

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

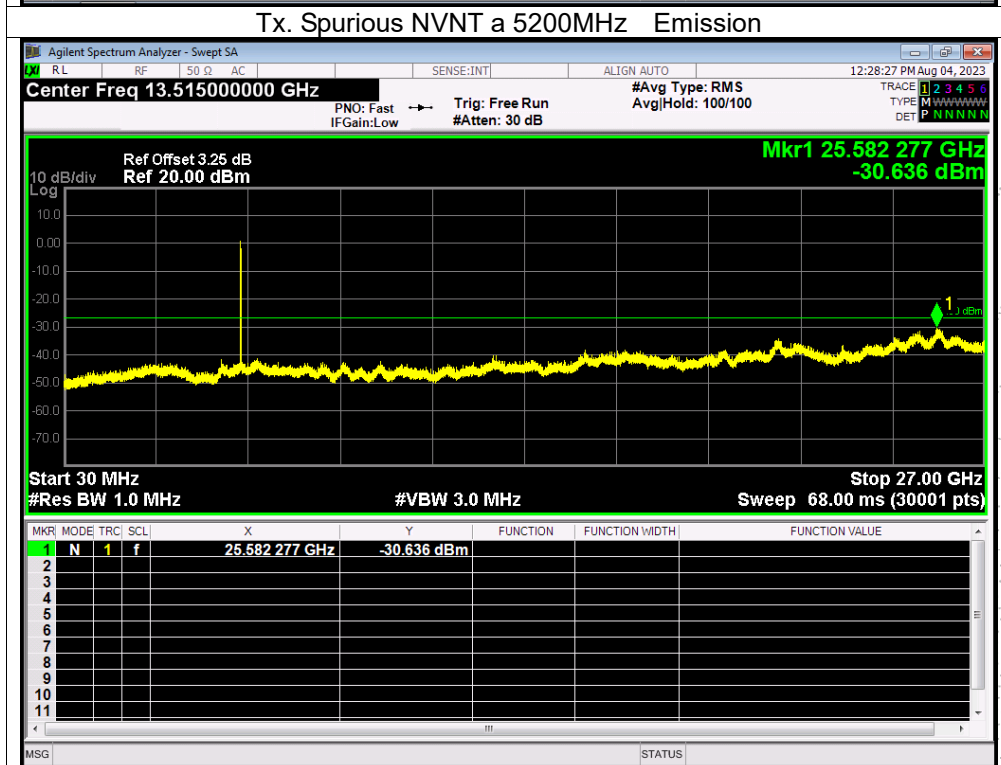
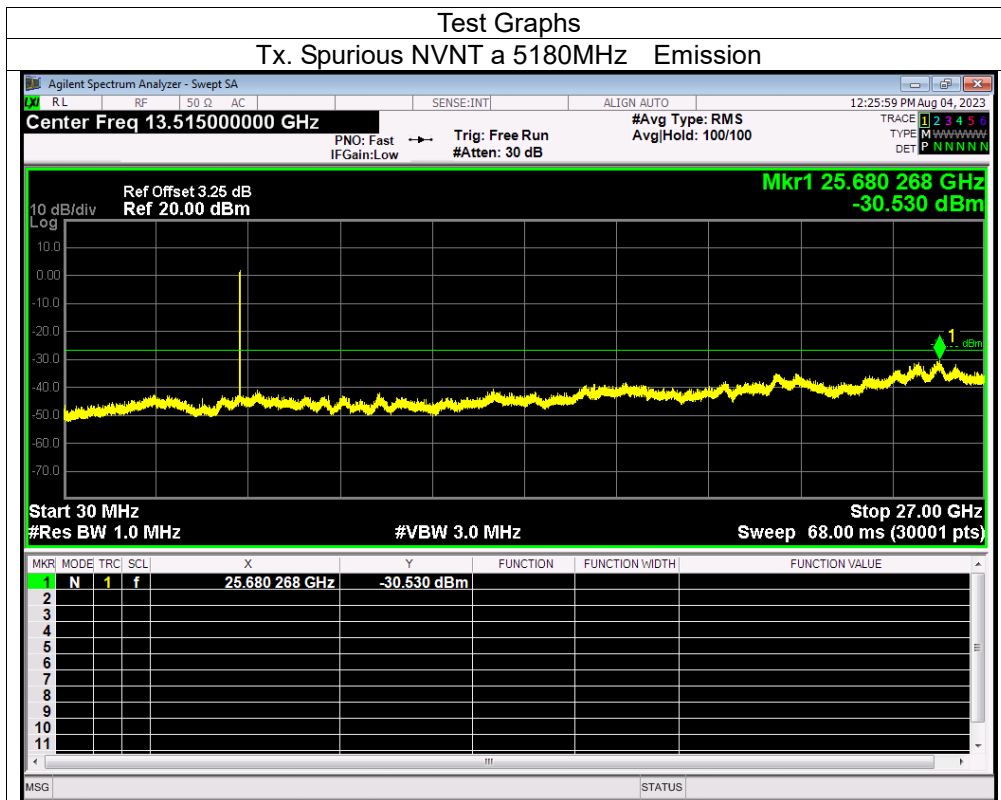
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then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

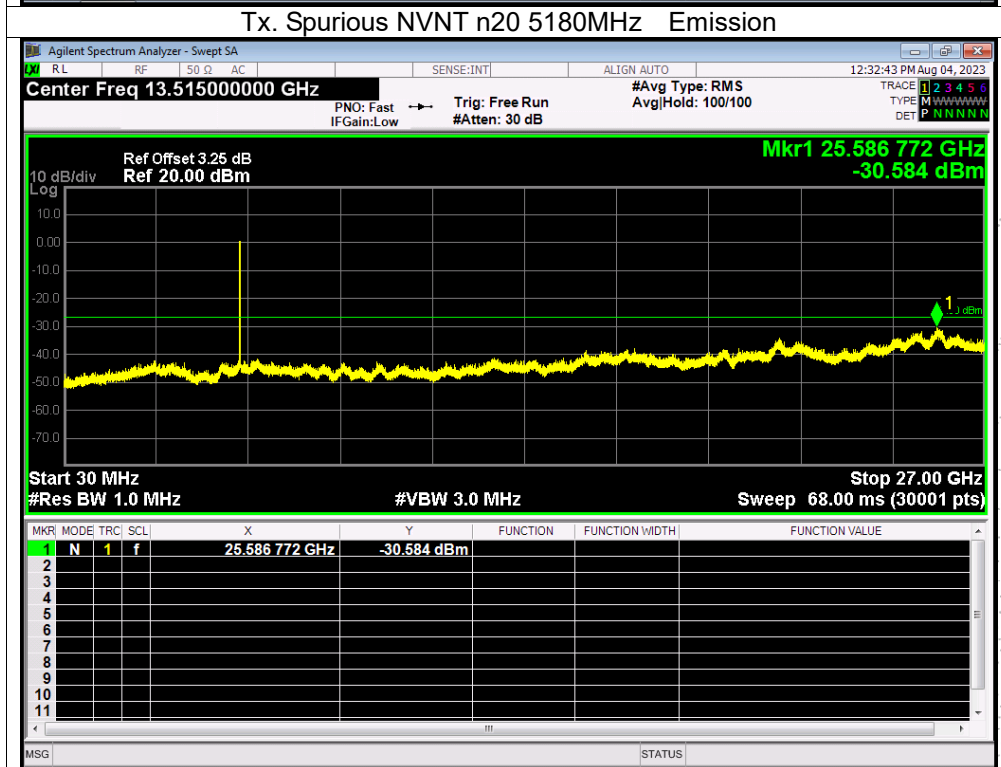
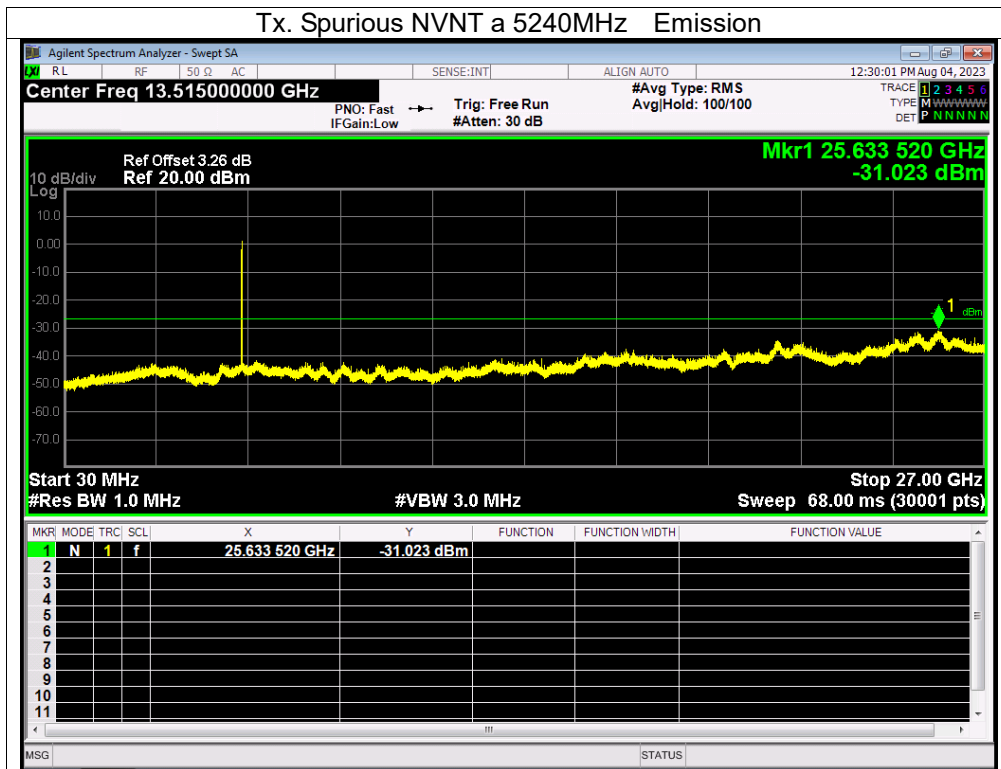
12.4 Test Result

