



Appendix D

RF Test Data for 5.2GWIFI (Conducted Measurement)

Product Name: Handheld tire tread detection equipment

Test Model: TTM313

Environmental Conditions

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



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



D.1 -26dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-26 dB Bandwidth (MHz)	Limit -26 dB Bandwidth (MHz)	Verdict
NVNT	a	5180	Ant1	20.821	---	Pass
NVNT	a	5200	Ant1	20.894	---	Pass
NVNT	a	5240	Ant1	21.149	---	Pass
NVNT	n20	5180	Ant1	21.142	---	Pass
NVNT	n20	5200	Ant1	21.278	---	Pass
NVNT	n20	5240	Ant1	20.92	---	Pass
NVNT	n40	5190	Ant1	39.301	---	Pass
NVNT	n40	5230	Ant1	39.349	---	Pass
NVNT	ac20	5180	Ant1	21.266	---	Pass
NVNT	ac20	5200	Ant1	21.093	---	Pass
NVNT	ac20	5240	Ant1	21.169	---	Pass
NVNT	ac40	5190	Ant1	39.417	---	Pass
NVNT	ac40	5230	Ant1	39.348	---	Pass
NVNT	ac80	5210	Ant1	80.373	---	Pass

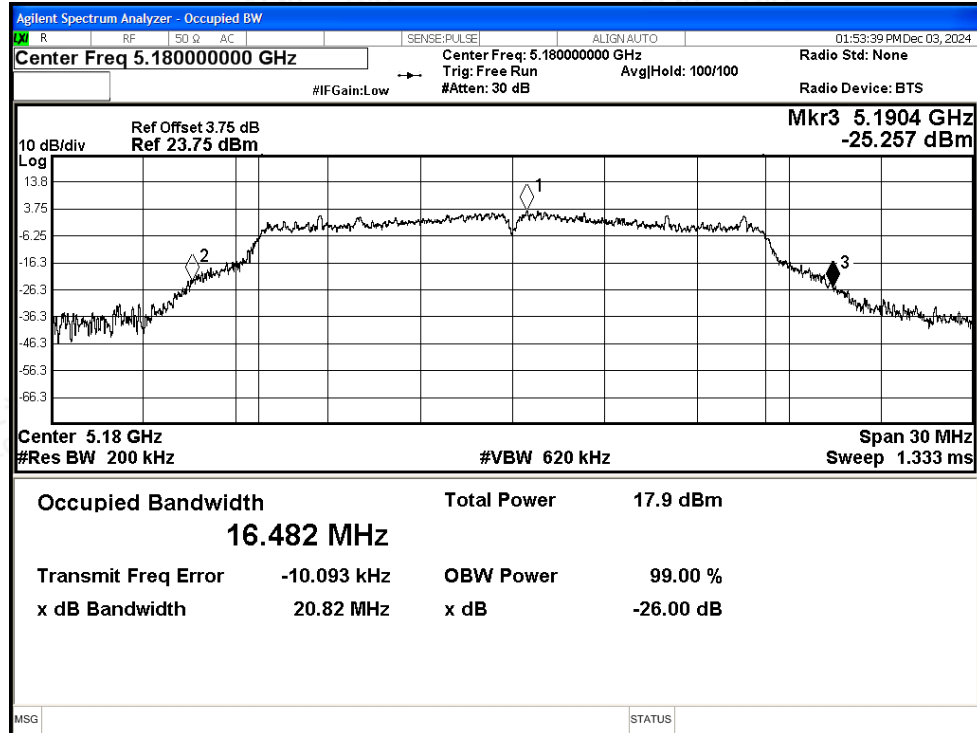


Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street,
Baoan District, Shenzhen, 518000, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

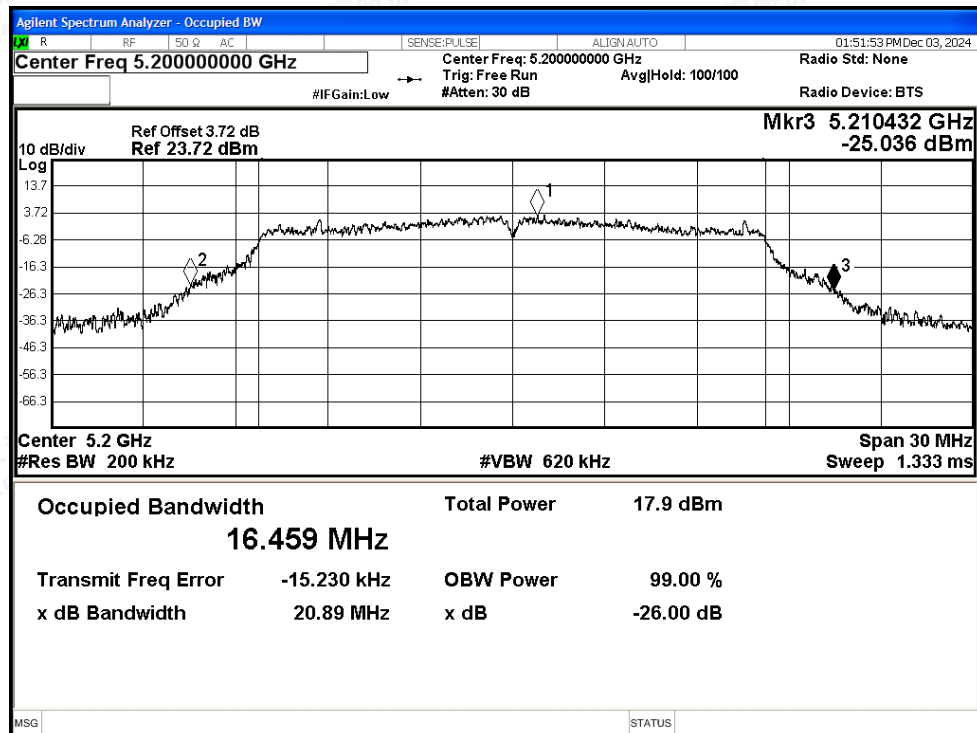


Test Graphs

-26dB Bandwidth NVNT a 5180MHz Ant1

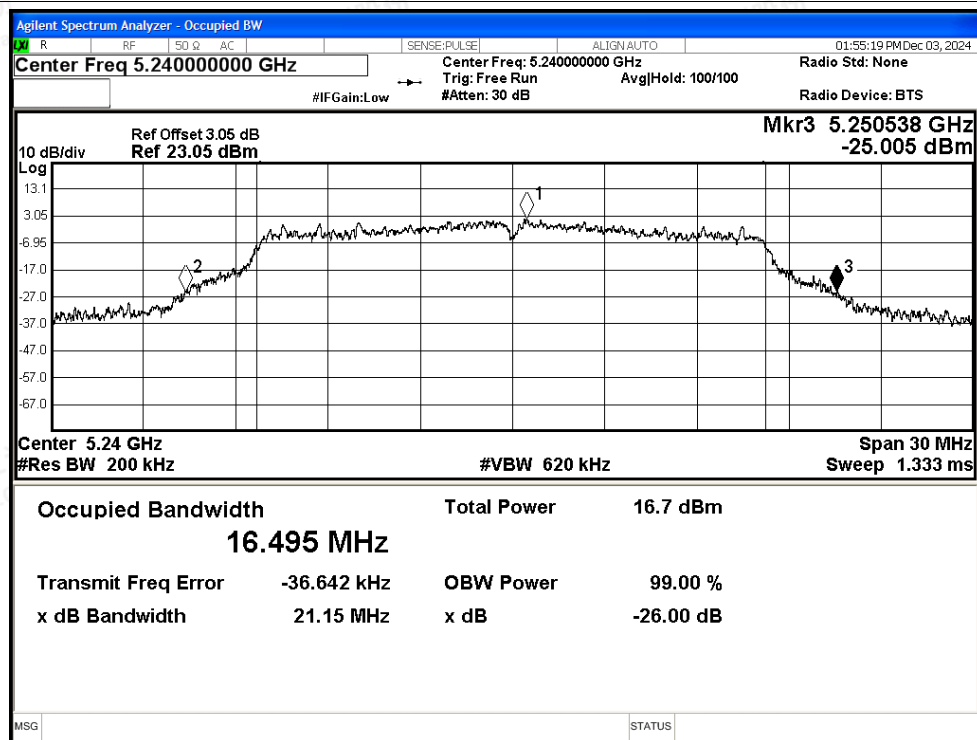


-26dB Bandwidth NVNT a 5200MHz Ant1

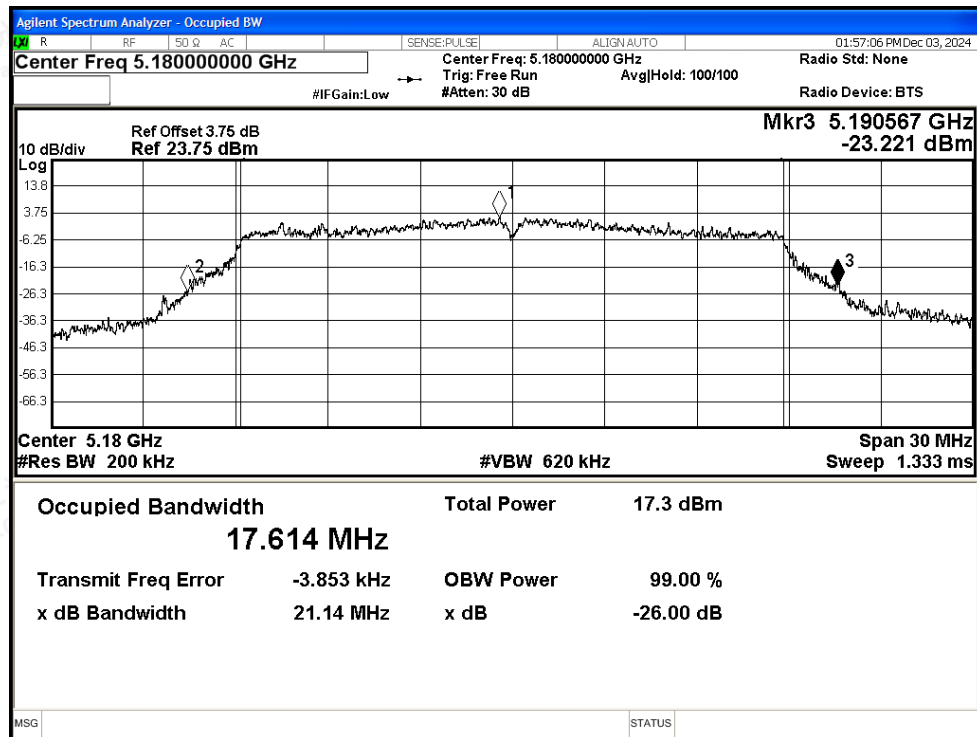


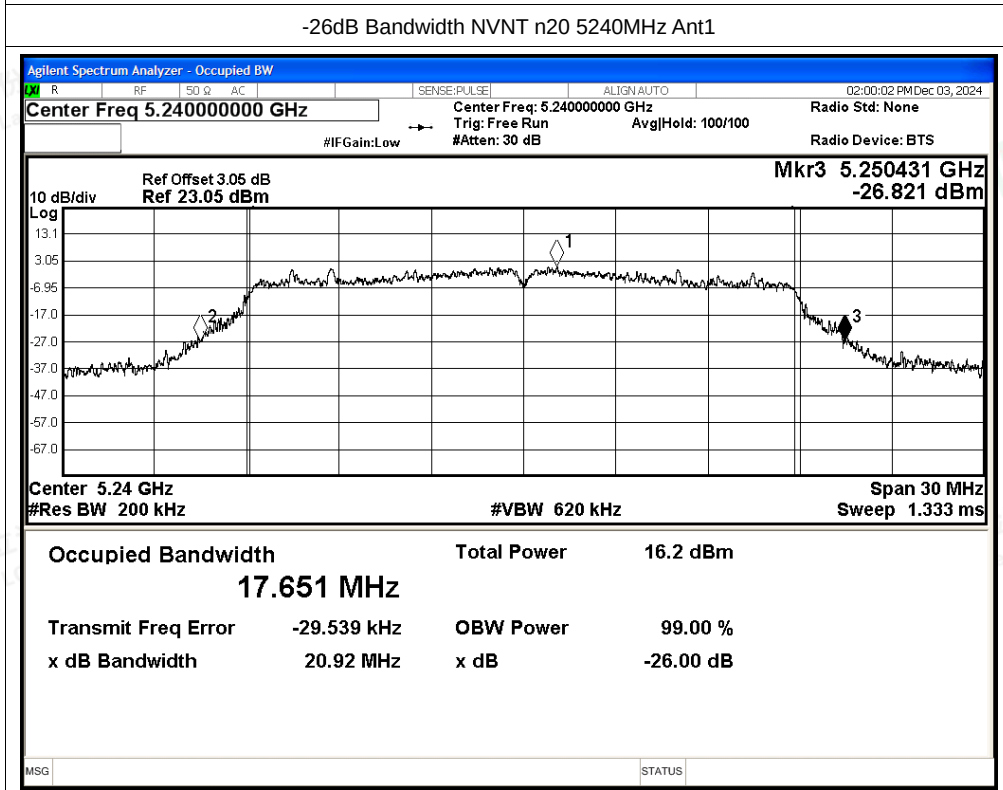
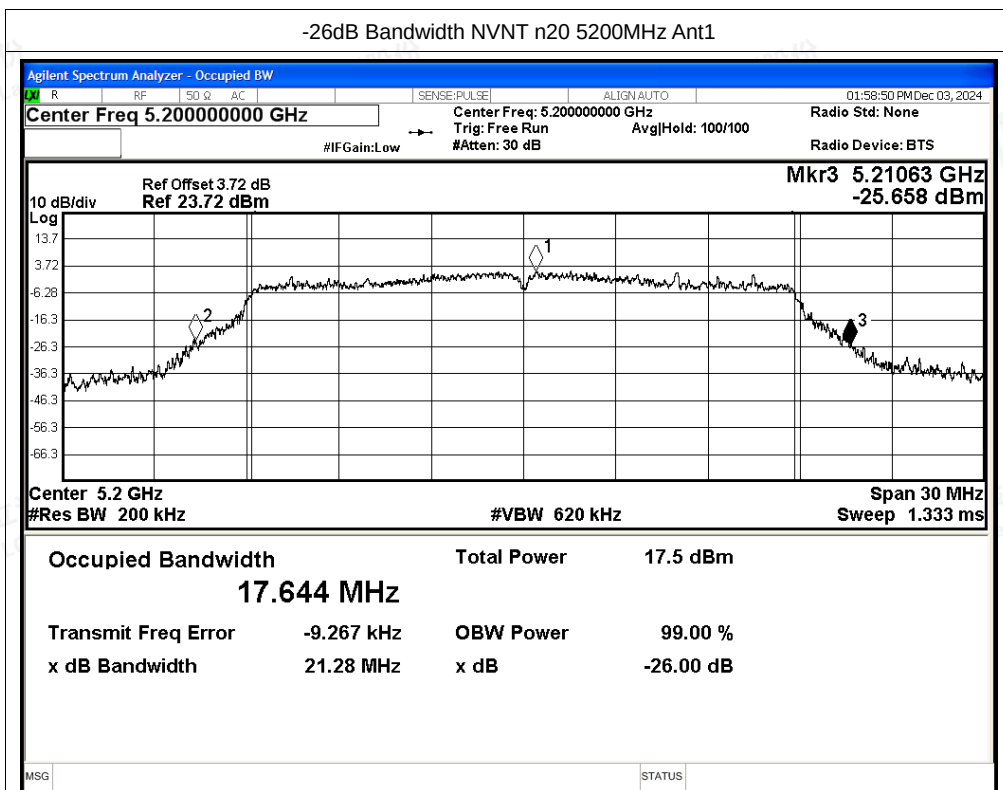


