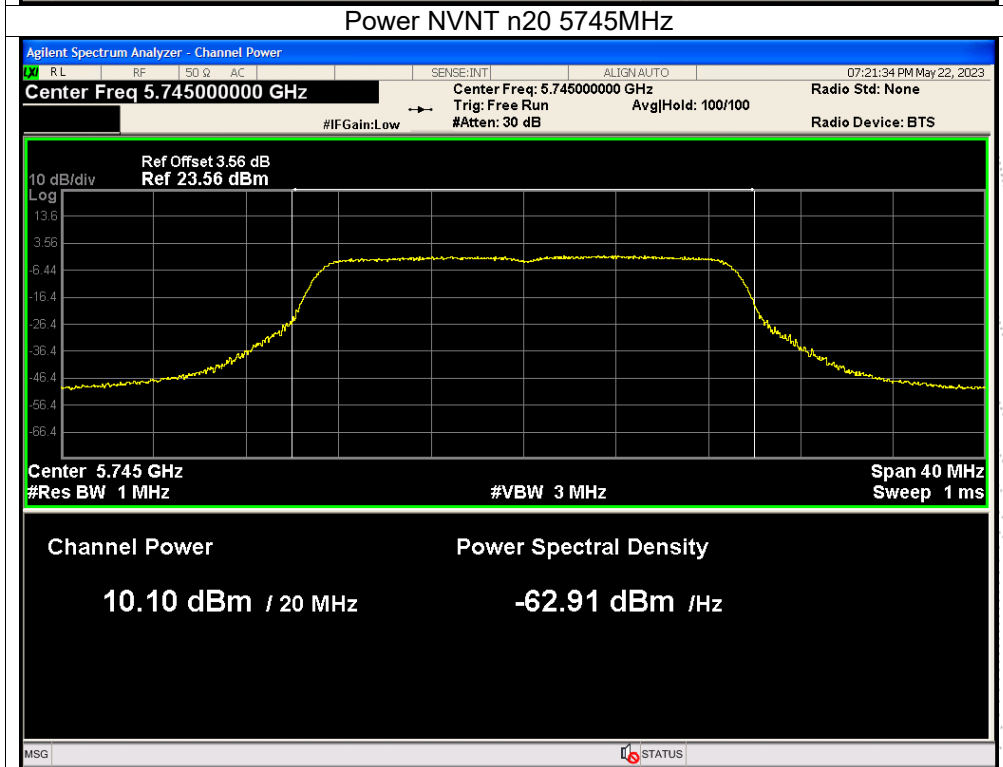
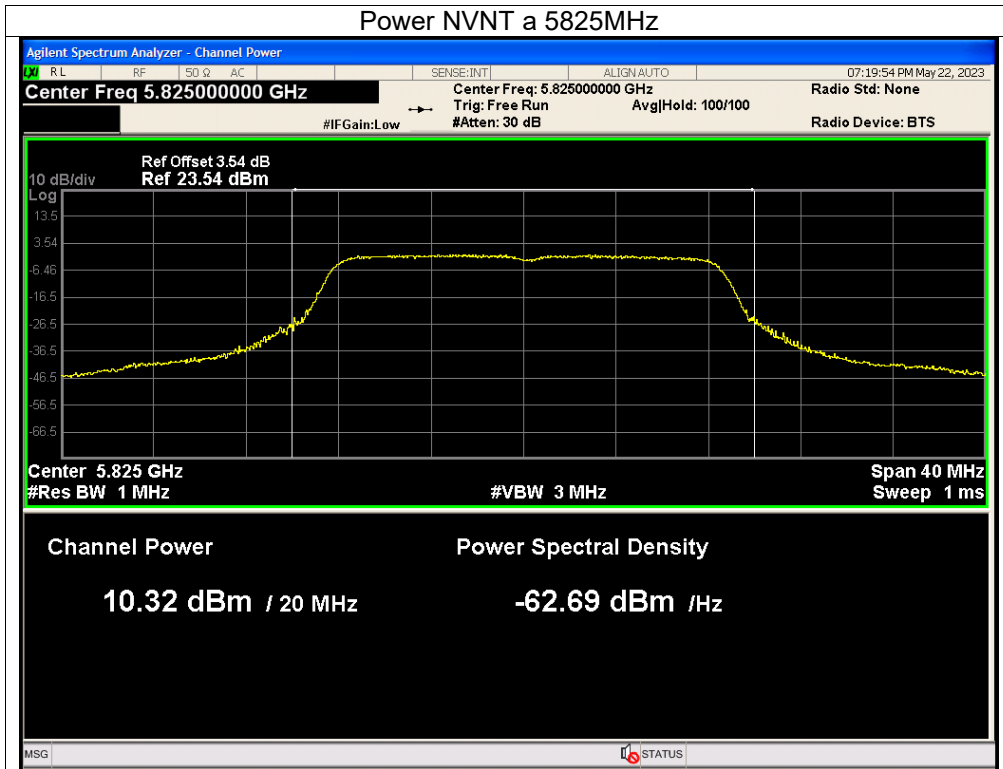
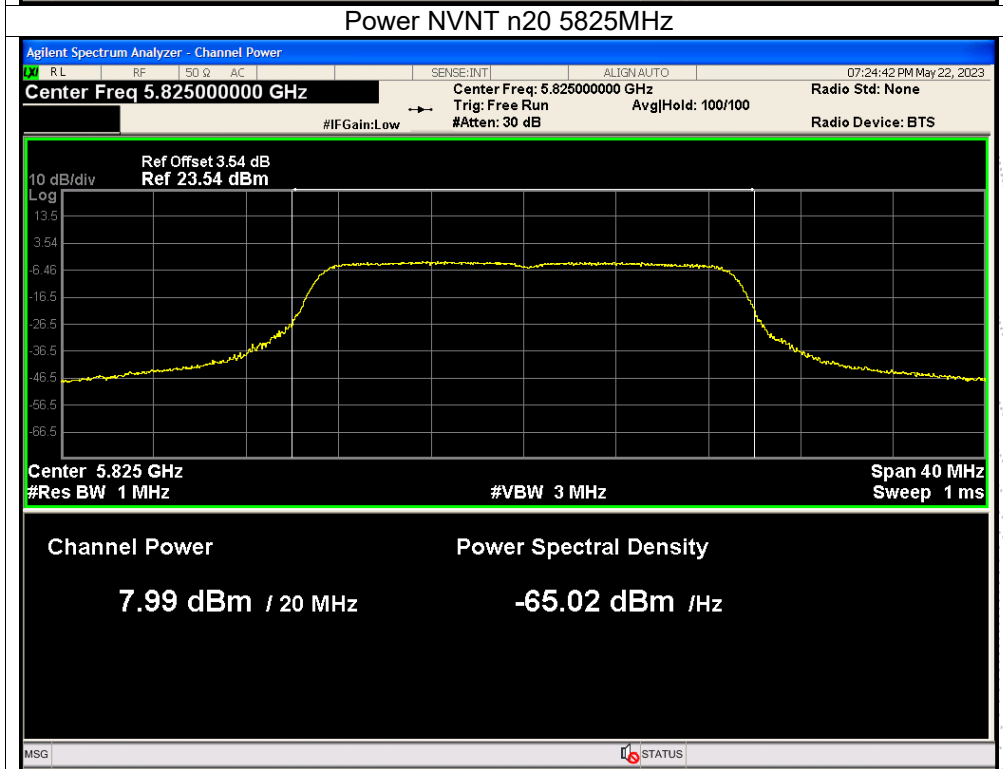
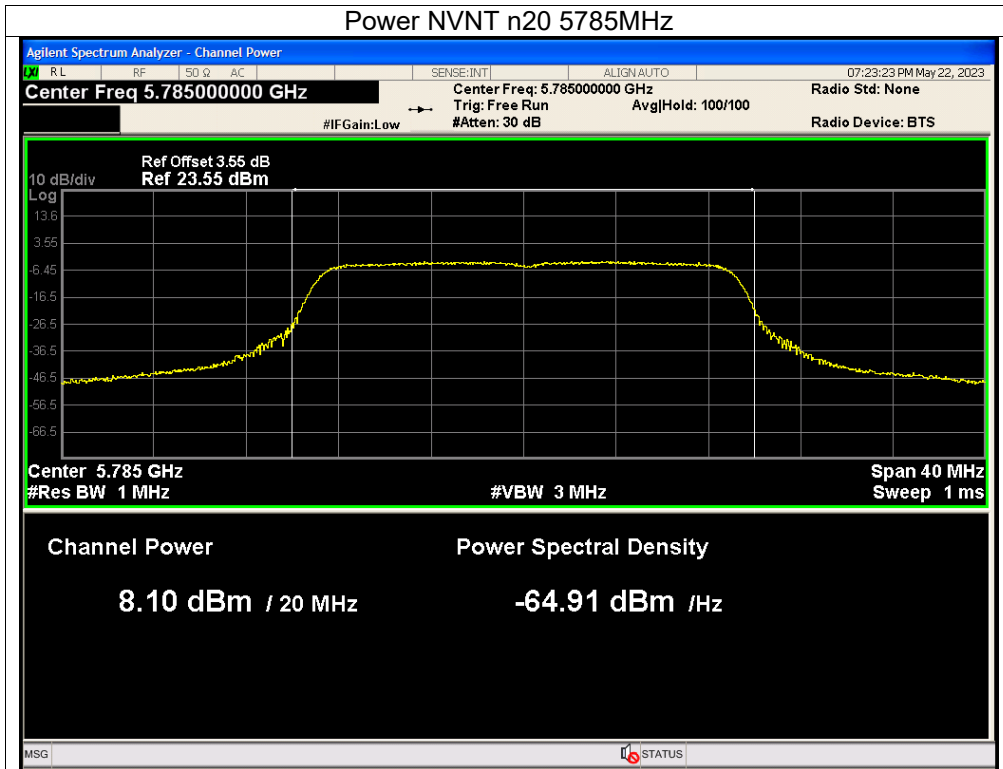
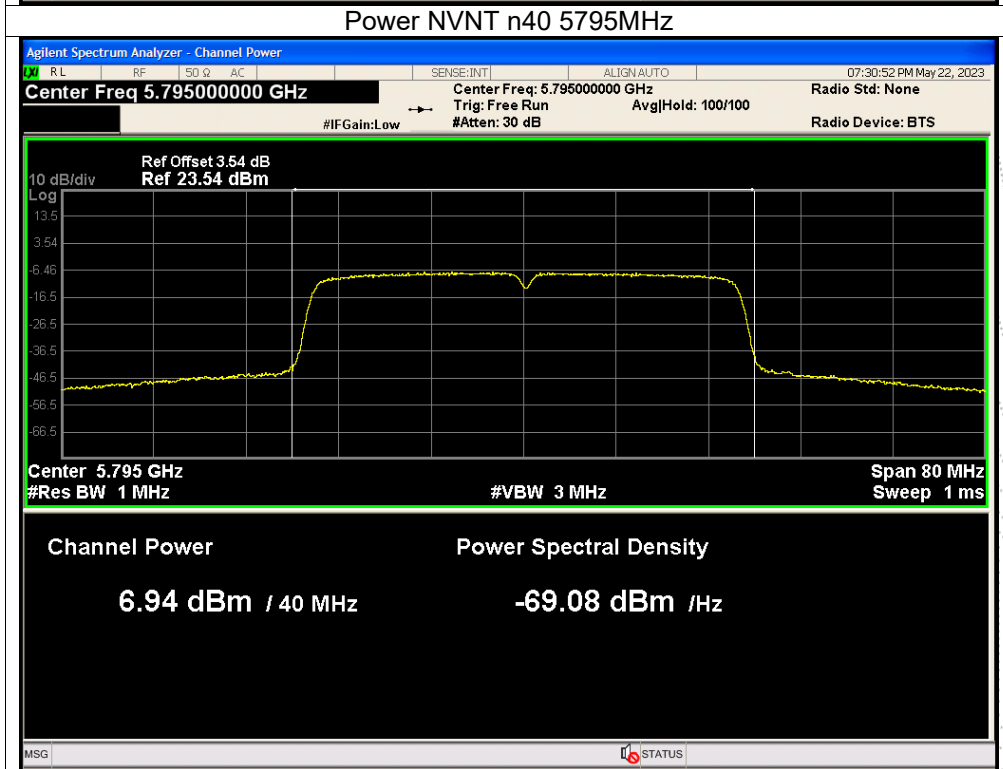
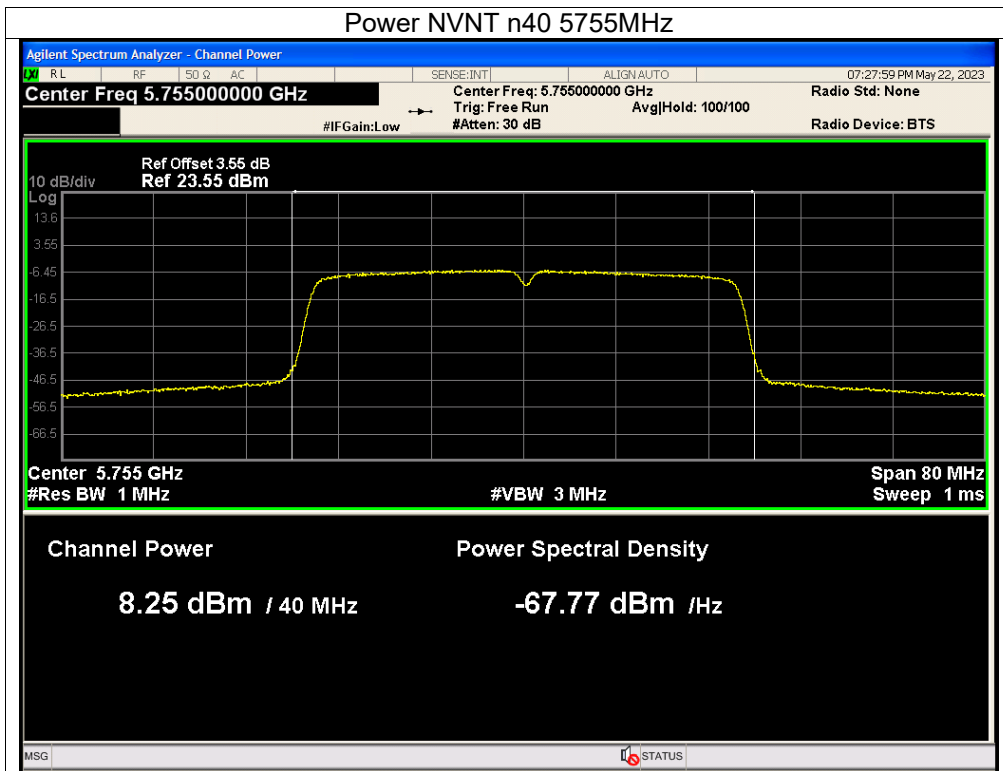


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11. Out Of Band Emissions

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.

