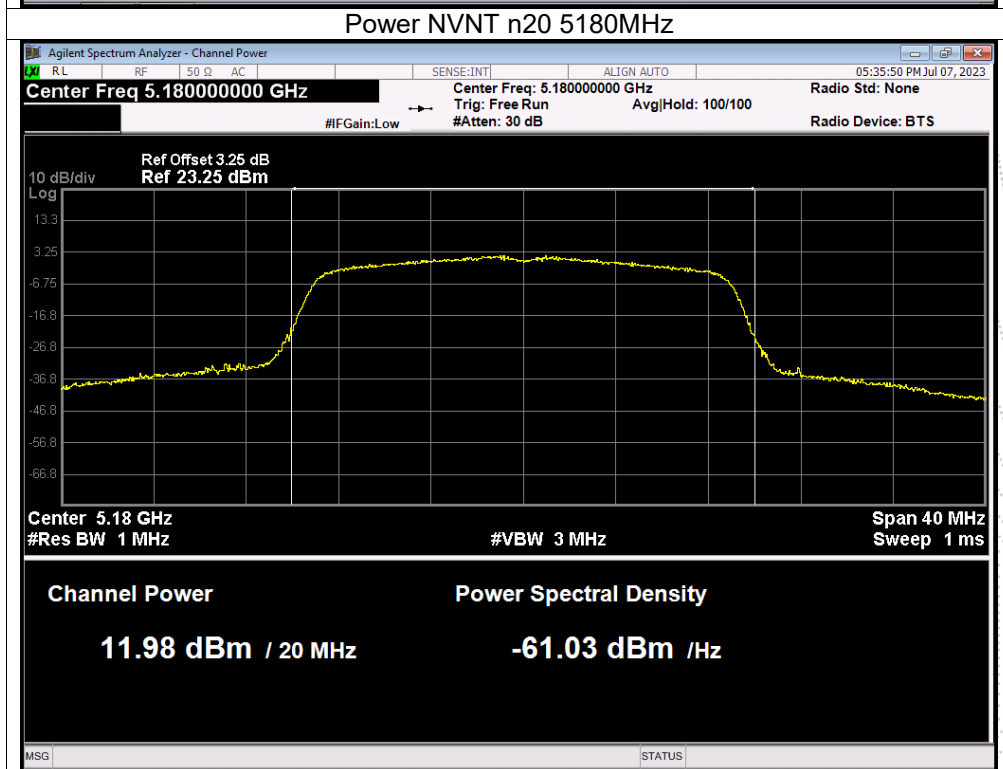
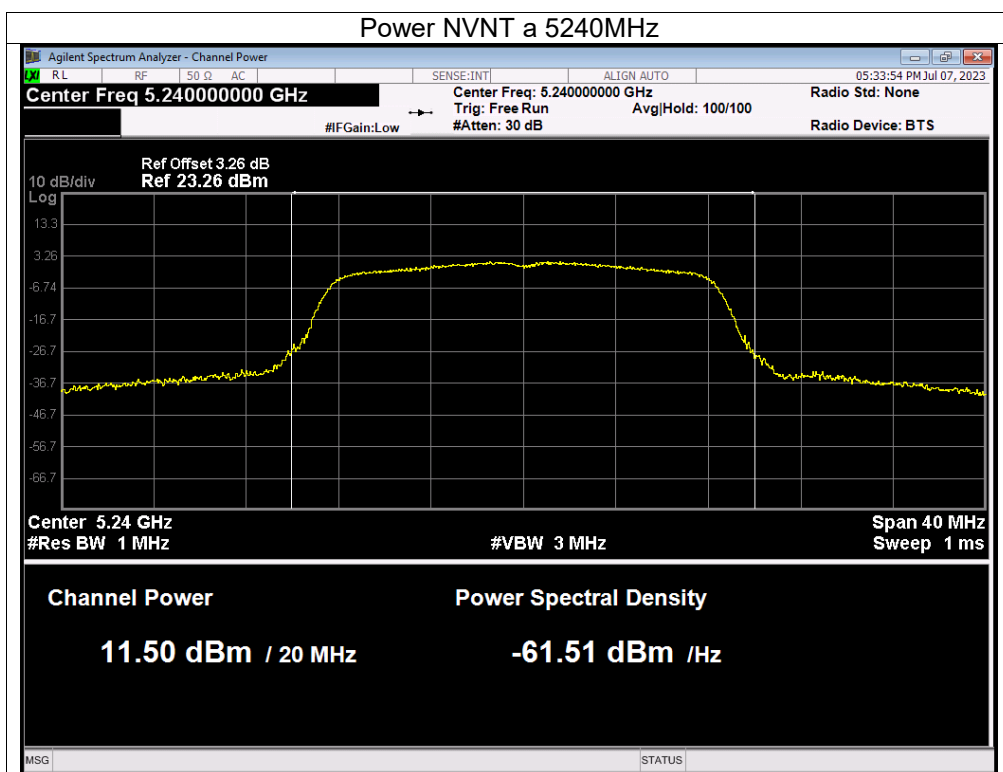
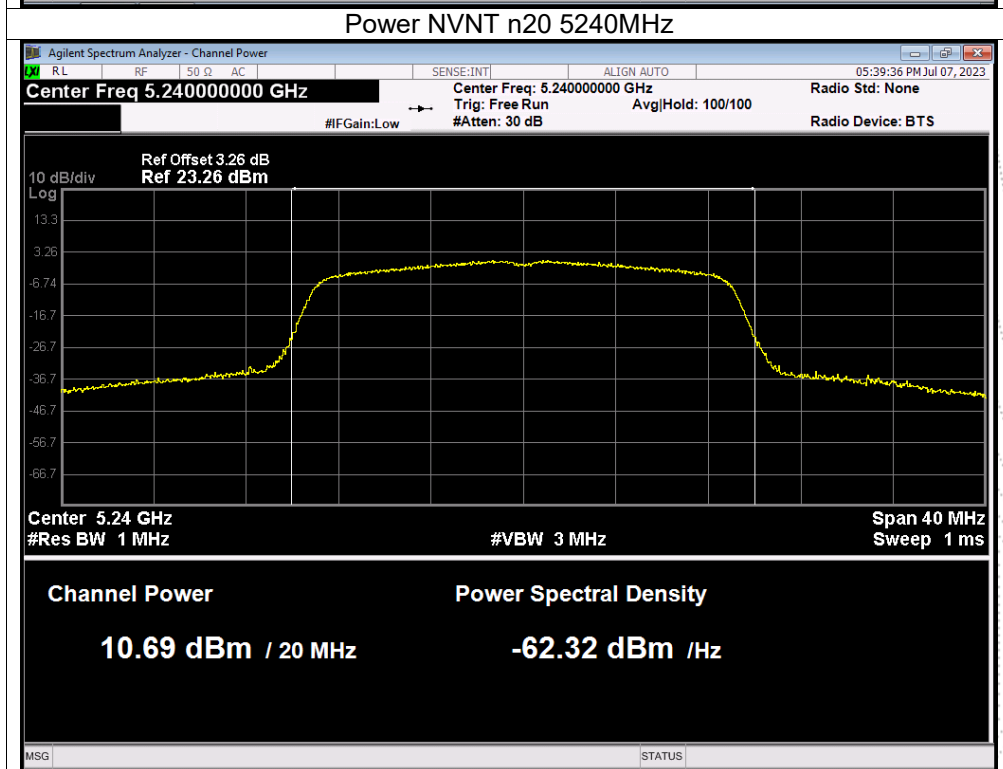
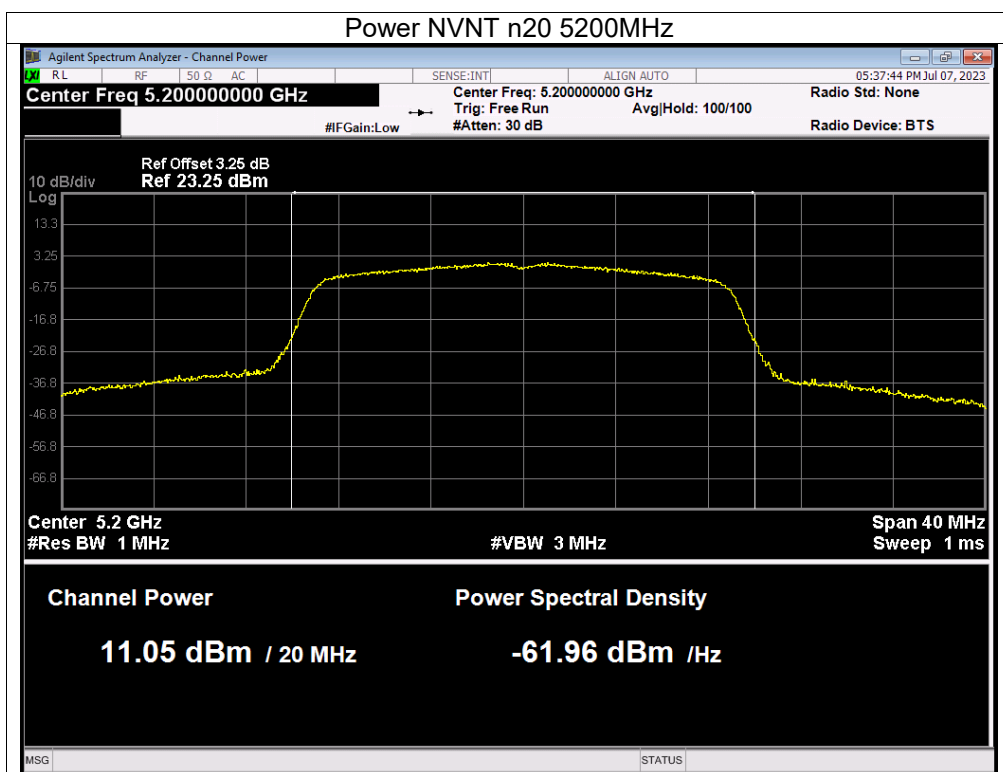
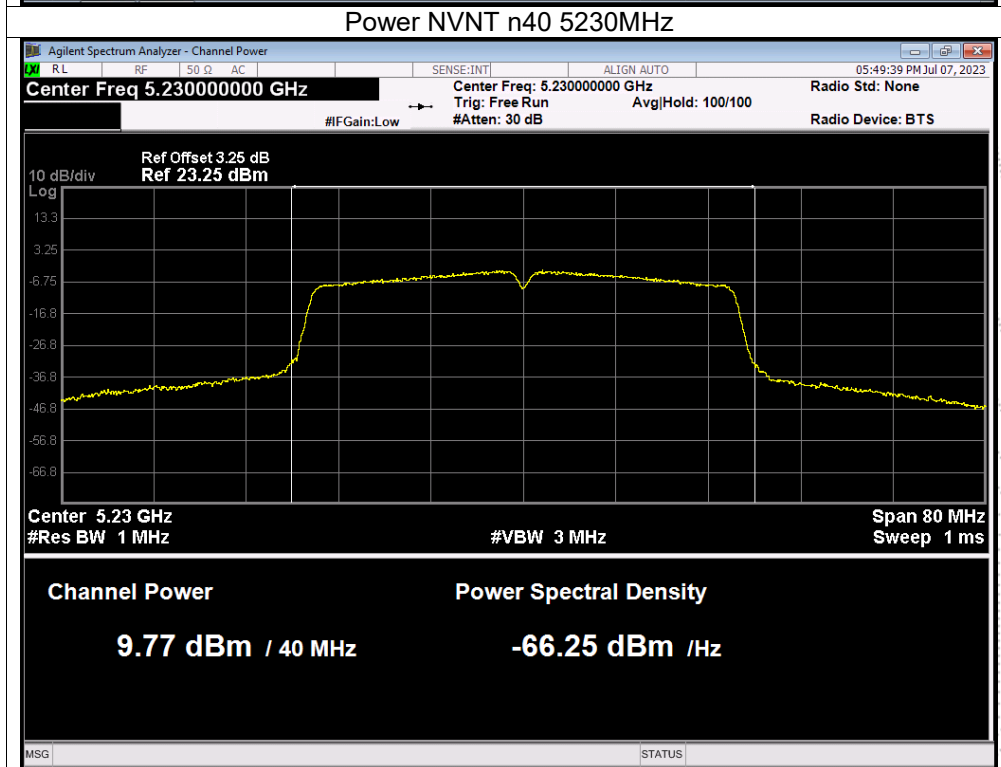
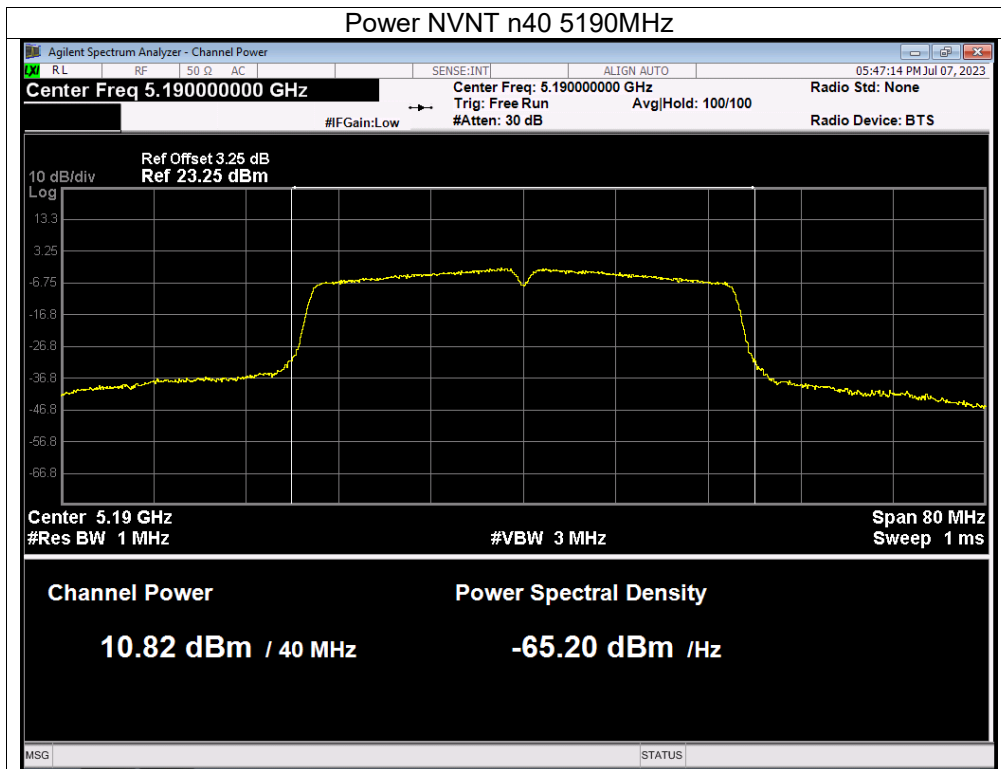
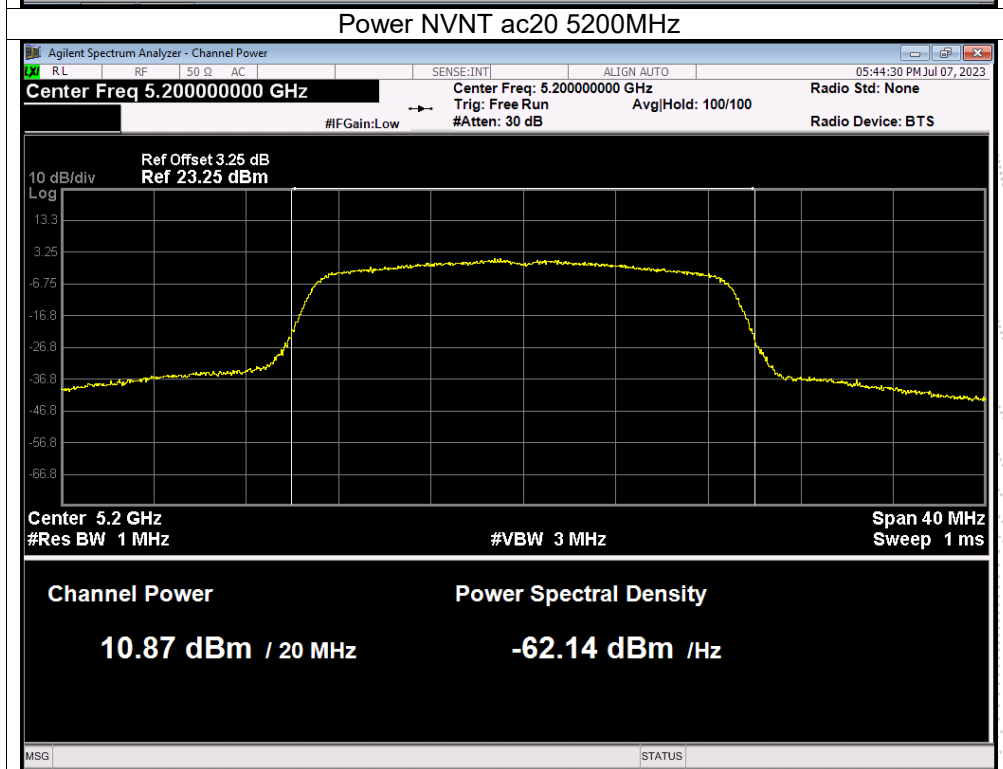
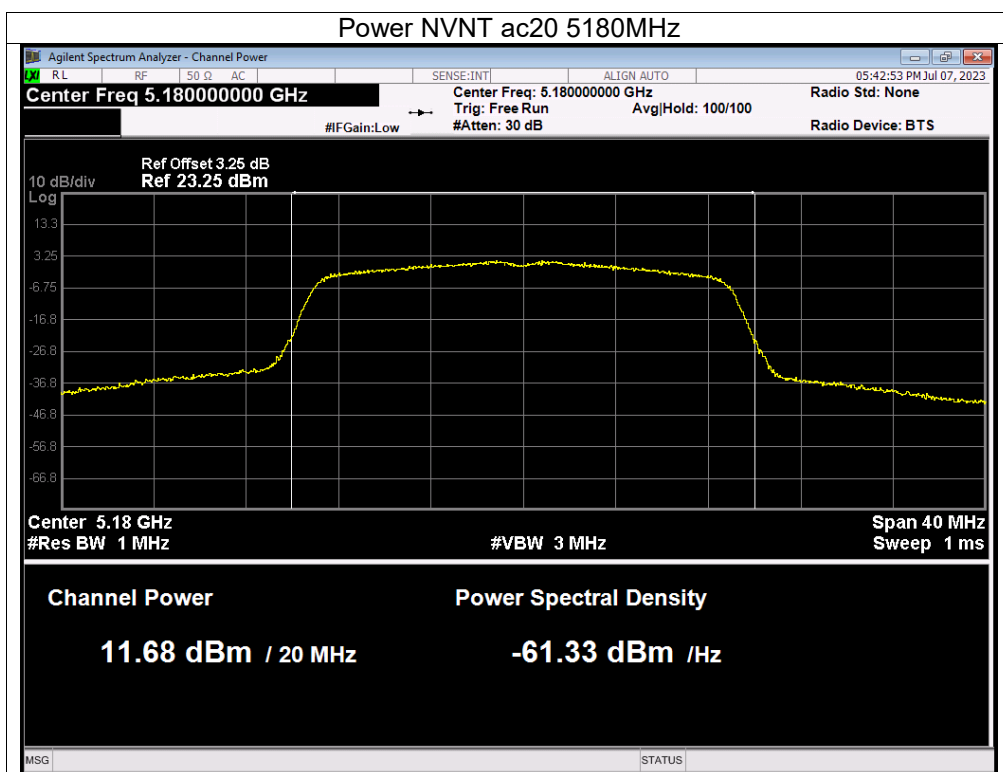
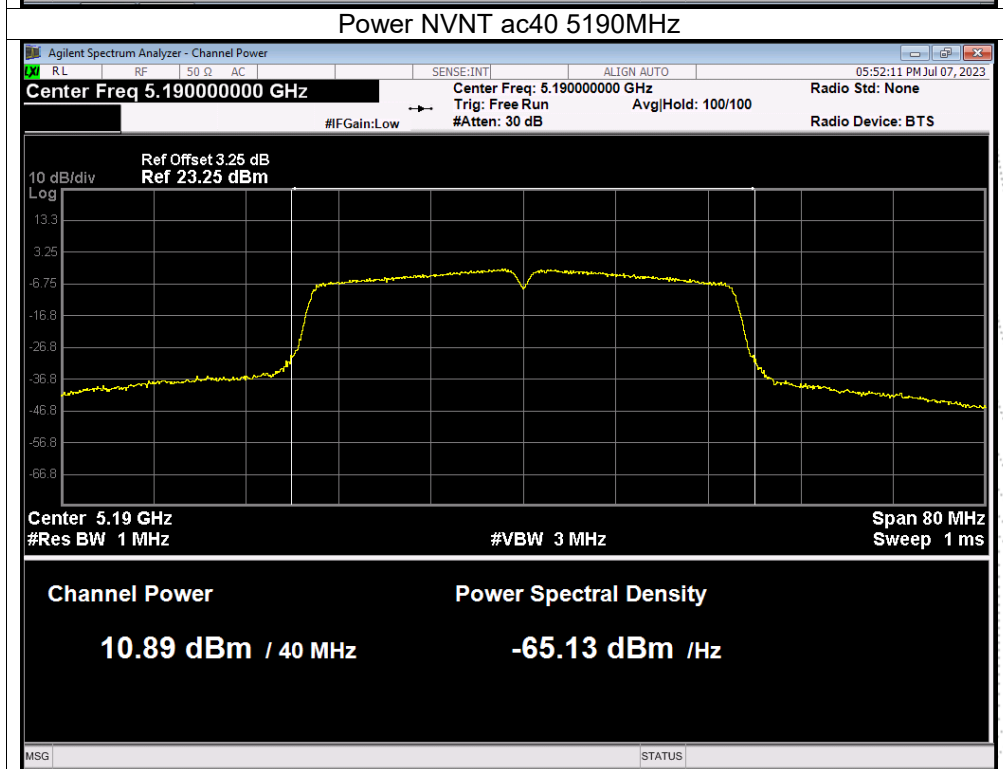
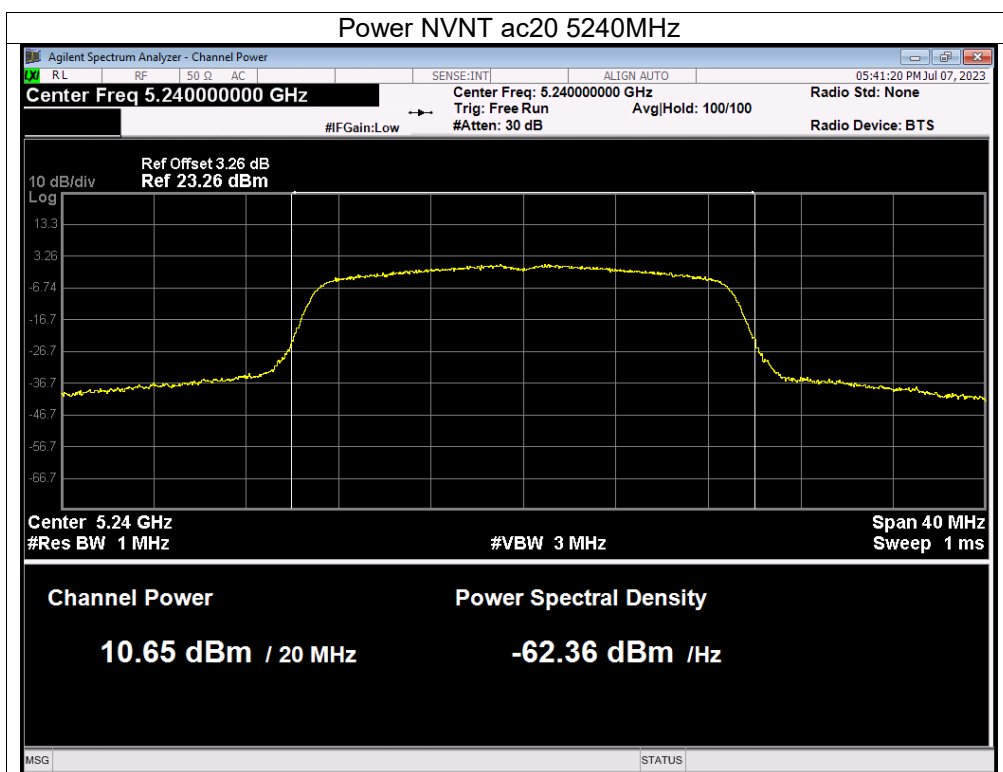


