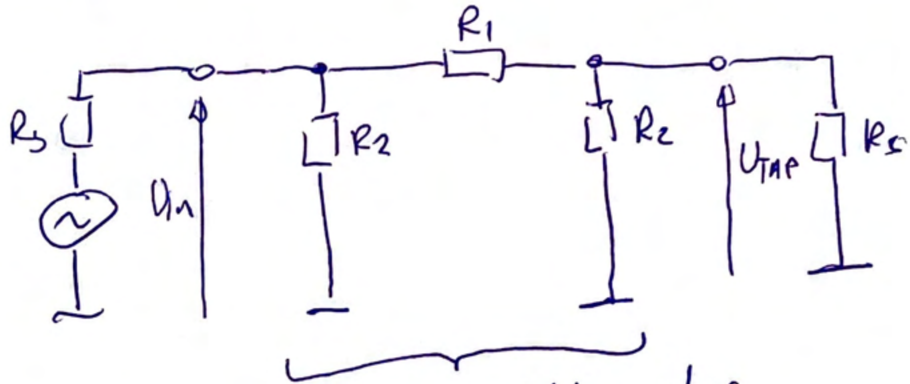
Principles of Operation

$R_{snenovnecn0} = R_{snenovnecn1} = R_S = 50\,\Omega$

$R_{1a} + R_{1b} + R_{1c} = R_1$

Simplified circuit:



Resistive Attenuator
in Pi configuration

A_V - voltage attenuation

$$A_V = \frac{U_{TAP}}{U_{in}}$$

A_{dB} - attenuation expressed in dB

If we assume voltage attenuation $A_V = \frac{1}{100}$ then

$$A_{dB} = 20\log(0{,}01) = 20\log 10^{-2} = 20\cdot(-2) = -40\,dB$$

Using formulas derived in [2] we can calculate resistor values:

$$R_2 = \left[\frac{1+A_V}{1-A_V}\right]\cdot R_S = \frac{1+0{,}01}{1-0{,}01}\cdot 50 = \frac{1{,}01}{0{,}99}\cdot 50 = \underline{\underline{51\,\Omega}}$$

$$R_1 = \frac{(1-A_V^2)}{2\cdot A_V}\cdot R_S = \frac{(1-0{,}01^2)}{2\cdot 0{,}01}\cdot 50 = \frac{0{,}9999}{0{,}02}\cdot 50 = \underline{\underline{2500\,\Omega}}$$

R_1 can be expressed in sum of standard resistor values. Good approximation is: ~~80~~ $820 + 820 + 820\,\Omega$ or $820 + 820\,\Omega$ and 1k potentiometer.