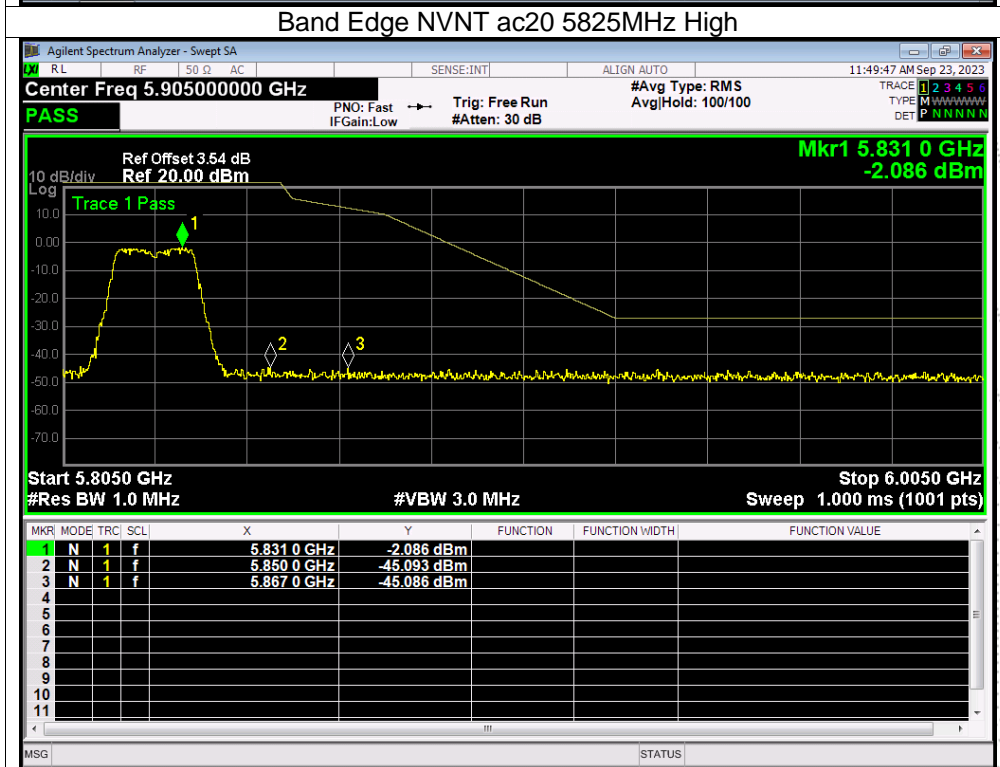
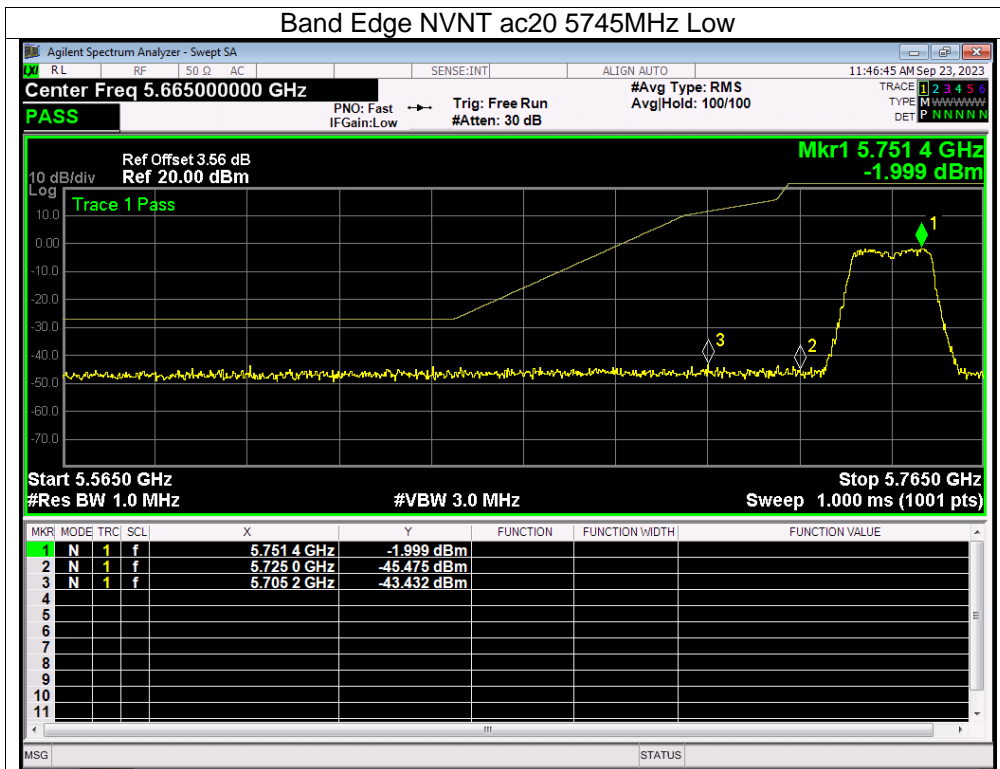
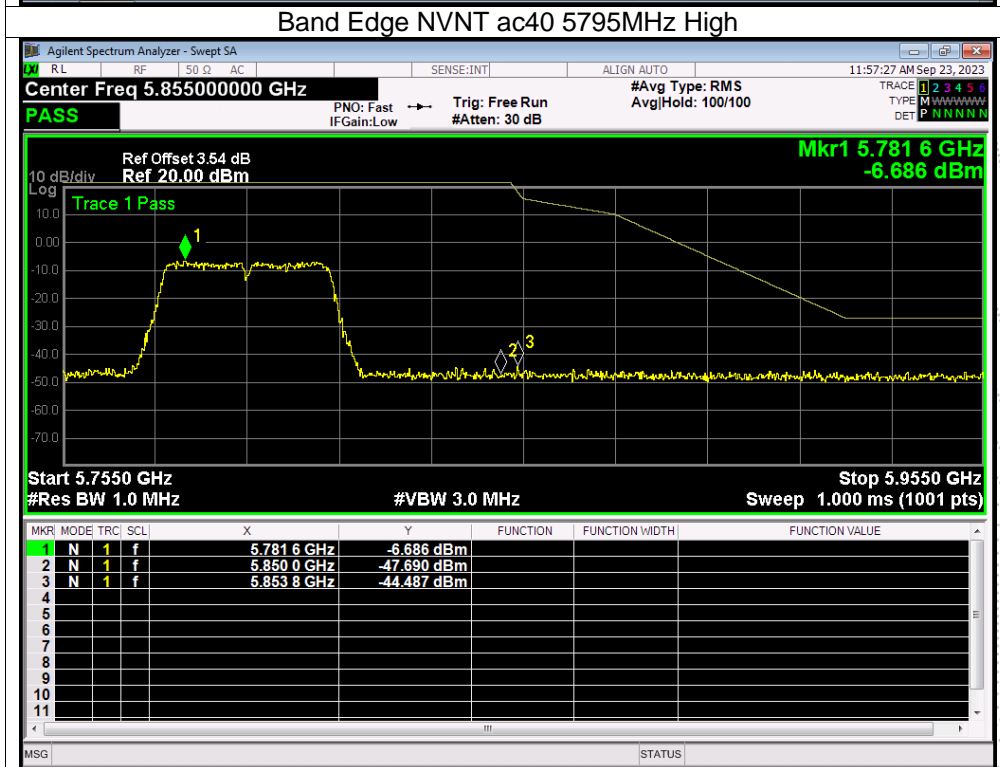
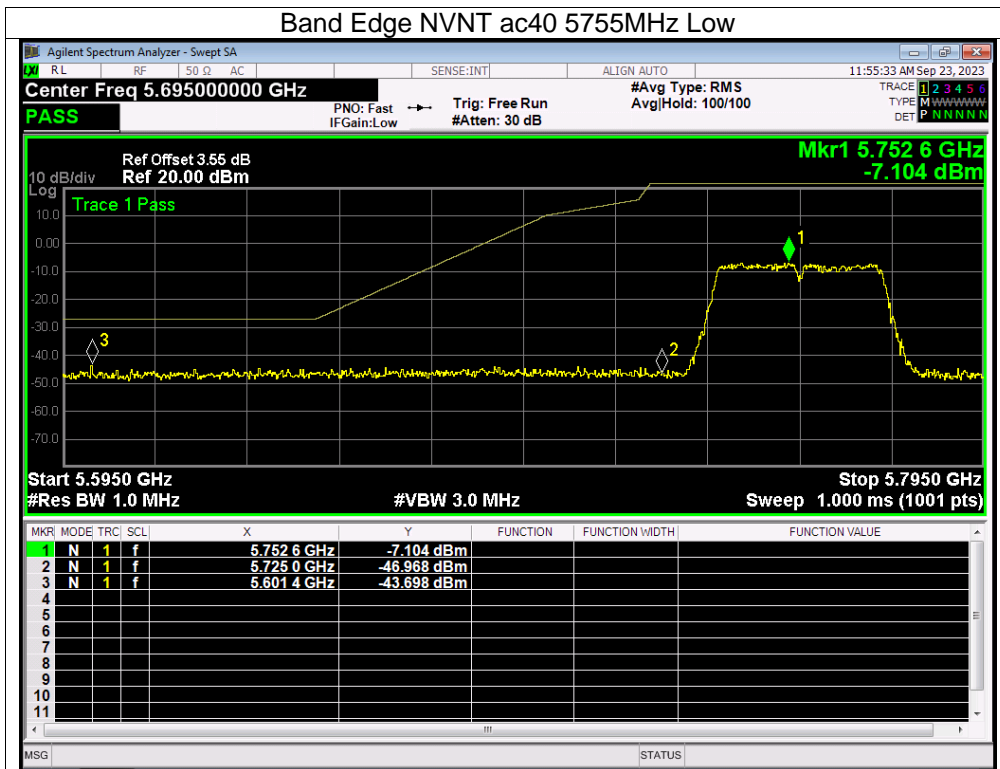
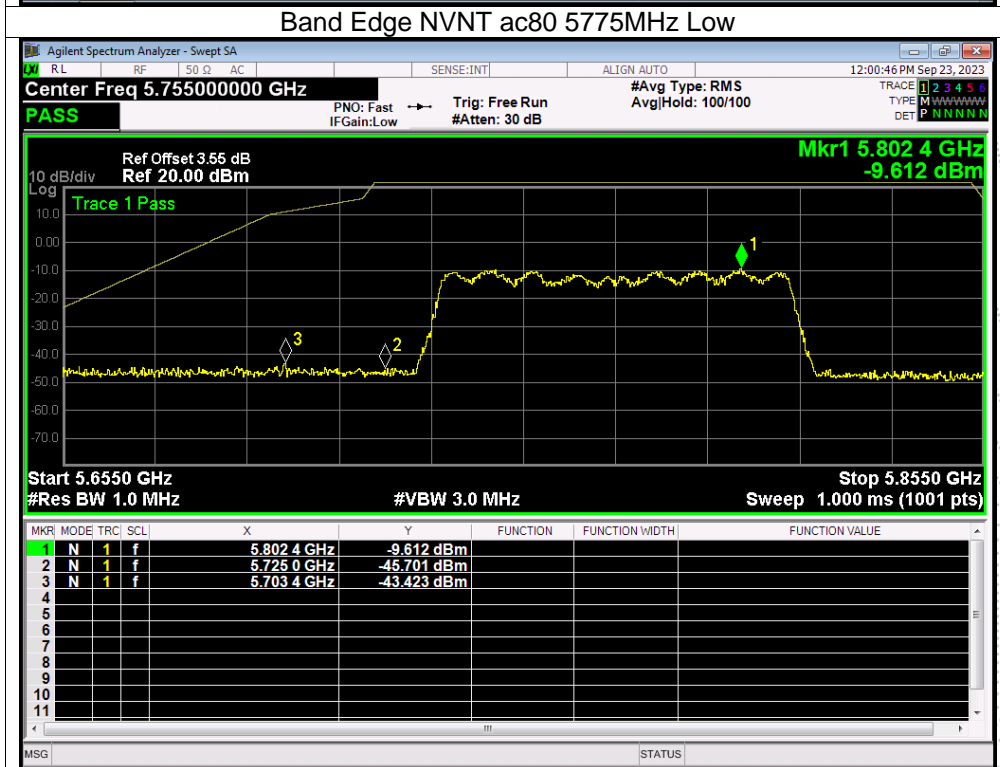
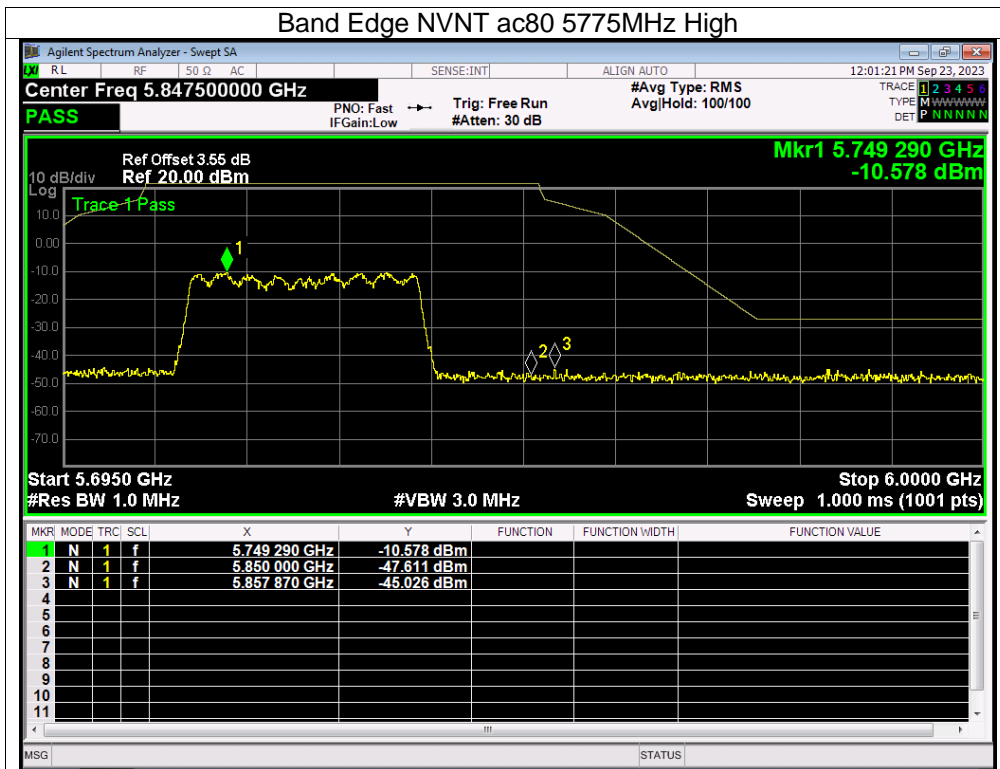


