

13. Appendix

13.1. Appendix A1: Emission Bandwidth

13.1.1. Test Result

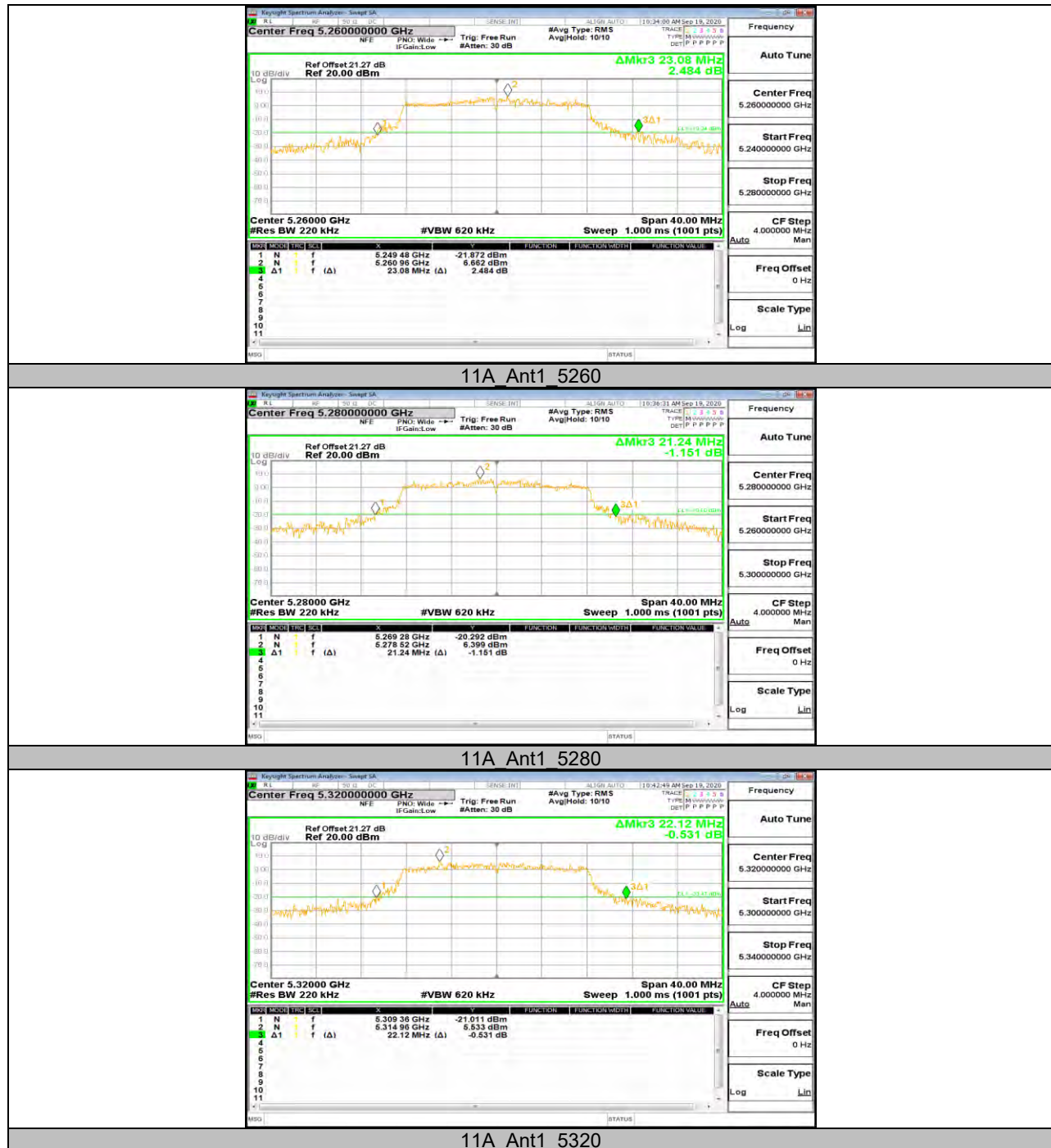
Test Mode	Antenna	Channel	26db EBW [MHz]	FL[MHz]	FH[MHz]	Verdict
11A	Ant1	5180	23.640	5169.840	5193.480	PASS
		5200	23.880	5189.240	5213.120	PASS
		5240	20.440	5230.040	5250.480	PASS
		5260	23.080	5249.480	5272.560	PASS
		5280	21.240	5269.280	5290.520	PASS
		5320	22.120	5309.360	5331.480	PASS
		5500	20.960	5489.600	5510.560	PASS
		5600	23.040	5588.400	5611.440	PASS
		5700	22.600	5689.280	5711.880	PASS
		5720	22.880	5709.200	5732.080	PASS
		5720 UNII-2C	15.8	5709.200	5725	PASS
		5720 UNII-3	7.08	5725	5732.080	PASS
		5745	23.320	5732.120	5755.440	PASS
		5785	24.760	5771.160	5795.920	PASS
		5825	24.400	5811.800	5836.200	PASS
11N20SISO	Ant1	5180	22.360	5169.680	5192.040	PASS
		5200	24.320	5189.400	5213.720	PASS
		5240	21.240	5229.560	5250.800	PASS
		5260	24.400	5248.080	5272.480	PASS
		5280	23.960	5269.400	5293.360	PASS
		5320	20.880	5309.600	5330.480	PASS
		5500	21.880	5488.800	5510.680	PASS
		5600	22.800	5589.320	5612.120	PASS
		5700	21.000	5689.600	5710.600	PASS
		5720	24.200	5706.640	5730.840	PASS
		5720 UNII-2C	18.36	5706.640	5725	PASS
		5720 UNII-3	5.84	5725	5730.840	PASS
		5745	21.120	5734.160	5755.280	PASS
		5785	21.800	5774.120	5795.920	PASS
		5825	22.680	5812.760	5835.440	PASS
11AC20SISO	Ant1	5180	23.480	5169.160	5192.640	PASS
		5200	23.640	5189.360	5213.000	PASS
		5240	21.400	5229.640	5251.040	PASS
		5260	23.880	5249.400	5273.280	PASS
		5280	21.600	5269.400	5291.000	PASS
		5320	23.160	5309.400	5332.560	PASS
		5500	21.400	5489.520	5510.920	PASS
		5600	21.080	5589.400	5610.480	PASS
		5700	21.720	5688.760	5710.480	PASS
		5720	21.440	5709.240	5730.680	PASS
		5720 UNII-2C	15.76	5709.240	5725	PASS
		5720 UNII-3	5.68	5725	5730.680	PASS
		5745	20.680	5734.720	5755.400	PASS
		5785	21.080	5774.240	5795.320	PASS
		5825	21.120	5814.320	5835.440	PASS
11AC40SISO	Ant1	5190	39.360	5170.320	5209.680	PASS
		5230	39.200	5210.640	5249.840	PASS
		5270	39.520	5250.320	5289.840	PASS
		5310	39.360	5290.400	5329.760	PASS
		5510	39.360	5490.400	5529.760	PASS
		5550	24.160	5565.840	5590.000	PASS



		5590	39.440	5570.080	5609.520	PASS
		5670	39.280	5650.400	5689.680	PASS
		5710	39.120	5690.320	5729.440	PASS
		5710 UNII-2C	34.68	5690.320	5725	PASS
		5710 UNII-3	4.44	5725	5729.440	PASS
		5755	38.880	5735.480	5774.360	PASS
		5795	39.520	5775.160	5814.680	PASS
		5210	79.840	5170.320	5250.160	PASS
11AC80SISO	Ant1	5290	81.120	5249.360	5330.480	PASS
		5530	79.520	5490.640	5570.160	PASS
		5610	80.800	5569.840	5650.640	PASS
		5690	80.480	5649.680	5730.160	PASS
		5690 UNII-2C	75.32	5649.680	5725	PASS
		5690 UNII-3	5.16	5725	5730.160	PASS
		5775	80.320	5734.520	5814.840	PASS

