



Appendix D

RF Test Data for 5.2GWIFI(Conducted Measurement)

Product Name: Smart Phone

Test Model: HPPL67A

Environmental Conditions

Temperature:	23.8° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Can Kun
Supervised by:	Nick Peng





D.1 -26dB Bandwidth

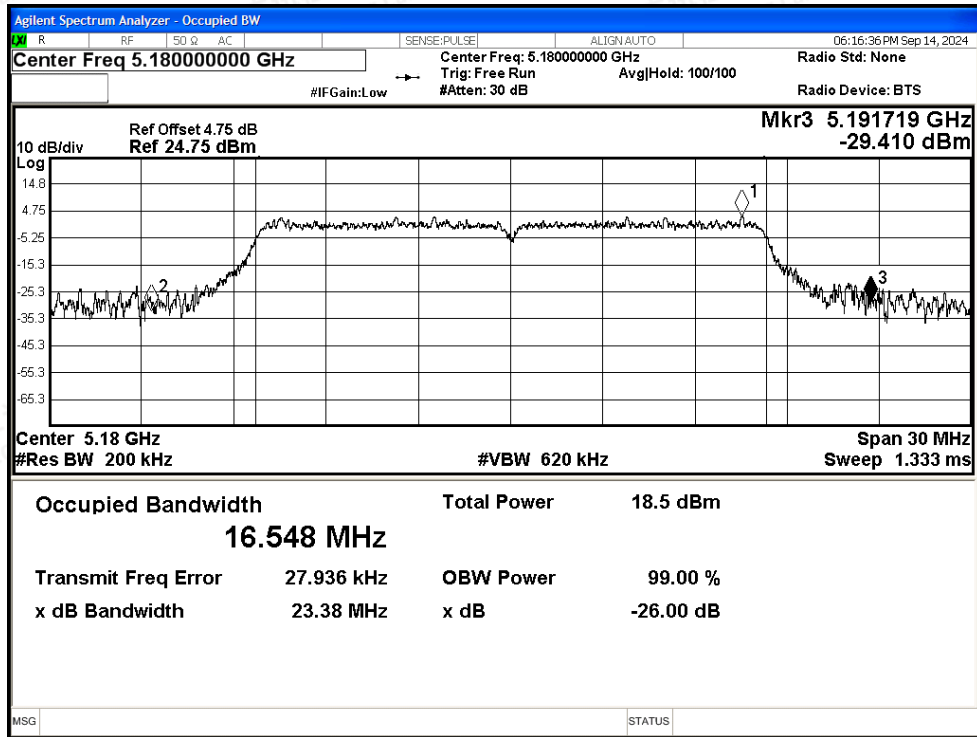
Condition	Mode	Frequency (MHz)	Antenna	-26 dB Bandwidth (MHz)	Limit -26 dB Bandwidth (MHz)	Verdict
NVNT	a	5180	Ant	23.383	---	Pass
NVNT	a	5200	Ant	22.557	---	Pass
NVNT	a	5240	Ant	22.841	---	Pass
NVNT	n20	5180	Ant	26.772	---	Pass
NVNT	n20	5200	Ant	25.394	---	Pass
NVNT	n20	5240	Ant	26.801	---	Pass
NVNT	n40	5190	Ant	42.737	---	Pass
NVNT	n40	5230	Ant	43.498	---	Pass
NVNT	ac20	5180	Ant	26.06	---	Pass
NVNT	ac20	5200	Ant	26.892	---	Pass
NVNT	ac20	5240	Ant	27.402	---	Pass
NVNT	ac40	5190	Ant	44.682	---	Pass
NVNT	ac40	5230	Ant	47.359	---	Pass