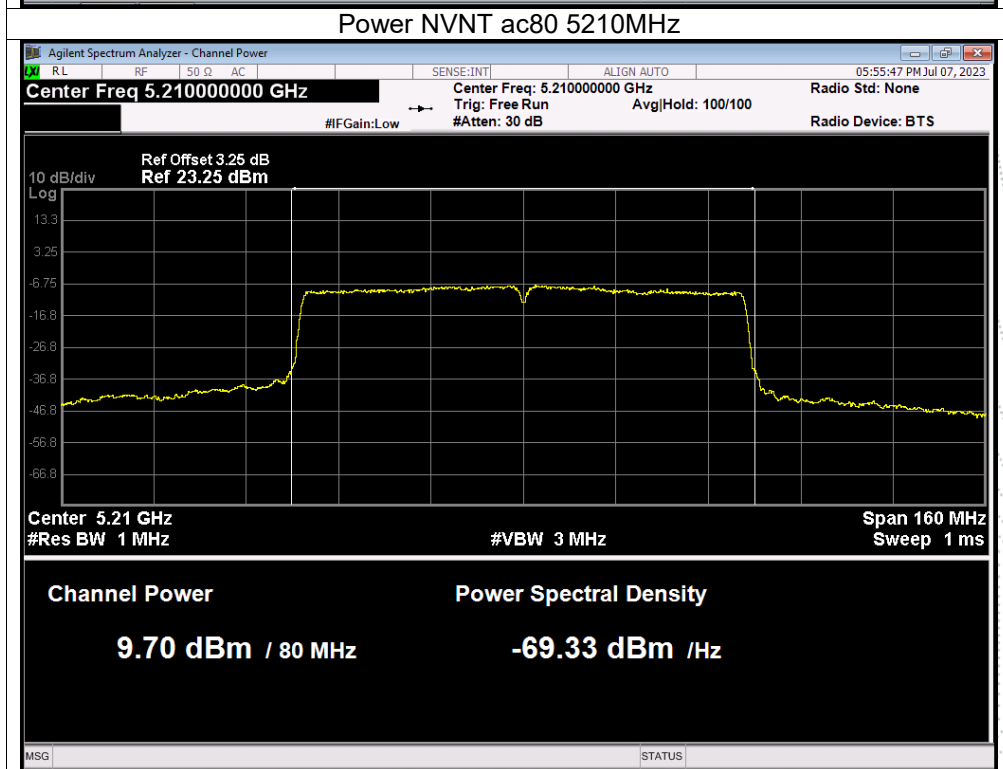
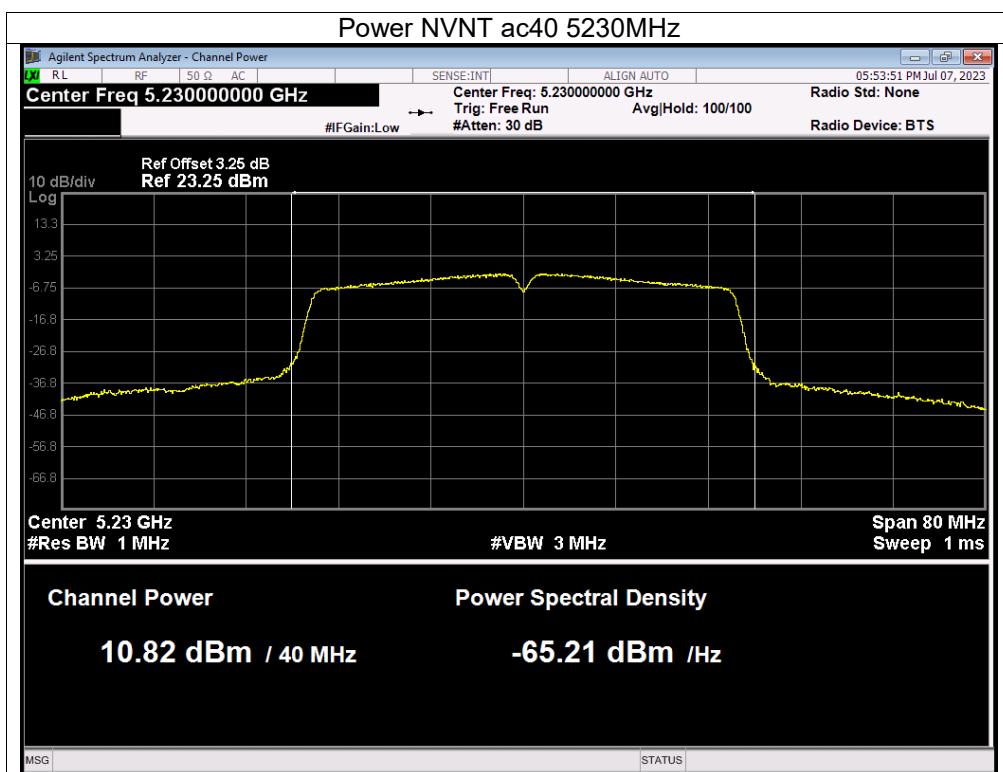


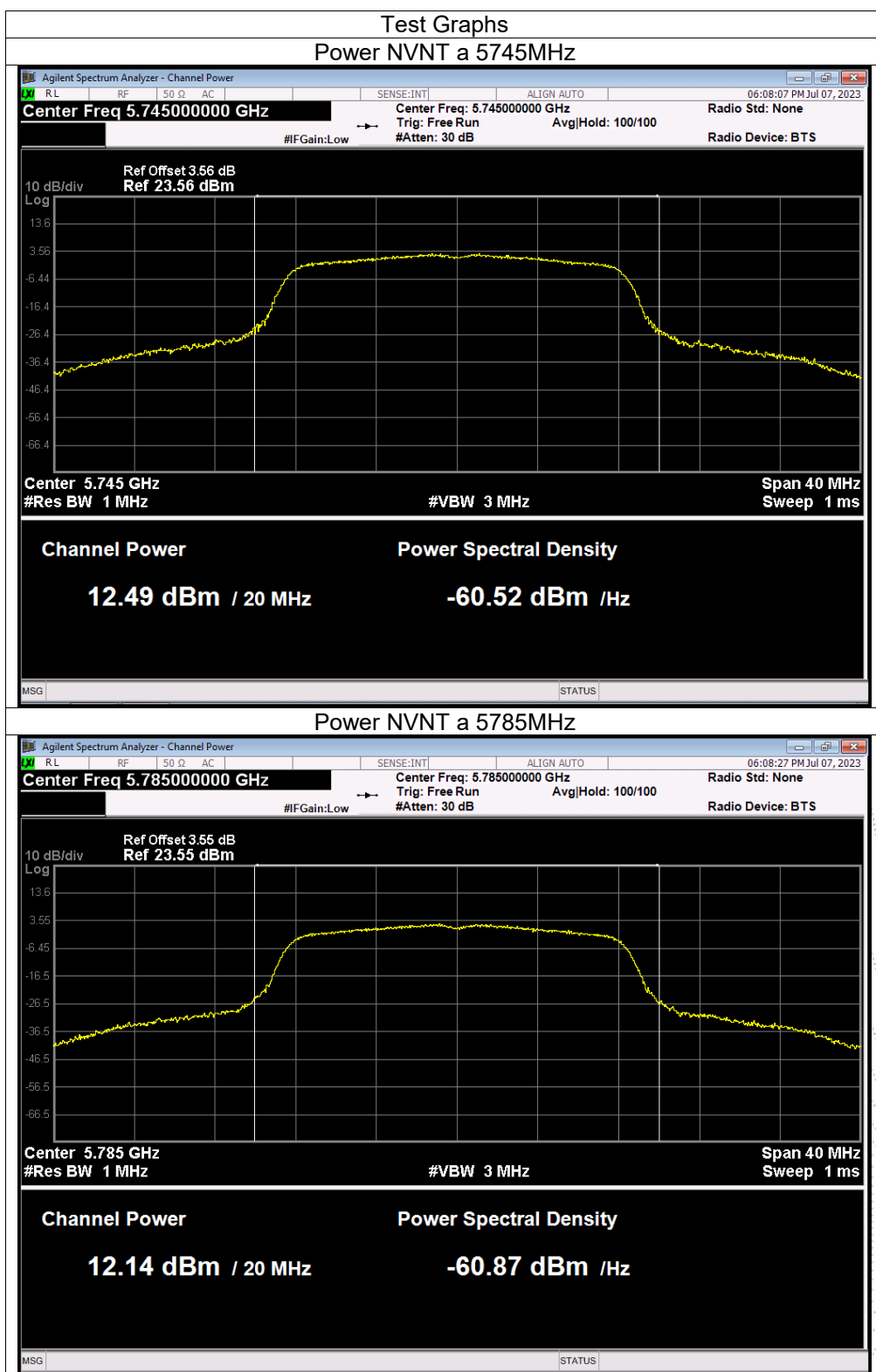


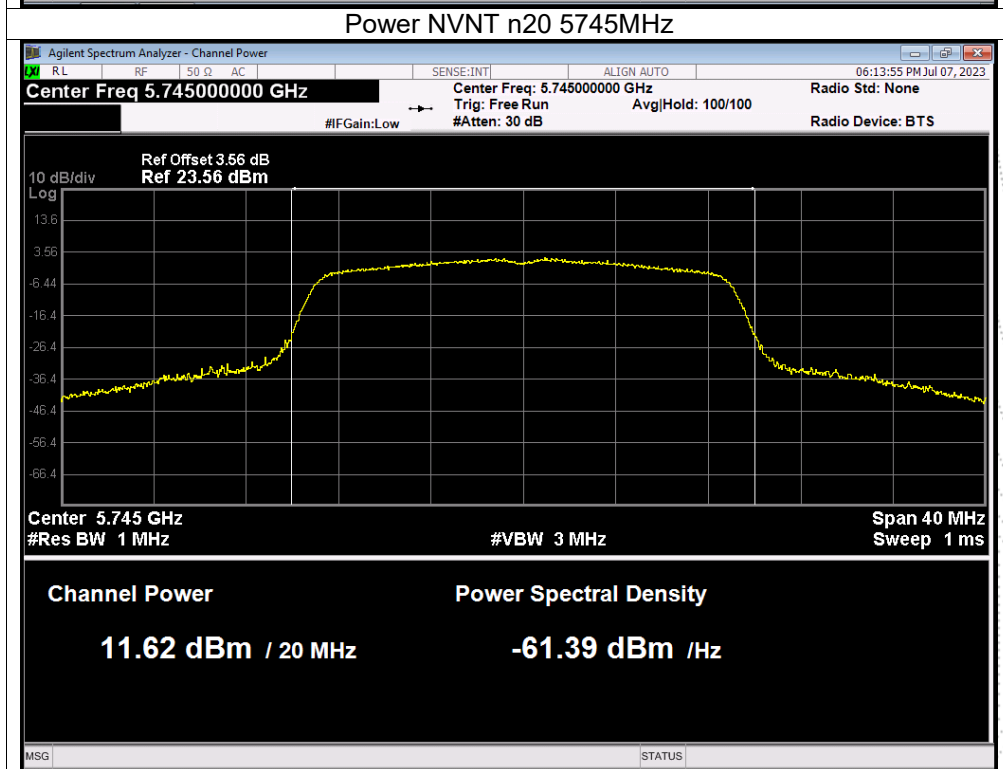
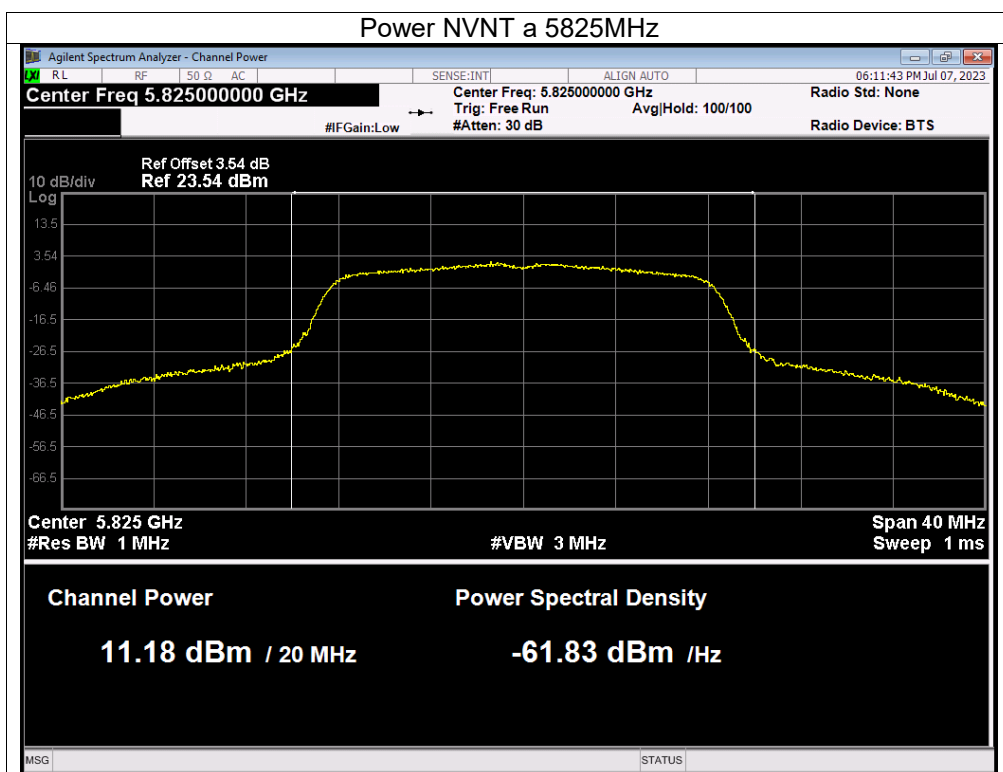


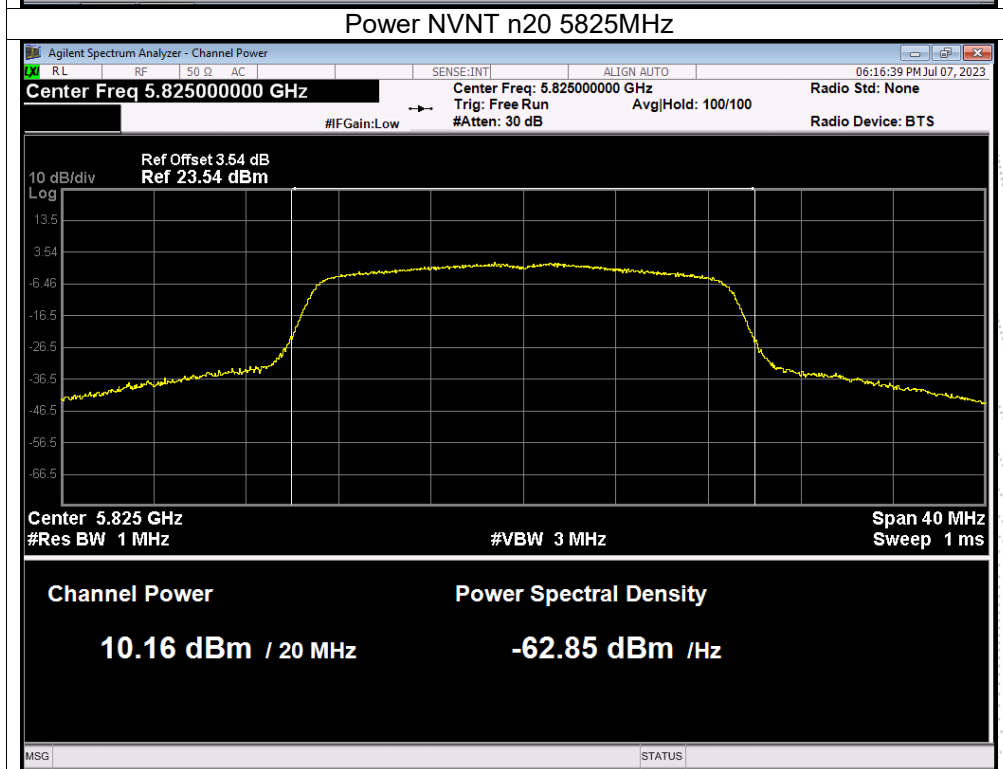
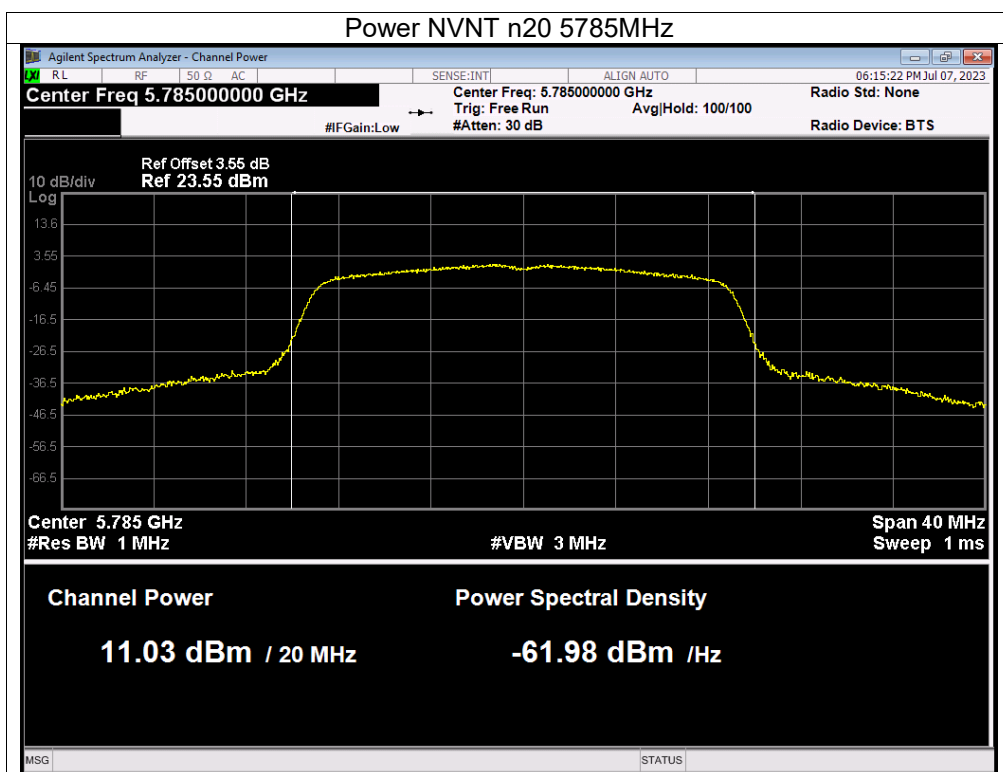


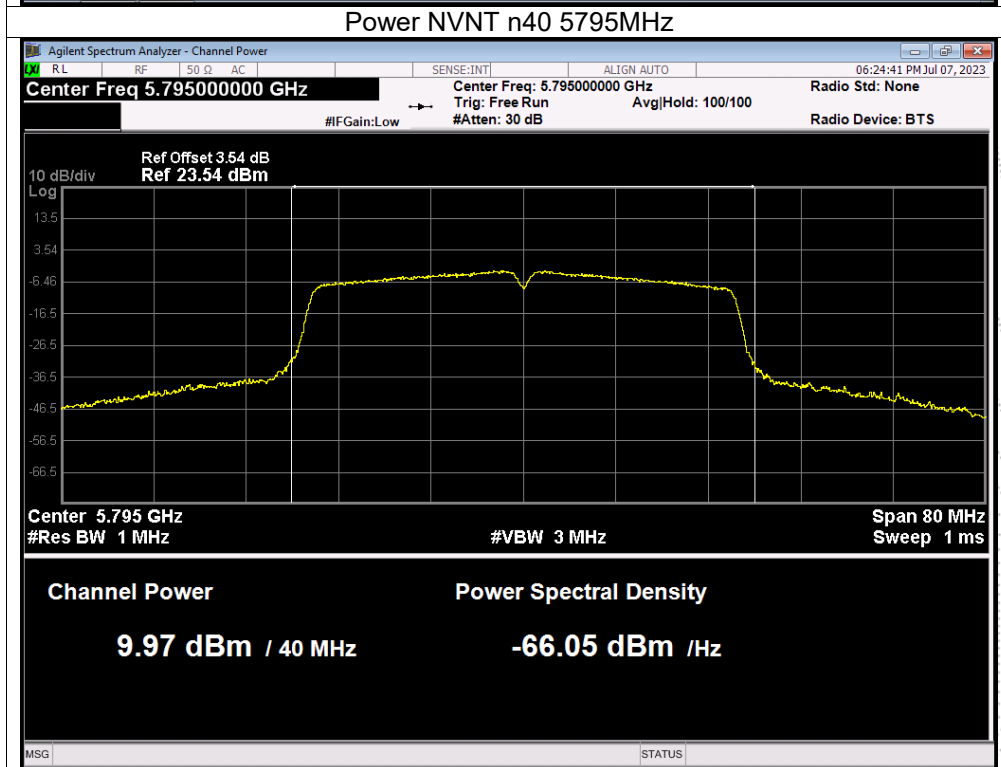
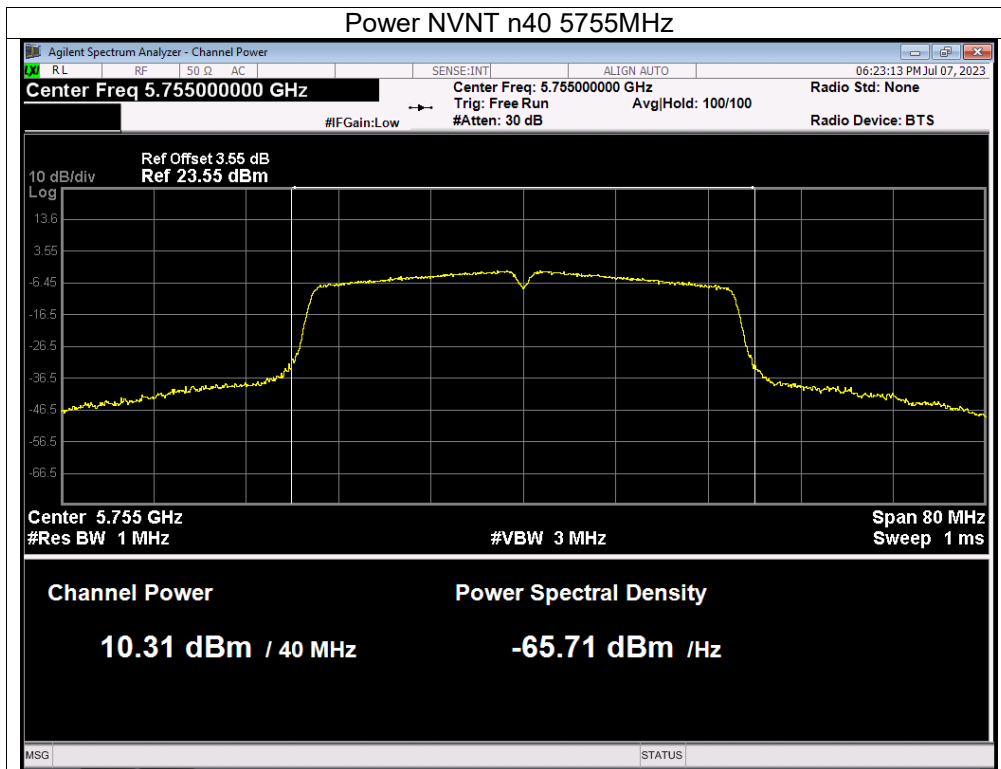


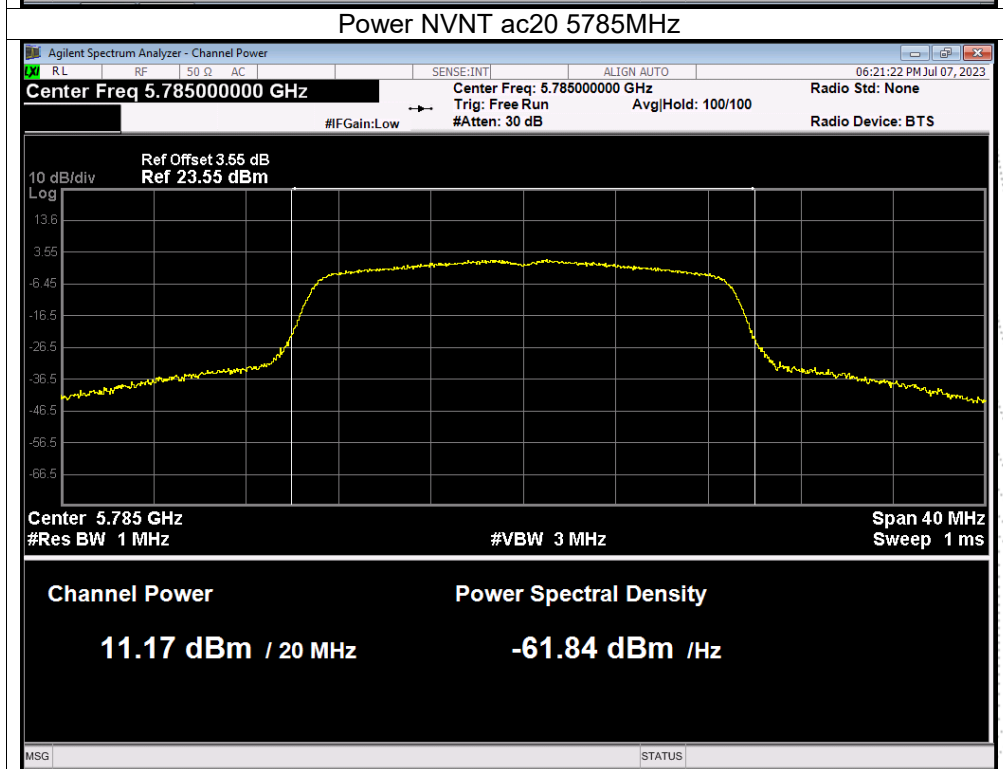
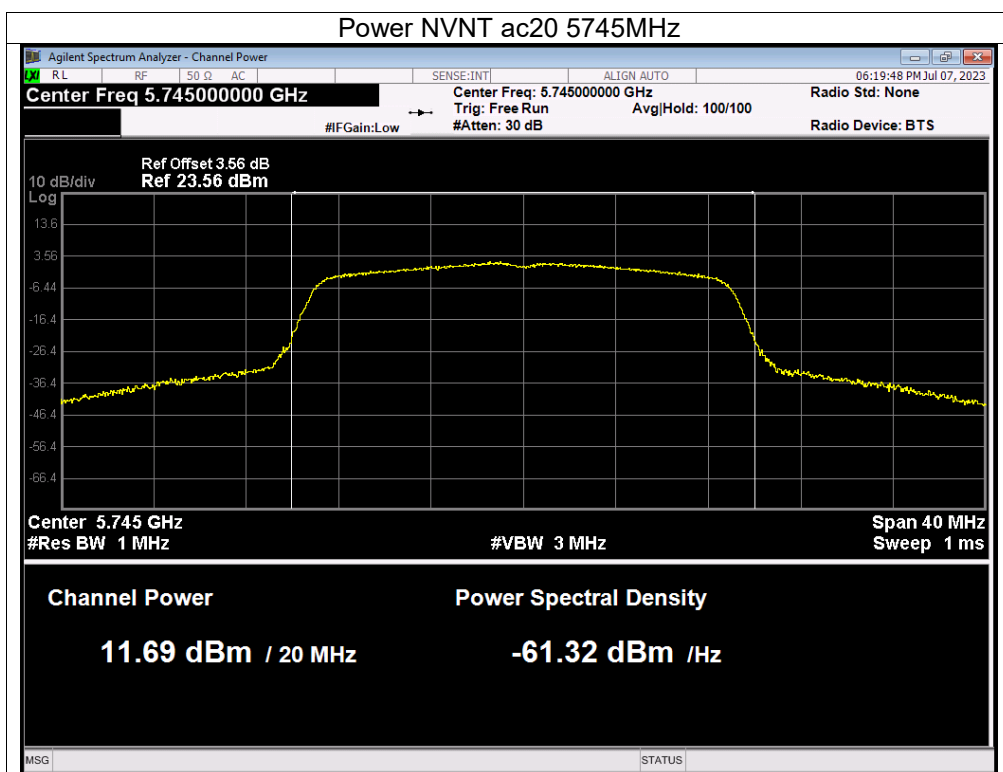


