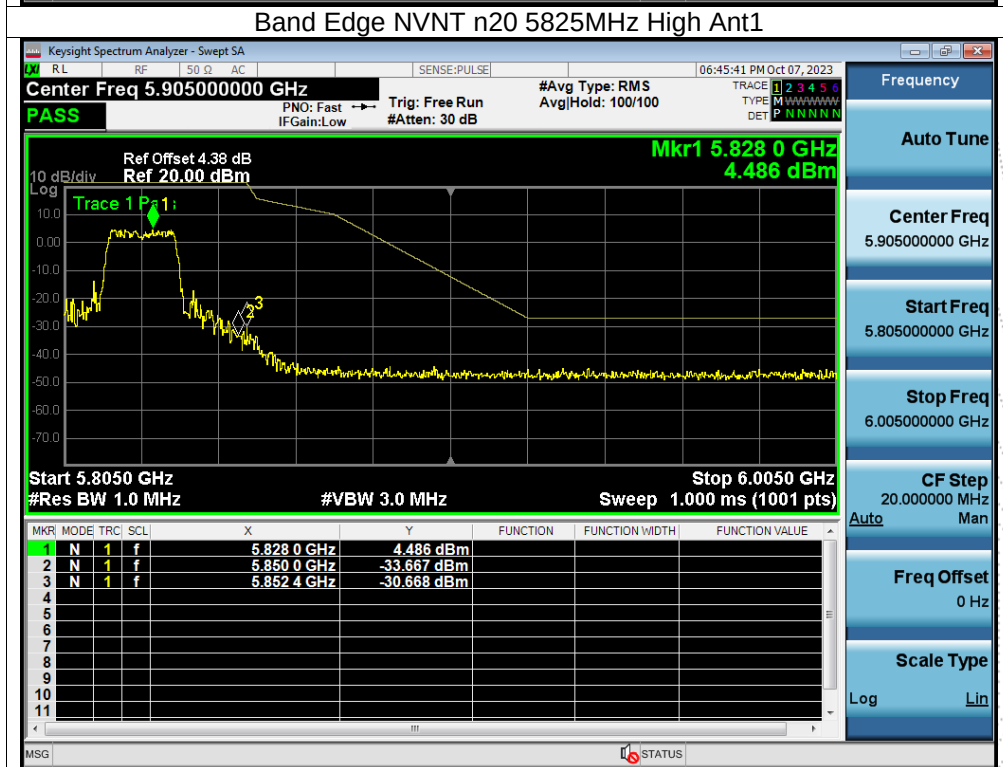
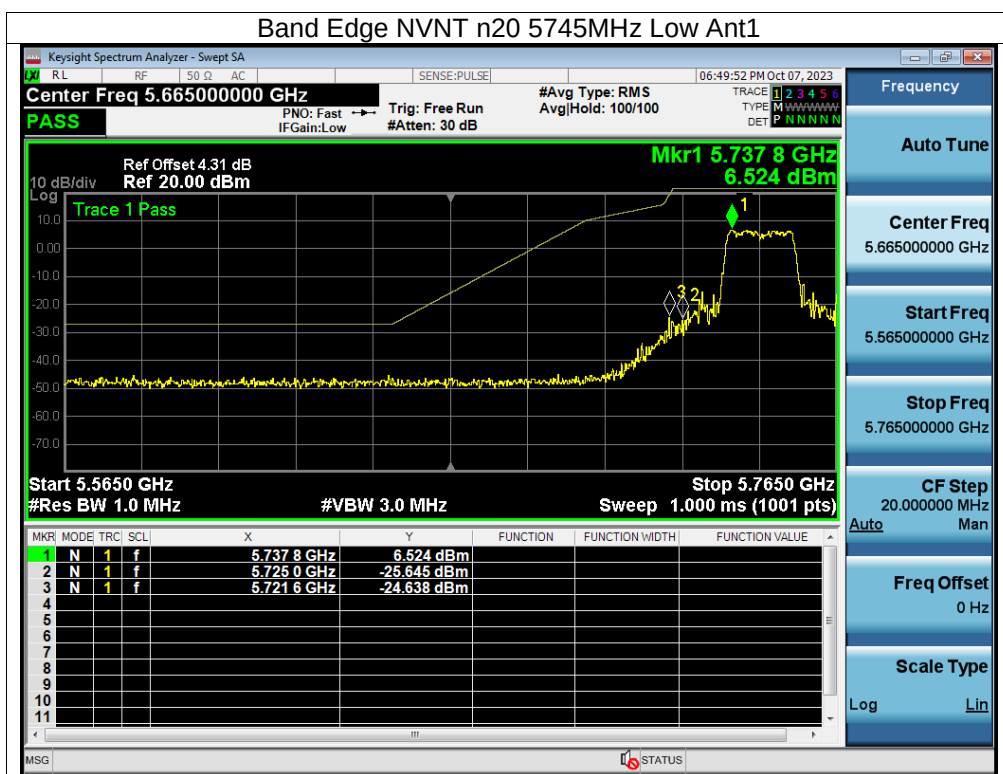
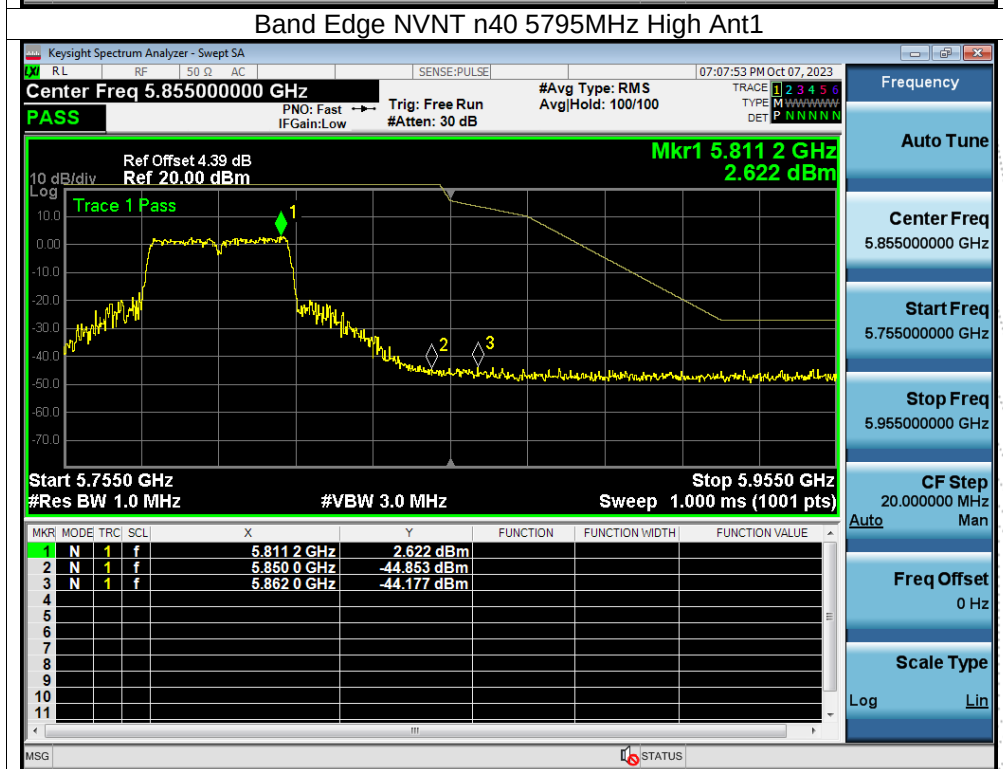
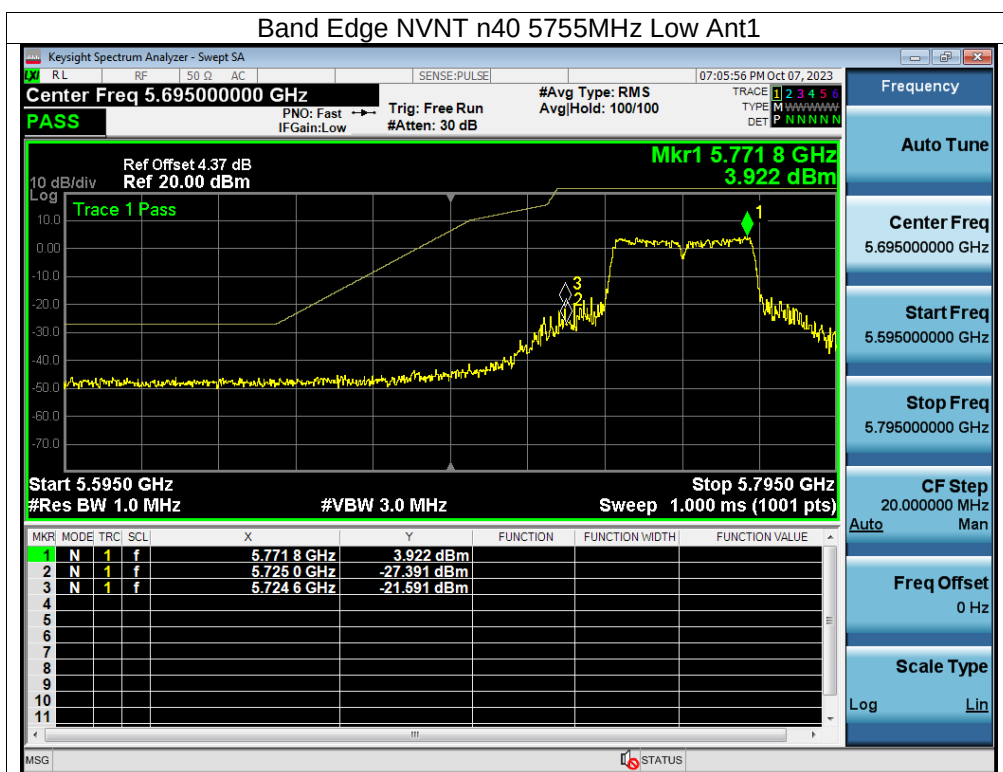
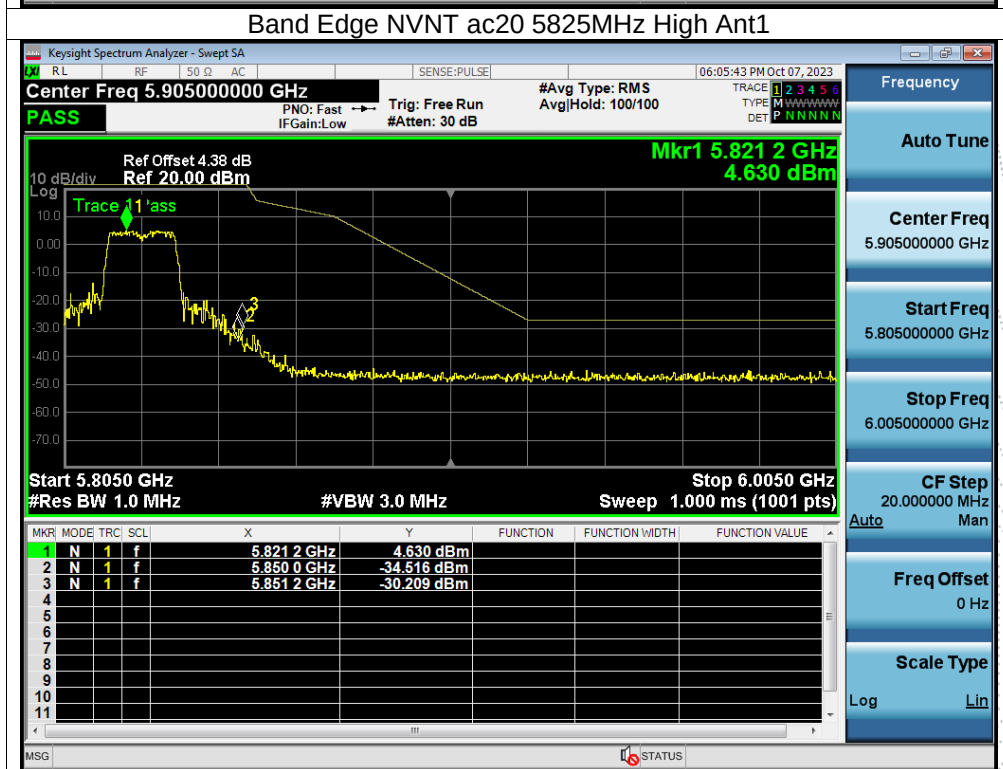
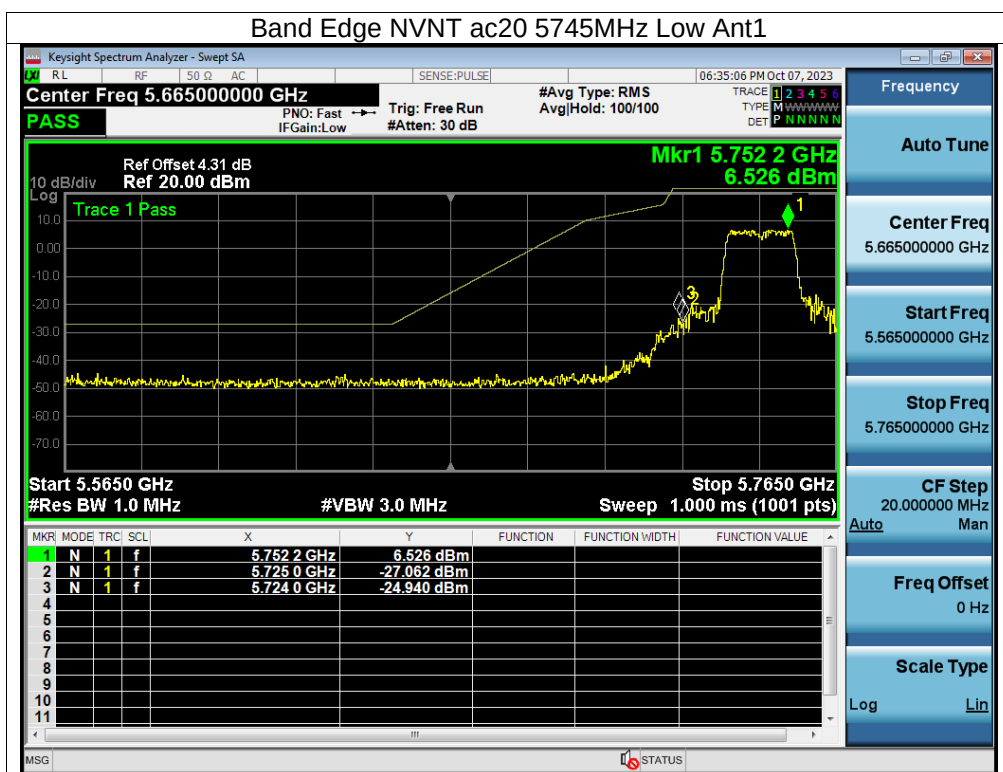
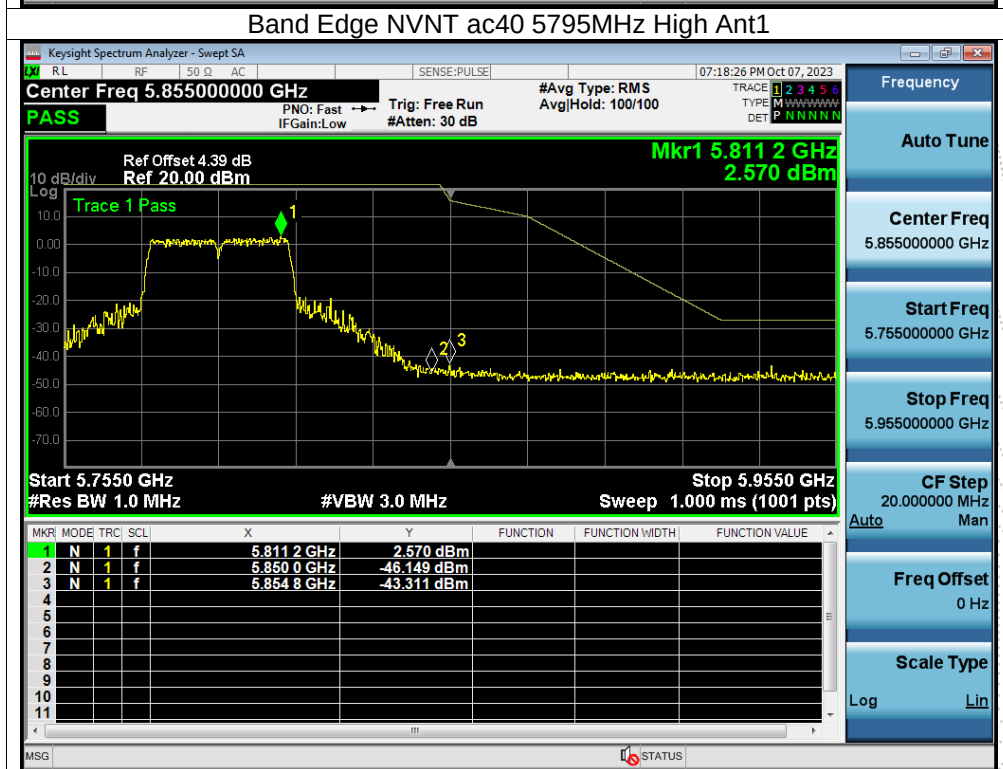
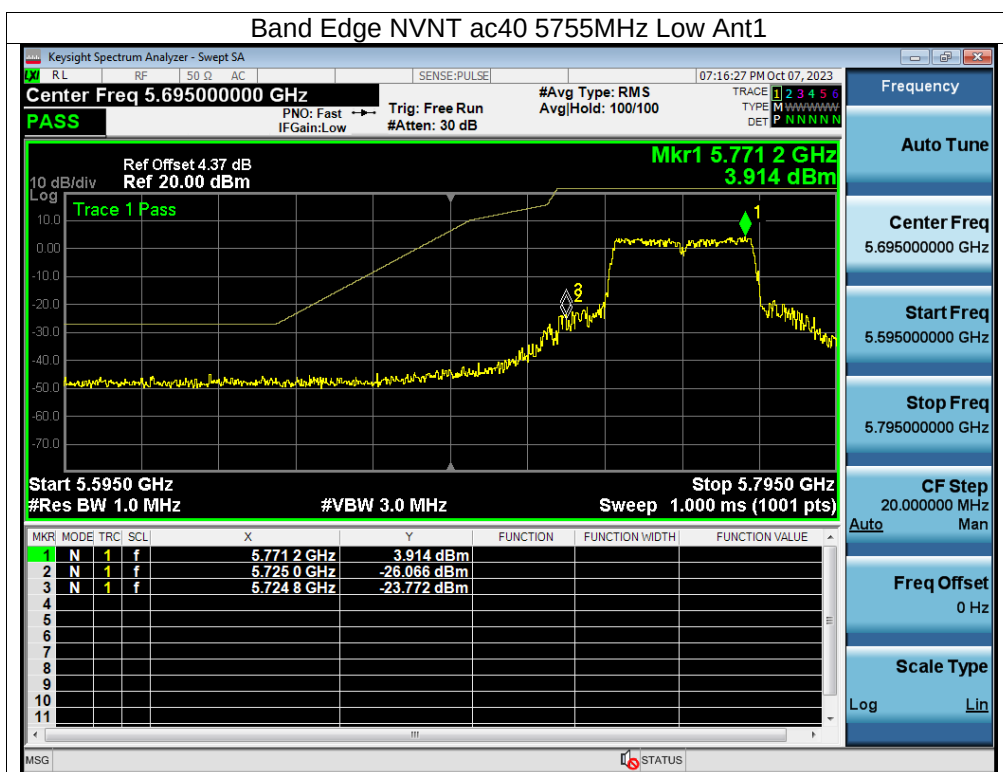
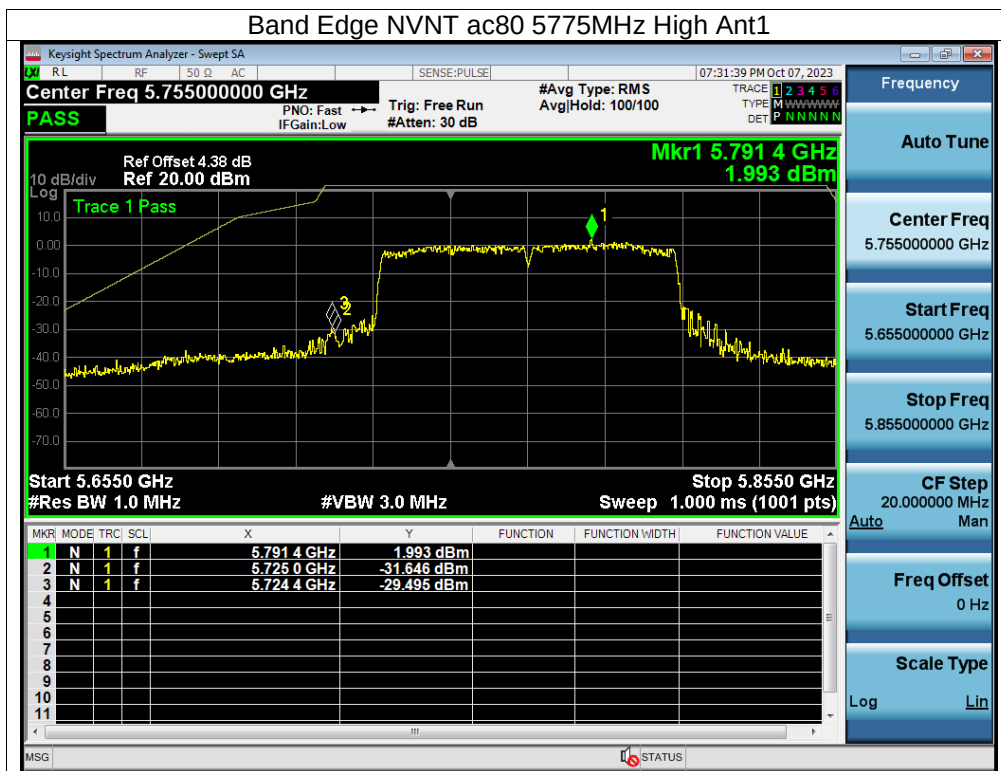












