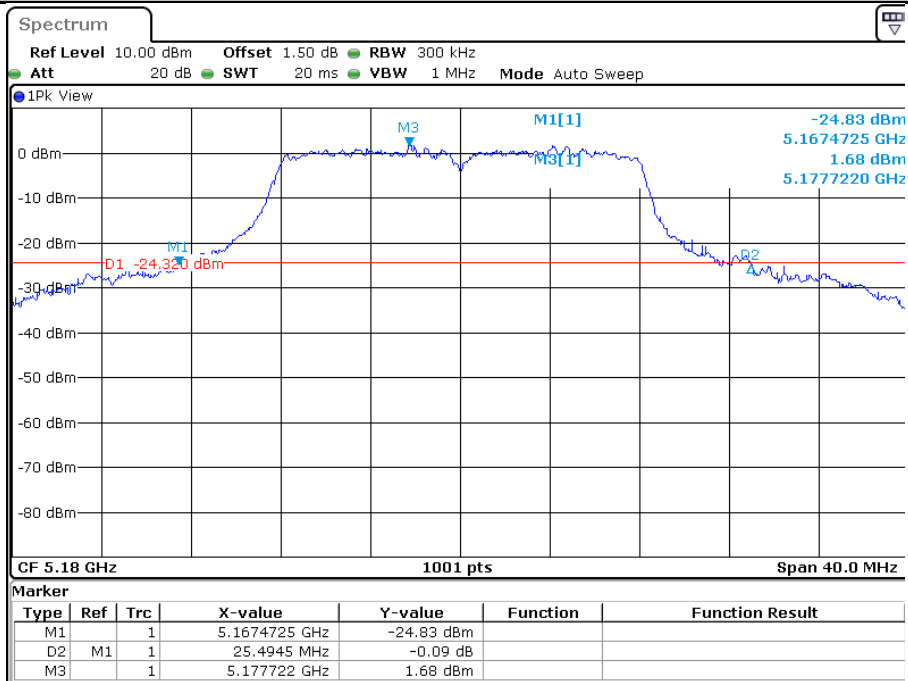


## Appendix B for SHEM190601436502

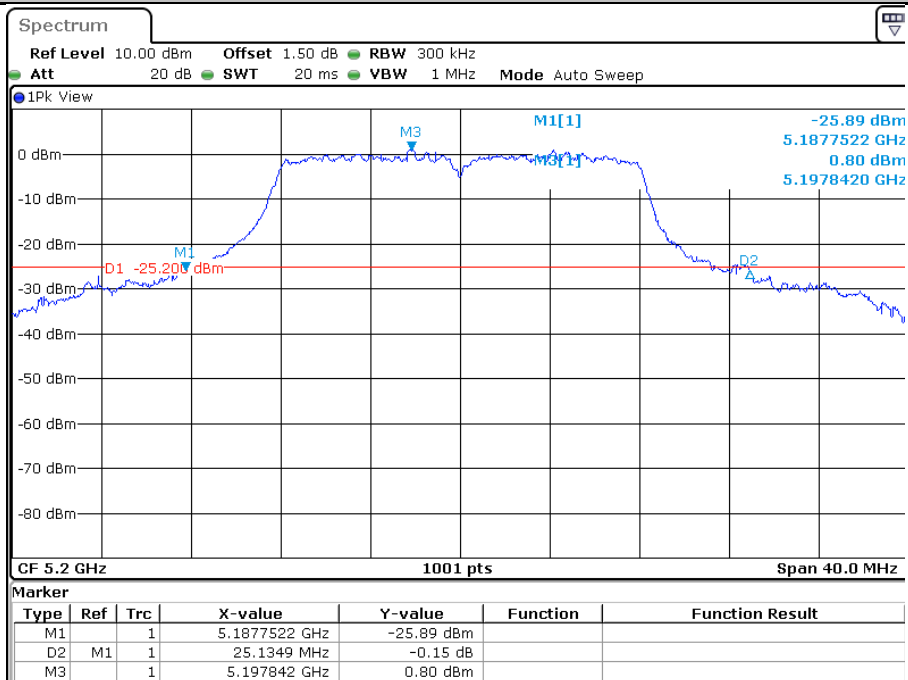
## 1.Emission Bandwidth Measurement

Test Mode	Test Channel	EBW[MHz]		Limit[MHz]	Verdict
		Ant1	Ant2		
11A	5180	25.49	23.02	---	PASS
11A	5220	25.13	23.22	---	PASS
11A	5240	22.90	23.42	---	PASS
11N20	5180	28.89	24.02	---	PASS
11N20	5220	28.21	24.54	---	PASS
11N20	5240	27.97	24.90	---	PASS

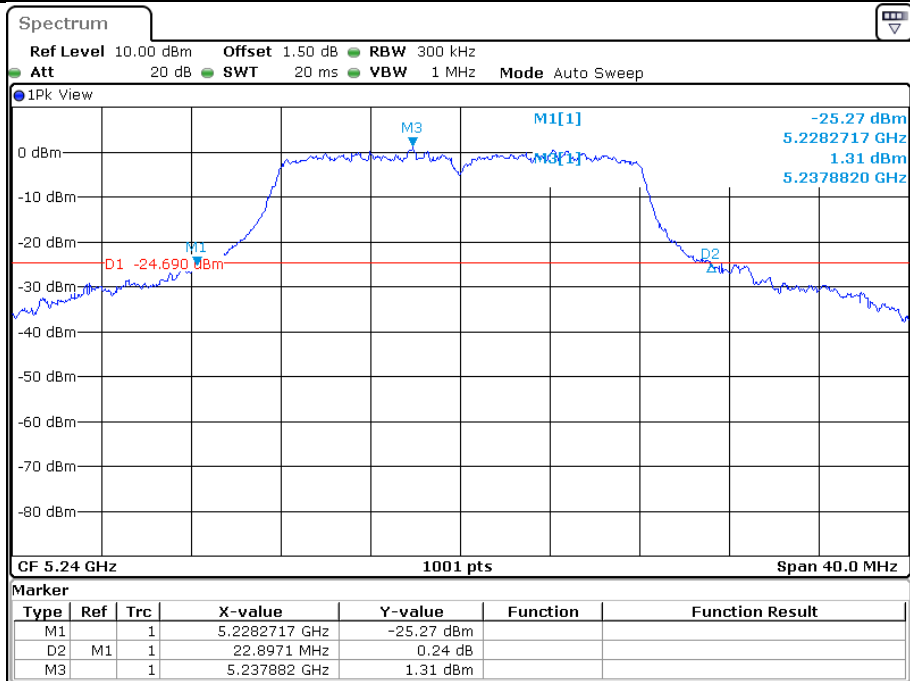
## Emission Bandwidth Measurement\_11A\_5180\_Ant1



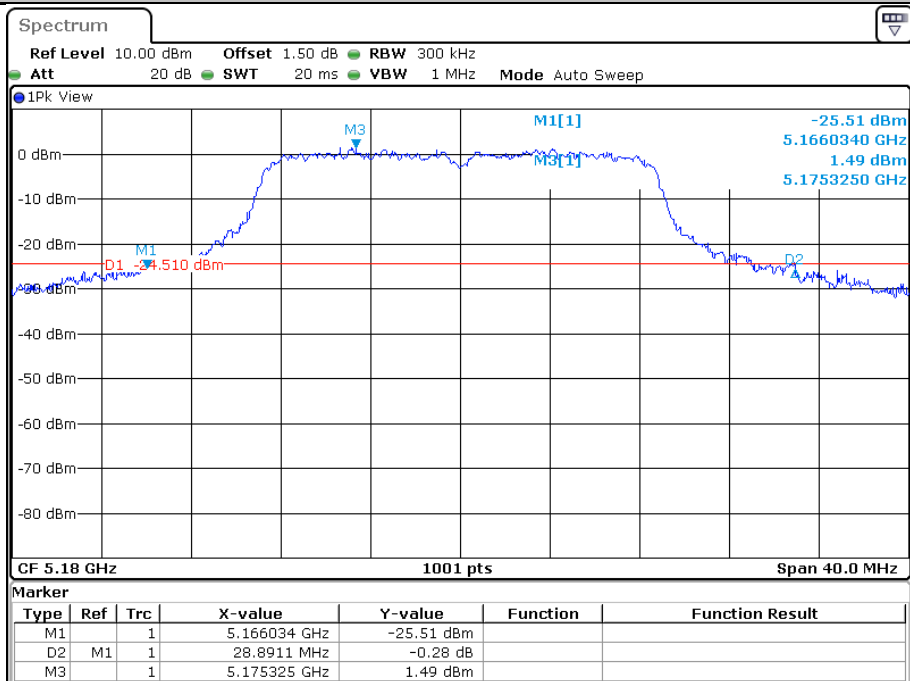
## Emission Bandwidth Measurement\_11A\_5220\_Ant1



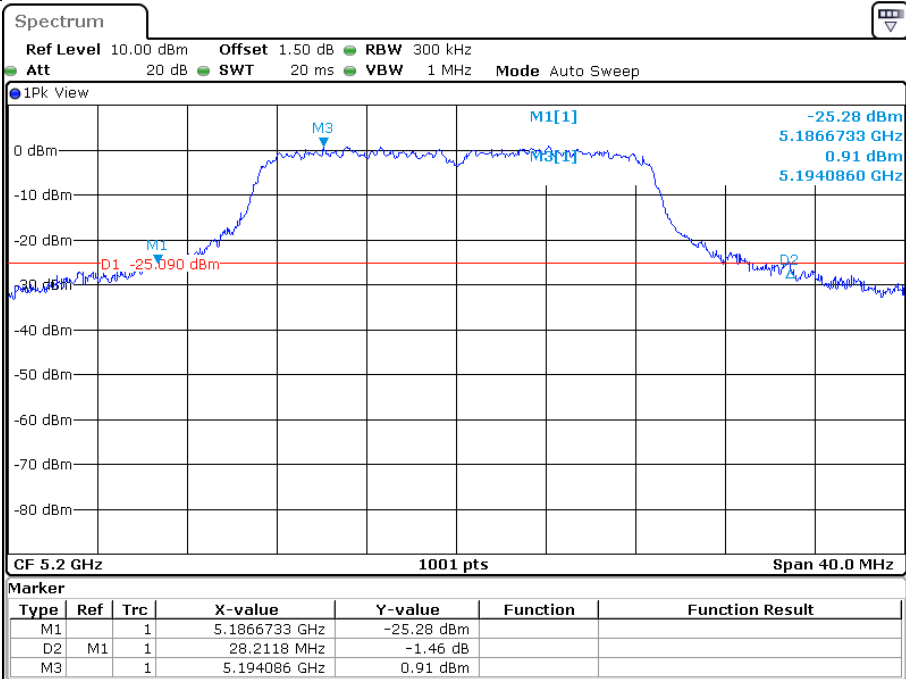
## Emission Bandwidth Measurement\_11A\_5240\_Ant1



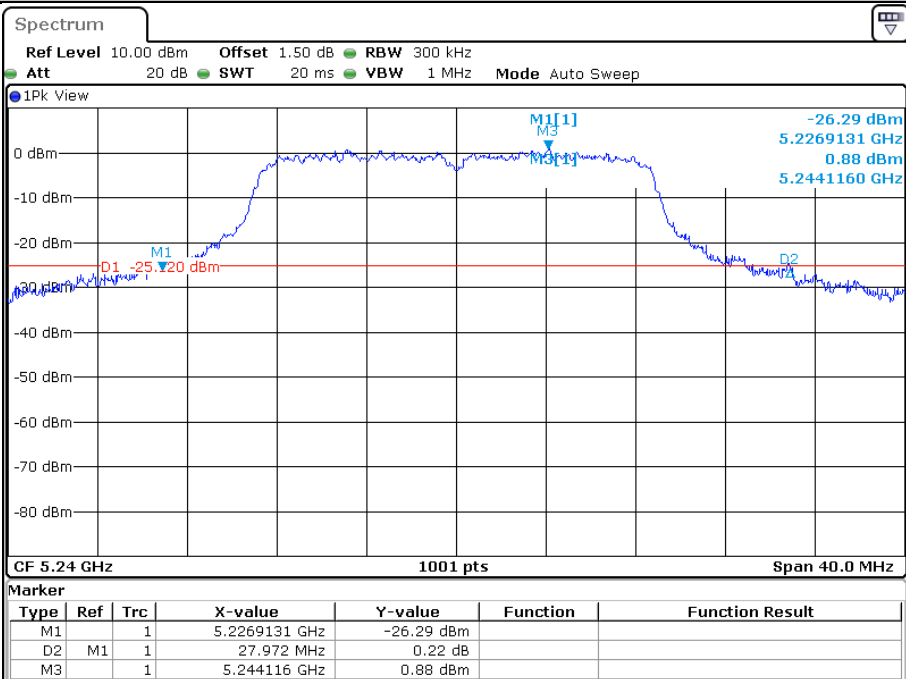
Emission Bandwidth Measurement\_11N20\_5180\_Ant1



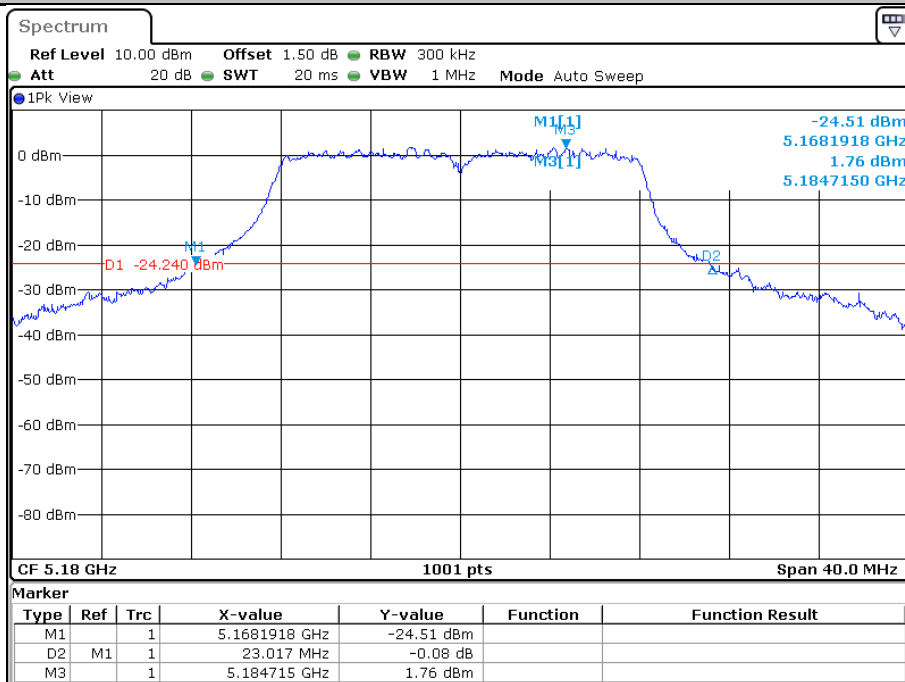
Emission Bandwidth Measurement\_11N20\_5220\_Ant1



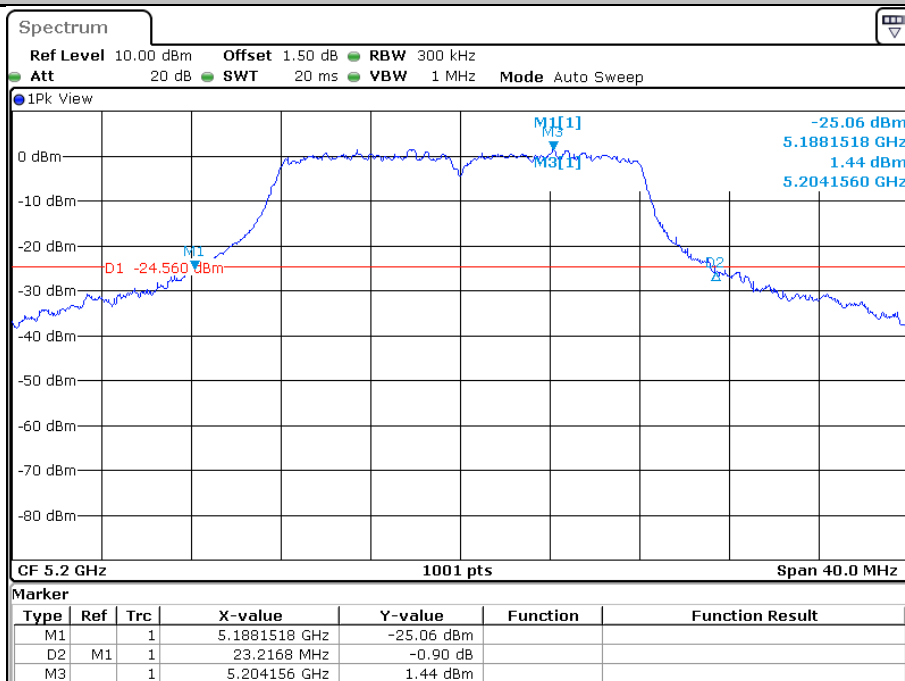
## Emission Bandwidth Measurement\_11N20\_5240\_Ant1



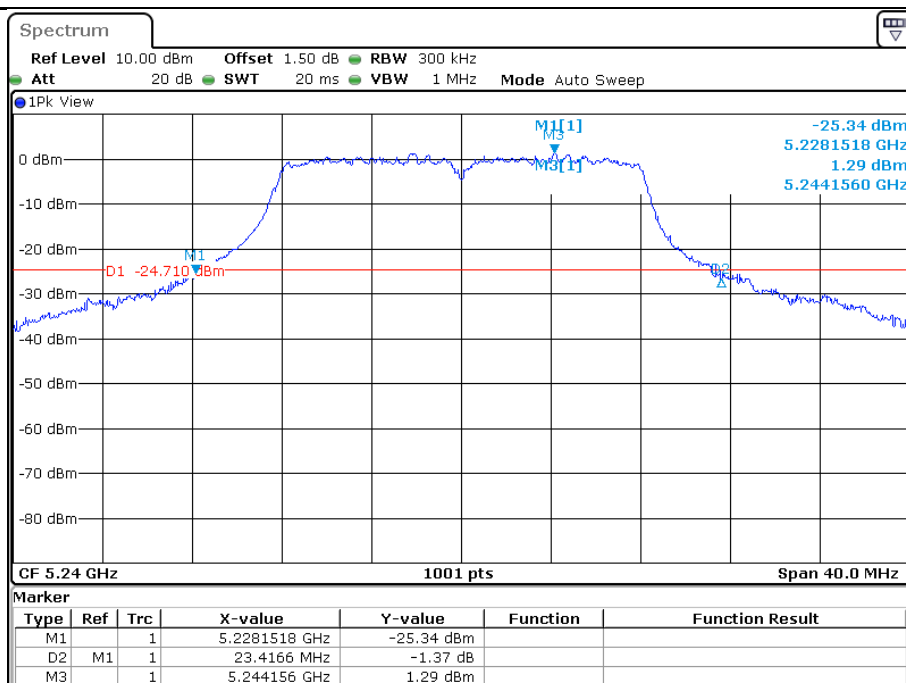
## Emission Bandwidth Measurement\_11A\_5180\_Ant2



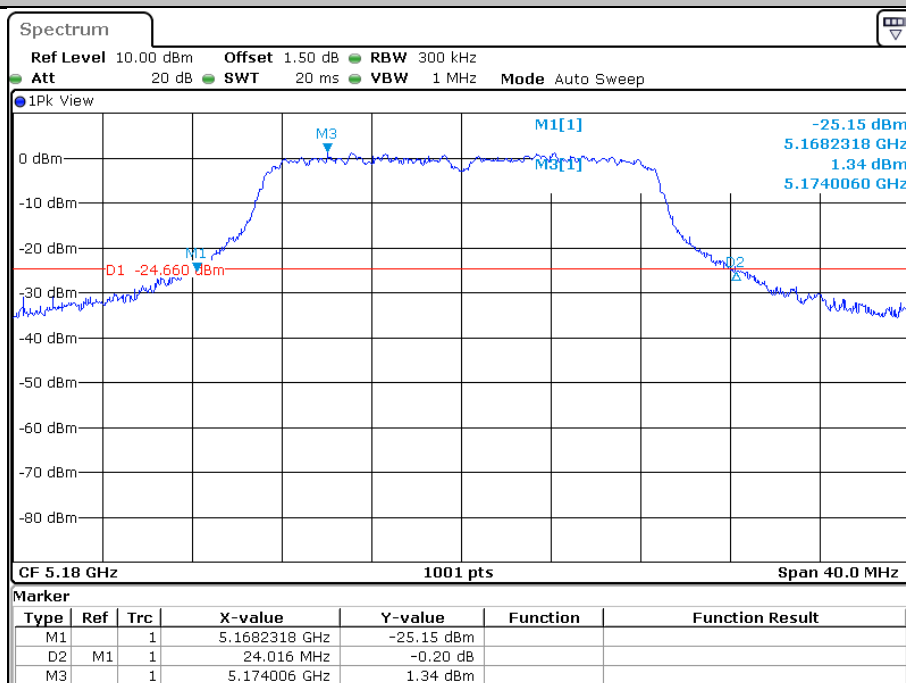
## Emission Bandwidth Measurement\_11A\_5220\_Ant2



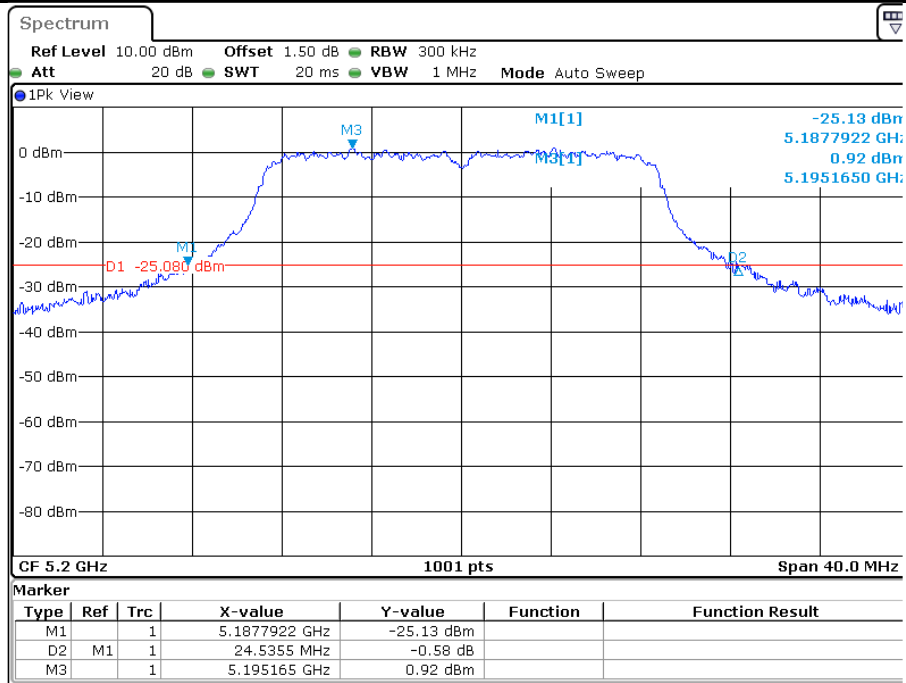
## Emission Bandwidth Measurement\_11A\_5240\_Ant2



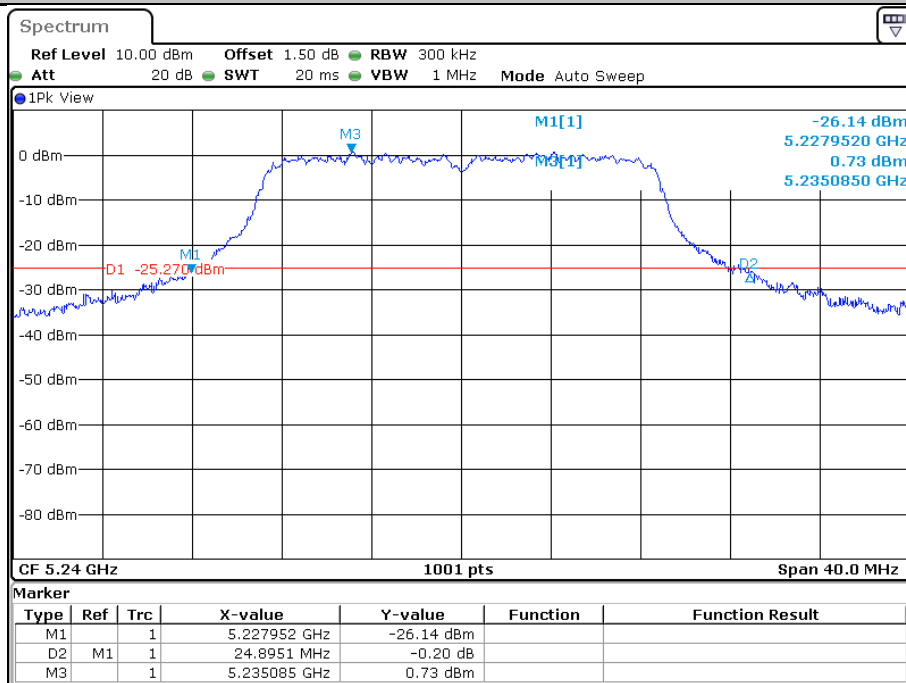
Emission Bandwidth Measurement\_11N20\_5180\_Ant2