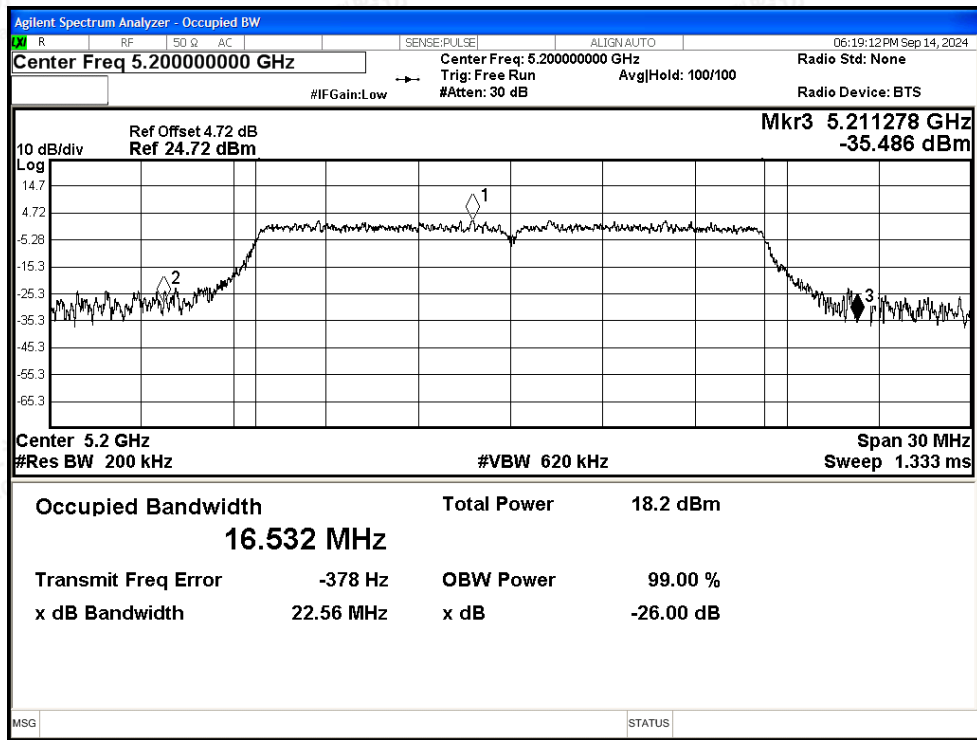


Test Graphs

-26dB Bandwidth NVNT a 5180MHz Ant

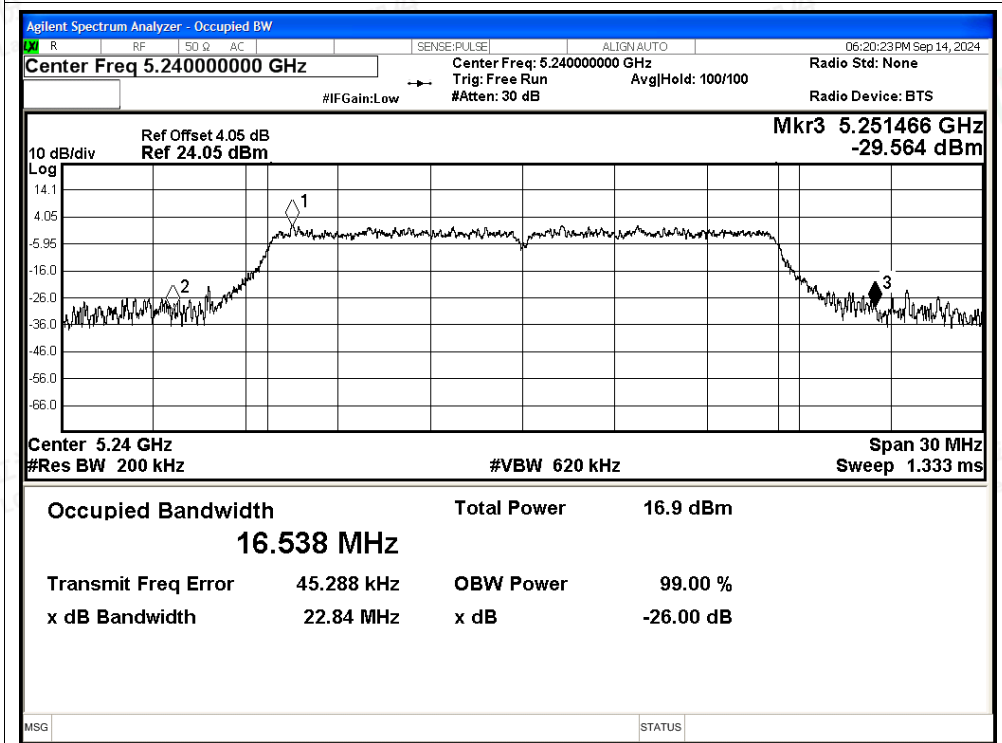


-26dB Bandwidth NVNT a 5200MHz Ant

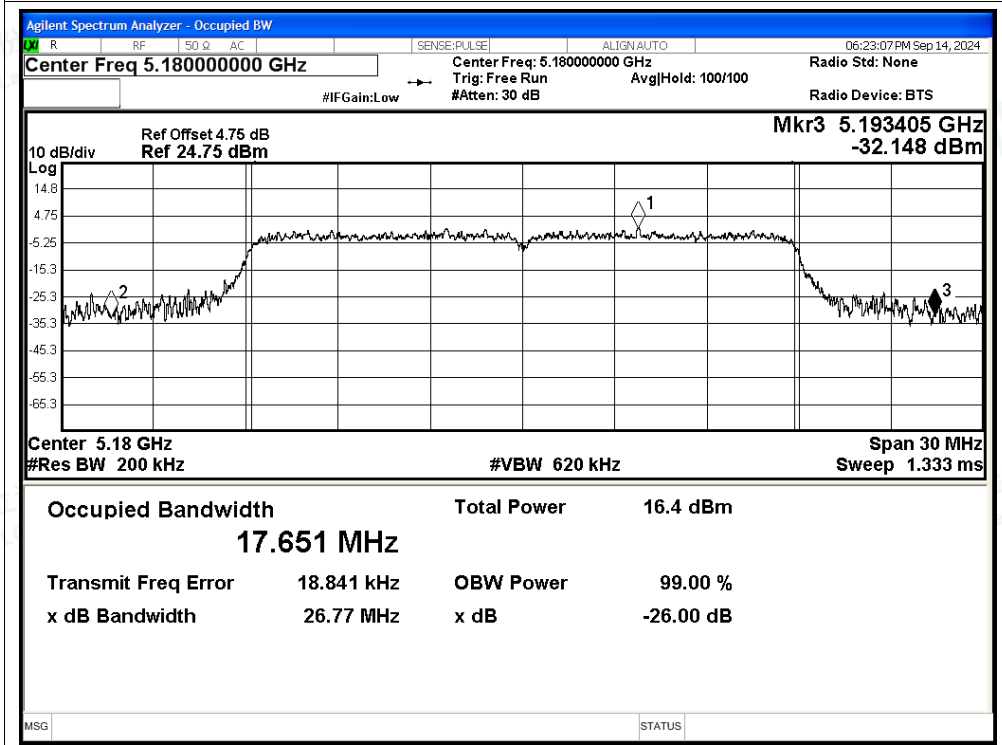




-26dB Bandwidth NVNT a 5240MHz Ant

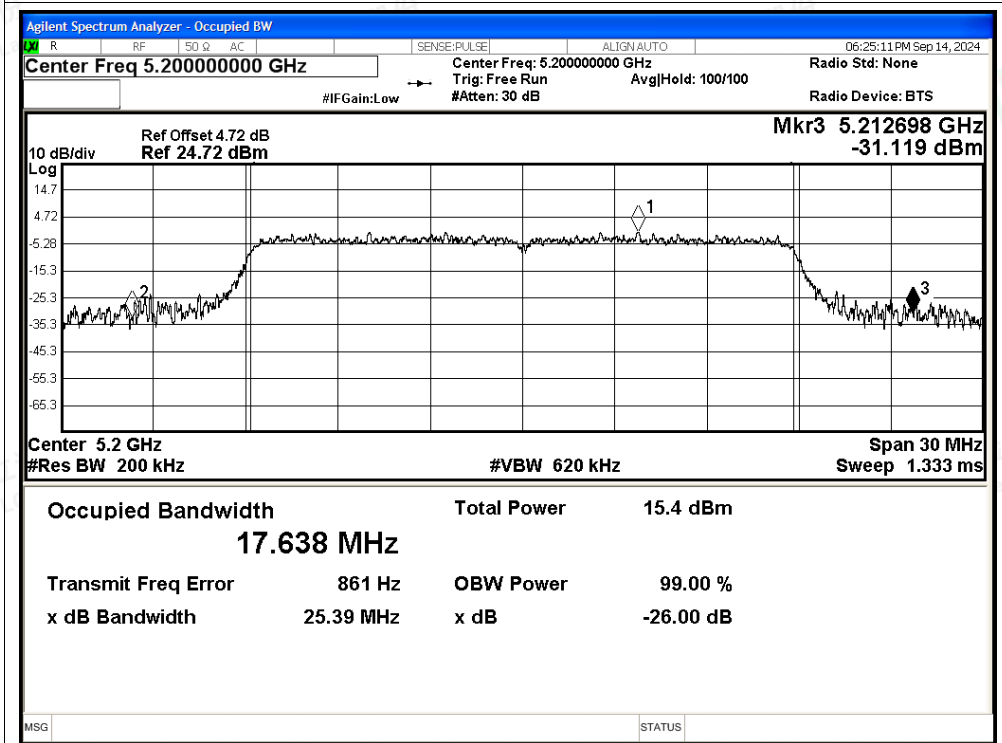


-26dB Bandwidth NVNT n20 5180MHz Ant

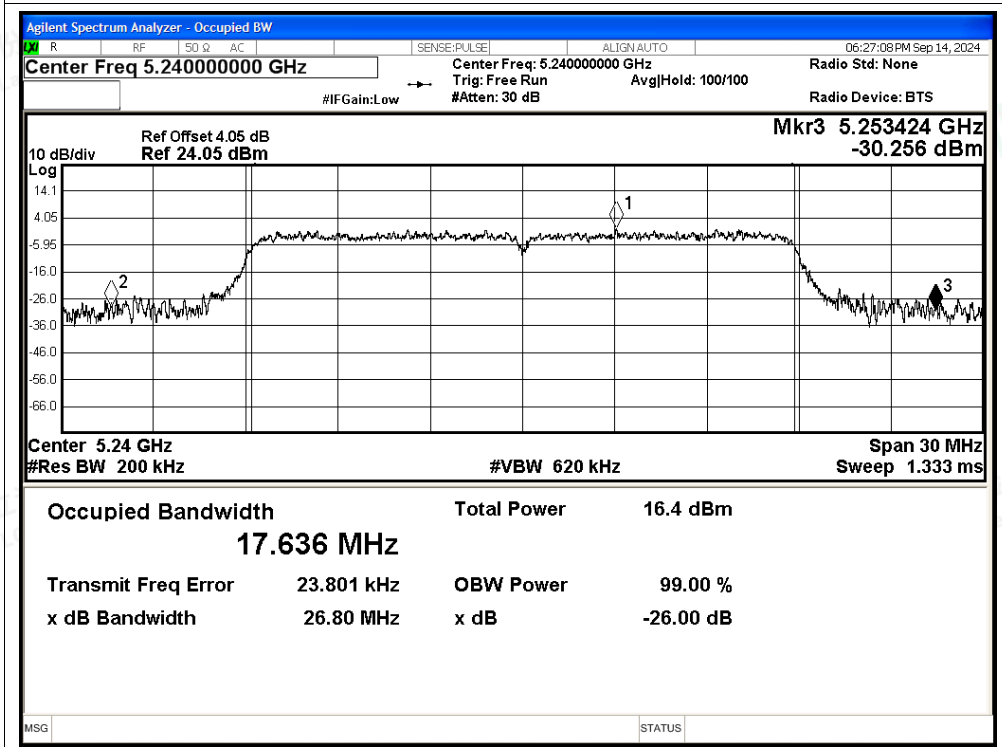




-26dB Bandwidth NVNT n20 5200MHz Ant

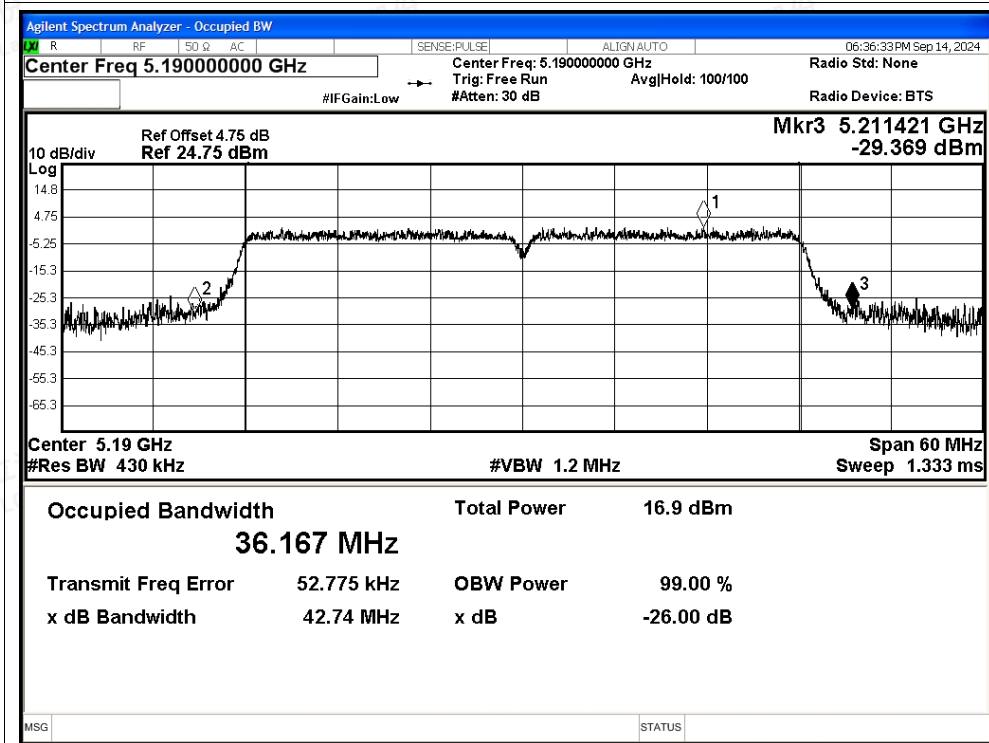


-26dB Bandwidth NVNT n20 5240MHz Ant

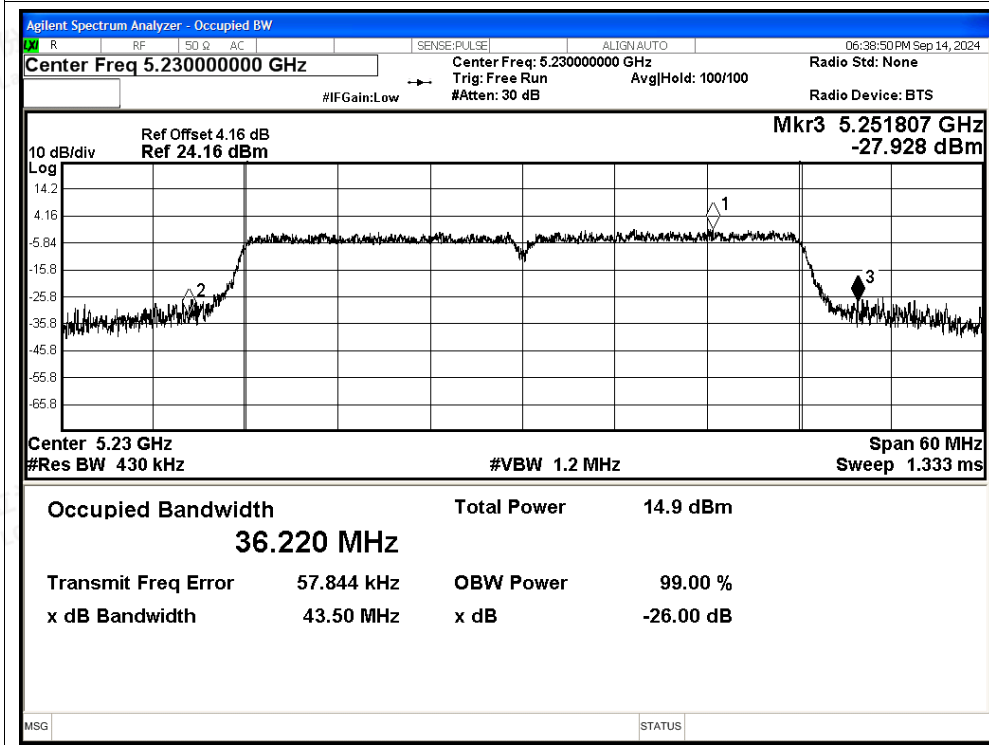




-26dB Bandwidth NVNT n40 5190MHz Ant

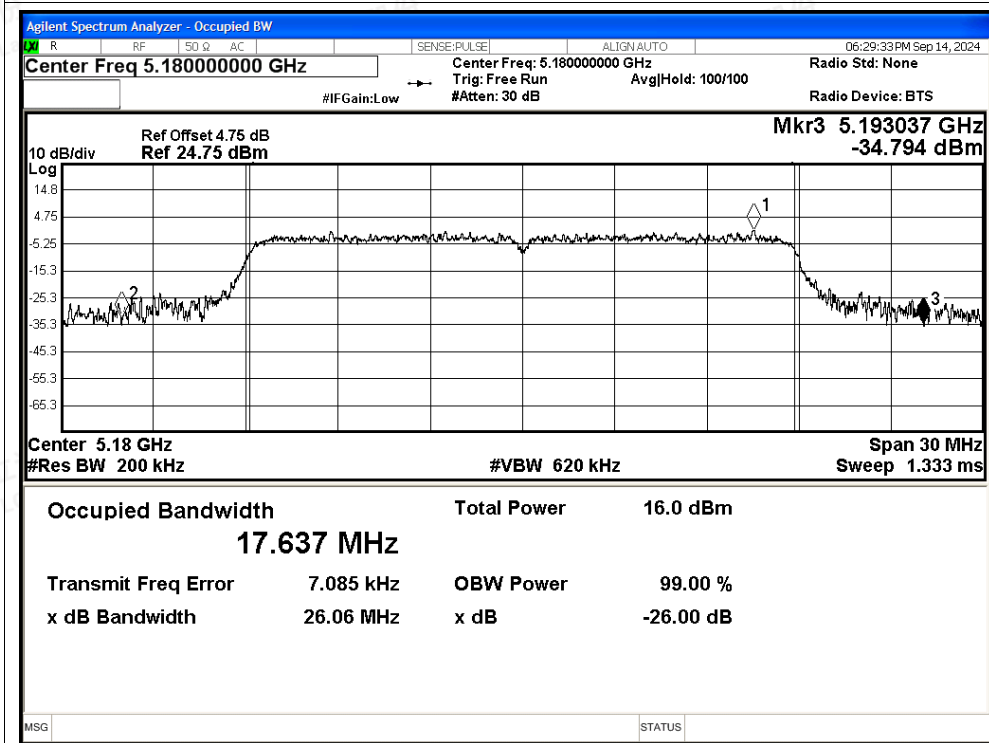


-26dB Bandwidth NVNT n40 5230MHz Ant

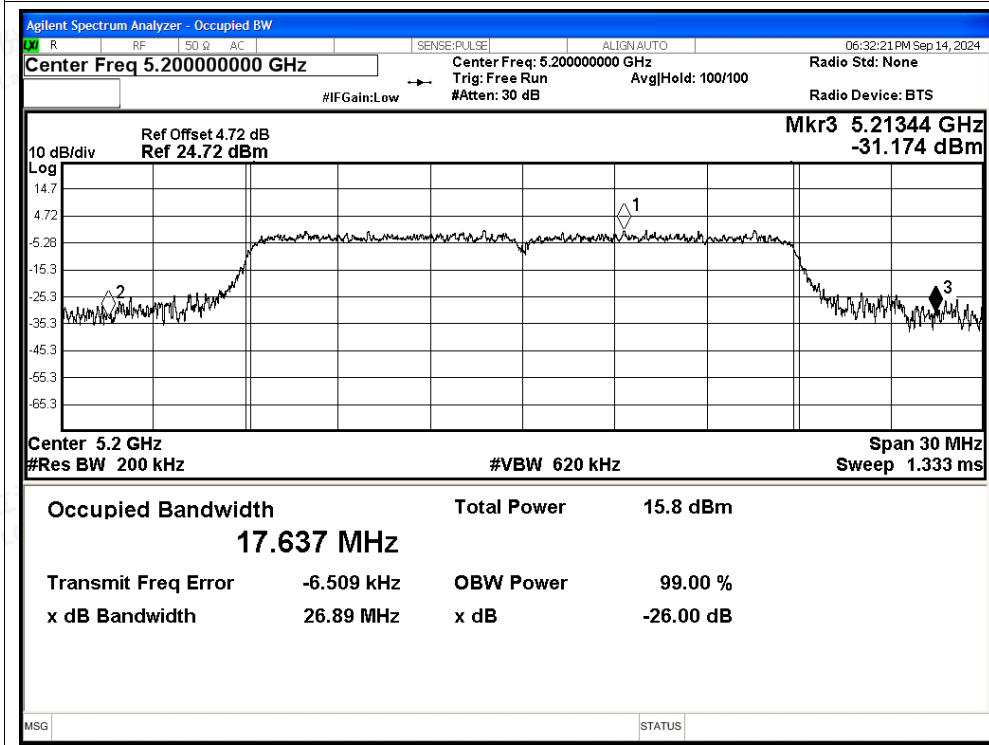


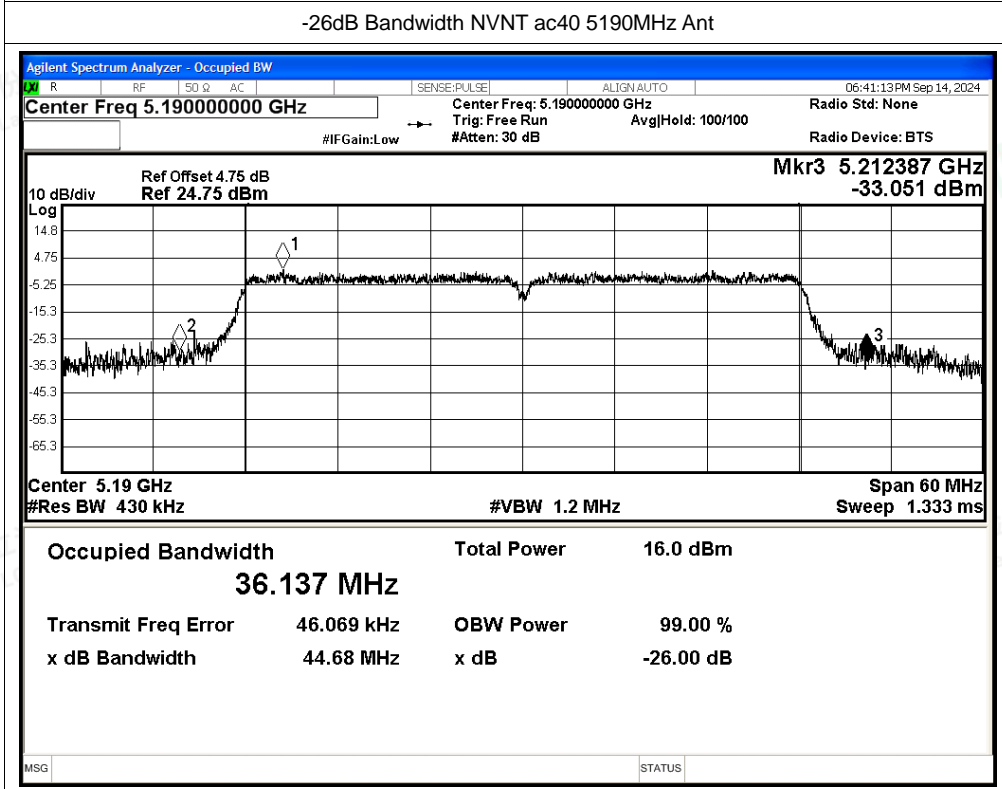
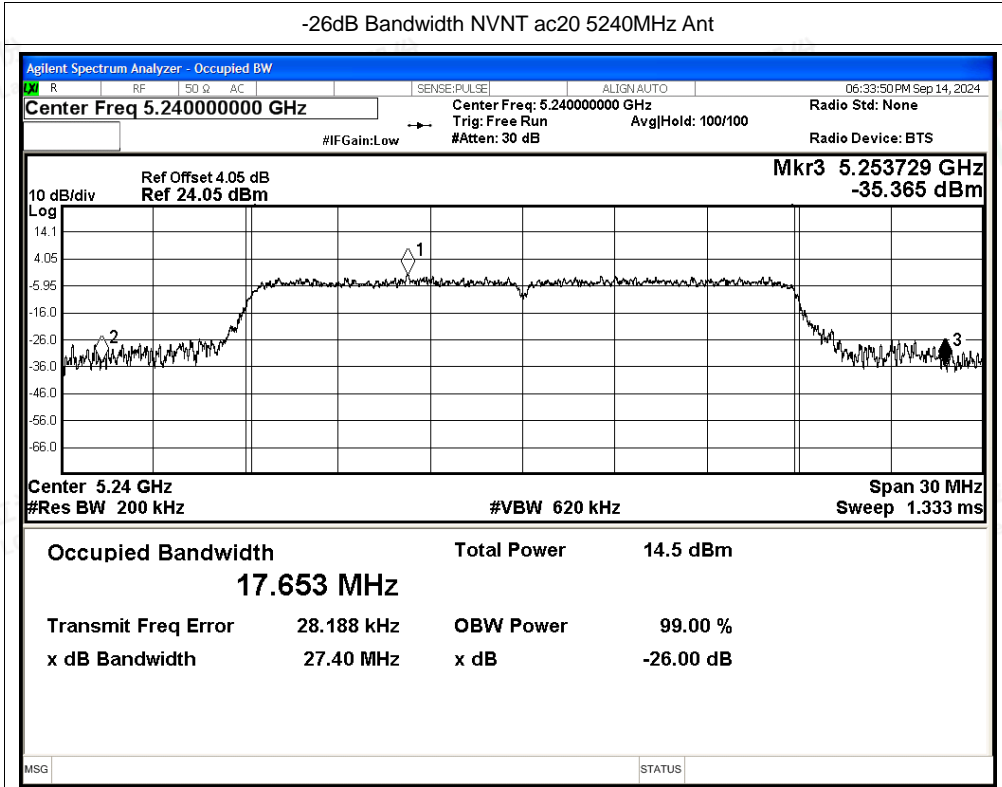


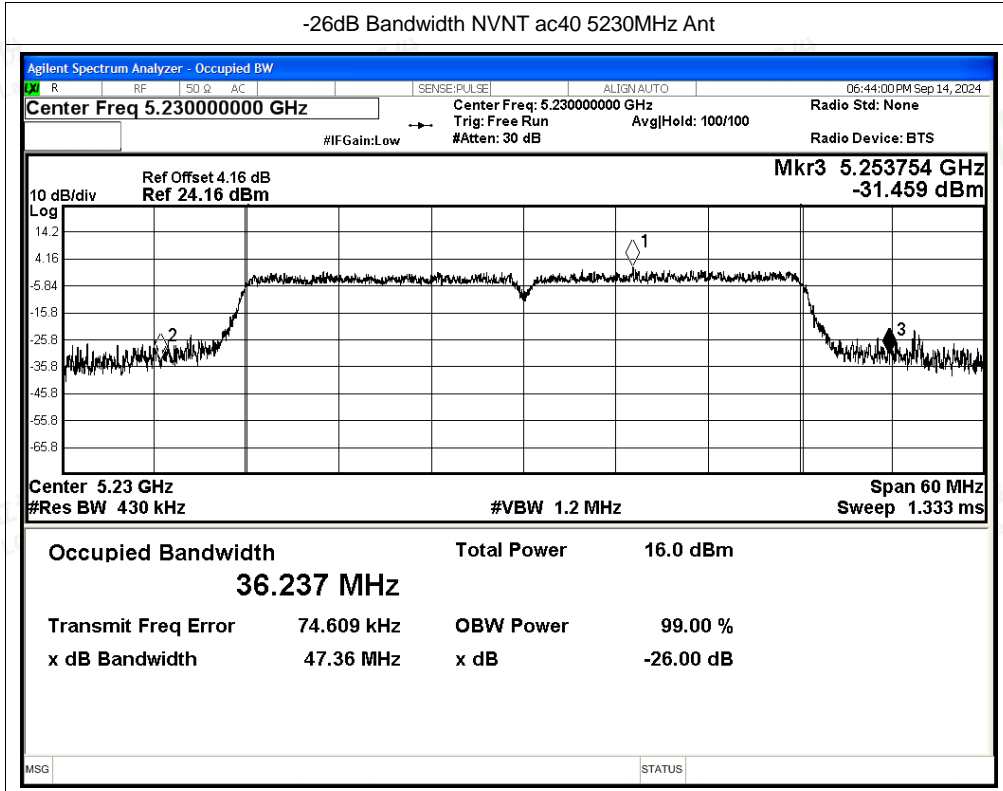
-26dB Bandwidth NVNT ac20 5180MHz Ant



-26dB Bandwidth NVNT ac20 5200MHz Ant









D.2 Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	Ant	12.88	0.24	13.12	24	Pass
NVNT	a	5200	Ant	12.47	0.24	12.71	24	Pass
NVNT	a	5240	Ant	12.05	0.24	12.29	24	Pass
NVNT	n20	5180	Ant	10.93	0.12	11.05	24	Pass
NVNT	n20	5200	Ant	10.92	0.12	11.04	24	Pass
NVNT	n20	5240	Ant	10.95	0.12	11.07	24	Pass
NVNT	n40	5190	Ant	11.13	0.12	11.25	24	Pass
NVNT	n40	5230	Ant	11.15	0.12	11.27	24	Pass
NVNT	ac20	5180	Ant	10.43	0.12	10.55	24	Pass
NVNT	ac20	5200	Ant	10.26	0.12	10.38	24	Pass
NVNT	ac20	5240	Ant	10.02	0.12	10.14	24	Pass
NVNT	ac40	5190	Ant	10.2	0.12	10.32	24	Pass
NVNT	ac40	5230	Ant	10.22	0.12	10.34	24	Pass





D.3 Maximum Power Spectral Density Level

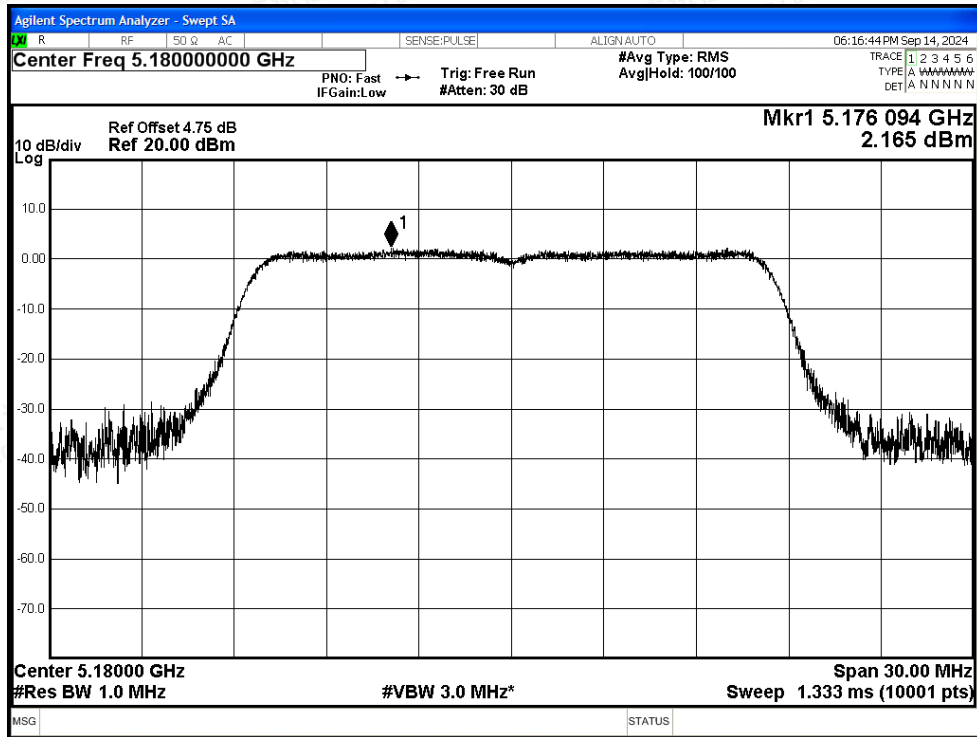
Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/MHz)	Duty Factor (dB)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
NVNT	a	5180	Ant	2.17	0.24	2.41	11	Pass
NVNT	a	5200	Ant	2.01	0.24	2.25	11	Pass
NVNT	a	5240	Ant	0.5	0.24	0.74	11	Pass
NVNT	n20	5180	Ant	-0.05	0.12	0.07	11	Pass
NVNT	n20	5200	Ant	-1.04	0.12	-0.92	11	Pass
NVNT	n20	5240	Ant	0.24	0.12	0.36	11	Pass
NVNT	n40	5190	Ant	-3.01	0.12	-2.89	11	Pass
NVNT	n40	5230	Ant	-4.22	0.12	-4.1	11	Pass
NVNT	ac20	5180	Ant	-0.25	0.12	-0.13	11	Pass
NVNT	ac20	5200	Ant	-0.42	0.12	-0.3	11	Pass
NVNT	ac20	5240	Ant	-1.68	0.12	-1.56	11	Pass
NVNT	ac40	5190	Ant	-3.91	0.12	-3.79	11	Pass
NVNT	ac40	5230	Ant	-3.61	0.12	-3.49	11	Pass



