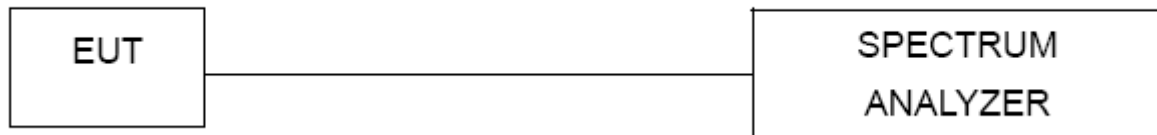


11. Out Of Band Emissions

11.1 Block Diagram Of Test Setup



11.2 Limit

According to FCC §15.407(b)

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) 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.

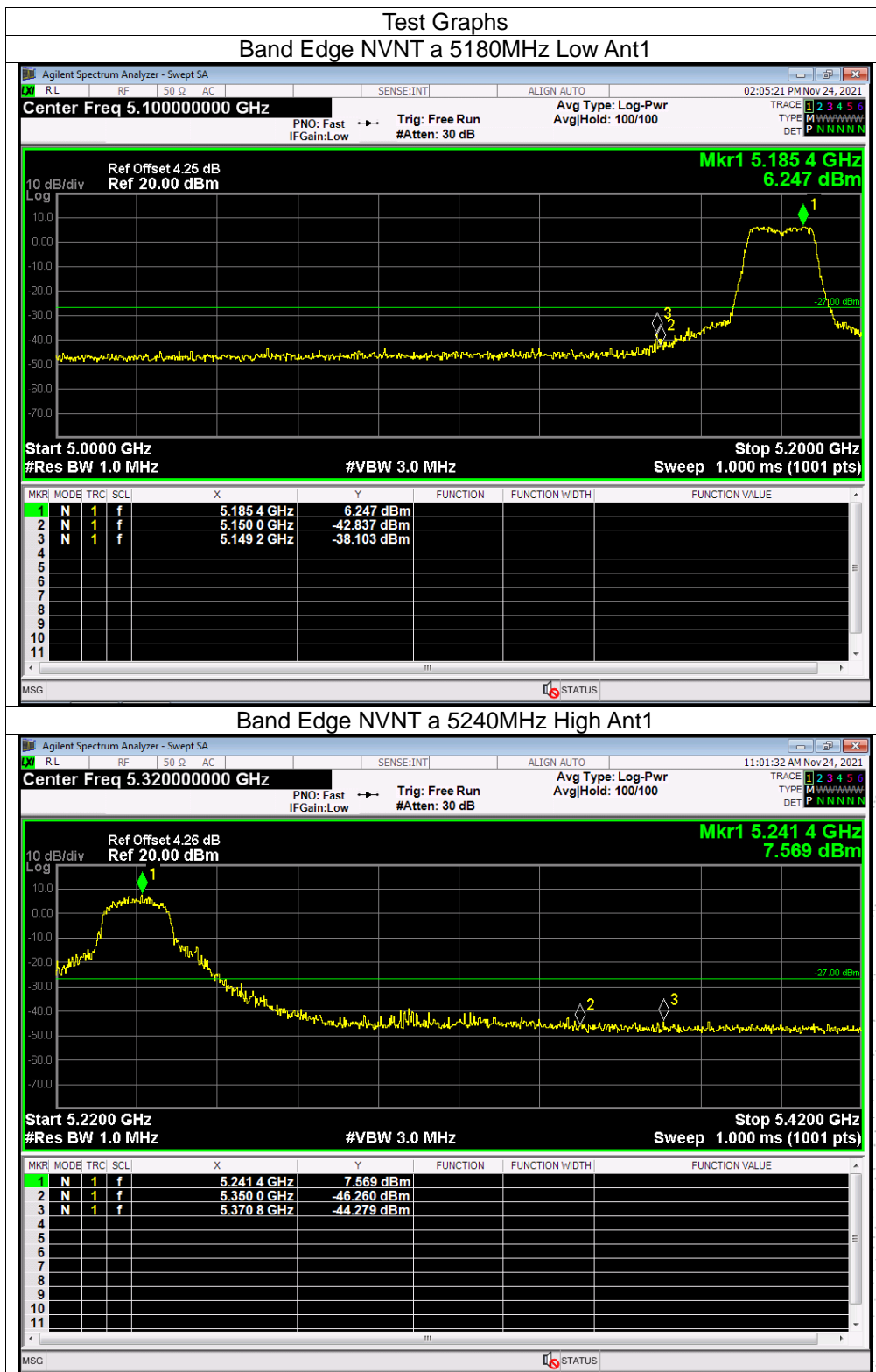
11.3 Test procedure

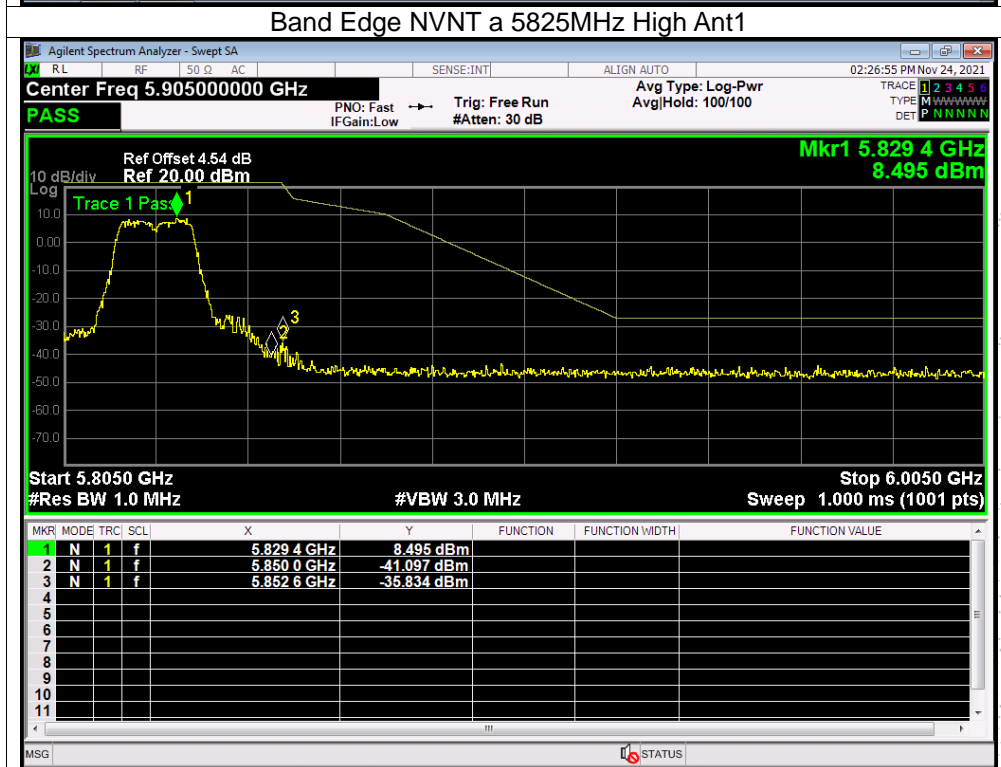
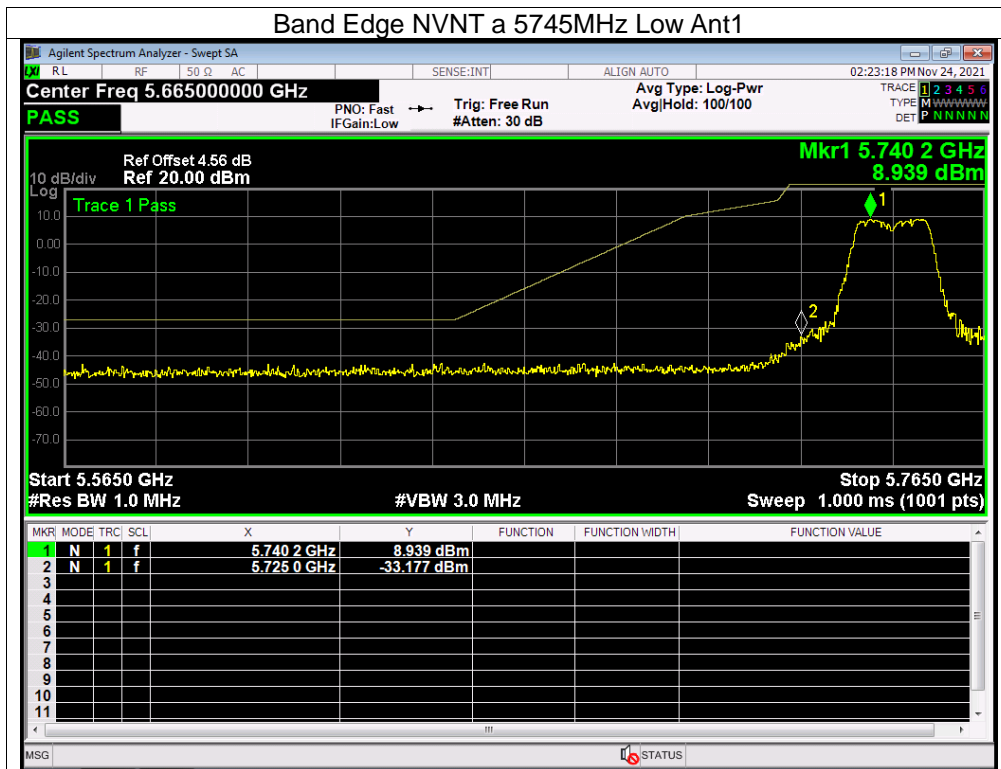
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then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

