



## Appendix D

### RF Test Data for 5.2G WIFI (Conducted Measurement)

Product Name: AVA Nano Brain

Test Model: AVA-CO-CB1

#### Environmental Conditions

Temperature:	23.8 ° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Ling Zhu
Supervised by:	Li Huan





### D.1 -26dB Bandwidth

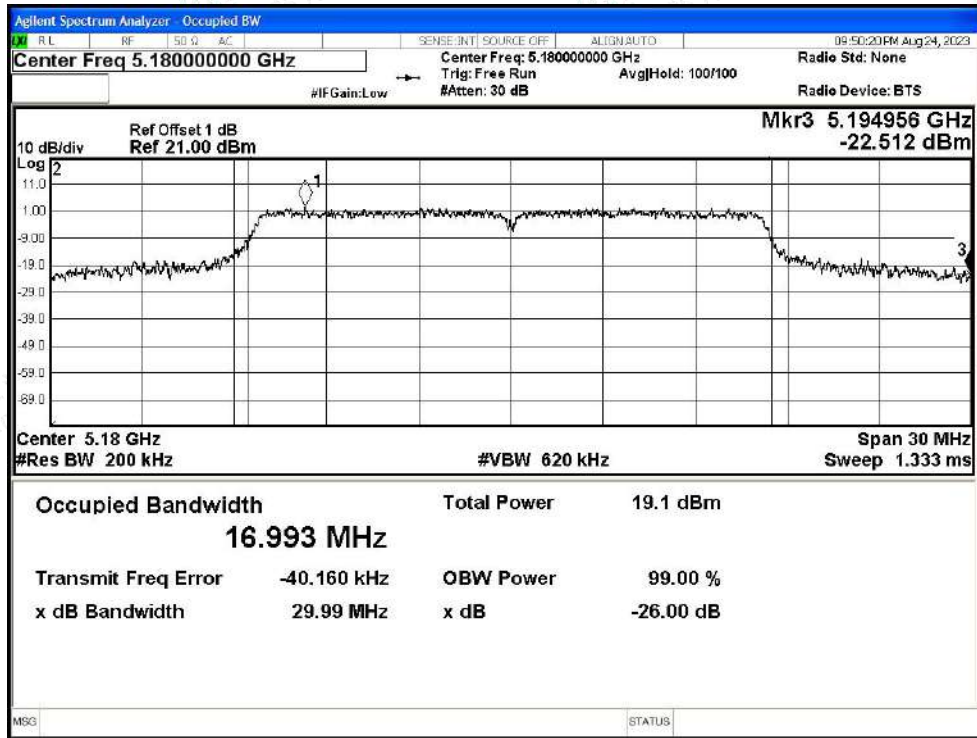
Condition	Mode	Frequency (MHz)	Antenna	-26 dB Bandwidth (MHz)	Limit -26 dB Bandwidth (MHz)	Verdict
NVNT	a	5180	Ant1	29.991	--	Pass
NVNT	a	5200	Ant1	29.973	--	Pass
NVNT	a	5240	Ant1	30	--	Pass
NVNT	n20	5180	Ant1	29.129	--	Pass
NVNT	n20	5200	Ant1	29.405	--	Pass
NVNT	n20	5240	Ant1	29.46	--	Pass
NVNT	n40	5190	Ant1	59.592	--	Pass
NVNT	n40	5230	Ant1	58.785	--	Pass
NVNT	ac20	5180	Ant1	29.685	--	Pass
NVNT	ac20	5200	Ant1	29.415	--	Pass
NVNT	ac20	5240	Ant1	29.695	--	Pass
NVNT	ac40	5190	Ant1	59.453	--	Pass
NVNT	ac40	5230	Ant1	59.292	--	Pass
NVNT	ac80	5210	Ant1	118.299	--	Pass