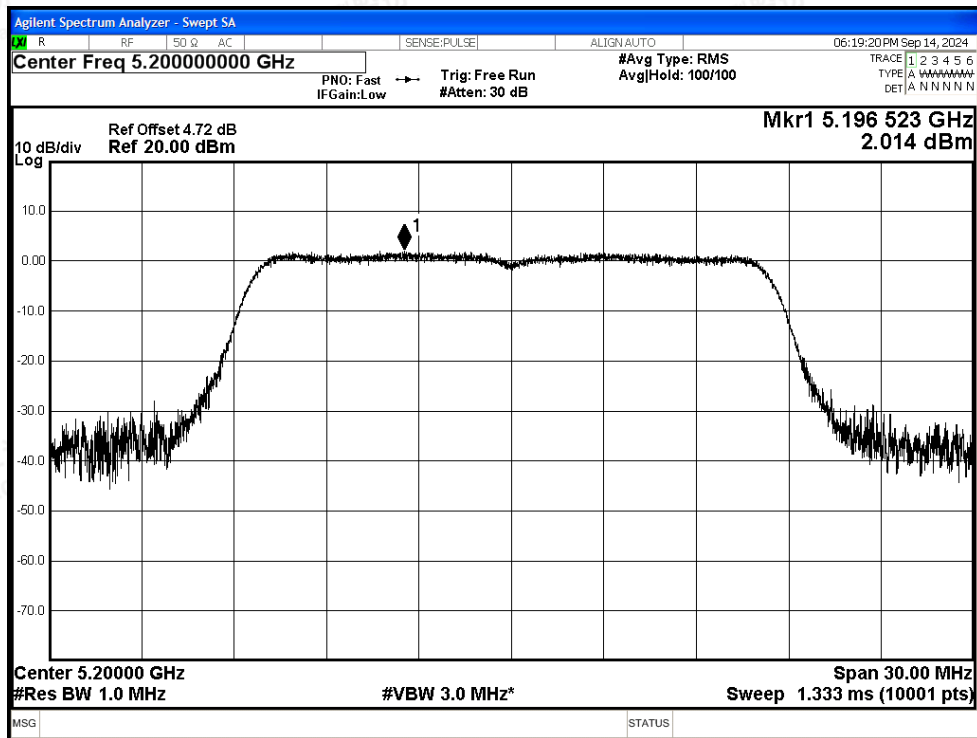


Test Graphs

PSD NVNT a 5180MHz Ant

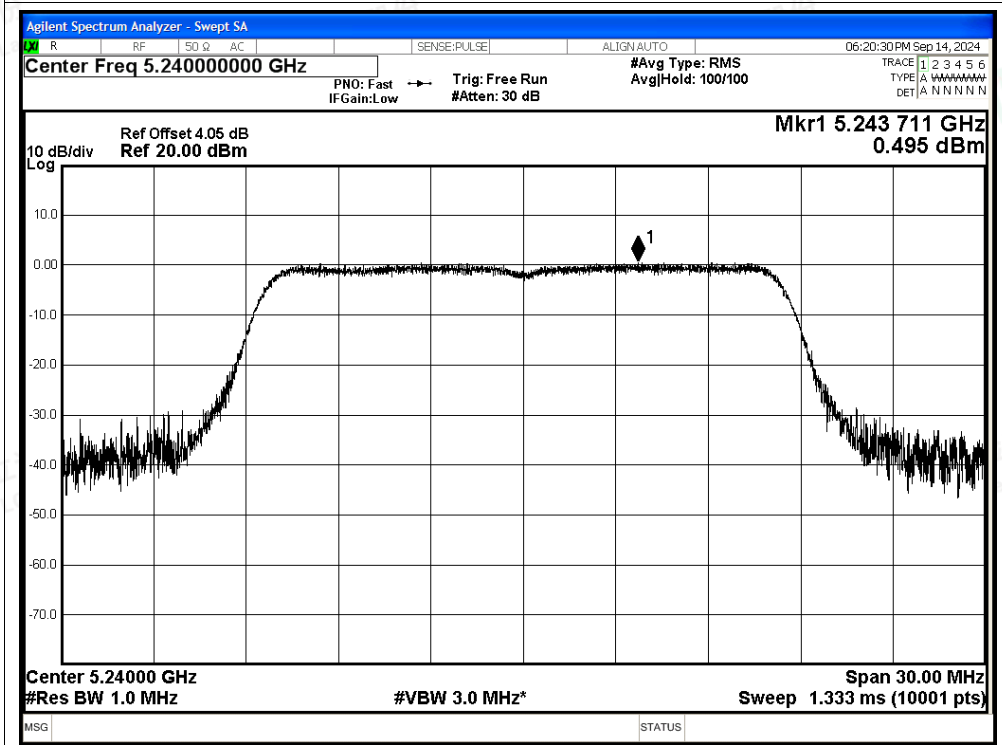


PSD NVNT a 5200MHz Ant

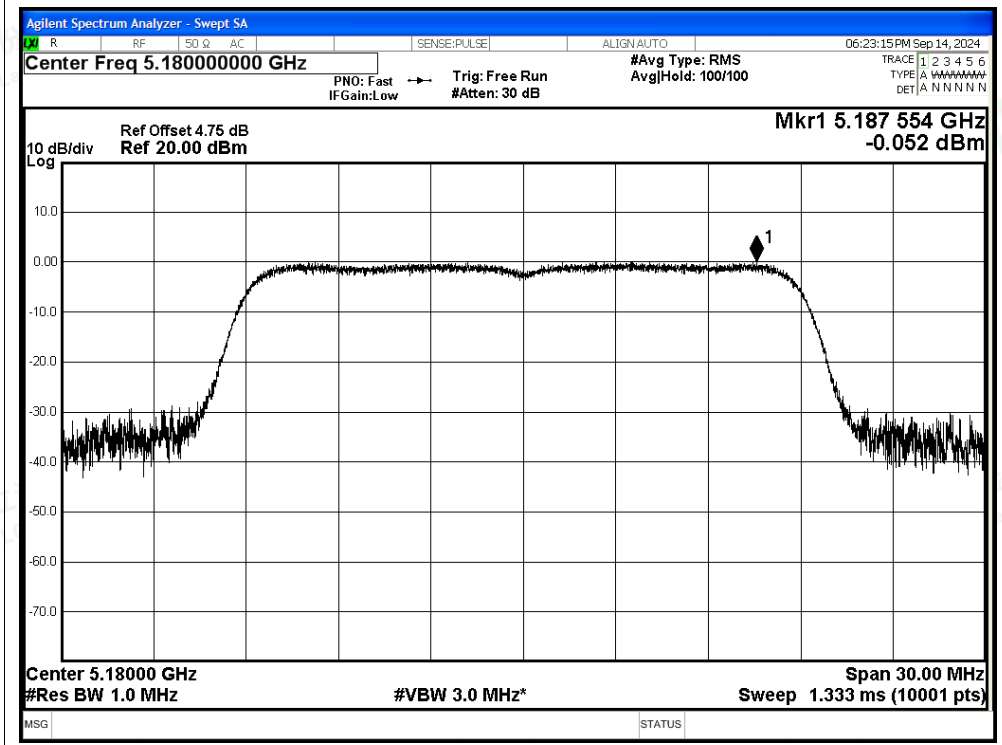


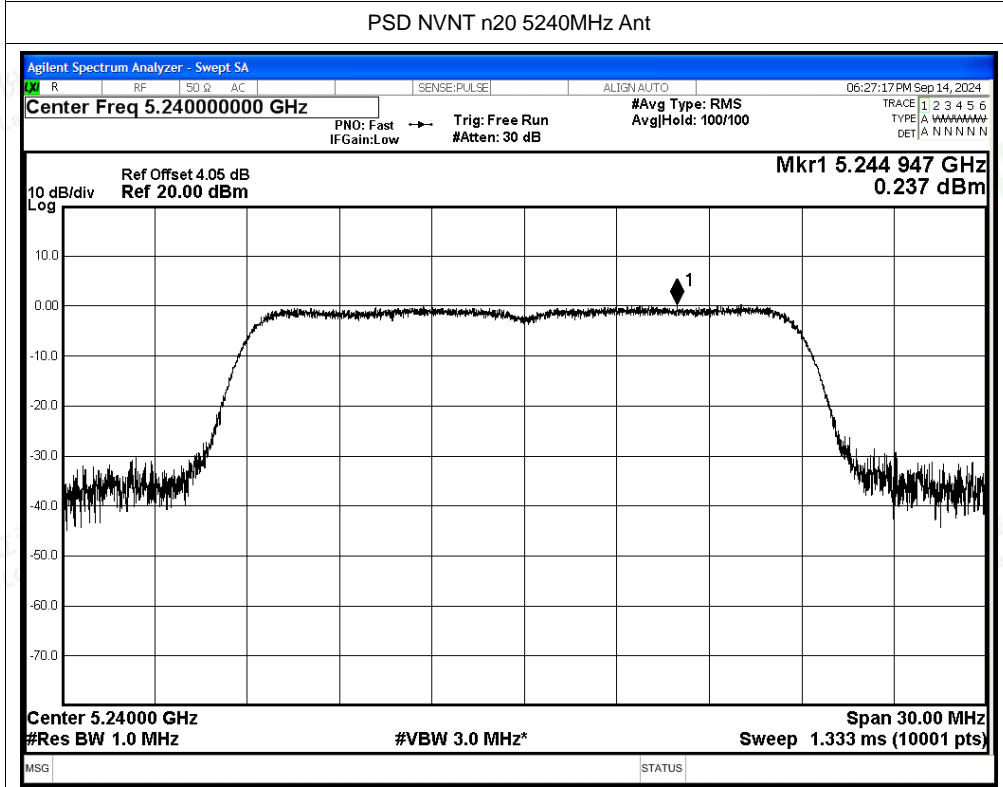
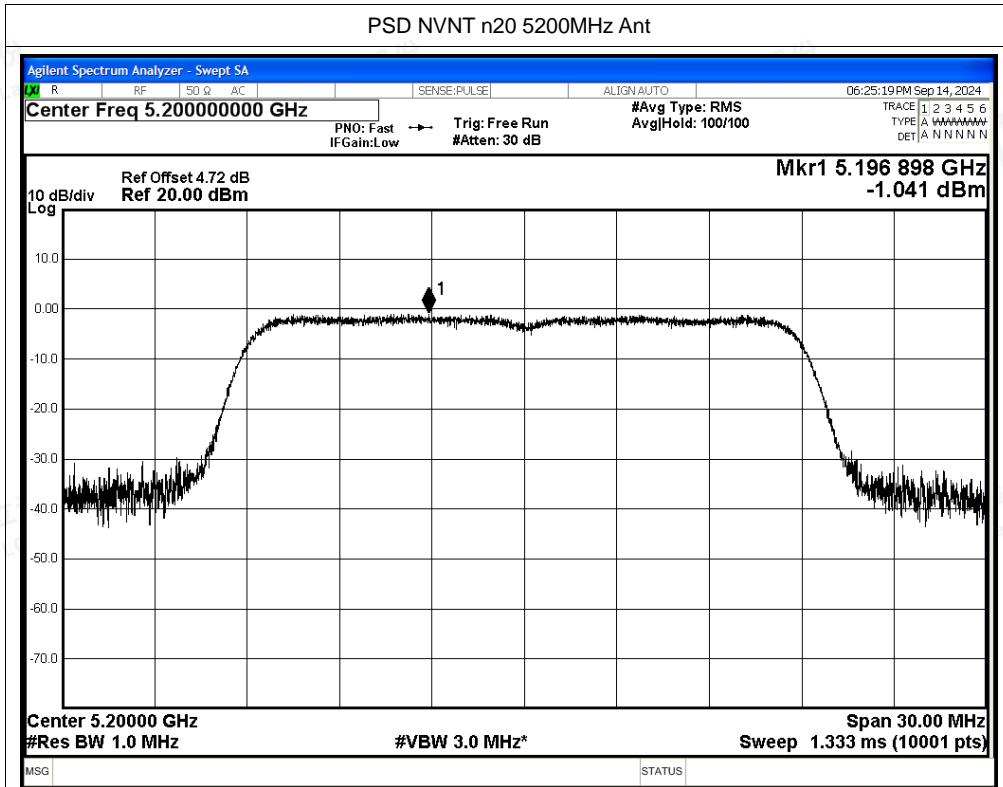


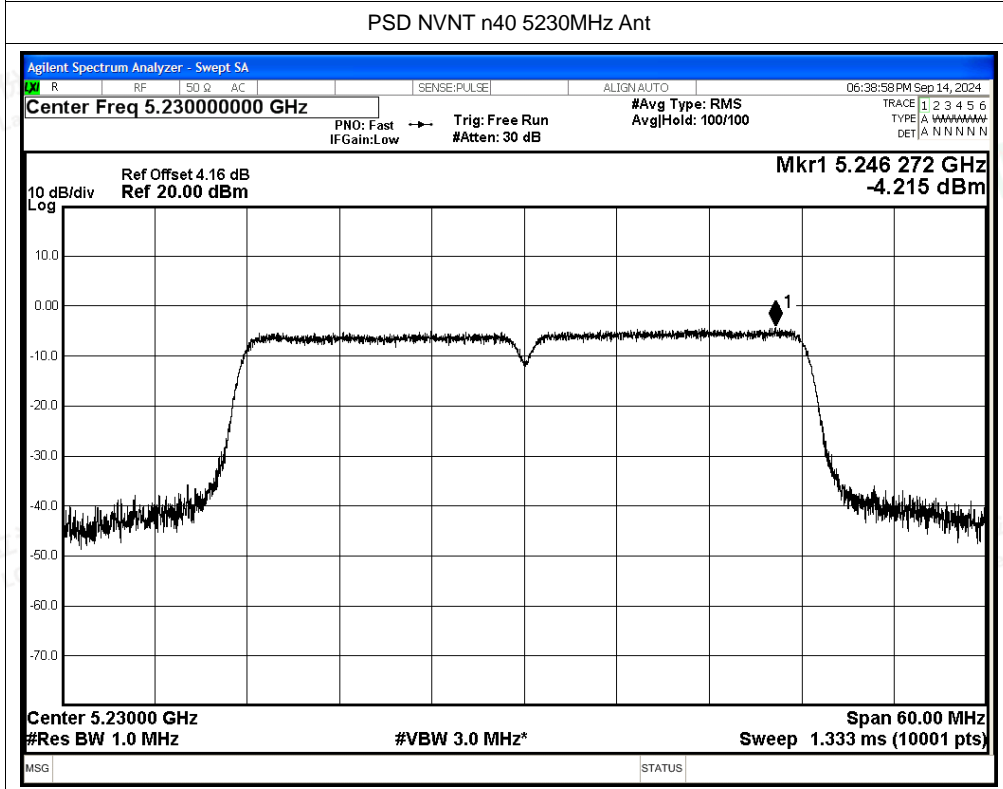
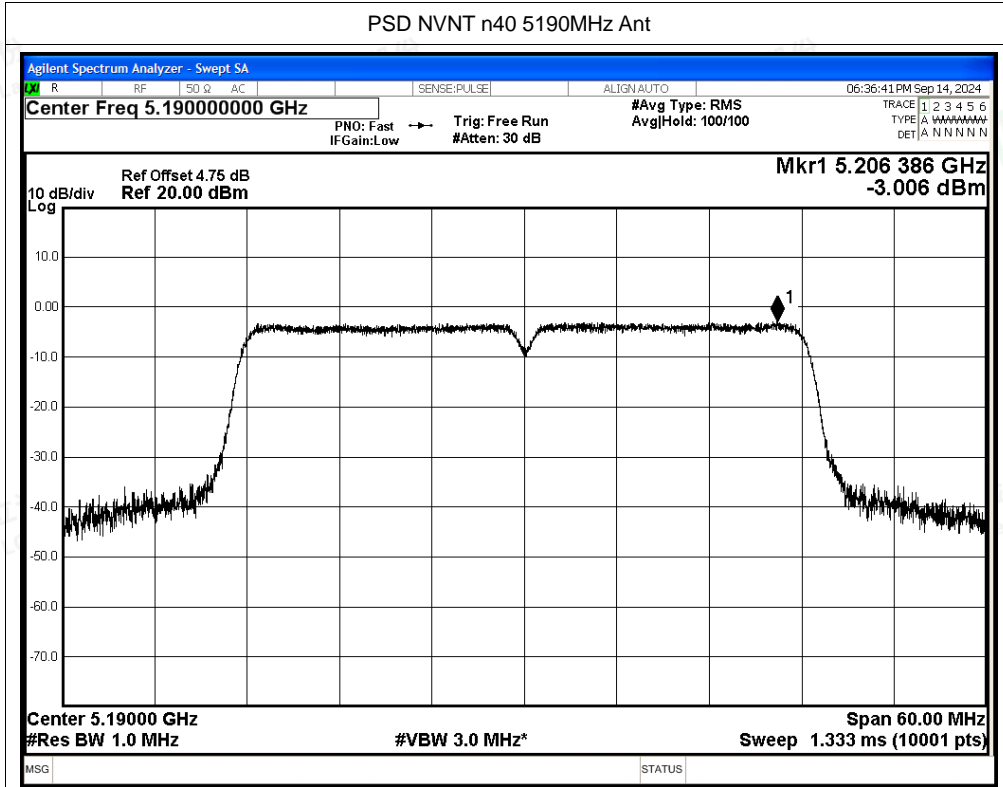
PSD NVNT a 5240MHz Ant

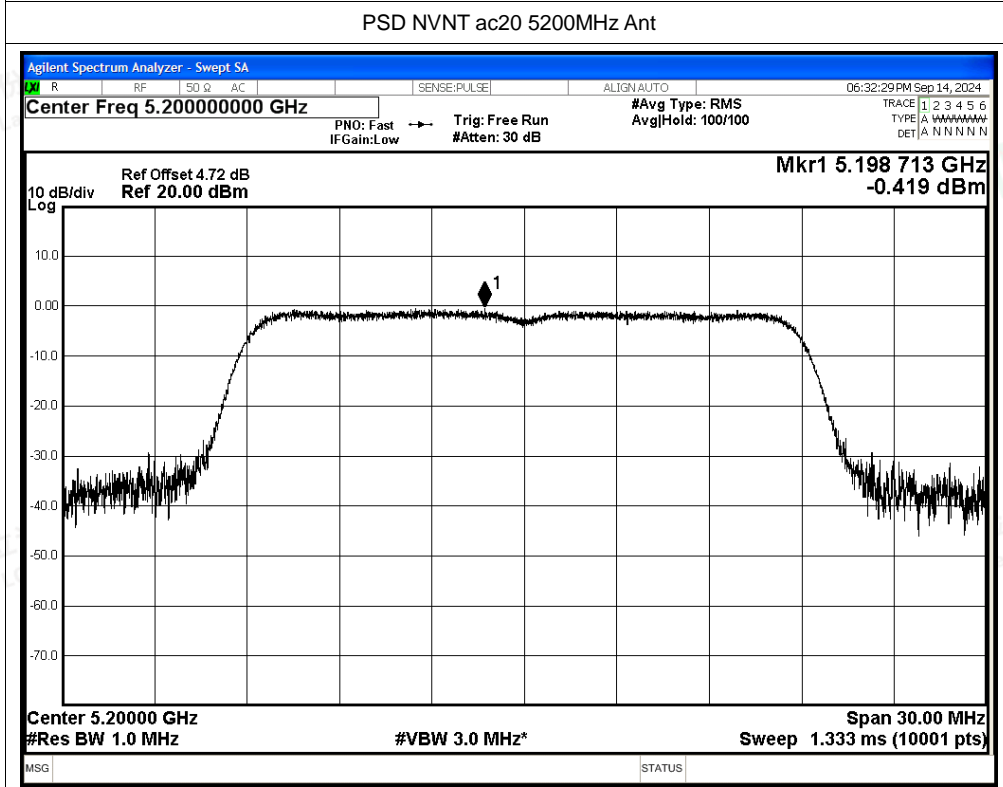
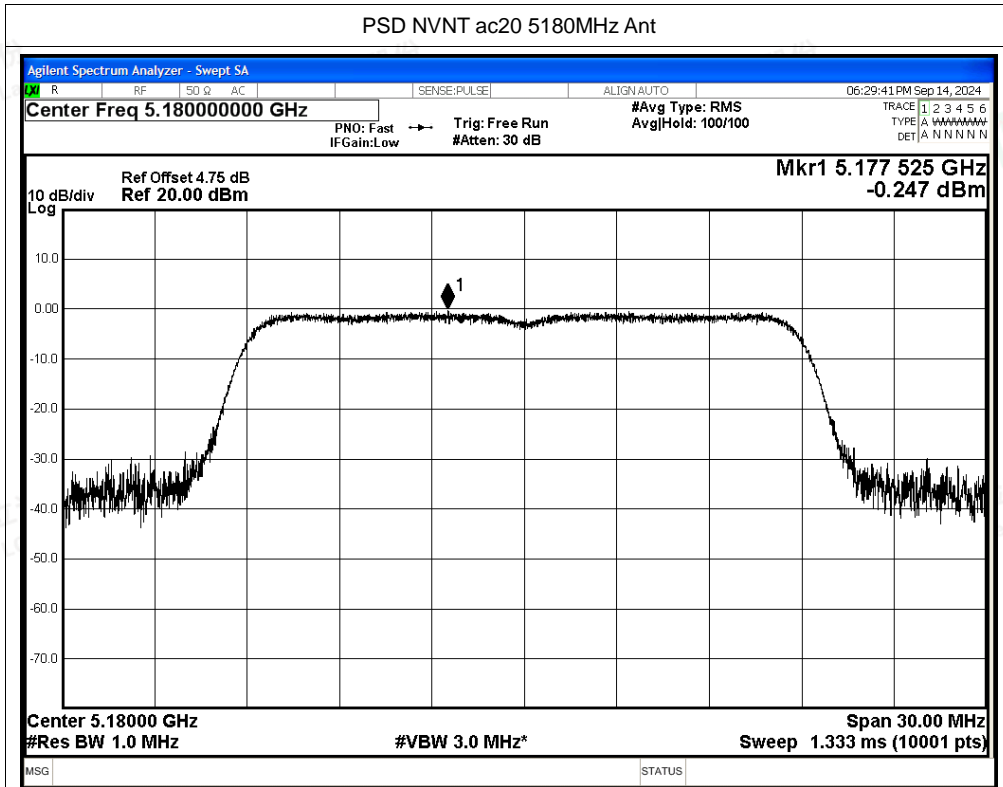


PSD NVNT n20 5180MHz Ant



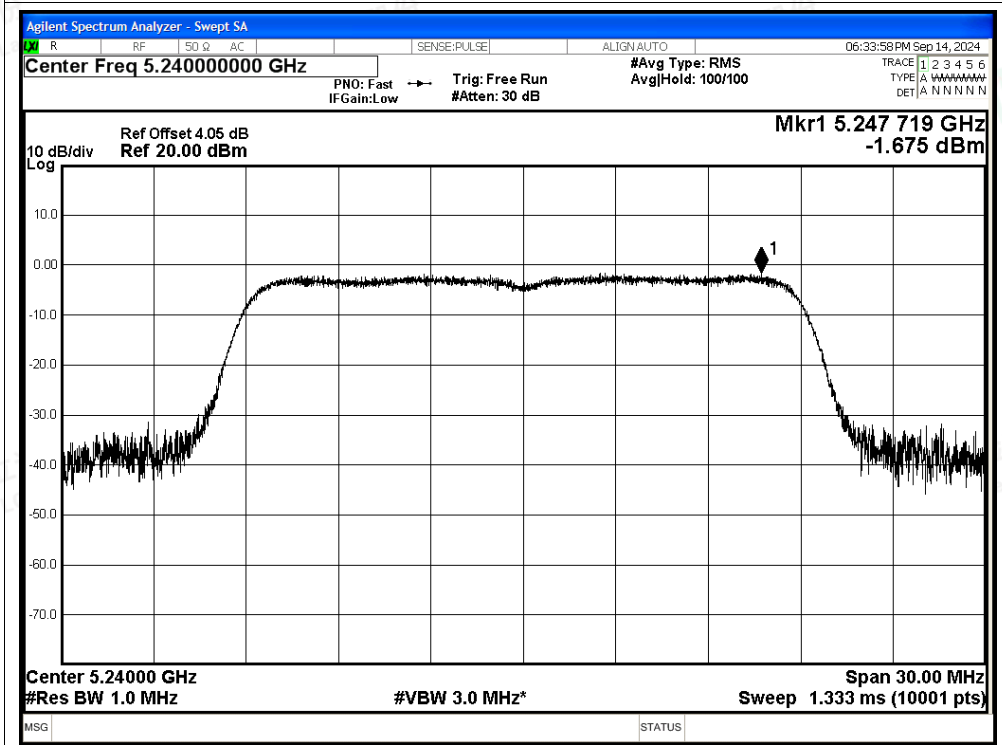




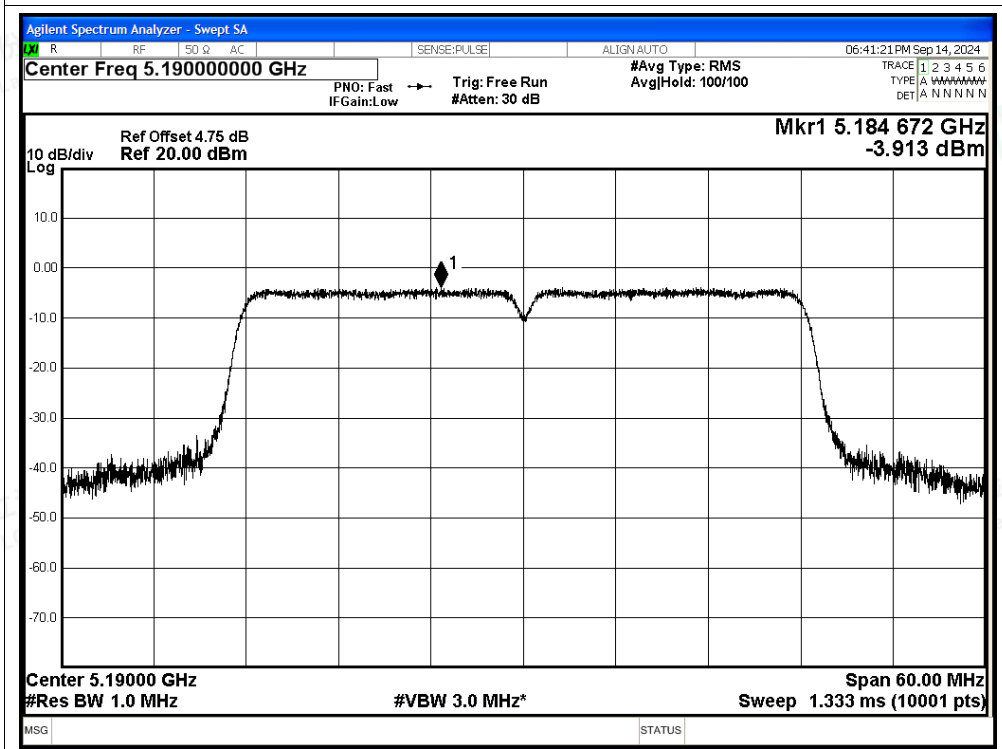


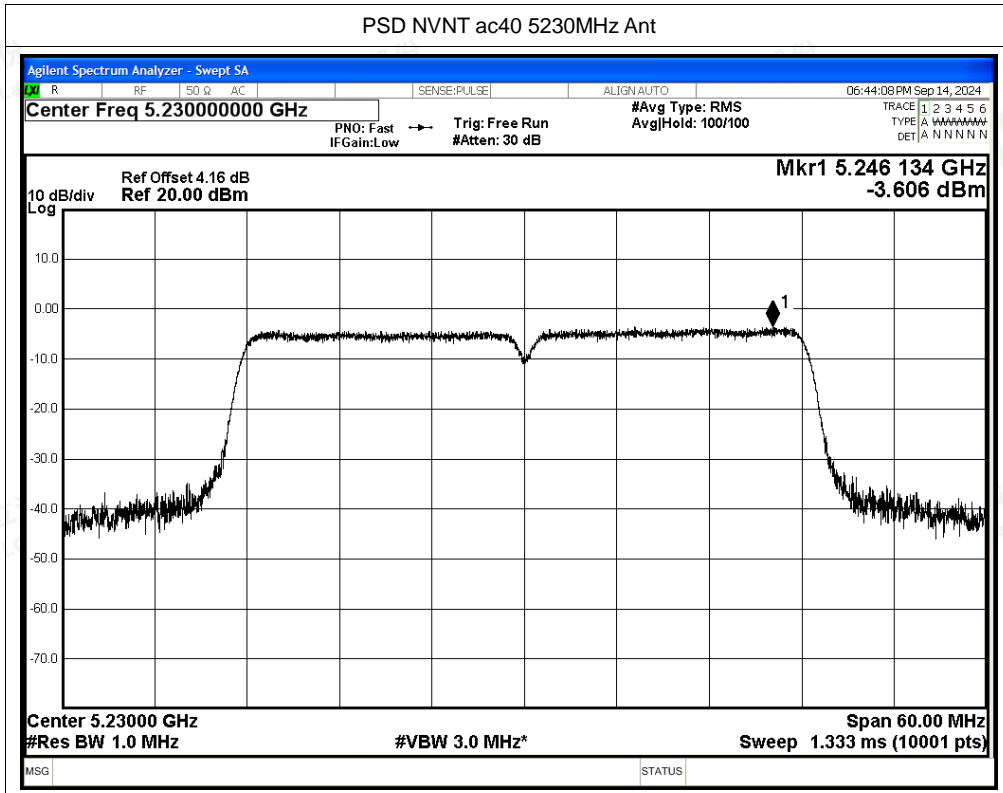


PSD NVNT ac20 5240MHz Ant



PSD NVNT ac40 5190MHz Ant







D.4 Restrict Band

Condition	Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBUV/m)	Detector	Limit (dBUV/m)	Verdict
NVNT	a	5180	Ant	4500	-49.46	2	-	47.77	Peak	68.2	Pass
NVNT	a	5180	Ant	4500	-57.05	2	0.24	40.42	Average	54	Pass
NVNT	a	5180	Ant	5148.9	-39.25	2	-	57.98	Peak	68.2	Pass
NVNT	a	5180	Ant	5148.9	-52.4	2	0.24	45.07	Average	54	Pass
NVNT	a	5180	Ant	5150	-40.45	2	-	56.78	Peak	68.2	Pass
NVNT	a	5180	Ant	5150	-53.12	2	0.24	44.35	Average	54	Pass
NVNT	a	5240	Ant	5350	-48.28	2	-	48.95	Peak	68.2	Pass
NVNT	a	5240	Ant	5350	-56.06	2	0.24	41.41	Average	54	Pass
NVNT	a	5240	Ant	5409.84	-45.52	2	-	51.71	Peak	68.2	Pass
NVNT	a	5240	Ant	5360.4	-56.02	2	0.24	41.45	Average	54	Pass
NVNT	a	5240	Ant	5460	-48.78	2	-	48.45	Peak	68.2	Pass
NVNT	a	5240	Ant	5460	-57.35	2	0.24	40.12	Average	54	Pass
NVNT	n20	5180	Ant	4500	-48.18	2	-	49.05	Peak	68.2	Pass
NVNT	n20	5180	Ant	4500	-56.86	2	0.12	40.49	Average	54	Pass
NVNT	n20	5180	Ant	5148.2	-41.71	2	-	55.52	Peak	68.2	Pass
NVNT	n20	5180	Ant	5148.9	-51.57	2	0.12	45.78	Average	54	Pass
NVNT	n20	5180	Ant	5150	-38.67	2	-	58.56	Peak	68.2	Pass
NVNT	n20	5180	Ant	5150	-52.8	2	0.12	44.55	Average	54	Pass
NVNT	n20	5240	Ant	5350	-47.07	2	-	50.16	Peak	68.2	Pass
NVNT	n20	5240	Ant	5350	-56.19	2	0.12	41.16	Average	54	Pass
NVNT	n20	5240	Ant	5438.4	-45.75	2	-	51.48	Peak	68.2	Pass
NVNT	n20	5240	Ant	5351.28	-55.91	2	0.12	41.44	Average	54	Pass
NVNT	n20	5240	Ant	5460	-49.12	2	-	48.11	Peak	68.2	Pass
NVNT	n20	5240	Ant	5460	-56.99	2	0.12	40.36	Average	54	Pass
NVNT	n40	5190	Ant	4500	-48.76	2	-	48.47	Peak	68.2	Pass
NVNT	n40	5190	Ant	4500	-57.65	2	0.12	39.7	Average	54	Pass
NVNT	n40	5190	Ant	5148.24	-38.54	2	-	58.69	Peak	68.2	Pass
NVNT	n40	5190	Ant	5148.97	-52.4	2	0.12	44.95	Average	54	Pass
NVNT	n40	5190	Ant	5150	-39.38	2	-	57.85	Peak	68.2	Pass
NVNT	n40	5190	Ant	5150	-52.51	2	0.12	44.84	Average	54	Pass
NVNT	n40	5230	Ant	5350	-49.23	2	-	48	Peak	68.2	Pass
NVNT	n40	5230	Ant	5350	-56.55	2	0.12	40.8	Average	54	Pass
NVNT	n40	5230	Ant	5383.05	-45.98	2	-	51.25	Peak	68.2	Pass
NVNT	n40	5230	Ant	5380.35	-56.12	2	0.12	41.23	Average	54	Pass
NVNT	n40	5230	Ant	5460	-48.55	2	-	48.68	Peak	68.2	Pass
NVNT	n40	5230	Ant	5460	-57.08	2	0.12	40.27	Average	54	Pass
NVNT	ac20	5180	Ant	4500	-49.62	2	-	47.61	Peak	68.2	Pass
NVNT	ac20	5180	Ant	4500	-57.37	2	0.12	39.98	Average	54	Pass



