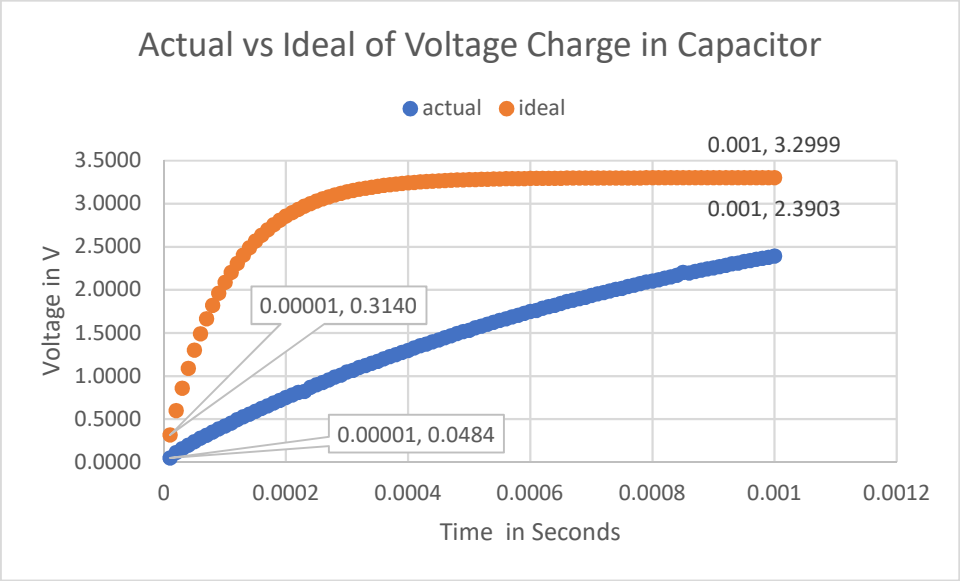
Time	Measured Voltage	Actual	Ideal
0.00001	15	0.0484	0.3140
0.00002	34	0.1097	0.5982
0.00003	48	0.1548	0.8553
0.00004	61	0.1968	1.0879
0.00005	74	0.2387	1.2984
0.00006	86	0.2774	1.4889
0.00007	97	0.3129	1.6613
0.00008	108	0.3484	1.8172
0.00009	120	0.3871	1.9583
0.0001	130	0.4194	2.0860
0.00011	140	0.4516	2.2015
0.00012	153	0.4935	2.3061
0.00013	163	0.5258	2.4006
0.00014	172	0.5548	2.4862
0.00015	183	0.5903	2.5637
0.00016	193	0.6226	2.6337
0.00017	202	0.6516	2.6971
0.00018	213	0.6871	2.7545
0.00019	222	0.7161	2.8064
0.0002	232	0.7484	2.8534
0.00021	241	0.7774	2.8959
0.00022	251	0.8097	2.9343
0.00023	254	0.8194	2.9691
0.00024	269	0.8677	3.0006
0.00025	278	0.8968	3.0291
0.00026	287	0.9258	3.0549
0.00027	296	0.9548	3.0782
0.00028	306	0.9871	3.0993
0.00029	313	1.0097	3.1184
0.0003	324	1.0452	3.1357
0.00031	330	1.0645	3.1513
0.00032	340	1.0968	3.1655
0.00033	347	1.1194	3.1783
0.00034	355	1.1452	3.1899
0.00035	362	1.1677	3.2003
0.00036	372	1.2000	3.2098
0.00037	380	1.2258	3.2184
0.00038	387	1.2484	3.2262
0.00039	395	1.2742	3.2332
0.0004	401	1.2935	3.2396
0.00041	411	1.3258	3.2453
0.00042	419	1.3516	3.2505
0.00043	425	1.3710	3.2552
0.00044	433	1.3968	3.2595
0.00045	440	1.4194	3.2633
0.00046	448	1.4452	3.2668

0.00047	455	1.4677	3.2700
0.00048	462	1.4903	3.2728
0.00049	469	1.5129	3.2754
0.0005	474	1.5290	3.2778
0.00051	483	1.5581	3.2799
0.00052	489	1.5774	3.2818
0.00053	496	1.6000	3.2835
0.00054	503	1.6226	3.2851
0.00055	510	1.6452	3.2865
0.00056	516	1.6645	3.2878
0.00057	522	1.6839	3.2890
0.00058	528	1.7032	3.2900
0.00059	535	1.7258	3.2910
0.0006	542	1.7484	3.2918
0.00061	546	1.7613	3.2926
0.00062	554	1.7871	3.2933
0.00063	559	1.8032	3.2939
0.00064	564	1.8194	3.2945
0.00065	571	1.8419	3.2950
0.00066	578	1.8645	3.2955
0.00067	582	1.8774	3.2959
0.00068	588	1.8968	3.2963
0.00069	593	1.9129	3.2967
0.0007	599	1.9323	3.2970
0.00071	605	1.9516	3.2973
0.00072	610	1.9677	3.2975
0.00073	616	1.9871	3.2978
0.00074	621	2.0032	3.2980
0.00075	625	2.0161	3.2982
0.00076	632	2.0387	3.2983
0.00077	636	2.0516	3.2985
0.00078	642	2.0710	3.2986
0.00079	648	2.0903	3.2988
0.0008	651	2.1000	3.2989
0.00081	656	2.1161	3.2990
0.00082	662	2.1355	3.2991
0.00083	666	2.1484	3.2992
0.00084	672	2.1677	3.2993
0.00085	683	2.2032	3.2993
0.00086	680	2.1935	3.2994
0.00087	686	2.2129	3.2995
0.00088	691	2.2290	3.2995
0.00089	695	2.2419	3.2995
0.0009	699	2.2548	3.2996
0.00091	703	2.2677	3.2996
0.00092	708	2.2839	3.2997
0.00093	713	2.3000	3.2997

0.00094	716	2.3097	3.2997
0.00095	722	2.3290	3.2998
0.00096	725	2.3387	3.2998
0.00097	730	2.3548	3.2998
0.00098	733	2.3645	3.2998
0.00099	737	2.3774	3.2998
0.001	741	2.3903	3.2999



The discrepancy in the two graphs can be explained by the manufactured percent of error of each piece of hardware used. When manufactures are making resistors and capacitors they always state a certain degree of error that the given hardware will perform within. In this case, the resistor and capacitor has a certain degree of error that was making the capcitor not charge to the ideal value within the given ideal time.