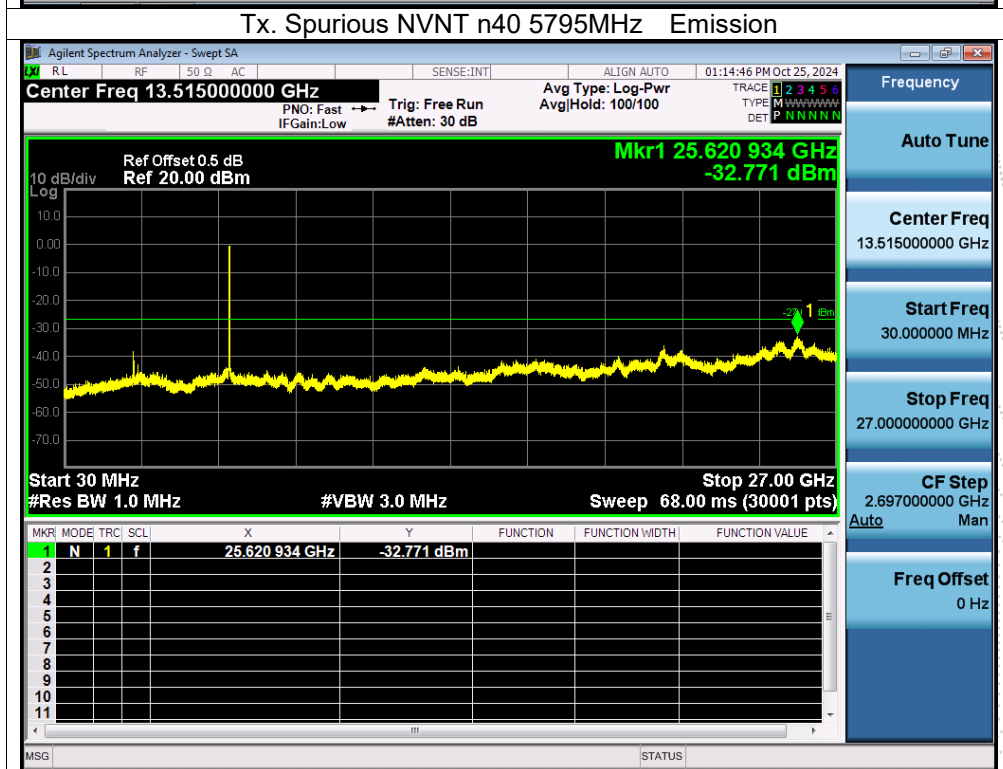
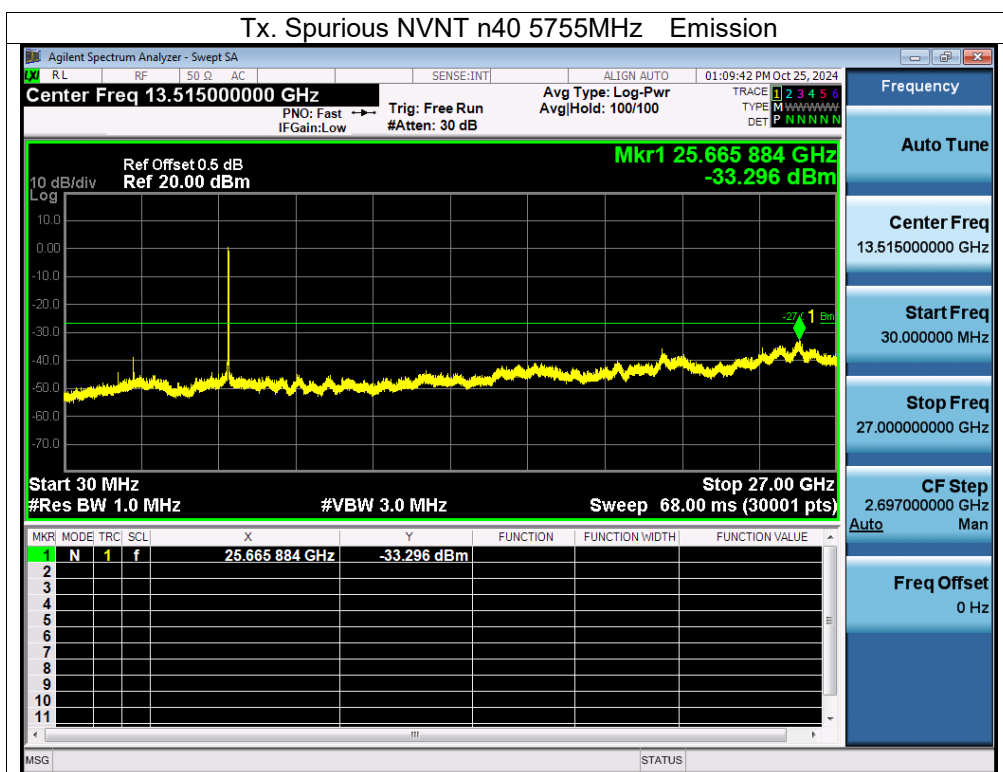
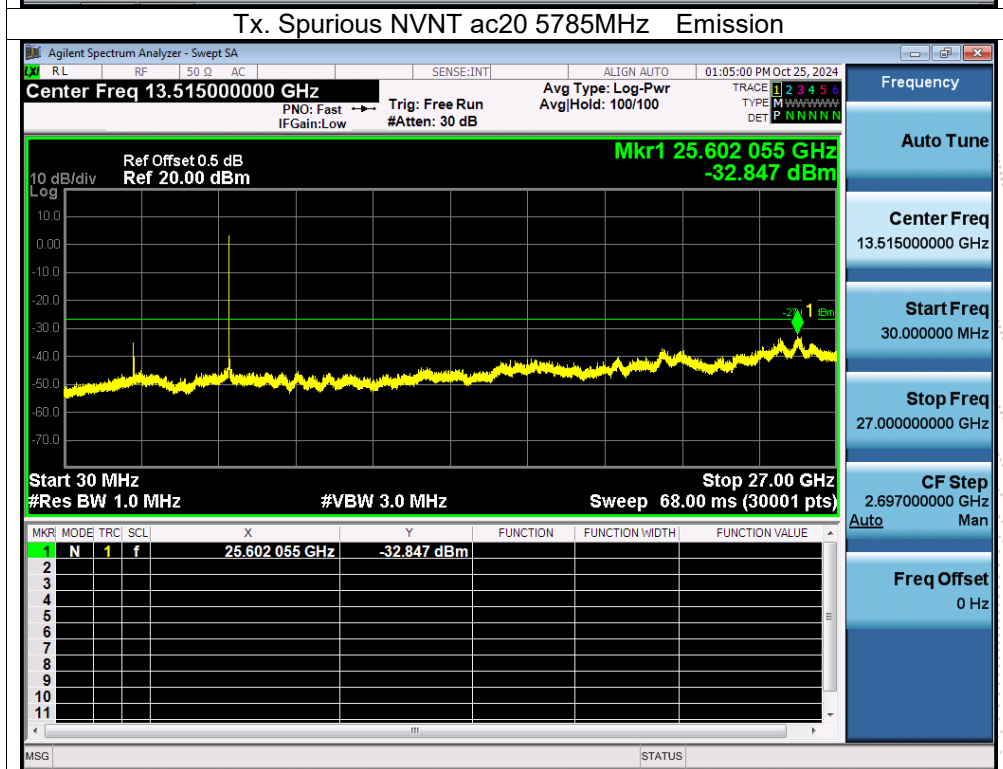
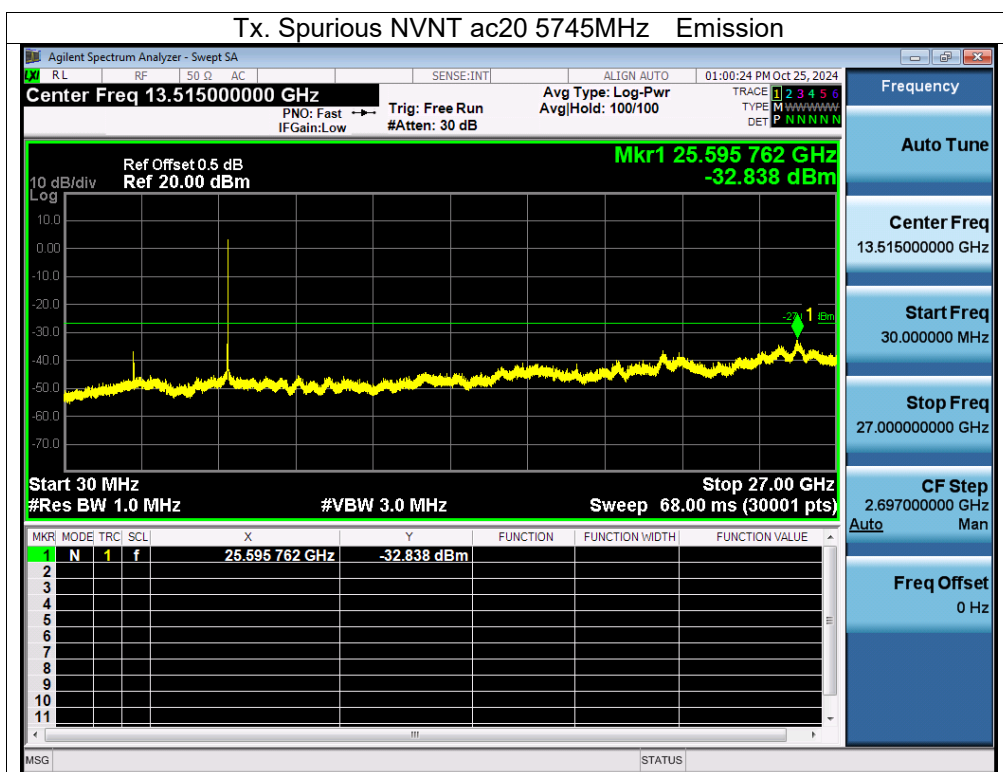