Emission Bandwidth Measurement\_11N20\_5220\_Ant2



## Emission Bandwidth Measurement\_11N20\_5240\_Ant2

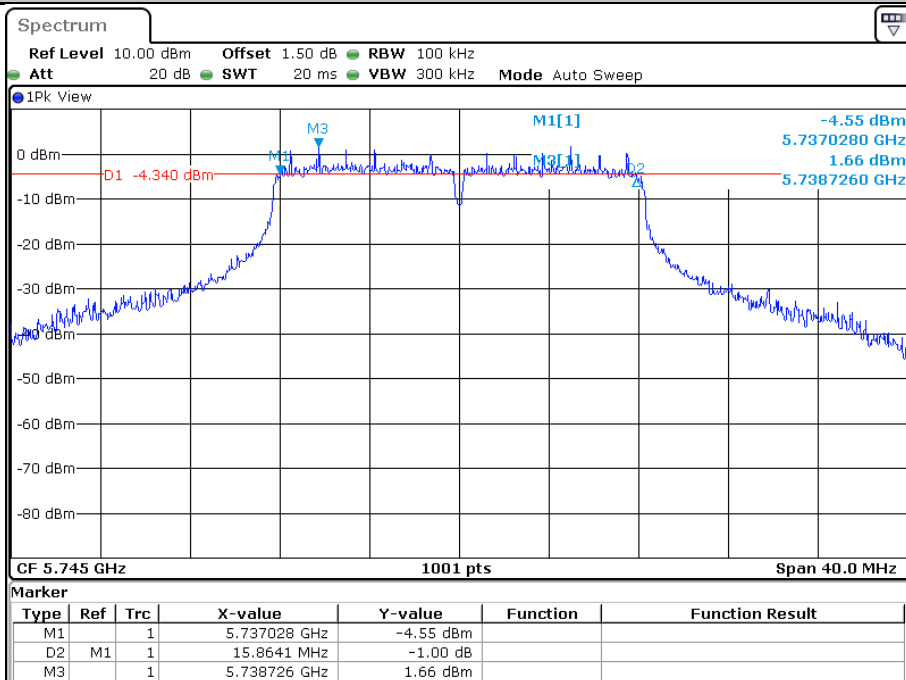


**2.Minimum Emission Bandwidth Measurement**

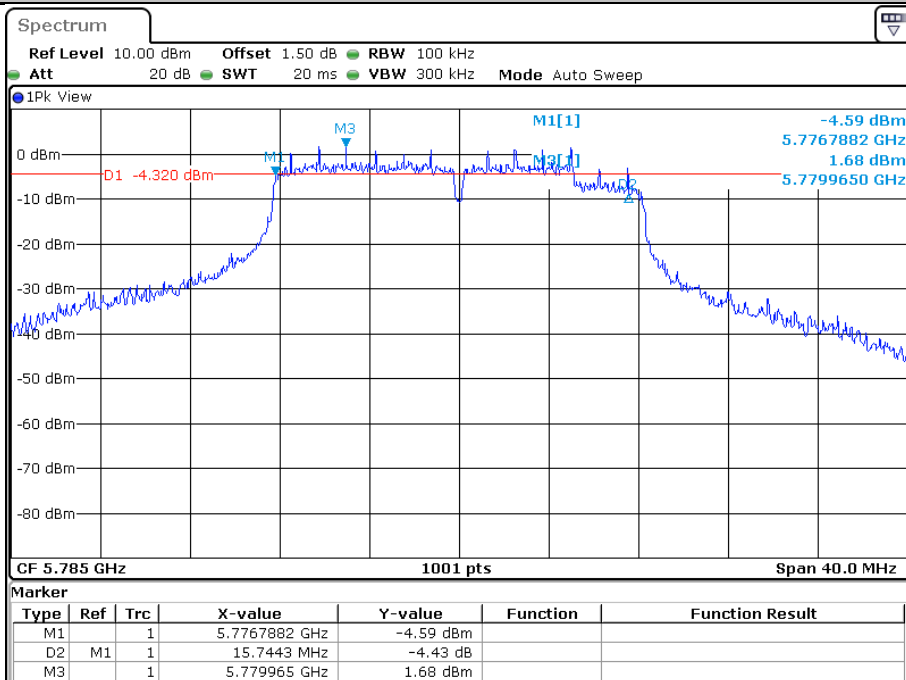
Test Mode	Test Channel	EBW[MHz]		Limit[MHz]	Verdict
		Ant1	Ant2		
11A	5745	15.86	16.14	0.5	PASS
11A	5785	15.74	15.78	0.5	PASS
11A	5825	16.38	16.38	0.5	PASS
11N20	5745	17.02	17.06	0.5	PASS
11N20	5785	16.14	16.38	0.5	PASS
11N20	5825	17.06	16.90	0.5	PASS



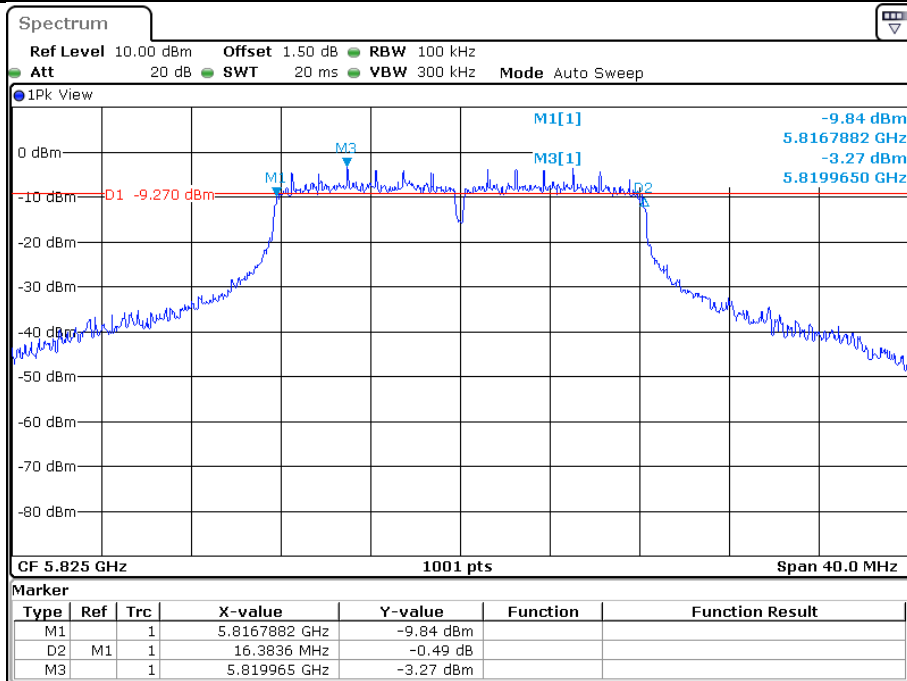
## Minimum Emission Bandwidth Measurement\_11A\_5745\_Ant1



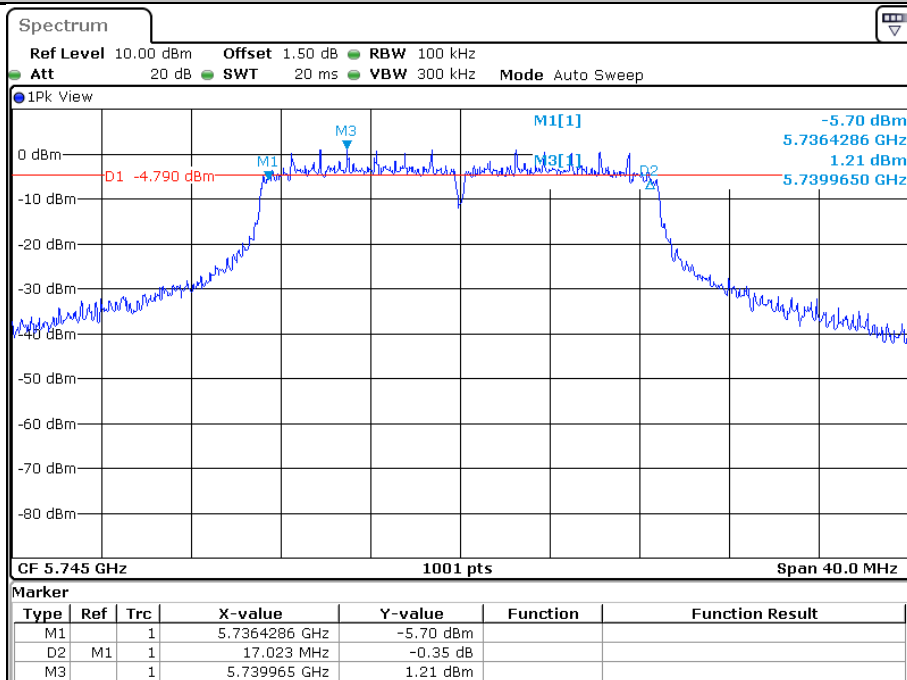
## Minimum Emission Bandwidth Measurement\_11A\_5785\_Ant1



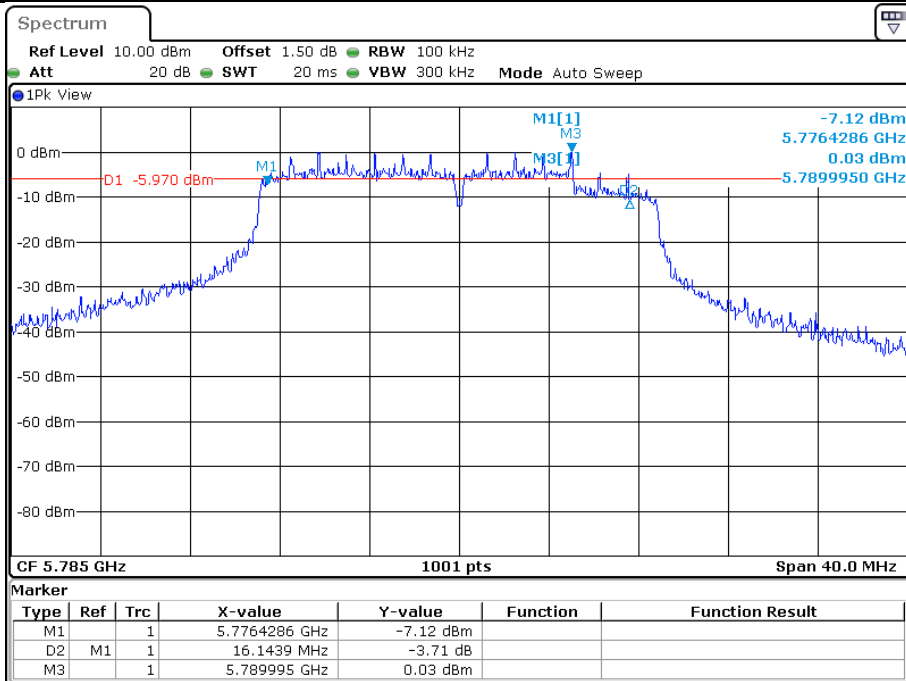
## Minimum Emission Bandwidth Measurement\_11A\_5825\_Ant1



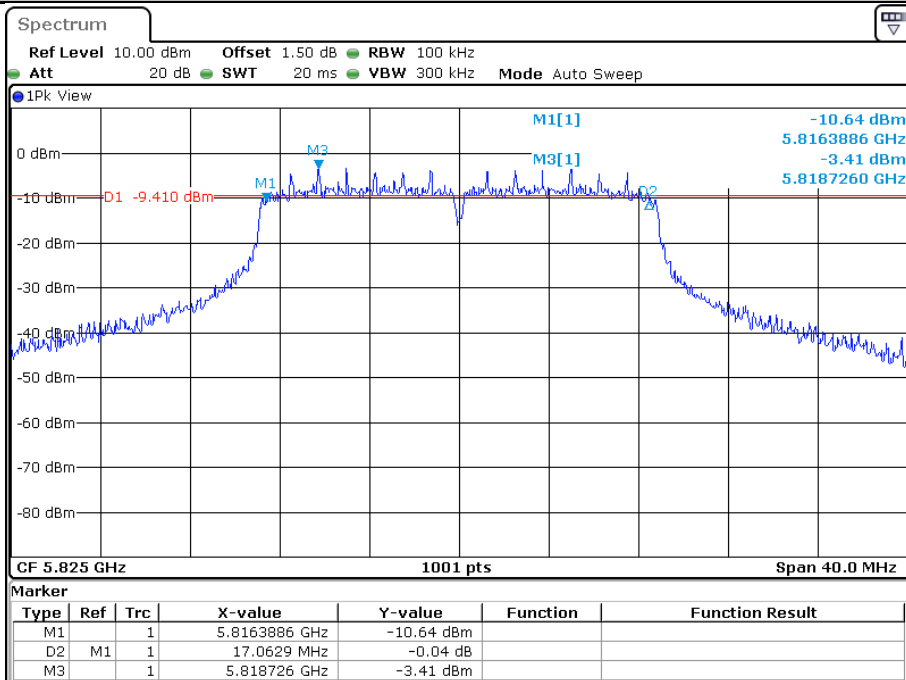
Minimum Emission Bandwidth Measurement\_11N20\_5745\_Ant1



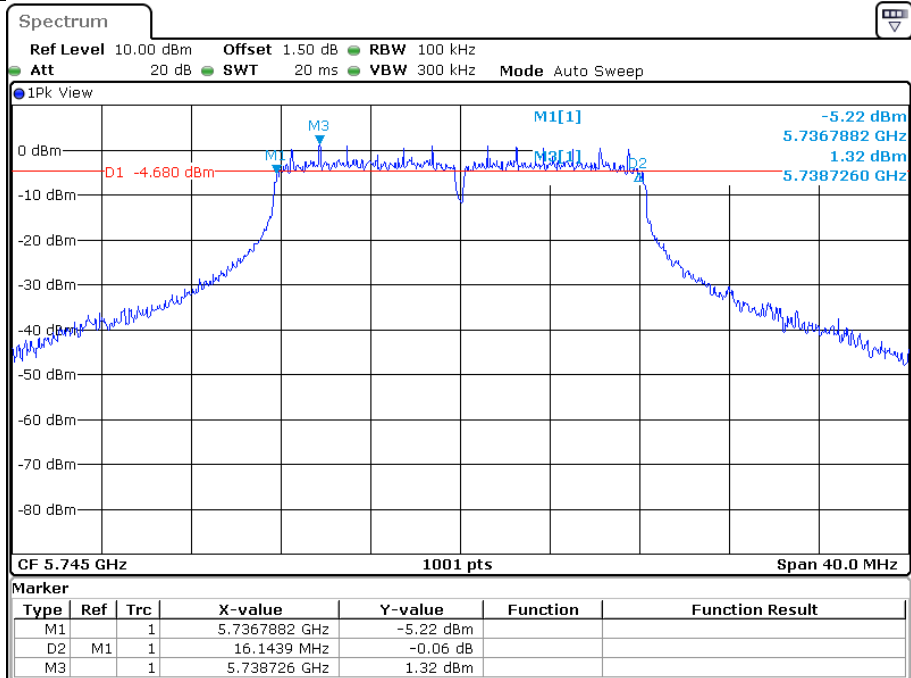
Minimum Emission Bandwidth Measurement\_11N20\_5785\_Ant1



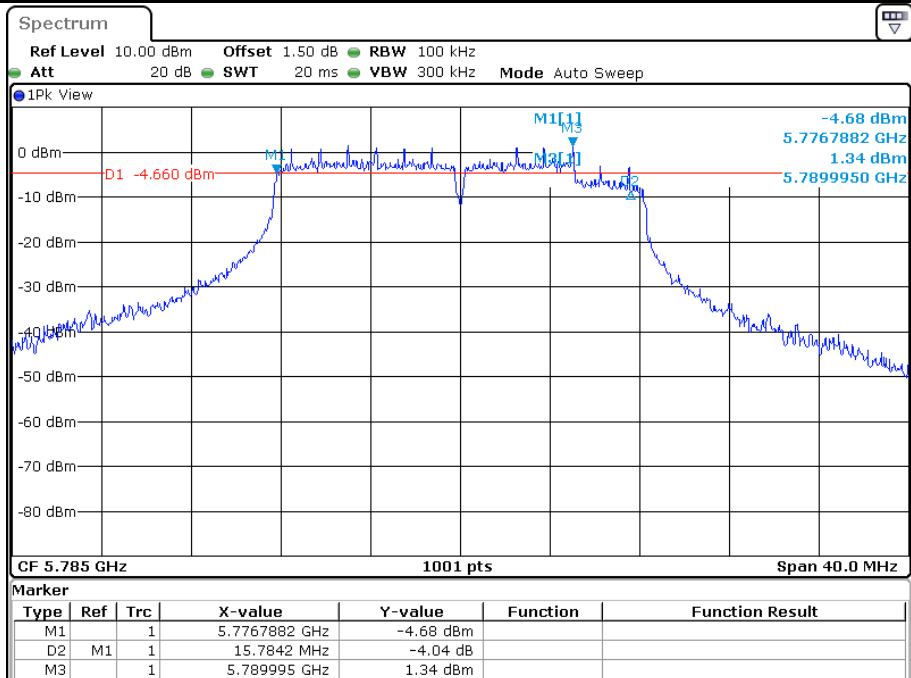
## Minimum Emission Bandwidth Measurement\_11N20\_5825\_Ant1



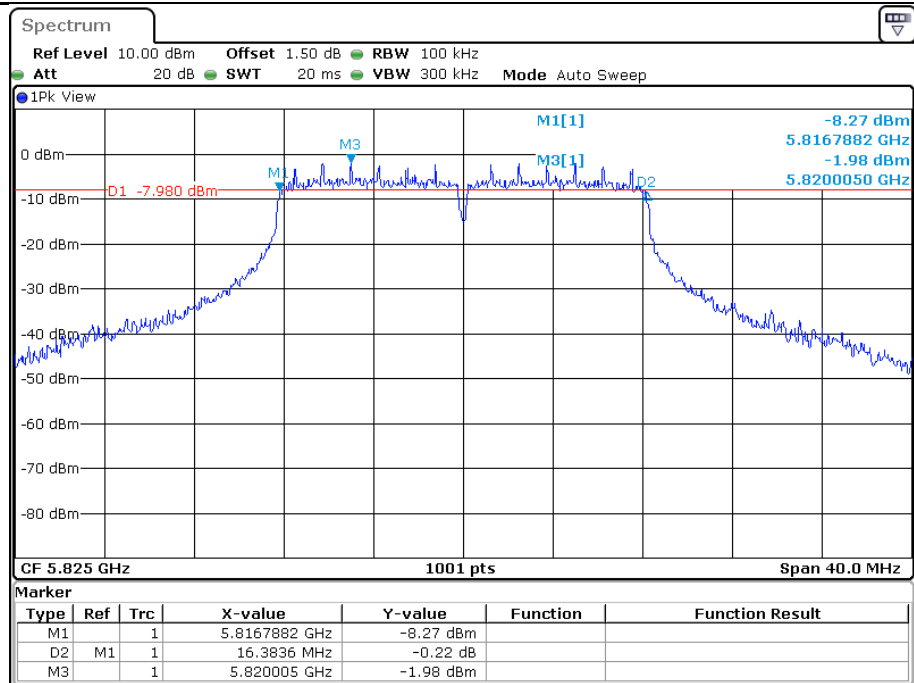
## Minimum Emission Bandwidth Measurement\_11A\_5745\_Ant2



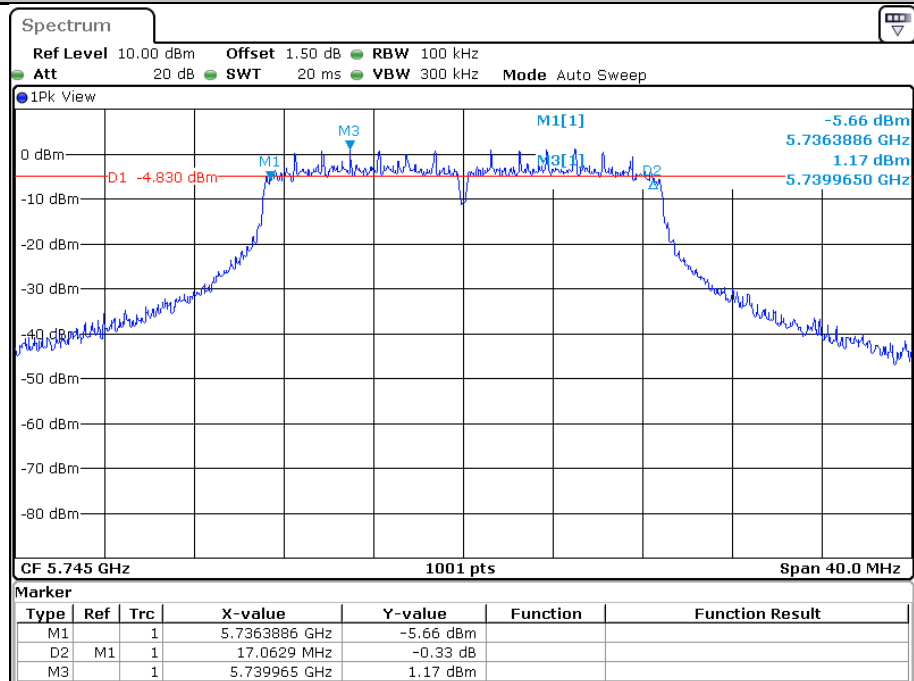
## Minimum Emission Bandwidth Measurement\_11A\_5785\_Ant2



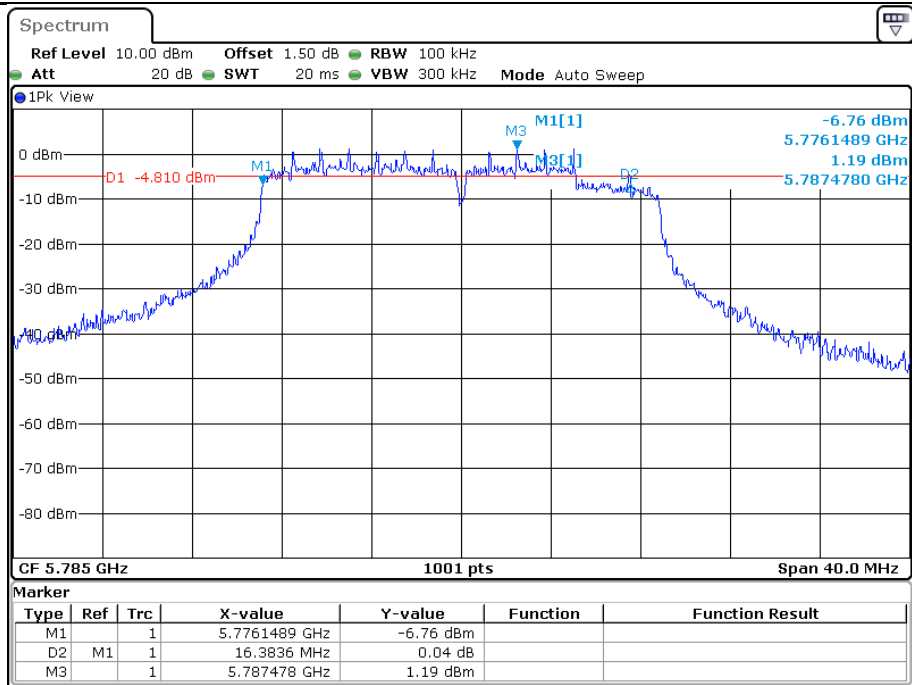
## Minimum Emission Bandwidth Measurement\_11A\_5825\_Ant2



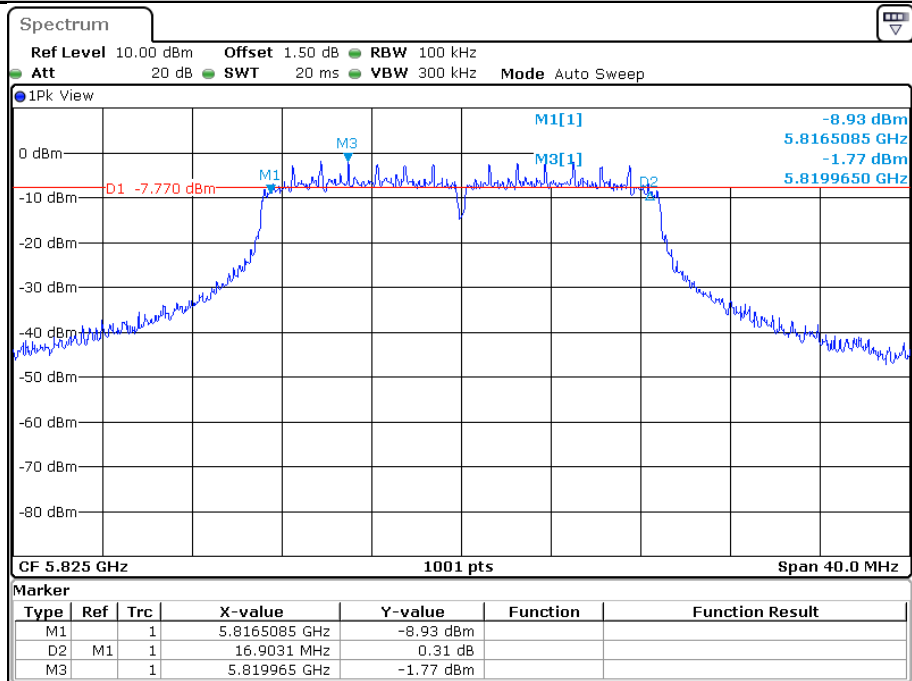
Minimum Emission Bandwidth Measurement\_11N20\_5745\_Ant2



