

ALICE Software (5 Extra-Credit Lab Points)

In future labs we will use the M1000 (M1K) board to make electronic measurements. We will practice a bit today with the ALICE (Active Learning Interface for Circuits and Electronics) software. You will import data that I have already collected into the ALICE interface and then perform a few standard operations.

You should have previously loaded Pixel Pulse and ALICE using the instructions in the LMS Software folder. ([General Information - Lab Notes and Software ... Supplementary ALICE and M1K material](#)).

Download the file RawCurrentVSVoltage_SINEwave_UnknownR.csv from LMS into the folder for this lab. This data was taken by driving a circuit with a resistor in it using the voltage signal from channel B (CB-V) in my M1K and measuring the current out of the source (CB-I).

Open ALICE M1K Desktop

Select the “Curves” menu at the top of the display. Select CB-V and CB-I to display.

Select “File” in the Upper Right Menu

Select “Load from CSV”

Find where you have saved RawCurrentVSVoltage_SINEwave_UnknownR.csv and select it.

Here’s how to set up the ALICE screen to view the voltage and current in the B channel:

Select a Time mS/Div to display 5-10 oscillations across the display using the menu at the top center of the screen.

Select vertical scales for CB-V/Div and CB-mA/Div to fit each signal on the screen using the menu bar across the bottom of the display.

Here’s how to use the screen cursor to measure the amplitude and period of the signals:

Select the signal you want to measure in the row of choices at the bottom of the screen by clicking on a colored button. (In this exercise you will select CB-V.)

Click on the position of a maximum of the signal you selected (CB-V). The Voltage and Time of that point will appear on the screen. Enter the voltage coordinate in row 1 of the table.

Click on the position of a minimum of the signal you selected (CB-V). The next row of data on the screen will have the voltage and time of that point as well as the difference between that point and the previous one. Record the voltage coordinate in row 2 of the table. This will give you the “peak to peak” magnitude of your signal. (The amplitude is usually one-half of the peak to peak magnitude.)

Choose two points (in CB-V) that differ by several periods. (The left-hand point is labeled as the zeroth cycle in the table.) and enter their time coordinates below in rows 4 and 5. This will allow you to calculate the period of the signal.

Repeat the measurement of minimum and maximum displacement coordinates for the second signal (CB-I) and record in rows 5 and 6 below.

| | Signal Type | Voltage (V) Or Current (mA) | Time (mS) | Cycle Count |
|---|-------------|--------------------------------|-----------|-------------|
| 1 | CB-V | | | |
| 2 | CB-V | | | |
| 3 | CB-V | | | 0 |
| 4 | CB-V | | | |
| 5 | CB-I | | | |
| 6 | CB-I | | | |

Report the following here:

Peak to Peak CB-V Magnitude for this signal _____ Volts

Period: _____ s

Frequency computed from the period _____ Hz

Peak to Peak CB-I measurement for this signal _____ milliamps

Resistance computed from the ratio of peak to peak voltage and current _____ ohms