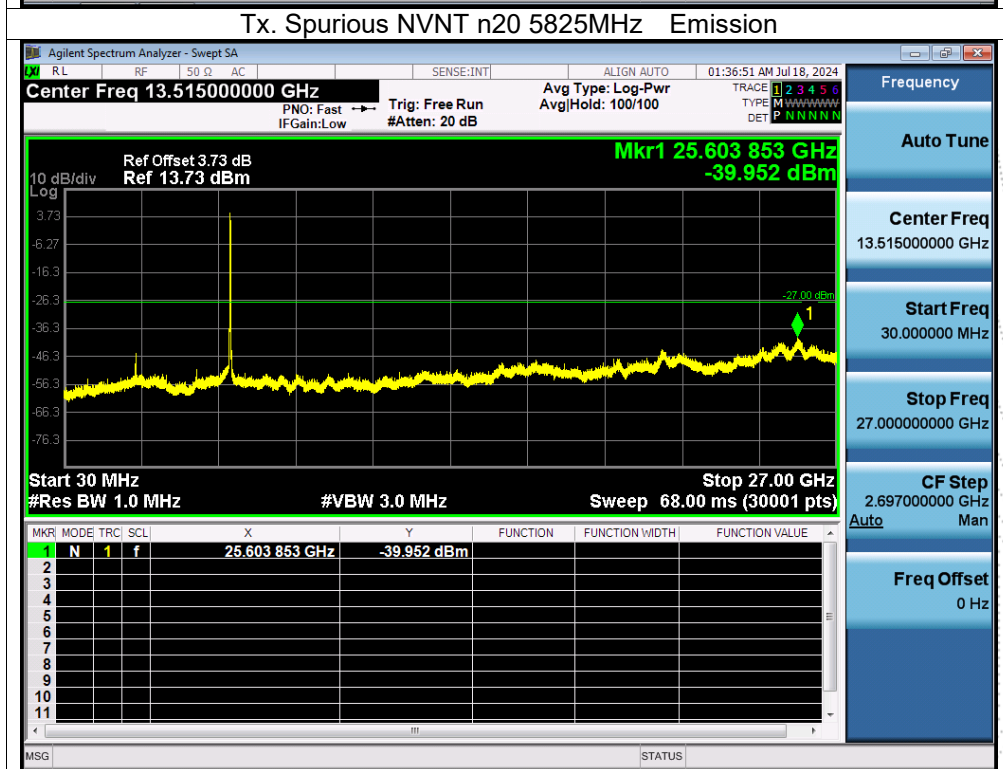
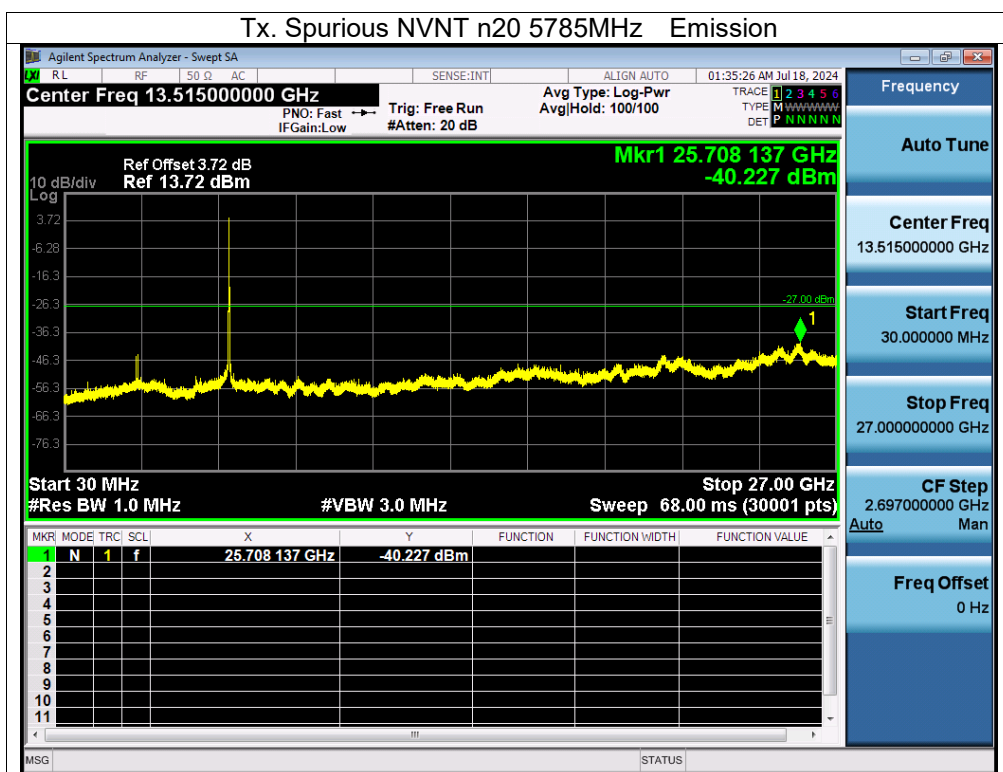
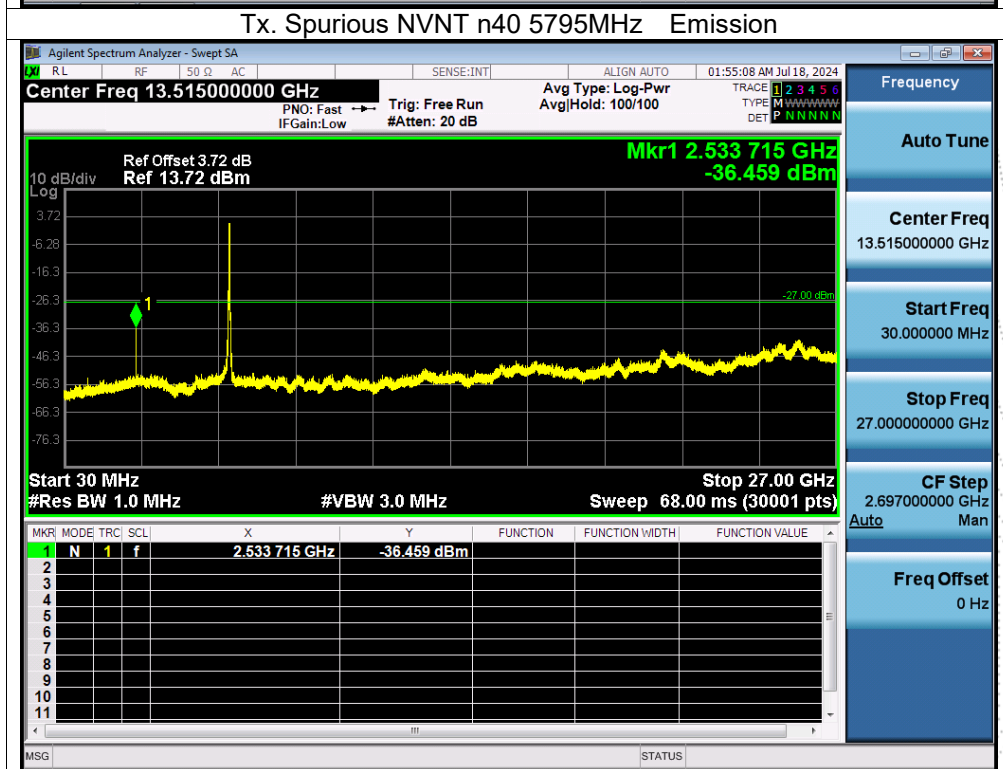