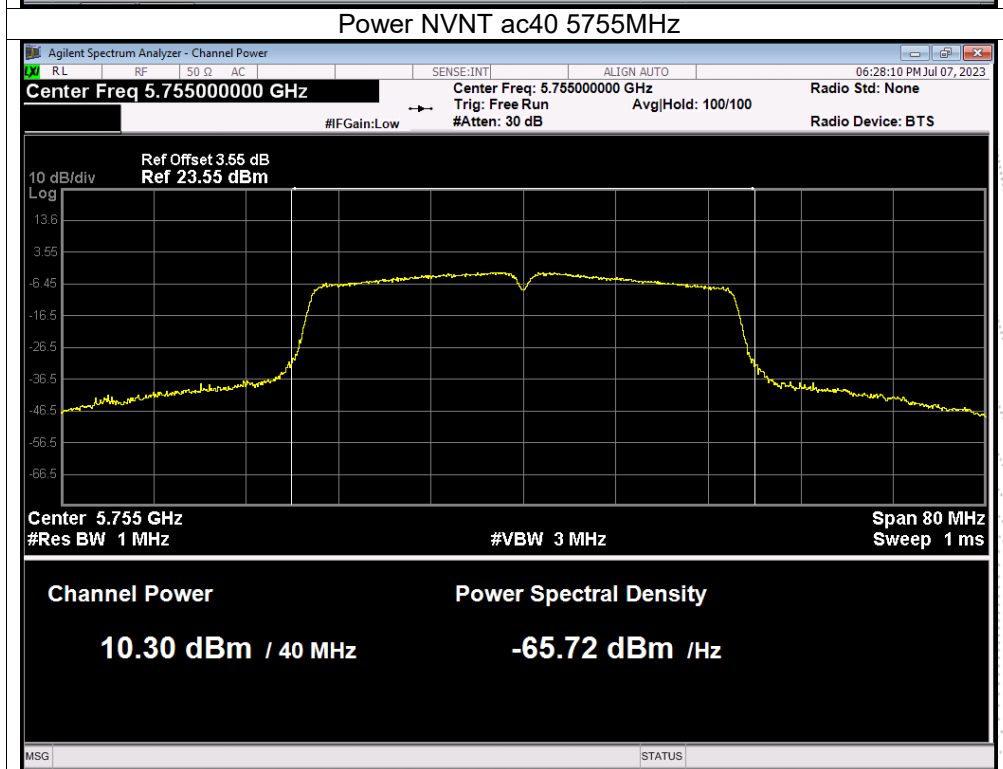
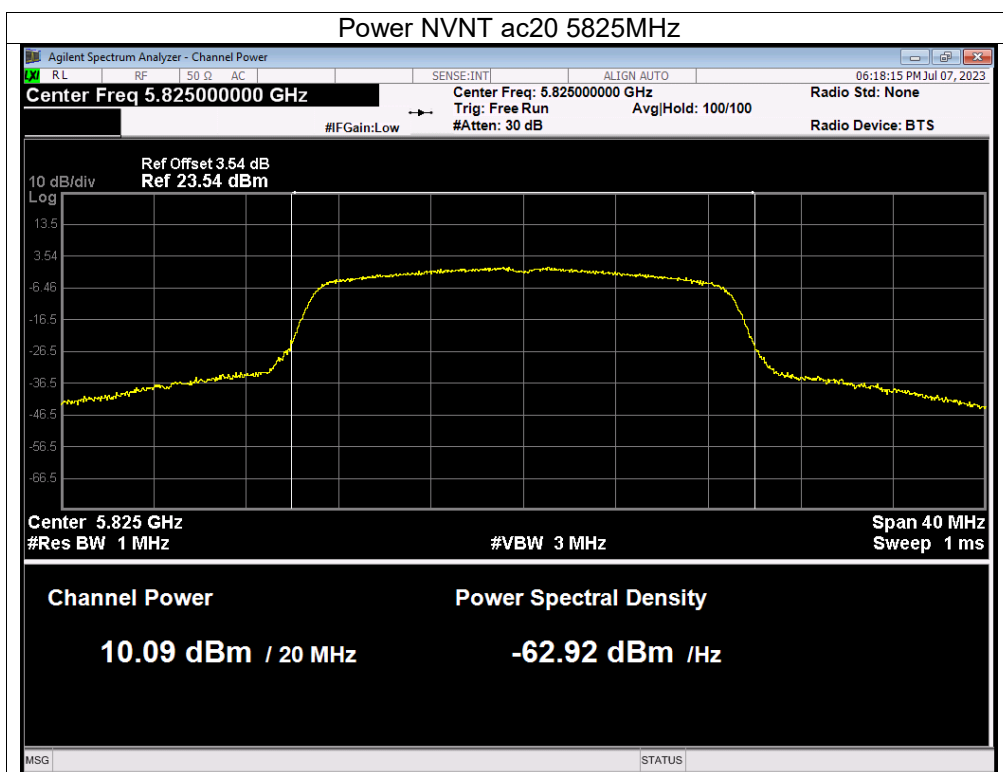


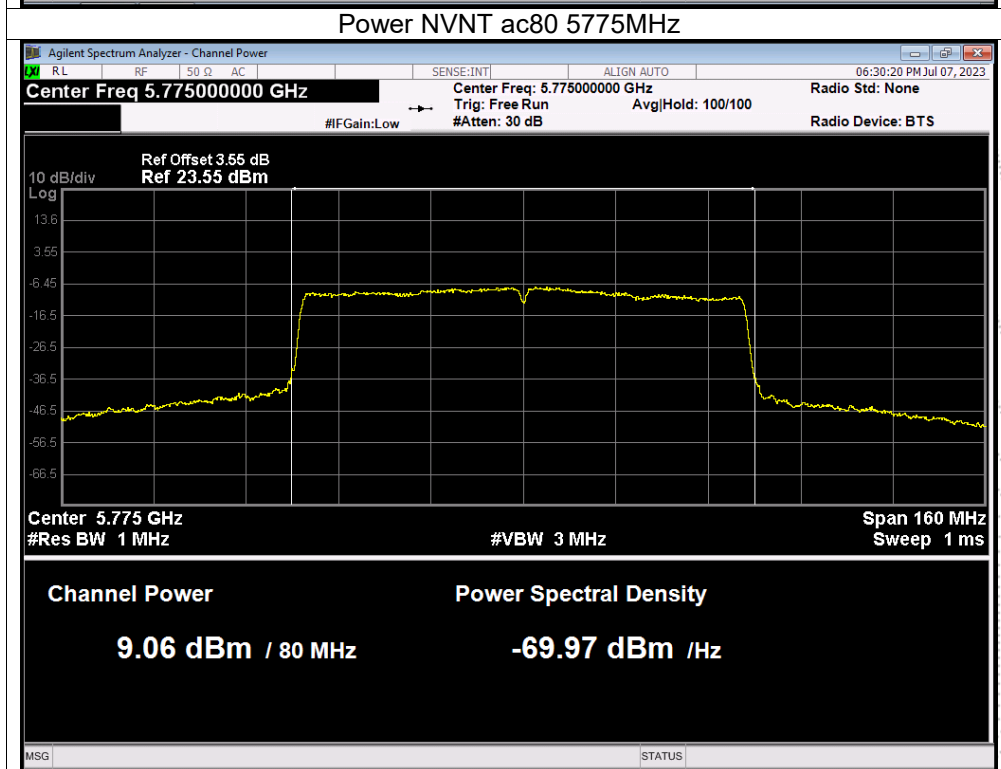
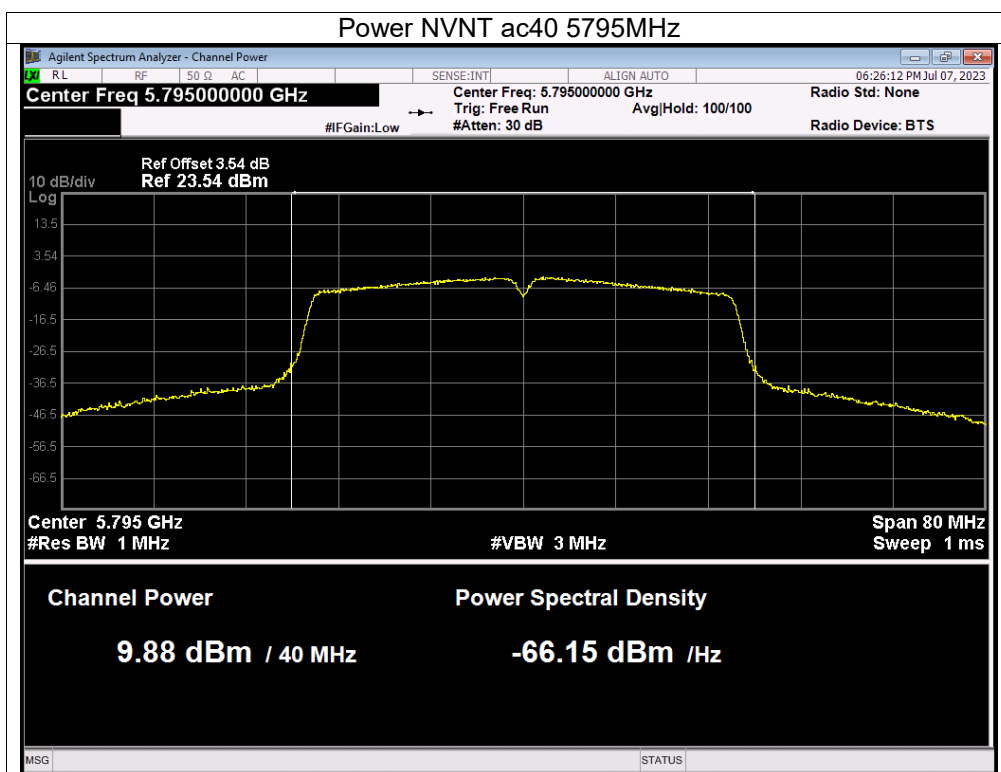












11. Out Of Band Emissions

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.

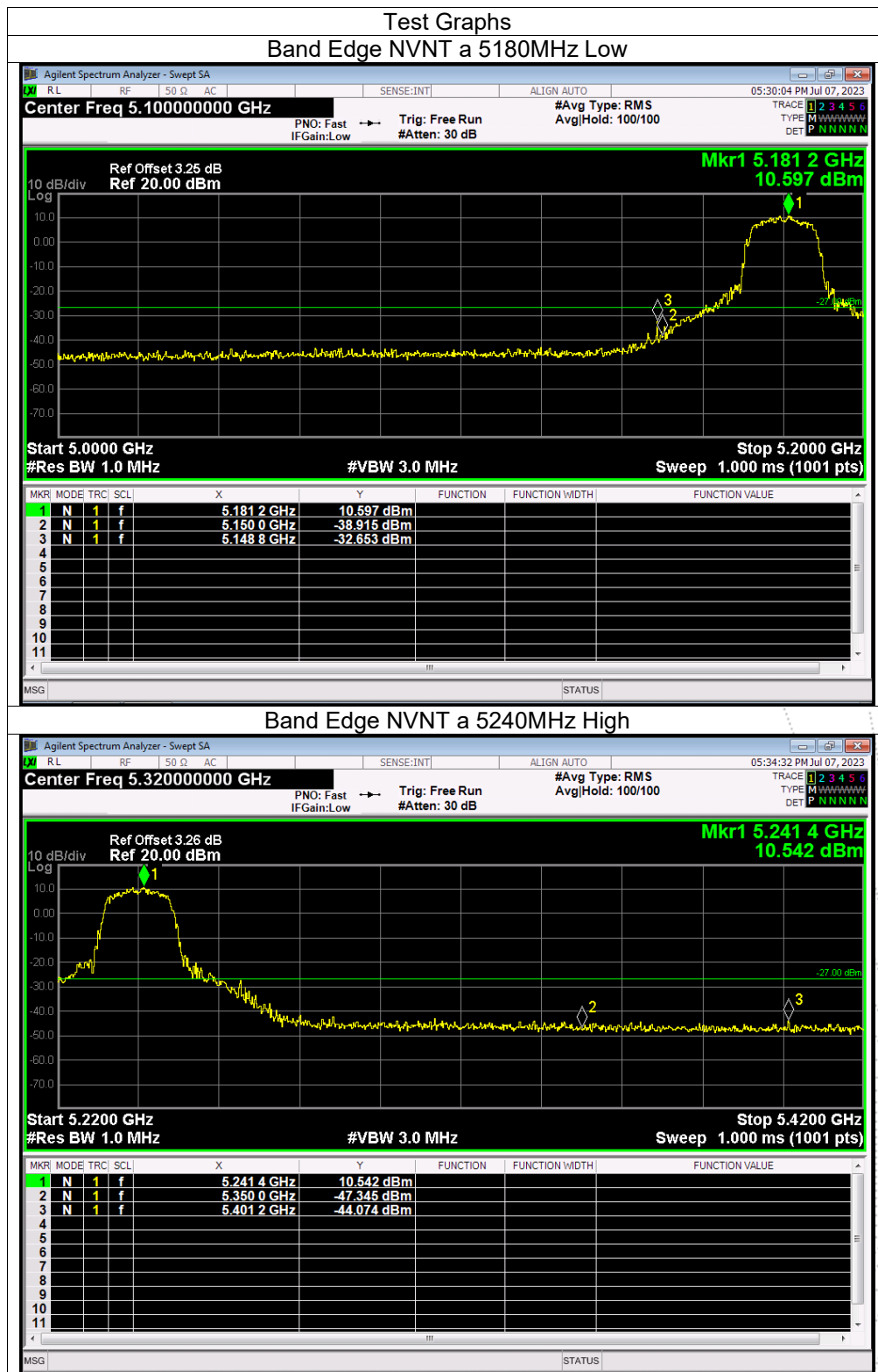
11.3 Test Procedure

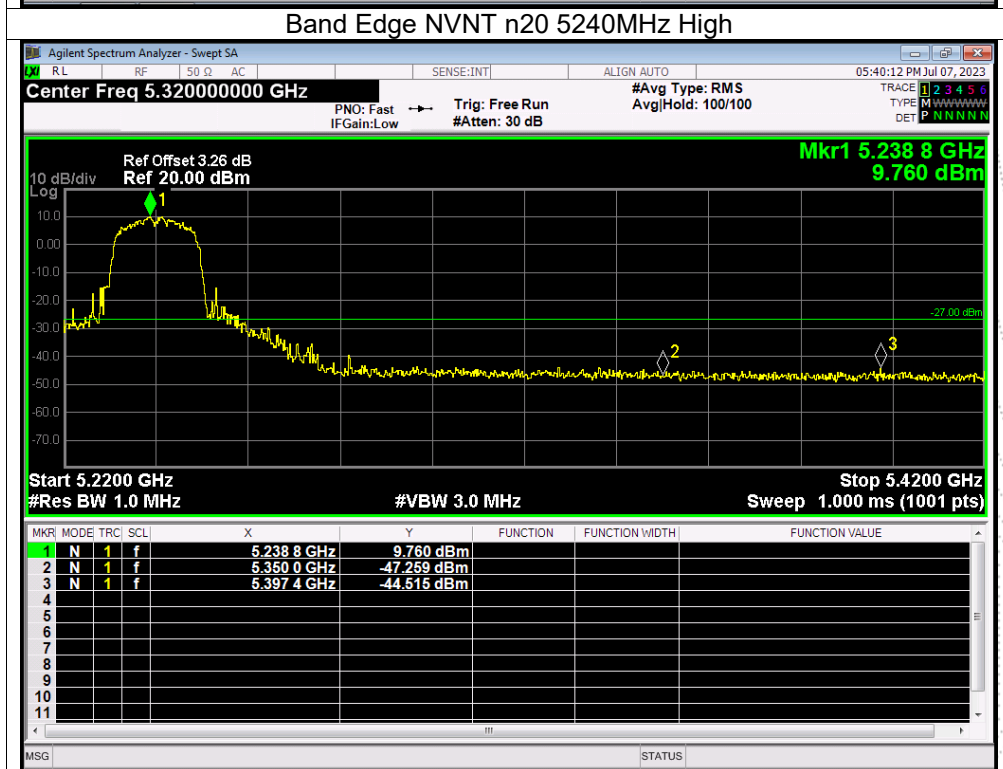
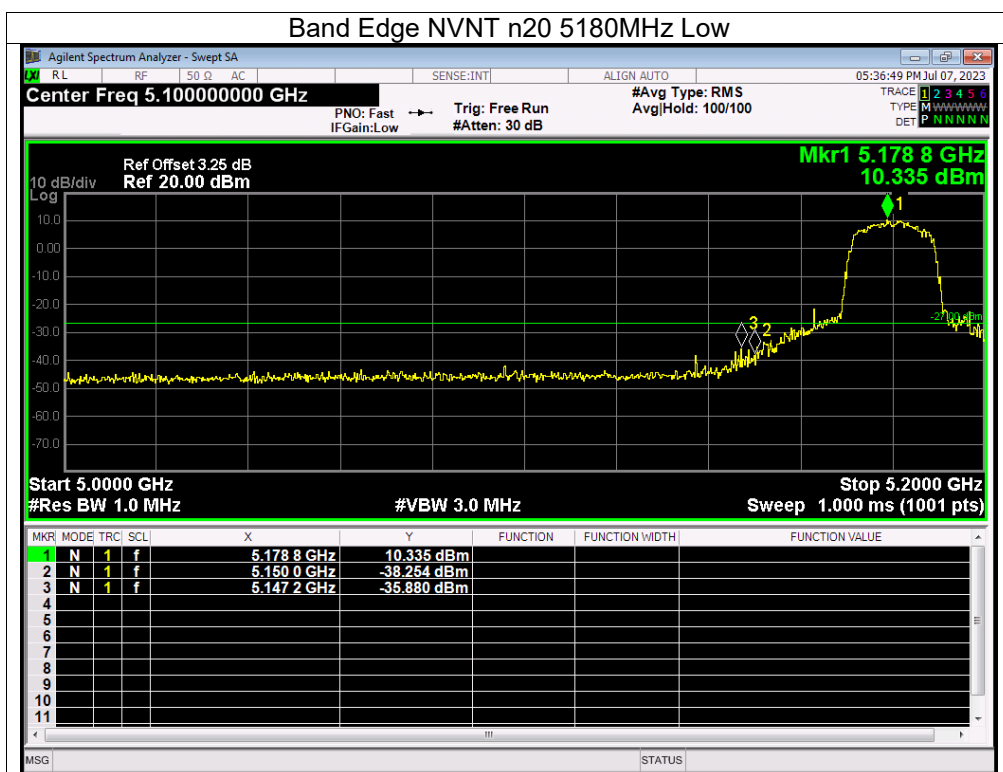
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then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

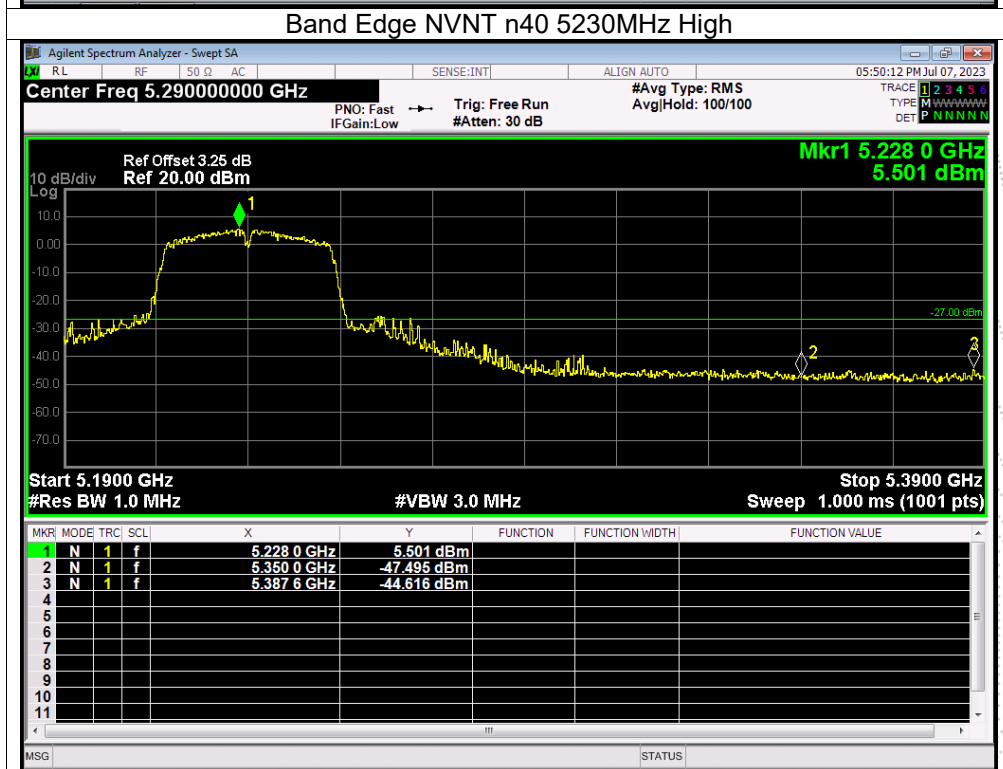
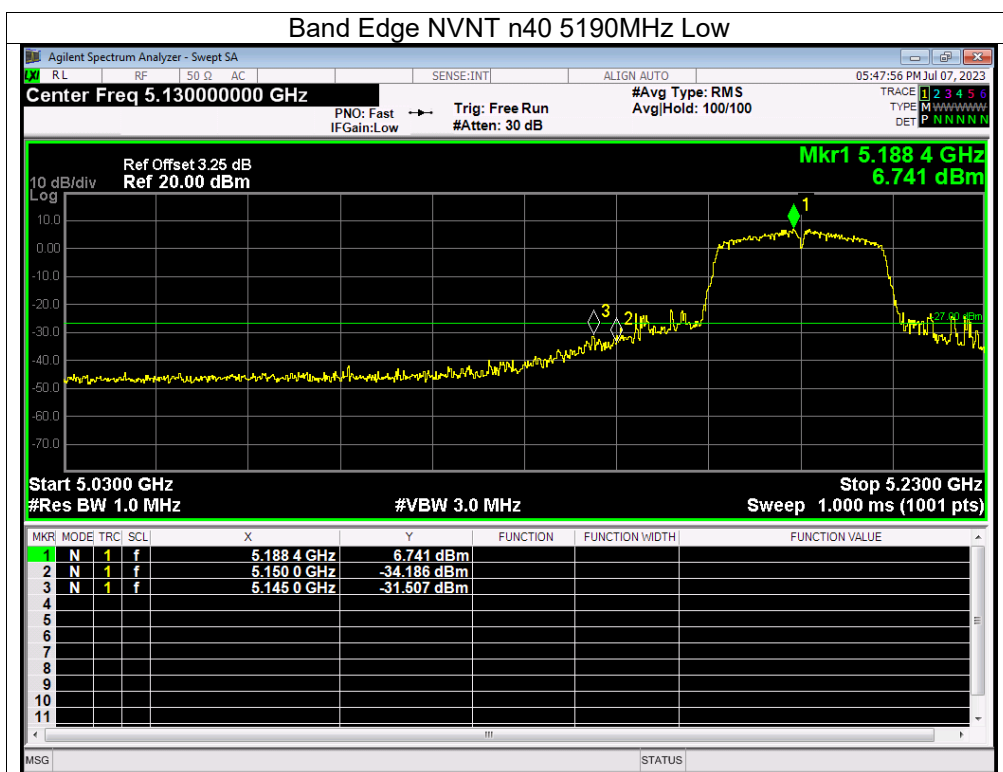
11.4 EUT Operating Conditions

