



Appendix E

RF Test Data for 5.8G WIFI(Conducted Measurement)

Product Name: M5ToughC5



Trade Mark: M5STACK

Test Model: ToughC5

Environmental Conditions

Temperature:	25.2° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Emiya Lin
Supervised by:	Simba Huang



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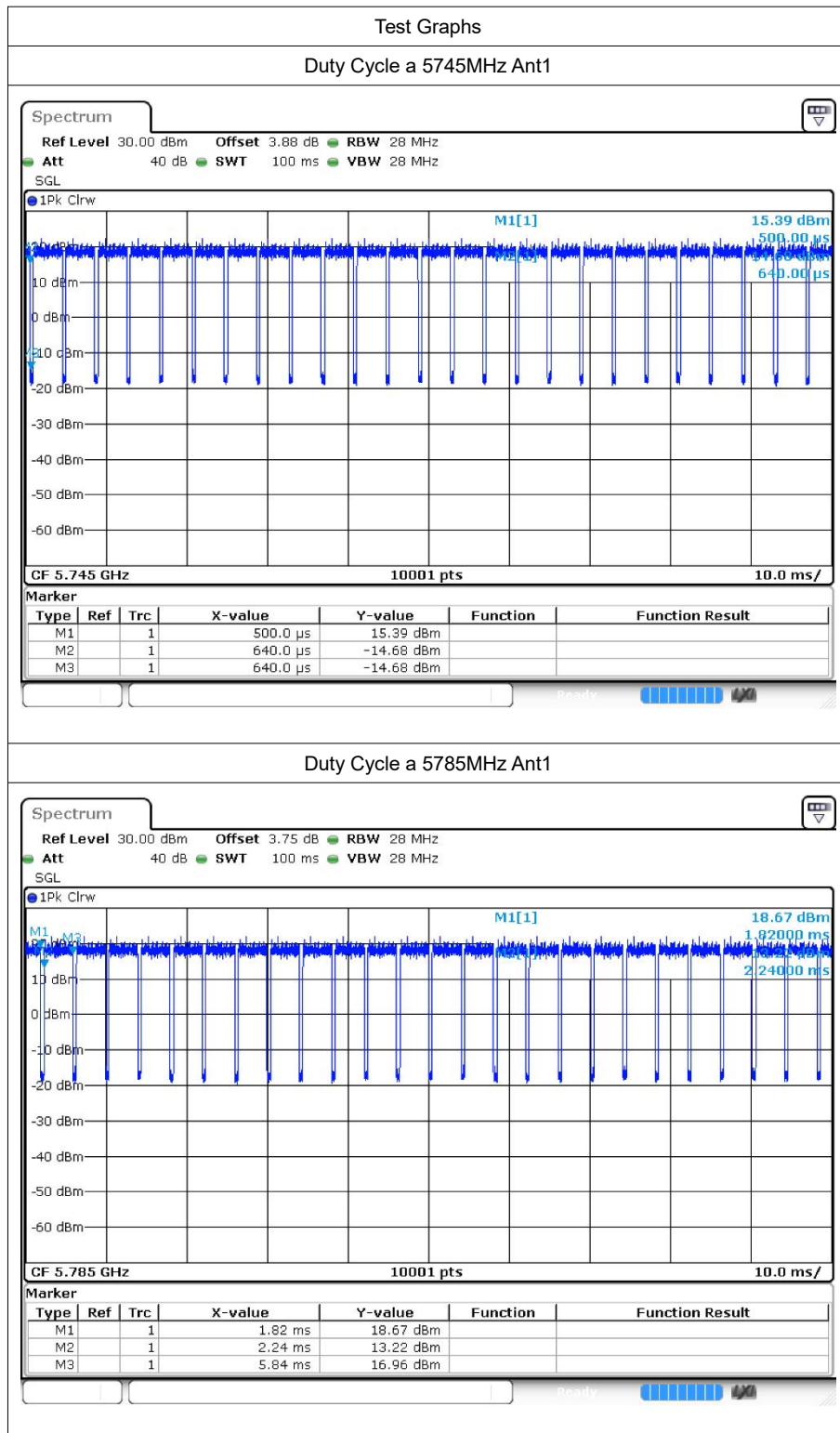
1 Duty Cycle

1.1 Test Result

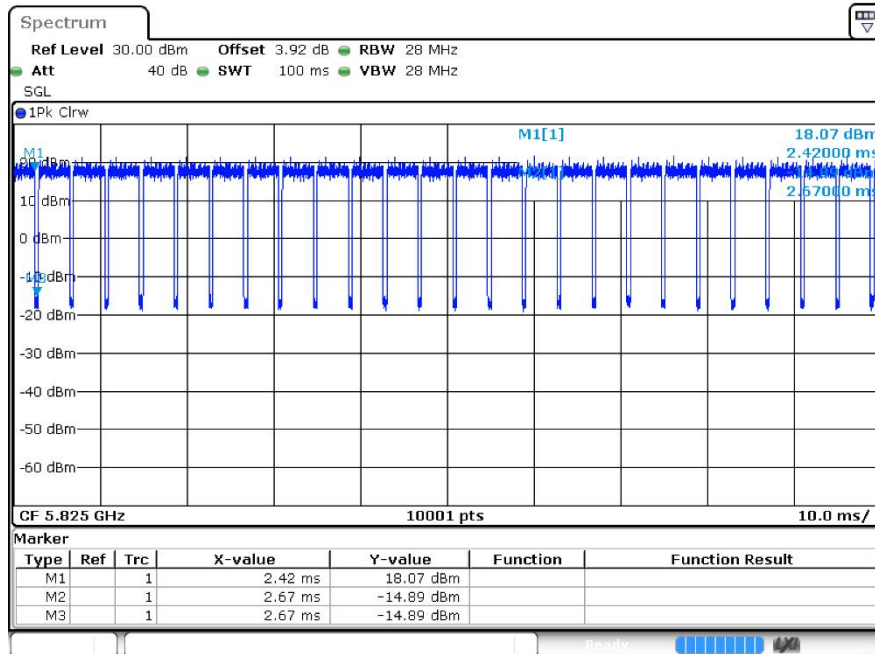
Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
a	5745	Ant1	89.93	0.46	鑒?
a	5785	Ant1	89.93	0.46	0.28
a	5825	Ant1	90.05	0.46	鑒?
n20	5745	Ant1	89.87	0.46	0.28
n20	5785	Ant1	89.89	0.46	0.28
n20	5825	Ant1	89.95	0.46	鑒?
n40	5755	Ant1	89.87	0.46	鑒?
n40	5795	Ant1	89.93	0.46	鑒?
ac20	5745	Ant1	89.95	0.46	0.28
ac20	5785	Ant1	89.89	0.46	鑒?
ac20	5825	Ant1	89.99	0.46	0.28
ax20	5745	Ant1	89.97	0.46	0.28
ax20	5785	Ant1	89.93	0.46	0.28
ax20	5825	Ant1	90.02	0.46	0.28



