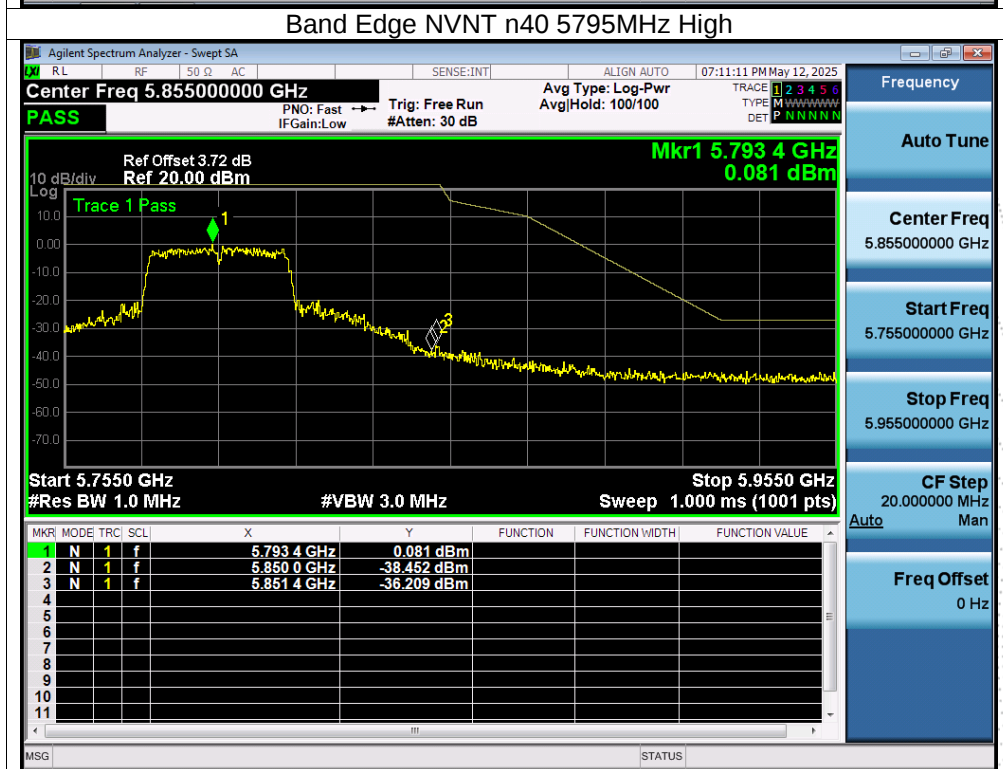
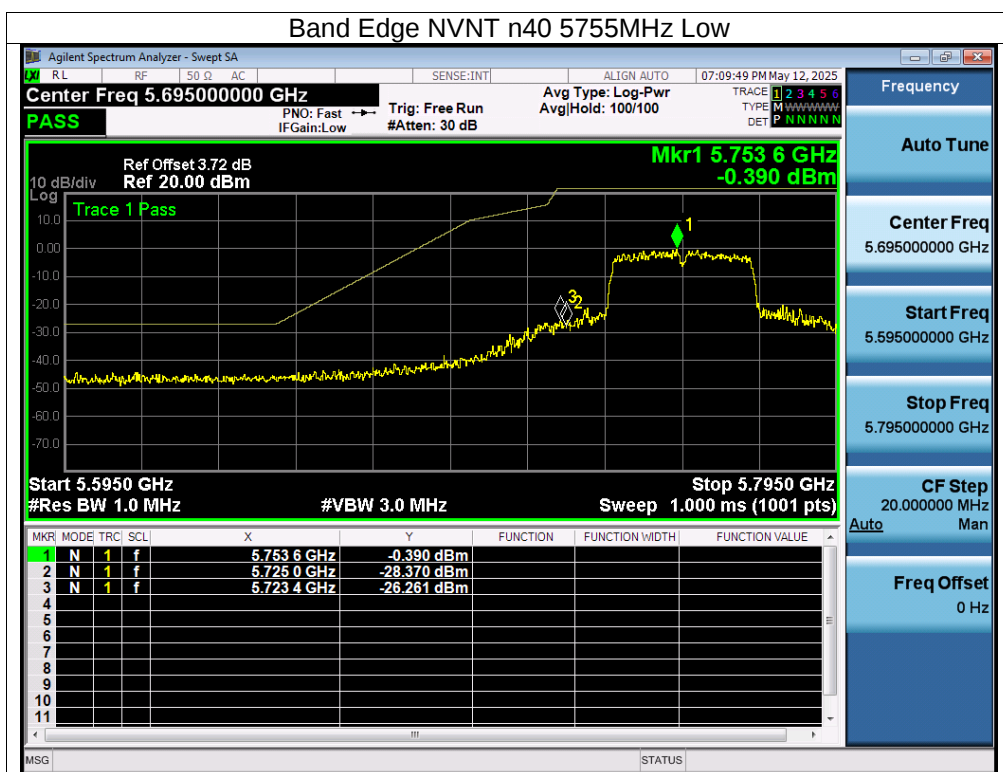
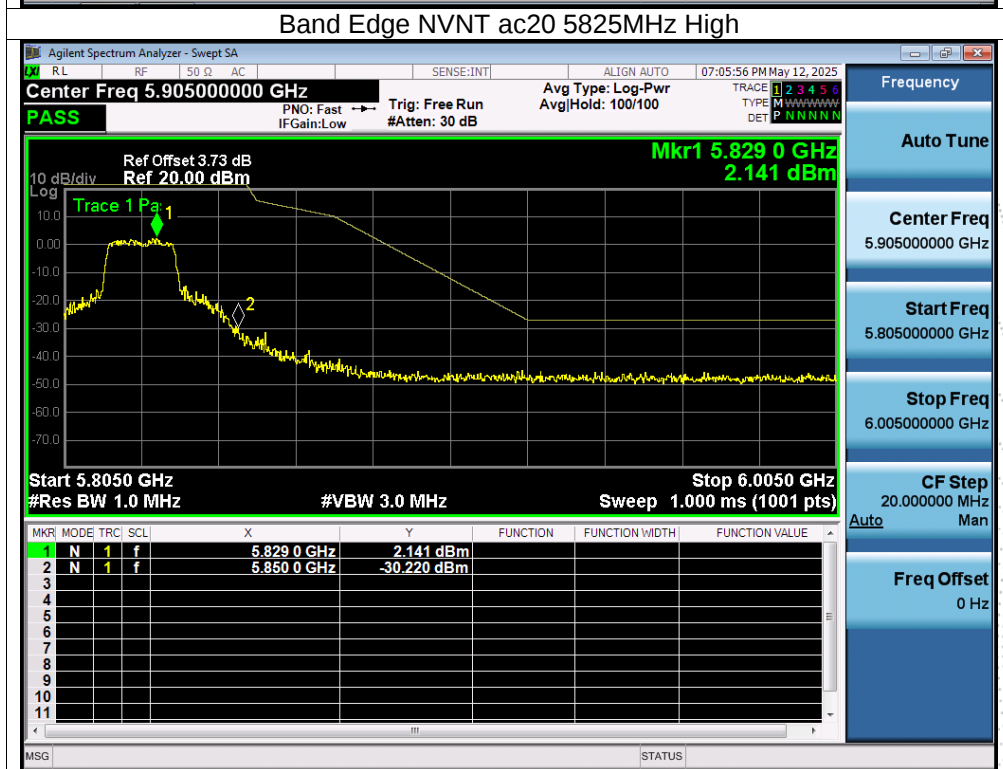
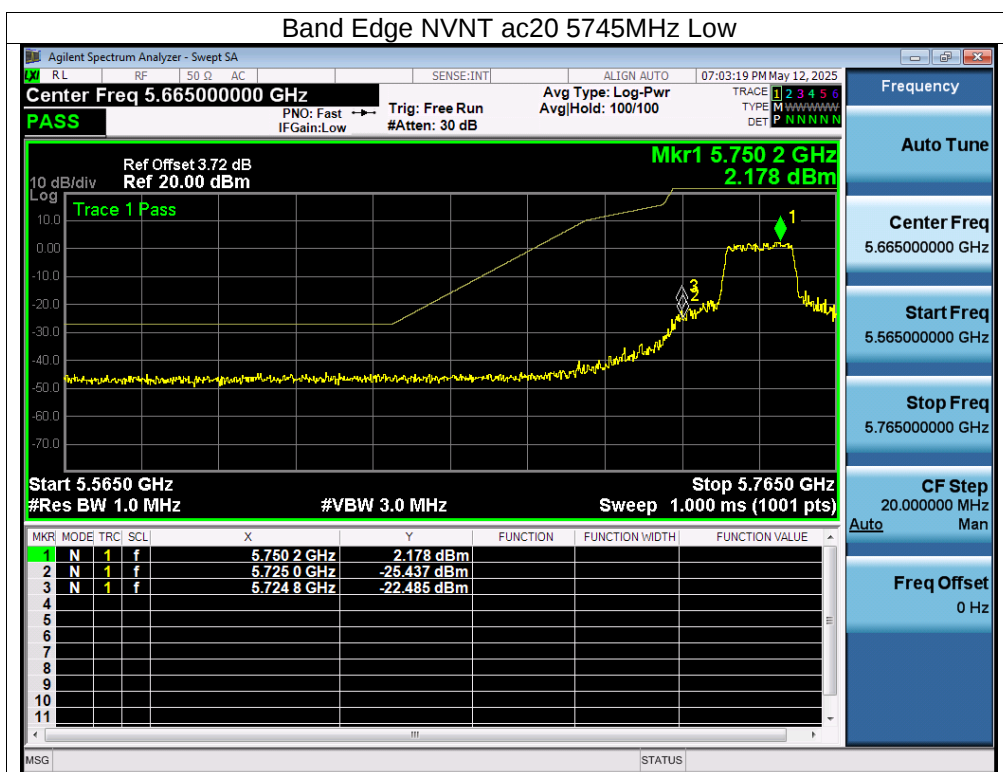
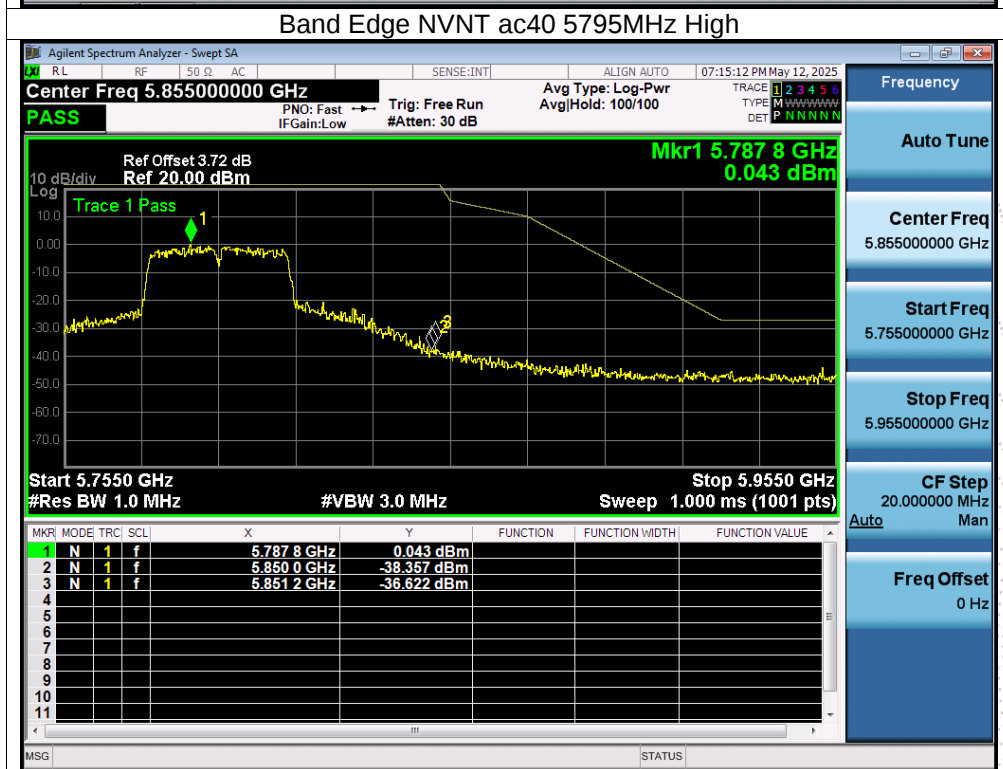
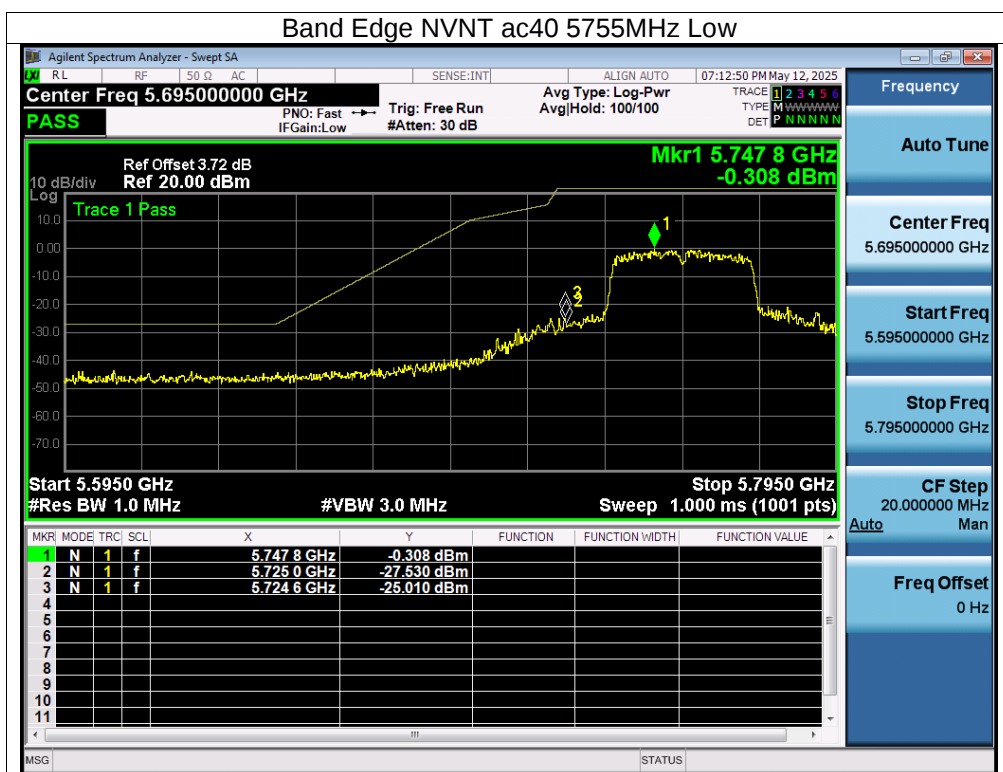
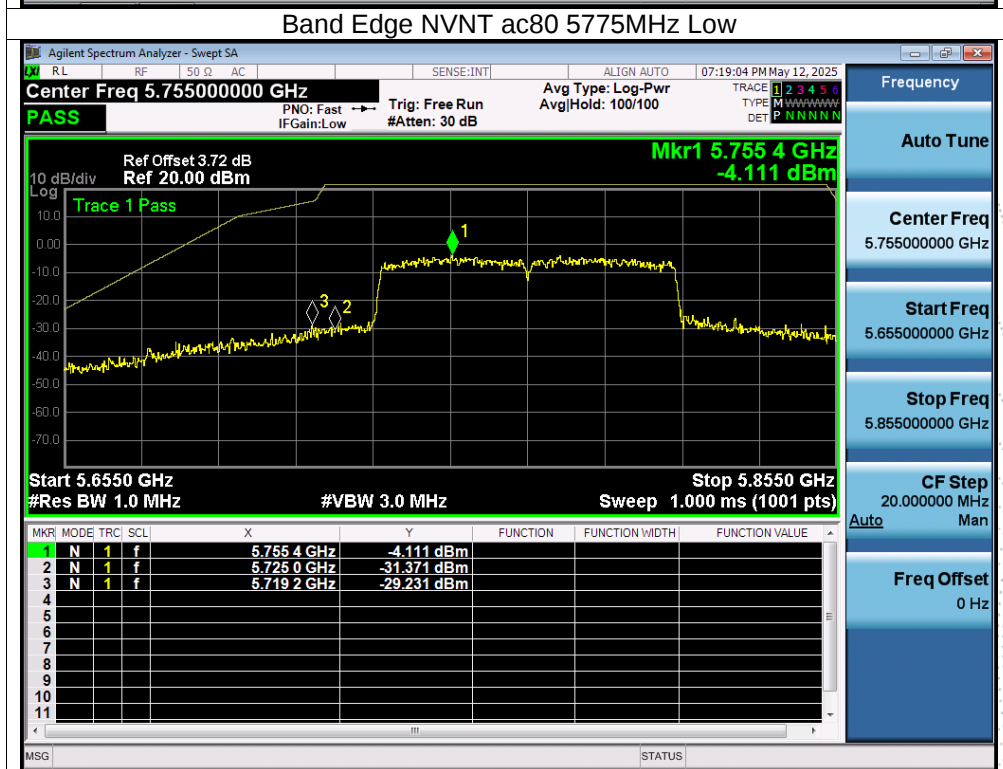
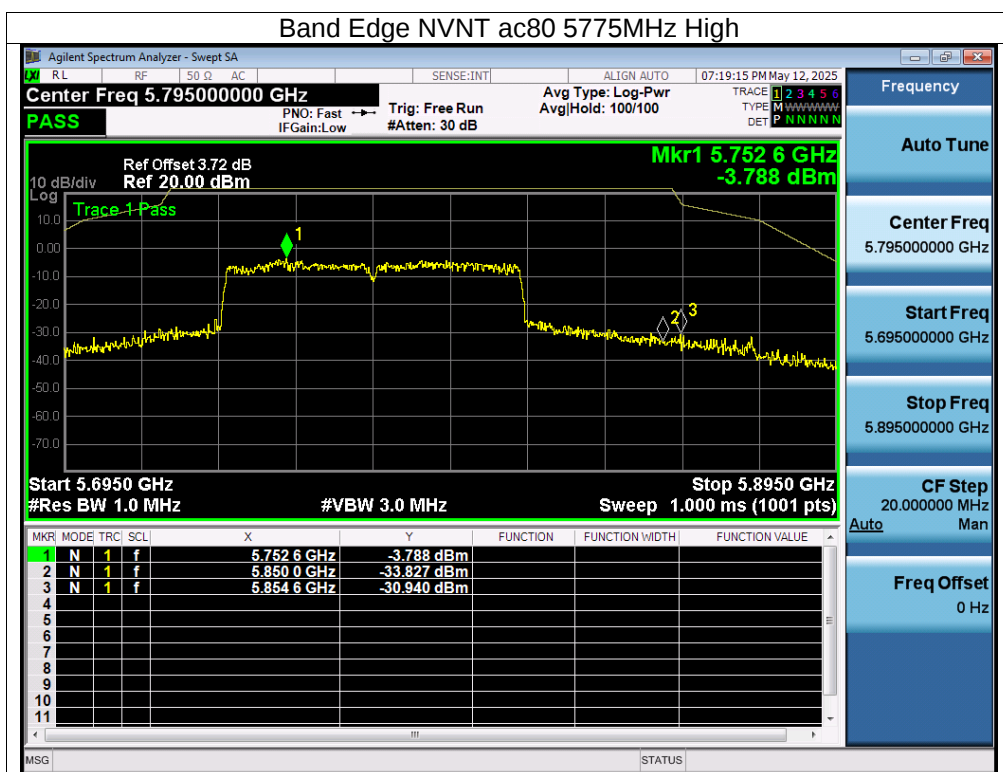










12. Spurious RF Conducted Emissions

12.1 Block Diagram Of Test Setup



12.2 Limit

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2) For transmitters operating in the 5.725-5.85 GHz band(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge..

