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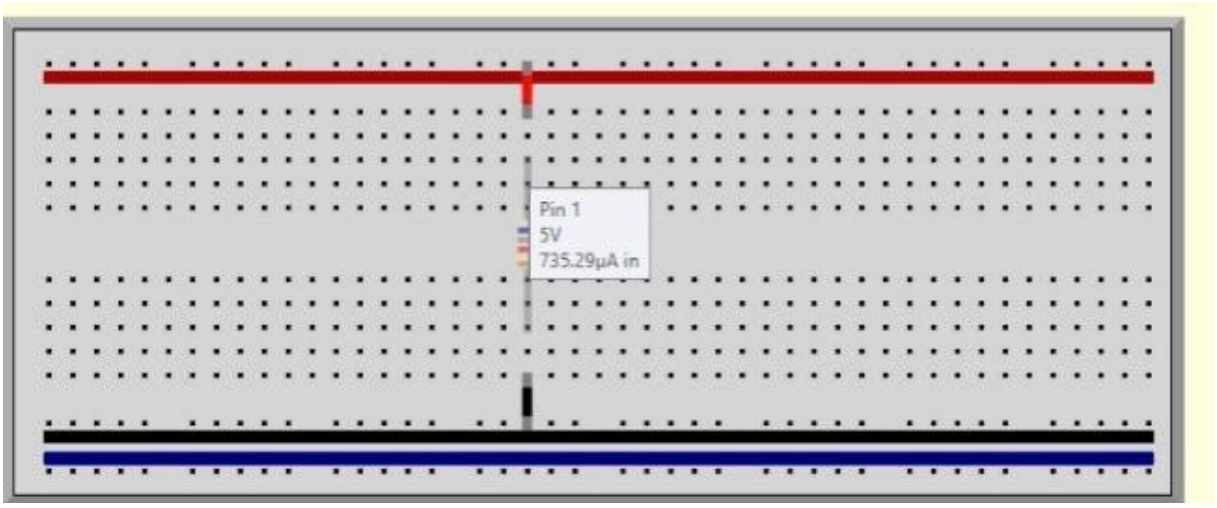
Fişă laborator 1 - online
rev. 2