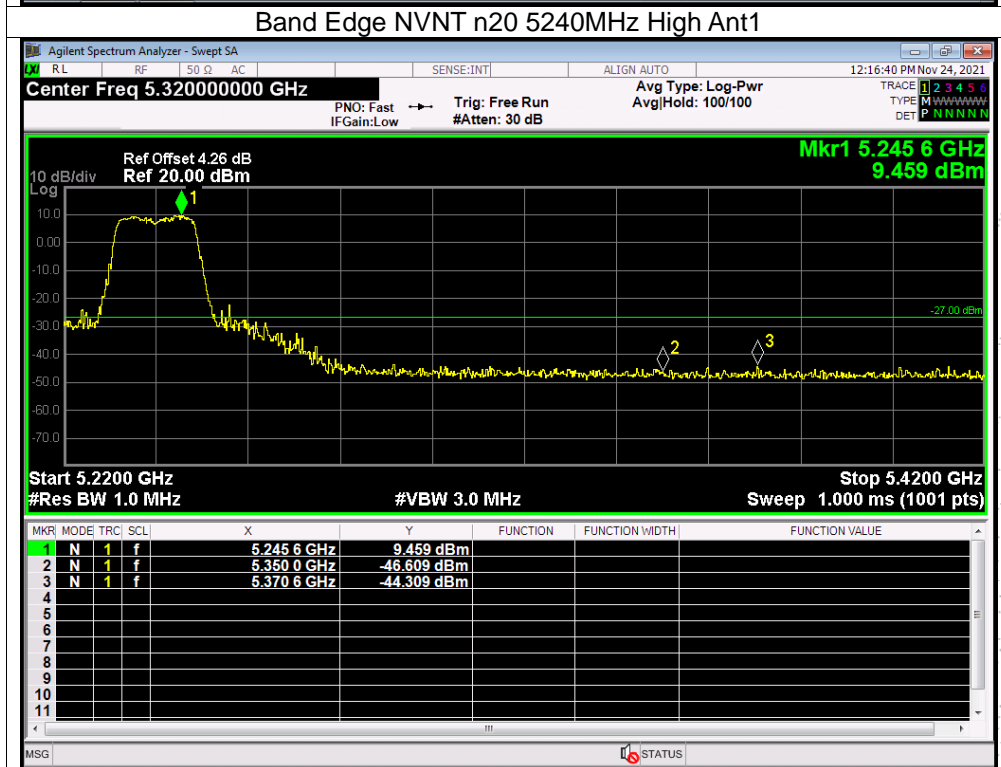
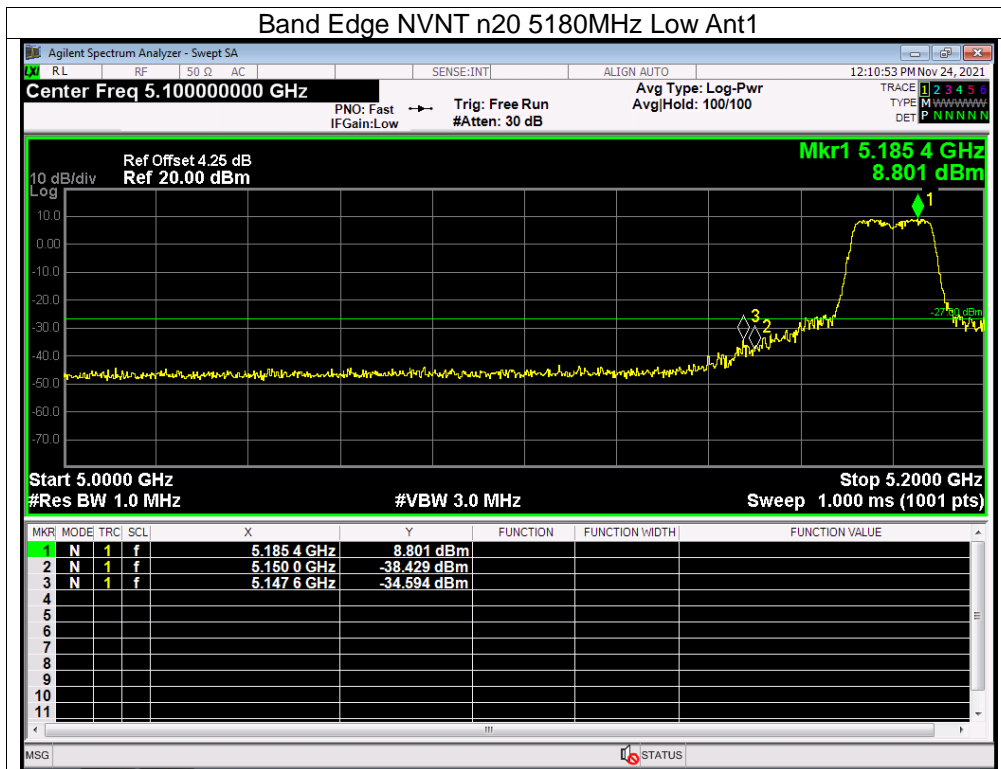
11.4 EUT operating Conditions

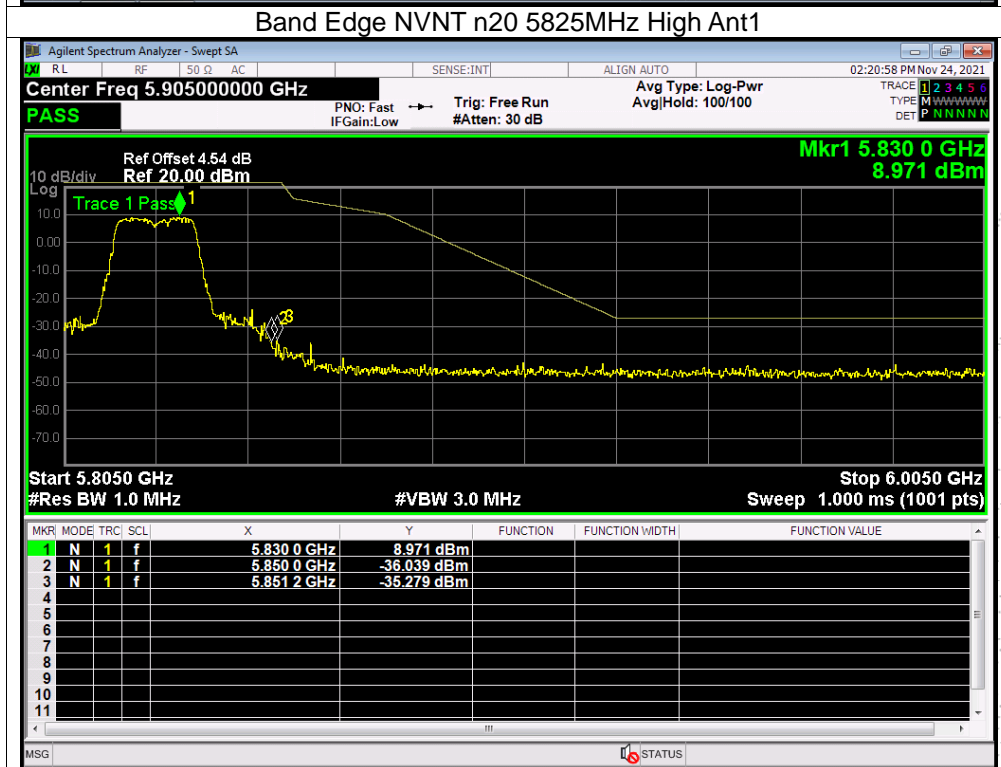
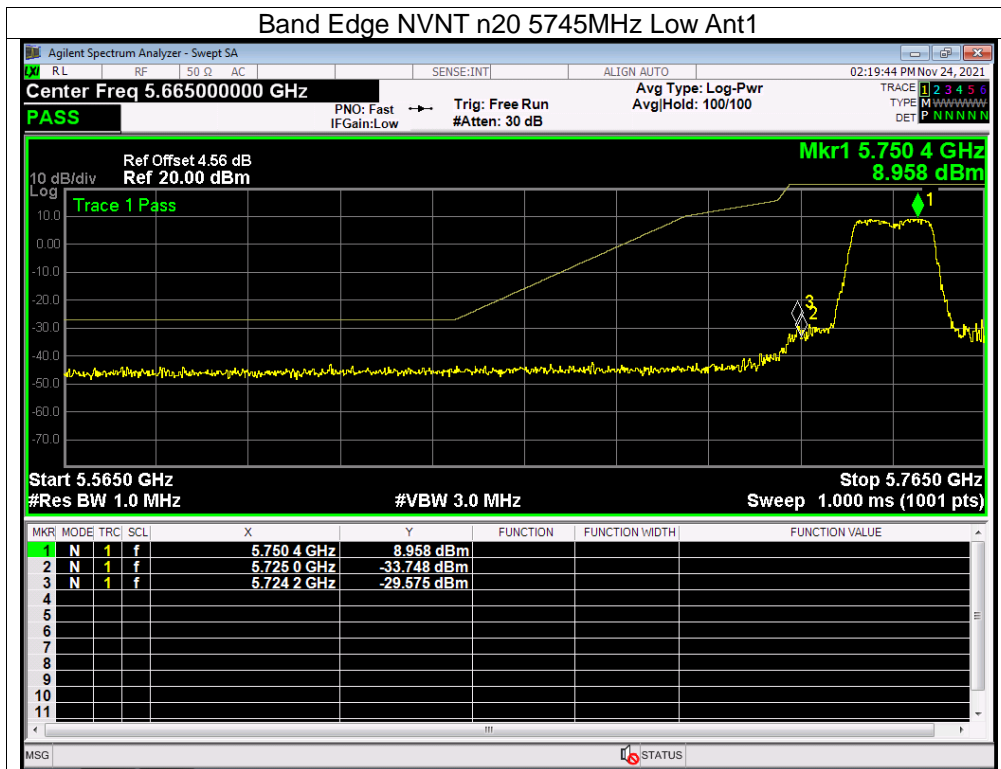
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data