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## 12. Spurious RF Conducted Emissions

### 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

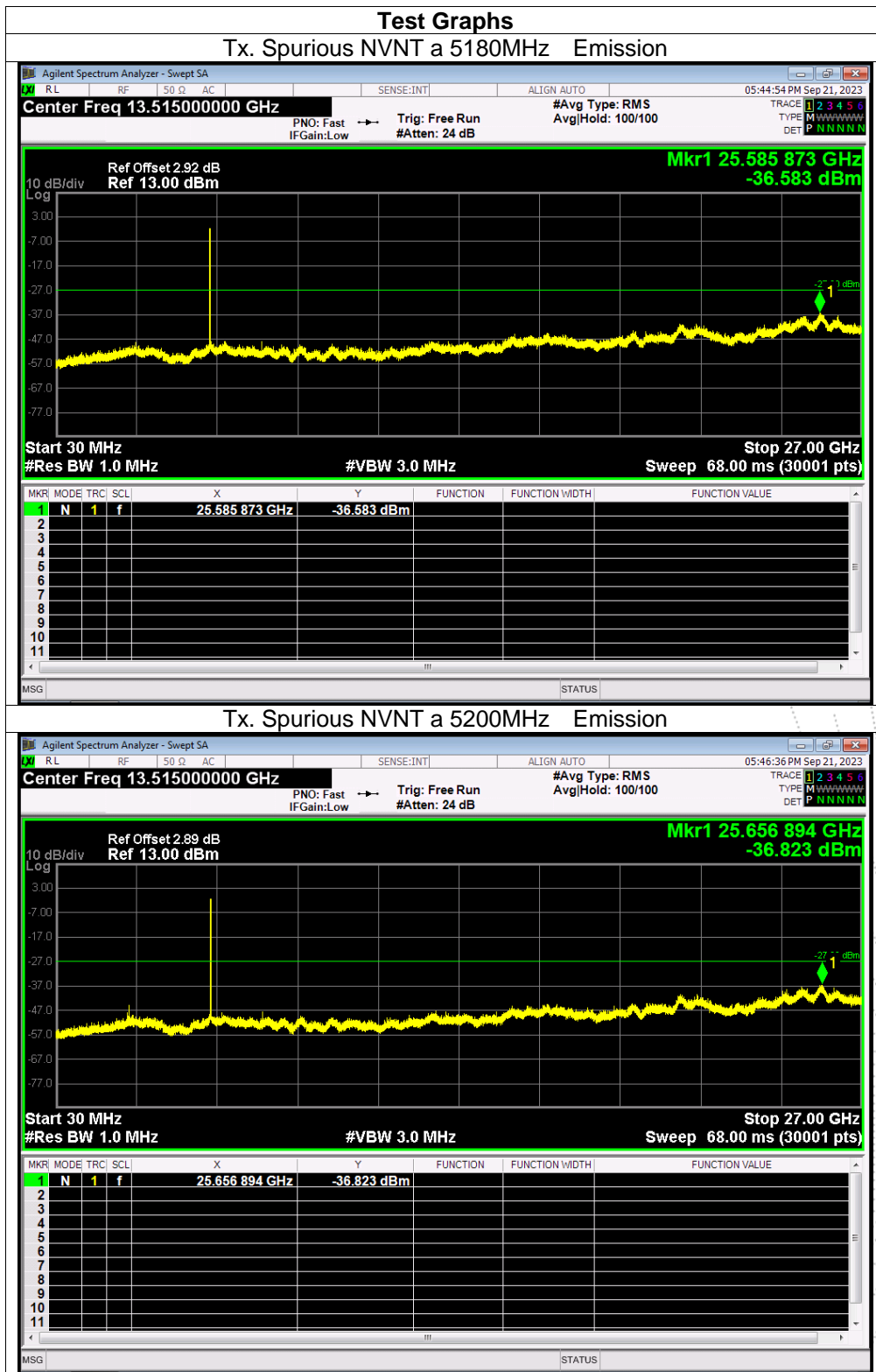
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then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

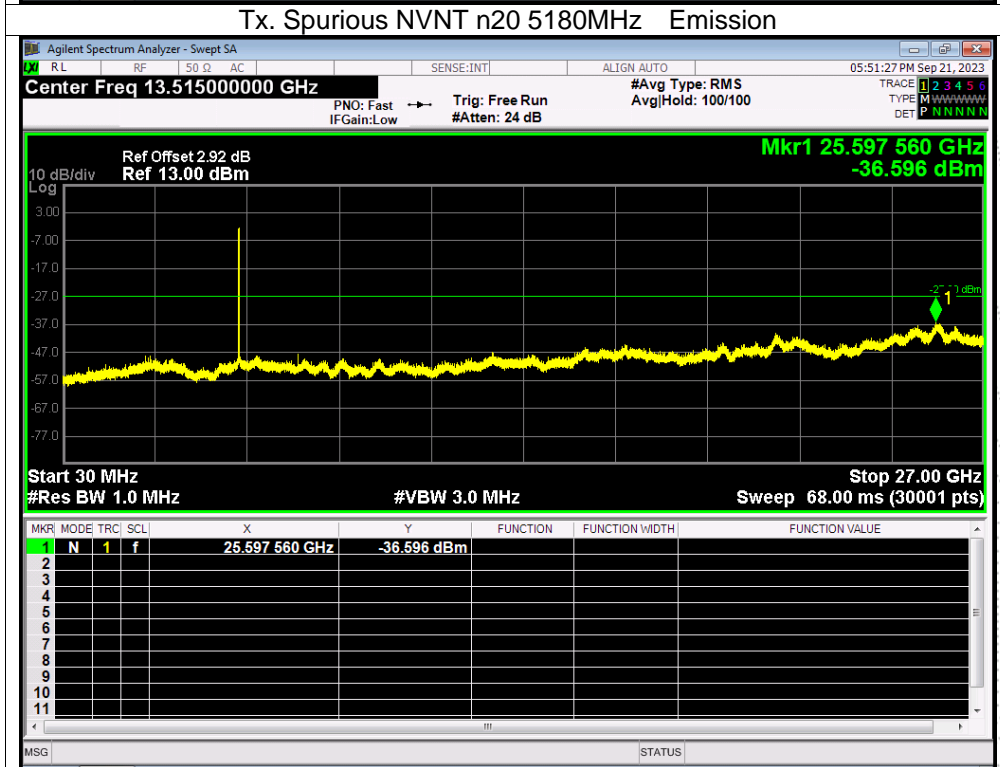
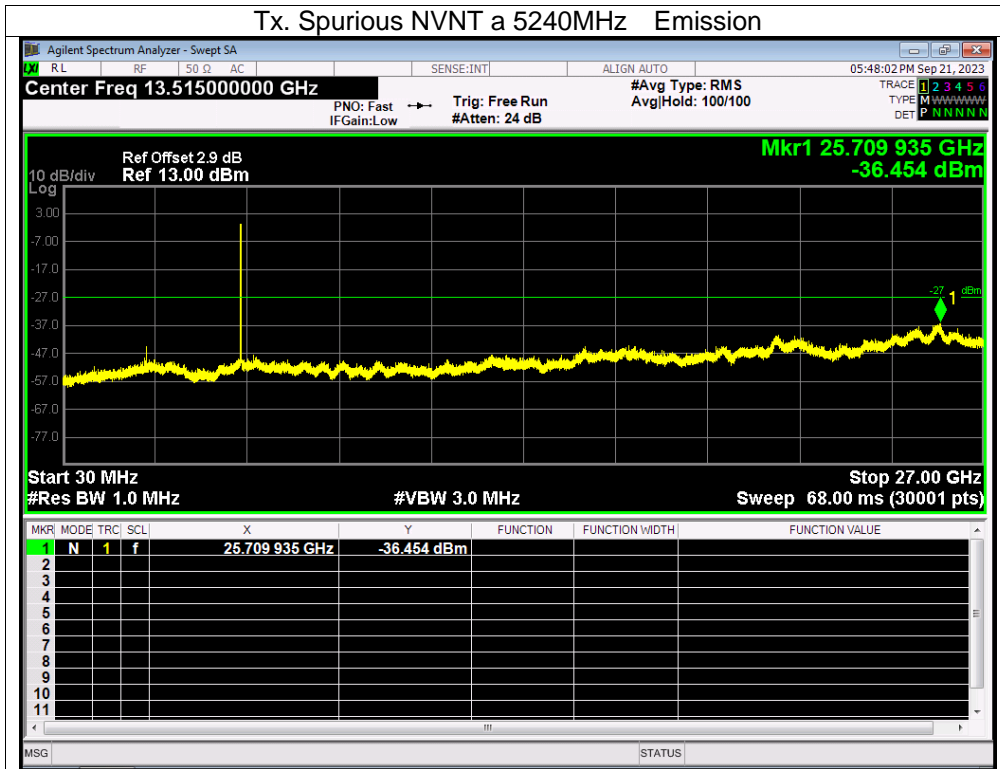
Remark: The measurement frequency range is from 9KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandedge measurement data.

About: 26.5GHz-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 A, only shown Antenna A.  
 Plot. Antenna B: 5180-5240MHz

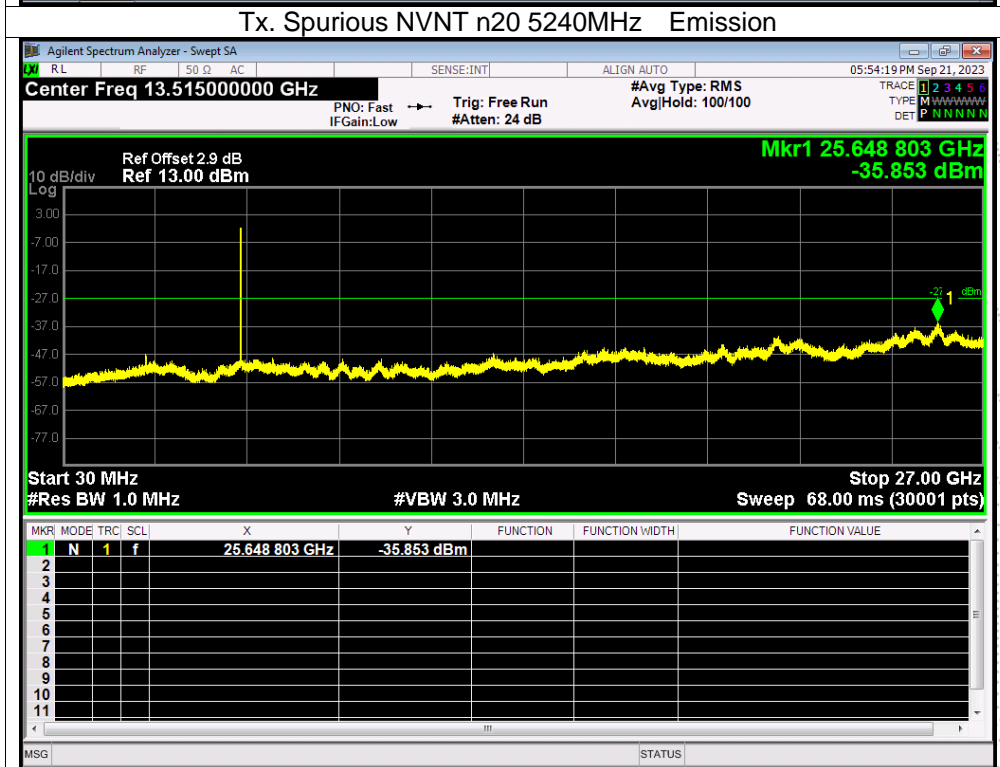
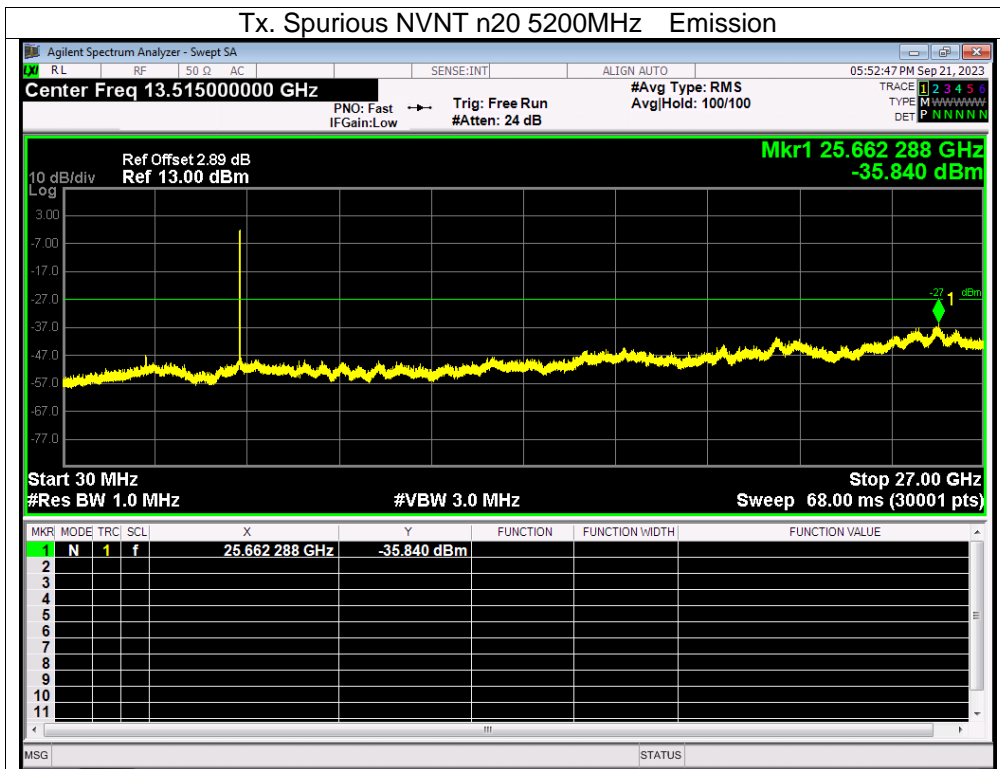