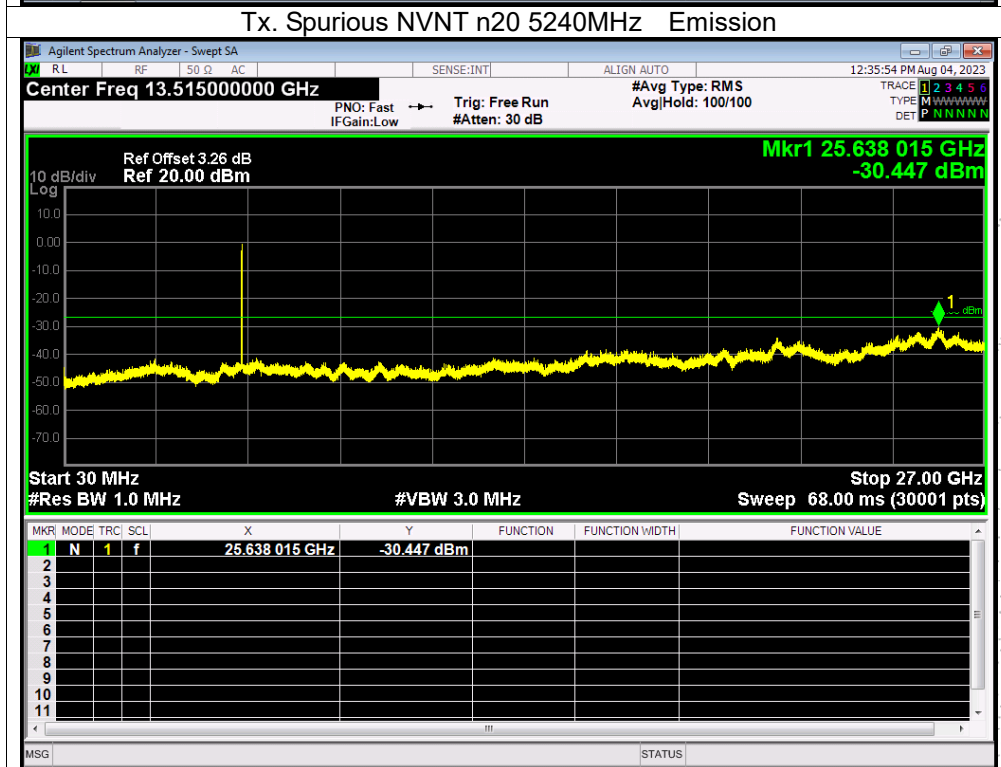
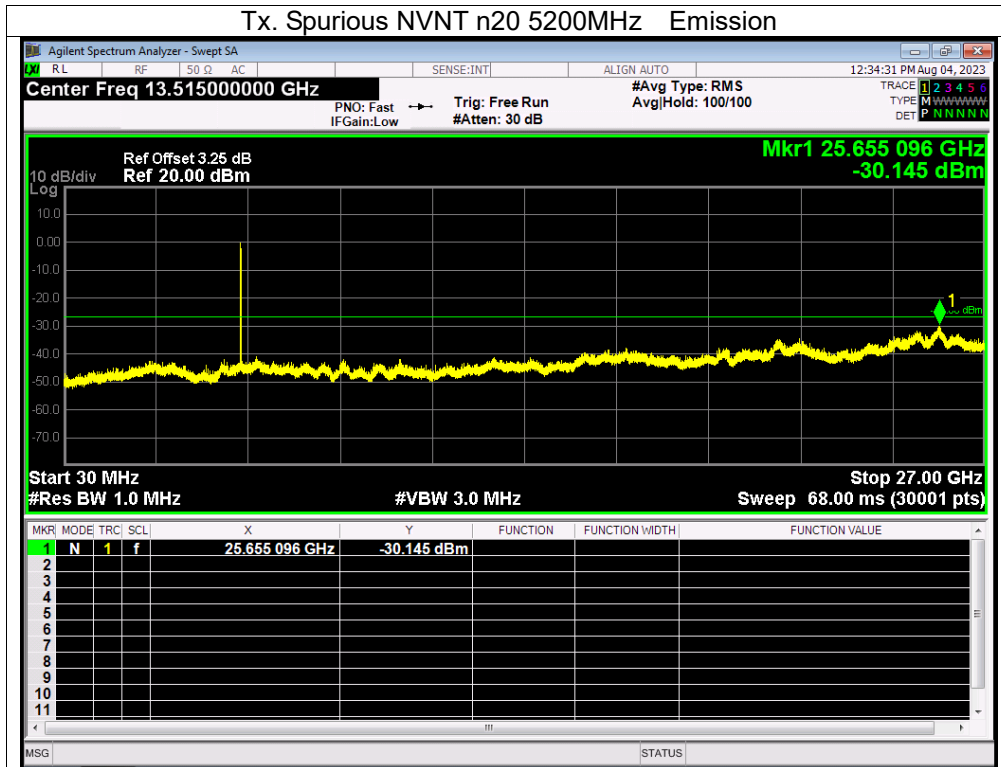
Remark: The measurement frequency range is from 9KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandege measurement data.

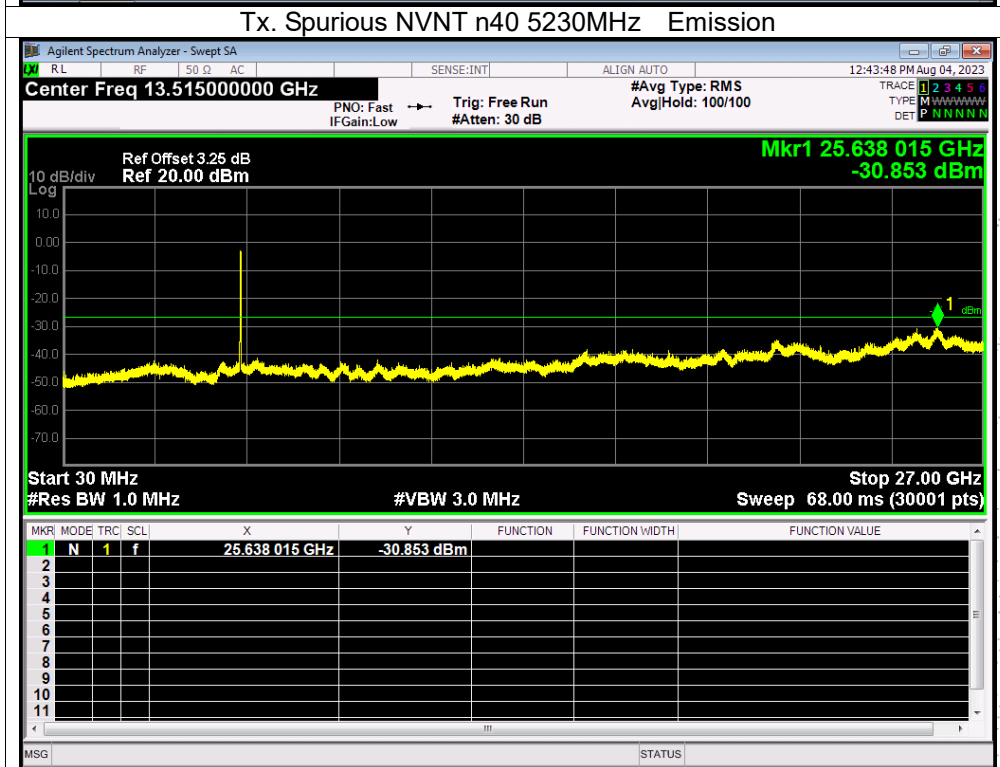
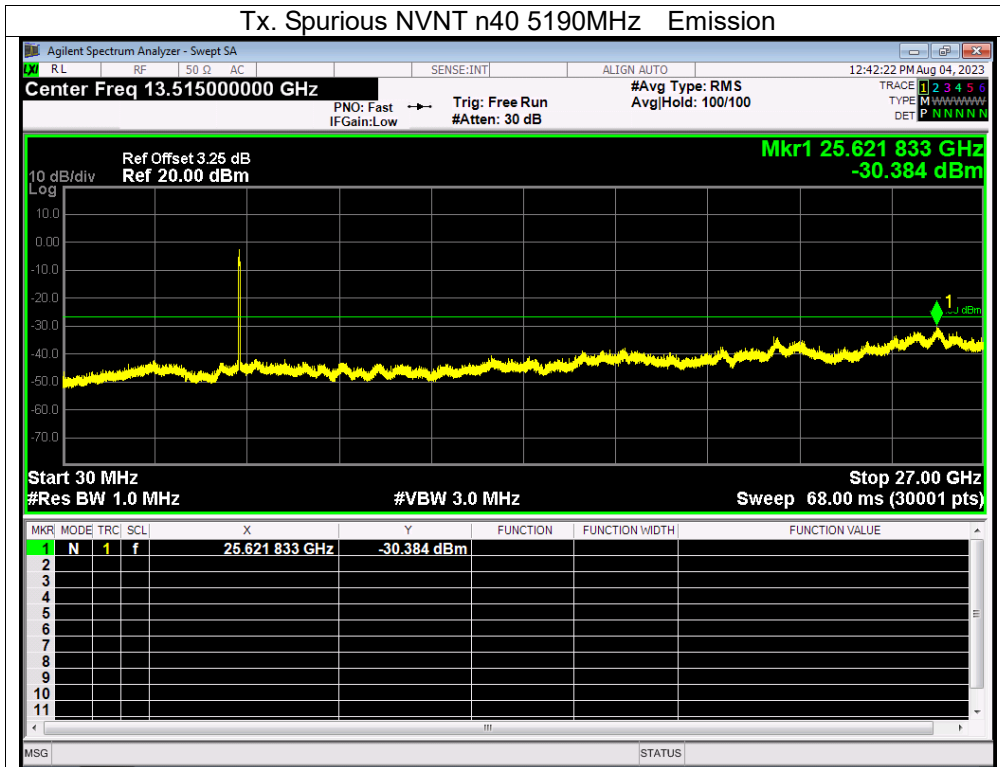
About: 26.5GHz-40GHz, The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

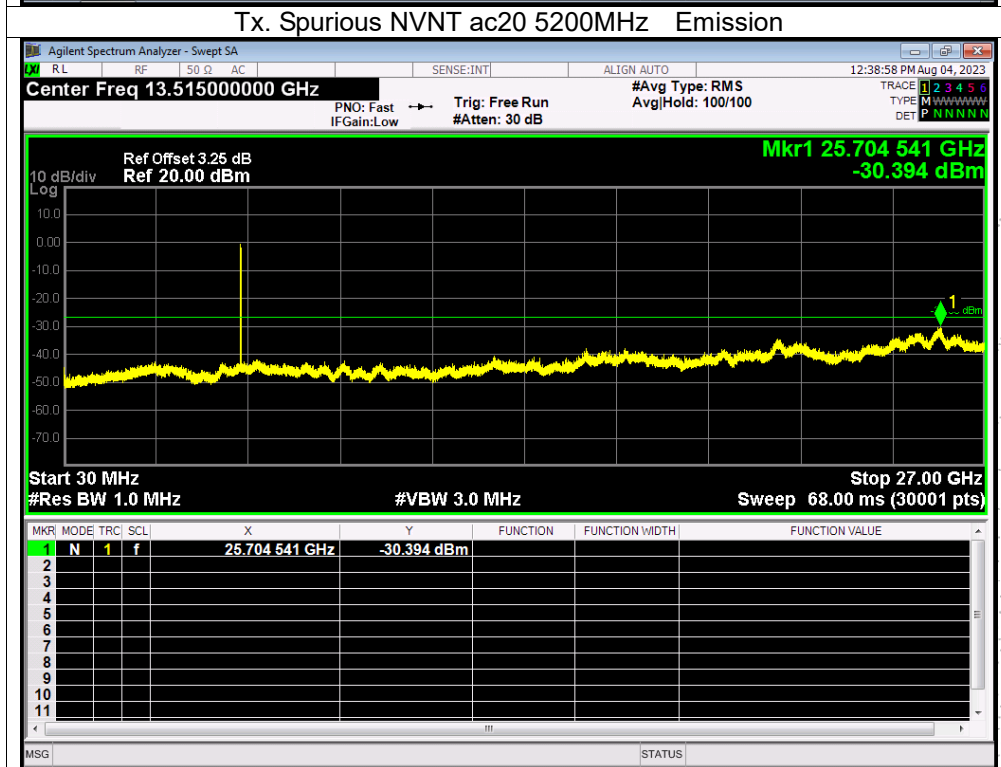
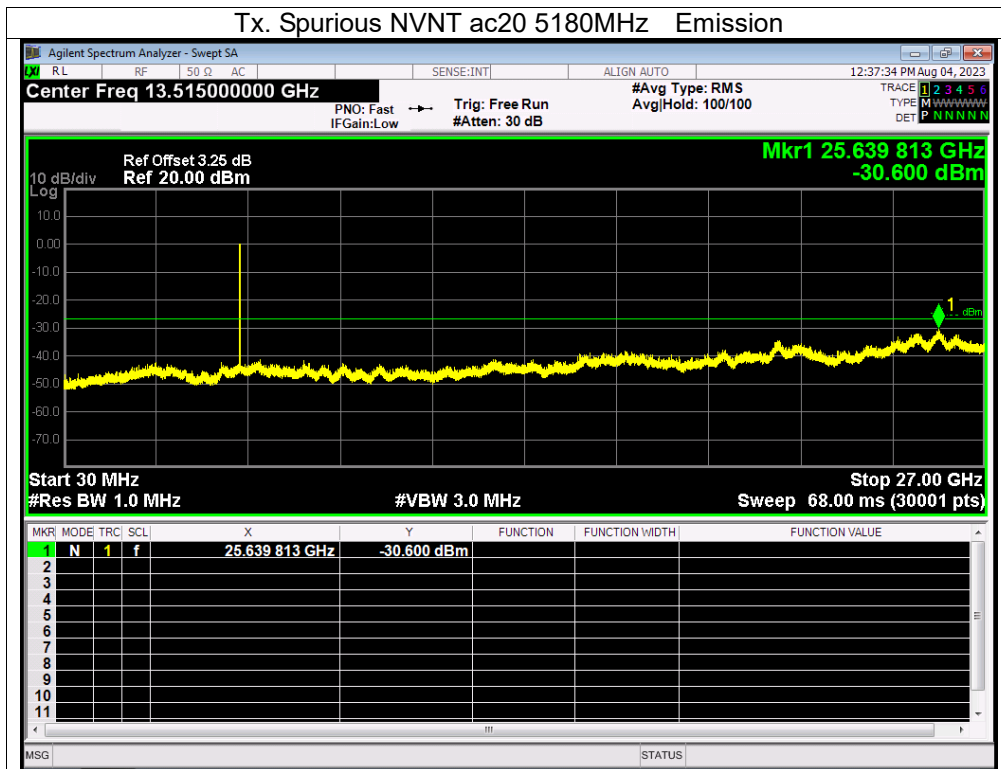
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna B, only shown Antenna B Plot.

