



Appendix D

RF Test Data For U-NII Band I (Conducted Measurement)

Product Name: All-in-One Live Streaming Device

Trade Mark: HNKJ LAB

Test Model: HN-V88-HD

Environmental Conditions

Temperature:	24.6° C
Relative Humidity:	52.4%
ATM Pressure:	100.0 kPa
Test Engineer:	Simba Huang
Supervised by:	Seal Chen



Contents

Page

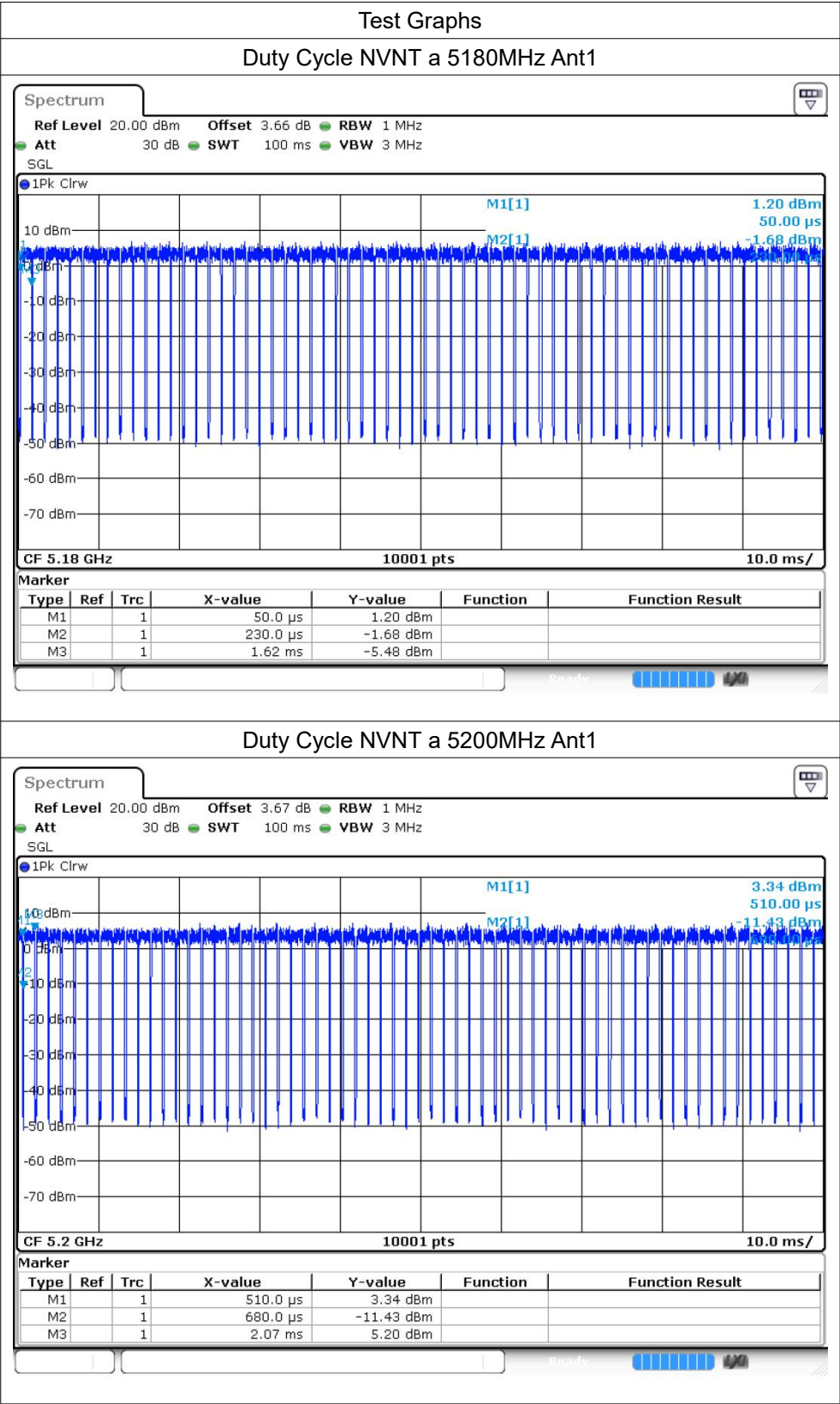
COVER PAGE

1 Duty Cycle	3
2 Maximum Conducted Output Power	11
3 -26dB Bandwidth	19
4 Occupied Channel Bandwidth	27
5 Maximum Power Spectral Density Level	35
6 Band Edge	43
7 Frequency Stability	50
8 Conducted RF Spurious Emission	124
9 Restrict Band	132



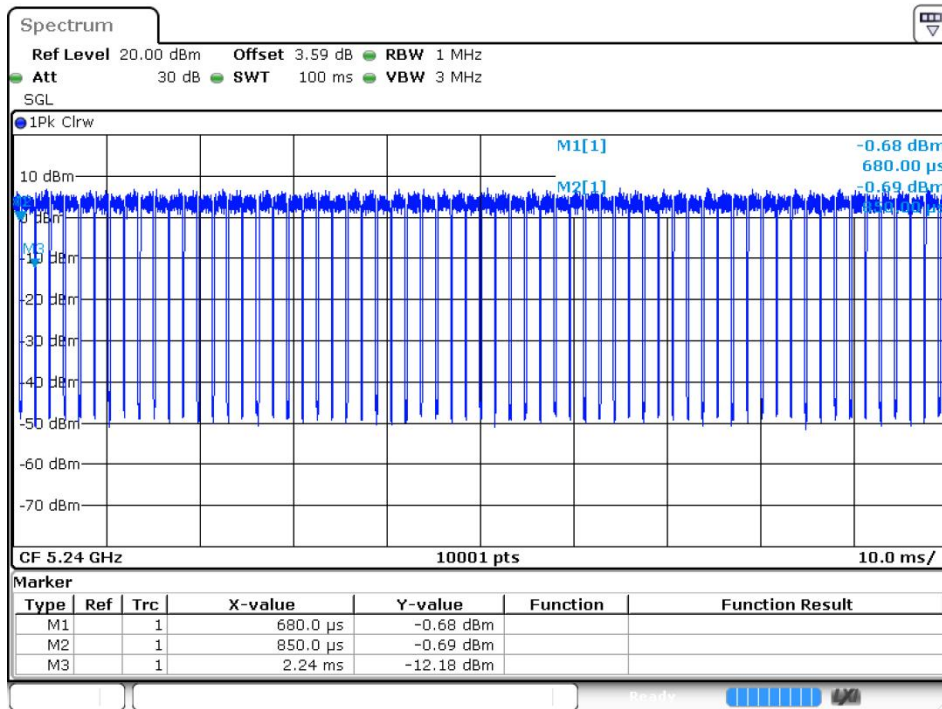
1 Duty Cycle

Test Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
802.11a	5180	Ant1	88.36	0.54	0.72
802.11a	5200	Ant1	88.35	0.54	0.72
802.11a	5240	Ant1	88.2	0.55	0.72
802.11n20	5180	Ant1	86.86	0.61	0.85
802.11n20	5200	Ant1	87.21	0.59	0.85
802.11n20	5240	Ant1	87.05	0.6	0.85
802.11n40	5190	Ant1	76.75	1.15	1.69
802.11n40	5230	Ant1	77.42	1.11	1.72
802.11ac20	5180	Ant1	87.02	0.6	0.85
802.11ac20	5200	Ant1	87.05	0.6	0.85
802.11ac20	5240	Ant1	87.21	0.59	0.85
802.11ac40	5190	Ant1	77.3	1.12	1.69
802.11ac40	5230	Ant1	76.88	1.14	1.69
802.11ac80	5210	Ant1	63.62	1.96	3.33