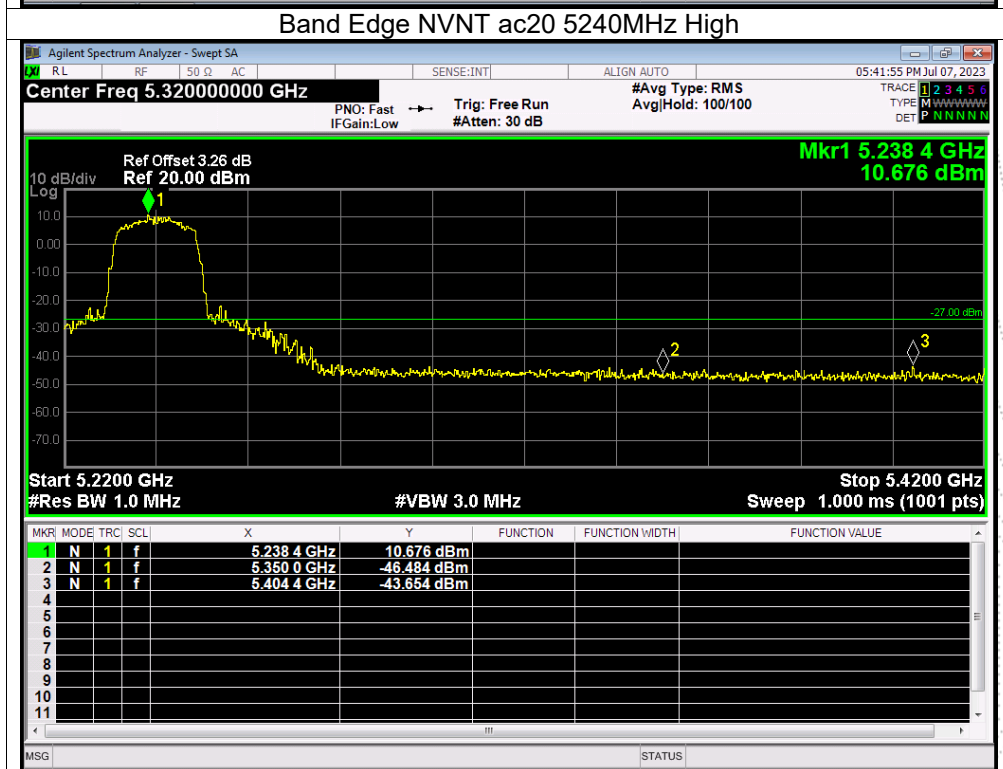
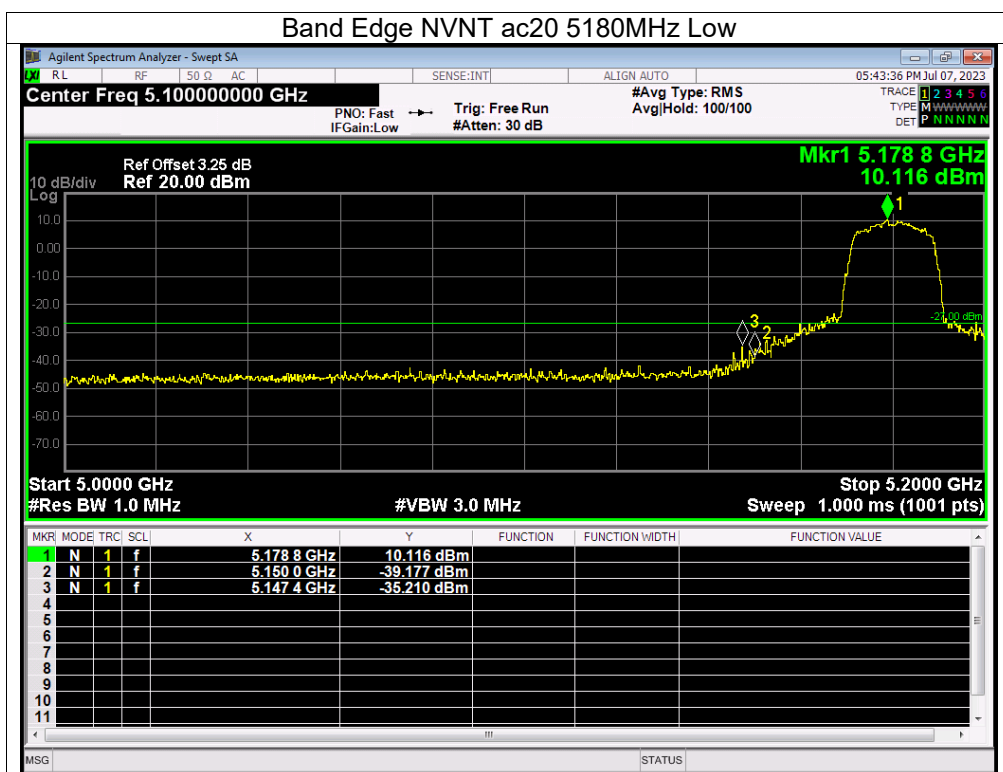
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data

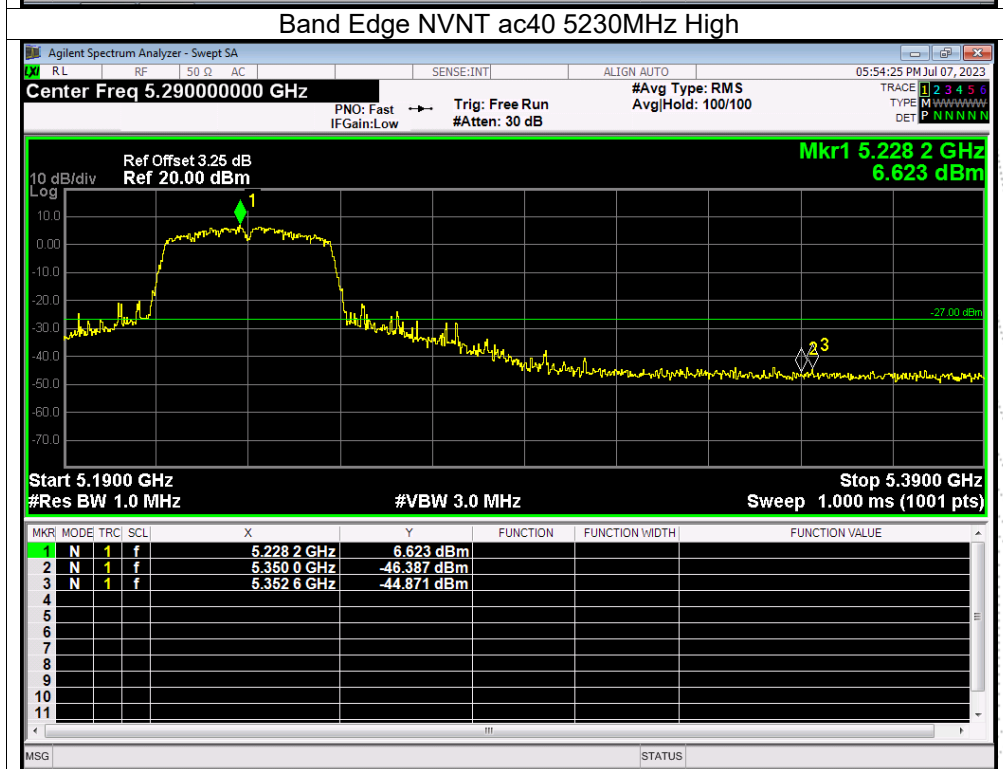
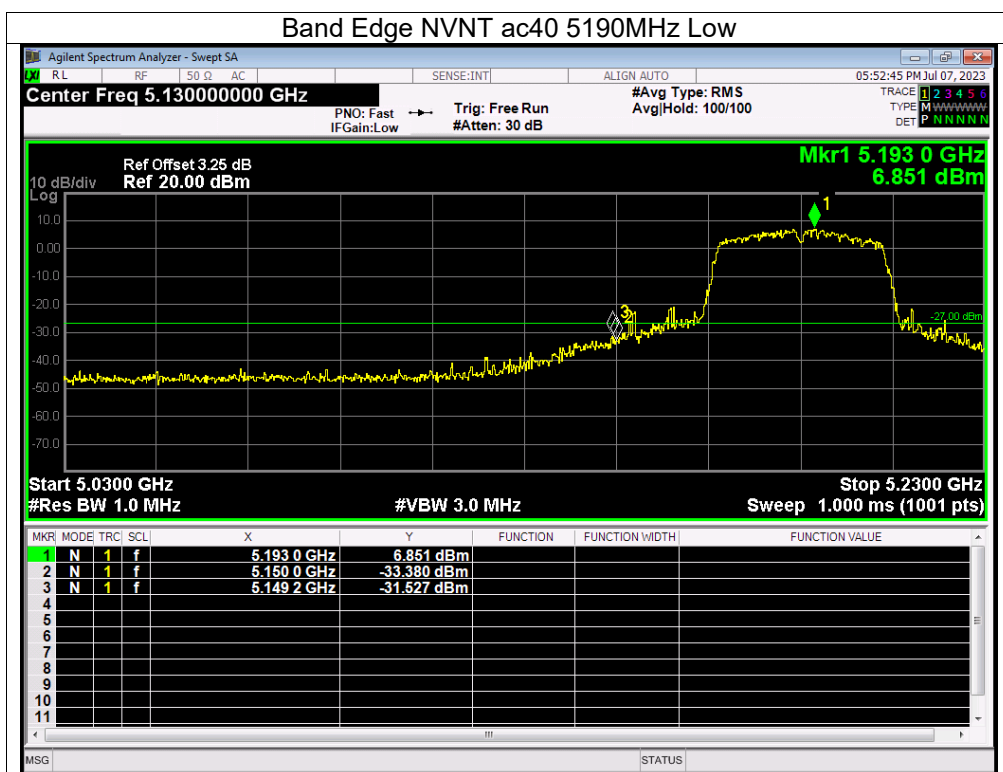
11.5 Test Result

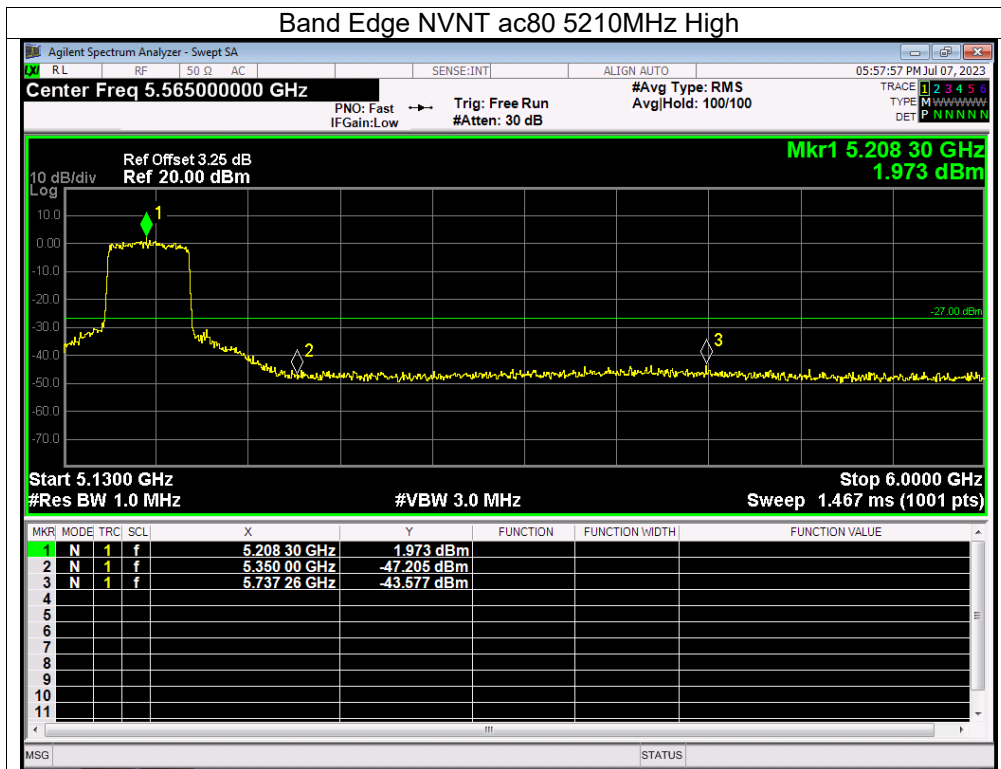






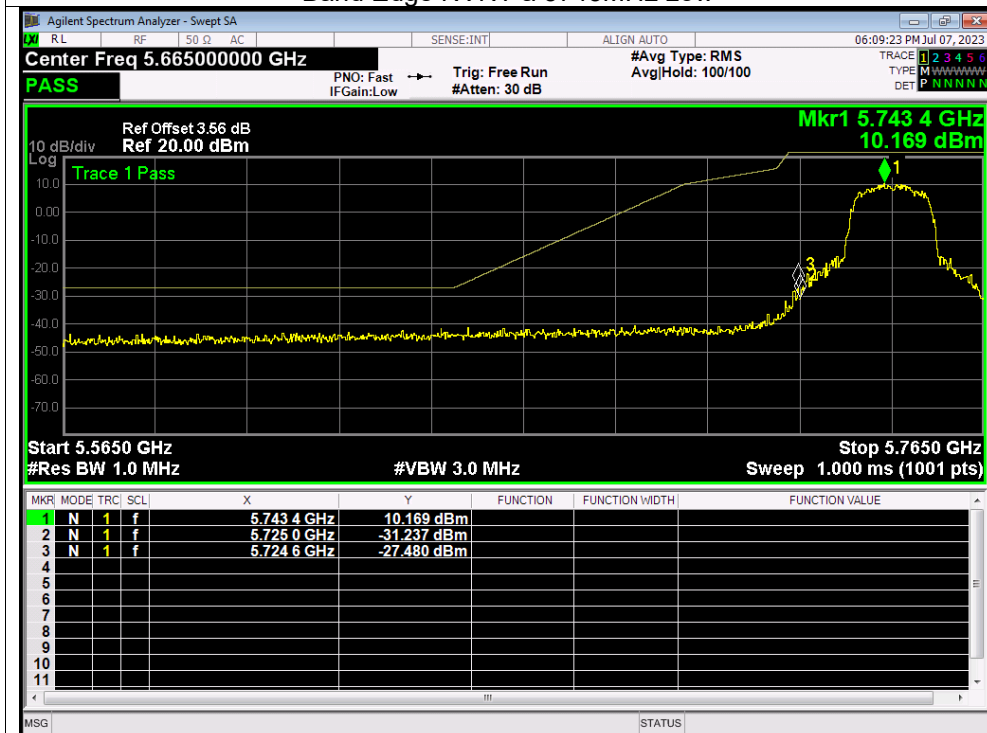




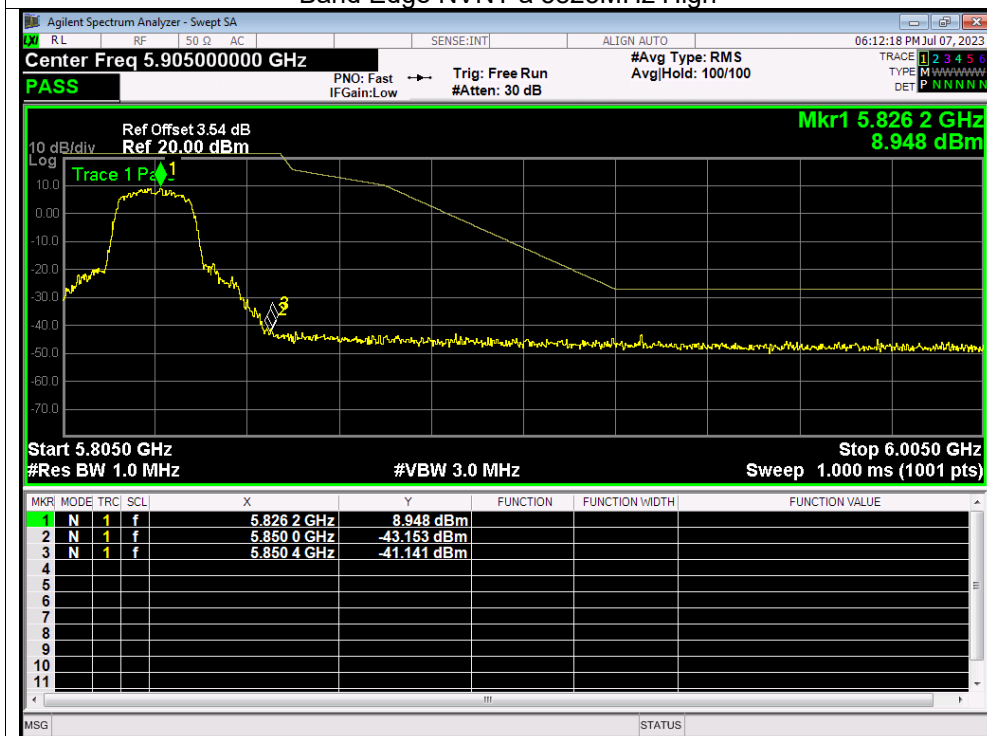


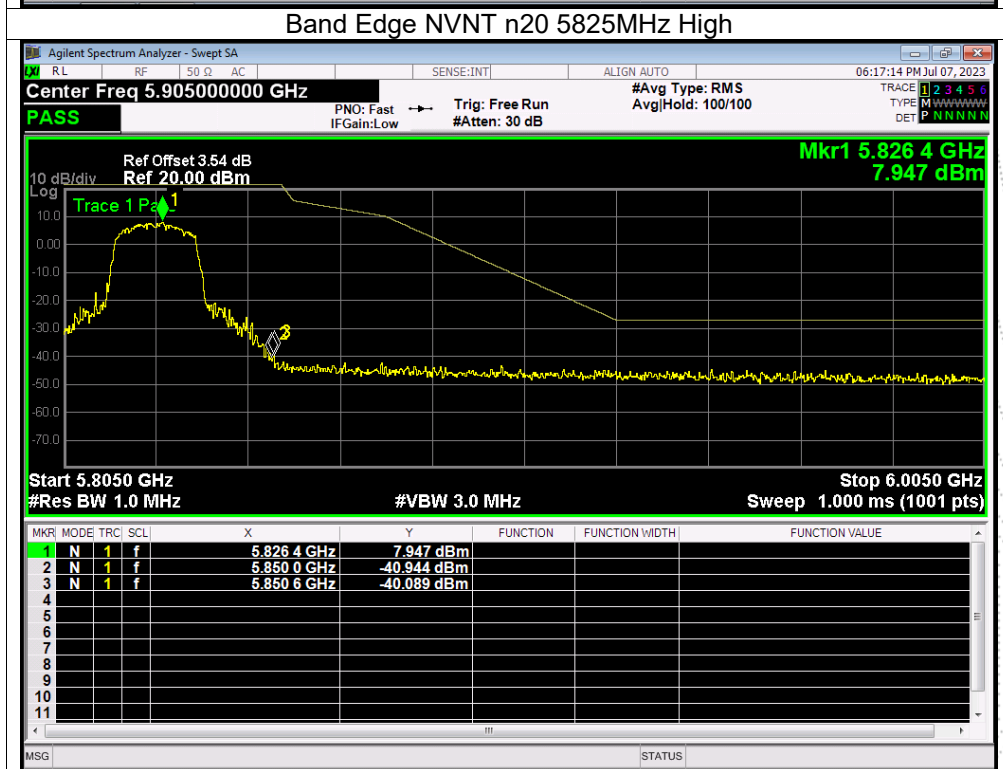
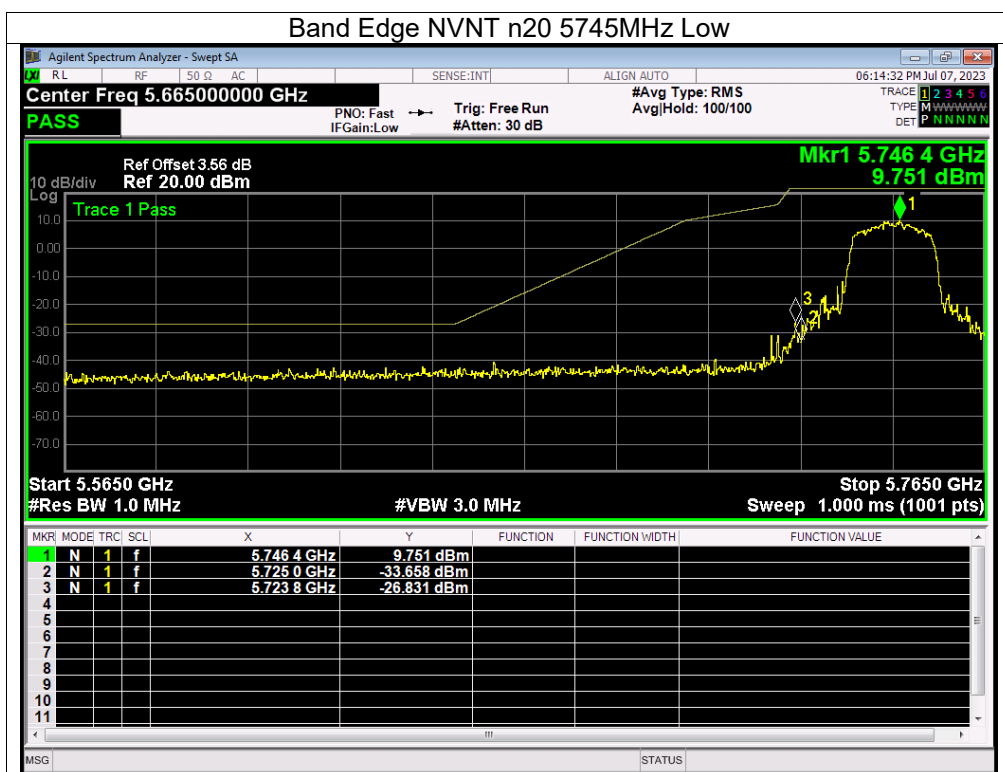
Test Graphs

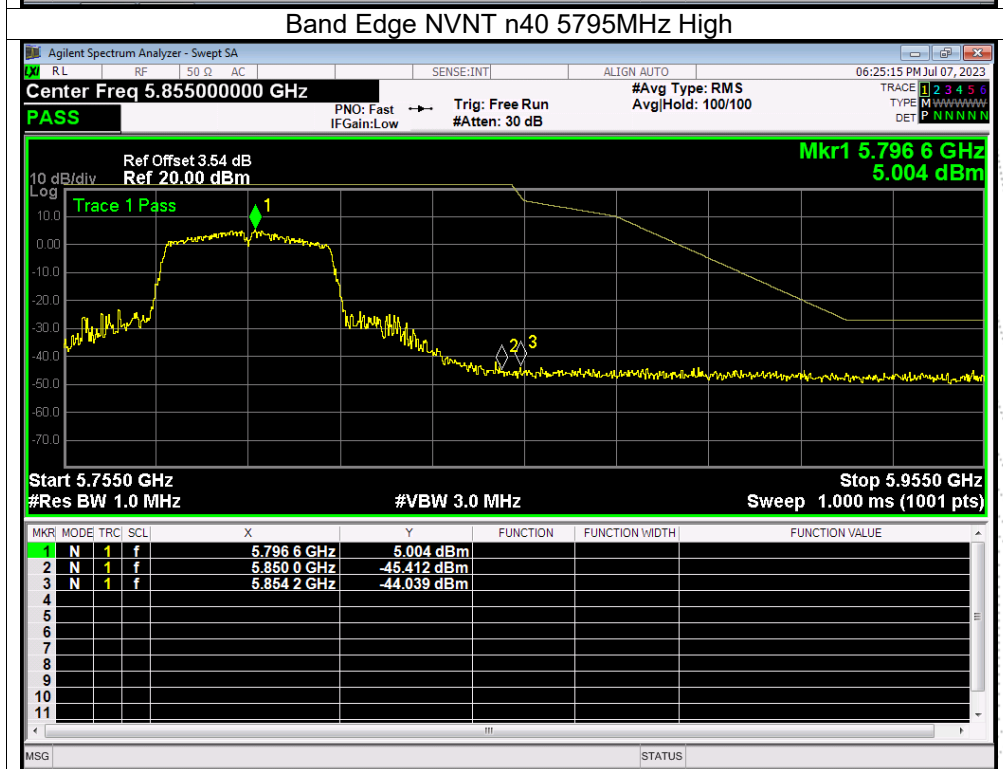
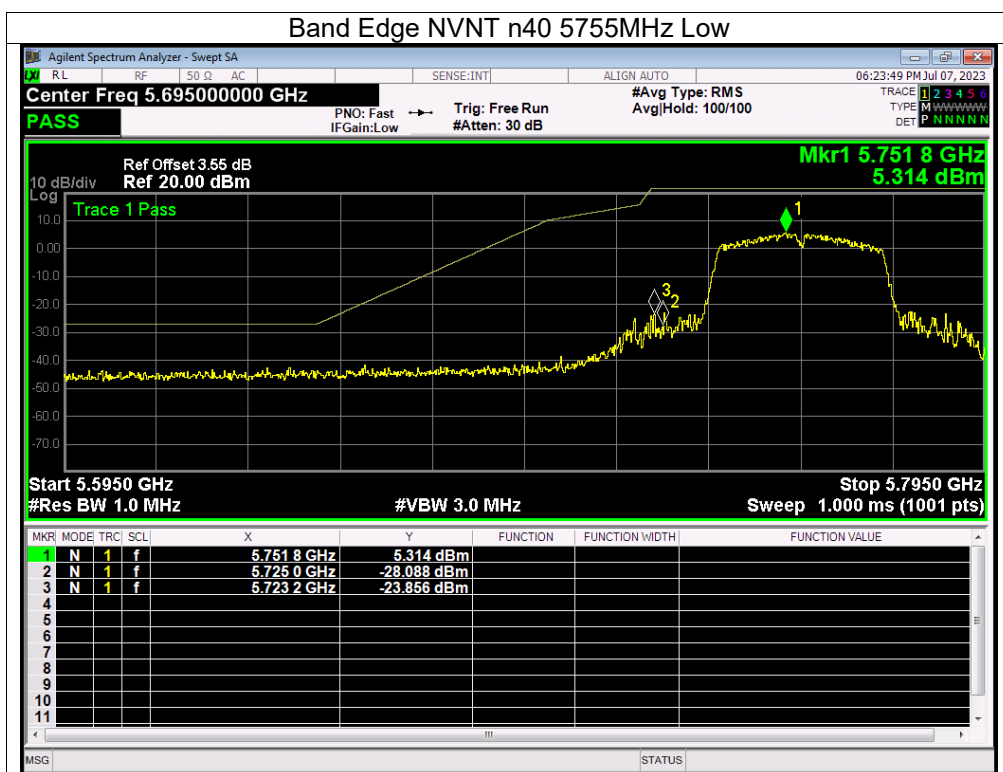
Band Edge NVNT a 5745MHz Low