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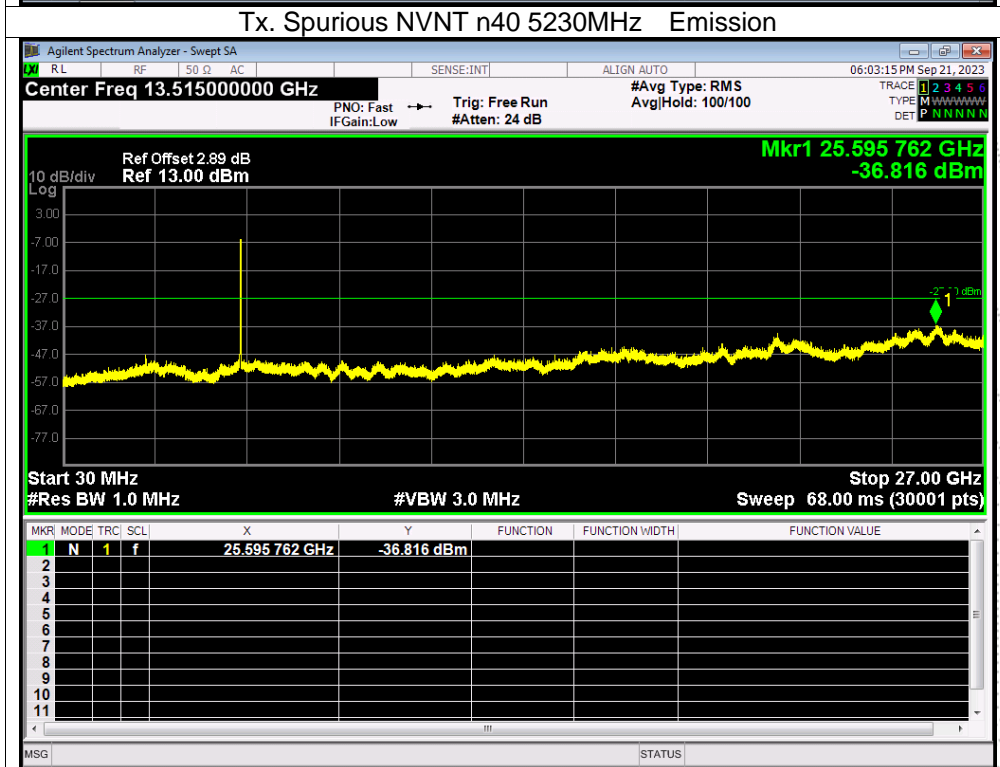
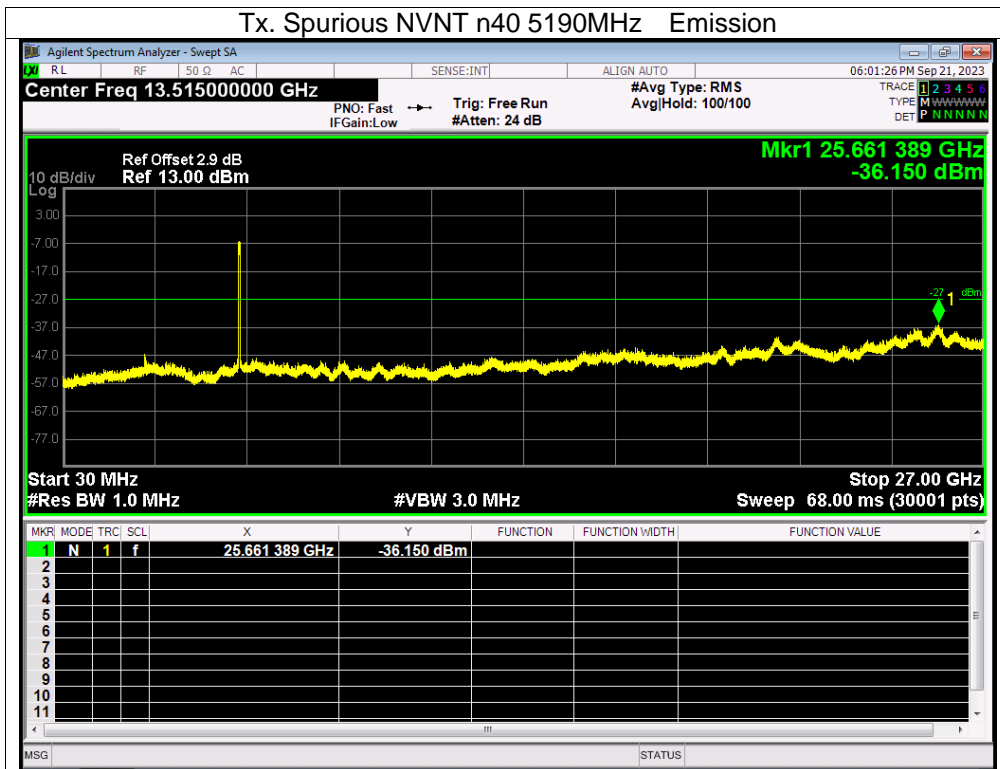


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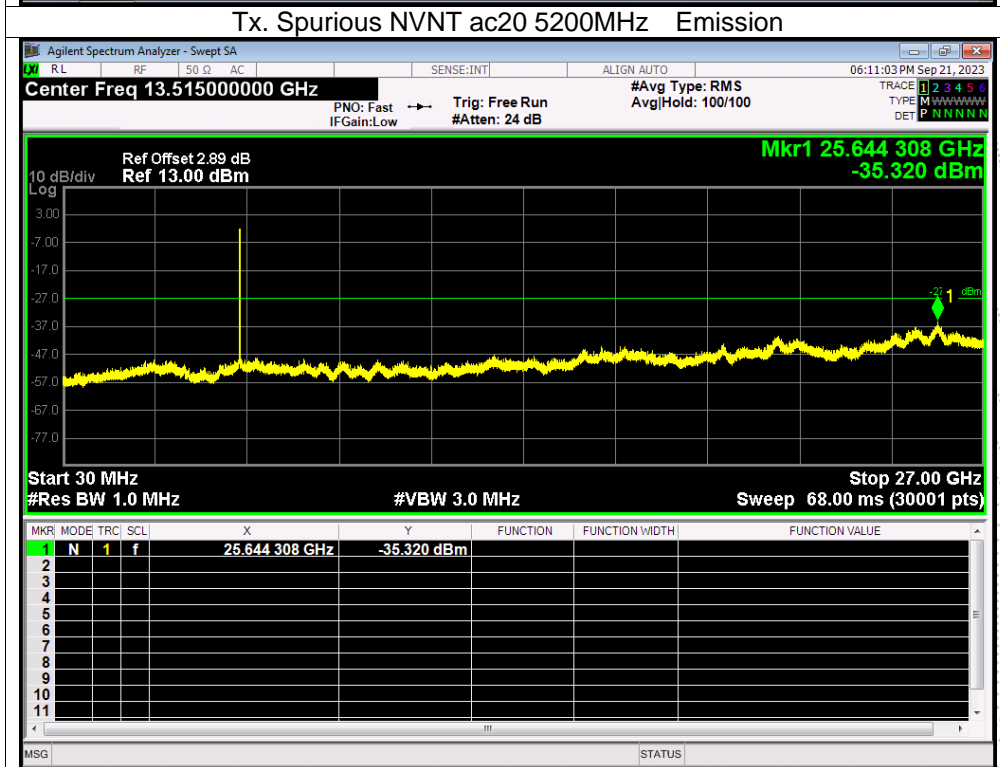
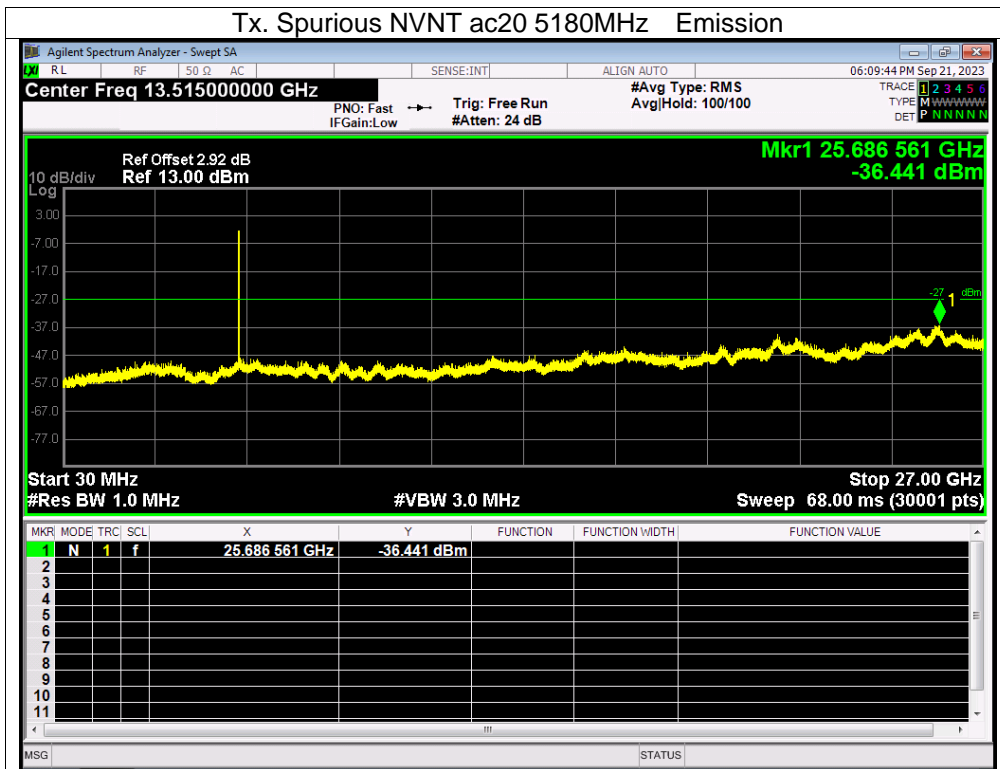