13.1.2. Test Graphs

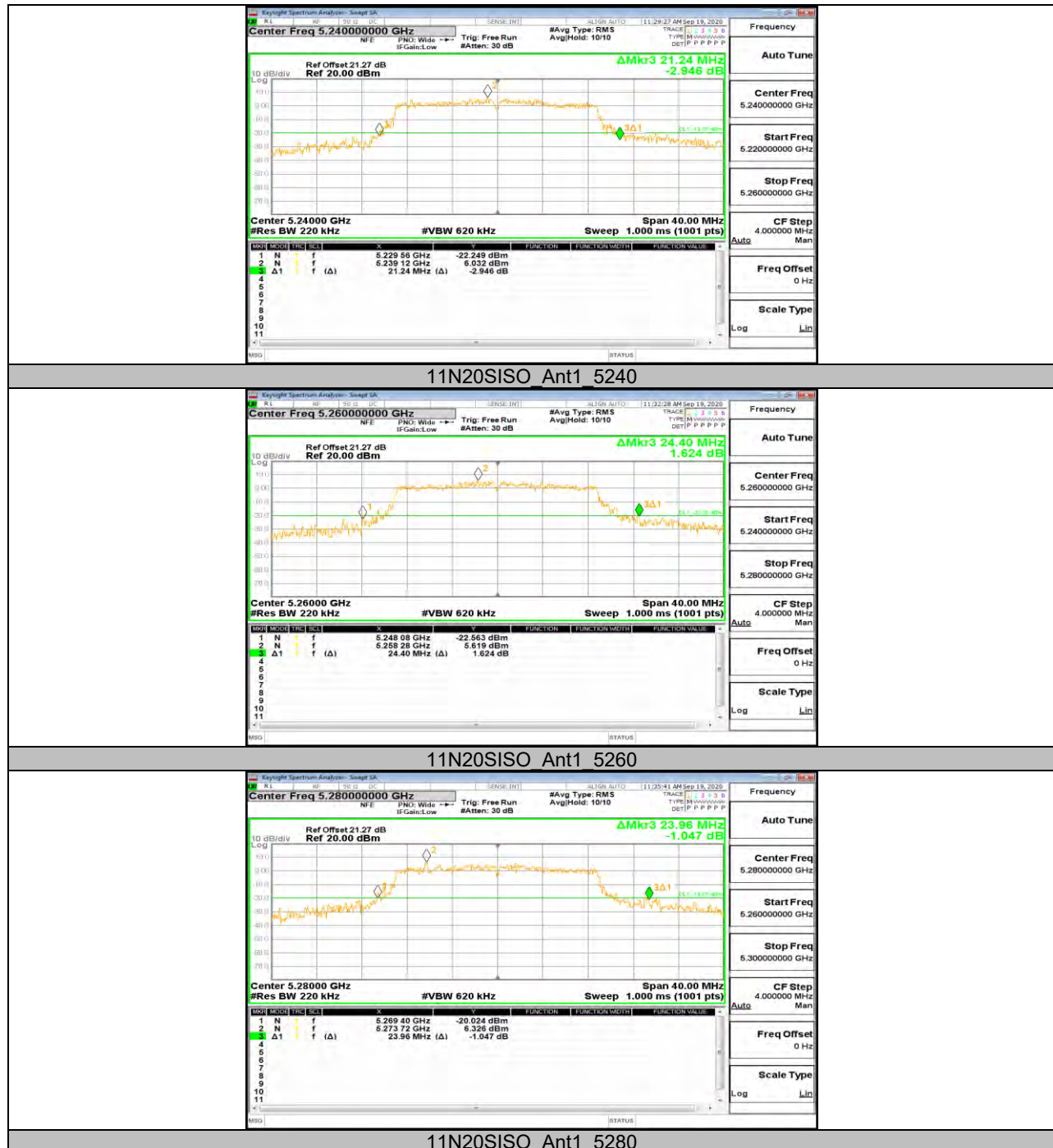














11N20SISO Ant1 5320



11N20SISO Ant1 5500



11N20SISO Ant1 5600













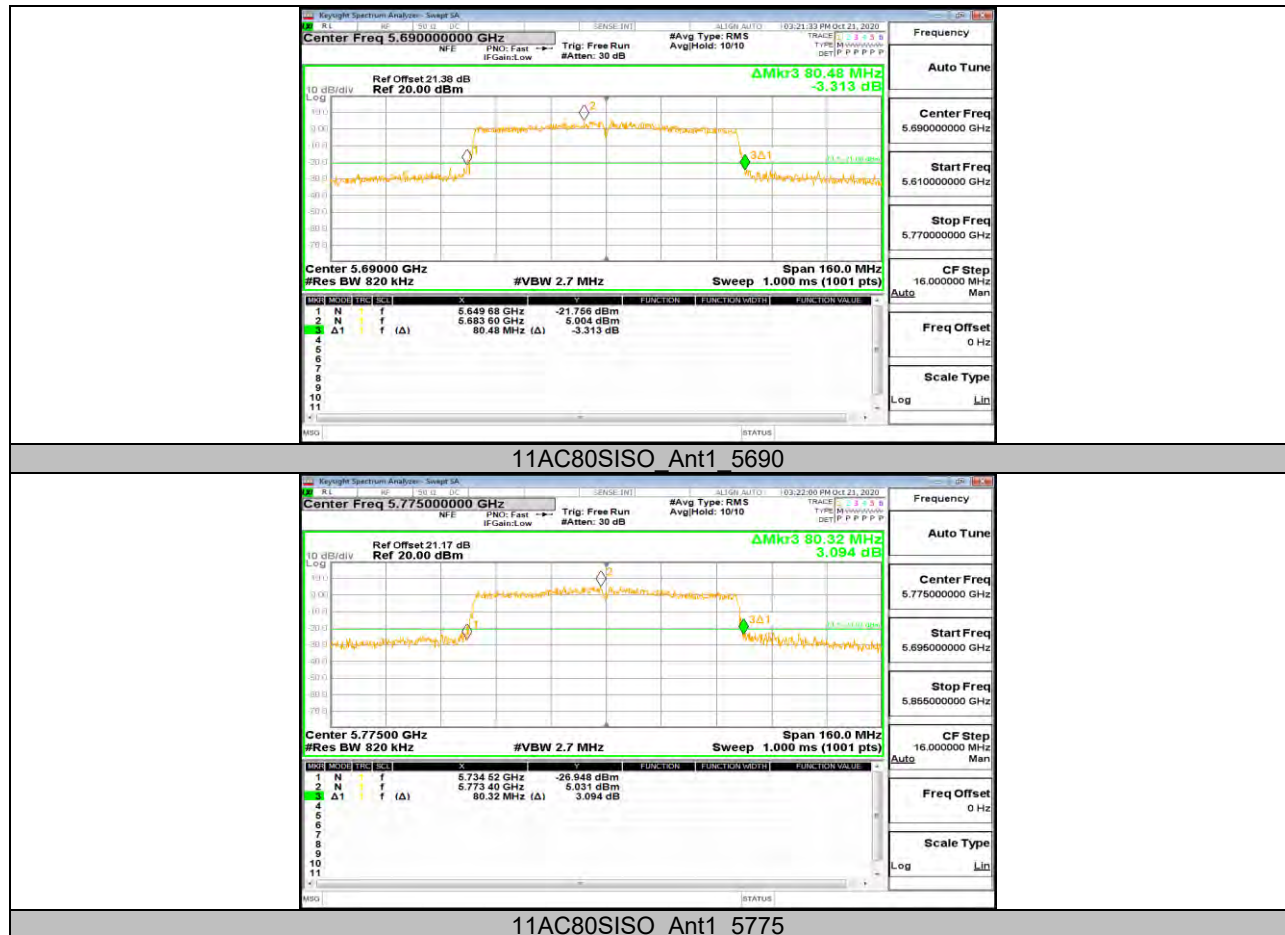












13.2. Appendix A2: Occupied channel bandwidth

13.2.1. Test Result

Test Mode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Verdict
11A	Ant1	5180	17.022	5171.458	5188.480	PASS
		5200	17.155	5191.429	5208.584	PASS
		5240	17.085	5231.443	5248.528	PASS
		5260	17.060	5251.442	5268.502	PASS
		5280	16.942	5271.488	5288.430	PASS
		5320	17.217	5311.226	5328.443	PASS
		5500	16.961	5491.428	5508.389	PASS
		5600	17.199	5591.452	5608.651	PASS
		5700	16.830	5691.534	5708.364	PASS
		5720	17.129	5711.374	5728.503	PASS
		5720 UNII-2C	13.626	5711.374	5725	PASS
		5720 UNII-3	3.503	5725	5728.503	PASS
		5745	17.210	5736.251	5753.461	PASS
		5785	17.504	5776.036	5793.540	PASS
		5825	17.273	5816.204	5833.477	PASS
11N20SISO	Ant1	5180	18.047	5171.028	5189.075	PASS
		5200	18.015	5191.046	5209.061	PASS
		5240	18.086	5230.982	5249.068	PASS
		5260	18.112	5250.980	5269.092	PASS
		5280	18.186	5270.858	5289.044	PASS
		5320	18.084	5310.967	5329.051	PASS
		5500	18.035	5490.851	5508.886	PASS
		5600	18.097	5590.940	5609.037	PASS
		5700	18.025	5690.911	5708.936	PASS
		5720	18.016	5710.948	5728.964	PASS
		5720 UNII-2C	14.052	5710.948	5725	PASS
		5720 UNII-3	3.964	5725	5728.964	PASS
		5745	18.187	5735.869	5754.056	PASS
		5785	18.170	5775.868	5794.038	PASS
		5825	18.124	5815.867	5833.991	PASS
11AC20SISO	Ant1	5180	18.149	5171.059	5189.208	PASS
		5240	18.156	5230.849	5249.005	PASS
		5260	18.155	5251.010	5269.165	PASS
		5280	18.010	5270.917	5288.927	PASS
		5320	18.197	5310.830	5329.027	PASS
		5500	18.171	5490.963	5509.134	PASS
		5600	17.976	5591.012	5608.988	PASS
		5700	18.069	5690.920	5708.989	PASS
		5720	17.998	5710.923	5728.921	PASS
		5720 UNII-2C	14.077	5710.923	5725	PASS
		5720 UNII-3	3.921	5725	5728.921	PASS
		5745	18.314	5735.729	5754.043	PASS
		5785	18.444	5775.638	5794.082	PASS
		5825	18.328	5815.780	5834.108	PASS
11AC40SISO	Ant1	5190	36.449	5171.867	5208.316	PASS
		5230	36.414	5211.918	5248.332	PASS
		5270	36.339	5251.849	5288.188	PASS
		5310	36.428	5291.753	5328.181	PASS
		5510	36.519	5491.798	5528.317	PASS
		5590	36.611	5571.650	5608.261	PASS
		5670	36.471	5651.779	5688.250	PASS
		5710	36.589	5691.724	5728.313	PASS



		5710 UNII-2C	33.276	5691.724	5725	PASS
		5710 UNII-3	3.313	5725	5728.313	PASS
		5755	36.708	5736.680	5773.388	PASS
		5795	36.569	5776.653	5813.222	PASS
11AC80SISO	Ant1	5210	75.841	5172.392	5248.233	PASS
		5290	75.756	5252.172	5327.928	PASS
		5530	76.047	5492.090	5568.137	PASS
		5610	75.883	5572.064	5647.947	PASS
		5690	76.061	5651.867	5727.928	PASS
		5690 UNII-2C	73.133	5651.867	5725	PASS
		5690 UNII-3	2.928	5725	5727.928	PASS
		5775	76.229	5736.757	5812.986	PASS

13.2.2. Test Graphs







































13.3. Appendix A3: 6dB emission bandwidth

13.3.1. Test Result

Test Mode	Antenna	Channel	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	16.160	5736.760	5752.920	0.5	PASS
		5785	15.800	5776.760	5792.560	0.5	PASS
		5825	16.400	5816.760	5833.160	0.5	PASS
11N20SISO	Ant1	5745	17.640	5736.160	5753.800	0.5	PASS
		5785	16.760	5776.400	5793.160	0.5	PASS
		5825	17.240	5816.160	5833.400	0.5	PASS
11AC20SISO	Ant1	5745	17.360	5736.400	5753.760	0.5	PASS
		5785	17.000	5776.160	5793.160	0.5	PASS
		5825	16.600	5816.520	5833.120	0.5	PASS
11AC40SISO	Ant1	5755	35.840	5736.760	5772.600	0.5	PASS
		5795	35.840	5776.760	5812.600	0.5	PASS
11AC80SISO	Ant1	5775	75.520	5737.240	5812.760	0.5	PASS

13.3.2. Test Graphs









**13.4. Appendix B: Maximum AVG conducted output power****13.4.1. Test Result**

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11A	Ant1	5180	16.94	<=23.98	PASS
		5200	17.19	<=23.98	PASS
		5240	16.65	<=23.98	PASS
		5260	16.65	<=23.98	PASS
		5280	16.50	<=23.98	PASS
		5320	16.29	<=23.98	PASS
		5500	16.87	<=23.98	PASS
		5600	16.69	<=23.98	PASS
		5700	15.83	<=23.98	PASS
		5720 UNII-2C	14.36	<=23.98	PASS
		5720 UNII-3	7.16	<=30	PASS
		5745	15.79	<=30	PASS
		5785	15.68	<=30	PASS
		5825	15.30	<=30	PASS
11N20SISO	Ant1	5180	16.81	<=23.98	PASS
		5200	16.86	<=23.98	PASS
		5240	16.57	<=23.98	PASS
		5260	16.55	<=23.98	PASS
		5280	16.31	<=23.98	PASS
		5320	16.17	<=23.98	PASS
		5500	16.72	<=23.98	PASS
		5600	16.37	<=23.98	PASS
		5700	15.58	<=23.98	PASS
		5720 UNII-2C	14.33	<=23.98	PASS
		5720 UNII-3	7.44	<=30	PASS
		5745	15.56	<=30	PASS
		5785	15.46	<=30	PASS
		5825	14.97	<=30	PASS
11AC20SISO	Ant1	5180	17.61	<=23.98	PASS
		5200	16.90	<=23.98	FAIL
		5240	17.59	<=23.98	PASS
		5260	17.38	<=23.98	PASS
		5280	17.33	<=23.98	PASS
		5320	17.28	<=23.98	PASS
		5500	17.90	<=23.98	PASS
		5600	17.98	<=23.98	PASS
		5700	17.45	<=23.98	PASS
		5720 UNII-2C	15.94	<=23.98	PASS
		5720 UNII-3	9.18	<=30	PASS
		5745	17.72	<=30	PASS
		5785	17.63	<=30	PASS
		5825	17.40	<=30	PASS
11AC40SISO	Ant1	5190	15.77	<=23.98	PASS
		5230	16.96	<=23.98	PASS
		5270	15.63	<=23.98	PASS
		5310	14.94	<=23.98	PASS
		5510	12.84	<=23.98	PASS
		5590	13.03	<=23.98	PASS
		5670	13.11	<=23.98	PASS
		5710 UNII-2C	13.54	<=23.98	PASS
		5710 UNII-3	1.35	<=30	PASS
		5755	15.82	<=30	PASS
		5795	15.61	<=30	PASS
11AC80SISO	Ant1	5210	17.03	<=23.98	PASS
		5290	13.98	<=23.98	PASS



		5530	13.39	≤ 23.98	PASS
		5610	14.15	≤ 23.98	PASS
		5690 UNII-2C	13.87	≤ 23.98	PASS
		5690 UNII-3	-2.28	≤ 30	PASS
		5775	17.50	≤ 30	PASS

Note : The Duty Cycle Factor is compensated in the graph.

**13.5. Appendix C: Maximum power spectral density****13.5.1. Test Result**

Test Mode	Antenna	Channel	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	Ant1	5180	7.00	<=11	PASS
		5200	6.98	<=11	PASS
		5240	6.95	<=11	PASS
		5260	6.67	<=11	PASS
		5280	6.57	<=11	PASS
		5320	6.30	<=11	PASS
		5500	6.89	<=11	PASS
		5600	6.52	<=11	PASS
		5700	5.58	<=11	PASS
		5720 UNII-2C	5.14	<=11	PASS
		5720 UNII-3	0.02	<=11	PASS
		5745	3.10	<=30	PASS
		5785	2.90	<=30	PASS
		5825	2.62	<=30	PASS
11N20SISO	Ant1	5180	6.53	<=11	PASS
		5200	7.00	<=11	PASS
		5240	6.60	<=11	PASS
		5260	6.32	<=11	PASS
		5280	6.33	<=11	PASS
		5320	5.76	<=11	PASS
		5500	6.57	<=11	PASS
		5600	5.89	<=11	PASS
		5700	5.46	<=11	PASS
		5720 UNII-2C	4.81	<=11	PASS
		5720 UNII-3	-0.65	<=11	PASS
		5745	2.79	<=30	PASS
		5785	2.21	<=30	PASS
		5825	2.16	<=30	PASS
11AC20SISO	Ant1	5180	7.38	<=11	PASS
		5200	7.47	<=11	PASS
		5240	7.27	<=11	PASS
		5260	7.30	<=11	PASS
		5280	7.09	<=11	PASS
		5320	7.39	<=11	PASS
		5500	7.73	<=11	PASS
		5600	7.64	<=11	PASS
		5700	7.50	<=11	PASS
		5720 UNII-2C	6.73	<=11	PASS
		5720 UNII-3	1.41	<=11	PASS
		5745	4.94	<=30	PASS
		5785	4.14	<=30	PASS
		5825	4.29	<=30	PASS
11AC40SISO	Ant1	5190	4.36	<=11	PASS
		5230	3.86	<=11	PASS
		5270	3.38	<=11	PASS
		5310	1.69	<=11	PASS
		5510	-0.48	<=11	PASS
		5590	3.87	<=11	PASS
		5670	2.49	<=11	PASS
		5710 UNII-2C	4.35	<=11	PASS
		5710 UNII-3	-1.18	<=11	PASS
		5755	0.00	<=30	PASS
		5795	-0.40	<=30	PASS

