

Lab 3 – Series Resistors

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The purpose of this lab is to:

Experiment with series circuits and verify that the simulation, analysis (calculations) and test results all agree.

From the resistor kit select 3 resistors (10K, 2.2K, 4.7K)

Measure and record the value of each resistor. Connect the resistors as shown in Figure 1. Measure and record the total resistance,  $R_T$ . Then connect the resistors as shown in Figure 2, the 9V come from the Elvis II (Modular Engineering Educational Laboratory Platform). Then measure and record with the Digital Multimeter the current and voltages of the series circuit.

Equipment needed:

- 1 – Digital Multimeter
- 1 – Elvis II
- 3 – resistors.

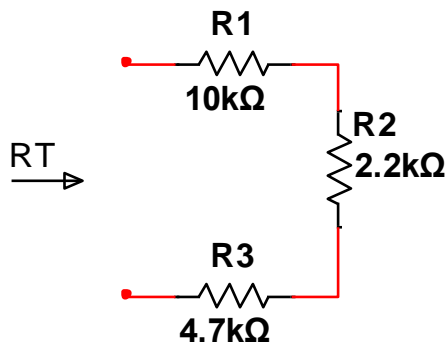


Figure 1

	Measured	Calculated	Simulated
R1 =	9.95 k Ω	10,000Ω	10 k Ω
R2 =	2.15 k Ω	2200 Ω	2.2 k Ω
R3 =	4.59 k Ω	4700 Ω	4.7k Ω
$R_T$ =	16.69 k Ω	16.9 k	16.9 k Ω

Measured = using Digital Multimeter

Calculated = based on color code and Excel values

Simulated = Multisim simulation

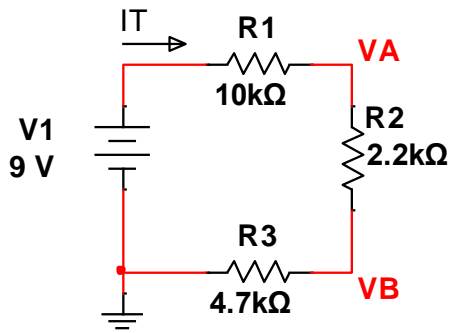


Figure 2

	Measured	Calculated	Simulated
IT =	.54 mA	.5325 mA	.533 mA
V1 =	5.39 v	5.4 v	5.32 v
VA =	1.17 v	1.17 v	1.172 v
VB =	2.49 v	2.5 v	2.504 v

Measured = using Digital Multimeter

Calculated = based on color code and Excel values

Simulated = Multisim simulation

Observations: The measured resistance is not same as calculated or simulated resistances.