12.3 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

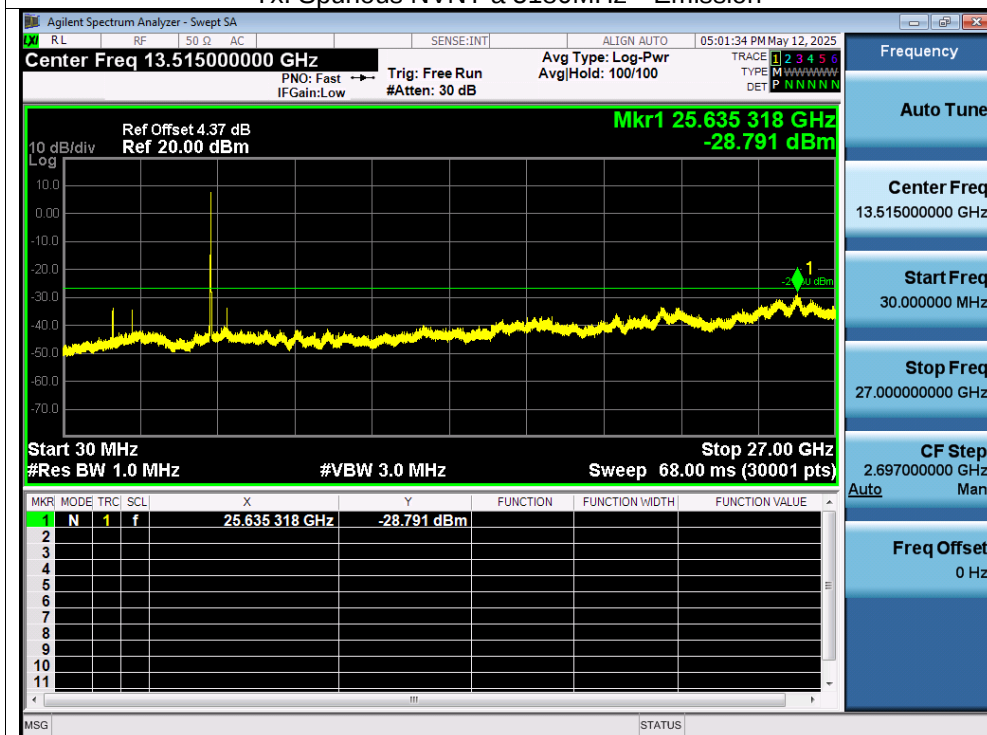
12.4 Test Result

Remark: The measurement frequency range is from 9KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandedge measurement data.

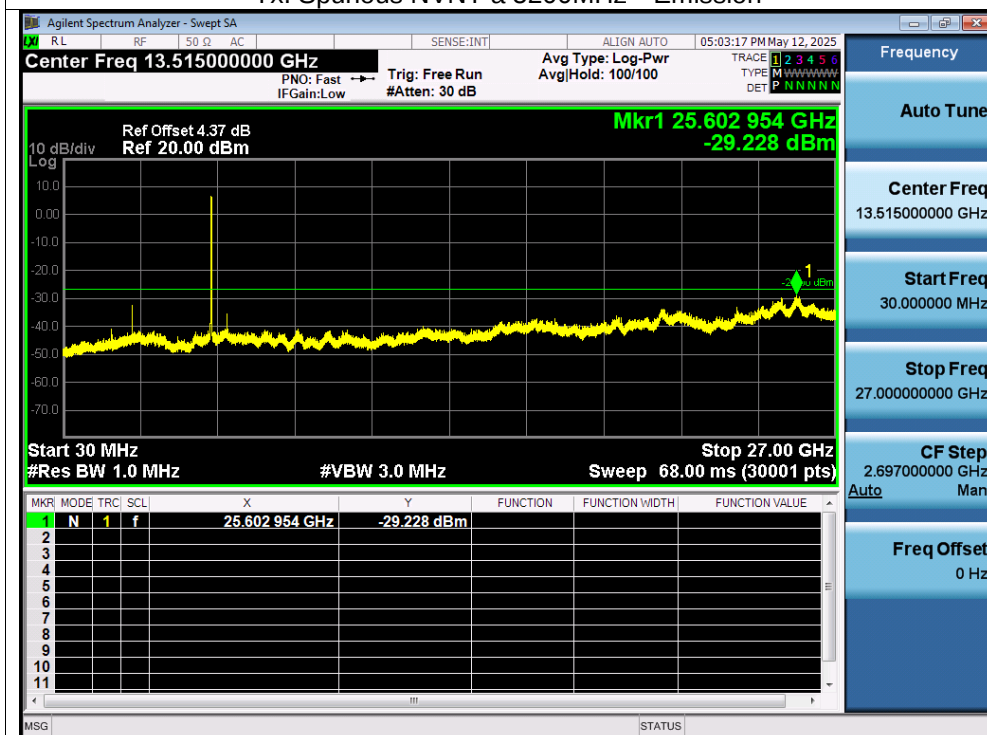
About: 26.5 GHz-40GHz, The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

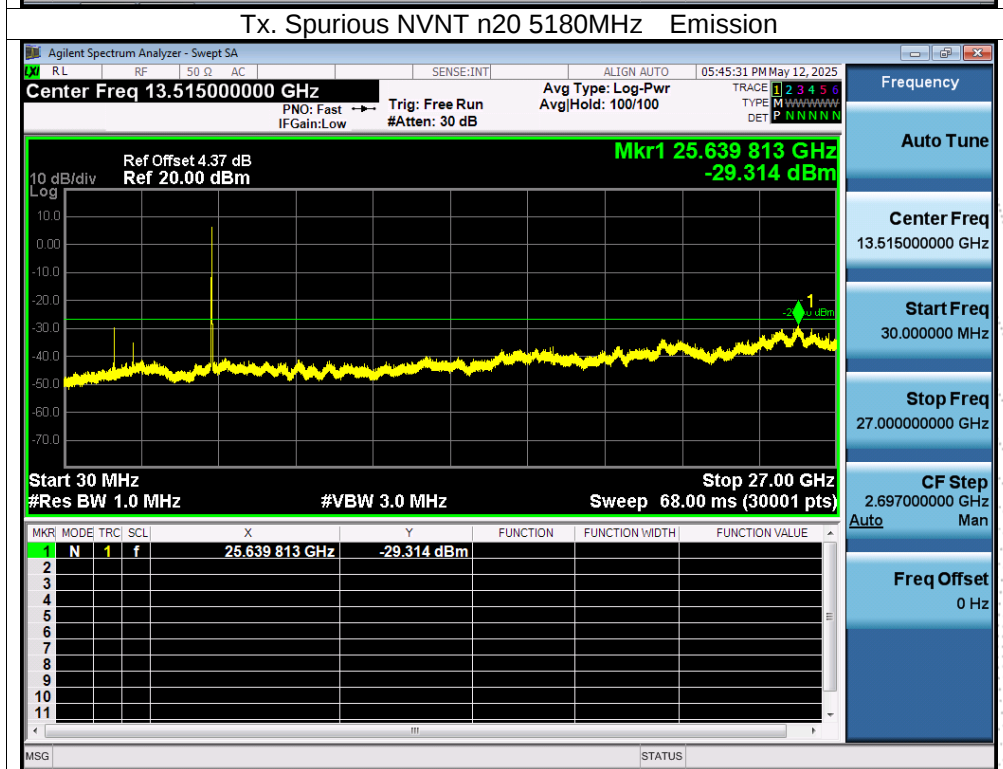
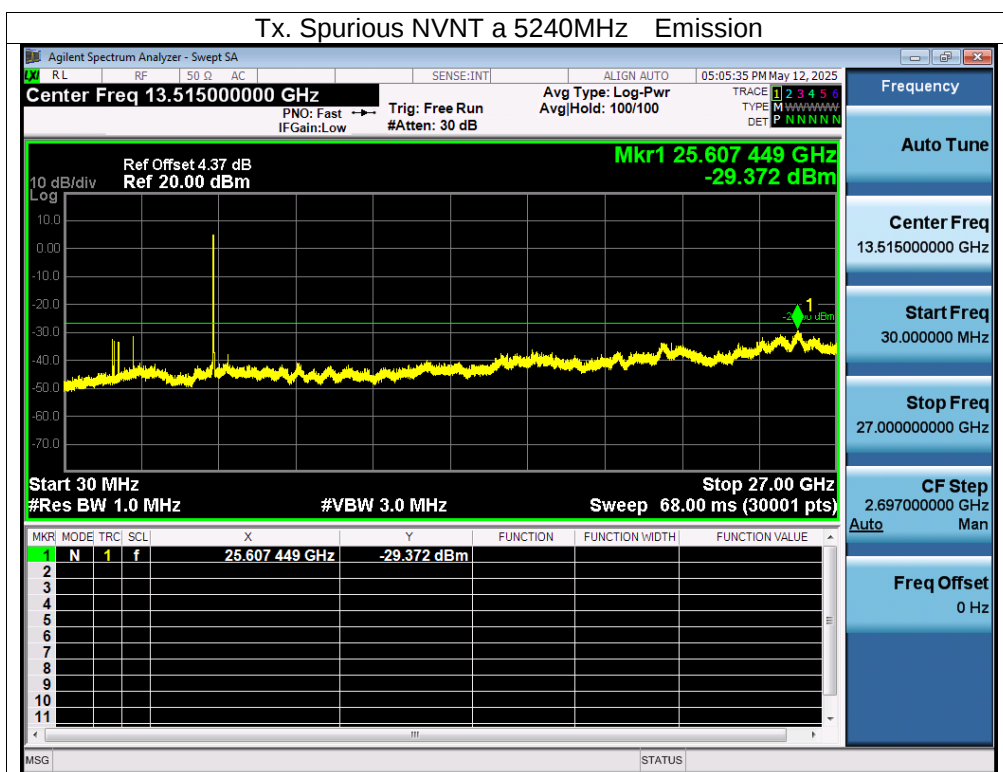
Test Graphs

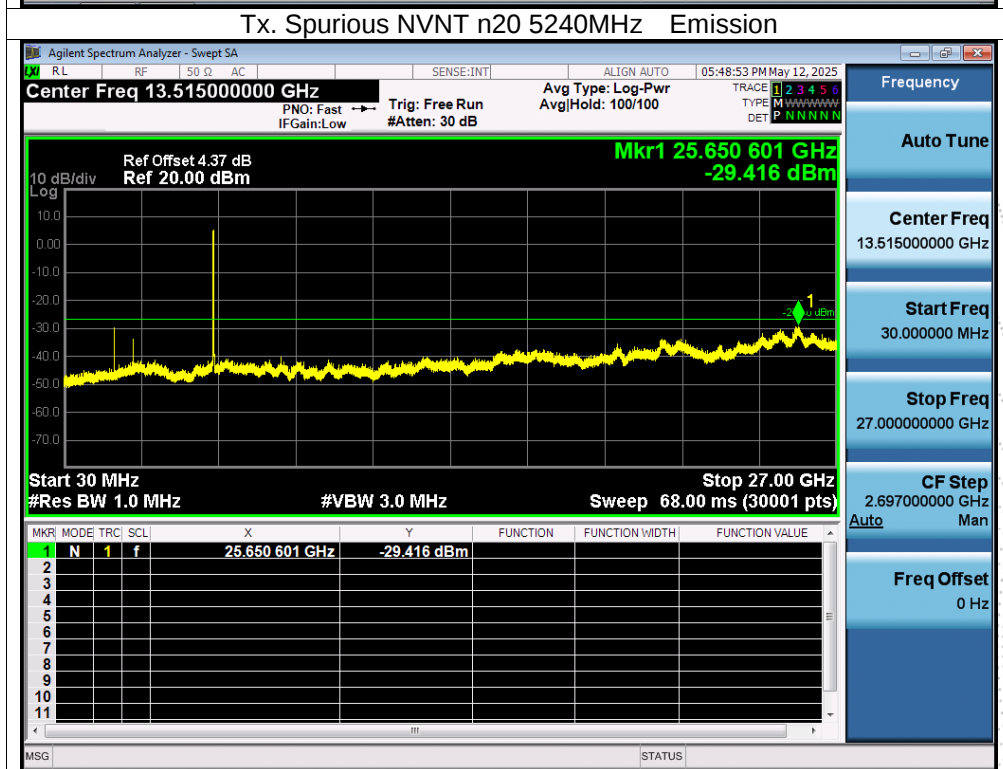
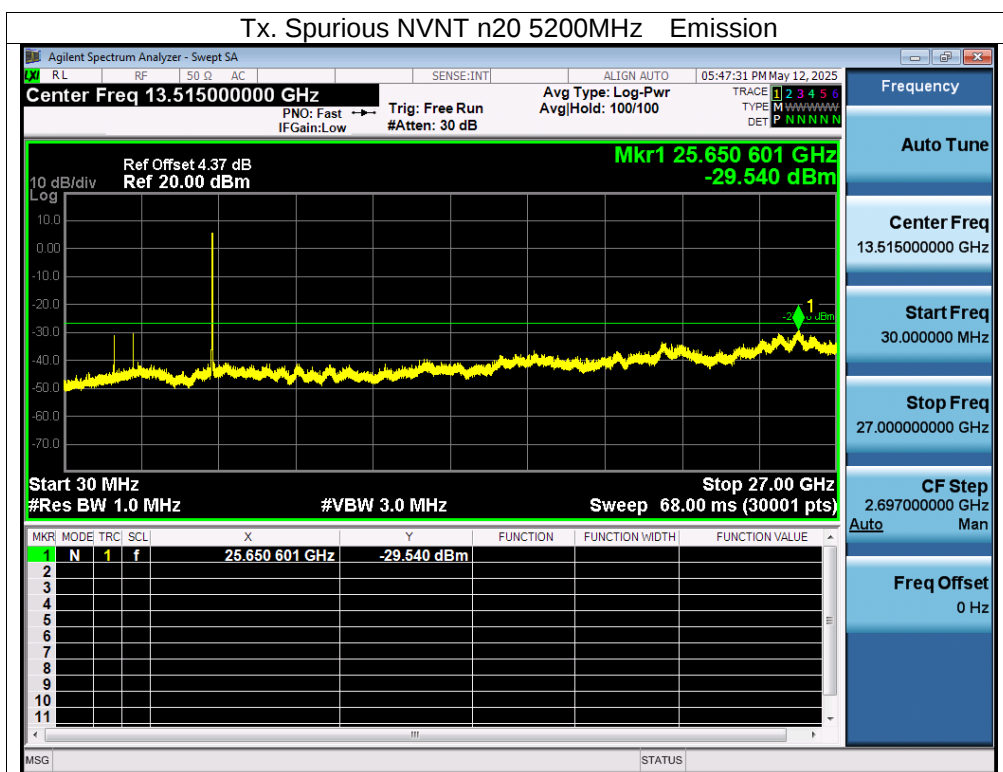
Tx. Spurious NVNT a 5180MHz Emission

