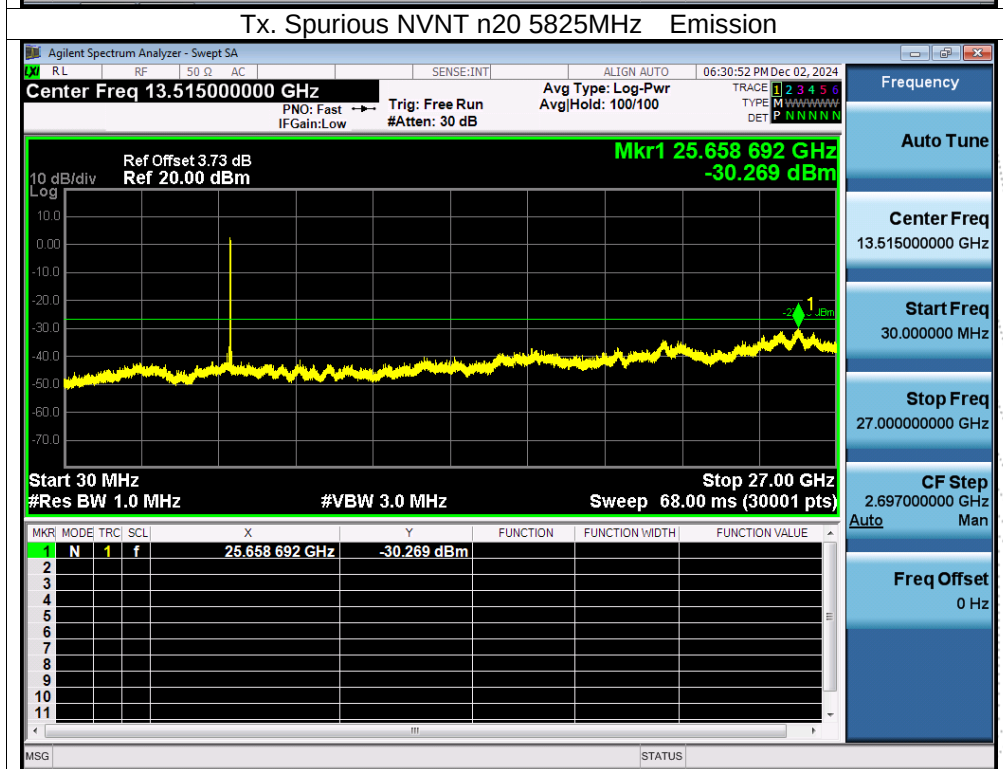
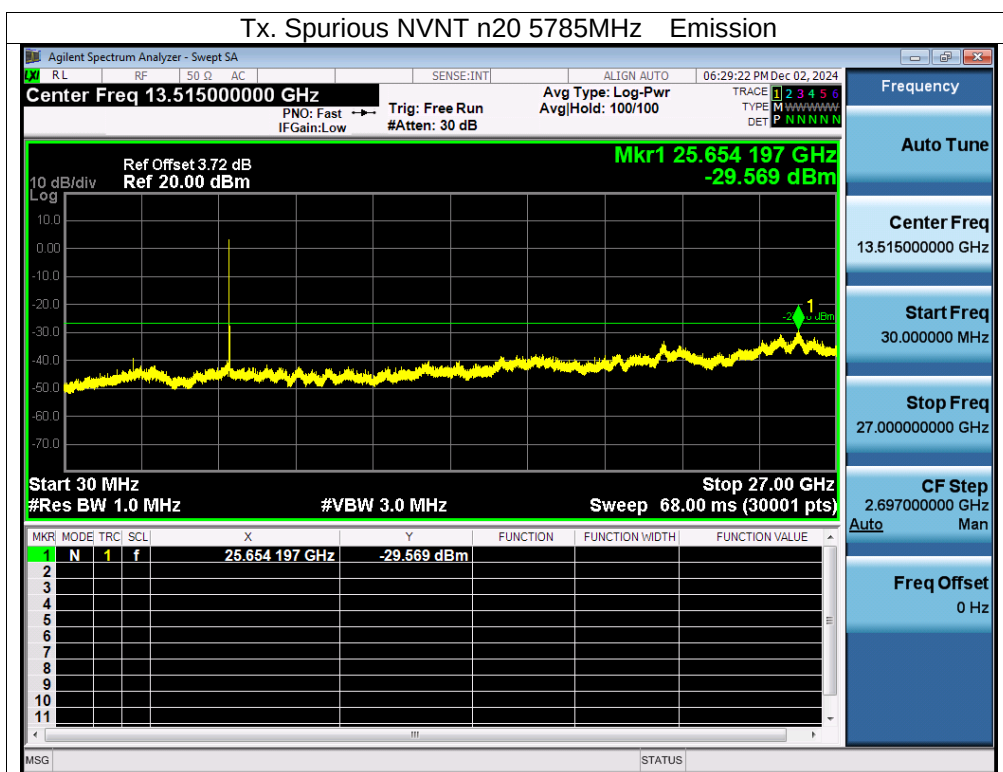
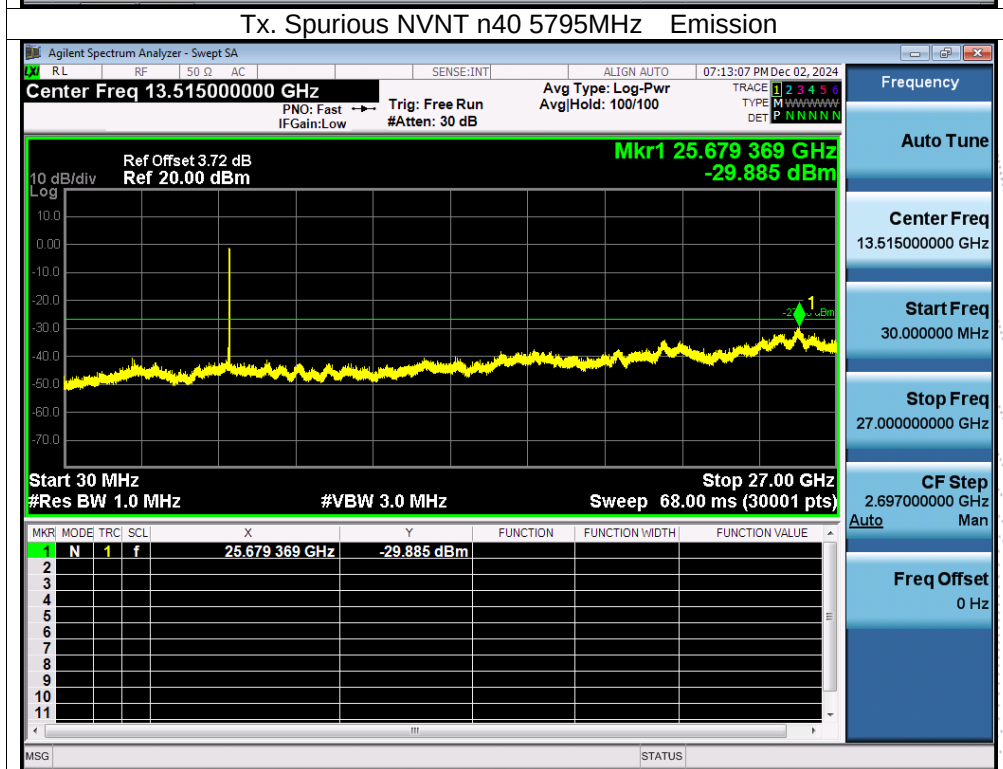
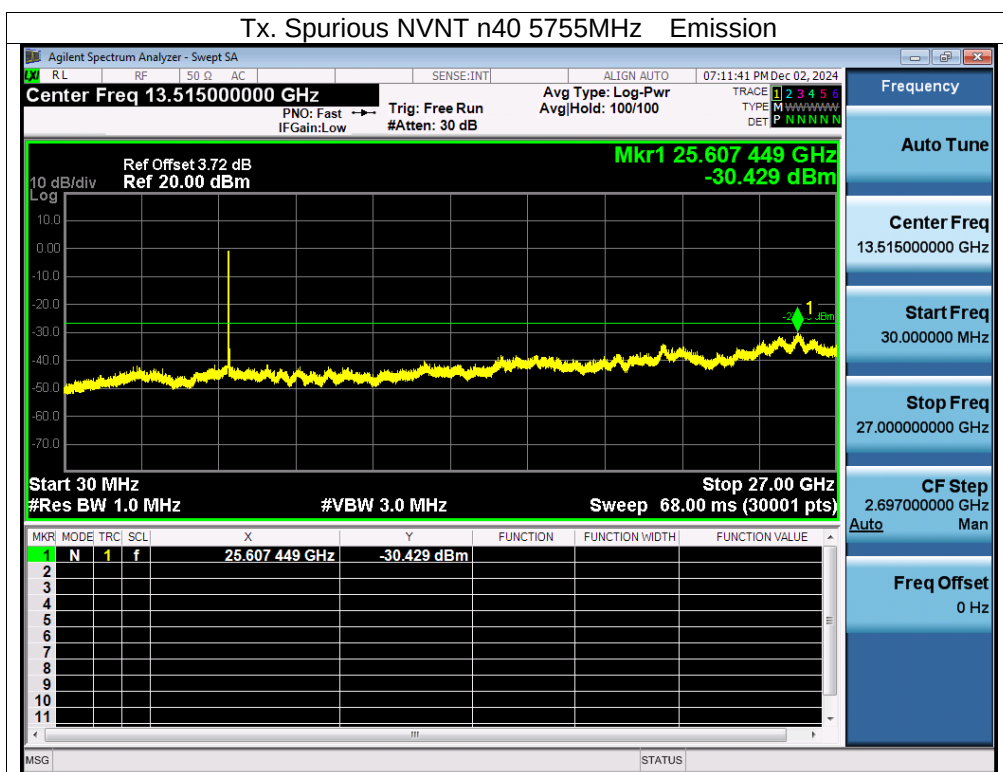
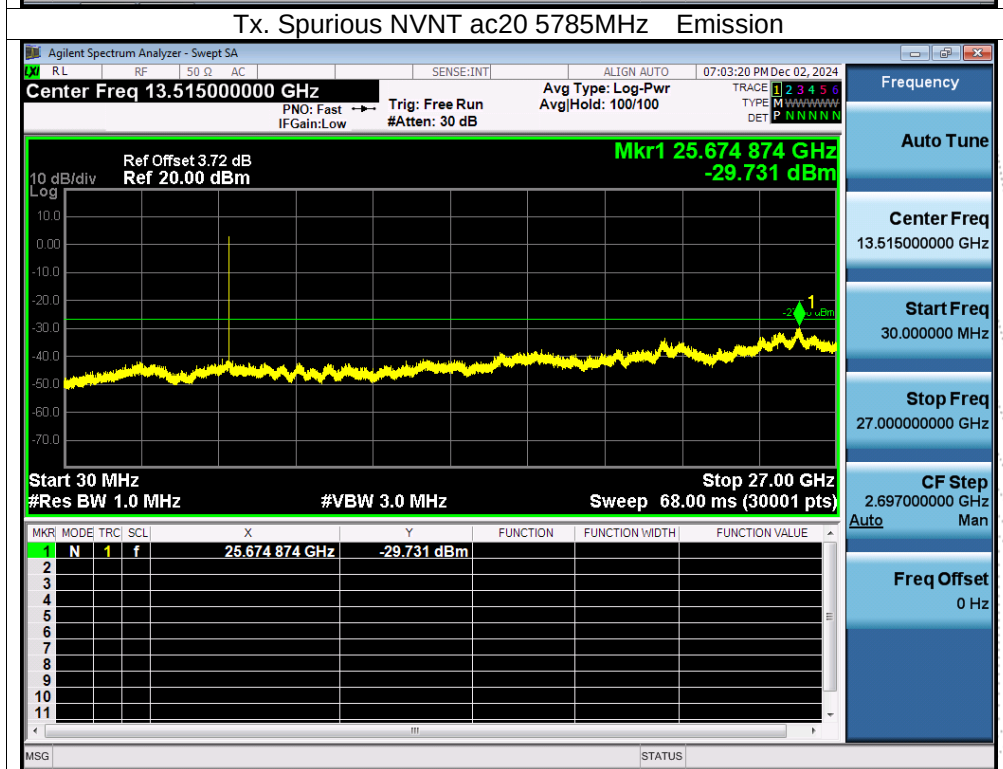
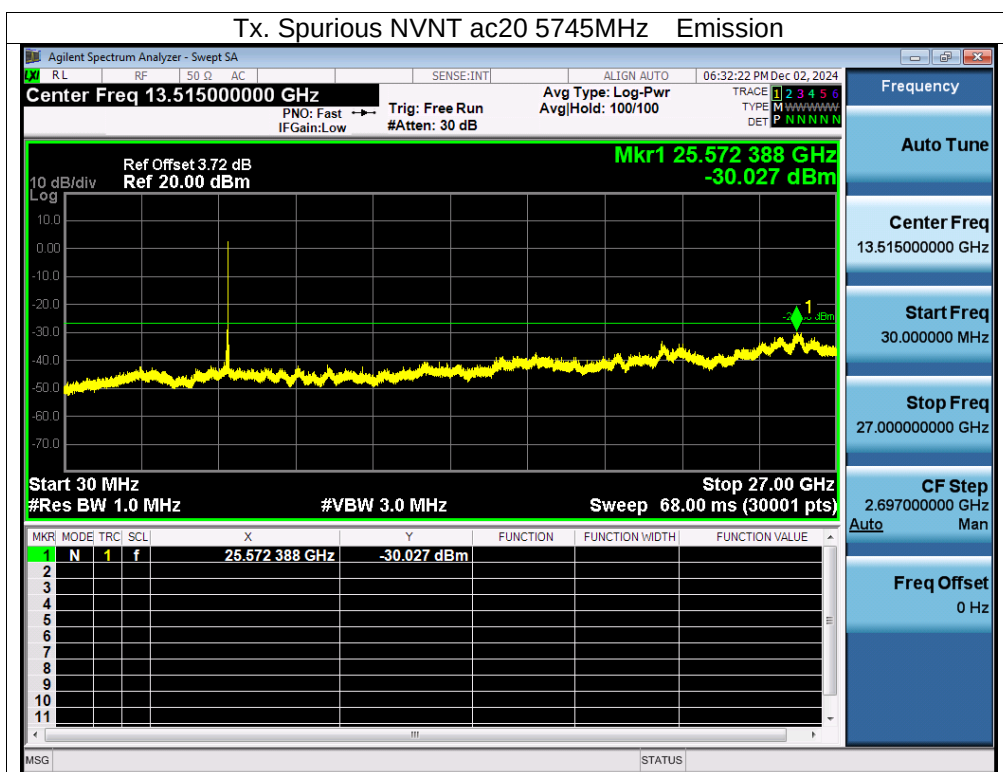
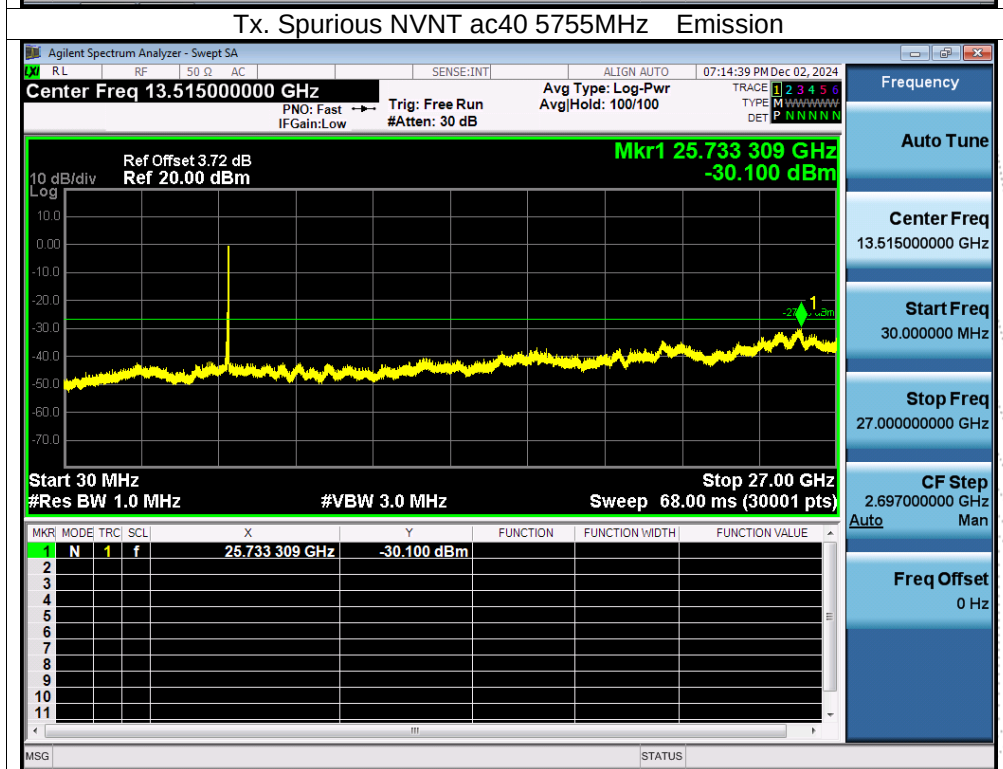
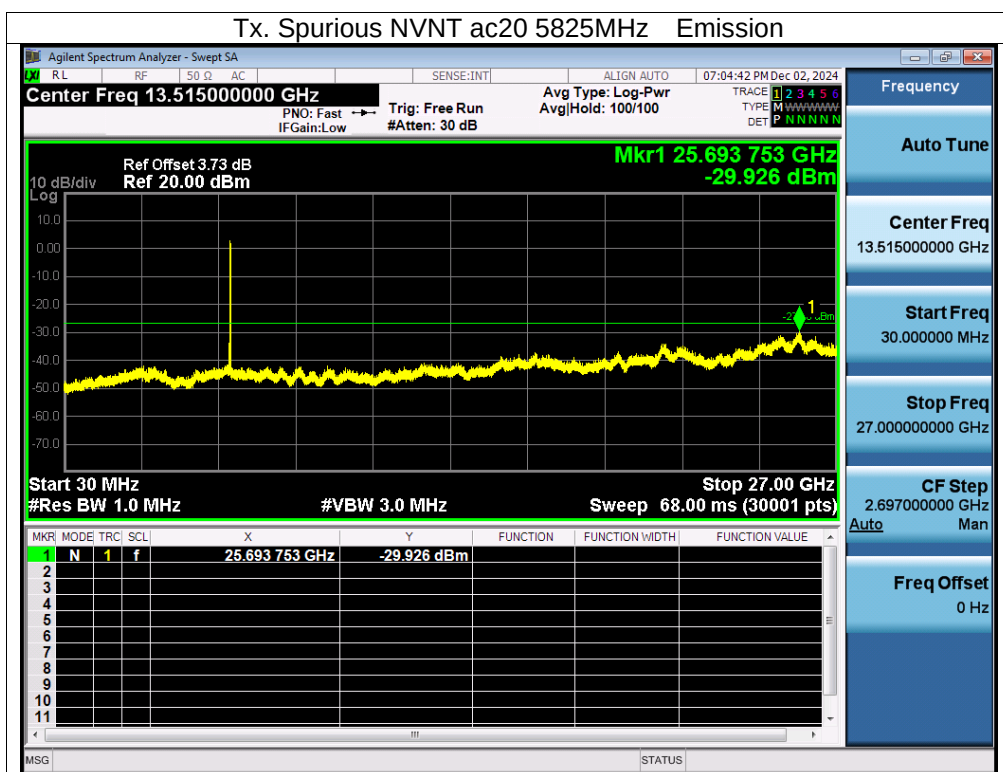
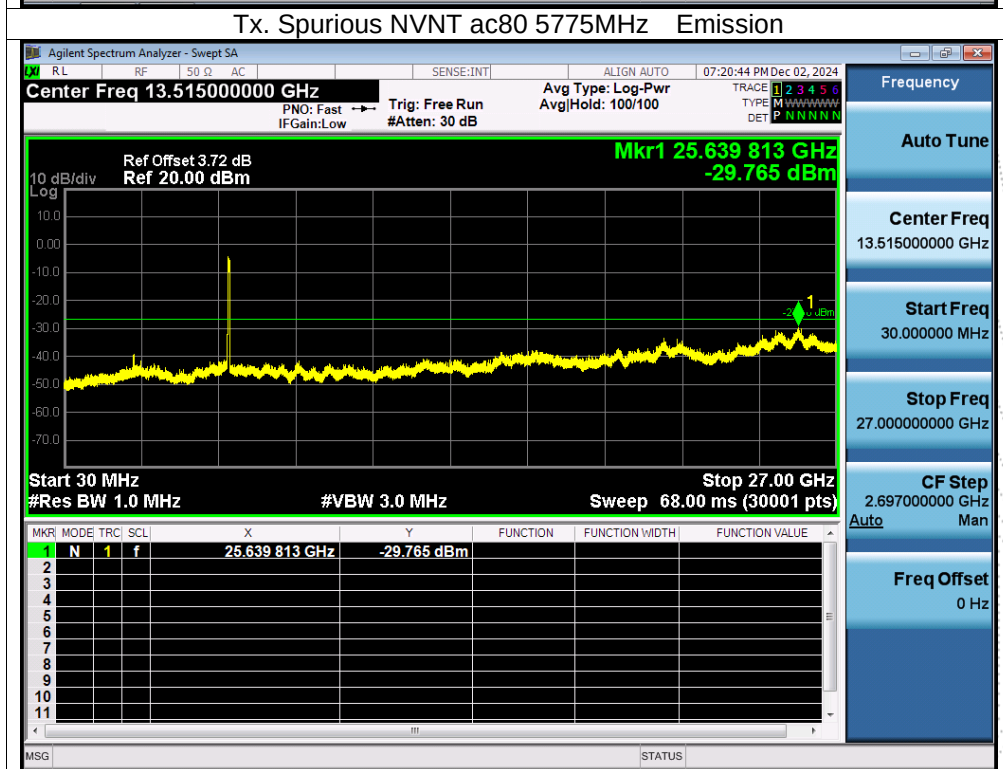
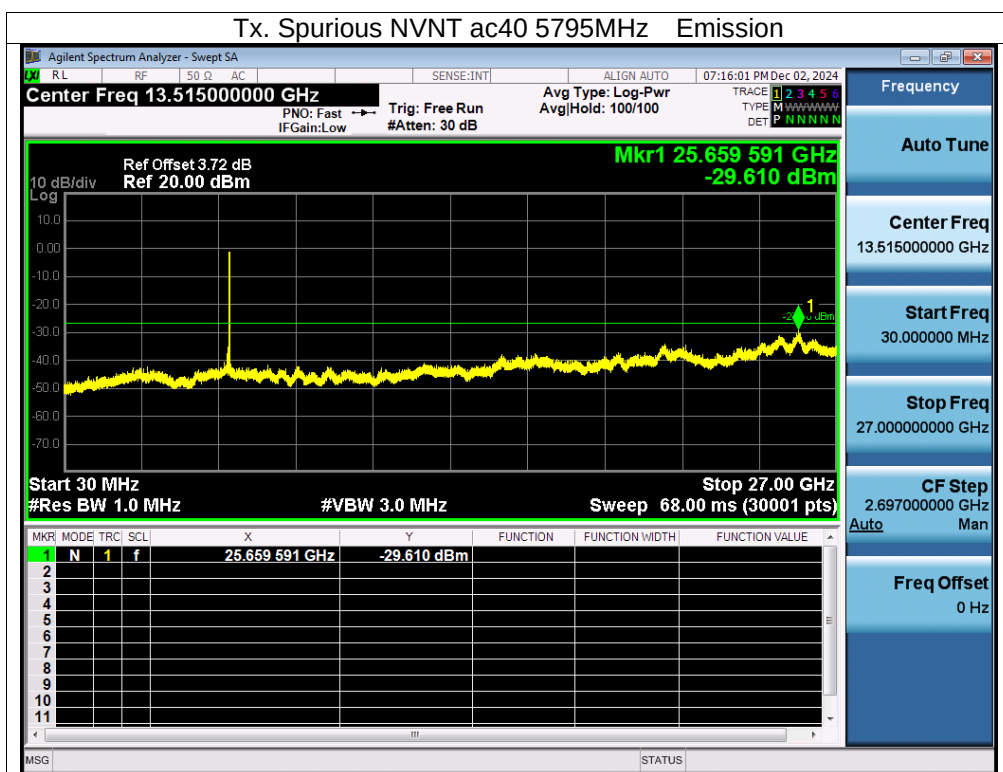


