

10.5 Test Result

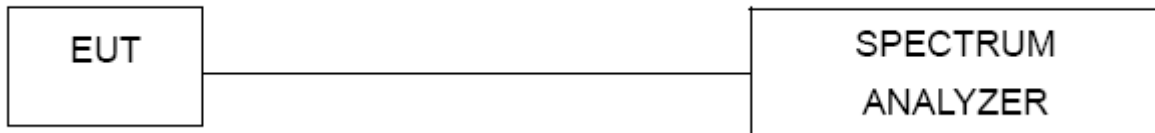
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC120V/60Hz
Test Mode:	(5180-5240MHz); (5745-5825MHz)		

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	5.81	24	Pass
NVNT	a	5200	5.82	24	Pass
NVNT	a	5240	6.02	24	Pass
NVNT	n20	5180	5.13	24	Pass
NVNT	n20	5200	5.22	24	Pass
NVNT	n20	5240	4.95	24	Pass
NVNT	n40	5190	4.15	24	Pass
NVNT	n40	5230	4.08	24	Pass
NVNT	ac20	5180	5.10	24	Pass
NVNT	ac20	5200	5.20	24	Pass
NVNT	ac20	5240	5.15	24	Pass
NVNT	ac40	5190	4.30	24	Pass
NVNT	ac40	5230	4.10	24	Pass
NVNT	ac80	5210	2.63	24	Pass

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5745	5.69	30	Pass
NVNT	a	5785	3.08	30	Pass
NVNT	a	5825	1.59	30	Pass
NVNT	n20	5745	3.50	30	Pass
NVNT	n20	5785	2.89	30	Pass
NVNT	n20	5825	0.45	30	Pass
NVNT	n40	5755	2.62	30	Pass
NVNT	n40	5795	0.92	30	Pass
NVNT	ac20	5745	3.63	30	Pass
NVNT	ac20	5785	2.08	30	Pass
NVNT	ac20	5825	0.54	30	Pass
NVNT	ac40	5755	2.77	30	Pass
NVNT	ac40	5795	1.20	30	Pass
NVNT	ac80	5775	2.09	30	Pass

11. Out Of Band Emissions

11.1 Block Diagram Of Test Setup



11.2 Limit

According to FCC §15.407(b)

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

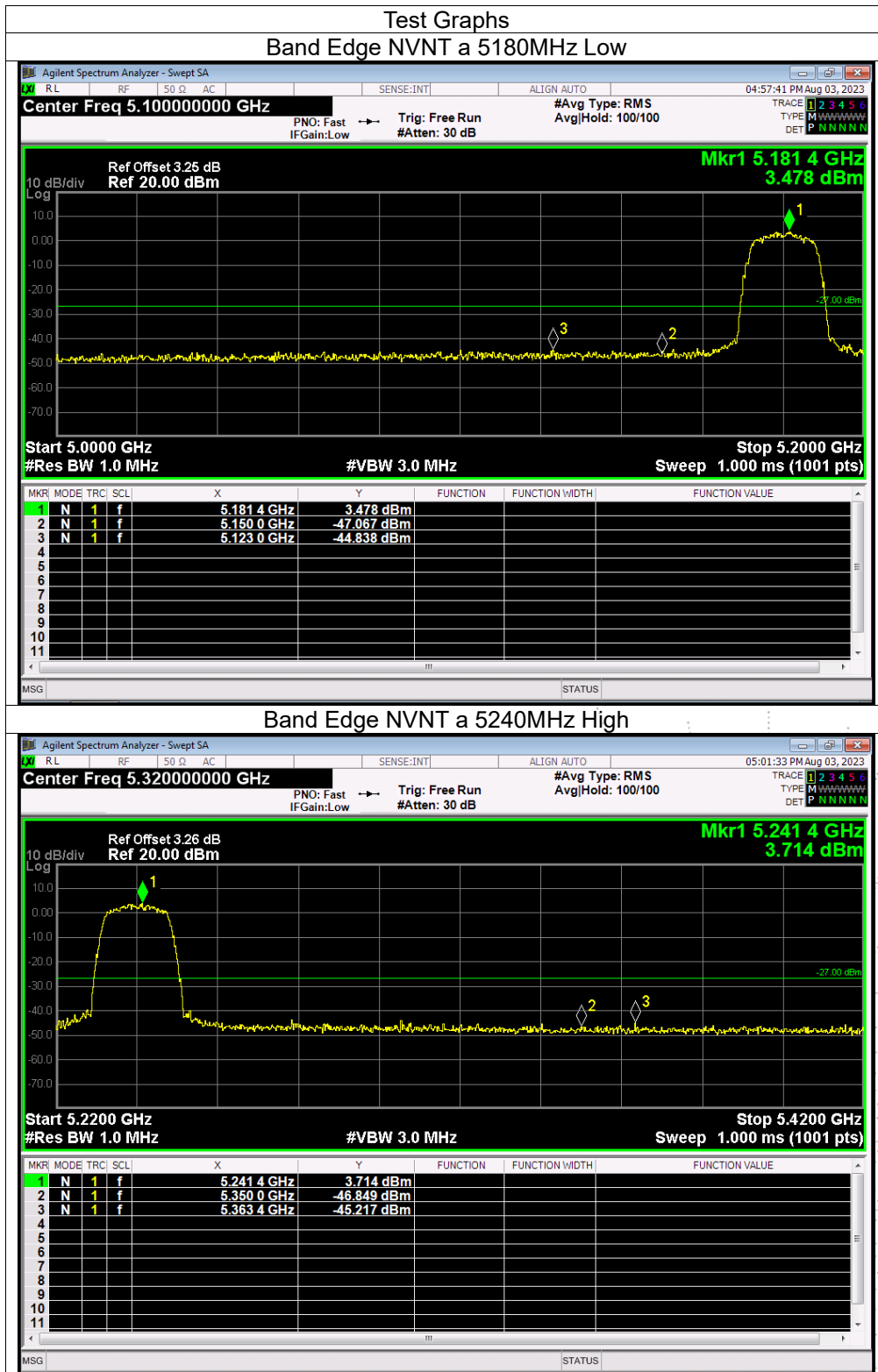
11.3 Test procedure

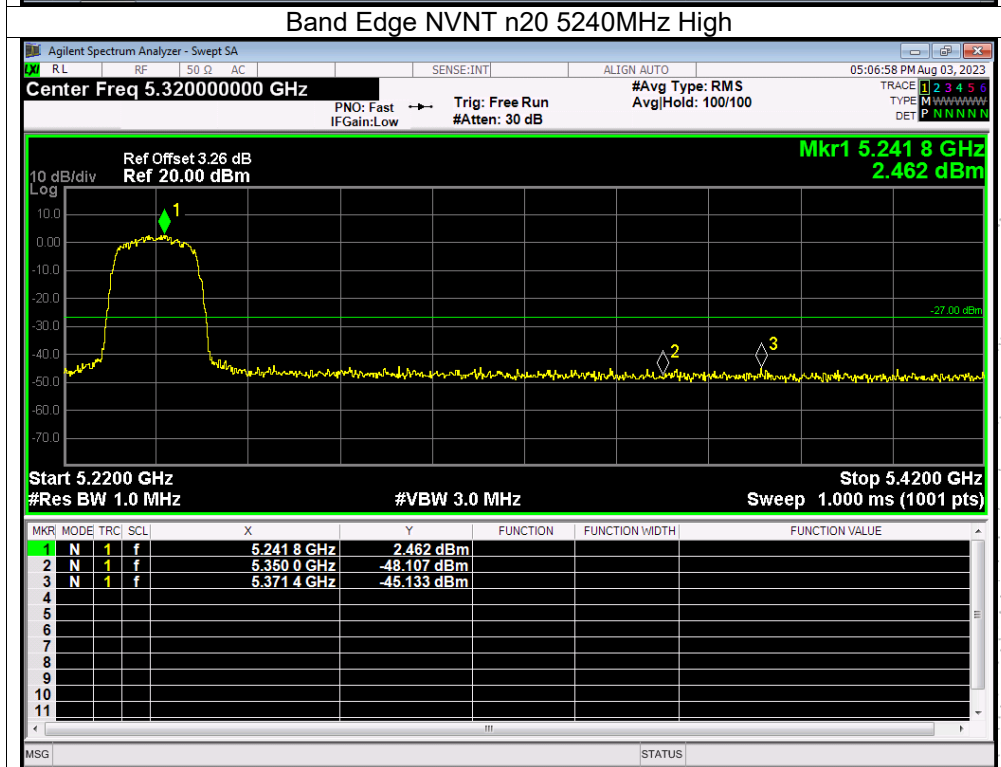
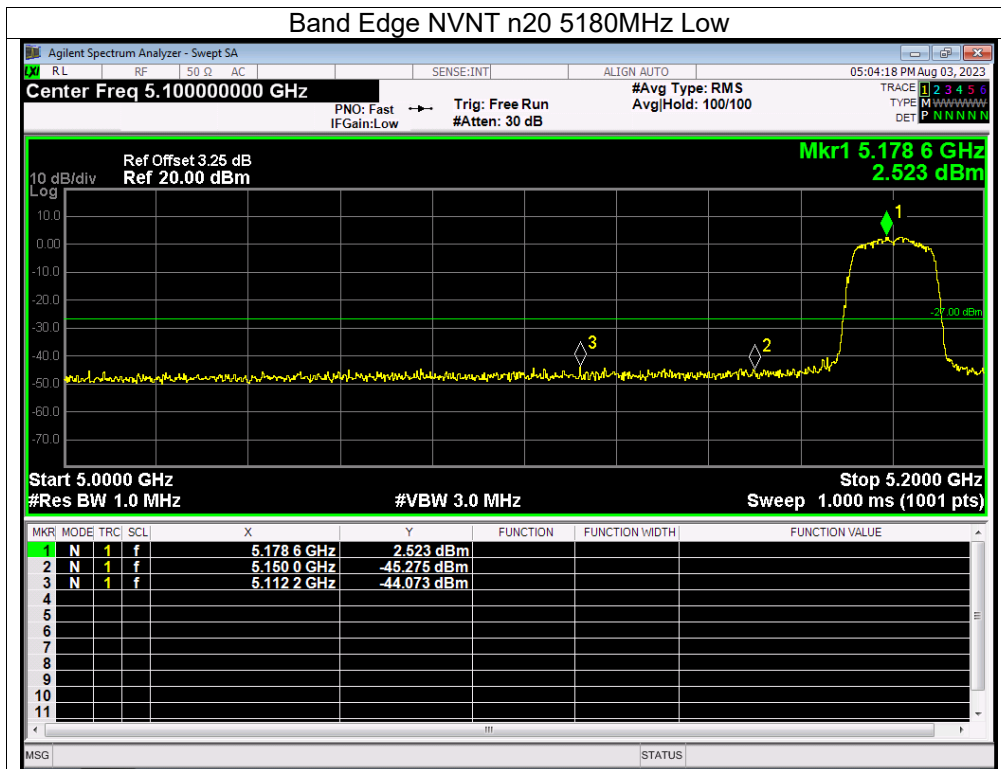
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

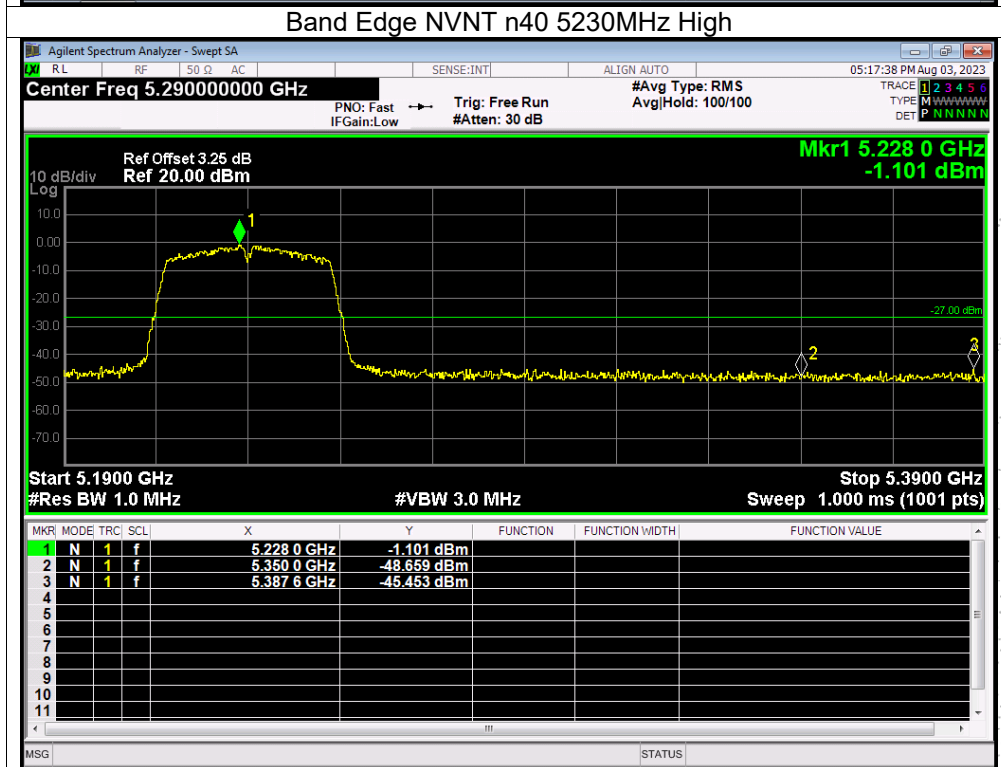
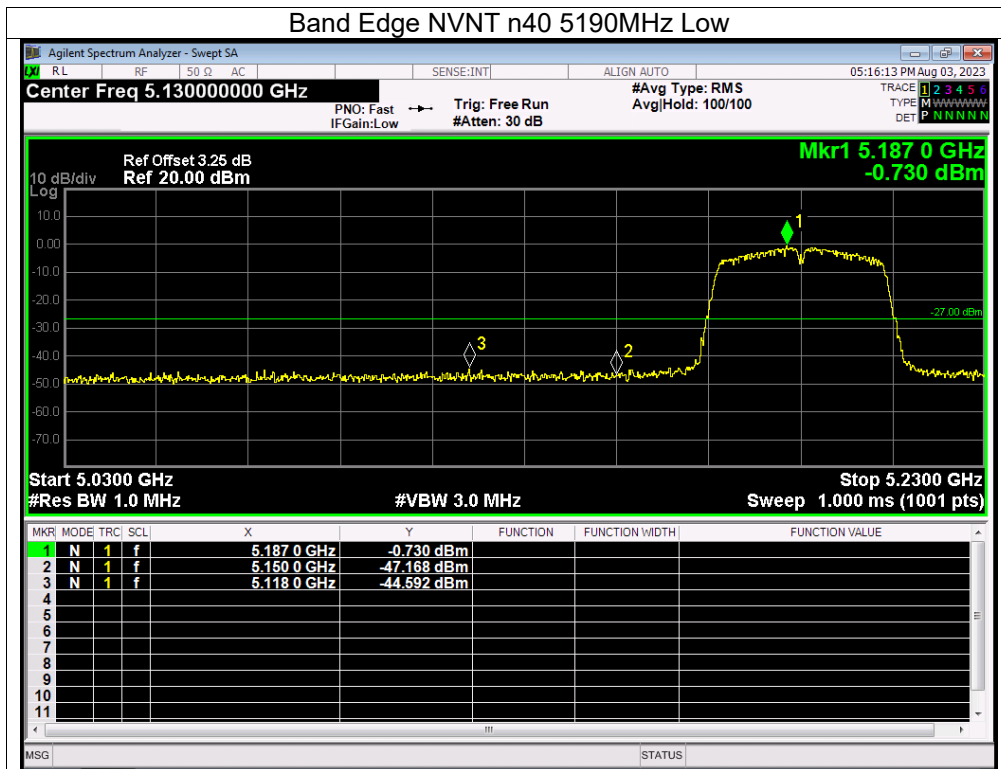
11.4 EUT operating Conditions

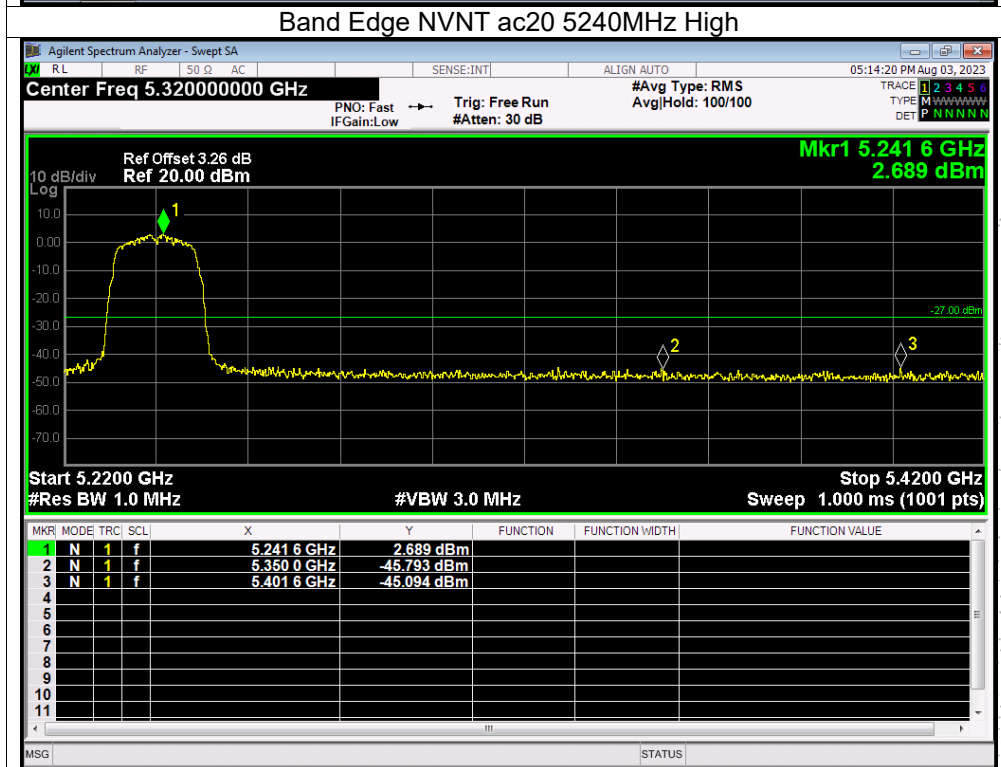
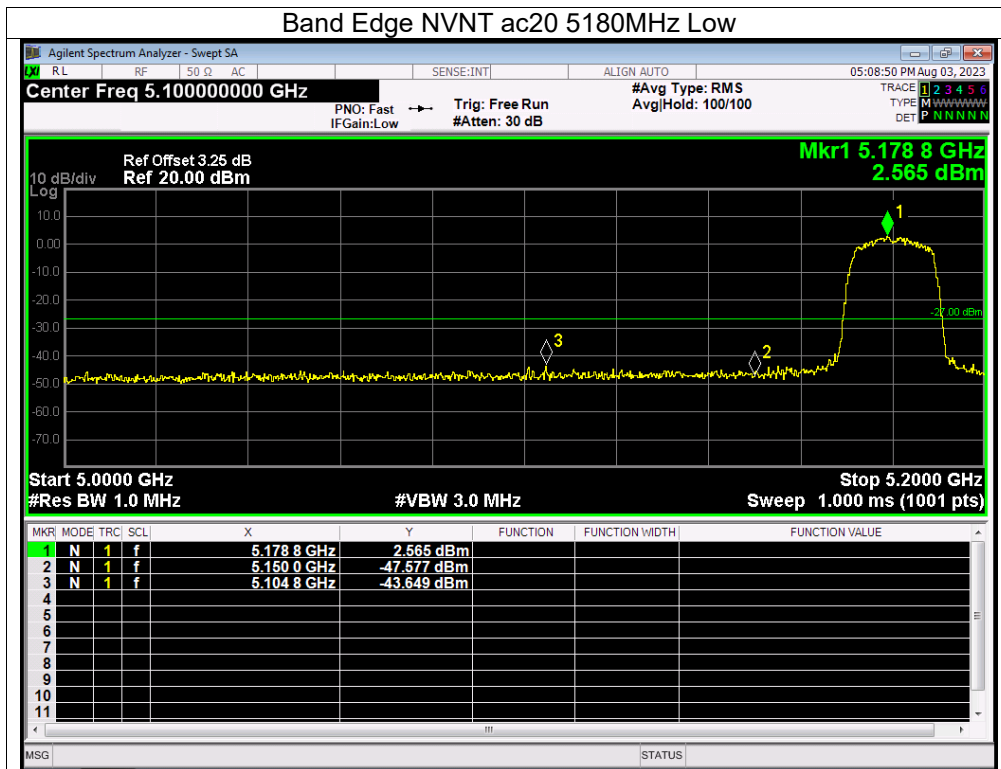
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data

