Aber Instruments

Software Engineer - Technical Assessment

Problem Statement

During the manufacturing process some of our equipment undergoes a period of testing while placed in an oven where the temperature is cycled. We now need to analyse this data to identify any anomalies.

We have a few hundred devices which have been through this process. Data from each device is held in separate folders on a file server. This test contains a sample set of 5 devices with the data from each in a separate folder.

Requirement

Develop a utility to output the following for each device:

from the XML file in the folder

Serial number
Test Date

from the CSV file in each folder

Average V1_fb at 50kHz at a maximum temperature for the last full oven cycle
Average V1_fb at 50kHz at a minimum temperature for the last full oven cycle
Average G at 50kHz at a maximum temperature for the last full oven cycle
Average G at 50kHz at a minimum temperature for the last full oven cycle
Average C at 50kHz at a maximum temperature for the last full oven cycle
Average C at 50kHz at a minimum temperature for the last full oven cycle
Average V1_fb at 64kHz at a maximum temperature for the last full oven cycle
Average V1_fb at 64kHz at a minimum temperature for the last full oven cycle
Average G at 64kHz at a maximum temperature for the last oven full cycle
Average G at 64kHz at a minimum temperature for the last oven full cycle
Average C at 64kHz at a maximum temperature for the last oven full cycle
Average C at 64kHz at a minimum temperature for the last oven full cycle

Produce a CSV file containing a line for each device matching the output requirements stated above identifying the time periods where the oven is at its maximum and minimum temperatures.

Your solution must be written in C# and can be a console or GUI application. Return your solution via email or link to a code repository. Visual Studio can be downloaded from this location: https://visualstudio.microsoft.com/free-developer-offers/

Key notes:

- The Oven temperature cycles are fixed lengths and fixed temperatures. An example of this cycling can be seen represented on the following graph with the relevant cycles circled.
- It is acceptable to take an average over approximately 30 mins of data for the high and low temperature periods.
- The oven cycles could start at any time during a day. There is no fixed start time.