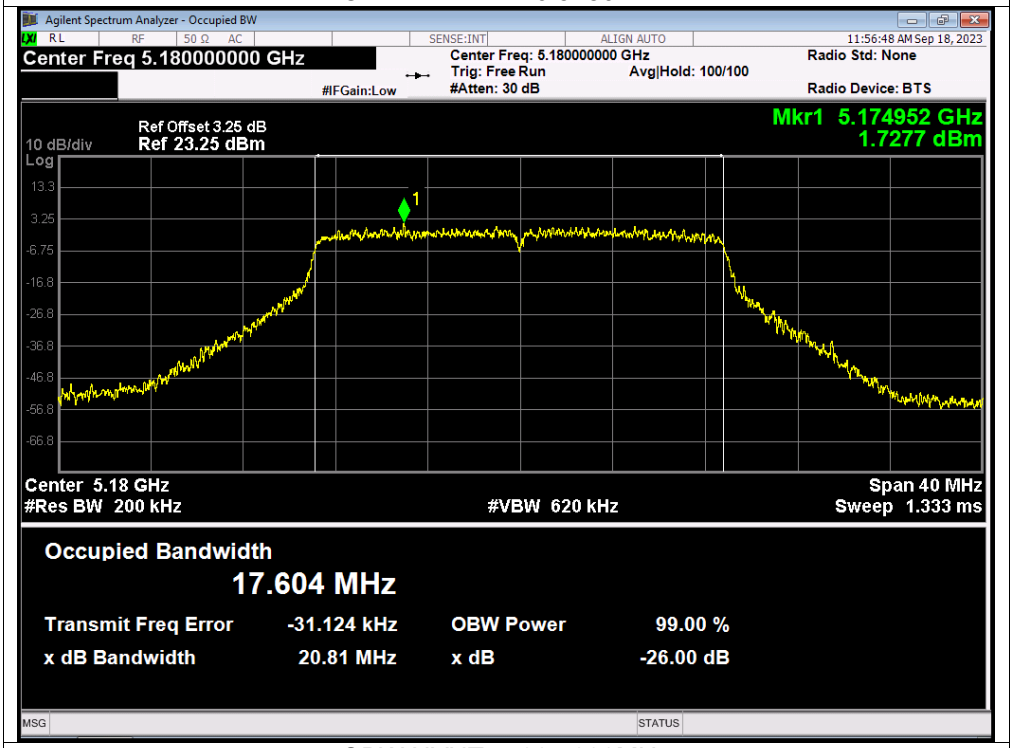
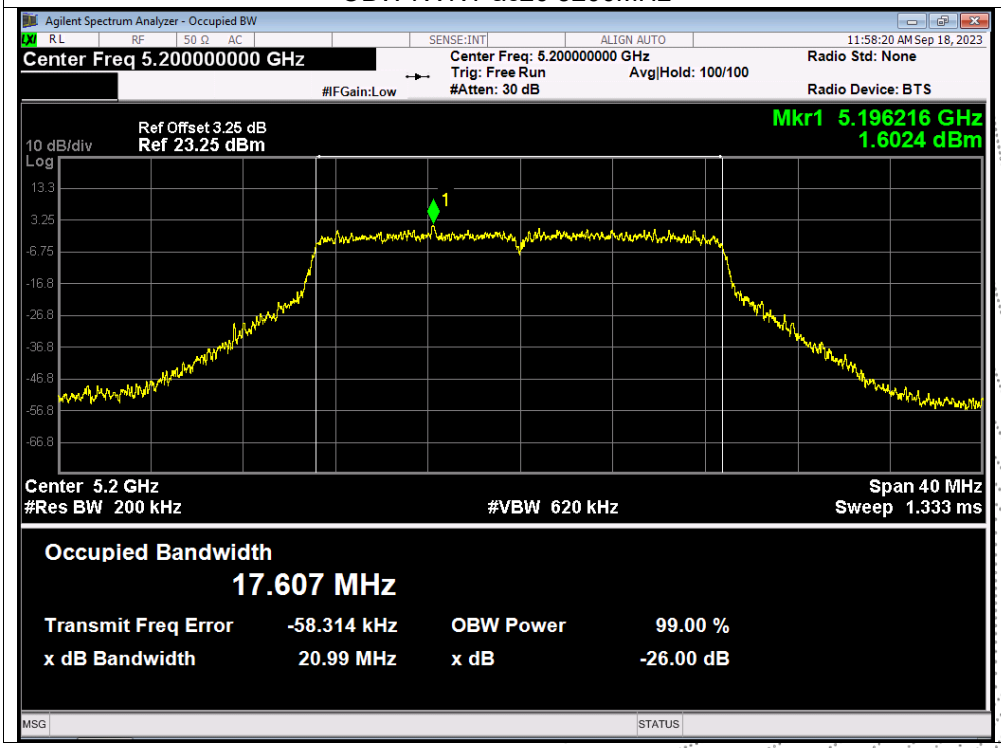
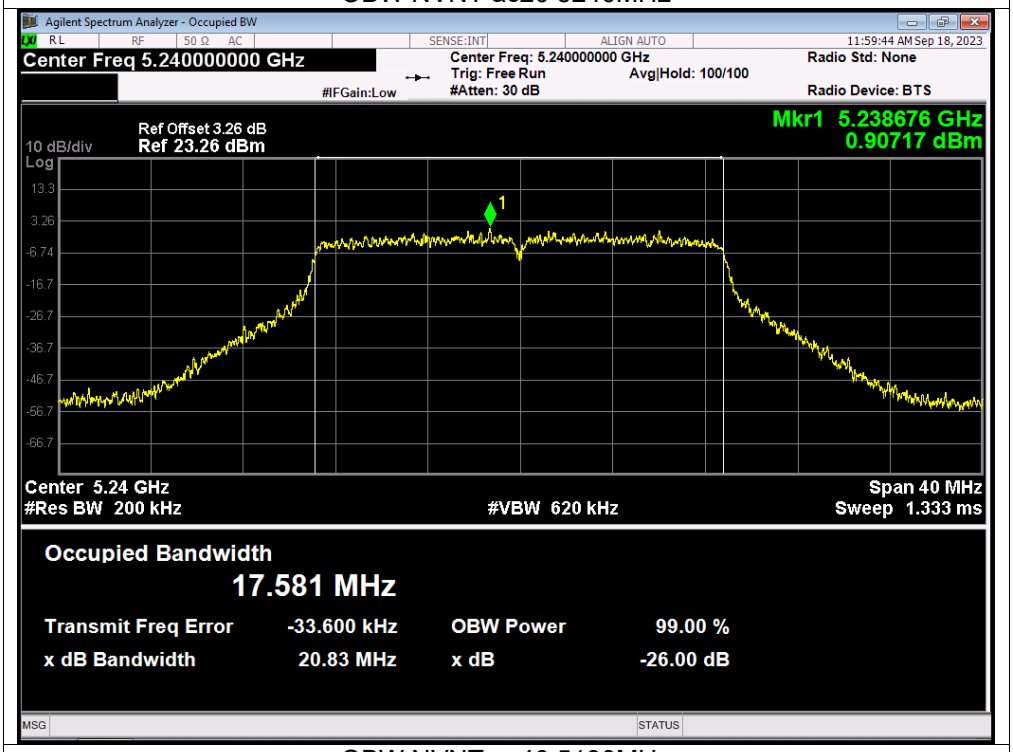
OBW NVNT ac20 5180MHz



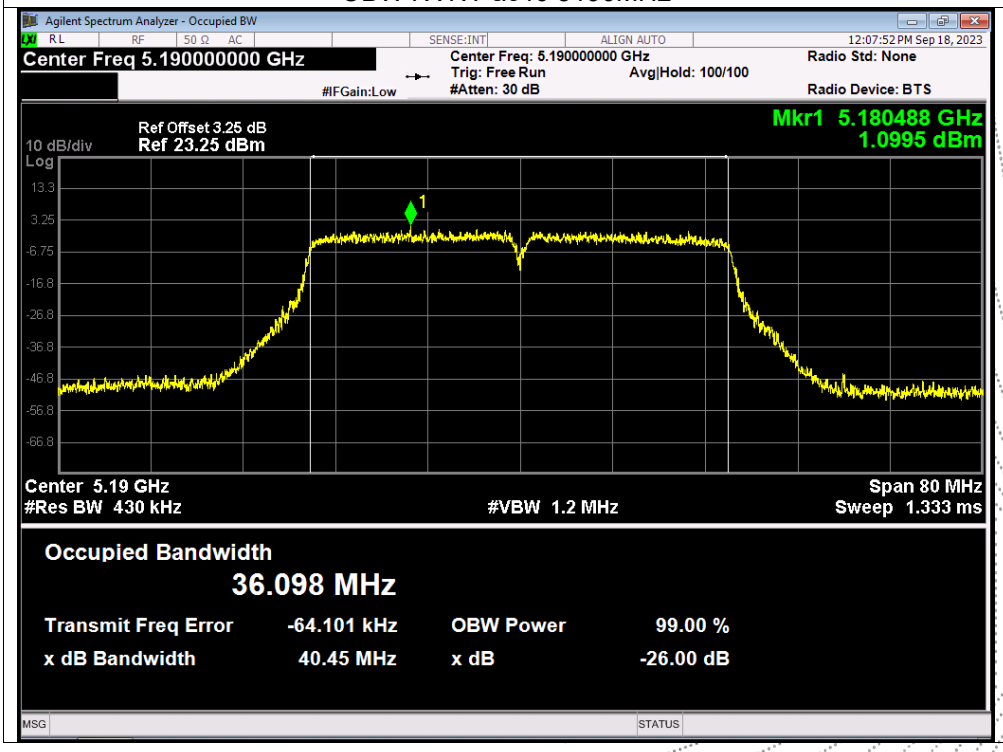
OBW NVNT ac20 5200MHz



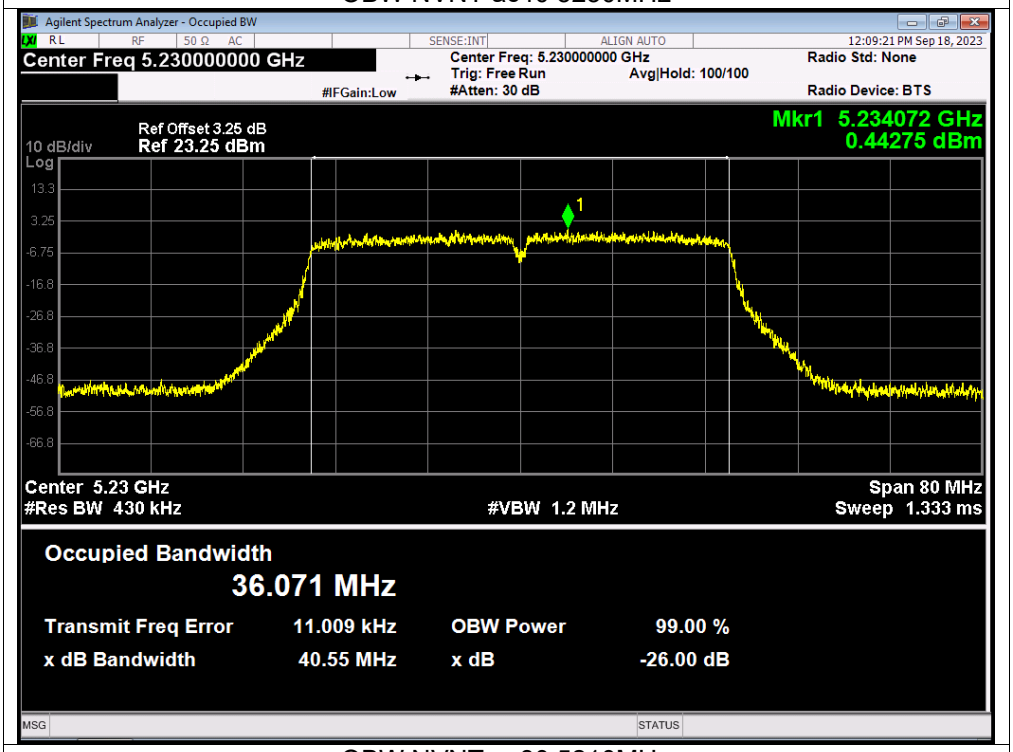
OBW NVNT ac20 5240MHz



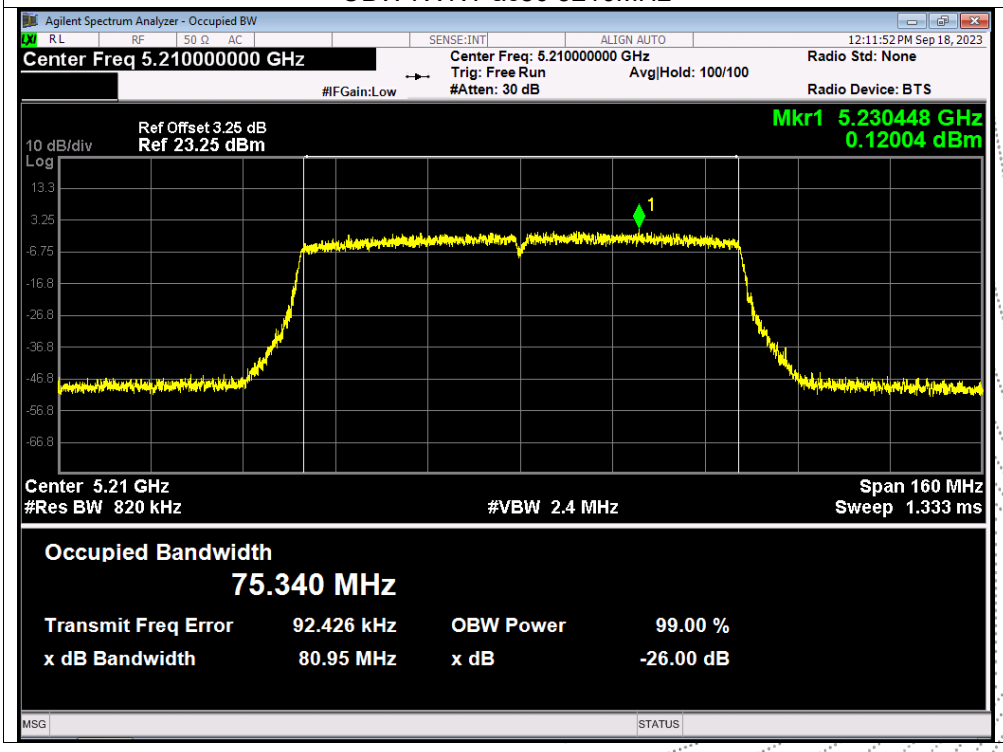
OBW NVNT ac40 5190MHz



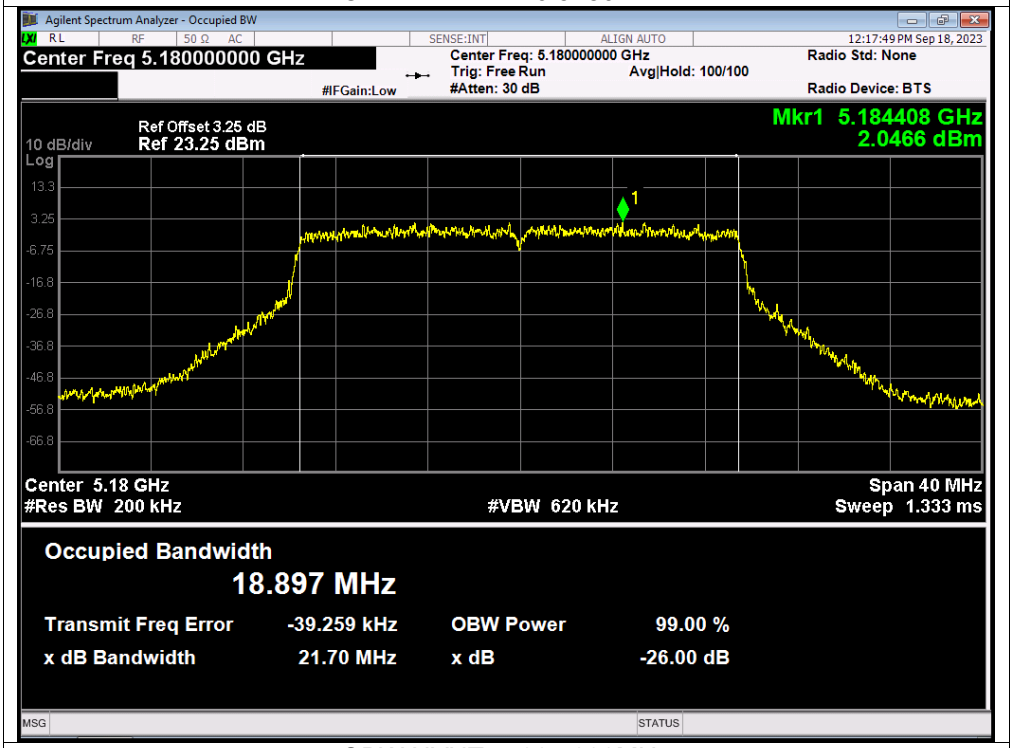
OBW NVNT ac40 5230MHz



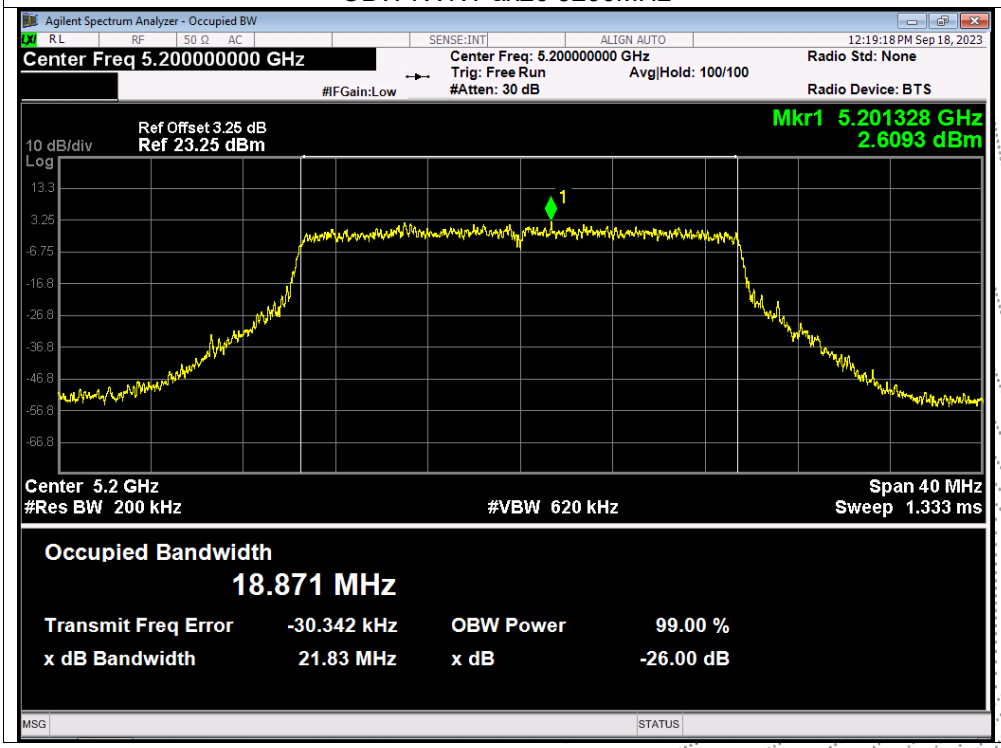
OBW NVNT ac80 5210MHz



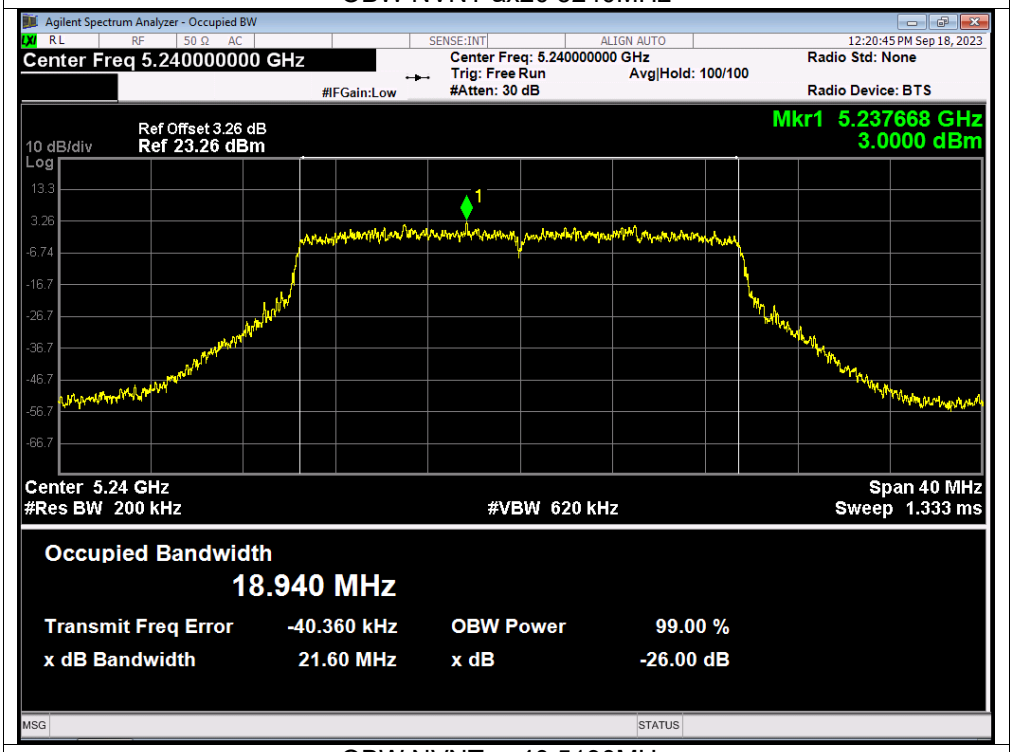
OBW NVNT ax20 5180MHz



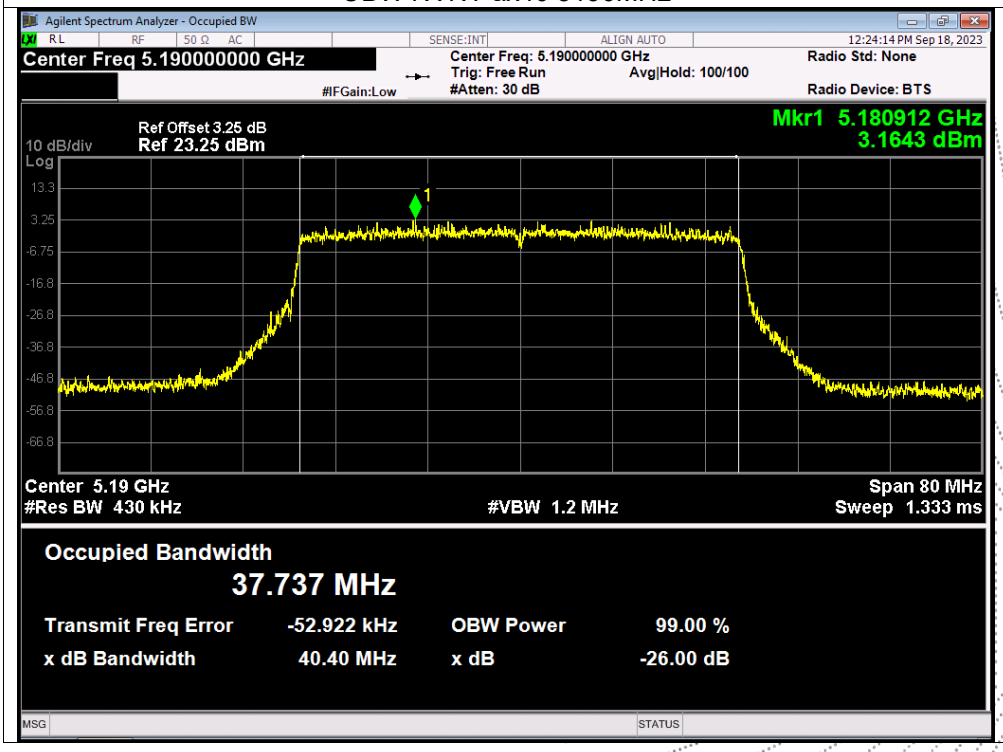
OBW NVNT ax20 5200MHz



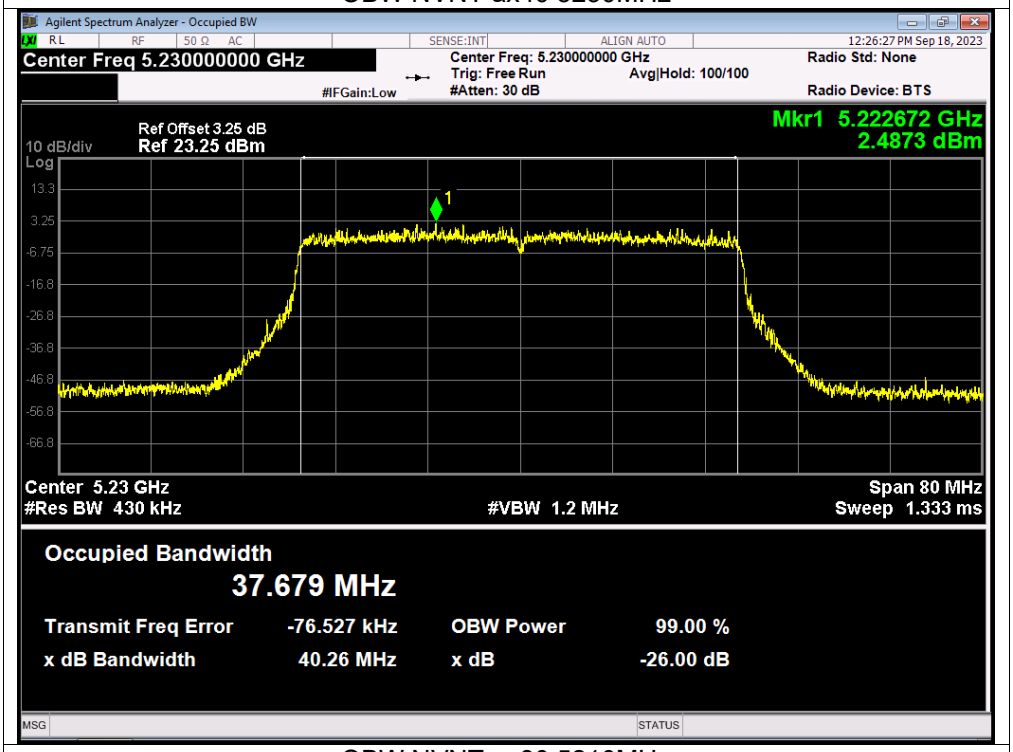
OBW NVNT ax20 5240MHz



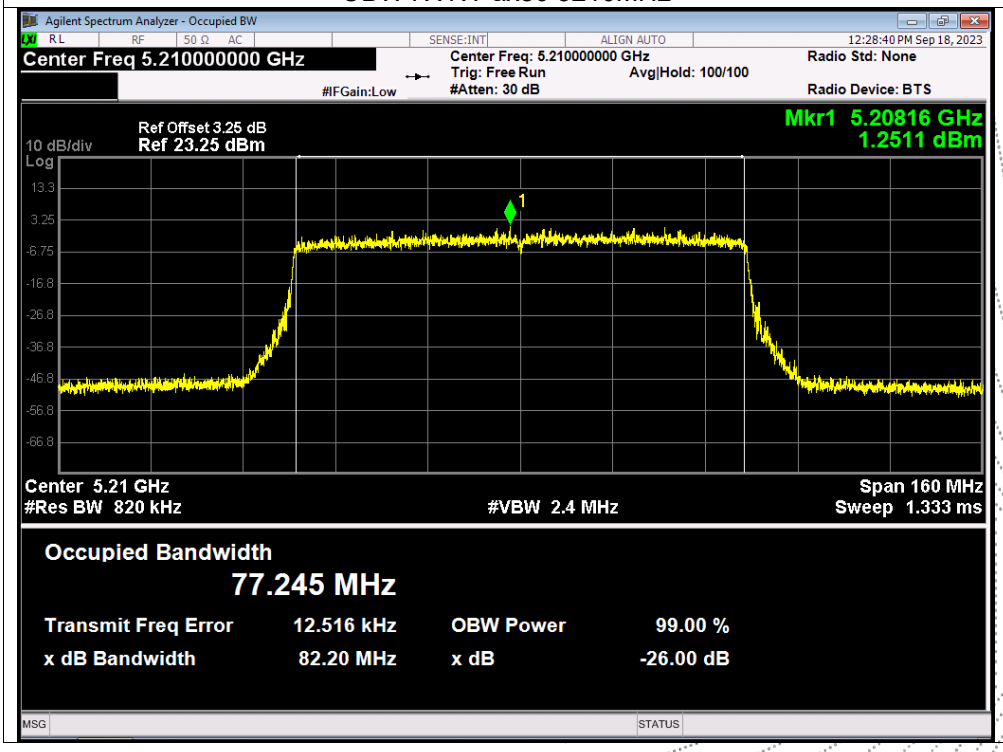
OBW NVNT ax40 5190MHz



OBW NVNT ax40 5230MHz



OBW NVNT ax80 5210MHz



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

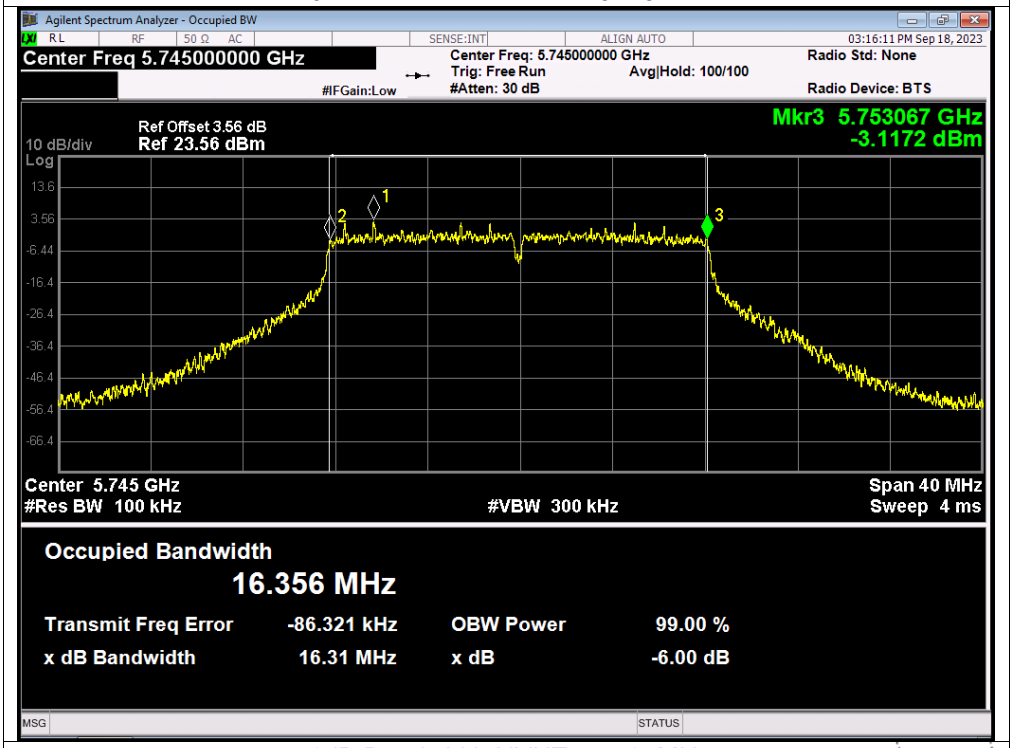
Mode	Channel	Frequency (MHz)	-6dB bandwidth (MHz)		Limit -6dB bandwidth MHz	Result
			ANT A	ANT B		
802.11a	CH149	5745	16.306	15.907	≥500	Pass
	CH157	5785	15.312	16.309	≥500	Pass
	CH165	5825	16.325	16.292	≥500	Pass
802.11 n20	CH149	5745	17.17	16.031	≥500	Pass
	CH157	5785	17.544	16.567	≥500	Pass
	CH165	5825	17.595	16.851	≥500	Pass
802.11 n40	CH151	5755	36.295	36.341	≥500	Pass
	CH159	5795	36.35	36.324	≥500	Pass
802.11 ac20	CH149	5745	17.546	17.033	≥500	Pass
	CH157	5785	17.618	17.521	≥500	Pass
	CH165	5825	17.531	16.681	≥500	Pass
802.11 ac40	CH151	5755	36.066	36.319	≥500	Pass
	CH159	5795	35.027	36.062	≥500	Pass
802.11 ac80	CH155	5775	72.526	71.059	≥500	Pass
802.11 ax20	CH149	5745	18.305	18.232	≥500	Pass
	CH157	5785	17.911	17.34	≥500	Pass
	CH165	5825	17.736	18.502	≥500	Pass
802.11 ax40	CH151	5755	37.763	37.682	≥500	Pass
	CH159	5795	37.533	37.332	≥500	Pass
802.11 ax80	CH155	5775	**75.014**	72.513	≥500	Pass

Mode	Channel	Frequency (MHz)	99% bandwidth (MHz)		Result
			ANT A	ANT B	
802.11a	CH149	5745	16.401	16.398	Pass
	CH157	5785	16.407	16.395	Pass
	CH165	5825	16.354	16.382	Pass
802.11 n20	CH149	5745	17.62	17.596	Pass
	CH157	5785	17.616	17.608	Pass
	CH165	5825	17.6	17.589	Pass
802.11 n40	CH151	5755	36.059	36.103	Pass
	CH159	5795	36.067	36.037	Pass
802.11 ac20	CH149	5745	17.599	17.595	Pass
	CH157	5785	17.589	17.597	Pass
	CH165	5825	17.591	17.604	Pass
802.11 ac40	CH151	5755	36.084	36.054	Pass
	CH159	5795	36.074	36.084	Pass
802.11 ac80	CH155	5775	75.37	75.339	Pass
802.11 ax20	CH149	5745	18.906	18.954	Pass
	CH157	5785	18.927	18.939	Pass
	CH165	5825	18.923	18.955	Pass
802.11 ax40	CH151	5755	37.669	37.686	Pass
	CH159	5795	37.735	37.763	Pass
802.11 ax80	CH155	5775	**77**	76.973	Pass

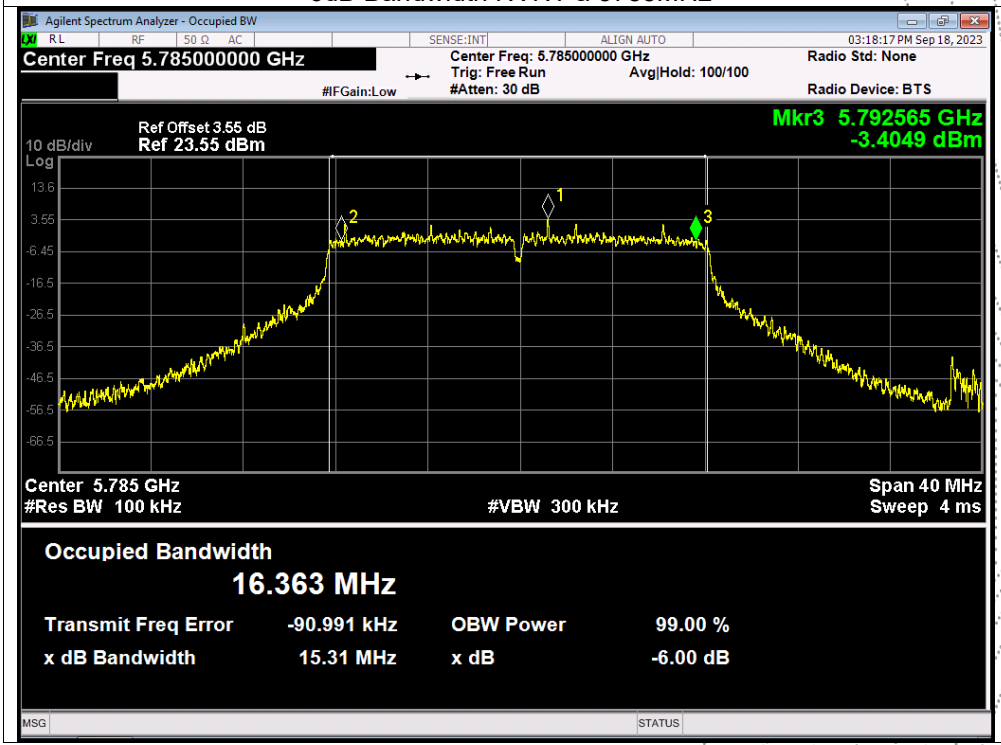
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A Plot.