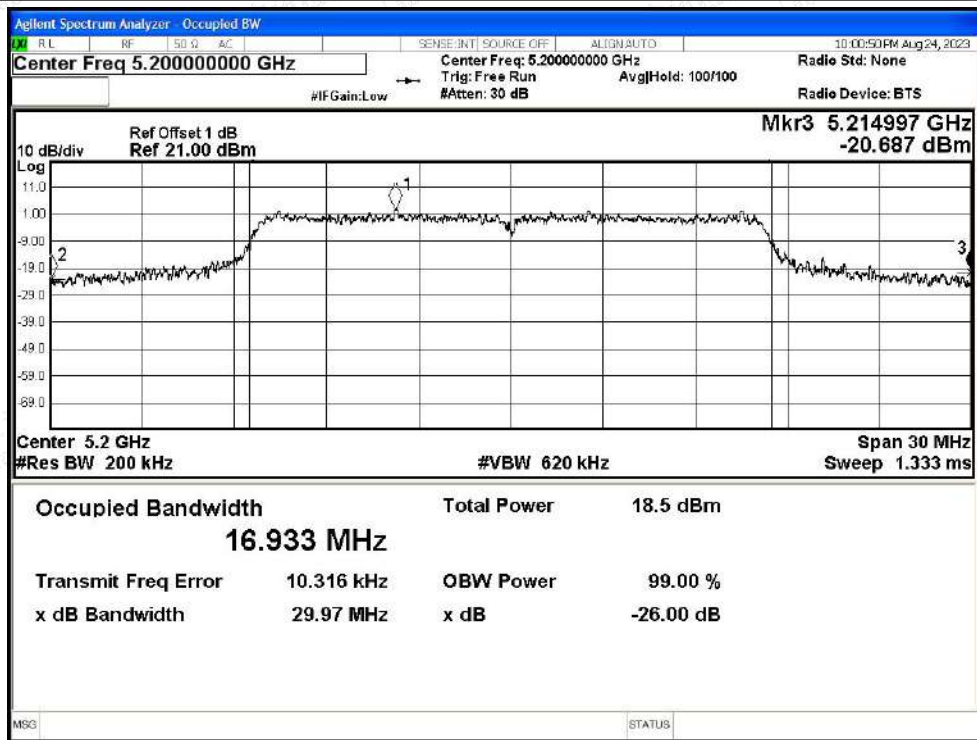


Test Graphs

-26dB Bandwidth NVNT a 5180MHz Ant1

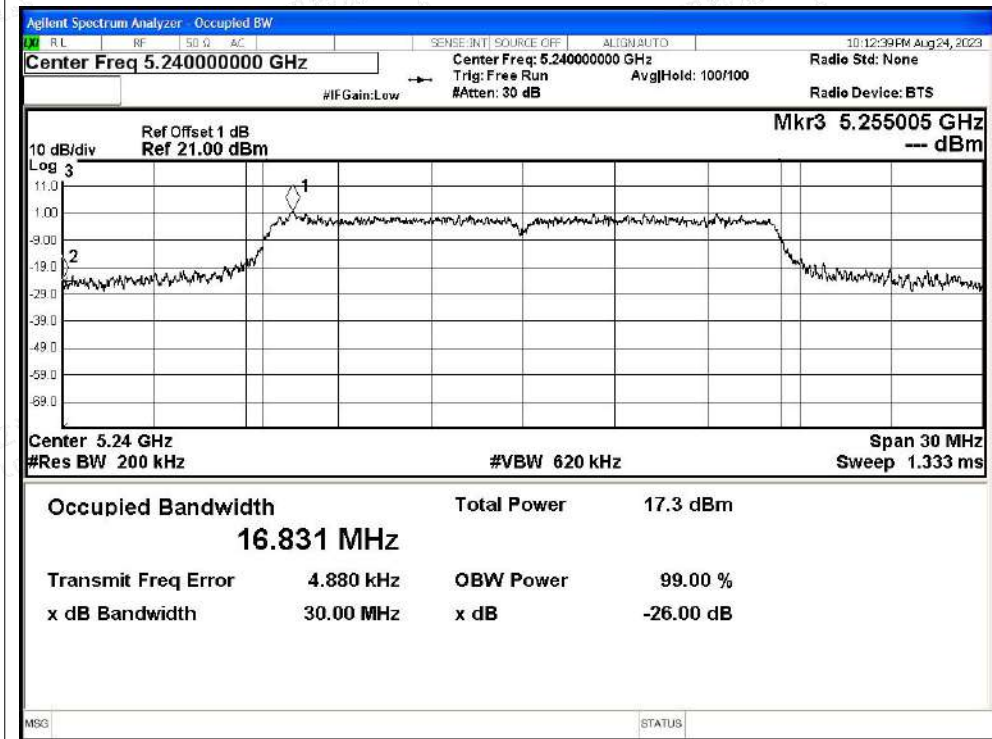


-26dB Bandwidth NVNT a 5200MHz Ant1





-26dB Bandwidth NVNT a 5240MHz Ant1

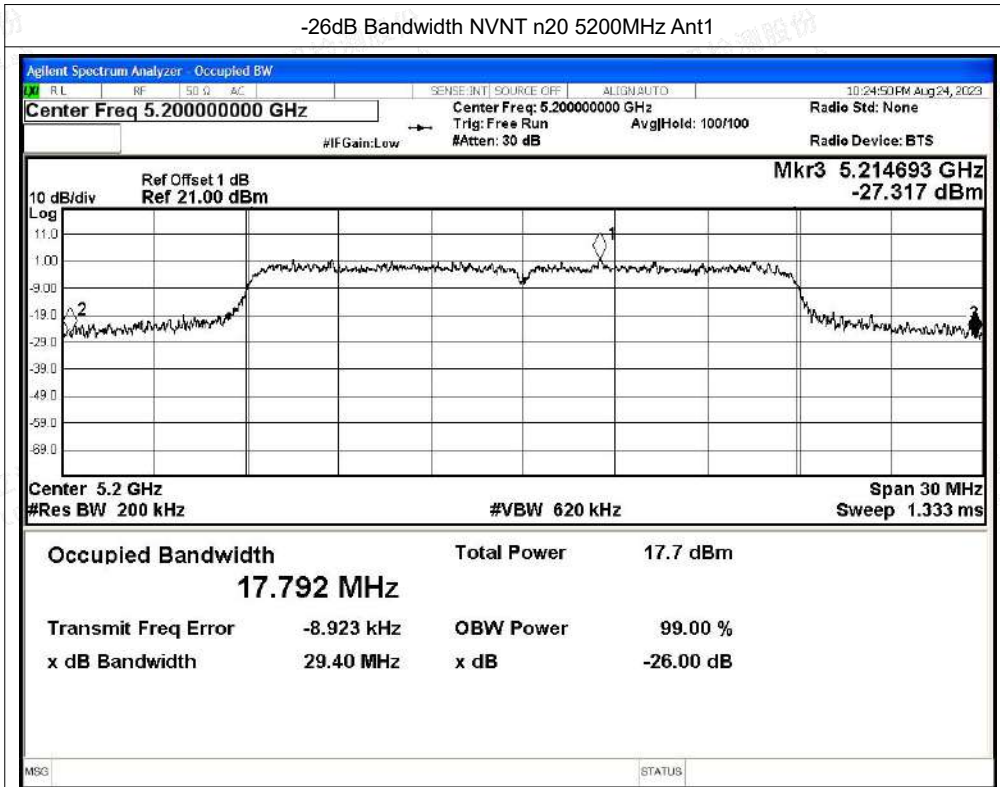


-26dB Bandwidth NVNT n20 5180MHz Ant1

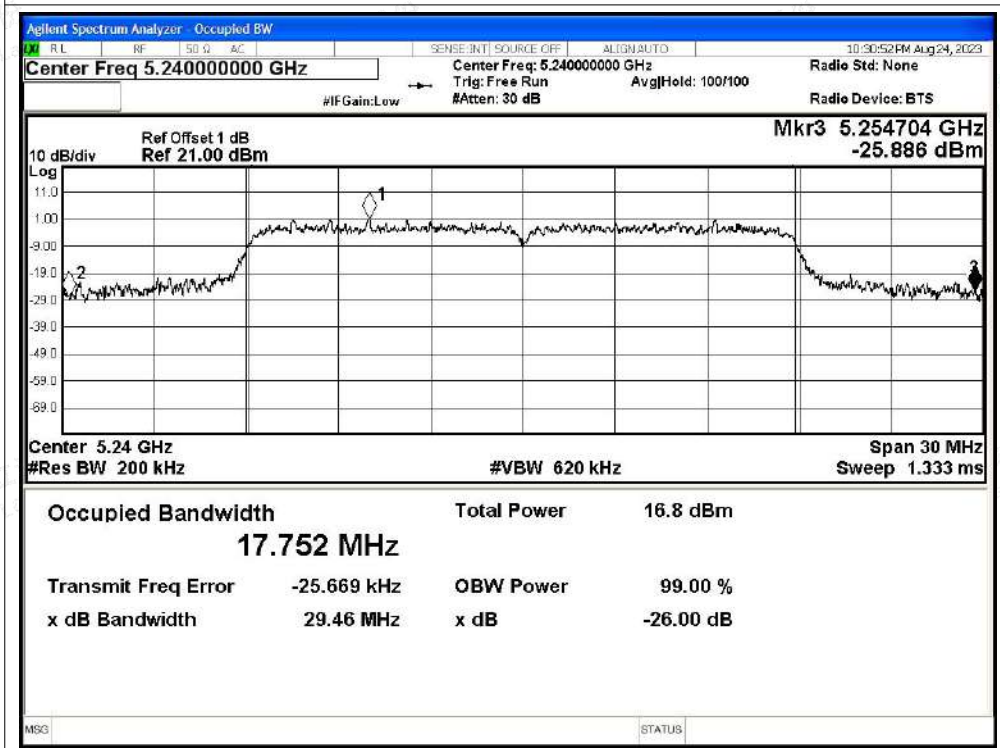




-26dB Bandwidth NVNT n20 5200MHz Ant1

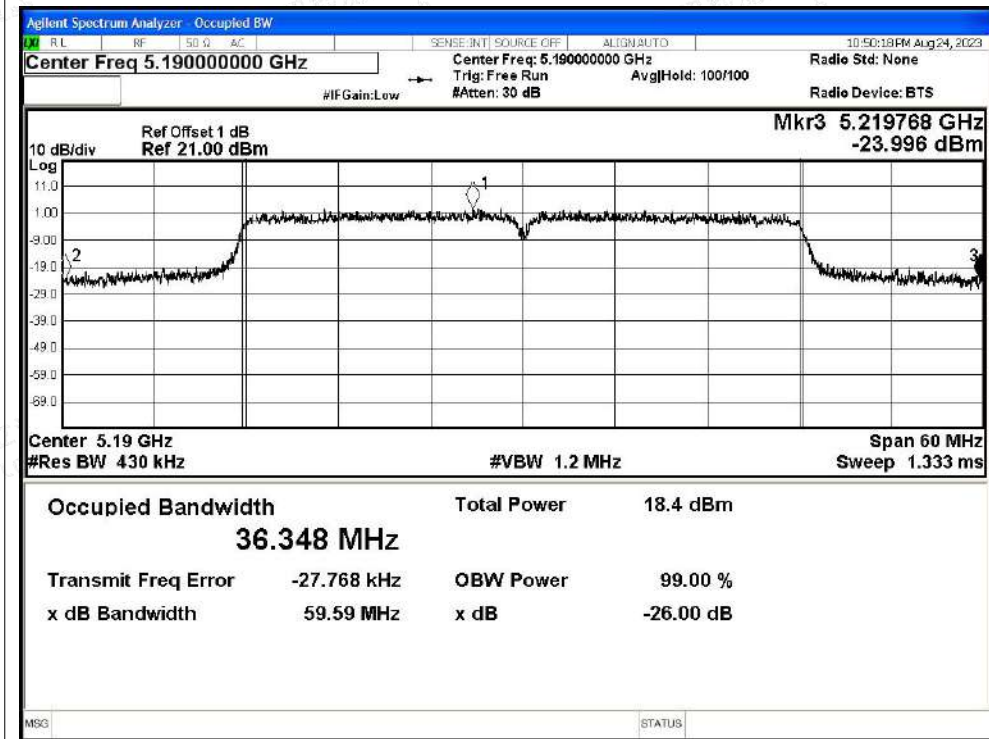


-26dB Bandwidth NVNT n20 5240MHz Ant1

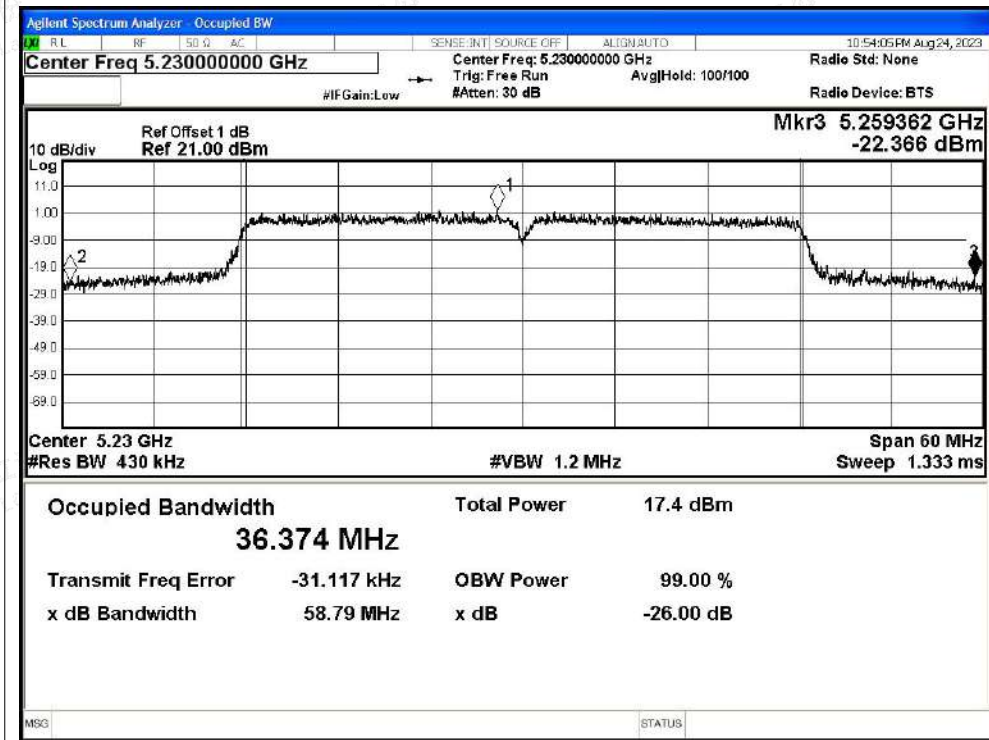




-26dB Bandwidth NVNT n40 5190MHz Ant1

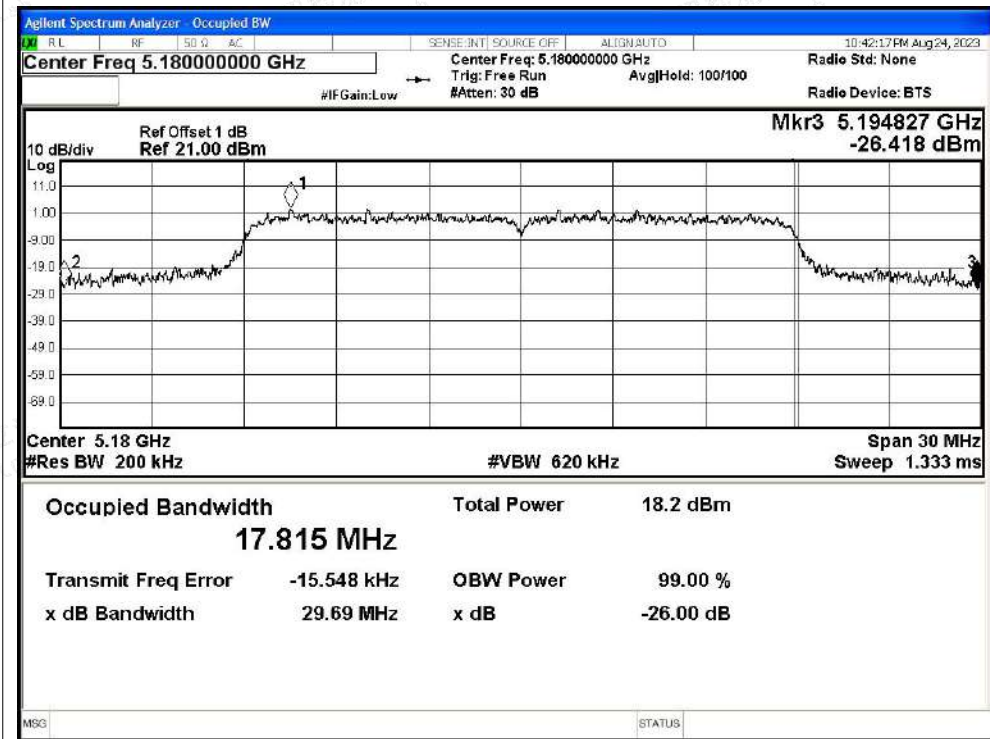


-26dB Bandwidth NVNT n40 5230MHz Ant1

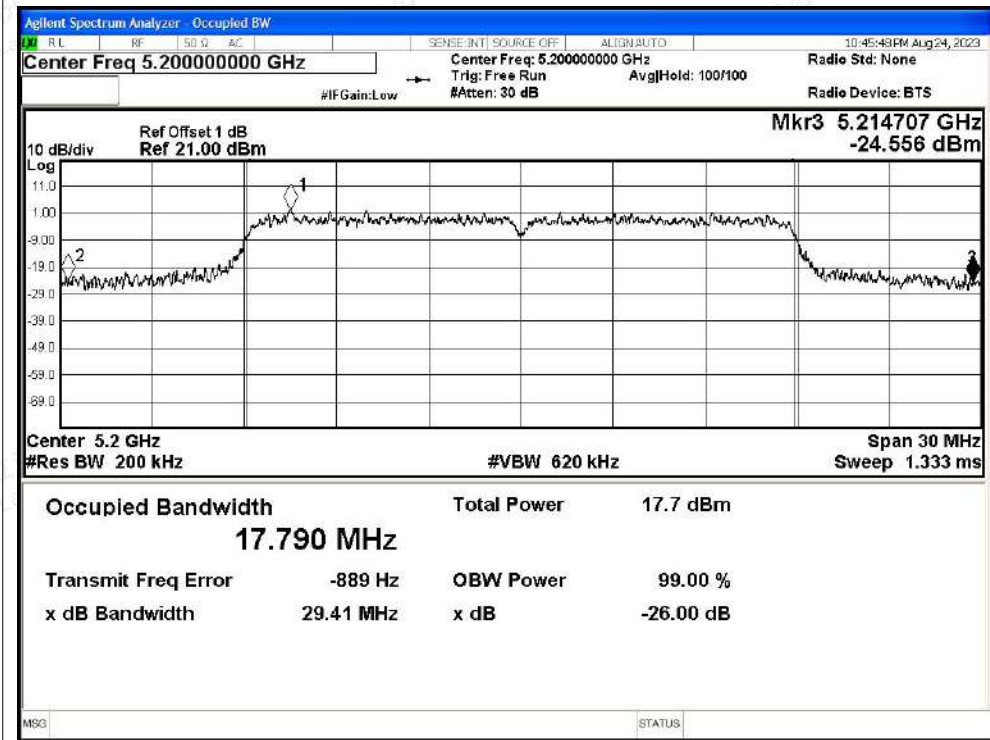




-26dB Bandwidth NVNT ac20 5180MHz Ant1

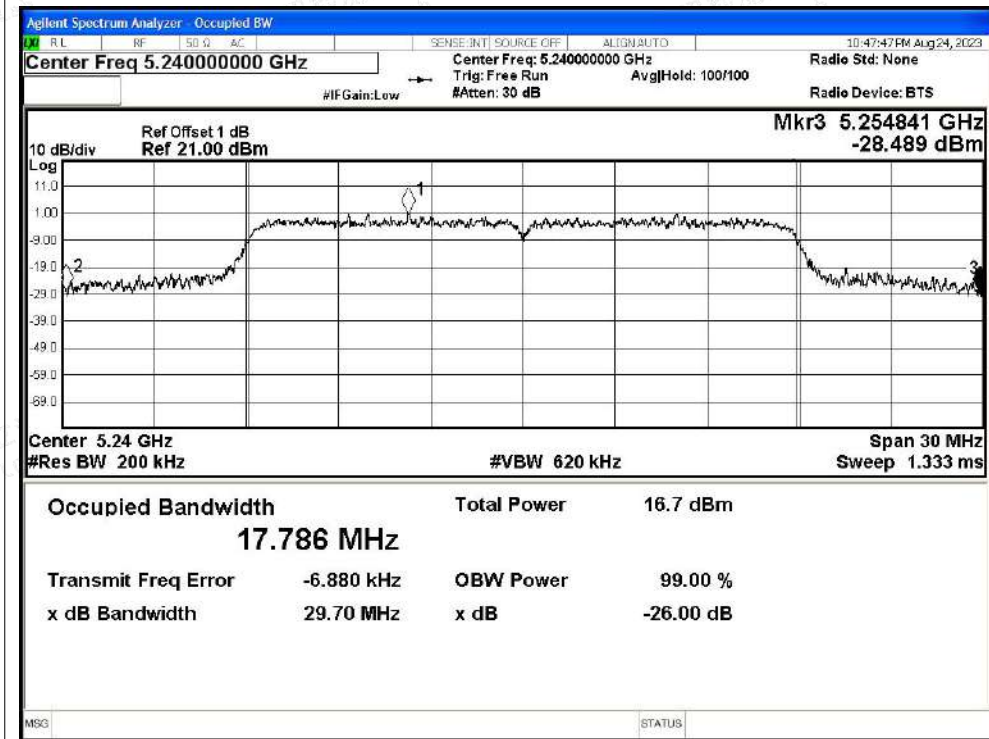


-26dB Bandwidth NVNT ac20 5200MHz Ant1

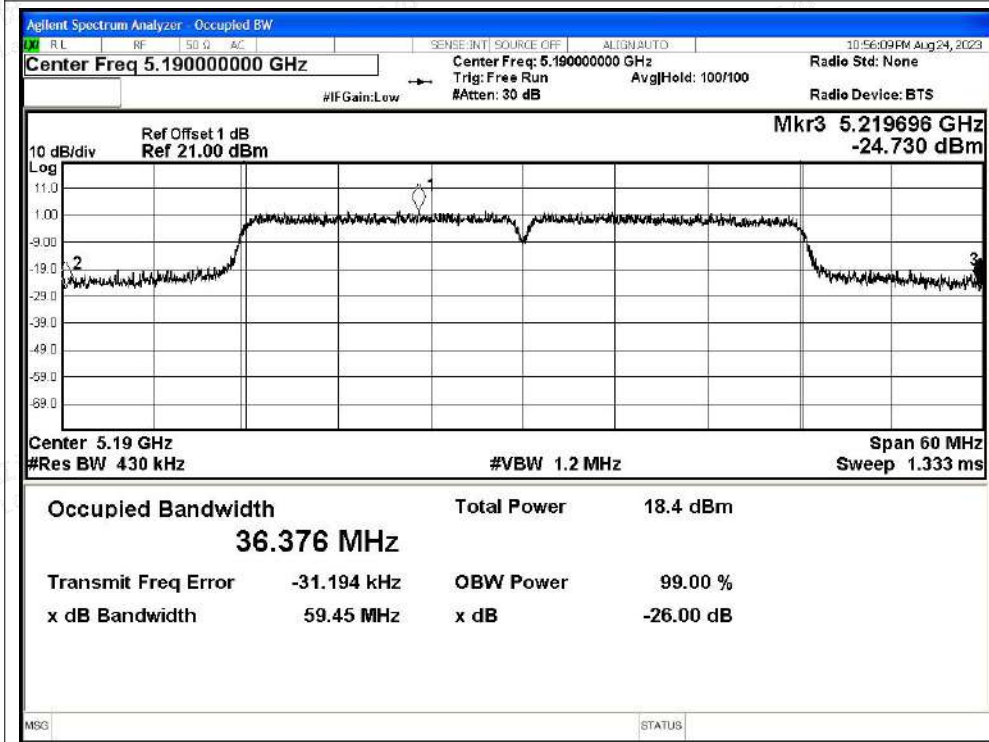




-26dB Bandwidth NVNT ac20 5240MHz Ant1



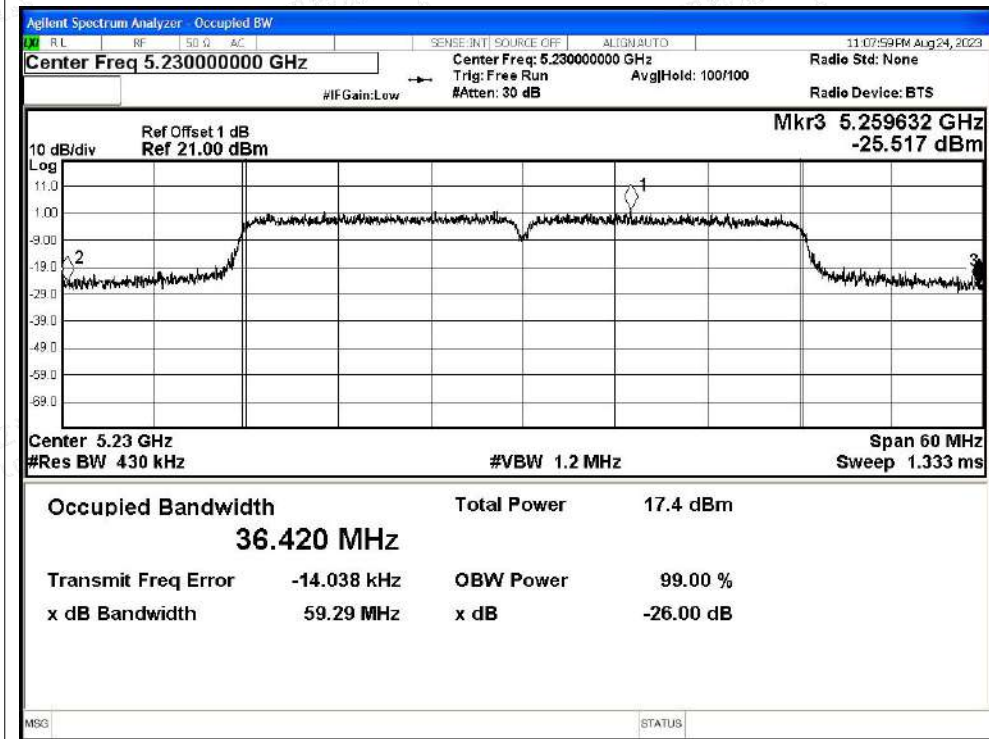
-26dB Bandwidth NVNT ac40 5190MHz Ant1



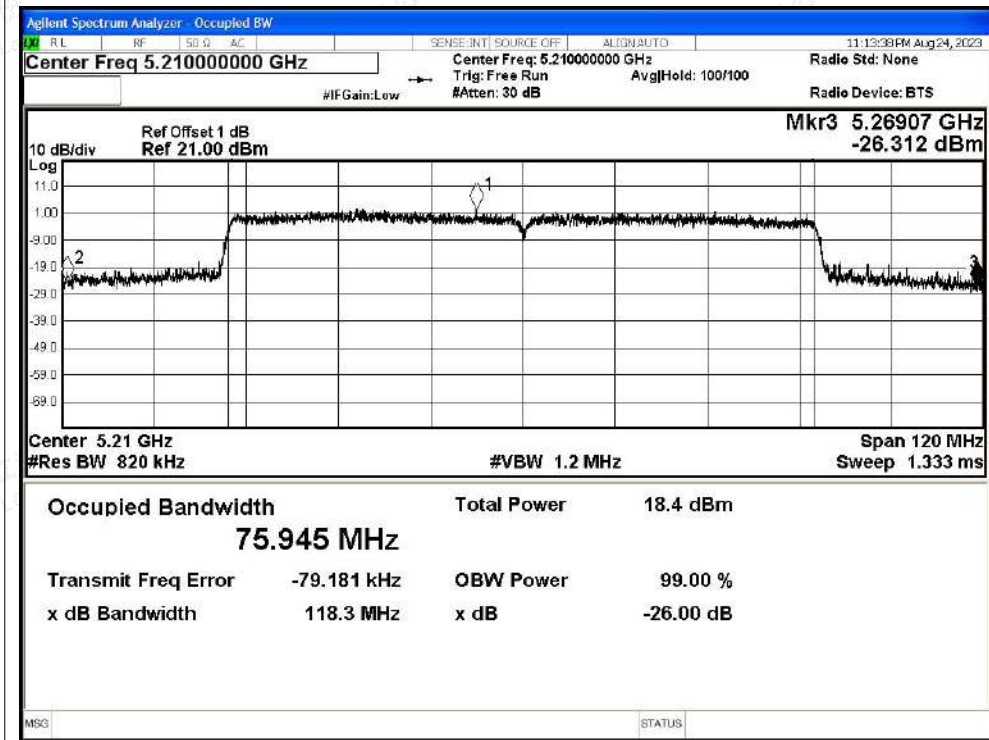




-26dB Bandwidth NVNT ac40 5230MHz Ant1



-26dB Bandwidth NVNT ac80 5210MHz Ant1





## D.2 Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	Ant1	13.4	24	Pass
NVNT	a	5200	Ant1	12.87	24	Pass
NVNT	a	5240	Ant1	11.89	24	Pass
NVNT	n20	5180	Ant1	12.74	24	Pass
NVNT	n20	5200	Ant1	12.24	24	Pass
NVNT	n20	5240	Ant1	11.35	24	Pass
NVNT	n40	5190	Ant1	12.81	24	Pass
NVNT	n40	5230	Ant1	11.96	24	Pass
NVNT	ac20	5180	Ant1	12.83	24	Pass
NVNT	ac20	5200	Ant1	12.12	24	Pass
NVNT	ac20	5240	Ant1	11.19	24	Pass
NVNT	ac40	5190	Ant1	12.76	24	Pass
NVNT	ac40	5230	Ant1	11.84	24	Pass
NVNT	ac80	5210	Ant1	12.45	24	Pass



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### D.3 Maximum Power Spectral Density Level

Condition	Mode	Frequency (MHz)	Antenna	Total PSD (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	Ant1	-3.57	11	Pass
NVNT	a	5200	Ant1	0.58	11	Pass
NVNT	a	5240	Ant1	-3.64	11	Pass
NVNT	n20	5180	Ant1	-3.72	11	Pass
NVNT	n20	5200	Ant1	-4.29	11	Pass
NVNT	n20	5240	Ant1	-4.28	11	Pass
NVNT	n40	5190	Ant1	-8.22	11	Pass
NVNT	n40	5230	Ant1	-9.84	11	Pass
NVNT	ac20	5180	Ant1	-4.58	11	Pass
NVNT	ac20	5200	Ant1	-5.18	11	Pass
NVNT	ac20	5240	Ant1	-2.95	11	Pass
NVNT	ac40	5190	Ant1	-10.39	11	Pass
NVNT	ac40	5230	Ant1	-8.63	11	Pass
NVNT	ac80	5210	Ant1	-19.24	11	Pass



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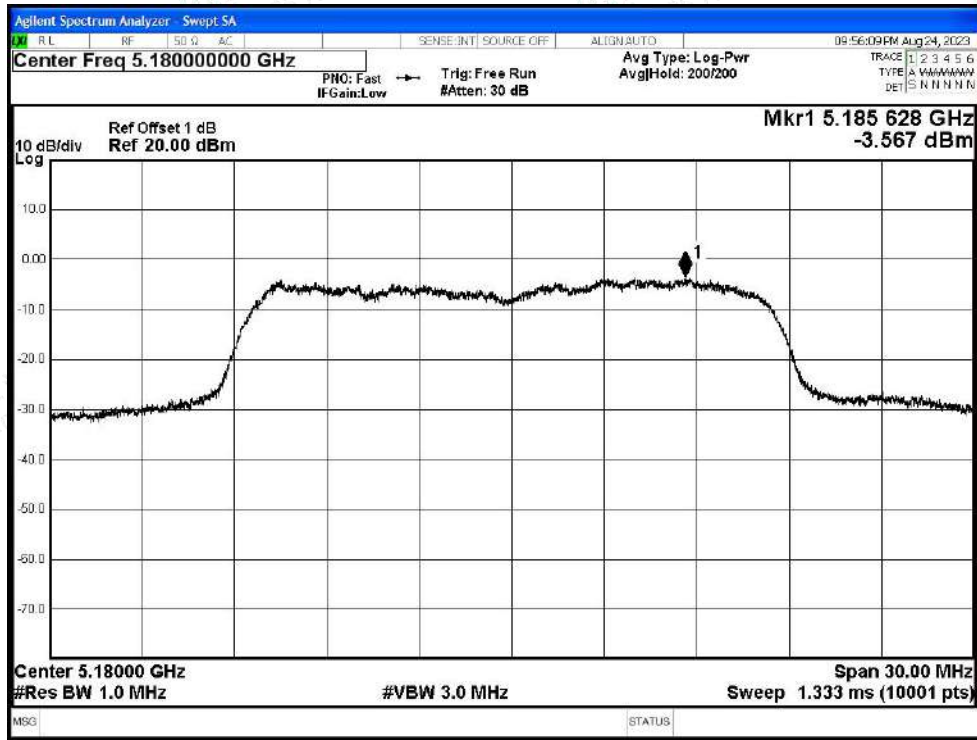
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

Scan code to check authenticity

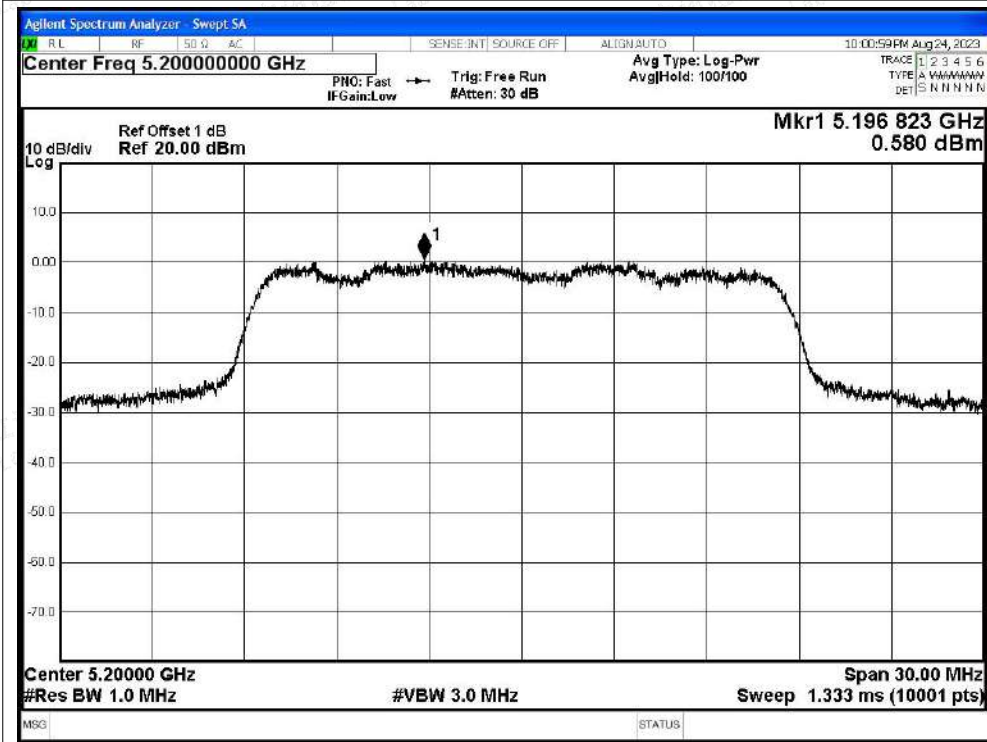


Test Graphs

PSD NVNT a 5180MHz Ant1

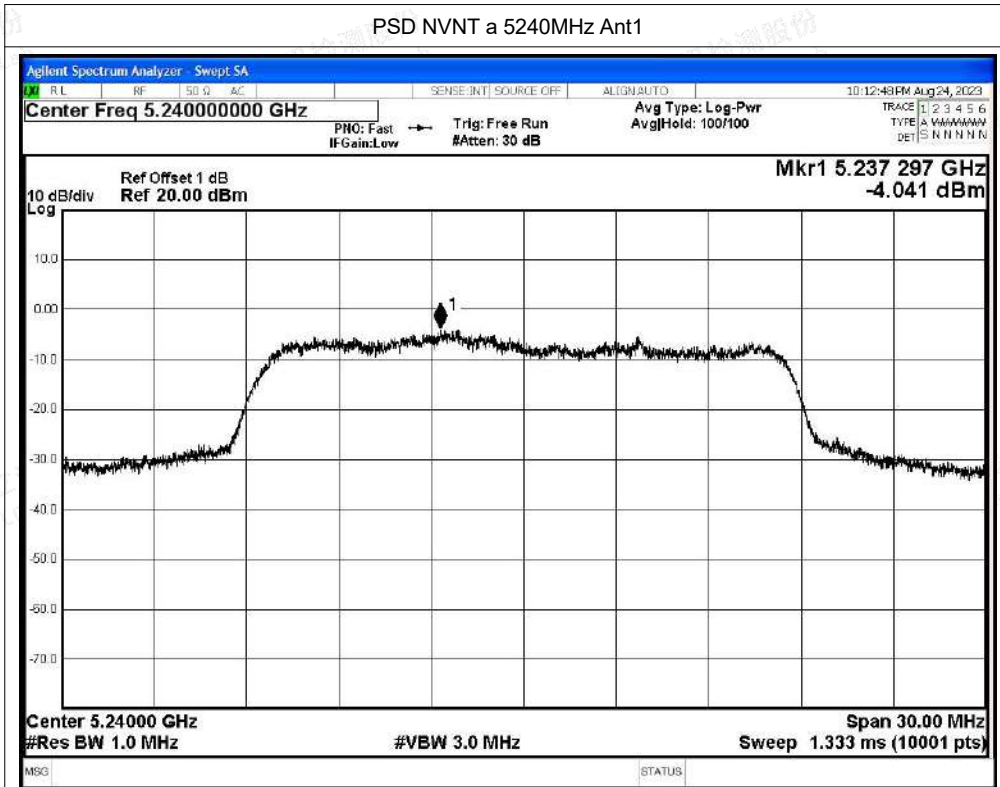


PSD NVNT a 5200MHz Ant1

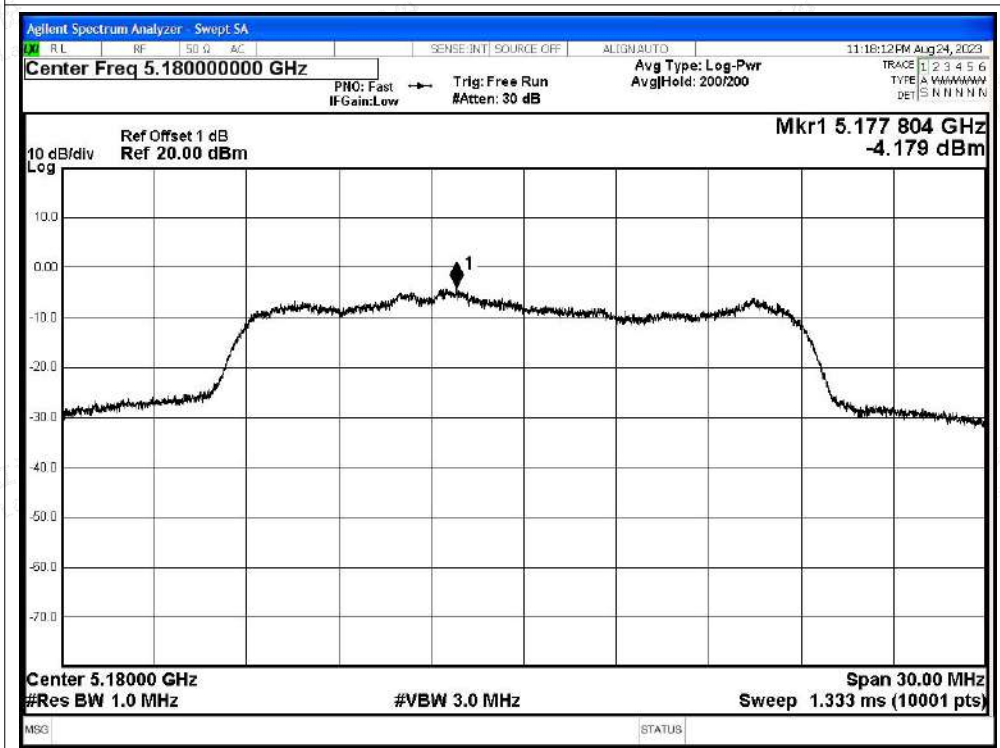


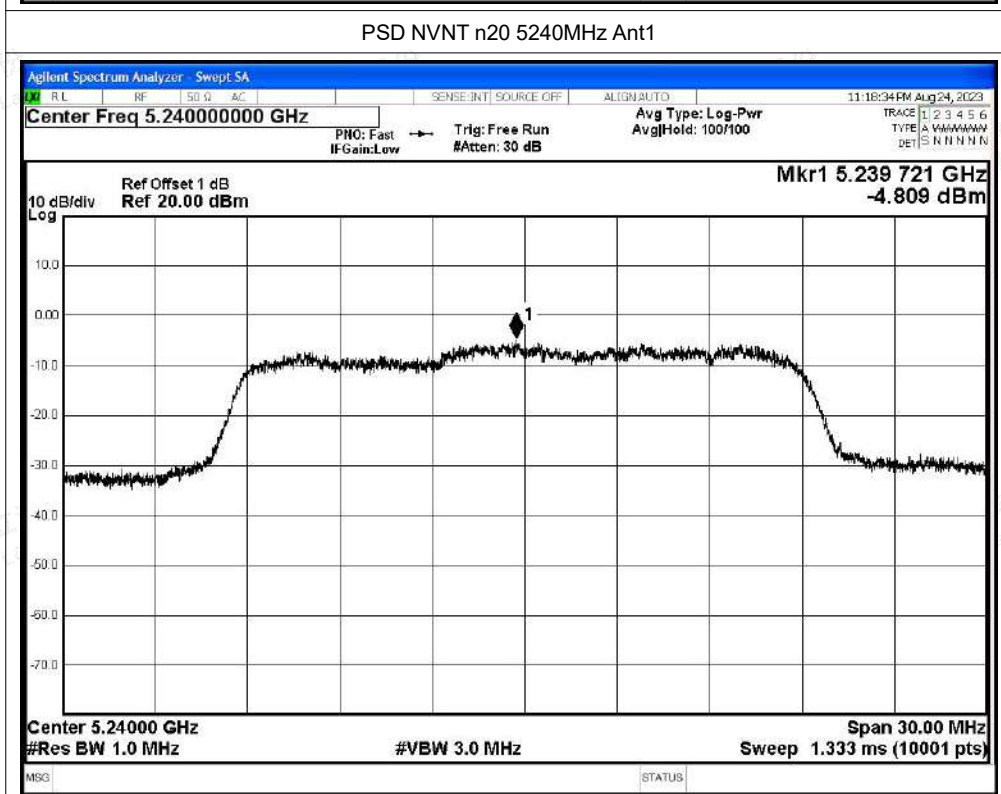
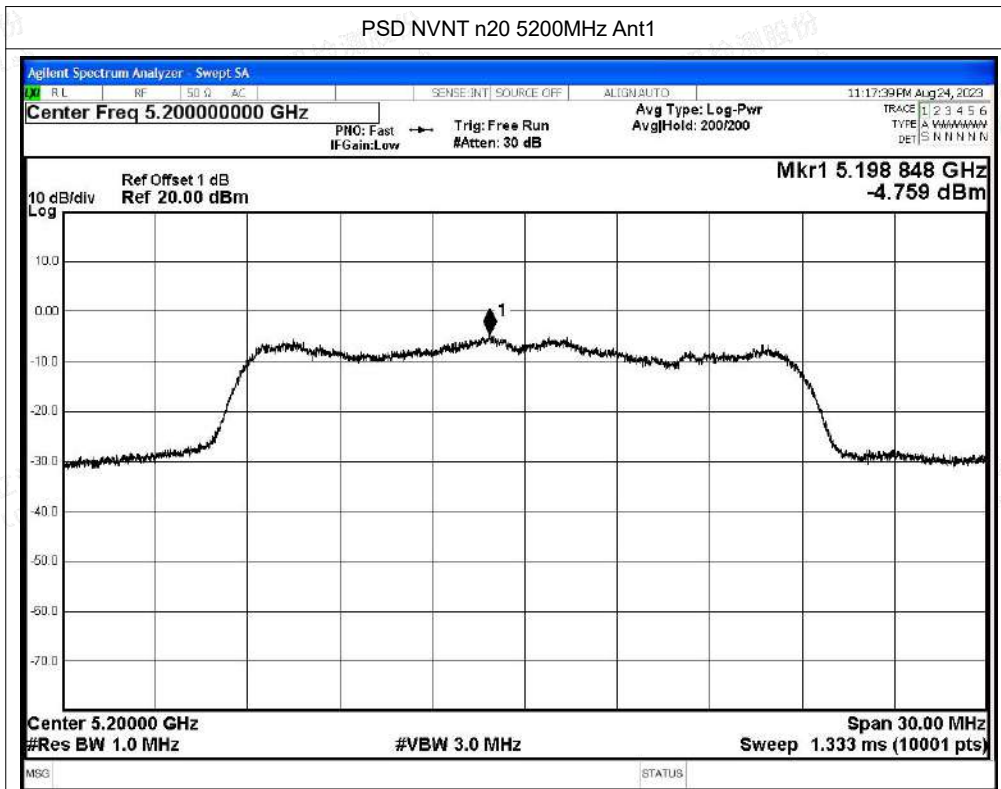