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Scan code to check authenticity



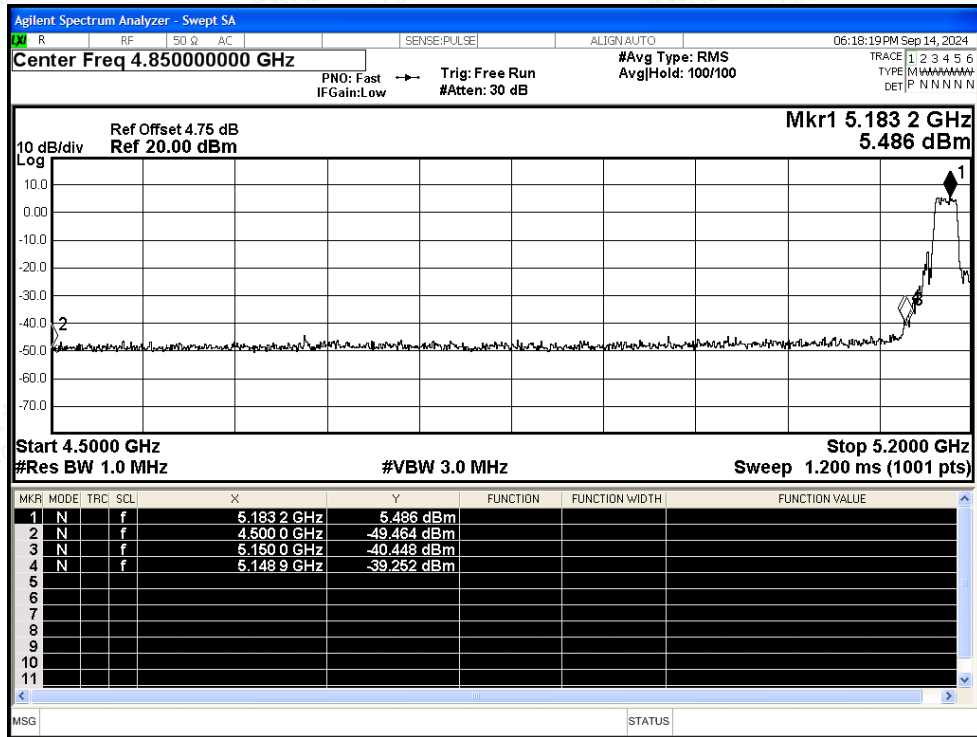
NVNT	ac20	5180	Ant	5147.5	-41.5	2	-	55.73	Peak	68.2	Pass
NVNT	ac20	5180	Ant	5148.2	-52.81	2	0.12	44.54	Average	54	Pass
NVNT	ac20	5180	Ant	5150	-41.3	2	-	55.93	Peak	68.2	Pass
NVNT	ac20	5180	Ant	5150	-53.68	2	0.12	43.67	Average	54	Pass
NVNT	ac20	5240	Ant	5350	-48.88	2	-	48.35	Peak	68.2	Pass
NVNT	ac20	5240	Ant	5350	-56.82	2	0.12	40.53	Average	54	Pass
NVNT	ac20	5240	Ant	5441.28	-45.57	2	-	51.66	Peak	68.2	Pass
NVNT	ac20	5240	Ant	5351.04	-55.78	2	0.12	41.57	Average	54	Pass
NVNT	ac20	5240	Ant	5460	-49.78	2	-	47.45	Peak	68.2	Pass
NVNT	ac20	5240	Ant	5460	-57.27	2	0.12	40.08	Average	54	Pass
NVNT	ac40	5190	Ant	4500	-49.74	2	-	47.49	Peak	68.2	Pass
NVNT	ac40	5190	Ant	4500	-57.52	2	0.12	39.83	Average	54	Pass
NVNT	ac40	5190	Ant	5146.78	-41.75	2	-	55.48	Peak	68.2	Pass
NVNT	ac40	5190	Ant	5149.7	-53	2	0.12	44.35	Average	54	Pass
NVNT	ac40	5190	Ant	5150	-42.54	2	-	54.69	Peak	68.2	Pass
NVNT	ac40	5190	Ant	5150	-53	2	0.12	44.35	Average	54	Pass
NVNT	ac40	5230	Ant	5350	-47.97	2	-	49.26	Peak	68.2	Pass
NVNT	ac40	5230	Ant	5350	-56.84	2	0.12	40.51	Average	54	Pass
NVNT	ac40	5230	Ant	5405.19	-46.28	2	-	50.95	Peak	68.2	Pass
NVNT	ac40	5230	Ant	5361.99	-56.18	2	0.12	41.17	Average	54	Pass
NVNT	ac40	5230	Ant	5460	-49.75	2	-	47.48	Peak	68.2	Pass
NVNT	ac40	5230	Ant	5460	-57.27	2	0.12	40.08	Average	54	Pass