Test Graphs

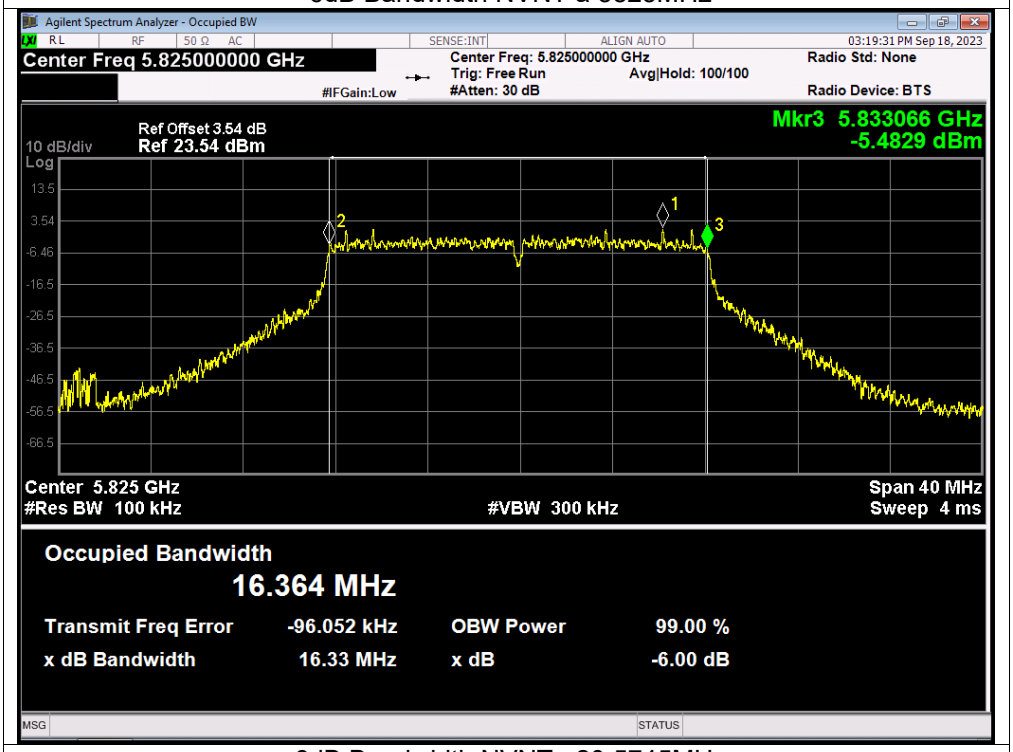
-6dB Bandwidth NVNT a 5745MHz



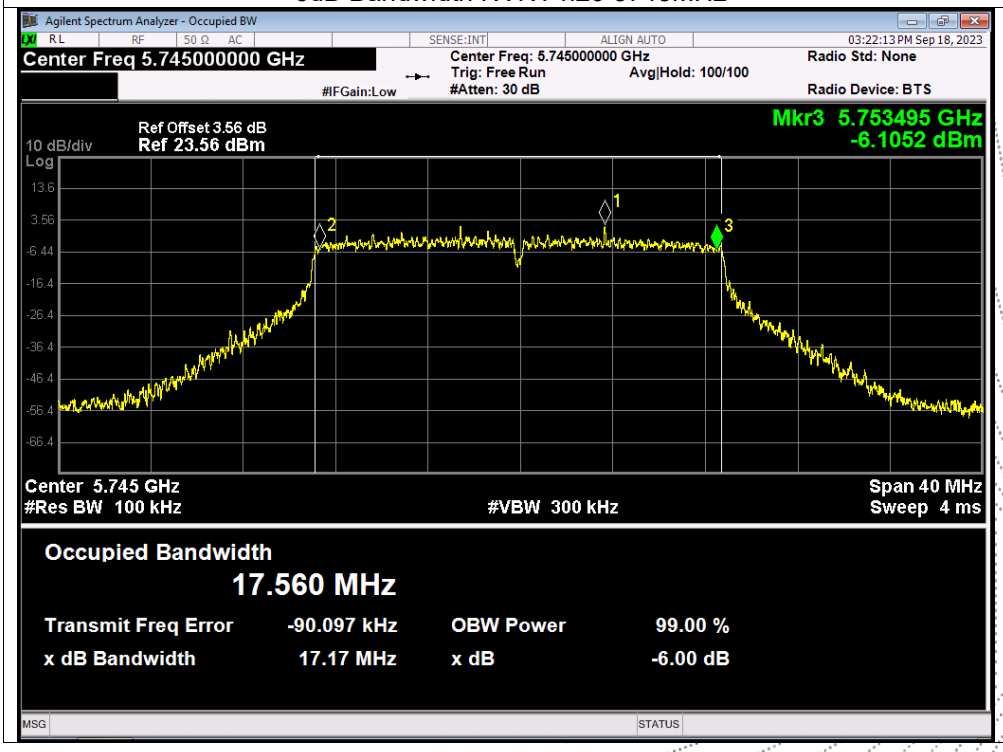
-6dB Bandwidth NVNT a 5785MHz



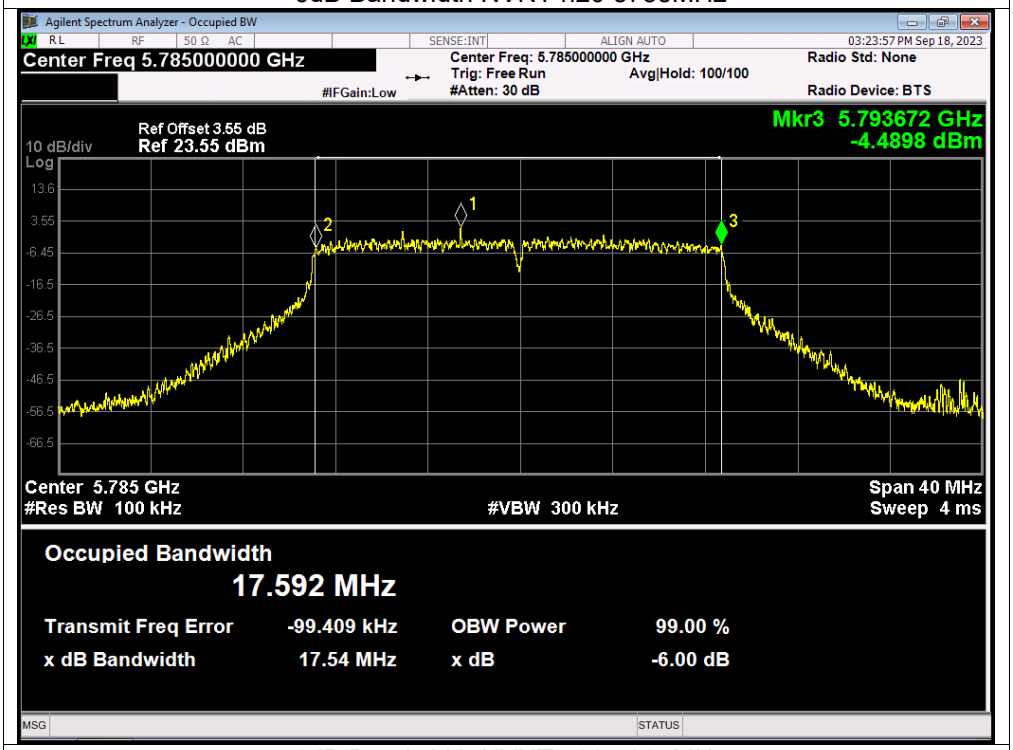
-6dB Bandwidth NVNT a 5825MHz



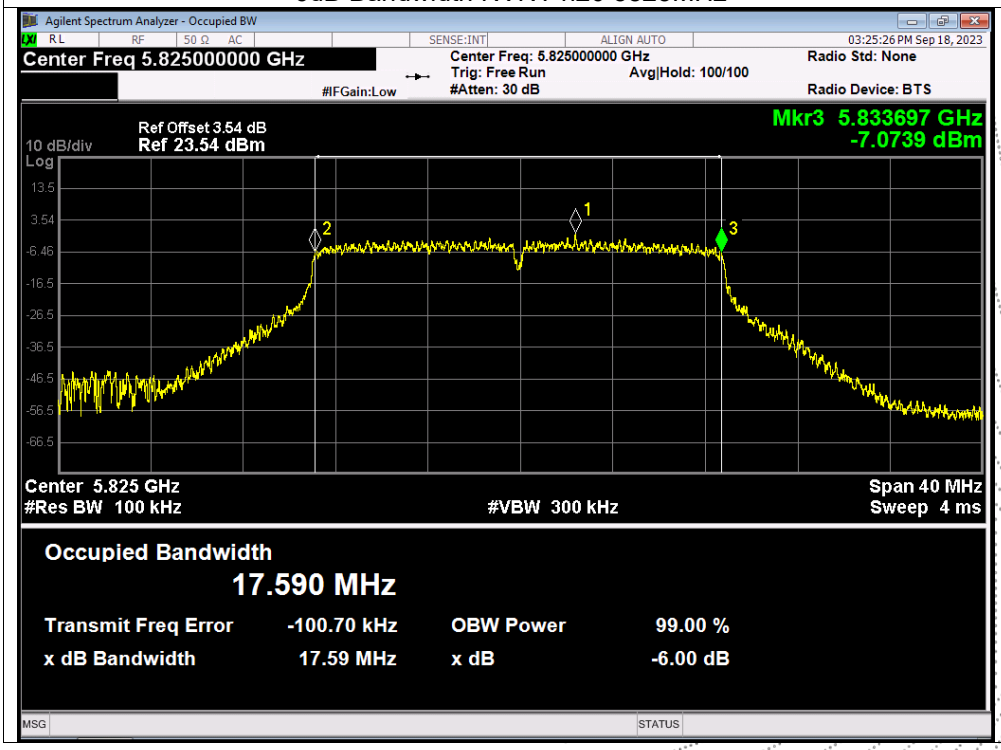
-6dB Bandwidth NVNT n20 5745MHz



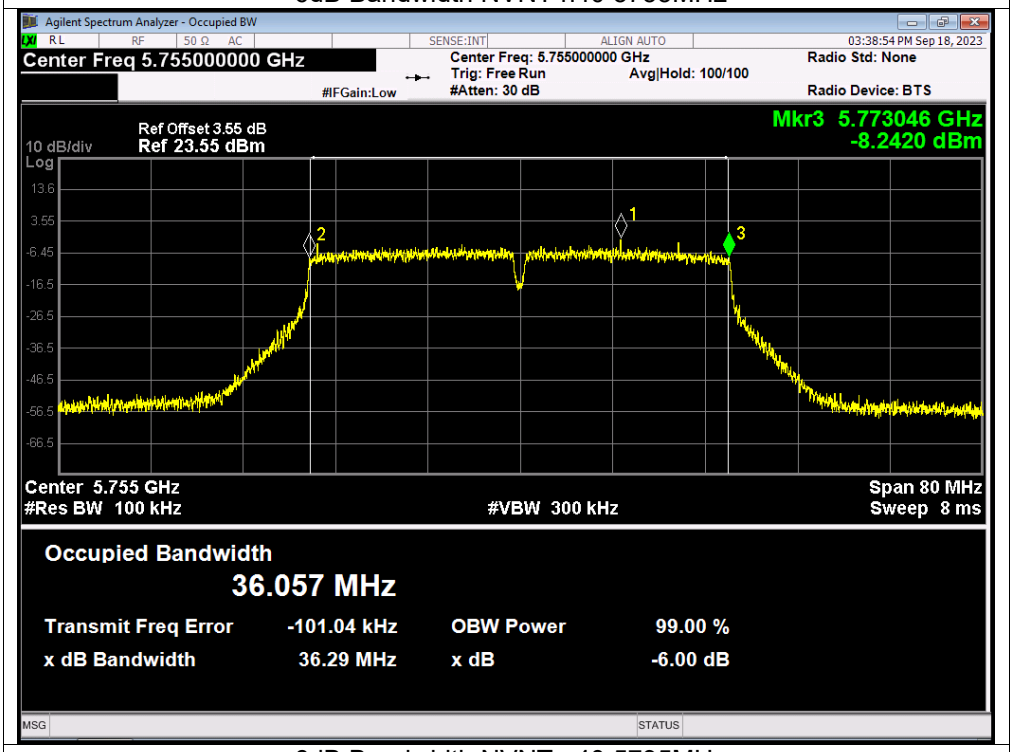
-6dB Bandwidth NVNT n20 5785MHz



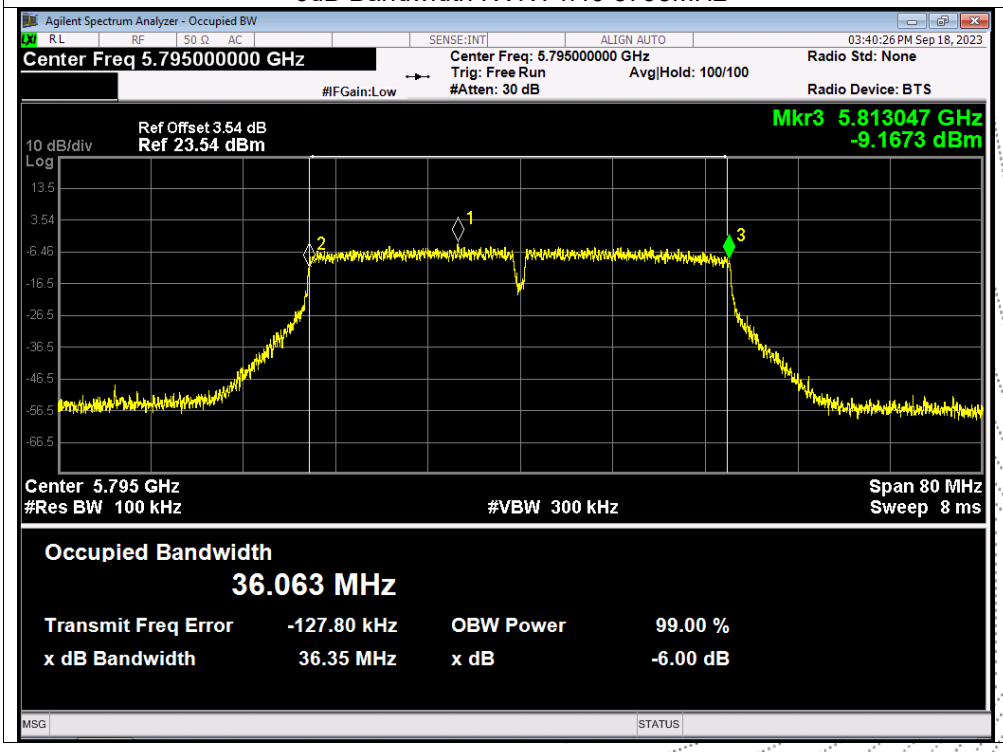
-6dB Bandwidth NVNT n20 5825MHz



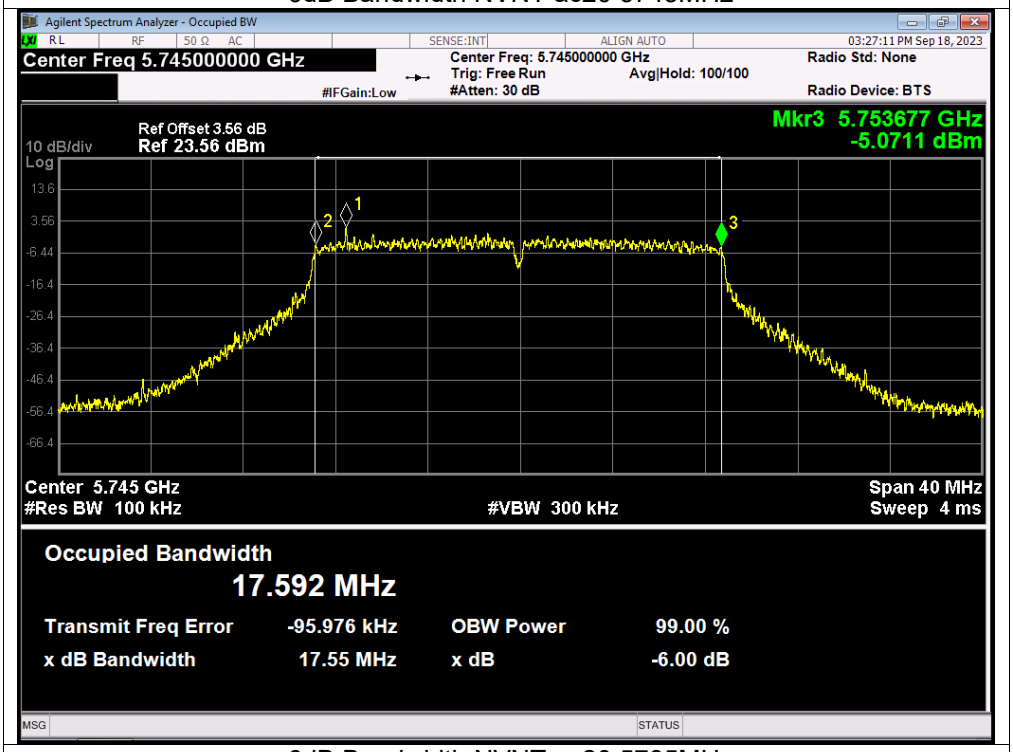
-6dB Bandwidth NVNT n40 5755MHz



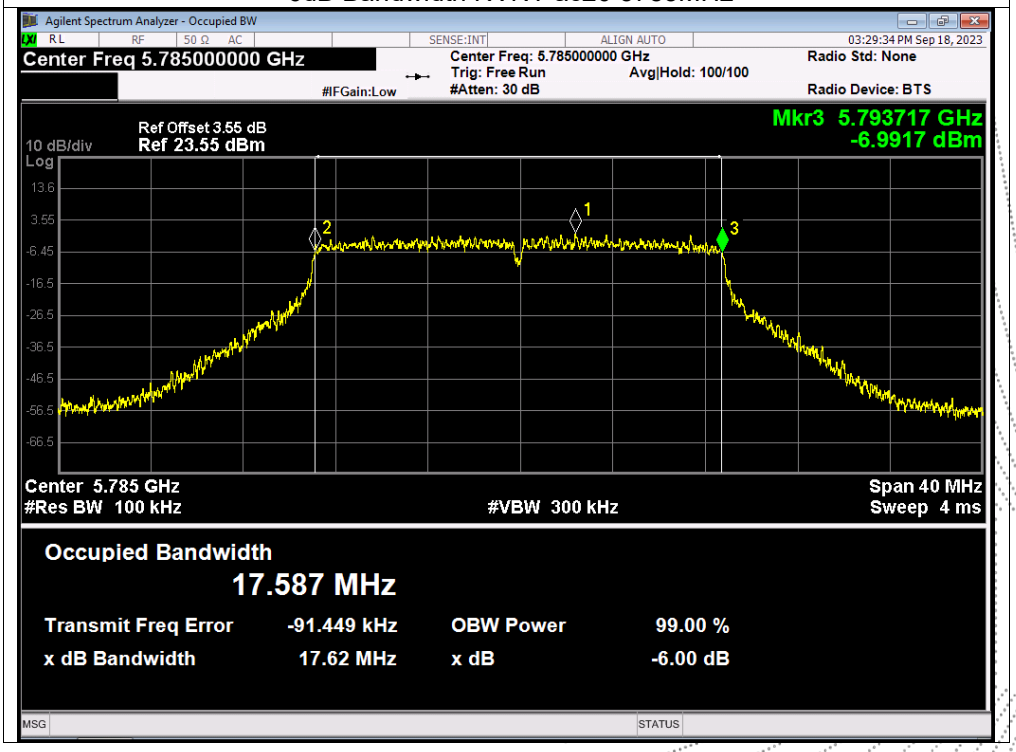
-6dB Bandwidth NVNT n40 5795MHz



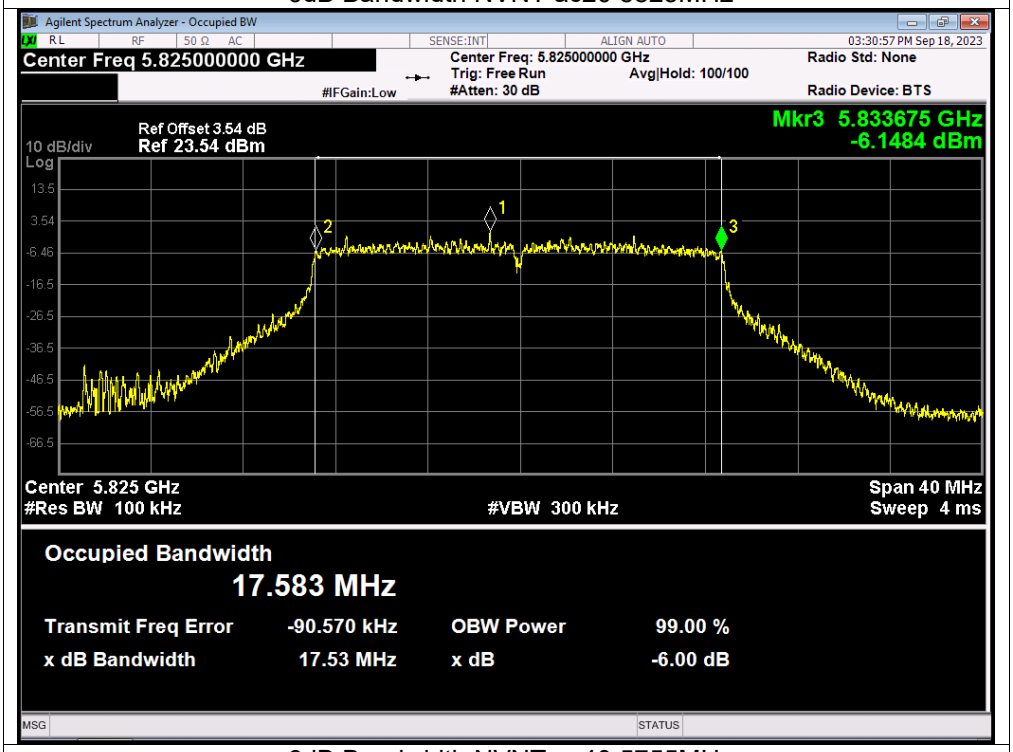
-6dB Bandwidth NVNT ac20 5745MHz



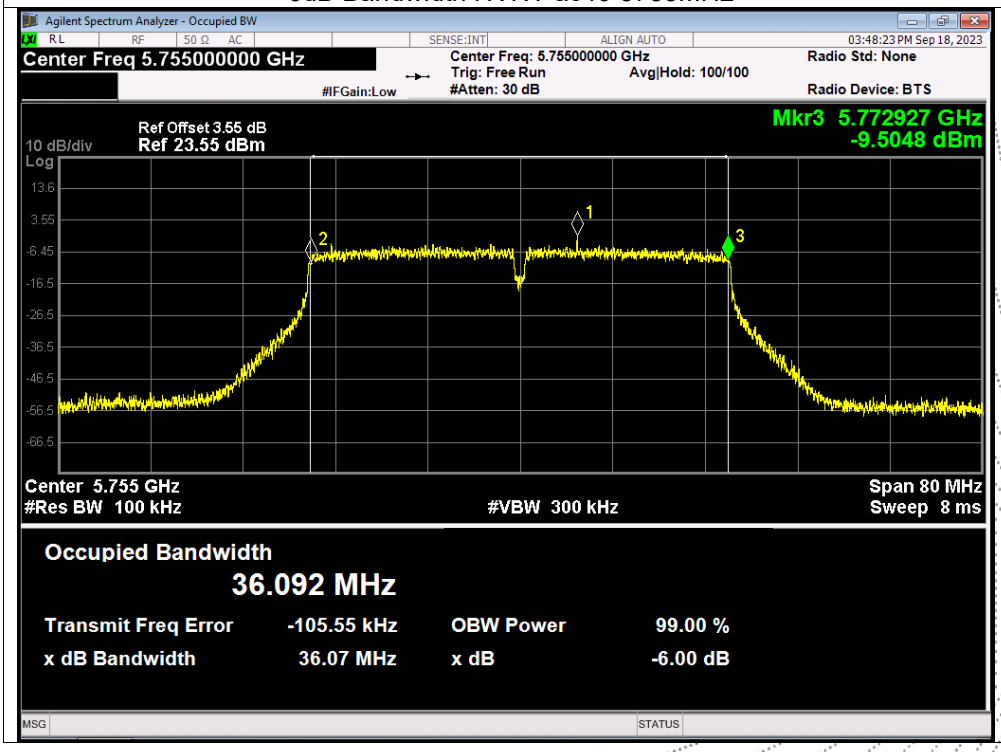
-6dB Bandwidth NVNT ac20 5785MHz



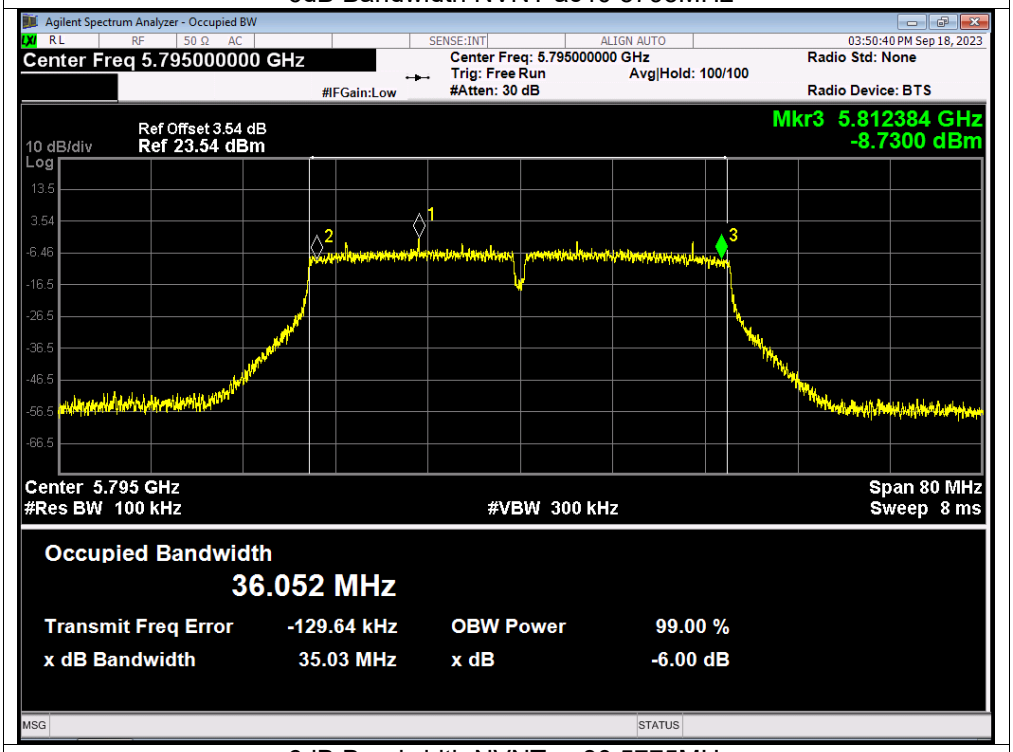
