EE2112- Lab 2 Submission Sheet

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Table 2 and Ta initials

Table 2: Resistance measurements of resistors, and the measurements in the circuit with the calculated resistance.

Name	Nominal Resistance(kOhms)	Measured Resistance(kOhm)	Voltage VR(V)	Current IR(mA)	$\frac{V_R}{I_R}$ (KΩ)
R1	3.24	3.3K	8.742	2.537	3.268
R2	3.966	3.6K	6.709	1.879	3.570
R3	4.630	4.7K	3.053	.659	4.633
R4	5.546	5.6K	3.1571	.559	5.549

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Table 3: Kirchhoff's Voltage Law: Sum of Voltage drops around loops.

	Measured Voltage(V)	Loop 1 Voltages with polarity(V)	Loop 2 Voltages with polarity(V)	Loop 3 Voltages with polarity(V)
V_{dc}	15,00	−15,00	[illegible]	−15,00
V_{R1}	8,29	8,29	—	8,28
V_{R2}	6,70	6,70	−6,70	—
V_{R3}	3,05	—	3,05	3,05
V_{R4}	[illegible]	—	3,66	3,16
Total	0,01	0,01	0,01	0,00

Table 4: Kirchhoff's Current Law: Sum of current into node loops.

Node #	$I_{sources}$	I_{R1}	I_{R2}	I_{R3}	I_{R4}	I_{R5}	Sum
Node 0	−2,537	—	[illegible]	—	,659	—	[illegible]
Node 1	[illegible]	2,537	—	—	—	—	[illegible]
Node 2	[illegible]	−2,537	1,878	,659	—	—	0
Node 3	—	—	—	,659	−,659	—	0

How does it compare to the measured quantities? Use (5) to compare measured value and actual value of resistor.

The resistors values that where calculated in circuit where less than 1.5% off (see table 5 for actual values). The calculated values tended to be greater than the measured resistance. This could be because of the resistances in the bread board

Table 5: Resistance Measurements (Measurements, Ohm's Law and percent error)

Nominal Resistance(KΩ)	Measured Resistance(KΩ)	$\frac{V_R}{I_R}$ (KΩ)	Percent Error%
3.3	3,263	3,268	0,97%
3.6	3,576	3,570	0,83%
4.7	4,630	4,623	31,42%
5.6	5,546	5,554	0,96%

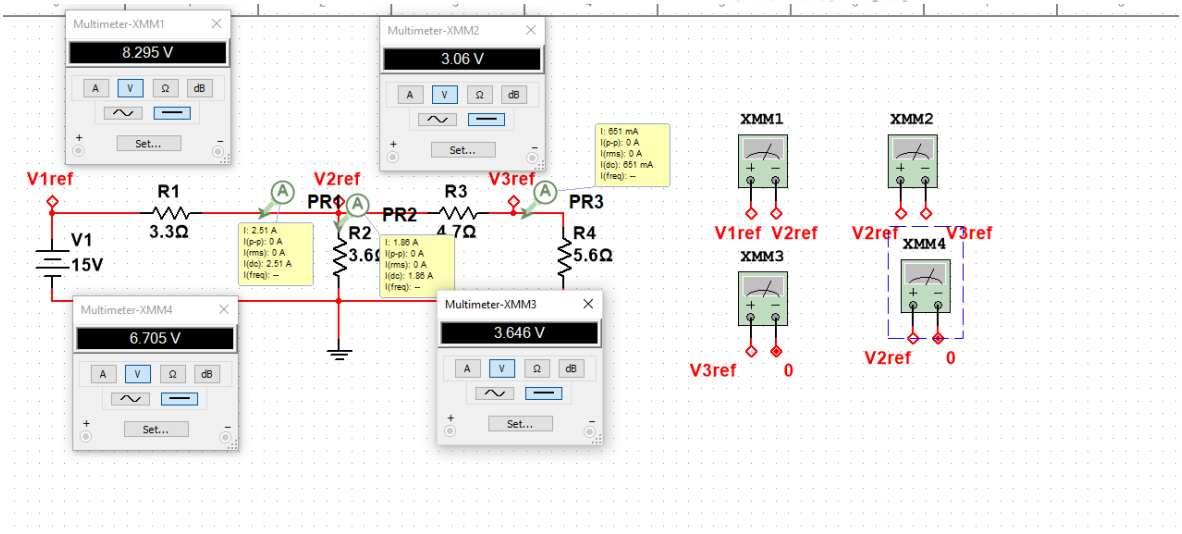

Table 6: Current and Voltage Measurement in Multi-SIM Simulation

Nominal Resistance(KΩ)	V_R (V)	I_R	% Diff
3.3	8.295	2.51	.03%, .7%
3.6	6.705	1.8 L	.06%, 1.0%
4.7	3.06	.65	.22%, 1.22%
5.6	3.646	.65	.30%, 1.22%

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How does the value calculated in the previous step compare with those of your actual circuit measure values in Section 4.2 Table 2?

The values calcutaed had less of a present error to the measured value than the values in the actual circuit, but where still not perfect.

Where there any general trends? Explain.

Some general trends where that the %off where not just one direction away some of the error is grater and some are less. This could be how Multi-SIM handles things, or it could be human error while measuring.

Short conclusion:

This lab has shown how errors differ in different things. For example, we saw how the errors differ in the Multisim and how it differs from the real circuit. The voltage of it varies .05% off the voltage measured in the circuit. All the values are just estimation because all the tools can only be or accurate