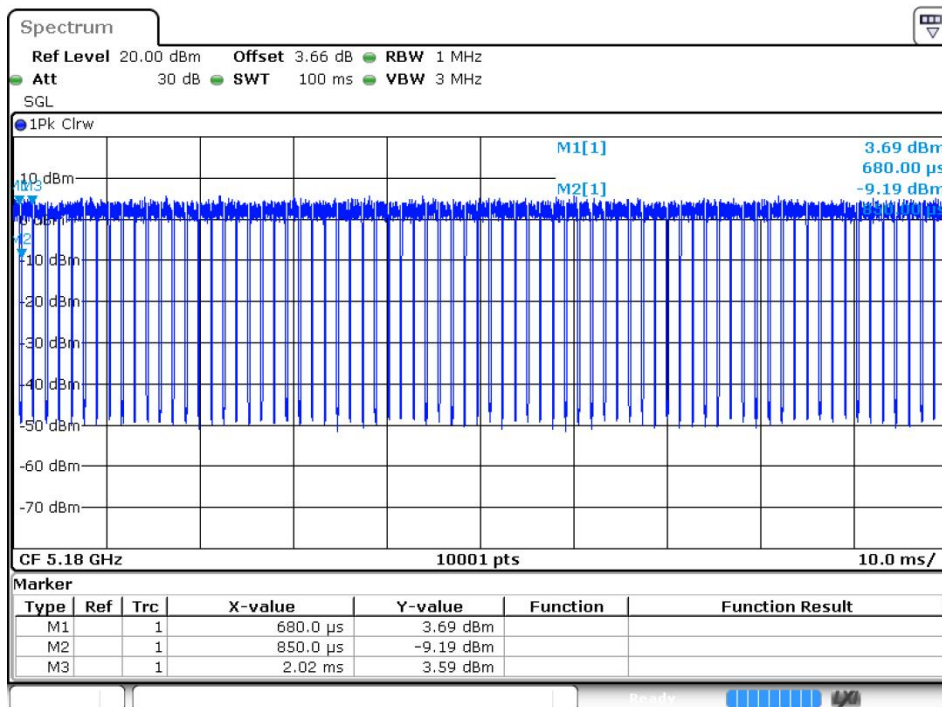




Duty Cycle NVNT a 5240MHz Ant1

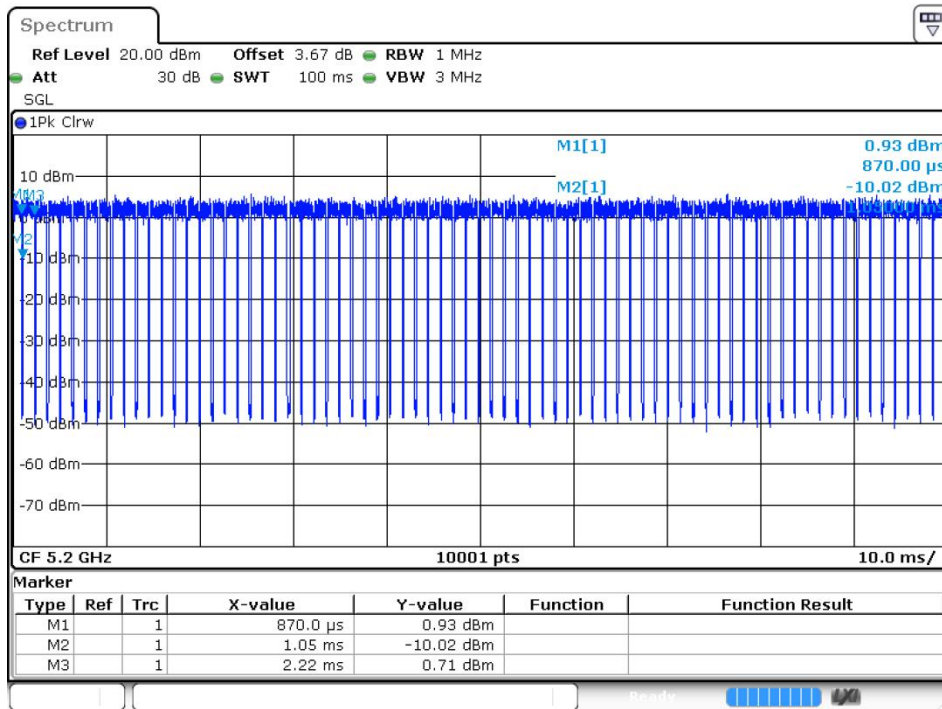


Duty Cycle NVNT n20 5180MHz Ant1

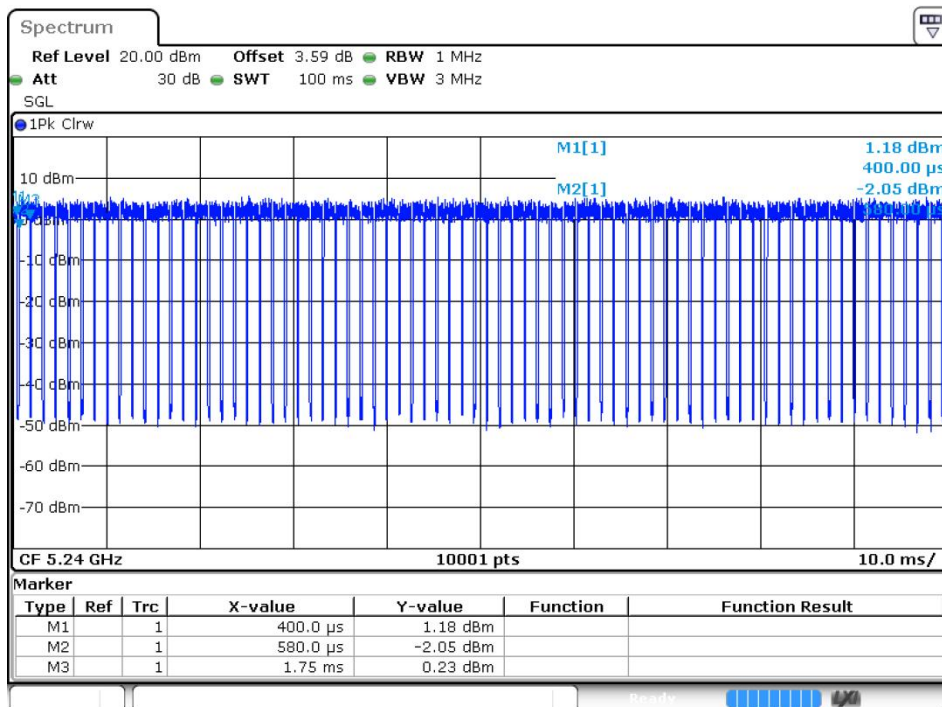


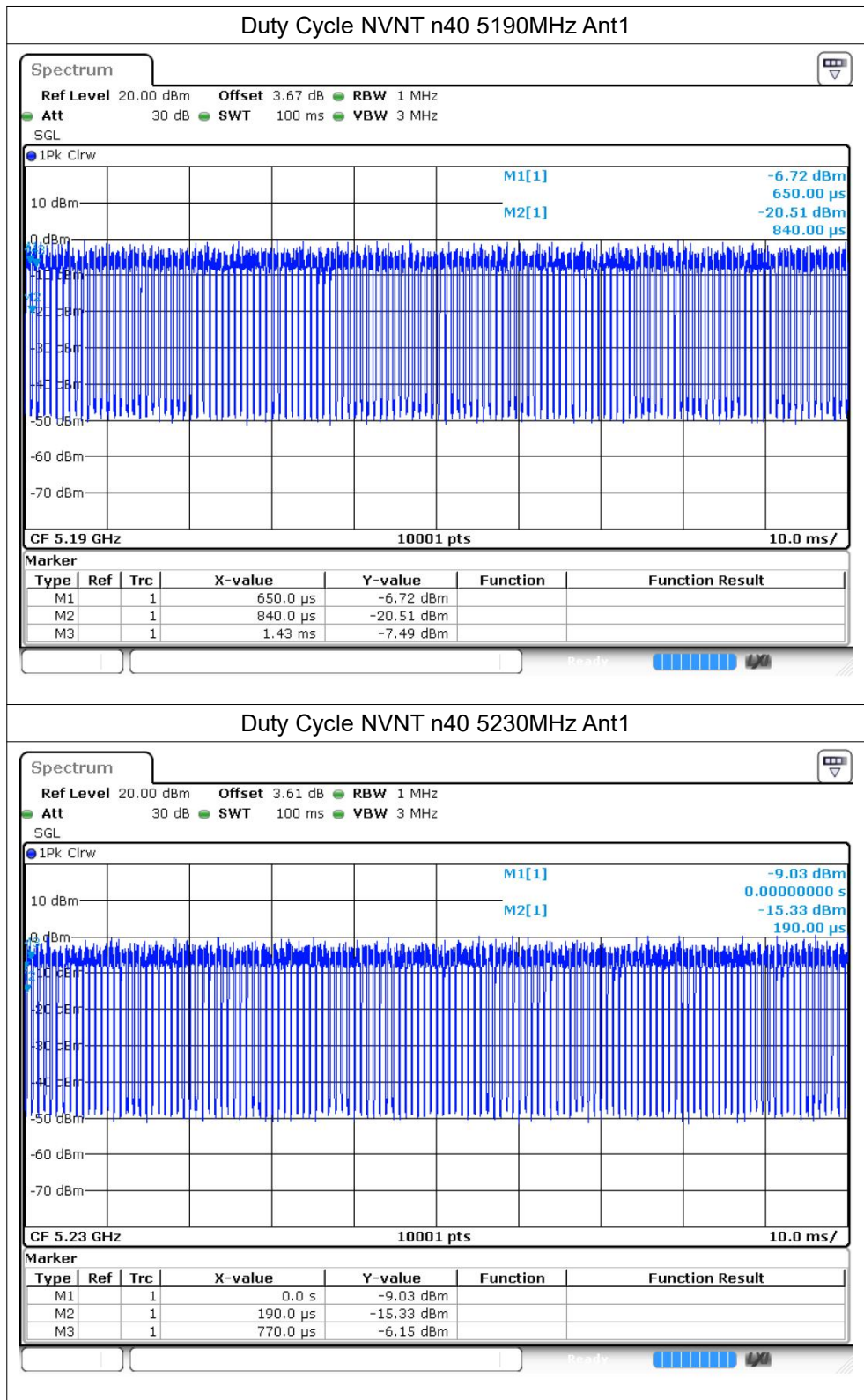


Duty Cycle NVNT n20 5200MHz Ant1



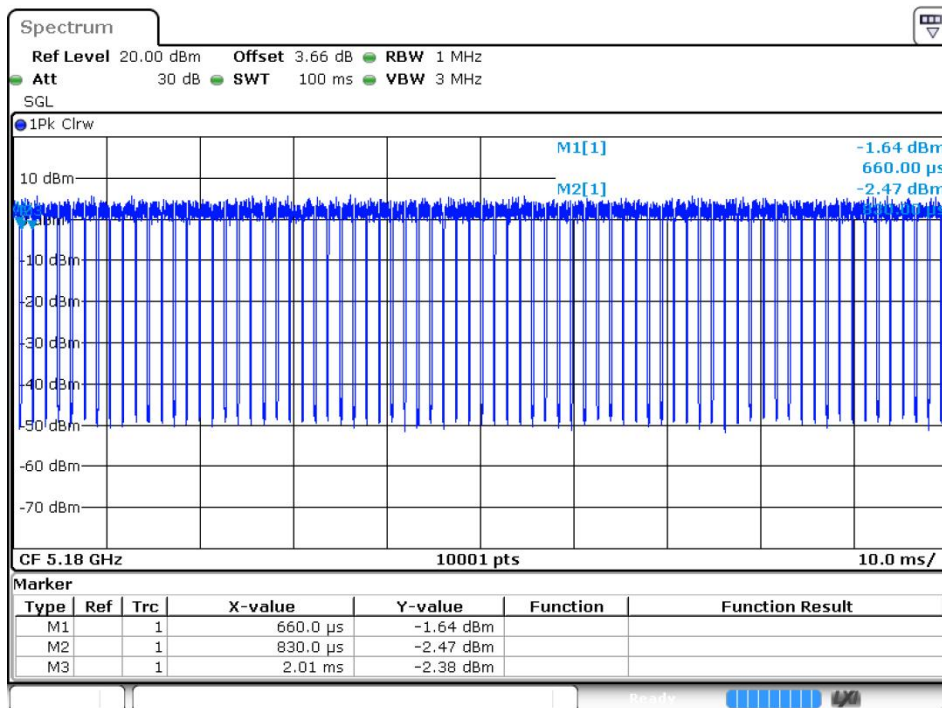
Duty Cycle NVNT n20 5240MHz Ant1



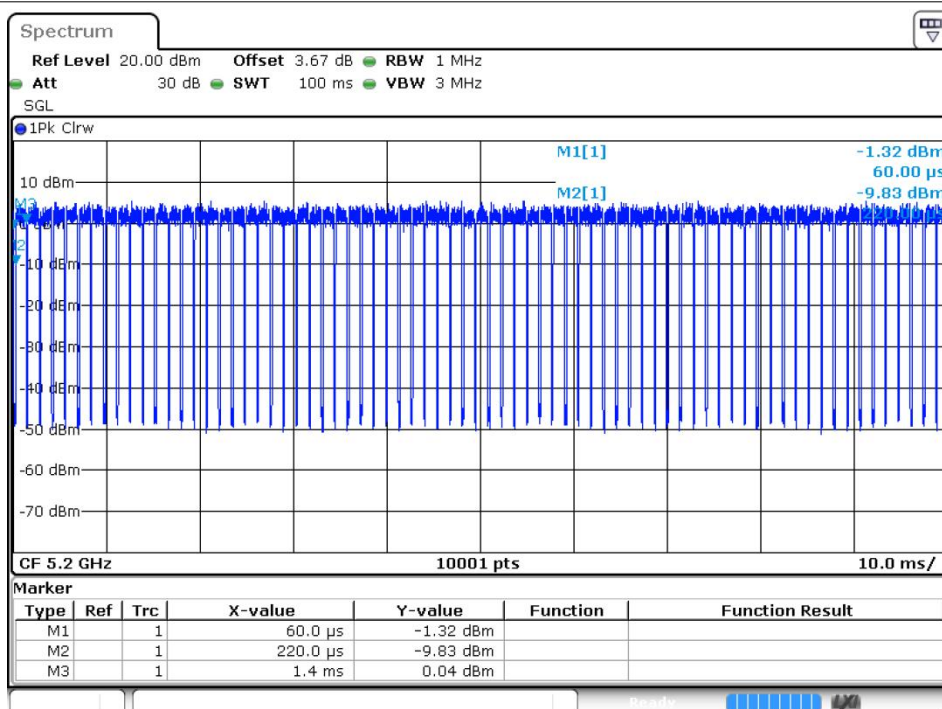


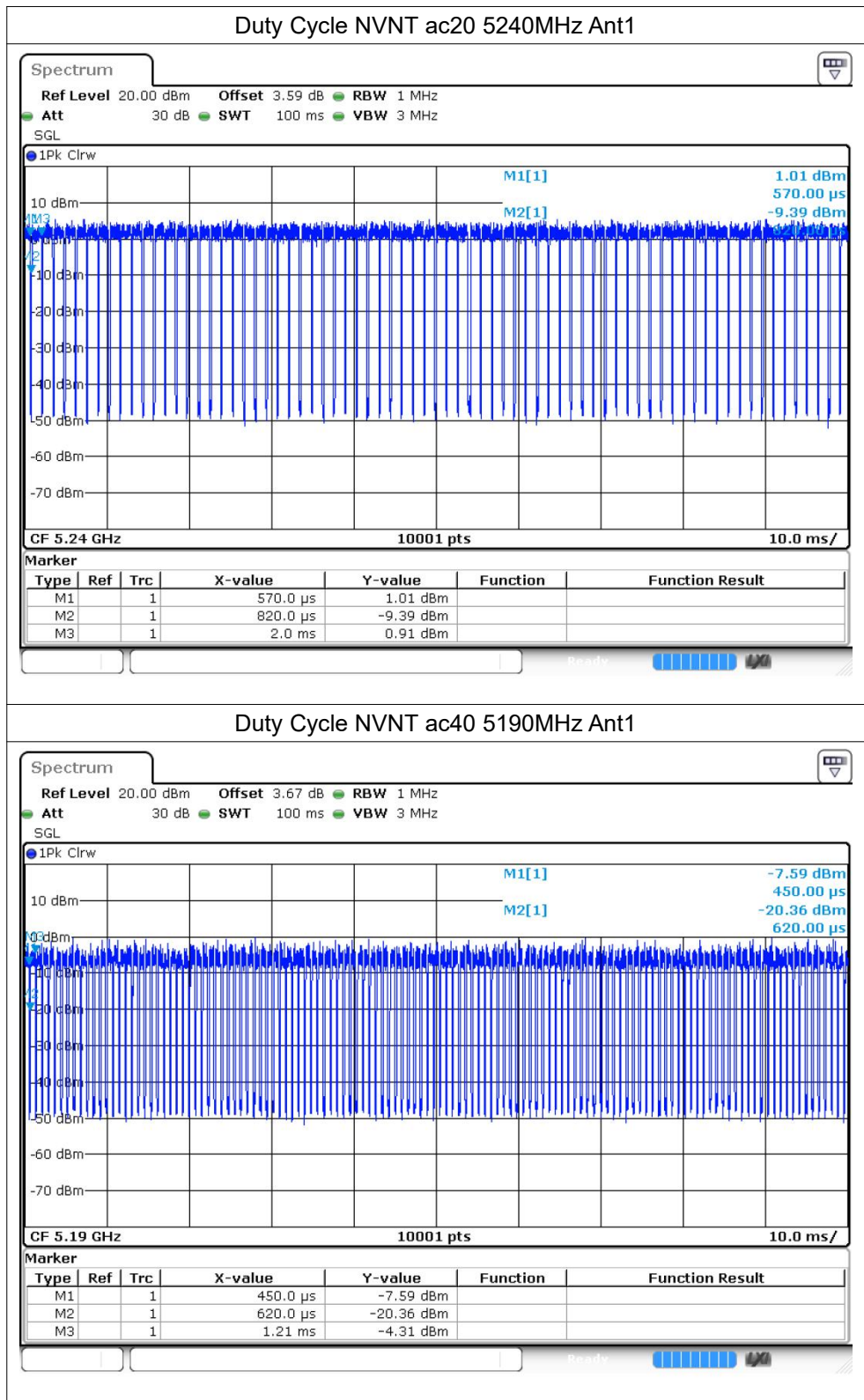


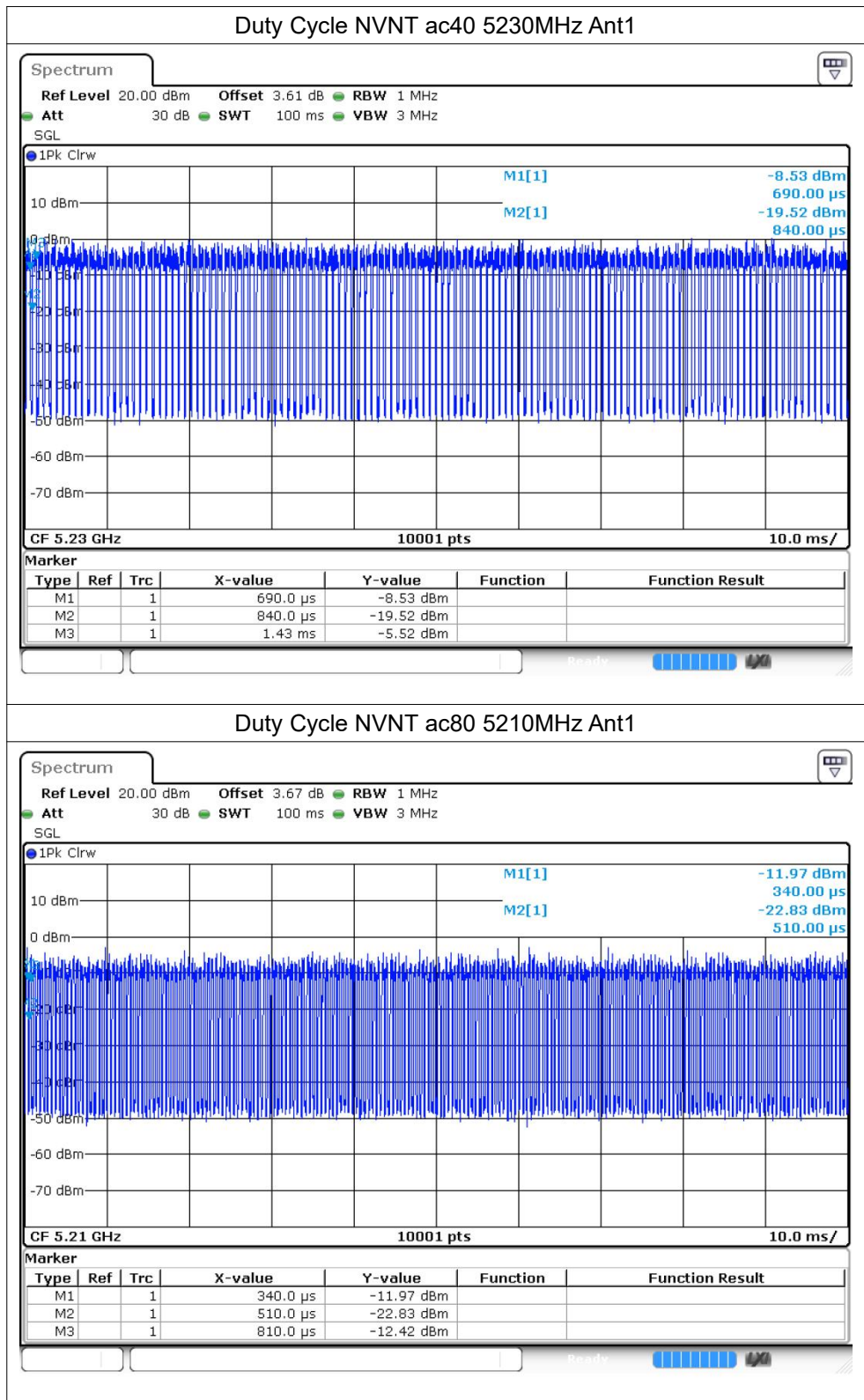
Duty Cycle NVNT ac20 5180MHz Ant1



Duty Cycle NVNT ac20 5200MHz Ant1



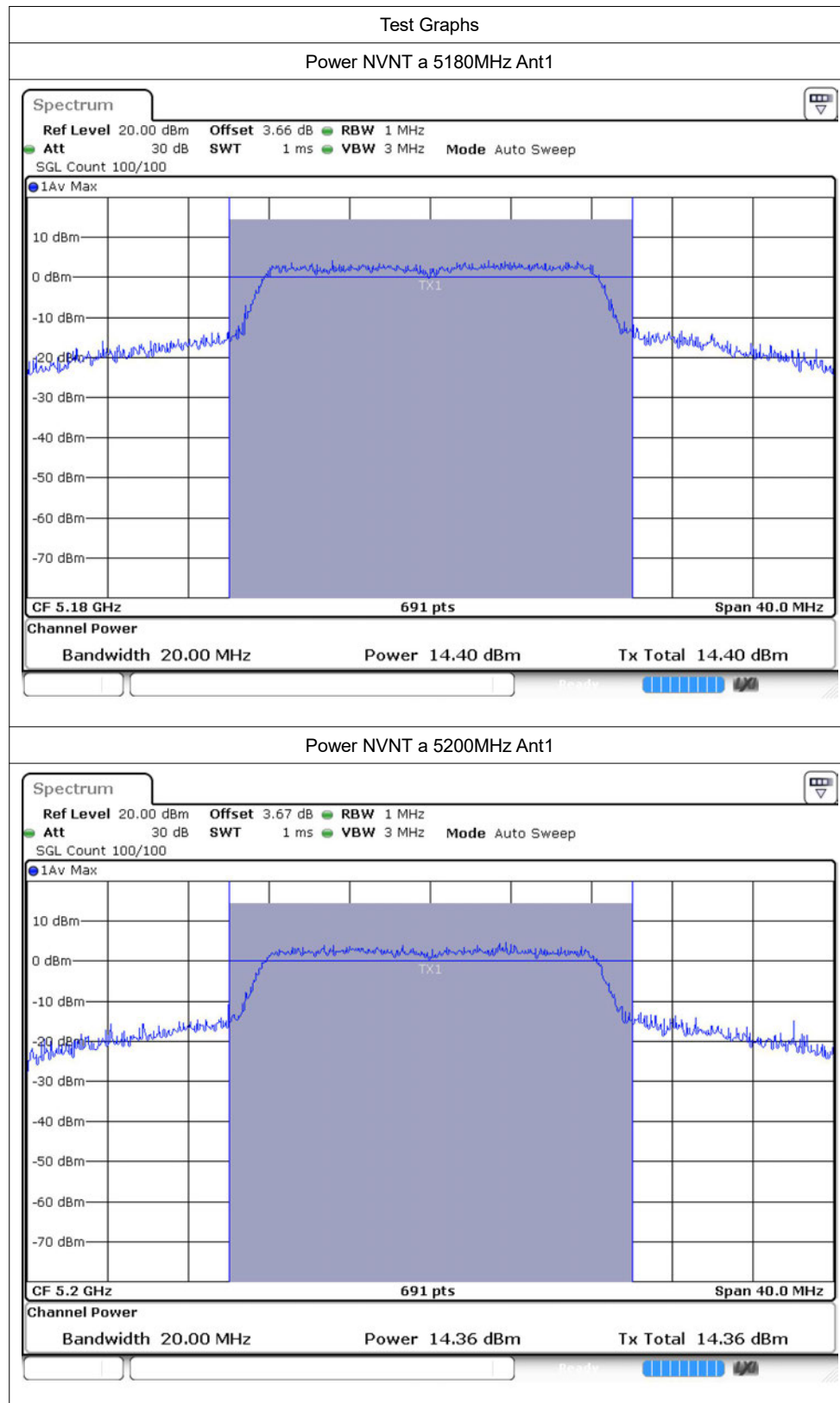


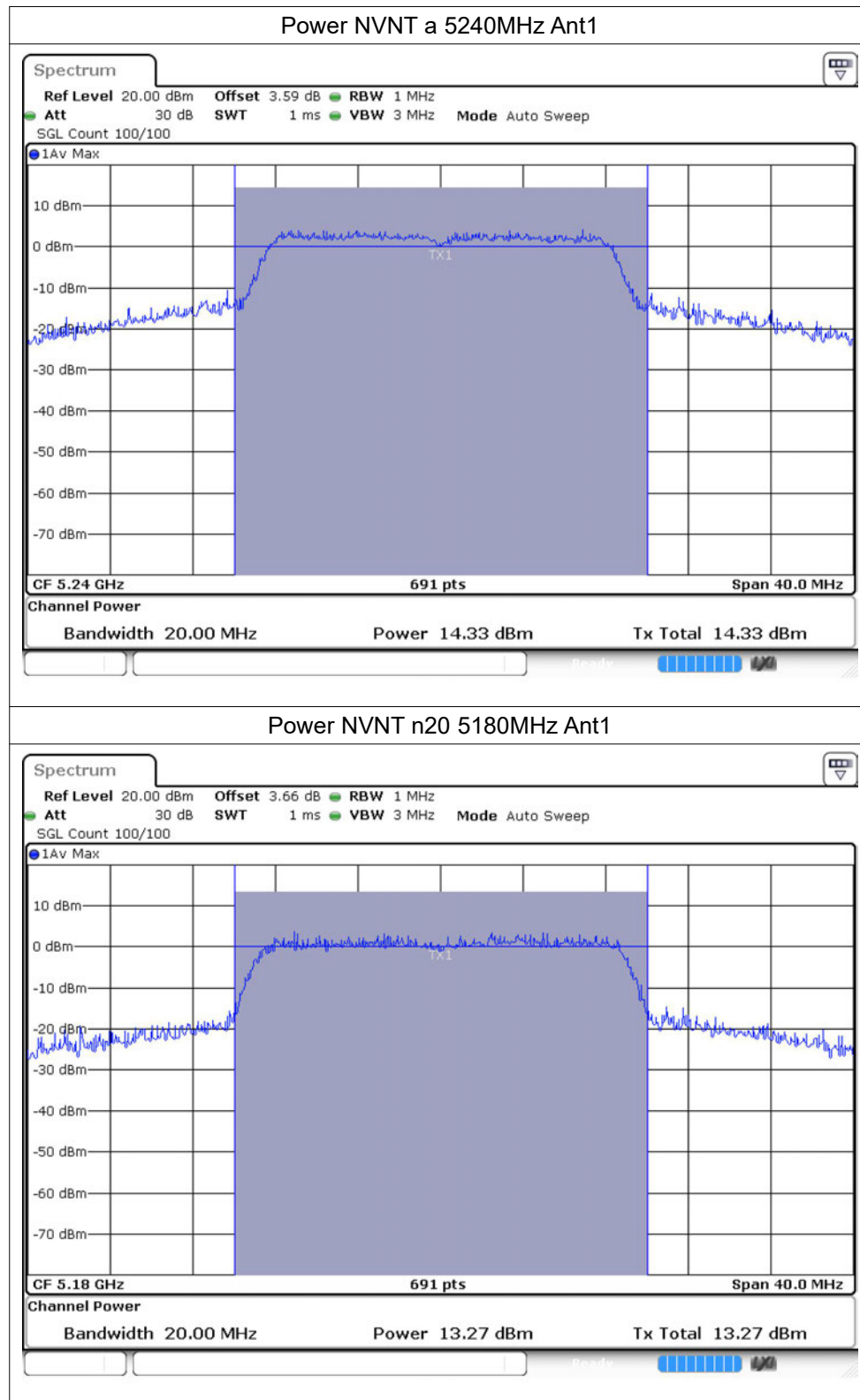




2 Maximum Conducted Output Power

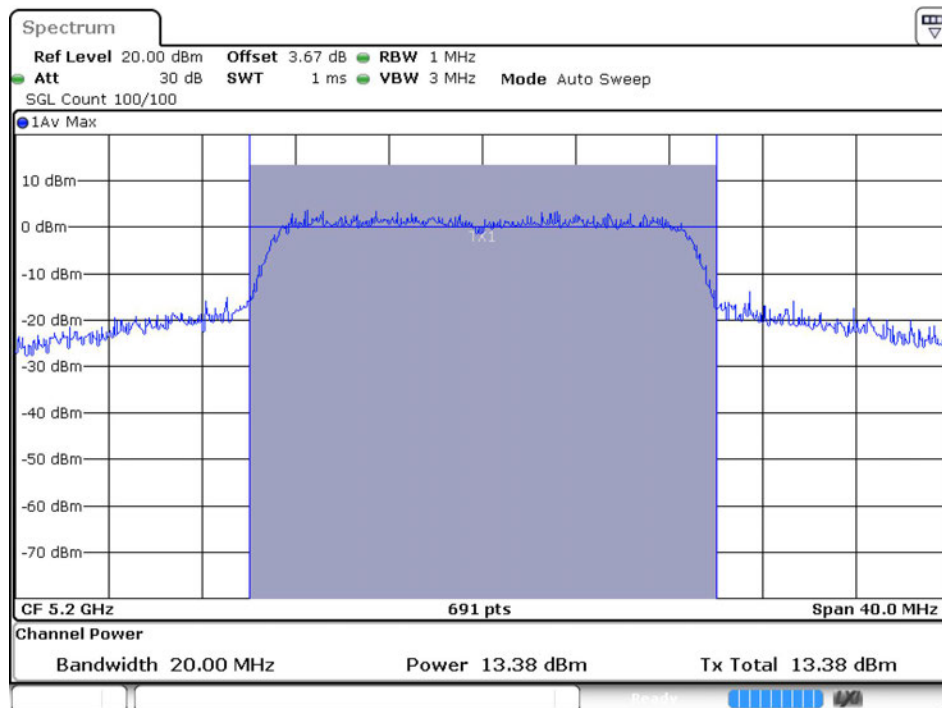
Test Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
802.11a	5180	Ant1	14.4	0.54	14.94	24	Pass
802.11a	5200	Ant1	14.36	0.54	14.9	24	Pass
802.11a	5240	Ant1	14.33	0.55	14.88	24	Pass
802.11n20	5180	Ant1	13.27	0.61	13.88	24	Pass
802.11n20	5200	Ant1	13.38	0.59	13.97	24	Pass
802.11n20	5240	Ant1	13.06	0.6	13.66	24	Pass
802.11n40	5190	Ant1	11.58	1.15	12.73	24	Pass
802.11n40	5230	Ant1	11.9	1.11	13.01	24	Pass
802.11ac20	5180	Ant1	12.97	0.6	13.57	24	Pass
802.11ac20	5200	Ant1	13.32	0.6	13.92	24	Pass
802.11ac20	5240	Ant1	13.03	0.59	13.62	24	Pass
802.11ac40	5190	Ant1	11.69	1.12	12.81	24	Pass
802.11ac40	5230	Ant1	11.84	1.14	12.98	24	Pass
802.11ac80	5210	Ant1	11.51	1.96	13.47	24	Pass