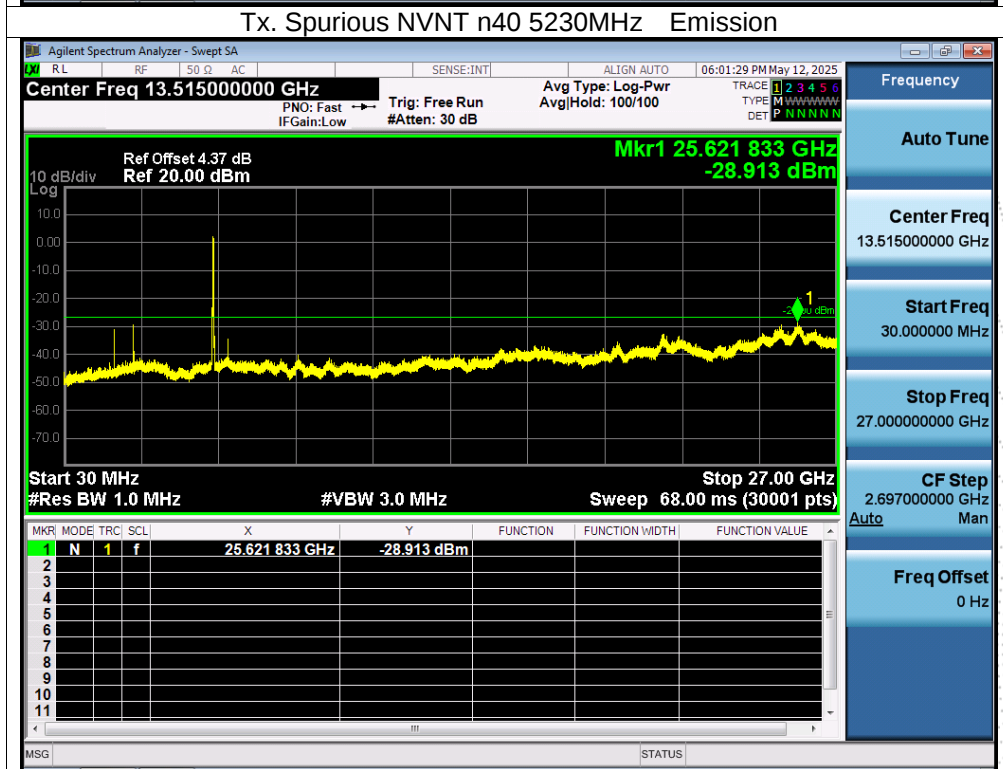
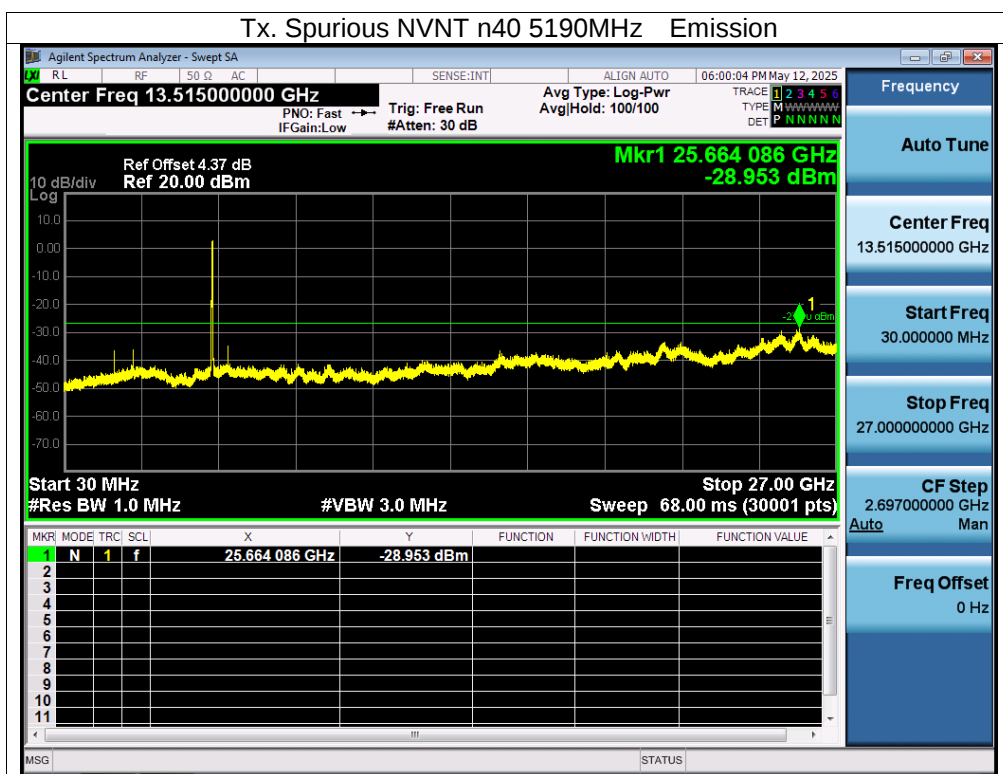


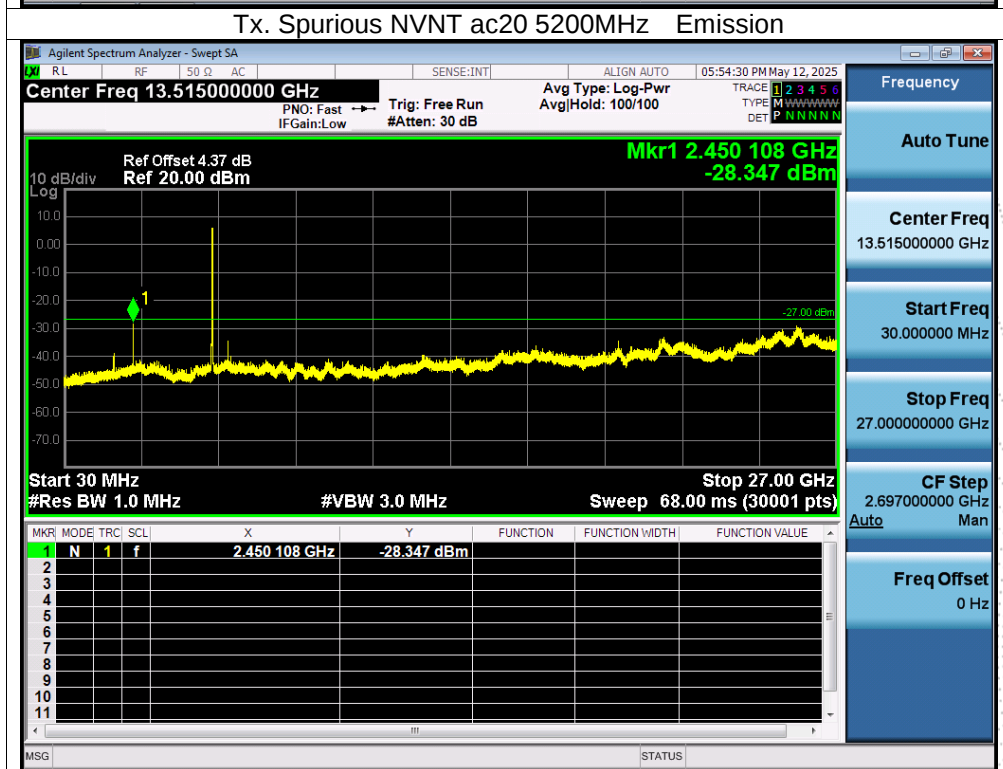
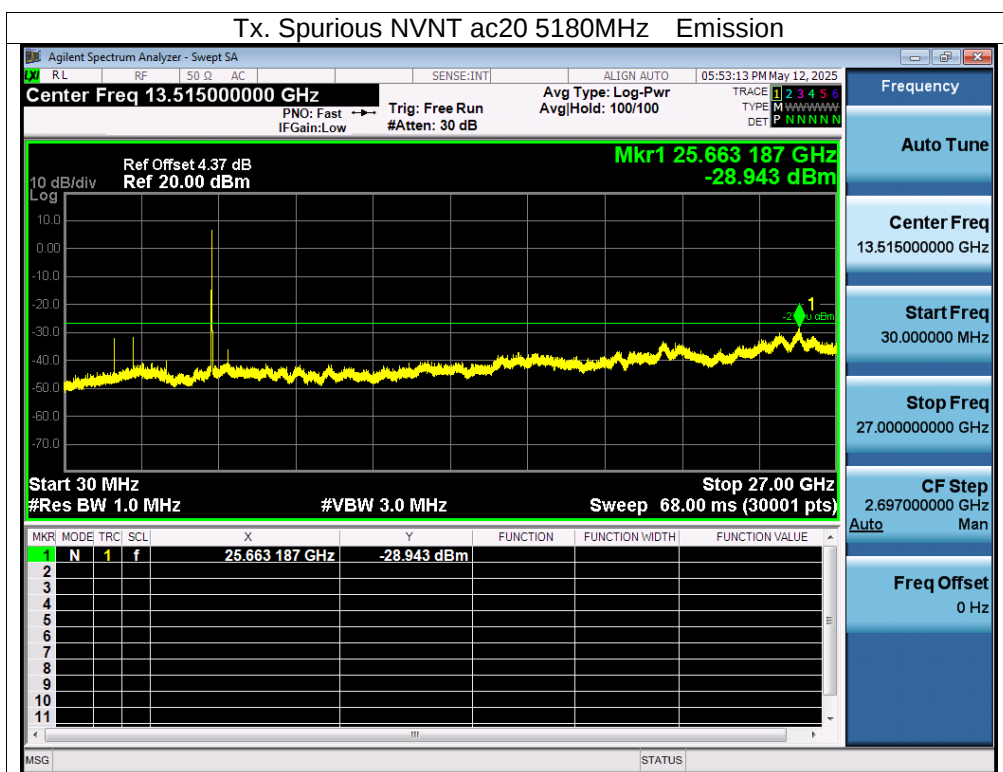
Tx. Spurious NVNT a 5200MHz Emission

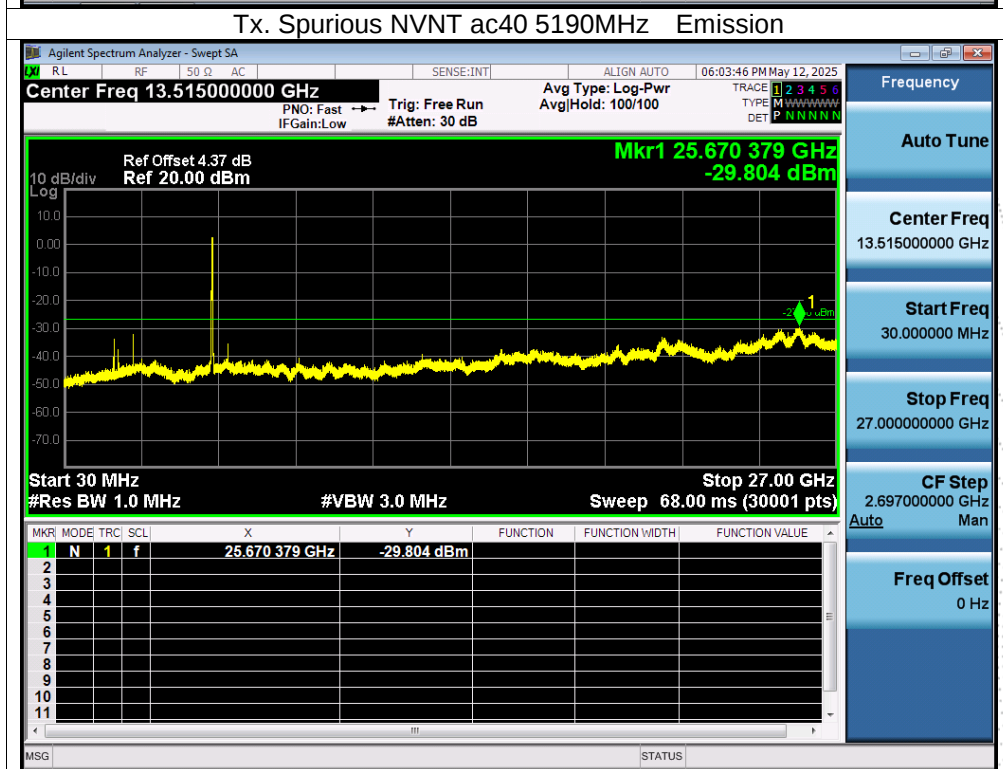
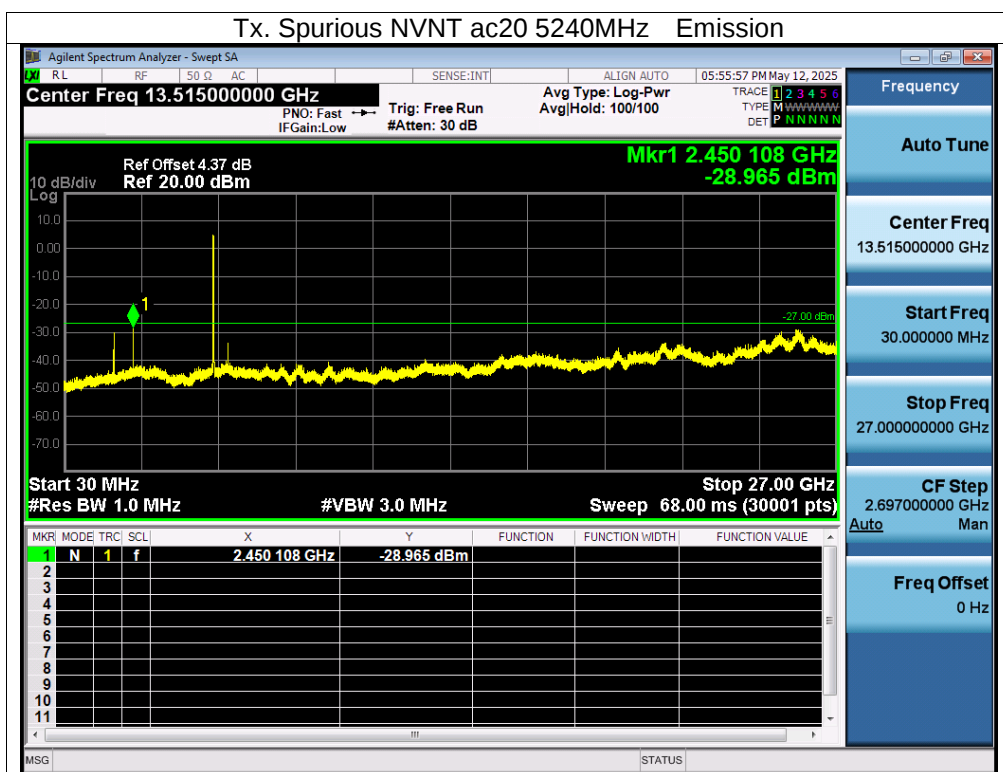


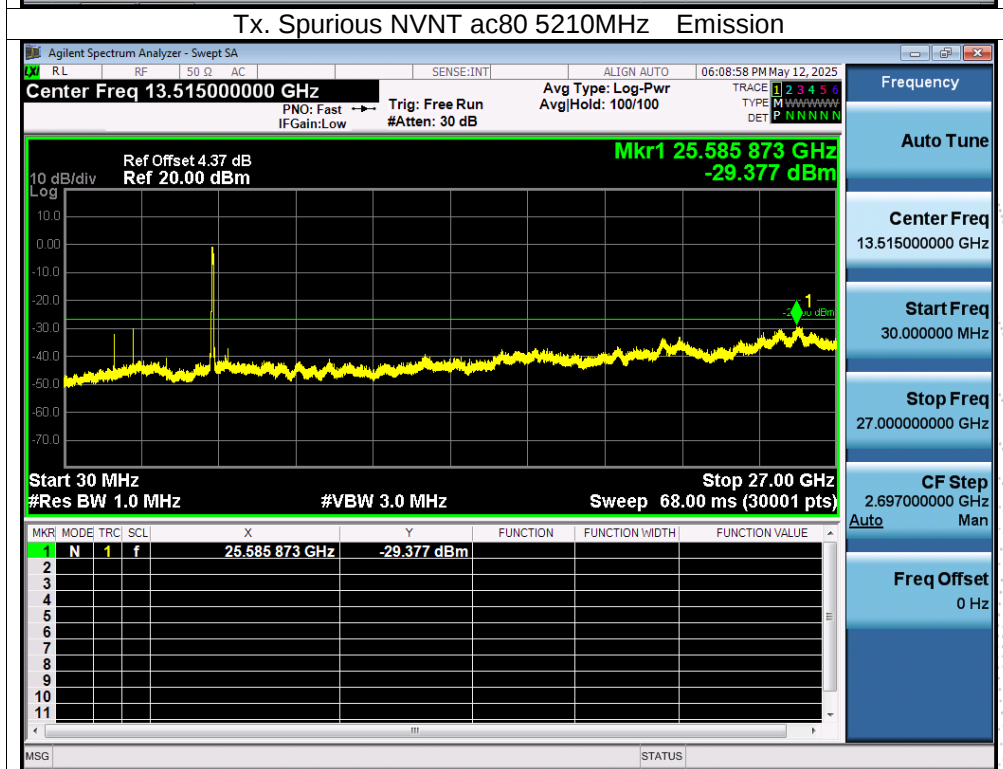
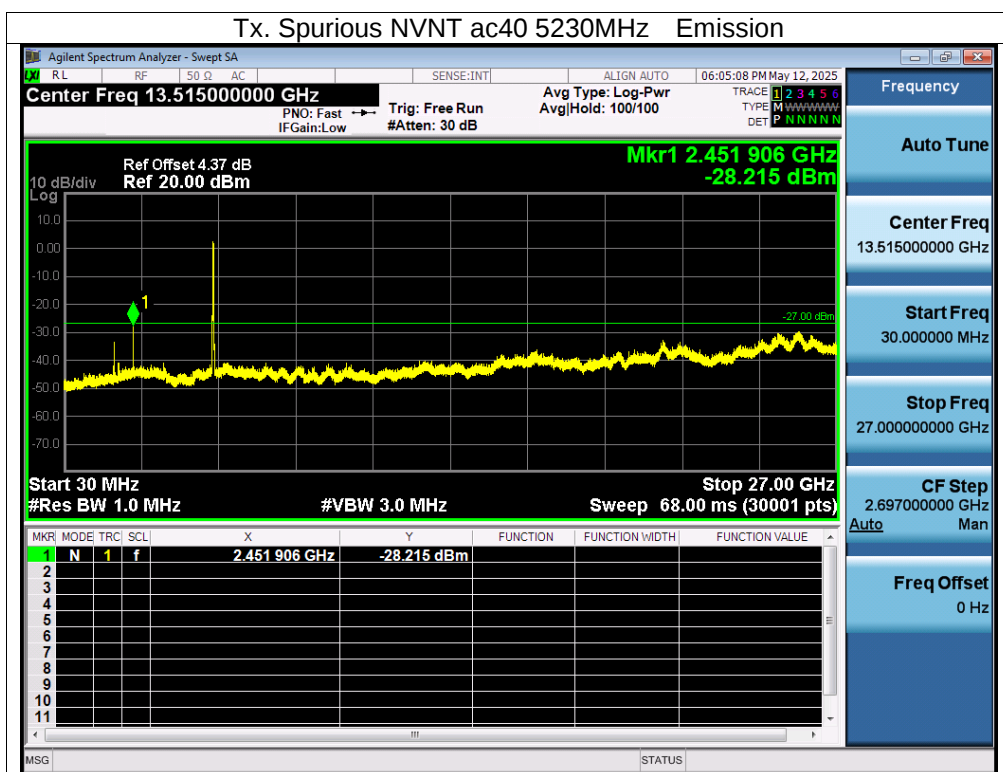






