10.5 Test Result

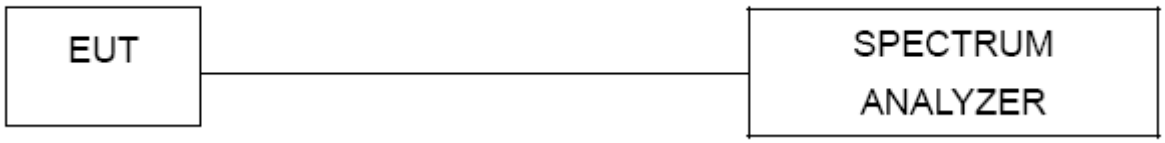
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 12V
Test Mode:	(5180-5240MHz); (5745-5825MHz)		

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	11.41	24	Pass
NVNT	a	5200	10.27	24	Pass
NVNT	a	5240	11.45	24	Pass
NVNT	n20	5180	10.1	24	Pass
NVNT	n20	5200	9.56	24	Pass
NVNT	n20	5240	10.52	24	Pass
NVNT	n40	5190	9.83	24	Pass
NVNT	n40	5230	10.73	24	Pass
NVNT	ac20	5180	10.06	24	Pass
NVNT	ac20	5200	9.38	24	Pass
NVNT	ac20	5240	10.07	24	Pass
NVNT	ac40	5190	8.89	24	Pass
NVNT	ac40	5230	9.46	24	Pass
NVNT	ac80	5210	8.24	24	Pass

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5745	12.05	30	Pass
NVNT	a	5785	11.16	30	Pass
NVNT	a	5825	10.59	30	Pass
NVNT	n20	5745	10.91	30	Pass
NVNT	n20	5785	10.21	30	Pass
NVNT	n20	5825	9.45	30	Pass
NVNT	n40	5755	9.93	30	Pass
NVNT	n40	5795	8.99	30	Pass
NVNT	ac20	5745	11.12	30	Pass
NVNT	ac20	5785	10.24	30	Pass
NVNT	ac20	5825	9.46	30	Pass
NVNT	ac40	5755	9.88	30	Pass
NVNT	ac40	5795	8.93	30	Pass
NVNT	ac80	5775	9.14	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

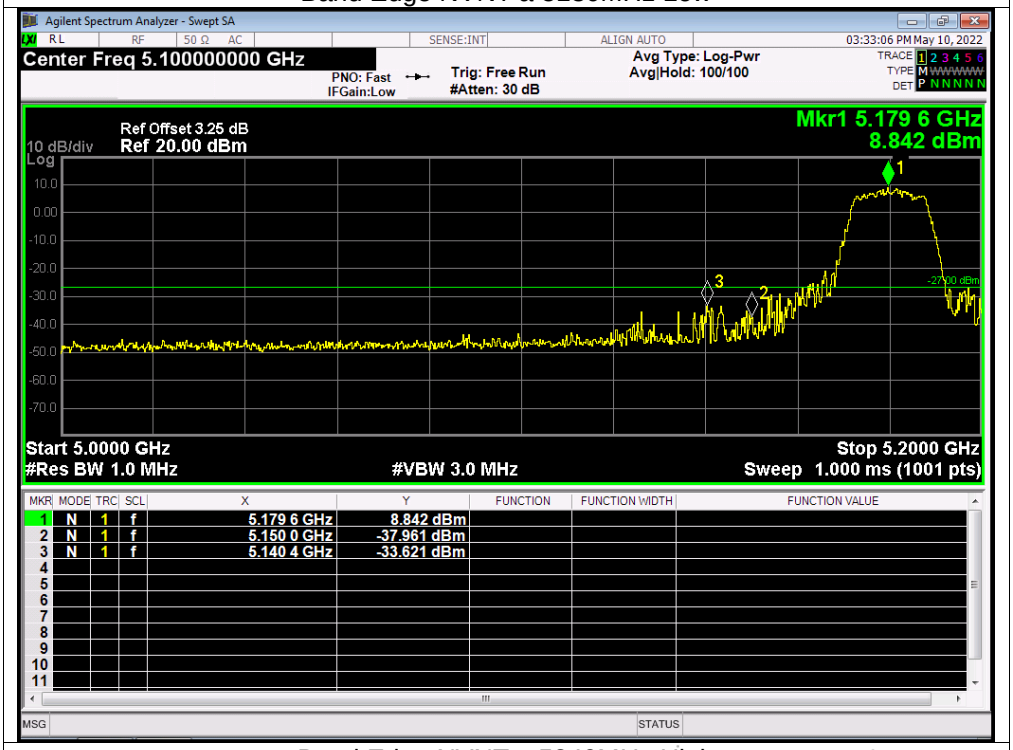
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then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

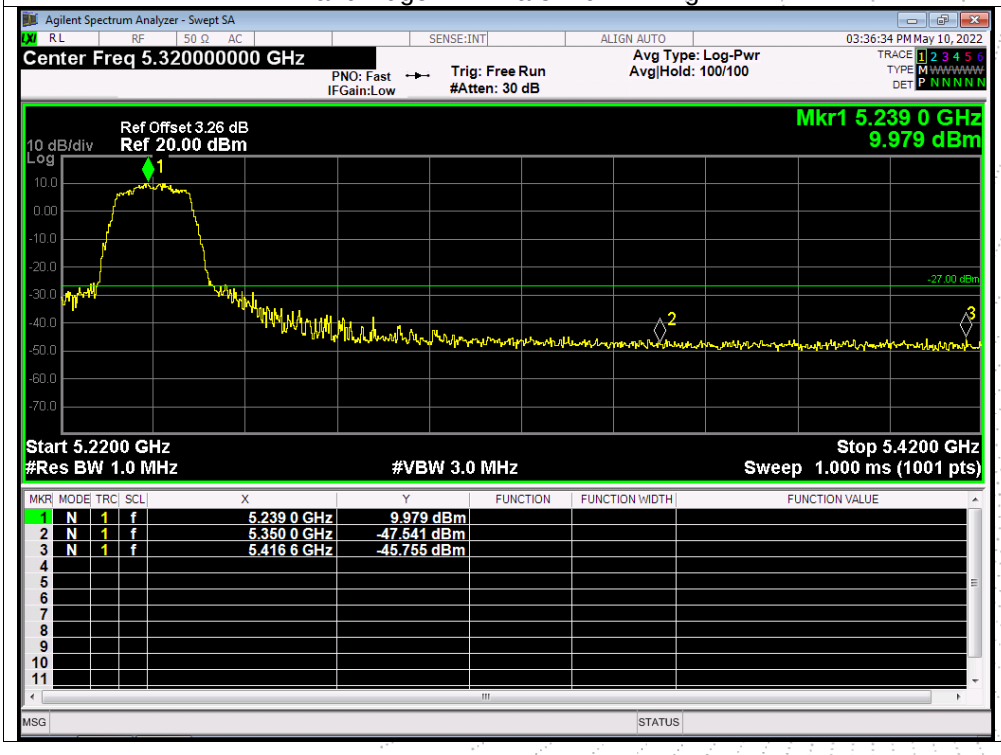
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data

11.5 Test Result

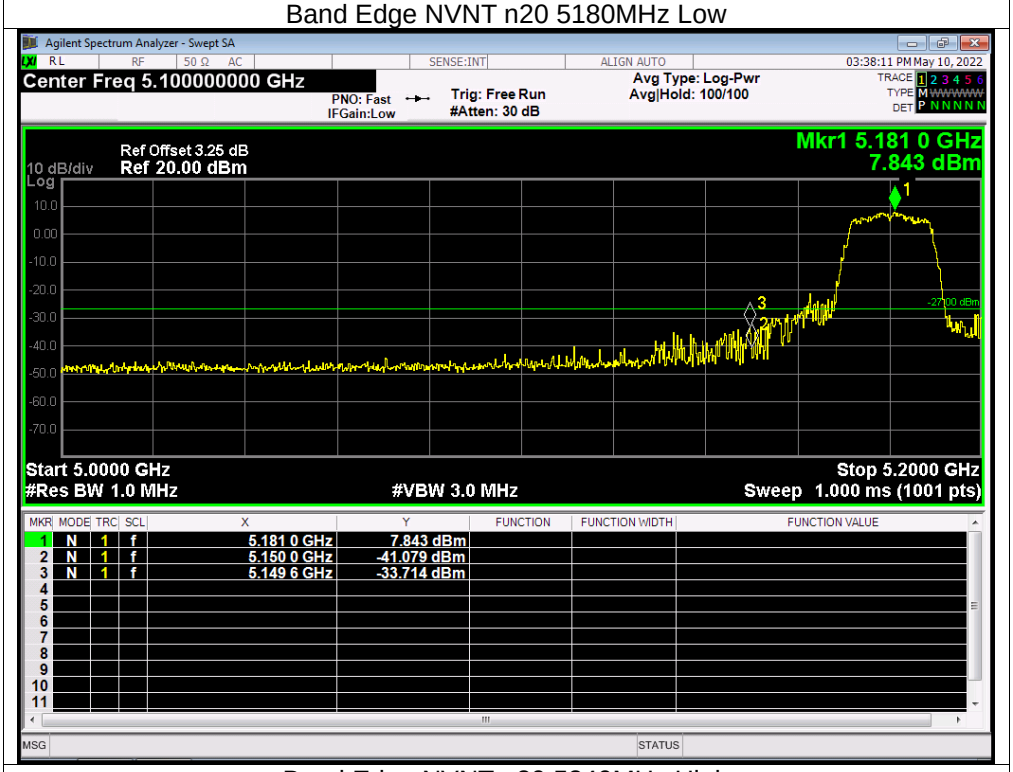
Test Graphs
Band Edge NVNT a 5180MHz Low