-26dB Bandwidth NVNT a 5240MHz Ant1



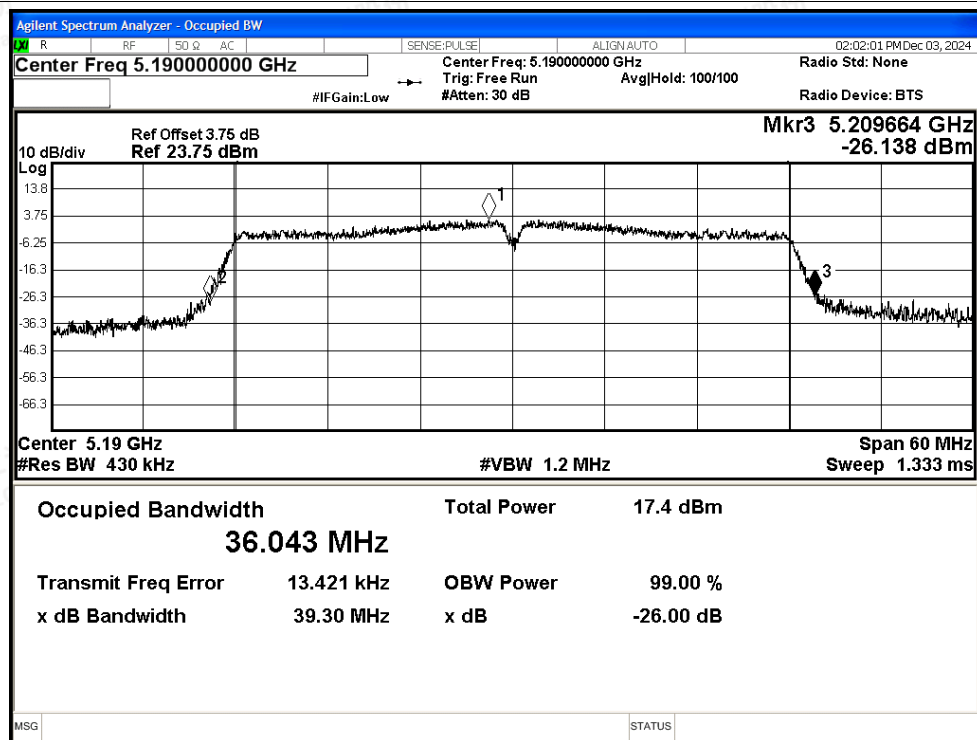
-26dB Bandwidth NVNT n20 5180MHz Ant1



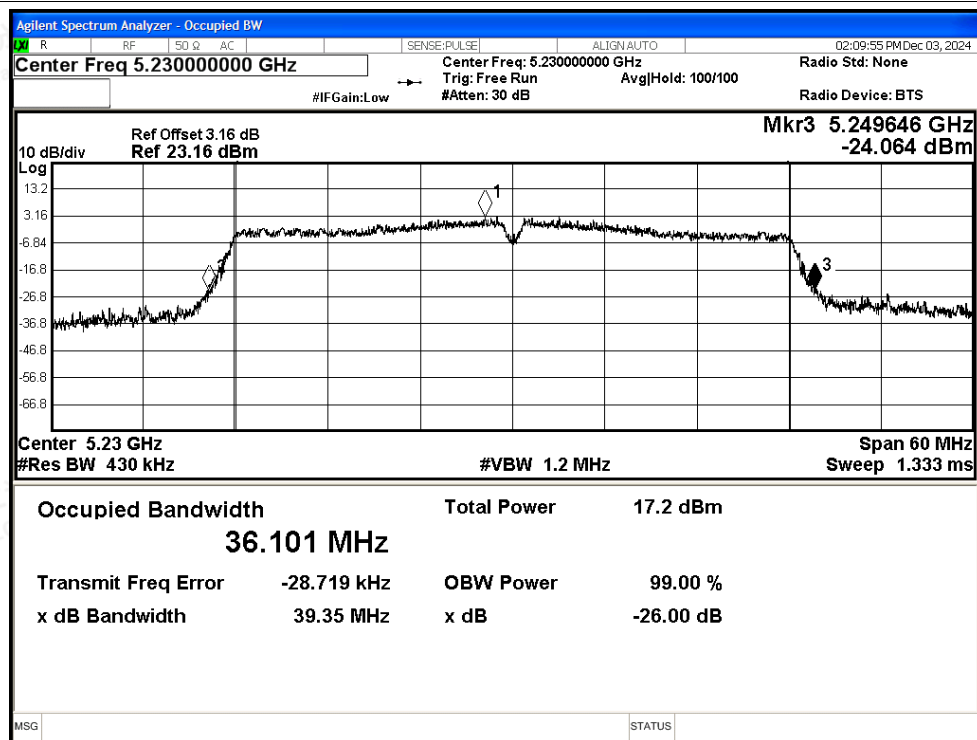




-26dB Bandwidth NVNT n40 5190MHz Ant1

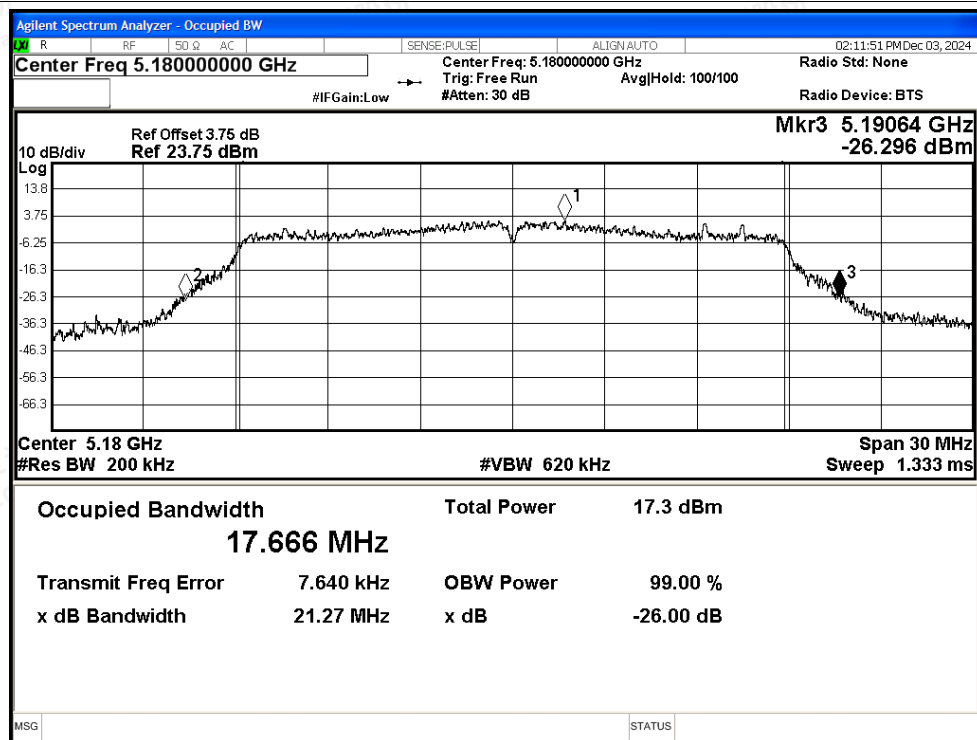


-26dB Bandwidth NVNT n40 5230MHz Ant1





-26dB Bandwidth NVNT ac20 5180MHz Ant1

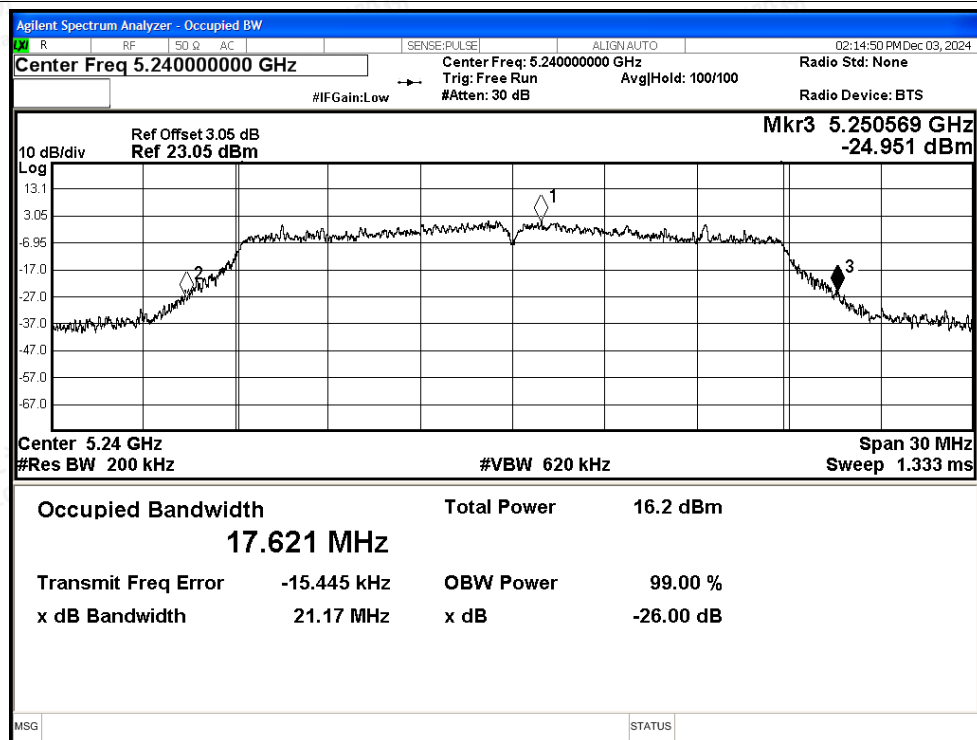


-26dB Bandwidth NVNT ac20 5200MHz Ant1

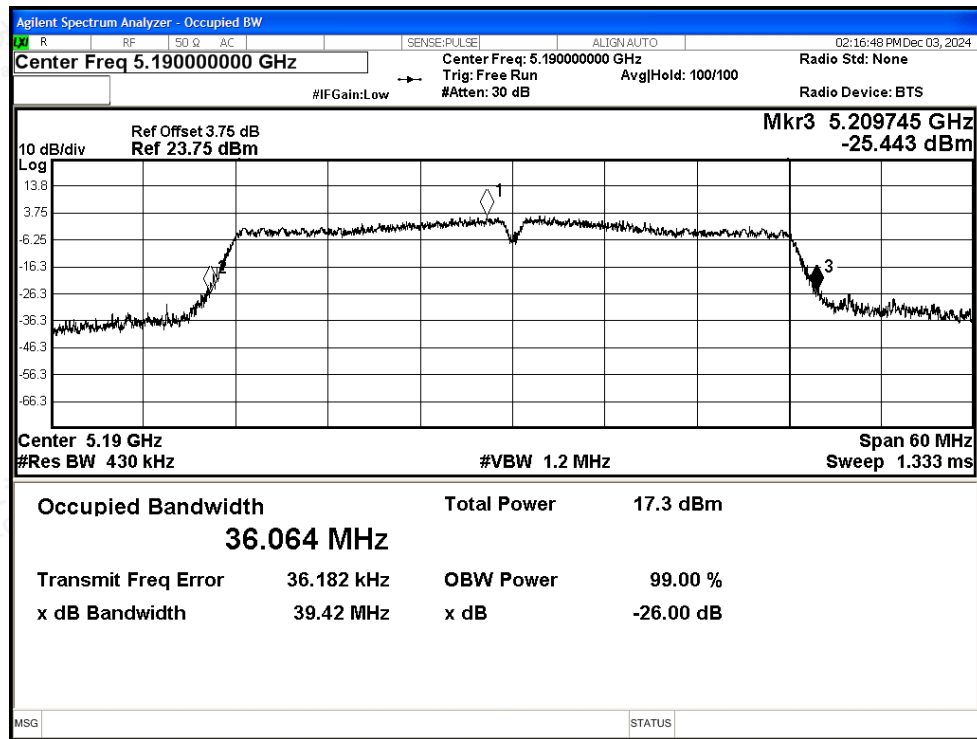




-26dB Bandwidth NVNT ac20 5240MHz Ant1

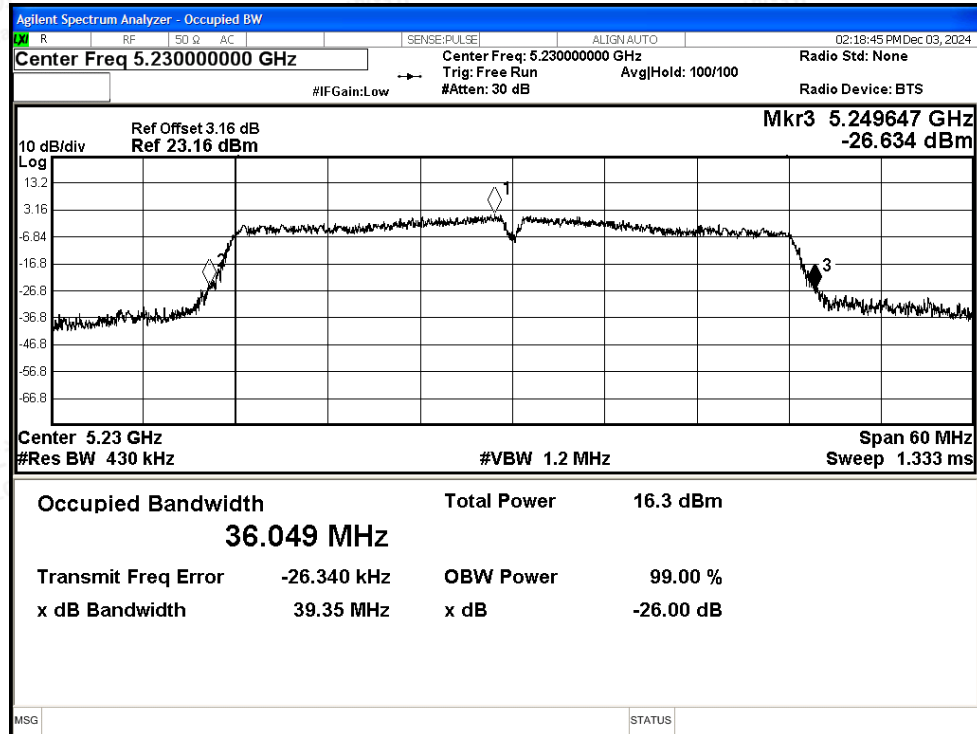


-26dB Bandwidth NVNT ac40 5190MHz Ant1

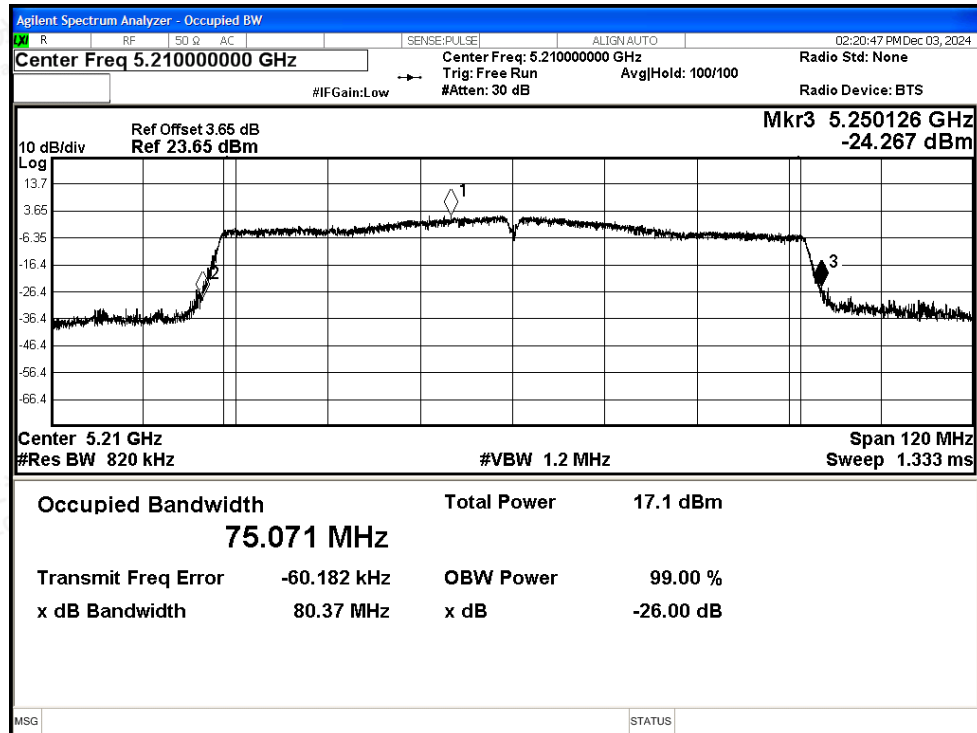




-26dB Bandwidth NVNT ac40 5230MHz Ant1



-26dB Bandwidth NVNT ac80 5210MHz Ant1





D.2 Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	Ant1	12.25	0.12	12.37	24	Pass
NVNT	a	5200	Ant1	12.35	0.13	12.48	24	Pass
NVNT	a	5240	Ant1	10.98	0.13	11.11	24	Pass
NVNT	n20	5180	Ant1	11.65	0.13	11.78	24	Pass
NVNT	n20	5200	Ant1	11.73	0.13	11.86	24	Pass
NVNT	n20	5240	Ant1	10.31	0.13	10.44	24	Pass
NVNT	n40	5190	Ant1	11.51	0.26	11.77	24	Pass
NVNT	n40	5230	Ant1	10.99	0.26	11.25	24	Pass
NVNT	ac20	5180	Ant1	11.51	0.13	11.64	24	Pass
NVNT	ac20	5200	Ant1	11.68	0.13	11.81	24	Pass
NVNT	ac20	5240	Ant1	10.34	0.13	10.47	24	Pass
NVNT	ac40	5190	Ant1	11.33	0.26	11.59	24	Pass
NVNT	ac40	5230	Ant1	10.1	0.26	10.36	24	Pass
NVNT	ac80	5210	Ant1	10.47	0	10.47	24	Pass



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



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	Ant1	3.06	0.12	3.18	11	Pass
NVNT	a	5200	Ant1	3.65	0.13	3.78	11	Pass
NVNT	a	5240	Ant1	2.24	0.13	2.37	11	Pass
NVNT	n20	5180	Ant1	2.49	0.13	2.62	11	Pass
NVNT	n20	5200	Ant1	2.76	0.13	2.89	11	Pass
NVNT	n20	5240	Ant1	1.15	0.13	1.28	11	Pass
NVNT	n40	5190	Ant1	-0.35	0.26	-0.09	11	Pass
NVNT	n40	5230	Ant1	-0.61	0.26	-0.35	11	Pass
NVNT	ac20	5180	Ant1	2.49	0.13	2.62	11	Pass
NVNT	ac20	5200	Ant1	2.59	0.13	2.72	11	Pass
NVNT	ac20	5240	Ant1	1.33	0.13	1.46	11	Pass
NVNT	ac40	5190	Ant1	-0.75	0.26	-0.49	11	Pass
NVNT	ac40	5230	Ant1	-1.62	0.26	-1.36	11	Pass
NVNT	ac80	5210	Ant1	-4.2	0	-4.2	11	Pass

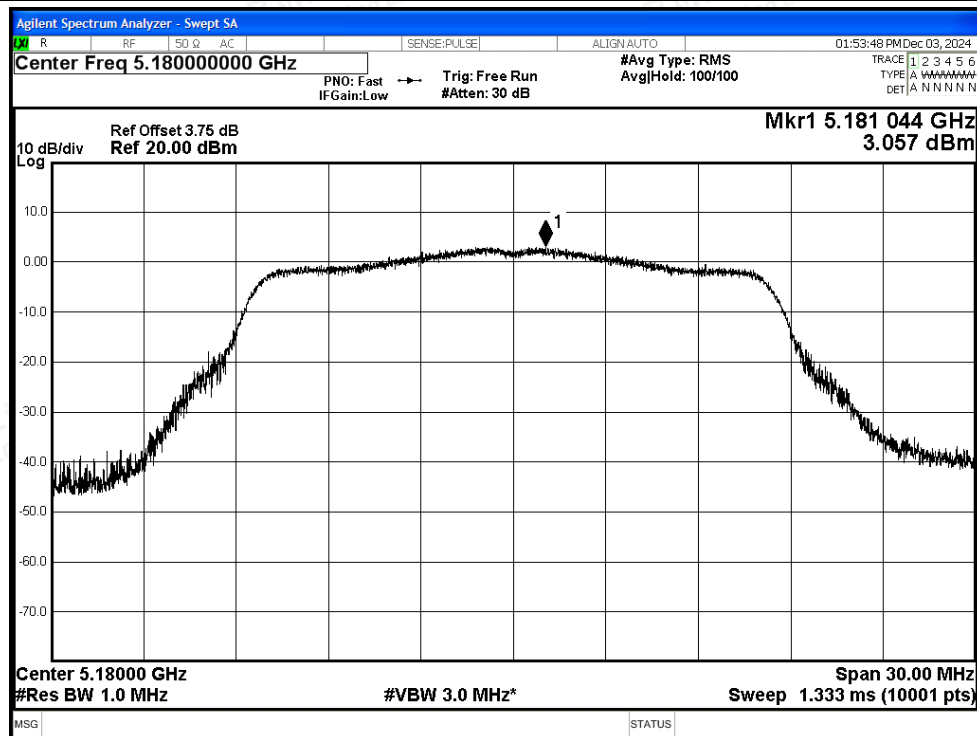


Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street,
Baoan District, Shenzhen, 518000, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

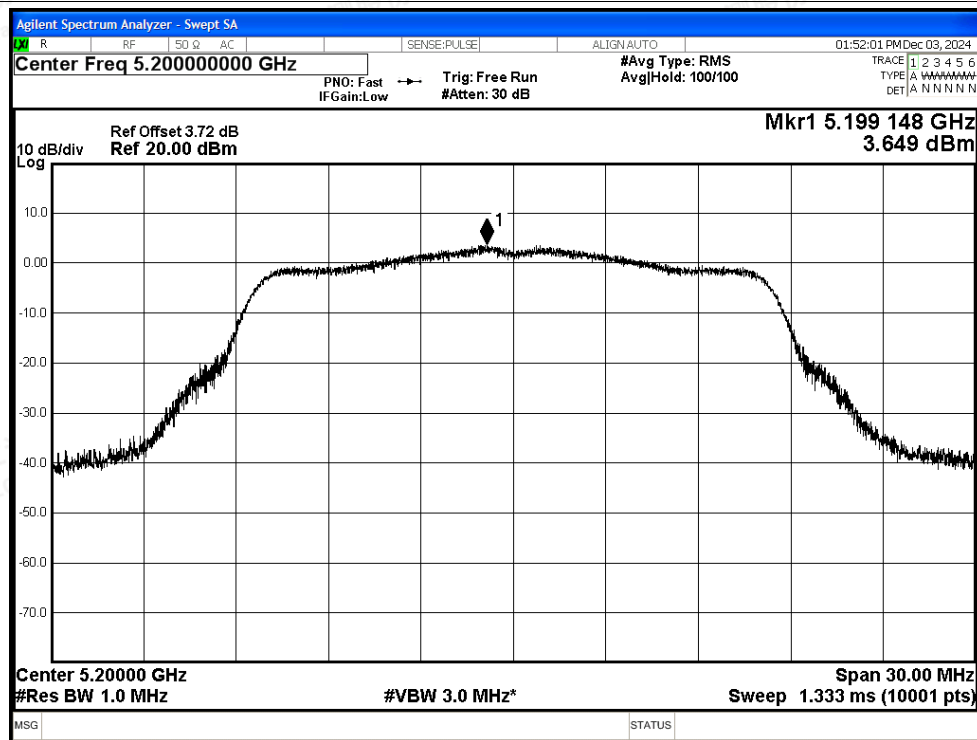


Test Graphs

PSD NVNT a 5180MHz Ant1

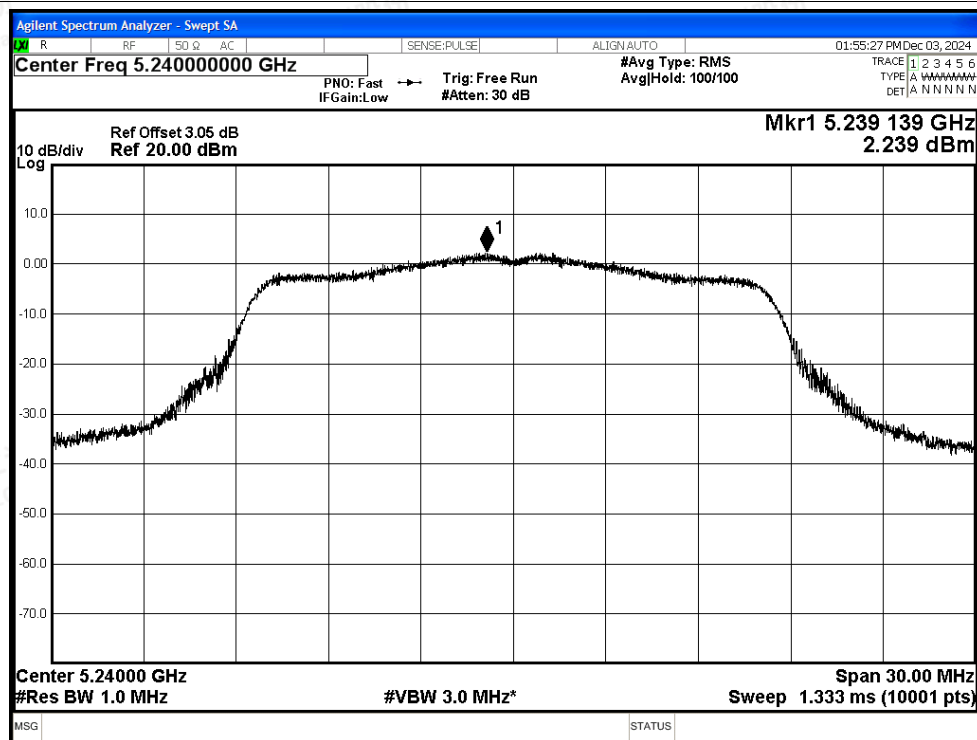


PSD NVNT a 5200MHz Ant1

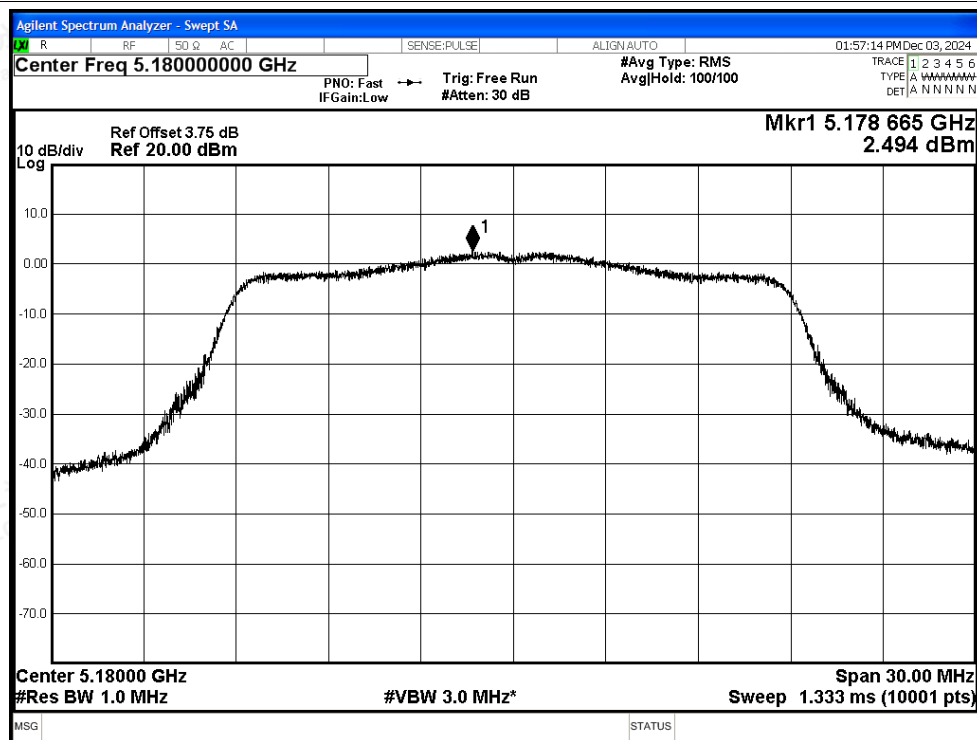


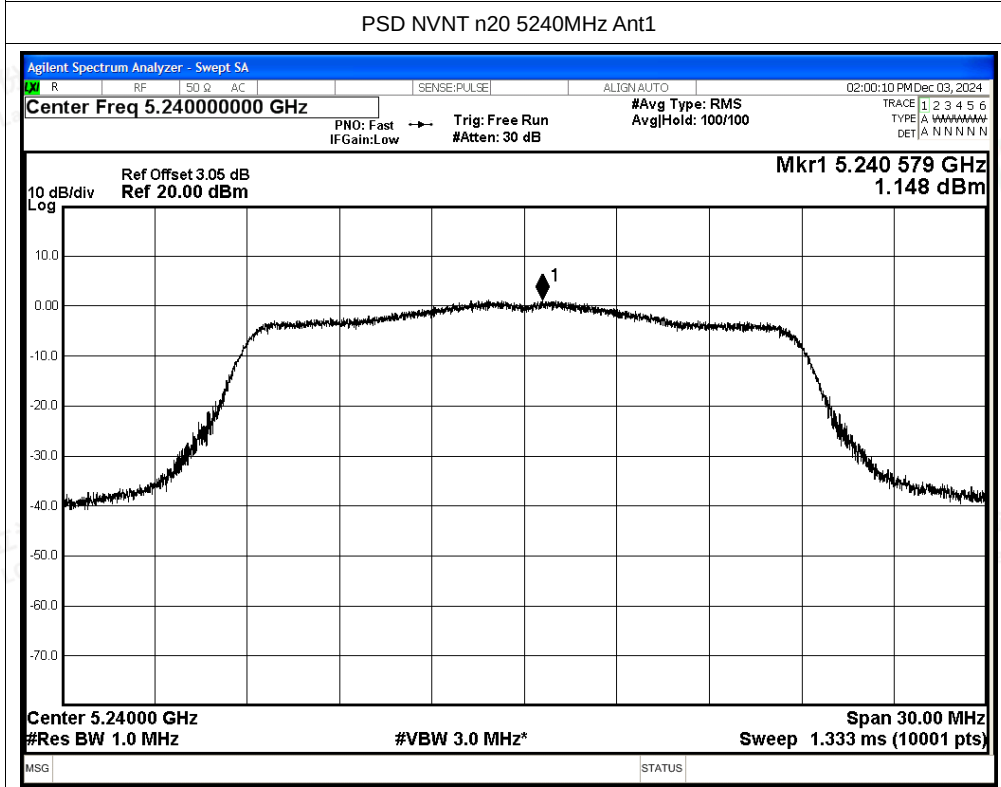
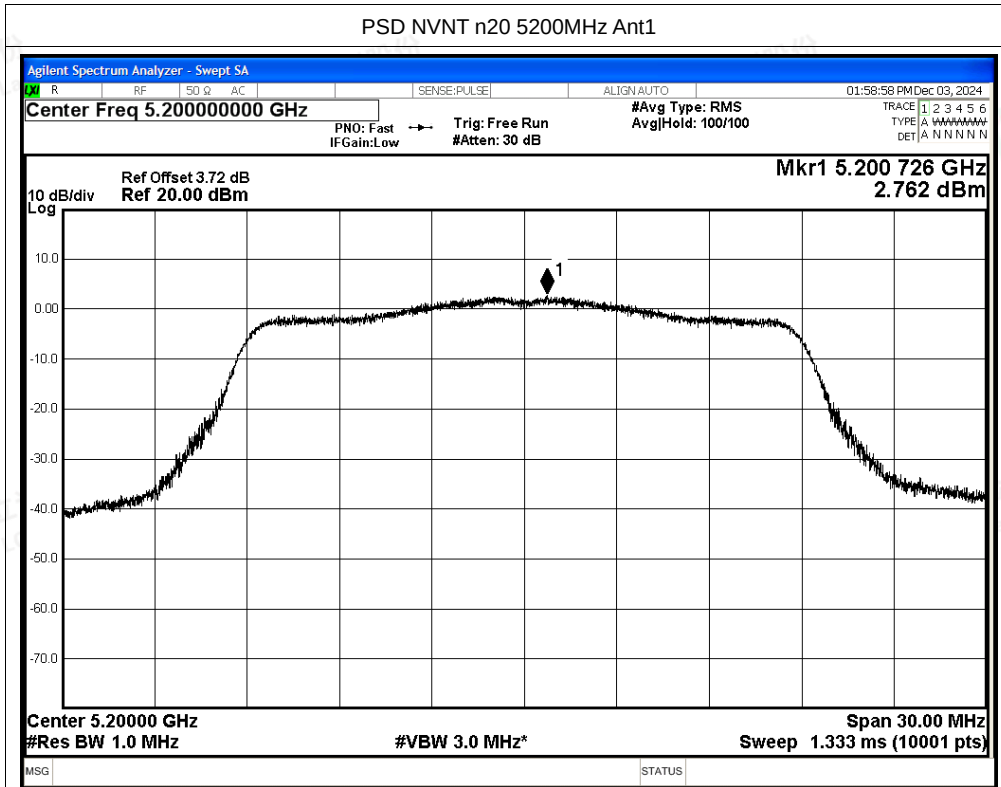