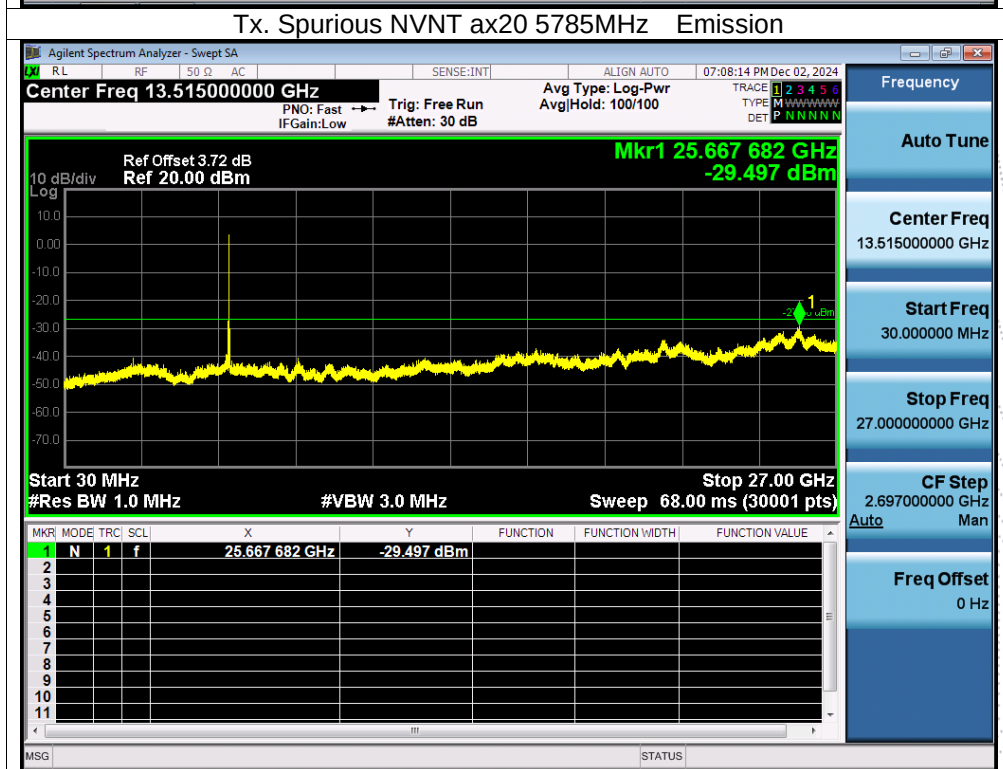
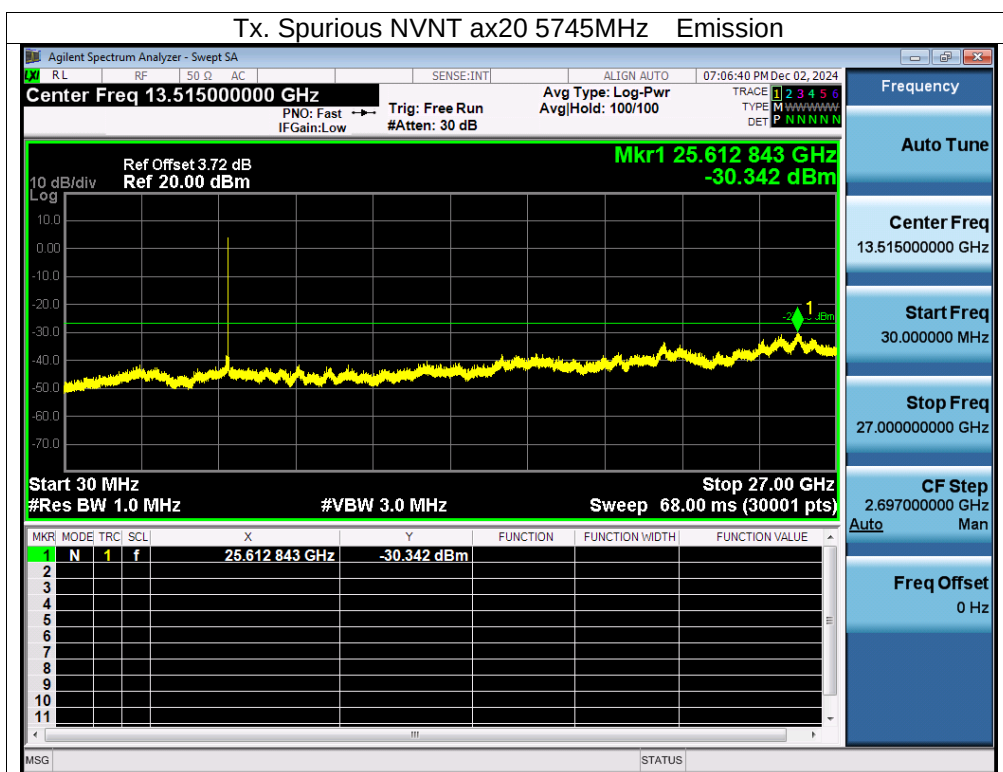


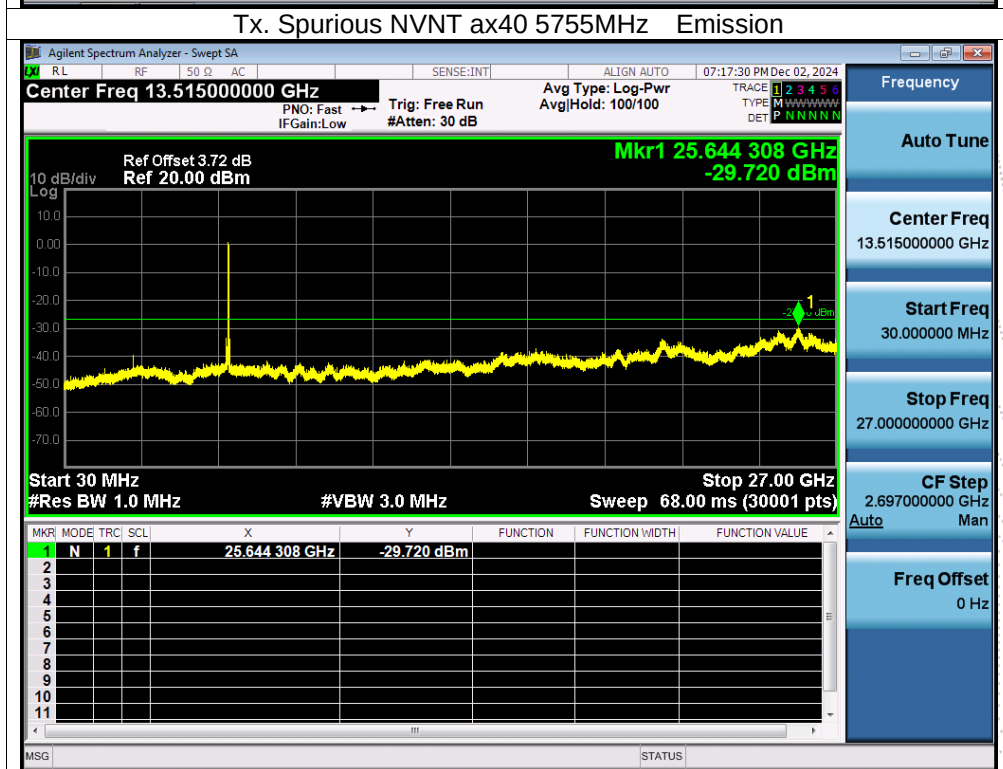
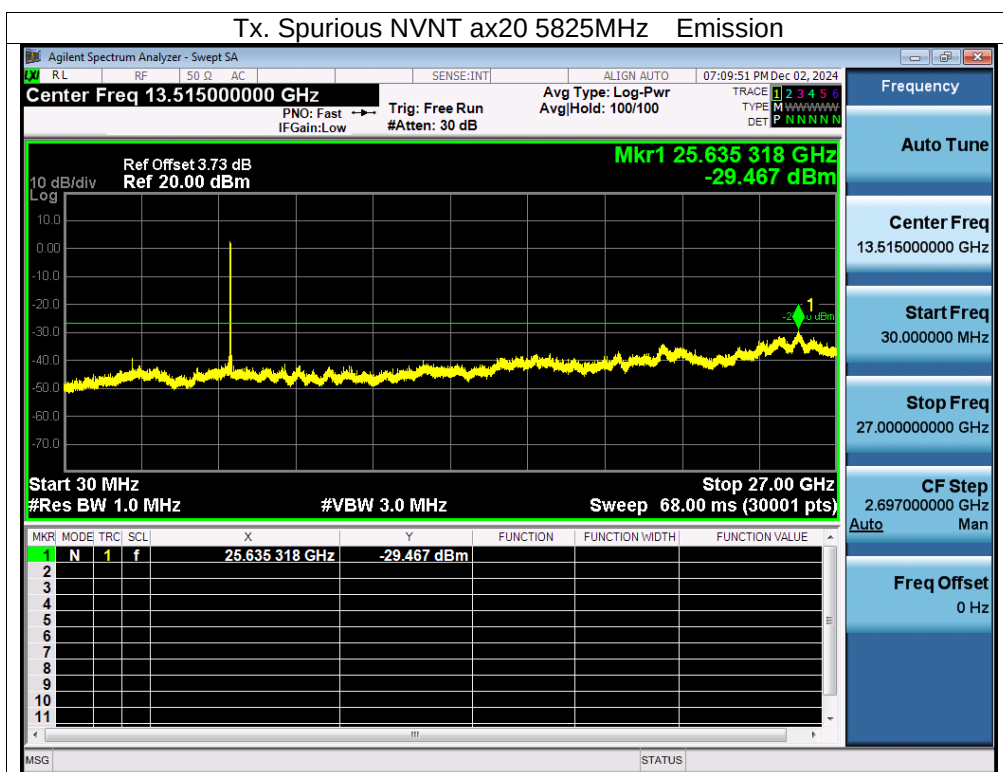


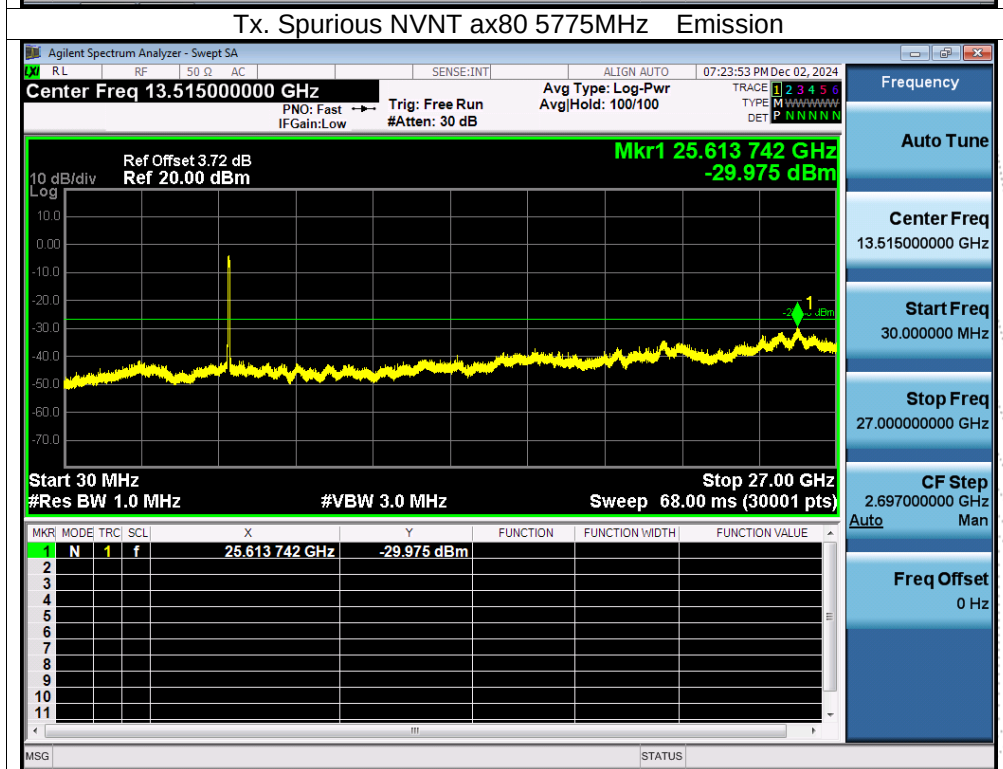
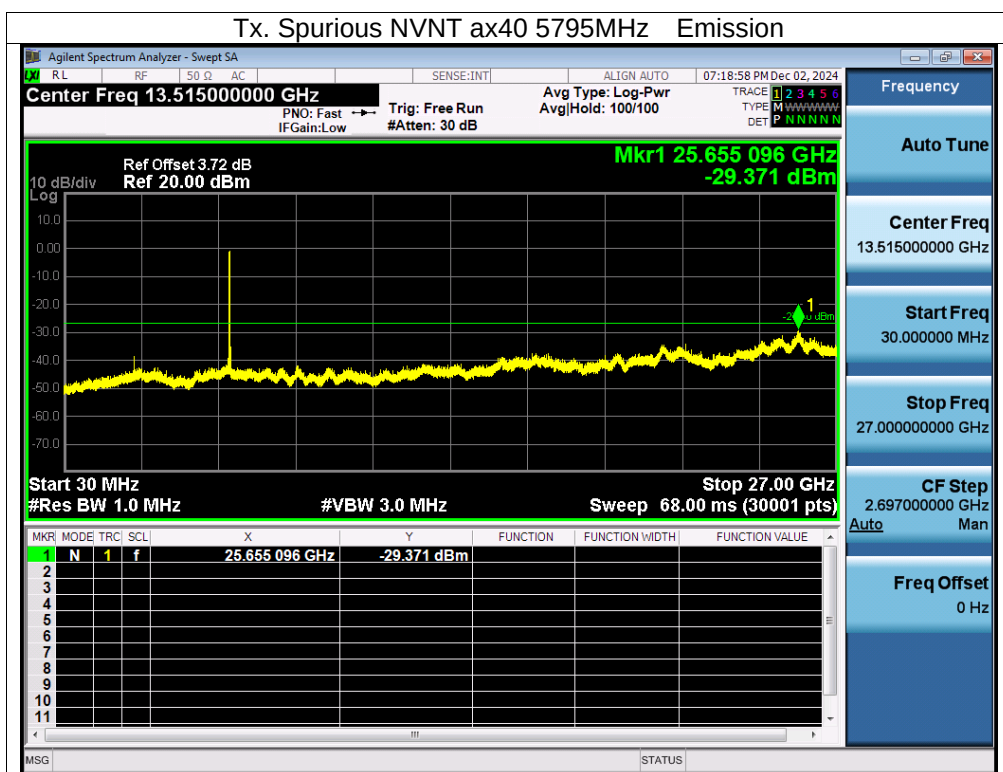












