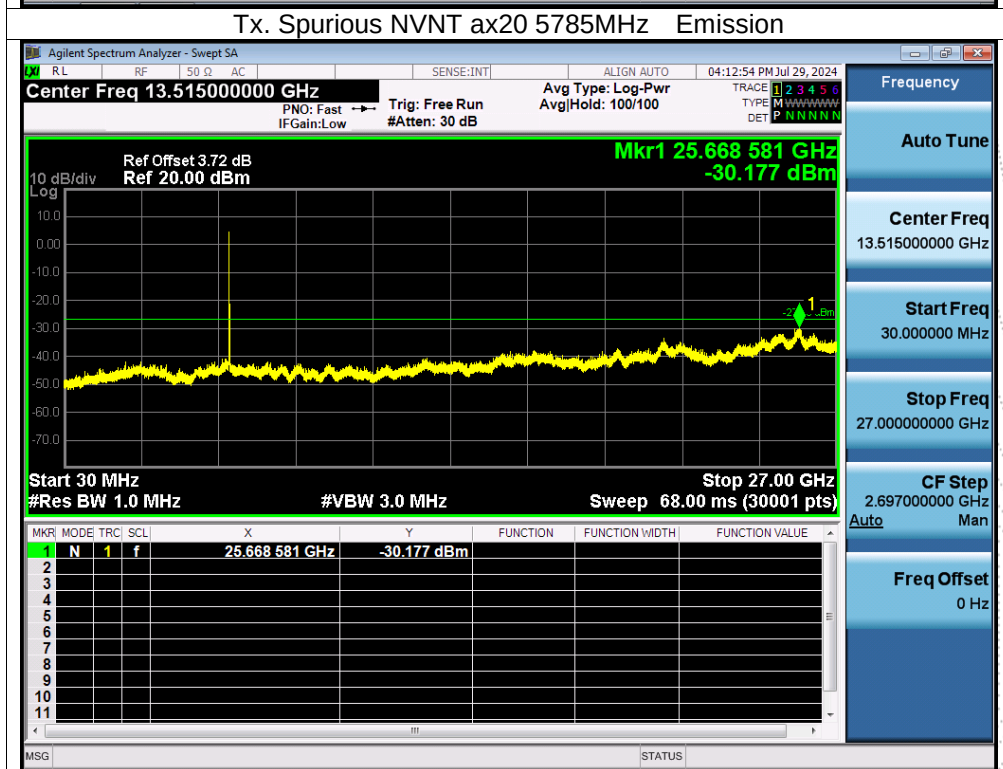
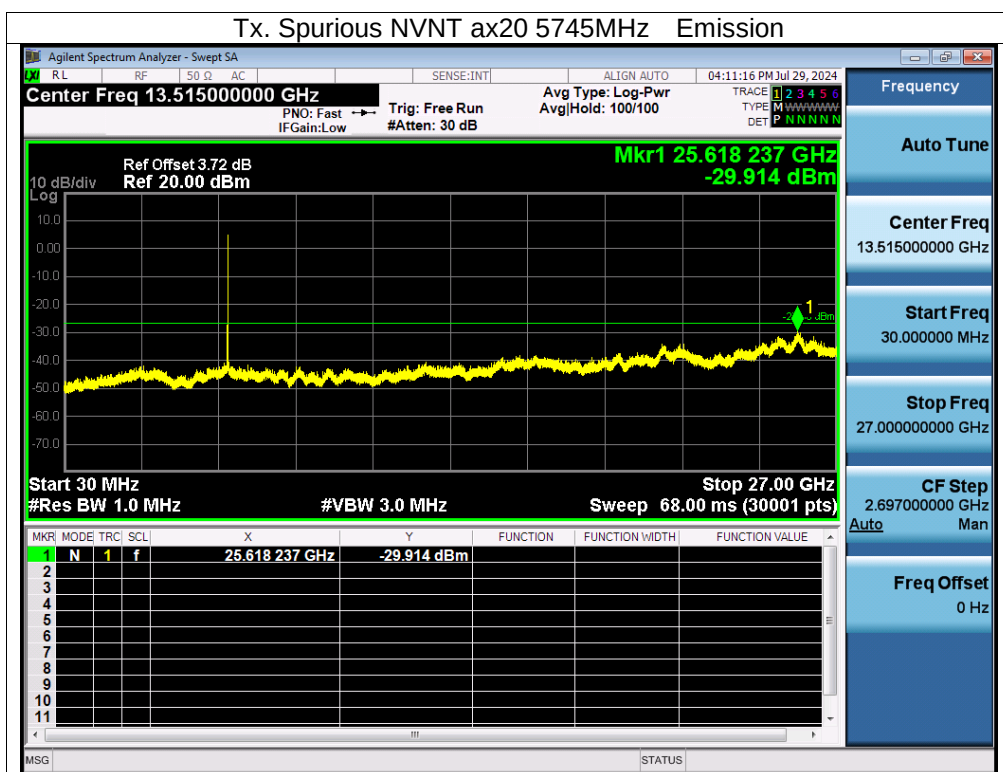
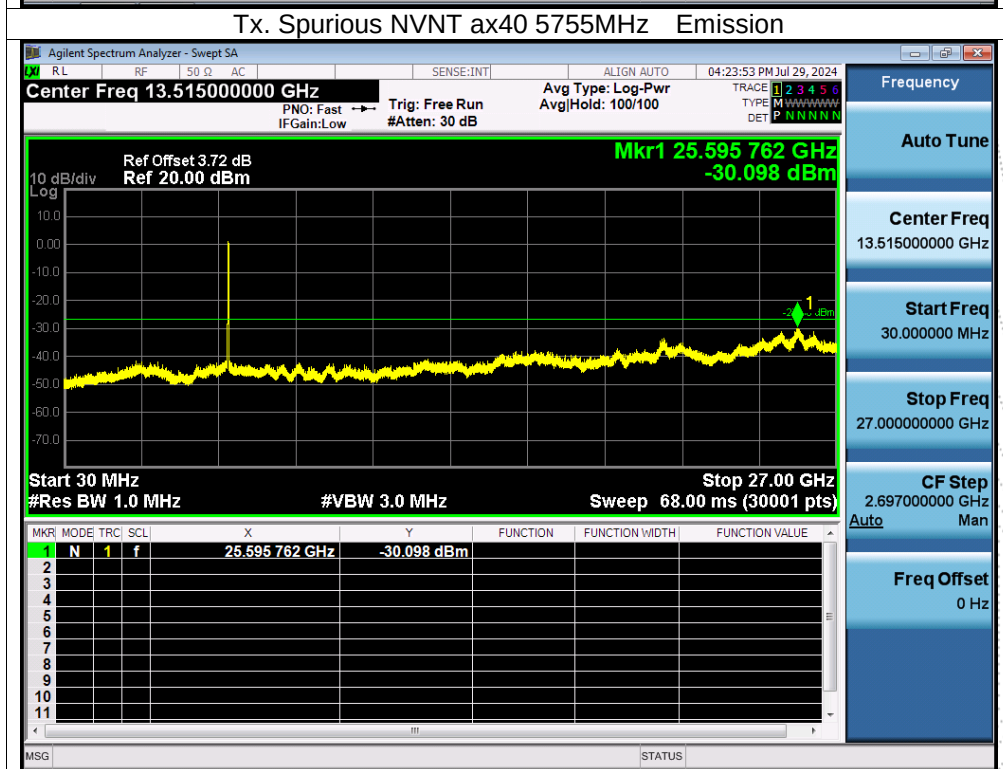
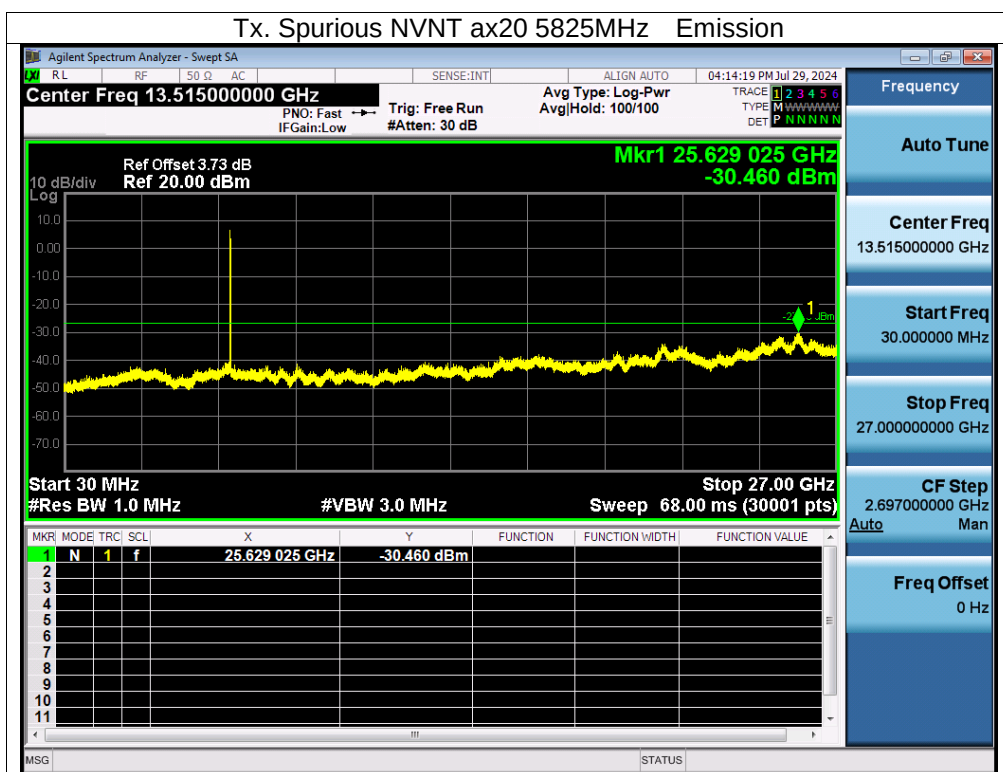
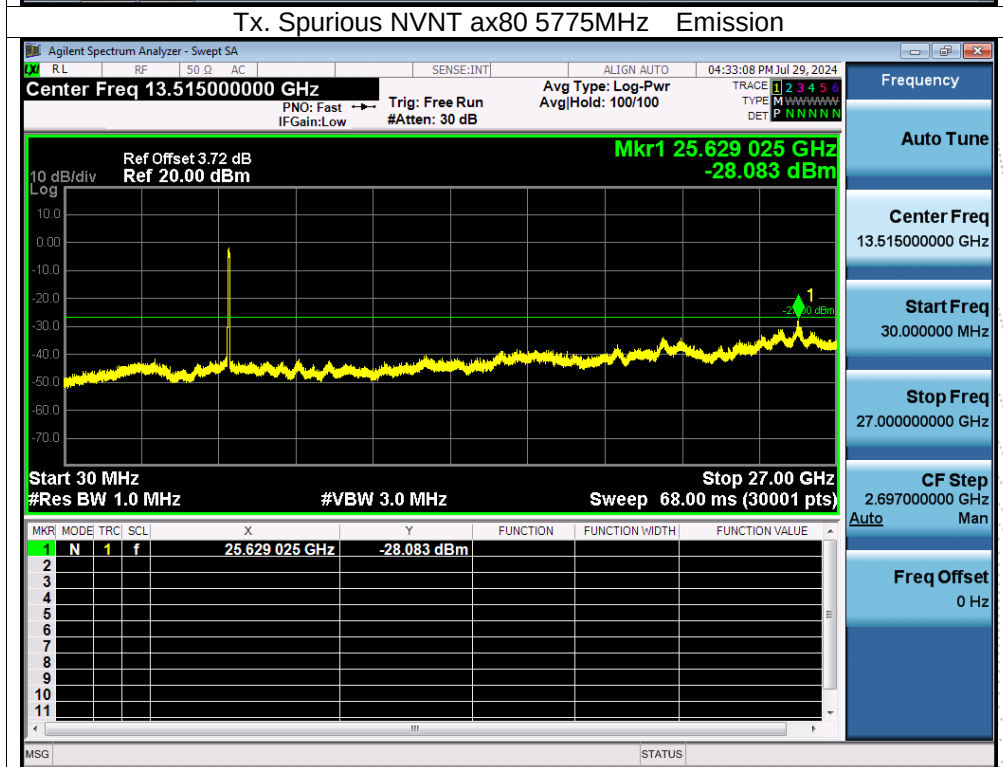
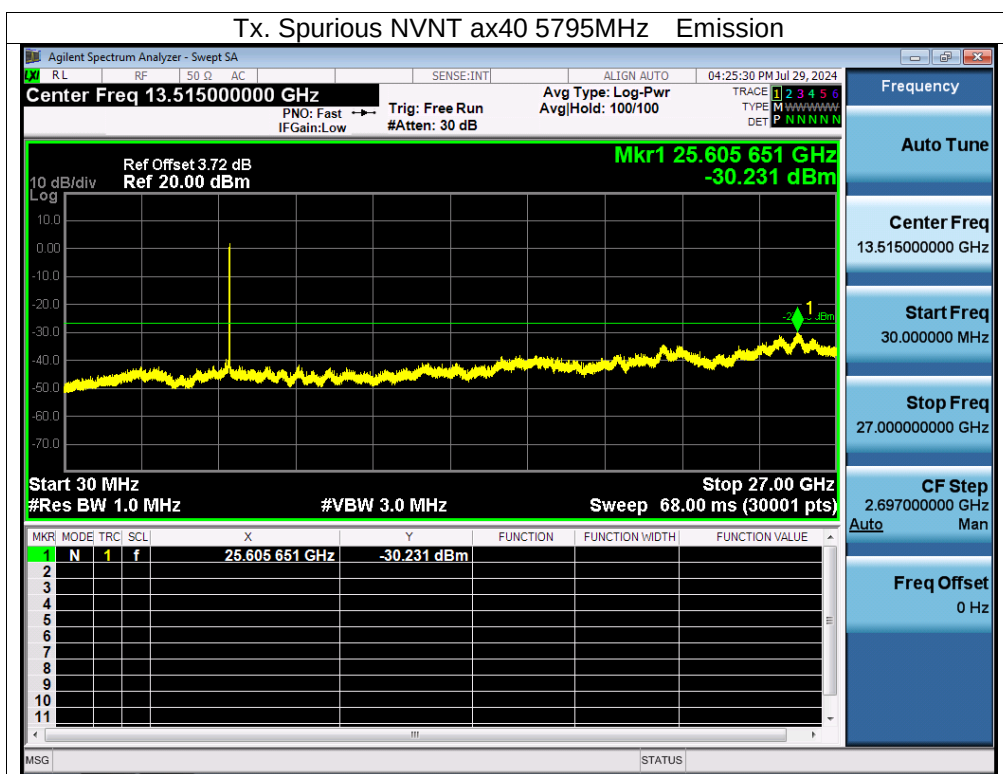








