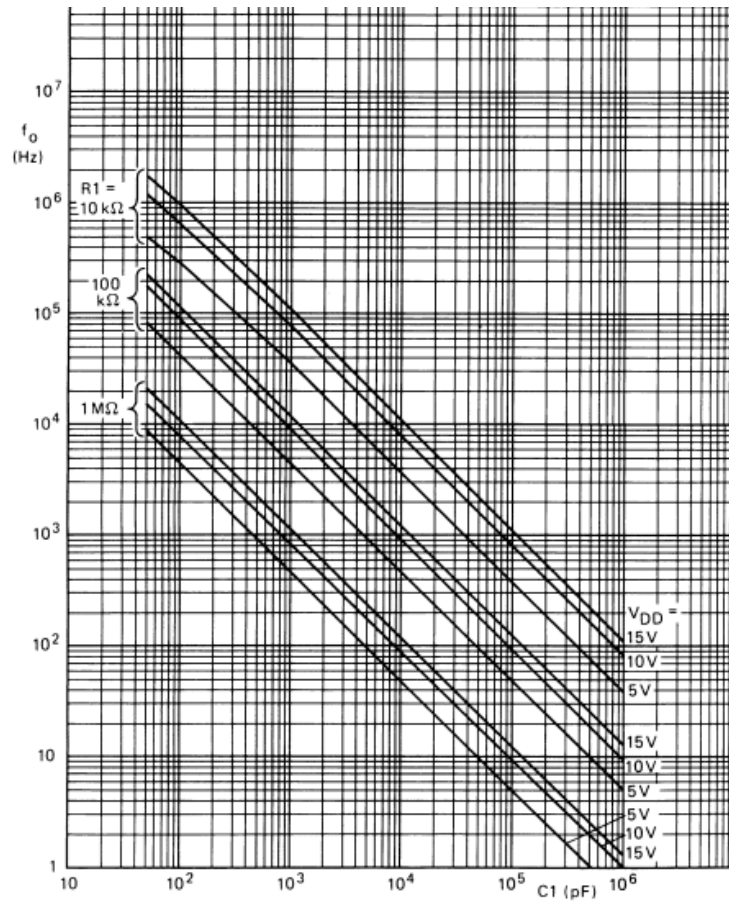


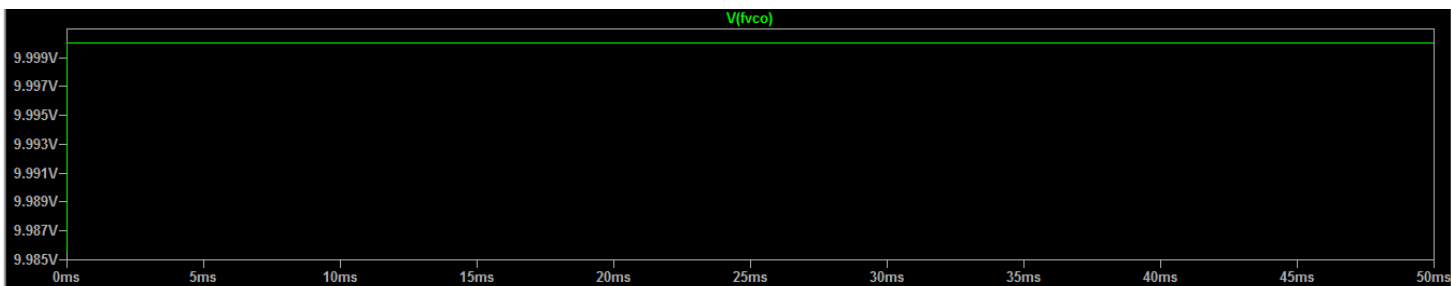
## Devoir 4



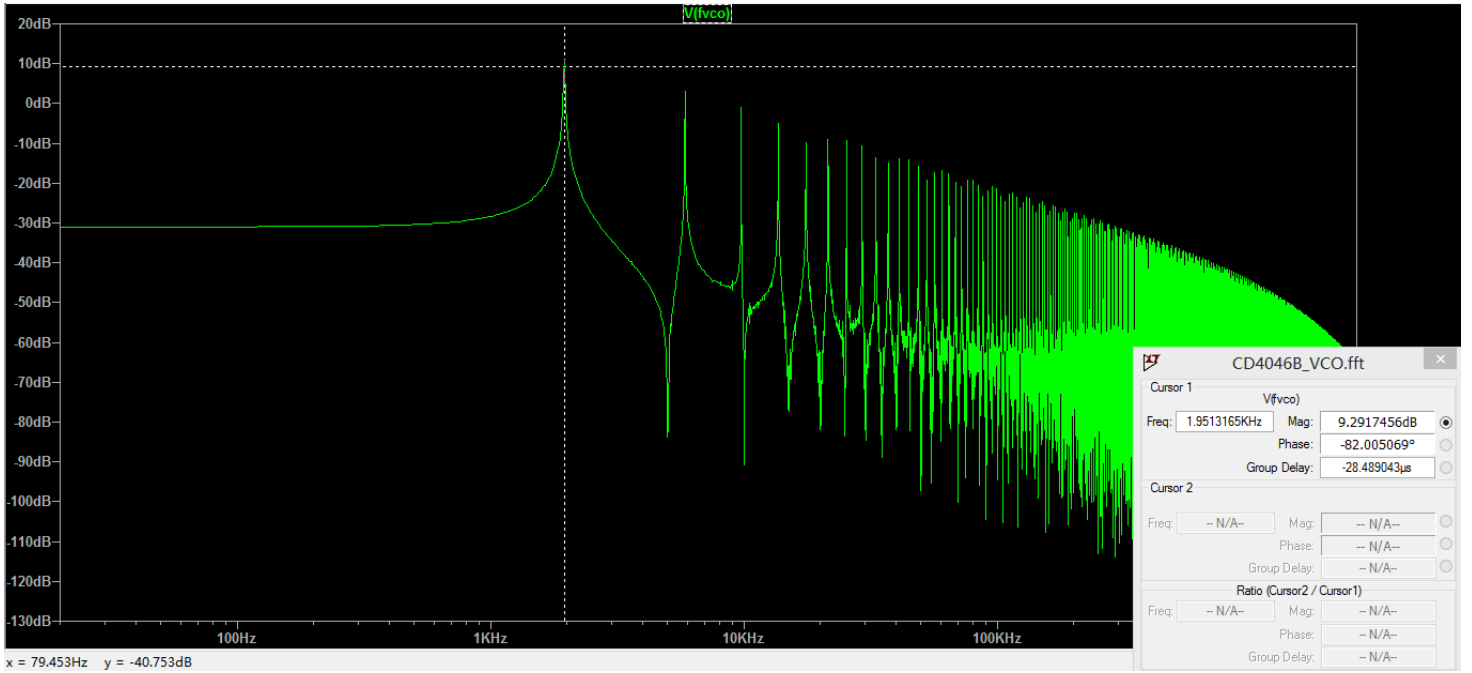
