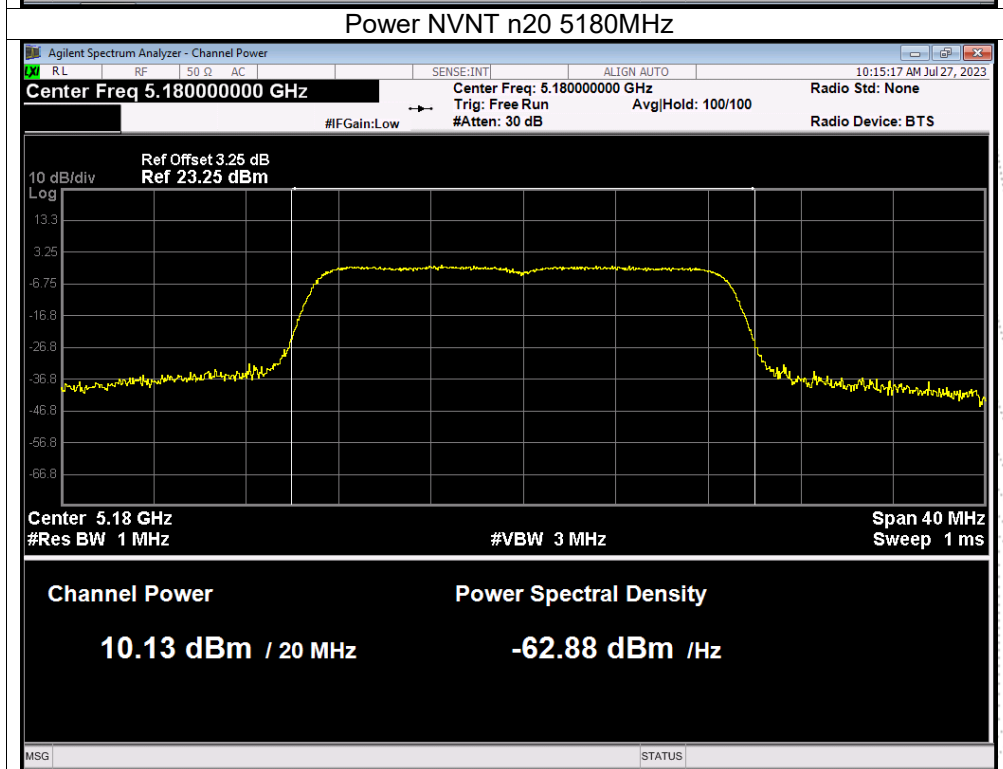
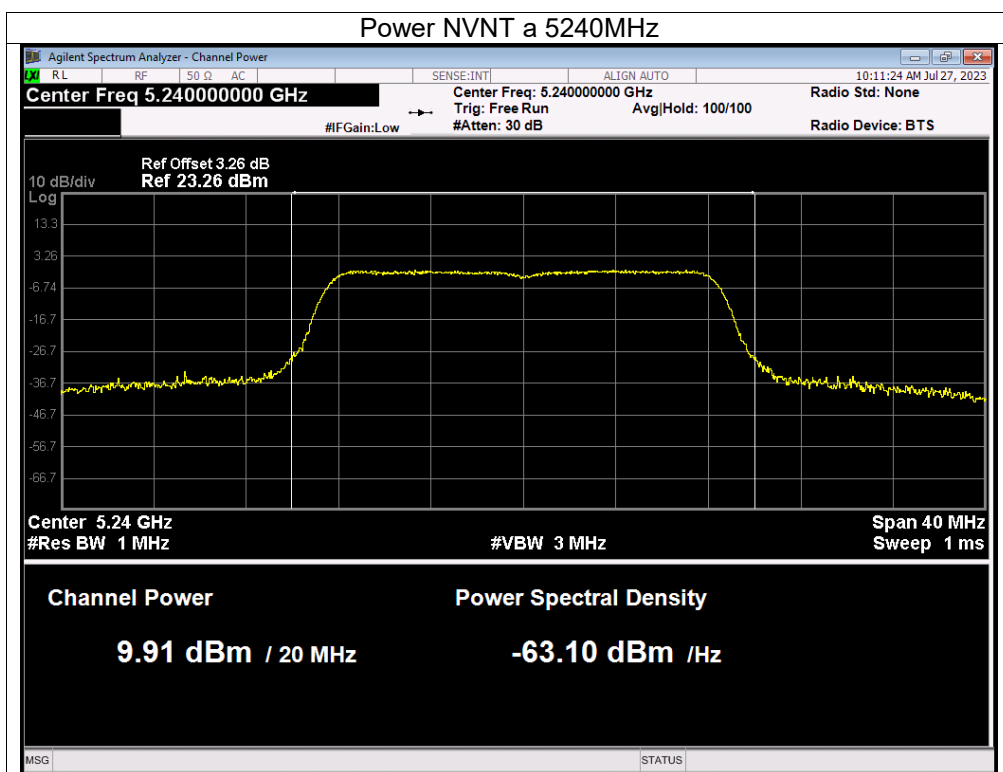
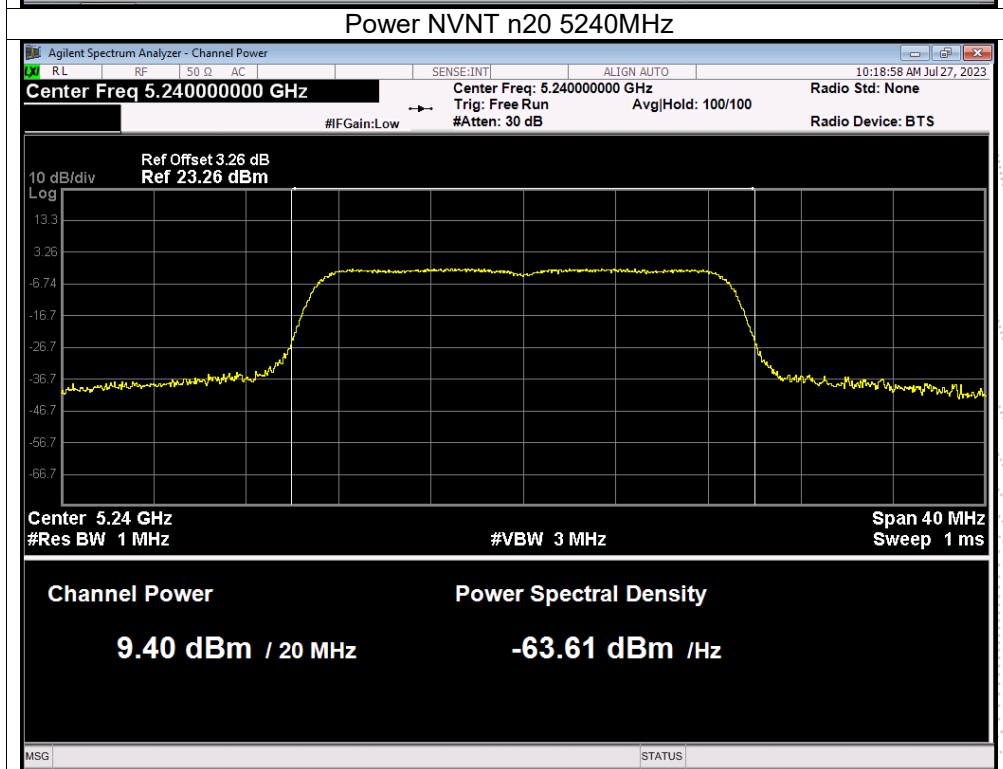
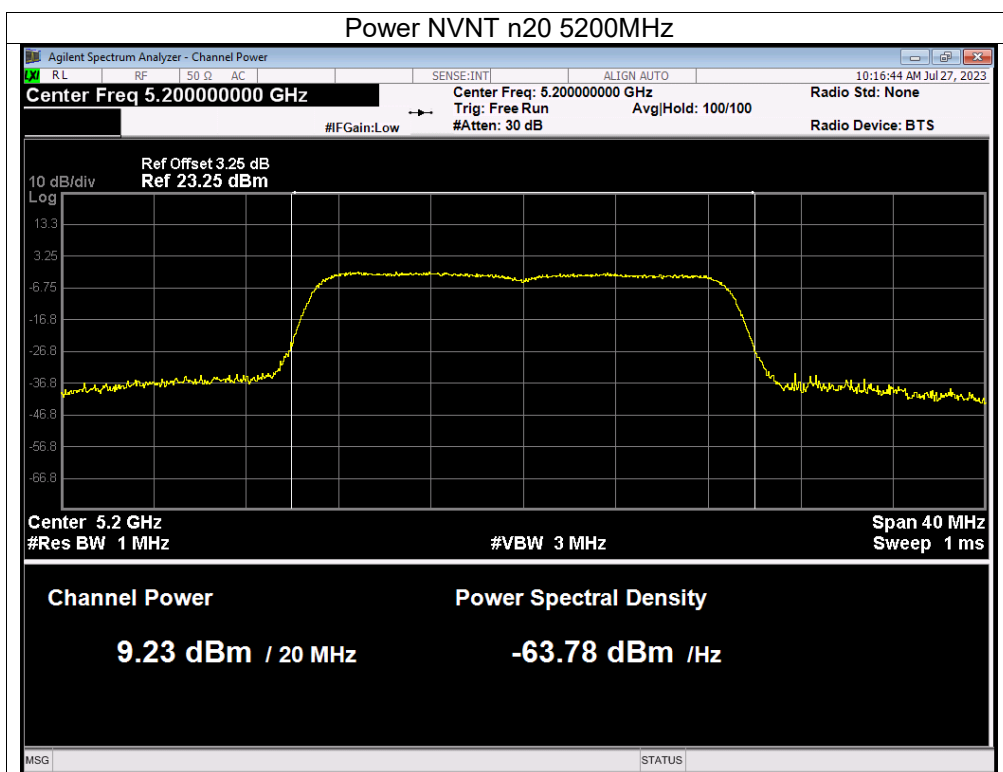
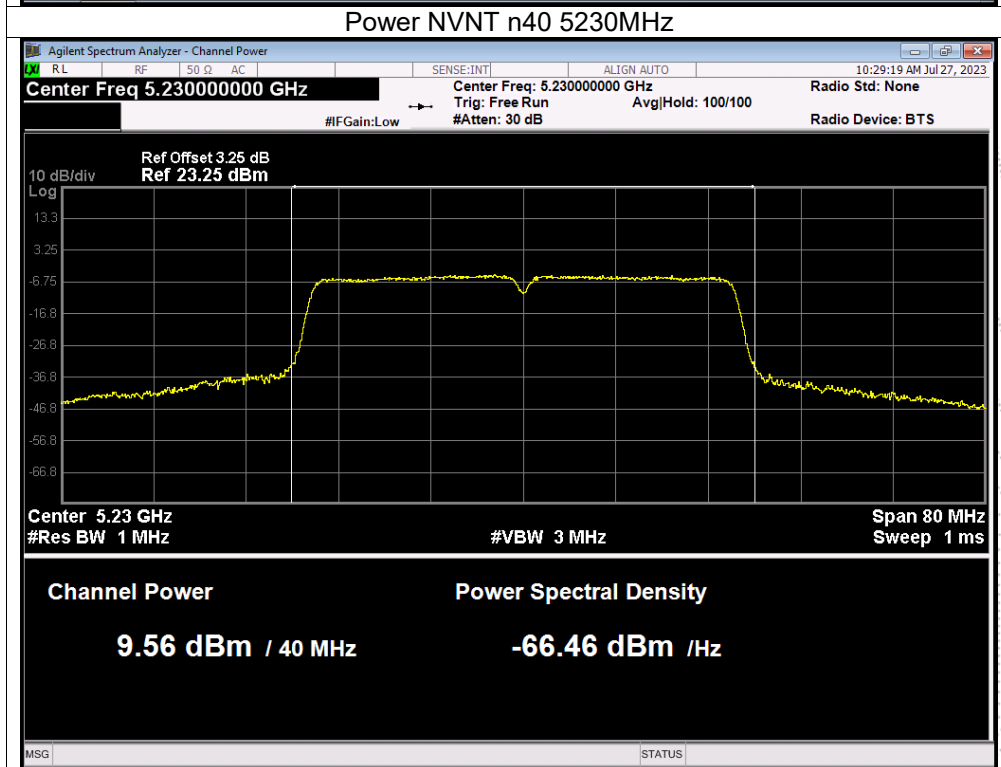
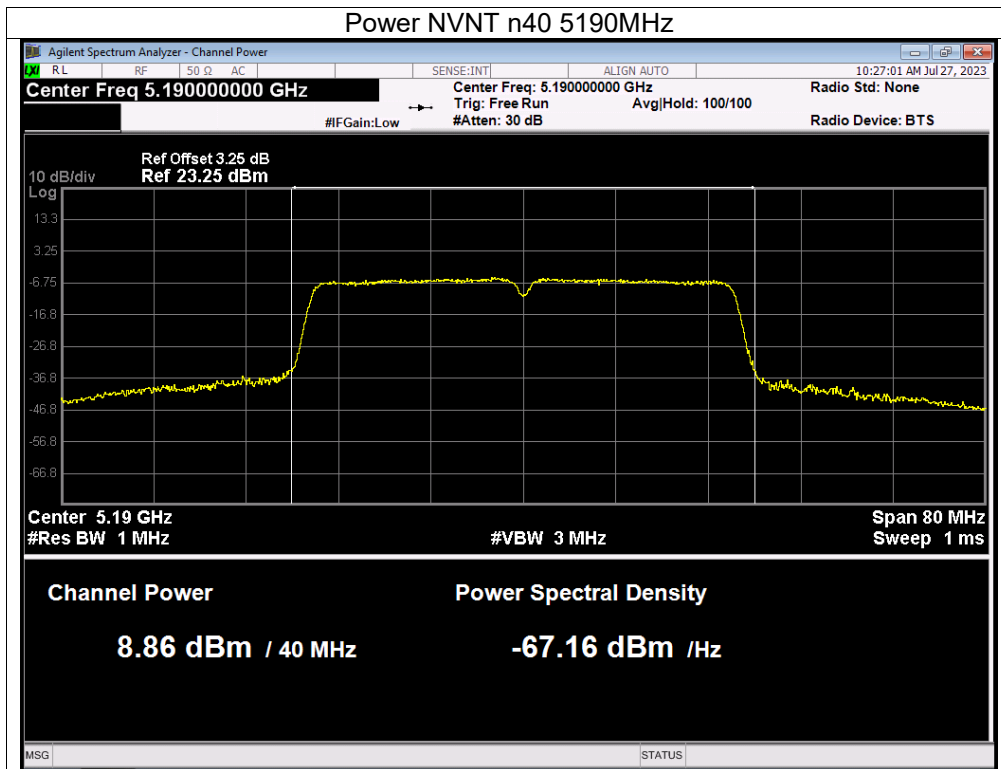
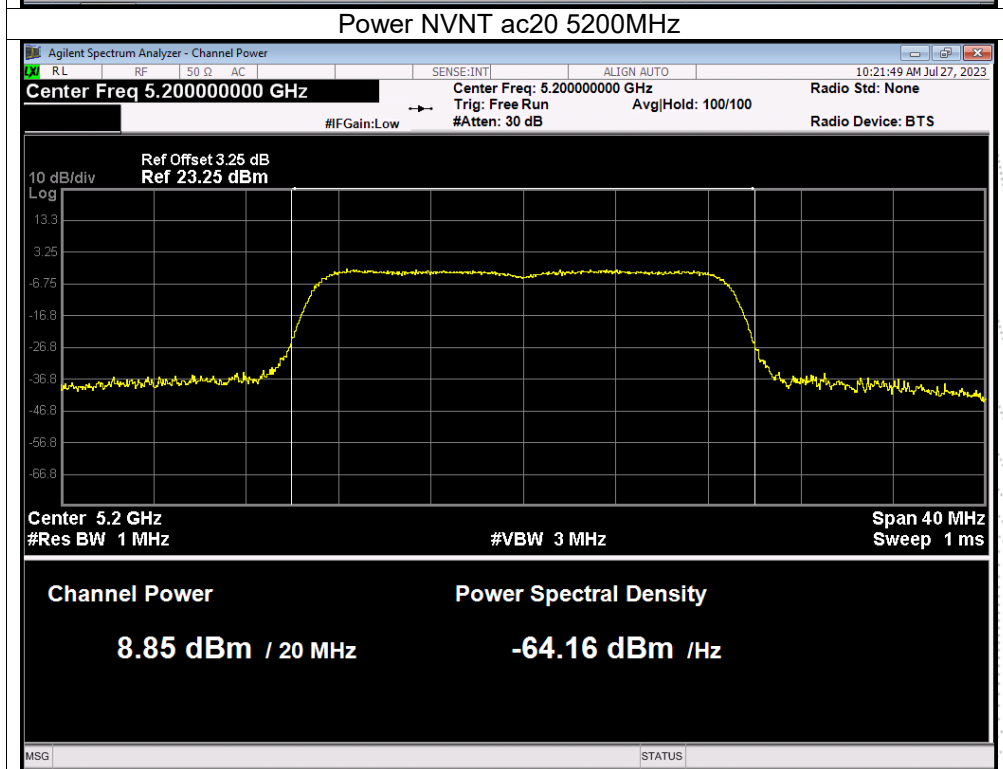
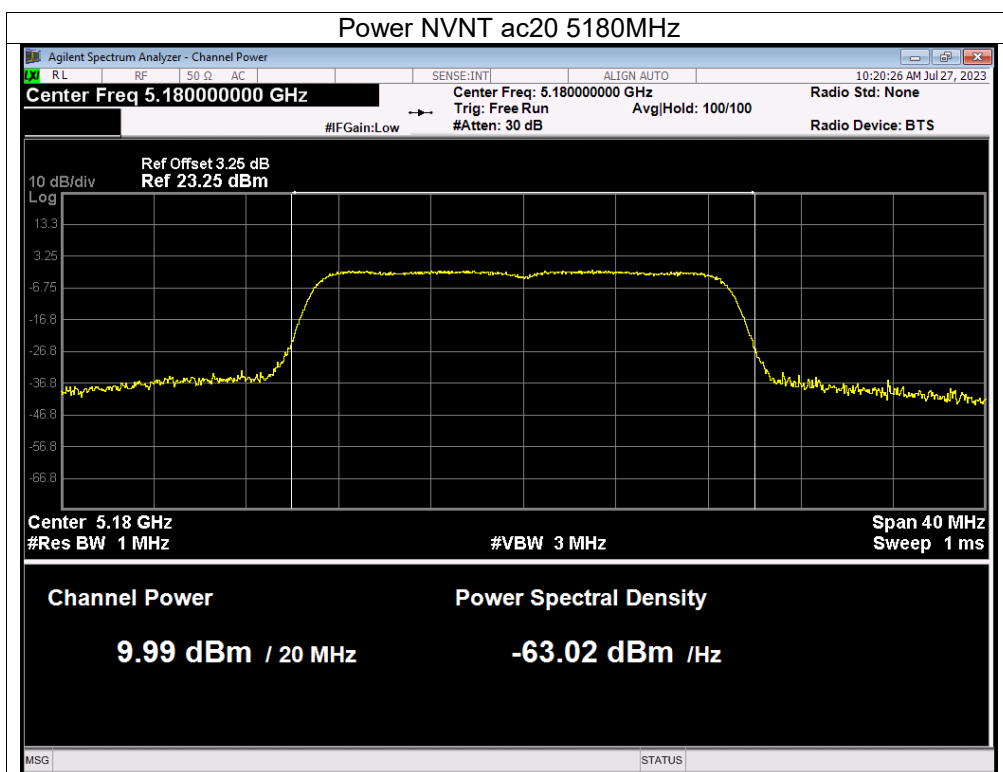
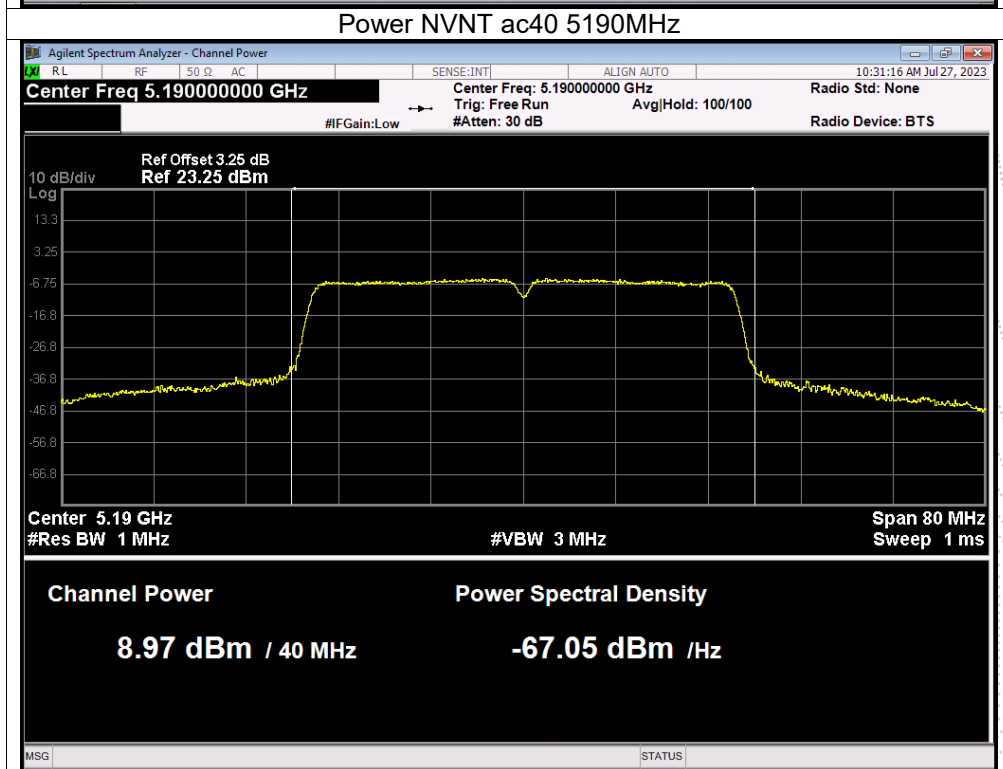
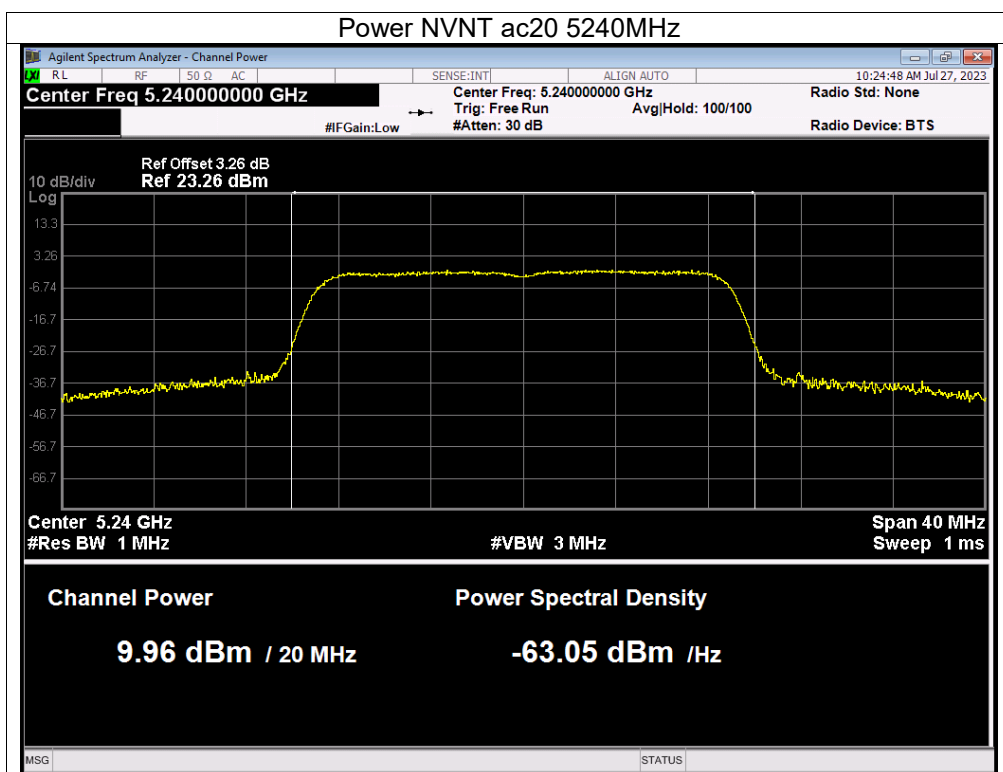