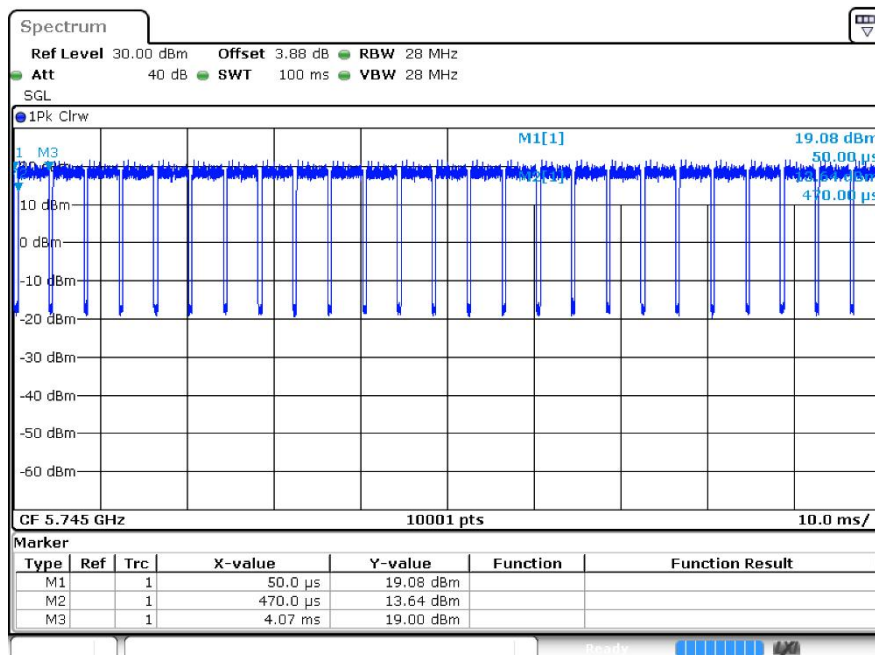
1.2 Test Graphs



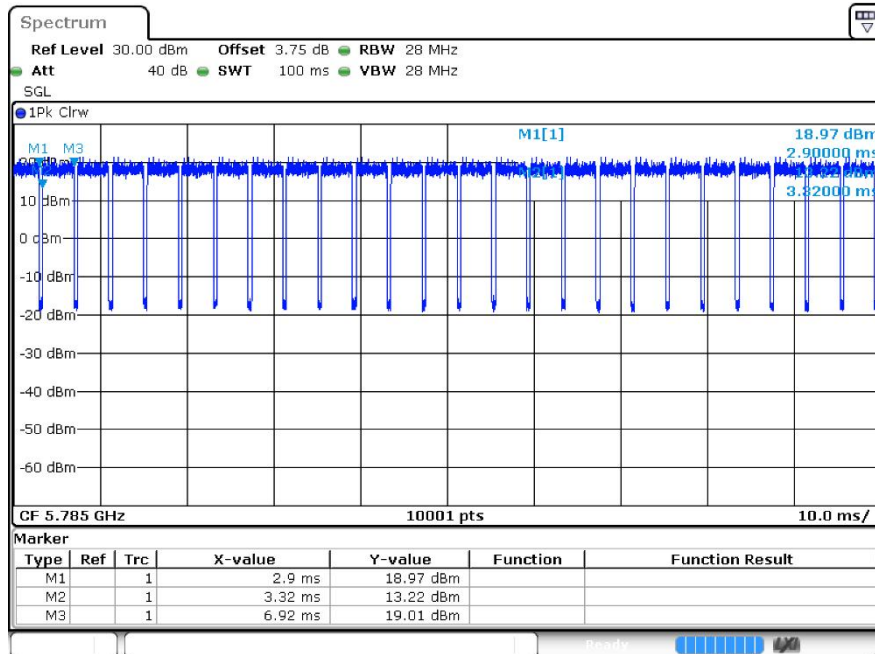
Duty Cycle a 5825MHz Ant1



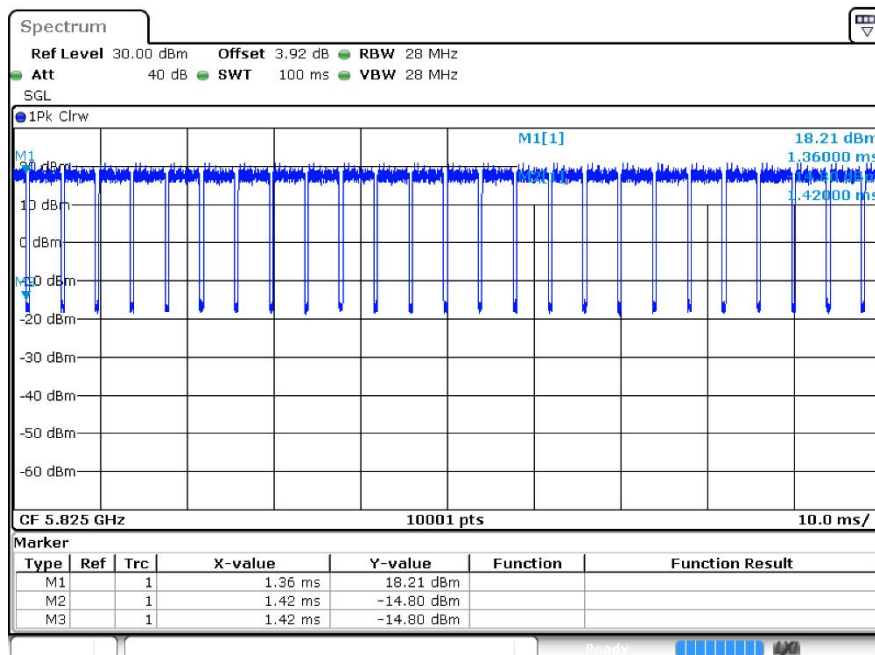
Duty Cycle n20 5745MHz Ant1



Duty Cycle n20 5785MHz Ant1

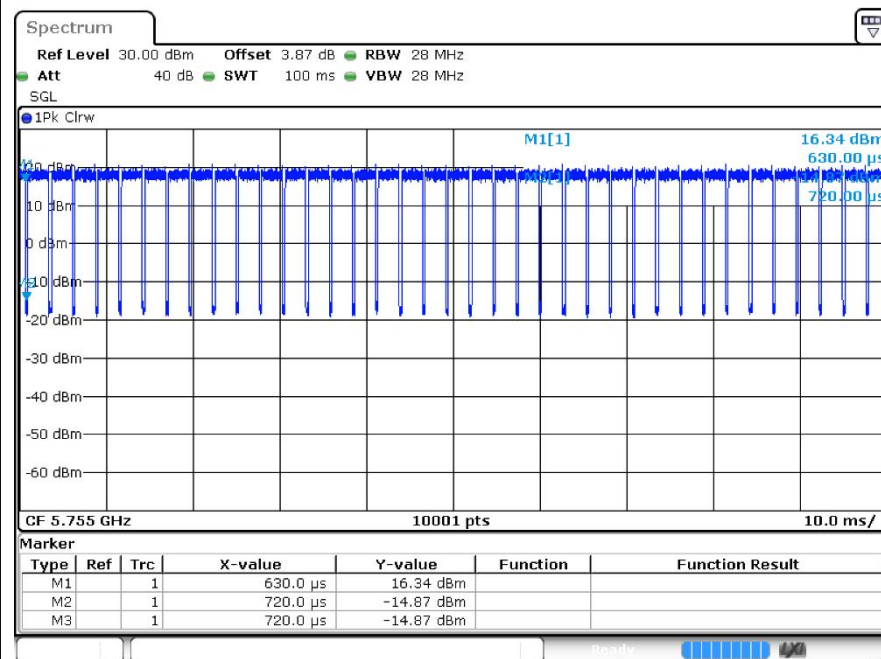


Duty Cycle n20 5825MHz Ant1

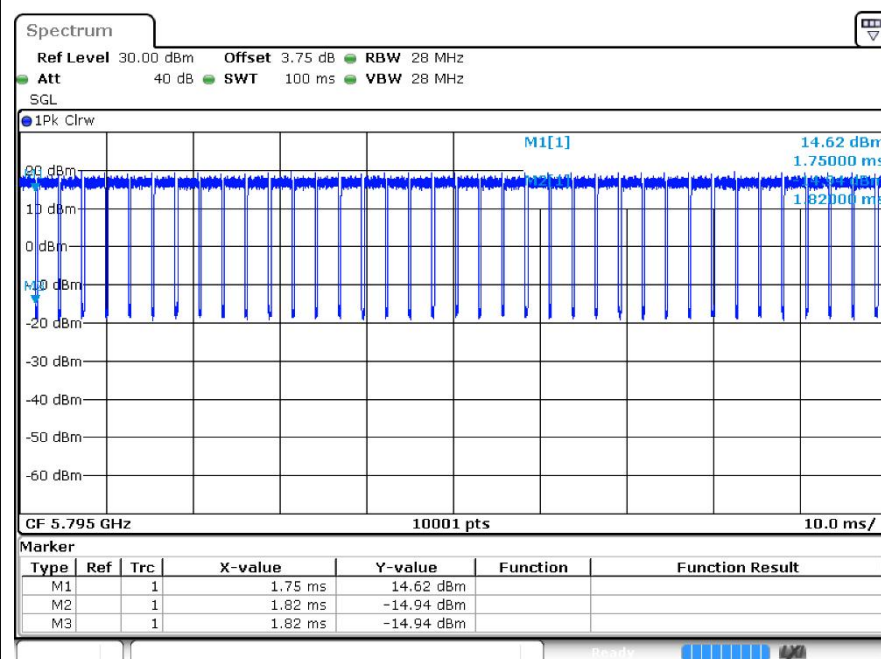




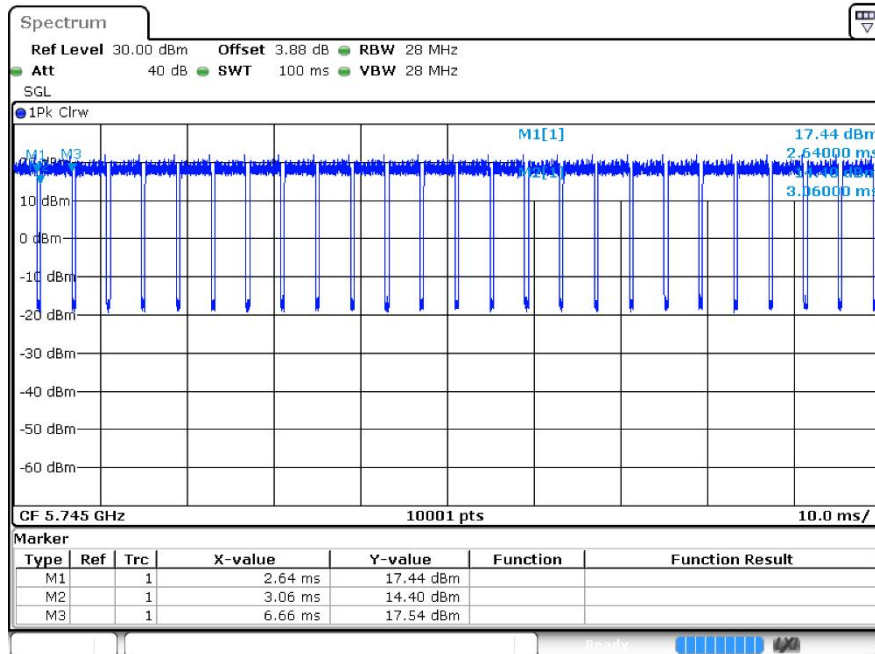
Duty Cycle n40 5755MHz Ant1



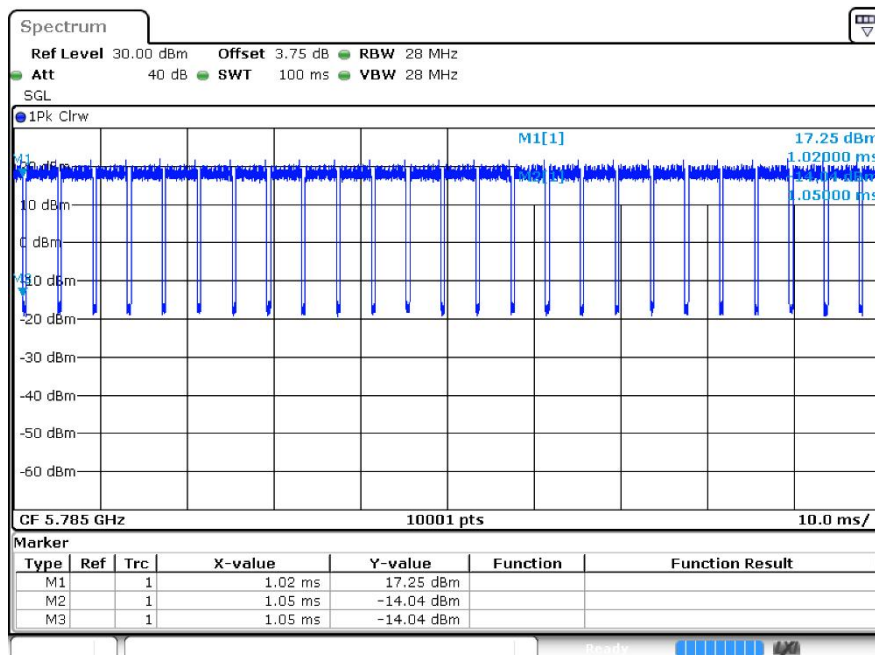
Duty Cycle n40 5795MHz Ant1

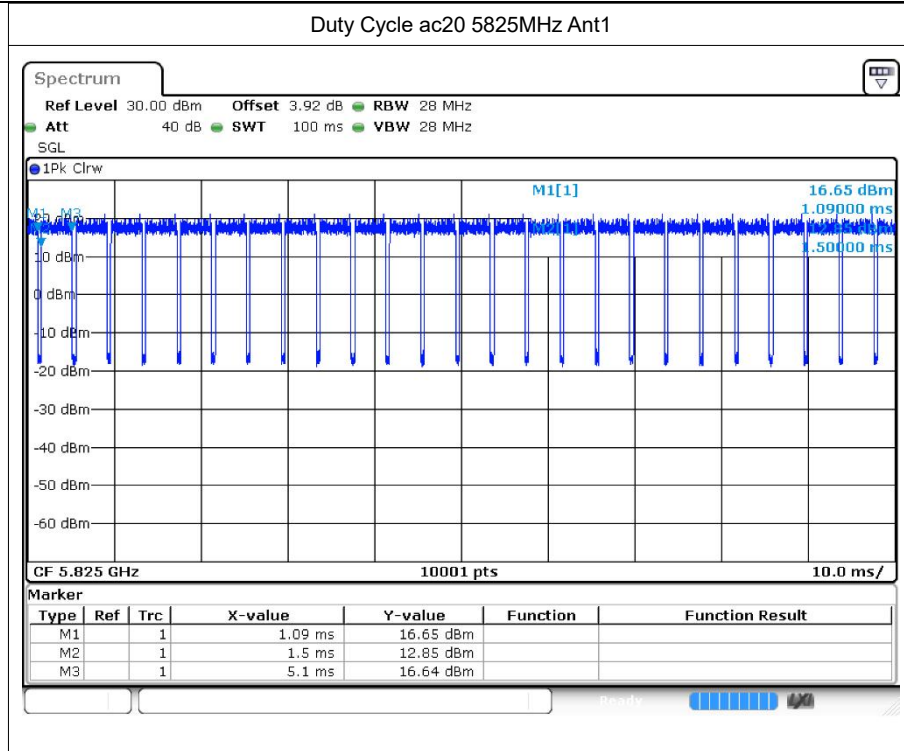


Duty Cycle ac20 5745MHz Ant1

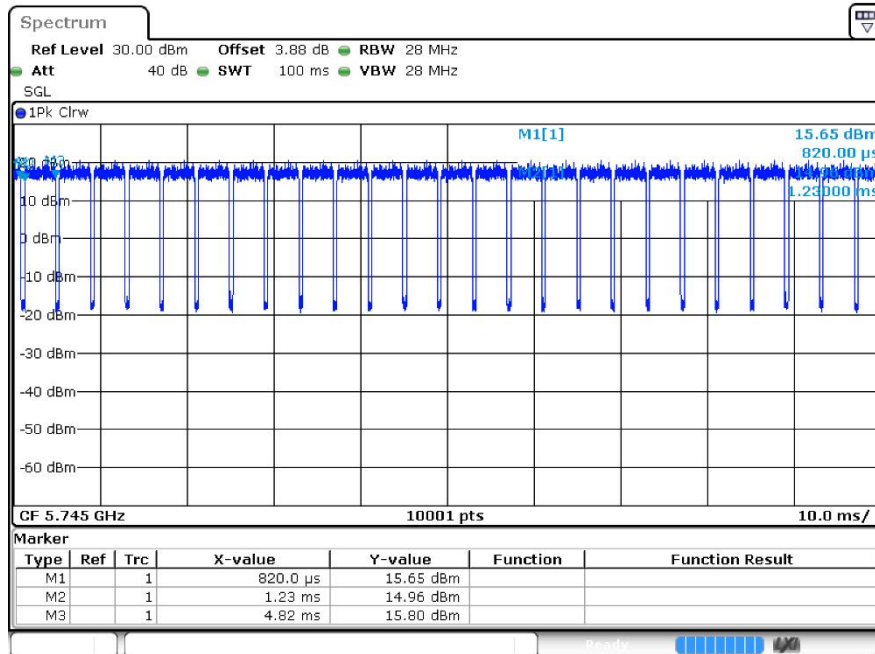


Duty Cycle ac20 5785MHz Ant1

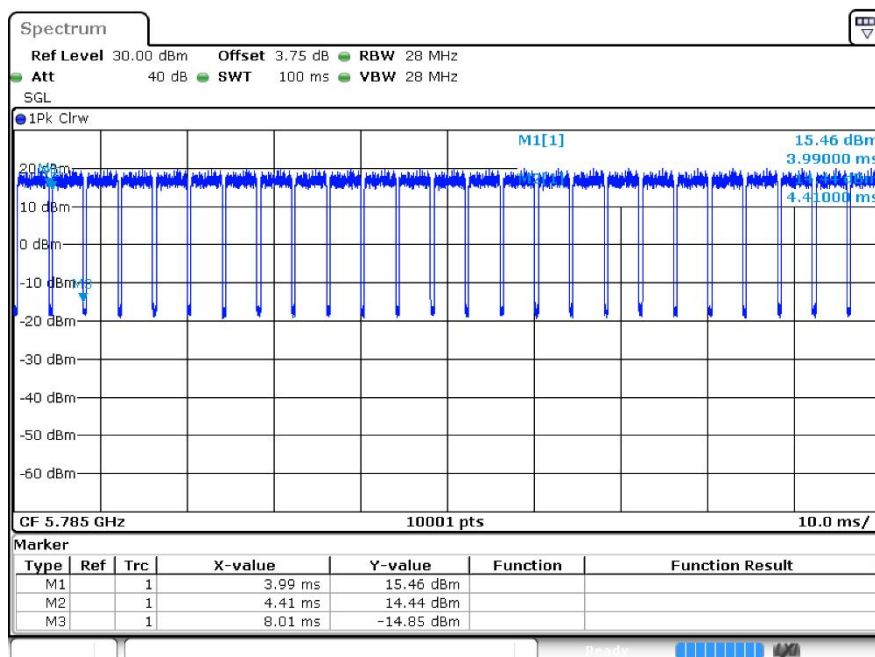


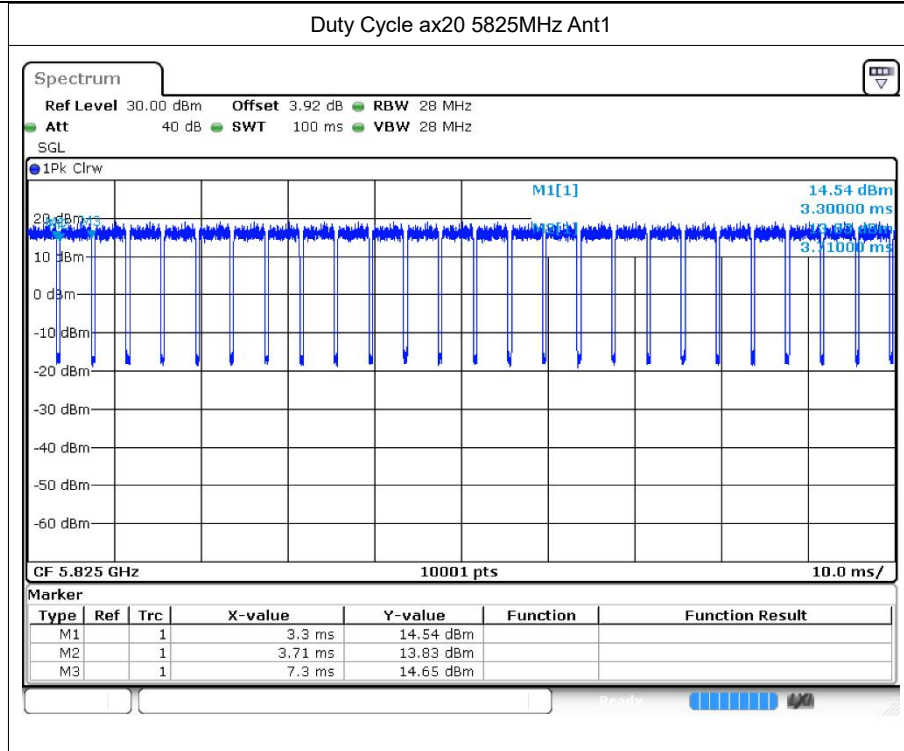


Duty Cycle ax20 5745MHz Ant1



Duty Cycle ax20 5785MHz Ant1







2 Maximum Conducted Output Power

2.1 Test Result

Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
a	5745	Ant1	14.33	30	Pass
a	5785	Ant1	13.84	30	Pass
a	5825	Ant1	13.47	30	Pass
