Throughput Testing on the HP Elitebook G2

Adam Stammer

(Dated: February 11, 2020)

I. BRIEF ANALYSIS

The first graph below shows the result of a rather extreme throughput test. You can see that this test went all the way up to 500 threads and did so rather quickly at 20 threads added every 5 seconds. This test was not really meant to show detail of throughput but an overview such that I might narrow down a decent maximum thread count to use in my detailed tests. I decided that throughput was relatively linear up until 200 threads and nearly capped out at 300 threads. I wanted to capture detail in both of these regions so I deemed 300 threads to be an acceptable max thread count. From there I ran four tests, altering 2 binary variables, whether or not the computer was plugged in, and whether the cpu frequency was dynamic or fixed at it's maximum, 2.71GHz in the case of this HP Elitebook G2. Each test was run close to 300 threads, until there were 3 measurements of 100% cpu utilization. I chose a continuous line graph for showing CPU utilization because it adds a depth of time which is otherwise not communicated but a rather important feature of this measurement.

A brief analysis of these graphs leads me to three main takeaways:

1. Plugging the computer in tends to raise the ceiling of throughput
2. Dynamic CPU frequency makes CPU utilization rather erratic likely due to a difficulty in measurement
3. Transaction/Second count tends to fall off shortly before 100% CPU utilization is reached