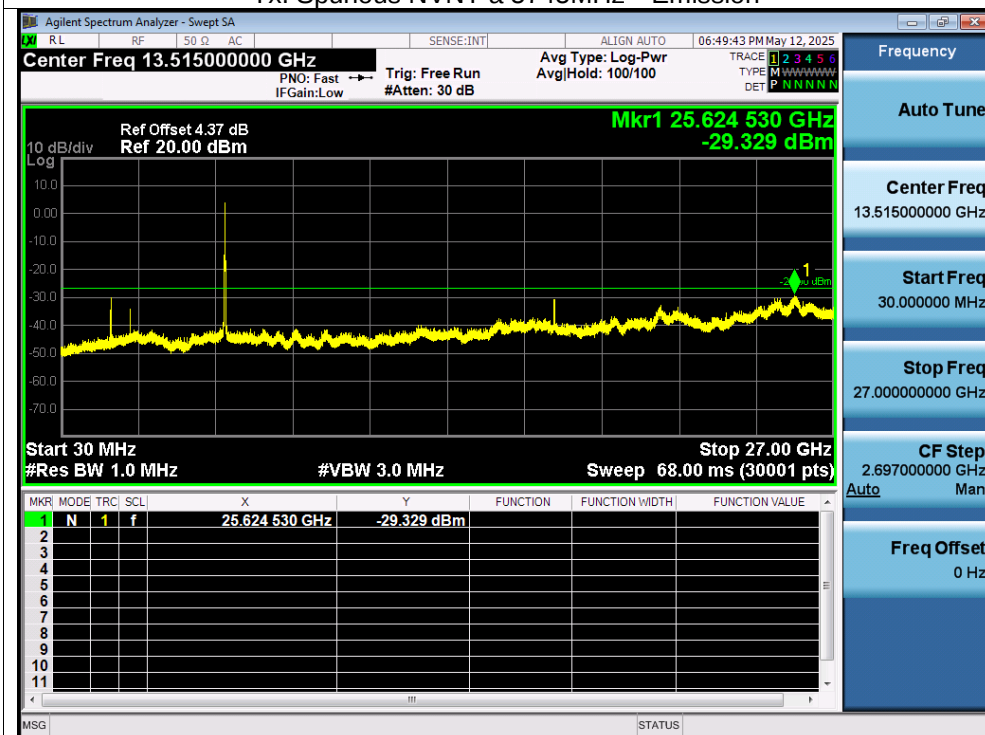




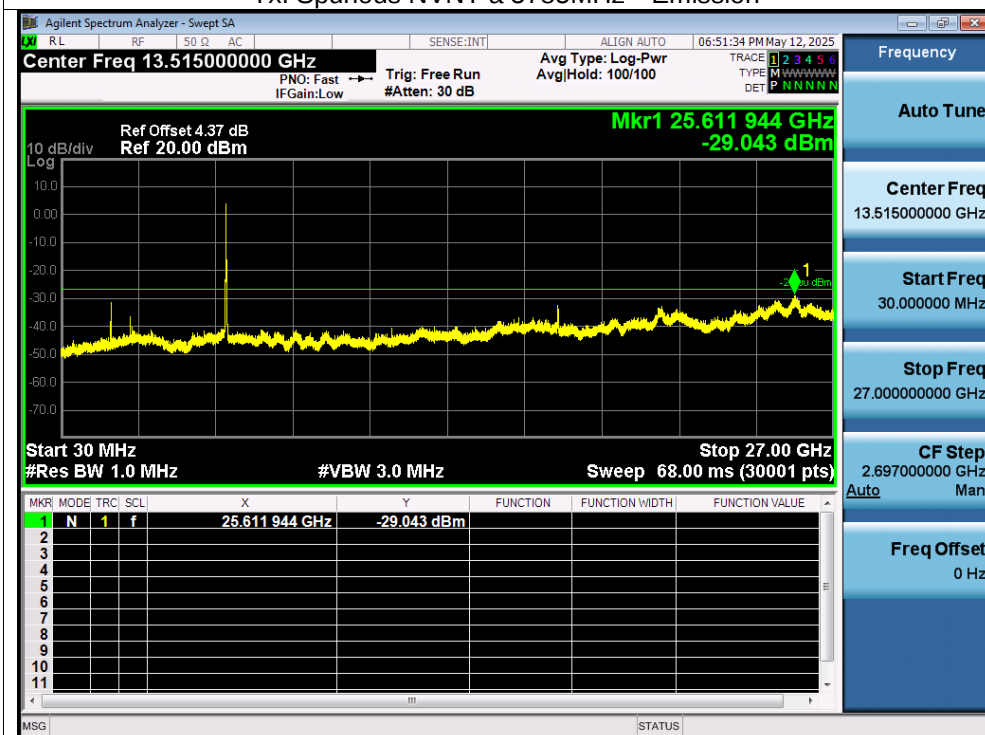


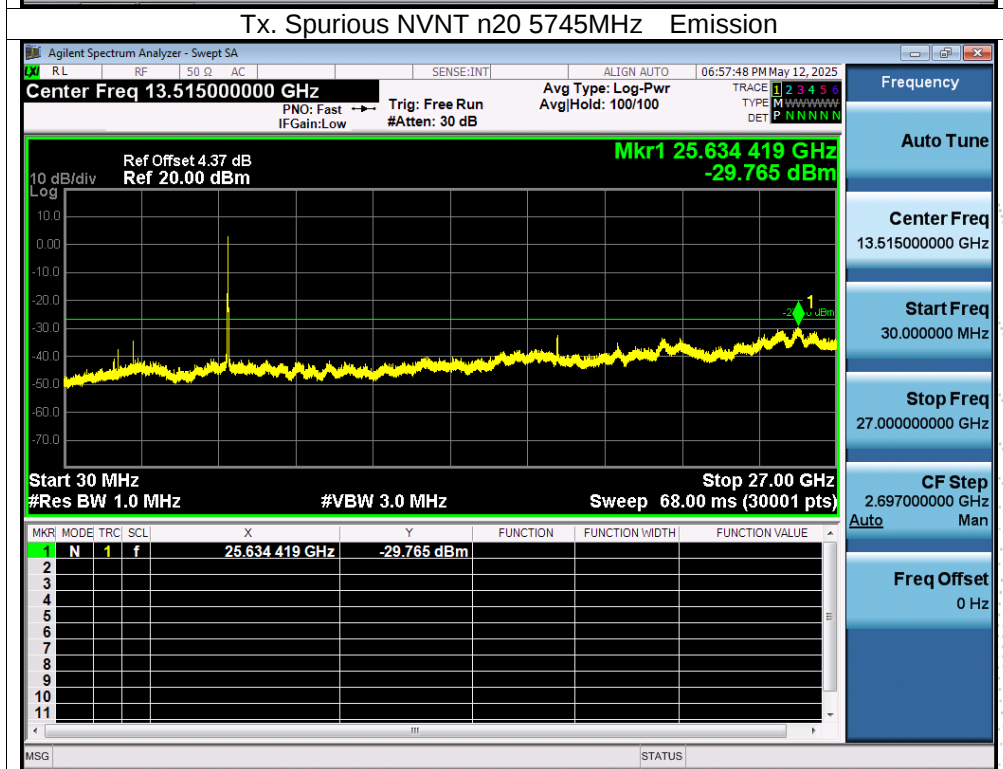
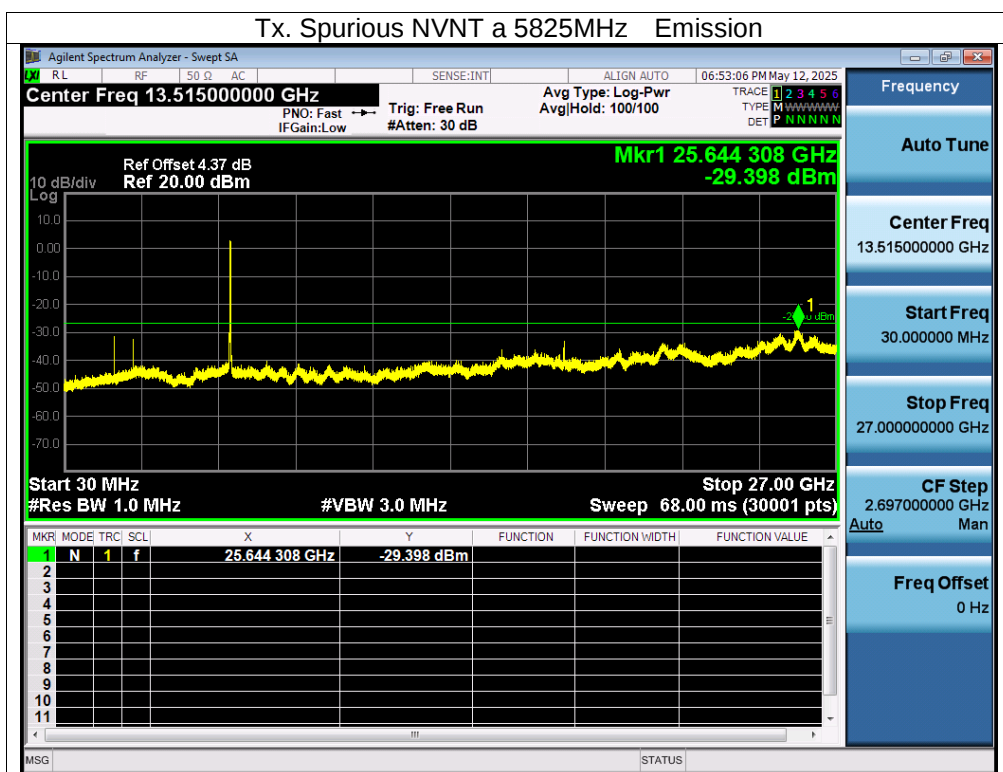
Test Graphs

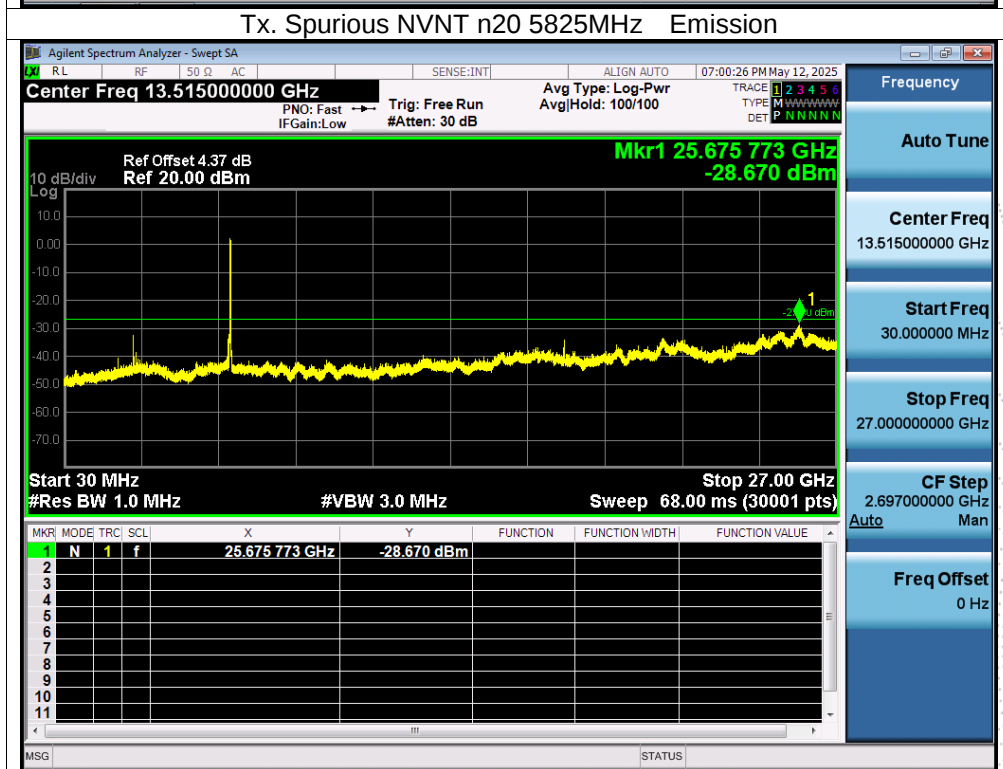
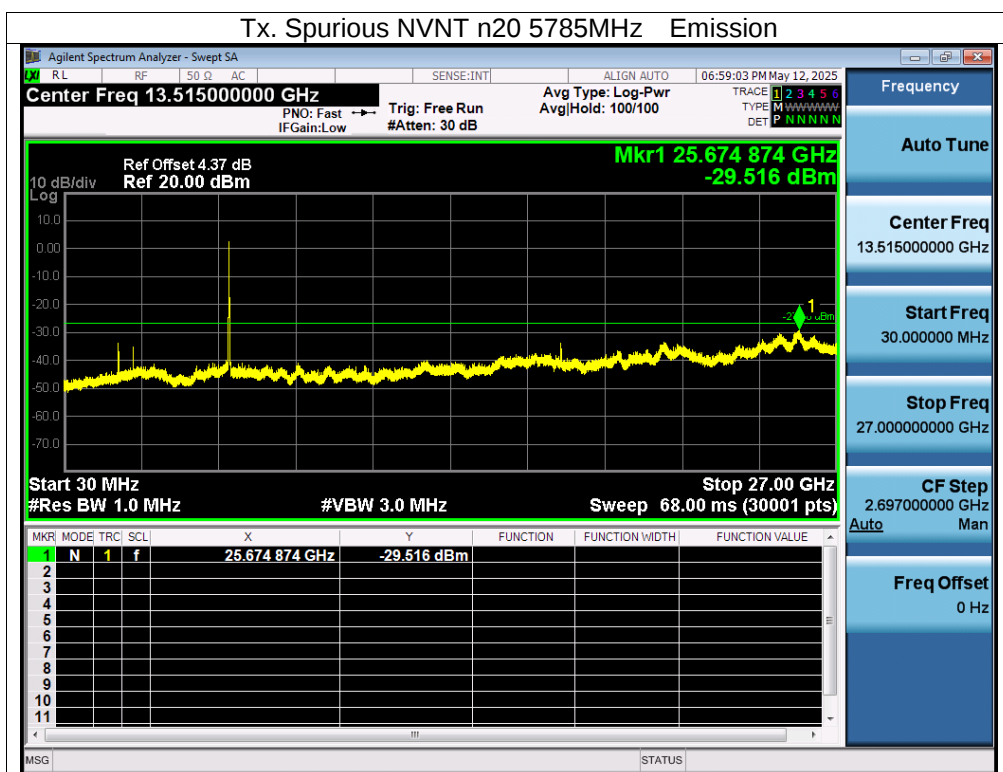
Tx. Spurious NVNT a 5745MHz Emission