12. Spurious RF Conducted Emissions

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

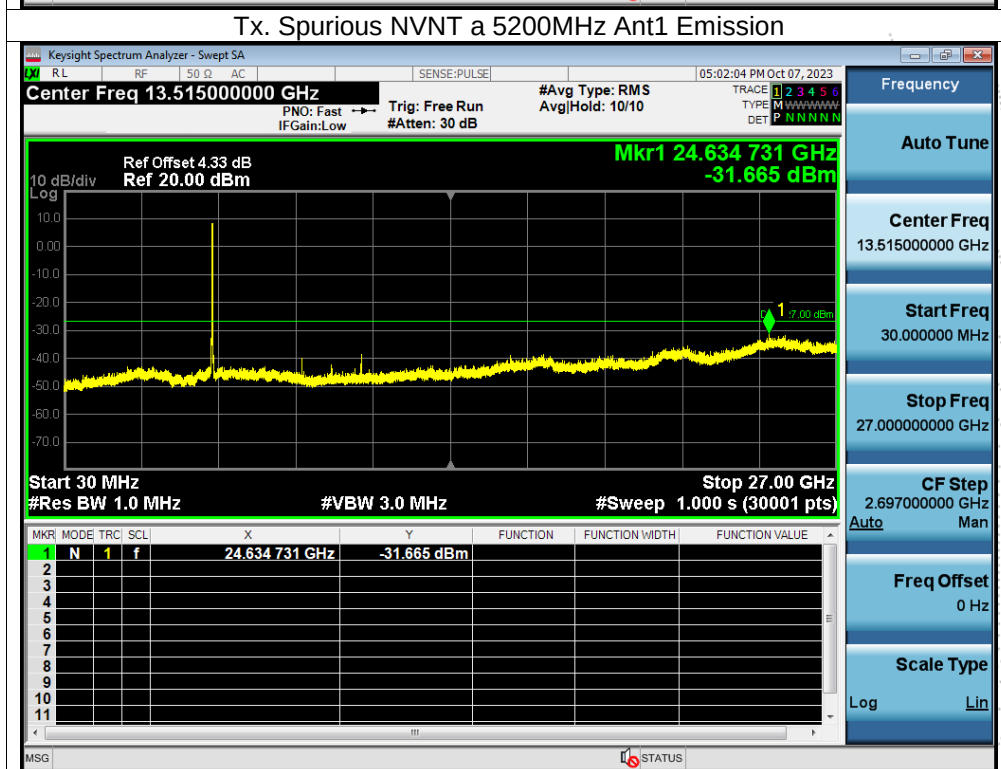
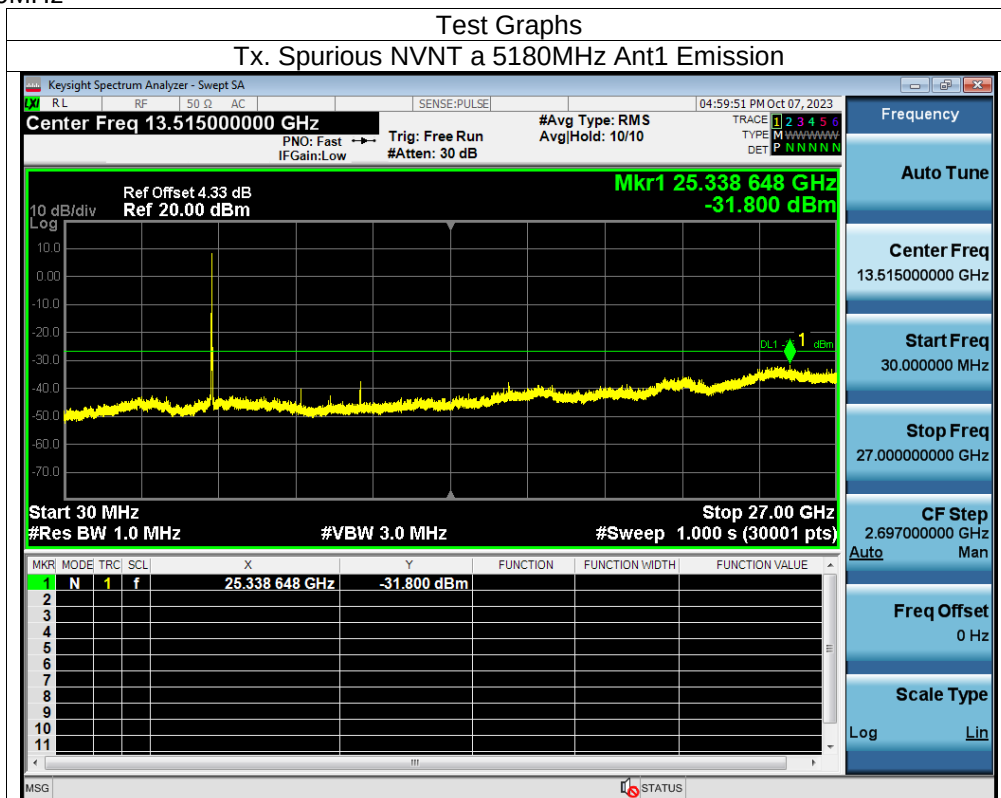
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then 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.

