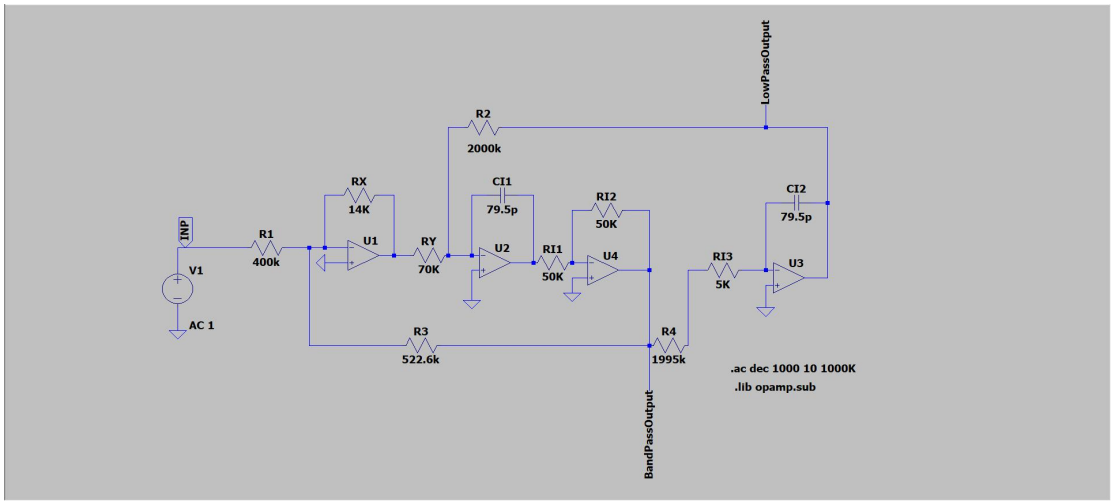
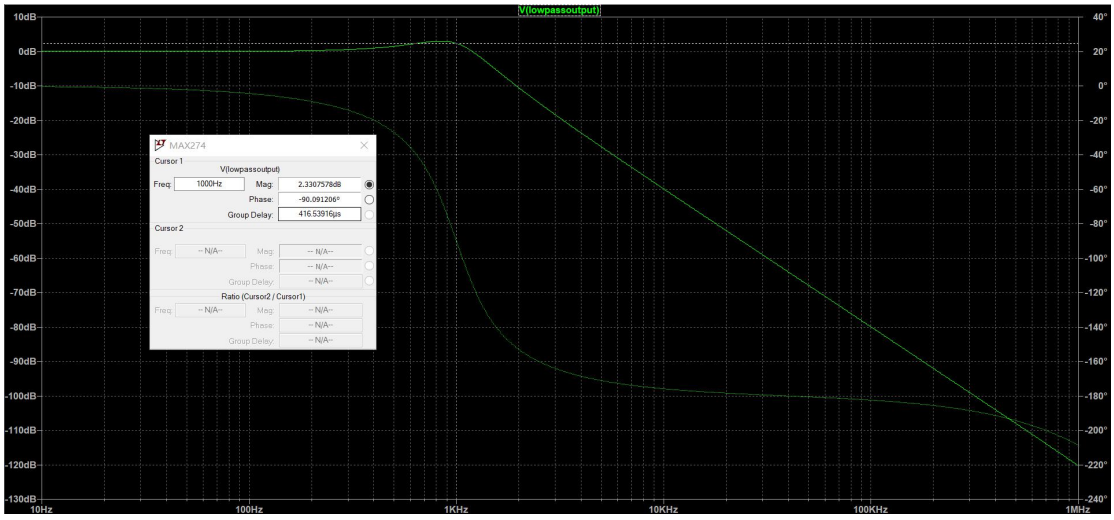
Devoir 2

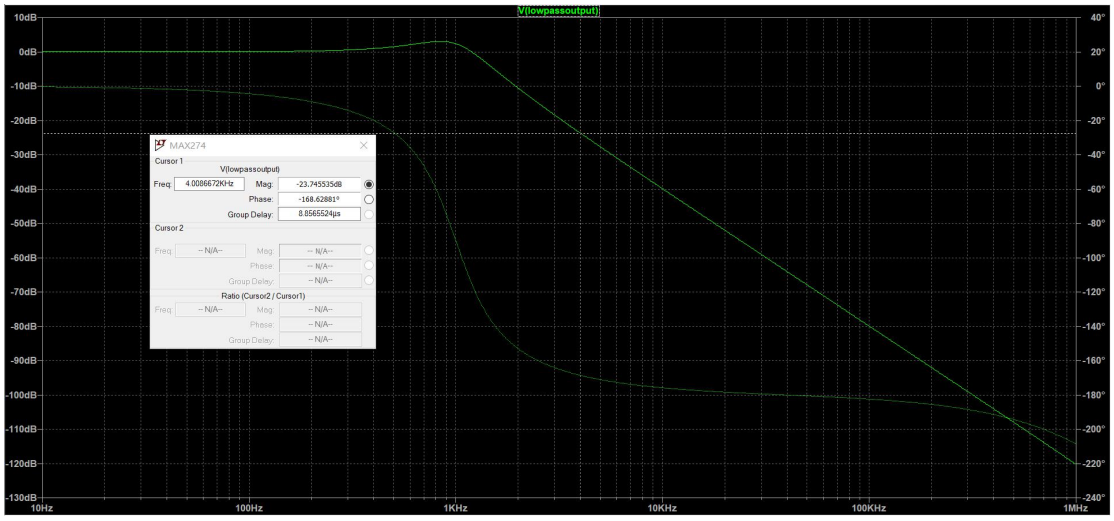
William
ZY1924114

Q1 Filtre passe-bas

Pour la section 1, R1=400KΩ, R2=2MΩ, R3=522.6KΩ, R4=1.995MΩ.