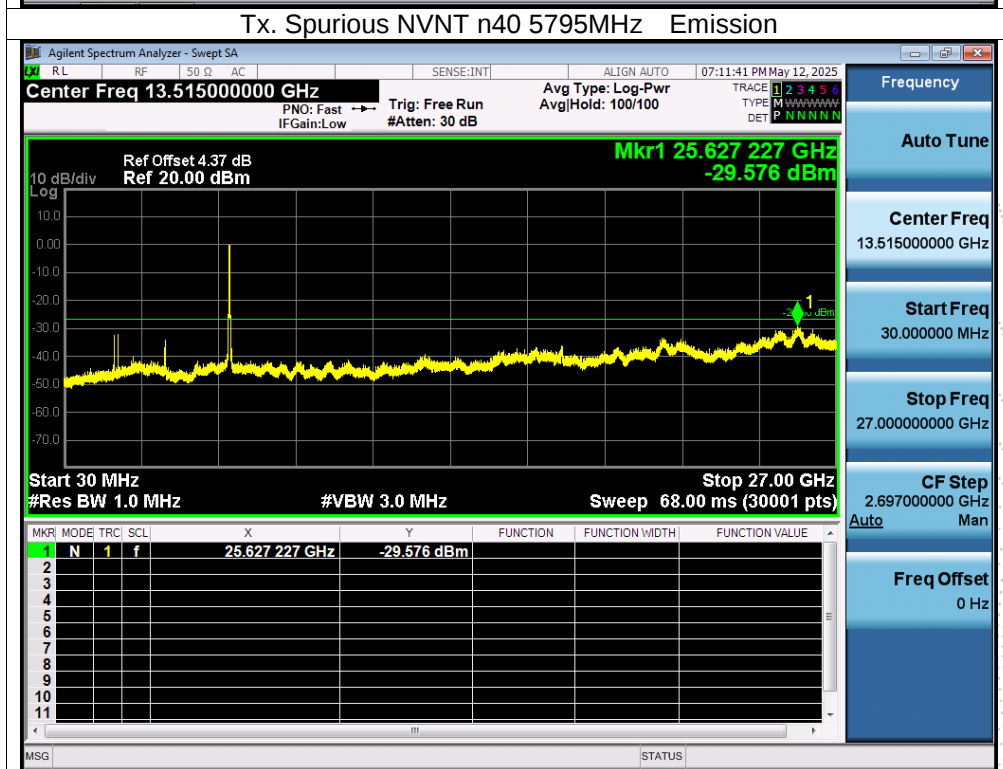
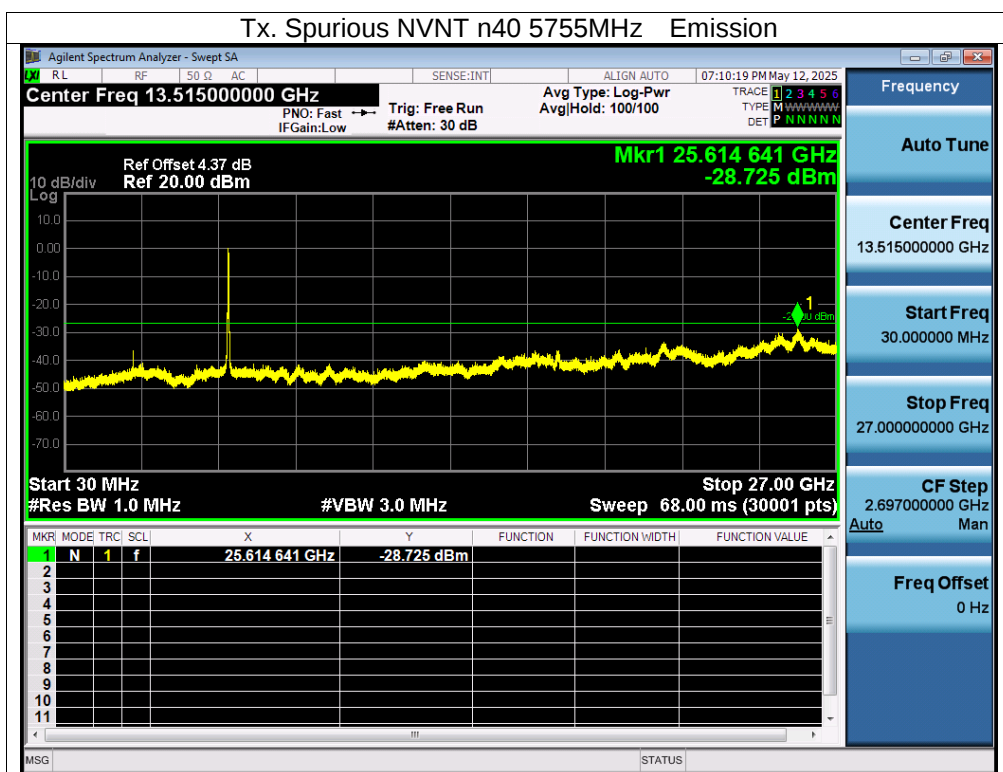


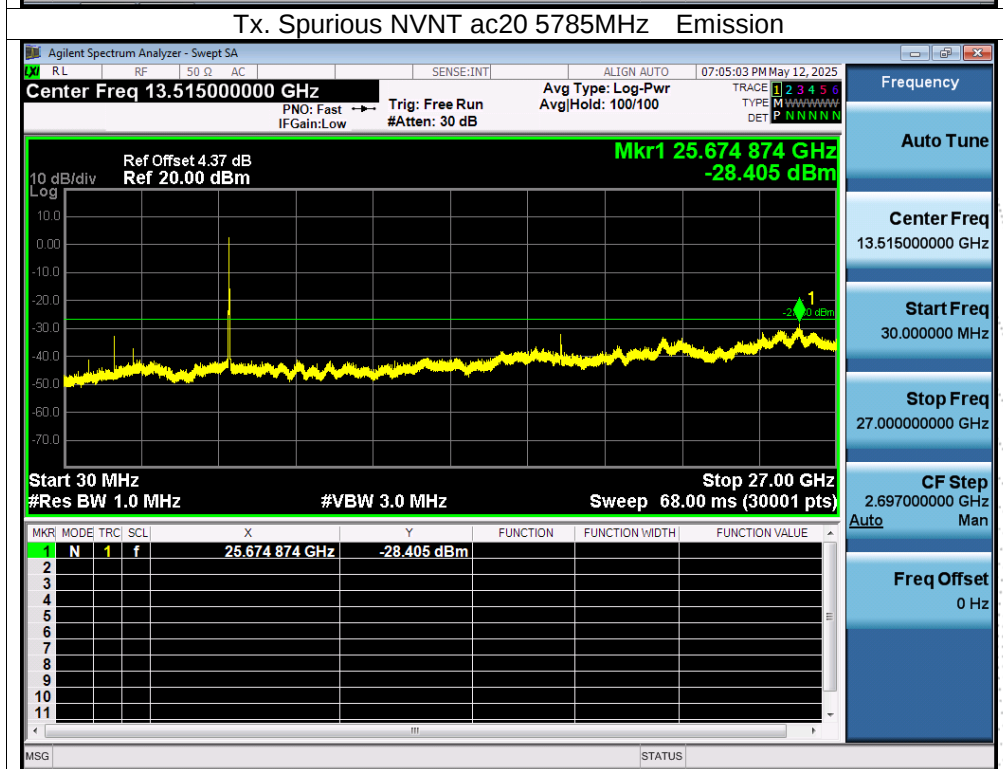
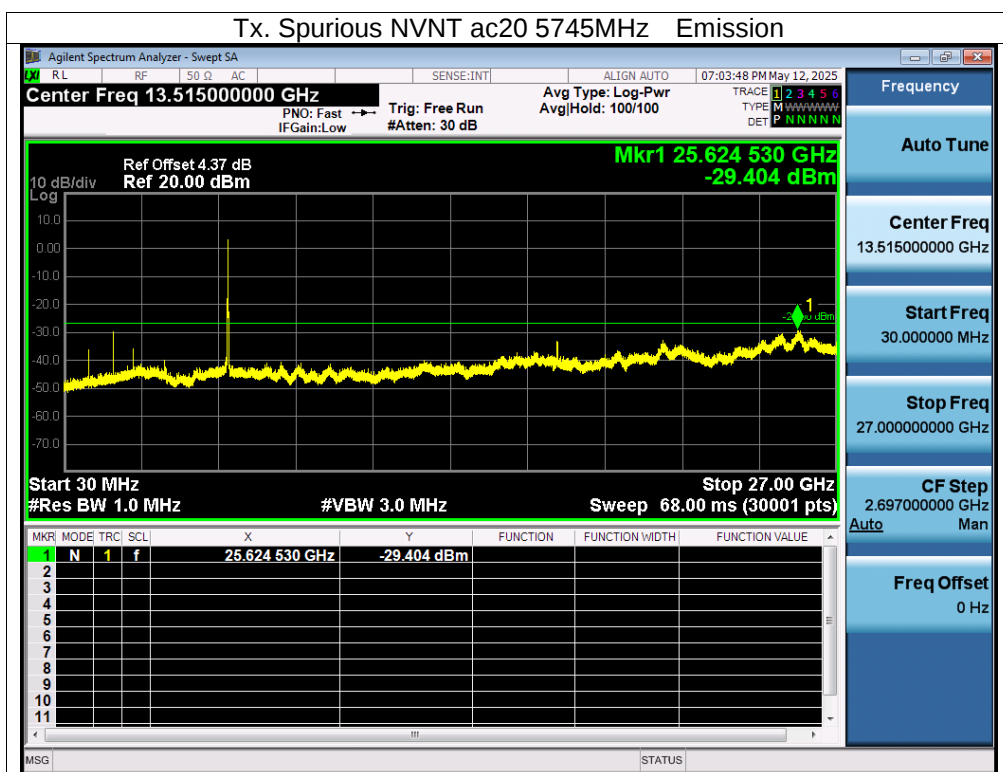
Tx. Spurious NVNT a 5785MHz Emission

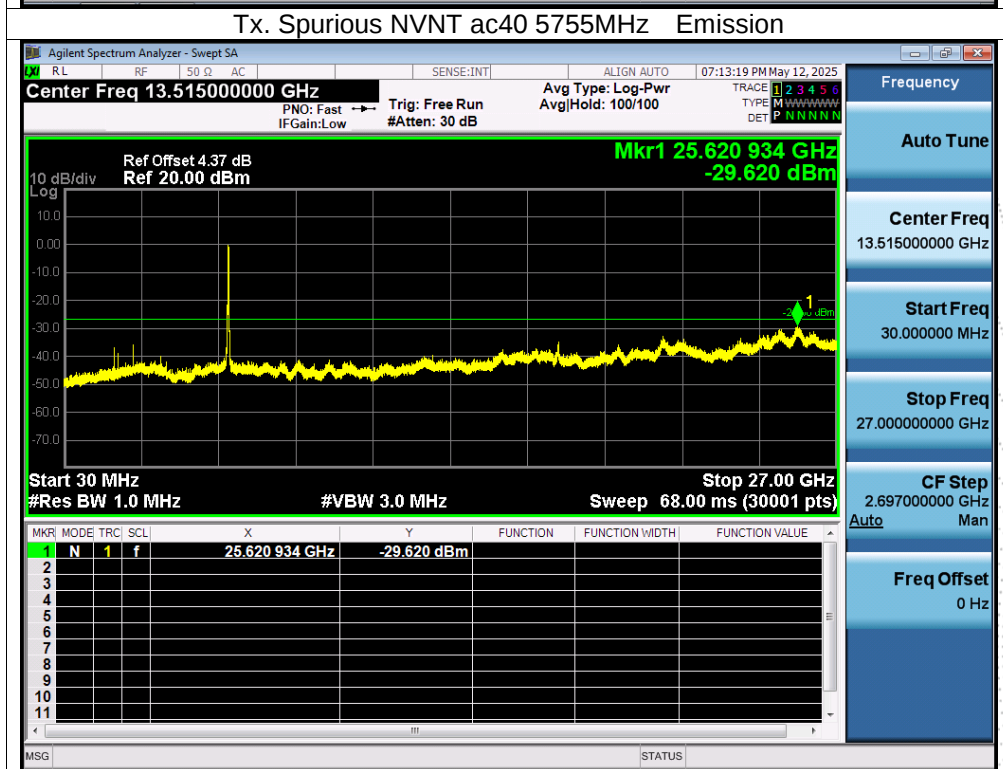
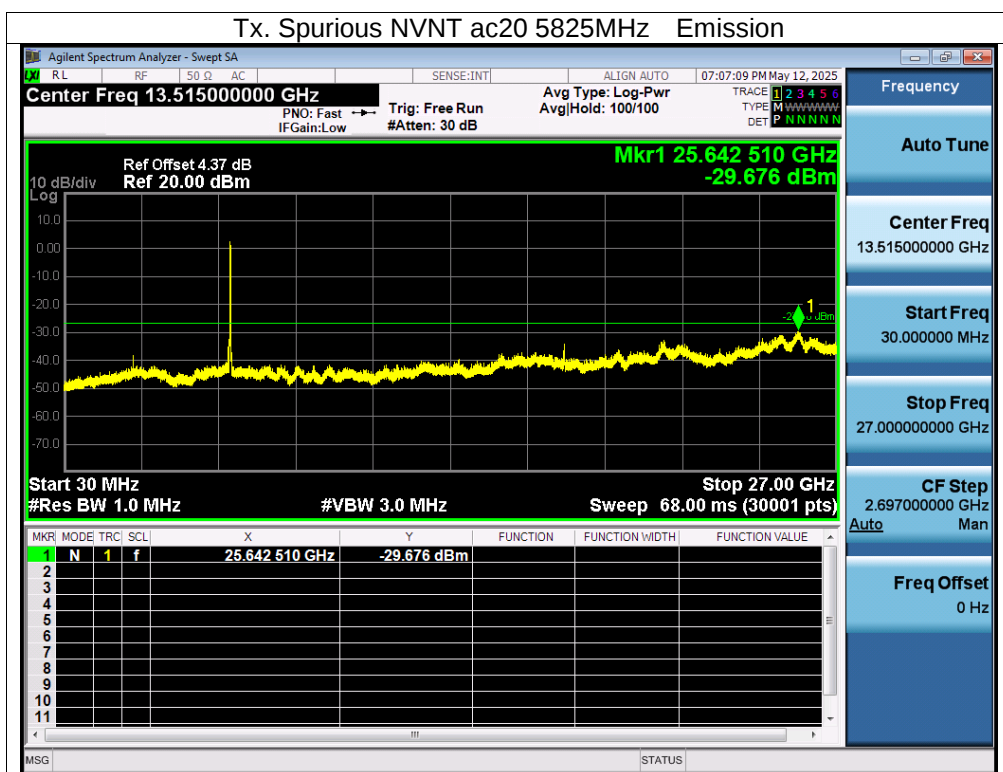


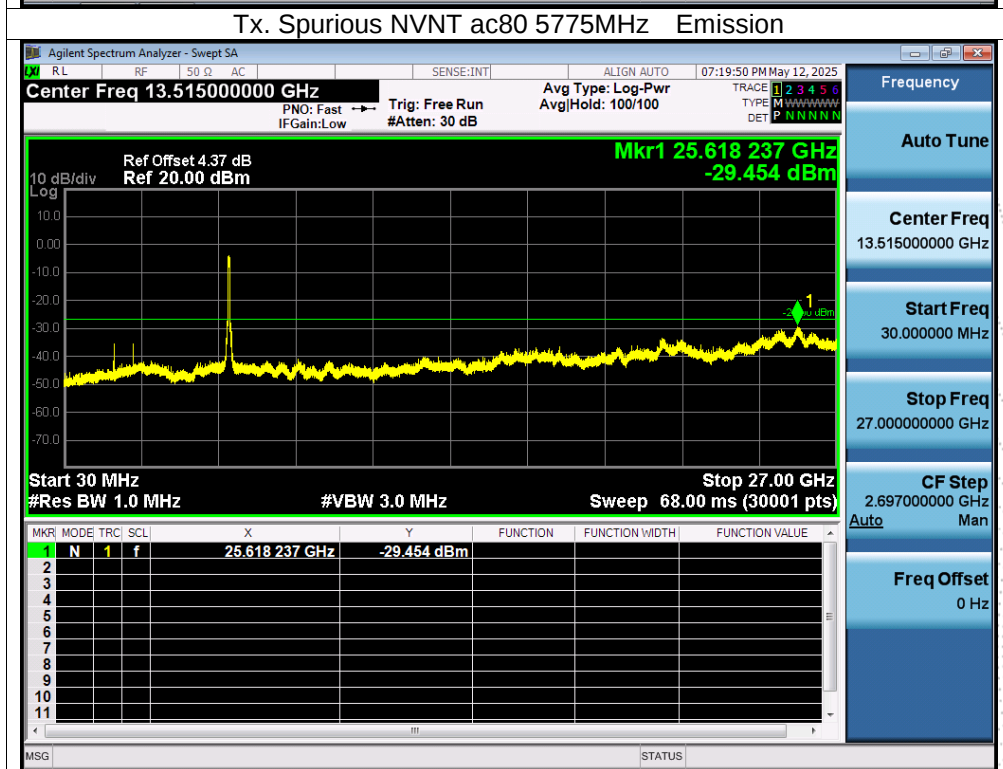
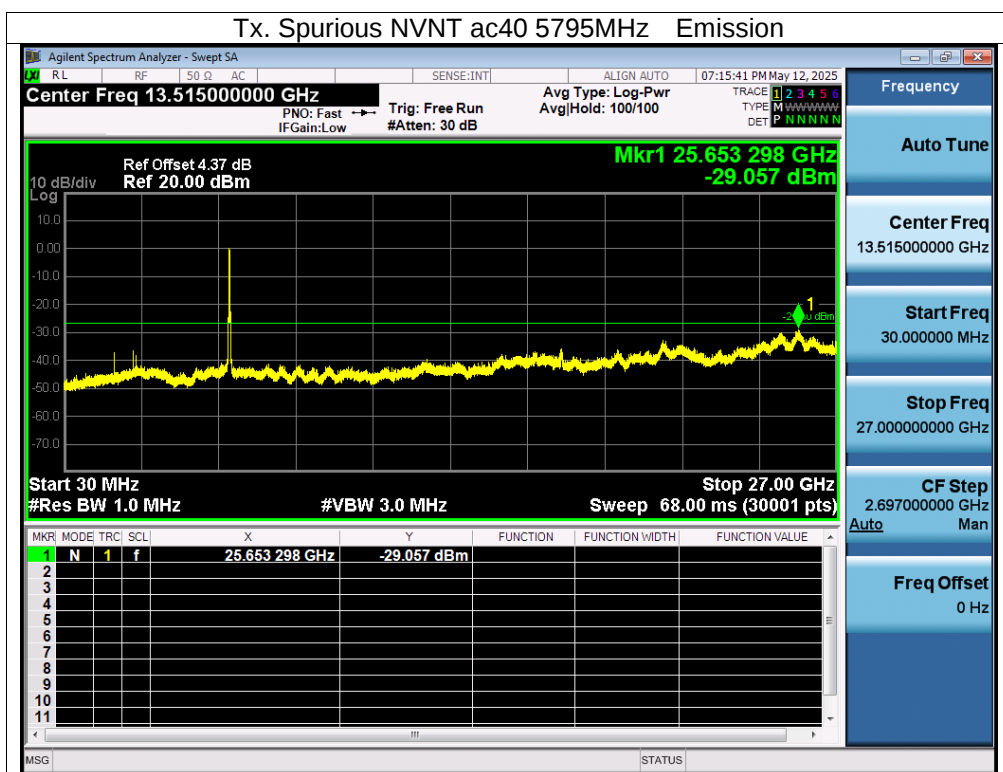