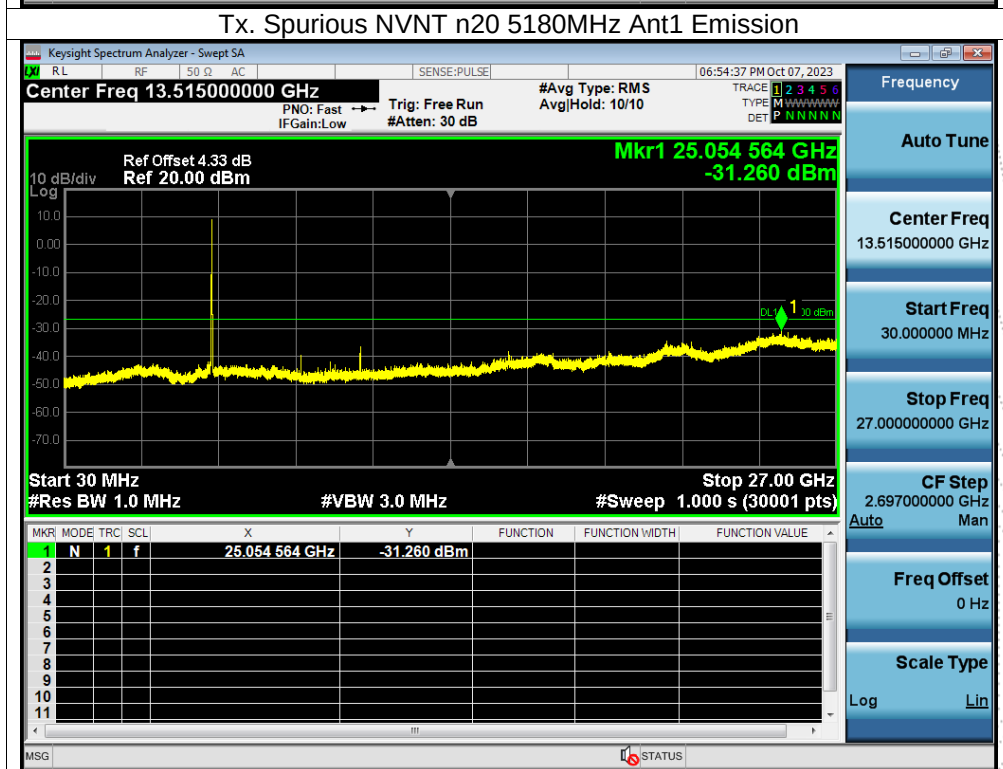
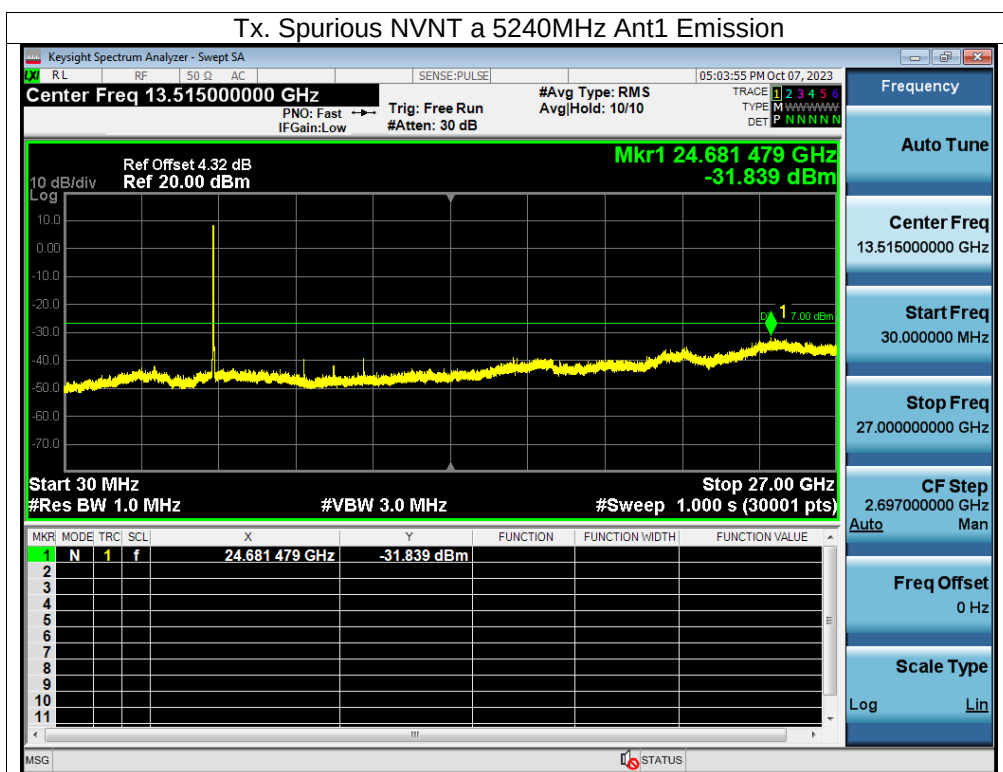
12.4 Test Result

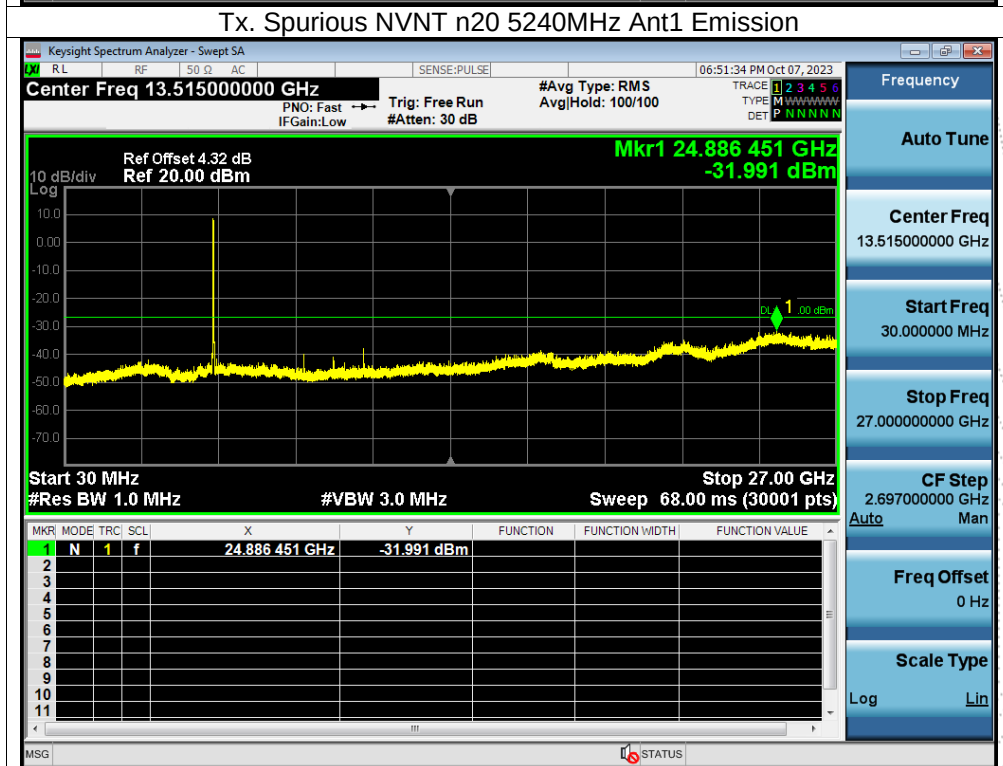
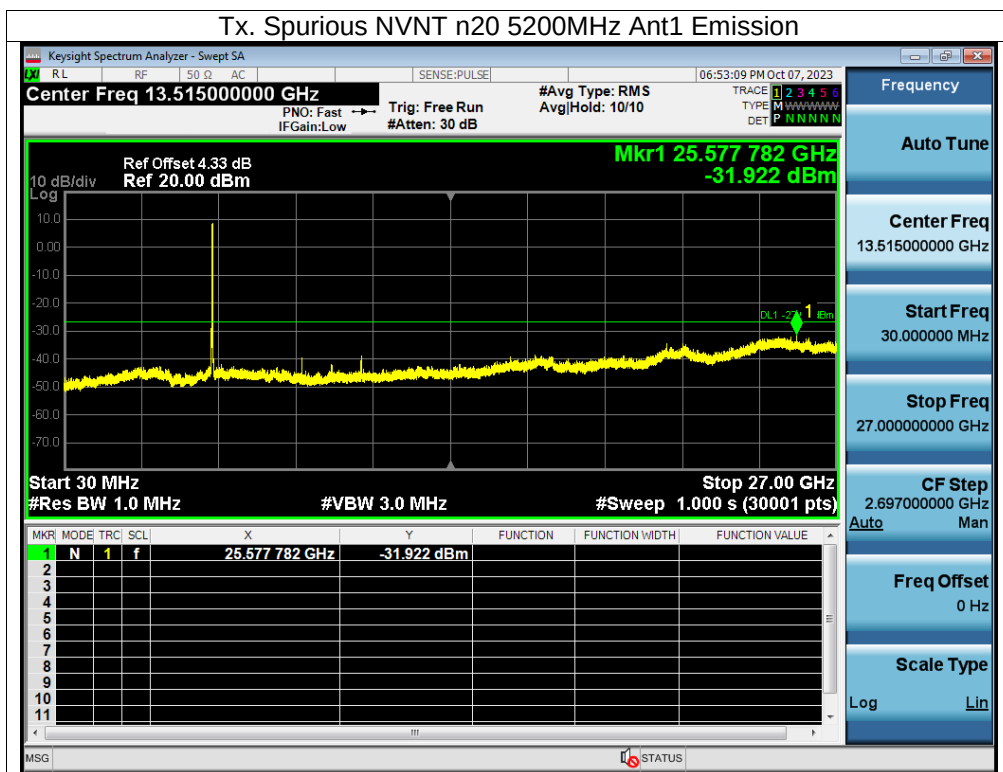
Remark: The measurement frequency range is from 9KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and band edge measurement data.