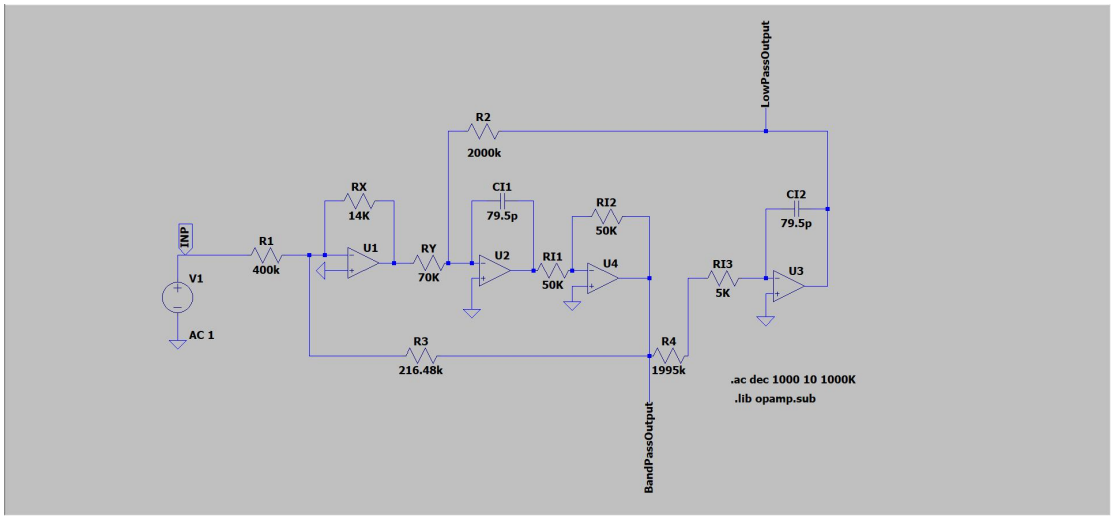


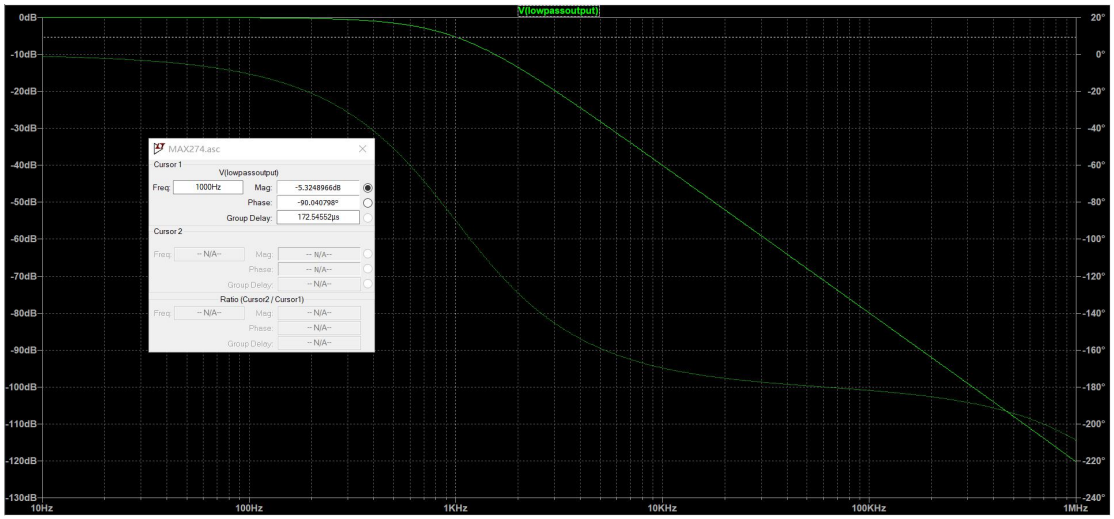


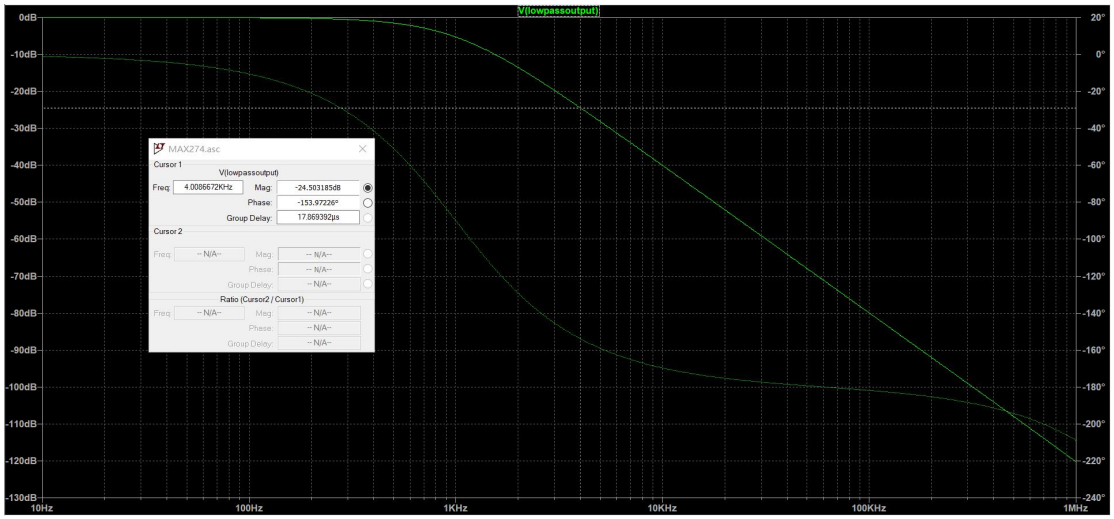


À 1kHz, le gain est 2.33dB, à 4kHz, le gain est -23.75dB.

Pour la section 2, R1=400KΩ, R2=2MΩ, R3=216.48KΩ, R4=1.995M.