13. Frequency Stability Measurement

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)	11.40	5180.0097	5180	0.0097	1.8726
		V max (V)	12.54	5180.0107	5180	0.0107	2.0656
		V min (V)	10.26	5180.0048	5180	0.0048	0.9266
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)	11.4	T (°C)	-20	5180.0116	5180	0.0116	2.2394
		T (°C)	-10	5180.0006	5180	0.0006	0.1158
		T (°C)	0	5180.0094	5180	0.0094	1.8147
		T (°C)	10	5180.0129	5180	0.0129	2.4903
		T (°C)	20	5180.0119	5180	0.0119	2.2973
		T (°C)	30	5180.0109	5180	0.0109	2.1042
		T (°C)	40	5180.0103	5180	0.0103	1.9884
		T (°C)	50	5180.0049	5180	0.0049	0.9459
		T (°C)	60	5180.0065	5180	0.0065	1.2548
		T (°C)	70	5180.0062	5180	0.0062	1.1969
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)	11.40	5200.0057	5200	0.0057	1.0962
		V max (V)	12.54	5200.0027	5200	0.0027	0.5192
		V min (V)	10.26	5200.0051	5200	0.0051	0.9808
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)	11.4	T (°C)	-20	5200.00390	5200	0.00390	0.7500
		T (°C)	-10	5200.00270	5200	0.00270	0.5192
		T (°C)	0	5200.00560	5200	0.00560	1.0769
		T (°C)	10	5200.01110	5200	0.01110	2.1346
		T (°C)	20	5200.00770	5200	0.00770	1.4808
		T (°C)	30	5200.00530	5200	0.00530	1.0192
		T (°C)	40	5200.00100	5200	0.00100	0.1923
		T (°C)	50	5200.01280	5200	0.01280	2.4615
		T (°C)	60	5200.00700	5200	0.00700	1.3462
		T (°C)	70	5200.01080	5200	0.01080	2.0769
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)	11.40	5240.0002	5240	0.0002	0.0382
		V max (V)	12.54	5240.0056	5240	0.0056	1.0687
		V min (V)	10.26	5240.0056	5240	0.0056	1.0687
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)	11.4	T (°C)	-20	5240.0120	5240	0.0120	2.2901
		T (°C)	-10	5240.0027	5240	0.0027	0.5153
		T (°C)	0	5240.0016	5240	0.0016	0.3053
		T (°C)	10	5240.0117	5240	0.0117	2.2328
		T (°C)	20	5240.0049	5240	0.0049	0.9351
		T (°C)	30	5240.0011	5240	0.0011	0.2099
		T (°C)	40	5240.0001	5240	0.0001	0.0191
		T (°C)	50	5240.0056	5240	0.0056	1.0687
		T (°C)	60	5240.0127	5240	0.0127	2.4237
T (°C)	70	5240.0133	5240	0.0133	2.5382		
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)	11.40	5745.00210	5745	0.00210	0.3655
		V max (V)	12.54	5745.01160	5745	0.01160	2.0191
		V min (V)	10.26	5745.01090	5745	0.01090	1.8973
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)	11.4	T (°C)	-20	5745.00870	5745	0.00870	1.5144
		T (°C)	-10	5745.00990	5745	0.00990	1.7232
		T (°C)	0	5745.00010	5745	0.00010	0.0174
		T (°C)	10	5745.00760	5745	0.00760	1.3229
		T (°C)	20	5745.00930	5745	0.00930	1.6188
		T (°C)	30	5745.00600	5745	0.00600	1.0444
		T (°C)	40	5745.01130	5745	0.01130	1.9669
		T (°C)	50	5745.00380	5745	0.00380	0.6614
		T (°C)	60	5745.00570	5745	0.00570	0.9922
		T (°C)	70	5745.00560	5745	0.00560	0.9748
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)	11.40	5785.00430	5785	0.00430	0.7433
		V max (V)	12.54	5785.00180	5785	0.00180	0.3111
		V min (V)	10.26	5785.00840	5785	0.00840	1.4520
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)	11.4	T (°C)	-20	5785.01170	5785	0.01170	2.0225
		T (°C)	-10	5785.01020	5785	0.01020	1.7632
		T (°C)	0	5785.00020	5785	0.00020	0.0346
		T (°C)	10	5785.00270	5785	0.00270	0.4667
		T (°C)	20	5785.00330	5785	0.00330	0.5704
		T (°C)	30	5785.01010	5785	0.01010	1.7459
		T (°C)	40	5785.01080	5785	0.01080	1.8669
		T (°C)	50	5785.00380	5785	0.00380	0.6569
		T (°C)	60	5785.01070	5785	0.01070	1.8496
		T (°C)	70	5785.00650	5785	0.00650	1.1236
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)	11.40	5825.01120	5825	0.01120	1.9227
		V max (V)	12.54	5825.01020	5825	0.01020	1.7511
		V min (V)	10.26	5825.01060	5825	0.01060	1.8197
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)	11.4	T (°C)	-20	5825.00550	5825	0.00550	0.9442
		T (°C)	-10	5825.00460	5825	0.00460	0.7897
		T (°C)	0	5825.01330	5825	0.01330	2.2833
		T (°C)	10	5825.00200	5825	0.00200	0.3433
		T (°C)	20	5825.00330	5825	0.00330	0.5665
		T (°C)	30	5825.01210	5825	0.01210	2.0773
		T (°C)	40	5825.00320	5825	0.00320	0.5494
		T (°C)	50	5825.00450	5825	0.00450	0.7725
		T (°C)	60	5825.00670	5825	0.00670	1.1502
		T (°C)	70	5825.01280	5825	0.01280	2.1974
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 = $T_{on} / (T_{on} + T_{off})$

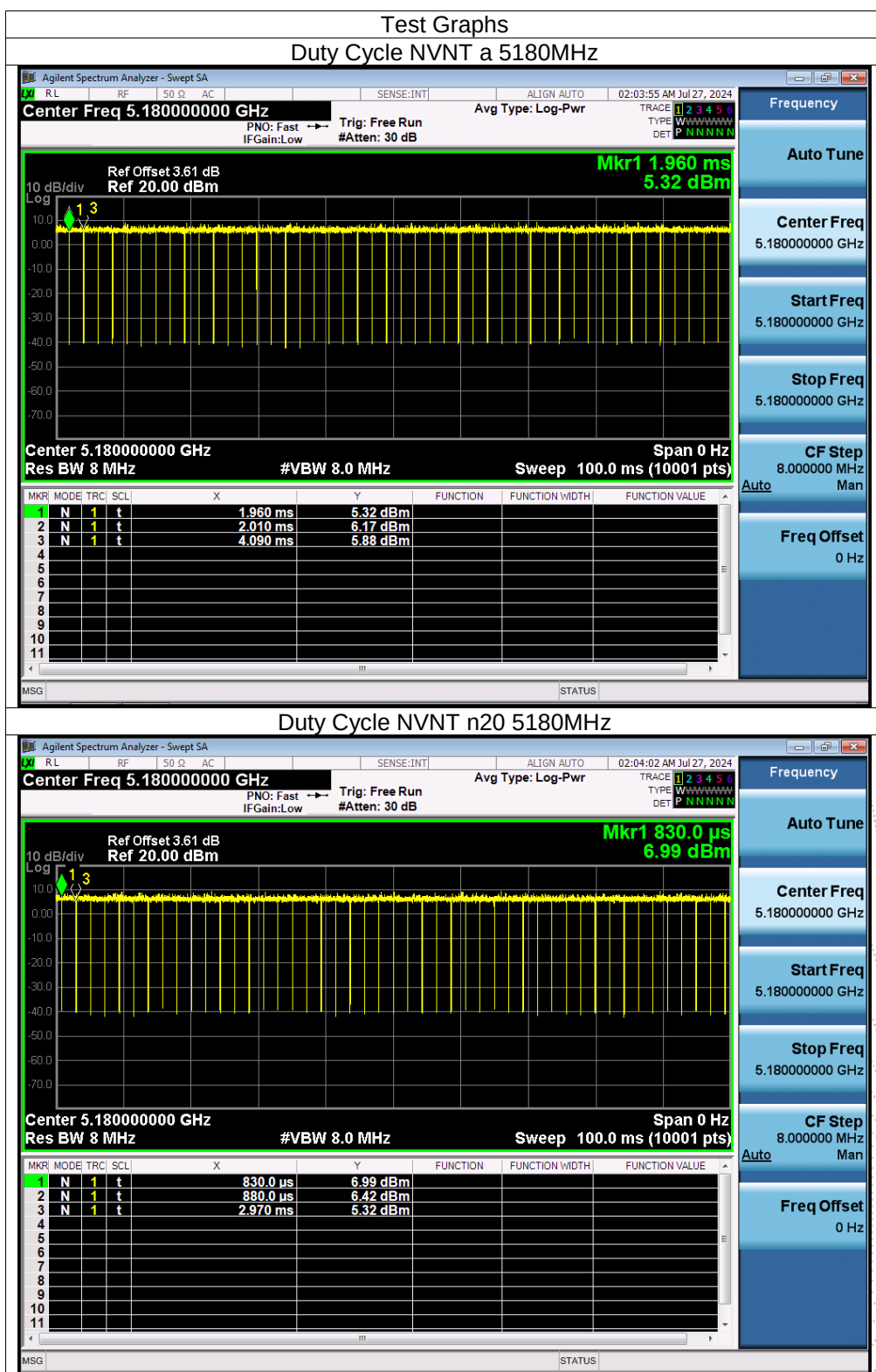
14.3 Test Procedure

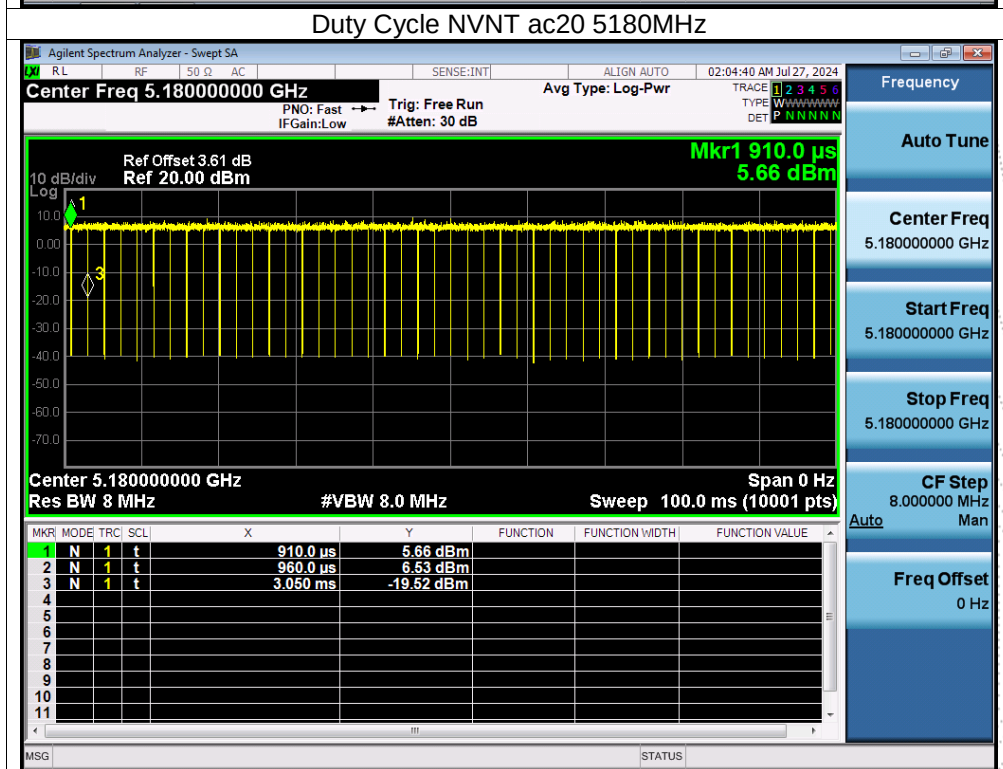
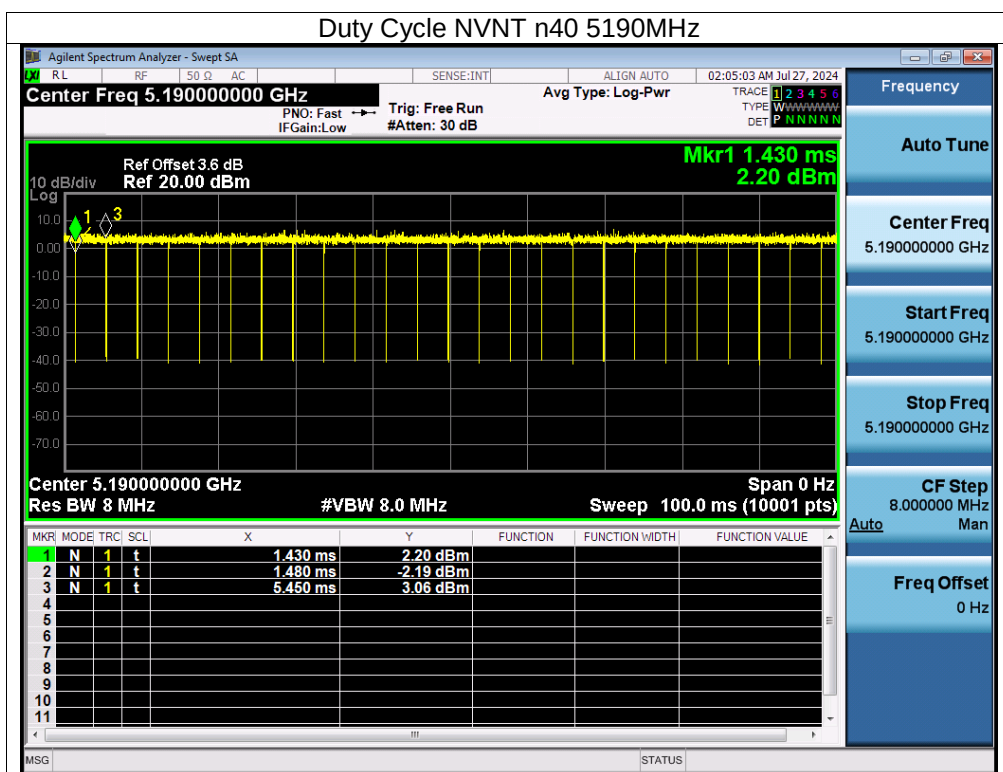
1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