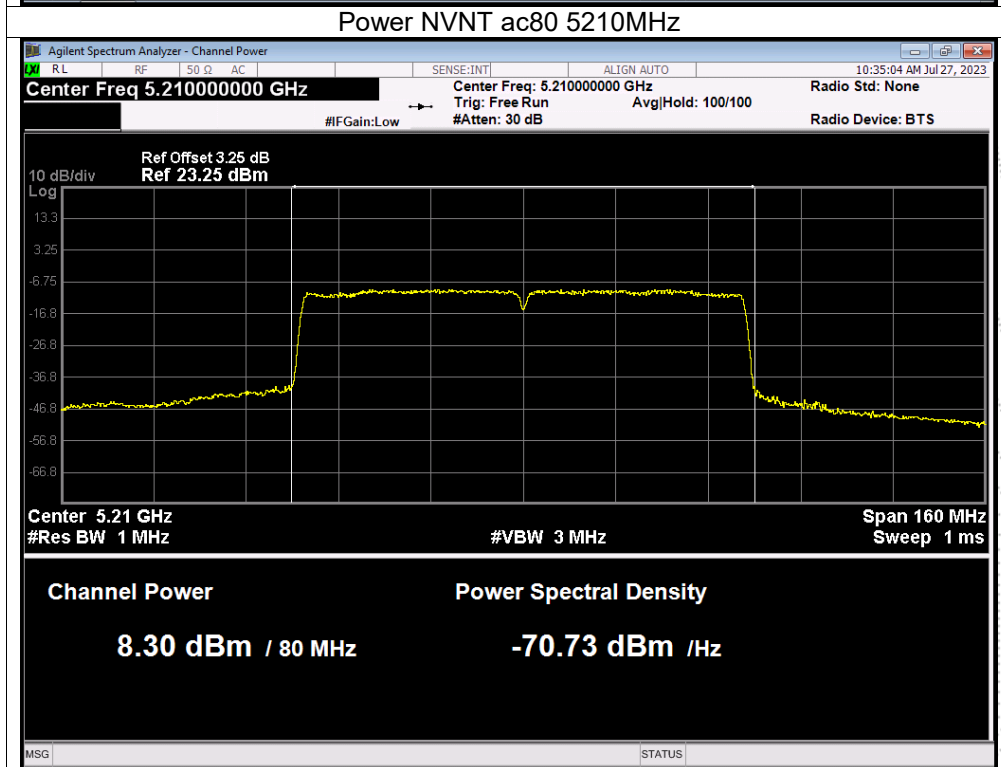
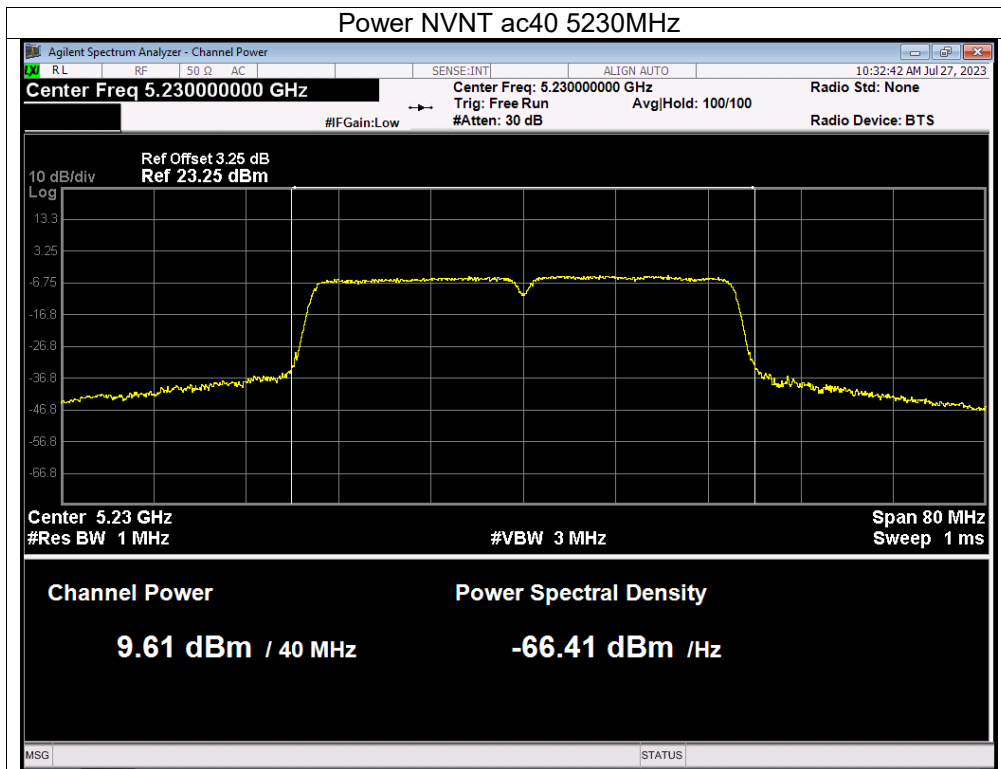


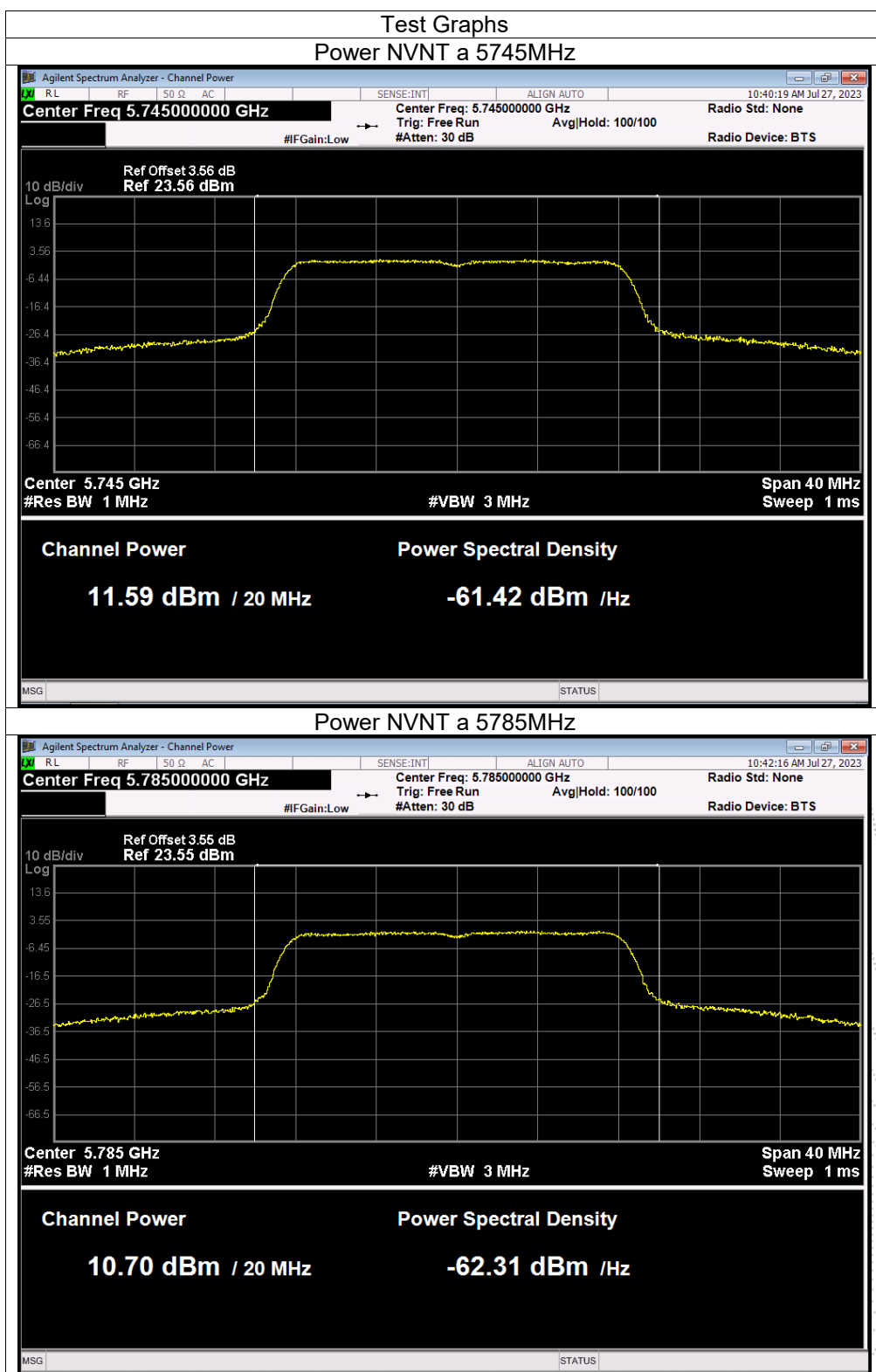


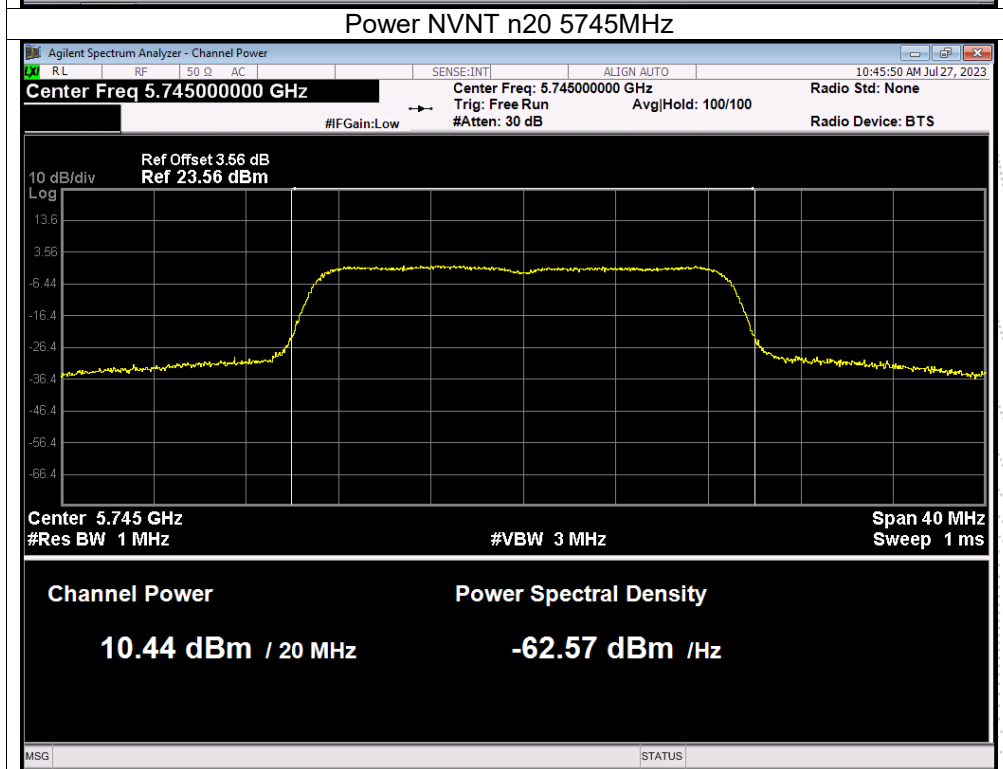
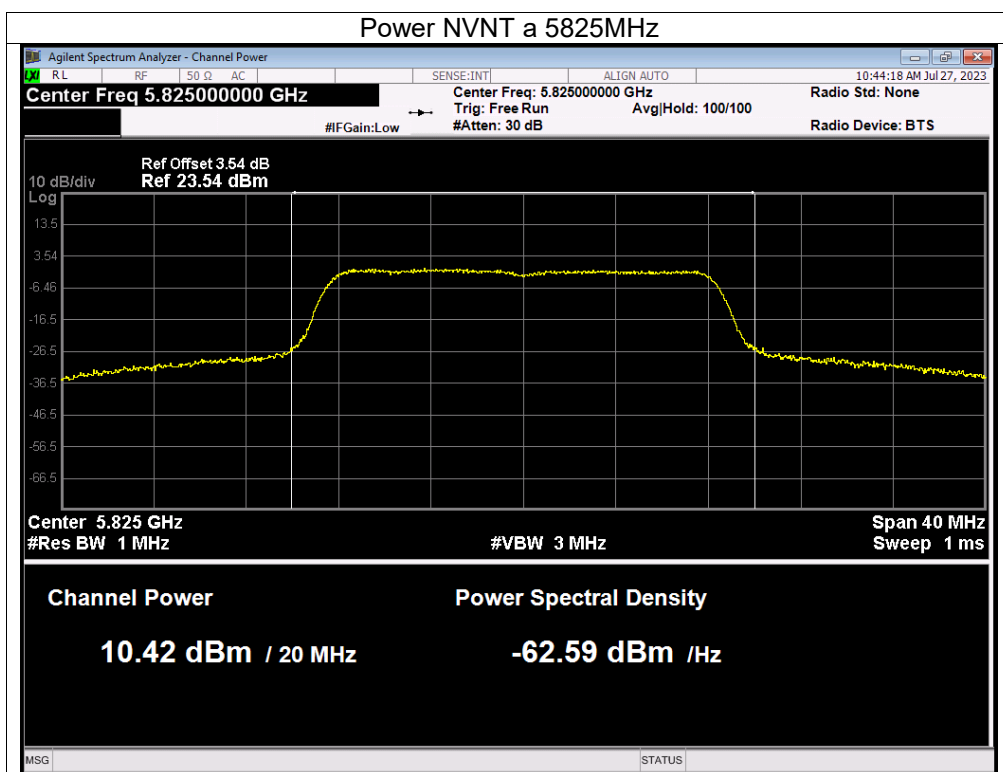


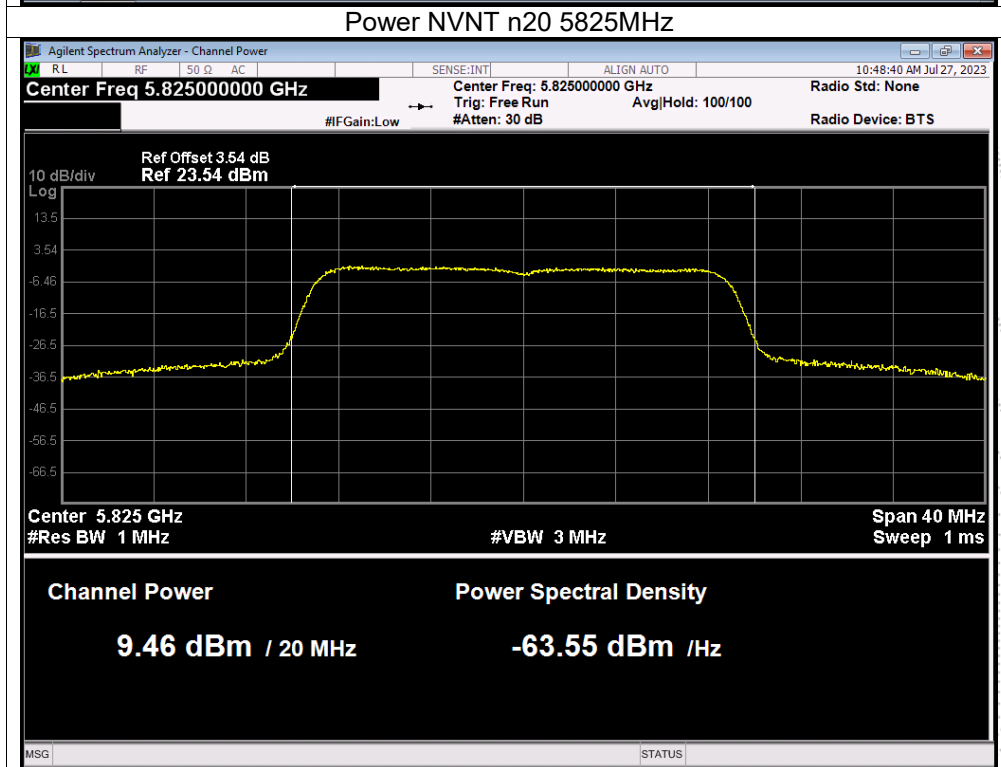
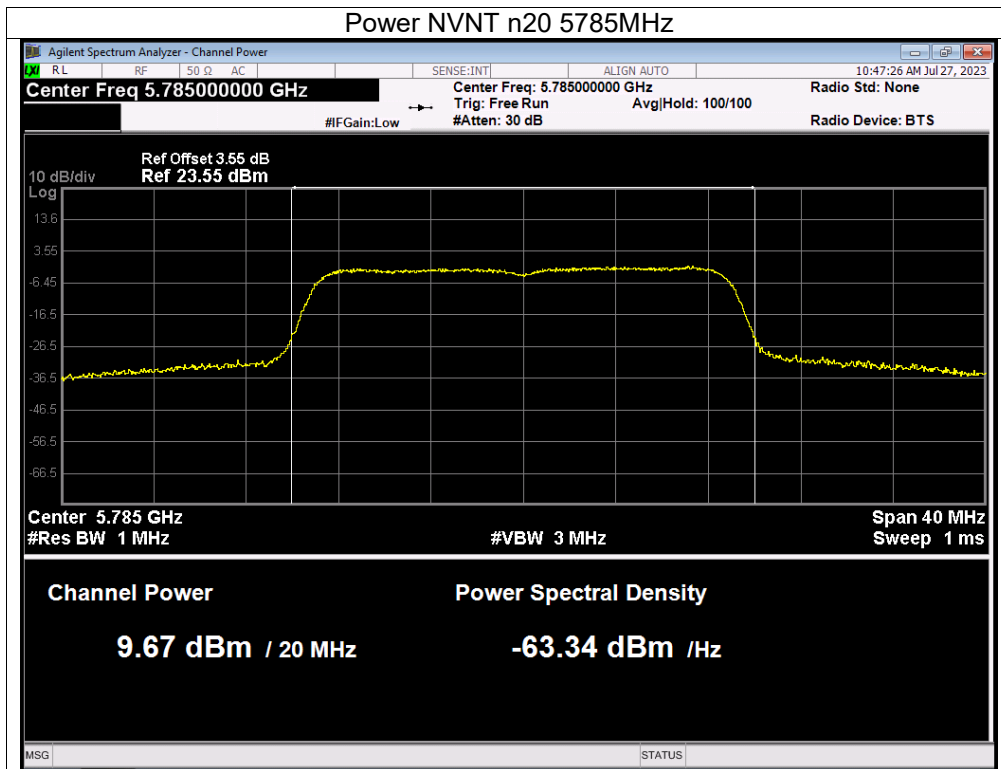


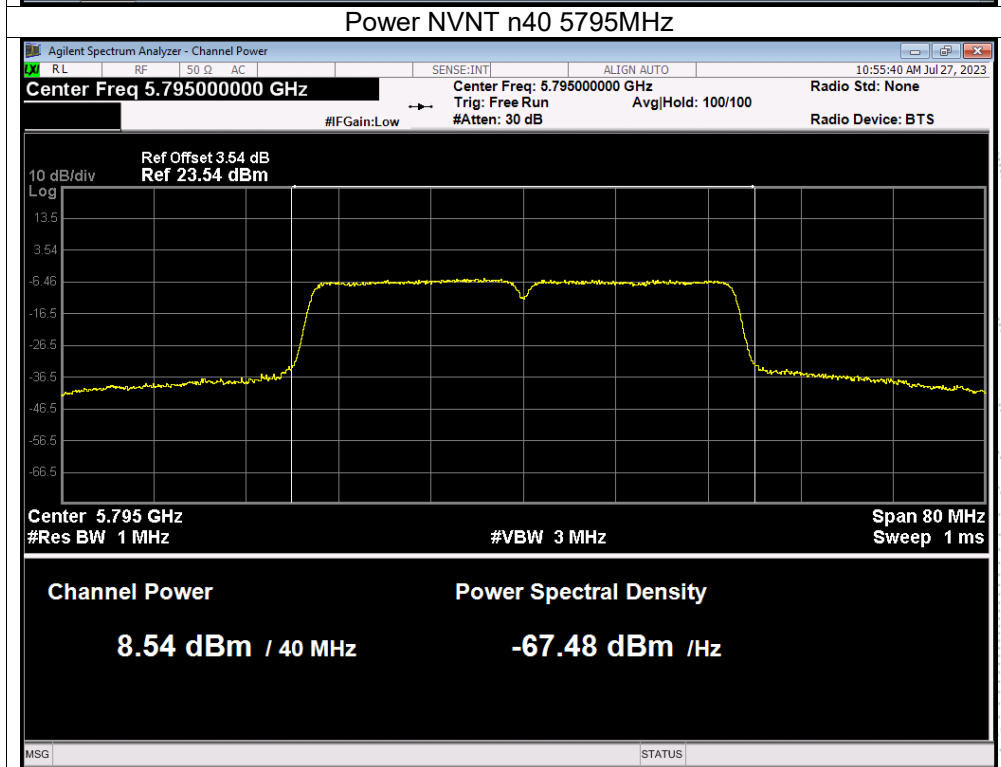
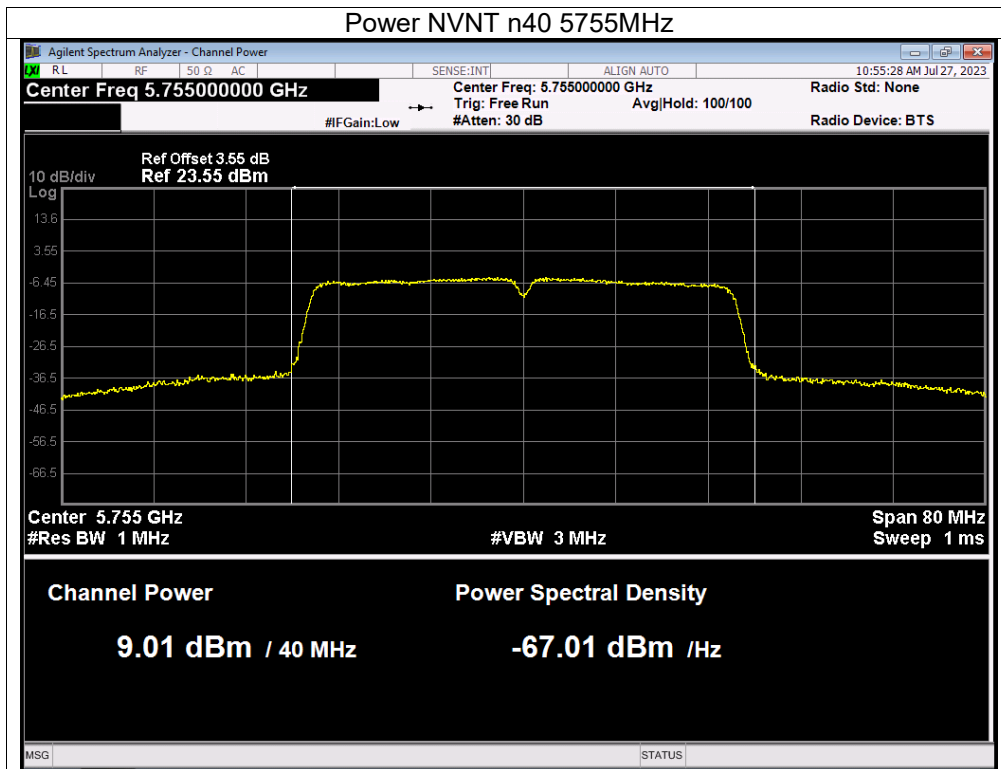


