



Appendix D

RF Test Data for 5.2GWIFI(Conducted Measurement)

Product Name: AX3000 Dual Band XPON ONT

Trade Mark: N/A

Test Model: X302

Environmental Conditions

Temperature:	25.6° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Emiya lin
Supervised by:	Simba Haung



Contents

Page

COVER PAGE

1	Duty Cycle	3
1.1	Test Result	3
1.2	Test Graphs	5
2	Maximum Conducted Output Power	29
2.1	Test Result	29
3	-26dB Bandwidth	31
3.1	Test Result	31
3.2	Test Graphs	33
4	Occupied Channel Bandwidth	59
4.1	Test Result	59
4.2	Test Graphs	61
5	Maximum Power Spectral Density Level	87
5.1	Test Result	87
5.2	Test Graphs	89
6	Frequency Stability	113
6.1	Test Result	113
7	Conducted RF Spurious Emission	123
7.1	Test Result	123
7.2	Test Graphs	125



1 Duty Cycle

1.1 Test Result

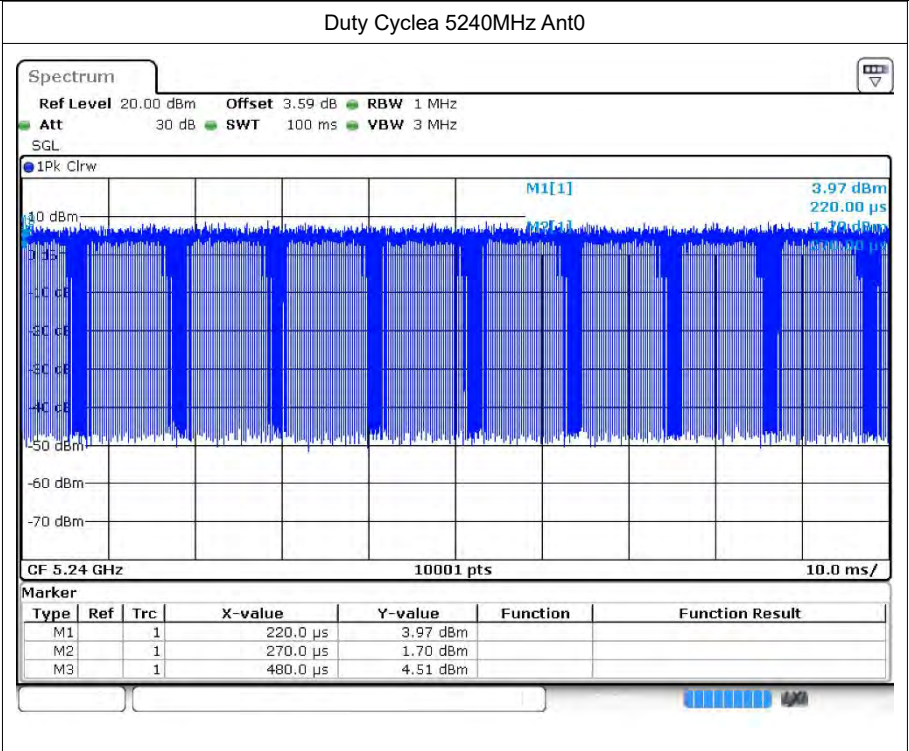
Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
a	5180	Ant0	86.98	0.61	4.55
a	5200	Ant0	86.96	0.61	4.76
a	5240	Ant0	87.02	0.6	4.76
a	5180	Ant1	87.19	0.6	4.76
a	5200	Ant1	87	0.6	4.76
a	5240	Ant1	87.05	0.6	4.76
n20	5180	Ant0	93.06	0.31	2.22
n20	5200	Ant0	93.04	0.31	2.22
n20	5240	Ant0	93.02	0.31	2.22
n20	5180	Ant1	93.1	0.31	2.22
n20	5200	Ant1	93.07	0.31	2.22
n20	5240	Ant1	93.08	0.31	2.22
n40	5190	Ant0	92.97	0.32	2.22
n40	5230	Ant0	92.93	0.32	2.27
n40	5190	Ant1	91.32	0.39	2.27
n40	5230	Ant1	92.09	0.36	2.22
ac20	5180	Ant0	87.06	0.6	4.55
ac20	5200	Ant0	87.23	0.59	4.35
ac20	5240	Ant0	87.27	0.59	4.55
ac20	5180	Ant1	87.19	0.6	4.35
ac20	5200	Ant1	87.12	0.6	4.55
ac20	5240	Ant1	87.21	0.59	4.55
ac40	5190	Ant0	87.09	0.6	4.35
ac40	5230	Ant0	87.36	0.59	4.35
ac40	5190	Ant1	84.82	0.71	4.35
ac40	5230	Ant1	86.85	0.61	4.35
ac80	5210	Ant0	87.52	0.58	4.35
ac80	5210	Ant1	84.63	0.72	4.55
ax20	5180	Ant0	86.87	0.61	4.35
ax20	5200	Ant0	86.86	0.61	4.35
ax20	5240	Ant0	87.13	0.6	4.35
ax20	5180	Ant1	86.87	0.61	4.55
ax20	5200	Ant1	87.19	0.6	4.35
ax20	5240	Ant1	87.19	0.6	4.35
ax40	5190	Ant0	87.67	0.57	4.17
ax40	5230	Ant0	87.69	0.57	4.17
ax40	5190	Ant1	84.93	0.71	4.35



ax40	5230	Ant1	84.93	0.71	4.17
ax80	5210	Ant0	87.04	0.6	4.35
ax80	5210	Ant1	84.02	0.76	4.55