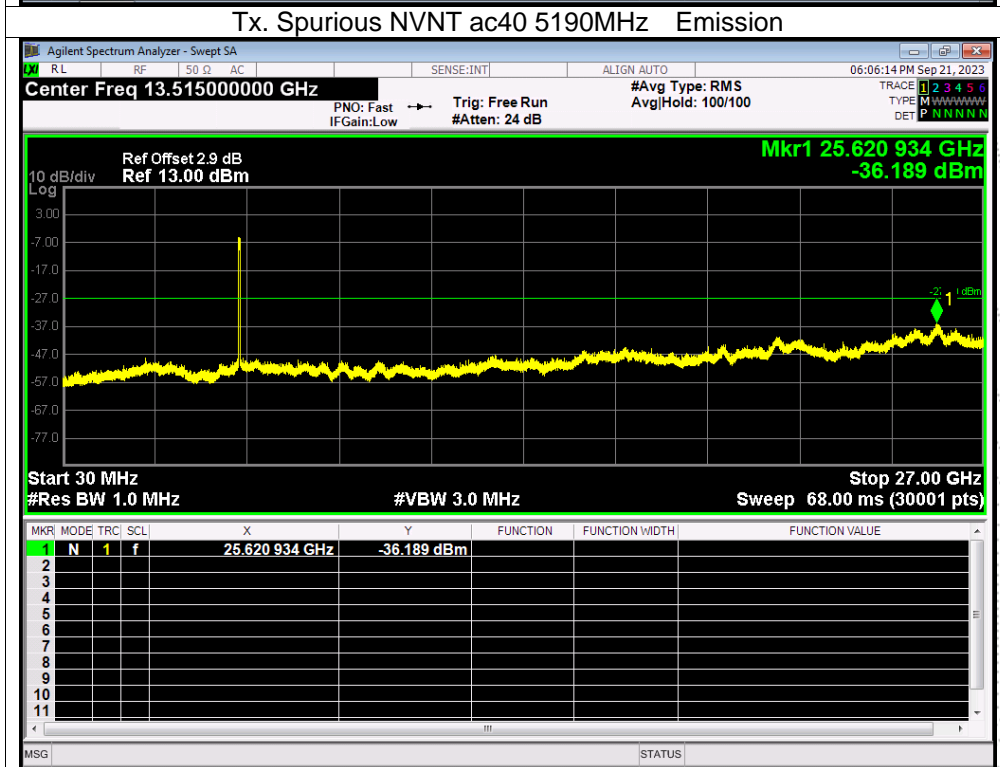
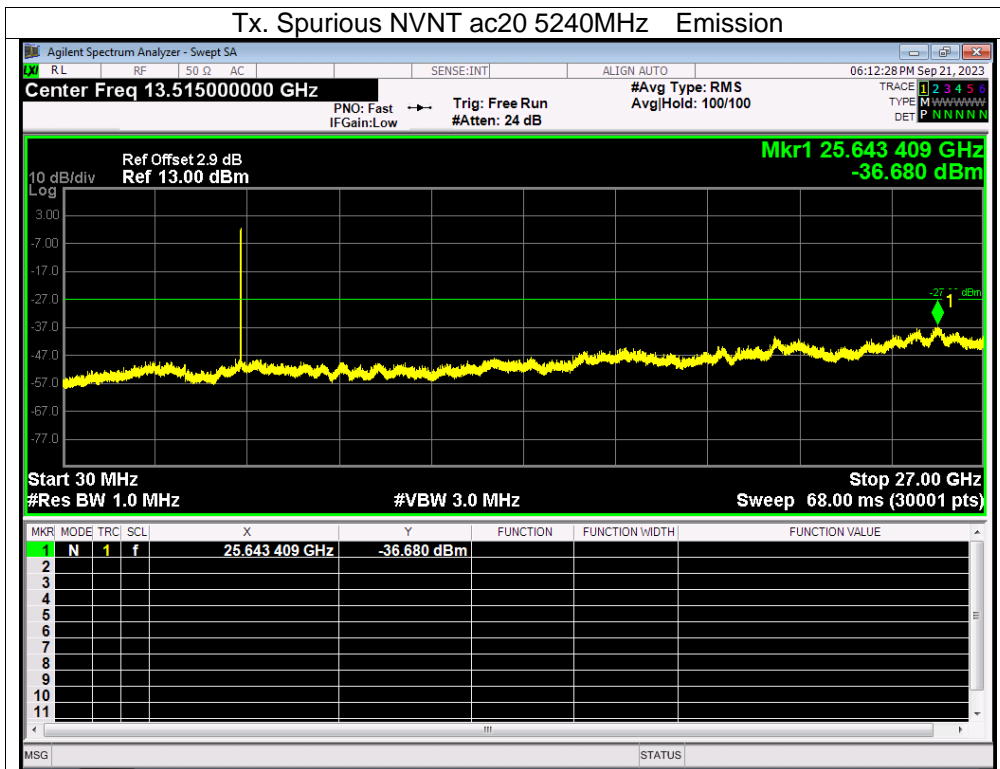


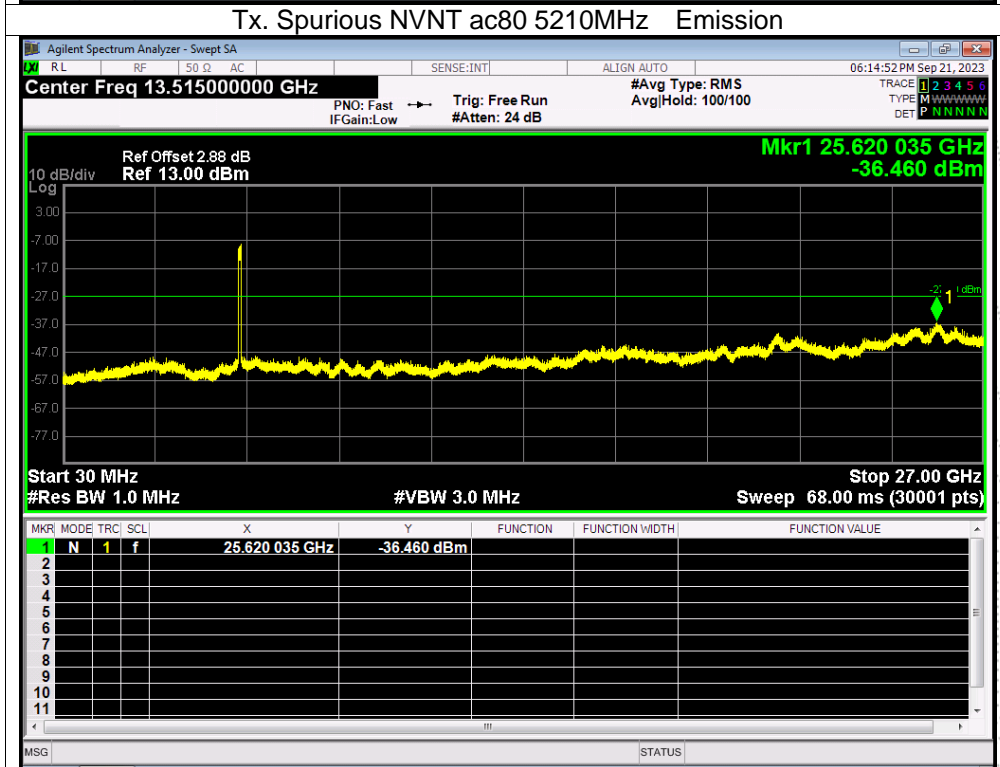
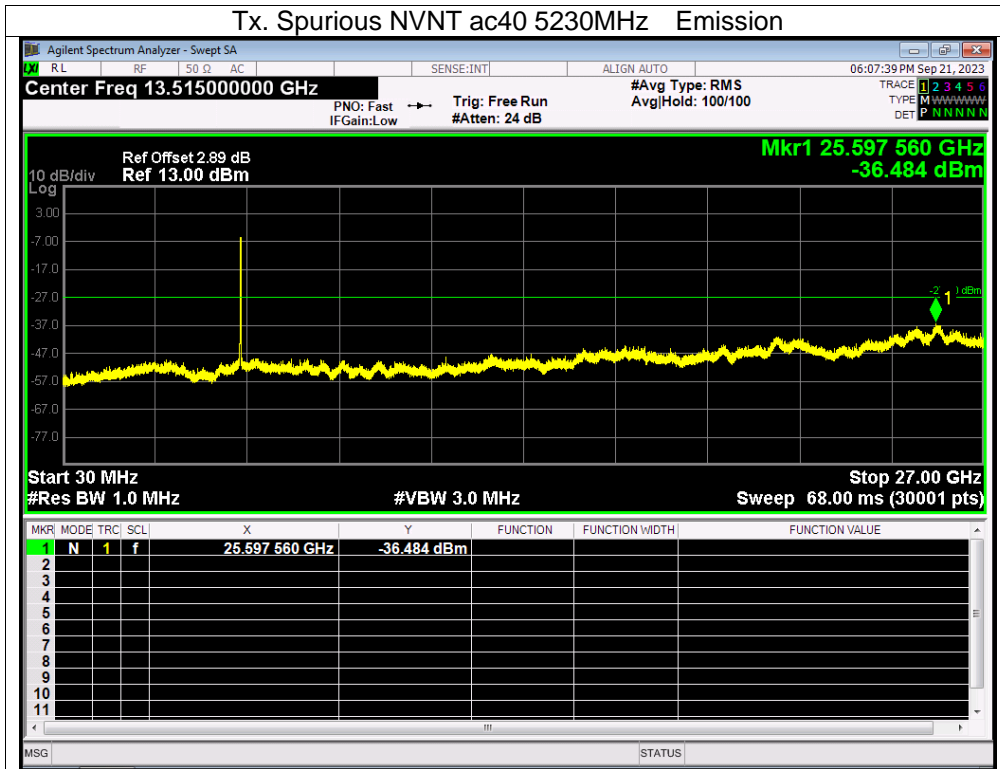


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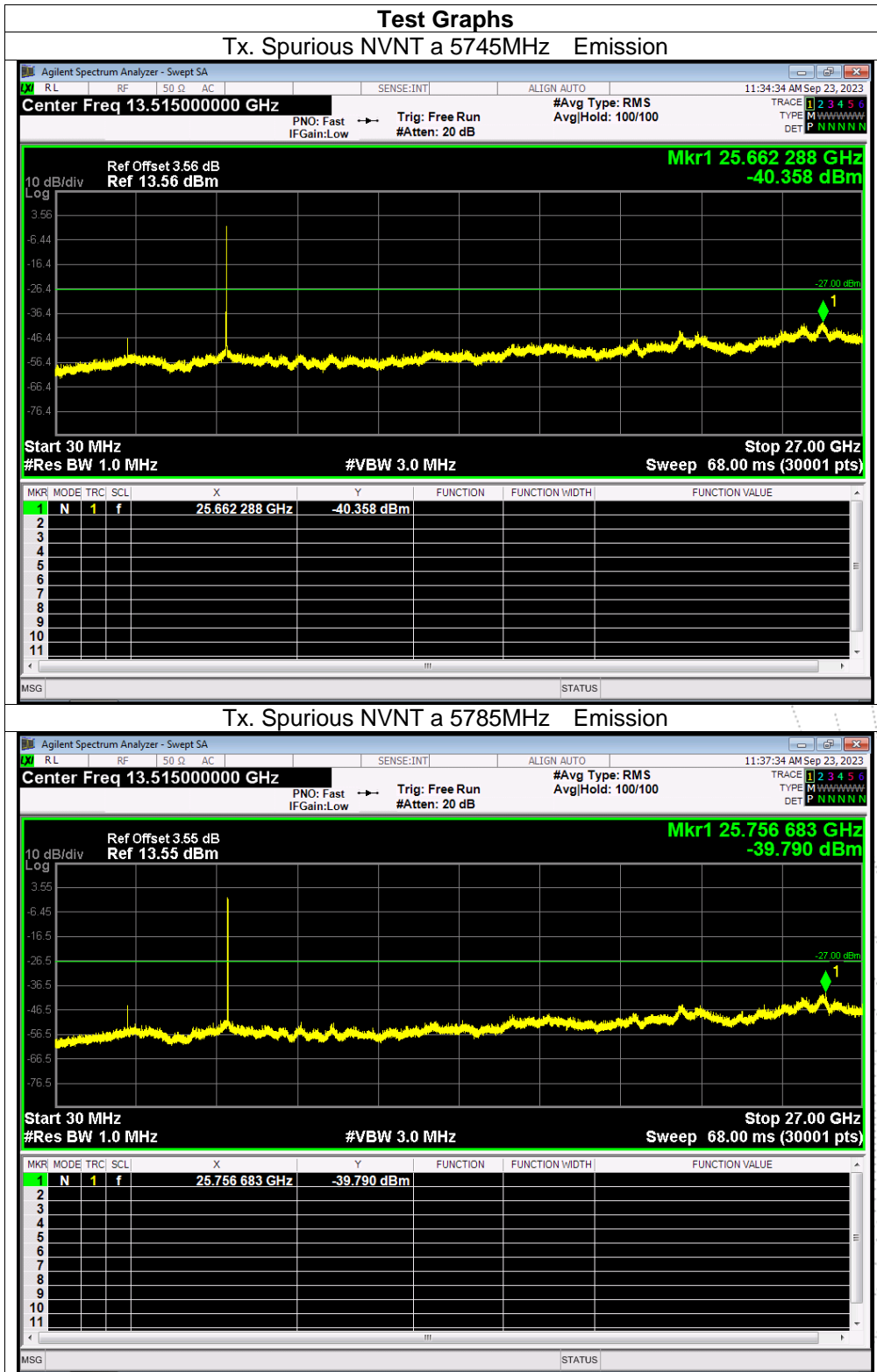
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 検査