13. Frequency Stability Measurement

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	5180.0065	5180	0.0065	1.2548
		V max (V)	4.45	5180.0032	5180	0.0032	0.6178
		V min (V)	3.29	5180.0095	5180	0.0095	1.8340
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	5180.0078	5180	0.0078	1.5058
		T (°C)	-10	5180.0105	5180	0.0105	2.0270
		T (°C)	0	5180.0075	5180	0.0075	1.4479
		T (°C)	10	5180.0047	5180	0.0047	0.9073
		T (°C)	20	5180.0067	5180	0.0067	1.2934
		T (°C)	30	5180.0042	5180	0.0042	0.8108
		T (°C)	40	5180.0130	5180	0.0130	2.5097
		T (°C)	50	5180.0064	5180	0.0064	1.2355
		T (°C)	60	5180.0084	5180	0.0084	1.6216
		T (°C)	70	5180.0042	5180	0.0042	0.8108
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	5200.0047	5200	0.0047	0.9038
		V max (V)	4.45	5200.0031	5200	0.0031	0.5962
		V min (V)	3.29	5200.0059	5200	0.0059	1.1346
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	5200.01000	5200	0.01000	1.9231
		T (°C)	-10	5200.00900	5200	0.00900	1.7308
		T (°C)	0	5200.01180	5200	0.01180	2.2692
		T (°C)	10	5200.01230	5200	0.01230	2.3654
		T (°C)	20	5200.00530	5200	0.00530	1.0192
		T (°C)	30	5200.00600	5200	0.00600	1.1538
		T (°C)	40	5200.00330	5200	0.00330	0.6346
		T (°C)	50	5200.00120	5200	0.00120	0.2308
		T (°C)	60	5200.00980	5200	0.00980	1.8846
		T (°C)	70	5200.00940	5200	0.00940	1.8077
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	5240.0092	5240	0.0092	1.7557
		V max (V)	4.45	5240.0028	5240	0.0028	0.5344
		V min (V)	3.29	5240.0025	5240	0.0025	0.4771
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	5240.0050	5240	0.0050	0.9542
		T (°C)	-10	5240.0058	5240	0.0058	1.1069
		T (°C)	0	5240.0033	5240	0.0033	0.6298
		T (°C)	10	5240.0124	5240	0.0124	2.3664
		T (°C)	20	5240.0018	5240	0.0018	0.3435
		T (°C)	30	5240.0130	5240	0.0130	2.4809
		T (°C)	40	5240.0031	5240	0.0031	0.5916
		T (°C)	50	5240.0037	5240	0.0037	0.7061
		T (°C)	60	5240.0073	5240	0.0073	1.3931
		T (°C)	70	5240.0014	5240	0.0014	0.2672
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	5745.00670	5745	0.00670	1.1662
		V max (V)	4.45	5745.00520	5745	0.00520	0.9051
		V min (V)	3.29	5745.01220	5745	0.01220	2.1236
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	5745.00710	5745	0.00710	1.2359
		T (°C)	-10	5745.00660	5745	0.00660	1.1488
		T (°C)	0	5745.00240	5745	0.00240	0.4178
		T (°C)	10	5745.00570	5745	0.00570	0.9922
		T (°C)	20	5745.00410	5745	0.00410	0.7137
		T (°C)	30	5745.00040	5745	0.00040	0.0696
		T (°C)	40	5745.00140	5745	0.00140	0.2437
		T (°C)	50	5745.00590	5745	0.00590	1.0270
		T (°C)	60	5745.01260	5745	0.01260	2.1932
		T (°C)	70	5745.00610	5745	0.00610	1.0618
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	5785.00720	5785	0.00720	1.2446
		V max (V)	4.45	5785.01180	5785	0.01180	2.0398
		V min (V)	3.29	5785.00570	5785	0.00570	0.9853
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	5785.00230	5785	0.00230	0.3976
		T (°C)	-10	5785.00830	5785	0.00830	1.4347
		T (°C)	0	5785.01060	5785	0.01060	1.8323
		T (°C)	10	5785.01060	5785	0.01060	1.8323
		T (°C)	20	5785.00680	5785	0.00680	1.1755
		T (°C)	30	5785.01120	5785	0.01120	1.9360
		T (°C)	40	5785.00650	5785	0.00650	1.1236
		T (°C)	50	5785.00160	5785	0.00160	0.2766
		T (°C)	60	5785.01220	5785	0.01220	2.1089
		T (°C)	70	5785.01200	5785	0.01200	2.0743
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	5825.00920	5825	0.00920	1.5794
		V max (V)	4.45	5825.00310	5825	0.00310	0.5322
		V min (V)	3.29	5825.01320	5825	0.01320	2.2661
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	5825.00510	5825	0.00510	0.8755
		T (°C)	-10	5825.00120	5825	0.00120	0.2060
		T (°C)	0	5825.00020	5825	0.00020	0.0343
		T (°C)	10	5825.00970	5825	0.00970	1.6652
		T (°C)	20	5825.00050	5825	0.00050	0.0858
		T (°C)	30	5825.01060	5825	0.01060	1.8197
		T (°C)	40	5825.00230	5825	0.00230	0.3948
		T (°C)	50	5825.01340	5825	0.01340	2.3004
		T (°C)	60	5825.00950	5825	0.00950	1.6309
		T (°C)	70	5825.00900	5825	0.00900	1.5451
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 = $T_{on} / (T_{on} + T_{off})$

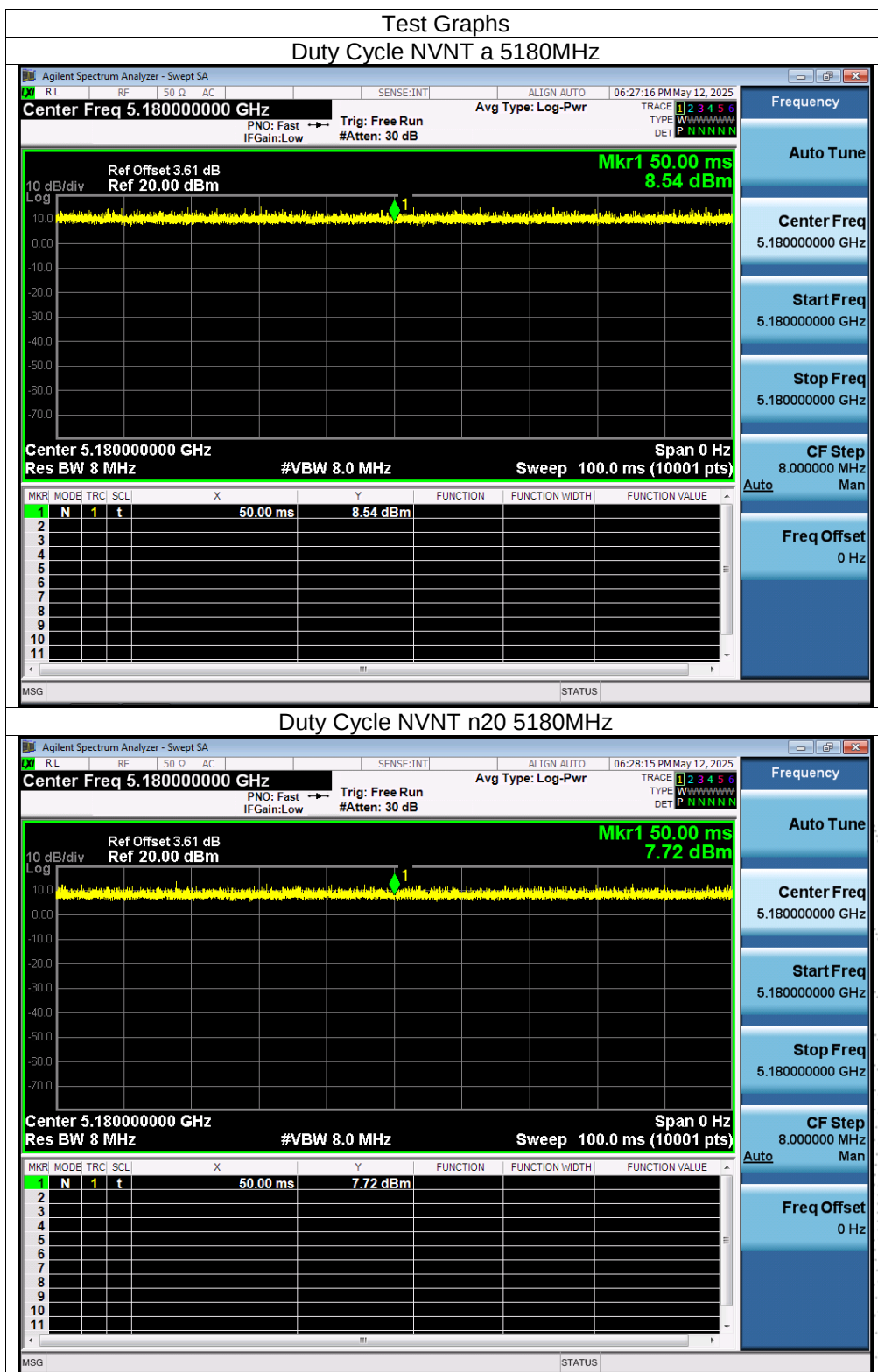
14.3 Test Procedure

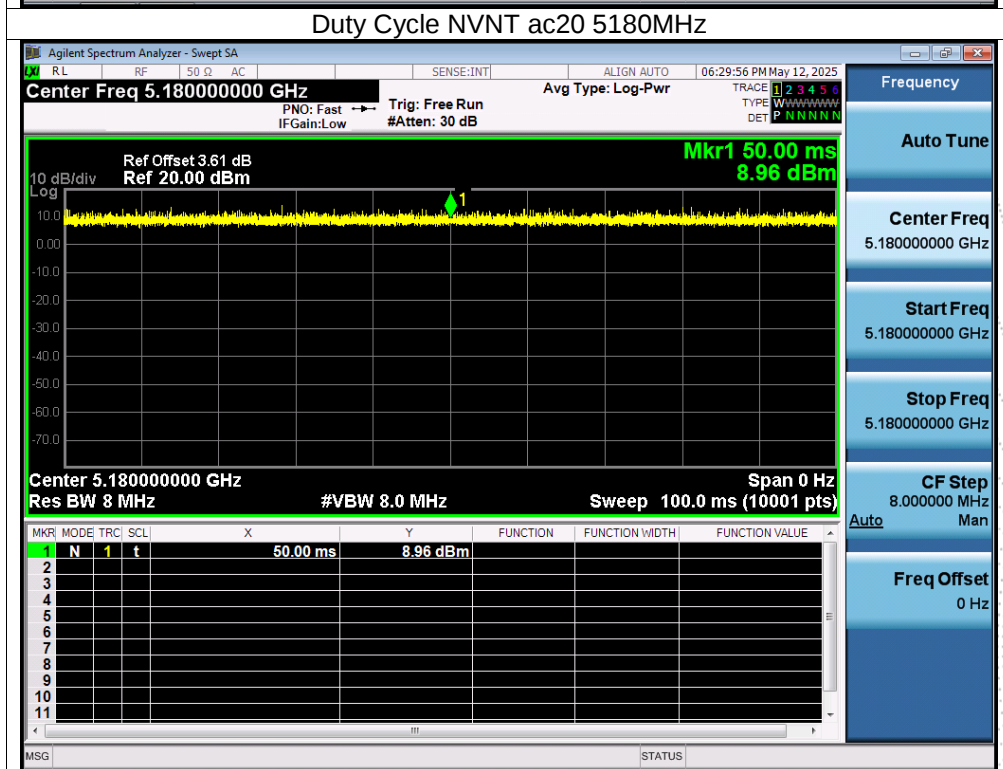
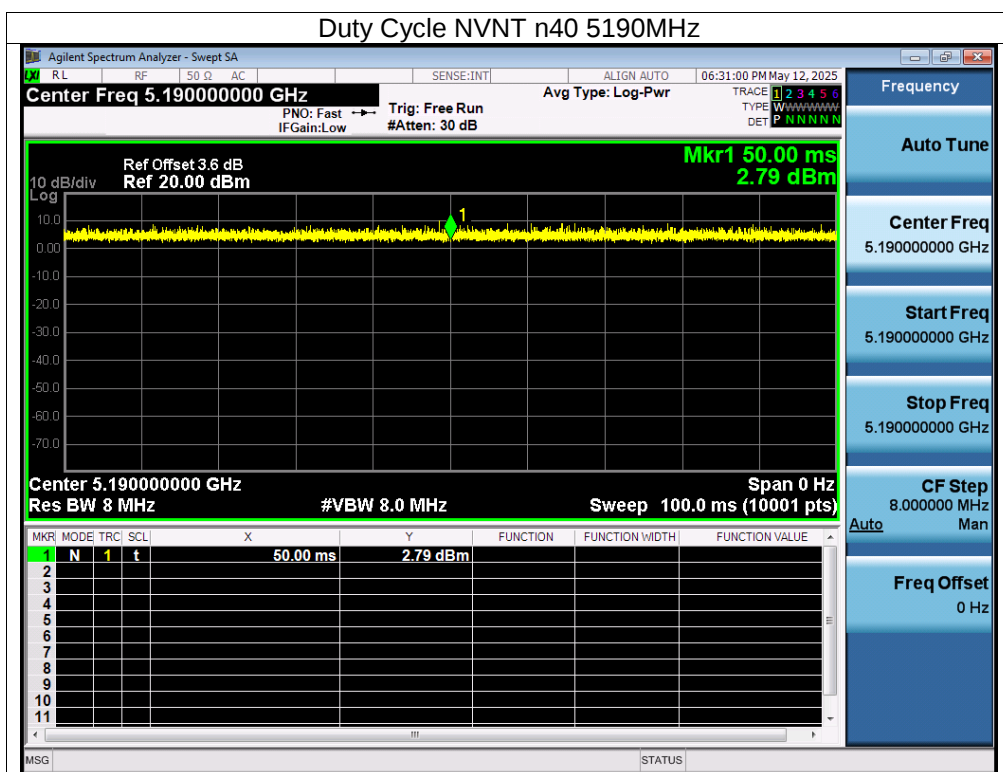
1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