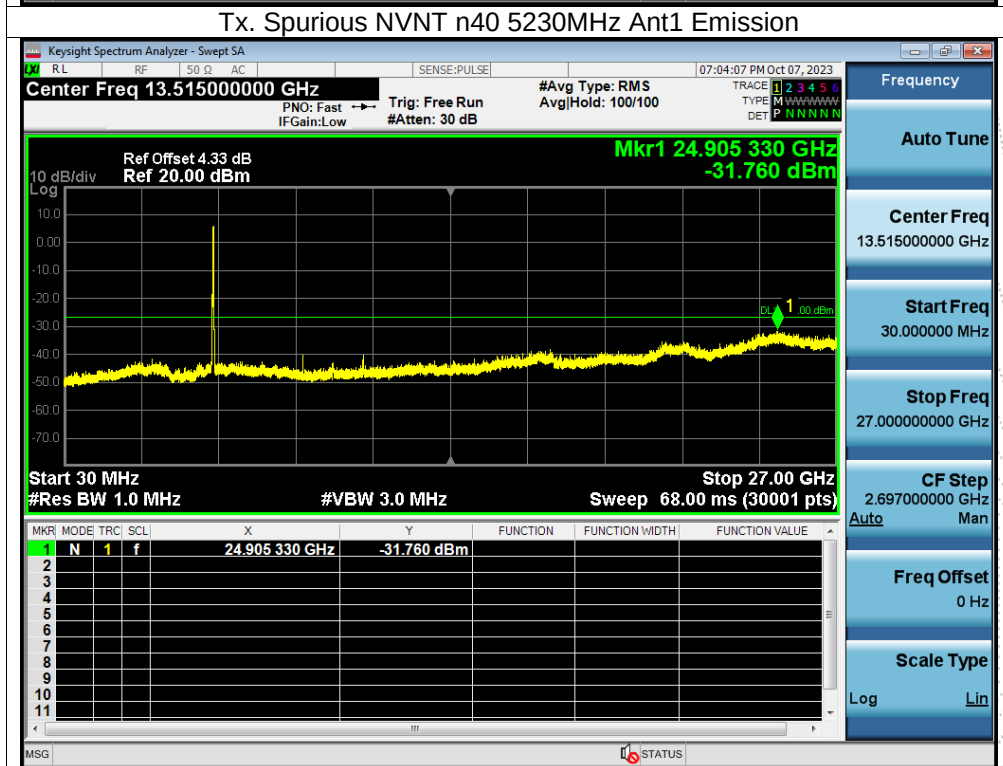
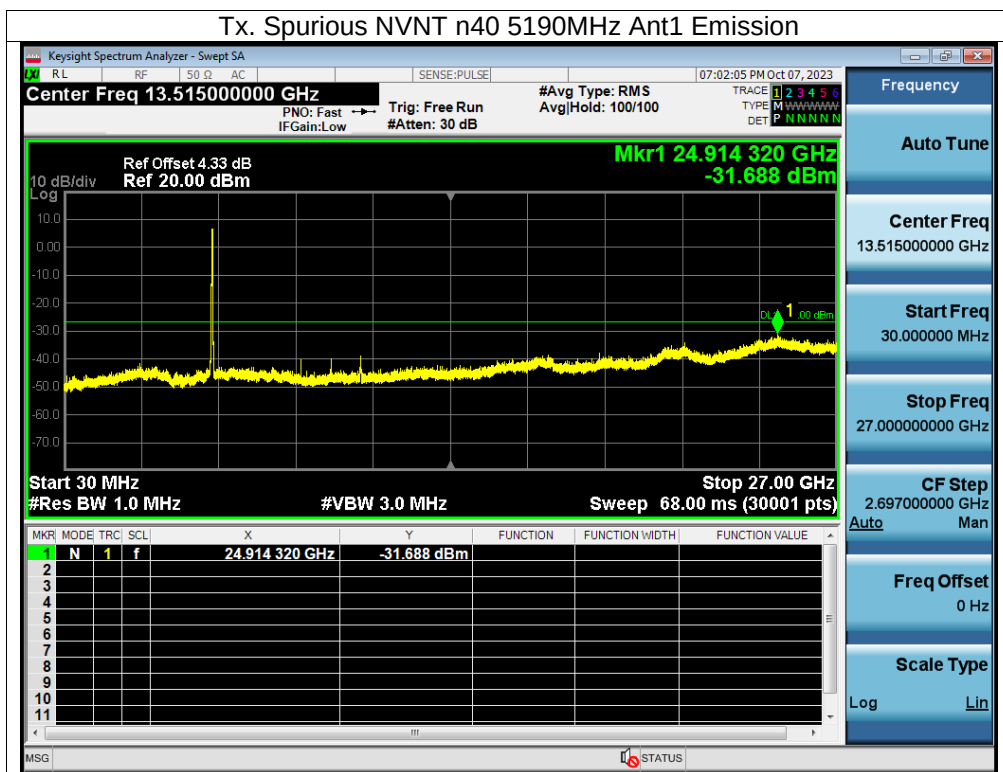
About: 26.5GHz-40GHz, The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

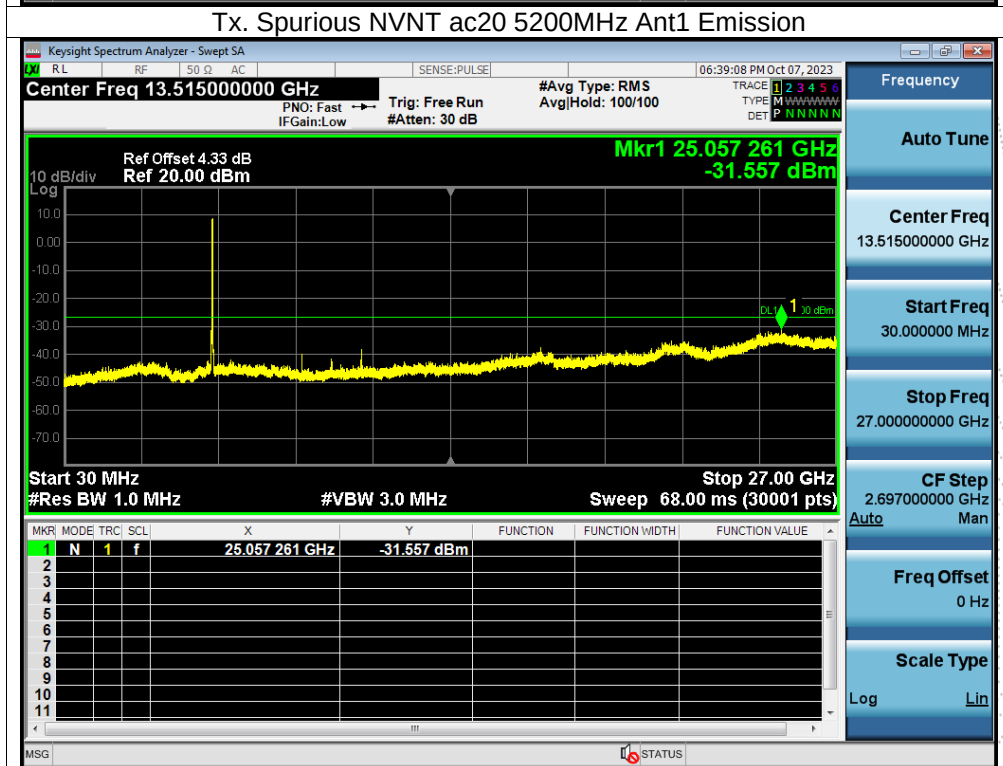
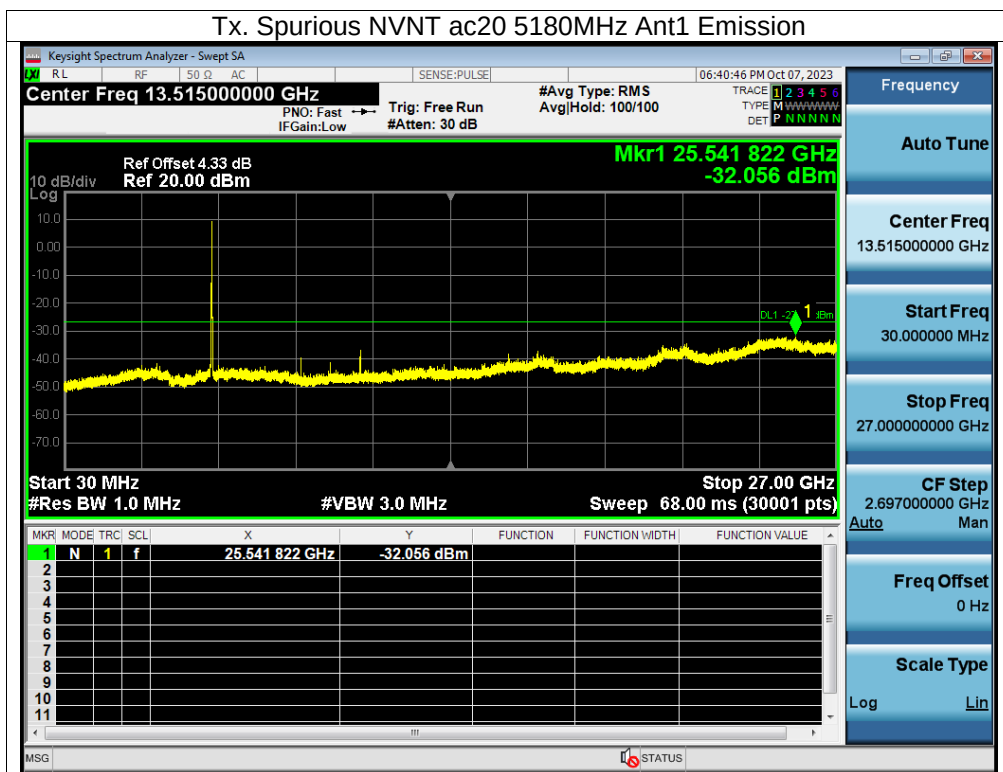
5180-5240MHz