-6dB Bandwidth NVNT ac20 5825MHz



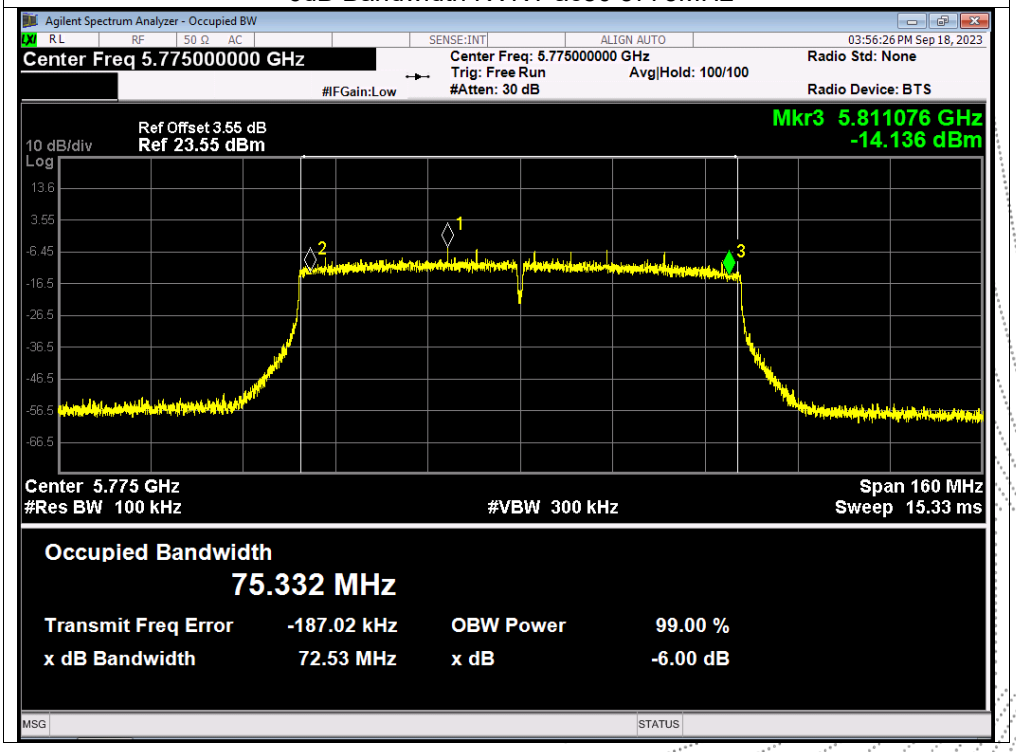
-6dB Bandwidth NVNT ac40 5755MHz



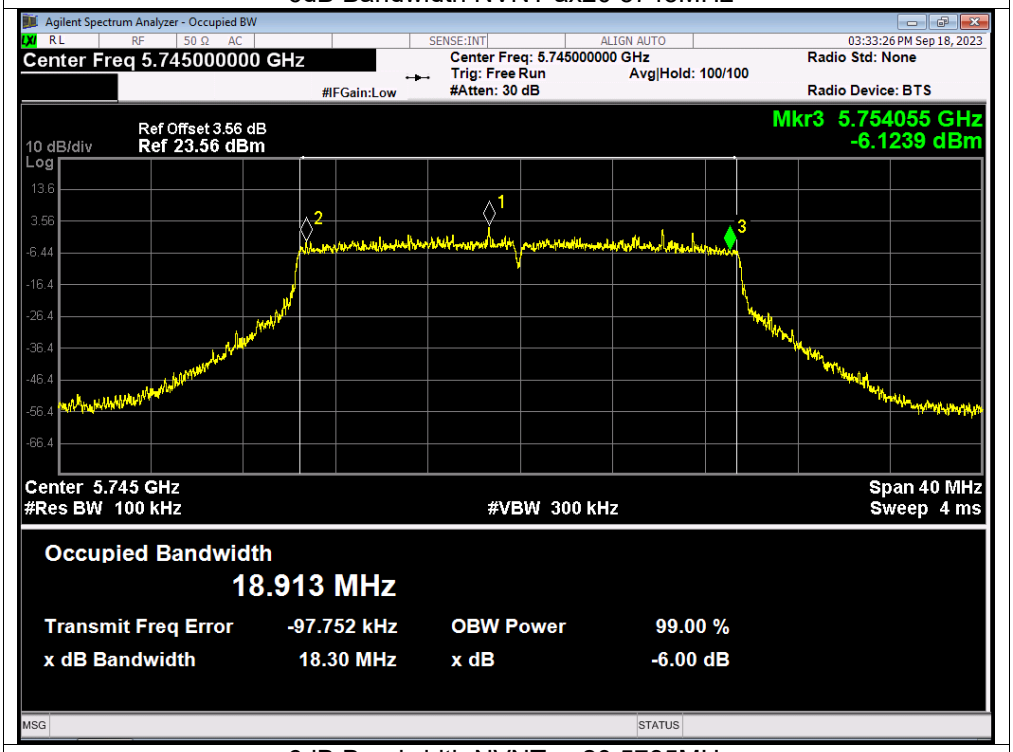
-6dB Bandwidth NVNT ac40 5795MHz



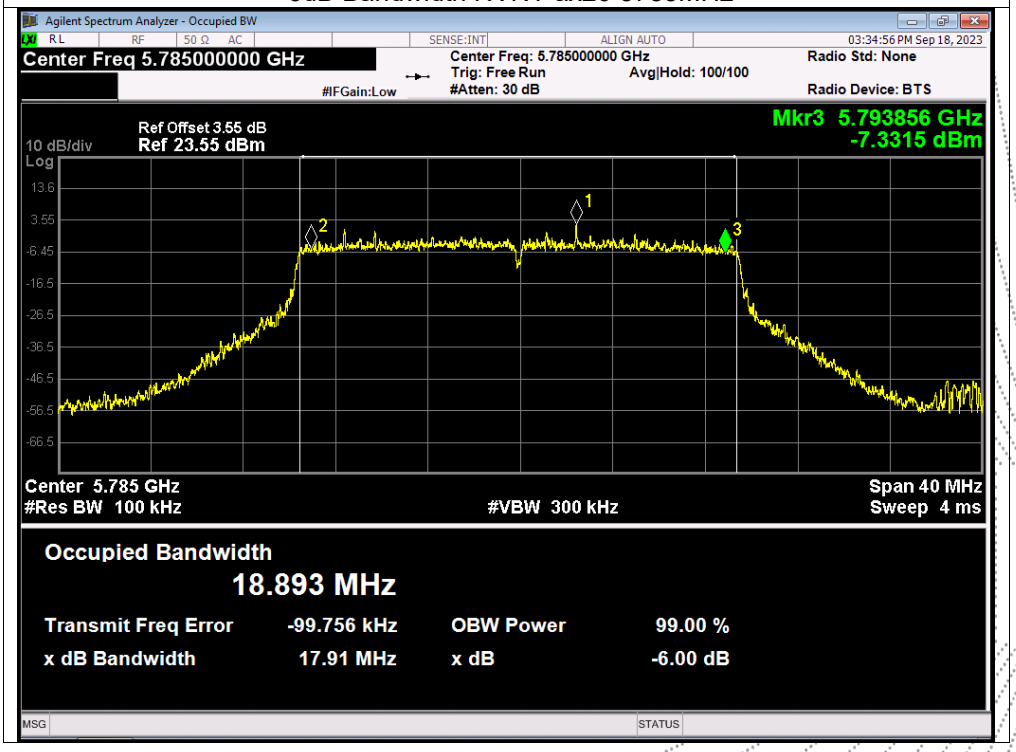
-6dB Bandwidth NVNT ac80 5775MHz



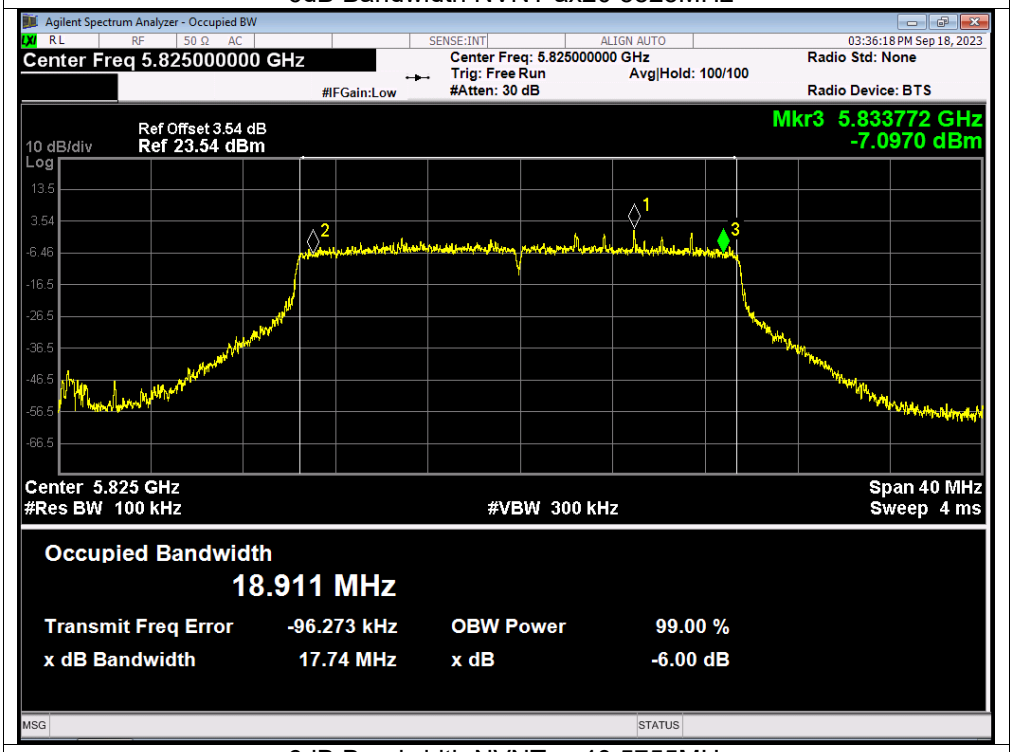
-6dB Bandwidth NVNT ax20 5745MHz



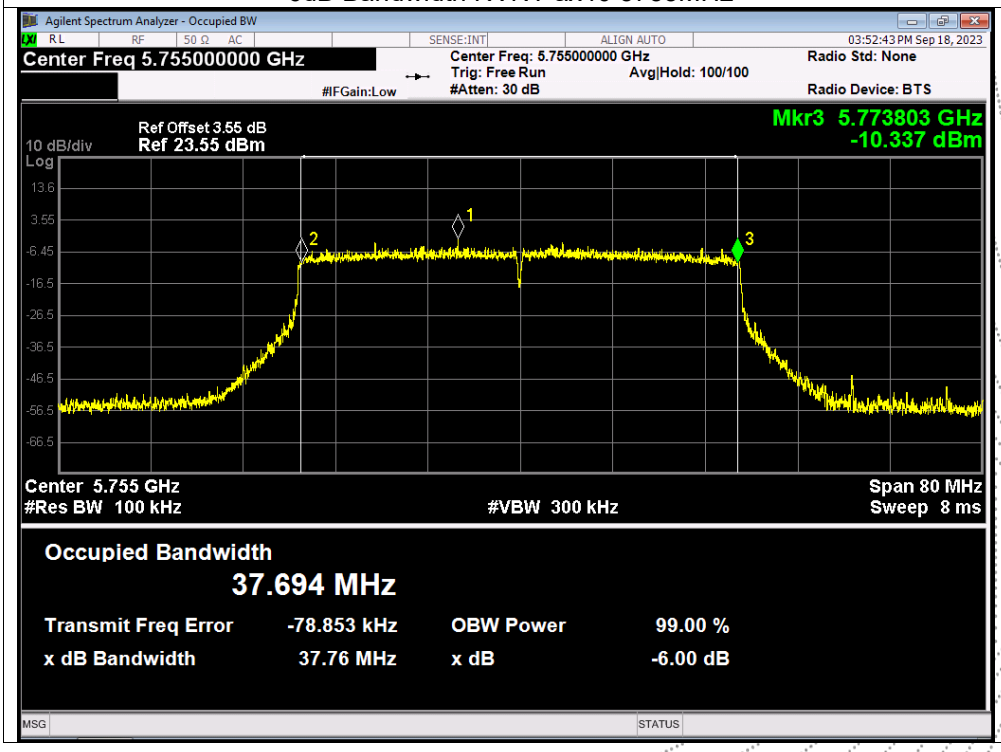
-6dB Bandwidth NVNT ax20 5785MHz



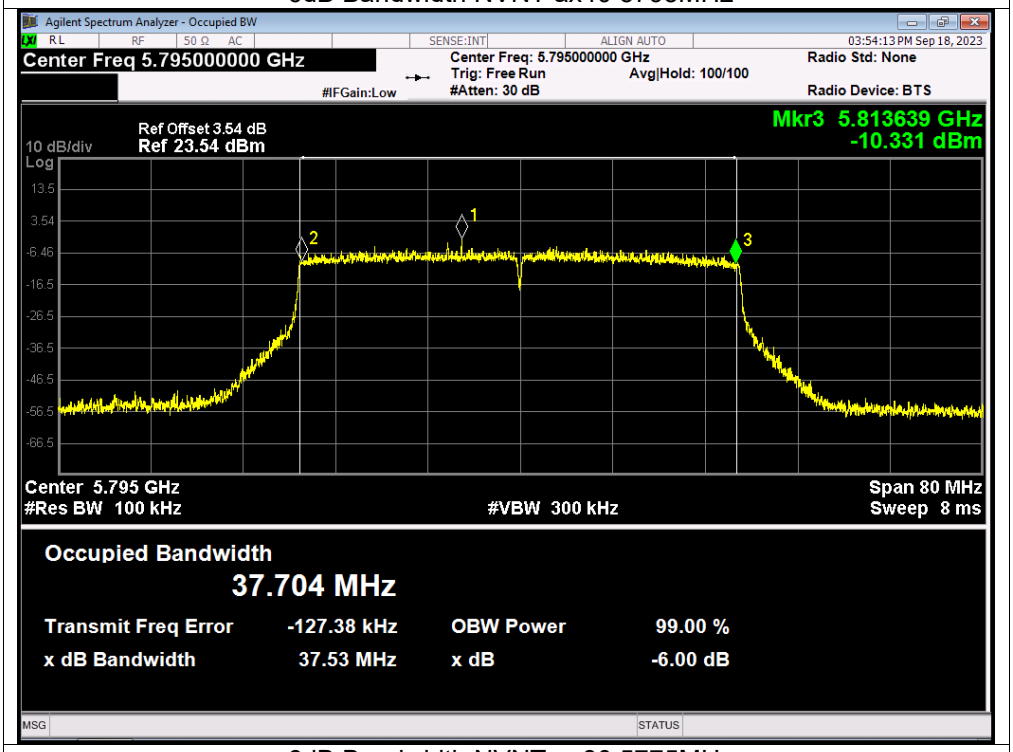
-6dB Bandwidth NVNT ax20 5825MHz



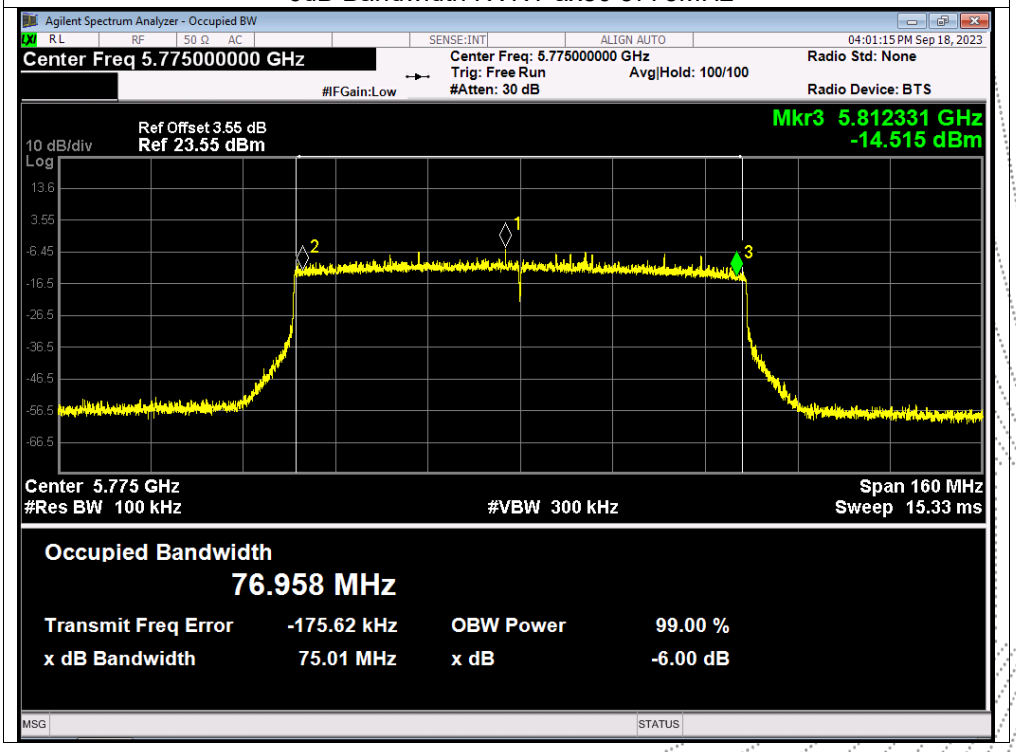
-6dB Bandwidth NVNT ax40 5755MHz



-6dB Bandwidth NVNT ax40 5795MHz



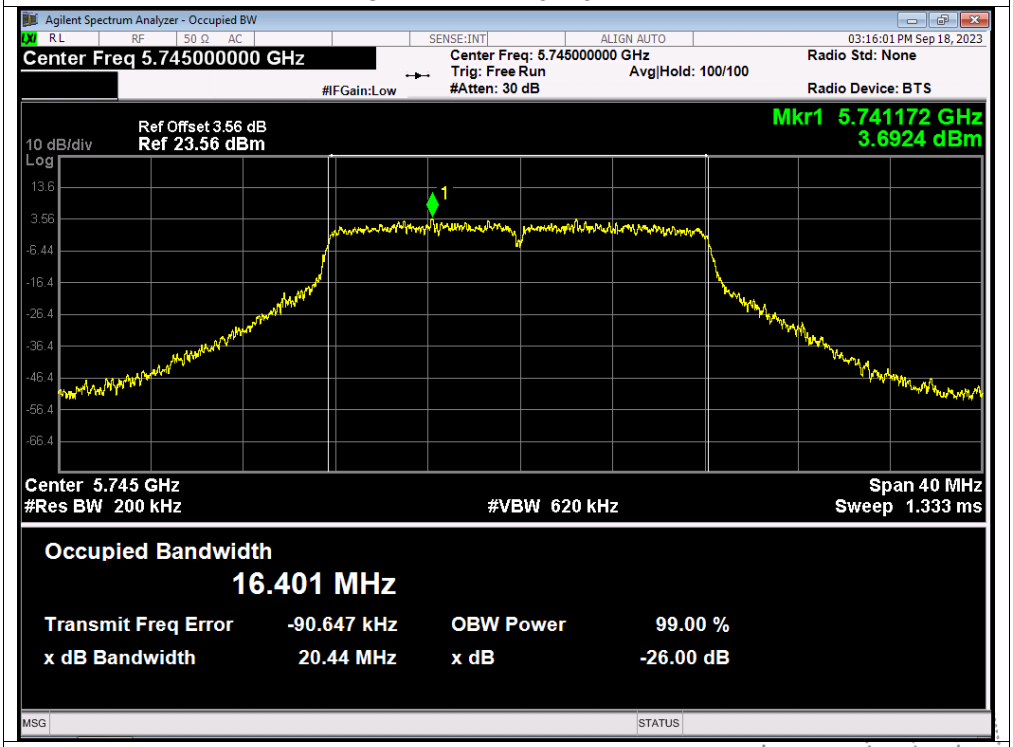
-6dB Bandwidth NVNT ax80 5775MHz



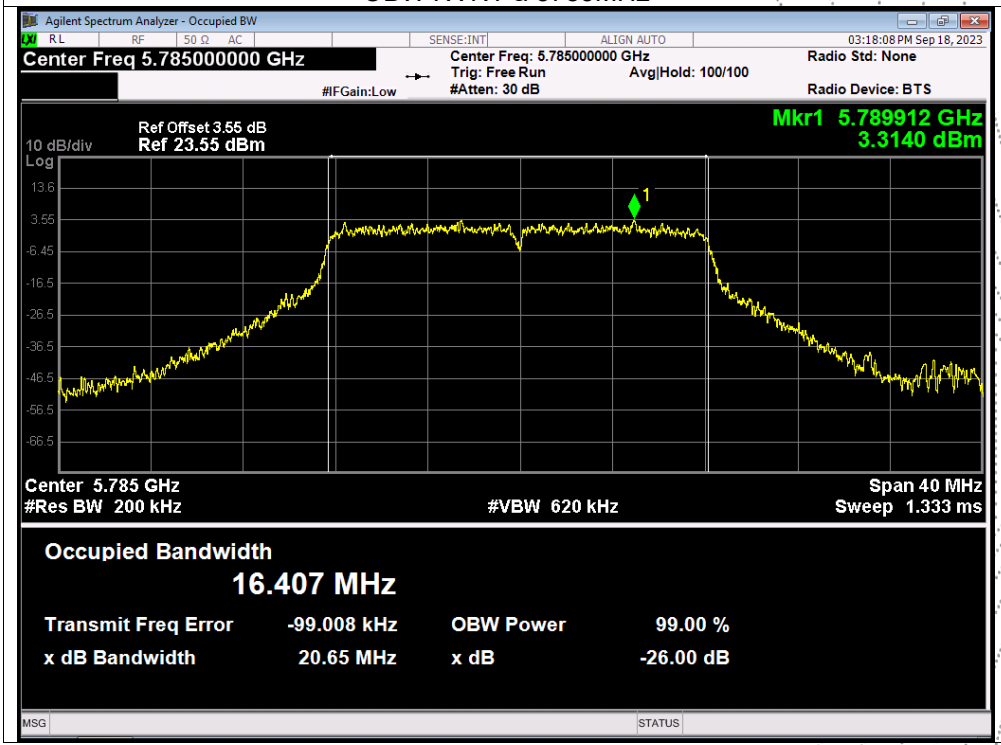
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A Plot.