13. Frequency Stability Measurement

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 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	5180.0056	5180	0.0056	1.0811
		V max (V)	AC 138	5180.0052	5180	0.0052	1.0039
		V min (V)	AC 102	5180.0010	5180	0.0010	0.1931
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	5180.0003	5180	0.0003	0.0579
		T (°C)	-10	5180.0128	5180	0.0128	2.4710
		T (°C)	0	5180.0093	5180	0.0093	1.7954
		T (°C)	10	5180.0035	5180	0.0035	0.6757
		T (°C)	20	5180.0127	5180	0.0127	2.4517
		T (°C)	30	5180.0016	5180	0.0016	0.3089
		T (°C)	40	5180.0062	5180	0.0062	1.1969
		T (°C)	50	5180.0079	5180	0.0079	1.5251
		T (°C)	60	5180.0115	5180	0.0115	2.2201
		T (°C)	70	5180.0053	5180	0.0053	1.0232
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	5200.0111	5200	0.0111	2.1346
		V max (V)	AC 138	5200.0029	5200	0.0029	0.5577
		V min (V)	AC 102	5200.0094	5200	0.0094	1.8077
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)	AC 120	T (°C)	-20	5200.00850	5200	0.00850	1.6346
		T (°C)	-10	5200.01230	5200	0.01230	2.3654
		T (°C)	0	5200.00520	5200	0.00520	1.0000
		T (°C)	10	5200.00770	5200	0.00770	1.4808
		T (°C)	20	5200.00040	5200	0.00040	0.0769
		T (°C)	30	5200.01080	5200	0.01080	2.0769
		T (°C)	40	5200.01190	5200	0.01190	2.2885
		T (°C)	50	5200.01070	5200	0.01070	2.0577
		T (°C)	60	5200.00950	5200	0.00950	1.8269
		T (°C)	70	5200.01160	5200	0.01160	2.2308
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	5240.0038	5240	0.0038	0.7252
		V max (V)	AC 138	5240.0008	5240	0.0008	0.1527
		V min (V)	AC 102	5240.0094	5240	0.0094	1.7939
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	5240.0100	5240	0.0100	1.9084
		T (°C)	-10	5240.0035	5240	0.0035	0.6679
		T (°C)	0	5240.0066	5240	0.0066	1.2595
		T (°C)	10	5240.0052	5240	0.0052	0.9924
		T (°C)	20	5240.0105	5240	0.0105	2.0038
		T (°C)	30	5240.0112	5240	0.0112	2.1374
		T (°C)	40	5240.0122	5240	0.0122	2.3282
		T (°C)	50	5240.0094	5240	0.0094	1.7939
		T (°C)	60	5240.0052	5240	0.0052	0.9924
		T (°C)	70	5240.0097	5240	0.0097	1.8511
Limits				5150-5250 MHz			
Result				Complies			

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Test Voltage:	AC 120V 60Hz
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)	AC 120	5745.01010	5745	0.01010	1.7581
		V max (V)	AC 138	5745.00980	5745	0.00980	1.7058
		V min (V)	AC 102	5745.00020	5745	0.00020	0.0348
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	5745.00120	5745	0.00120	0.2089
		T (°C)	-10	5745.01140	5745	0.01140	1.9843
		T (°C)	0	5745.00520	5745	0.00520	0.9051
		T (°C)	10	5745.00440	5745	0.00440	0.7659
		T (°C)	20	5745.01010	5745	0.01010	1.7581
		T (°C)	30	5745.01330	5745	0.01330	2.3151
		T (°C)	40	5745.00630	5745	0.00630	1.0966
		T (°C)	50	5745.00820	5745	0.00820	1.4273
		T (°C)	60	5745.00040	5745	0.00040	0.0696
		T (°C)	70	5745.00930	5745	0.00930	1.6188
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	5785.00970	5785	0.00970	1.6768
		V max (V)	AC 138	5785.00700	5785	0.00700	1.2100
		V min (V)	AC 102	5785.01100	5785	0.01100	1.9015
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	5785.00370	5785	0.00370	0.6396
		T (°C)	-10	5785.00040	5785	0.00040	0.0691
		T (°C)	0	5785.00260	5785	0.00260	0.4494
		T (°C)	10	5785.00690	5785	0.00690	1.1927
		T (°C)	20	5785.00780	5785	0.00780	1.3483
		T (°C)	30	5785.01310	5785	0.01310	2.2645
		T (°C)	40	5785.01050	5785	0.01050	1.8150
		T (°C)	50	5785.00210	5785	0.00210	0.3630
		T (°C)	60	5785.00710	5785	0.00710	1.2273
		T (°C)	70	5785.01010	5785	0.01010	1.7459
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	5825.00760	5825	0.00760	1.3047
		V max (V)	AC 138	5825.01170	5825	0.01170	2.0086
		V min (V)	AC 102	5825.00350	5825	0.00350	0.6009
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	5825.00270	5825	0.00270	0.4635
		T (°C)	-10	5825.00090	5825	0.00090	0.1545
		T (°C)	0	5825.01060	5825	0.01060	1.8197
		T (°C)	10	5825.01190	5825	0.01190	2.0429
		T (°C)	20	5825.01140	5825	0.01140	1.9571
		T (°C)	30	5825.00630	5825	0.00630	1.0815
		T (°C)	40	5825.00540	5825	0.00540	0.9270
		T (°C)	50	5825.00540	5825	0.00540	0.9270
		T (°C)	60	5825.00230	5825	0.00230	0.3948
		T (°C)	70	5825.01110	5825	0.01110	1.9056
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 = $T_{on} / (T_{on} + T_{off})$

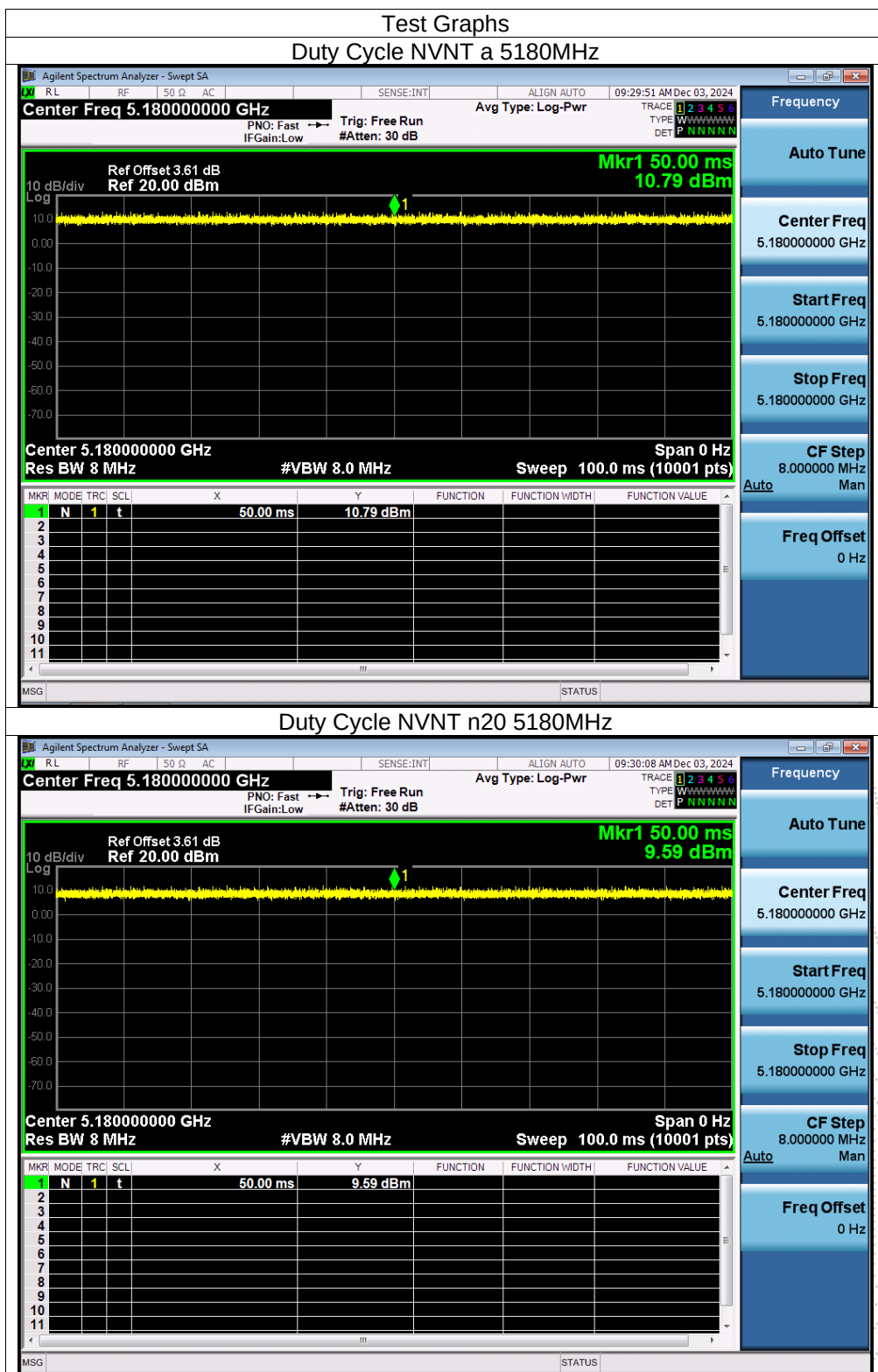
14.3 Test Procedure

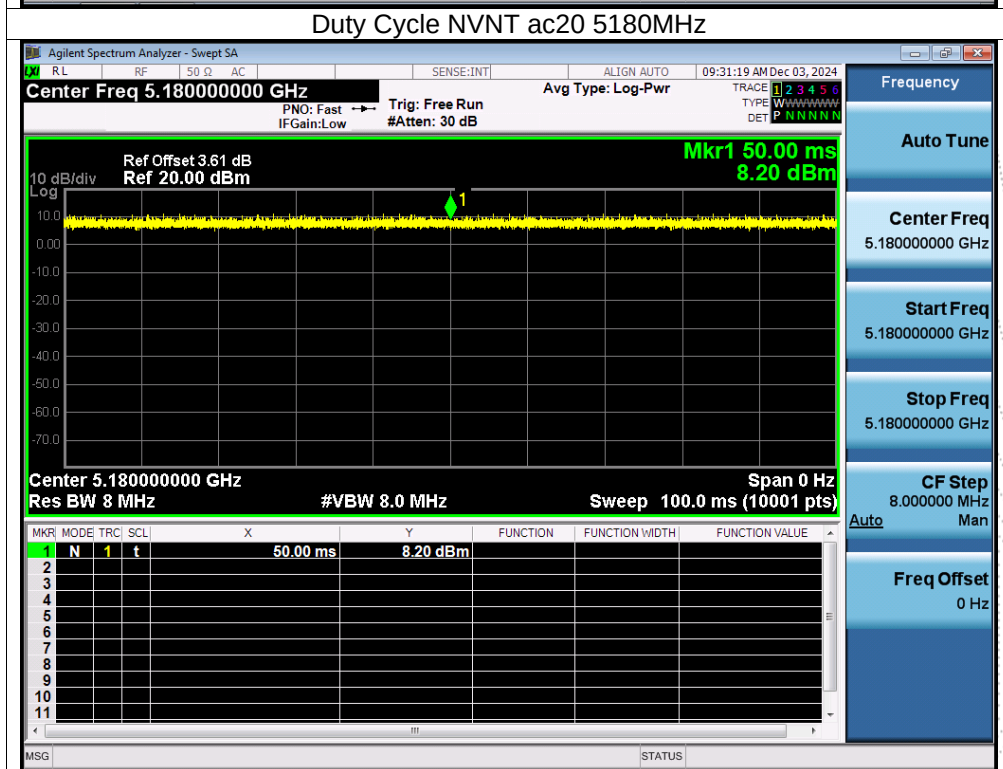
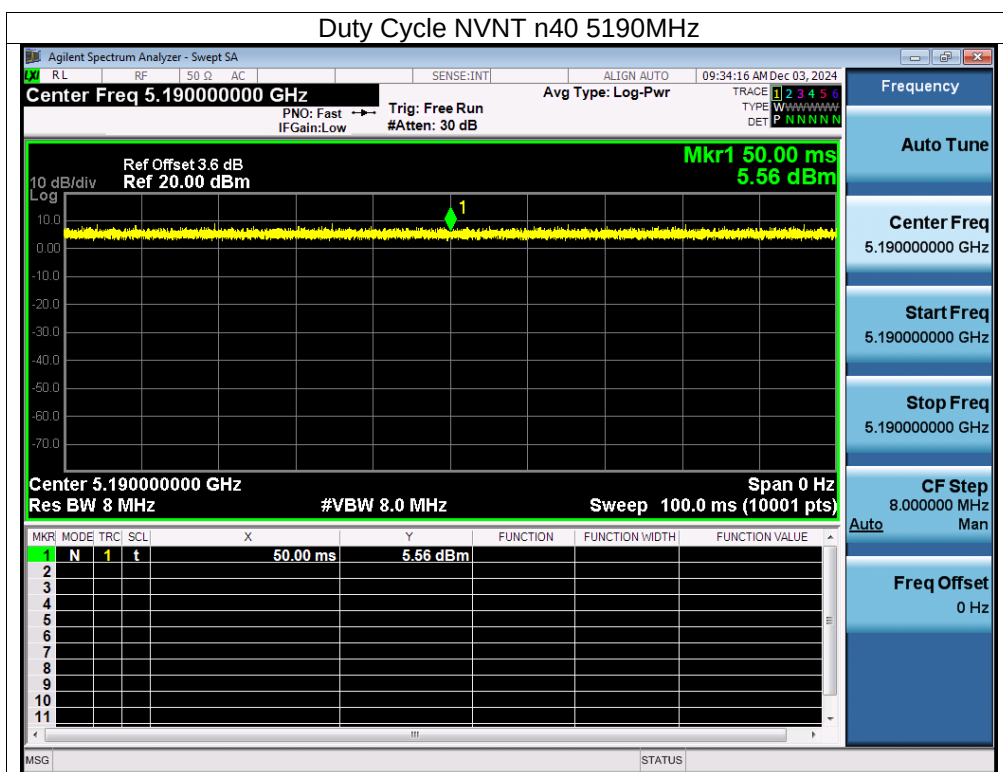
1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

