

**Khwaja Yunus Ali University**

***LAB Report***

**Name of the Department: Computer Science and Engineering**

**Course Code: CSE 0713-1104**

**Course Title: Electrical Circuit Lab**

**Report No.: 01**

**Topic: Verification of Ohm’s law.**

**Semester: Summer 2024**

**Submission Date: 29-01-2025**

**Instructor Signature & Date**

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| **Submitted by –** | |  | **Submitted to –** | |
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No. of experiment: 01

Name of the experiment: Verification of Ohm’s law.

Objective: Verification of Ohm’s law using digital simulator.

Theory: Ohm's Law is one of the significant guidelines in the field of electrical engineering. It states that the current (I) flowing through a conductor between two points is clearly relative to the voltage (V) over the two points, and on the other inversely proportional to the resistance (R) of the conductor. Ohm’s law is a must for understanding and designing electrical circuits.

Ohm’s law can be expressed as,

List of apparatus:

A working computer.

Software: Proteus 8 professional.

Tools: 1. Resistor, 2. Cell, 3. Grounding, 4. Wires, 5. DC Ammeter, 6. DC Voltmeter

Procedure:

1. Let’s add a DC voltage source, a resistor (R1), an AC Ammeter and connect them in a series connection with wires.
2. Now add a DC voltmeter in parallel the resistor and connect it on the two sides of resistor with wire properly to measure the voltage across the resistor.
3. Let’s complete the circuit by adding and connecting a grounding.
4. Let’s assign some value to the resistor and power supply to observe and record the voltage across the resistor using DC Voltmeter and current using DC Ammeter.

Circuit diagram:

A diagram of a battery

Description automatically generated

Circuit diagram of verification of ohm’s law

Calculations:

Let,

V= 300v & R= 50Ω

We know that,

V= IR

I = = = 6A

Table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SL NO. | Resistor, R(Ω) | Observed Voltage,  (V) | Calculated Voltage (V) | Observed Current,(A) | Calculated Current,(A) |
| 1 | 10 | 50 | 50 | 5.00 | 5.00 |
| 2 | 20 | 110 | 110 | 5.50 | 5.50 |
| 3 | 30 | 190 | 190 | 6.33 | 6.33 |
| 4 | 40 | 250 | 250 | 6.25 | 6.25 |
| 5 | 50 | 300 | 300 | 6.00 | 6.00 |

Tabulated calculations using ohm’s aw

Result and Discussions: After throw observation we can see that the value we got from the calculations and the value we got from simulation are exactly the same.

Conclusion: The result and the calculations we have done so far validated the ohm’s law, forming a relationship among Voltage, Resistance and Current flow. Thus we can conclude by saying that our experiment was successful and the ohm’s law is verified successfully.