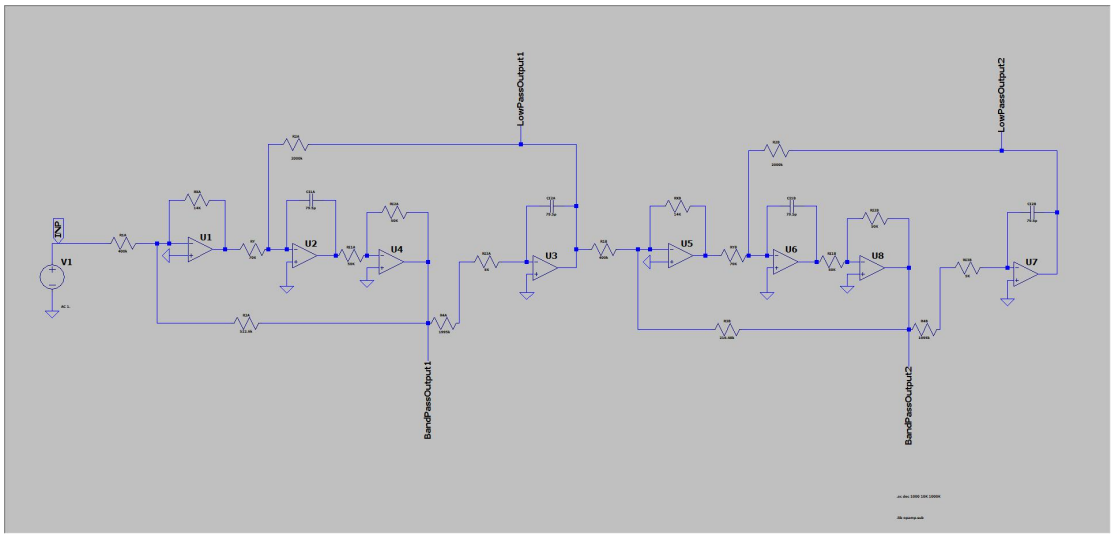


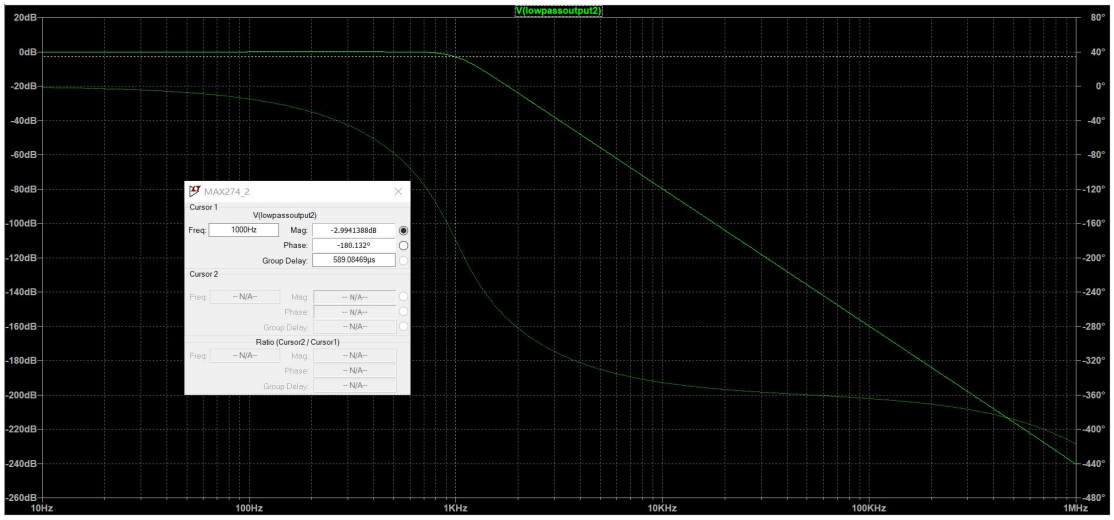


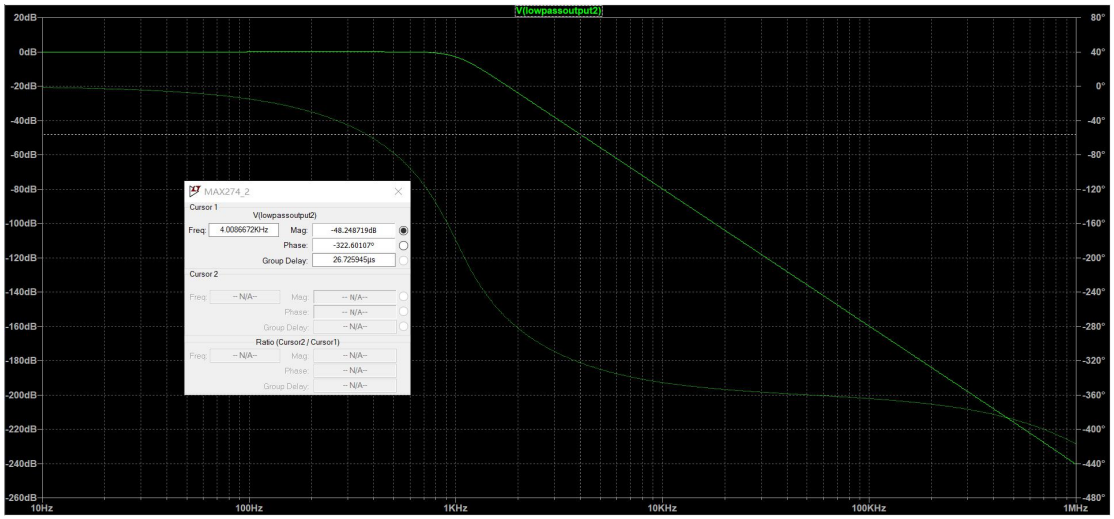


À 1kHz, le gain est -5.32dB, à 4kHz, le gain est -24.50dB.
Donc, le gain final doit être -2.99dB à 1kHz, et -48.25dB à 4kHz.

Pour les deux sections :