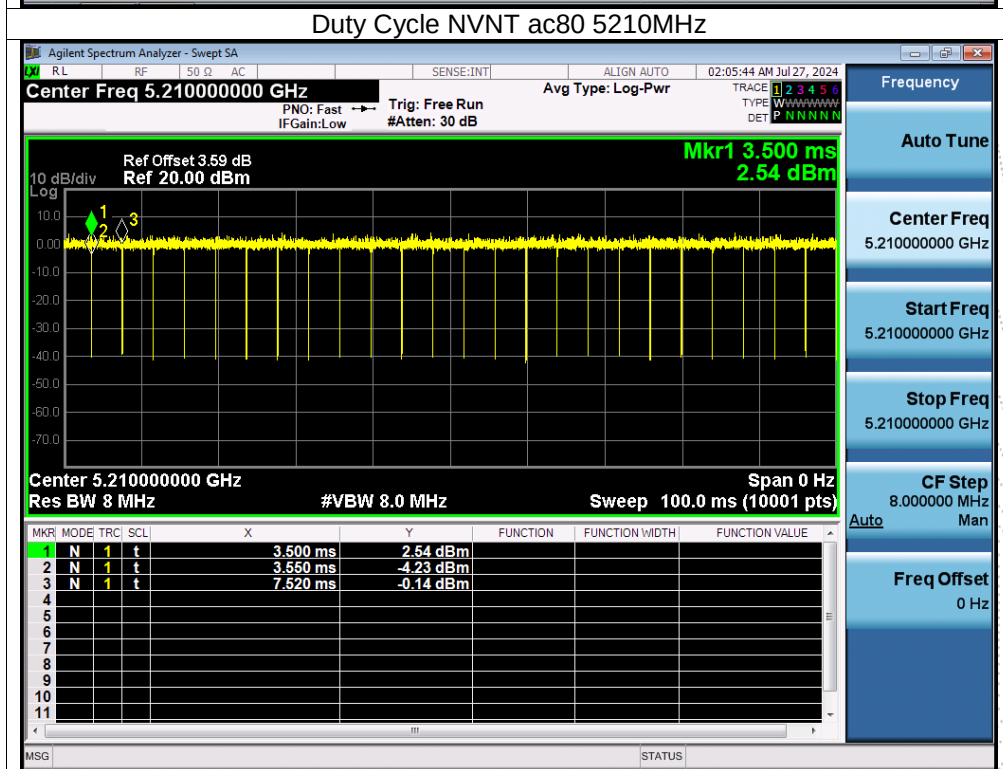
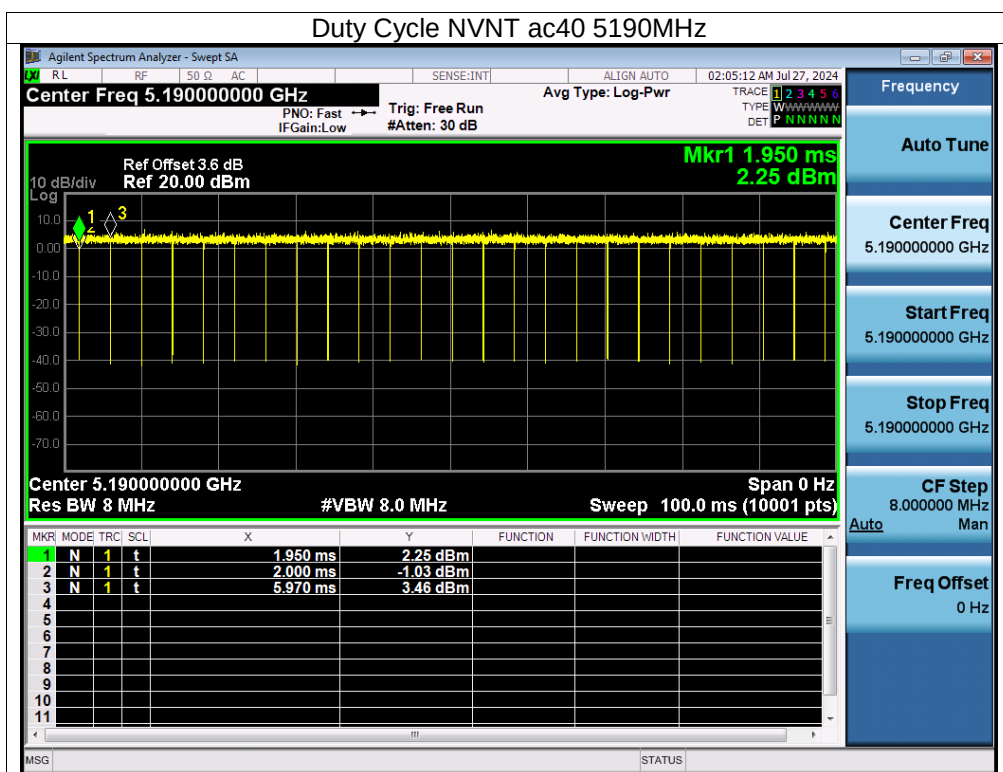
14.4 Test Result

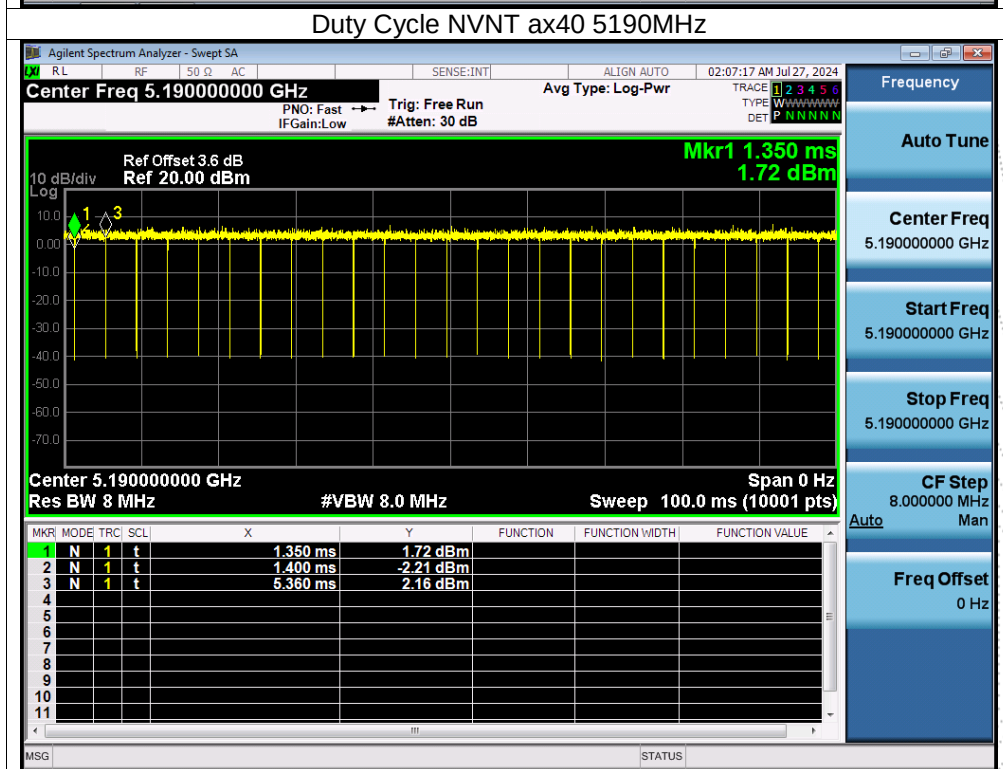
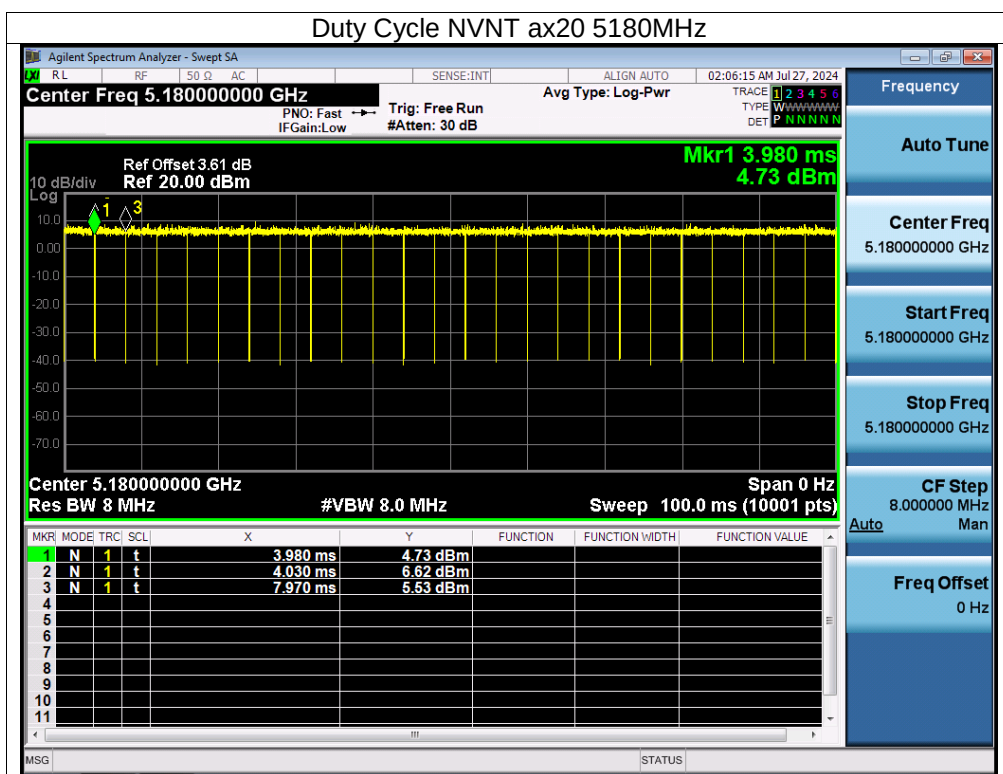
ANT A

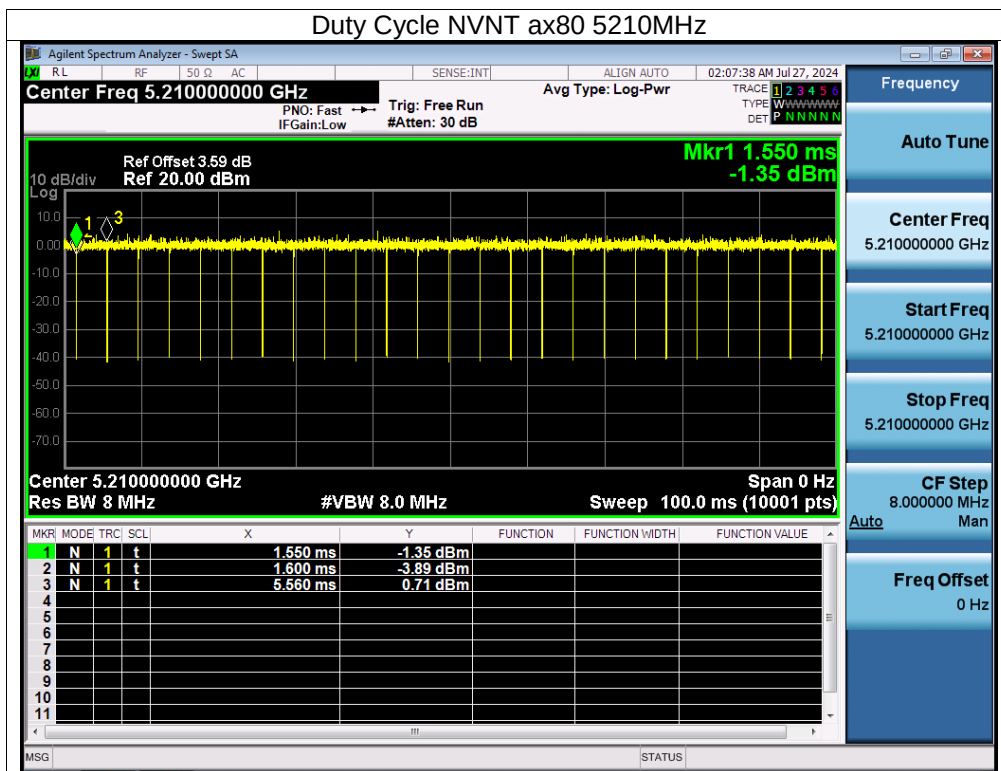
Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5200	97.65	0.1	0.48
NVNT	n20	5200	97.66	0.1	0.48
NVNT	n40	5190	98.76	0	0.25
NVNT	ac20	5200	97.66	0.1	0.48
NVNT	ac40	5190	98.76	0	0.25
NVNT	ac80	5210	98.76	0	0.25
NVNT	ax20	5200	98.75	0	0.25
NVNT	ax40	5190	98.75	0	0.25
NVNT	ax80	5210	98.75	0	0.25