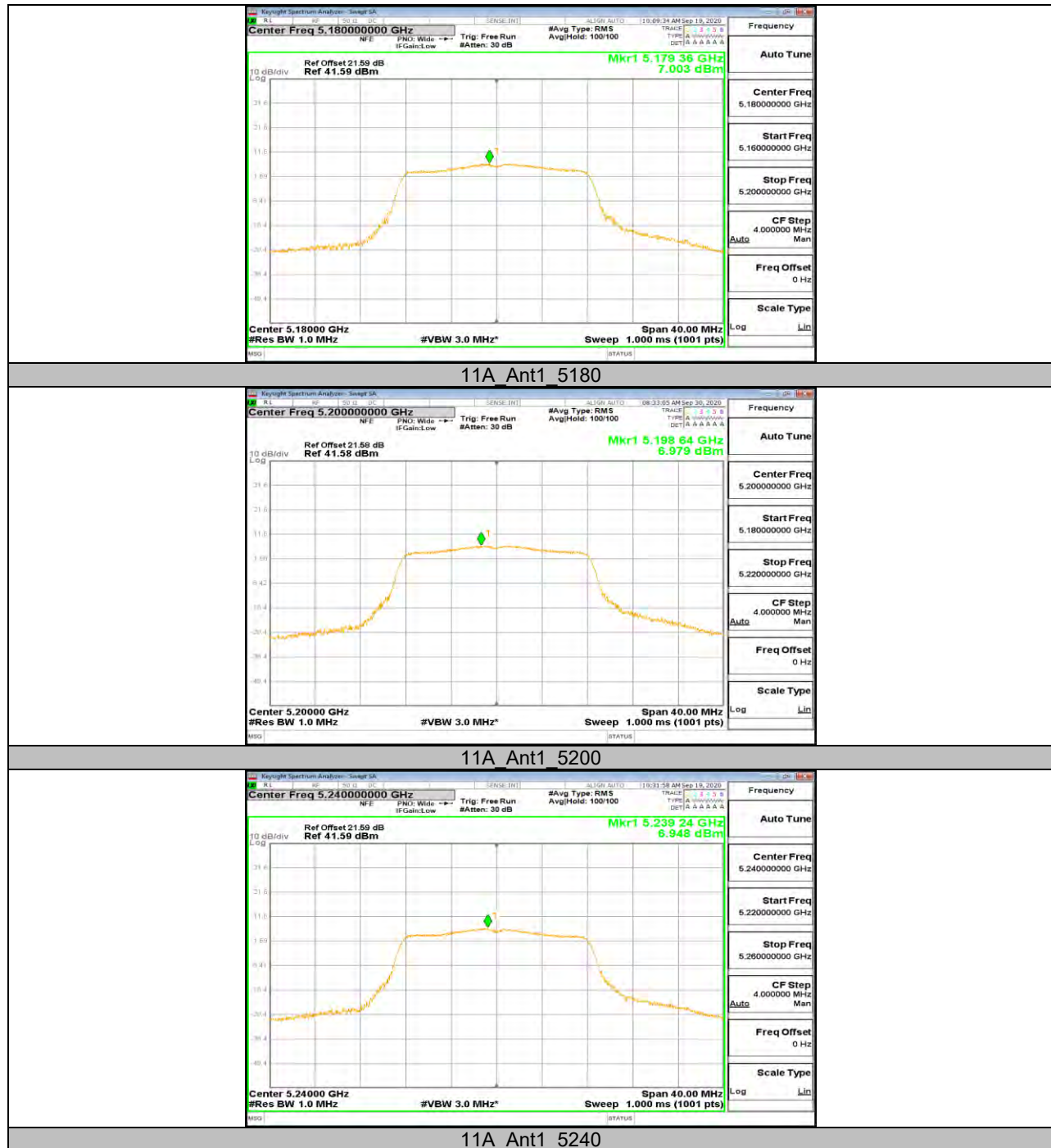


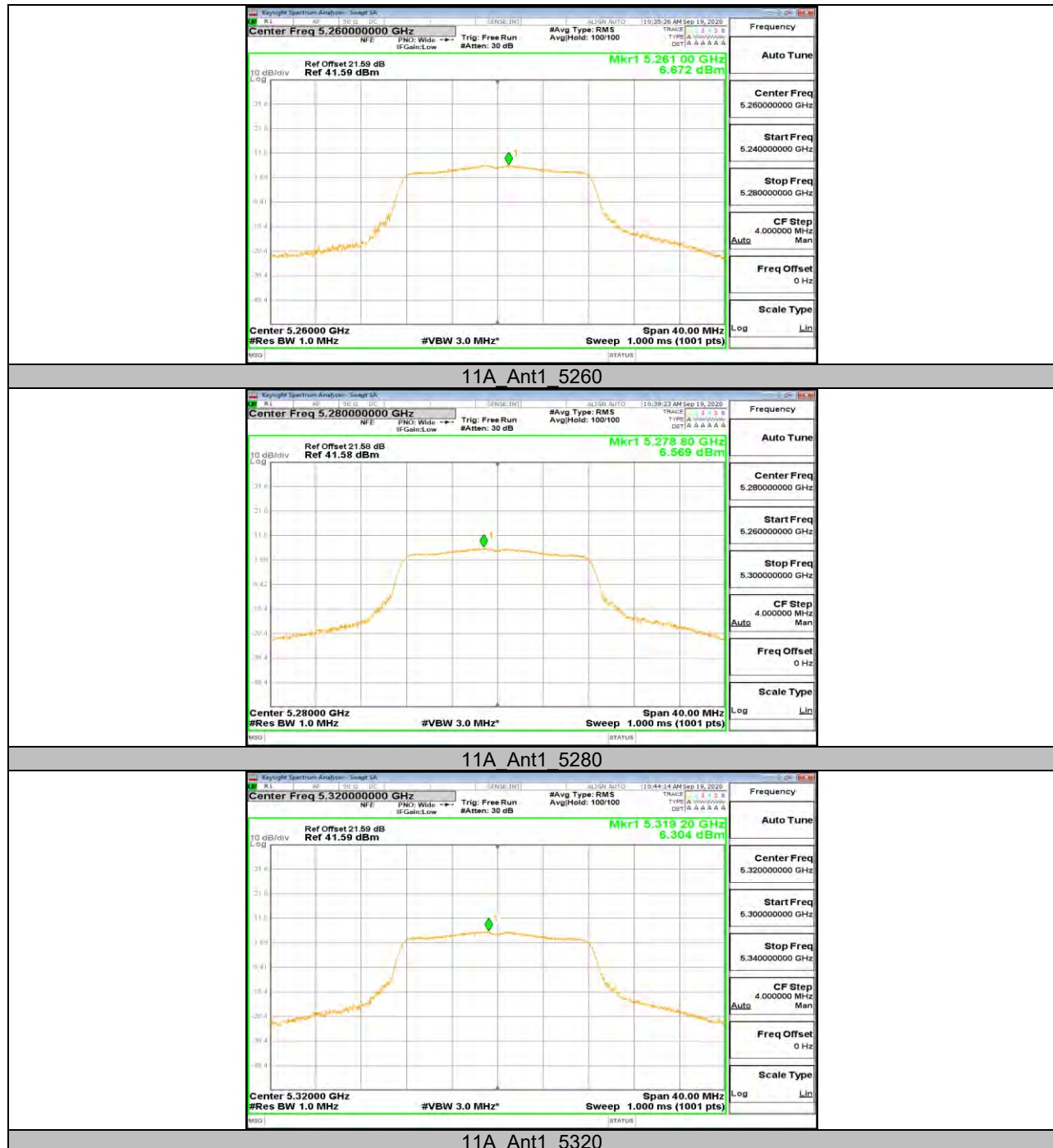
11AC80SISO	Ant1	5210	0.82	<=11	PASS
		5290	-2.20	<=11	PASS
		5530	-3.09	<=11	PASS
		5610	-20.79	<=11	PASS
		5690 UNII-2C	1.28	<=11	PASS
		5690 UNII-3	-5.88	<=11	PASS
		5775	-0.72	<=30	PASS

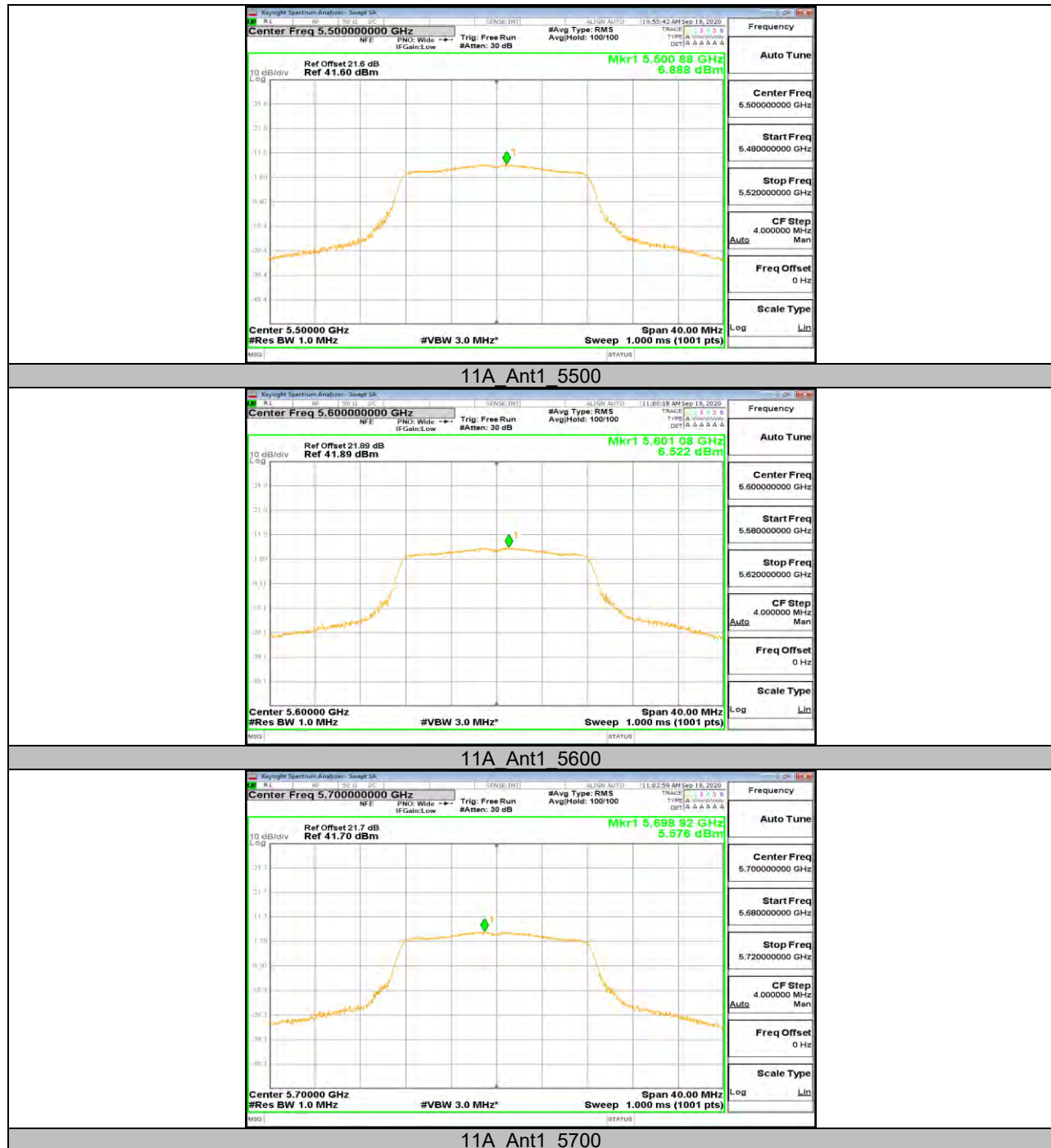
Note : 1.The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.

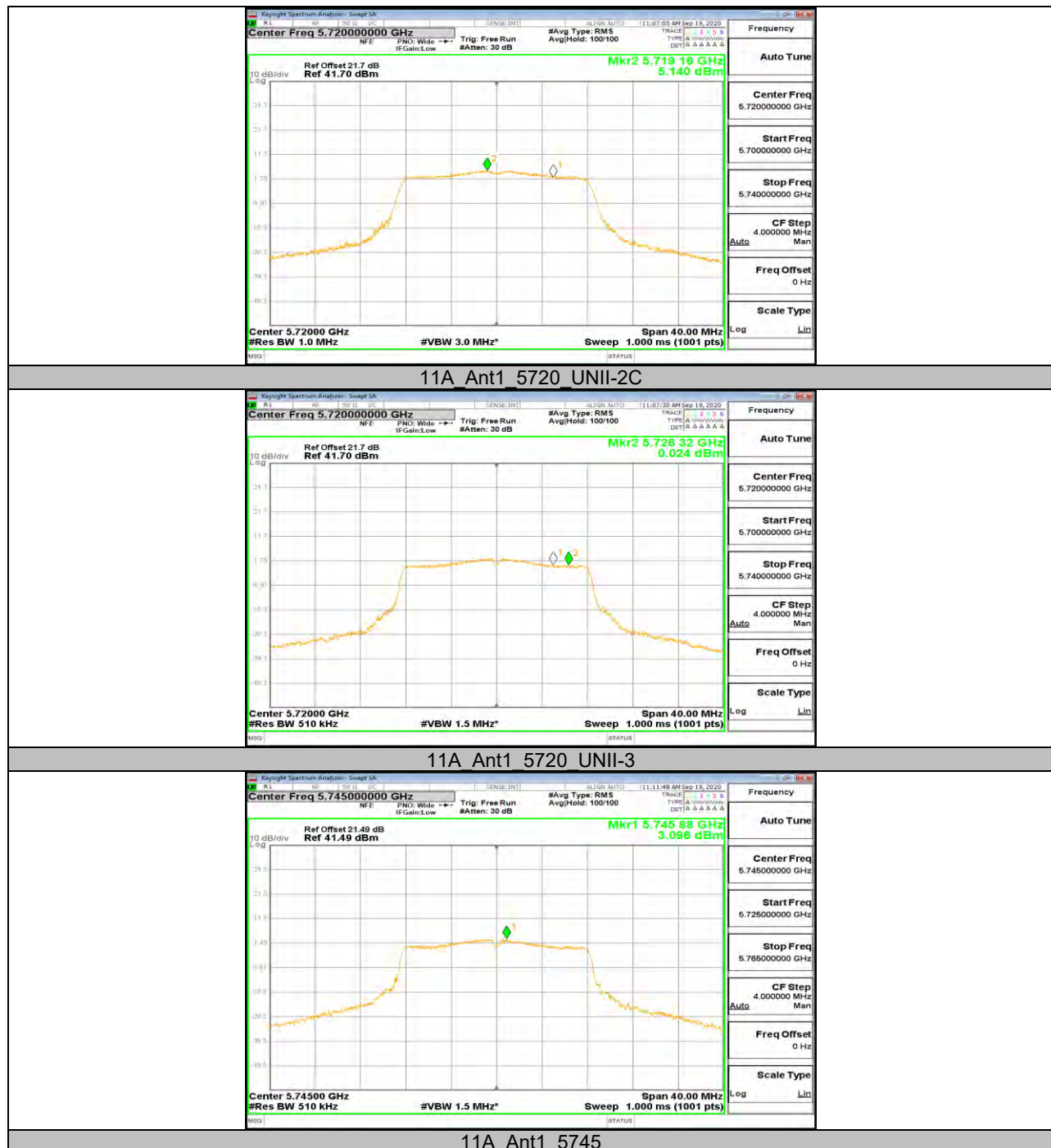
2.The Duty Cycle Factor and RBW Factor is compensated in the graph.