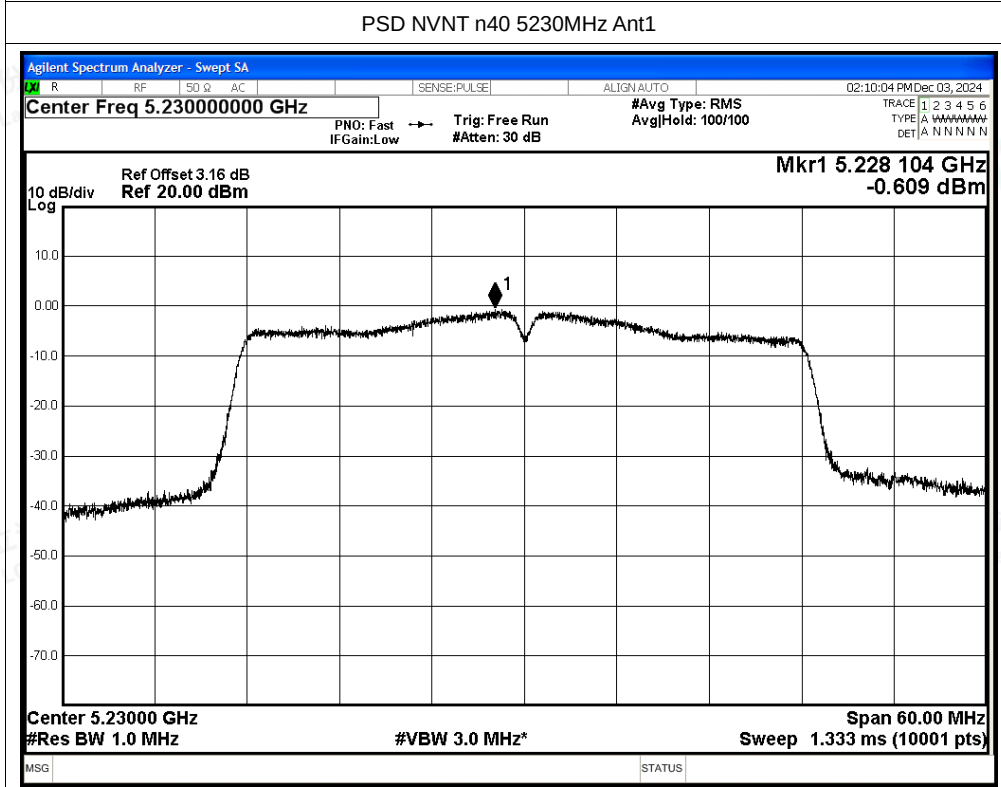
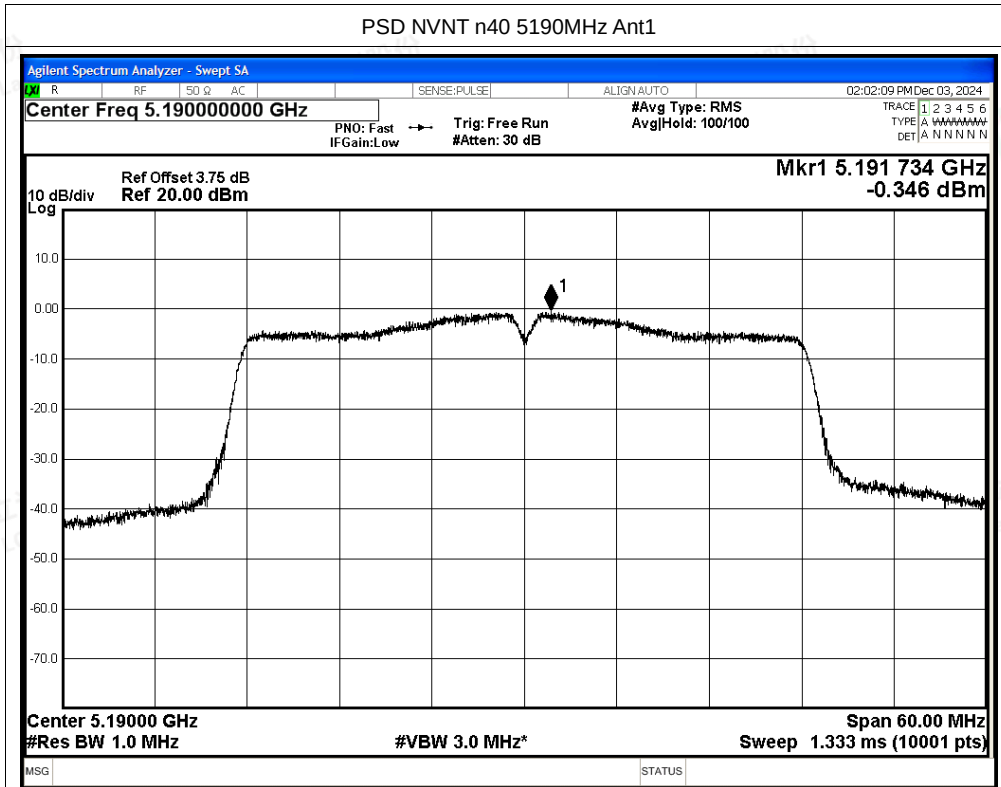
PSD NVNT a 5240MHz Ant1

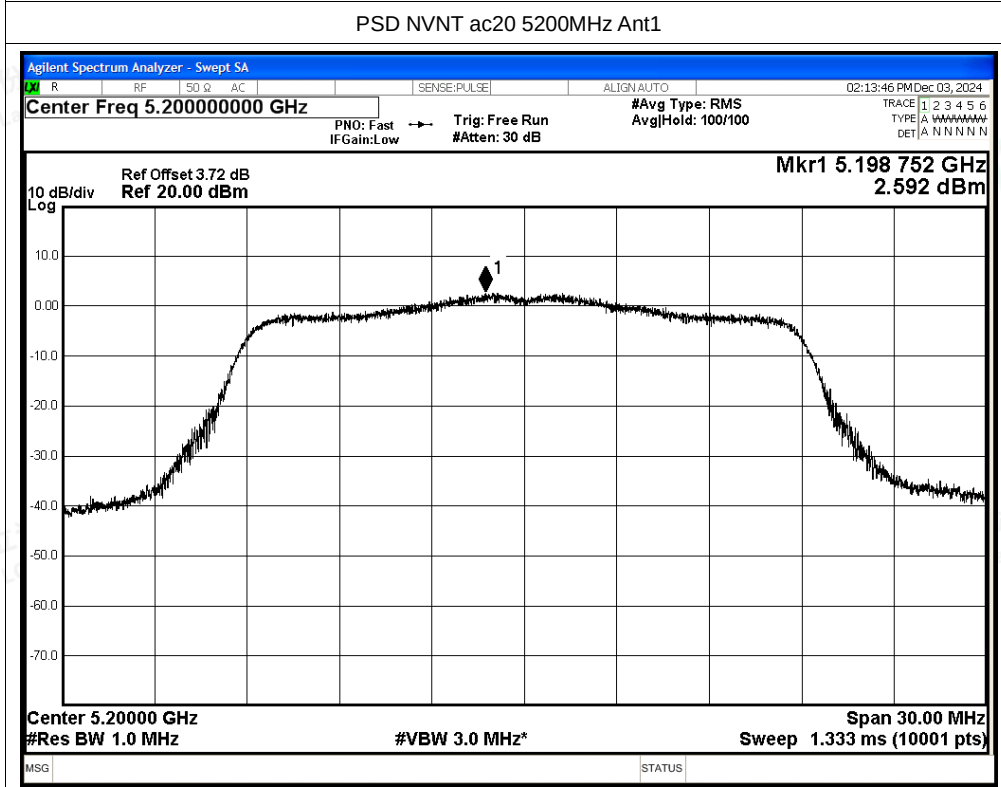
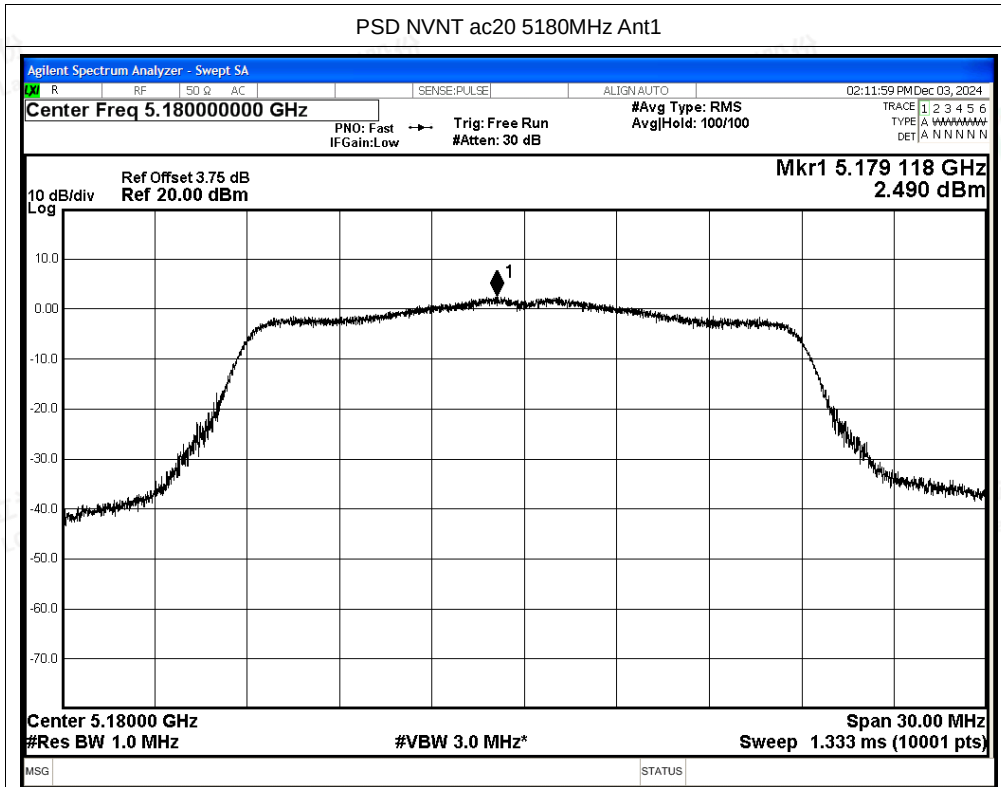


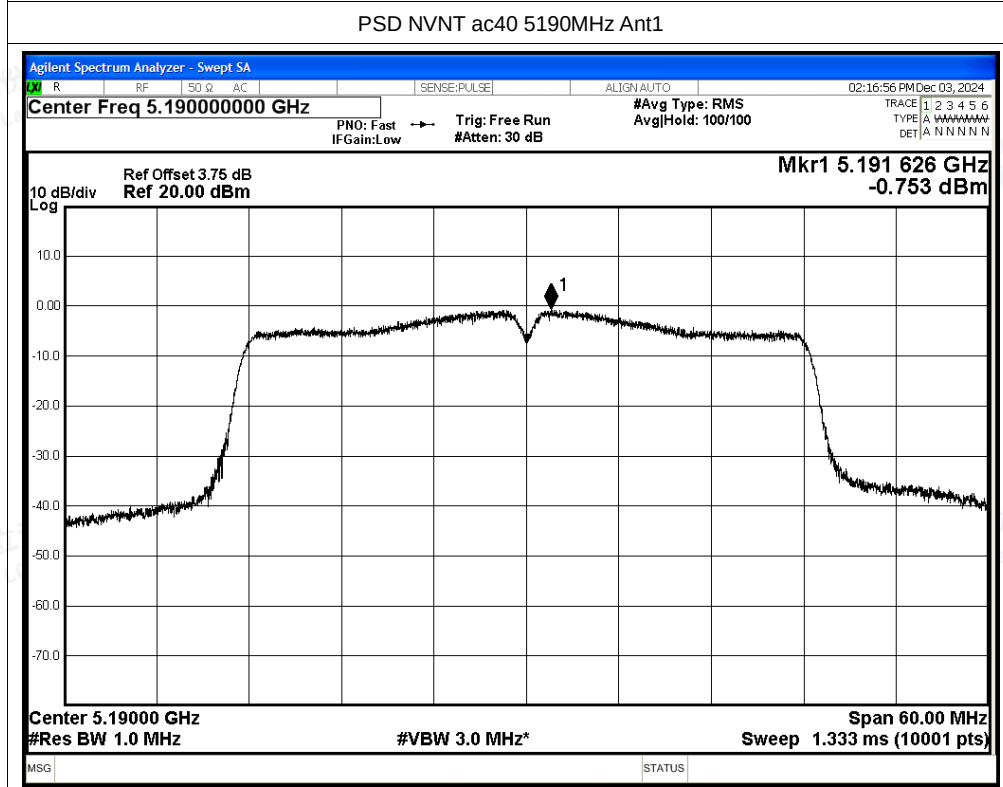
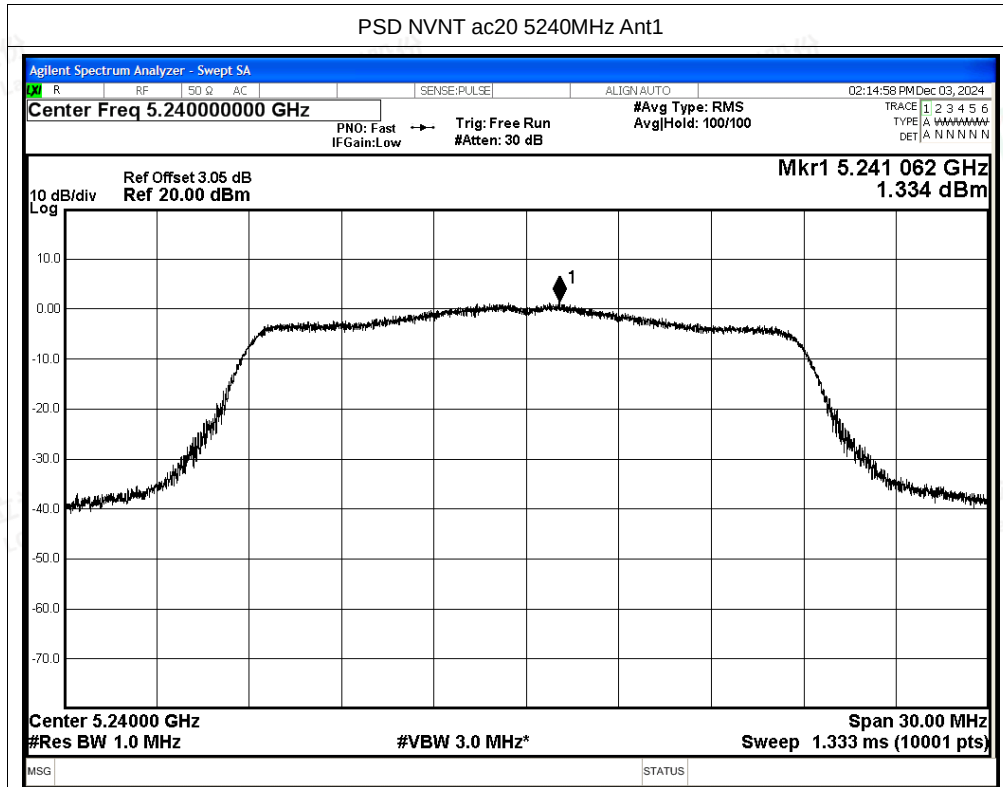
PSD NVNT n20 5180MHz Ant1

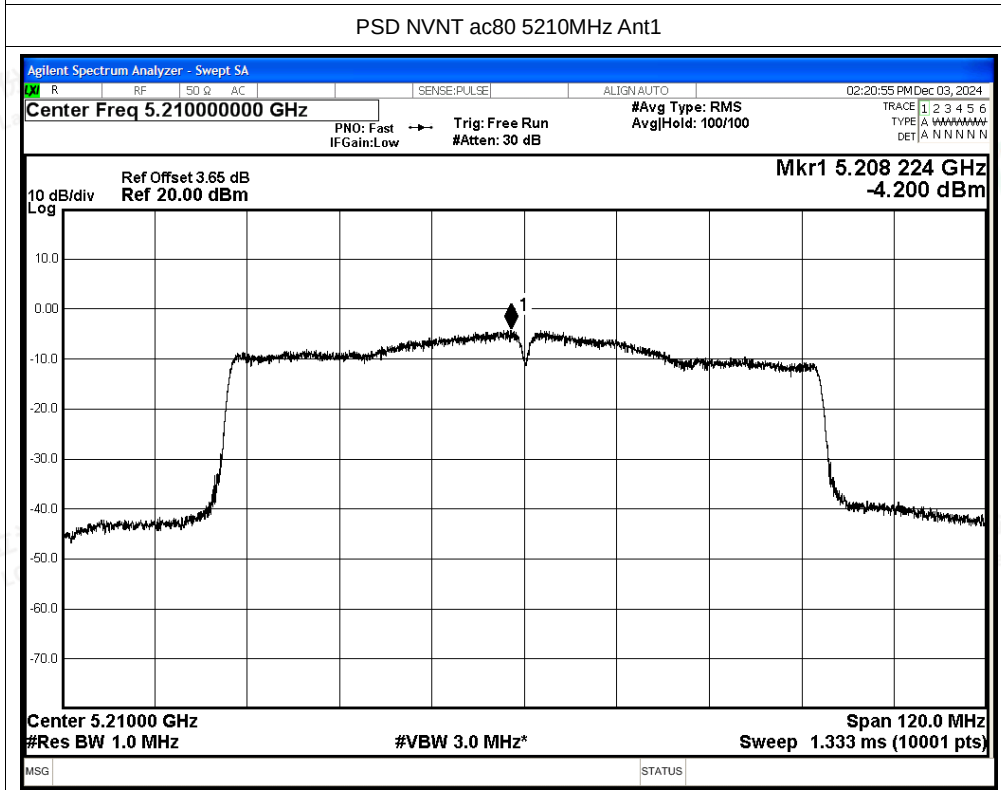
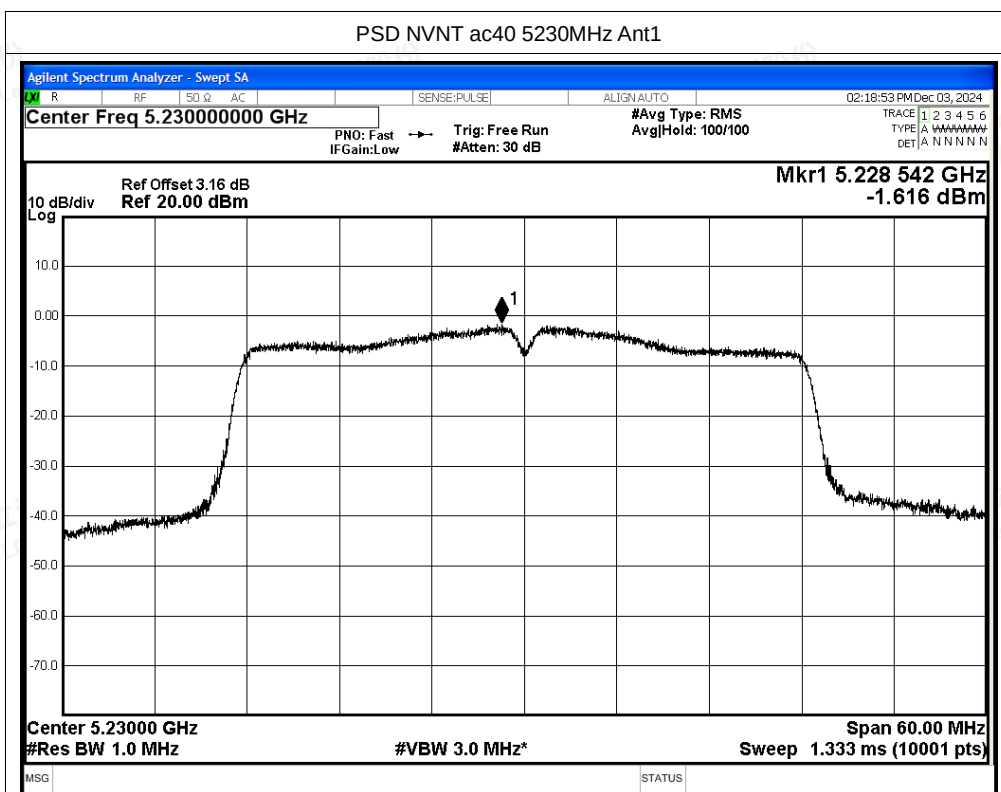












Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street,
Baoan District, Shenzhen, 518000, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity



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	Ant1	4500	-49.79	3.96	-	49.40	Peak	68.2	Pass
NVNT	a	5180	Ant1	4500	-58.23	3.96	0.12	41.08	Average	54	Pass
NVNT	a	5180	Ant1	5149.6	-35.95	3.96	-	63.24	Peak	68.2	Pass
NVNT	a	5180	Ant1	5148.9	-49.69	3.96	0.12	49.62	Average	54	Pass
NVNT	a	5180	Ant1	5150	-36.76	3.96	-	62.43	Peak	68.2	Pass
NVNT	a	5180	Ant1	5150	-49.83	3.96	0.12	49.48	Average	54	Pass
NVNT	a	5240	Ant1	5350	-49.44	3.96	-	49.75	Peak	68.2	Pass
NVNT	a	5240	Ant1	5350	-57.41	3.96	0.13	41.91	Average	54	Pass
NVNT	a	5240	Ant1	5380.08	-46.53	3.96	-	52.66	Peak	68.2	Pass
NVNT	a	5240	Ant1	5427.12	-56.71	3.96	0.13	42.61	Average	54	Pass
NVNT	a	5240	Ant1	5460	-48.46	3.96	-	50.73	Peak	68.2	Pass
NVNT	a	5240	Ant1	5460	-57.39	3.96	0.13	41.93	Average	54	Pass
NVNT	n20	5180	Ant1	4500	-49.74	3.96	-	49.45	Peak	68.2	Pass
NVNT	n20	5180	Ant1	4500	-58.25	3.96	0.13	41.07	Average	54	Pass
NVNT	n20	5180	Ant1	5146.1	-41.03	3.96	-	58.16	Peak	68.2	Pass
NVNT	n20	5180	Ant1	5149.6	-51.39	3.96	0.13	47.93	Average	54	Pass
NVNT	n20	5180	Ant1	5150	-42.11	3.96	-	57.08	Peak	68.2	Pass
NVNT	n20	5180	Ant1	5150	-50.9	3.96	0.13	48.42	Average	54	Pass
NVNT	n20	5240	Ant1	5350	-49.68	3.96	-	49.51	Peak	68.2	Pass
NVNT	n20	5240	Ant1	5350	-58.09	3.96	0.13	41.23	Average	54	Pass
NVNT	n20	5240	Ant1	5384.16	-46.08	3.96	-	53.11	Peak	68.2	Pass
NVNT	n20	5240	Ant1	5361.6	-56.6	3.96	0.13	42.72	Average	54	Pass
NVNT	n20	5240	Ant1	5460	-49.21	3.96	-	49.98	Peak	68.2	Pass
NVNT	n20	5240	Ant1	5460	-57.48	3.96	0.13	41.84	Average	54	Pass
NVNT	n40	5190	Ant1	4500	-50.77	3.96	-	48.42	Peak	68.2	Pass
NVNT	n40	5190	Ant1	4500	-58.42	3.96	0.26	41.03	Average	54	Pass
NVNT	n40	5190	Ant1	5146.05	-37.74	3.96	-	61.45	Peak	68.2	Pass
NVNT	n40	5190	Ant1	5149.7	-48.12	3.96	0.26	51.33	Average	54	Pass
NVNT	n40	5190	Ant1	5150	-37.93	3.96	-	61.26	Peak	68.2	Pass
NVNT	n40	5190	Ant1	5150	-48.12	3.96	0.26	51.33	Average	54	Pass
NVNT	n40	5230	Ant1	5350	-47.33	3.96	-	51.86	Peak	68.2	Pass
NVNT	n40	5230	Ant1	5350	-56.41	3.96	0.26	43.04	Average	54	Pass
NVNT	n40	5230	Ant1	5354.7	-46.54	3.96	-	52.65	Peak	68.2	Pass
NVNT	n40	5230	Ant1	5365.77	-55.88	3.96	0.26	43.57	Average	54	Pass
NVNT	n40	5230	Ant1	5460	-47.92	3.96	-	51.27	Peak	68.2	Pass