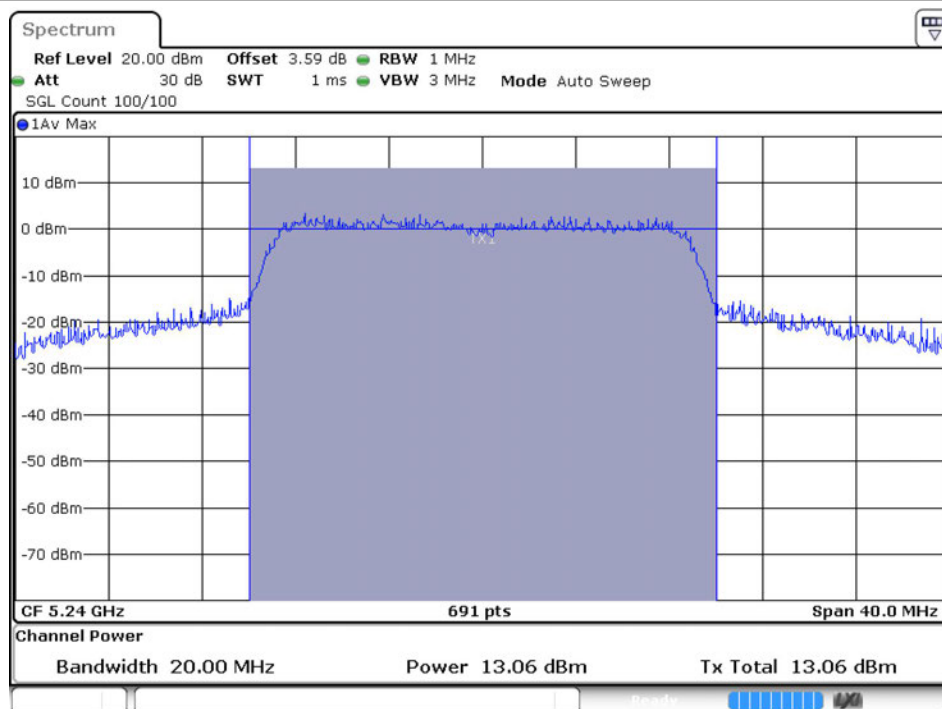




Power NVNT n20 5200MHz Ant1

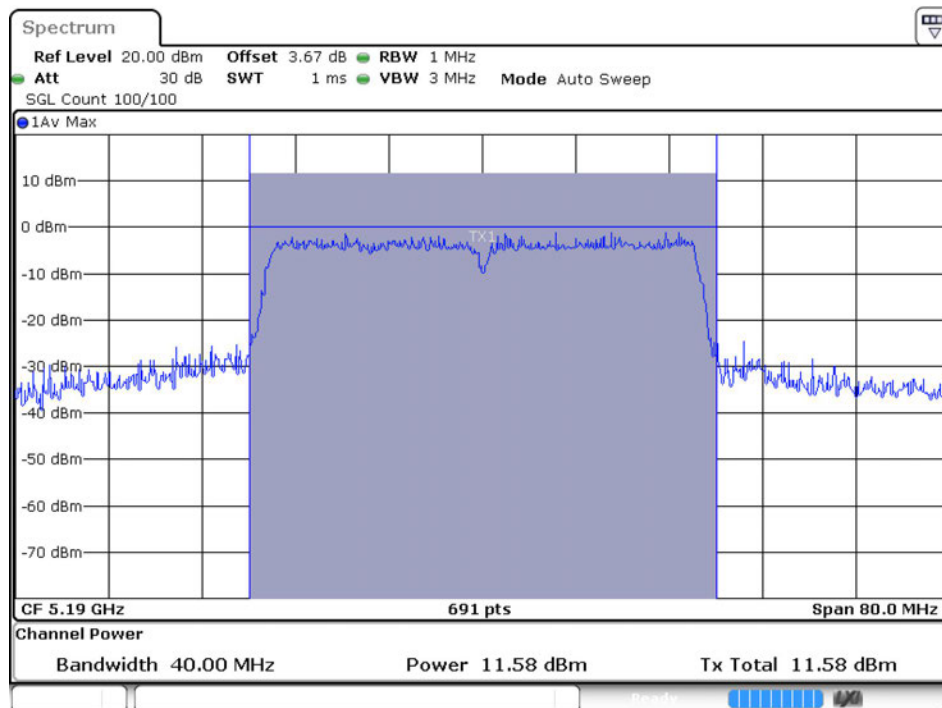


Power NVNT n20 5240MHz Ant1

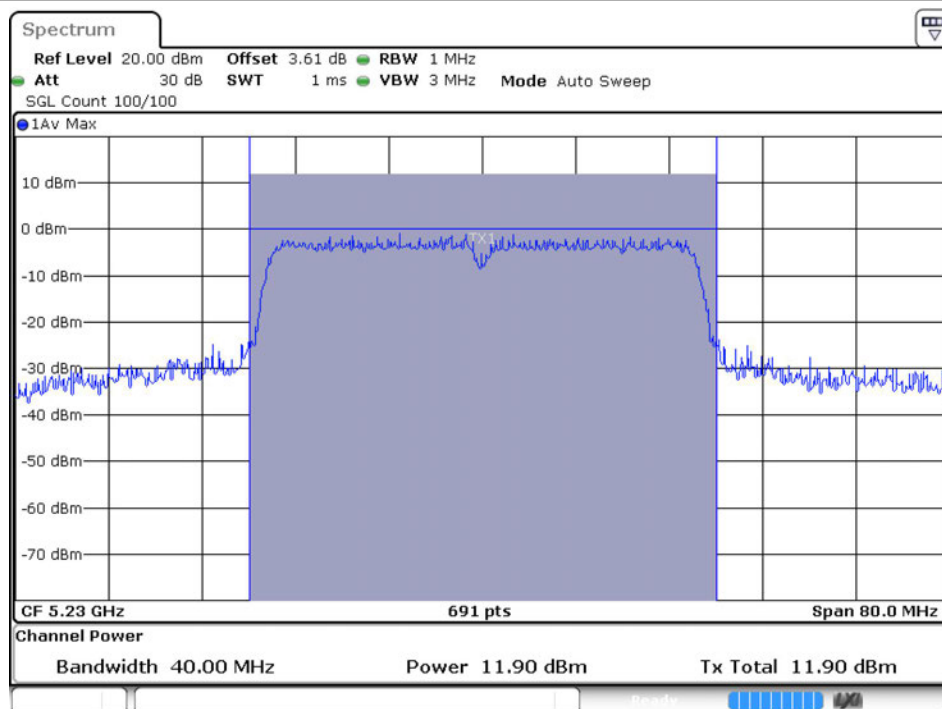




Power NVNT n40 5190MHz Ant1

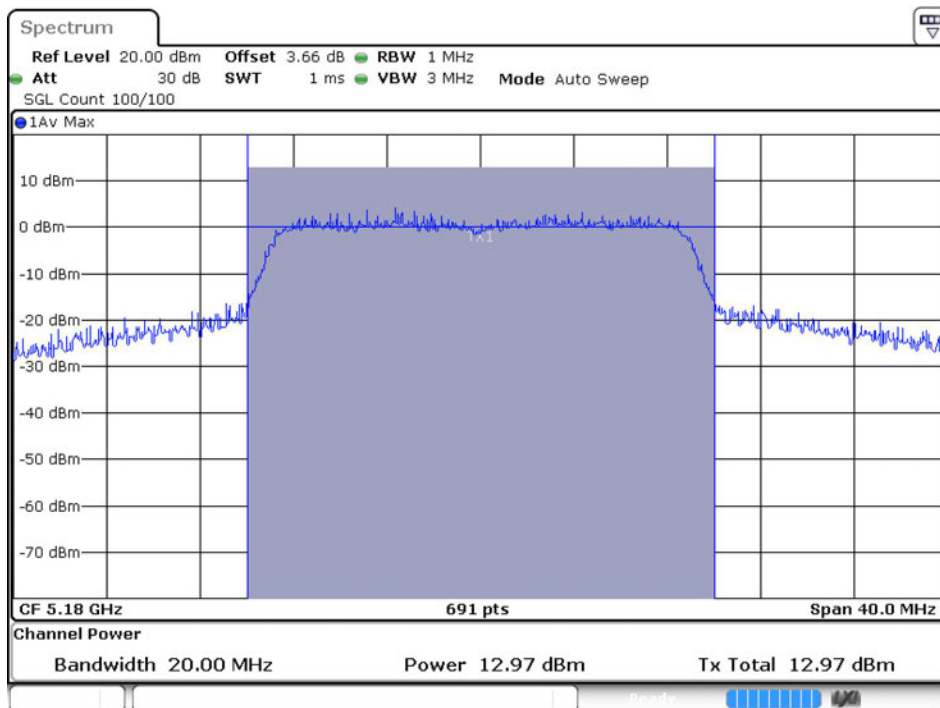


Power NVNT n40 5230MHz Ant1

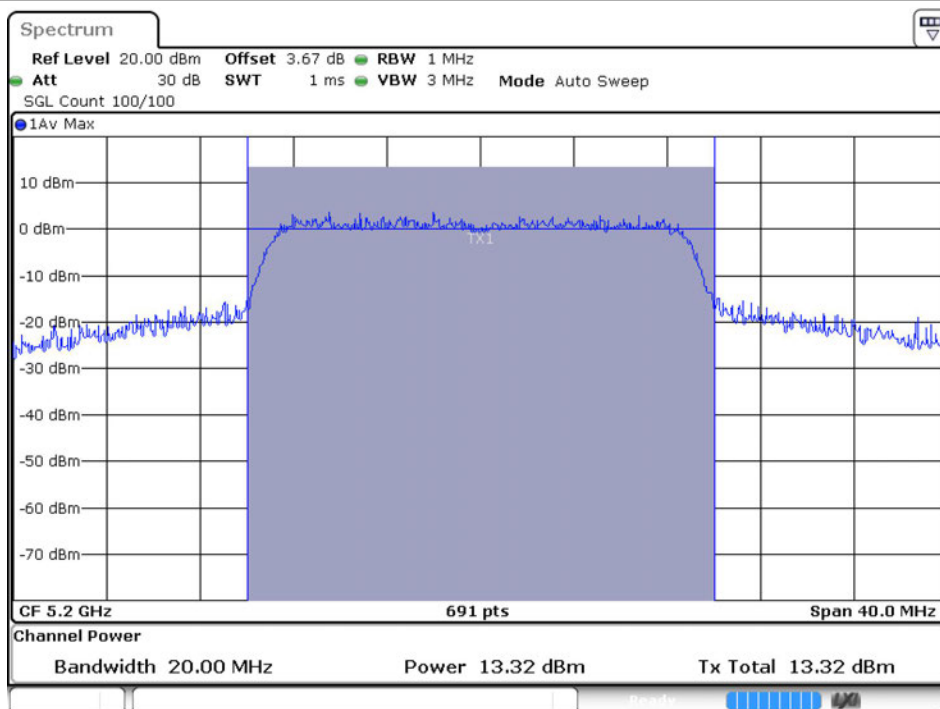


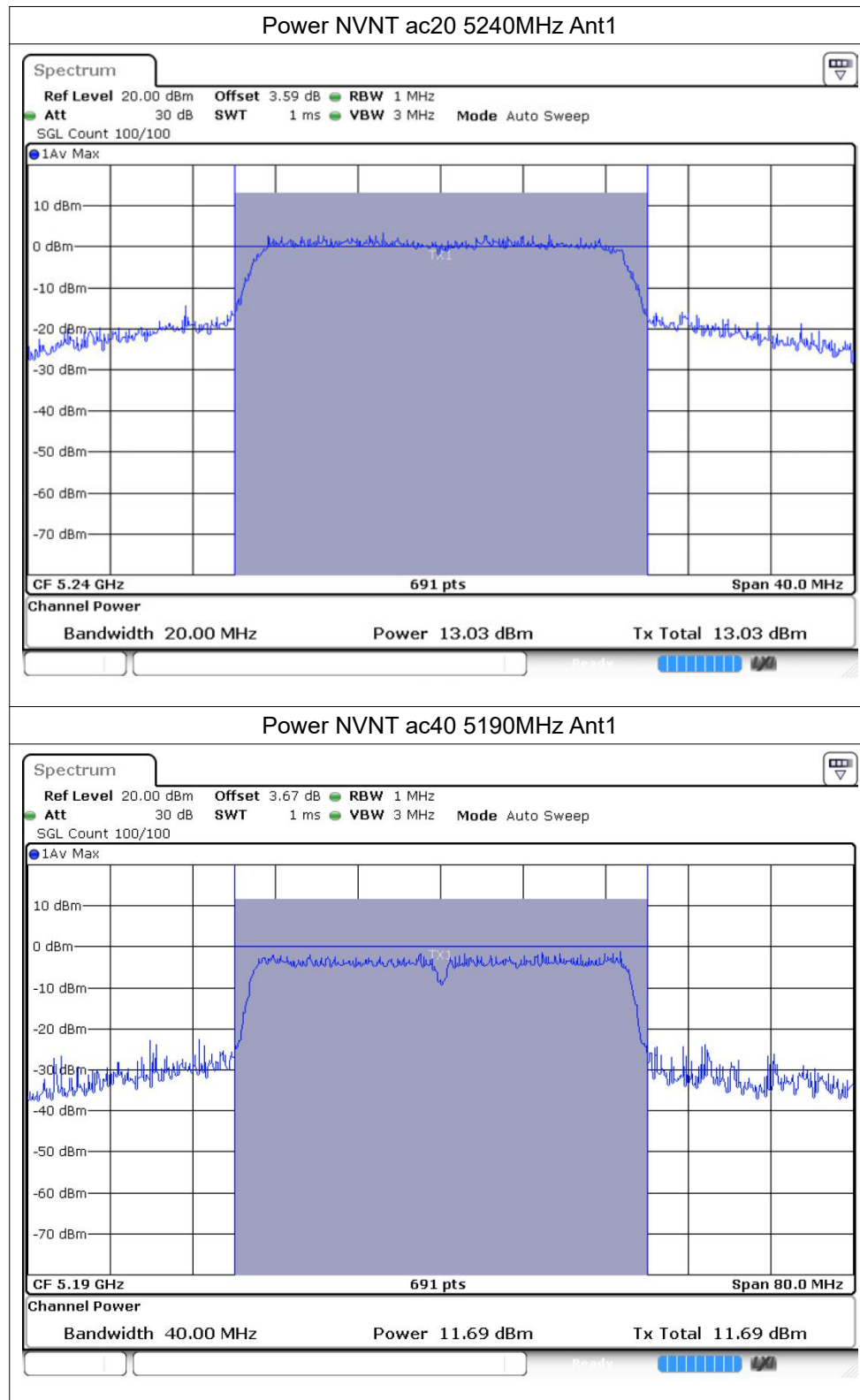


Power NVNT ac20 5180MHz Ant1



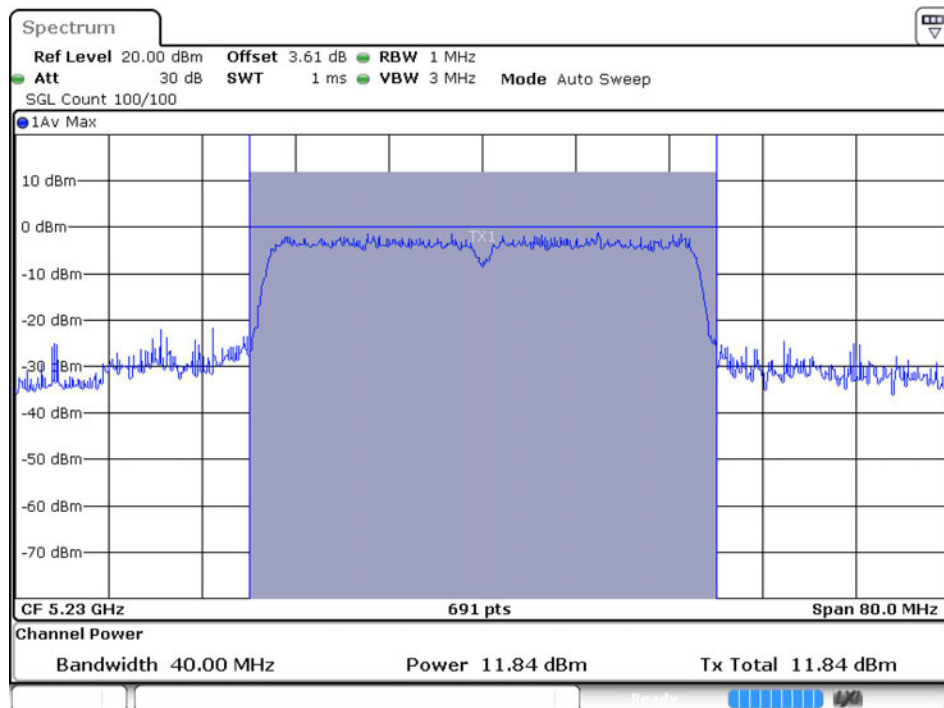
Power NVNT ac20 5200MHz Ant1



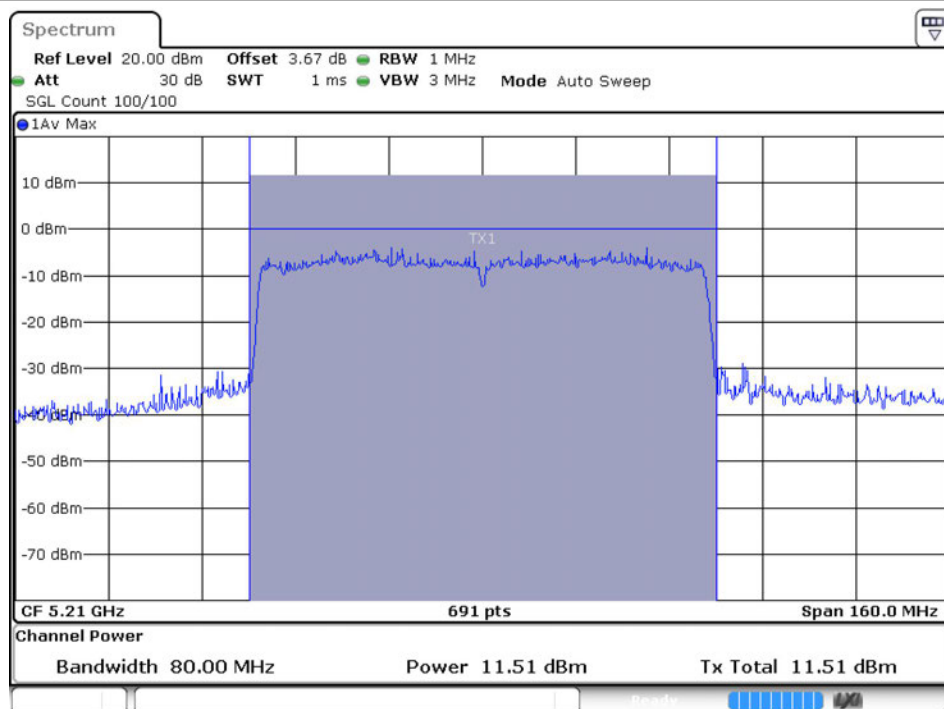




Power NVNT ac40 5230MHz Ant1



Power NVNT ac80 5210MHz Ant1





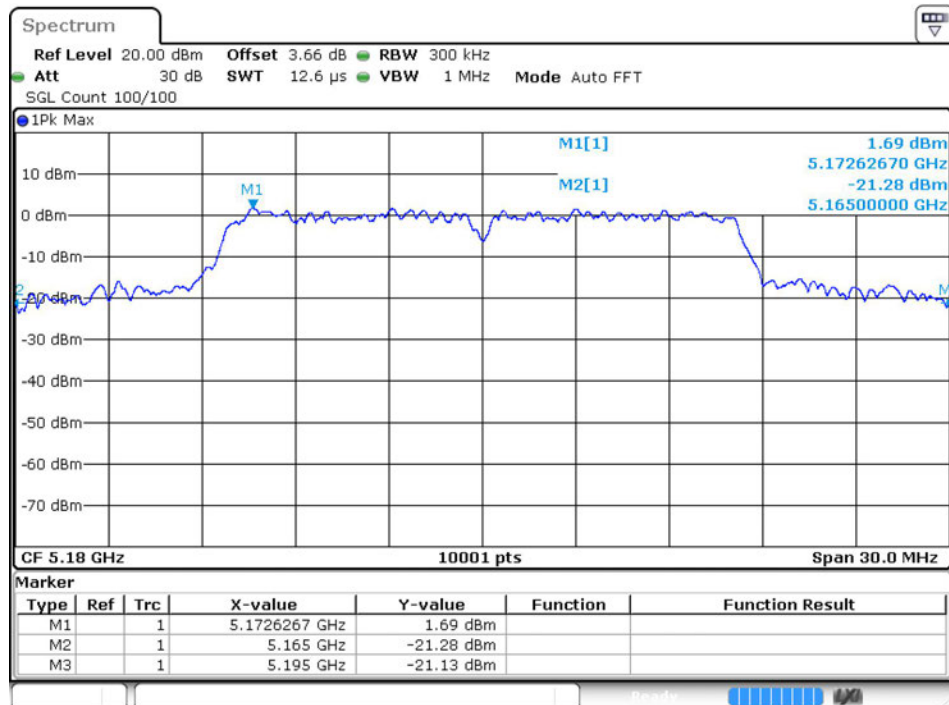
3 -26dB Bandwidth

Mode	Frequency (MHz)	Antenna	-26 dB Bandwidth (MHz)	Limit -26 dB Bandwidth (MHz)	Verdict
802.11a	5180	Ant1	30	N/A	Pass
802.11a	5200	Ant1	30	N/A	Pass
802.11a	5240	Ant1	30	N/A	Pass
802.11n20	5180	Ant1	30	N/A	Pass
802.11n20	5200	Ant1	29.874	N/A	Pass
802.11n20	5240	Ant1	30	N/A	Pass
802.11n40	5190	Ant1	39.708	N/A	Pass
802.11n40	5230	Ant1	40.104	N/A	Pass
802.11ac20	5180	Ant1	29.898	N/A	Pass
802.11ac20	5200	Ant1	30	N/A	Pass
802.11ac20	5240	Ant1	29.991	N/A	Pass
802.11ac40	5190	Ant1	50.382	N/A	Pass
802.11ac40	5230	Ant1	39.258	N/A	Pass
802.11ac80	5210	Ant1	80.196	N/A	Pass