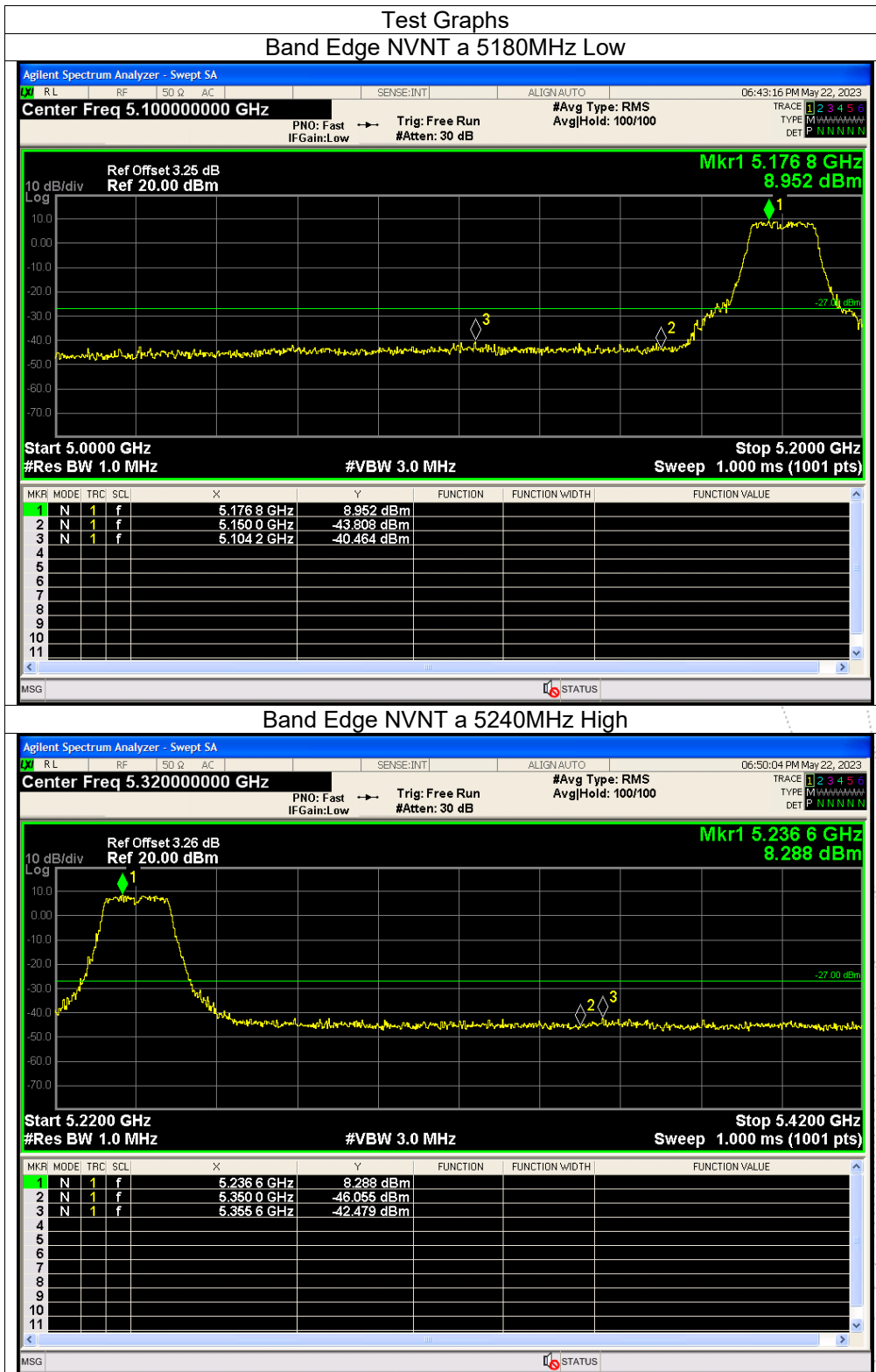
11.3 Test Procedure

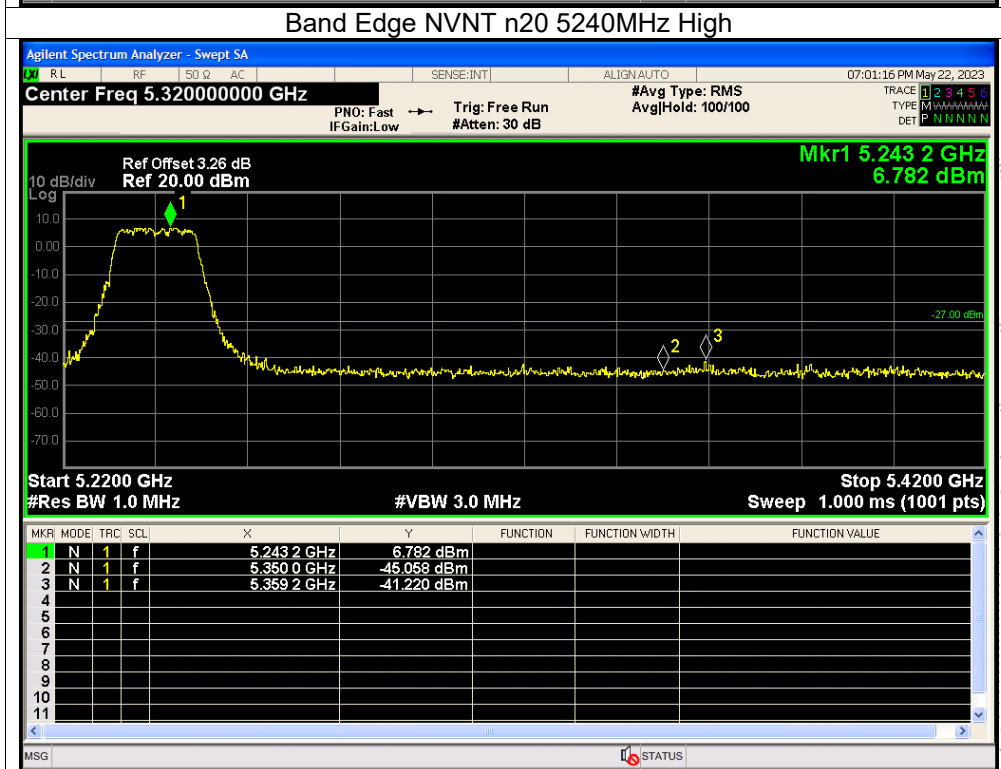
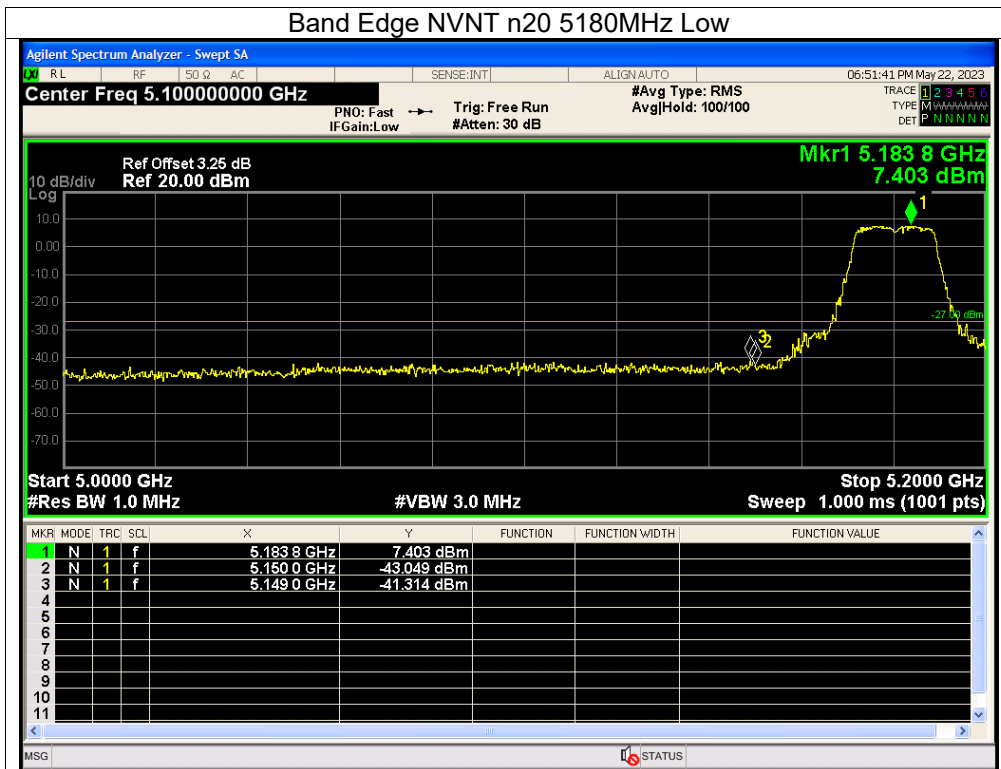
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then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

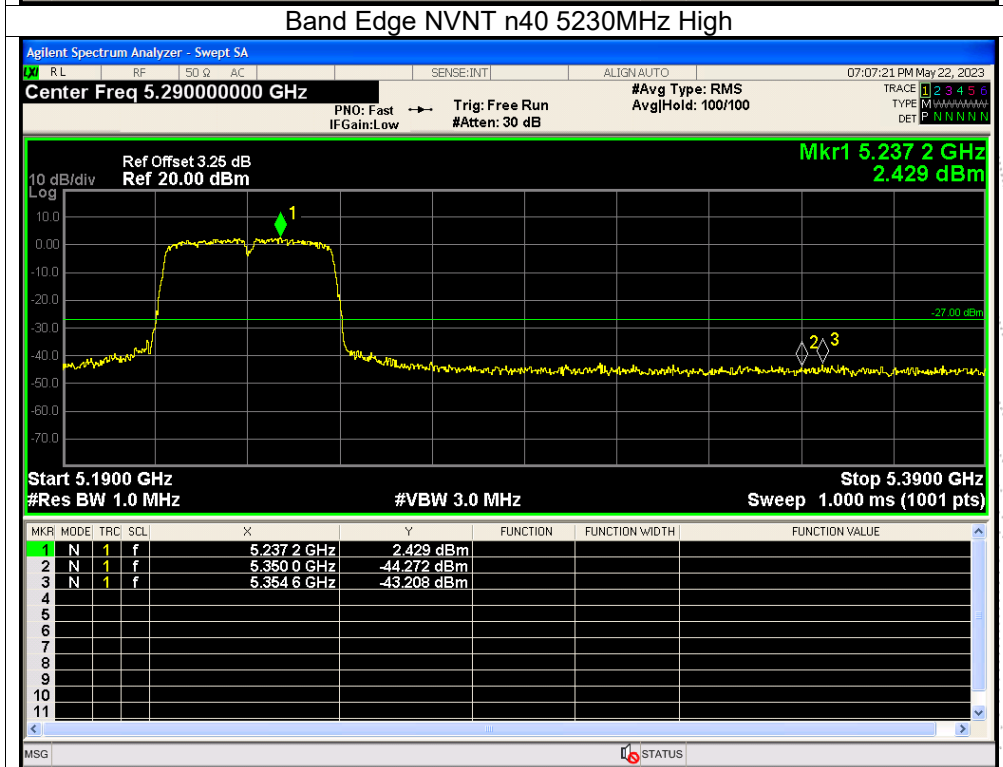
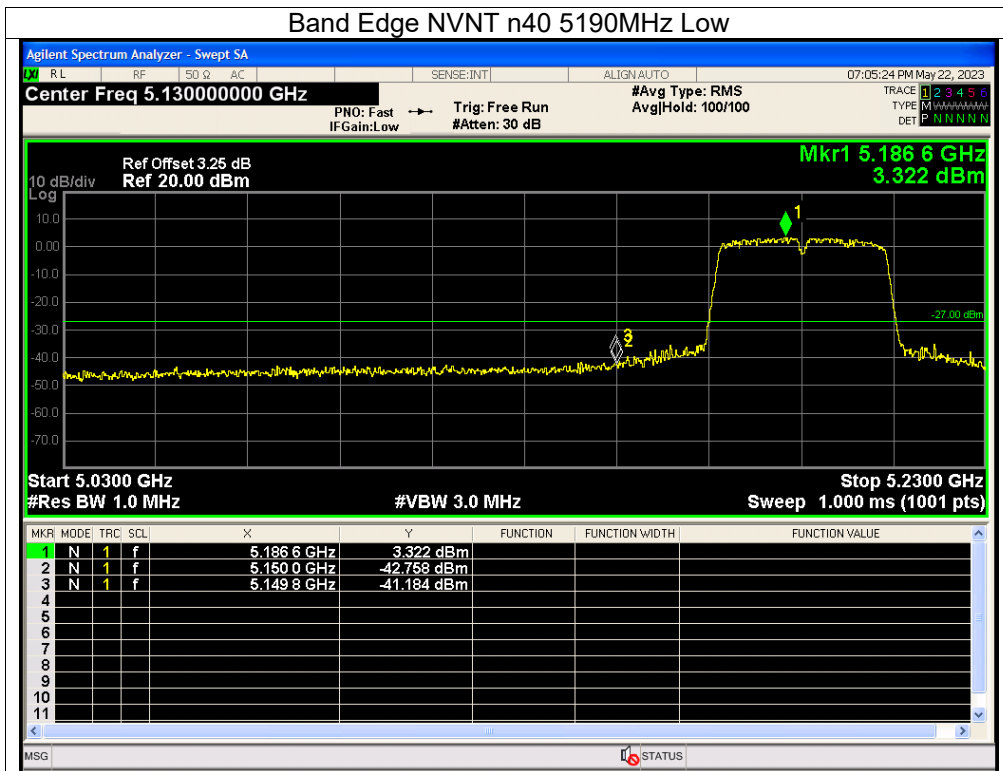
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data