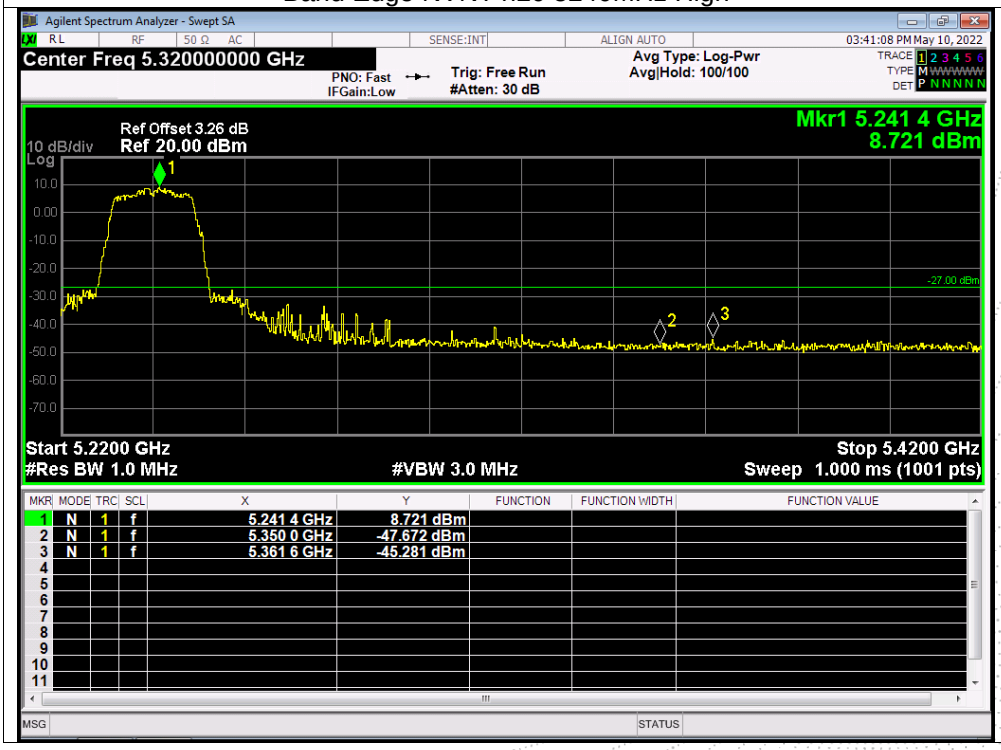
Band Edge NVNT a 5240MHz High



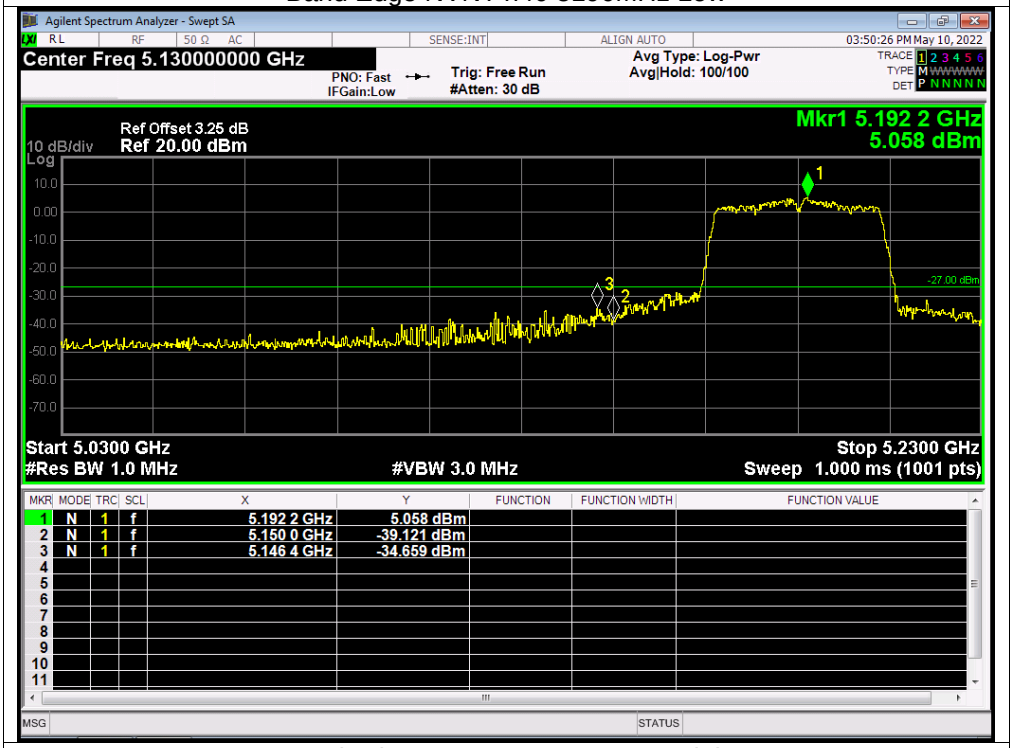
Band Edge NVNT n20 5180MHz Low



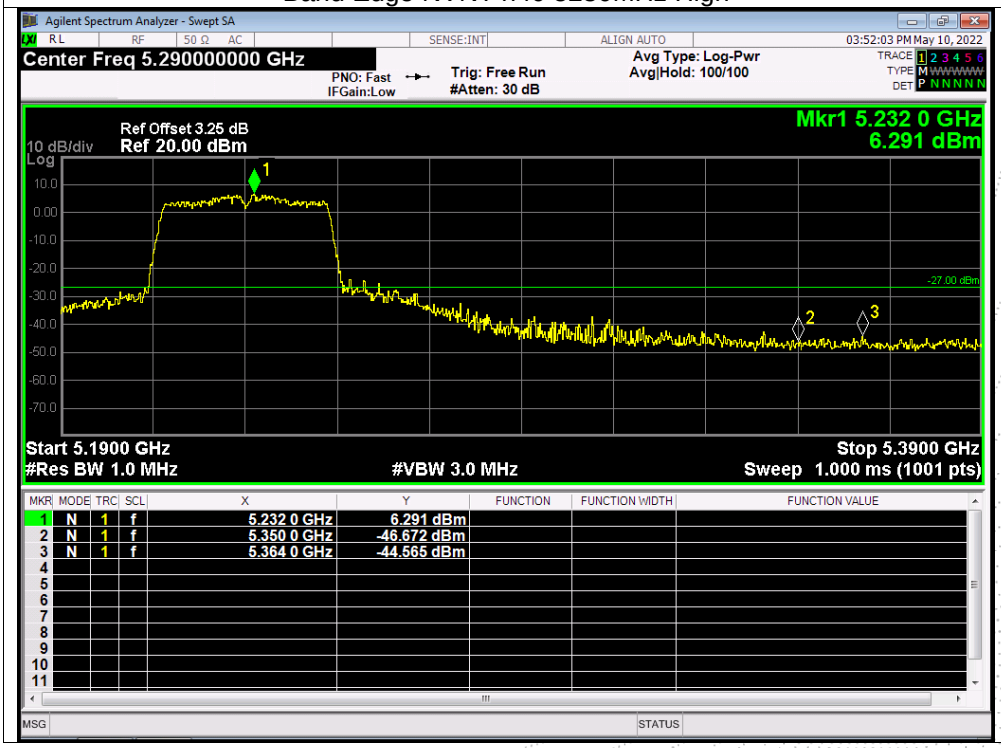
Band Edge NVNT n20 5240MHz High



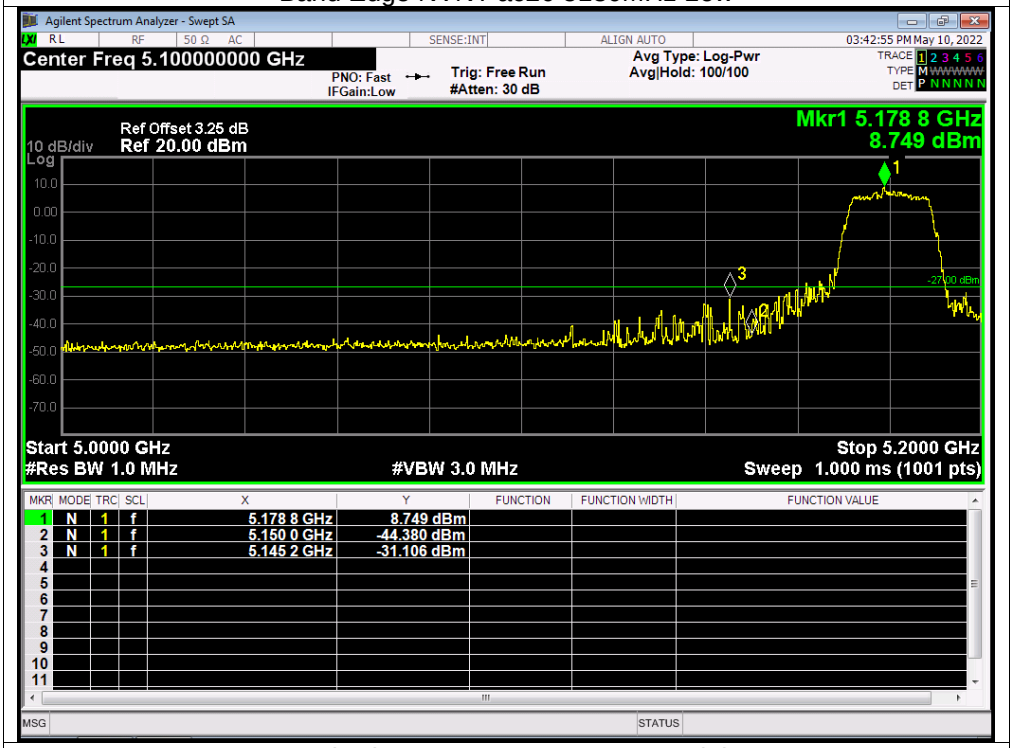
Band Edge NVNT n40 5190MHz Low



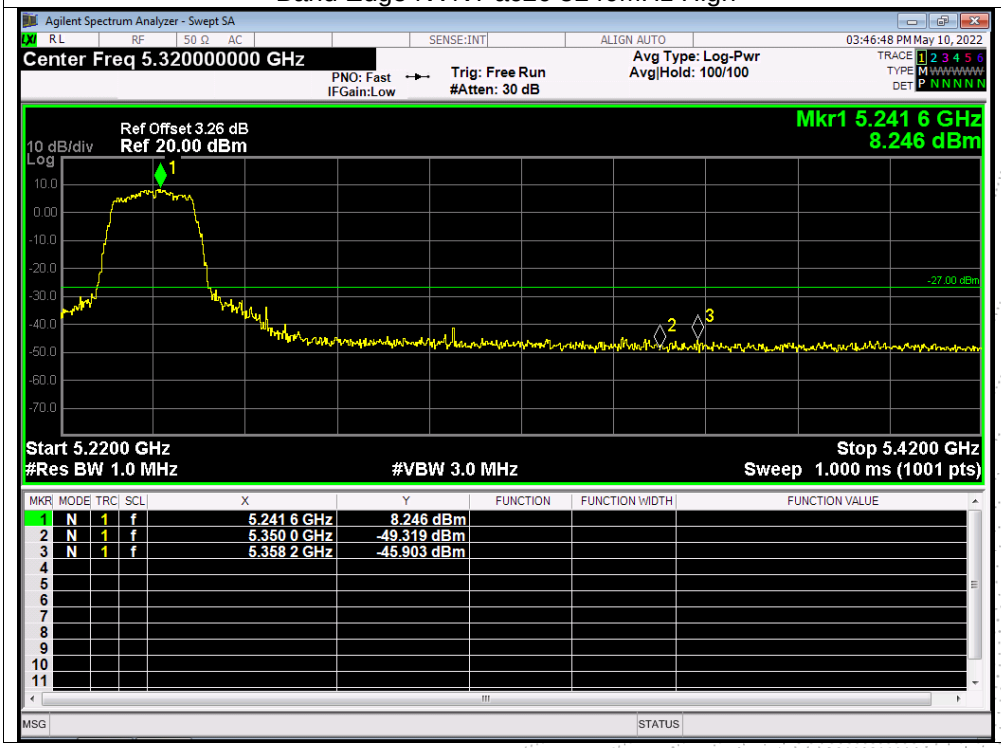
Band Edge NVNT n40 5230MHz High



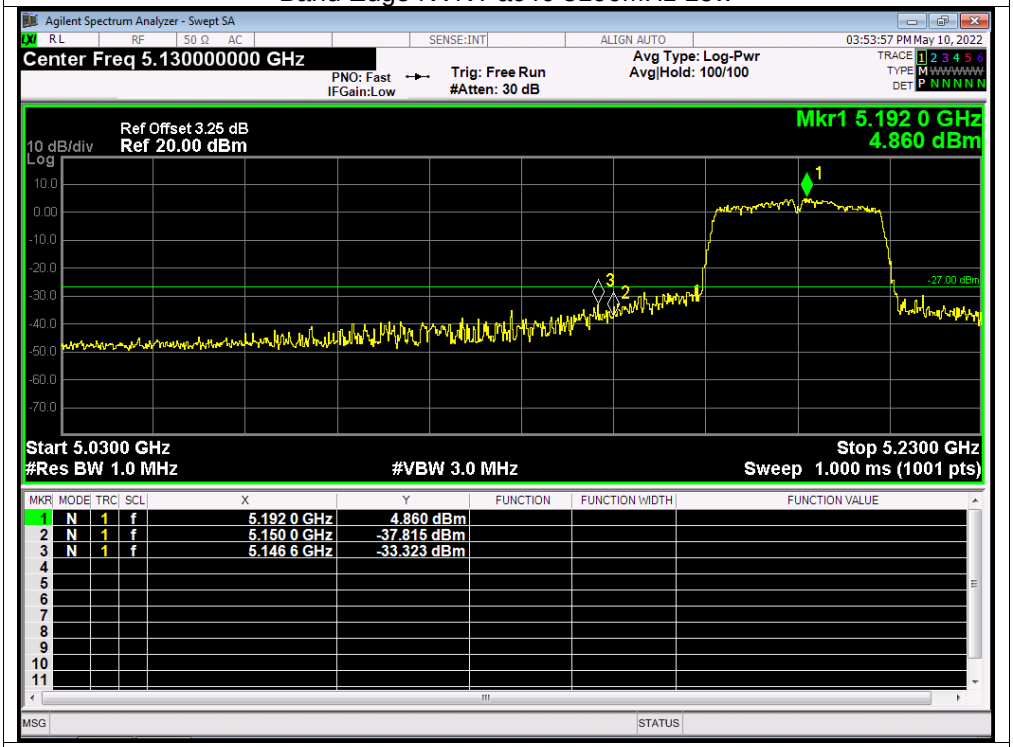
Band Edge NVNT ac20 5180MHz Low