ID = 69

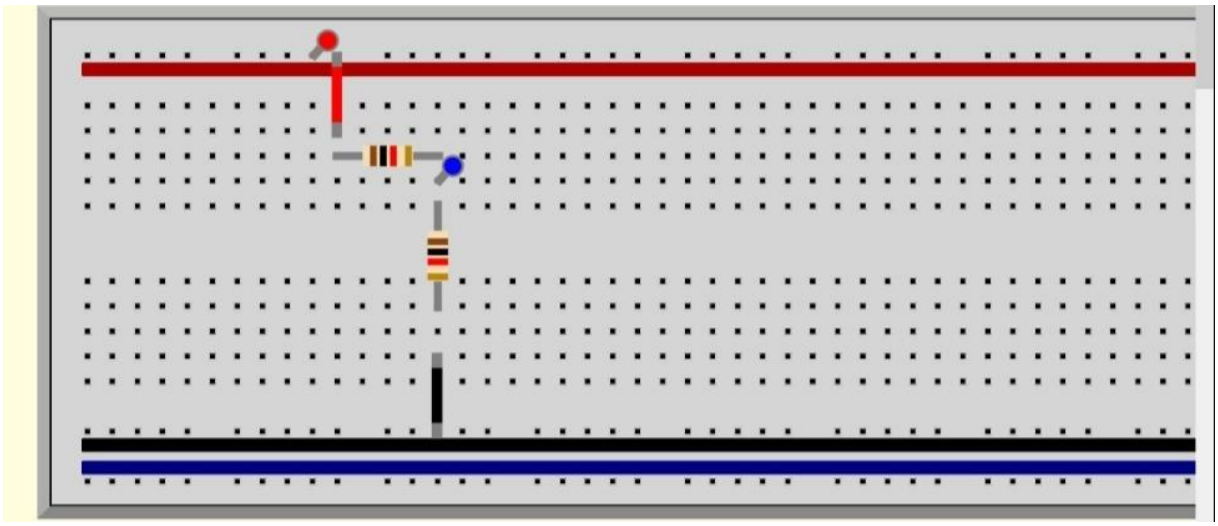
1.a) Verificarea legii lui Ohm

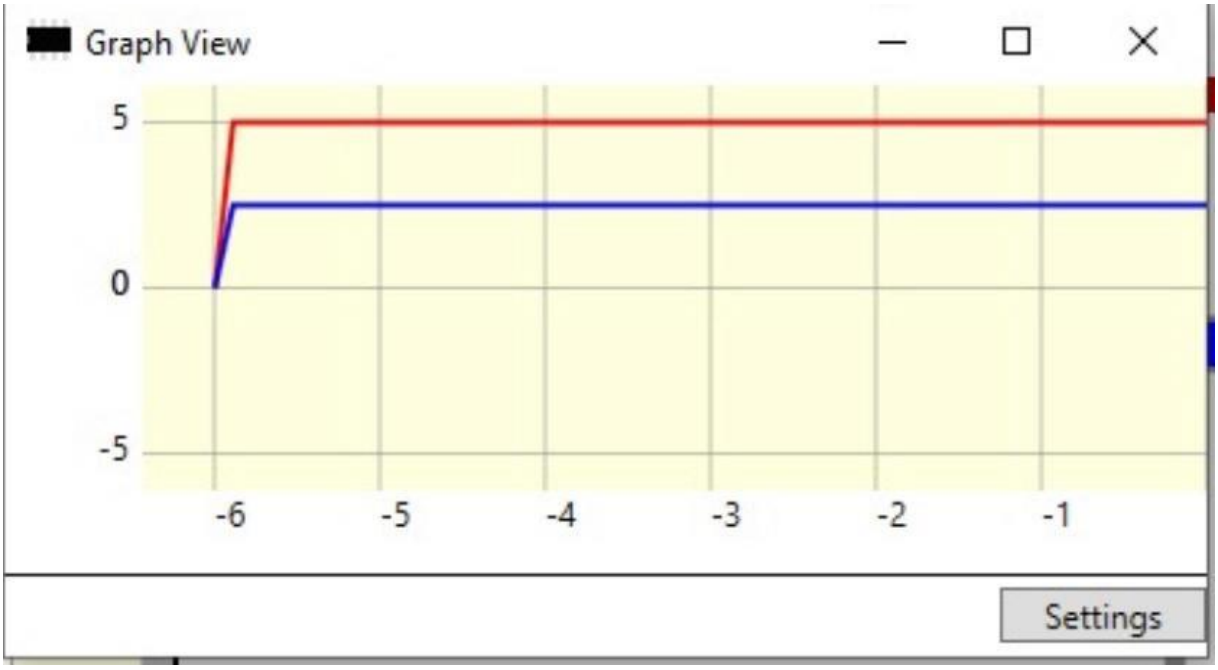
$R_{1\ calc}$ =7,9KΩ $R_{1\ ales}$ =6,8KΩ tol. =5 [%] U_1=5V
I_1=735,29μA R_1= U_1/I_1=5V/735,29*10^{-6}A=6,8KΩ
Citire codul culorilor: cifra 1 = albastru [6]
cifra 2 =gri[8]
cifra 3 =rosu[*10^2]



$R_{2\ calc}$ =10 Ω $R_{2\ ales}$ = 10Ω tol. =5 [%] U_2=5V I_2=500mA
$R_2=U_2/I_2$=5V/500*10^{-3}=10 Ω
Citire codul culorilor: cifra 1 = maro[1]
cifra 2 = negru[0]
cifra 3 = negru[*1]