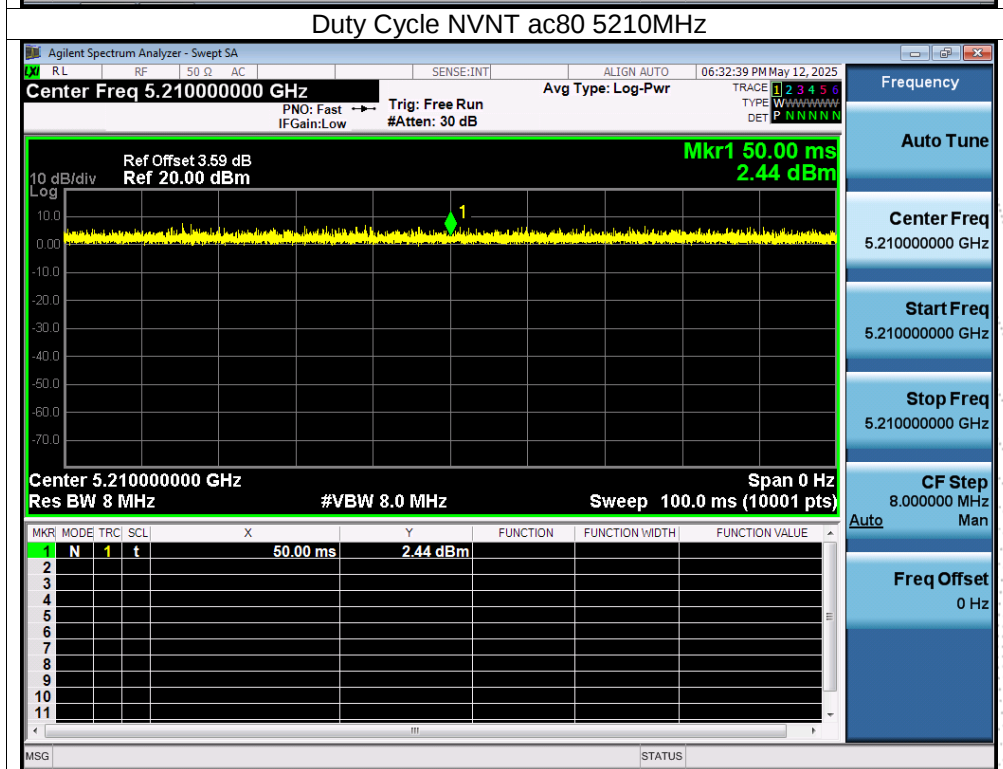
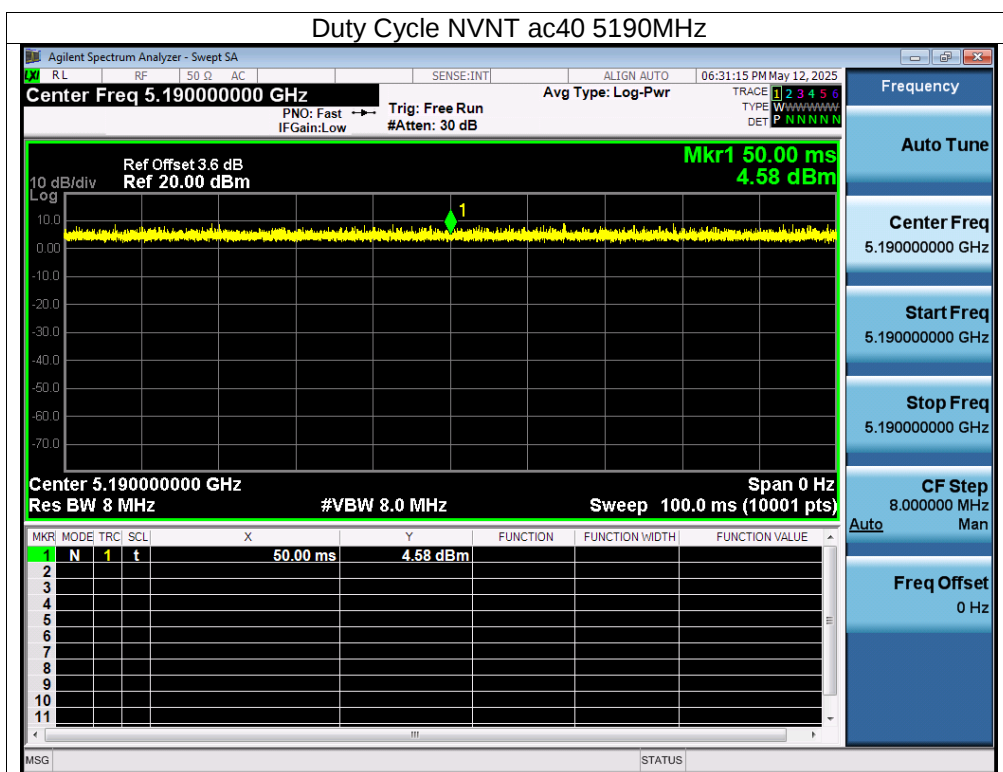
14.4 Test Result

5.1G

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

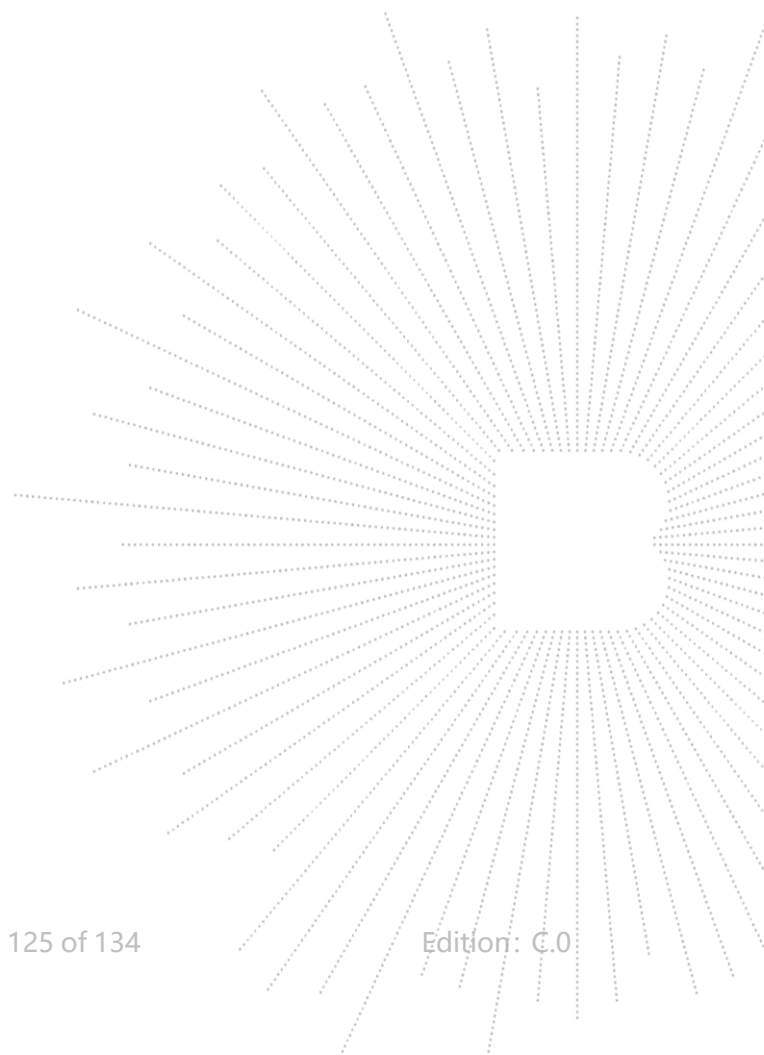






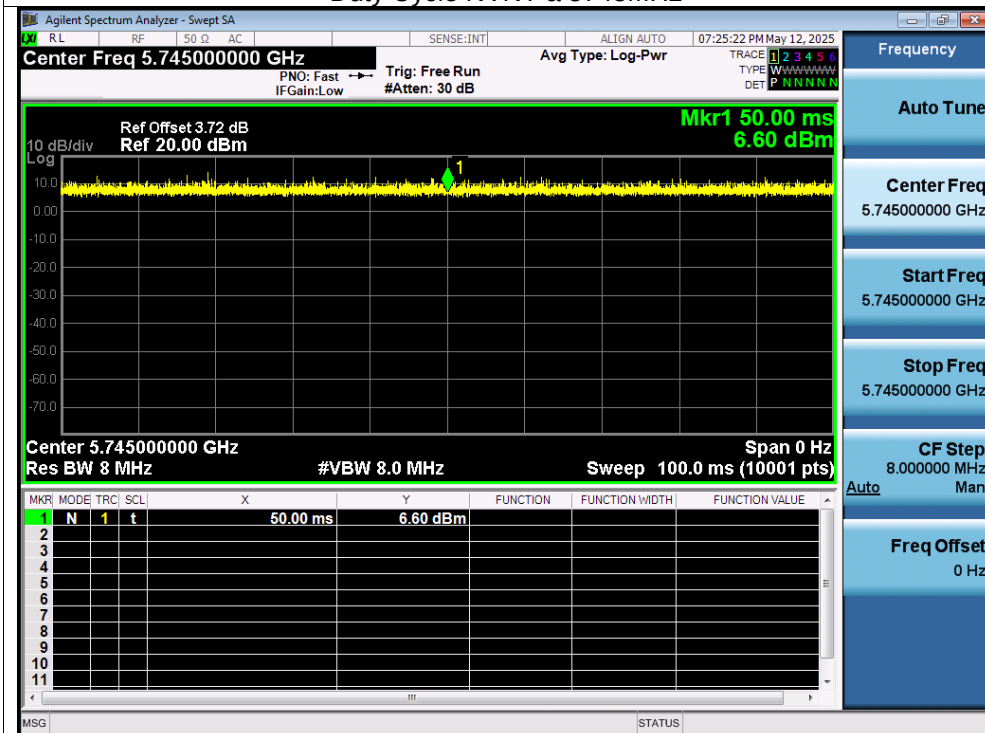
5.8G

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

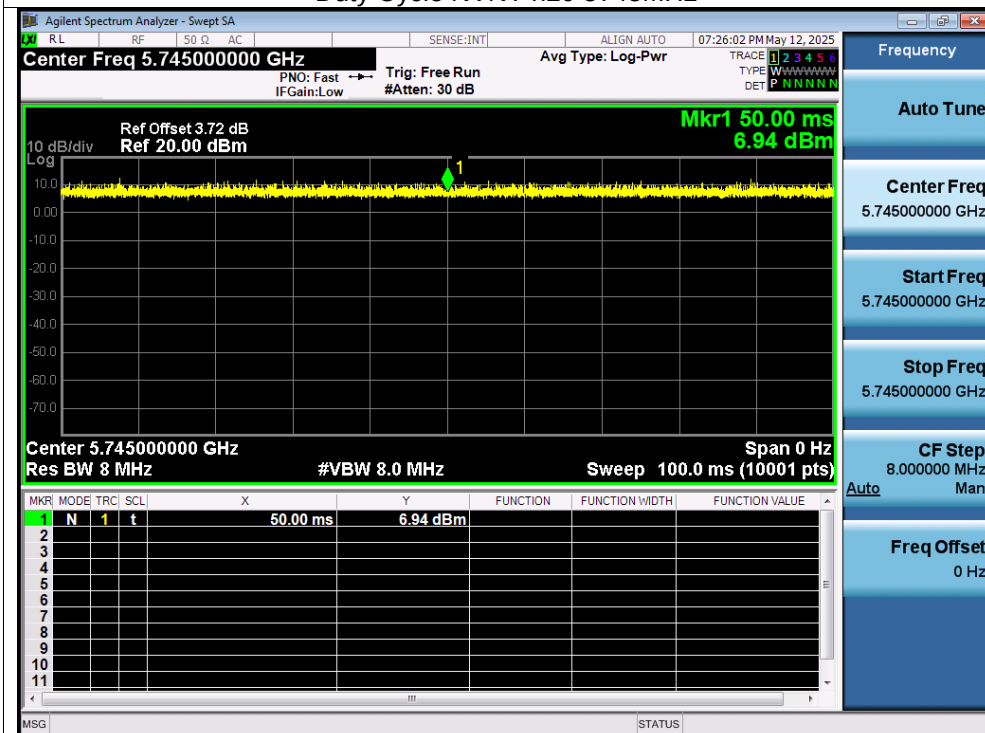


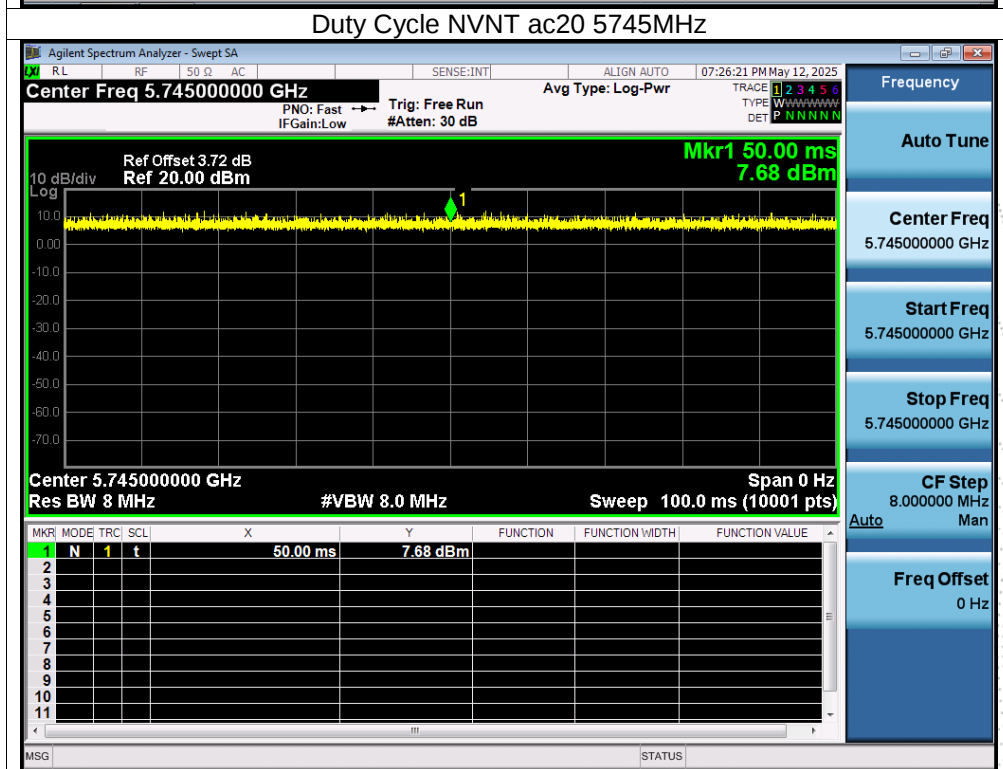
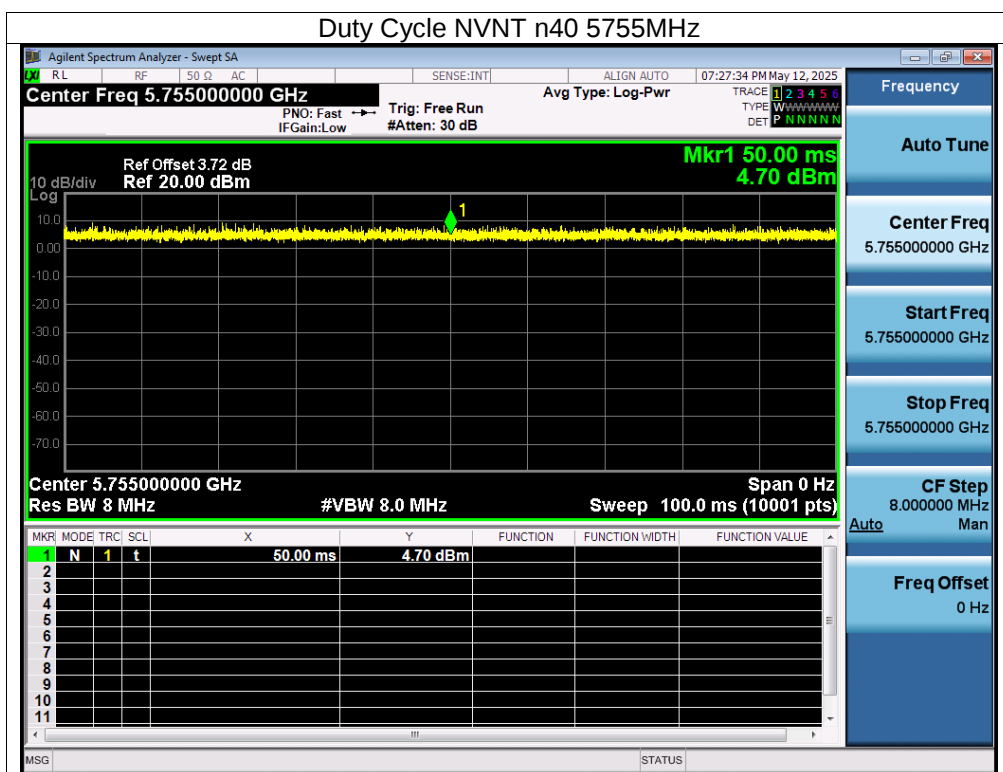
Test Graphs