1.2 Test Graphs



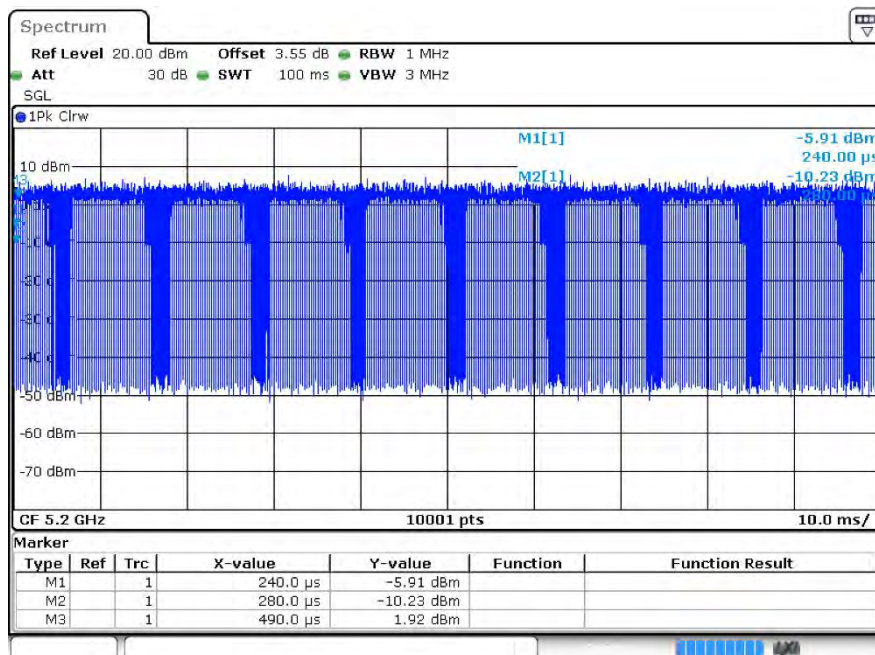


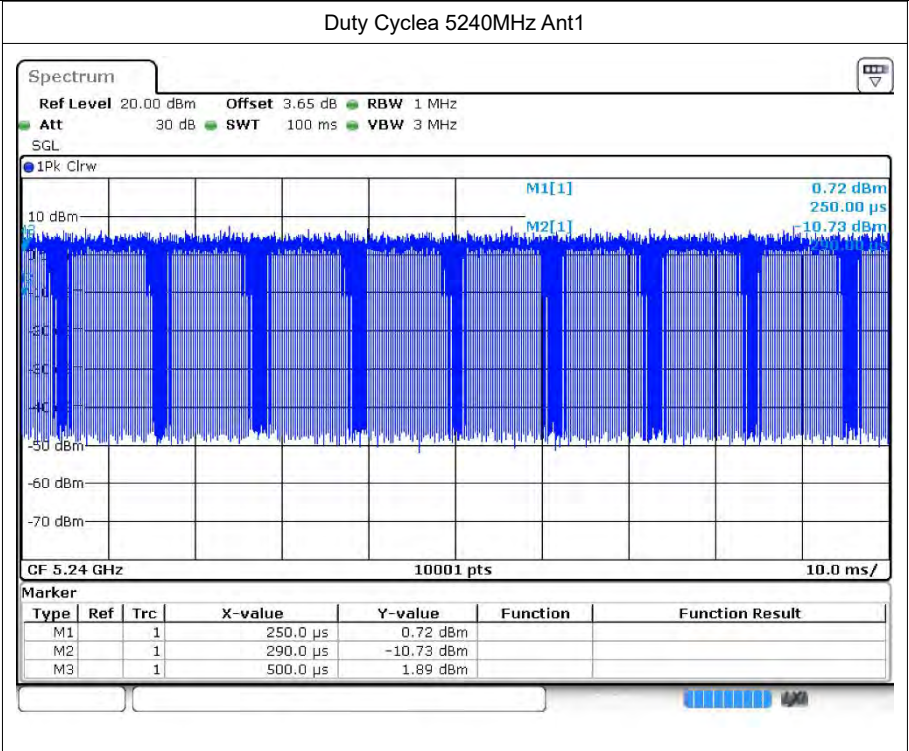


Duty Cyclea 5180MHz Ant1

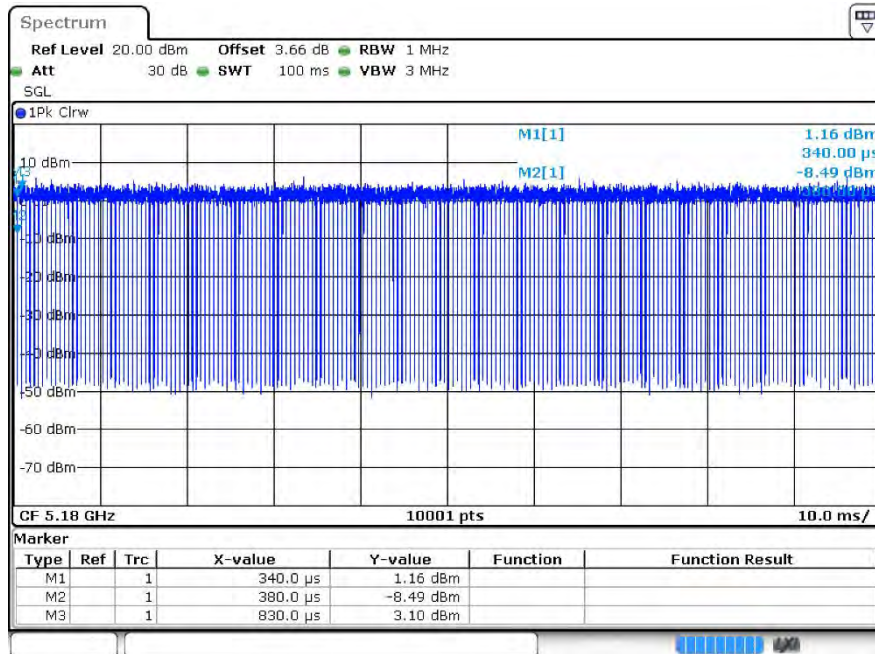


Duty Cycle a 5200MHz Ant1

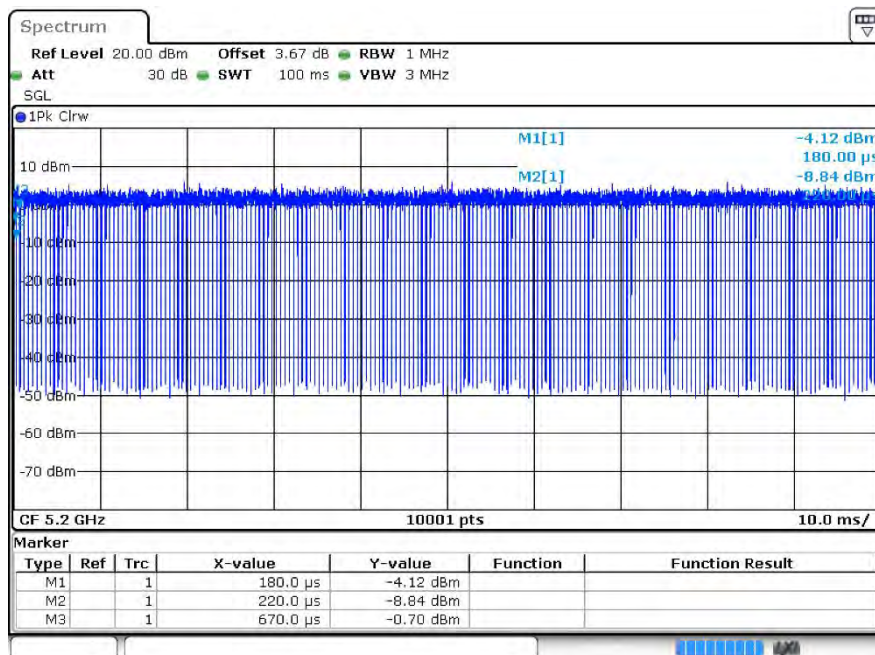


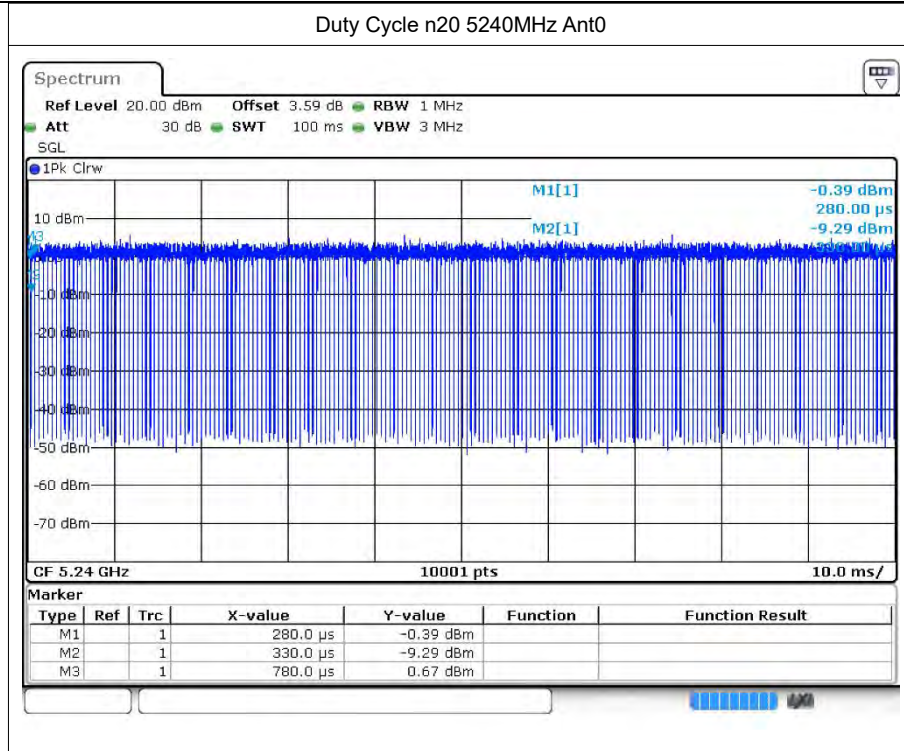


Duty Cycle n20 5180MHz Ant0



Duty Cycle n20 5200MHz Ant0



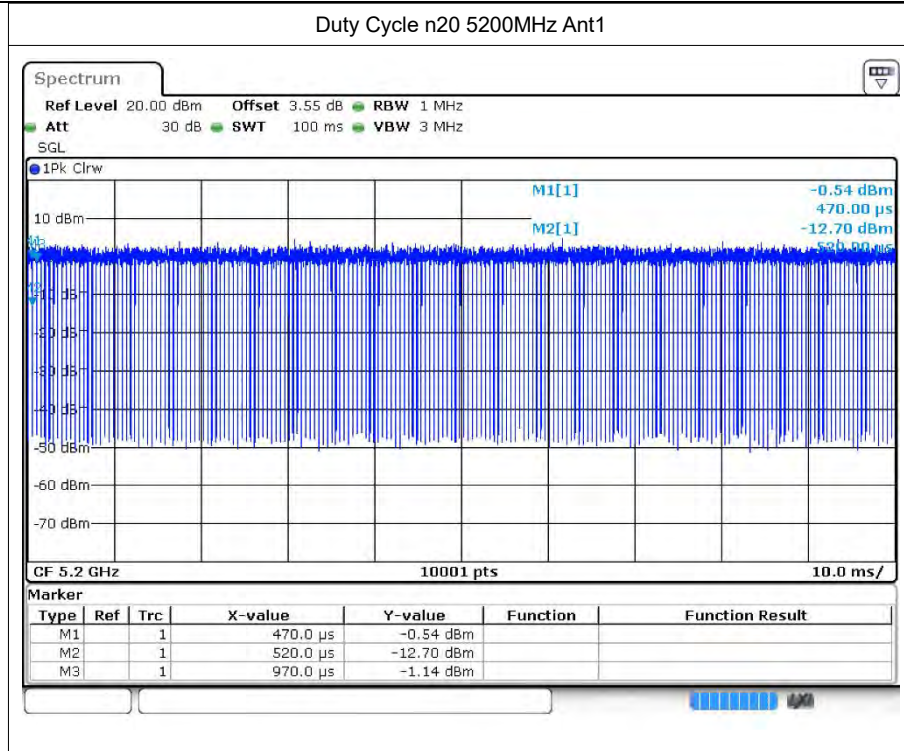


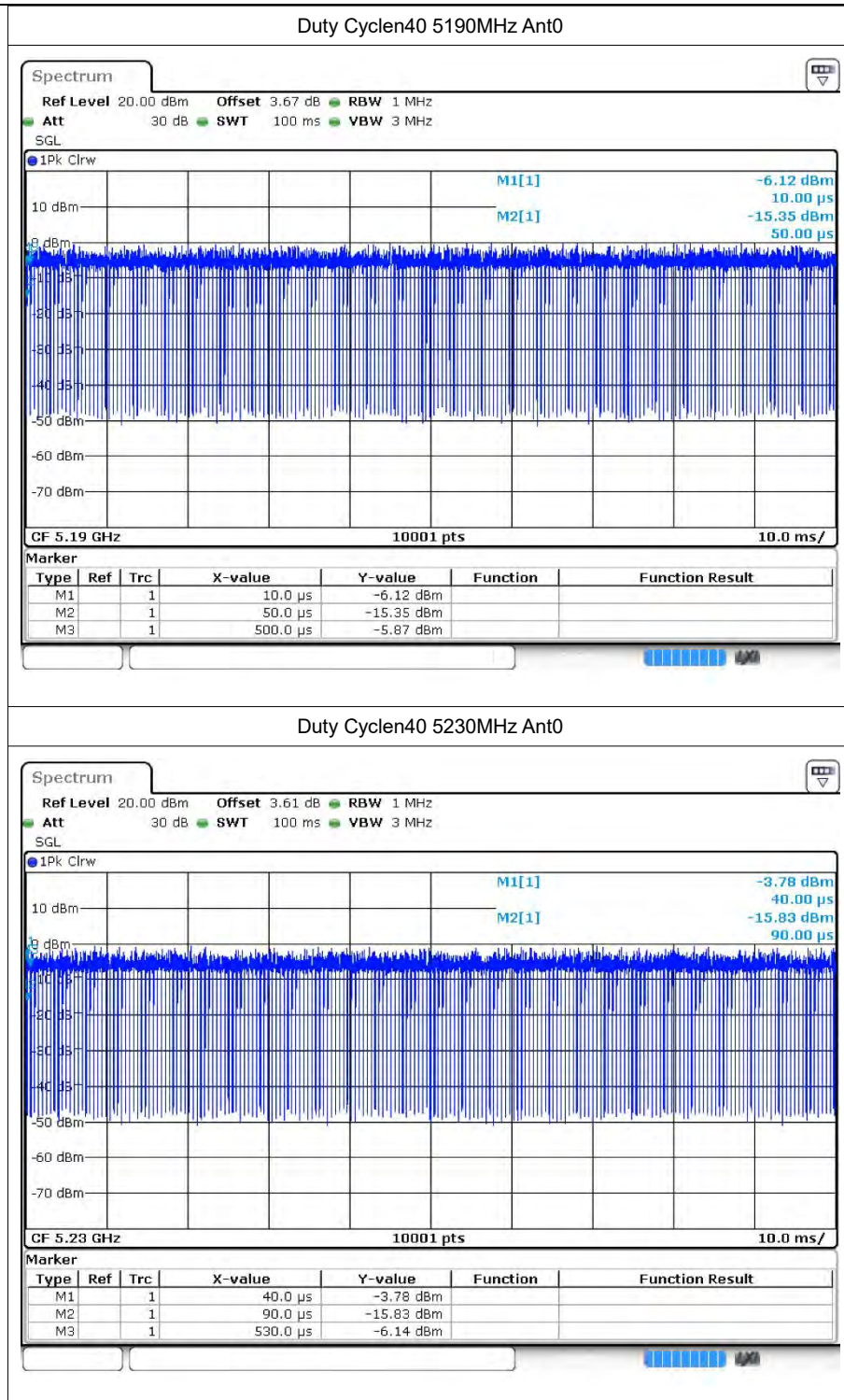
Duty Cycle n20 5180MHz Ant1



Duty Cycle n20 5200MHz Ant1

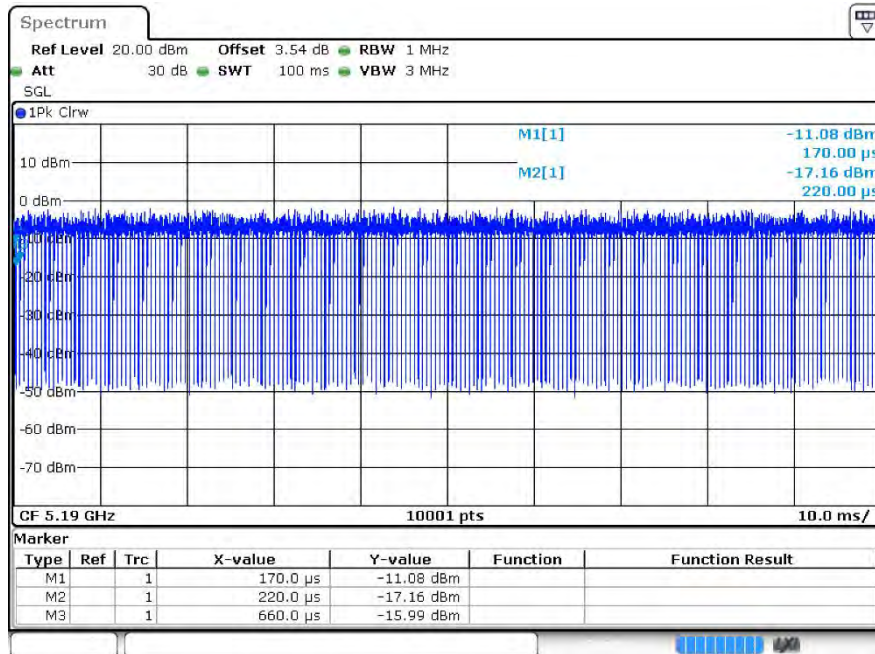




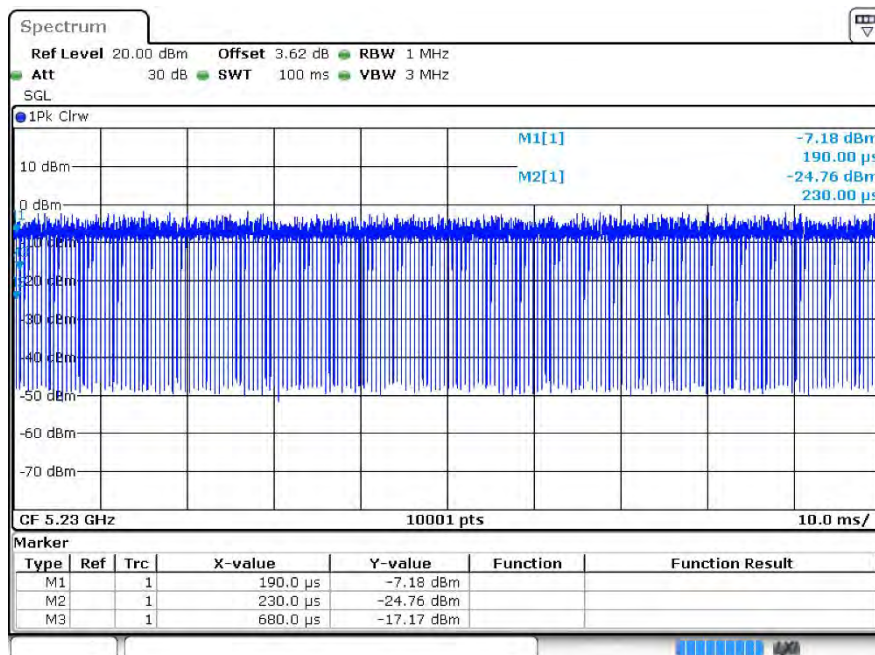




Duty Cyclen40 5190MHz Ant1



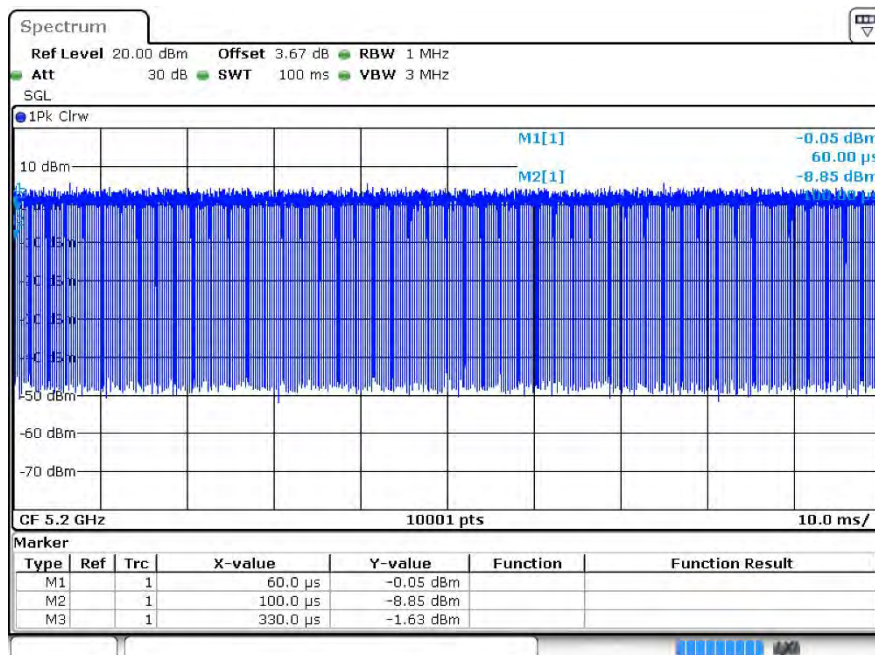
Duty Cyclen40 5230MHz Ant1

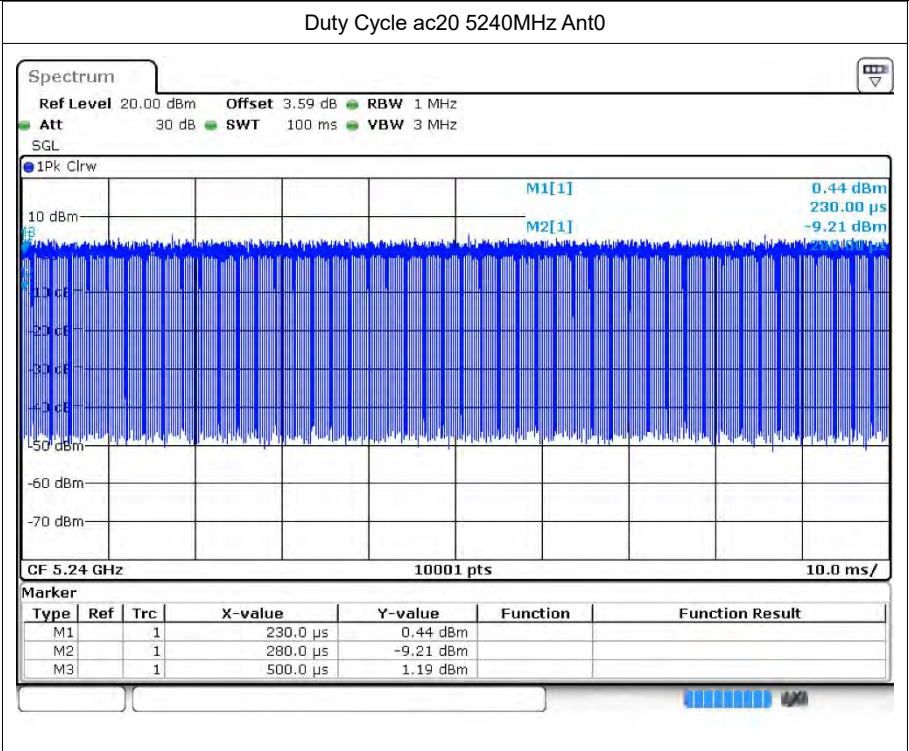


Duty Cycle ac20 5180MHz Ant0



Duty Cycle ac20 5200MHz Ant0

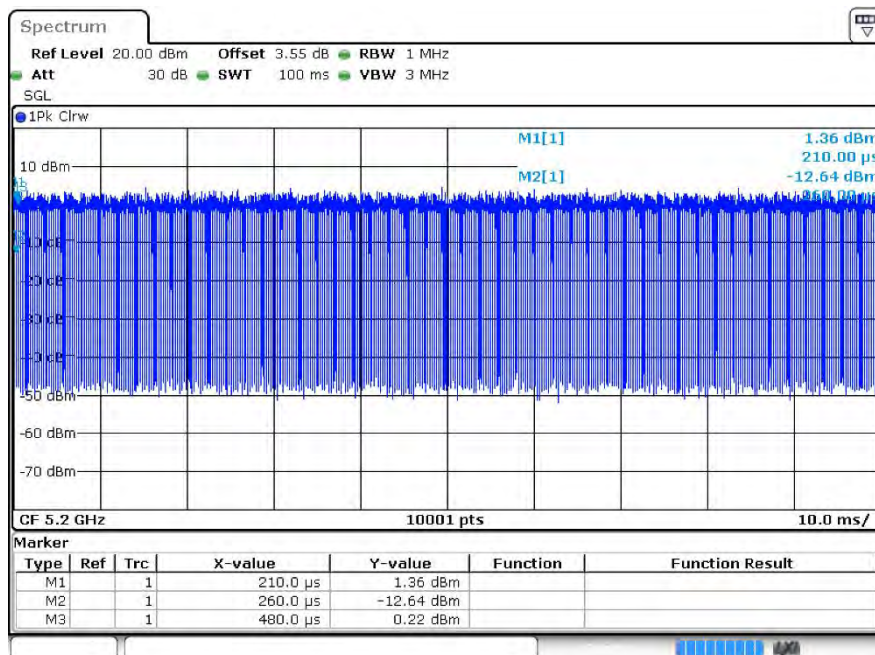


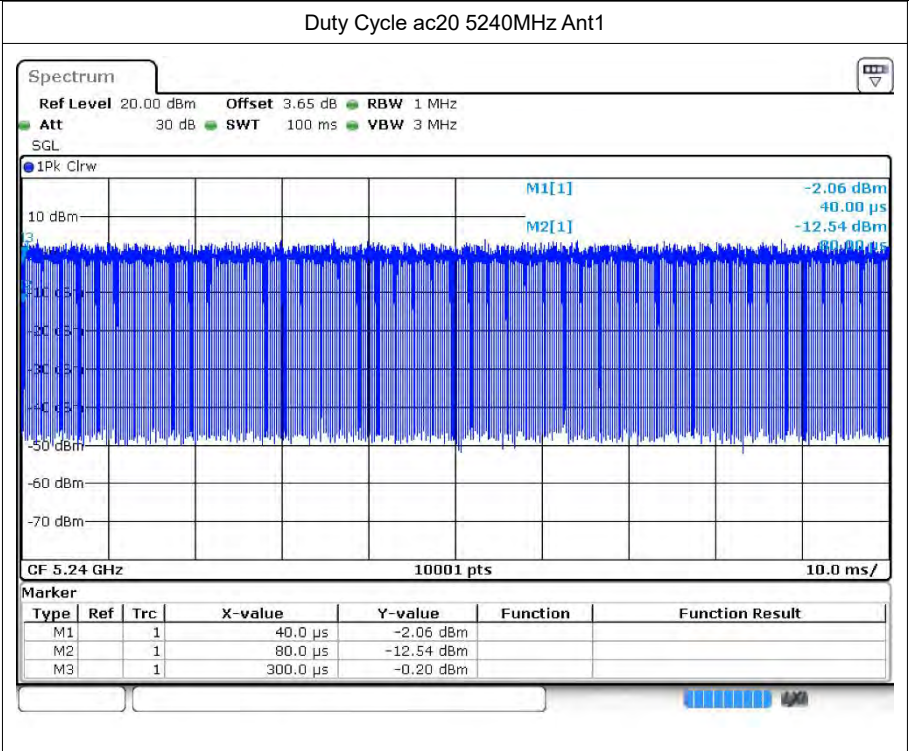


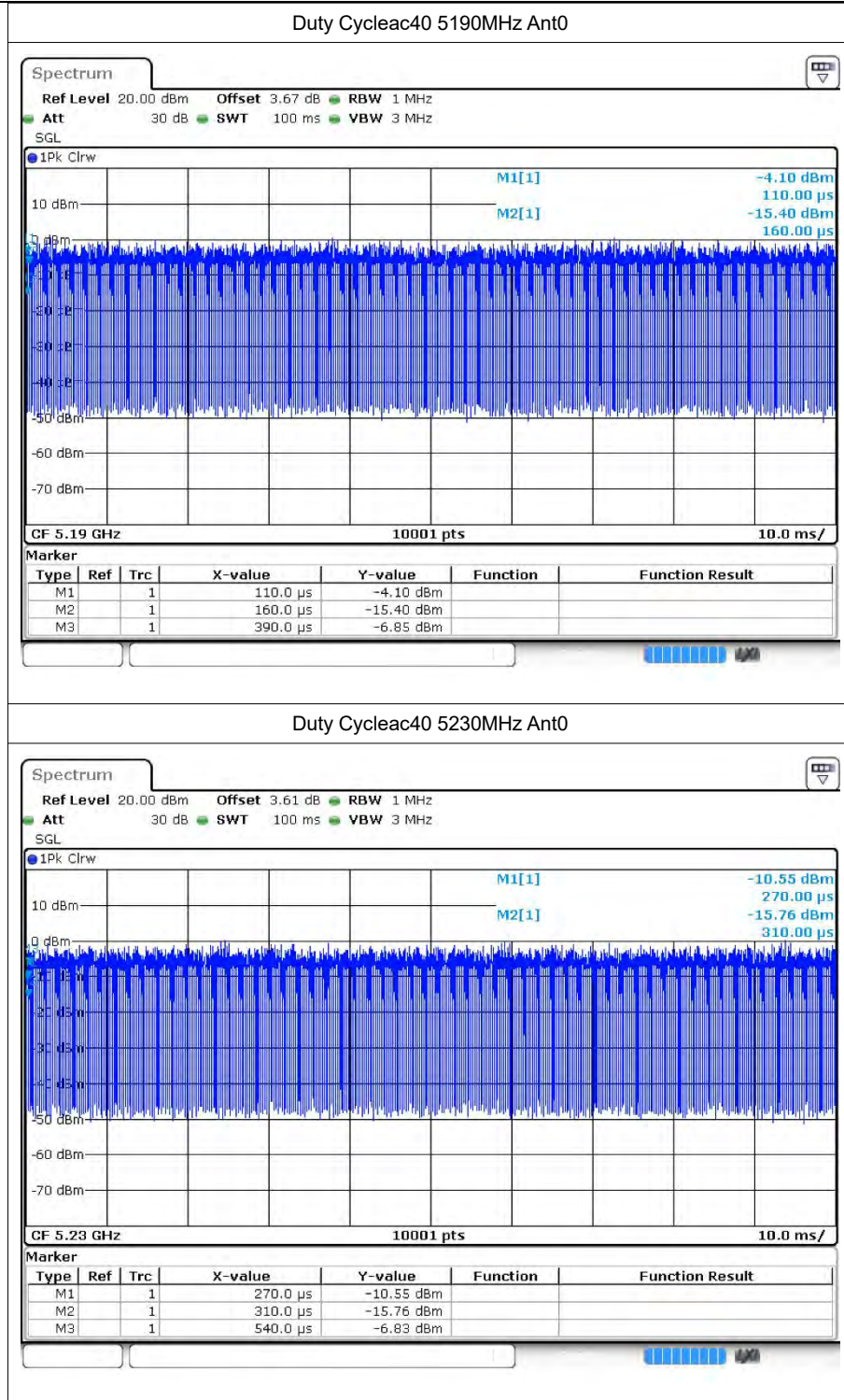
Duty Cycle ac20 5180MHz Ant1

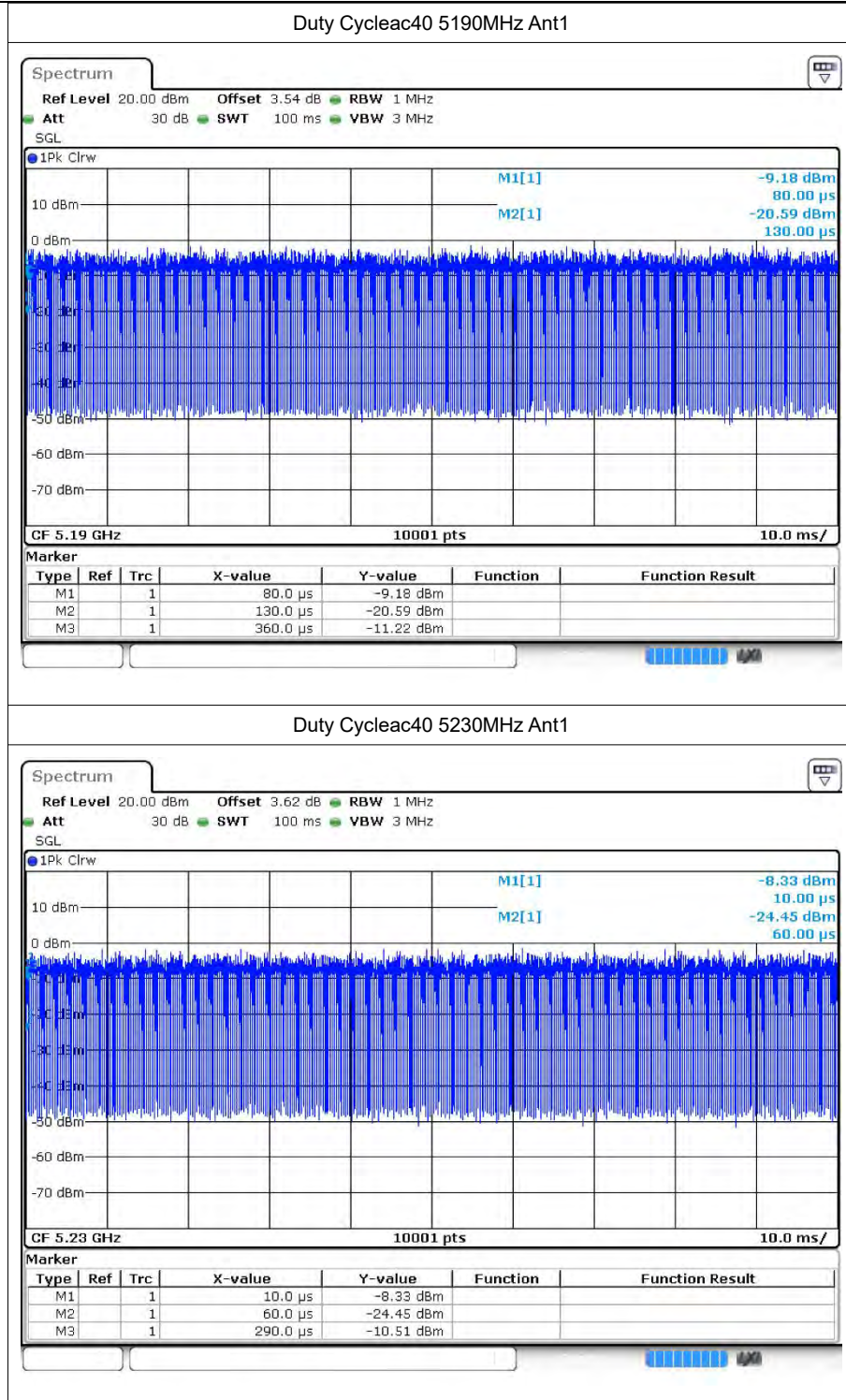


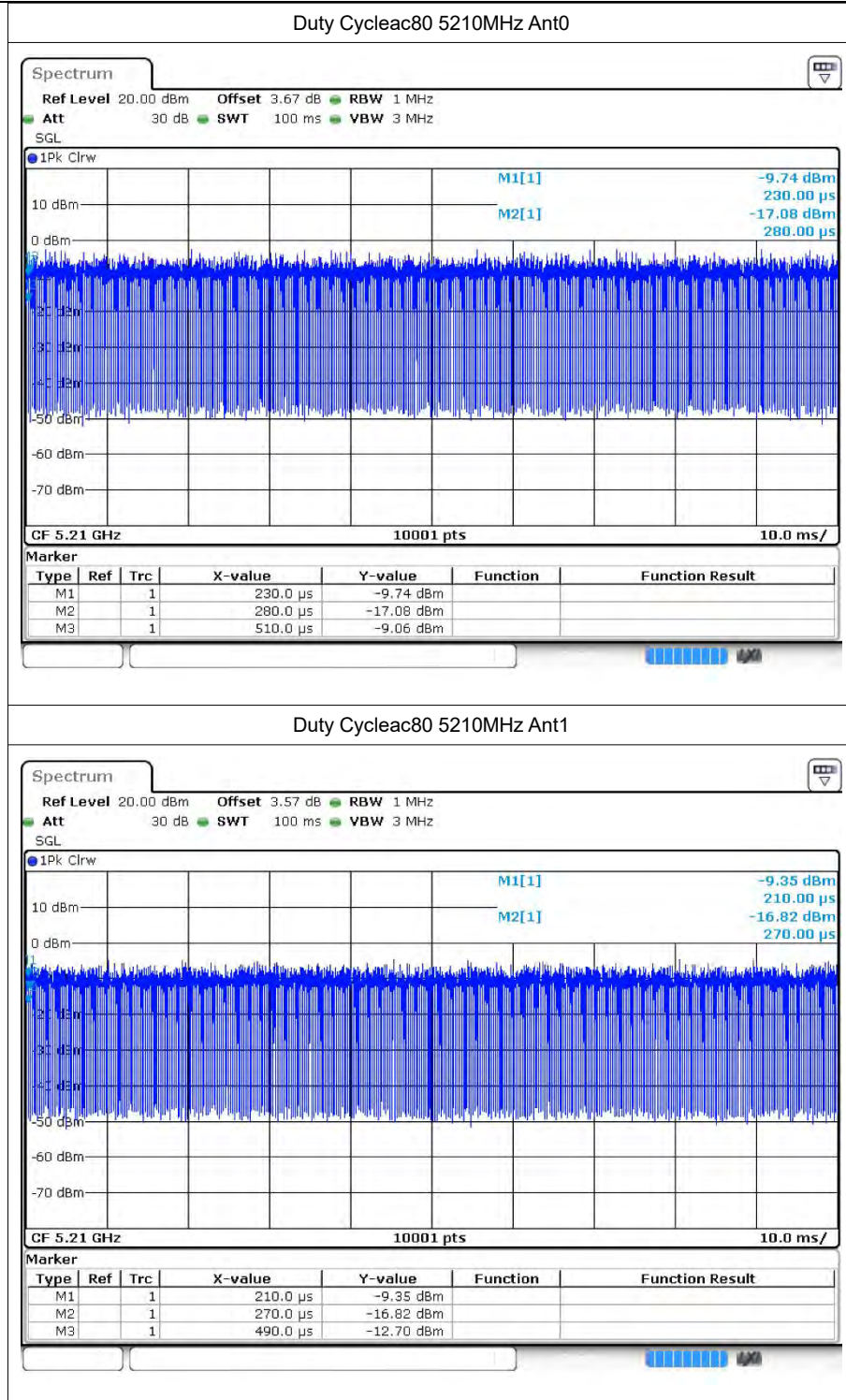
Duty Cycle ac20 5200MHz Ant1



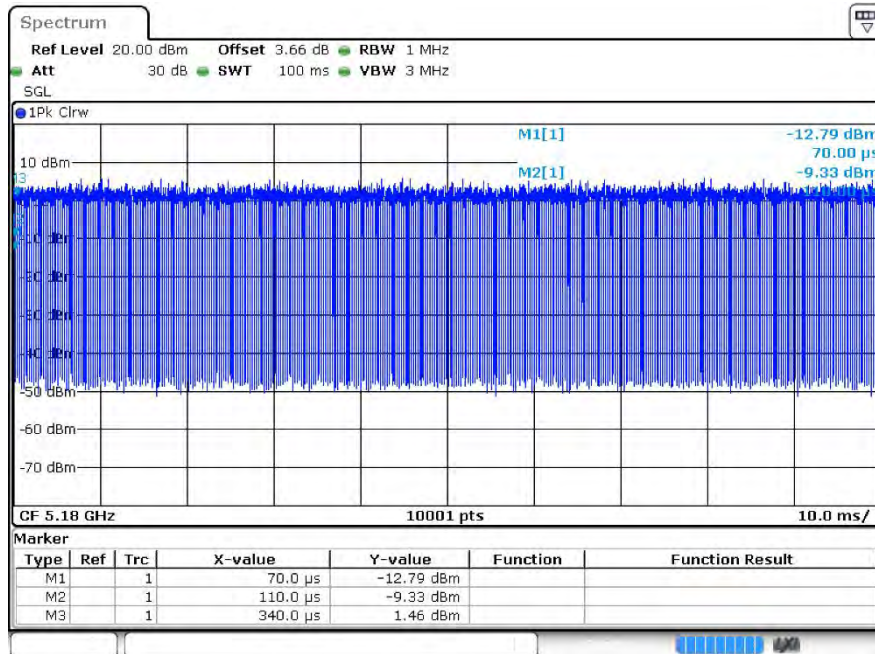




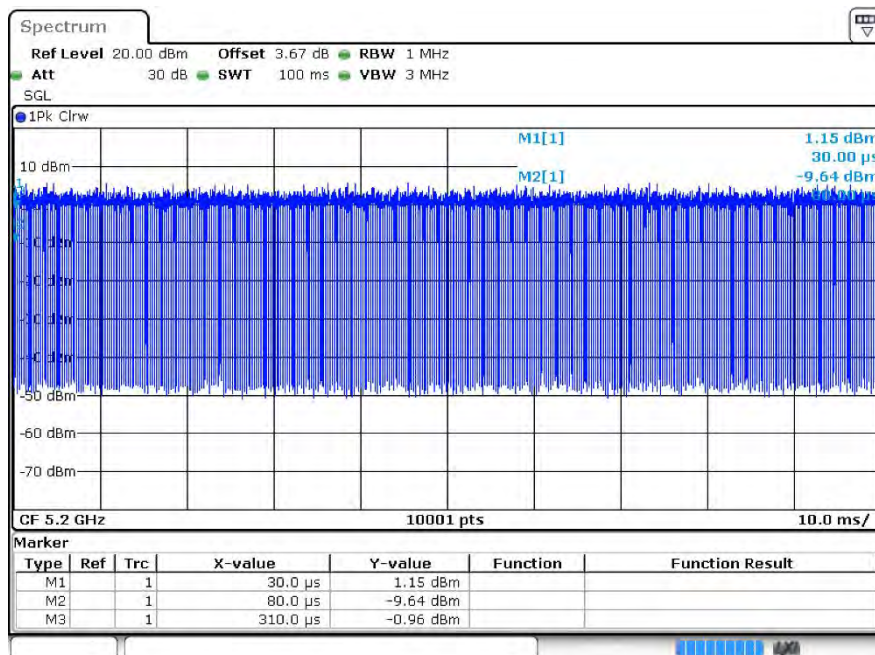


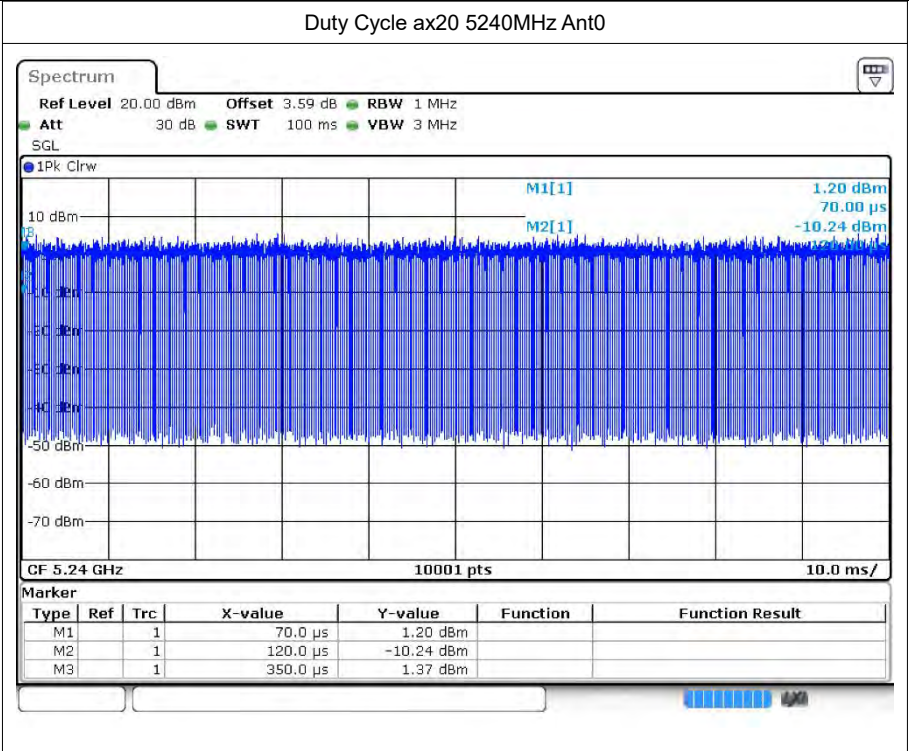


Duty Cycle ax20 5180MHz Ant0



Duty Cycle ax20 5200MHz Ant0



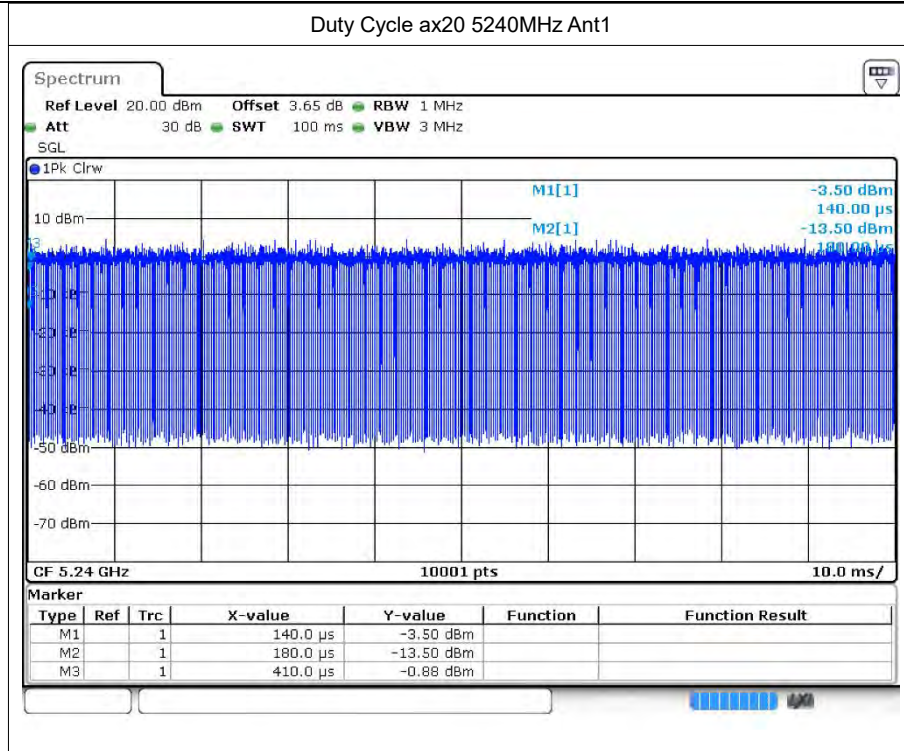


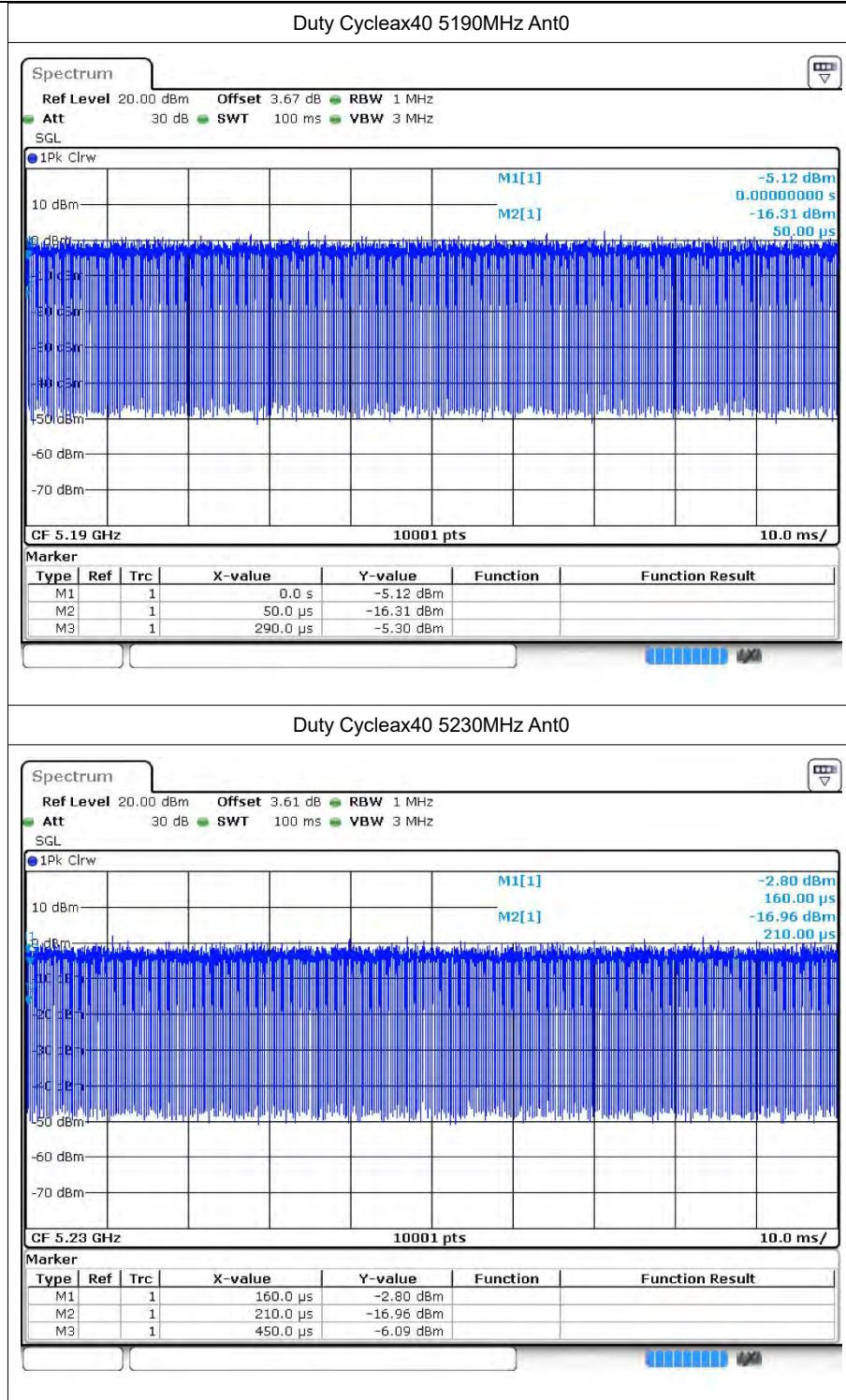
Duty Cycle ax20 5180MHz Ant1

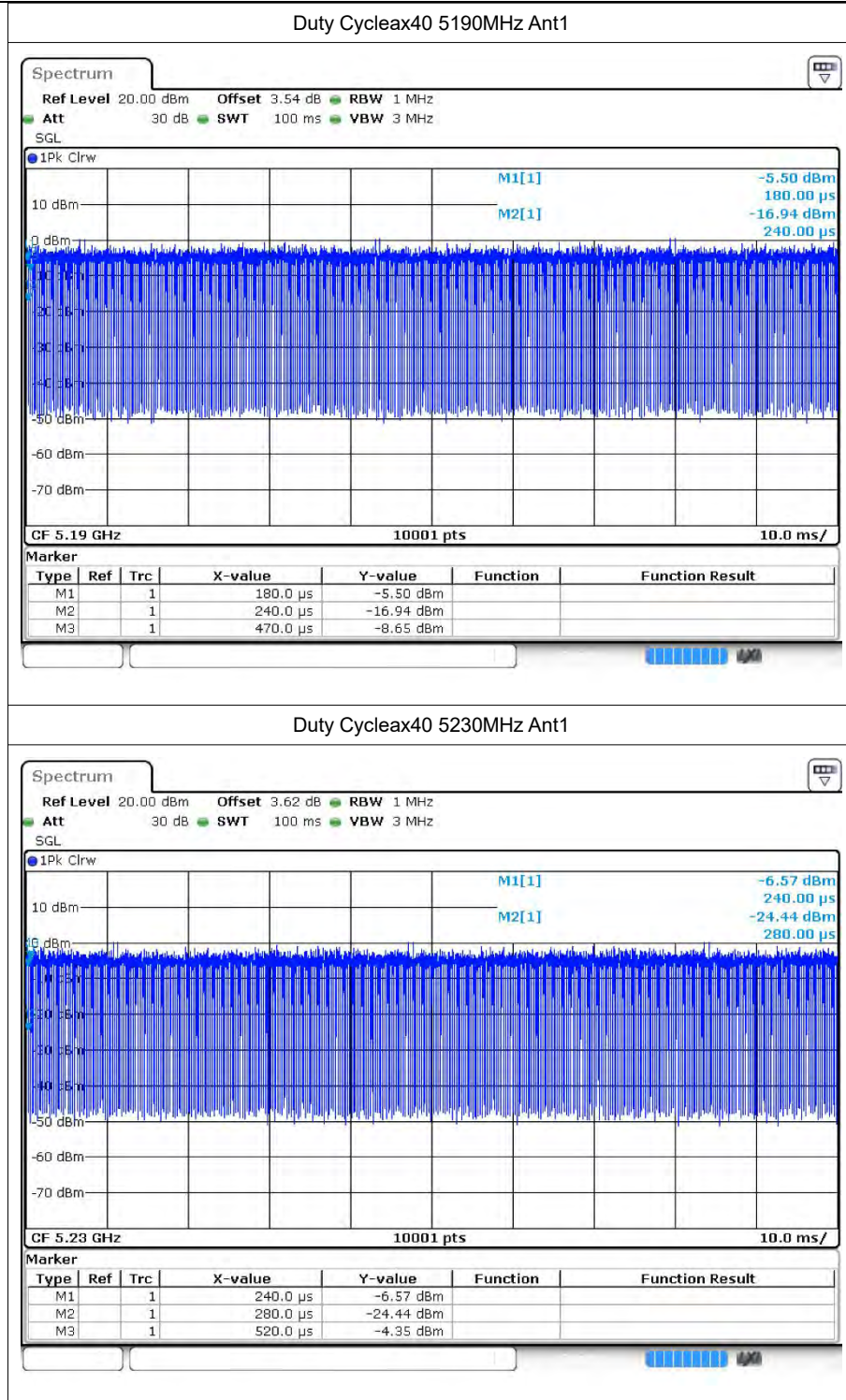


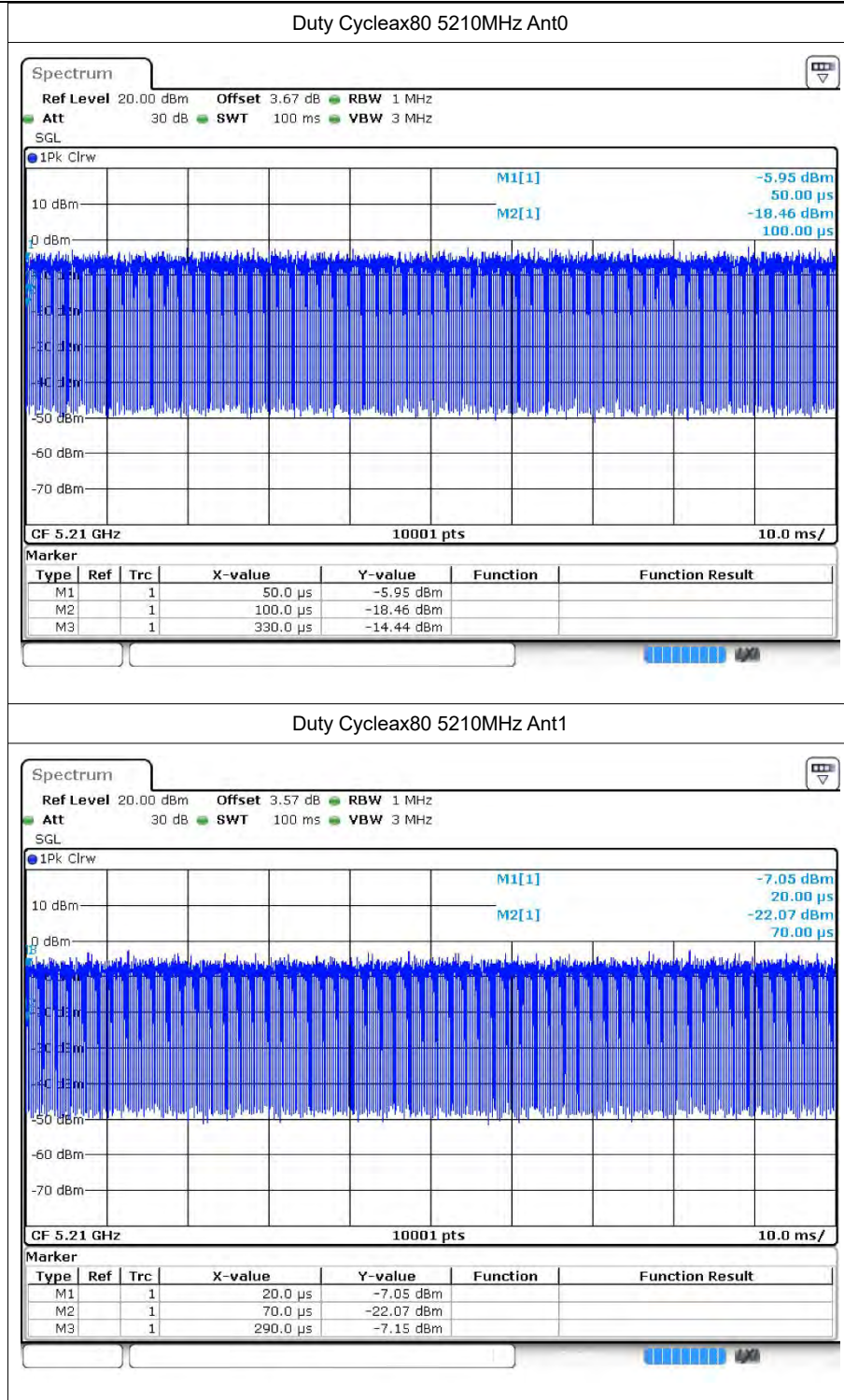
Duty Cycle ax20 5200MHz Ant1











2 Maximum Conducted Output Power

2.1 Test Result

Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
a	5180	Ant0	16.77	24	Pass
a	5200	Ant0	16.88	24	Pass