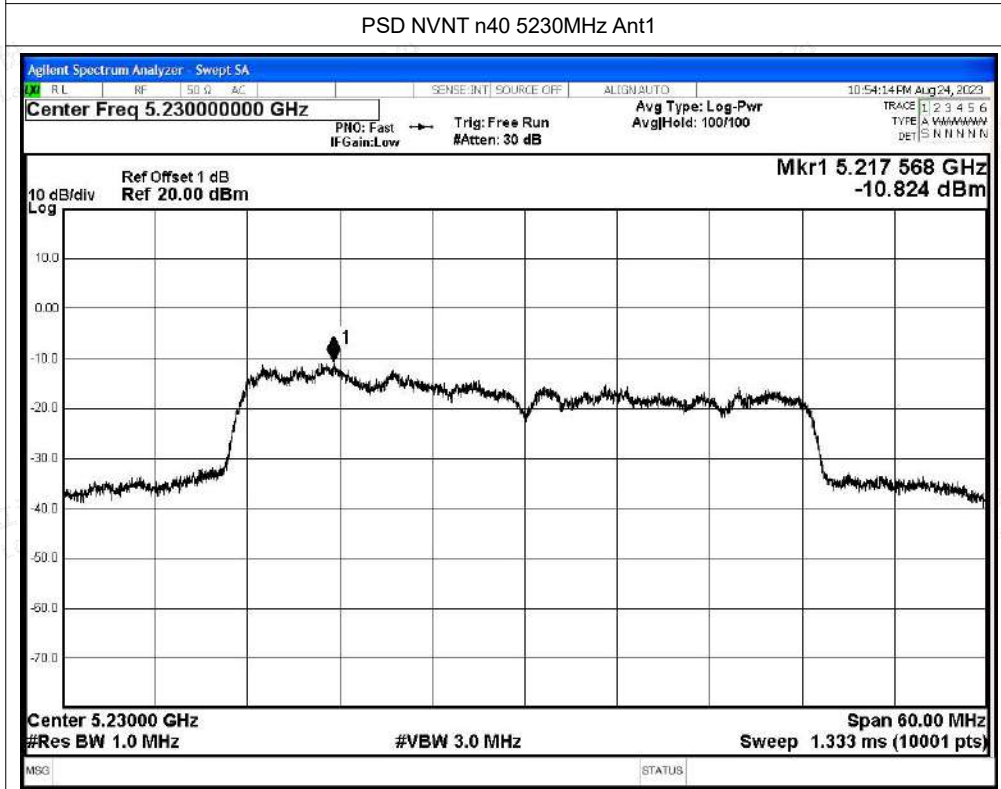
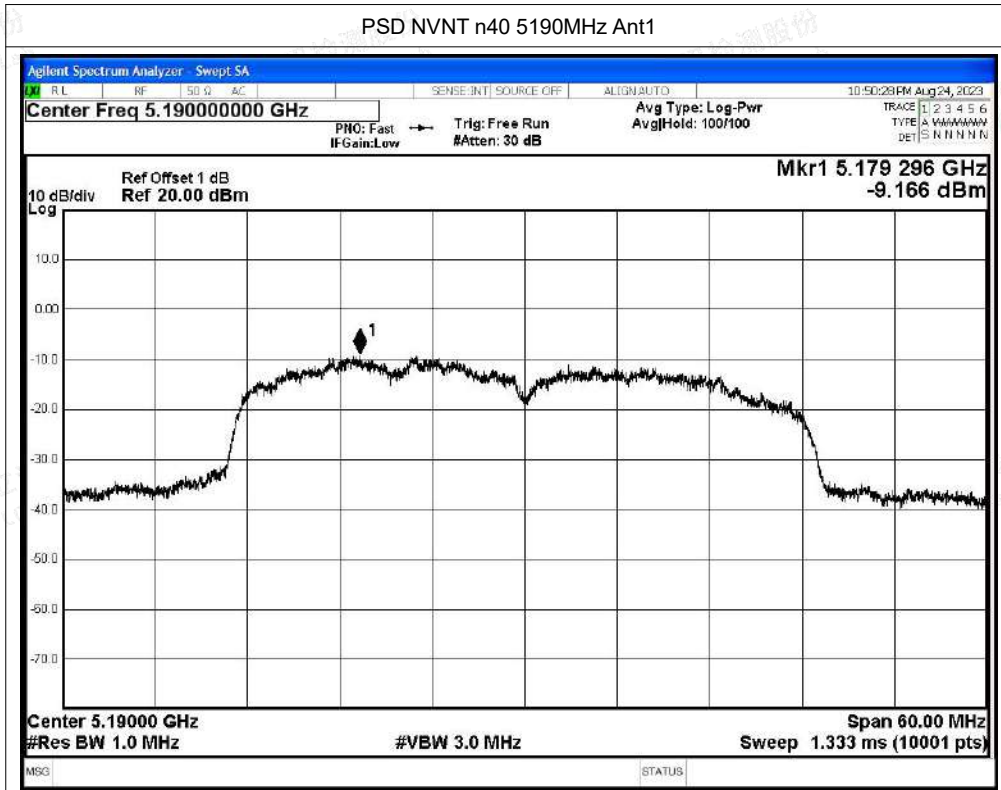
PSD NVNT a 5240MHz Ant1

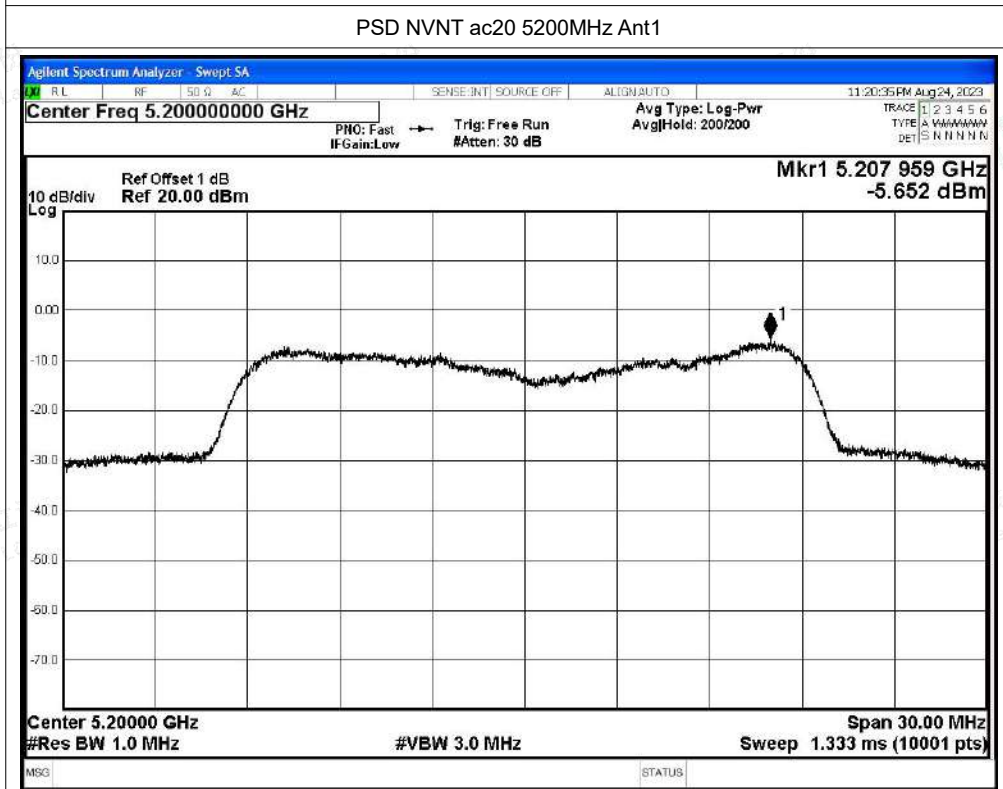
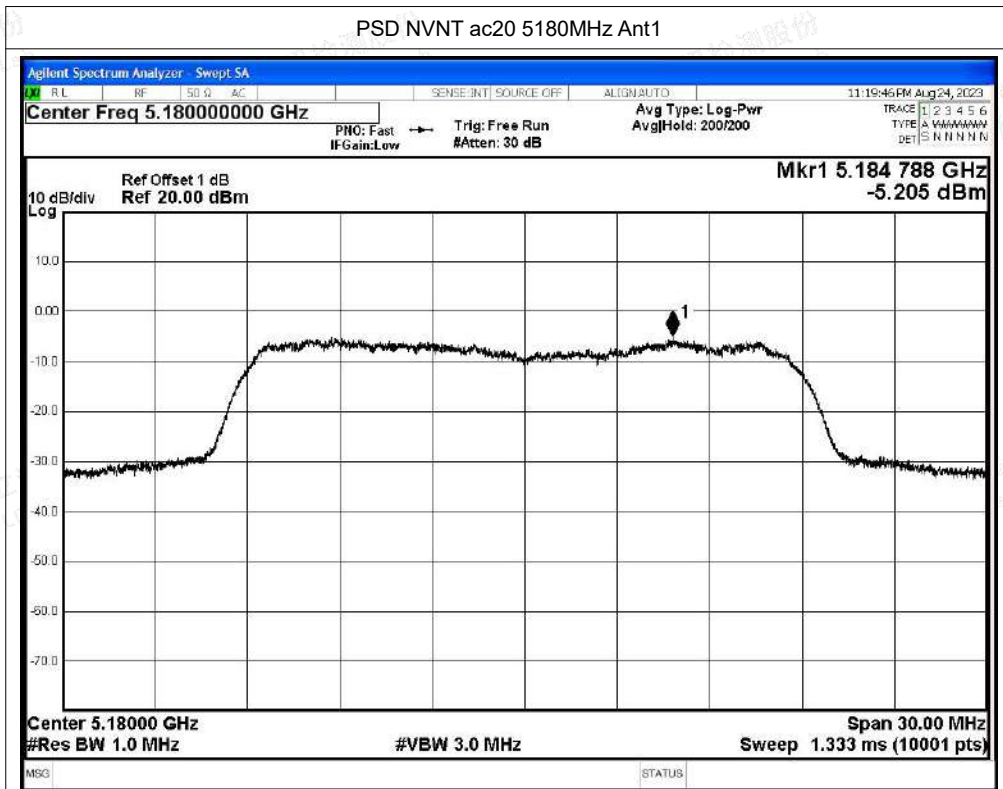


PSD NVNT n20 5180MHz Ant1





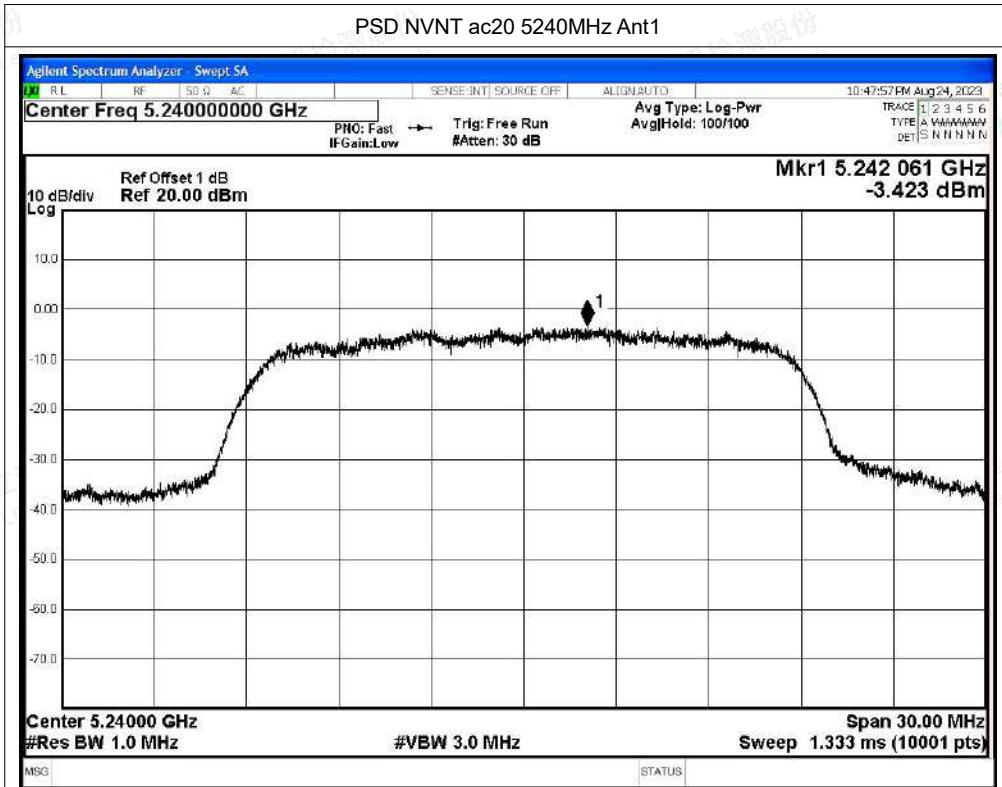




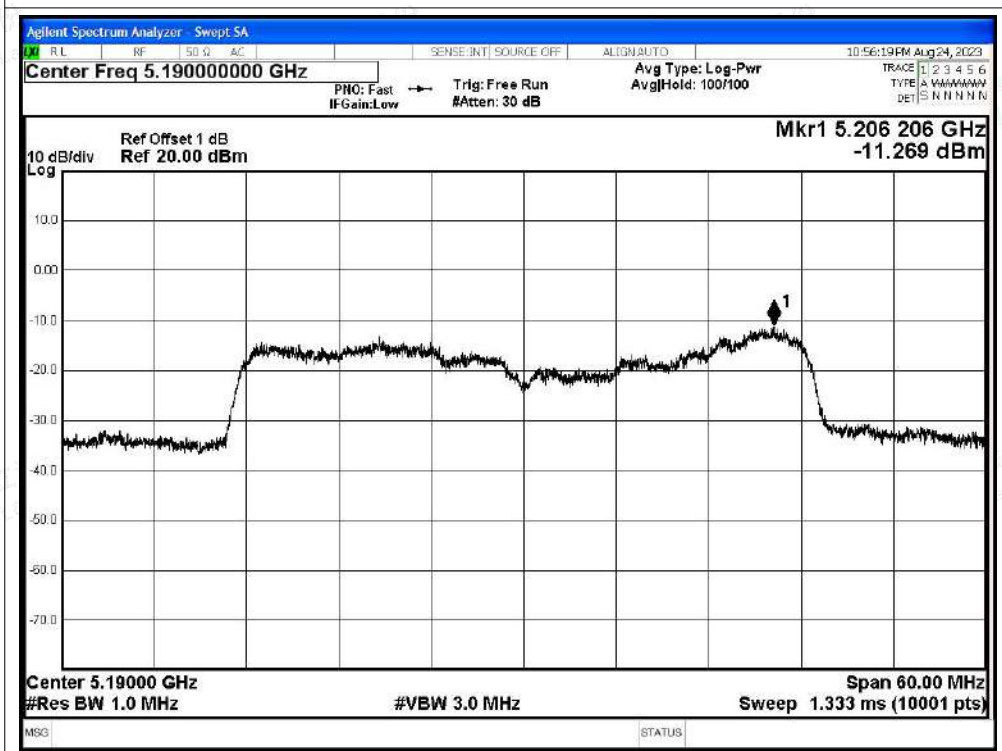


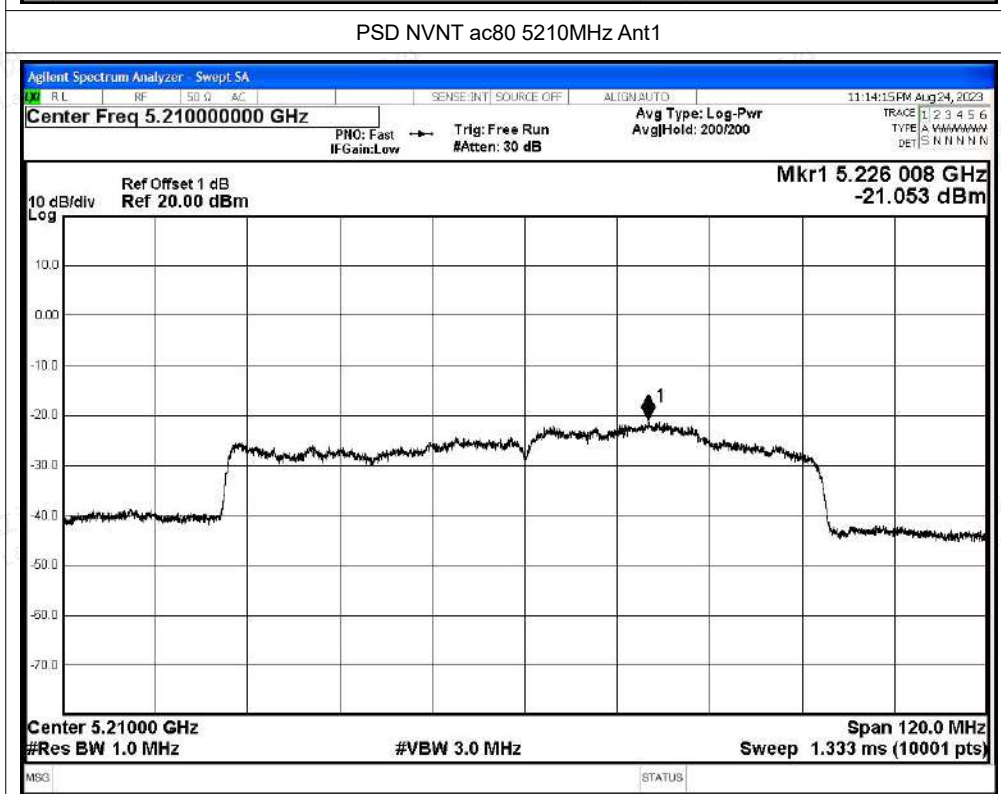
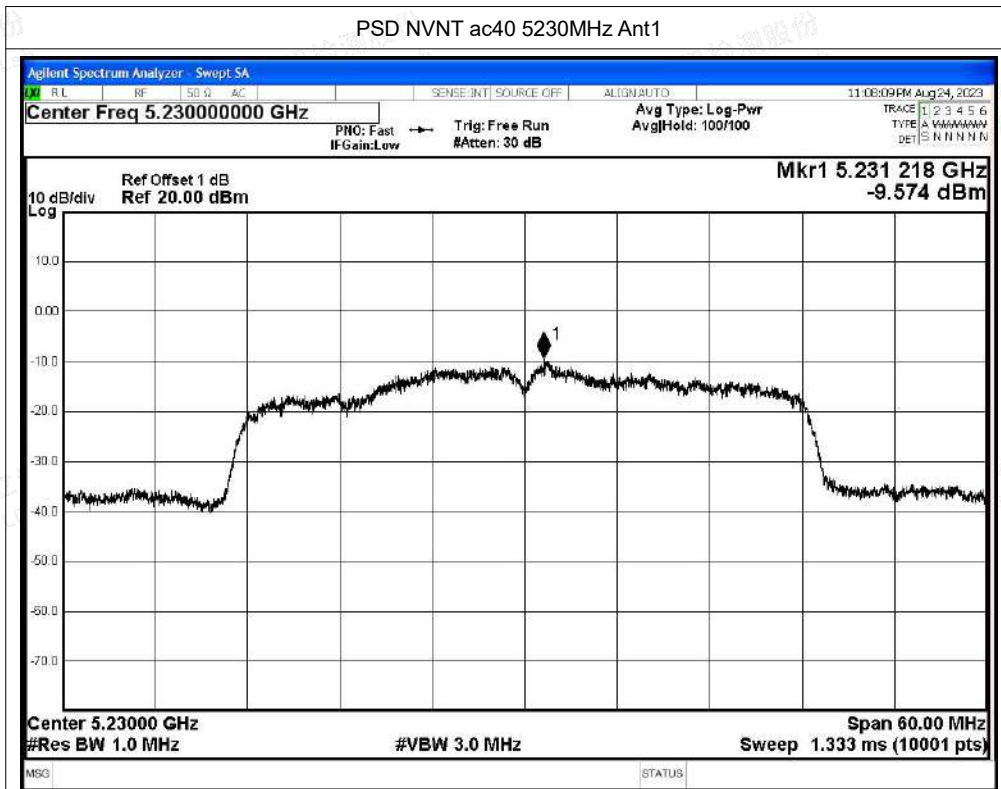