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



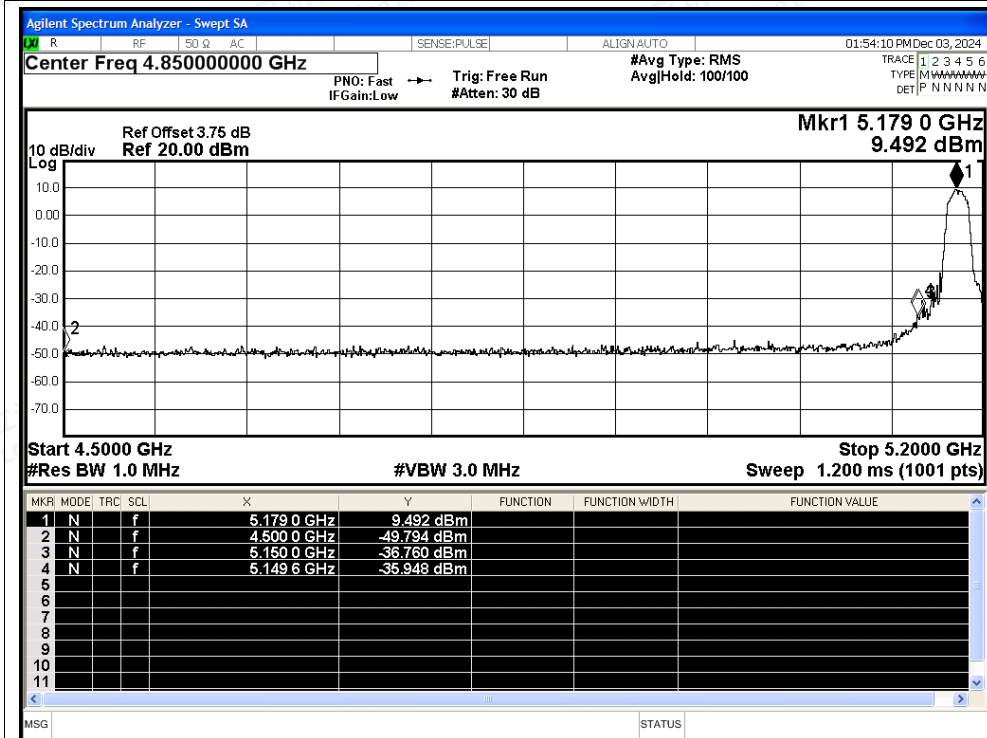
NVNT	n40	5230	Ant1	5460	-57.35	3.96	0.26	42.10	Average	54	Pass
NVNT	ac20	5180	Ant1	4500	-48.16	3.96	-	51.03	Peak	68.2	Pass
NVNT	ac20	5180	Ant1	4500	-58.36	3.96	0.13	40.96	Average	54	Pass
NVNT	ac20	5180	Ant1	5141.2	-41.36	3.96	-	57.83	Peak	68.2	Pass
NVNT	ac20	5180	Ant1	5148.2	-51.4	3.96	0.13	47.92	Average	54	Pass
NVNT	ac20	5180	Ant1	5150	-43.29	3.96	-	55.90	Peak	68.2	Pass
NVNT	ac20	5180	Ant1	5150	-50.73	3.96	0.13	48.59	Average	54	Pass
NVNT	ac20	5240	Ant1	5350	-48.93	3.96	-	50.26	Peak	68.2	Pass
NVNT	ac20	5240	Ant1	5350	-57.88	3.96	0.13	41.44	Average	54	Pass
NVNT	ac20	5240	Ant1	5360.4	-45.8	3.96	-	53.39	Peak	68.2	Pass
NVNT	ac20	5240	Ant1	5391.36	-56.77	3.96	0.13	42.55	Average	54	Pass
NVNT	ac20	5240	Ant1	5460	-50.25	3.96	-	48.94	Peak	68.2	Pass
NVNT	ac20	5240	Ant1	5460	-57.49	3.96	0.13	41.83	Average	54	Pass
NVNT	ac40	5190	Ant1	4500	-49.48	3.96	-	49.71	Peak	68.2	Pass
NVNT	ac40	5190	Ant1	4500	-58.38	3.96	0.26	41.07	Average	54	Pass
NVNT	ac40	5190	Ant1	5146.78	-38.79	3.96	-	60.40	Peak	68.2	Pass
NVNT	ac40	5190	Ant1	5149.7	-48.18	3.96	0.26	51.27	Average	54	Pass
NVNT	ac40	5190	Ant1	5150	-40.26	3.96	-	58.93	Peak	68.2	Pass
NVNT	ac40	5190	Ant1	5150	-48.18	3.96	0.26	51.27	Average	54	Pass
NVNT	ac40	5230	Ant1	5350	-47.14	3.96	-	52.05	Peak	68.2	Pass
NVNT	ac40	5230	Ant1	5350	-56.46	3.96	0.26	42.99	Average	54	Pass
NVNT	ac40	5230	Ant1	5356.05	-45.21	3.96	-	53.98	Peak	68.2	Pass
NVNT	ac40	5230	Ant1	5354.7	-56.22	3.96	0.26	43.23	Average	54	Pass
NVNT	ac40	5230	Ant1	5460	-48.59	3.96	-	50.60	Peak	68.2	Pass
NVNT	ac40	5230	Ant1	5460	-57.84	3.96	0.26	41.61	Average	54	Pass
NVNT	ac80	5210	Ant1	5350	-44.95	3.96	-	54.24	Peak	68.2	Pass
NVNT	ac80	5210	Ant1	5350	-54.45	3.96	0	44.74	Average	54	Pass
NVNT	ac80	5210	Ant1	5356.05	-44.33	3.96	-	54.86	Peak	68.2	Pass
NVNT	ac80	5210	Ant1	5361.66	-53.74	3.96	0	45.45	Average	54	Pass
NVNT	ac80	5210	Ant1	5460	-49.5	3.96	-	49.69	Peak	68.2	Pass
NVNT	ac80	5210	Ant1	5460	-56.92	3.96	0	42.27	Average	54	Pass
NVNT	ac80	5210	Ant1	4500	-49.38	3.96	-	49.81	Peak	68.2	Pass
NVNT	ac80	5210	Ant1	4500	-58.22	3.96	0	40.97	Average	54	Pass
NVNT	ac80	5210	Ant1	5149.38	-36.19	3.96	-	63.00	Peak	68.2	Pass
NVNT	ac80	5210	Ant1	5149.38	-45.67	3.96	0	53.52	Average	54	Pass
NVNT	ac80	5210	Ant1	5150	-36.45	3.96	-	62.74	Peak	68.2	Pass
NVNT	ac80	5210	Ant1	5150	-46.25	3.96	0	52.94	Average	54	Pass



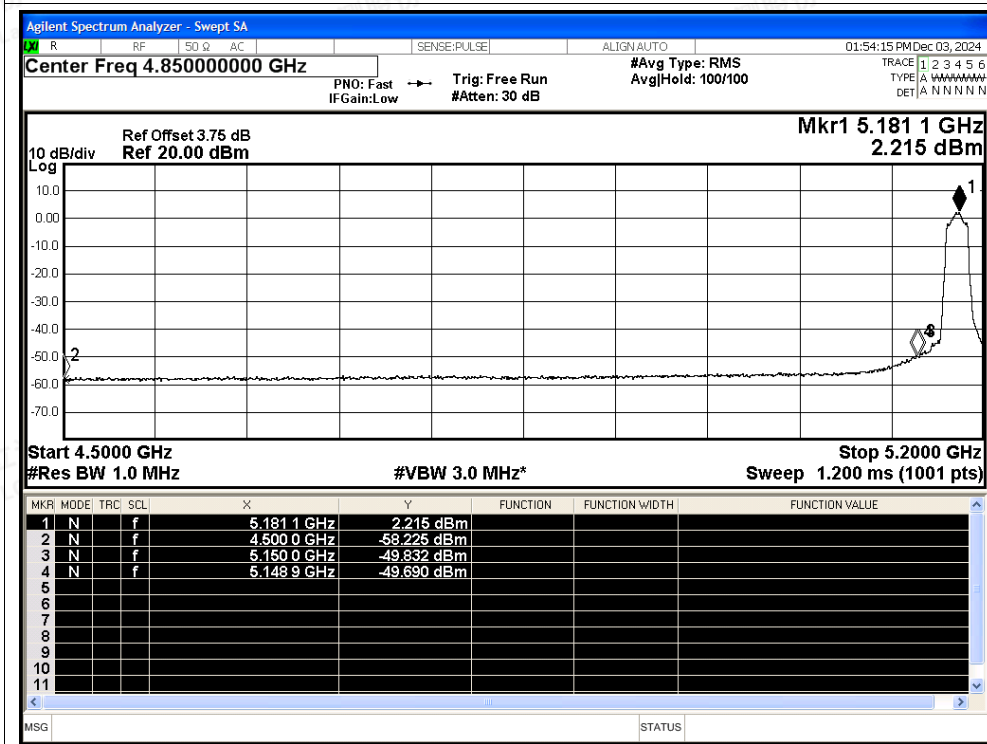


Test Graphs

Restrict Band NVNT a 5180MHz Ant1 Peak

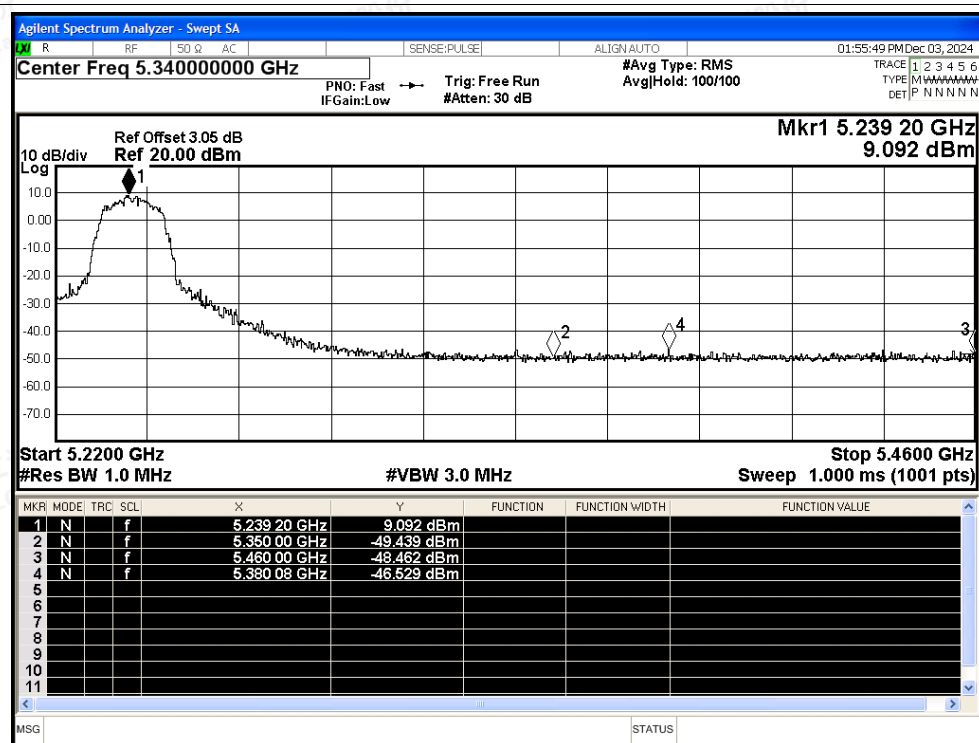


Restrict Band NVNT a 5180MHz Ant1 Average

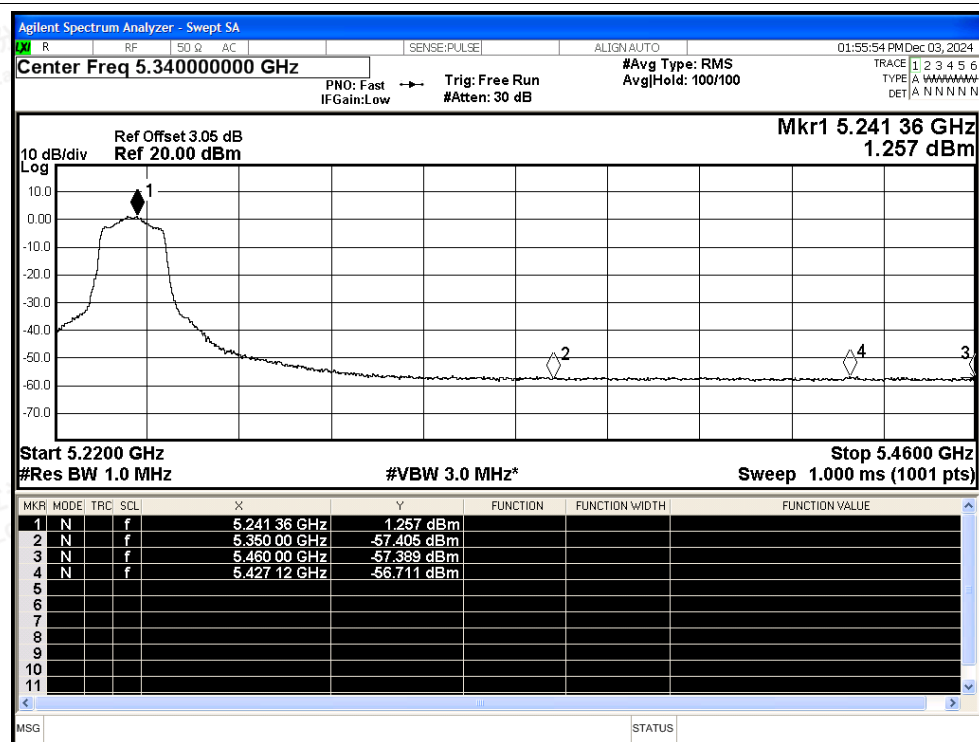


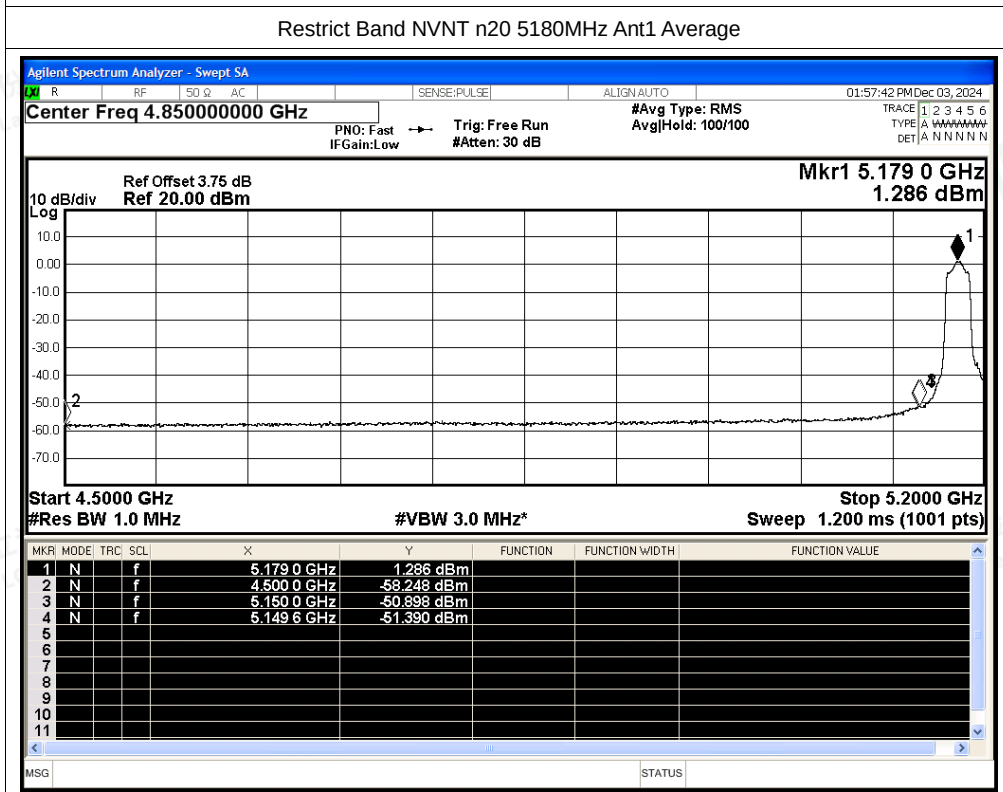
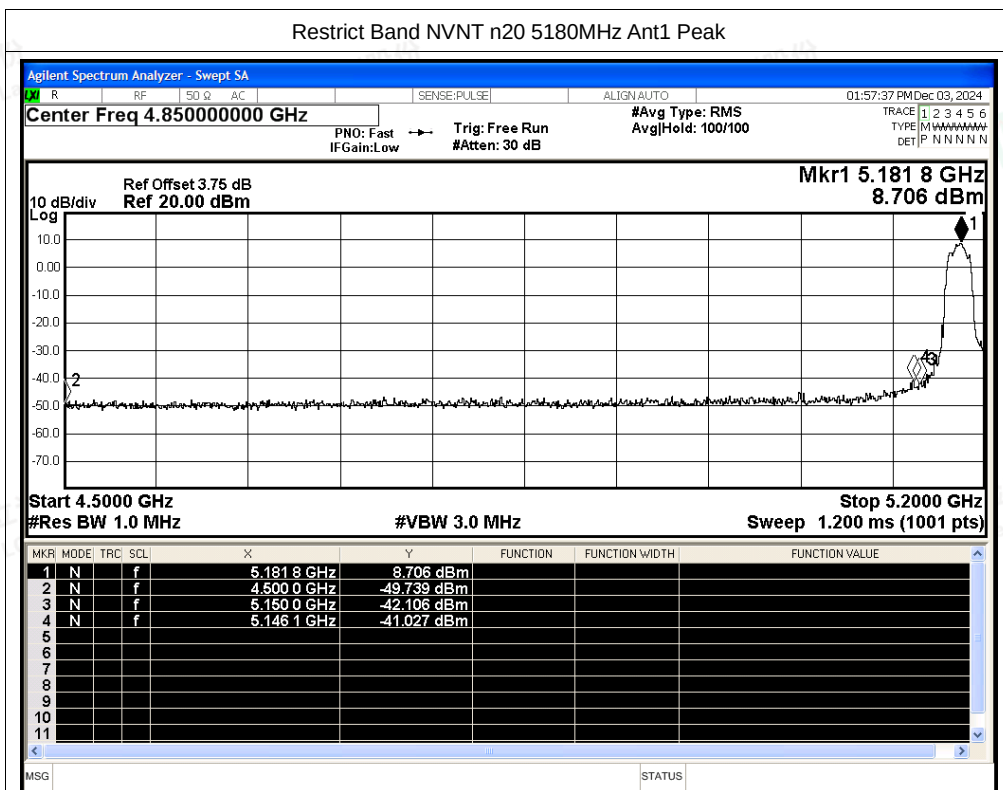


Restrict Band NVNT a 5240MHz Ant1 Peak



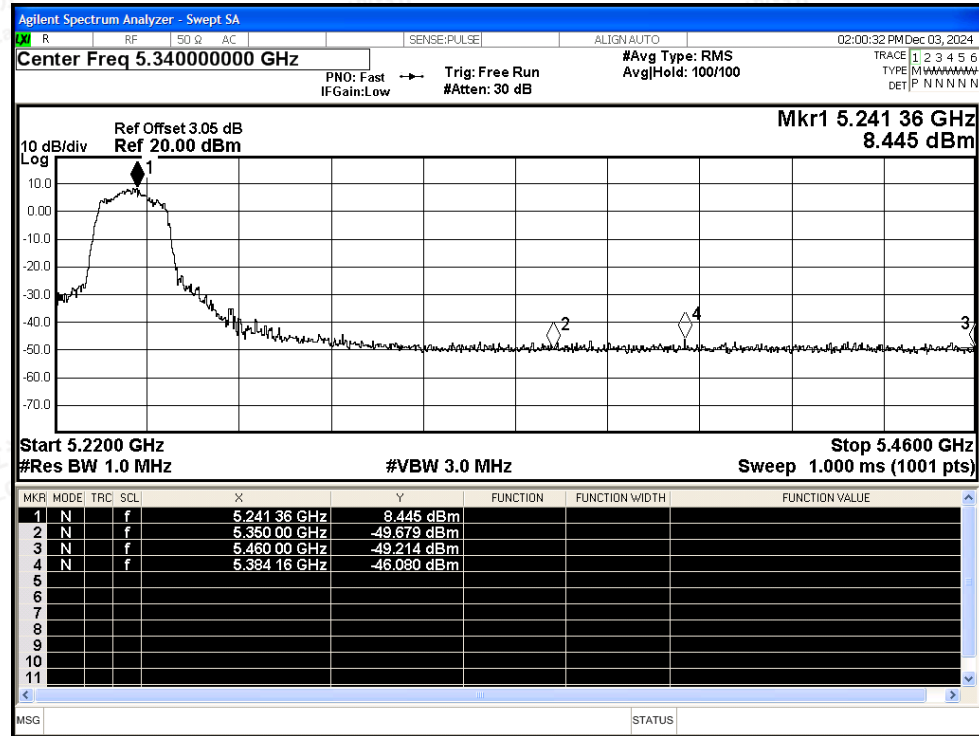
Restrict Band NVNT a 5240MHz Ant1 Average



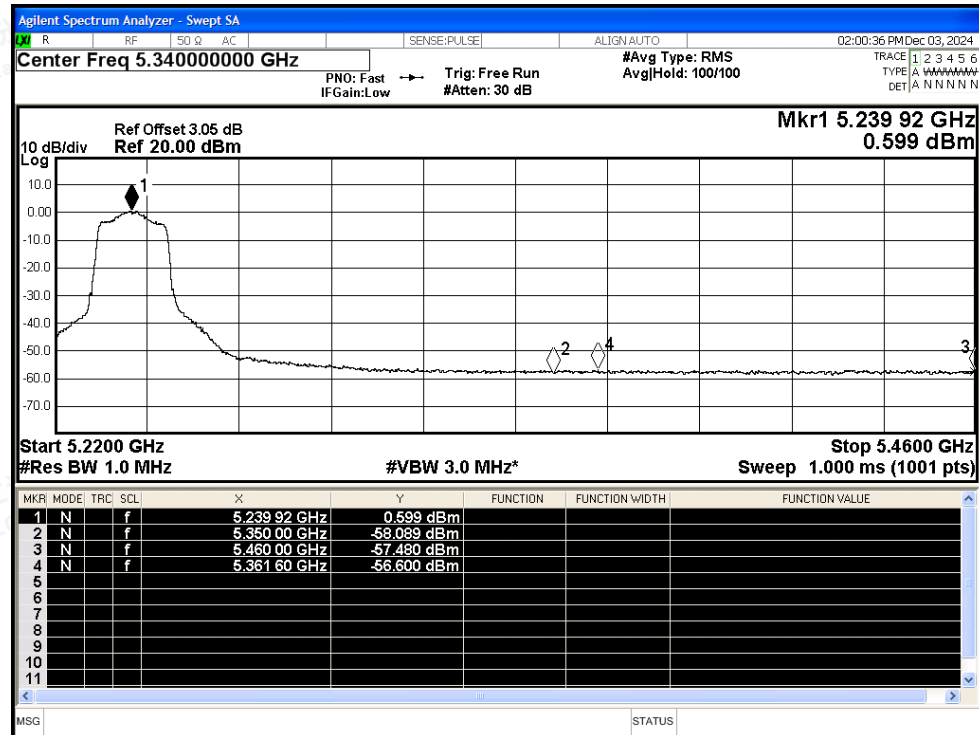


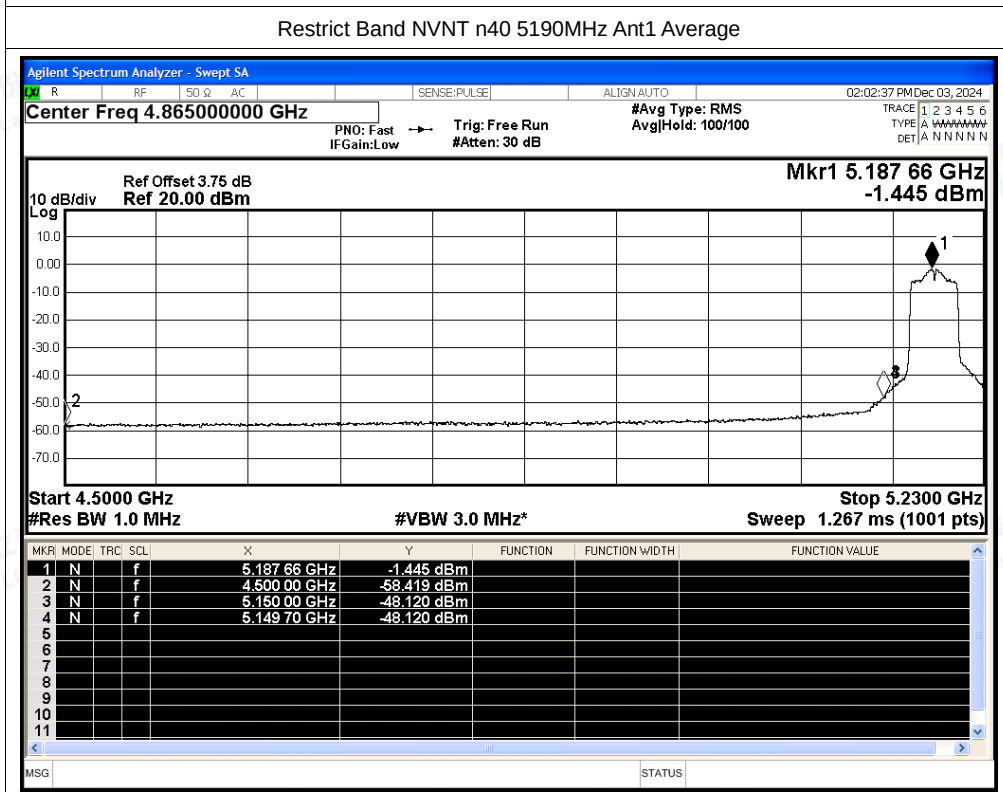
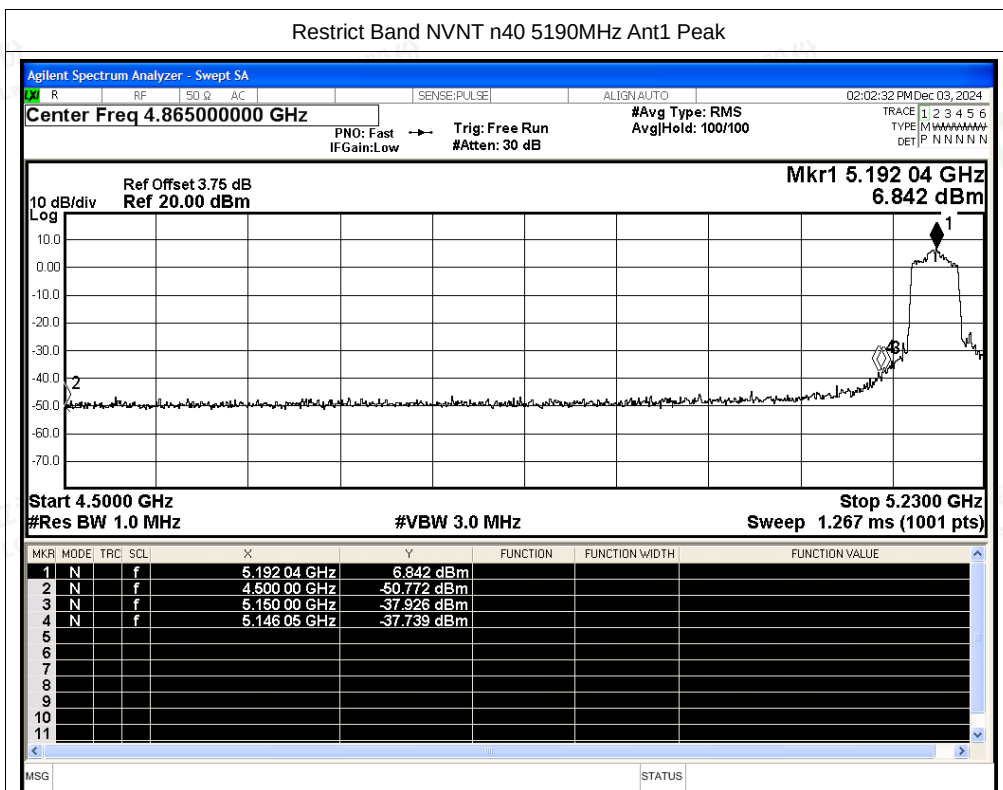