n20	5745	Ant1	14.12	30	Pass
n20	5785	Ant1	13.73	30	Pass
n20	5825	Ant1	13.14	30	Pass
n40	5755	Ant1	13.85	30	Pass
n40	5795	Ant1	12.73	30	Pass
ac20	5745	Ant1	14.2	30	Pass
ac20	5785	Ant1	13.69	30	Pass
ac20	5825	Ant1	13.12	30	Pass
ax20	5745	Ant1	13.94	30	Pass
ax20	5785	Ant1	13.35	30	Pass
ax20	5825	Ant1	12.9	30	Pass

Note:

The duty factor has been compensated into the result.

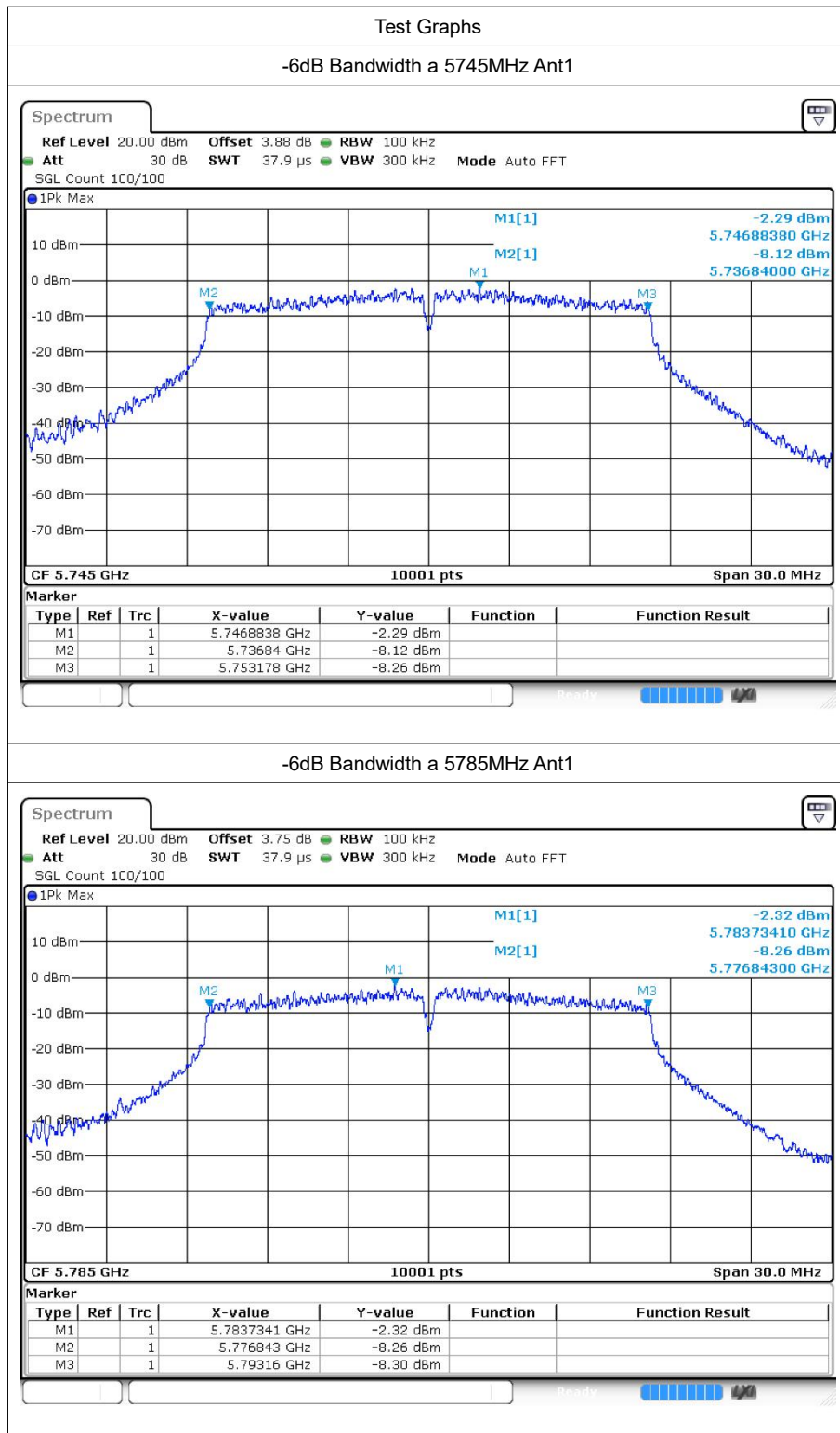


3 -6dB Bandwidth

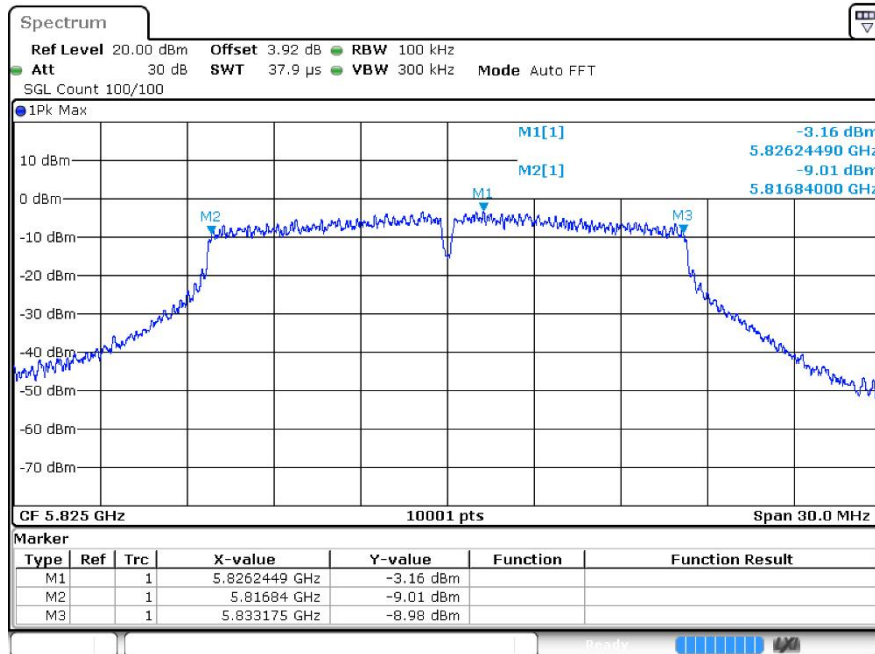
3.1 Test Result

Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
a	5745	Ant1	16.338	0.5	Pass
a	5785	Ant1	16.317	0.5	Pass
a	5825	Ant1	16.335	0.5	Pass
n20	5745	Ant1	17.538	0.5	Pass
n20	5785	Ant1	16.275	0.5	Pass
n20	5825	Ant1	17.571	0.5	Pass
n40	5755	Ant1	35.178	0.5	Pass
n40	5795	Ant1	36.054	0.5	Pass
ac20	5745	Ant1	16.89	0.5	Pass
ac20	5785	Ant1	15.111	0.5	Pass
ac20	5825	Ant1	17.052	0.5	Pass
ax20	5745	Ant1	17.091	0.5	Pass
ax20	5785	Ant1	17.163	0.5	Pass
ax20	5825	Ant1	15.375	0.5	Pass