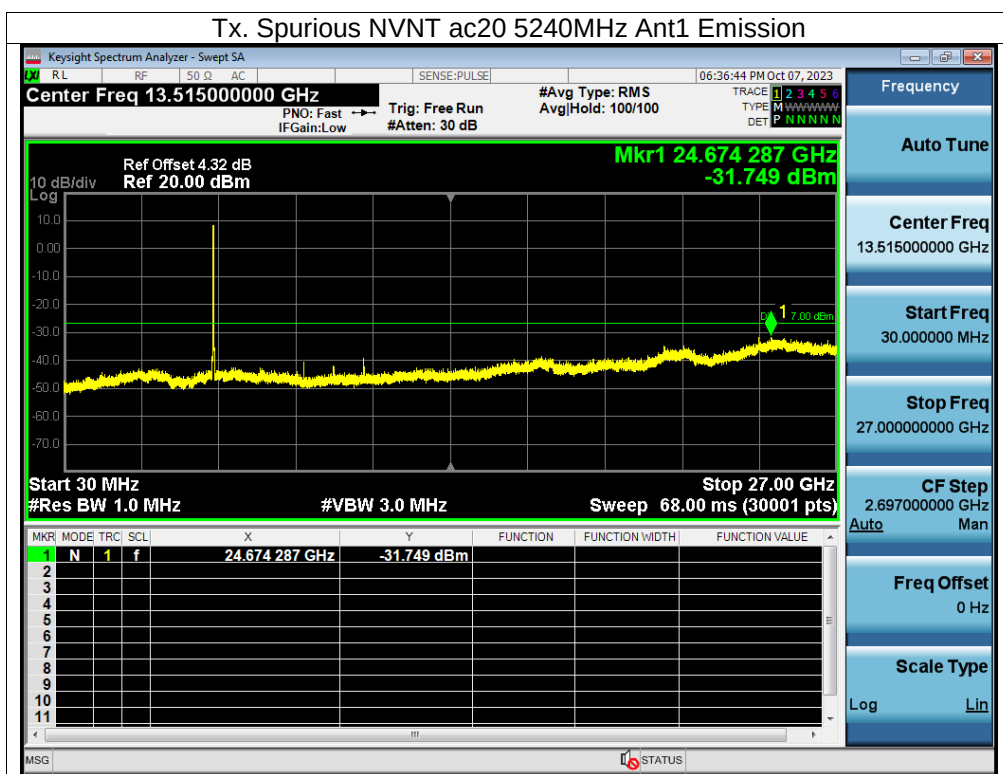




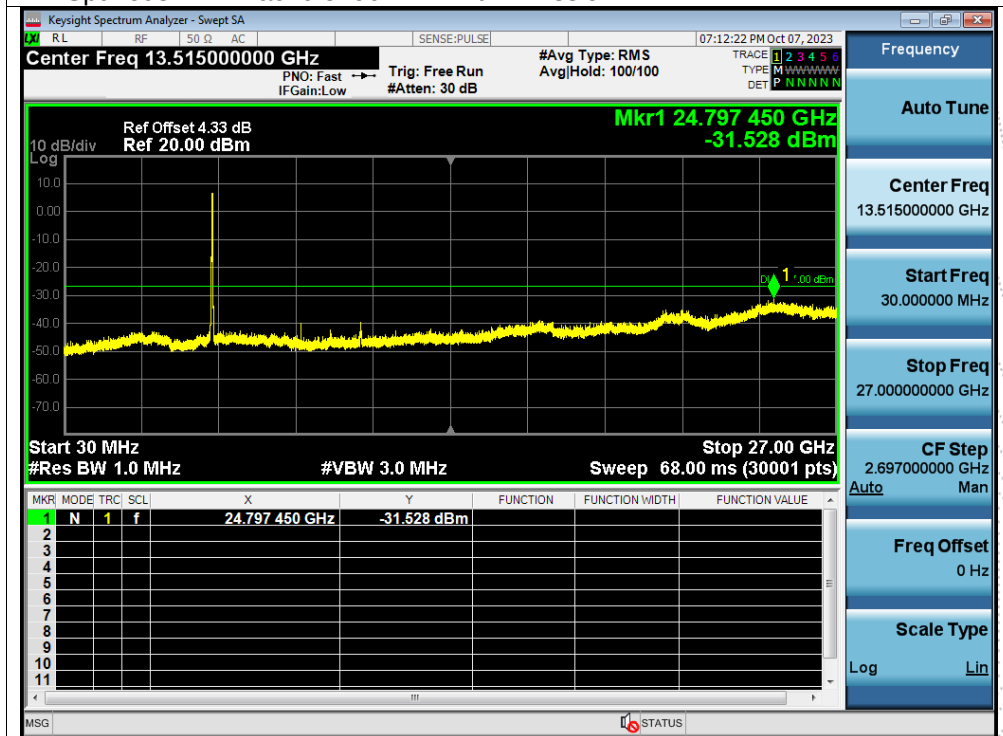


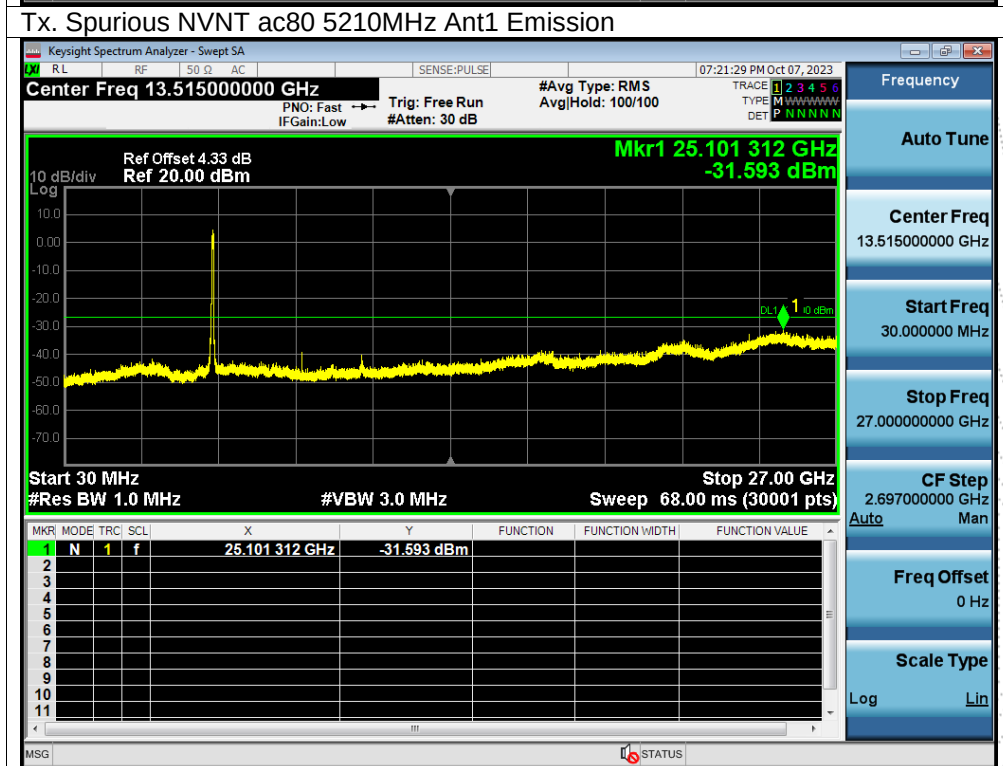
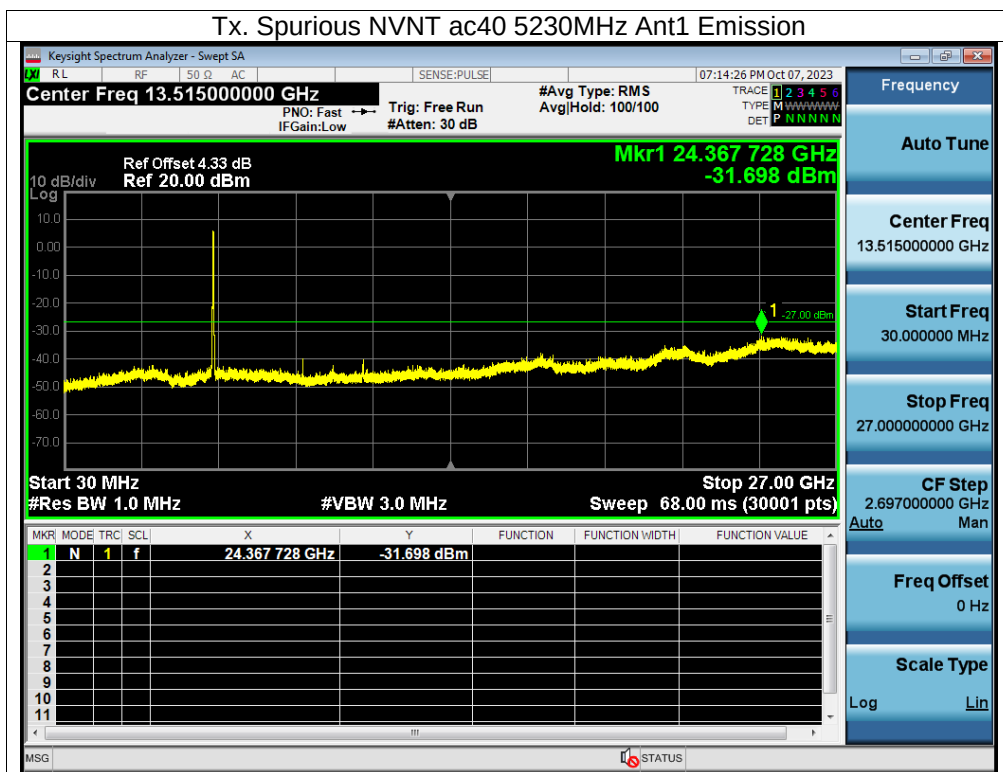




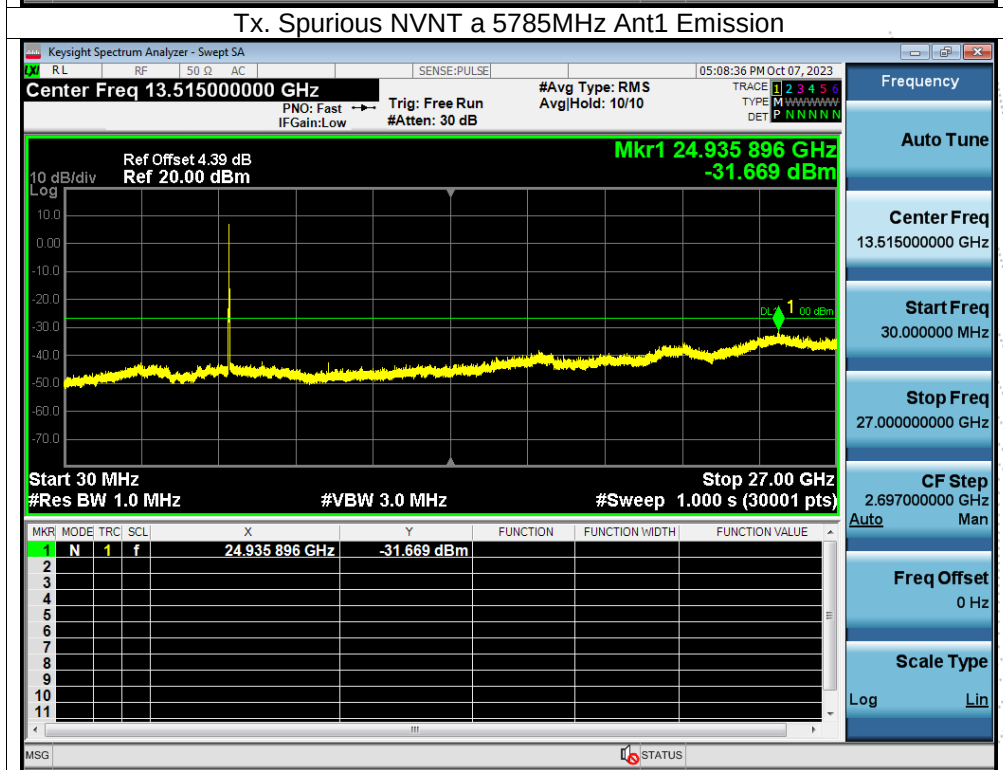
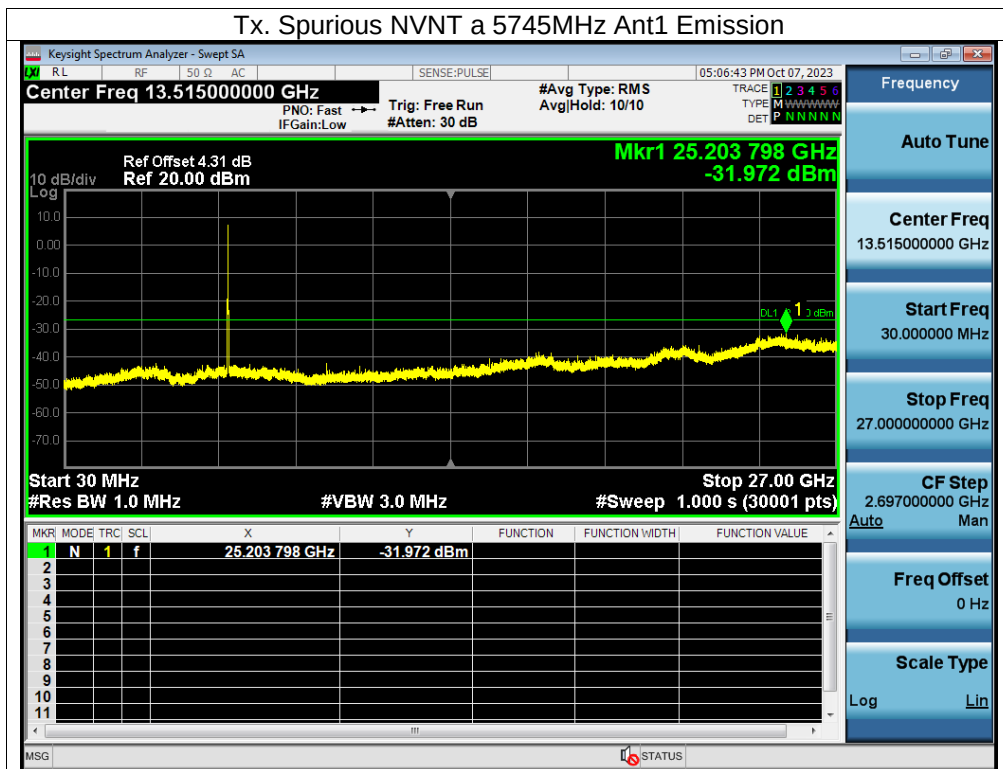


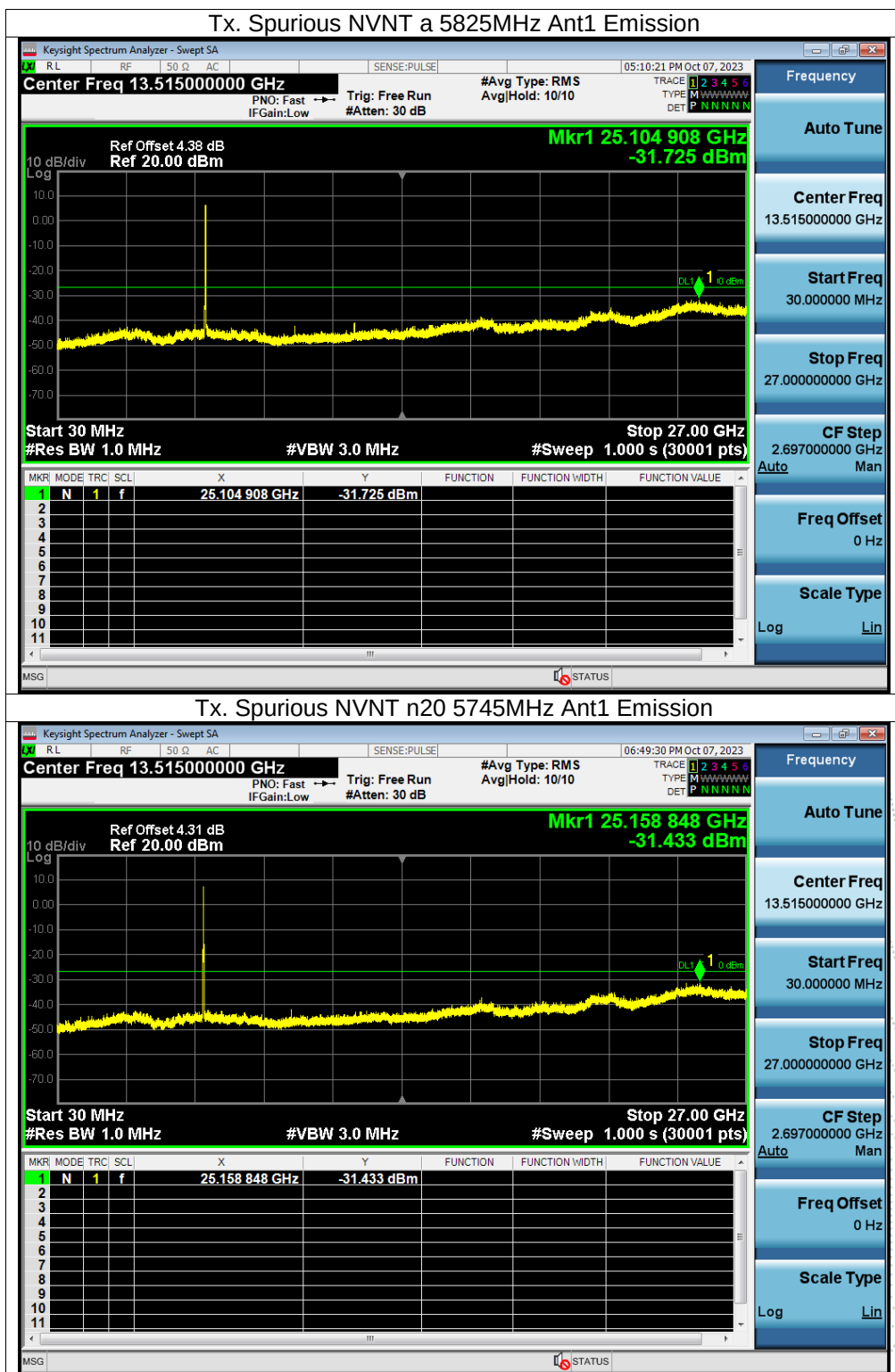
Tx. Spurious NVNT ac40 5190MHz Ant1 Emission