Minimum Emission Bandwidth Measurement\_11N20\_5785\_Ant2



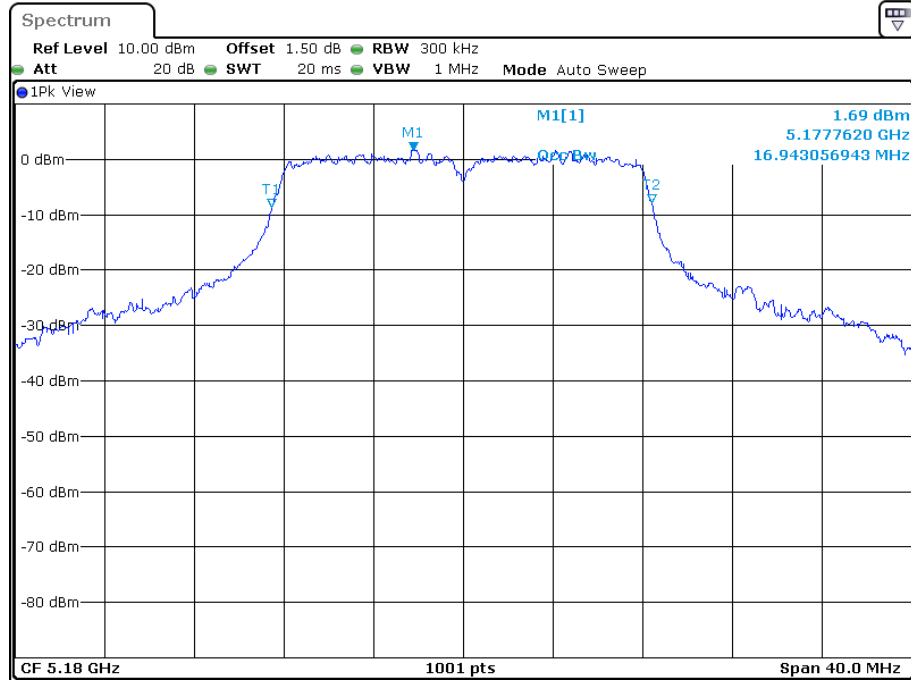
## Minimum Emission Bandwidth Measurement\_11N20\_5825\_Ant2



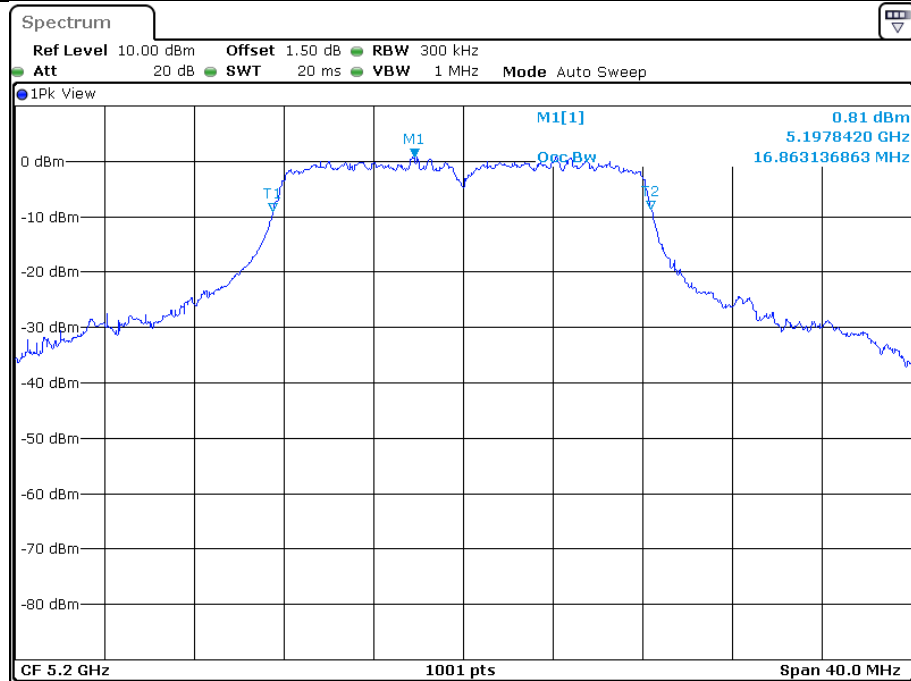
**3.Occupied Bandwidth Measurement**

Test Mode	Test Channel	OBW[MHz]		Limit[MHz]	Verdict
		Ant1	Ant2		
11A	5180	16.94	16.86	---	PASS
11A	5220	16.86	16.86	---	PASS
11A	5240	16.86	16.86	---	PASS
11A	5745	16.86	16.82	---	PASS
11A	5785	16.90	16.83	---	PASS
11A	5825	16.86	16.82	---	PASS
11N20	5180	18.14	17.98	---	PASS
11N20	5220	18.10	18.02	---	PASS
11N20	5240	18.10	18.02	---	PASS
11N20	5745	17.98	17.90	---	PASS
11N20	5785	18.06	17.94	---	PASS
11N20	5825	17.98	17.94	---	PASS

## Occupied Bandwidth Measurement\_11A\_5180\_Ant1

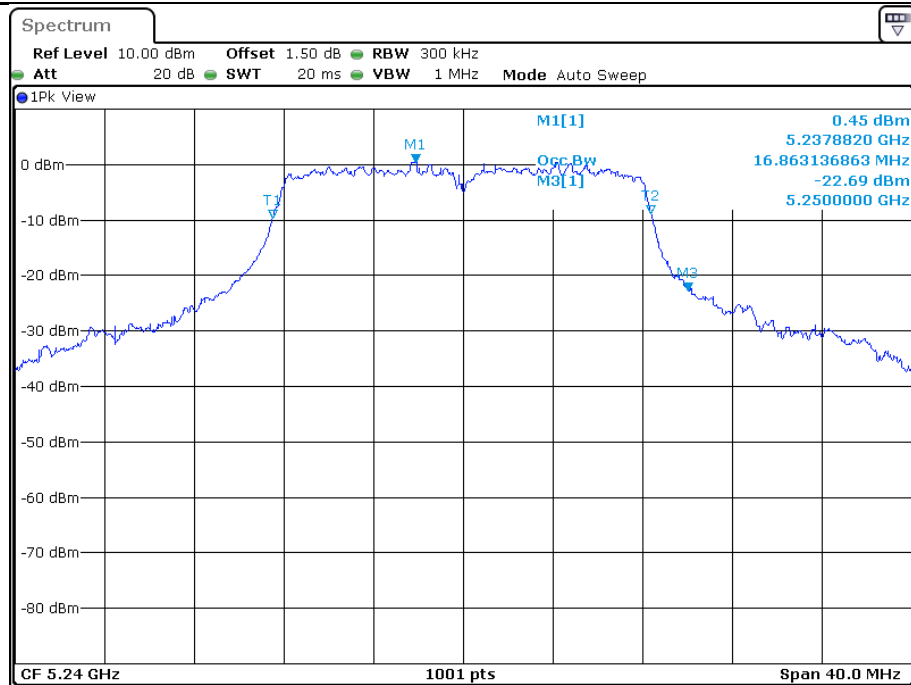


## Occupied Bandwidth Measurement\_11A\_5220\_Ant1

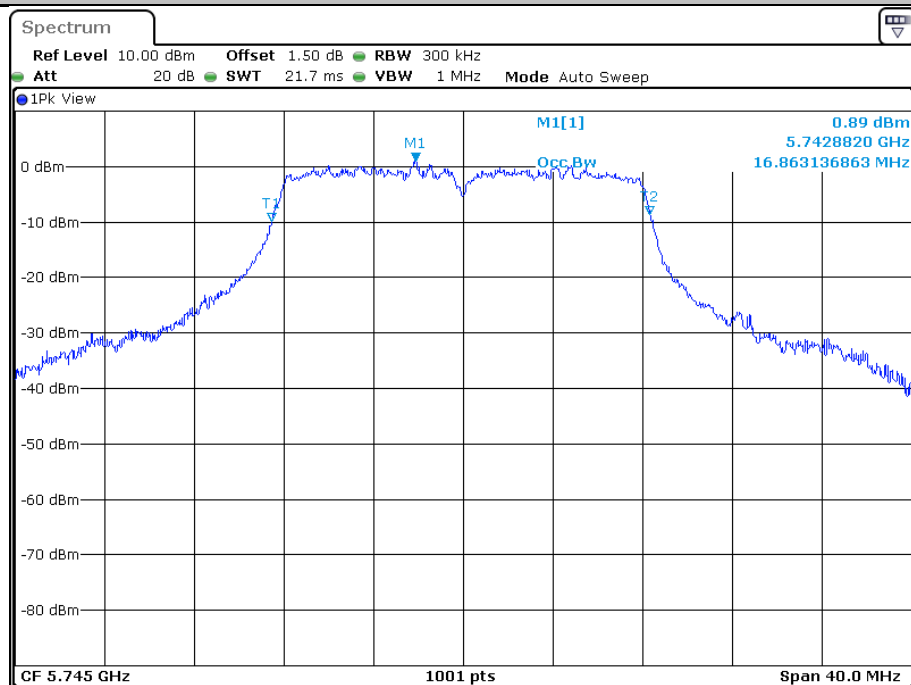


## Occupied Bandwidth Measurement\_11A\_5240\_Ant1

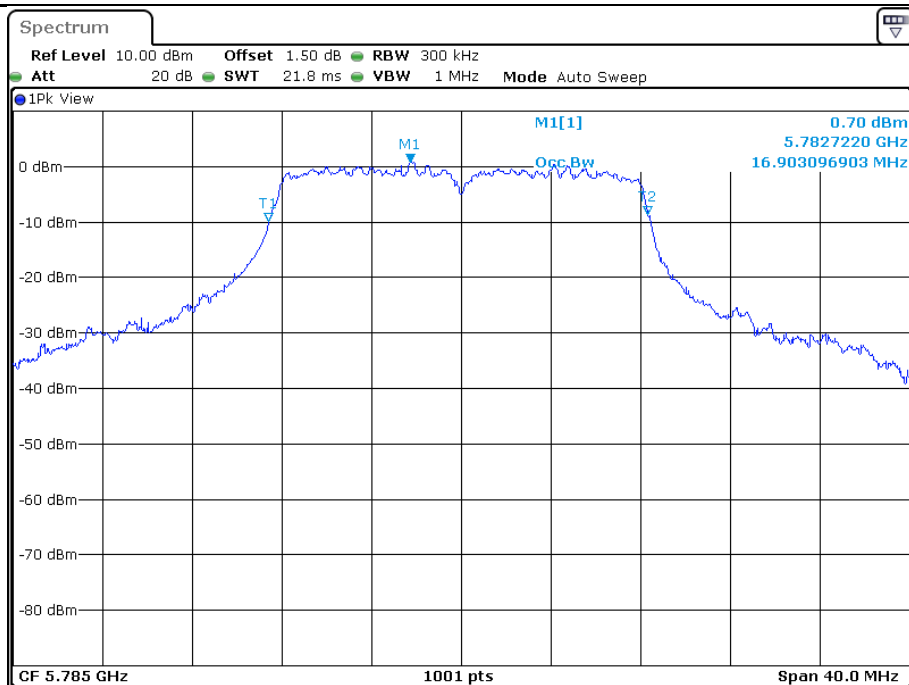




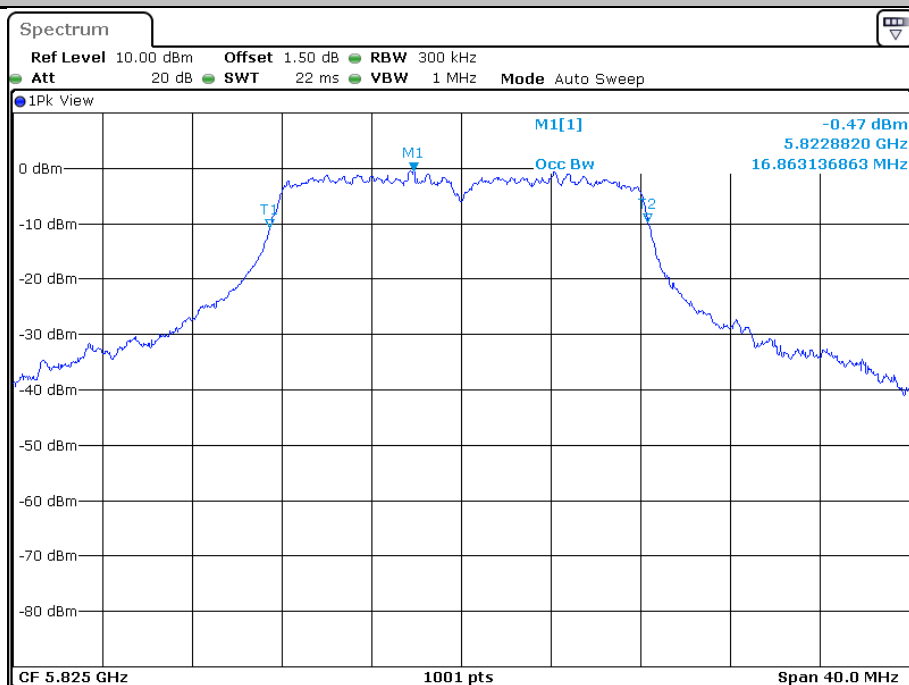
Occupied Bandwidth Measurement\_11A\_5745\_Ant1



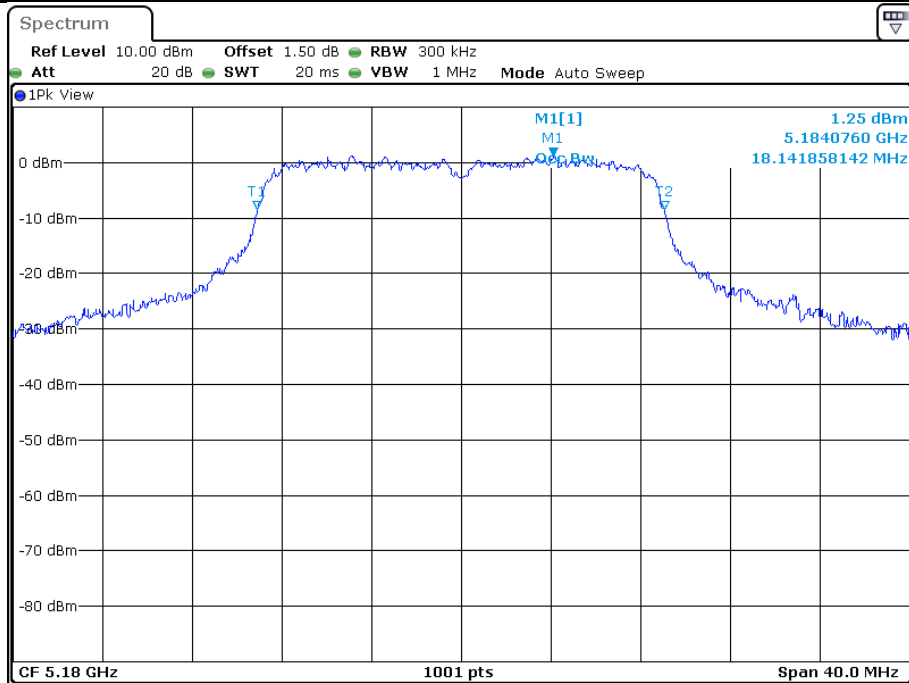
Occupied Bandwidth Measurement\_11A\_5785\_Ant1



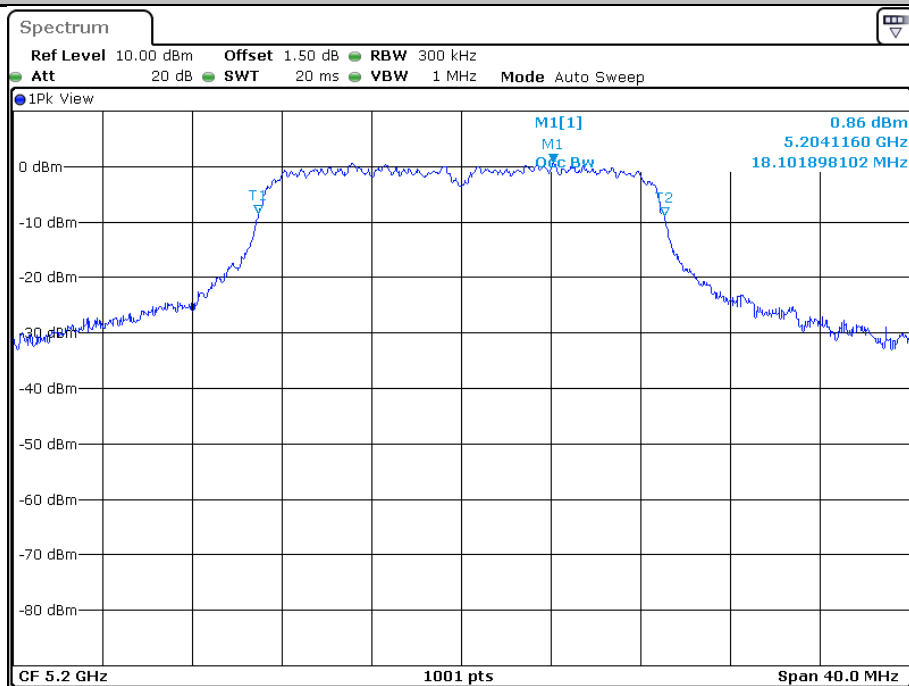
Occupied Bandwidth Measurement\_11A\_5825\_Ant1



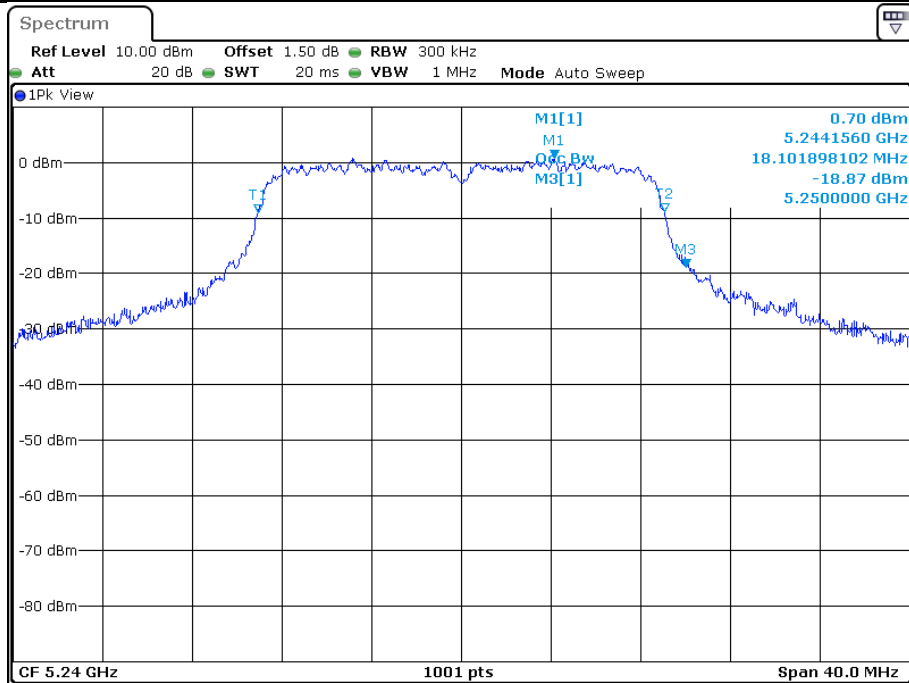
Occupied Bandwidth Measurement\_11N20\_5180\_Ant1



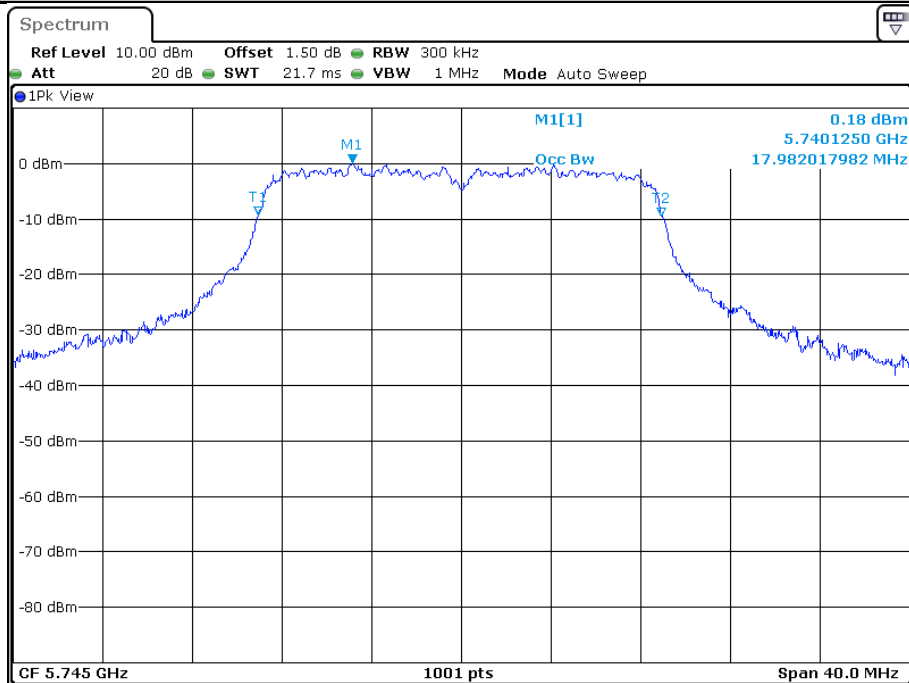
Occupied Bandwidth Measurement\_11N20\_5220\_Ant1



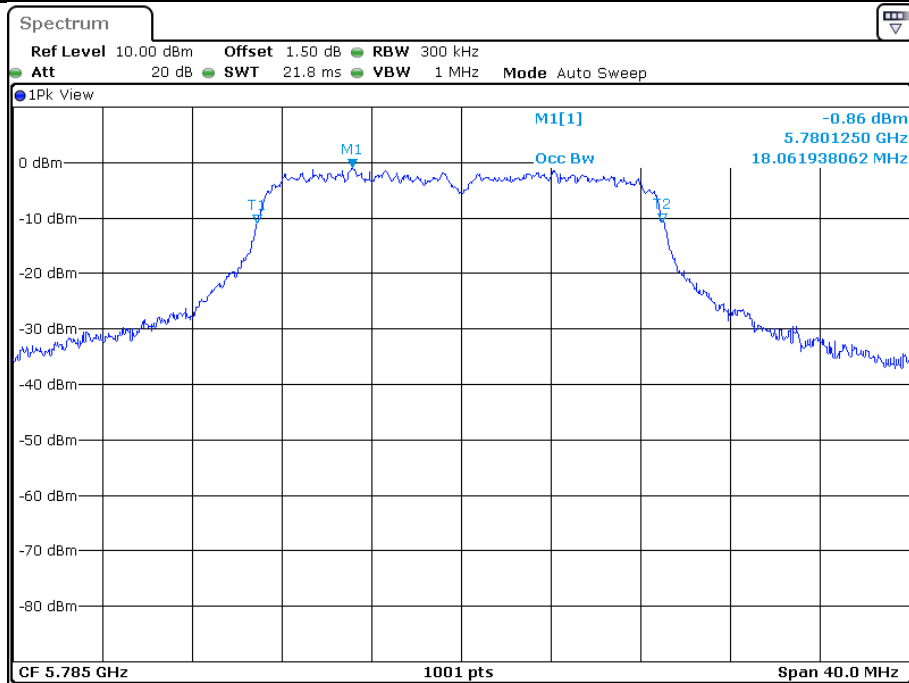
Occupied Bandwidth Measurement\_11N20\_5240\_Ant1



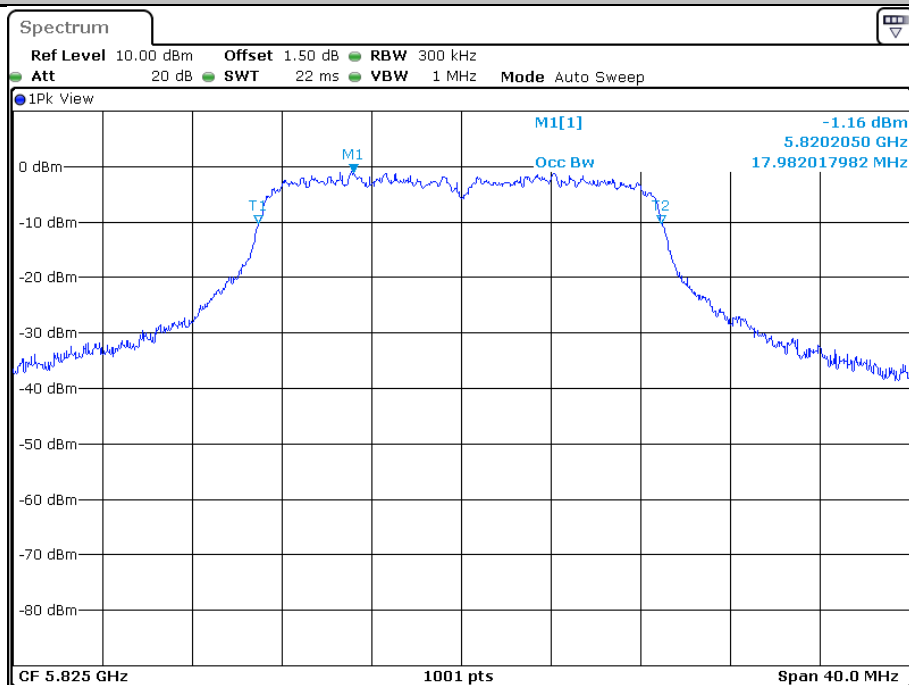
Occupied Bandwidth Measurement\_11N20\_5745\_Ant1



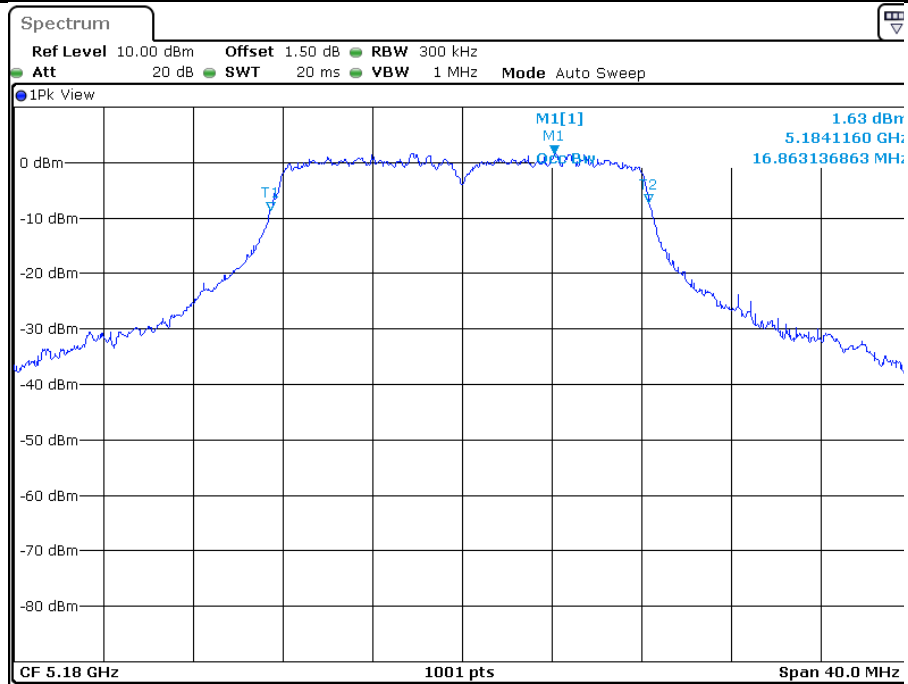
Occupied Bandwidth Measurement\_11N20\_5785\_Ant1