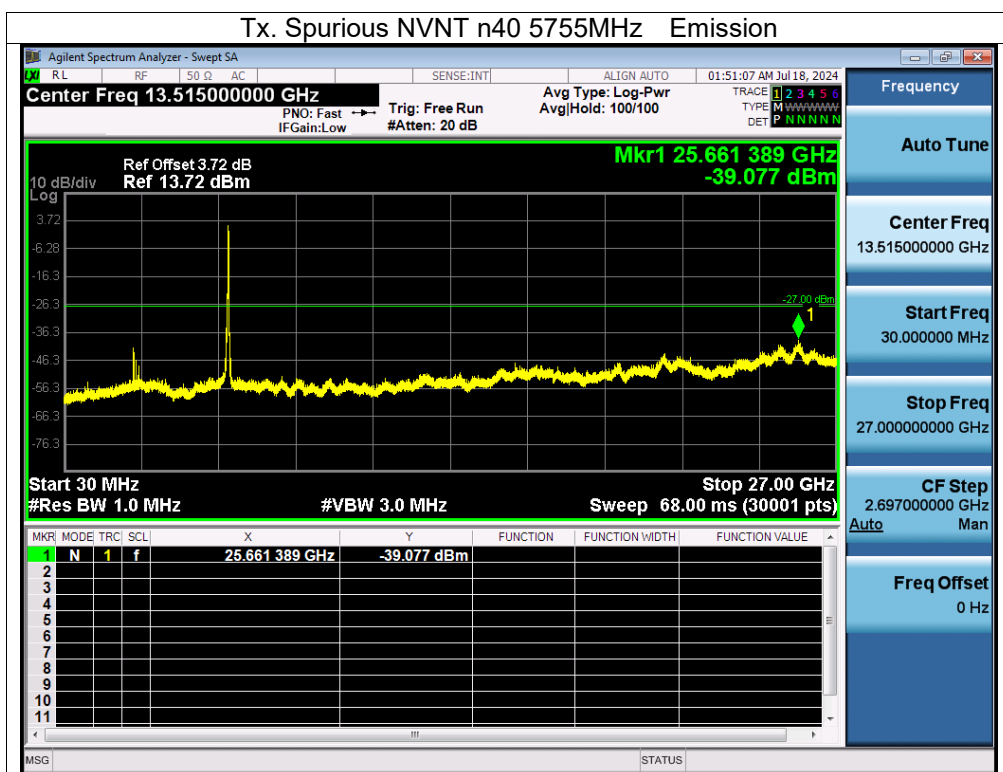
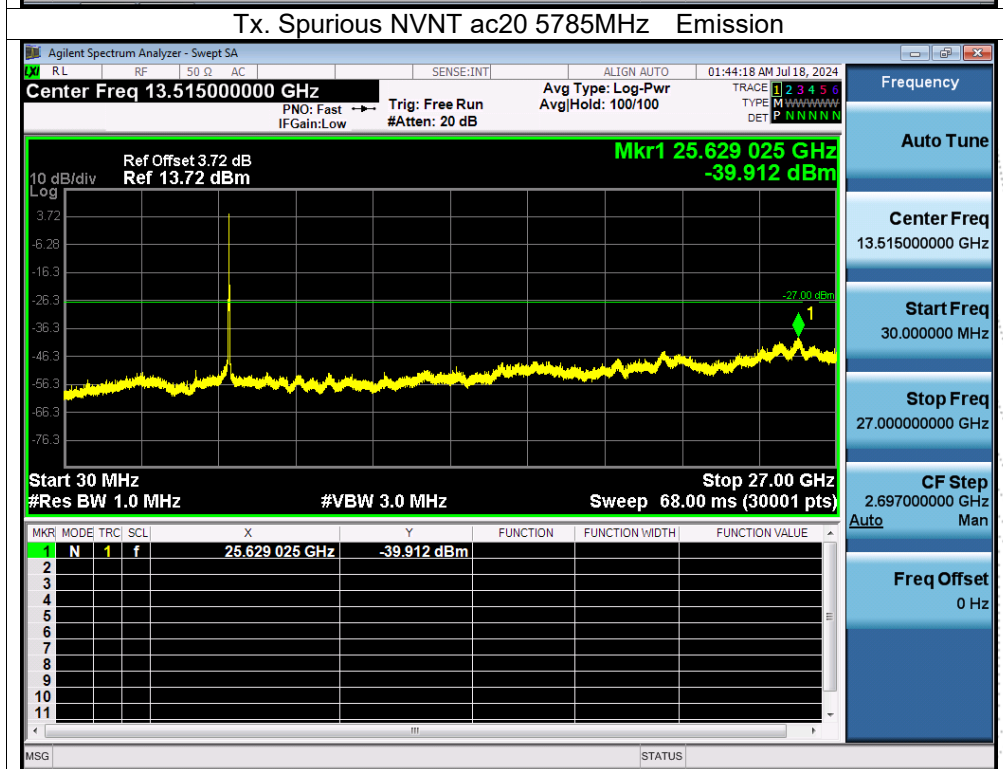
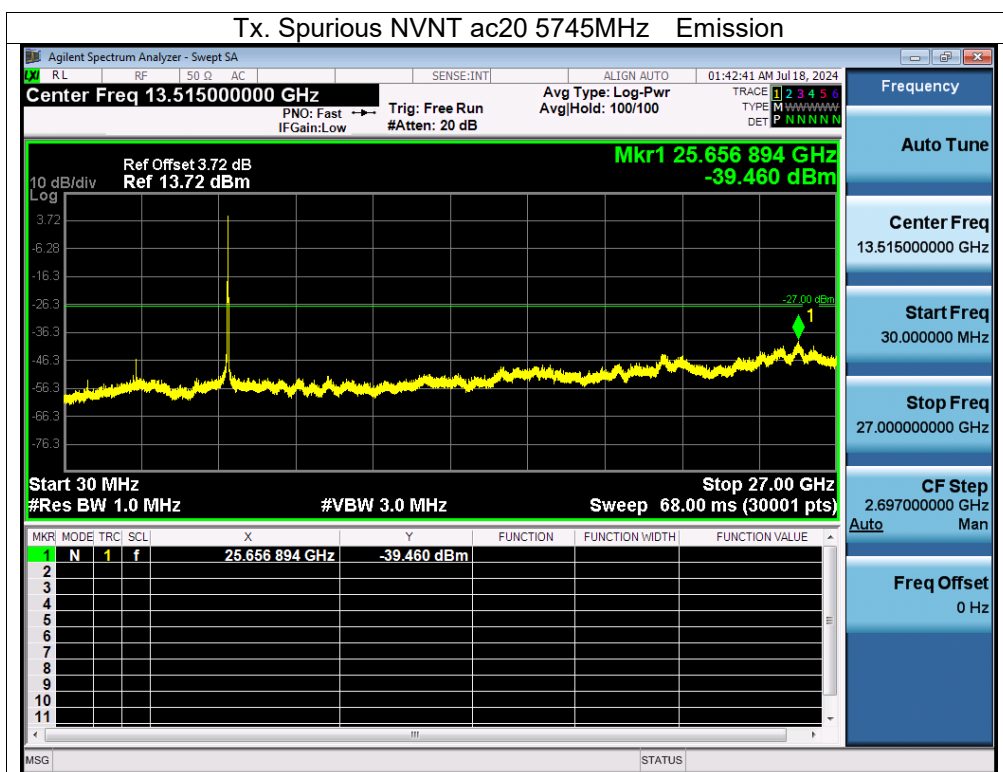
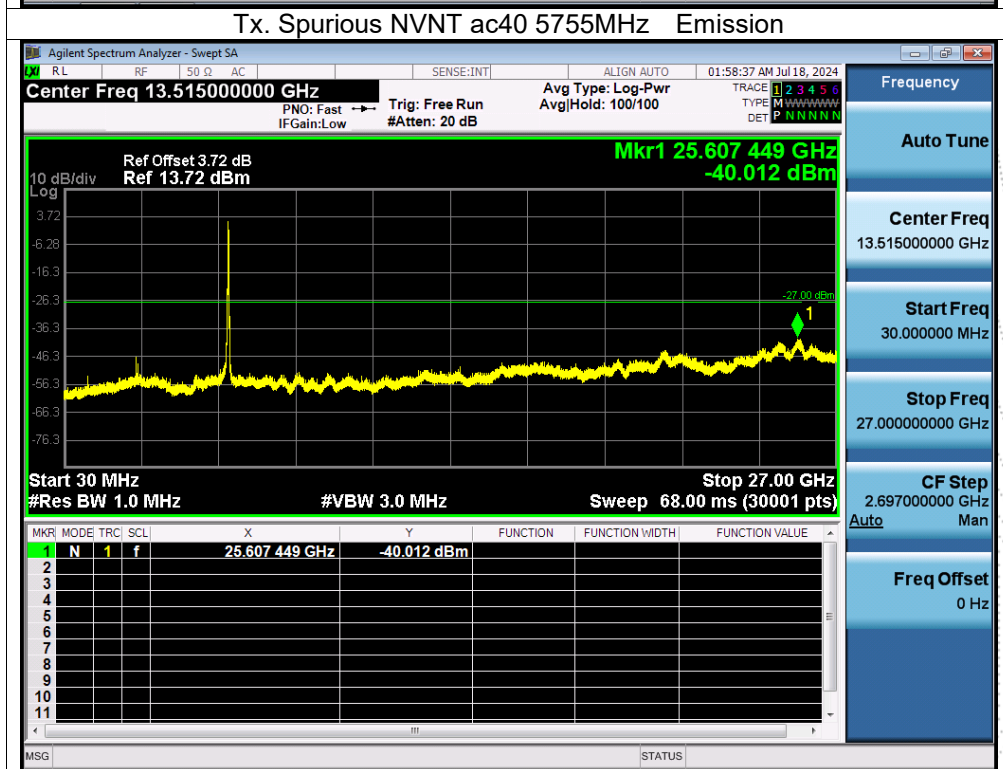