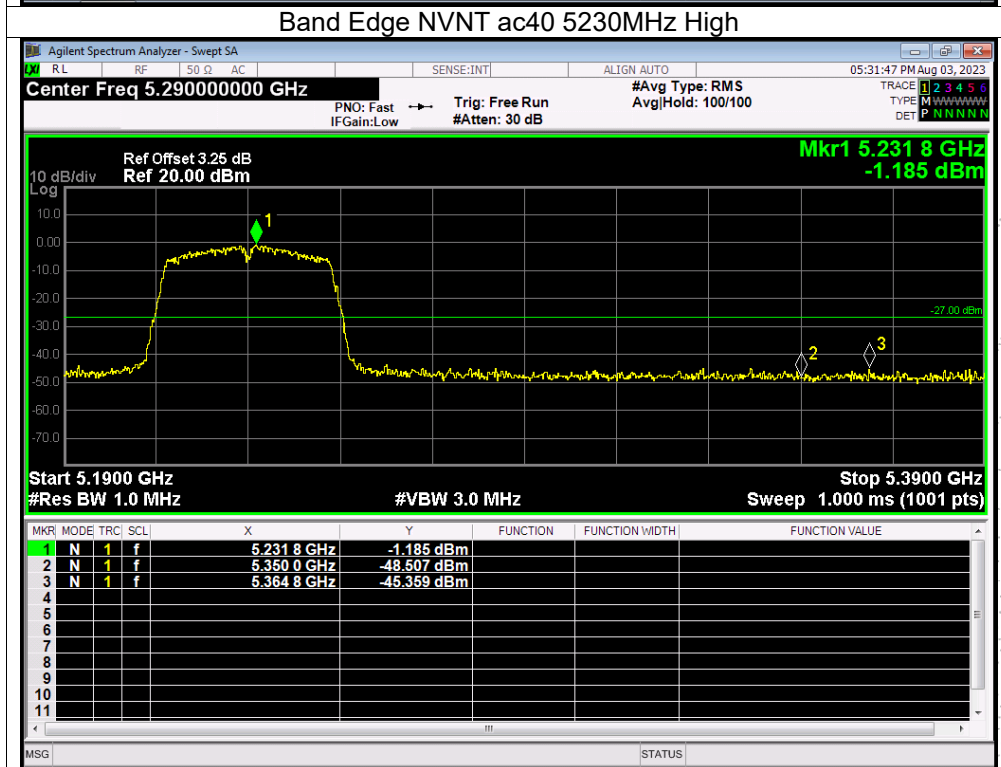
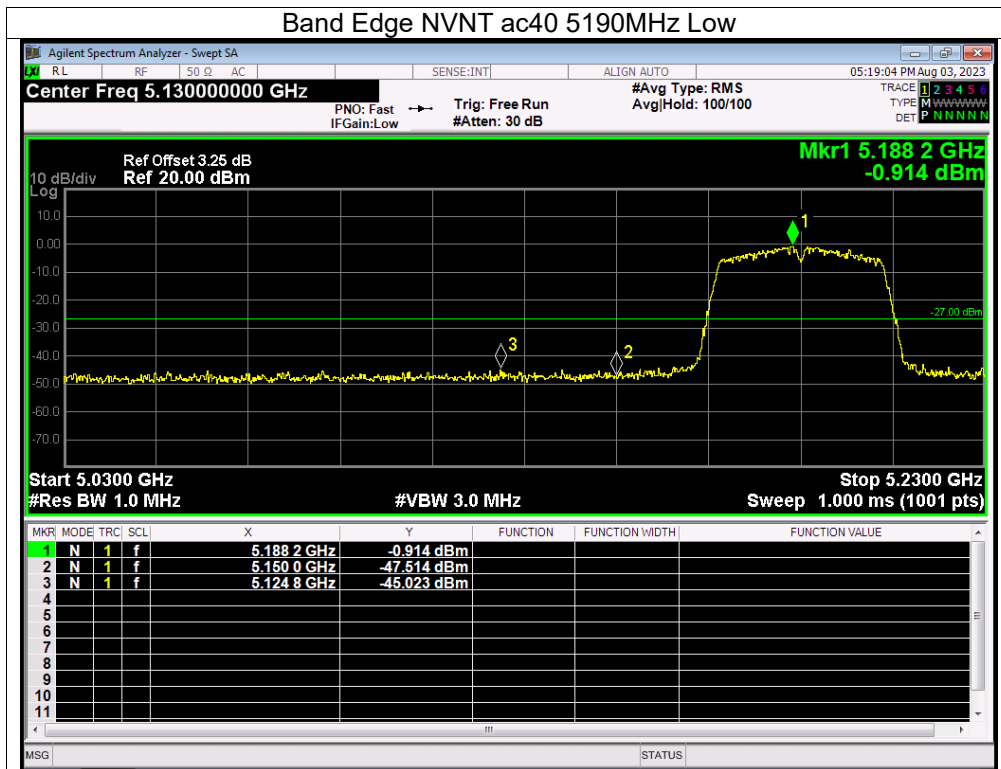
11.5 Test Result

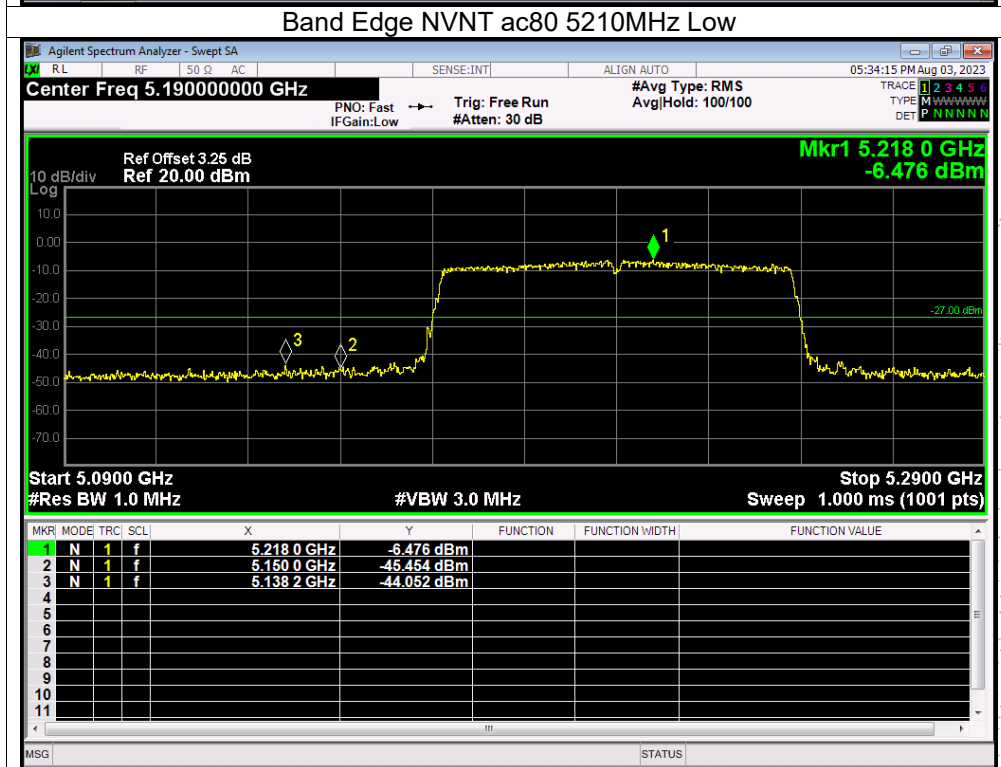
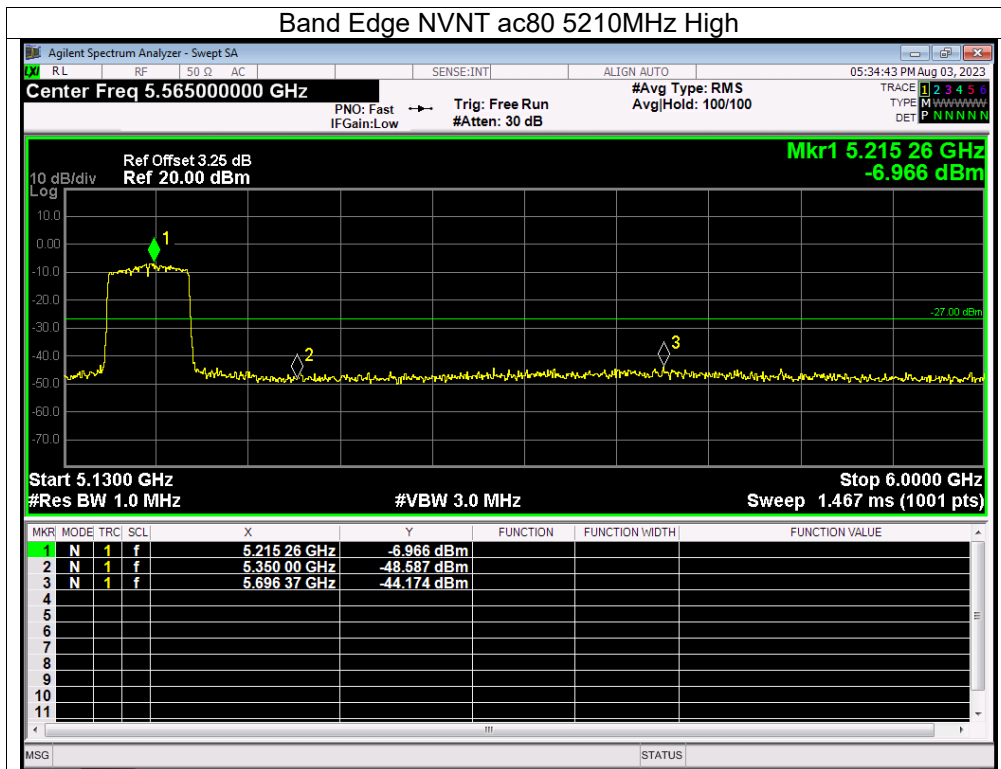


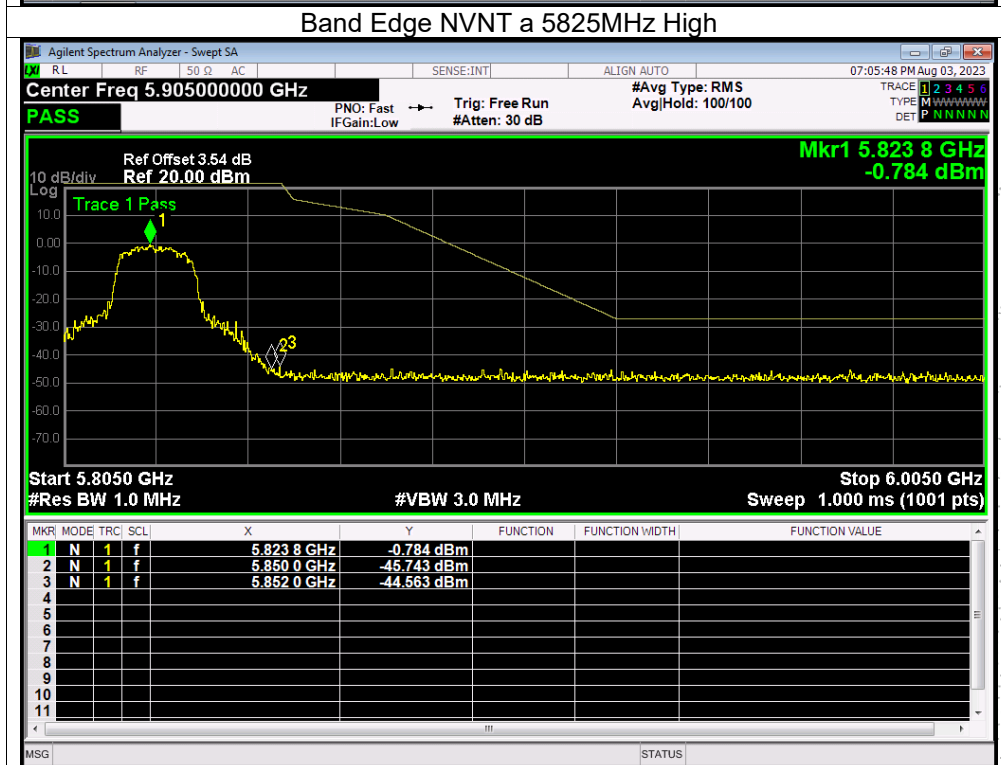
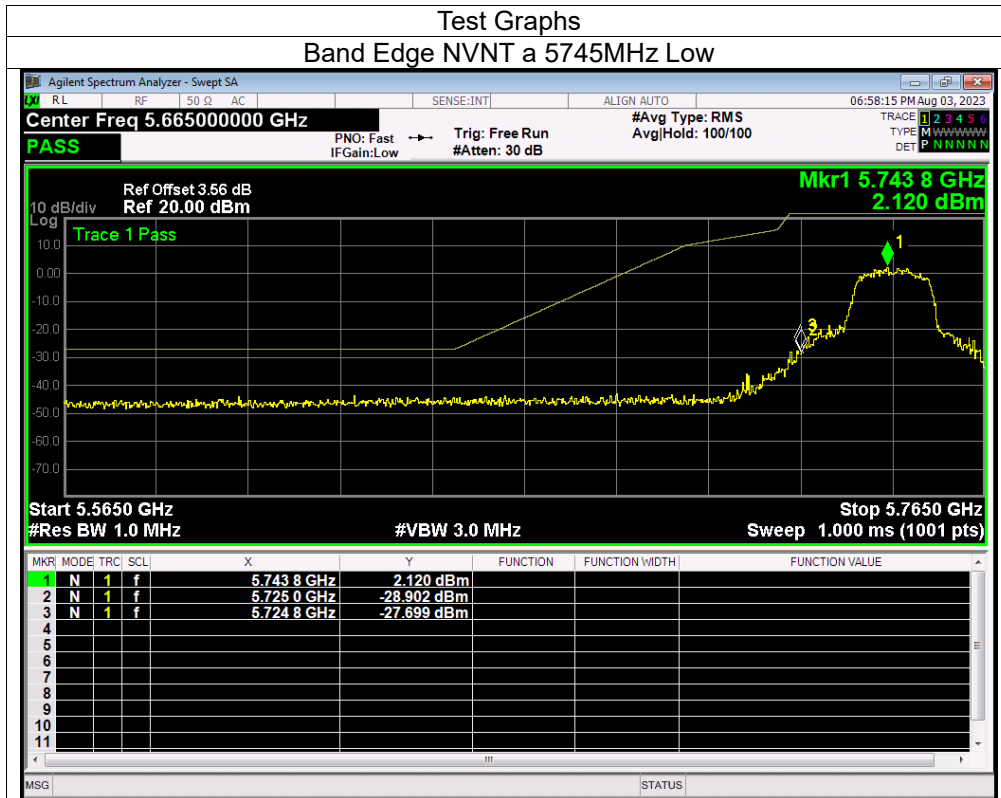


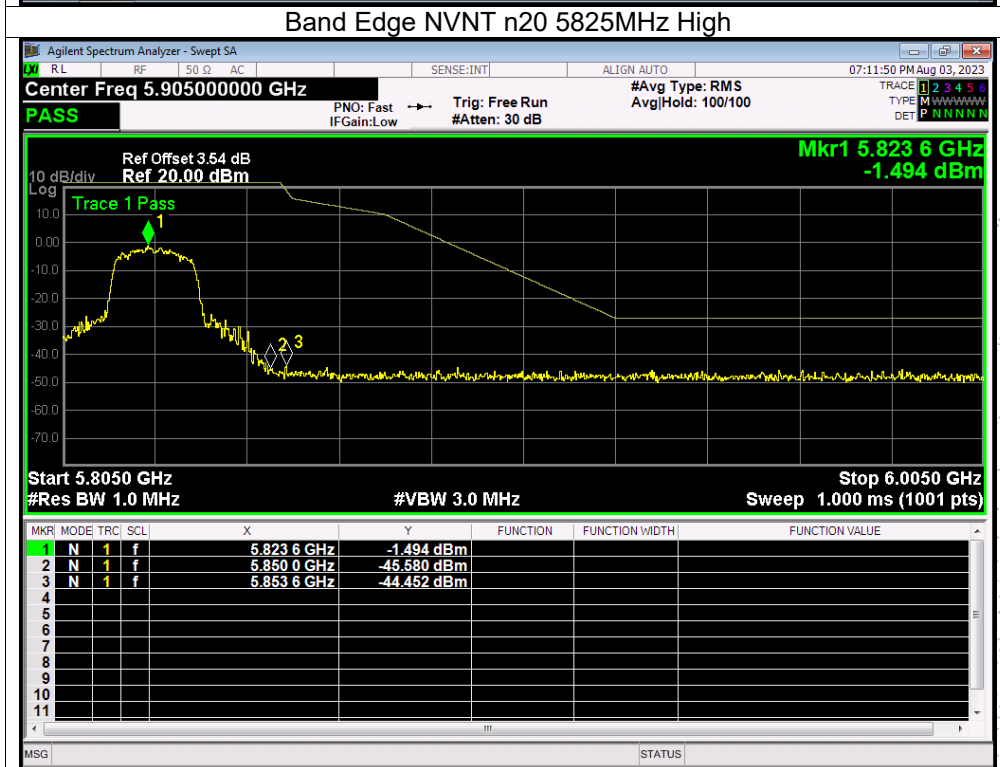
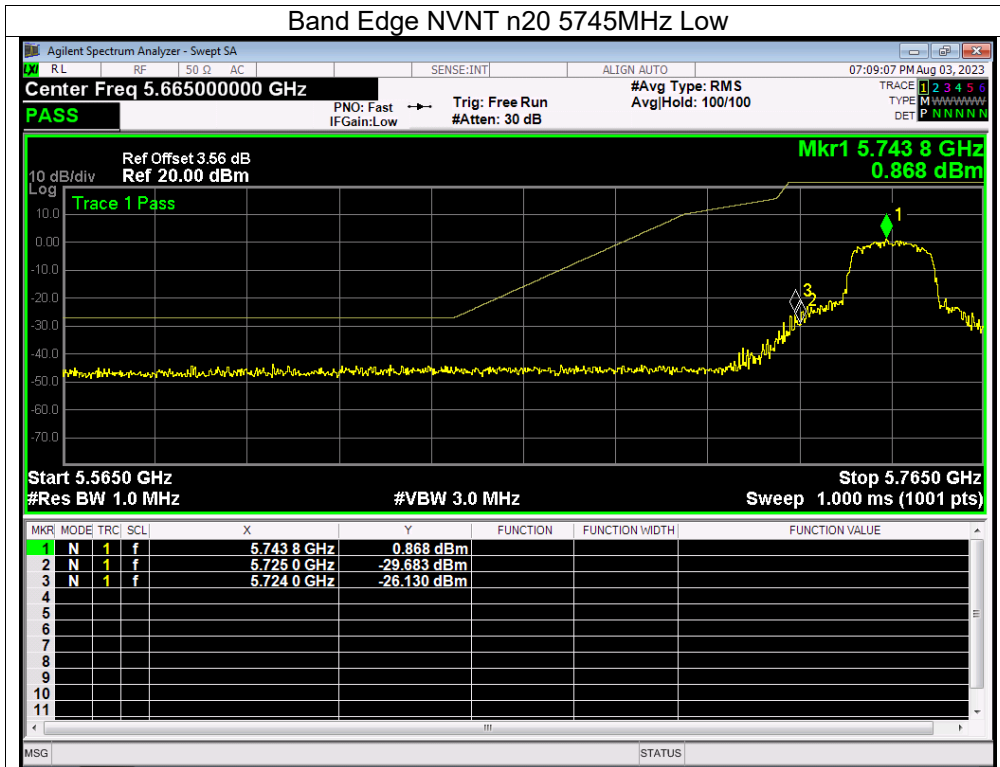