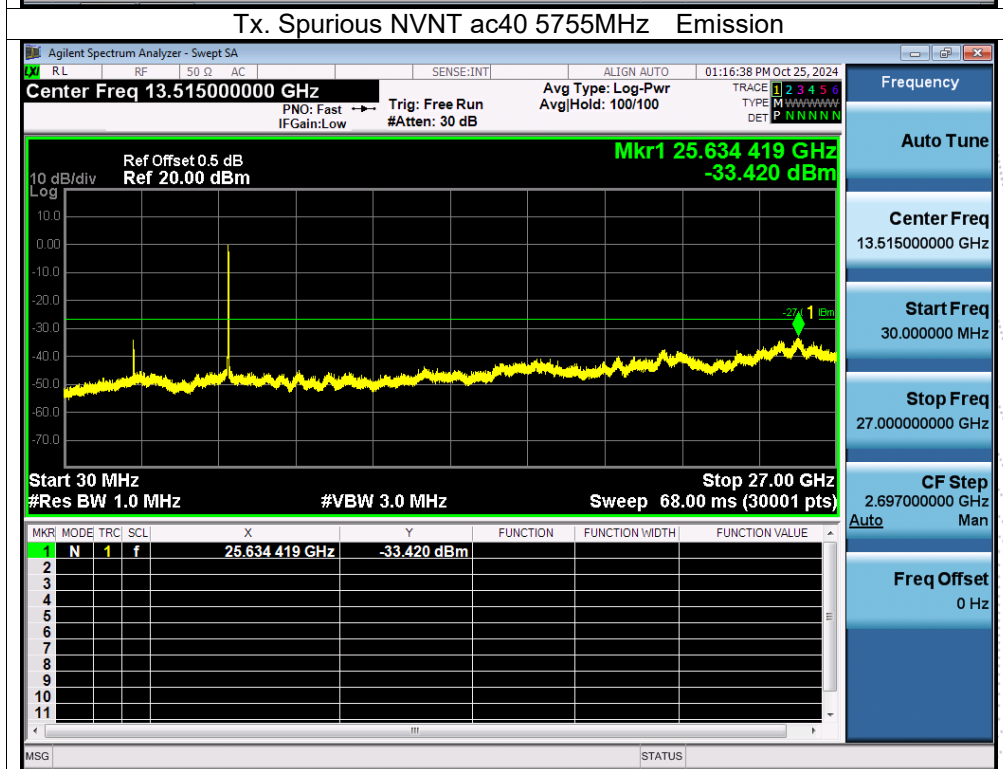
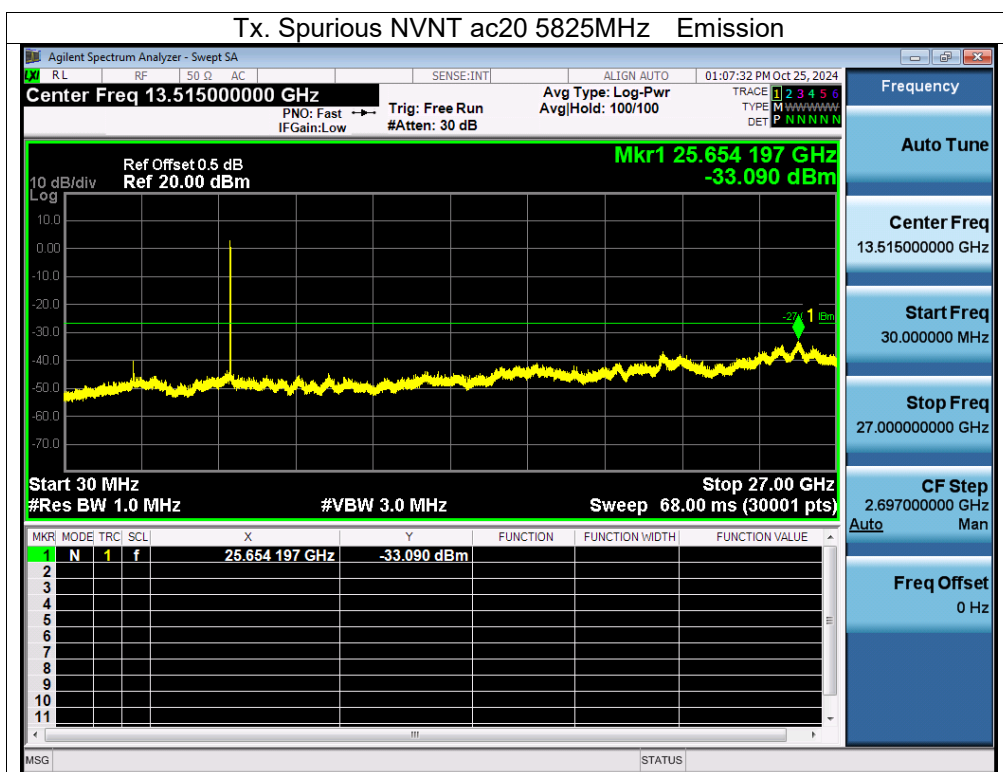
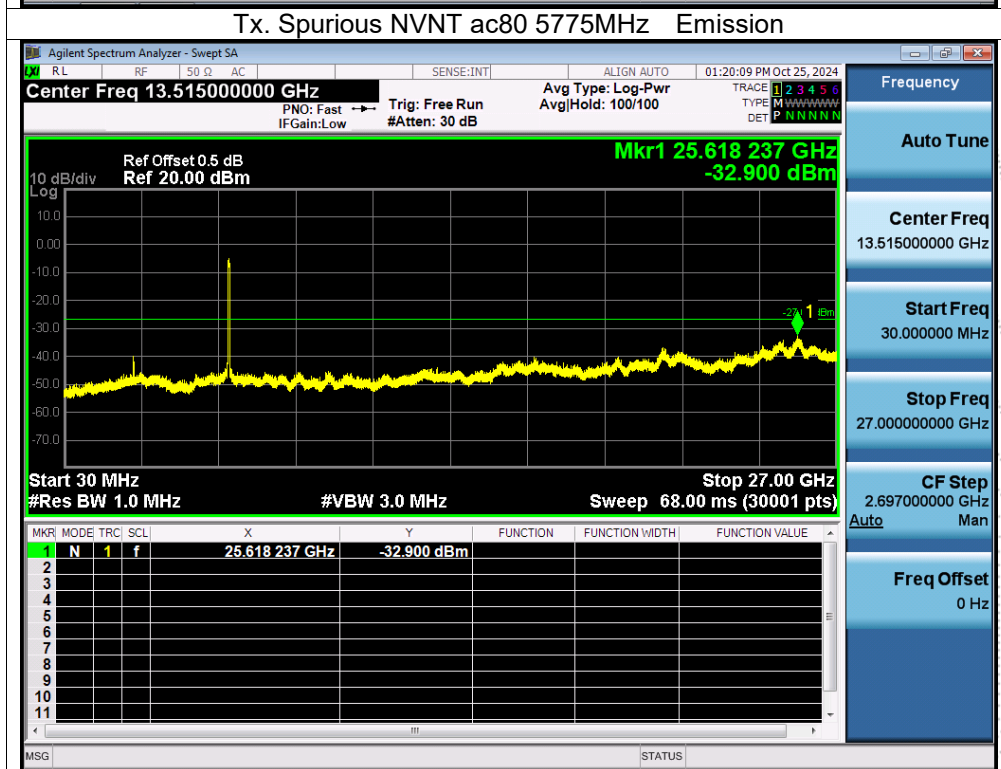
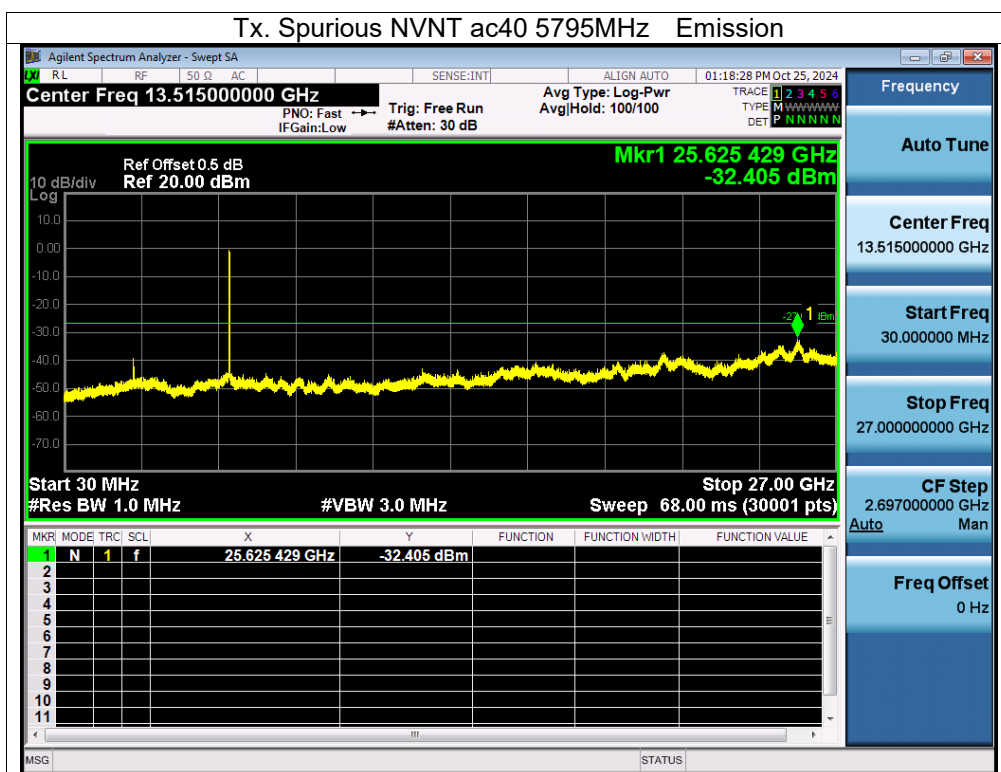