11.5 Test Result









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

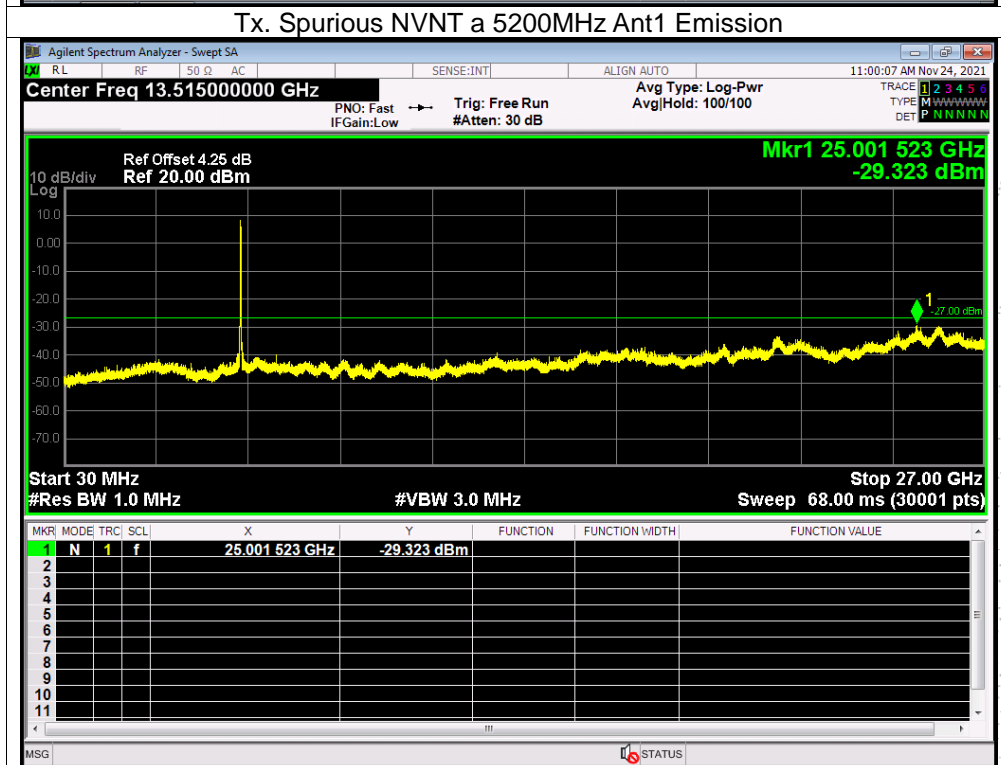
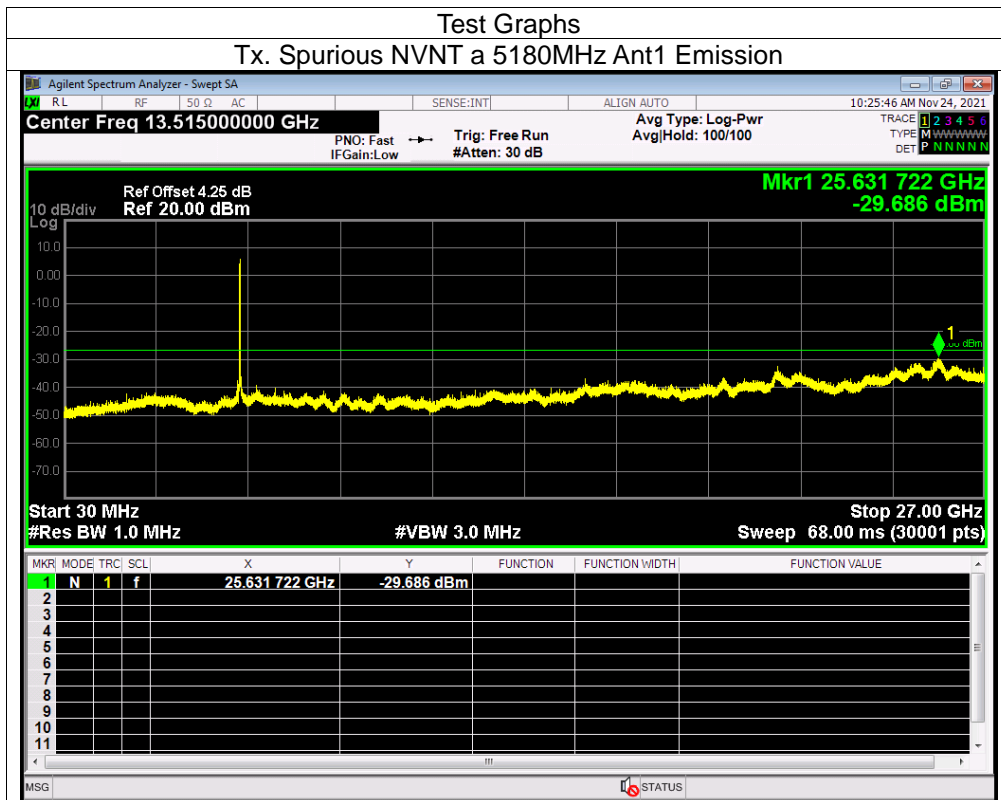
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then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

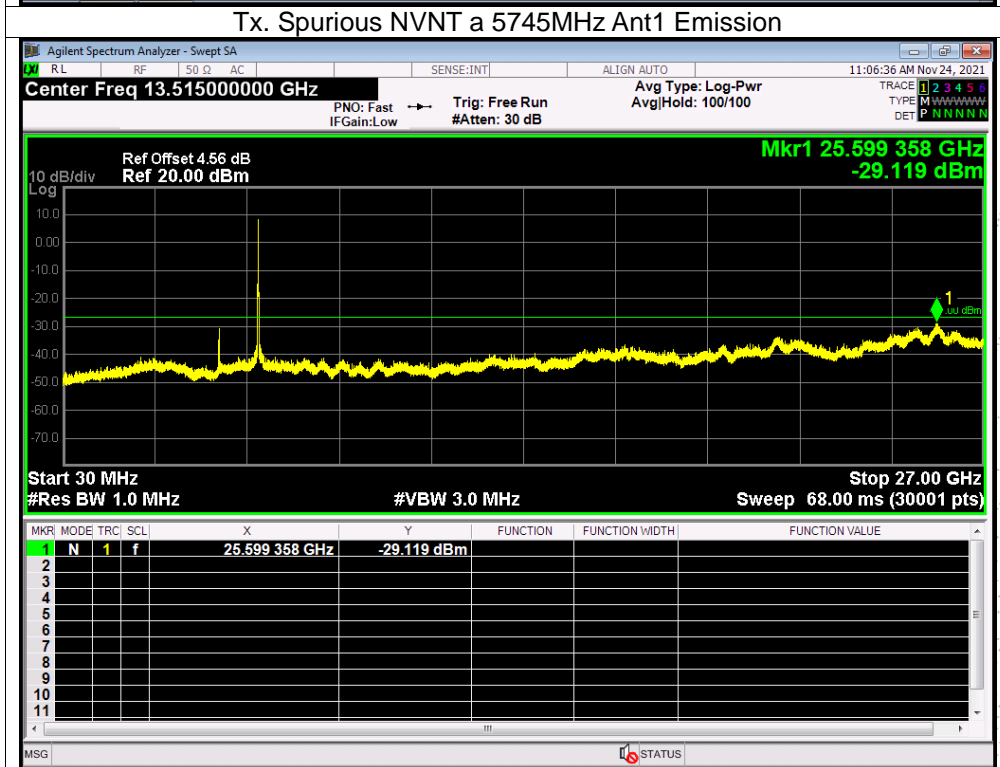
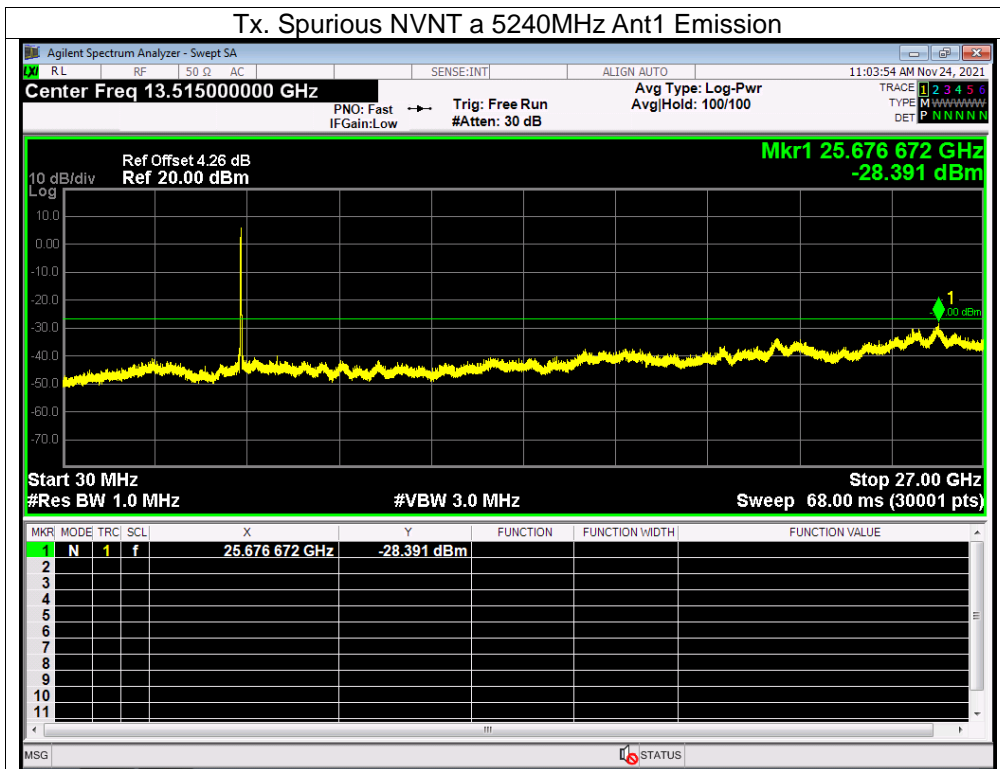
12.4 Test Result