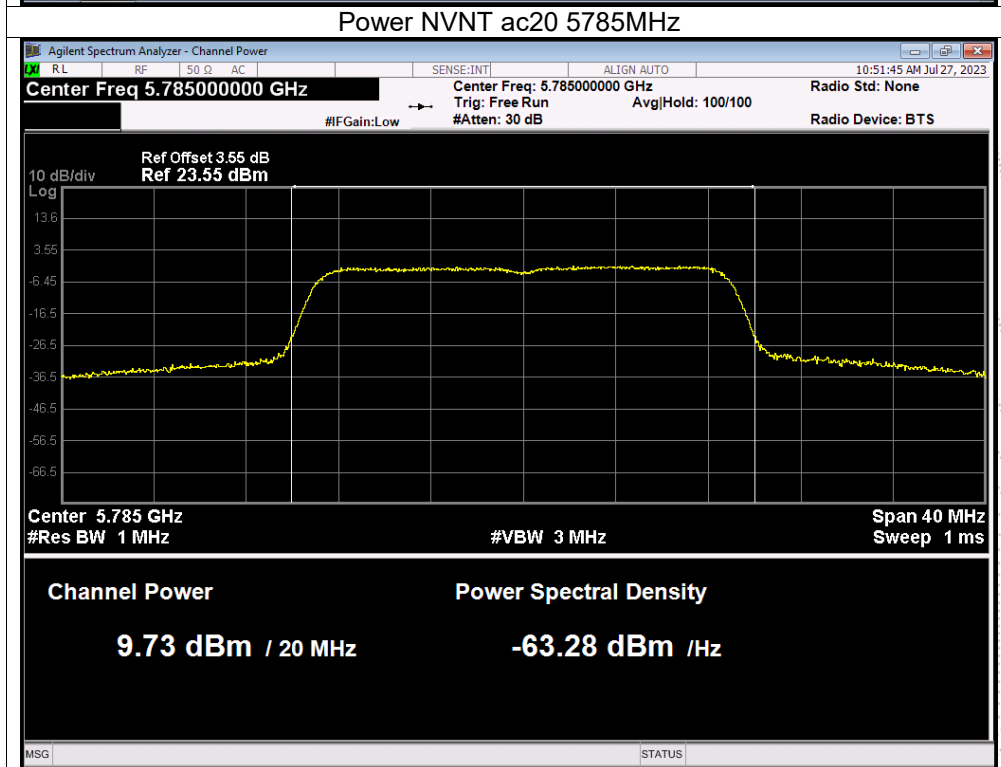
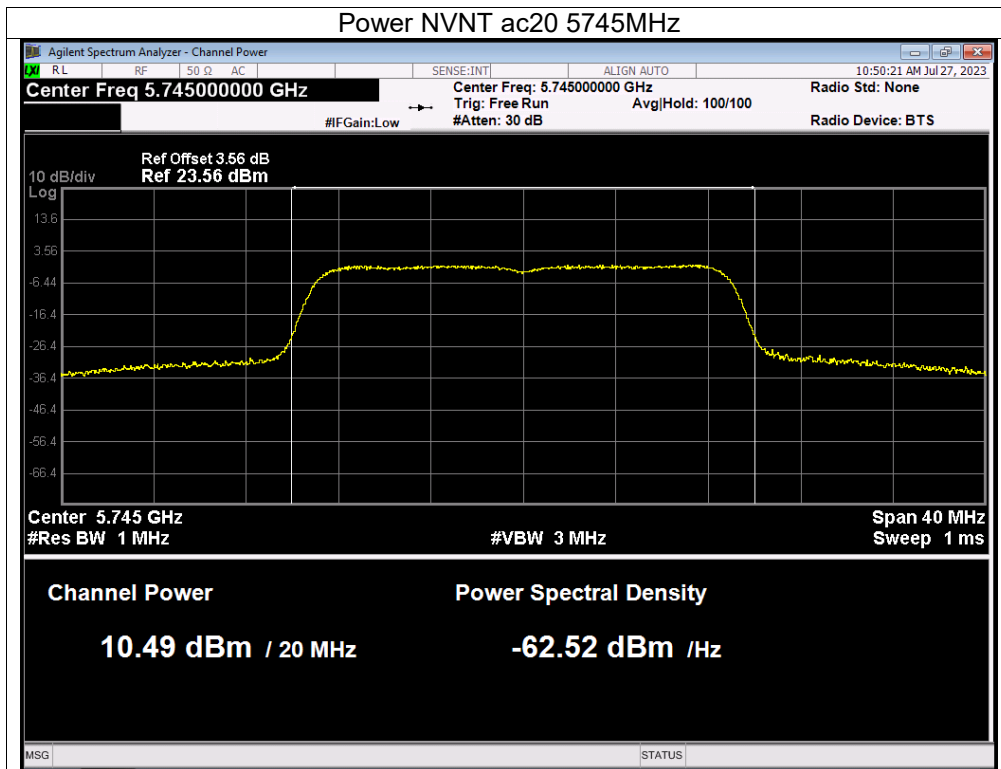


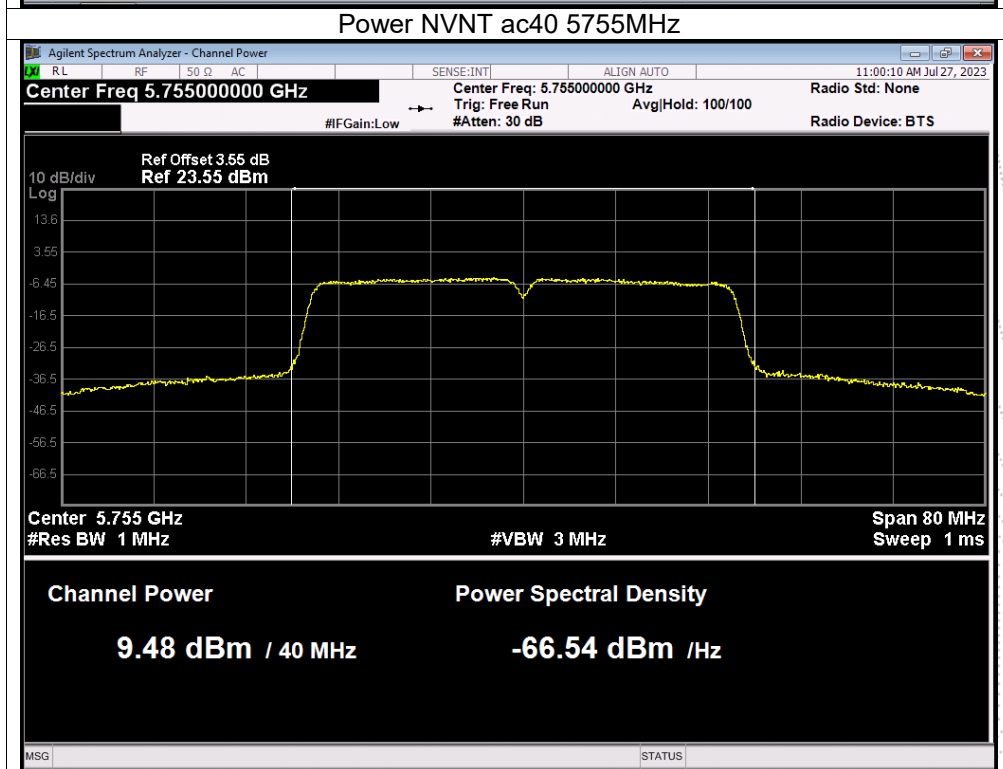
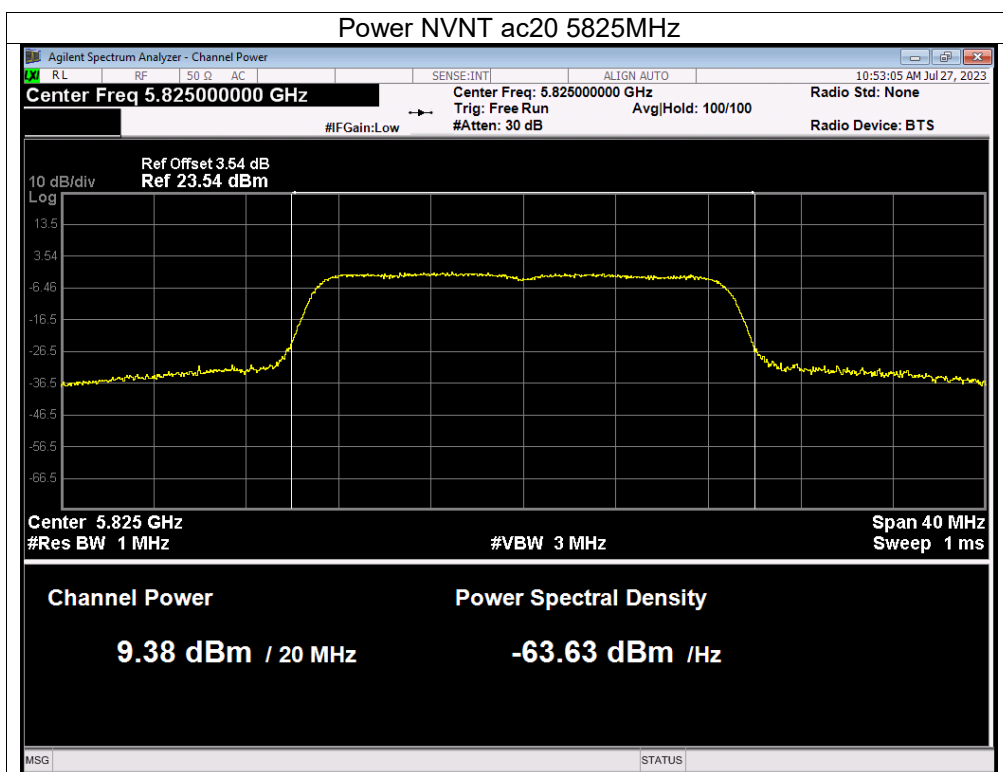


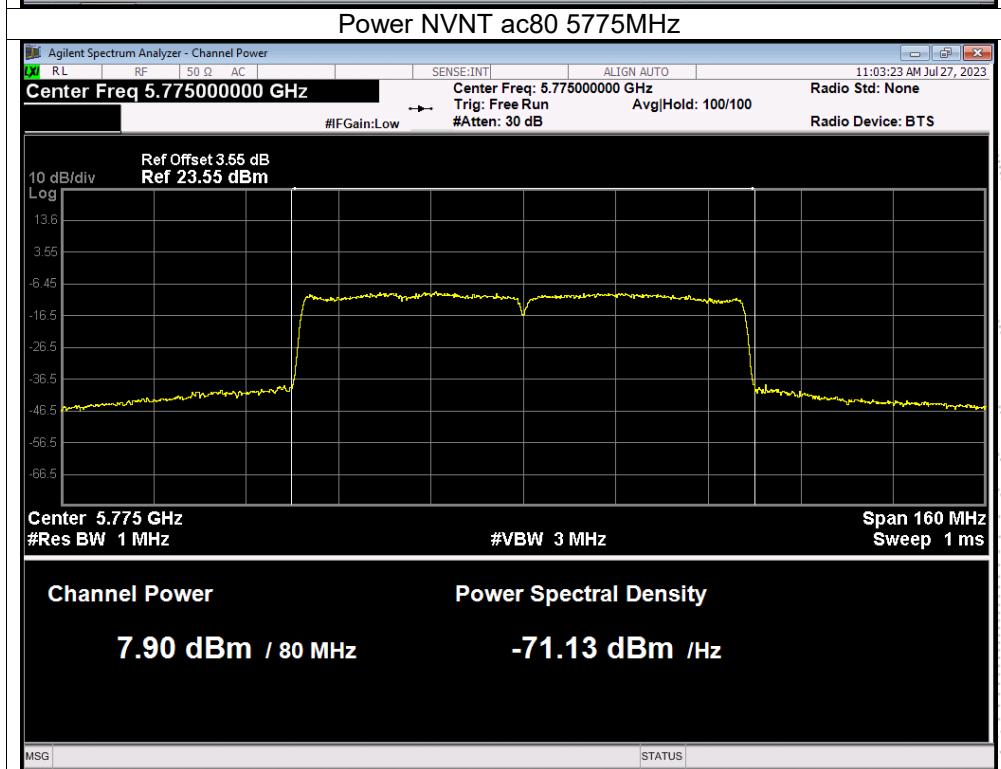
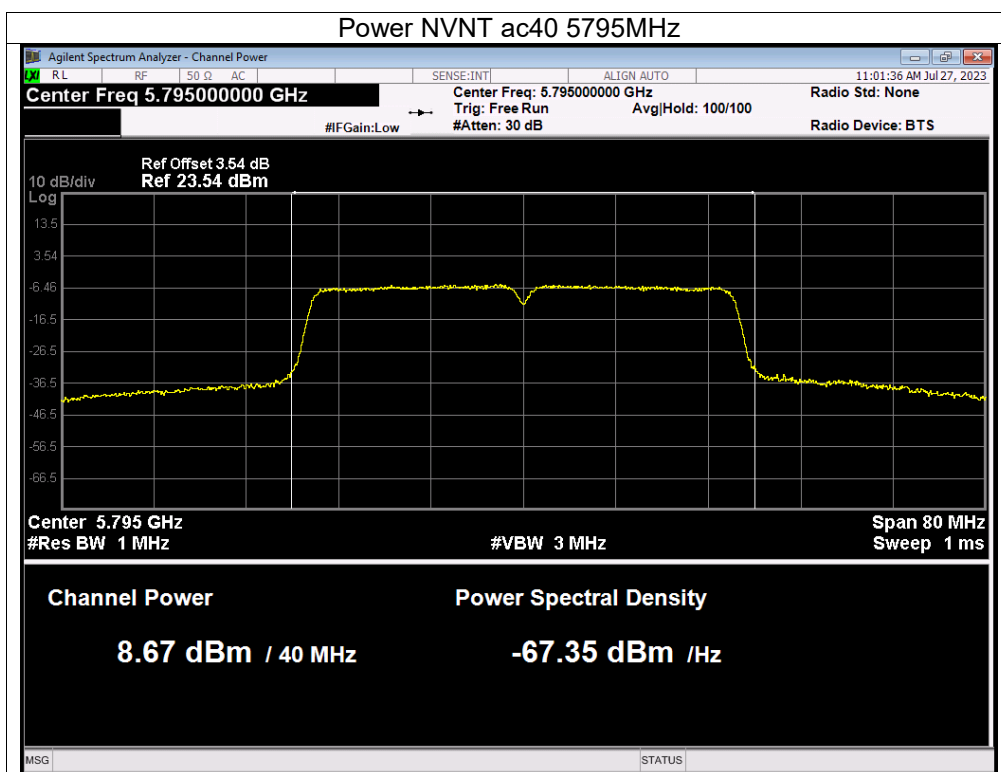












11. Out Of Band Emissions

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

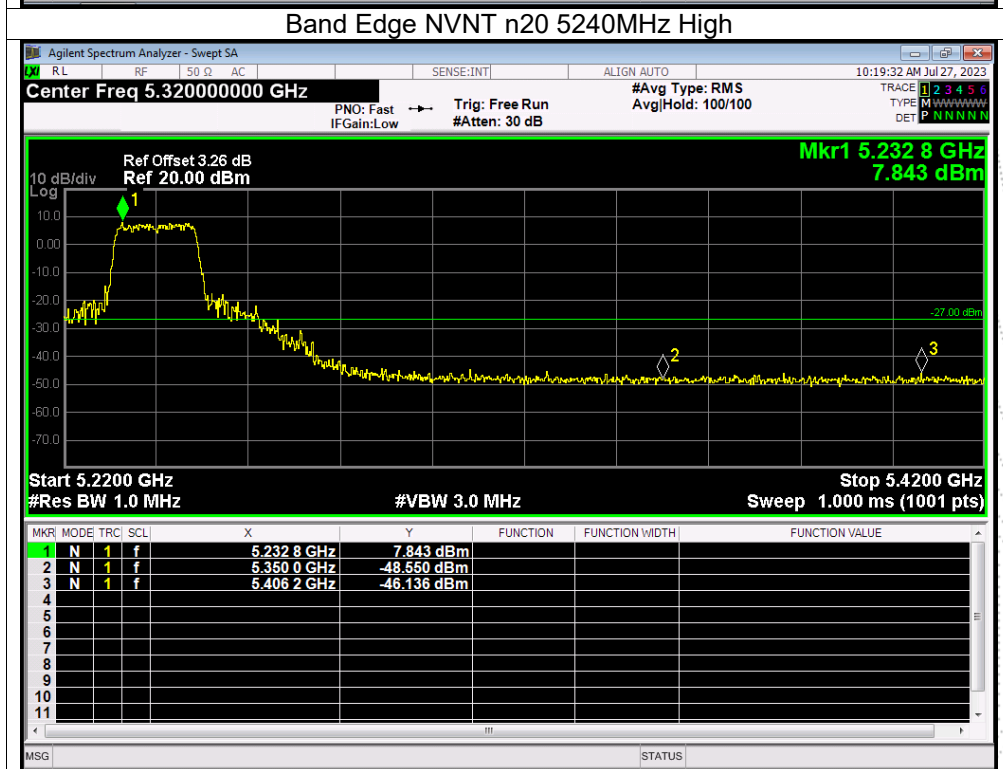
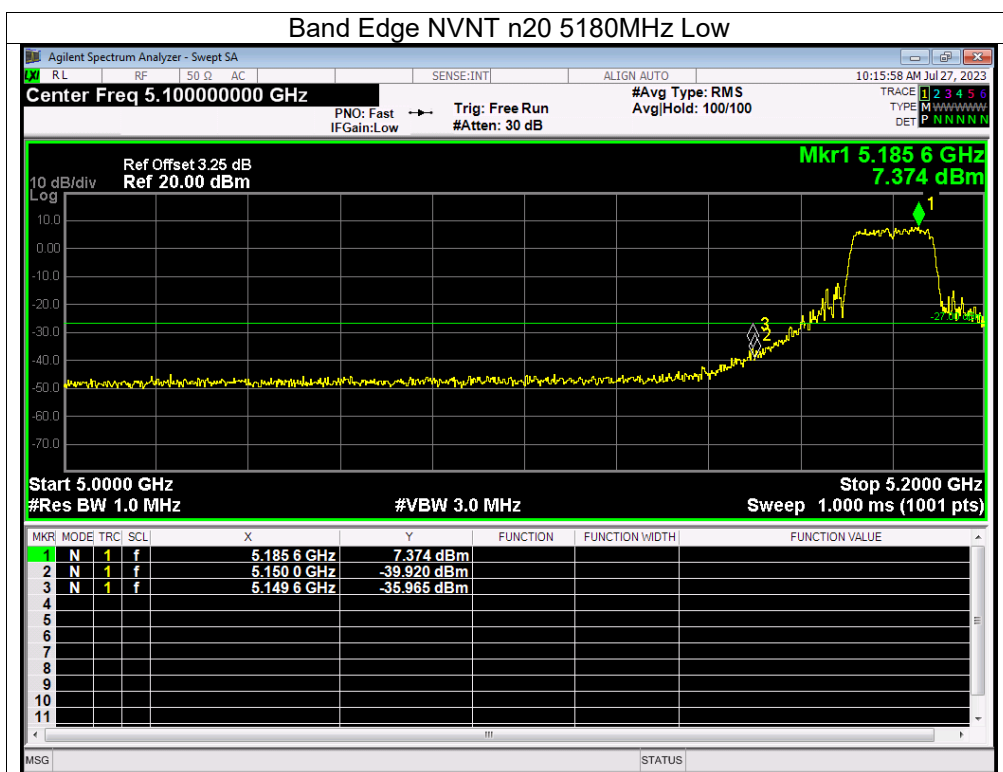
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then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

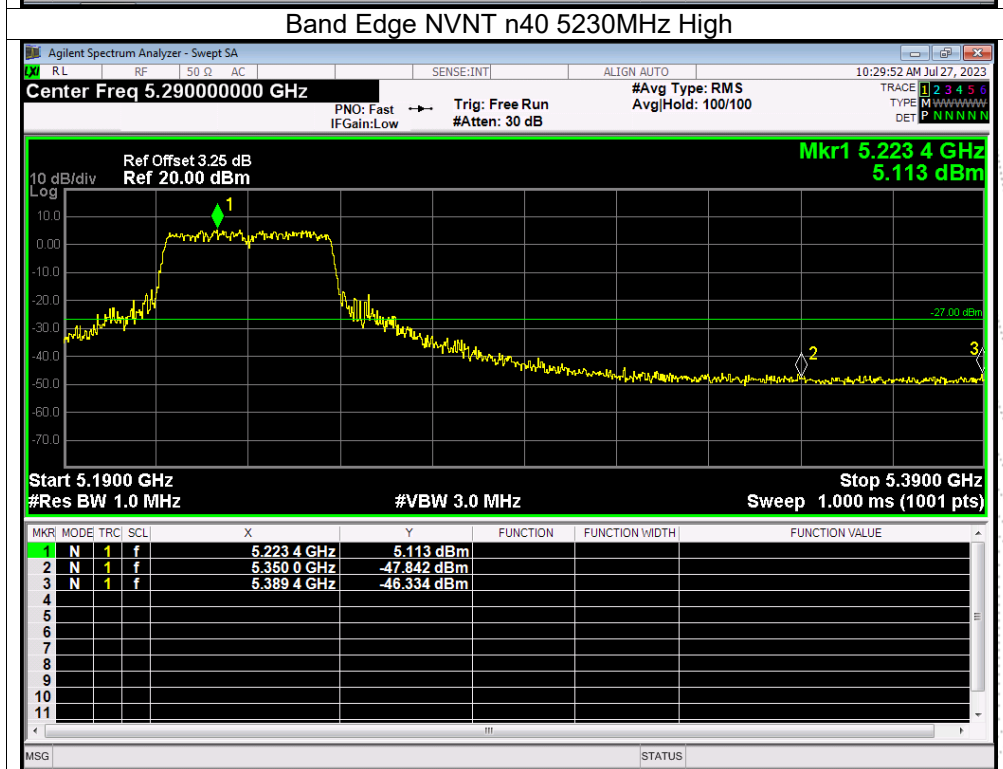
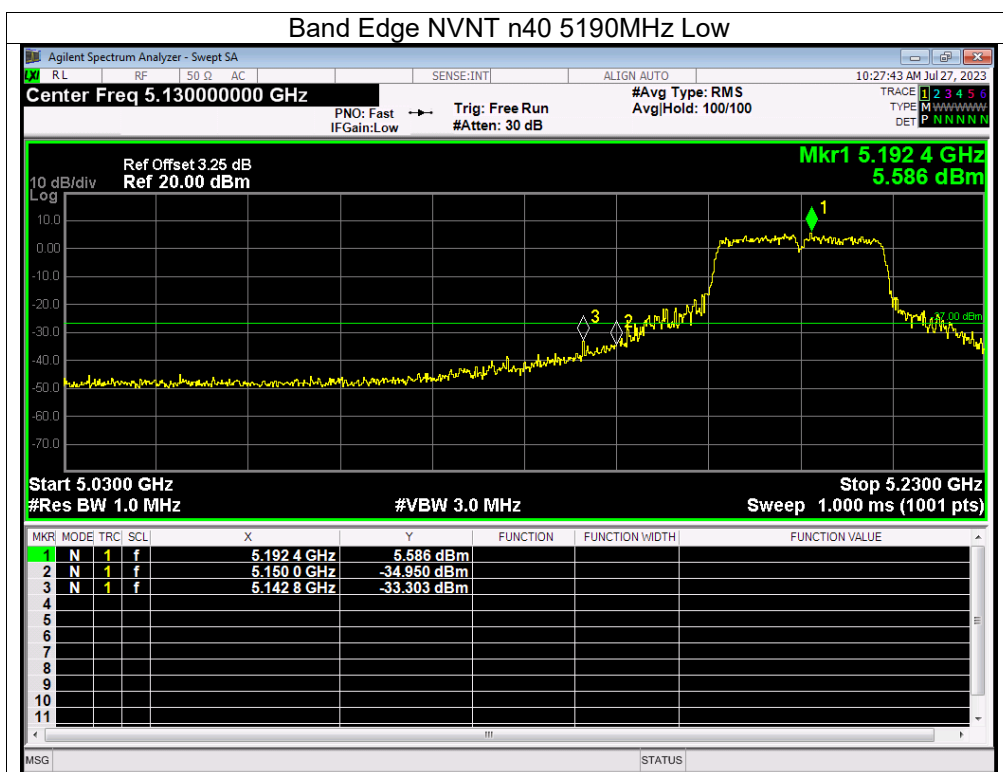
11.4 EUT Operating Conditions