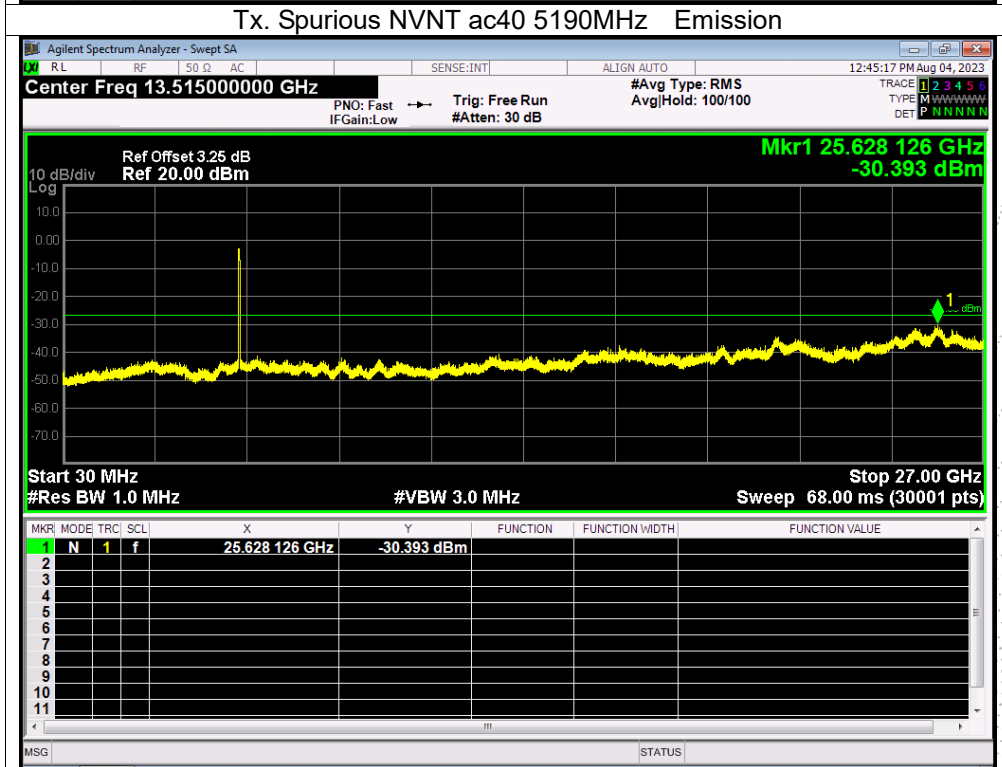
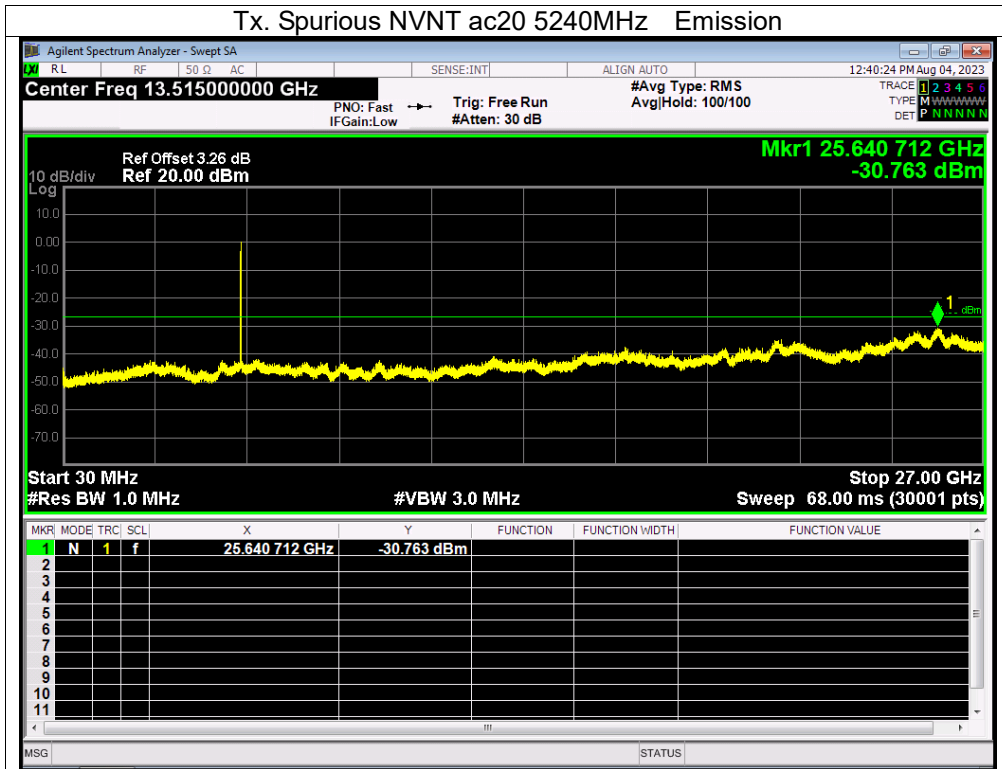


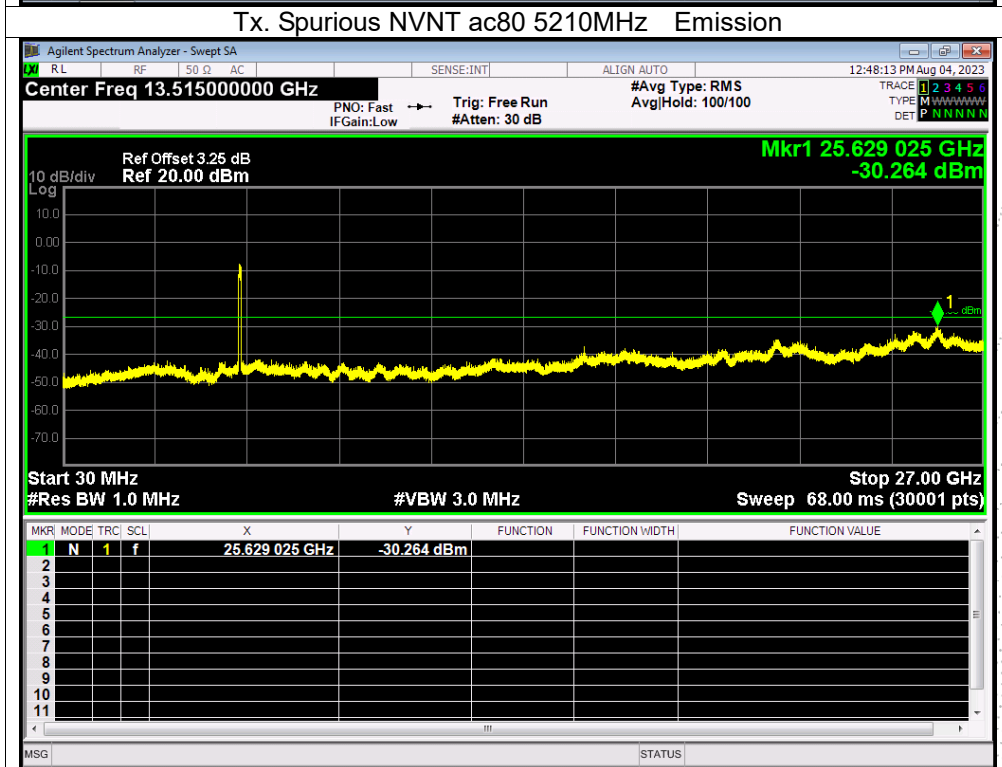
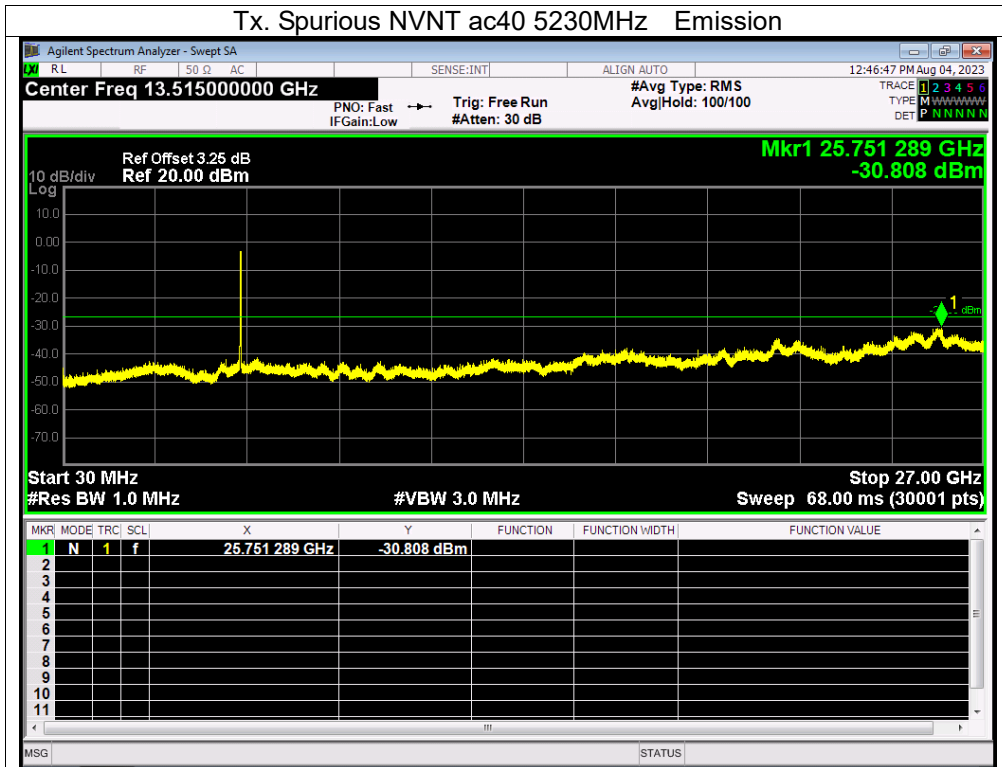