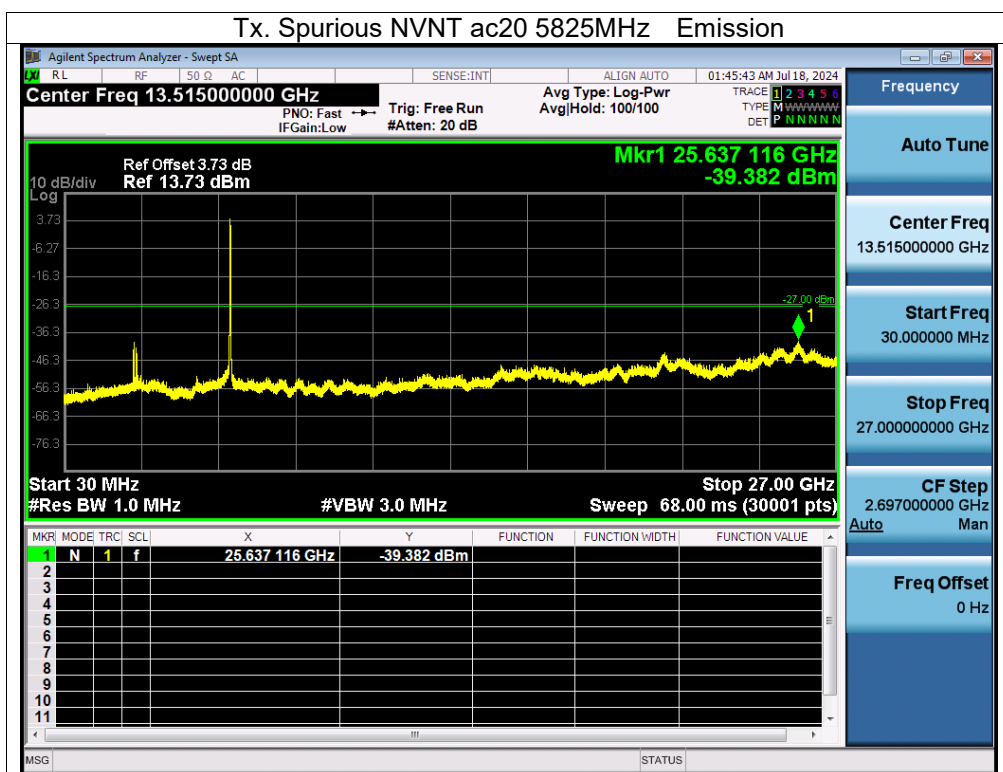
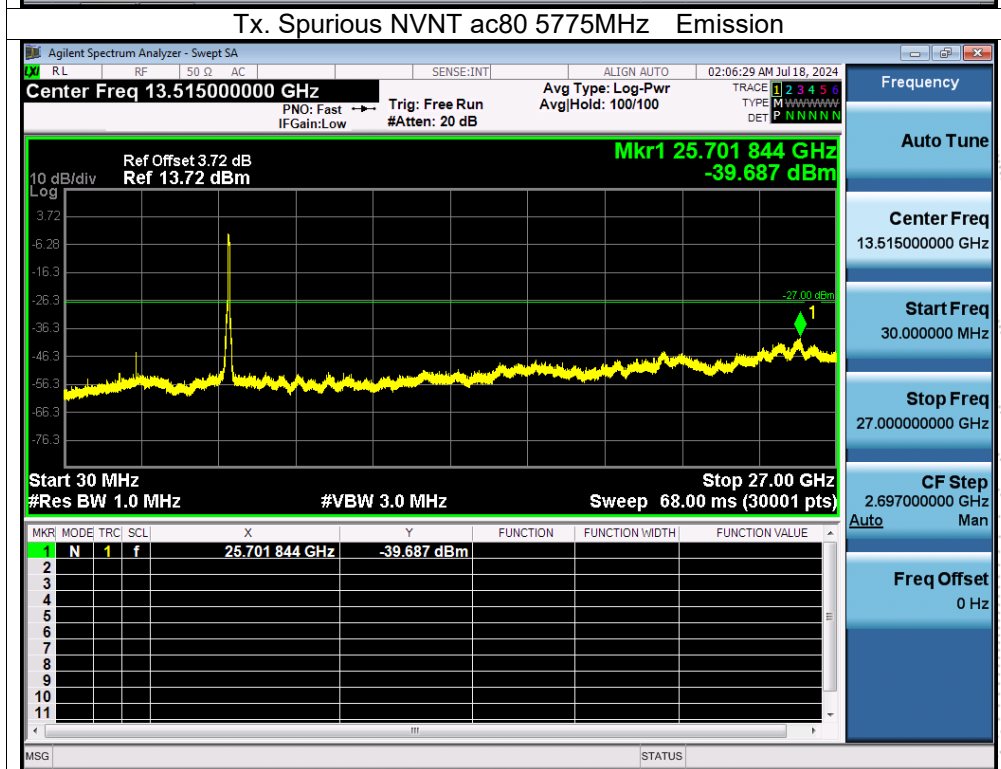
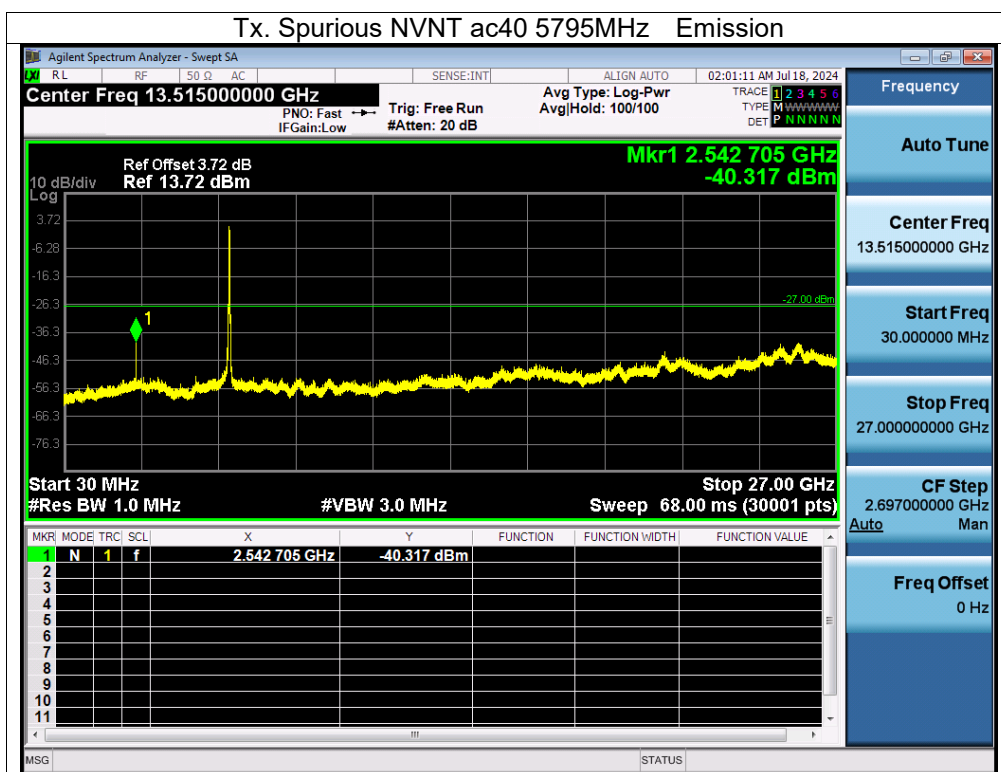