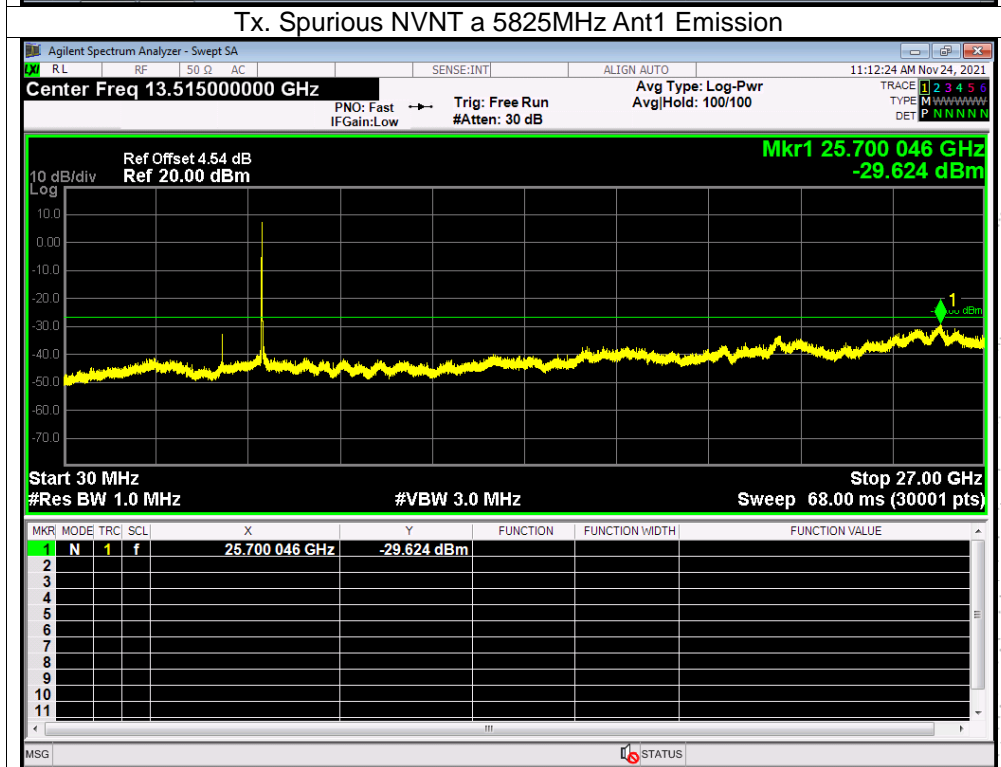
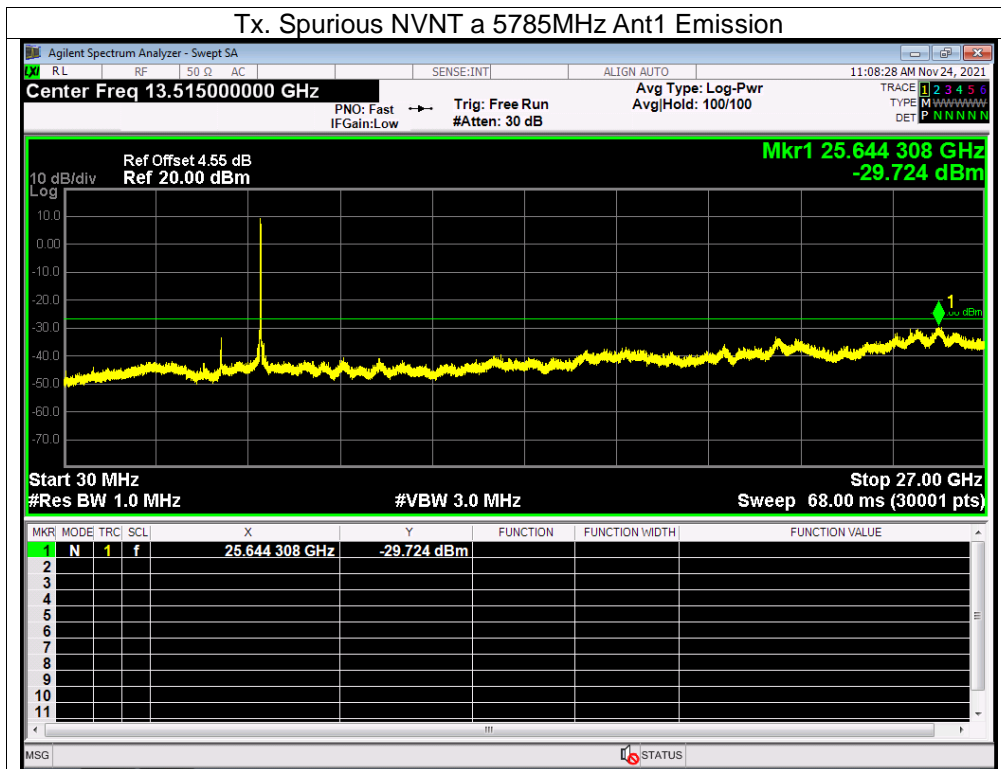
Remark: The measurement frequency range is from 9KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandege measurement data.

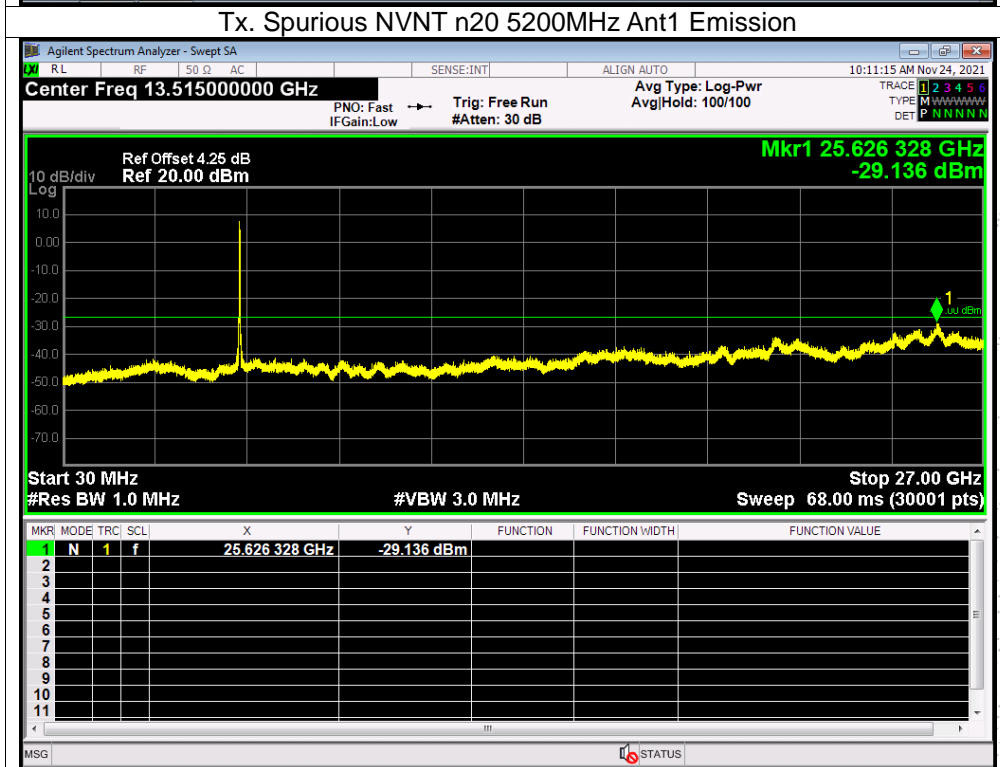
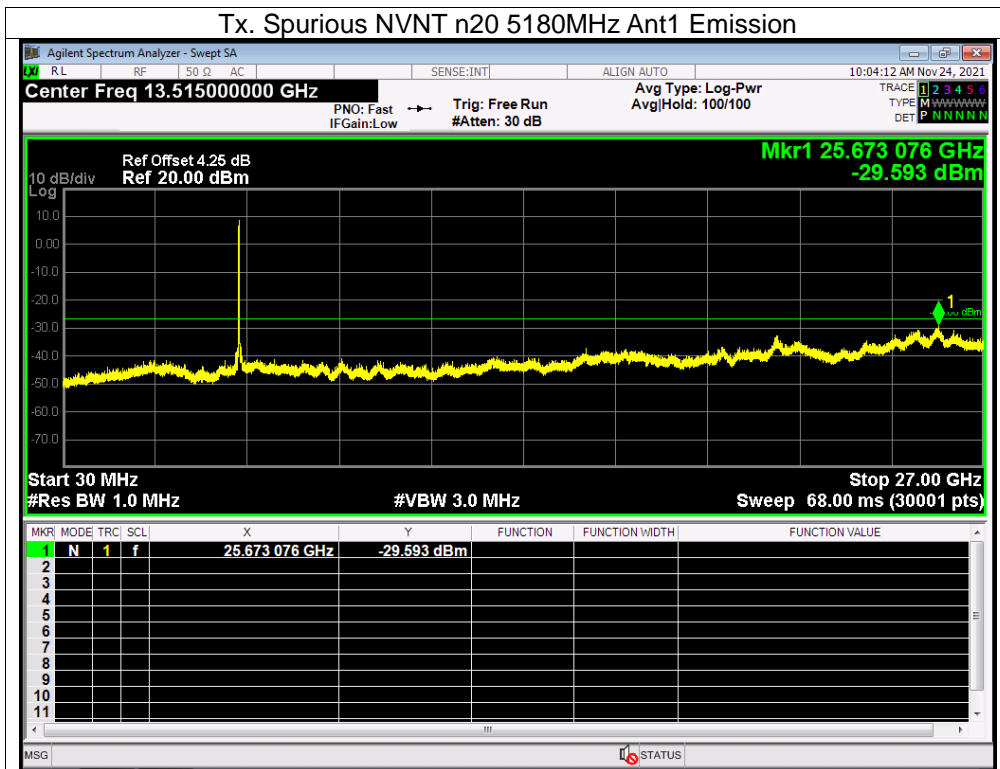
About:26.5GHz-40GHz, The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