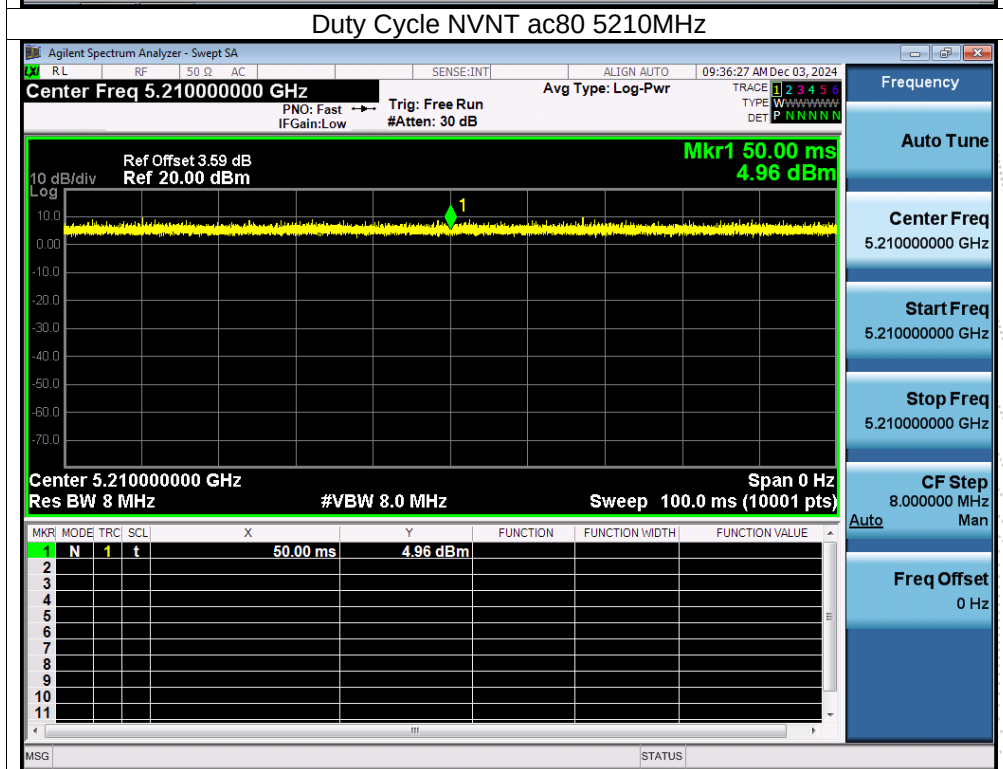
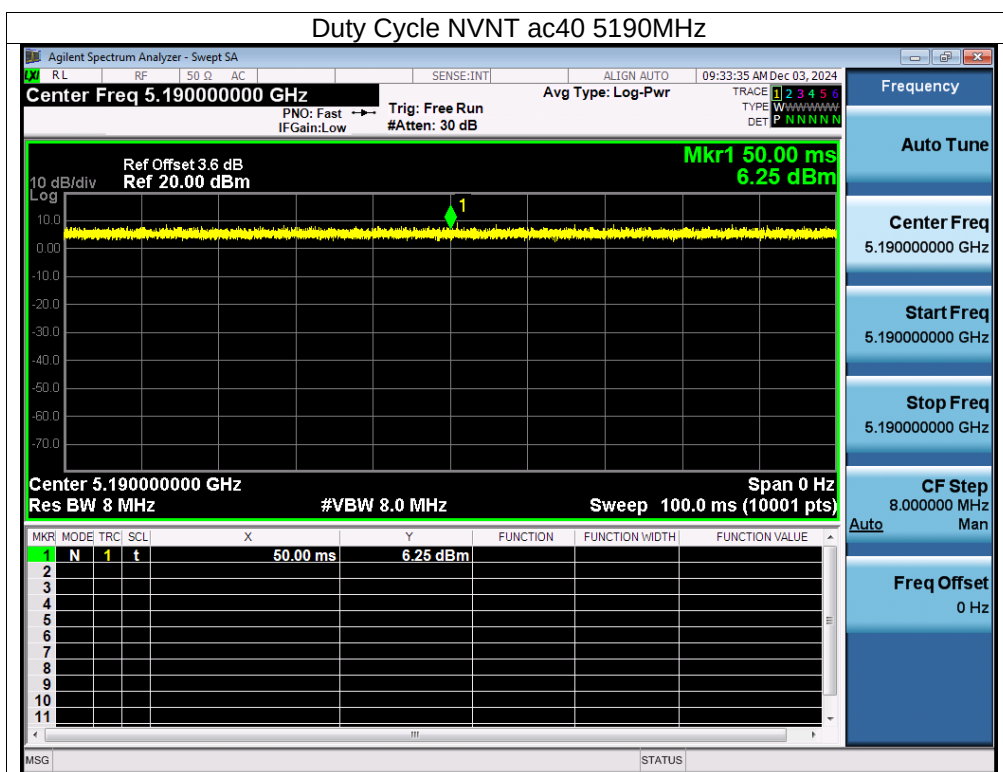
14.4 Test Result

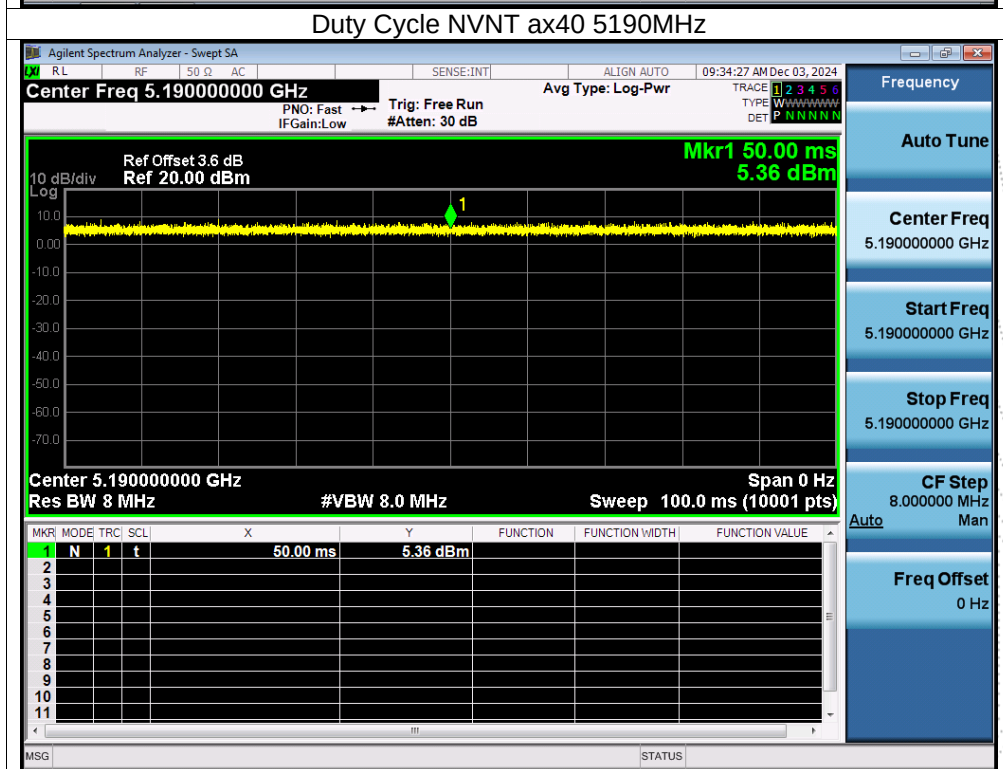
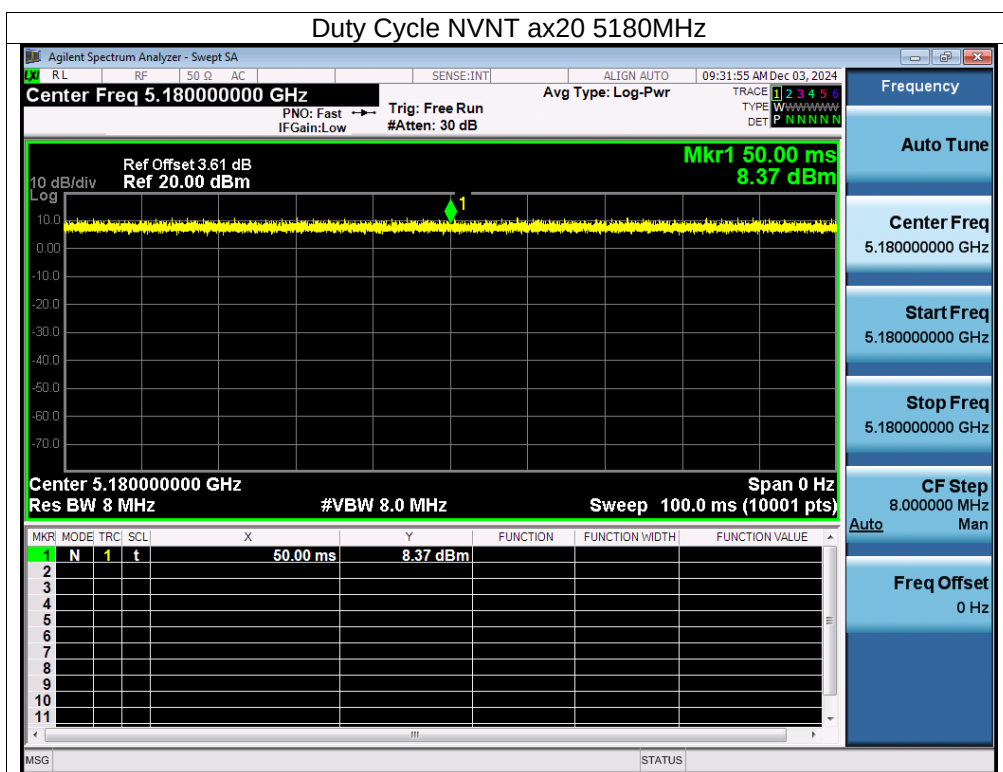
ANT A

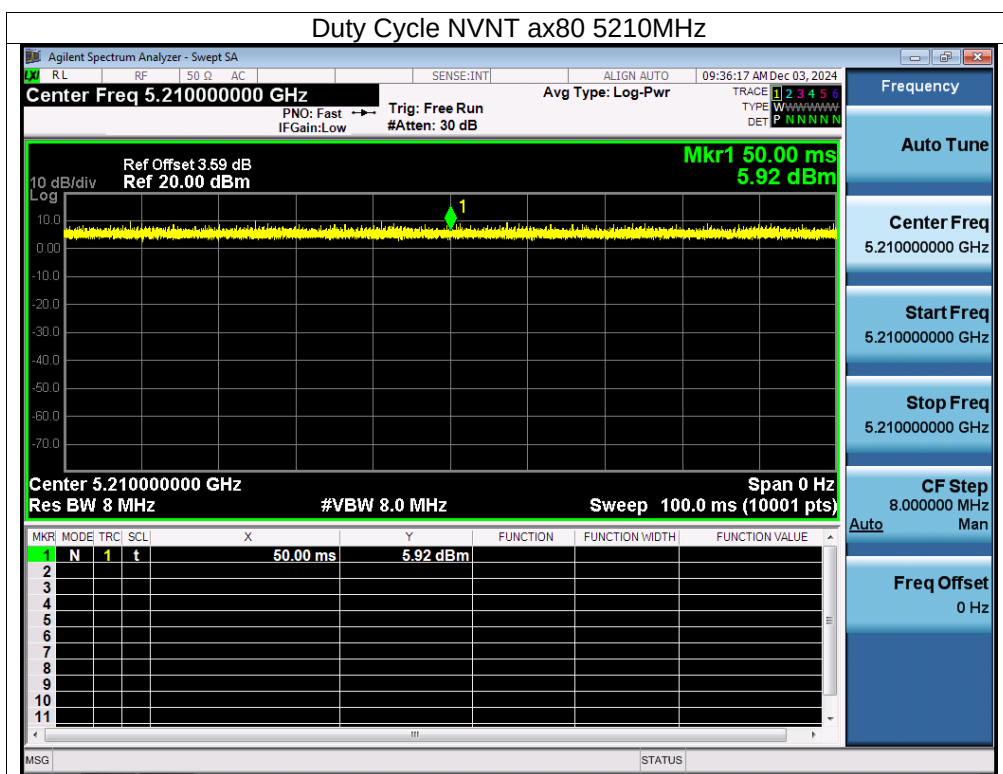
Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)	1/T (Hz)
NVNT	a	5180	100	0	10
NVNT	n20	5180	100	0	10
NVNT	n40	5190	100	0	10
NVNT	ac20	5180	100	0	10
NVNT	ac40	5190	100	0	10
NVNT	ac80	5210	100	0	10
NVNT	ax20	5180	100	0	10
NVNT	ax40	5190	100	0	10
NVNT	ax80	5210	100	0	10