13. Frequency Stability Measurement

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 3.87V
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)	3.87	5180.0076	5180	0.0076	1.4672
		V max (V)	4.45	5180.0130	5180	0.0130	2.5097
		V min (V)	3.29	5180.0056	5180	0.0056	1.0811
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)	3.87	T (°C)	-20	5180.0015	5180	0.0015	0.2896
		T (°C)	-10	5180.0060	5180	0.0060	1.1583
		T (°C)	0	5180.0033	5180	0.0033	0.6371
		T (°C)	10	5180.0080	5180	0.0080	1.5444
		T (°C)	20	5180.0103	5180	0.0103	1.9884
		T (°C)	30	5180.0061	5180	0.0061	1.1776
		T (°C)	40	5180.0106	5180	0.0106	2.0463
		T (°C)	50	5180.0051	5180	0.0051	0.9846
		T (°C)	60	5180.0028	5180	0.0028	0.5405
		T (°C)	70	5180.0091	5180	0.0091	1.7568
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)	3.87	5200.0102	5200	0.0102	1.9615
		V max (V)	4.45	5200.0082	5200	0.0082	1.5769
		V min (V)	3.29	5200.0096	5200	0.0096	1.8462
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)	3.87	T (°C)	-20	5200.00170	5200	0.00170	0.3269
		T (°C)	-10	5200.00820	5200	0.00820	1.5769
		T (°C)	0	5200.01090	5200	0.01090	2.0962
		T (°C)	10	5200.00530	5200	0.00530	1.0192
		T (°C)	20	5200.00030	5200	0.00030	0.0577
		T (°C)	30	5200.01150	5200	0.01150	2.2115
		T (°C)	40	5200.00200	5200	0.00200	0.3846
		T (°C)	50	5200.01120	5200	0.01120	2.1538
		T (°C)	60	5200.00610	5200	0.00610	1.1731
		T (°C)	70	5200.00200	5200	0.00200	0.3846
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)	3.87	5240.0040	5240	0.0040	0.7634
		V max (V)	4.45	5240.0111	5240	0.0111	2.1183
		V min (V)	3.29	5240.0017	5240	0.0017	0.3244
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)	3.87	T (°C)	-20	5240.0026	5240	0.0026	0.4962
		T (°C)	-10	5240.0115	5240	0.0115	2.1947
		T (°C)	0	5240.0004	5240	0.0004	0.0763
		T (°C)	10	5240.0025	5240	0.0025	0.4771
		T (°C)	20	5240.0025	5240	0.0025	0.4771
		T (°C)	30	5240.0004	5240	0.0004	0.0763
		T (°C)	40	5240.0003	5240	0.0003	0.0573
		T (°C)	50	5240.0034	5240	0.0034	0.6489
		T (°C)	60	5240.0012	5240	0.0012	0.2290
		T (°C)	70	5240.0053	5240	0.0053	1.0115
Limits				5150-5250 MHz			
Result				Complies			

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Test Voltage:	DC 3.87V
Test Mode:	TX Frequency(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)	3.87	5745.00600	5745	0.00600	1.0444
		V max (V)	4.45	5745.00830	5745	0.00830	1.4447
		V min (V)	3.29	5745.00030	5745	0.00030	0.0522
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)	3.87	T (°C)	-20	5745.01070	5745	0.01070	1.8625
		T (°C)	-10	5745.00750	5745	0.00750	1.3055
		T (°C)	0	5745.00960	5745	0.00960	1.6710
		T (°C)	10	5745.00020	5745	0.00020	0.0348
		T (°C)	20	5745.00080	5745	0.00080	0.1393
		T (°C)	30	5745.00140	5745	0.00140	0.2437
		T (°C)	40	5745.00330	5745	0.00330	0.5744
		T (°C)	50	5745.00860	5745	0.00860	1.4970
		T (°C)	60	5745.00520	5745	0.00520	0.9051
		T (°C)	70	5745.01270	5745	0.01270	2.2106
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)	3.87	5785.00900	5785	0.00900	1.5557
		V max (V)	4.45	5785.00060	5785	0.00060	0.1037
		V min (V)	3.29	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)	3.87	T (°C)	-20	5785.00200	5785	0.00200	0.3457
		T (°C)	-10	5785.00550	5785	0.00550	0.9507
		T (°C)	0	5785.00140	5785	0.00140	0.2420
		T (°C)	10	5785.00640	5785	0.00640	1.1063
		T (°C)	20	5785.00650	5785	0.00650	1.1236
		T (°C)	30	5785.00260	5785	0.00260	0.4494
		T (°C)	40	5785.00810	5785	0.00810	1.4002
		T (°C)	50	5785.00400	5785	0.00400	0.6914
		T (°C)	60	5785.00550	5785	0.00550	0.9507
		T (°C)	70	5785.00670	5785	0.00670	1.1582
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)	3.87	5825.00870	5825	0.00870	1.4936
		V max (V)	4.45	5825.00270	5825	0.00270	0.4635
		V min (V)	3.29	5825.00870	5825	0.00870	1.4936
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)	3.87	T (°C)	-20	5825.00110	5825	0.00110	0.1888
		T (°C)	-10	5825.00310	5825	0.00310	0.5322
		T (°C)	0	5825.00030	5825	0.00030	0.0515
		T (°C)	10	5825.00820	5825	0.00820	1.4077
		T (°C)	20	5825.00940	5825	0.00940	1.6137
		T (°C)	30	5825.00200	5825	0.00200	0.3433
		T (°C)	40	5825.00200	5825	0.00200	0.3433
		T (°C)	50	5825.01150	5825	0.01150	1.9742
		T (°C)	60	5825.00090	5825	0.00090	0.1545
		T (°C)	70	5825.00190	5825	0.00190	0.3262
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 = $T_{on} / (T_{on} + T_{off})$