2a) Divizor de tensiune format cu două rezistențe cu $R_1=R_2$=1K





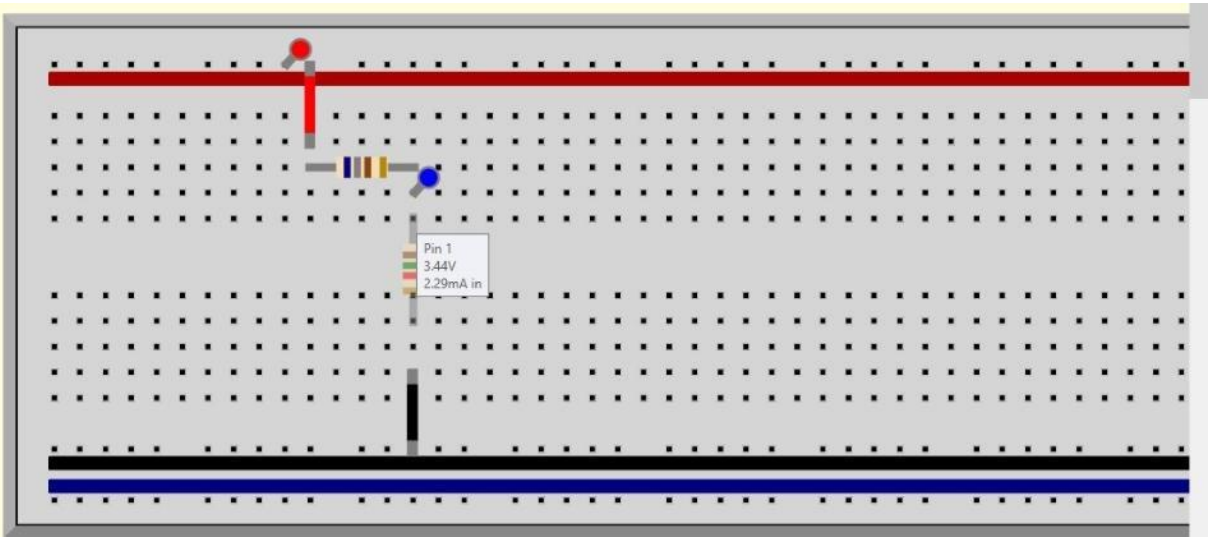
C_Y=2V/div N_{YA}=2.5div N_{YB}=1.25div

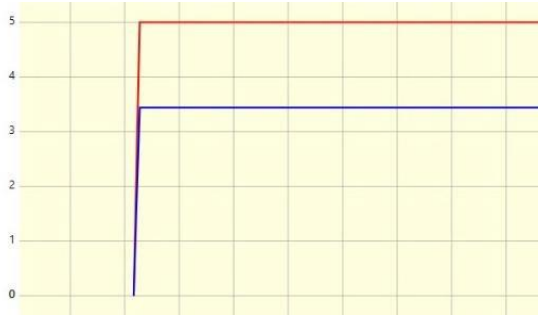
2b) Divizor de tensiune format cu două rezistențe funcție de ID

$R_{11\ calc}$=690Ω $R_{21\ calc}$=1725 Ω $R_{12\ calc}$=6,73KΩ $R_{22\ calc}$=5,08KΩ

$R_{11\ ales}$ =680 Ω $R_{21\ ales}$ =1500 Ω $R_{12\ ales}$ =6,8KΩ $R_{22\ ales}$=4,7KΩ

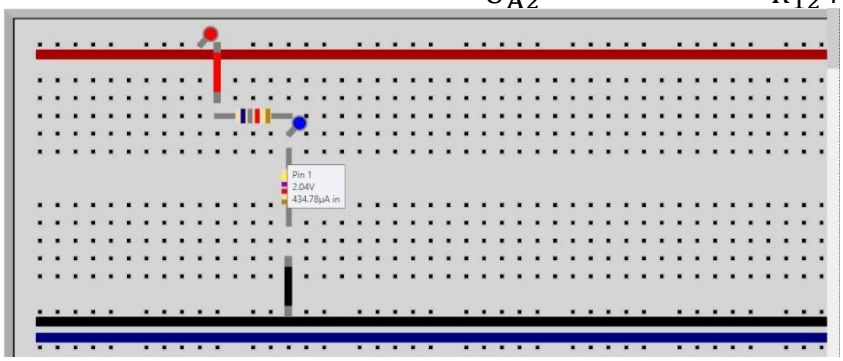
U_{A1}=5V U_{B1}= 3,44V $\frac{U_{B1}}{U_{A1}}$=1,453 $\frac{R_{21}}{R_{11}+R_{21}}$ =1500/2180=0,688





set 1: C_Y = 2V/div N_{YA}=2,5div N_{YB}=1div

U_{A2}=5V U_{B2}=2,04V $\frac{U_{B2}}{U_{A2}}$=0,408 $\frac{R_{22}}{R_{12}+R_{22}}$ =4,7/11,5=0,4



set 2: C_Y = 1V/div N_{YA}= 5div N_{YB}=3,44div

2c) Divizor de tensiune format cu trei rezistențe

$R_{1\ calc}$=6,73KΩ $R_{2\ calc}$ =5,08KΩ $R_{3\ calc}$ =4,5KΩ
$R_{1\ ales}$=6,8KΩ $R_{2\ ales}$ =4,7KΩ $R_{3\ ales}$ =4,7KΩ