PSD NVNT ac20 5240MHz Ant1



PSD NVNT ac40 5190MHz Ant1







## D.4 Restrict Band

Condition	Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	a	5180	Ant1	4500	-51.44	3.3	47.09	Peak	68.2	Pass
NVNT	a	5180	Ant1	4500	-60.16	3.3	38.37	Average	54	Pass
NVNT	a	5180	Ant1	5148.9	-40.08	3.3	58.45	Peak	68.2	Pass
NVNT	a	5180	Ant1	5149.6	-54.27	3.3	44.26	Average	54	Pass
NVNT	a	5180	Ant1	5150	-40.39	3.3	58.14	Peak	68.2	Pass
NVNT	a	5180	Ant1	5150	-53.95	3.3	44.58	Average	54	Pass
NVNT	a	5240	Ant1	5350	-48.76	3.3	49.77	Peak	68.2	Pass
NVNT	a	5240	Ant1	5350	-58.57	3.3	39.96	Average	54	Pass
NVNT	a	5240	Ant1	5394.72	-44.08	3.3	54.45	Peak	68.2	Pass
NVNT	a	5240	Ant1	5350.32	-58.37	3.3	40.16	Average	54	Pass
NVNT	a	5240	Ant1	5460	-48.84	3.3	49.69	Peak	68.2	Pass
NVNT	a	5240	Ant1	5460	-59.06	3.3	39.47	Average	54	Pass
NVNT	n20	5180	Ant1	4500	-50.52	3.3	48.01	Peak	68.2	Pass
NVNT	n20	5180	Ant1	4500	-60.18	3.3	38.35	Average	54	Pass
NVNT	n20	5180	Ant1	5149.6	-30.12	3.3	68.41	Peak	68.2	Pass
NVNT	n20	5180	Ant1	5149.6	-48.58	3.3	49.95	Average	54	Pass
NVNT	n20	5180	Ant1	5150	-35.2	3.3	63.33	Peak	68.2	Pass
NVNT	n20	5180	Ant1	5150	-48.38	3.3	50.15	Average	54	Pass
NVNT	n20	5240	Ant1	5350	-50.25	3.3	48.28	Peak	68.2	Pass
NVNT	n20	5240	Ant1	5350	-58.54	3.3	39.99	Average	54	Pass
NVNT	n20	5240	Ant1	5403.36	-46.32	3.3	52.21	Peak	68.2	Pass
NVNT	n20	5240	Ant1	5350.8	-58.44	3.3	40.09	Average	54	Pass
NVNT	n20	5240	Ant1	5460	-48.93	3.3	49.60	Peak	68.2	Pass
NVNT	n20	5240	Ant1	5460	-59.02	3.3	39.51	Average	54	Pass
NVNT	n40	5190	Ant1	4500	-50.02	3.3	48.51	Peak	68.2	Pass
NVNT	n40	5190	Ant1	4500	-59.9	3.3	38.63	Average	54	Pass
NVNT	n40	5190	Ant1	5146.78	-29.96	3.3	68.57	Peak	68.2	Pass
NVNT	n40	5190	Ant1	5149.7	-50.39	3.3	48.14	Average	54	Pass
NVNT	n40	5190	Ant1	5150	-33.93	3.3	64.60	Peak	68.2	Pass
NVNT	n40	5190	Ant1	5150	-50.39	3.3	48.14	Average	54	Pass
NVNT	n40	5230	Ant1	5350	-48.58	3.3	49.95	Peak	68.2	Pass
NVNT	n40	5230	Ant1	5350	-58.41	3.3	40.12	Average	54	Pass
NVNT	n40	5230	Ant1	5394.12	-46.04	3.3	52.49	Peak	68.2	Pass
NVNT	n40	5230	Ant1	5353.89	-58.17	3.3	40.36	Average	54	Pass
NVNT	n40	5230	Ant1	5460	-49.28	3.3	49.25	Peak	68.2	Pass
NVNT	n40	5230	Ant1	5460	-58.88	3.3	39.65	Average	54	Pass
NVNT	ac20	5180	Ant1	4500	-50.87	3.3	47.66	Peak	68.2	Pass
NVNT	ac20	5180	Ant1	4500	-60.1	3.3	38.43	Average	54	Pass



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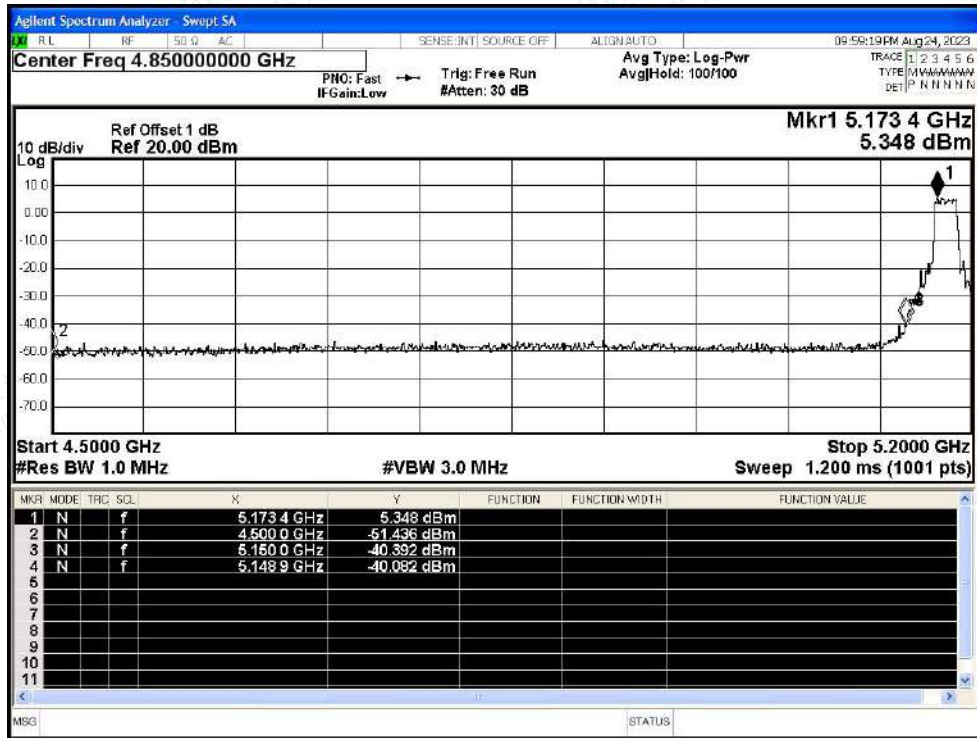
NVNT	ac20	5180	Ant1	5149.6	-32.27	3.3	66.26	Peak	68.2	Pass
NVNT	ac20	5180	Ant1	5149.6	-48.64	3.3	49.89	Average	54	Pass
NVNT	ac20	5180	Ant1	5150	-32.99	3.3	65.54	Peak	68.2	Pass
NVNT	ac20	5180	Ant1	5150	-48.41	3.3	50.12	Average	54	Pass
NVNT	ac20	5240	Ant1	5350	-47.59	3.3	50.94	Peak	68.2	Pass
NVNT	ac20	5240	Ant1	5350	-58.51	3.3	40.02	Average	54	Pass
NVNT	ac20	5240	Ant1	5423.04	-46.09	3.3	52.44	Peak	68.2	Pass
NVNT	ac20	5240	Ant1	5350.32	-58.38	3.3	40.15	Average	54	Pass
NVNT	ac20	5240	Ant1	5460	-49.04	3.3	49.49	Peak	68.2	Pass
NVNT	ac20	5240	Ant1	5460	-58.95	3.3	39.58	Average	54	Pass
NVNT	ac40	5190	Ant1	4500	-51.52	3.3	47.01	Peak	68.2	Pass
NVNT	ac40	5190	Ant1	4500	-60.03	3.3	38.50	Average	54	Pass
NVNT	ac40	5190	Ant1	5148.24	-35.78	3.3	62.75	Peak	68.2	Pass
NVNT	ac40	5190	Ant1	5149.7	-50.32	3.3	48.21	Average	54	Pass
NVNT	ac40	5190	Ant1	5150	-35.92	3.3	62.61	Peak	68.2	Pass
NVNT	ac40	5190	Ant1	5150	-50.32	3.3	48.21	Average	54	Pass
NVNT	ac40	5230	Ant1	5350	-48.98	3.3	49.55	Peak	68.2	Pass
NVNT	ac40	5230	Ant1	5350	-58.24	3.3	40.29	Average	54	Pass
NVNT	ac40	5230	Ant1	5355.78	-45.68	3.3	52.85	Peak	68.2	Pass
NVNT	ac40	5230	Ant1	5350.65	-58.17	3.3	40.36	Average	54	Pass
NVNT	ac40	5230	Ant1	5460	-48.33	3.3	50.20	Peak	68.2	Pass
NVNT	ac40	5230	Ant1	5460	-58.87	3.3	39.66	Average	54	Pass
NVNT	ac80	5210	Ant1	5350	-49.01	3.3	49.52	Peak	68.2	Pass
NVNT	ac80	5210	Ant1	5350	-57.98	3.3	40.55	Average	54	Pass
NVNT	ac80	5210	Ant1	5452.08	-46.61	3.3	51.92	Peak	68.2	Pass
NVNT	ac80	5210	Ant1	5360.34	-57.84	3.3	40.69	Average	54	Pass
NVNT	ac80	5210	Ant1	5460	-49.24	3.3	49.29	Peak	68.2	Pass
NVNT	ac80	5210	Ant1	5460	-58.43	3.3	40.10	Average	54	Pass
NVNT	ac80	5210	Ant1	4500	-50.11	3.3	48.42	Peak	68.2	Pass
NVNT	ac80	5210	Ant1	4500	-59.63	3.3	38.90	Average	54	Pass
NVNT	ac80	5210	Ant1	5145.43	-35.56	3.3	62.97	Peak	68.2	Pass
NVNT	ac80	5210	Ant1	5149.38	-50.25	3.3	48.28	Average	54	Pass
NVNT	ac80	5210	Ant1	5150	-36.51	3.3	62.02	Peak	68.2	Pass
NVNT	ac80	5210	Ant1	5150	-50.14	3.3	48.39	Average	54	Pass