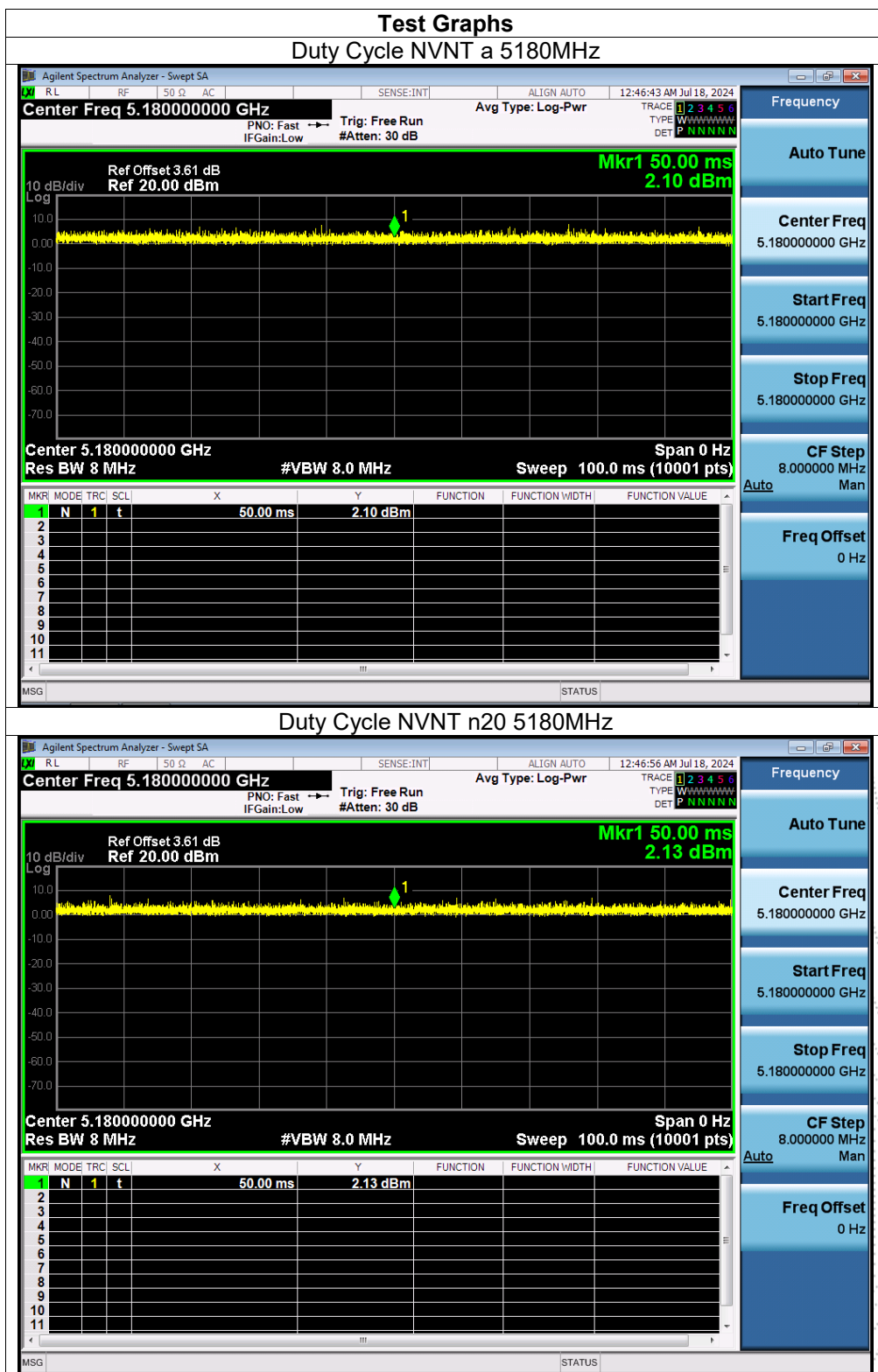
14.3 Test Procedure

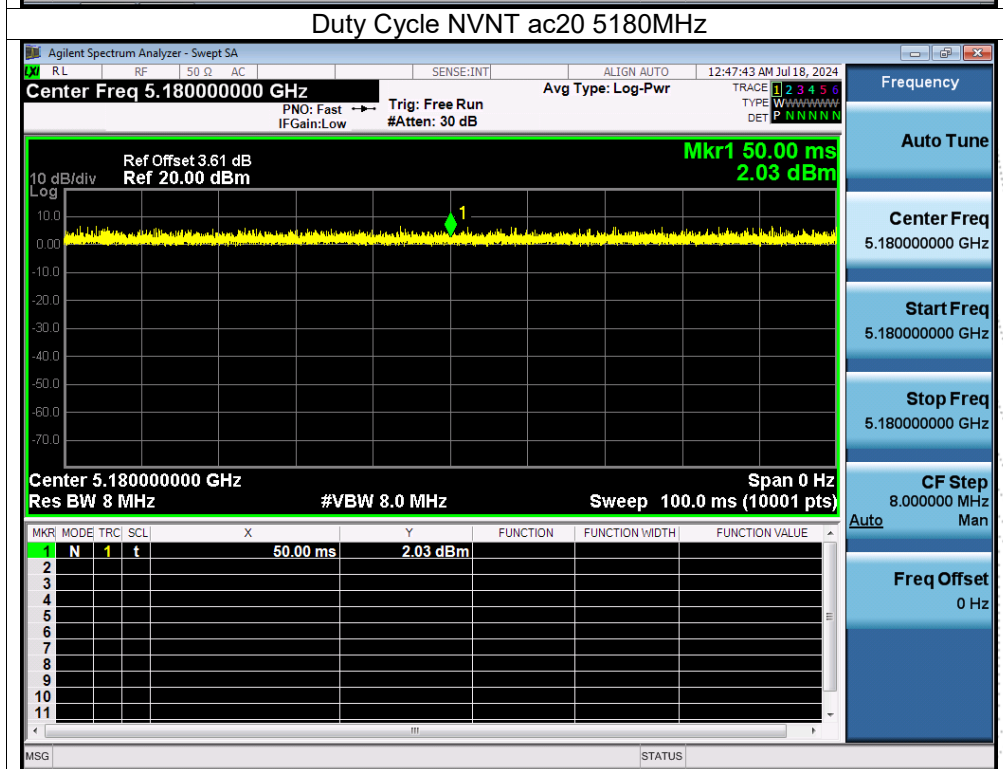
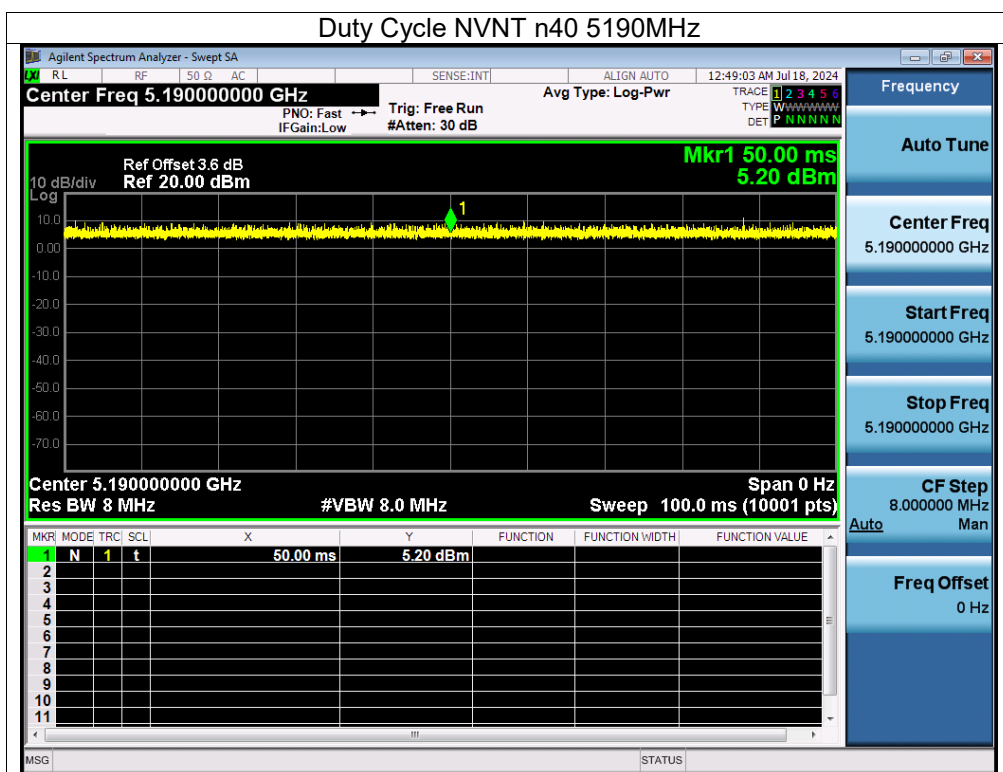
1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

