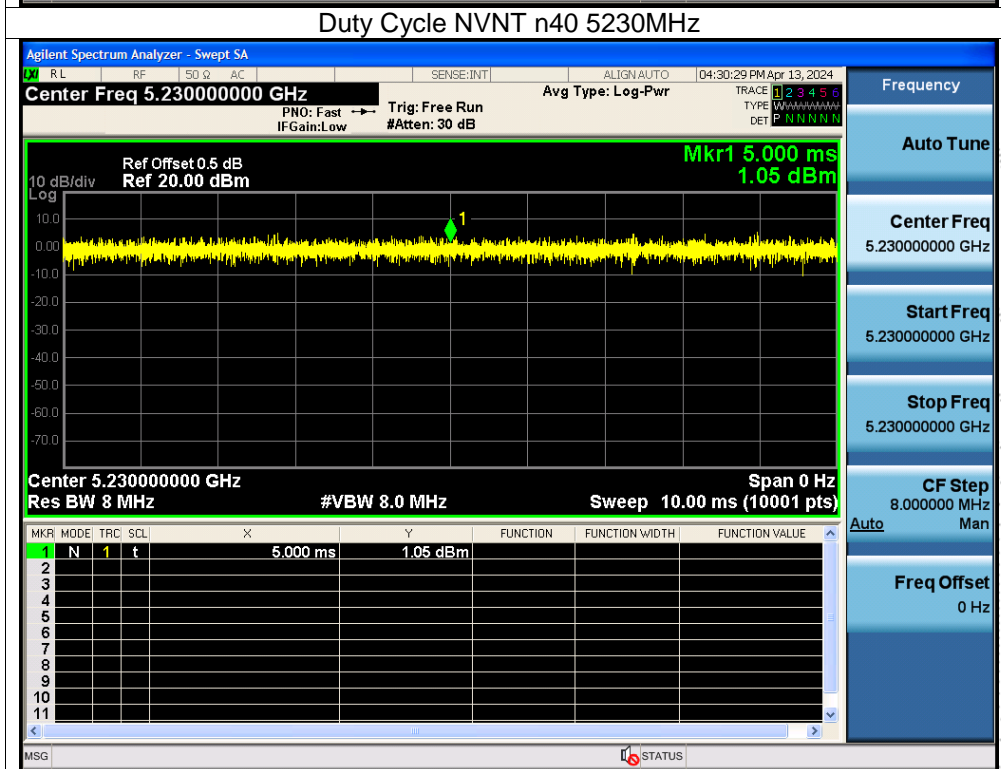
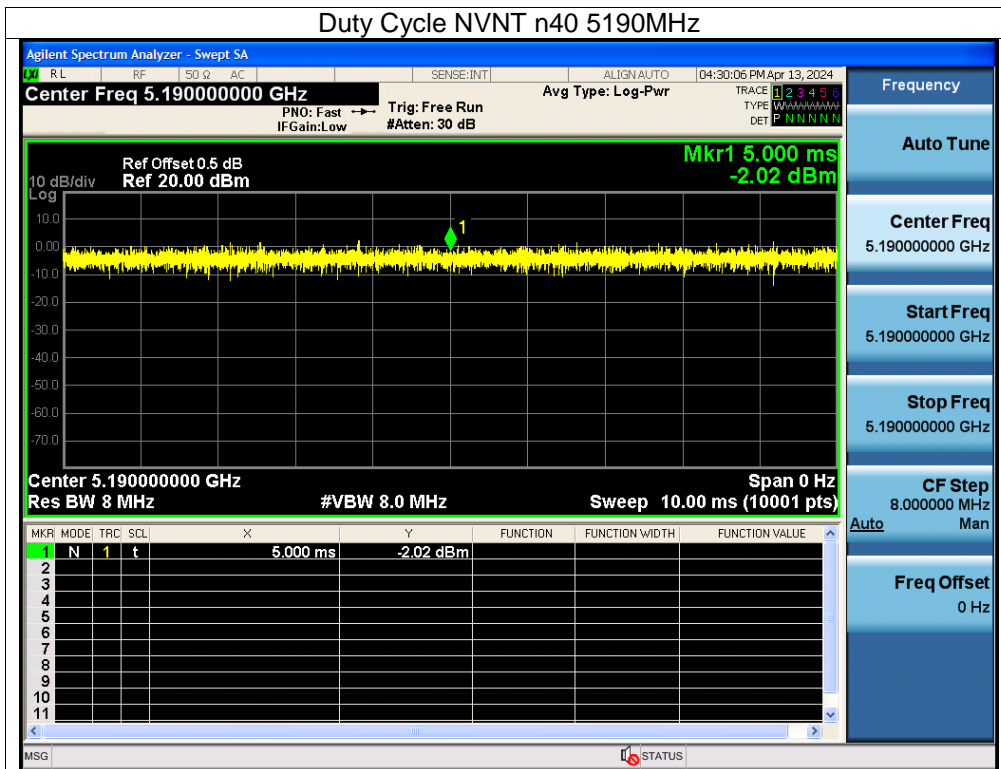


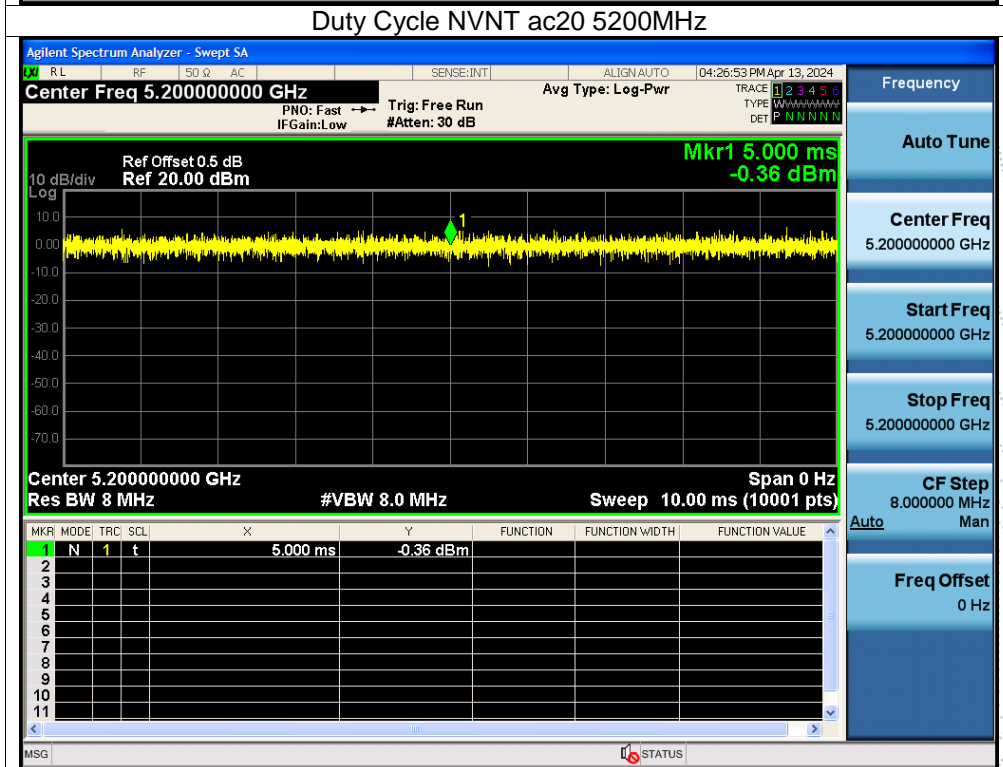
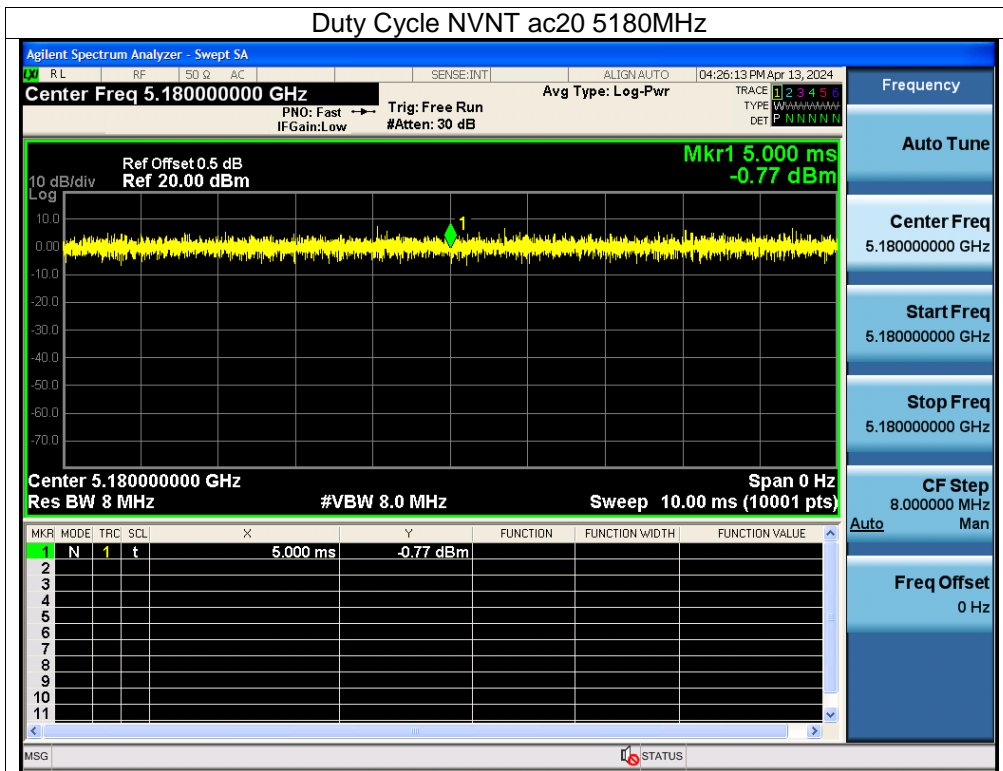
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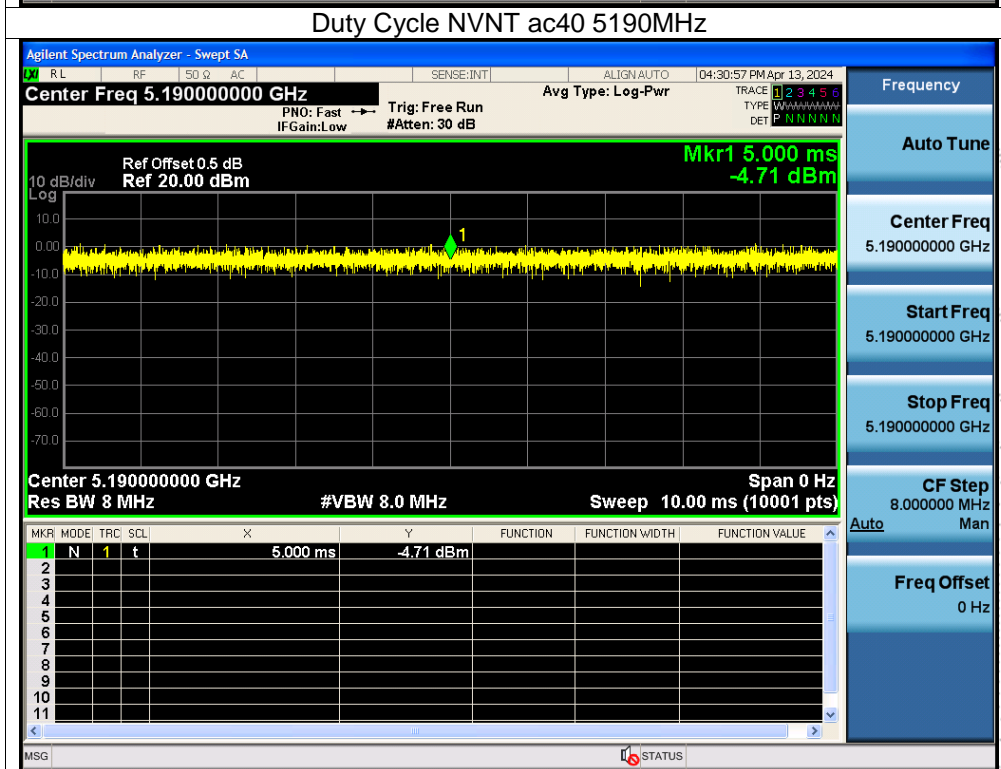
