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| ***Instructions:***   * ***Submission must contain only original, individual, and current work.*** * ***After completion, save as PDF before submitting.*** |

Objective:

|  |
| --- |
| Horizontal and Vertical Scale |

Results/Calculations:

Step 2:

|  |
| --- |
| v(t) = 1cos(2pi\*1000t) |

Step 3-7

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| --- |
|  |
| Figure 1: Oscilloscope Sine Wave Measurement . |

Step 6

Table I: Voltage and Frequency of Sine Wave

|  |  |  |  |
| --- | --- | --- | --- |
|  | Theoretical | Measured | Error (%) |
| Pk-Pk Amplitude ( V ) | 2 | 2.09 | 4.5 |
| Frequency ( Hz ) | 1000 | 1000 | 0 |

Conclusion

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| --- |
| You can scale the horizontal and vertical axes, and use the cursors to measure data. |

Objective

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| --- |
| Horizontal and vertical position |

Results/Calculations

Step 3-6

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| --- |
|  |
| Figure 2: . |

Step 5

Table II: Theoretical vs. Measured Triangle Wave Data

|  |  |  |  |
| --- | --- | --- | --- |
|  | Theoretical | Measured | Error (%) |
| Pk-Pk Amplitude | 2V | 2.08V | 4% |
| Frequency | 5khz | 5khz |  |
| Average | 4 V | 3.94V | 1.5% |

Conclusion

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| Offset and scale waves that normally would not fit on screen. |

Objective

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| --- |
| Slow Signals and Roll Mode |

Results/Calculations

Step 3

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| --- |
| No it the auto scale does not get the settings right |

Steps 4-6

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|  |
| Figure 3: Oscilloscope with Roll Mode Enabled . |

Conclusion

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| Roll mode helps read slow signals that could otherwise not be read. |

Step 1

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| function display\_sin(fg, scope, channel, frequency, amplitude, offset)  fg\_sin(fg, channel, frequency, amplitude, offset);  scope\_time\_setup(scope, 1/(5\*frequency), 0);  scope\_input\_setup(scope, channel, amplitude/2, 0);  end |

Step 4

|  |
| --- |
| %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  % ECE 20007 Instrument Control Skeleton File %  % 01/14/2019 %  %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  %% Instrument Addresses  % These are found as VISA addresses in Keysight connection expert)  % Leave address blank for any unused instruments  fg\_addr = 'USB0::0x0957::0x2C07::MY57801794::0::INSTR';  dmm\_addr = '';  scope\_addr = 'USB0::0x2A8D::0x1778::MY55440244::0::INSTR';  psu\_addr = '';  %% Connect to devices with addresses specified  instrreset;  fg = instr\_connect(fg\_addr, 'usb');  dmm = instr\_connect(dmm\_addr, 'usb');  psu = instr\_connect(psu\_addr, 'serial');  scope = instr\_connect(scope\_addr, 'usb');  %% Insert measurement code here  fg\_output(fg, 1, 'ON');  display\_sin(fg, scope, 1, 200, 4, 0)  %% Disconnect from all instruments used  instr\_disconnect(fg);  instr\_disconnect(scope);  instr\_disconnect(dmm);  instr\_disconnect(psu);  %% Insert any plotting or calculations here |

Objective

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| --- |
| Voltage Division |

Results/Calculations

Step 3

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| --- |
| The output amplitude lowers as resistance increases. |

Step 4

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|  |
| Figure 4: . |

Conclusion

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| Voltage is directly related to resistance. |