a	5240	Ant0	16.5	24	Pass
n20	5180	Ant0	13.63	24	Pass
n20	5200	Ant0	13.53	24	Pass
n20	5240	Ant0	13.16	24	Pass
n40	5190	Ant0	13.51	24	Pass
n40	5230	Ant0	13.09	24	Pass
ac20	5180	Ant0	13.44	24	Pass
ac20	5200	Ant0	13.58	24	Pass
ac20	5240	Ant0	13.18	24	Pass
ac40	5190	Ant0	13.39	24	Pass
ac40	5230	Ant0	13.11	24	Pass
ac80	5210	Ant0	13.13	24	Pass
ax20	5180	Ant0	13.88	24	Pass
ax20	5200	Ant0	13.8	24	Pass
ax20	5240	Ant0	13.5	24	Pass
ax40	5190	Ant0	13.56	24	Pass
ax40	5230	Ant0	13.31	24	Pass
ax80	5210	Ant0	12.8	24	Pass
a	5180	Ant1	14.92	24	Pass
a	5200	Ant1	14.83	24	Pass
a	5240	Ant1	14.6	24	Pass
n20	5180	Ant1	12.33	24	Pass
n20	5200	Ant1	12.15	24	Pass
n20	5240	Ant1	11.98	24	Pass
n40	5190	Ant1	11.92	24	Pass
n40	5230	Ant1	11.56	24	Pass
ac20	5180	Ant1	12.56	24	Pass
ac20	5200	Ant1	12.59	24	Pass
ac20	5240	Ant1	12.26	24	Pass
ac40	5190	Ant1	11.72	24	Pass
ac40	5230	Ant1	11.63	24	Pass
ac80	5210	Ant1	12.07	24	Pass
ax20	5180	Ant1	12.45	24	Pass



ax20	5200	Ant1	12.23	24	Pass
ax20	5240	Ant1	12.16	24	Pass
ax40	5190	Ant1	11.82	24	Pass
ax40	5230	Ant1	11.7	24	Pass
ax80	5210	Ant1	11.6	24	Pass
n20	5180	Sum	16.04	21.49	Pass
n20	5200	Sum	15.90	21.49	Pass
n20	5240	Sum	15.62	21.49	Pass
n40	5190	Sum	15.80	21.49	Pass
n40	5230	Sum	15.40	21.49	Pass
ac20	5180	Sum	16.03	21.49	Pass
ac20	5200	Sum	16.12	21.49	Pass
ac20	5240	Sum	15.75	21.49	Pass
ac40	5190	Sum	15.65	21.49	Pass
ac40	5230	Sum	15.44	21.49	Pass
ac80	5210	Sum	15.64	21.49	Pass
ax20	5180	Sum	16.23	21.49	Pass
ax20	5200	Sum	16.10	21.49	Pass
ax20	5240	Sum	15.89	21.49	Pass
ax40	5190	Sum	15.79	21.49	Pass
ax40	5230	Sum	15.59	21.49	Pass
ax80	5210	Sum	15.25	21.49	Pass

Note:

The duty factor has been compensated into the result.

