



Appendix RF test data for 5G WIFI Module 1

Product Name: Car Video Box

Trade Mark: N/A

Test Model: Y4

Environmental Conditions

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



Contents

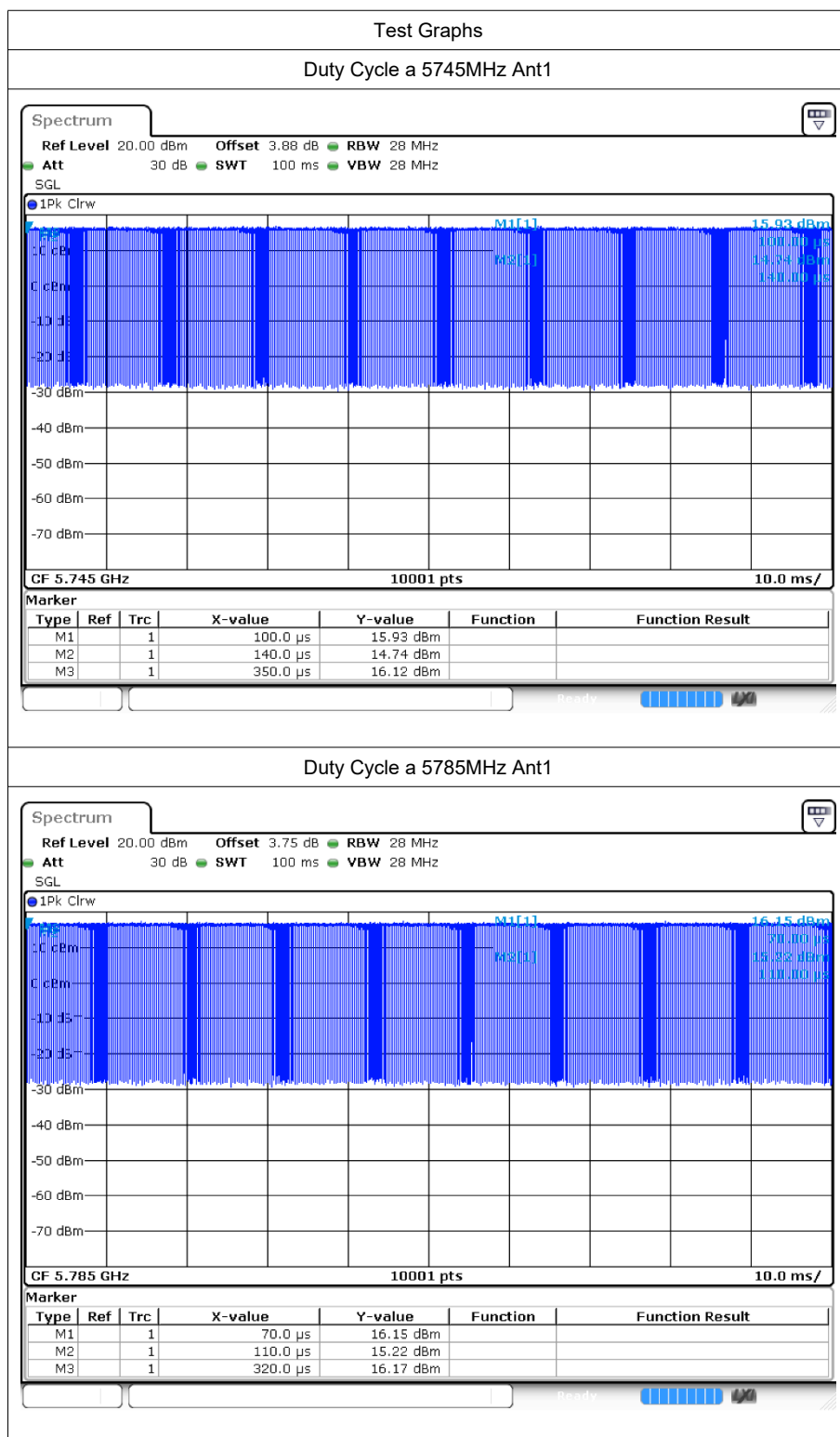
	Page
COVER PAGE	
1 Duty Cycle	3
1.1 Test Result	3
1.2 Test Graphs.....	5
2 Maximum Conducted Output Power.....	12
2.1 Test Result	12
3 -6dB Bandwidth	15
3.1 Test Result	15
3.2 Test Graphs.....	17
4 Occupied Channel Bandwidth	24
4.1 Test Result	24
4.2 Test Graphs.....	25
5 Maximum Power Spectral Density Level	32
5.1 Test Result	32
5.2 Test Graphs.....	35
6 Frequency Stability.....	42
6.1 Test Result	42
7 Conducted RF Spurious Emission.....	62
7.1 Test Result	62
7.2 Test Graphs.....	64
8 Restrict Band	71
8.1 Test Result	71
8.2 Test Graphs.....	83

1 Duty Cycle

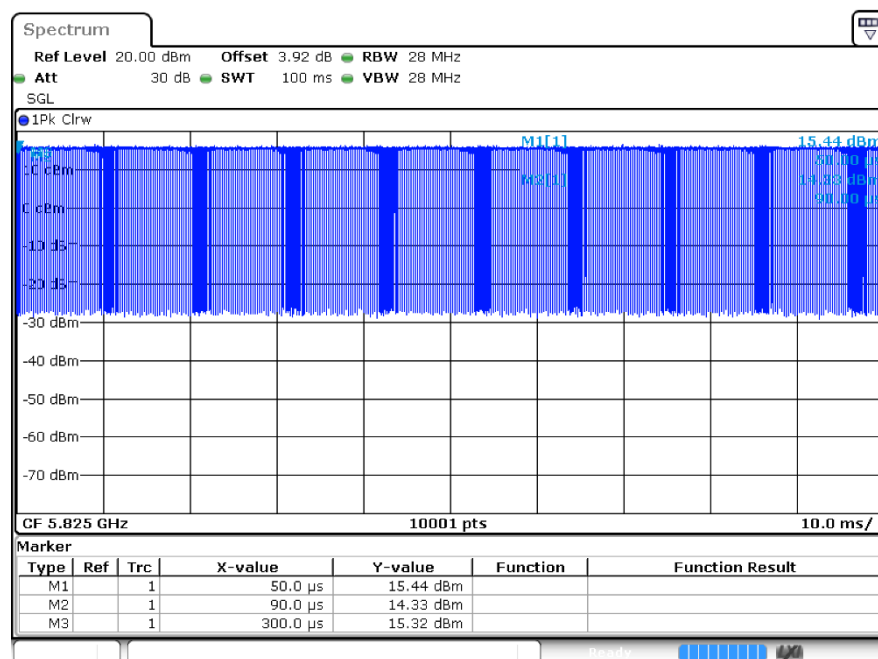
1.1 Test Result

Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
a	5745	Ant1	86.93	0.61	4.76
a	5785	Ant1	86.86	0.61	4.76
a	5825	Ant1	86.99	0.61	4.76
n20	5745	Ant1	87.54	0.58	4.35
n20	5785	Ant1	87.53	0.58	4.35
n20	5825	Ant1	87.7	0.57	4.35
n40	5755	Ant1	88.04	0.55	4
n40	5795	Ant1	88.1	0.55	4.17