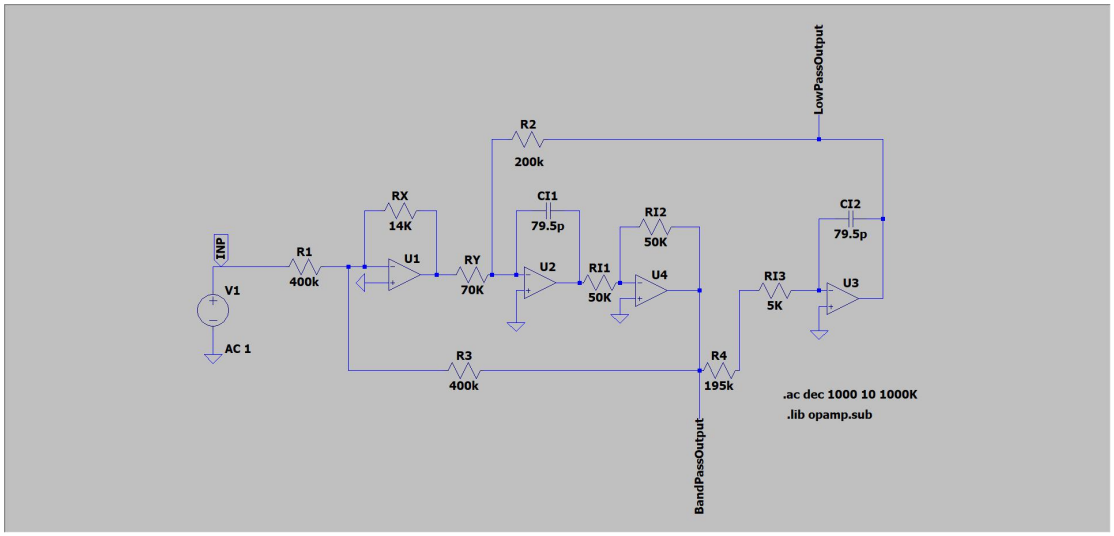


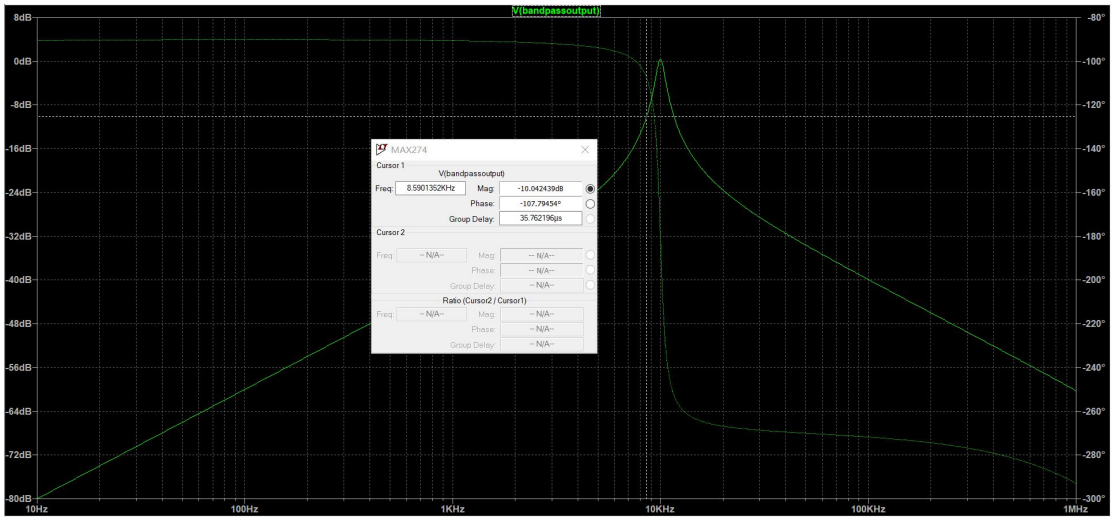


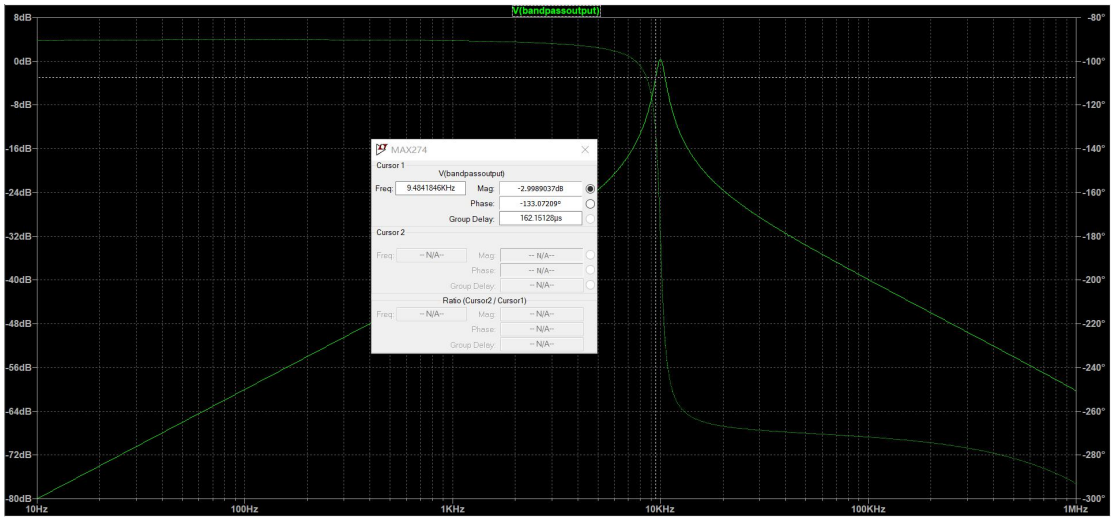
À 1kHz, le gain est -2.99dB, à 4kHz, le gain est -48.25dB, l'atténuation minimale dans la BA vérifie bien 45 dB.