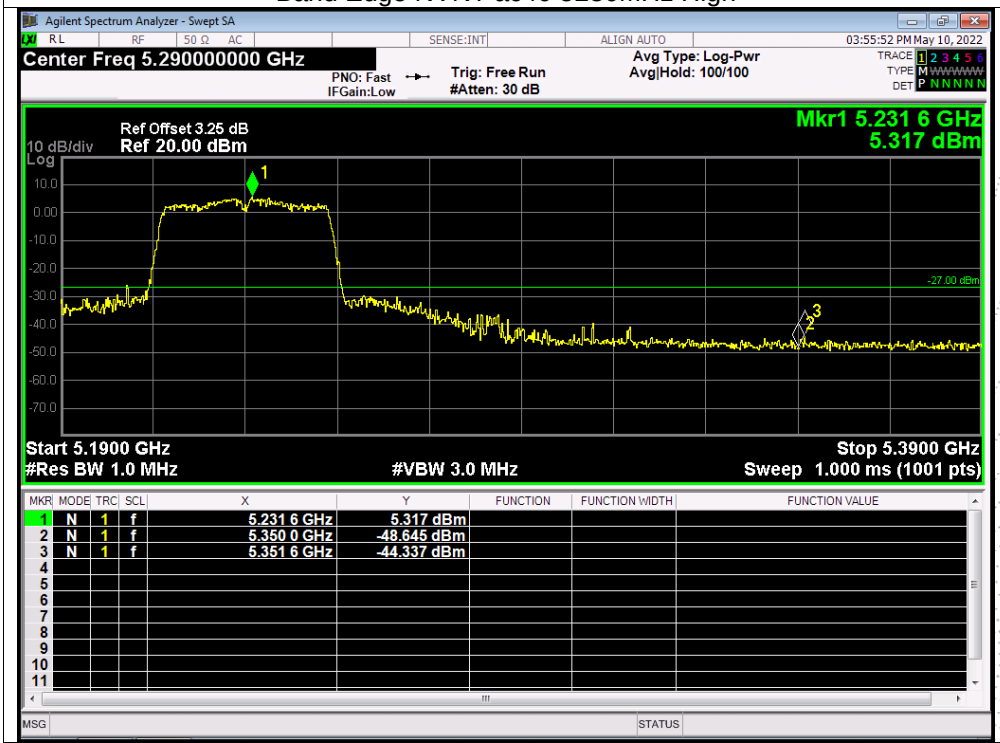
Band Edge NVNT ac20 5240MHz High



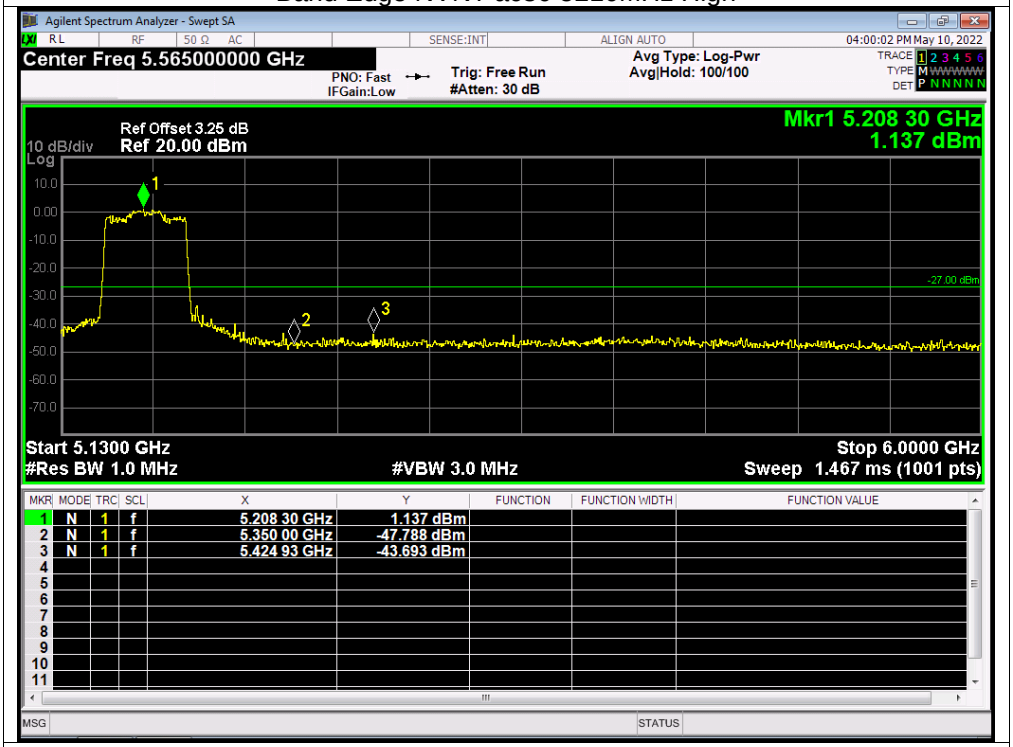
Band Edge NVNT ac40 5190MHz Low



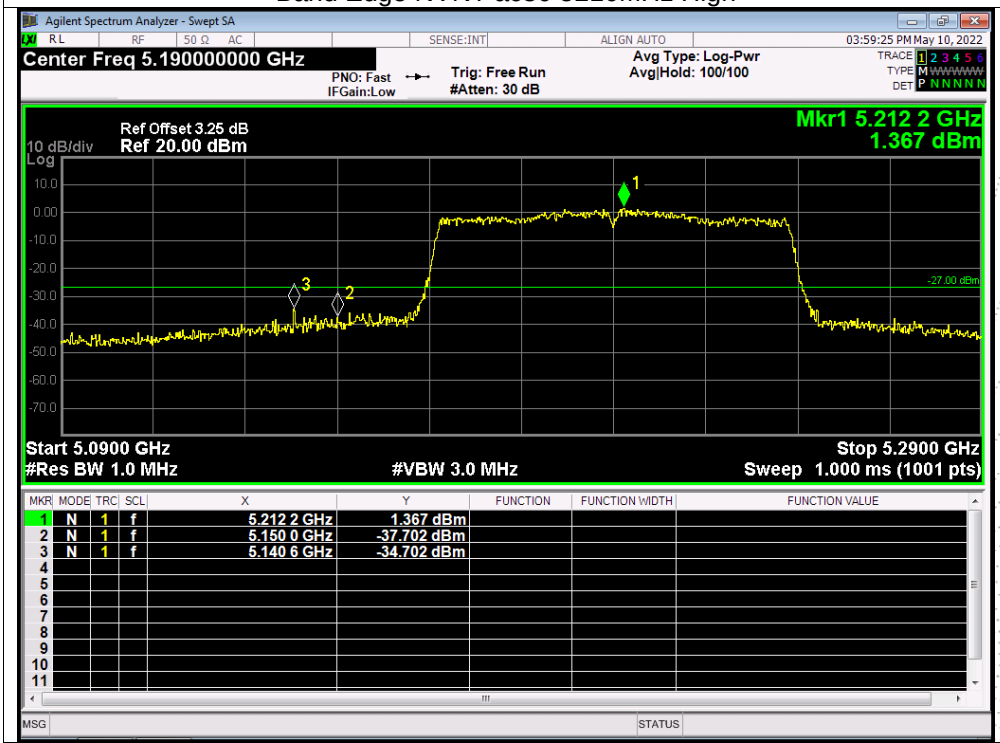
Band Edge NVNT ac40 5230MHz High



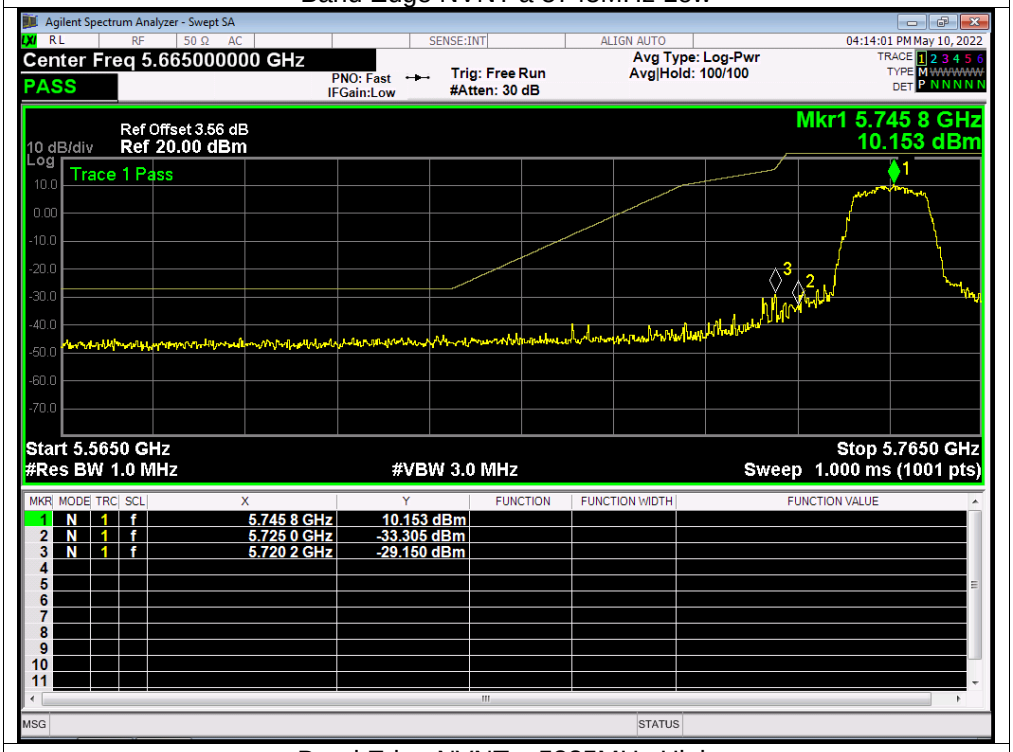
Band Edge NVNT ac80 5210MHz High



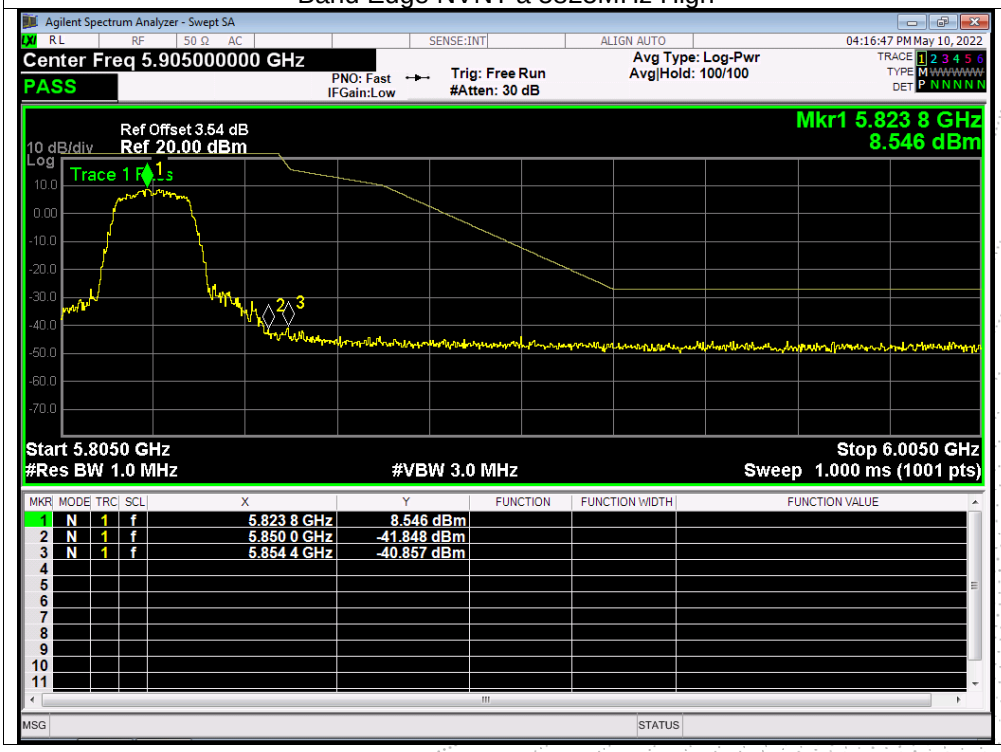
Band Edge NVNT ac80 5210MHz High



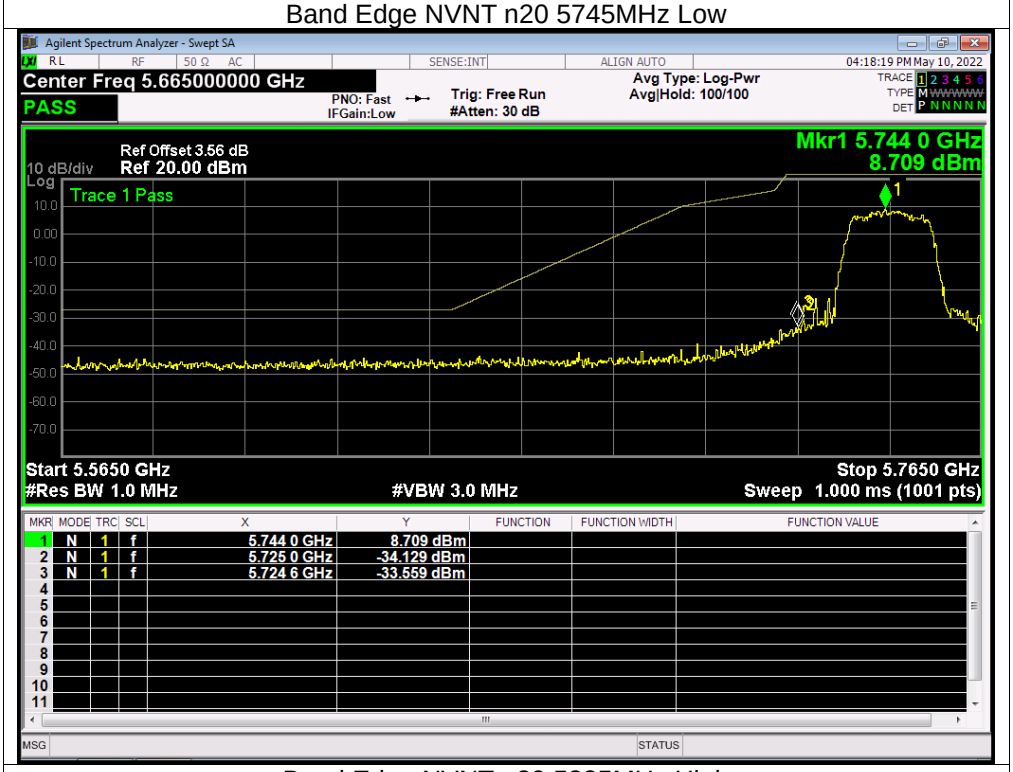
Test Graphs
Band Edge NVNT a 5745MHz Low