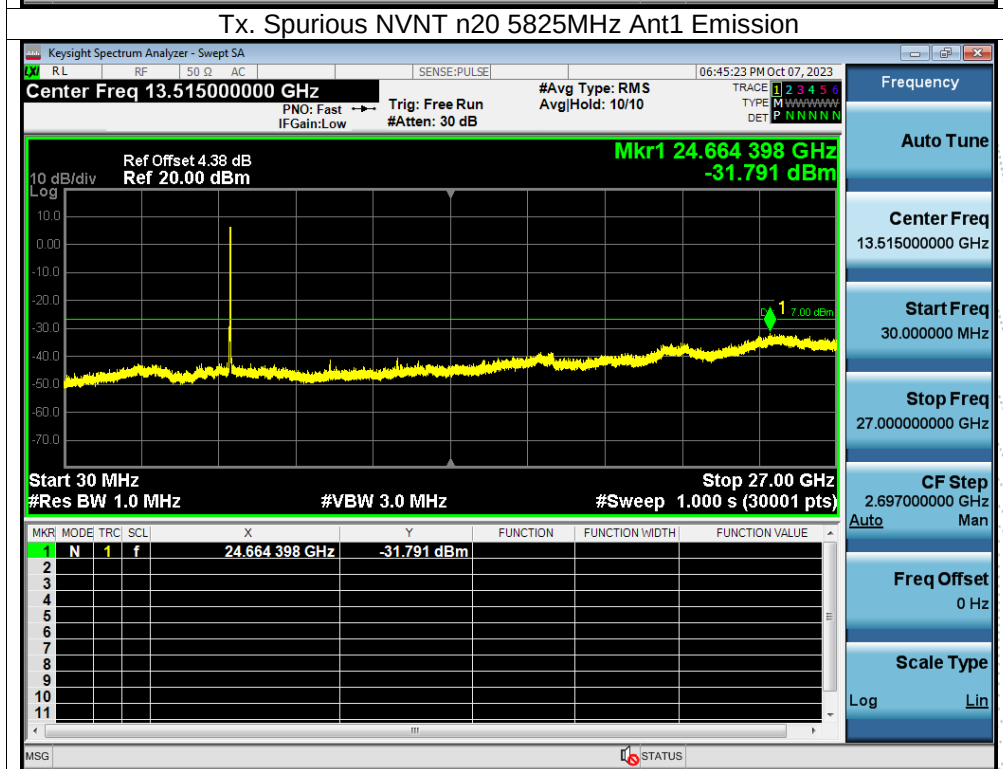
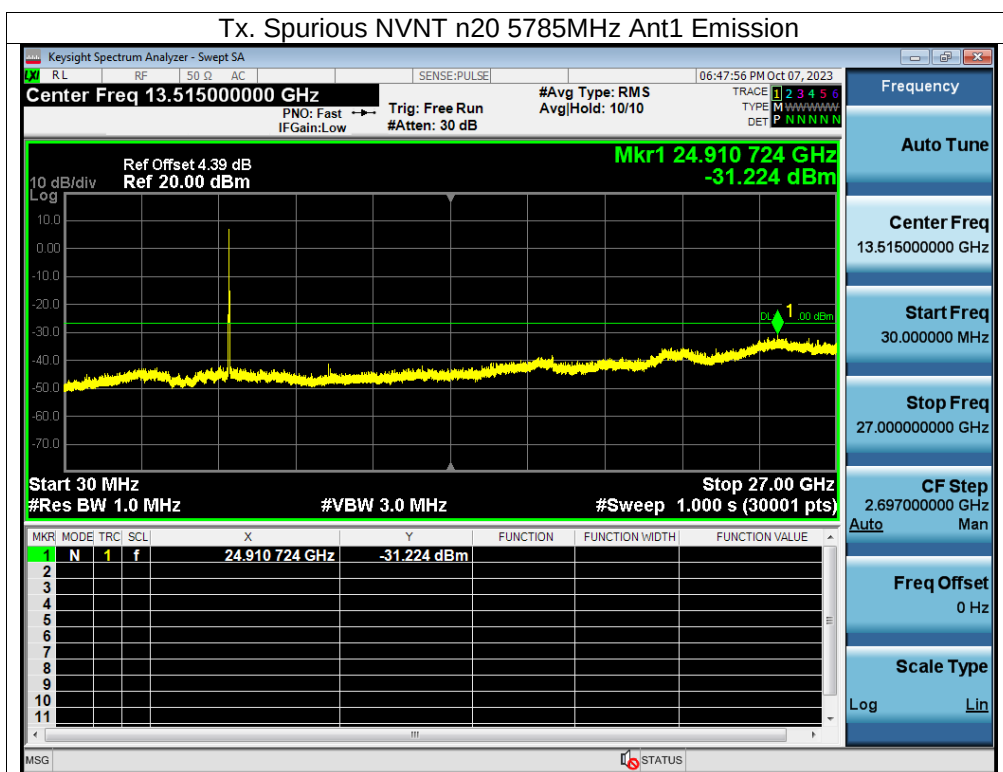


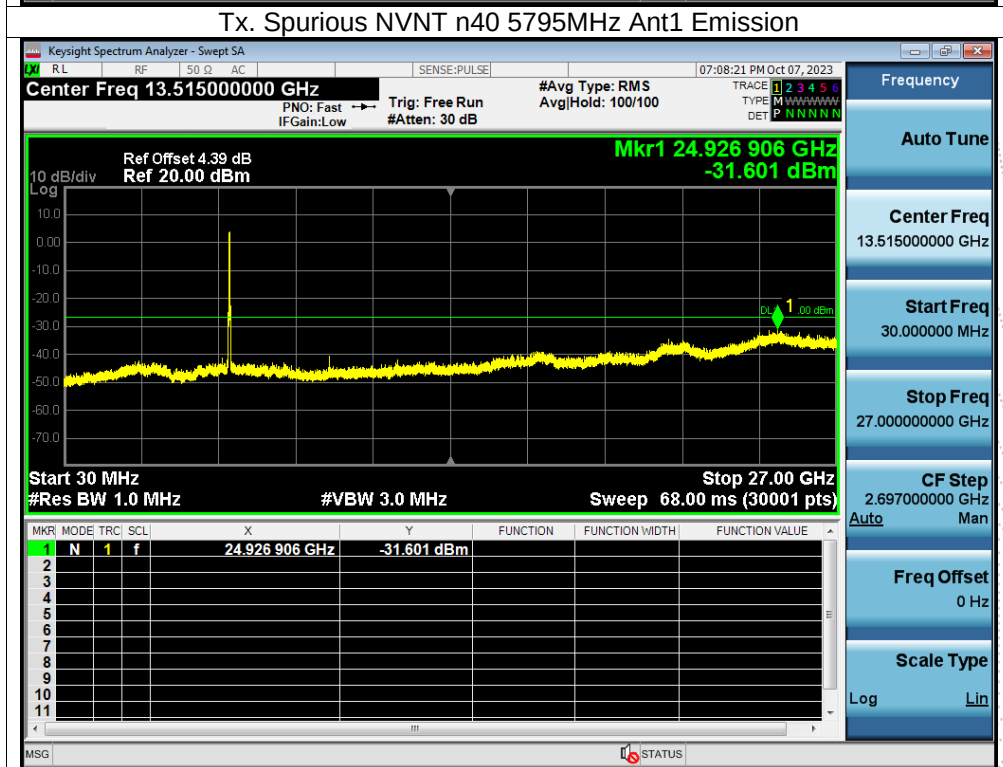
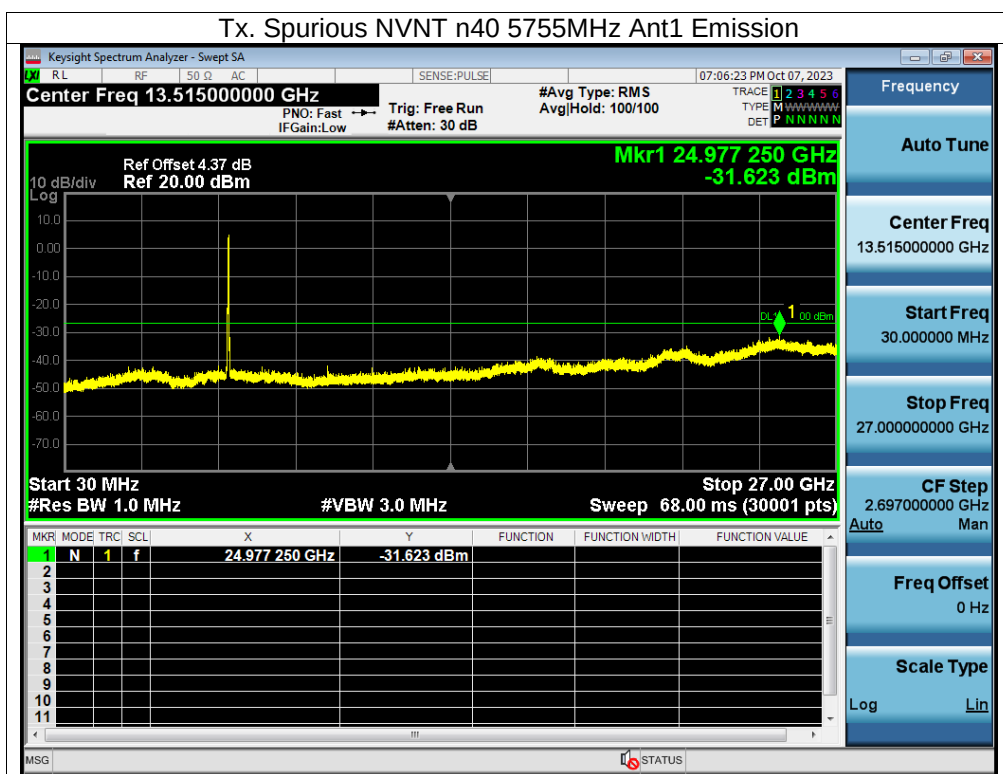


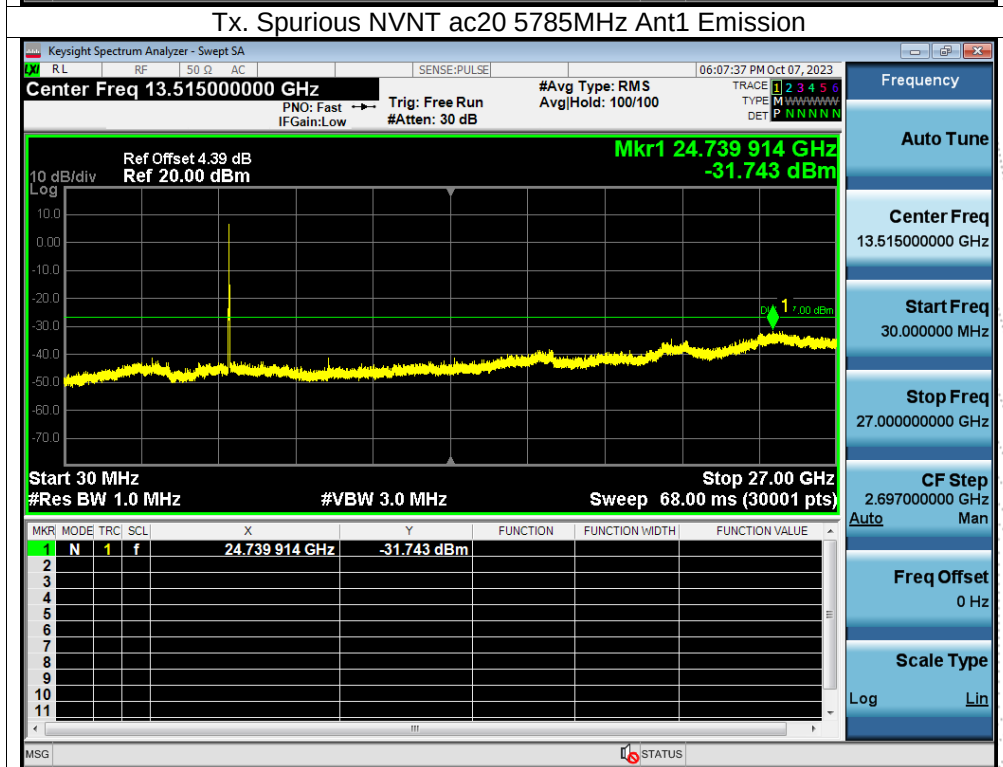
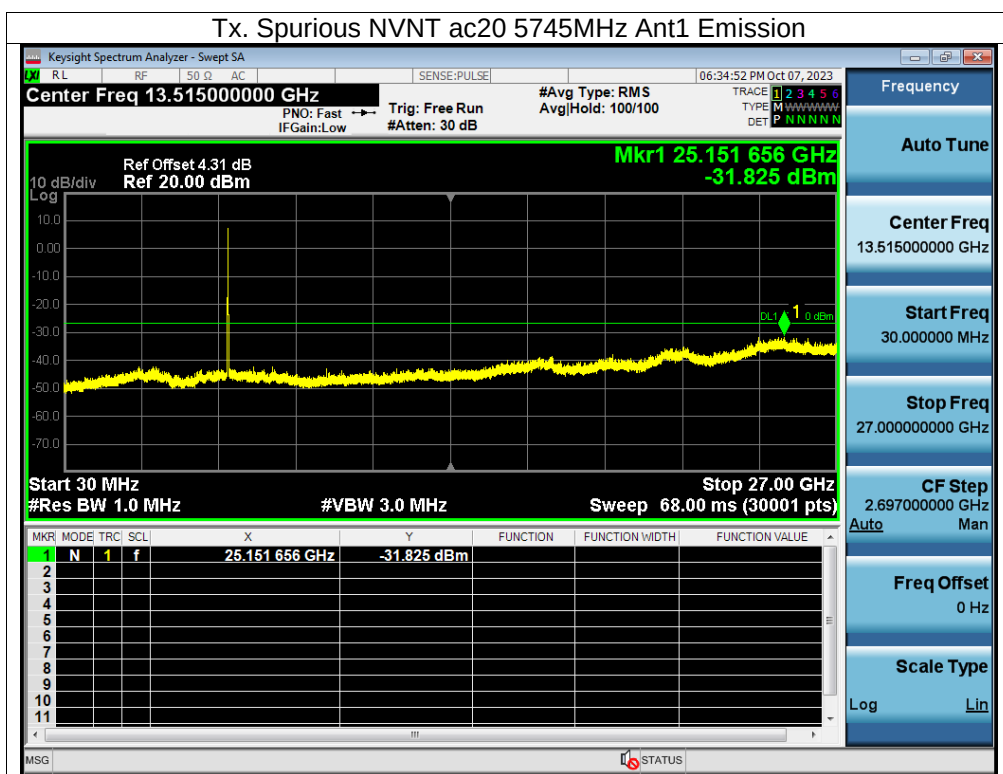
5745-58250MHz