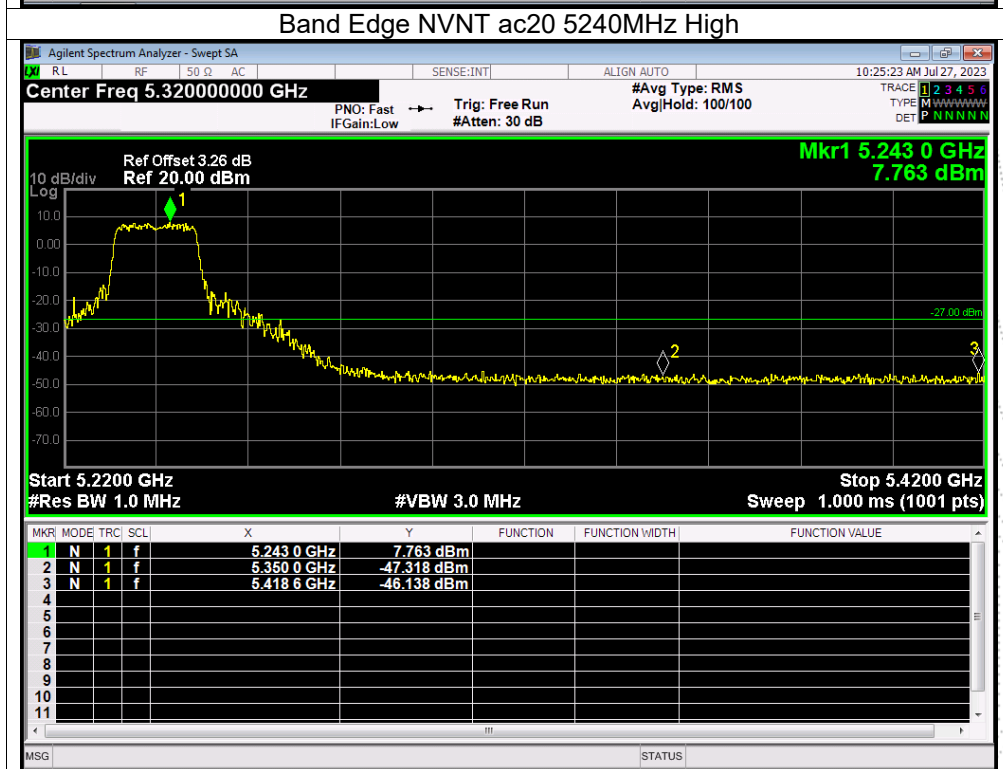
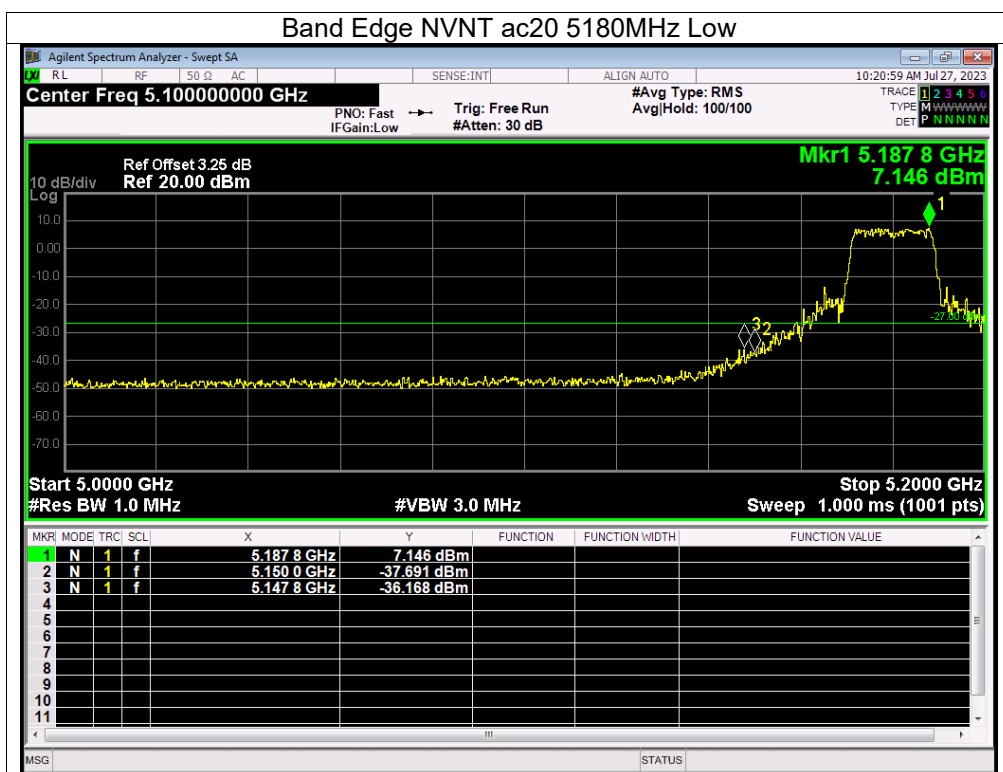
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data

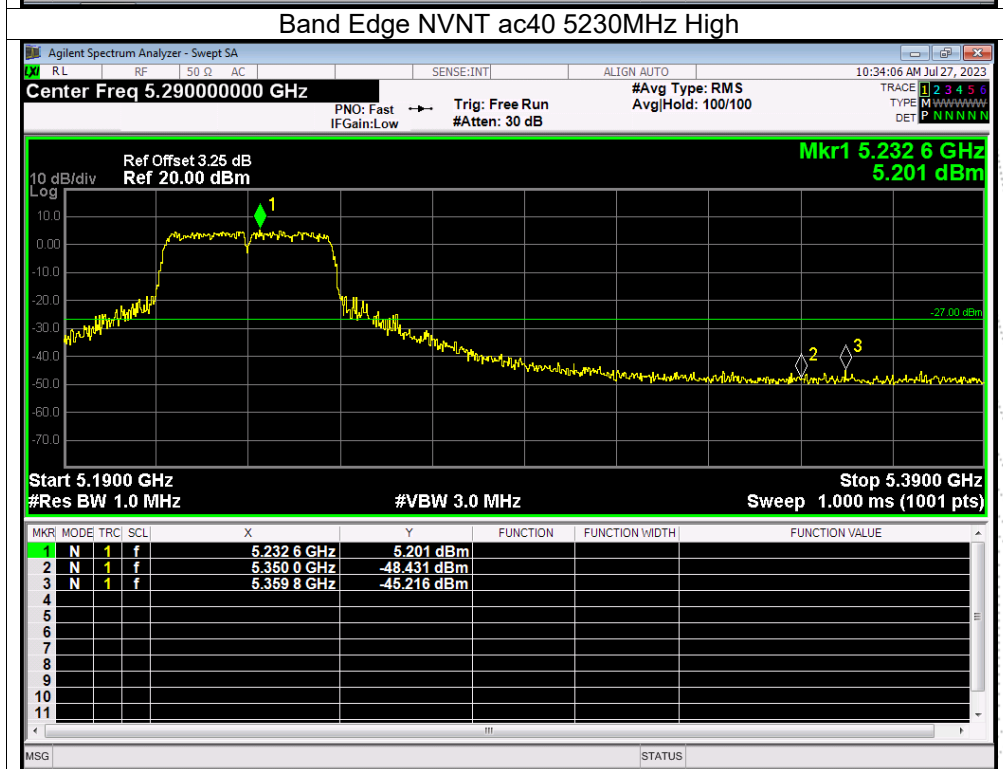
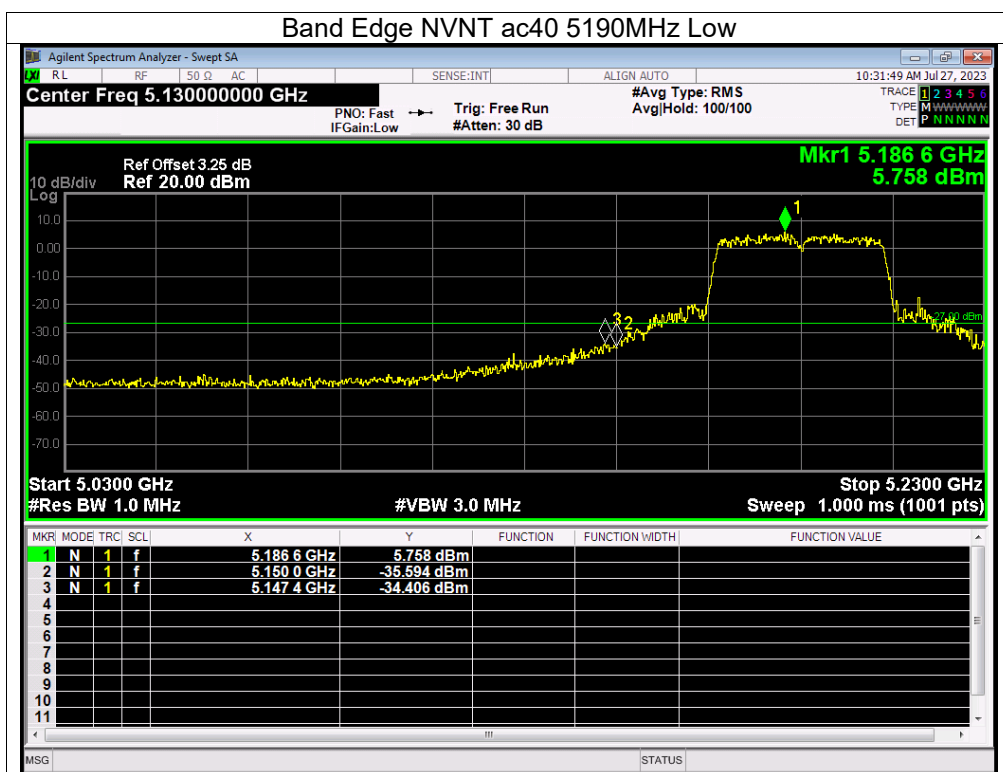
11.5 Test Result

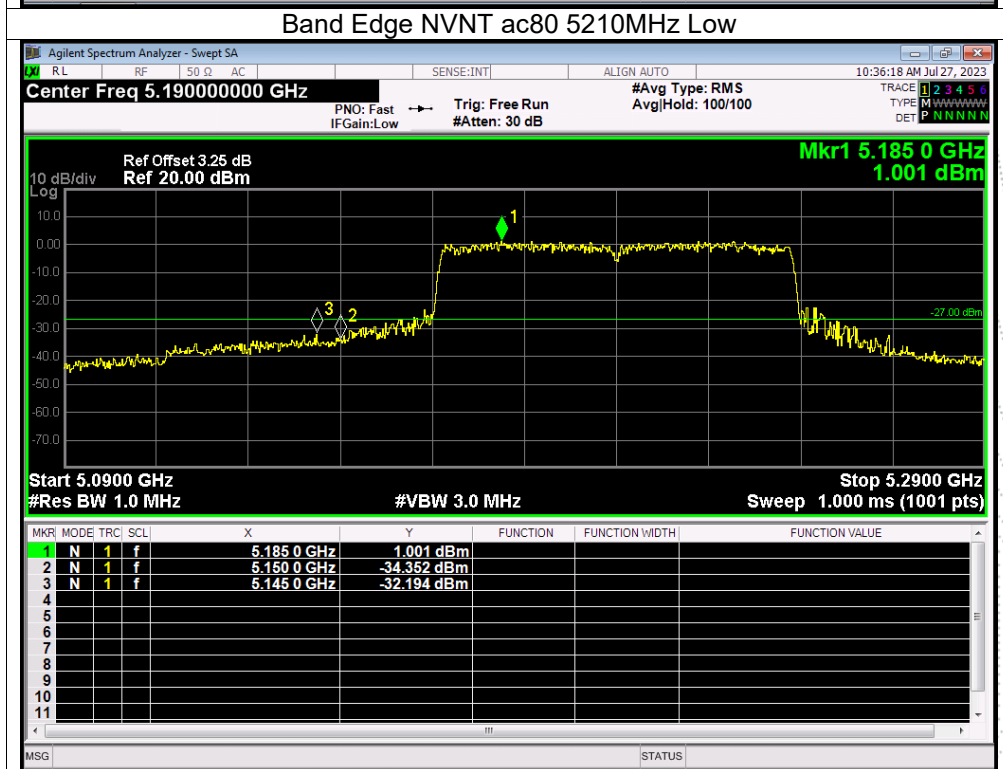
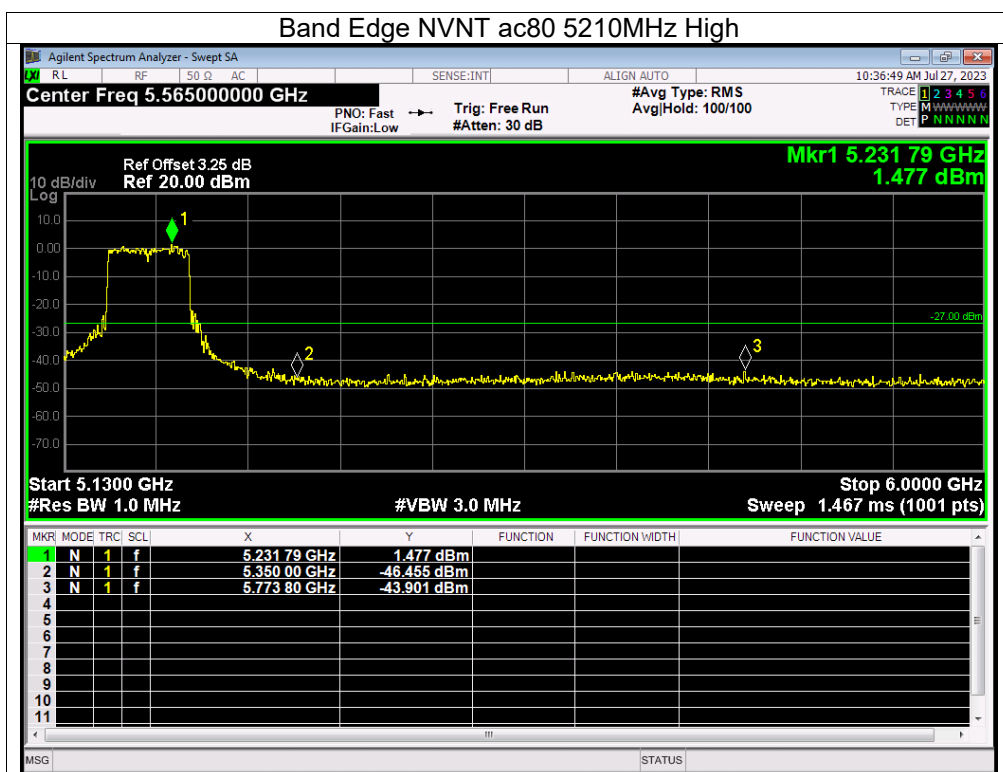


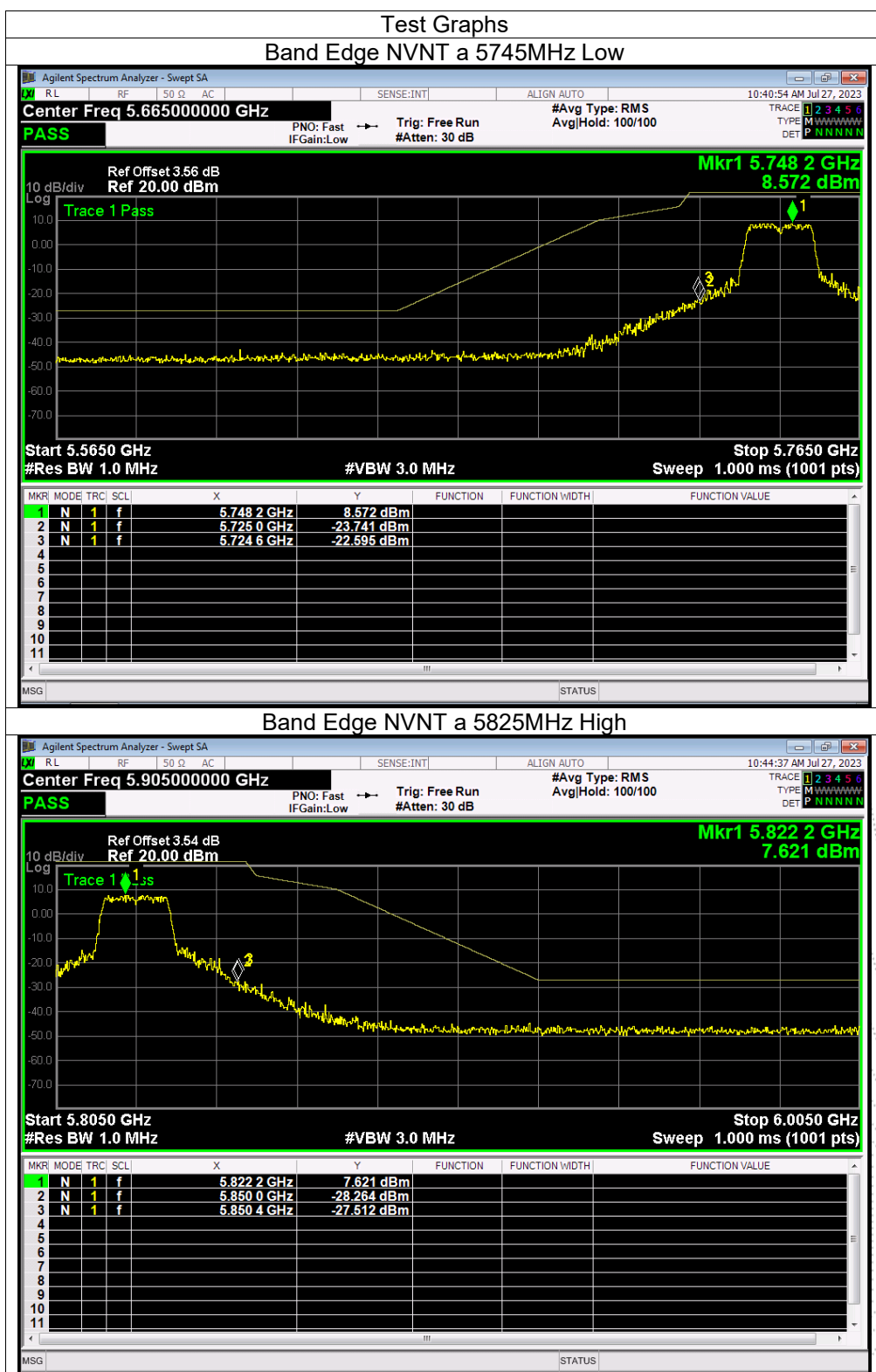


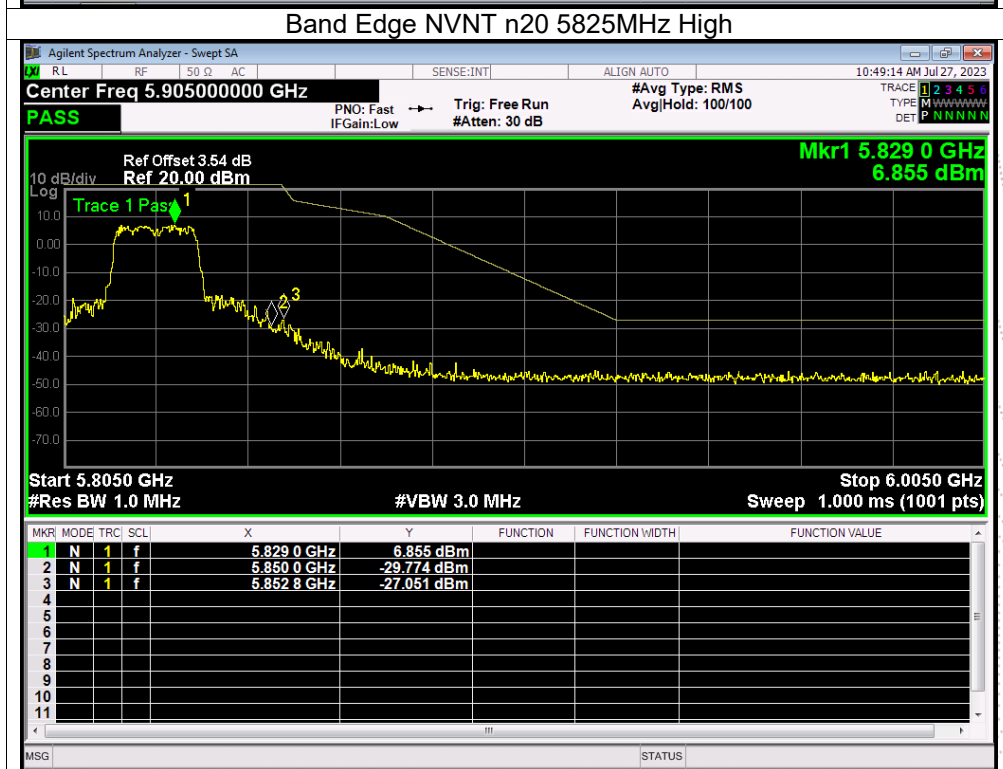
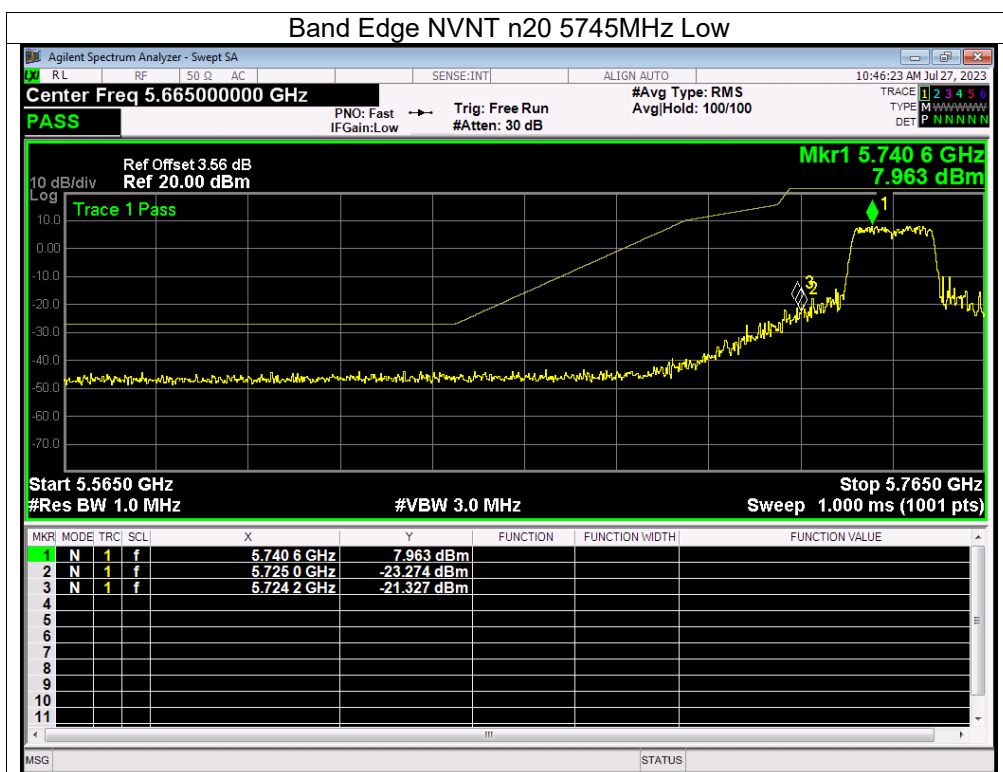