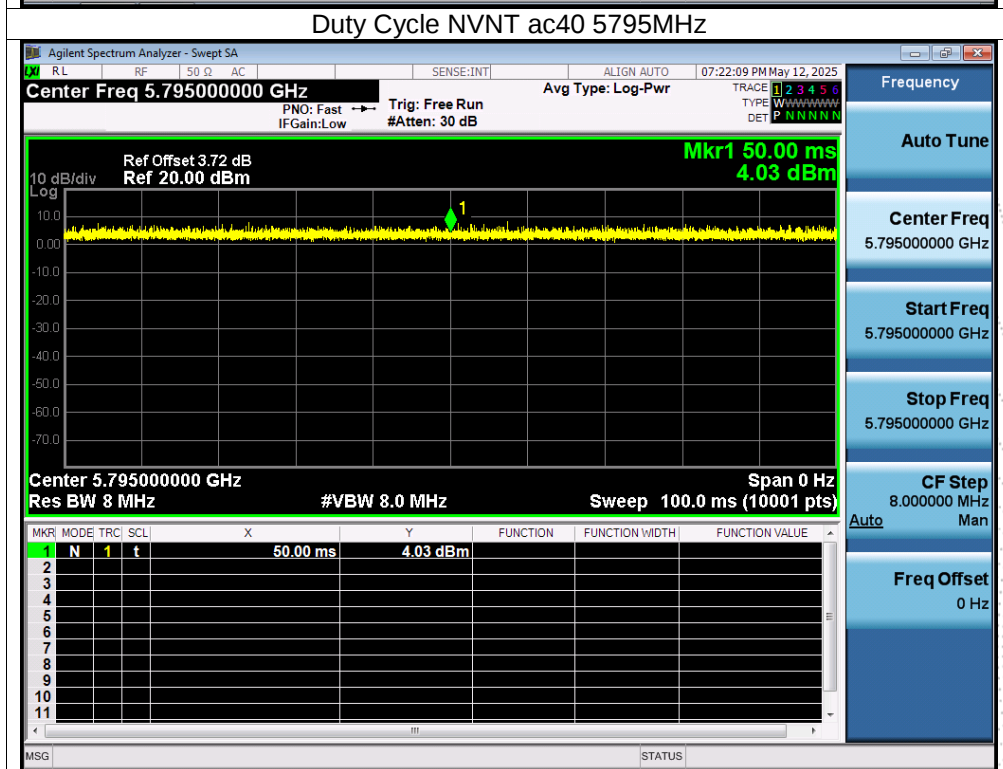
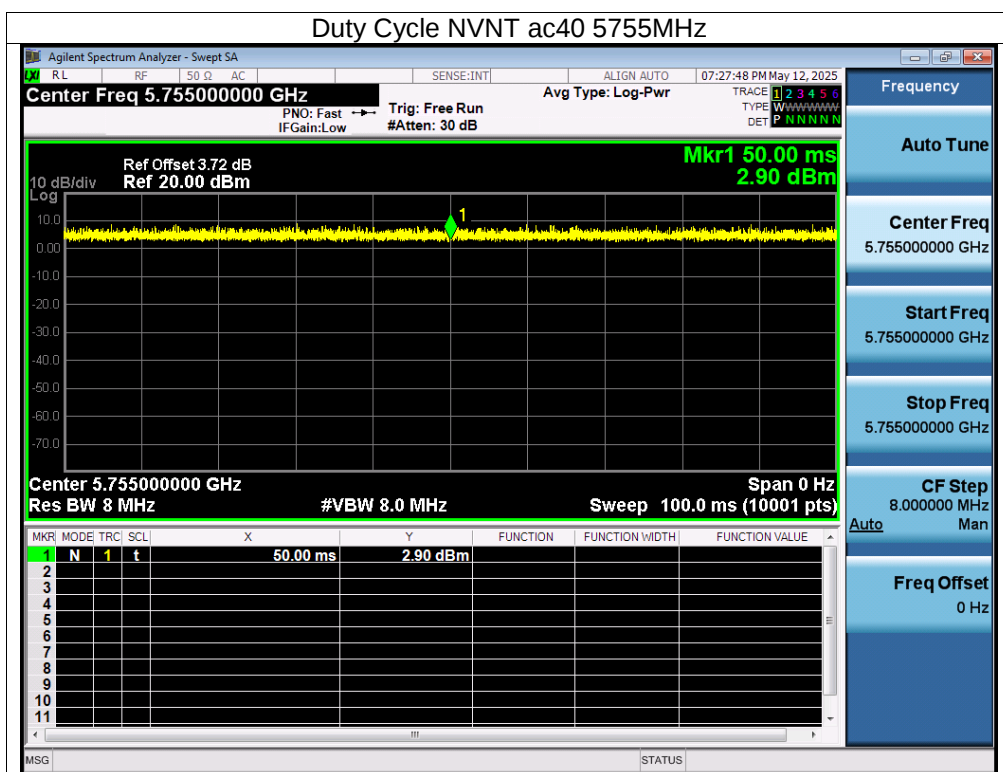
Duty Cycle NVNT a 5745MHz

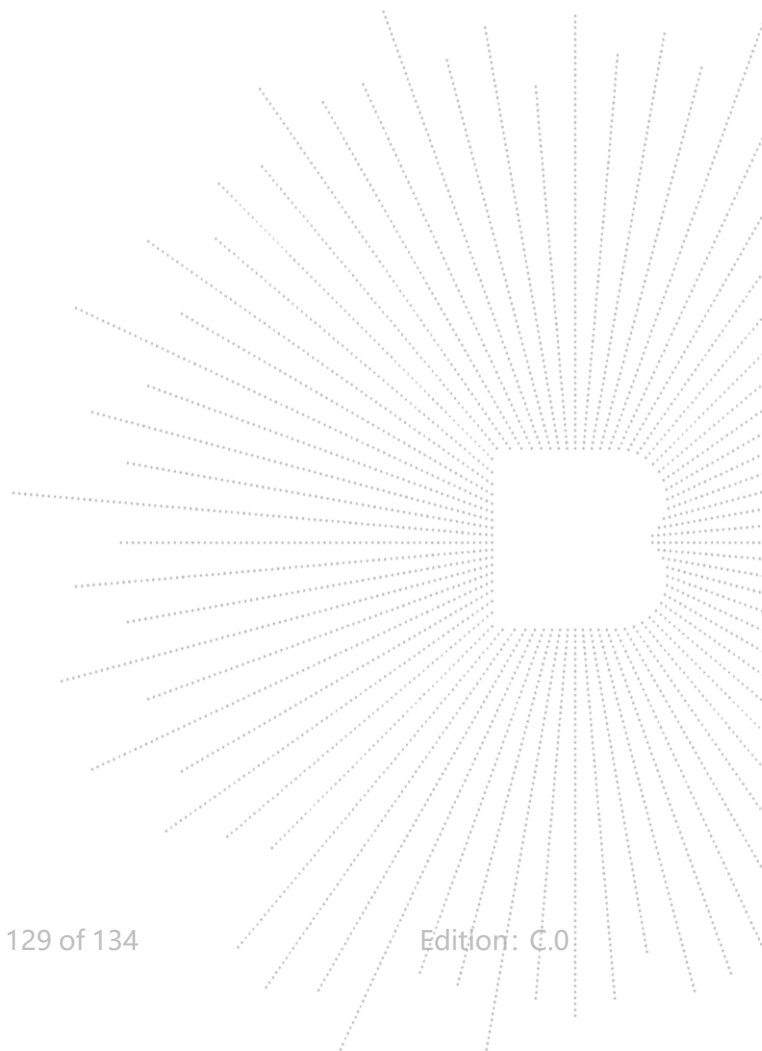
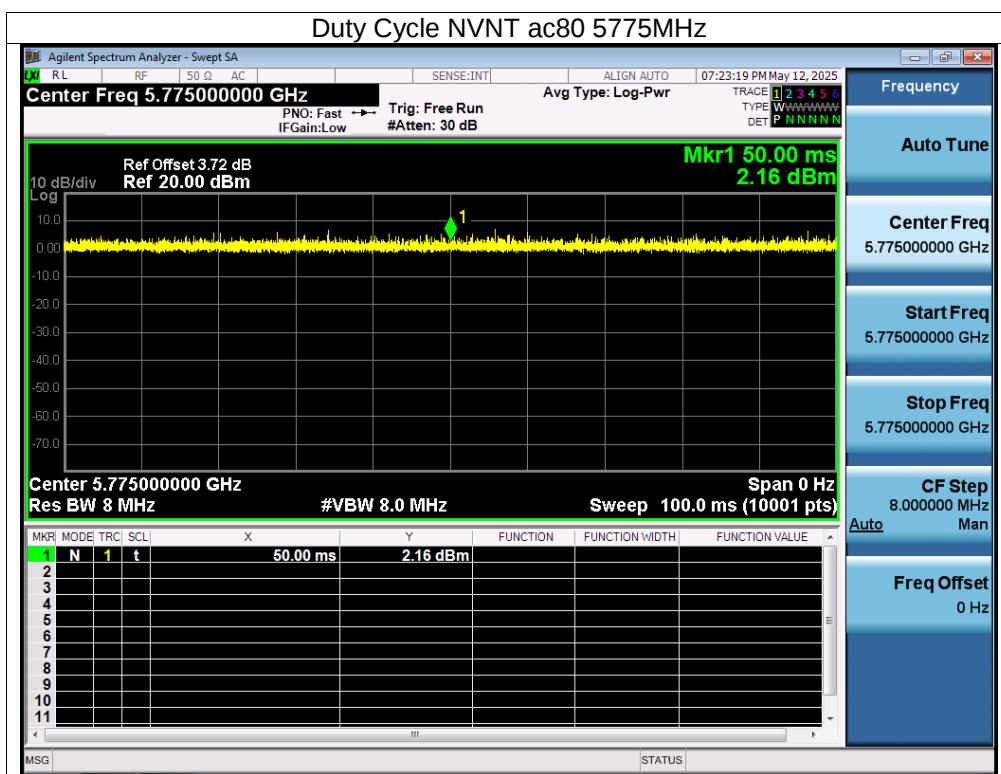


Duty Cycle NVNT n20 5745MHz









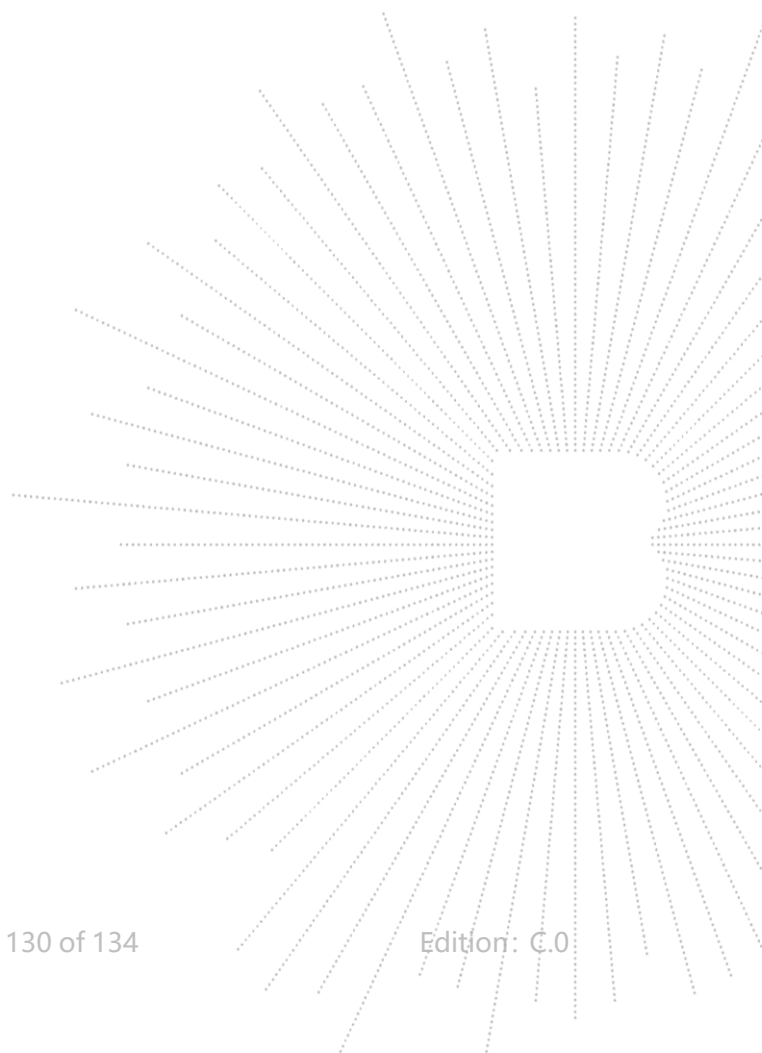
15. Antenna Requirement

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: 0.30 dBi). It comply with the standard requirement.



16. EUT Photographs

EUT Photo 1



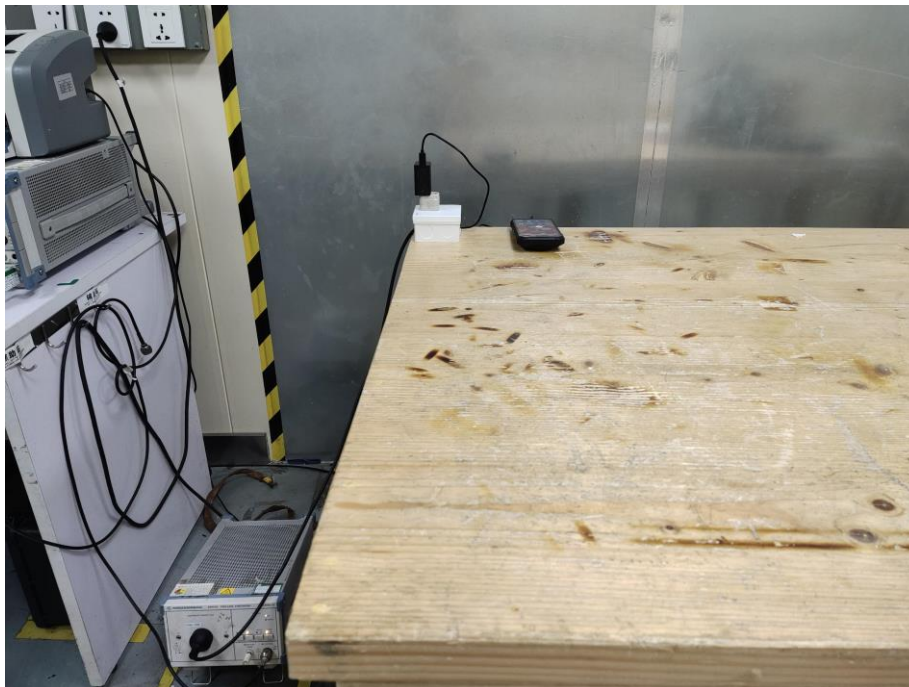
EUT Photo 2



NOTE: Appendix-Photographs Of EUT Constructional Details.

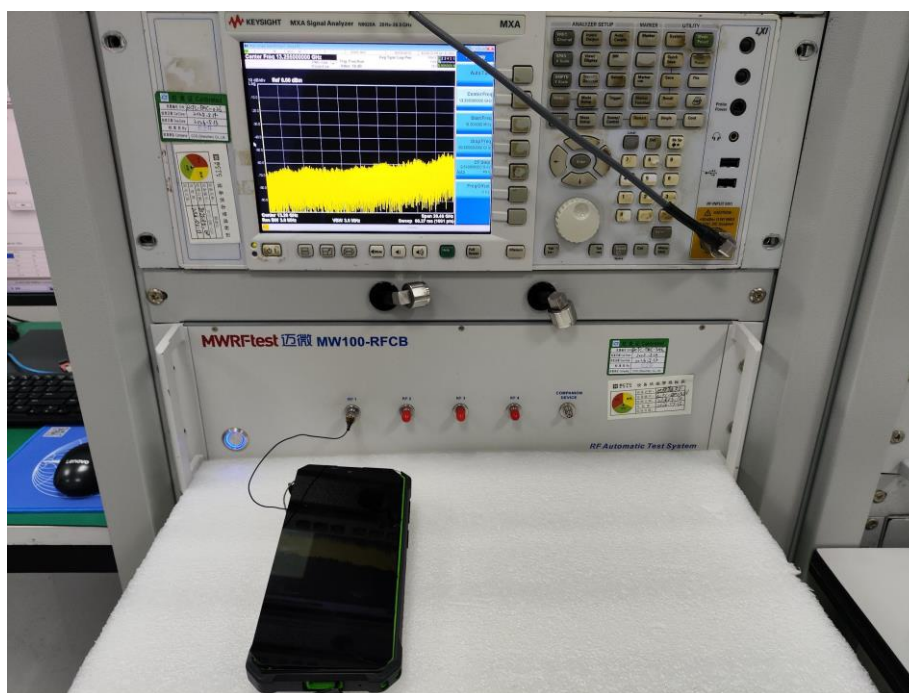
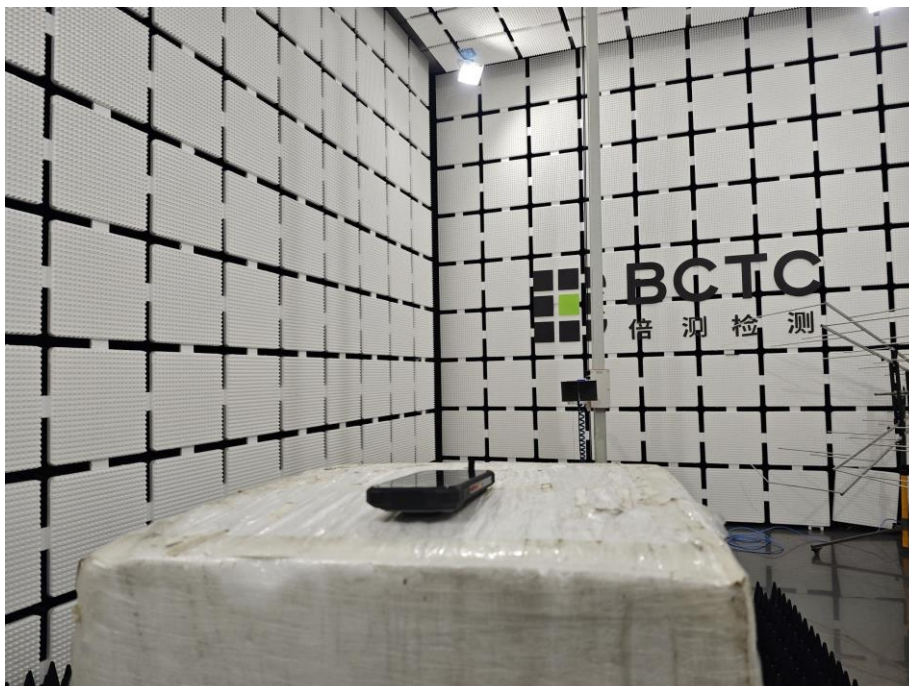
17. EUT Test Setup Photographs

Conducted Measurement Photos



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:

1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

TEL: 400-788-9558

P.C.: 518103

FAX: 0755-33229357

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

Consultation E-mail: bctc@bctc-lab.com.cn

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

***** END *****