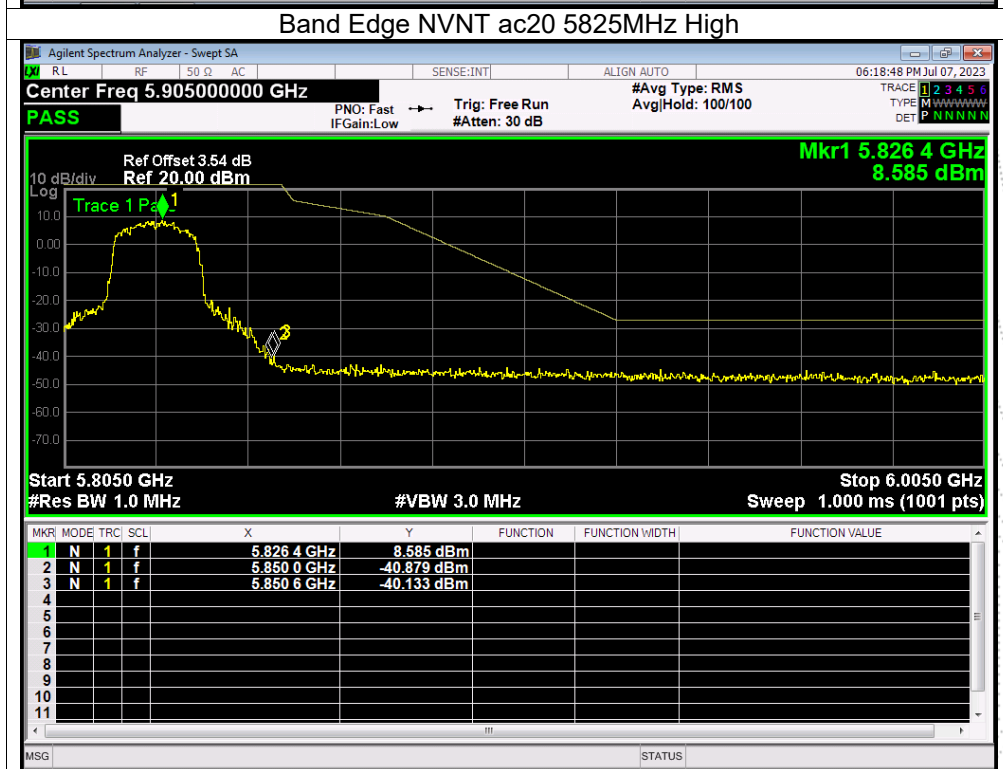
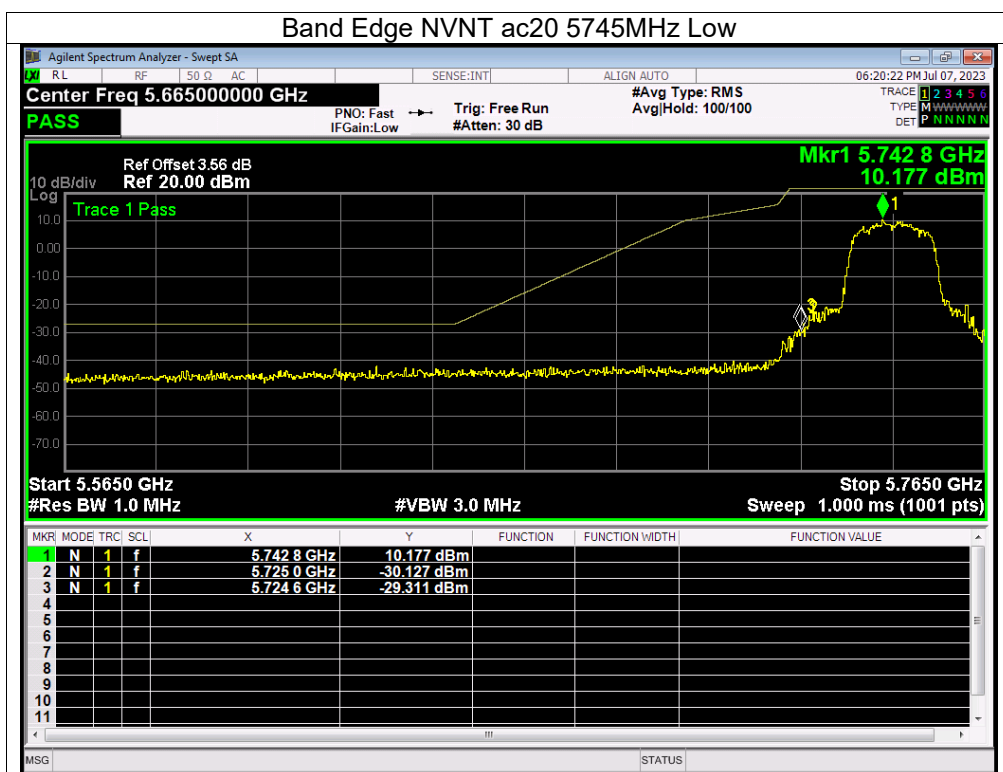


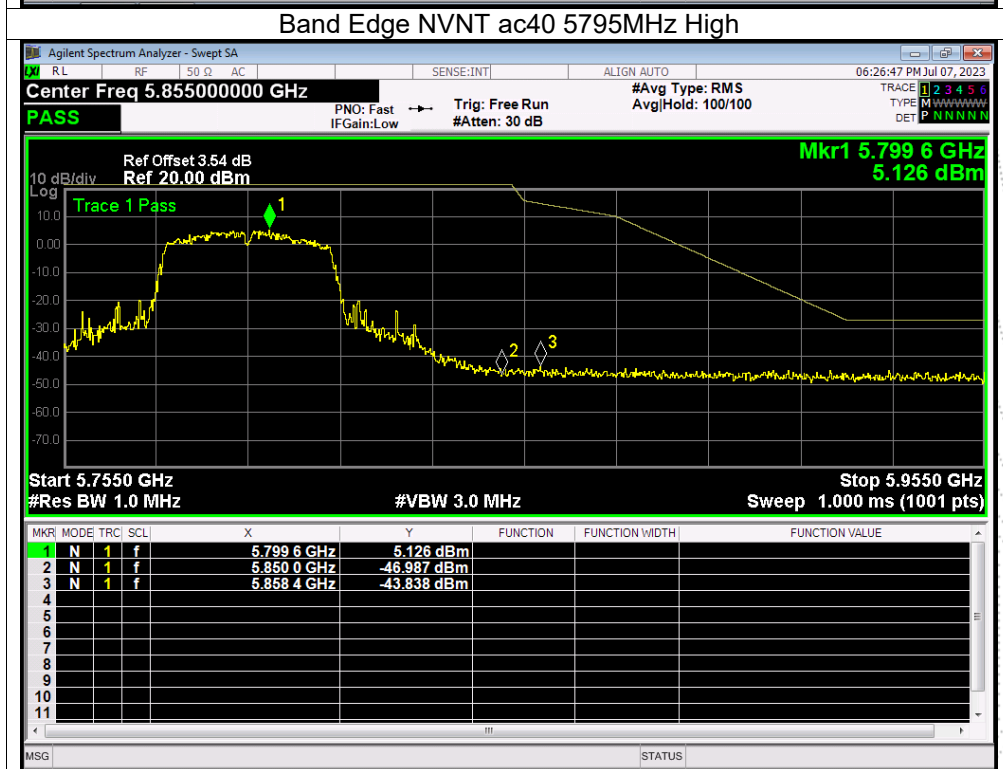
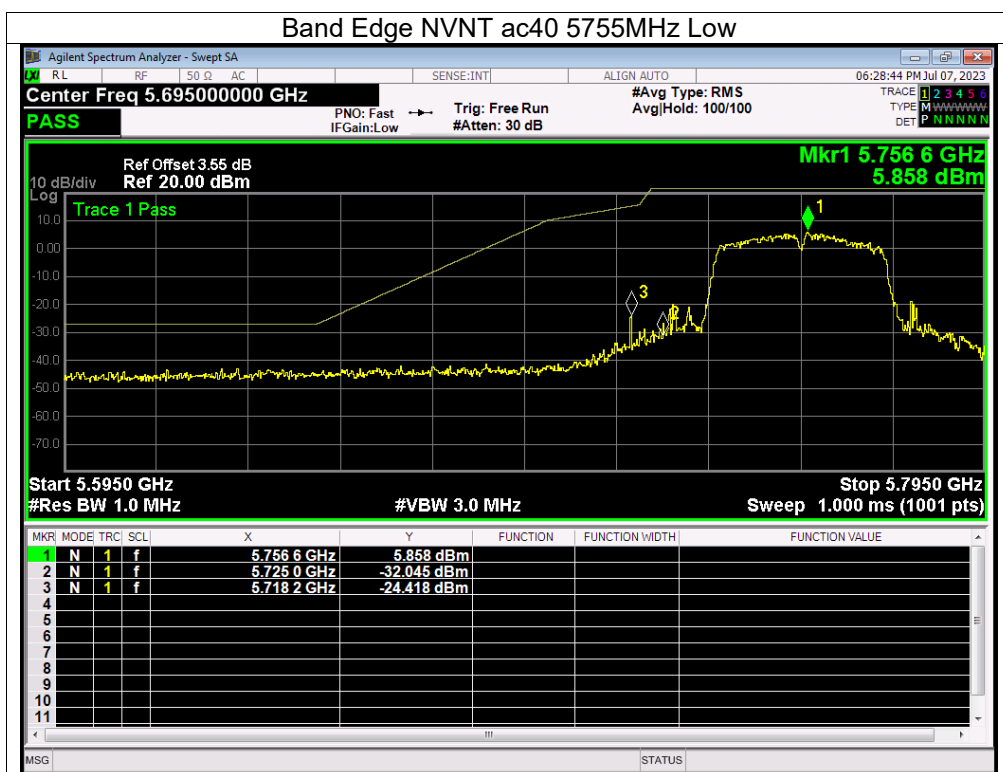
Band Edge NVNT a 5825MHz High

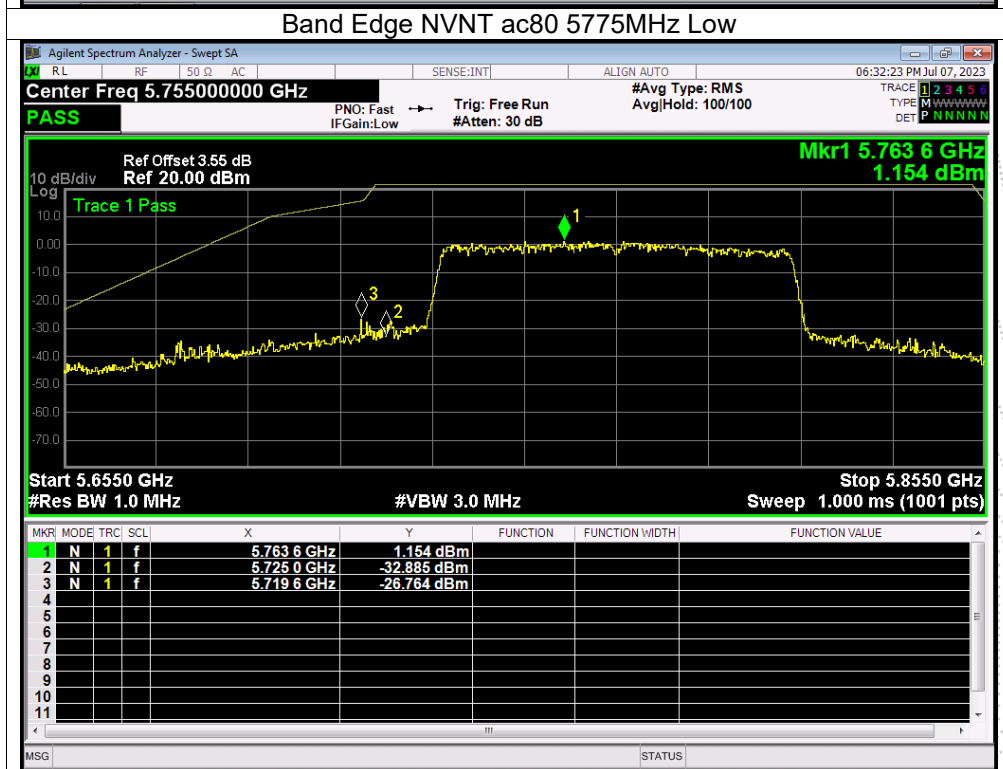
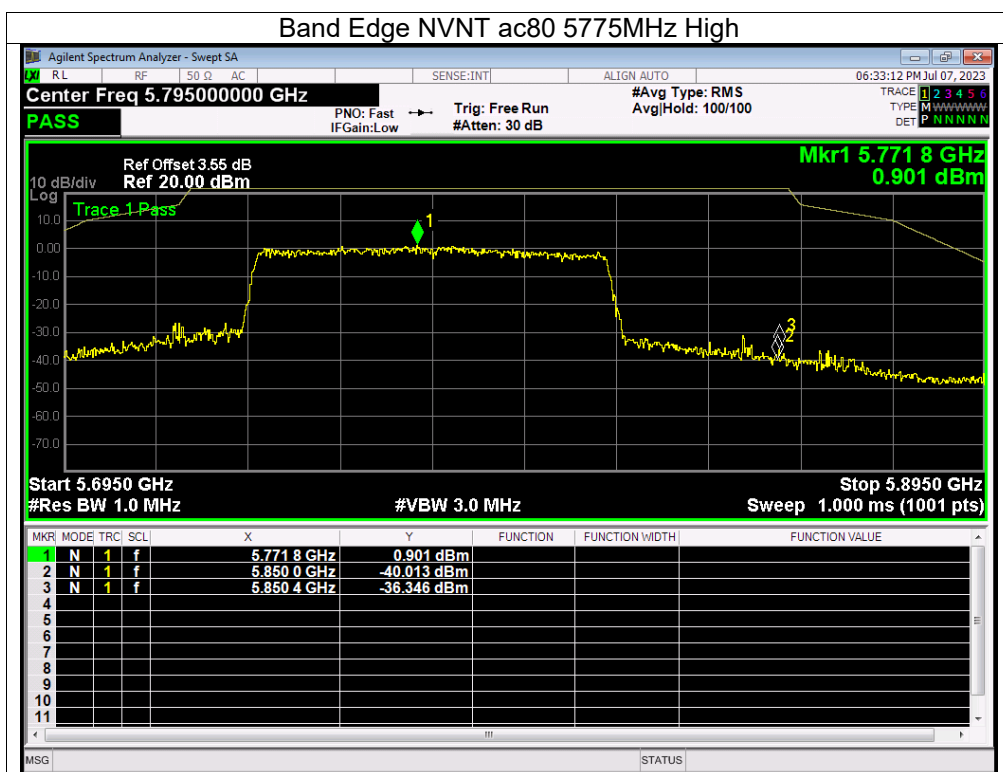












12. Spurious RF Conducted Emissions

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..

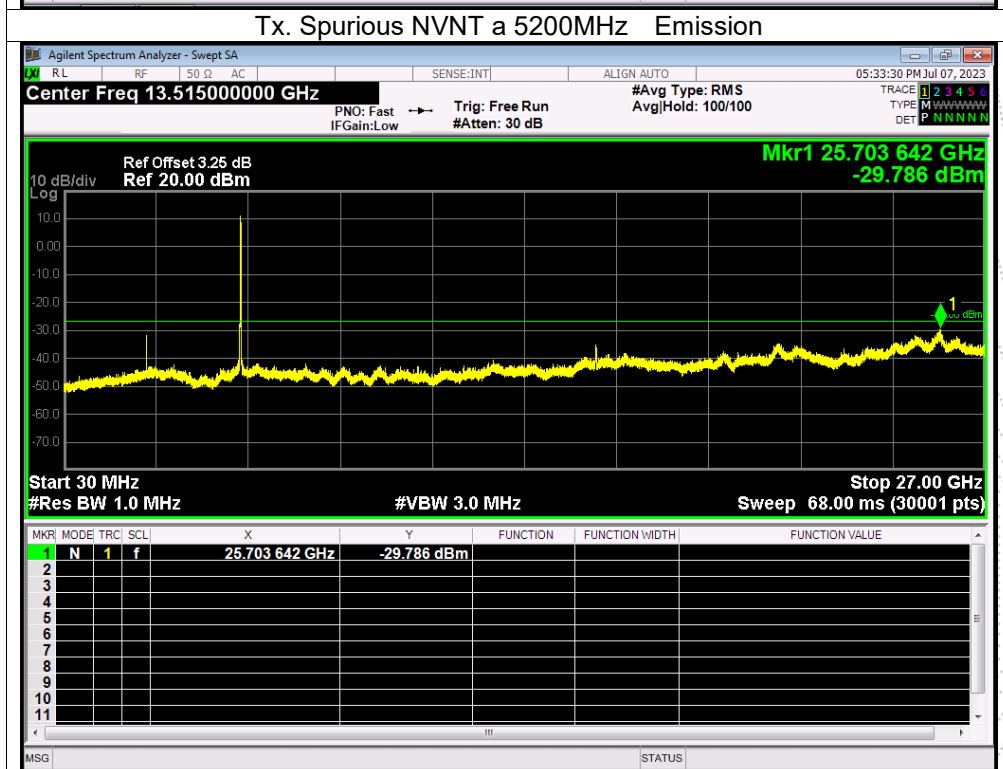
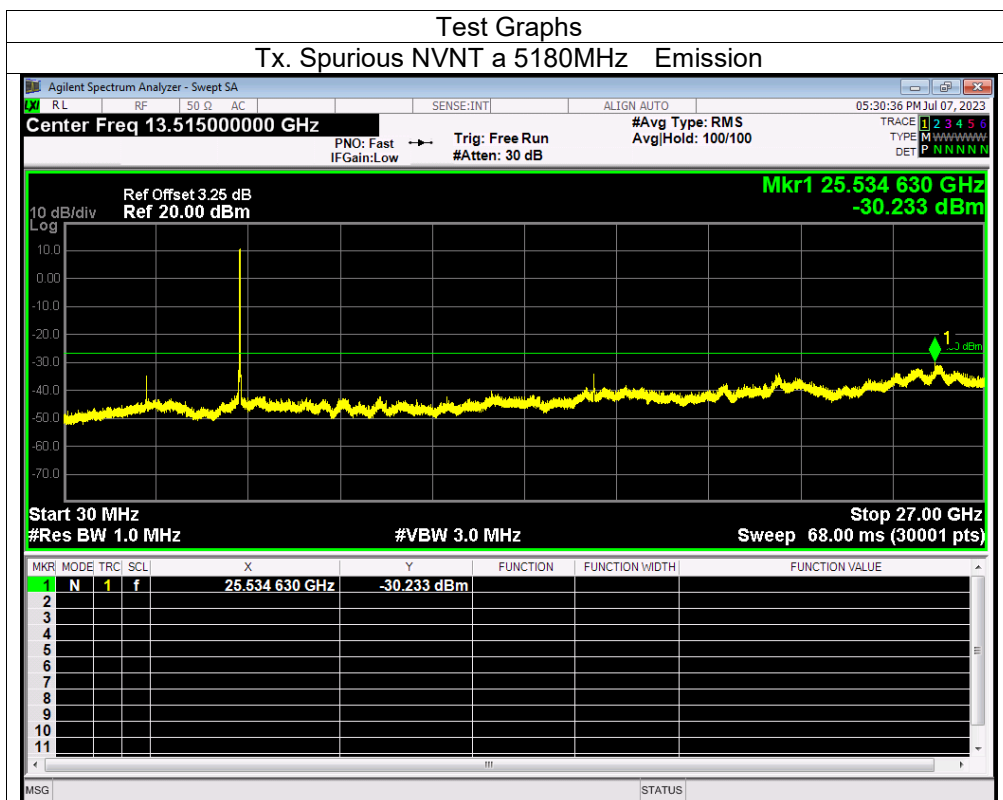
12.3 Test Procedure

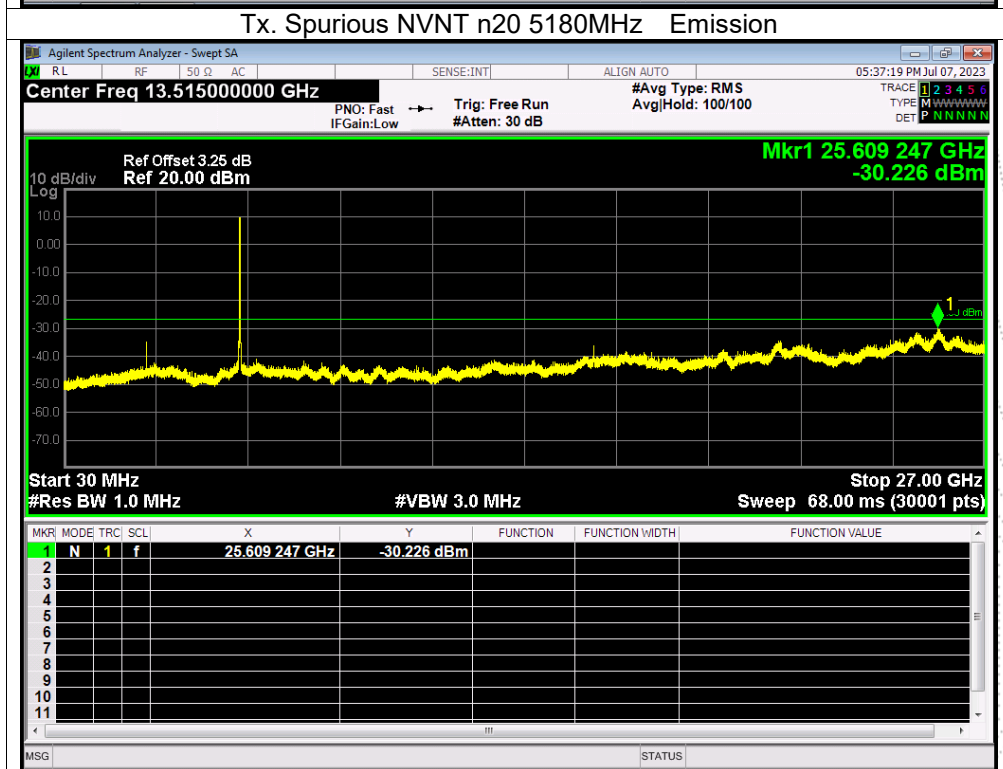
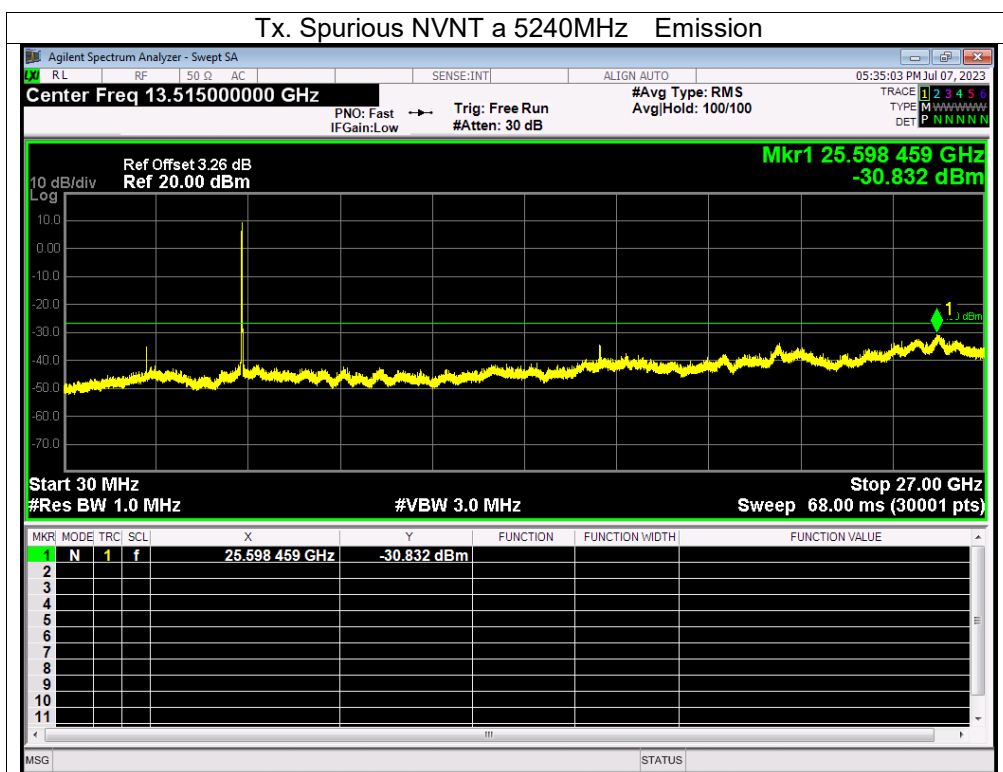
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then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