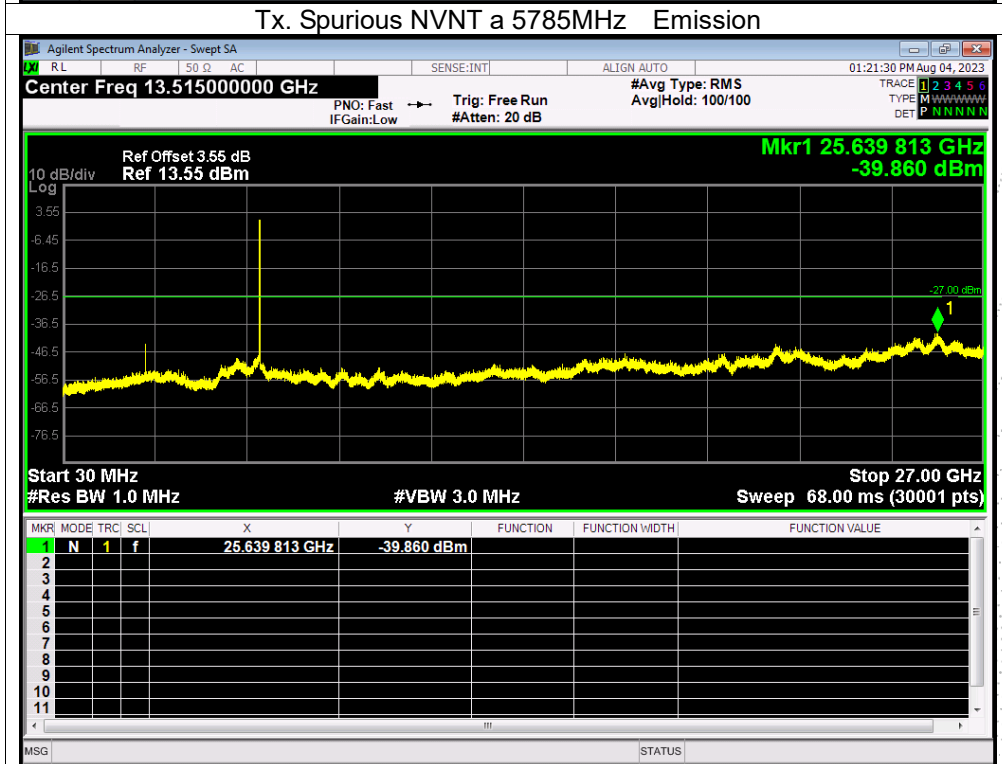
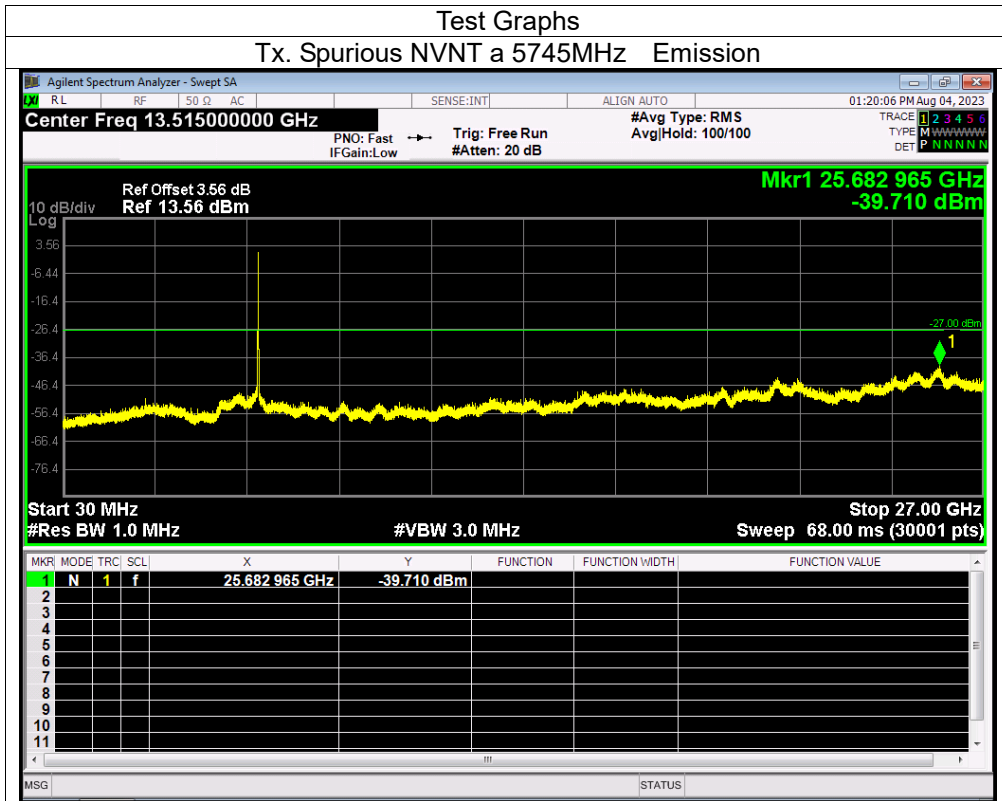


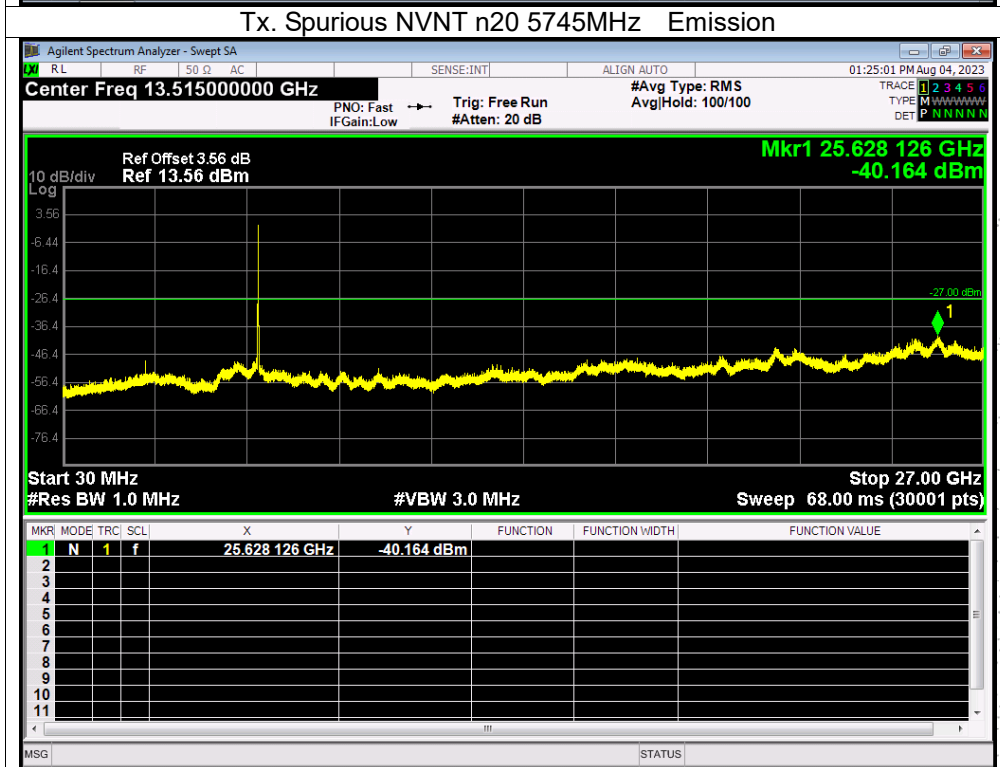
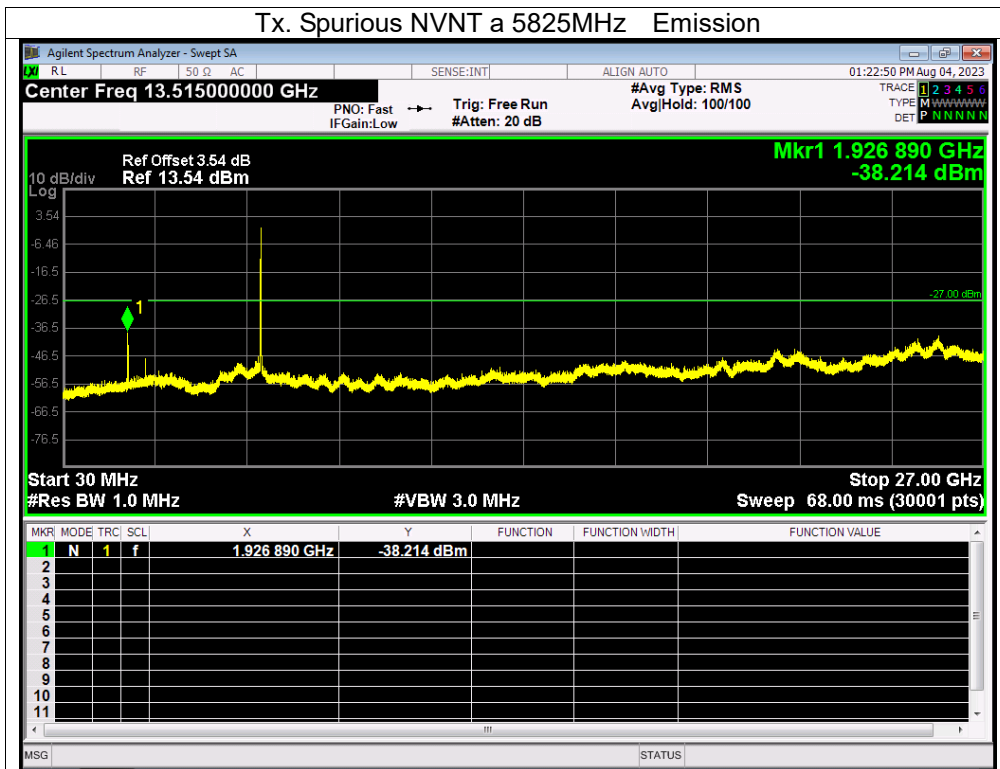


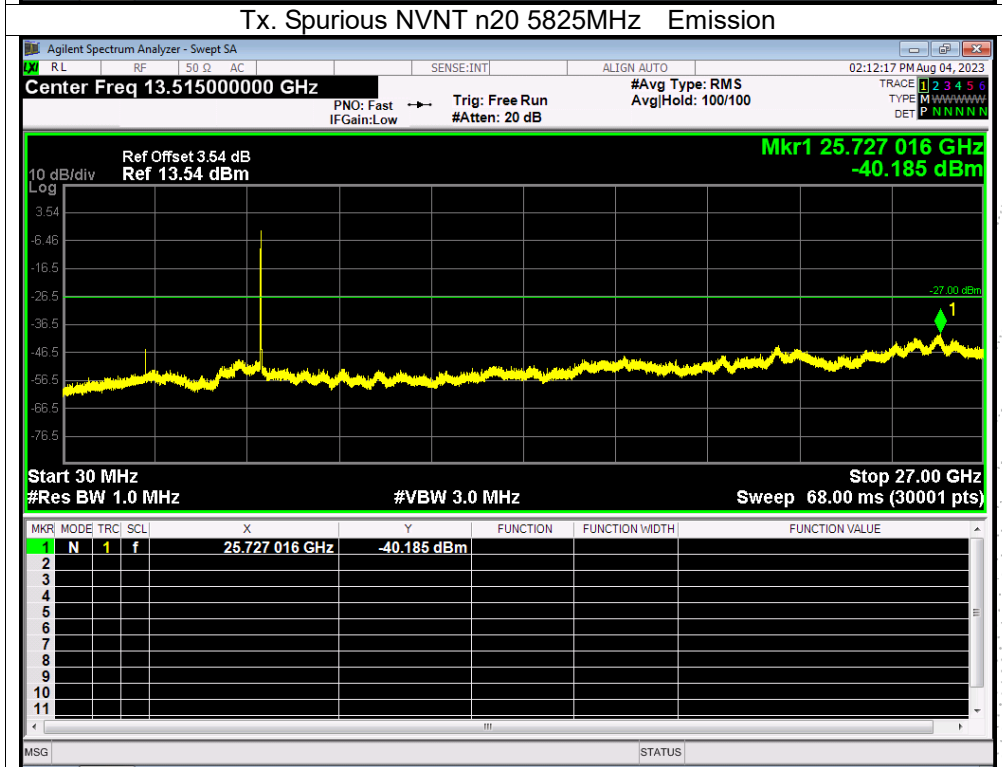
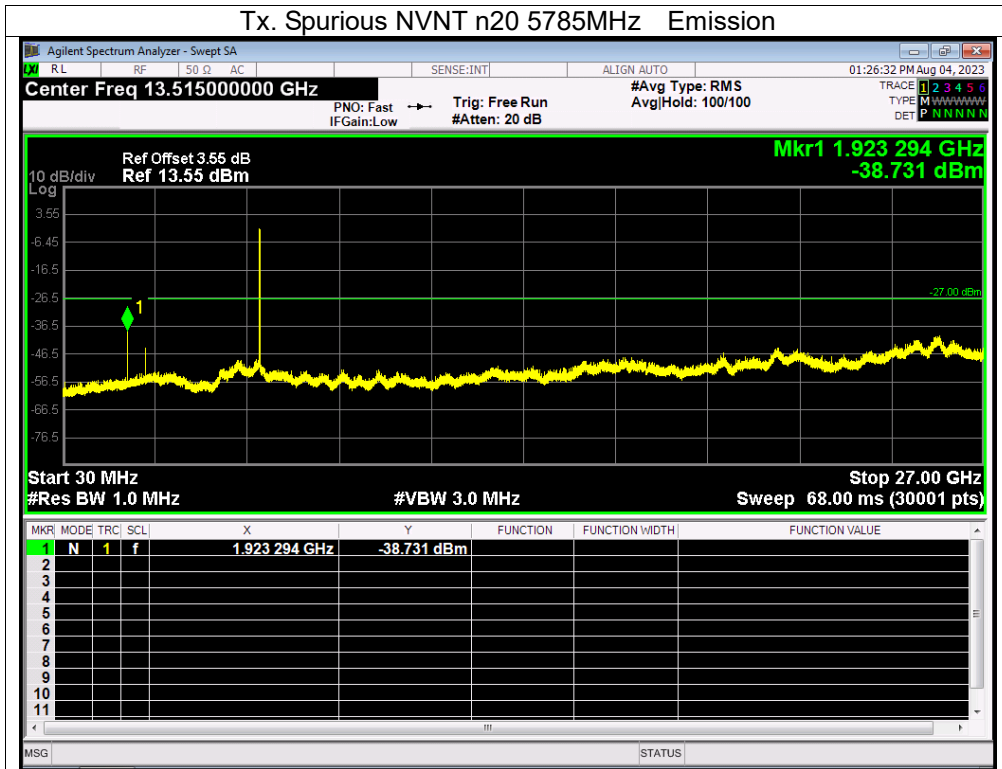