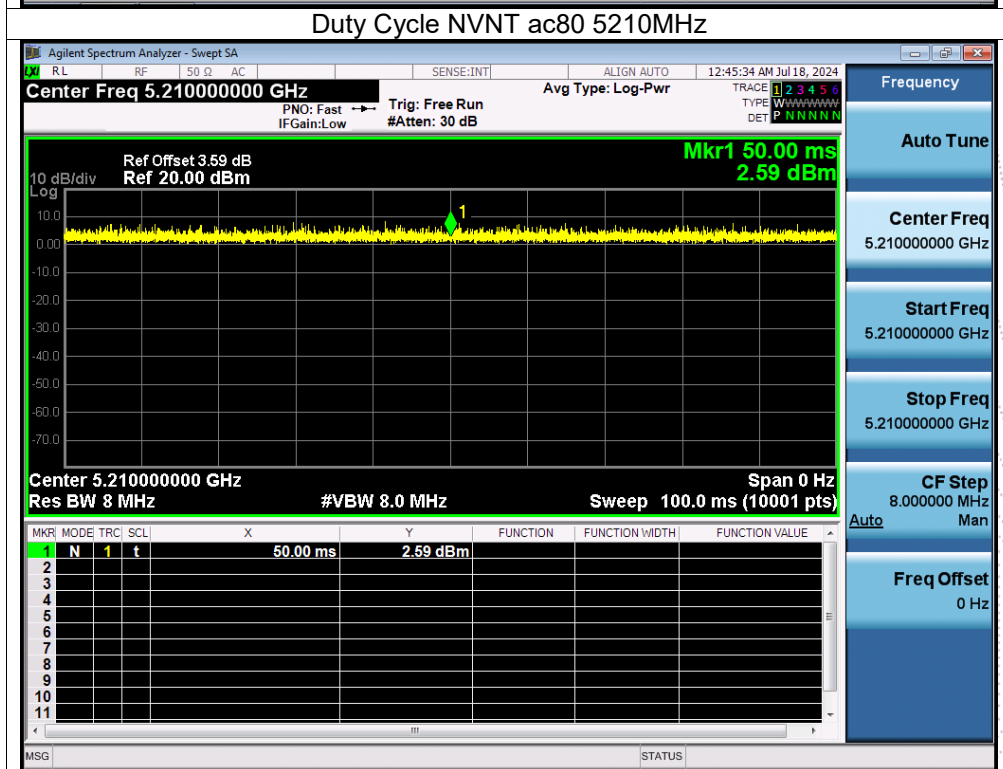
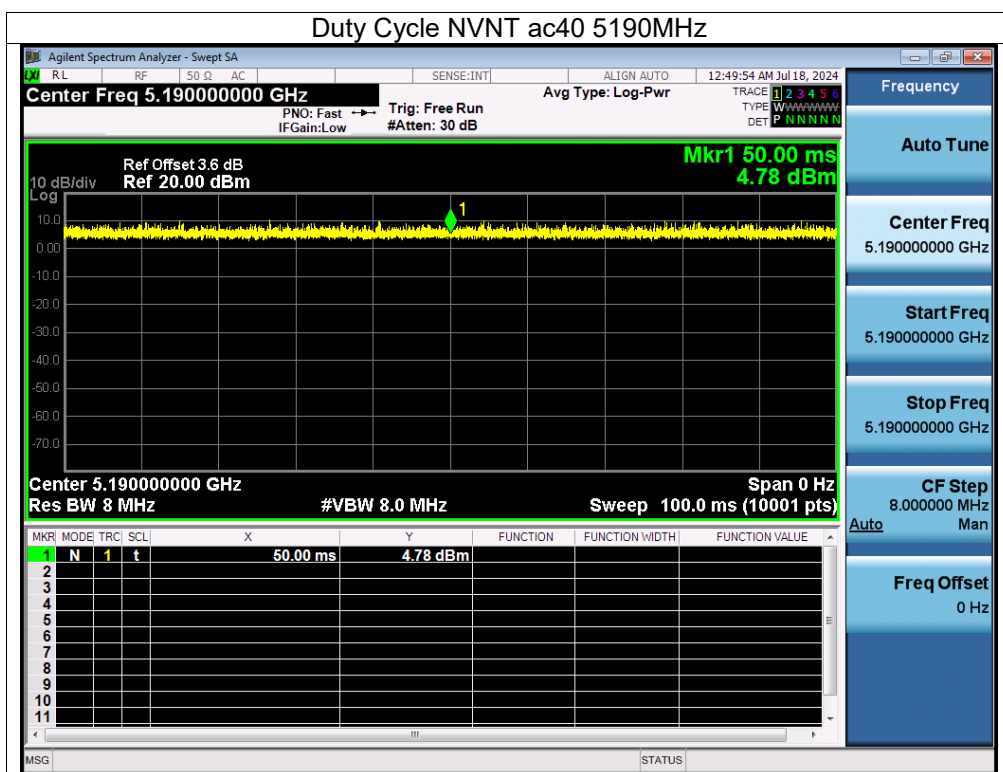
14.4 Test Result