Test Graphs

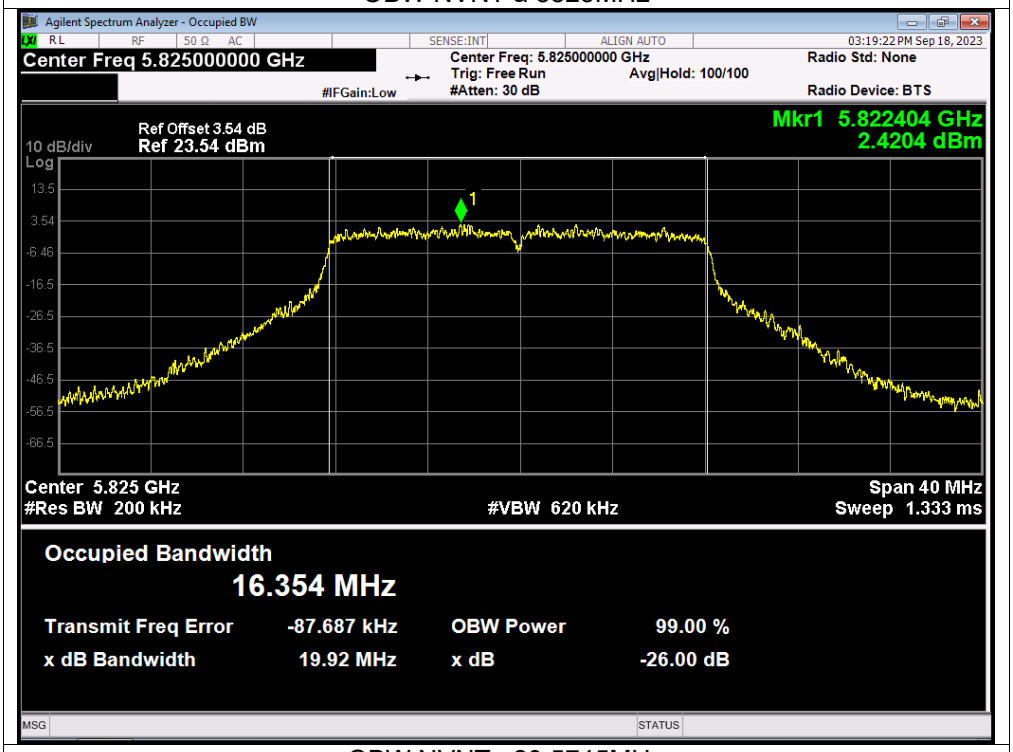
OBW NVNT a 5745MHz



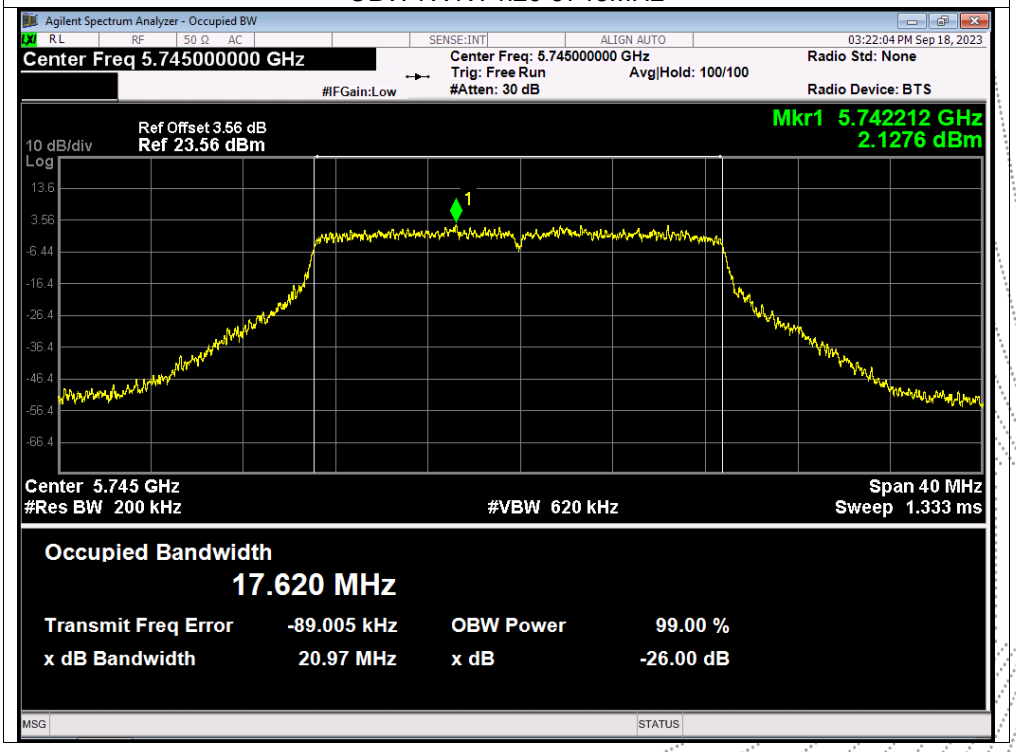
OBW NVNT a 5785MHz



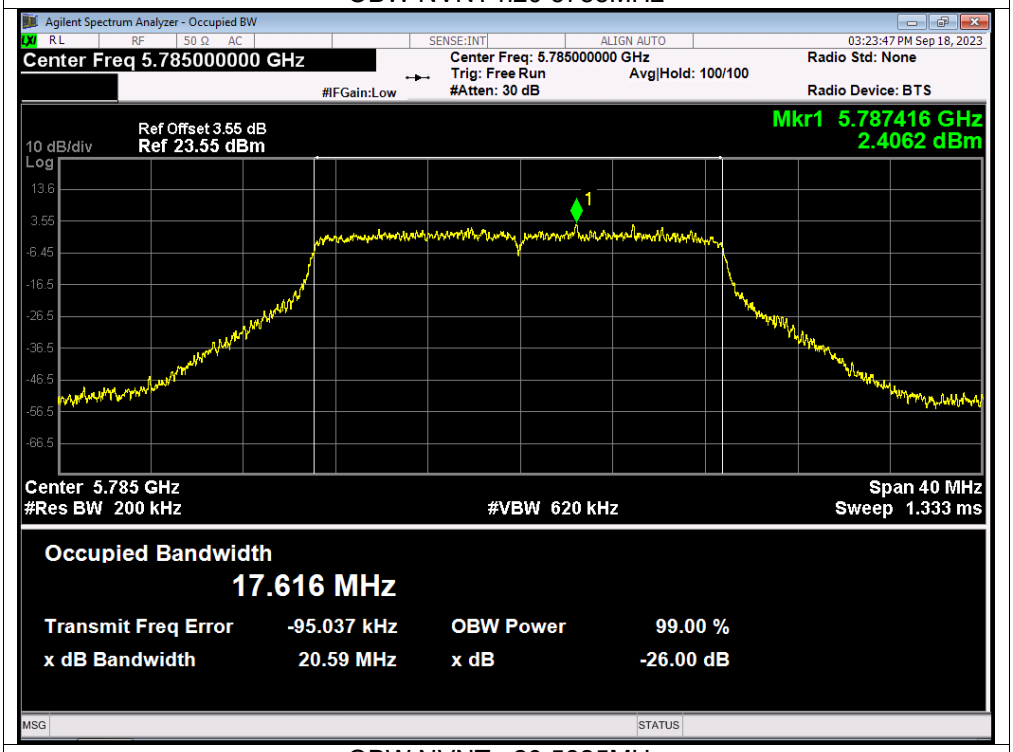
OBW NVNT a 5825MHz



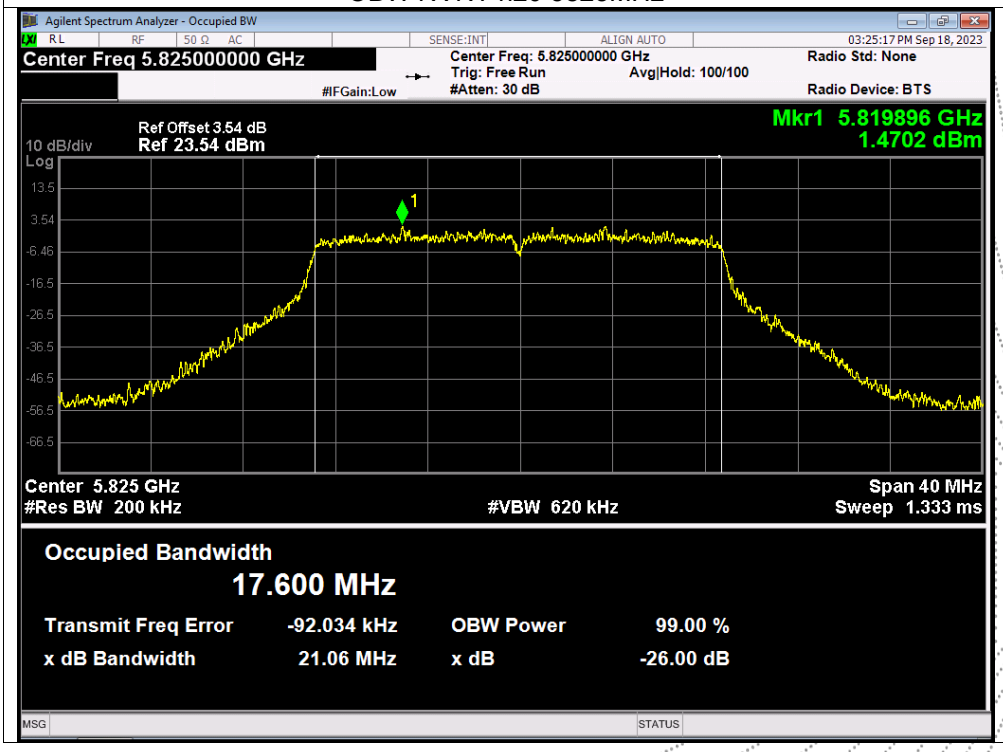
OBW NVNT n20 5745MHz



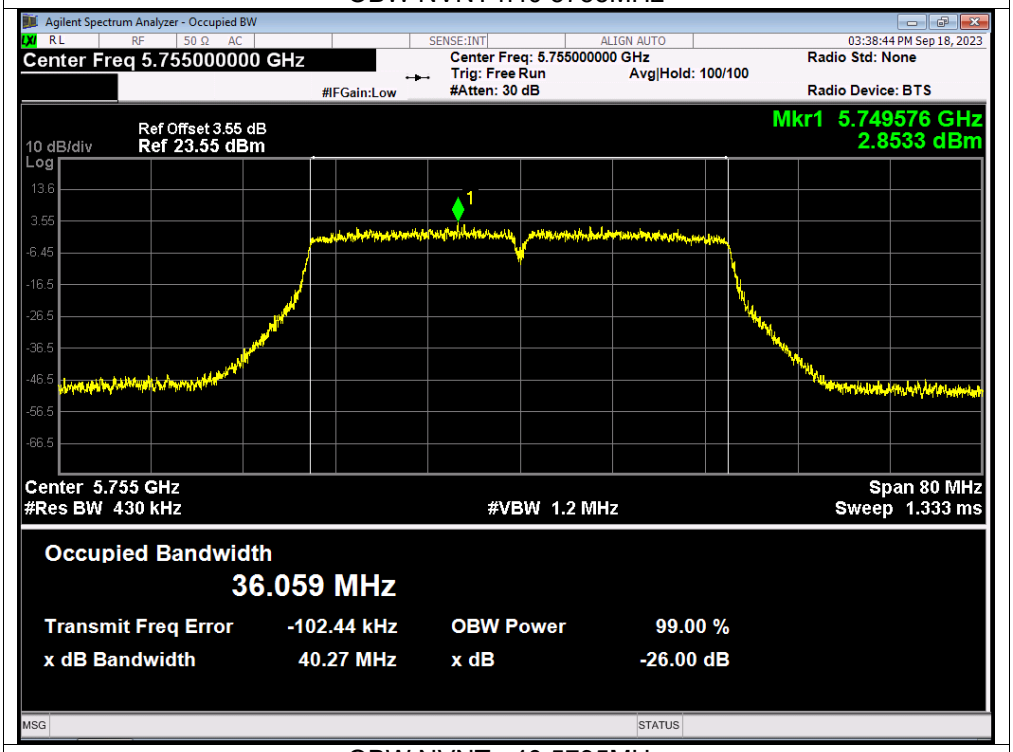
OBW NVNT n20 5785MHz



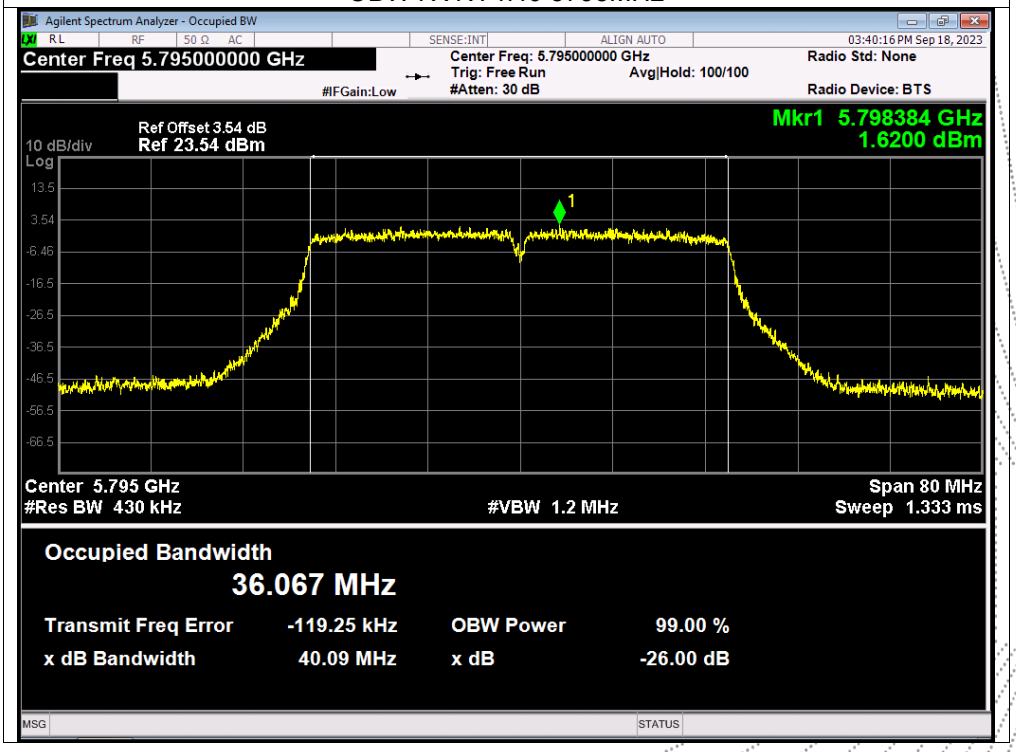
OBW NVNT n20 5825MHz



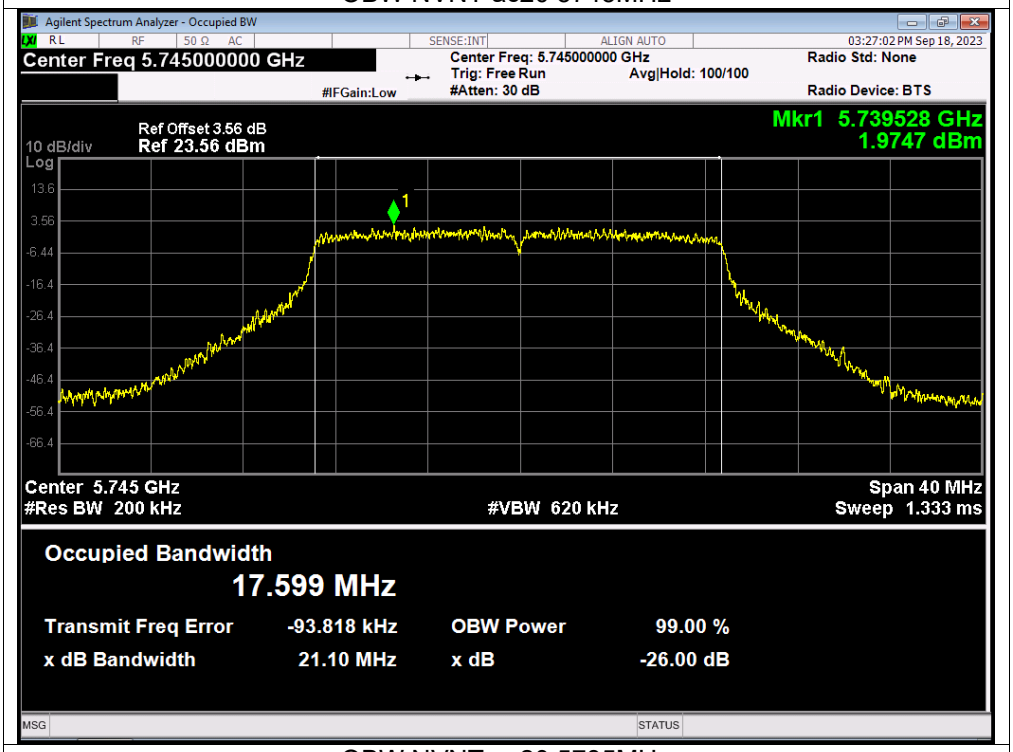
OBW NVNT n40 5755MHz



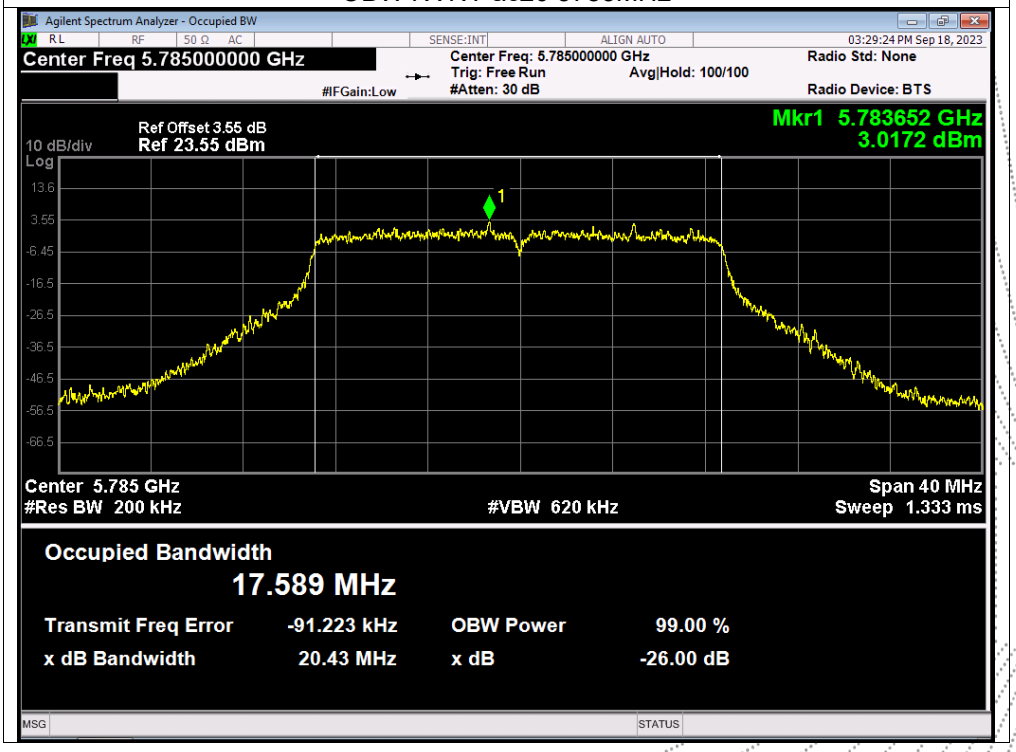
OBW NVNT n40 5795MHz



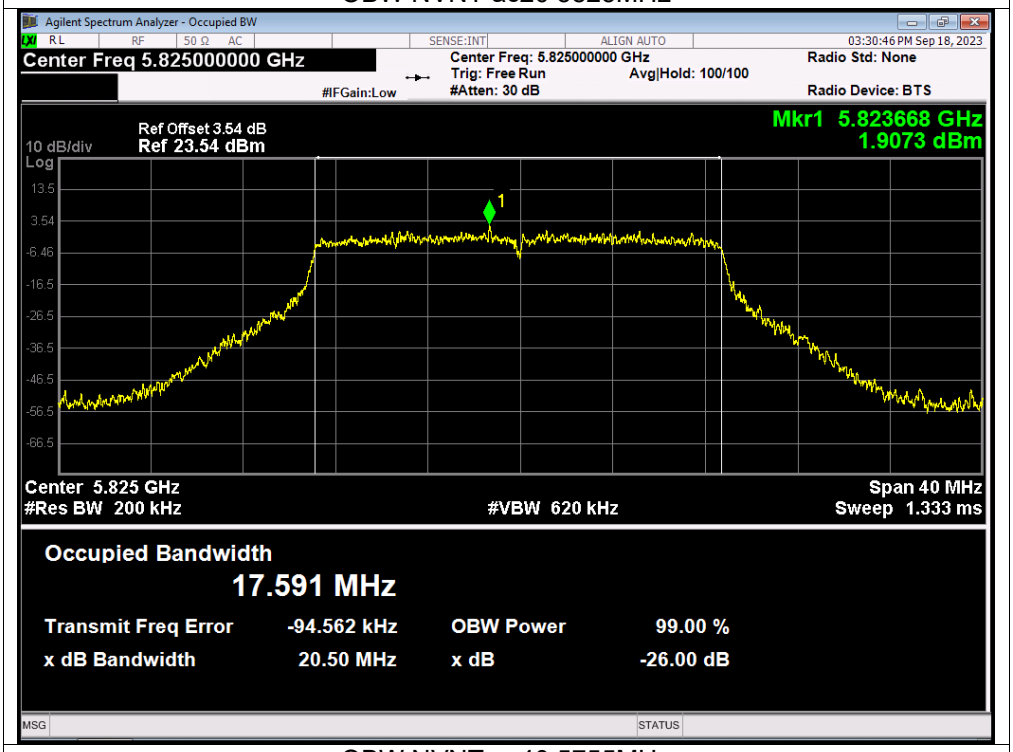
OBW NVNT ac20 5745MHz



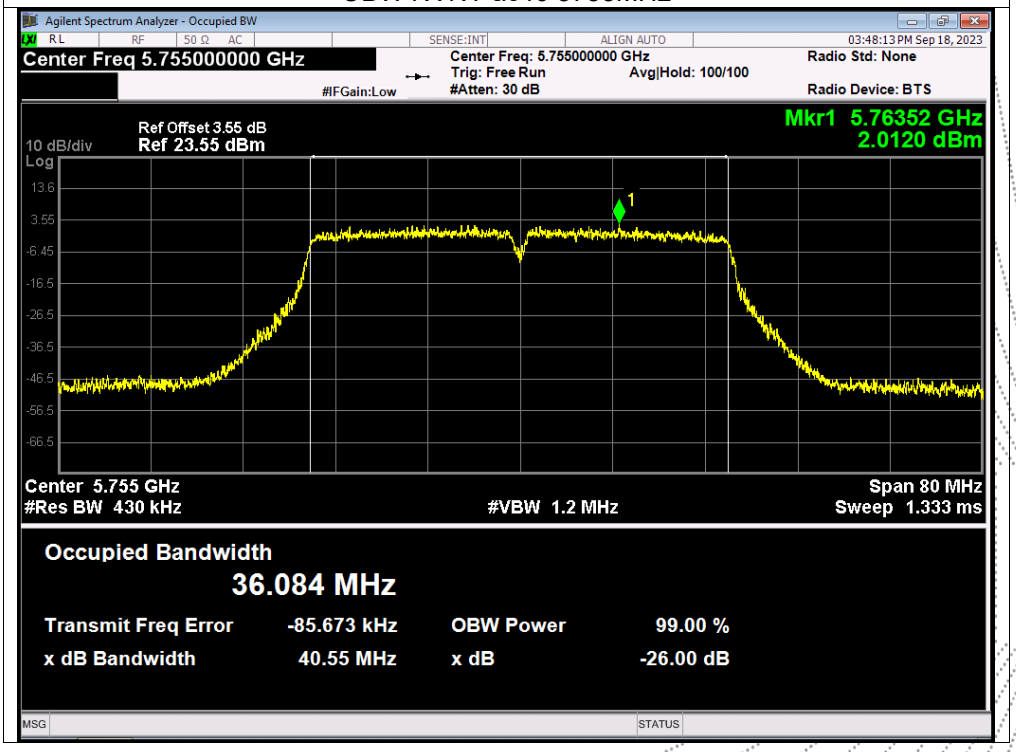
OBW NVNT ac20 5785MHz



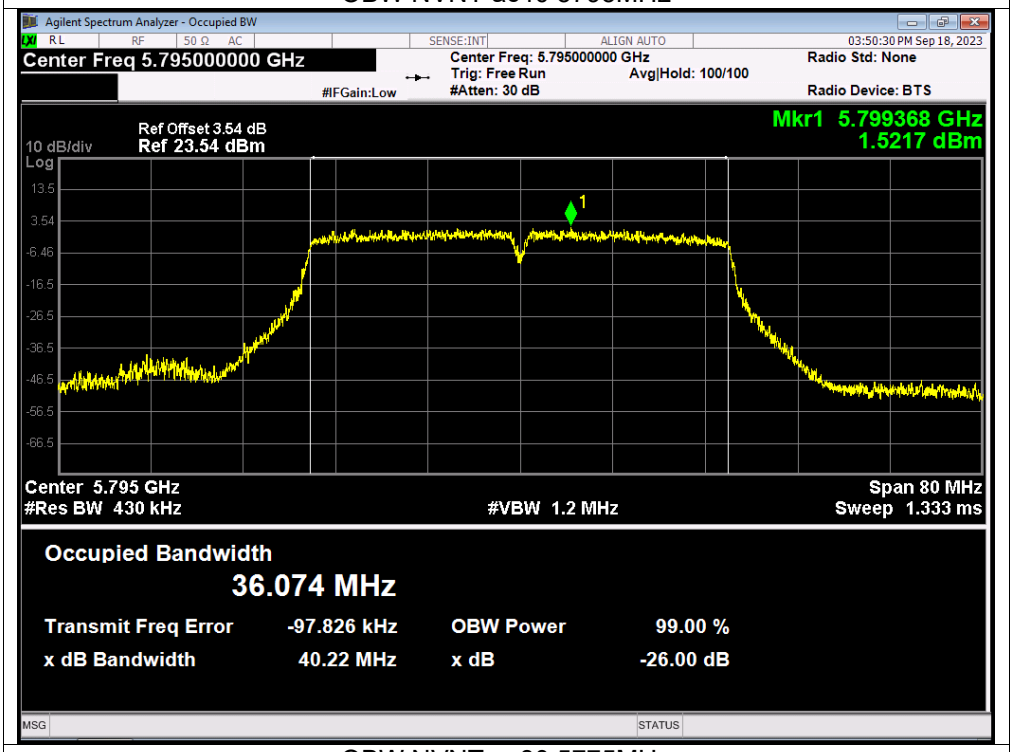
OBW NVNT ac20 5825MHz



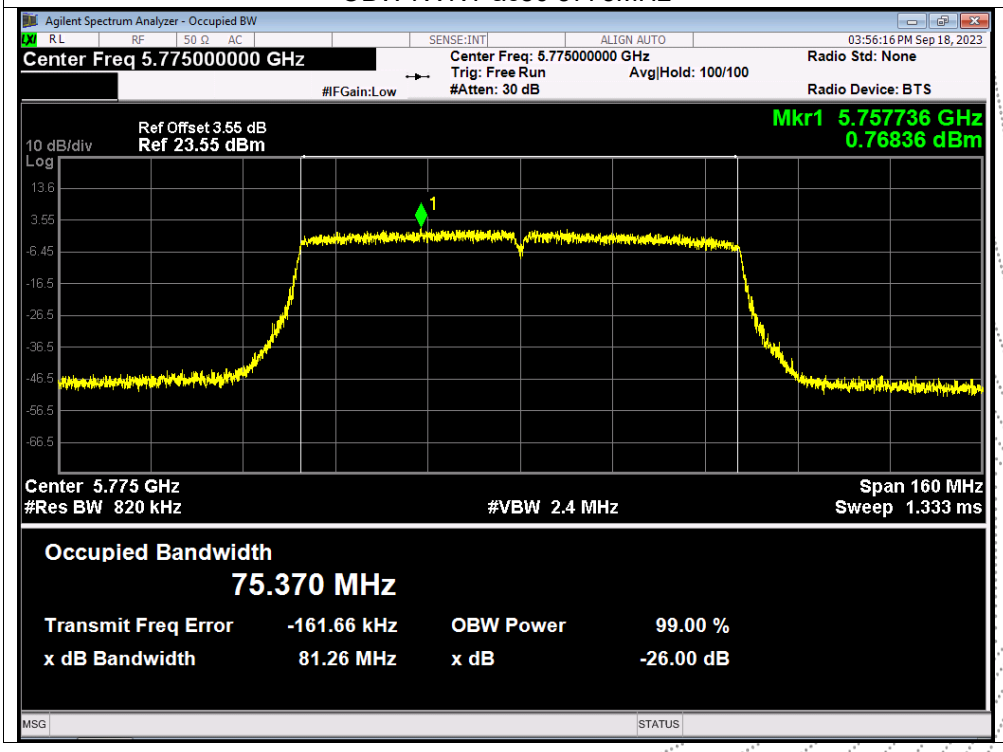
OBW NVNT ac40 5755MHz



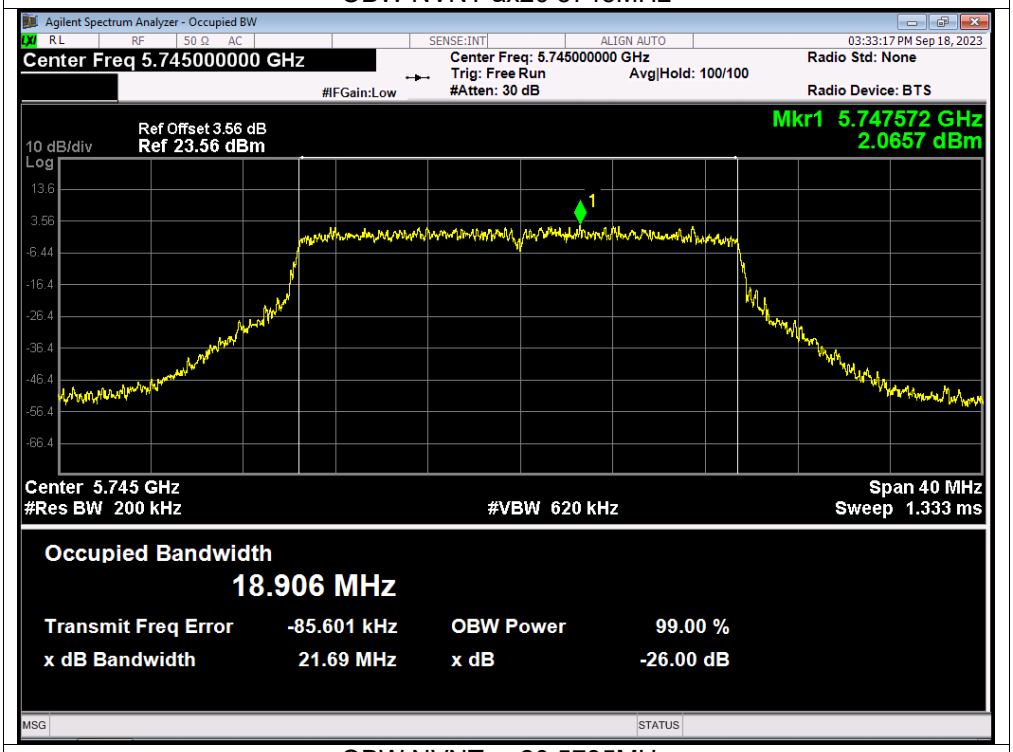
OBW NVNT ac40 5795MHz



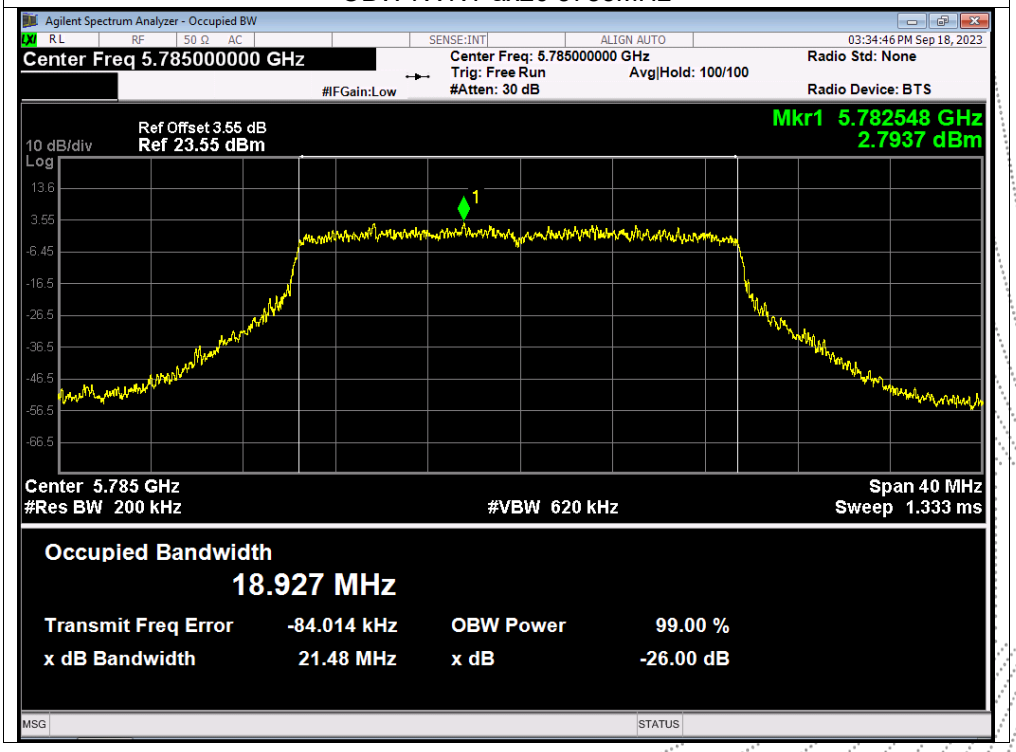
OBW NVNT ac80 5775MHz



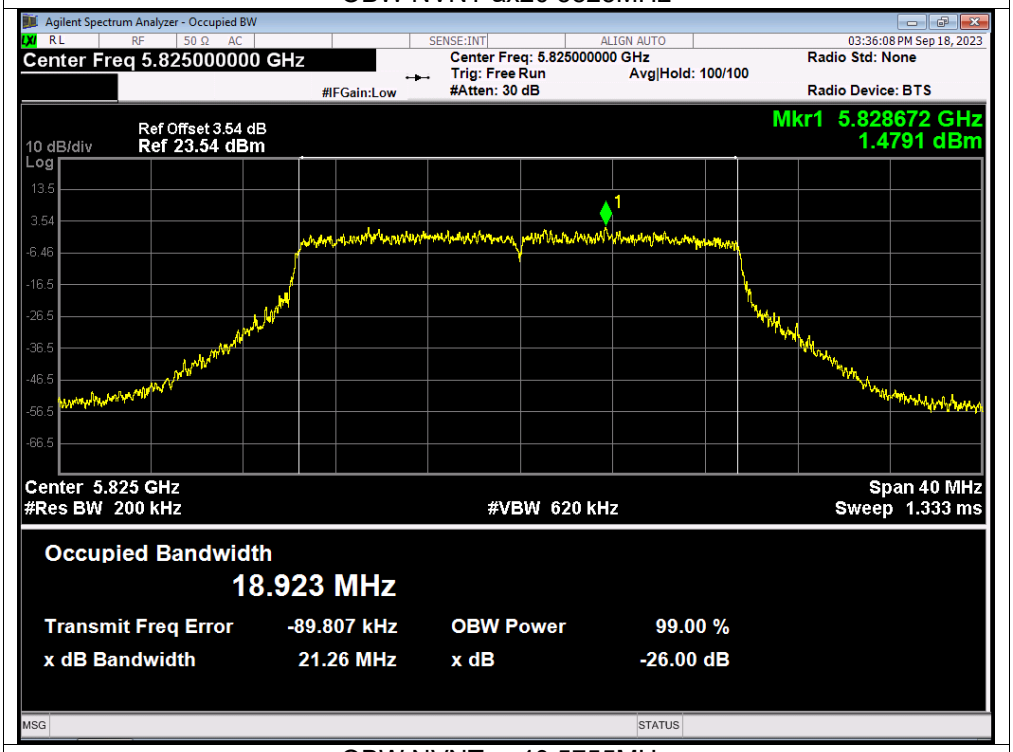
OBW NVNT ax20 5745MHz



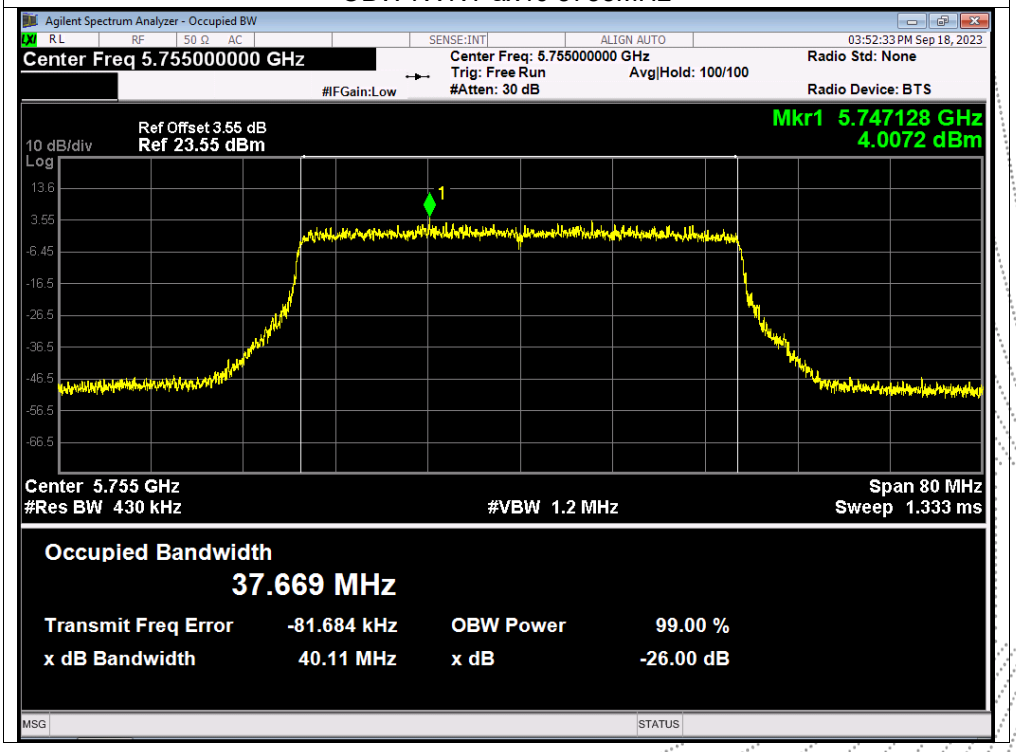
OBW NVNT ax20 5785MHz



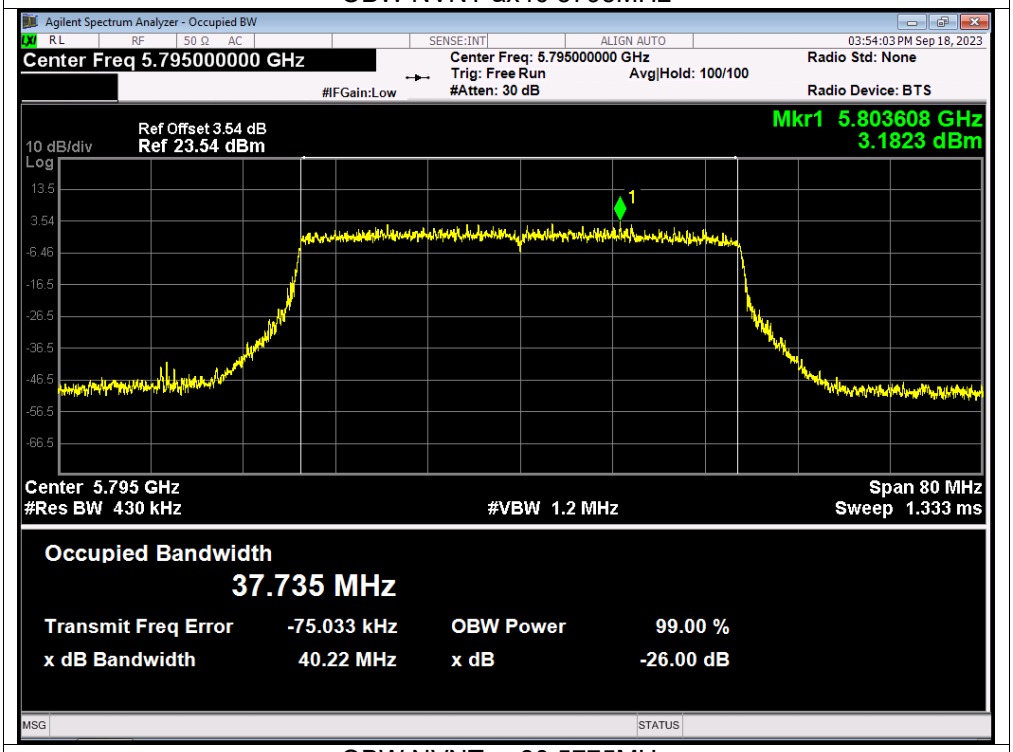
OBW NVNT ax20 5825MHz



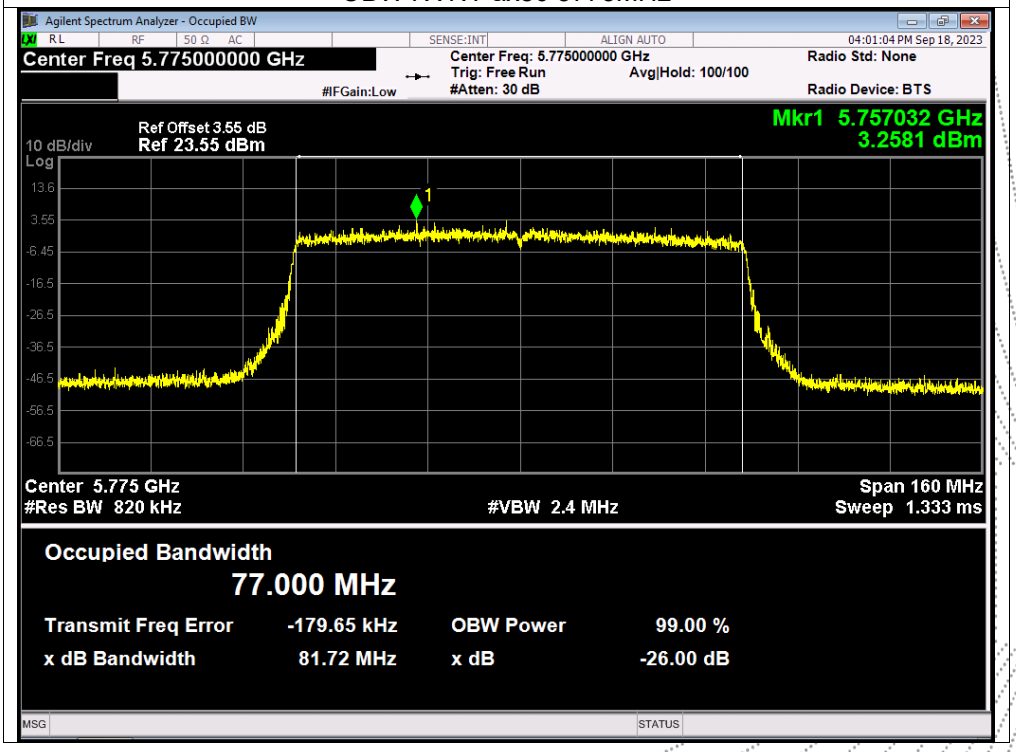
OBW NVNT ax40 5755MHz



OBW NVNT ax40 5795MHz

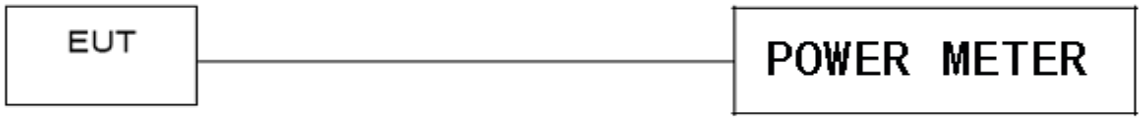


OBW NVNT ax80 5775MHz



10. Maximum Conducted Output Power

10.1 Block Diagram Of Test Setup



10.2 Limit

According to FCC §15.407

The maximum conduced output power should not exceed:

Frequency Band(MHz)	Limit
5150~5250	250mW
5725~5850	1W

10.3 Test Procedure

Maximum conducted output power may be measured using a spectrum analyzer/EMI receiver or an RF power meter.