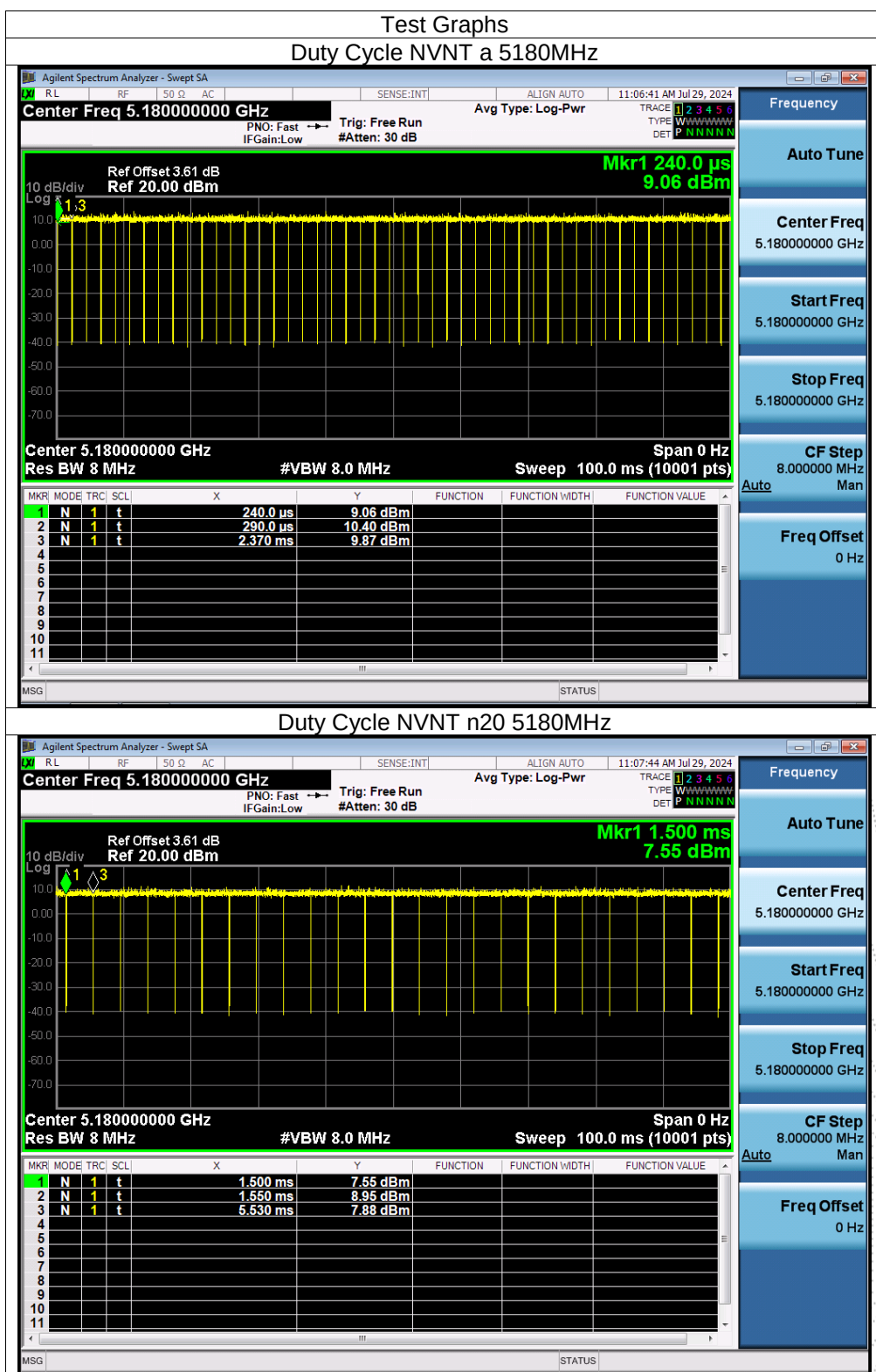


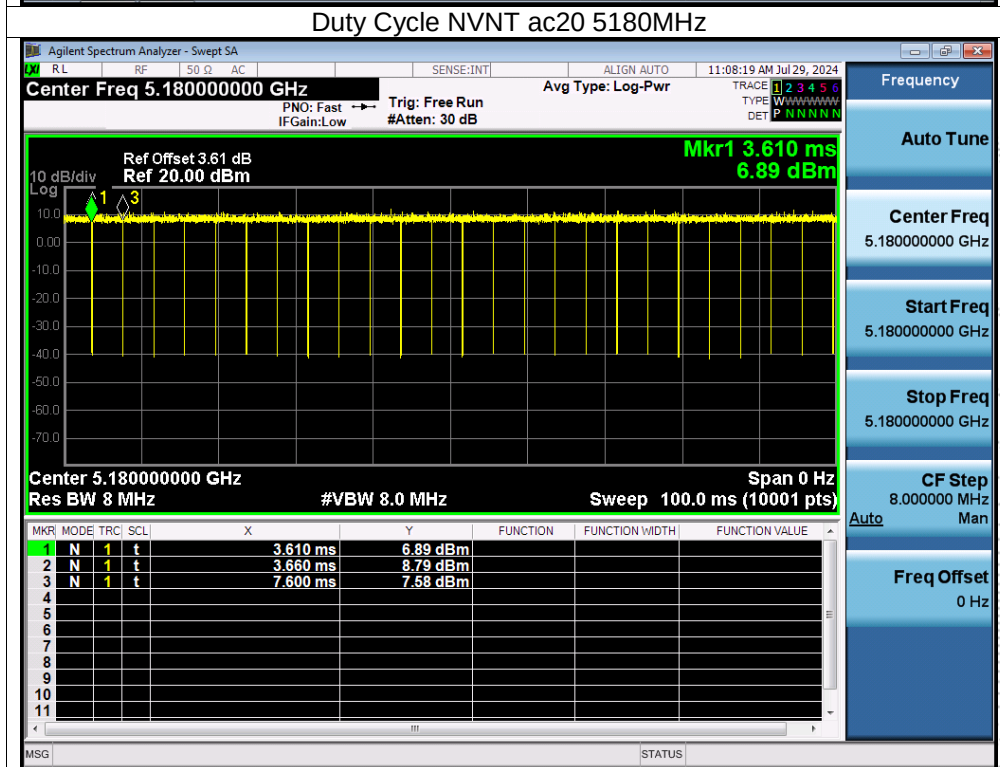
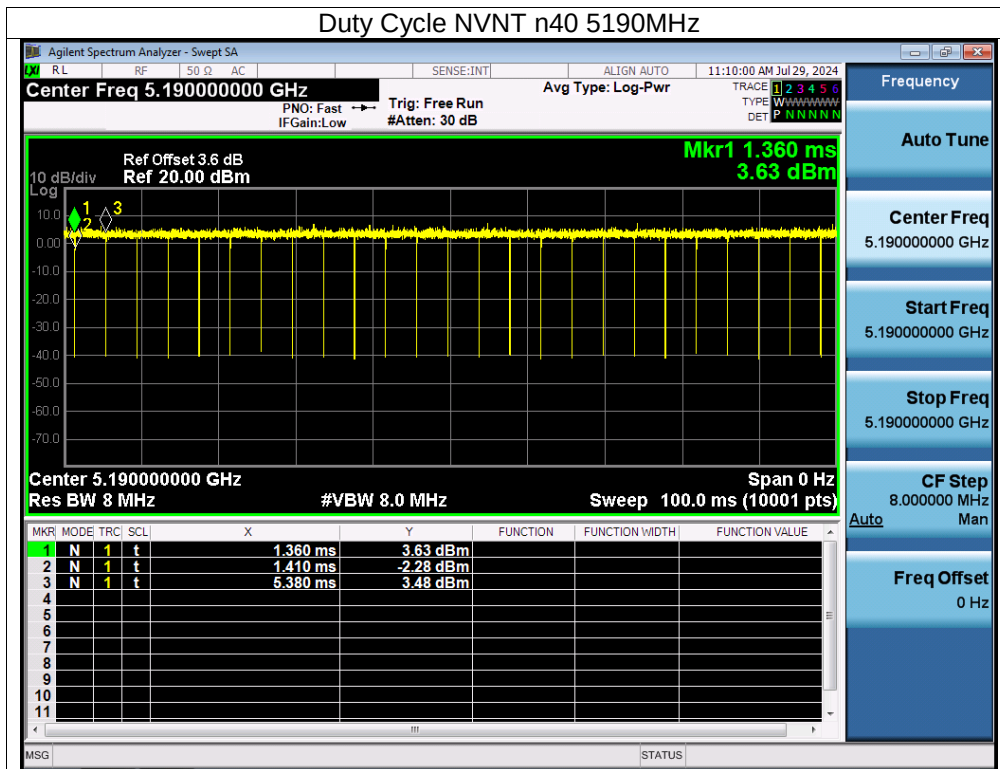


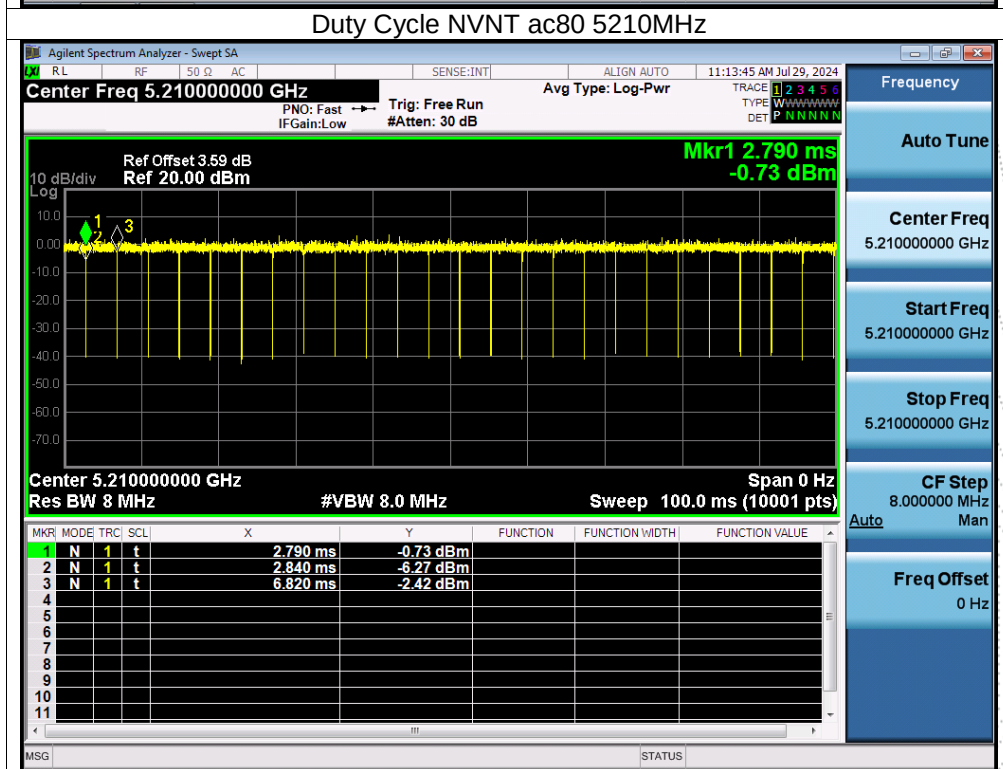
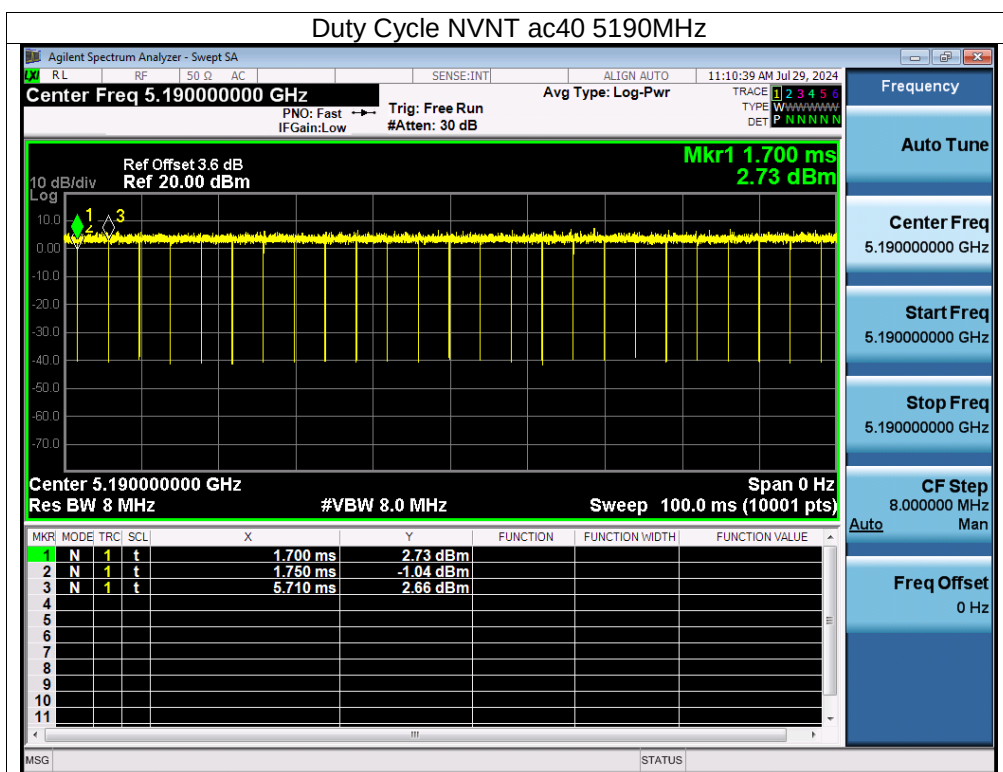