13.5.2. Test Graphs











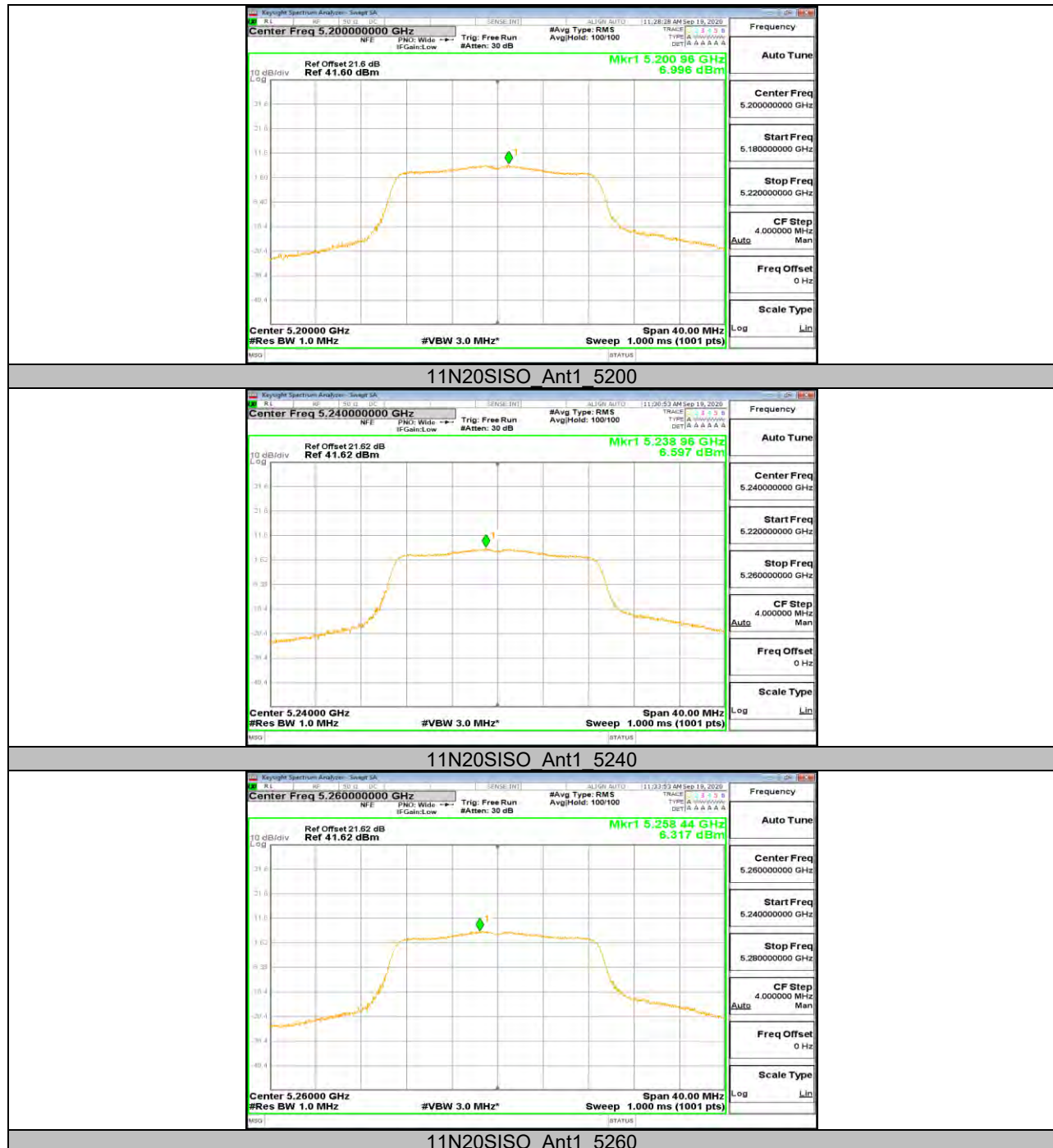
11A Ant1 5785

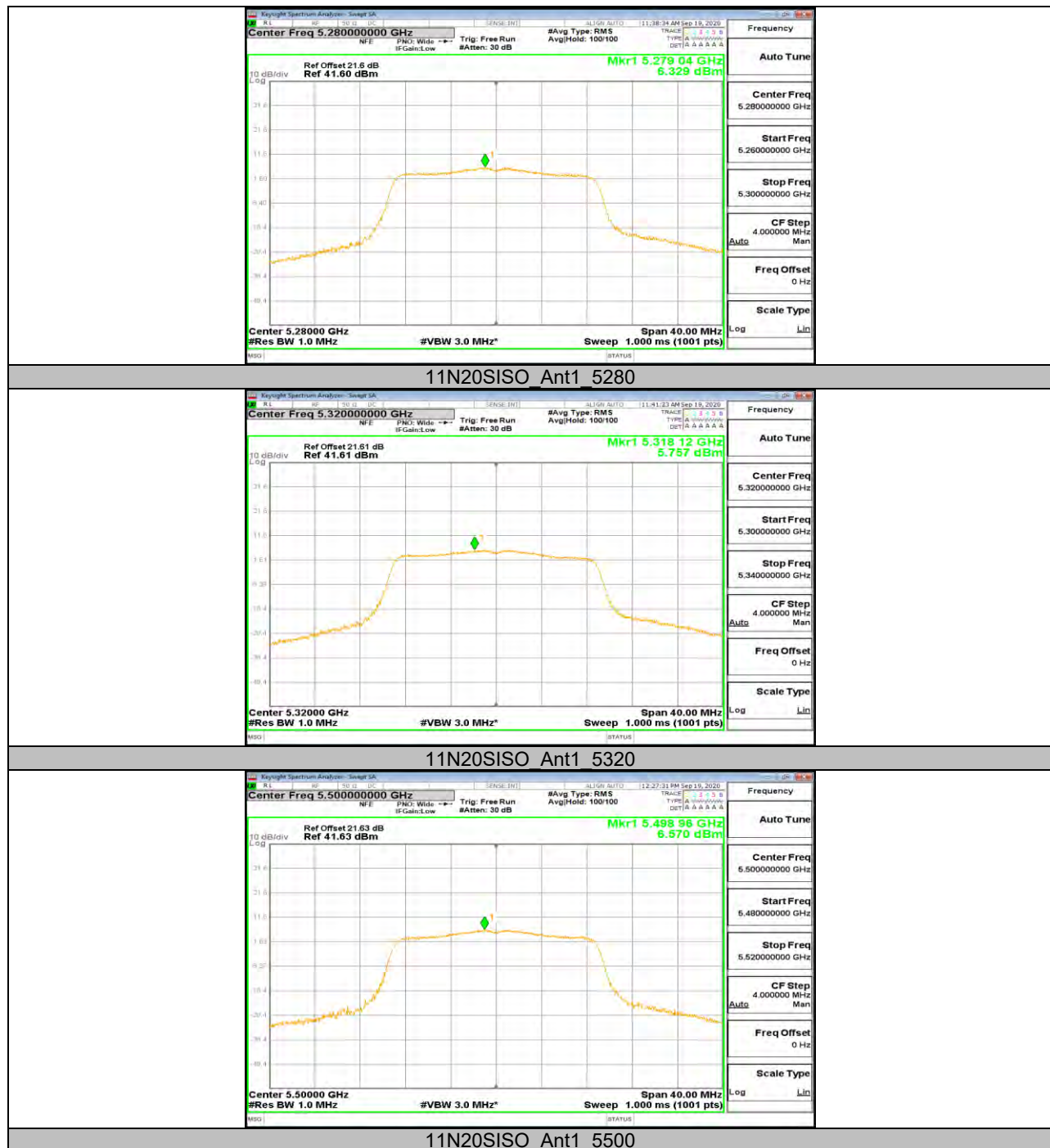


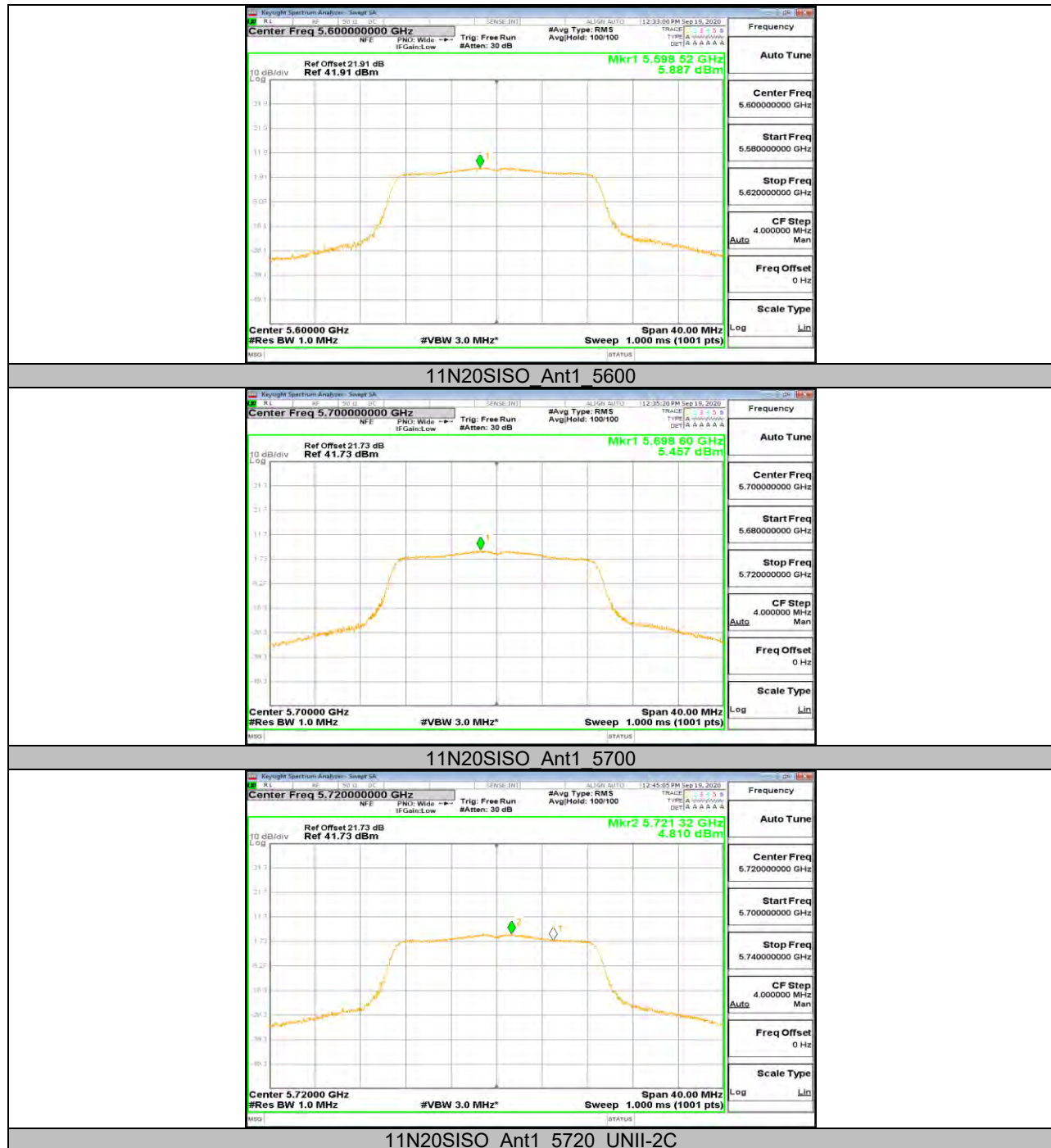
11A Ant1 5825