5.1G

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

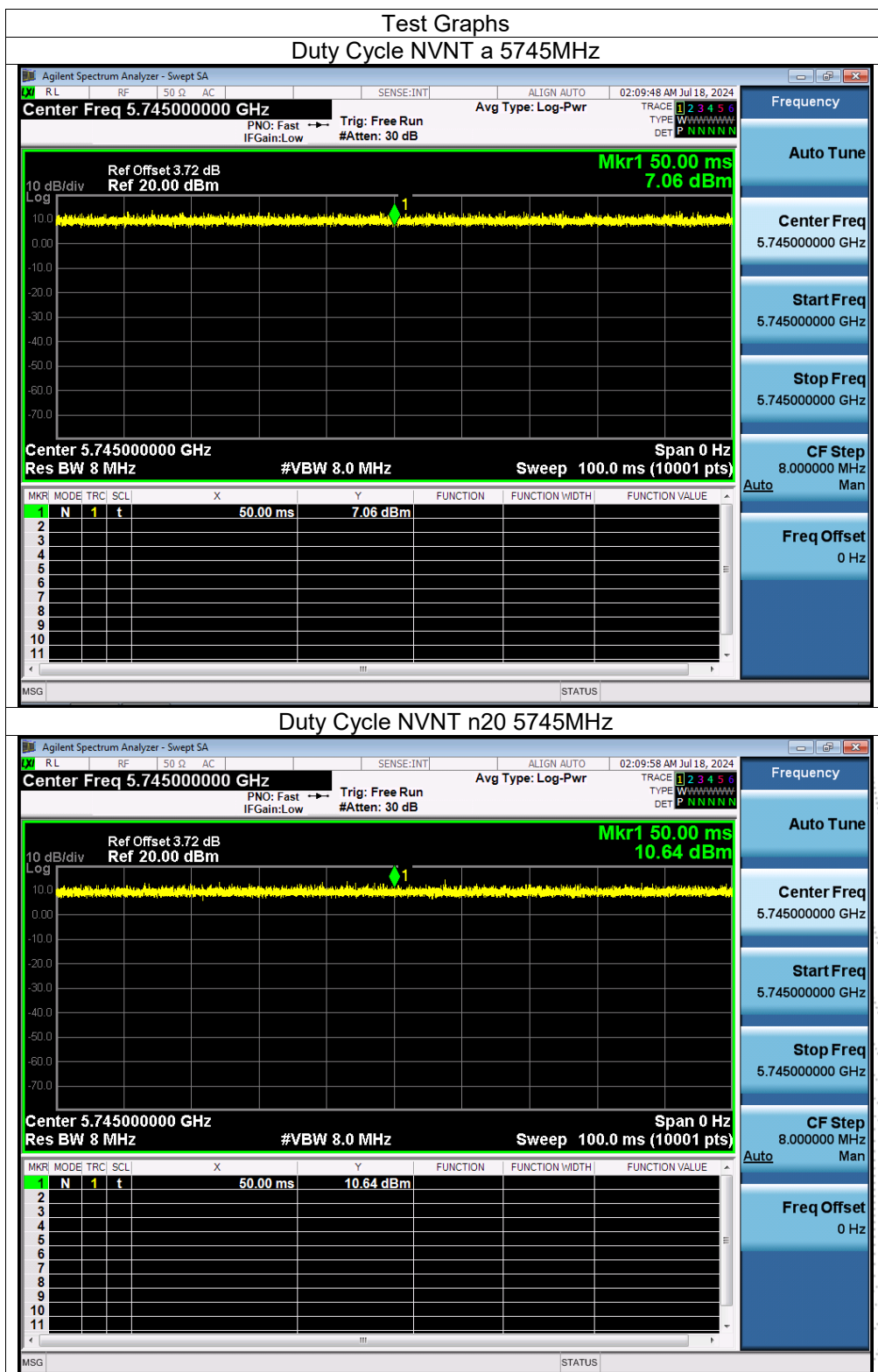


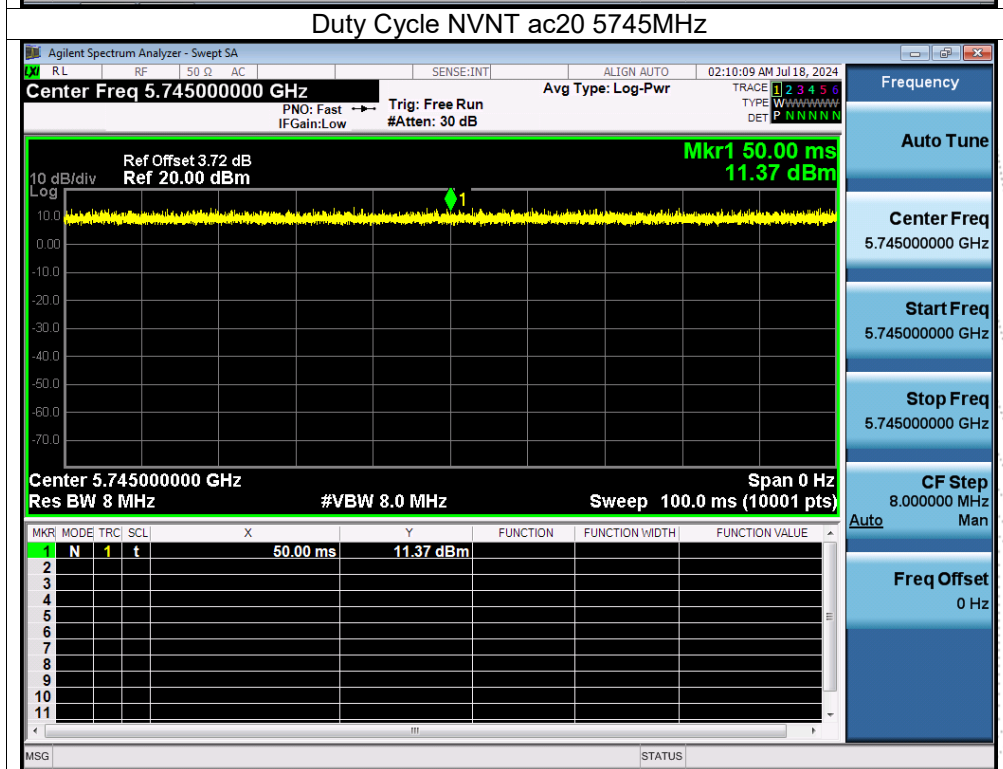
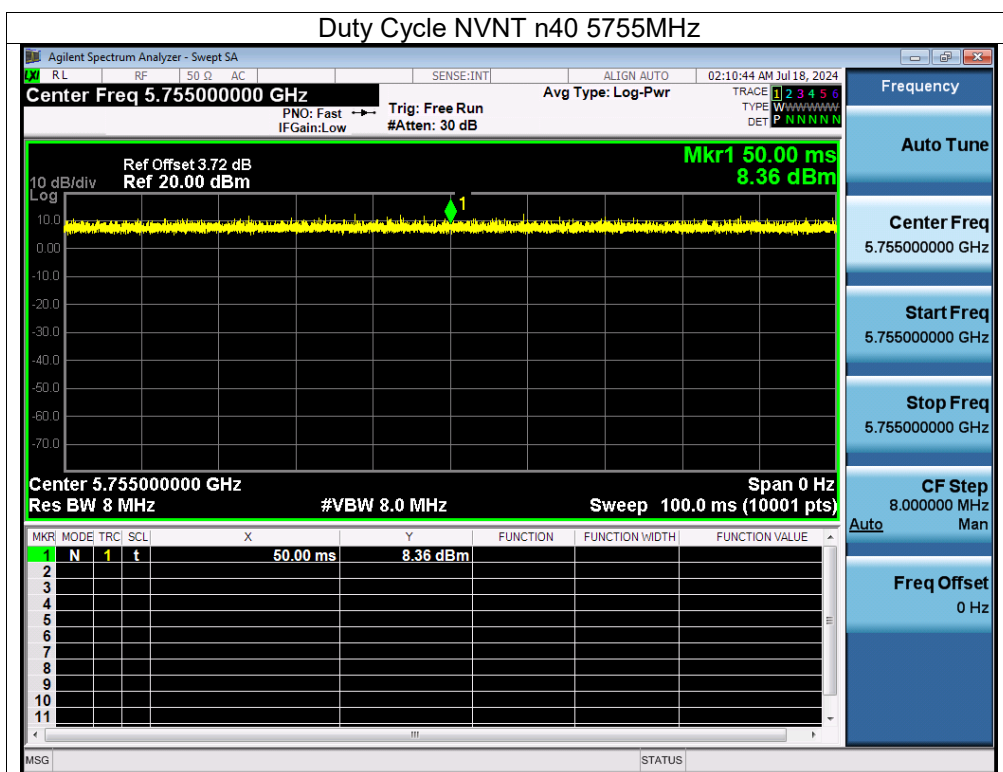