Note:

For MIMO mode:

Directional gain= $10\log[(10^{G1/20}+10^{G2/20})^2/2]$ dBi=8.51dBi

Limit = $24-(8.51-6)$ =21.49dBm for POWER



3 -26dB Bandwidth

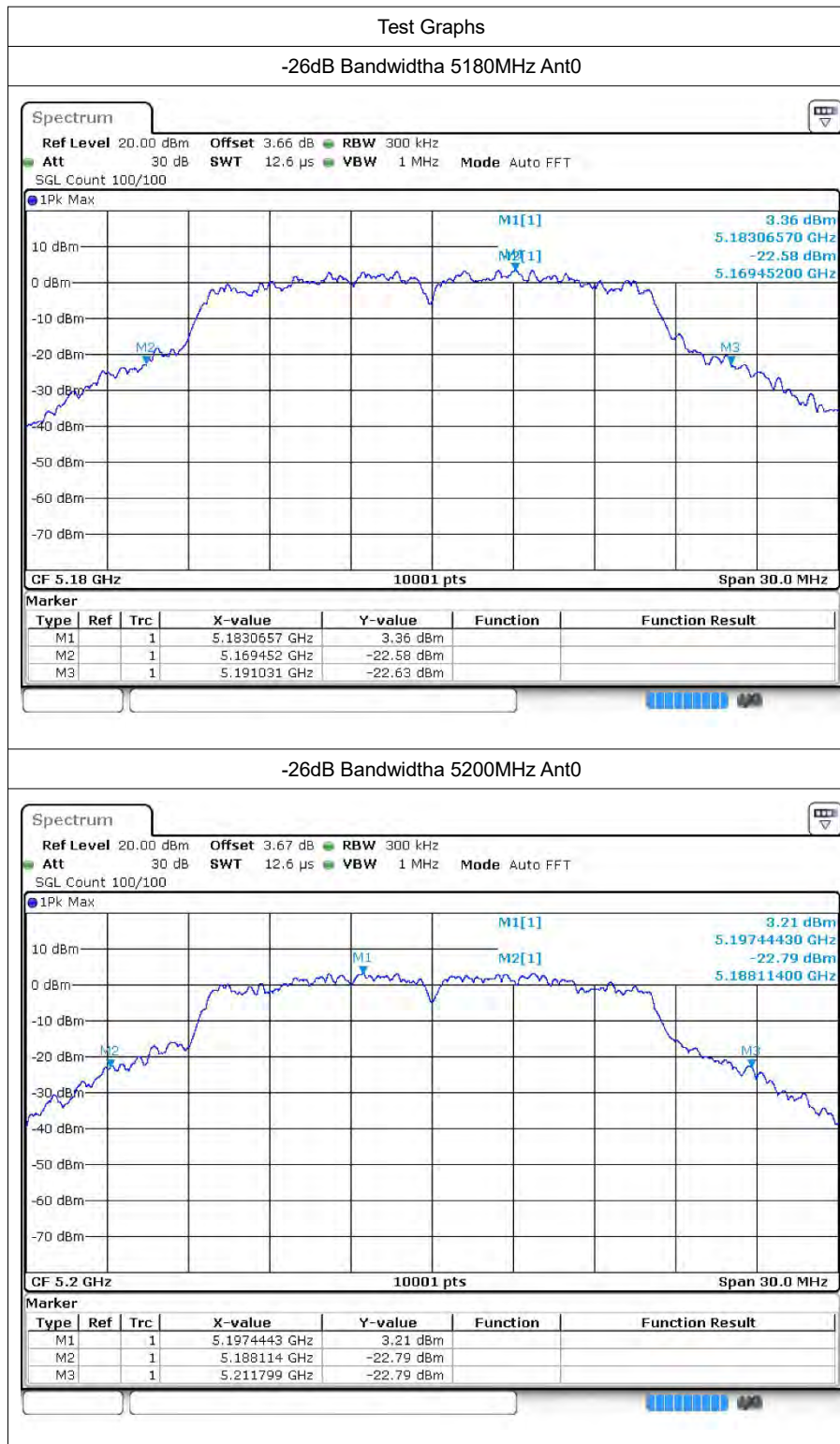
3.1 Test Result

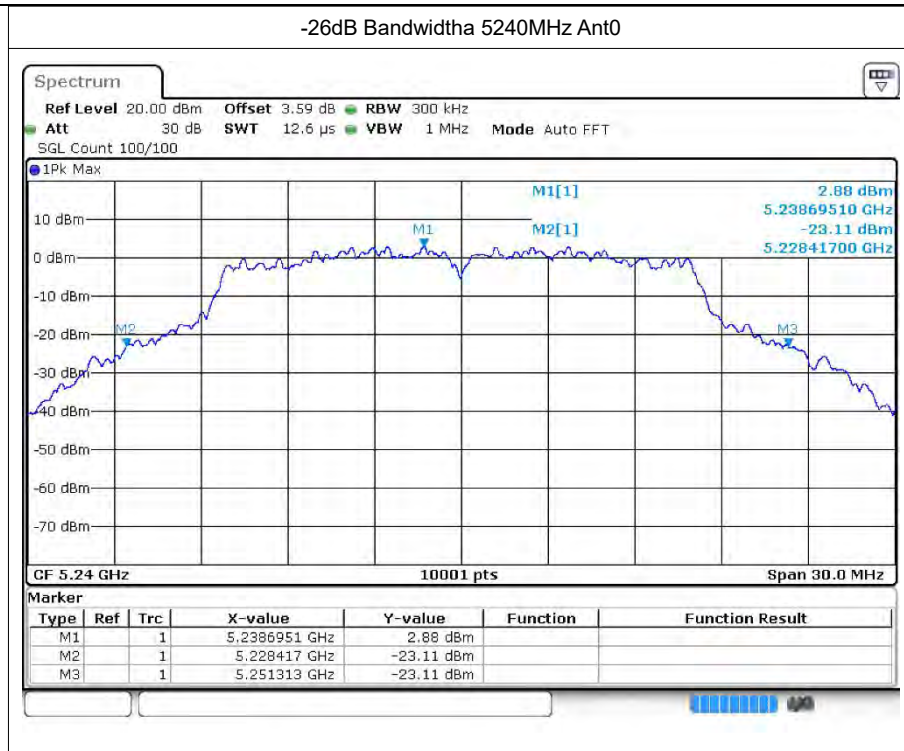
Mode	Frequency (MHz)	Antenna	-26 dB Bandwidth (MHz)	Limit -26 dB Bandwidth (MHz)	Verdict
a	5180	Ant0	21.579	0.5	Pass
a	5200	Ant0	23.685	0.5	Pass
a	5240	Ant0	22.896	0.5	Pass
n20	5180	Ant0	21.606	0.5	Pass
n20	5200	Ant0	22.761	0.5	Pass
n20	5240	Ant0	23.727	0.5	Pass
n40	5190	Ant0	40.998	0.5	Pass
n40	5230	Ant0	43.548	0.5	Pass
ac20	5180	Ant0	22.743	0.5	Pass
ac20	5200	Ant0	22.524	0.5	Pass
ac20	5240	Ant0	22.992	0.5	Pass
ac40	5190	Ant0	41.97	0.5	Pass
ac40	5230	Ant0	44.094	0.5	Pass
ac80	5210	Ant0	84.216	0.5	Pass
ax20	5180	Ant0	22.209	0.5	Pass
ax20	5200	Ant0	23.883	0.5	Pass
ax20	5240	Ant0	22.548	0.5	Pass
ax40	5190	Ant0	39.786	0.5	Pass
ax40	5230	Ant0	41.682	0.5	Pass
ax80	5210	Ant0	82.284	0.5	Pass
a	5180	Ant1	22.179	0.5	Pass
a	5200	Ant1	22.773	0.5	Pass
a	5240	Ant1	23.631	0.5	Pass
n20	5180	Ant1	23.235	0.5	Pass
n20	5200	Ant1	22.557	0.5	Pass
n20	5240	Ant1	22.722	0.5	Pass
n40	5190	Ant1	42.222	0.5	Pass
n40	5230	Ant1	41.586	0.5	Pass
ac20	5180	Ant1	22.767	0.5	Pass
ac20	5200	Ant1	22.812	0.5	Pass
ac20	5240	Ant1	22.305	0.5	Pass
ac40	5190	Ant1	40.626	0.5	Pass
ac40	5230	Ant1	42.312	0.5	Pass
ac80	5210	Ant1	81.516	0.5	Pass
ax20	5180	Ant1	22.401	0.5	Pass
ax20	5200	Ant1	22.203	0.5	Pass
ax20	5240	Ant1	22.614	0.5	Pass



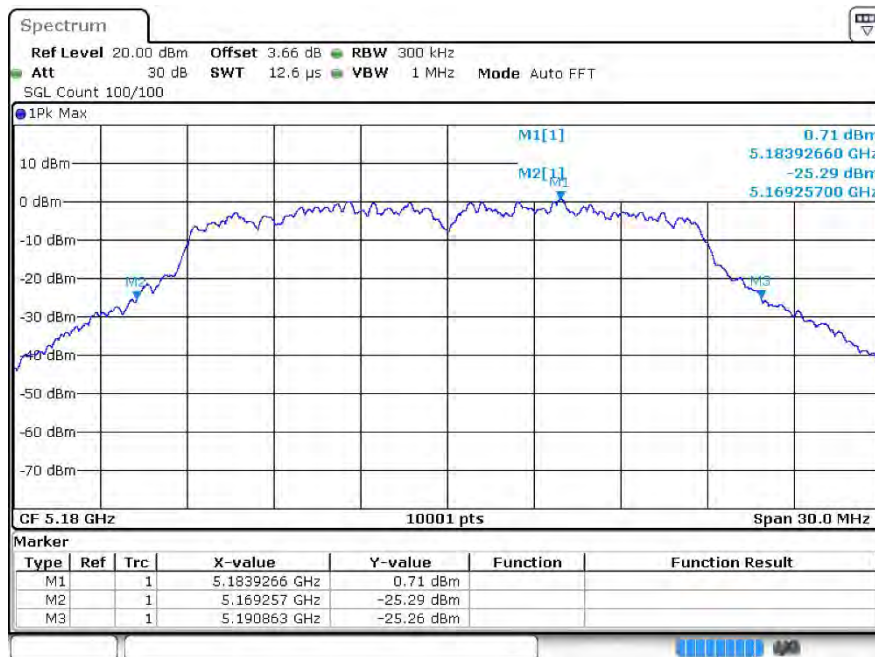
ax40	5190	Ant1	43.266	0.5	Pass
ax40	5230	Ant1	42.384	0.5	Pass
ax80	5210	Ant1	82.488	0.5	Pass