R_1: tol=5 [%] cifra 1 =albastru[6] cifra 2 =gri[8] cifra 3 =rosu[*10^2]

R_2: tol=5 [%] cifra 1 =galben[4] cifra 2 =violet[7] cifra 3 =rosu[10^2]

R_3: tol=5 [%] cifra 1 =galben[4] cifra 2 =violet[7] cifra 3 =rosu[10^2]

U_A=5V U_B=2,9V U_C=1,45V

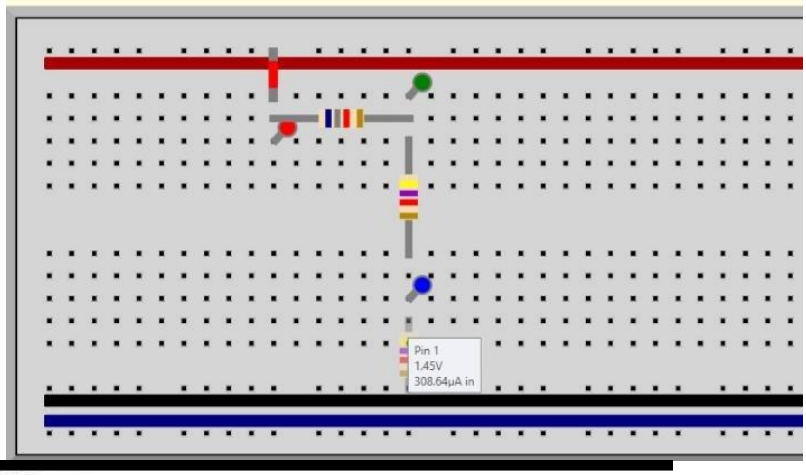
$\left\{\frac{U_B}{U_A}\right\}_{mas}$ = 2,9/5=0,58

$\left\{\frac{U_B}{U_A}\right\}_{calc}$ =R_2+R_3/R_1+R_2+R_3=9,58/16,31=0,58

$\left\{\frac{U_2}{U_A}\right\}_{mas}$ =(U_B-U_C)/U_A=R2/(R1+R2+R3)=4,7/16,2=0,29

$\left\{\frac{U_2}{U_A}\right\}_{calc}$ =R2/(R1+R2+R3)=5,08/16,31=0,31

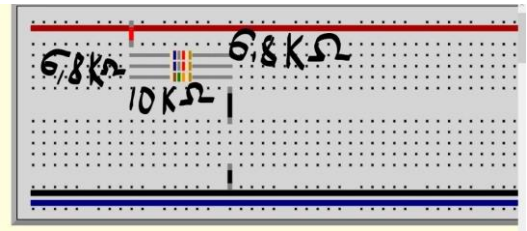
4



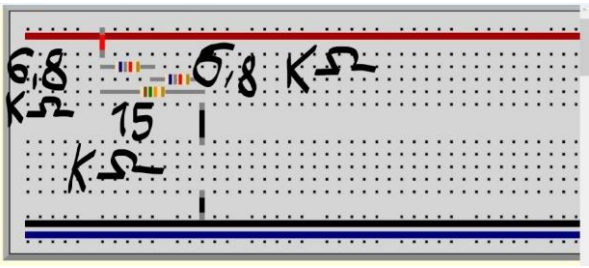
C_Y= 1V/div $N_{Y\,A}$ =5div $N_{Y\,B}$ =2,9div $N_{Y\,C}$ =1,45div

3. Realizarea unor circuite date pe placa de test

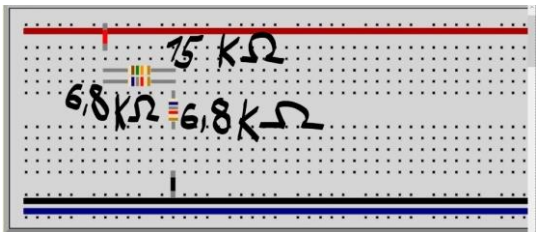
$R_{1\ calc}$=6,9KΩ $R_{1\ ales}$ = 6,8KΩ $R_{2\ calc}$= 17,25KΩ $R_{2\ ales}$ = 15KΩ