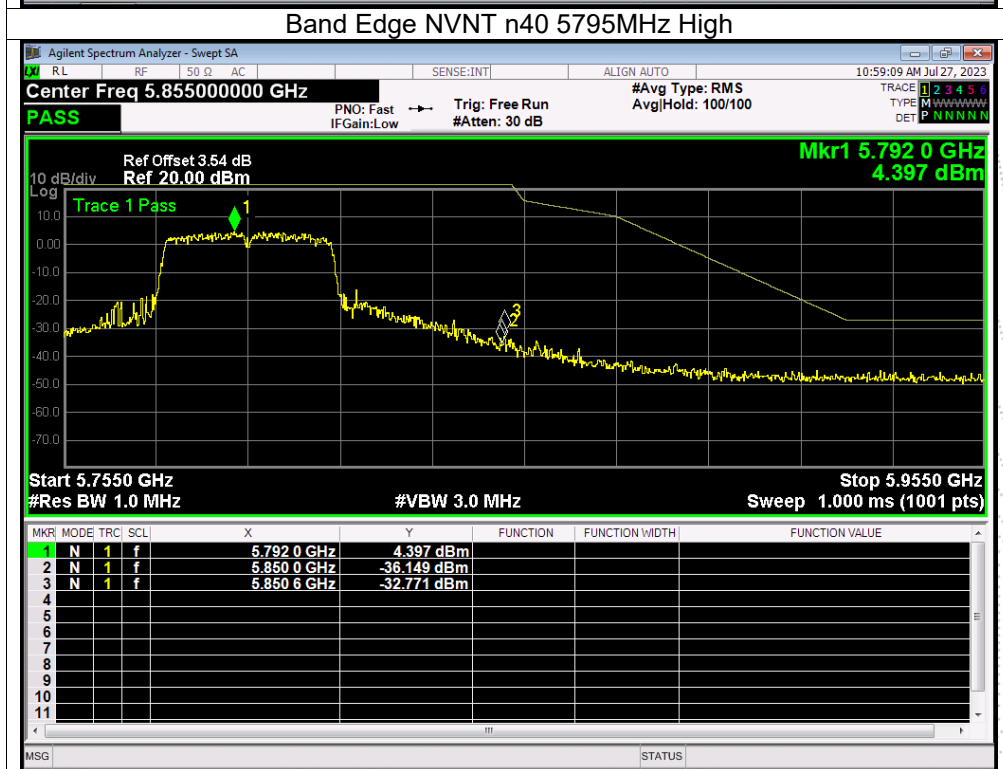
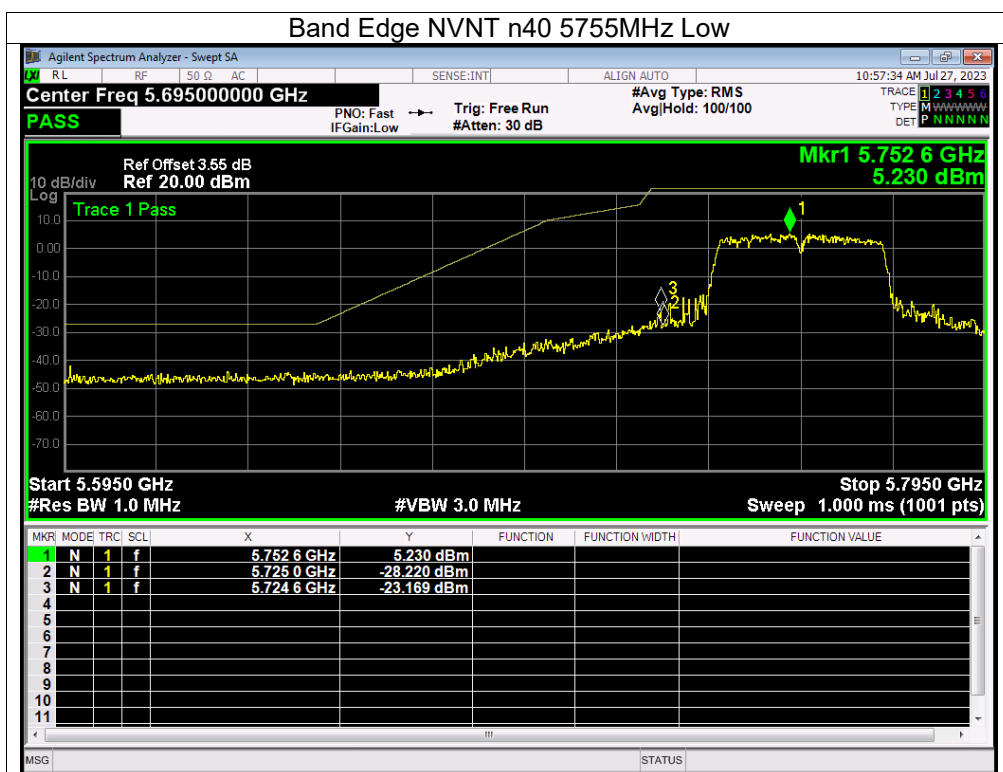


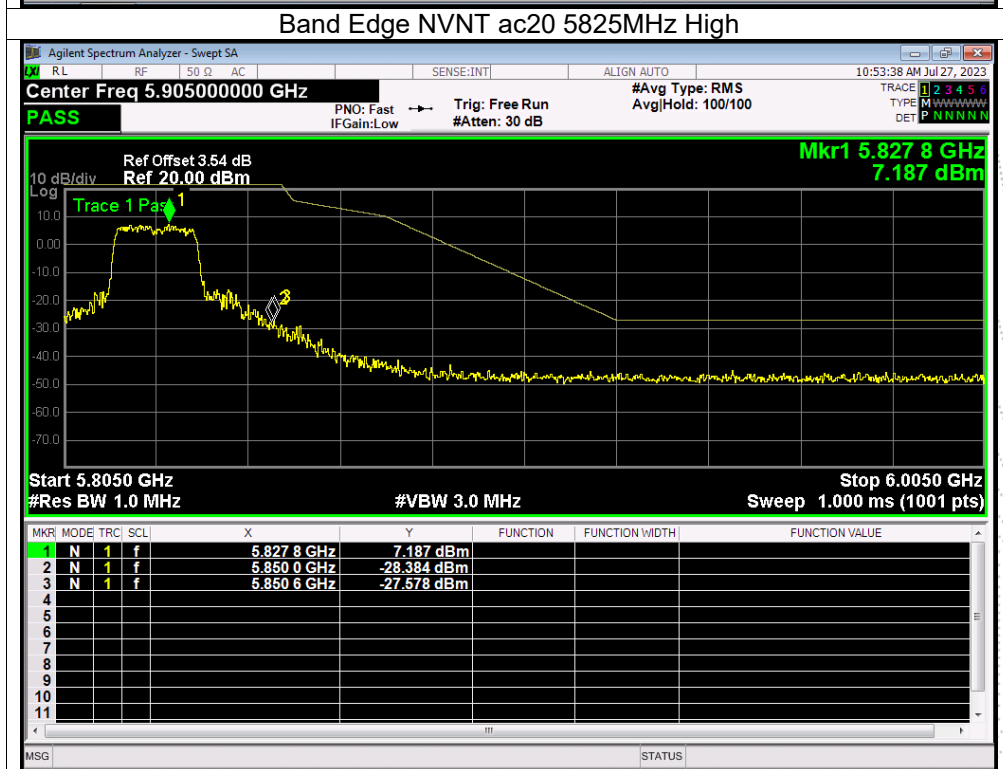
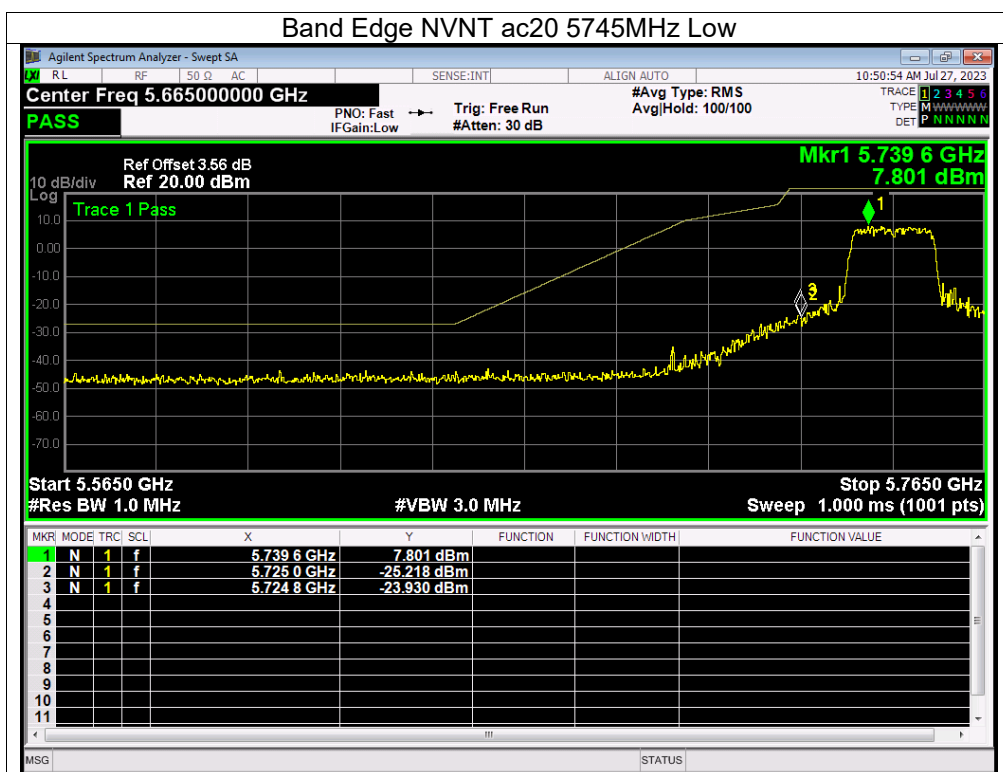


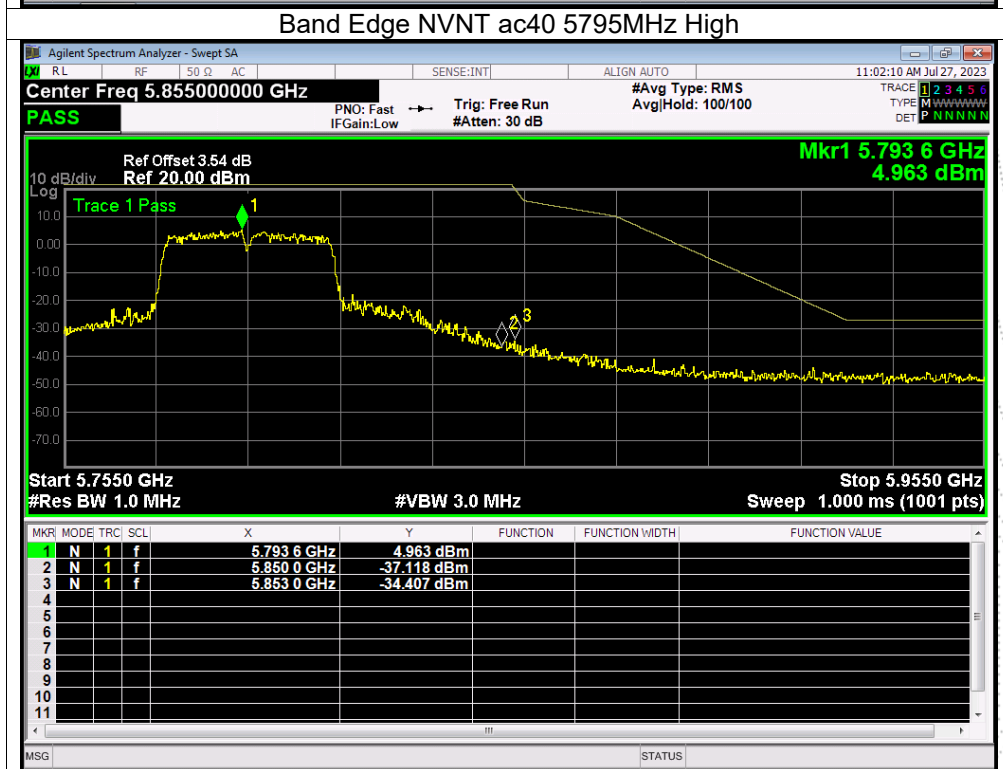
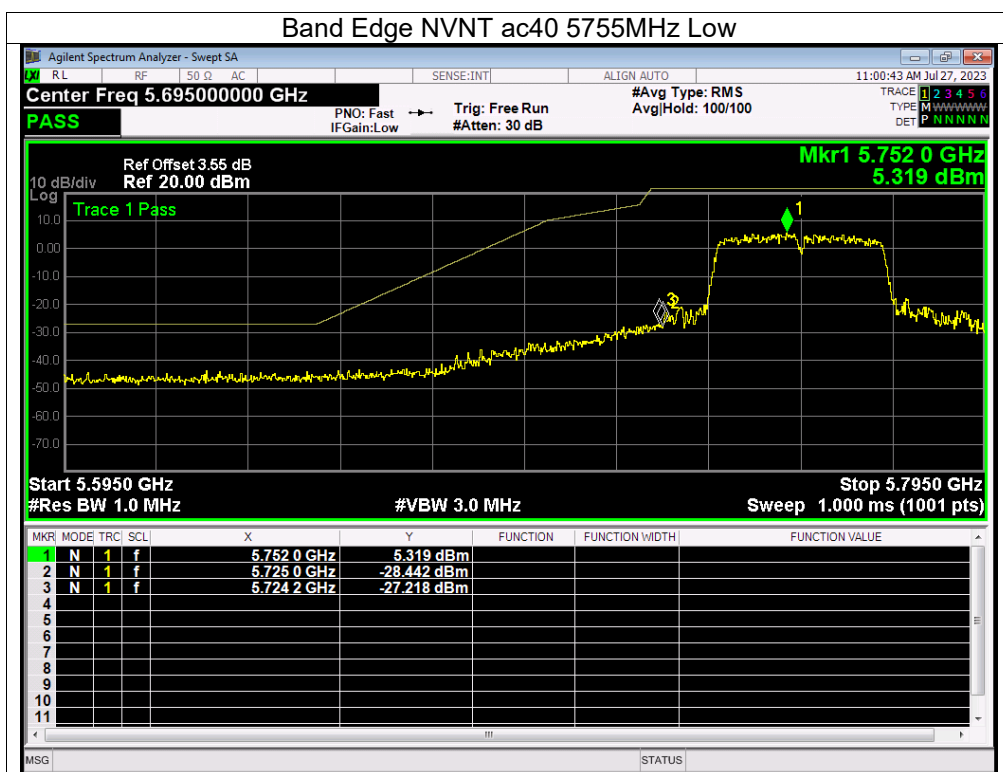


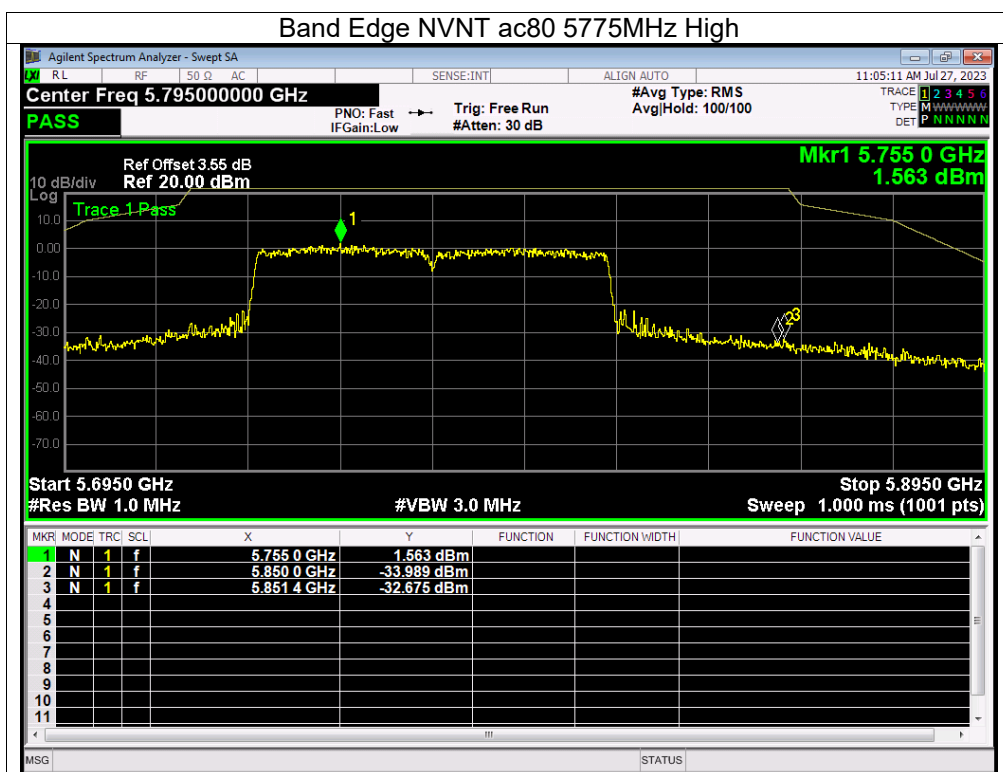












12. Spurious RF Conducted Emissions

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..

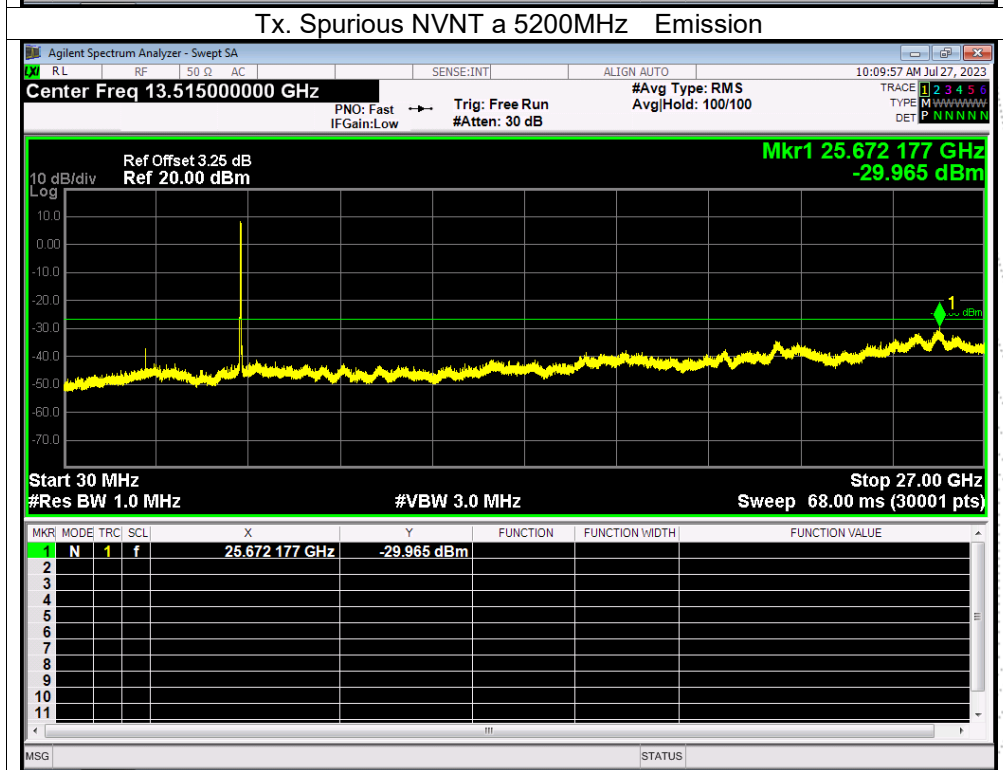
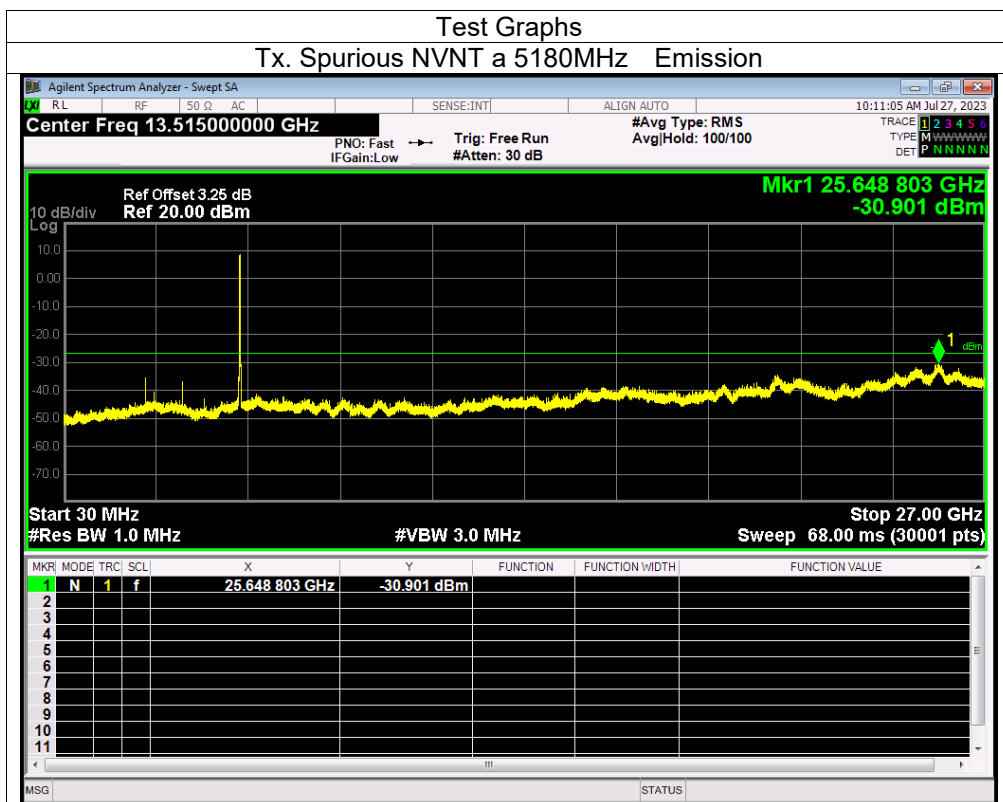
12.3 Test Procedure

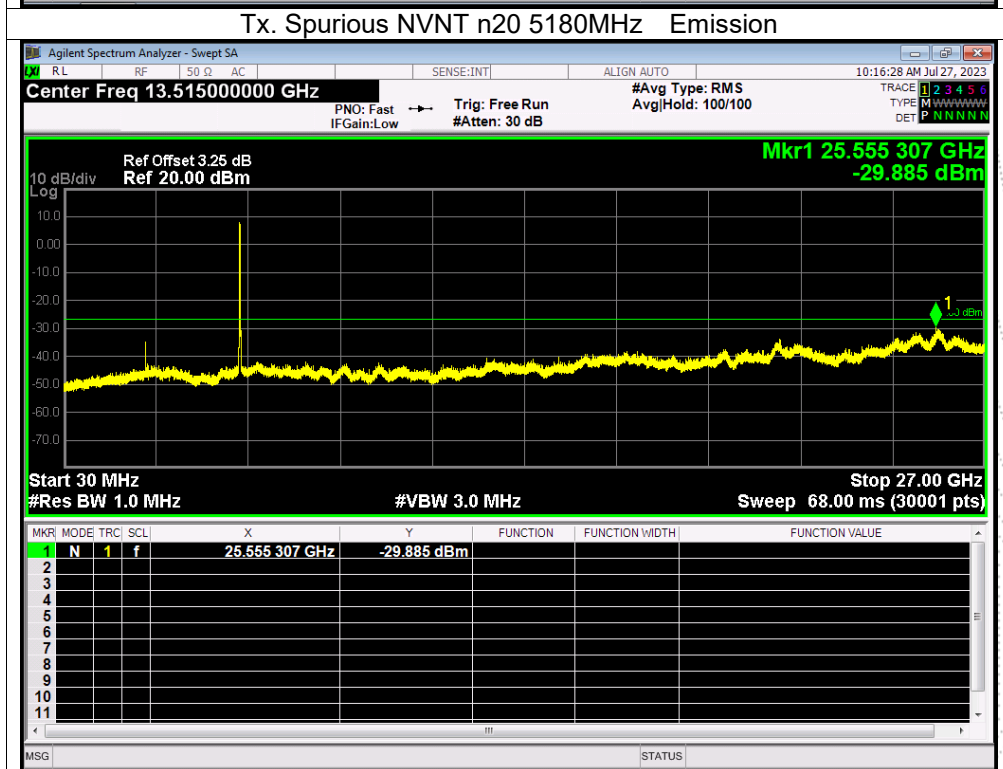
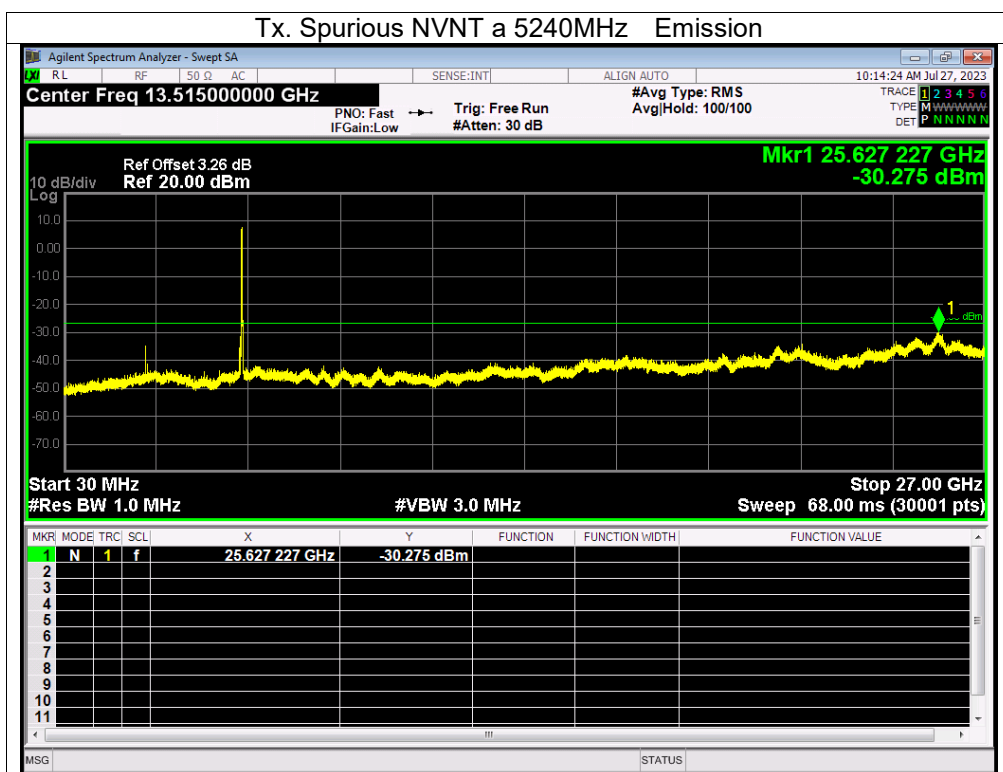
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then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