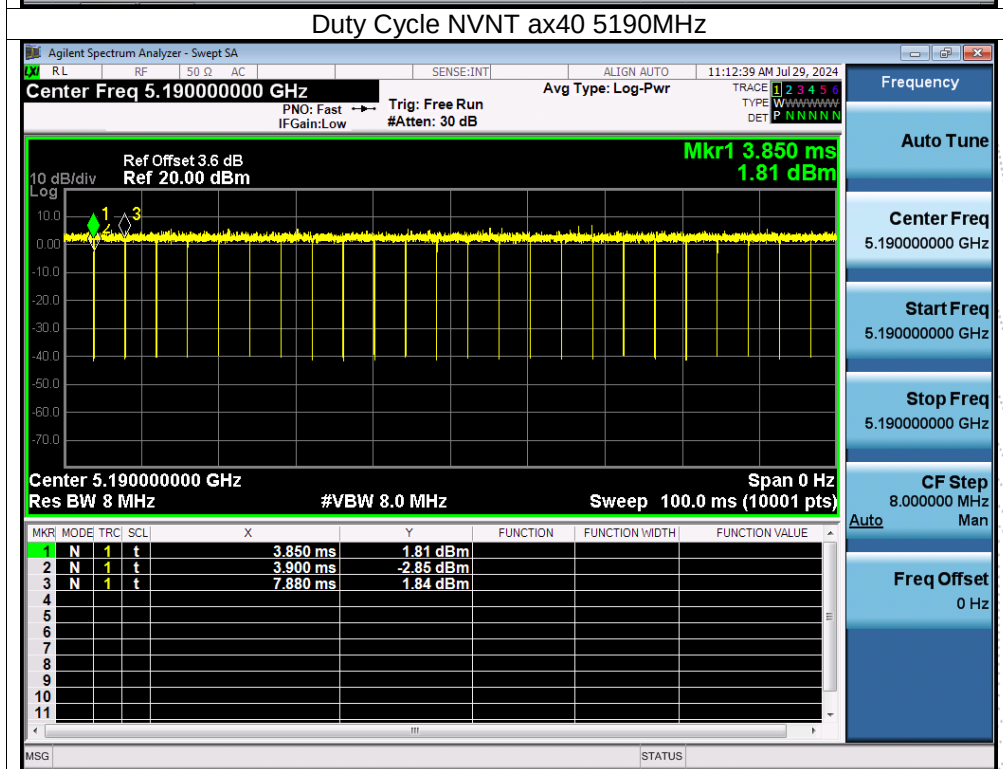
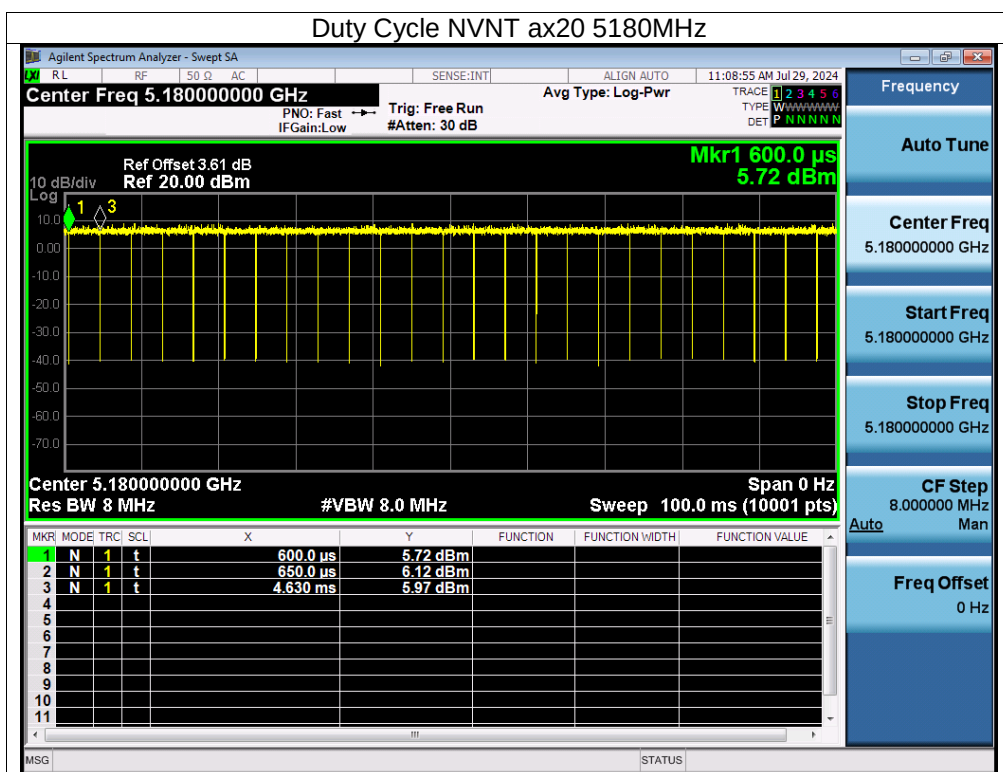
ANT B

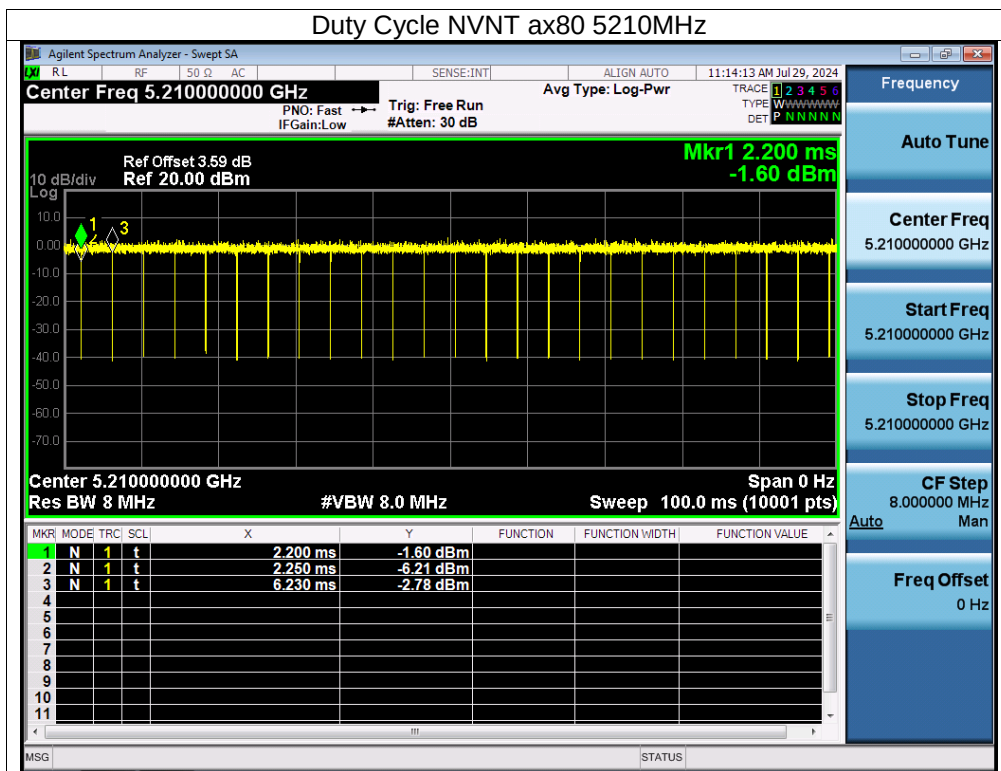
Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5200	97.65	0.1	0.48
NVNT	n20	5200	98.76	0	0.25
NVNT	n40	5190	98.76	0	0.25
NVNT	ac20	5200	98.75	0	0.25
NVNT	ac40	5190	98.75	0	0.25
NVNT	ac80	5210	98.76	0	0.25
NVNT	ax20	5200	98.76	0	0.25
NVNT	ax40	5190	98.76	0	0.25
NVNT	ax80	5210	98.76	0	0.25





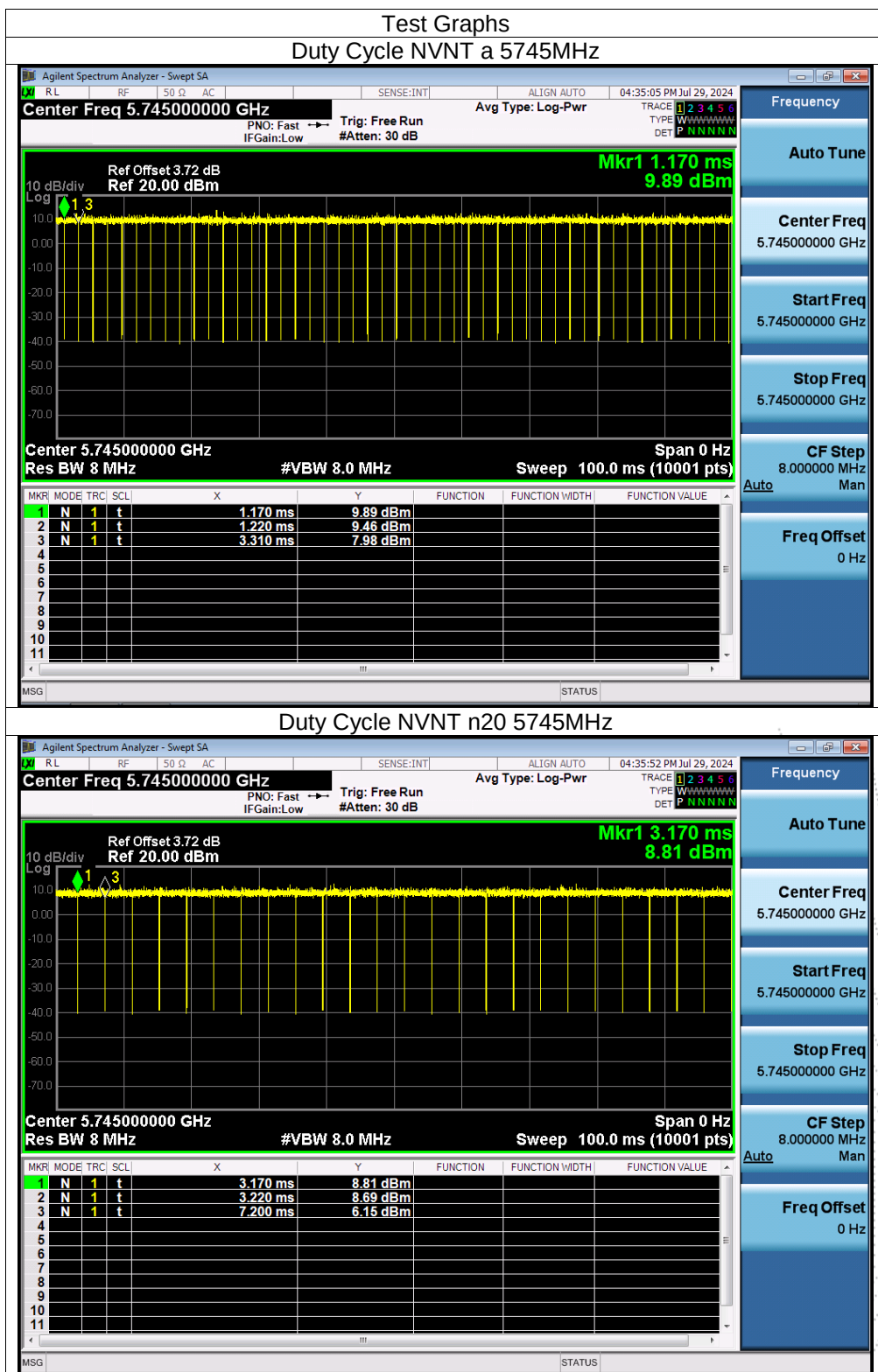


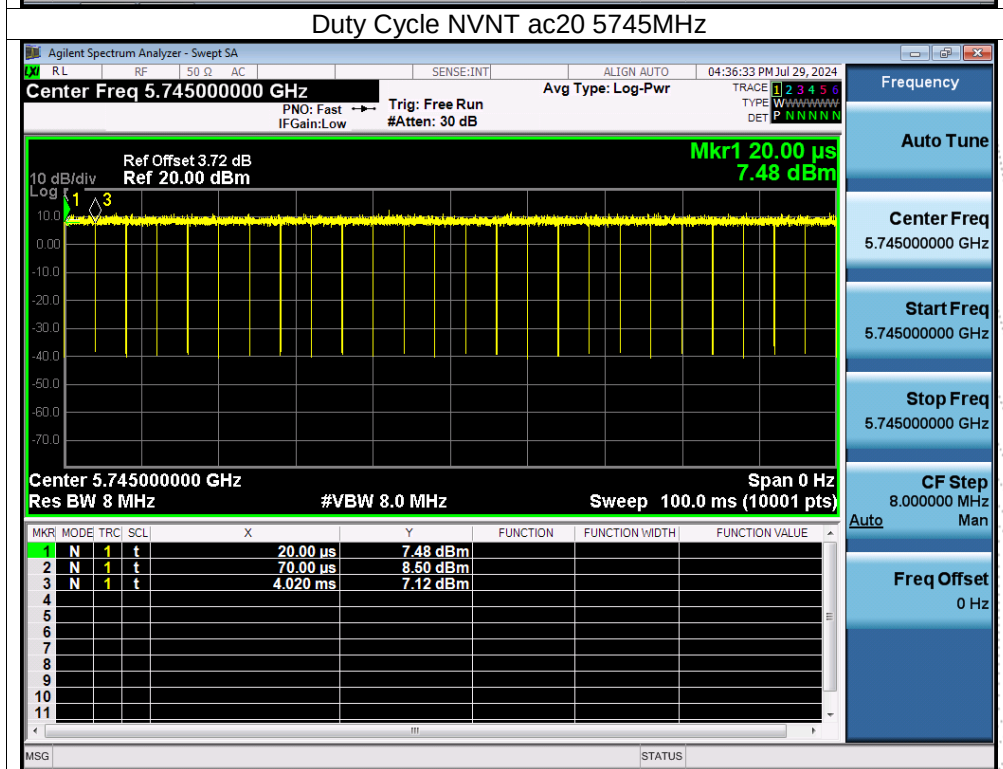
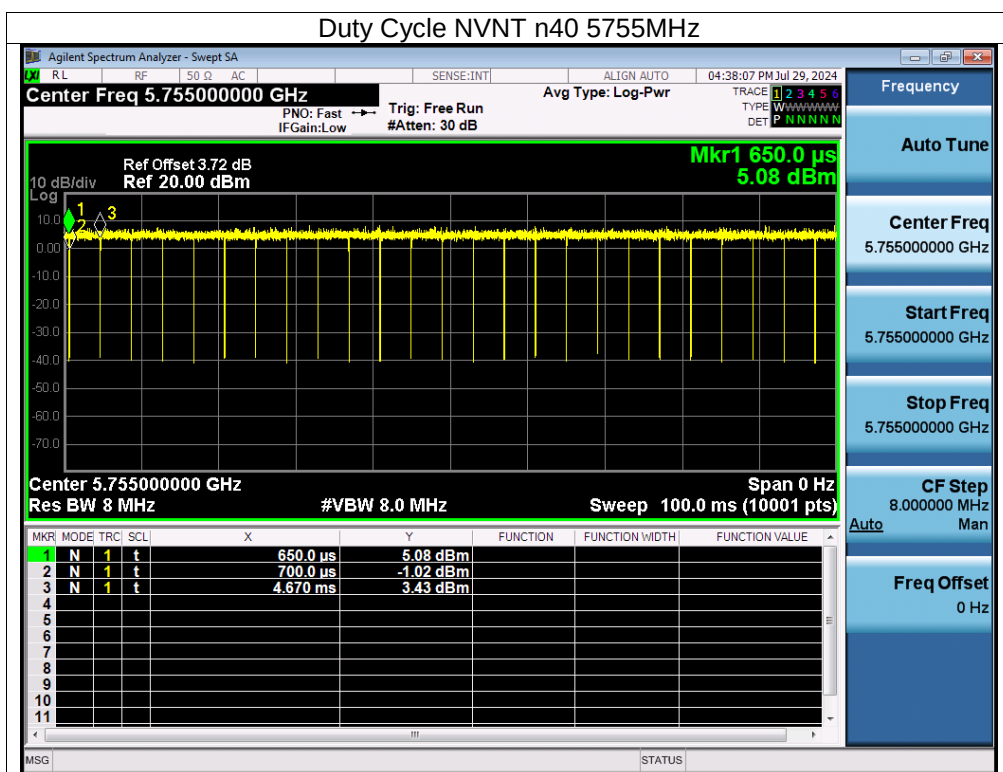