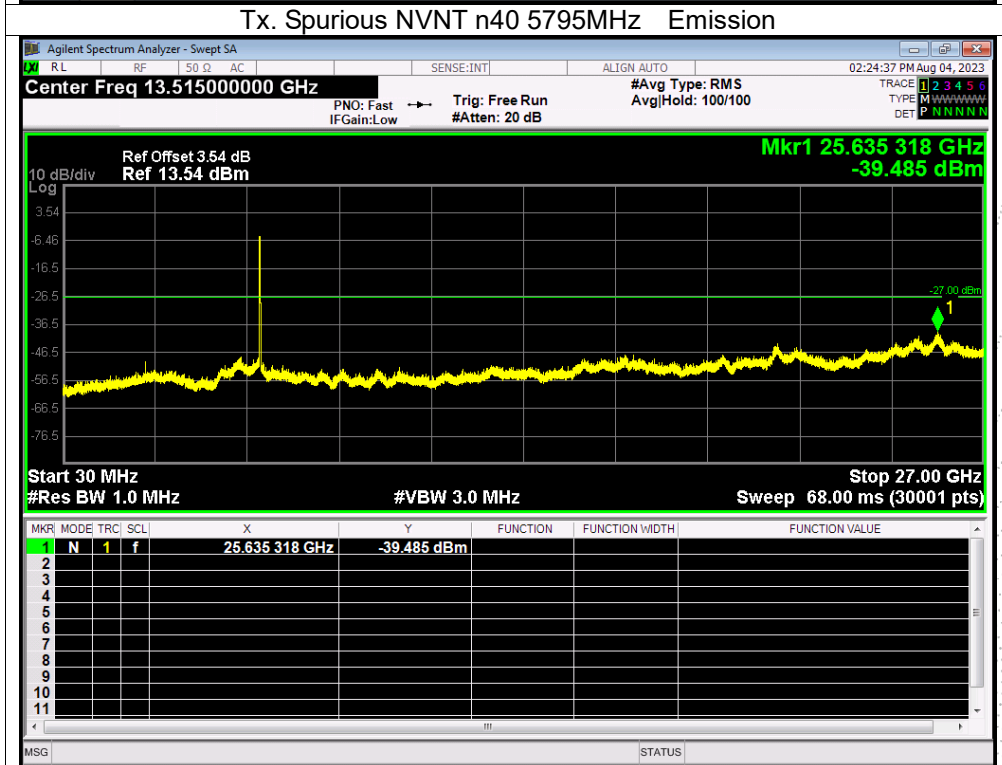
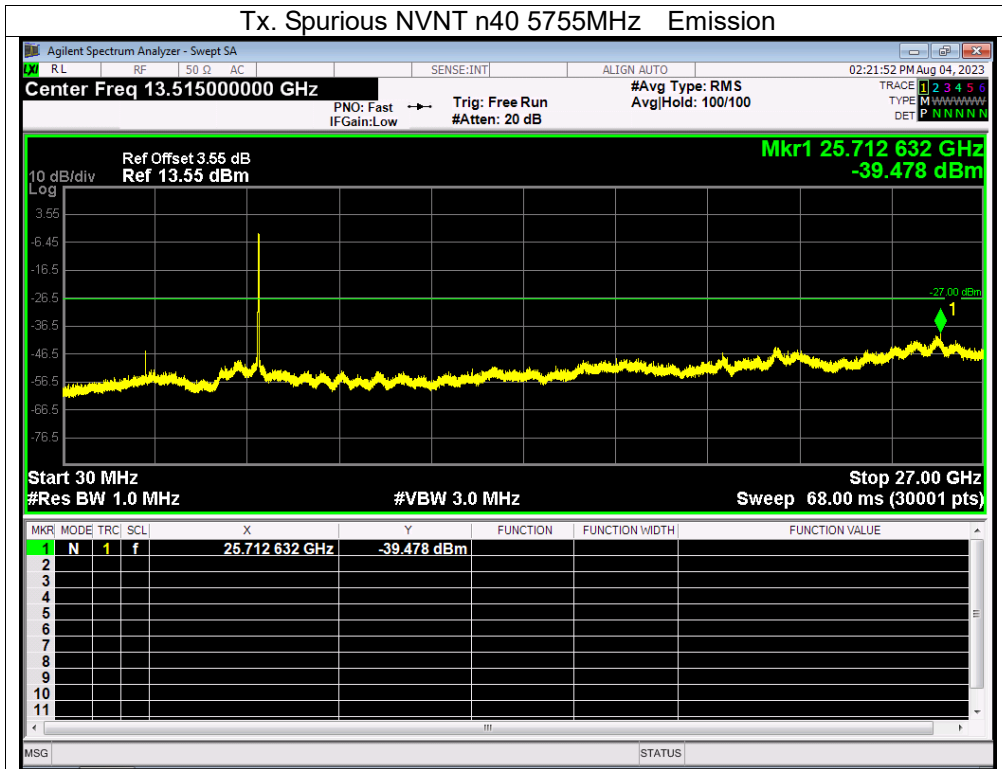


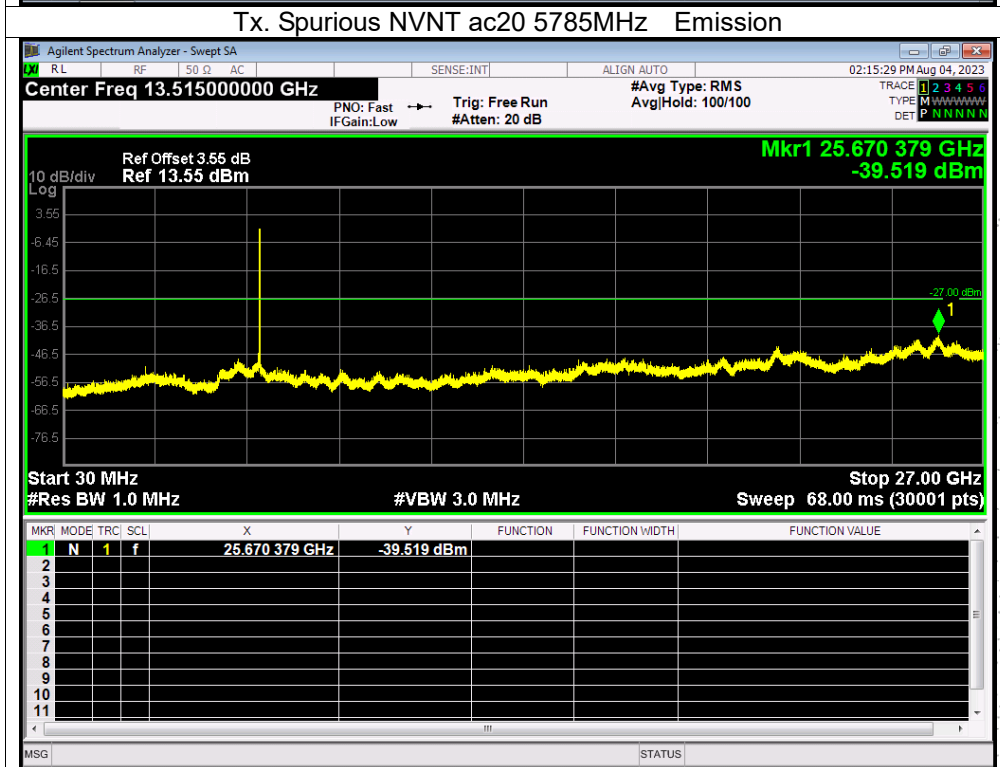
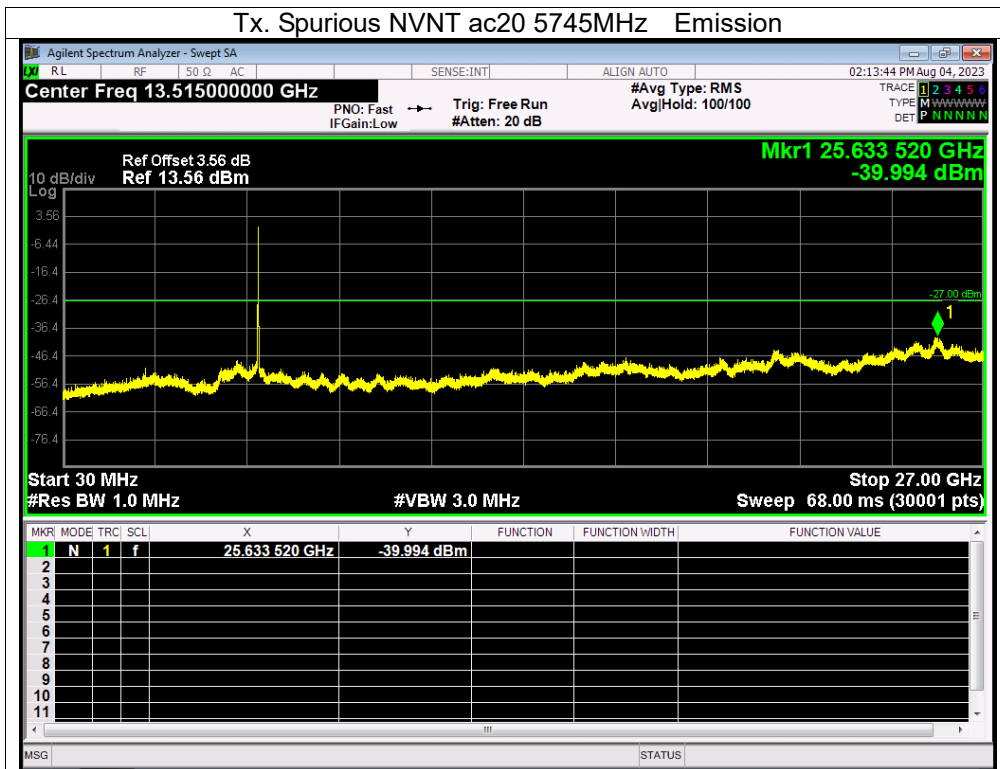