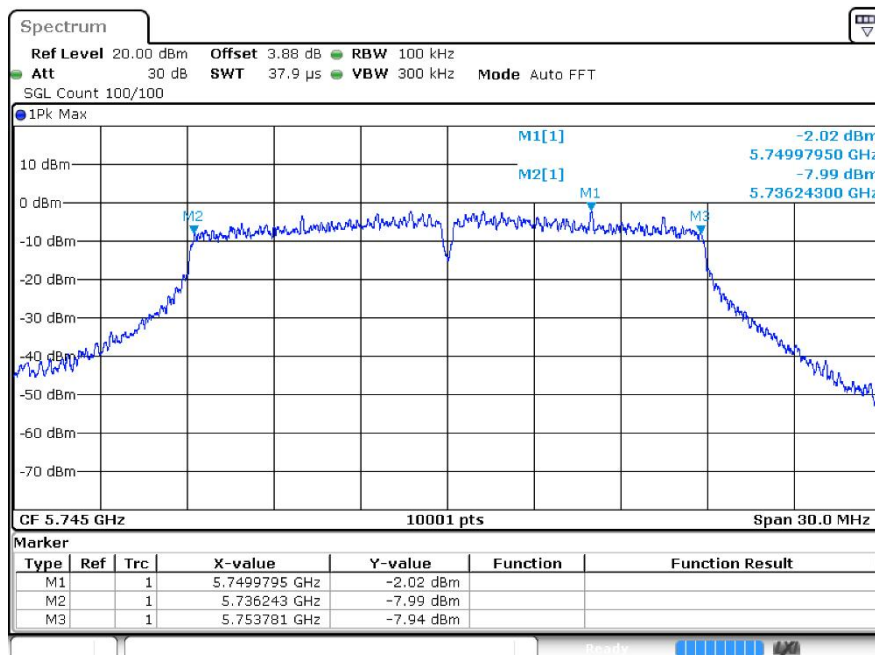
3.2 Test Graphs



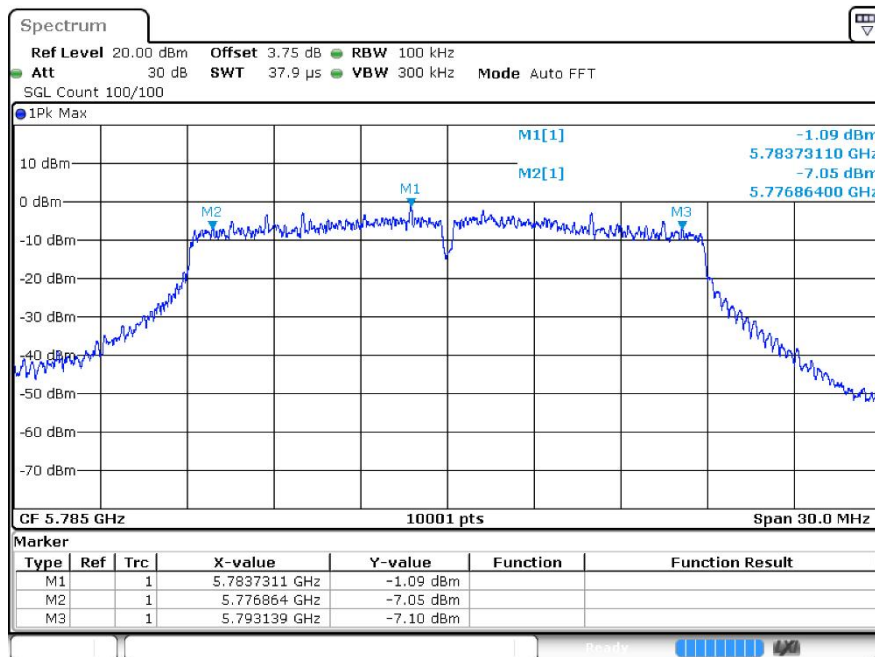
-6dB Bandwidth a 5825MHz Ant1



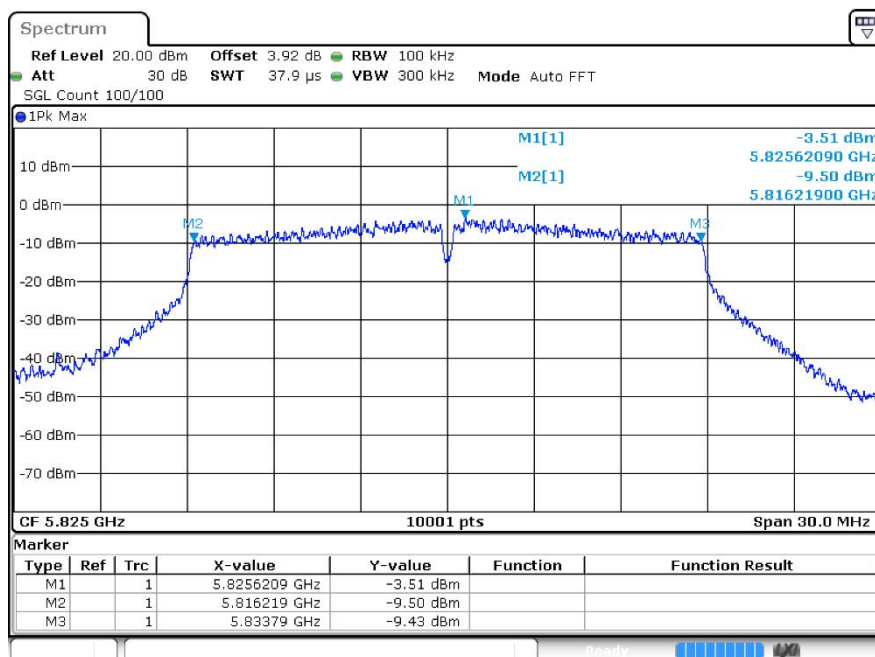
-6dB Bandwidth n20 5745MHz Ant1



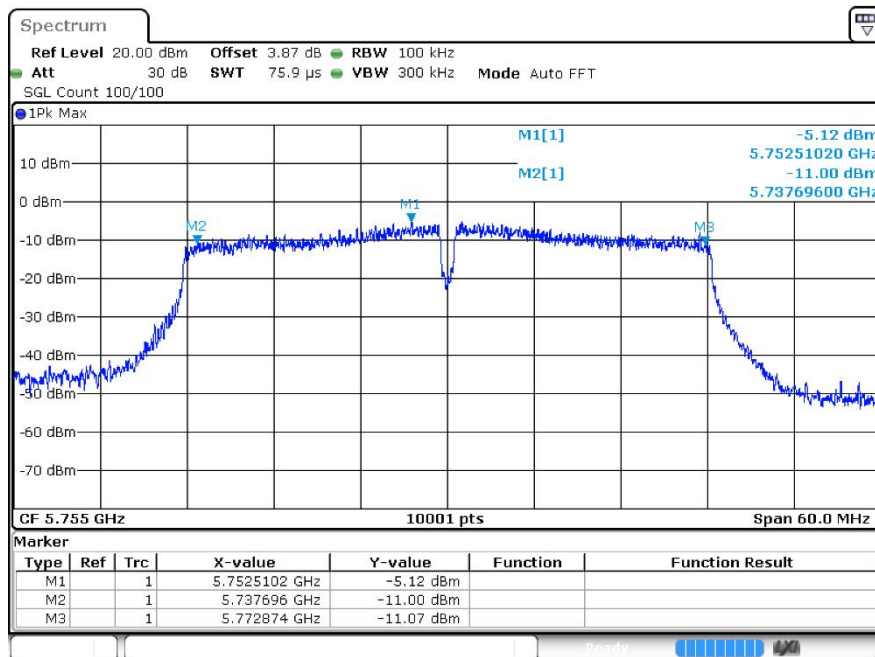
-6dB Bandwidth n20 5785MHz Ant1



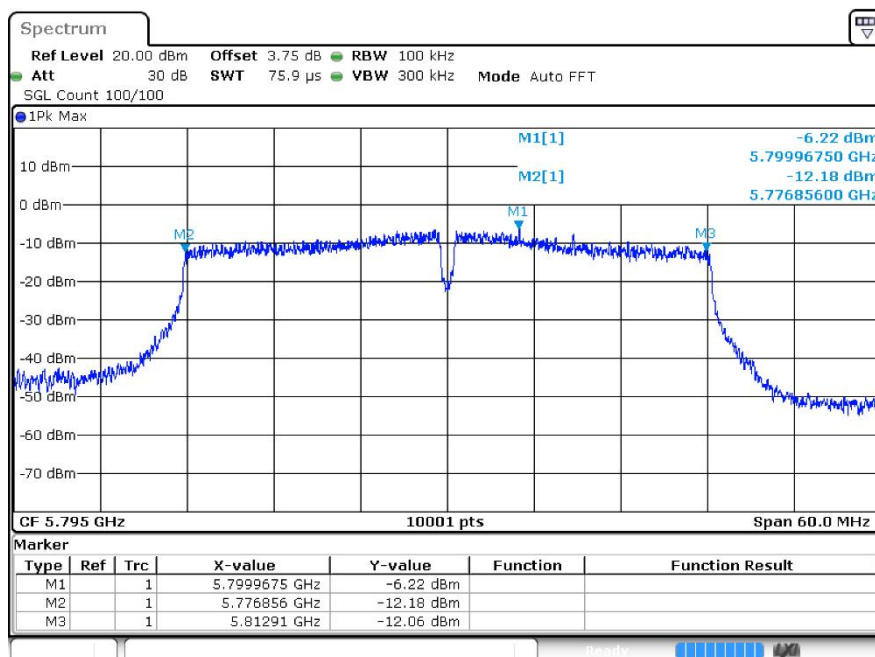
-6dB Bandwidth n20 5825MHz Ant1



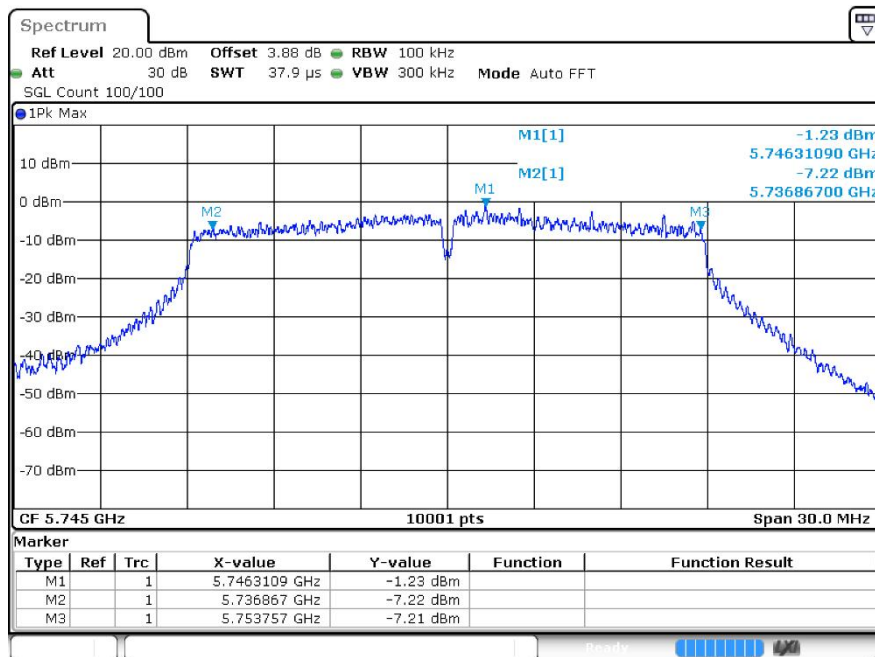
-6dB Bandwidth n40 5755MHz Ant1



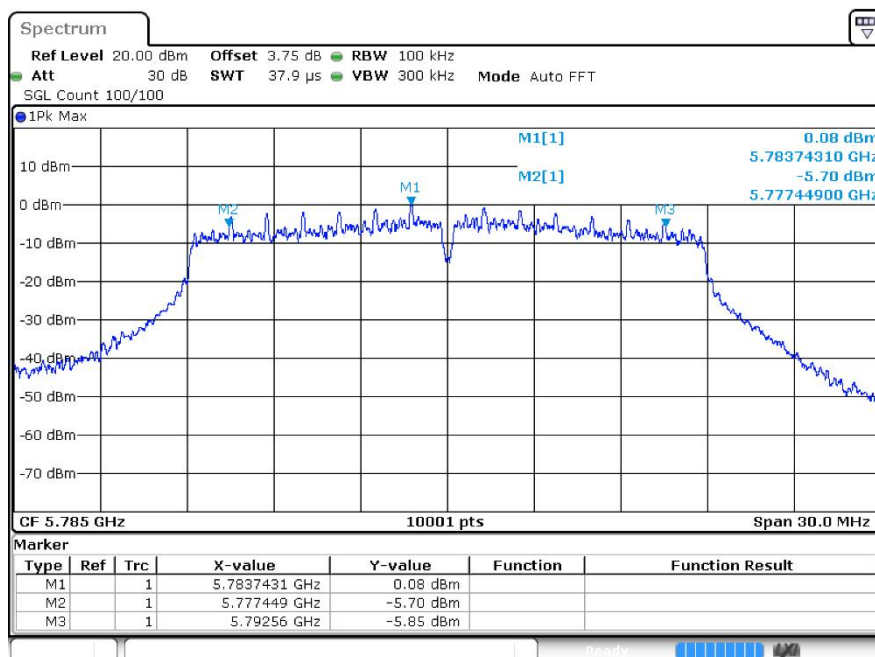
-6dB Bandwidth n40 5795MHz Ant1

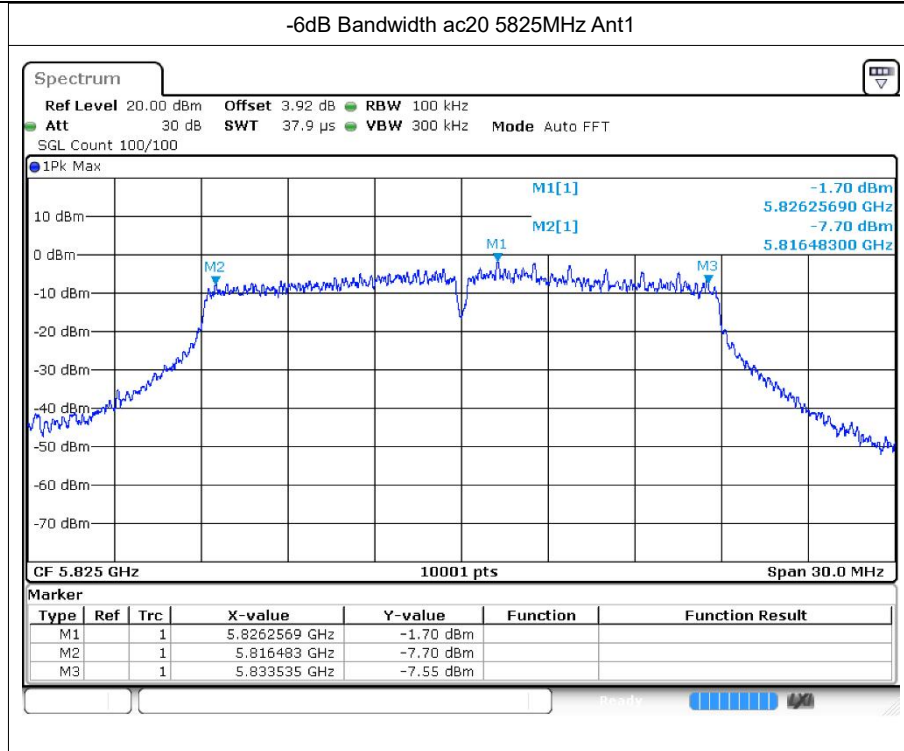


-6dB Bandwidth ac20 5745MHz Ant1

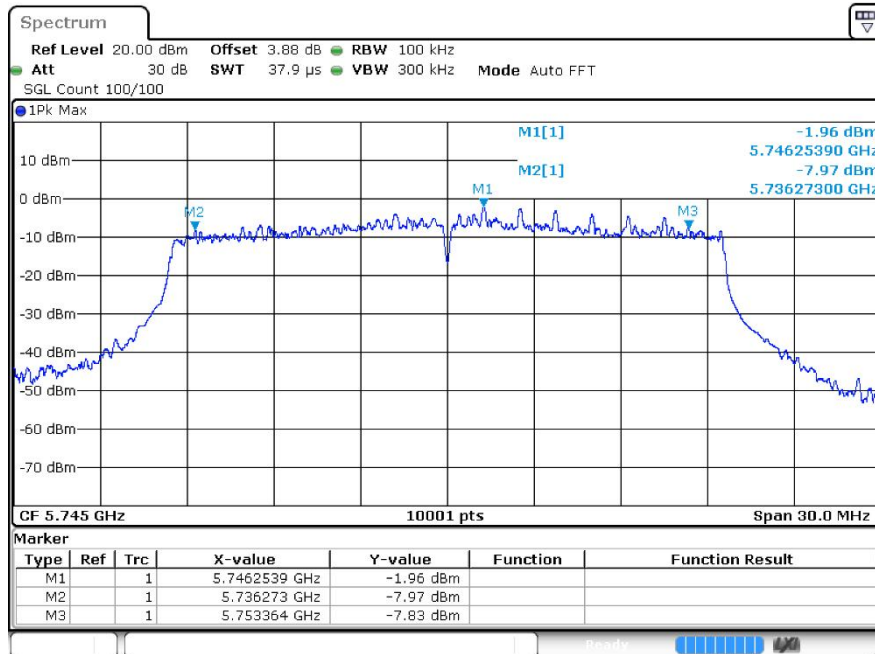


-6dB Bandwidth ac20 5785MHz Ant1