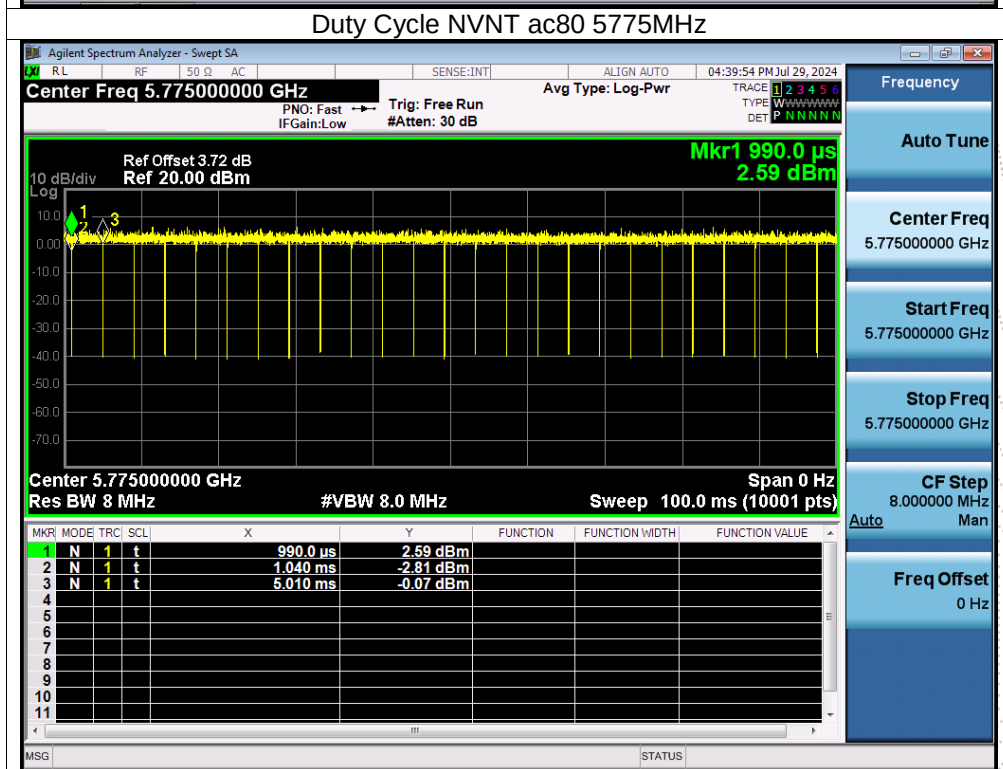
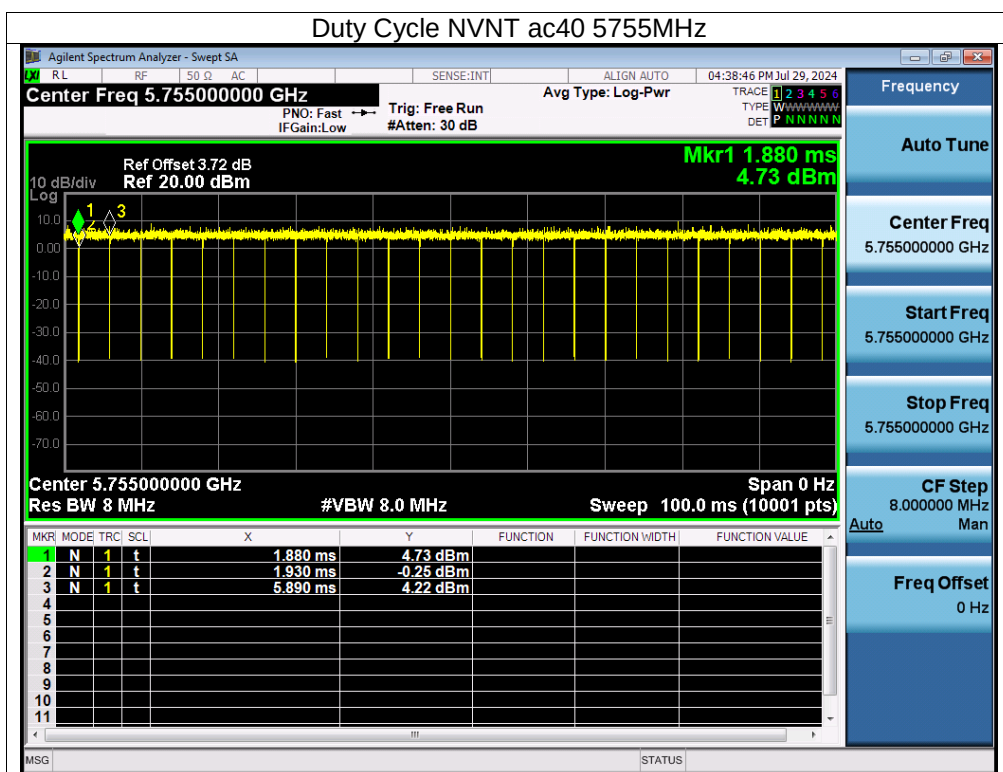


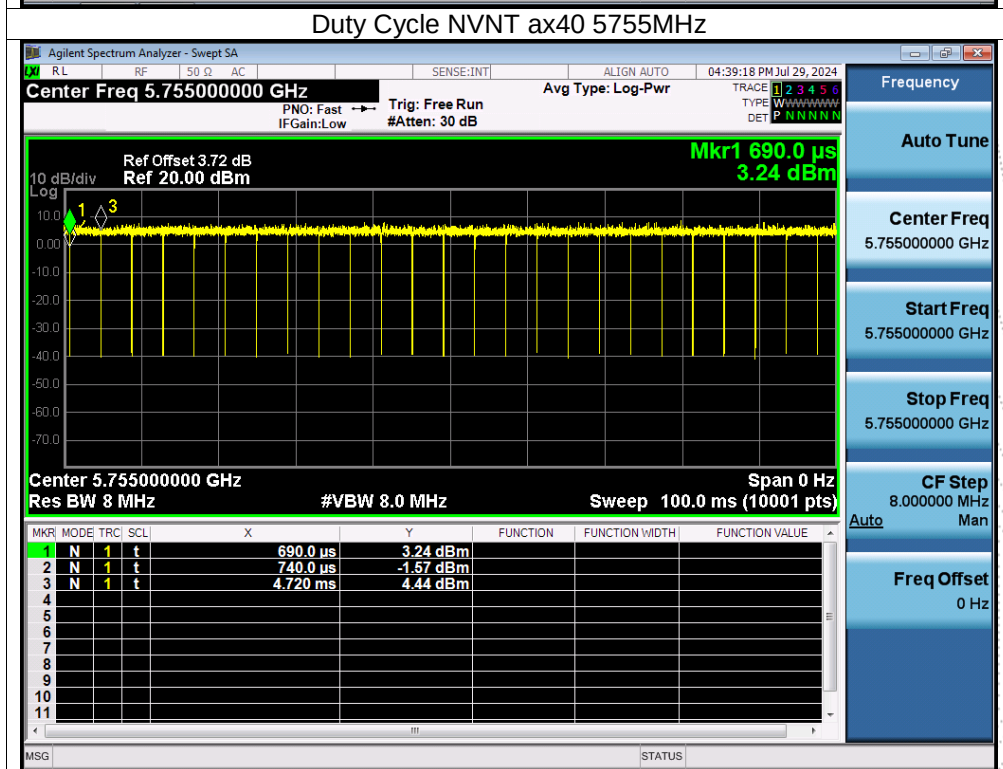
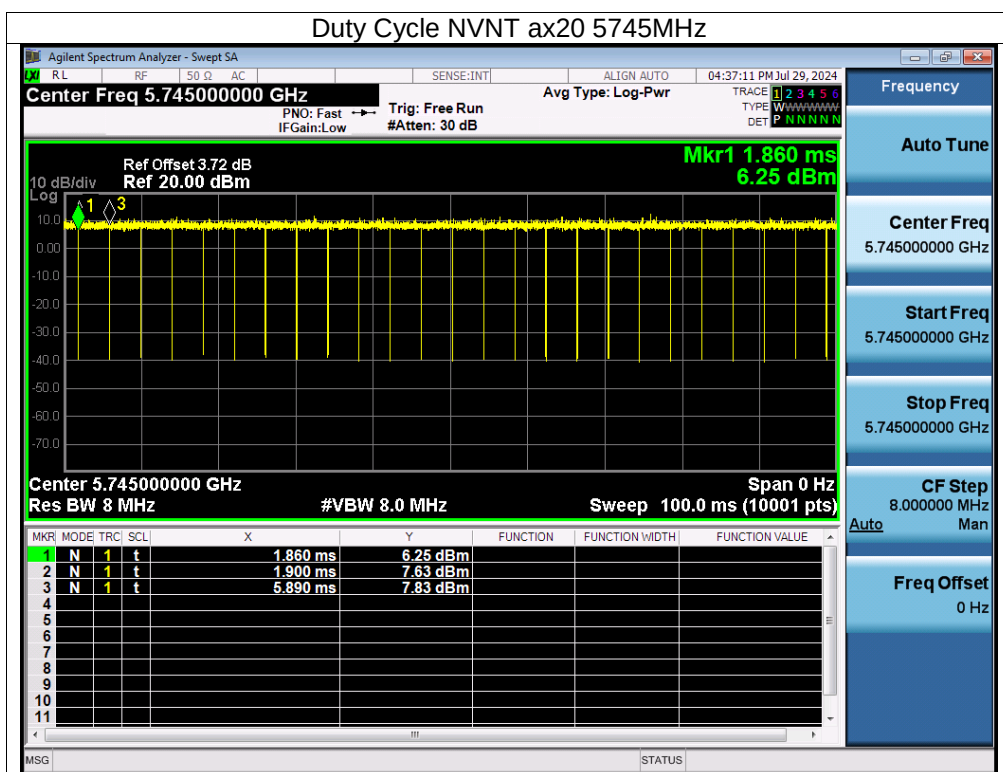
ANT A

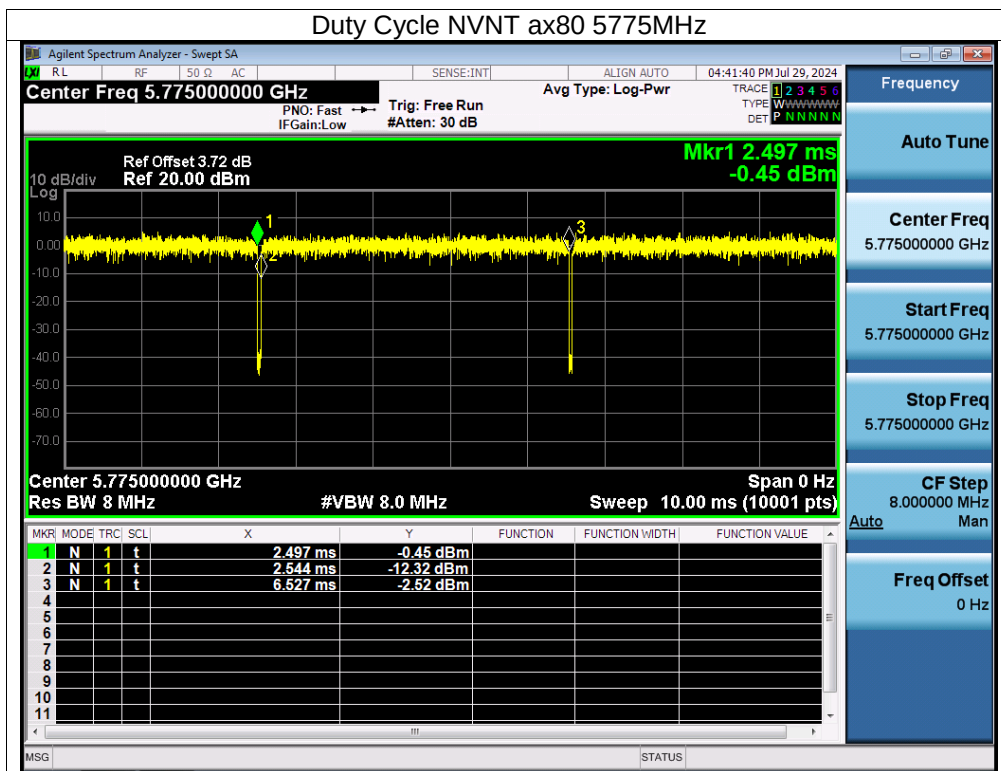
Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5785	97.66	0.1	0.48
NVNT	n20	5785	98.76	0	0.25
NVNT	n40	5755	98.76	0	0.25
NVNT	ac20	5785	98.75	0	0.25
NVNT	ac40	5755	98.75	0	0.25
NVNT	ac80	5775	98.76	0	0.25
NVNT	ax20	5785	99.01	0	0.25
NVNT	ax40	5755	98.76	0	0.25
NVNT	ax80	5775	98.83	0	0.25