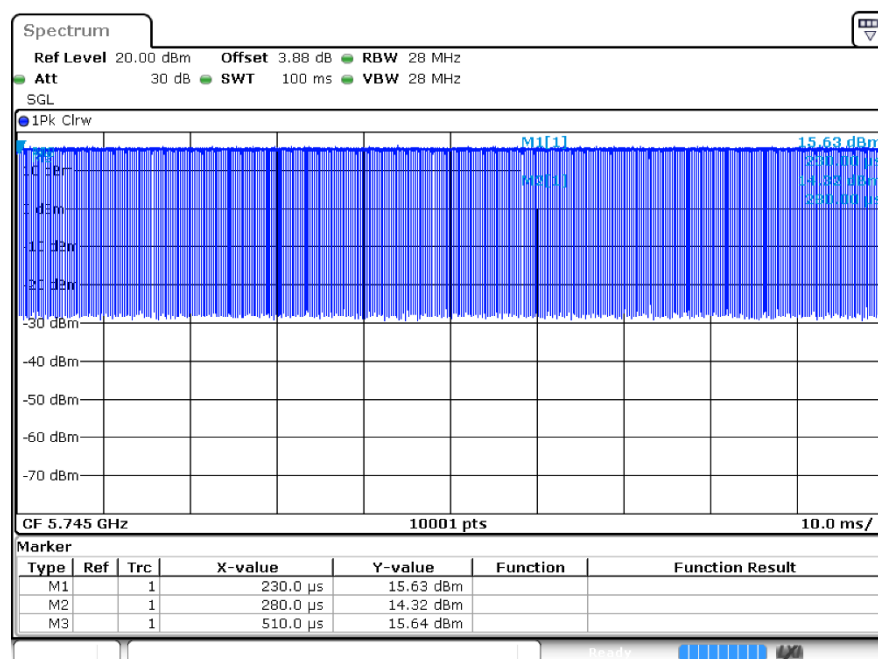
1.2 Test Graphs



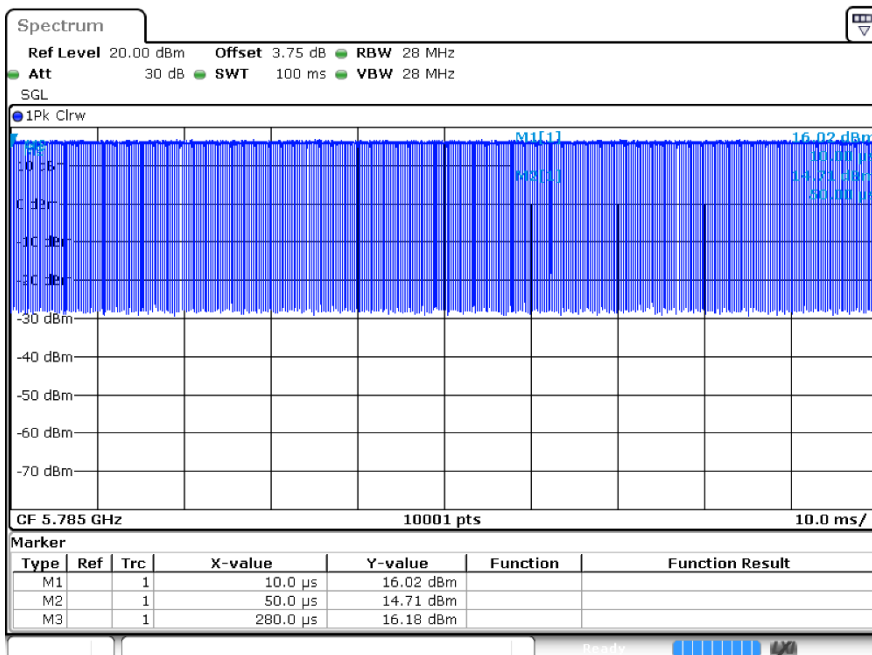
Duty Cycle a 5825MHz Ant1



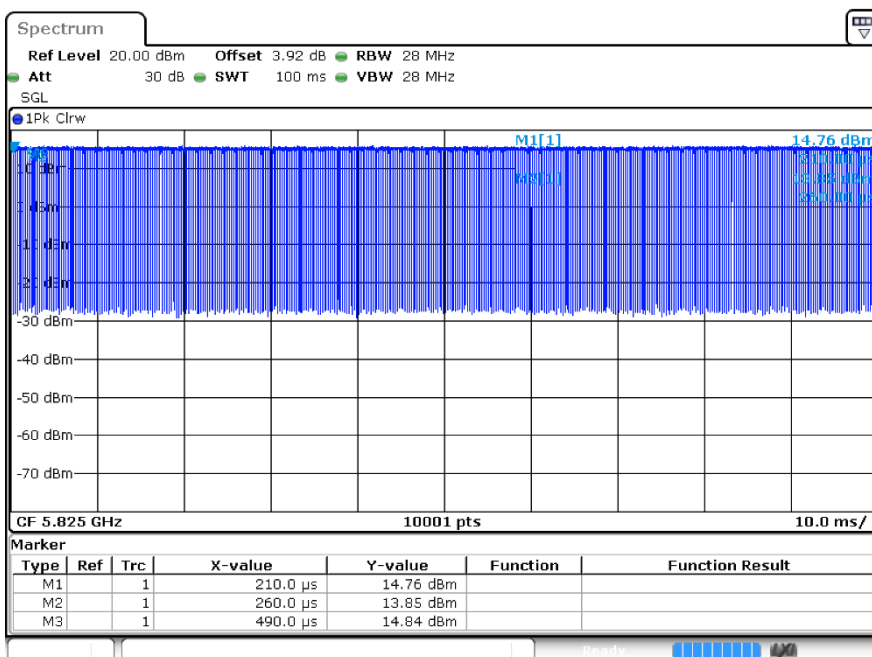
Duty Cycle n20 5745MHz Ant1



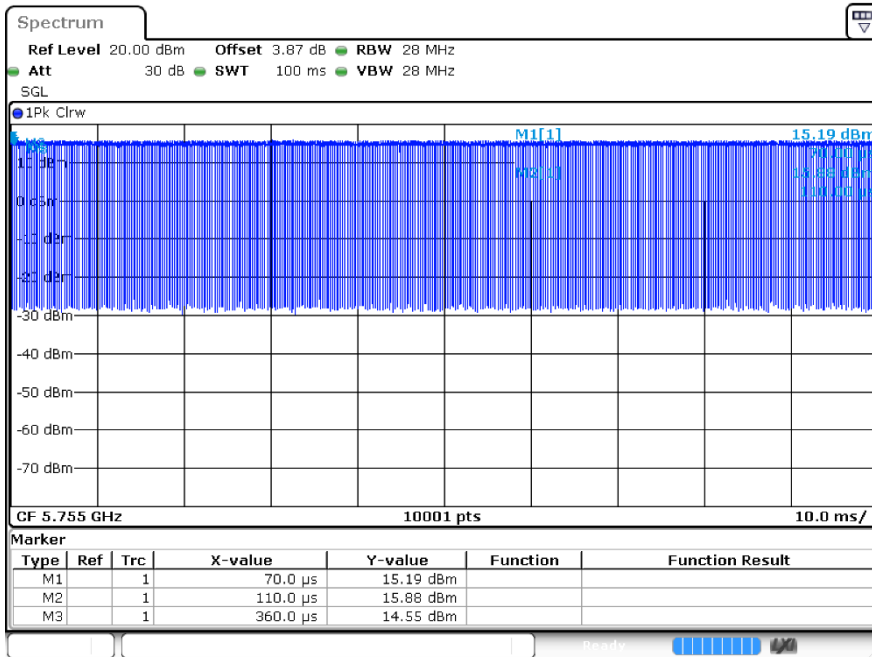
Duty Cycle n20 5785MHz Ant1



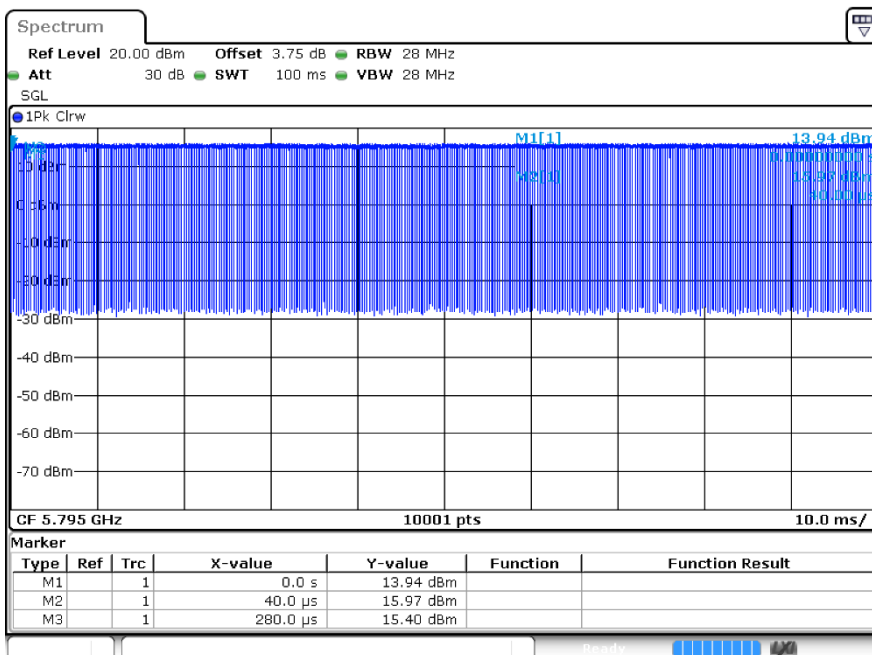
Duty Cycle n20 5825MHz Ant1



Duty Cycle n40 5755MHz Ant1



Duty Cycle n40 5795MHz Ant1



2 Maximum Conducted Output Power

2.1 Test Result

Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
a	5745	Ant1	14.88	30	Pass
a	5785	Ant1	15.27	30	Pass
a	5825	Ant1	14.49	30	Pass