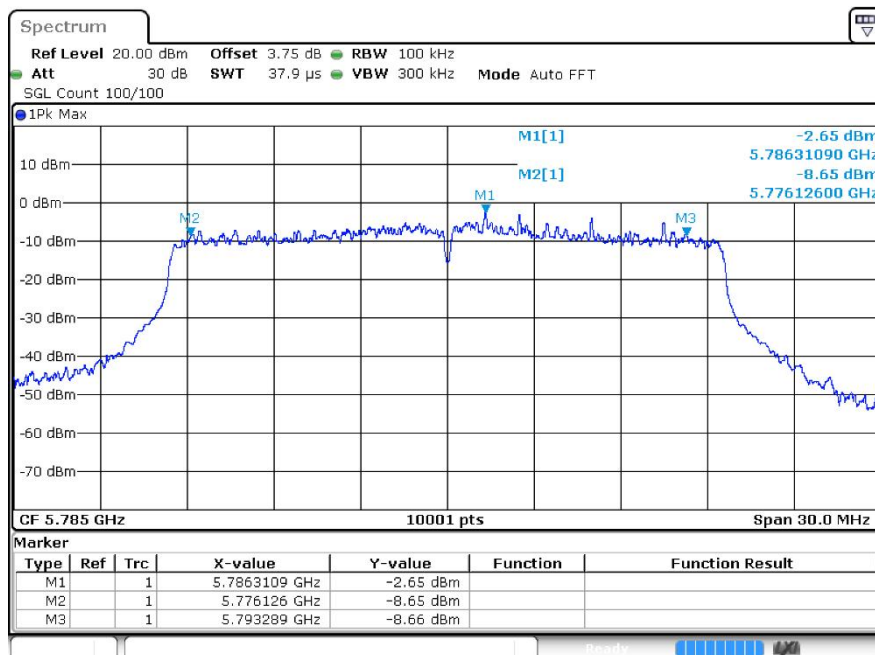


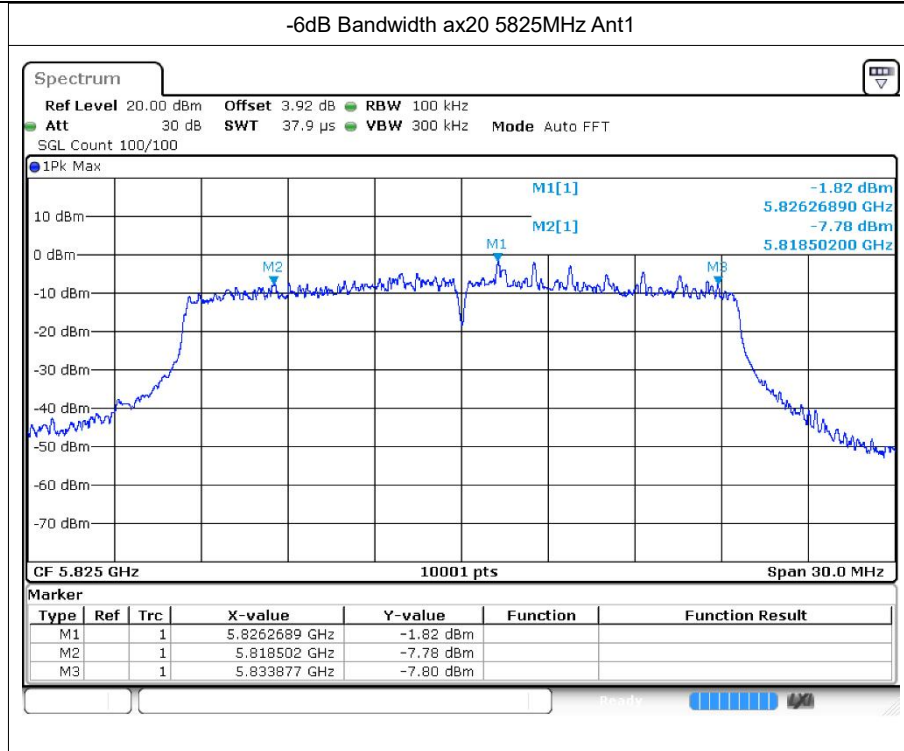


-6dB Bandwidth ax20 5745MHz Ant1



-6dB Bandwidth ax20 5785MHz Ant1





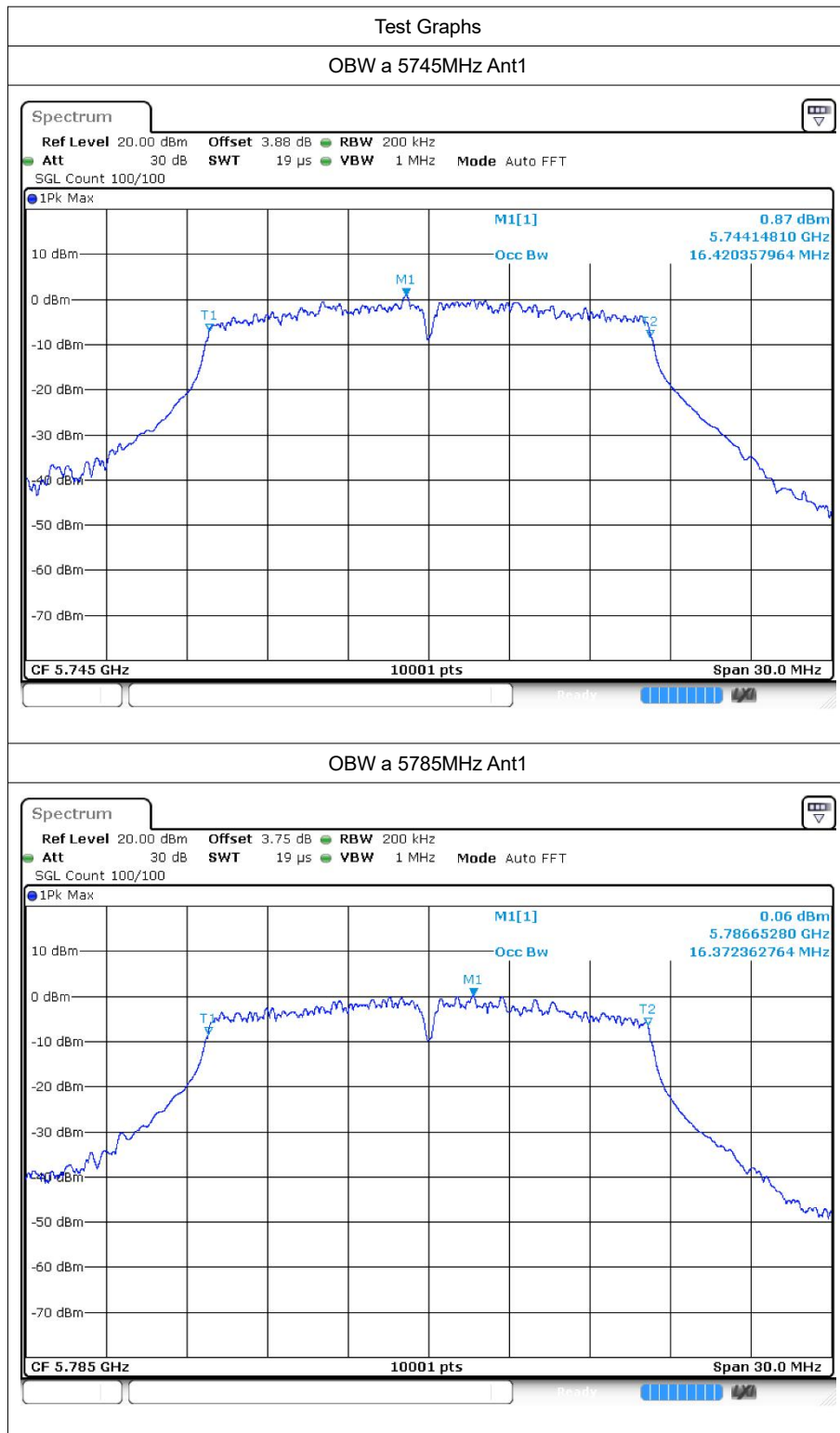


4 Occupied Channel Bandwidth

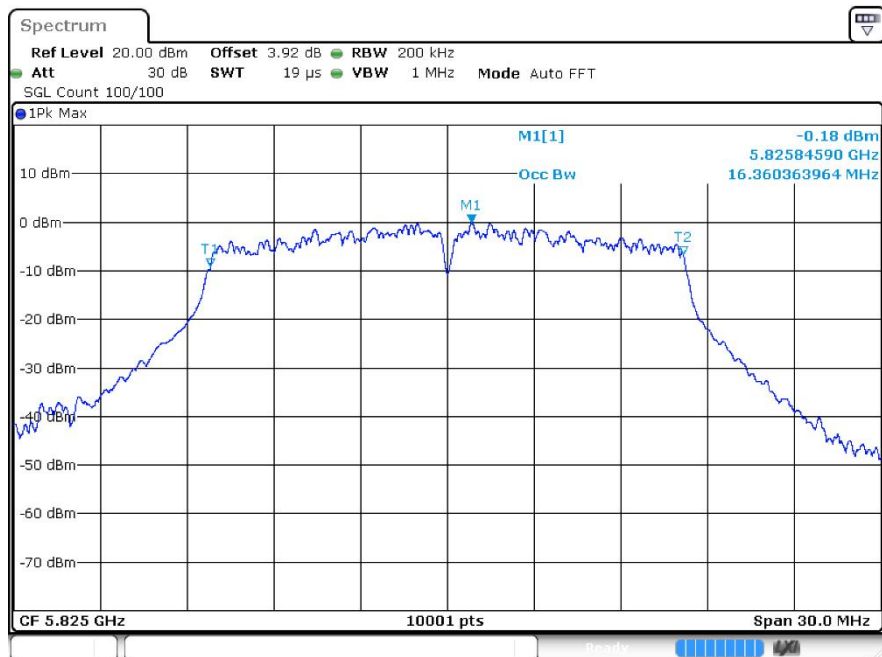
4.1 Test Result

Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
a	5745	Ant1	16.42
a	5785	Ant1	16.372
a	5825	Ant1	16.36
n20	5745	Ant1	17.572
n20	5785	Ant1	17.581
n20	5825	Ant1	17.614
n40	5755	Ant1	36.11
n40	5795	Ant1	36.026
ac20	5745	Ant1	17.551
ac20	5785	Ant1	17.608
ac20	5825	Ant1	17.611
ax20	5745	Ant1	18.817
ax20	5785	Ant1	18.757
ax20	5825	Ant1	18.808