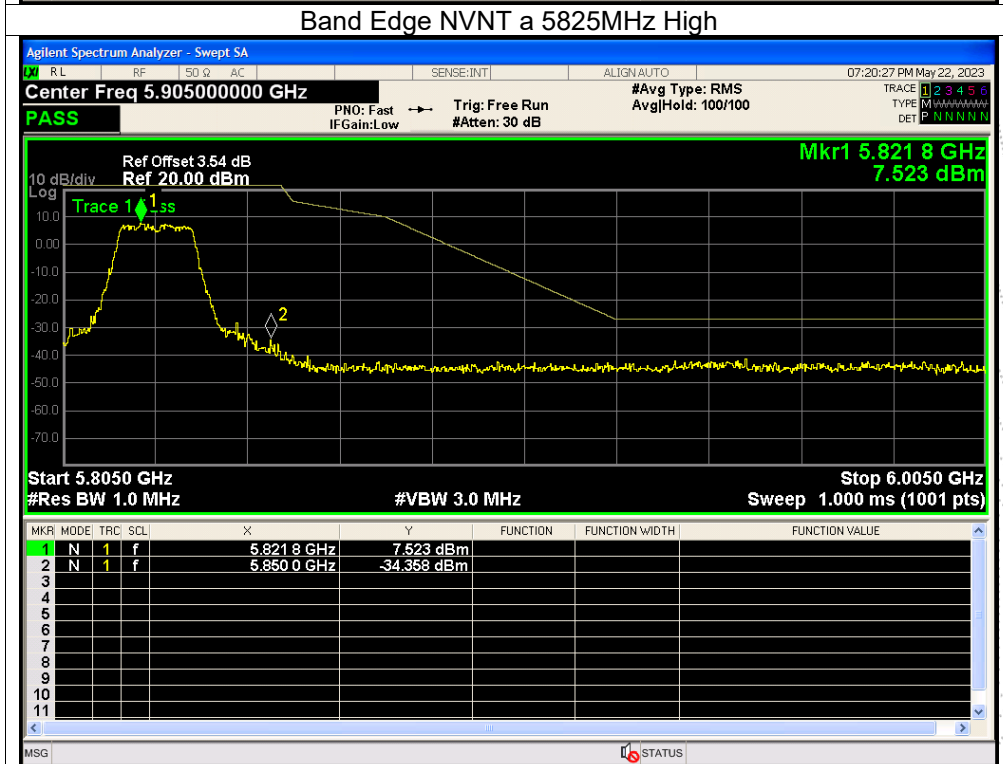
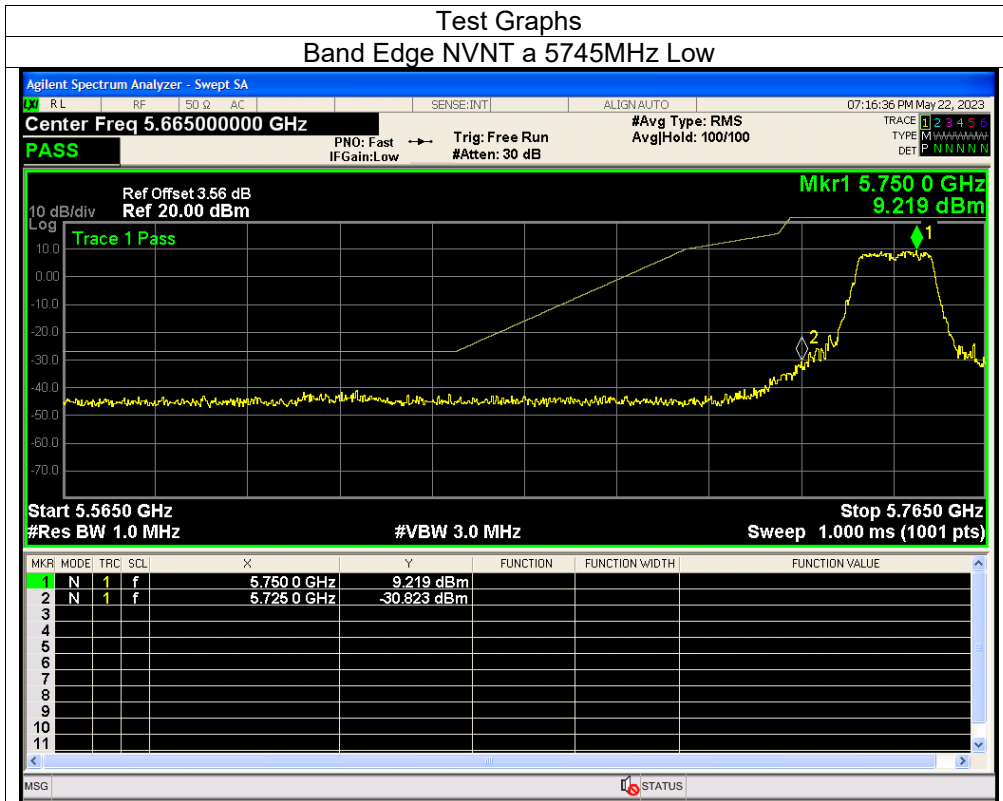
11.5 Test Result



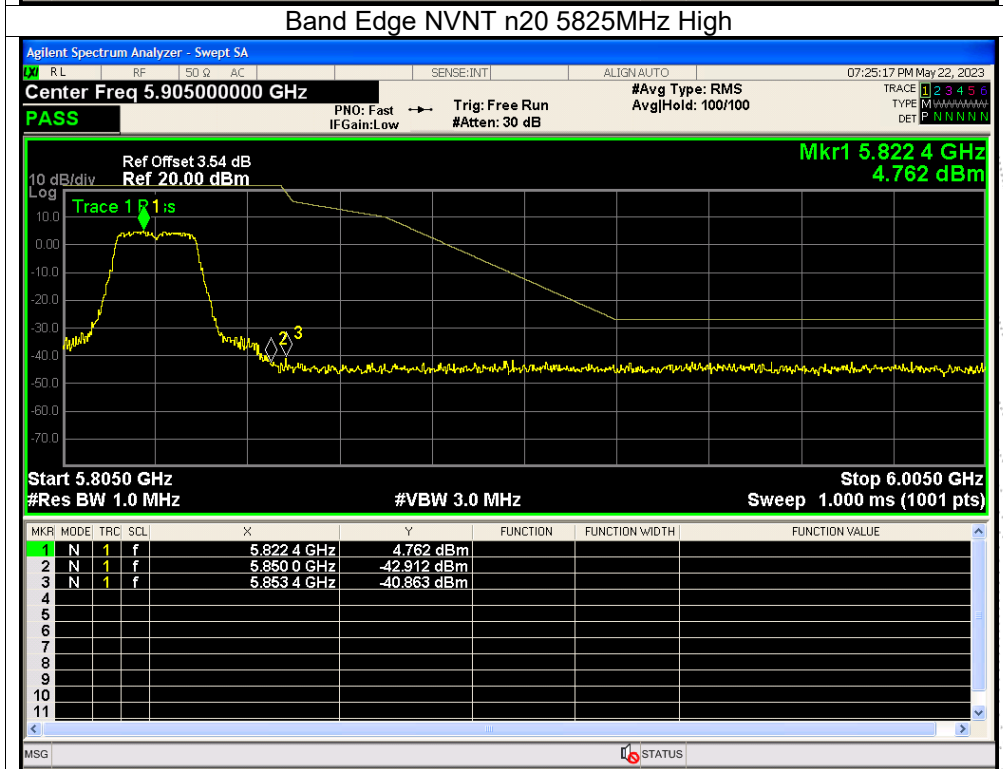
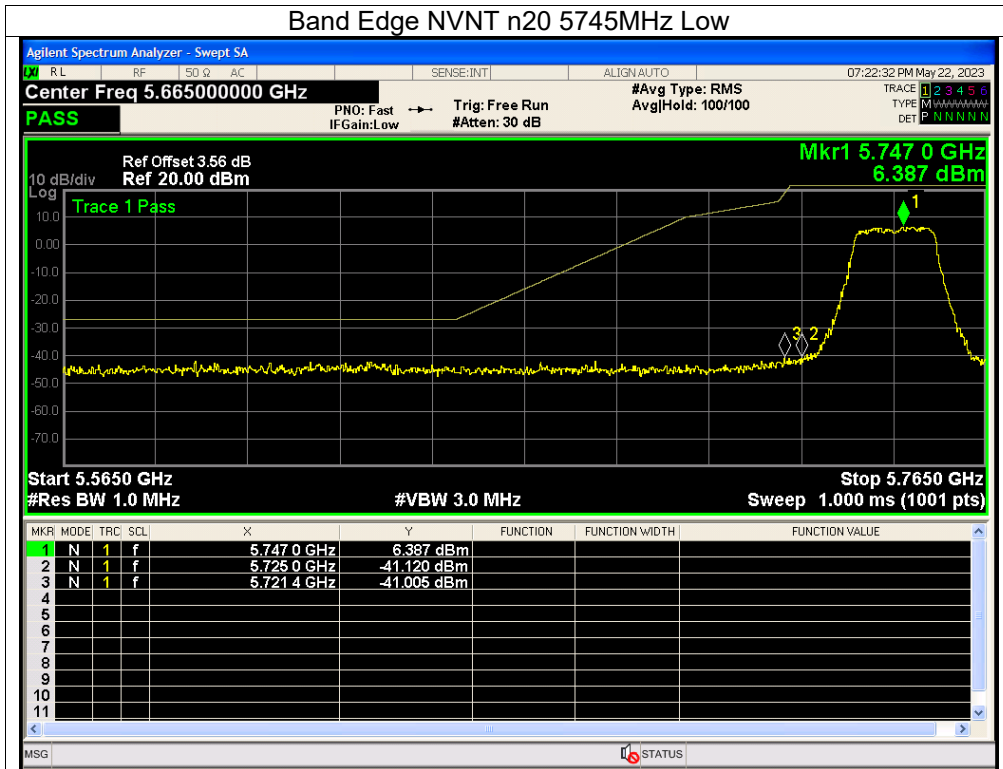