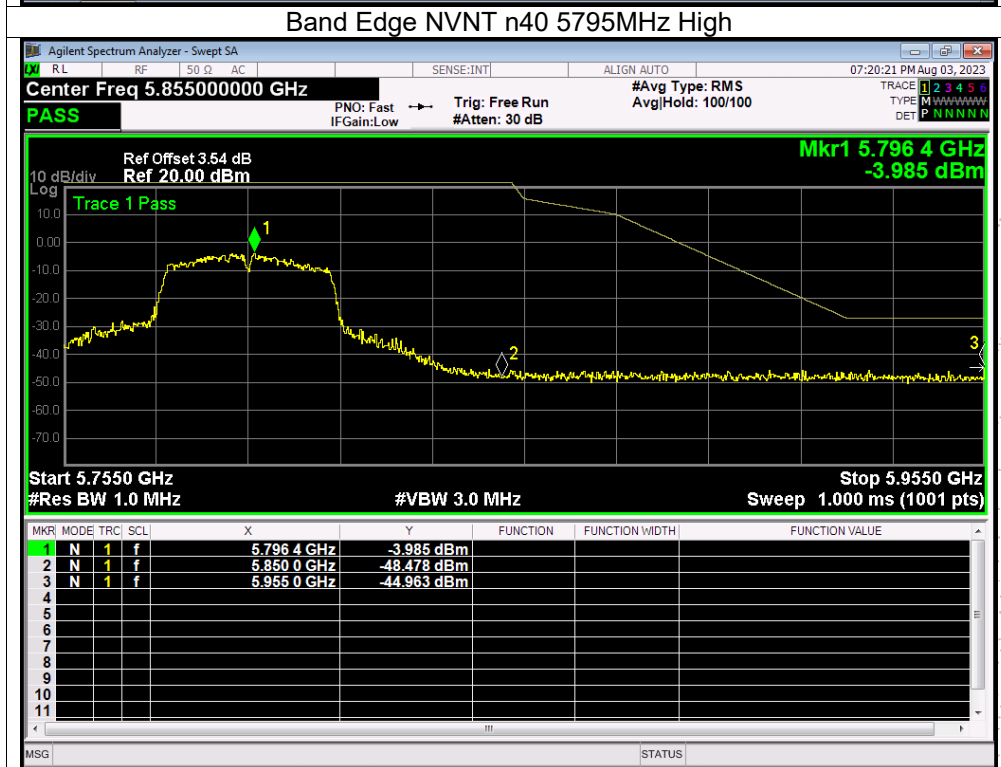
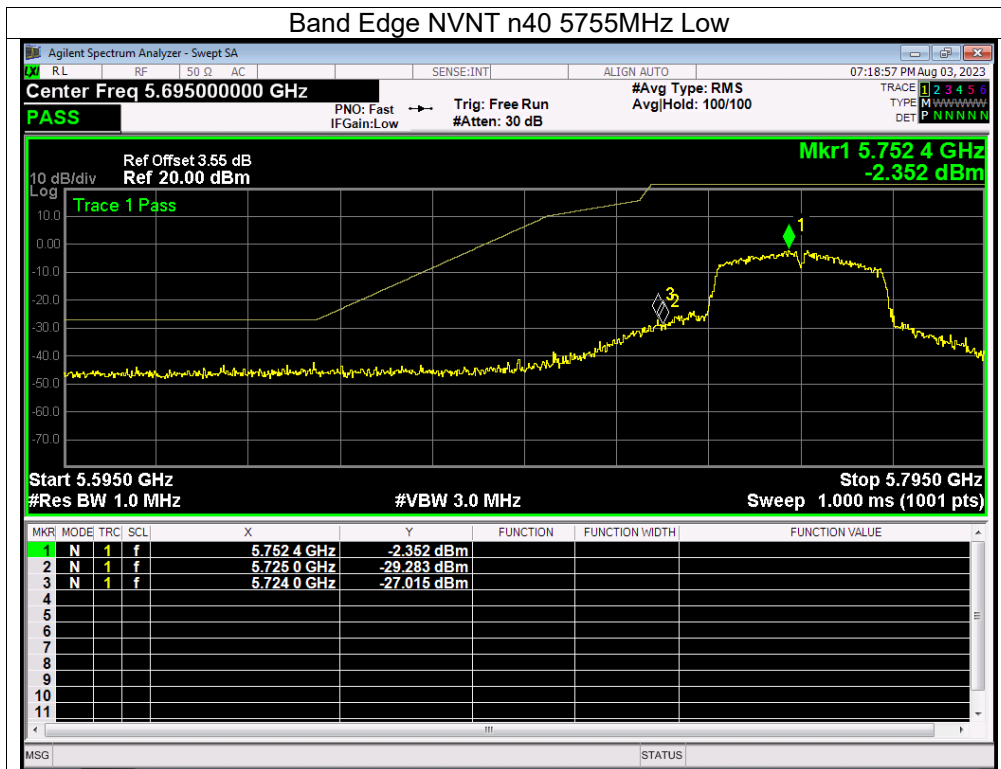


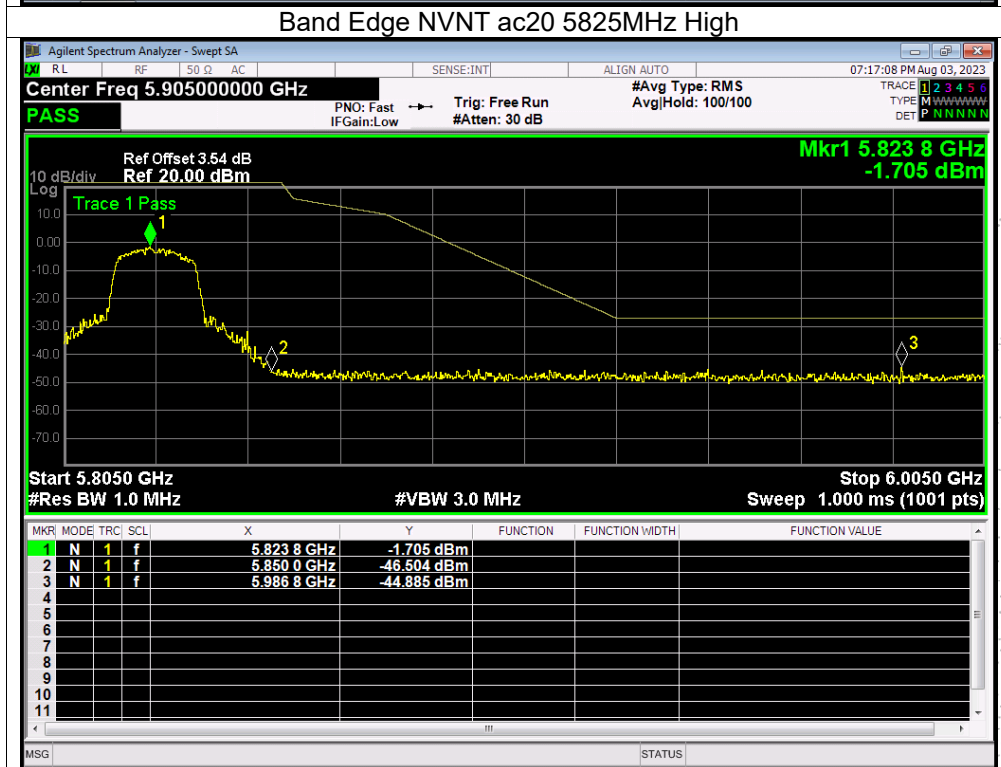
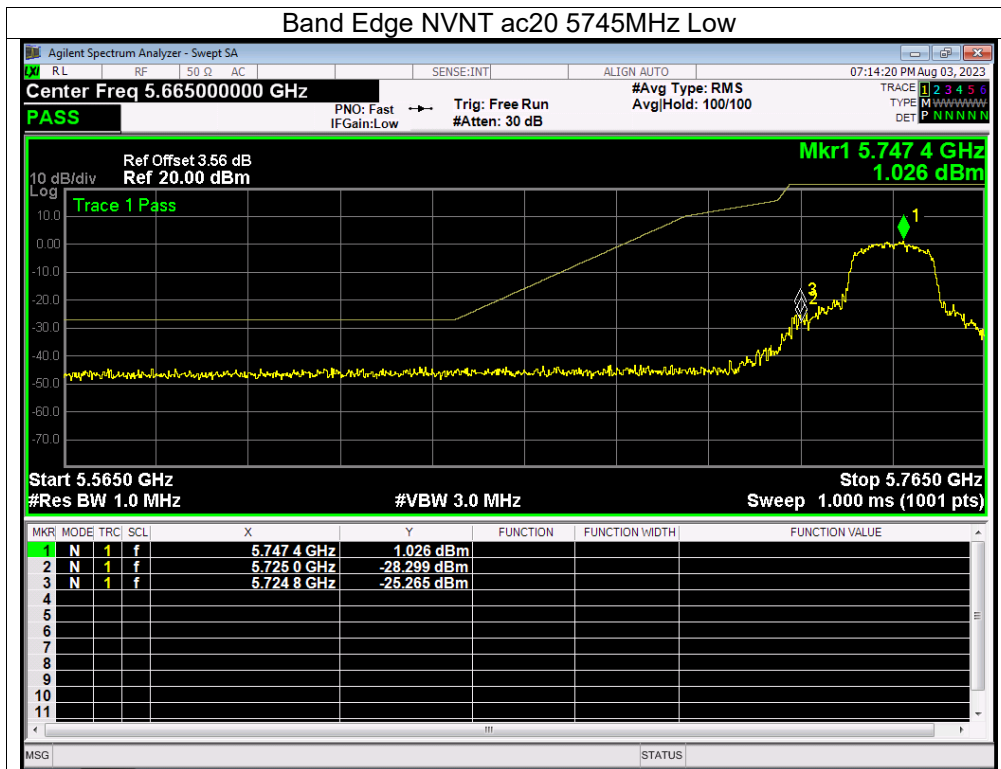


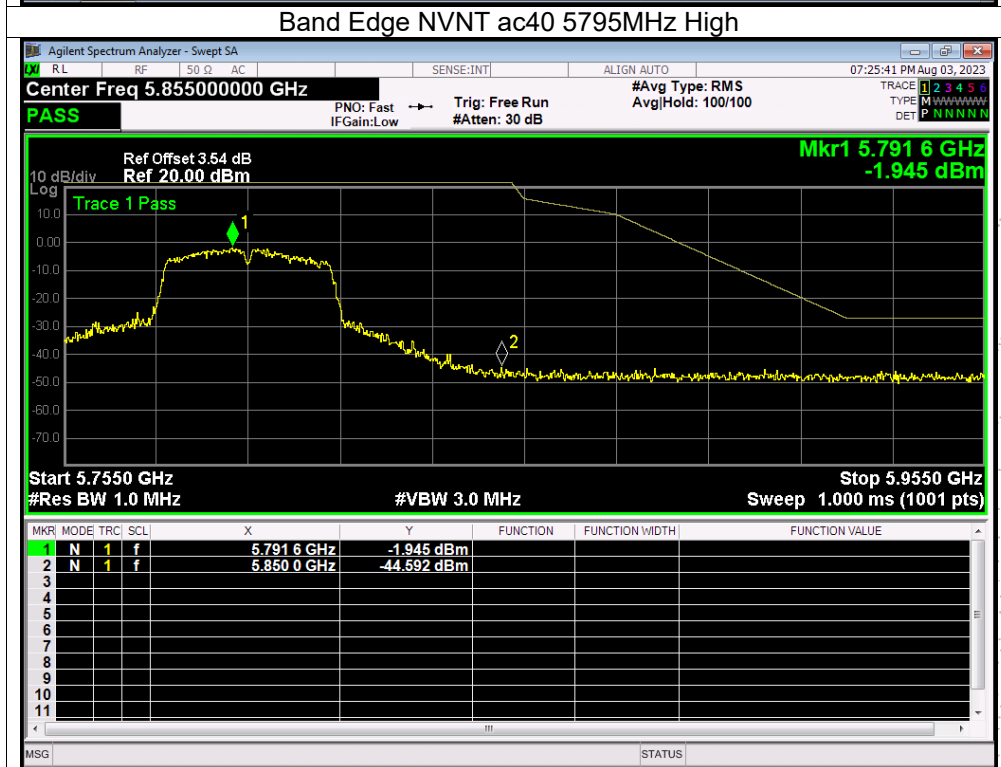
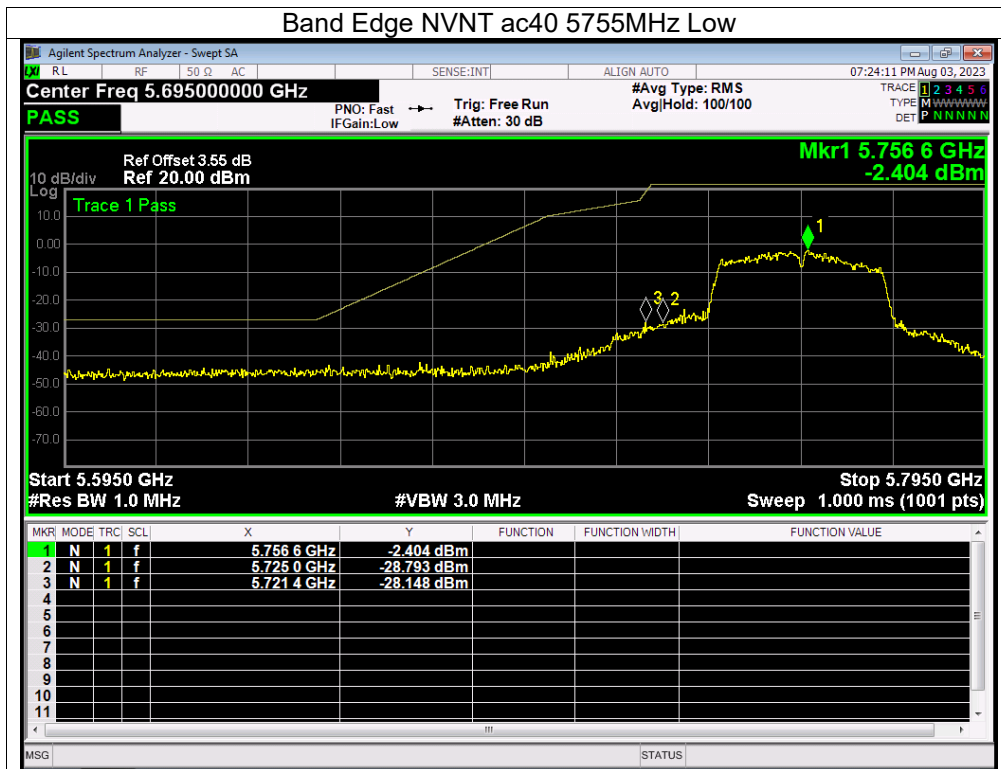


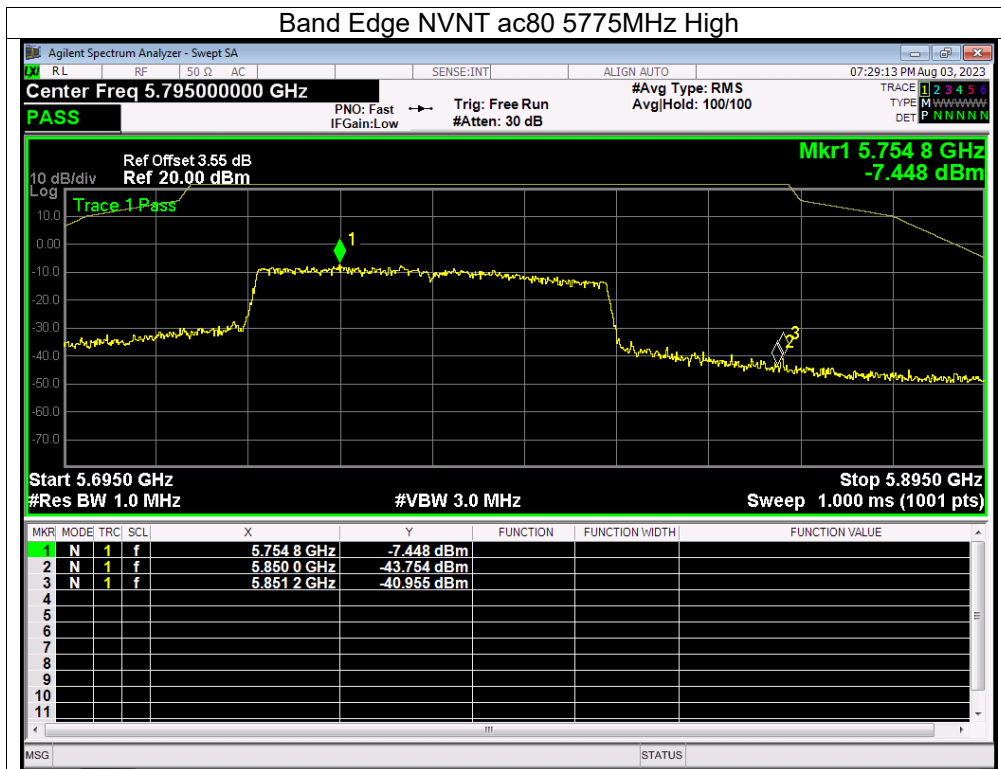






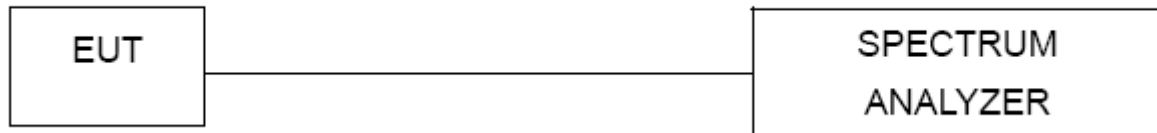






12. Spurious RF Conducted Emissions

12.1 Block Diagram Of Test Setup



12.2 Limit

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2) For transmitters operating in the 5.725-5.85 GHz band(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