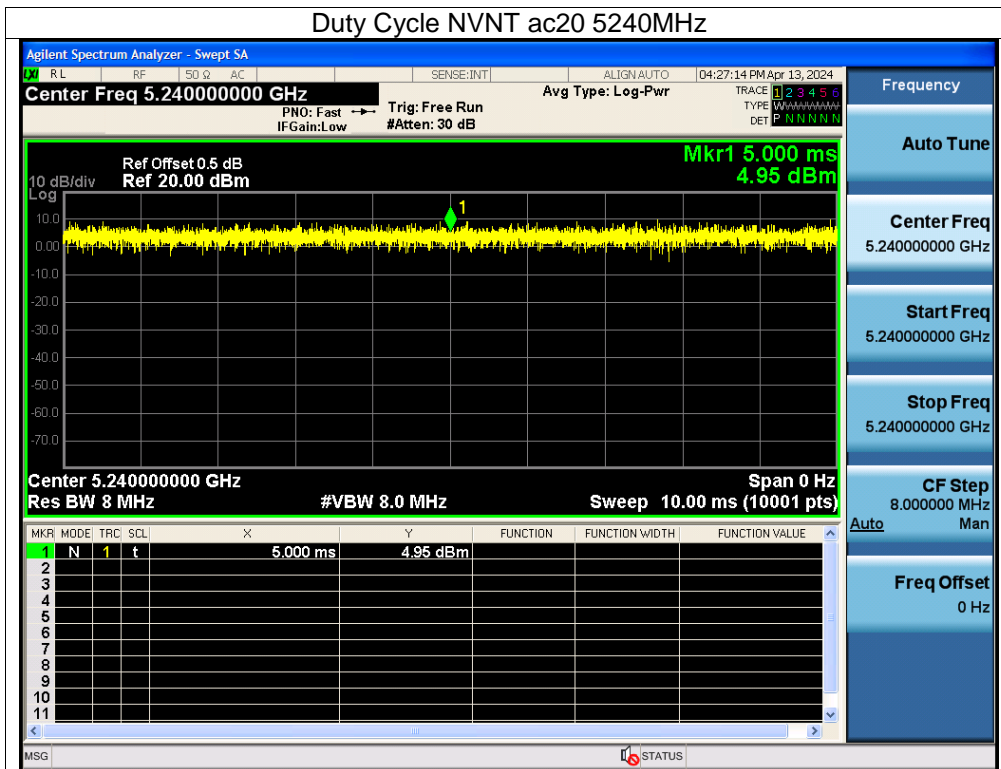


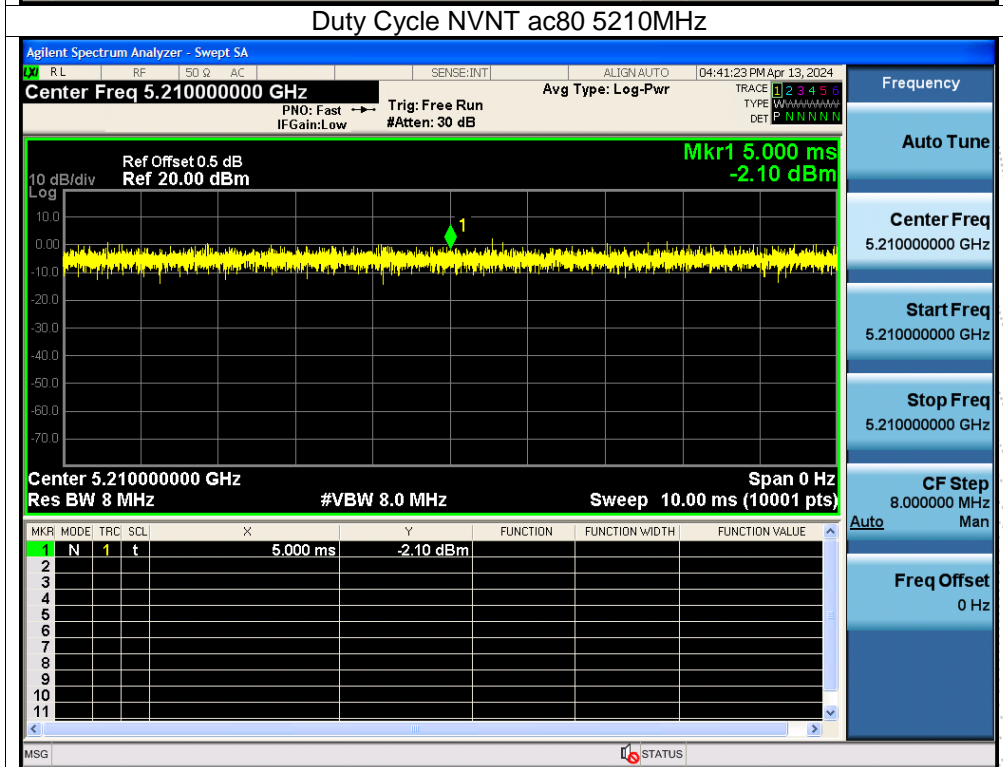
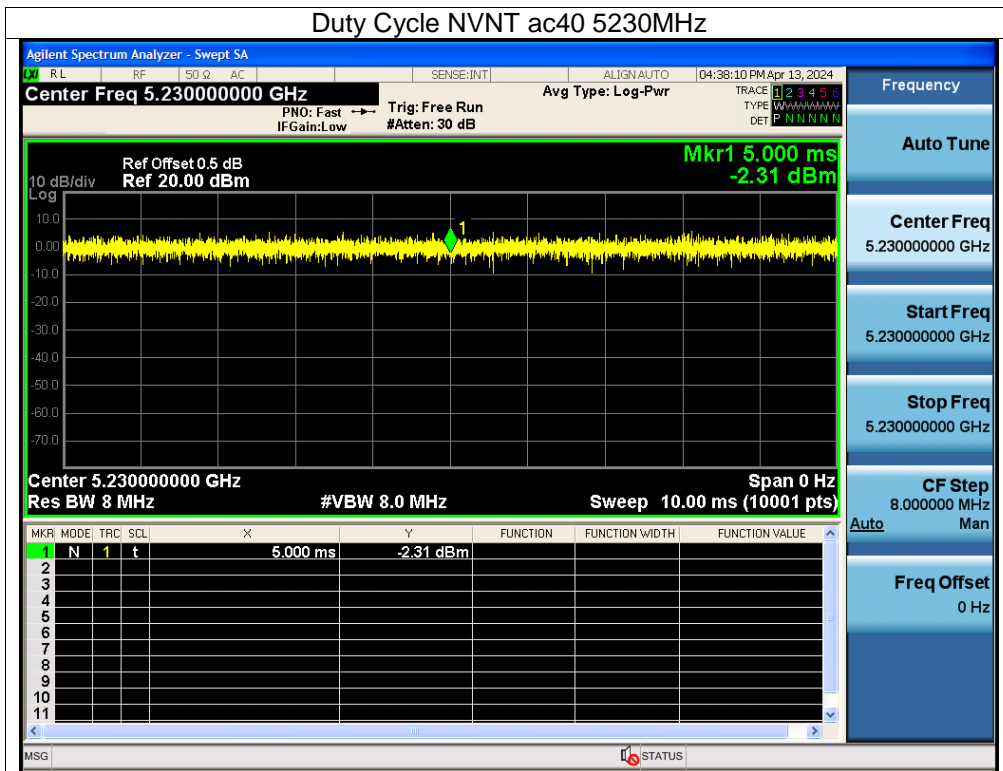
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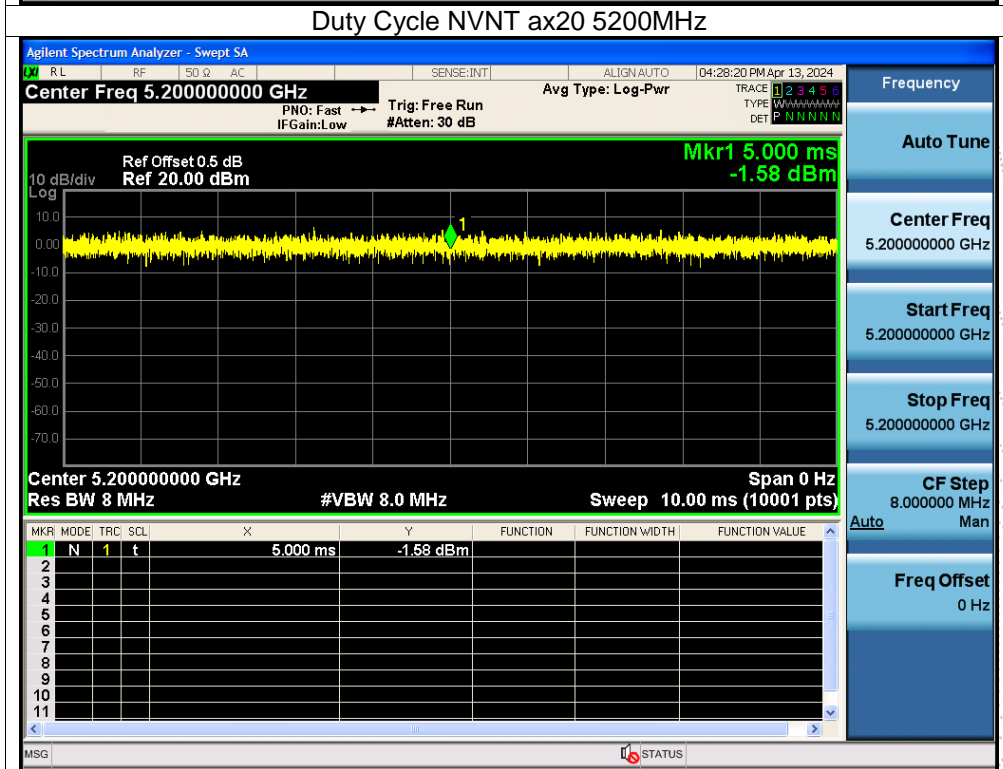