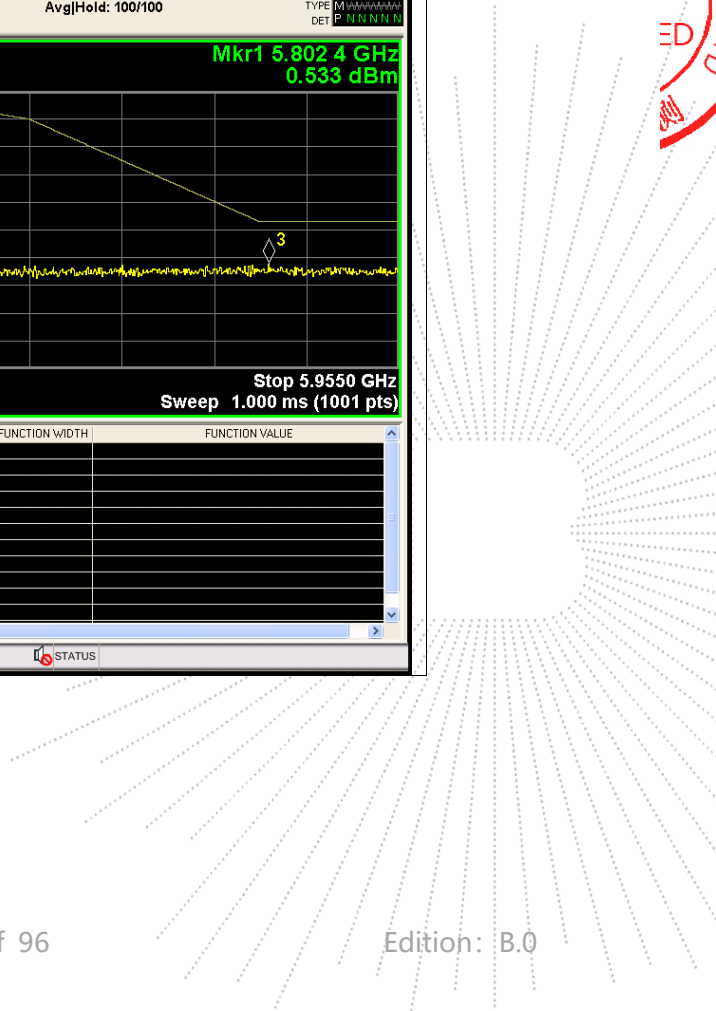
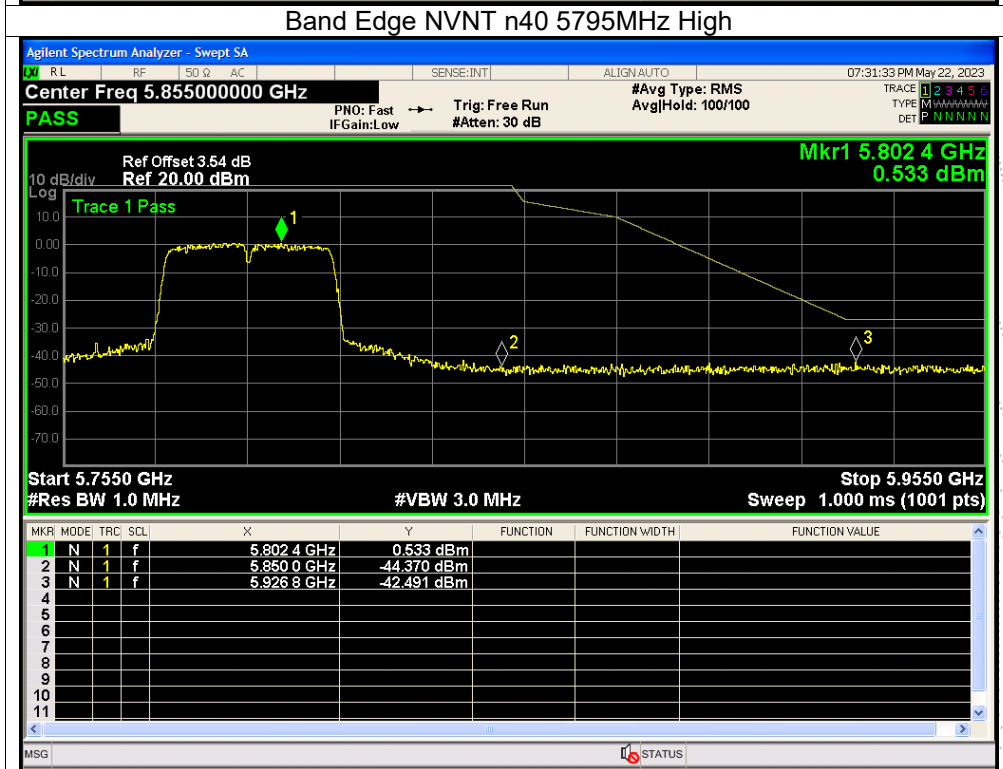
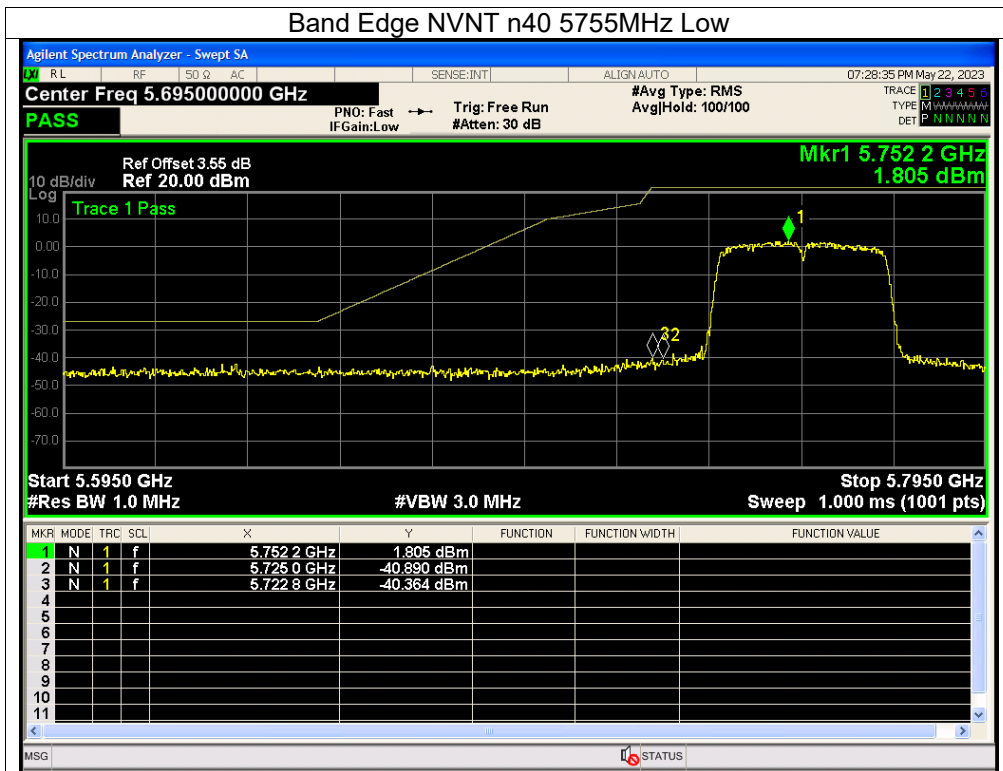
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12. Spurious RF Conducted Emissions

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..

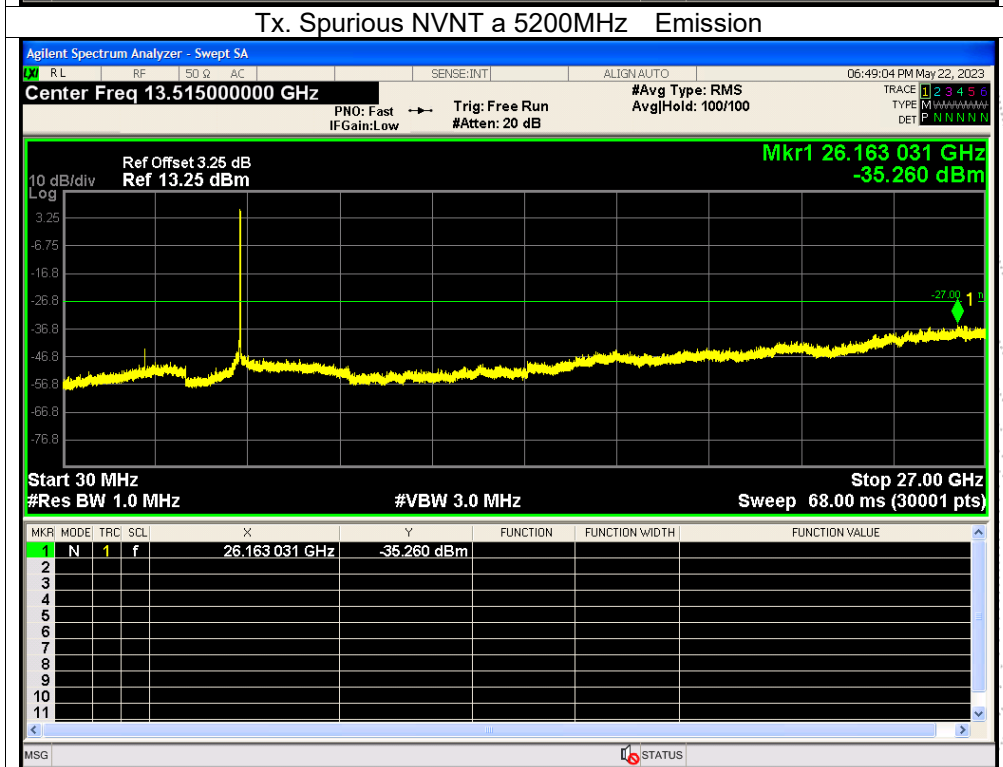
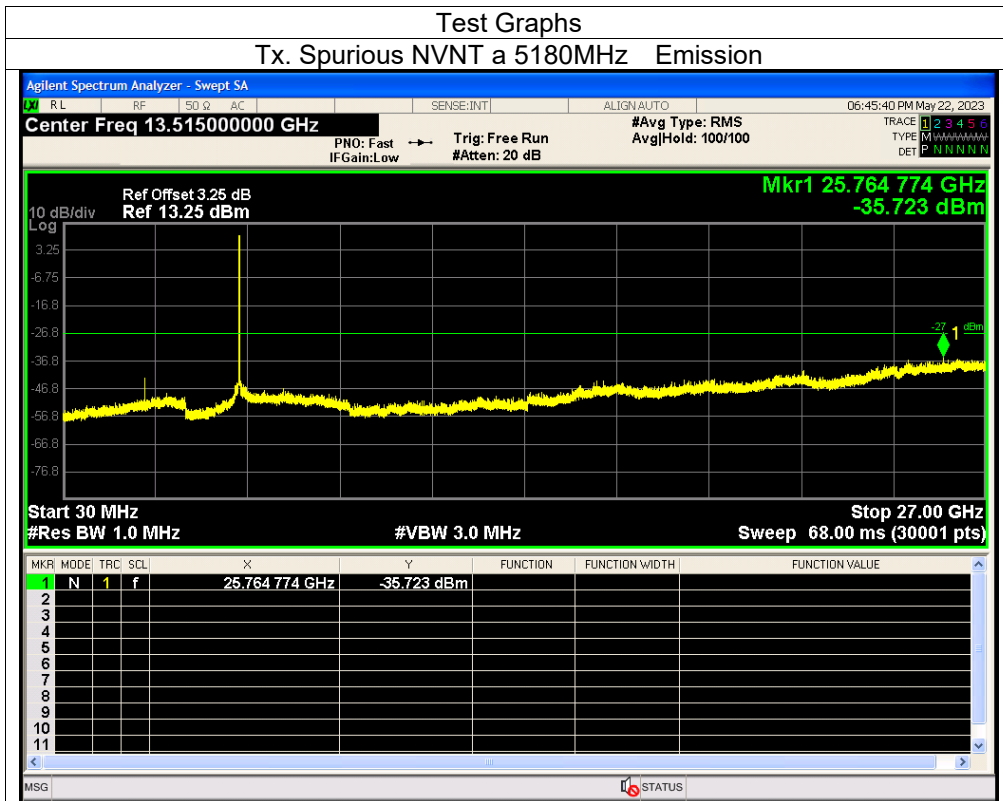
12.3 Test Procedure

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.