1. Device Configuration

If possible, configure or modify the operation of the EUT so that it transmits continuously at its maximum power control level (see section II.B.).

a) The intent is to test at 100 percent duty cycle; however a small reduction in duty cycle (to no lower than 98 percent) is permitted if required by the EUT for amplitude control purposes. Manufacturers are expected to provide software to the test lab to permit such continuous operation.

b) If continuous transmission (or at least 98 percent duty cycle) cannot be achieved due to hardware limitations (e.g., overheating), the EUT shall be operated at its maximum power control level with the transmit duration as long as possible and the duty cycle as high as possible.

2. Measurement using a Spectrum Analyzer or EMI Receiver (SA)

Measurement of maximum conducted output power using a spectrum analyzer requires integrating the spectrum across a frequency span that encompasses, at a minimum, either the EBW or the 99-percent occupied bandwidth of the signal.1 However, the EBW must be used to determine bandwidth dependent limits on maximum conducted output power in accordance with § 15.407(a).

a) The test method shall be selected as follows: (i) Method SA-1 or SA-1 Alternative (averaging with the EUT transmitting at full power throughout each sweep) shall be applied if either of the following conditions can be satisfied:

• The EUT transmits continuously (or with a duty cycle ≥ 98 percent).

• Sweep triggering or gating can be implemented in a way that the device transmits at the maximum power control level throughout the duration of each of the instrument sweeps to be averaged. This condition can generally be achieved by triggering the instrument's sweep if the duration of the sweep (with the analyzer configured as in Method SA-1, below) is equal to or shorter than the duration T of each transmission from the EUT and if those transmissions exhibit full power throughout their durations.

(ii) Method SA-2 or SA-2 Alternative (averaging across on and off times of the EUT transmissions, followed by duty cycle correction) shall be applied if the conditions of (i) cannot be achieved and the

transmissions exhibit a constant duty cycle during the measurement duration. Duty cycle will be considered to be constant if variations are less than ± 2 percent.

(iii) Method SA-3 (RMS detection with max hold) or SA-3 Alternative (reduced VBW with max hold) shall be applied if the conditions of (i) and (ii) cannot be achieved.

b) Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep): (i) Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.

(ii) Set RBW = 1 MHz.

(iii) Set VBW ≥ 3 MHz.

(iv) Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)

(v) Sweep time = auto.

(vi) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.

(vii) If transmit duty cycle < 98 percent, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98 percent, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to “free run”.

(viii) Trace average at least 100 traces in power averaging (i.e., RMS) mode.

(ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum

10.4 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.

10.5 Test Result

Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101kPa	Test Voltage ：	DC 12V
Test Mode ：	TX (5G) Mode Frequency U-NII-1 (5180-5240MHz)		

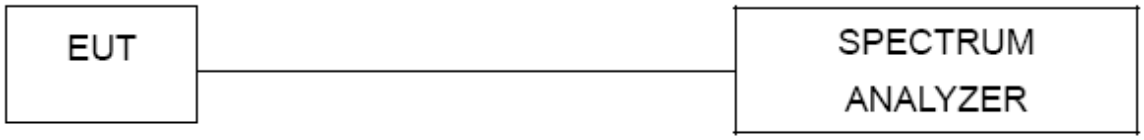
Condition	Mode	Frequency	Maximum output power. Antenna port (AV)			Limit	Result
		(MHz)	ANT A (dBm)	ANT B (dBm)	Total (dBm)	dBm	
NVNT	a	5180	13.39	13.15	/	24	Pass
NVNT	a	5200	13.25	12.95	/	24	Pass
NVNT	a	5240	13.16	12.49	/	24	Pass
NVNT	n20	5180	11.86	11.71	**14.80**	24	Pass
NVNT	n20	5200	11.57	11.46	14.53	24	Pass
NVNT	n20	5240	10.5	10.25	13.39	24	Pass
NVNT	n40	5190	10.44	10.99	13.73	24	Pass
NVNT	n40	5230	10.78	10.27	13.54	24	Pass
NVNT	ac20	5180	11.57	11.67	14.63	24	Pass
NVNT	ac20	5200	10.92	11.35	14.15	24	Pass
NVNT	ac20	5240	10.24	9.88	13.07	24	Pass
NVNT	ac40	5190	10.28	10.59	13.45	24	Pass
NVNT	ac40	5230	10.61	9.78	13.23	24	Pass
NVNT	ac80	5210	10.14	8.84	12.55	24	Pass
NVNT	ax20	5180	11.76	11.63	14.71	24	Pass
NVNT	ax20	5200	11.83	11.41	14.64	24	Pass
NVNT	ax20	5240	11.29	10.38	13.87	24	Pass
NVNT	ax40	5190	11.21	10.79	14.02	24	Pass
NVNT	ax40	5230	9.99	9.49	12.76	24	Pass
NVNT	ax80	5210	9.43	9.28	12.37	24	Pass

Temperature :	26 ℃	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 12V
Test Mode :	TX (5G) Mode Frequency U-NII-3 (5745-5825MHz)		

Condition	Mode	Frequency	Maximum output power. Antenna port (AV)			Limit	Result
		(MHz)	ANT A (dBm)	ANT B (dBm)	Total (dBm)	dBm	
NVNT	a	5745	13.29	14.84	/	30	Pass
NVNT	a	5785	13.16	14.43	/	30	Pass
NVNT	a	5825	12.28	13.34	/	30	Pass
NVNT	n20	5745	12.11	13.42	**15.82**	30	Pass
NVNT	n20	5785	11.6	12.9	15.31	30	Pass
NVNT	n20	5825	10.85	12.01	14.48	30	Pass
NVNT	n40	5755	11.6	13.22	15.50	30	Pass
NVNT	n40	5795	11.44	12.51	15.02	30	Pass
NVNT	ac20	5745	11.99	13.35	15.73	30	Pass
NVNT	ac20	5785	11.57	13.05	15.38	30	Pass
NVNT	ac20	5825	10.62	11.89	14.31	30	Pass
NVNT	ac40	5755	11.86	12.95	15.45	30	Pass
NVNT	ac40	5795	11.4	12.39	14.93	30	Pass
NVNT	ac80	5775	10.65	11.86	14.31	30	Pass
NVNT	ax20	5745	11.88	13.26	15.63	30	Pass
NVNT	ax20	5785	11.57	13.06	15.39	30	Pass
NVNT	ax20	5825	10.71	11.8	14.30	30	Pass
NVNT	ax40	5755	11.56	12.81	15.24	30	Pass
NVNT	ax40	5795	10.99	12.19	14.64	30	Pass
NVNT	ax80	5775	10.42	11.83	14.19	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

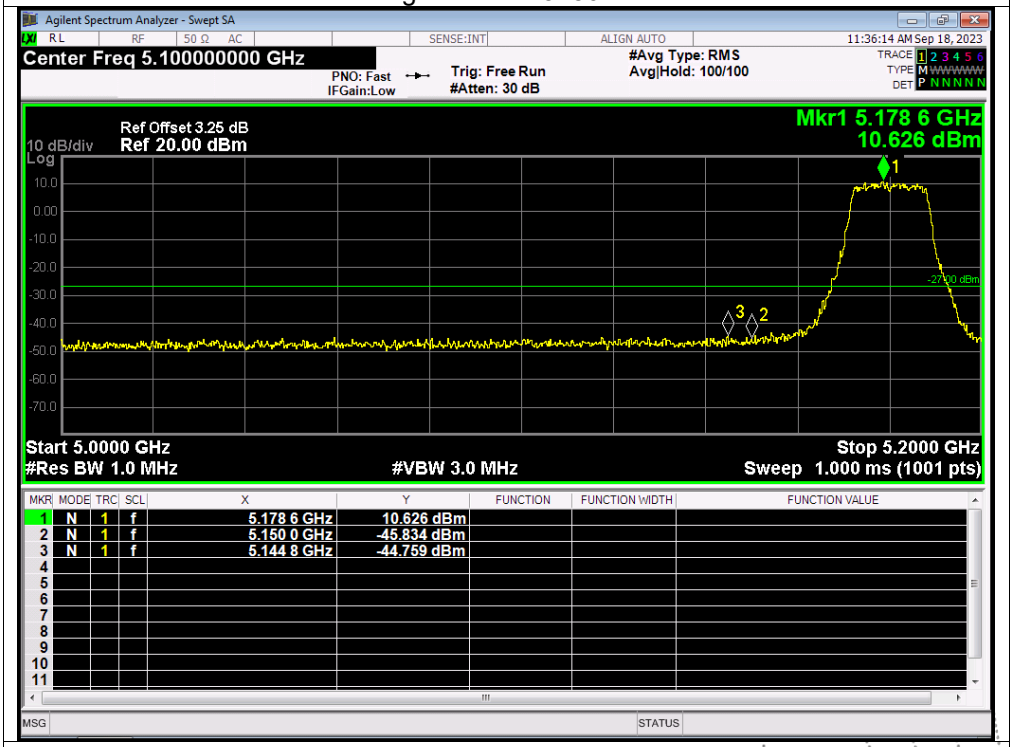
11.5 Test Result

Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101kPa	Test Voltage ：	DC 12V

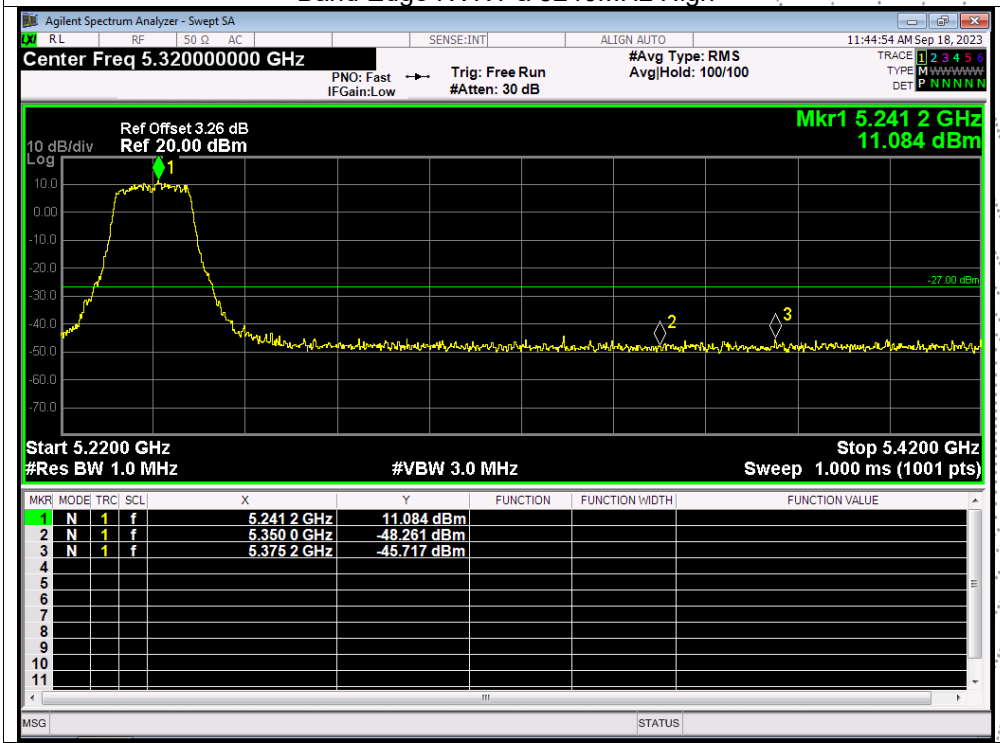
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A .
Plot. Antenna A: 5180-5240MHz