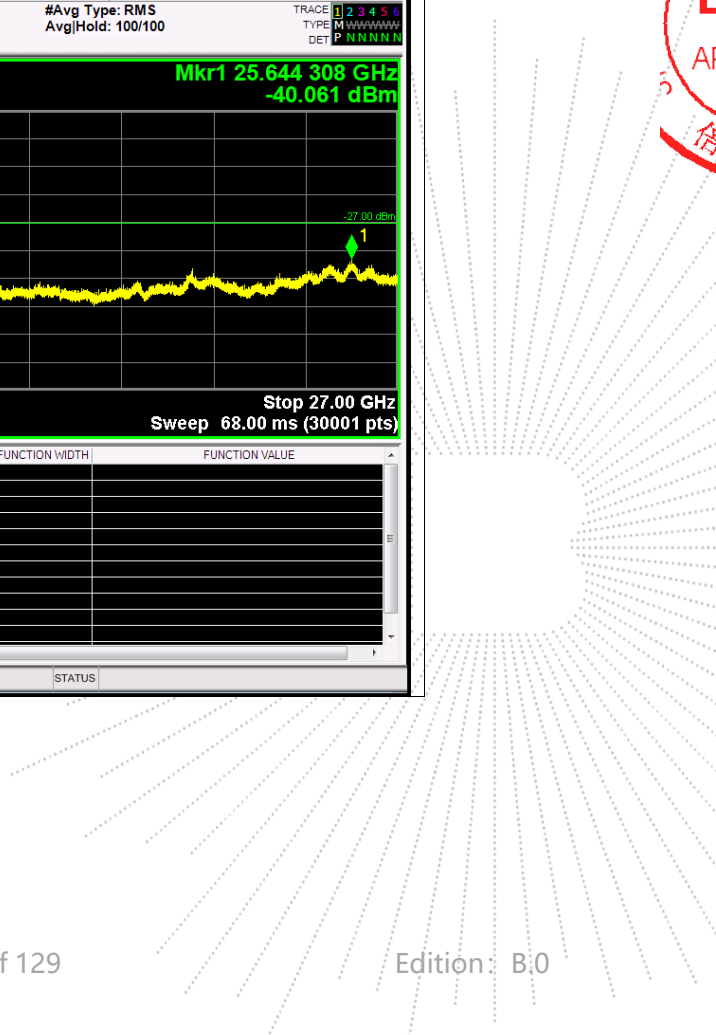
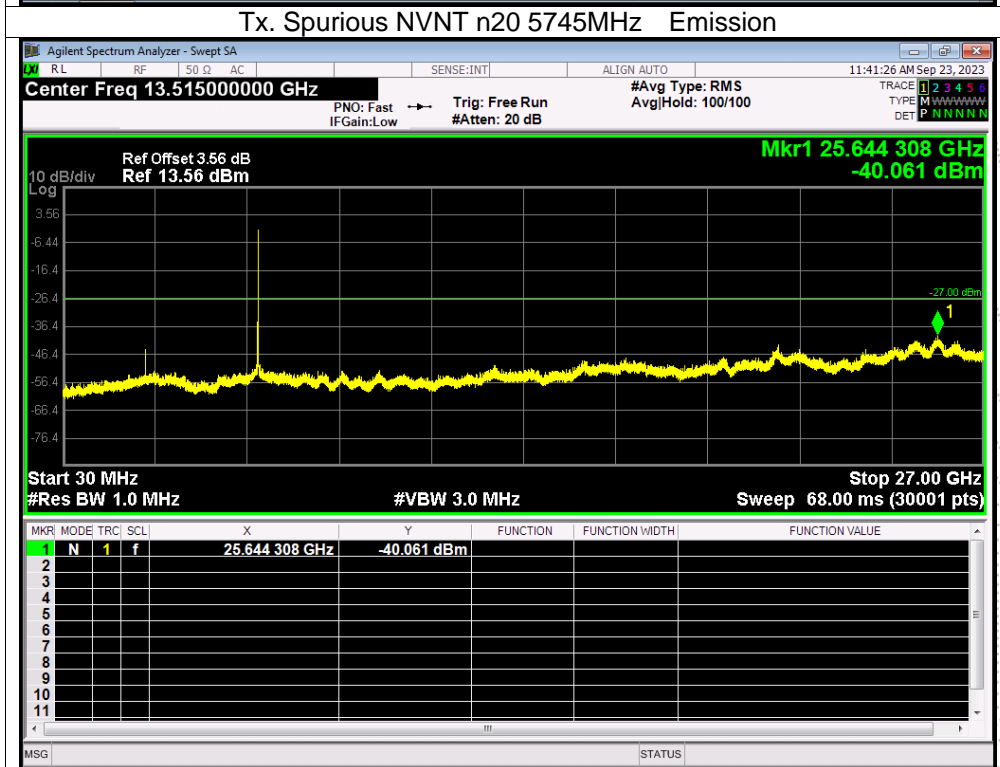
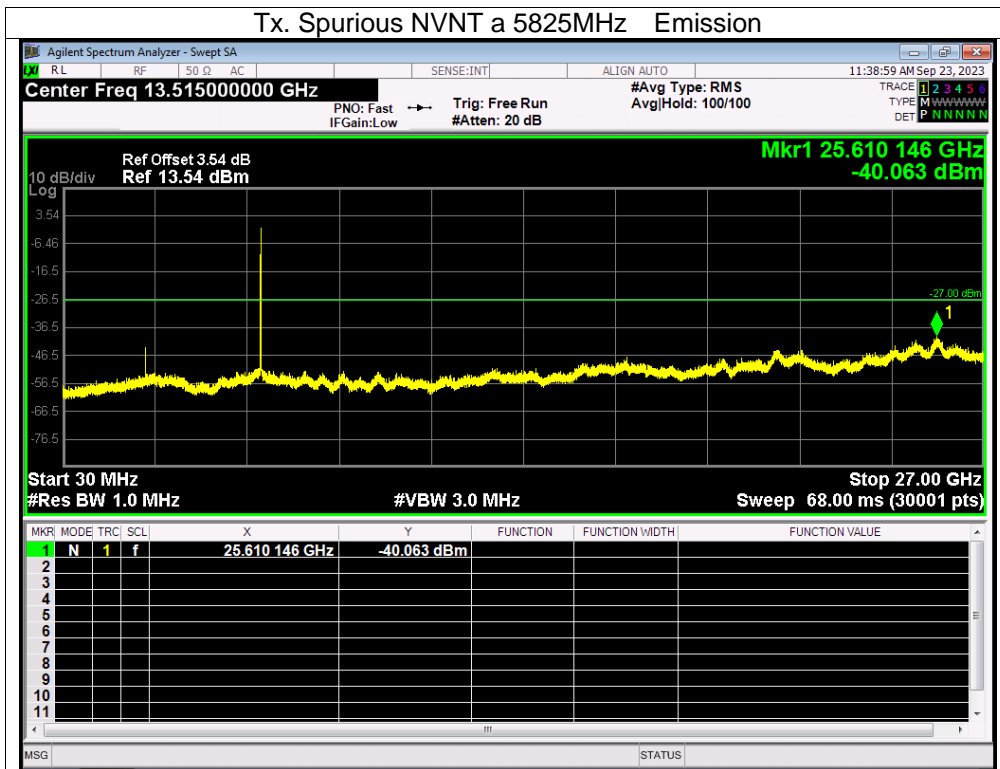


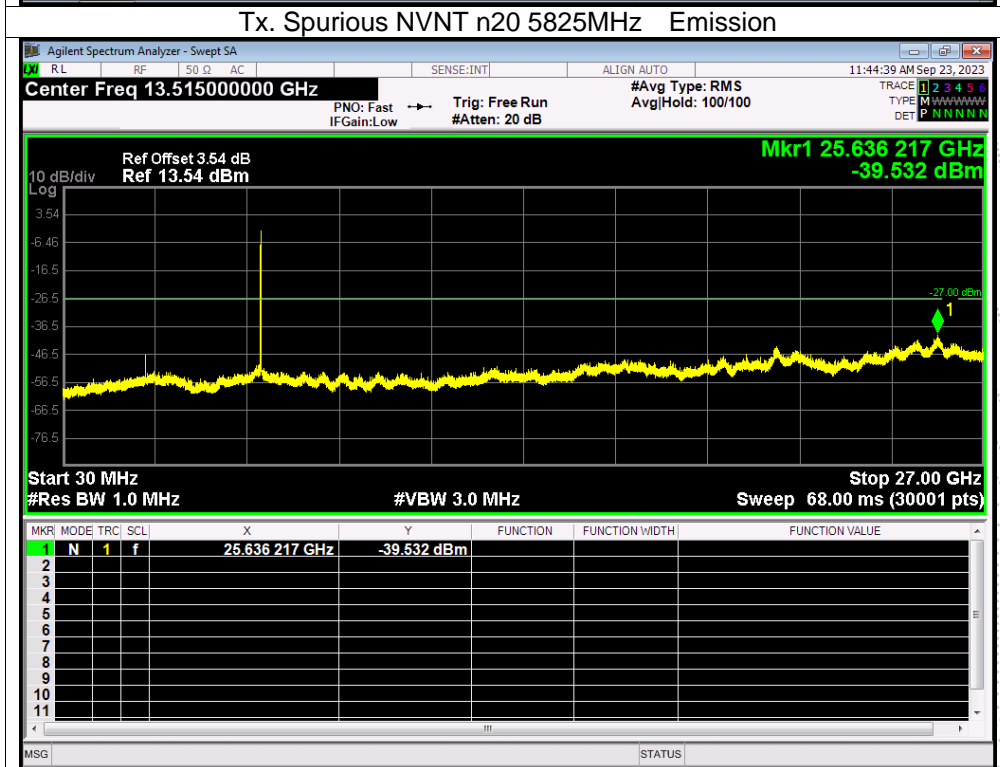
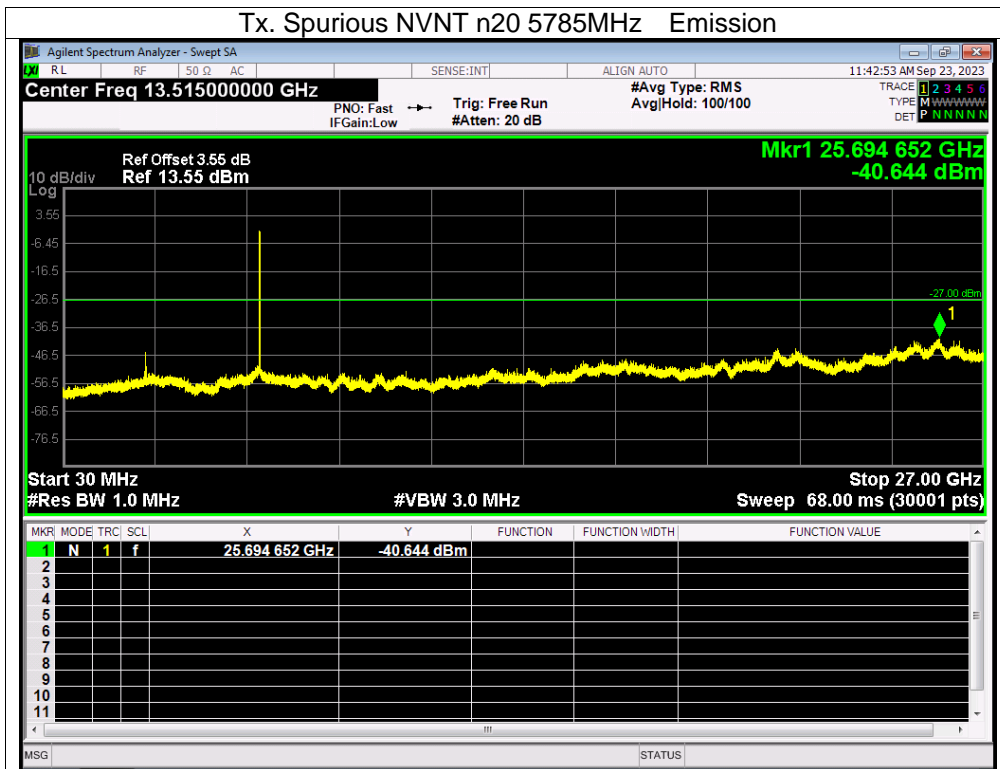


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Note: A(B) Represent the value of antenna A and B, The worst data is Antenna B, only shown Antenna B.  
 Antenna B: 5745-58250MHz

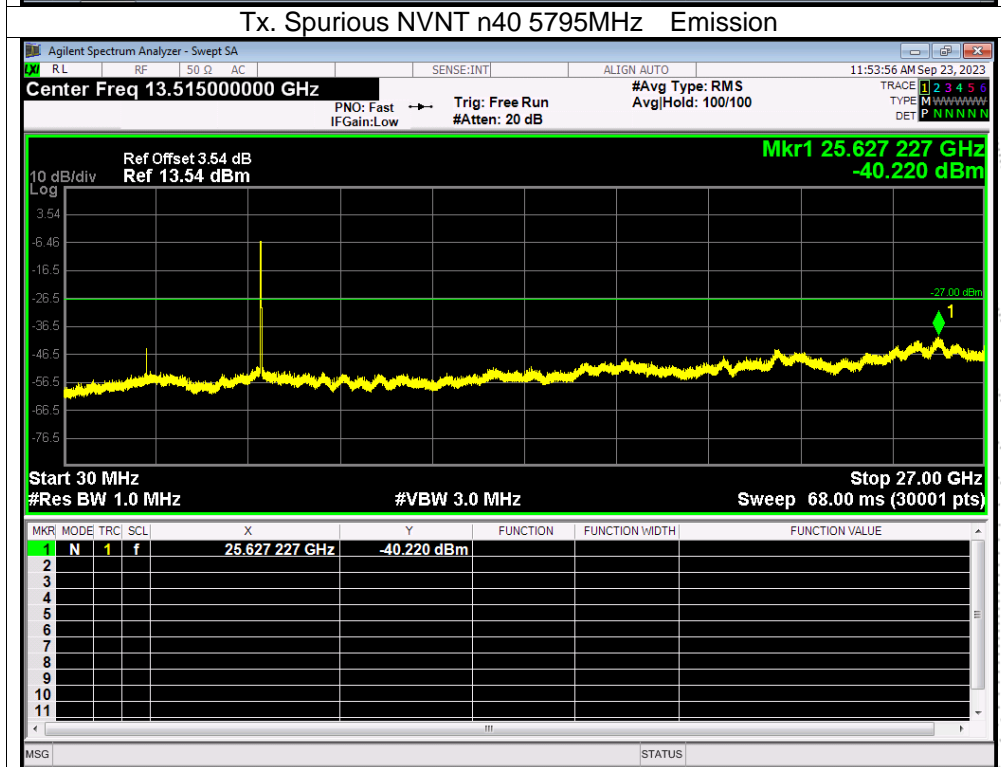
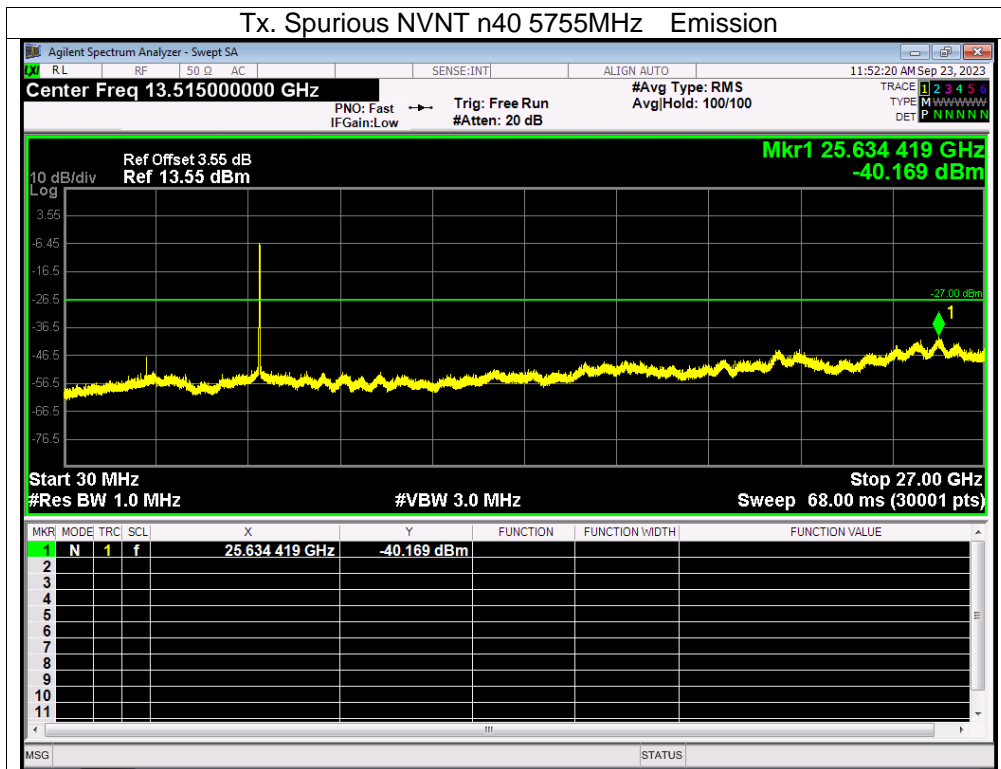