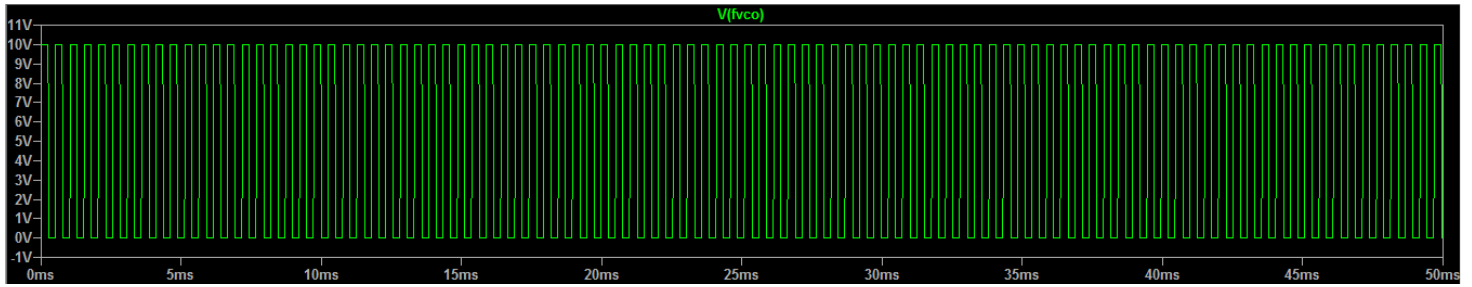
1. Selon la figure 7,  $f_0 \approx 85 \text{ kHz}$ ,  $f_{\text{max}} = 2f_0 = 170 \text{ kHz}$ ,  $\text{PLAGE} = 170 \text{ kHz}$ .

2.