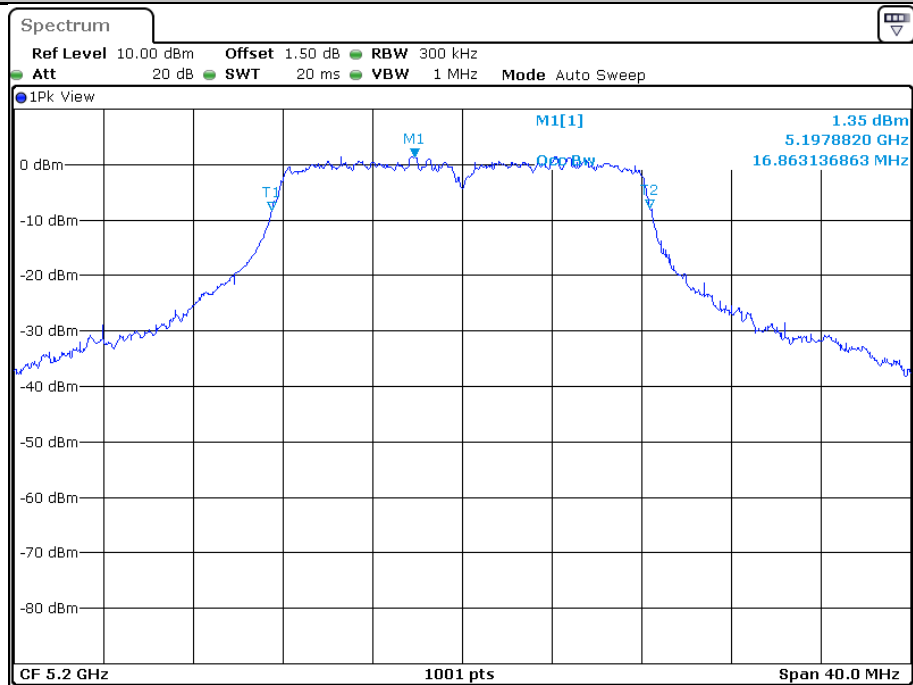
Occupied Bandwidth Measurement\_11N20\_5825\_Ant1



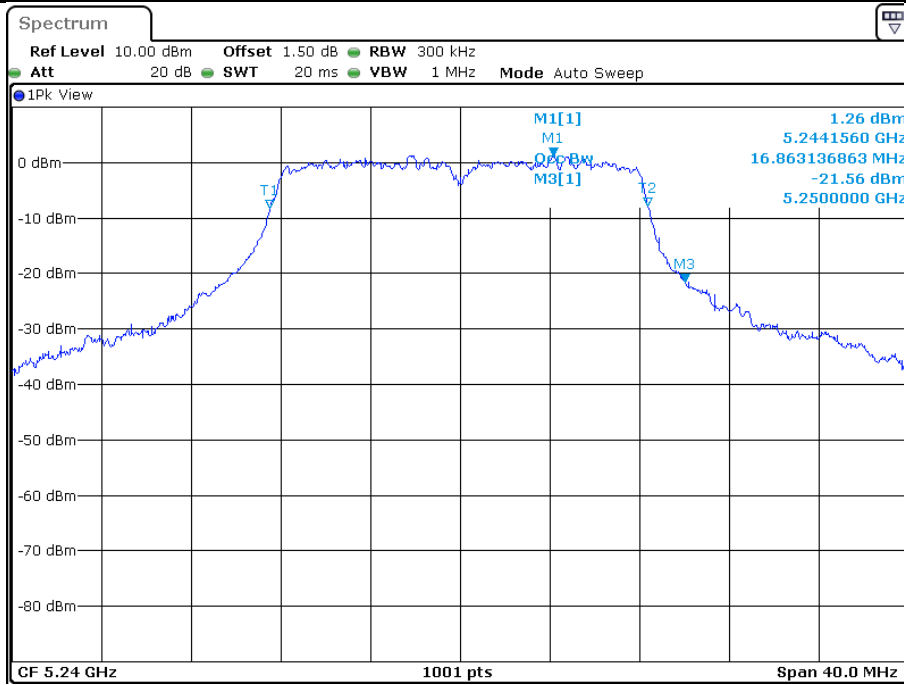
## Occupied Bandwidth Measurement\_11A\_5180\_Ant2



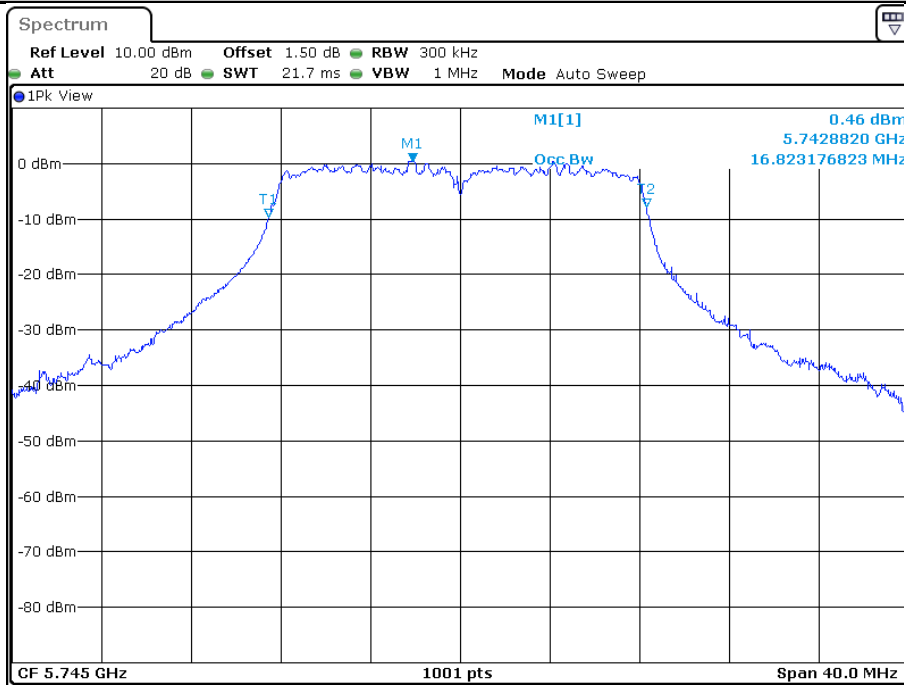
## Occupied Bandwidth Measurement\_11A\_5220\_Ant2



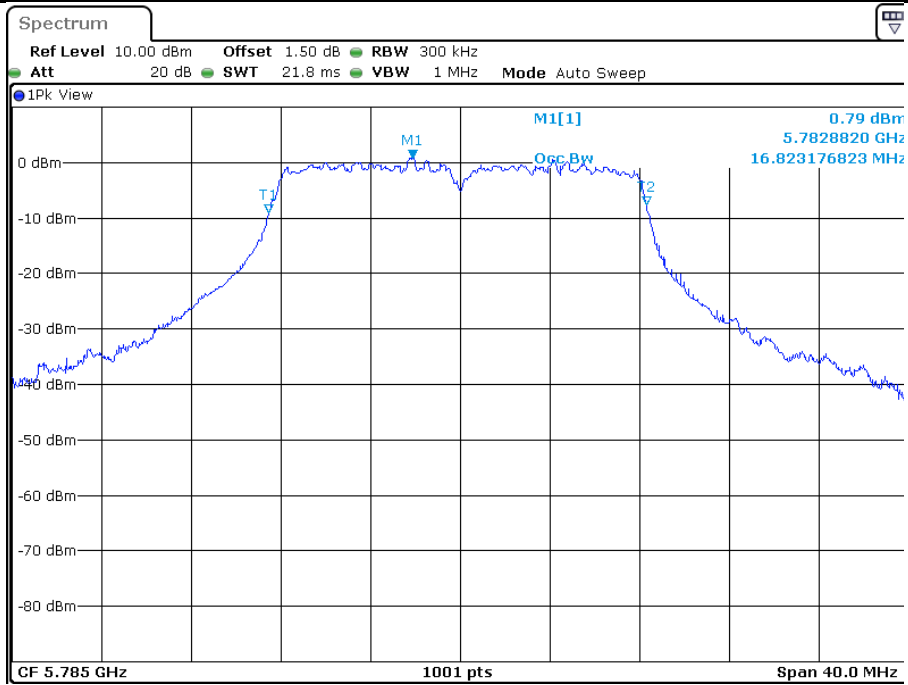
## Occupied Bandwidth Measurement\_11A\_5240\_Ant2



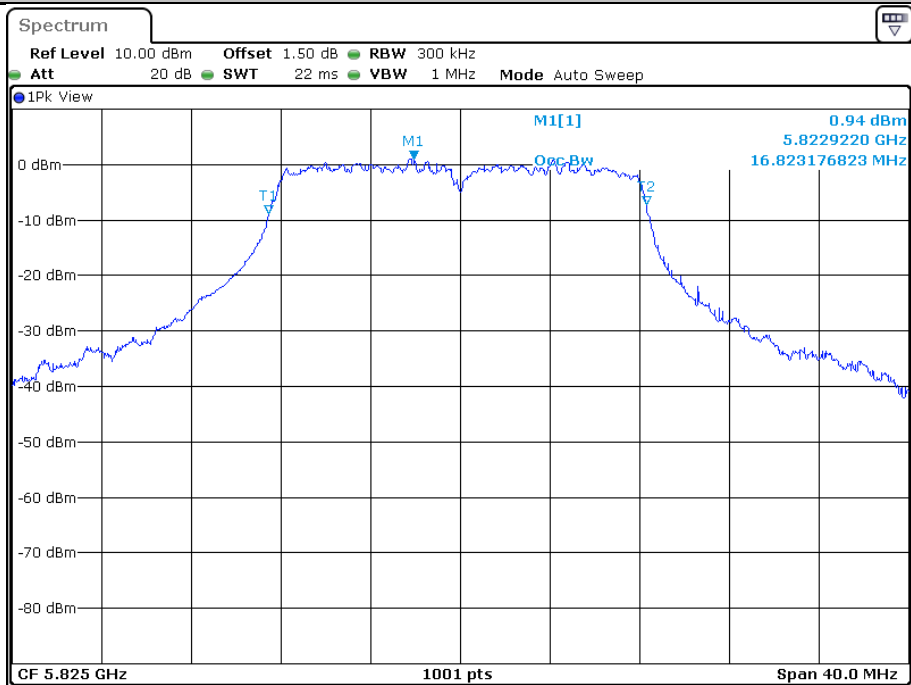
Occupied Bandwidth Measurement\_11A\_5745\_Ant2



Occupied Bandwidth Measurement\_11A\_5785\_Ant2

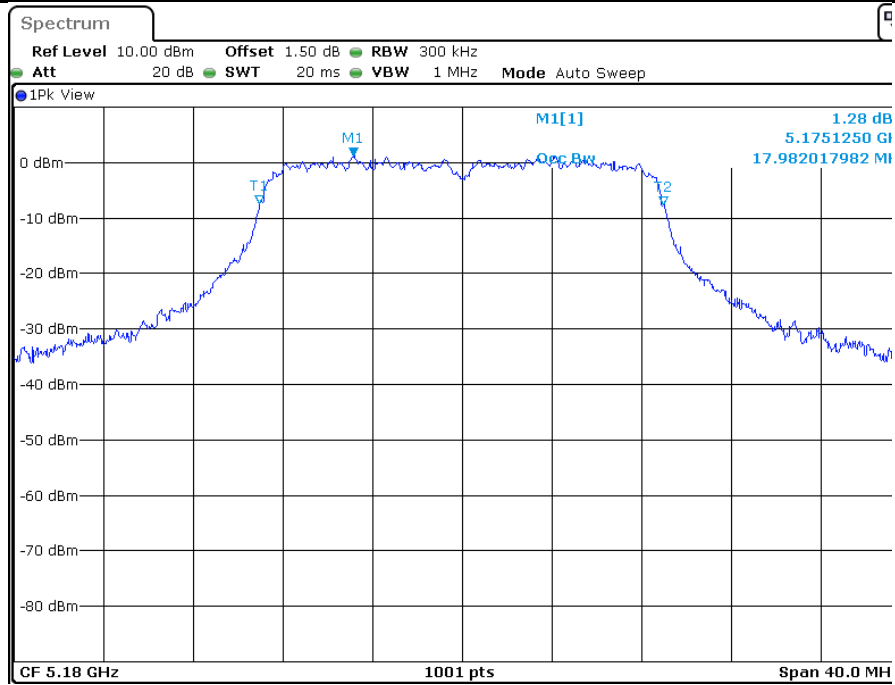


Occupied Bandwidth Measurement\_11A\_5825\_Ant2

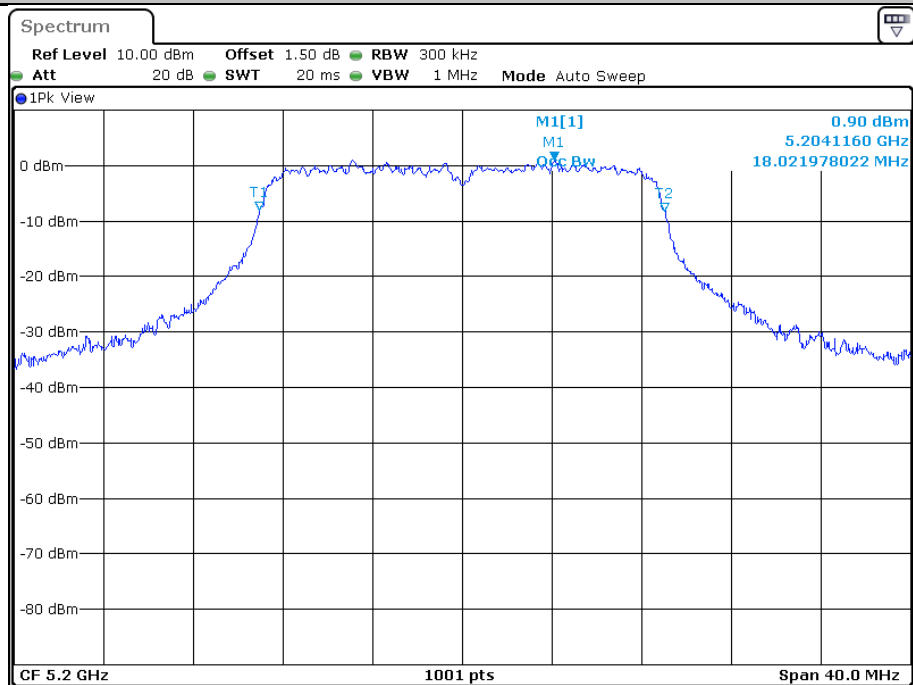


Occupied Bandwidth Measurement\_11N20\_5180\_Ant2

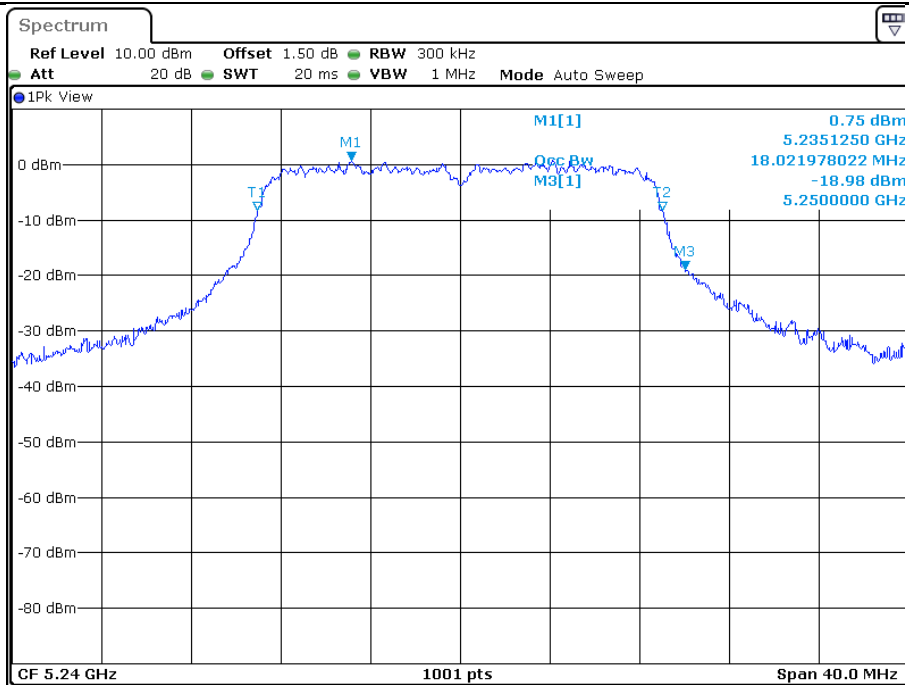




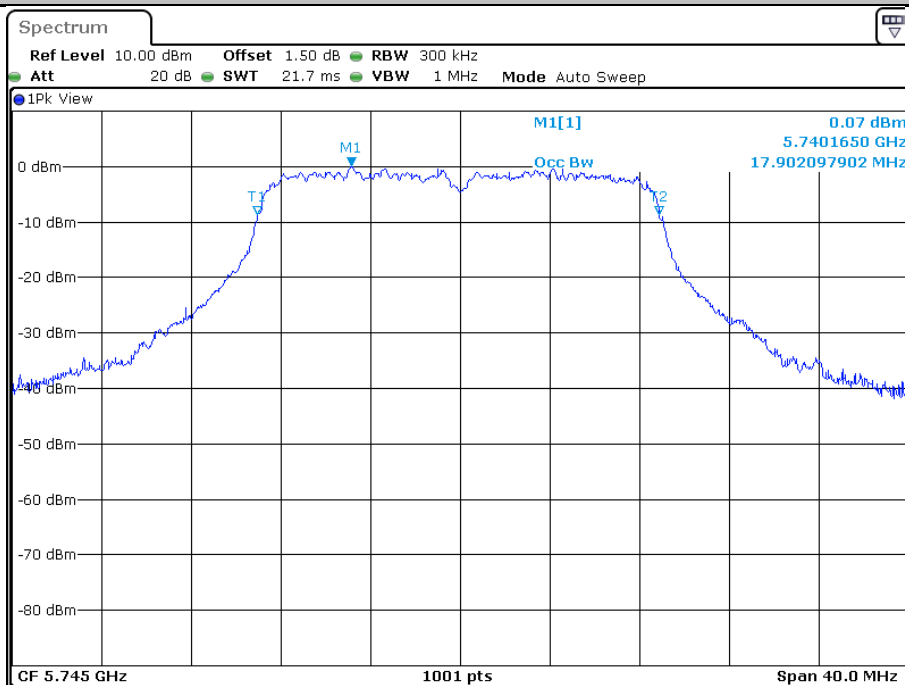
Occupied Bandwidth Measurement\_11N20\_5220\_Ant2



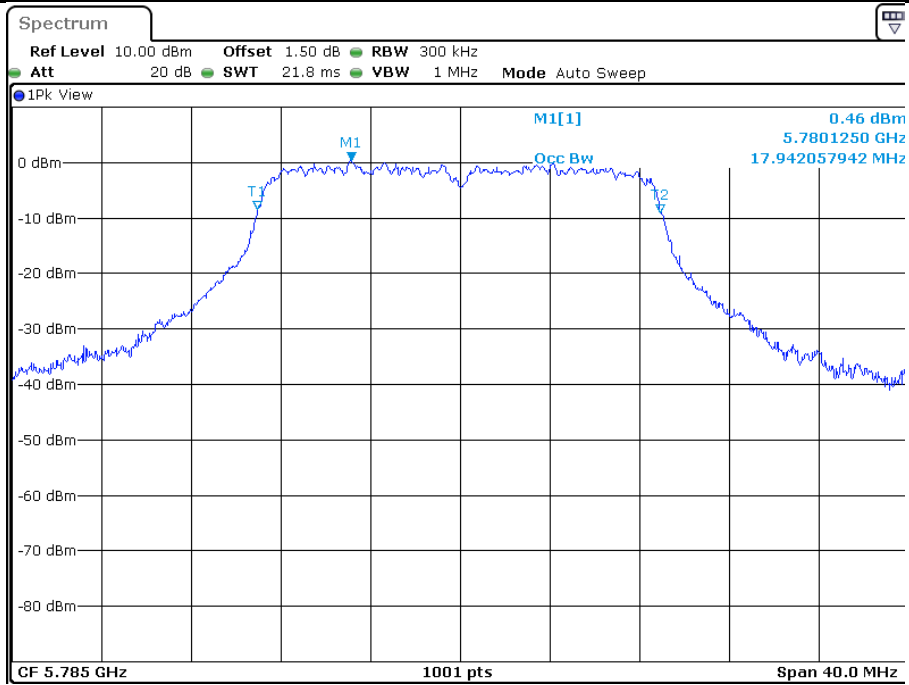
Occupied Bandwidth Measurement\_11N20\_5240\_Ant2



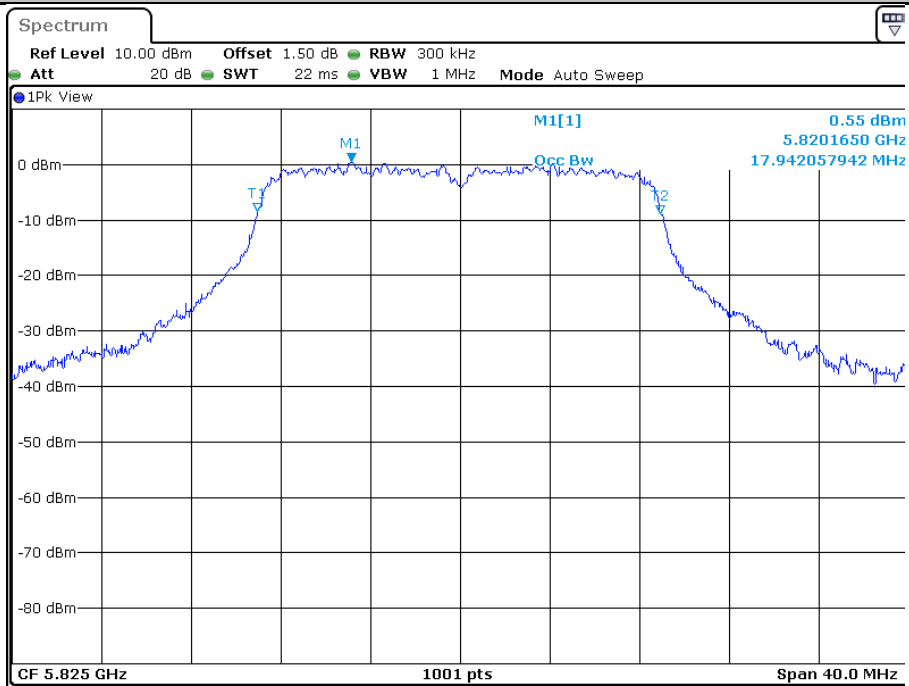
Occupied Bandwidth Measurement\_11N20\_5745\_Ant2



Occupied Bandwidth Measurement\_11N20\_5785\_Ant2



Occupied Bandwidth Measurement\_11N20\_5825\_Ant2



**4.Maximum Conduct Output Power**

Test Mode	Test Channel	Power [dBm]			Limit [dBm]	Verdict
		Ant1	Ant2	MIMO		
11A	5180	13.77	13.69	NA	24.00	PASS
11A	5220	13.43	13.71	NA	24.00	PASS
11A	5240	13.86	13.88	NA	24.00	PASS
11A	5745	13.94	13.87	NA	30.00	PASS
11A	5785	13.45	13.96	NA	30.00	PASS
11A	5825	13.91	13.85	NA	30.00	PASS
11N20	5180	10.24	10.95	13.62	24.00	PASS
11N20	5220	9.27	10.03	12.68	24.00	PASS
11N20	5240	9.19	9.74	12.48	24.00	PASS
11N20	5745	9.11	9.88	12.52	30.00	PASS
11N20	5785	9.14	10.02	12.61	30.00	PASS
11N20	5825	9.25	9.79	12.54	30.00	PASS

## Remark:

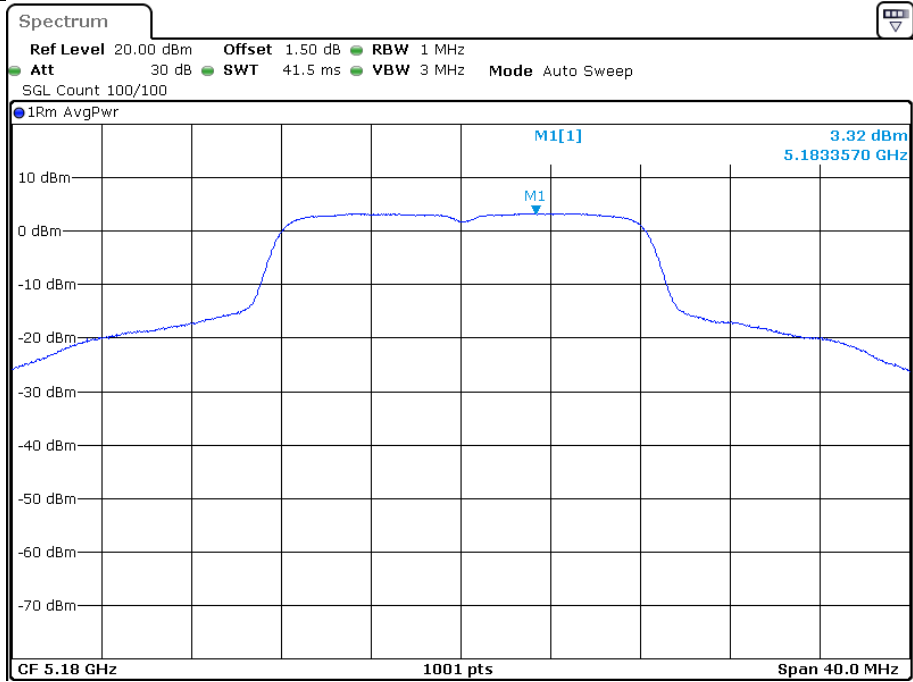
1) Per KDB 662911, the conducted powers at Antenna A and Antenna B were first measured separately during MIMO transmission as shown in section above. The measured values were then summed in linear power units then converted back to dBm.