3.2 Test Graphs

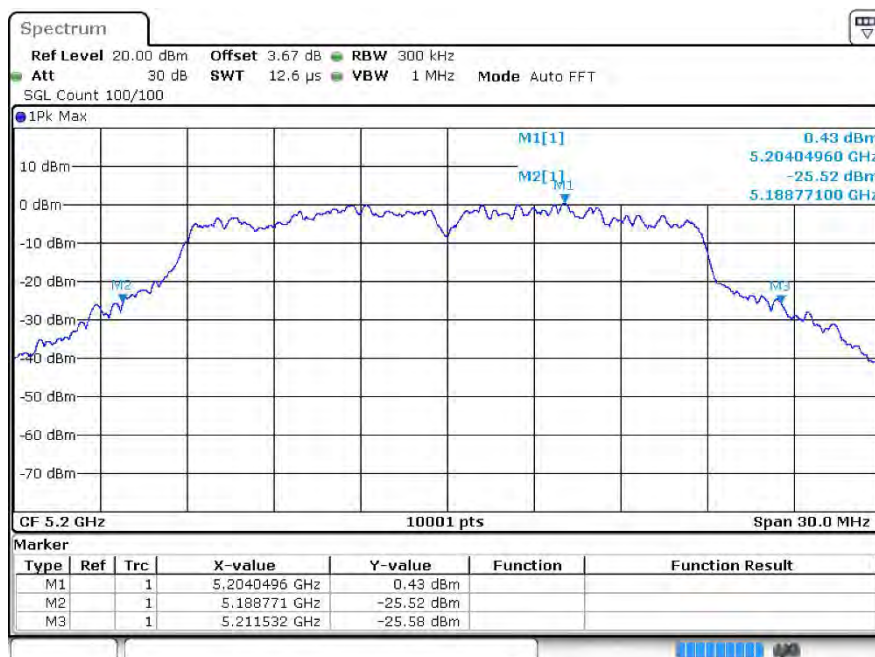


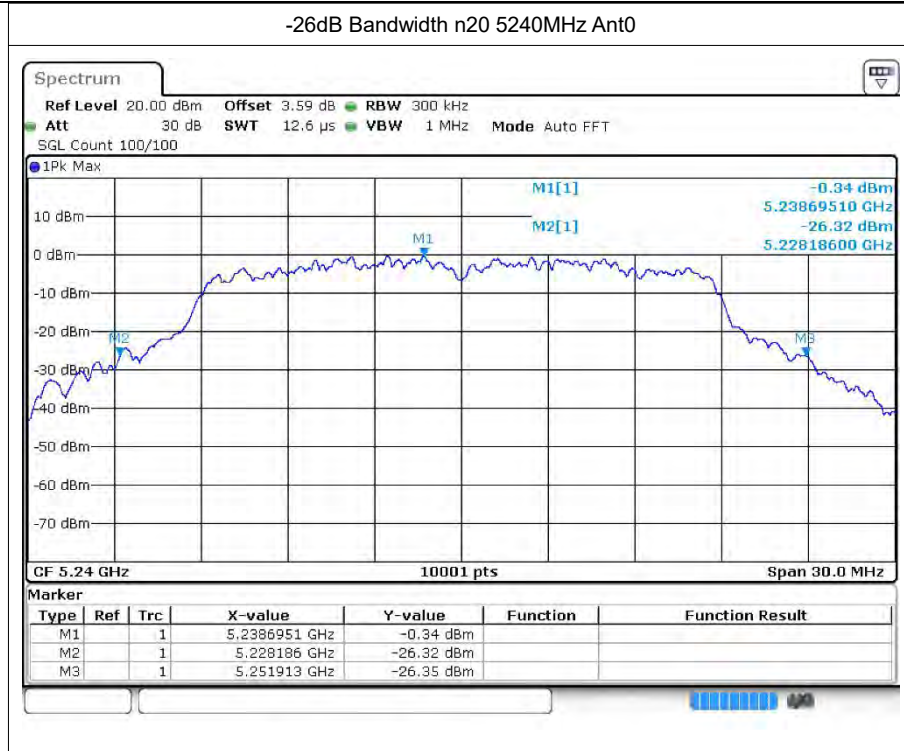


-26dB Bandwidth n20 5180MHz Ant0

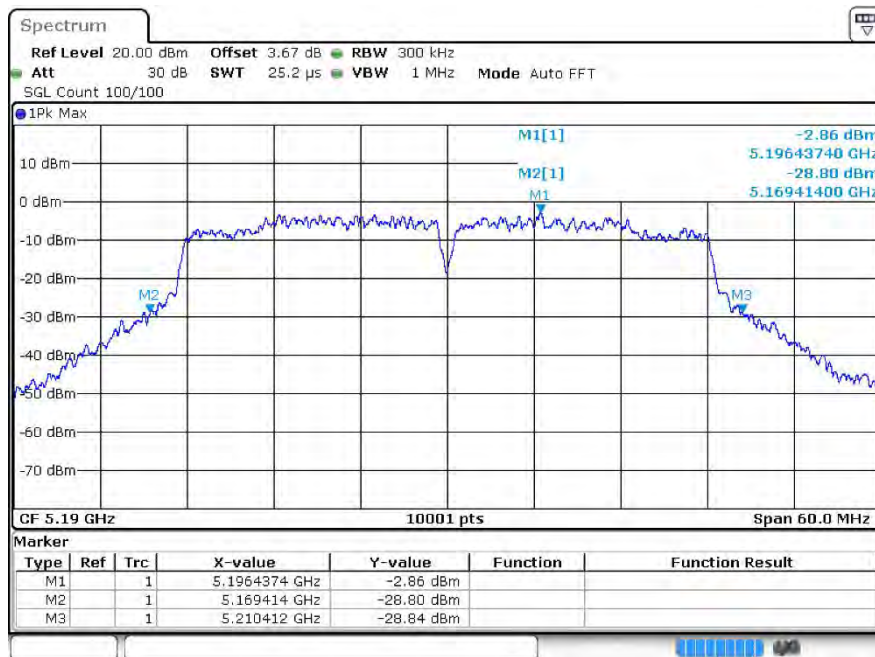


-26dB Bandwidth n20 5200MHz Ant0

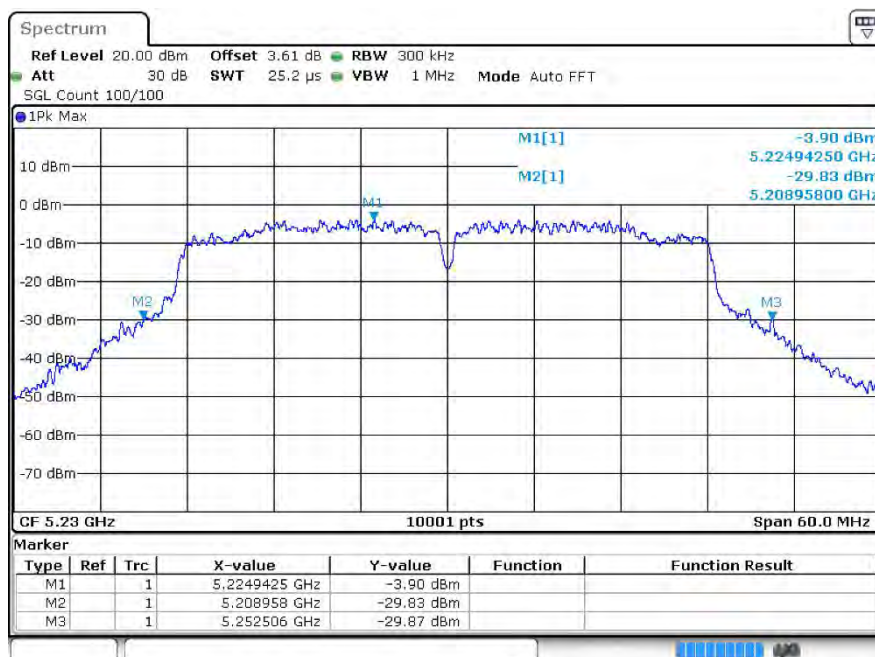




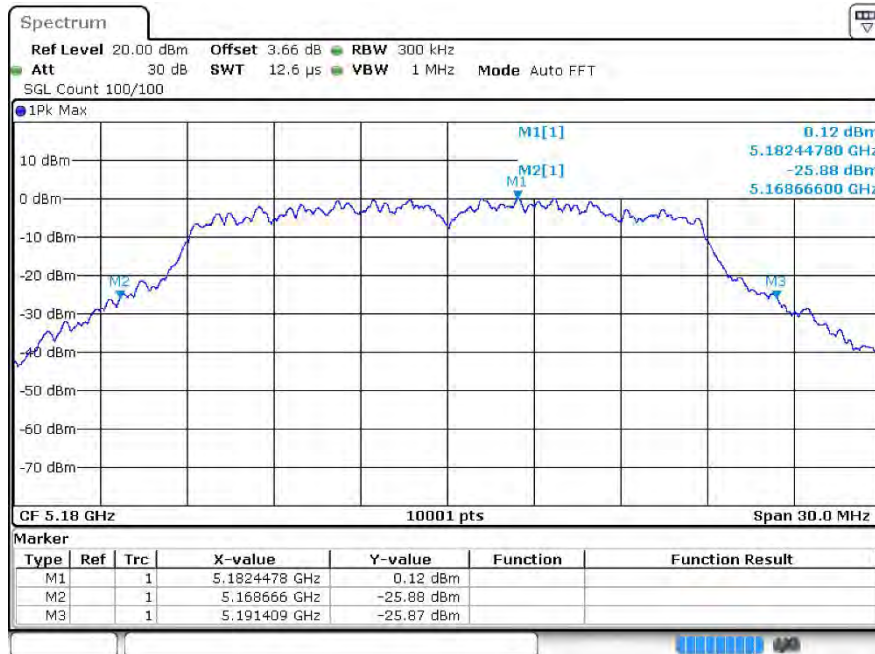
-26dB Bandwidthn40 5190MHz Ant0



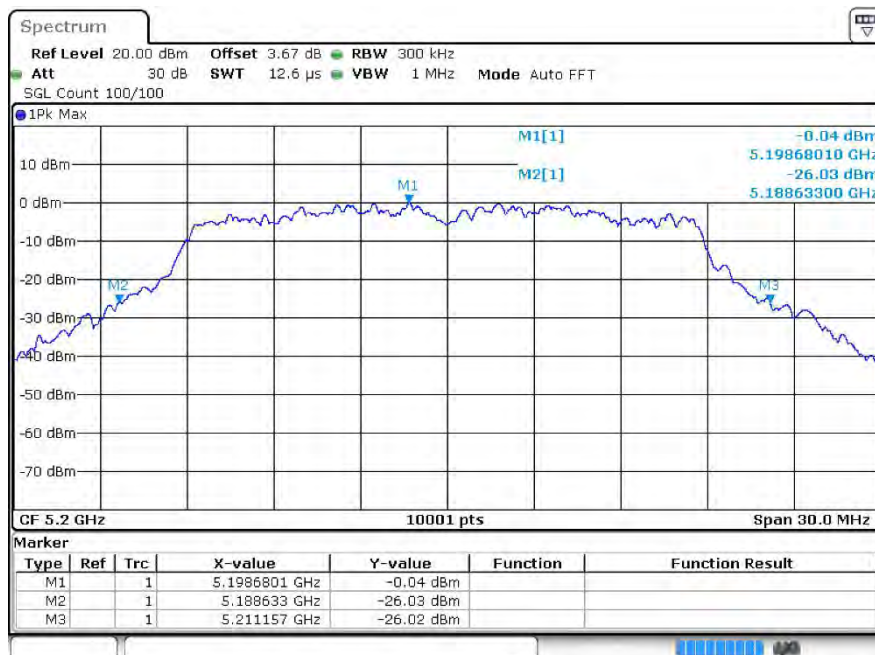
-26dB Bandwidthn40 5230MHz Ant0

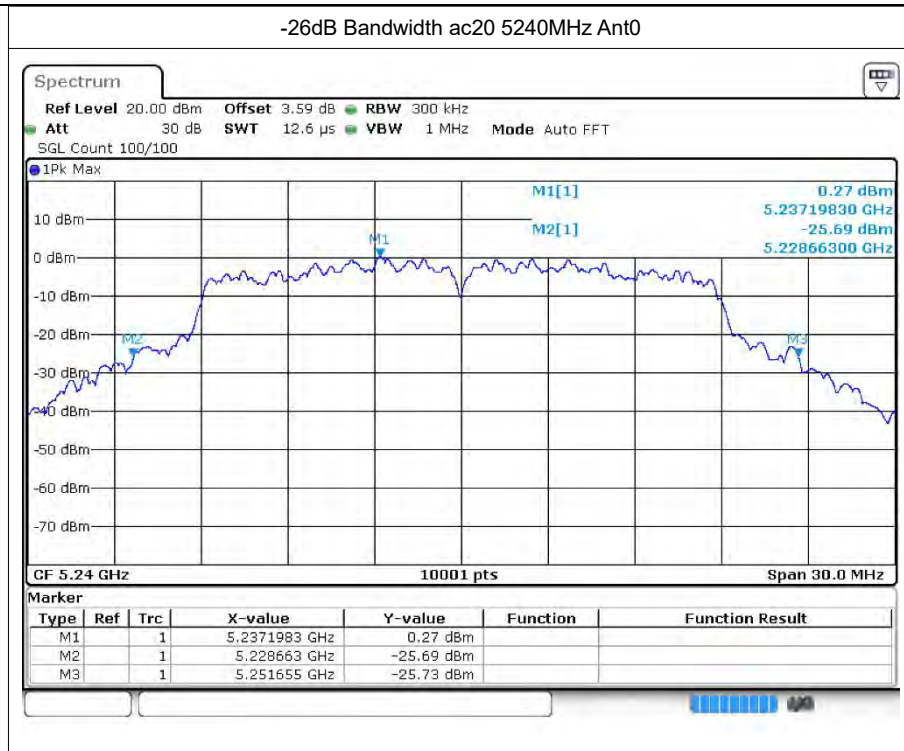


-26dB Bandwidth ac20 5180MHz Ant0

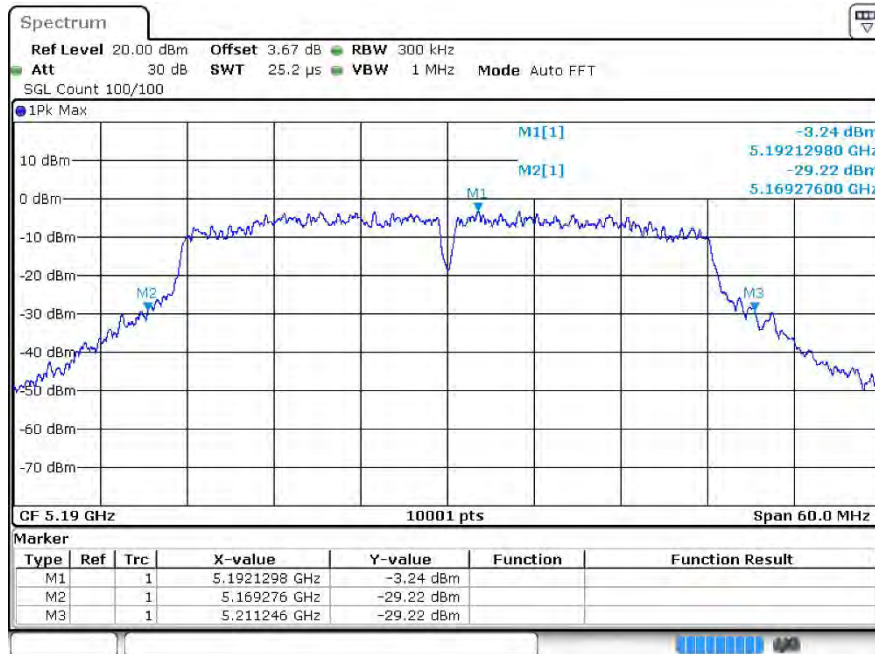


-26dB Bandwidth ac20 5200MHz Ant0

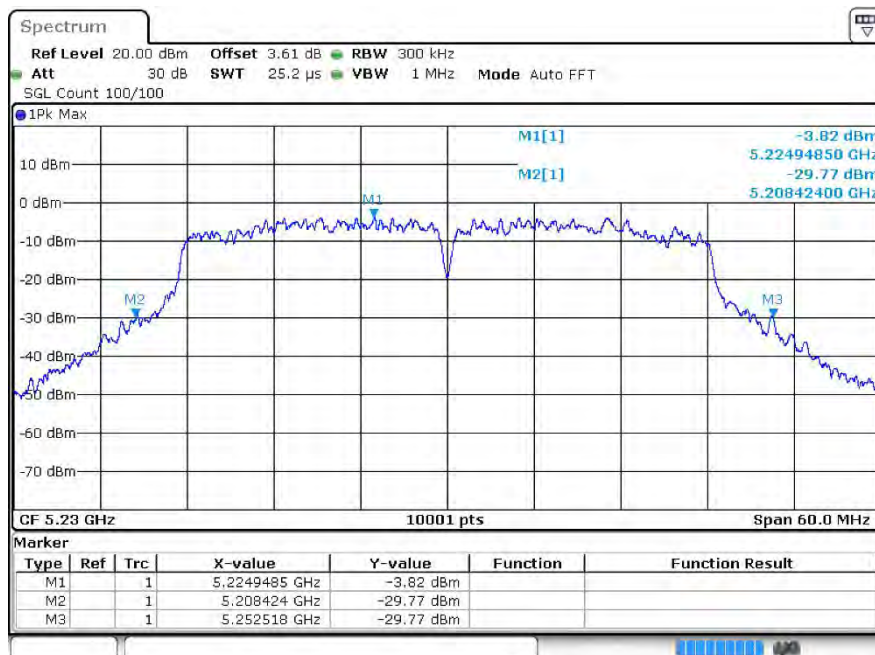


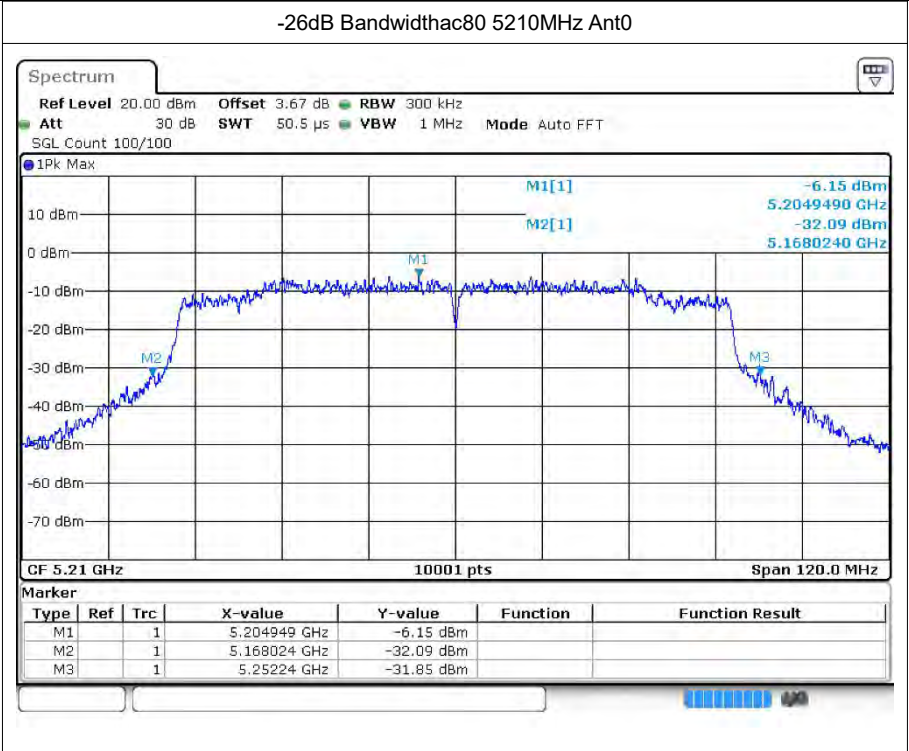


-26dB Bandwidthac40 5190MHz Ant0

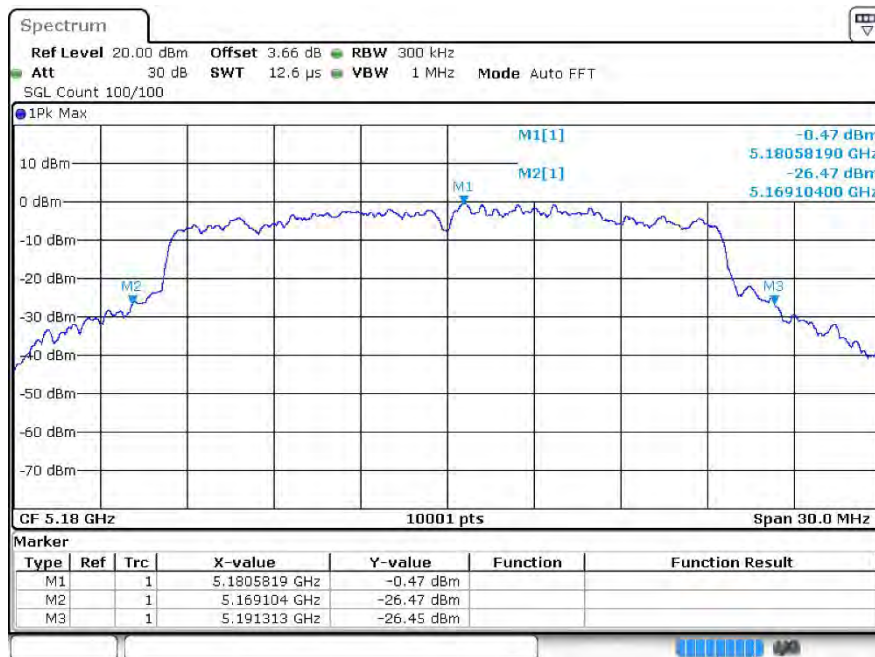


-26dB Bandwidthac40 5230MHz Ant0

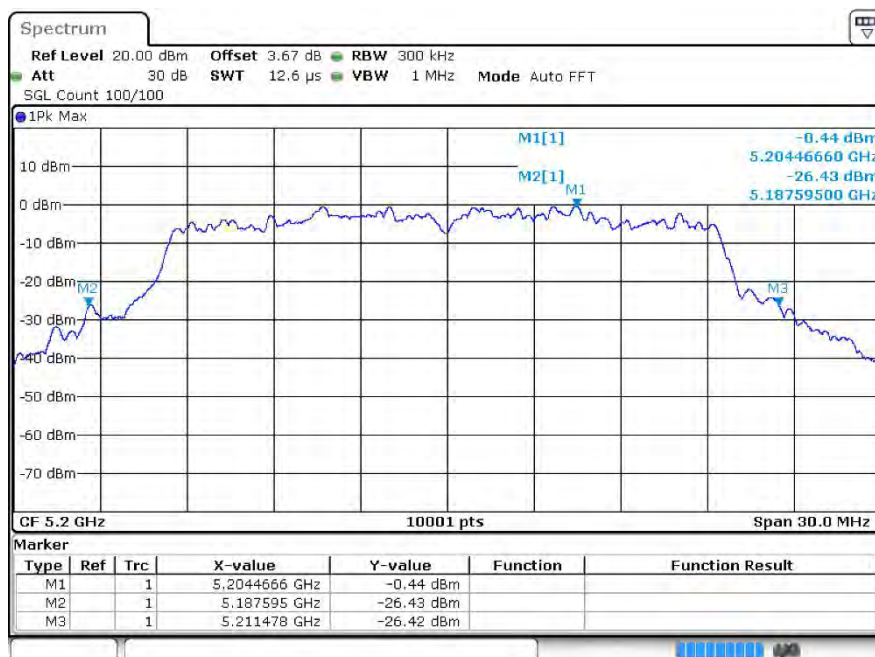


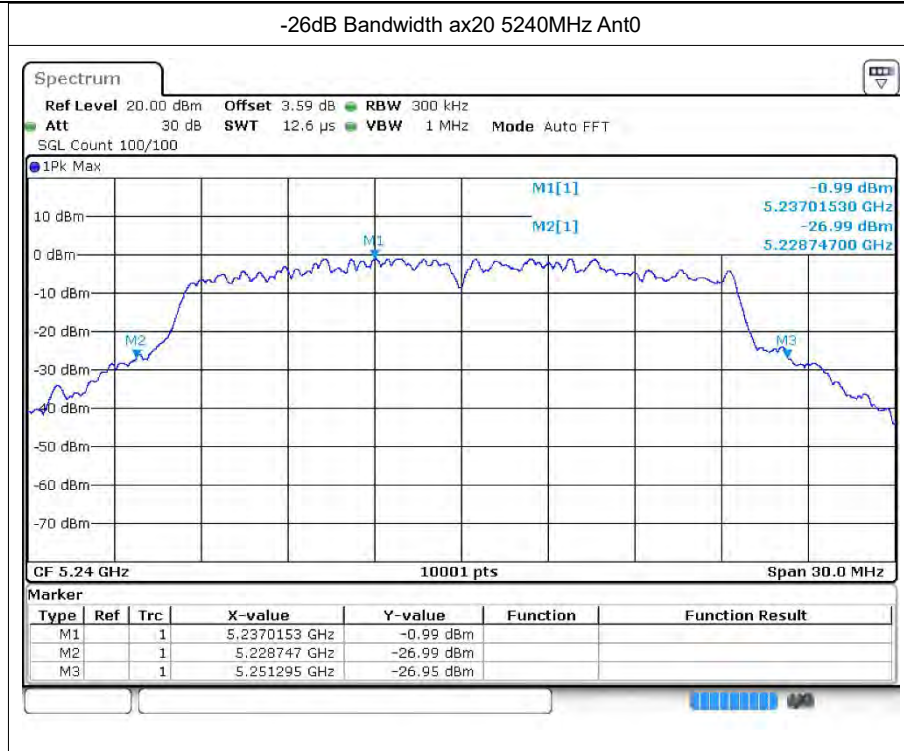


-26dB Bandwidth ax20 5180MHz Ant0

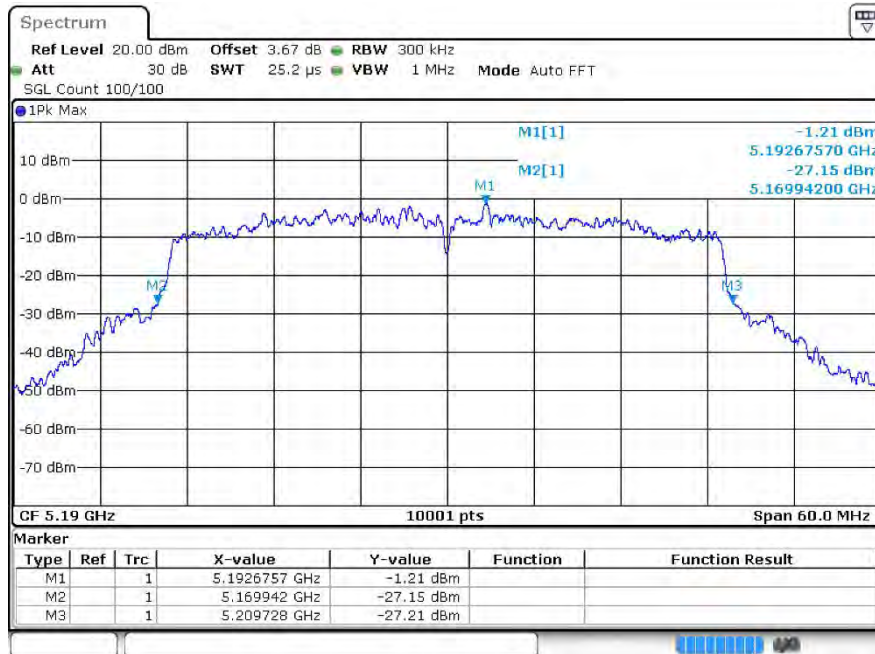


-26dB Bandwidth ax20 5200MHz Ant0

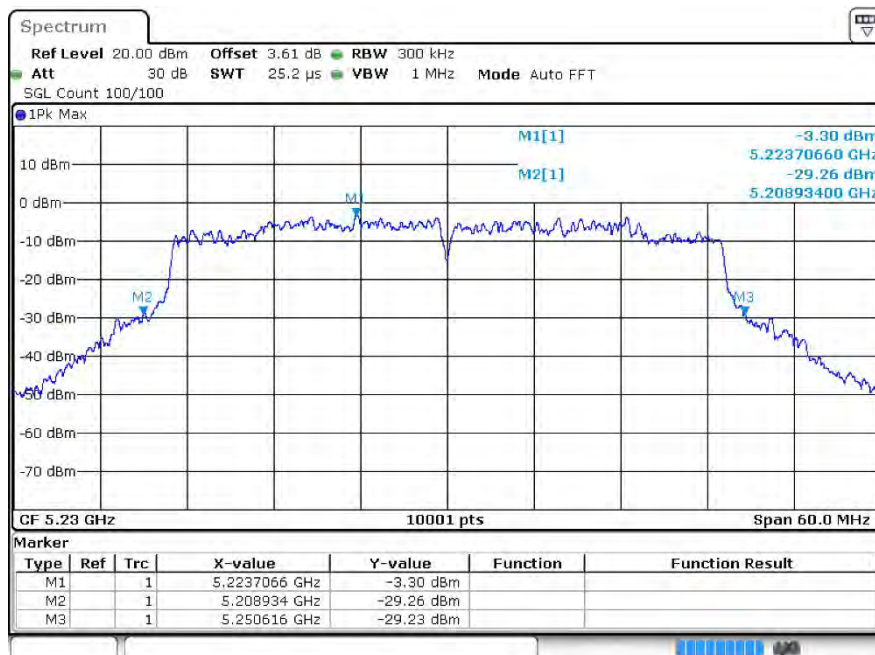


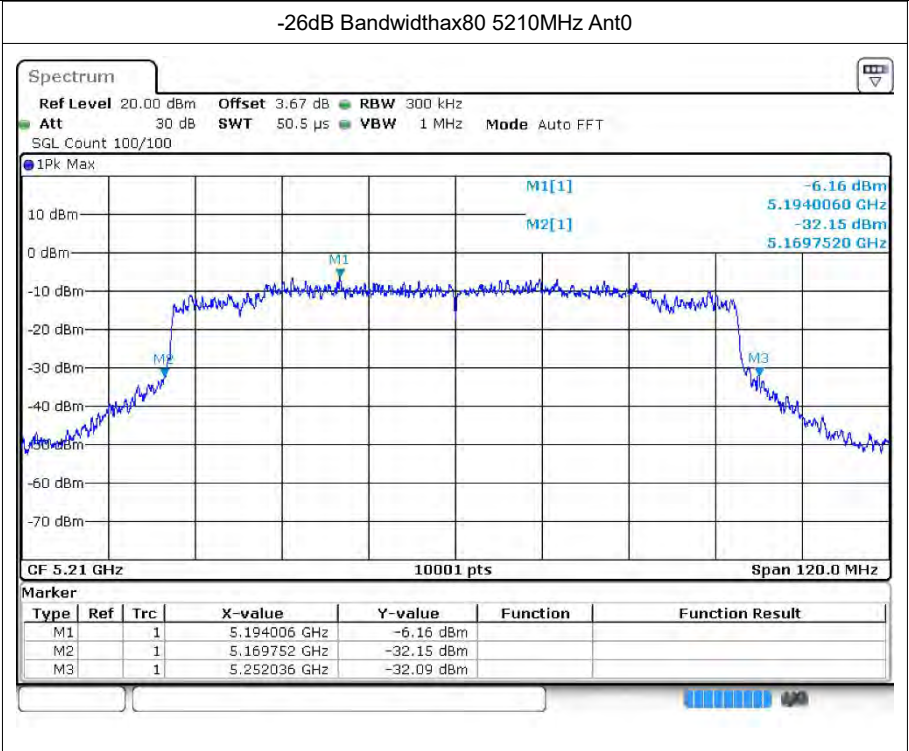


-26dB Bandwidthax40 5190MHz Ant0

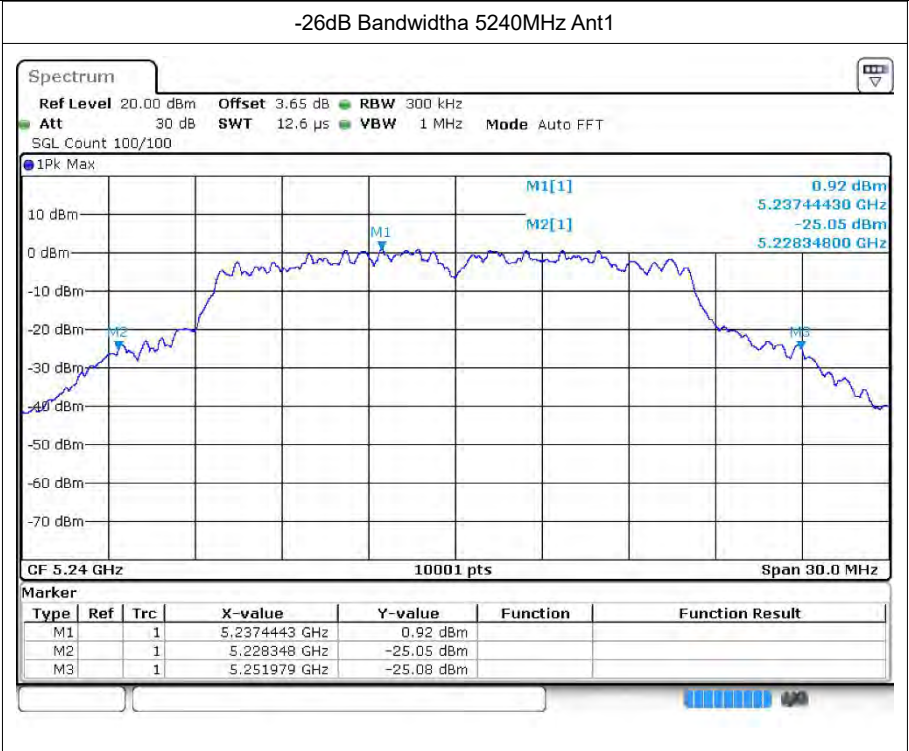