12.3 Test procedure

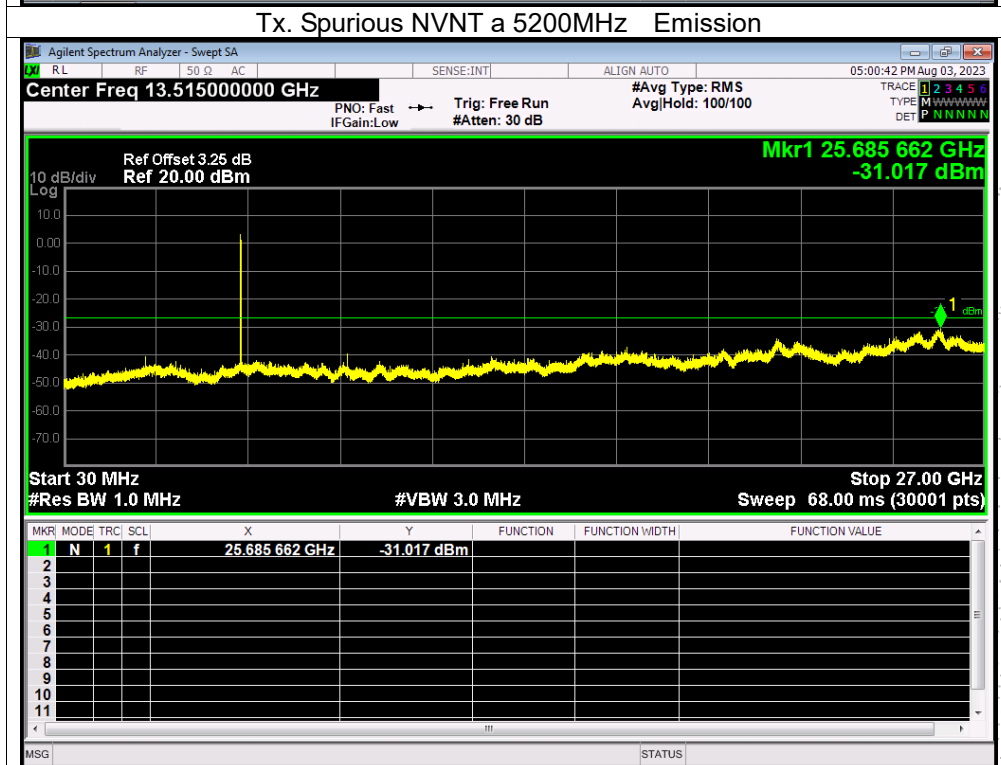
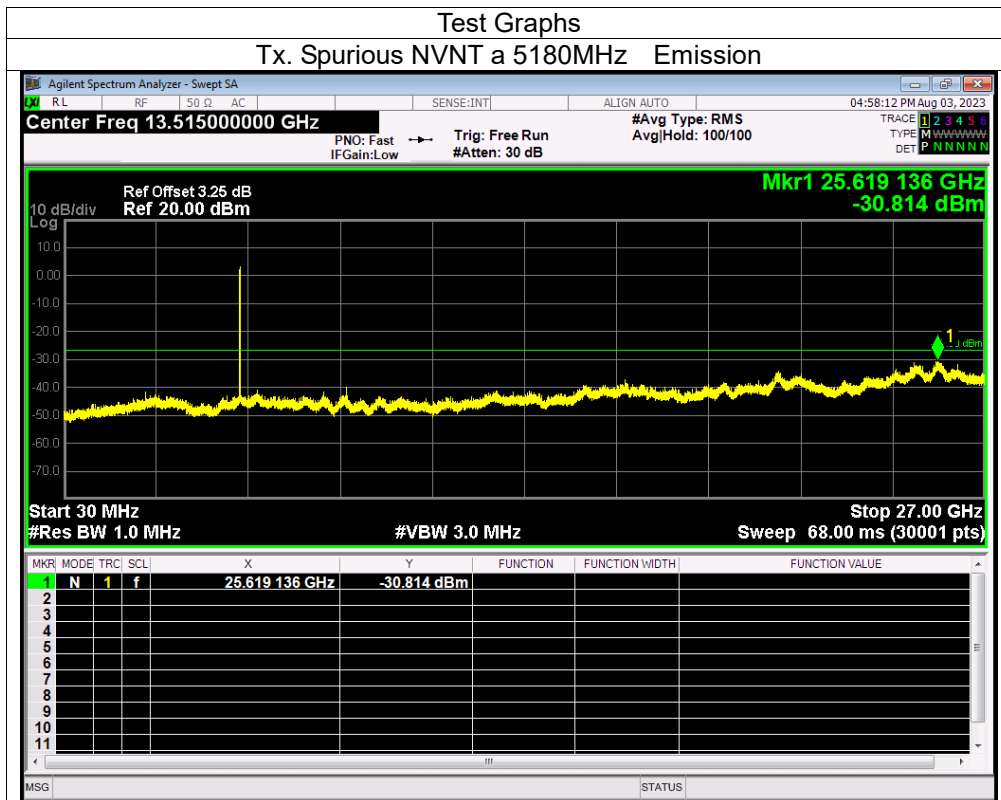
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

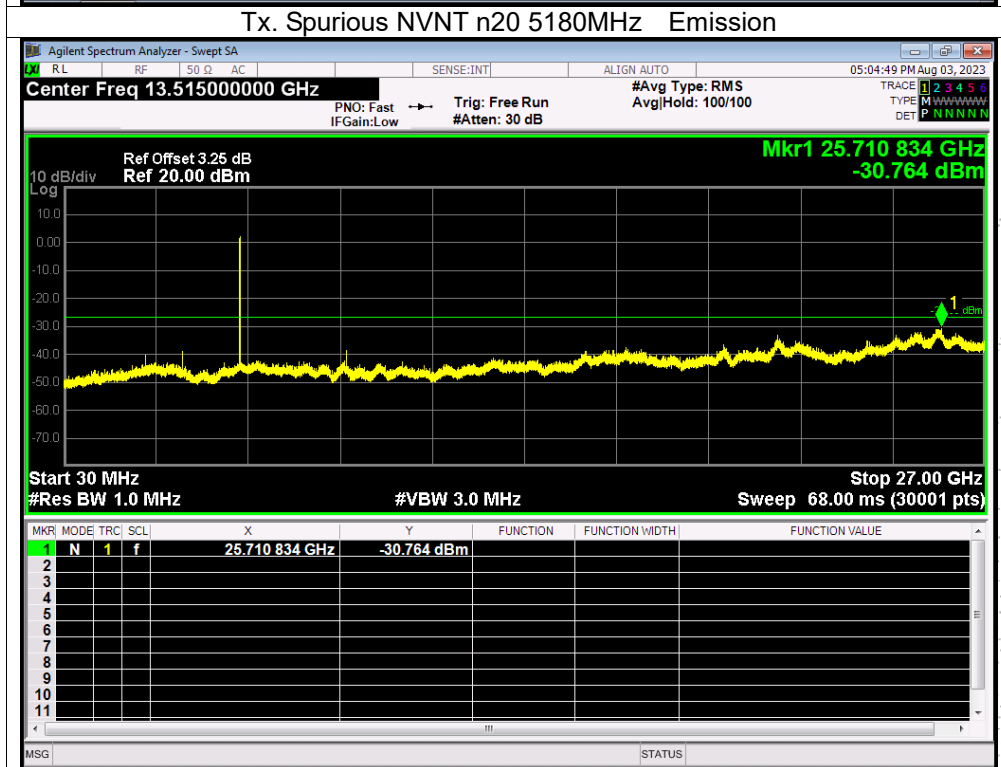
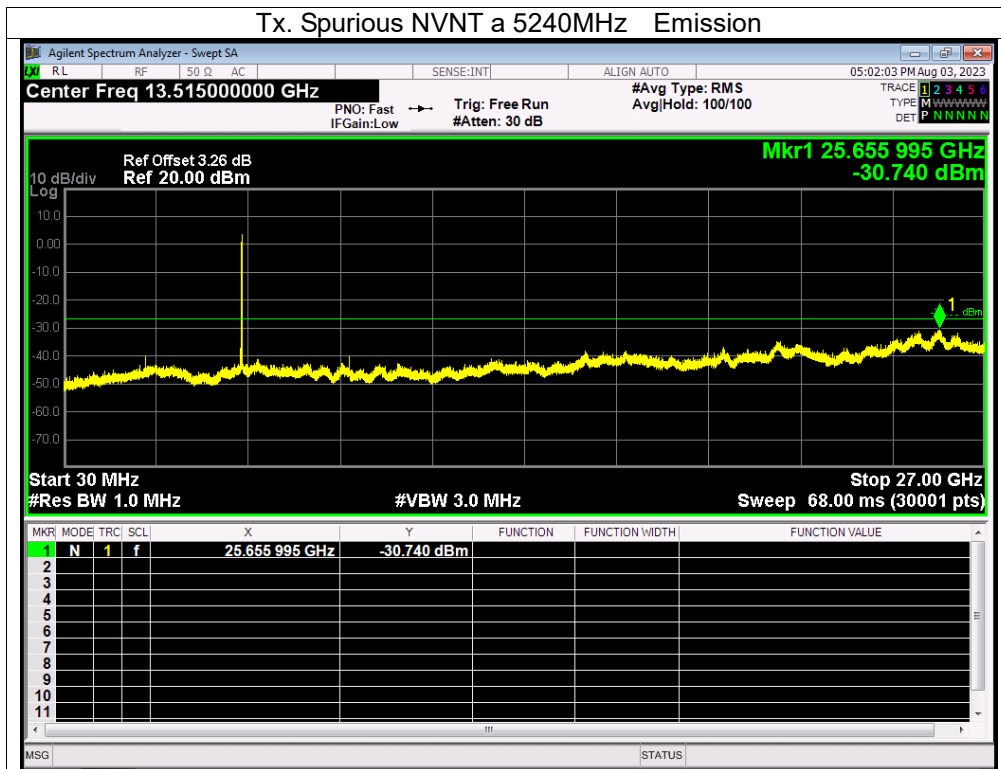
12.4 Test Result

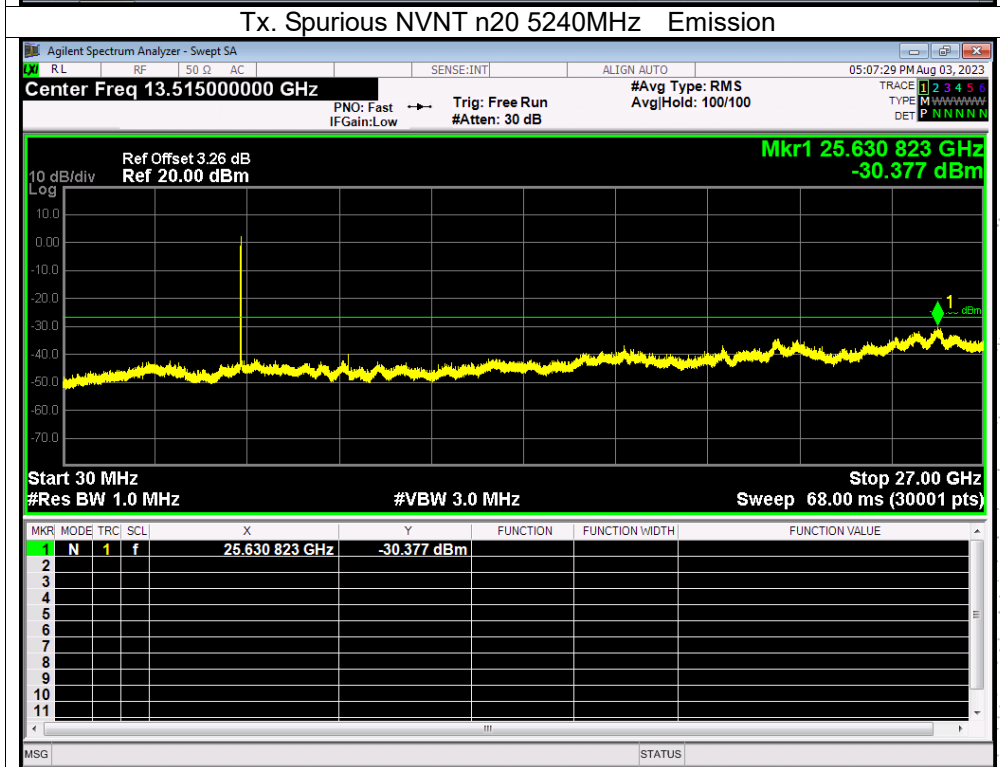
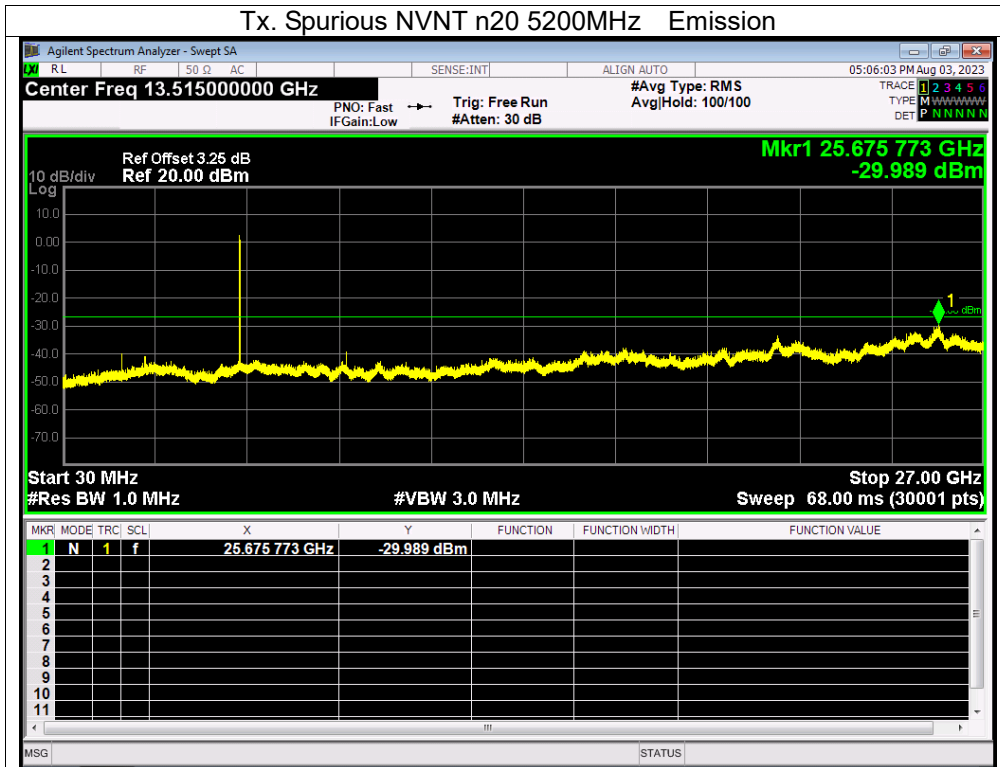
Remark: The measurement frequency range is from 9KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandege measurement data.

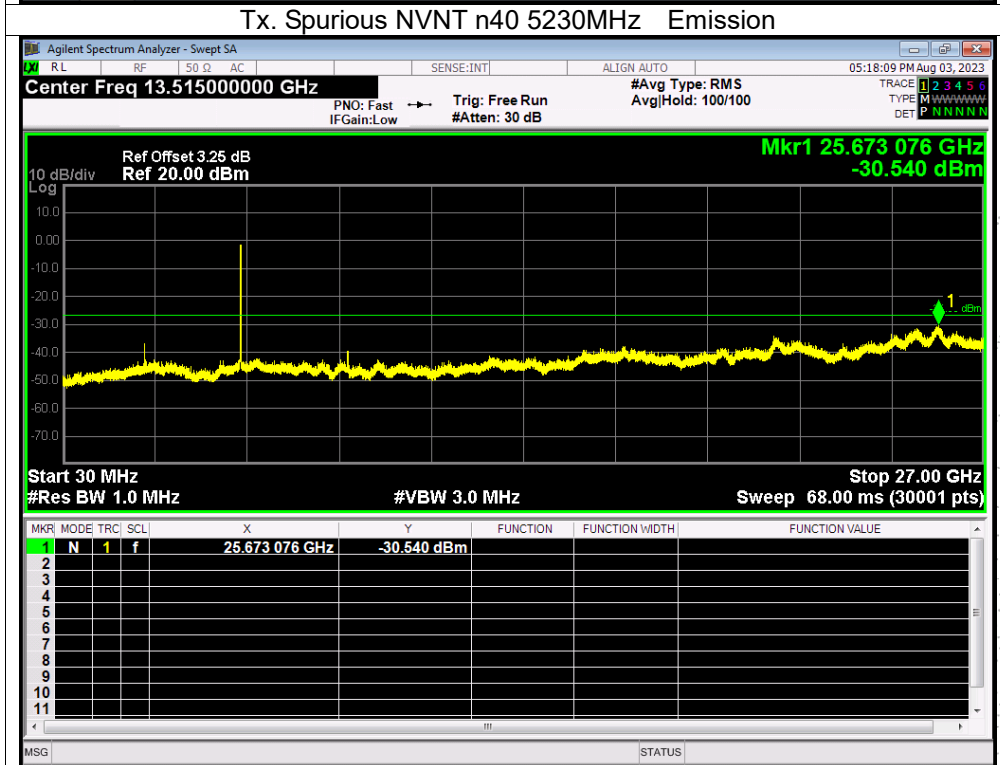
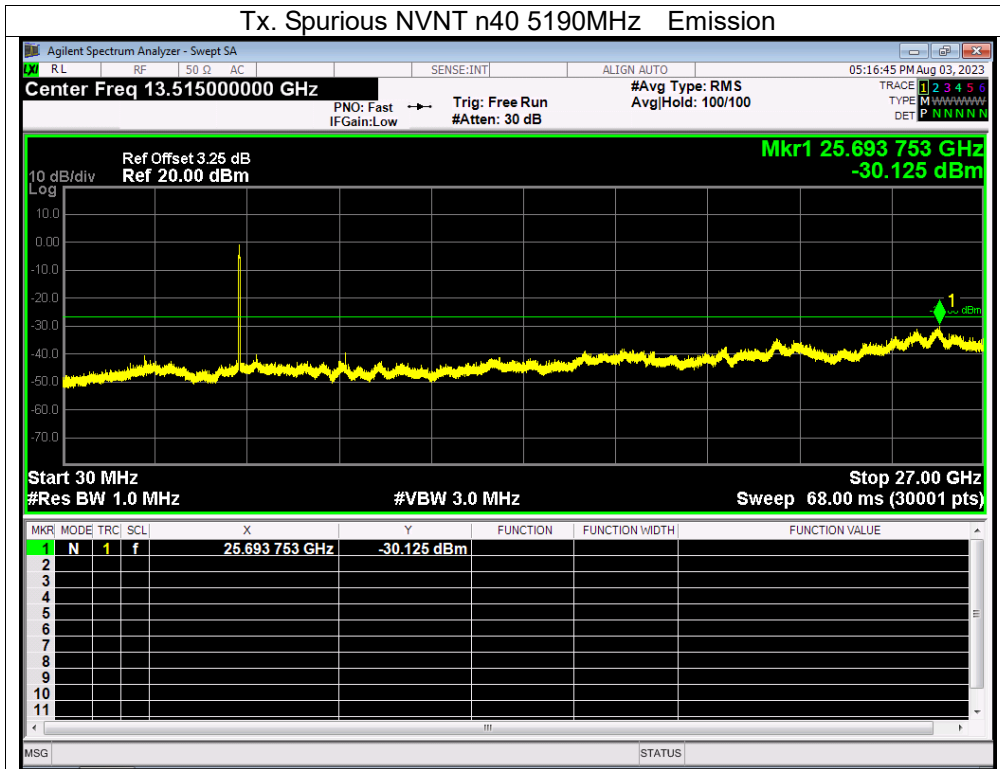
About: 26.5GHz-40GHz, The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