13. Frequency Stability Measurement

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	5180.0006	5180	0.0006	0.1158
		V max (V)	4.45	5180.0044	5180	0.0044	0.8494
		V min (V)	3.29	5180.0114	5180	0.0114	2.2008
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	5180.0069	5180	0.0069	1.3320
		T (°C)	-10	5180.0074	5180	0.0074	1.4286
		T (°C)	0	5180.0052	5180	0.0052	1.0039
		T (°C)	10	5180.0106	5180	0.0106	2.0463
		T (°C)	20	5180.0095	5180	0.0095	1.8340
		T (°C)	30	5180.0058	5180	0.0058	1.1197
		T (°C)	40	5180.0004	5180	0.0004	0.0772
		T (°C)	50	5180.0125	5180	0.0125	2.4131
		T (°C)	60	5180.0033	5180	0.0033	0.6371
		T (°C)	70	5180.0117	5180	0.0117	2.2587
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	5200.0010	5200	0.0010	0.1923
		V max (V)	4.45	5200.0122	5200	0.0122	2.3462
		V min (V)	3.29	5200.0055	5200	0.0055	1.0577
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	5200.01350	5200	0.01350	2.5962
		T (°C)	-10	5200.00010	5200	0.00010	0.0192
		T (°C)	0	5200.00420	5200	0.00420	0.8077
		T (°C)	10	5200.00830	5200	0.00830	1.5962
		T (°C)	20	5200.00690	5200	0.00690	1.3269
		T (°C)	30	5200.00420	5200	0.00420	0.8077
		T (°C)	40	5200.00910	5200	0.00910	1.7500
		T (°C)	50	5200.00810	5200	0.00810	1.5577
		T (°C)	60	5200.00570	5200	0.00570	1.0962
		T (°C)	70	5200.01240	5200	0.01240	2.3846
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	5240.0008	5240	0.0008	0.1527
		V max (V)	4.45	5240.0125	5240	0.0125	2.3855
		V min (V)	3.29	5240.0021	5240	0.0021	0.4008
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	5240.0120	5240	0.0120	2.2901
		T (°C)	-10	5240.0085	5240	0.0085	1.6221
		T (°C)	0	5240.0023	5240	0.0023	0.4389
		T (°C)	10	5240.0046	5240	0.0046	0.8779
		T (°C)	20	5240.0004	5240	0.0004	0.0763
		T (°C)	30	5240.0035	5240	0.0035	0.6679
		T (°C)	40	5240.0057	5240	0.0057	1.0878
		T (°C)	50	5240.0073	5240	0.0073	1.3931
		T (°C)	60	5240.0035	5240	0.0035	0.6679
		T (°C)	70	5240.0013	5240	0.0013	0.2481
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	5745.00370	5745	0.00370	0.6440
		V max (V)	4.45	5745.00110	5745	0.00110	0.1915
		V min (V)	3.29	5745.00940	5745	0.00940	1.6362
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	5745.00000	5745	0.00000	0.0000
		T (°C)	-10	5745.00110	5745	0.00110	0.1915
		T (°C)	0	5745.00870	5745	0.00870	1.5144
		T (°C)	10	5745.01250	5745	0.01250	2.1758
		T (°C)	20	5745.00110	5745	0.00110	0.1915
		T (°C)	30	5745.00640	5745	0.00640	1.1140
		T (°C)	40	5745.00690	5745	0.00690	1.2010
		T (°C)	50	5745.00450	5745	0.00450	0.7833
		T (°C)	60	5745.01140	5745	0.01140	1.9843
		T (°C)	70	5745.00450	5745	0.00450	0.7833
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	5785.00120	5785	0.00120	0.2074
		V max (V)	4.45	5785.00010	5785	0.00010	0.0173
		V min (V)	3.29	5785.00870	5785	0.00870	1.5039
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	5785.00660	5785	0.00660	1.1409
		T (°C)	-10	5785.00750	5785	0.00750	1.2965
		T (°C)	0	5785.00600	5785	0.00600	1.0372
		T (°C)	10	5785.00790	5785	0.00790	1.3656
		T (°C)	20	5785.00120	5785	0.00120	0.2074
		T (°C)	30	5785.00690	5785	0.00690	1.1927
		T (°C)	40	5785.00790	5785	0.00790	1.3656
		T (°C)	50	5785.00980	5785	0.00980	1.6940
		T (°C)	60	5785.00990	5785	0.00990	1.7113
		T (°C)	70	5785.00980	5785	0.00980	1.6940
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	5825.01220	5825	0.01220	2.0944
		V max (V)	4.45	5825.00240	5825	0.00240	0.4120
		V min (V)	3.29	5825.00650	5825	0.00650	1.1159
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	5825.00210	5825	0.00210	0.3605
		T (°C)	-10	5825.01040	5825	0.01040	1.7854
		T (°C)	0	5825.00240	5825	0.00240	0.4120
		T (°C)	10	5825.01200	5825	0.01200	2.0601
		T (°C)	20	5825.00470	5825	0.00470	0.8069
		T (°C)	30	5825.00060	5825	0.00060	0.1030
		T (°C)	40	5825.00240	5825	0.00240	0.4120
		T (°C)	50	5825.00130	5825	0.00130	0.2232
		T (°C)	60	5825.00890	5825	0.00890	1.5279
		T (°C)	70	5825.00730	5825	0.00730	1.2532
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 = $T_{on} / (T_{on} + T_{off})$