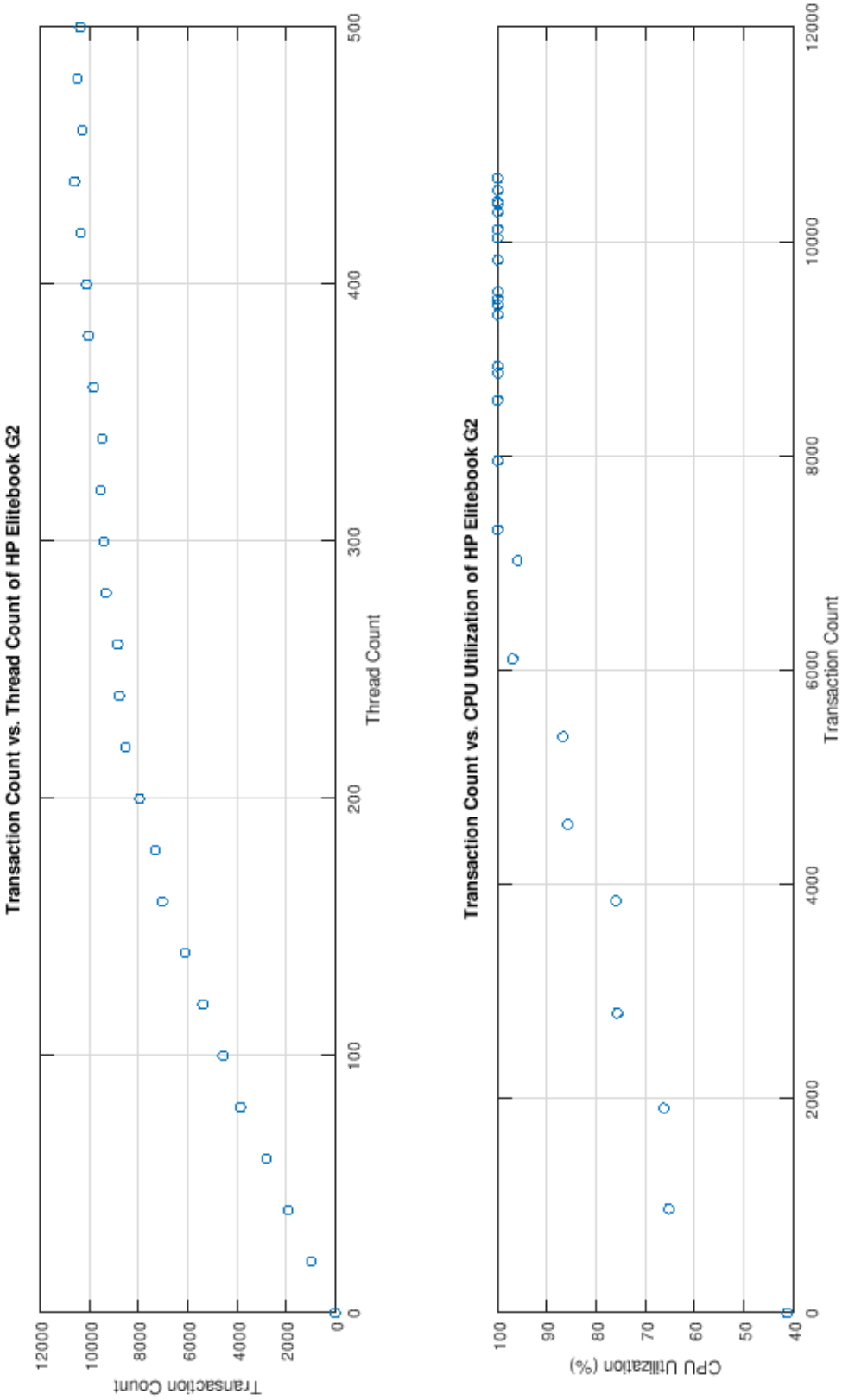

FIG. 1. Extreme run used to decide range