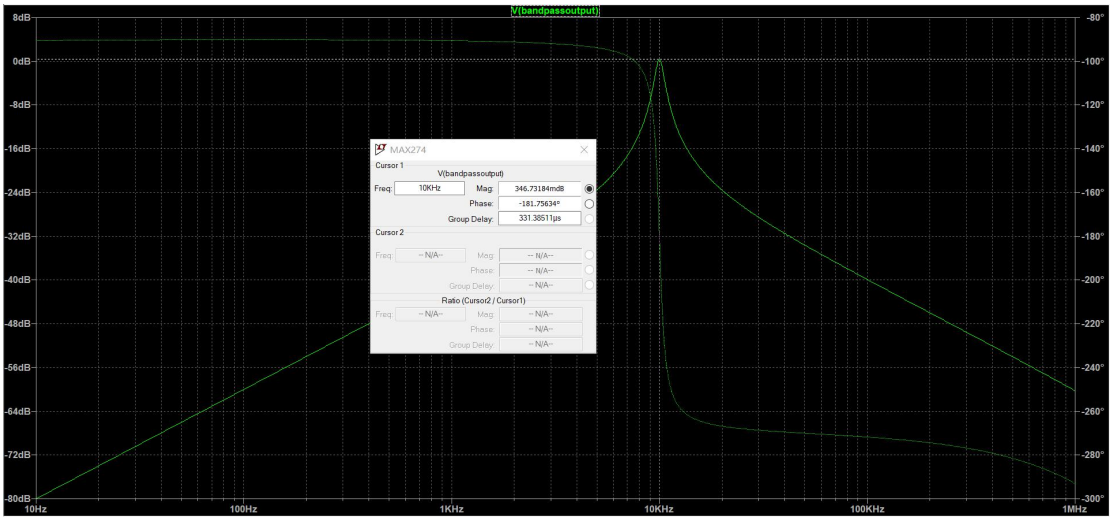
Q2 Filtre passe-bande

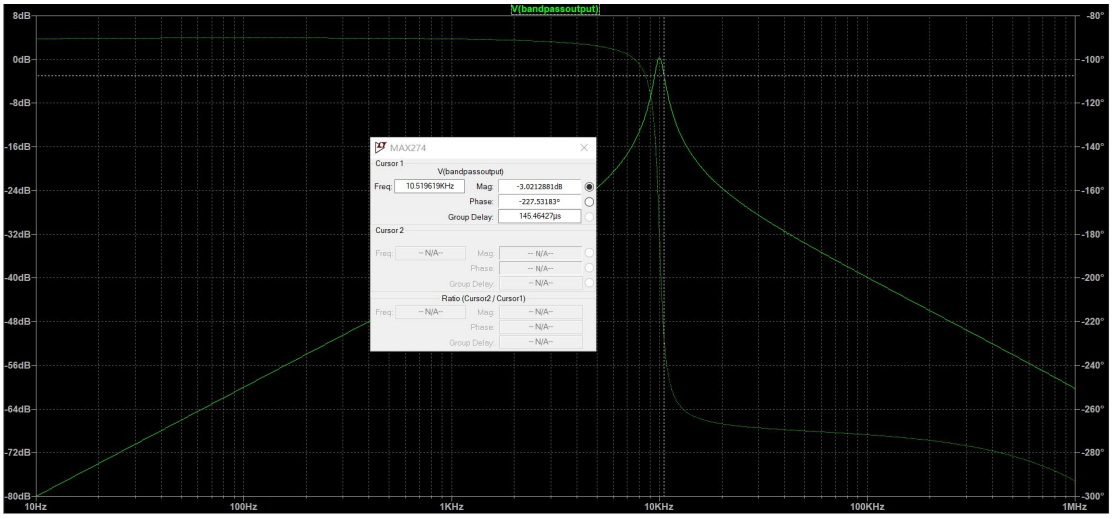
R1=400KΩ, R2=200KΩ, R3=400KΩ, R4=195KΩ.

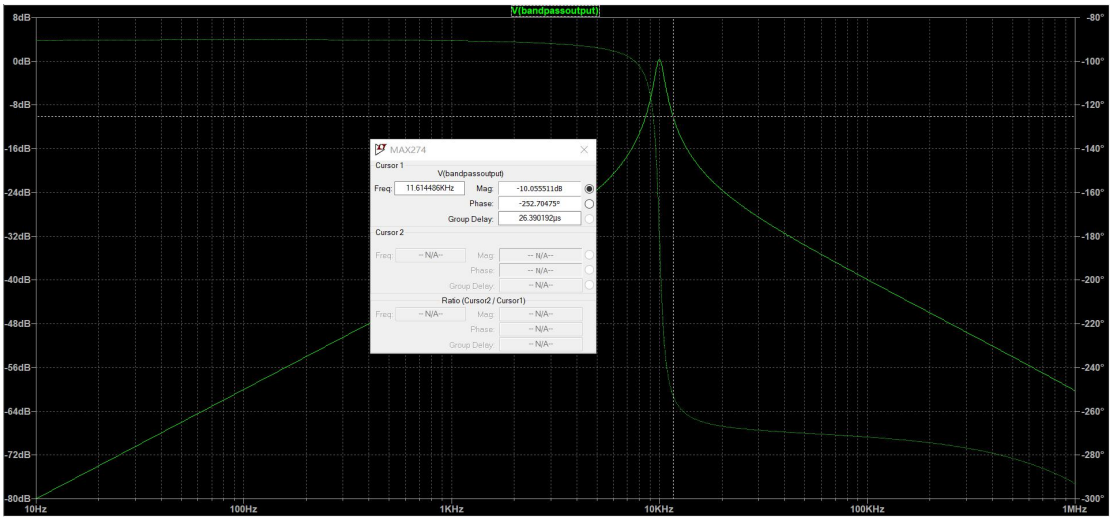