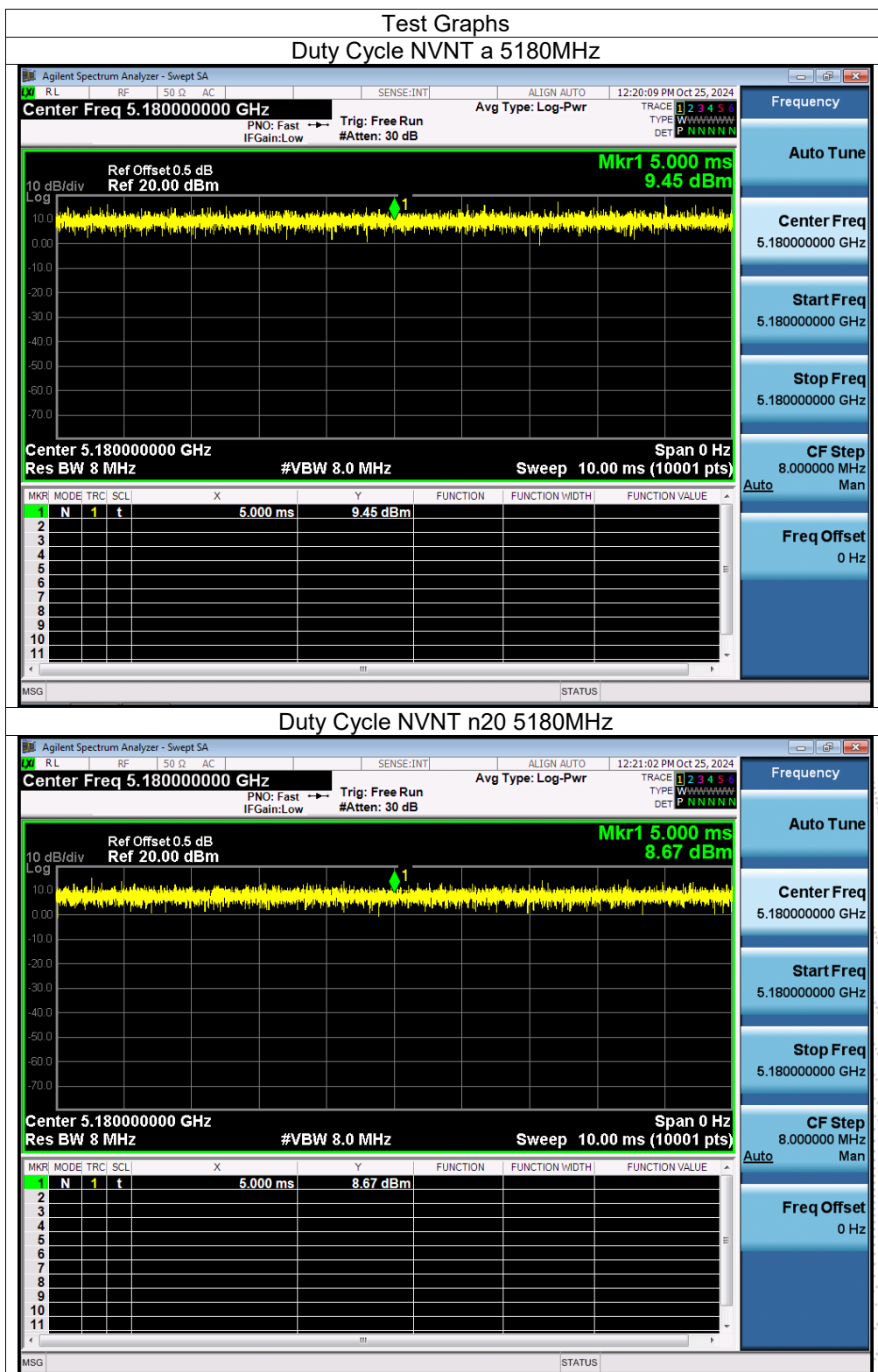
14.3 Test Procedure

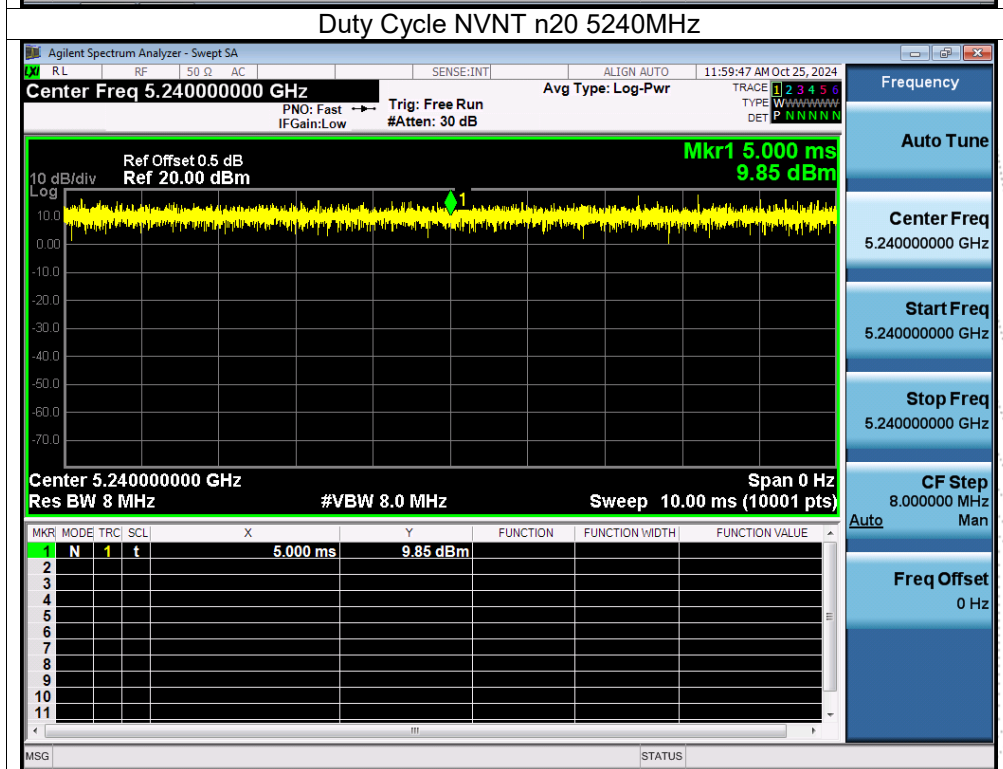
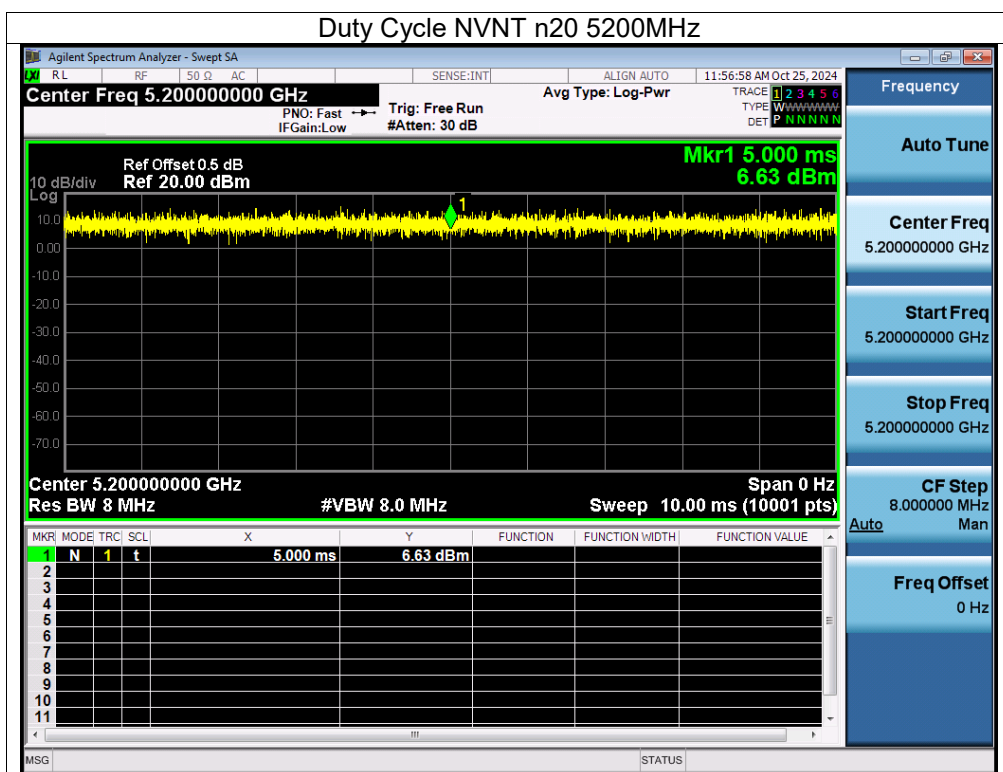
1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