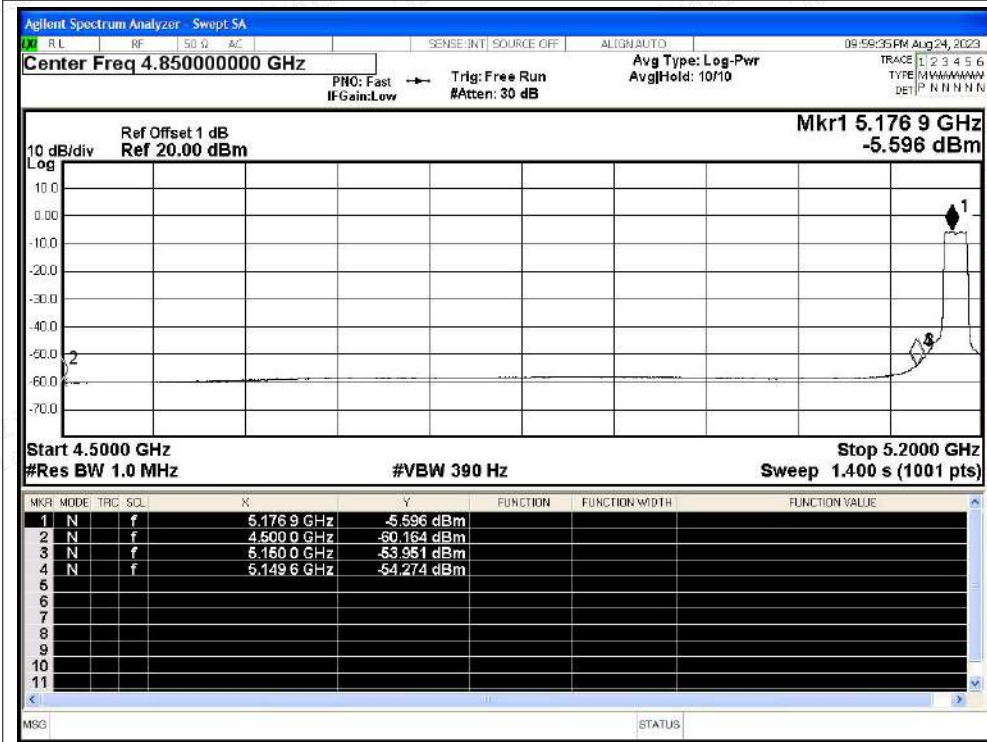


Test Graphs

Restrict Band NVNT a 5180MHz Ant1 Peak

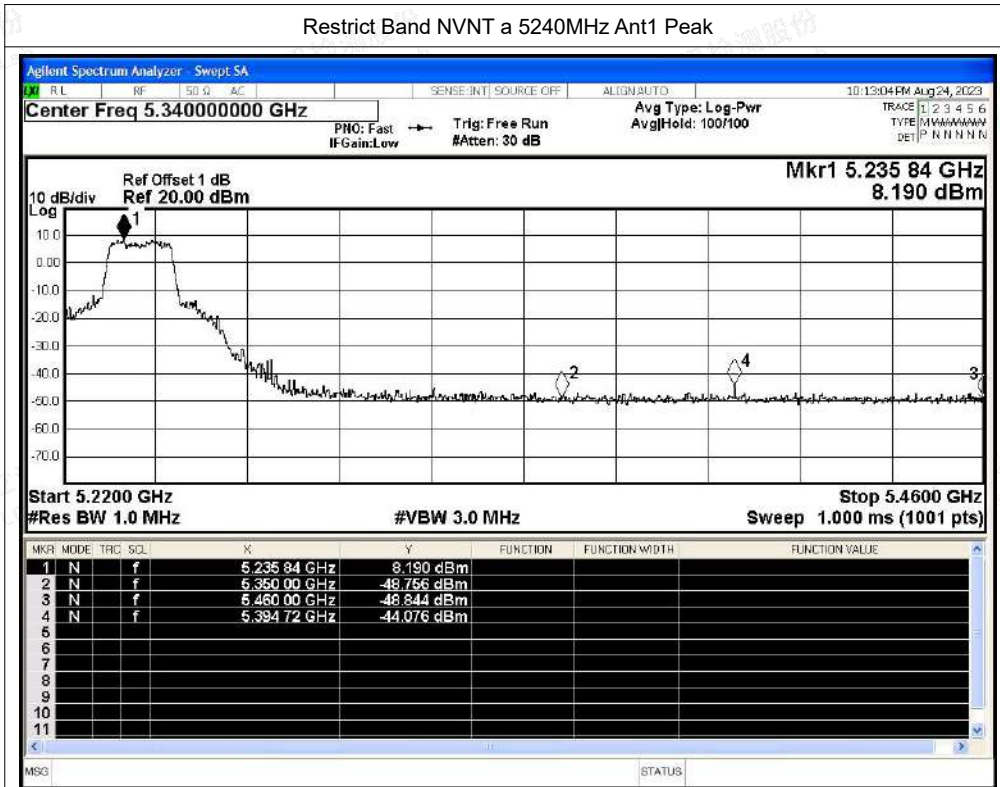


Restrict Band NVNT a 5180MHz Ant1 Average

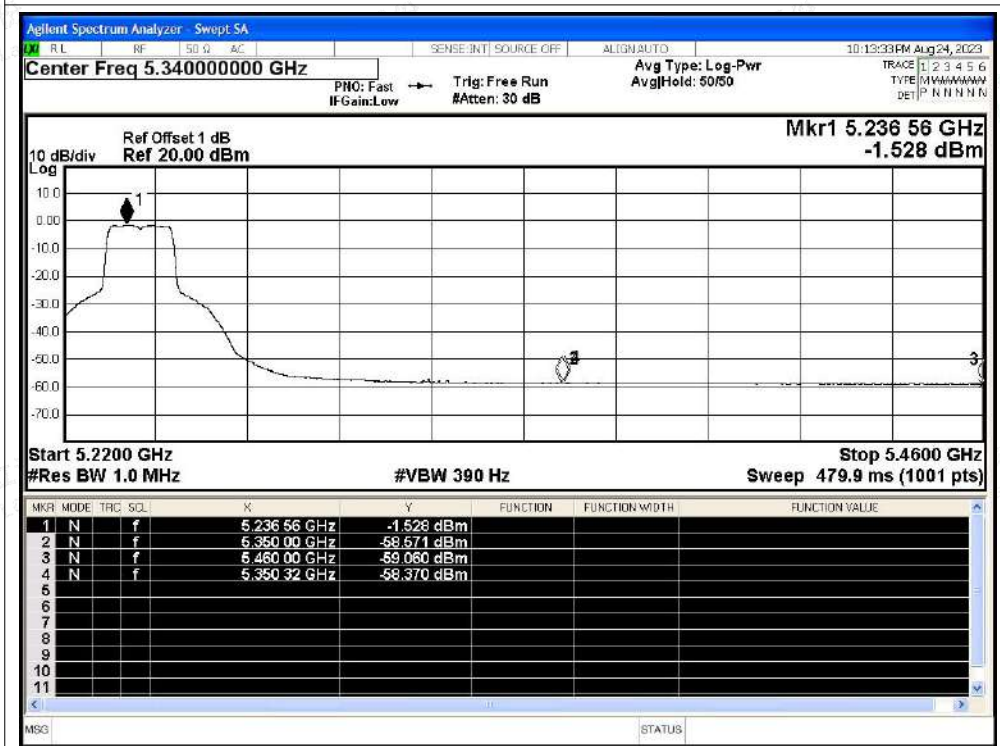




Restrict Band NVNT a 5240MHz Ant1 Peak

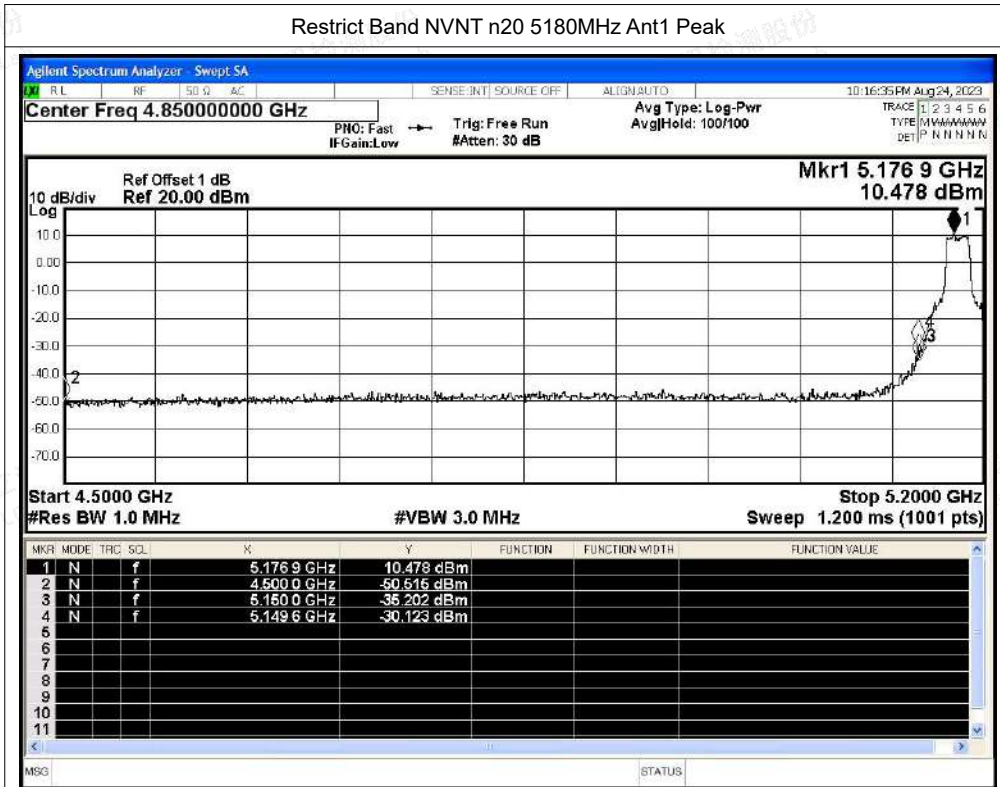


Restrict Band NVNT a 5240MHz Ant1 Average

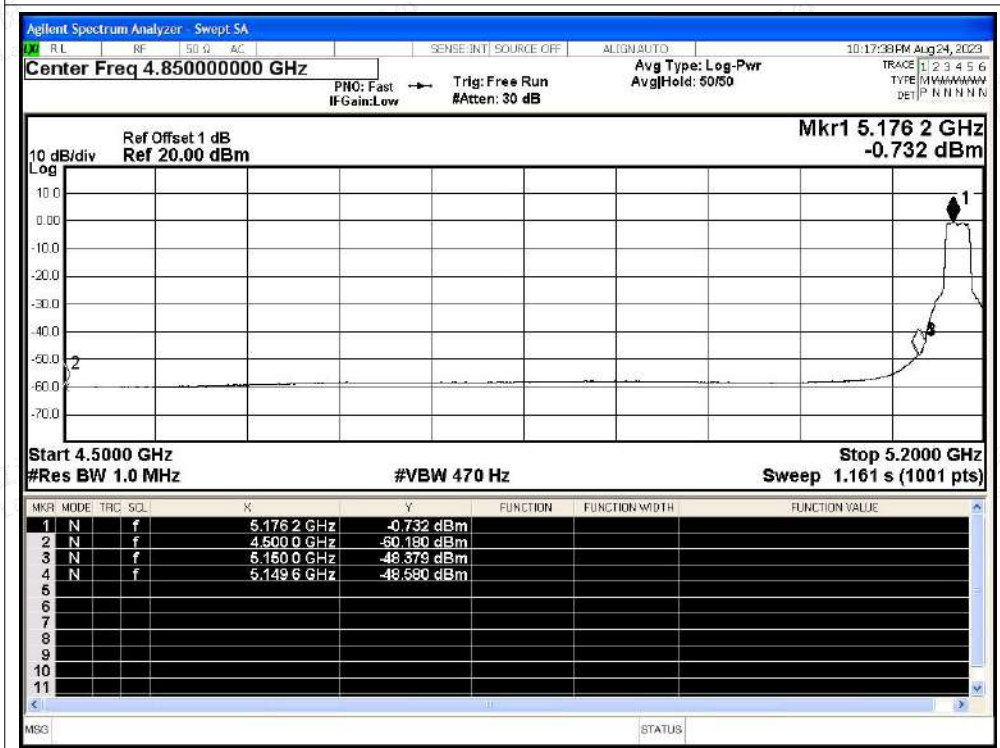




Restrict Band NVNT n20 5180MHz Ant1 Peak

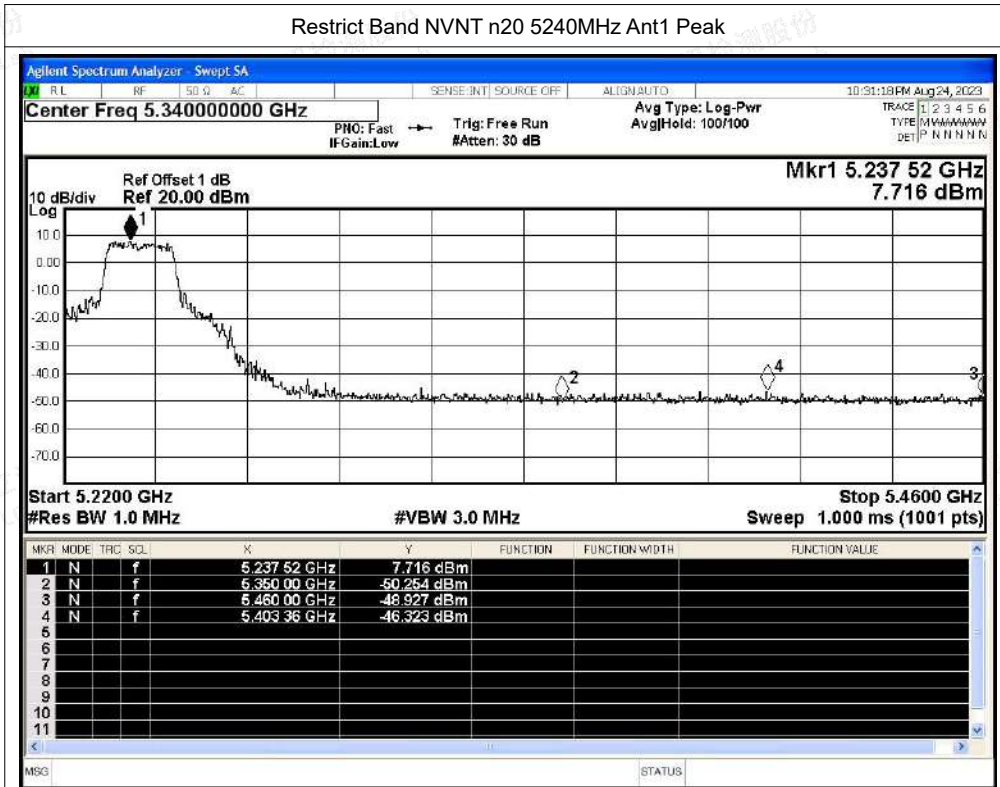


Restrict Band NVNT n20 5180MHz Ant1 Average

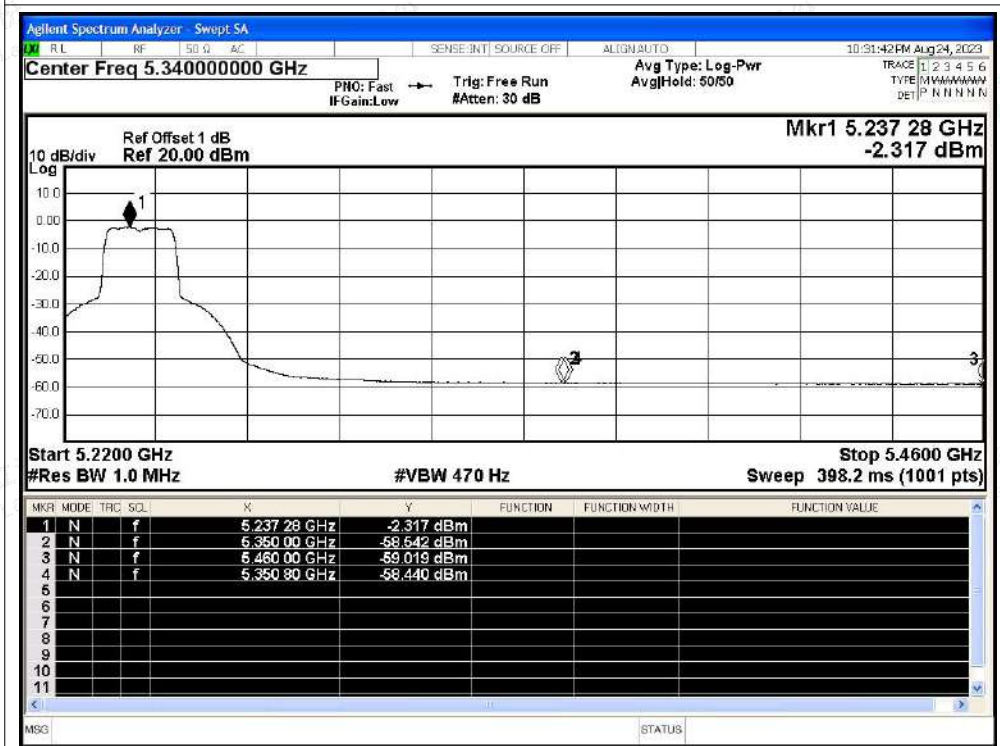




Restrict Band NVNT n20 5240MHz Ant1 Peak



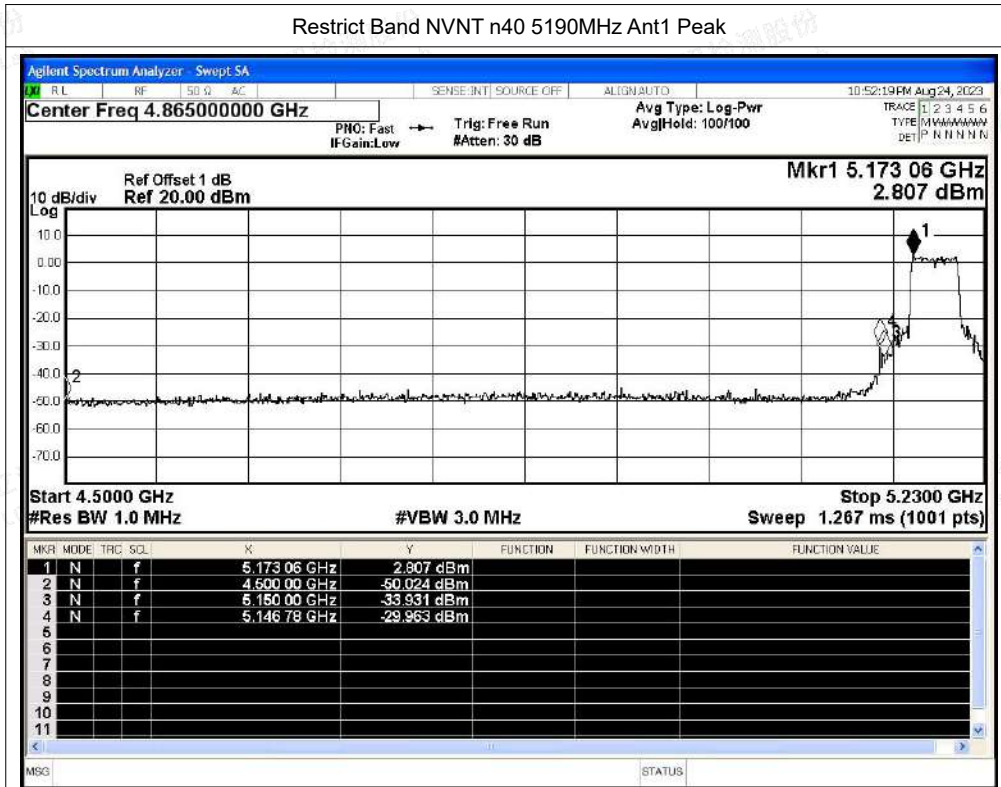
Restrict Band NVNT n20 5240MHz Ant1 Average



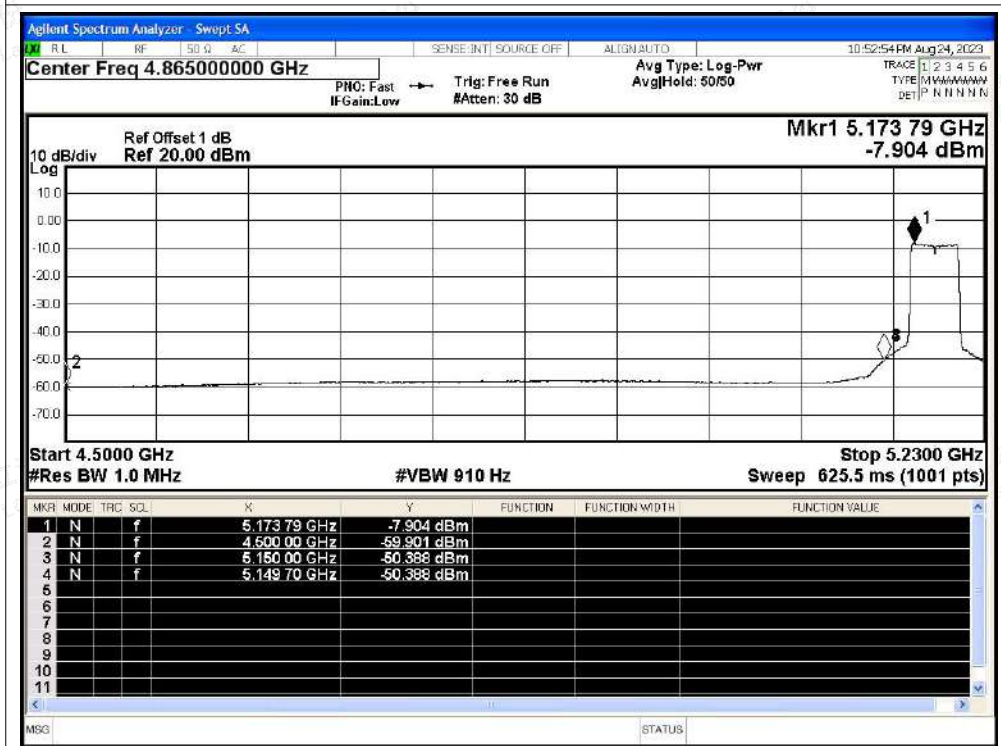




Restrict Band NVNT n40 5190MHz Ant1 Peak

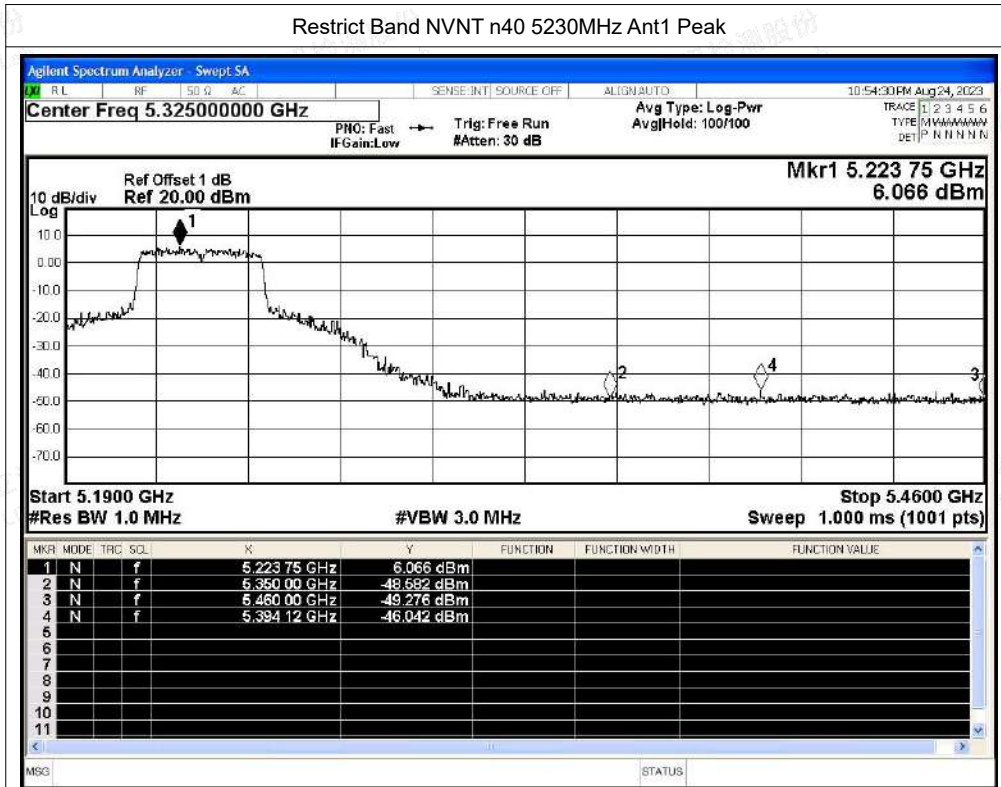


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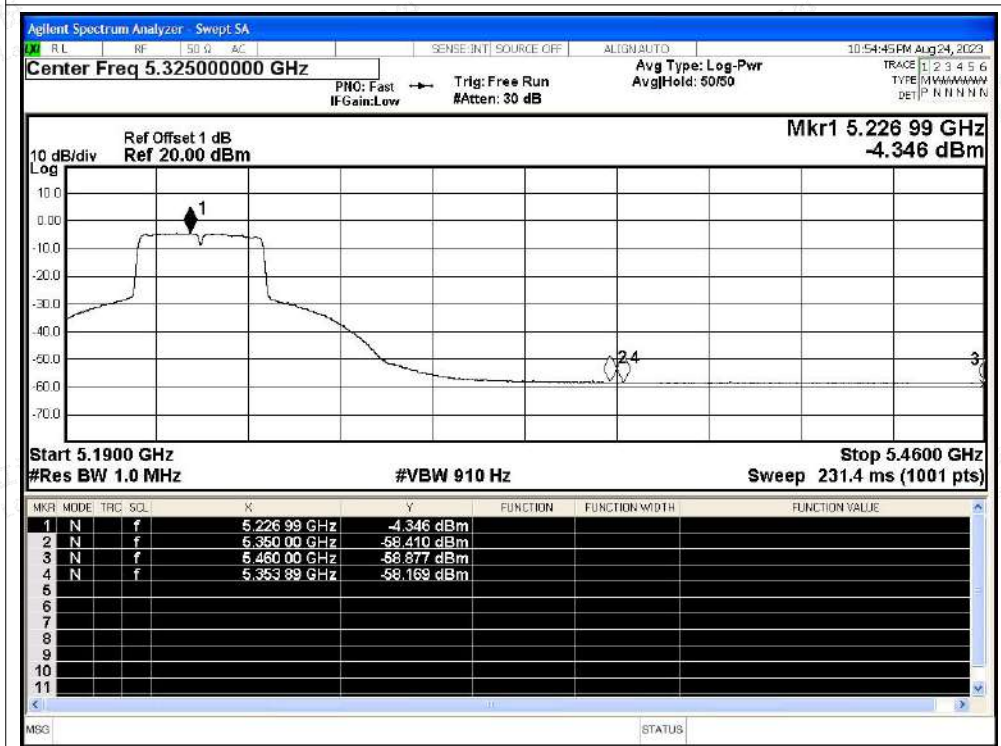