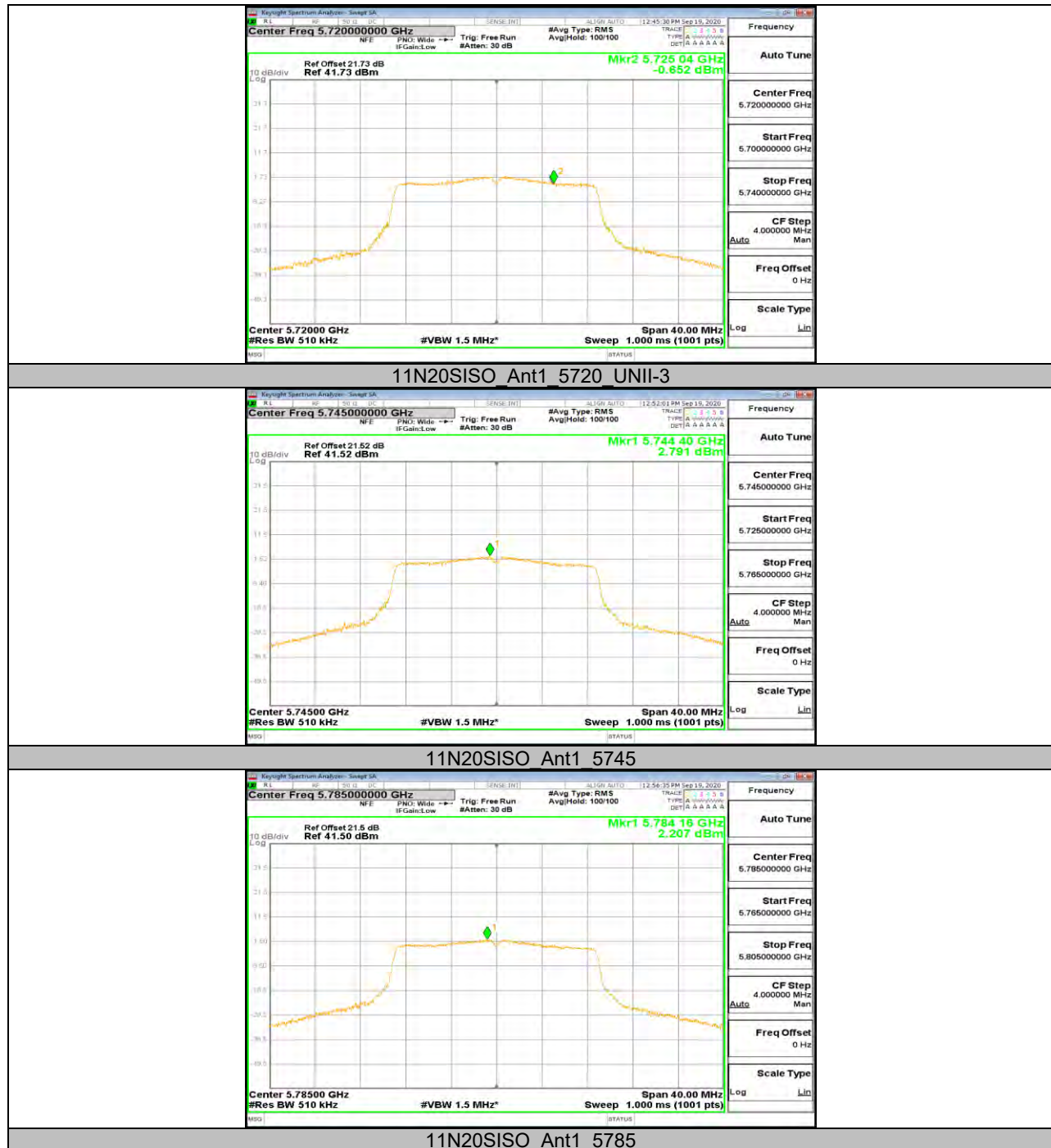


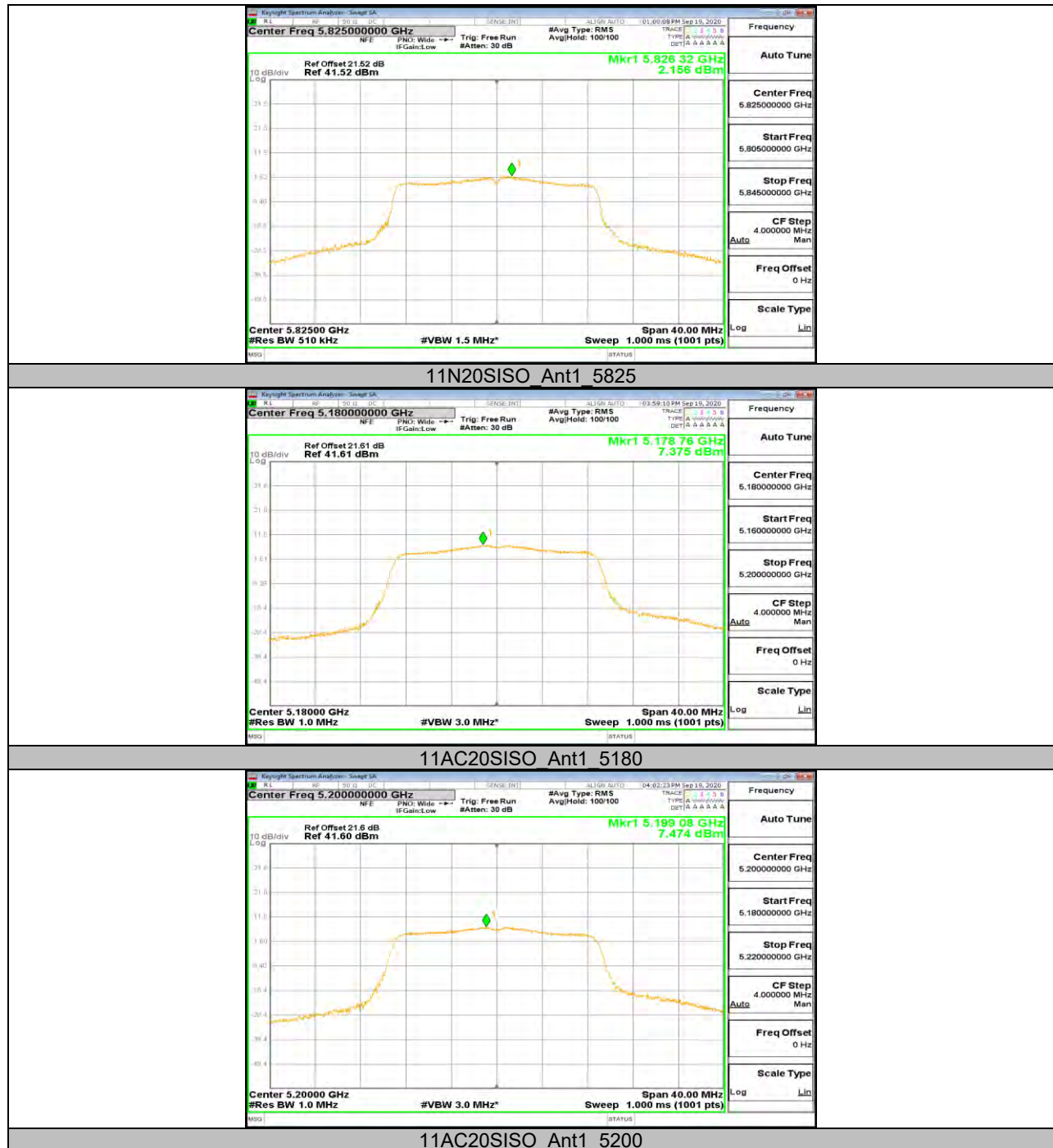
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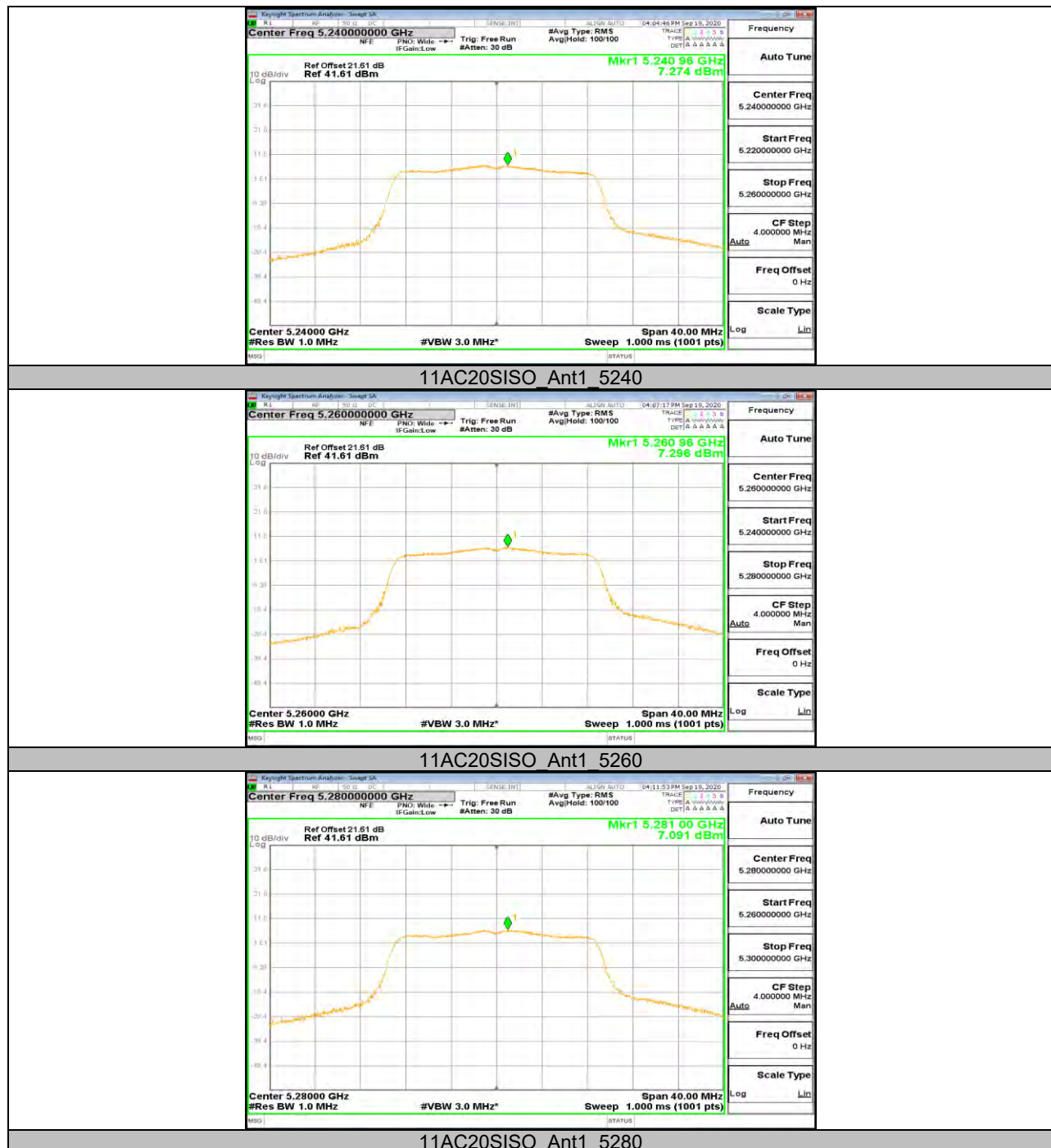