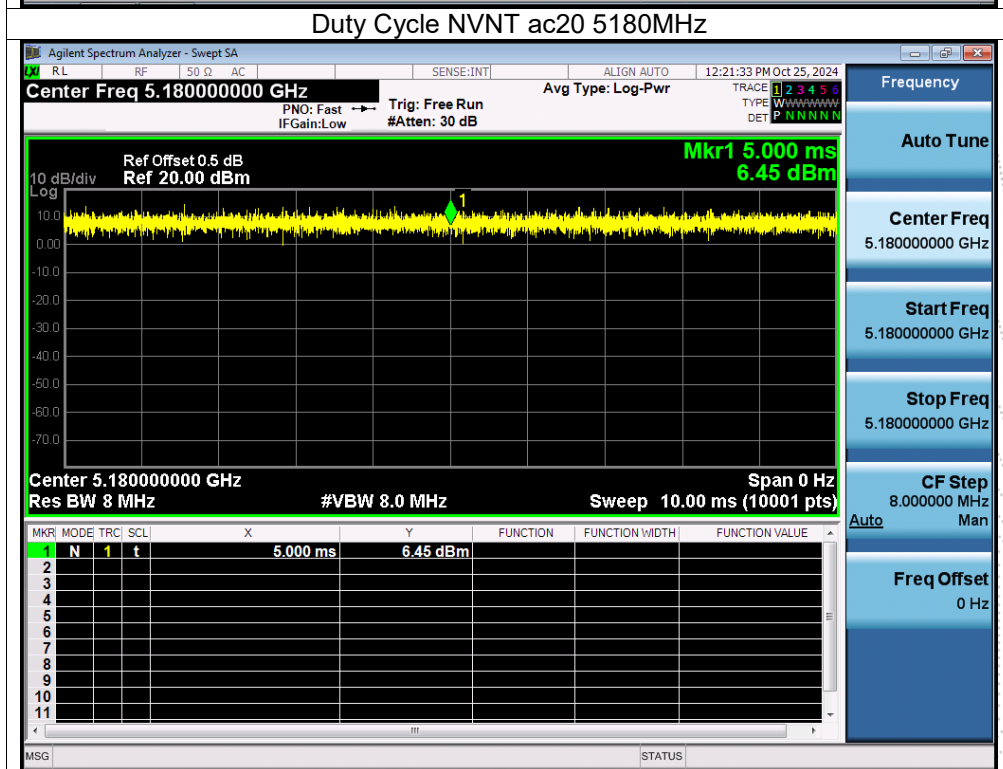
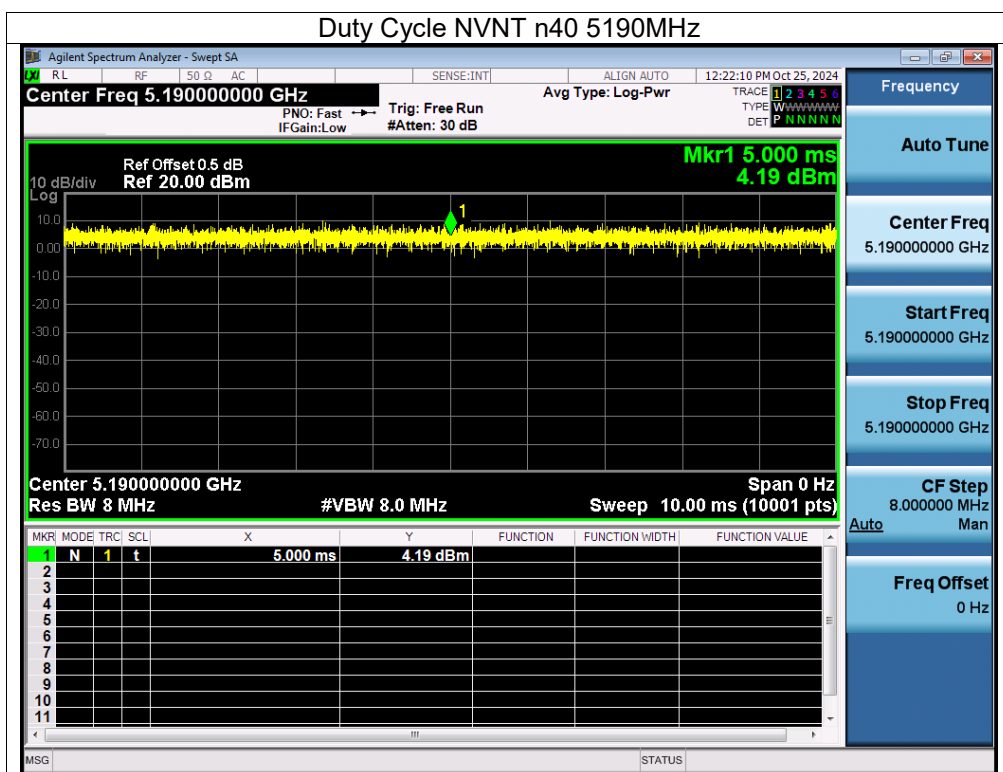
14.4 Test Result