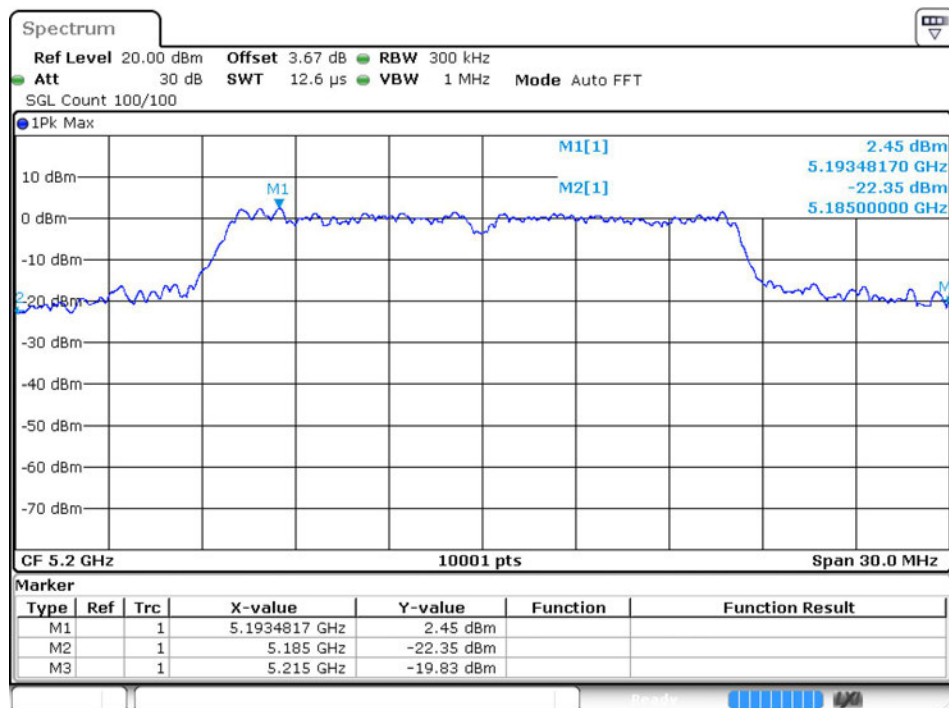


Test Graphs

-26dB Bandwidth NVNT a 5180MHz Ant1

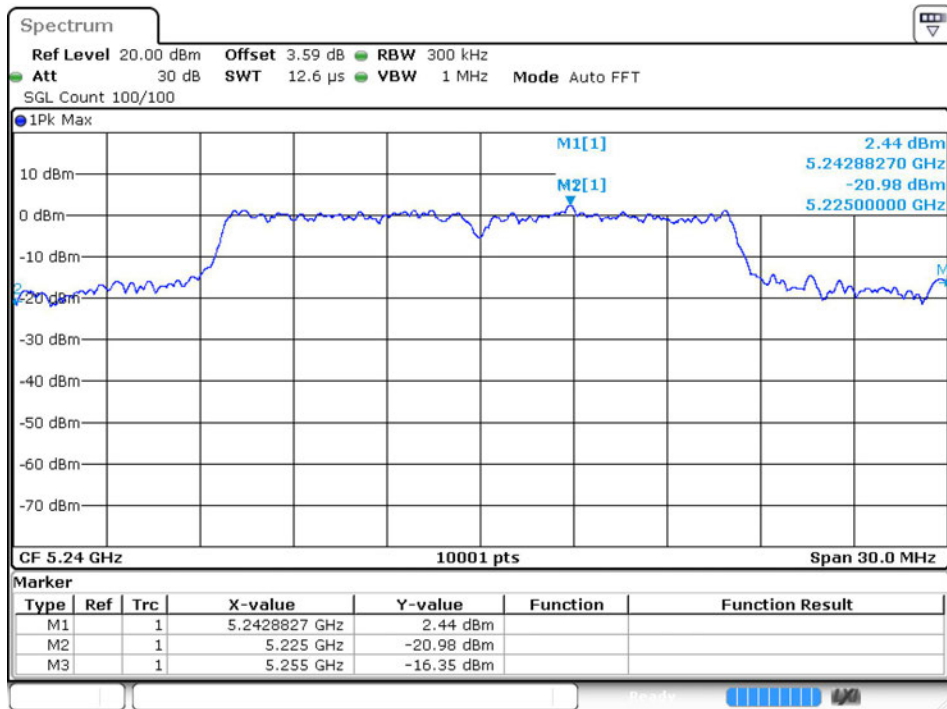


-26dB Bandwidth NVNT a 5200MHz Ant1

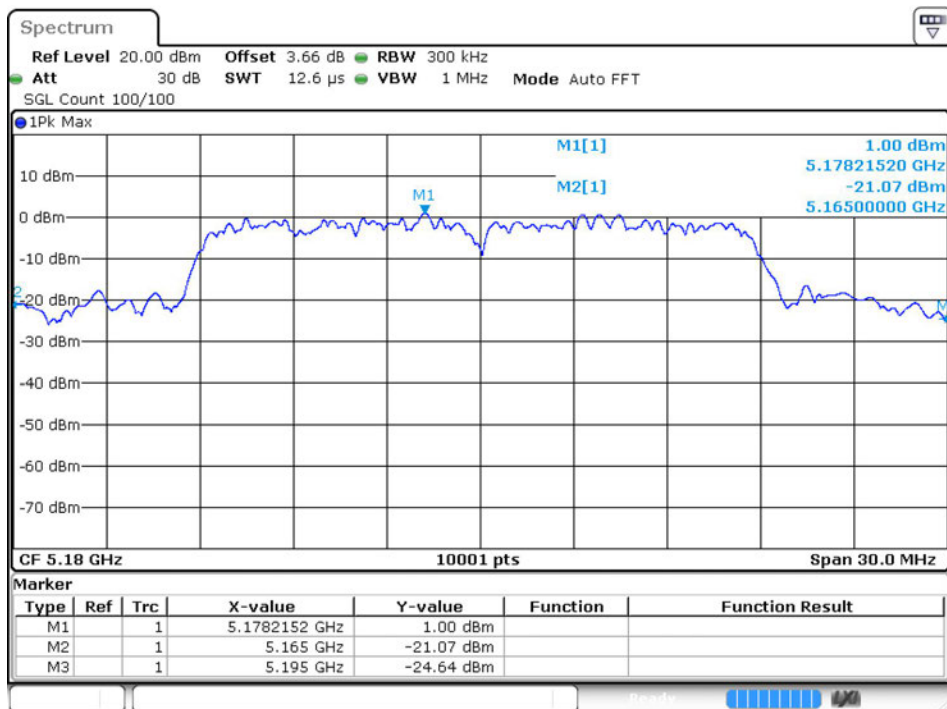




-26dB Bandwidth NVNT a 5240MHz Ant1

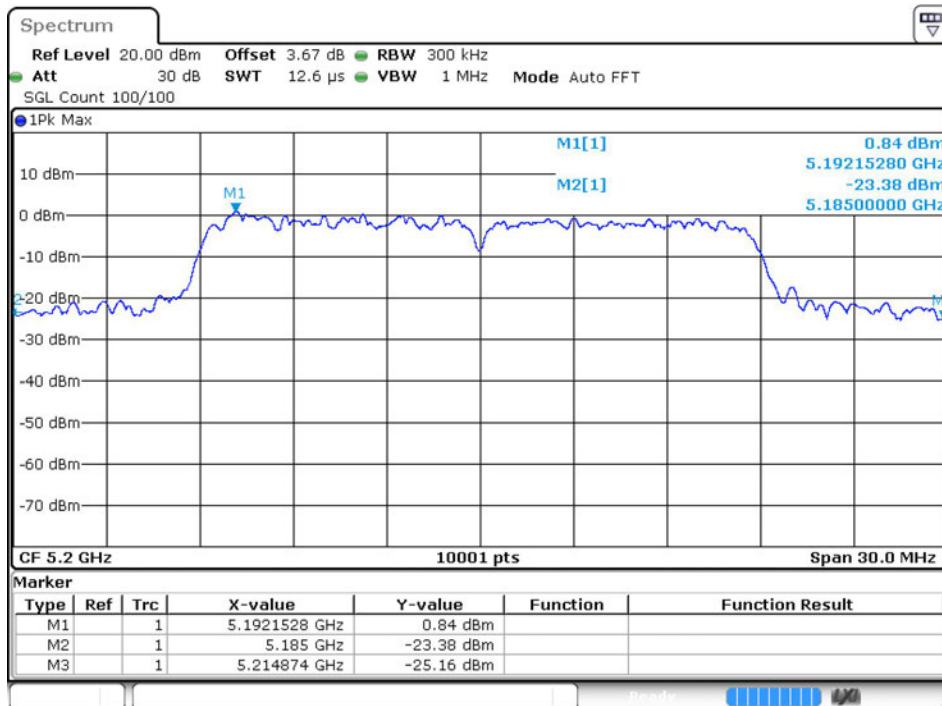


-26dB Bandwidth NVNT n20 5180MHz Ant1

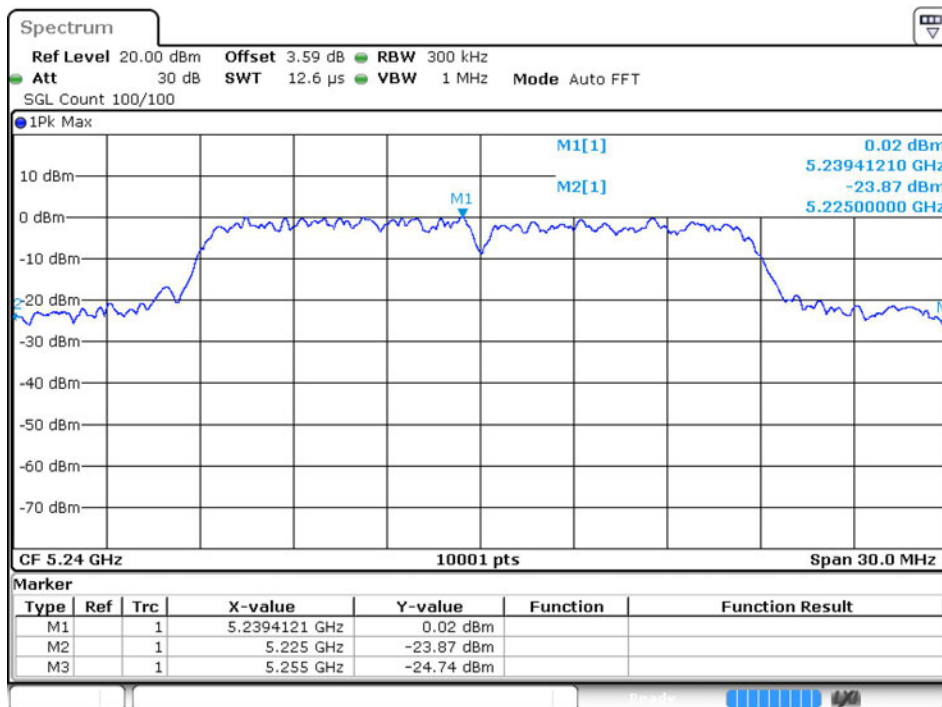




-26dB Bandwidth NVNT n20 5200MHz Ant1

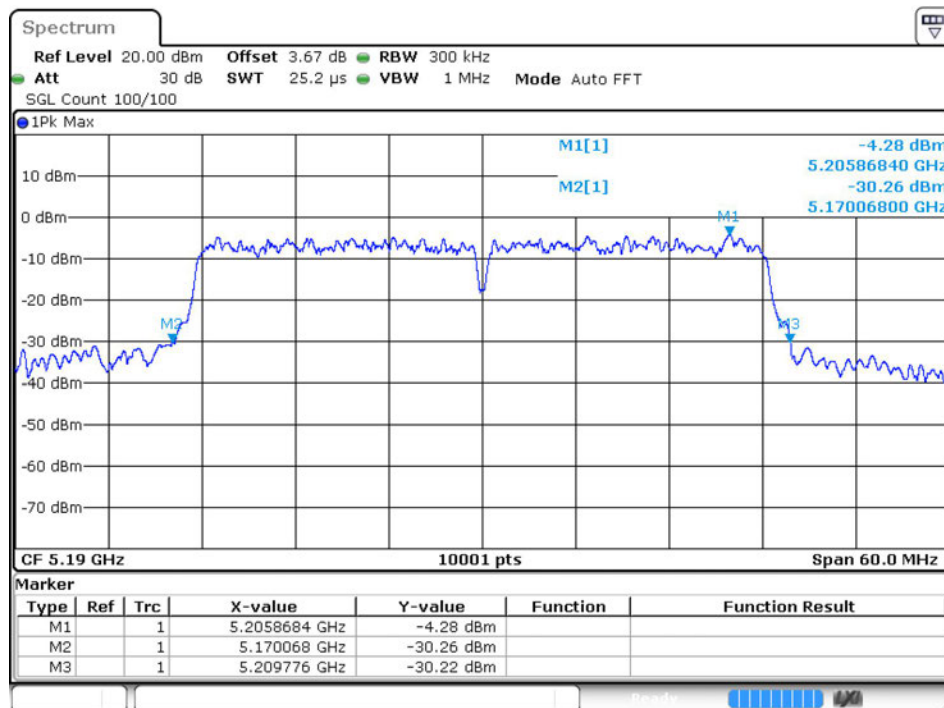


-26dB Bandwidth NVNT n20 5240MHz Ant1

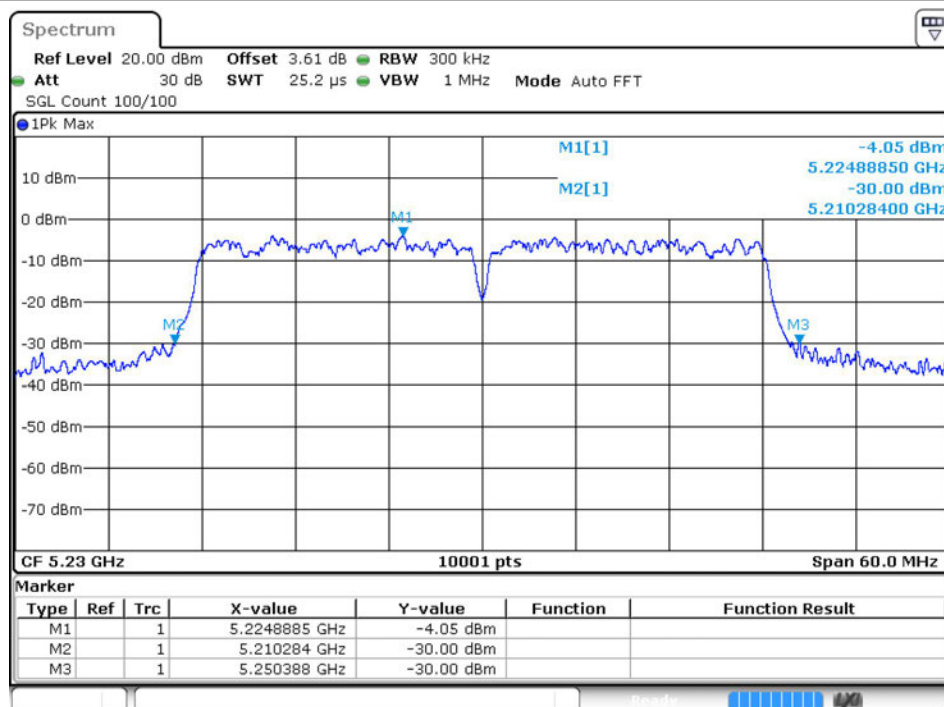




-26dB Bandwidth NVNT n40 5190MHz Ant1

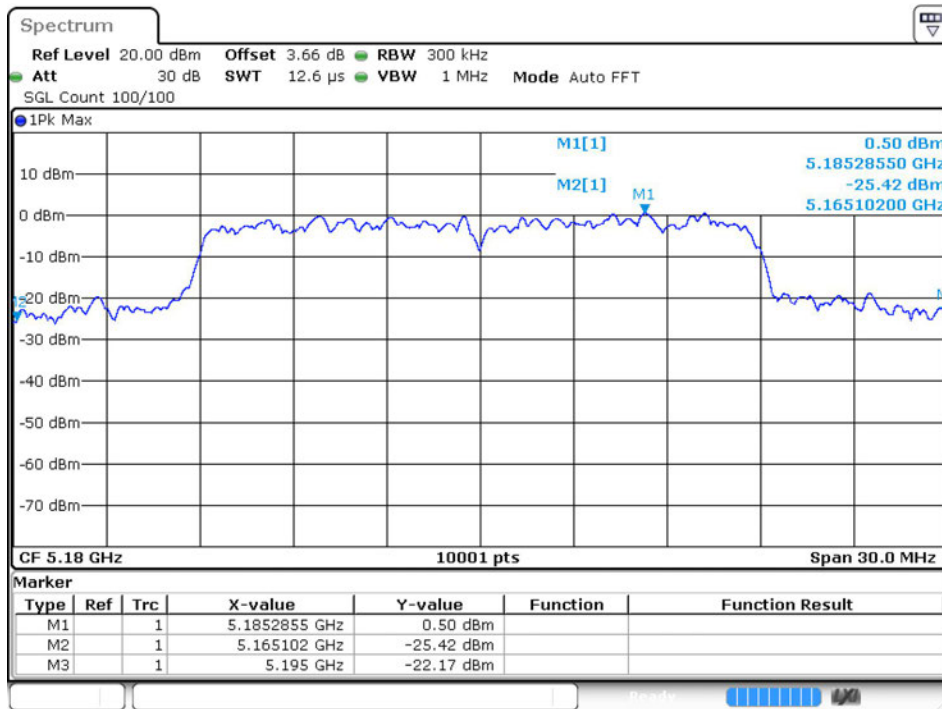


-26dB Bandwidth NVNT n40 5230MHz Ant1

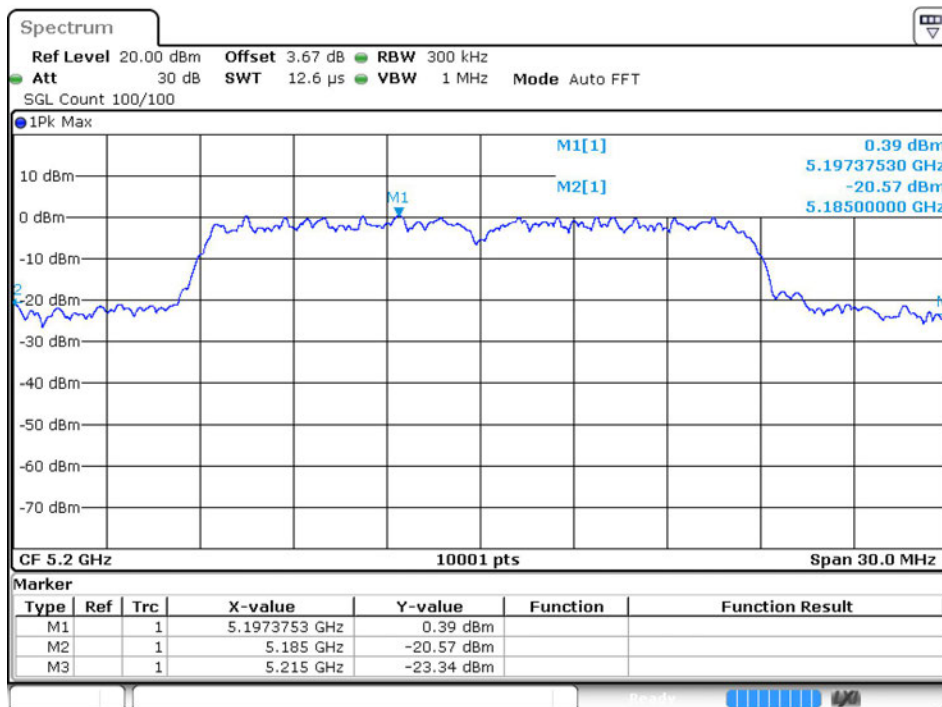




-26dB Bandwidth NVNT ac20 5180MHz Ant1

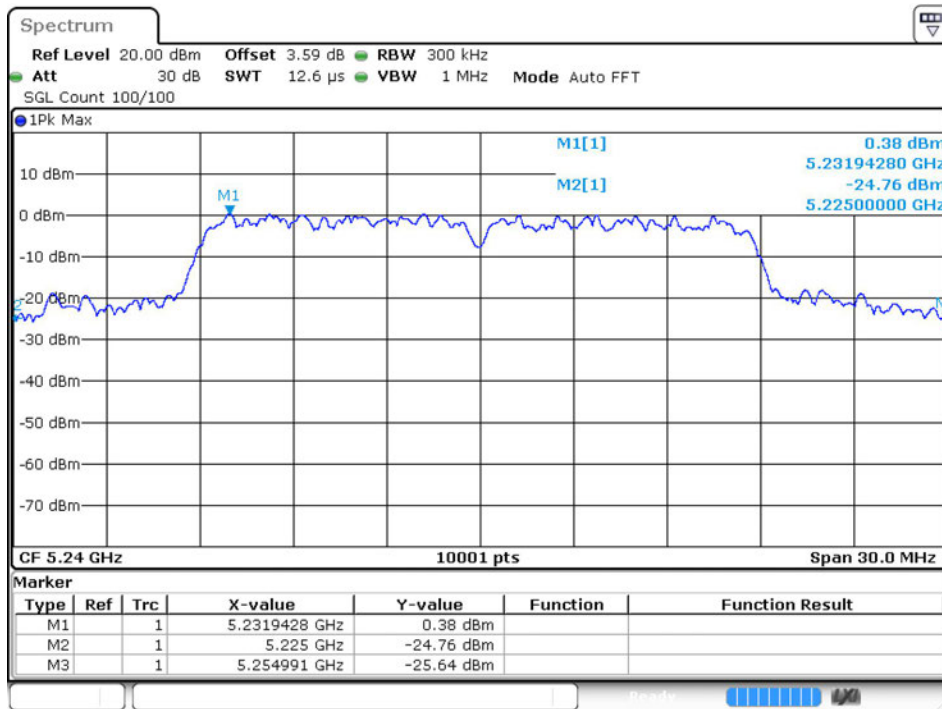


-26dB Bandwidth NVNT ac20 5200MHz Ant1