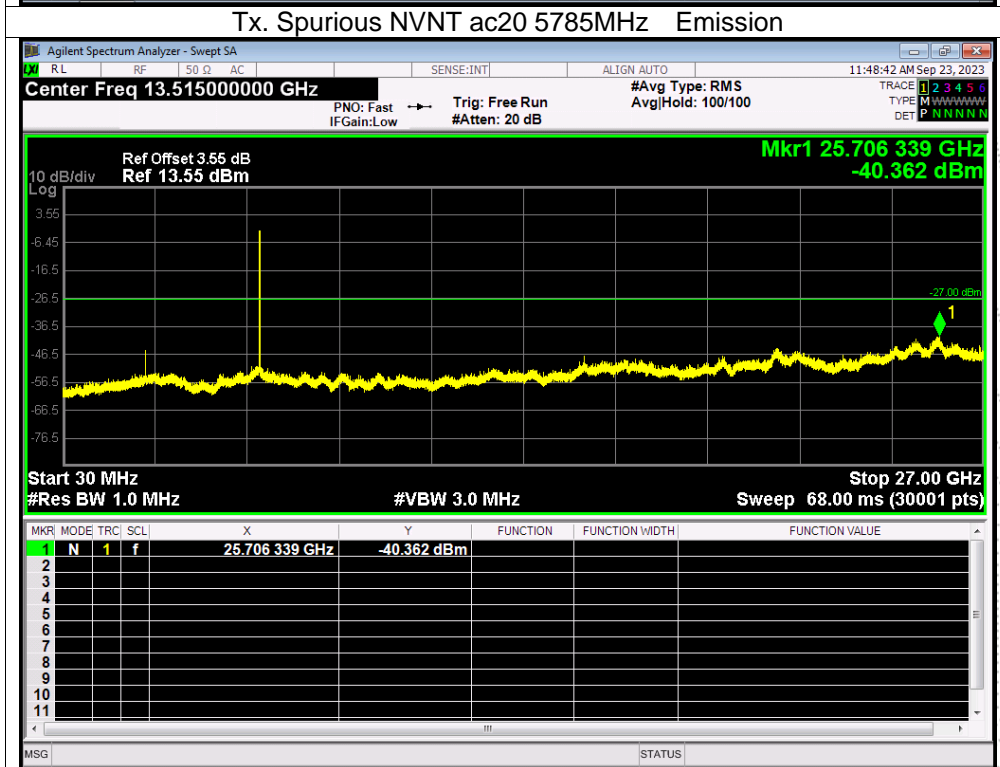
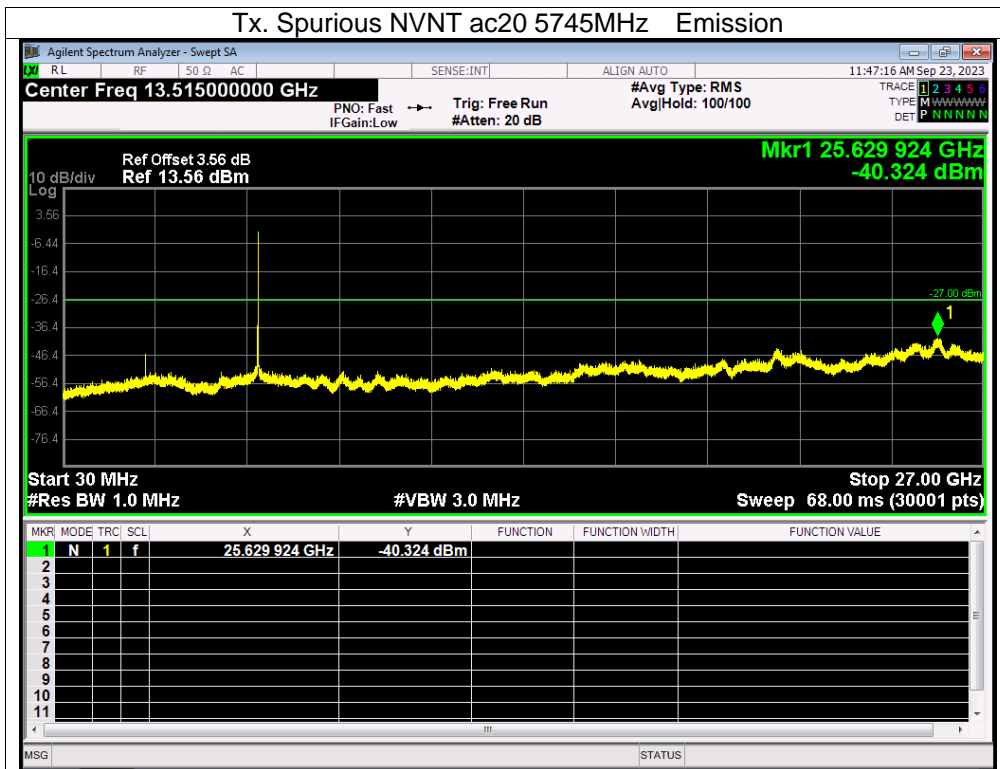


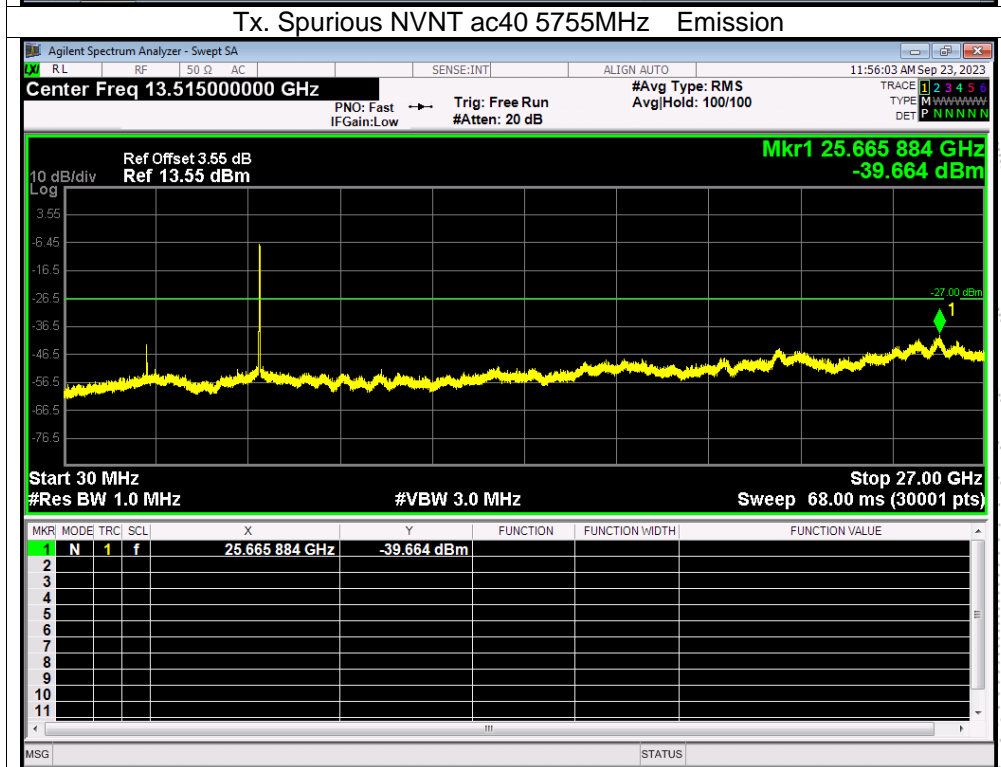
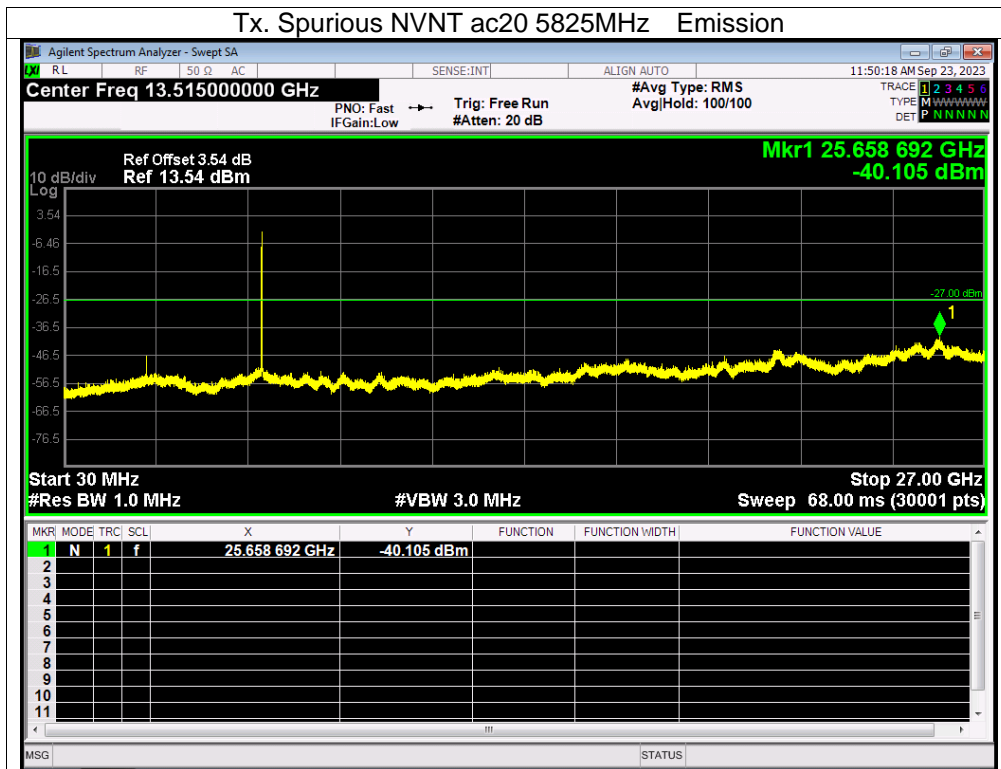
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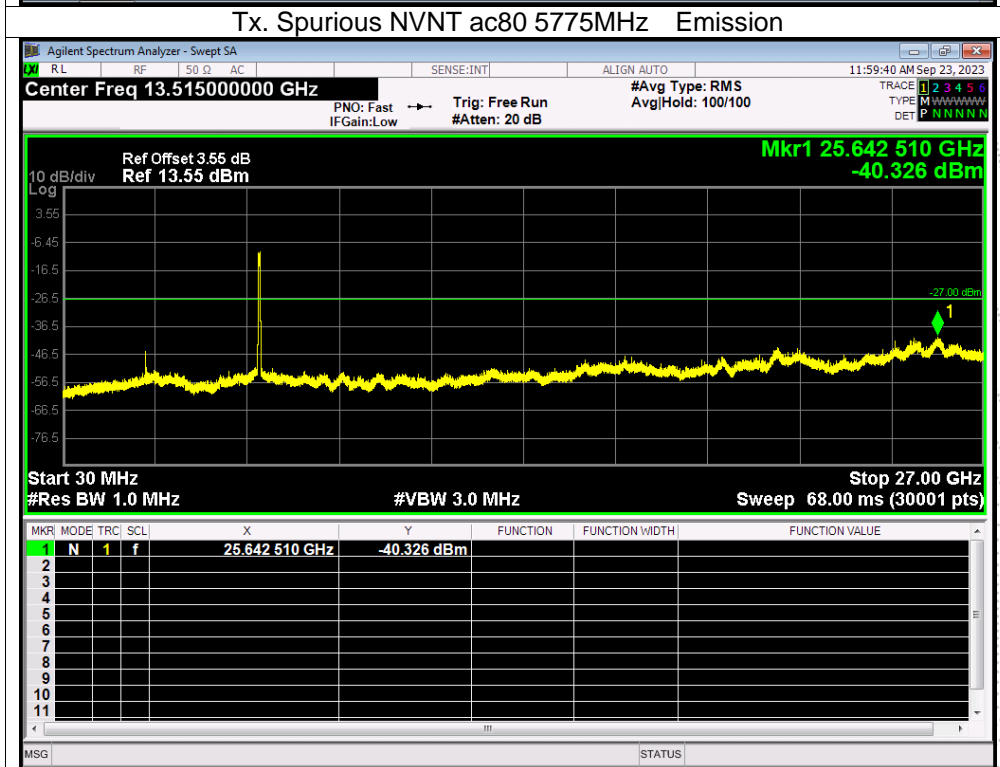
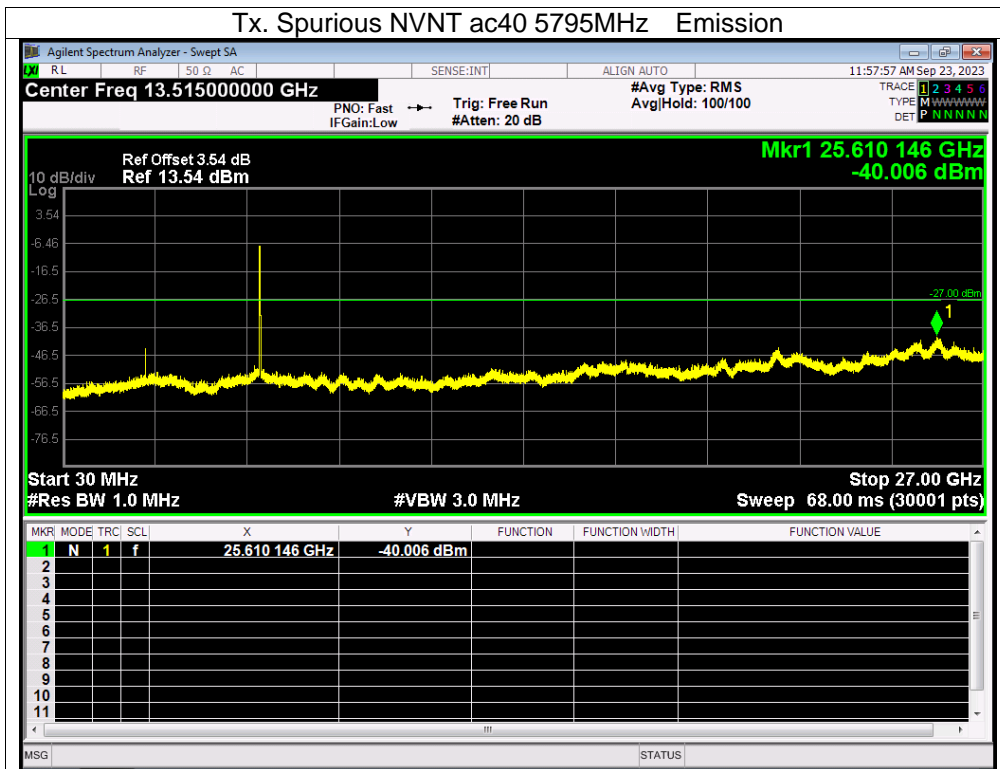


