# Experiment # 4

“To determine value of given resistance by color coding”

***Theory***

Resistor values are marked onto the body of the resistor using a series of color bands. These give the value of the resistor as well as other information including the tolerance. The band closest to the end of the resistor body is taken to the Band NO 1.

In case of four color bands, the first two bands are significant figures of values, the third band is a multiplier (number of zeros) and fourth band is tolerance band.

|  |  |
| --- | --- |
| COLOUR | VALUE |
| Black | 0 |
| Brown | 1 |
| Red | 2 |
| Orange | 3 |
| Yellow | 4 |
| Green | 5 |
| Blue | 6 |
| Violet | 7 |
| Gray | 8 |
| White | 9 |
| Gold | -1 |
| Silver | -2 |

|  |  |
| --- | --- |
| COLOUR | Precision |
| No Band | 20% |
| Silver | 10% |
| Gold | 5% |
| Red | 2% |
| Brown | 1% |

APPARATUS

A few number of resistors and ohm meter.

***Description of Apparatus***

1. Resistance: The restriction to the flow of current is called resistor.
2. Resistor A resistor is a component that resists the **flow** of electricity. This flow of electricity is called current. Each resistor has a value that tells how strongly it resists current flow. This resistance value is called the ohm, and the sign for the ohm is the Greek letter omega: Ω.
3. Ohm meter The working principle of Ohmmeter is, **when current flow through the circuit or component, the pointer deflects in the meter**. When a pointer moves the left side of the meter, it represents a high resistance and responds to low current. The resistive measuring scale is nonlinear in an ohmmeter and the analog multimeter.

***DIAGRAM***

***Diagram

Description automatically generated***

***Procedure***

I took a resistor and read its color code studying from left to right the first very color gives number of zeros. Finally the forth color which gives us tolerance of that resister that the resistance of resistor may be greater or lesser than the color code. If the third band is golden, the multiplying it will will 10^1.

***CALCULATIONS***

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| S NO | 1st | 2nd | 3rd | 4th | Resistor | Range | verification |
| **1.** | Brown 1 | Gray  8 | Orange  10^3 | Golden  ±5% | 18×10^3±5% | 17100-18400 | 18.50kΩ |
| **2.** | Blue  6 | Gray  8 | Golden  10^-1 | Golden  ±5% | 68×10^-1±5% | 6.42-7.14 | 6.7kΩ |
| **3.** | Yellow  4 | Violet  7 | Orange  10^3 | Golden  ±5% | 47×10^3±5% | 44650-49350 | 46.4kΩ |
| **4.** | Yellow  4 | Orange  3 | Red  10^2 | Golden  ±5% | 53×10^2±5% | 5035-5565 | 43.0kΩ |
| **5.** | Red  2 | Violet  7 | Orange  10^3 | Golden  ±5% | 27×10^3±5% | 25650-28350 | 26.7kΩ |