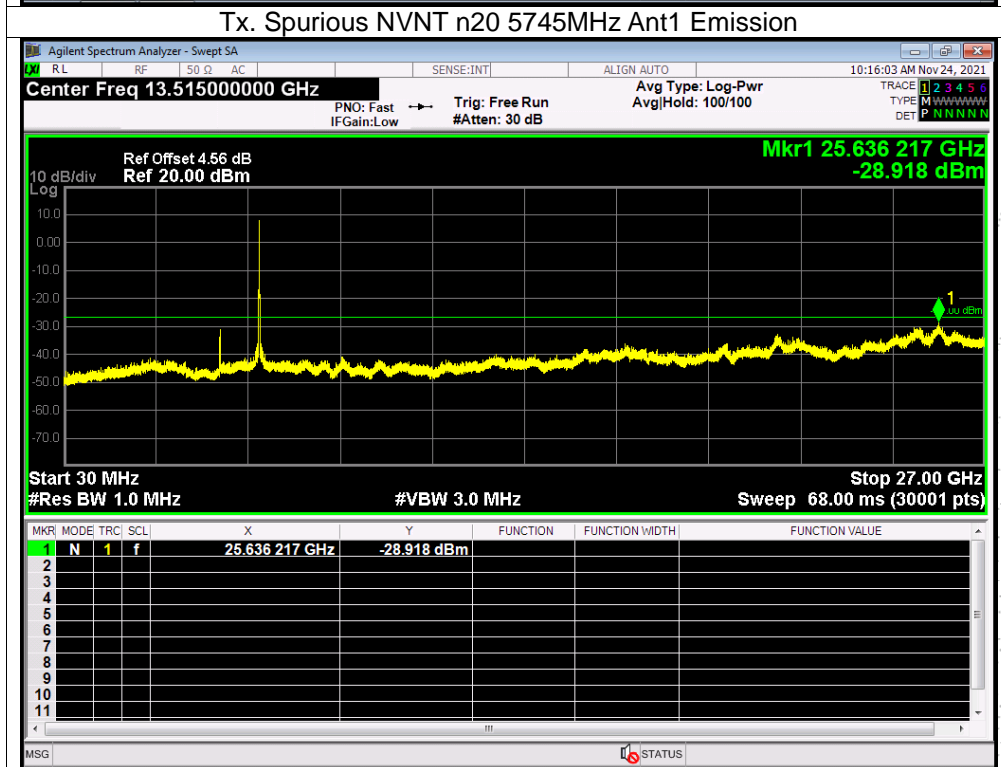
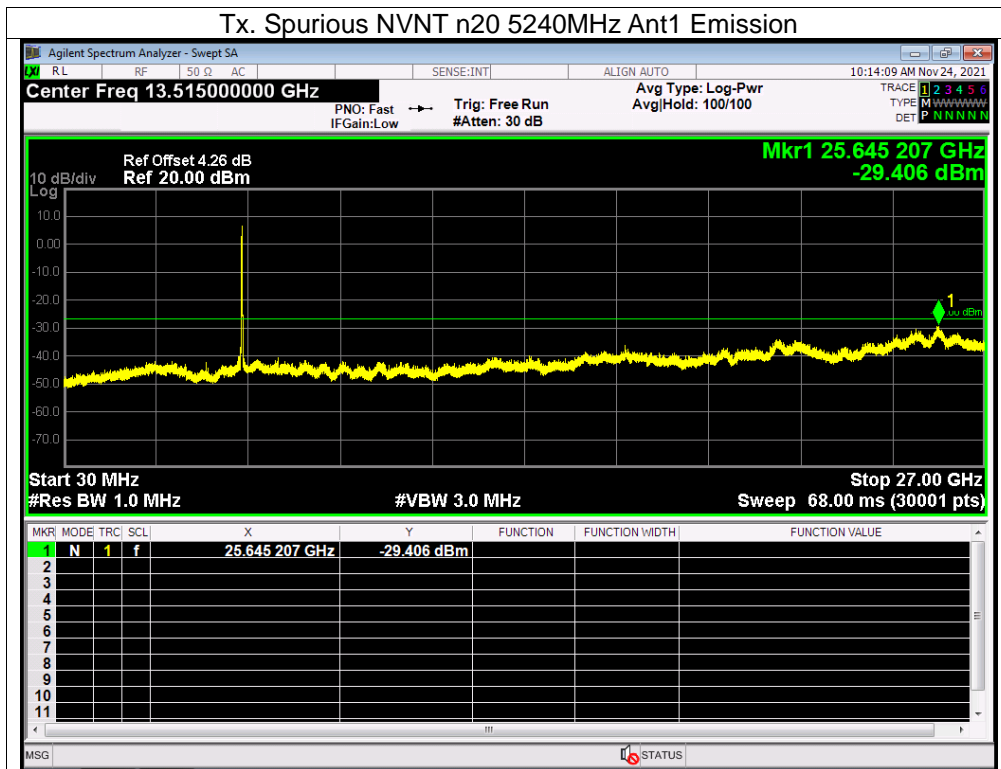
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna B, only shown Antenna B Plot.

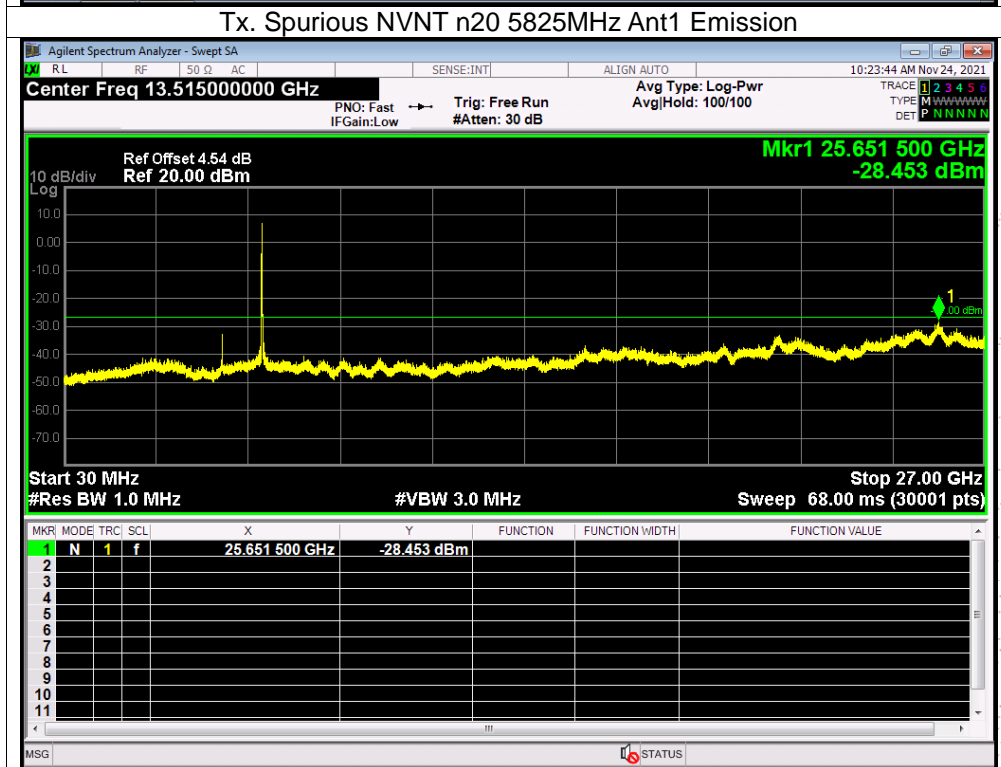
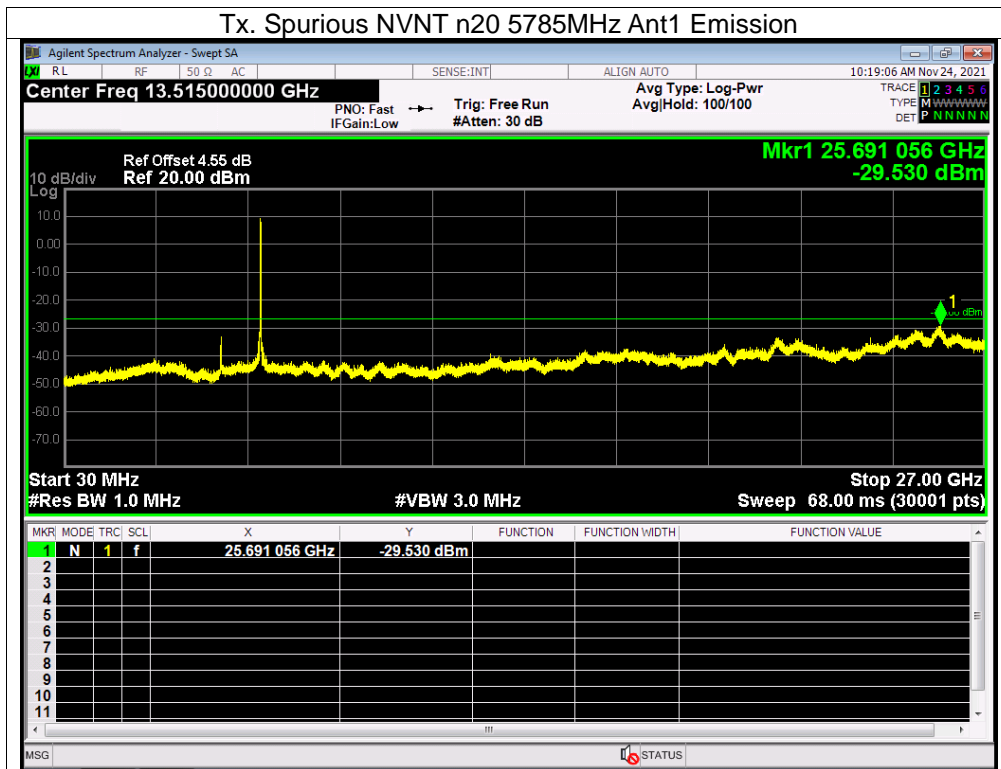