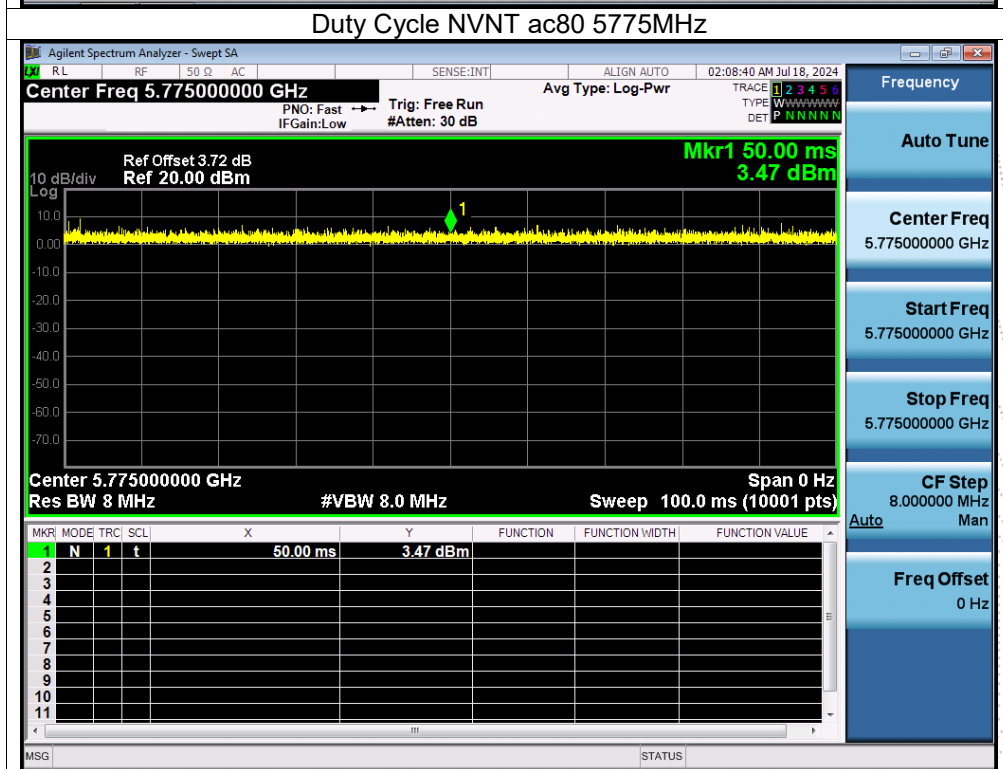
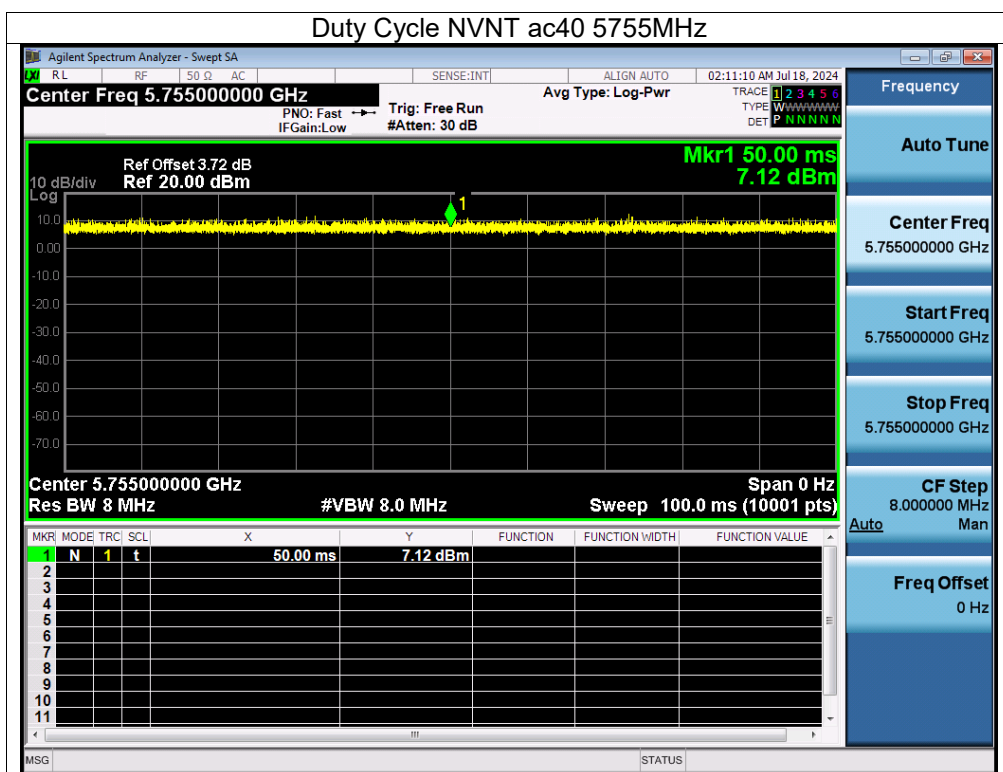


5.8G

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







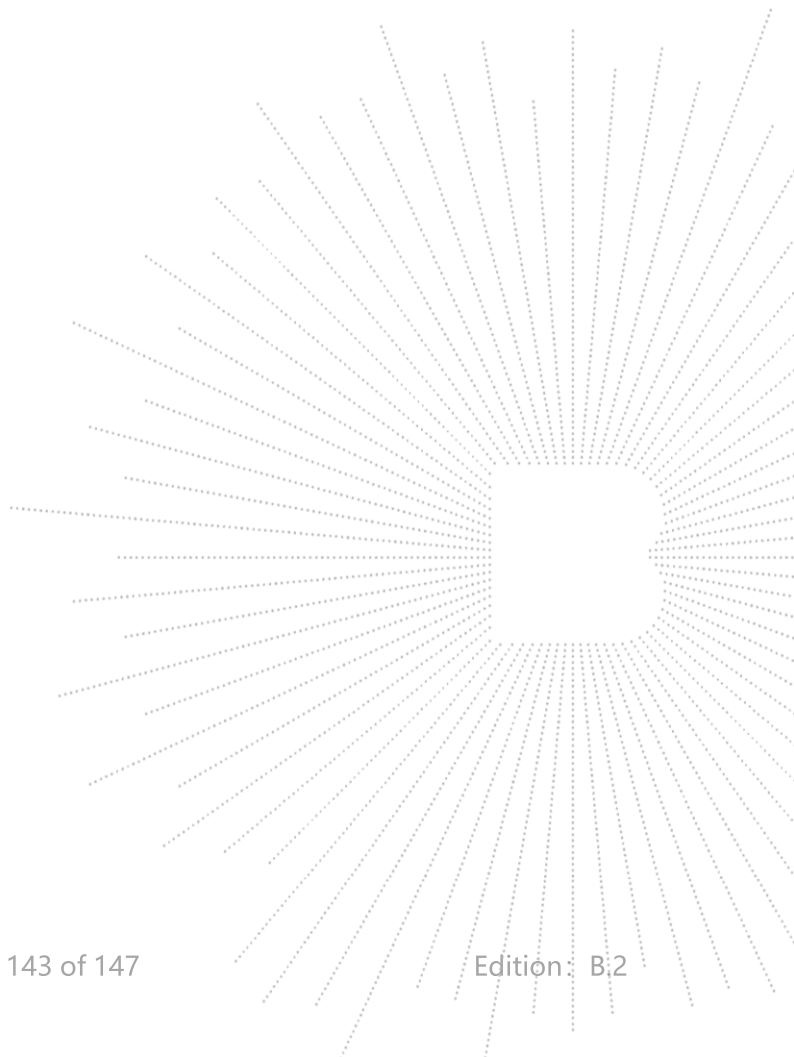
15. Antenna Requirement

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 (antenna gain: 5.1G: -0.27 dBi, 5.8G: -0.27 dBi). It comply with the standard requirement.

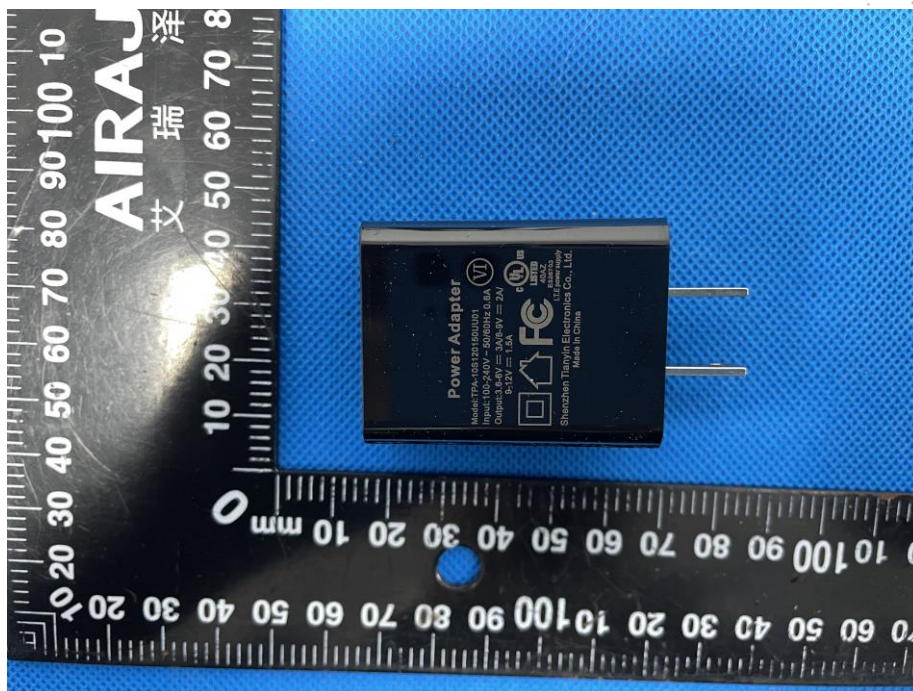


16. EUT Photographs

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.

Address:

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

※※※※※ END ※※※※※