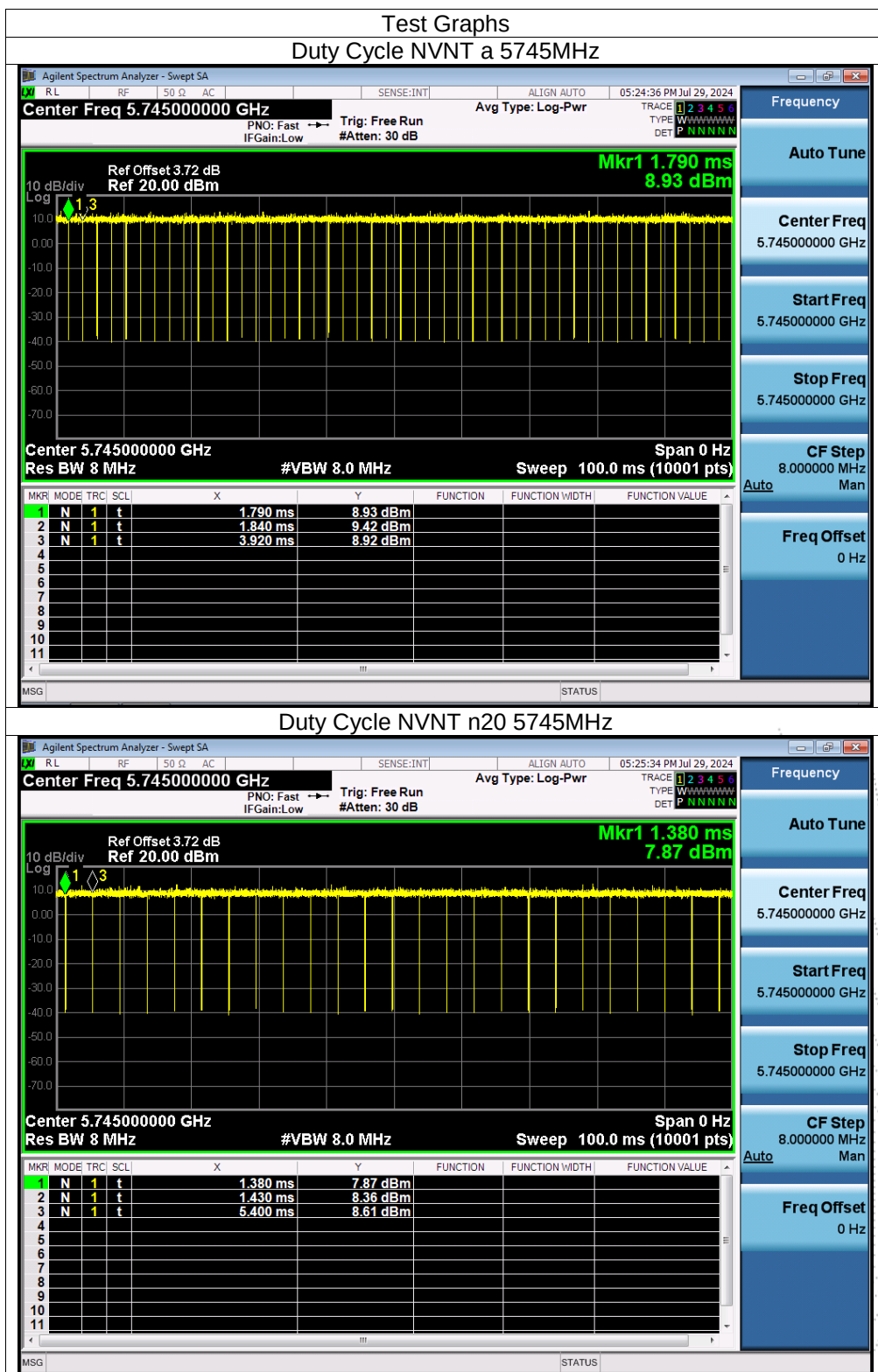


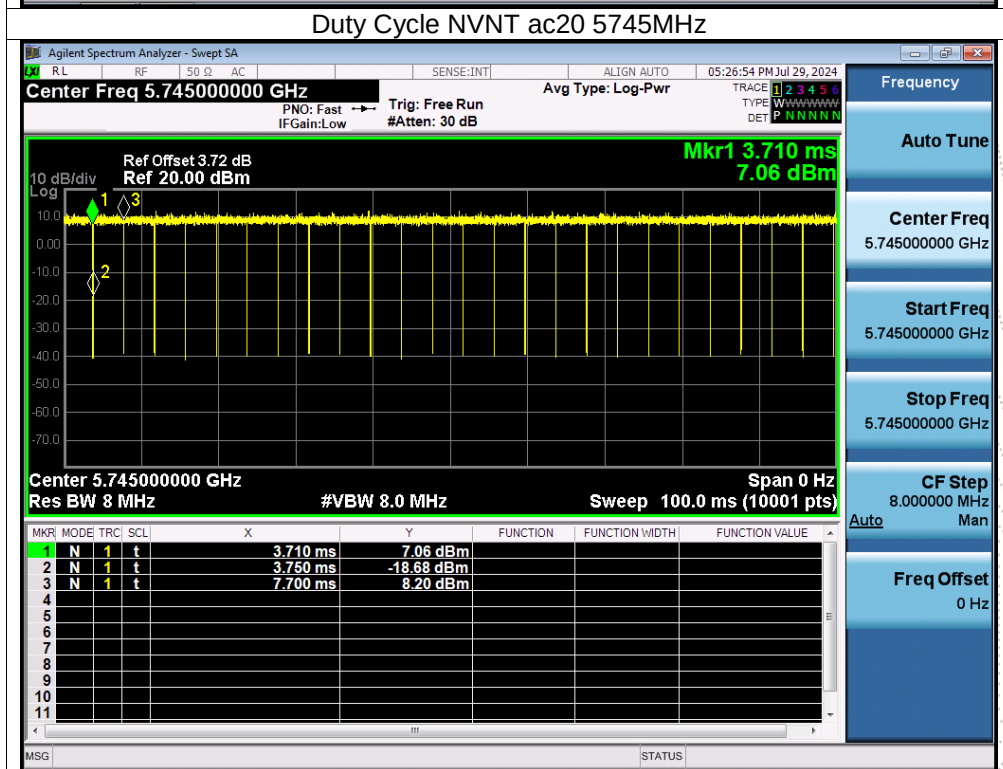
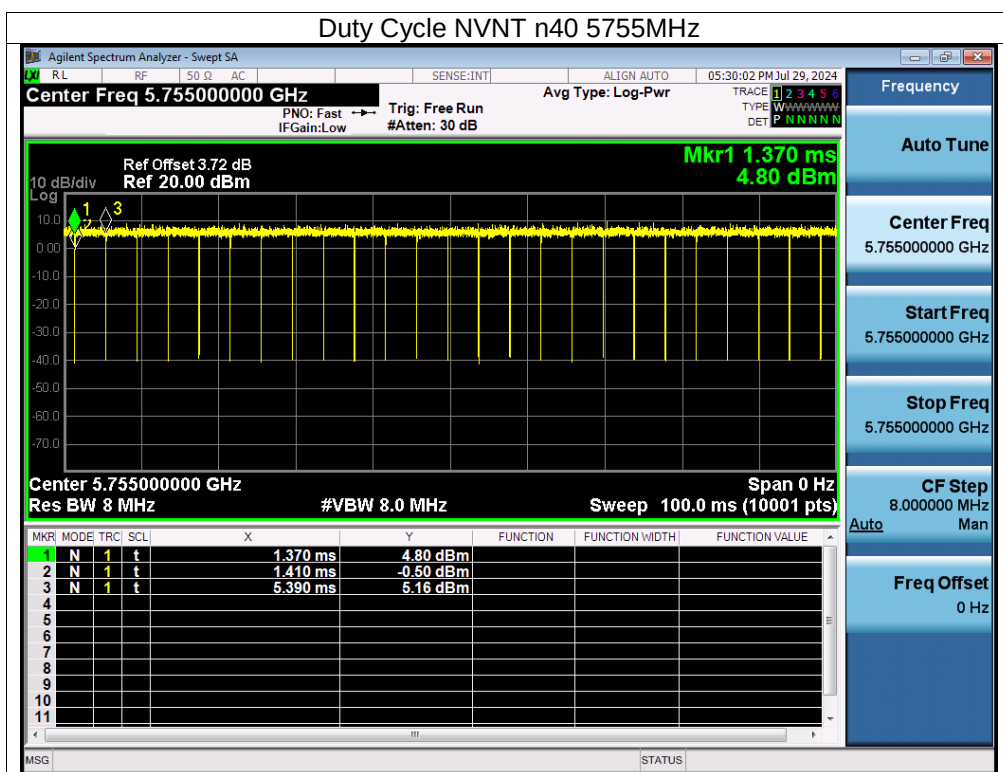


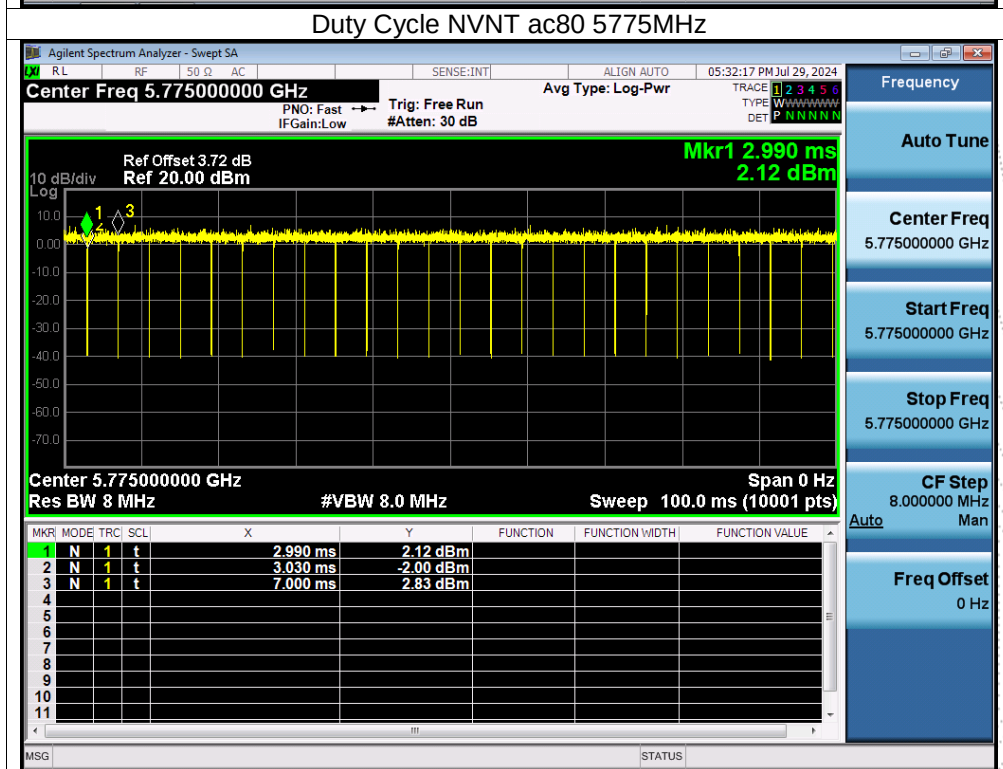
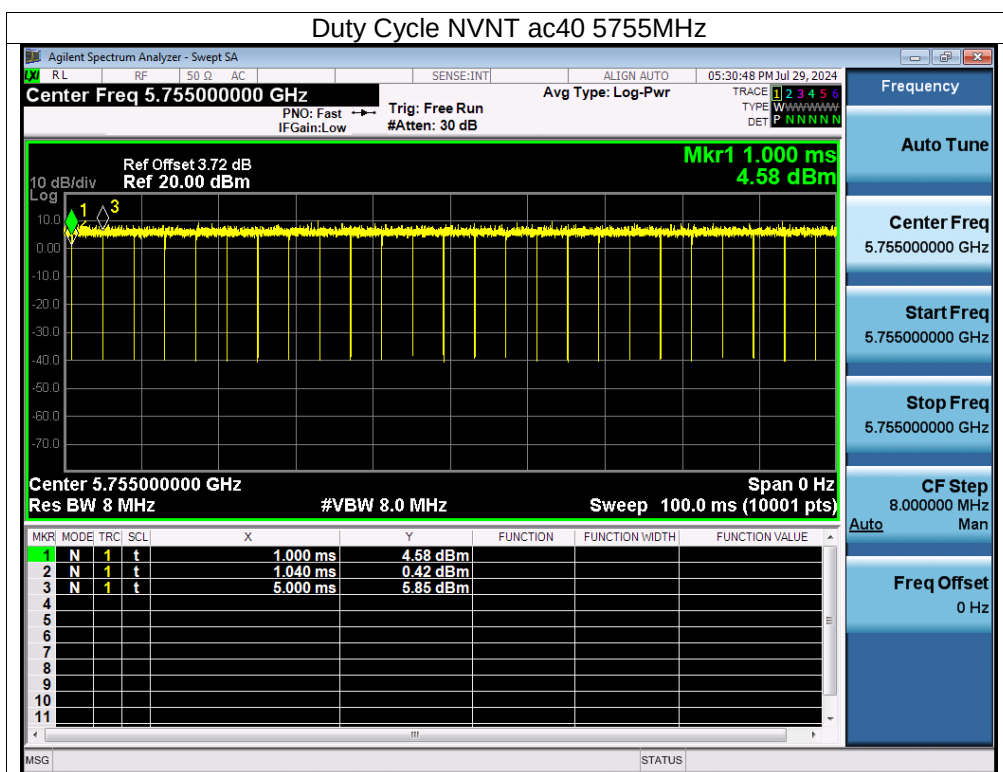