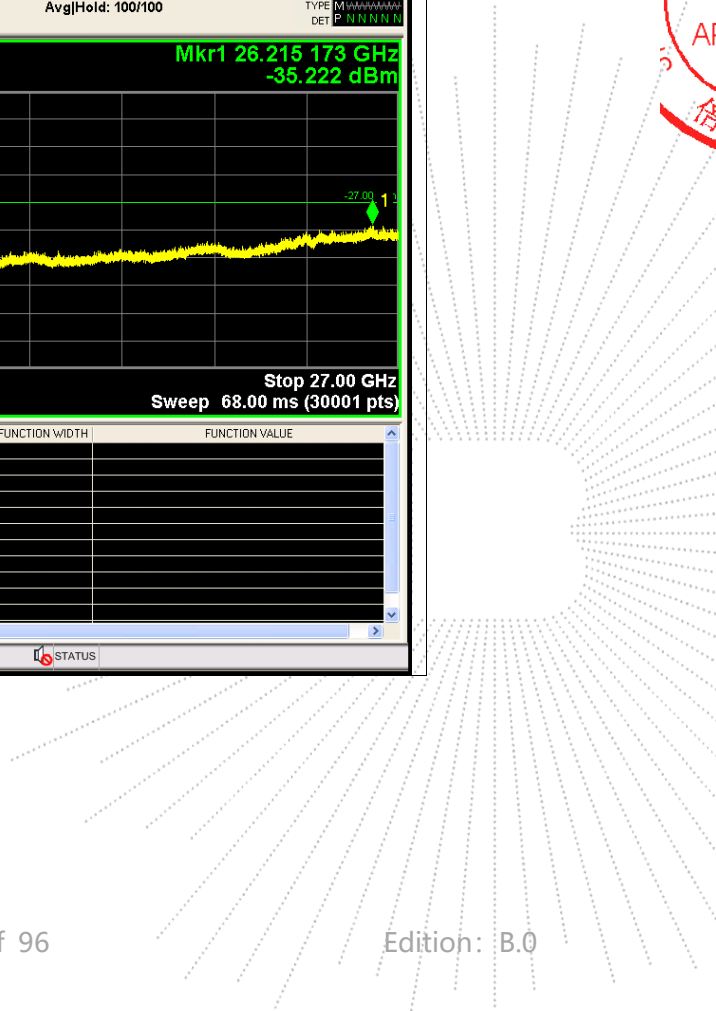
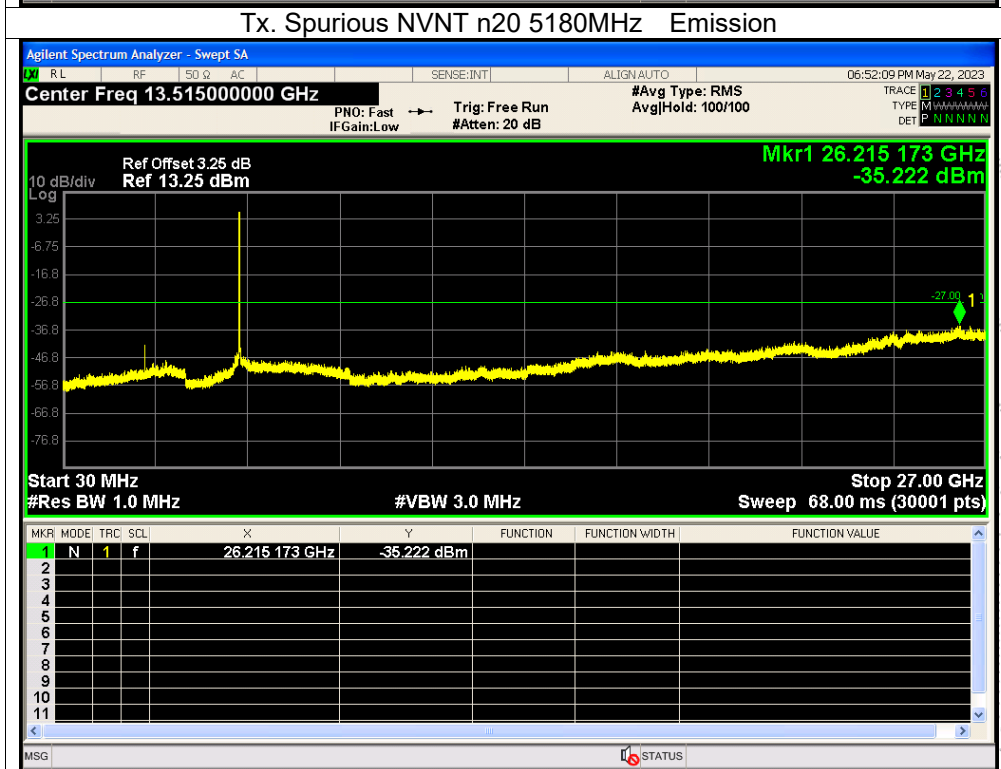
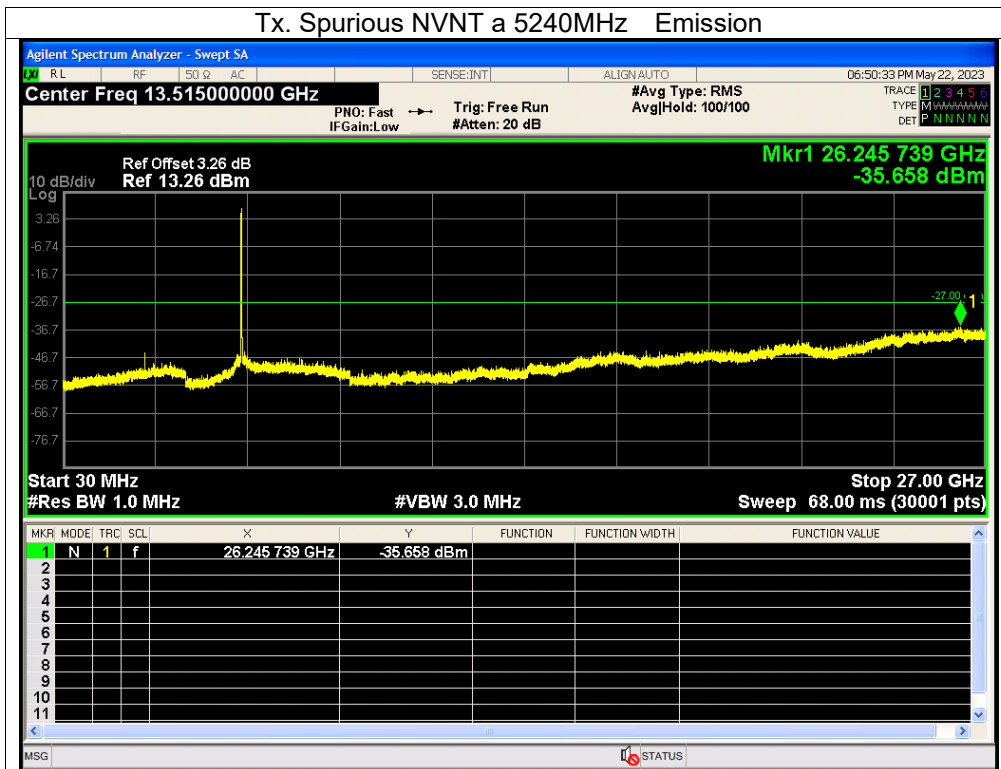
12.4 Test Result

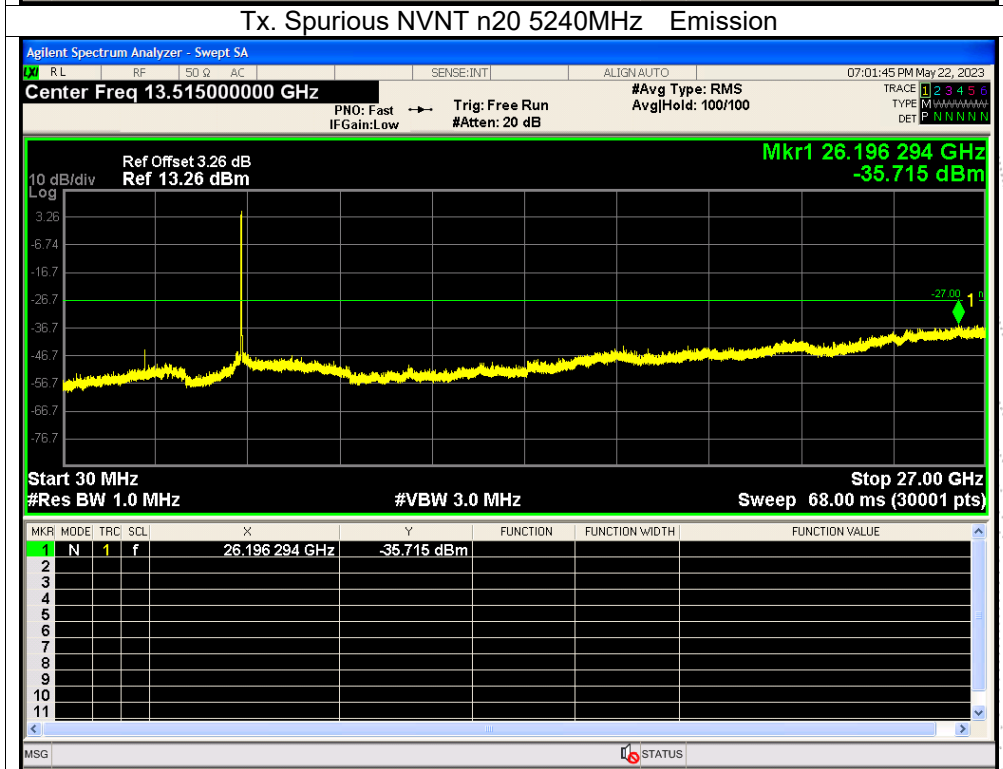
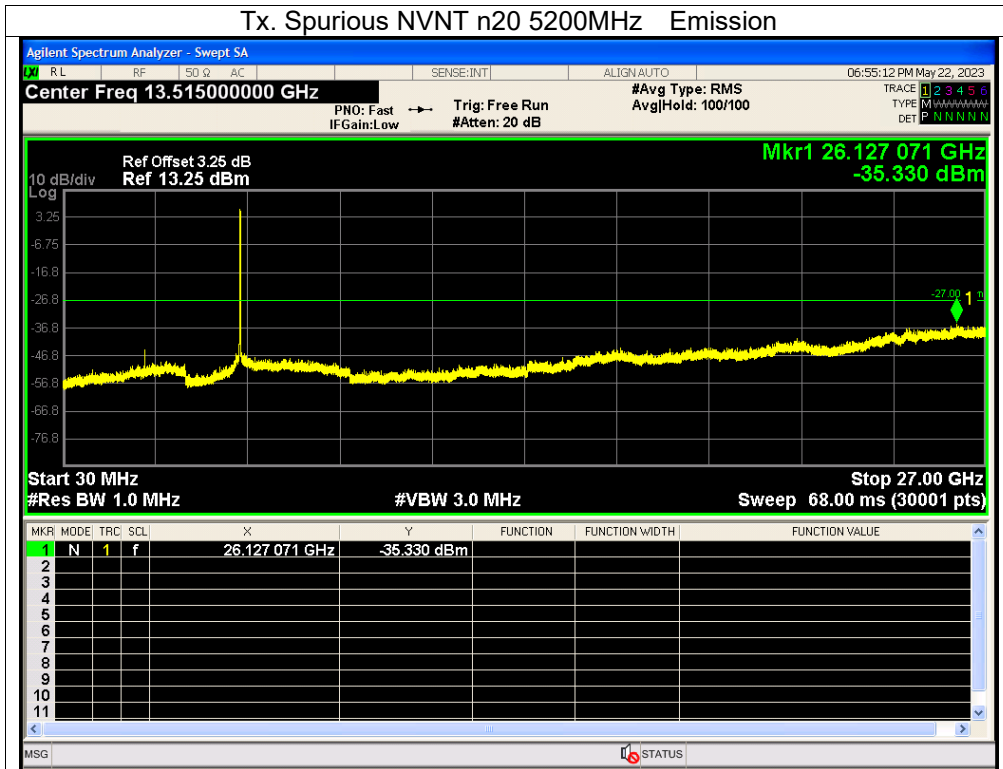
Remark: The measurement frequency range is from 9KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandedge measurement data.

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.

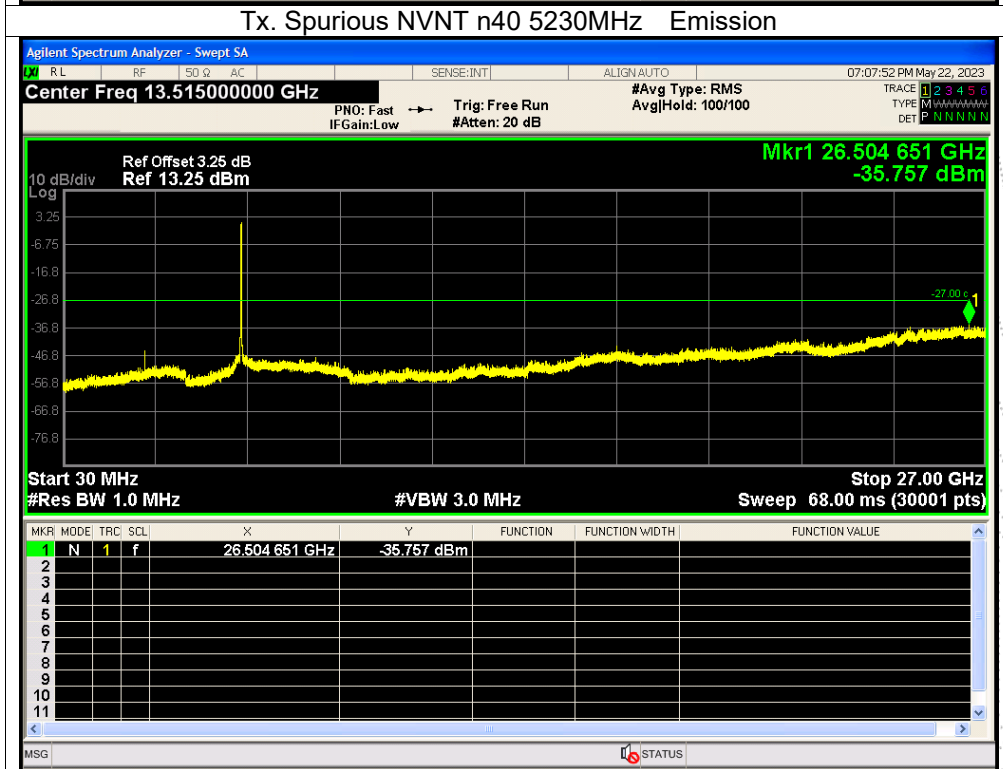
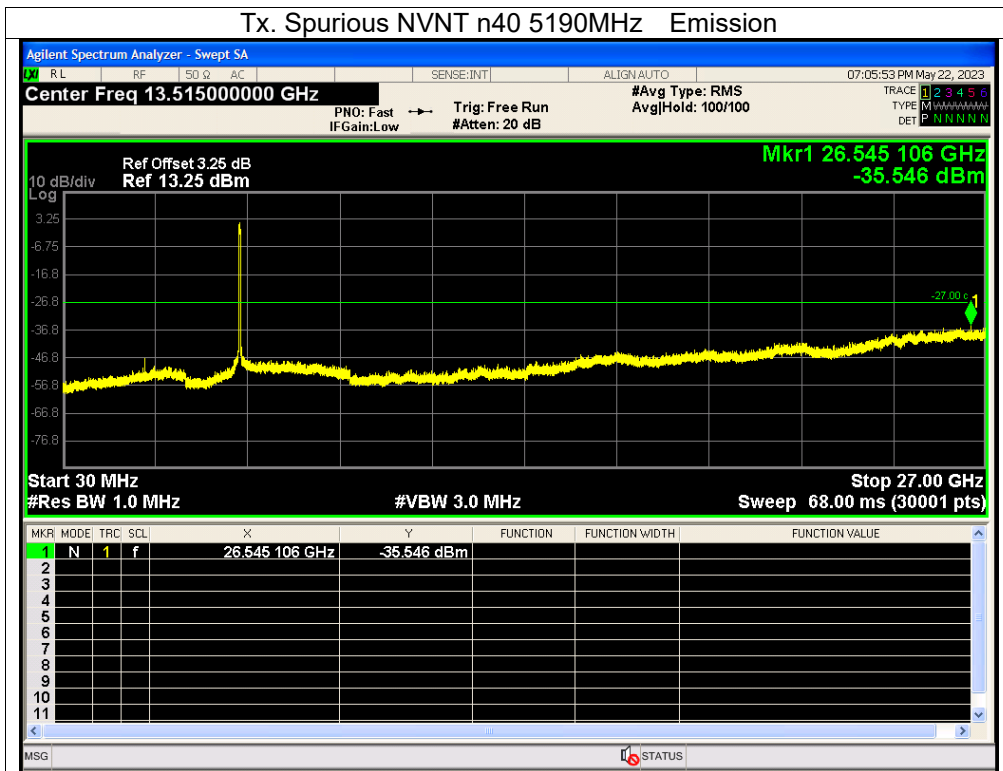