n20	5745	Ant1	14.41	30	Pass
n20	5785	Ant1	14.83	30	Pass
n20	5825	Ant1	14.01	30	Pass
n40	5755	Ant1	14.17	30	Pass
n40	5795	Ant1	14.44	30	Pass

Note:

The duty factor has been compensated into the result.

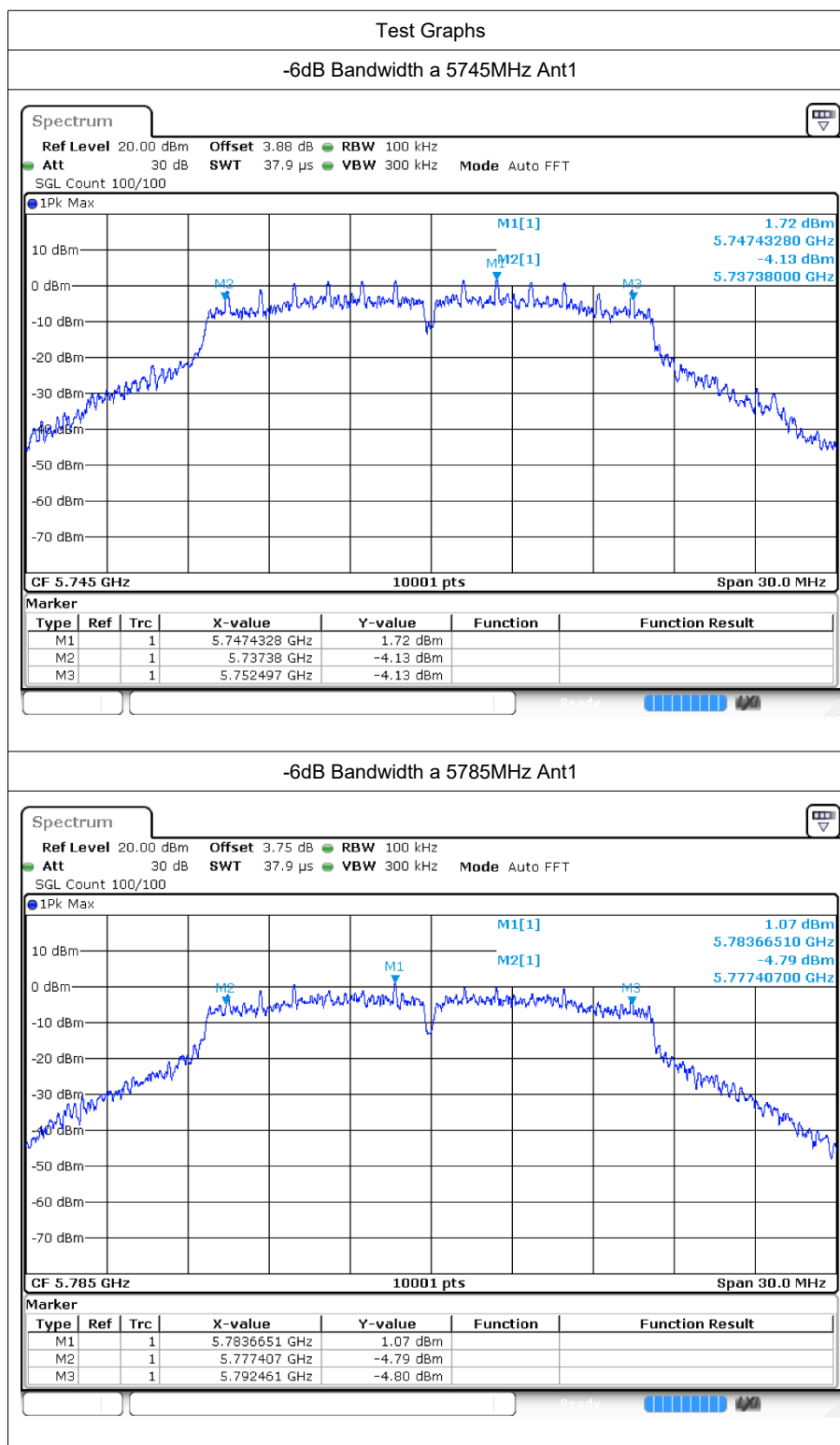


3 -6dB Bandwidth

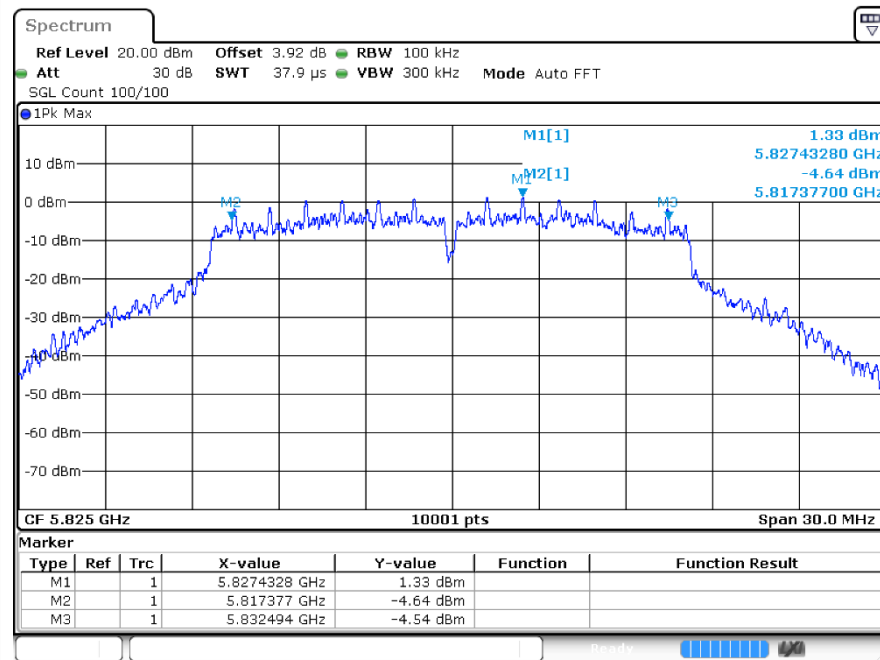
3.1 Test Result

Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
a	5745	Ant1	15.117	0.5	Pass
a	5785	Ant1	15.054	0.5	Pass
a	5825	Ant1	15.117	0.5	Pass
n20	5745	Ant1	15.072	0.5	Pass
n20	5785	Ant1	15.084	0.5	Pass
n20	5825	Ant1	15.105	0.5	Pass
n40	5755	Ant1	33.846	0.5	Pass
n40	5795	Ant1	35.064	0.5	Pass