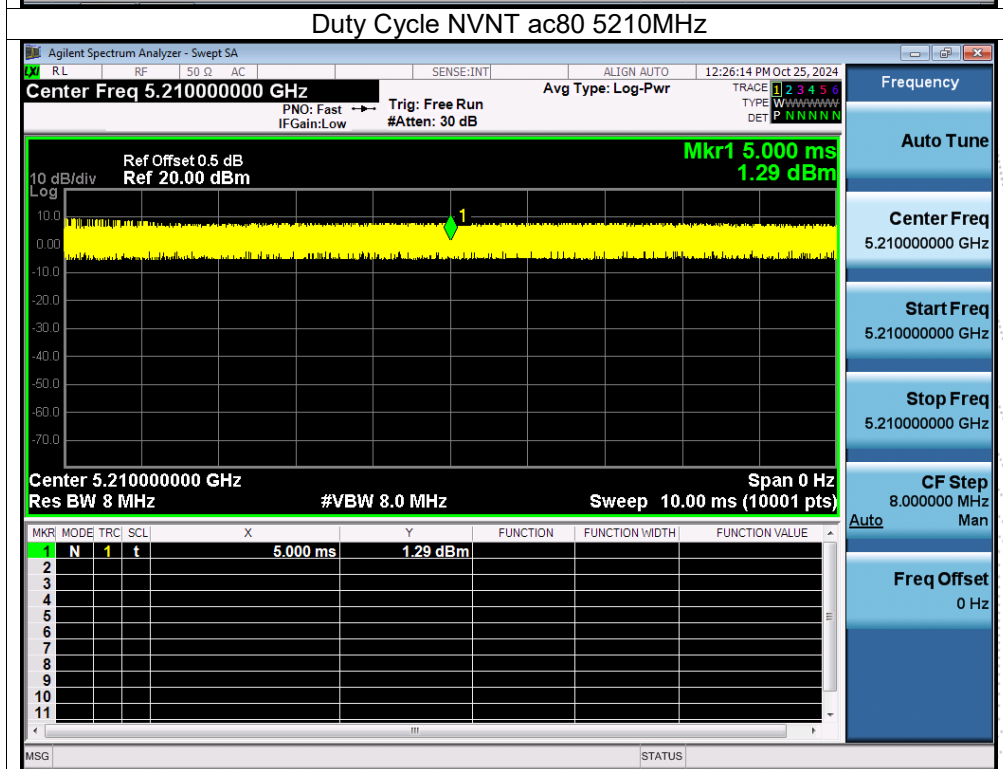
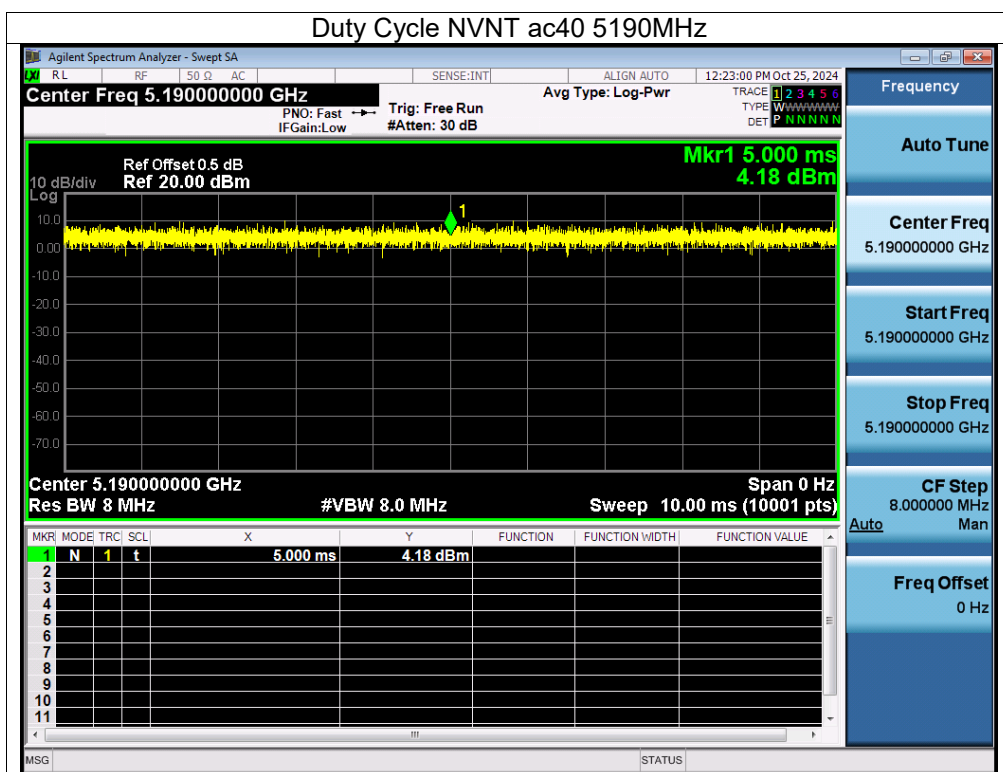
5.1G