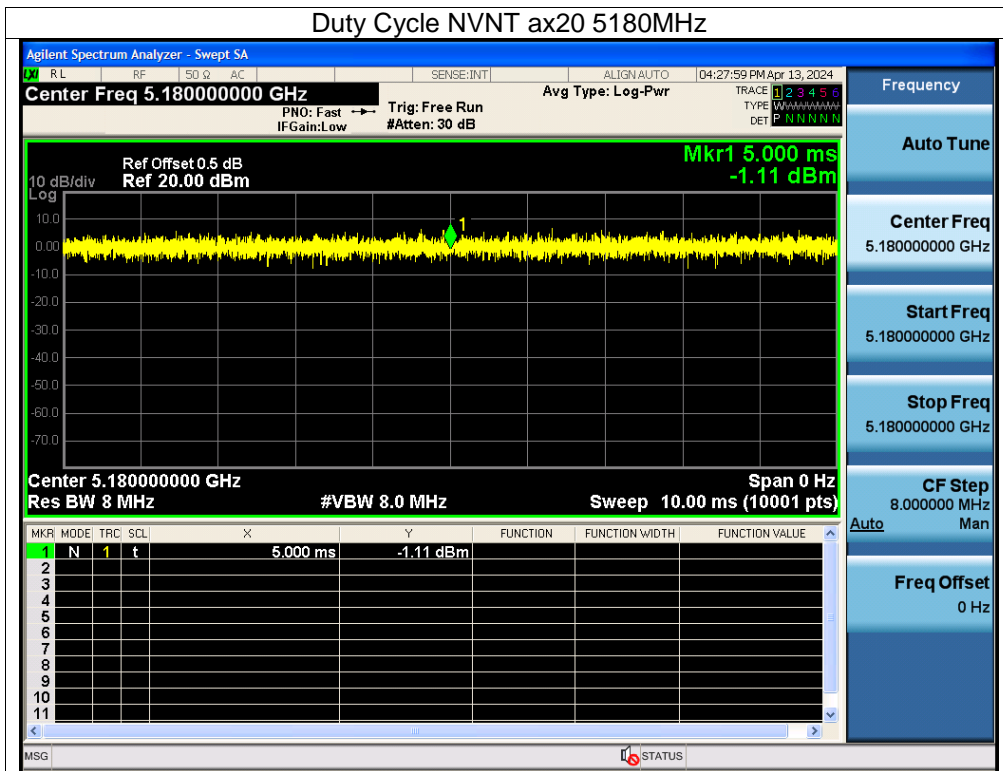




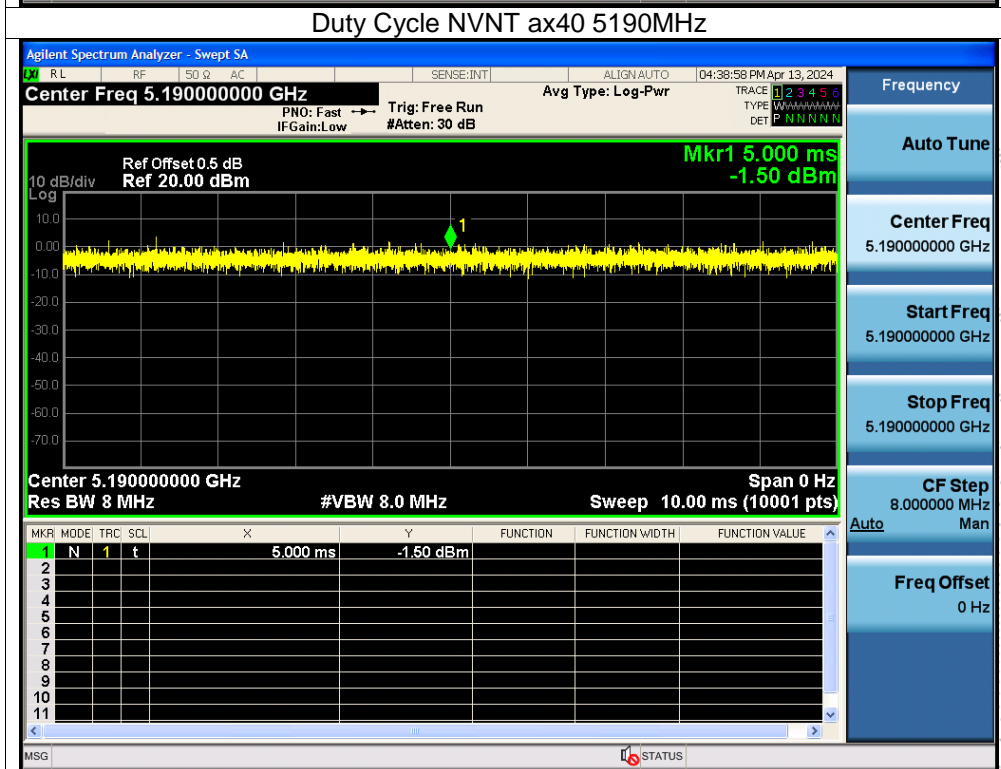
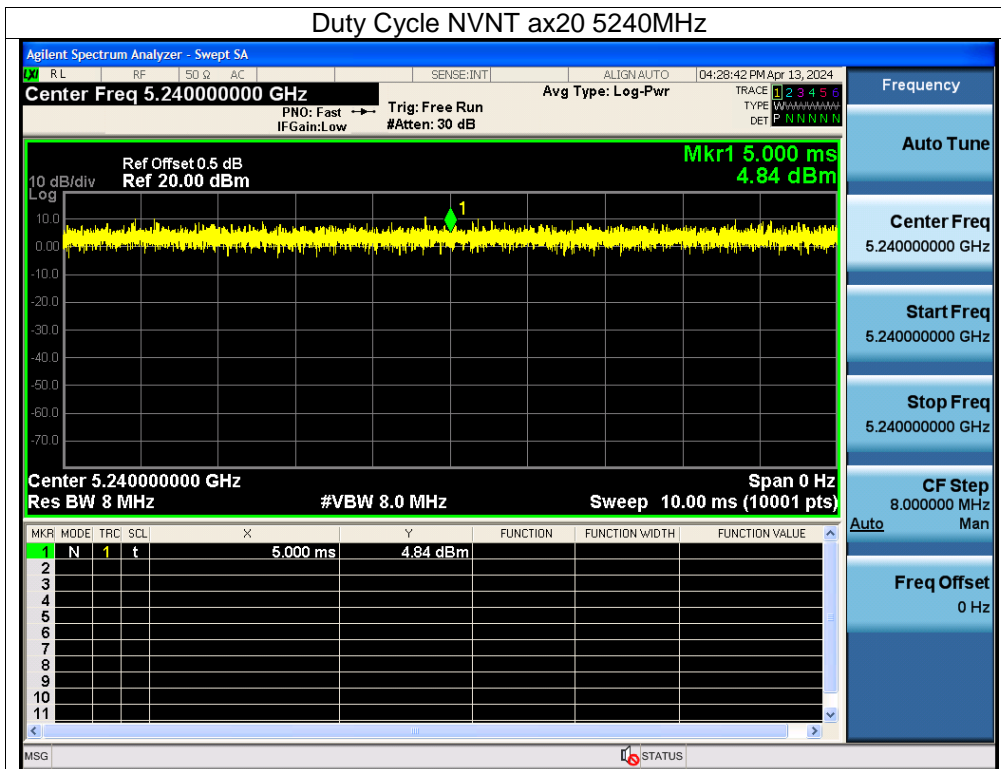


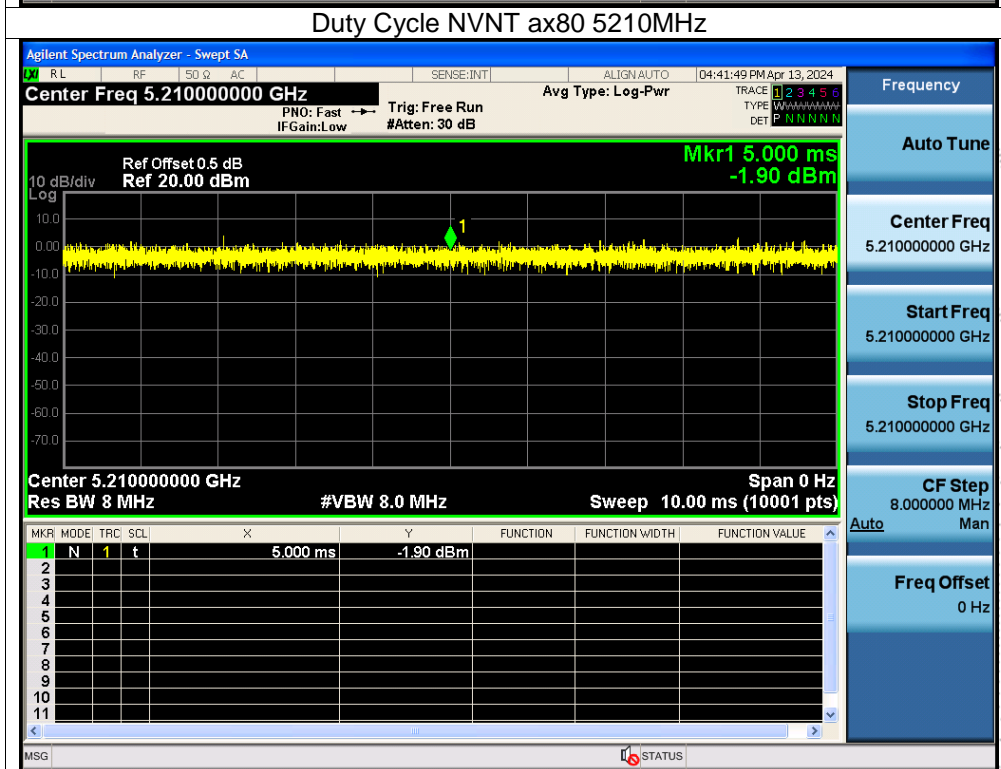
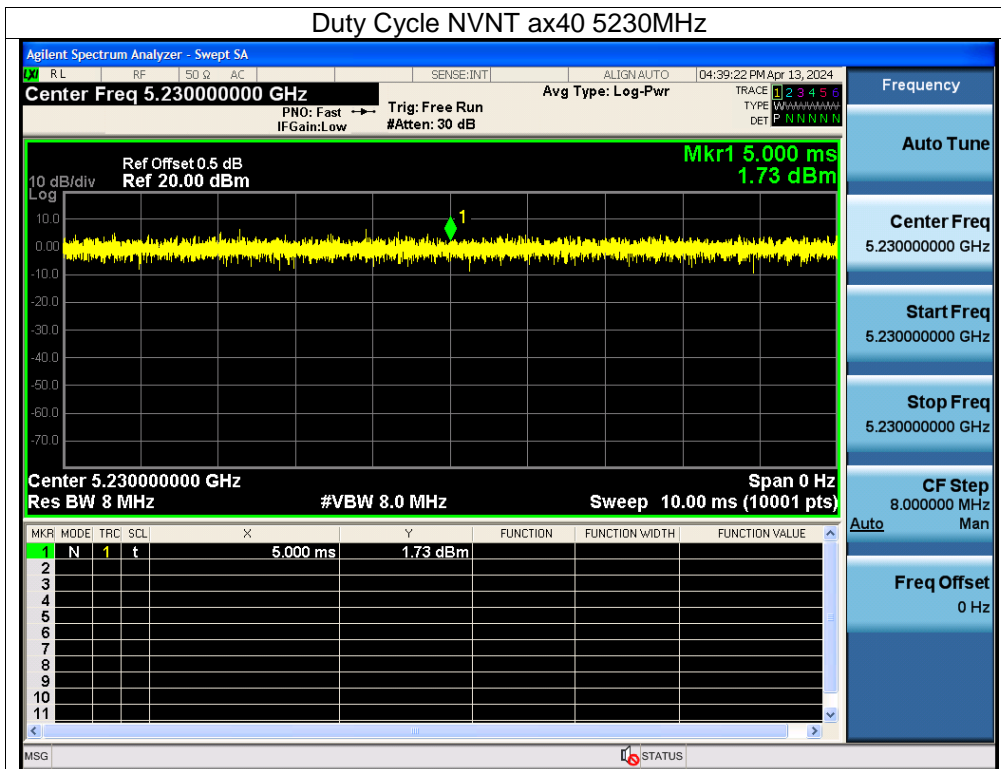