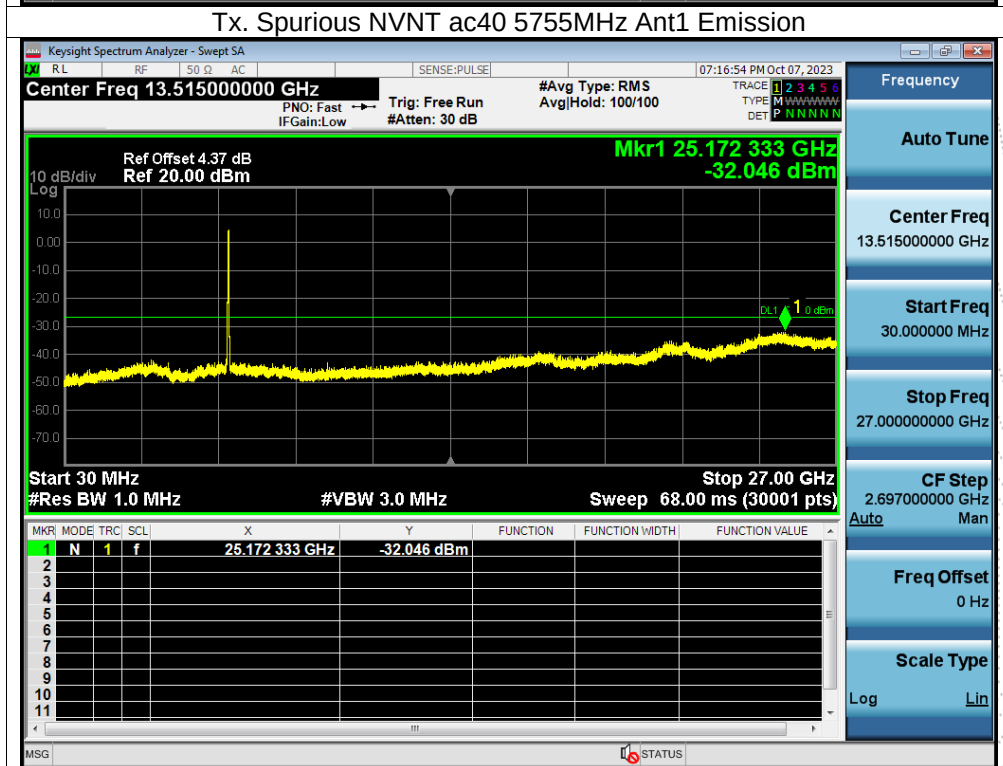
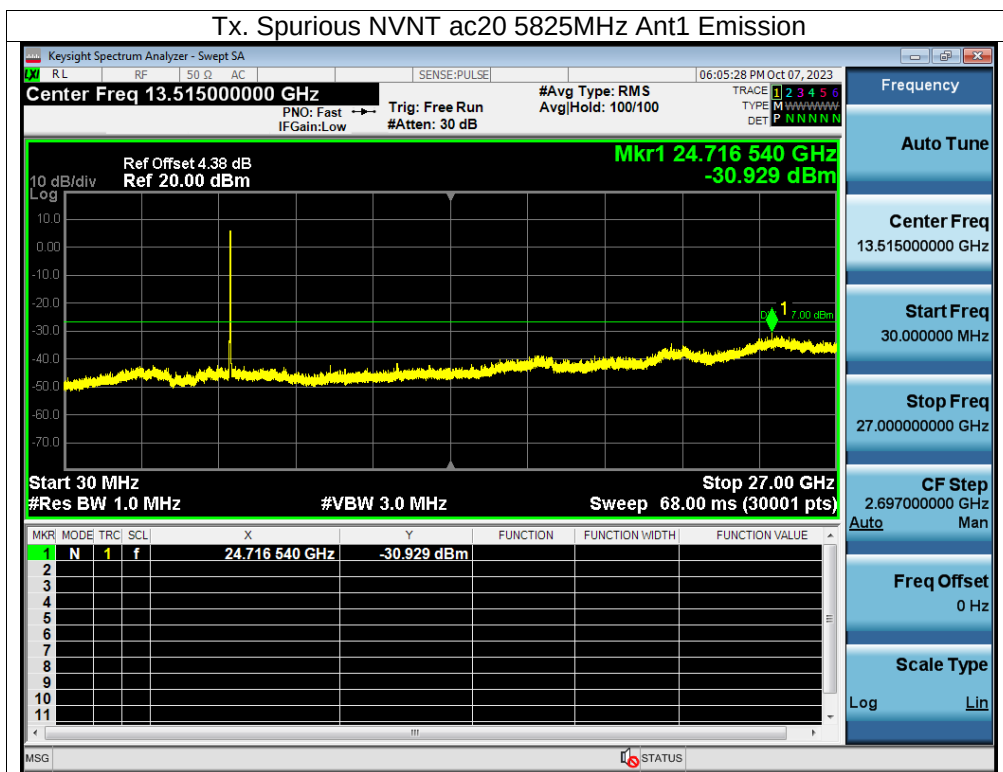


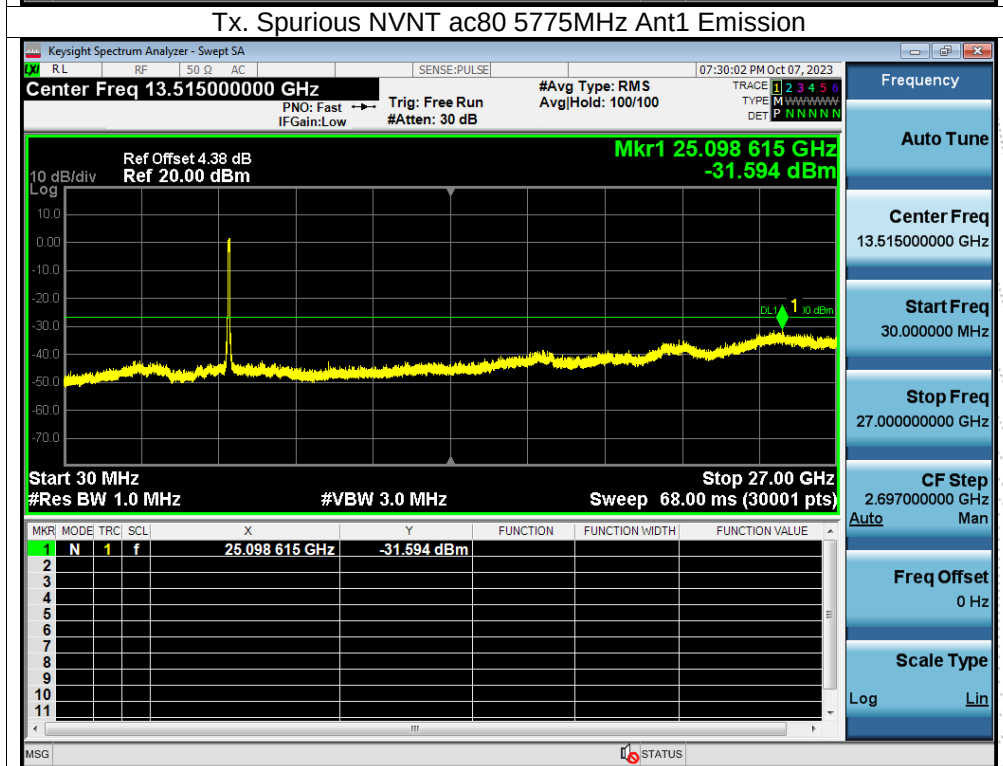
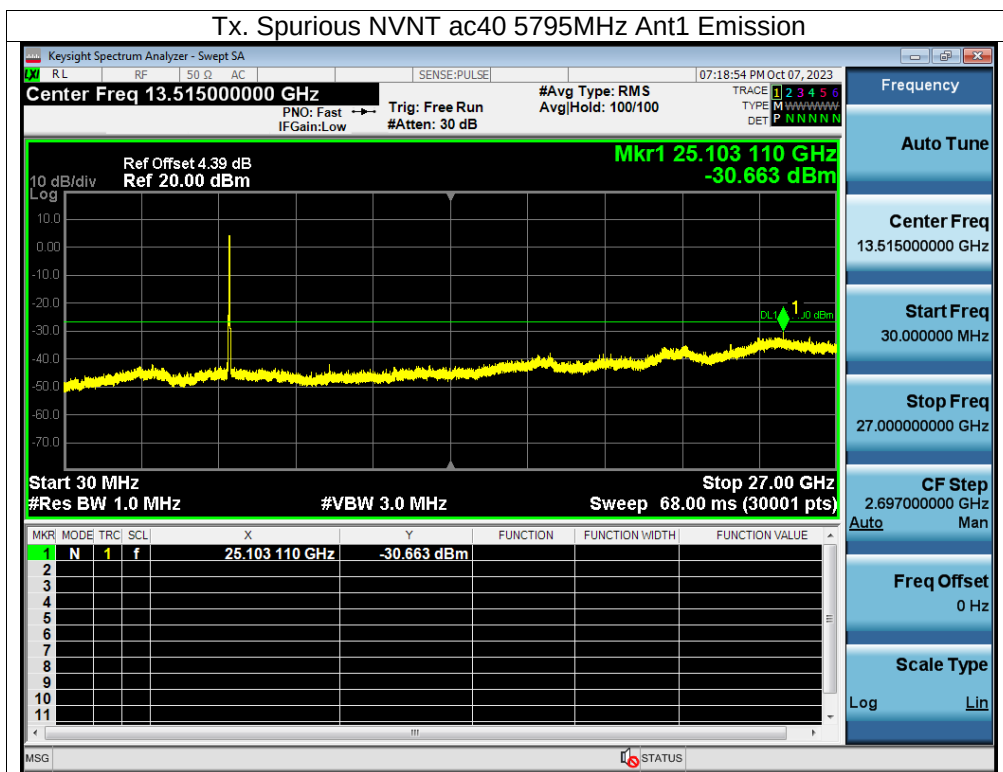






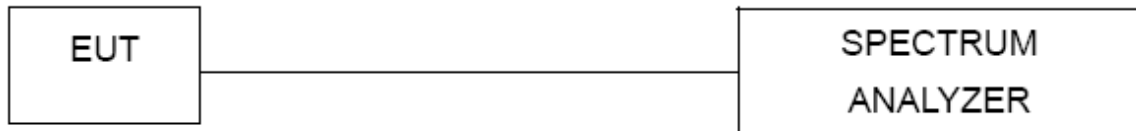






13. Frequency Stability Measurement

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°C ~ 70°C .