Restrict Band NVNT n20 5240MHz Ant1 Peak



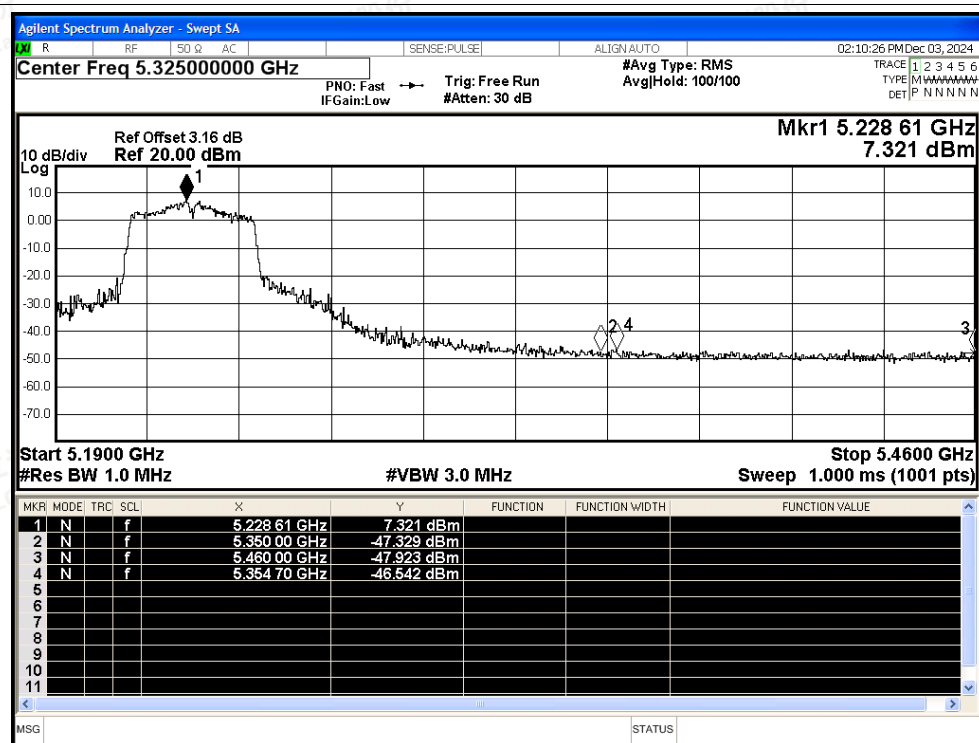
Restrict Band NVNT n20 5240MHz Ant1 Average



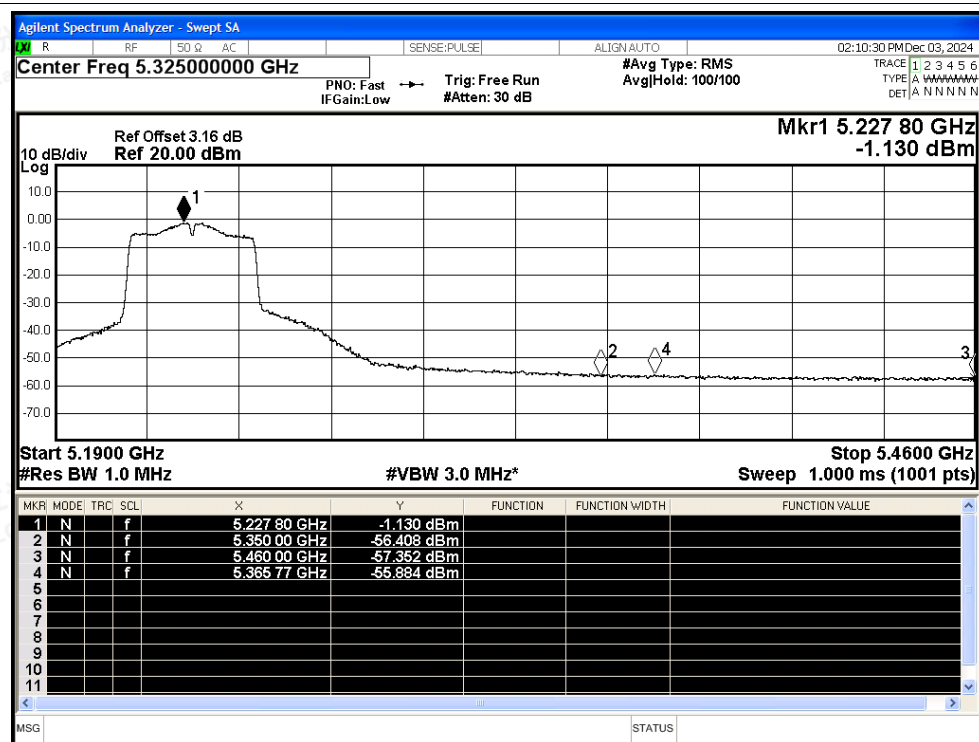


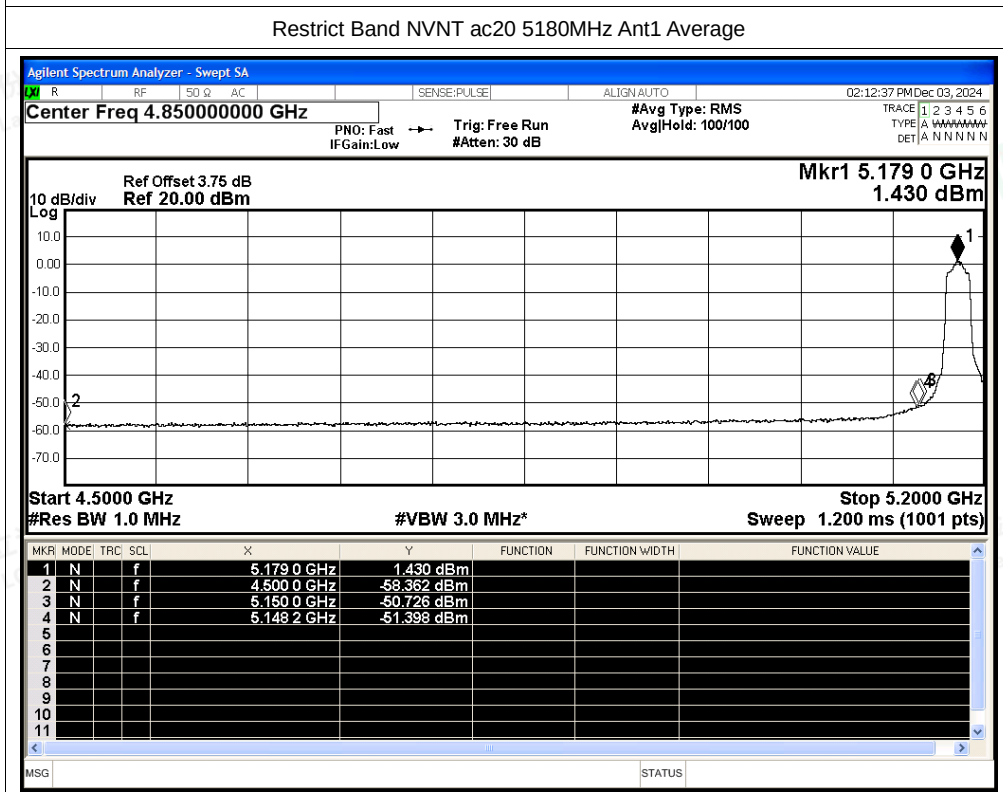
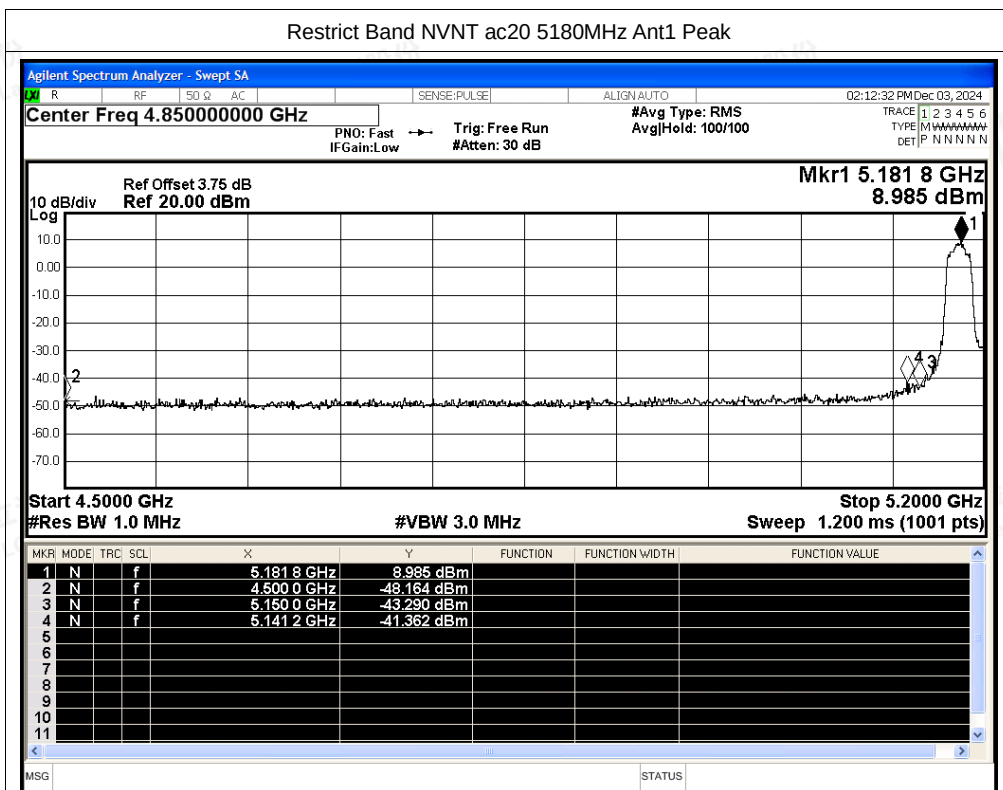


Restrict Band NVNT n40 5230MHz Ant1 Peak



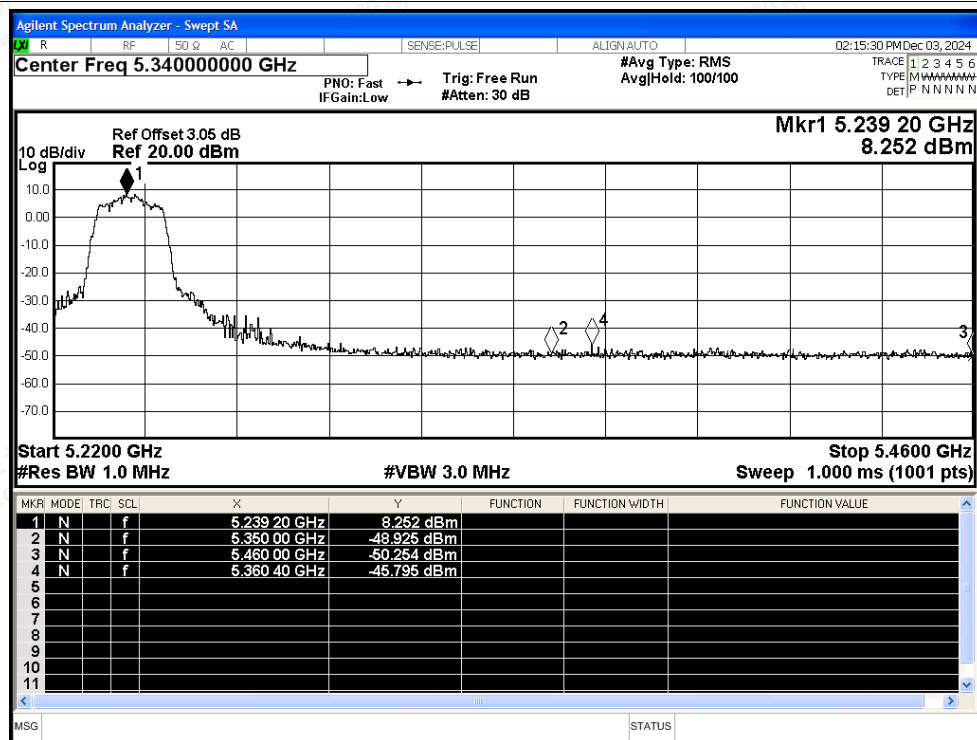
Restrict Band NVNT n40 5230MHz Ant1 Average