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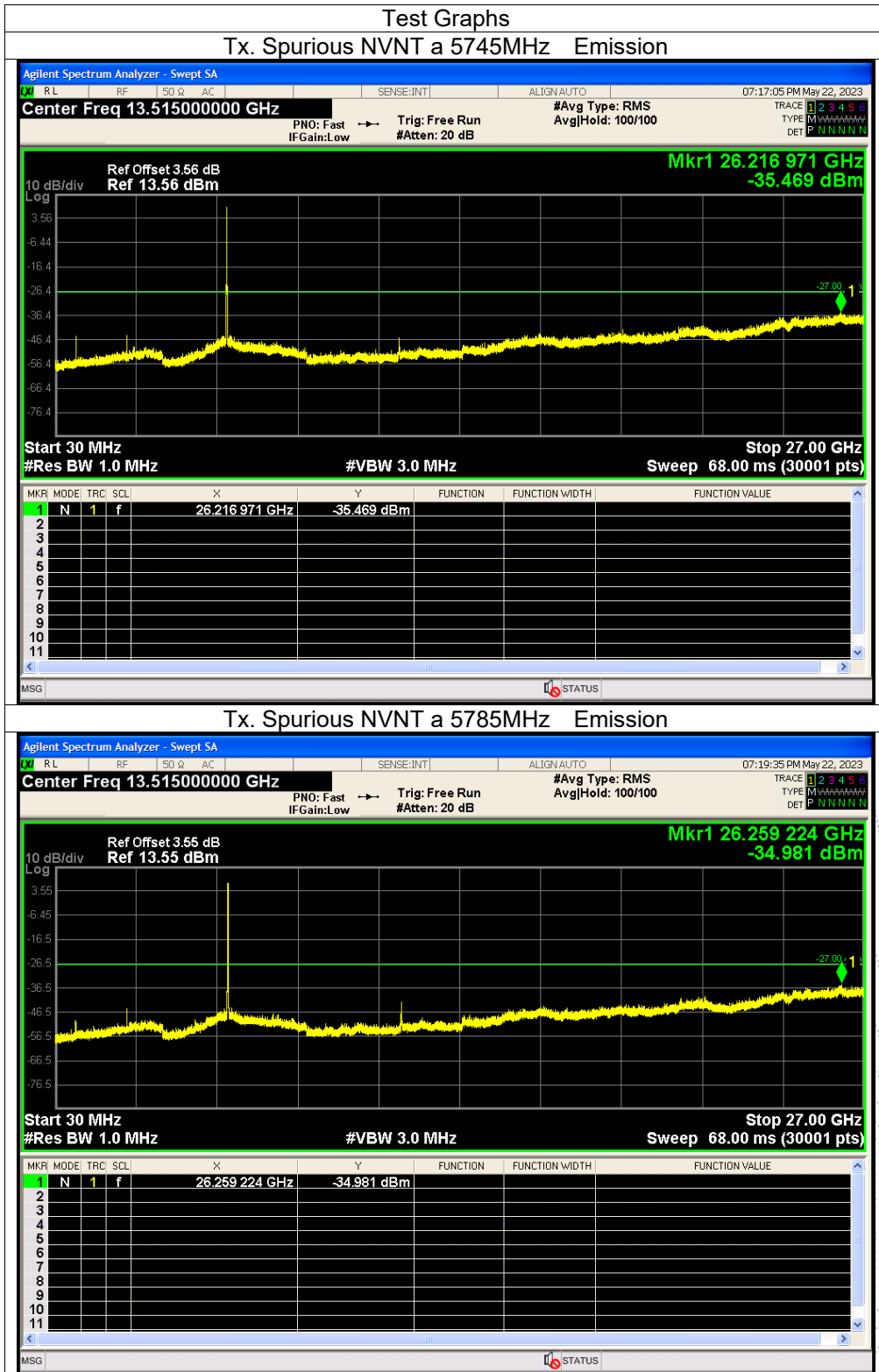


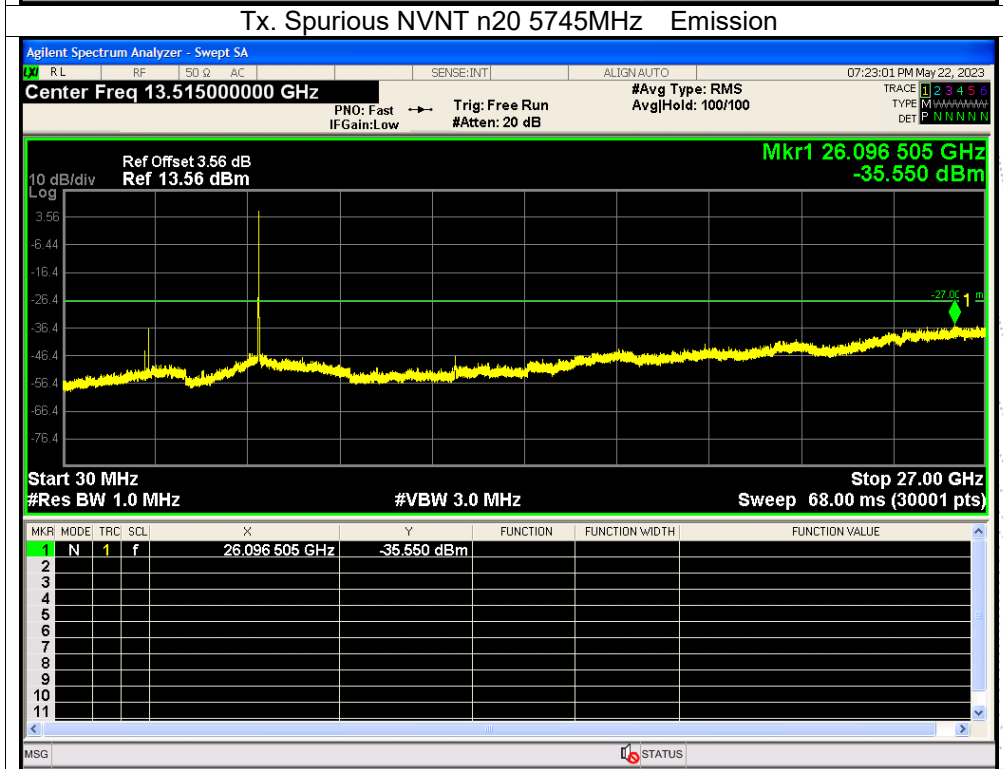
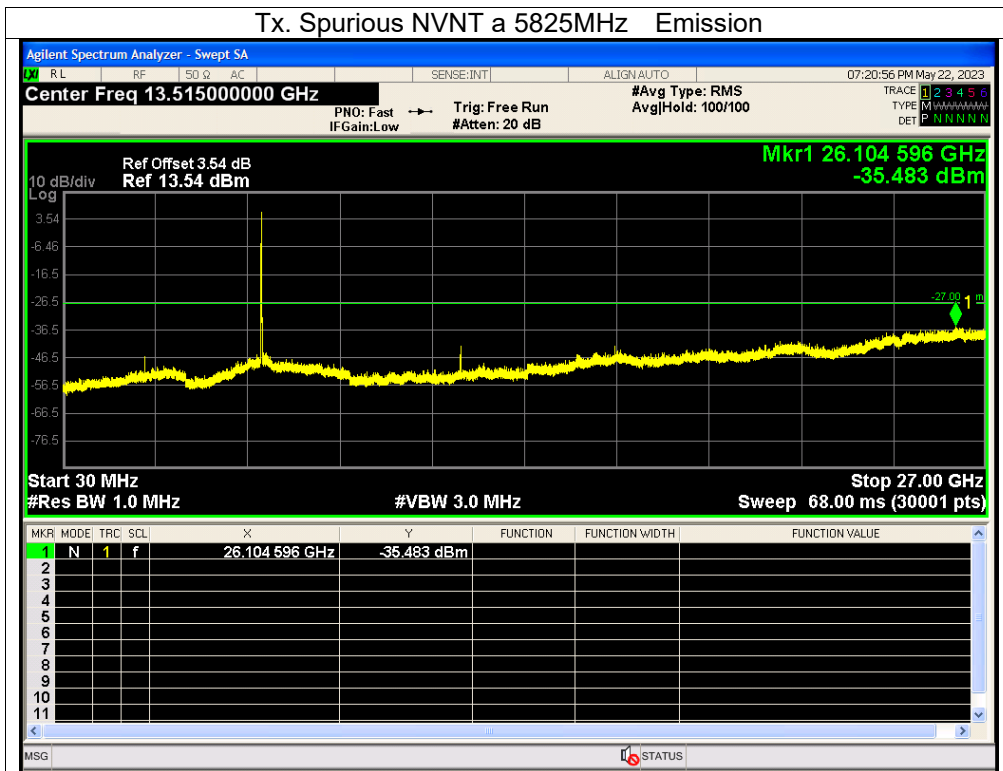


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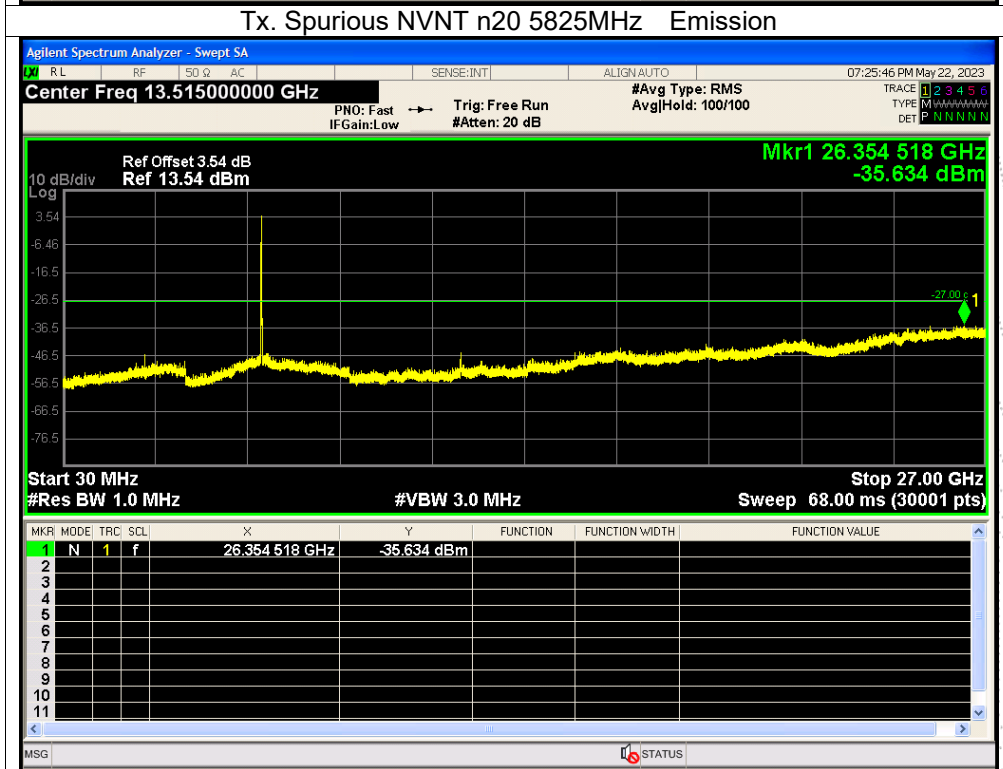
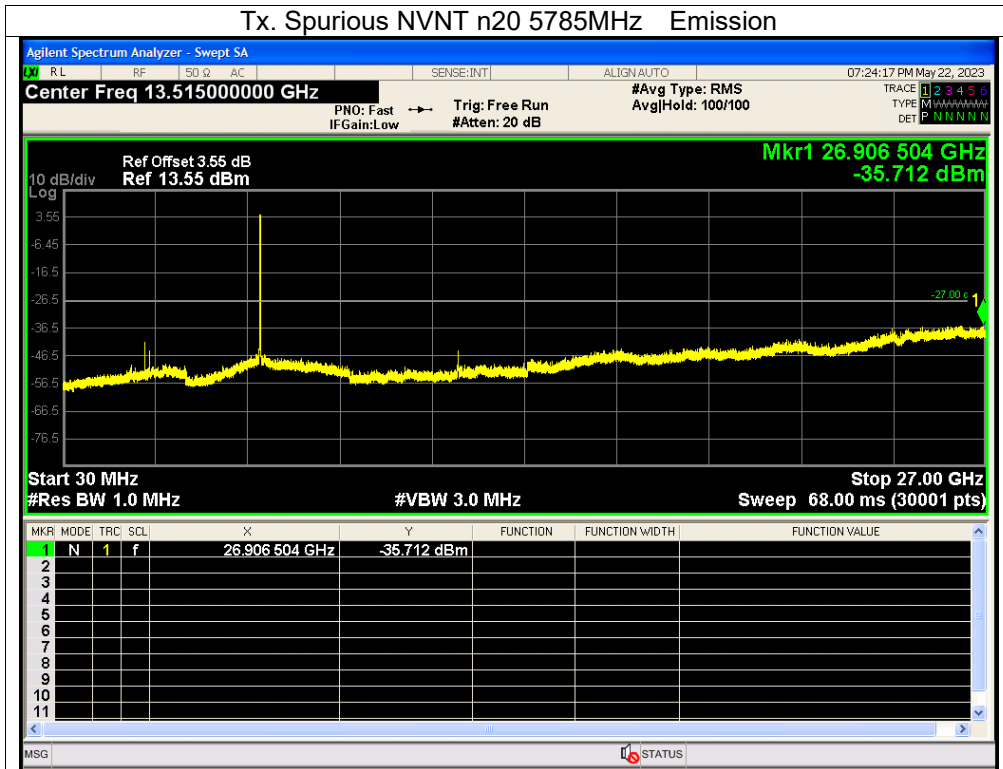