Test Graphs

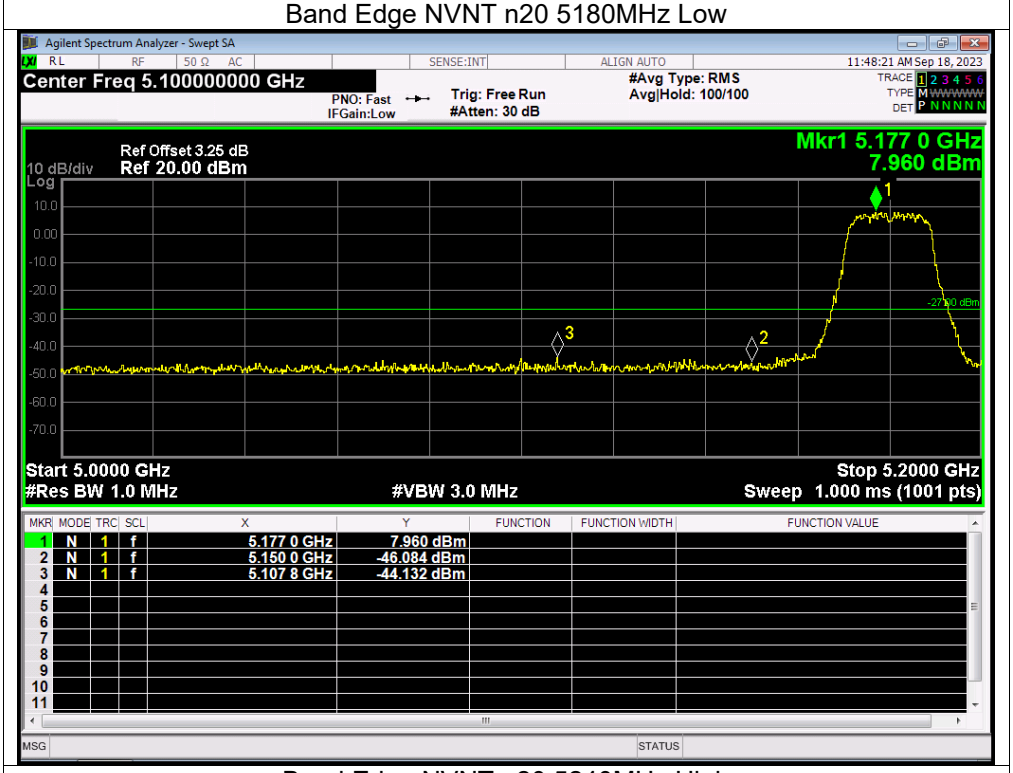
Band Edge NVNT a 5180MHz Low



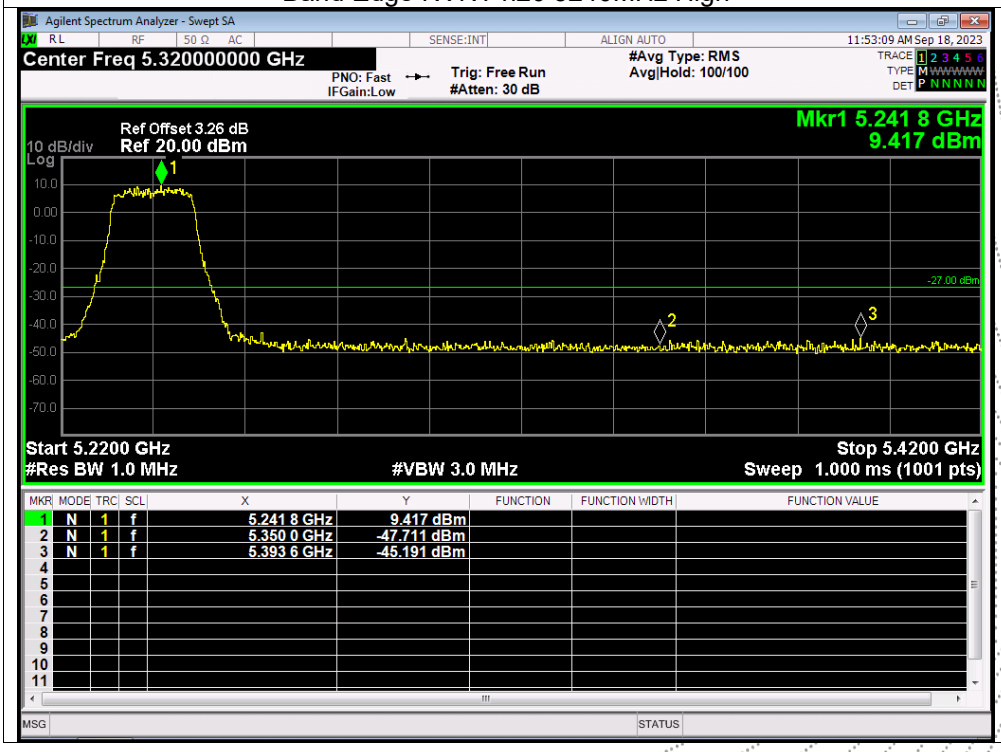
Band Edge NVNT a 5240MHz High



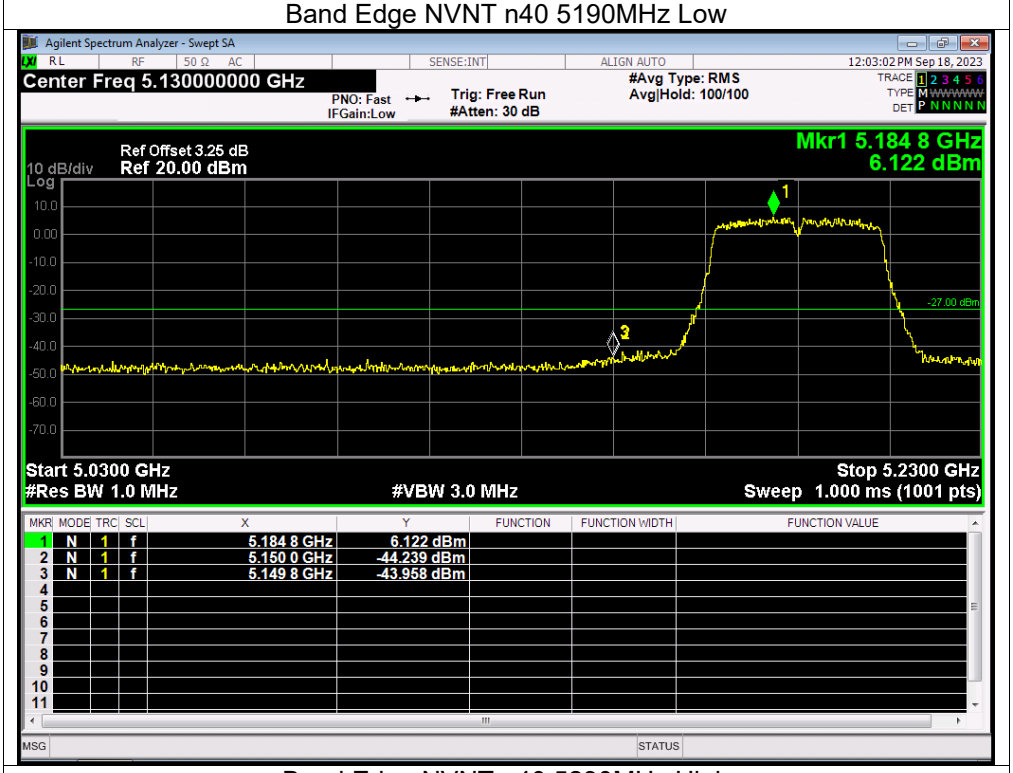
Band Edge NVNT n20 5180MHz Low



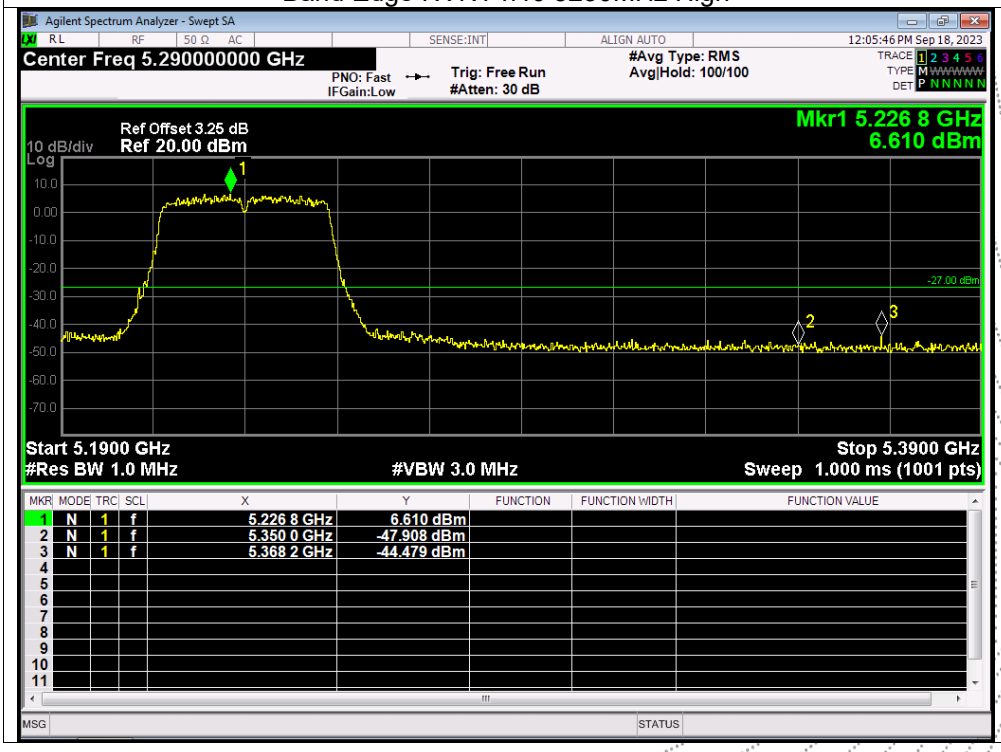
Band Edge NVNT n20 5240MHz High



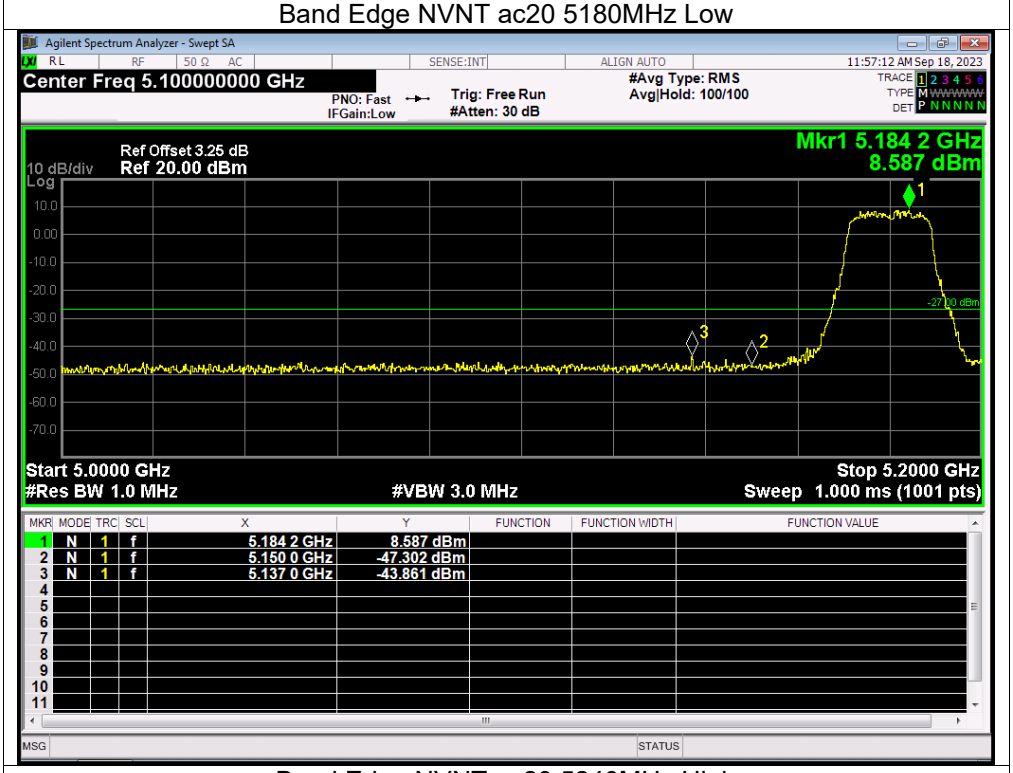
Band Edge NVNT n40 5190MHz Low



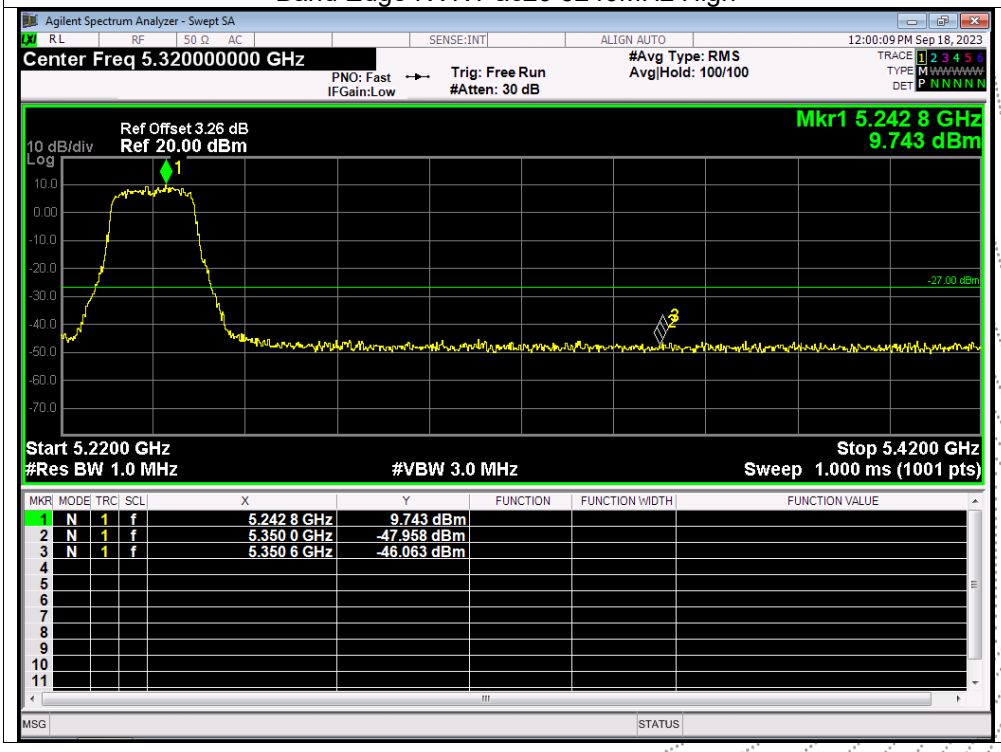
Band Edge NVNT n40 5230MHz High



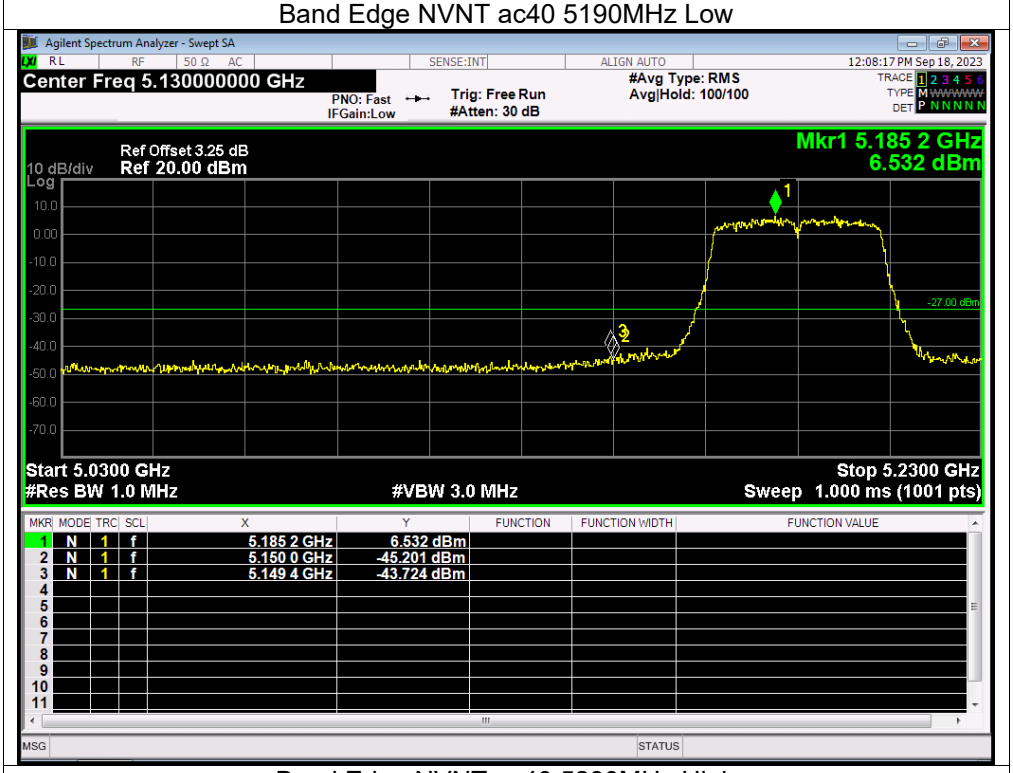
Band Edge NVNT ac20 5180MHz Low



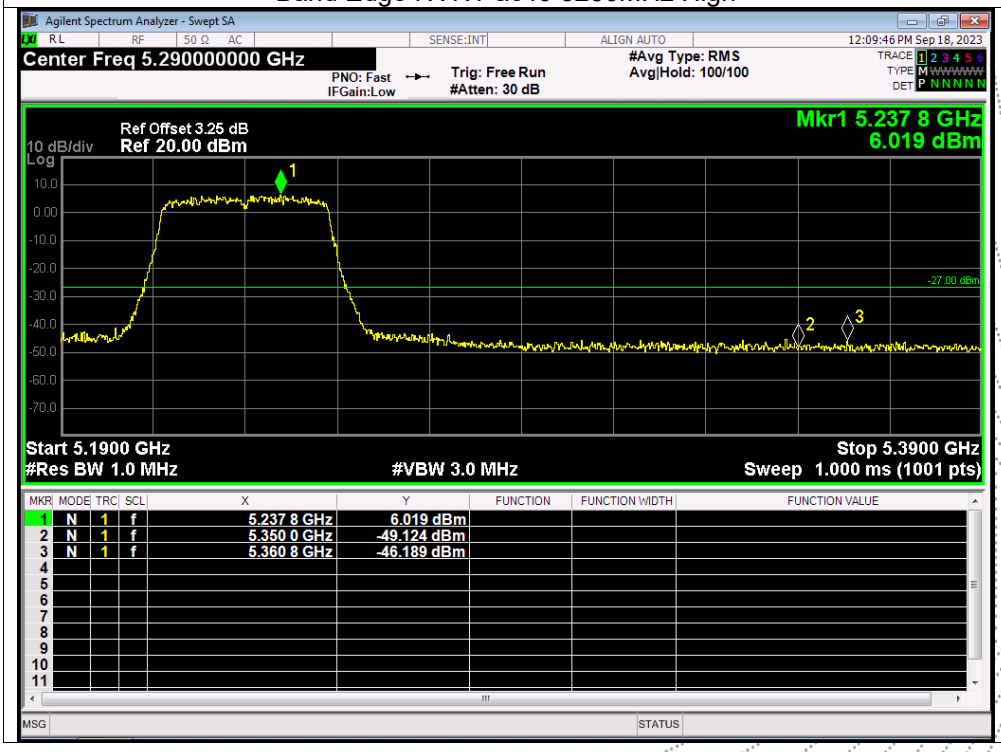
Band Edge NVNT ac20 5240MHz High



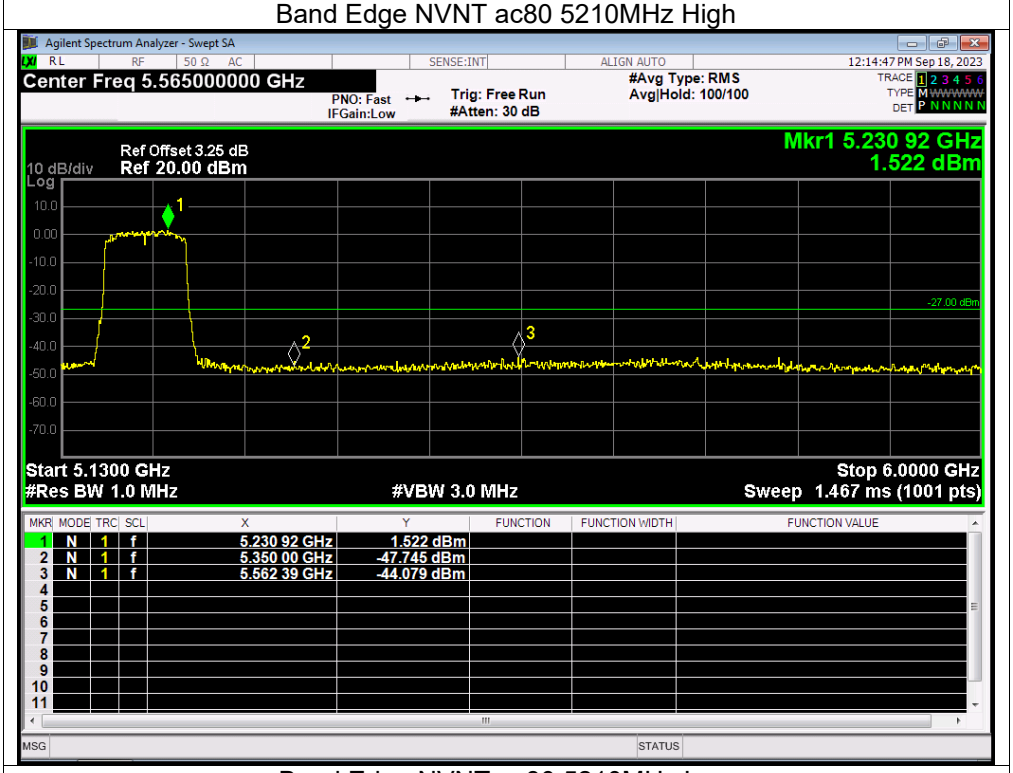
Band Edge NVNT ac40 5190MHz Low



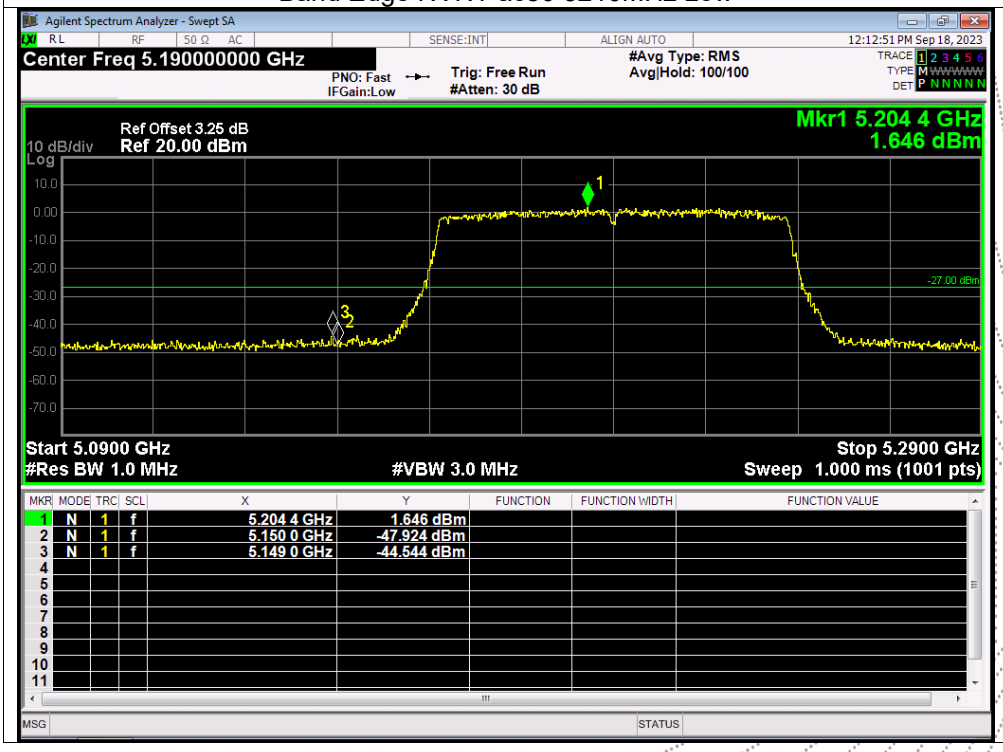
Band Edge NVNT ac40 5230MHz High



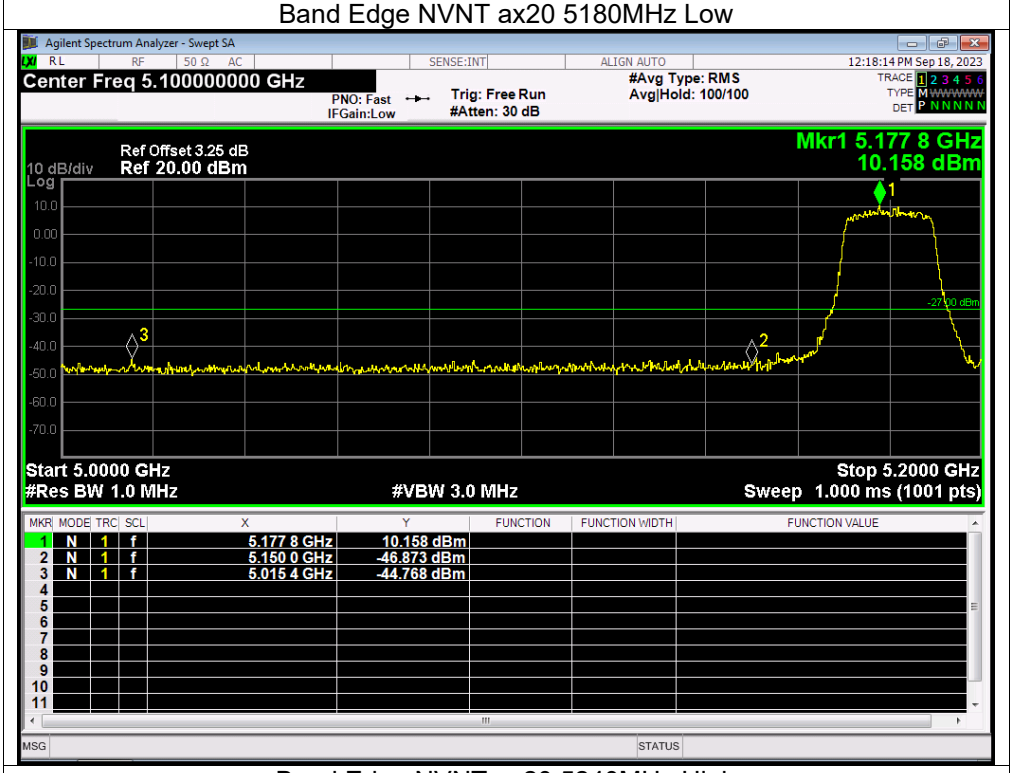
Band Edge NVNT ac80 5210MHz High



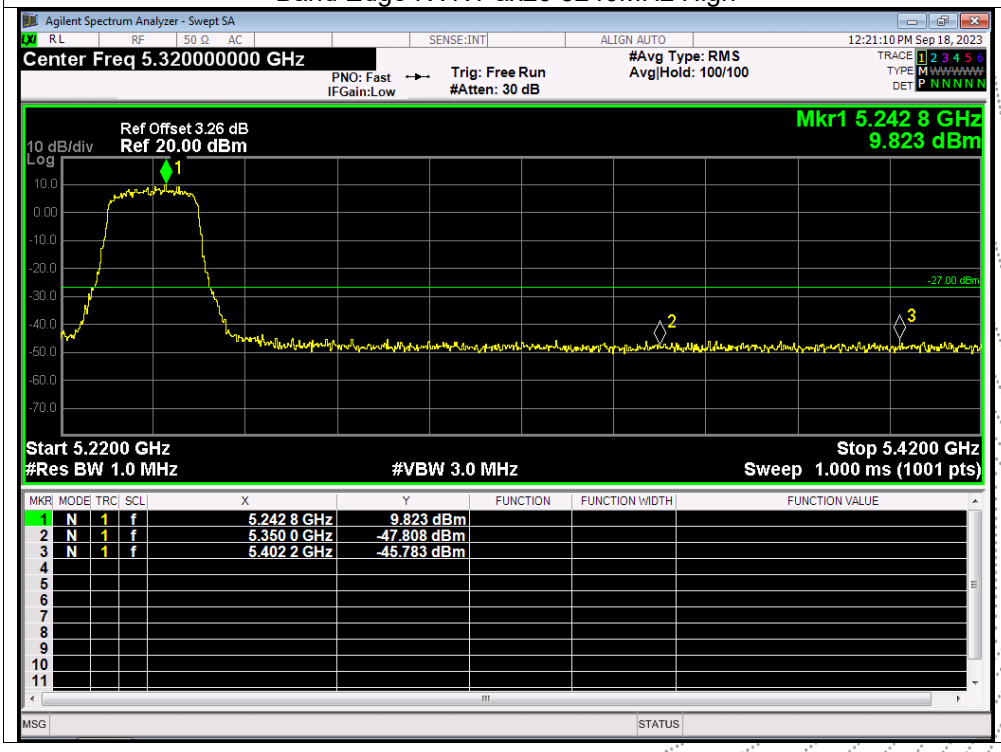
Band Edge NVNT ac80 5210MHz Low



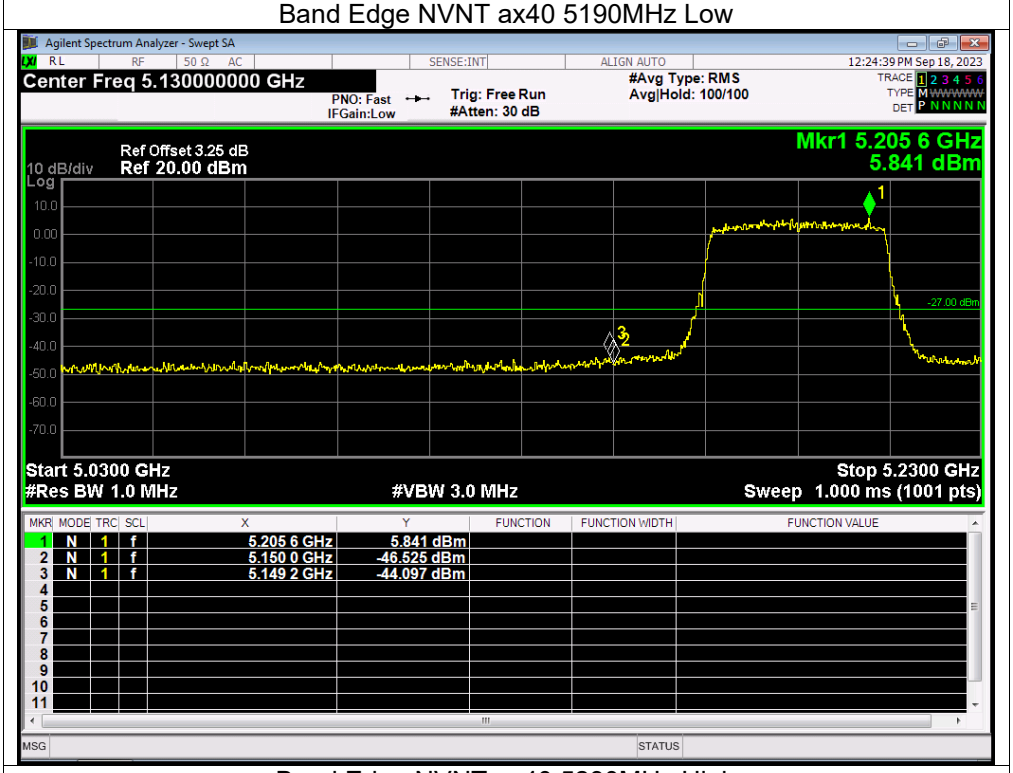
Band Edge NVNT ax20 5180MHz Low



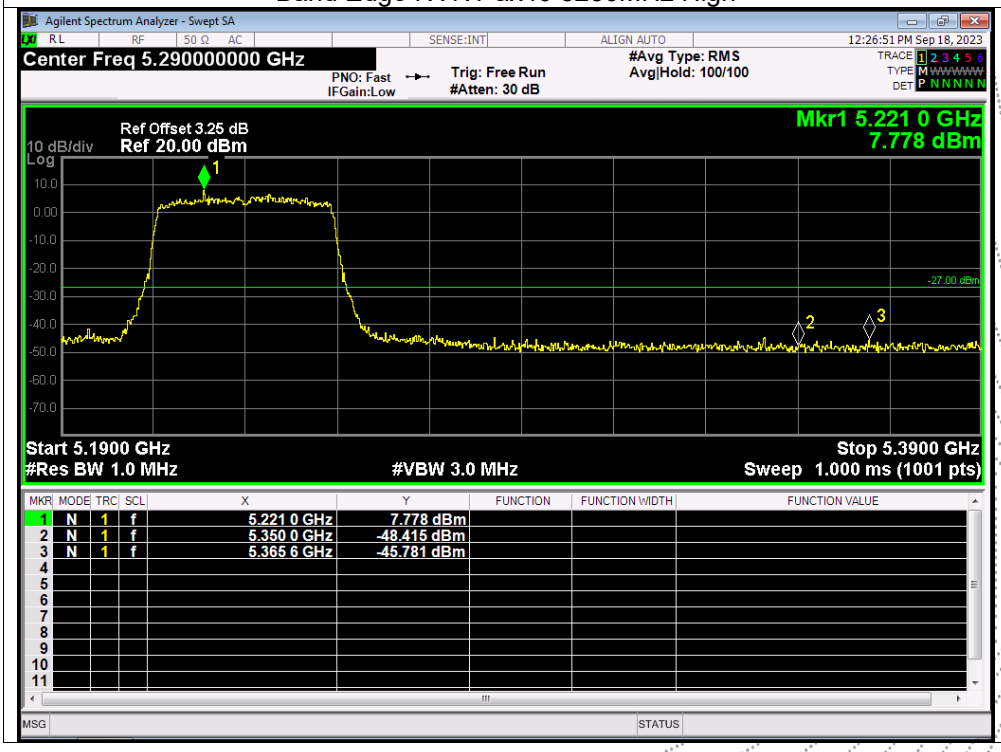
Band Edge NVNT ax20 5240MHz High



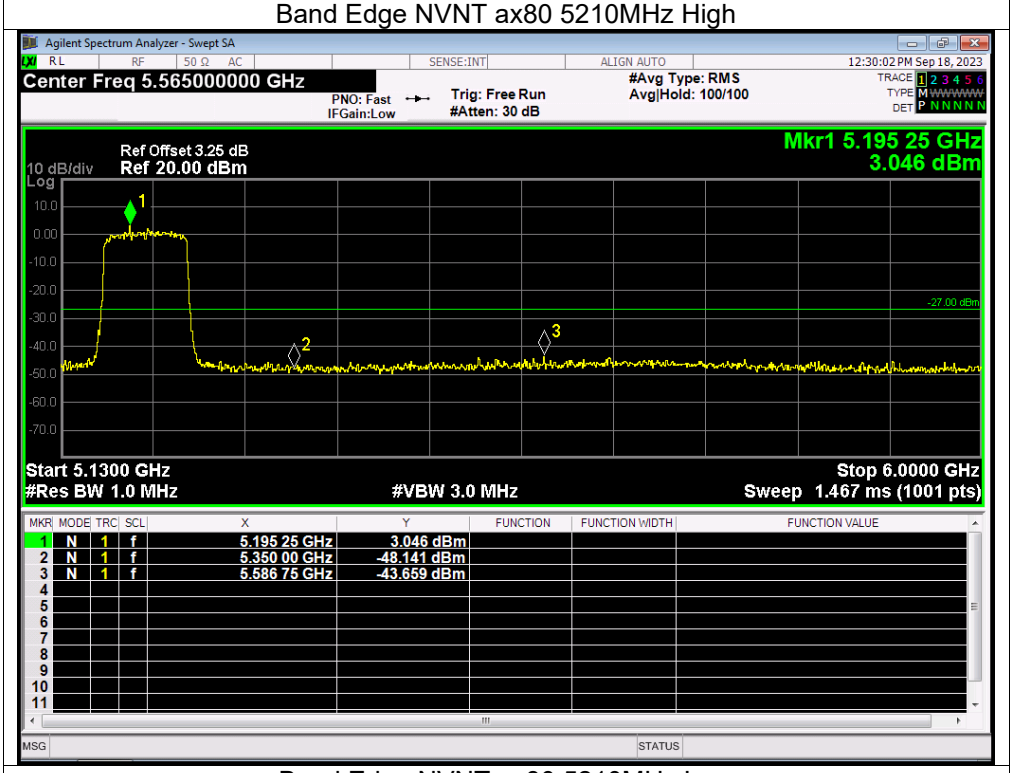
Band Edge NVNT ax40 5190MHz Low



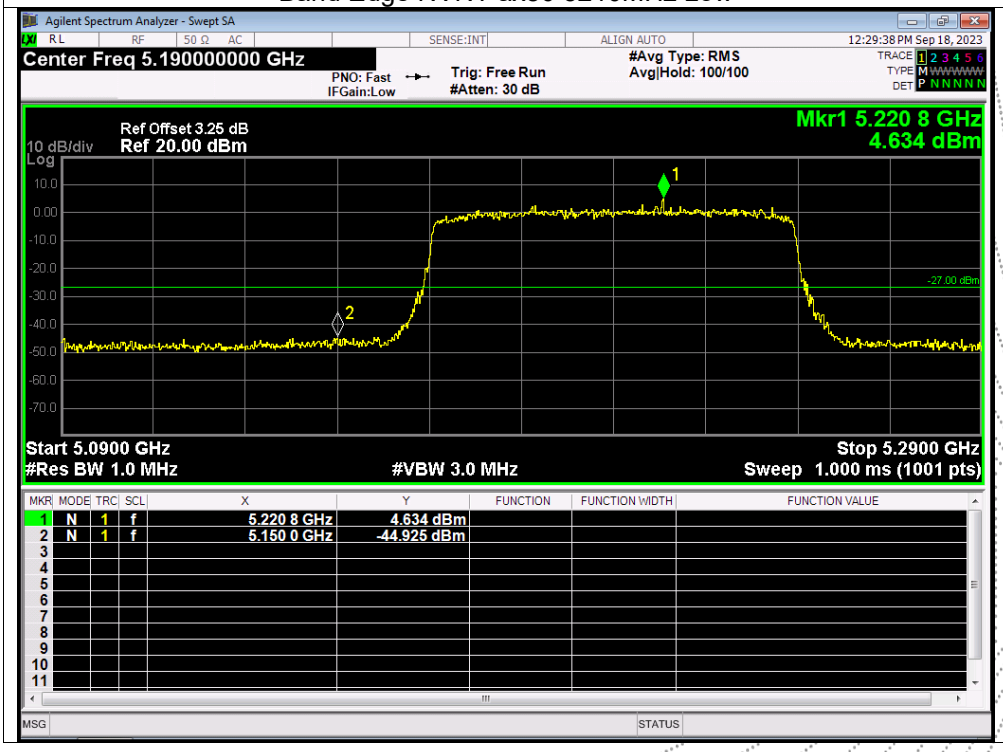
Band Edge NVNT ax40 5230MHz High



Band Edge NVNT ax80 5210MHz High



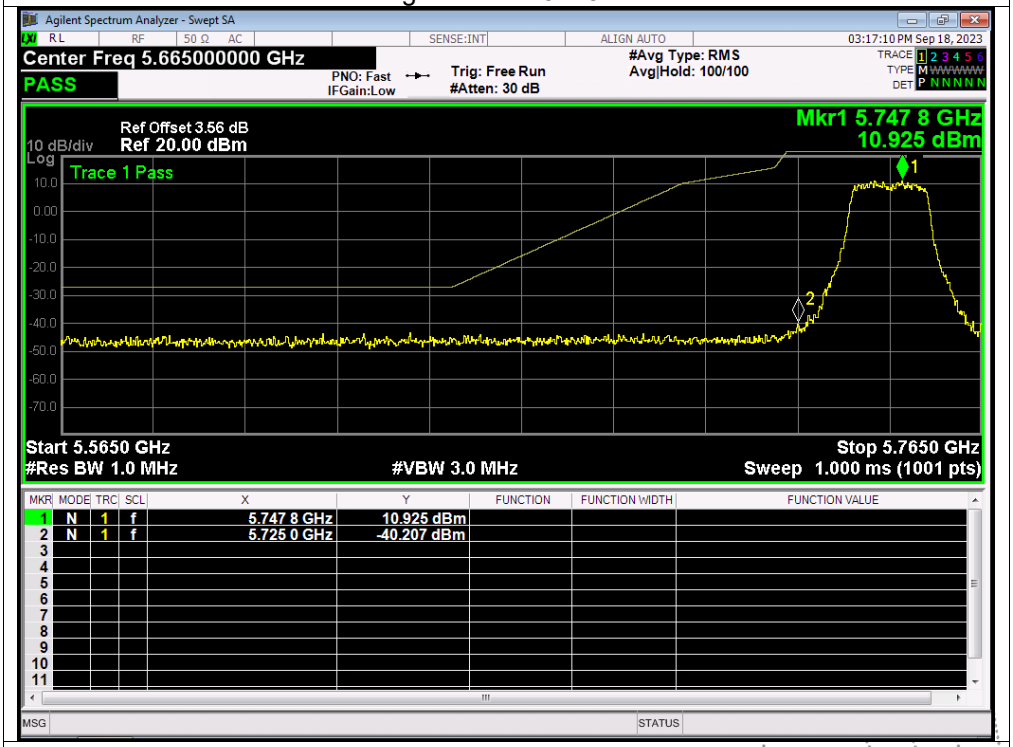
Band Edge NVNT ax80 5210MHz Low



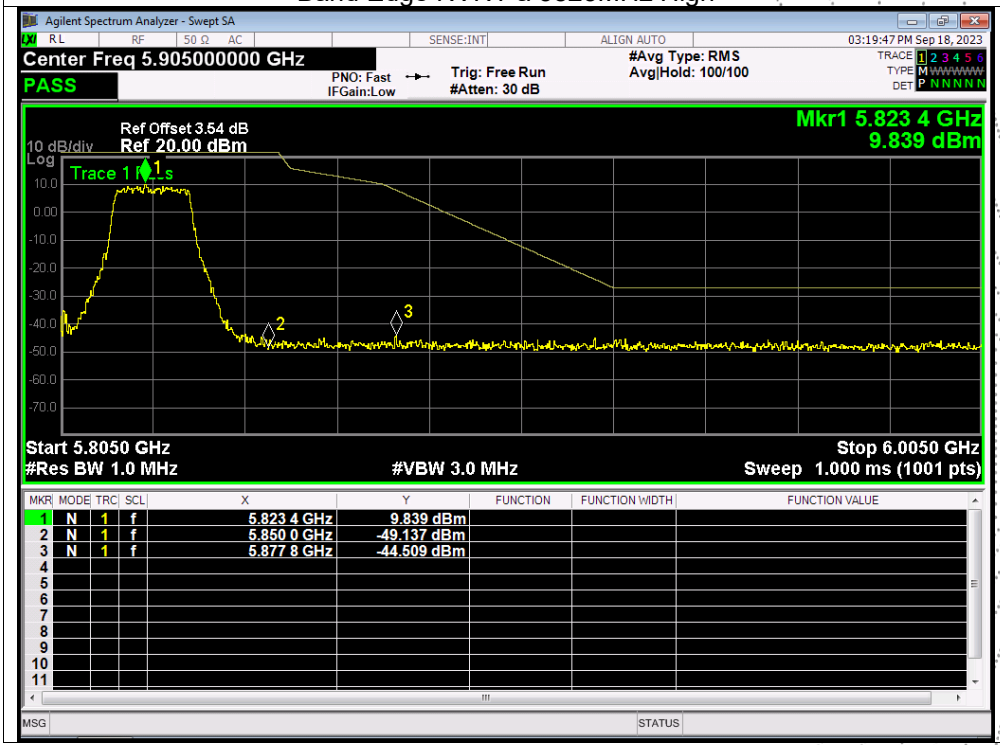
Note: A(B) Represent the value of antenna A and B. The worst data is Antenna A, only shown Antenna A.
Antenna A: 5745-58250MHz