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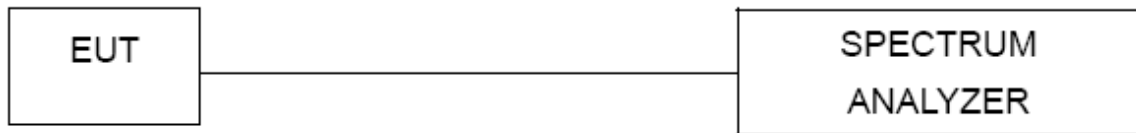
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## 13. Frequency Stability Measurement

### 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  $\pm 20$  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  $\pm 20$  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 12V
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)	12.00	5180.0054	5180	0.0054	1.0361
		V max (V)	13.80	5180.0141	5180	0.0141	2.7316
		V min (V)	10.20	5180.0023	5180	0.0023	0.4355
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)	12	T (°C)	-20	5180.0108	5180	0.0108	2.0940
		T (°C)	-10	5180.0012	5180	0.0012	0.2361
		T (°C)	0	5180.0003	5180	0.0003	0.0630
		T (°C)	10	5180.0051	5180	0.0051	0.9857
		T (°C)	20	5180.0004	5180	0.0004	0.0844
		T (°C)	30	5180.0081	5180	0.0081	1.5560
		T (°C)	40	5180.0054	5180	0.0054	1.0454
		T (°C)	50	5180.0006	5180	0.0006	0.1225
		T (°C)	60	5180.0079	5180	0.0079	1.5313
		T (°C)	70	5180.0062	5180	0.0062	1.1956
Limits				5150-5250 MHz			
Result				Complies			

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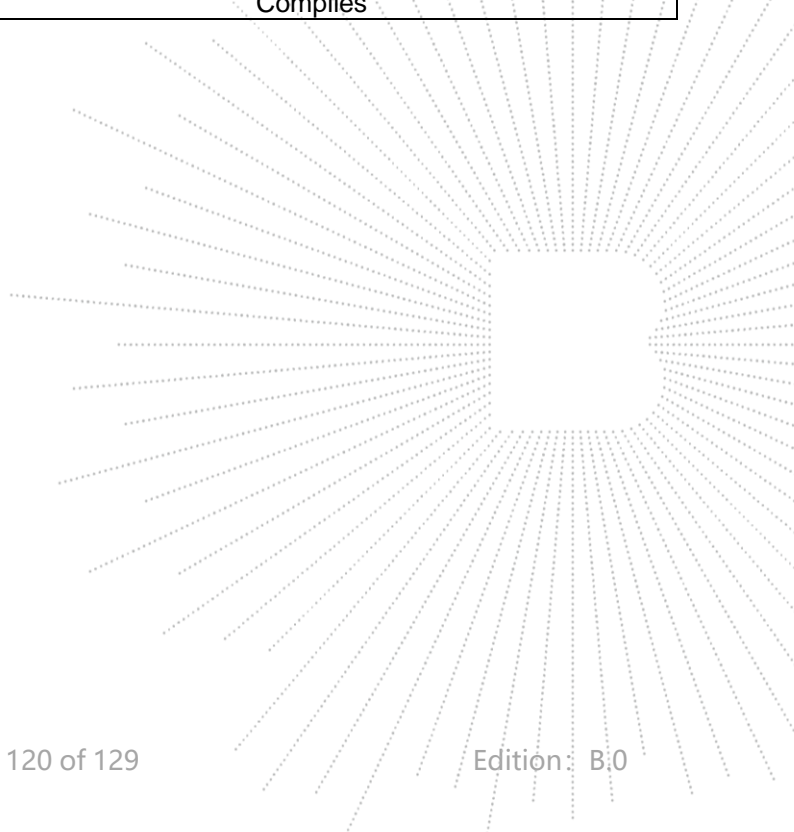
## Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	12.00	5200.0095	5200	0.0095	1.8284
		V max (V)	13.80	5200.0059	5200	0.0059	1.1351
		V min (V)	10.20	5200.0046	5200	0.0046	0.8874
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)	12	T (°C)	-20	5200.00395	5200	0.00395	0.7592
		T (°C)	-10	5200.00944	5200	0.00944	1.8159
		T (°C)	0	5200.00182	5200	0.00182	0.3498
		T (°C)	10	5200.00058	5200	0.00058	0.1109
		T (°C)	20	5200.00917	5200	0.00917	1.7629
		T (°C)	30	5200.00781	5200	0.00781	1.5017
		T (°C)	40	5200.00525	5200	0.00525	1.0102
		T (°C)	50	5200.01140	5200	0.01140	2.1923
		T (°C)	60	5200.00920	5200	0.00920	1.7691
		T (°C)	70	5200.00103	5200	0.00103	0.1986
Limits				5150-5250 MHz			
Result				Complies			

TEST  
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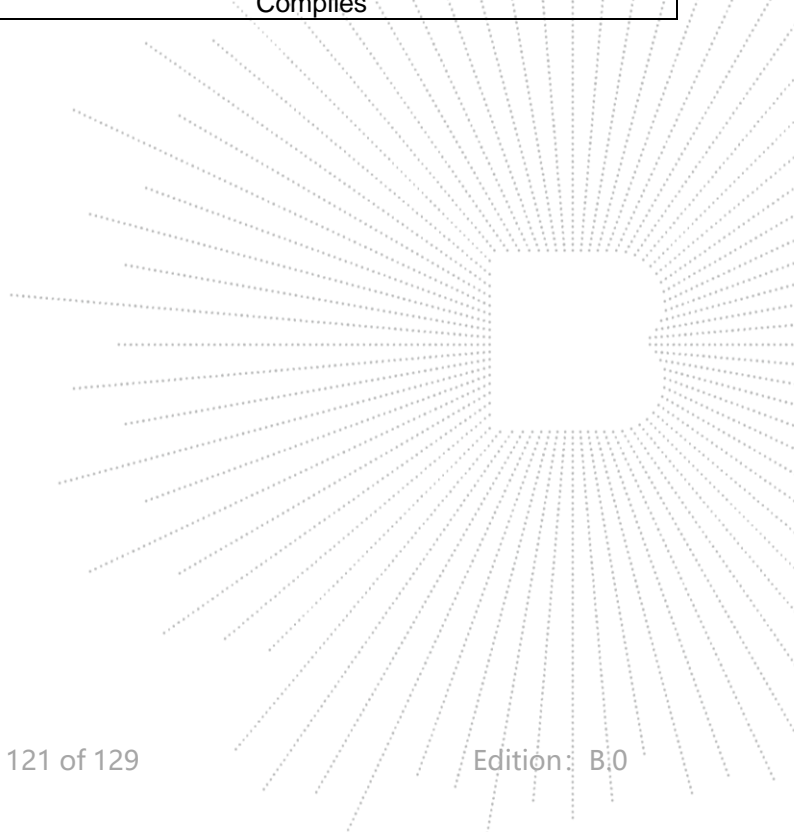


## Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	12.00	5240.0035	5240	0.0035	0.6671
		V max (V)	13.80	5240.0002	5240	0.0002	0.0295
		V min (V)	10.20	5240.0117	5240	0.0117	2.2378
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)	12	T (°C)	-20	5240.0112	5240	0.0112	2.1441
		T (°C)	-10	5240.0047	5240	0.0047	0.9062
		T (°C)	0	5240.0028	5240	0.0028	0.5319
		T (°C)	10	5240.0070	5240	0.0070	1.3361
		T (°C)	20	5240.0119	5240	0.0119	2.2721
		T (°C)	30	5240.0117	5240	0.0117	2.2352
		T (°C)	40	5240.0105	5240	0.0105	1.9948
		T (°C)	50	5240.0074	5240	0.0074	1.4151
		T (°C)	60	5240.0101	5240	0.0101	1.9283
		T (°C)	70	5240.0064	5240	0.0064	1.2206
Limits				5150-5250 MHz			
Result				Complies			

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage :	DC 12V
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)	12.00	5745.00287	5745	0.00287	0.5000
		V max (V)	13.80	5745.00152	5745	0.00152	0.2640
		V min (V)	10.20	5745.00314	5745	0.00314	0.5469
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)	12	T (°C)	-20	5745.00632	5745	0.00632	1.0996
		T (°C)	-10	5745.00380	5745	0.00380	0.6618
		T (°C)	0	5745.01068	5745	0.01068	1.8589
		T (°C)	10	5745.00397	5745	0.00397	0.6908
		T (°C)	20	5745.01097	5745	0.01097	1.9092
		T (°C)	30	5745.00575	5745	0.00575	1.0007
		T (°C)	40	5745.00569	5745	0.00569	0.9907
		T (°C)	50	5745.00160	5745	0.00160	0.2793
		T (°C)	60	5745.00908	5745	0.00908	1.5803
		T (°C)	70	5745.00881	5745	0.00881	1.5340
Limits				5725-5850 MHz			
Result				Complies			