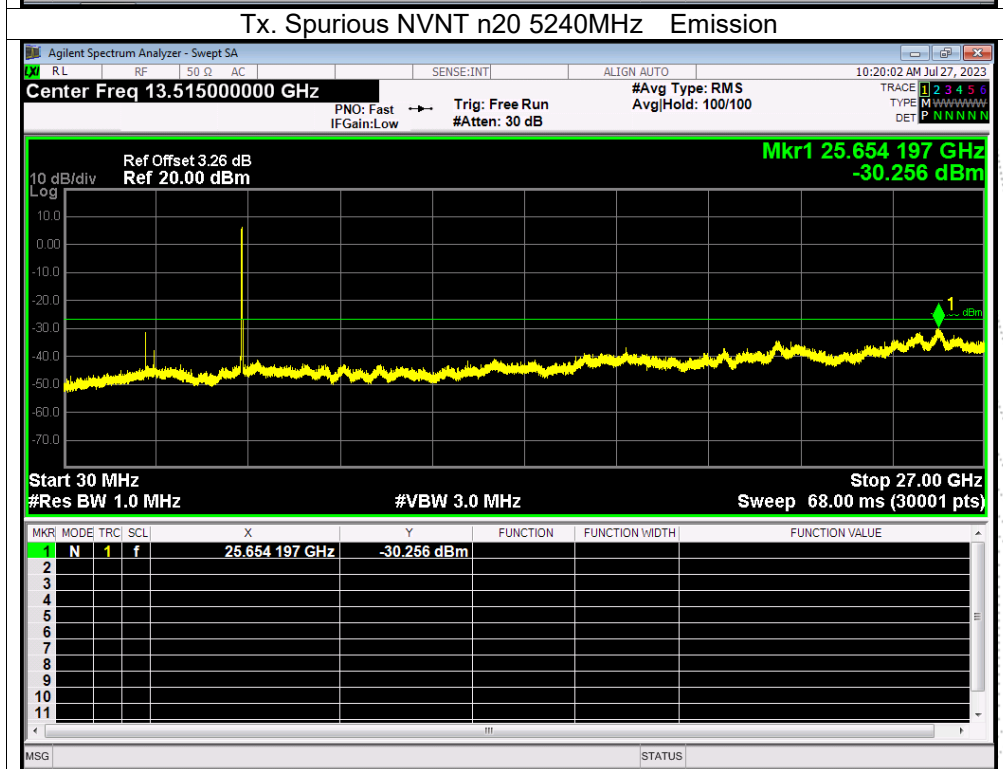
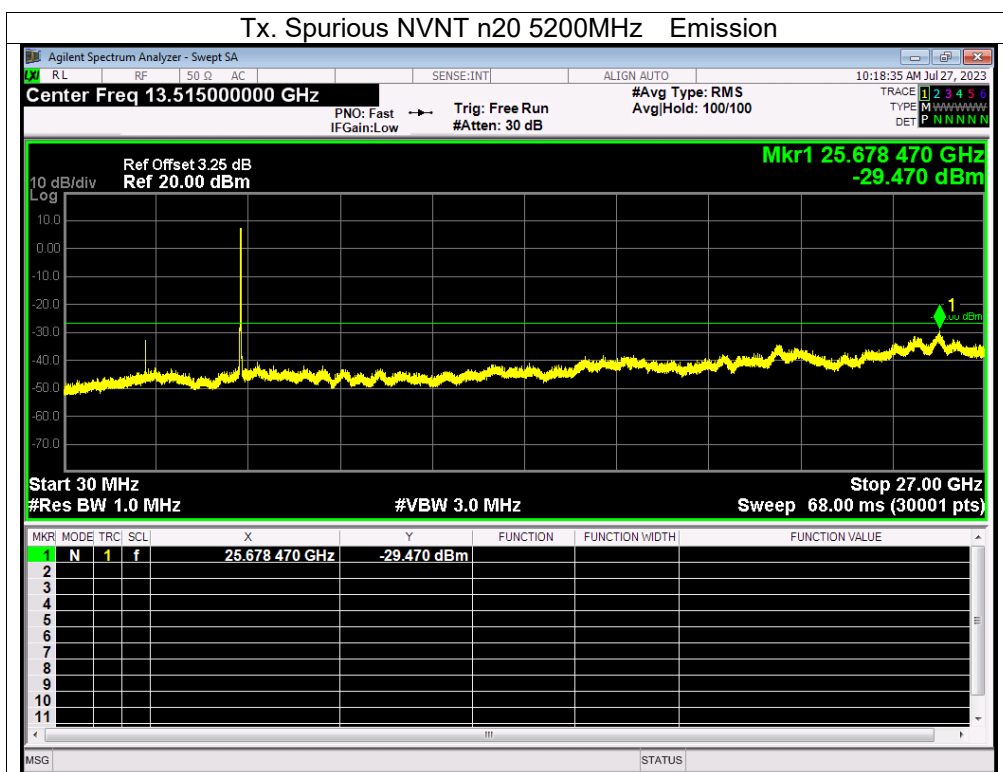
12.4 Test Result

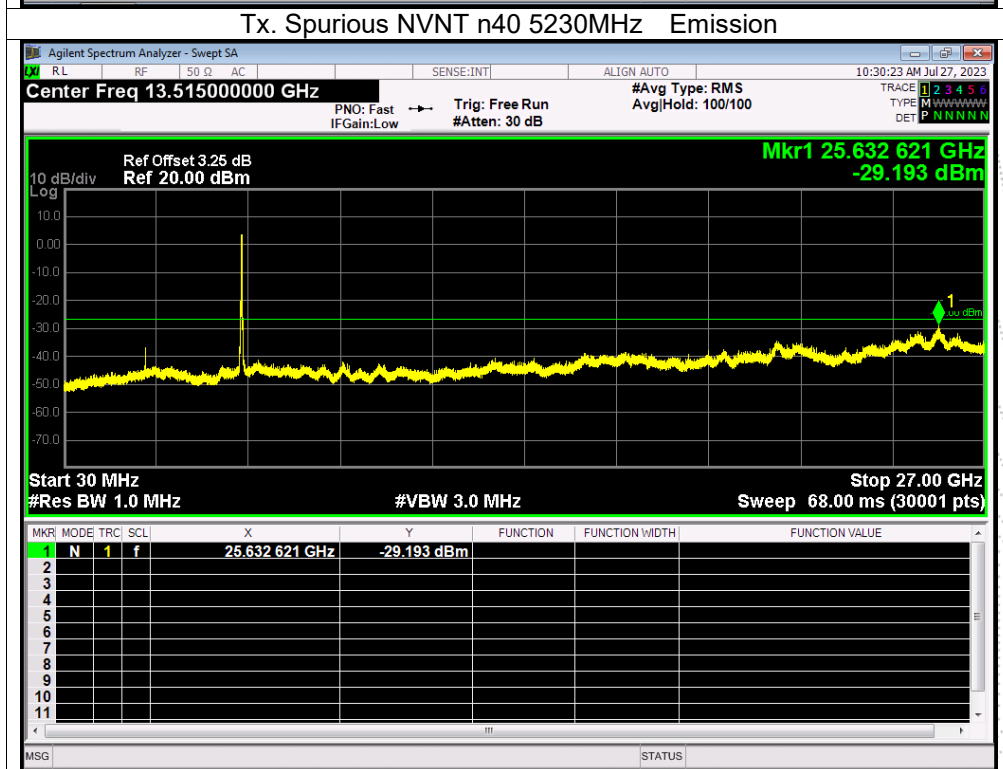
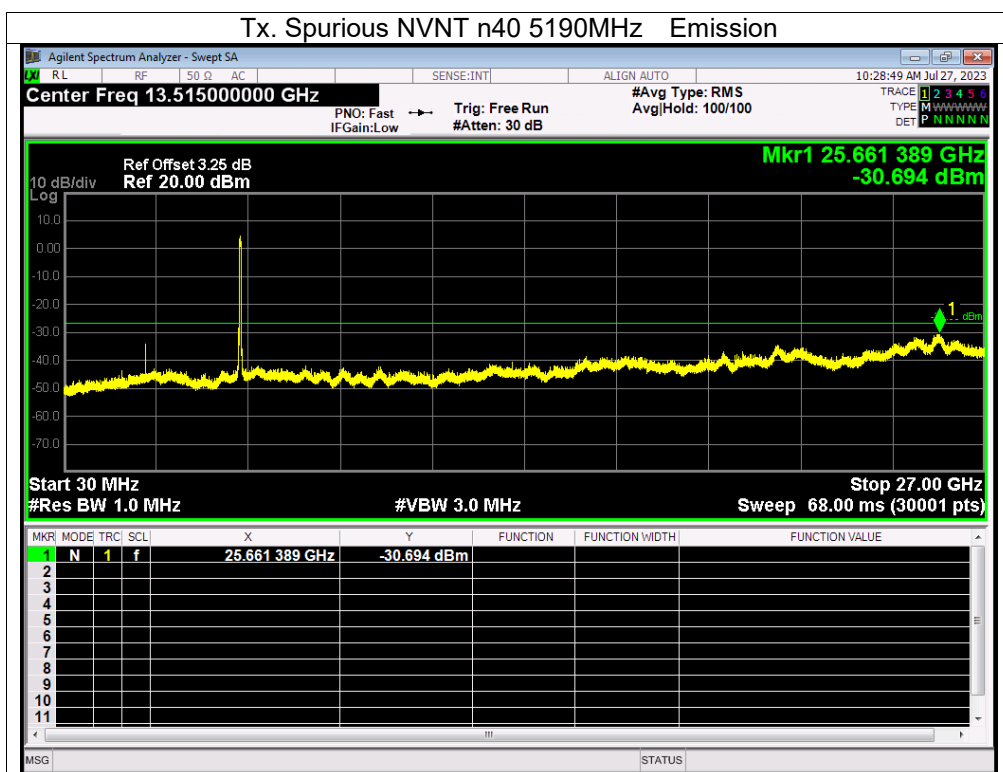
Remark: The measurement frequency range is from 9KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandedge measurement data.

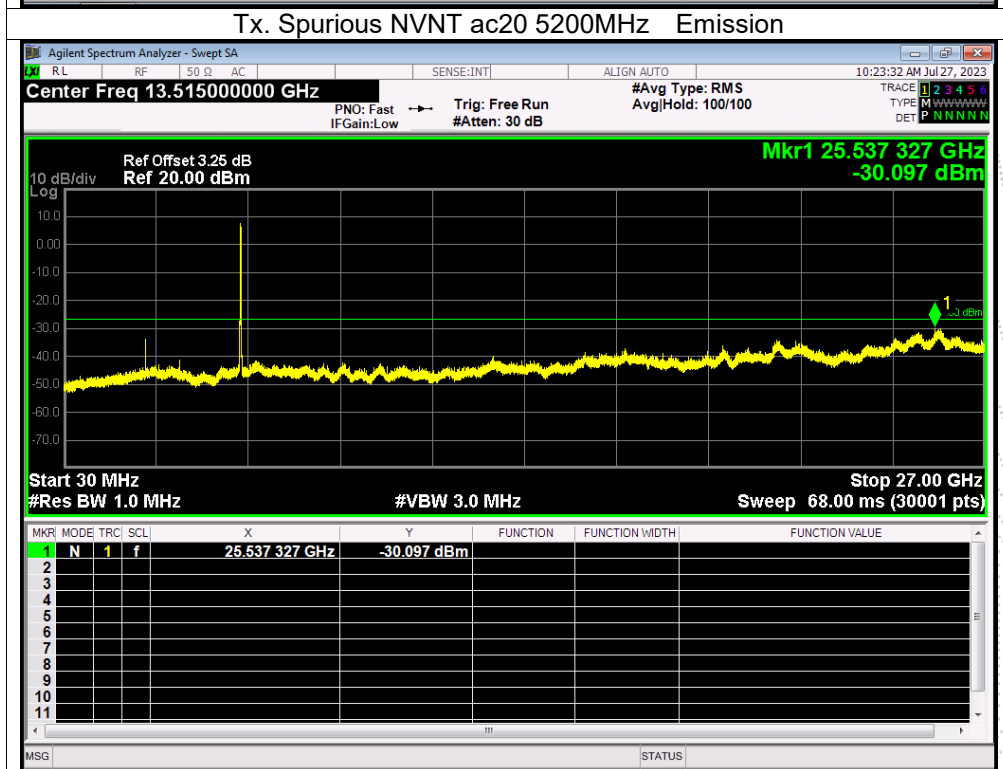
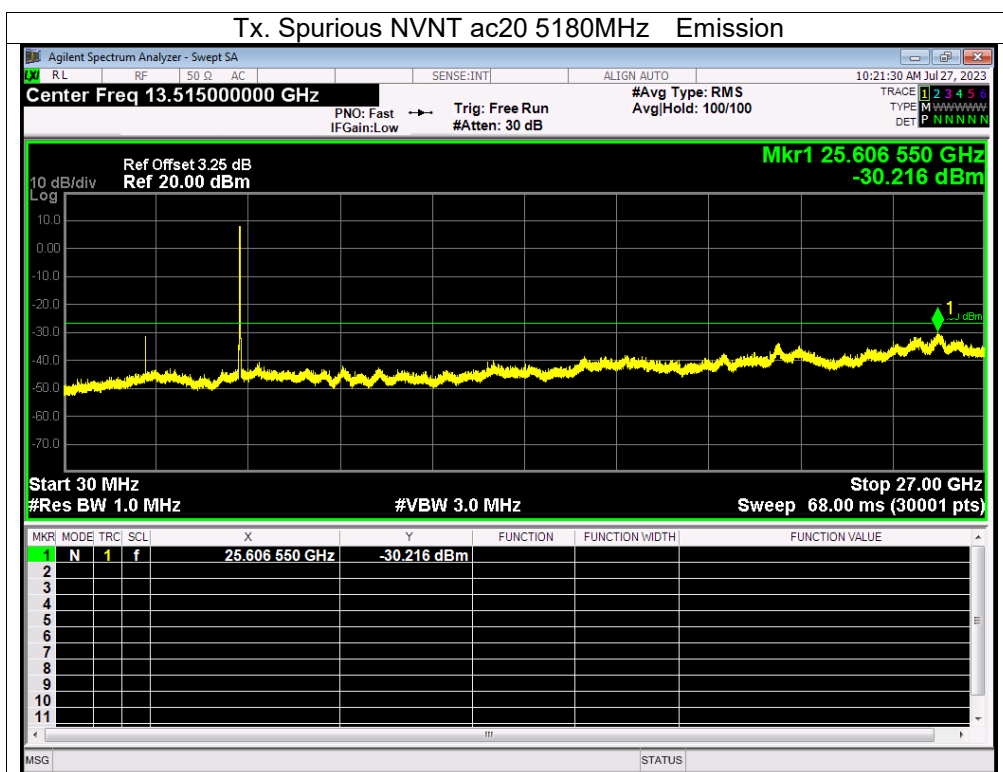
About: 26.5GHz-40GHz, The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

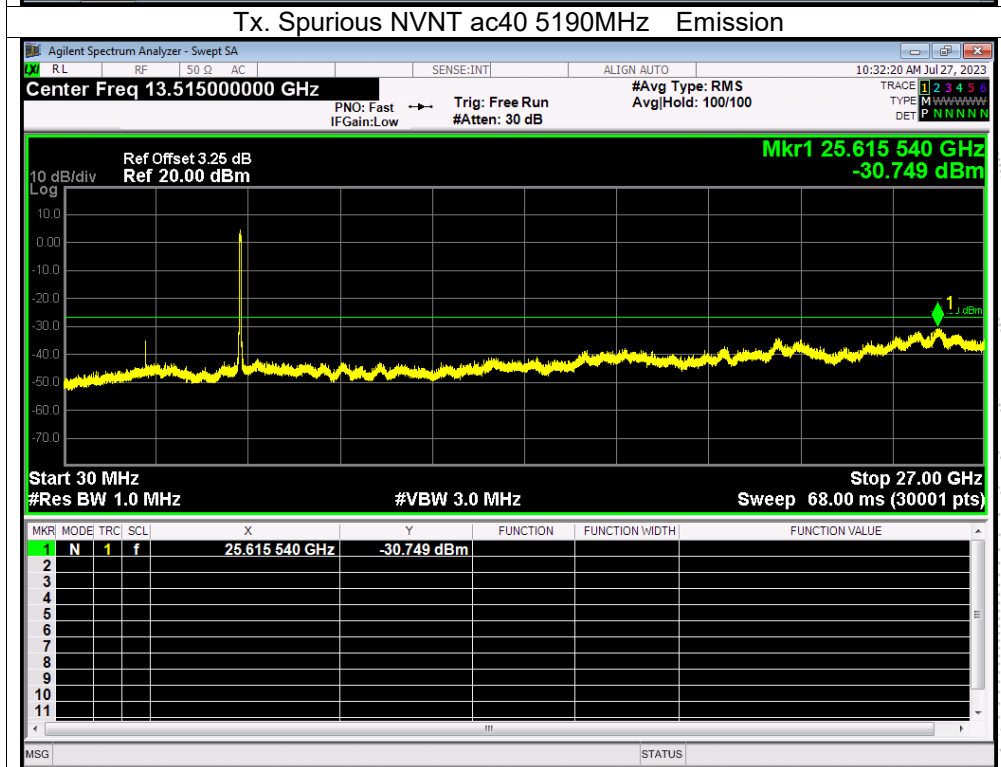
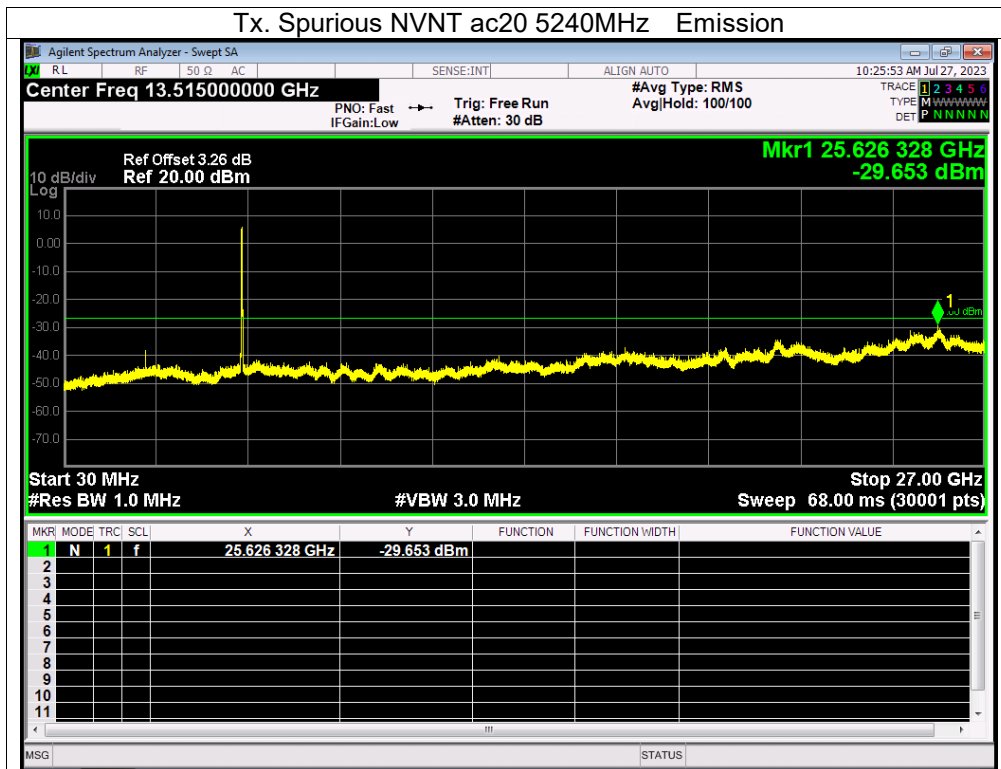


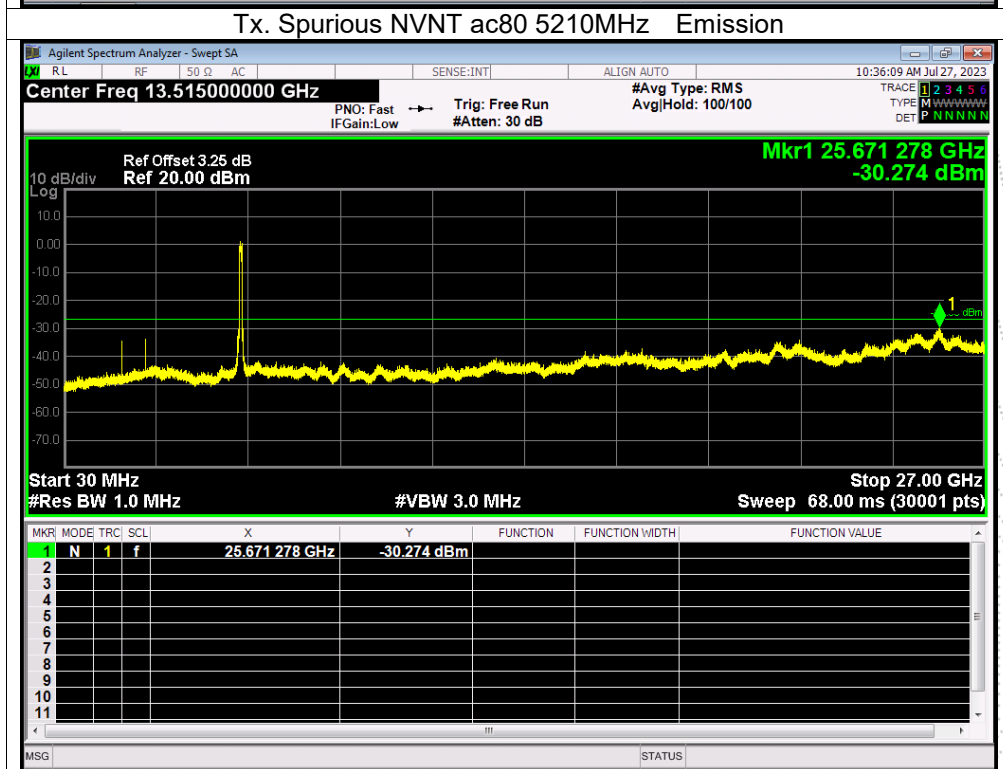
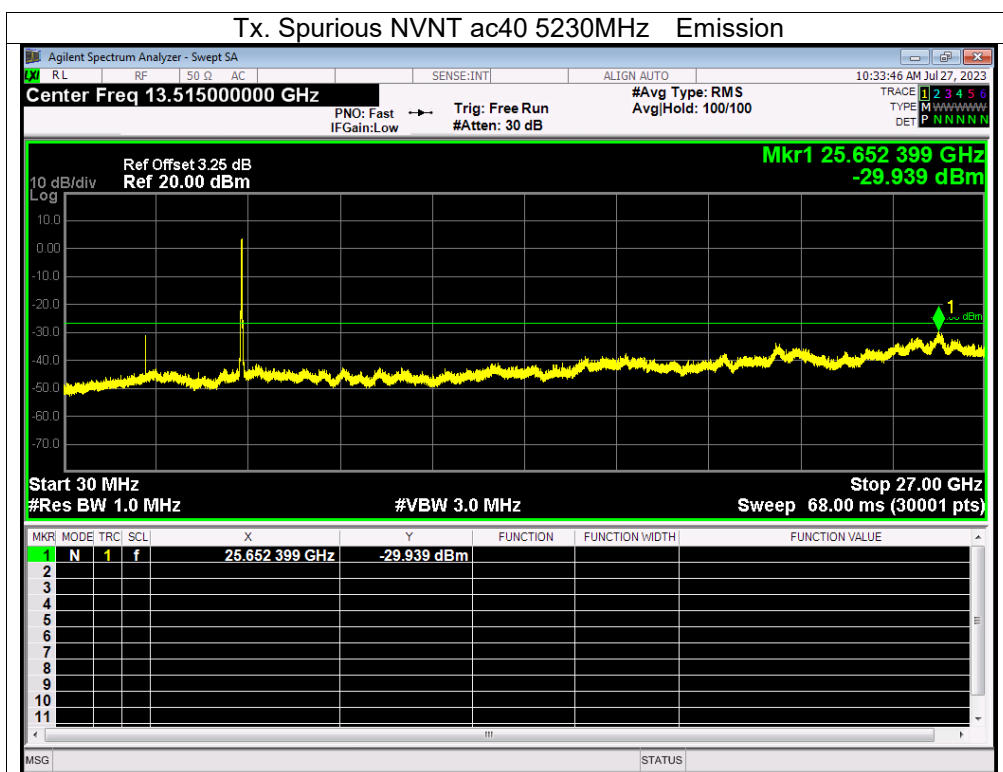