$V_1 = 0 \text{ V}$ :

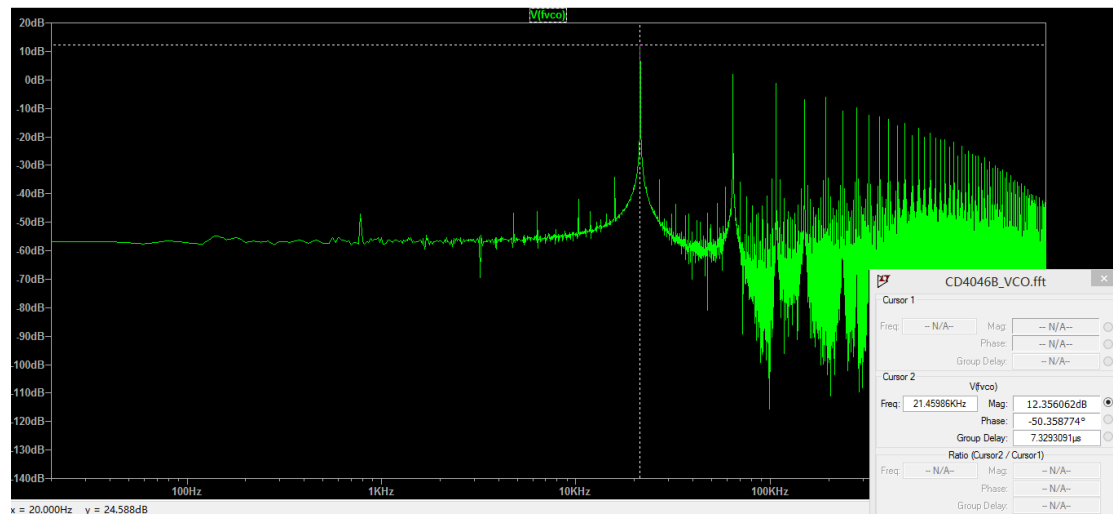


$V_1 = 1 \text{ V}$ :



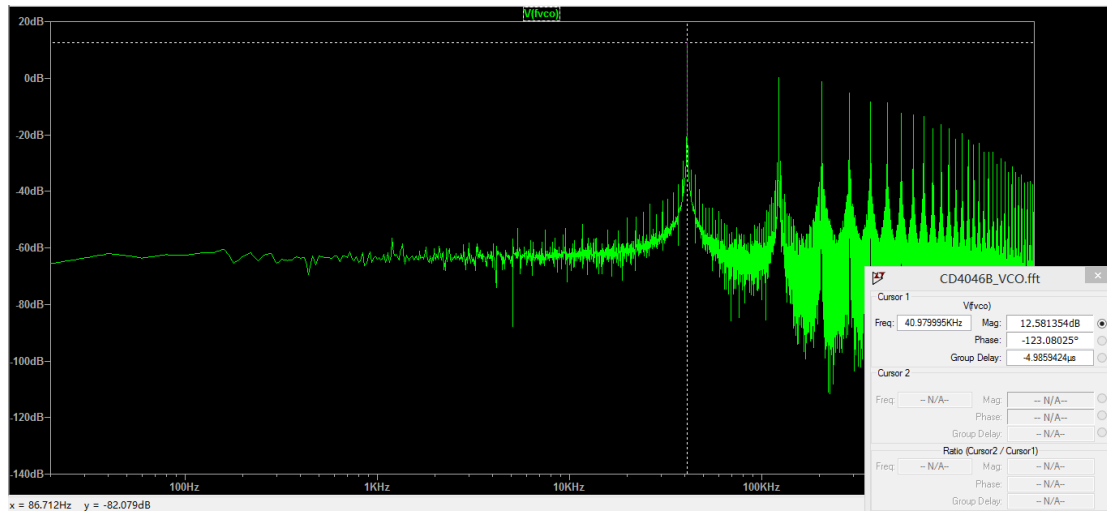
$F=1.95\text{kHz}, G=9.29\text{dB}$ .

$V=2$ :