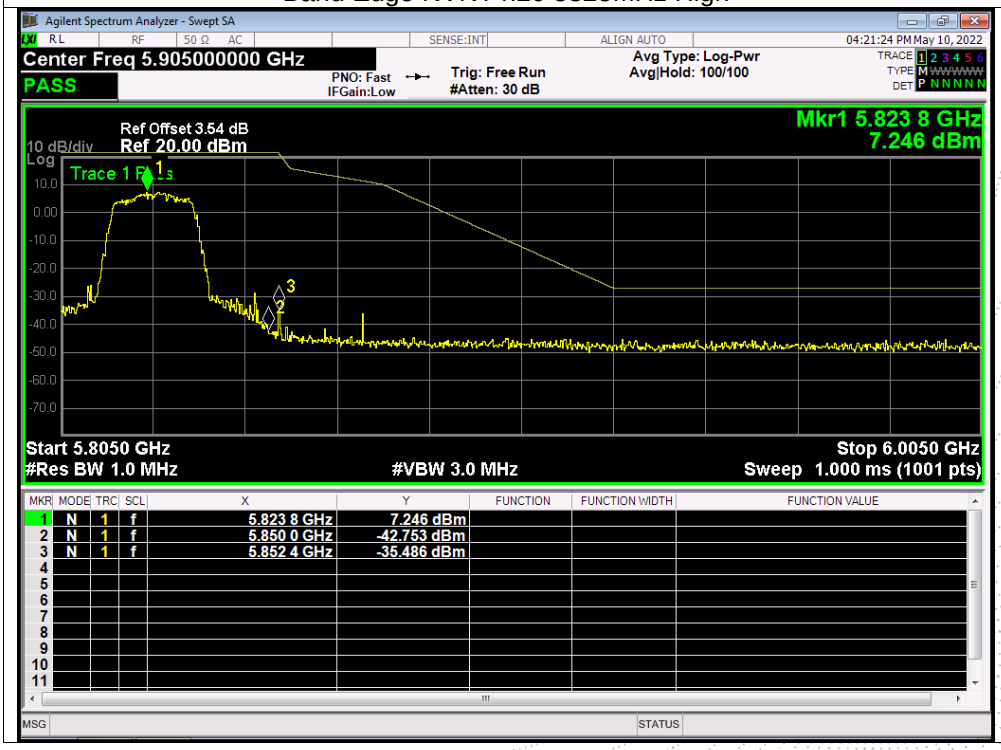
Band Edge NVNT a 5825MHz High



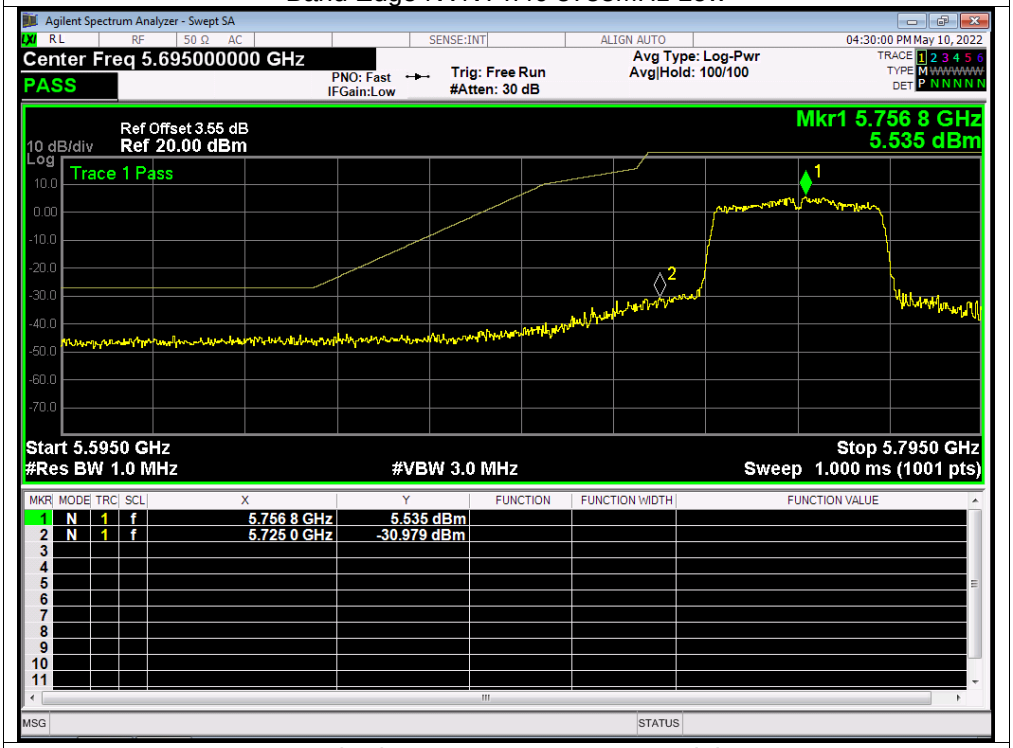
Band Edge NVNT n20 5745MHz Low



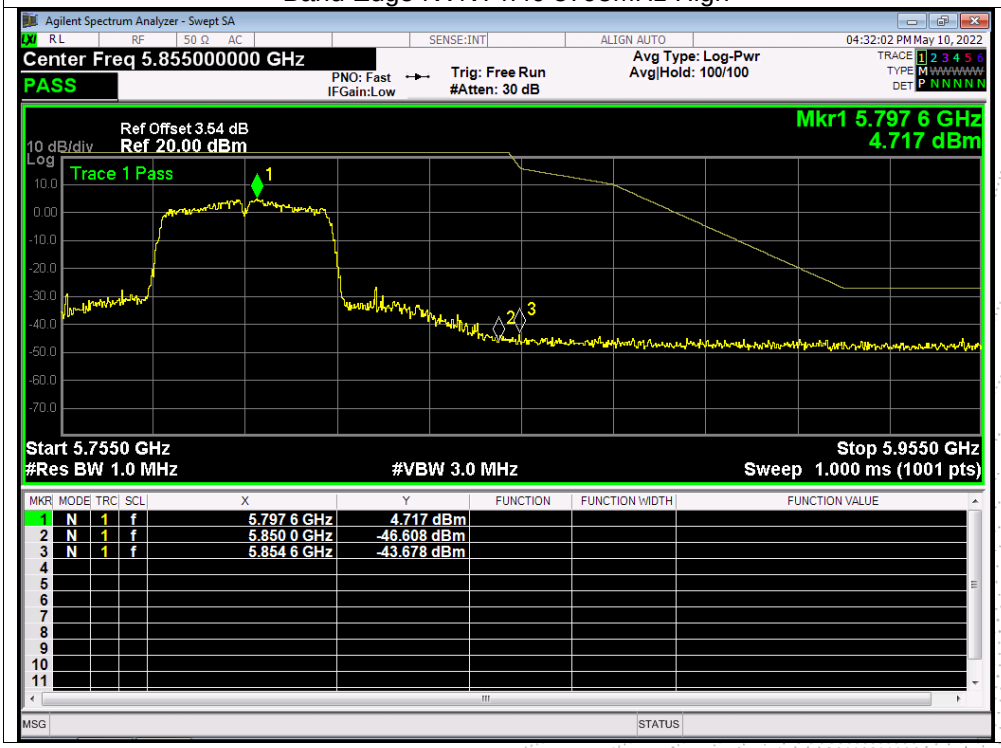
Band Edge NVNT n20 5825MHz High



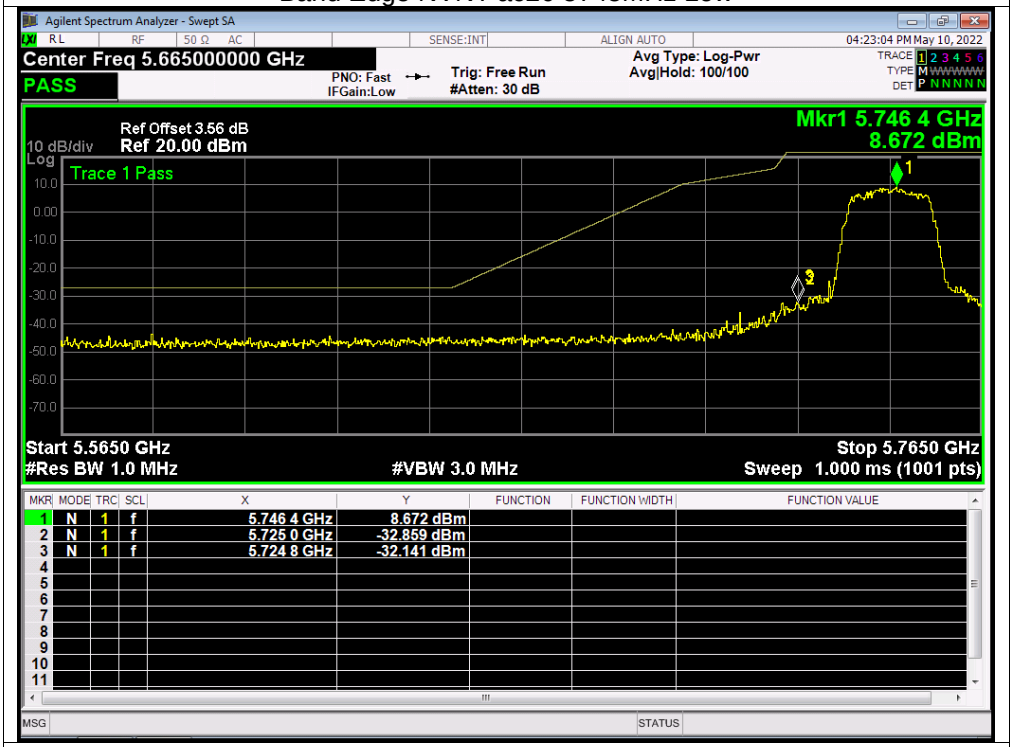
Band Edge NVNT n40 5755MHz Low



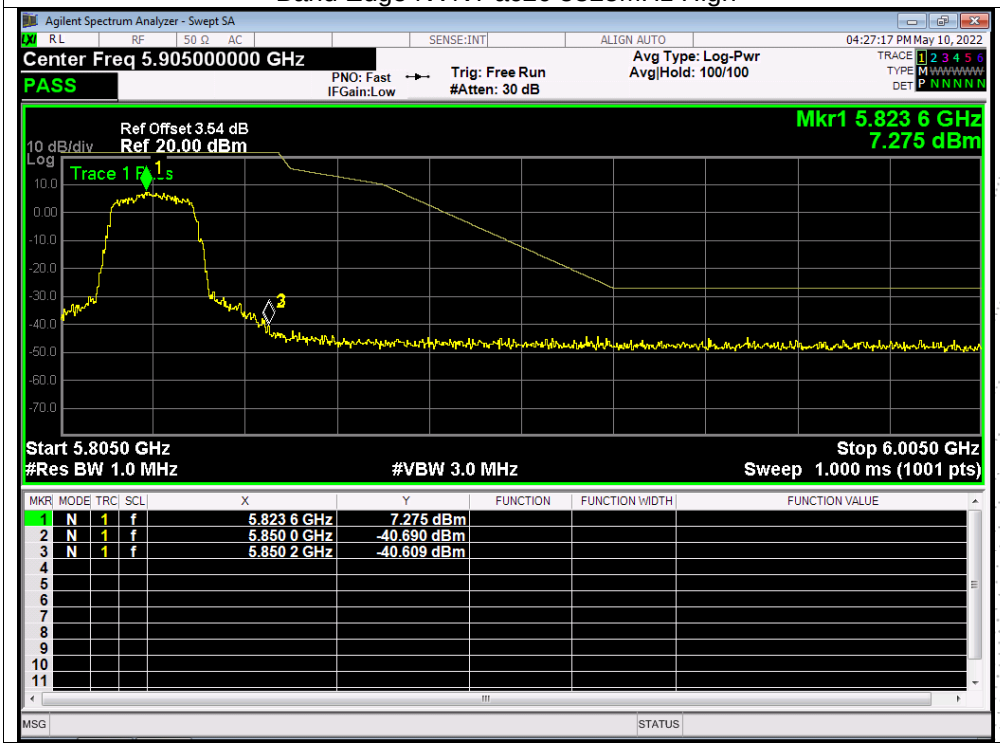
Band Edge NVNT n40 5795MHz High



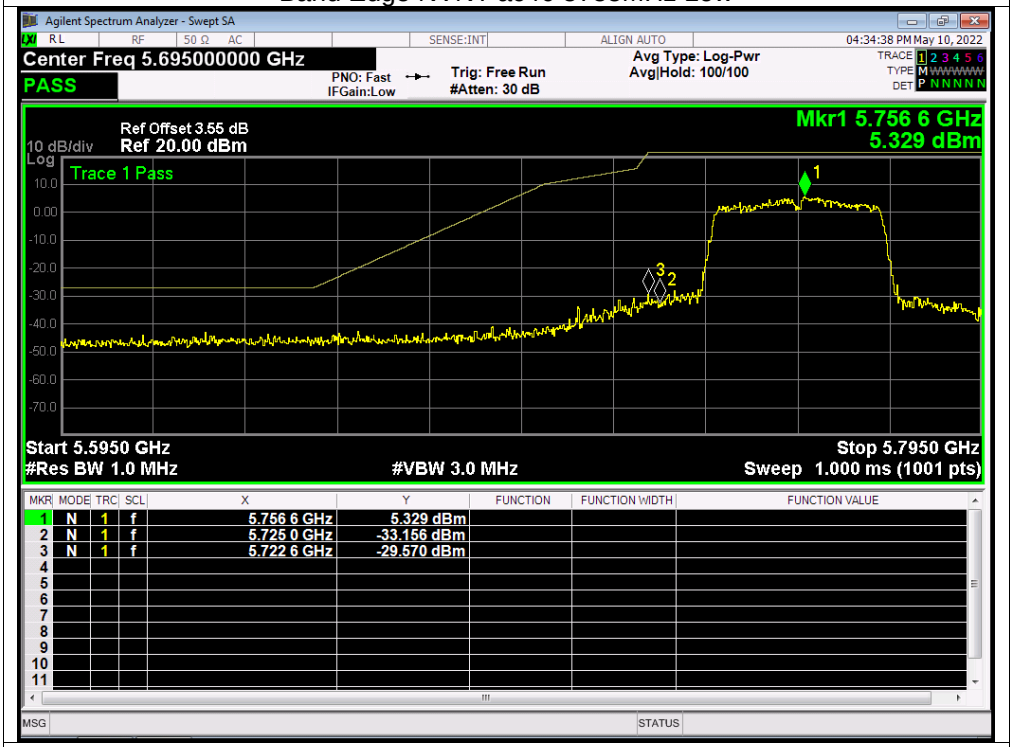
Band Edge NVNT ac20 5745MHz Low



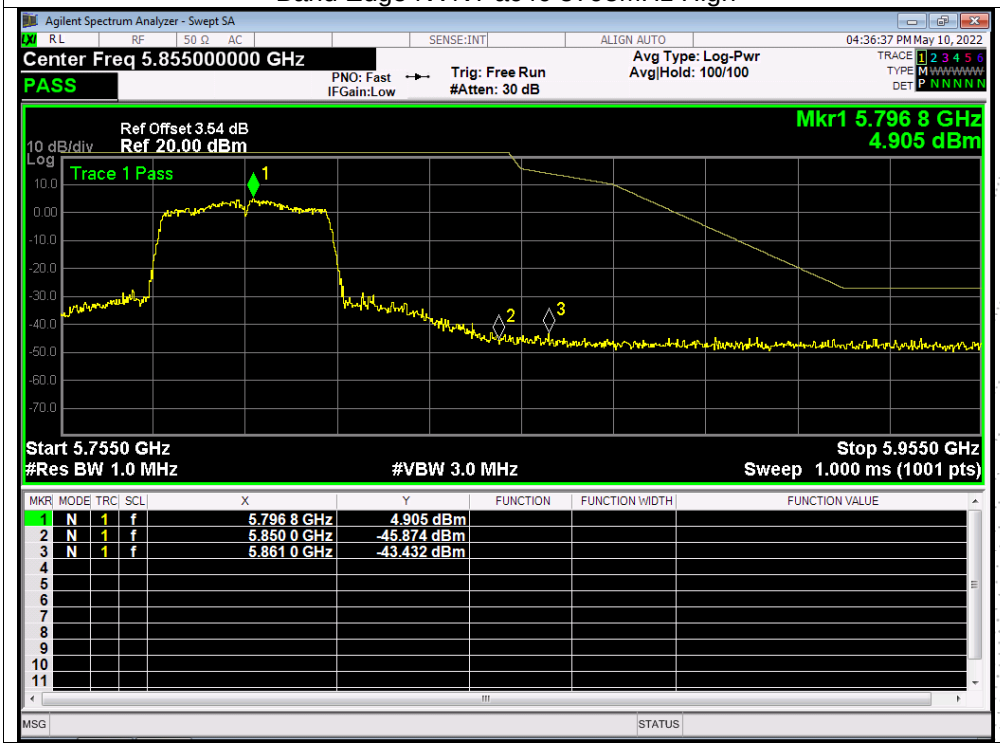
Band Edge NVNT ac20 5825MHz High



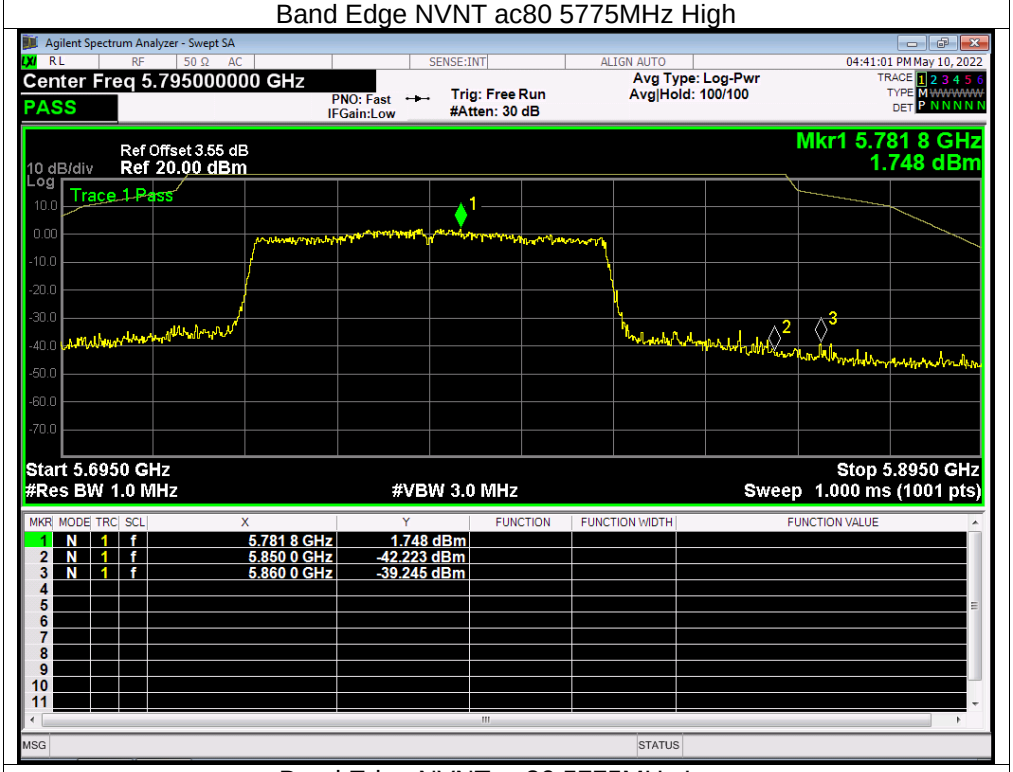
Band Edge NVNT ac40 5755MHz Low



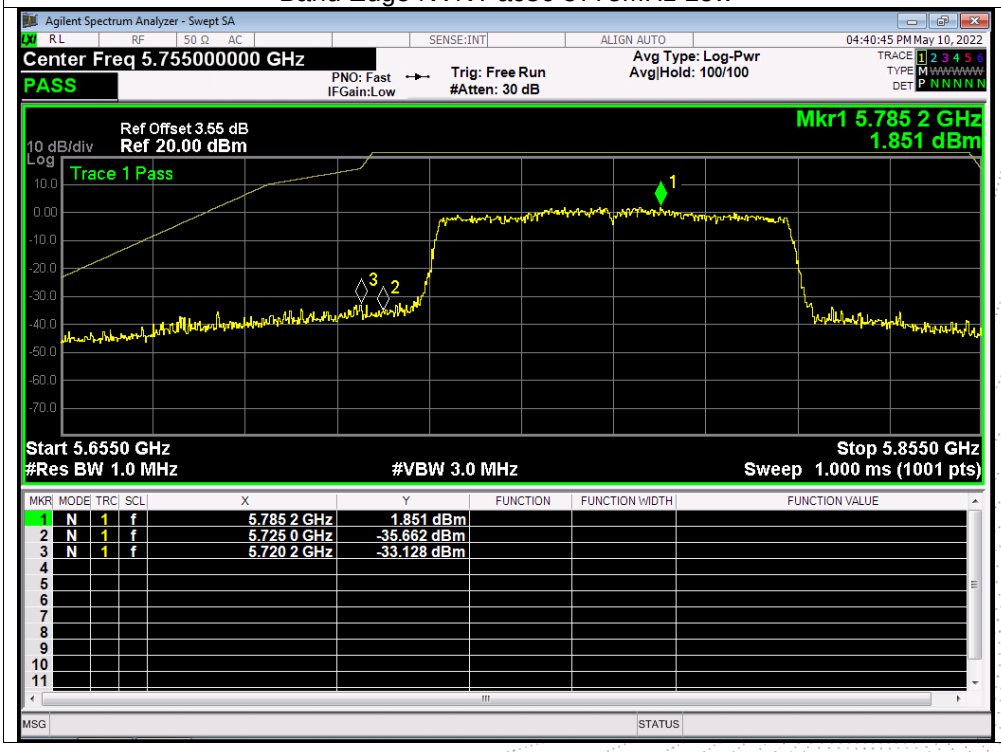
Band Edge NVNT ac40 5795MHz High



Band Edge NVNT ac80 5775MHz High

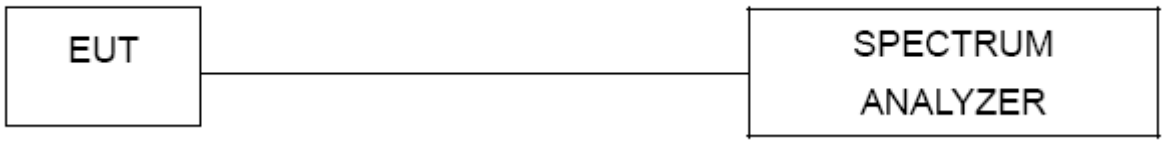


Band Edge NVNT ac80 5775MHz Low



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.

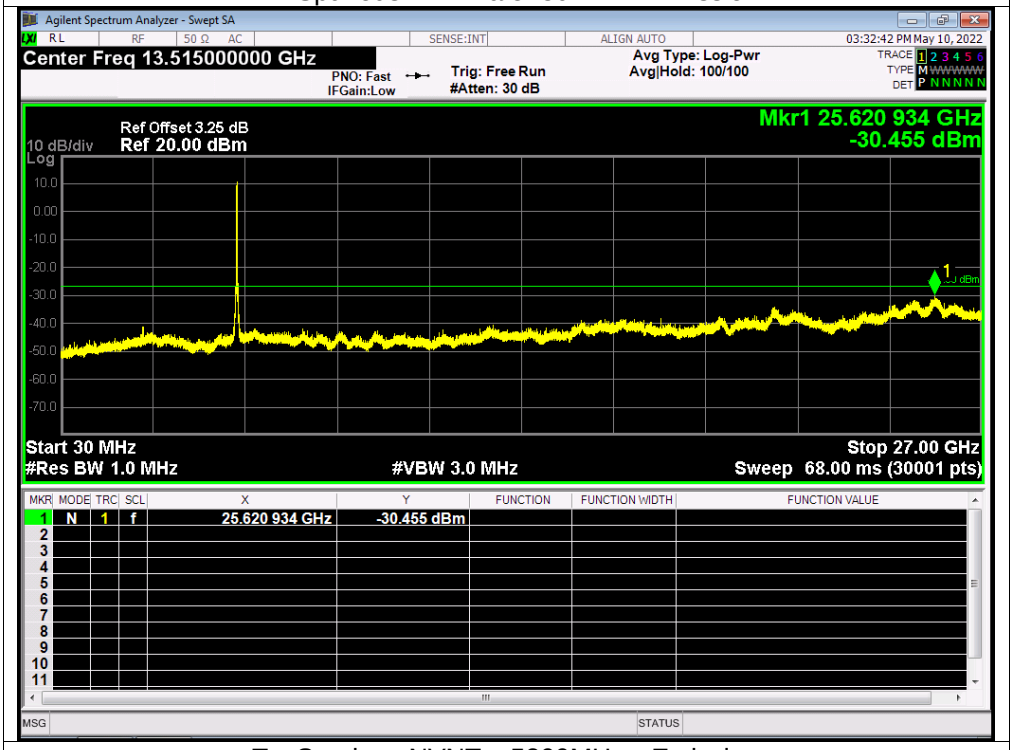
12.4 Test Result

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.

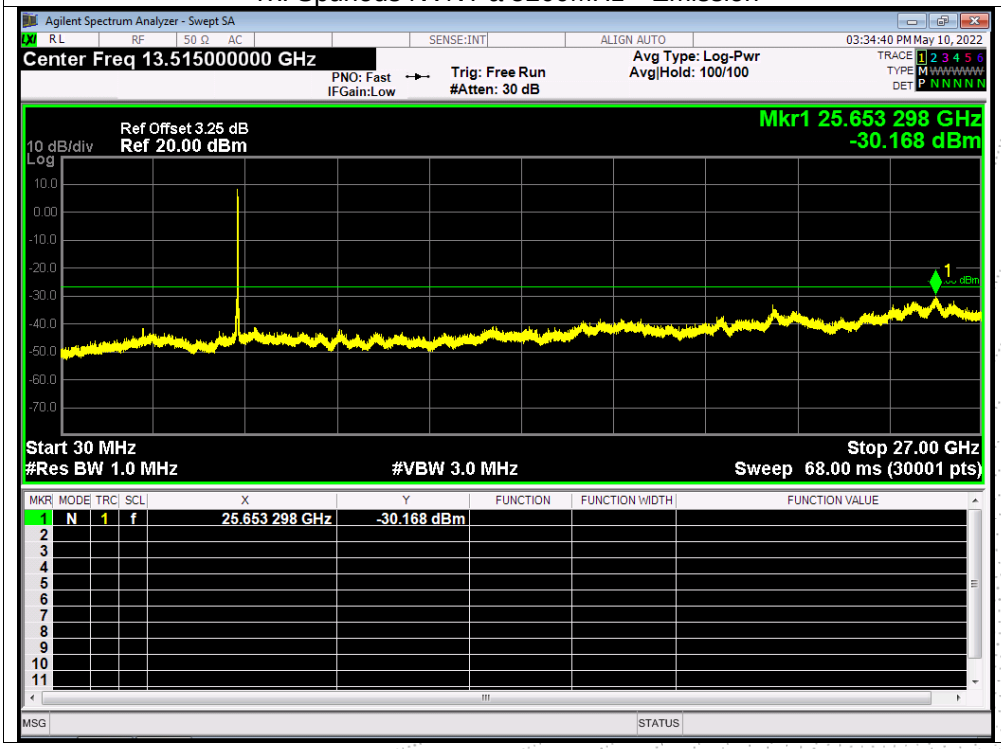
About:26.5GHz-40GHz, The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna B, only shown Antenna B Plot.