**5.Maximum Power Spectral Density**

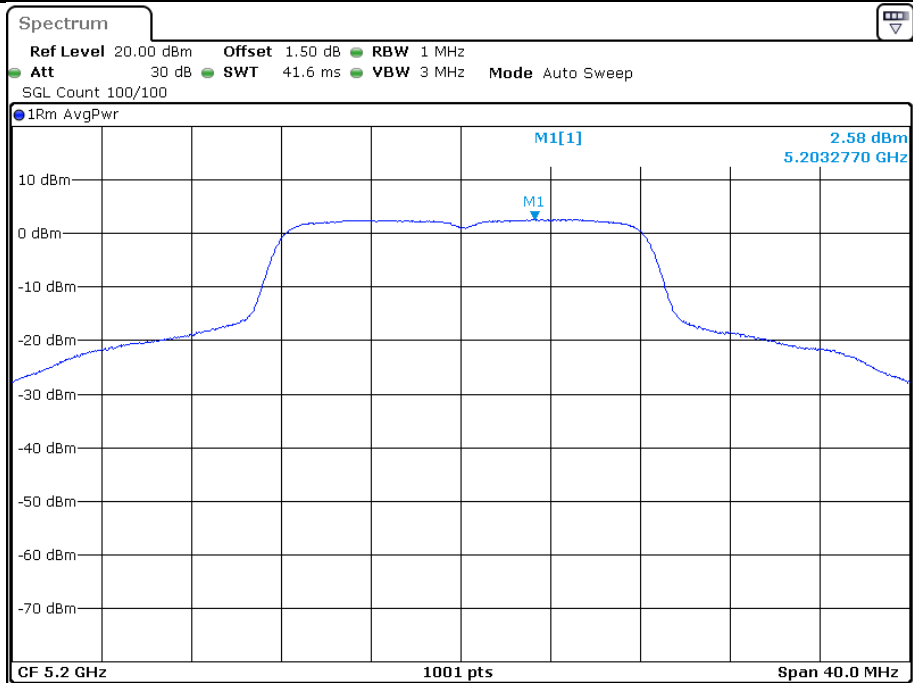
Test Mode	Test Channel	Level [dBm/MHz]		10log(1/x) Factor [dB]		PSD [dBm/MHz]			Limit [dBm/MHz]	Verdict
		Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	MIMO		
11A	5180	3.32	3.38	0.08	0.08	3.40	3.46	NA	11.00	PASS
11A	5220	2.58	3.79	0.06	0.07	2.64	3.86	NA	11.00	PASS
11A	5240	3.49	3.61	0.08	0.08	3.57	3.69	NA	11.00	PASS
11N20	5180	3.10	3.88	0.06	0.07	3.16	3.95	6.58	11.00	PASS
11N20	5220	2.75	3.58	0.06	0.07	2.81	3.65	6.26	11.00	PASS
11N20	5240	3.46	3.36	0.06	0.07	3.52	3.43	6.49	11.00	PASS

Test Mode	Test Channel	Level [dBm/500kHz]		10log(1/x) Factor[dB]		PSD [dBm/500kHz]			Limit [dBm/500kHz]	Verdict
		Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	MIMO		
11A	5745	0.79	0.00	0.07	0.07	0.86	0.07	NA	30	PASS
11A	5785	-0.53	0.14	0.07	0.07	-0.46	0.21	NA	30	PASS
11A	5825	-0.55	0.19	0.07	0.07	-0.48	0.26	NA	30	PASS
11N20	5745	-0.32	-0.27	0.07	0.07	-0.25	-0.20	2.79	30	PASS
11N20	5785	-1.70	-0.14	0.07	0.07	-1.63	-0.07	2.23	30	PASS
11N20	5825	-1.80	-0.07	0.07	0.07	-1.73	0.00	2.23	30	PASS

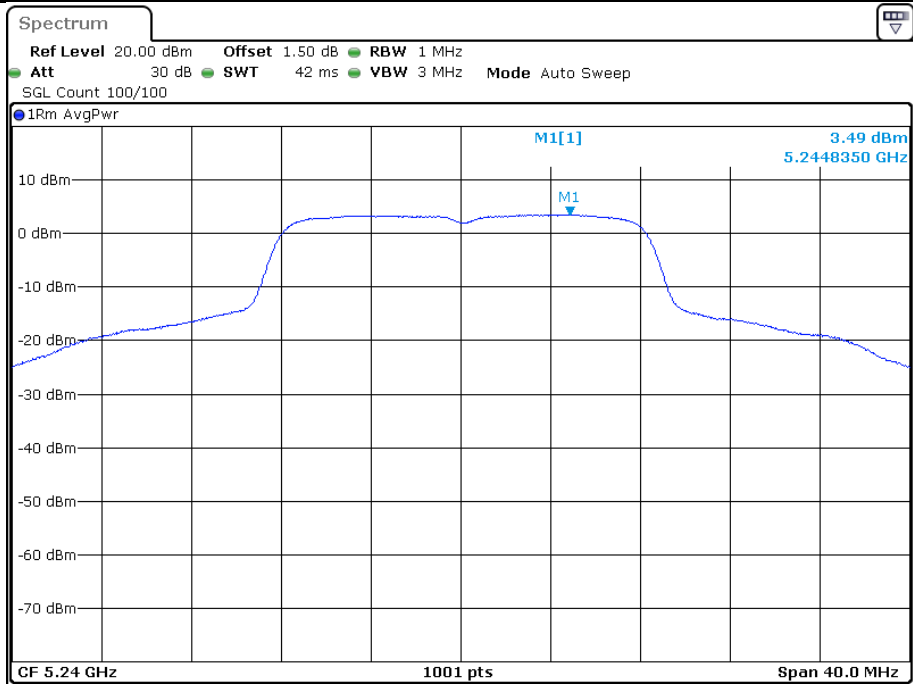
## Maximum Power Spectral Density\_TNVN\_11A\_5180\_Ant1



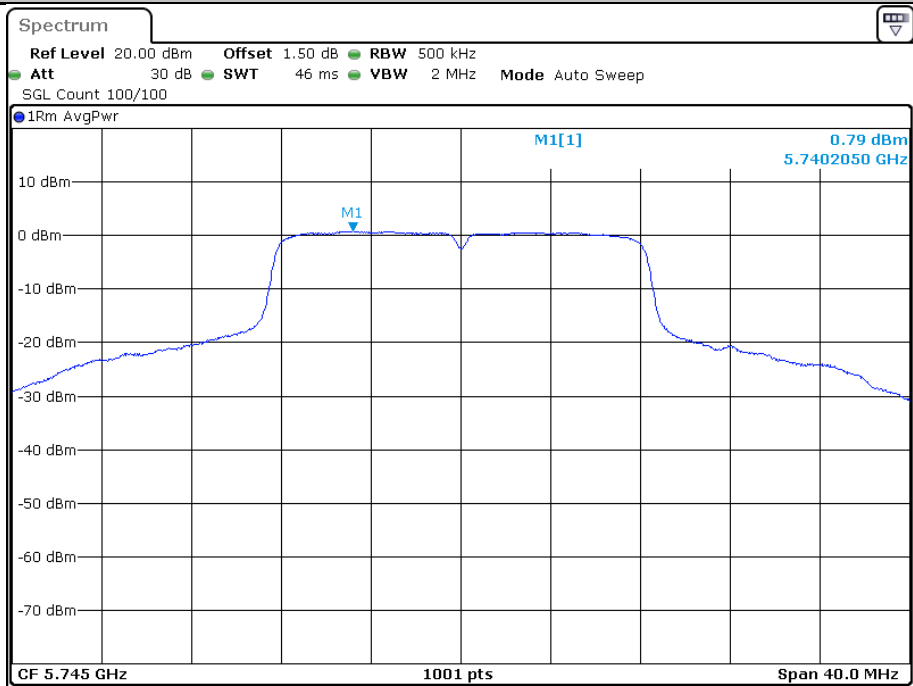
## Maximum Power Spectral Density\_TNVN\_11A\_5220\_Ant1



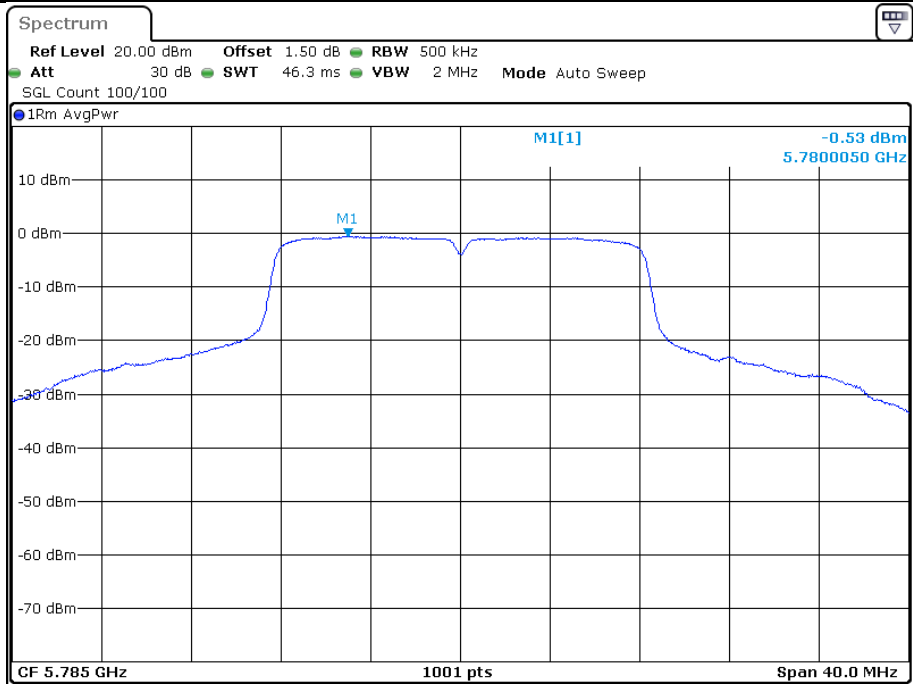
## Maximum Power Spectral Density\_TNVN\_11A\_5240\_Ant1



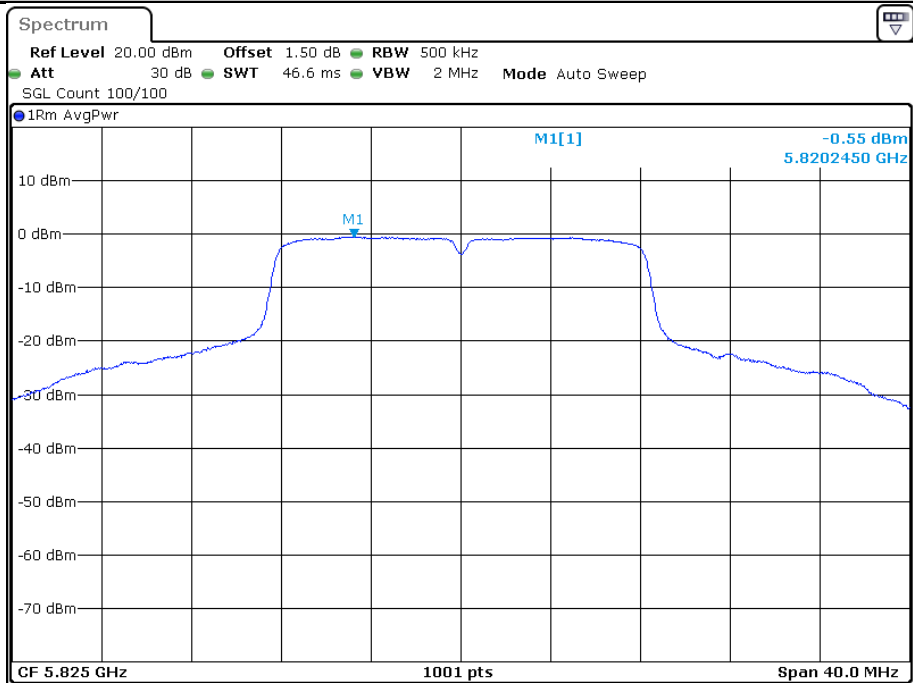
Maximum Power Spectral Density\_TNVN\_11A\_5745\_Ant1



Maximum Power Spectral Density\_TNVN\_11A\_5785\_Ant1

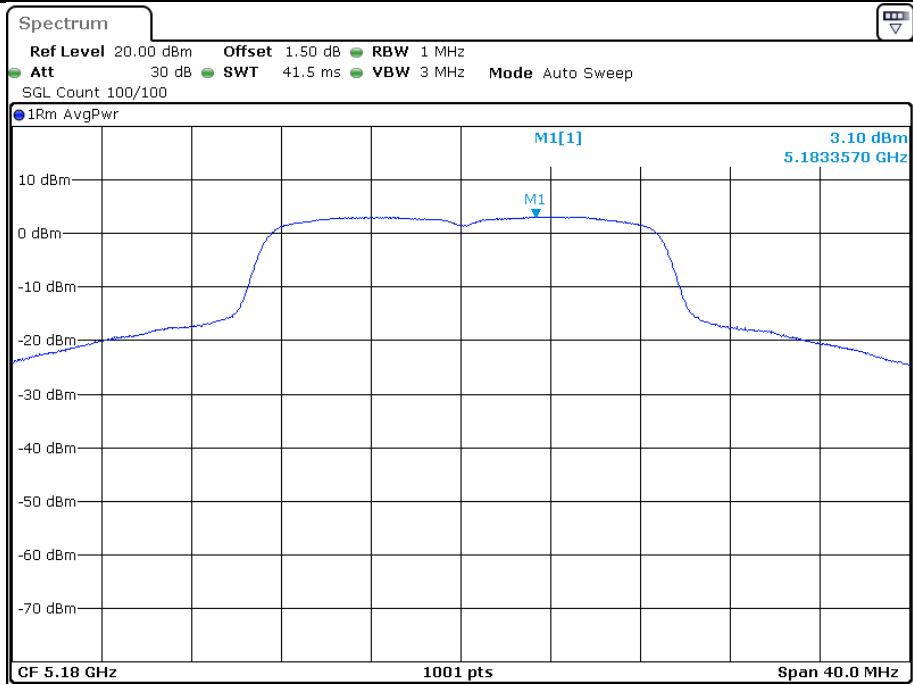


Maximum Power Spectral Density\_TNVN\_11A\_5825\_Ant1

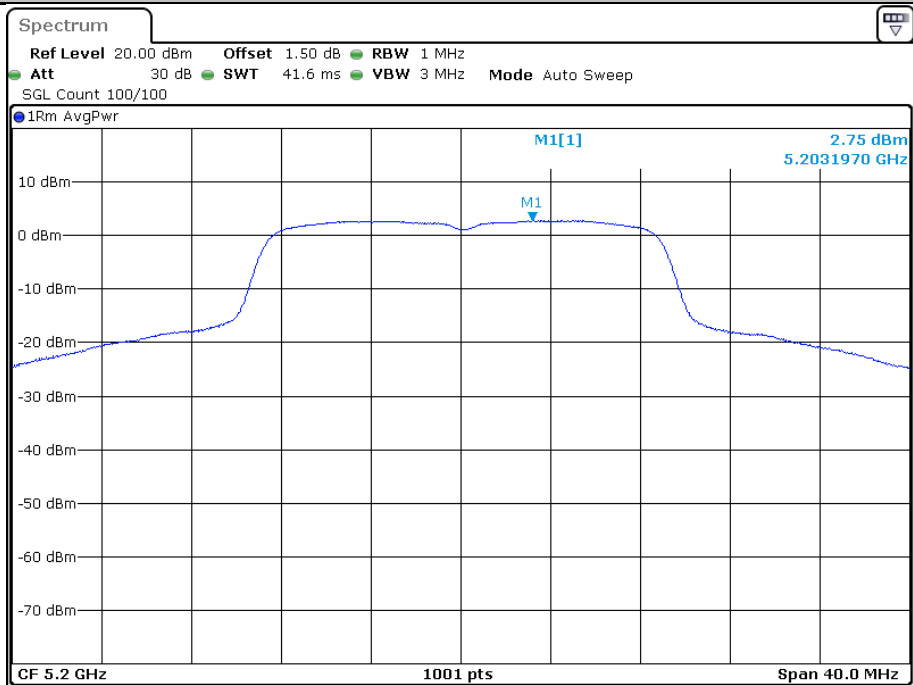


Maximum Power Spectral Density\_TNVN\_11N20\_5180\_Ant1

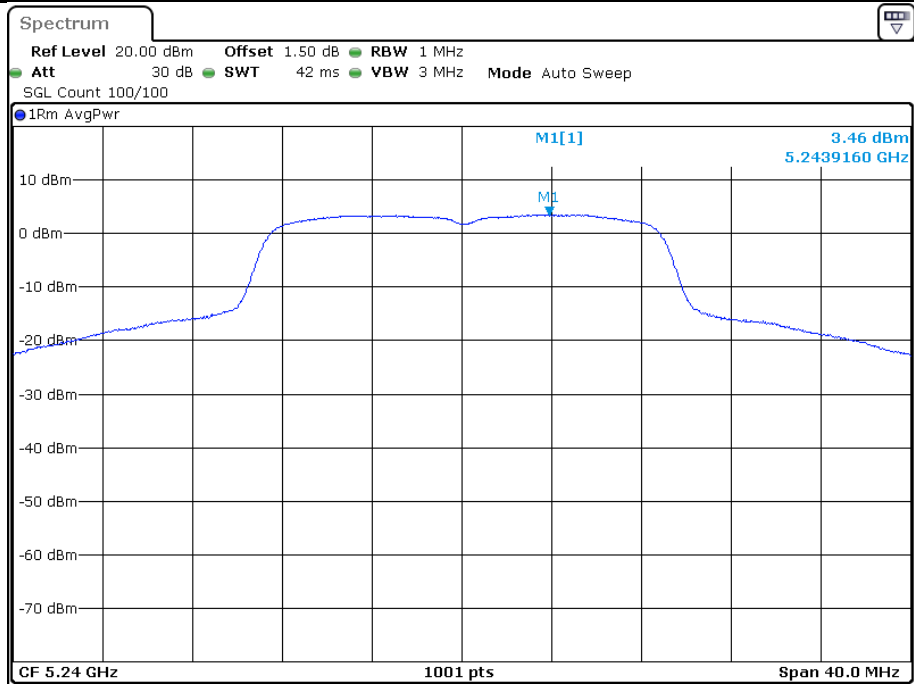




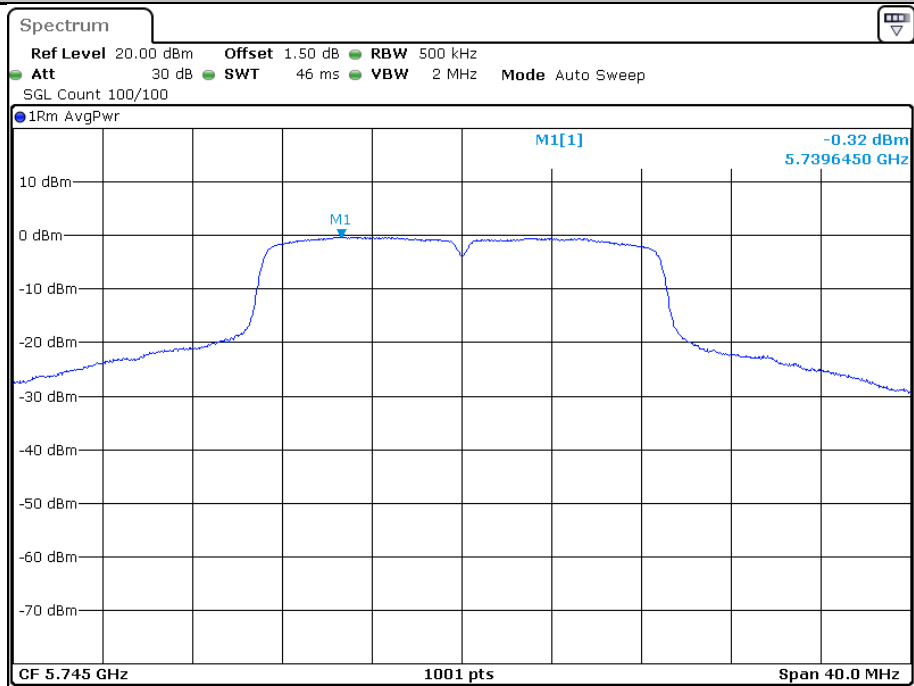
Maximum Power Spectral Density\_TNVN\_11N20\_5220\_Ant1



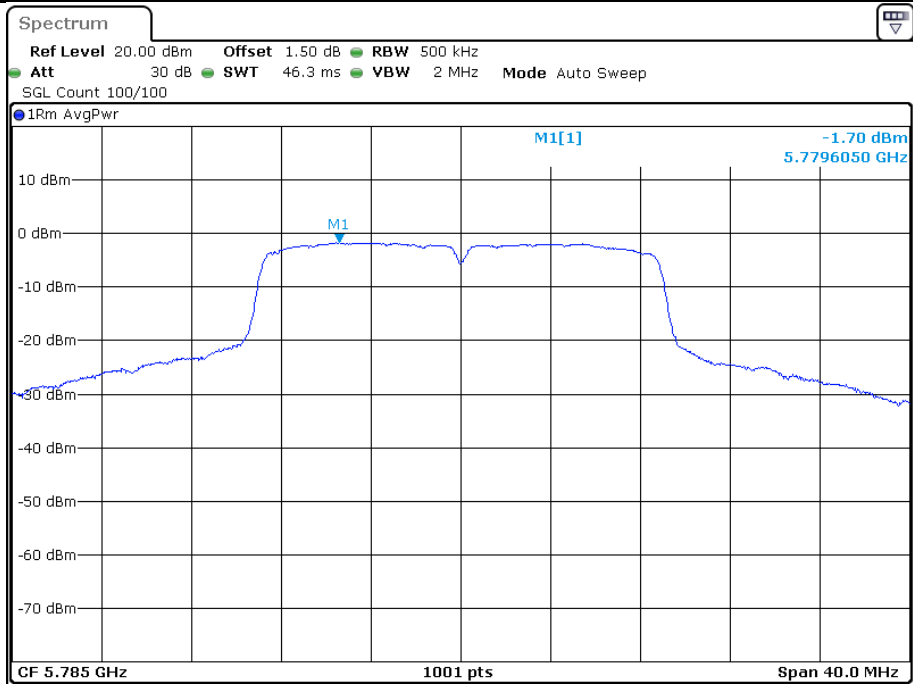
Maximum Power Spectral Density\_TNVN\_11N20\_5240\_Ant1



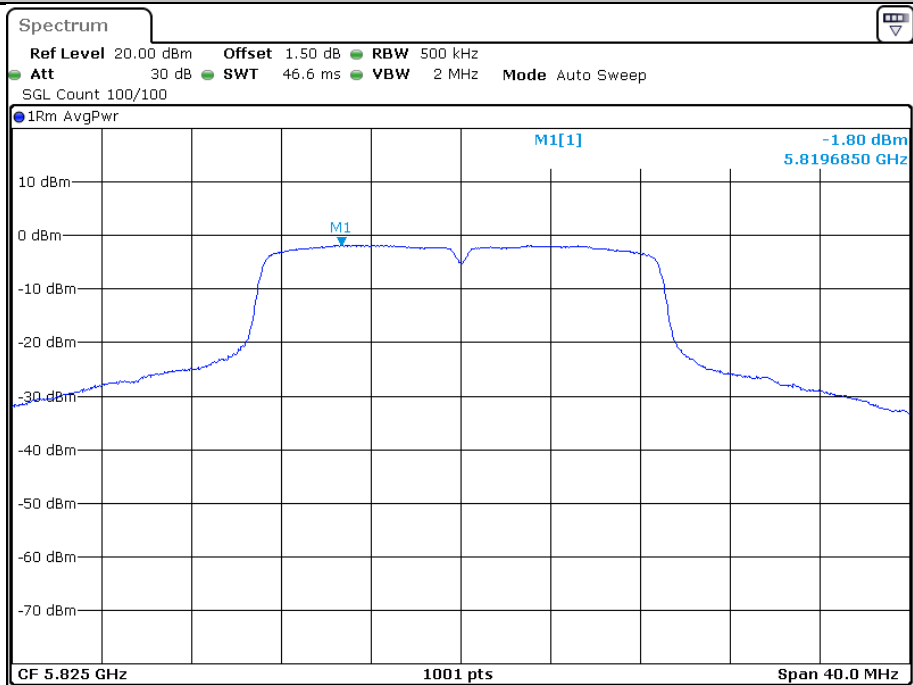
Maximum Power Spectral Density\_TNVN\_11N20\_5745\_Ant1