13.4 Test Result

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 3.8V
Test Mode:	TX (5.1G) Mode 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)	3.8	5179.9864	5180	-0.0136	-2.63
		V max (V)	4.2	5179.9884	5180	-0.0116	-2.24
		V min (V)	3.3	5179.9843	5180	-0.0157	-3.03
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)	3.8	T (°C)	-20	5179.9833	5180	-0.0167	-3.22
		T (°C)	-10	5179.9885	5180	-0.0115	-2.22
		T (°C)	0	5179.9827	5180	-0.0173	-3.34
		T (°C)	10	5179.9859	5180	-0.0141	-2.72
		T (°C)	20	5179.9836	5180	-0.0164	-3.17
		T (°C)	30	5179.9854	5180	-0.0146	-2.82
		T (°C)	40	5179.9883	5180	-0.0117	-2.26
		T (°C)	50	5179.9823	5180	-0.0177	-3.42
		T (°C)	60	5179.9804	5180	-0.0196	-3.78
		T (°C)	70	5179.9835	5180	-0.0165	-3.19
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)	3.8	5199.9812	5200	-0.0188	-3.62
		V max (V)	4.2	5199.9867	5200	-0.0133	-2.56
		V min (V)	3.3	5199.9818	5200	-0.0182	-3.50
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)	3.8	T (°C)	-20	5199.9803	5200	-0.0197	-3.79
		T (°C)	-10	5199.9829	5200	-0.0171	-3.29
		T (°C)	0	5199.9883	5200	-0.0117	-2.25
		T (°C)	10	5199.9858	5200	-0.0142	-2.73
		T (°C)	20	5199.9847	5200	-0.0153	-2.94
		T (°C)	30	5199.9819	5200	-0.0181	-3.48
		T (°C)	40	5199.9853	5200	-0.0147	-2.83
		T (°C)	50	5199.9843	5200	-0.0157	-3.02
		T (°C)	60	5199.9882	5200	-0.0118	-2.27
		T (°C)	70	5199.9829	5200	-0.0171	-3.29
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)	3.8	5239.9803	5240	-0.0197	-3.76
		V max (V)	4.2	5239.9886	5240	-0.0114	-2.18
		V min (V)	3.3	5239.9882	5240	-0.0118	-2.25
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)	3.8	T (°C)	-20	5239.9813	5240	-0.0187	-3.57
		T (°C)	-10	5239.9873	5240	-0.0127	-2.42
		T (°C)	0	5239.9837	5240	-0.0163	-3.11
		T (°C)	10	5239.9815	5240	-0.0185	-3.53
		T (°C)	20	5239.9831	5240	-0.0169	-3.23
		T (°C)	30	5239.9828	5240	-0.0172	-3.28
		T (°C)	40	5239.9844	5240	-0.0156	-2.98
		T (°C)	50	5239.9867	5240	-0.0133	-2.54
		T (°C)	60	5239.9803	5240	-0.0197	-3.76
		T (°C)	70	5239.9885	5240	-0.0115	-2.19
Limits				5150-5250 MHz			
Result				Complies			

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC3.8V
Test Mode:	TX (5.8G) Mode Frequency U-NII-3 (5745-5825MHz)		

Voltage vs. Frequency Stabilit

TEST CONDITIONS				Reference Frequency:5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	3.8	5744.9878	5745	-0.0122	-2.12
		V max (V)	4.2	5744.9888	5745	-0.0112	-1.95
		V min (V)	3.3	5744.9812	5745	-0.0188	-3.27
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)	3.8	T (°C)	-20	5744.9838	5745	-0.0162	-2.82
		T (°C)	-10	5744.9849	5745	-0.0151	-2.63
		T (°C)	0	5744.9817	5745	-0.0183	-3.19
		T (°C)	10	5744.9841	5745	-0.0159	-2.77
		T (°C)	20	5744.9847	5745	-0.0153	-2.66
		T (°C)	30	5744.9889	5745	-0.0111	-1.93
		T (°C)	40	5744.9841	5745	-0.0159	-2.77
		T (°C)	50	5744.9819	5745	-0.0181	-3.15
		T (°C)	60	5744.9876	5745	-0.0124	-2.16
		T (°C)	70	5744.9804	5745	-0.0196	-3.41
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)	3.8	5784.9822	5785	-0.0178	-3.08
		V max (V)	4.2	5784.9863	5785	-0.0137	-2.37
		V min (V)	3.3	5784.9810	5785	-0.019	-3.28
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)	3.8	T (°C)	-20	5784.9868	5785	-0.0132	-2.28
		T (°C)	-10	5784.9867	5785	-0.0133	-2.30
		T (°C)	0	5784.9858	5785	-0.0142	-2.45
		T (°C)	10	5784.9883	5785	-0.0117	-2.02
		T (°C)	20	5784.9873	5785	-0.0127	-2.20
		T (°C)	30	5784.9855	5785	-0.0145	-2.51
		T (°C)	40	5784.9823	5785	-0.0177	-3.06
		T (°C)	50	5784.9852	5785	-0.0148	-2.56
		T (°C)	60	5784.9803	5785	-0.0197	-3.41
		T (°C)	70	5784.9831	5785	-0.0169	-2.92
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)	3.8	5824.9834	5825	0.0166	-2.85
		V max (V)	4.2	5824.9886	5825	0.0114	-1.96
		V min (V)	3.3	5824.9881	5825	0.0119	-2.04
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)	3.8	T (°C)	-20	5784.9882	5785	-0.0118	-2.04
		T (°C)	-10	5784.9867	5785	-0.0133	-2.30
		T (°C)	0	5784.9811	5785	-0.0189	-3.27
		T (°C)	10	5784.9857	5785	-0.0143	-2.47
		T (°C)	20	5784.9819	5785	-0.0181	-3.13
		T (°C)	30	5784.9815	5785	-0.0185	-3.20
		T (°C)	40	5784.9806	5785	-0.0194	-3.35
		T (°C)	50	5784.9818	5785	-0.0182	-3.15
		T (°C)	60	5784.9878	5785	-0.0122	-2.11
		T (°C)	70	5784.9807	5785	-0.0193	-3.34
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

Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5180	100	0	0
NVNT	a	5200	100	0	0
NVNT	a	5240	100	0	0
NVNT	n20	5180	100	0	0
NVNT	n20	5200	100	0	0
NVNT	n20	5240	100	0	0
NVNT	n40	5190	100	0	0
NVNT	n40	5230	100	0	0
NVNT	ac20	5180	100	0	0
NVNT	ac20	5200	100	0	0
NVNT	ac20	5240	100	0	0
NVNT	ac40	5190	100	0	0
NVNT	ac40	5230	100	0	0
NVNT	ac80	5210	100	0	0

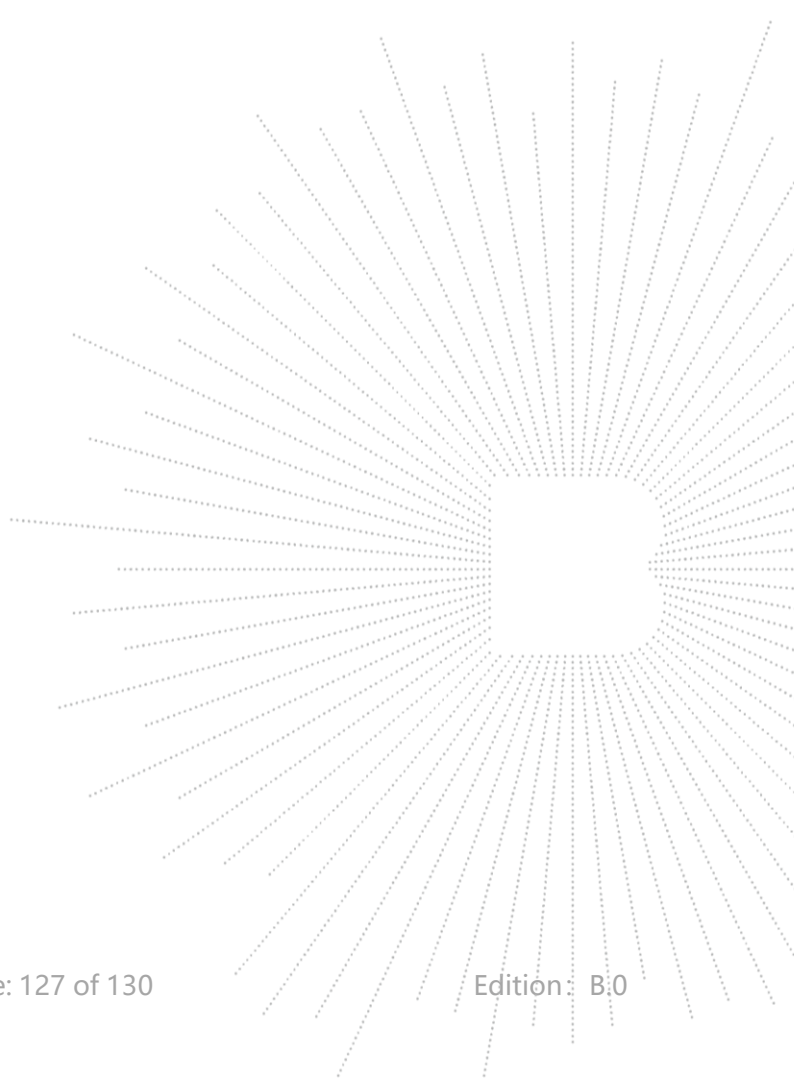
15. Antenna Requirement

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.

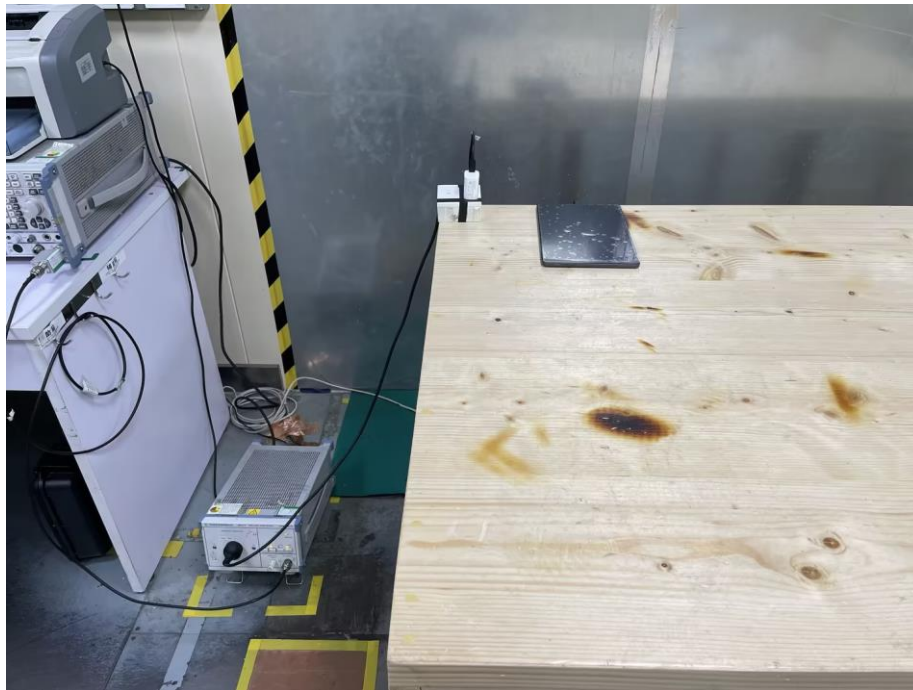
15.2 Test Result

The EUT antenna is internal antenna, fulfill the requirement of this section.

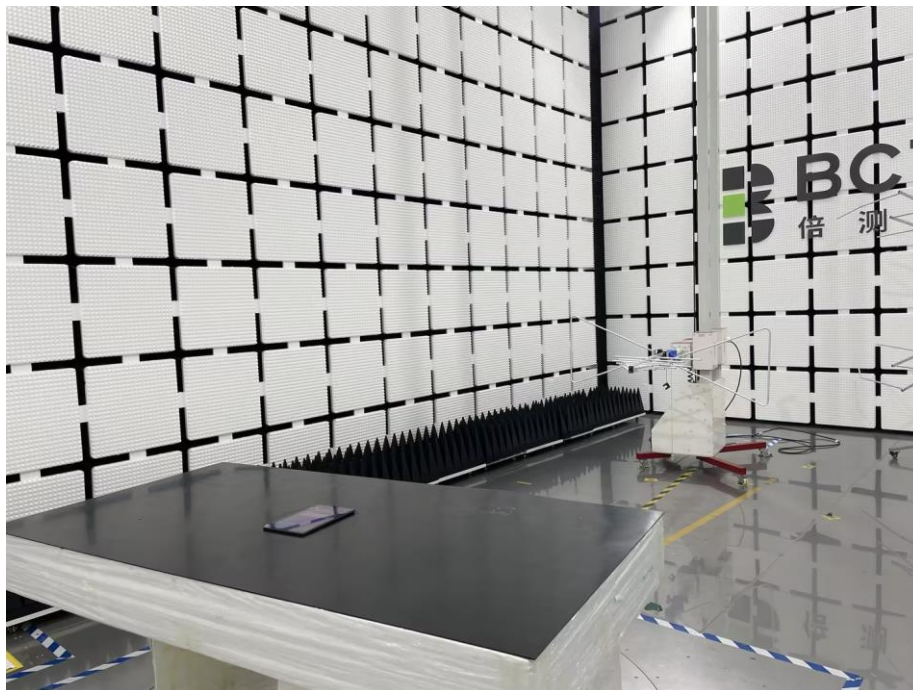


16. EUT Test Setup Photographs

Conducted emissions



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>

E-Mail: bctc@bctc-lab.com.cn

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