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



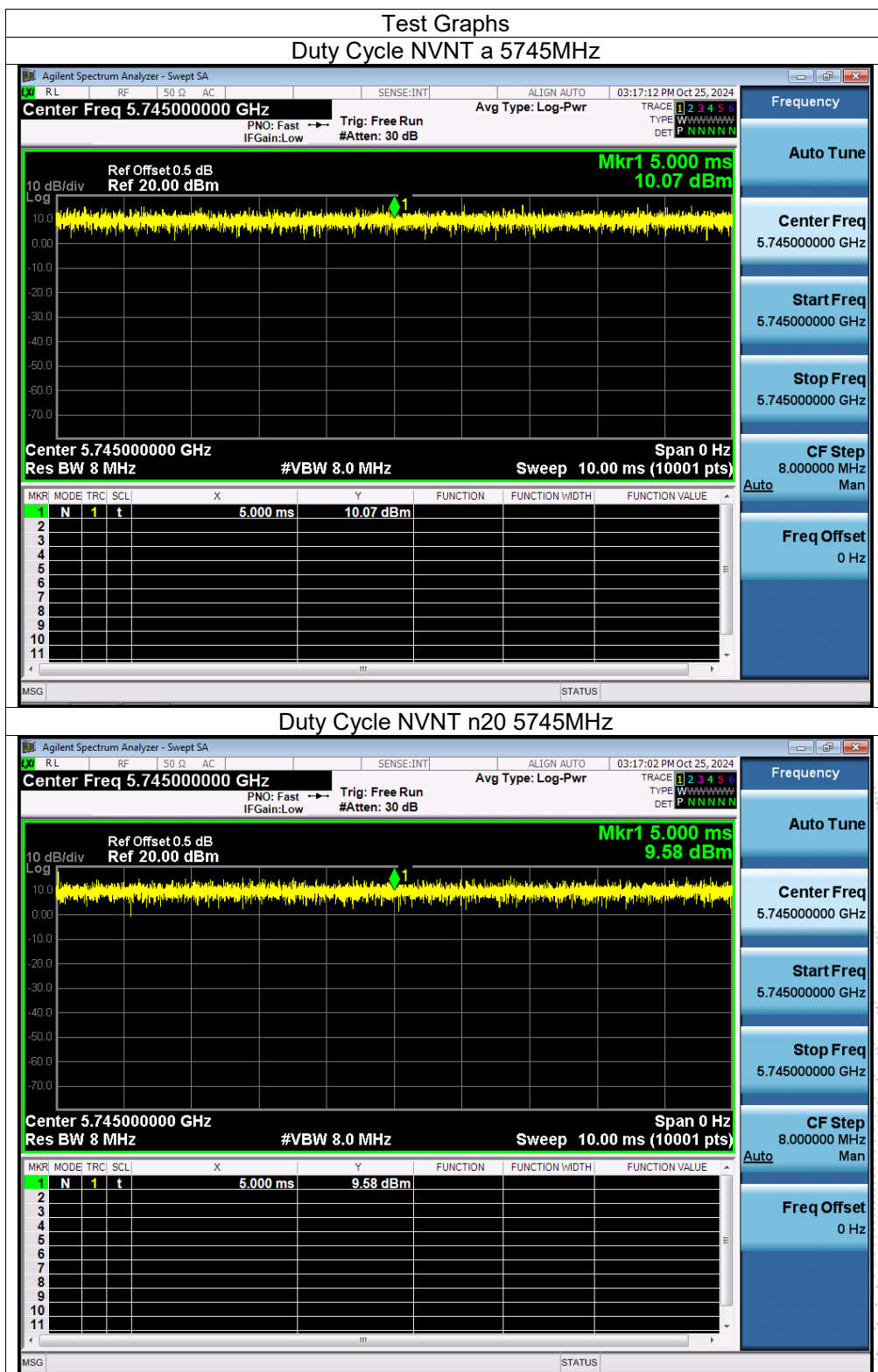


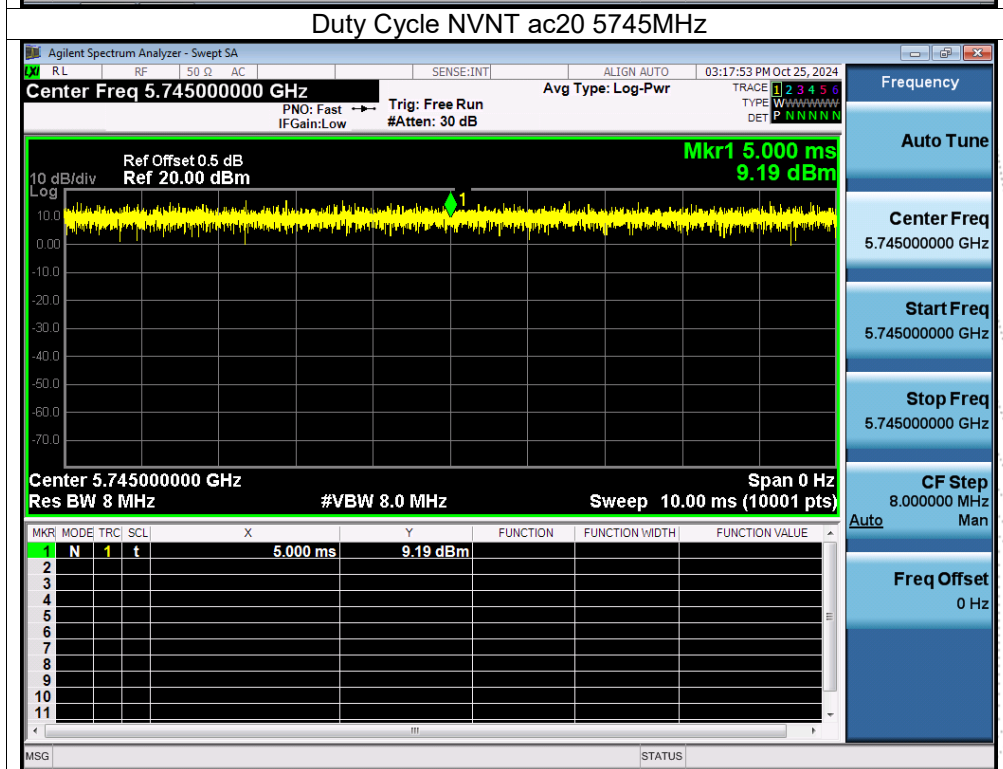
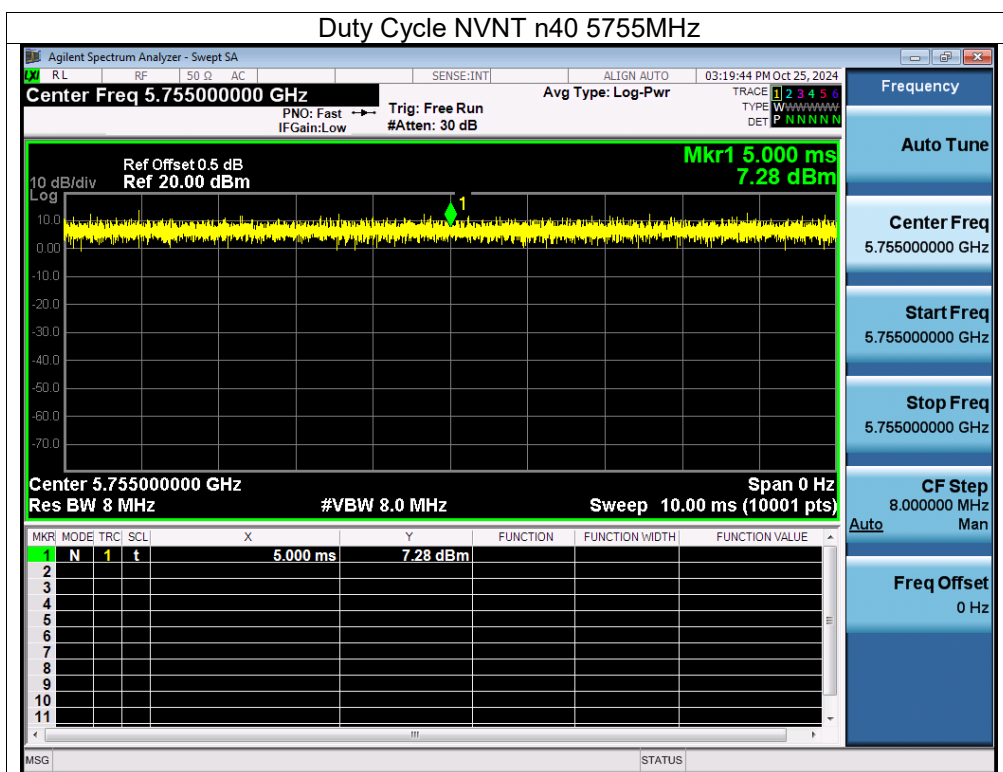


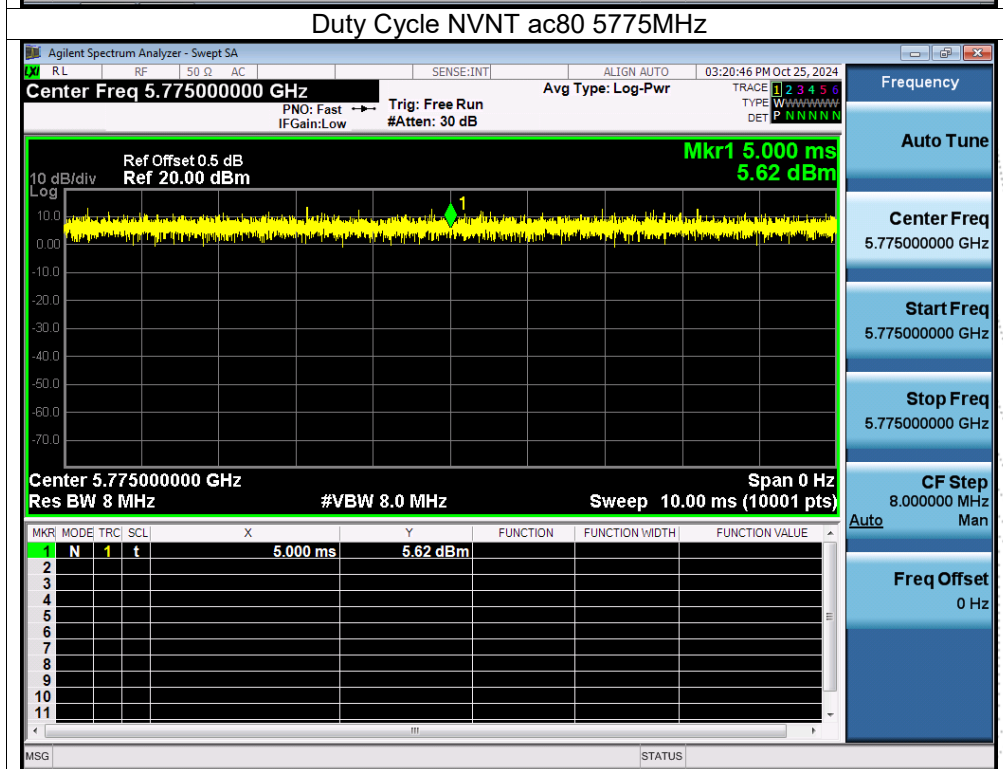
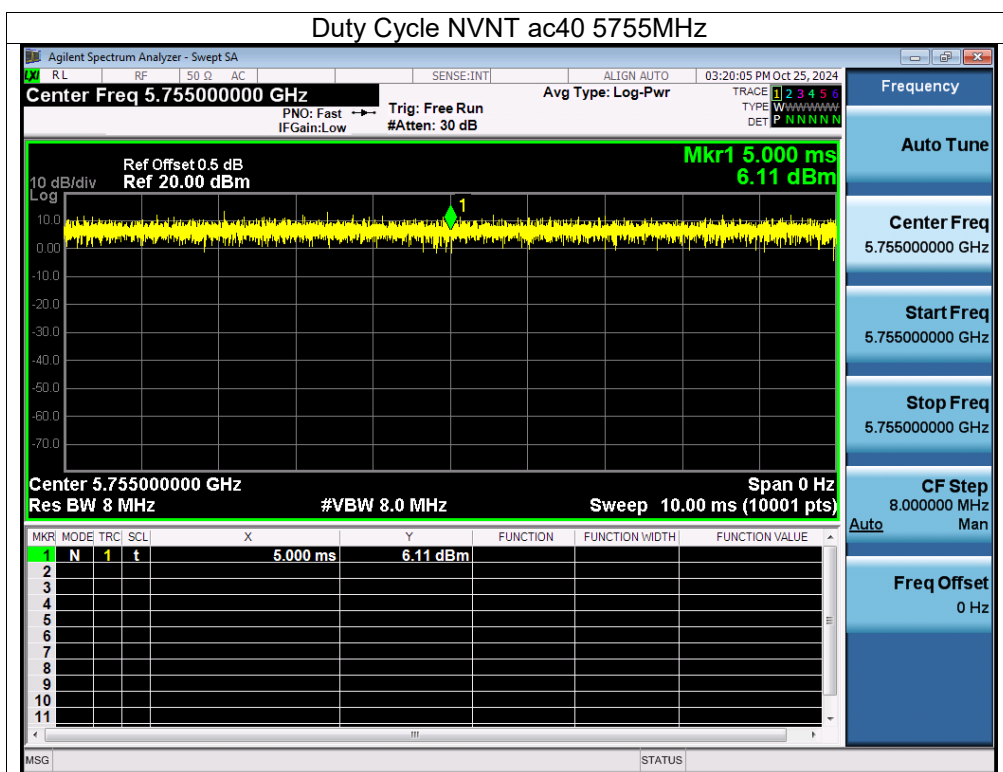