Test Graphs

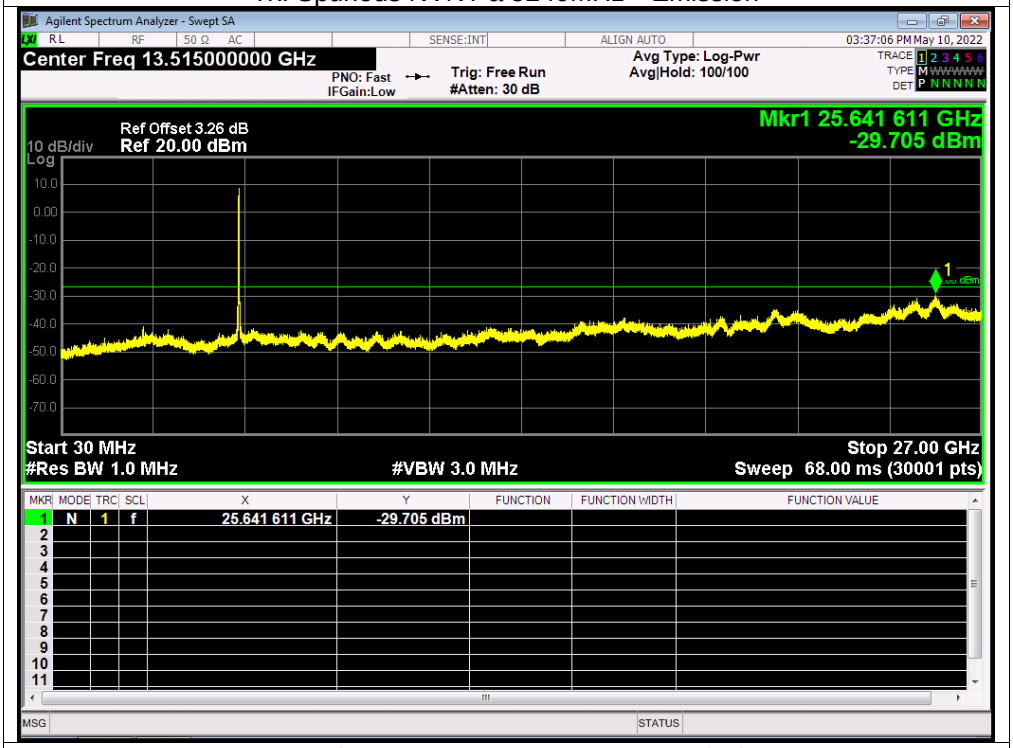
Tx. Spurious NVNT a 5180MHz Emission



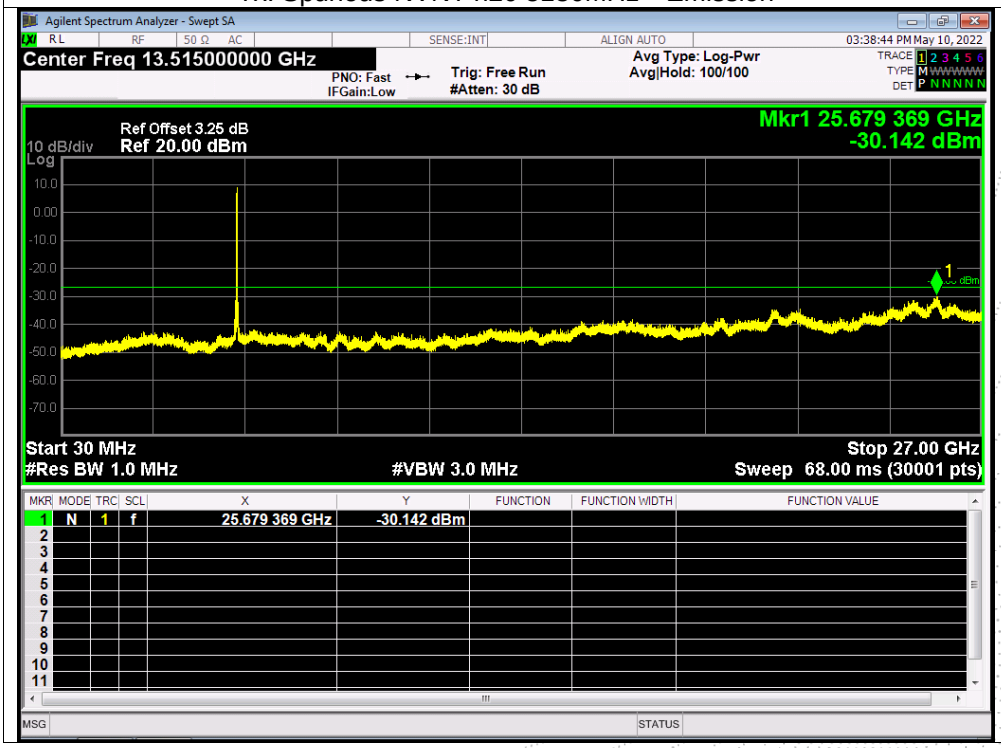
Tx. Spurious NVNT a 5200MHz Emission



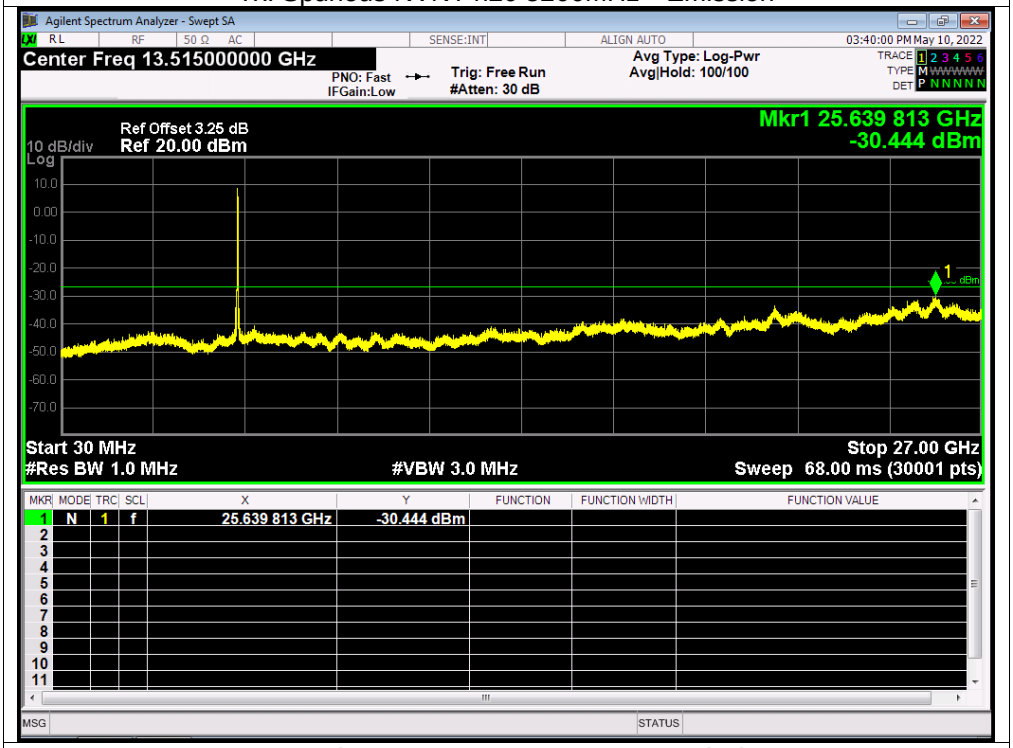
Tx. Spurious NVNT a 5240MHz Emission



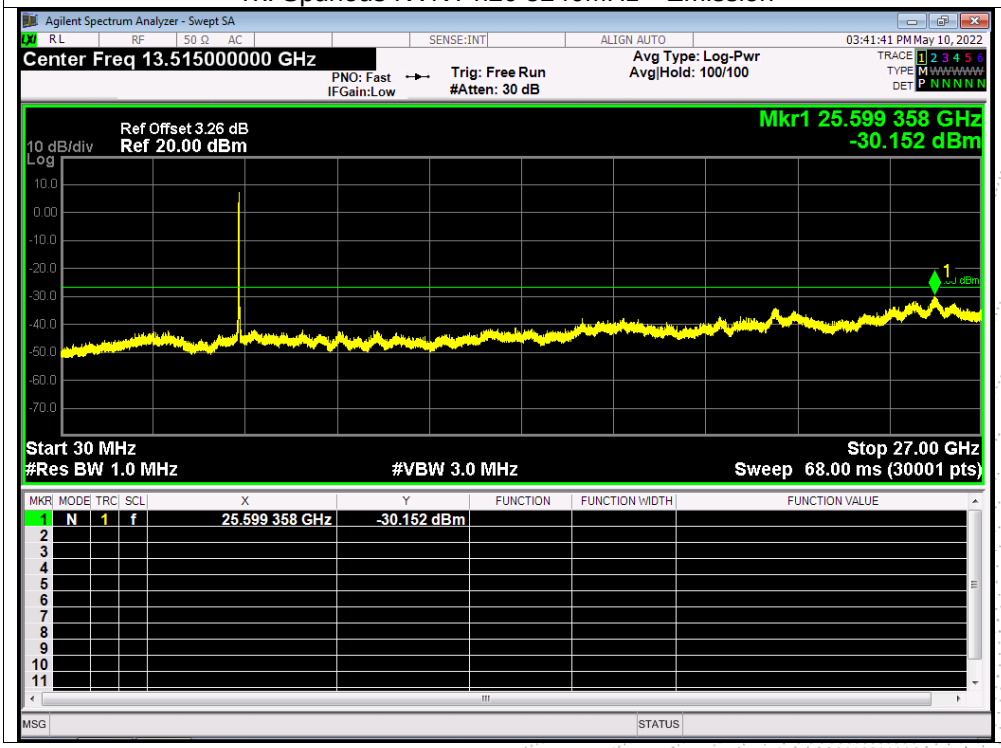
Tx. Spurious NVNT n20 5180MHz Emission



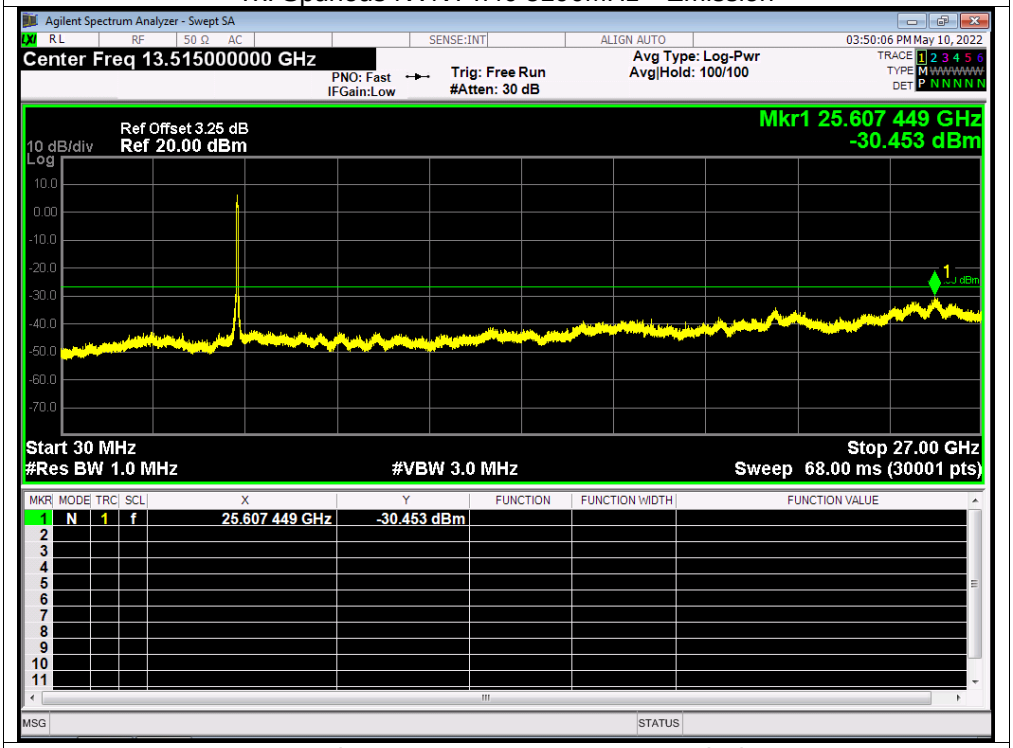
Tx. Spurious NVNT n20 5200MHz Emission



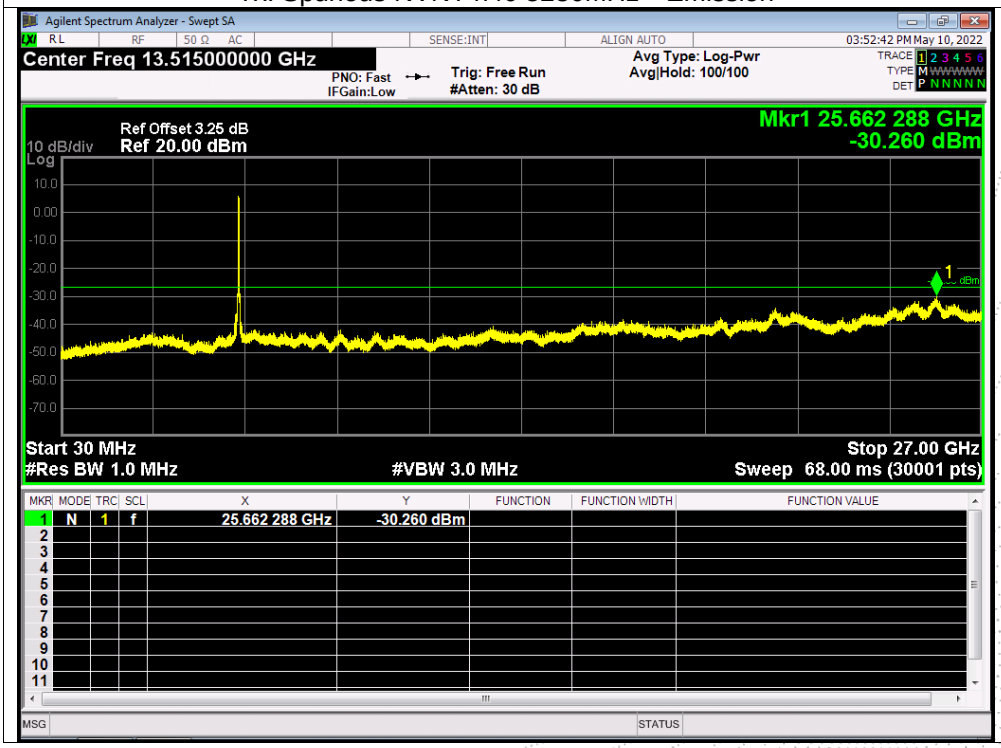
Tx. Spurious NVNT n20 5240MHz Emission



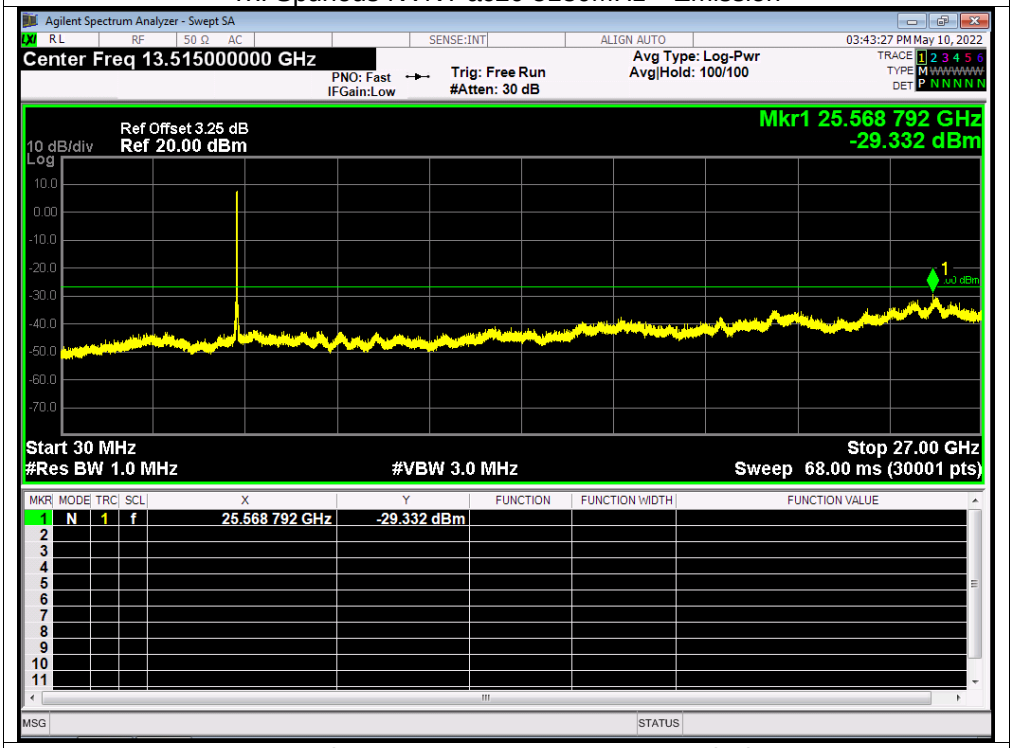
Tx. Spurious NVNT n40 5190MHz Emission



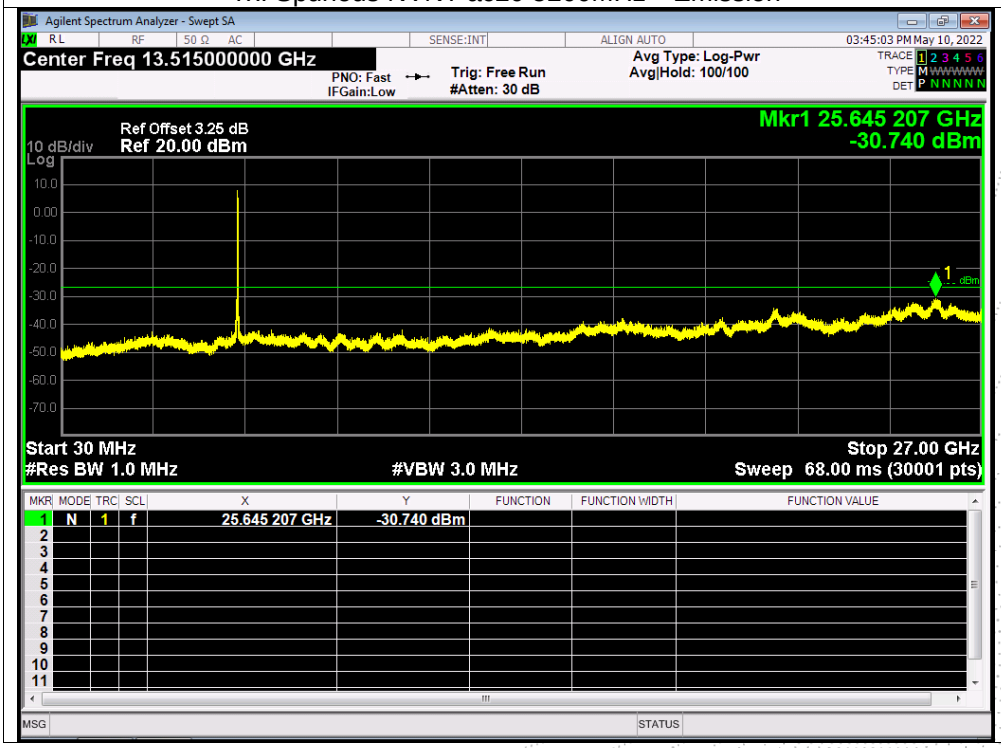