Restrict Band NVNT n40 5230MHz Ant1 Peak

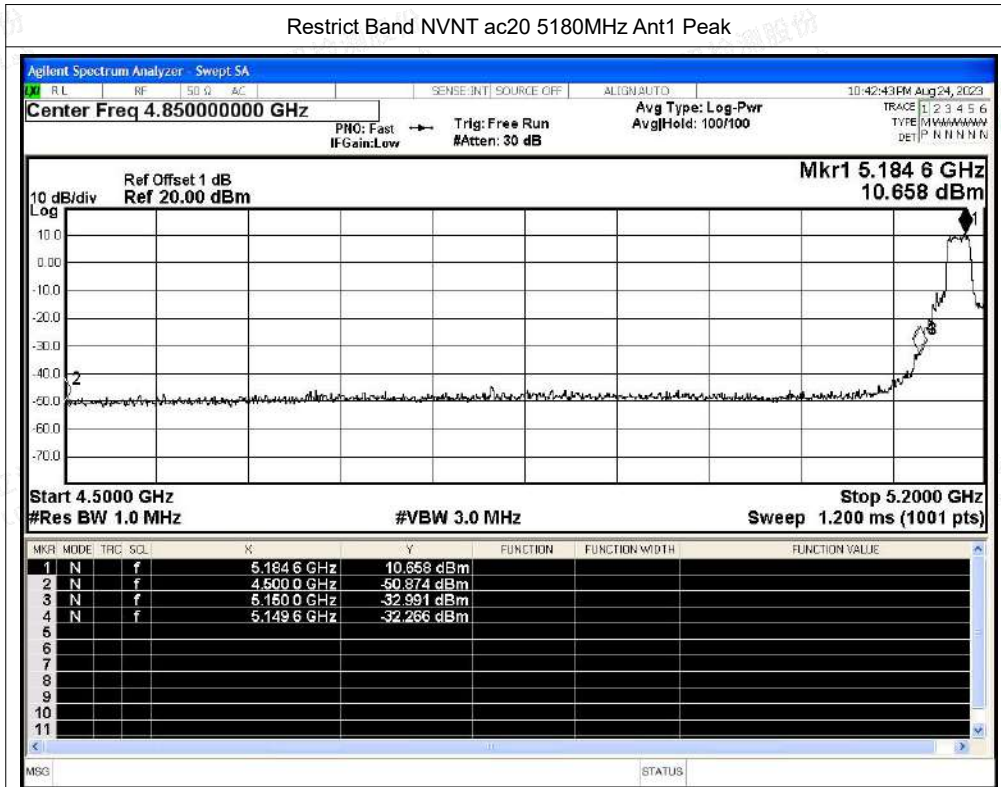


Restrict Band NVNT n40 5230MHz Ant1 Average

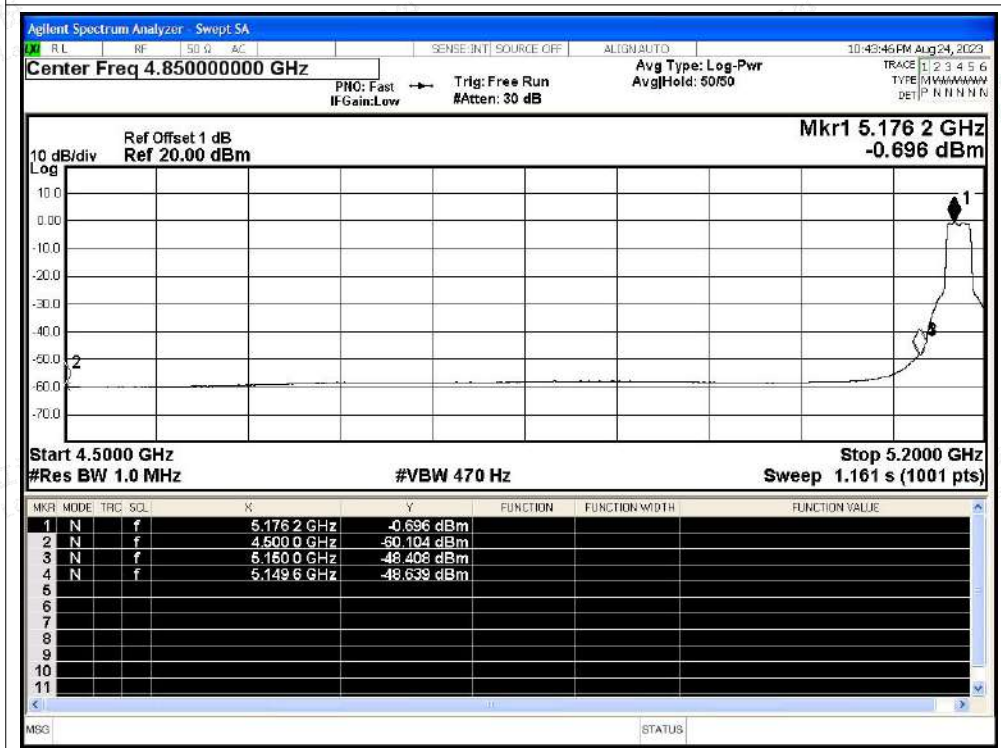




Restrict Band NVNT ac20 5180MHz Ant1 Peak

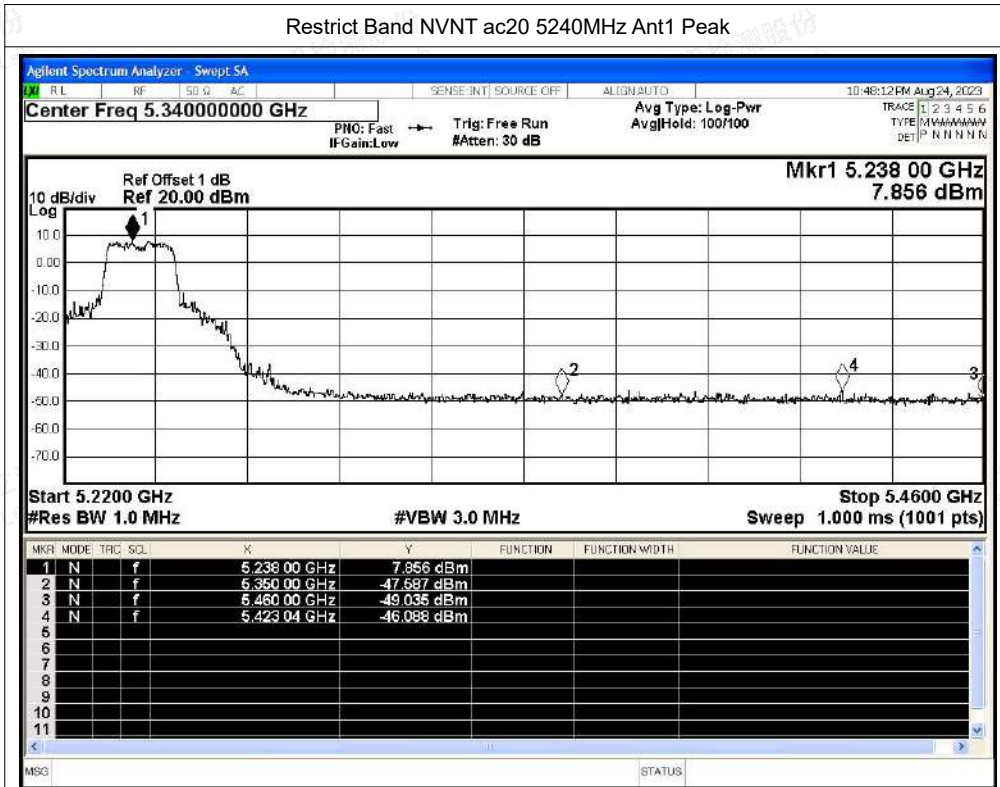


Restrict Band NVNT ac20 5180MHz Ant1 Average

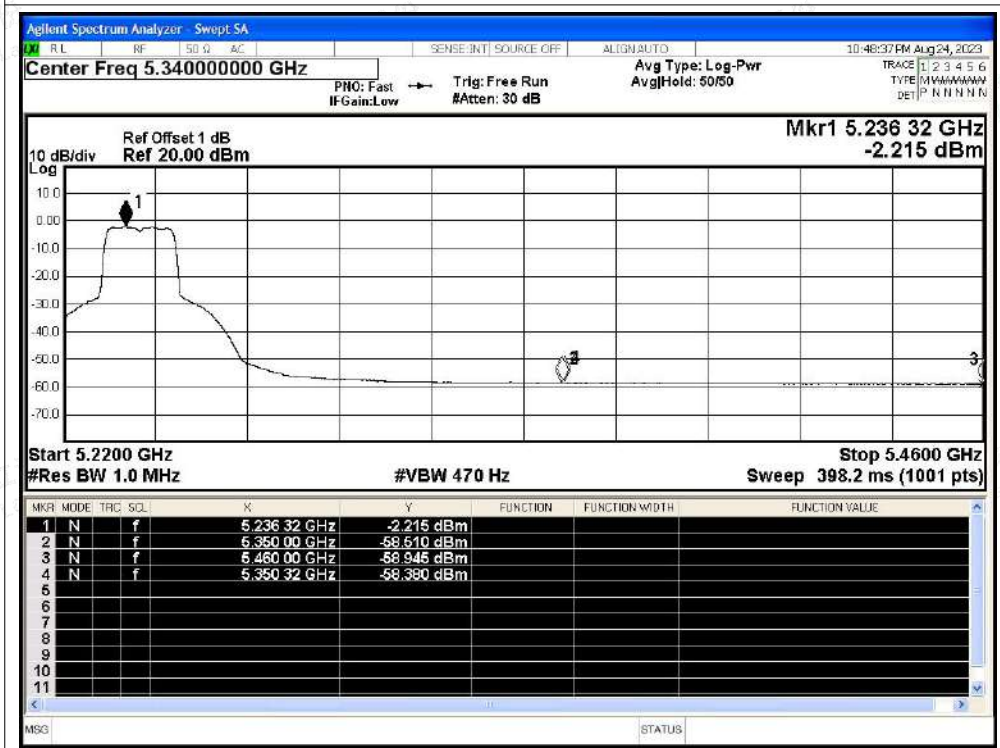




Restrict Band NVNT ac20 5240MHz Ant1 Peak

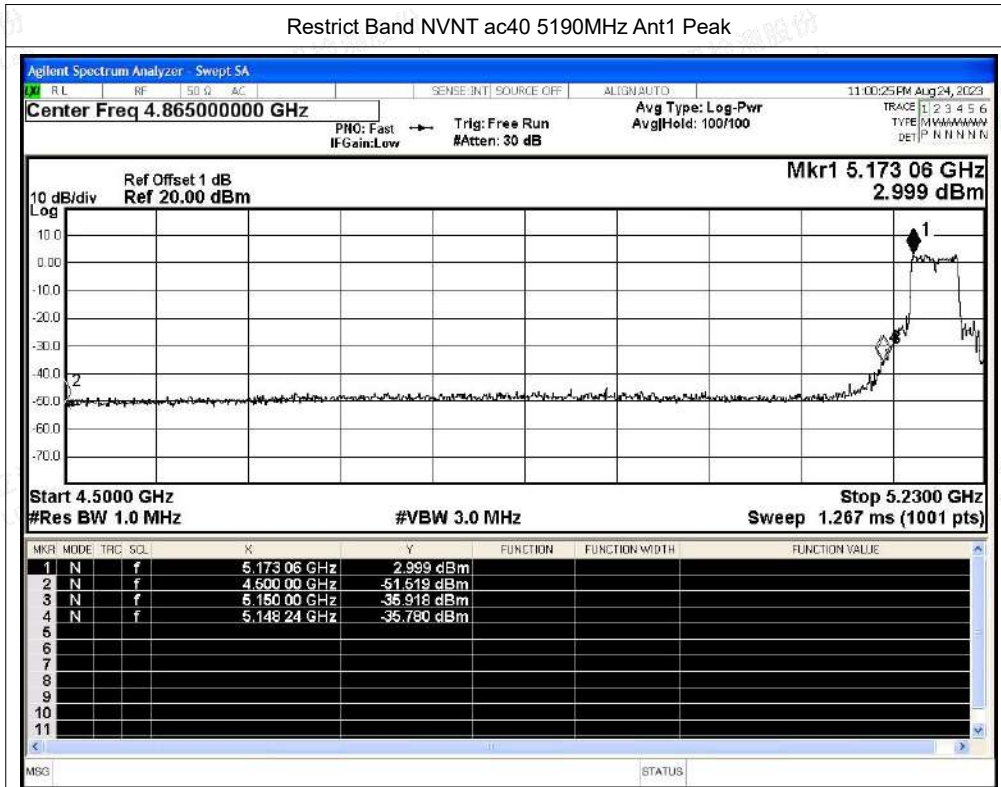


Restrict Band NVNT ac20 5240MHz Ant1 Average

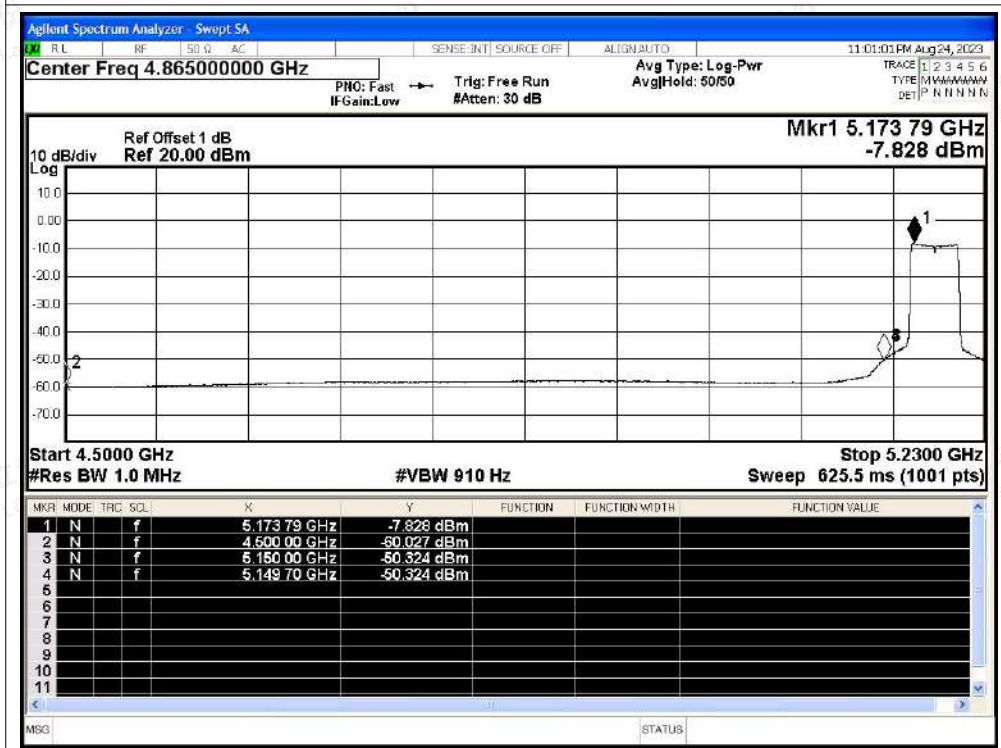




Restrict Band NVNT ac40 5190MHz Ant1 Peak

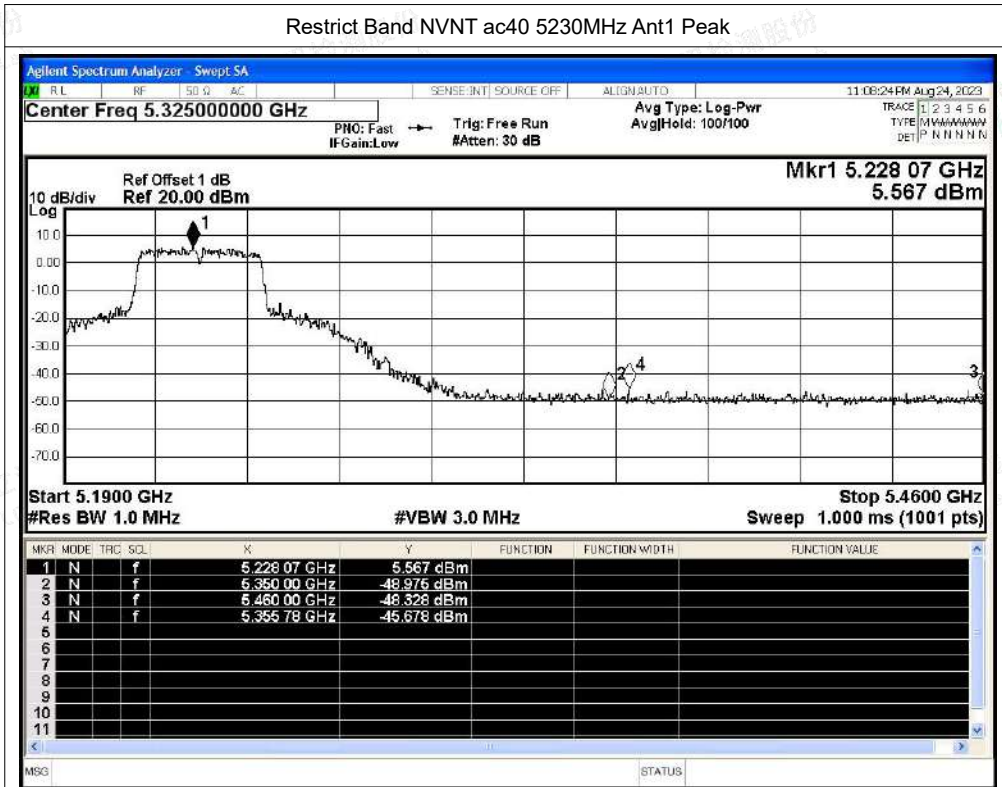


Restrict Band NVNT ac40 5190MHz Ant1 Average

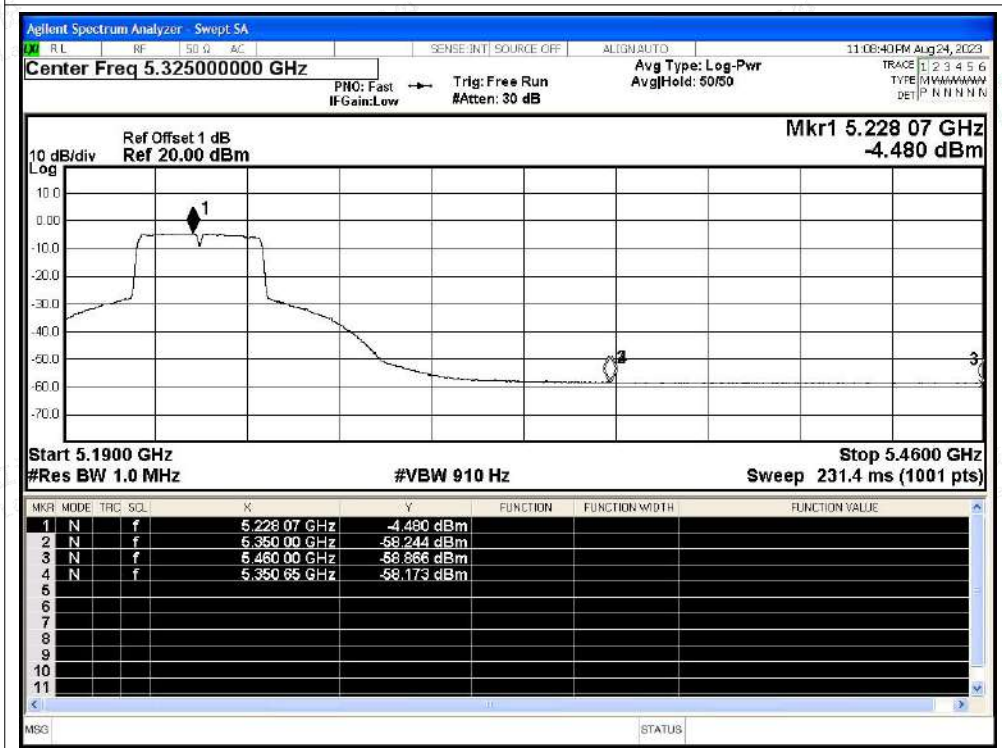




Restrict Band NVNT ac40 5230MHz Ant1 Peak

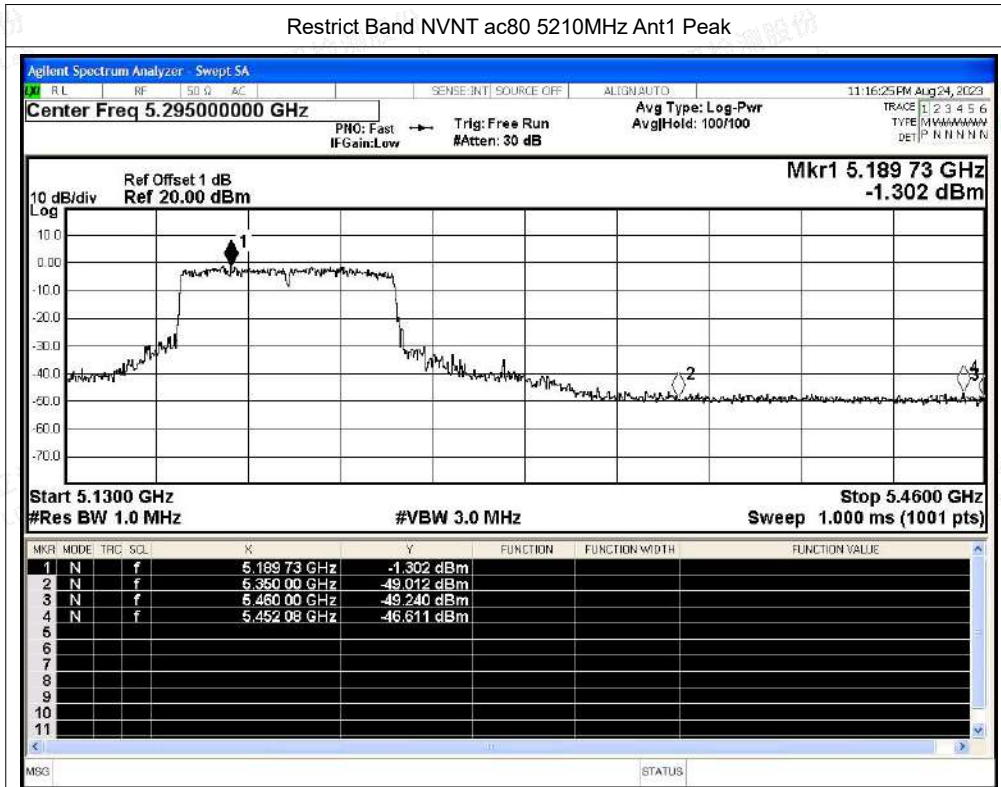


Restrict Band NVNT ac40 5230MHz Ant1 Average

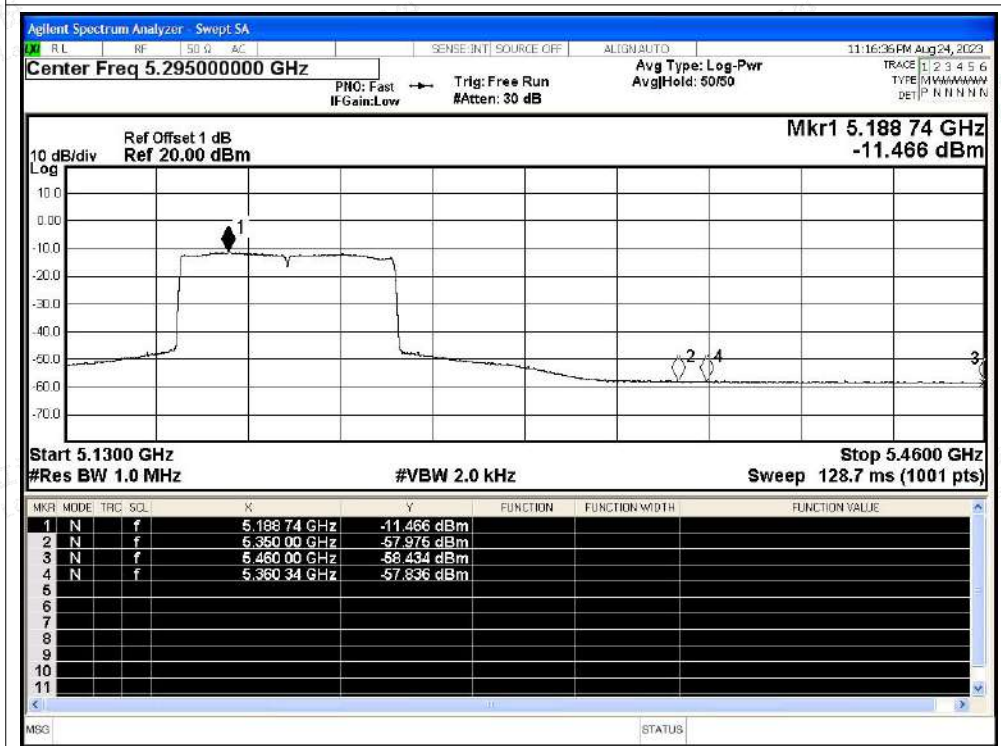




Restrict Band NVNT ac80 5210MHz Ant1 Peak

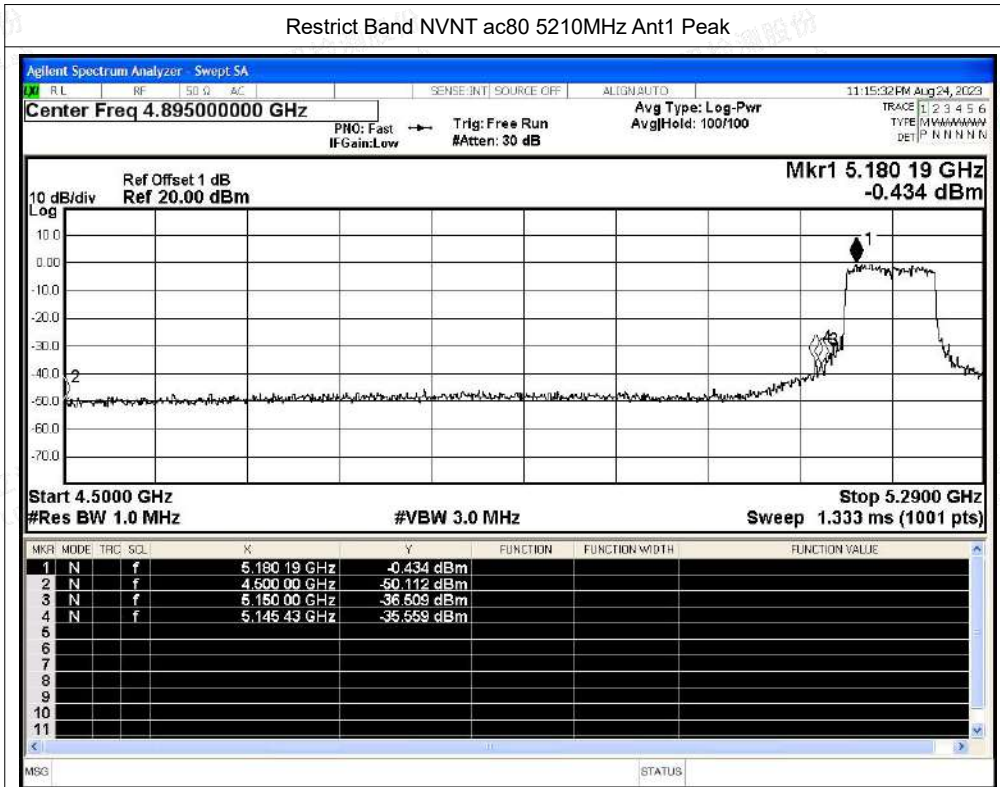


Restrict Band NVNT ac80 5210MHz Ant1 Average

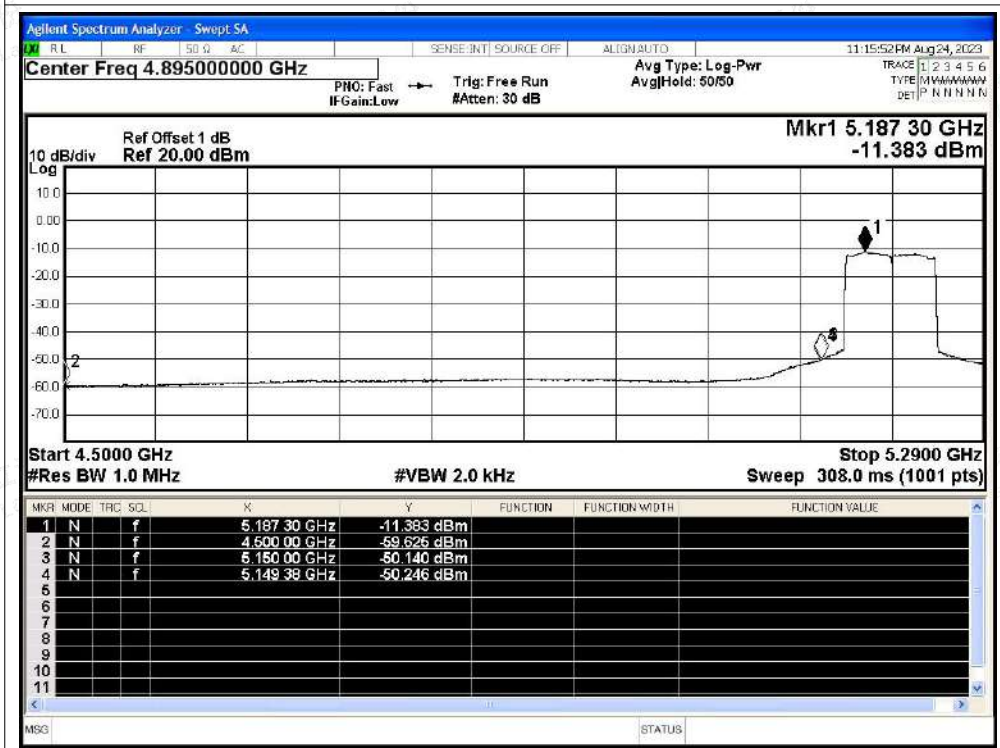




Restrict Band NVNT ac80 5210MHz Ant1 Peak



Restrict Band NVNT ac80 5210MHz Ant1 Average







### D.5 Frequency Stability

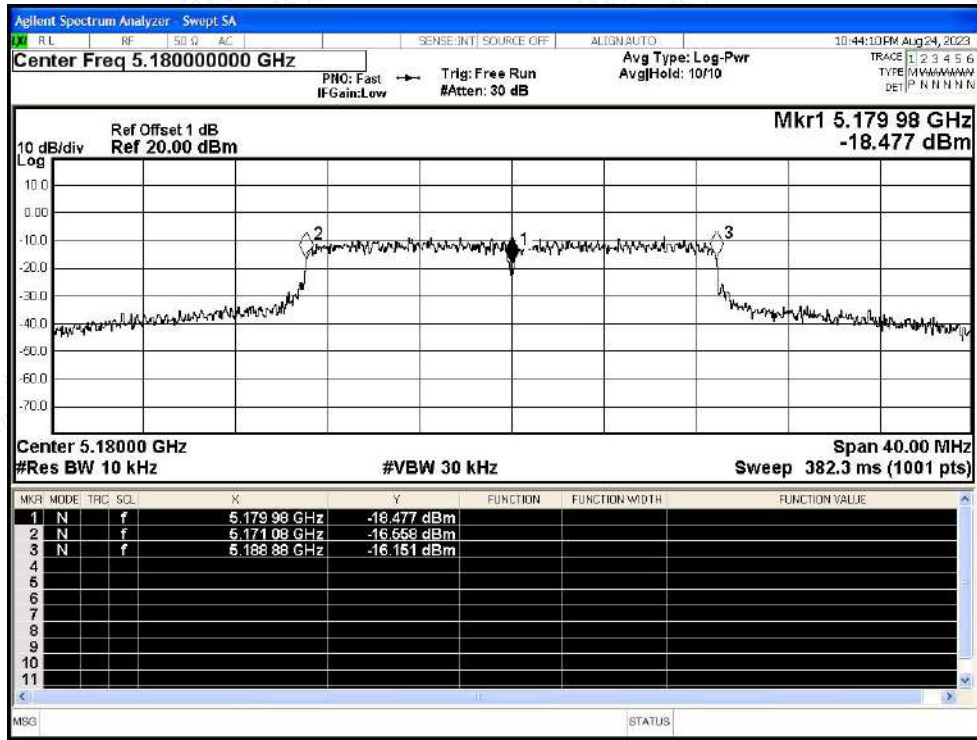
Condition	Mode	Frequency (MHz)	Antenna	Measured Frequency (MHz)	Frequency Error (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
NVNT	ac20	5180	Ant1	5179.98	-20000	-3.86	25	Pass
NVNT	ac20	5200	Ant1	5199.98	-20000	-3.85	25	Pass
NVNT	ac20	5240	Ant1	5240.02	20000	3.82	25	Pass
NVNT	ac40	5190	Ant1	5190	0	0	25	Pass
NVNT	ac40	5230	Ant1	5230	0	0	25	Pass
NVNT	ac80	5210	Ant1	5210	0	0	25	Pass



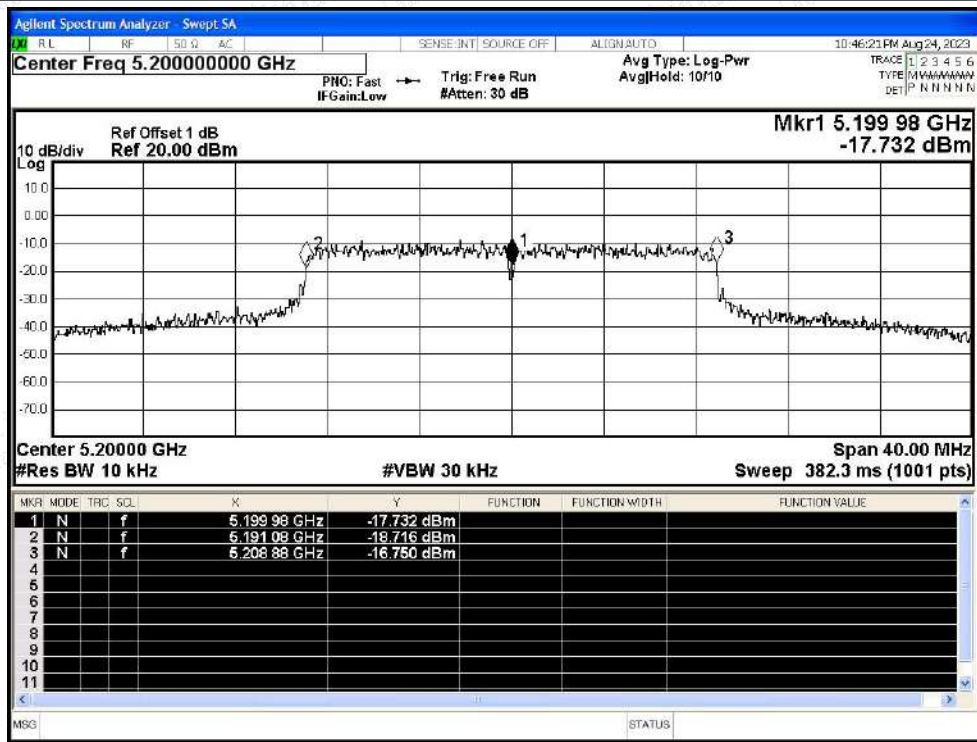


Test Graphs

Freq. Stability NVNT ac20 5180MHz Ant1



Freq. Stability NVNT ac20 5200MHz Ant1



Shenzhen LCS Compliance Testing Laboratory Ltd.