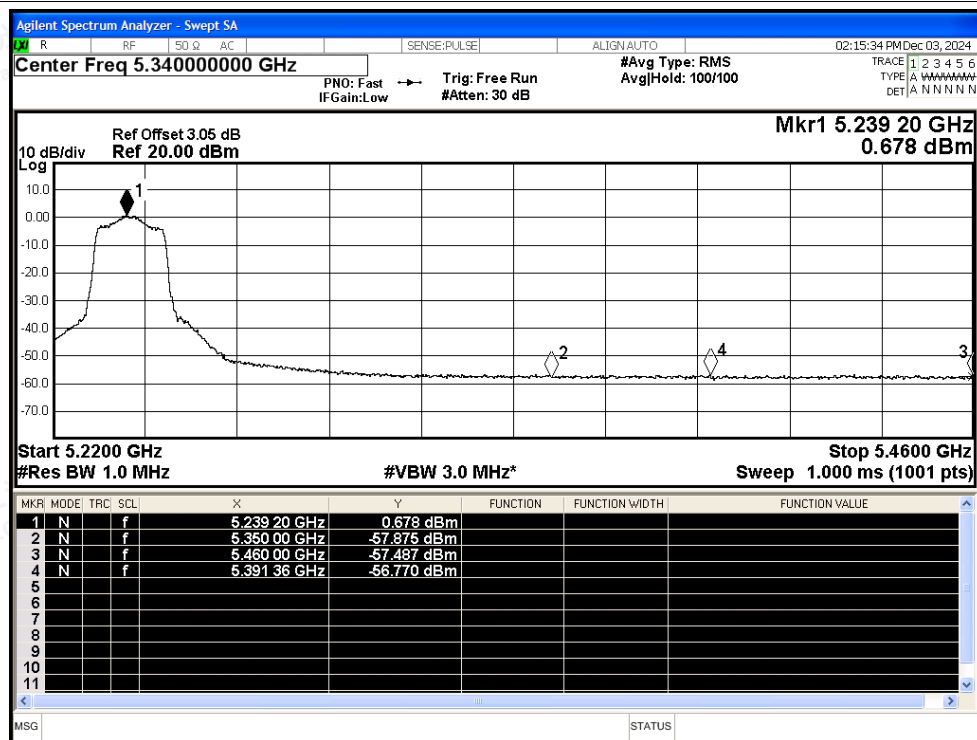




Restrict Band NVNT ac20 5240MHz Ant1 Peak

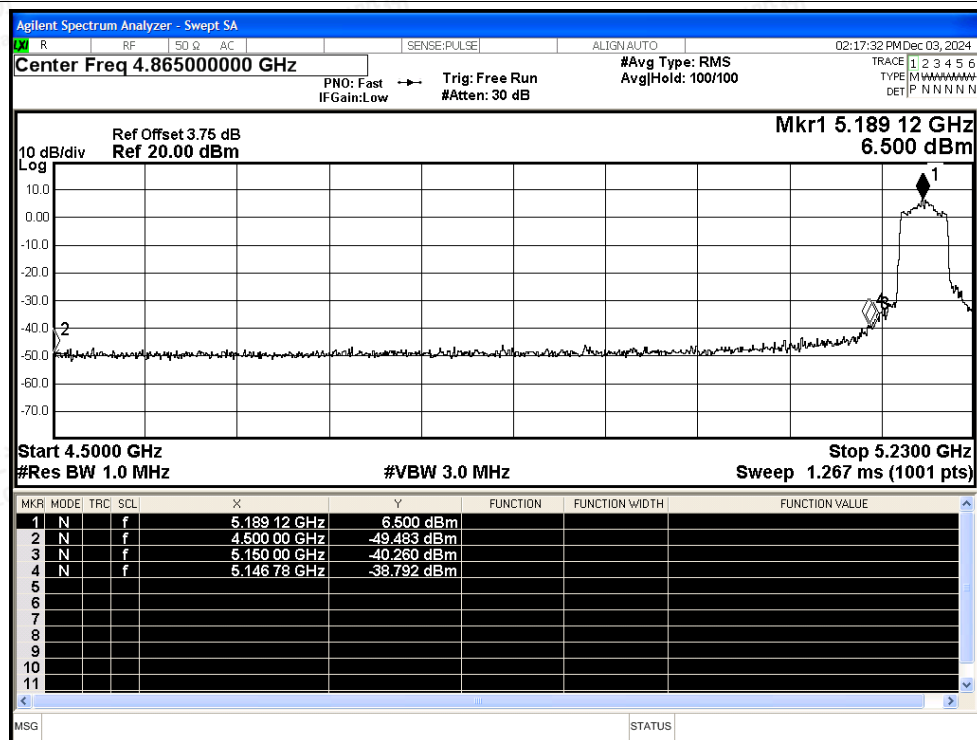


Restrict Band NVNT ac20 5240MHz Ant1 Average

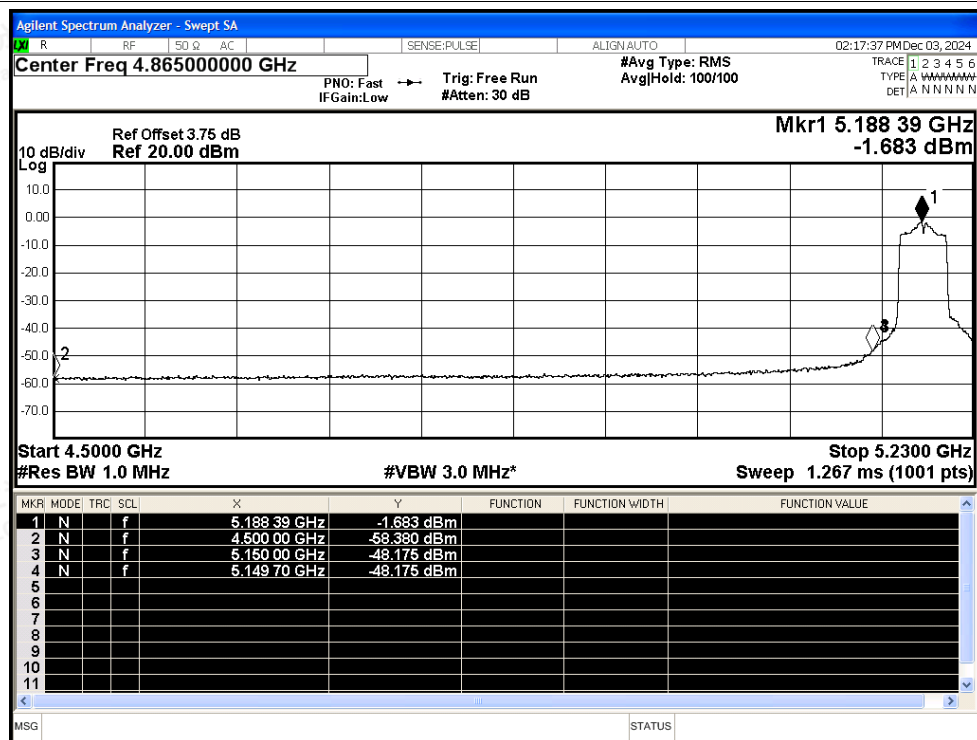




Restrict Band NVNT ac40 5190MHz Ant1 Peak

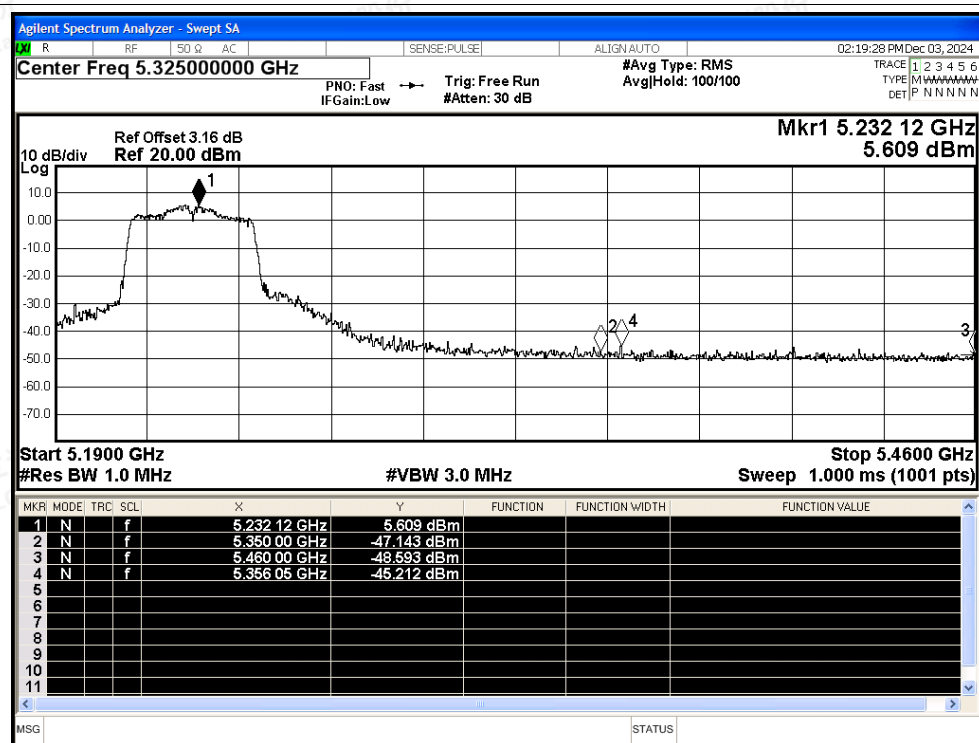


Restrict Band NVNT ac40 5190MHz Ant1 Average

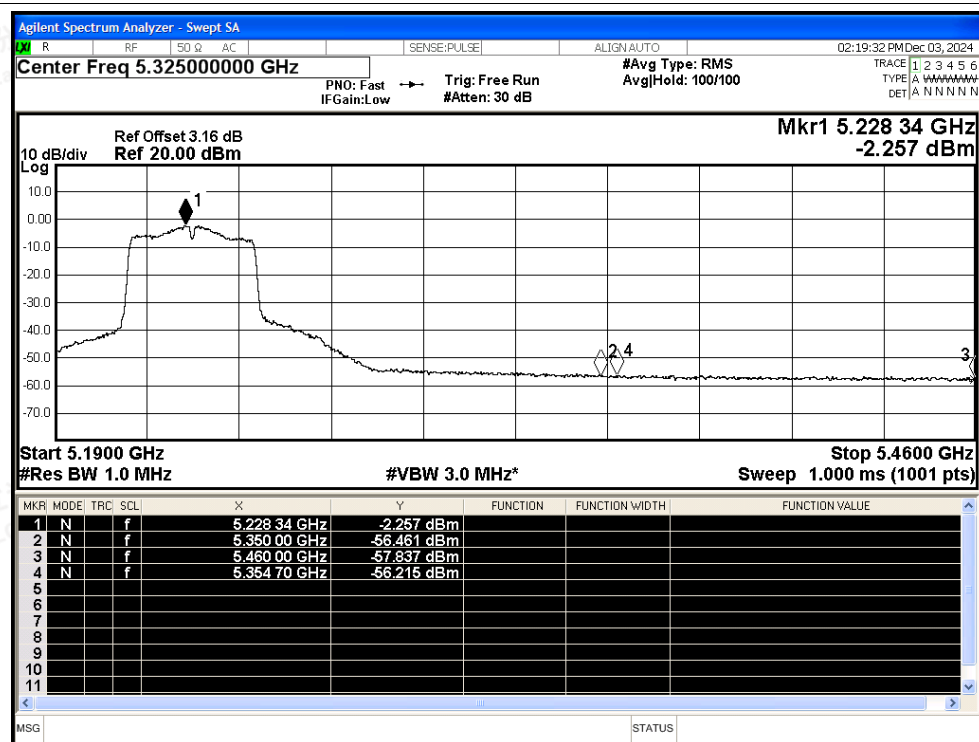




Restrict Band NVNT ac40 5230MHz Ant1 Peak

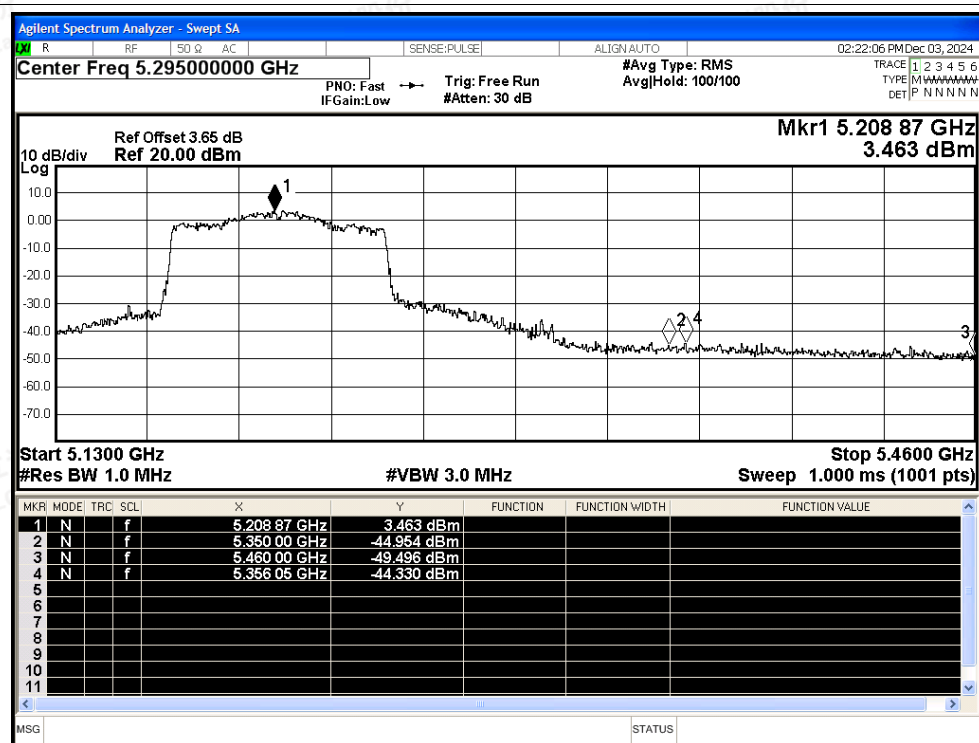


Restrict Band NVNT ac40 5230MHz Ant1 Average

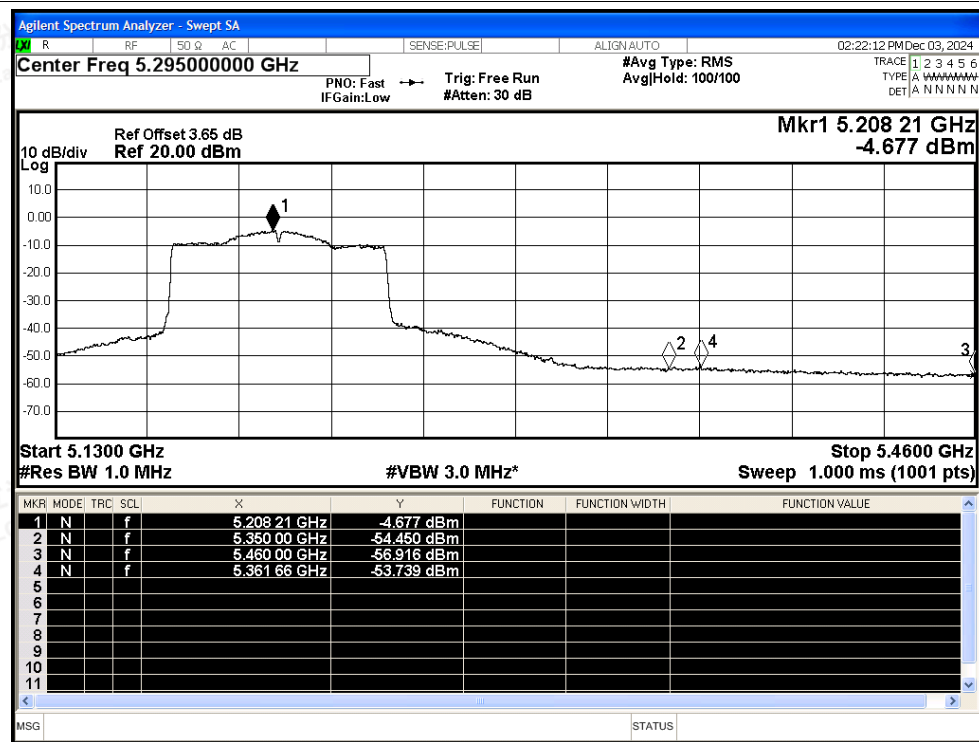




Restrict Band NVNT ac80 5210MHz Ant1 Peak

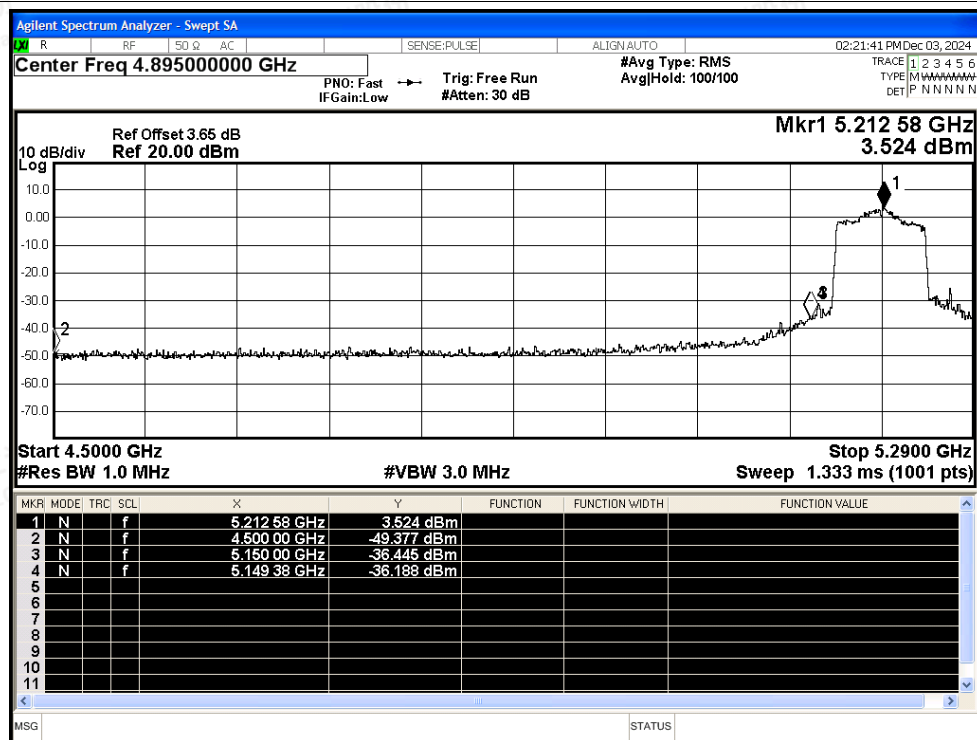


Restrict Band NVNT ac80 5210MHz Ant1 Average

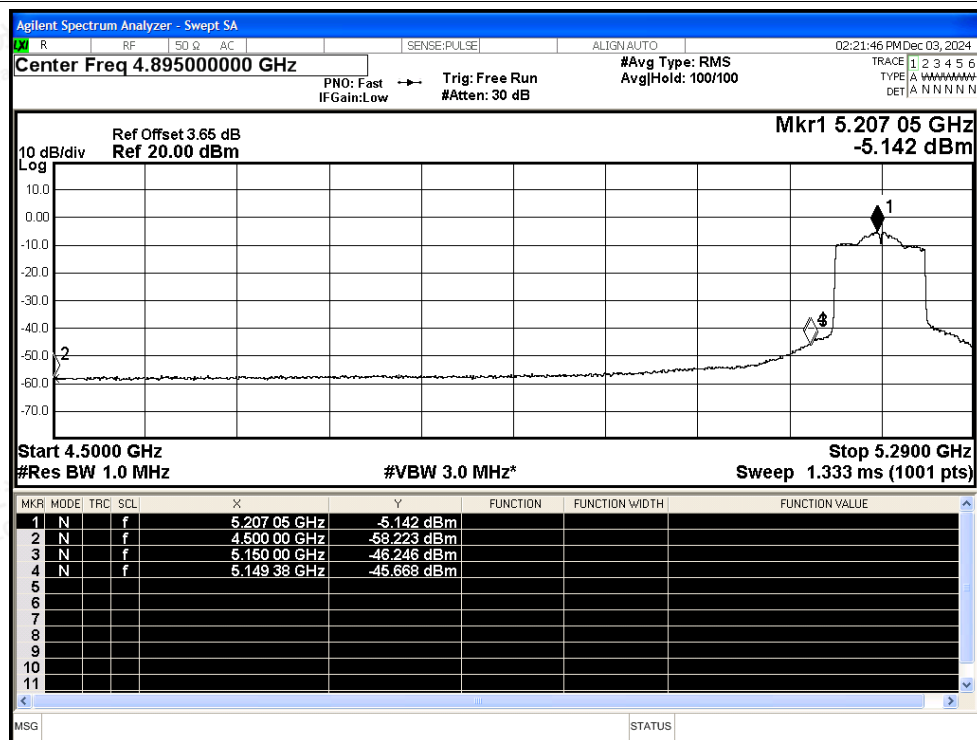




Restrict Band NVNT ac80 5210MHz Ant1 Peak



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	a	5180	Ant1	5179.98	-20000	-3.86	25	Pass
NVNT	a	5200	Ant1	5200	0	0	25	Pass
NVNT	a	5240	Ant1	5240	0	0	25	Pass
NVNT	n20	5180	Ant1	5179.98	-20000	-3.86	25	Pass
NVNT	n20	5200	Ant1	5200	0	0	25	Pass
NVNT	n20	5240	Ant1	5239.98	-20000	-3.82	25	Pass
NVNT	n40	5190	Ant1	5190	0	0	25	Pass
NVNT	n40	5230	Ant1	5229.96	-40000	-7.65	25	Pass
NVNT	ac20	5180	Ant1	5180	0	0	25	Pass
NVNT	ac20	5200	Ant1	5200	0	0	25	Pass
NVNT	ac20	5240	Ant1	5239.96	-40000	-7.63	25	Pass
NVNT	ac40	5190	Ant1	5190	0	0	25	Pass
NVNT	ac40	5230	Ant1	5229.96	-40000	-7.65	25	Pass
NVNT	ac80	5210	Ant1	5209.92	-80000	-15.36	25	Pass

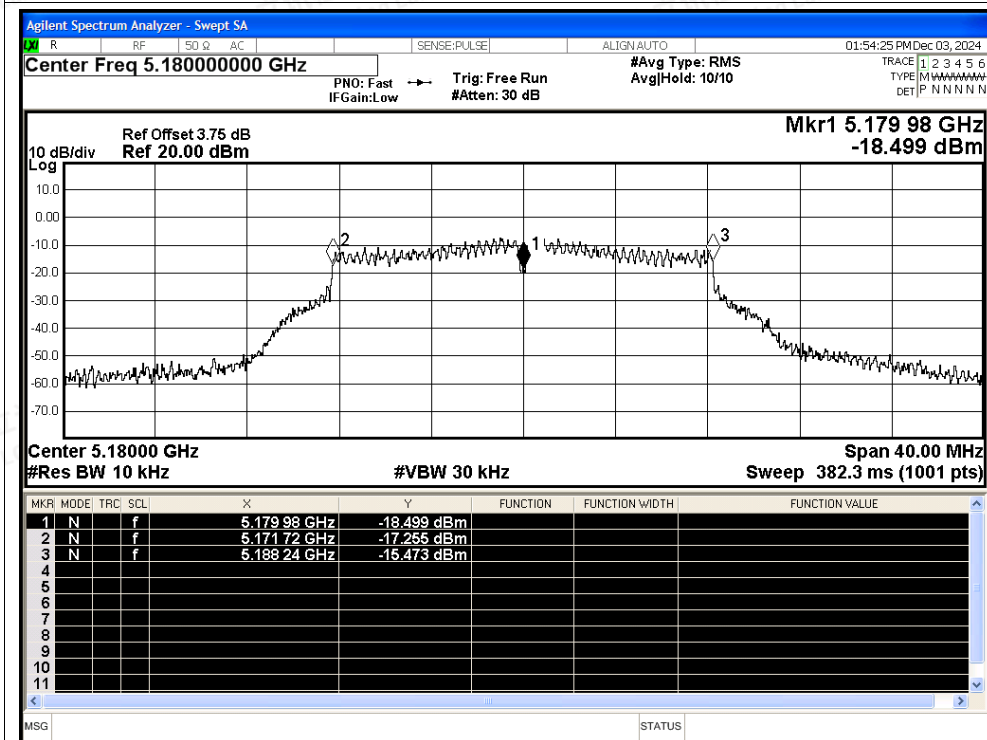


Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street,
Baoan District, Shenzhen, 518000, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

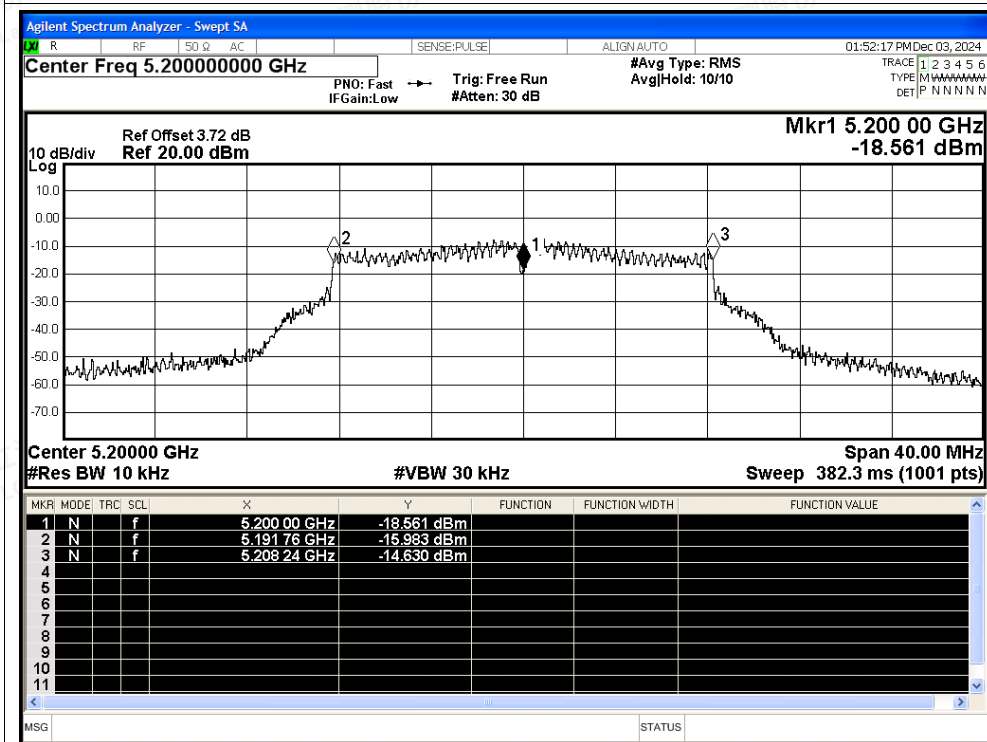


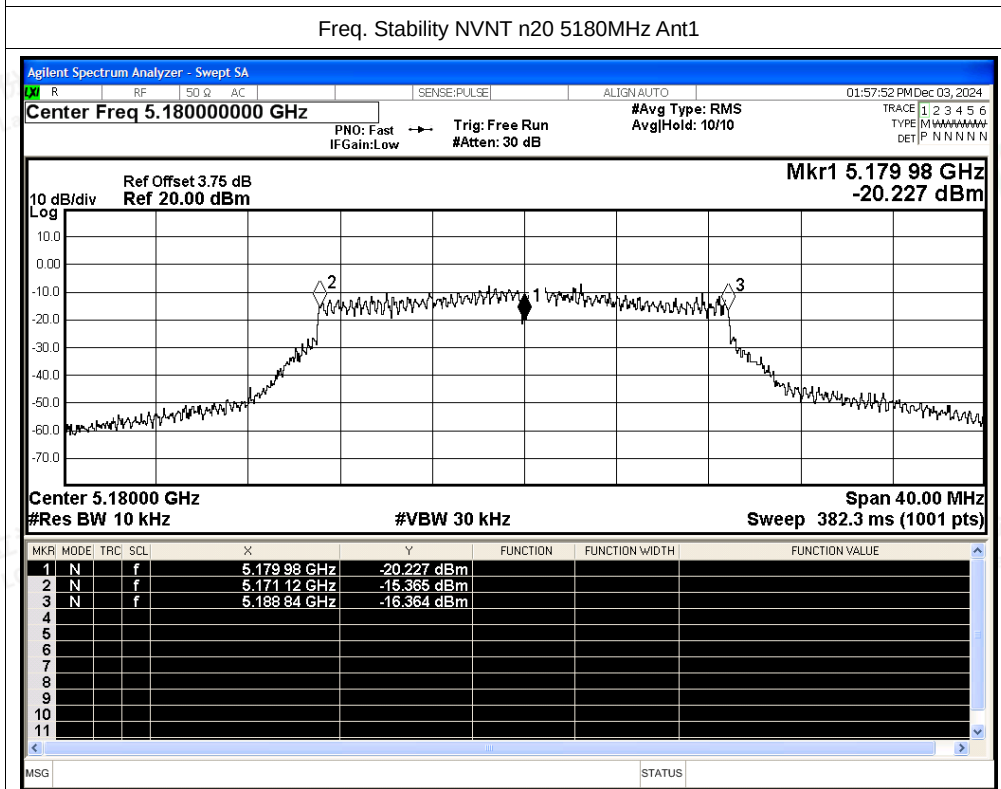
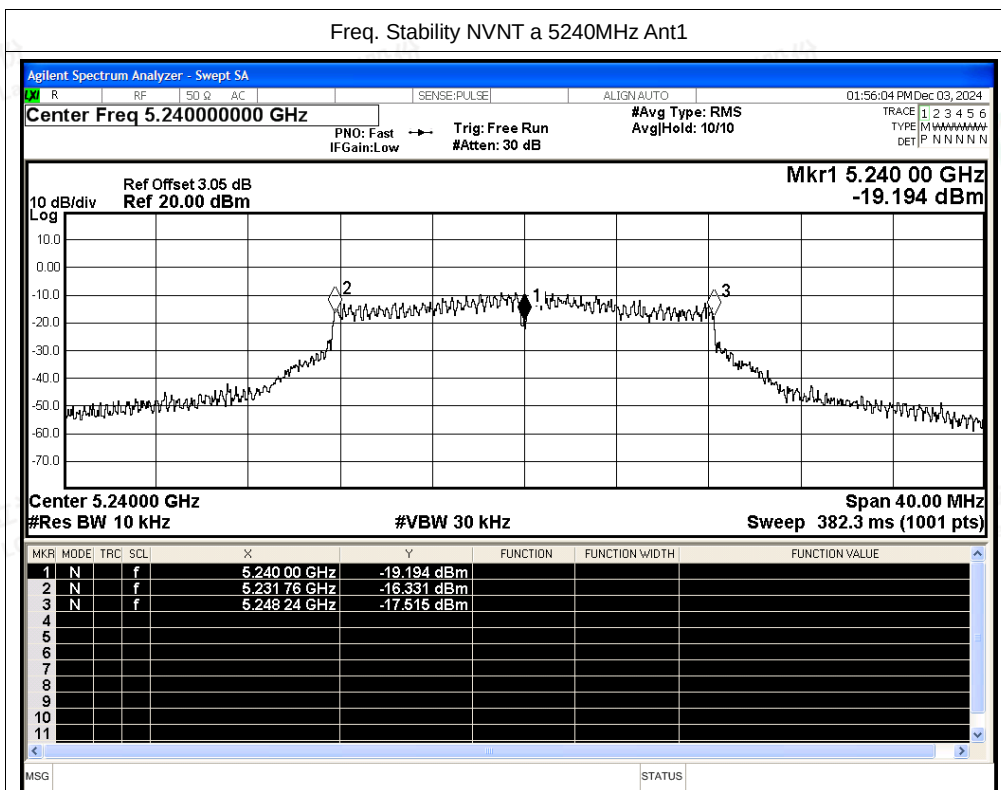
Test Graphs

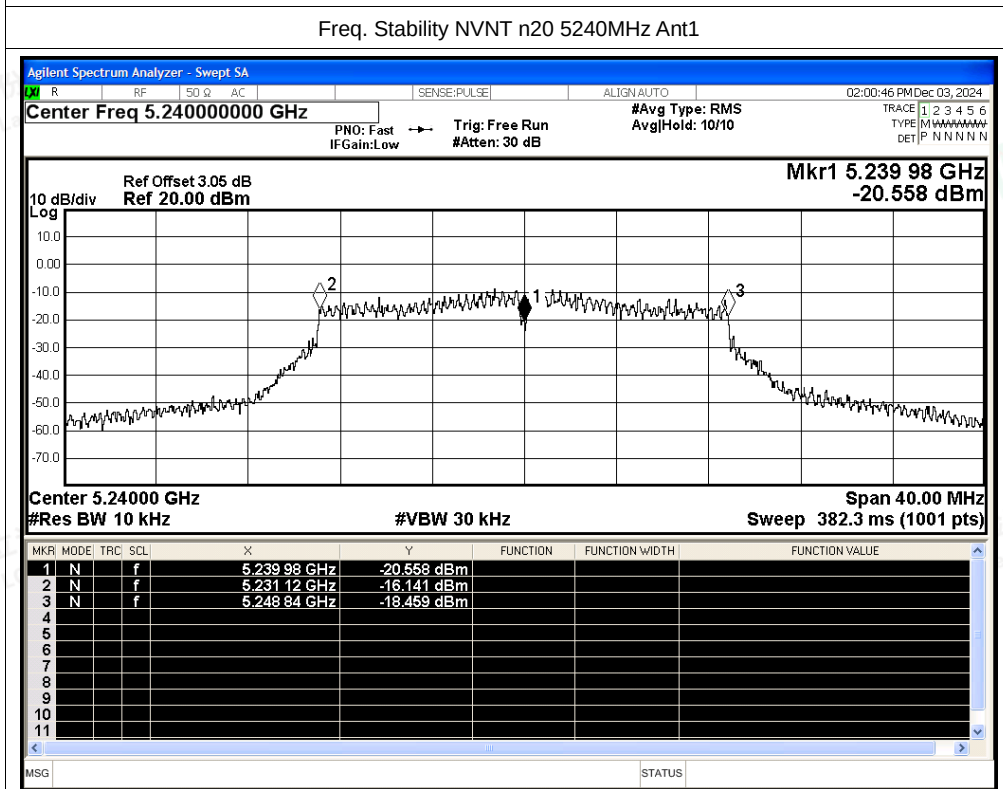
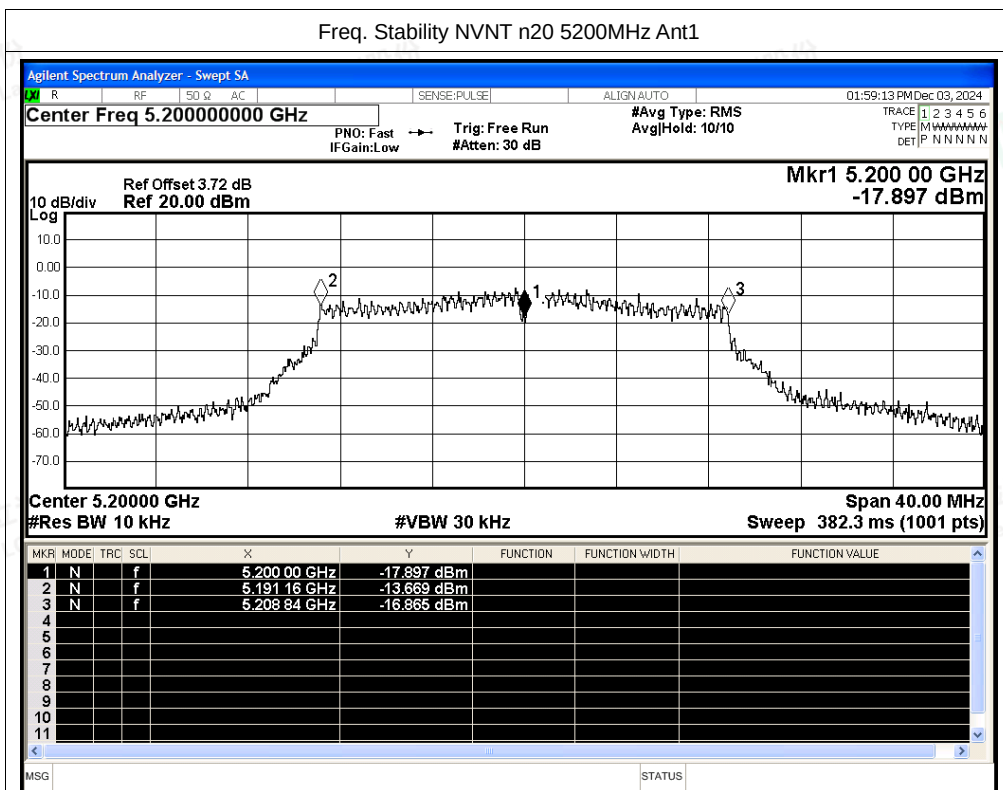
Freq. Stability NVNT a 5180MHz Ant1