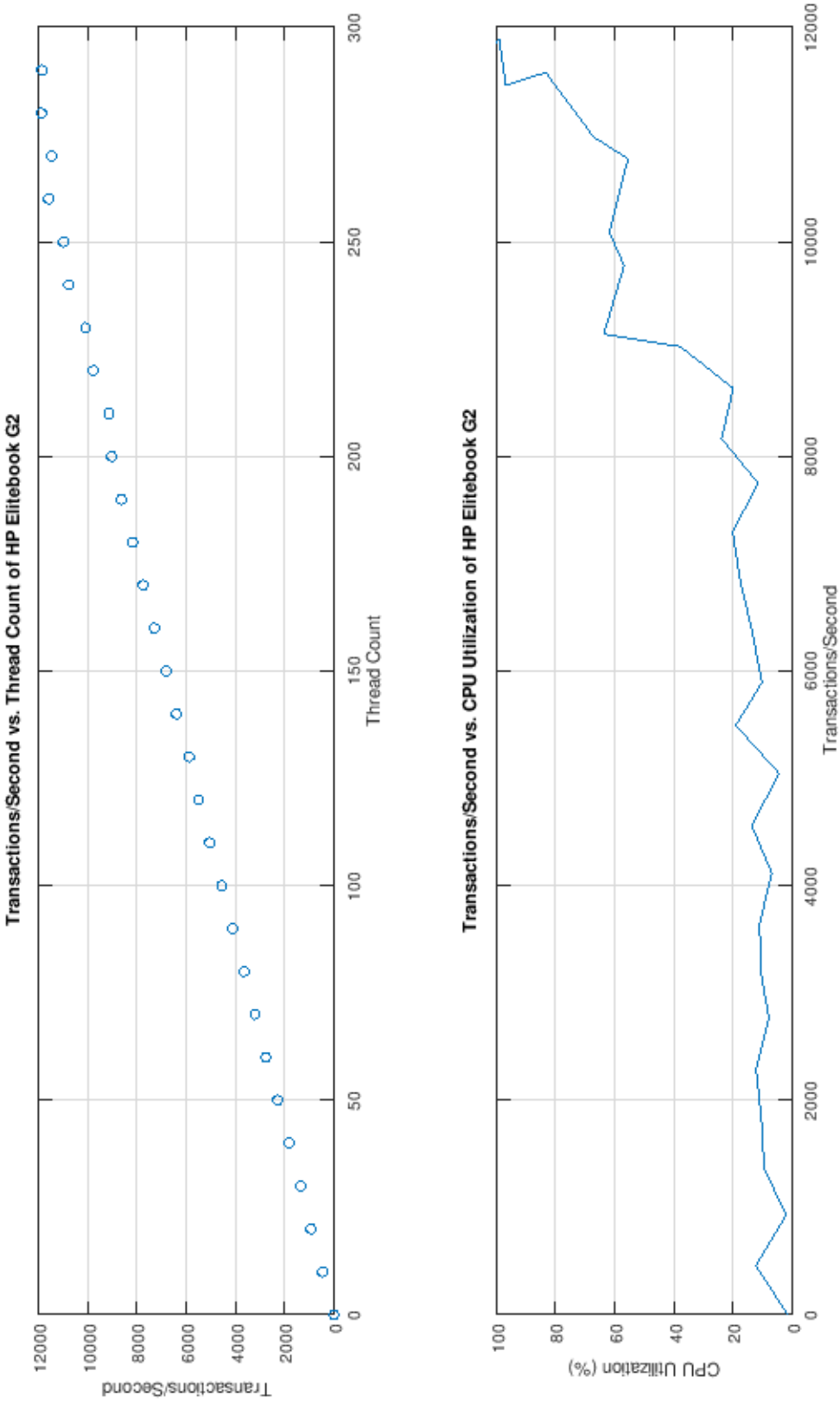

FIG. 2. Fixed Maximum Frequency, Plugged In

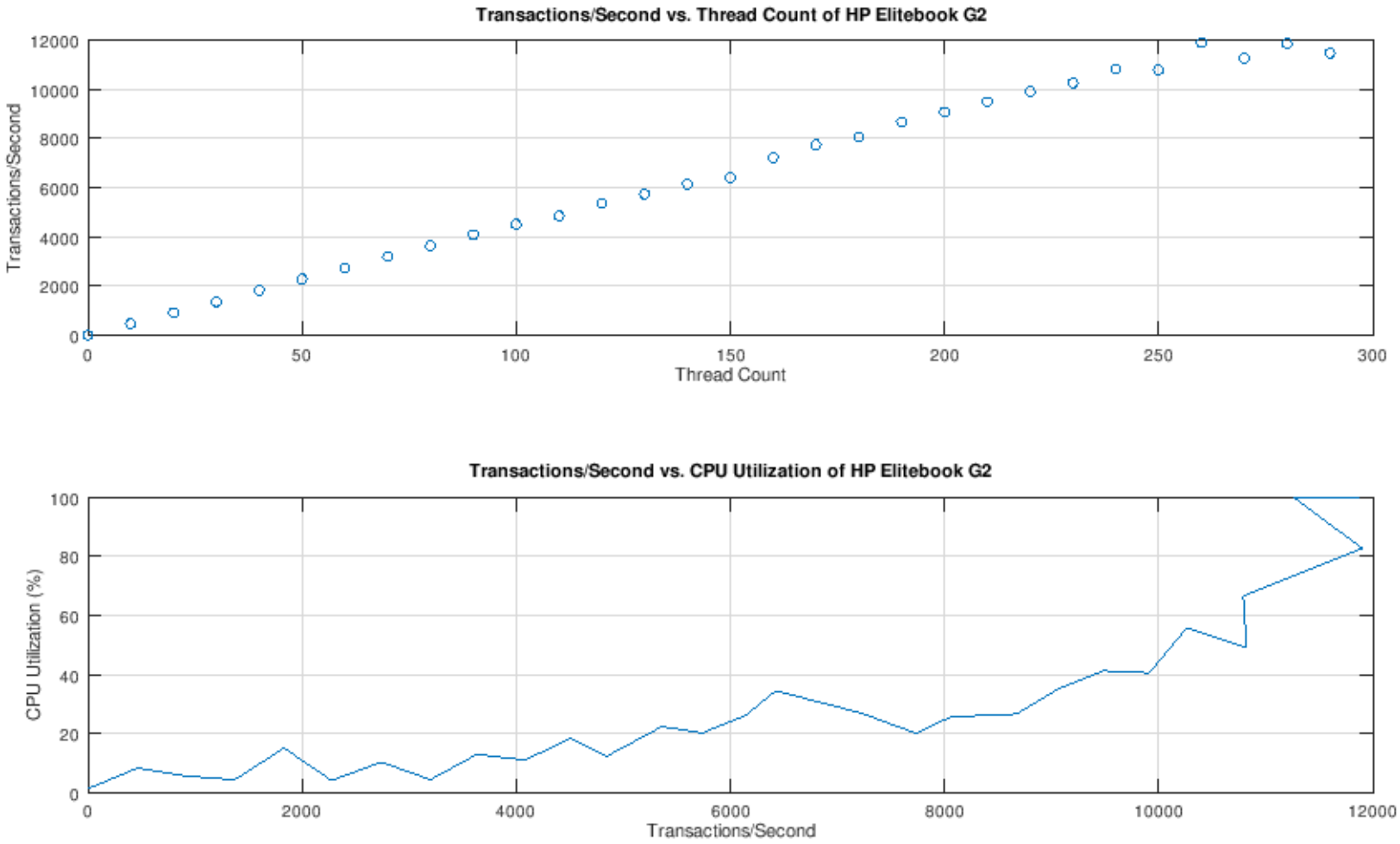