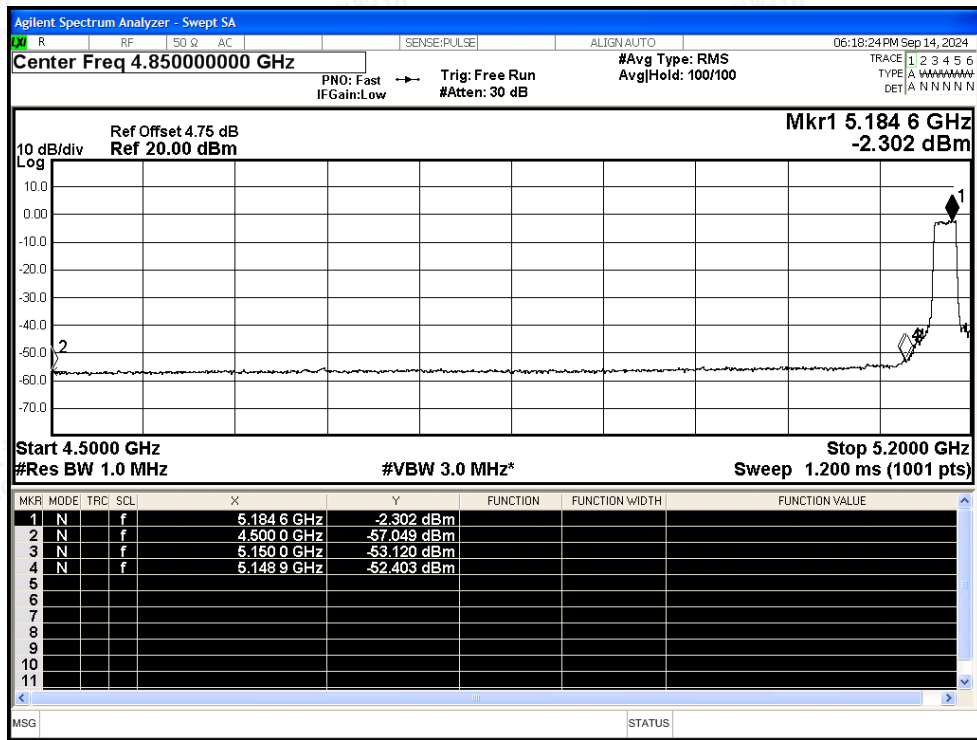


Test Graphs

Restrict Band NVNT a 5180MHz Ant Peak

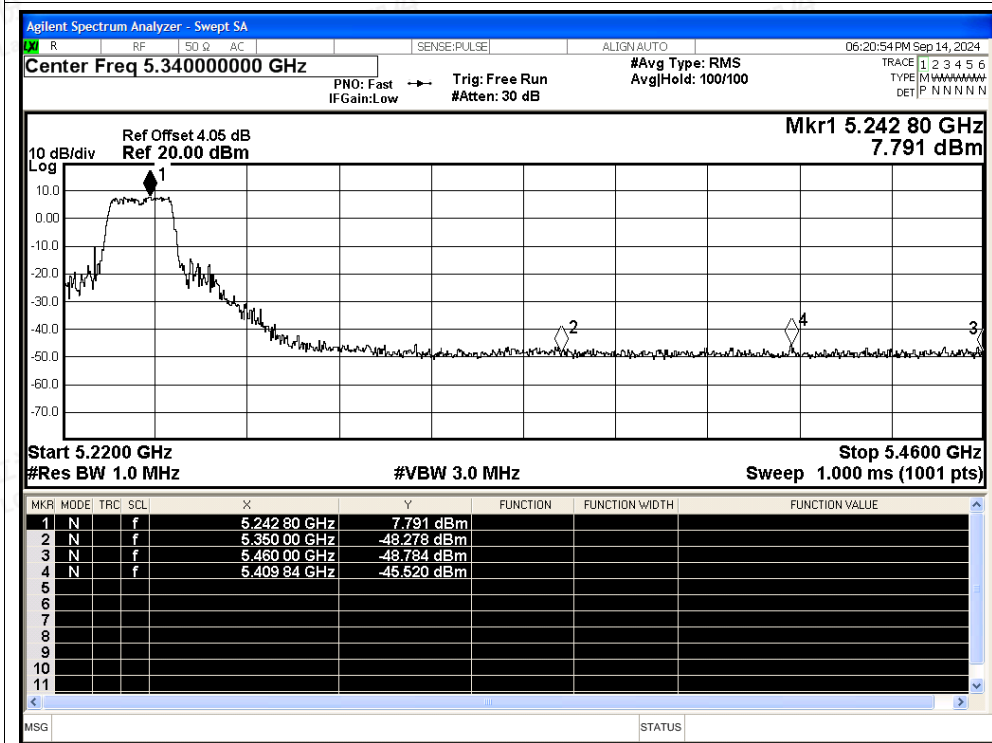


Restrict Band NVNT a 5180MHz Ant Average

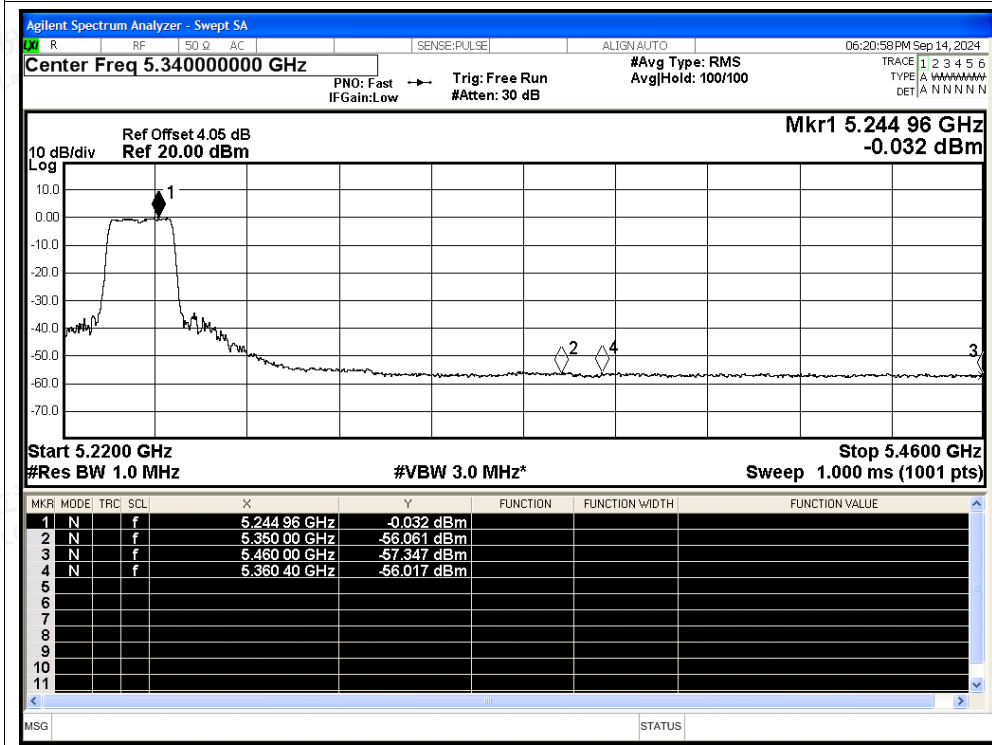




Restrict Band NVNT a 5240MHz Ant Peak

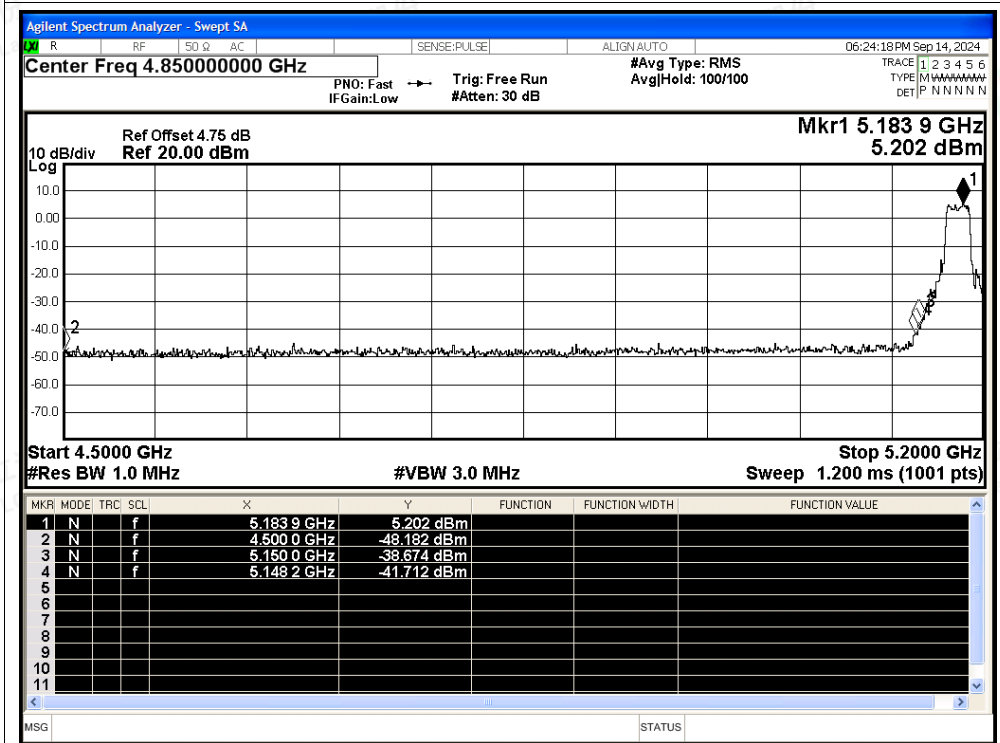


Restrict Band NVNT a 5240MHz Ant Average

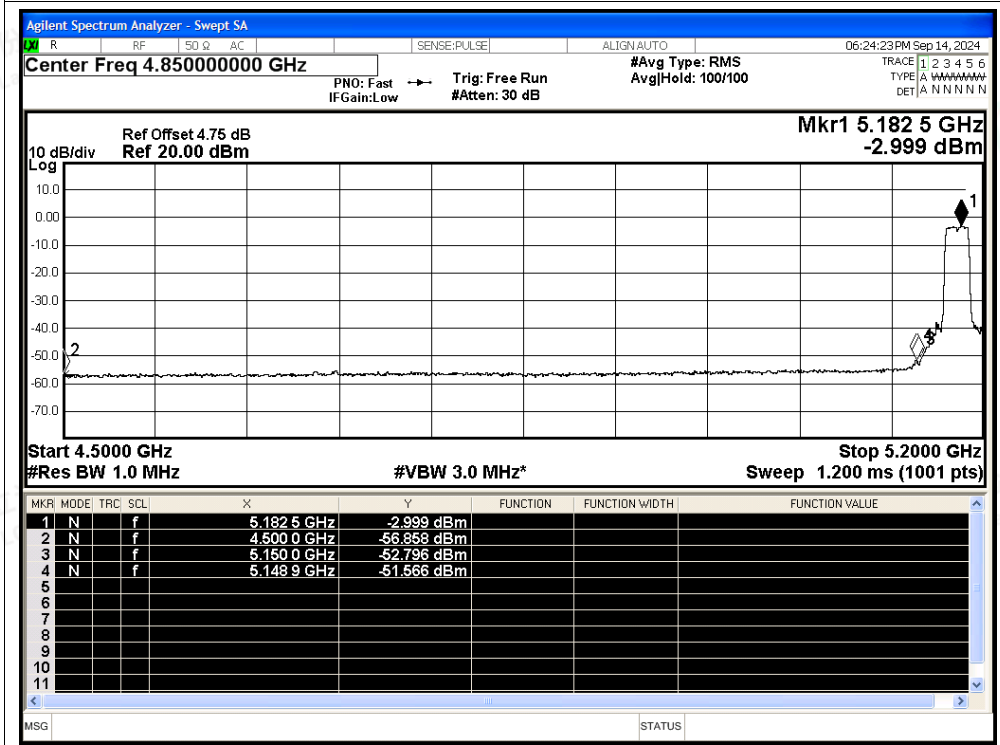




Restrict Band NVNT n20 5180MHz Ant Peak

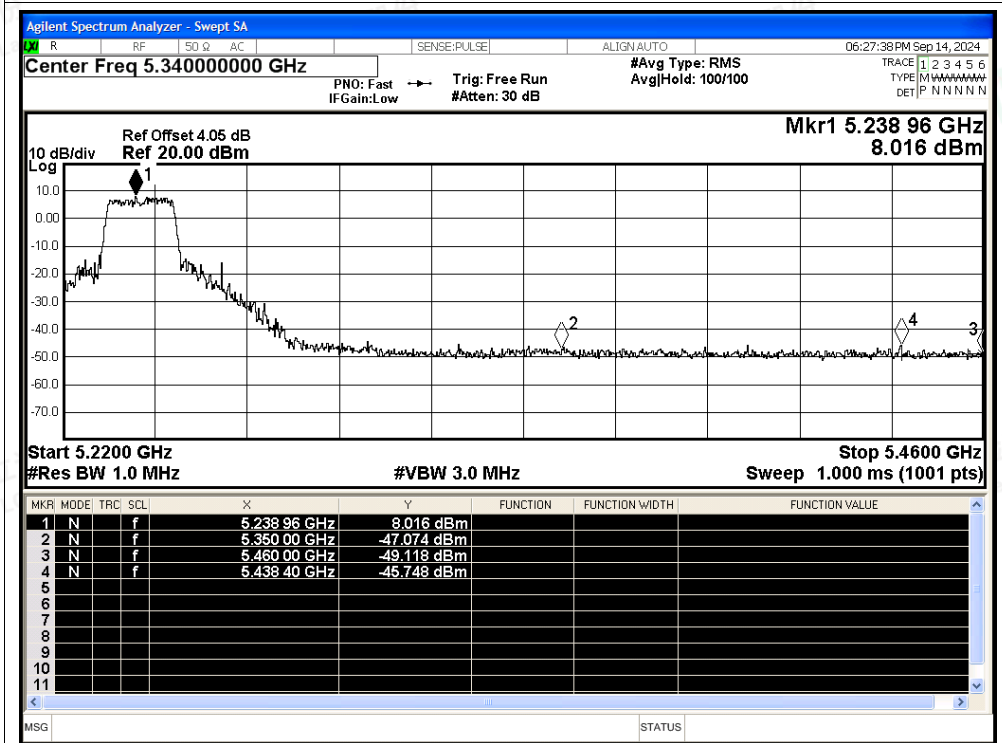


Restrict Band NVNT n20 5180MHz Ant Average

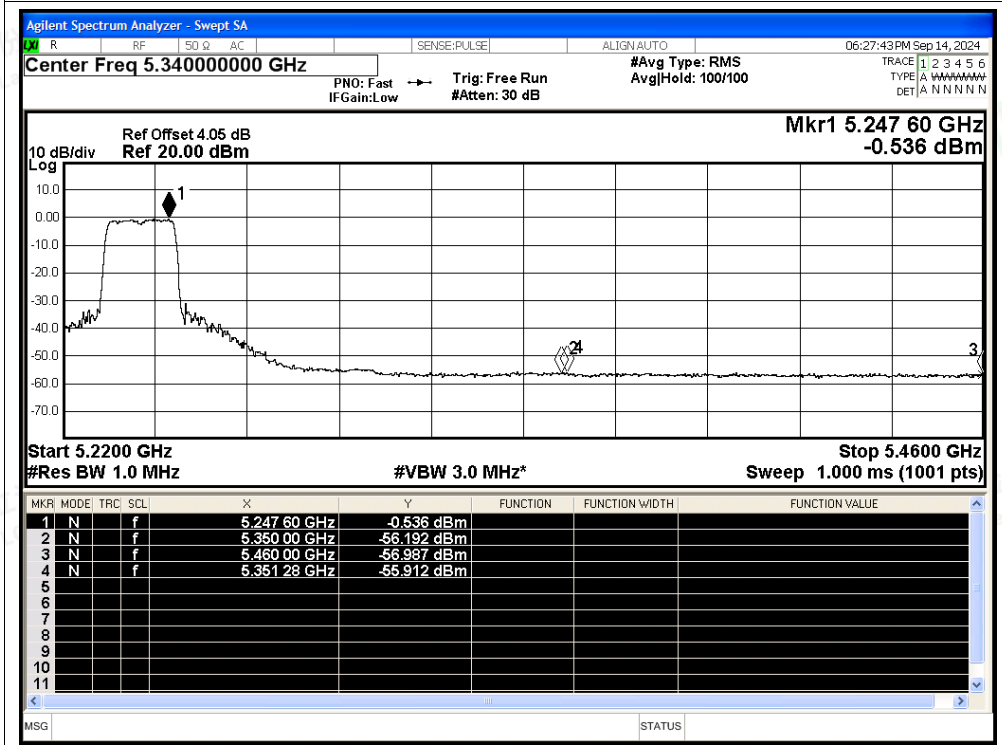




Restrict Band NVNT n20 5240MHz Ant Peak

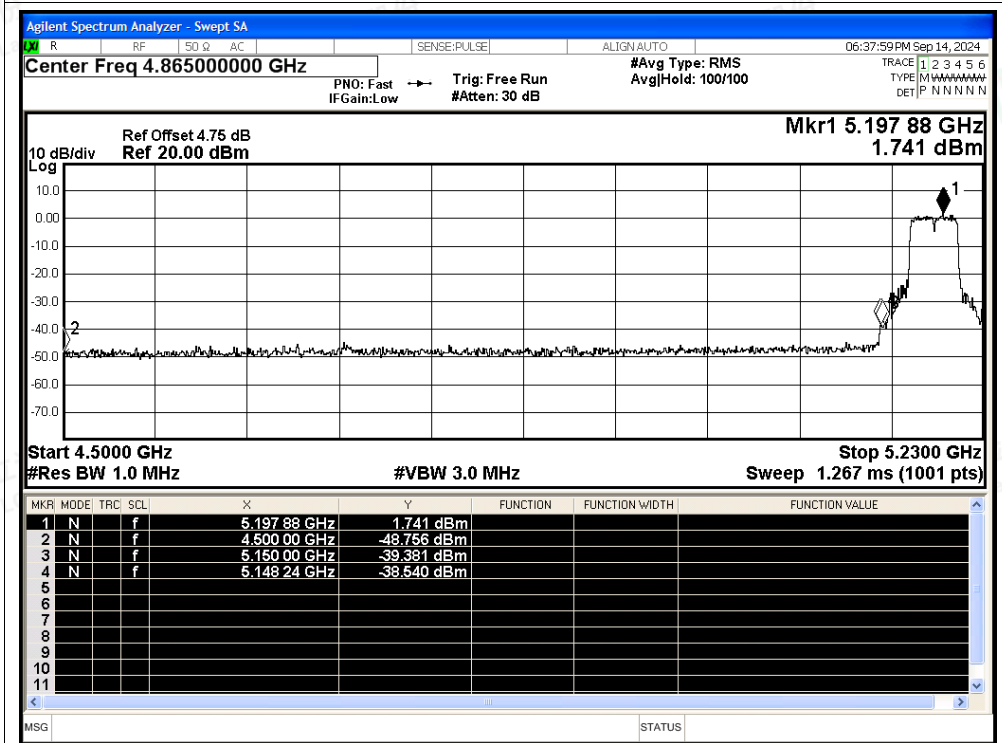


Restrict Band NVNT n20 5240MHz Ant Average

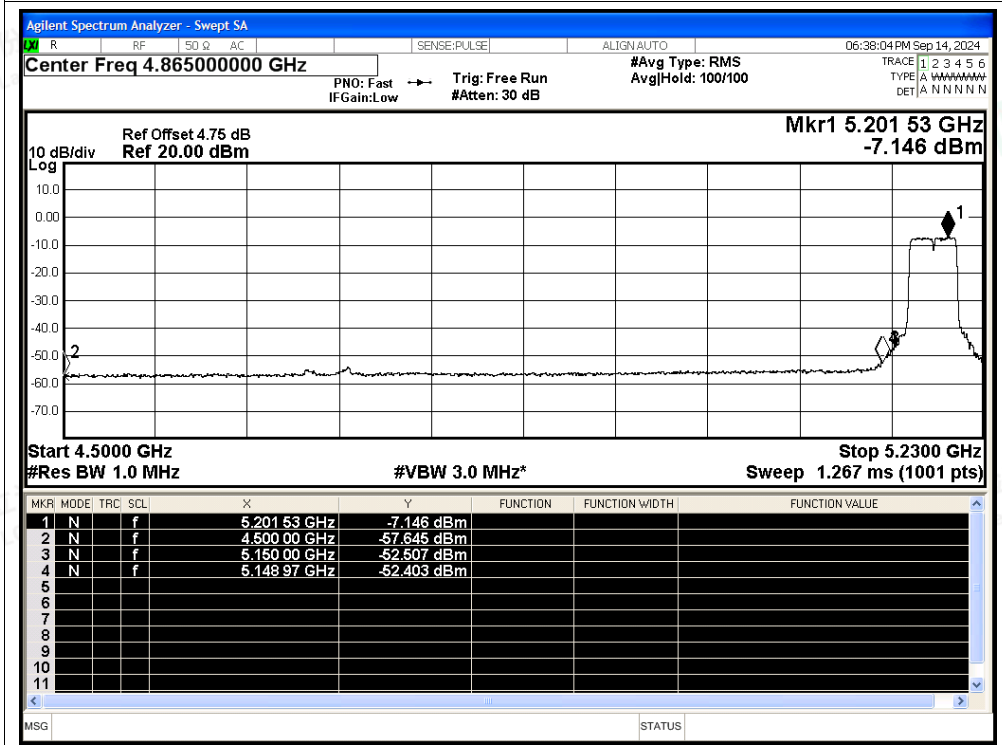




Restrict Band NVNT n40 5190MHz Ant Peak

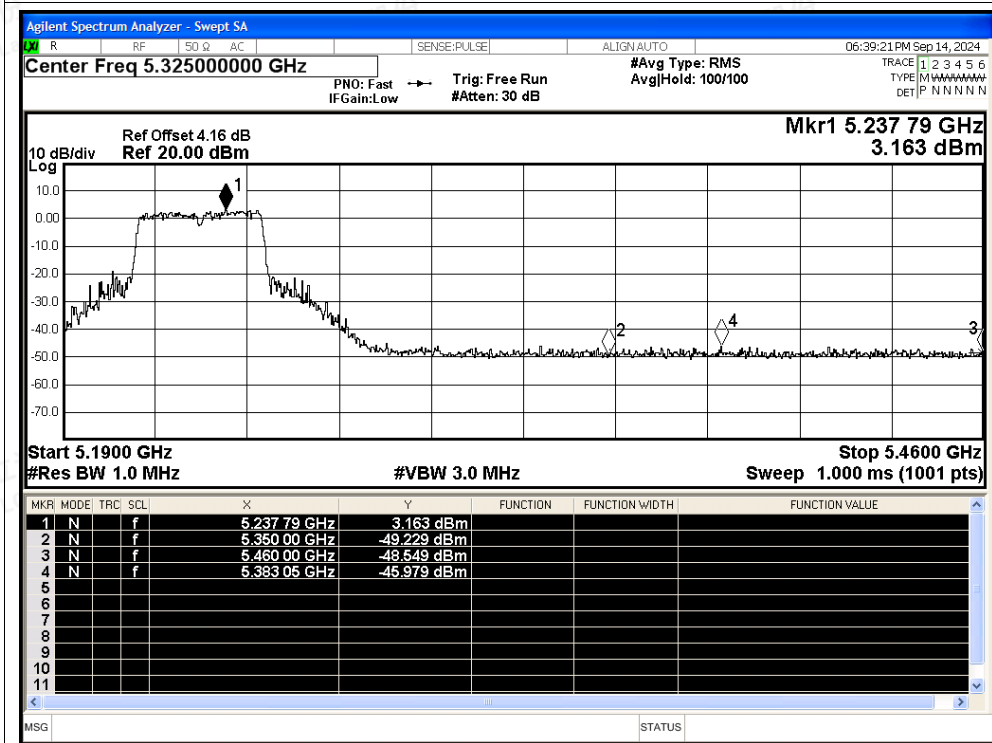


Restrict Band NVNT n40 5190MHz Ant Average

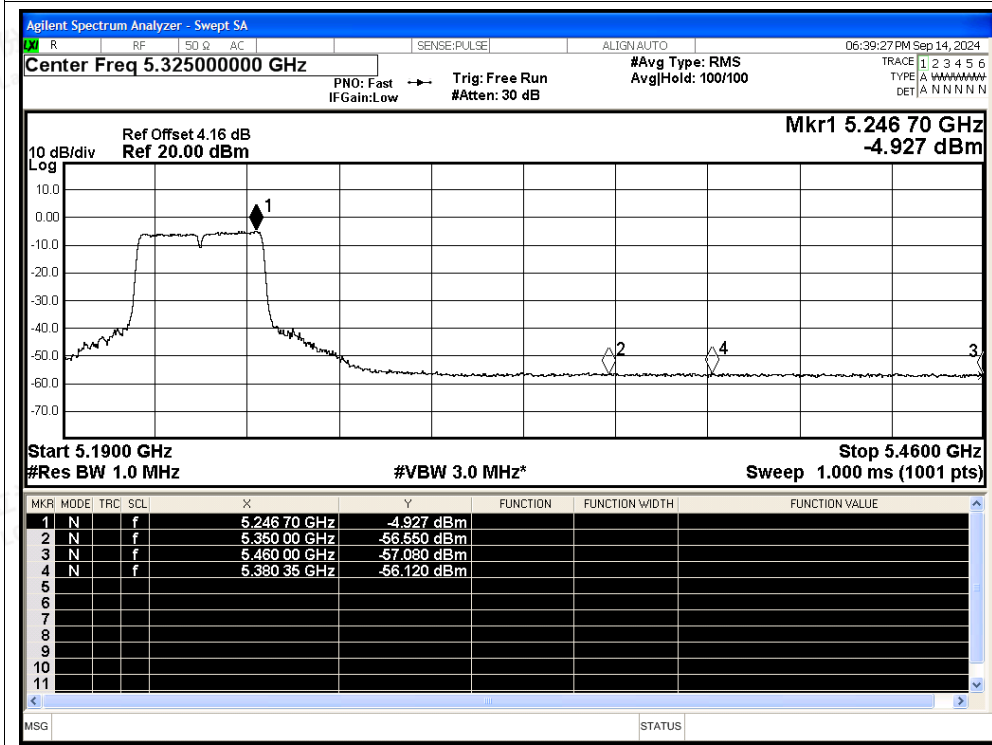




Restrict Band NVNT n40 5230MHz Ant Peak

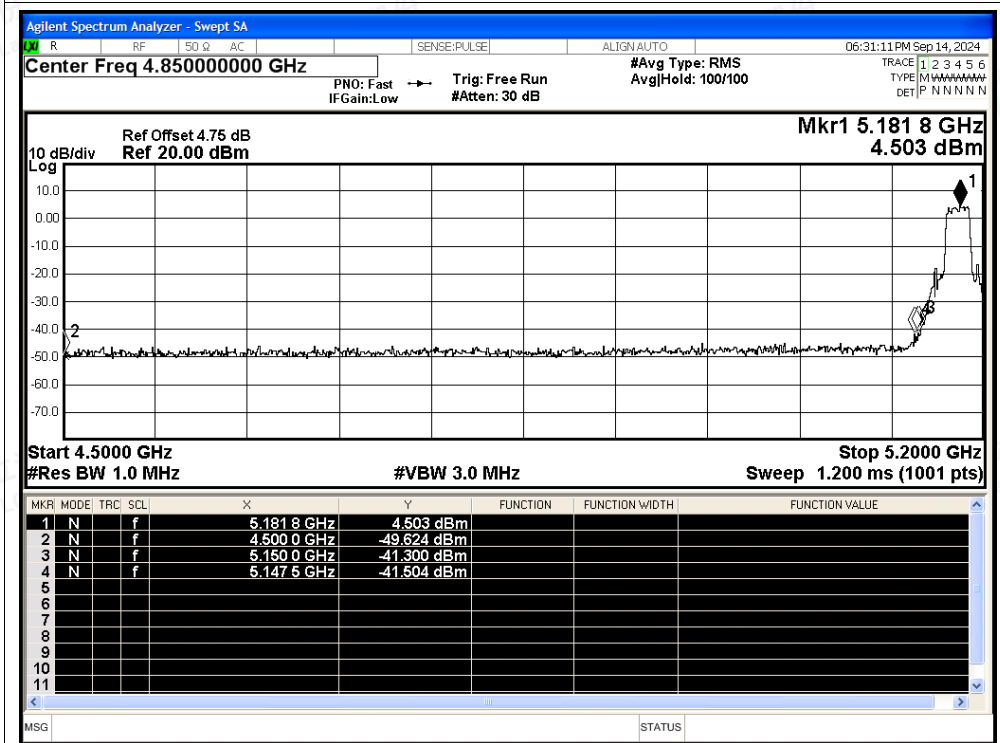


Restrict Band NVNT n40 5230MHz Ant Average

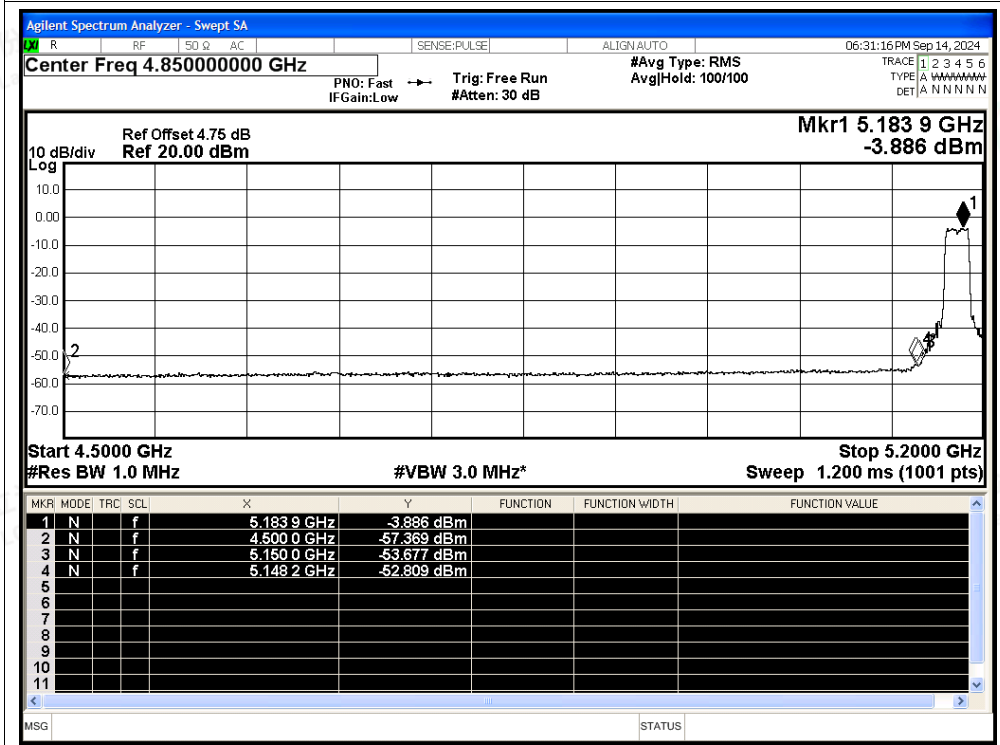




Restrict Band NVNT ac20 5180MHz Ant Peak

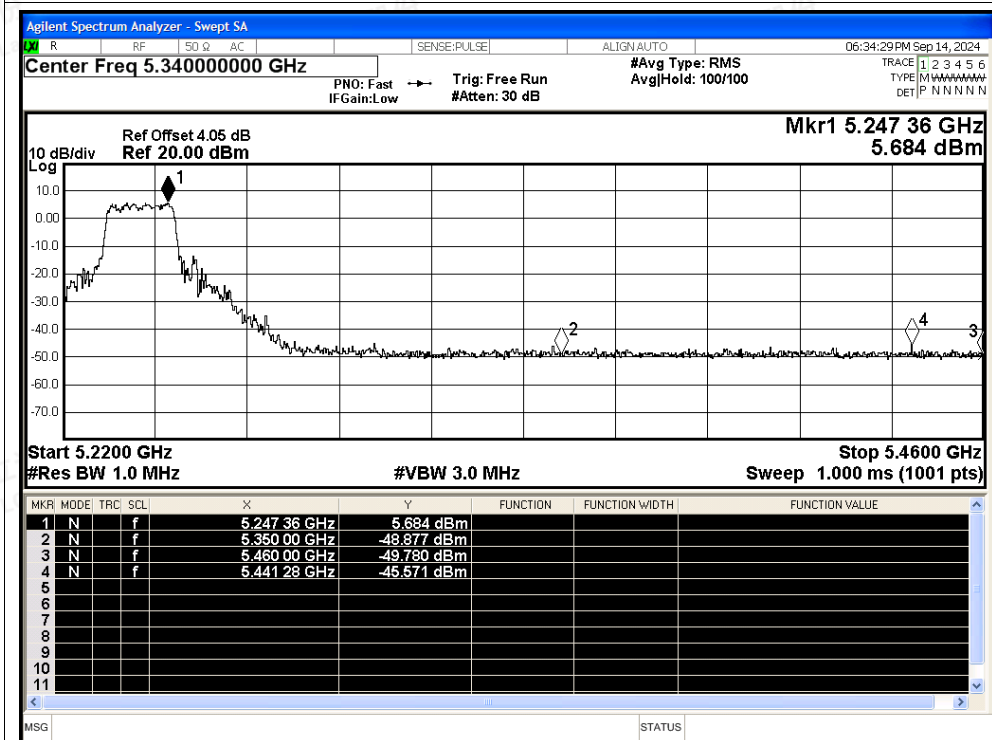


Restrict Band NVNT ac20 5180MHz Ant Average