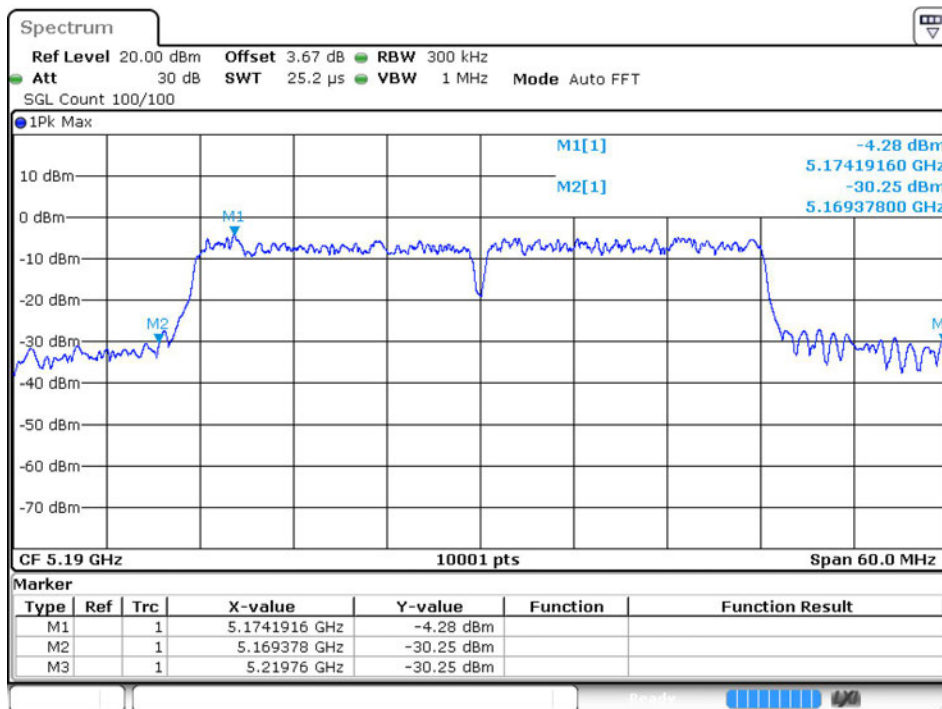




-26dB Bandwidth NVNT ac20 5240MHz Ant1

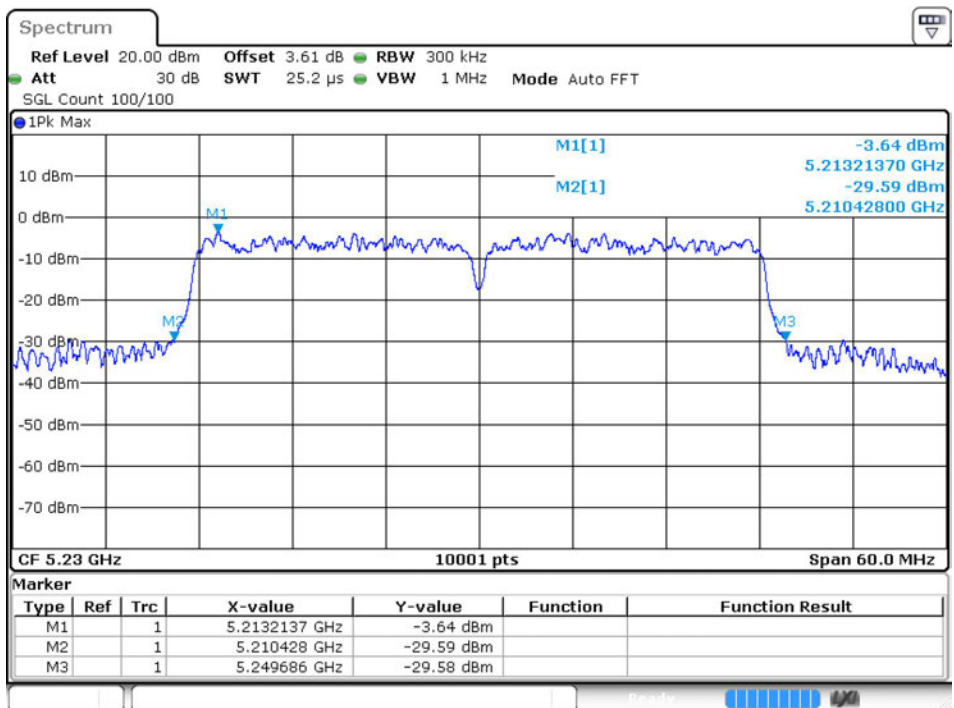


-26dB Bandwidth NVNT ac40 5190MHz Ant1

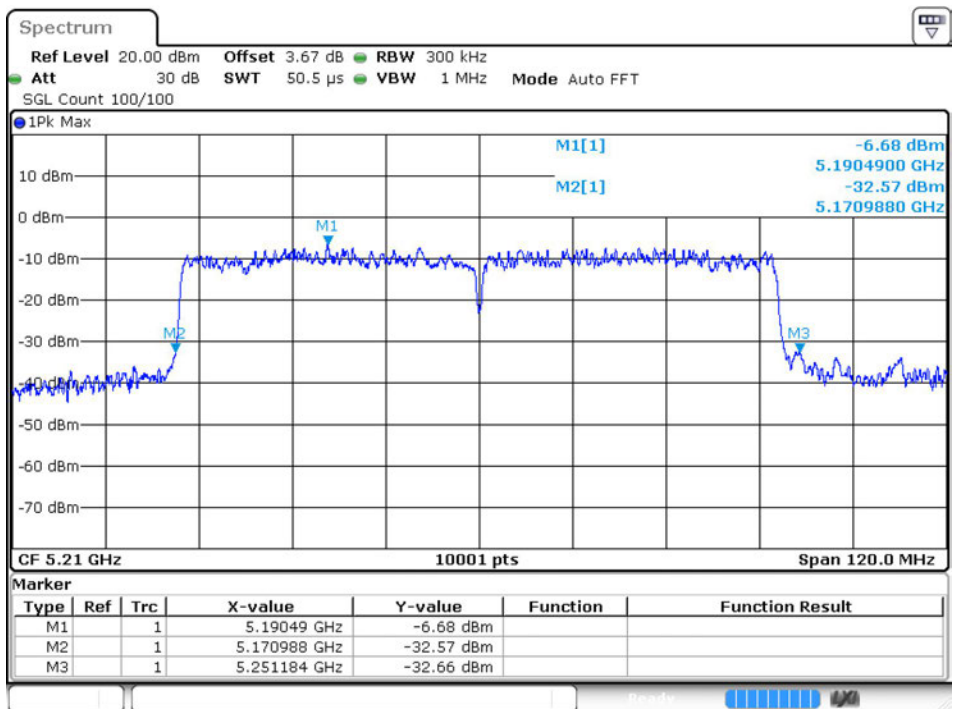




-26dB Bandwidth NVNT ac40 5230MHz Ant1



-26dB Bandwidth NVNT ac80 5210MHz Ant1





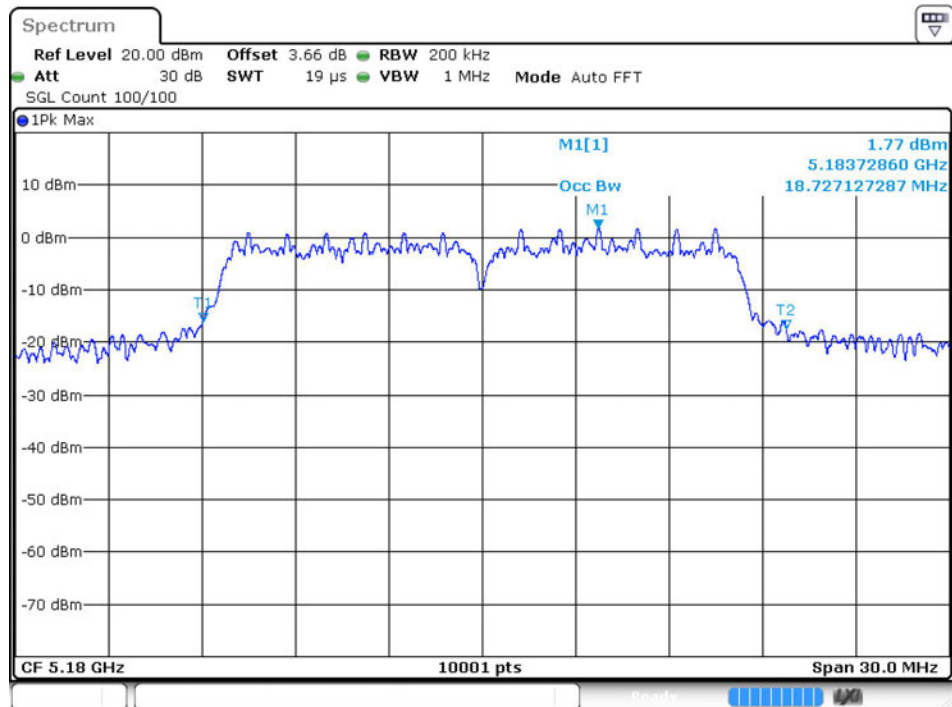
4 Occupied Channel Bandwidth

Test Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
802.11a	5180	Ant1	18.727
802.11a	5200	Ant1	18.952
802.11a	5240	Ant1	19.324
802.11n20	5180	Ant1	17.842
802.11n20	5200	Ant1	17.956
802.11n20	5240	Ant1	17.887
802.11n40	5190	Ant1	36.428
802.11n40	5230	Ant1	36.14
802.11ac20	5180	Ant1	17.875
802.11ac20	5200	Ant1	17.881
802.11ac20	5240	Ant1	17.995
802.11ac40	5190	Ant1	36.338
802.11ac40	5230	Ant1	36.332
802.11ac80	5210	Ant1	75.652