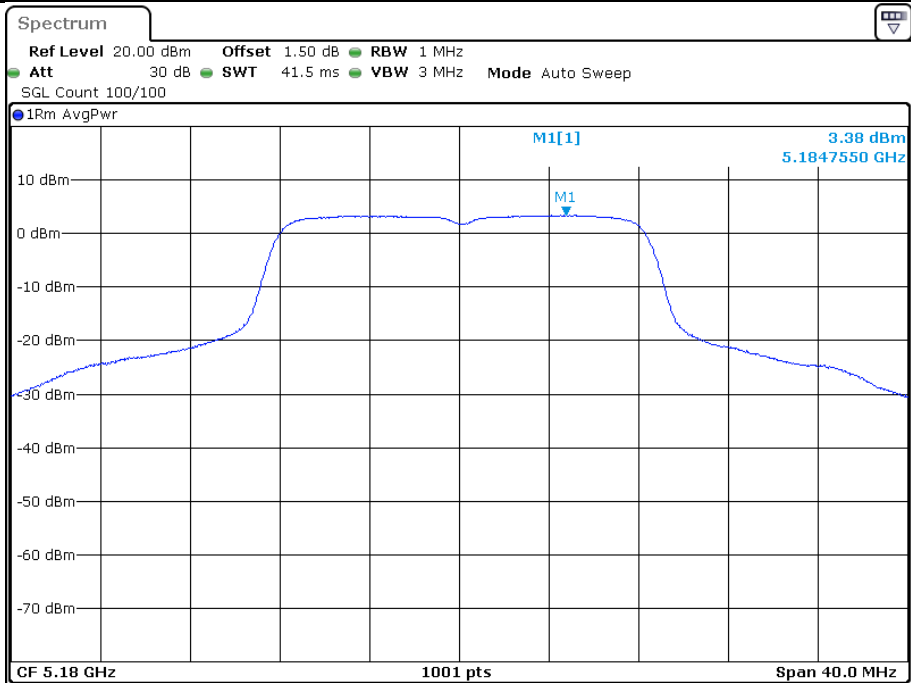
Maximum Power Spectral Density\_TNVN\_11N20\_5785\_Ant1



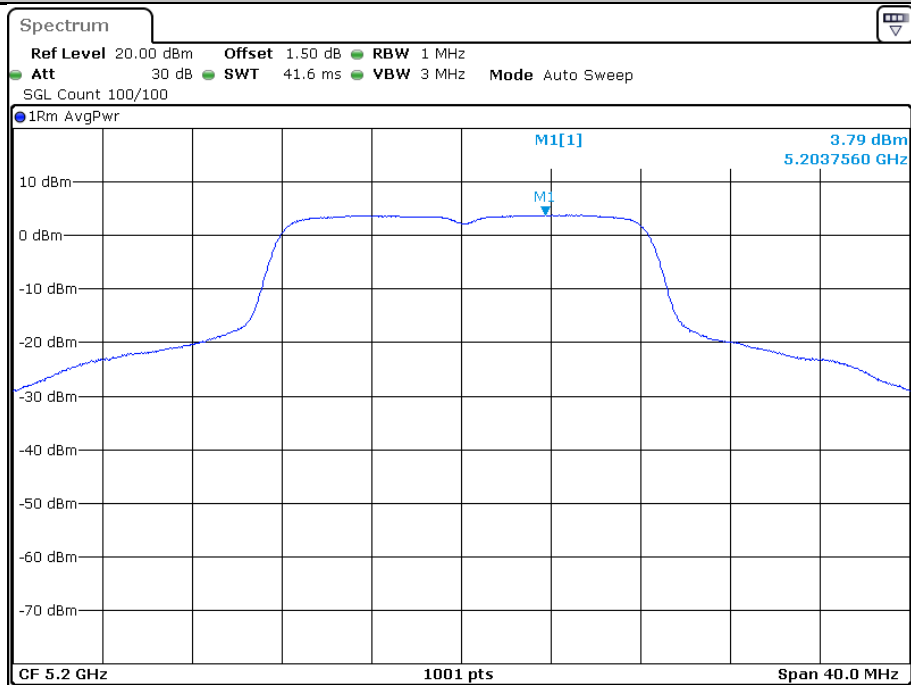
Maximum Power Spectral Density\_TNVN\_11N20\_5825\_Ant1



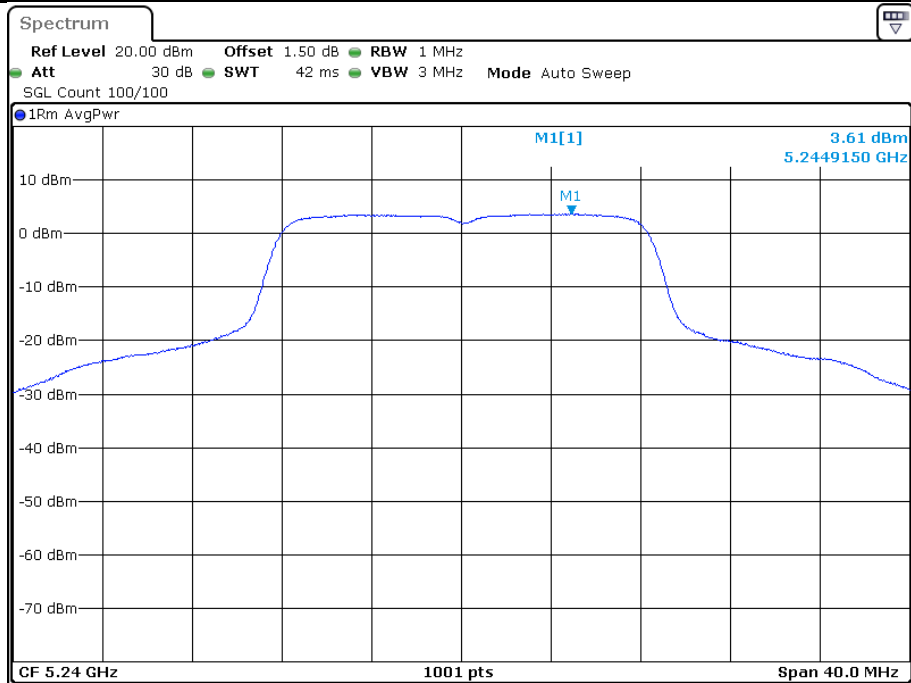
Maximum Power Spectral Density\_TNVN\_11A\_5180\_Ant2



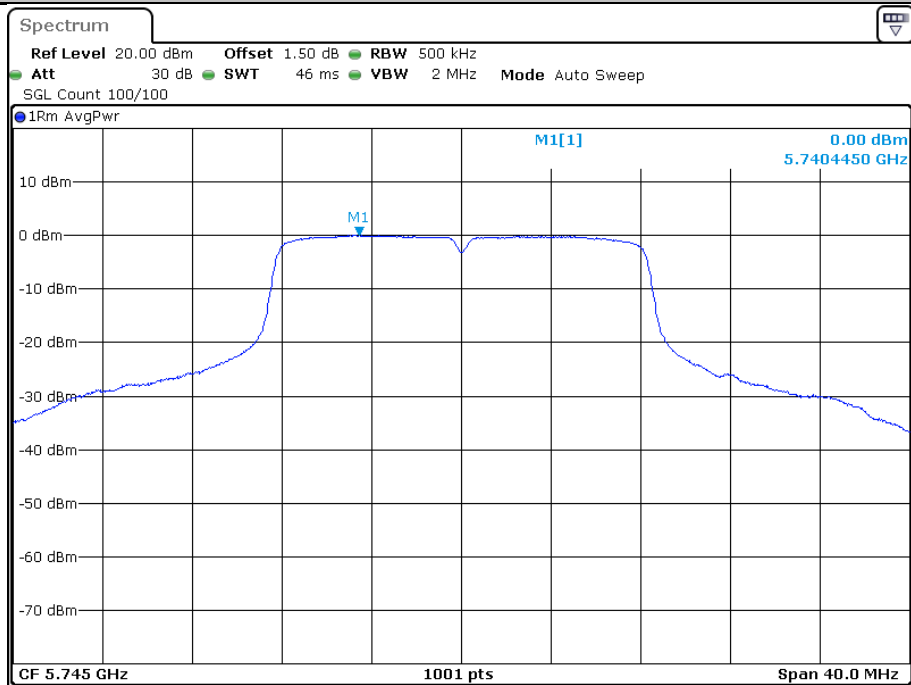
Maximum Power Spectral Density\_TNVN\_11A\_5220\_Ant2



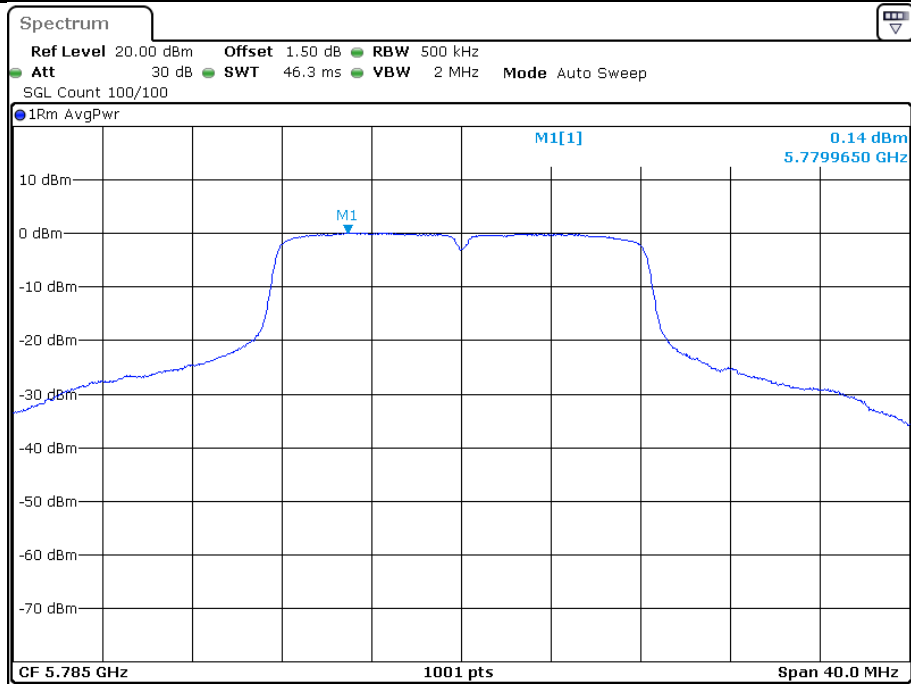
Maximum Power Spectral Density\_TNVN\_11A\_5240\_Ant2



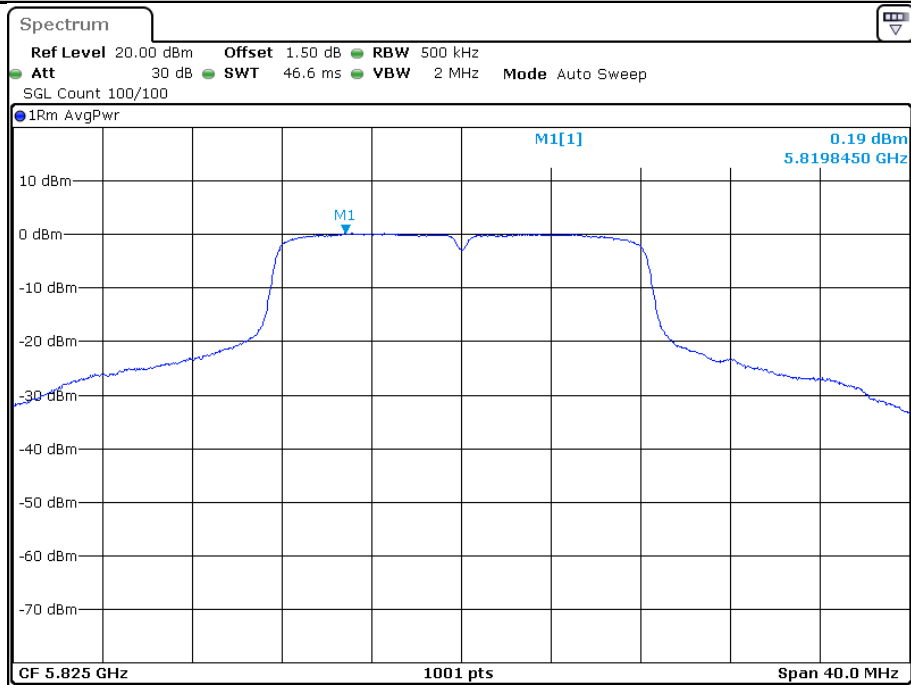
Maximum Power Spectral Density\_TNVN\_11A\_5745\_Ant2



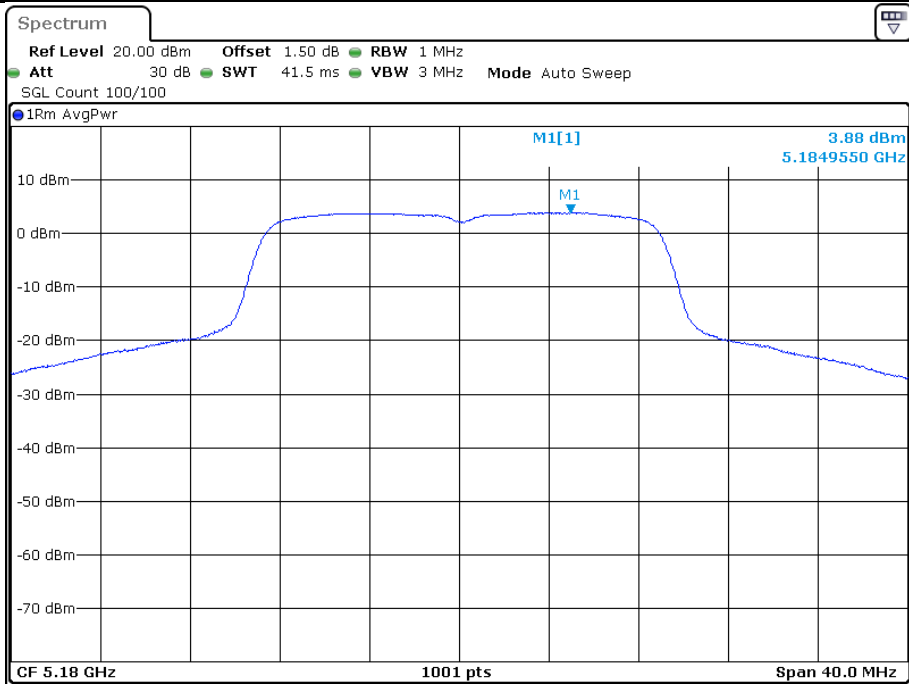
Maximum Power Spectral Density\_TNVN\_11A\_5785\_Ant2



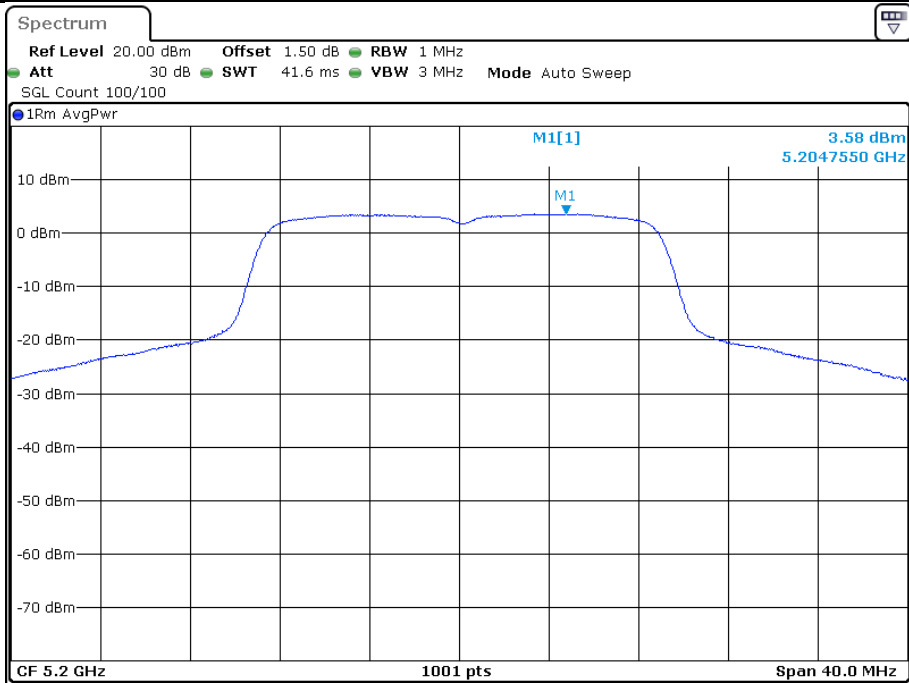
Maximum Power Spectral Density\_TNVN\_11A\_5825\_Ant2



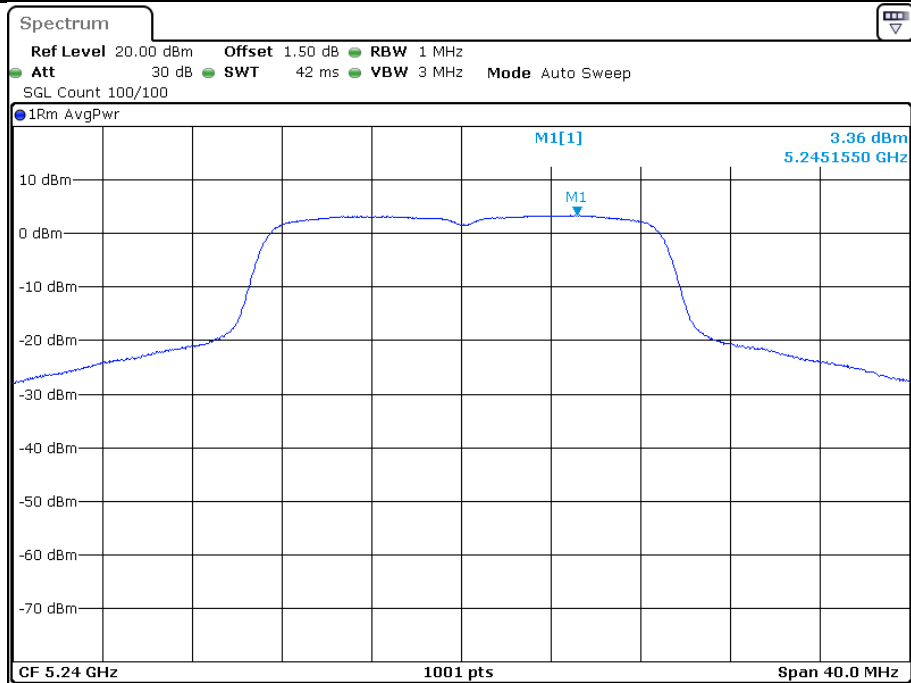
Maximum Power Spectral Density\_TNVN\_11N20\_5180\_Ant2



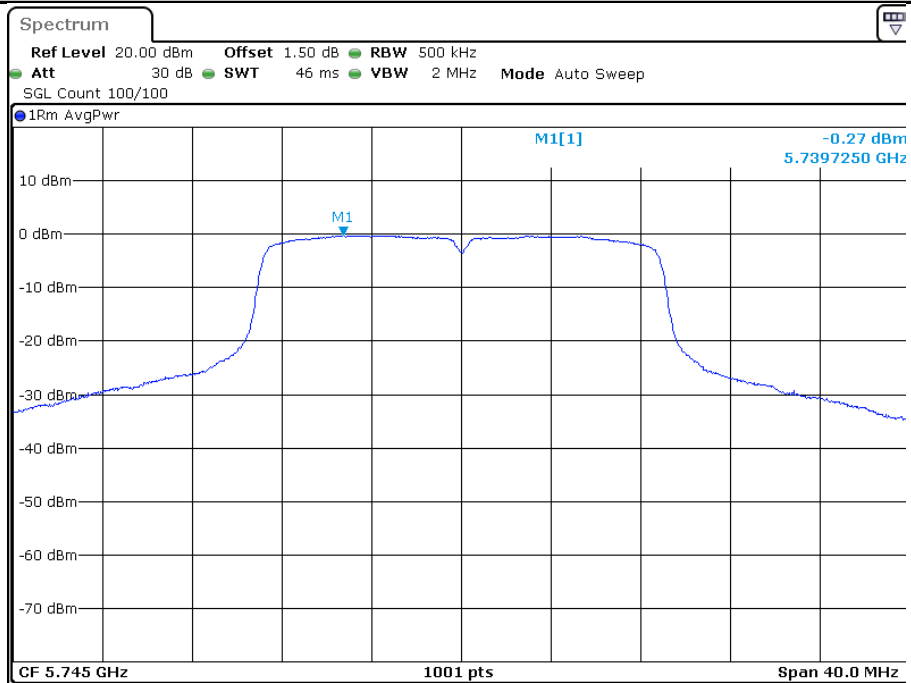
Maximum Power Spectral Density\_TNVN\_11N20\_5220\_Ant2