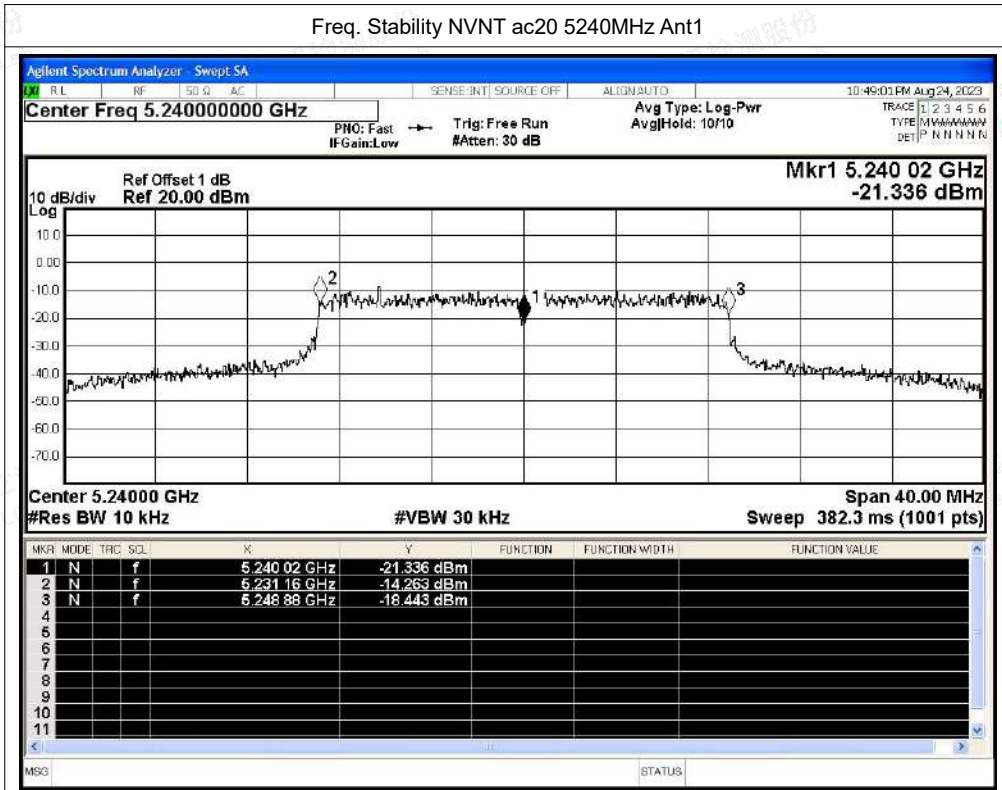
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

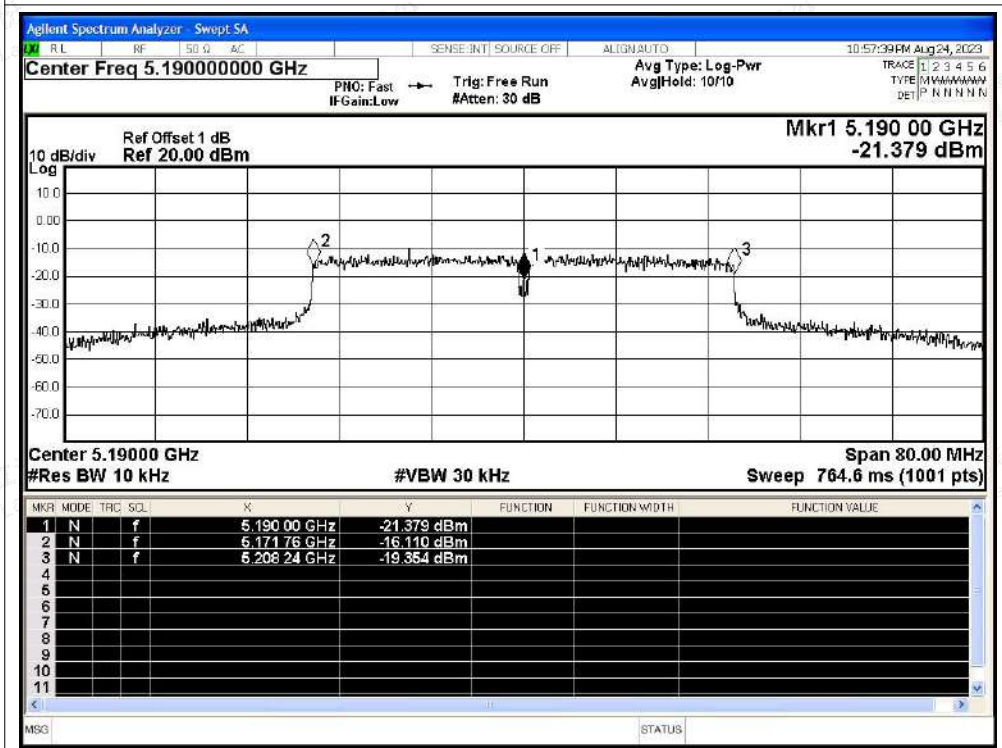
Scan code to check authenticity



Freq. Stability NVNT ac20 5240MHz Ant1

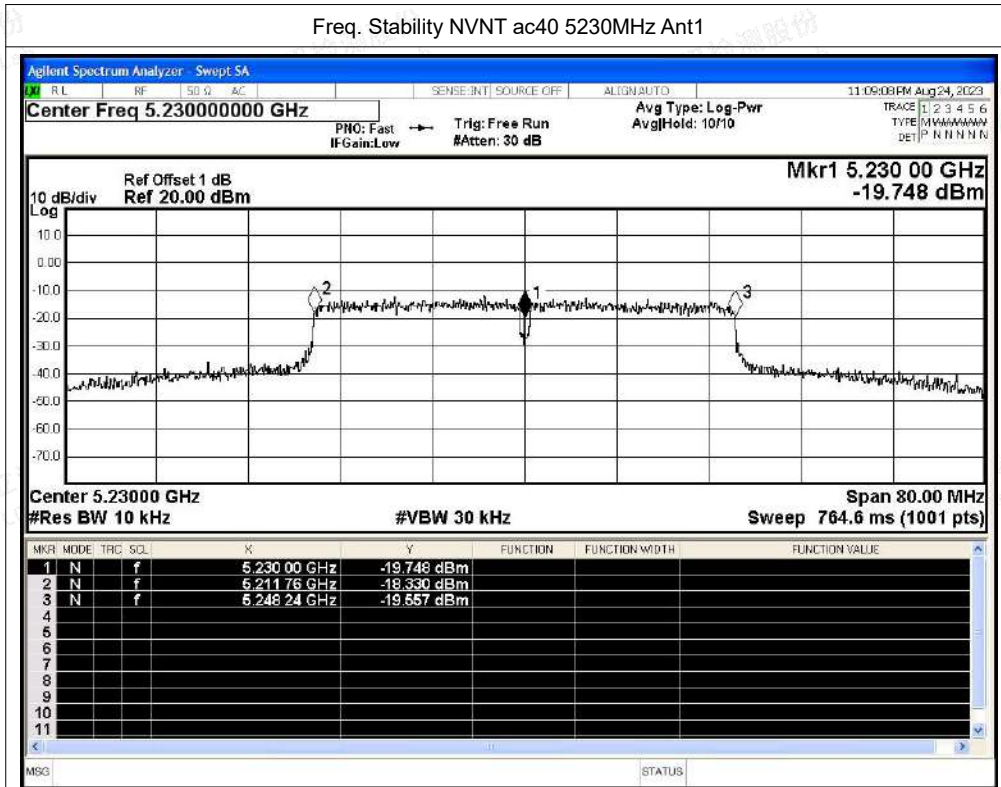


Freq. Stability NVNT ac40 5190MHz Ant1

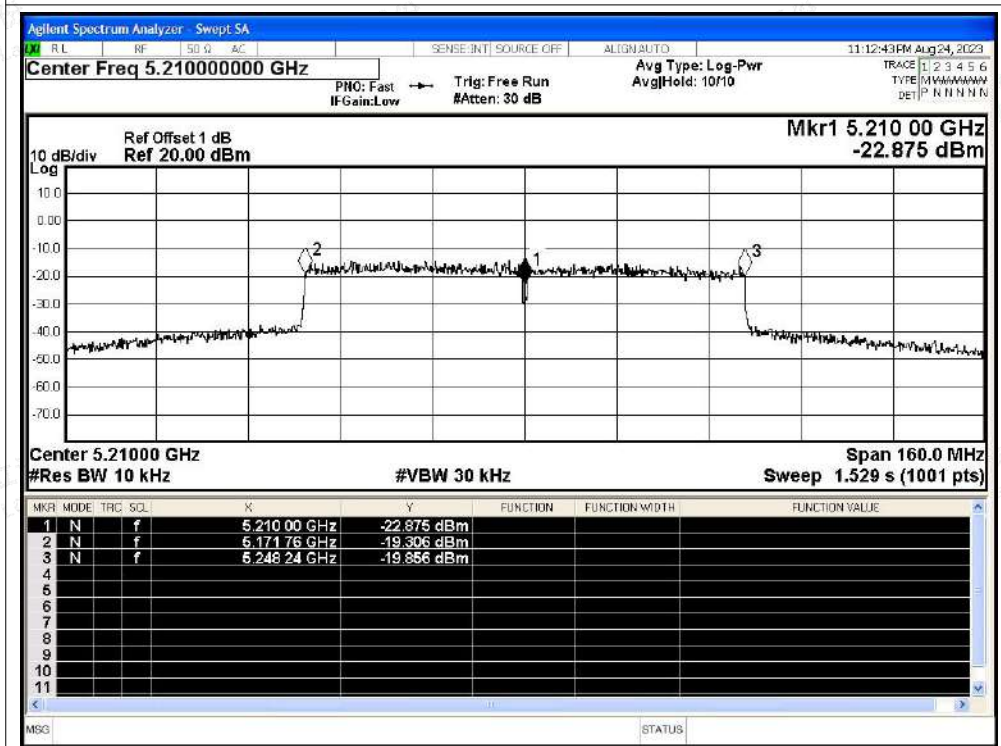




Freq. Stability NVNT ac40 5230MHz Ant1



Freq. Stability NVNT ac80 5210MHz Ant1





### D.6 Duty Cycle

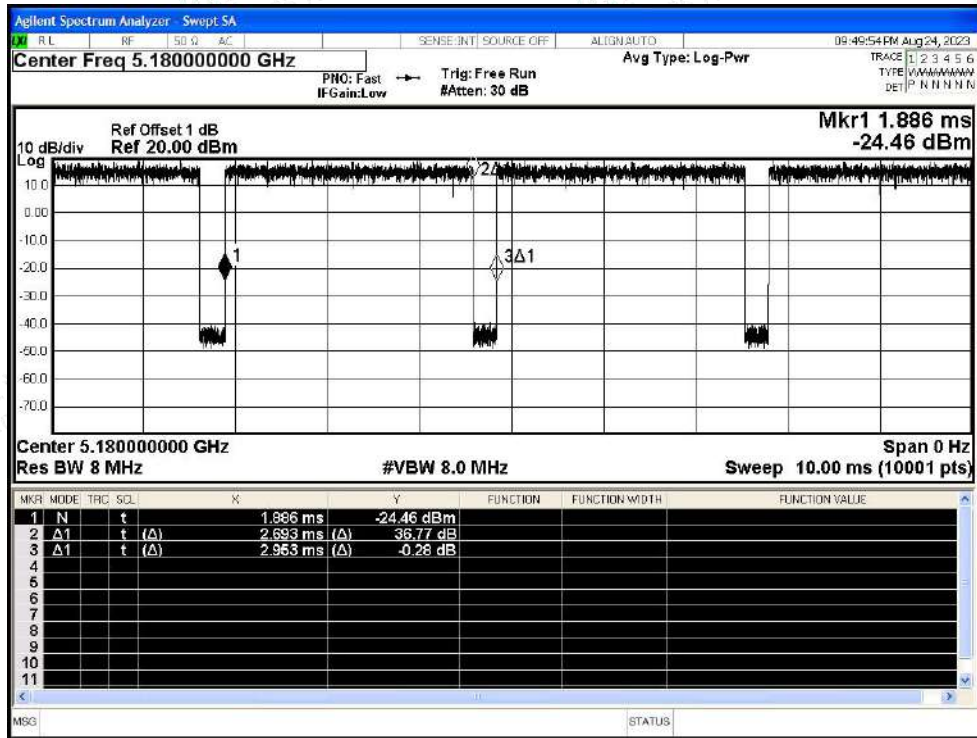
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5180	Ant1	91.2	0.4	0.37
NVNT	a	5200	Ant1	98.72	0	0.01
NVNT	a	5240	Ant1	91.16	0.4	0.37
NVNT	n20	5180	Ant1	90	0.46	0.44
NVNT	n20	5200	Ant1	89.64	0.47	0.44
NVNT	n20	5240	Ant1	88.41	0.53	0.44
NVNT	n40	5190	Ant1	80.36	0.95	0.9
NVNT	n40	5230	Ant1	79.84	0.98	0.9
NVNT	ac20	5180	Ant1	86.59	0.63	0.44
NVNT	ac20	5200	Ant1	89.67	0.47	0.44
NVNT	ac20	5240	Ant1	89.67	0.47	0.44
NVNT	ac40	5190	Ant1	81.67	0.88	0.9
NVNT	ac40	5230	Ant1	80.61	0.94	0.9
NVNT	ac80	5210	Ant1	65.97	1.81	1.86