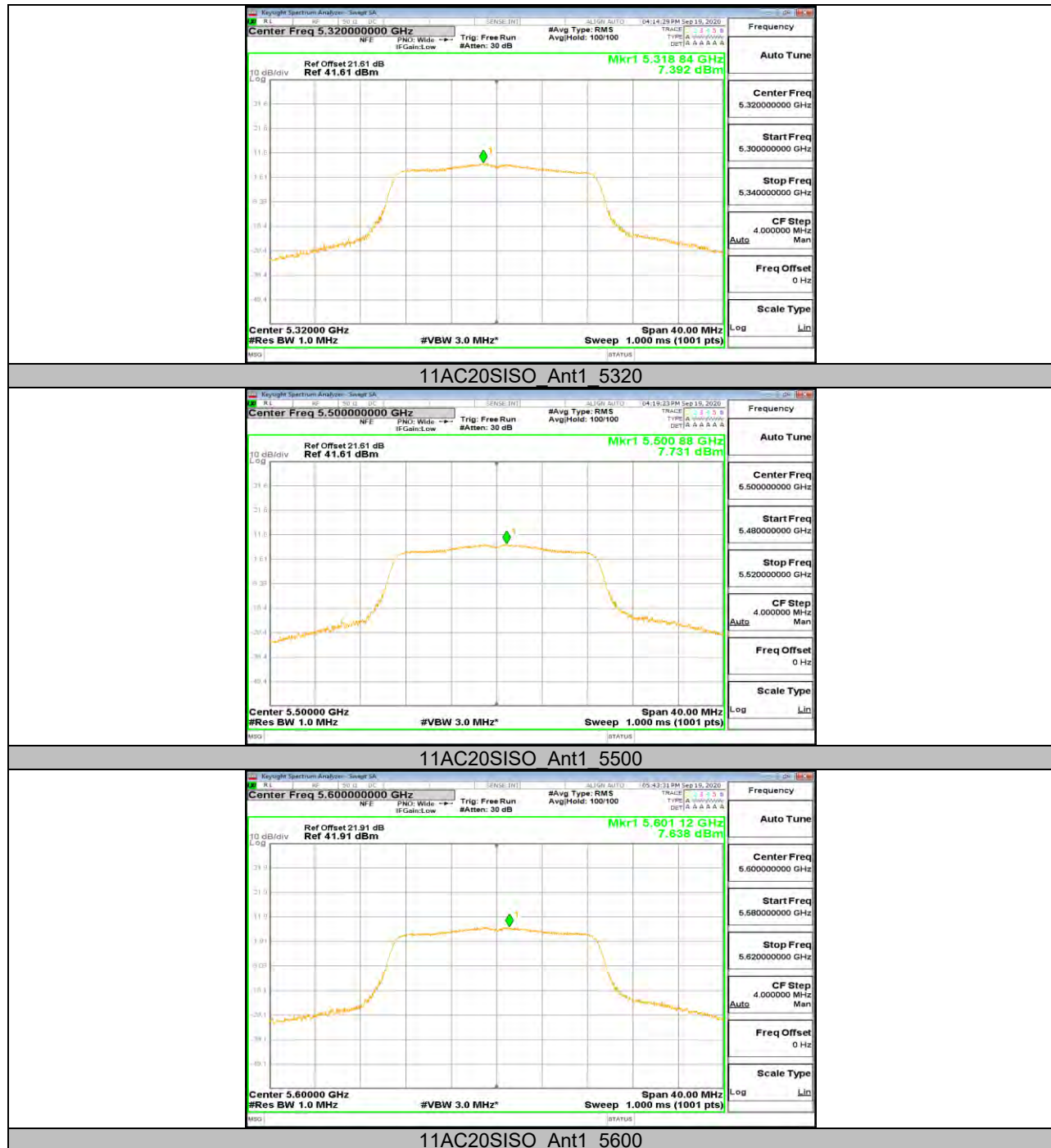


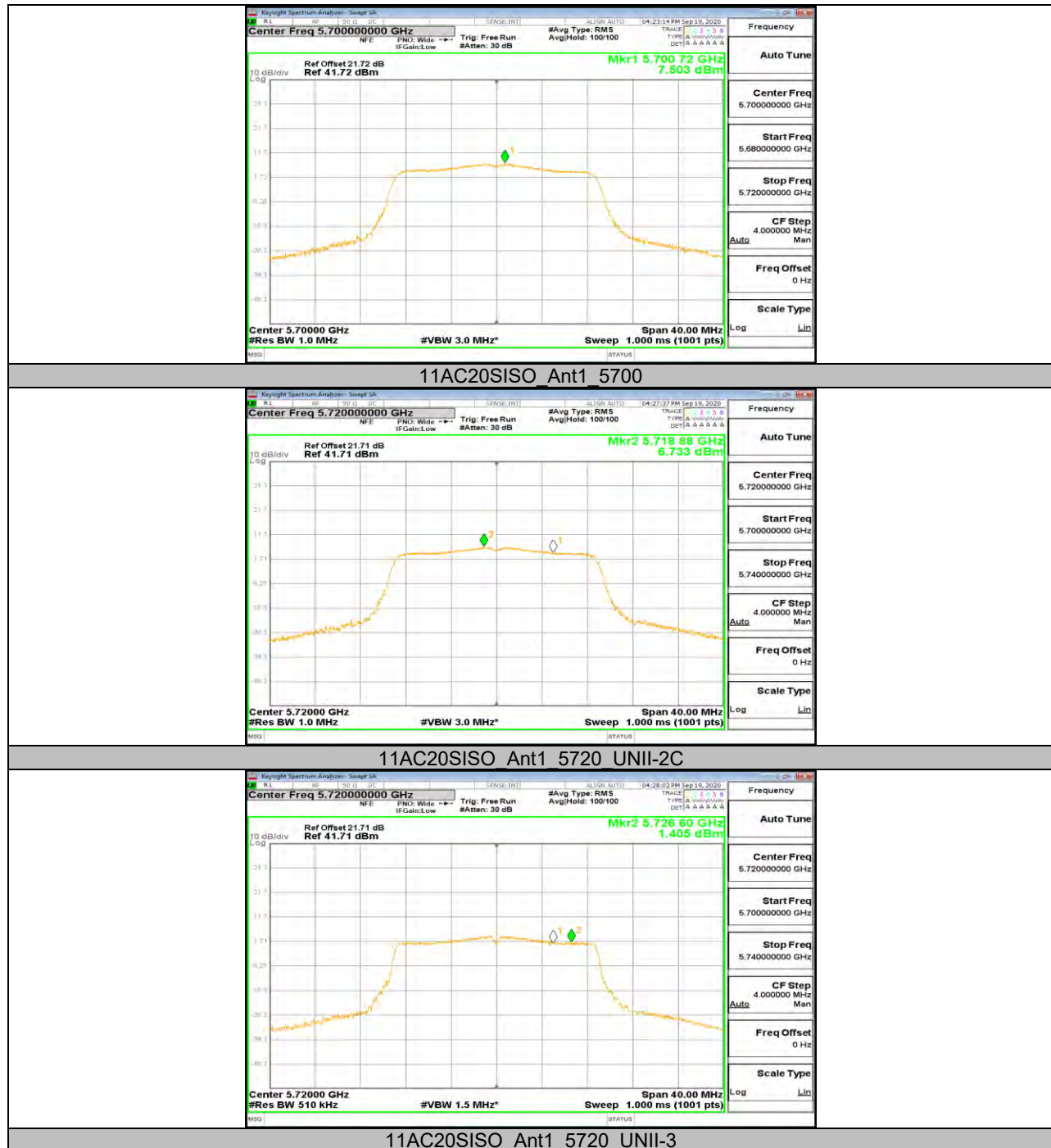


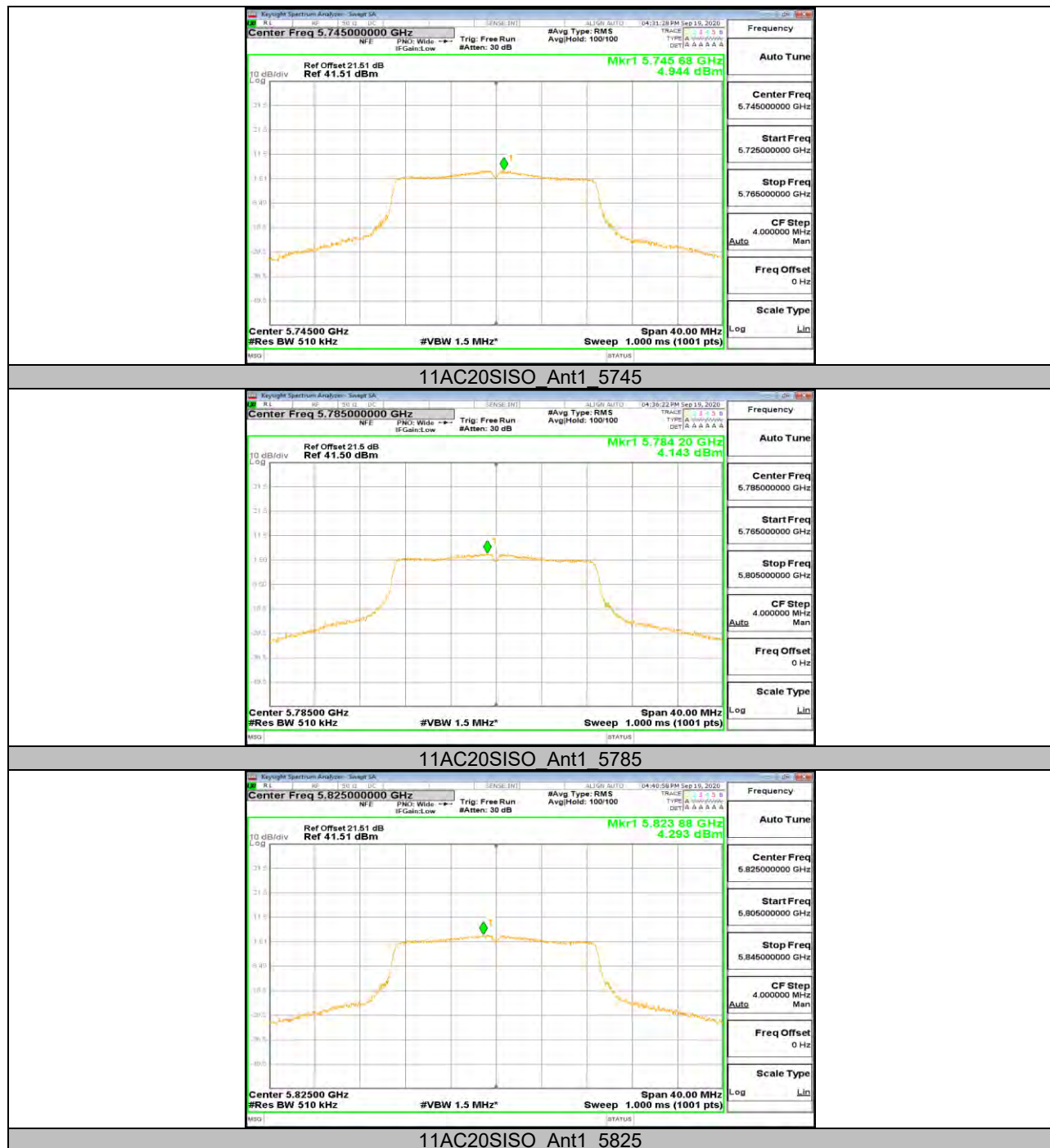


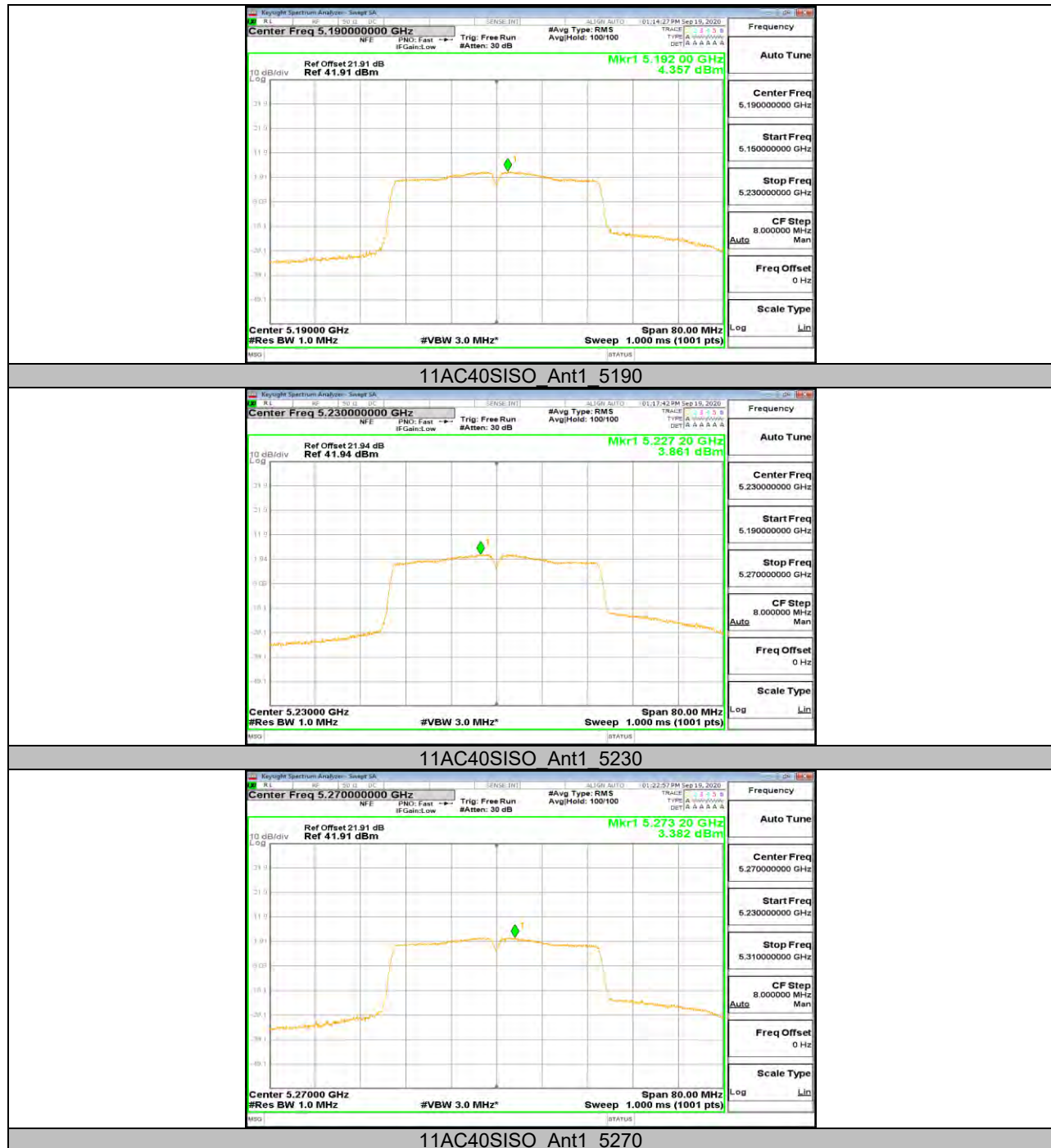


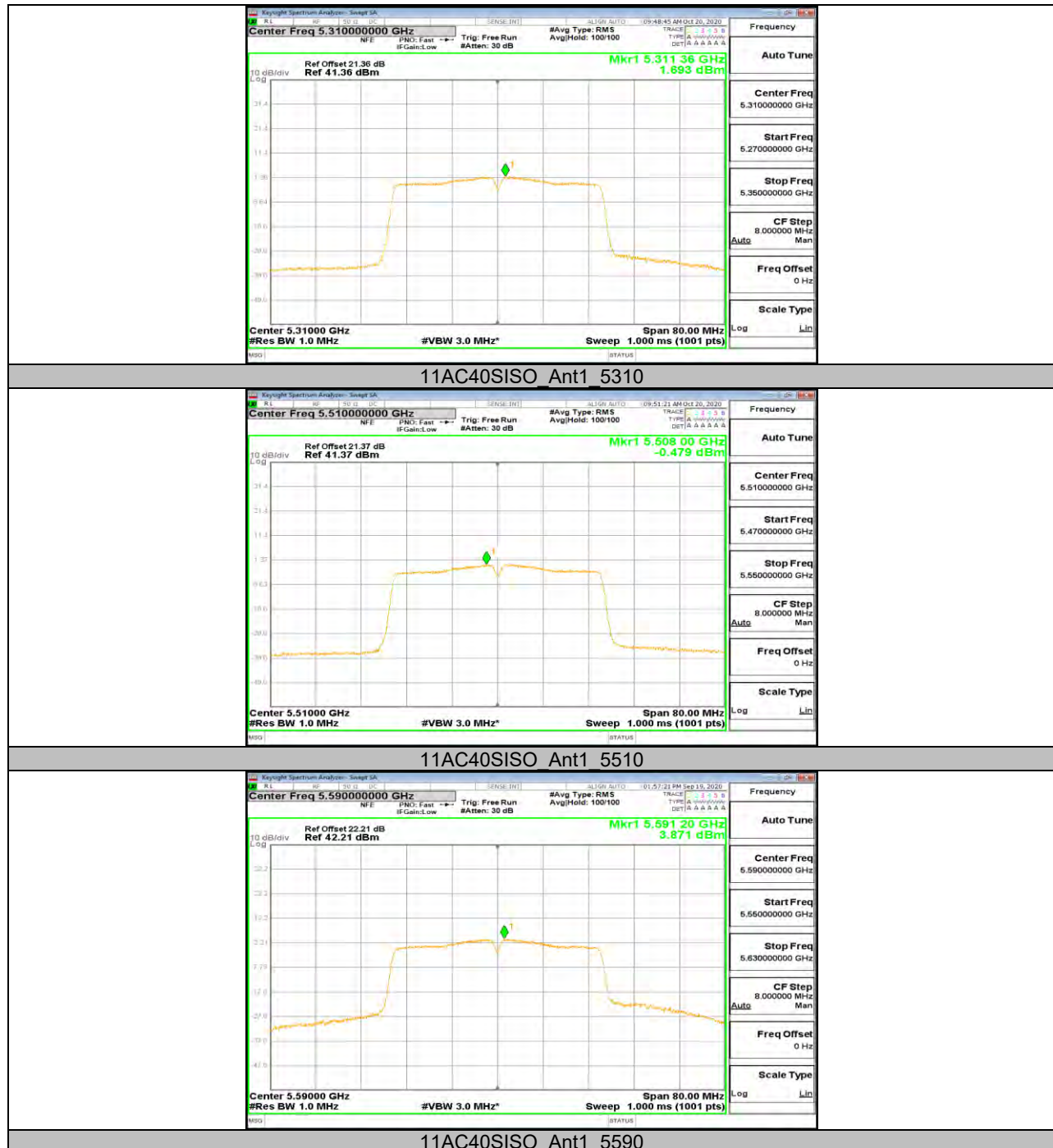


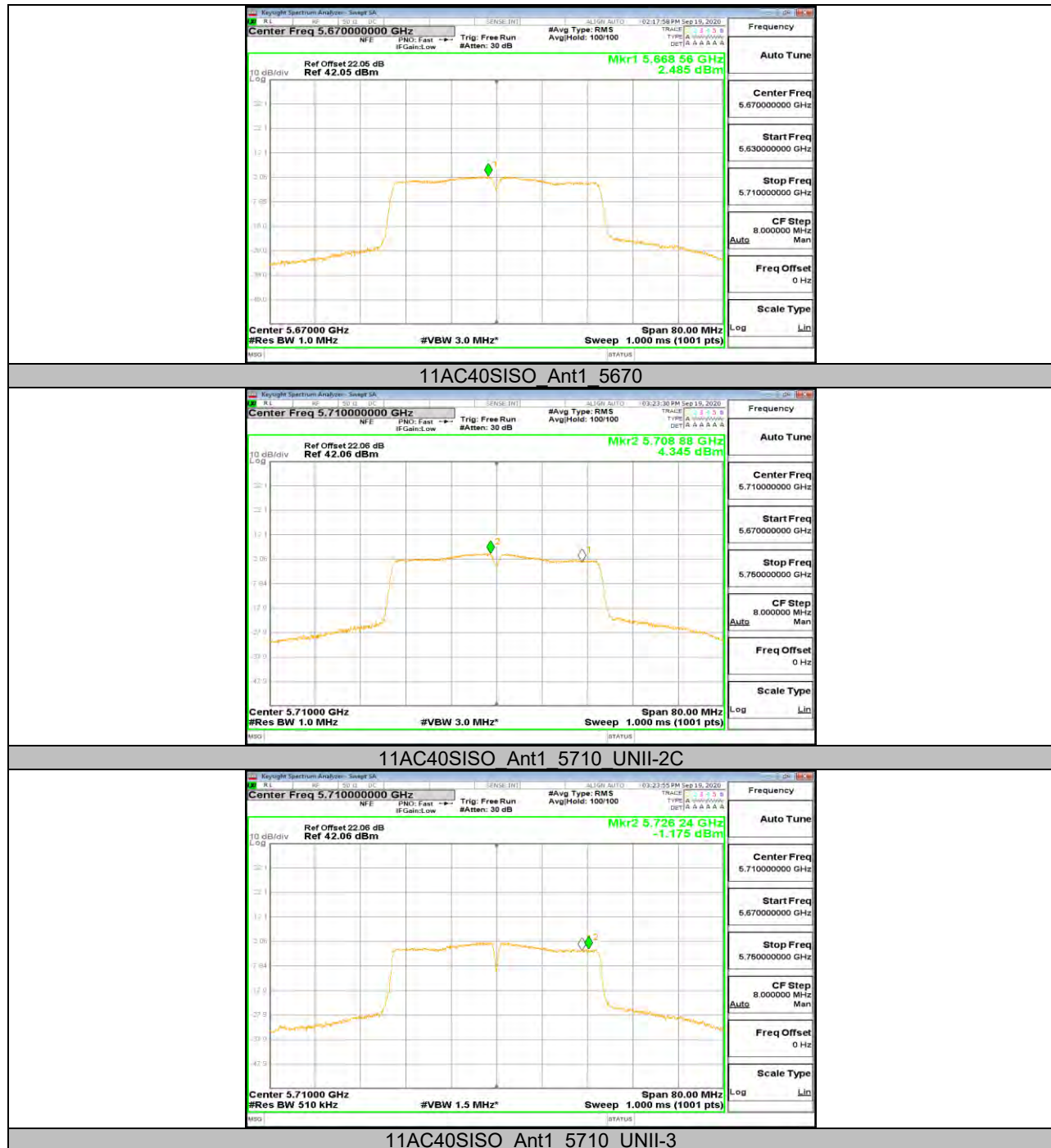


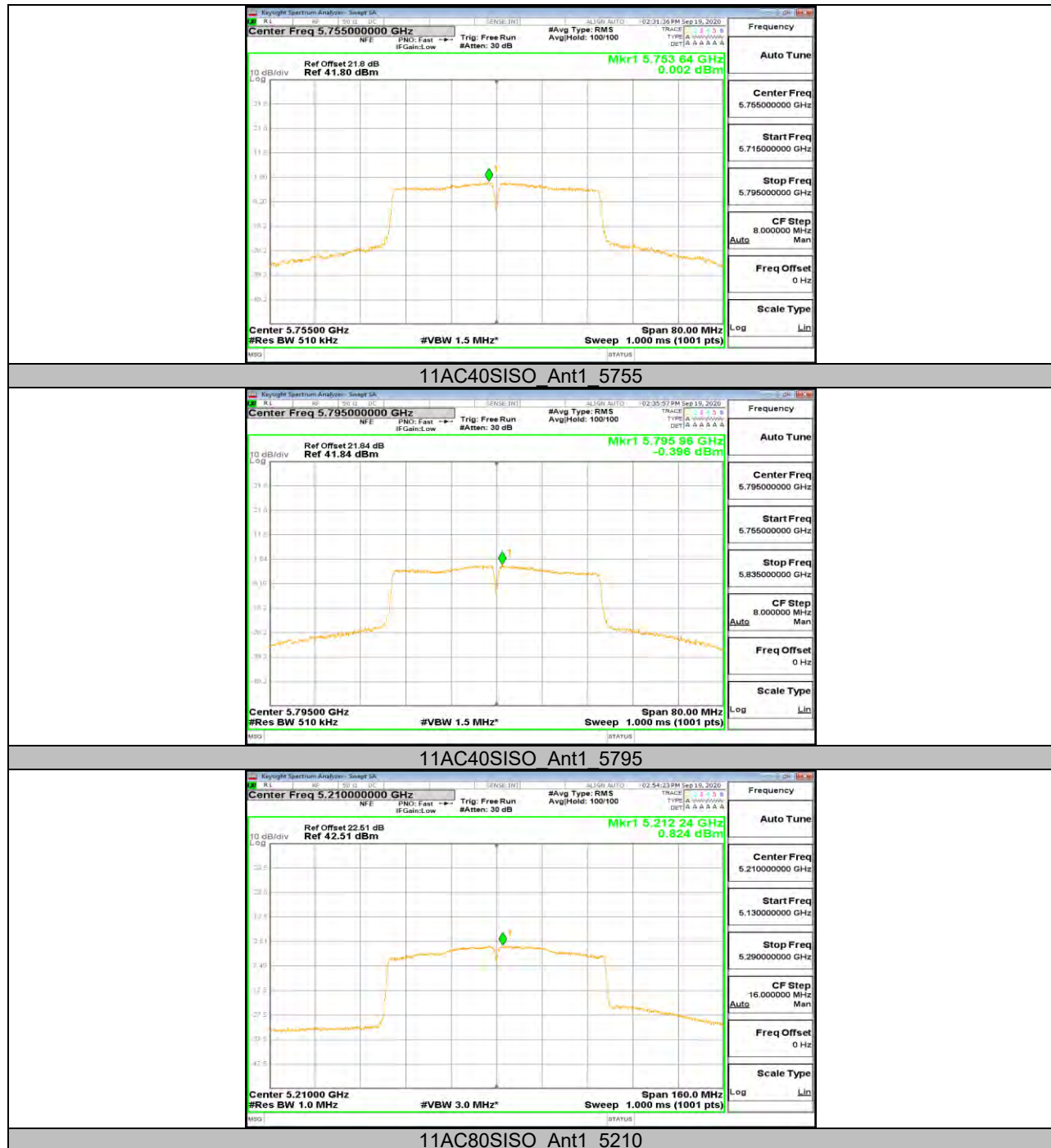


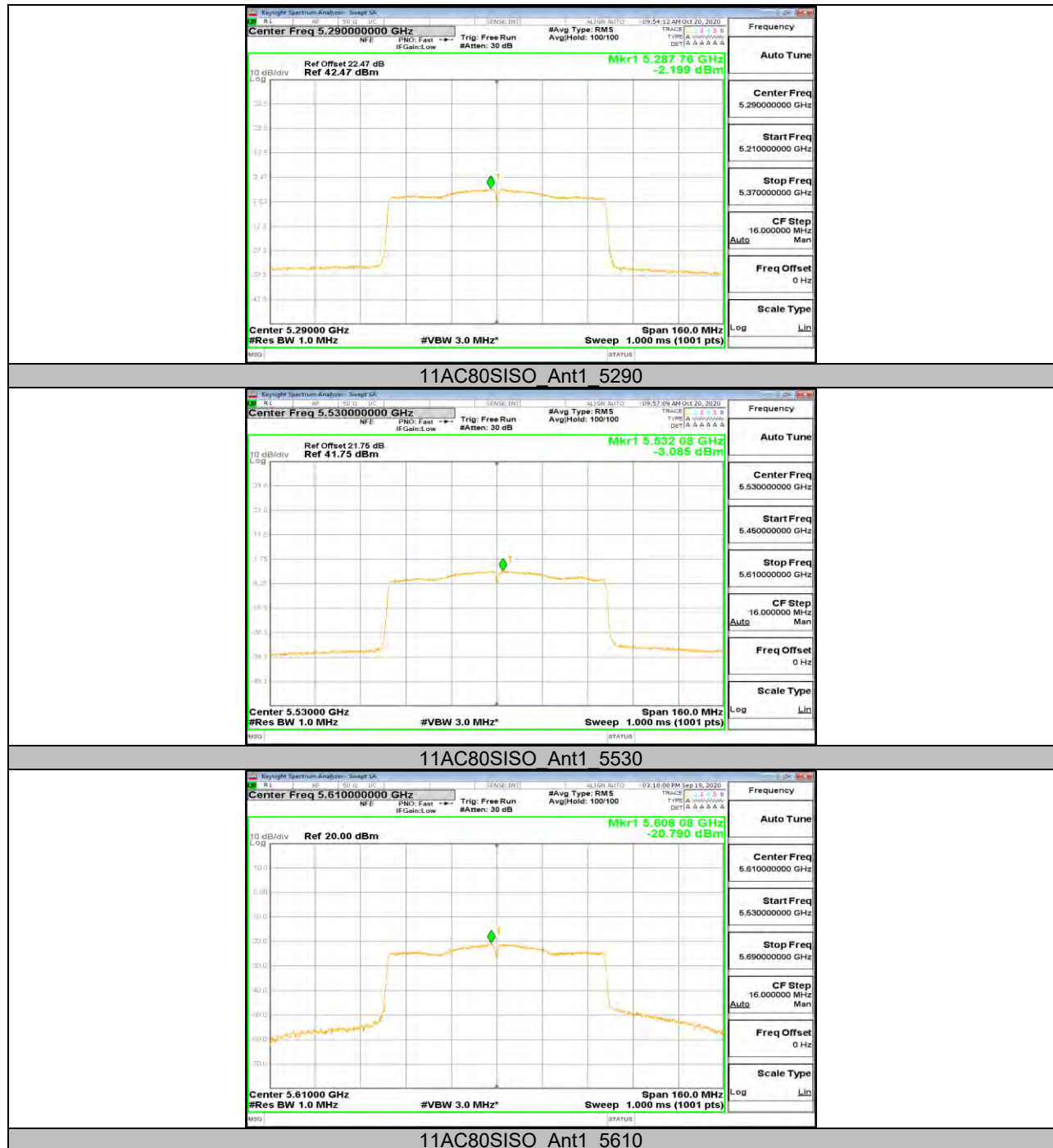


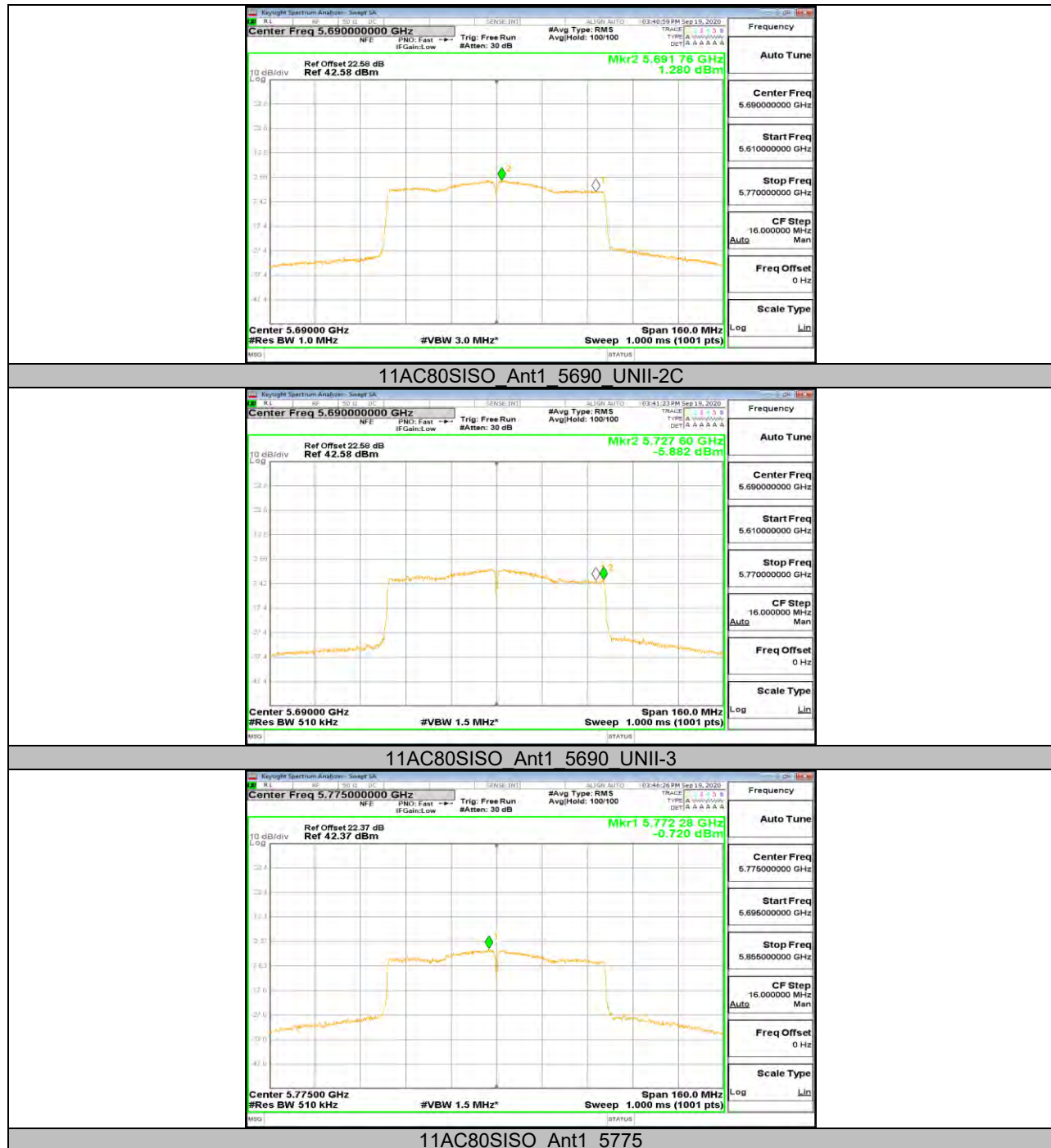














13.6. Appendix D: Duty Cycle

13.6.1. Test Result

Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (db)	1/T Minimum VBW (kHz)	Final setting For VBW (kHz)
11A	1.395	1.497	0.932	93.2	0.306	0.72	1
11N20SISO	1.307	1.410	0.927	92.7	0.329	0.77	1
11AC20SISO	1.315	1.418	0.927	92.7	0.329	0.76	1
11AC40SISO	0.655	0.758	0.864	86.4	0.635	1.53	2
11AC80SISO	0.320	0.426	0.751	75.1	1.244	3.13	4

Note:

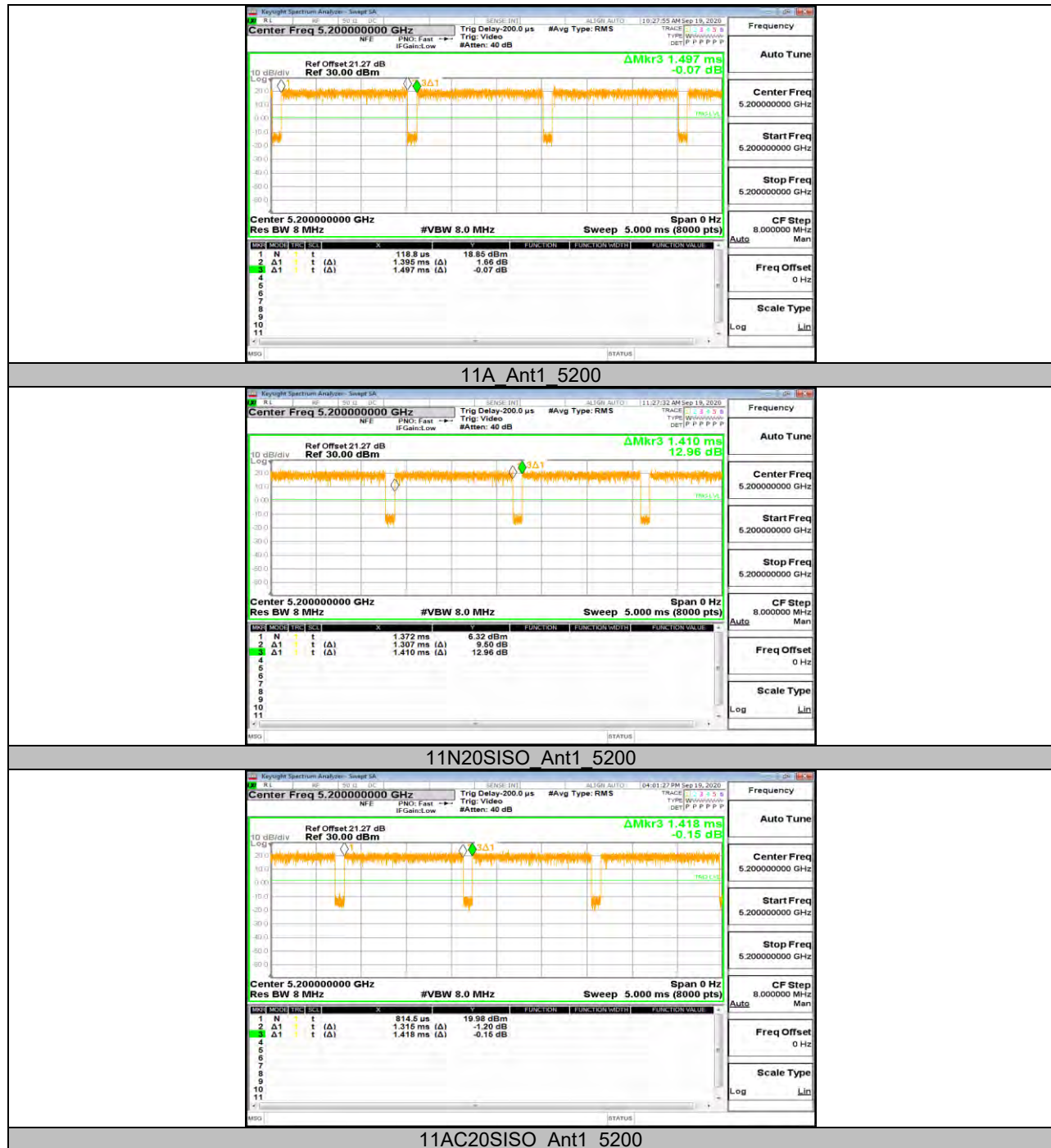
Duty Cycle Correction Factor= $10\log(1/x)$.

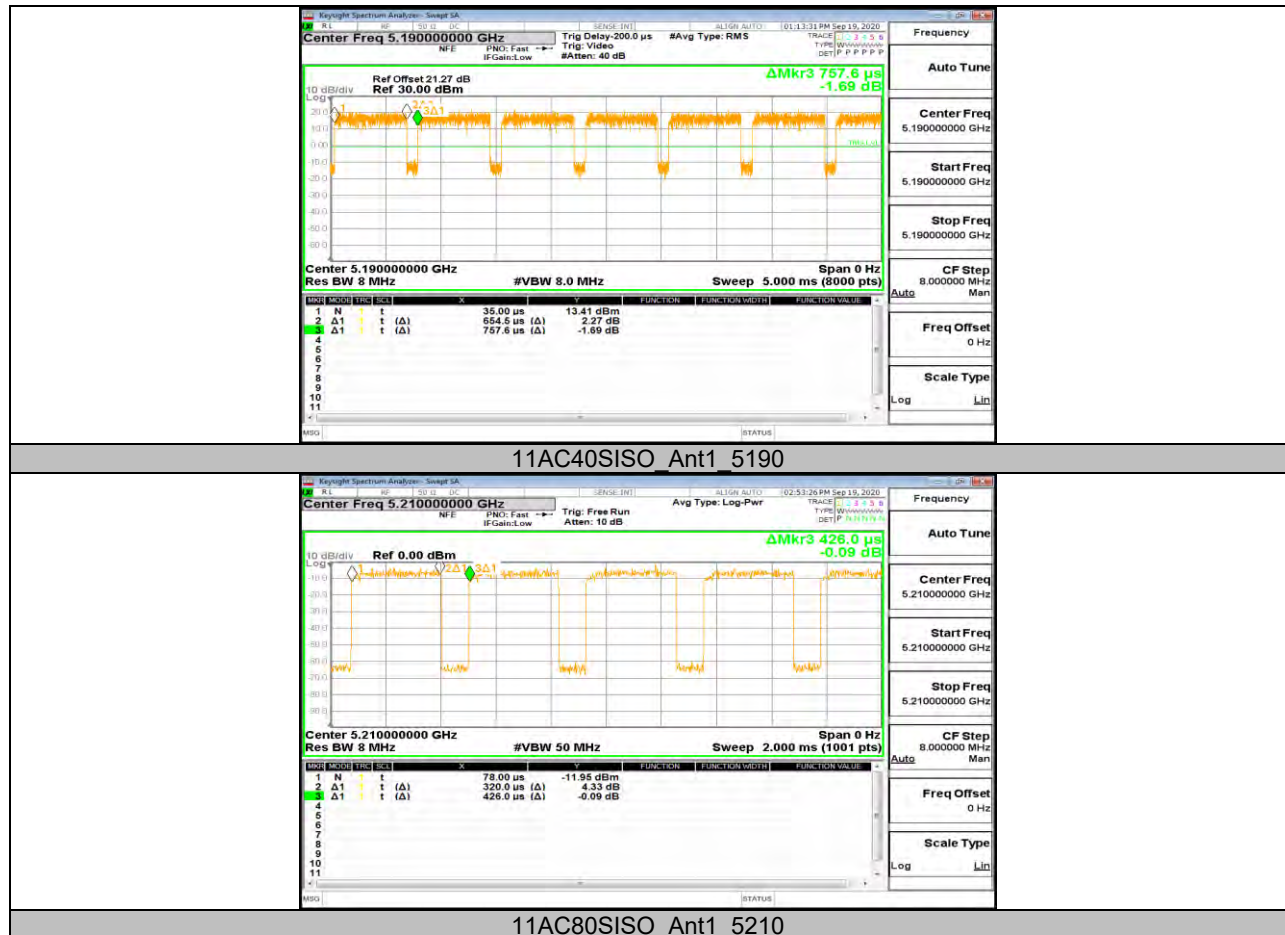
Where: x is Duty Cycle (Linear)

Where: T is On Time (transmit duration)