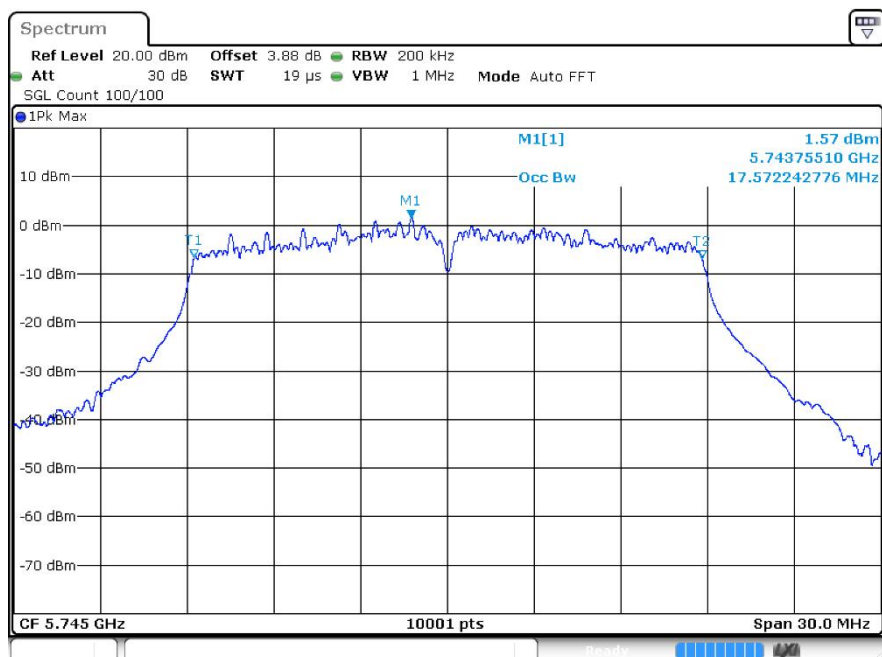
4.2 Test Graphs



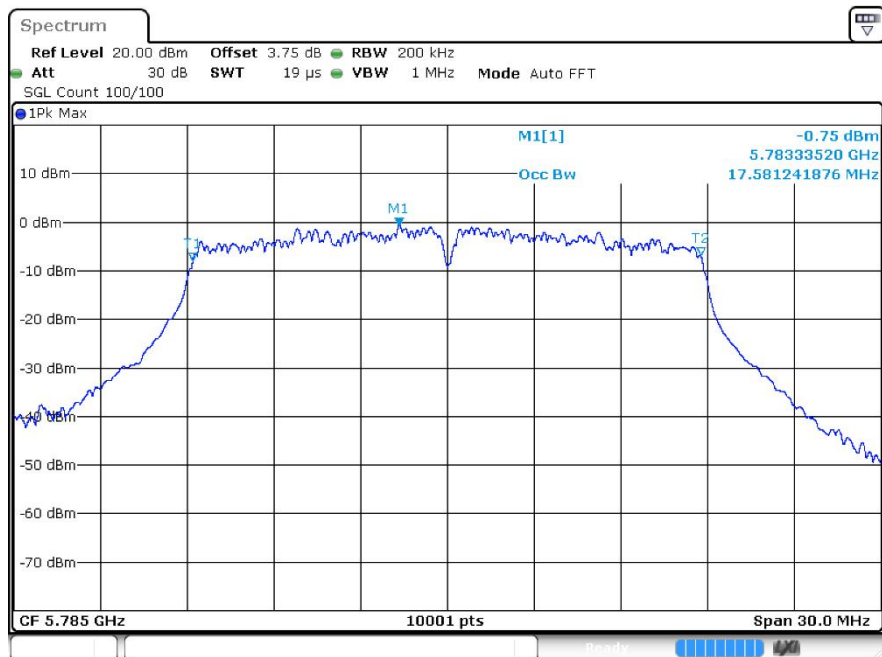
OBW a 5825MHz Ant1



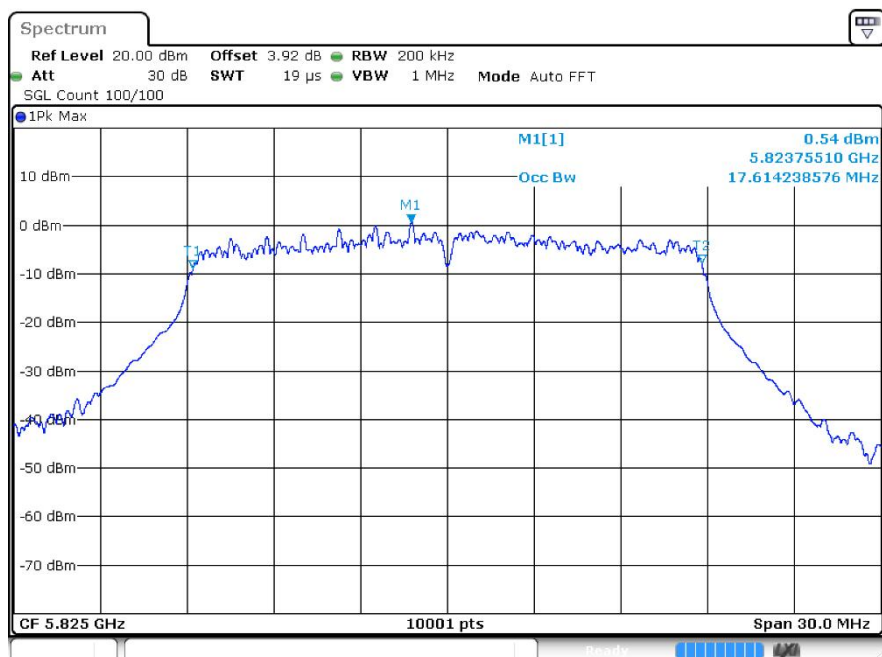
OBW n20 5745MHz Ant1



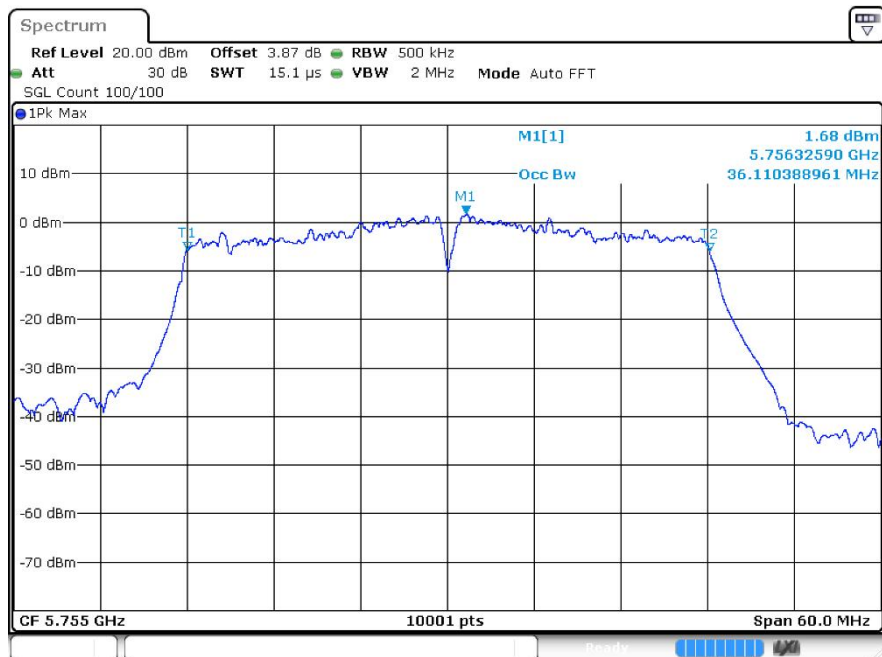
OBW n20 5785MHz Ant1



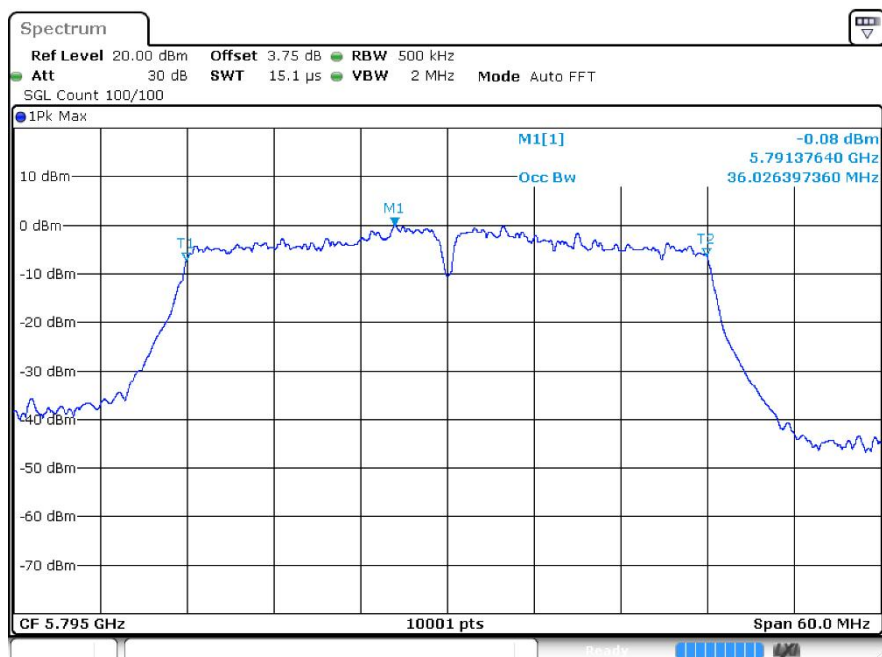
OBW n20 5825MHz Ant1



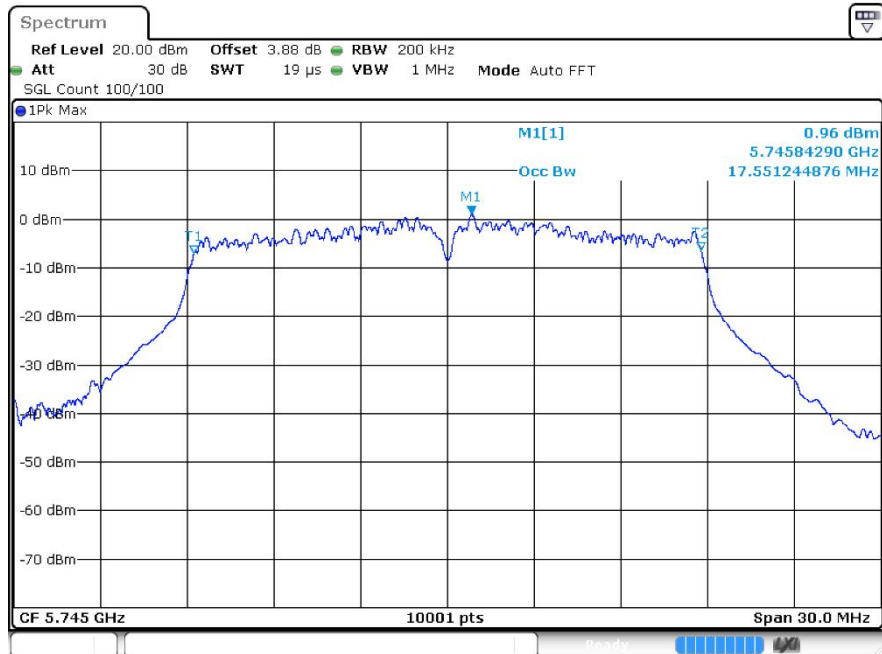
OBW n40 5755MHz Ant1



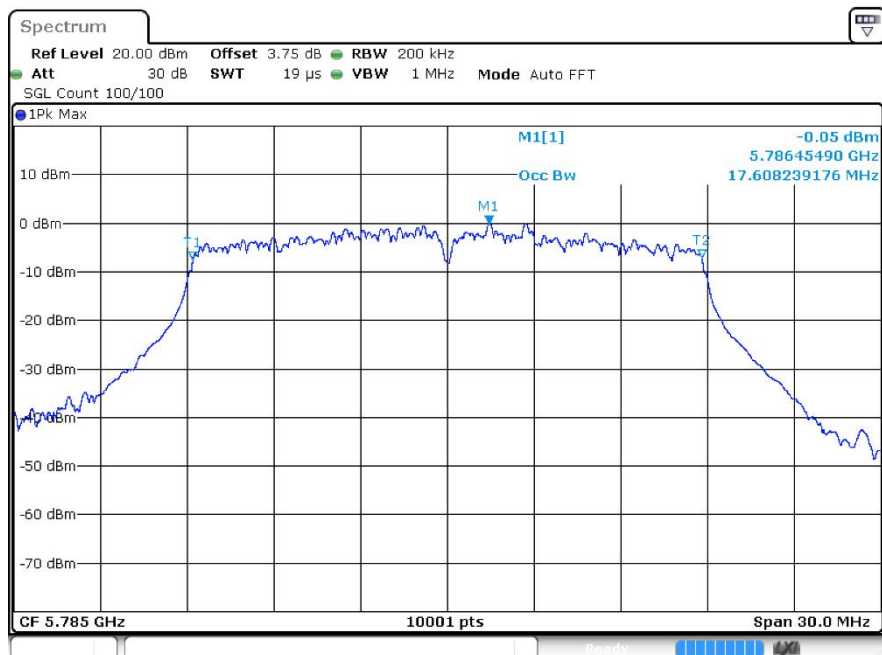
OBW n40 5795MHz Ant1

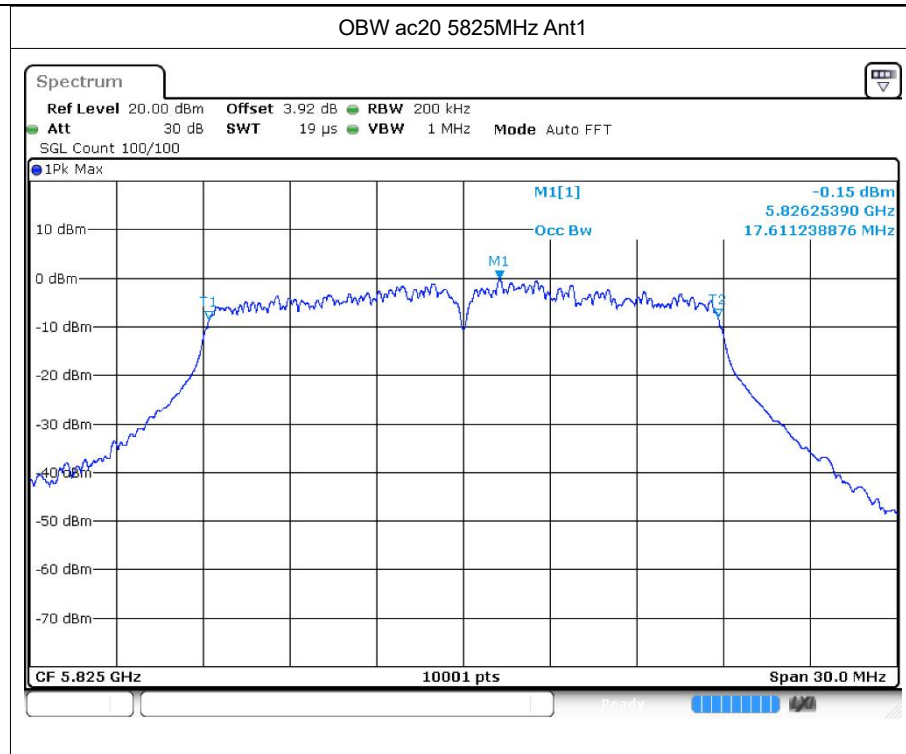


OBW ac20 5745MHz Ant1

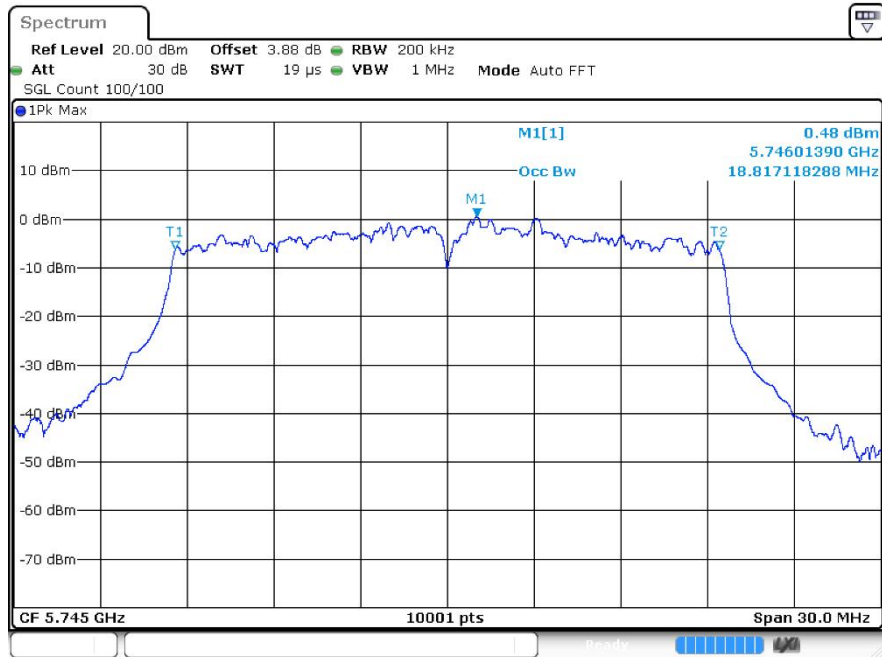


OBW ac20 5785MHz Ant1