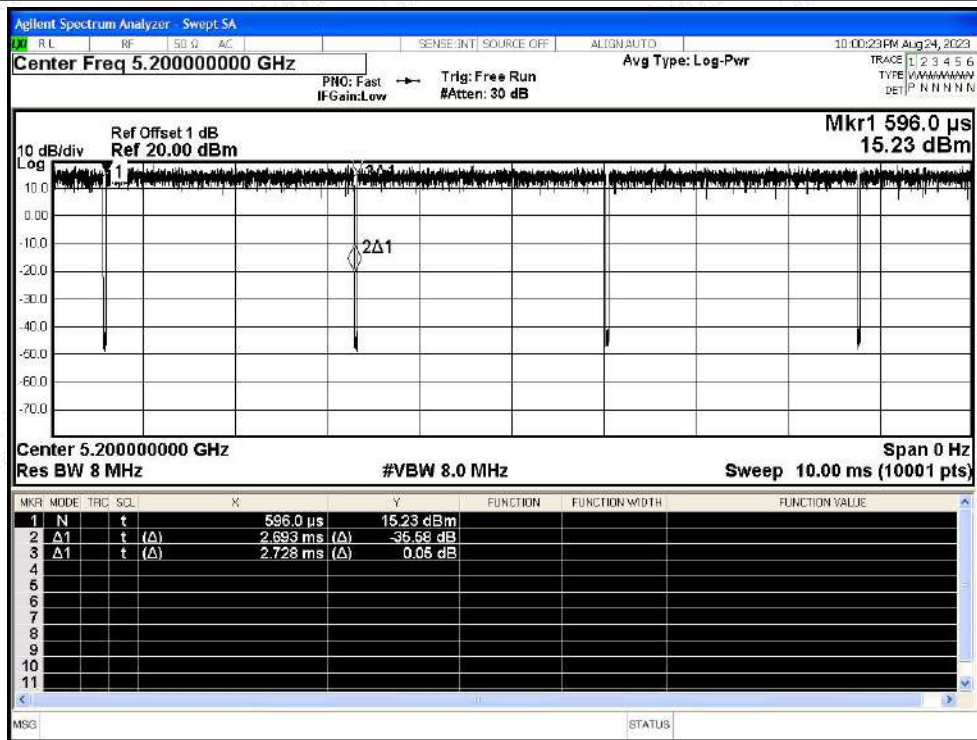


Test Graphs

Duty Cycle NVNT a 5180MHz Ant1

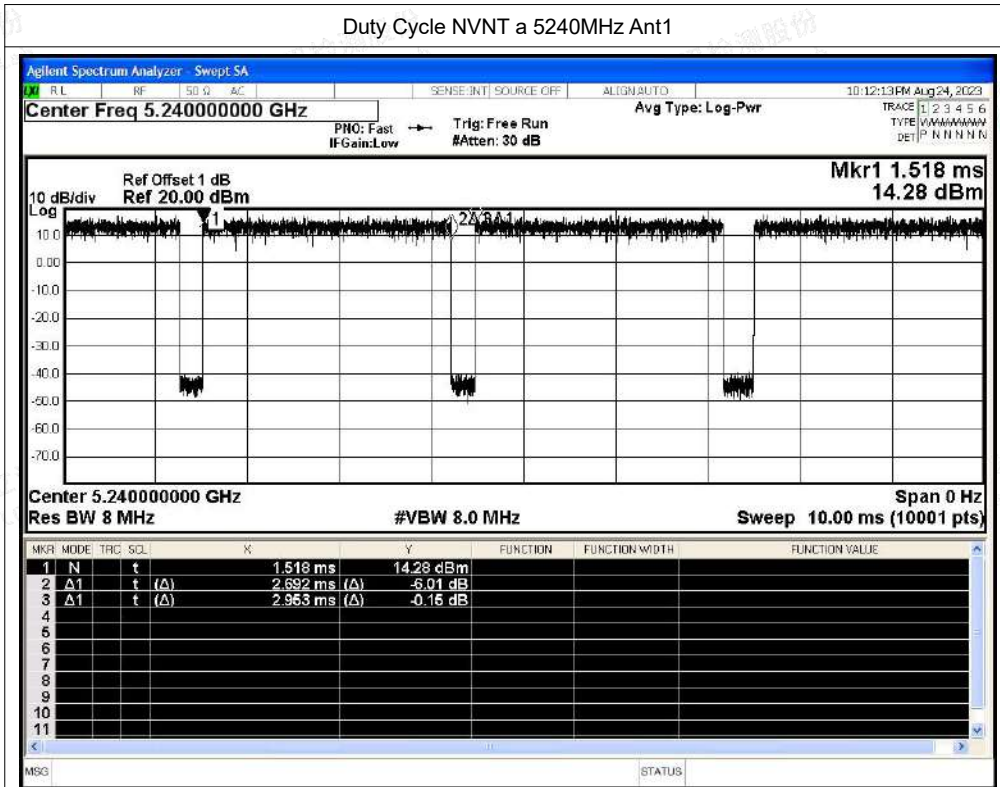


Duty Cycle NVNT a 5200MHz Ant1

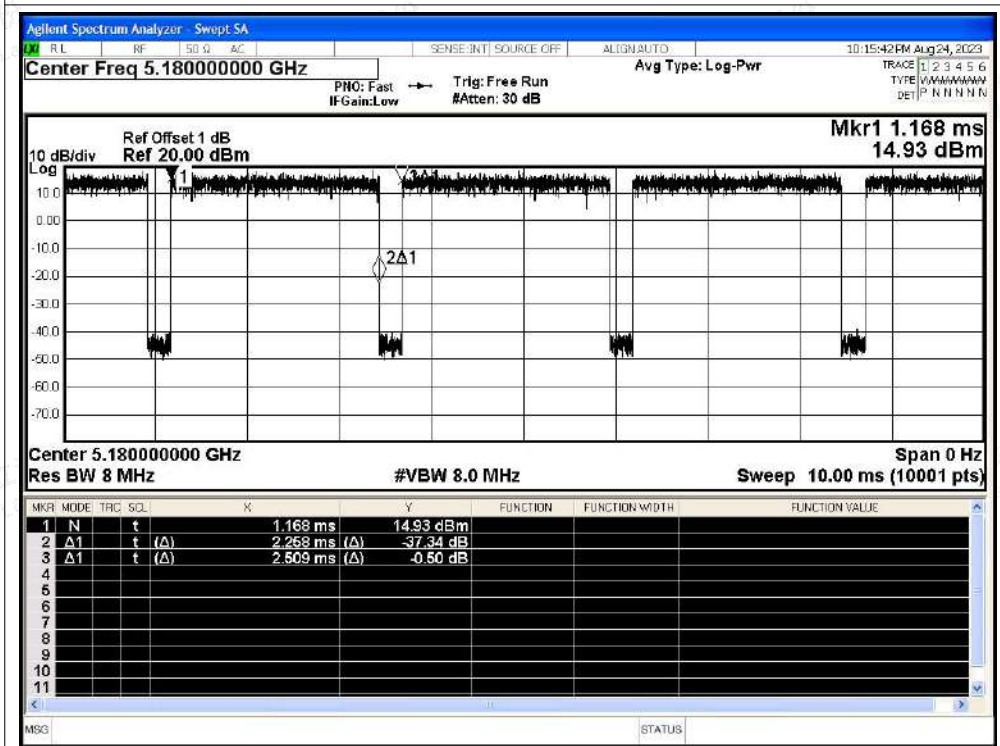




Duty Cycle NVNT a 5240MHz Ant1

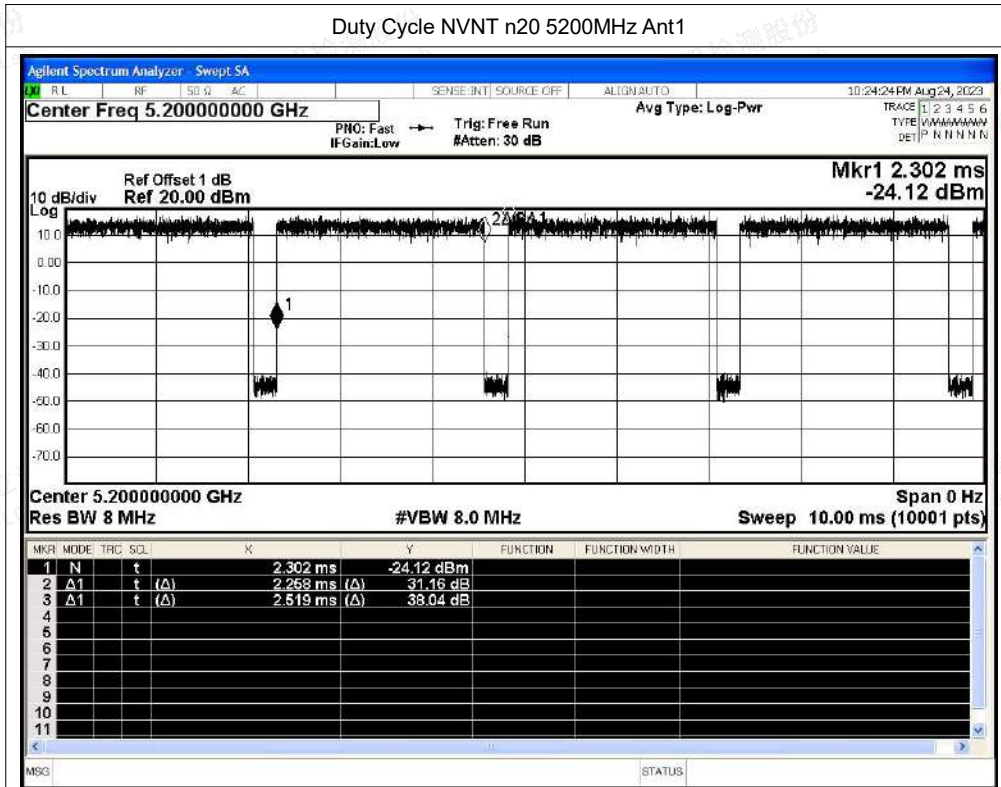


Duty Cycle NVNT n20 5180MHz Ant1

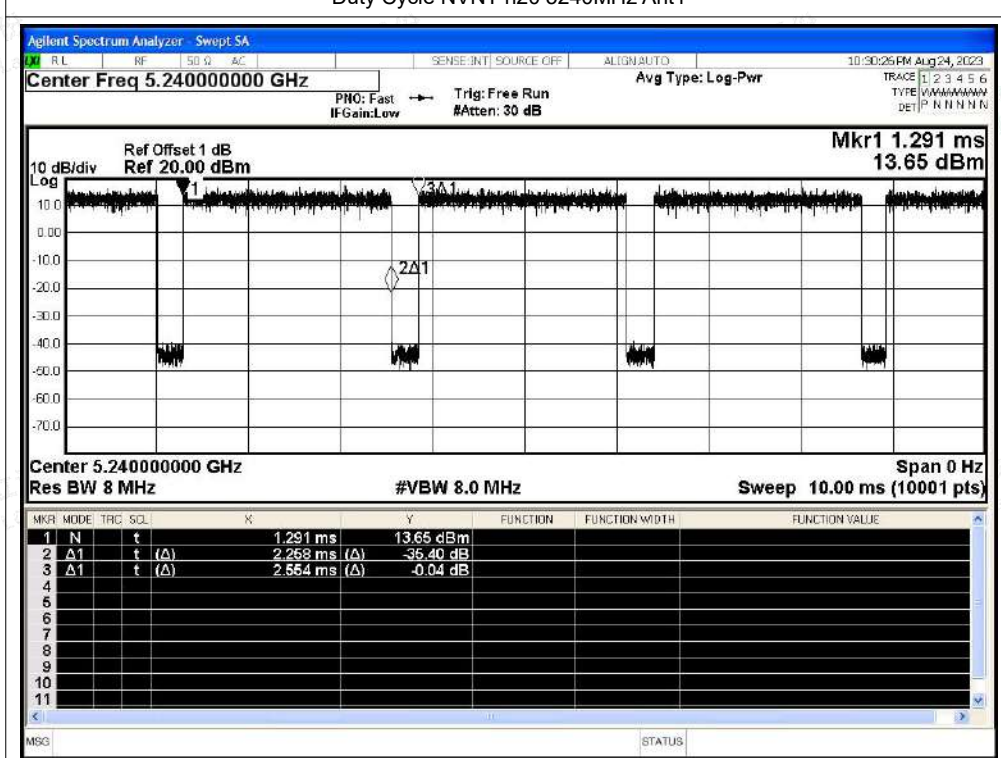




Duty Cycle NVNT n20 5200MHz Ant1



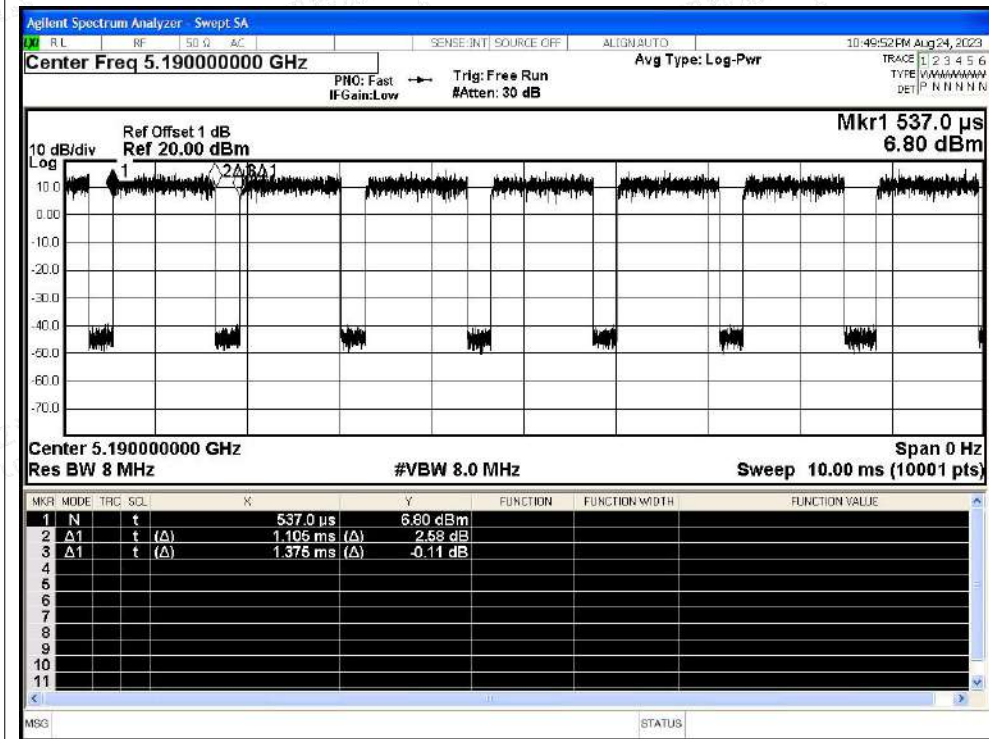
Duty Cycle NVNT n20 5240MHz Ant1



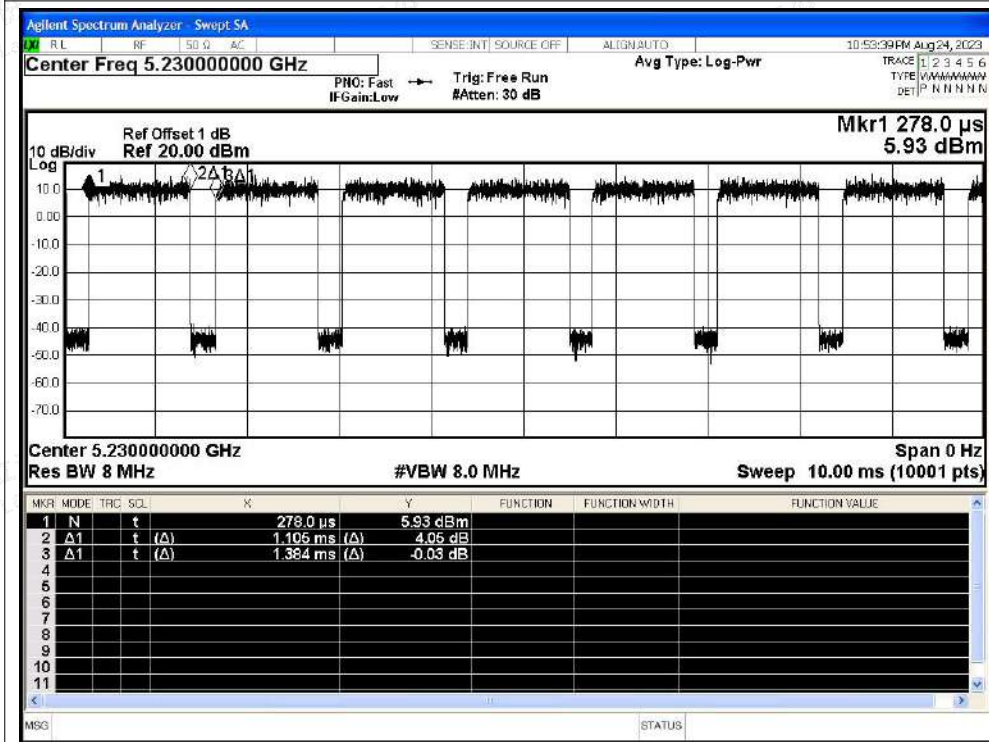




Duty Cycle NVNT n40 5190MHz Ant1

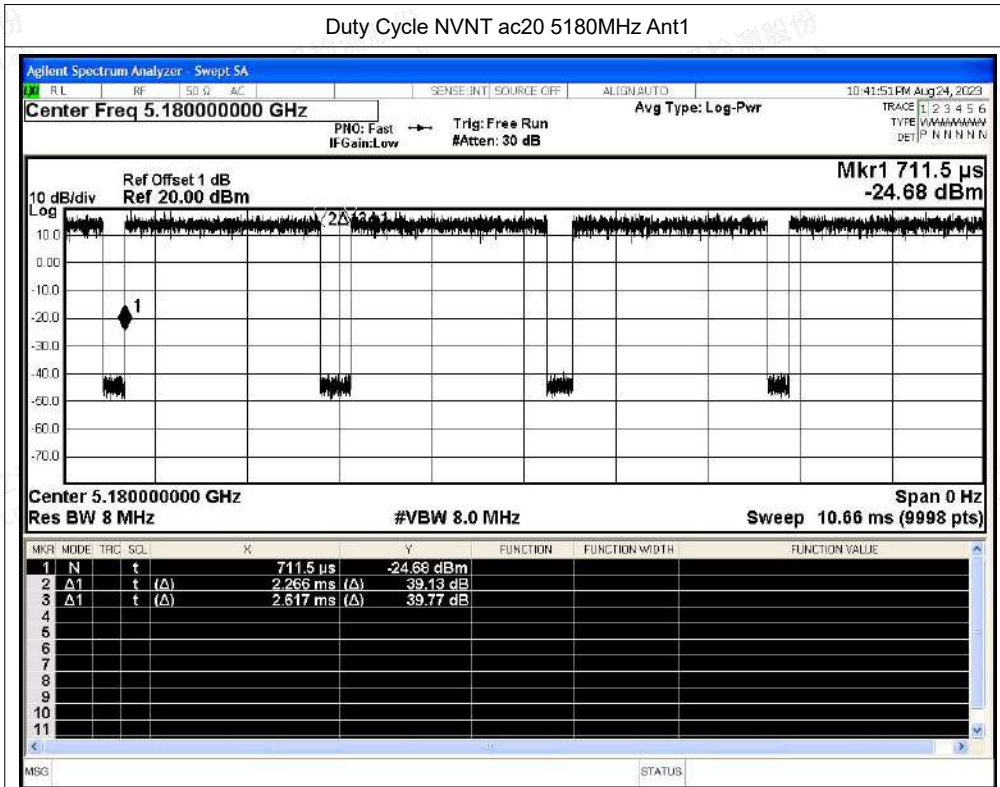


Duty Cycle NVNT n40 5230MHz Ant1

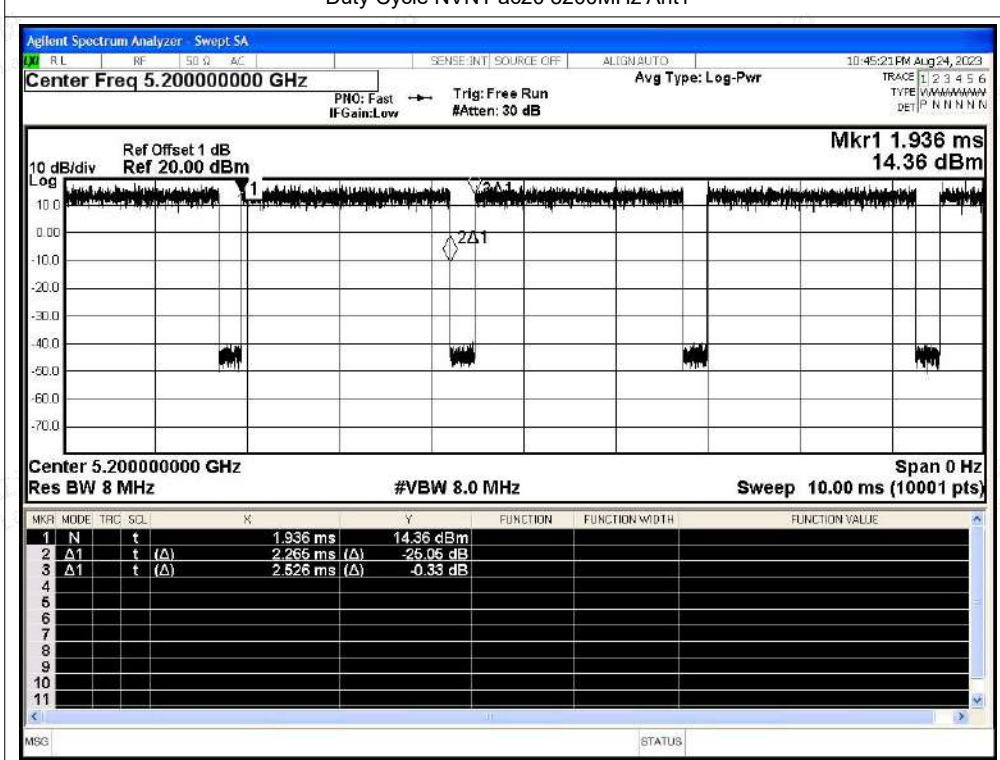




Duty Cycle NVNT ac20 5180MHz Ant1

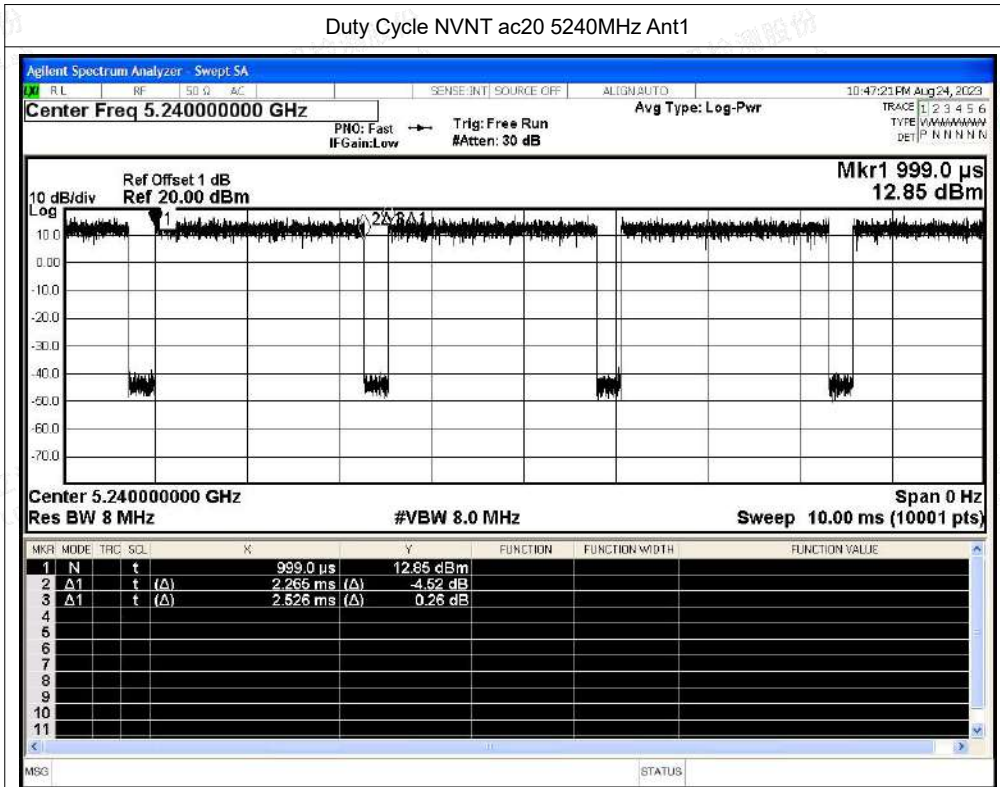


Duty Cycle NVNT ac20 5200MHz Ant1

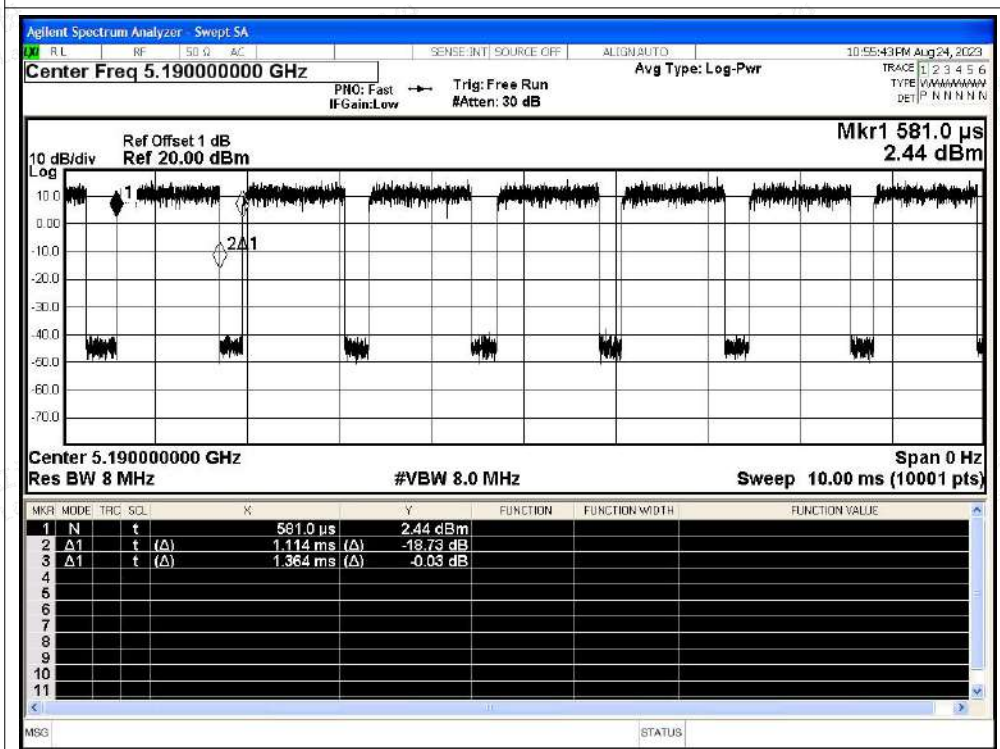




Duty Cycle NVNT ac20 5240MHz Ant1

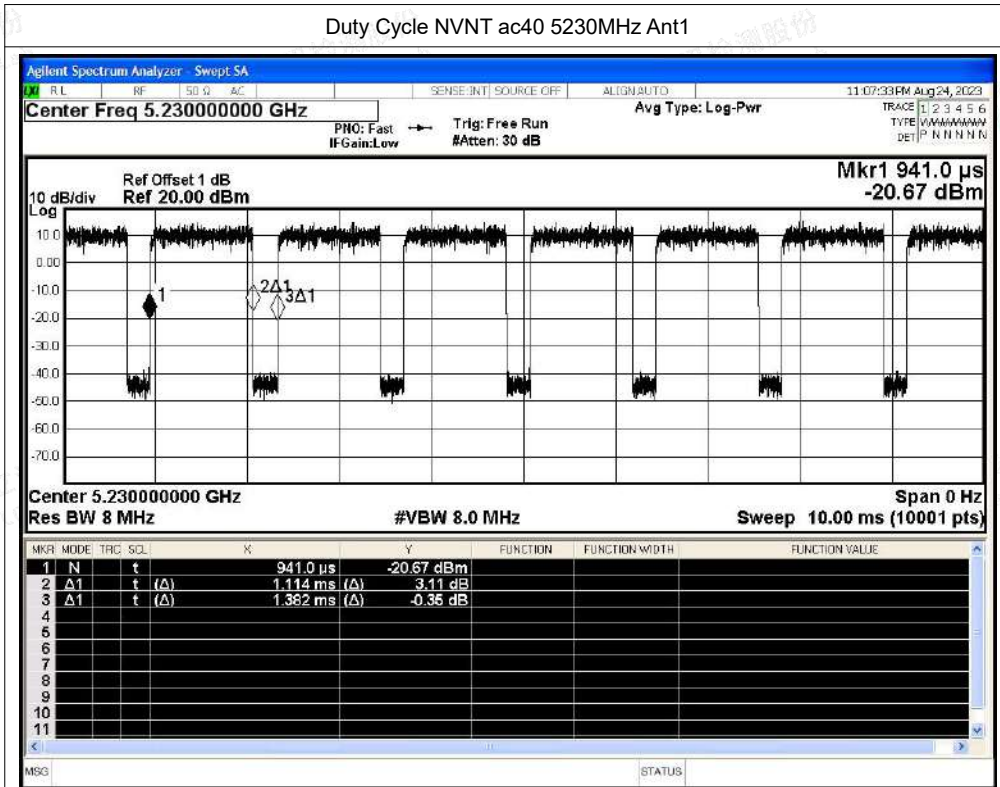


Duty Cycle NVNT ac40 5190MHz Ant1





Duty Cycle NVNT ac40 5230MHz Ant1



Duty Cycle NVNT ac80 5210MHz Ant1