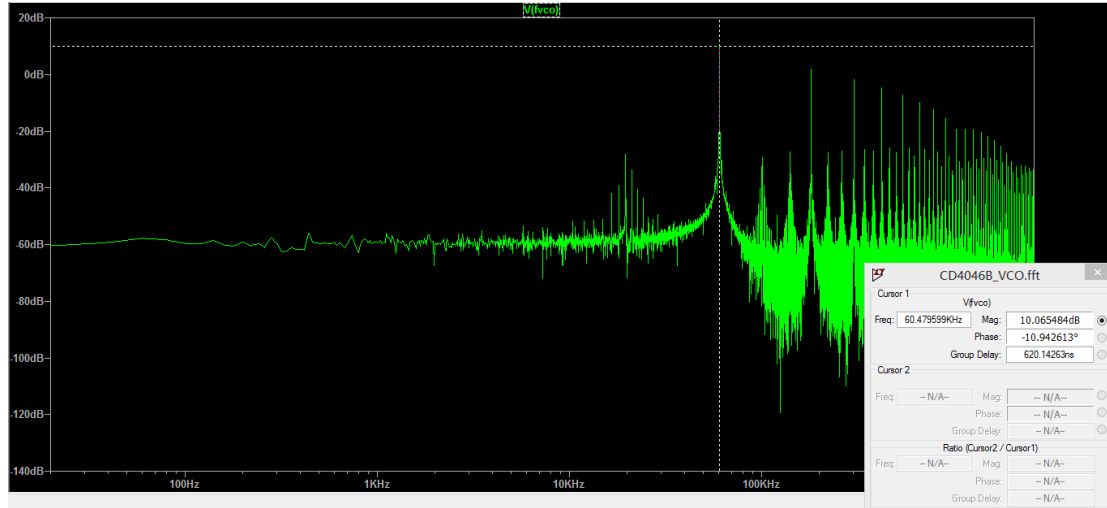
F=21.46kHz,G=12.36db.

V=3:



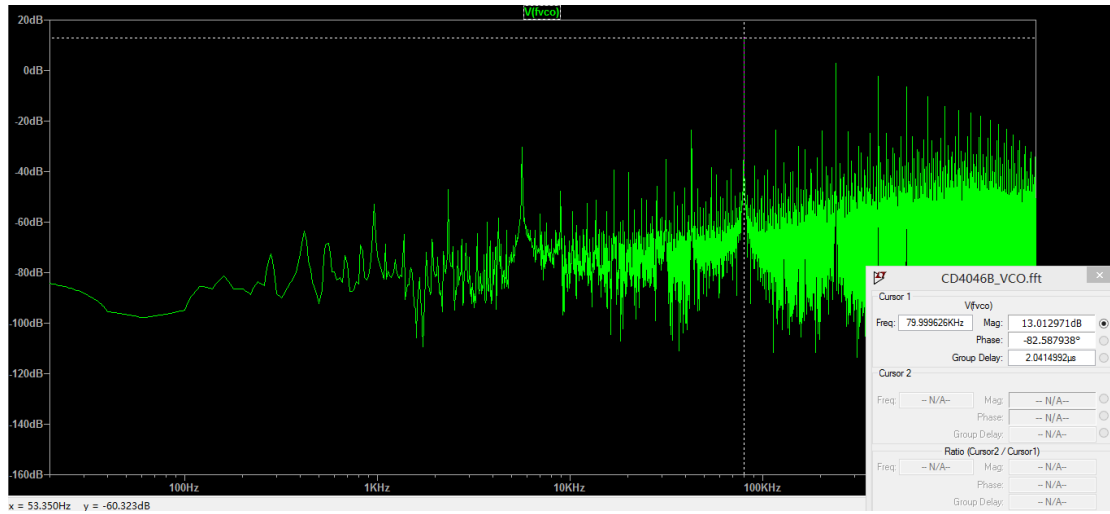
F=40.98kHz,G=12.58db.

V=4:



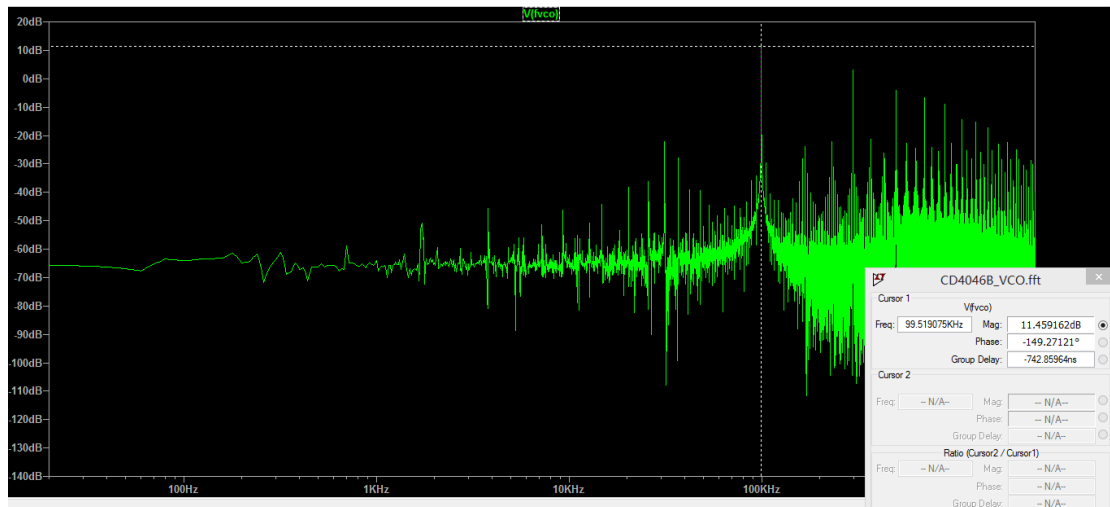
F=60.48kHz,G=10.07db.

