Practice TAsk 3 REPORT

« Operational amplifiers. Wien bridge oscillator»

**Principles of Circuits**

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# Work purpose: to study parameters of Wien bridge oscillator

Goals:

1) Calculate parameters of Wien bridge oscillator

2) Compare calculated and simulated signal frequencies

# Starting data

* **Source voltage frequency, [Hz],**  4000 [Hz]
* **Load resistance, [Ω]:** 1Meg [Ohm]
* **Resistance *R*1 [Ω] [V]:** 10k [Ohm]
* **Voltage source power supply [V]:**  [V]

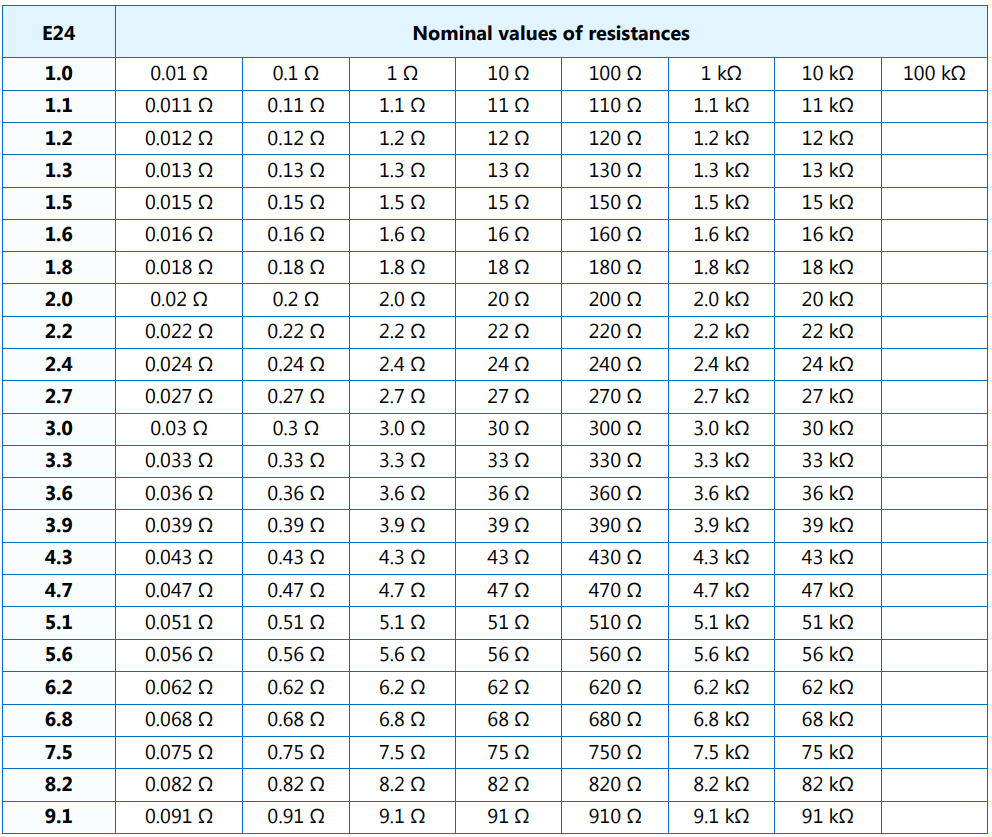
0.8 [V]

# Calculations

* 1. Calculate

= 10000 []

* 1. Define (choose) (E24 nominal values range)



=20000 []

* 1. Define (choose) (E24 nominal values range)

10000 [Ω]

* 1. Calculate C1 and C2 value in your model

=3.9789 [uF]

* 1. Define (choose) C1=C2 (E24 nominal values range)

=3.9 [uF]

* 1. Define *f*0 in Hz calculated from C1, C2, R1, R2 real values

4080.896 [Hz]

* 1. Define *f*0 in from simulation results of Wien bridge with ideal operational amplifier