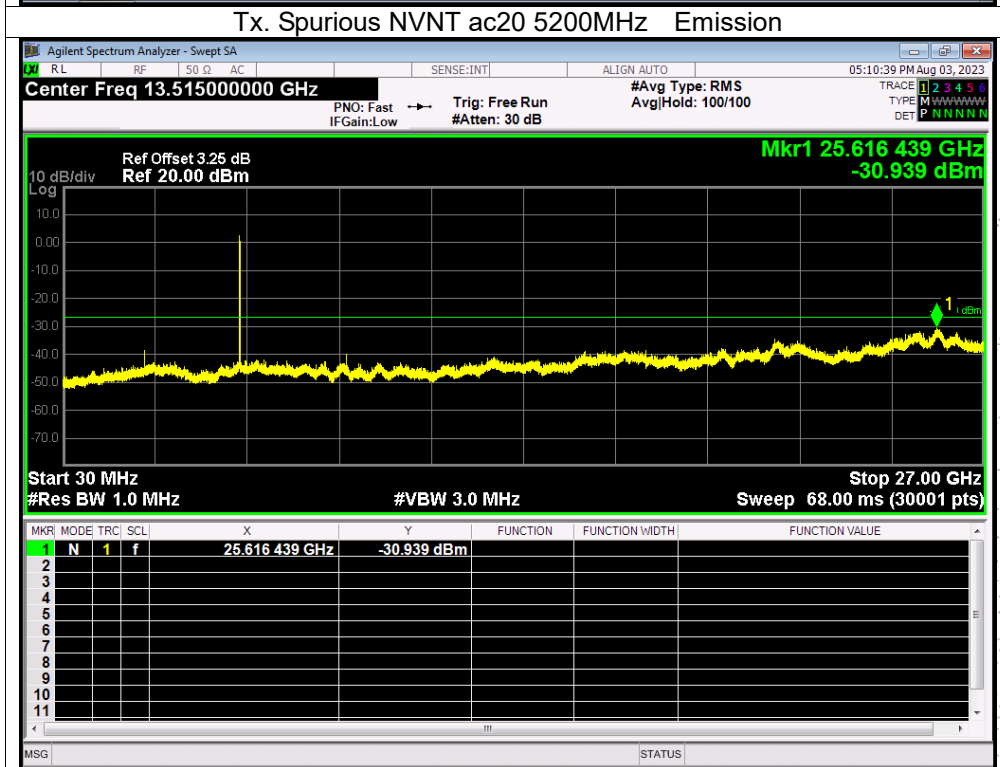
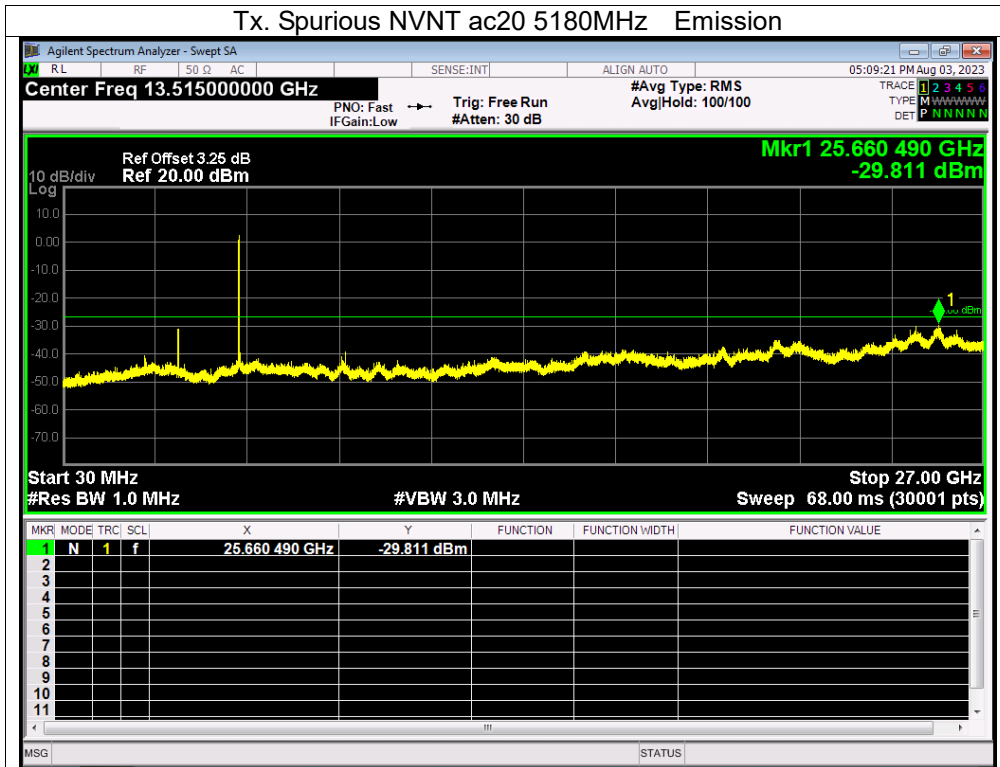
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna B, only shown Antenna B Plot.

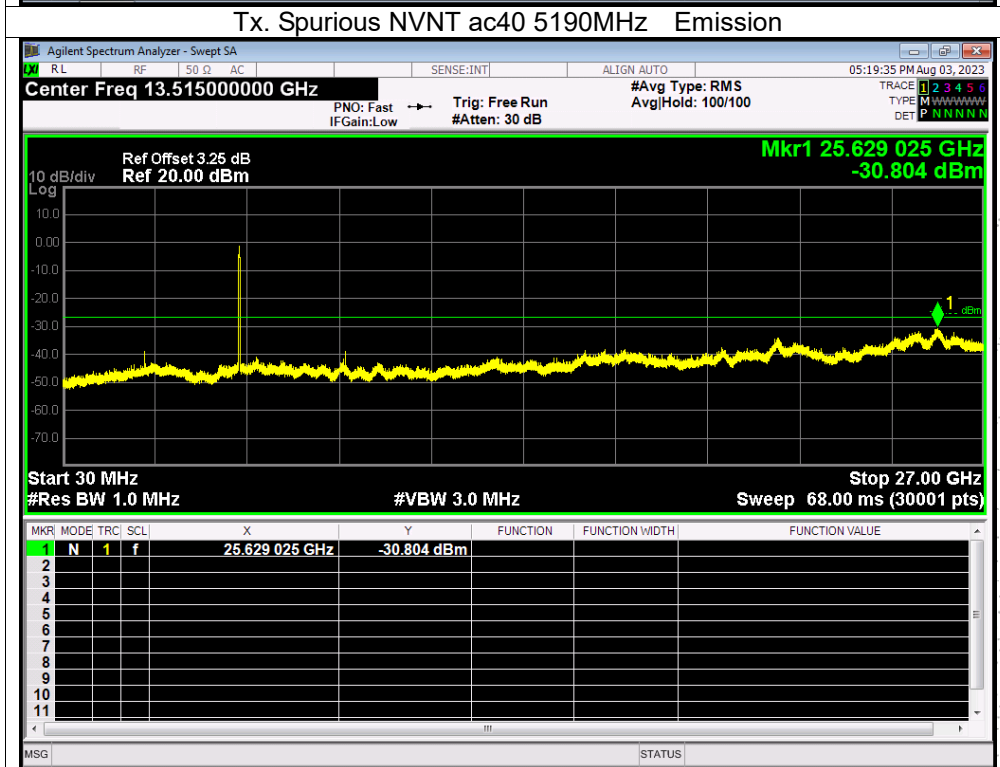
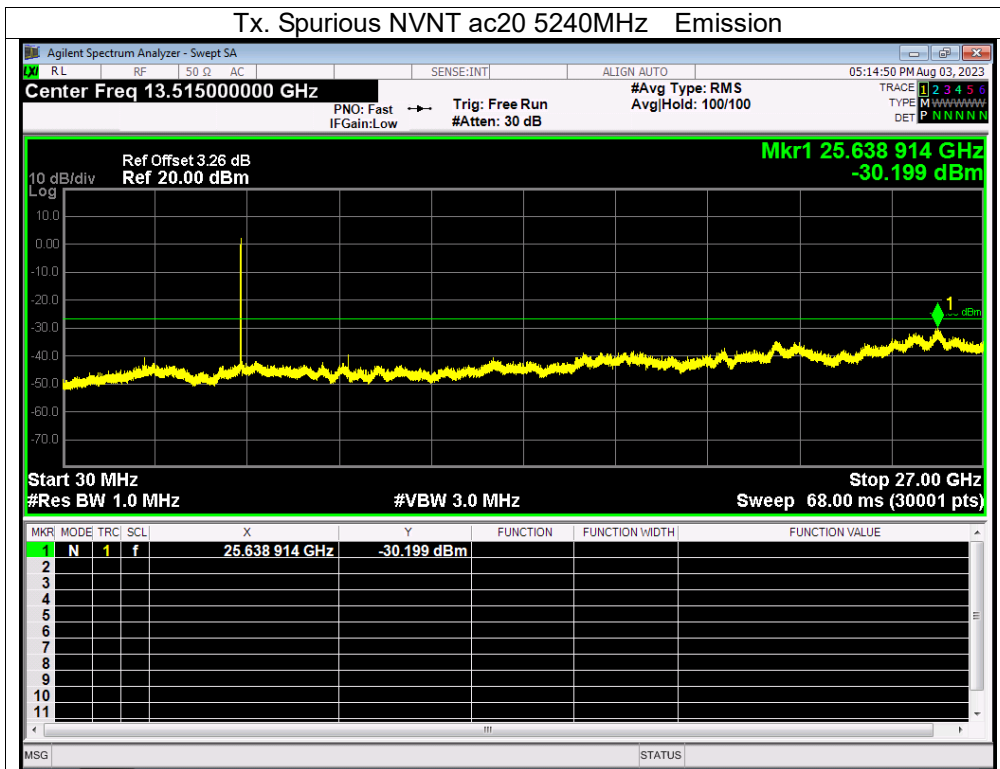


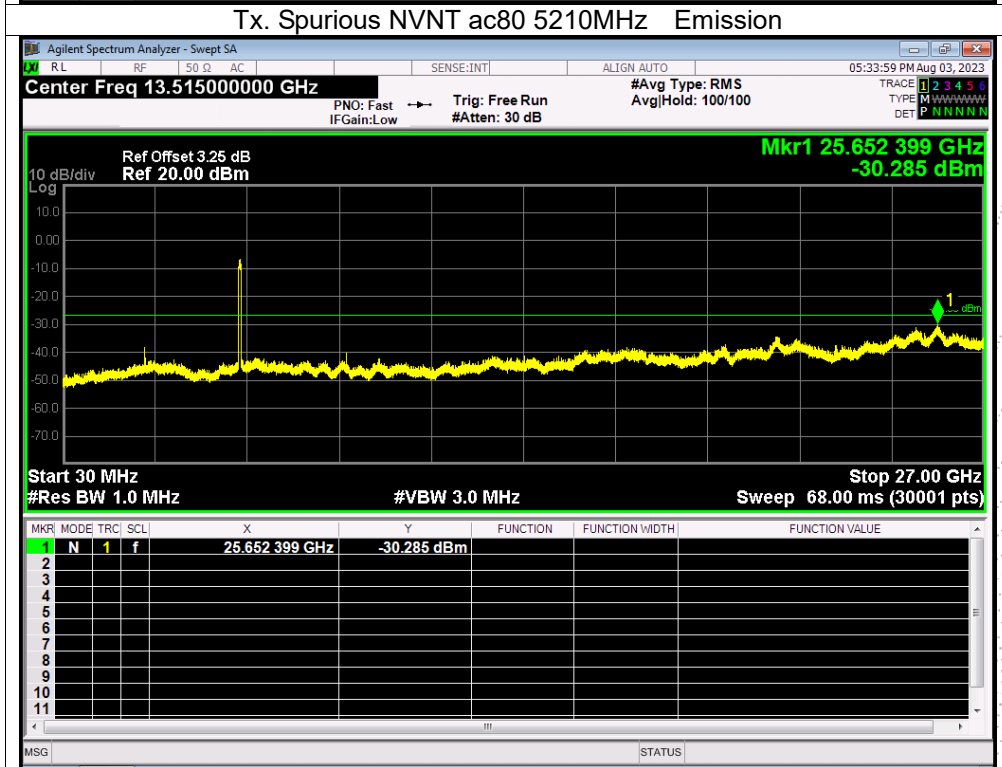
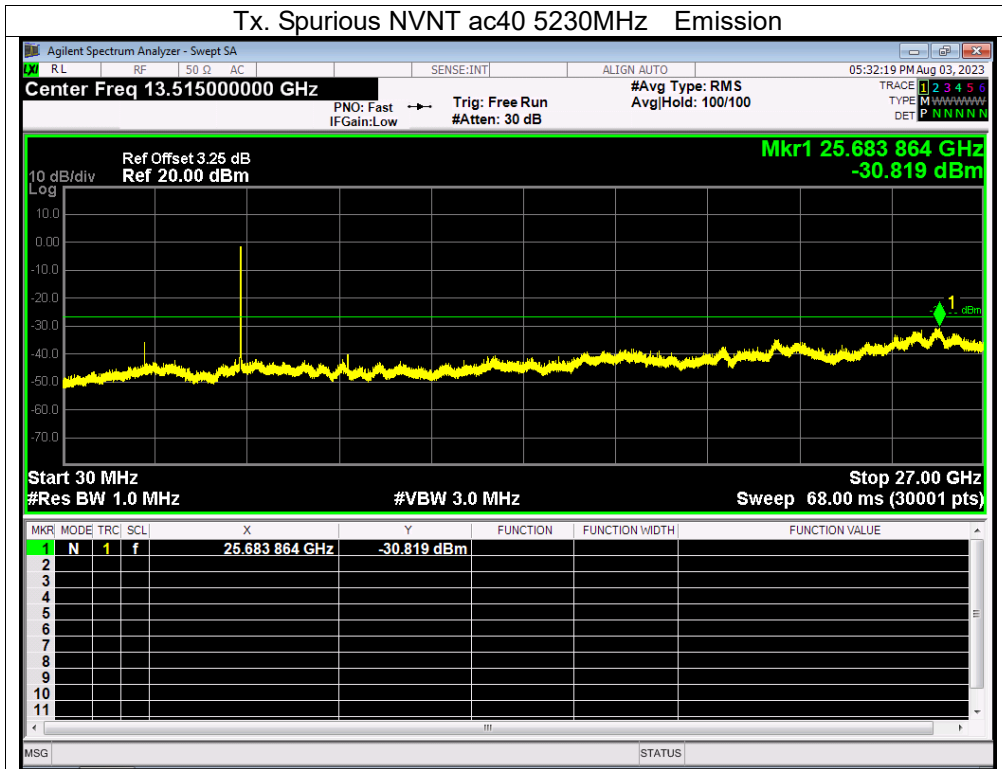


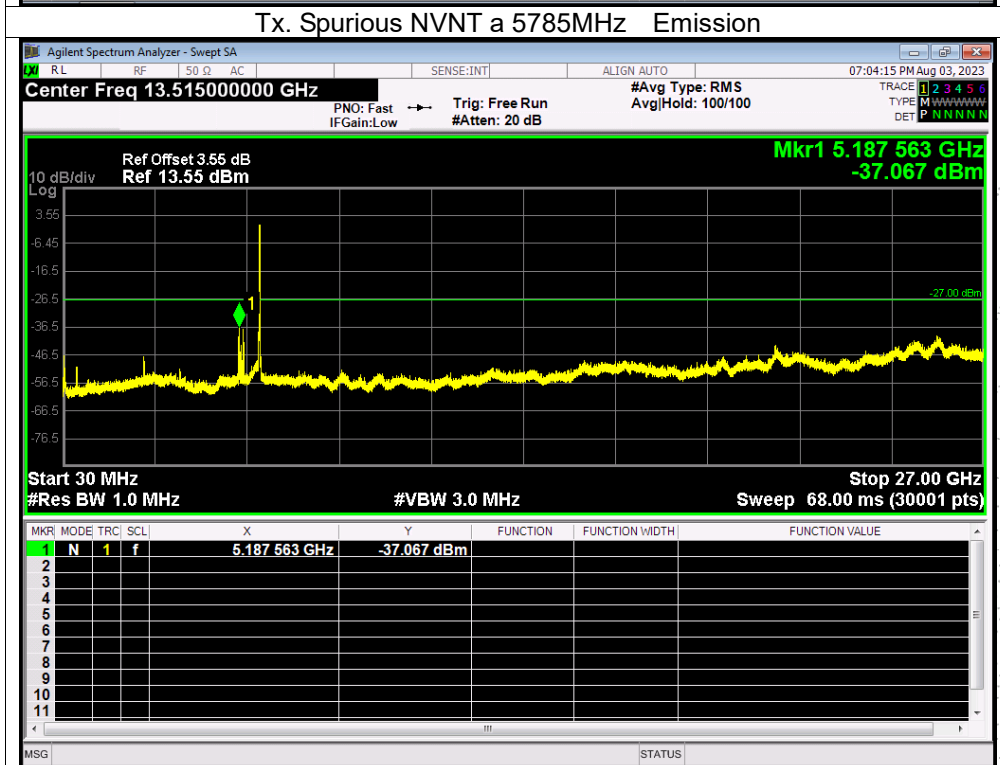
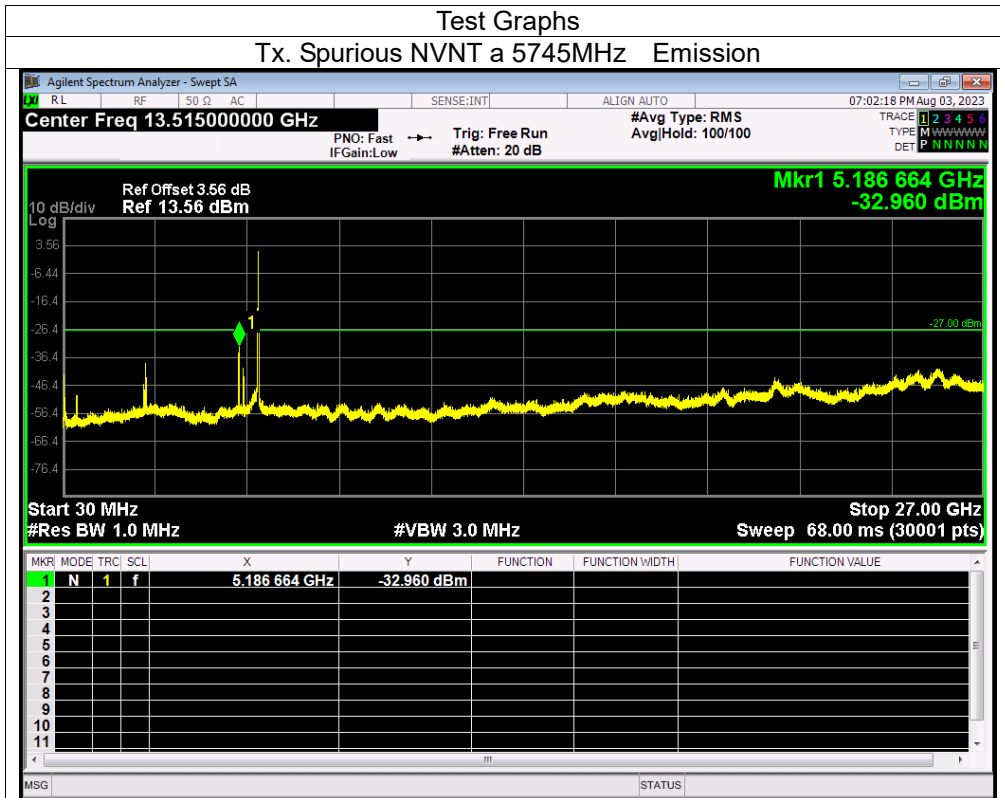