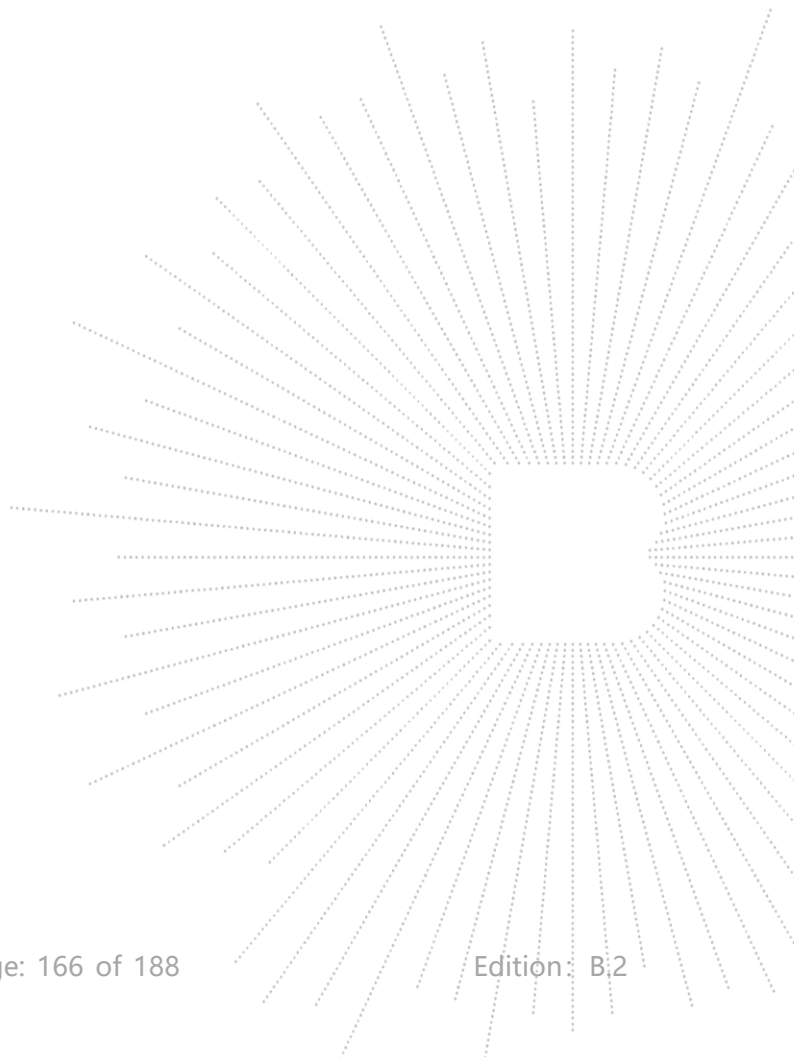


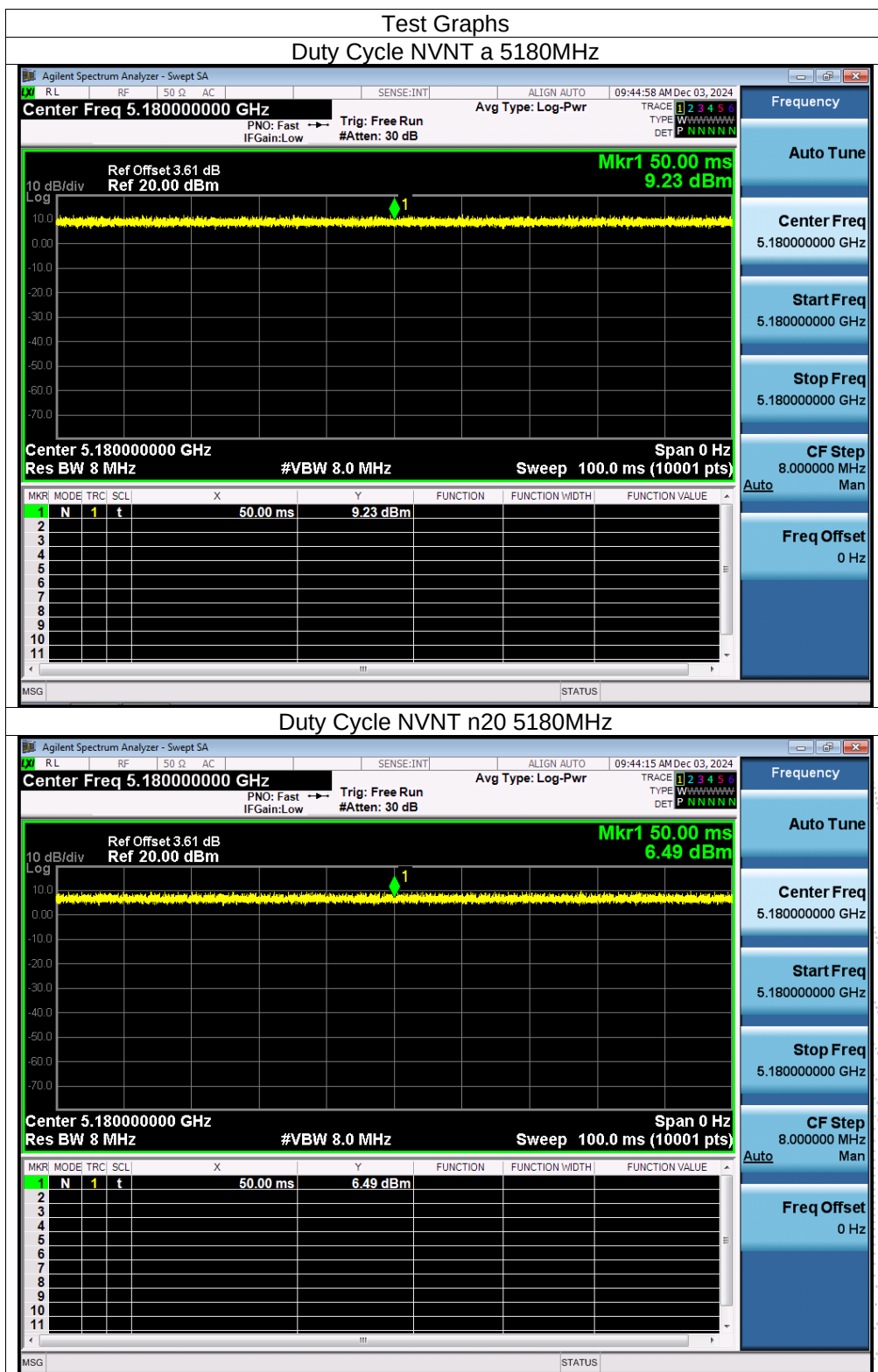


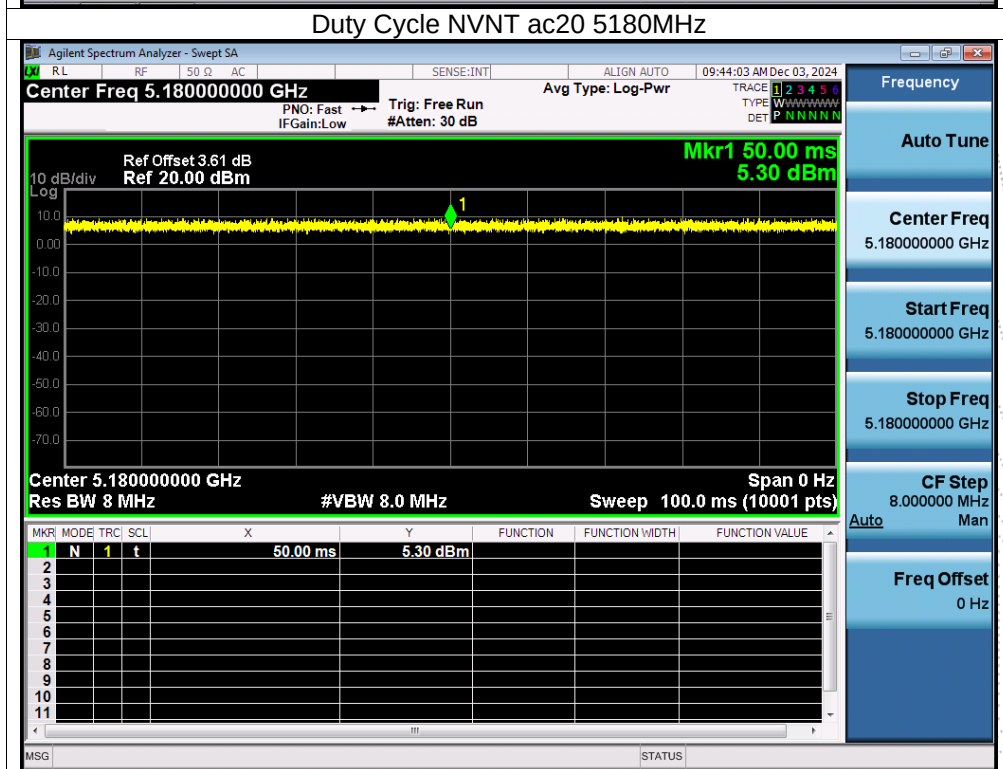
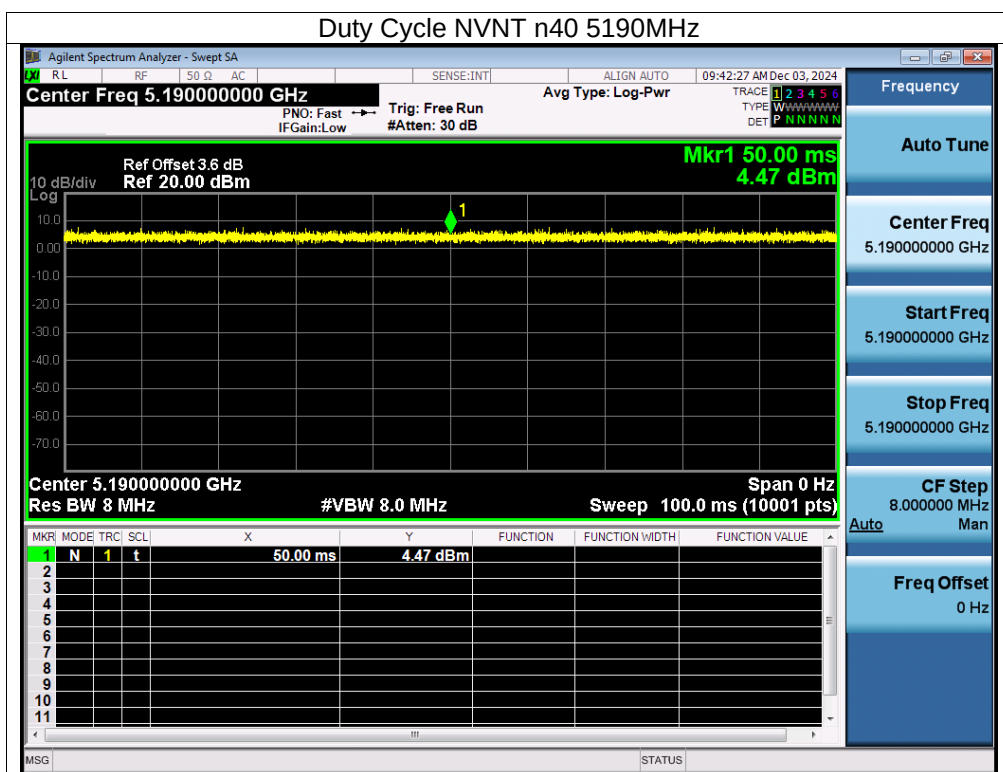


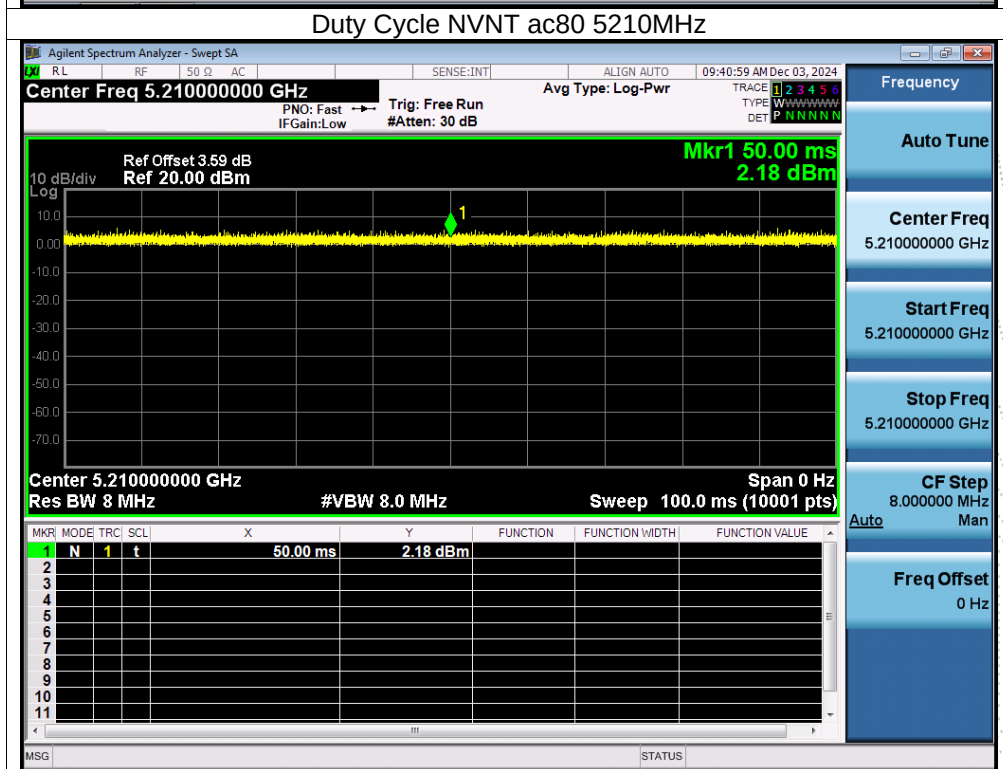
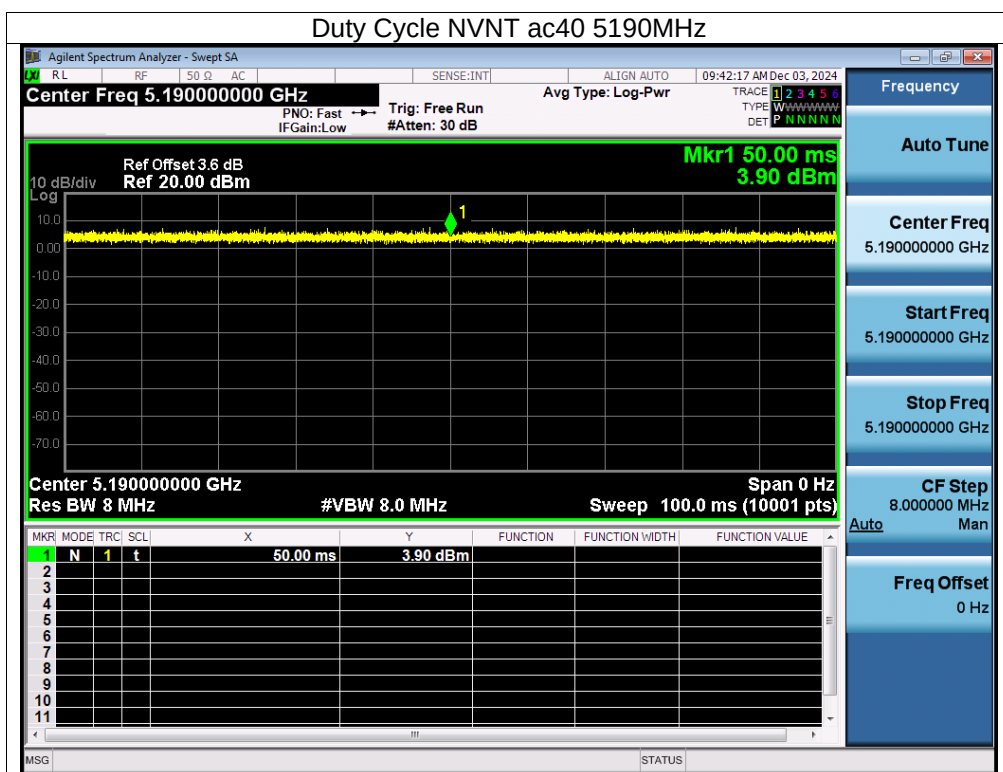
ANT B

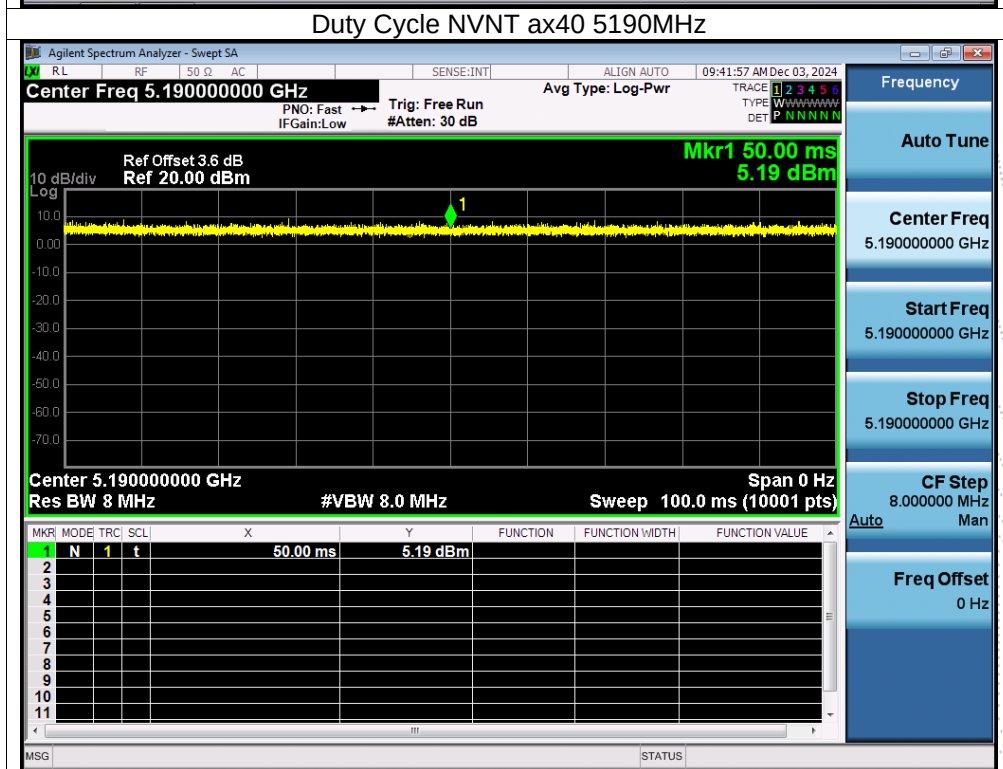
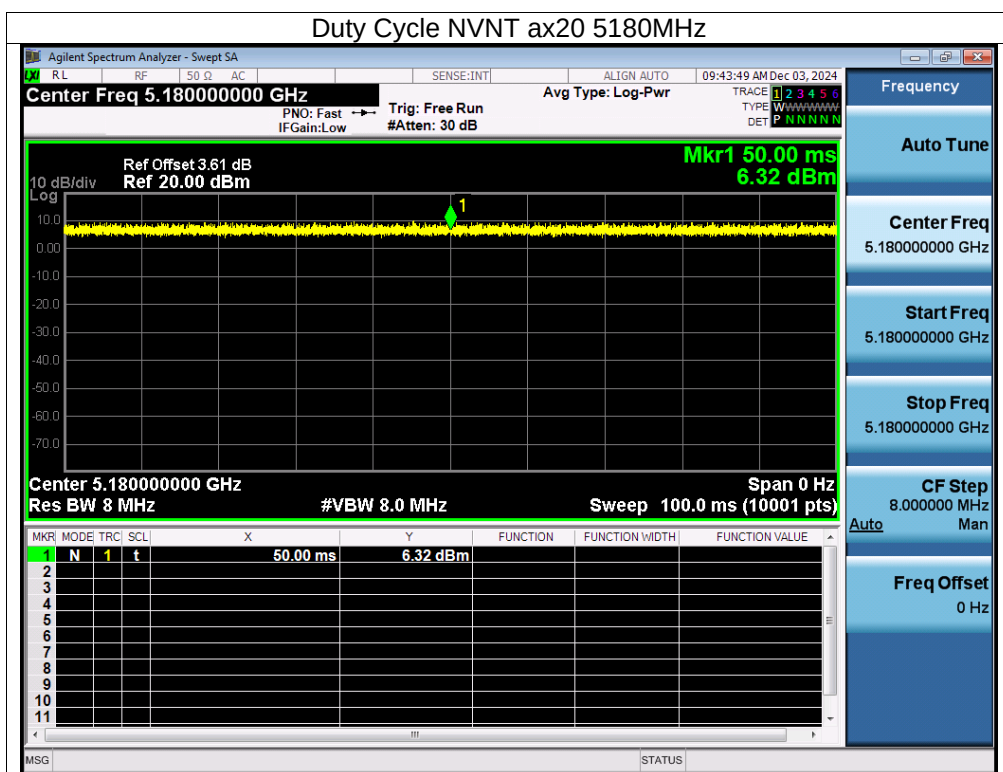
Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)	1/T (Hz)
NVNT	a	5180	100	0	10
NVNT	n20	5180	100	0	10
NVNT	n40	5190	100	0	10
NVNT	ac20	5180	100	0	10
NVNT	ac40	5190	100	0	10
NVNT	ac80	5210	100	0	10
NVNT	ax20	5180	100	0	10
NVNT	ax40	5190	100	0	10
NVNT	ax80	5210	100	0	10