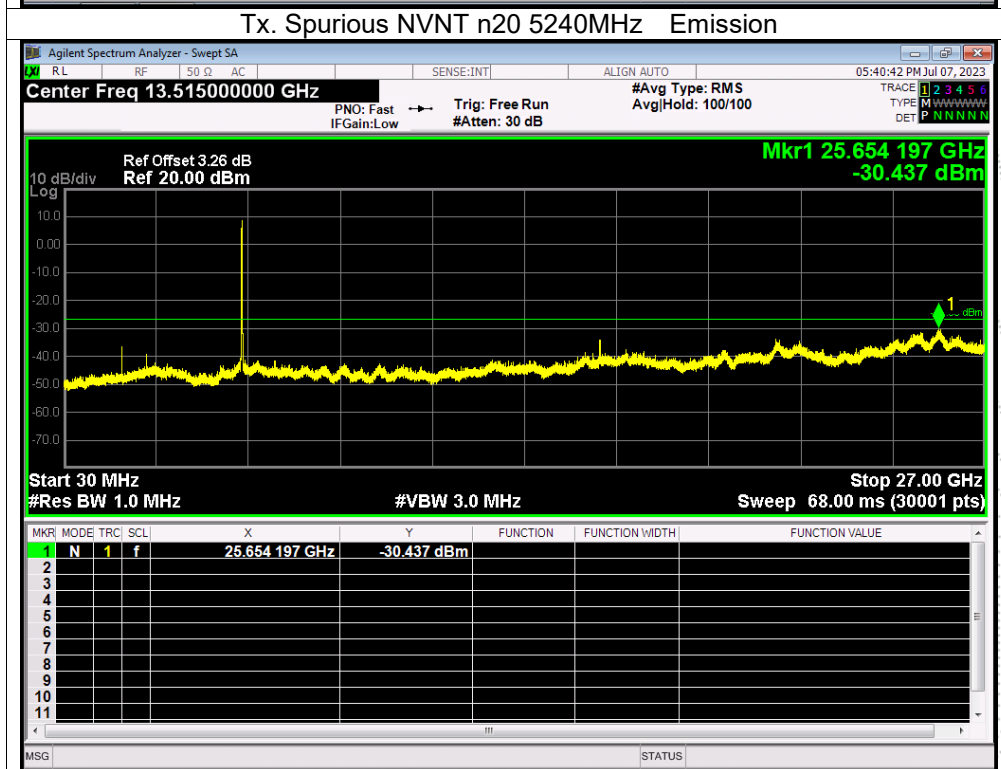
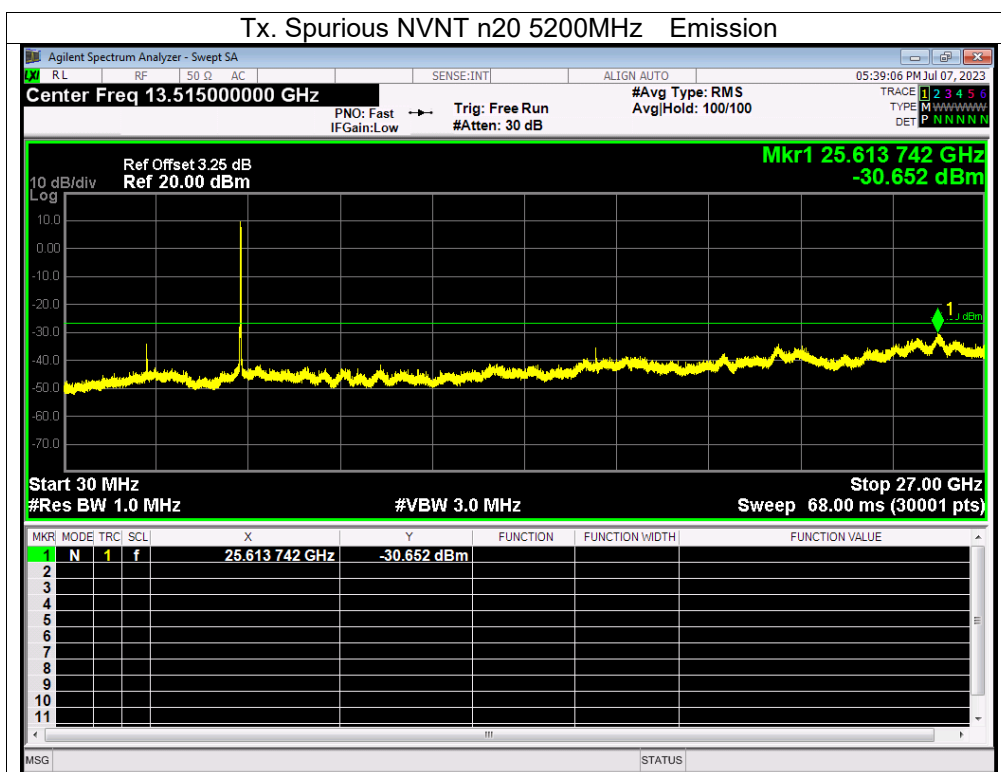
12.4 Test Result

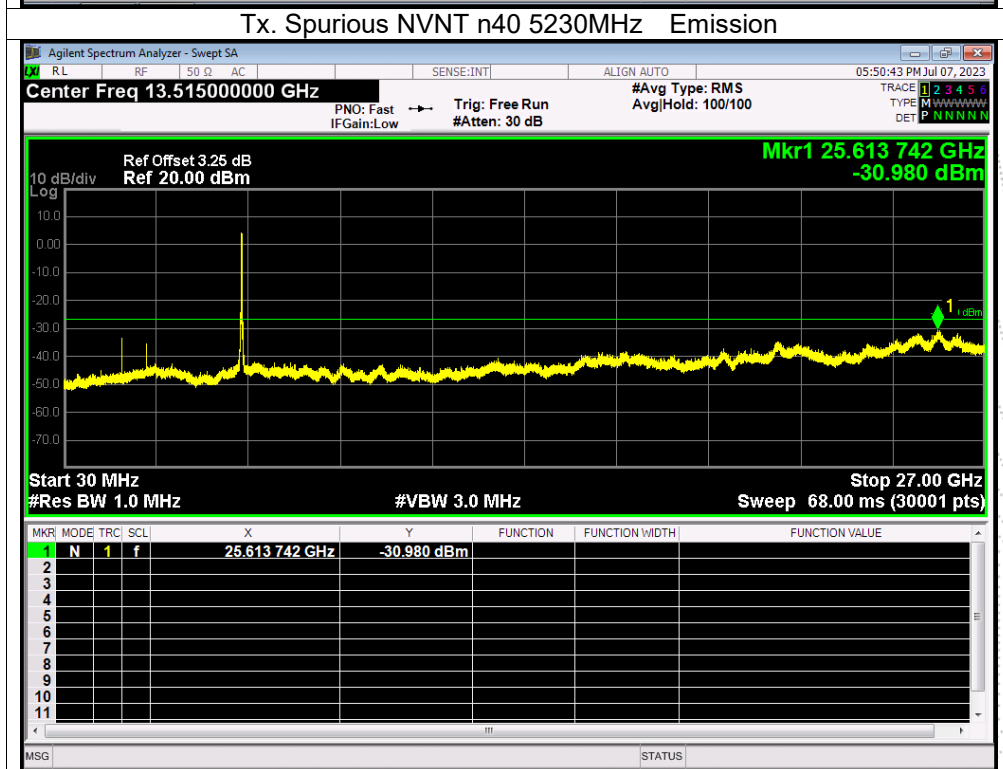
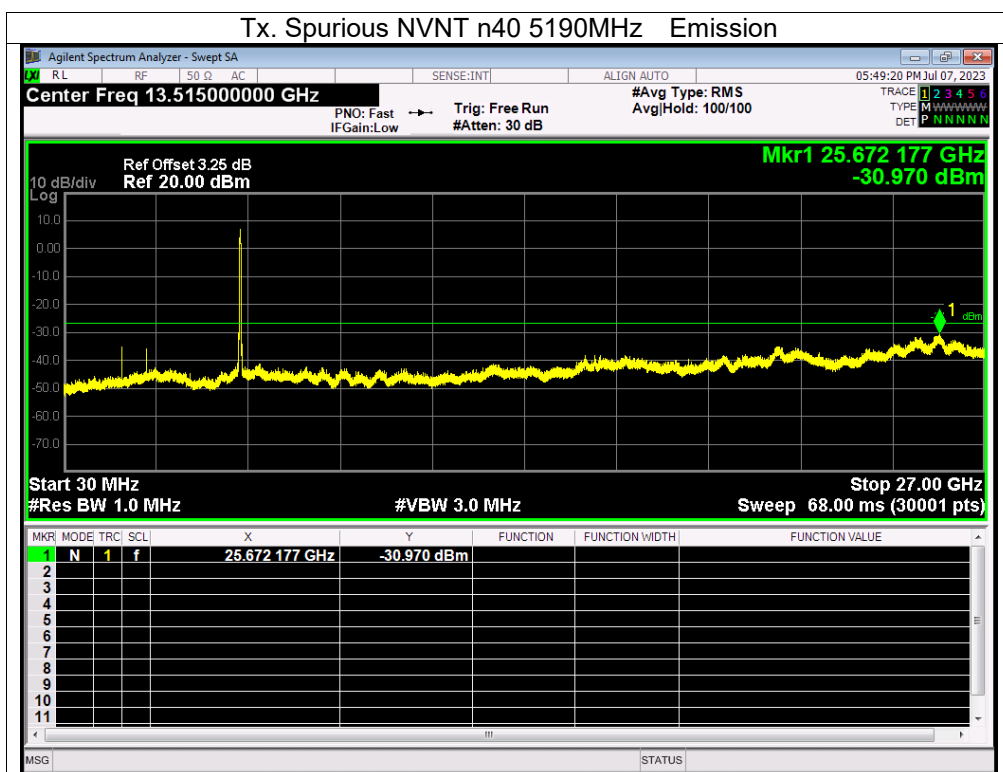
Remark: The measurement frequency range is from 9KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandedge measurement data.

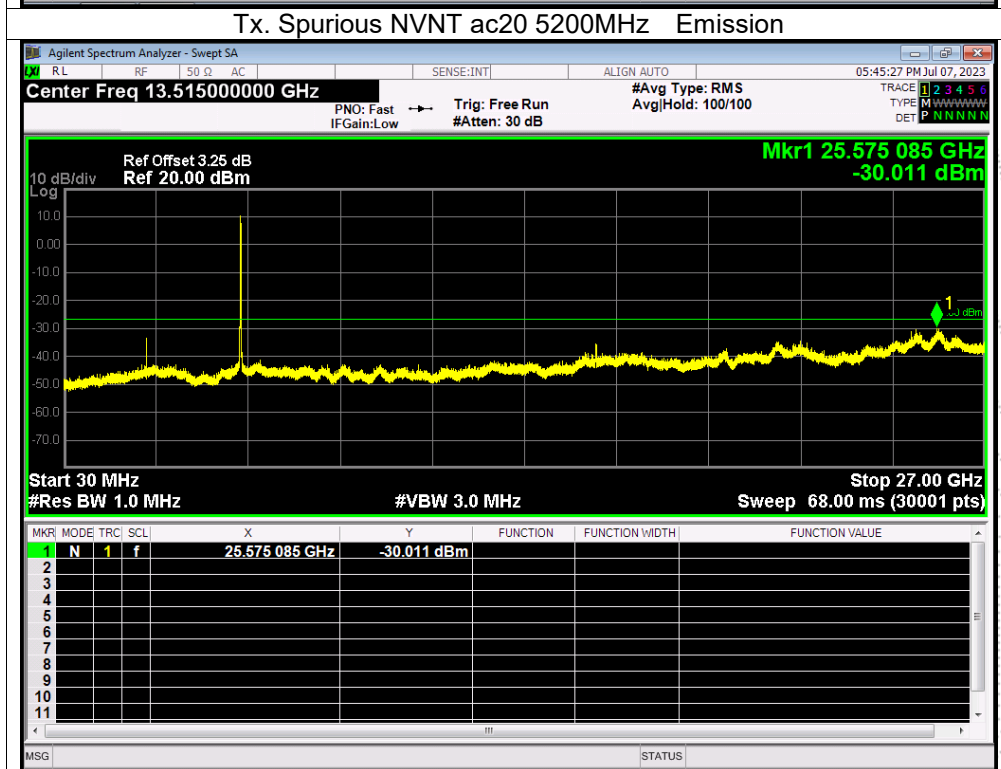
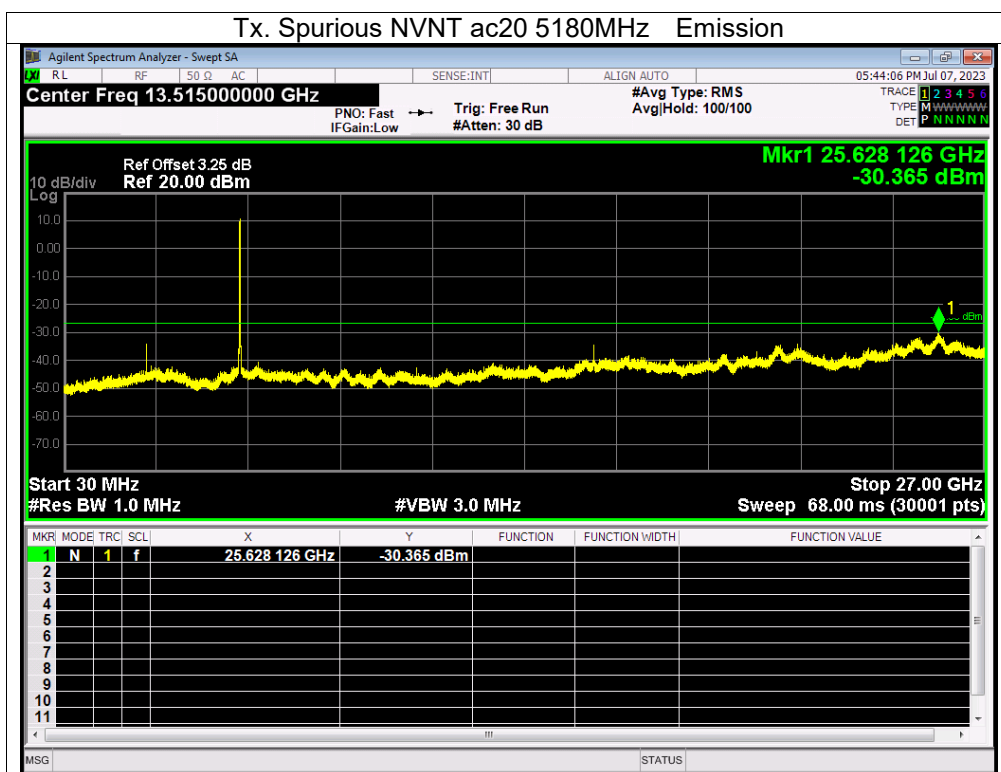
About: 26.5GHz-40GHz, The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

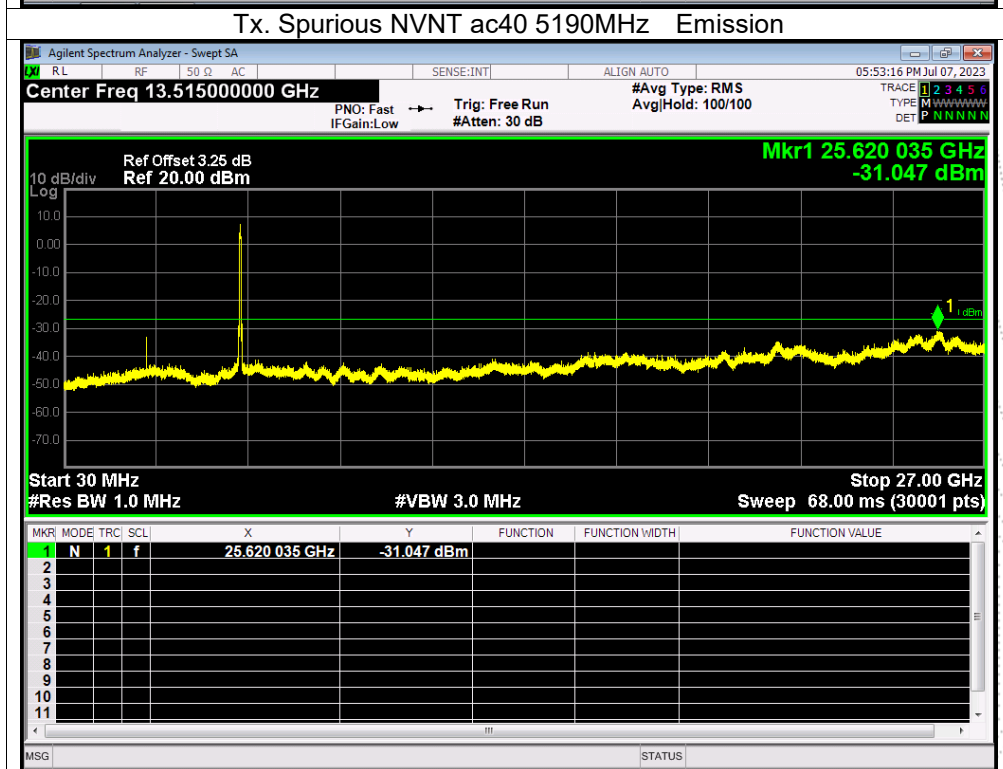
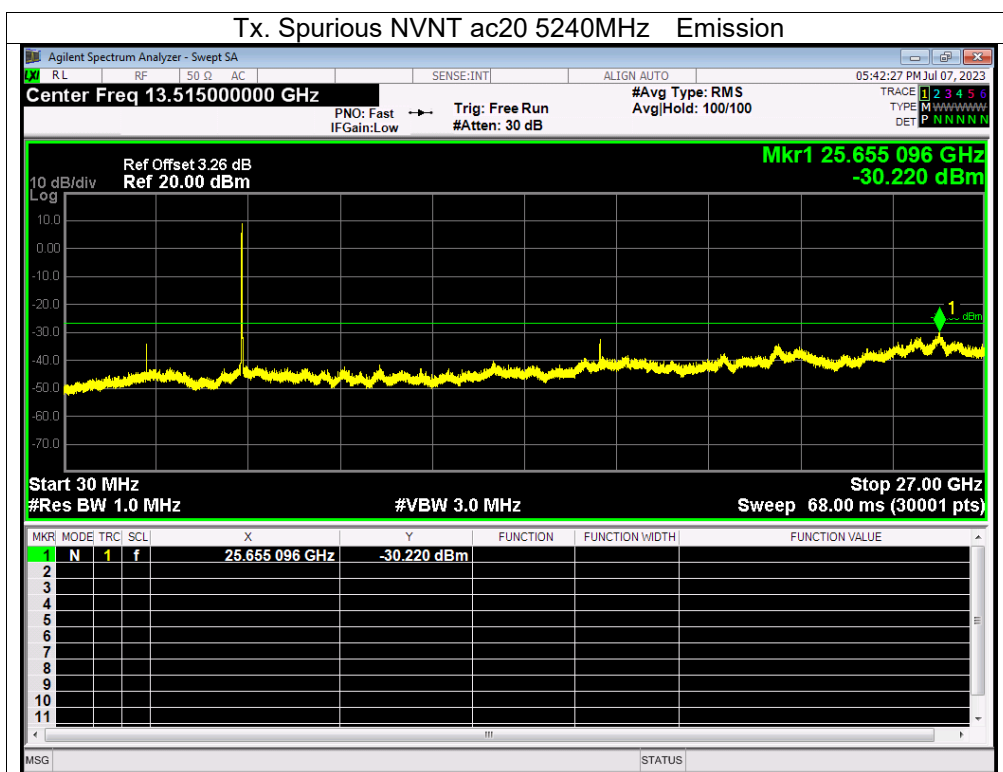


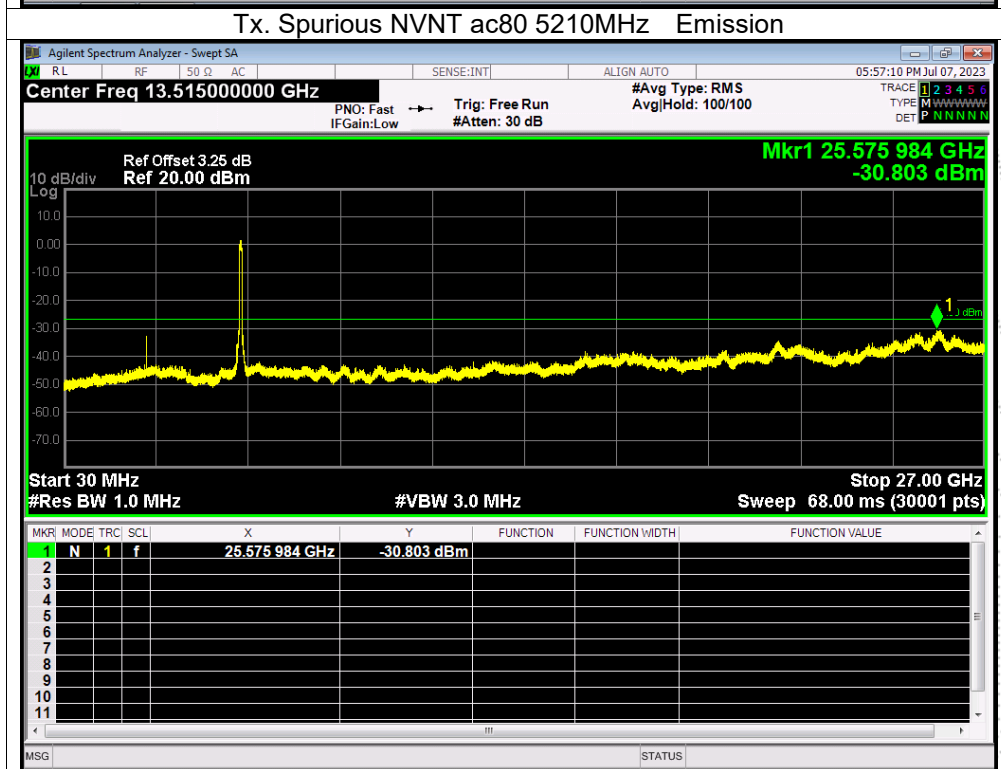
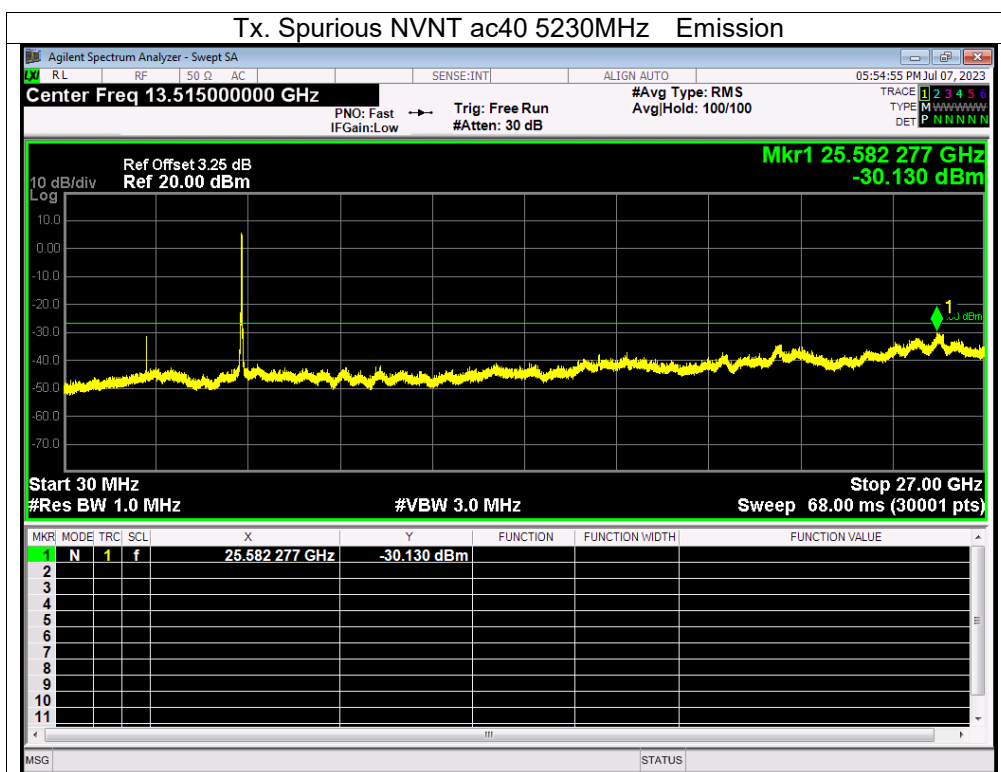