Tx. Spurious NVNT n40 5230MHz Emission



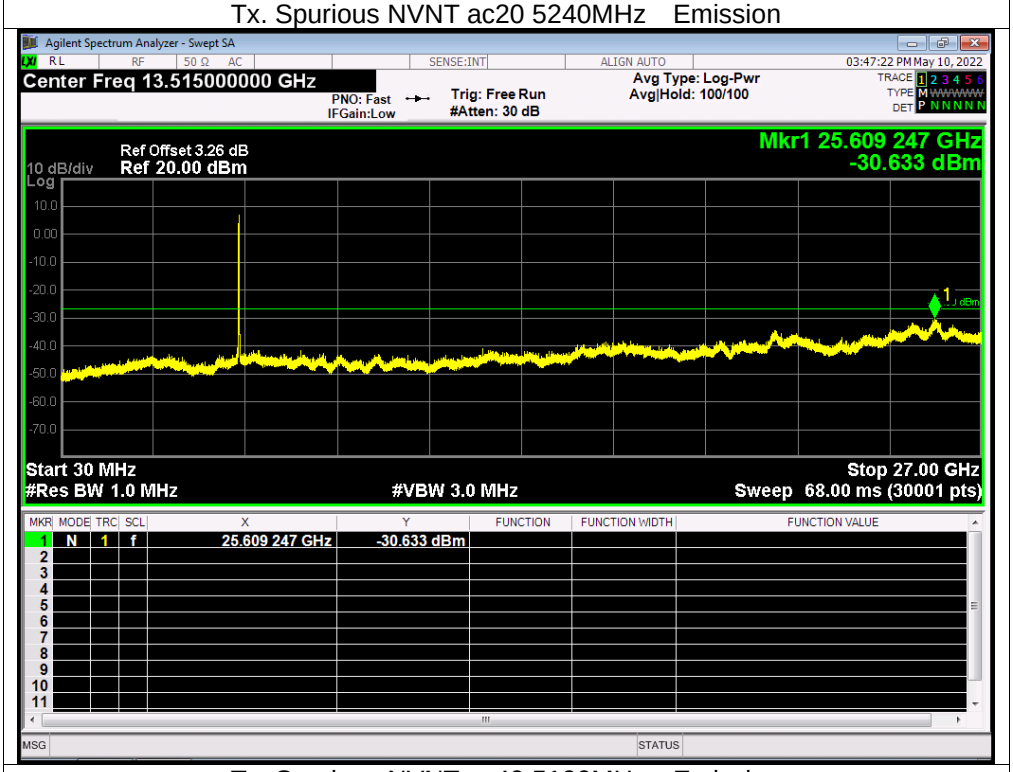
Tx. Spurious NVNT ac20 5180MHz Emission



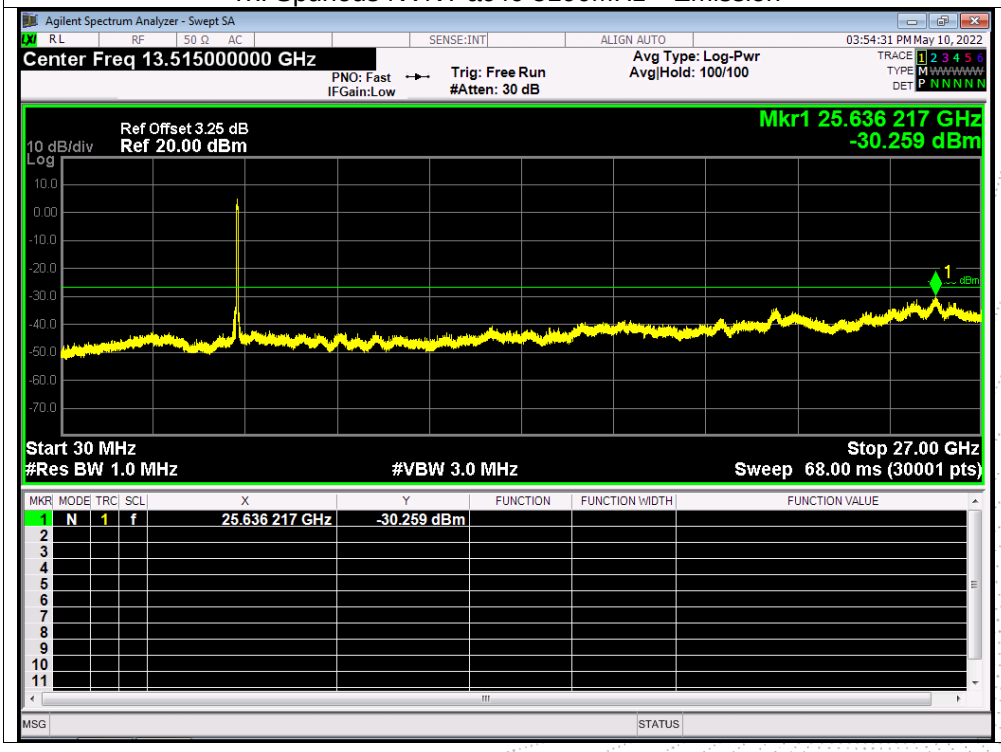
Tx. Spurious NVNT ac20 5200MHz Emission



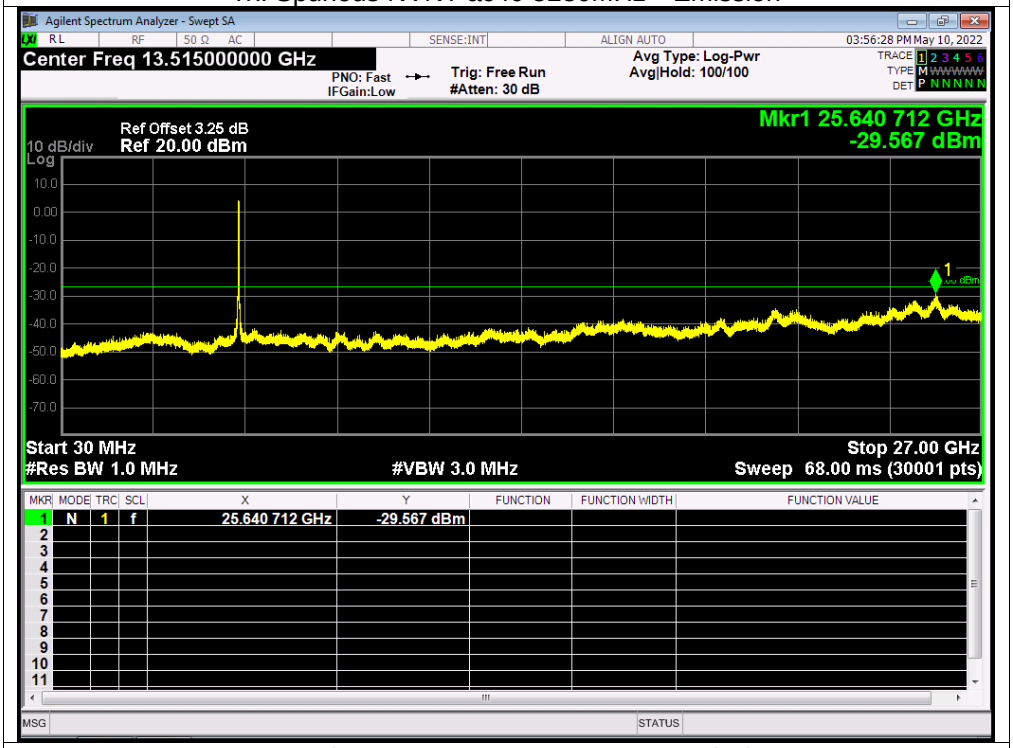
Tx. Spurious NVNT ac20 5240MHz Emission



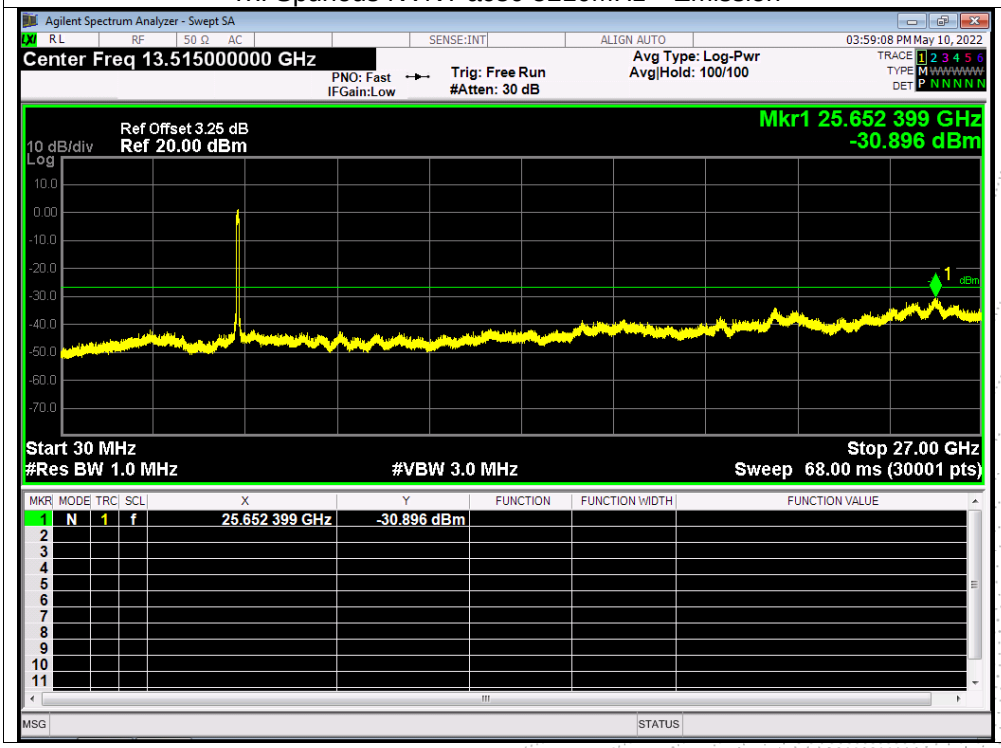
Tx. Spurious NVNT ac40 5190MHz Emission



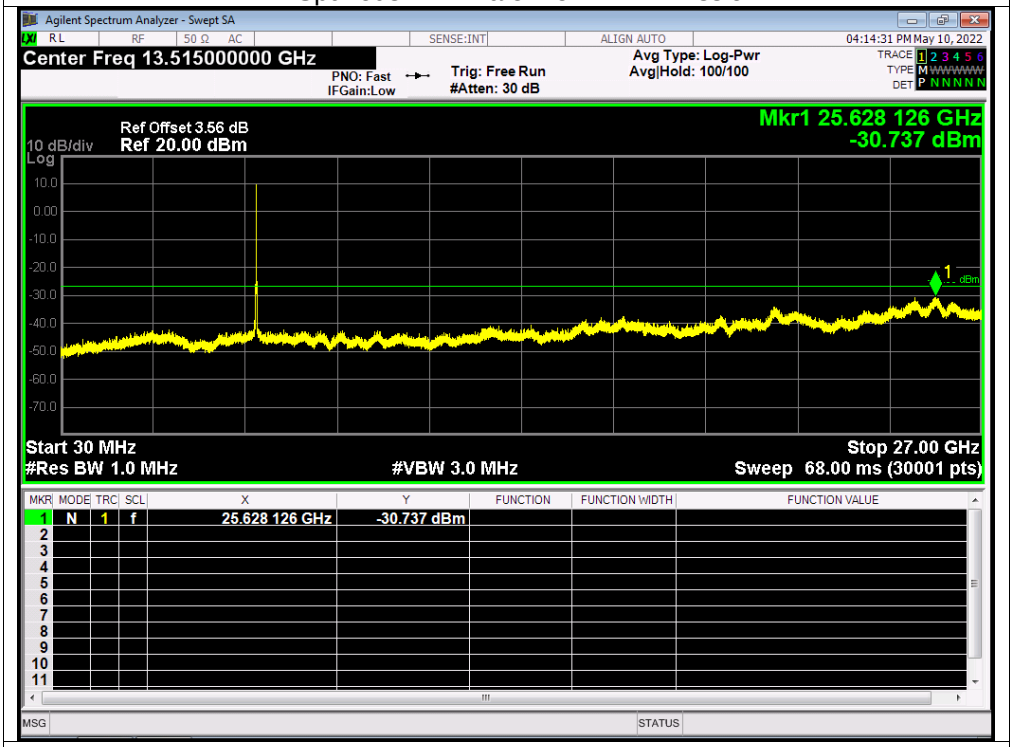
Tx. Spurious NVNT ac40 5230MHz Emission



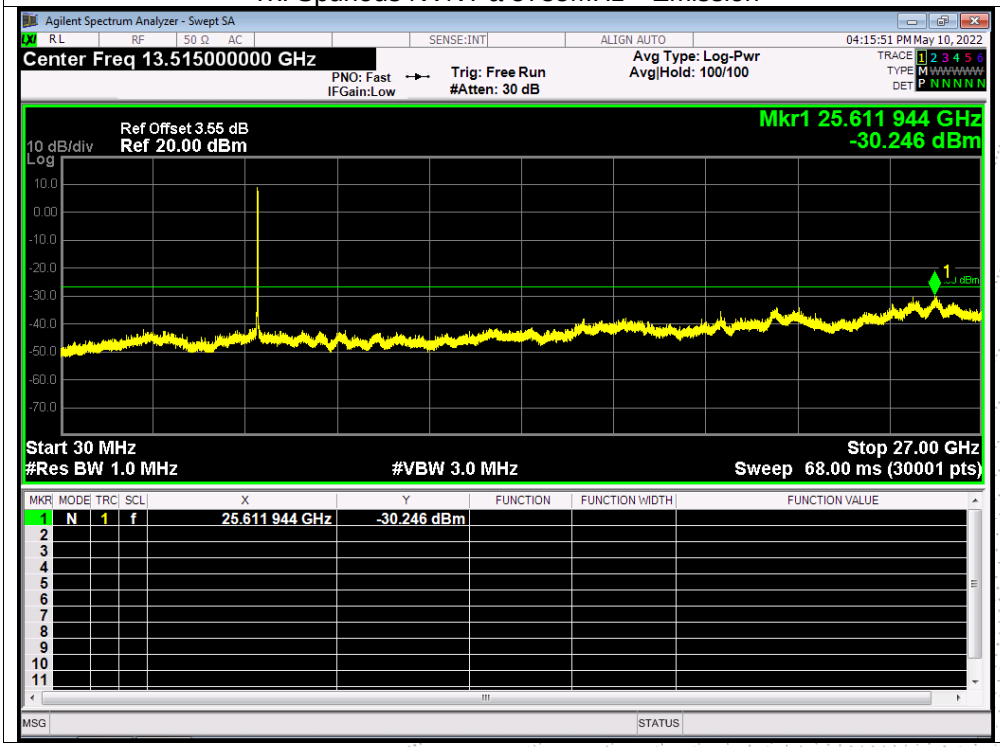
Tx. Spurious NVNT ac80 5210MHz Emission



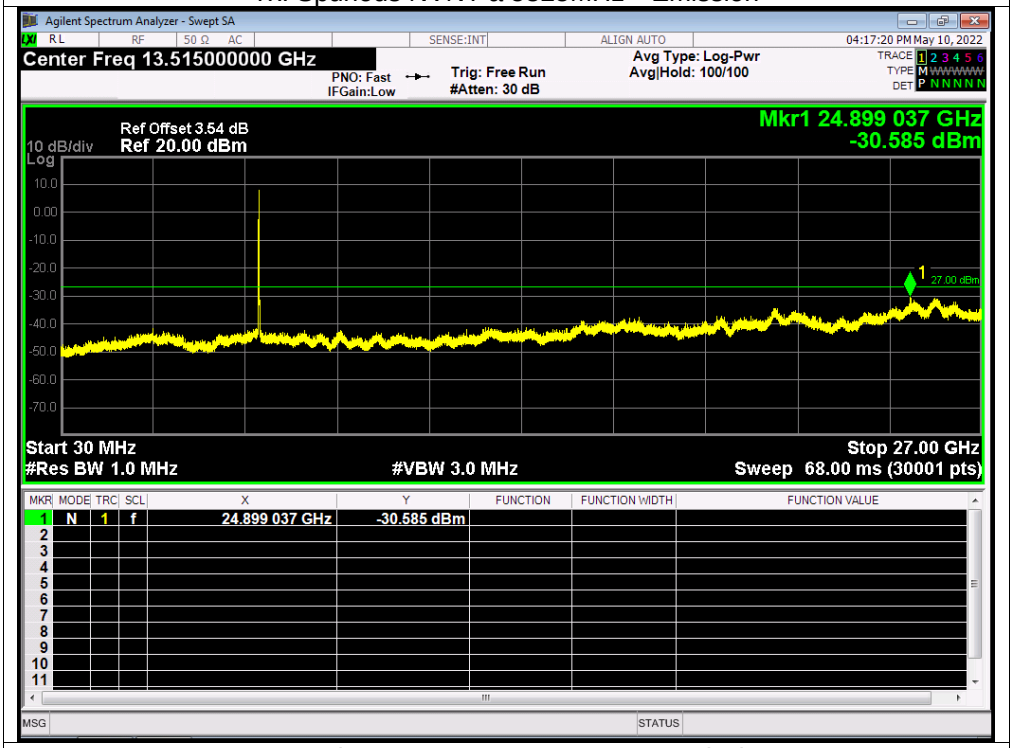
Test Graphs
Tx. Spurious NVNT a 5745MHz Emission