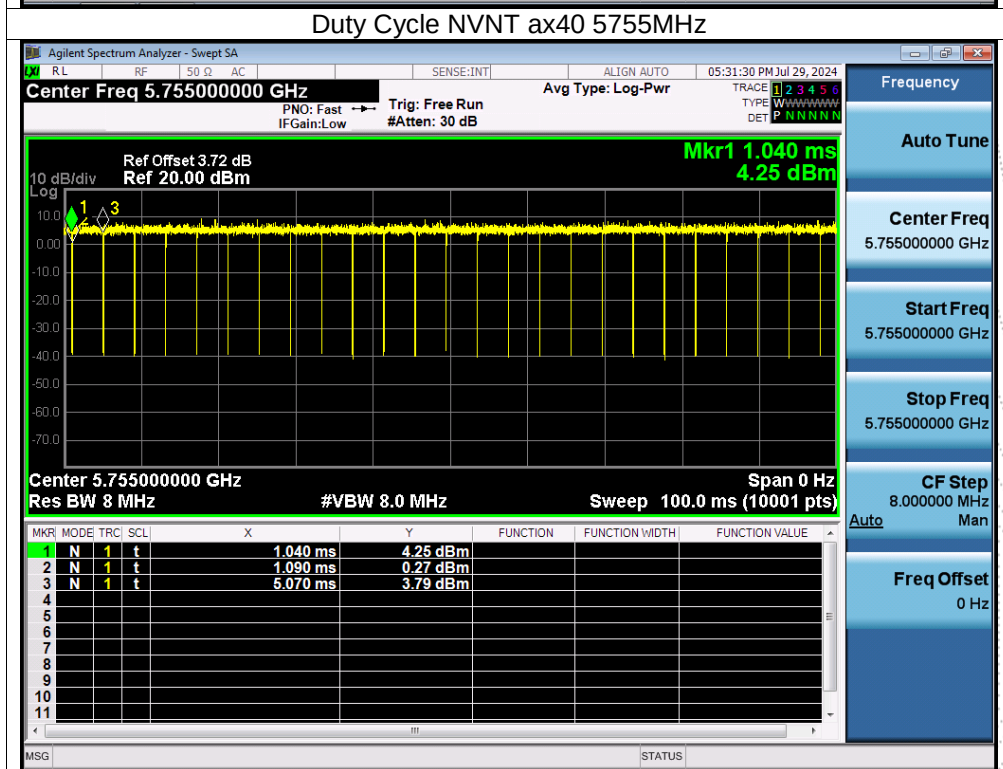
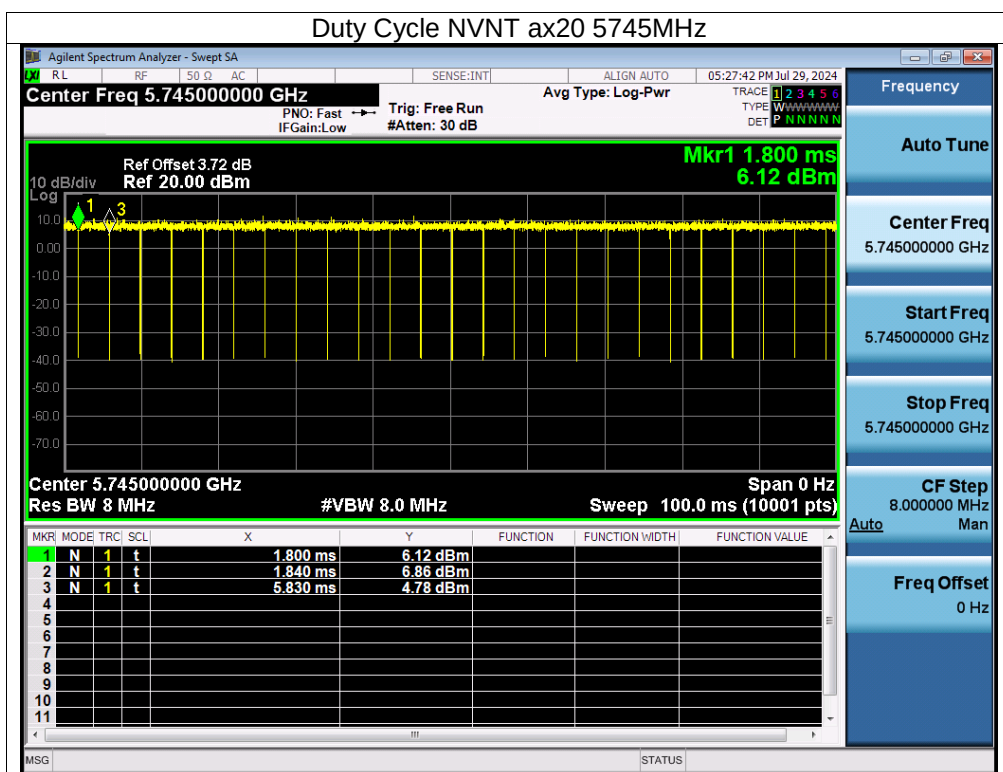
ANT B

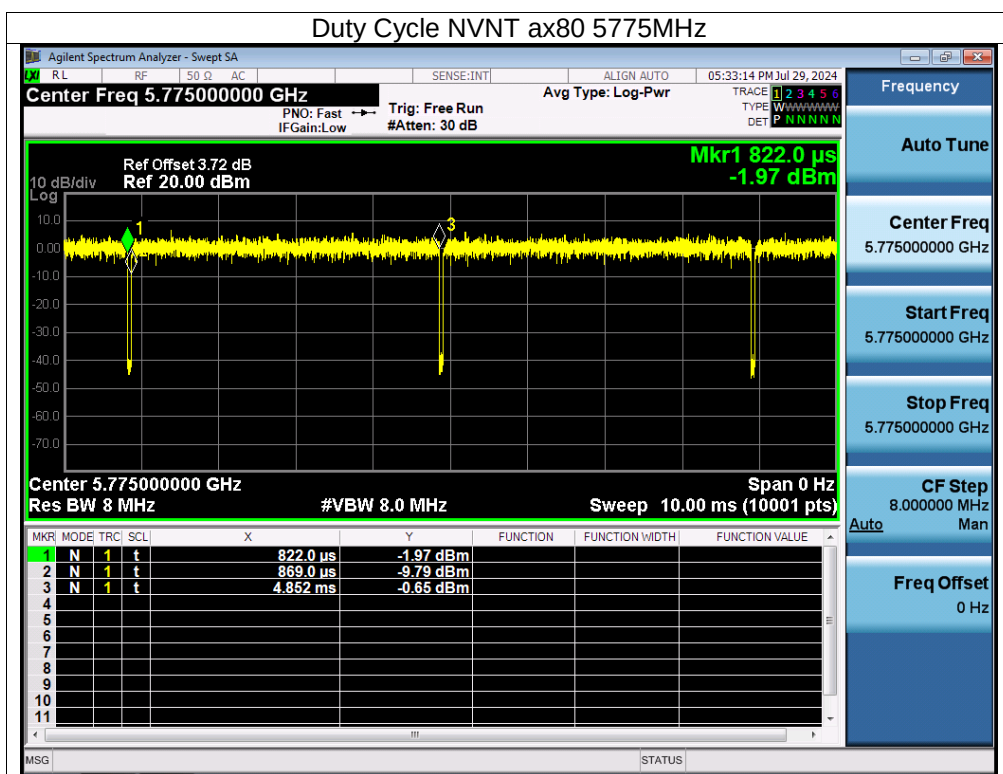
Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5785	97.65	0.1	0.48
NVNT	n20	5785	98.76	0	0.25
NVNT	n40	5755	99	0	0.25
NVNT	ac20	5785	99	0	0.25
NVNT	ac40	5755	99	0	0.25
NVNT	ac80	5775	99	0	0.25
NVNT	ax20	5785	99.01	0	0.25
NVNT	ax40	5755	98.76	0	0.25
NVNT	ax80	5775	98.83	0	0.25











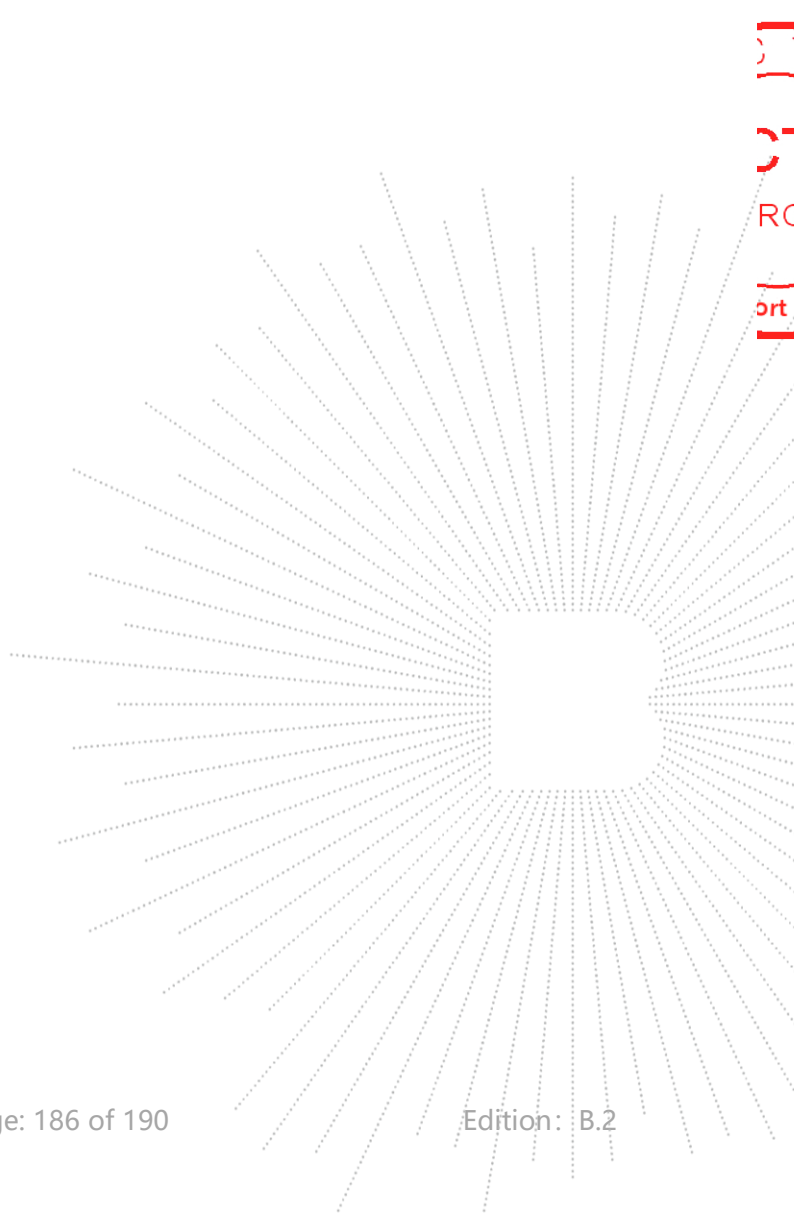
15. Antenna Requirement

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 Internal antenna. It complies with the standard requirement.



16. EUT Photographs

EUT Photo 1



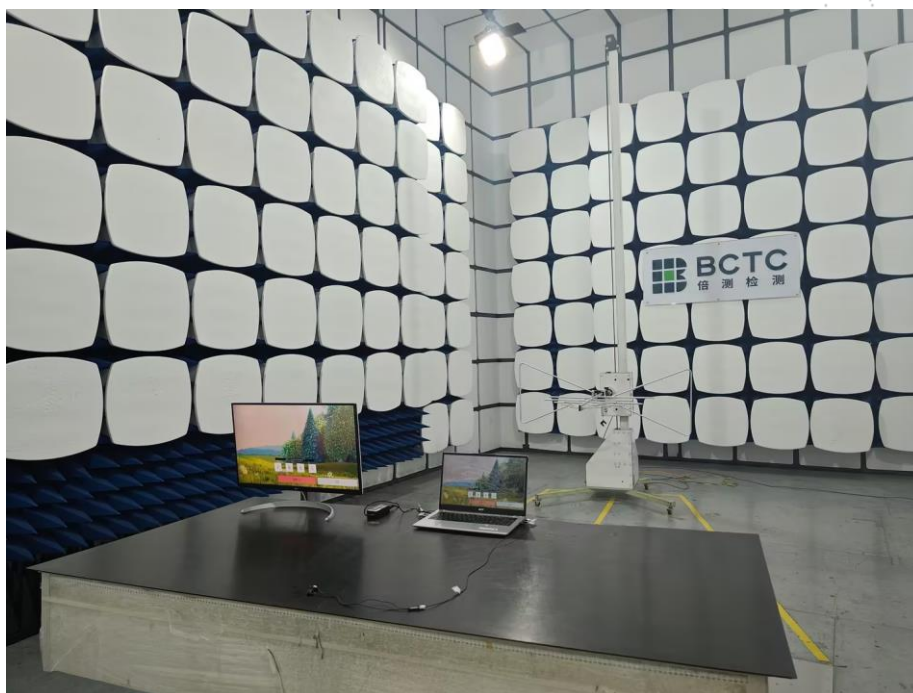
NOTE: Appendix-Photographs Of EUT Constructional Details.

17. EUT Test Setup Photographs

Conducted Measurement Photo



Radiated Measurement Photos





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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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