Problem 2: Electric consumption of Italian households

The file `consumption.txt` contains the semi-daily electrical consumption in kilowatt-hours (kWh) of 50 randomly selected Italian households for 3 successive working days. For each day, the period `am` indicates the time interval from 00:00 to 12:00, and the period `pm` indicates the time interval from 12:00 to 24:00.

a) Does the data support the hypothesis that the electrical consumption of a household exhibits a periodic pattern? If yes, what is the pattern? Provide an argument and corroborate your answer with plots.

b) Using appropriate inferential procedures, test at 5% significance level the hypothesis you decided to support at point a); recall to report your p-values.

c) Estimate the average electric consumption of an Italian household during a working day. Present your answer as a 95% confidence interval.

Upload your results here:
https://forms.office.com/e/y5bZuLSPp4