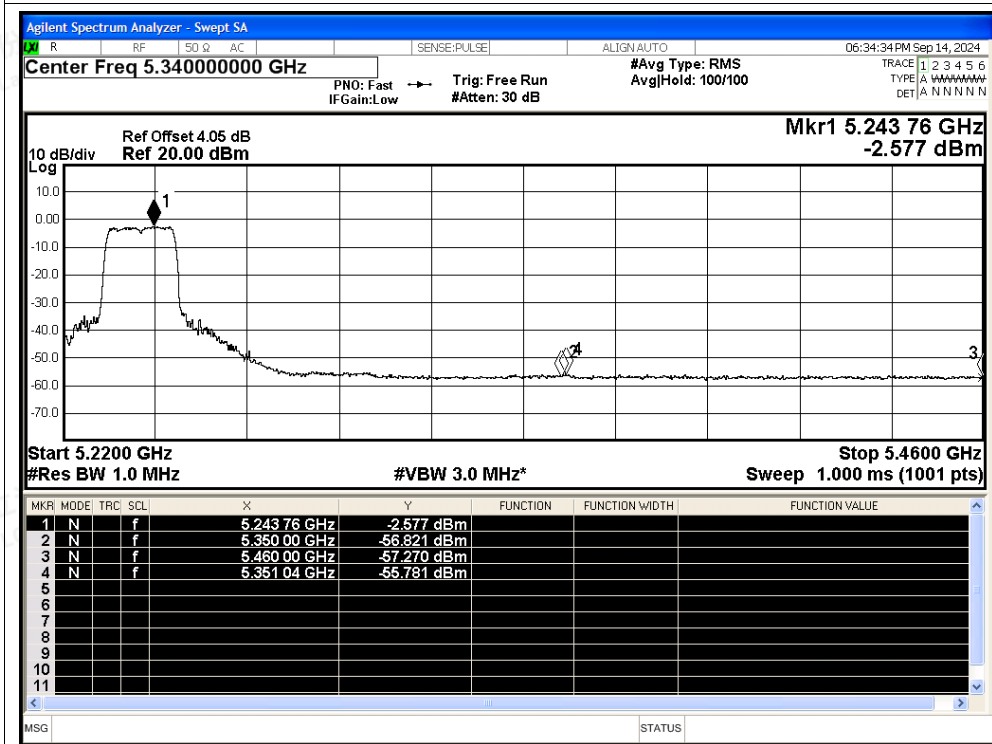




Restrict Band NVNT ac20 5240MHz Ant Peak

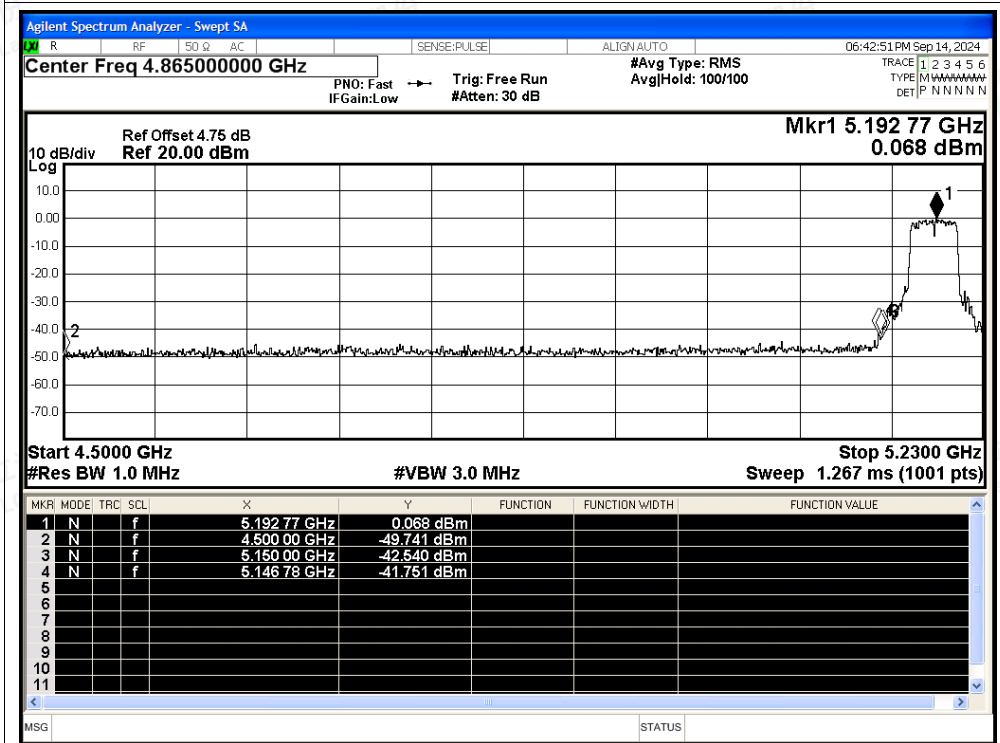


Restrict Band NVNT ac20 5240MHz Ant Average

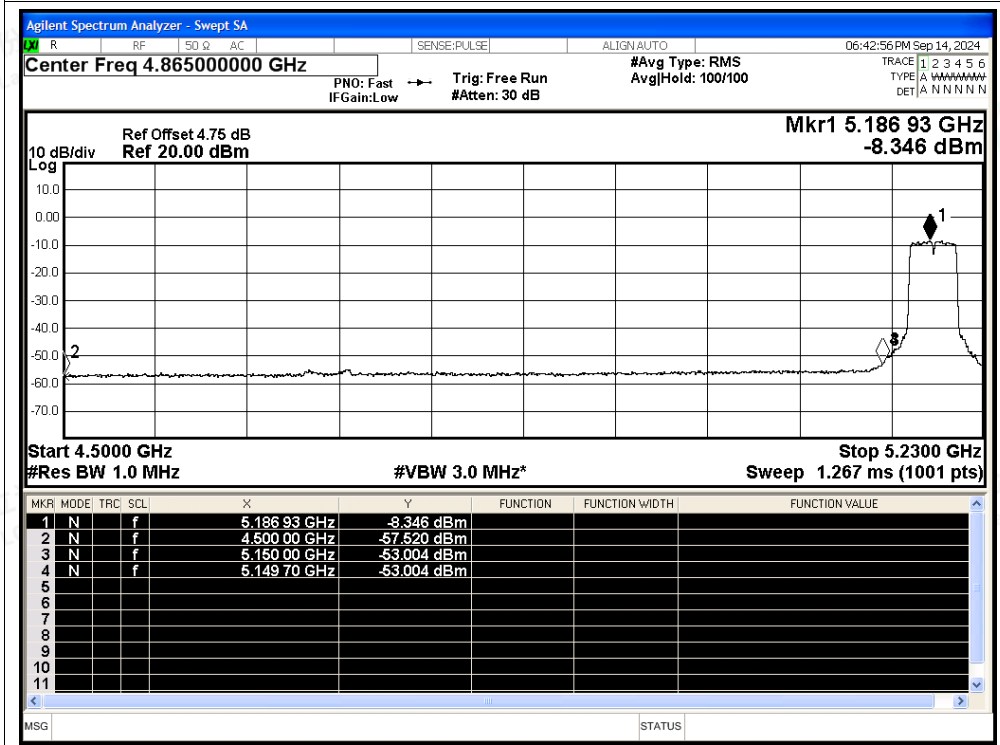




Restrict Band NVNT ac40 5190MHz Ant Peak

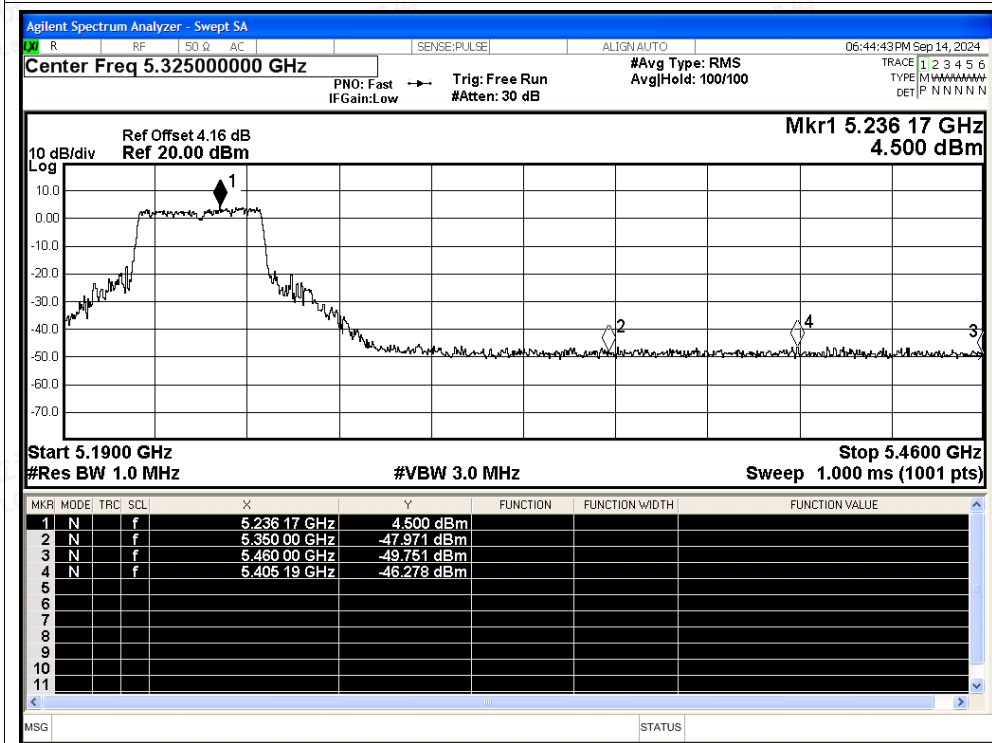


Restrict Band NVNT ac40 5190MHz Ant Average

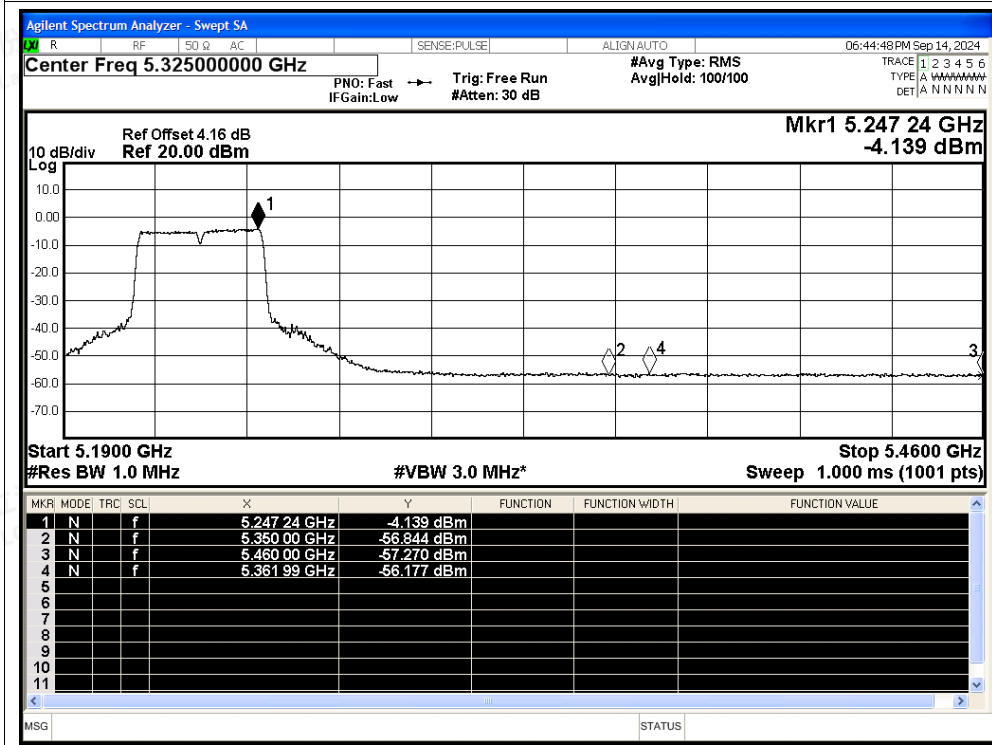




Restrict Band NVNT ac40 5230MHz Ant Peak



Restrict Band NVNT ac40 5230MHz Ant Average





D.5 Frequency Stability

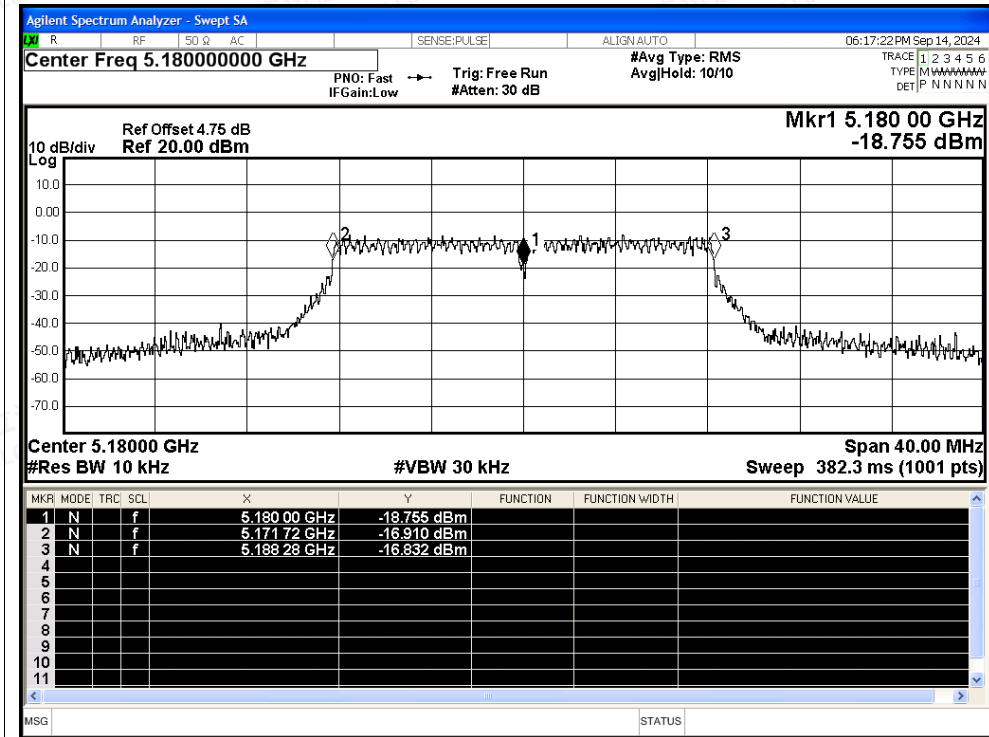
Condition	Mode	Frequency (MHz)	Antenna	Measured Frequency (MHz)	Frequency Error (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
NVNT	a	5180	Ant	5180	0	0	25	Pass
NVNT	a	5200	Ant	5200	0	0	25	Pass
NVNT	a	5240	Ant	5240	0	0	25	Pass
NVNT	n20	5180	Ant	5179.98	-20000	-3.86	25	Pass
NVNT	n20	5200	Ant	5199.98	-20000	-3.85	25	Pass
NVNT	n20	5240	Ant	5240.02	20000	3.82	25	Pass
NVNT	n40	5190	Ant	5189.96	-40000	-7.71	25	Pass
NVNT	n40	5230	Ant	5230	0	0	25	Pass
NVNT	ac20	5180	Ant	5180	0	0	25	Pass
NVNT	ac20	5200	Ant	5199.98	-20000	-3.85	25	Pass
NVNT	ac20	5240	Ant	5240	0	0	25	Pass
NVNT	ac40	5190	Ant	5190	0	0	25	Pass
NVNT	ac40	5230	Ant	5230	0	0	25	Pass