Freq. Stability NVNT a 5200MHz Ant1

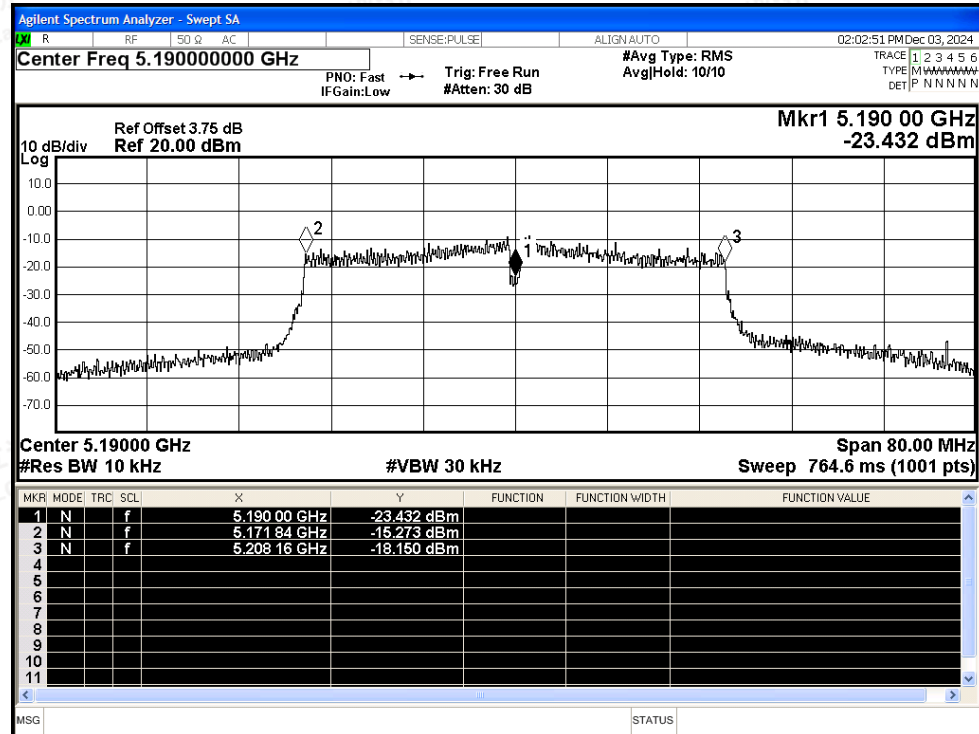




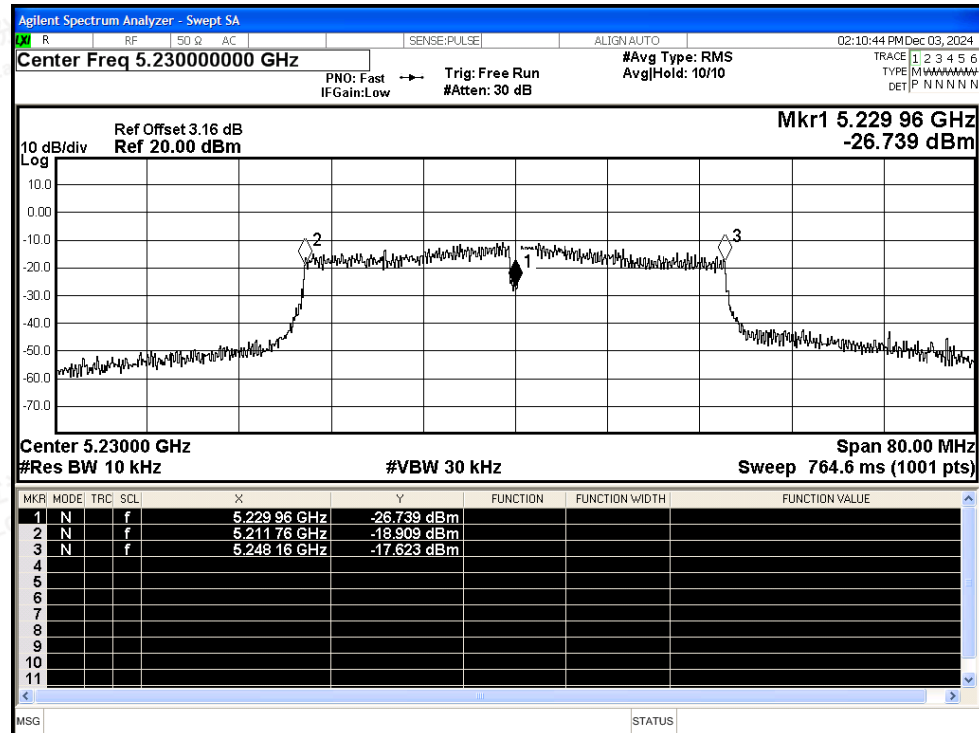




Freq. Stability NVNT n40 5190MHz Ant1

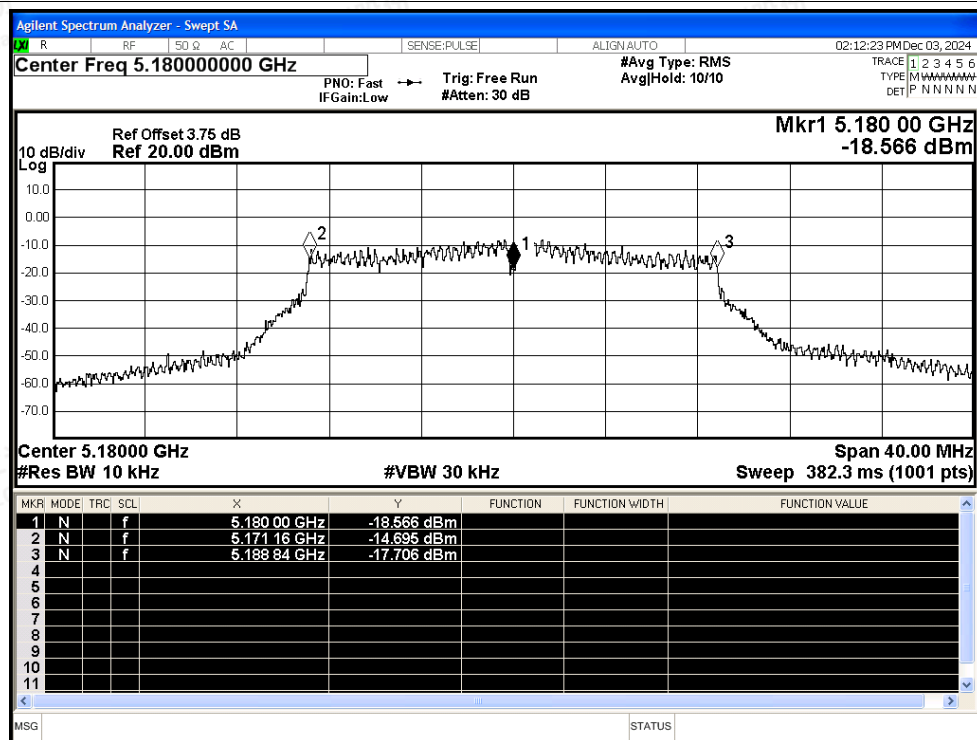


Freq. Stability NVNT n40 5230MHz Ant1

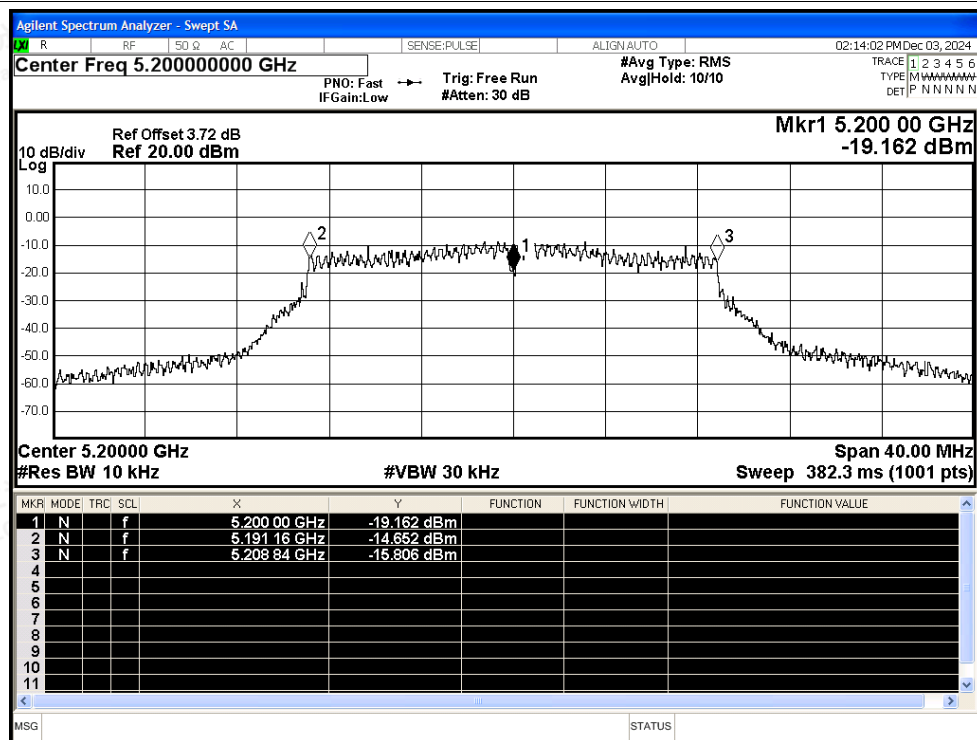




Freq. Stability NVNT ac20 5180MHz Ant1

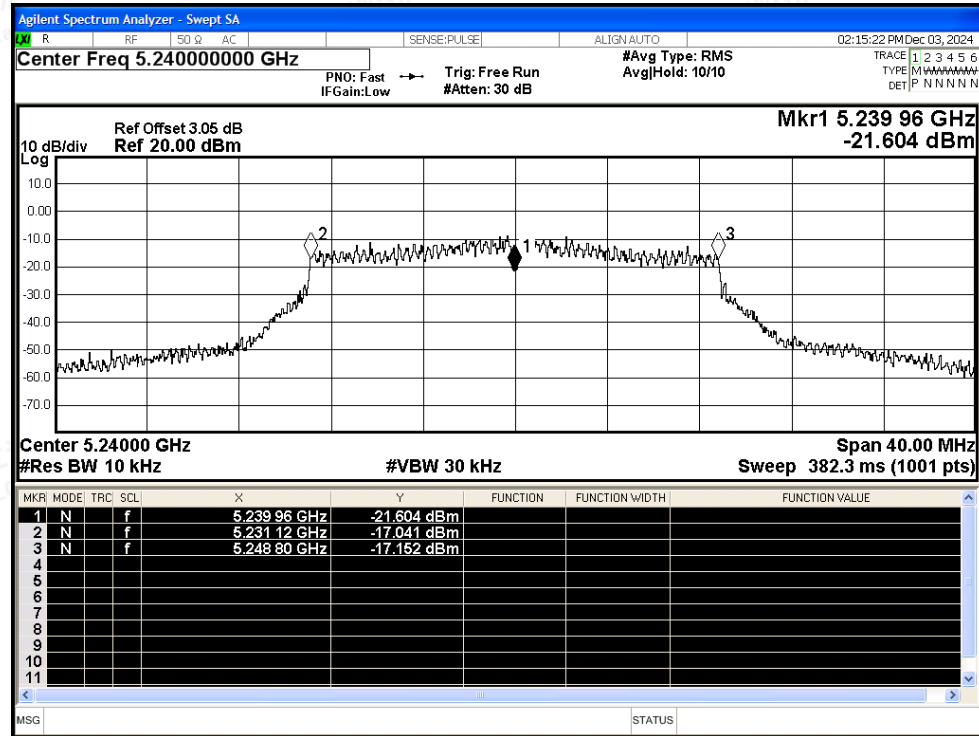


Freq. Stability NVNT ac20 5200MHz Ant1

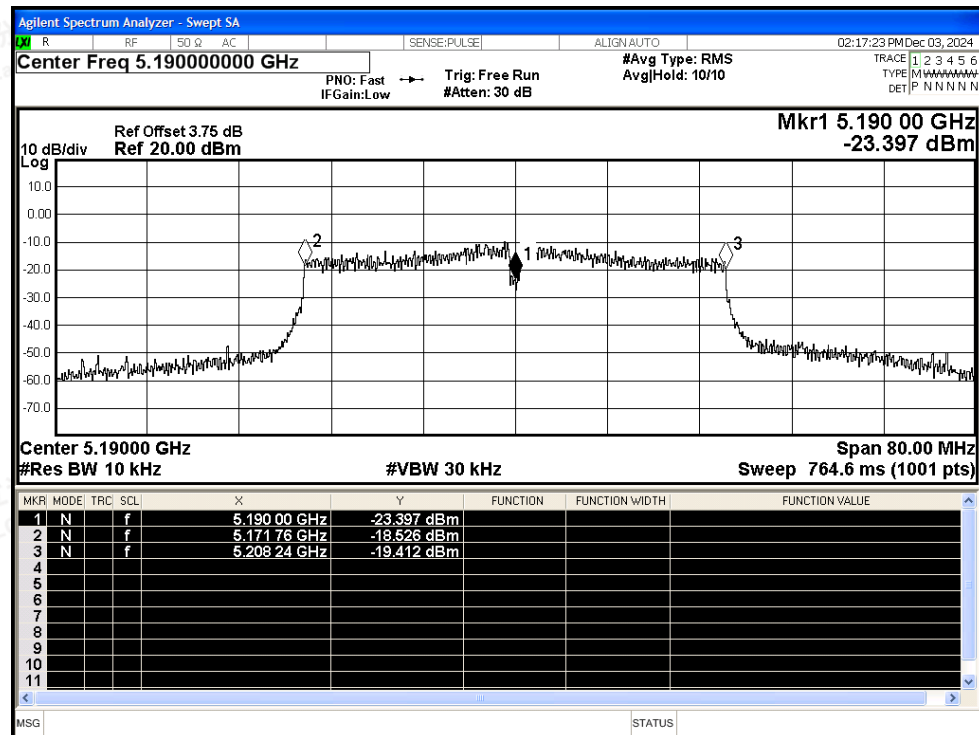




Freq. Stability NVNT ac20 5240MHz Ant1

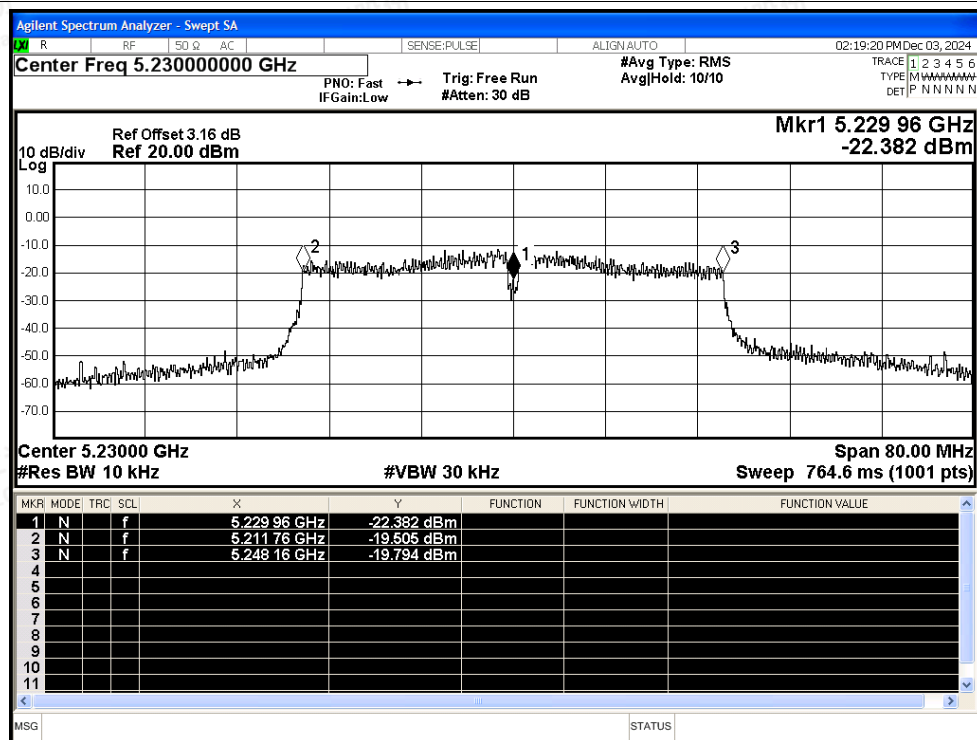


Freq. Stability NVNT ac40 5190MHz Ant1

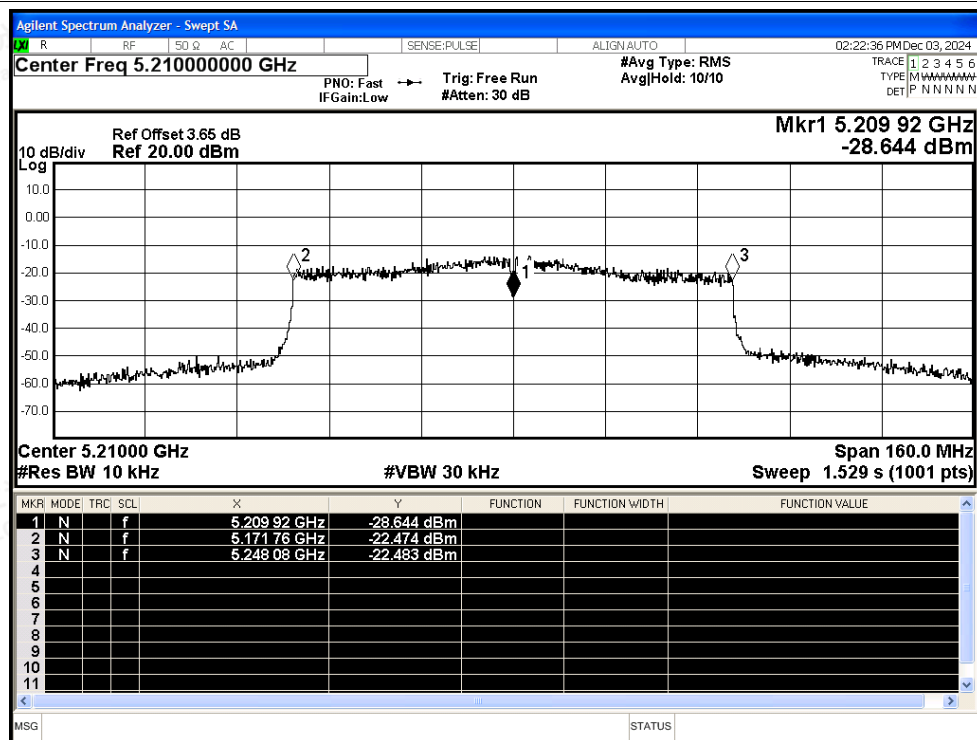


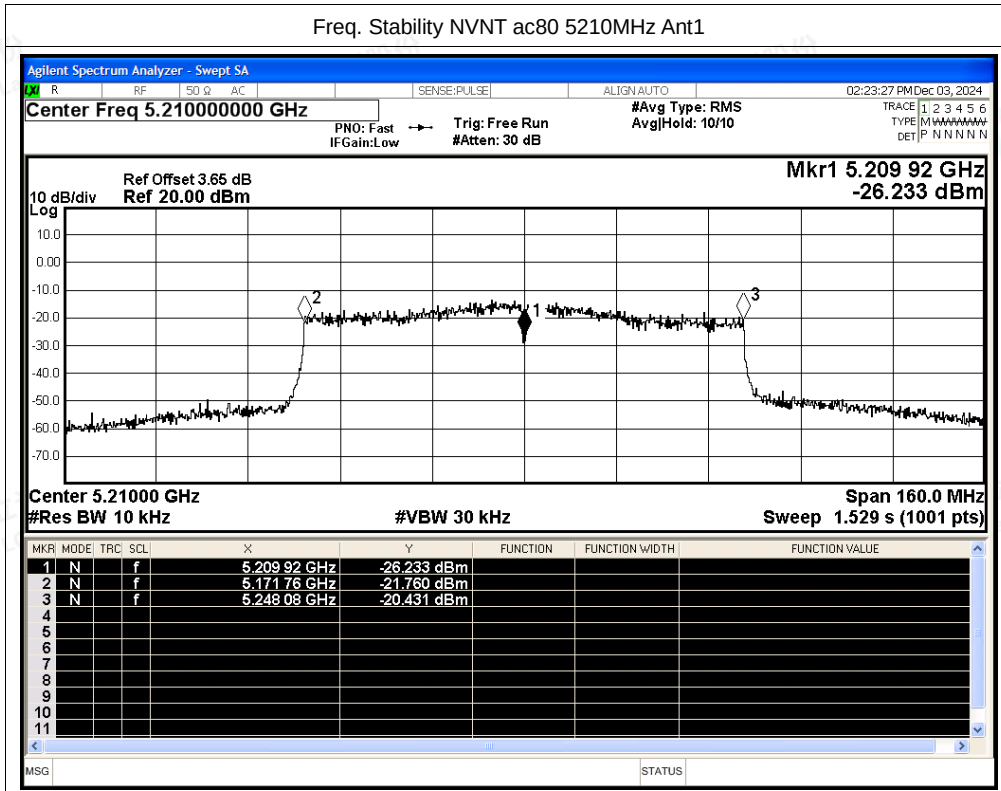


Freq. Stability NVNT ac40 5230MHz Ant1



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	97.22	0.12	0.72
NVNT	a	5200	Ant1	97.15	0.13	0.72
NVNT	a	5240	Ant1	97.15	0.13	0.72
NVNT	n20	5180	Ant1	96.96	0.13	0.76
NVNT	n20	5200	Ant1	97.03	0.13	0.76
NVNT	n20	5240	Ant1	96.96	0.13	0.76
NVNT	n40	5190	Ant1	94.2	0.26	1.54
NVNT	n40	5230	Ant1	94.19	0.26	1.54
NVNT	ac20	5180	Ant1	97.01	0.13	0.76
NVNT	ac20	5200	Ant1	96.98	0.13	0.76
NVNT	ac20	5240	Ant1	96.98	0.13	0.76
NVNT	ac40	5190	Ant1	94.27	0.26	1.52
NVNT	ac40	5230	Ant1	94.26	0.26	1.52
NVNT	ac80	5210	Ant1	0	0	∞

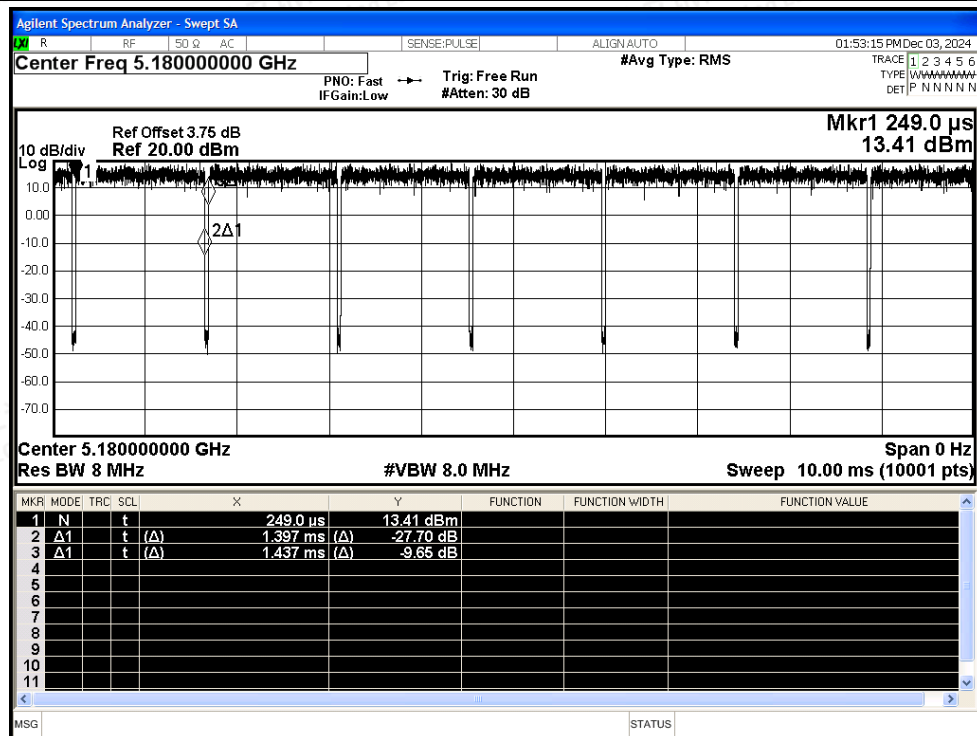


Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street,
Baoan District, Shenzhen, 518000, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