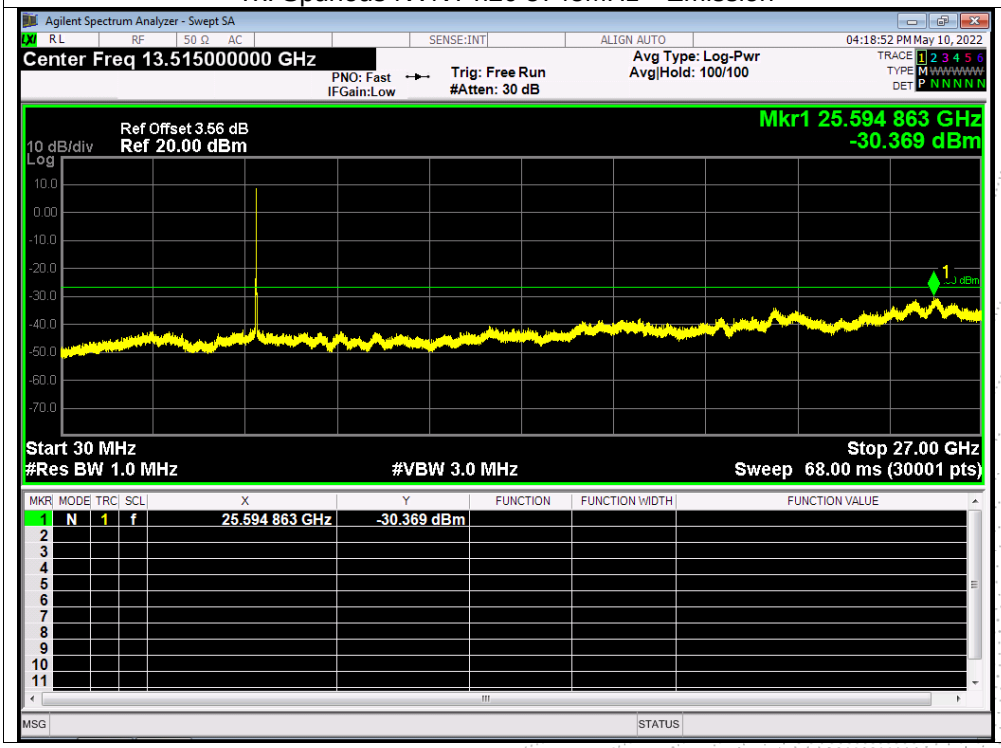
Tx. Spurious NVNT a 5785MHz Emission



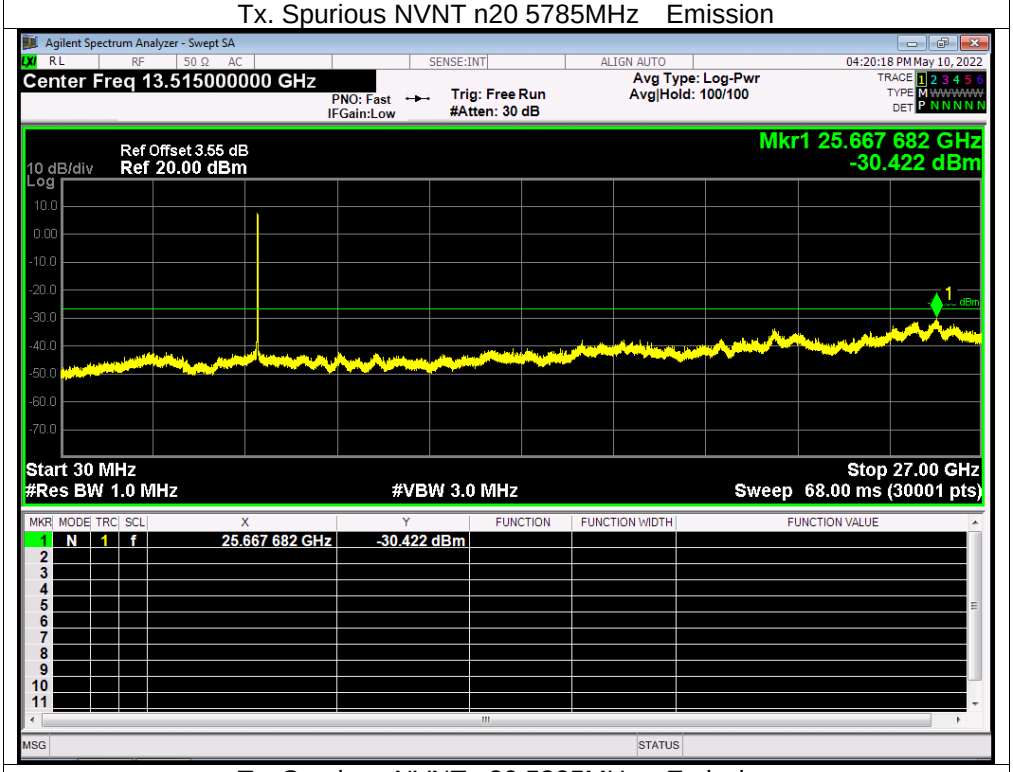
Tx. Spurious NVNT a 5825MHz Emission



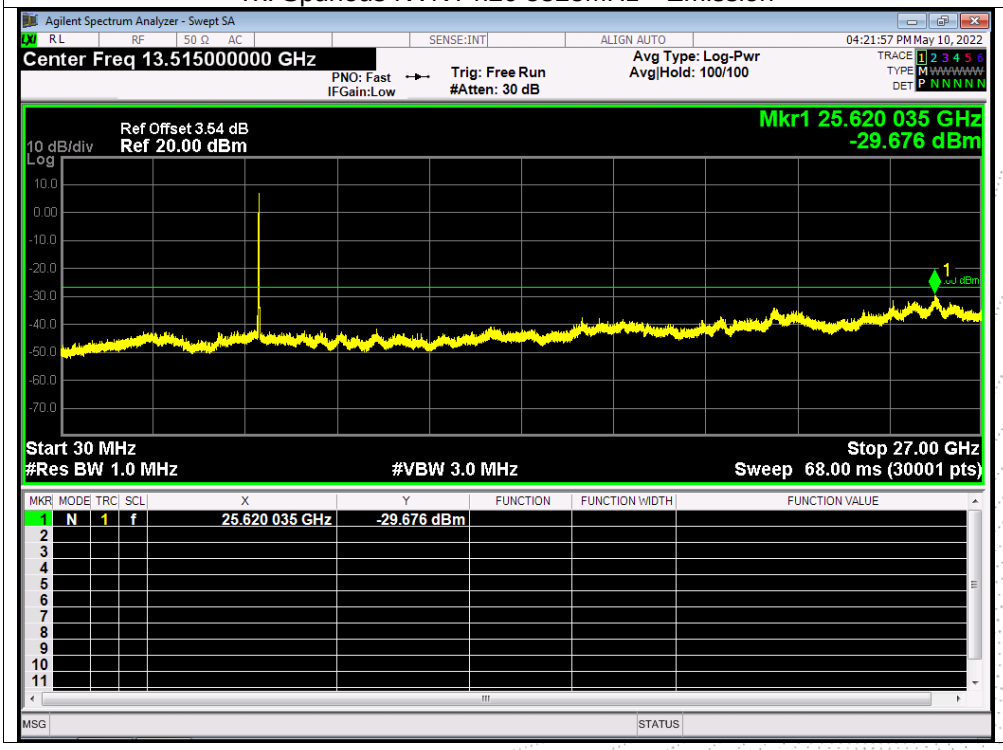
Tx. Spurious NVNT n20 5745MHz Emission



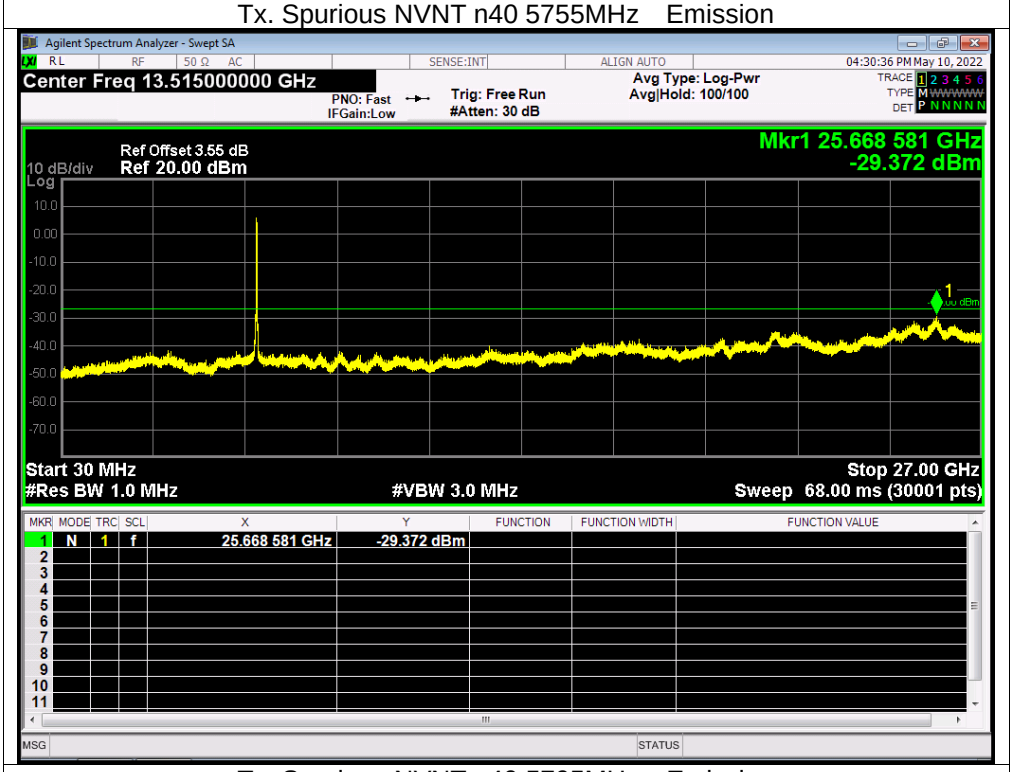
Tx. Spurious NVNT n20 5785MHz Emission



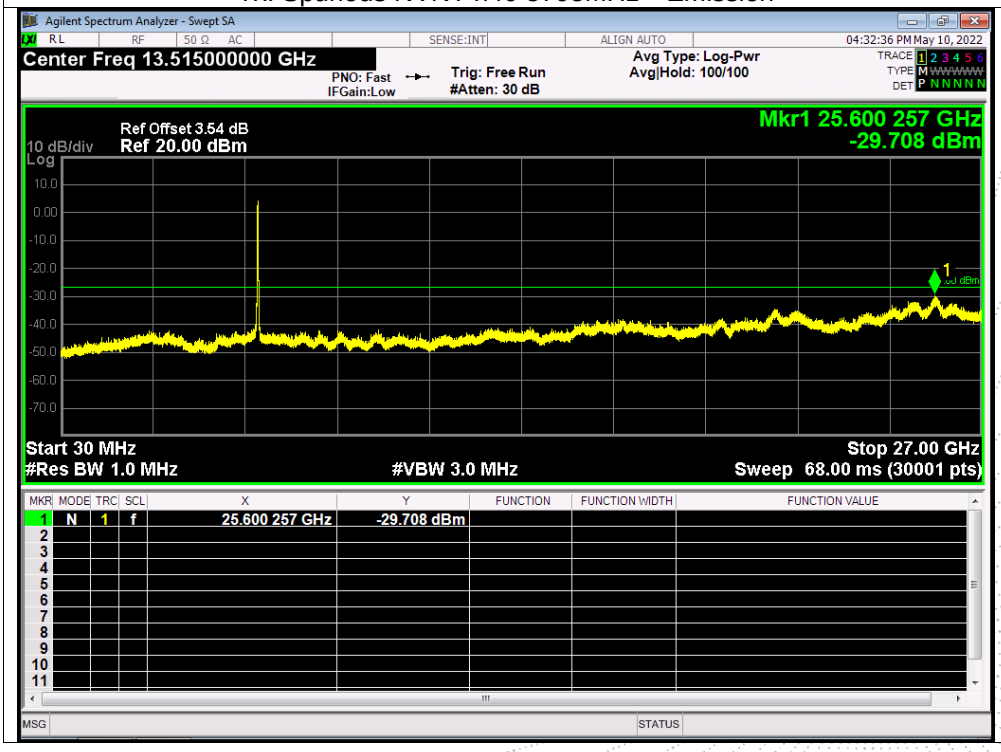
Tx. Spurious NVNT n20 5825MHz Emission



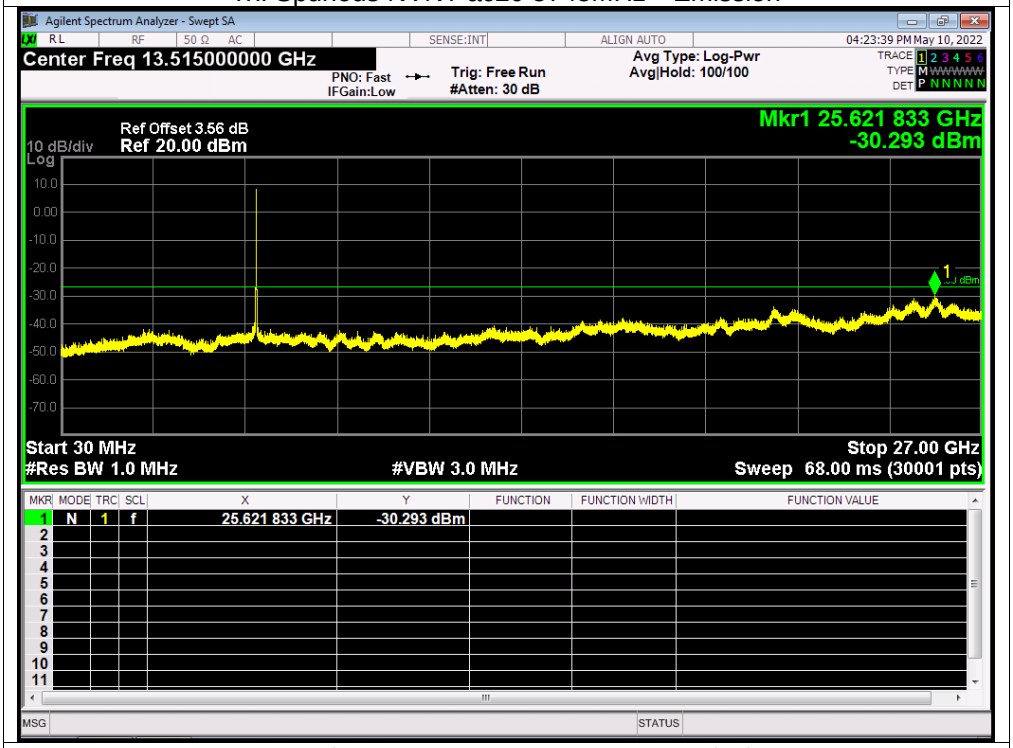
Tx. Spurious NVNT n40 5755MHz Emission



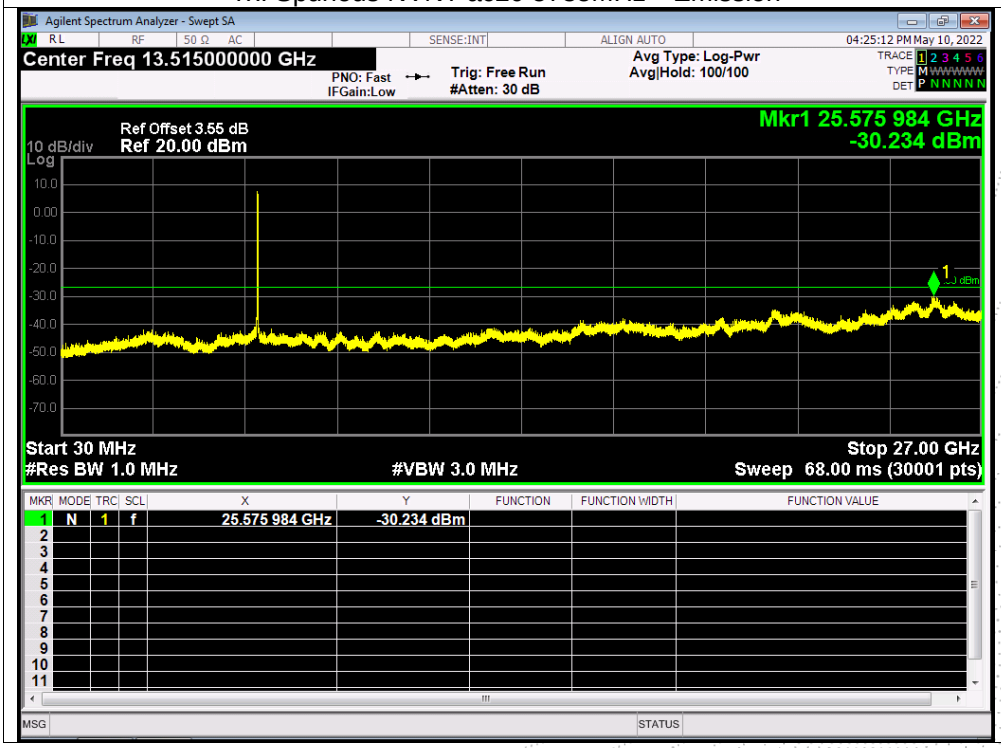
Tx. Spurious NVNT n40 5795MHz Emission



Tx. Spurious NVNT ac20 5745MHz Emission



Tx. Spurious NVNT ac20 5785MHz Emission



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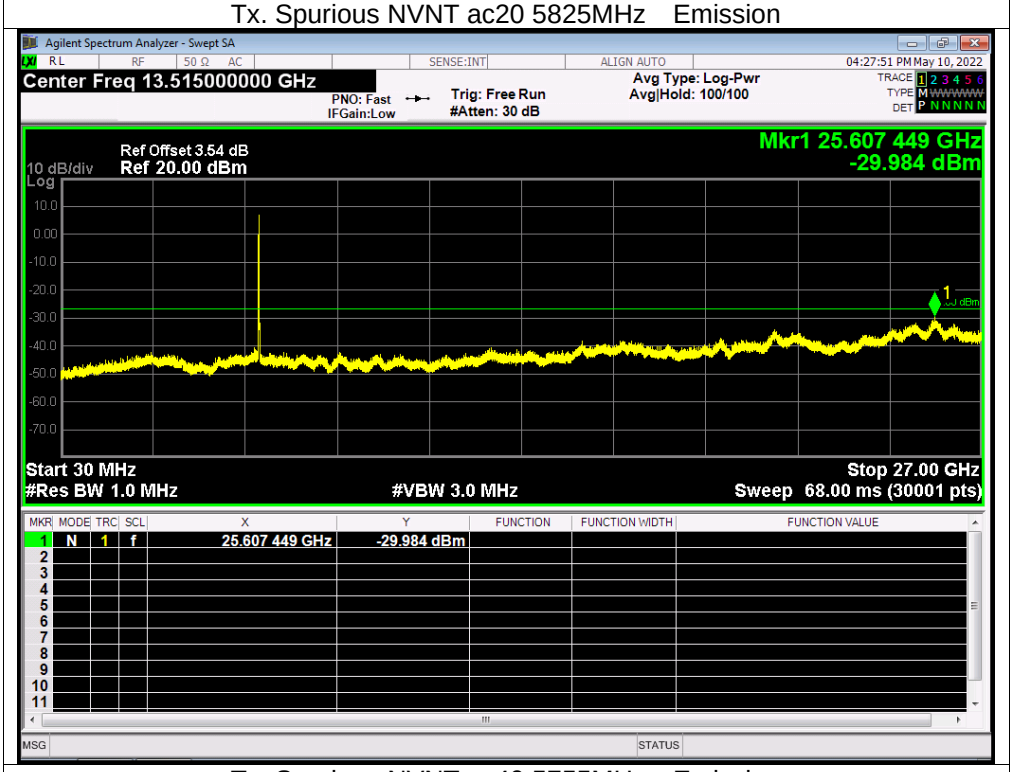
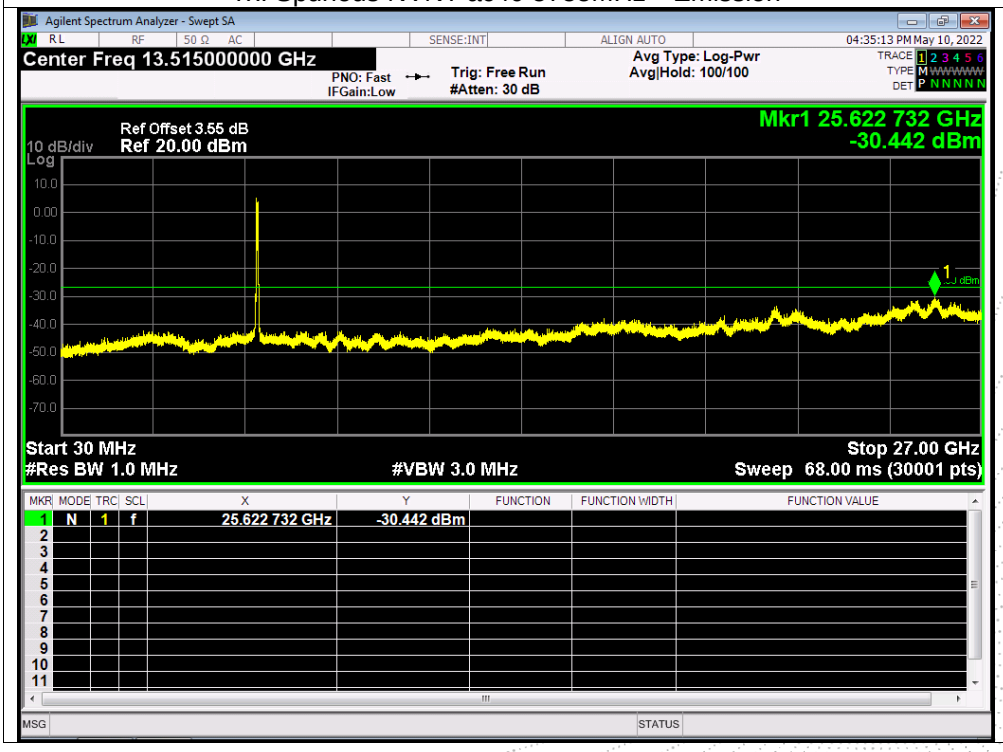
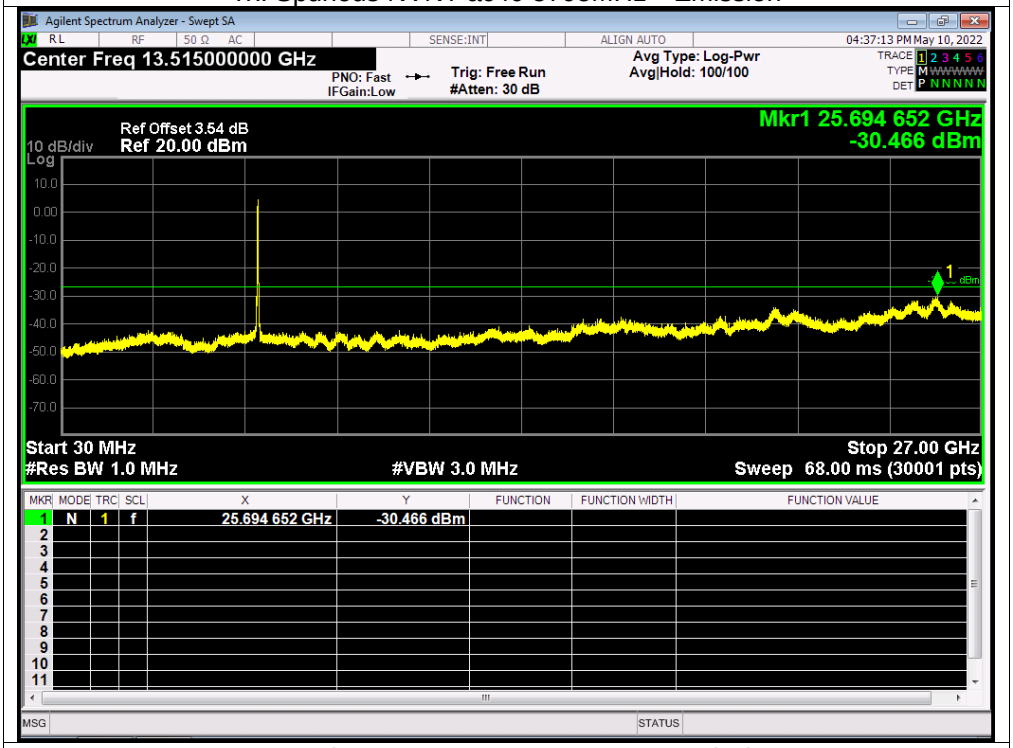


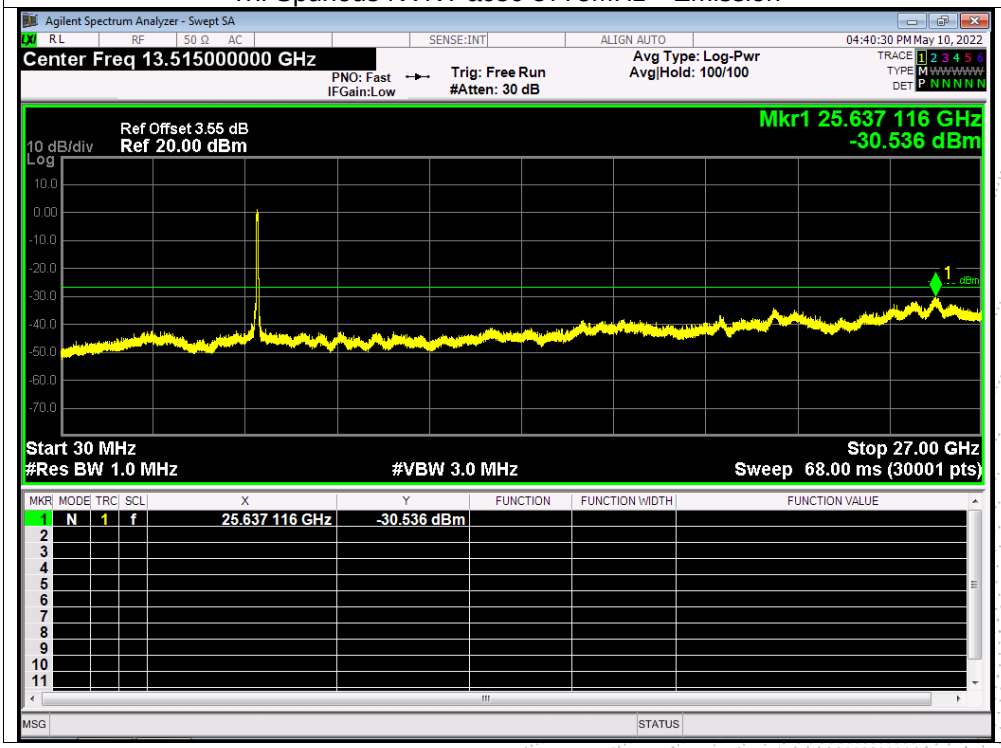
Tx. Spurious NVNT ac40 5755MHz Emission



Tx. Spurious NVNT ac40 5795MHz Emission



Tx. Spurious NVNT ac80 5775MHz 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. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 106 ppm and he limit is less than ±20ppm (IEEE 802.11nspecification).
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°C~70°C.

13.4 Test Result

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 12V
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)	12.00	5180.0166	5180	0.0166	3.2051
		V max (V)	13.80	5180.0162	5180	0.0162	3.1288
		V min (V)	10.20	5180.0043	5180	0.0043	0.8309
Limits				5150-5250 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency:5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	12	T (°C)	-20	5180.0127	5180	0.0127	2.4570
		T (°C)	-10	5180.0010	5180	0.0010	0.1934
		T (°C)	0	5180.0006	5180	0.0006	0.1230
		T (°C)	10	5180.0022	5180	0.0022	0.4332
		T (°C)	20	5180.0034	5180	0.0034	0.6493
		T (°C)	30	5180.0037	5180	0.0037	0.7195
		T (°C)	40	5180.0120	5180	0.0120	2.3204
		T (°C)	50	5180.0041	5180	0.0041	0.7894
		T (°C)	60	5180.0065	5180	0.0065	1.2533
		T (°C)	70	5180.0009	5180	0.0009	0.1748
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)	12.00	5200.0092	5200	0.0092	1.7740
		V max (V)	13.80	5200.0108	5200	0.0108	2.0738
		V min (V)	10.20	5200.0023	5200	0.0023	0.4514
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency:5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	12	T (°C)	-20	5200.01260	5200	0.01260	2.4232
		T (°C)	-10	5200.01351	5200	0.01351	2.5973
		T (°C)	0	5200.01053	5200	0.01053	2.0253
		T (°C)	10	5200.00533	5200	0.00533	1.0257
		T (°C)	20	5200.00843	5200	0.00843	1.6218
		T (°C)	30	5200.01167	5200	0.01167	2.2435
		T (°C)	40	5200.01207	5200	0.01207	2.3218
		T (°C)	50	5200.00604	5200	0.00604	1.1613
		T (°C)	60	5200.00614	5200	0.00614	1.1814
		T (°C)	70	5200.01065	5200	0.01065	2.0474
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)	12.00	5240.0089	5240	0.0089	1.7080
		V max (V)	13.80	5240.0065	5240	0.0065	1.2373
		V min (V)	10.20	5240.0063	5240	0.0063	1.2007
Limits				5150-5250 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency:5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	12	T (°C)	-20	5240.0105	5240	0.0105	1.9966
		T (°C)	-10	5240.0066	5240	0.0066	1.2637
		T (°C)	0	5240.0134	5240	0.0134	2.5648
		T (°C)	10	5240.0113	5240	0.0113	2.1577
		T (°C)	20	5240.0101	5240	0.0101	1.9209
		T (°C)	30	5240.0109	5240	0.0109	2.0765
		T (°C)	40	5240.0131	5240	0.0131	2.5009
		T (°C)	50	5240.0112	5240	0.0112	2.1445
		T (°C)	60	5240.0120	5240	0.0120	2.2982