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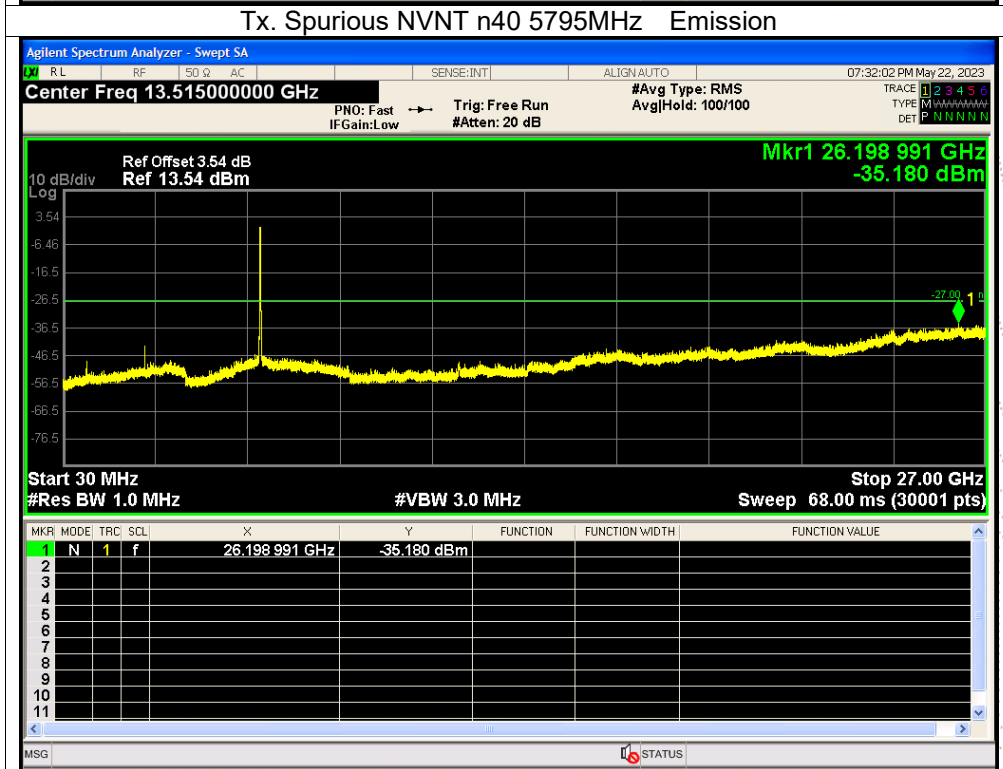
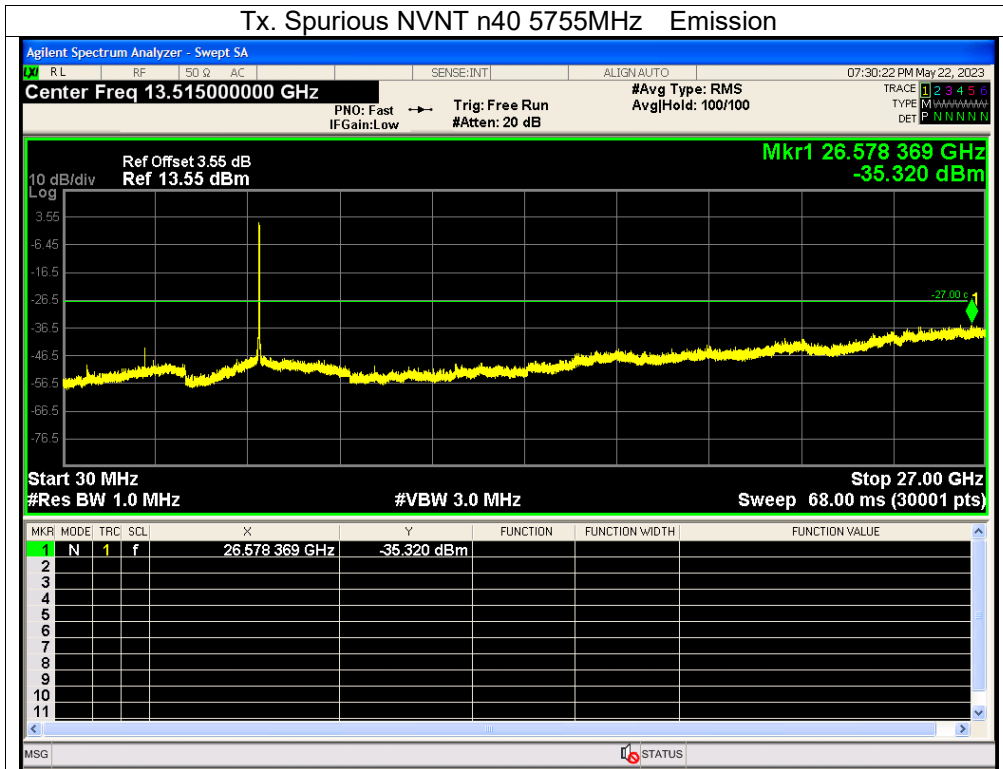




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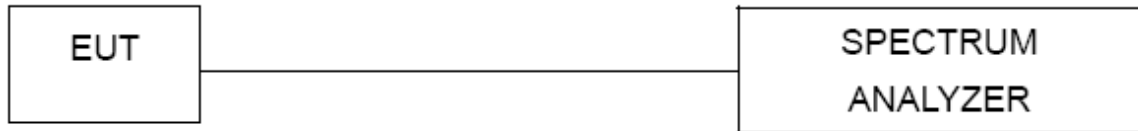


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13. Frequency Stability Measurement

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 ± 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 4.5V
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)	5.00	5180.0108	5180	0.0108	2.0771
		V max (V)	5.75	5180.0062	5180	0.0062	1.1891
		V min (V)	4.25	5180.0191	5180	0.0191	3.6802
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)	5	T (°C)	-20	5180.0070	5180	0.0070	1.3557
		T (°C)	-10	5180.0049	5180	0.0049	0.9532
		T (°C)	0	5180.0061	5180	0.0061	1.1716
		T (°C)	10	5180.0124	5180	0.0124	2.4024
		T (°C)	20	5180.0026	5180	0.0026	0.4941
		T (°C)	30	5180.0006	5180	0.0006	0.1191
		T (°C)	40	5180.0064	5180	0.0064	1.2324
		T (°C)	50	5180.0103	5180	0.0103	1.9966
		T (°C)	60	5180.0087	5180	0.0087	1.6748
		T (°C)	70	5180.0099	5180	0.0099	1.9068
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)	5.00	5200.0119	5200	0.0119	2.2941
		V max (V)	5.75	5200.0060	5200	0.0060	1.1624
		V min (V)	4.25	5200.0058	5200	0.0058	1.1209
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)	5	T (°C)	-20	5200.00620	5200	0.00620	1.1924
		T (°C)	-10	5200.00304	5200	0.00304	0.5845
		T (°C)	0	5200.00218	5200	0.00218	0.4188
		T (°C)	10	5200.01028	5200	0.01028	1.9774
		T (°C)	20	5200.01055	5200	0.01055	2.0289
		T (°C)	30	5200.00790	5200	0.00790	1.5183
		T (°C)	40	5200.00988	5200	0.00988	1.8997
		T (°C)	50	5200.00765	5200	0.00765	1.4717
		T (°C)	60	5200.00885	5200	0.00885	1.7015
		T (°C)	70	5200.00014	5200	0.00014	0.0275
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)	5.00	5240.0092	5240	0.0092	1.7648
		V max (V)	5.75	5240.0054	5240	0.0054	1.0307
		V min (V)	4.25	5240.0086	5240	0.0086	1.6354
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)	5	T (°C)	-20	5240.0004	5240	0.0004	0.0806
		T (°C)	-10	5240.0016	5240	0.0016	0.2980
		T (°C)	0	5240.0013	5240	0.0013	0.2532
		T (°C)	10	5240.0025	5240	0.0025	0.4745
		T (°C)	20	5240.0057	5240	0.0057	1.0813
		T (°C)	30	5240.0048	5240	0.0048	0.9067
		T (°C)	40	5240.0070	5240	0.0070	1.3453
		T (°C)	50	5240.0016	5240	0.0016	0.2984
		T (°C)	60	5240.0107	5240	0.0107	2.0367
		T (°C)	70	5240.0002	5240	0.0002	0.0337
Limits				5150-5250 MHz			
Result				Complies			

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Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 4.5V
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)	5.00	5745.00960	5745	0.00960	1.6713
		V max (V)	5.75	5745.00926	5745	0.00926	1.6117
		V min (V)	4.25	5745.00563	5745	0.00563	0.9798
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)	5	T (°C)	-20	5745.00467	5745	0.00467	0.8123
		T (°C)	-10	5745.00499	5745	0.00499	0.8678
		T (°C)	0	5745.01020	5745	0.01020	1.7761
		T (°C)	10	5745.00482	5745	0.00482	0.8385
		T (°C)	20	5745.00787	5745	0.00787	1.3700
		T (°C)	30	5745.00590	5745	0.00590	1.0272
		T (°C)	40	5745.00674	5745	0.00674	1.1735
		T (°C)	50	5745.00493	5745	0.00493	0.8578
		T (°C)	60	5745.01008	5745	0.01008	1.7538
T (°C)	70	5745.00196	5745	0.00196	0.3420		
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)	5.00	5785.00573	5785	0.00573	0.9907
		V max (V)	5.75	5785.00110	5785	0.00110	0.1908
		V min (V)	4.25	5785.00858	5785	0.00858	1.4831
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)	5	T (°C)	-20	5785.01052	5785	0.01052	1.8188
		T (°C)	-10	5785.00597	5785	0.00597	1.0316
		T (°C)	0	5785.00940	5785	0.00940	1.6251
		T (°C)	10	5785.00546	5785	0.00546	0.9432
		T (°C)	20	5785.00406	5785	0.00406	0.7021
		T (°C)	30	5785.00990	5785	0.00990	1.7116
		T (°C)	40	5785.00664	5785	0.00664	1.1480
		T (°C)	50	5785.00983	5785	0.00983	1.6992
		T (°C)	60	5785.01345	5785	0.01345	2.3245
		T (°C)	70	5785.00523	5785	0.00523	0.9032
Limits				5725-5850 MHz			
Result				Complies			