13. Frequency Stability Measurement

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	5180.0076	5180	0.0076	1.4578
		V max (V)	138.00	5180.0096	5180	0.0096	1.8628
		V min (V)	102.00	5180.0191	5180	0.0191	3.6806
Limits				5150-5250 MHz			
Result				Complies			

Temperature vs. Frequency Stability

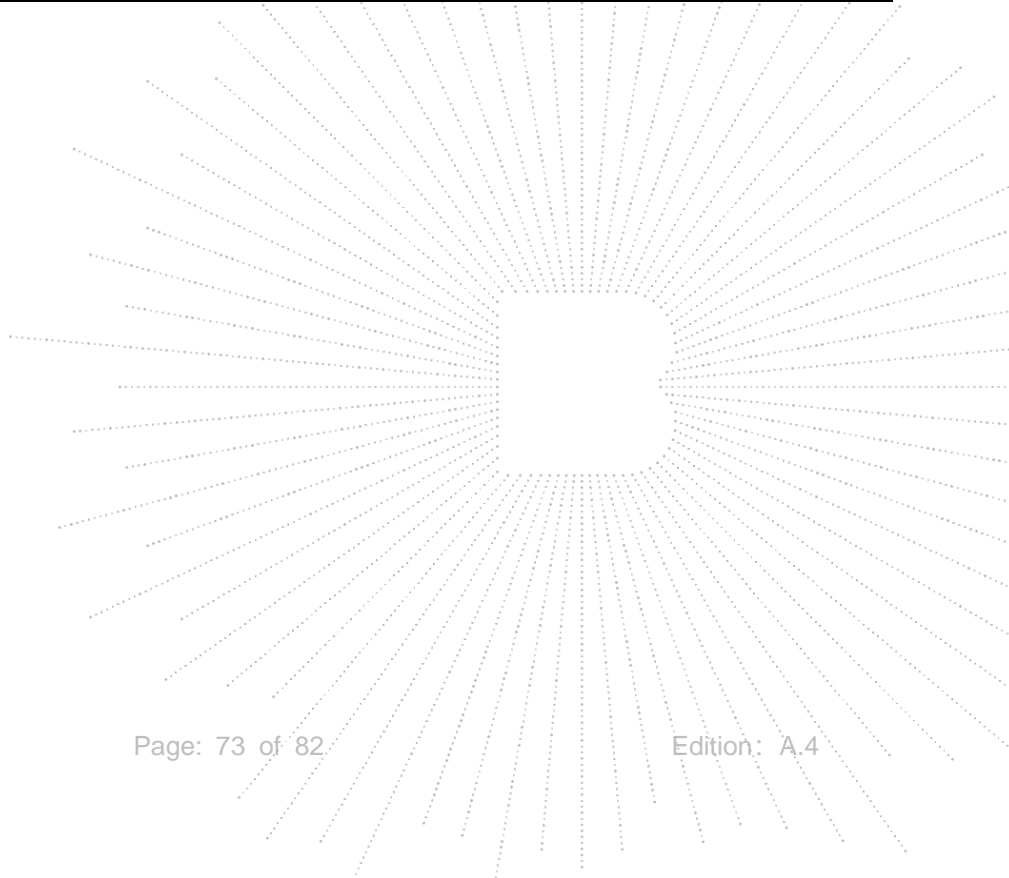
TEST CONDITIONS				Reference Frequency: 5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5180.0069	5180	0.0069	1.3270
		T (°C)	-10	5180.0123	5180	0.0123	2.3708
		T (°C)	0	5180.0117	5180	0.0117	2.2495
		T (°C)	10	5180.0070	5180	0.0070	1.3525
		T (°C)	20	5180.0116	5180	0.0116	2.2394
		T (°C)	30	5180.0047	5180	0.0047	0.9116
		T (°C)	40	5180.0039	5180	0.0039	0.7556
		T (°C)	50	5180.0106	5180	0.0106	2.0482
		T (°C)	60	5180.0127	5180	0.0127	2.4493
		T (°C)	70	5180.0093	5180	0.0093	1.8026
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	5200.0017	5200	0.0017	0.3235
		V max (V)	138.00	5200.0029	5200	0.0029	0.5510
		V min (V)	102.00	5200.0101	5200	0.0101	1.9380
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	5200.00262	5200	0.00262	0.5037
		T (°C)	-10	5200.00914	5200	0.00914	1.7568
		T (°C)	0	5200.01117	5200	0.01117	2.1473
		T (°C)	10	5200.00602	5200	0.00602	1.1582
		T (°C)	20	5200.01014	5200	0.01014	1.9497
		T (°C)	30	5200.01037	5200	0.01037	1.9936
		T (°C)	40	5200.00490	5200	0.00490	0.9415
		T (°C)	50	5200.00605	5200	0.00605	1.1629
		T (°C)	60	5200.01160	5200	0.01160	2.2300
		T (°C)	70	5200.01024	5200	0.01024	1.9688
Limits				5150-5250 MHz			
Result				Complies			

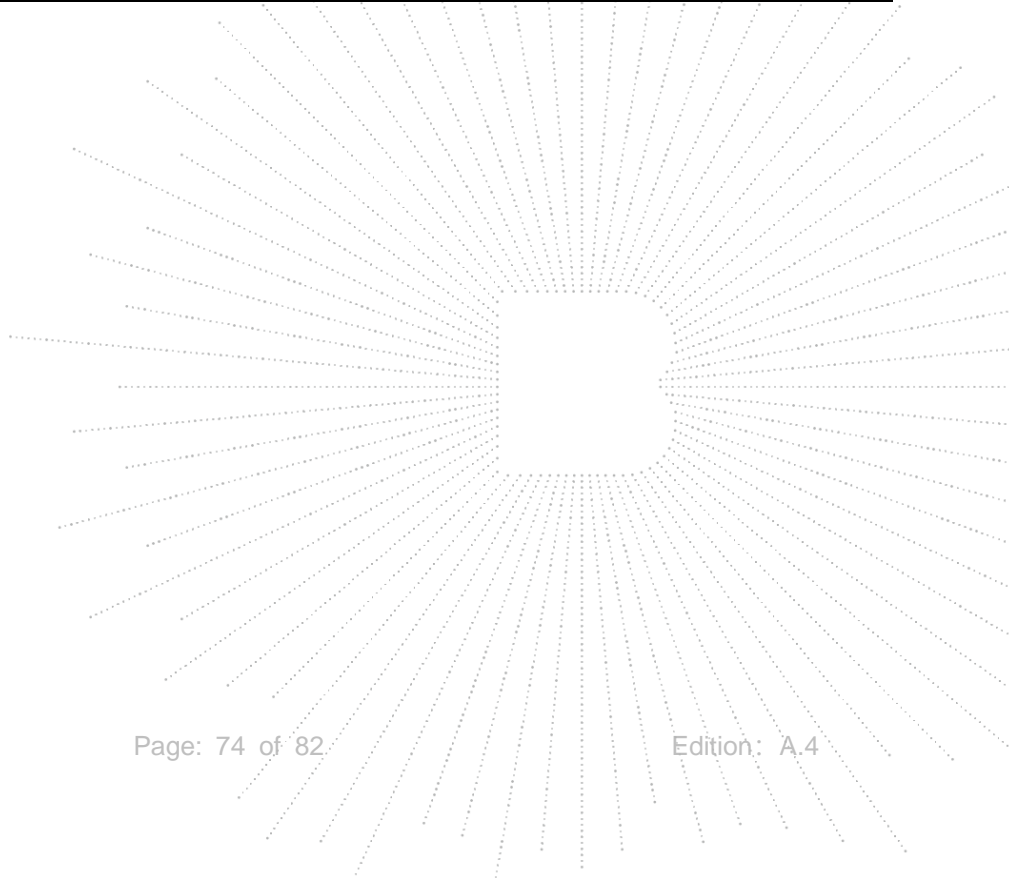


Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5240.0069	5240	0.0069	1.3239
		V max (V)	138.00	5240.0004	5240	0.0004	0.0758
		V min (V)	102.00	5240.0127	5240	0.0127	2.4165
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	5240.0076	5240	0.0076	1.4427
		T (°C)	-10	5240.0041	5240	0.0041	0.7832
		T (°C)	0	5240.0081	5240	0.0081	1.5410
		T (°C)	10	5240.0007	5240	0.0007	0.1414
		T (°C)	20	5240.0106	5240	0.0106	2.0183
		T (°C)	30	5240.0065	5240	0.0065	1.2374
		T (°C)	40	5240.0014	5240	0.0014	0.2618
		T (°C)	50	5240.0103	5240	0.0103	1.9668
		T (°C)	60	5240.0024	5240	0.0024	0.4669
		T (°C)	70	5240.0075	5240	0.0075	1.4408
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 Stabilit

TEST CONDITIONS				Reference Frequency: 5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5745.00605	5745	0.00605	1.0535
		V max (V)	138.00	5745.00971	5745	0.00971	1.6903
		V min (V)	102.00	5745.00764	5745	0.00764	1.3298
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