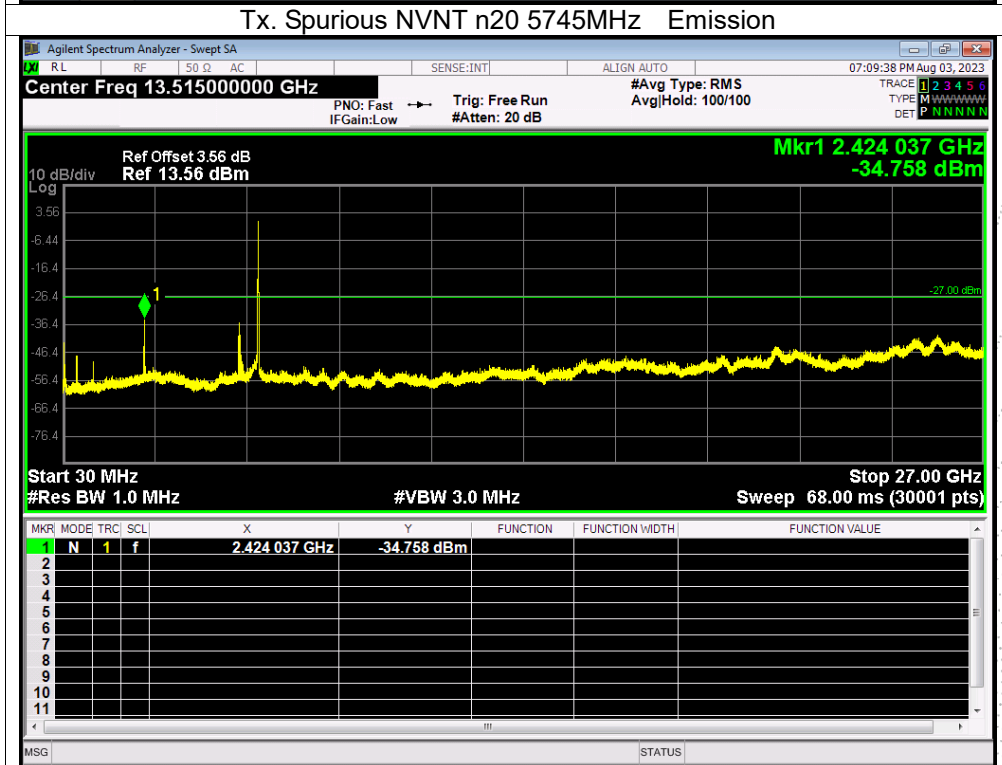
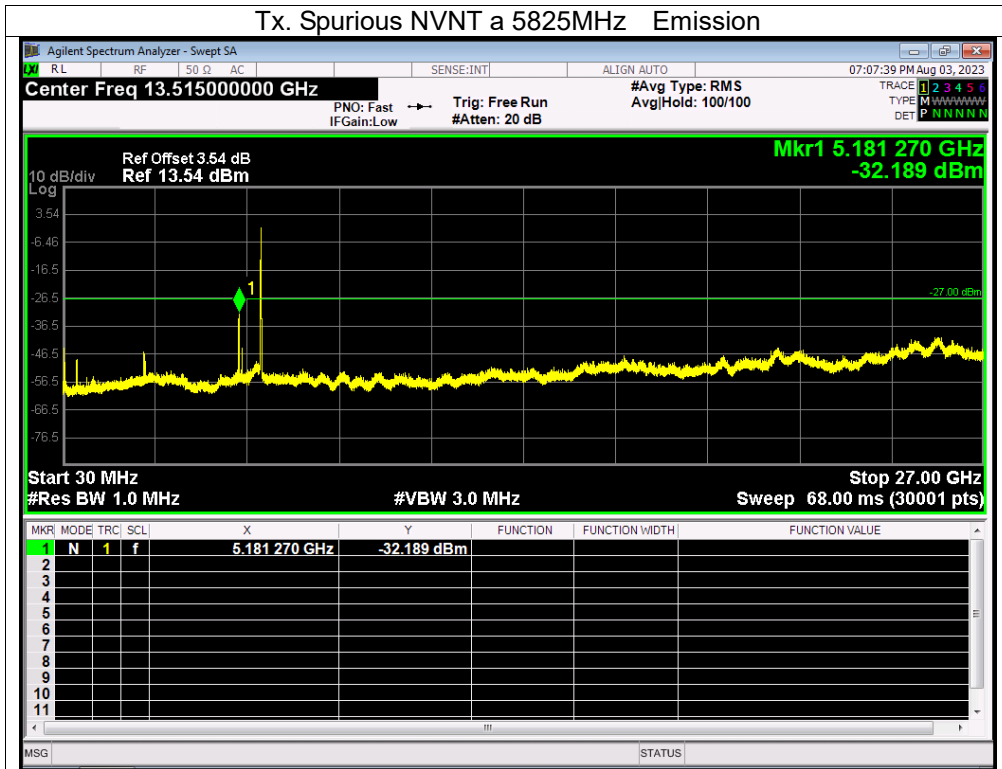


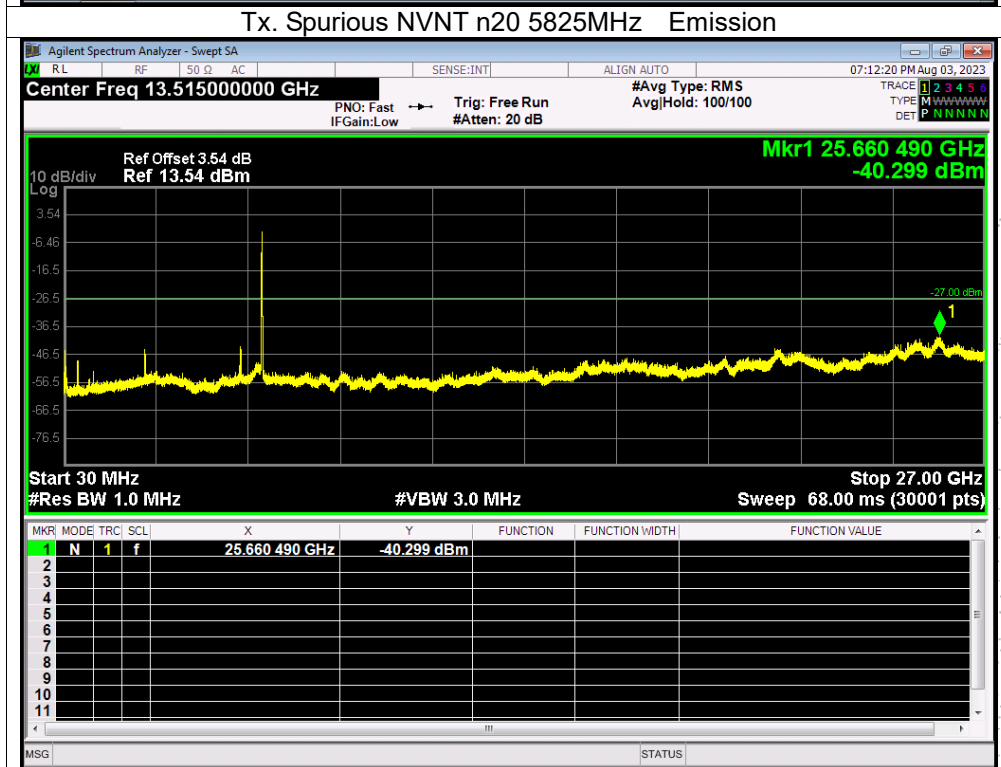
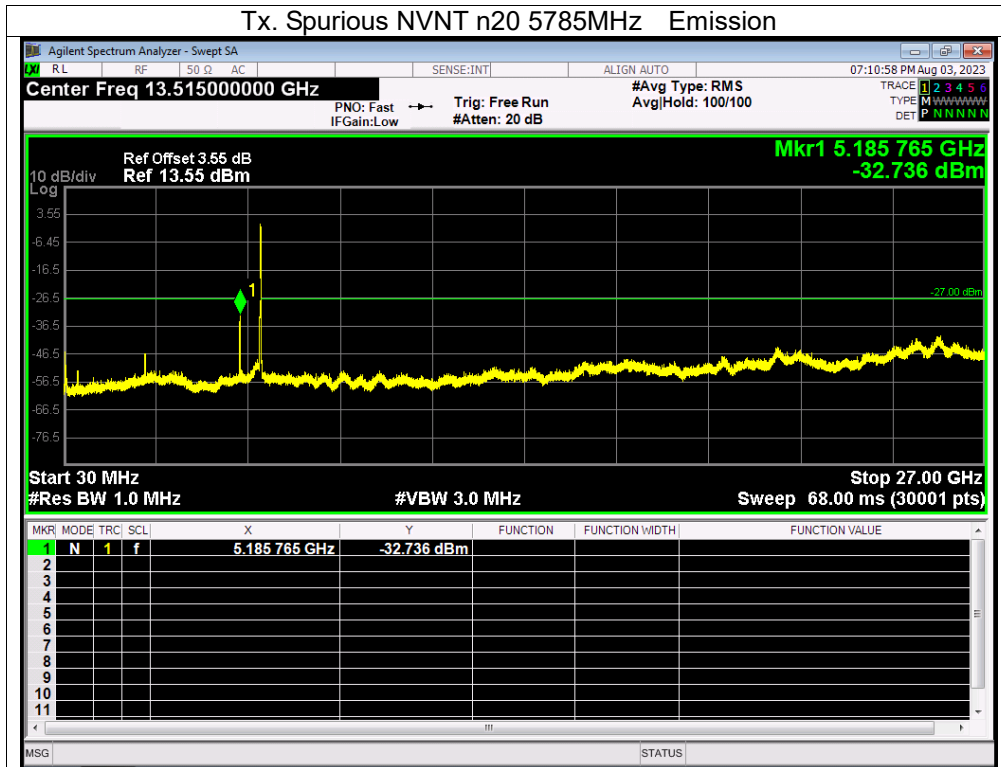


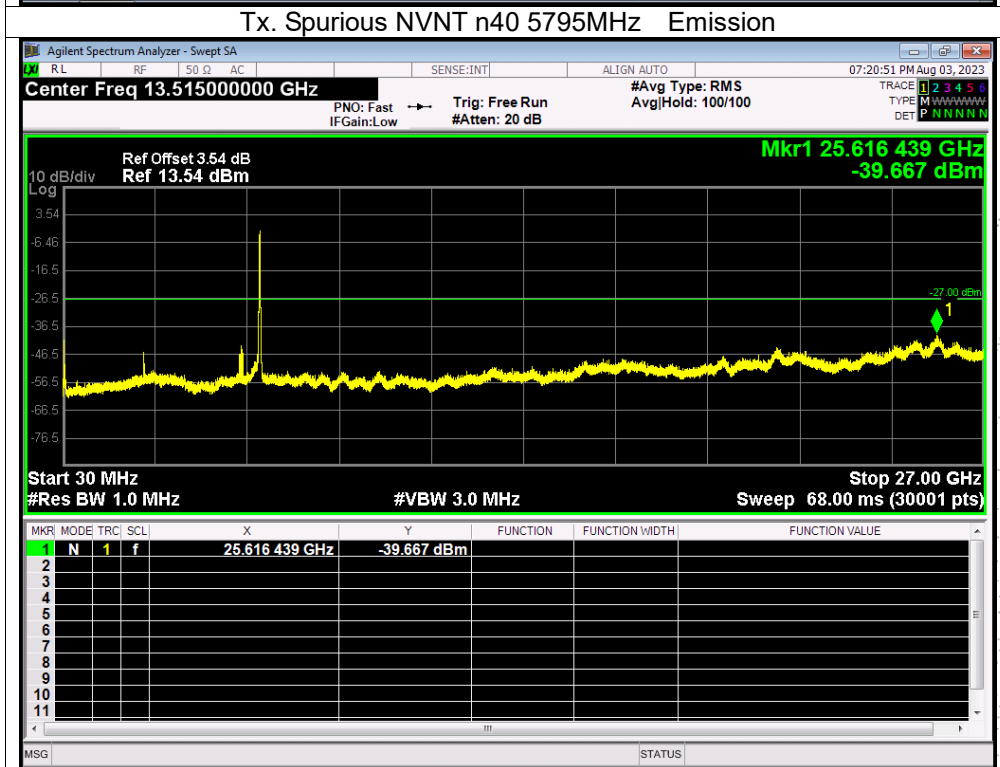
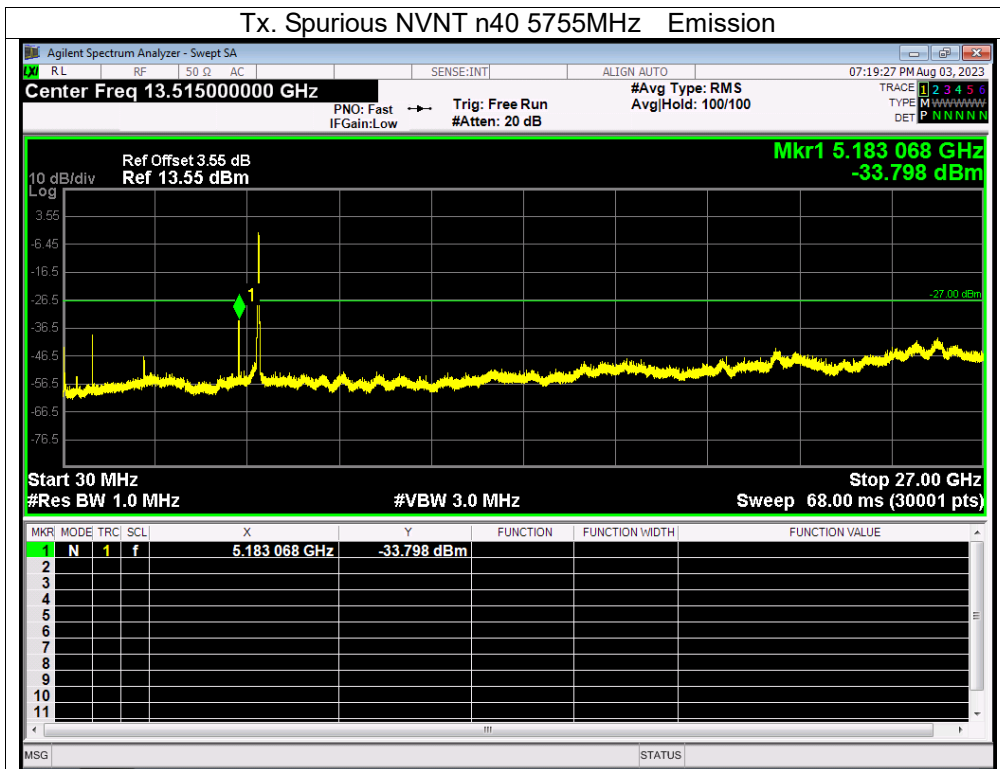


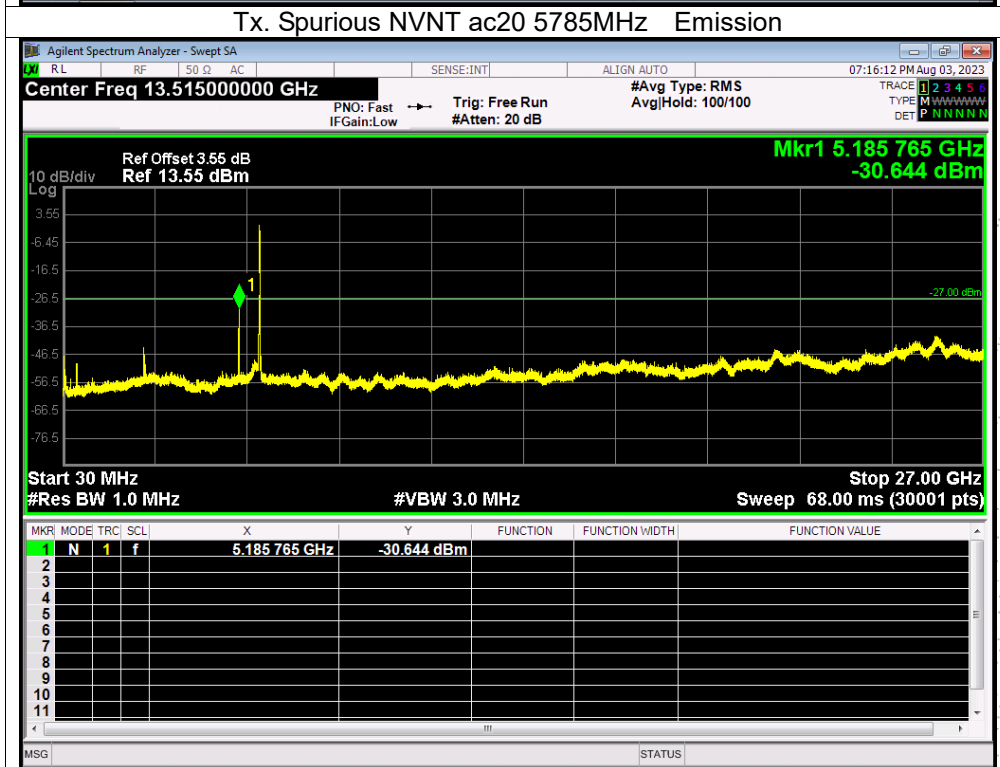
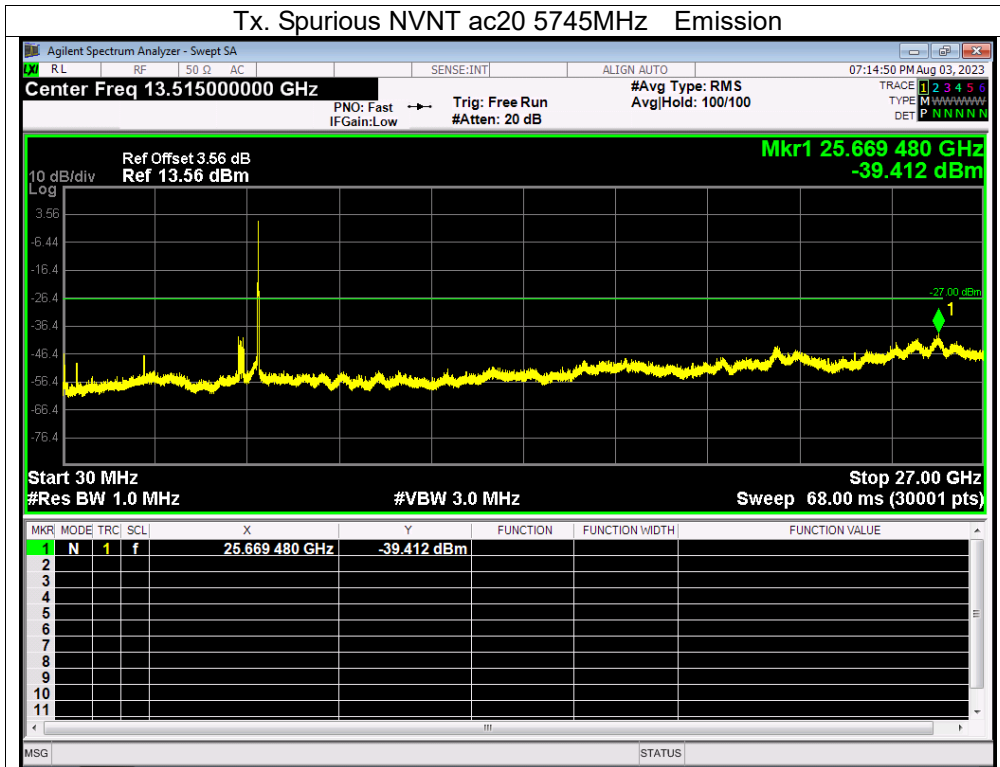