-26dB Bandwidthax40 5230MHz Ant0



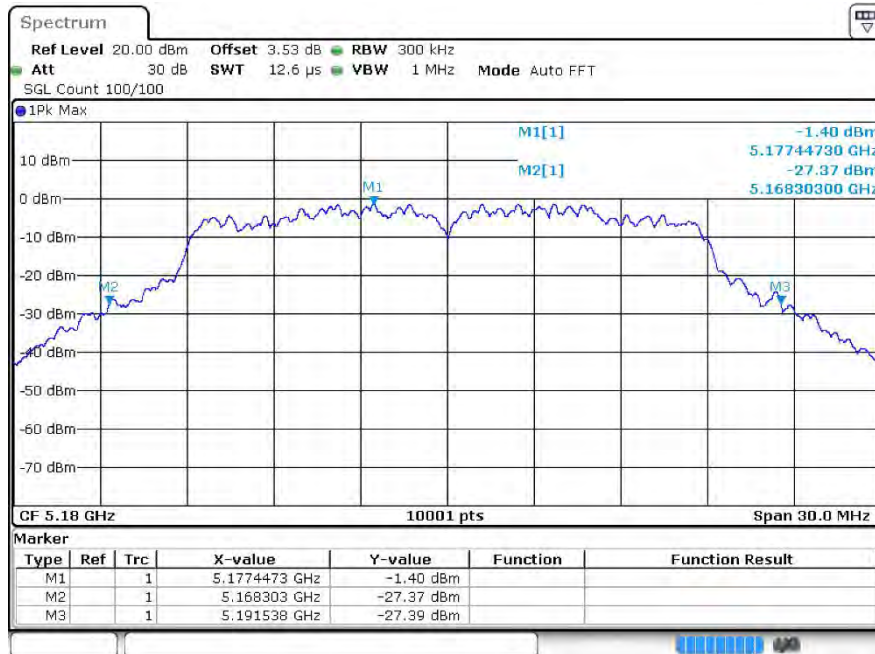




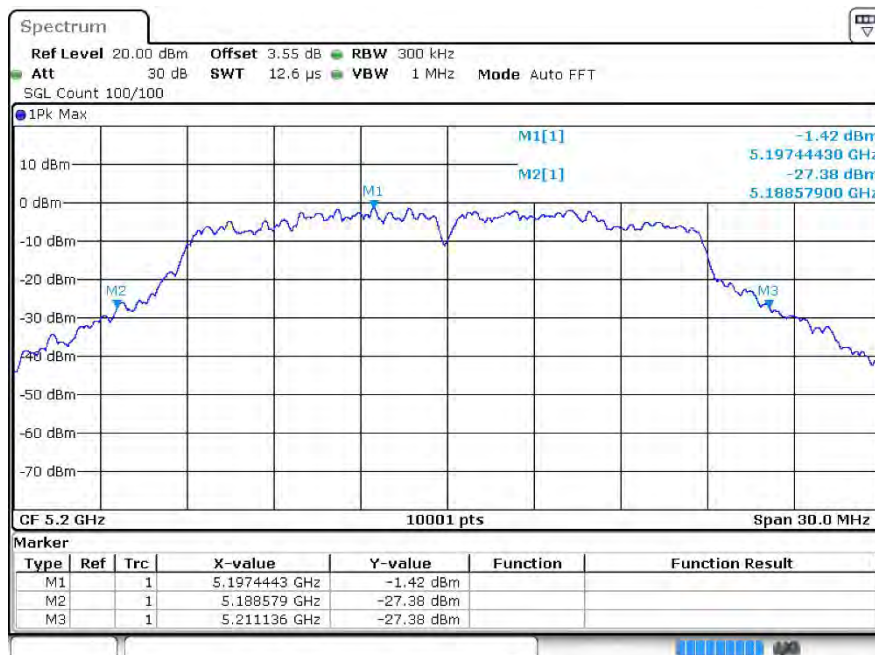


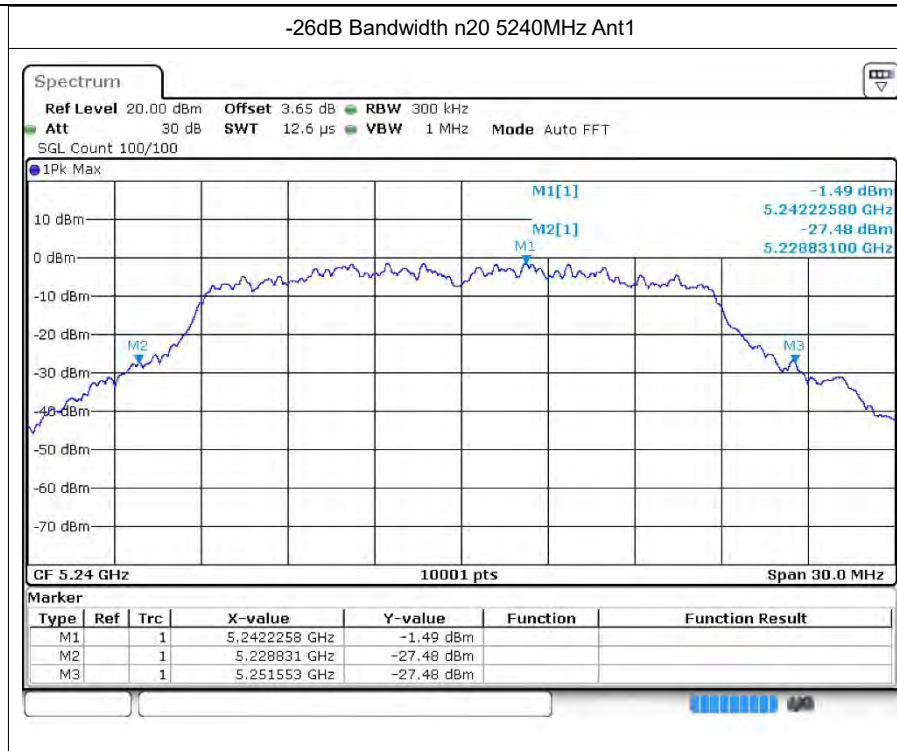


-26dB Bandwidth n20 5180MHz Ant1

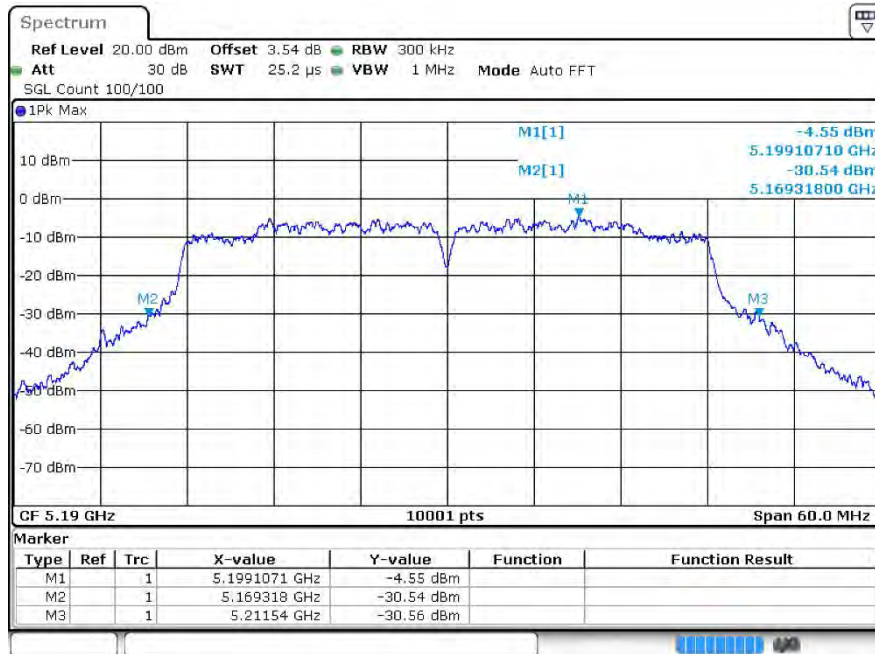


-26dB Bandwidth n20 5200MHz Ant1

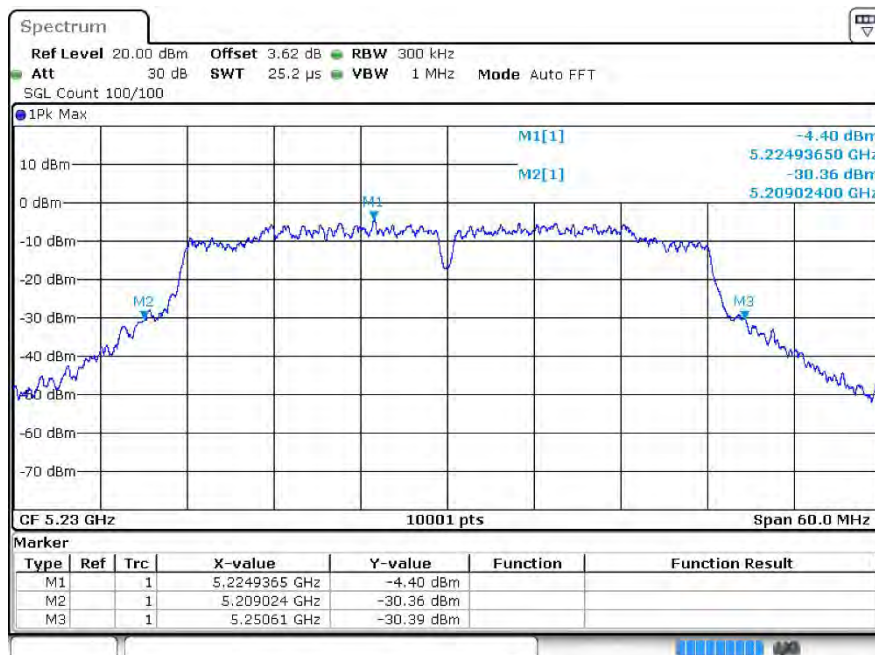




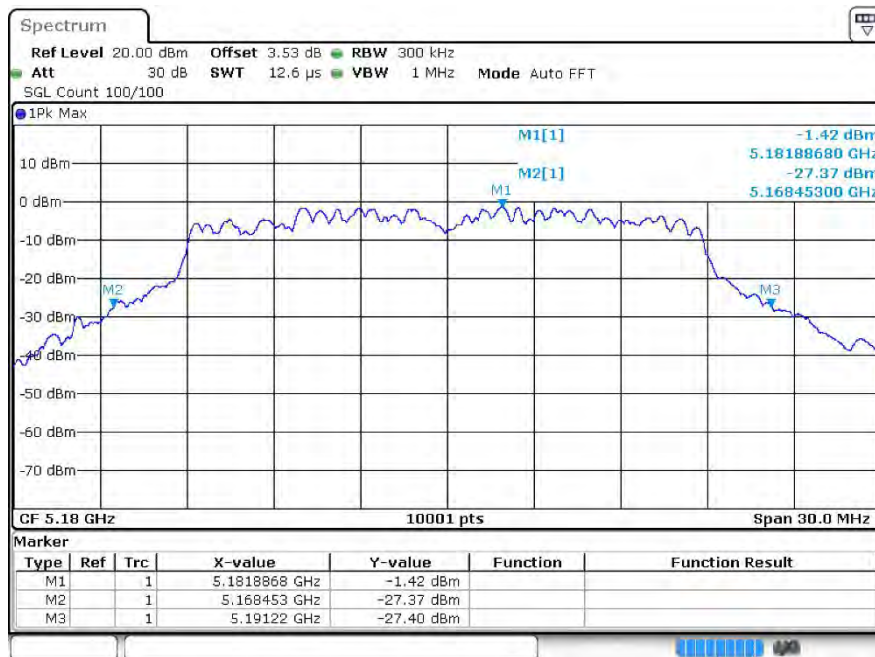
-26dB Bandwidthn40 5190MHz Ant1



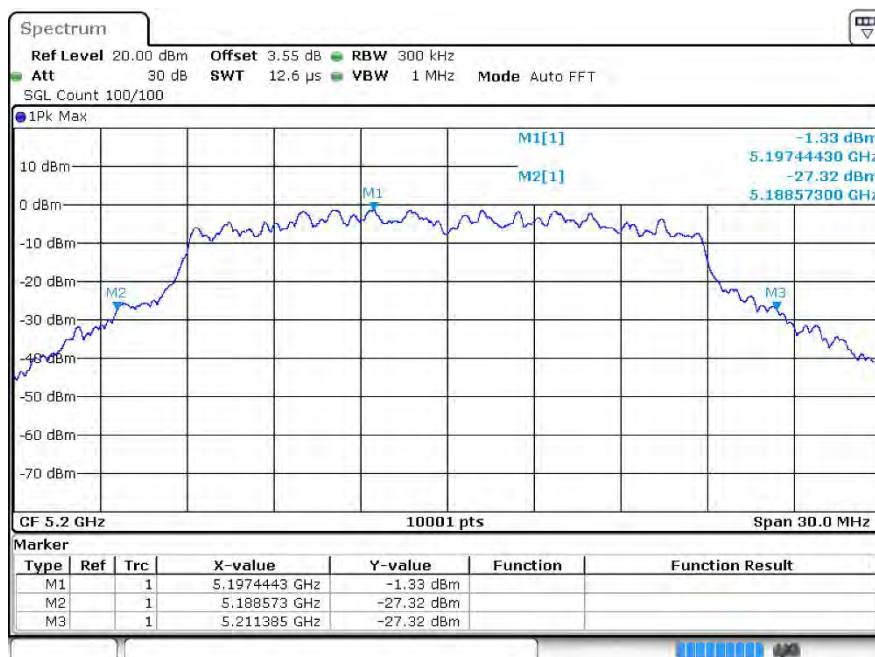
-26dB Bandwidthn40 5230MHz Ant1

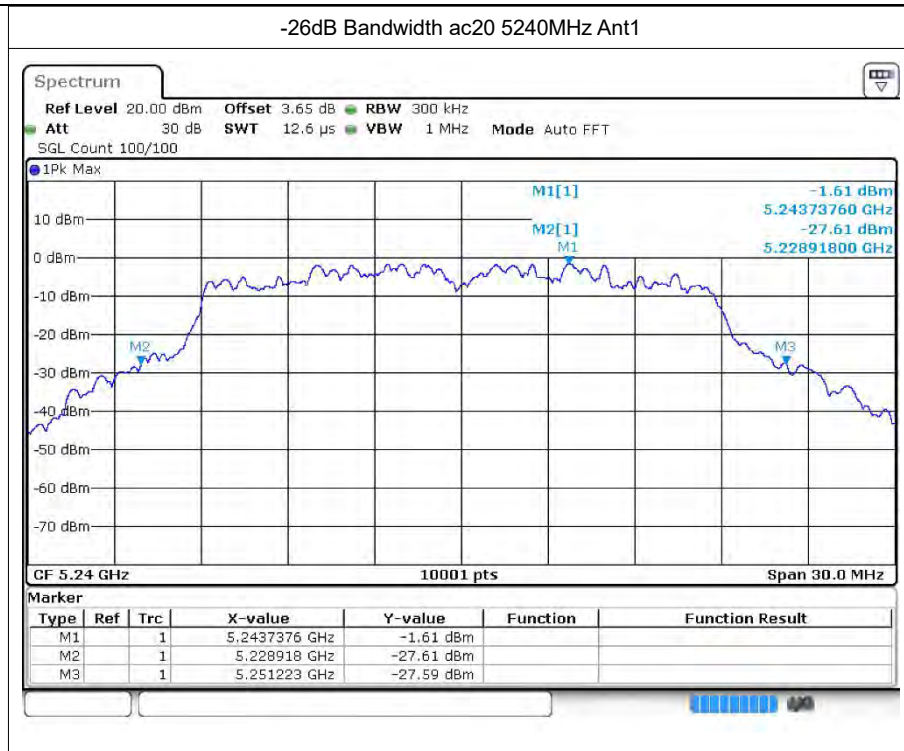


-26dB Bandwidth ac20 5180MHz Ant1

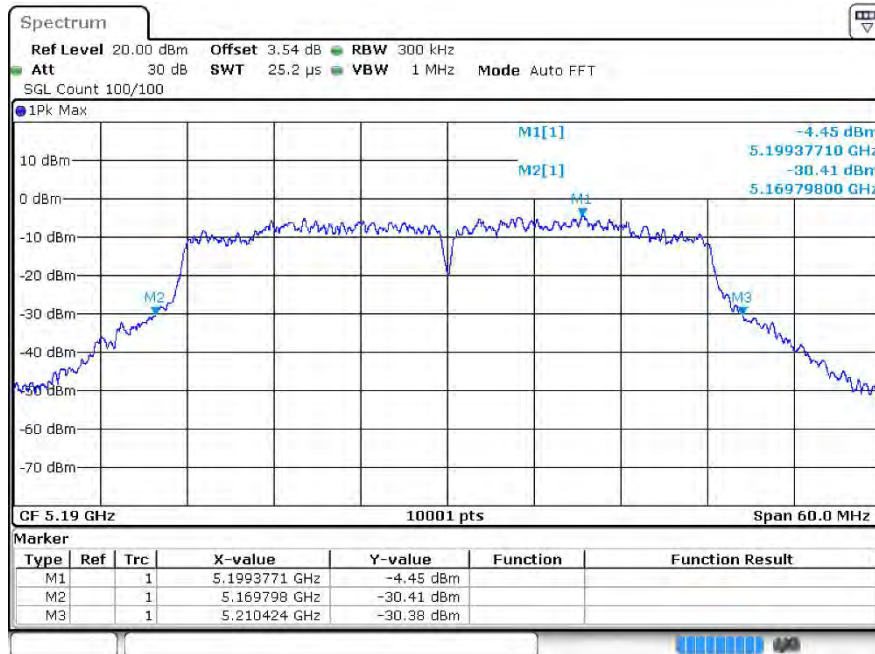


-26dB Bandwidth ac20 5200MHz Ant1

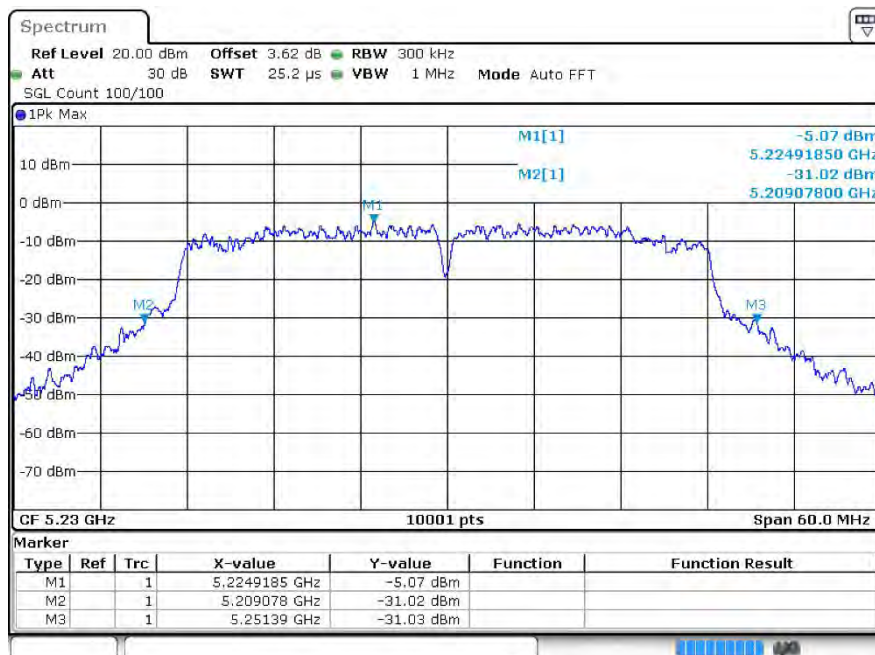


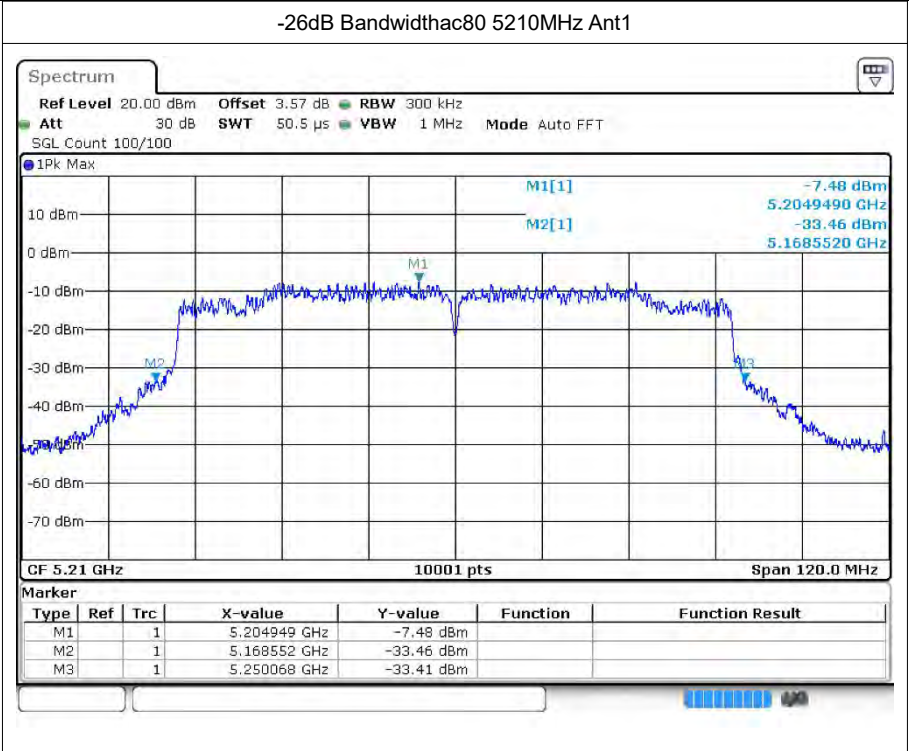


-26dB Bandwidthac40 5190MHz Ant1

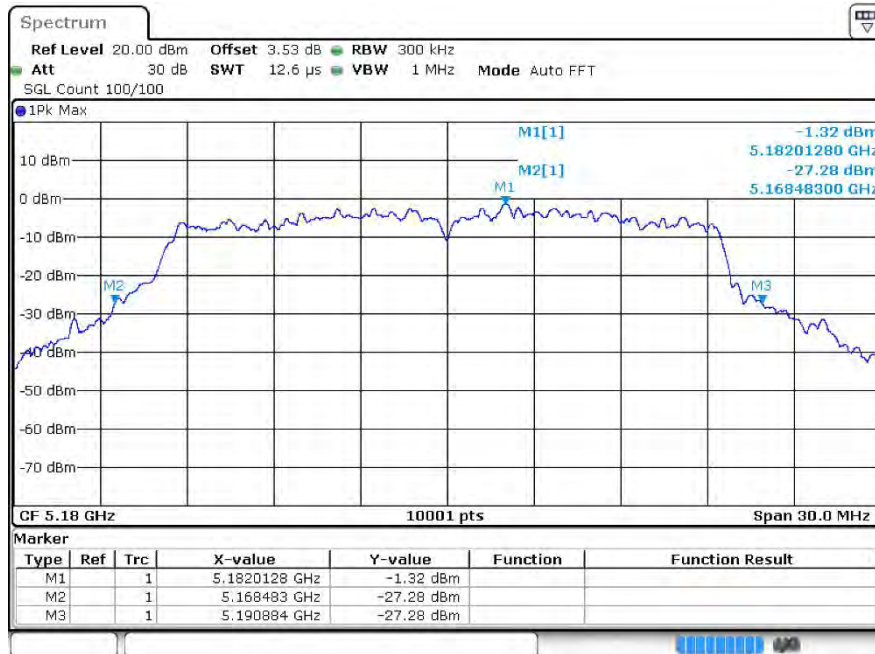


-26dB Bandwidthac40 5230MHz Ant1

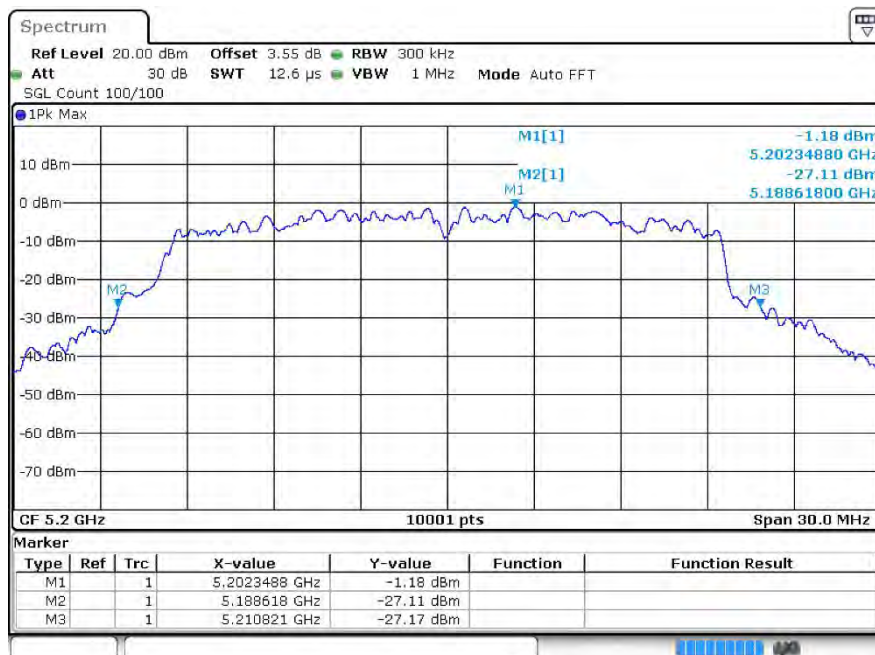


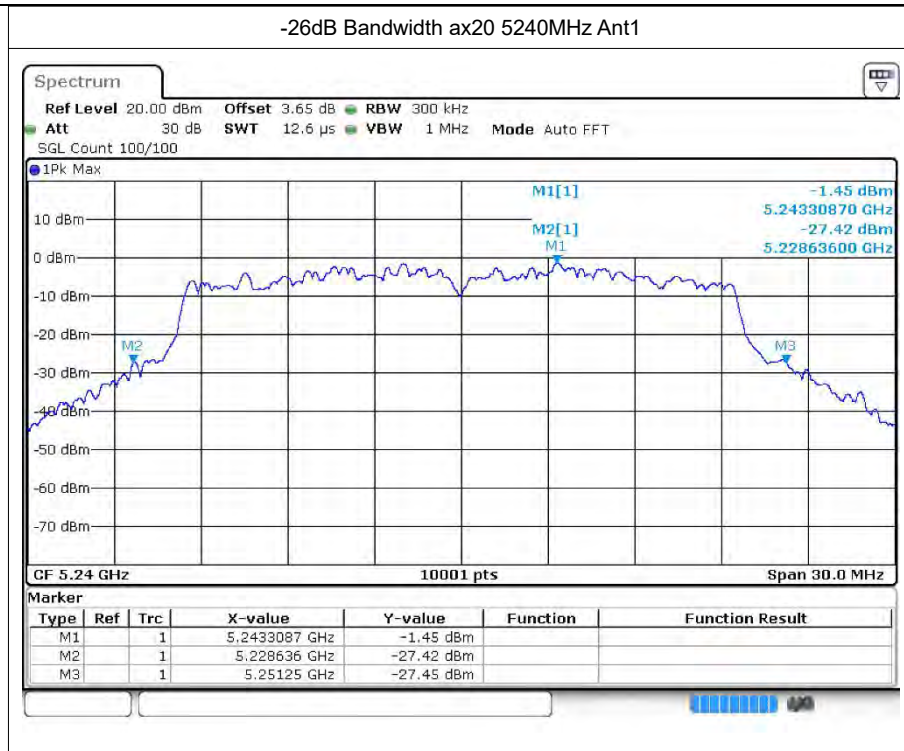


-26dB Bandwidth ax20 5180MHz Ant1

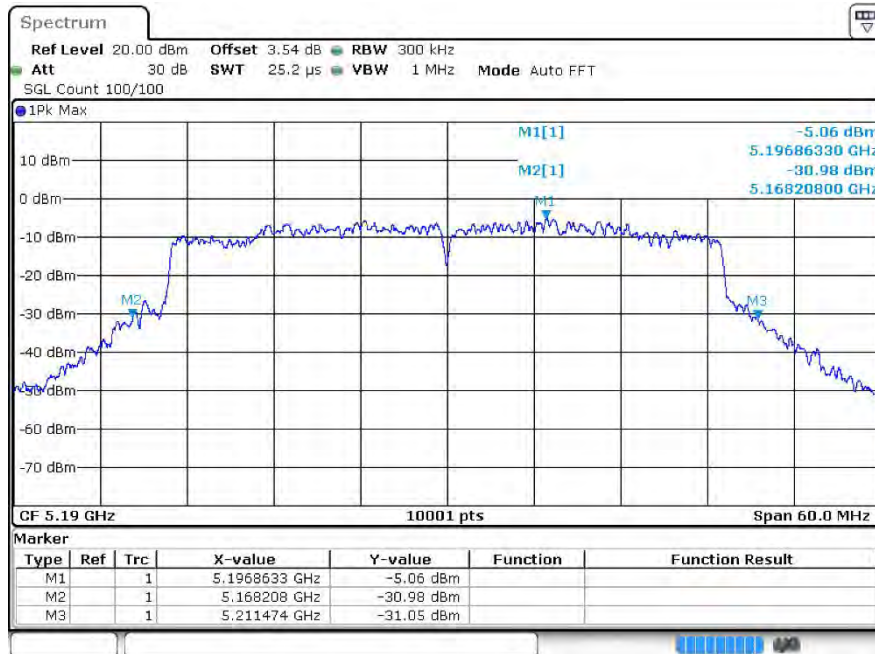


-26dB Bandwidth ax20 5200MHz Ant1

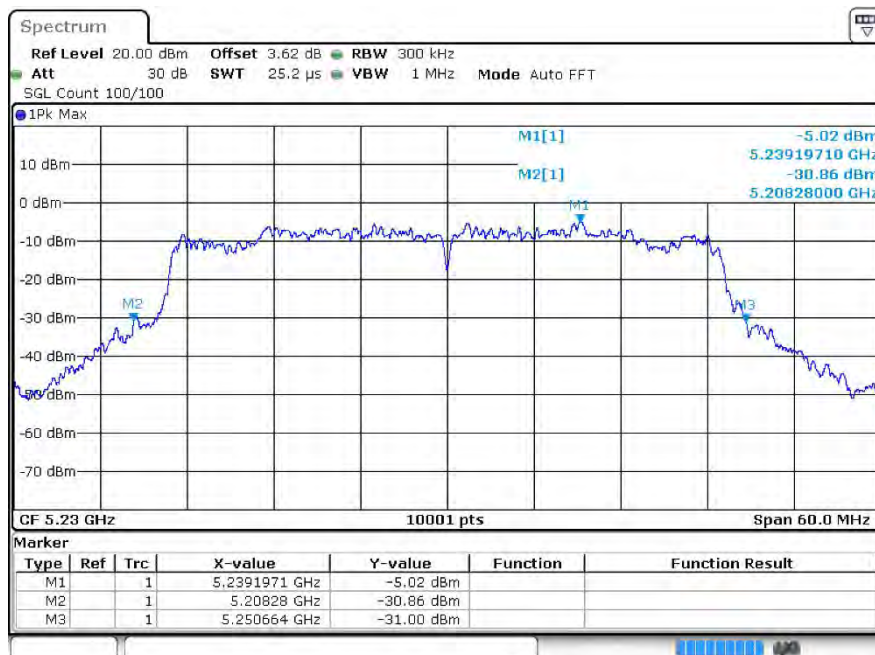


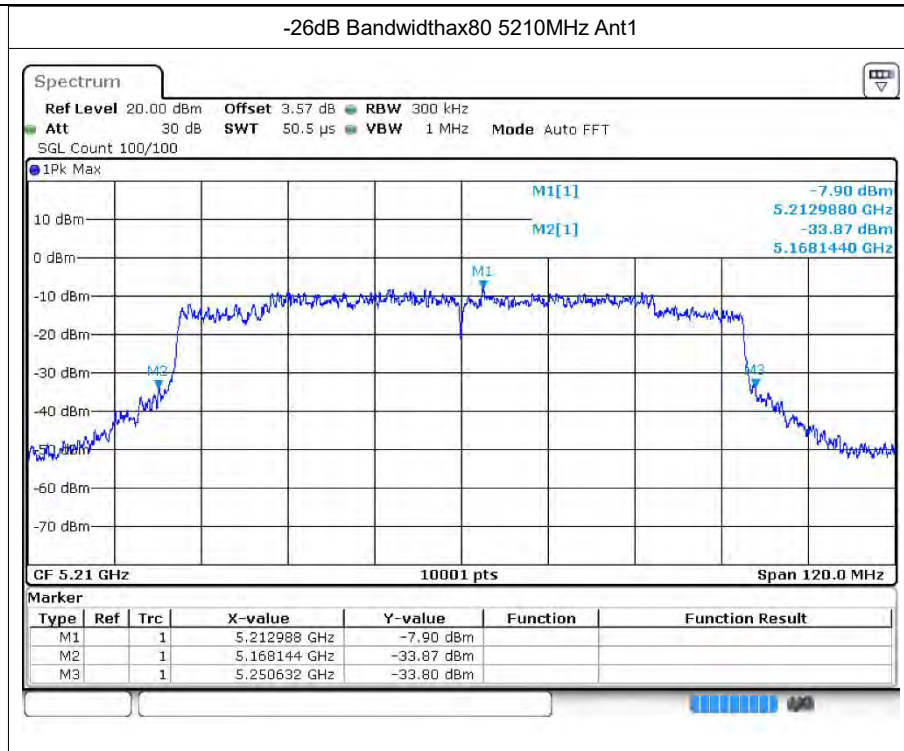