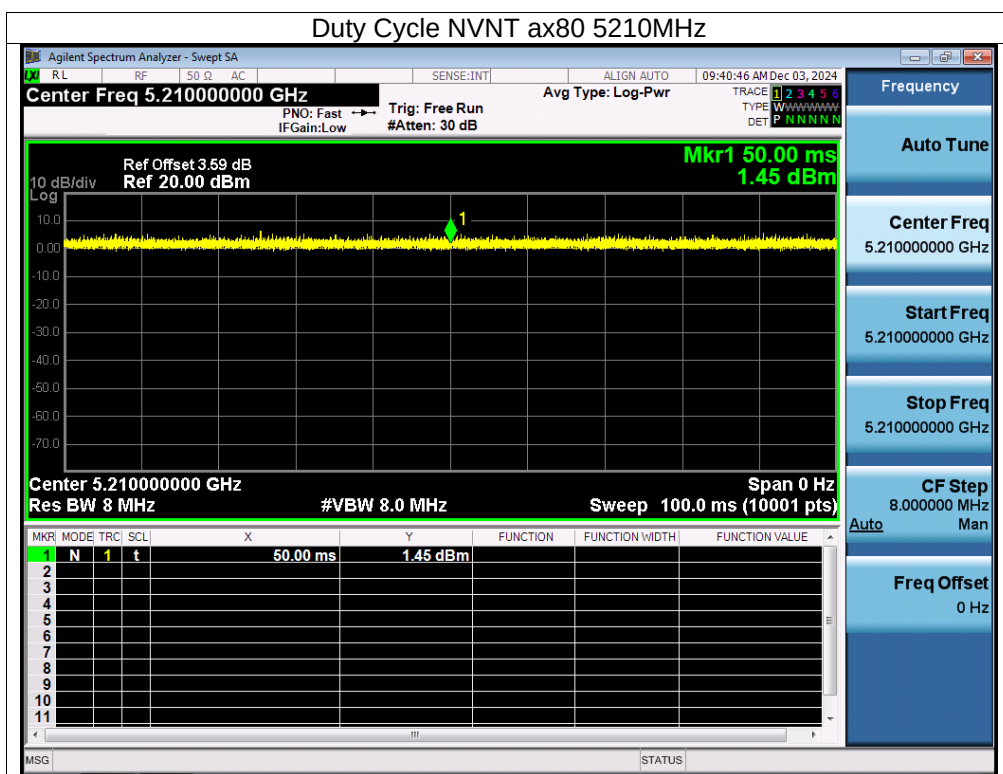






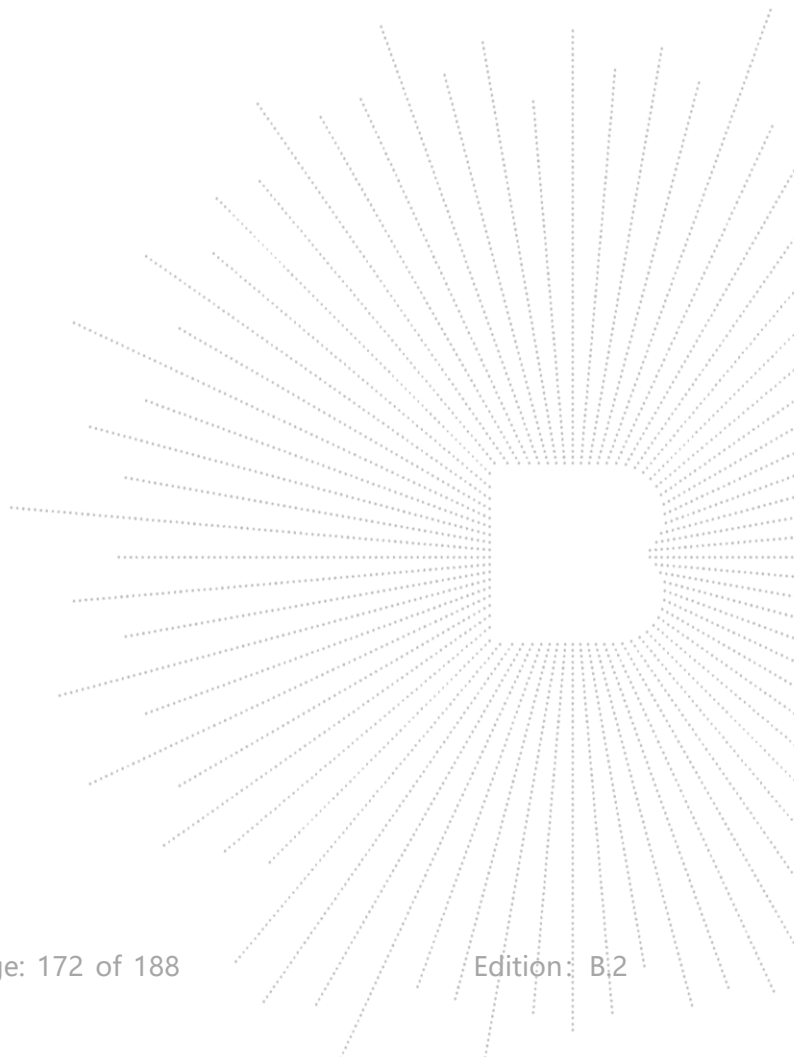


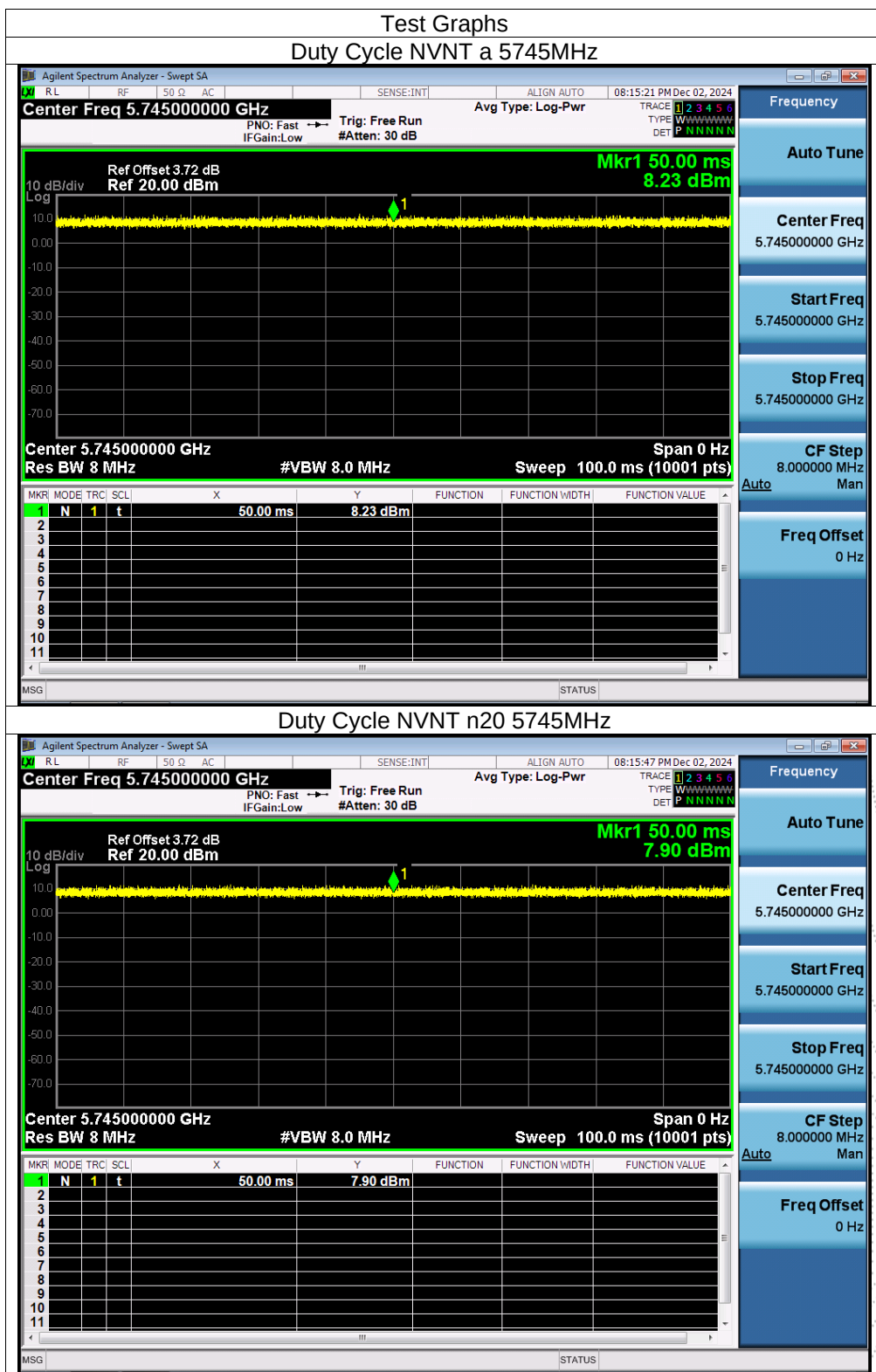


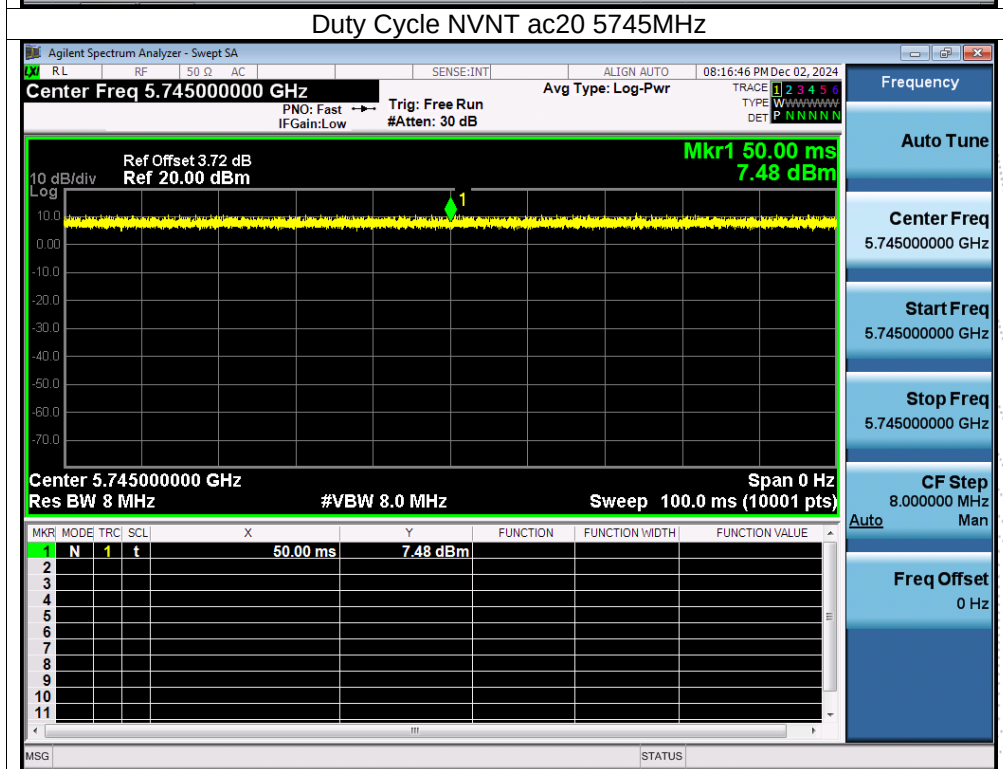
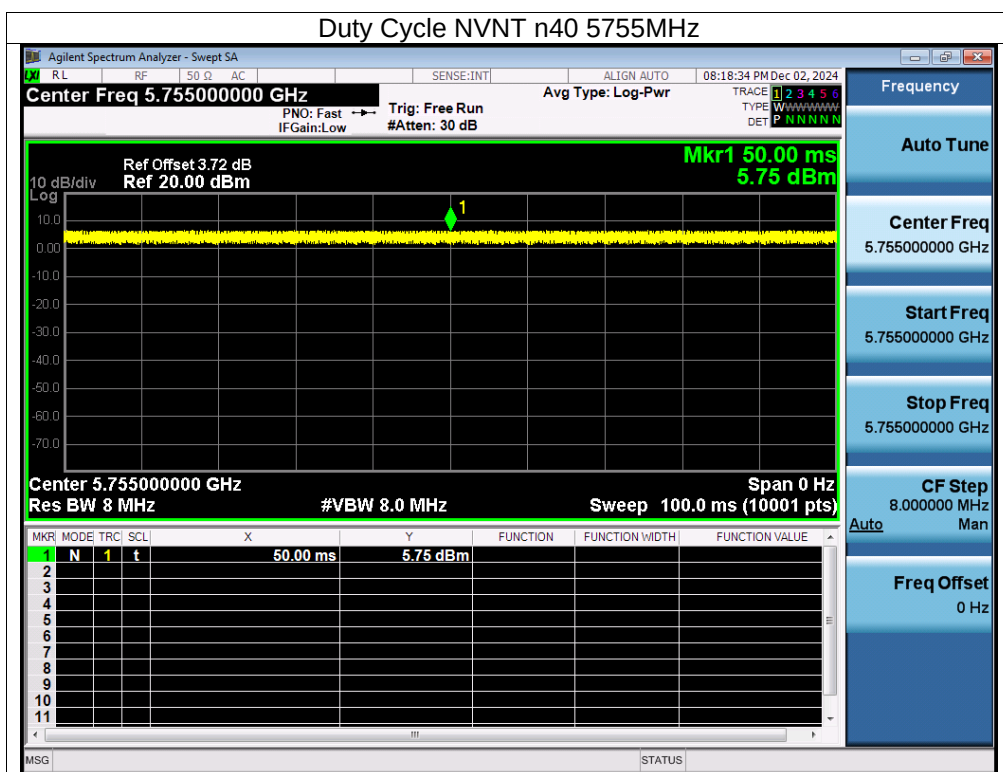


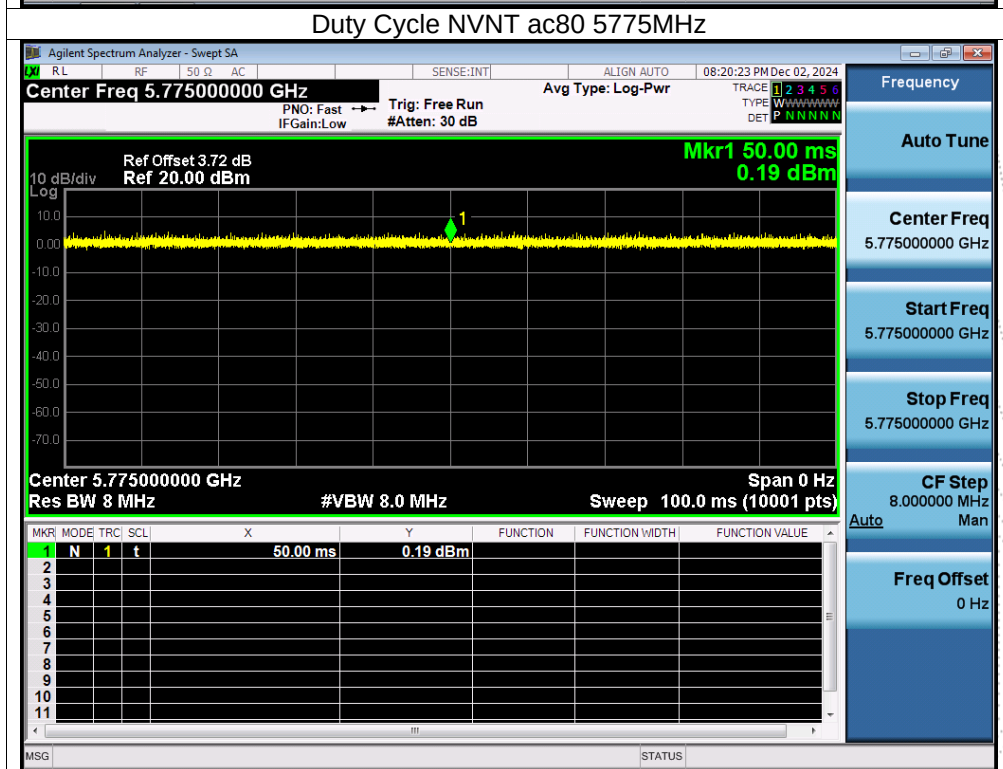
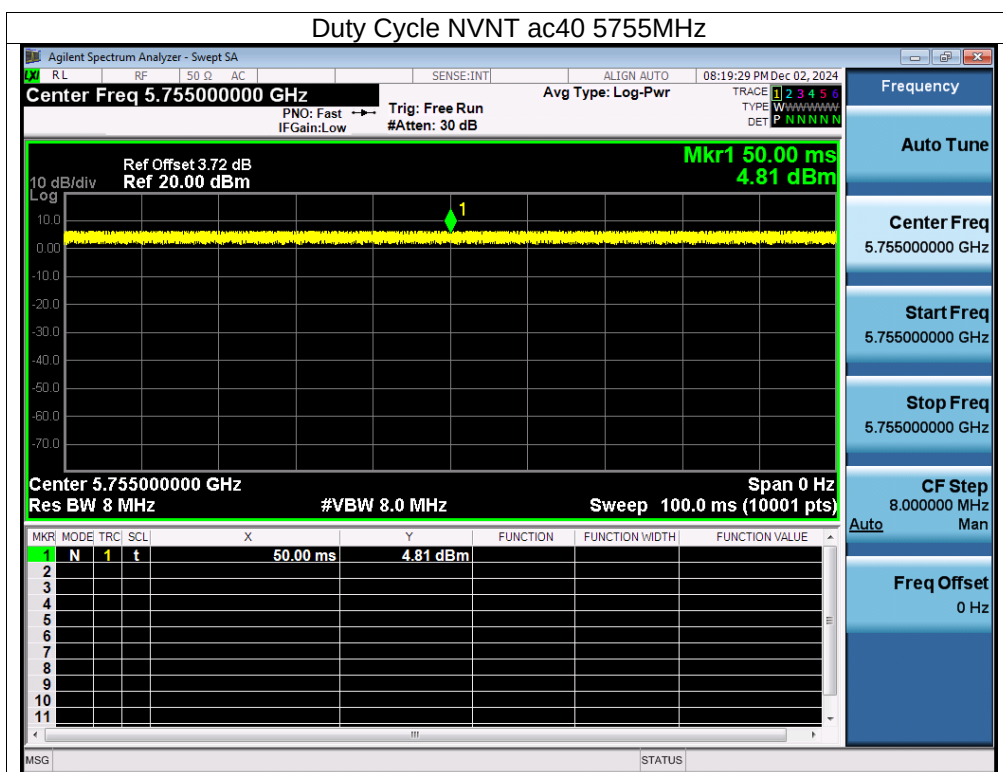
5.8G
ANT A

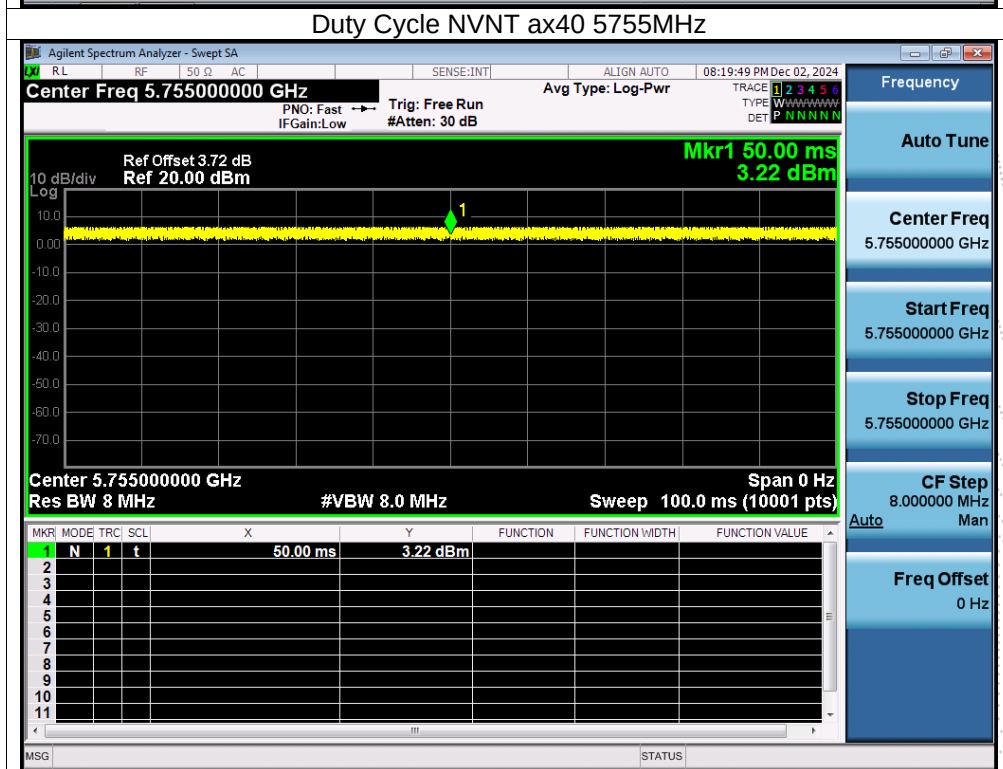
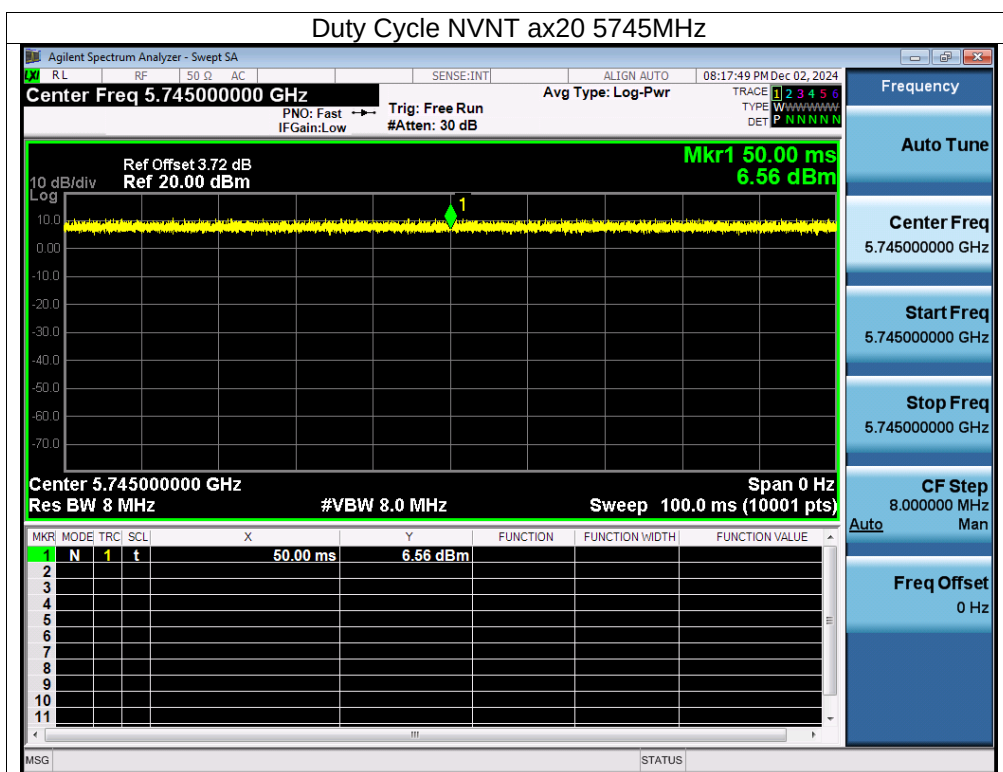
Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)	1/T (Hz)
NVNT	a	5745	100	0	10
NVNT	n20	5745	100	0	10
NVNT	n40	5755	100	0	10
NVNT	ac20	5745	100	0	10
NVNT	ac40	5755	100	0	10
NVNT	ac80	5775	100	0	10
NVNT	ax20	5745	100	0	10
NVNT	ax40	5755	100	0	10
NVNT	ax80	5775	100	0	10