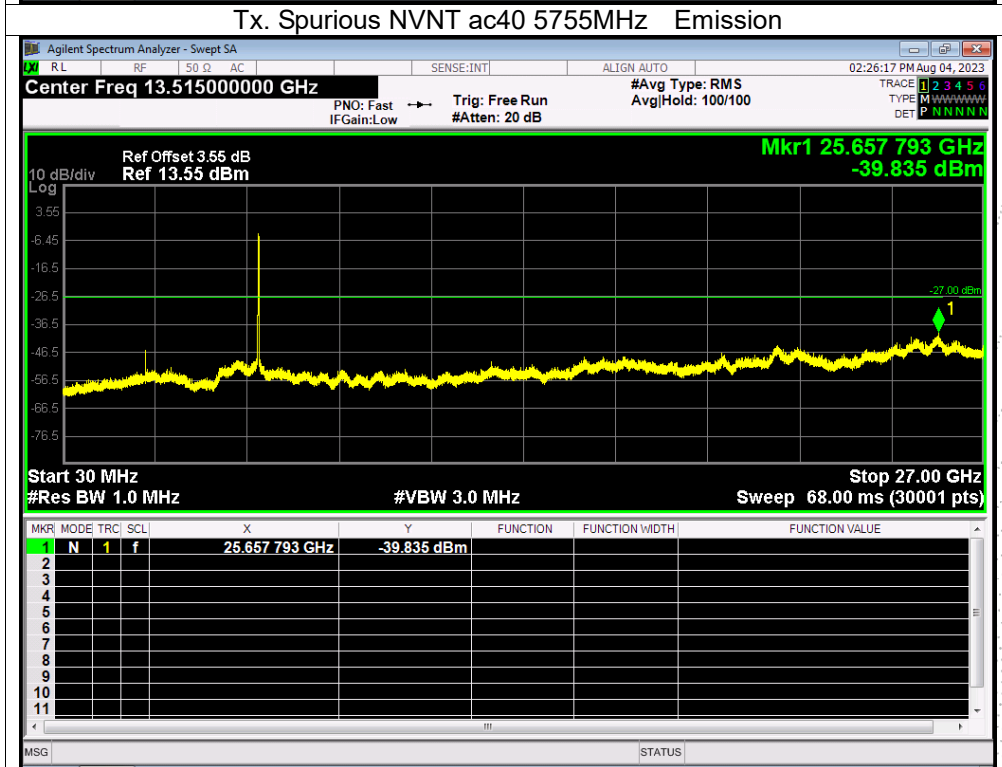
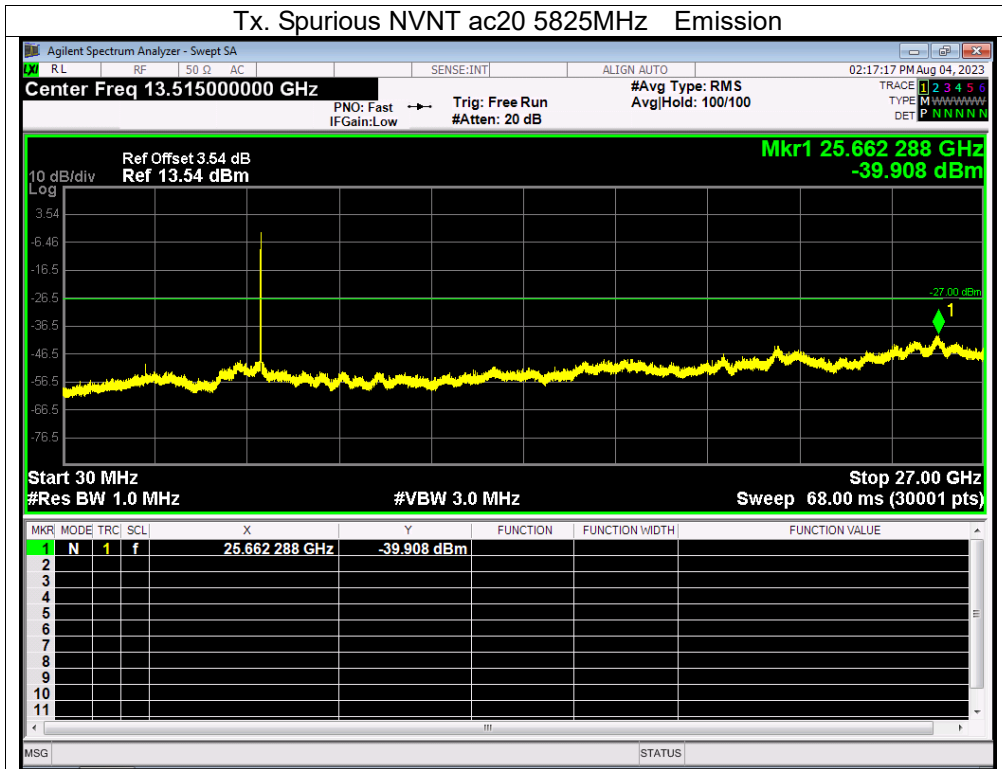


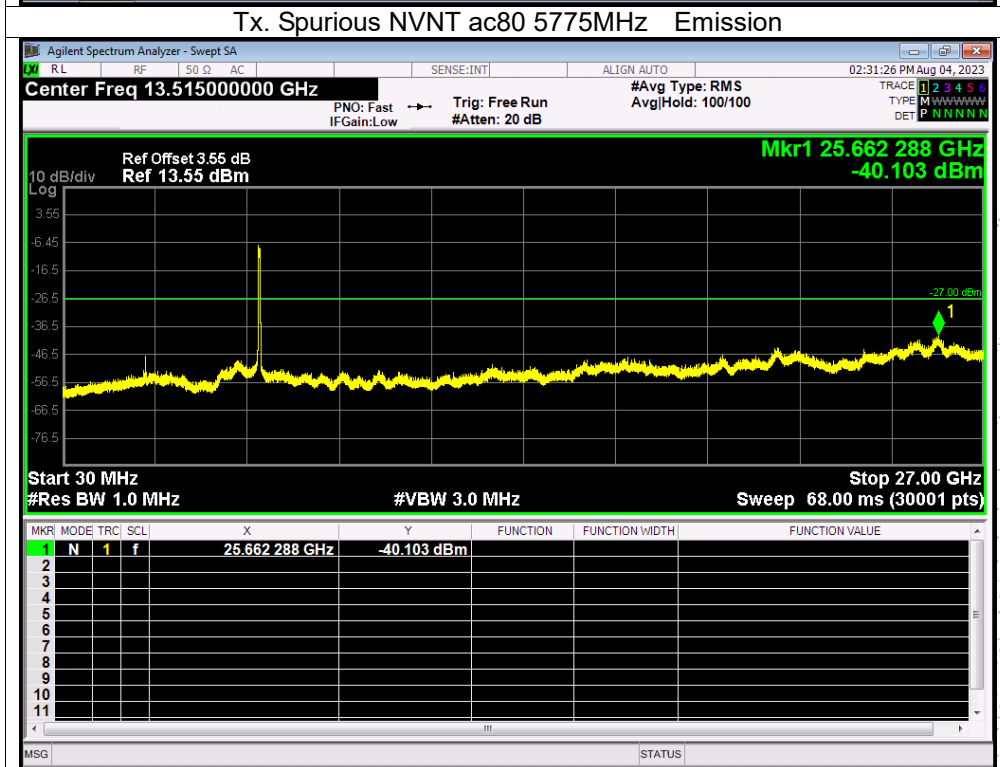
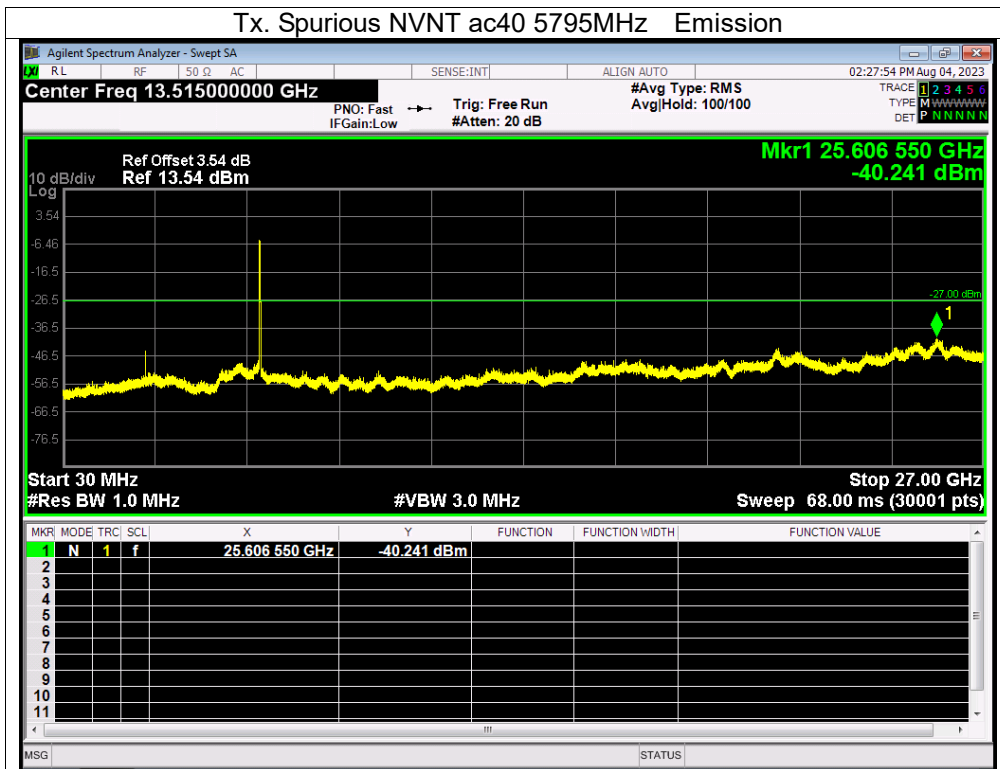






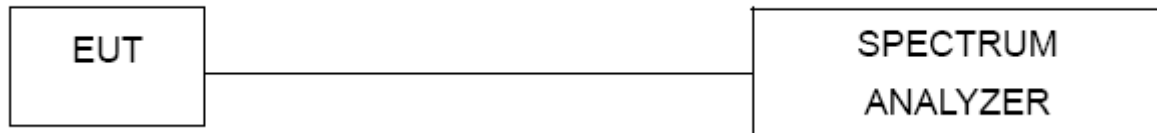






13. Frequency Stability Measurement

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:	AC120V/60Hz
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)	120.00	5180.0198	5180	0.0198	3.8192
		V max (V)	138.00	5180.0001	5180	0.0001	0.0130
		V min (V)	102.00	5180.0132	5180	0.0132	2.5437
Limits				5150-5250 MHz			
Result				Complies			

Temperature vs. Frequency Stability

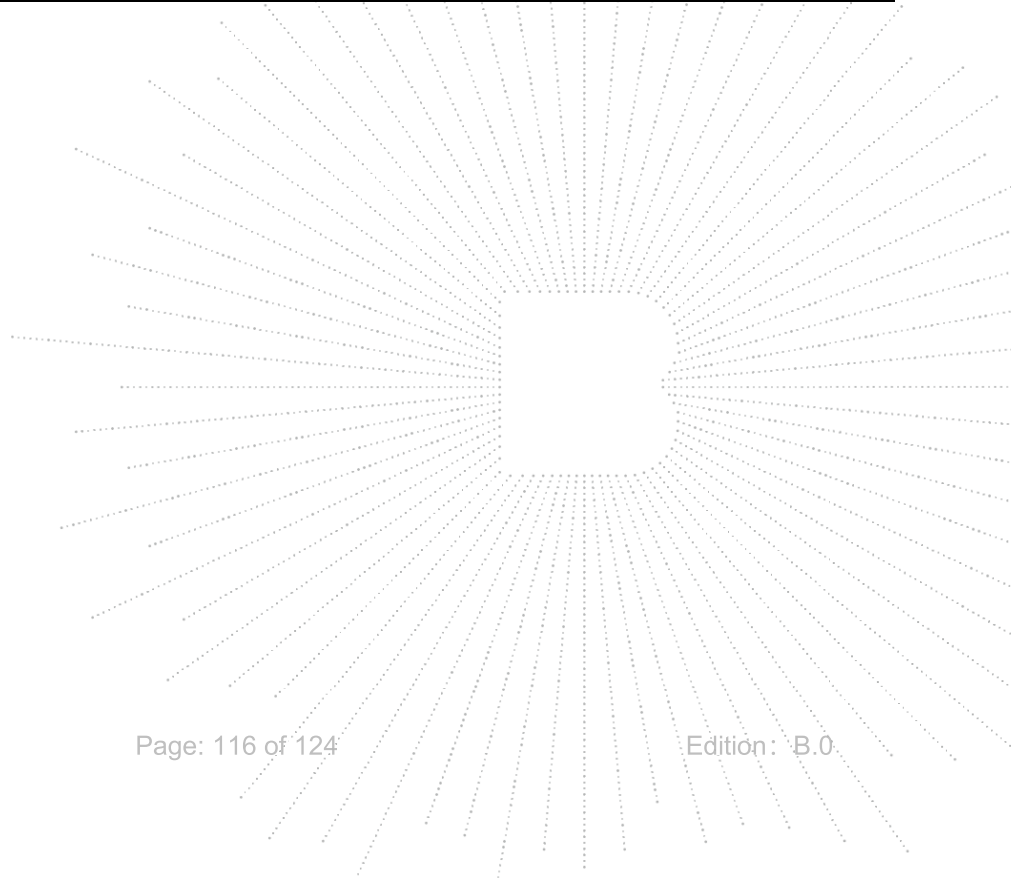
TEST CONDITIONS				Reference Frequency: 5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5180.0083	5180	0.0083	1.6011
		T (°C)	-10	5180.0025	5180	0.0025	0.4887
		T (°C)	0	5180.0075	5180	0.0075	1.4466
		T (°C)	10	5180.0049	5180	0.0049	0.9470
		T (°C)	20	5180.0088	5180	0.0088	1.6932
		T (°C)	30	5180.0116	5180	0.0116	2.2300
		T (°C)	40	5180.0020	5180	0.0020	0.3897
		T (°C)	50	5180.0021	5180	0.0021	0.4091
		T (°C)	60	5180.0041	5180	0.0041	0.7990
		T (°C)	70	5180.0022	5180	0.0022	0.4214
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)	120.00	5200.0088	5200	0.0088	1.6874
		V max (V)	138.00	5200.0090	5200	0.0090	1.7392
		V min (V)	102.00	5200.0020	5200	0.0020	0.3925
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5200.00991	5200	0.00991	1.9063
		T (°C)	-10	5200.00341	5200	0.00341	0.6561
		T (°C)	0	5200.00477	5200	0.00477	0.9167
		T (°C)	10	5200.01069	5200	0.01069	2.0560
		T (°C)	20	5200.00386	5200	0.00386	0.7426
		T (°C)	30	5200.00279	5200	0.00279	0.5374
		T (°C)	40	5200.01179	5200	0.01179	2.2664
		T (°C)	50	5200.01011	5200	0.01011	1.9447
		T (°C)	60	5200.00217	5200	0.00217	0.4176
		T (°C)	70	5200.00510	5200	0.00510	0.9816
Limits				5150-5250 MHz			
Result				Complies			