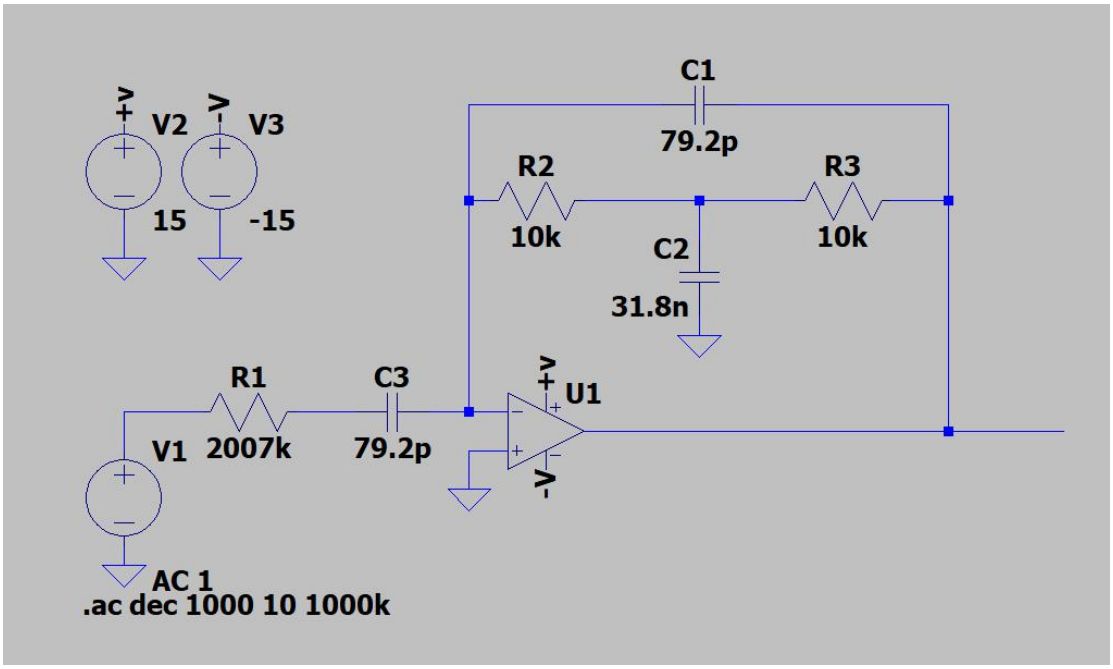
f0=10kHz, d'après la calculation numérique, f1=9512.5Hz, f2=10512.5Hz, f1'=8611.9Hz, et f2'=11612.9Hz.