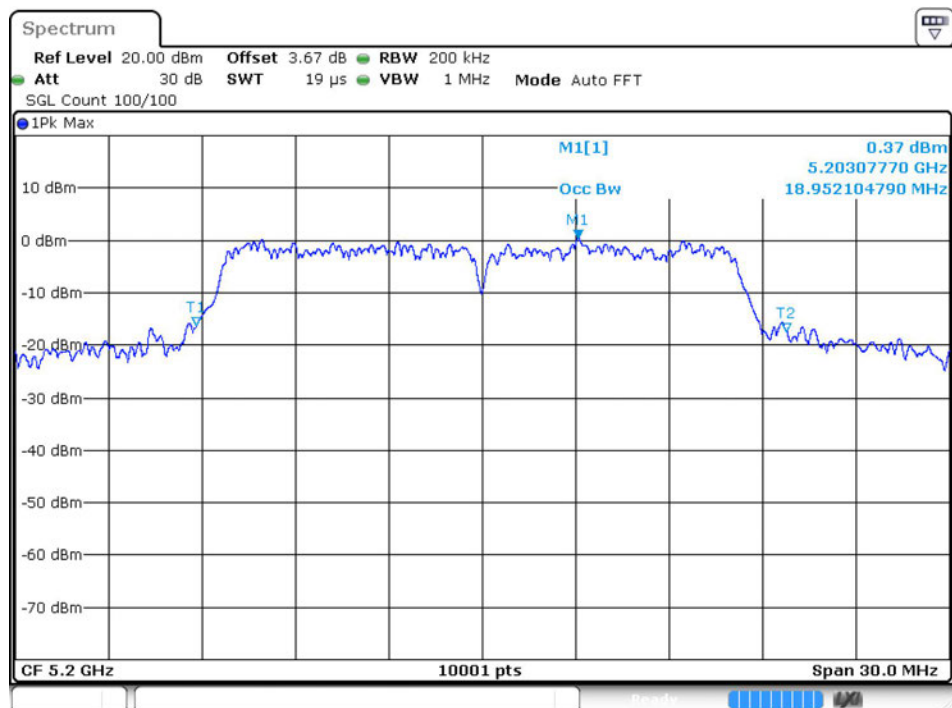


Test Graphs

OBW NVNT a 5180MHz Ant1

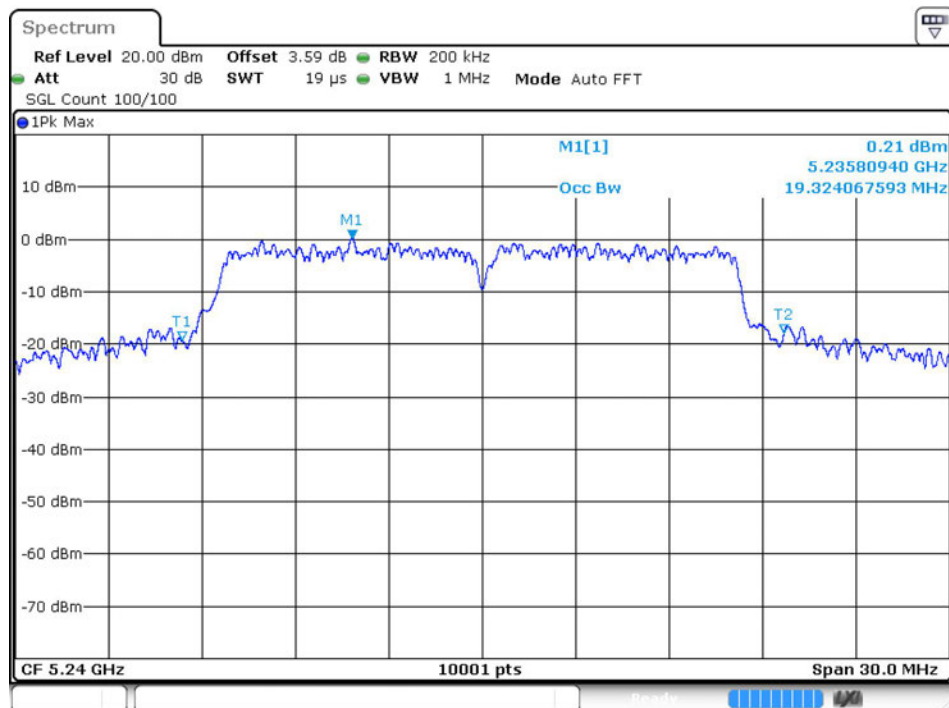


OBW NVNT a 5200MHz Ant1

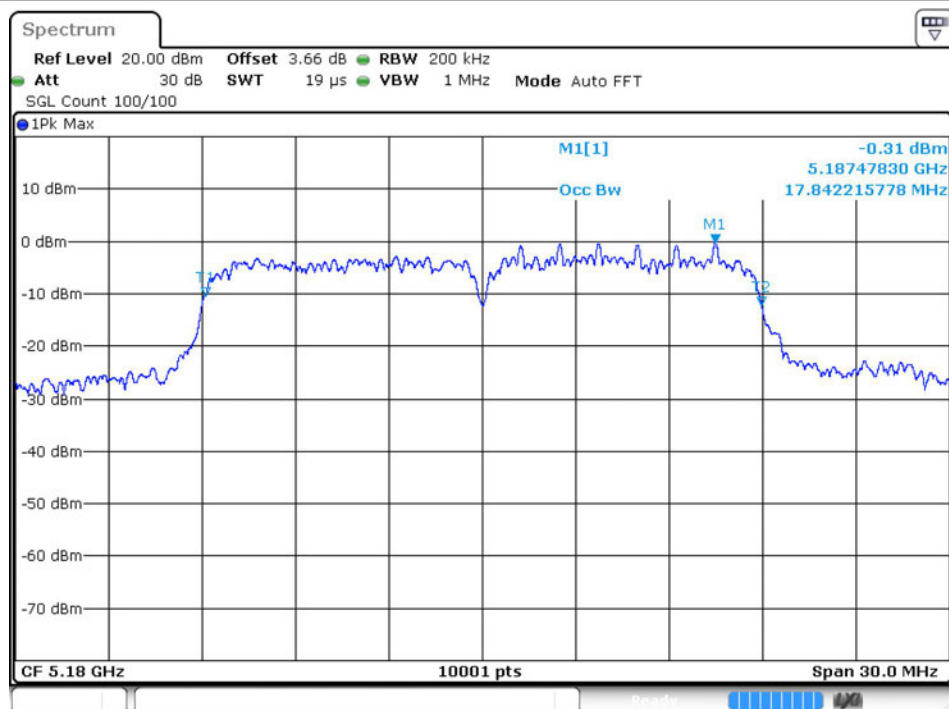




OBW NVNT a 5240MHz Ant1

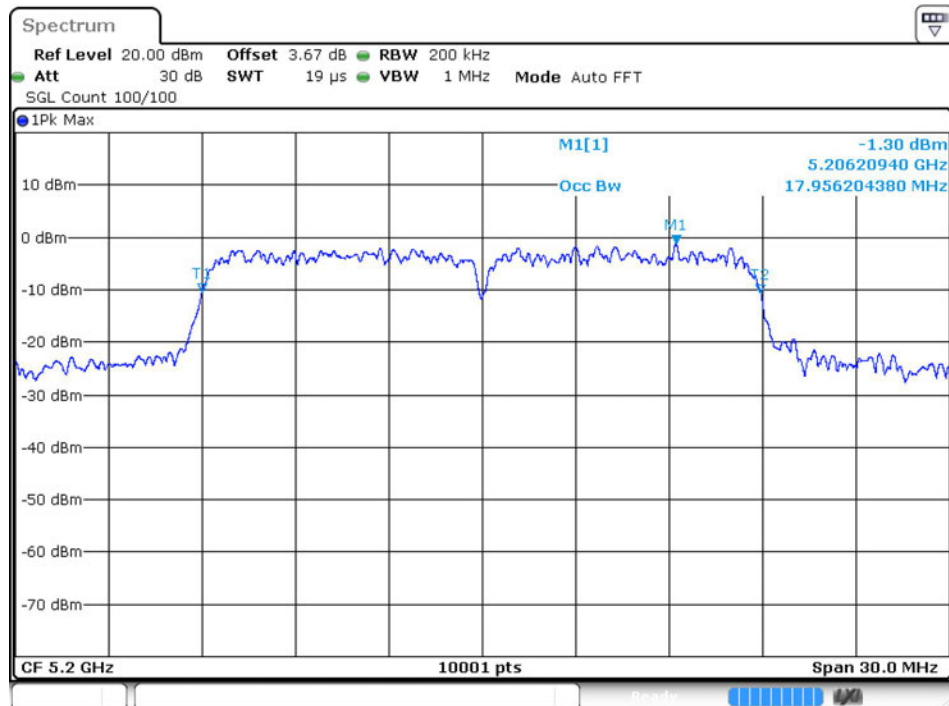


OBW NVNT n20 5180MHz Ant1

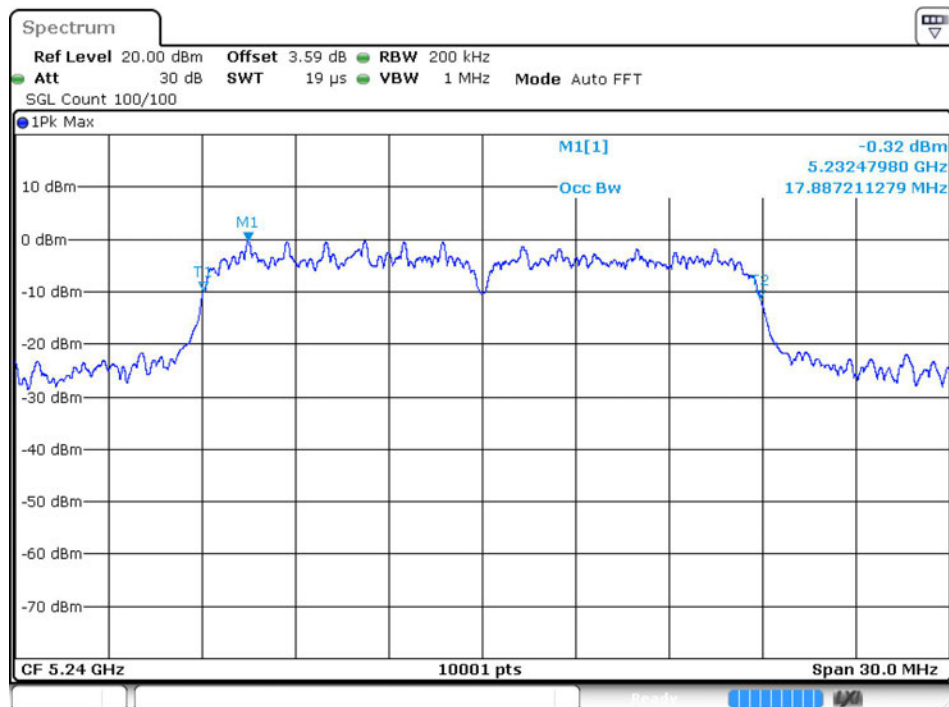




OBW NVNT n20 5200MHz Ant1

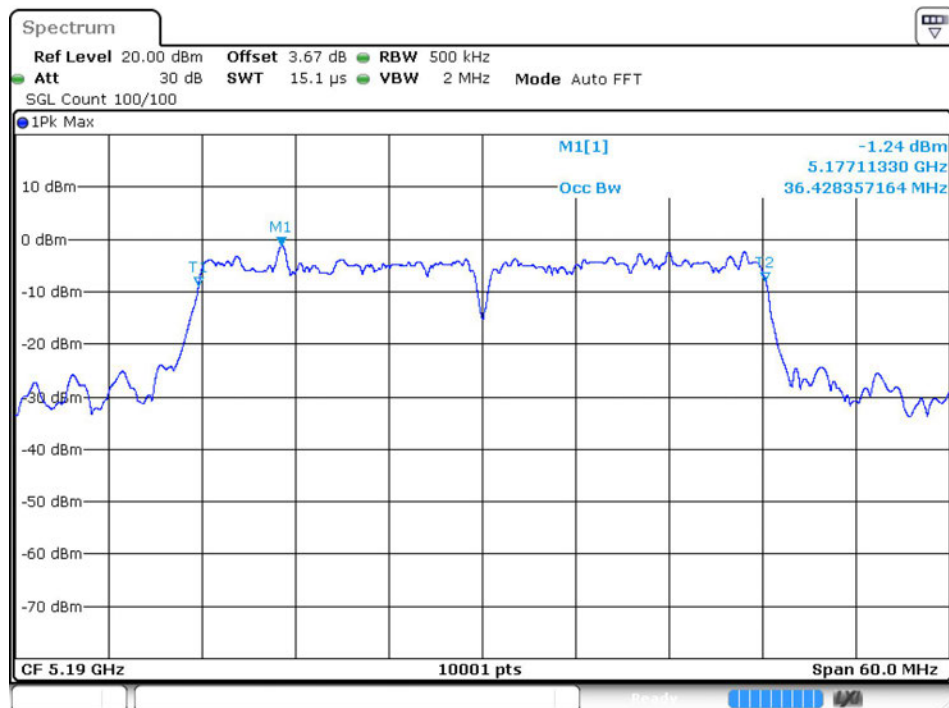


OBW NVNT n20 5240MHz Ant1

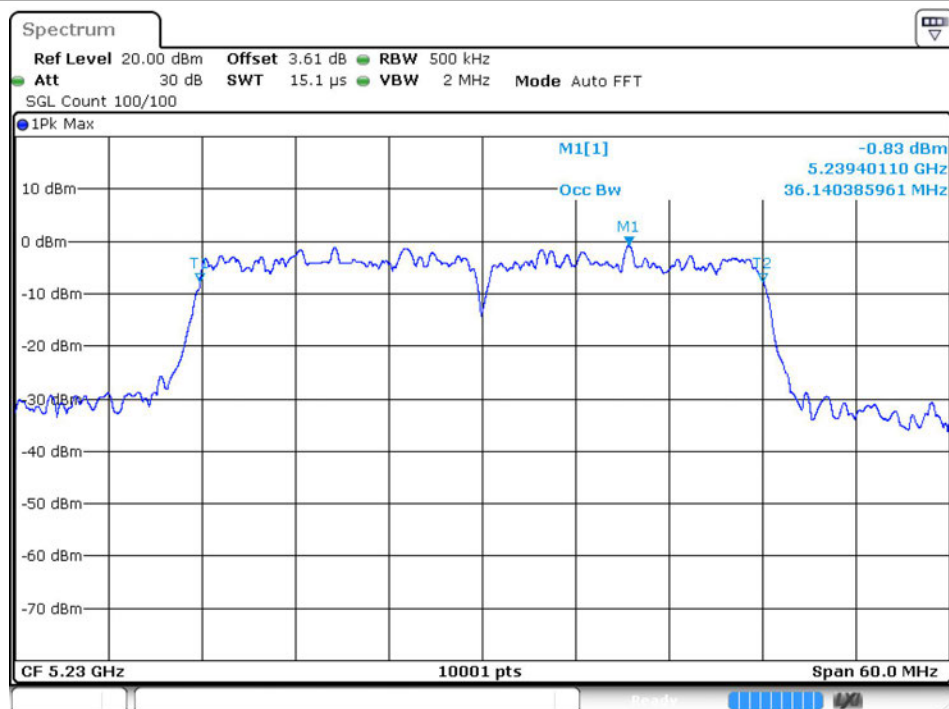




OBW NVNT n40 5190MHz Ant1

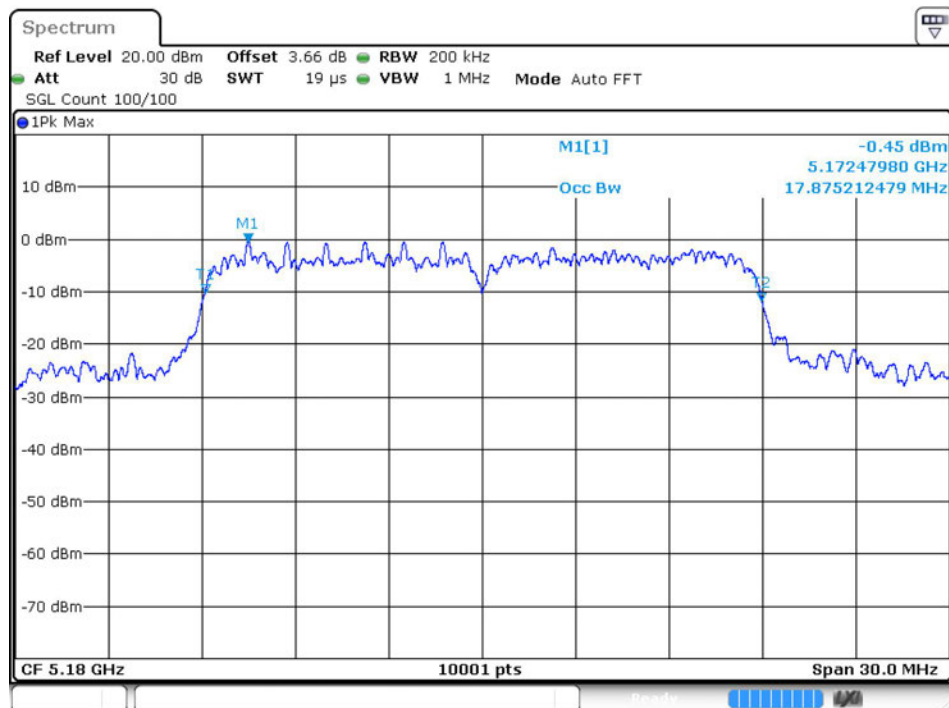


OBW NVNT n40 5230MHz Ant1

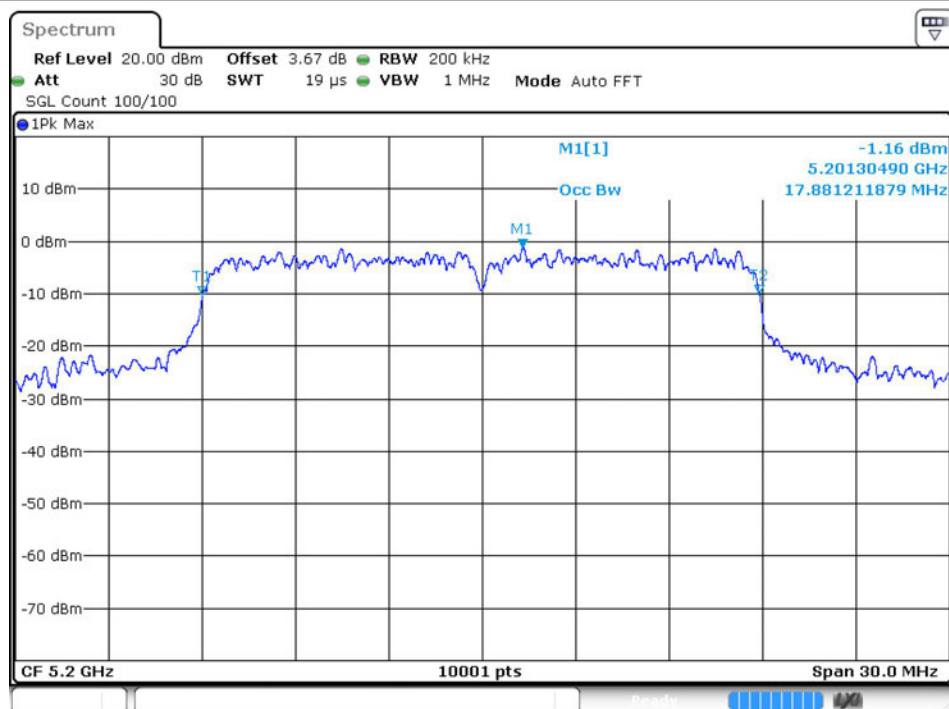




OBW NVNT ac20 5180MHz Ant1

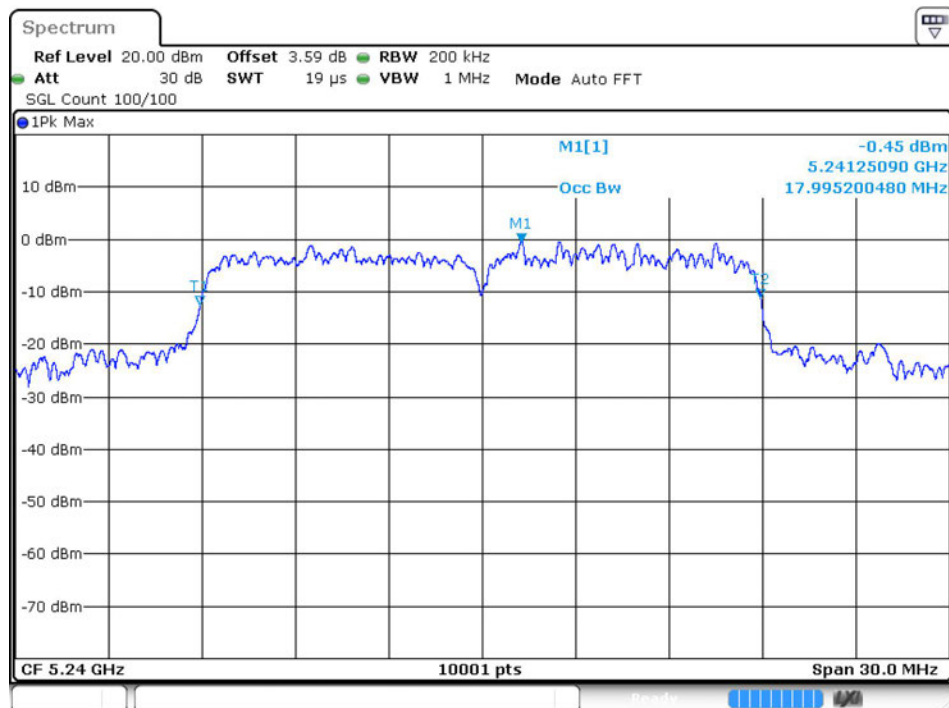


OBW NVNT ac20 5200MHz Ant1

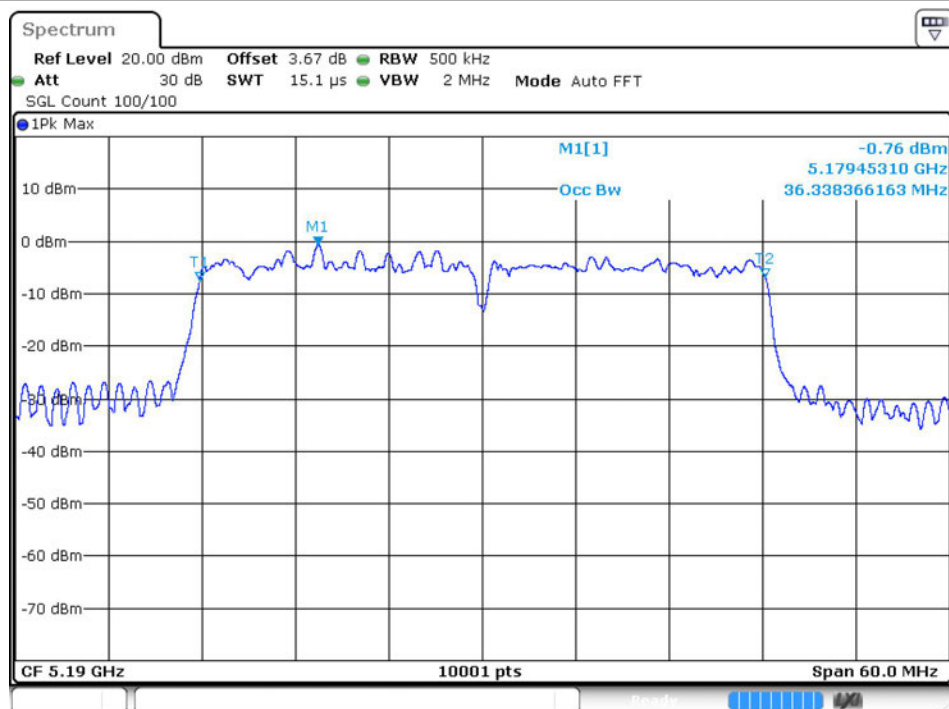




OBW NVNT ac20 5240MHz Ant1

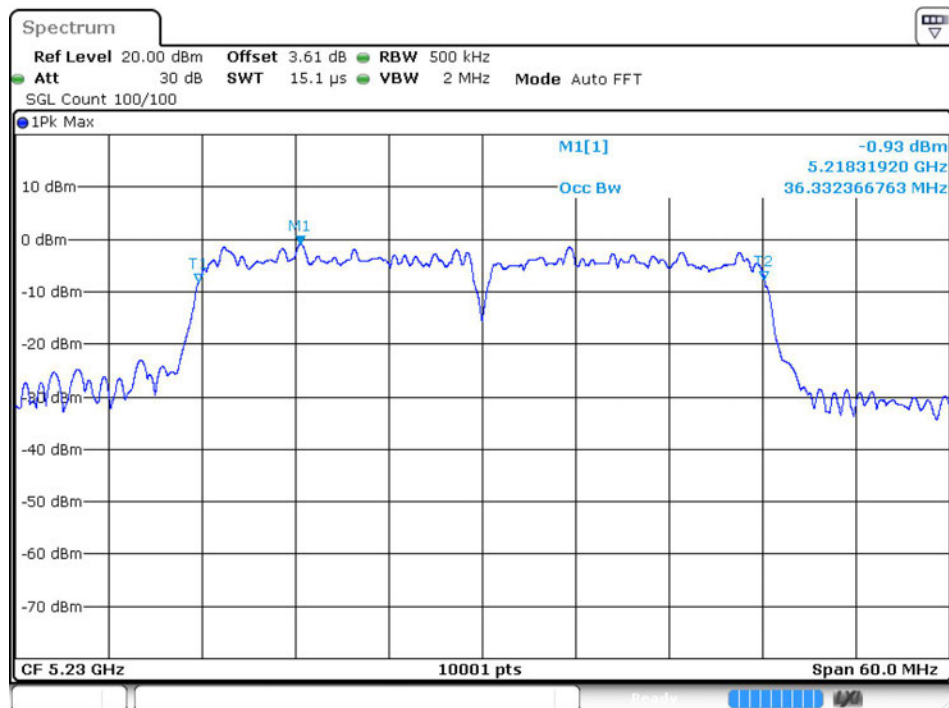


OBW NVNT ac40 5190MHz Ant1

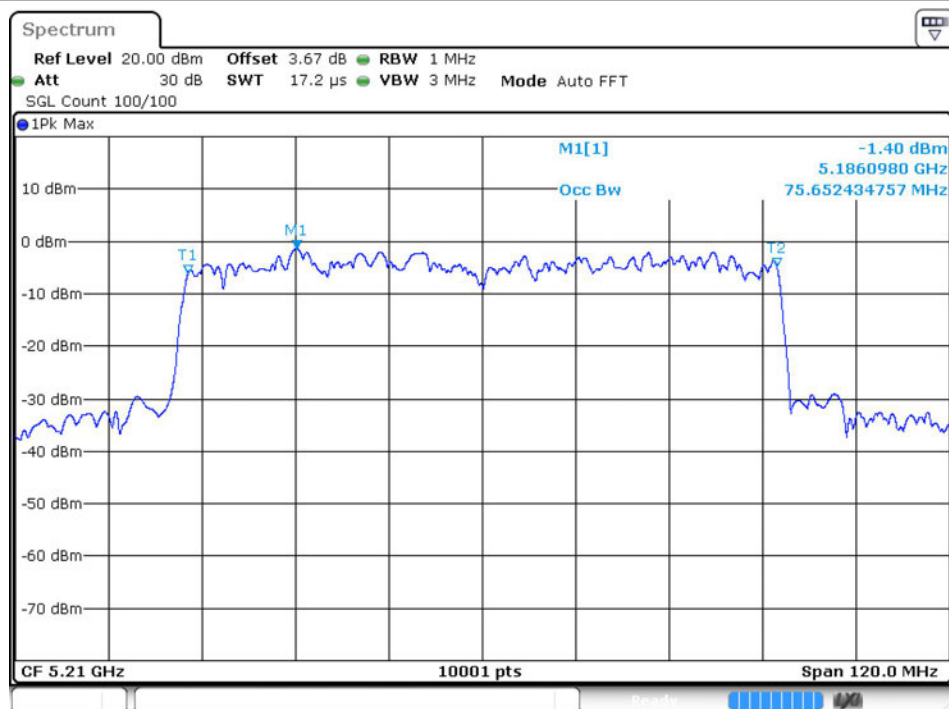