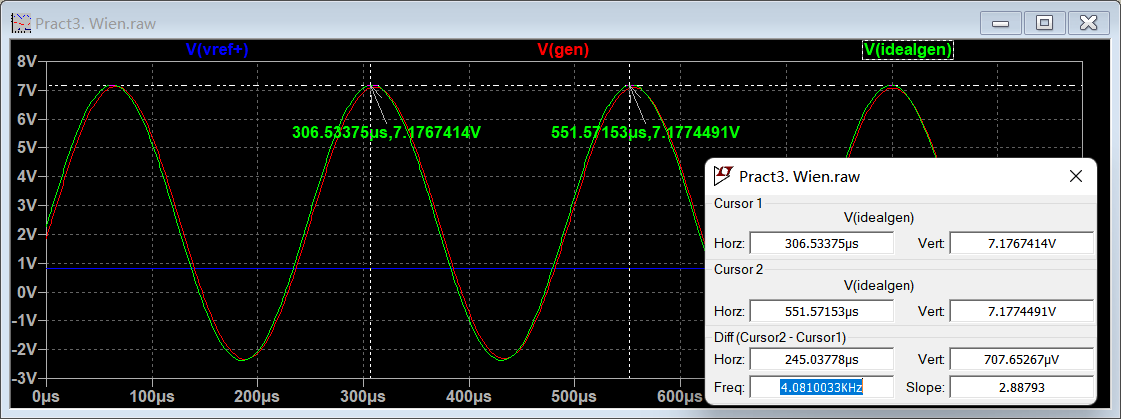


Figure 1. Results with ideal operational amplifier simulation

4081.003 [Hz]

* 1. Define *f*0 in from simulation results of Wien bridge with real operational amplifier

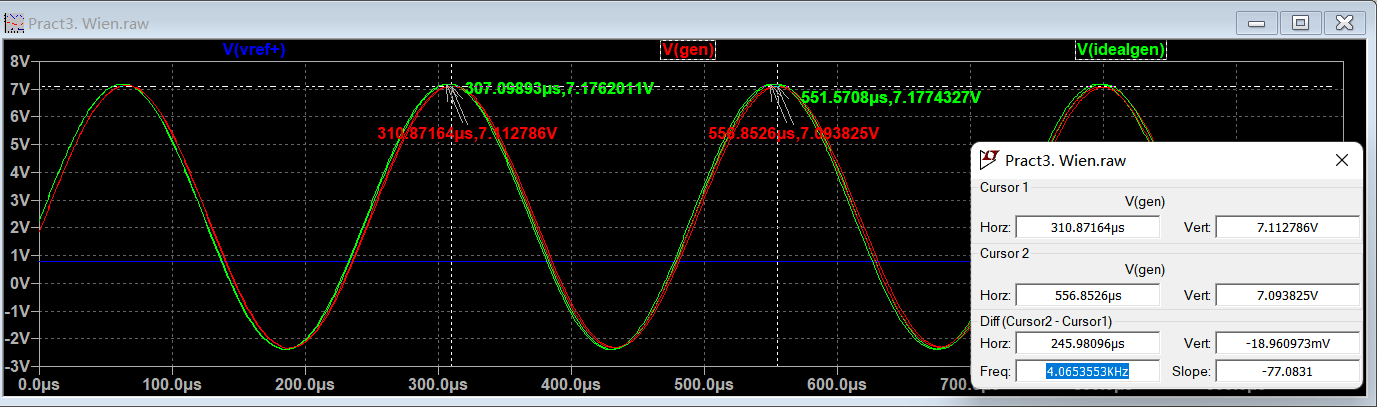


Figure 2. Results with real operational amplifier simulation

4065.3553 [Hz]

# Conclusions

Conclusions should contain:

1. Values of , ,

4065.3553 Hz

4081.003 Hz

=4080.896 Hz

1. [Optional] Which resistor and capacitors correspond to the required parameters? Try to find a set of capacitor and resistors which could provide required frequency.

10000 [Ohm]

10000[Ohm]

=3.9[uF]