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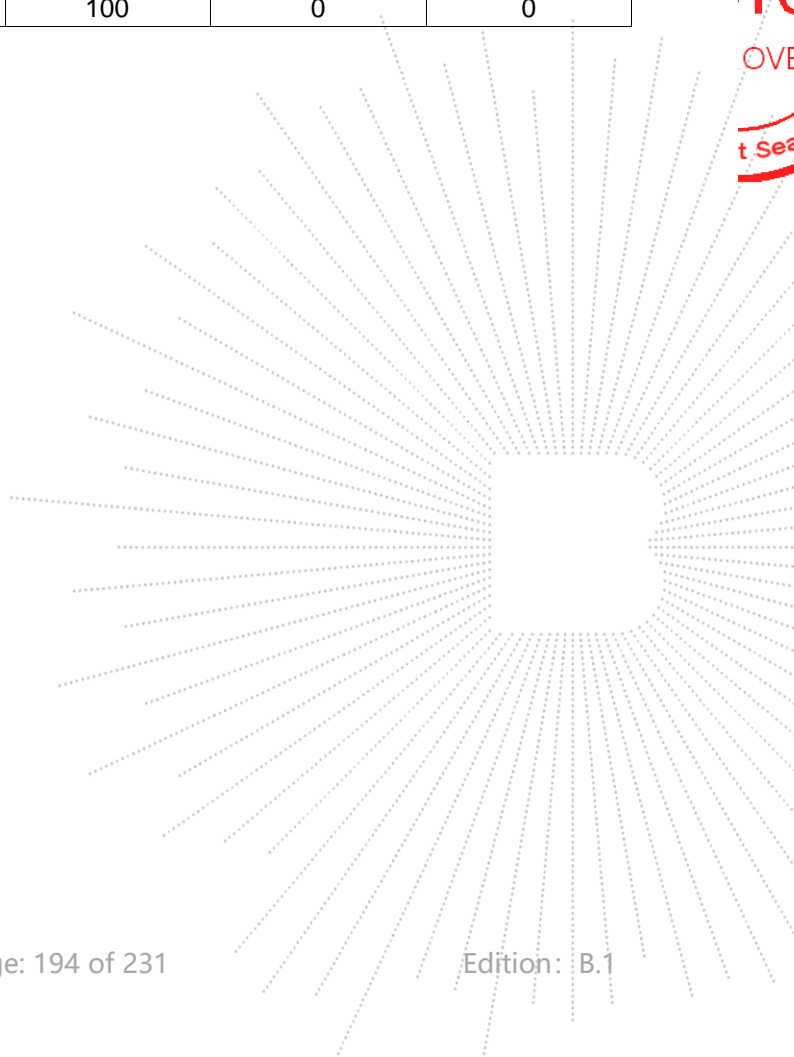


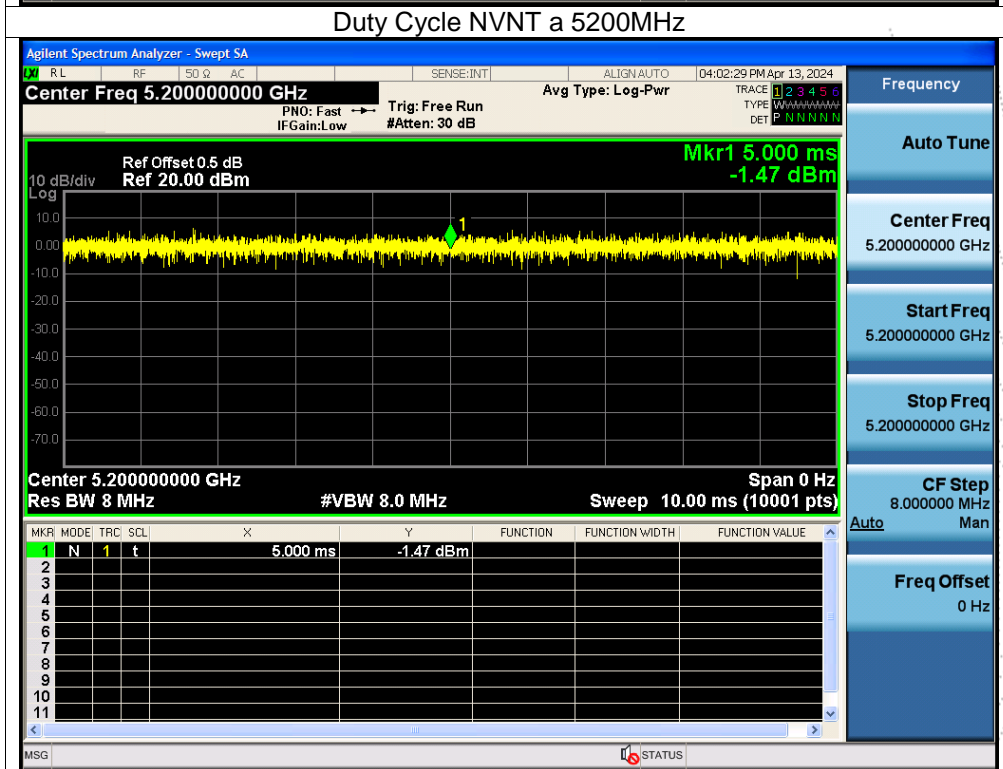
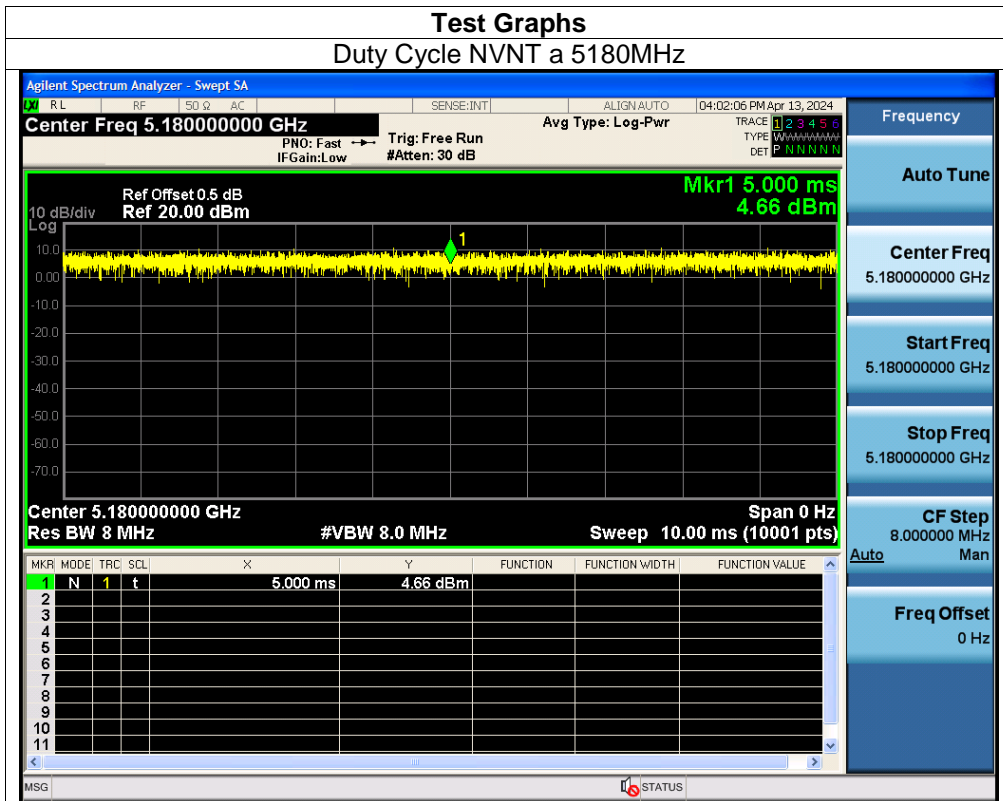


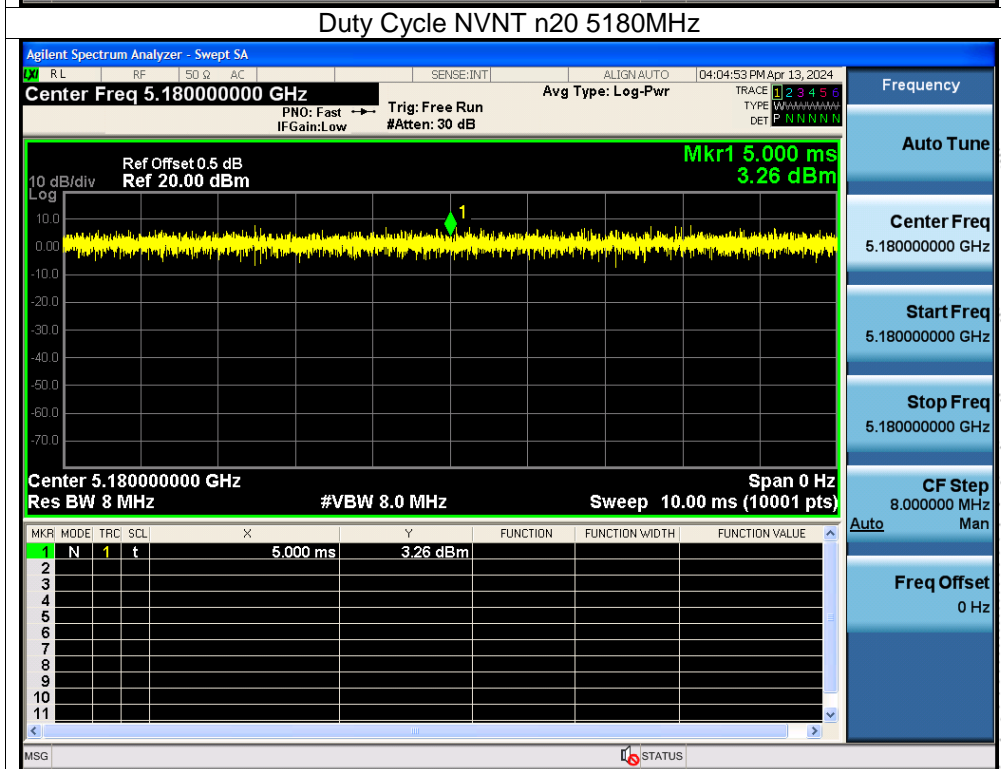