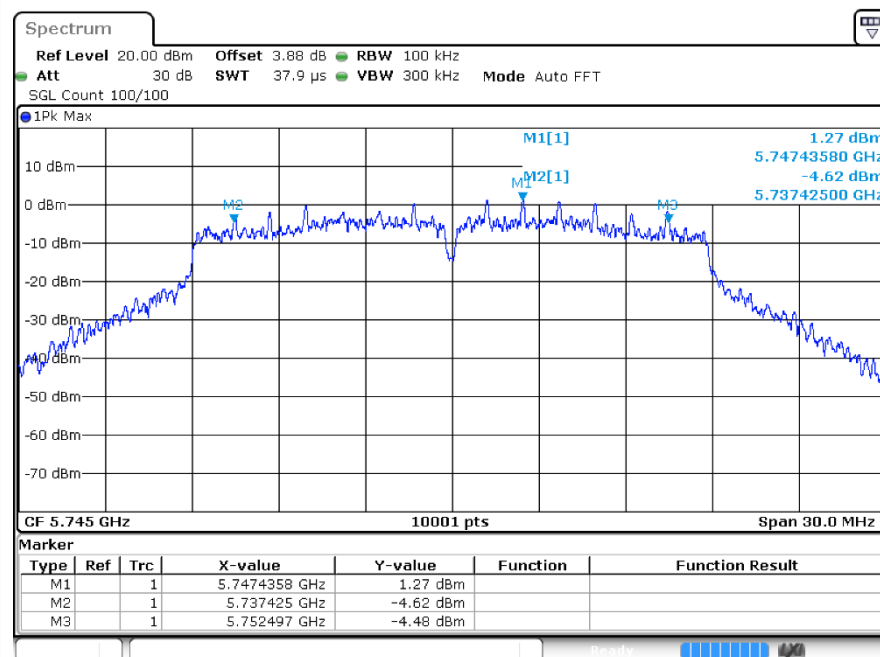
3.2 Test Graphs



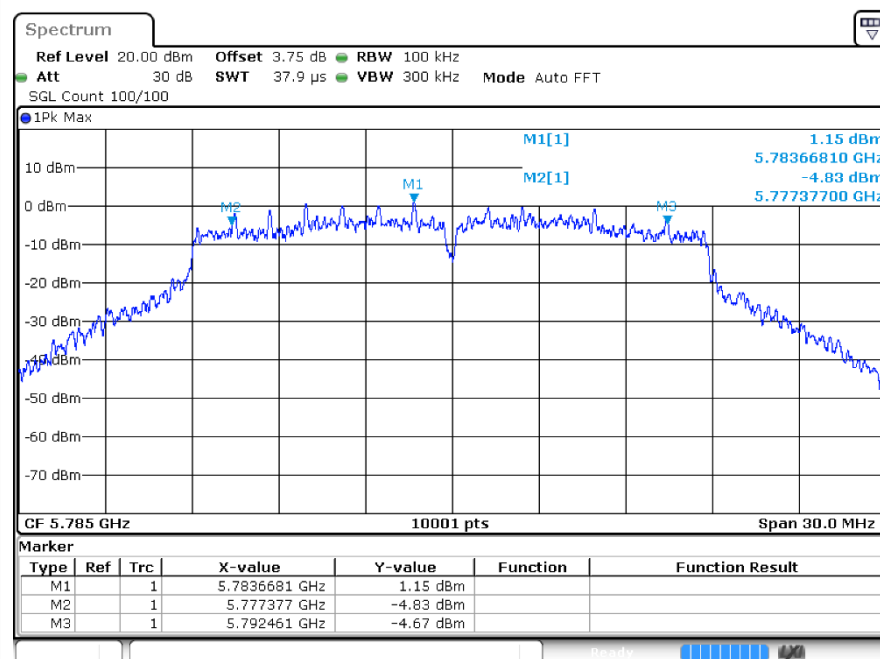
-6dB Bandwidth a 5825MHz Ant1



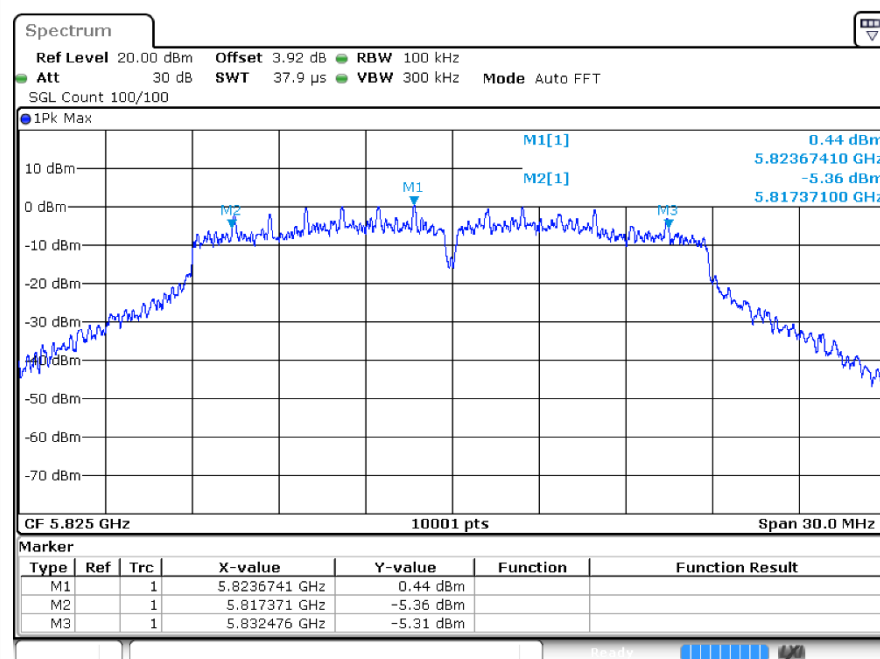
-6dB Bandwidth n20 5745MHz Ant1



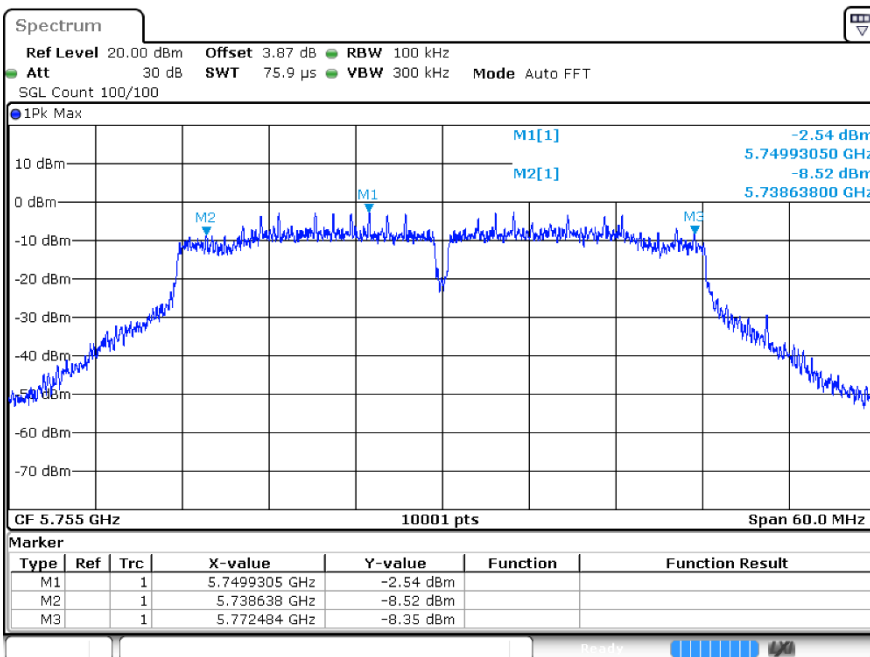
-6dB Bandwidth n20 5785MHz Ant1



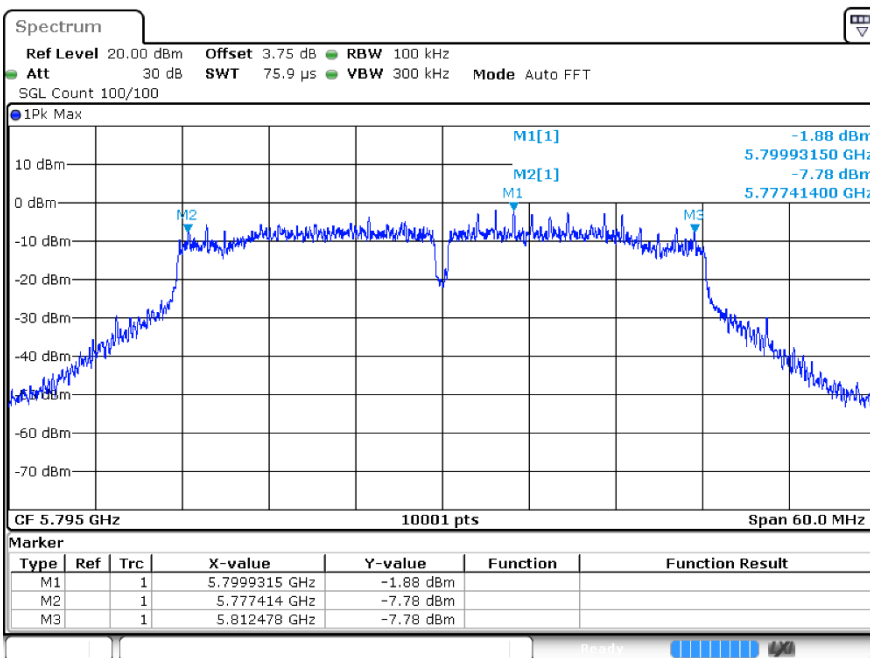
-6dB Bandwidth n20 5825MHz Ant1



-6dB Bandwidth n40 5755MHz Ant1



-6dB Bandwidth n40 5795MHz Ant1



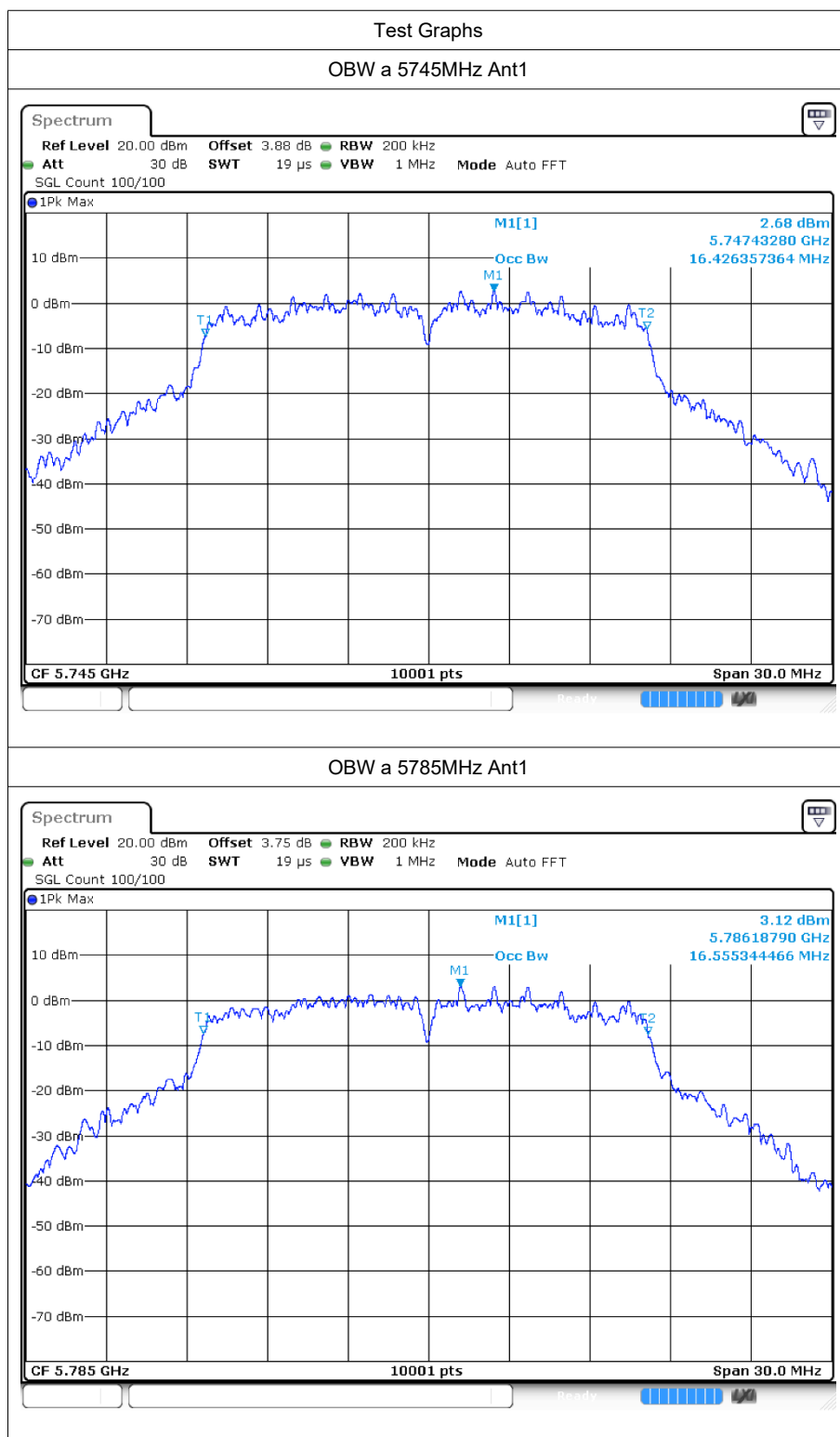


4 Occupied Channel Bandwidth

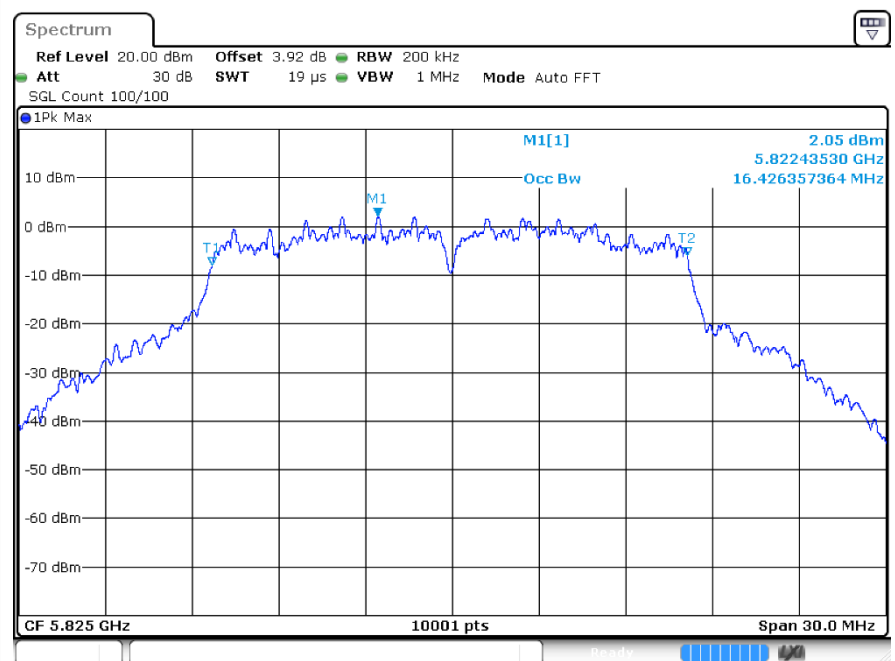
4.1 Test Result

Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
a	5745	Ant1	16.426
a	5785	Ant1	16.555
a	5825	Ant1	16.426
n20	5745	Ant1	17.611
n20	5785	Ant1	17.587
n20	5825	Ant1	17.584
n40	5755	Ant1	36.02
n40	5795	Ant1	36.092