Test Graphs

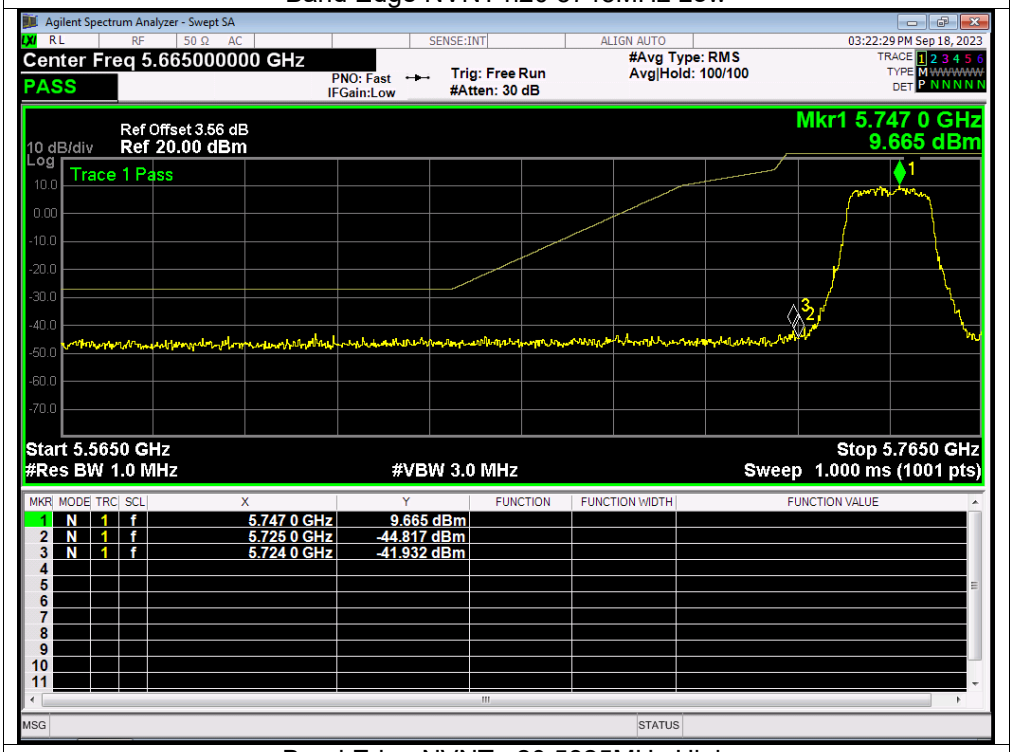
Band Edge NVNT a 5745MHz Low



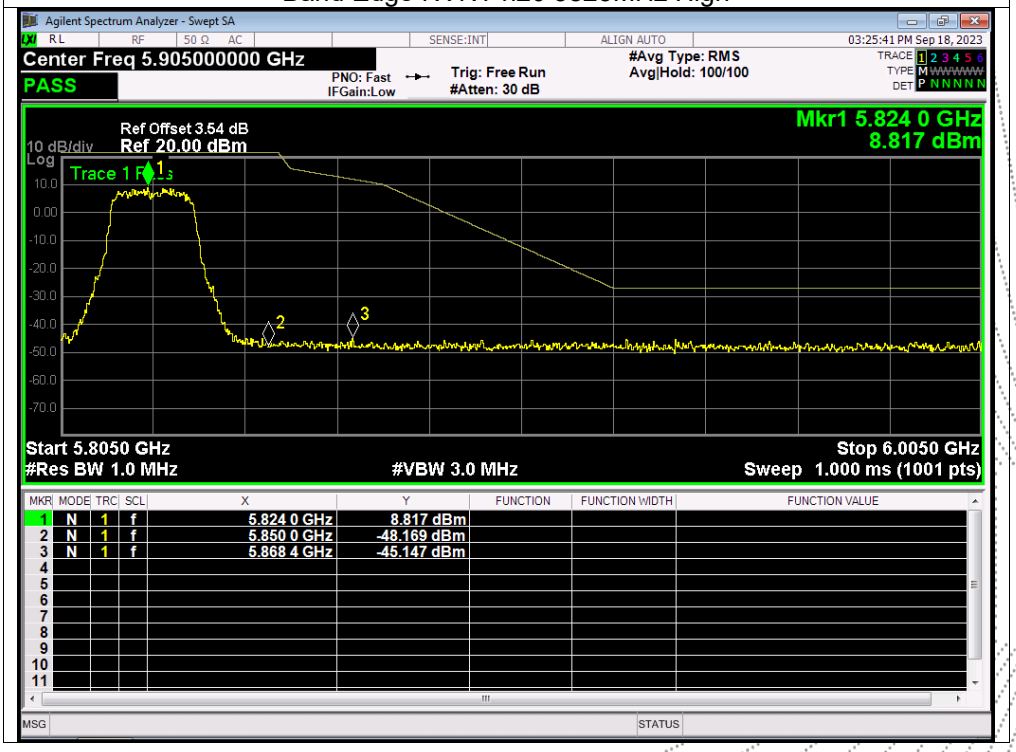
Band Edge NVNT a 5825MHz High



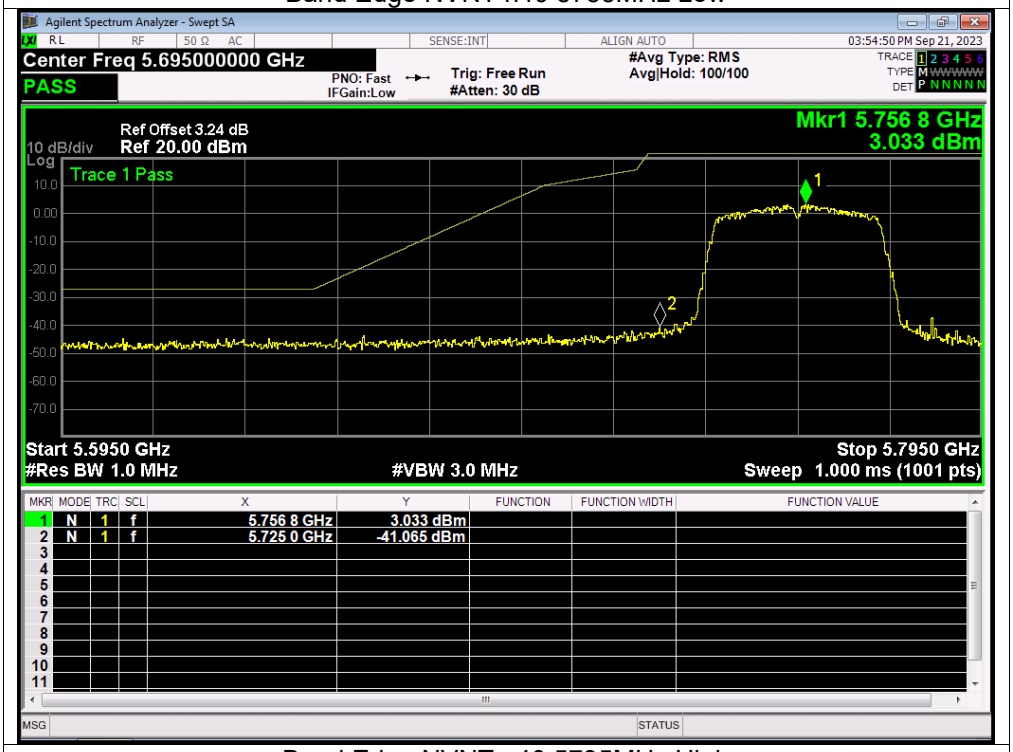
Band Edge NVNT n20 5745MHz Low



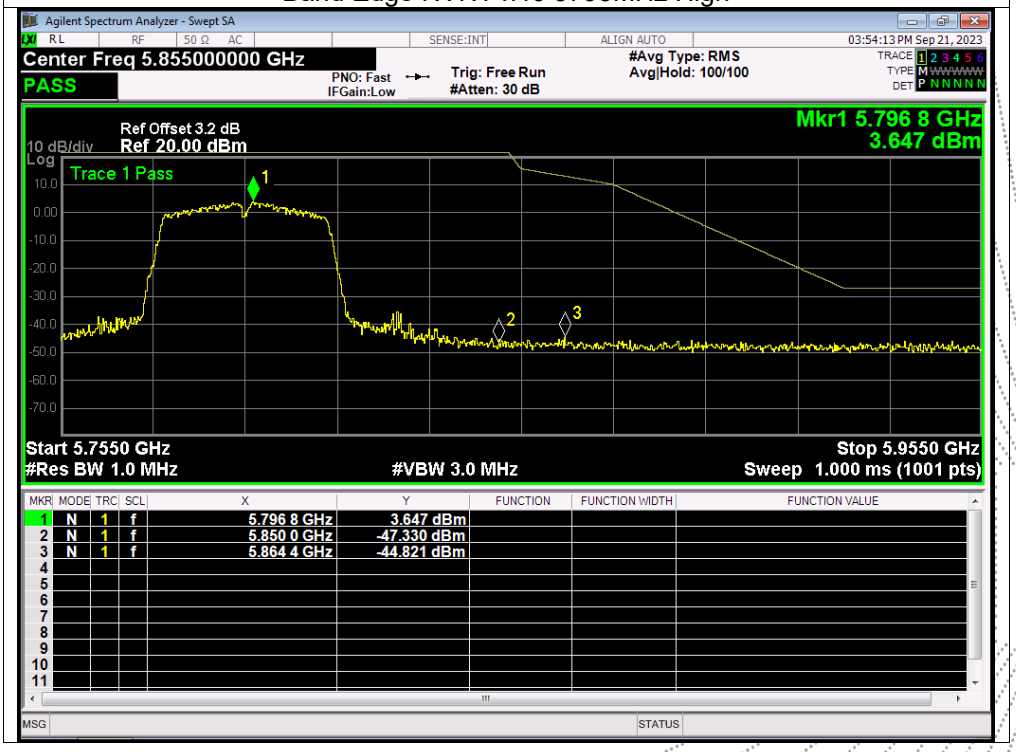
Band Edge NVNT n20 5825MHz High



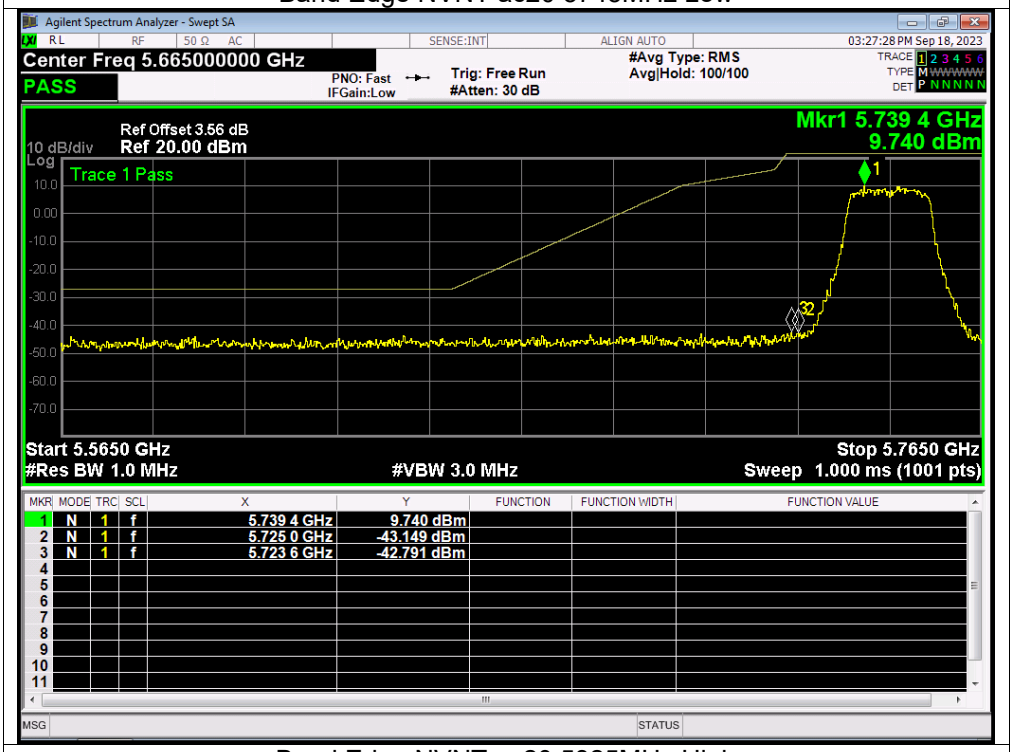
Band Edge NVNT n40 5755MHz Low



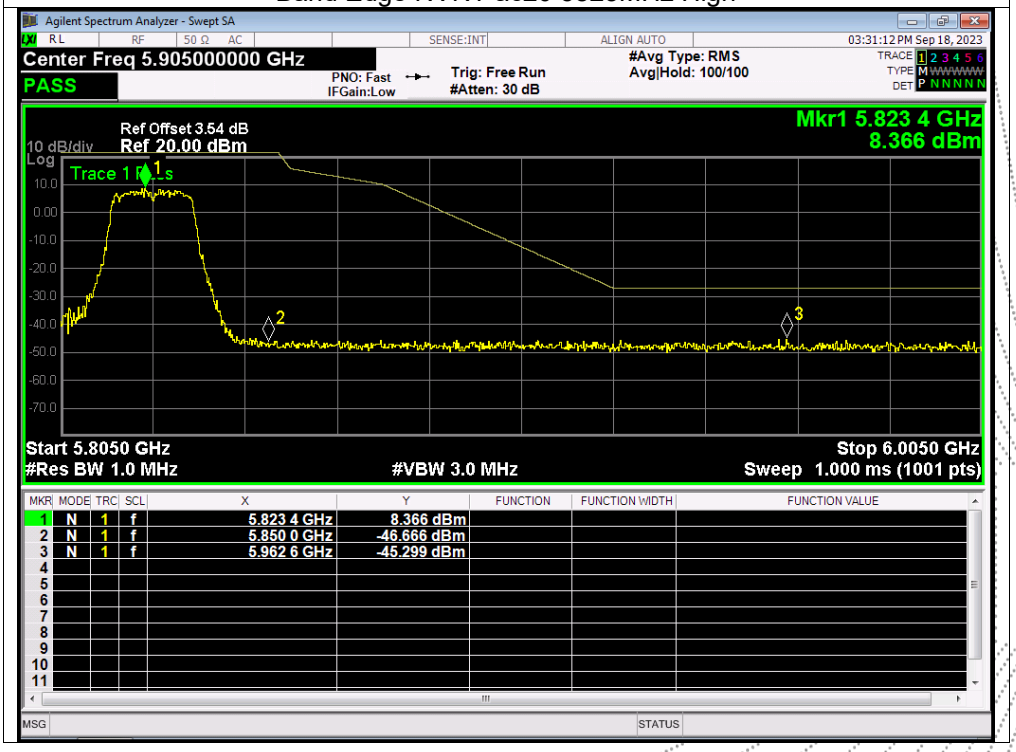
Band Edge NVNT n40 5795MHz High



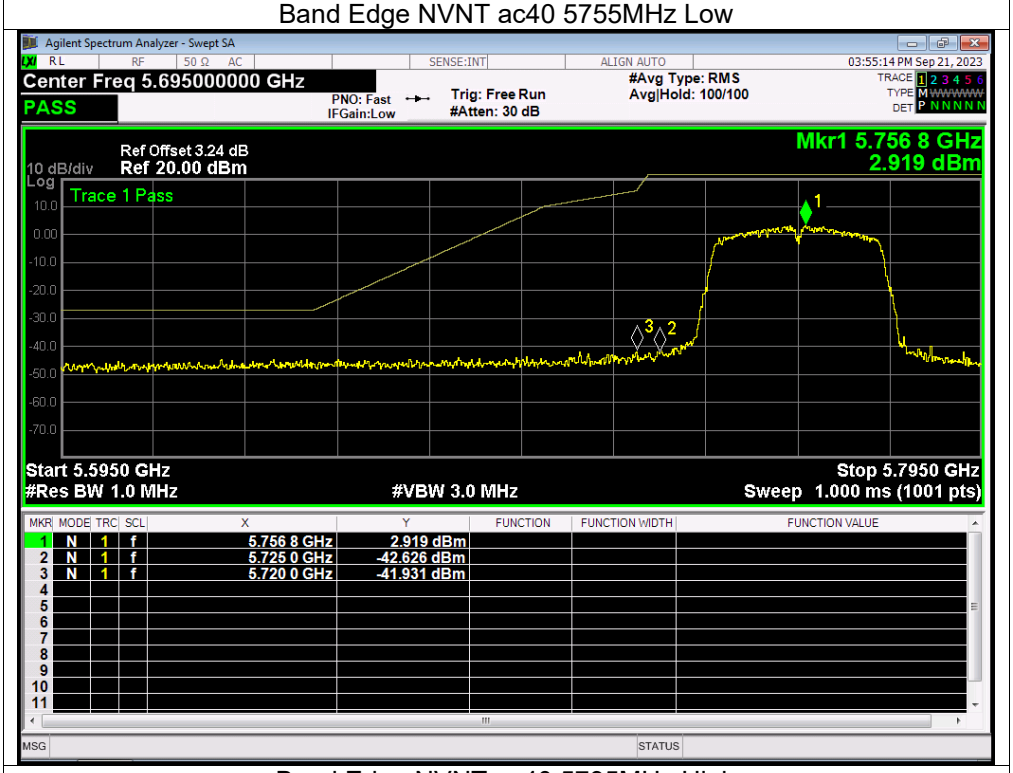
Band Edge NVNT ac20 5745MHz Low



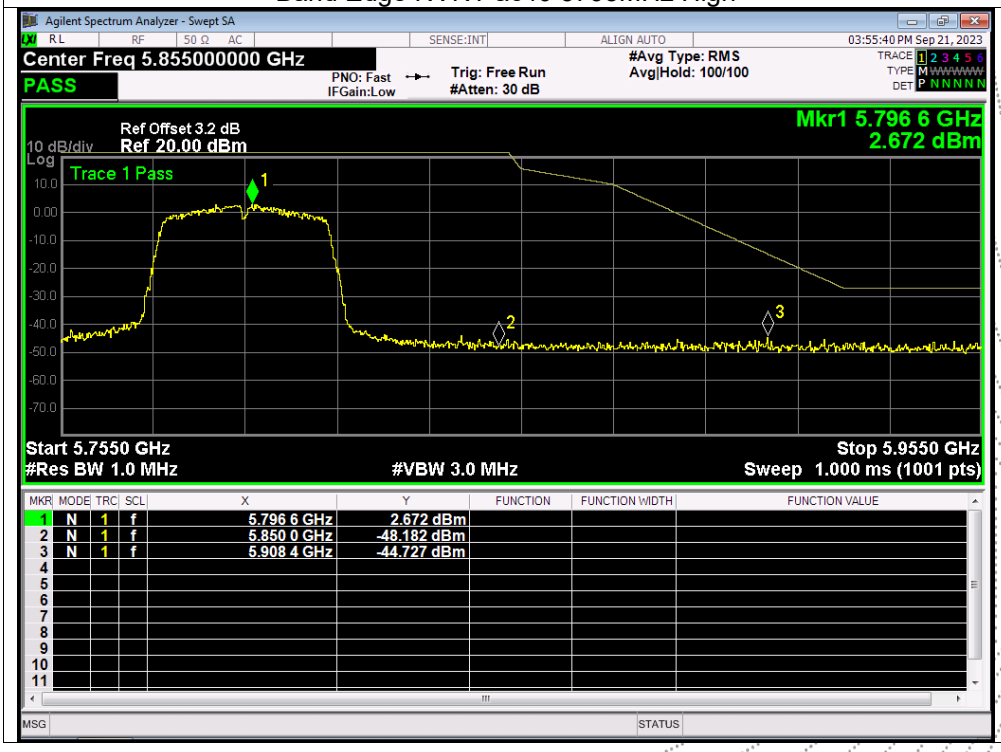
Band Edge NVNT ac20 5825MHz High



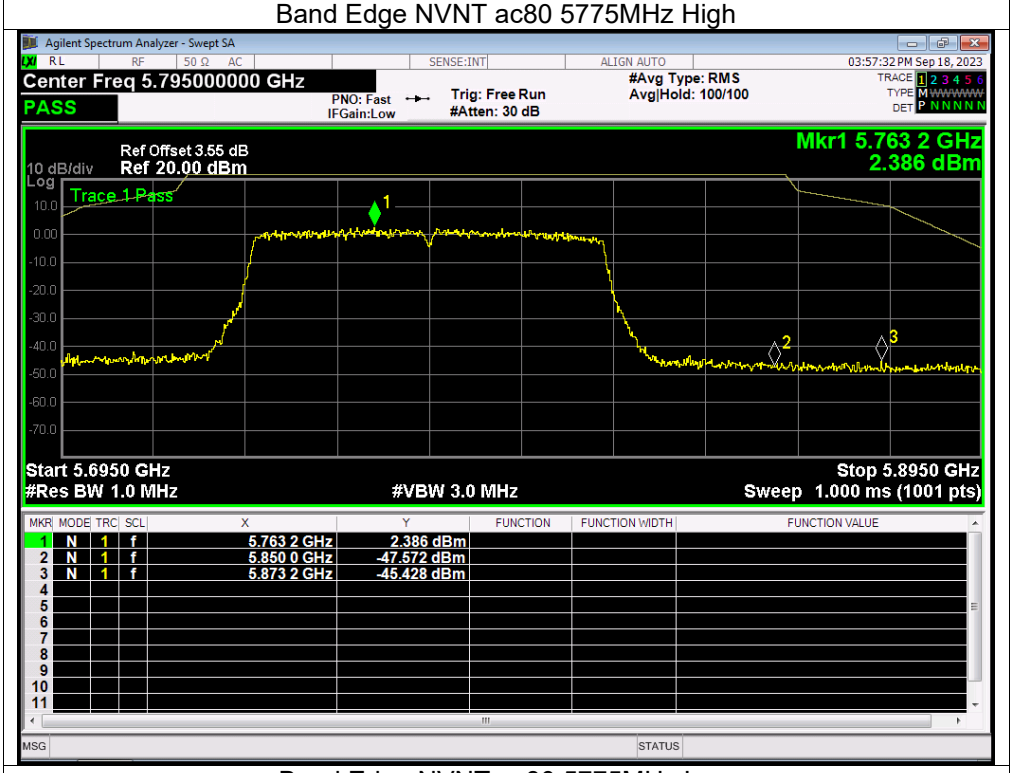
Band Edge NVNT ac40 5755MHz Low



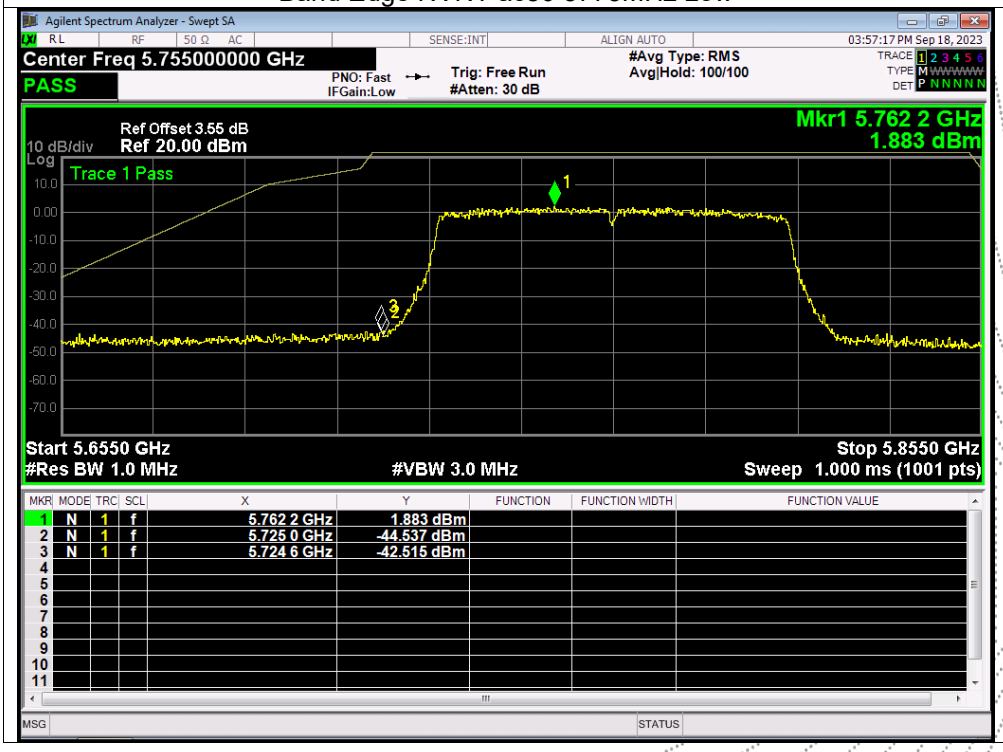
Band Edge NVNT ac40 5795MHz High



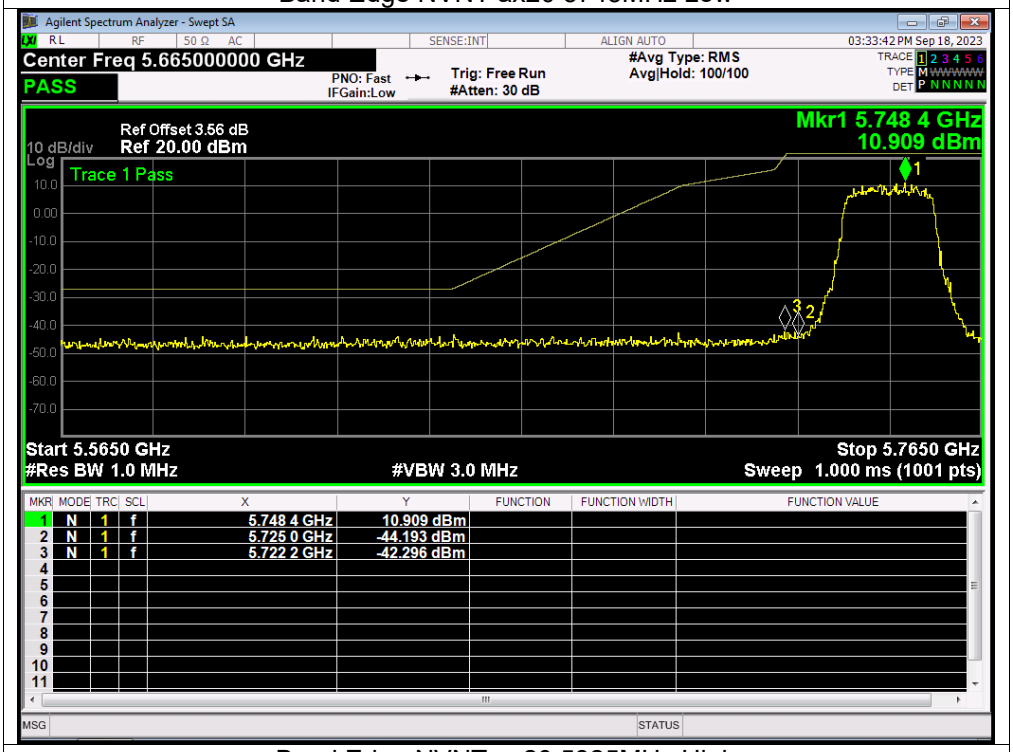
Band Edge NVNT ac80 5775MHz High



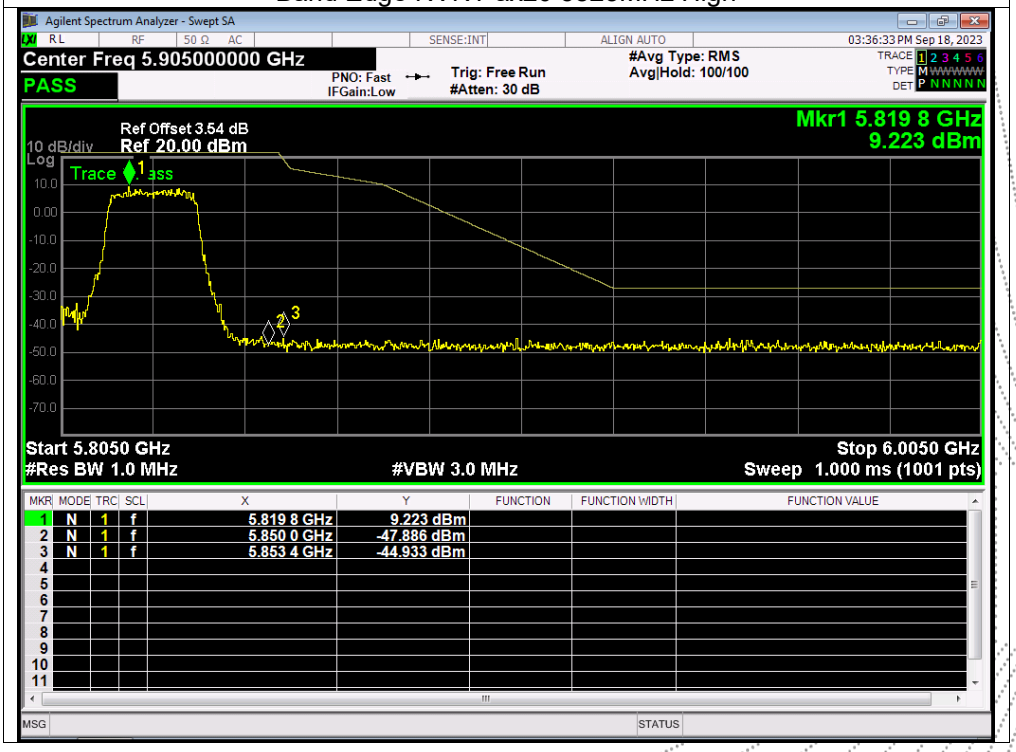
Band Edge NVNT ac80 5775MHz Low



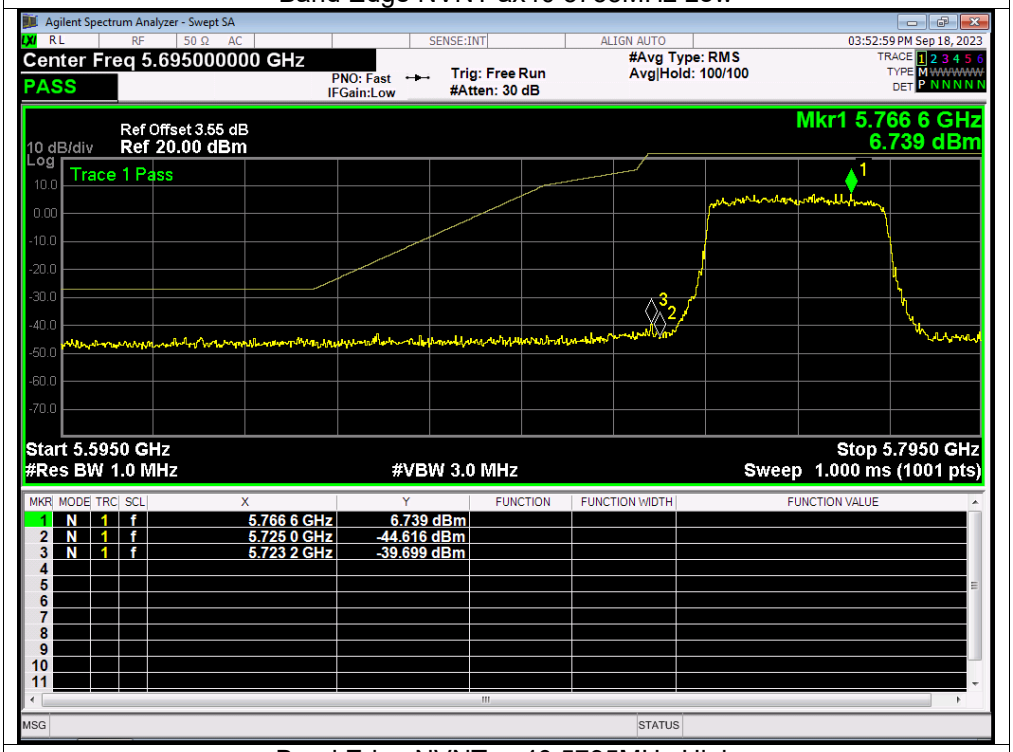
Band Edge NVNT ax20 5745MHz Low



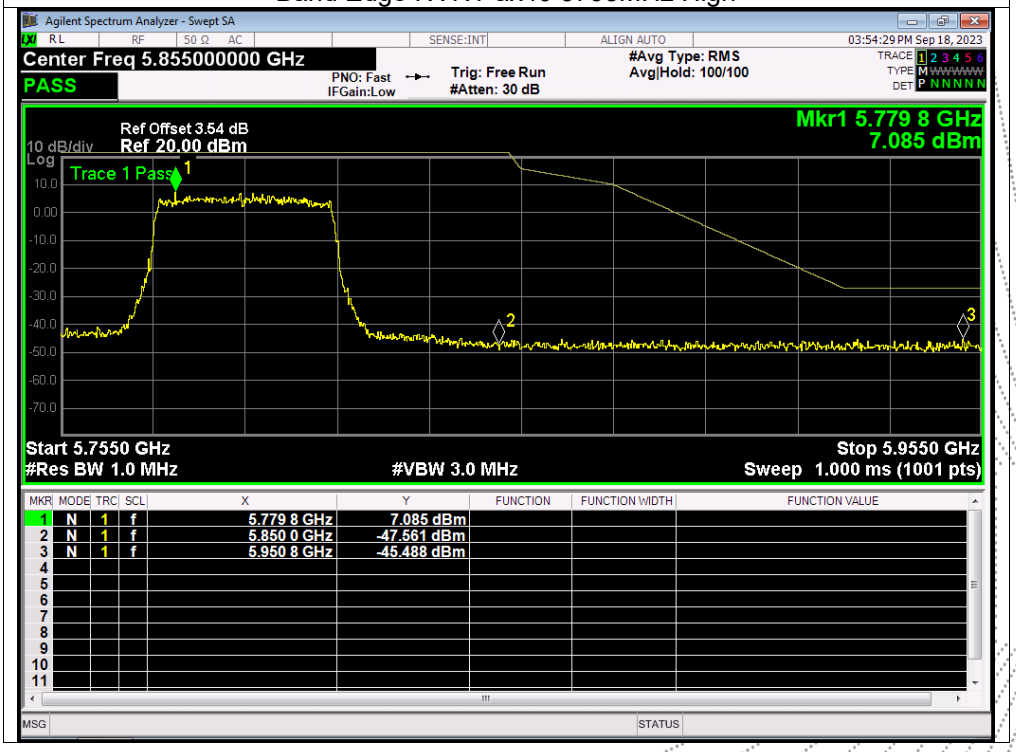
Band Edge NVNT ax20 5825MHz High



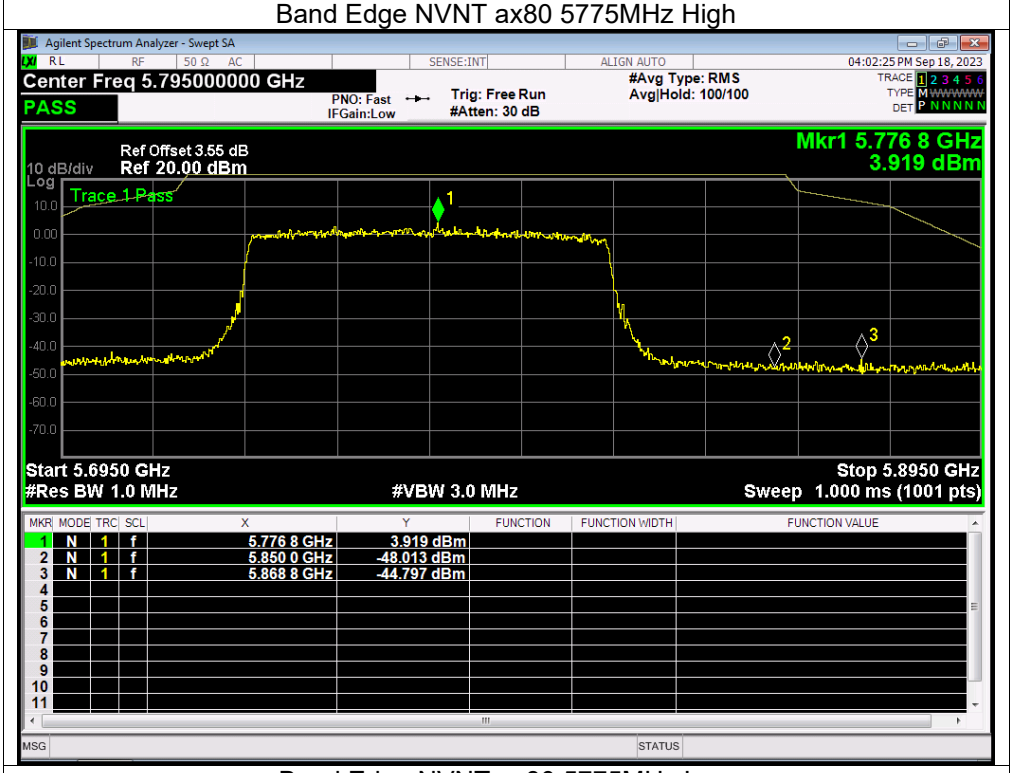
Band Edge NVNT ax40 5755MHz Low



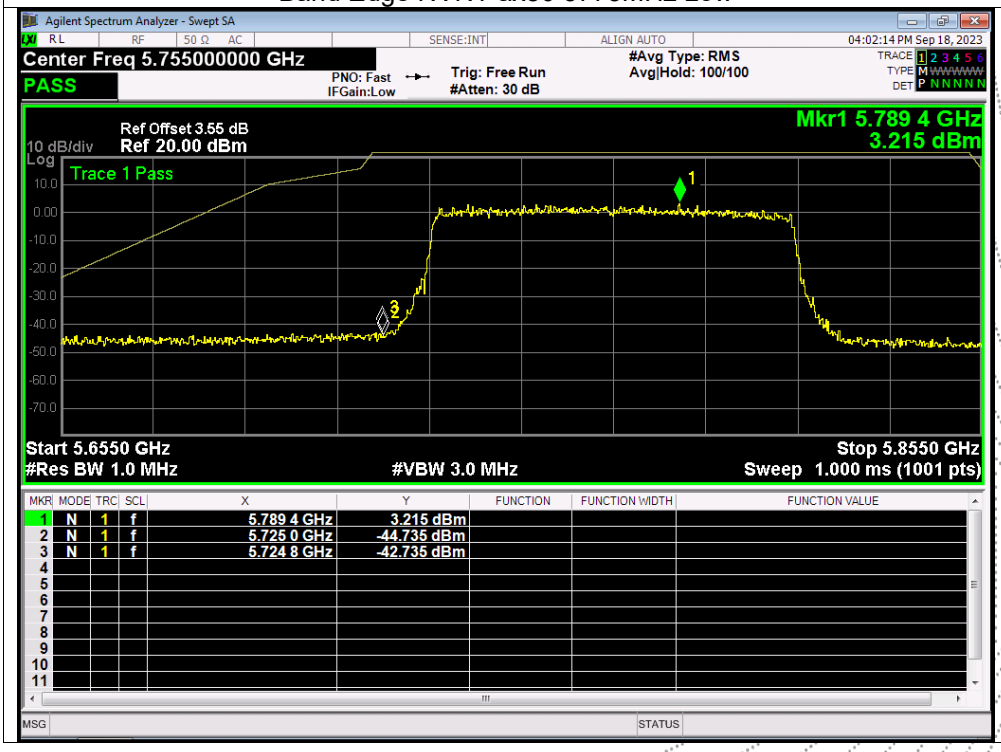
Band Edge NVNT ax40 5795MHz High



Band Edge NVNT ax80 5775MHz High

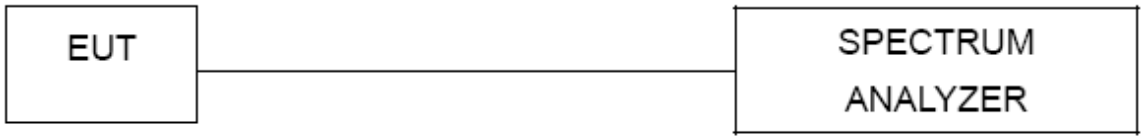


Band Edge NVNT ax80 5775MHz Low



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

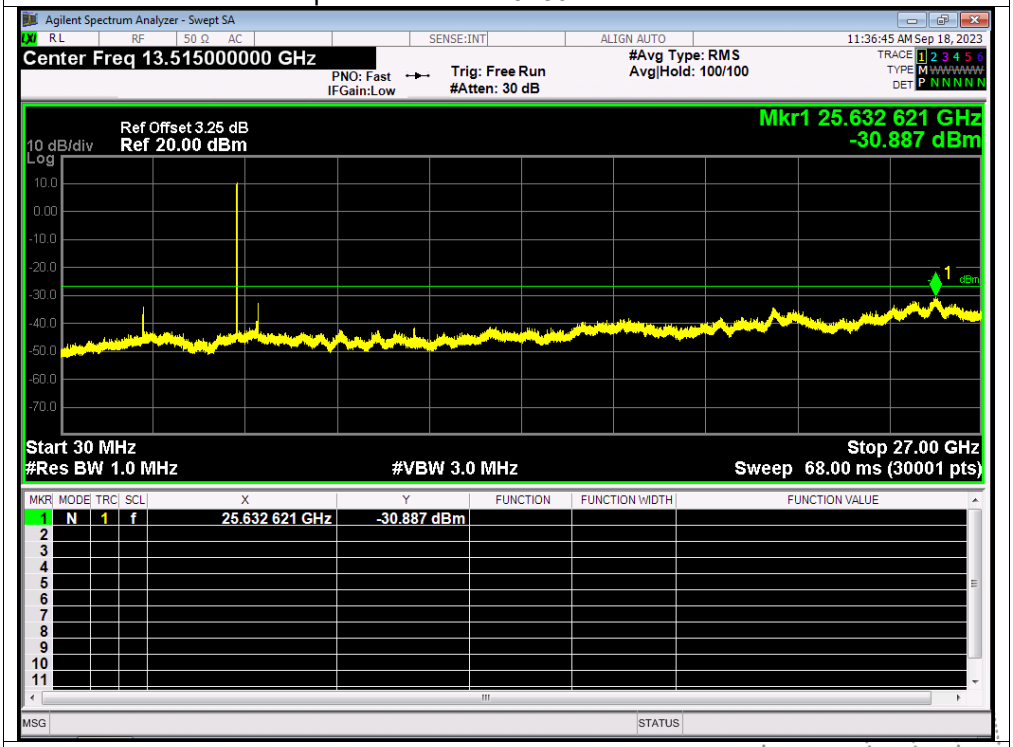
Remark: The measurement frequency range is from 9KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandege measurement data.