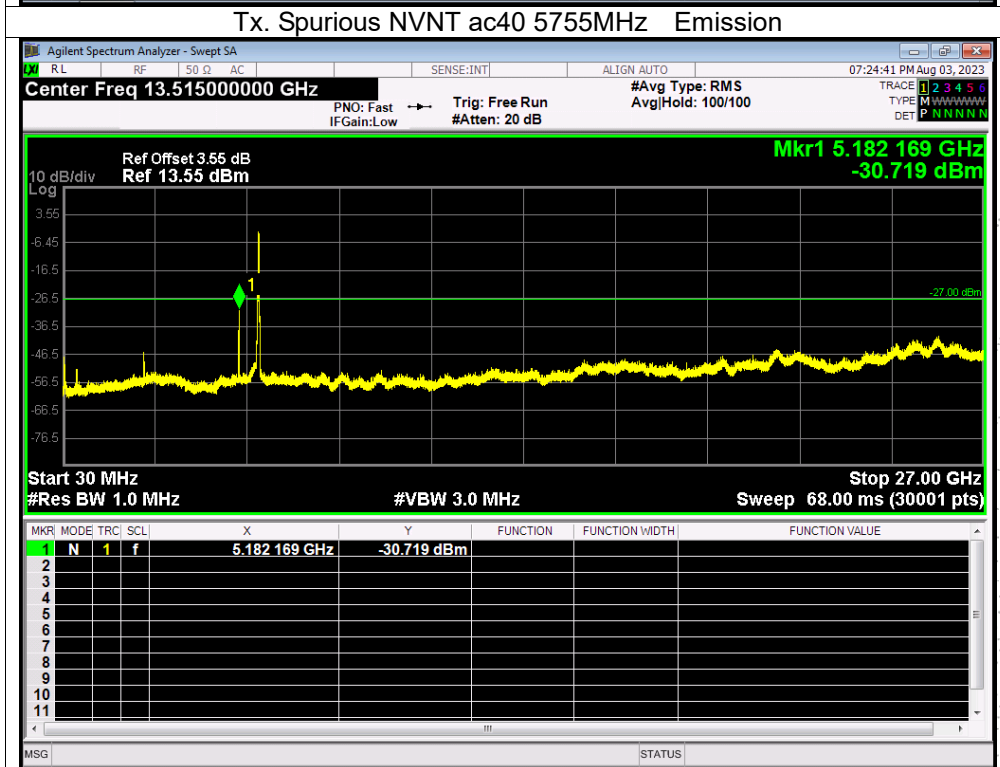
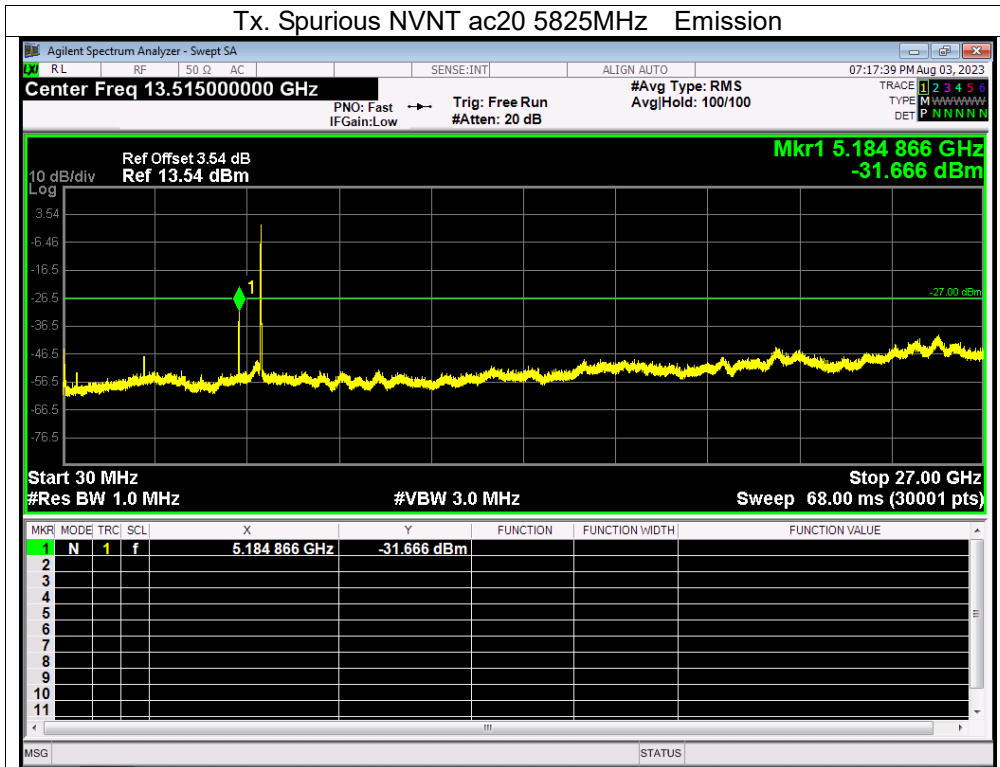


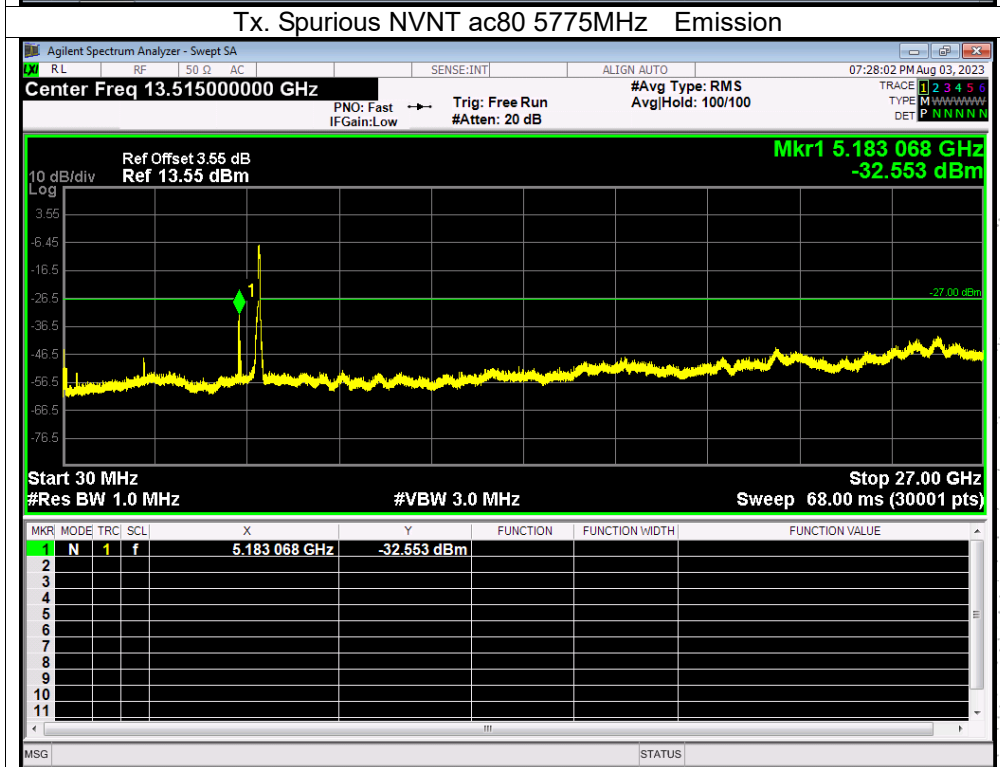
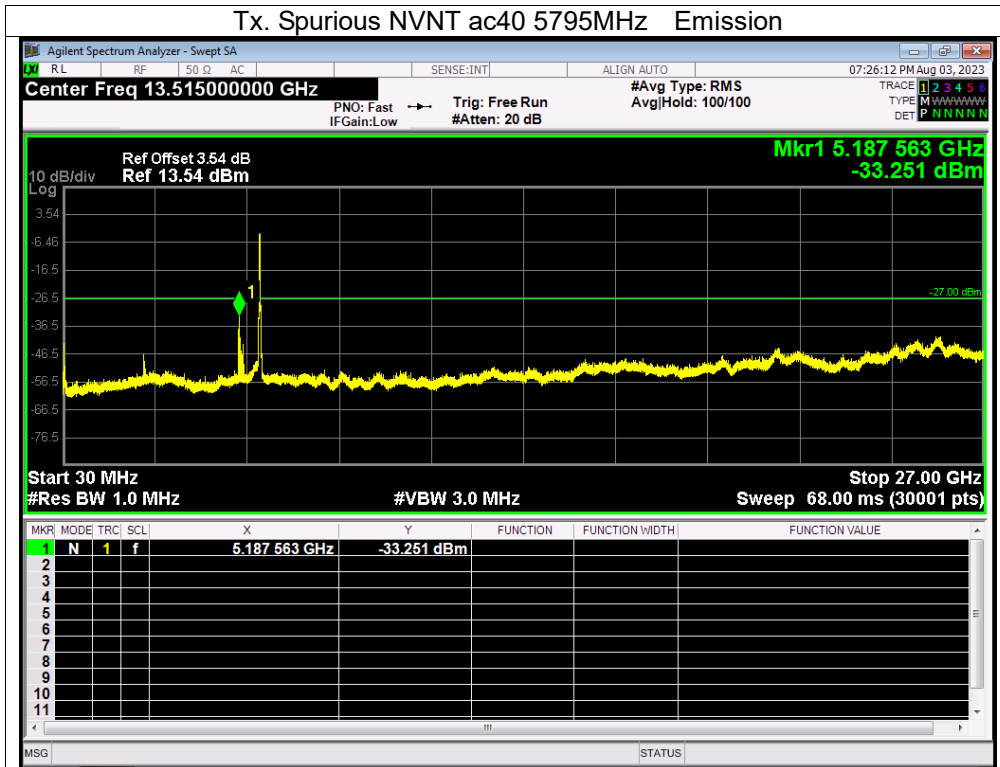












13. Frequency Stability Measurement

13.1 Block Diagram Of Test Setup



13.2 Limit

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band (IEEE 802.11n specification).

13.3 Test procedure

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. f_c is declaring of channel frequency. Then the frequency error formula is $(f_c - f) / f_c \times 10^6$ ppm and he limit is less than ± 20 ppm (IEEE 802.11n specification).
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
7. Extreme temperature is $-20^\circ\text{C} \sim 70^\circ\text{C}$.

13.4 Test Result

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC120V/60Hz
Test Mode:	TX (5.1G) Mode Frequency U-NII-1 (5180-5240MHz)		

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5180.0189	5180	0.0189	3.6543
		V max (V)	138.00	5180.0208	5180	0.0208	4.0196
		V min (V)	102.00	5180.0150	5180	0.0150	2.9010
Limits				5150-5250 MHz			
Result				Complies			

Temperature vs. Frequency Stability

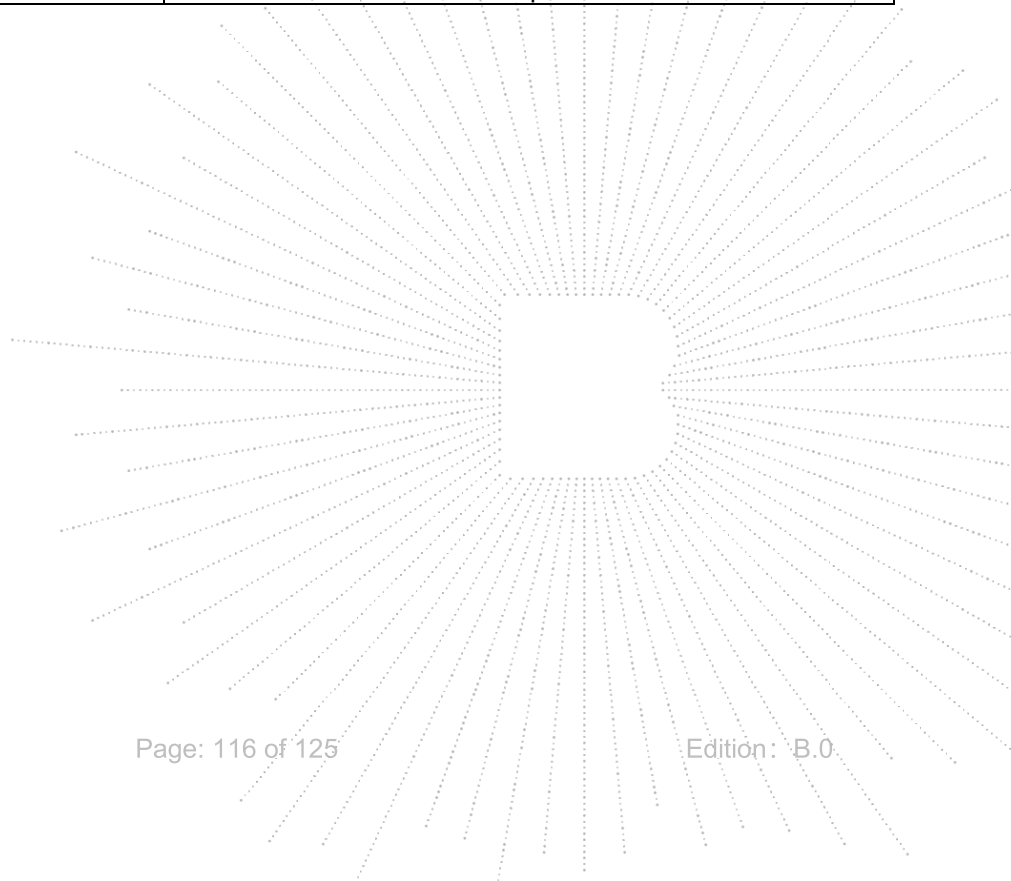
TEST CONDITIONS				Reference Frequency: 5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5180.0113	5180	0.0113	2.1805
		T (°C)	-10	5180.0068	5180	0.0068	1.3075
		T (°C)	0	5180.0016	5180	0.0016	0.3043
		T (°C)	10	5180.0112	5180	0.0112	2.1690
		T (°C)	20	5180.0130	5180	0.0130	2.5106
		T (°C)	30	5180.0017	5180	0.0017	0.3374
		T (°C)	40	5180.0035	5180	0.0035	0.6736
		T (°C)	50	5180.0104	5180	0.0104	2.0149
		T (°C)	60	5180.0029	5180	0.0029	0.5518
		T (°C)	70	5180.0055	5180	0.0055	1.0554
Limits				5150-5250 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5200.0075	5200	0.0075	1.4328
		V max (V)	138.00	5200.0113	5200	0.0113	2.1636
		V min (V)	102.00	5200.0100	5200	0.0100	1.9179
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5200.01201	5200	0.01201	2.3098
		T (°C)	-10	5200.01164	5200	0.01164	2.2383
		T (°C)	0	5200.00140	5200	0.00140	0.2686
		T (°C)	10	5200.00541	5200	0.00541	1.0411
		T (°C)	20	5200.00327	5200	0.00327	0.6286
		T (°C)	30	5200.01317	5200	0.01317	2.5333
		T (°C)	40	5200.00328	5200	0.00328	0.6312
		T (°C)	50	5200.01164	5200	0.01164	2.2392
		T (°C)	60	5200.01027	5200	0.01027	1.9747
		T (°C)	70	5200.01197	5200	0.01197	2.3023
Limits				5150-5250 MHz			
Result				Complies			

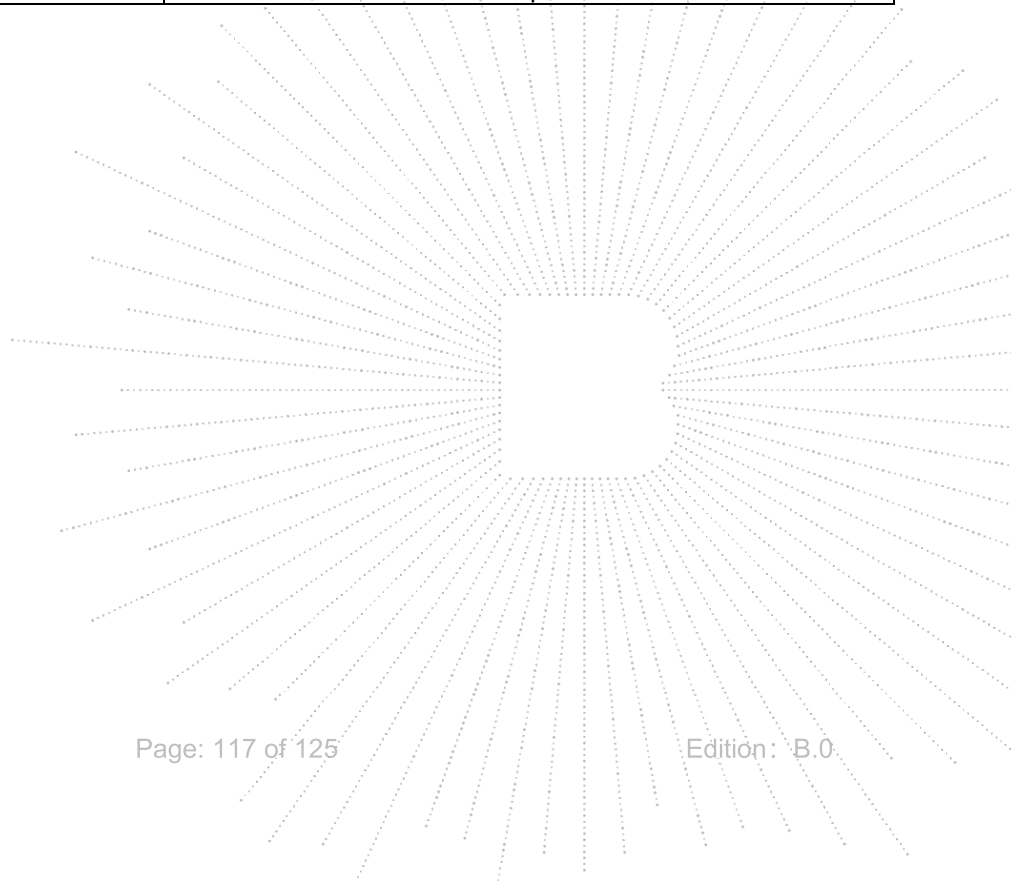


Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5240.0001	5240	0.0001	0.0105
		V max (V)	138.00	5240.0117	5240	0.0117	2.2346
		V min (V)	102.00	5240.0012	5240	0.0012	0.2250
Limits				5150-5250 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5240.0088	5240	0.0088	1.6793
		T (°C)	-10	5240.0032	5240	0.0032	0.6179
		T (°C)	0	5240.0018	5240	0.0018	0.3425
		T (°C)	10	5240.0124	5240	0.0124	2.3608
		T (°C)	20	5240.0024	5240	0.0024	0.4510
		T (°C)	30	5240.0017	5240	0.0017	0.3227
		T (°C)	40	5240.0045	5240	0.0045	0.8622
		T (°C)	50	5240.0083	5240	0.0083	1.5817
		T (°C)	60	5240.0130	5240	0.0130	2.4881
		T (°C)	70	5240.0014	5240	0.0014	0.2682
Limits				5150-5250 MHz			
Result				Complies			



Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC120V/60Hz
Test Mode:	TX (5.8G) Mode Frequency U-NII-3 (5745-5825MHz)		

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5745.01033	5745	0.01033	1.7986
		V max (V)	138.00	5745.00830	5745	0.00830	1.4455
		V min (V)	102.00	5745.00674	5745	0.00674	1.1740
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