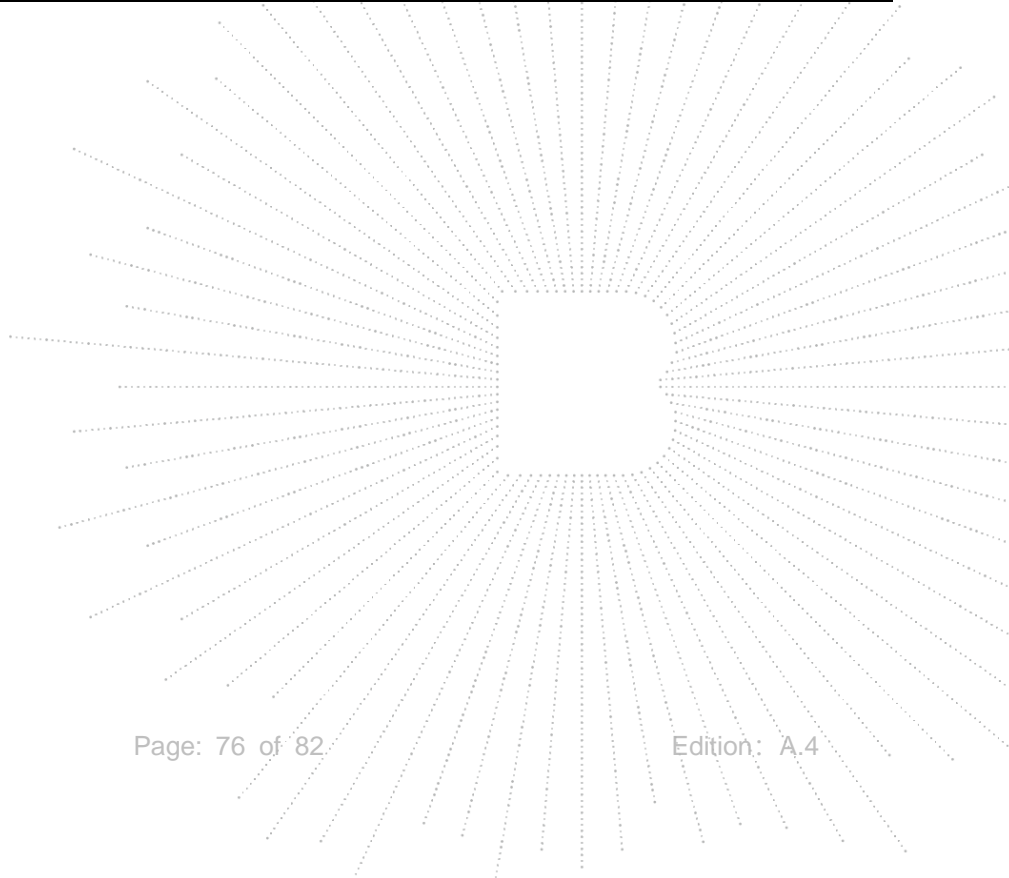
TEST CONDITIONS				Reference Frequency: 5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5745.00278	5745	0.00278	0.4845
		T (°C)	-10	5745.01131	5745	0.01131	1.9692
		T (°C)	0	5745.00657	5745	0.00657	1.1436
		T (°C)	10	5745.00481	5745	0.00481	0.8373
		T (°C)	20	5745.00927	5745	0.00927	1.6142
		T (°C)	30	5745.00485	5745	0.00485	0.8446
		T (°C)	40	5745.00316	5745	0.00316	0.5500
		T (°C)	50	5745.00127	5745	0.00127	0.2207
		T (°C)	60	5745.00870	5745	0.00870	1.5144
		T (°C)	70	5745.00741	5745	0.00741	1.2891
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	5785.00579	5785	0.00579	1.0002
		V max (V)	138.00	5785.01082	5785	0.01082	1.8697
		V min (V)	102.00	5785.00627	5785	0.00627	1.0831
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	5785.00394	5785	0.00394	0.6811
		T (°C)	-10	5785.00187	5785	0.00187	0.3230
		T (°C)	0	5785.00657	5785	0.00657	1.1352
		T (°C)	10	5785.01246	5785	0.01246	2.1535
		T (°C)	20	5785.00622	5785	0.00622	1.0747
		T (°C)	30	5785.01123	5785	0.01123	1.9412
		T (°C)	40	5785.00393	5785	0.00393	0.6801
		T (°C)	50	5785.01233	5785	0.01233	2.1318
		T (°C)	60	5785.00115	5785	0.00115	0.1984
		T (°C)	70	5785.00837	5785	0.00837	1.4471
Limits				5725-5850 MHz			
Result				Complies			

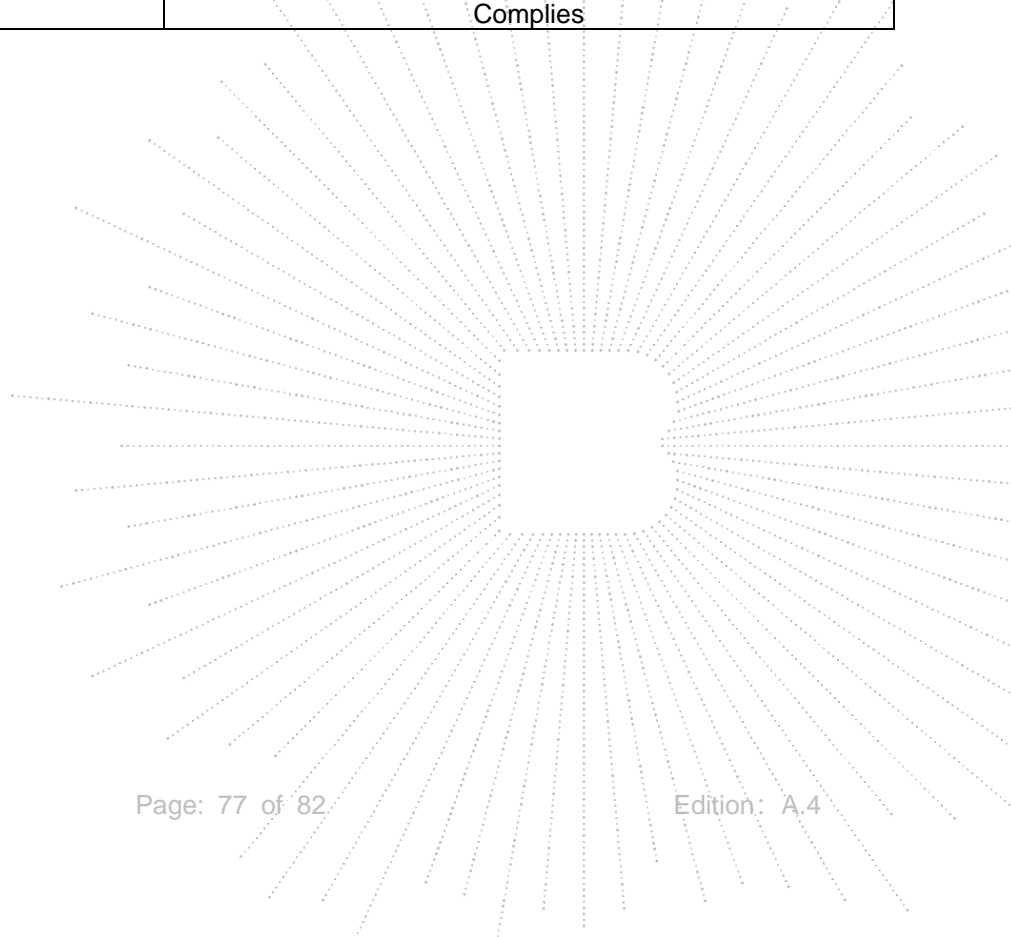


Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5825.00639	5825	0.00639	1.0969
		V max (V)	138.00	5825.00063	5825	0.00063	0.1077
		V min (V)	102.00	5825.00181	5825	0.00181	0.3105
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	5825.00094	5825	0.00094	0.1619
		T (°C)	-10	5825.01174	5825	0.01174	2.0153
		T (°C)	0	5825.01056	5825	0.01056	1.8126
		T (°C)	10	5825.00613	5825	0.00613	1.0528
		T (°C)	20	5825.00551	5825	0.00551	0.9454
		T (°C)	30	5825.01255	5825	0.01255	2.1547
		T (°C)	40	5825.01234	5825	0.01234	2.1191
		T (°C)	50	5825.00948	5825	0.00948	1.6279
		T (°C)	60	5825.01320	5825	0.01320	2.2661
		T (°C)	70	5825.01329	5825	0.01329	2.2824
Limits				5725-5850 MHz			
Result				Complies			