FIG. 3. Fixed Maximum Frequency, Battery

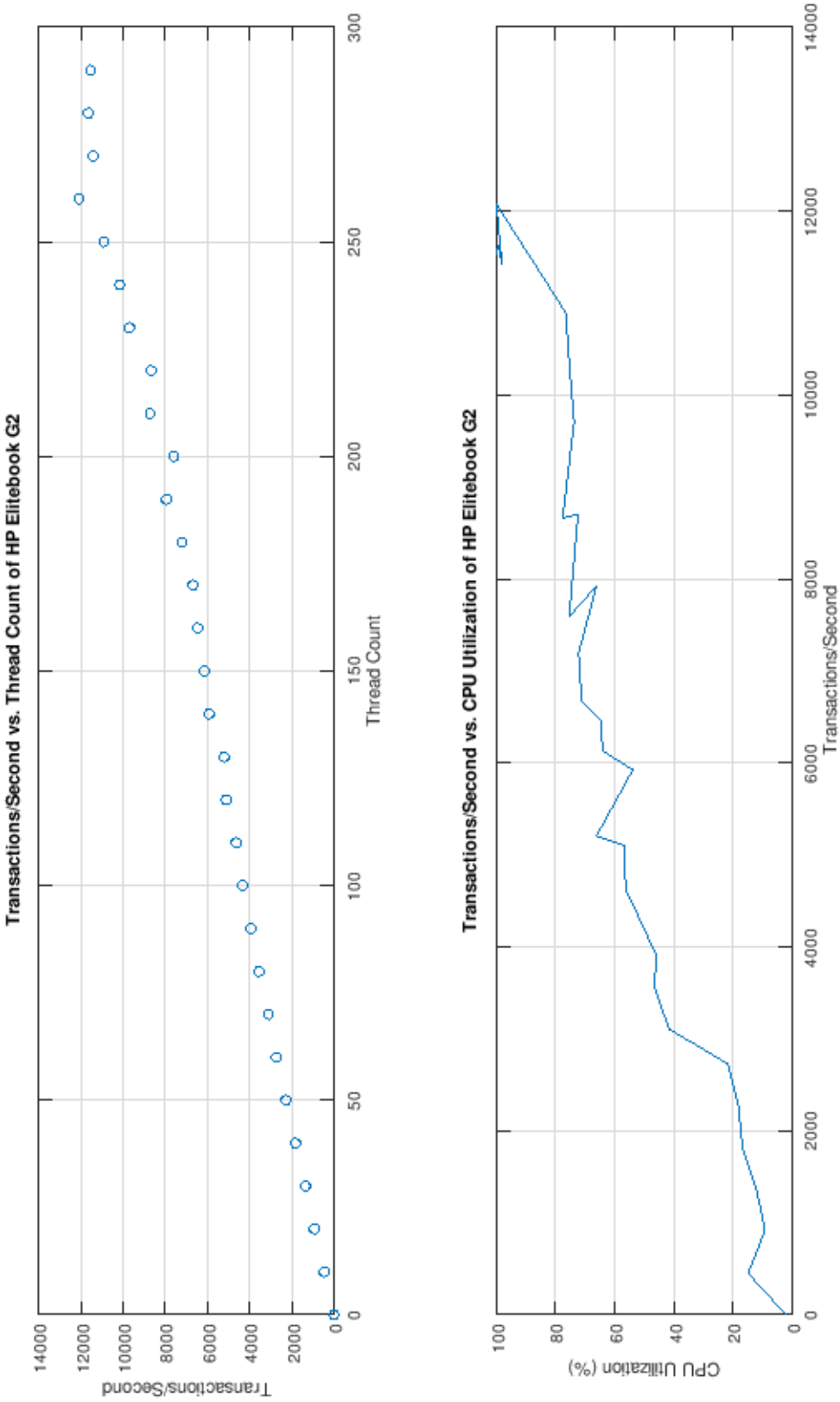