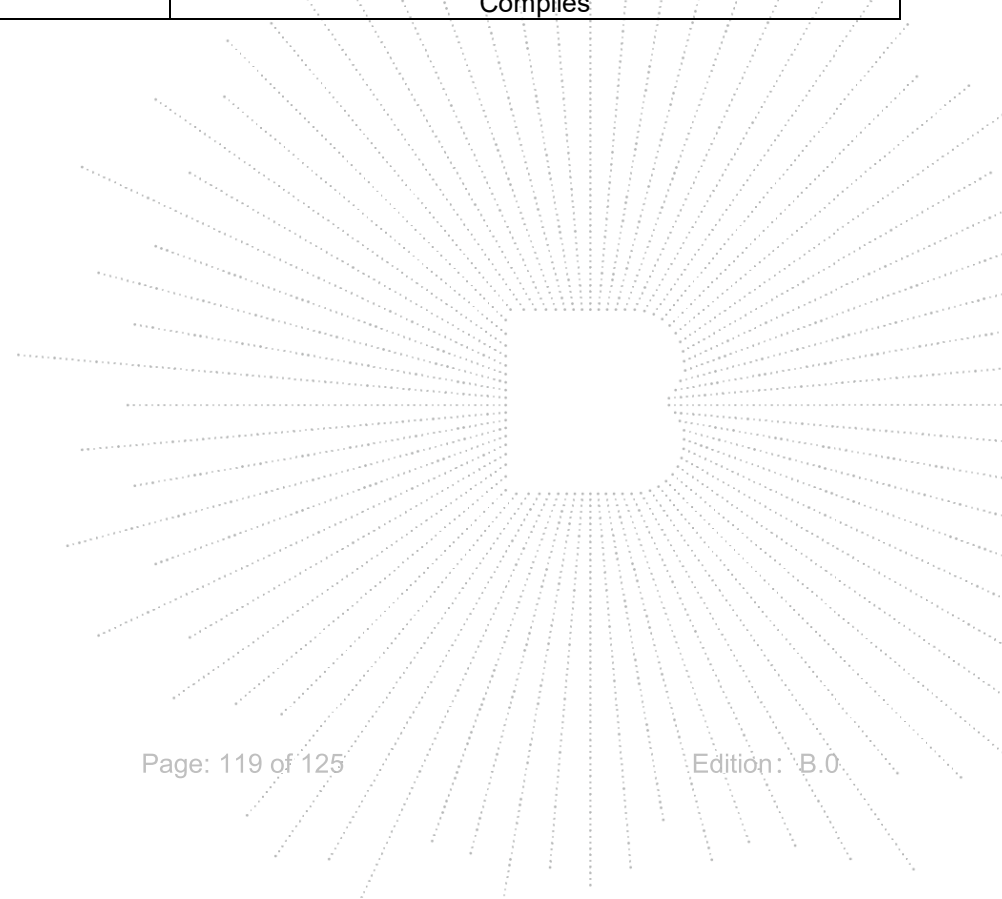
TEST CONDITIONS				Reference Frequency: 5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5745.00938	5745	0.00938	1.6332
		T (°C)	-10	5745.00319	5745	0.00319	0.5545
		T (°C)	0	5745.00283	5745	0.00283	0.4929
		T (°C)	10	5745.00783	5745	0.00783	1.3634
		T (°C)	20	5745.01229	5745	0.01229	2.1391
		T (°C)	30	5745.00812	5745	0.00812	1.4136
		T (°C)	40	5745.00394	5745	0.00394	0.6865
		T (°C)	50	5745.01238	5745	0.01238	2.1544
		T (°C)	60	5745.00029	5745	0.00029	0.0512
		T (°C)	70	5745.00117	5745	0.00117	0.2042
Limits				5725-5850 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5785.00248	5785	0.00248	0.4287
		V max (V)	138.00	5785.01316	5785	0.01316	2.2750
		V min (V)	102.00	5785.01275	5785	0.01275	2.2041
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5785.00890	5785	0.00890	1.5384
		T (°C)	-10	5785.00255	5785	0.00255	0.4415
		T (°C)	0	5785.01053	5785	0.01053	1.8198
		T (°C)	10	5785.01228	5785	0.01228	2.1230
		T (°C)	20	5785.00856	5785	0.00856	1.4796
		T (°C)	30	5785.00171	5785	0.00171	0.2960
		T (°C)	40	5785.00204	5785	0.00204	0.3530
		T (°C)	50	5785.00330	5785	0.00330	0.5701
		T (°C)	60	5785.00671	5785	0.00671	1.1607
		T (°C)	70	5785.00173	5785	0.00173	0.2997
Limits				5725-5850 MHz			
Result				Complies			

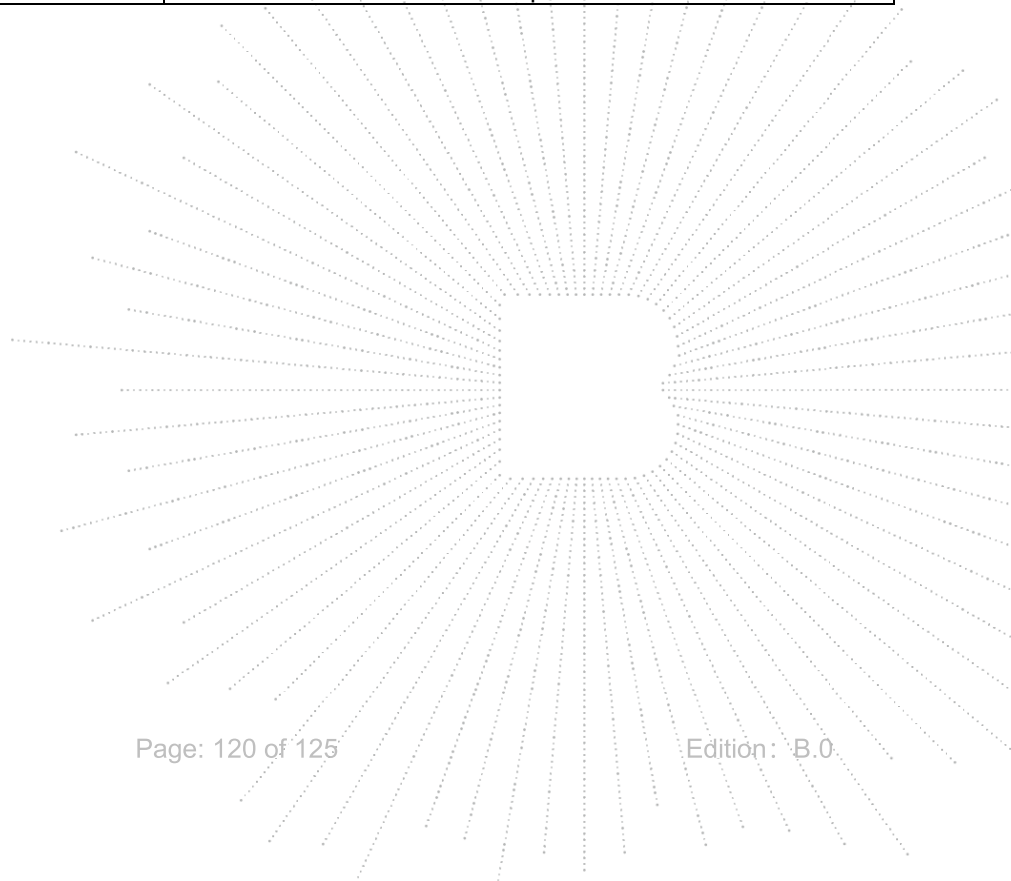


Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5825.00688	5825	0.00688	1.1808
		V max (V)	138.00	5825.00504	5825	0.00504	0.8655
		V min (V)	102.00	5825.00290	5825	0.00290	0.4984
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5825.00684	5825	0.00684	1.1749
		T (°C)	-10	5825.00518	5825	0.00518	0.8901
		T (°C)	0	5825.01192	5825	0.01192	2.0470
		T (°C)	10	5825.00655	5825	0.00655	1.1237
		T (°C)	20	5825.00870	5825	0.00870	1.4934
		T (°C)	30	5825.01315	5825	0.01315	2.2582
		T (°C)	40	5825.01252	5825	0.01252	2.1489
		T (°C)	50	5825.00904	5825	0.00904	1.5513
		T (°C)	60	5825.00288	5825	0.00288	0.4951
		T (°C)	70	5825.00025	5825	0.00025	0.0434
Limits				5725-5850 MHz			
Result				Complies			



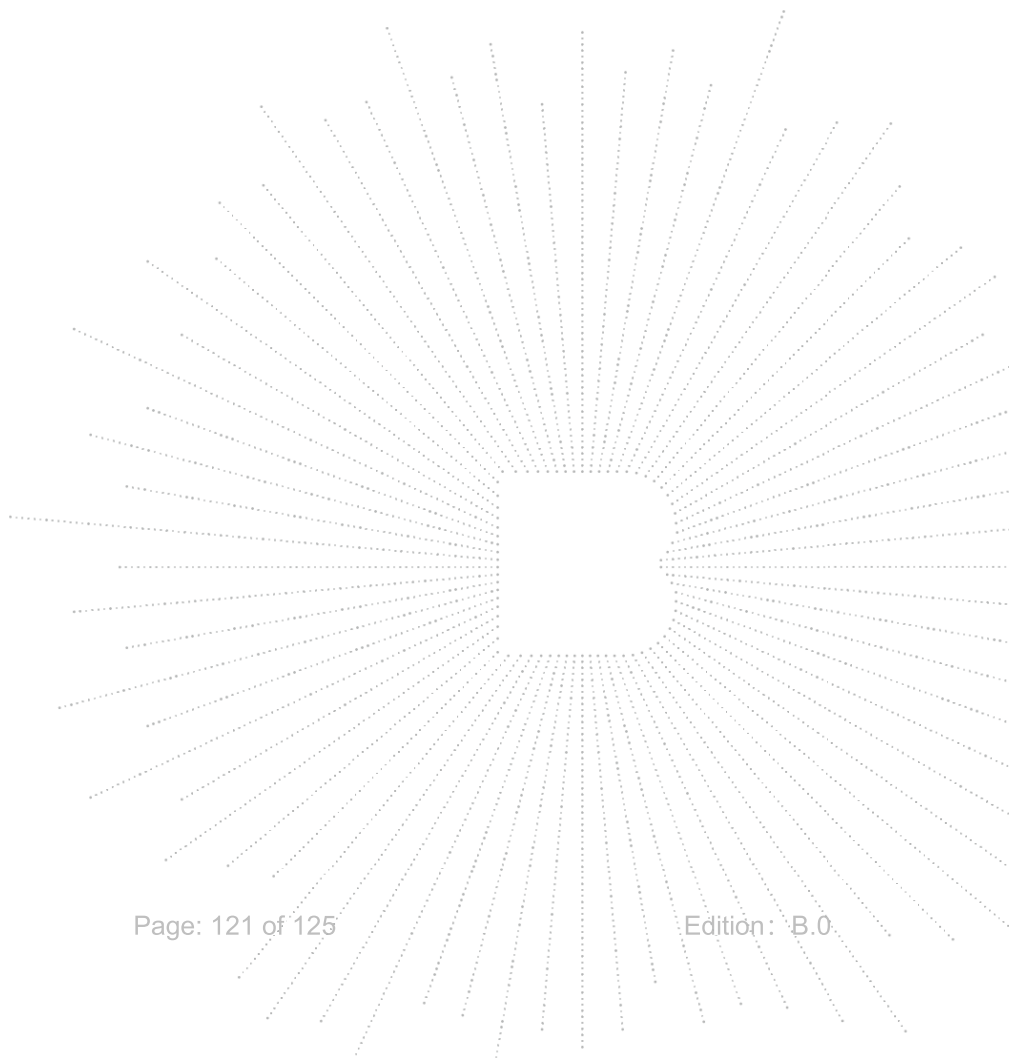
14. Antenna Requirement

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.

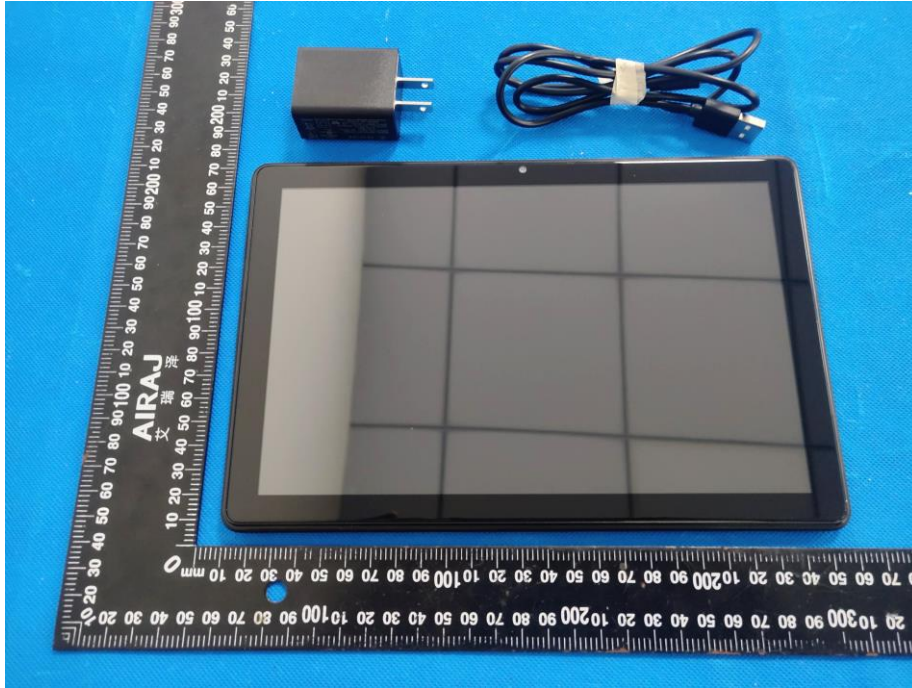
14.2 Test Antenna

The EUT antenna is Internal antenna, It comply with the standard requirement.

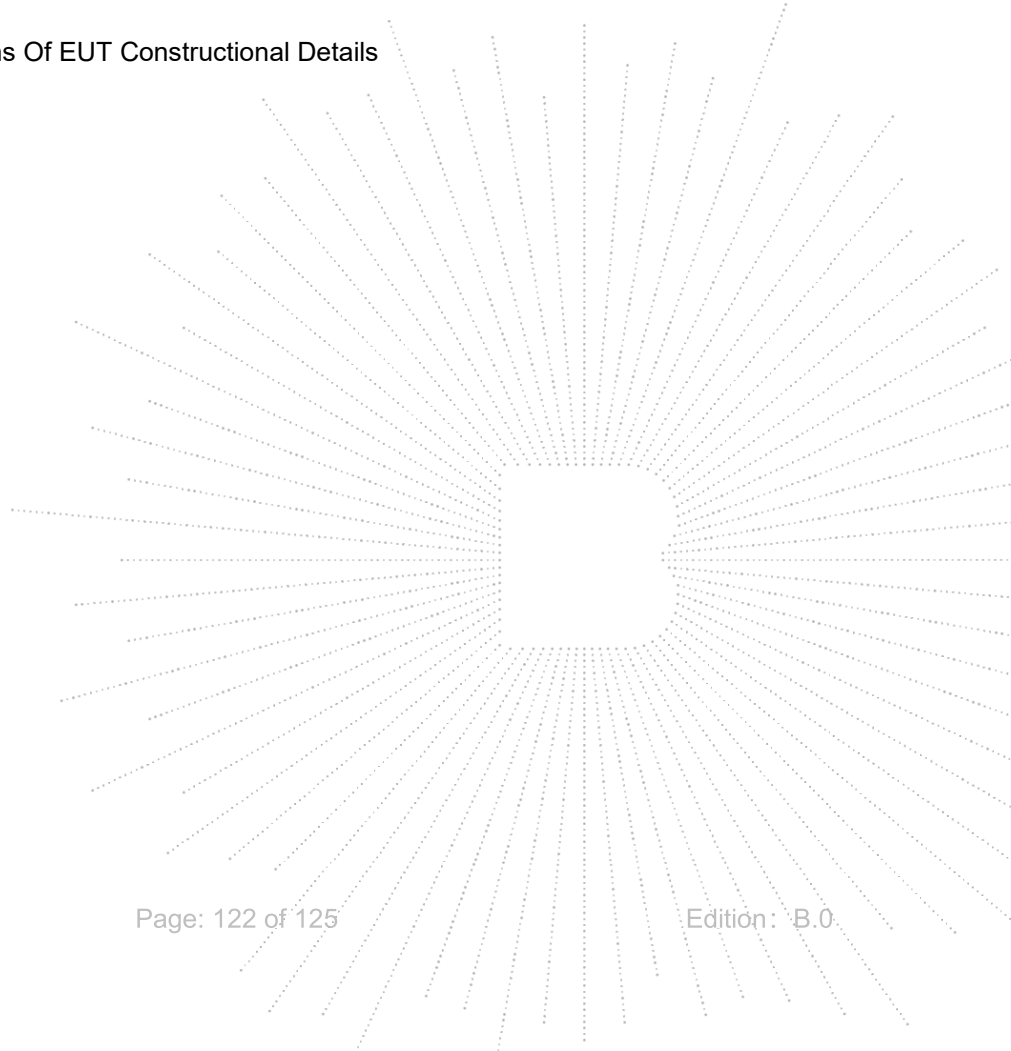


15. EUT Photographs

EUT Photo

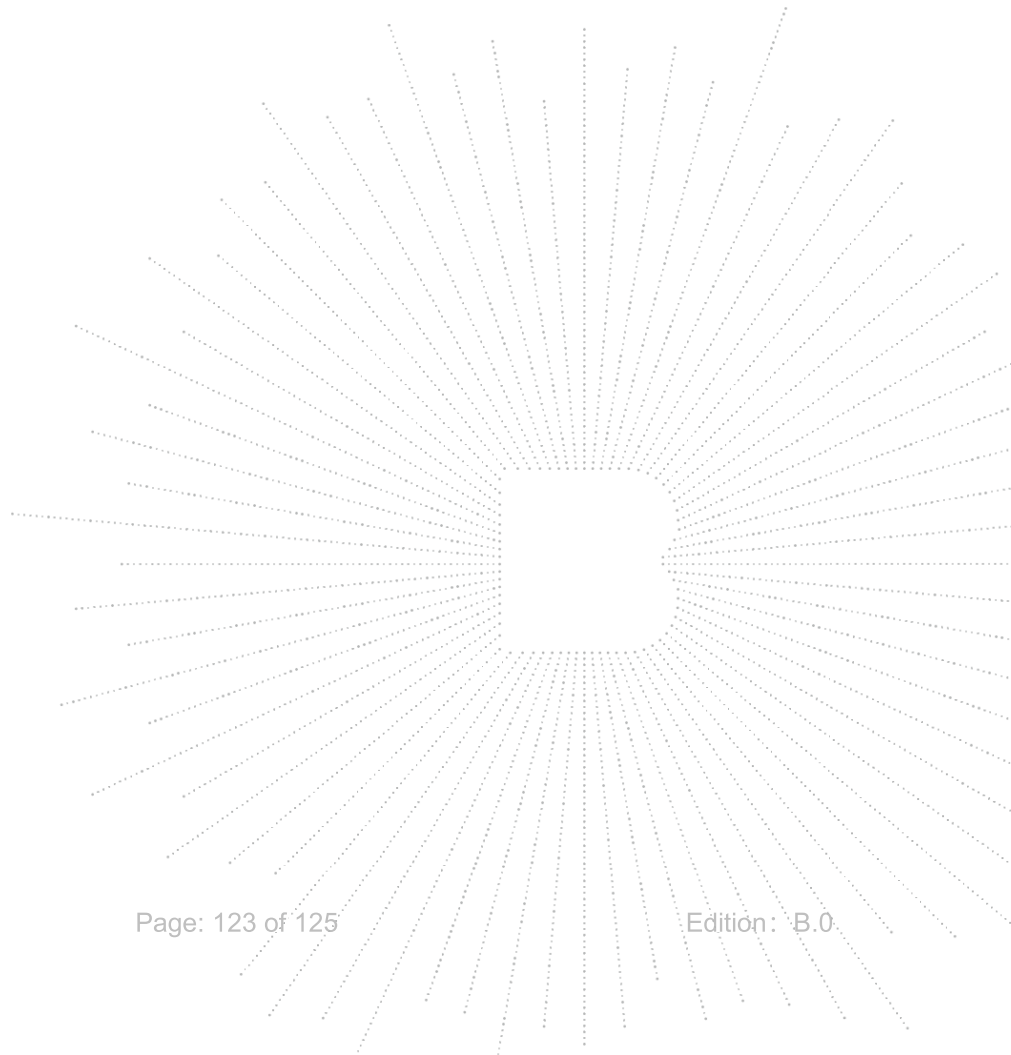


NOTE: Appendix-Photographs Of EUT Constructional Details



16. EUT Test Setup Photographs

Conducted emissions



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 *******