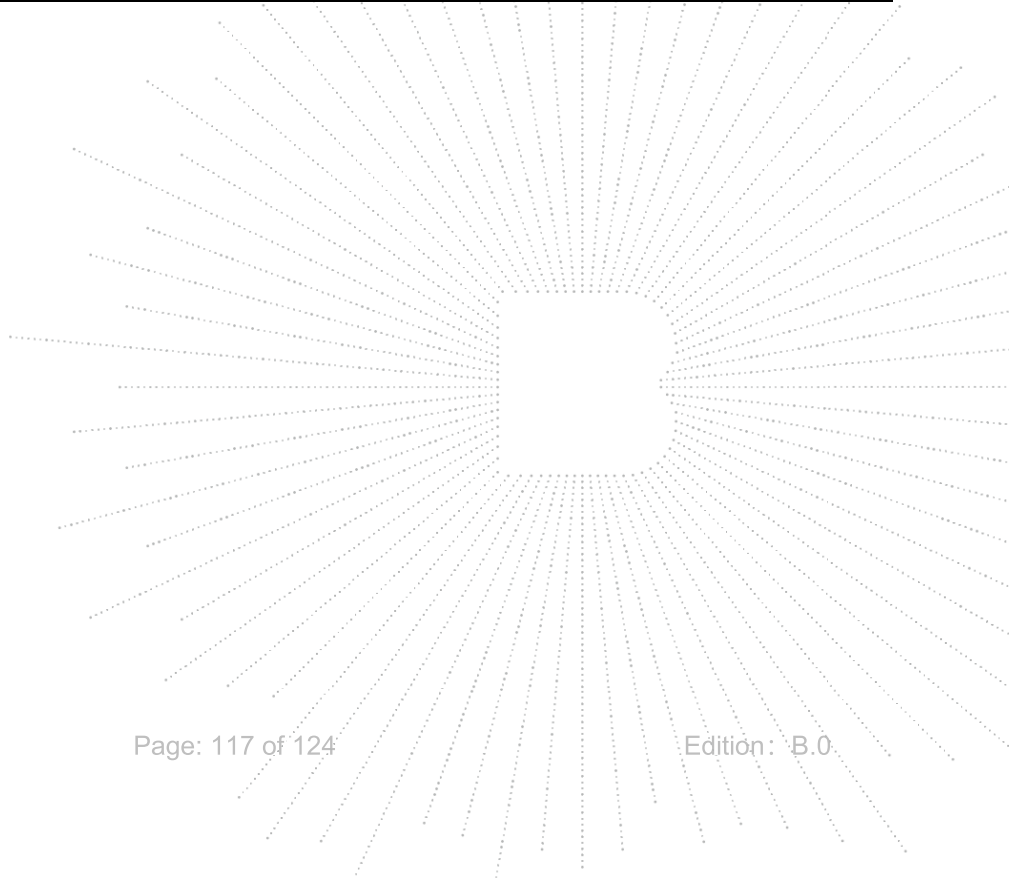


Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5240.0114	5240	0.0114	2.1664
		V max (V)	138.00	5240.0003	5240	0.0003	0.0533
		V min (V)	102.00	5240.0124	5240	0.0124	2.3723
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)	120	T (°C)	-20	5240.0023	5240	0.0023	0.4324
		T (°C)	-10	5240.0081	5240	0.0081	1.5425
		T (°C)	0	5240.0120	5240	0.0120	2.2935
		T (°C)	10	5240.0024	5240	0.0024	0.4554
		T (°C)	20	5240.0017	5240	0.0017	0.3254
		T (°C)	30	5240.0085	5240	0.0085	1.6205
		T (°C)	40	5240.0010	5240	0.0010	0.1992
		T (°C)	50	5240.0095	5240	0.0095	1.8202
		T (°C)	60	5240.0053	5240	0.0053	1.0155
		T (°C)	70	5240.0035	5240	0.0035	0.6602
Limits				5150-5250 MHz			
Result				Complies			



Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC120V/60Hz
Test Mode:	TX (5.8G) Mode 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)	120.00	5745.01092	5745	0.01092	1.9014
		V max (V)	138.00	5745.00970	5745	0.00970	1.6883
		V min (V)	102.00	5745.00338	5745	0.00338	0.5889
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

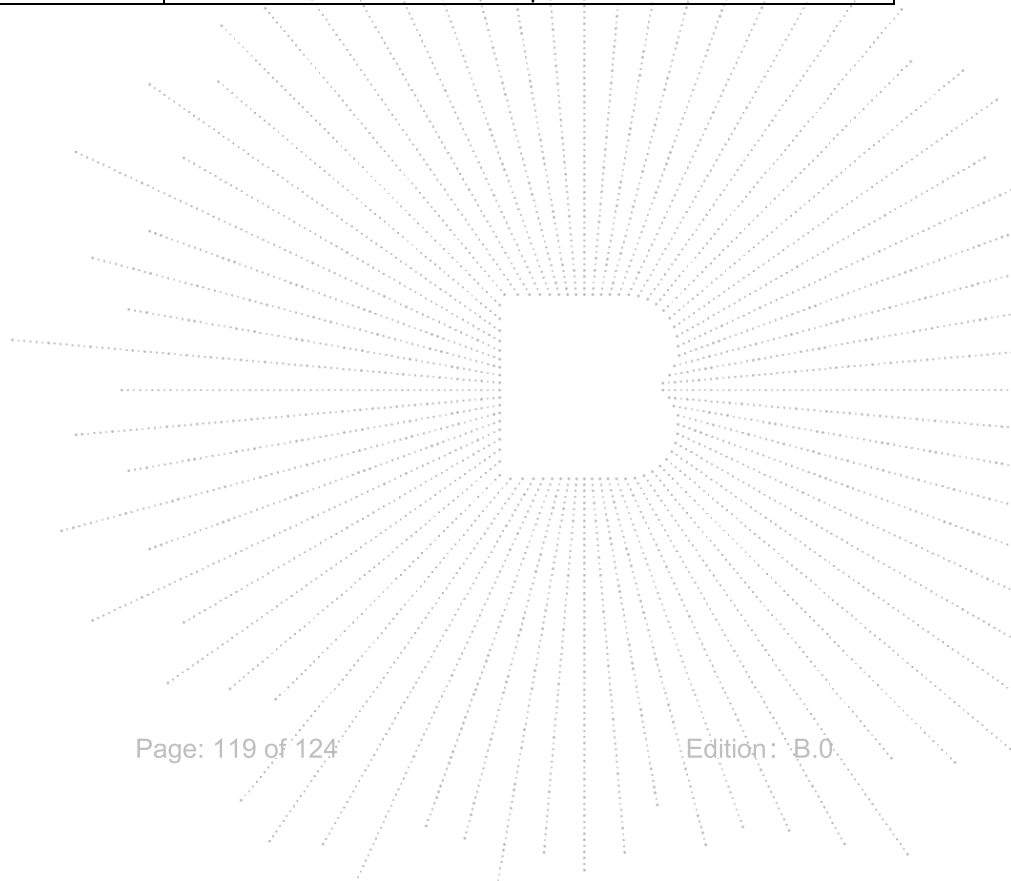
TEST CONDITIONS				Reference Frequency: 5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5745.00193	5745	0.00193	0.3357
		T (°C)	-10	5745.00460	5745	0.00460	0.8015
		T (°C)	0	5745.00545	5745	0.00545	0.9495
		T (°C)	10	5745.00179	5745	0.00179	0.3111
		T (°C)	20	5745.00033	5745	0.00033	0.0573
		T (°C)	30	5745.01027	5745	0.01027	1.7871
		T (°C)	40	5745.00259	5745	0.00259	0.4503
		T (°C)	50	5745.00757	5745	0.00757	1.3184
		T (°C)	60	5745.00250	5745	0.00250	0.4359
		T (°C)	70	5745.00702	5745	0.00702	1.2225
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)	120.00	5785.01165	5785	0.01165	2.0137
		V max (V)	138.00	5785.00740	5785	0.00740	1.2790
		V min (V)	102.00	5785.01193	5785	0.01193	2.0628
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)	120	T (°C)	-20	5785.00324	5785	0.00324	0.5597
		T (°C)	-10	5785.00236	5785	0.00236	0.4083
		T (°C)	0	5785.00604	5785	0.00604	1.0447
		T (°C)	10	5785.00357	5785	0.00357	0.6174
		T (°C)	20	5785.00668	5785	0.00668	1.1541
		T (°C)	30	5785.00334	5785	0.00334	0.5777
		T (°C)	40	5785.00471	5785	0.00471	0.8136
		T (°C)	50	5785.01230	5785	0.01230	2.1260
		T (°C)	60	5785.01058	5785	0.01058	1.8282
		T (°C)	70	5785.01265	5785	0.01265	2.1865
Limits				5725-5850 MHz			
Result				Complies			

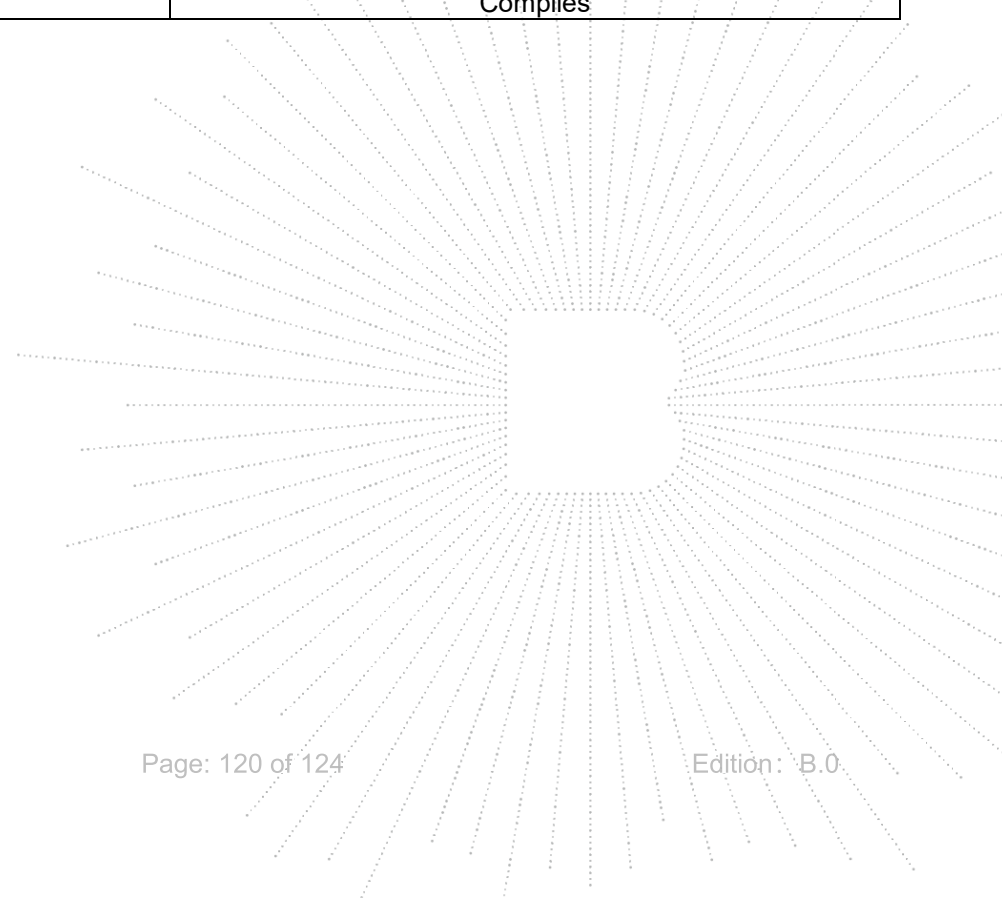


Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5825.00315	5825	0.00315	0.5411
		V max (V)	138.00	5825.00602	5825	0.00602	1.0338
		V min (V)	102.00	5825.01169	5825	0.01169	2.0068
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)	120	T (°C)	-20	5825.01132	5825	0.01132	1.9432
		T (°C)	-10	5825.01226	5825	0.01226	2.1047
		T (°C)	0	5825.01061	5825	0.01061	1.8211
		T (°C)	10	5825.01015	5825	0.01015	1.7418
		T (°C)	20	5825.00992	5825	0.00992	1.7025
		T (°C)	30	5825.00791	5825	0.00791	1.3585
		T (°C)	40	5825.00476	5825	0.00476	0.8177
		T (°C)	50	5825.01045	5825	0.01045	1.7943
		T (°C)	60	5825.00766	5825	0.00766	1.3158
		T (°C)	70	5825.00113	5825	0.00113	0.1934
Limits				5725-5850 MHz			
Result				Complies			