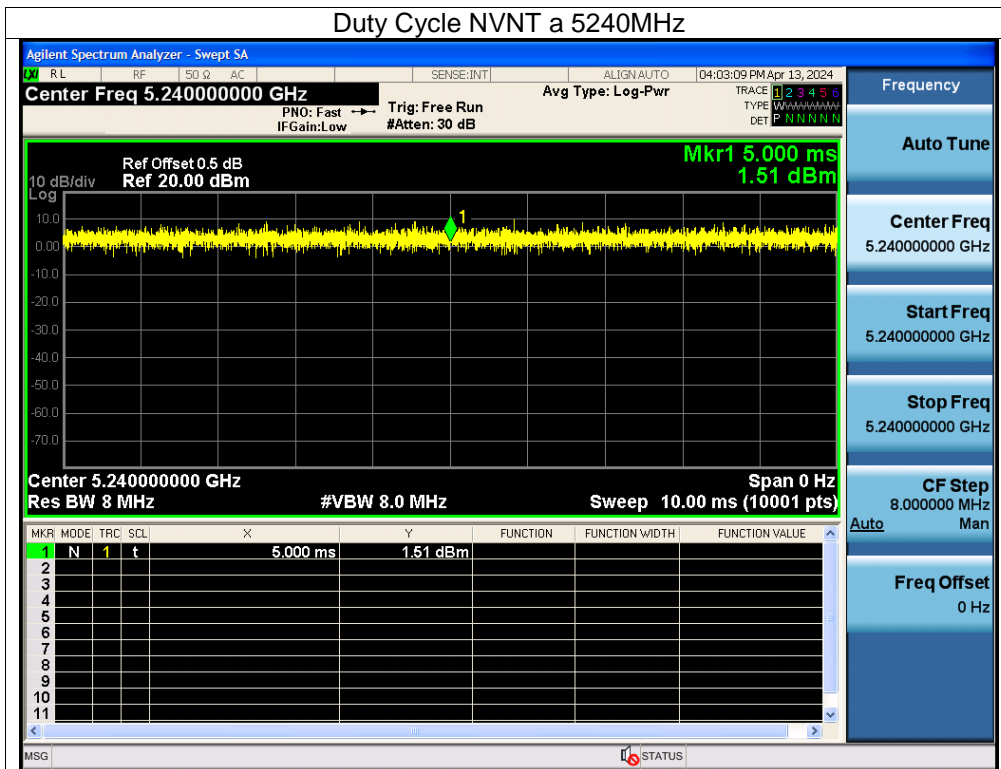
ANT B

Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
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NVNT	a	5200	100	0	0
NVNT	a	5240	100	0	0
NVNT	n20	5180	100	0	0
NVNT	n20	5200	100	0	0