If that calculated VBW is not available on the analyzer then the next higher value should be used.

13.6.2. Test Graphs







13.7. Appendix E: Frequency Stability Test Result

Frequency Error vs. Voltage									
802.11a:5200MHz									
Temp.	Volt.	0 Minute		2 Minute		5 Minute		10 Minute	
		Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)
T _N	V _L	5199.9805	-3.75	5199.9769	-4.45	5200.0155	2.97	5200.0032	0.62
T _N	V _N	5199.9787	-4.09	5200.0137	2.64	5199.9916	-1.61	5200.0050	0.95
T _N	V _H	5199.9949	-0.98	5200.0177	3.39	5199.9976	-0.47	5200.0177	3.40
Frequency Error vs. Temperature									
802.11a: 5200 MHz									
Temp.	Volt.	0 Minute		2 Minute		5 Minute		10 Minute	
		Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)
40	V _N	5199.9849	-2.91	5200.0097	1.86	5199.9892	-2.07	5200.0220	4.24
30	V _N	5199.9767	-4.47	5200.0135	2.59	5200.0232	4.46	5200.0019	0.36
20	V _N	5199.9795	-3.95	5199.9946	-1.04	5199.9999	-0.02	5200.0036	0.70
10	V _N	5200.0089	1.71	5199.9988	-0.23	5199.9875	-2.40	5200.0067	1.29
0	V _N	5199.9851	-2.86	5199.9816	-3.54	5199.9918	-1.57	5199.9948	-1.01