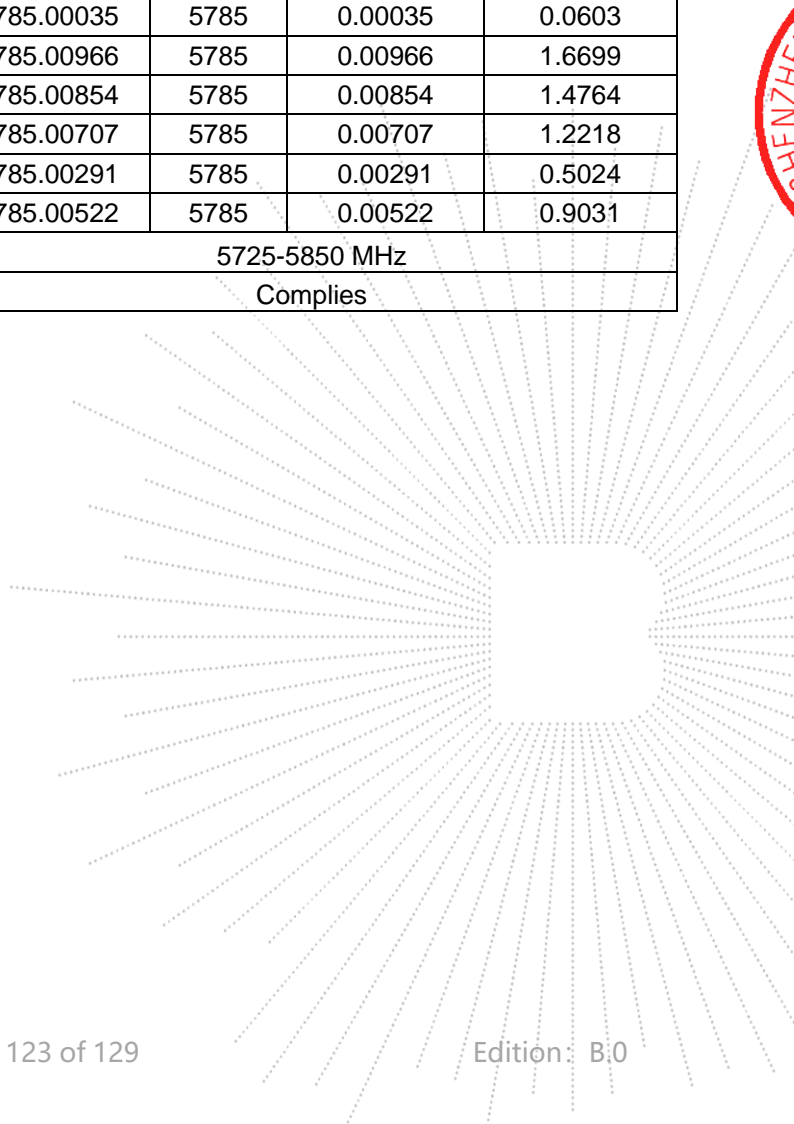
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## Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency : 5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	12.00	5785.00240	5785	0.00240	0.4155
		V max (V)	13.80	5785.00714	5785	0.00714	1.2345
		V min (V)	10.20	5785.00943	5785	0.00943	1.6306
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)	12	T (°C)	-20	5785.00101	5785	0.00101	0.1747
		T (°C)	-10	5785.00479	5785	0.00479	0.8286
		T (°C)	0	5785.00853	5785	0.00853	1.4747
		T (°C)	10	5785.01169	5785	0.01169	2.0202
		T (°C)	20	5785.00035	5785	0.00035	0.0603
		T (°C)	30	5785.00966	5785	0.00966	1.6699
		T (°C)	40	5785.00854	5785	0.00854	1.4764
		T (°C)	50	5785.00707	5785	0.00707	1.2218
		T (°C)	60	5785.00291	5785	0.00291	0.5024
		T (°C)	70	5785.00522	5785	0.00522	0.9031
Limits				5725-5850 MHz			
Result				Complies			



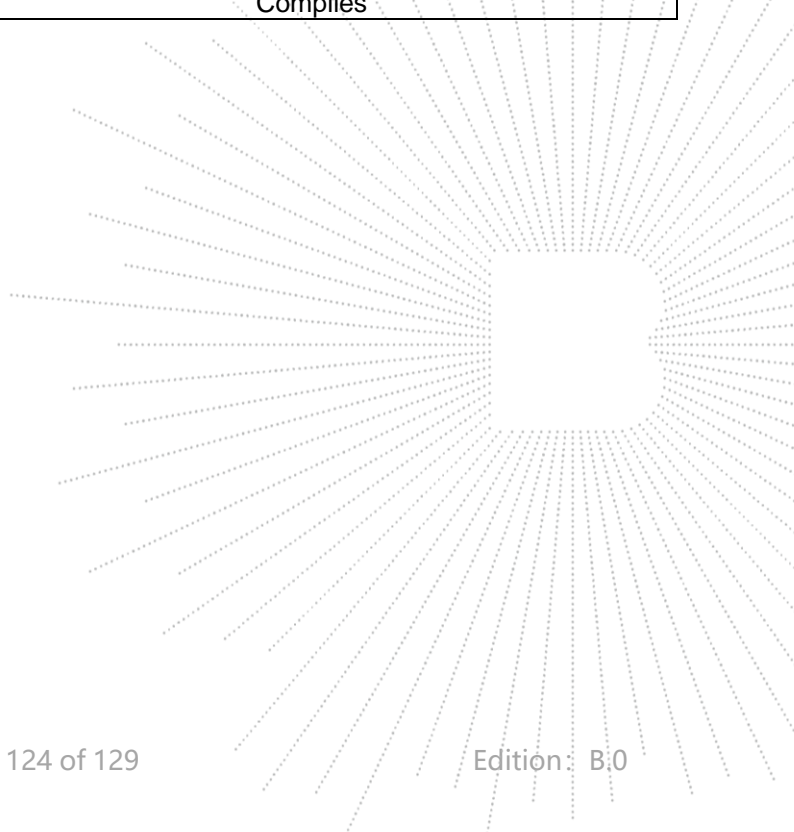
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## Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency : 5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	12.00	5825.00313	5825	0.00313	0.5374
		V max (V)	13.80	5825.00438	5825	0.00438	0.7518
		V min (V)	10.20	5825.00906	5825	0.00906	1.5549
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)	12	T (°C)	-20	5825.01027	5825	0.01027	1.7632
		T (°C)	-10	5825.00688	5825	0.00688	1.1805
		T (°C)	0	5825.00363	5825	0.00363	0.6234
		T (°C)	10	5825.00157	5825	0.00157	0.2689
		T (°C)	20	5825.00105	5825	0.00105	0.1795
		T (°C)	30	5825.00791	5825	0.00791	1.3585
		T (°C)	40	5825.00740	5825	0.00740	1.2698
		T (°C)	50	5825.00253	5825	0.00253	0.4336
		T (°C)	60	5825.00450	5825	0.00450	0.7719
		T (°C)	70	5825.01156	5825	0.01156	1.9844
Limits				5725-5850 MHz			
Result				Complies			



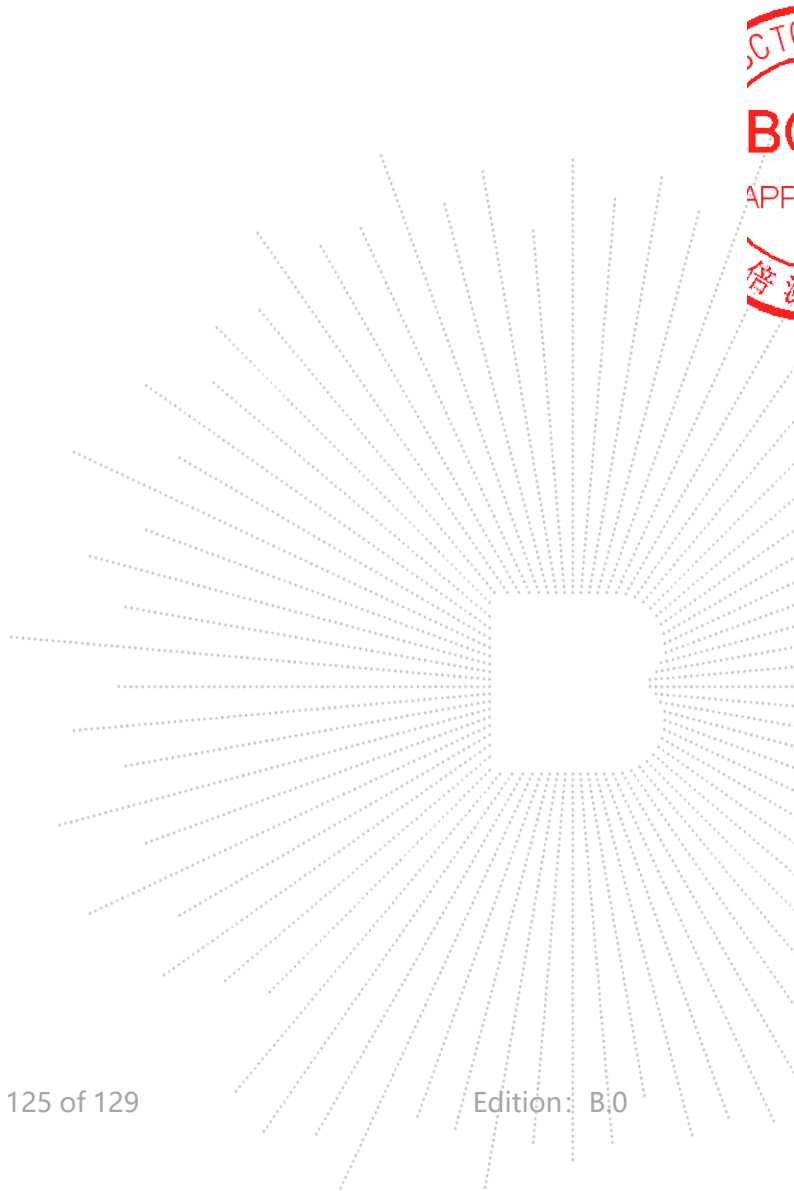
## 14. Antenna Requirement

### 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 Internal antenna (antenna gain (A): 2.65 dBi; antenna gain (B) : 2.65 dBi). It comply with the standard requirement.





### 15. EUT Photographs

EUT Photo 1



EUT Photo 2



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CT  
PROC  
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### 16. EUT Test Setup Photographs

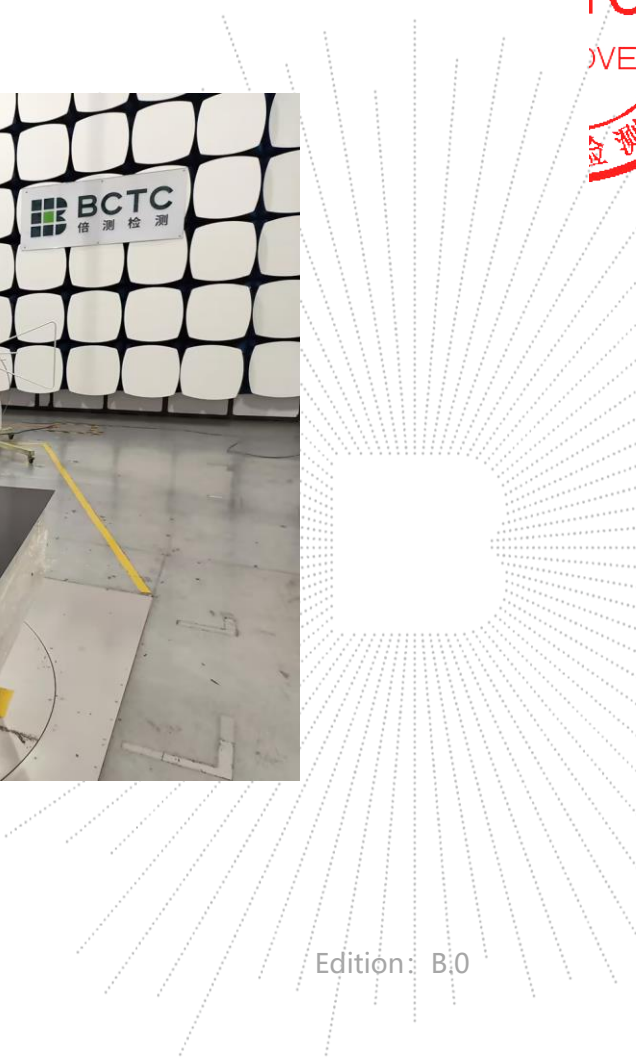
#### Conducted Measurement Photo



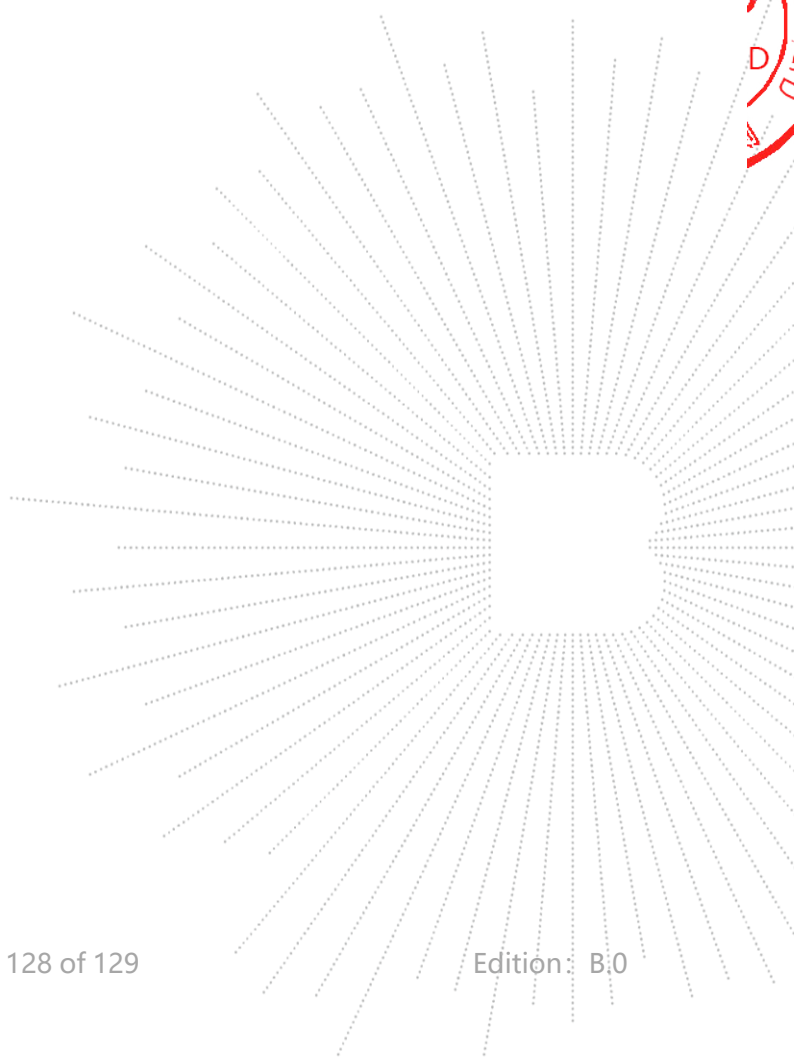
#### Radiated Measurement Photos



TEST  
FOR  
EUT  
EUT







**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.

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