-26dB Bandwidthax40 5190MHz Ant1



-26dB Bandwidthax40 5230MHz Ant1





4 Occupied Channel Bandwidth

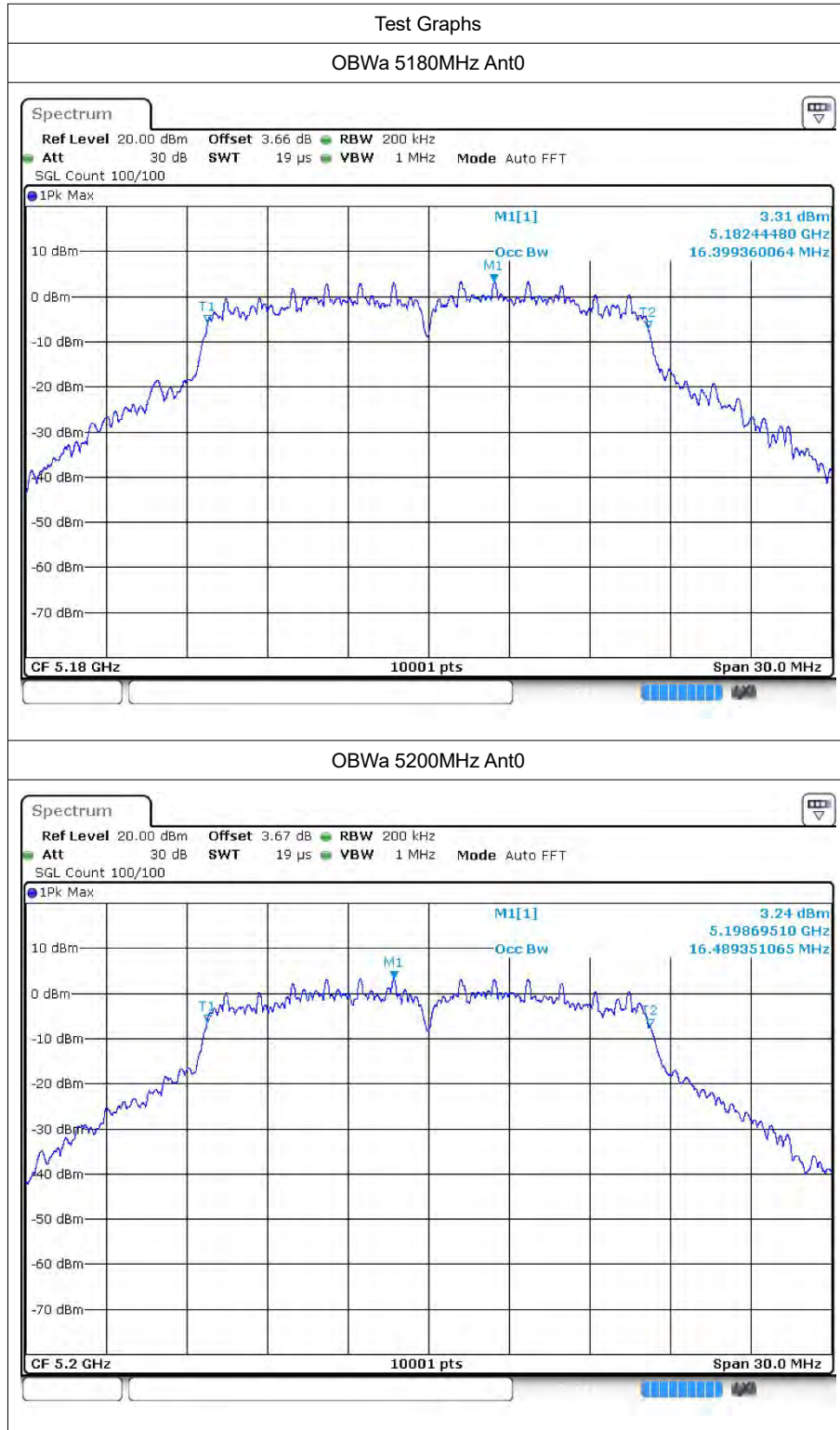
4.1 Test Result

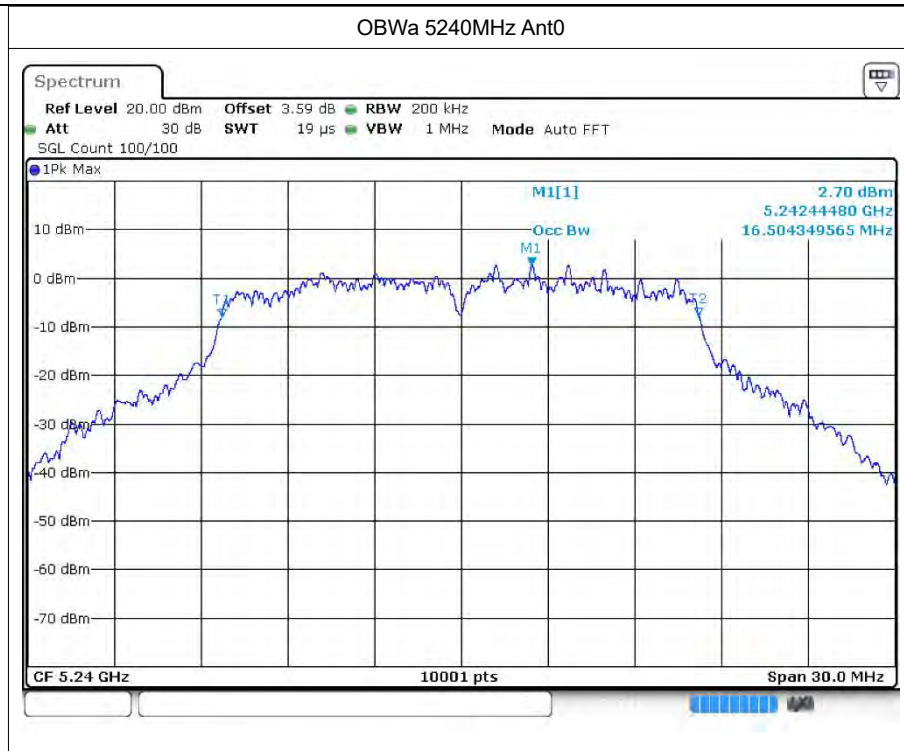
Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
a	5180	Ant0	16.399
a	5200	Ant0	16.489
a	5240	Ant0	16.504
n20	5180	Ant0	17.575
n20	5200	Ant0	17.605
n20	5240	Ant0	17.68
n40	5190	Ant0	35.876
n40	5230	Ant0	36.068
ac20	5180	Ant0	17.599
ac20	5200	Ant0	17.593
ac20	5240	Ant0	17.617
ac40	5190	Ant0	35.93
ac40	5230	Ant0	36.158
ac80	5210	Ant0	75.016
ax20	5180	Ant0	18.805
ax20	5200	Ant0	18.904
ax20	5240	Ant0	18.859
ax40	5190	Ant0	37.496
ax40	5230	Ant0	37.676
ax80	5210	Ant0	76.672
a	5180	Ant1	16.408
a	5200	Ant1	16.396
a	5240	Ant1	16.432
n20	5180	Ant1	17.581
n20	5200	Ant1	17.563
n20	5240	Ant1	17.584
n40	5190	Ant1	36.05
n40	5230	Ant1	36.026
ac20	5180	Ant1	17.605
ac20	5200	Ant1	17.581
ac20	5240	Ant1	17.566
ac40	5190	Ant1	35.942
ac40	5230	Ant1	35.9
ac80	5210	Ant1	75.256
ax20	5180	Ant1	18.799
ax20	5200	Ant1	18.778



ax20	5240	Ant1	18.937
ax40	5190	Ant1	37.508
ax40	5230	Ant1	37.61
ax80	5210	Ant1	76.744