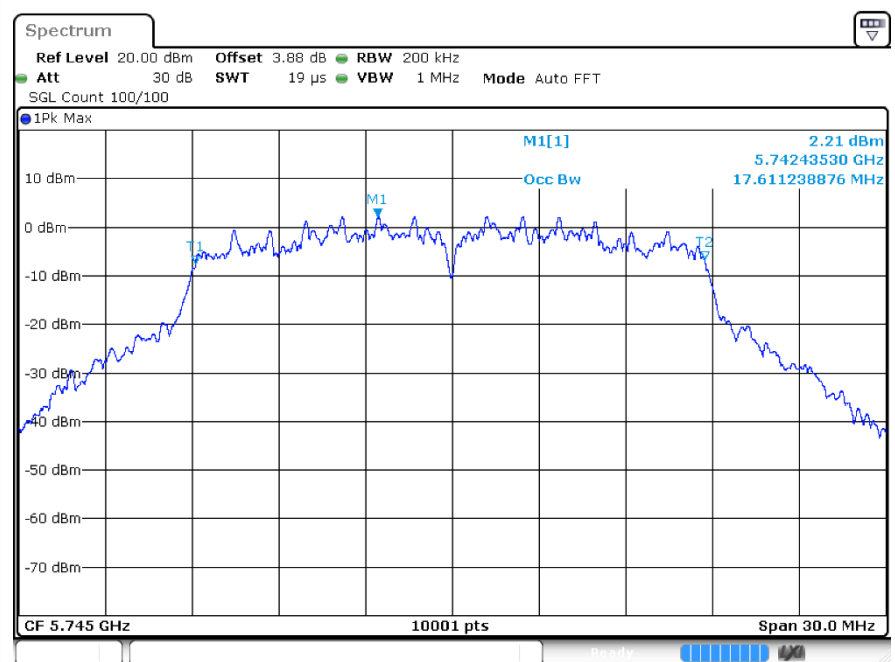
4.2 Test Graphs



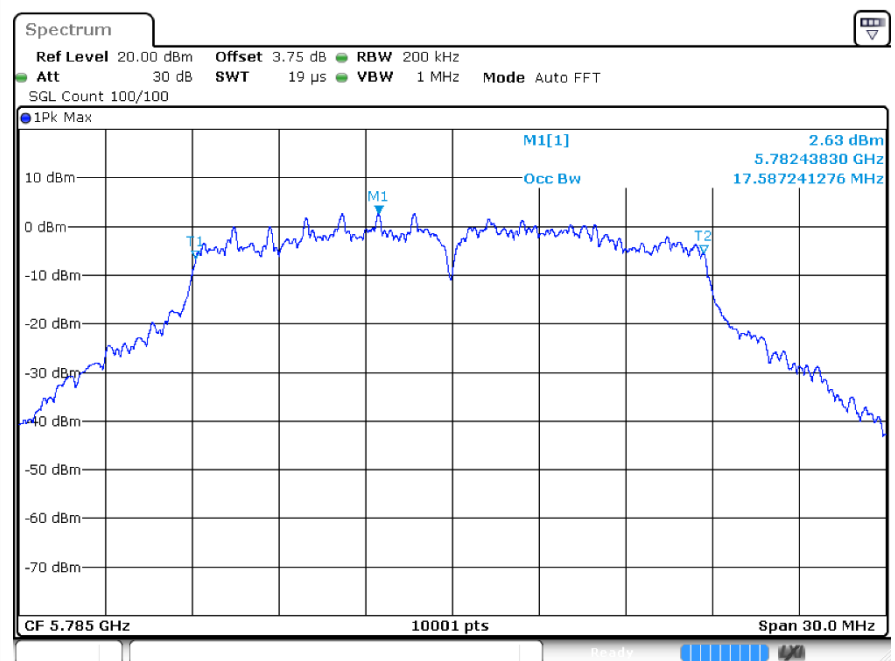
OBW a 5825MHz Ant1



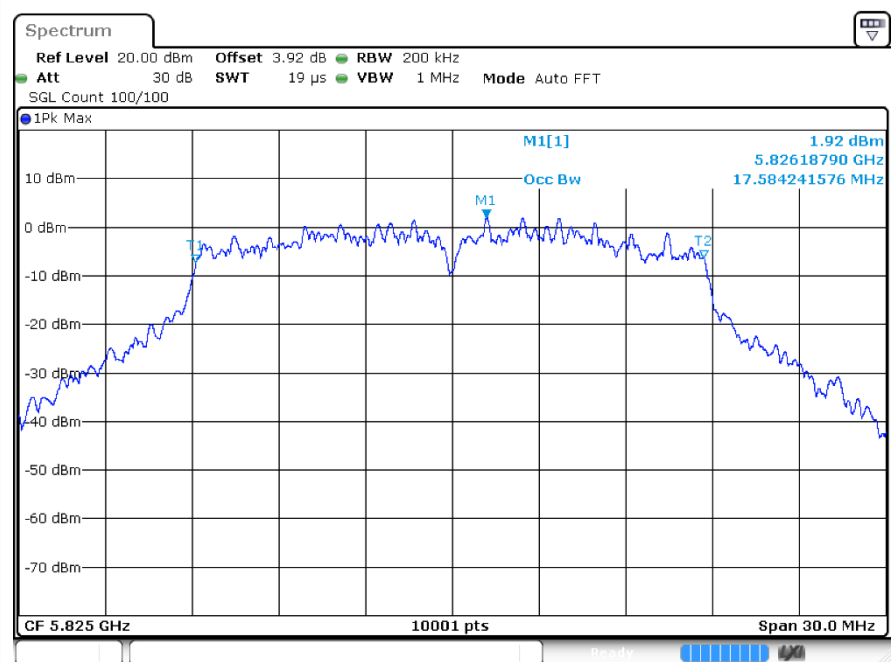
OBW n20 5745MHz Ant1



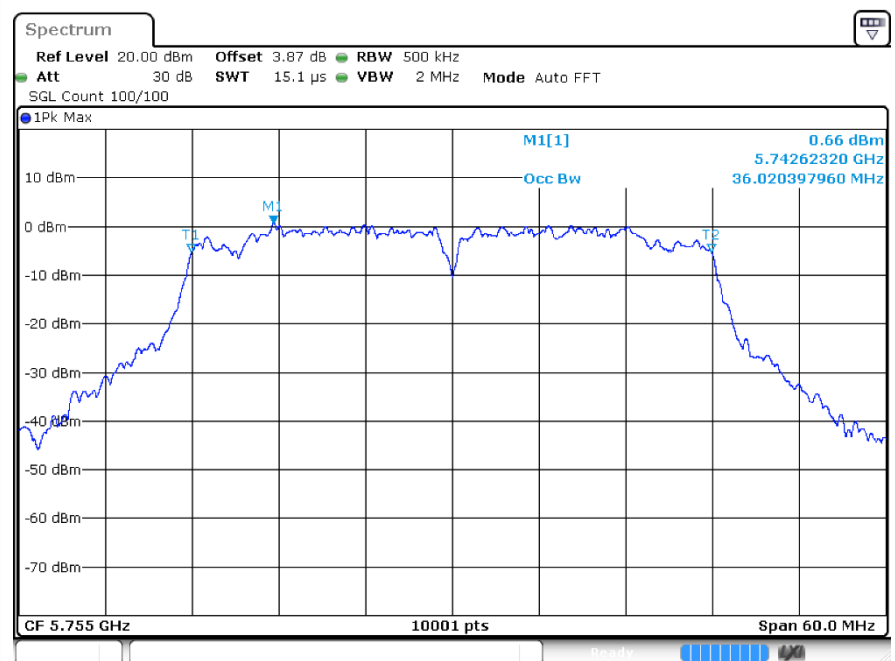
OBW n20 5785MHz Ant1



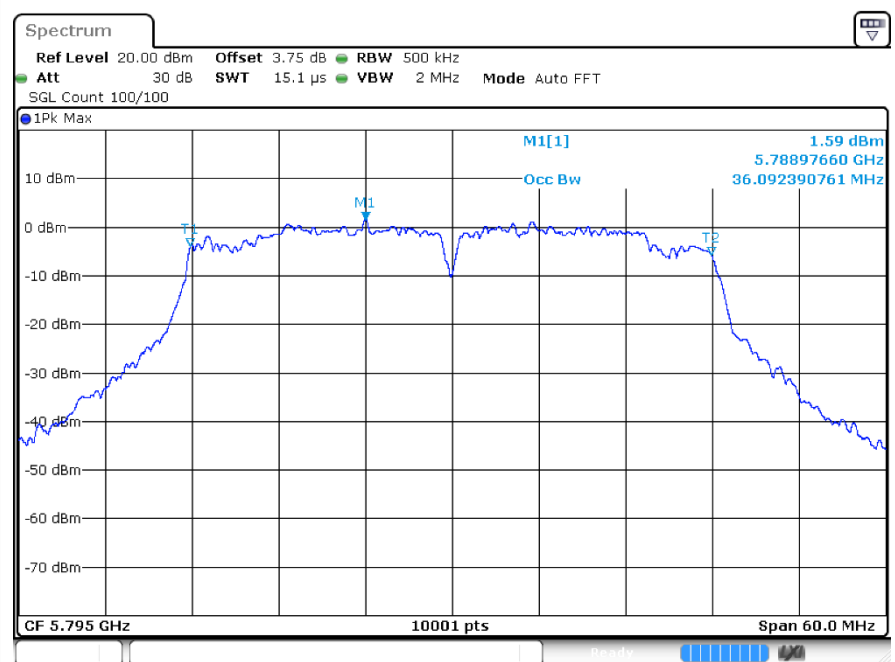
OBW n20 5825MHz Ant1



OBW n40 5755MHz Ant1



OBW n40 5795MHz Ant1

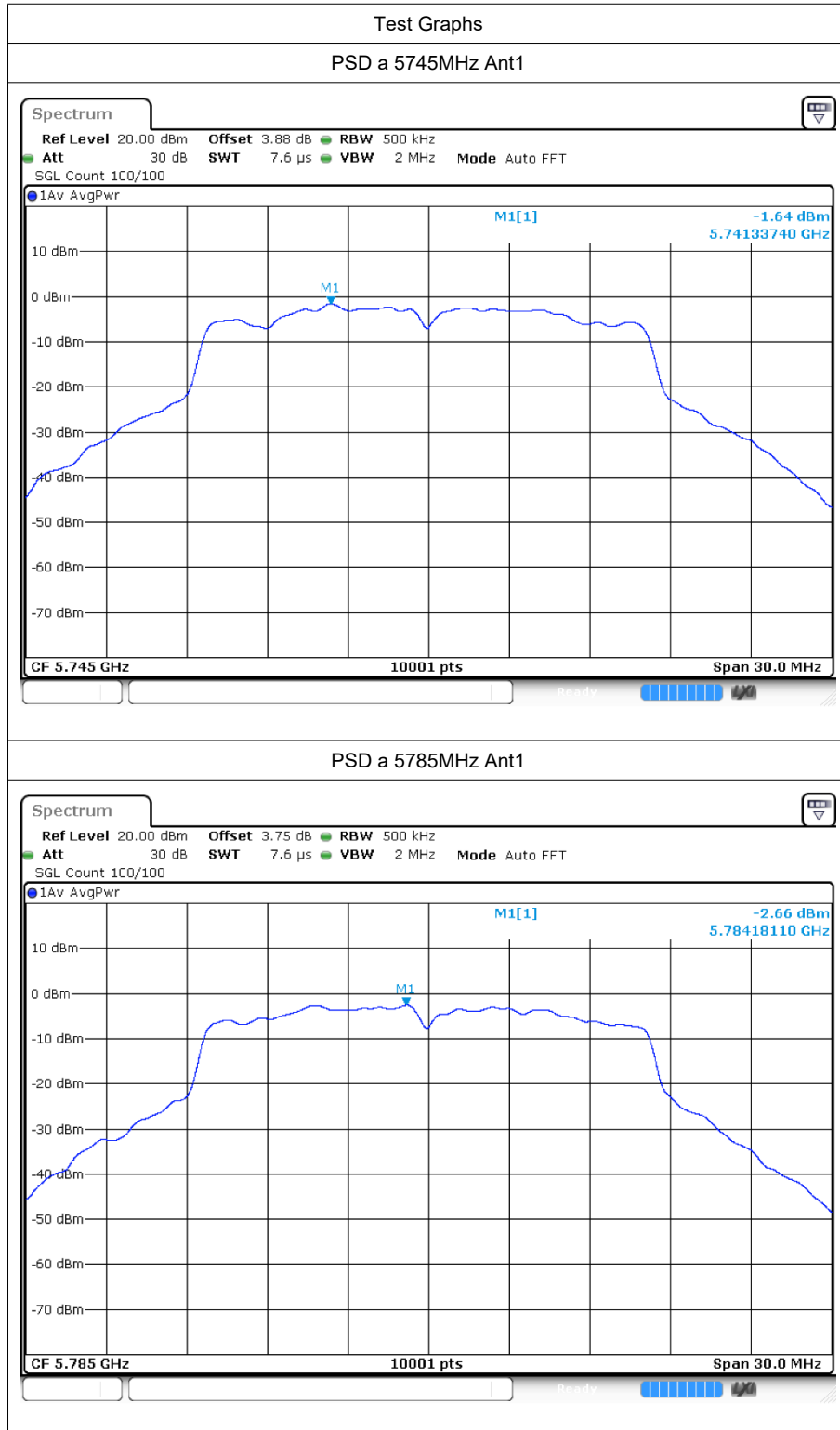


5 Maximum Power Spectral Density Level

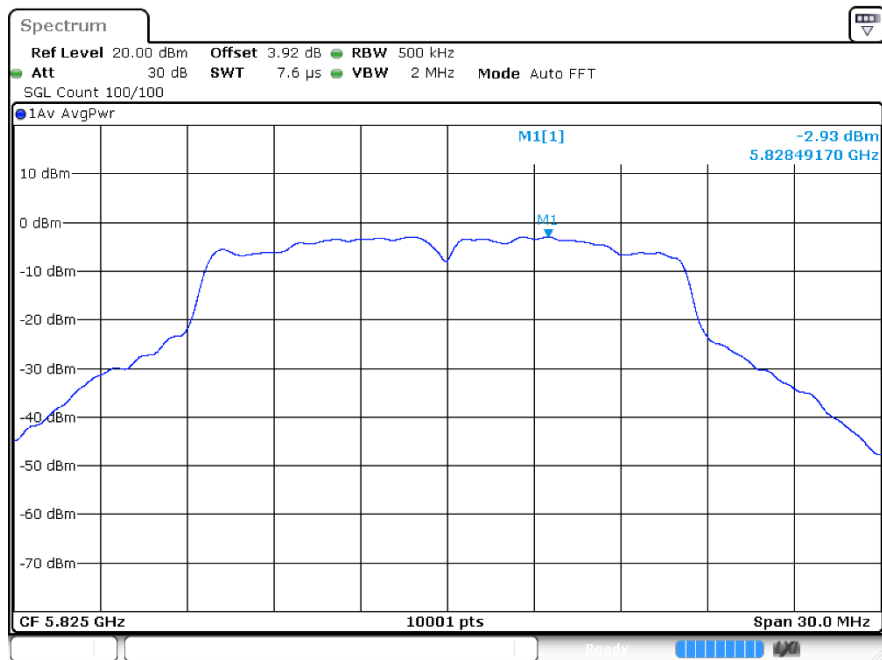
5.1 Test Result

Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm)	Duty Factor (dB)	Total PSD (dBm)	Limit (dBm)	Verdict
a	5745	Ant1	-1.64	0.61	-1.03	30	Pass
a	5785	Ant1	-2.66	0.61	-2.05	30	Pass
a	5825	Ant1	-2.93	0.61	-2.32	30	Pass
n20	5745	Ant1	-3.27	0.58	-2.69	30	Pass
n20	5785	Ant1	-2.7	0.58	-2.12	30	Pass
n20	5825	Ant1	-3.07	0.57	-2.5	30	Pass
n40	5755	Ant1	-7.17	0.55	-6.62	30	Pass
n40	5795	Ant1	-6.21	0.55	-5.66	30	Pass