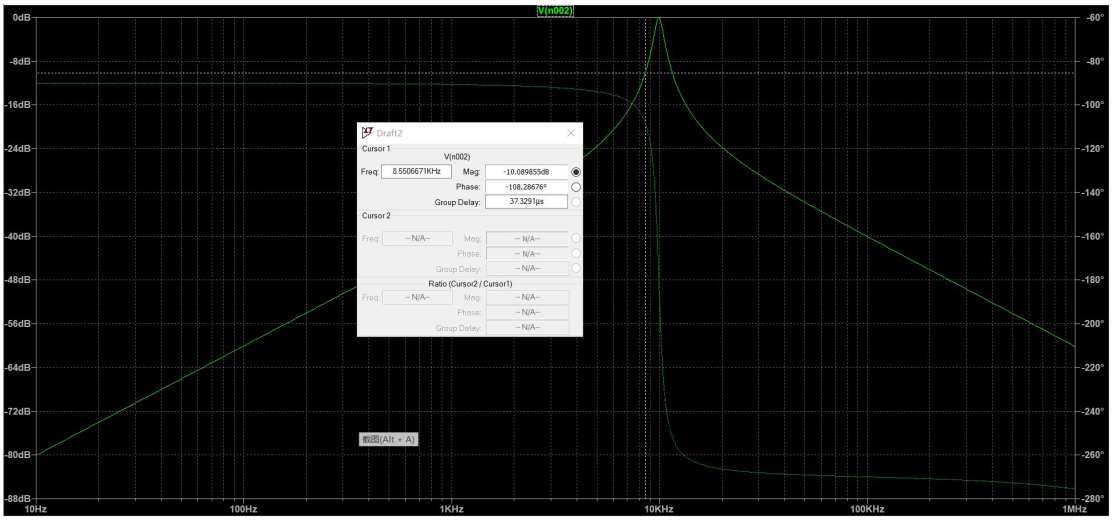
Dans la simulation : f1'=8590.1Hz, f1=9484.2Hz, f2=10519.6Hz, f2'=11614.5Hz

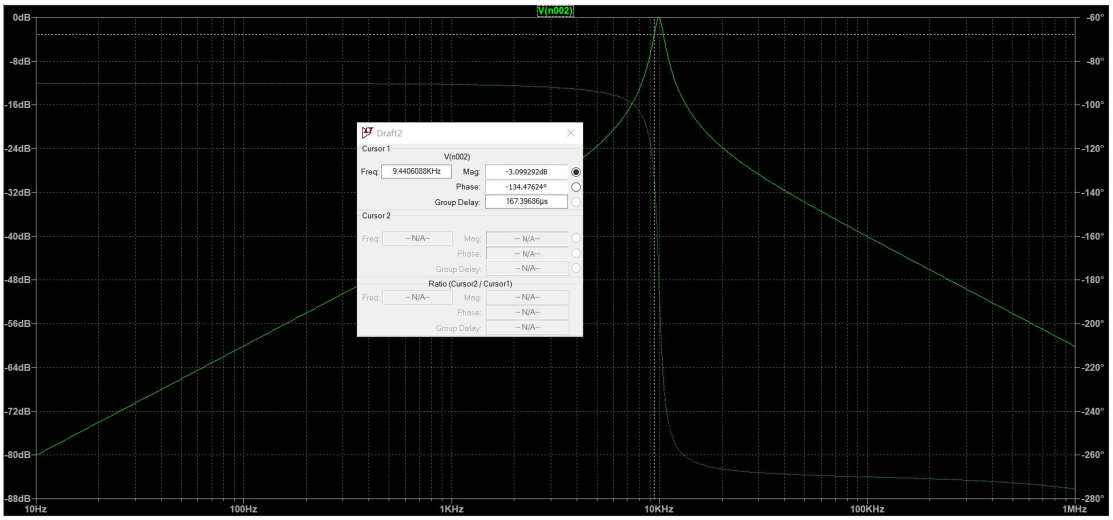
f0=10kHz, le gain est 0.35dB, donc l'atténuation minimale dans la BA vérifie bien 10dB.