NVNT	n20	5240	100	0	0
NVNT	n40	5190	100	0	0
NVNT	n40	5230	100	0	0
NVNT	ac20	5180	100	0	0
NVNT	ac20	5200	100	0	0
NVNT	ac20	5240	100	0	0
NVNT	ac40	5190	100	0	0
NVNT	ac40	5230	100	0	0
NVNT	ac80	5210	100	0	0
NVNT	ax20	5180	100	0	0
NVNT	ax20	5200	100	0	0
NVNT	ax20	5240	100	0	0
NVNT	ax40	5190	100	0	0
NVNT	ax40	5230	100	0	0
NVNT	ax80	5210	100	0	0

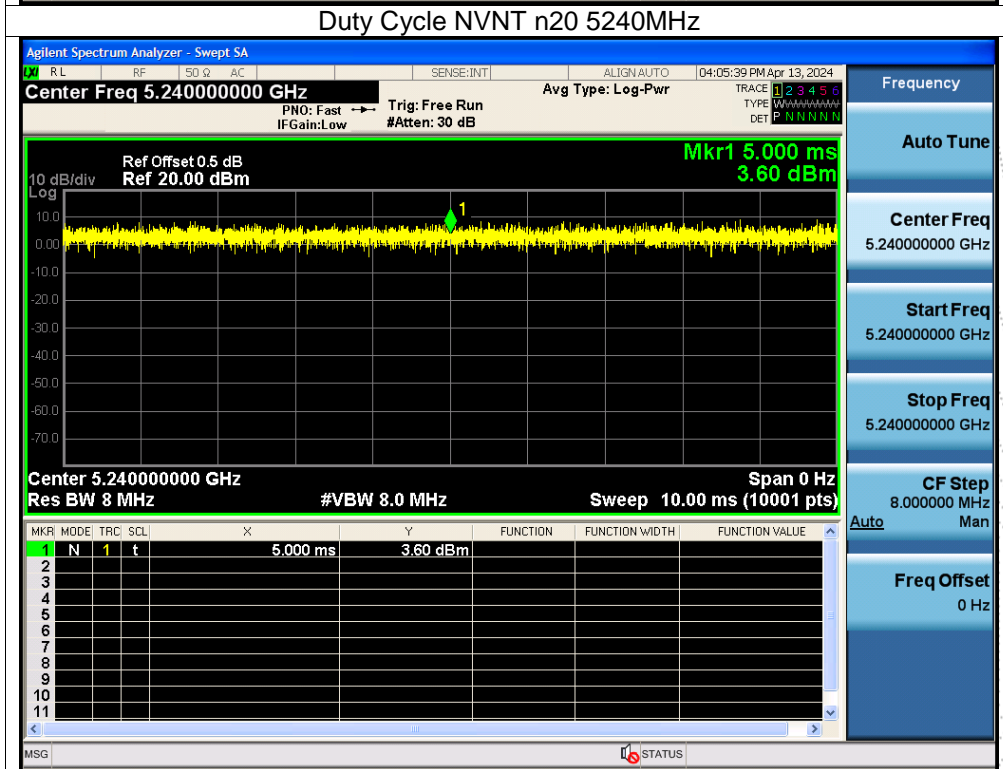
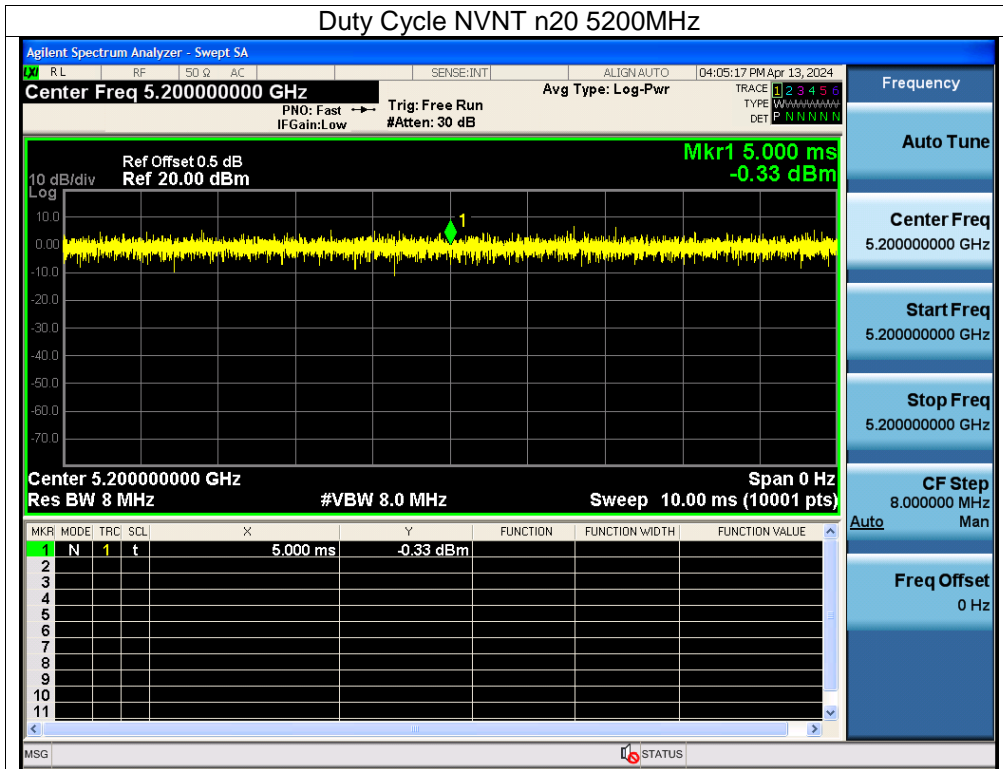
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