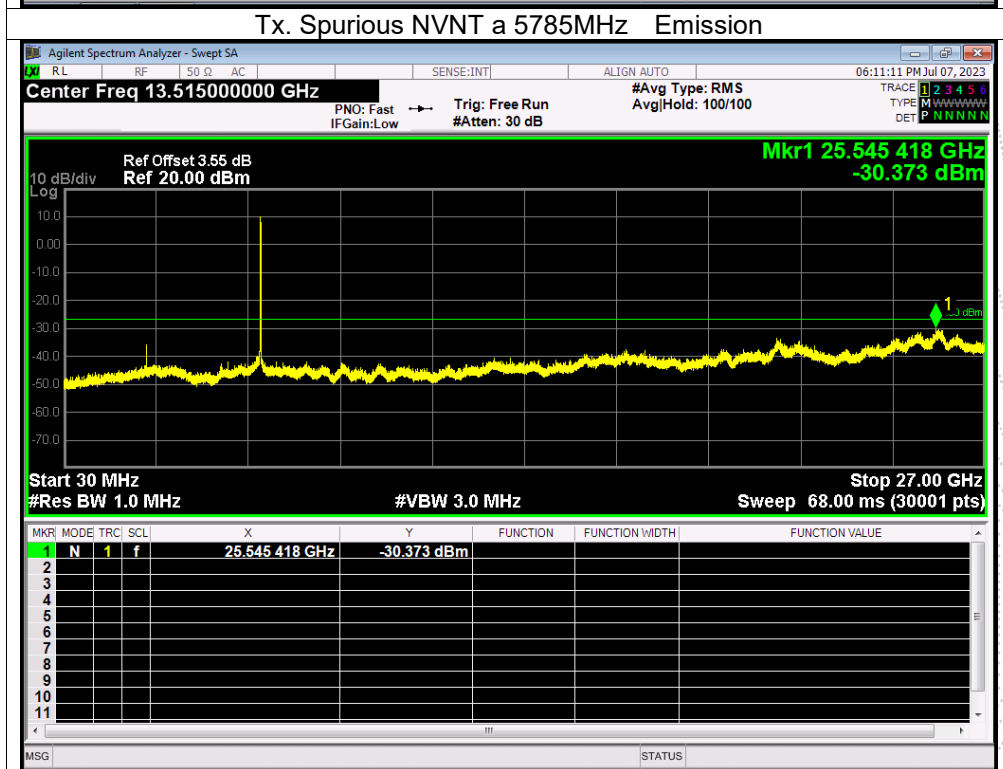
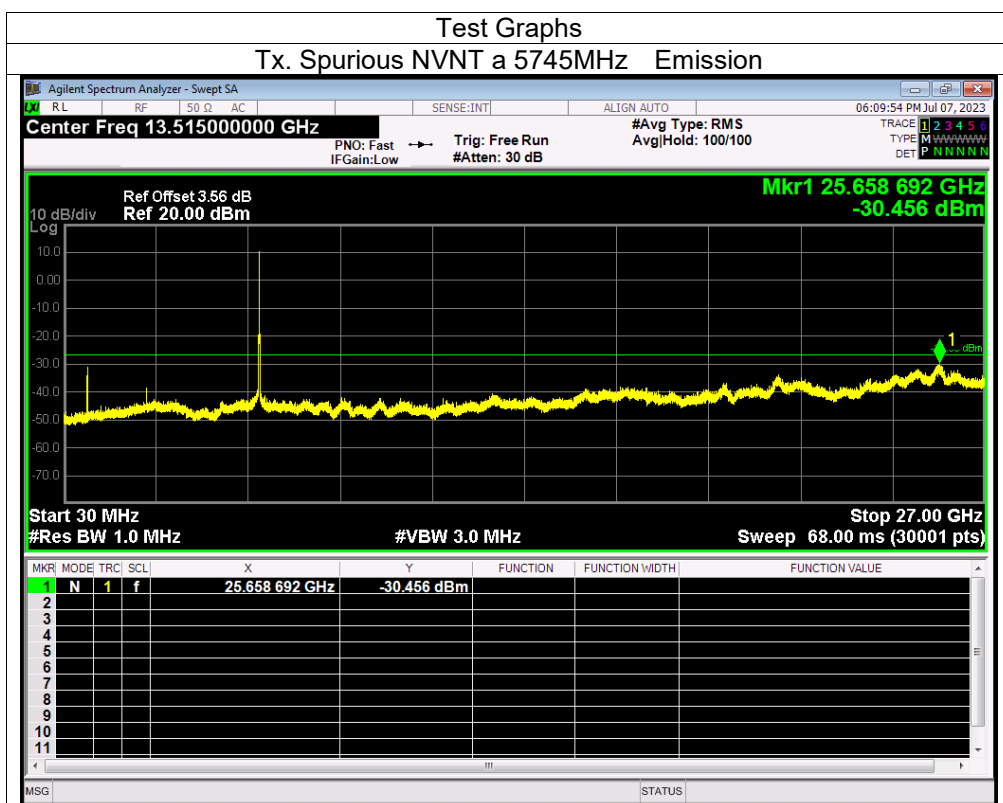


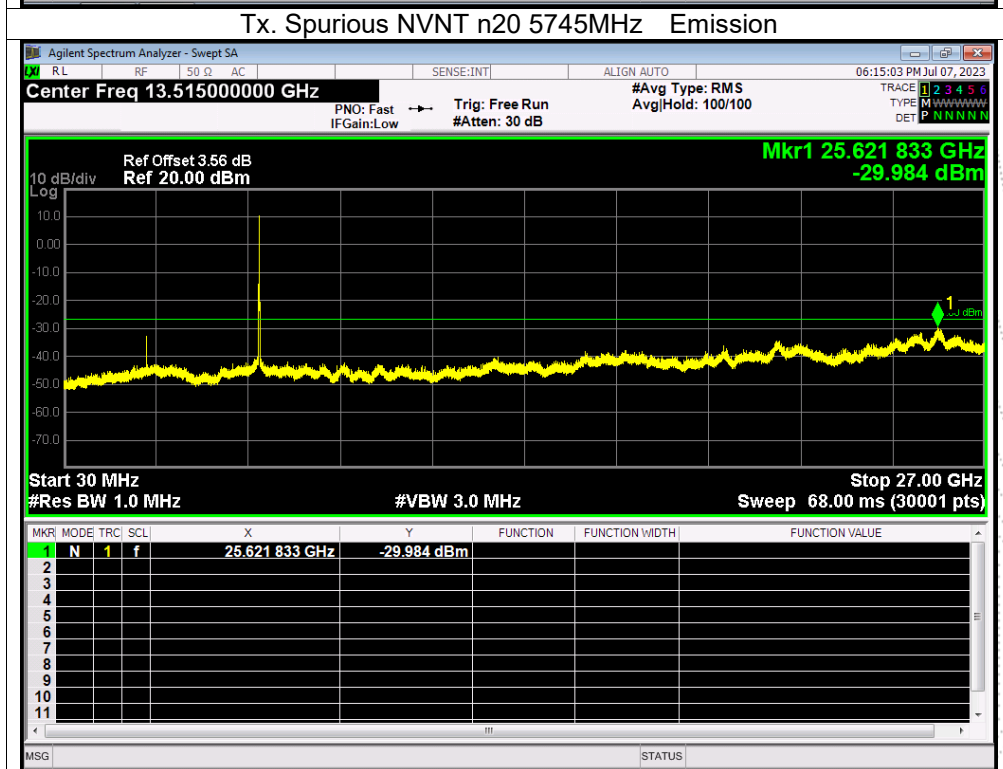
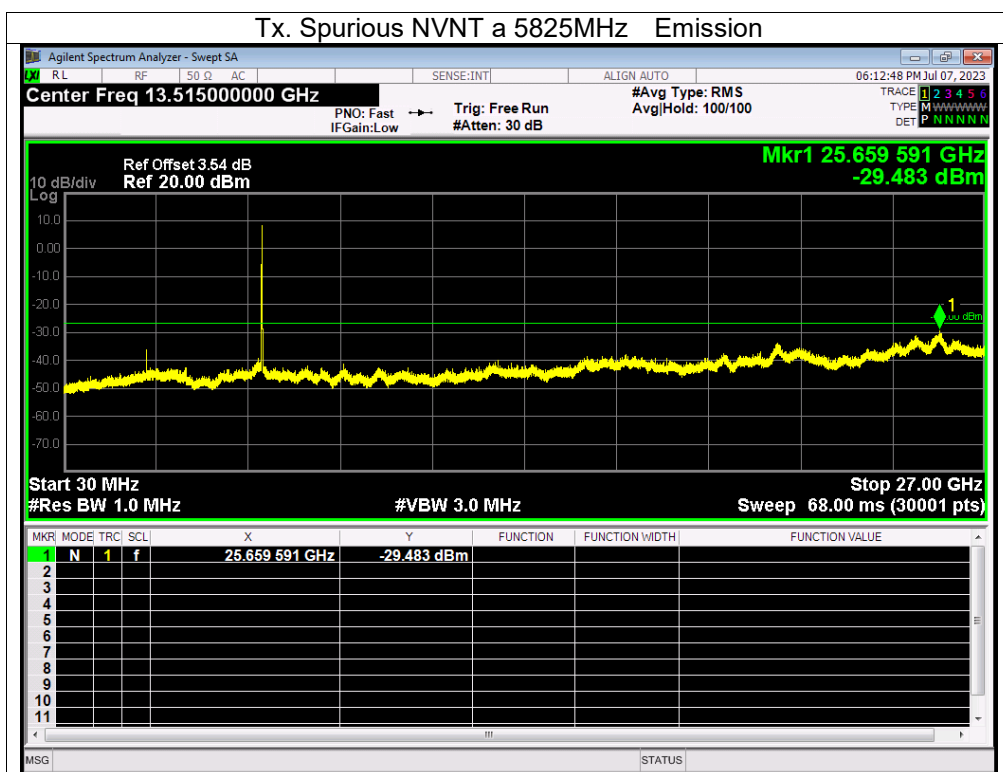


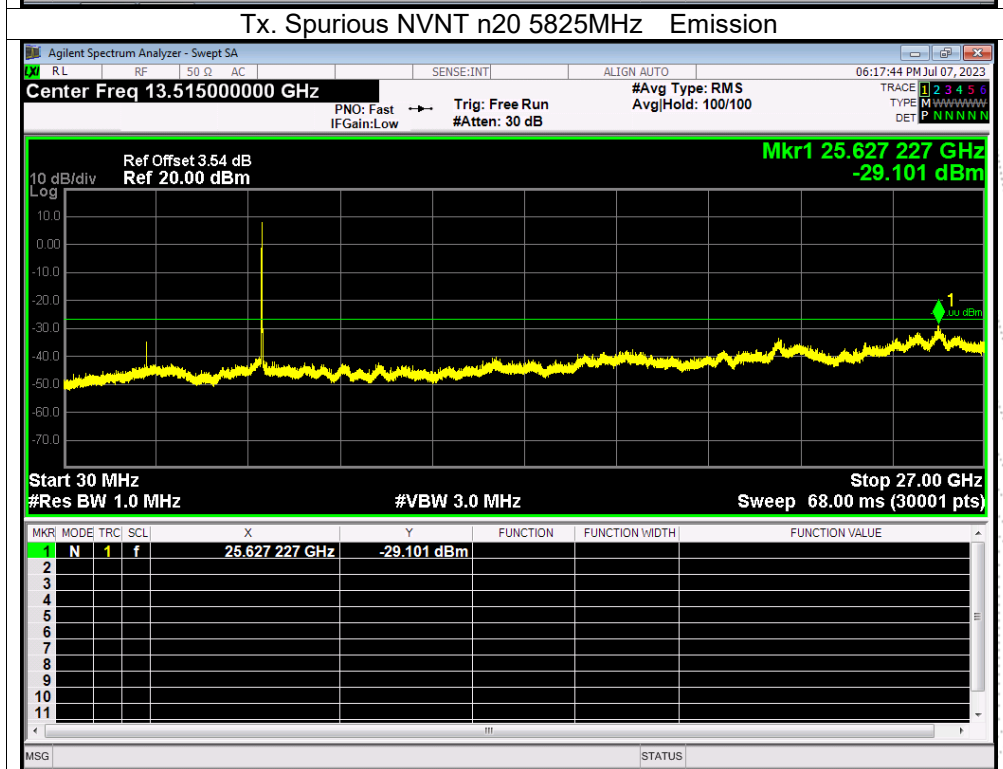
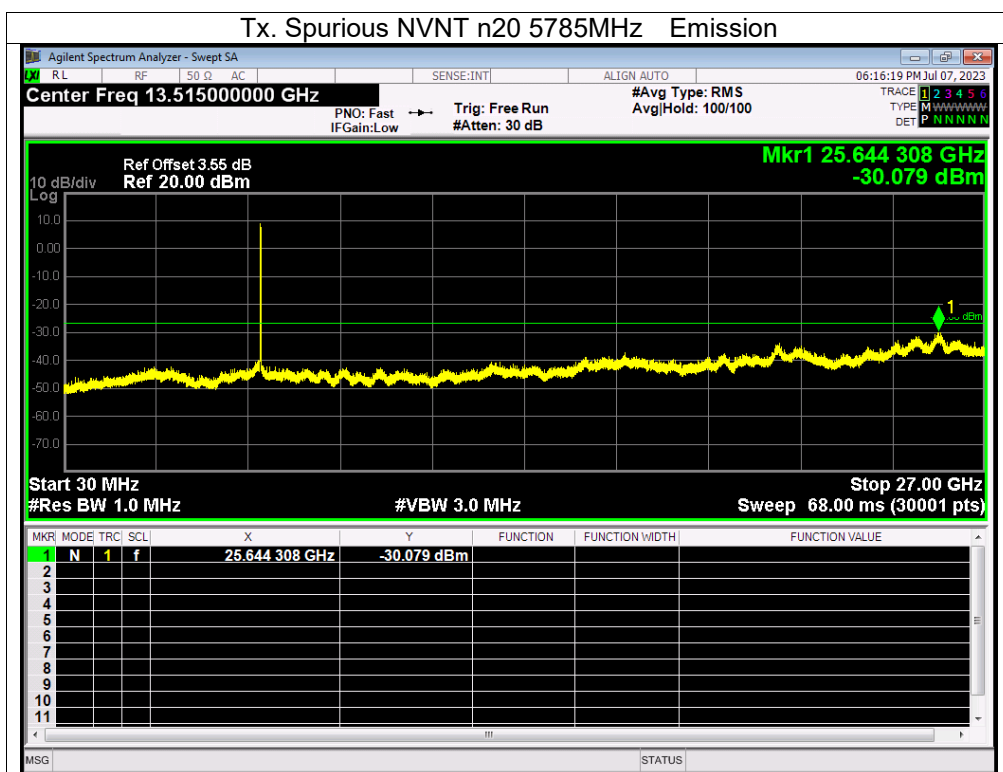


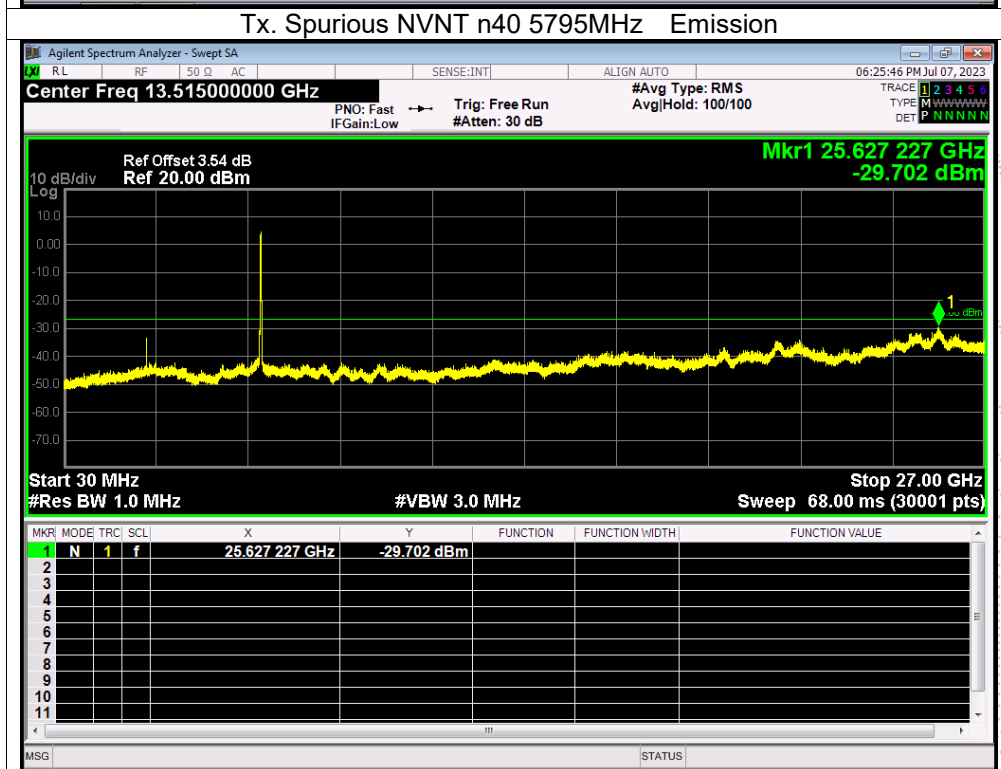
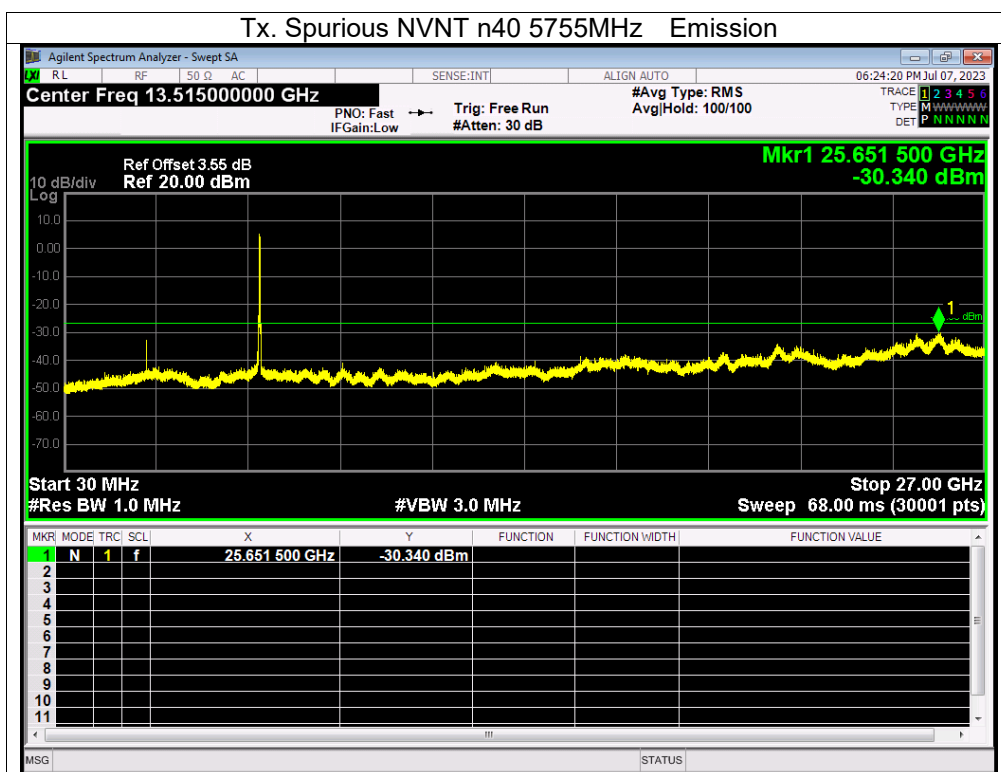


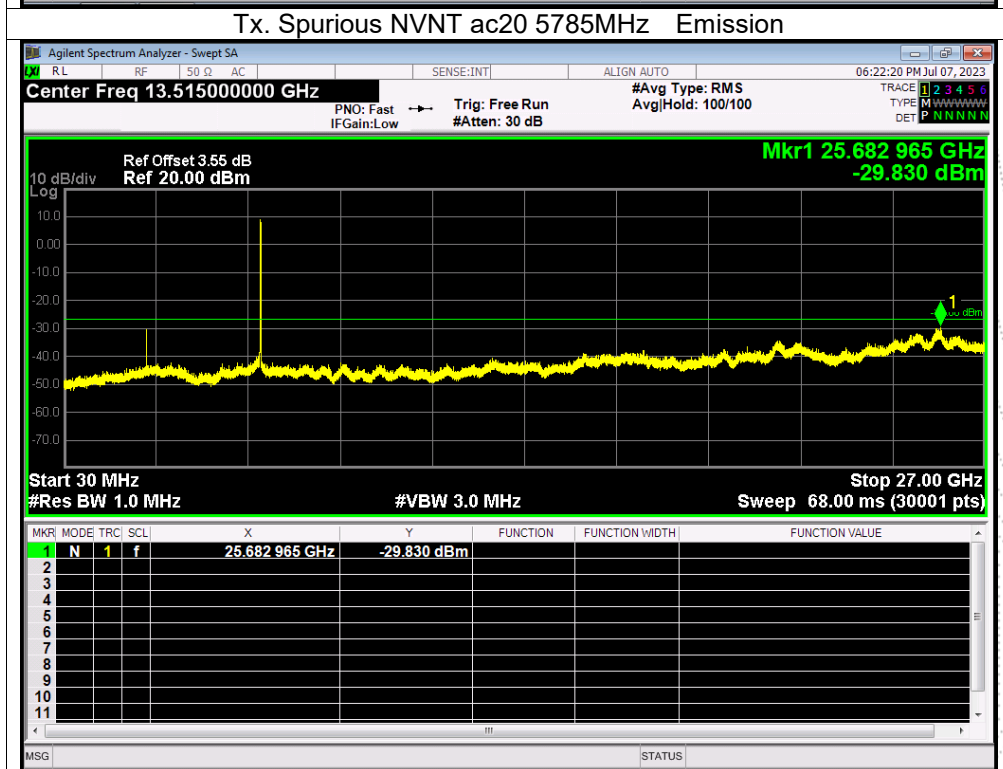
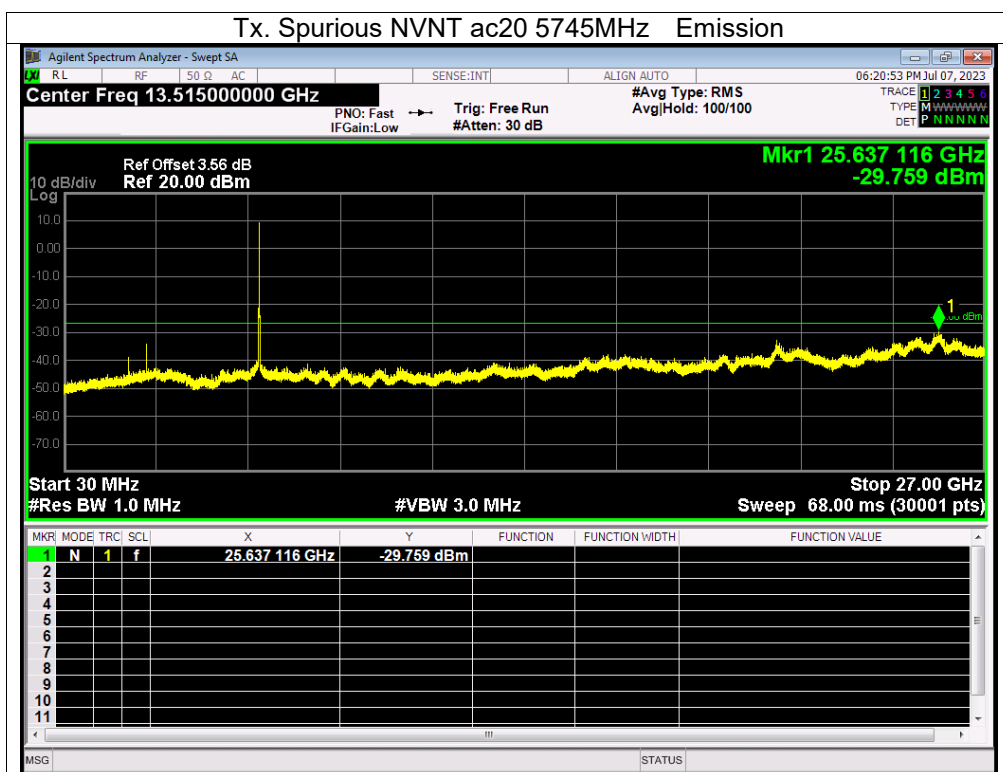