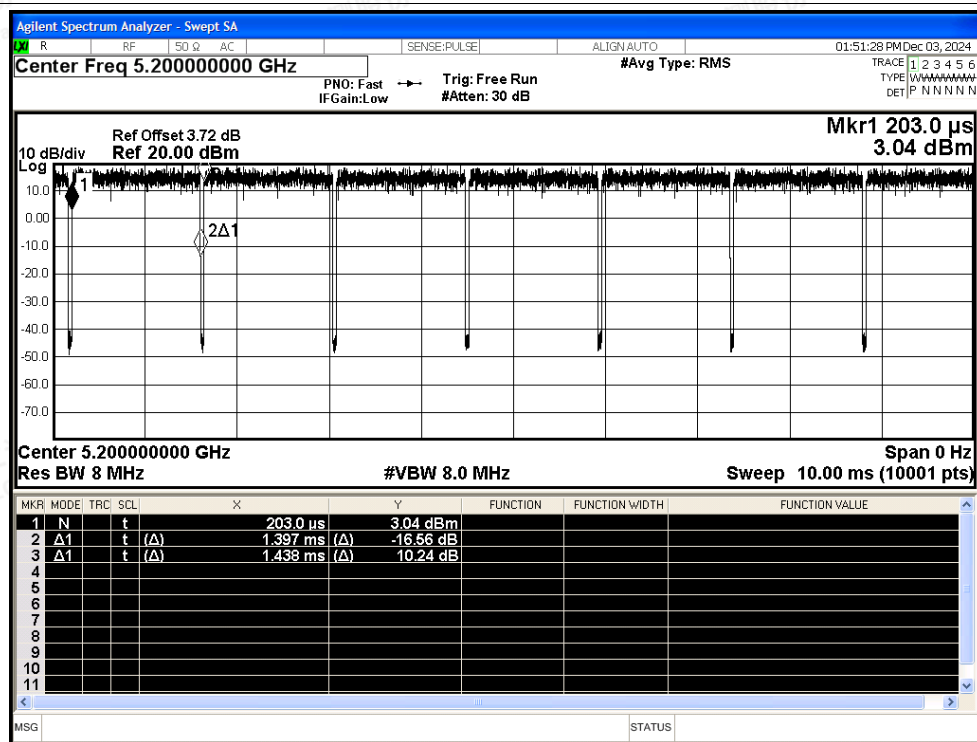


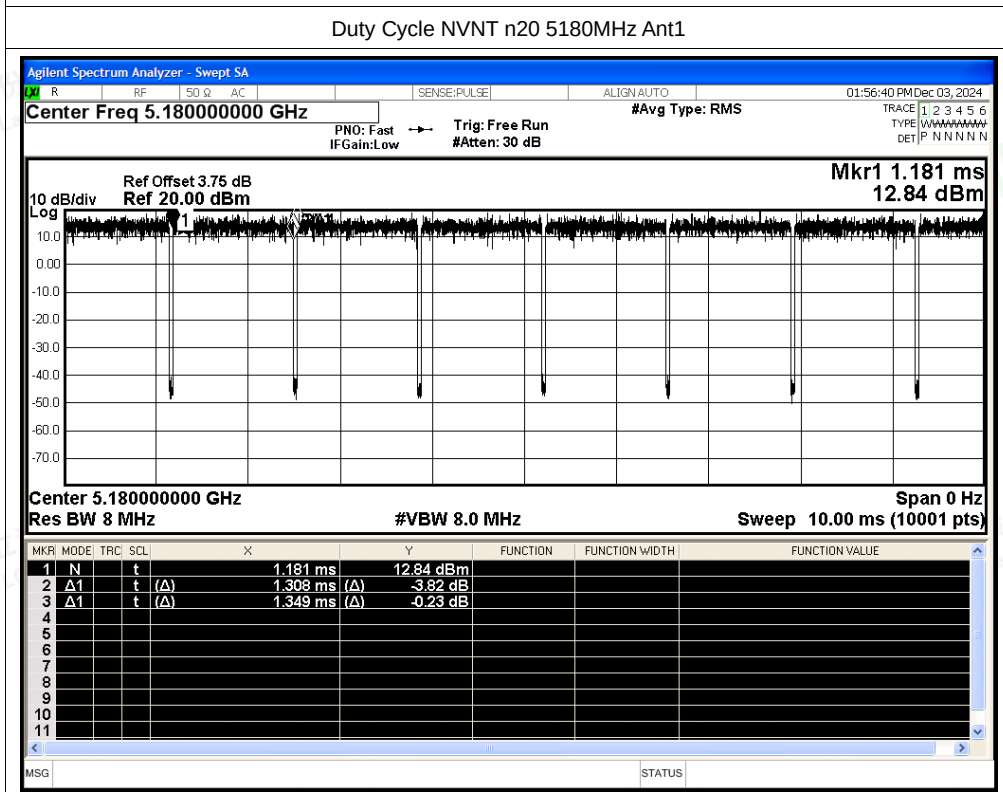
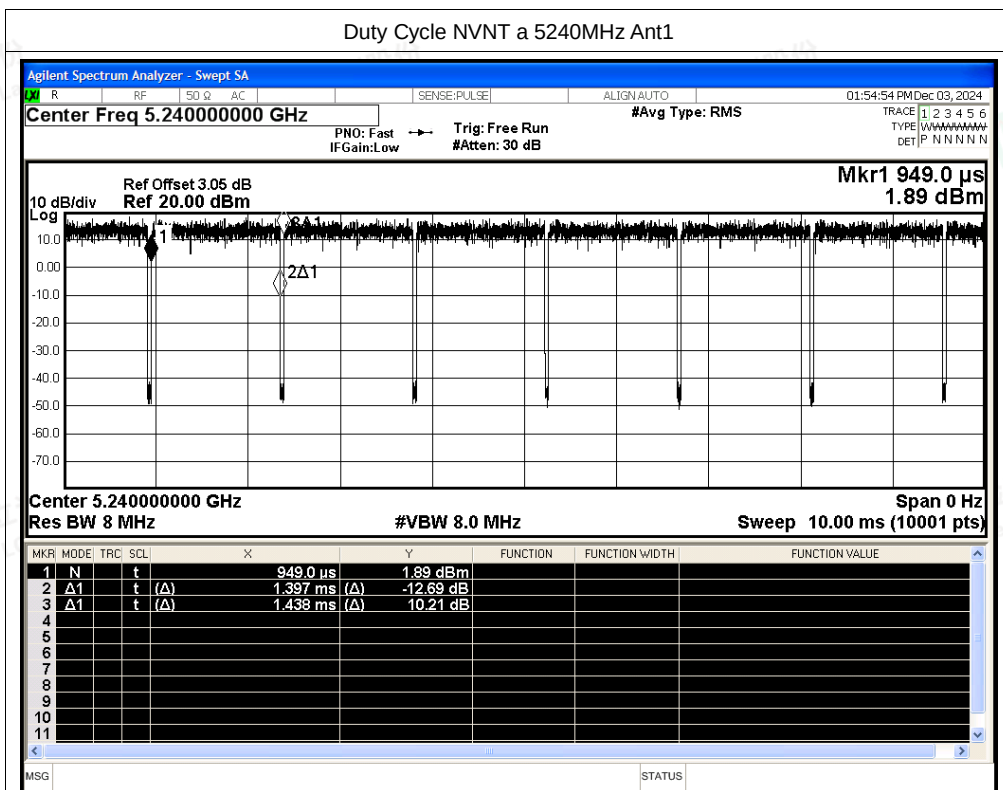
Test Graphs

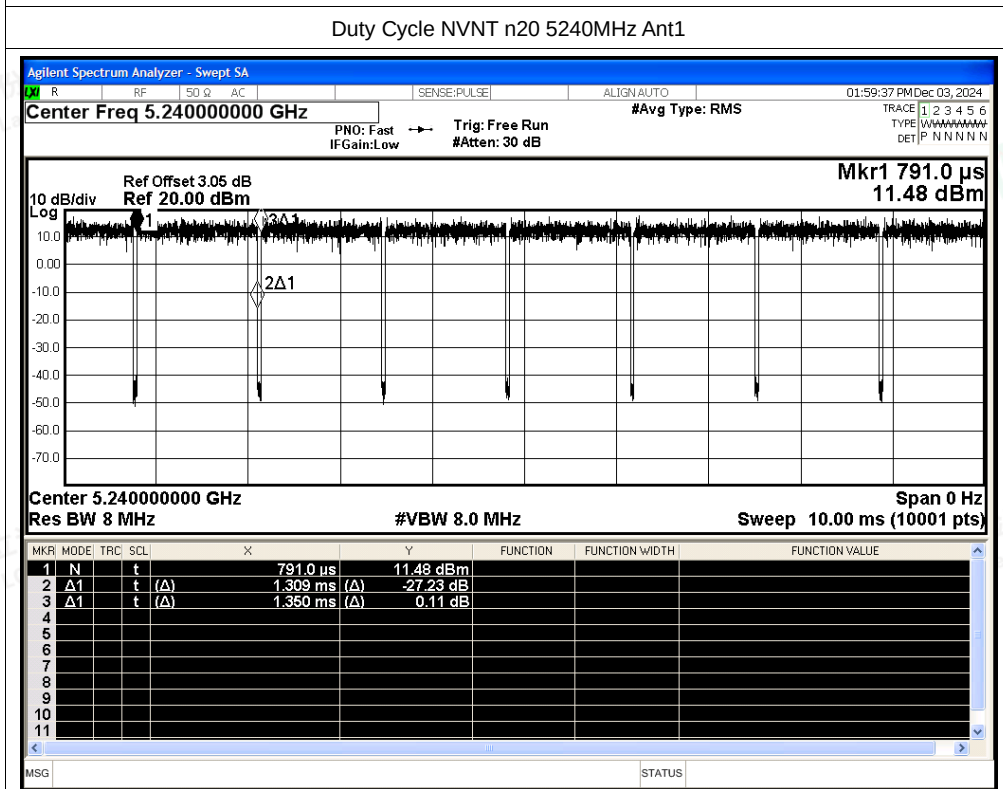
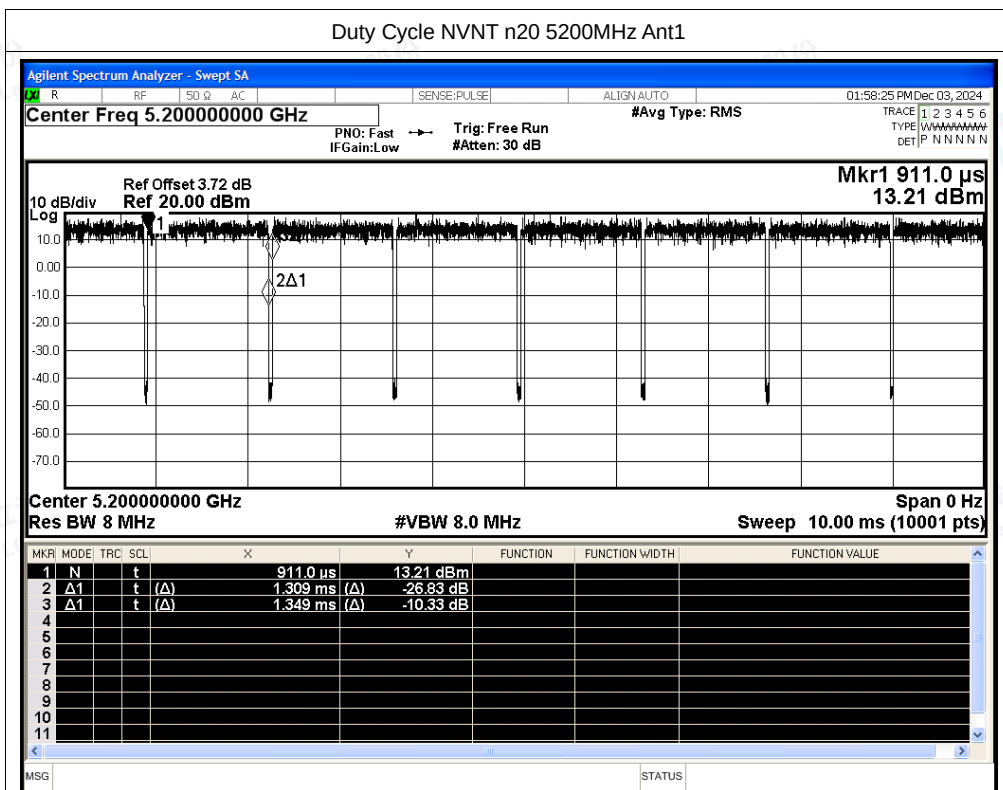
Duty Cycle NVNT a 5180MHz Ant1



Duty Cycle NVNT a 5200MHz Ant1

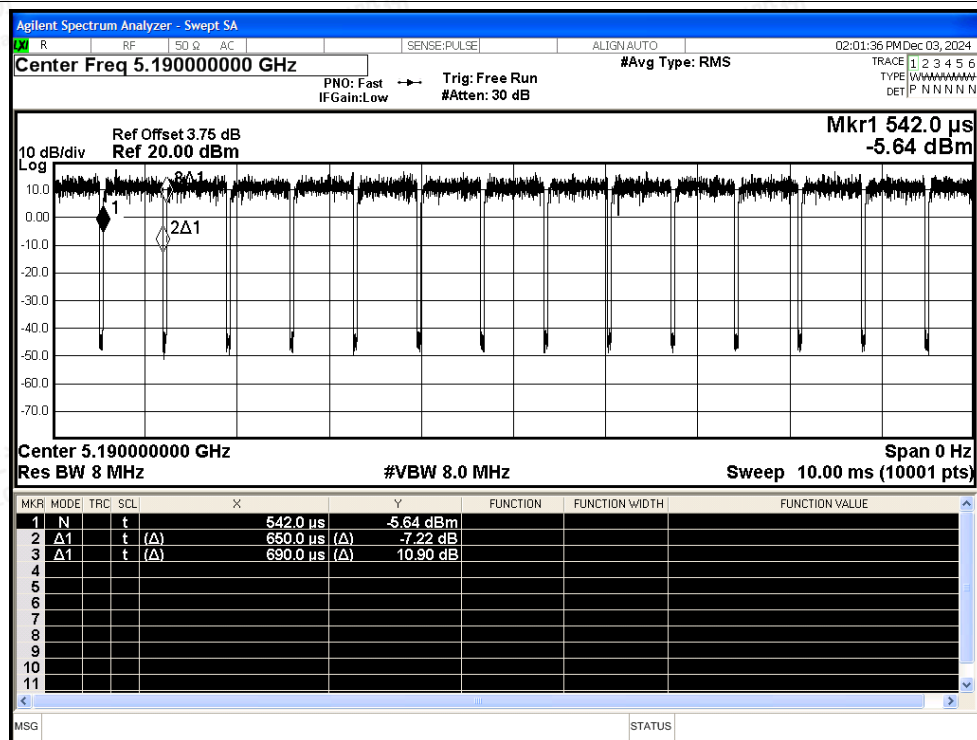




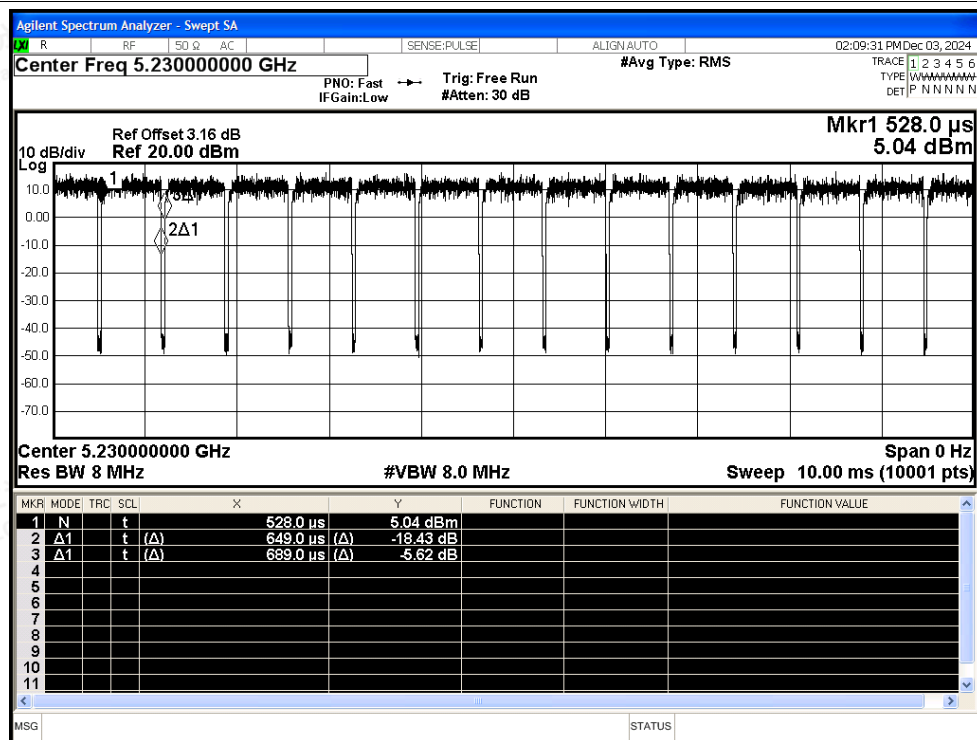


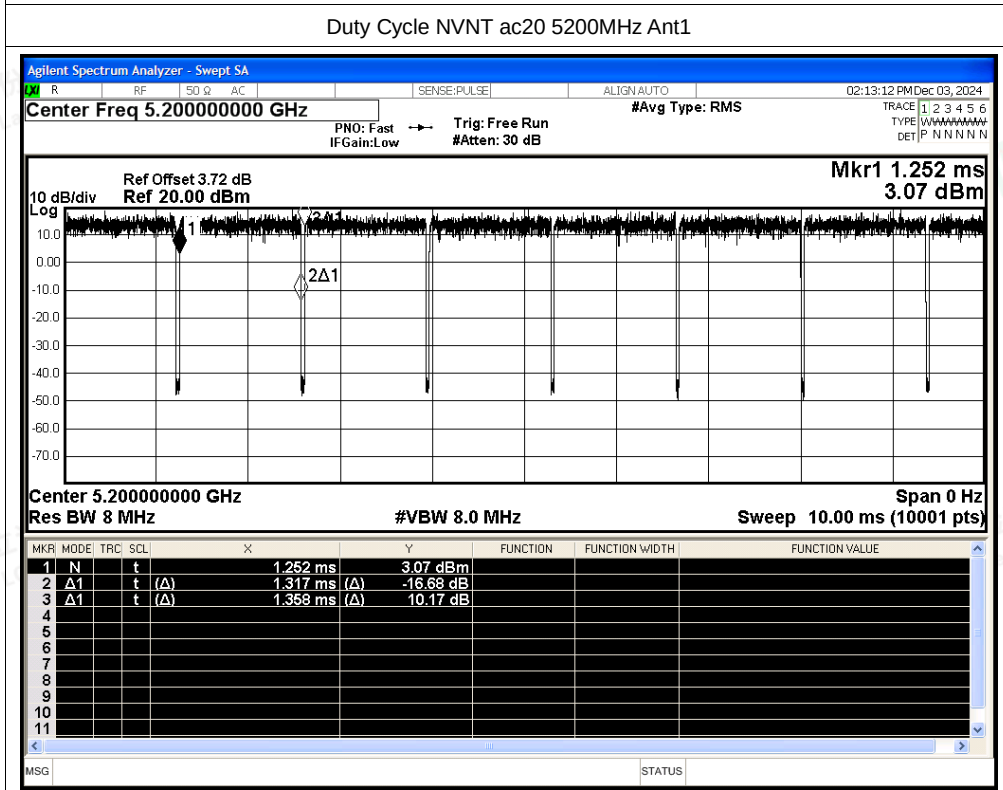
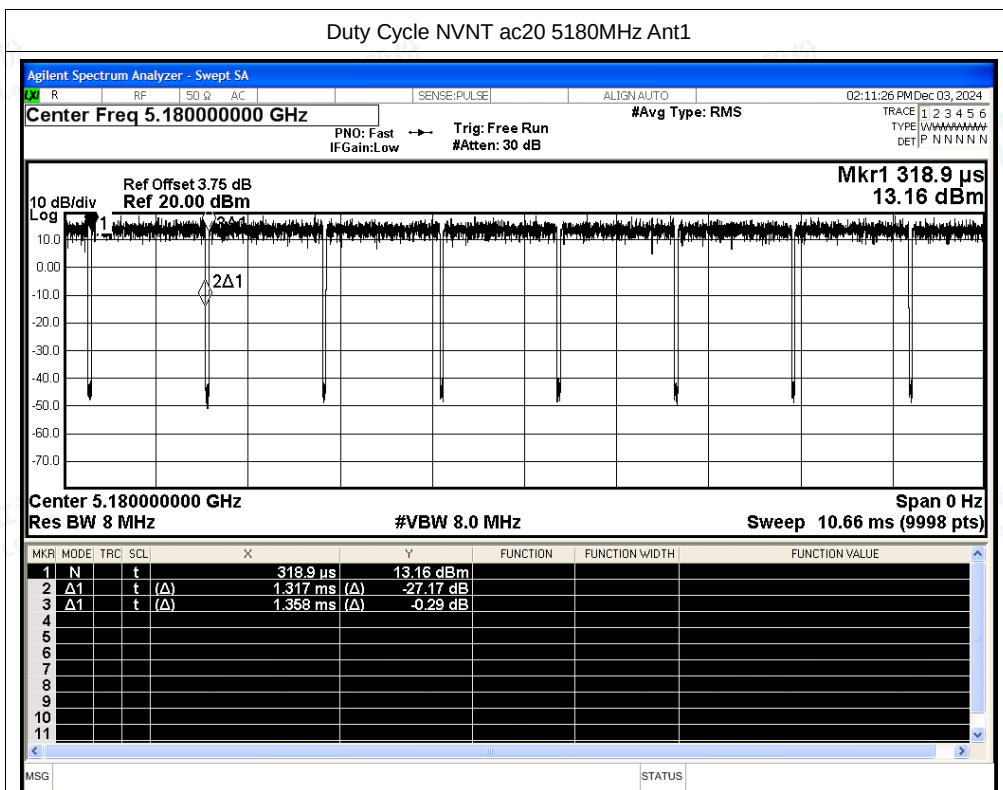


Duty Cycle NVNT n40 5190MHz Ant1



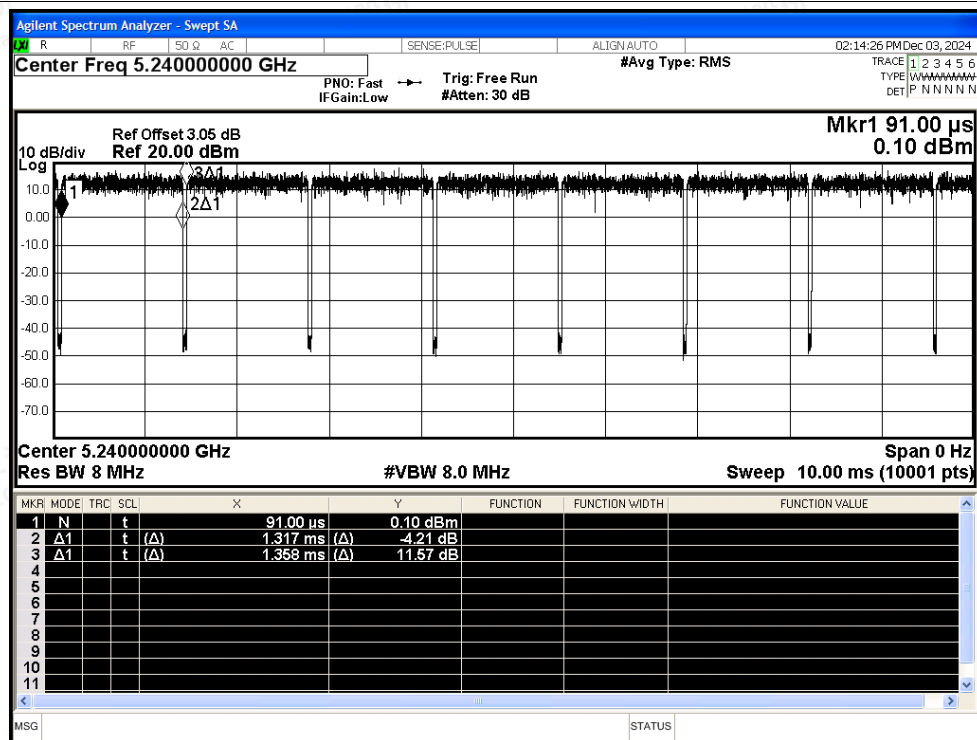
Duty Cycle NVNT n40 5230MHz Ant1







Duty Cycle NVNT ac20 5240MHz Ant1



Duty Cycle NVNT ac40 5190MHz Ant1