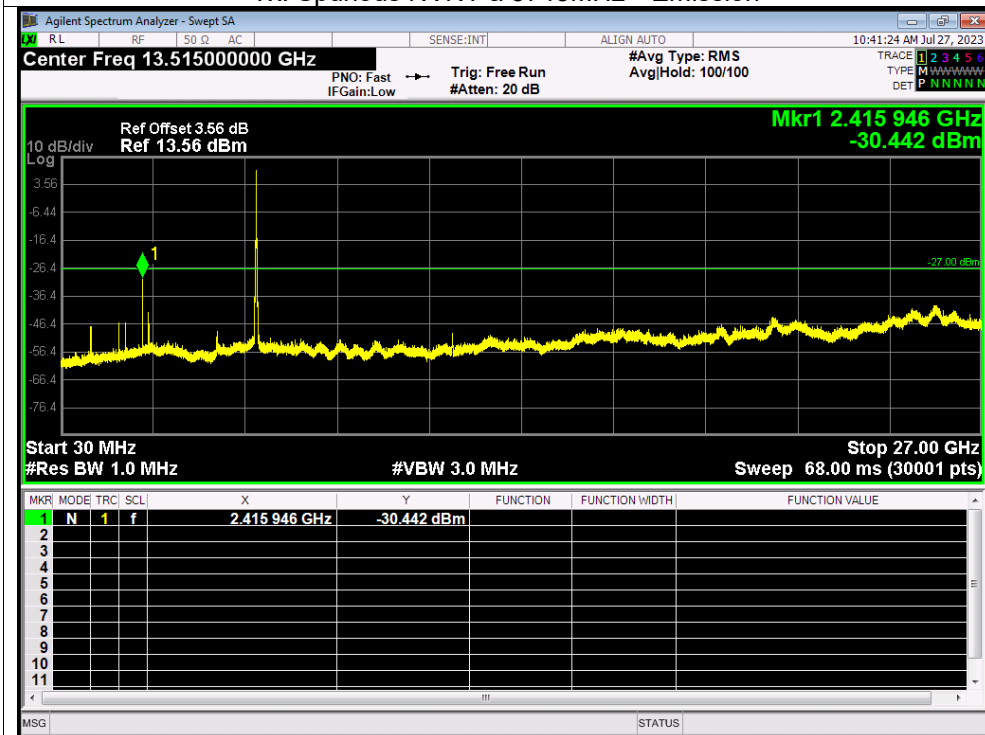




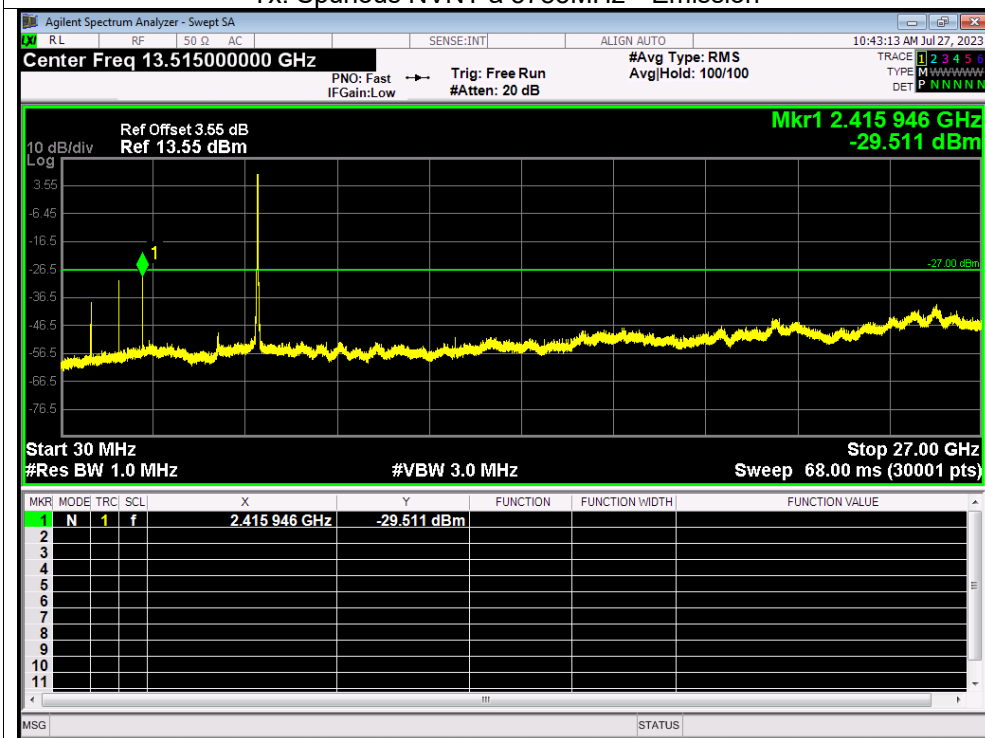


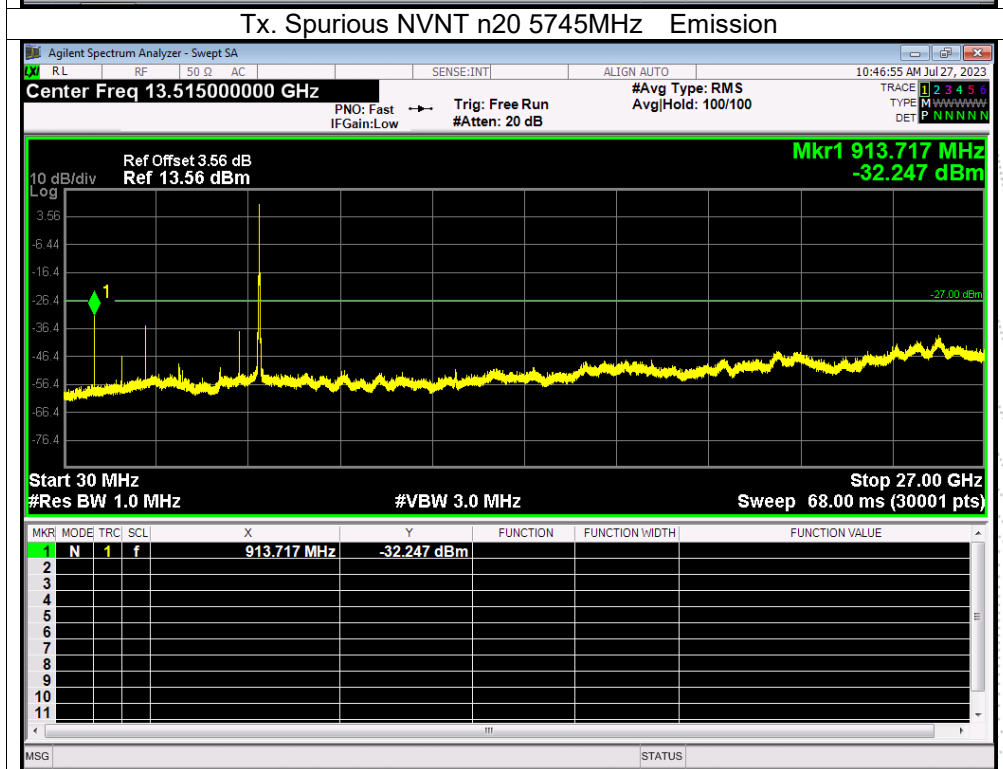
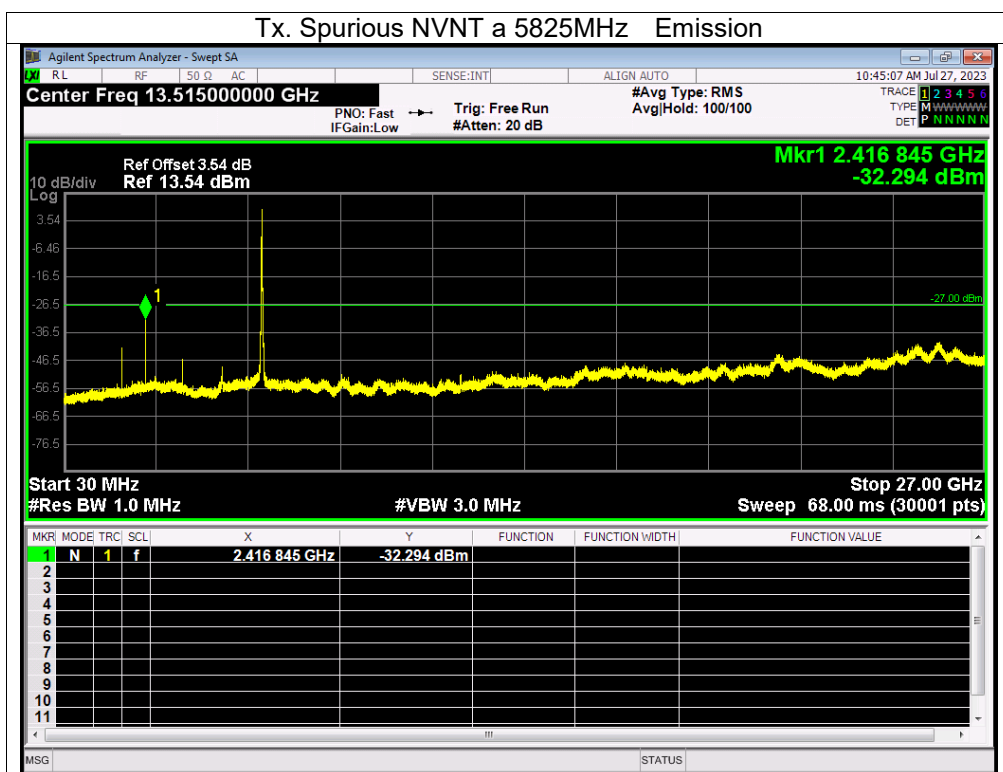
Test Graphs

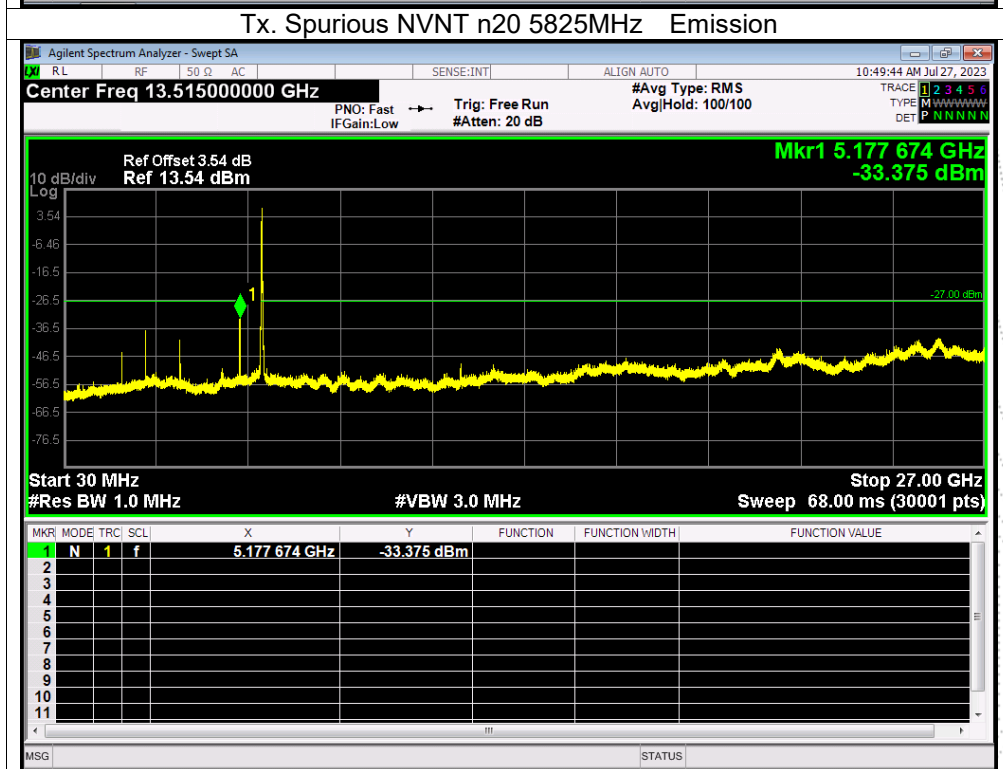
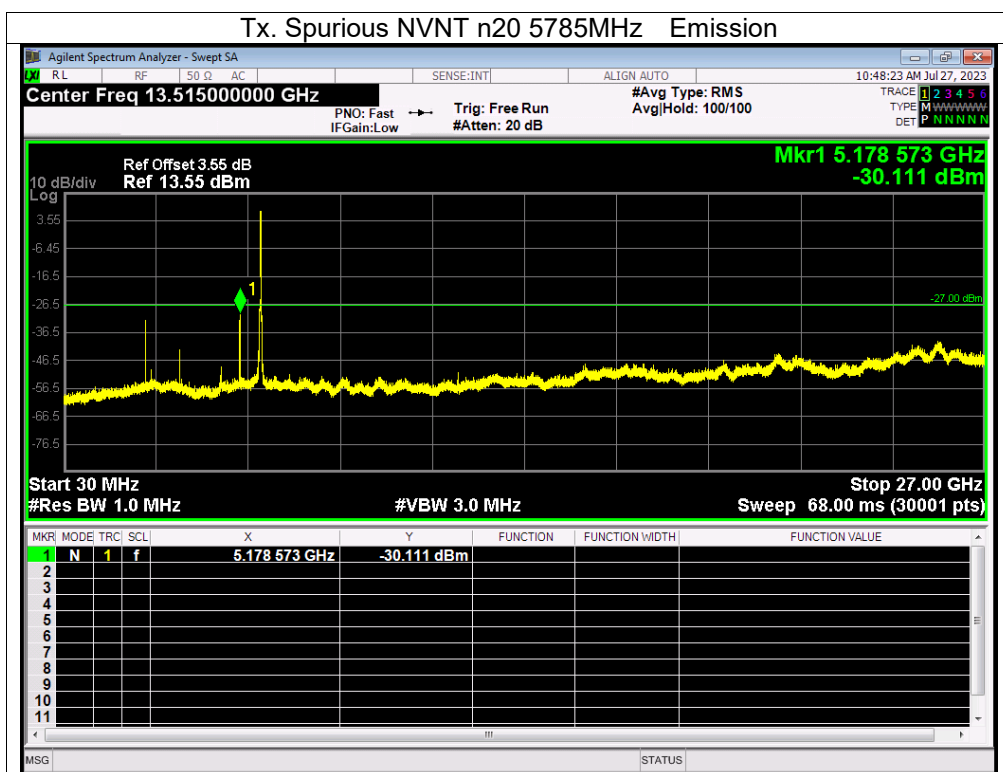
Tx. Spurious NVNT a 5745MHz Emission

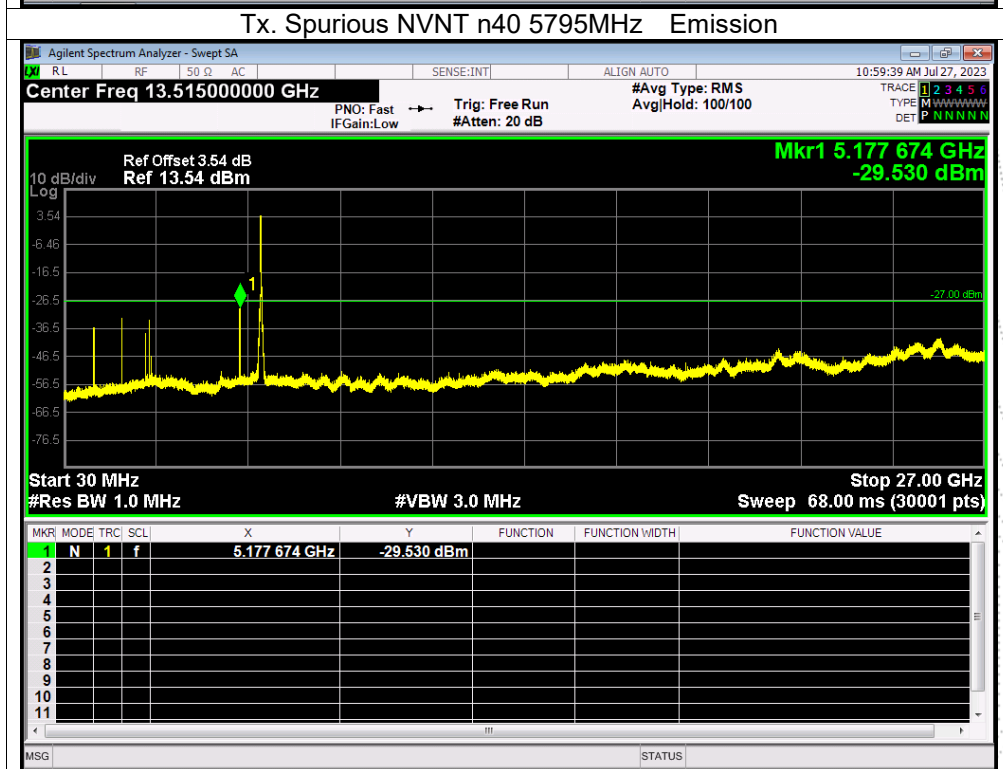
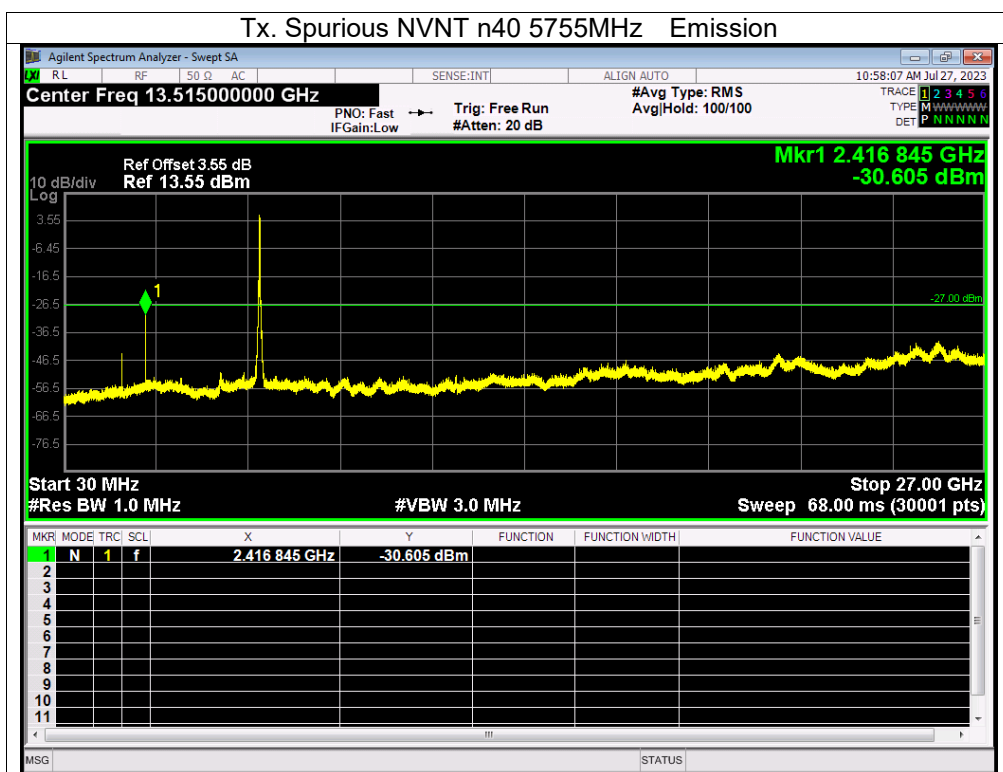


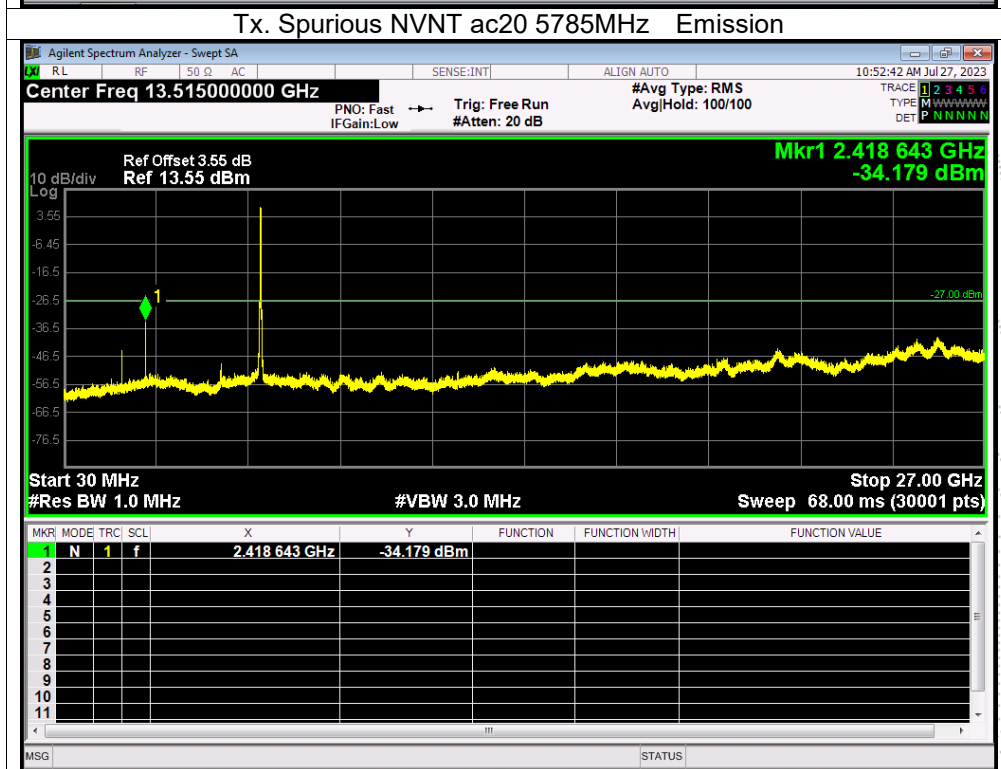
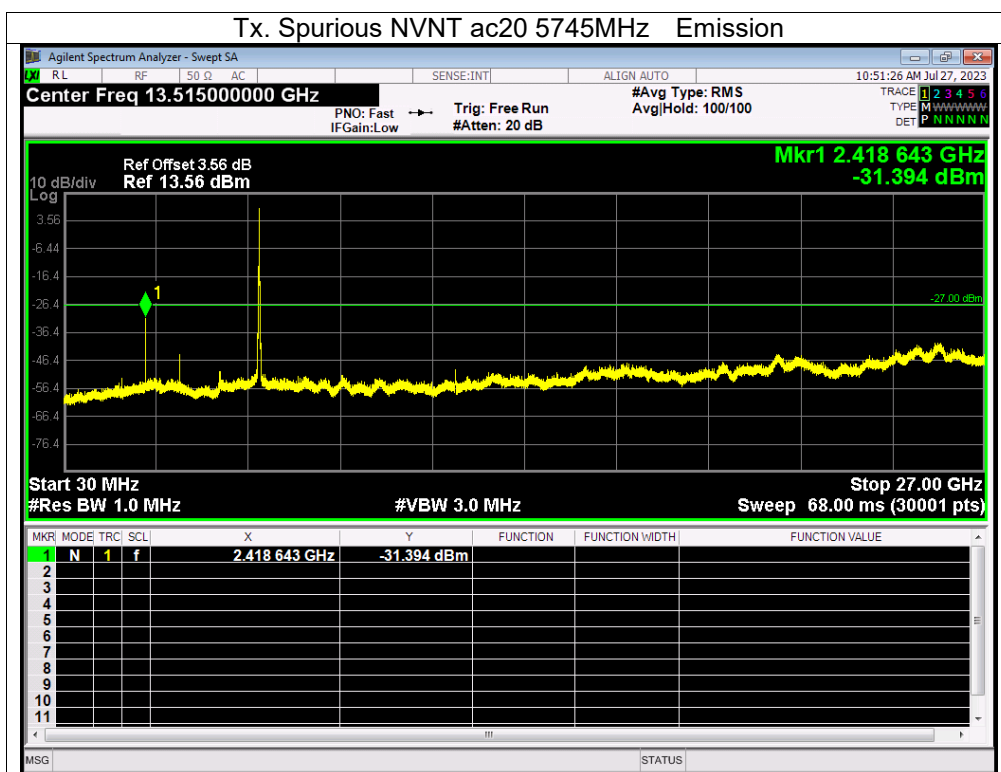
Tx. Spurious NVNT a 5785MHz Emission