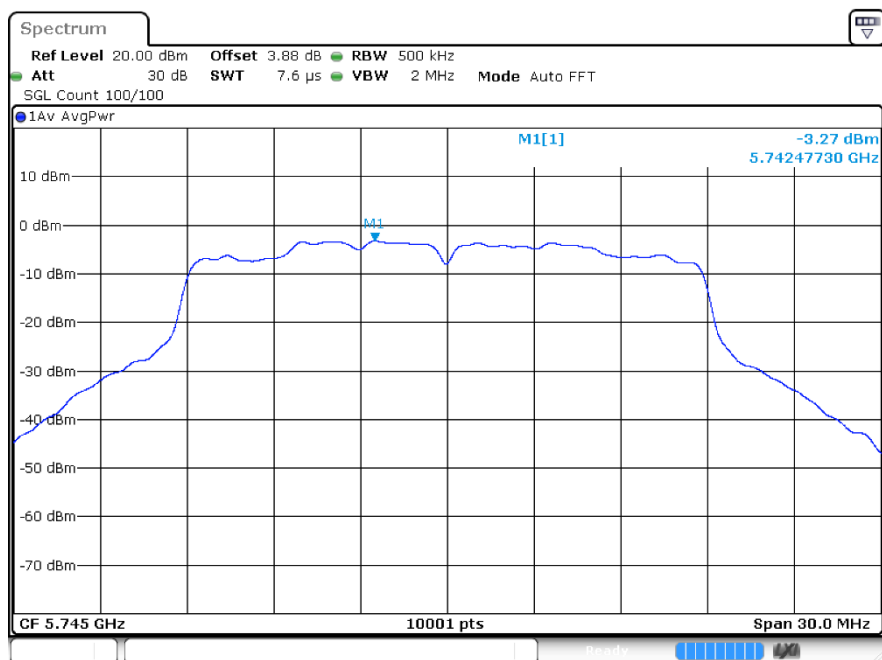
5.2 Test Graphs



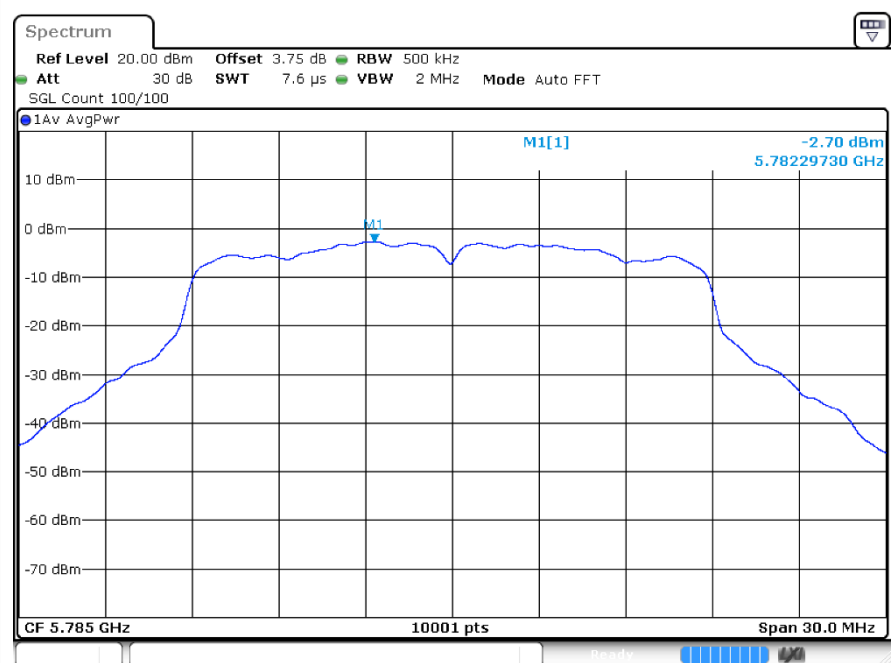
PSD a 5825MHz Ant1



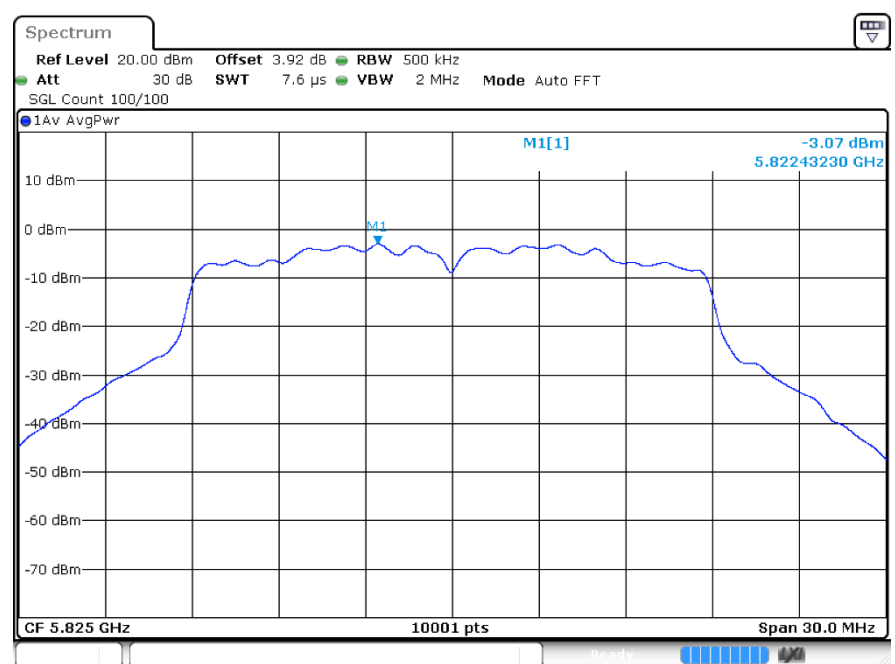
PSD n20 5745MHz Ant1



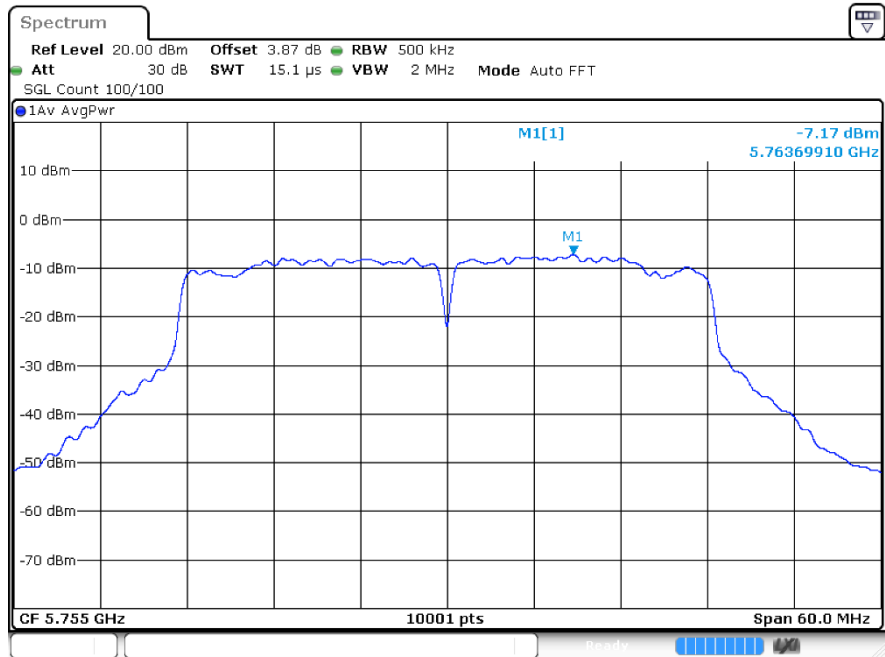
PSD n20 5785MHz Ant1



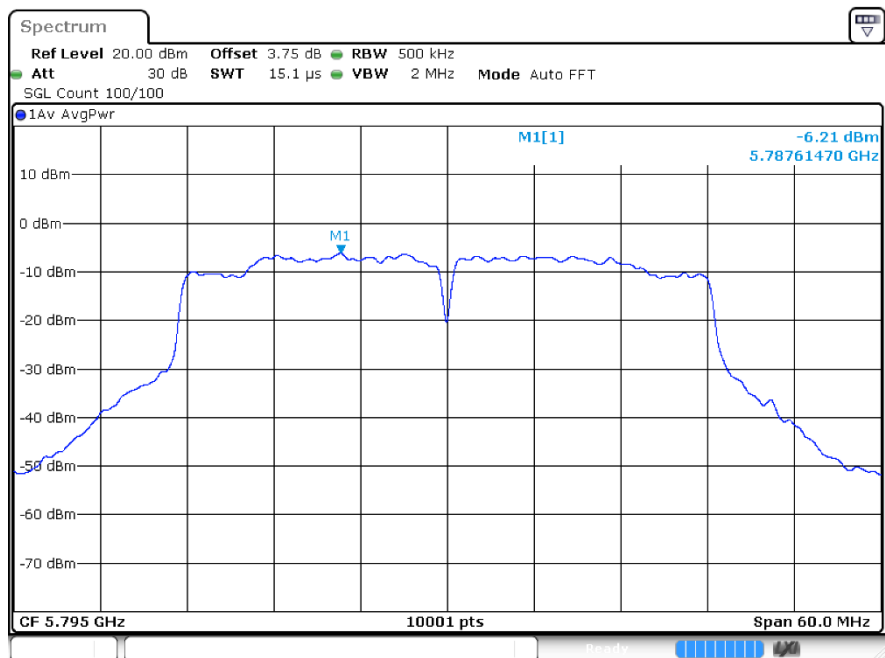
PSD n20 5825MHz Ant1



PSD n40 5755MHz Ant1



PSD n40 5795MHz Ant1



6 Frequency Stability

6.1 Test Result

Condition	Mode	Frequency (MHz)	Antenna	Measured Frequency (MHz)	Frequency Error (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
20°C 4.25V	a	5745	Ant1	5744.92	-80000	-13.93	25	Pass
20°C 5V	a	5745	Ant1	5744.94	-60000	-10.44	25	Pass
20°C 5.75V	a	5745	Ant1	5744.94	-60000	-10.44	25	Pass
-20°C 5V	a	5745	Ant1	5744.94	-60000	-10.44	25	Pass
-10°C 5V	a	5745	Ant1	5744.92	-80000	-13.93	25	Pass
0°C 5V	a	5745	Ant1	5744.94	-60000	-10.44	25	Pass
10°C 5V	a	5745	Ant1	5744.92	-80000	-13.93	25	Pass
30°C 5V	a	5745	Ant1	5744.96	-40000	-6.96	25	Pass
40°C 5V	a	5745	Ant1	5744.92	-80000	-13.93	25	Pass
50°C 5V	a	5745	Ant1	5744.92	-80000	-13.93	25	Pass
20°C 4.25V	a	5785	Ant1	5784.92	-80000	-13.83	25	Pass
20°C 5V	a	5785	Ant1	5784.94	-60000	-10.37	25	Pass
20°C 5.75V	a	5785	Ant1	5784.92	-80000	-13.83	25	Pass
-20°C 5V	a	5785	Ant1	5784.94	-60000	-10.37	25	Pass
-10°C 5V	a	5785	Ant1	5784.94	-60000	-10.37	25	Pass
0°C 5V	a	5785	Ant1	5784.94	-60000	-10.37	25	Pass
10°C 5V	a	5785	Ant1	5784.92	-80000	-13.83	25	Pass
30°C 5V	a	5785	Ant1	5784.92	-80000	-13.83	25	Pass
40°C 5V	a	5785	Ant1	5784.96	-40000	-6.91	25	Pass
50°C 5V	a	5785	Ant1	5784.94	-60000	-10.37	25	Pass
20°C 4.25V	a	5825	Ant1	5824.94	-60000	-10.3	25	Pass
20°C 5V	a	5825	Ant1	5824.94	-60000	-10.3	25	Pass
20°C 5.75V	a	5825	Ant1	5824.92	-80000	-13.73	25	Pass
-20°C 5V	a	5825	Ant1	5824.94	-60000	-10.3	25	Pass
-10°C 5V	a	5825	Ant1	5824.94	-60000	-10.3	25	Pass
0°C 5V	a	5825	Ant1	5824.94	-60000	-10.3	25	Pass
10°C 5V	a	5825	Ant1	5824.94	-60000	-10.3	25	Pass
30°C 5V	a	5825	Ant1	5824.9	-100000	-17.17	25	Pass
40°C 5V	a	5825	Ant1	5824.94	-60000	-10.3	25	Pass
50°C 5V	a	5825	Ant1	5824.94	-60000	-10.3	25	Pass
20°C 4.25V	n20	5745	Ant1	5744.94	-60000	-10.44	25	Pass
20°C 5V	n20	5745	Ant1	5744.96	-40000	-6.96	25	Pass
20°C 5.75V	n20	5745	Ant1	5744.96	-40000	-6.96	25	Pass
-20°C 5V	n20	5745	Ant1	5744.94	-60000	-10.44	25	Pass
-10°C 5V	n20	5745	Ant1	5744.92	-80000	-13.93	25	Pass
0°C 5V	n20	5745	Ant1	5744.92	-80000	-13.93	25	Pass



10°C 5V	n20	5745	Ant1	5744.92	-80000	-13.93	25	Pass
30°C 5V	n20	5745	Ant1	5744.94	-60000	-10.44	25	Pass
40°C 5V	n20	5745	Ant1	5744.96	-40000	-6.96	25	Pass
50°C 5V	n20	5745	Ant1	5744.94	-60000	-10.44	25	Pass