		T (°C)	70	5240.0134	5240	0.0134	2.5544
Limits				5150-5250 MHz			
Result				Complies			

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 12V
Test Mode:	TX (5.8G) Mode Frequency U-NII-3 (5745-5825MHz)		

Voltage vs. Frequency Stabilit

TEST CONDITIONS				Reference Frequency:5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	12.00	5745.00478	5745	0.00478	0.8323
		V max (V)	13.80	5745.00109	5745	0.00109	0.1900
		V min (V)	10.20	5745.01035	5745	0.01035	1.8014
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency:5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	12	T (°C)	-20	5745.00914	5745	0.00914	1.5901
		T (°C)	-10	5745.00162	5745	0.00162	0.2818
		T (°C)	0	5745.01324	5745	0.01324	2.3053
		T (°C)	10	5745.00066	5745	0.00066	0.1146
		T (°C)	20	5745.00214	5745	0.00214	0.3722
		T (°C)	30	5745.00473	5745	0.00473	0.8228
		T (°C)	40	5745.00949	5745	0.00949	1.6513
		T (°C)	50	5745.00128	5745	0.00128	0.2229
		T (°C)	60	5745.00549	5745	0.00549	0.9562
		T (°C)	70	5745.00851	5745	0.00851	1.4810
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)	12.00	5785.00723	5785	0.00723	1.2492
		V max (V)	13.80	5785.00312	5785	0.00312	0.5393
		V min (V)	10.20	5785.00072	5785	0.00072	0.1253
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency:5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	12	T (°C)	-20	5785.00623	5785	0.00623	1.0766
		T (°C)	-10	5785.01009	5785	0.01009	1.7444
		T (°C)	0	5785.01052	5785	0.01052	1.8193
		T (°C)	10	5785.00529	5785	0.00529	0.9138
		T (°C)	20	5785.00039	5785	0.00039	0.0671
		T (°C)	30	5785.00350	5785	0.00350	0.6056
		T (°C)	40	5785.01100	5785	0.01100	1.9010
		T (°C)	50	5785.00594	5785	0.00594	1.0267
		T (°C)	60	5785.00757	5785	0.00757	1.3091
		T (°C)	70	5785.00770	5785	0.00770	1.3319
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)	12.00	5825.00483	5825	0.00483	0.8292
		V max (V)	13.80	5825.00459	5825	0.00459	0.7874
		V min (V)	10.20	5825.00518	5825	0.00518	0.8888
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency:5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	12	T (°C)	-20	5825.00695	5825	0.00695	1.1936
		T (°C)	-10	5825.00322	5825	0.00322	0.5531
		T (°C)	0	5825.00590	5825	0.00590	1.0128
		T (°C)	10	5825.00171	5825	0.00171	0.2929
		T (°C)	20	5825.01316	5825	0.01316	2.2600
		T (°C)	30	5825.00644	5825	0.00644	1.1054
		T (°C)	40	5825.00623	5825	0.00623	1.0697
		T (°C)	50	5825.00497	5825	0.00497	0.8535
		T (°C)	60	5825.00765	5825	0.00765	1.3130
		T (°C)	70	5825.00625	5825	0.00625	1.0728
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

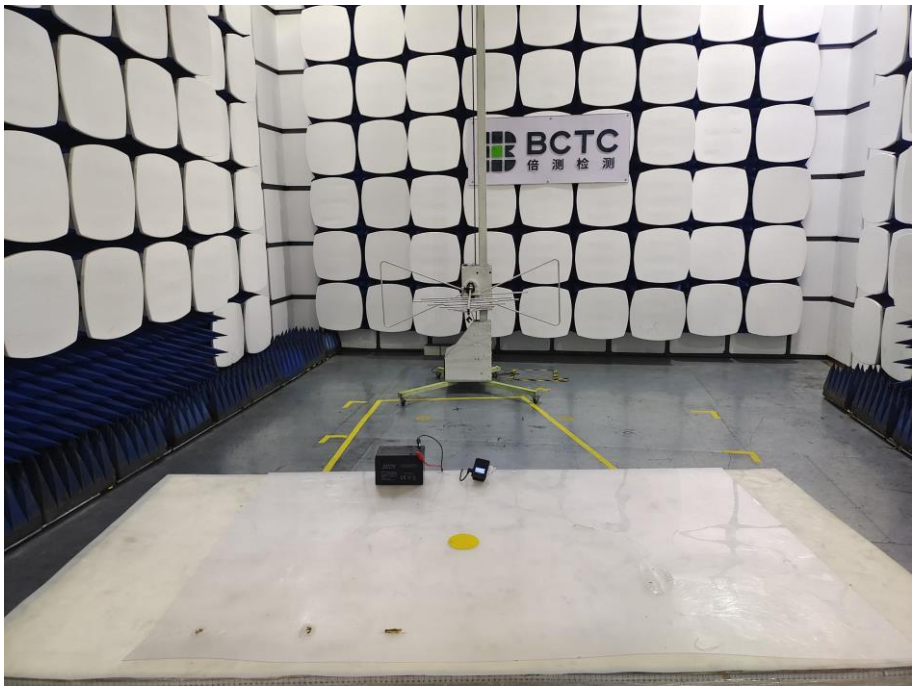
The EUT antenna is FPC antenna (antenna gain:1dBi). It comply with the standard requirement.

15. EUT Photographs

Appendix-Photographs Of EUT Constructional Details

16. EUT Test Setup Photographs

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 stamp of laboratory.

4.The test report is invalid without signature of person(s) testing and authorizing.

5.The test process and test result is only related to the Unit Under Test.

6.The quality system of our laboratory is in accordance with ISO/IEC17025.

7.If there is any objection to report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

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1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

TEL：400-788-9558

P.C.: 518103

FAX：0755-33229357

Website：http://www.chnbctc.com

E-Mail：bctc@bctc-lab.com.cn

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