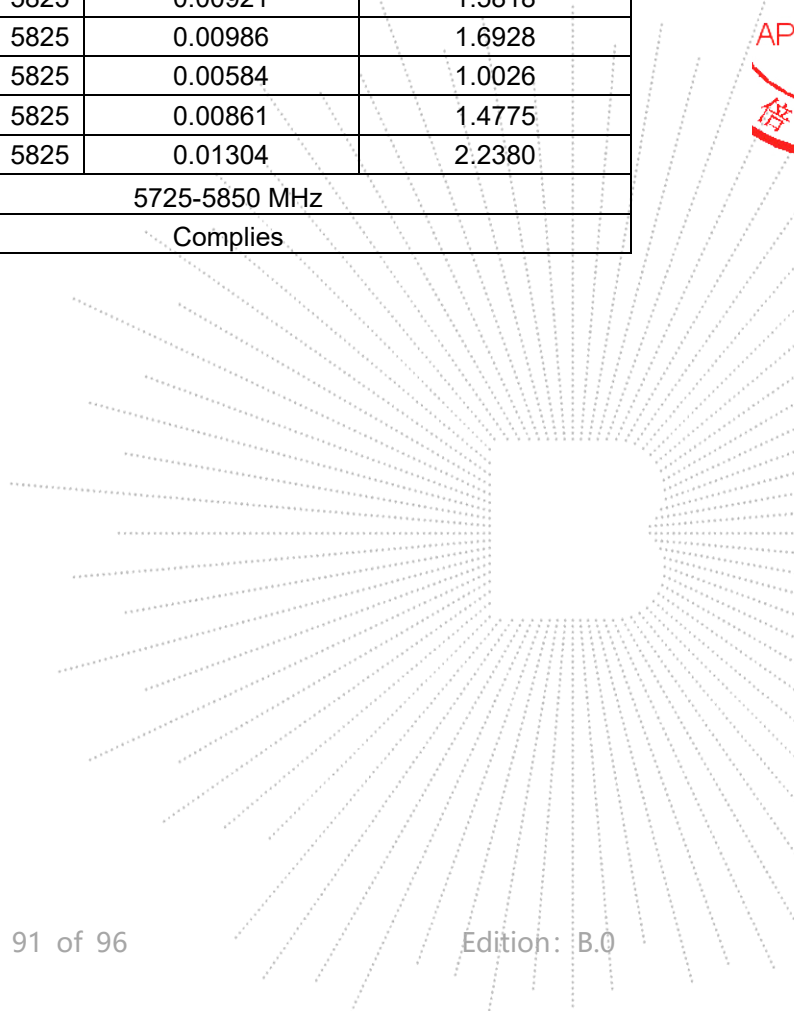
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Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	5.00	5825.01132	5825	0.01132	1.9434
		V max (V)	5.75	5825.01113	5825	0.01113	1.9108
		V min (V)	4.25	5825.00873	5825	0.00873	1.4981
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)	5	T (°C)	-20	5825.00938	5825	0.00938	1.6101
		T (°C)	-10	5825.00602	5825	0.00602	1.0339
		T (°C)	0	5825.00392	5825	0.00392	0.6729
		T (°C)	10	5825.00212	5825	0.00212	0.3634
		T (°C)	20	5825.01306	5825	0.01306	2.2412
		T (°C)	30	5825.00921	5825	0.00921	1.5818
		T (°C)	40	5825.00986	5825	0.00986	1.6928
		T (°C)	50	5825.00584	5825	0.00584	1.0026
		T (°C)	60	5825.00861	5825	0.00861	1.4775
		T (°C)	70	5825.01304	5825	0.01304	2.2380
Limits				5725-5850 MHz			
Result				Complies			

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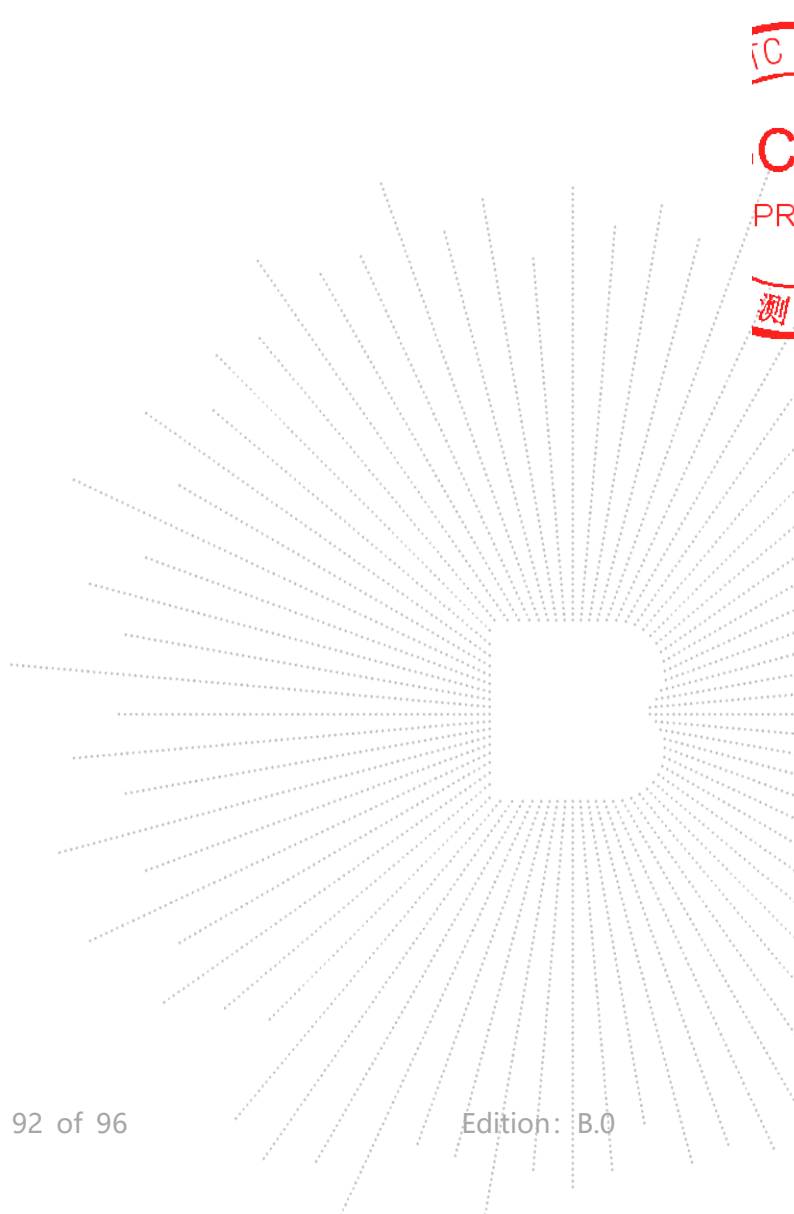
14. Antenna Requirement

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 PCB antenna, fulfill the requirement of this section.



15. EUT Photographs

EUT Photo 1

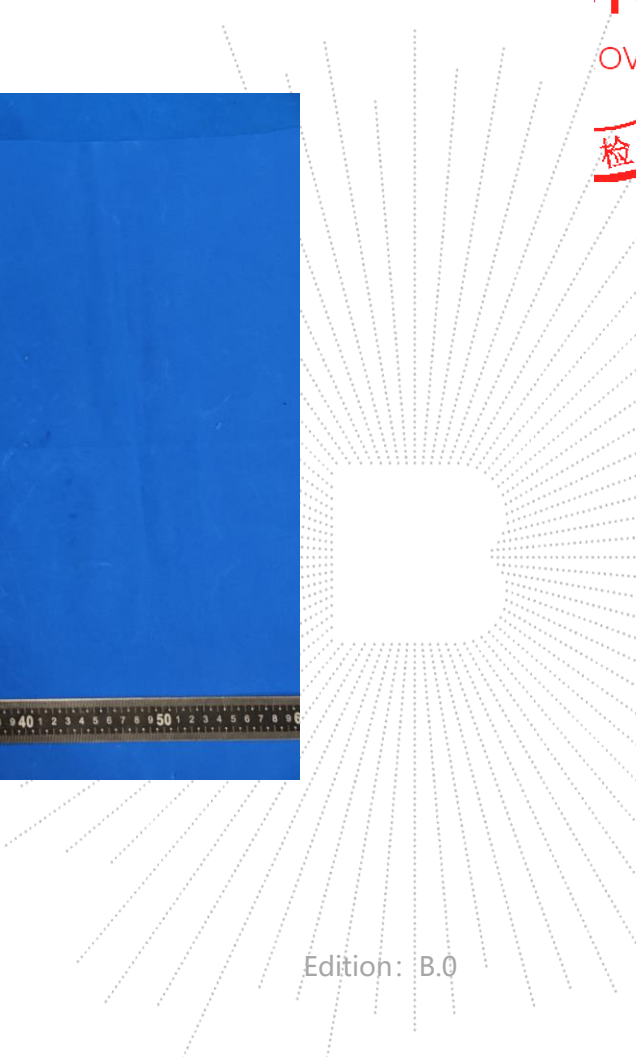


EUT Photo 2



NOTE: Appendix-Photographs Of EUT Constructional Details

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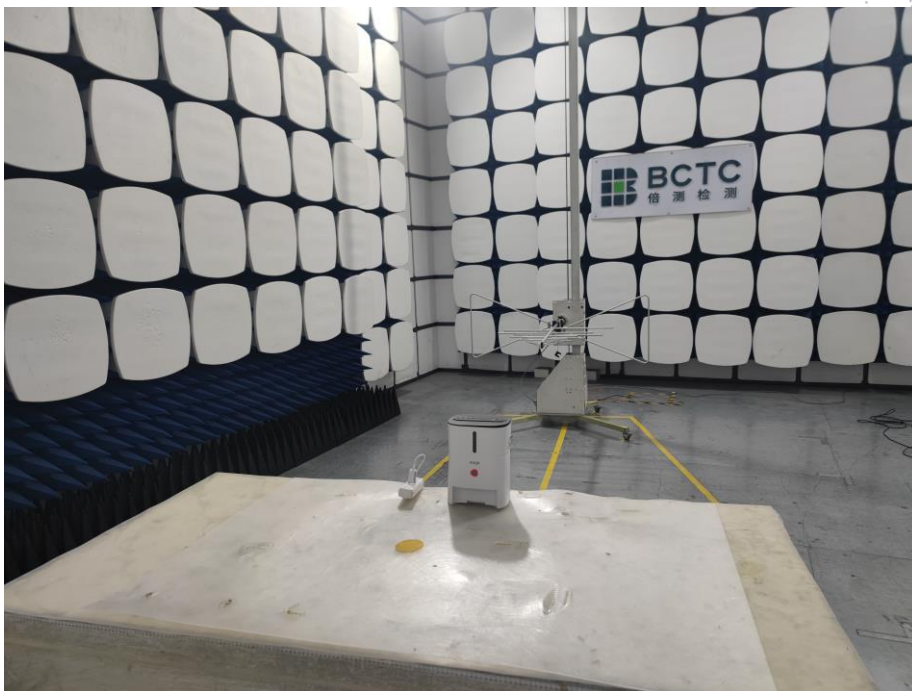


16. EUT Test Setup Photographs

Conducted Measurement Photo

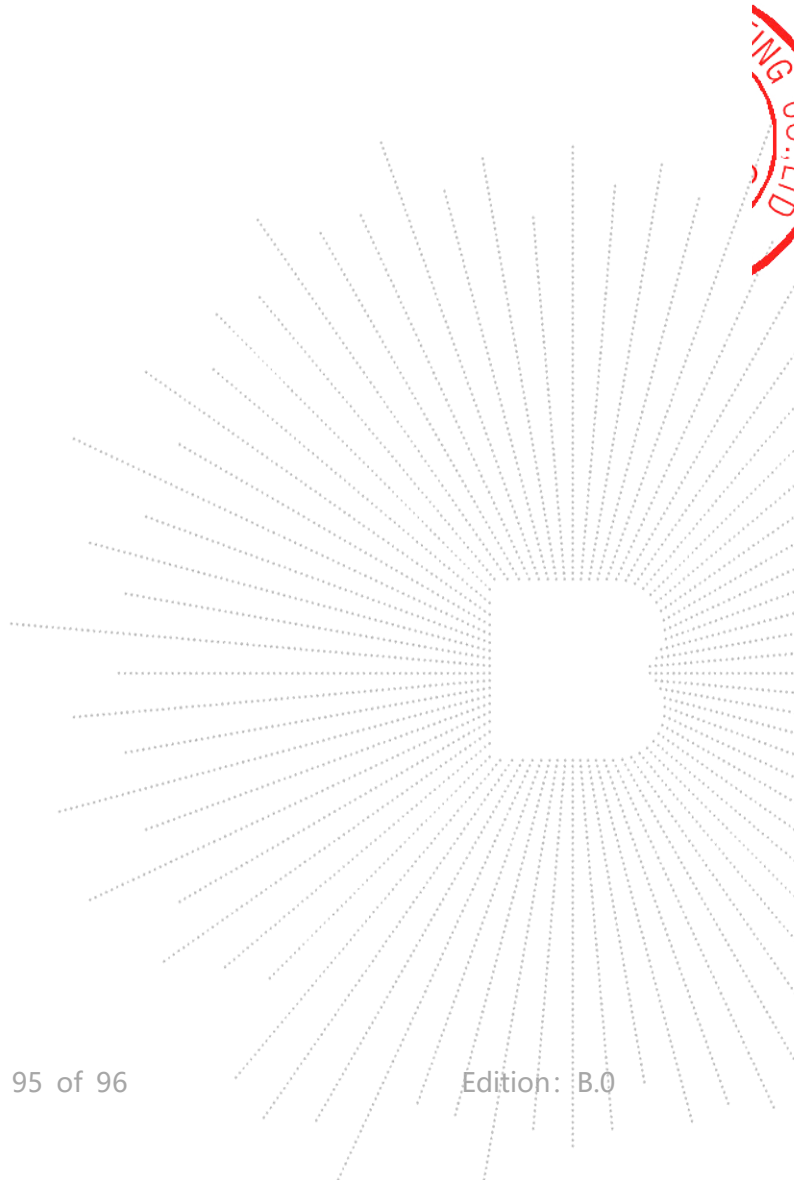


Radiated Measurement Photos



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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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