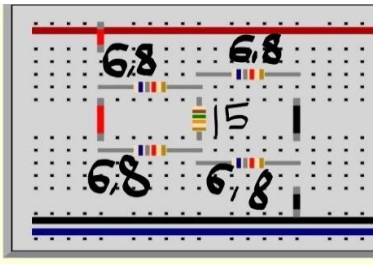
circuit 1 $R_{AB\ calc}$ = 2,77315585KΩ
$R_{AB\ măs}$ = 2,77173913KΩ



circuit 2 $R_{AB\ calc}$ =7,13286713KΩ
$R_{AB\ măs}$ =7,13307464KΩ



circuit 3 $R_{AB\ calc}$ =11,4788991KΩ
$R_{AB\ măs}$ = 11,4789476KΩ

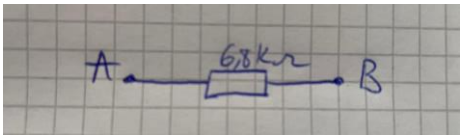


circuit 4 $R_{AB\ calc}$ = 6,799KΩ
$R_{AB\ măs}$ = 6,8 KΩ

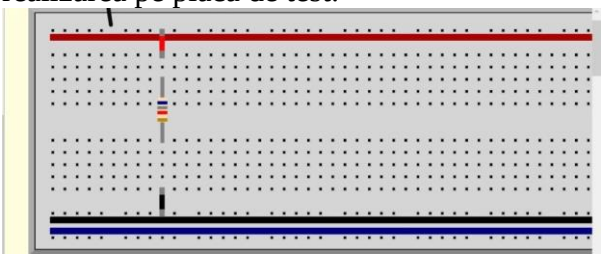
4. Proiectarea şi realizarea unor circuite rezistive pe placa de test

$R_{1\ ales}$=6,8KΩ $R_{2\ ales}$ =15KΩ $R_{AB\ 1\ dorit}$ = 6900Ω $R_{AB\ 2\ dorit}$ =22080Ω $R_{AB\ 3\ dorit}$ =38640Ω

schema proiectată:



realizarea pe placa de test:

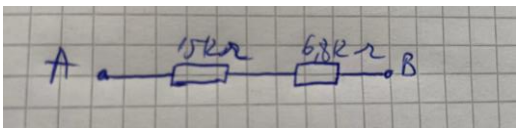


circuit 1 $R_{AB\ calc}$ = 6,8KΩ

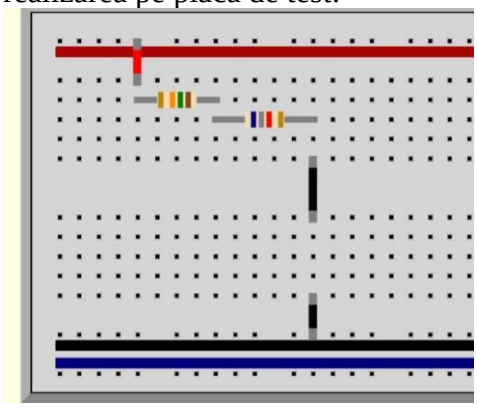
$R_{AB\ măs}$ =6,800038KΩ

ε = -1,449%

schema proiectată:



realizarea pe placa de test:

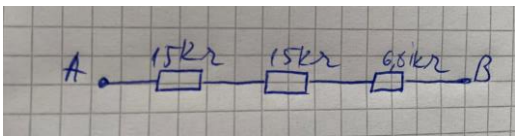


circuit 2 $R_{AB\ calc}$ = R1+R2=21,8 KΩ

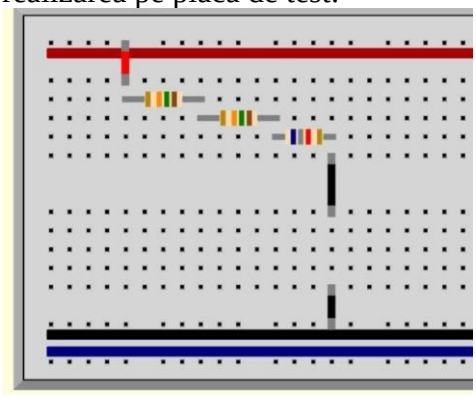
$R_{AB\ măs}$ =U/I= 21,799KΩ

ε =-1,268%

schema proiectată:



realizarea pe placa de test:



circuit 3 $R_{AB\ calc}$ =R1+R2+R2=36,8KΩ

$R_{AB\ măs}$ =U/I=5/135,87*10^{-6}=36,799KΩ

ε =-4,761%