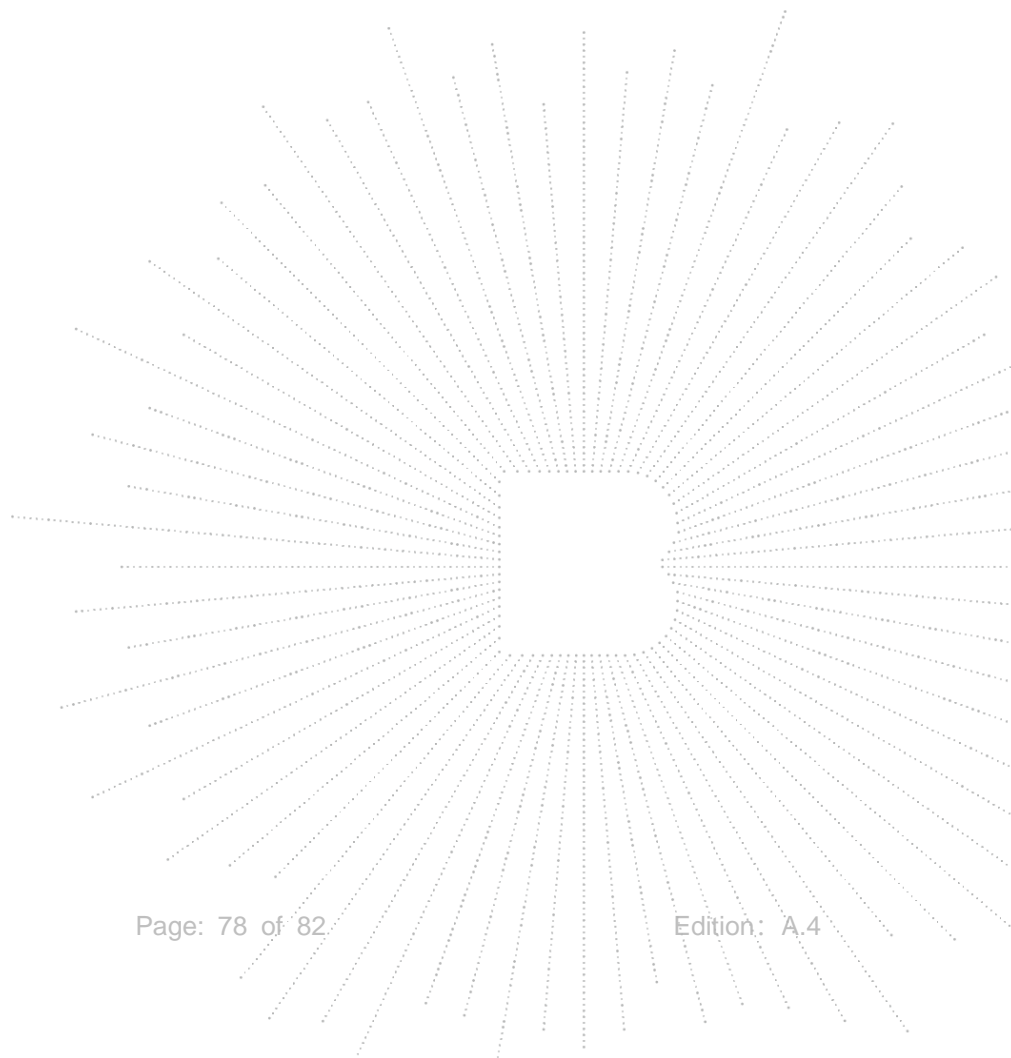
14. Antenna Requirement

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.

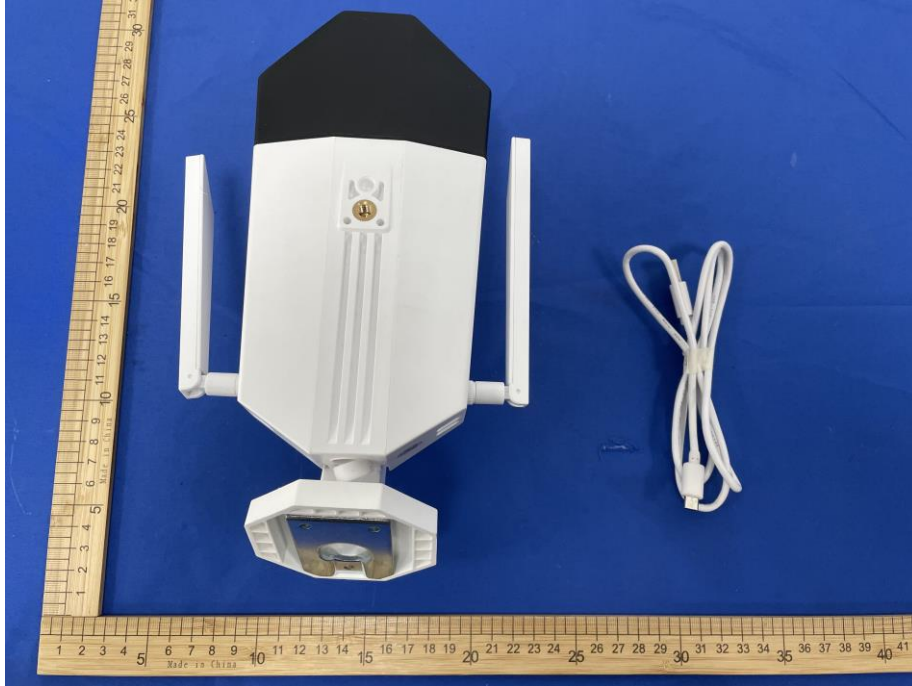
14.2 Test Result

The EUT antenna is External antenna, Use SMA reverse polarity, fulfill the requirement of this section.



15. EUT Photographs

EUT Photo 1

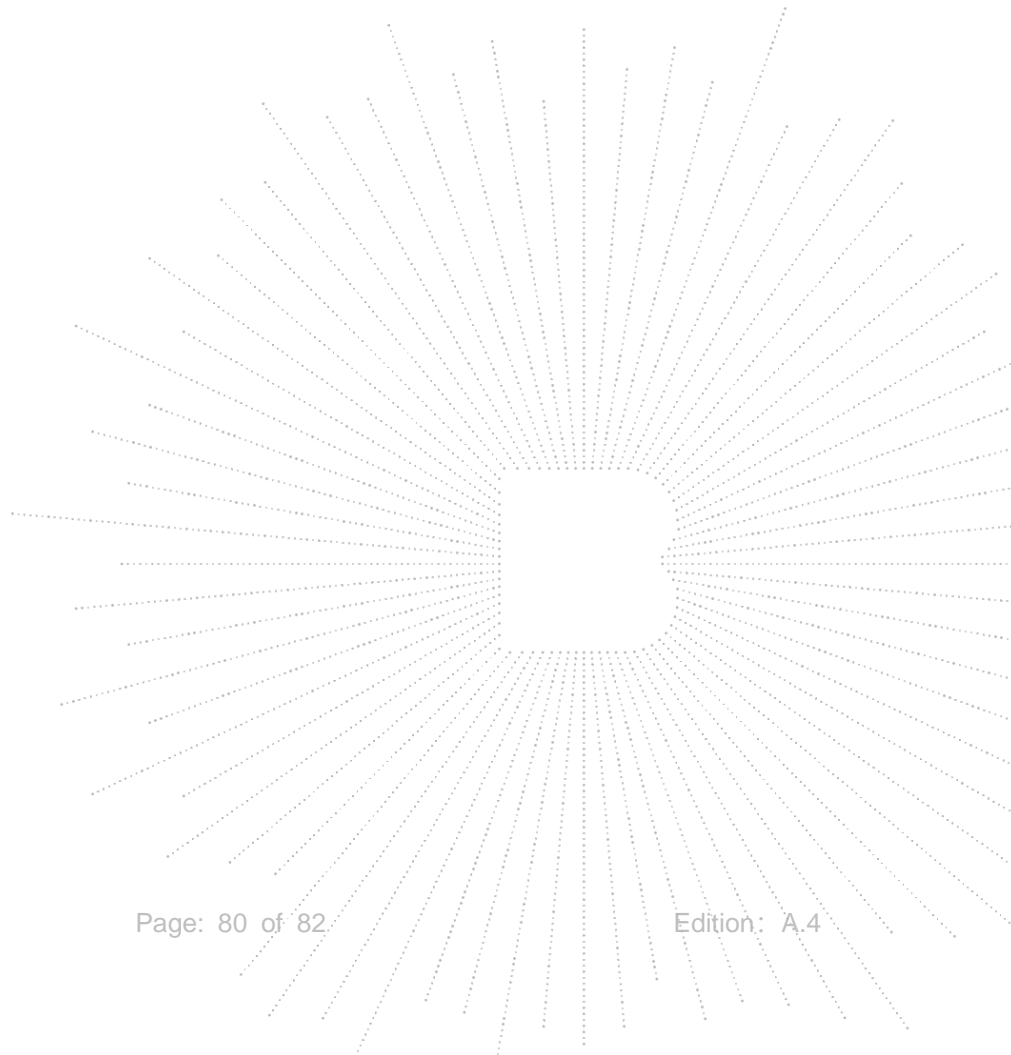


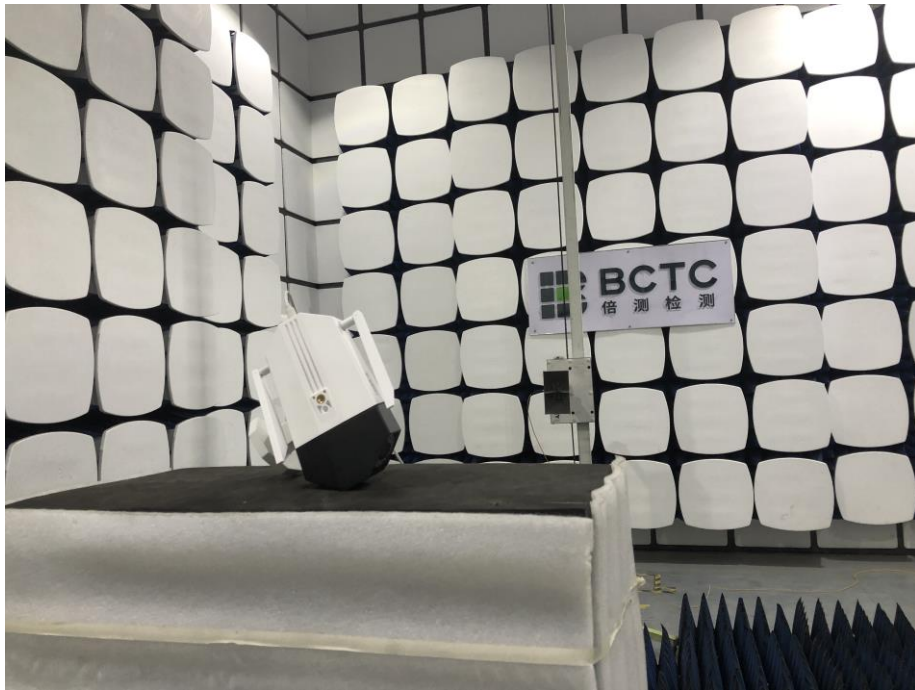
EUT Photo 2



16. EUT Test Setup Photographs

Conducted Emission





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 stamp of laboratory.
- 4.The test report is invalid without signature of person(s) testing and authorizing.
- 5.The test process and test result is only related to the Unit Under Test.
- 6.The quality system of our laboratory is in accordance with ISO/IEC17025.
- 7.If there is any objection to 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, Tangwei, 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 *****