FIG. 4. Dynamic Frequency, Plugged In

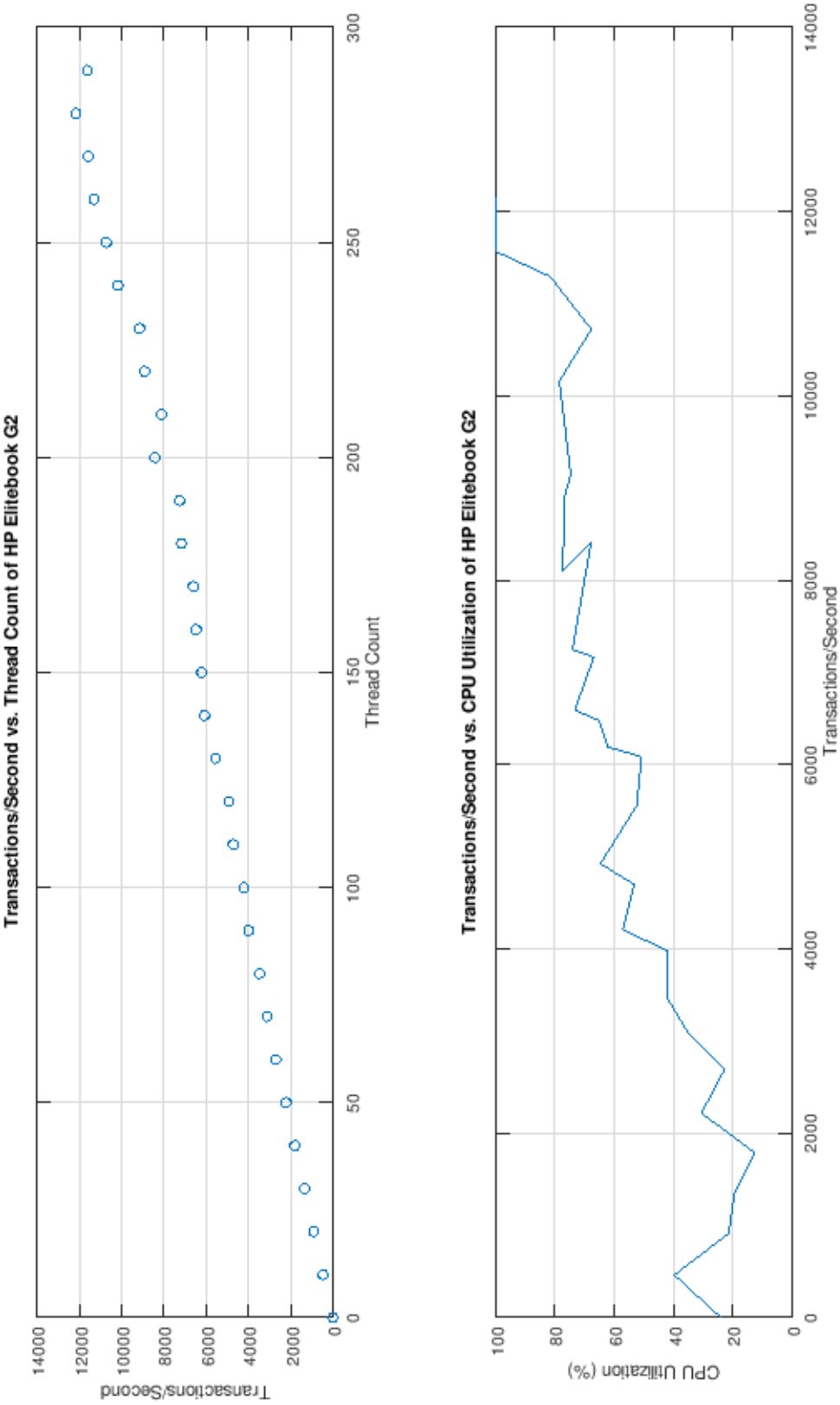

FIG. 5. Dynamic Frequency, Battery