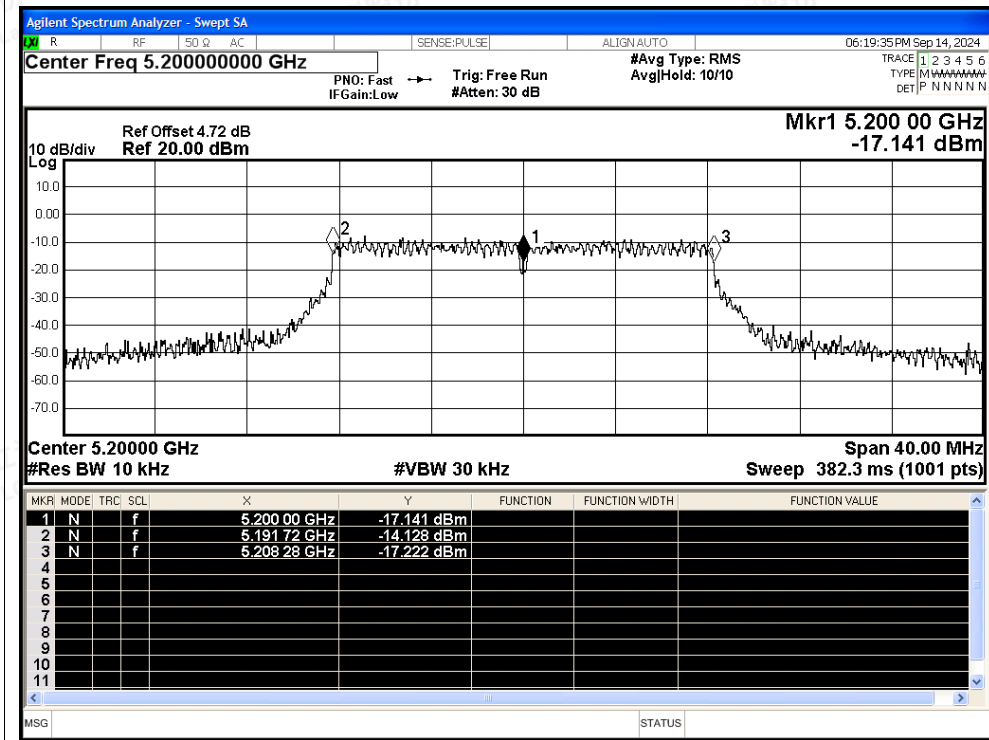


Test Graphs

Freq. Stability NVNT a 5180MHz Ant

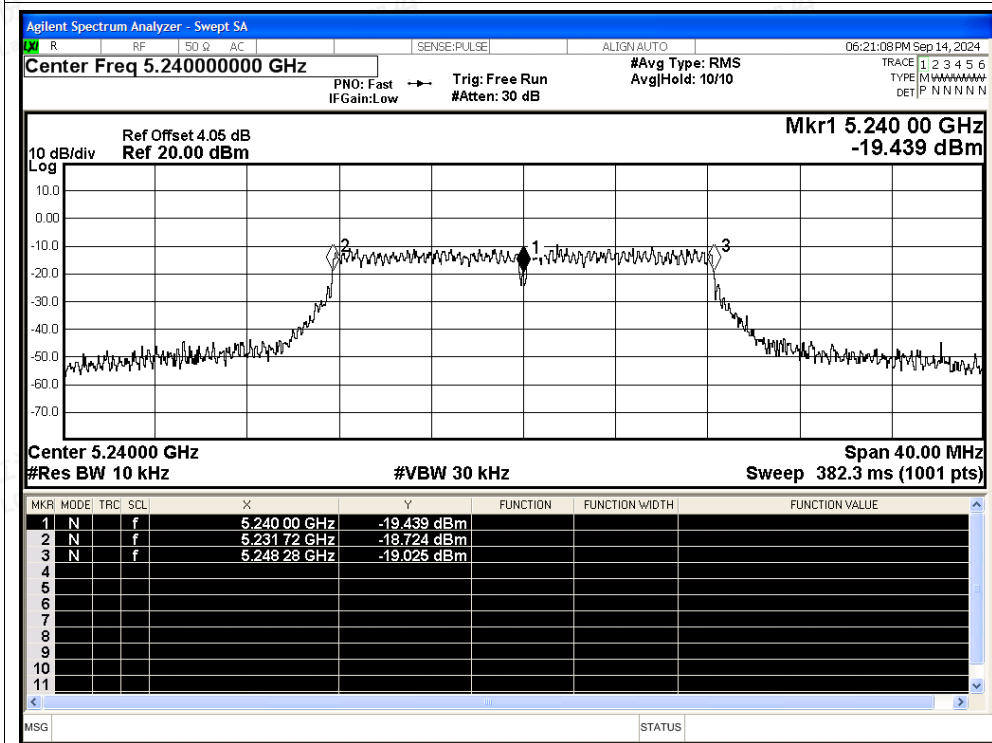


Freq. Stability NVNT a 5200MHz Ant

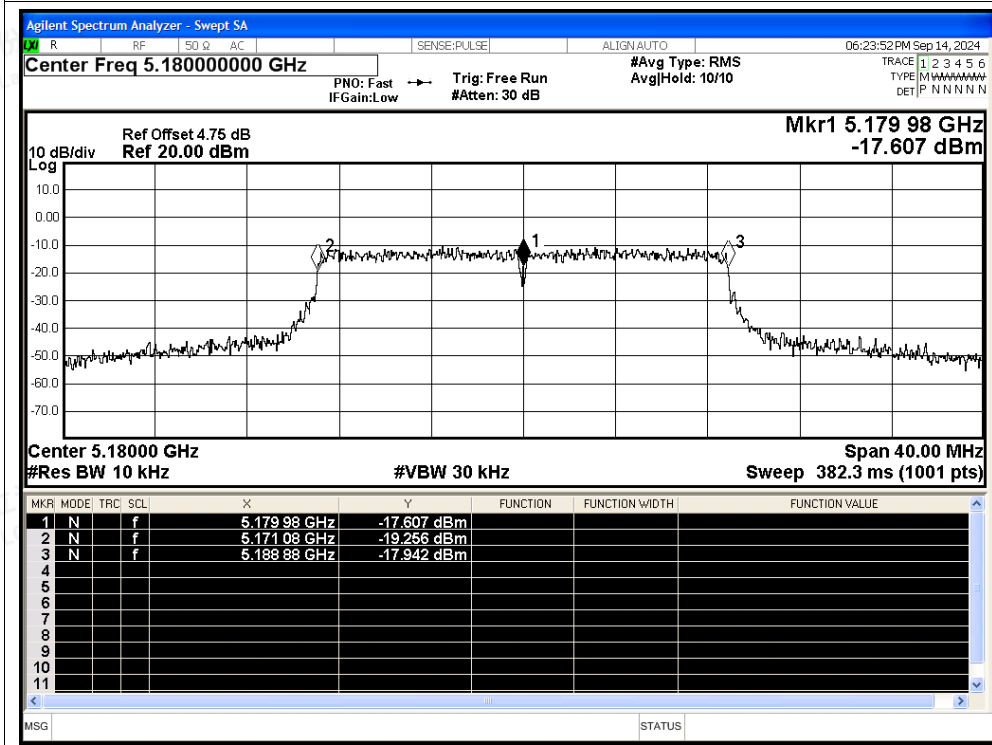




Freq. Stability NVNT a 5240MHz Ant

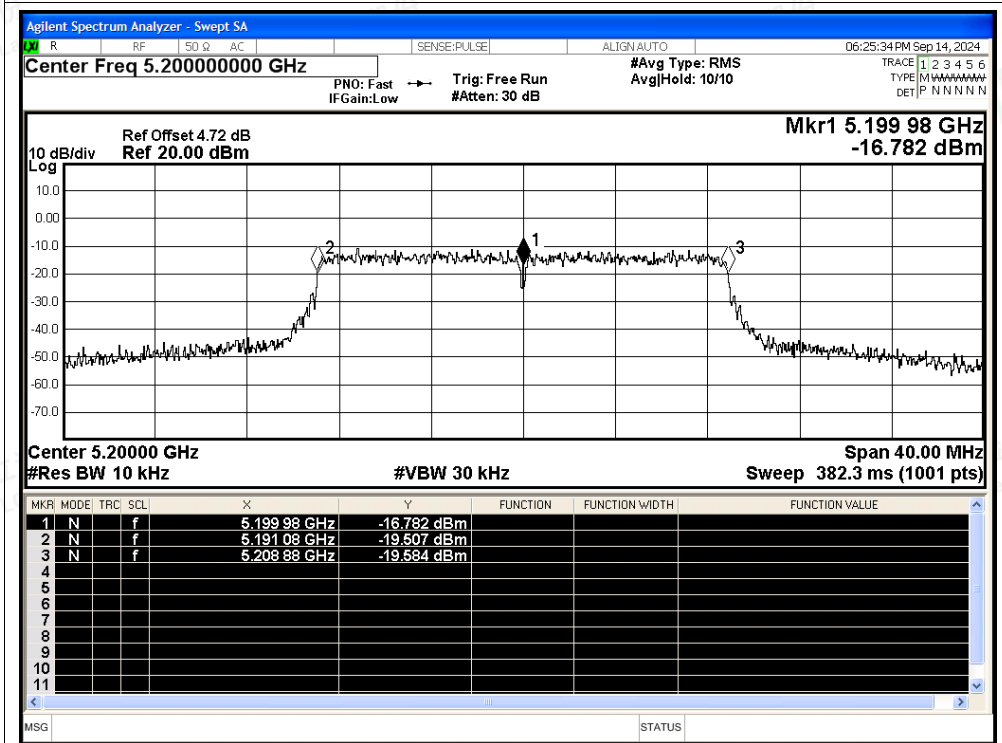


Freq. Stability NVNT n20 5180MHz Ant

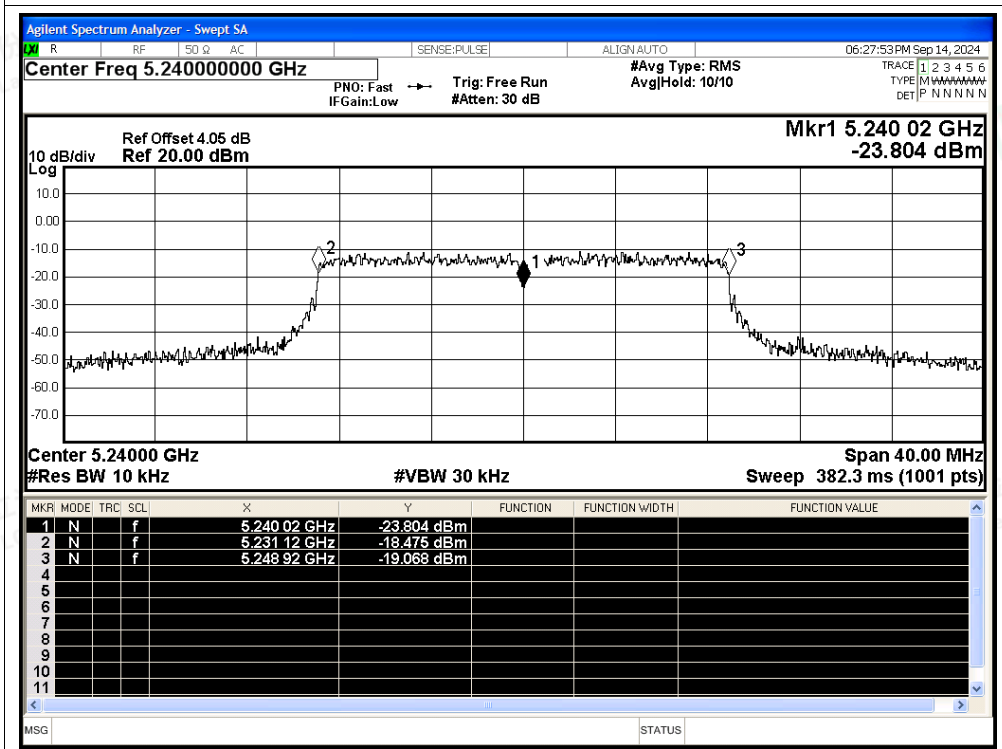




Freq. Stability NVNT n20 5200MHz Ant

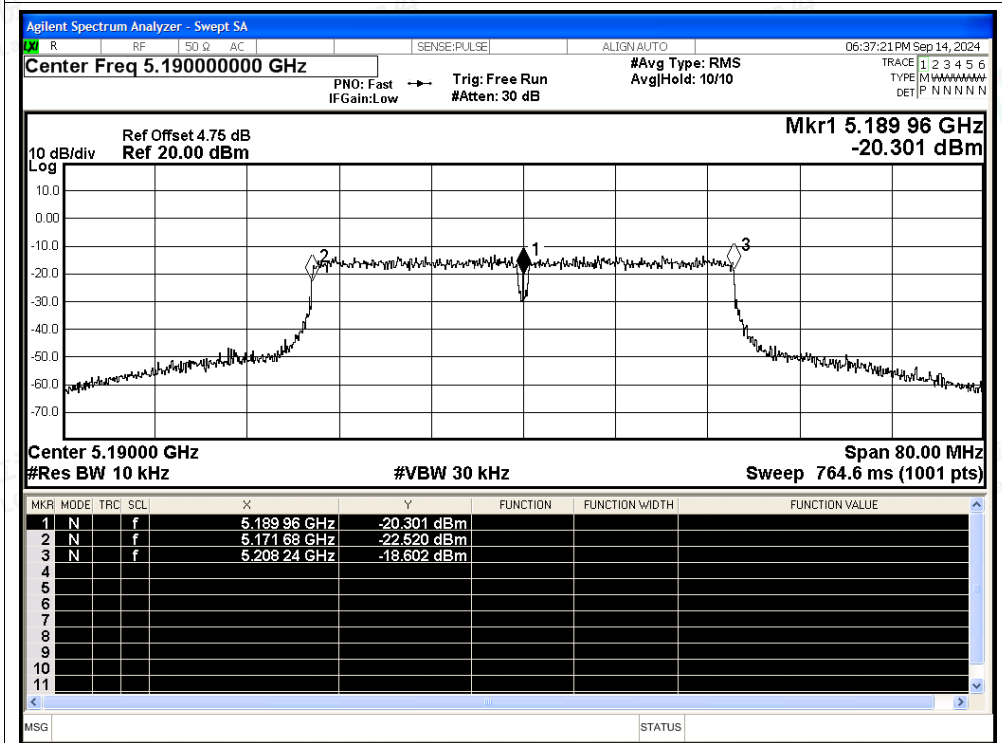


Freq. Stability NVNT n20 5240MHz Ant

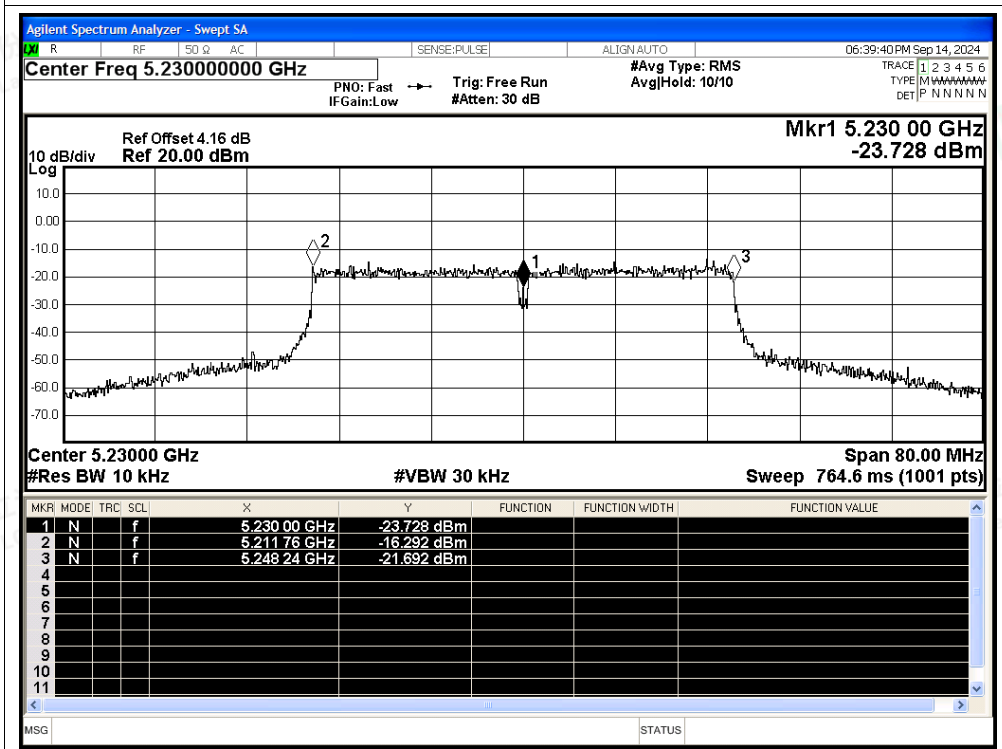




Freq. Stability NVNT n40 5190MHz Ant

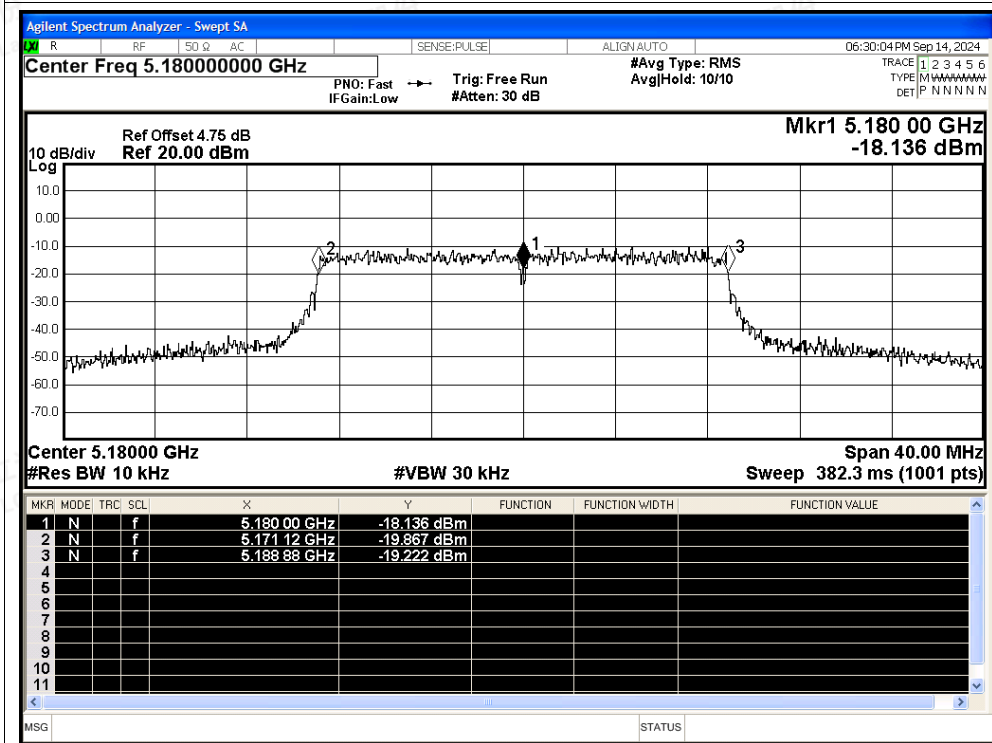


Freq. Stability NVNT n40 5230MHz Ant

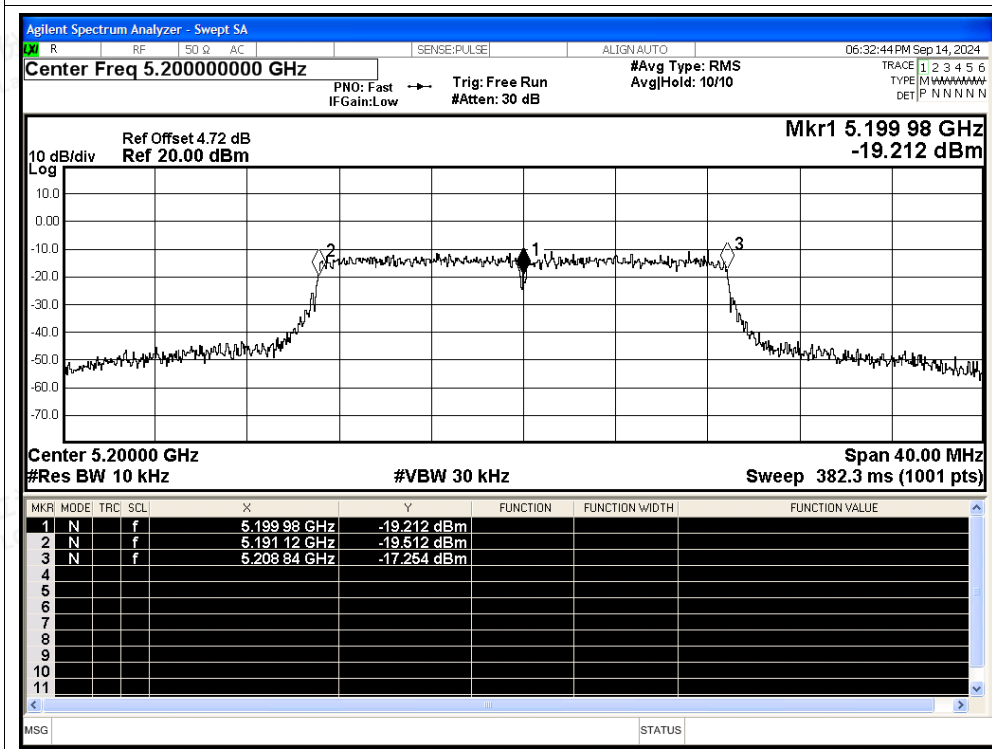




Freq. Stability NVNT ac20 5180MHz Ant

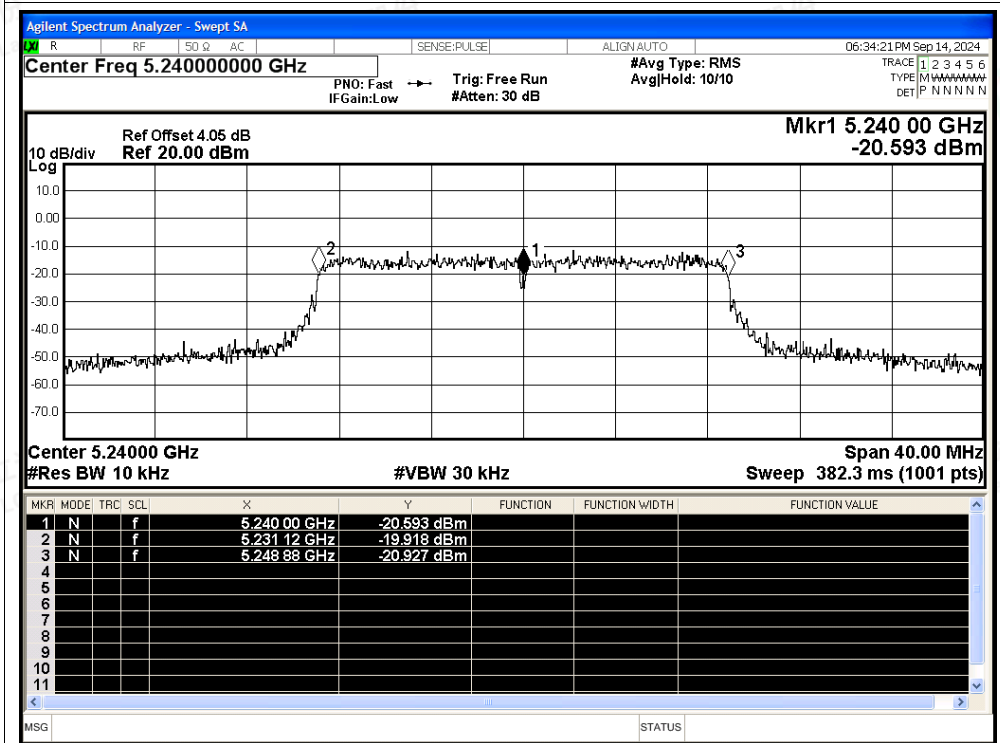


Freq. Stability NVNT ac20 5200MHz Ant

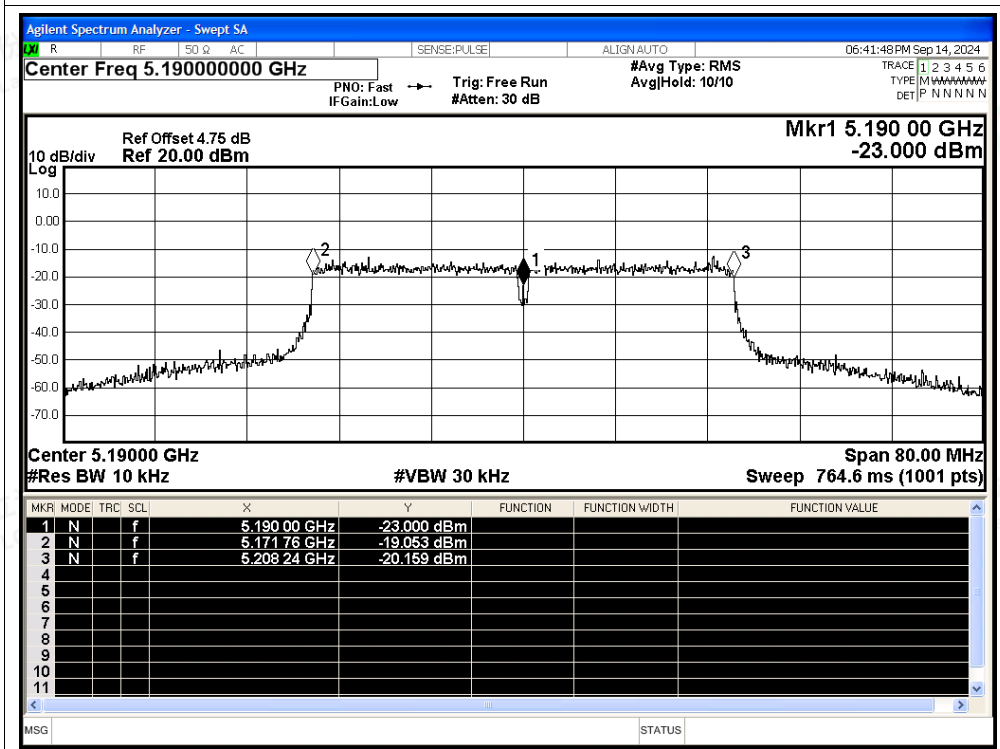


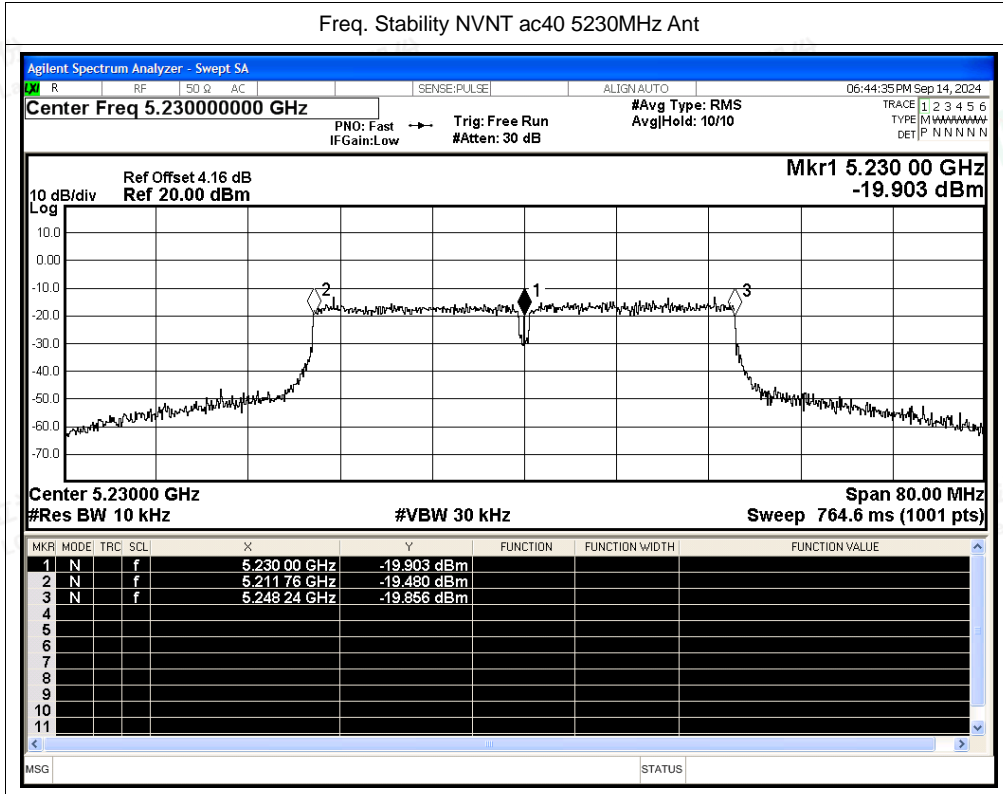


Freq. Stability NVNT ac20 5240MHz Ant



Freq. Stability NVNT ac40 5190MHz Ant







D.6 Duty Cycle

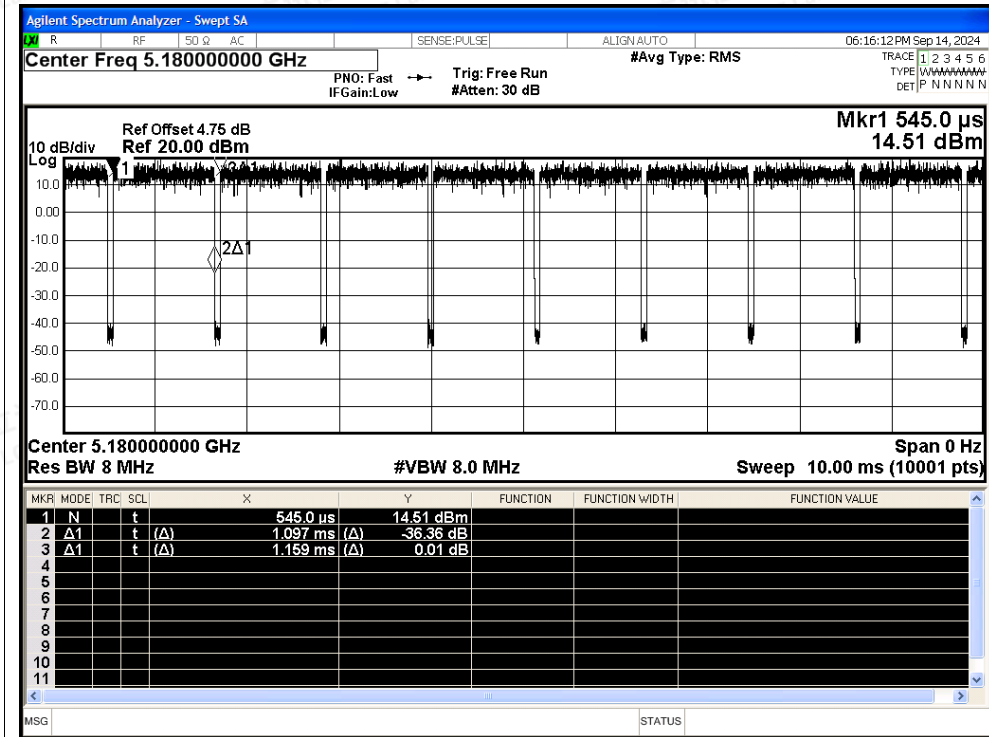
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5180	Ant	94.65	0.24	0.91
NVNT	a	5200	Ant	94.56	0.24	0.91
NVNT	a	5240	Ant	94.65	0.24	0.91
NVNT	n20	5180	Ant	97.33	0.12	0.44
NVNT	n20	5200	Ant	97.29	0.12	0.44
NVNT	n20	5240	Ant	97.29	0.12	0.44
NVNT	n40	5190	Ant	97.23	0.12	0.46
NVNT	n40	5230	Ant	97.18	0.12	0.46
NVNT	ac20	5180	Ant	97.35	0.12	0.44
NVNT	ac20	5200	Ant	97.34	0.12	0.44
NVNT	ac20	5240	Ant	97.34	0.12	0.44
NVNT	ac40	5190	Ant	97.19	0.12	0.46
NVNT	ac40	5230	Ant	97.24	0.12	0.46