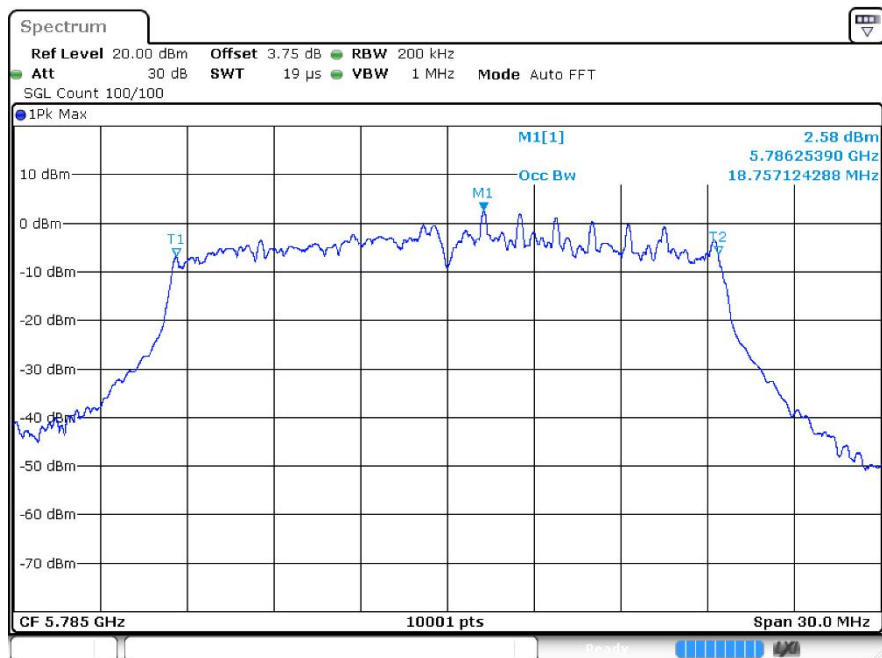


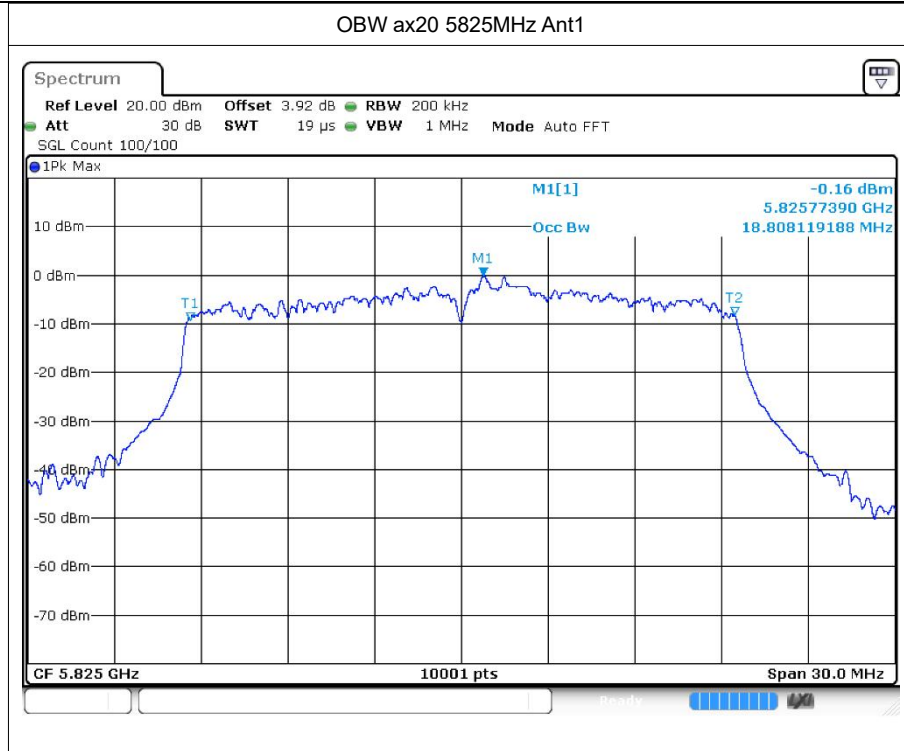


OBW ax20 5745MHz Ant1



OBW ax20 5785MHz Ant1



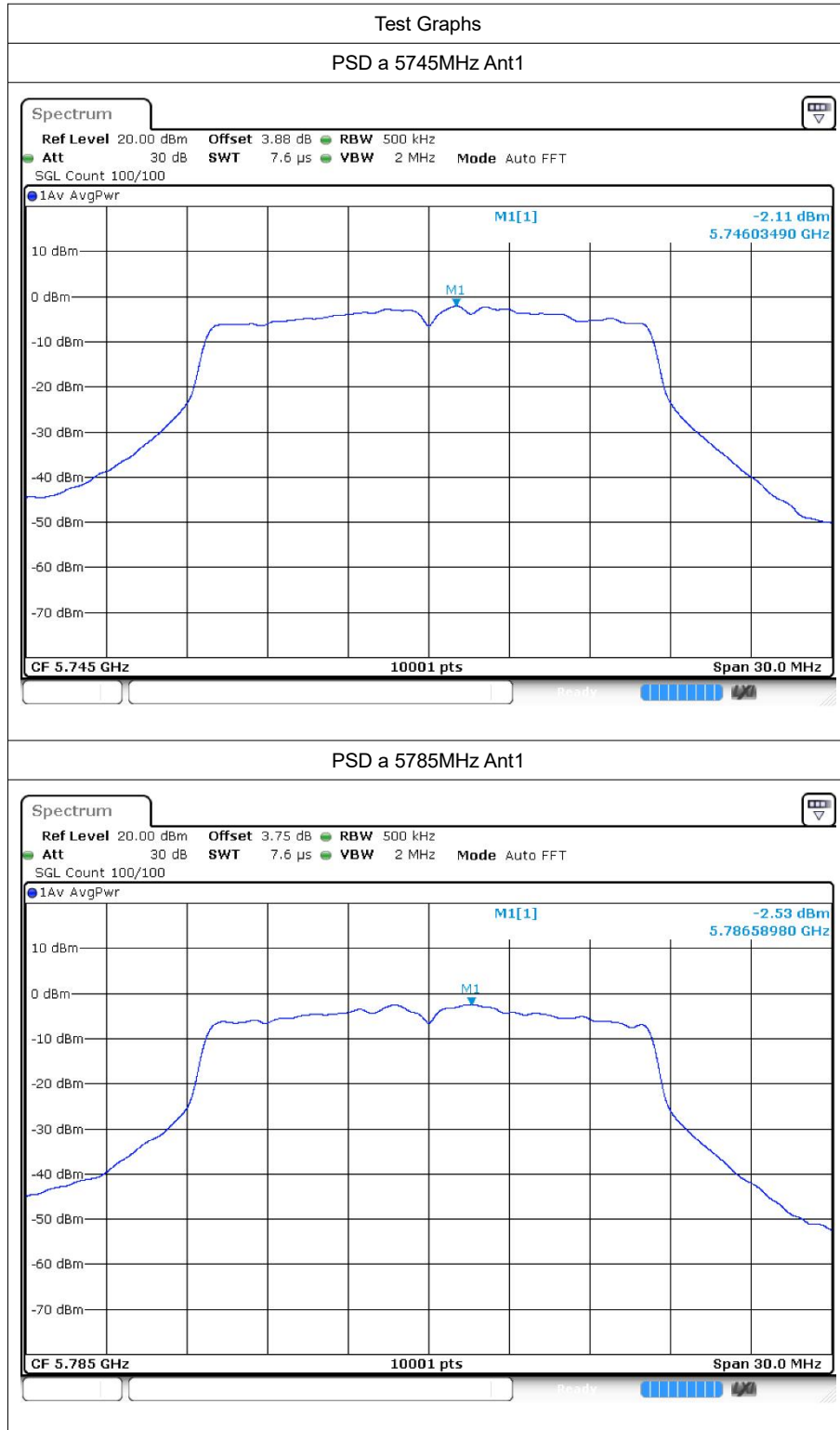


5 Maximum Power Spectral Density Level

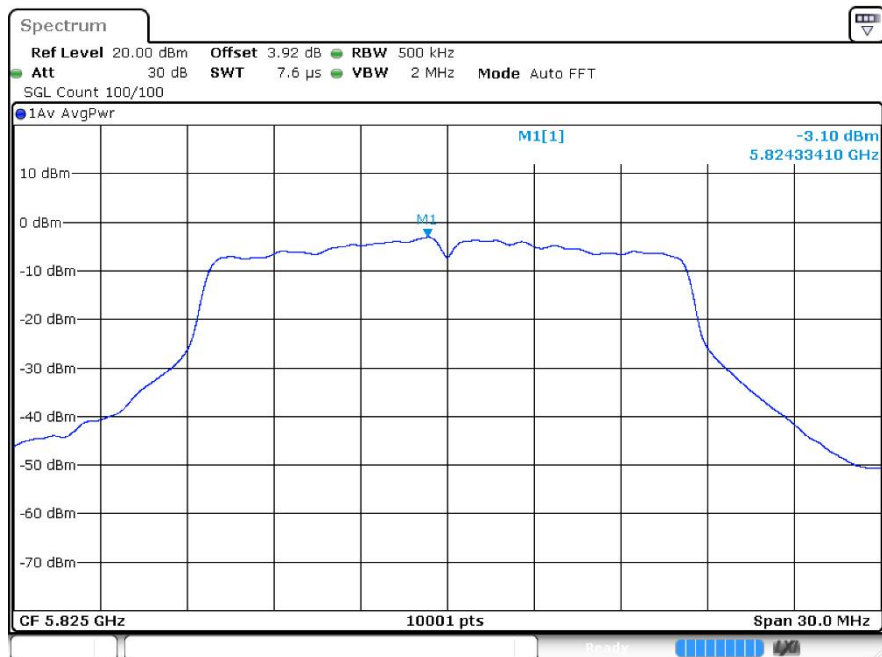
5.1 Test Result

Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm)	Duty Factor (dB)	Total PSD (dBm)	Limit (dBm)	Verdict
a	5745	Ant1	-2.11	0.46	-1.65	30	Pass
a	5785	Ant1	-2.53	0.46	-2.07	30	Pass
a	5825	Ant1	-3.1	0.46	-2.64	30	Pass
n20	5745	Ant1	-1.94	0.46	-1.48	30	Pass
n20	5785	Ant1	-2.85	0.46	-2.39	30	Pass