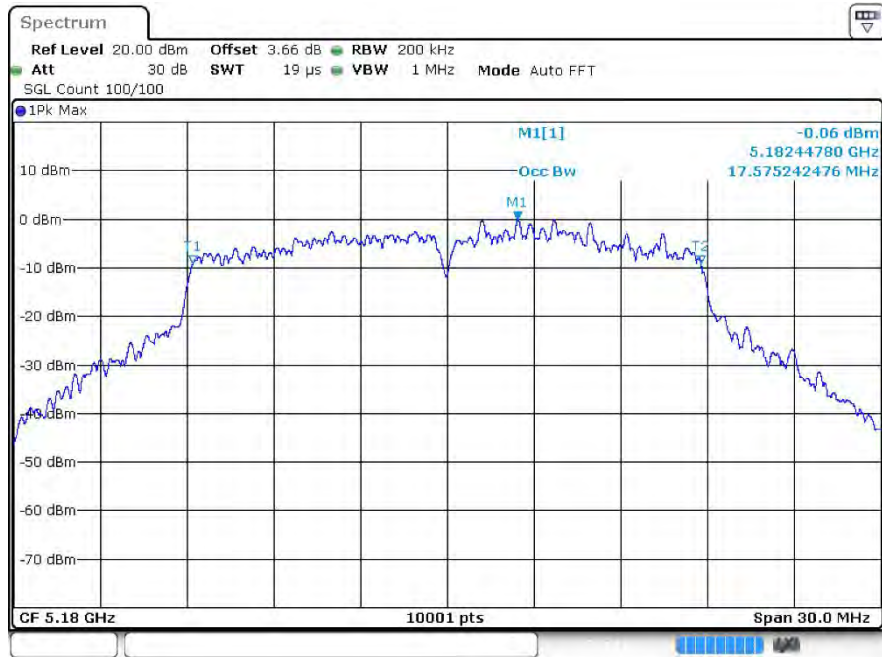
4.2 Test Graphs



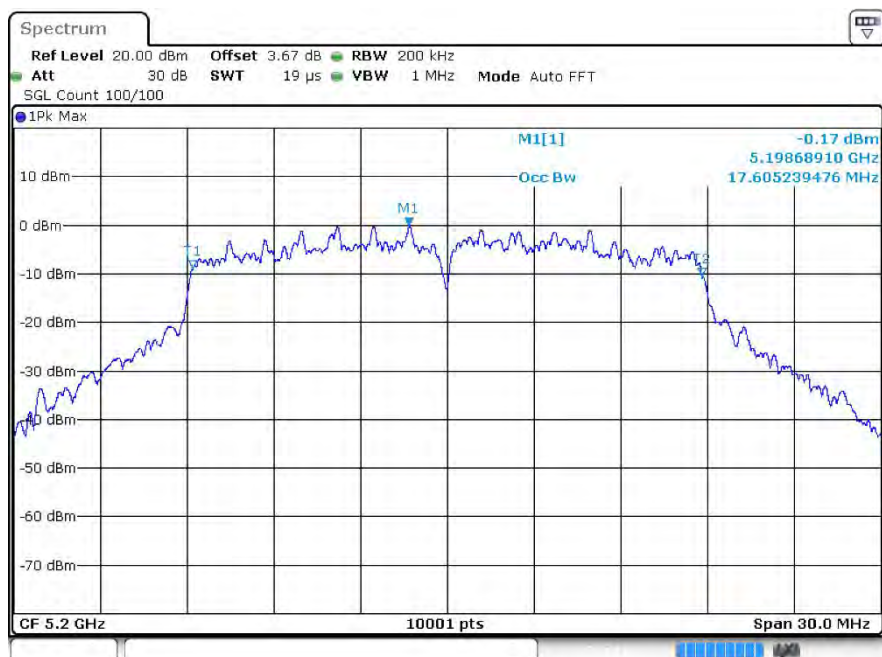


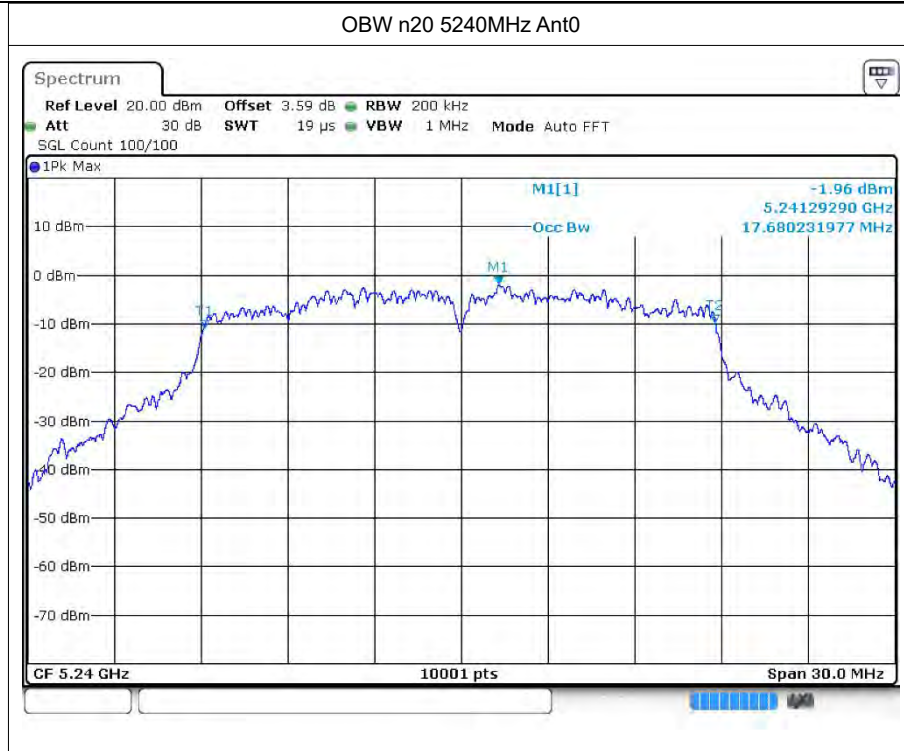


OBW n20 5180MHz Ant0

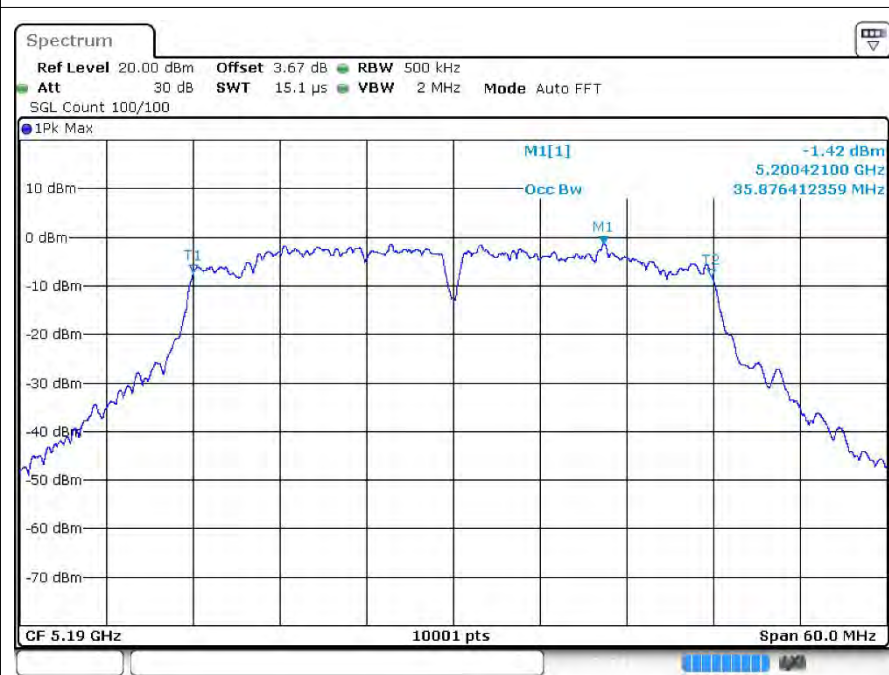


OBW n20 5200MHz Ant0





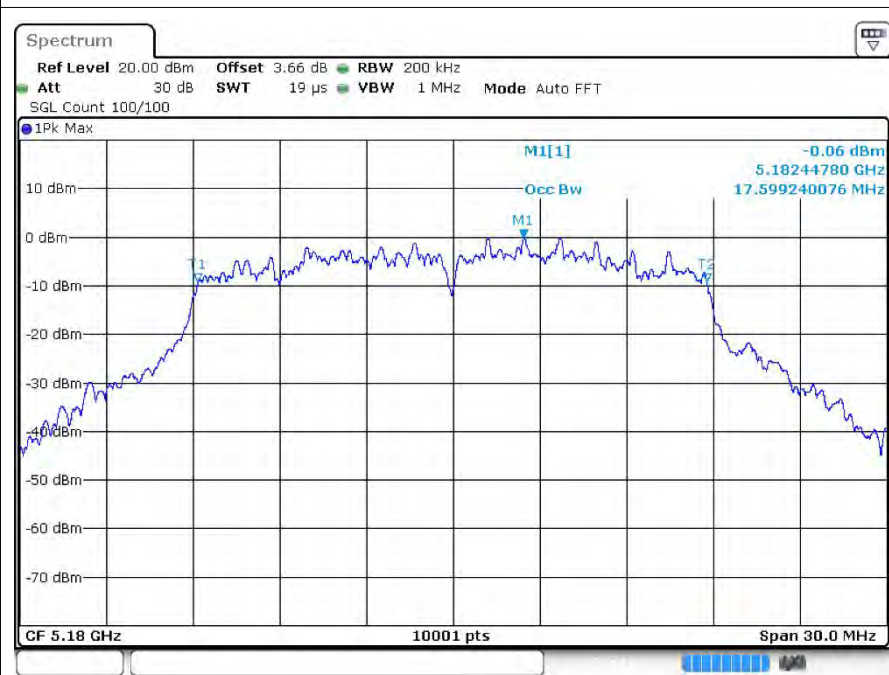
OBWn40 5190MHz Ant0



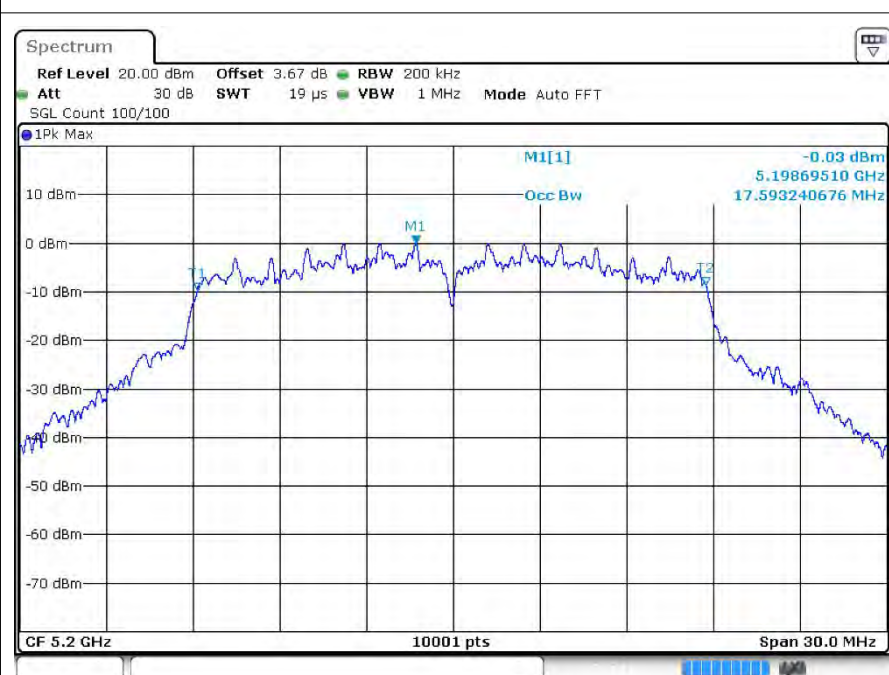
OBWn40 5230MHz Ant0

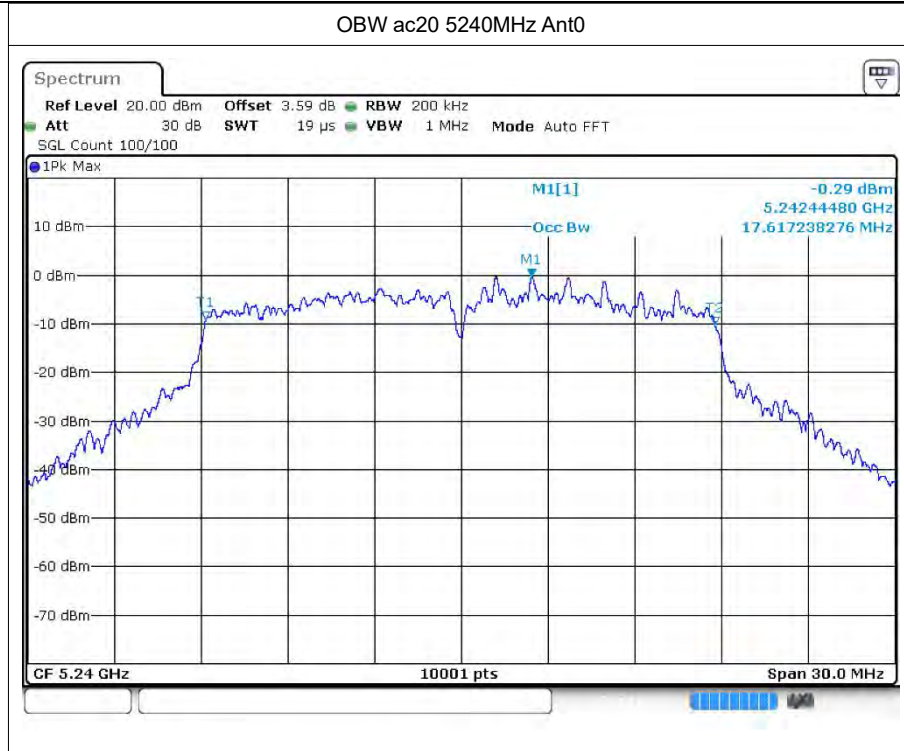


OBW ac20 5180MHz Ant0

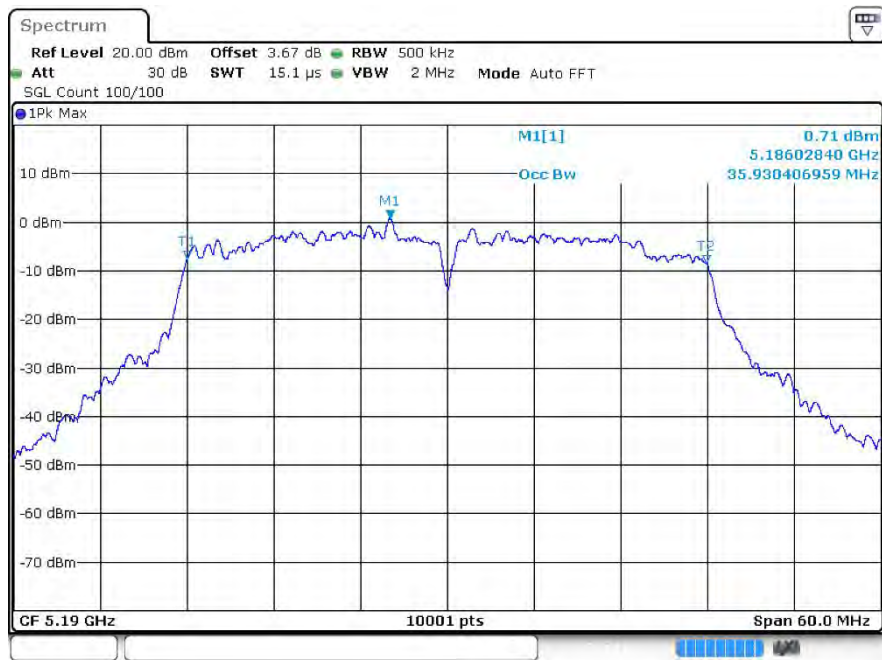


OBW ac20 5200MHz Ant0



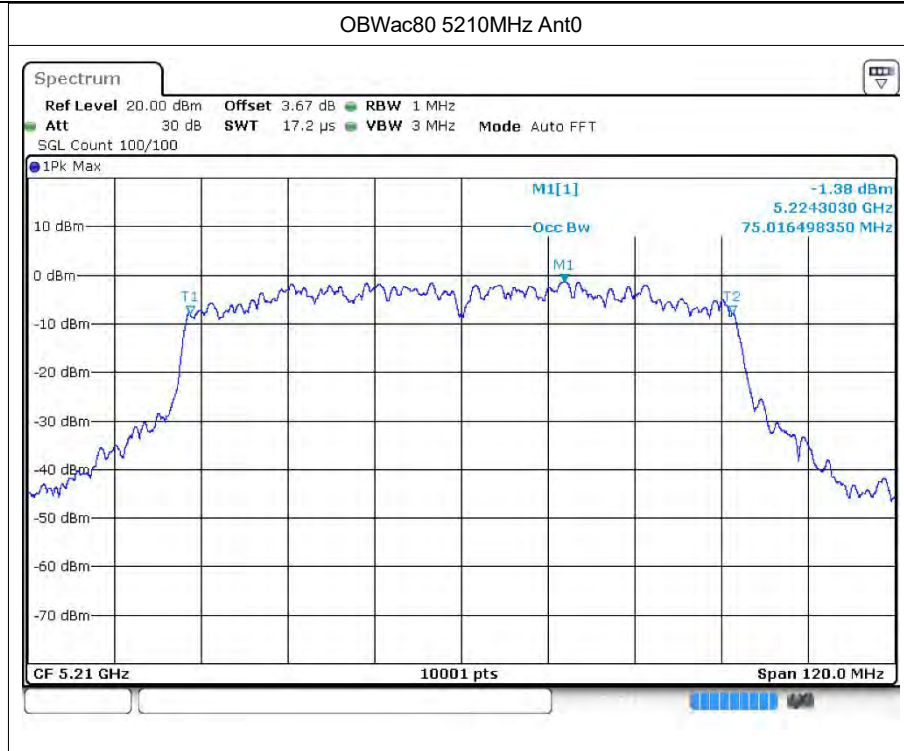


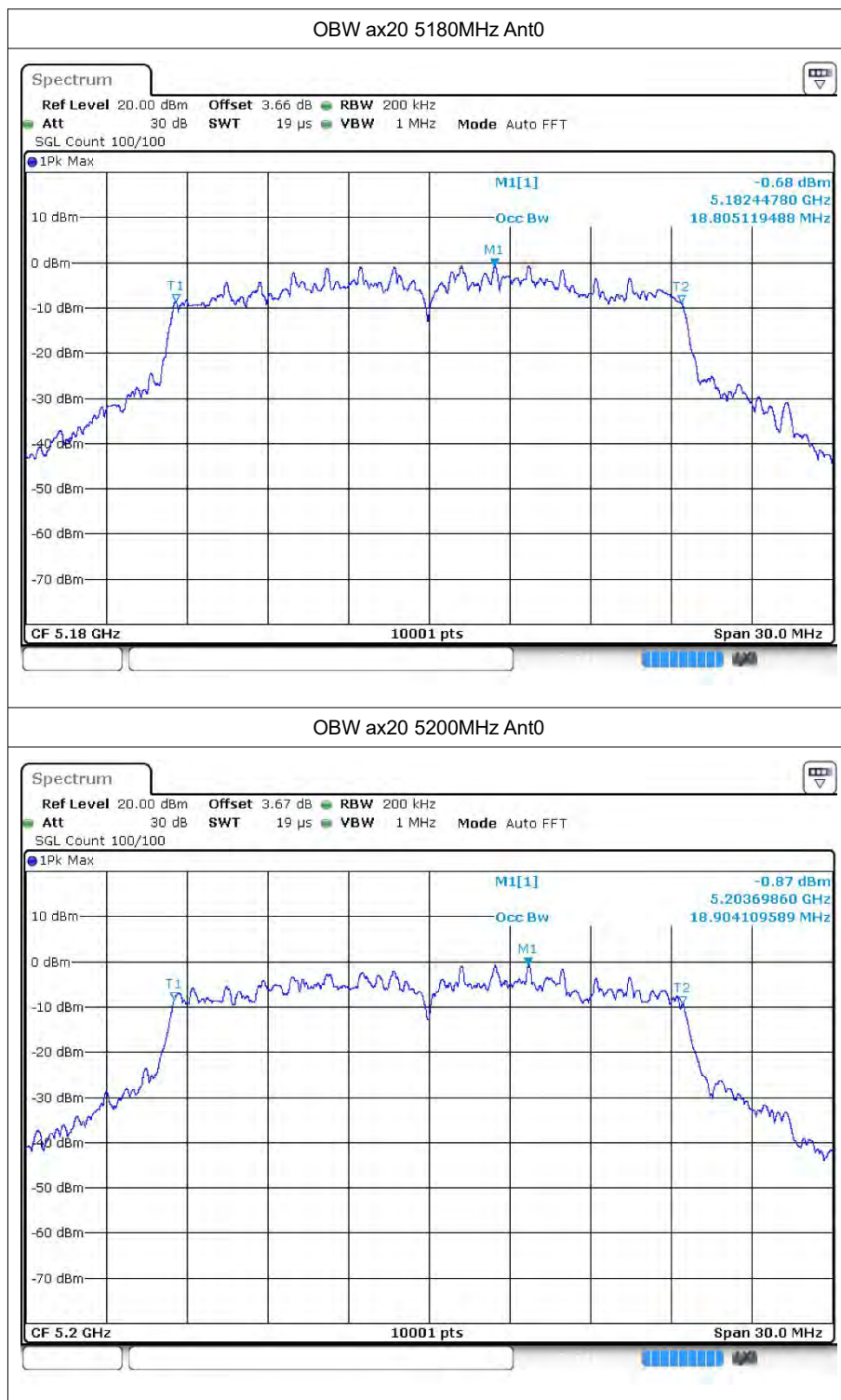
OBWac40 5190MHz Ant0

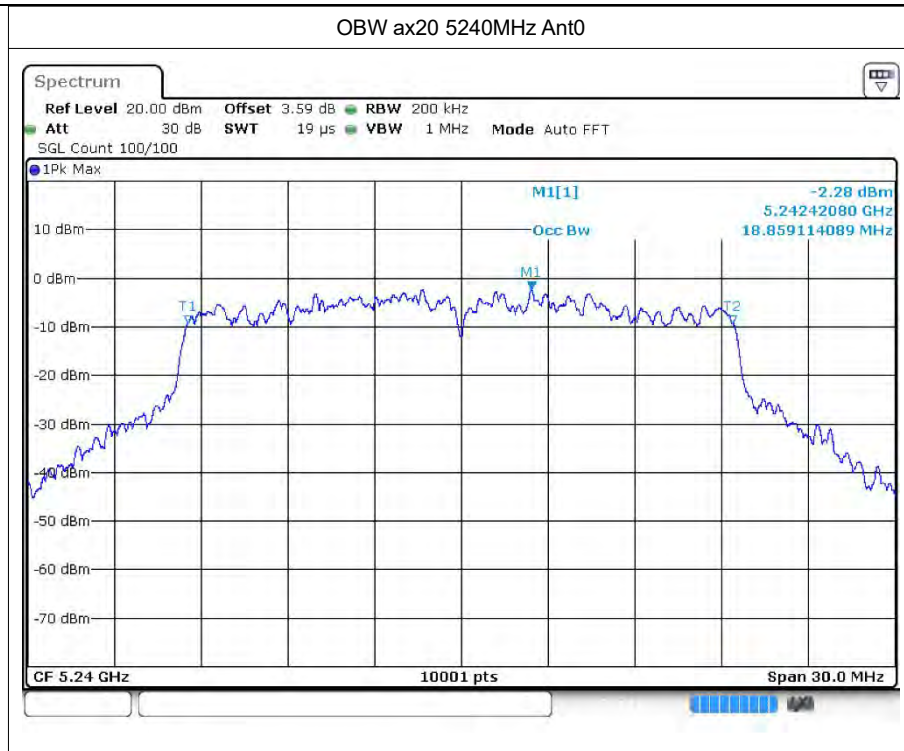


OBWac40 5230MHz Ant0

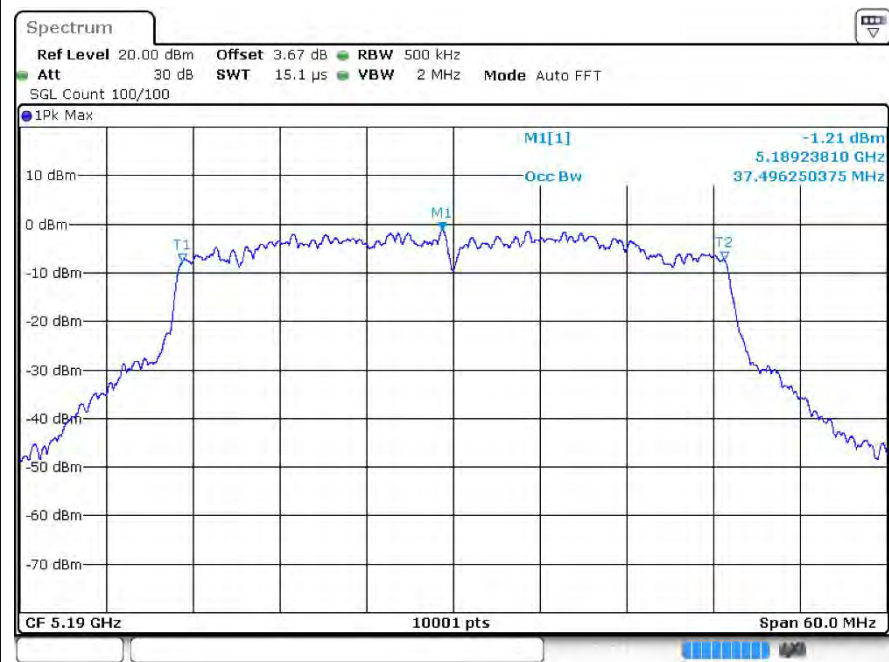








OBWax40 5190MHz Ant0



OBWax40 5230MHz Ant0