20°C 4.25V	n20	5785	Ant1	5784.96	-40000	-6.91	25	Pass
20°C 5V	n20	5785	Ant1	5784.92	-80000	-13.83	25	Pass
20°C 5.75V	n20	5785	Ant1	5784.92	-80000	-13.83	25	Pass
-20°C 5V	n20	5785	Ant1	5784.96	-40000	-6.91	25	Pass
-10°C 5V	n20	5785	Ant1	5784.92	-80000	-13.83	25	Pass
0°C 5V	n20	5785	Ant1	5784.96	-40000	-6.91	25	Pass
10°C 5V	n20	5785	Ant1	5784.92	-80000	-13.83	25	Pass
30°C 5V	n20	5785	Ant1	5784.94	-60000	-10.37	25	Pass
40°C 5V	n20	5785	Ant1	5784.9	-100000	-17.29	25	Pass
50°C 5V	n20	5785	Ant1	5784.92	-80000	-13.83	25	Pass
20°C 4.25V	n20	5825	Ant1	5824.9	-100000	-17.17	25	Pass
20°C 5V	n20	5825	Ant1	5824.94	-60000	-10.3	25	Pass
20°C 5.75V	n20	5825	Ant1	5824.96	-40000	-6.87	25	Pass
-20°C 5V	n20	5825	Ant1	5824.92	-80000	-13.73	25	Pass
-10°C 5V	n20	5825	Ant1	5824.94	-60000	-10.3	25	Pass
0°C 5V	n20	5825	Ant1	5824.94	-60000	-10.3	25	Pass
10°C 5V	n20	5825	Ant1	5824.9	-100000	-17.17	25	Pass
30°C 5V	n20	5825	Ant1	5824.96	-40000	-6.87	25	Pass
40°C 5V	n20	5825	Ant1	5824.94	-60000	-10.3	25	Pass
50°C 5V	n20	5825	Ant1	5824.96	-40000	-6.87	25	Pass
20°C 4.25V	n40	5755	Ant1	5754.96	-40000	-6.95	25	Pass
20°C 5V	n40	5755	Ant1	5754.92	-80000	-13.9	25	Pass
20°C 5.75V	n40	5755	Ant1	5754.92	-80000	-13.9	25	Pass
-20°C 5V	n40	5755	Ant1	5754.92	-80000	-13.9	25	Pass
-10°C 5V	n40	5755	Ant1	5754.92	-80000	-13.9	25	Pass
0°C 5V	n40	5755	Ant1	5754.96	-40000	-6.95	25	Pass
10°C 5V	n40	5755	Ant1	5754.96	-40000	-6.95	25	Pass
30°C 5V	n40	5755	Ant1	5754.92	-80000	-13.9	25	Pass
40°C 5V	n40	5755	Ant1	5754.92	-80000	-13.9	25	Pass
50°C 5V	n40	5755	Ant1	5754.92	-80000	-13.9	25	Pass
20°C 4.25V	n40	5795	Ant1	5795	0	0	25	Pass
20°C 5V	n40	5795	Ant1	5794.92	-80000	-13.81	25	Pass
20°C 5.75V	n40	5795	Ant1	5794.92	-80000	-13.81	25	Pass
-20°C 5V	n40	5795	Ant1	5794.92	-80000	-13.81	25	Pass
-10°C 5V	n40	5795	Ant1	5794.92	-80000	-13.81	25	Pass
0°C 5V	n40	5795	Ant1	5794.96	-40000	-6.9	25	Pass
10°C 5V	n40	5795	Ant1	5794.92	-80000	-13.81	25	Pass
30°C 5V	n40	5795	Ant1	5794.96	-40000	-6.9	25	Pass
40°C 5V	n40	5795	Ant1	5795	0	0	25	Pass



50°C 5V	n40	5795	Ant1	5795	0	0	25	Pass
---------	-----	------	------	------	---	---	----	------

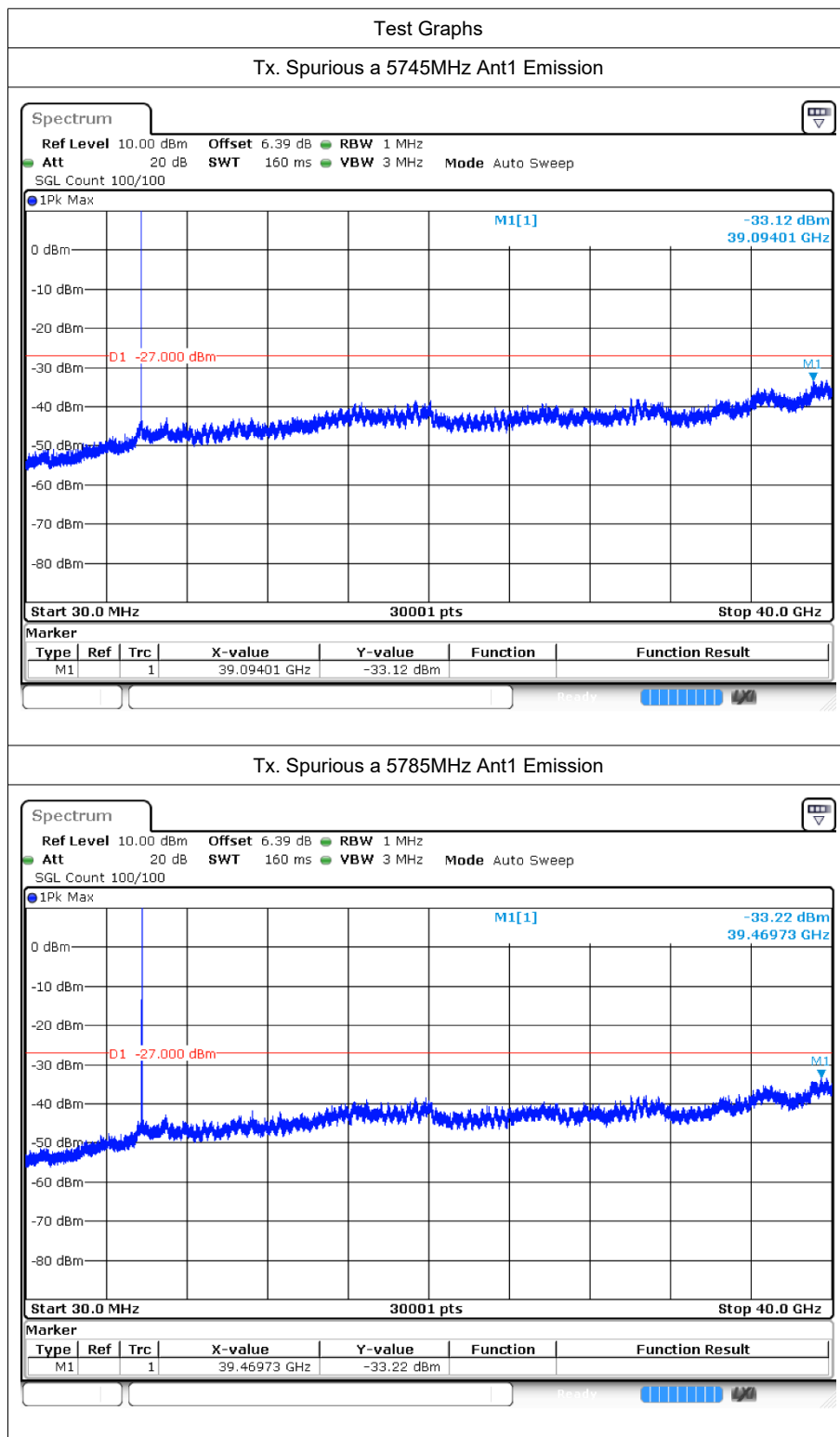


7 Conducted RF Spurious Emission

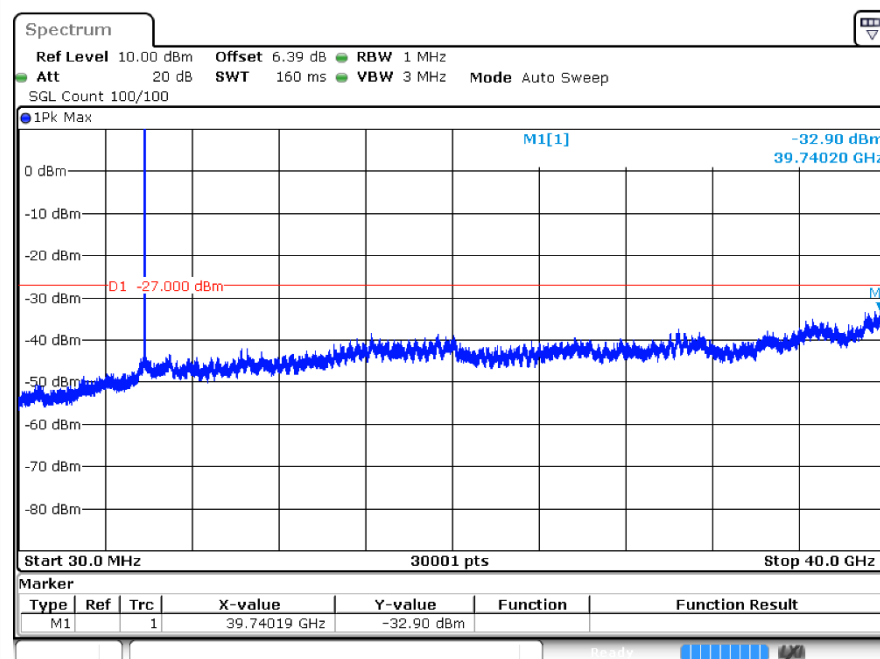
7.1 Test Result

Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
a	5745	Ant1	-33.12	-27	Pass
a	5785	Ant1	-33.21	-27	Pass
a	5825	Ant1	-32.89	-27	Pass
n20	5745	Ant1	-33.47	-27	Pass
n20	5785	Ant1	-33.17	-27	Pass
n20	5825	Ant1	-33.43	-27	Pass
n40	5755	Ant1	-33.01	-27	Pass
n40	5795	Ant1	-32.74	-27	Pass