n20	5825	Ant1	-3.59	0.46	-3.13	30	Pass
n40	5755	Ant1	-5.37	0.46	-4.91	30	Pass
n40	5795	Ant1	-6.4	0.46	-5.94	30	Pass
ac20	5745	Ant1	-2.54	0.46	-2.08	30	Pass
ac20	5785	Ant1	-2.53	0.46	-2.07	30	Pass
ac20	5825	Ant1	-3.74	0.46	-3.28	30	Pass

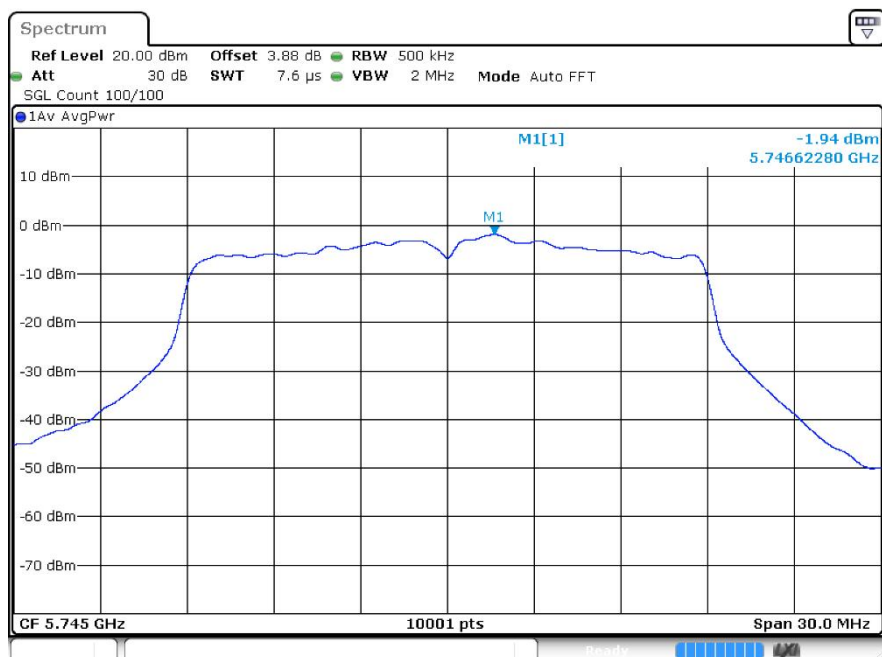
5.2 Test Graphs



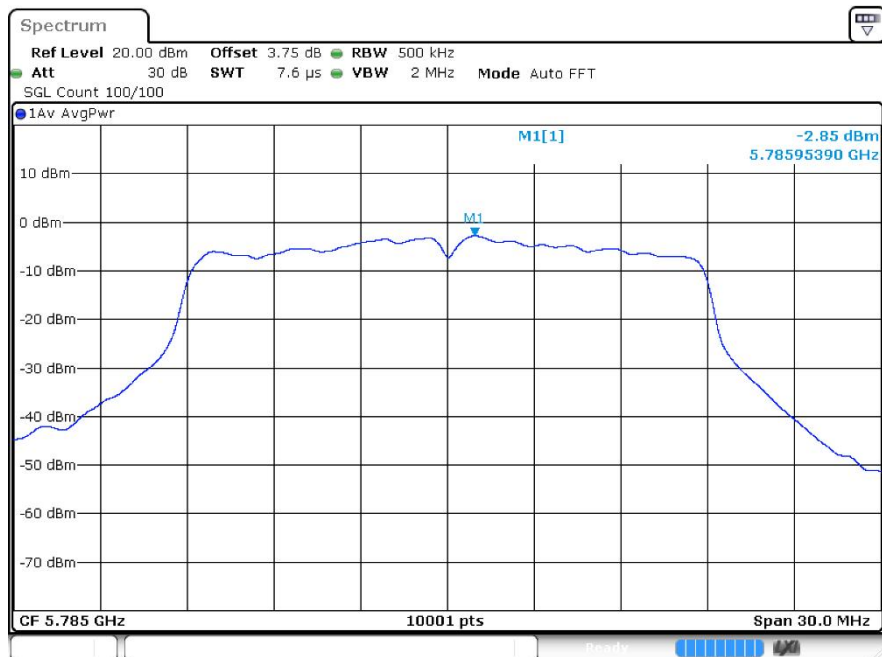
PSD a 5825MHz Ant1



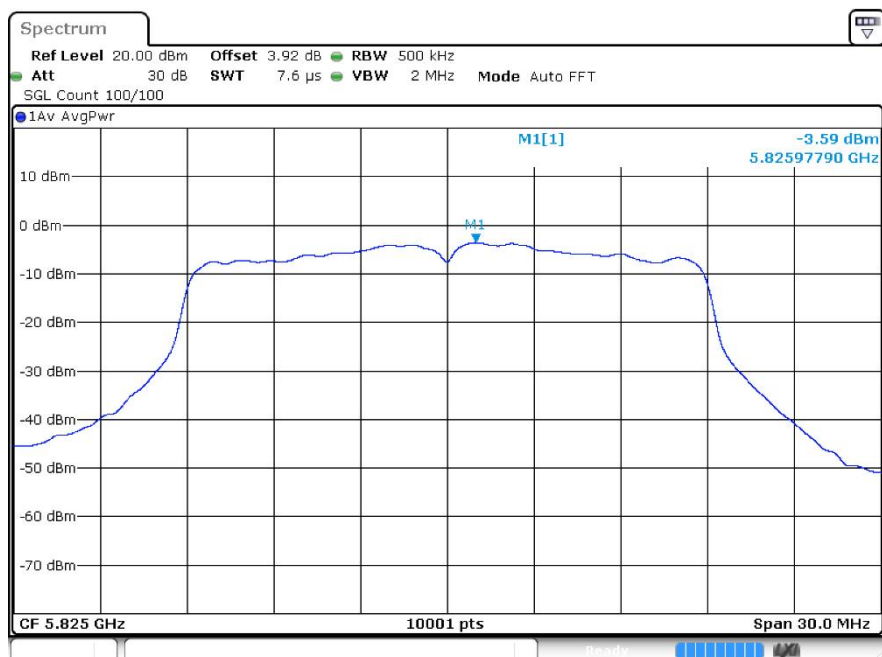
PSD n20 5745MHz Ant1



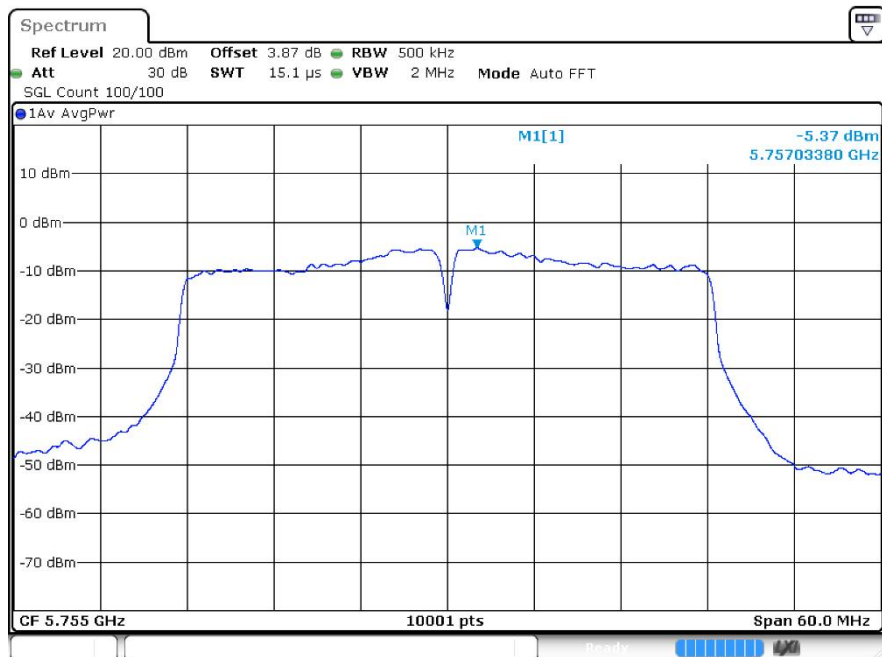
PSD n20 5785MHz Ant1



PSD n20 5825MHz Ant1



PSD n40 5755MHz Ant1



PSD n40 5795MHz Ant1