OBW NVNT ac40 5230MHz Ant1



OBW NVNT ac80 5210MHz Ant1





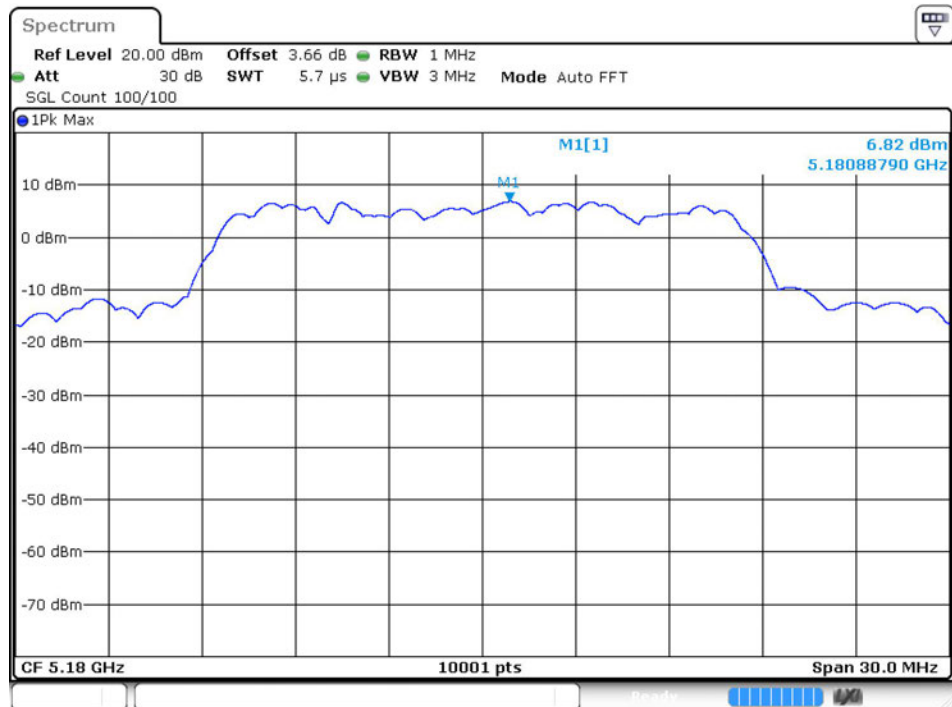
5 Maximum Power Spectral Density Level

Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm)	Limit (dBm)	Verdict
802.11a	5180	Ant1	6.82	11	Pass
802.11a	5200	Ant1	7.47	11	Pass
802.11a	5240	Ant1	8.06	11	Pass
802.11n20	5180	Ant1	5.19	11	Pass
802.11n20	5200	Ant1	6.89	11	Pass
802.11n20	5240	Ant1	5.86	11	Pass
802.11n40	5190	Ant1	1.34	11	Pass
802.11n40	5230	Ant1	1.89	11	Pass
802.11ac20	5180	Ant1	6.11	11	Pass
802.11ac20	5200	Ant1	6.16	11	Pass
802.11ac20	5240	Ant1	5.97	11	Pass
802.11ac40	5190	Ant1	1.05	11	Pass
802.11ac40	5230	Ant1	2.33	11	Pass
802.11ac80	5210	Ant1	-0.48	11	Pass

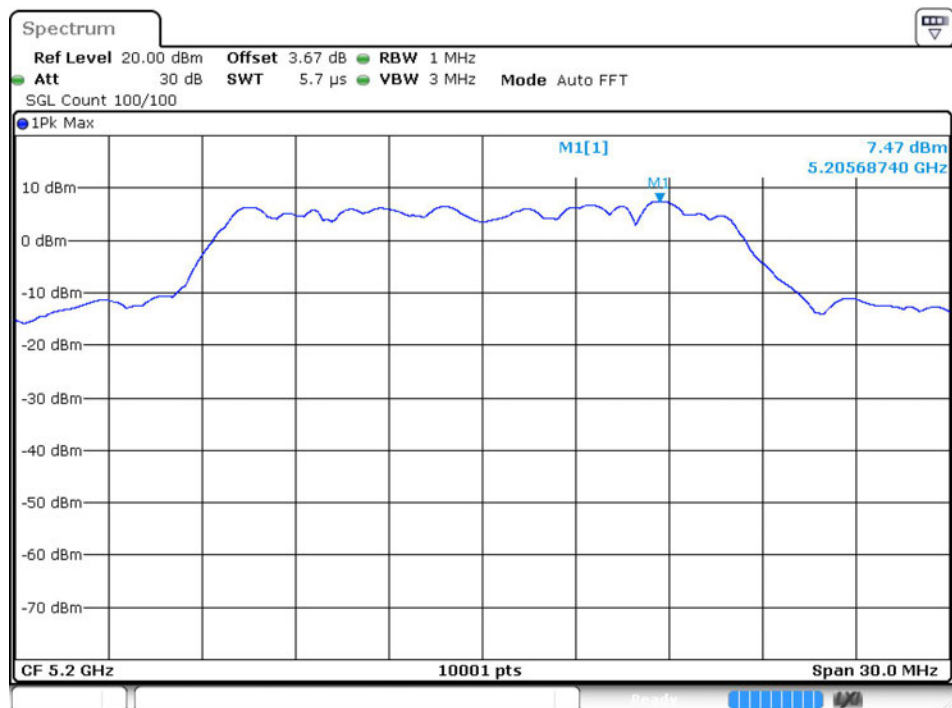


Test Graphs

PSD NVNT a 5180MHz Ant1

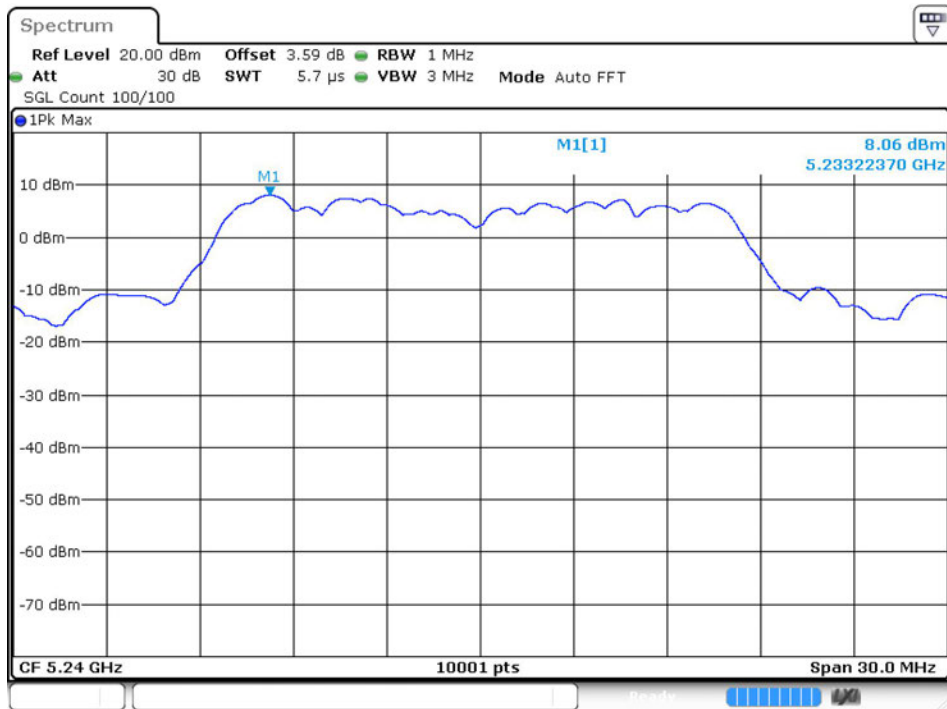


PSD NVNT a 5200MHz Ant1





PSD NVNT a 5240MHz Ant1



PSD NVNT n20 5180MHz Ant1