Frequency Error vs. Voltage									
802.11a: 5825 MHz									
Temp.	Volt.	0 Minute		2 Minute		5 Minute		10 Minute	
		Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)
T _N	V _L	5824.9789	-3.63	5824.9818	-3.12	5824.9810	-3.26	5825.0067	1.16
T _N	V _N	5824.9873	-2.19	5825.0069	1.19	5824.9903	-1.67	5824.9929	-1.21
T _N	V _H	5825.0082	1.40	5824.9759	-4.14	5824.9944	-0.95	5824.9817	-3.14
Frequency Error vs. Temperature									
802.11a:5825MHz									
Temp.	Volt.	0 Minute		2 Minute		5 Minute		10 Minute	
		Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)
40	V _N	5825.0189	3.25	5824.9817	-3.15	5825.0099	1.69	5824.9855	-2.49
30	V _N	5825.0086	1.48	5825.0226	3.87	5825.0218	3.75	5824.9803	-3.39
20	V _N	5824.9910	-1.54	5824.9921	-1.35	5824.9831	-2.90	5825.0207	3.56
10	V _N	5825.0247	4.23	5825.0056	0.97	5824.9836	-2.82	5825.0023	0.40
0	V _N	5824.9971	-0.50	5824.9974	-0.45	5825.0185	3.18	5825.0131	2.25

Note: All the modes have been tested, only the worst data was recorded in the report.

END OF REPORT