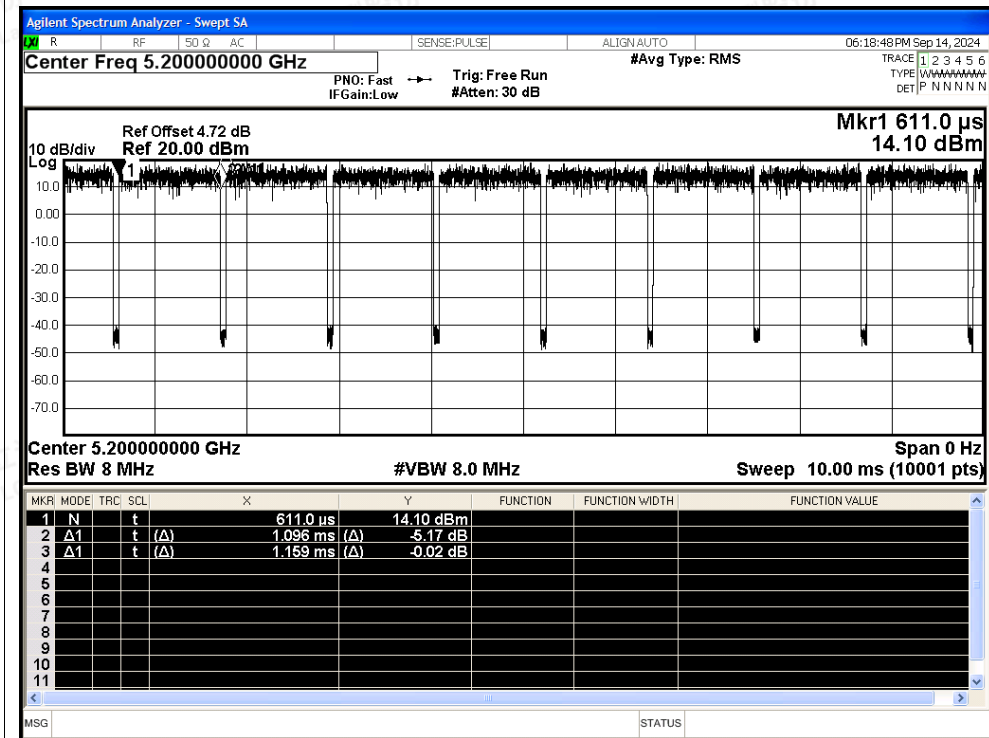


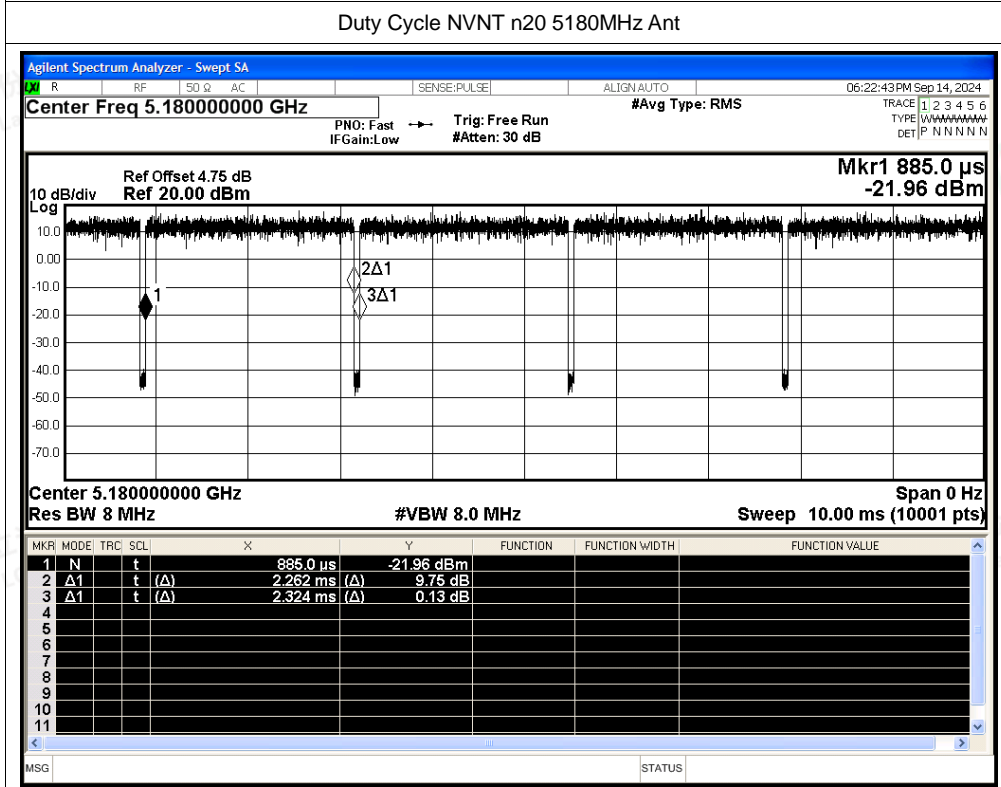
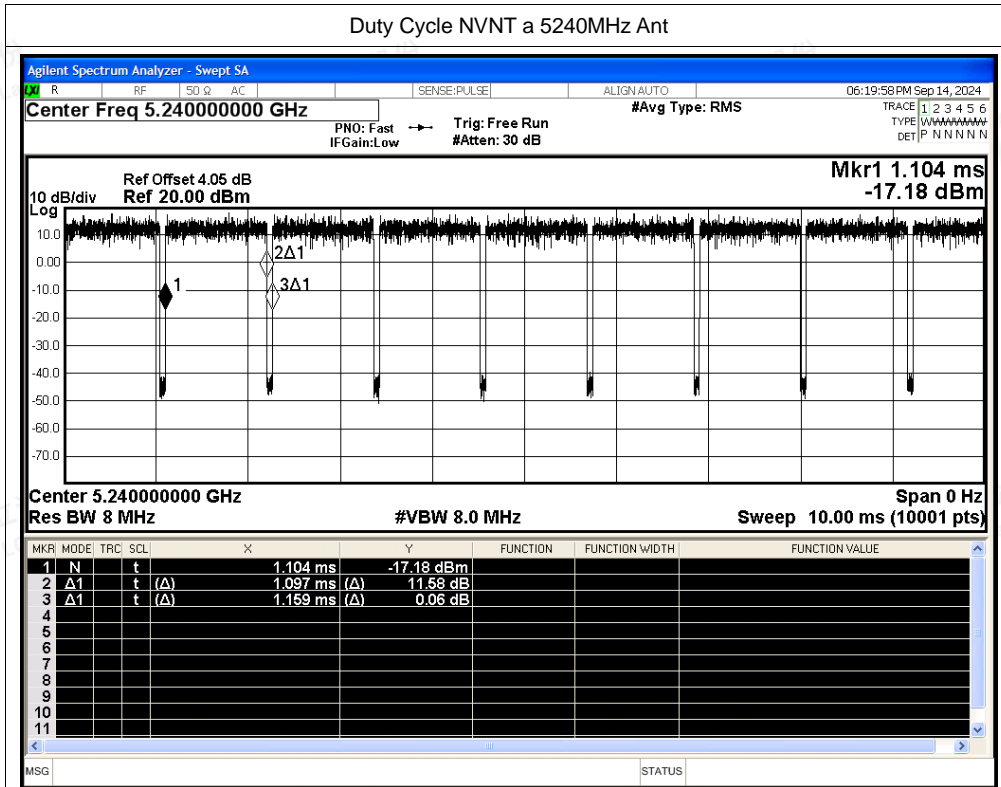
Test Graphs

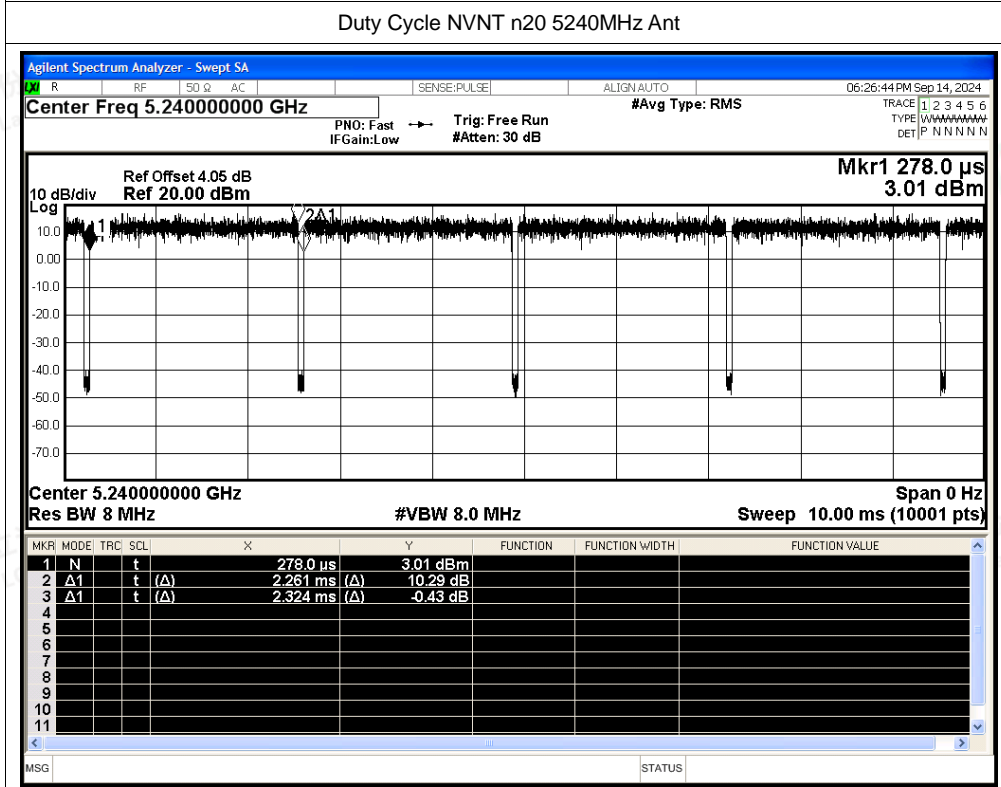
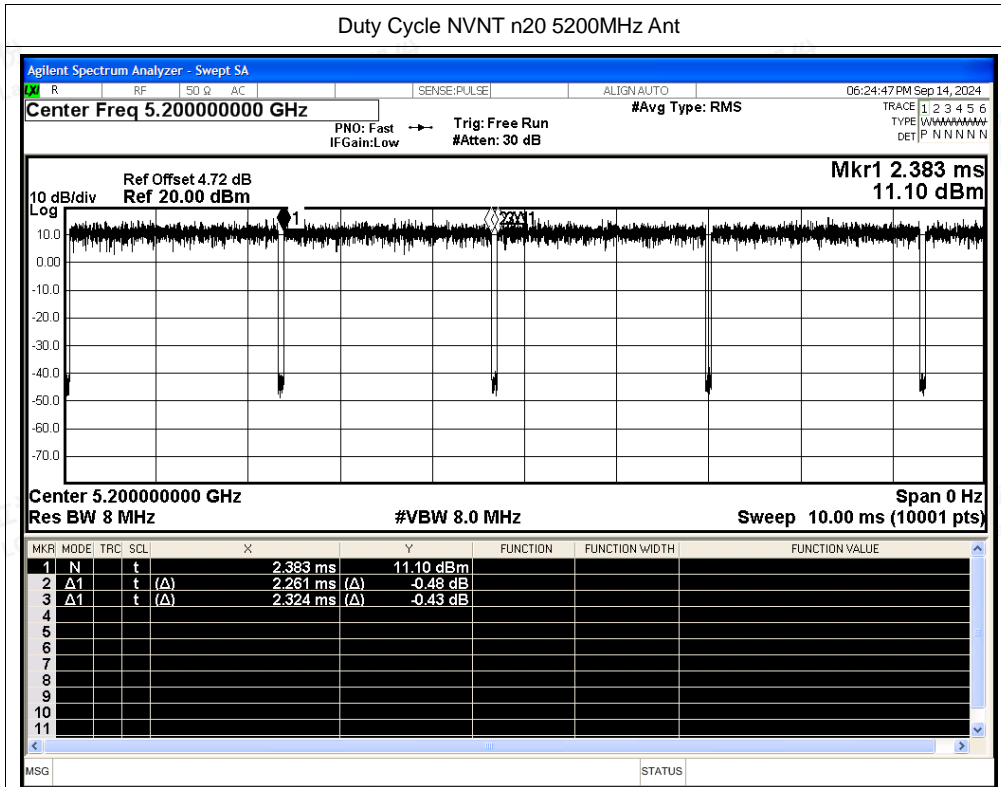
Duty Cycle NVNT a 5180MHz Ant

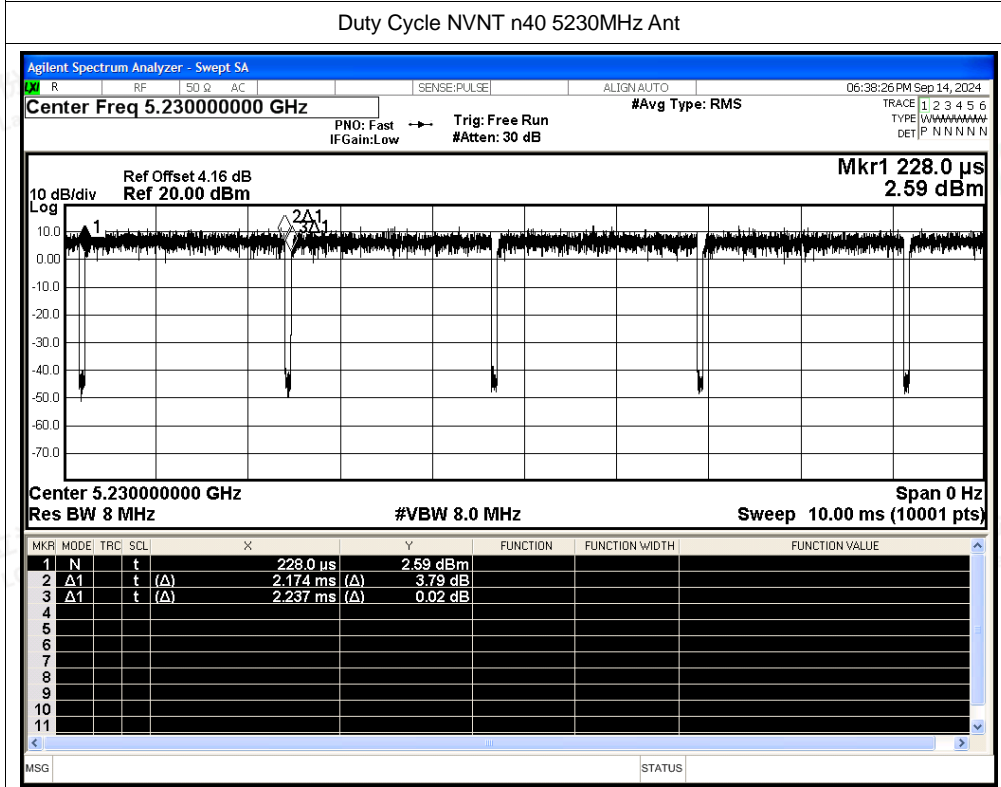
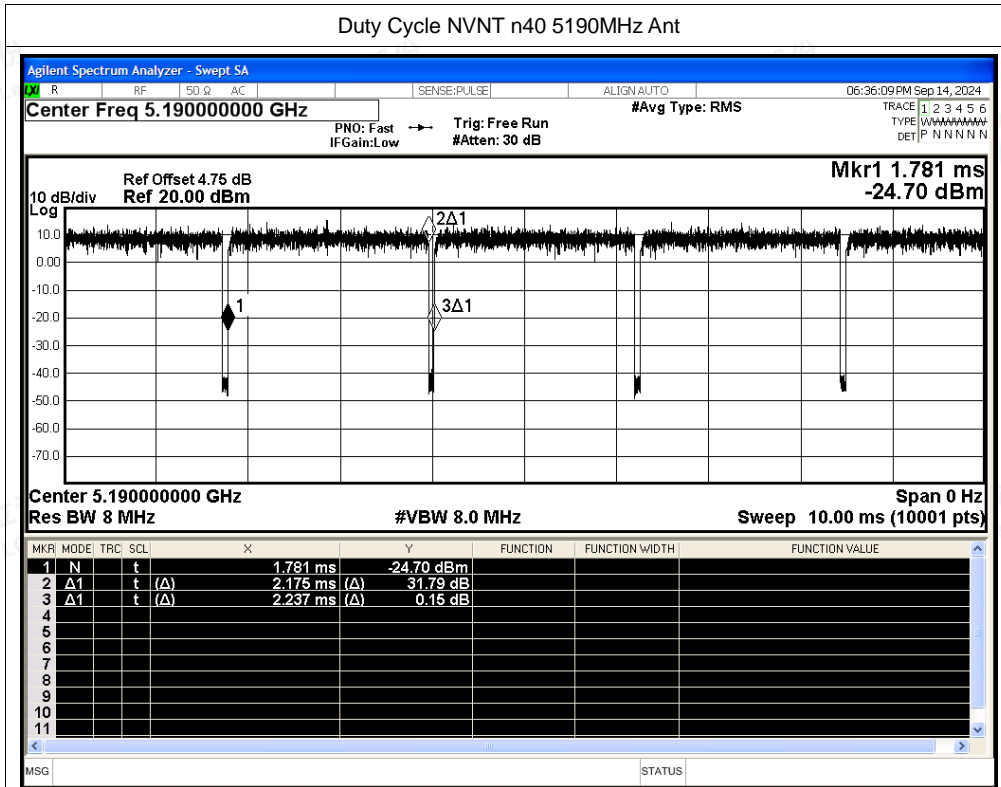


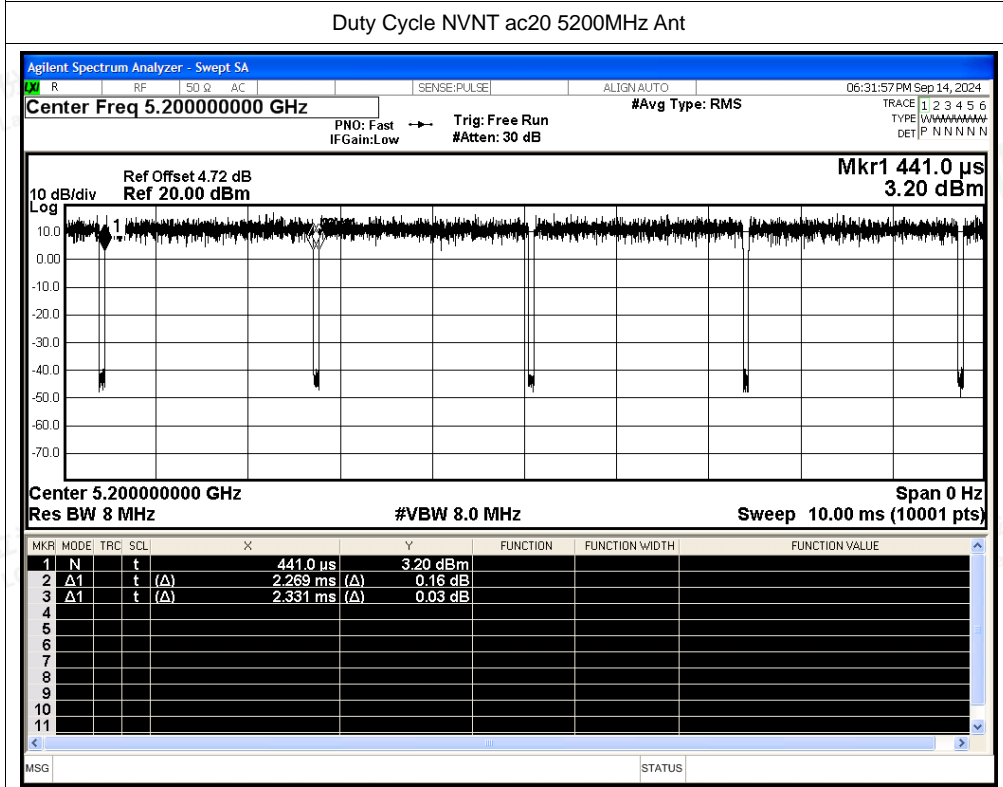
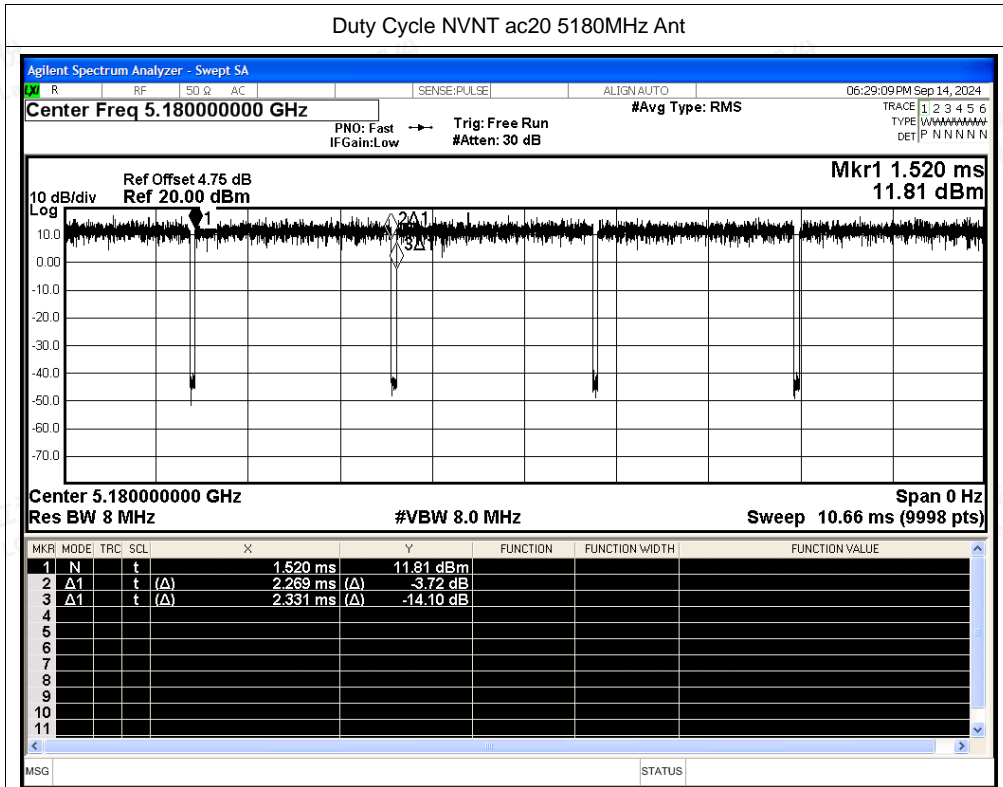
Duty Cycle NVNT a 5200MHz Ant





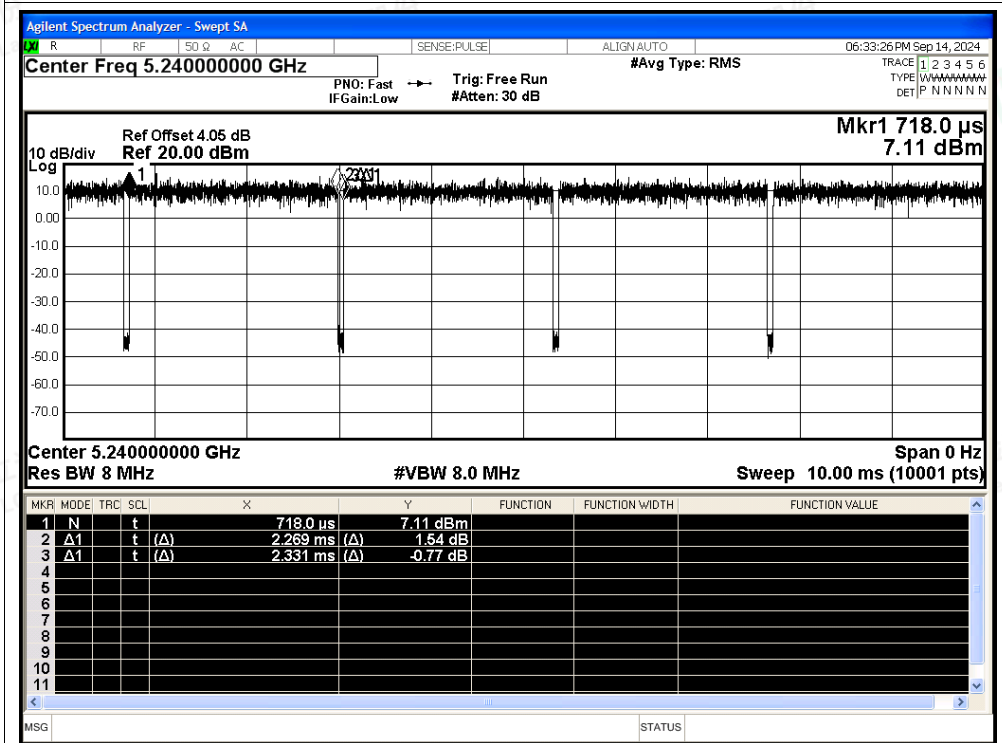








Duty Cycle NVNT ac20 5240MHz Ant



Duty Cycle NVNT ac40 5190MHz Ant