Maximum Power Spectral Density\_TNVN\_11N20\_5240\_Ant2

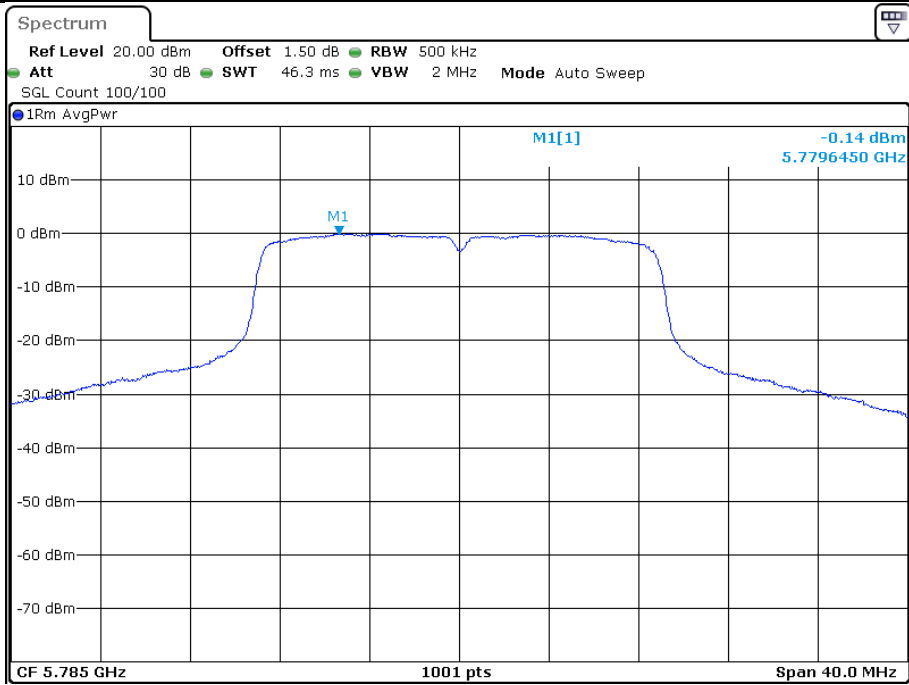


Maximum Power Spectral Density\_TNVN\_11N20\_5745\_Ant2

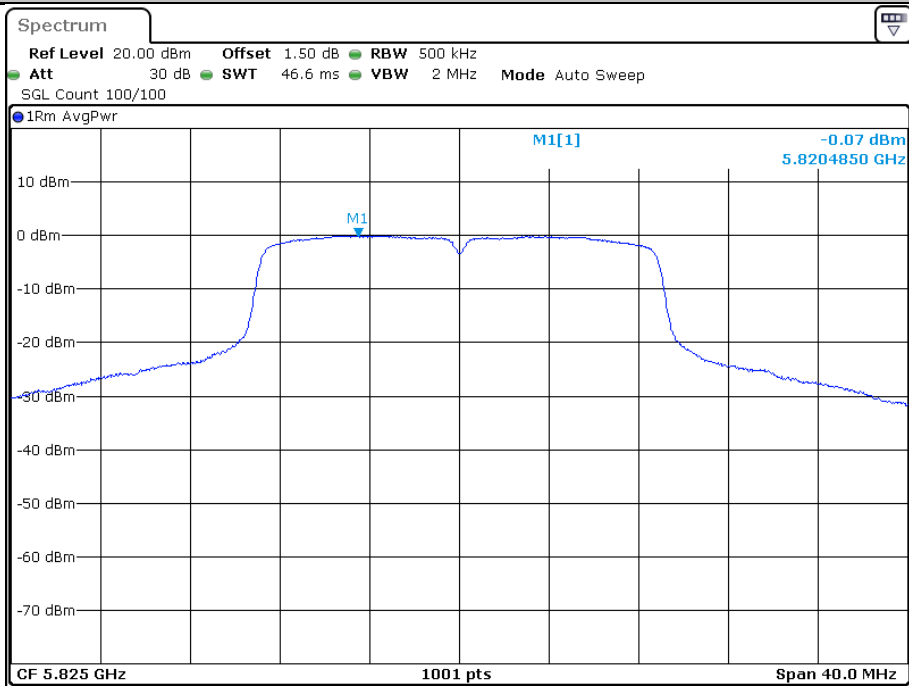


Maximum Power Spectral Density\_TNVN\_11N20\_5785\_Ant2





Maximum Power Spectral Density\_TNVN\_11N20\_5825\_Ant2



## 6. Frequency Stability

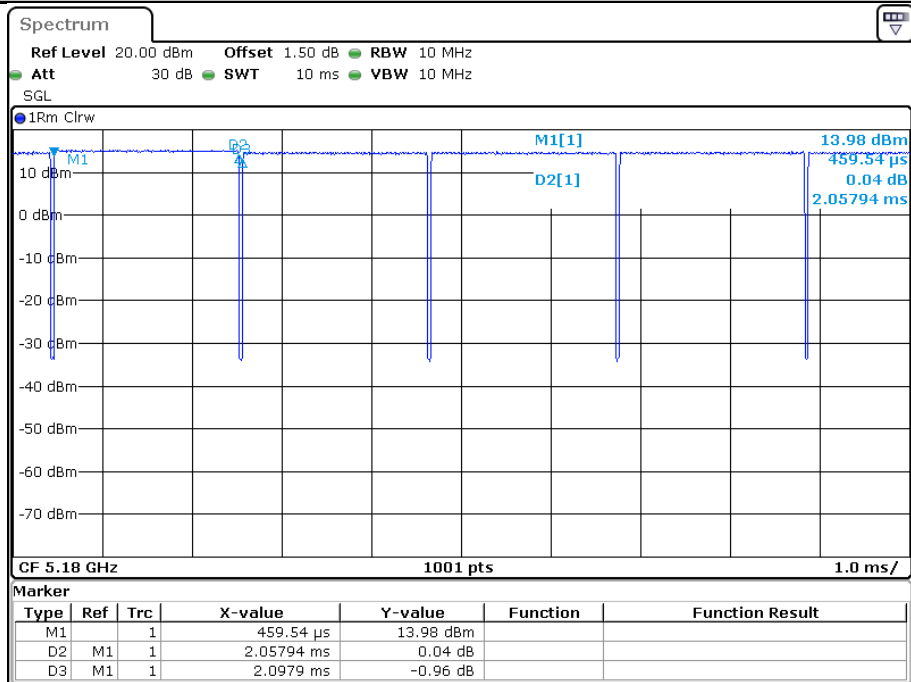
Band	Test Conditions		Operation Frequency (MHz)	Test Frequency (MHz)		Freq. Dev. (MHz)		Limit (GHz)	Result
	Volt (V DC)	Temp (°C)		ANT0	ANT1	ANT0	ANT1		
Band U-NII 1	Normal(3.7)	Extreme(-20)	5180	5180.0258	5180.0275	0.0258	0.0275	5.15-5.25	Pass
		Extreme(-10)		5180.0299	5180.0302	0.0299	0.0302		Pass
		Extreme(0)		5180.0313	5180.0252	0.0313	0.0252		Pass
		Extreme(+10)		5180.0337	5180.0246	0.0337	0.0246		Pass
		Extreme(+20)		5180.0332	5180.0259	0.0332	0.0259		Pass
		Extreme(+30)		5180.0334	5180.0199	0.0334	0.0199		Pass
		Extreme(+40)		5180.0251	5180.0265	0.0251	0.0265		Pass
		Extreme(+55)		5180.0425	5180.0208	0.0425	0.0208		Pass
	Extreme(3.2)	Normal(+20)	5180.0128	5180.0443	0.0128	0.0443	Pass		
	Extreme(4.3)		5180.0363	5180.0152	0.0363	0.0152	Pass		
	Normal(3.7)	5240	Extreme(-20)	5240.0273	5240.0401	0.0273	0.0401		Pass
			Extreme(-10)	5240.0255	5240.0259	0.0255	0.0259		Pass
			Extreme(0)	5240.0338	5240.0349	0.0338	0.0349		Pass
			Extreme(+10)	5240.0375	5240.0385	0.0375	0.0385		Pass
			Extreme(+20)	5240.0424	5240.0449	0.0424	0.0449		Pass
			Extreme(+30)	5240.0239	5240.0257	0.0239	0.0257		Pass
			Extreme(+40)	5240.0247	5240.0268	0.0247	0.0268		Pass
			Extreme(+55)	5240.0375	5240.0399	0.0375	0.0399		Pass
	Extreme(3.2)	Normal(20)	5240.0413	5240.0428	0.0413	0.0428	Pass		
	Extreme(4.3)		5240.0356	5240.0388	0.0356	0.0388	Pass		
Band	Test Conditions		Operation Frequency (MHz)	Test Frequency (MHz)		Freq. Dev. (MHz)		Limit (GHz)	Result
	Volt (V DC)	Temp (°C)		ANT0	ANT1	ANT0	ANT1		
Band U-NII 3	Normal(3.7)	Extreme(-20)	5745	5745.0415	5745.0432	0.0415	0.0432	5.725-5.85	Pass
		Extreme(-10)		5745.0405	5745.0441	0.0405	0.0441		Pass
		Extreme(0)		5745.0326	5745.0358	0.0326	0.0358		Pass
		Extreme(+10)		5745.0312	5745.0346	0.0312	0.0346		Pass
		Extreme(+20)		5745.0385	5745.0399	0.0385	0.0399		Pass
		Extreme(+30)		5745.0421	5745.0455	0.0421	0.0455		Pass
		Extreme(+40)		5745.0358	5745.0398	0.0358	0.0398		Pass
		Extreme(+55)		5745.0322	5745.0374	0.0322	0.0374		Pass
	Extreme(3.2)	Normal(+20)	5745.0402	5745.0425	0.0402	0.0425	Pass		
	Extreme(4.3)		5745.0434	5745.0485	0.0434	0.0485	Pass		
	Normal(3.7)	5825	Extreme(-20)	5825.0401	5825.0436	0.0401	0.0436		Pass
			Extreme(-10)	5825.0431	5825.0486	0.0431	0.0486		Pass
			Extreme(0)	5825.0365	5825.0388	0.0365	0.0388		Pass
			Extreme(+10)	5825.0302	5825.0345	0.0302	0.0345		Pass
			Extreme(+20)	5825.0299	5825.0306	0.0299	0.0306		Pass
			Extreme(+30)	5825.0341	5825.0384	0.0341	0.0384		Pass
			Extreme(+40)	5825.0314	5825.0365	0.0314	0.0365		Pass
			Extreme(+55)	5825.0328	5825.0376	0.0328	0.0376		Pass
	Extreme(3.2)	Normal(20)	5825.0415	5825.0435	0.0415	0.0435	Pass		
	Extreme(4.3)		5825.0356	5825.0385	0.0356	0.0385	Pass		

Remark: Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

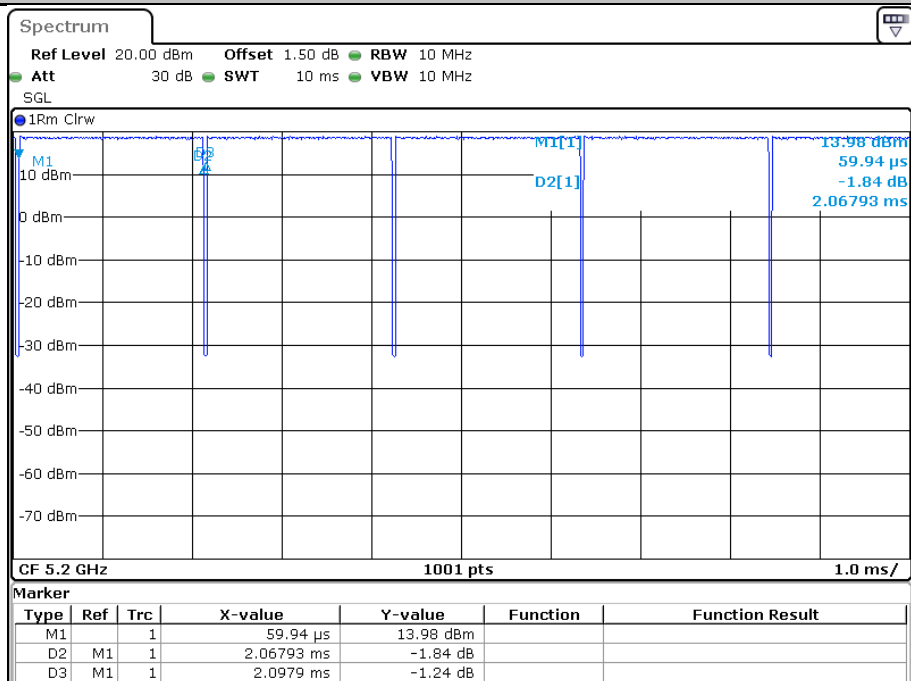
## 7.Duty Cycle

Test Mode	Test Channel	Duty Cycle[%]		10log(1/x) Factor[dB]	
		Ant1	Ant2	Ant1	Ant2
11A	5180	98.10	98.12	0.08	0.08
11A	5220	98.57	98.47	0.06	0.07
11A	5240	98.10	98.15	0.08	0.08
11A	5745	98.57	98.51	0.06	0.07
11A	5785	98.57	98.49	0.06	0.07
11A	5825	98.57	98.51	0.06	0.07
11N20	5180	98.47	98.50	0.07	0.07
11N20	5220	98.46	98.49	0.07	0.07
11N20	5240	98.46	98.49	0.07	0.07
11N20	5745	98.47	98.48	0.07	0.07
11N20	5785	98.47	98.48	0.07	0.07
11N20	5825	98.47	98.48	0.07	0.07