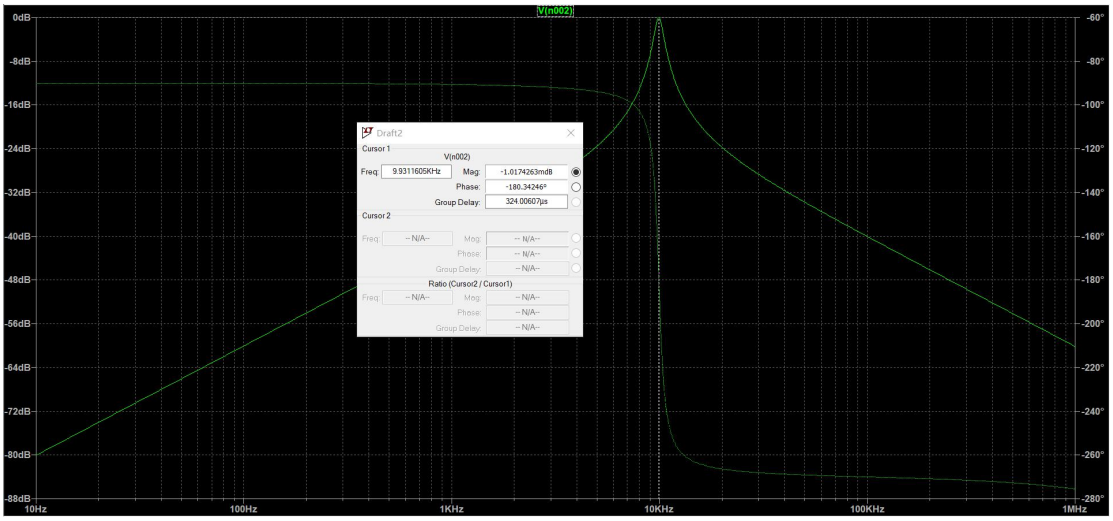
Q3 Structure à 1 amplificateur opérationnel

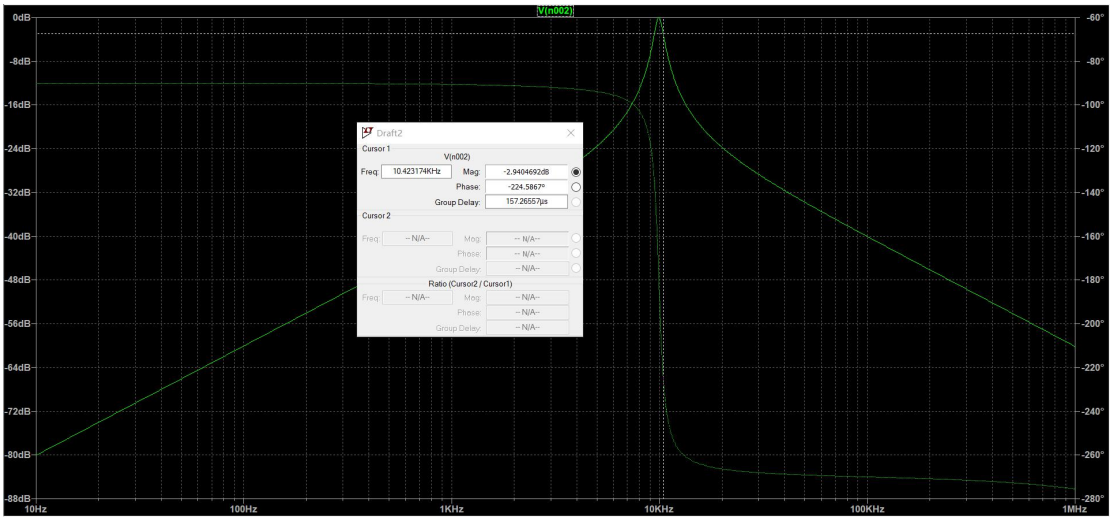
R1=2007KΩ, R2=R3=10KΩ, C1=C3=79.2pF, C2=31.8nF.

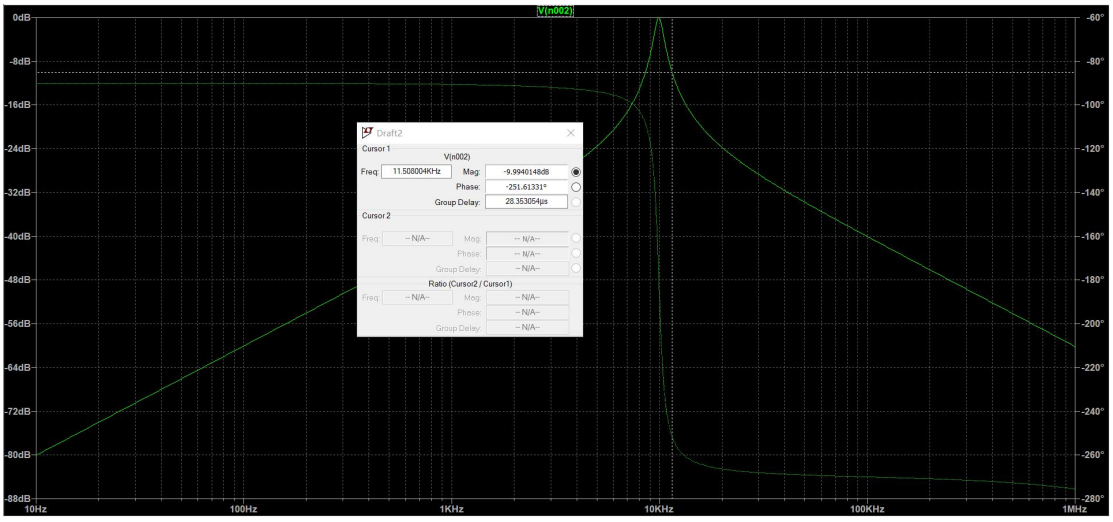












Dans la simulation : f1'=8550.7Hz, f1=9440.6Hz, f2=10423.2Hz, f2'=11508.0Hz f0=9931.2Hz, le gain est -0.001dB, donc l'atténuation minimale dans la BA vérifie aussi 10dB.