5.8G

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







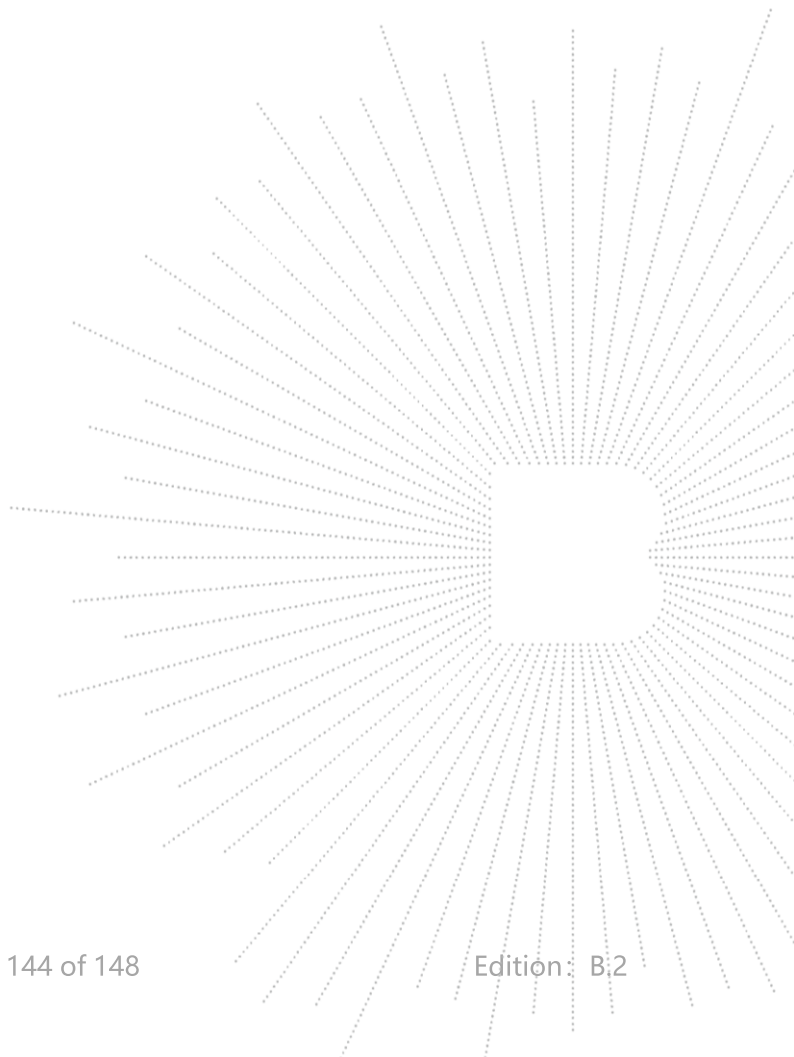
15. Antenna Requirement

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: 1 dBi, 5.8G: 1 dBi). It comply with the standard requirement.



16. EUT Photographs

EUT Photo 1



EUT Photo 2



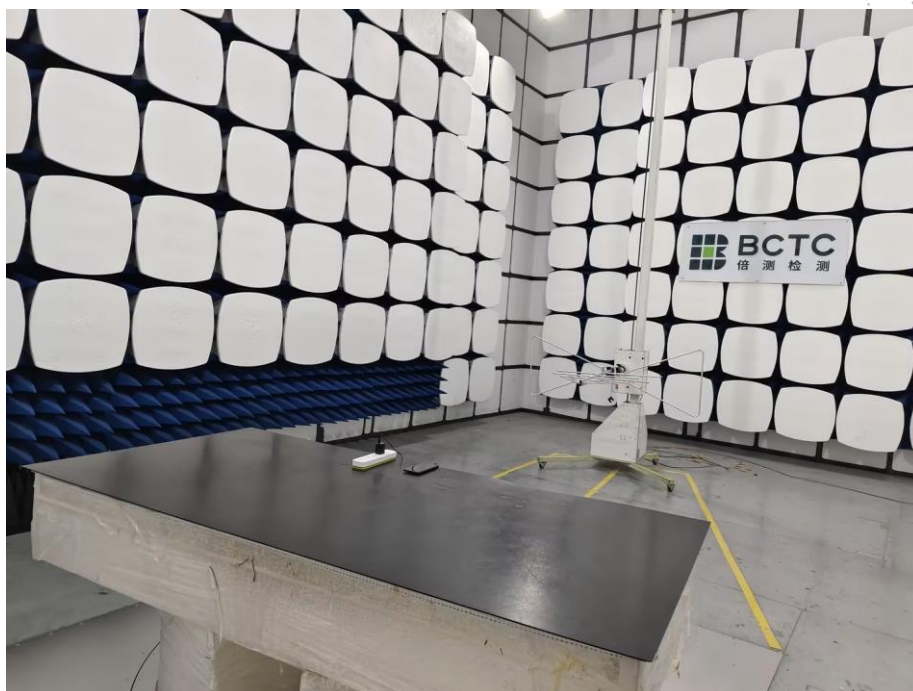
NOTE: Appendix-Photographs Of EUT Constructional Details.

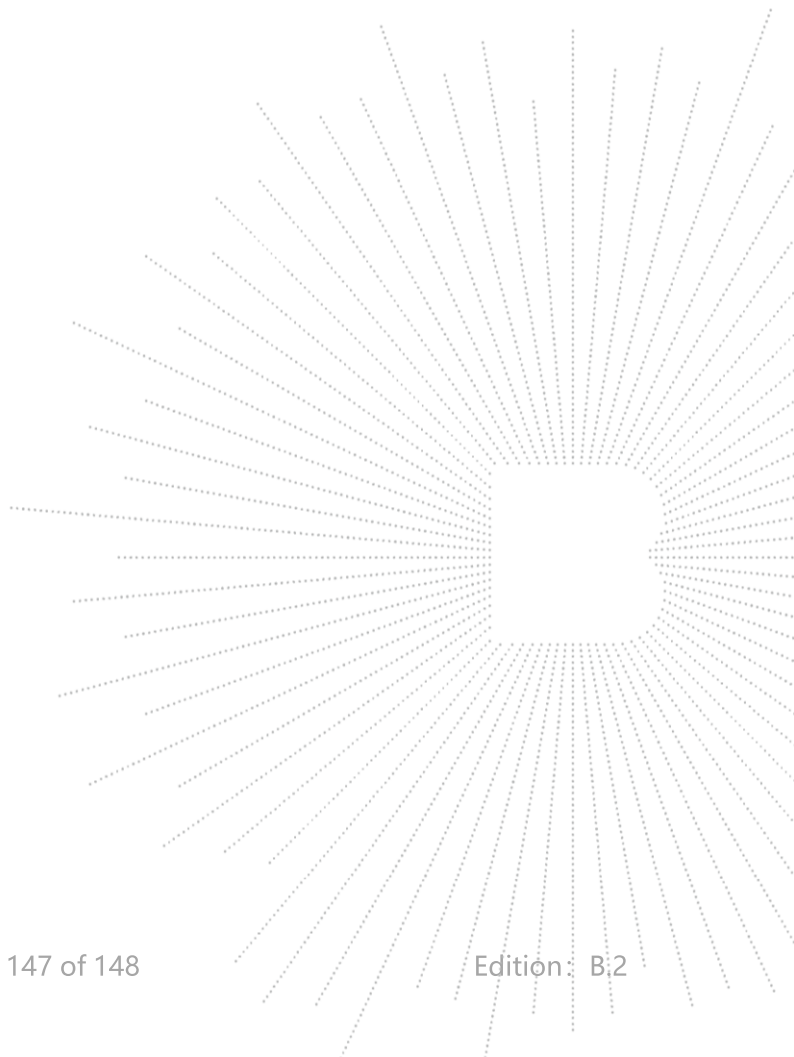
17. EUT Test Setup Photographs

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 ※※※※※