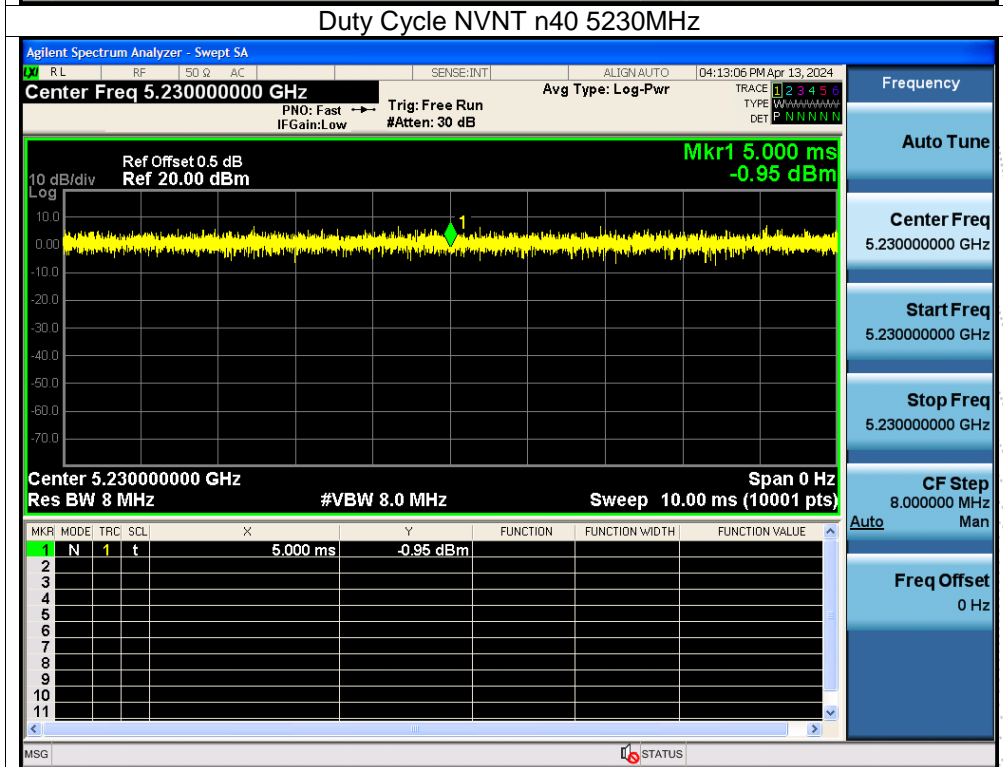
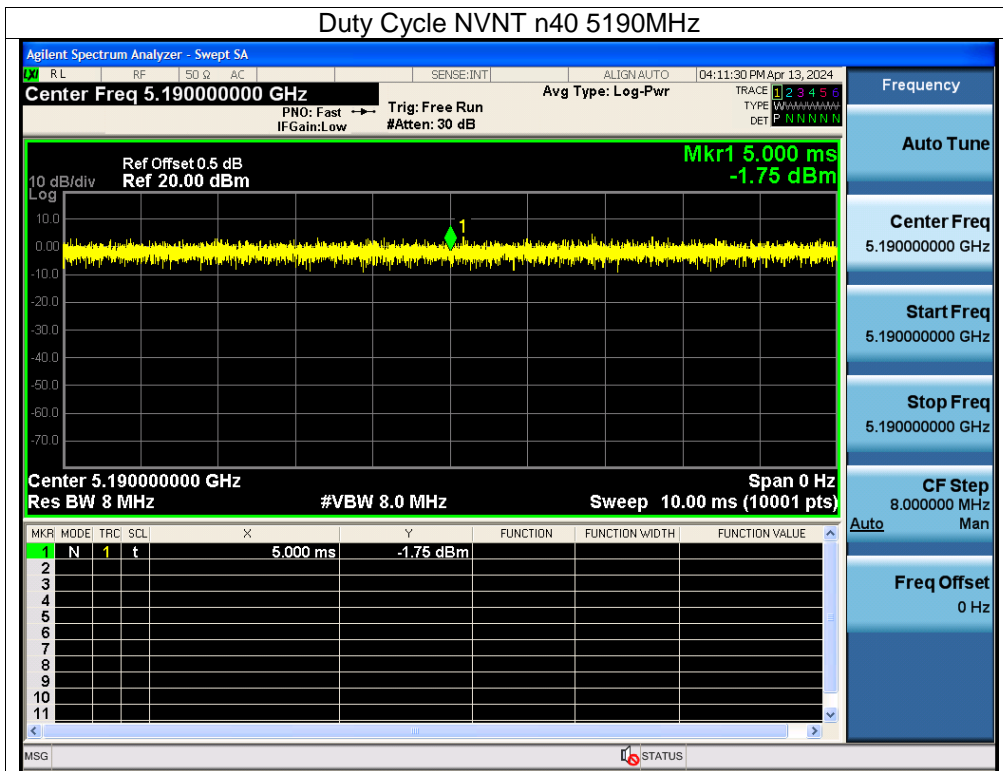




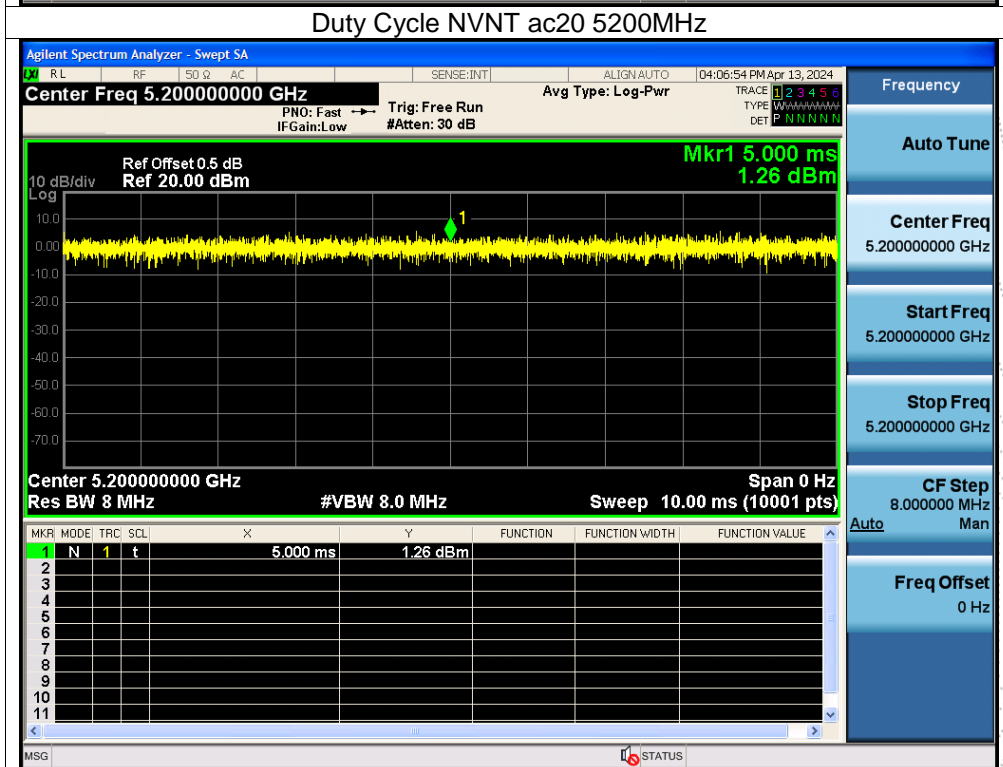
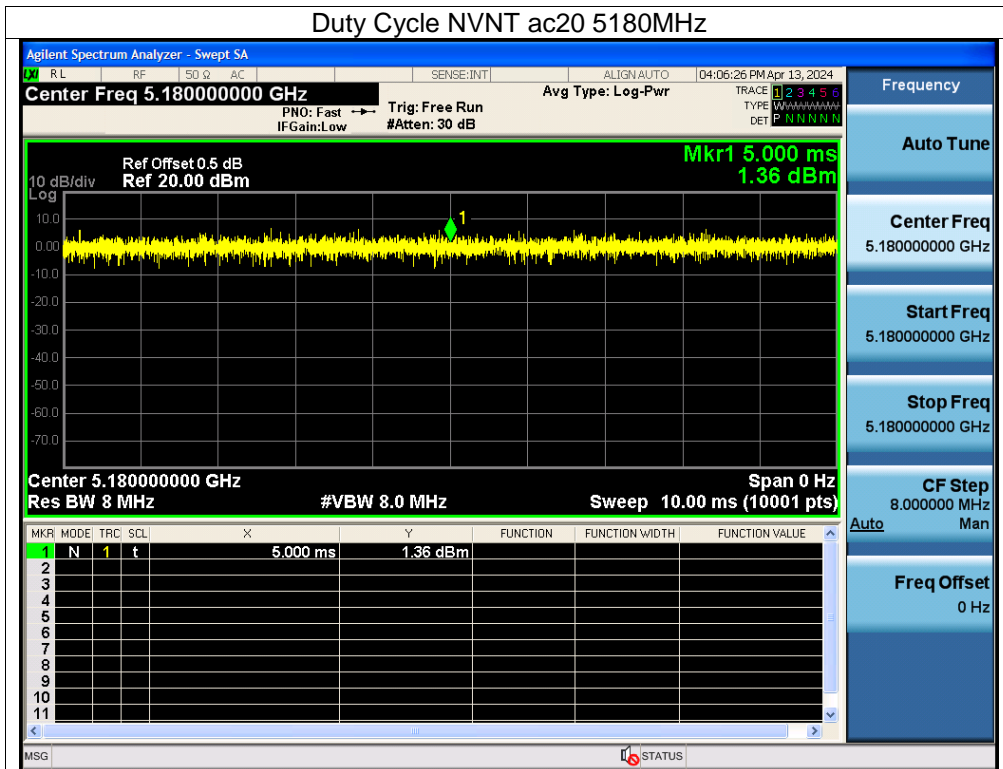


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