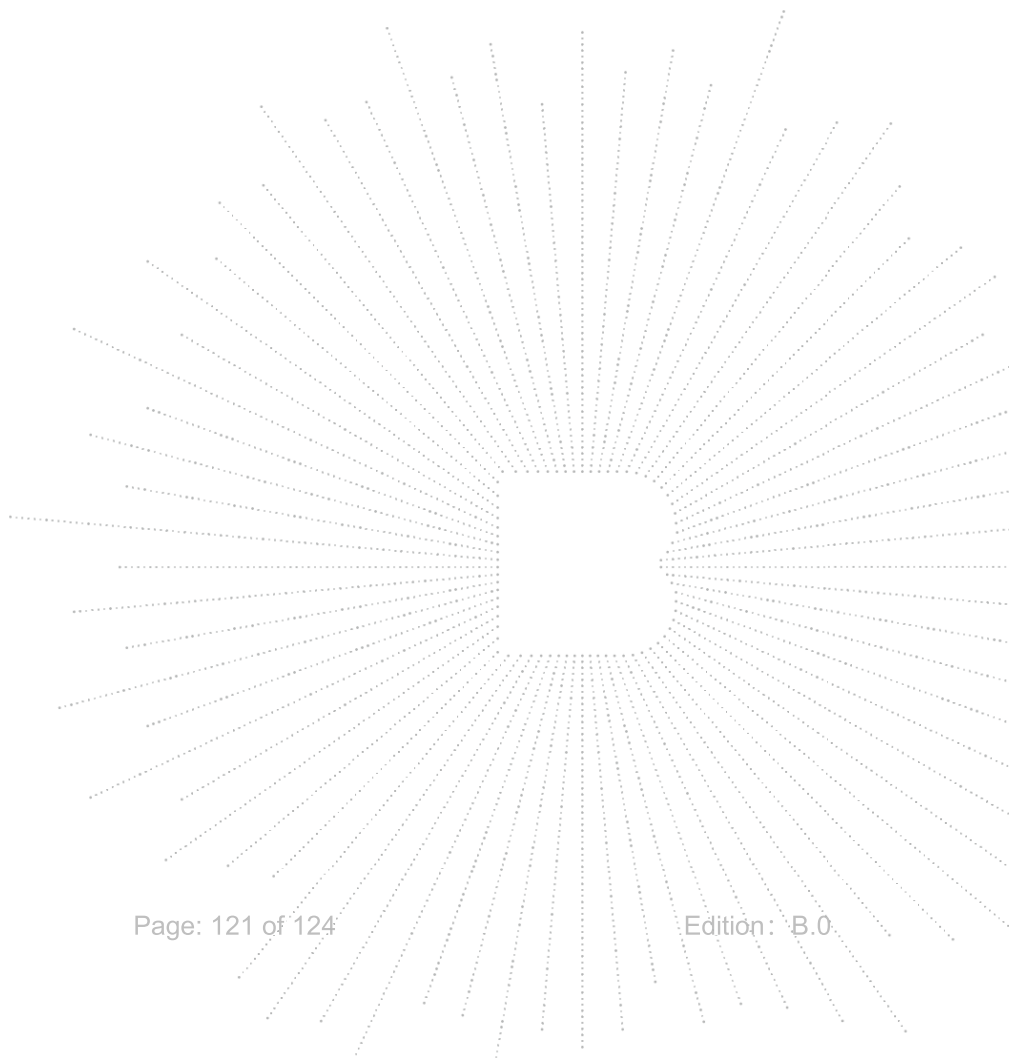
14. Antenna Requirement

14.1 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.

14.2 Test Antenna

The EUT antenna is Internal antenna, It comply with the standard requirement.

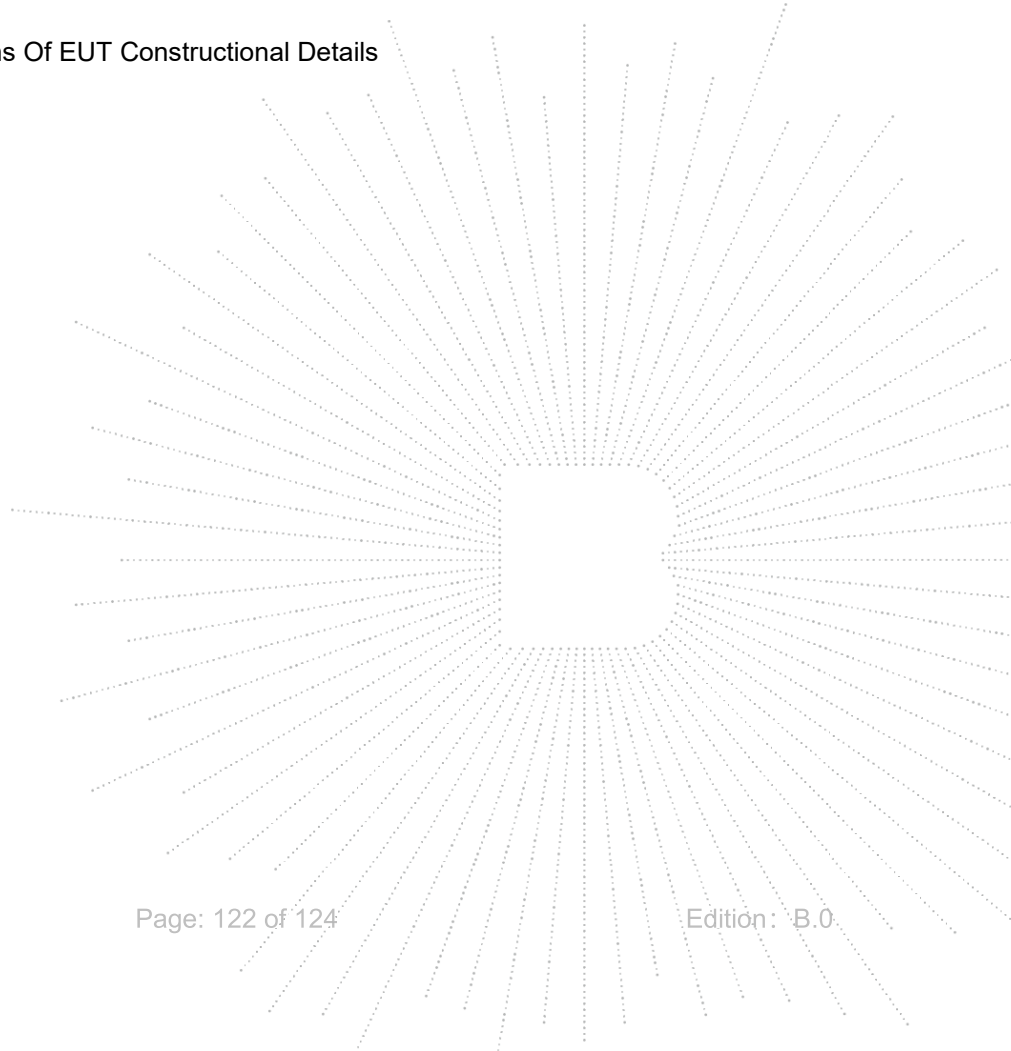


15. EUT Photographs

EUT Photo

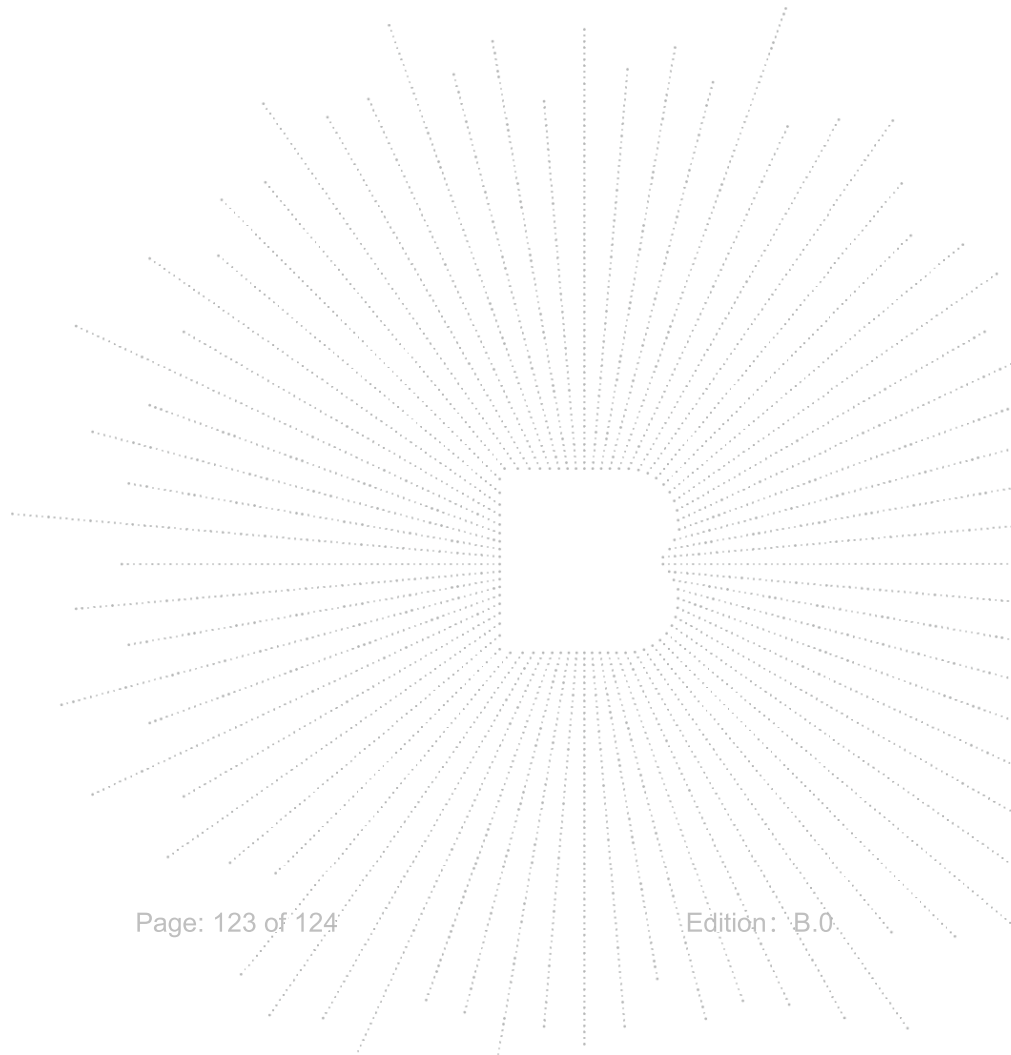


NOTE: Appendix-Photographs Of EUT Constructional Details



16. EUT Test Setup Photographs

NOTE: Appendix -Test Setup Photographs.



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

******* END *******