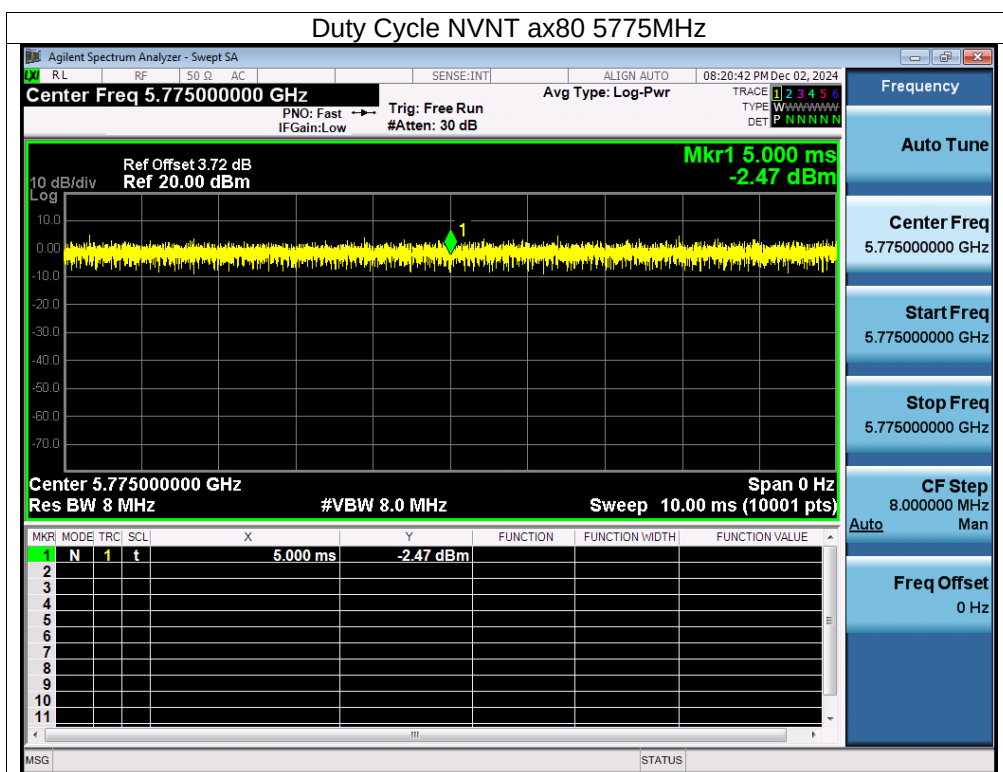






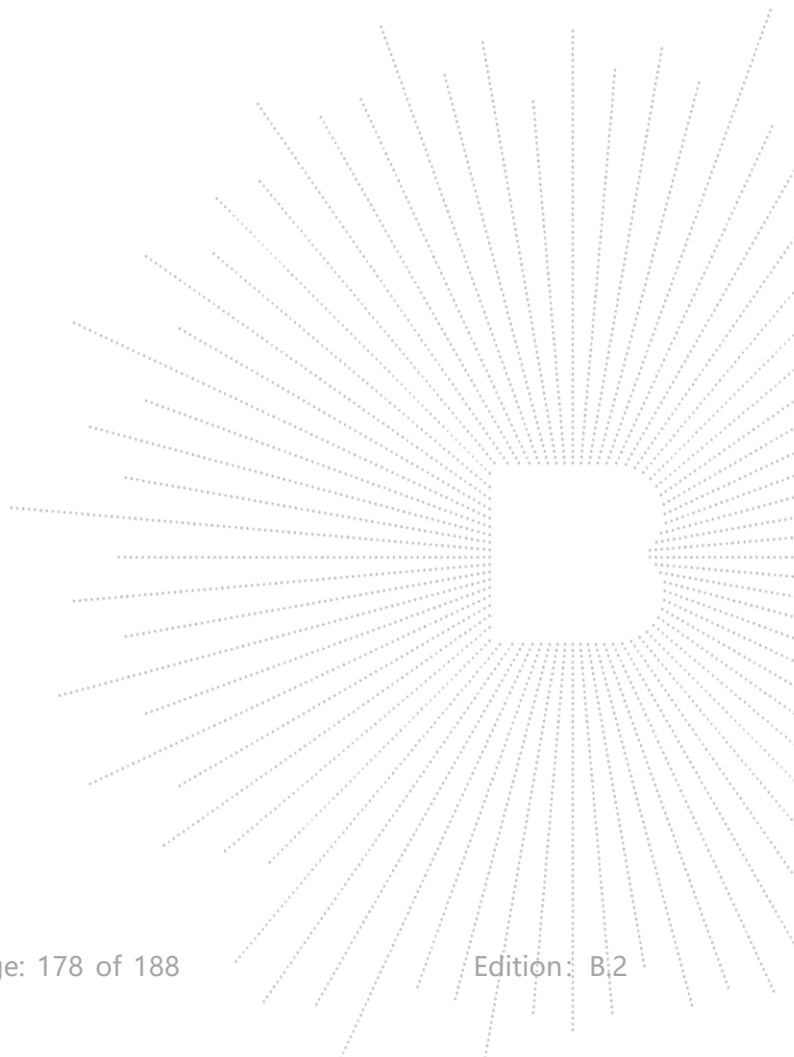


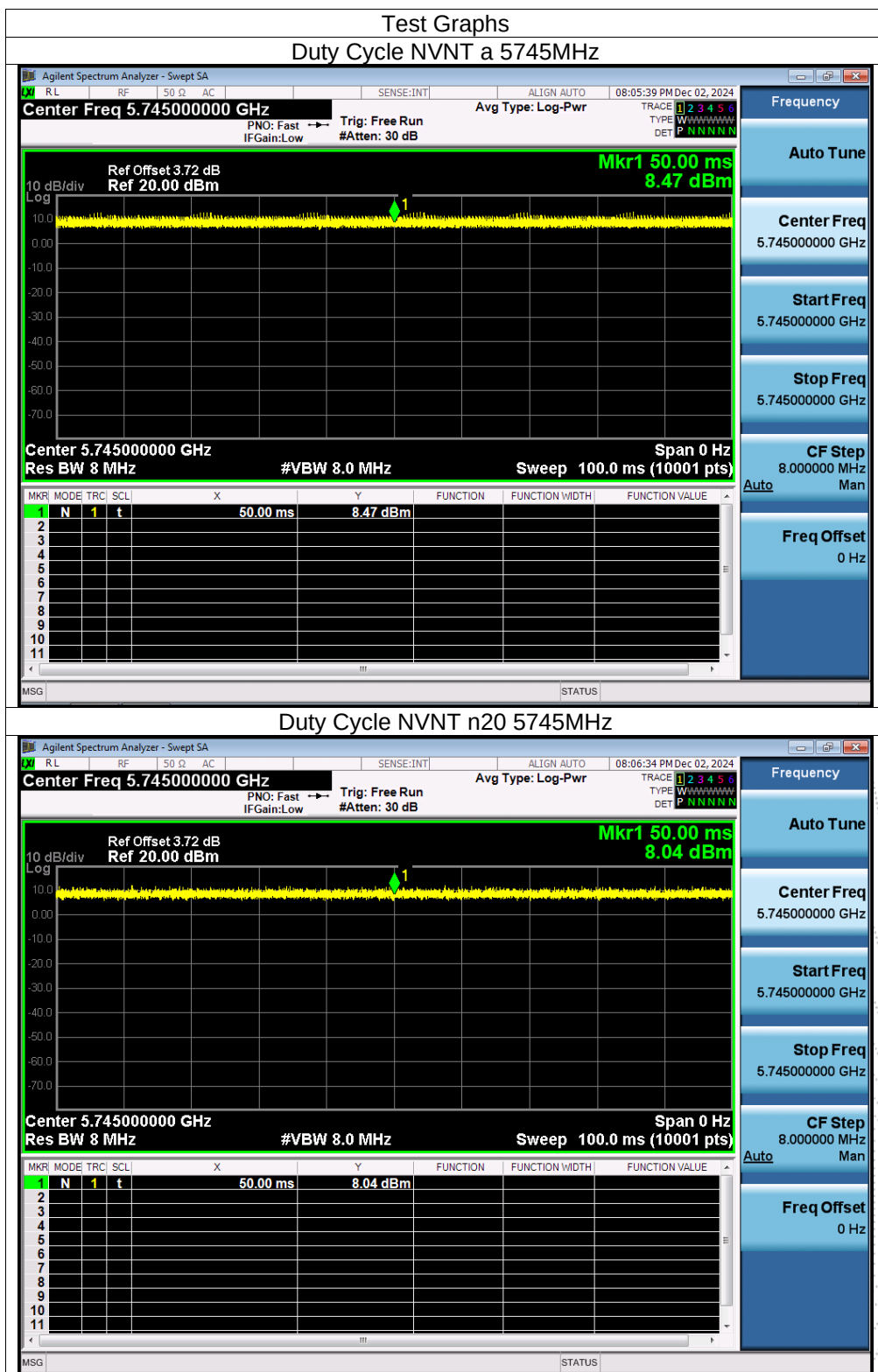


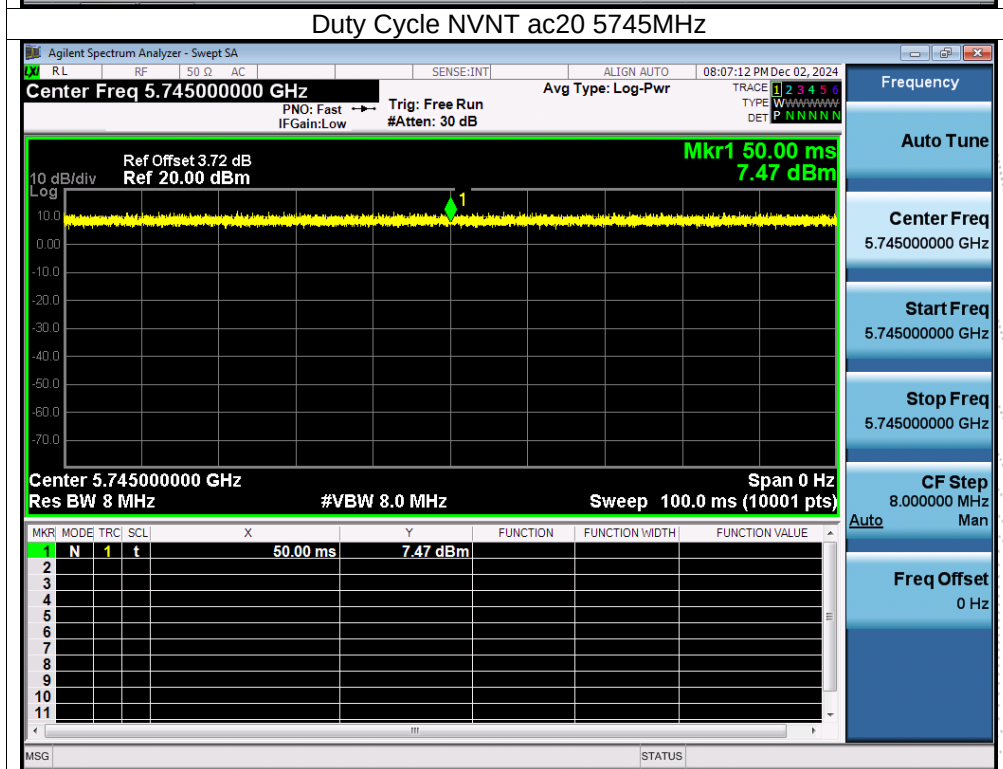
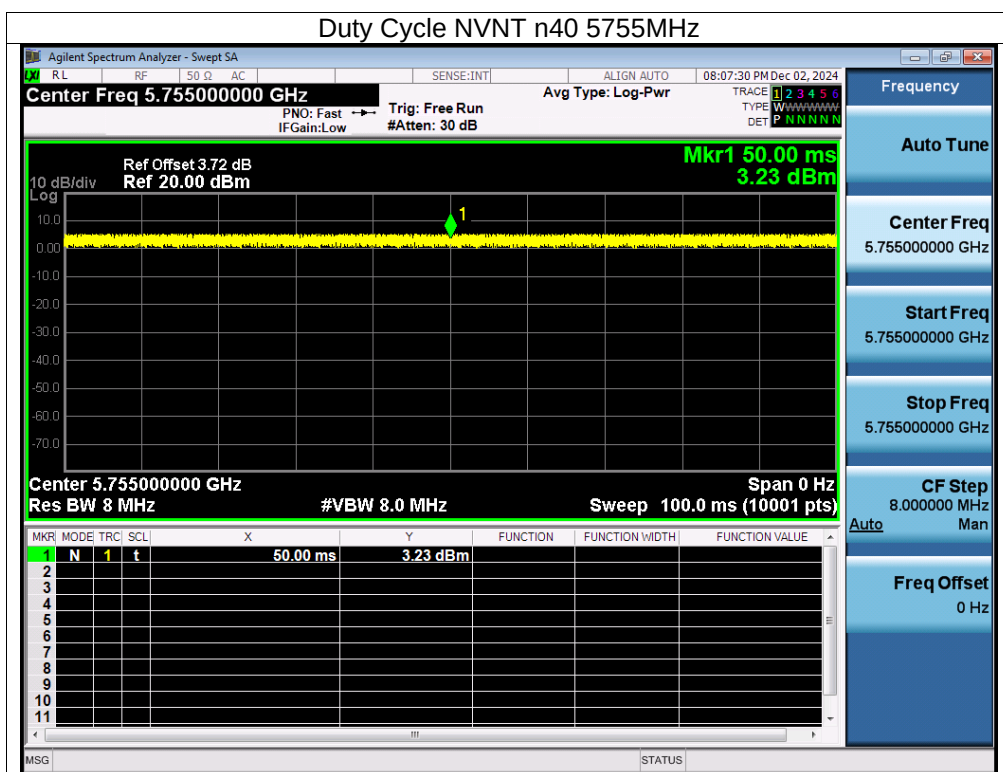


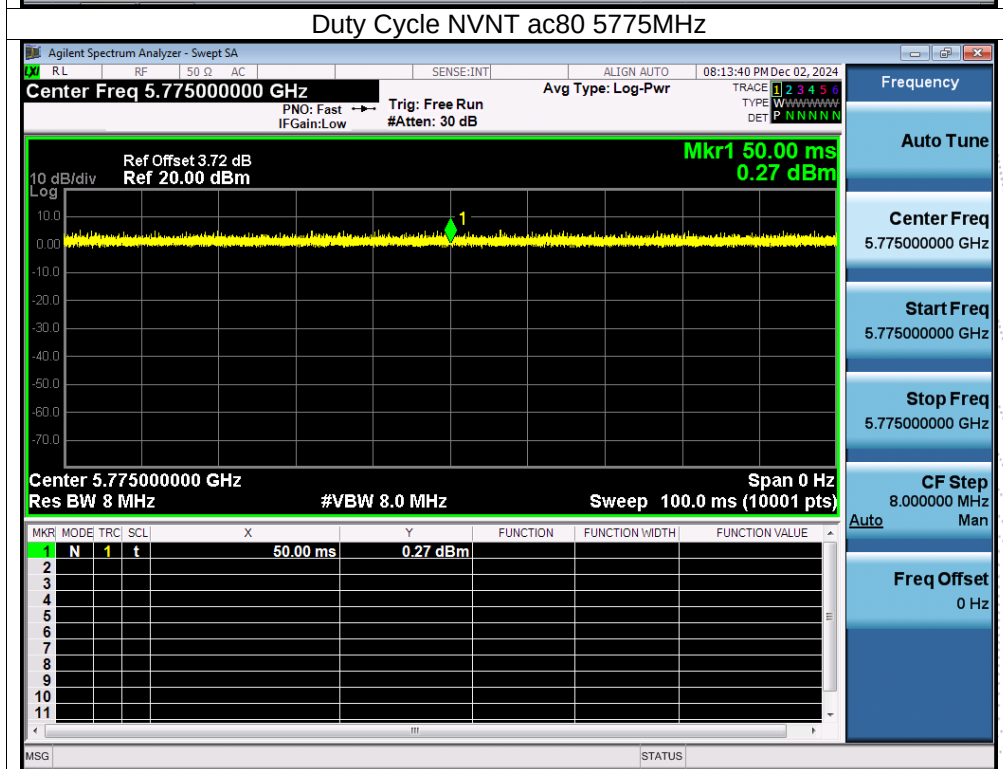
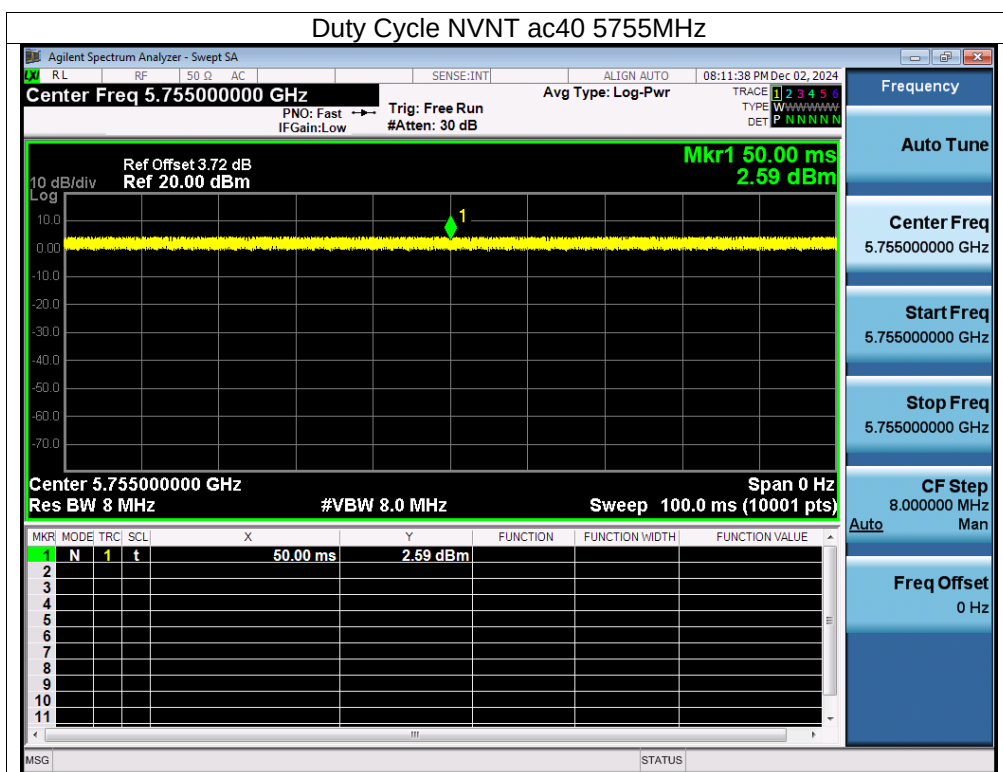
ANT B