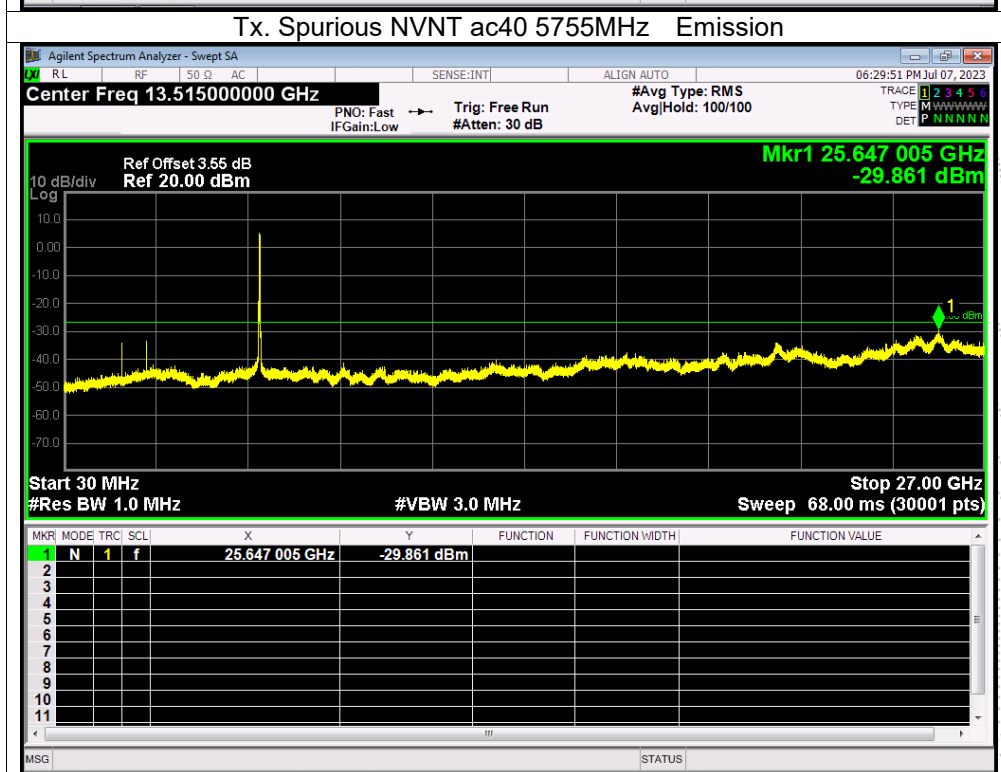
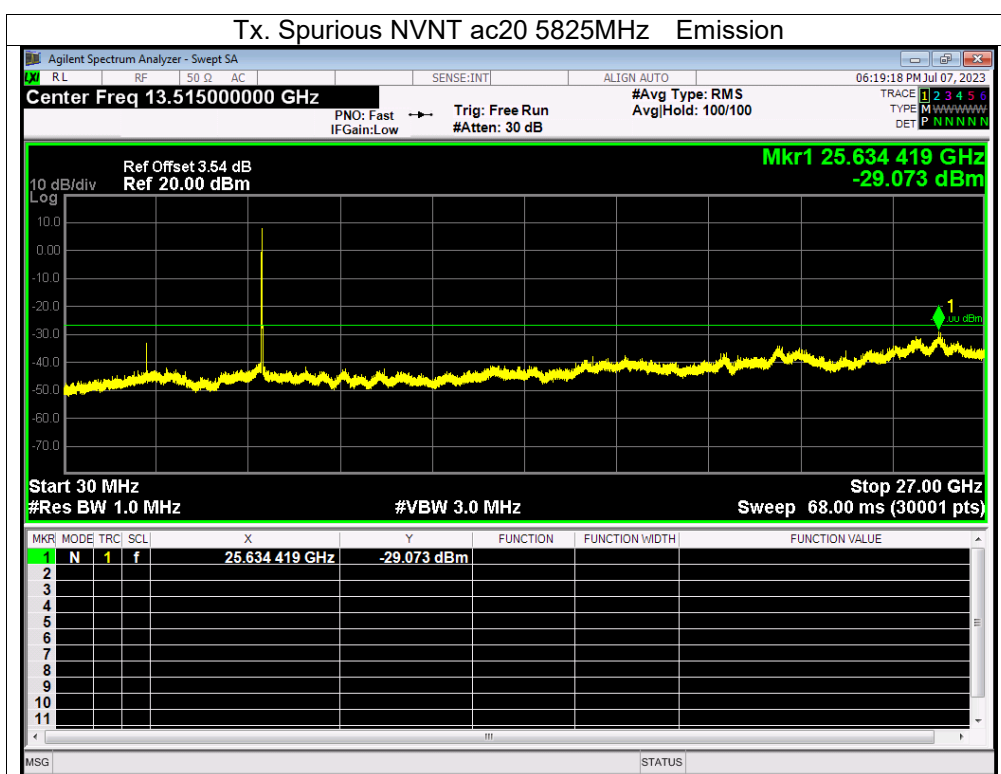


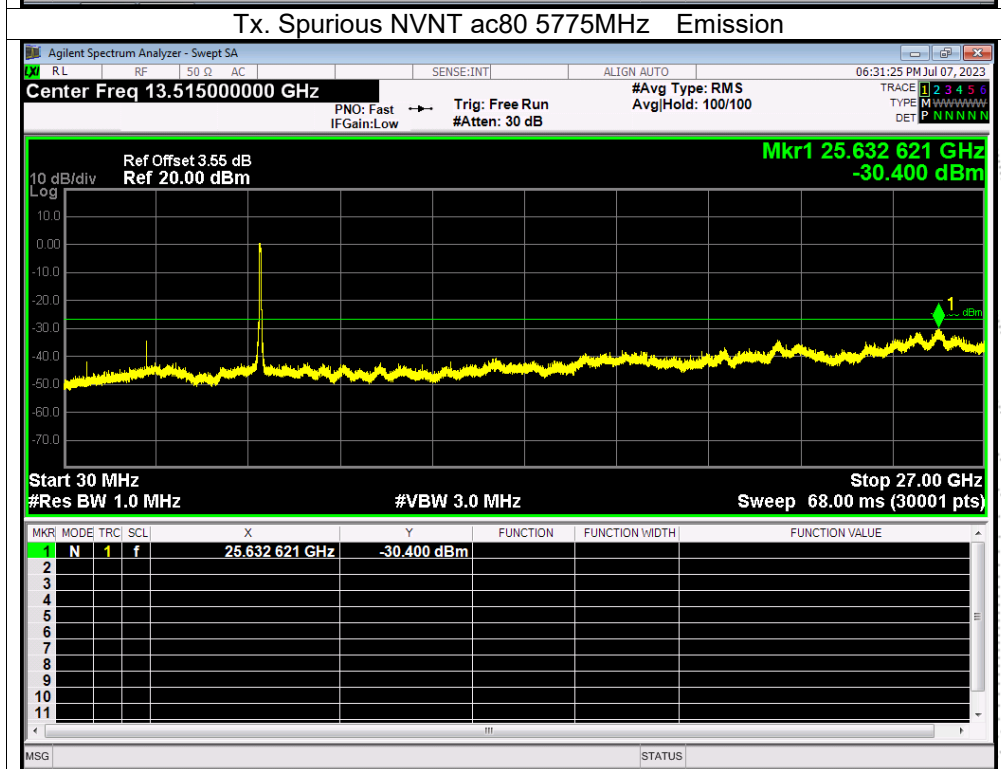
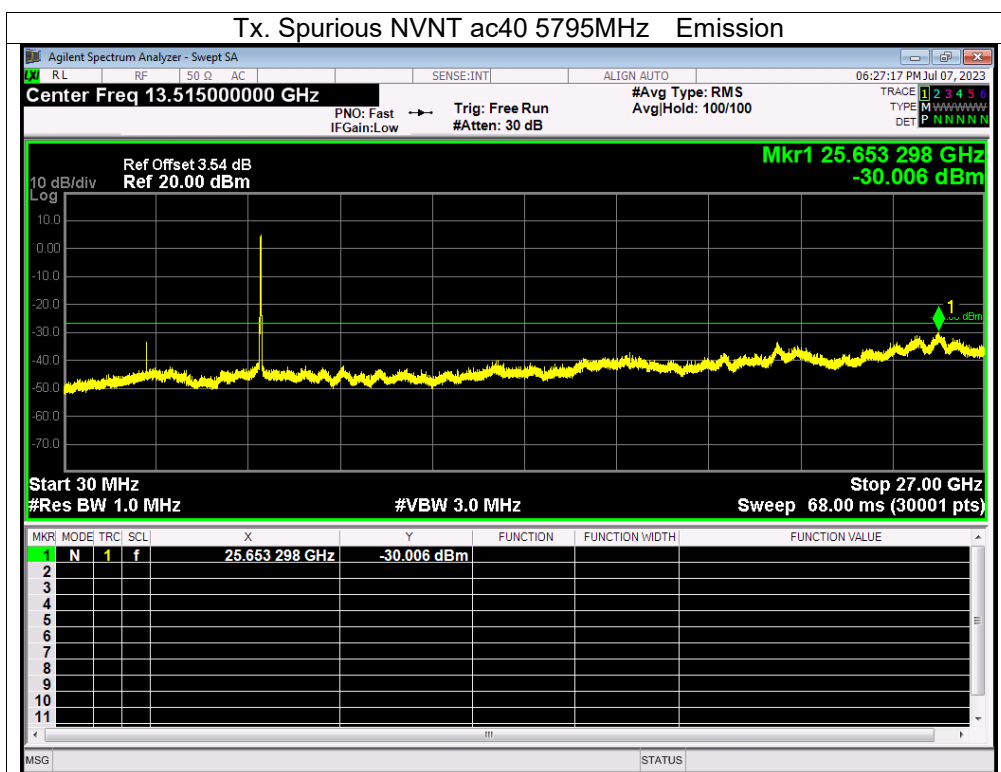












13. Frequency Stability Measurement

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	5180.0069	5180	0.0069	1.3226
		V max (V)	5.75	5180.0073	5180	0.0073	1.4179
		V min (V)	4.25	5180.0028	5180	0.0028	0.5355
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	5180.0104	5180	0.0104	2.0051
		T (°C)	-10	5180.0052	5180	0.0052	1.0103
		T (°C)	0	5180.0104	5180	0.0104	2.0126
		T (°C)	10	5180.0110	5180	0.0110	2.1327
		T (°C)	20	5180.0112	5180	0.0112	2.1657
		T (°C)	30	5180.0120	5180	0.0120	2.3112
		T (°C)	40	5180.0135	5180	0.0135	2.6101
		T (°C)	50	5180.0083	5180	0.0083	1.6027
		T (°C)	60	5180.0069	5180	0.0069	1.3269
		T (°C)	70	5180.0120	5180	0.0120	2.3095
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	5200.0089	5200	0.0089	1.7185
		V max (V)	5.75	5200.0035	5200	0.0035	0.6772
		V min (V)	4.25	5200.0048	5200	0.0048	0.9155
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	5200.00758	5200	0.00758	1.4581
		T (°C)	-10	5200.00872	5200	0.00872	1.6769
		T (°C)	0	5200.00594	5200	0.00594	1.1418
		T (°C)	10	5200.00893	5200	0.00893	1.7179
		T (°C)	20	5200.00128	5200	0.00128	0.2464
		T (°C)	30	5200.00230	5200	0.00230	0.4428
		T (°C)	40	5200.01170	5200	0.01170	2.2506
		T (°C)	50	5200.00392	5200	0.00392	0.7544
		T (°C)	60	5200.00944	5200	0.00944	1.8154
		T (°C)	70	5200.00178	5200	0.00178	0.3418
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	5240.0064	5240	0.0064	1.2214
		V max (V)	5.75	5240.0049	5240	0.0049	0.9319
		V min (V)	4.25	5240.0126	5240	0.0126	2.4099
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	5240.0041	5240	0.0041	0.7911
		T (°C)	-10	5240.0099	5240	0.0099	1.8898
		T (°C)	0	5240.0125	5240	0.0125	2.3928
		T (°C)	10	5240.0065	5240	0.0065	1.2375
		T (°C)	20	5240.0084	5240	0.0084	1.5987
		T (°C)	30	5240.0075	5240	0.0075	1.4251
		T (°C)	40	5240.0050	5240	0.0050	0.9452
		T (°C)	50	5240.0108	5240	0.0108	2.0639
		T (°C)	60	5240.0060	5240	0.0060	1.1436
		T (°C)	70	5240.0101	5240	0.0101	1.9222
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	5745.00454	5745	0.00454	0.7899
		V max (V)	5.75	5745.00329	5745	0.00329	0.5729
		V min (V)	4.25	5745.00971	5745	0.00971	1.6902
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	5745.00561	5745	0.00561	0.9765
		T (°C)	-10	5745.00826	5745	0.00826	1.4379
		T (°C)	0	5745.00926	5745	0.00926	1.6118
		T (°C)	10	5745.00996	5745	0.00996	1.7331
		T (°C)	20	5745.00527	5745	0.00527	0.9177
		T (°C)	30	5745.00014	5745	0.00014	0.0244
		T (°C)	40	5745.00744	5745	0.00744	1.2945
		T (°C)	50	5745.00540	5745	0.00540	0.9398
		T (°C)	60	5745.01019	5745	0.01019	1.7729
		T (°C)	70	5745.00153	5745	0.00153	0.2656
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	5785.00226	5785	0.00226	0.3903
		V max (V)	5.75	5785.00431	5785	0.00431	0.7451
		V min (V)	4.25	5785.00616	5785	0.00616	1.0642
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	5785.00882	5785	0.00882	1.5239
		T (°C)	-10	5785.00775	5785	0.00775	1.3398
		T (°C)	0	5785.01185	5785	0.01185	2.0476
		T (°C)	10	5785.01346	5785	0.01346	2.3259
		T (°C)	20	5785.00038	5785	0.00038	0.0665
		T (°C)	30	5785.00473	5785	0.00473	0.8180
		T (°C)	40	5785.00337	5785	0.00337	0.5830
		T (°C)	50	5785.01245	5785	0.01245	2.1519
		T (°C)	60	5785.00755	5785	0.00755	1.3053
		T (°C)	70	5785.00822	5785	0.00822	1.4208
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	5825.00425	5825	0.00425	0.7288
		V max (V)	5.75	5825.00335	5825	0.00335	0.5752
		V min (V)	4.25	5825.00409	5825	0.00409	0.7017
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	5825.01248	5825	0.01248	2.1424
		T (°C)	-10	5825.00758	5825	0.00758	1.3017
		T (°C)	0	5825.00662	5825	0.00662	1.1373
		T (°C)	10	5825.01287	5825	0.01287	2.2091
		T (°C)	20	5825.01074	5825	0.01074	1.8434
		T (°C)	30	5825.00872	5825	0.00872	1.4965
		T (°C)	40	5825.00306	5825	0.00306	0.5260
		T (°C)	50	5825.01217	5825	0.01217	2.0895
		T (°C)	60	5825.01207	5825	0.01207	2.0726
		T (°C)	70	5825.01302	5825	0.01302	2.2360
Limits				5725-5850 MHz			
Result				Complies			

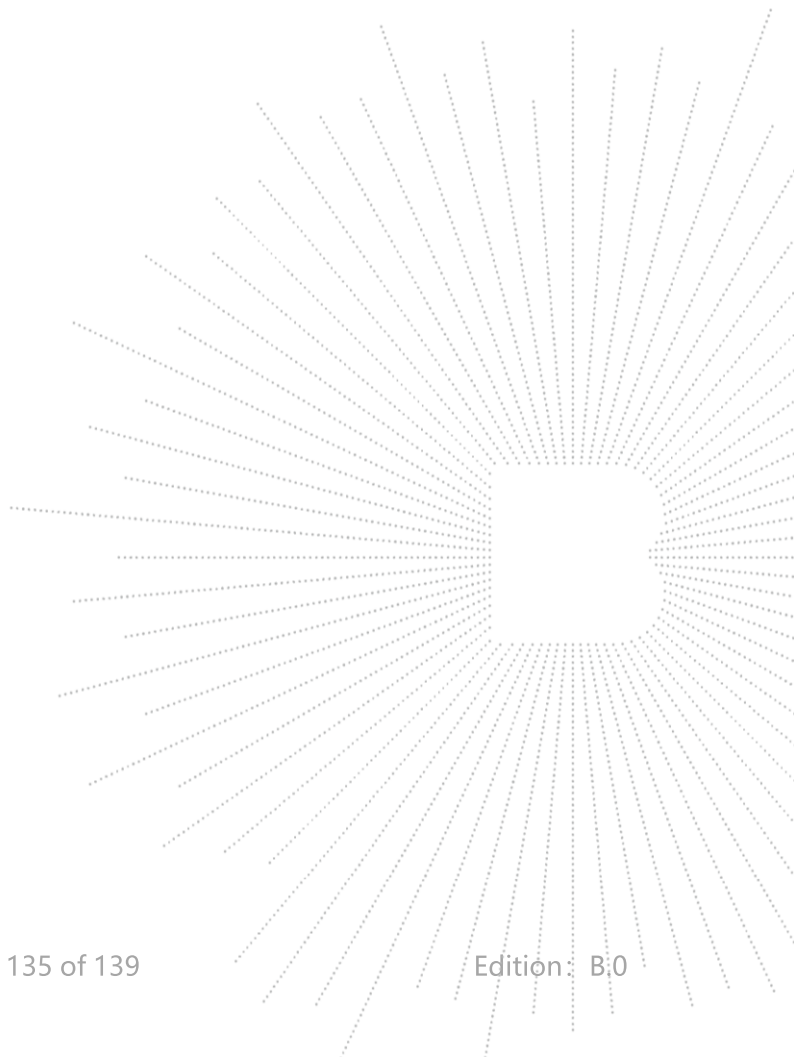
14. Antenna Requirement

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

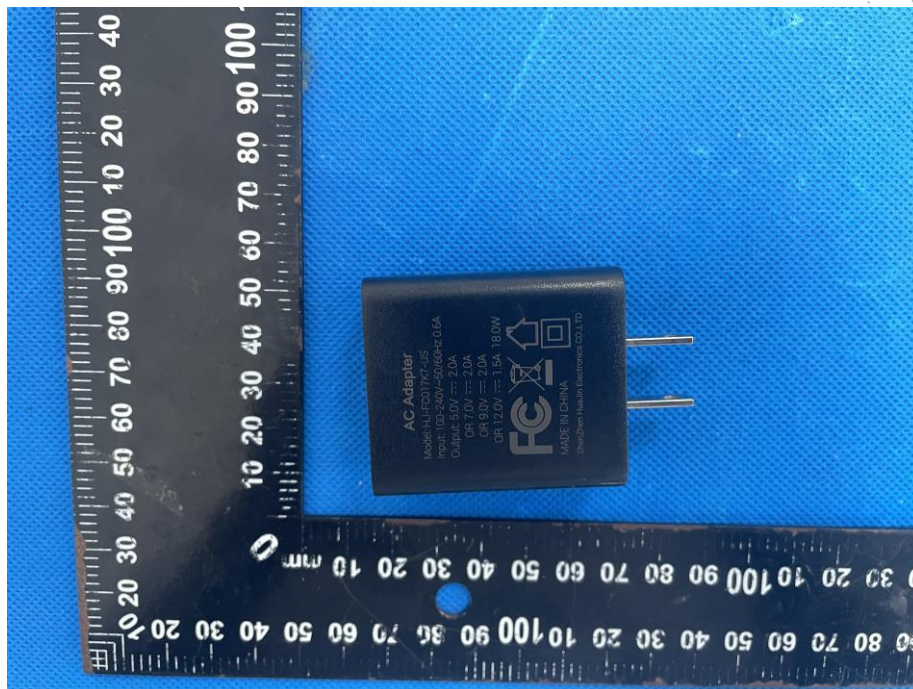


15. EUT Photographs

EUT Photo 1

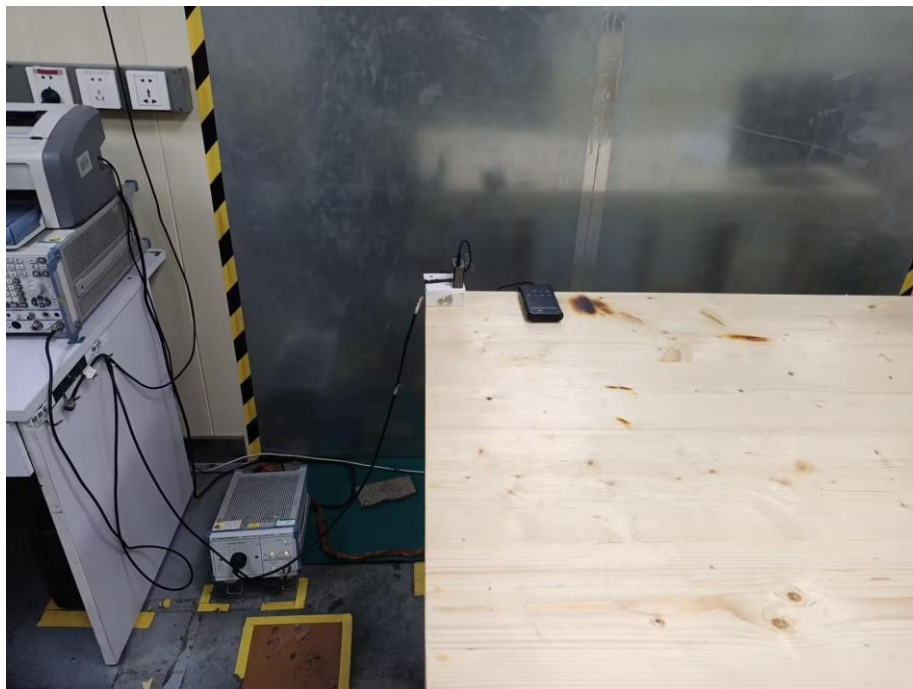


EUT Photo 2

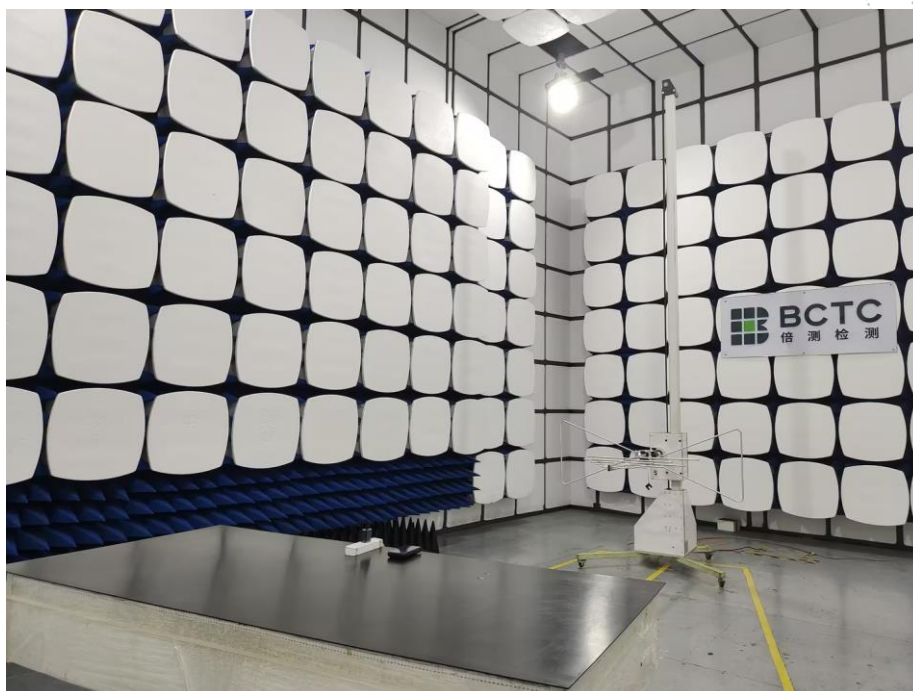


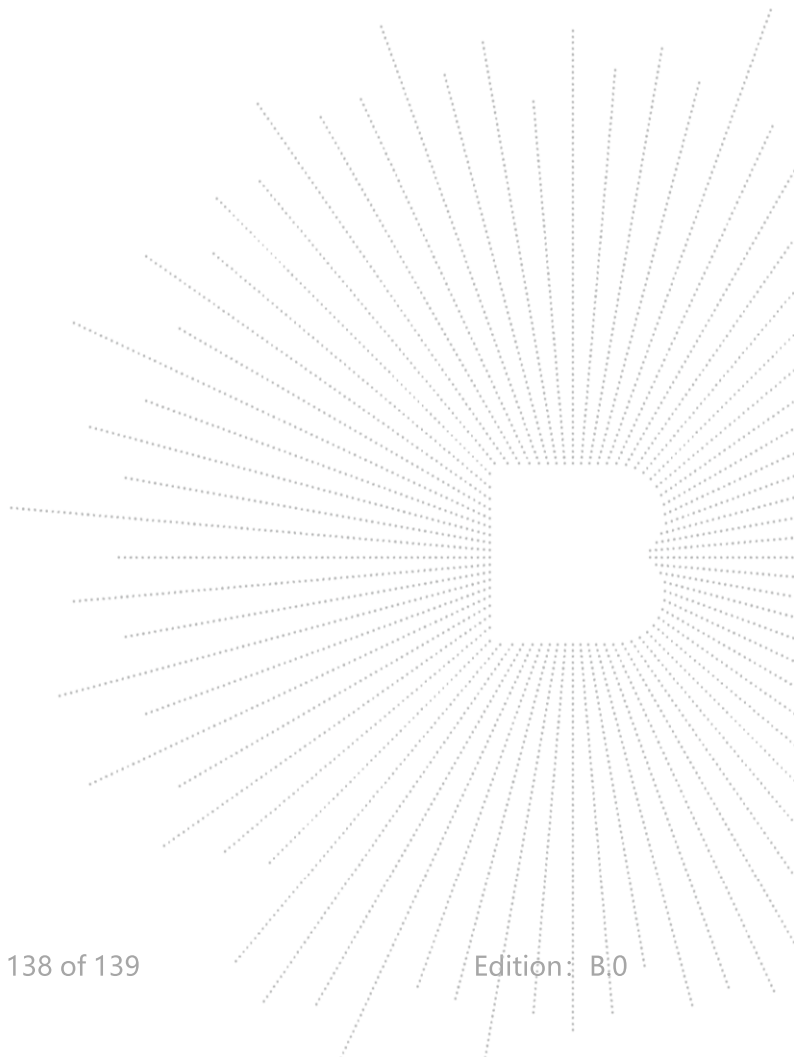
16. EUT Test Setup Photographs

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 *****