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.

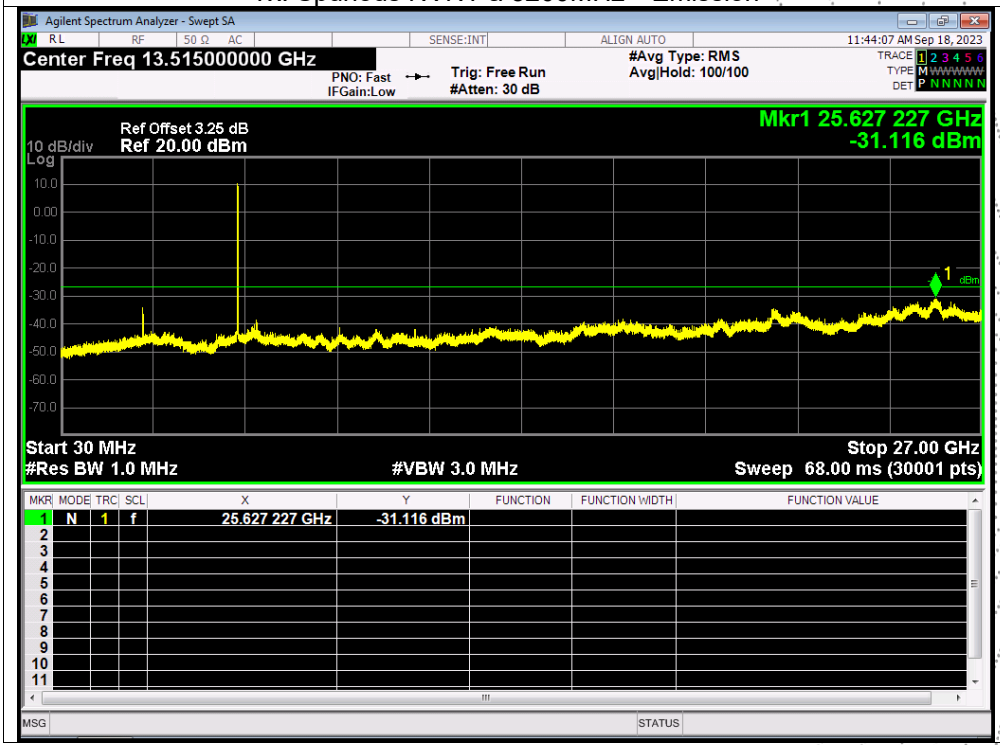
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A.
Plot. Antenna A: 5180-5240MHz

Test Graphs

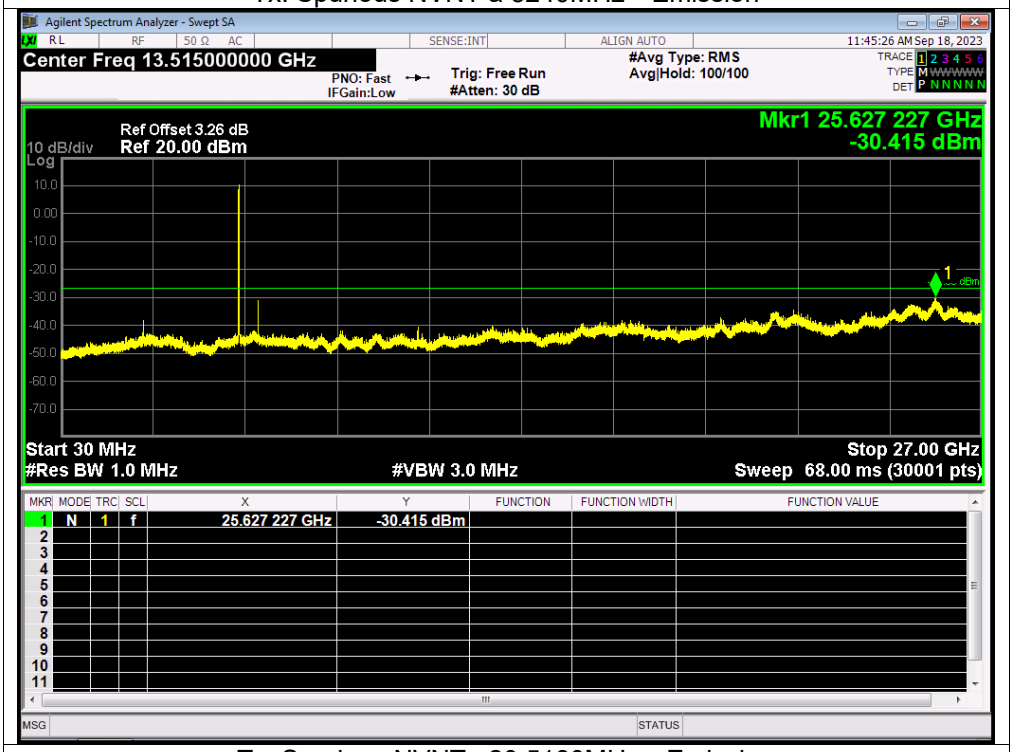
Tx. Spurious NVNT a 5180MHz Emission



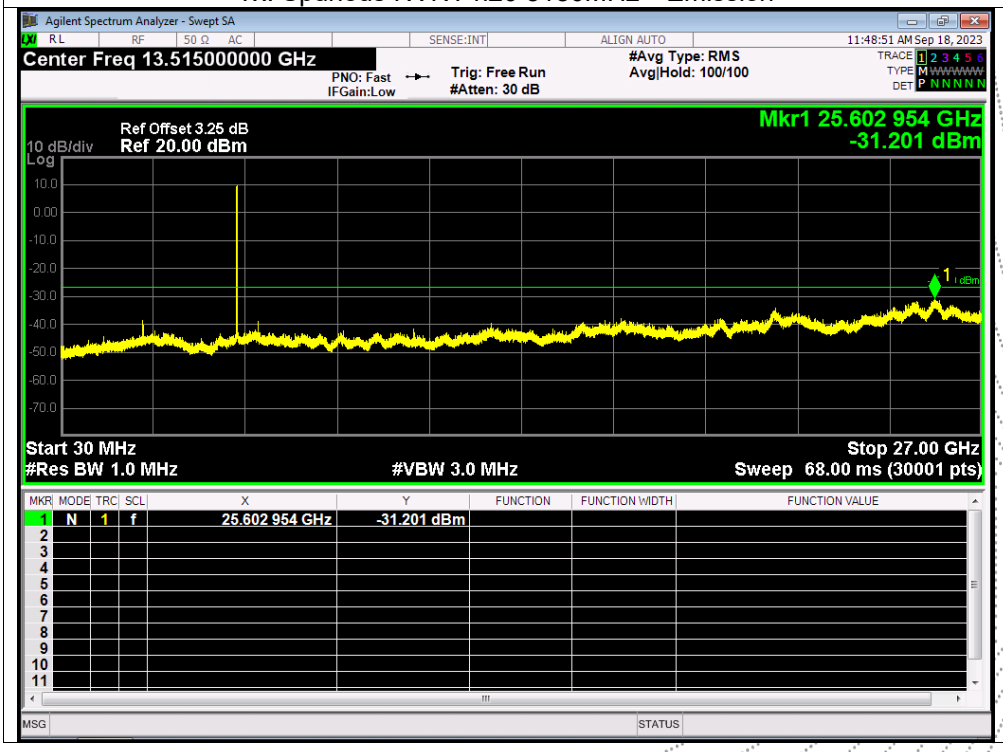
Tx. Spurious NVNT a 5200MHz Emission



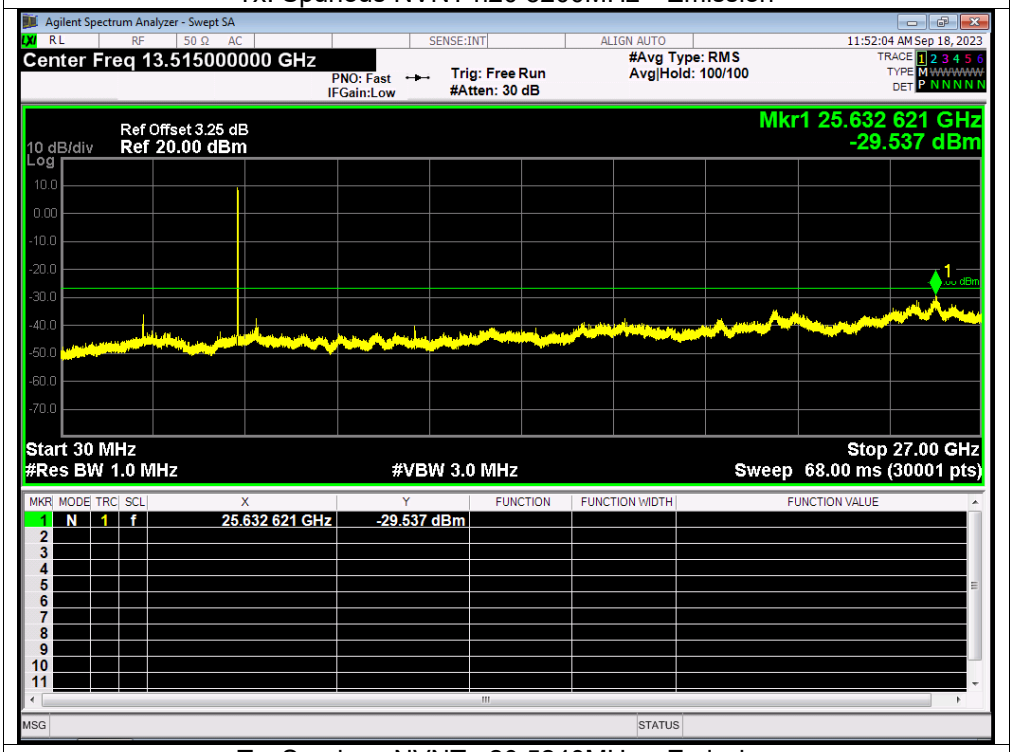
Tx. Spurious NVNT a 5240MHz Emission



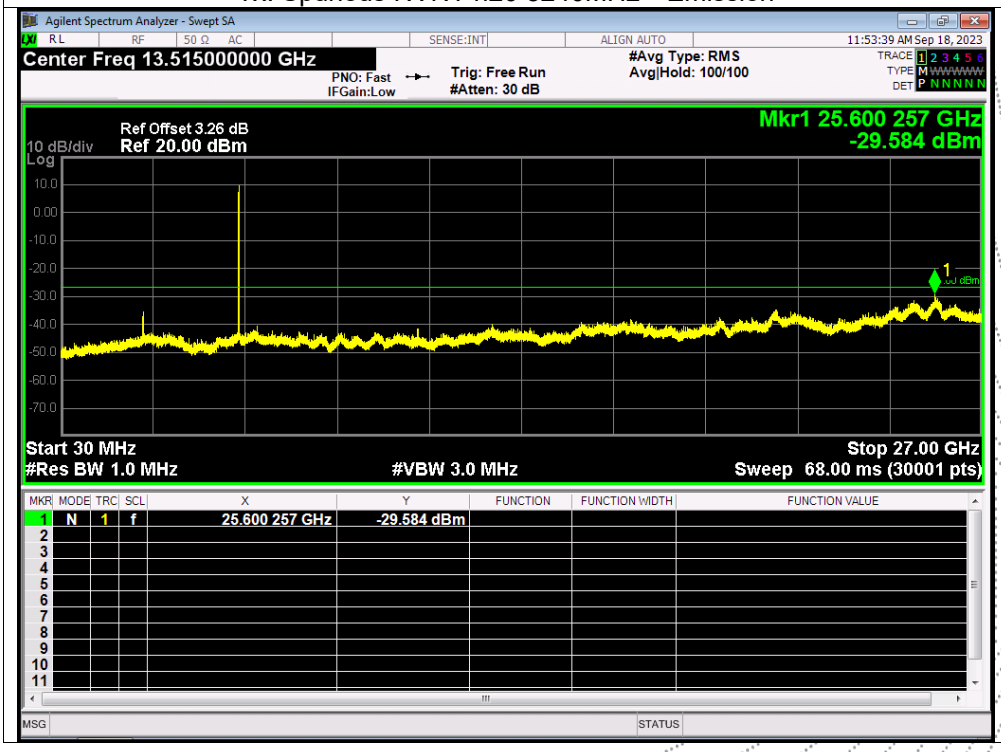
Tx. Spurious NVNT n20 5180MHz Emission



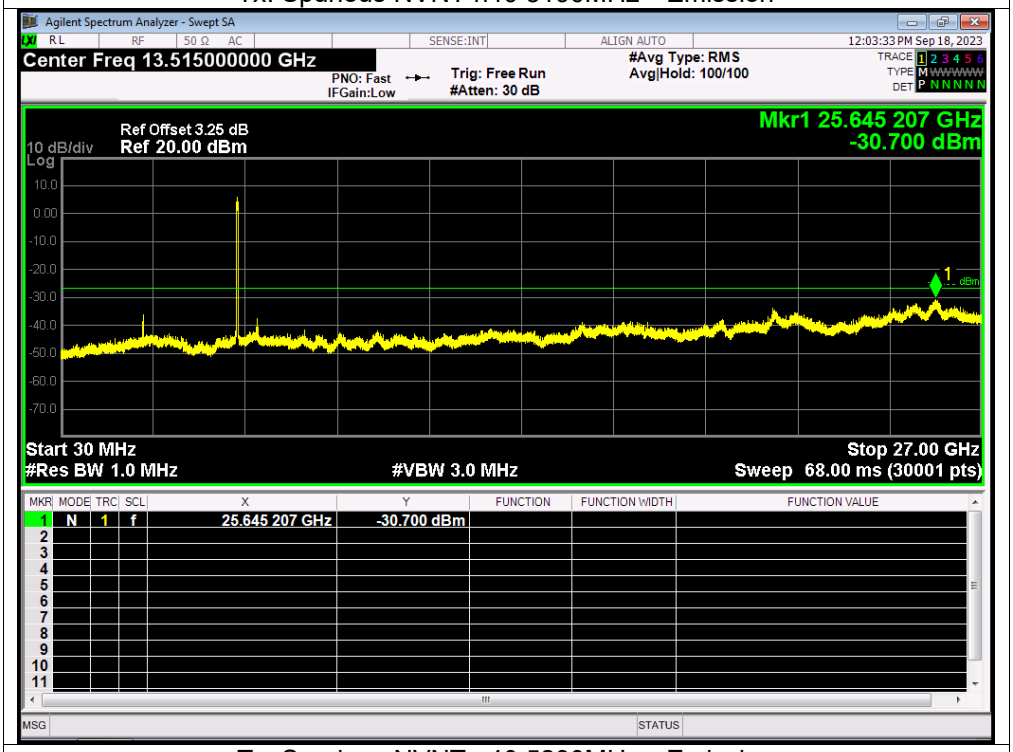
Tx. Spurious NVNT n20 5200MHz Emission



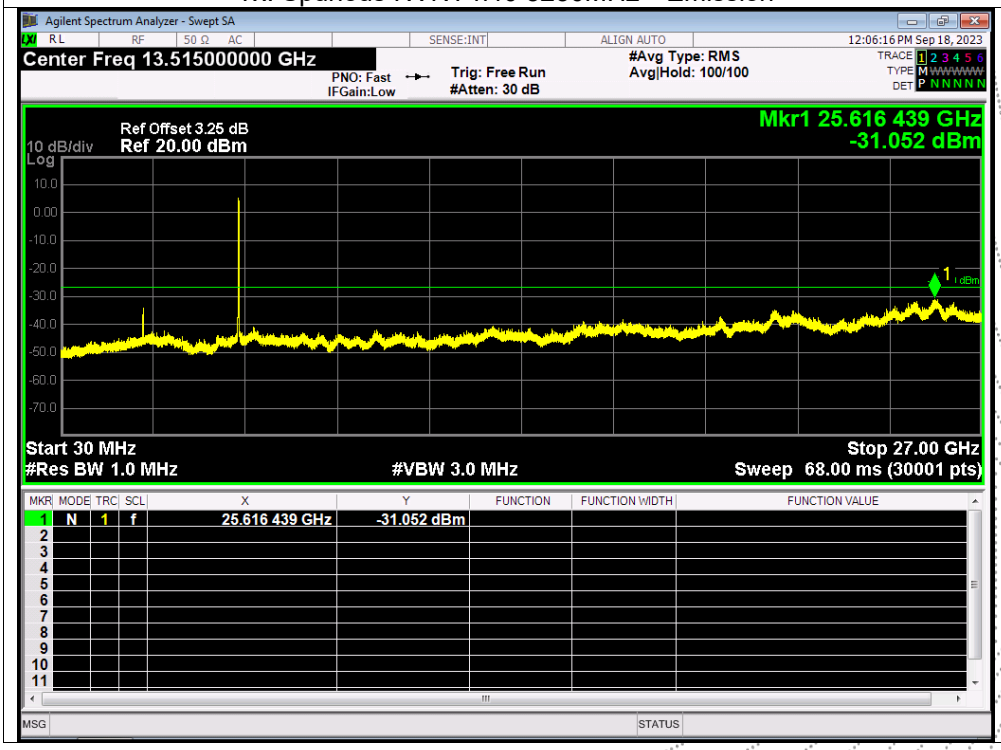
Tx. Spurious NVNT n20 5240MHz Emission



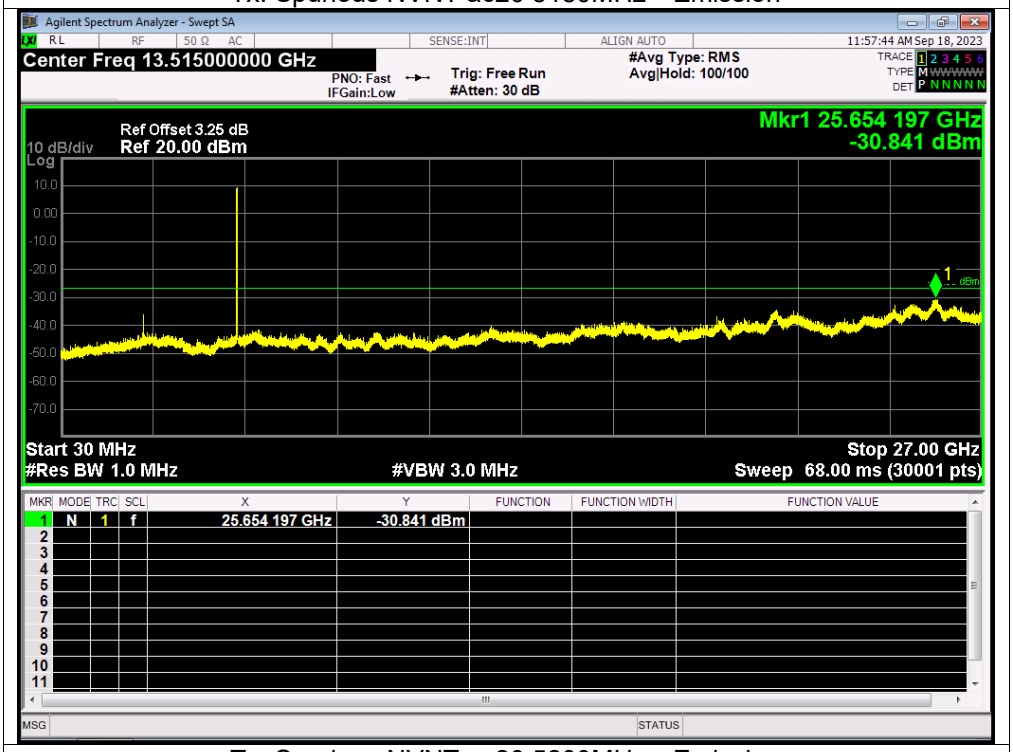
Tx. Spurious NVNT n40 5190MHz Emission



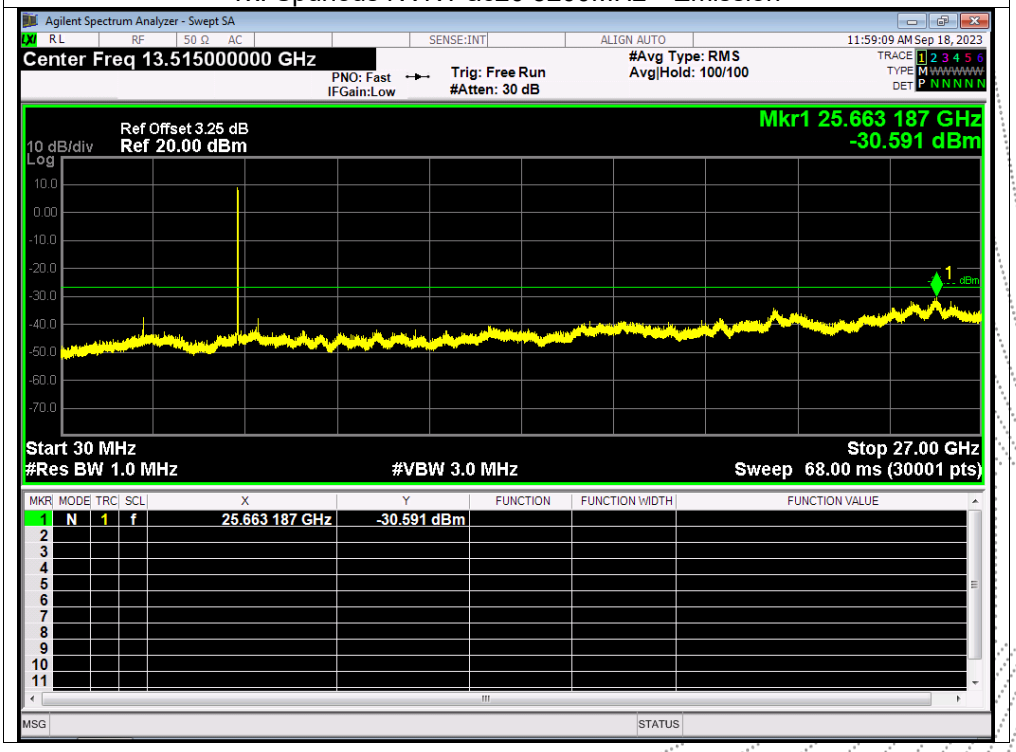
Tx. Spurious NVNT n40 5230MHz Emission



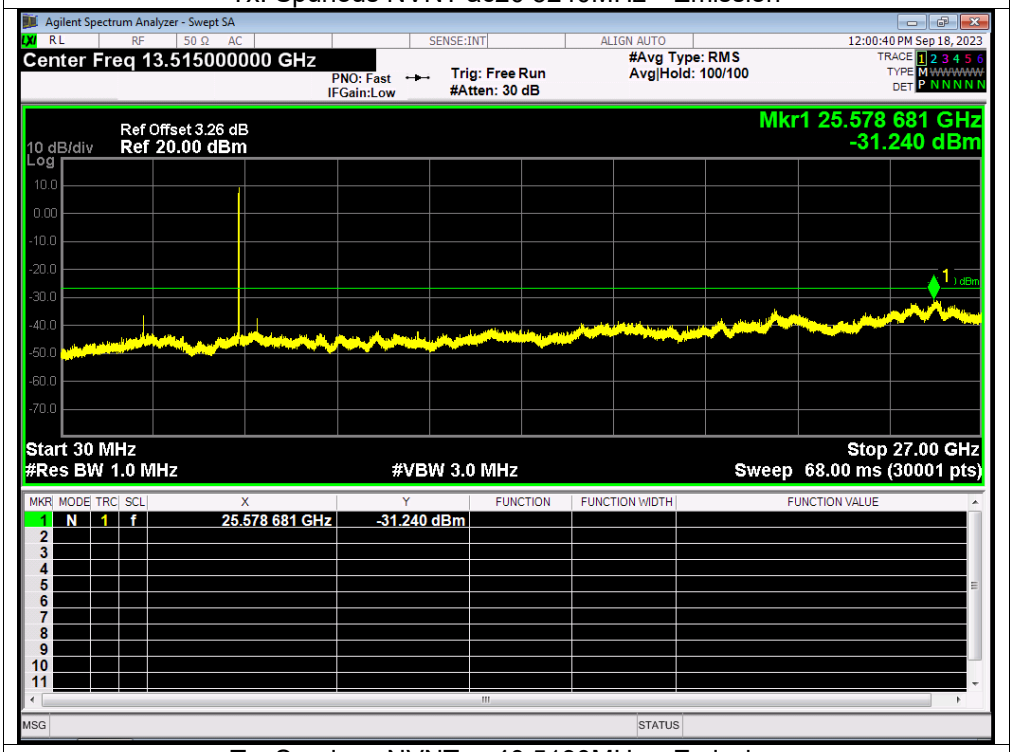
Tx. Spurious NVNT ac20 5180MHz Emission



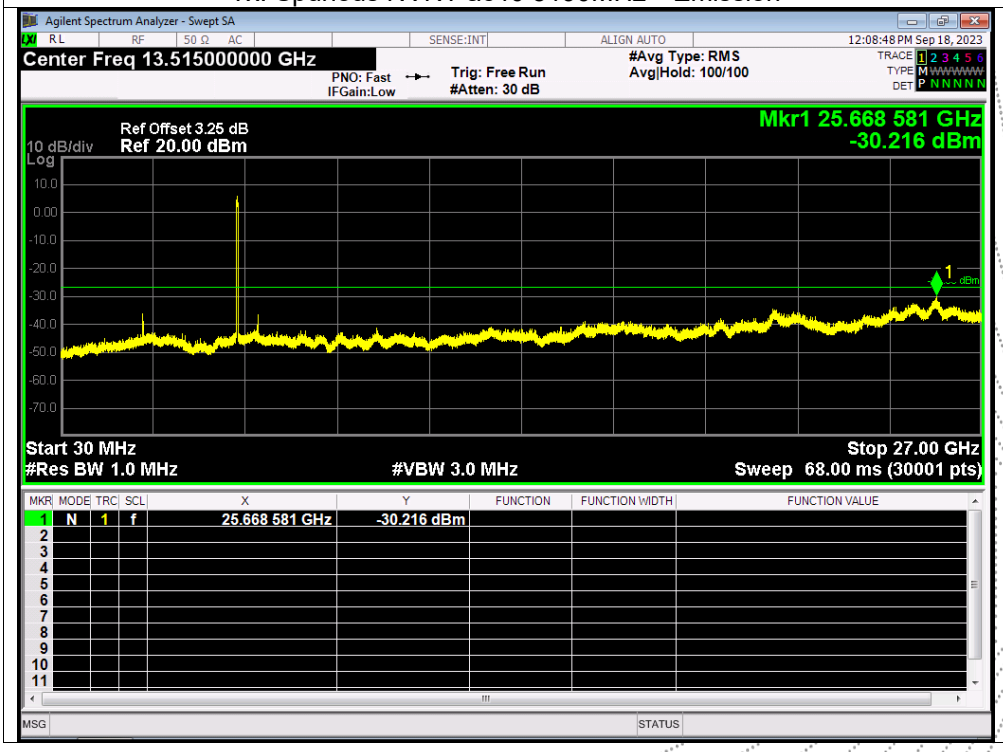
Tx. Spurious NVNT ac20 5200MHz Emission



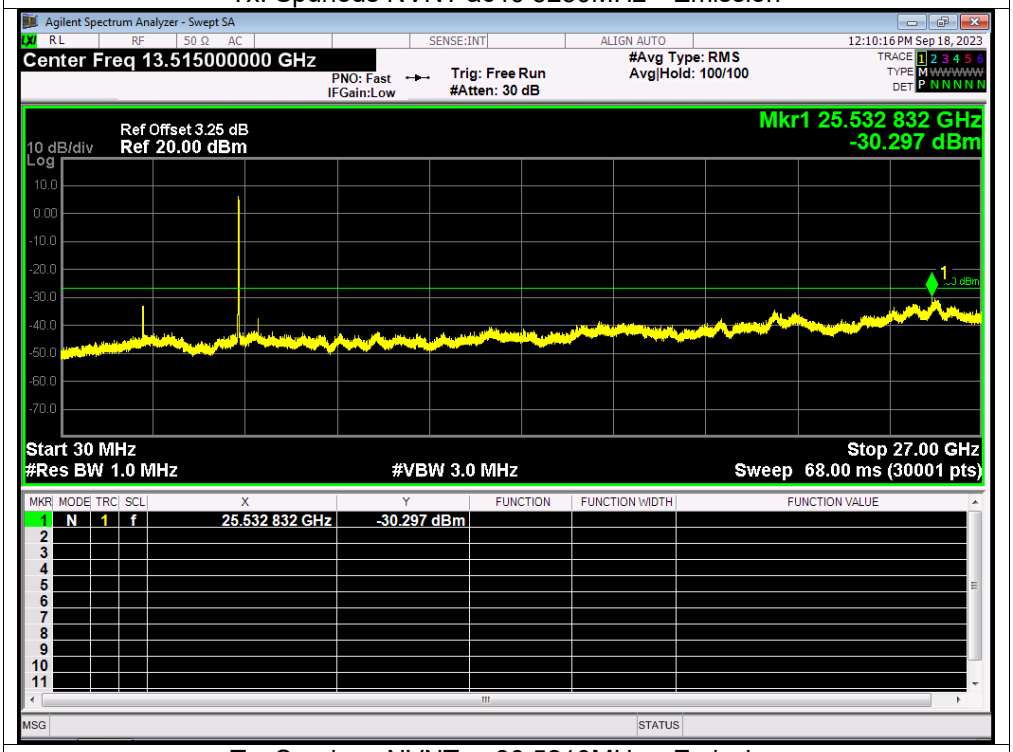
Tx. Spurious NVNT ac20 5240MHz Emission



Tx. Spurious NVNT ac40 5190MHz Emission



Tx. Spurious NVNT ac40 5230MHz Emission



Tx. Spurious NVNT ac80 5210MHz Emission