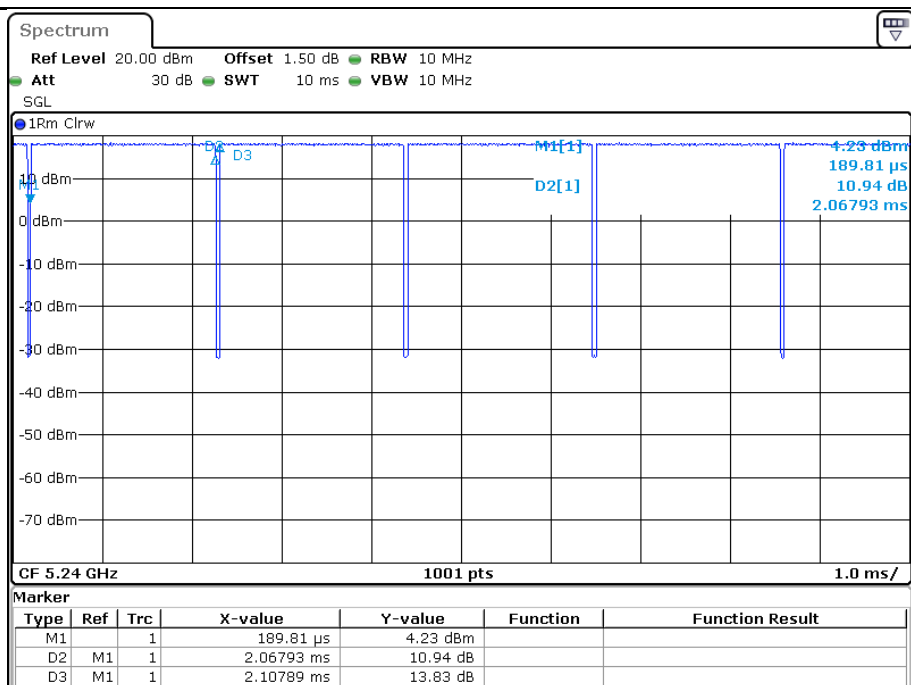
## Duty Cycle\_11A\_5180\_Ant1



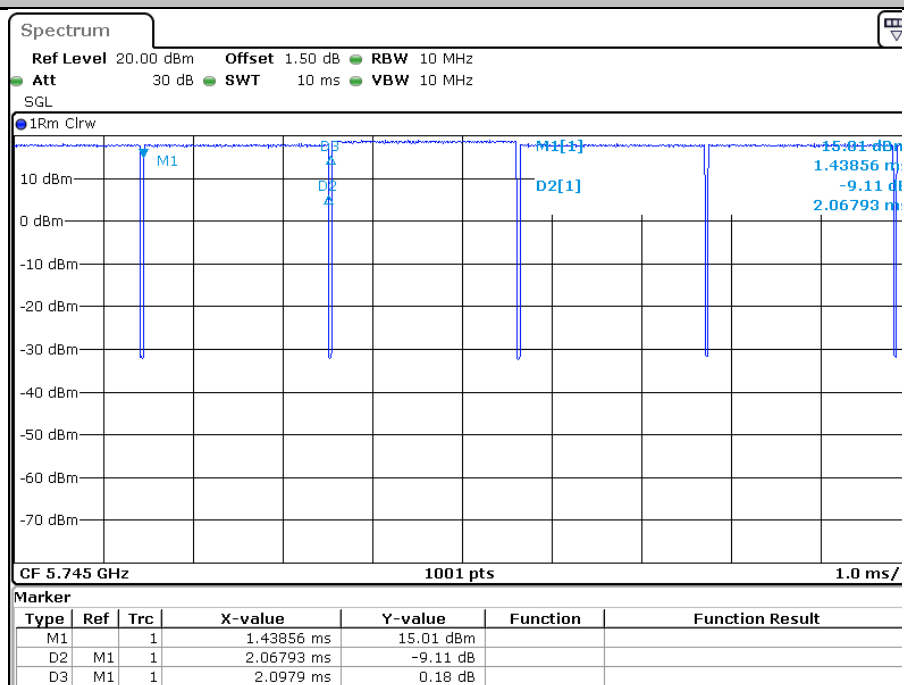
## Duty Cycle\_11A\_5220\_Ant1



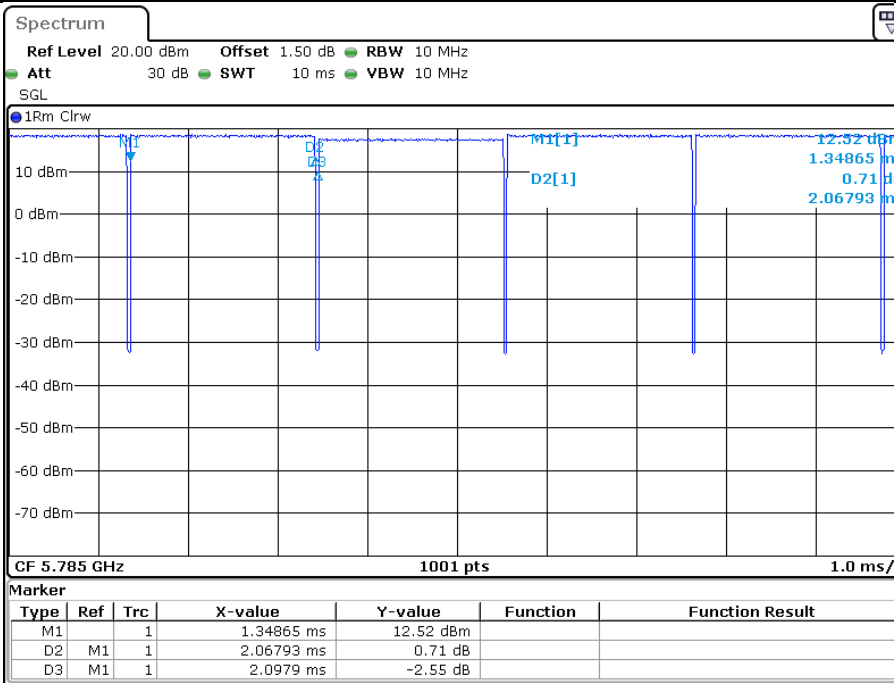
## Duty Cycle\_11A\_5240\_Ant1



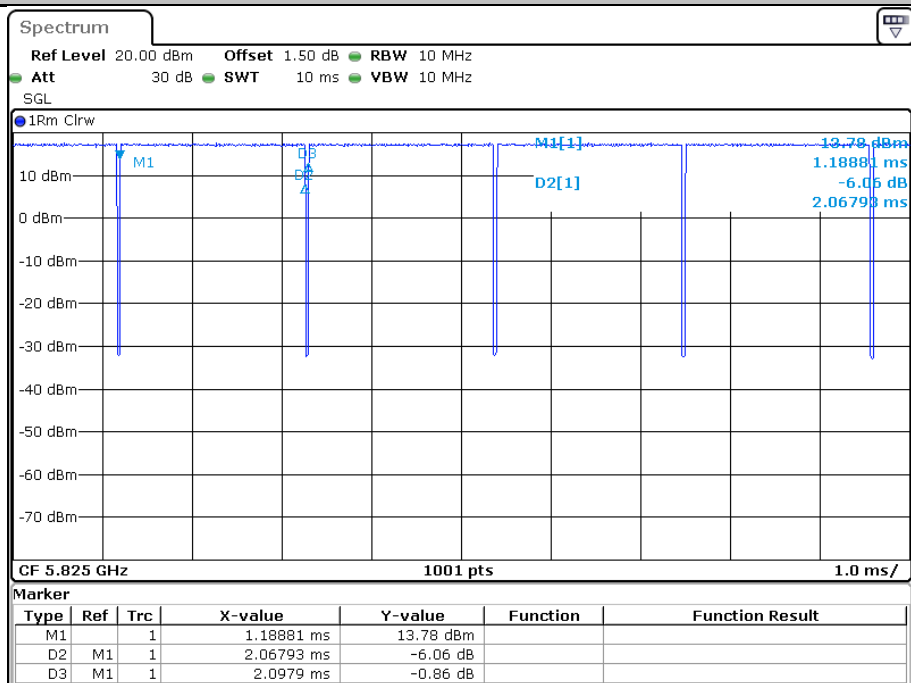
Duty Cycle\_11A\_5745\_Ant1



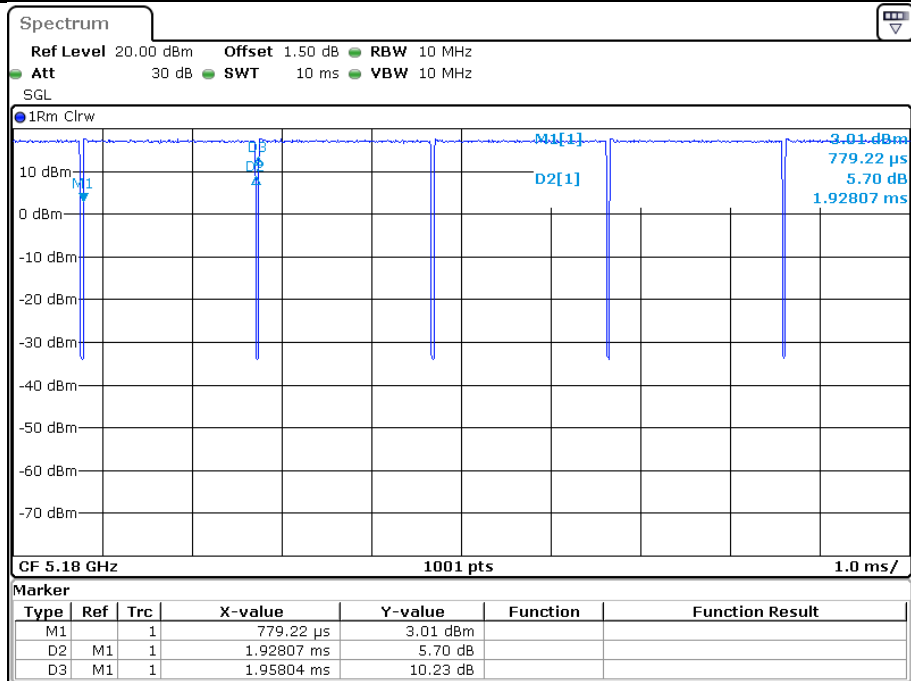
Duty Cycle\_11A\_5785\_Ant1



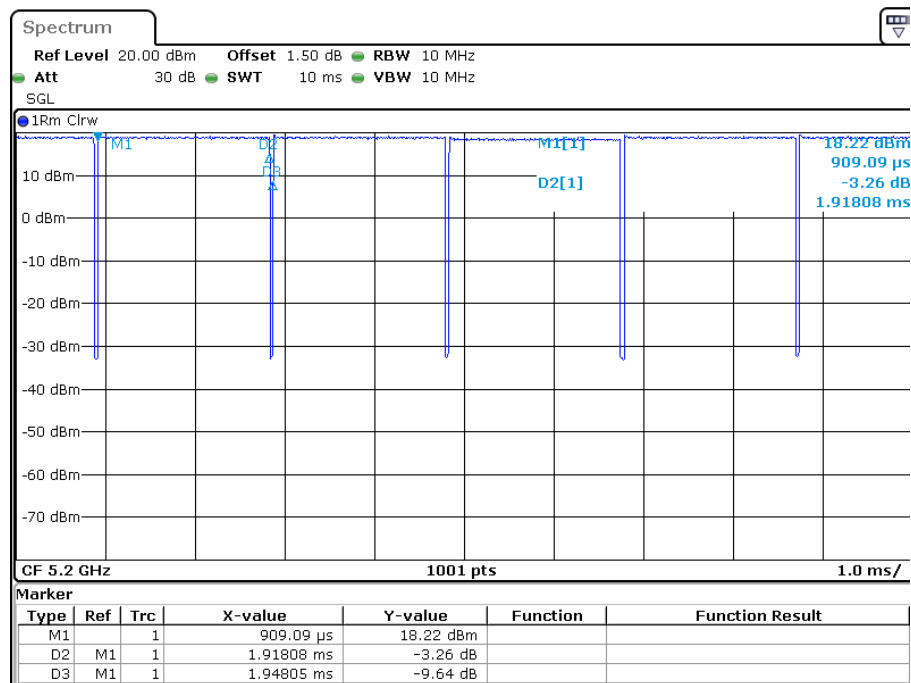
Duty Cycle\_11A\_5825\_Ant1



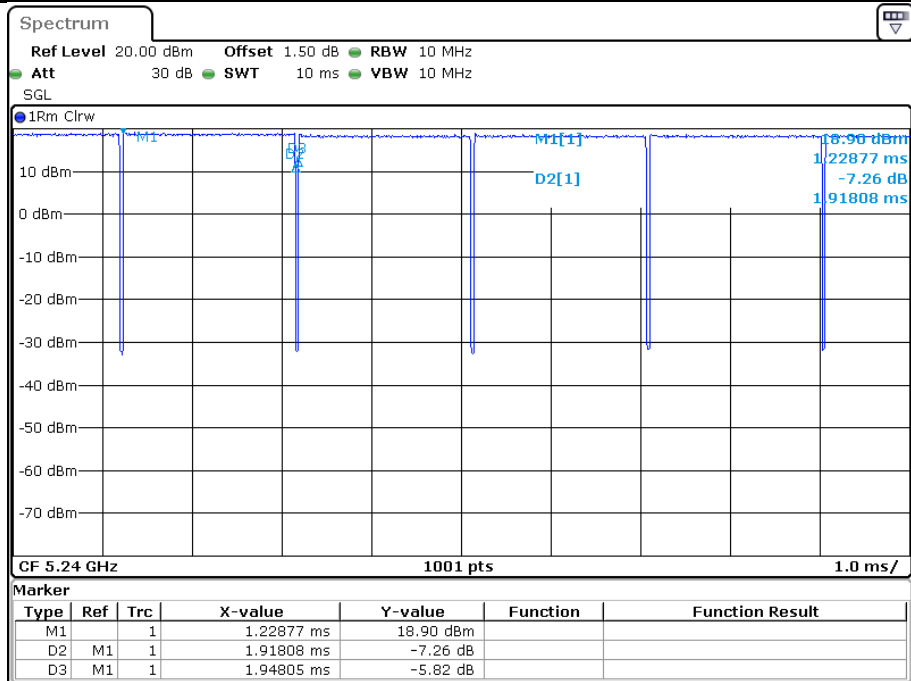
Duty Cycle\_11N20\_5180\_Ant1



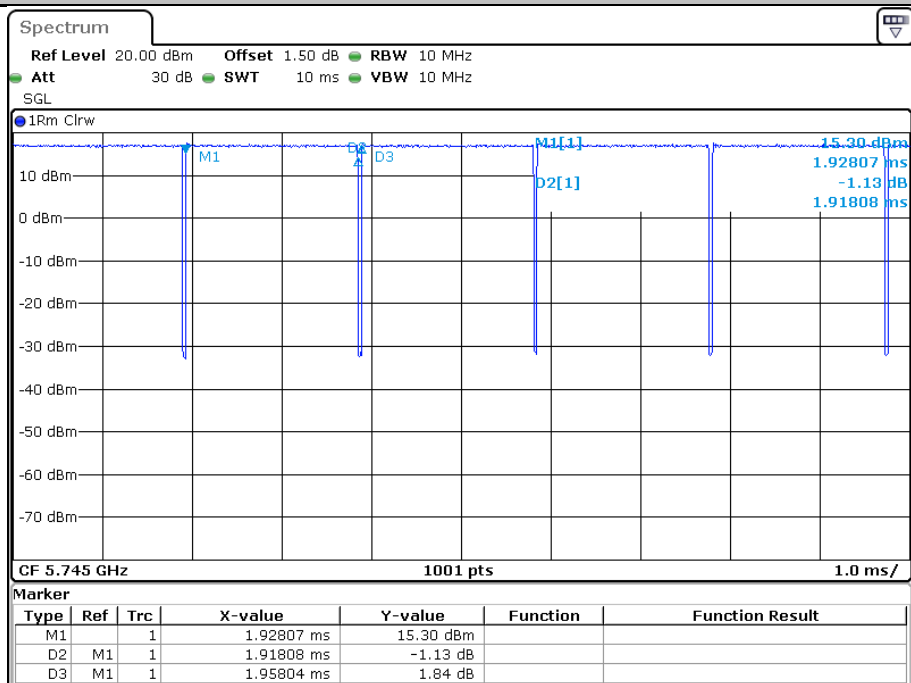
Duty Cycle\_11N20\_5220\_Ant1



Duty Cycle\_11N20\_5240\_Ant1

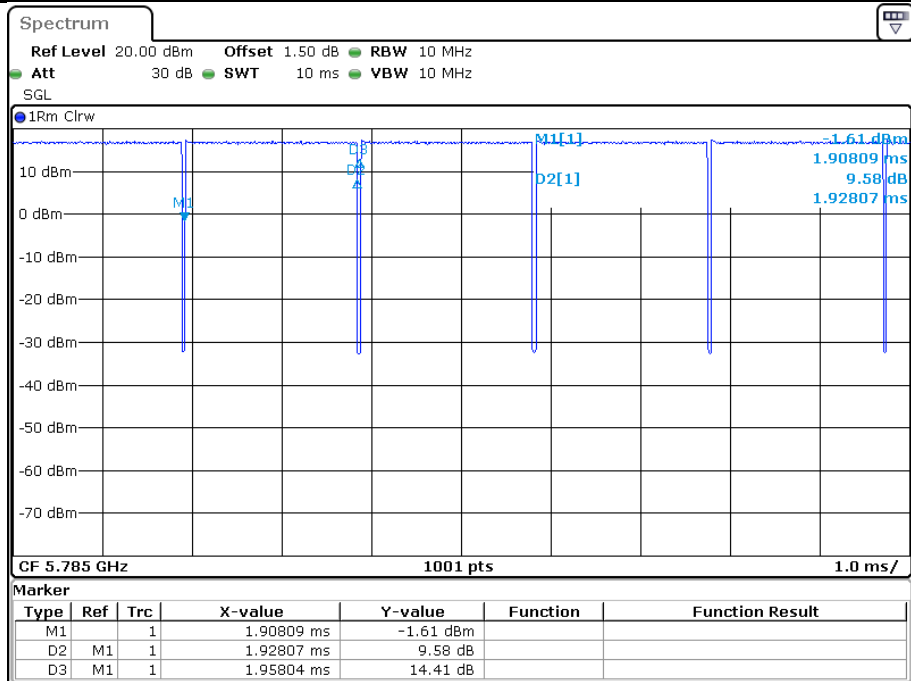


Duty Cycle\_11N20\_5745\_Ant1

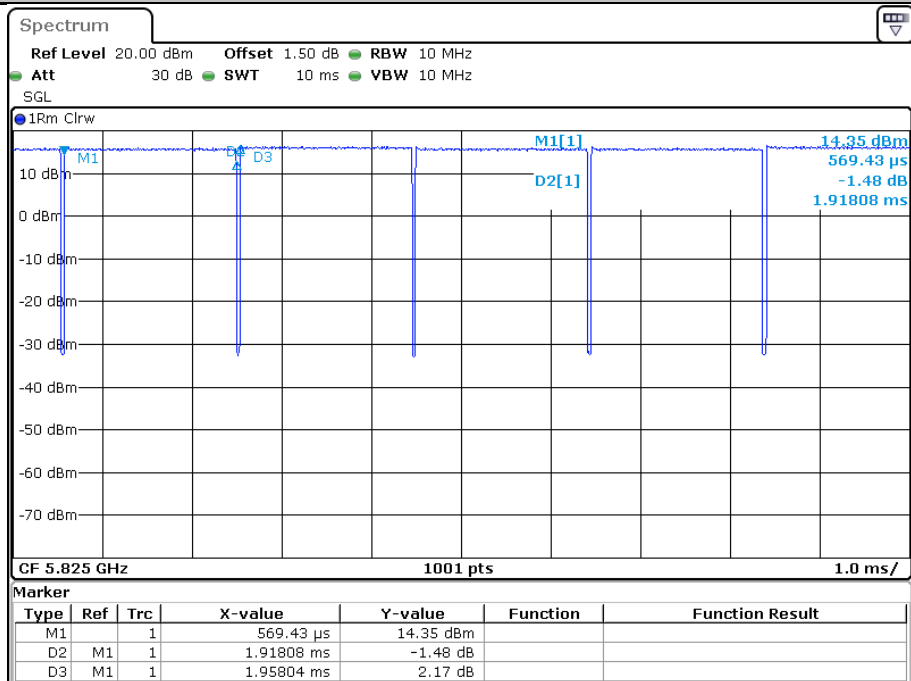


Duty Cycle\_11N20\_5785\_Ant1

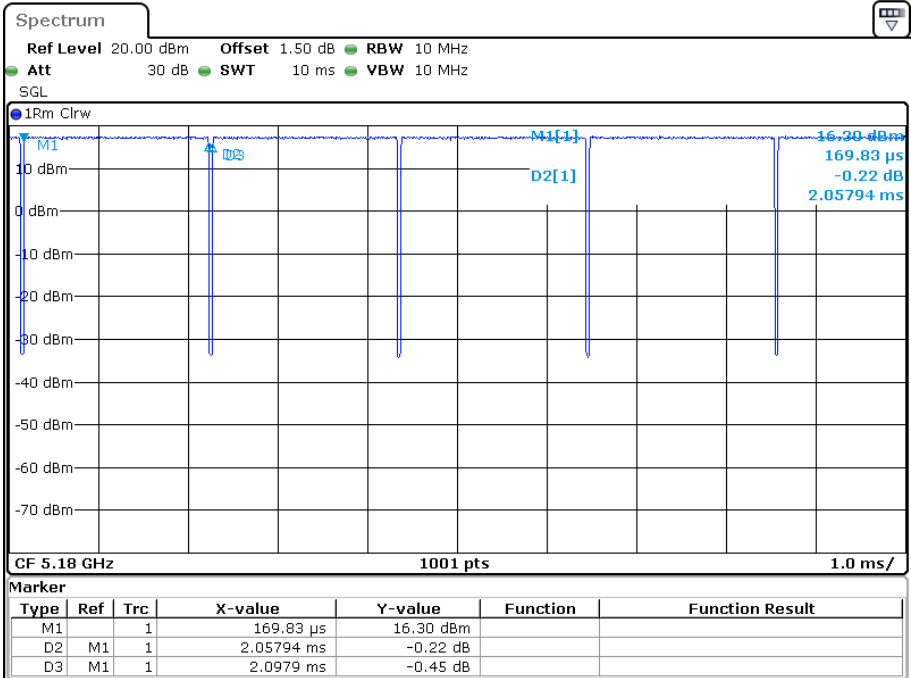




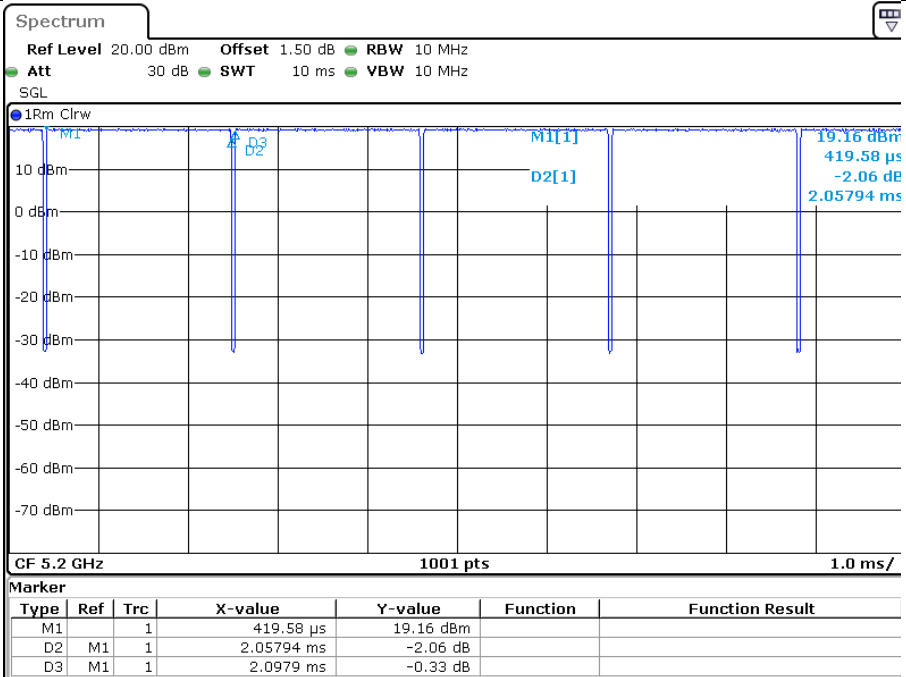
Duty Cycle\_11N20\_5825\_Ant1



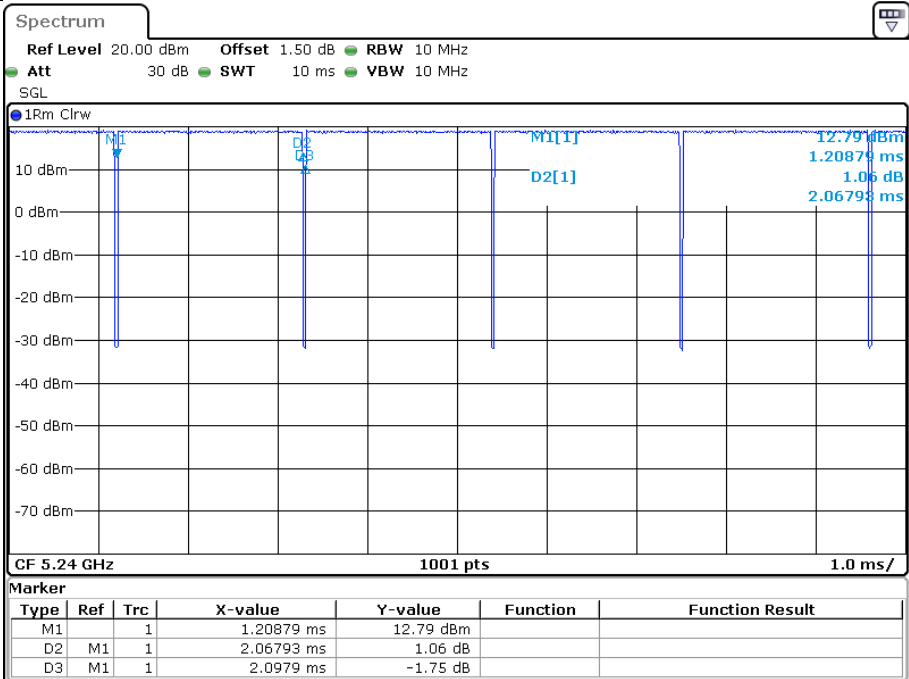
## Duty Cycle\_11A\_5180\_Ant2



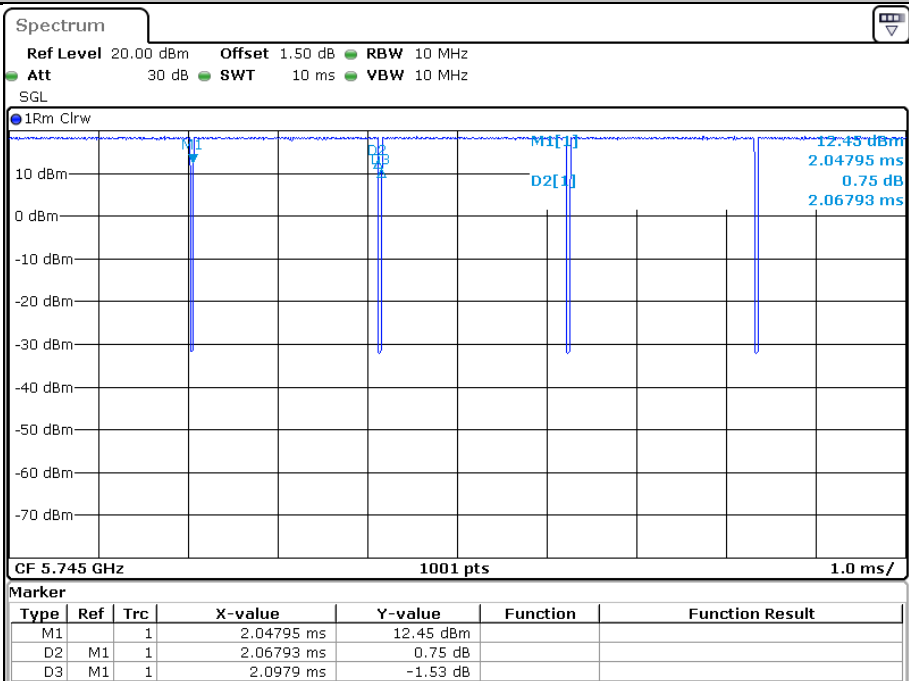
## Duty Cycle\_11A\_5220\_Ant2



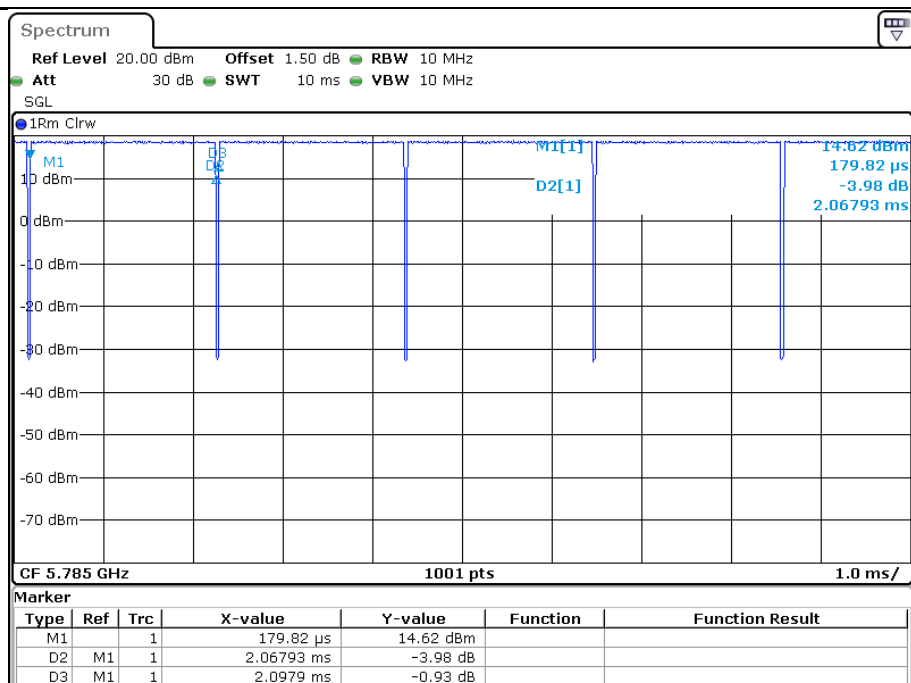
## Duty Cycle\_11A\_5240\_Ant2



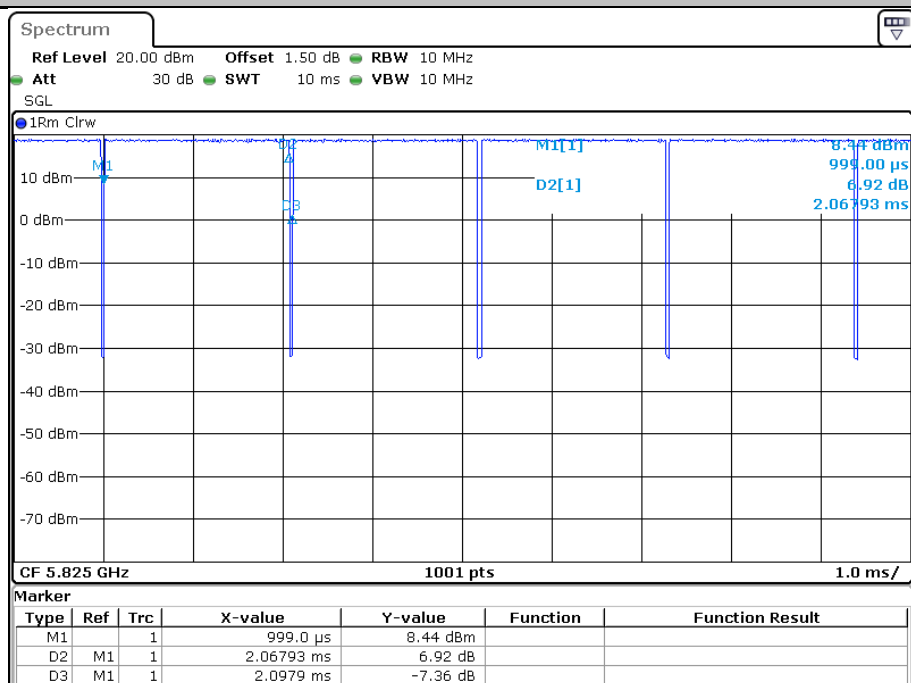
Duty Cycle\_11A\_5745\_Ant2



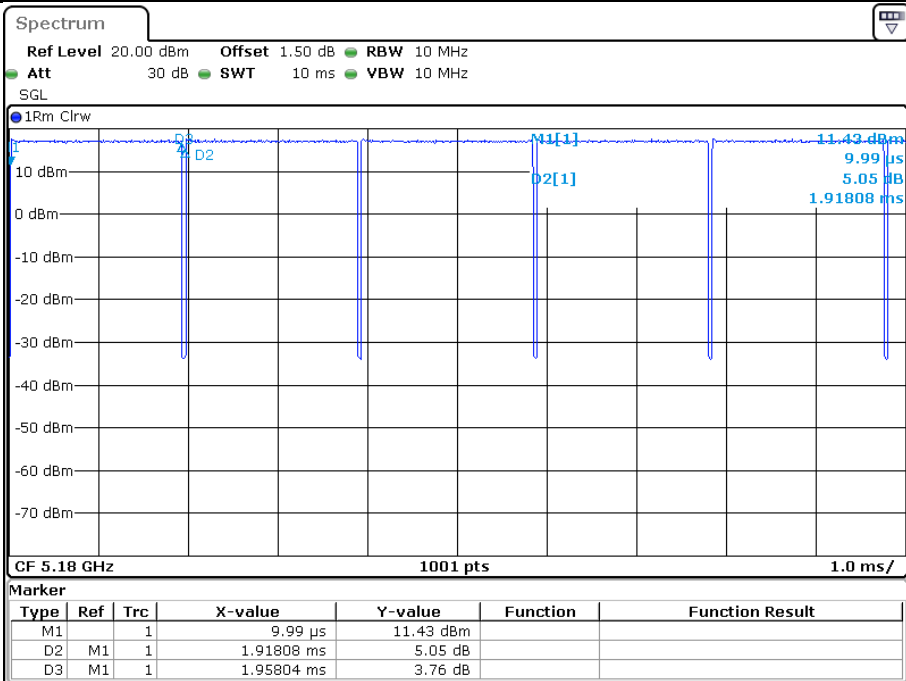
Duty Cycle\_11A\_5785\_Ant2



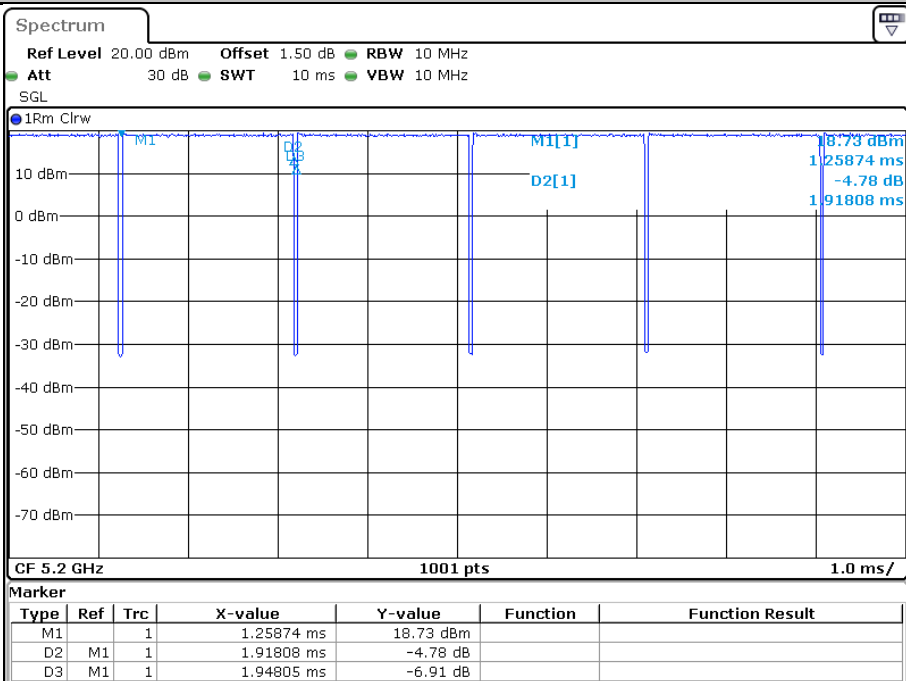
Duty Cycle\_11A\_5825\_Ant2



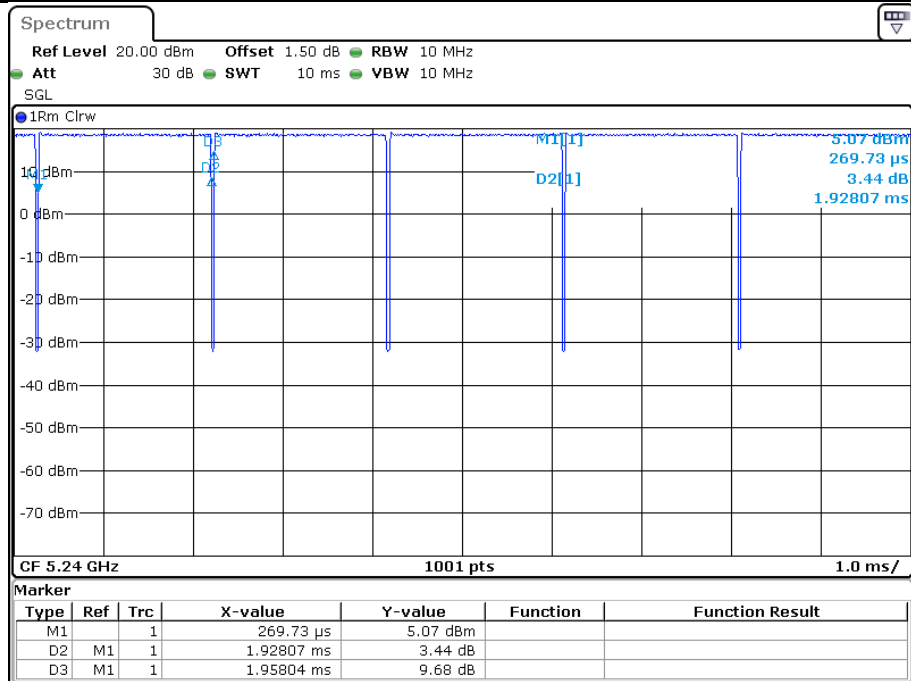
Duty Cycle\_11N20\_5180\_Ant2



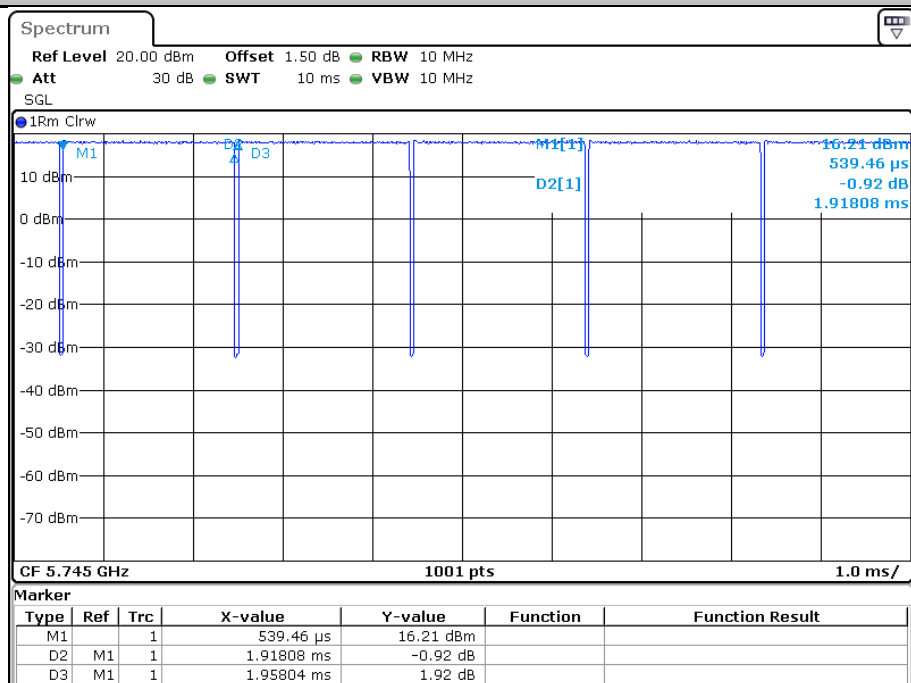
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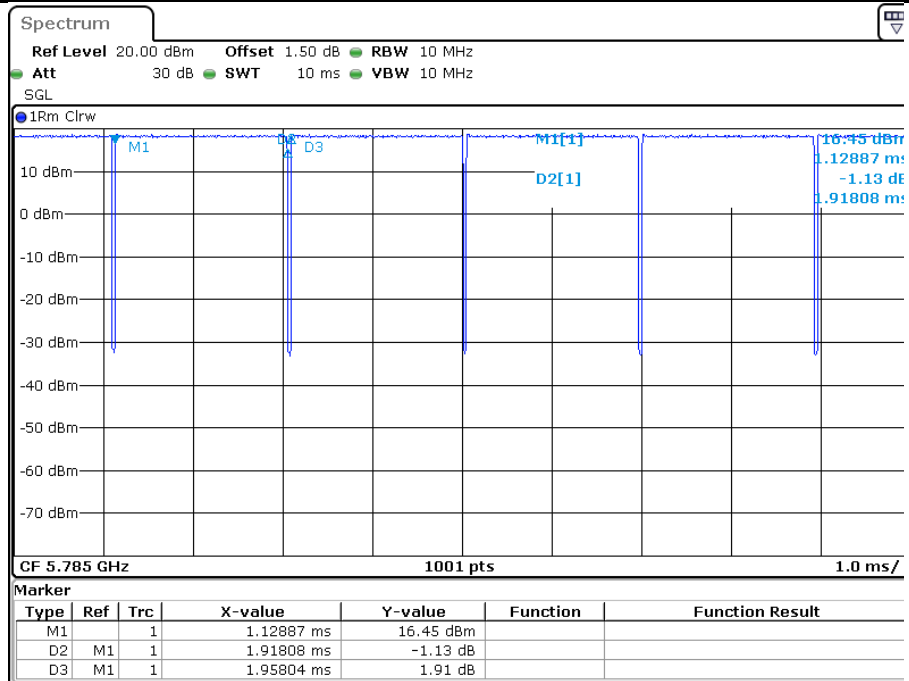
Duty Cycle\_11N20\_5240\_Ant2



Duty Cycle\_11N20\_5745\_Ant2



Duty Cycle\_11N20\_5785\_Ant2



## Duty Cycle\_11N20\_5825\_Ant2