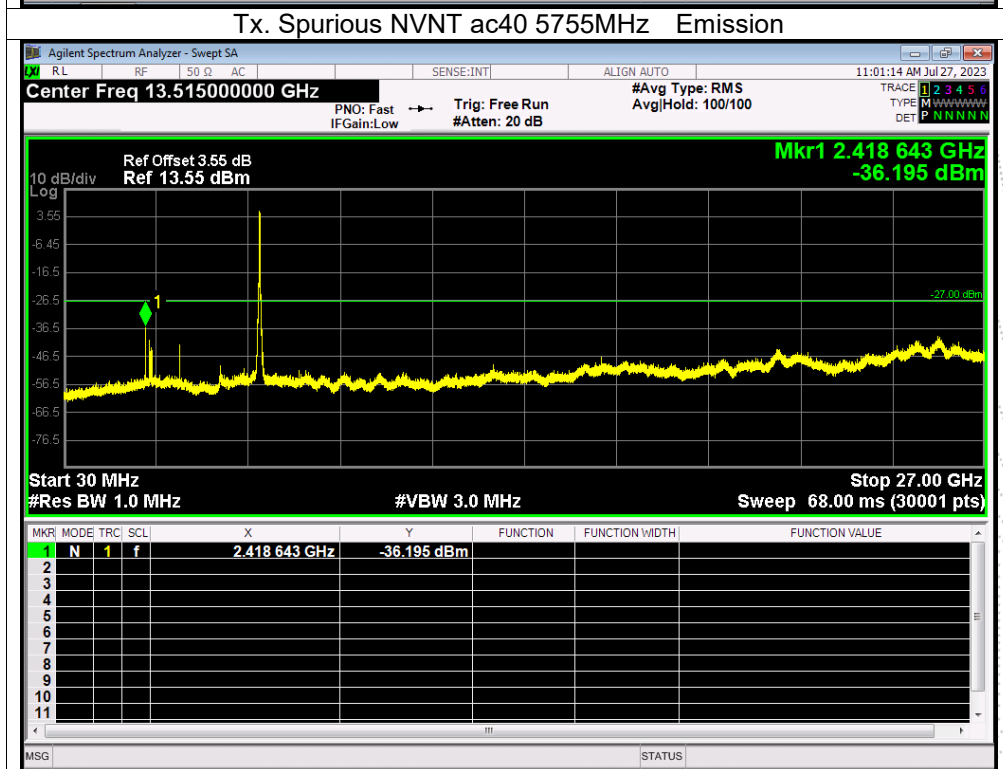
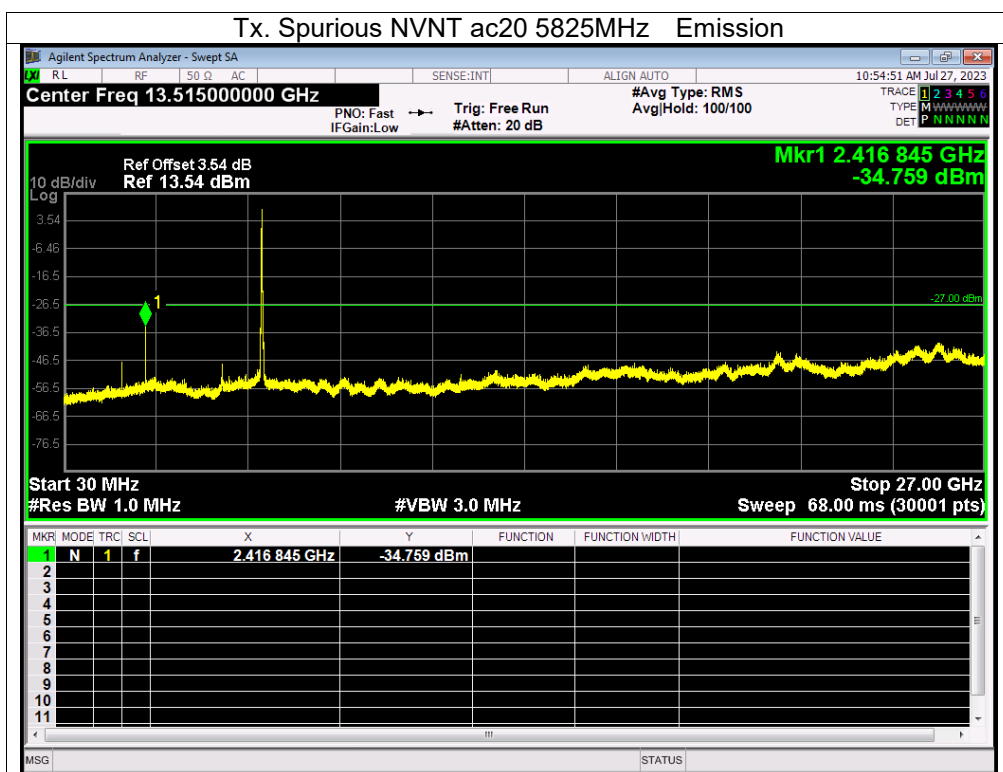


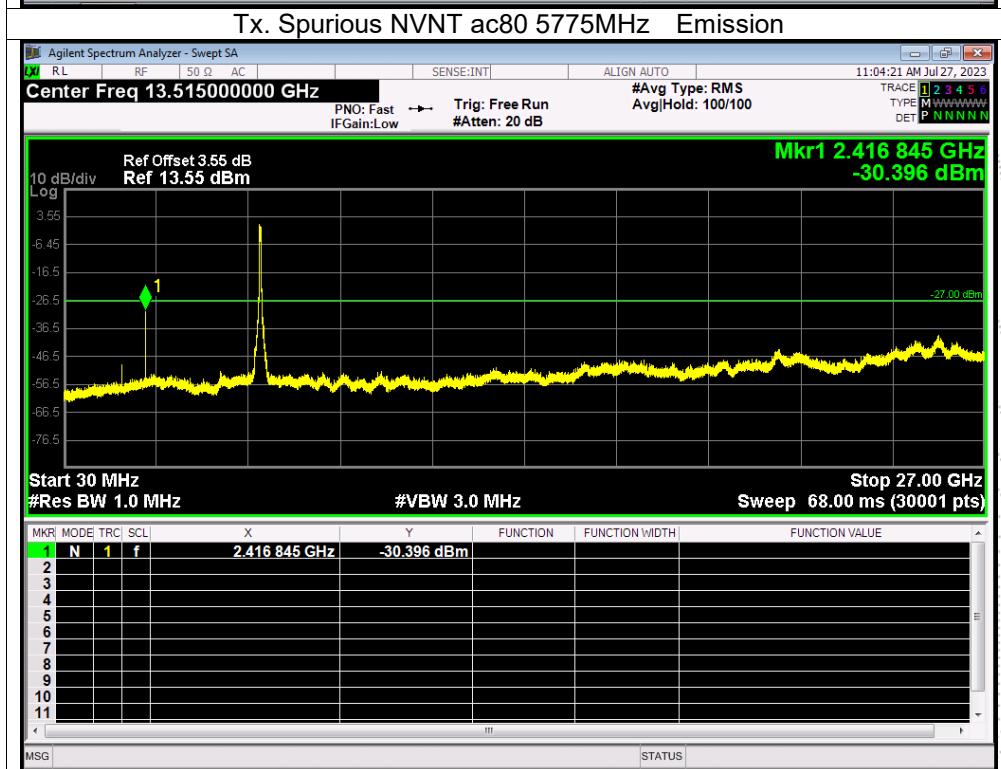
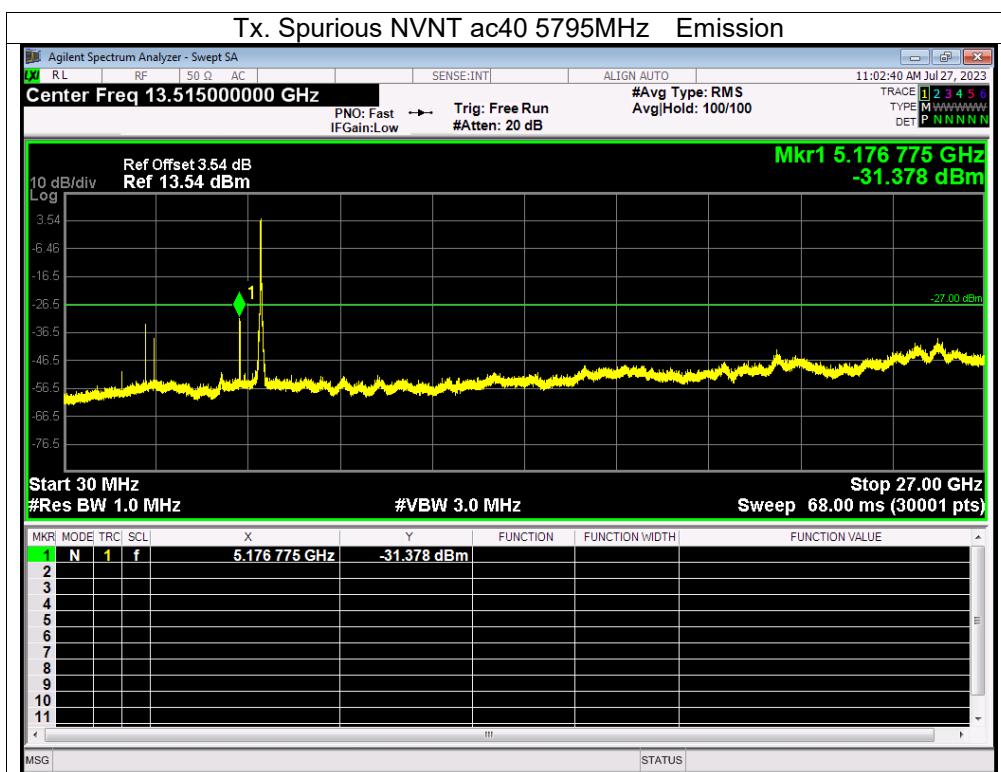












13. Frequency Stability Measurement

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 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	5180.0139	5180	0.0139	2.6850
		V max (V)	5.75	5180.0115	5180	0.0115	2.2115
		V min (V)	4.25	5180.0103	5180	0.0103	1.9854
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	5180.0106	5180	0.0106	2.0410
		T (°C)	-10	5180.0020	5180	0.0020	0.3766
		T (°C)	0	5180.0066	5180	0.0066	1.2747
		T (°C)	10	5180.0101	5180	0.0101	1.9544
		T (°C)	20	5180.0100	5180	0.0100	1.9354
		T (°C)	30	5180.0114	5180	0.0114	2.2054
		T (°C)	40	5180.0007	5180	0.0007	0.1367
		T (°C)	50	5180.0071	5180	0.0071	1.3723
		T (°C)	60	5180.0098	5180	0.0098	1.8880
		T (°C)	70	5180.0128	5180	0.0128	2.4765
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)	5.00	5200.0010	5200	0.0010	0.1946
		V max (V)	5.75	5200.0044	5200	0.0044	0.8400
		V min (V)	4.25	5200.0035	5200	0.0035	0.6817
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	5200.01017	5200	0.01017	1.9553
		T (°C)	-10	5200.01330	5200	0.01330	2.5580
		T (°C)	0	5200.00072	5200	0.00072	0.1388
		T (°C)	10	5200.00012	5200	0.00012	0.0227
		T (°C)	20	5200.00232	5200	0.00232	0.4460
		T (°C)	30	5200.00542	5200	0.00542	1.0424
		T (°C)	40	5200.00119	5200	0.00119	0.2282
		T (°C)	50	5200.01310	5200	0.01310	2.5197
		T (°C)	60	5200.00580	5200	0.00580	1.1152
		T (°C)	70	5200.00169	5200	0.00169	0.3253
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	5240.0118	5240	0.0118	2.2593
		V max (V)	5.75	5240.0132	5240	0.0132	2.5112
		V min (V)	4.25	5240.0032	5240	0.0032	0.6154
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	5240.0064	5240	0.0064	1.2148
		T (°C)	-10	5240.0038	5240	0.0038	0.7261
		T (°C)	0	5240.0124	5240	0.0124	2.3704
		T (°C)	10	5240.0117	5240	0.0117	2.2411
		T (°C)	20	5240.0091	5240	0.0091	1.7414
		T (°C)	30	5240.0128	5240	0.0128	2.4409
		T (°C)	40	5240.0048	5240	0.0048	0.9083
		T (°C)	50	5240.0091	5240	0.0091	1.7286
		T (°C)	60	5240.0129	5240	0.0129	2.4611
		T (°C)	70	5240.0041	5240	0.0041	0.7903
Limits				5150-5250 MHz			
Result				Complies			

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 5V
Hrst Mode :	TX Frequency(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)	5.00	5745.00954	5745	0.00954	1.6612
		V max (V)	5.75	5745.00569	5745	0.00569	0.9900
		V min (V)	4.25	5745.00069	5745	0.00069	0.1196
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	5745.00217	5745	0.00217	0.3774
		T (°C)	-10	5745.01294	5745	0.01294	2.2528
		T (°C)	0	5745.00574	5745	0.00574	0.9988
		T (°C)	10	5745.00157	5745	0.00157	0.2727
		T (°C)	20	5745.00497	5745	0.00497	0.8645
		T (°C)	30	5745.00753	5745	0.00753	1.3102
		T (°C)	40	5745.00182	5745	0.00182	0.3164
		T (°C)	50	5745.00929	5745	0.00929	1.6178
		T (°C)	60	5745.00574	5745	0.00574	0.9989
		T (°C)	70	5745.00472	5745	0.00472	0.8211
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	5785.00289	5785	0.00289	0.4988
		V max (V)	5.75	5785.01283	5785	0.01283	2.2178
		V min (V)	4.25	5785.00816	5785	0.00816	1.4105
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	5785.00236	5785	0.00236	0.4072
		T (°C)	-10	5785.00095	5785	0.00095	0.1638
		T (°C)	0	5785.01019	5785	0.01019	1.7610
		T (°C)	10	5785.00901	5785	0.00901	1.5581
		T (°C)	20	5785.00978	5785	0.00978	1.6905
		T (°C)	30	5785.00493	5785	0.00493	0.8526
		T (°C)	40	5785.00341	5785	0.00341	0.5892
		T (°C)	50	5785.00041	5785	0.00041	0.0716
		T (°C)	60	5785.00627	5785	0.00627	1.0840
		T (°C)	70	5785.01316	5785	0.01316	2.2753
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)	5.00	5825.00275	5825	0.00275	0.4727
		V max (V)	5.75	5825.00409	5825	0.00409	0.7029
		V min (V)	4.25	5825.00462	5825	0.00462	0.7923
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	5825.00337	5825	0.00337	0.5791
		T (°C)	-10	5825.00339	5825	0.00339	0.5823
		T (°C)	0	5825.00652	5825	0.00652	1.1188
		T (°C)	10	5825.01088	5825	0.01088	1.8677
		T (°C)	20	5825.00455	5825	0.00455	0.7812
		T (°C)	30	5825.00906	5825	0.00906	1.5555
		T (°C)	40	5825.01292	5825	0.01292	2.2183
		T (°C)	50	5825.00741	5825	0.00741	1.2712
		T (°C)	60	5825.00661	5825	0.00661	1.1354
		T (°C)	70	5825.00327	5825	0.00327	0.5622
Limits				5725-5850 MHz			
Result				Complies			

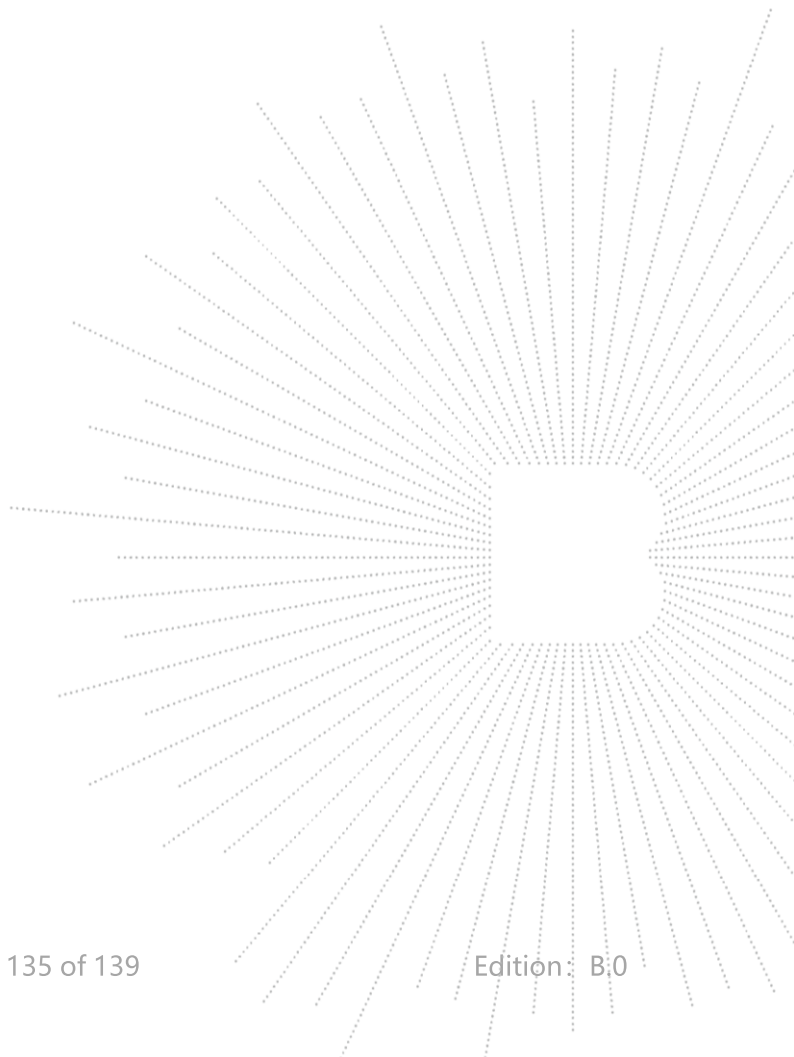
14. Antenna Requirement

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: 0.05 dBi). It comply with the standard requirement.

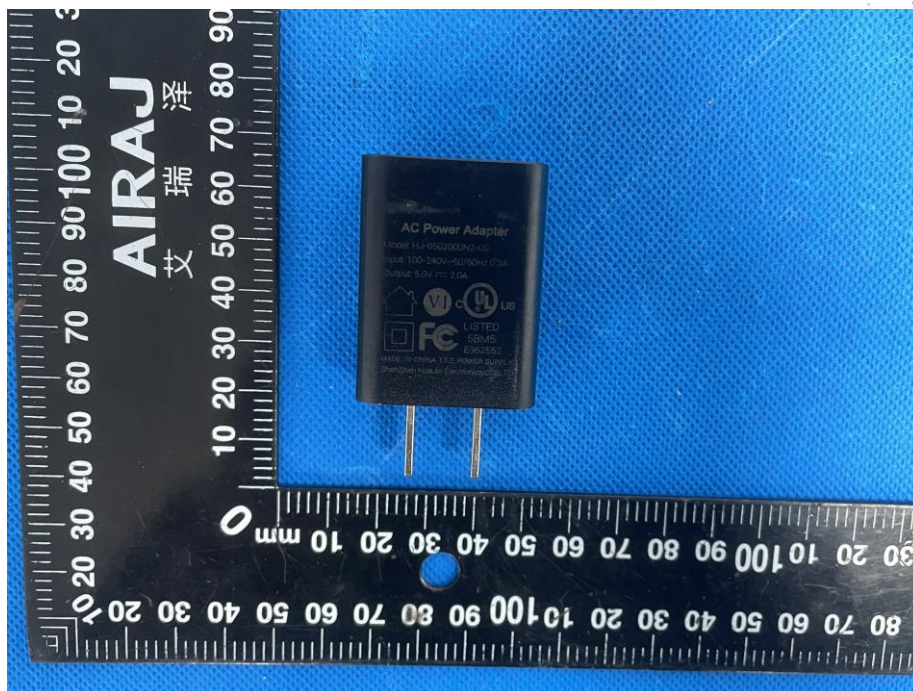


15. EUT Photographs

EUT Photo 1



EUT Photo 2

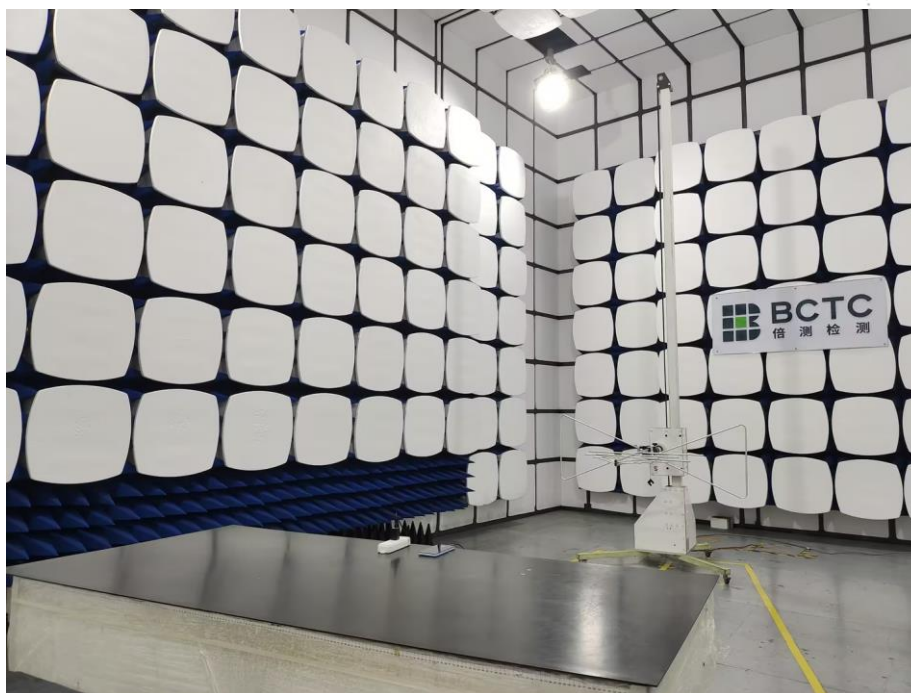


16. EUT Test Setup Photographs

Conducted Measurement Photo



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.

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