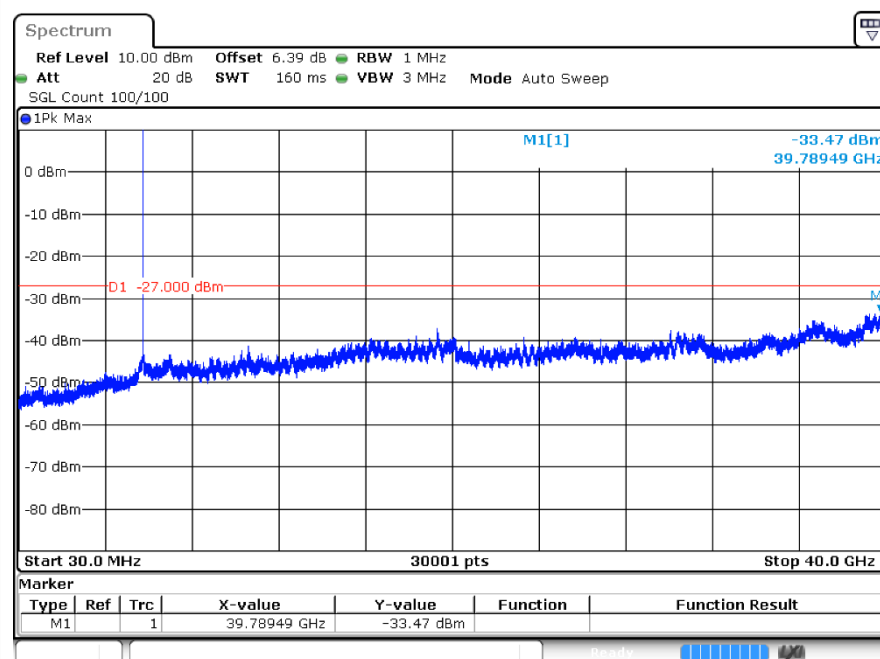
7.2 Test Graphs



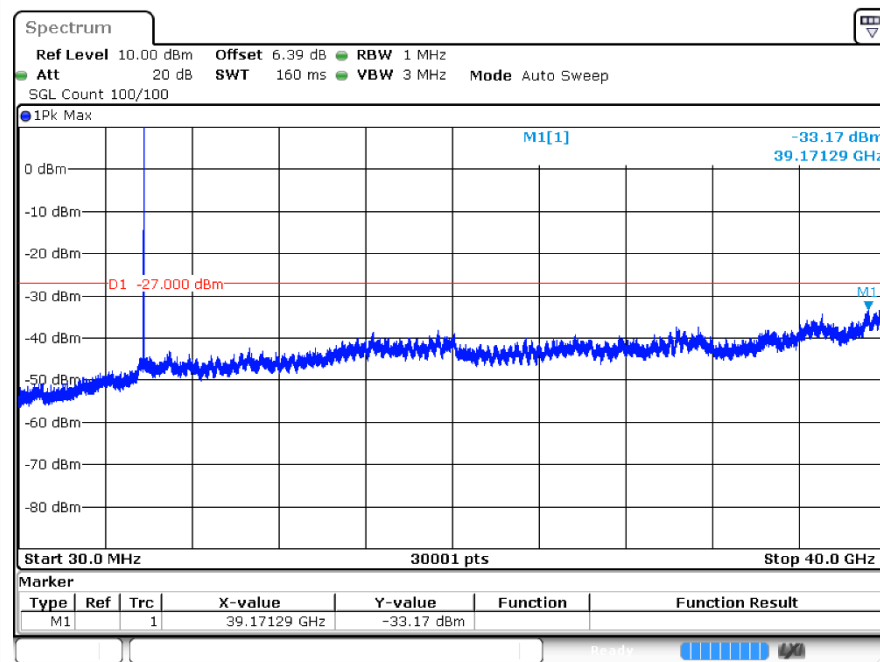
Tx. Spurious a 5825MHz Ant1 Emission



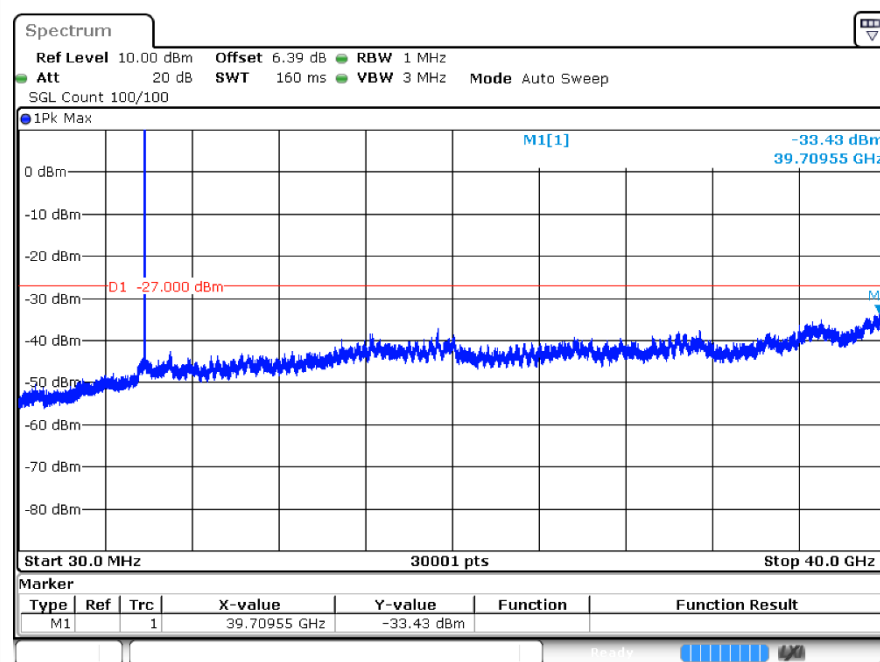
Tx. Spurious n20 5745MHz Ant1 Emission



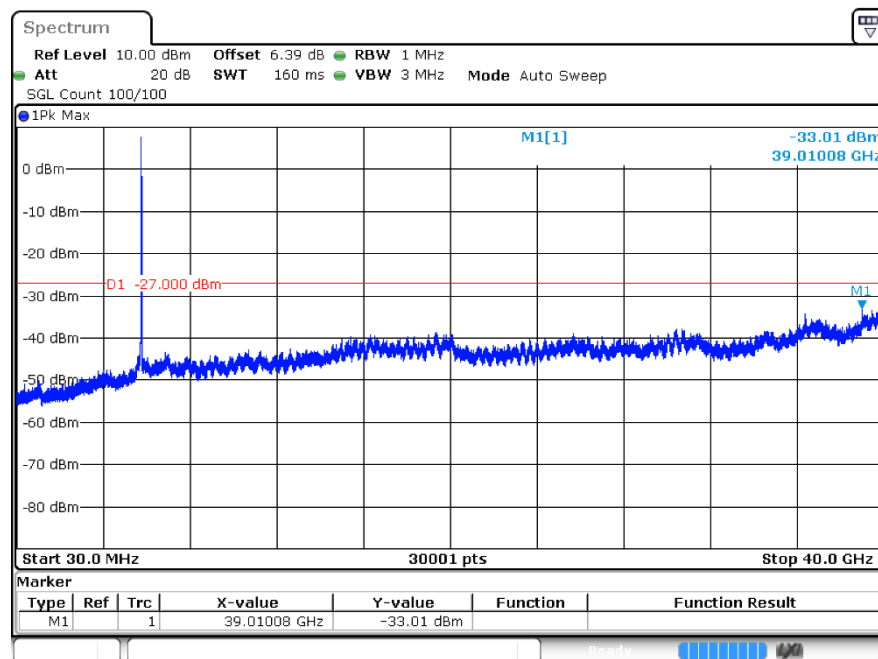
Tx. Spurious n20 5785MHz Ant1 Emission



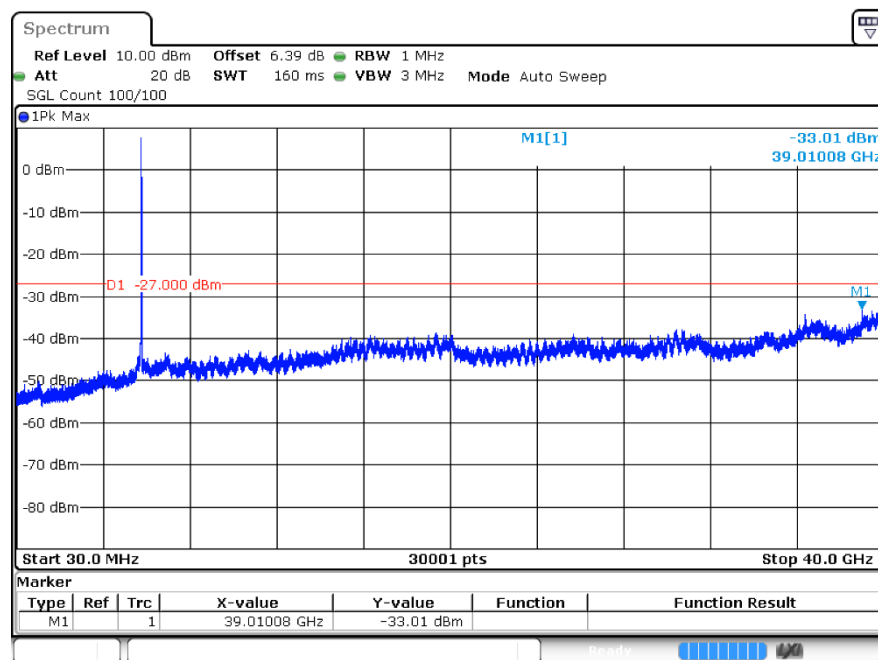
Tx. Spurious n20 5825MHz Ant1 Emission



Tx. Spurious n40 5755MHz Ant1 Emission



Tx. Spurious n40 5795MHz Ant1 Emission



---The End---