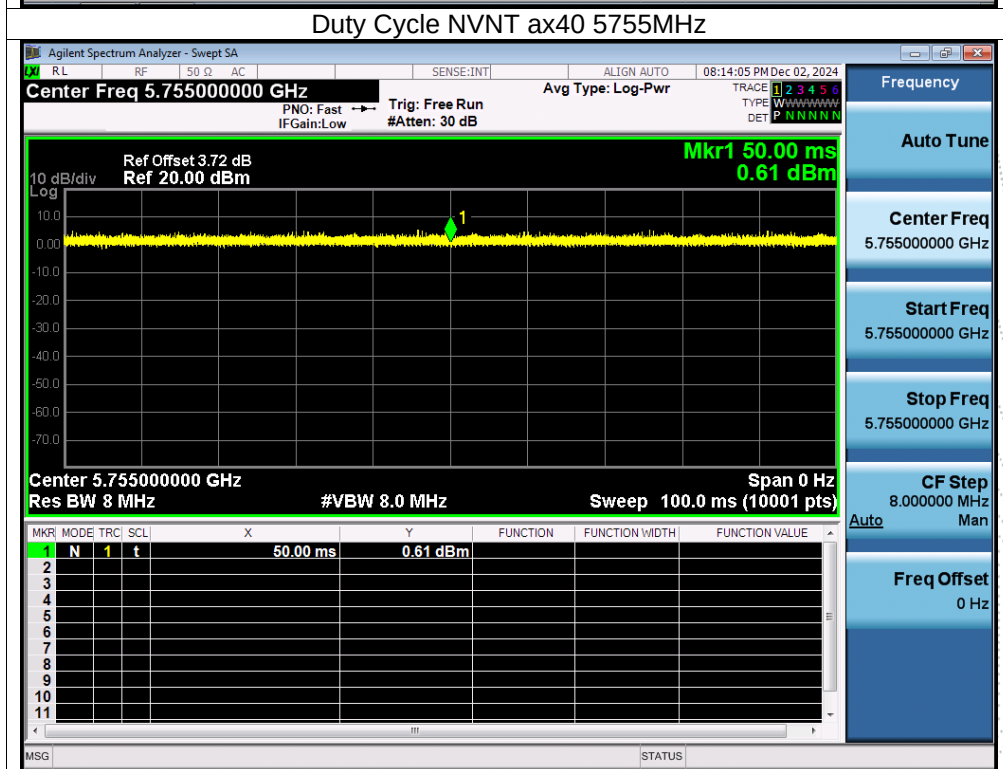
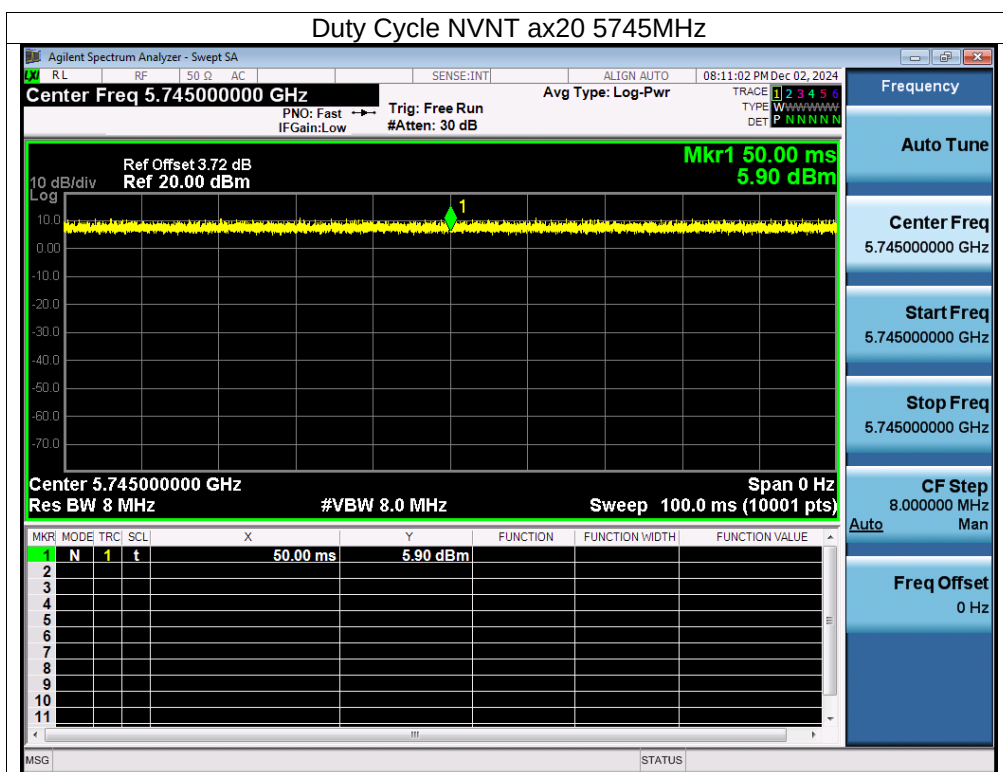
Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)	1/T (Hz)
NVNT	a	5745	100	0	10
NVNT	n20	5745	100	0	10
NVNT	n40	5755	100	0	10
NVNT	ac20	5745	100	0	10
NVNT	ac40	5755	100	0	10
NVNT	ac80	5775	100	0	10
NVNT	ax20	5745	100	0	10
NVNT	ax40	5755	100	0	10
NVNT	ax80	5775	100	0	10

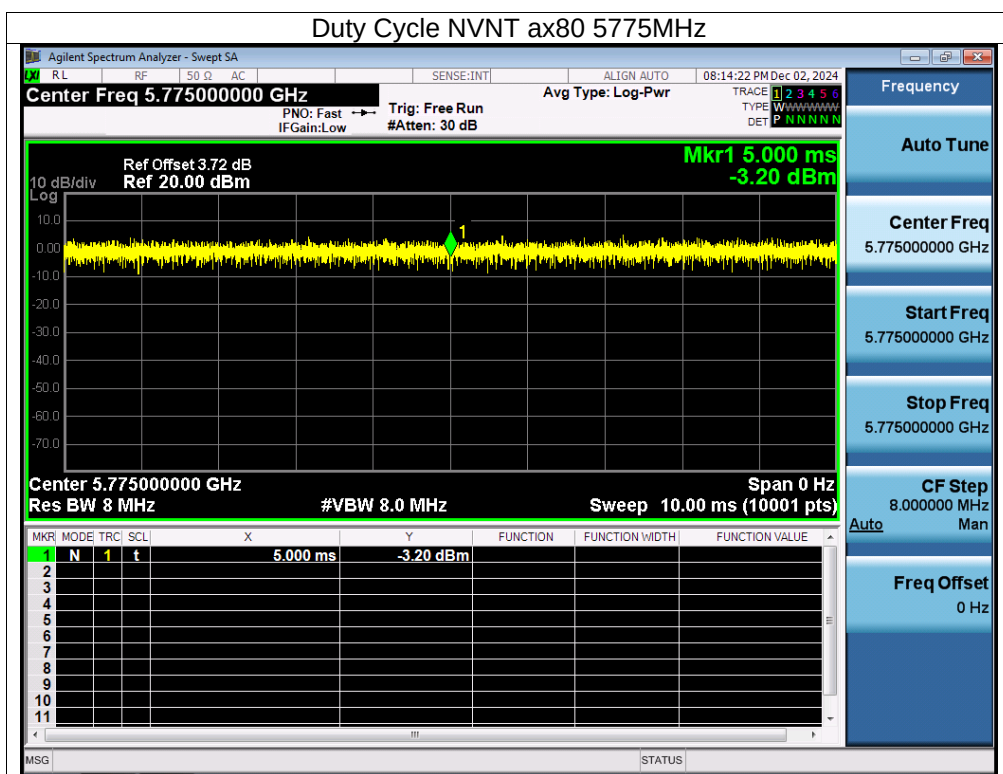












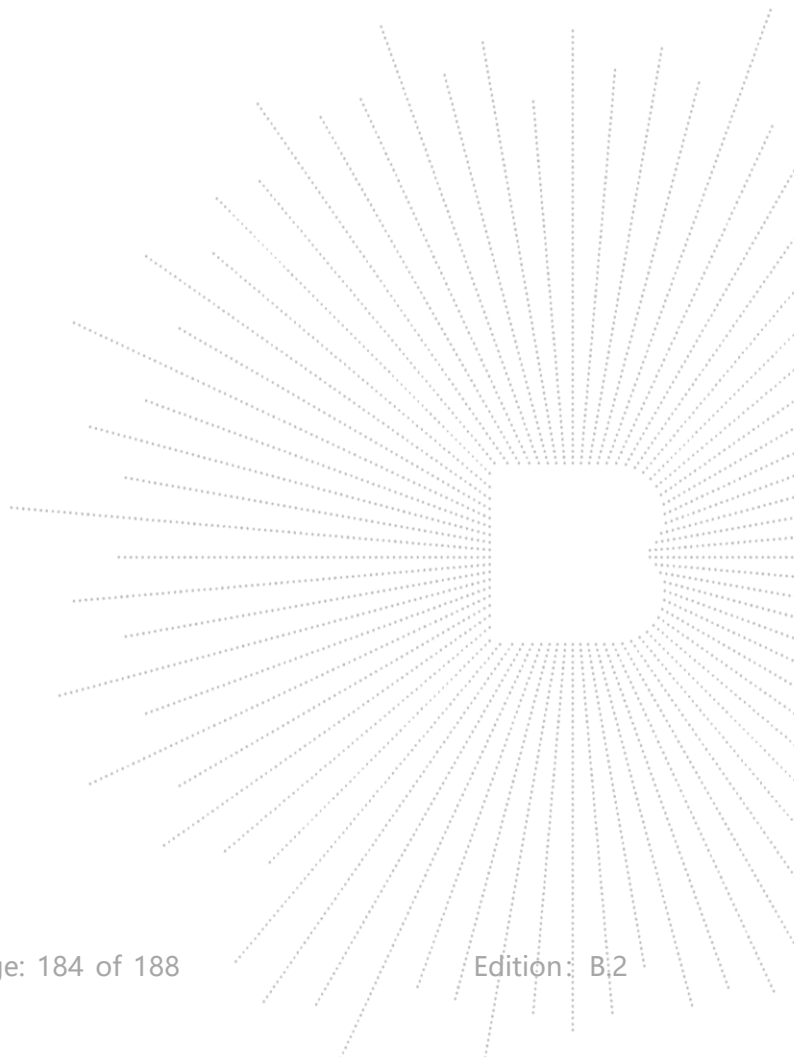
15. Antenna Requirement

15.1 Limit

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

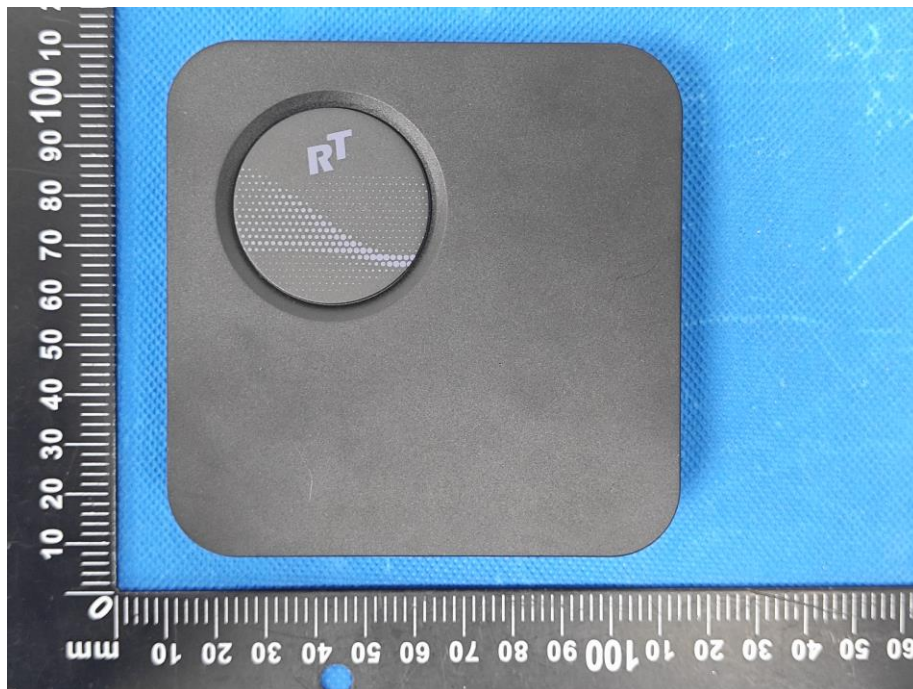
15.2 Test Result

The EUT antenna is PCB antenna (5.1G Antenna A&B gain: 0.54 dBi, 5.8G Antenna A&B gain: 2.71 dBi). It comply with the standard requirement.

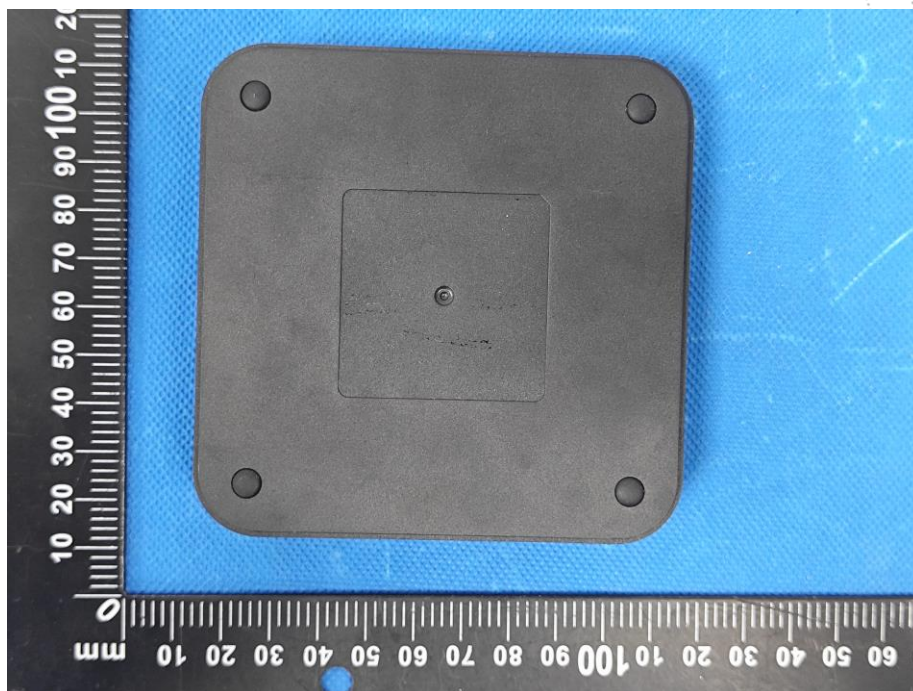


16. EUT Photographs

EUT Photo 1



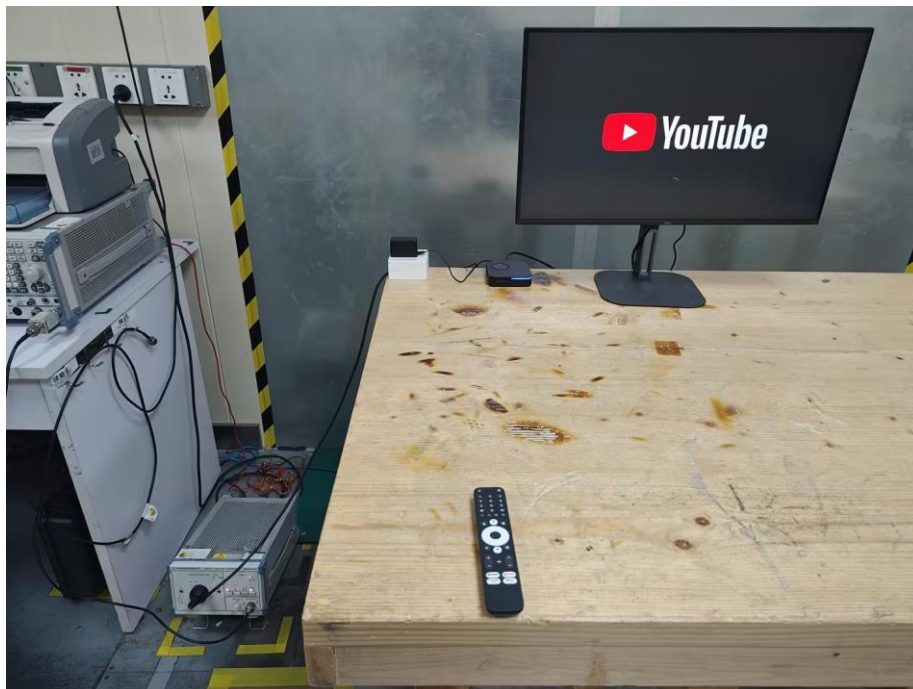
EUT Photo 2



NOTE: Appendix-Photographs Of EUT Constructional Details.

17. EUT Test Setup Photographs

Conducted Measurement Photo



Radiated Measurement Photos





STATEMENT

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

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Website: <http://www.chnbctc.com>

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Complaint/Advice E-mail: advice@bctc-lab.com.cn

***** END *****