V=5:



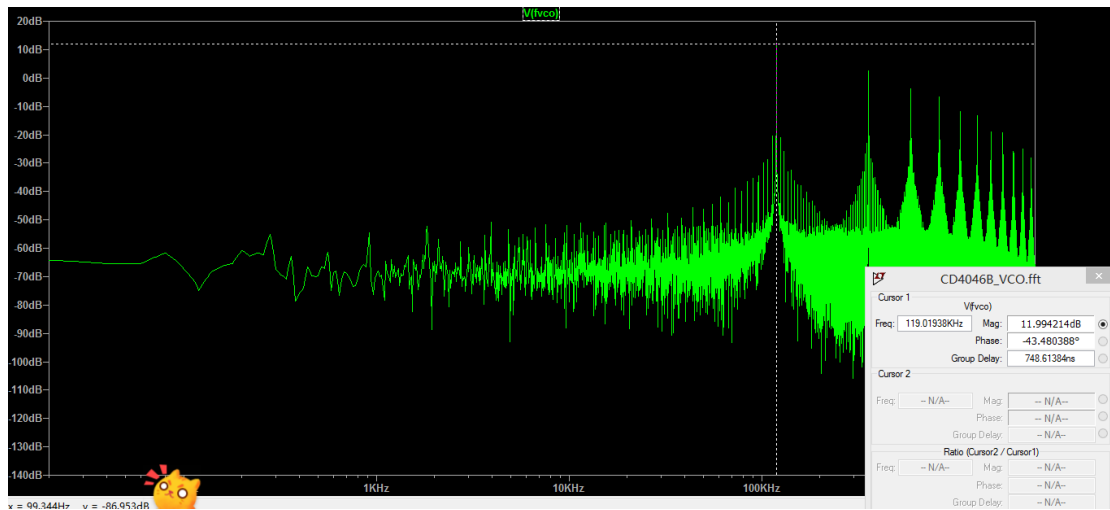
F=80.00kHz,G=13.01db.

V=6:



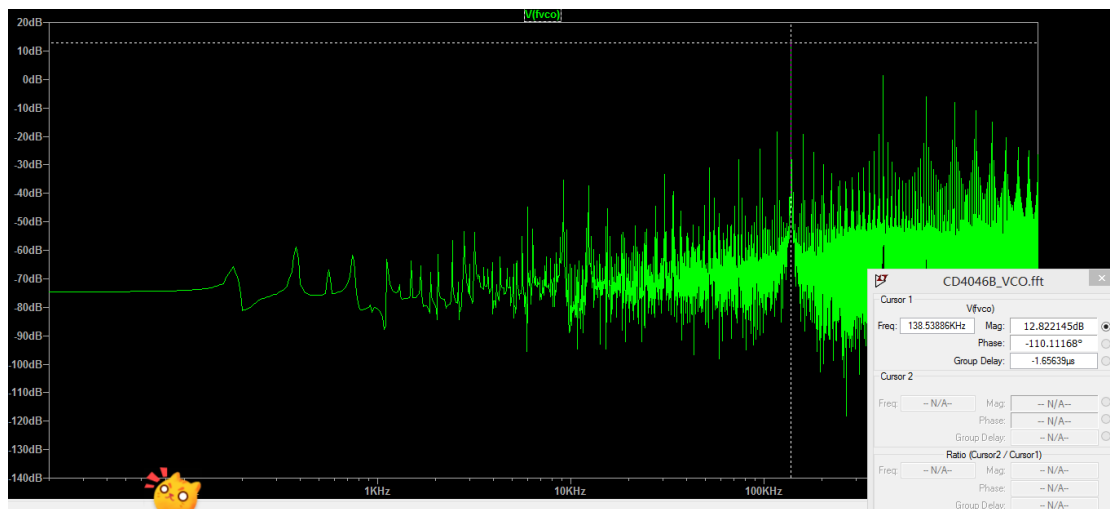
F=99.52kHz,G=11.46db.

V=7:



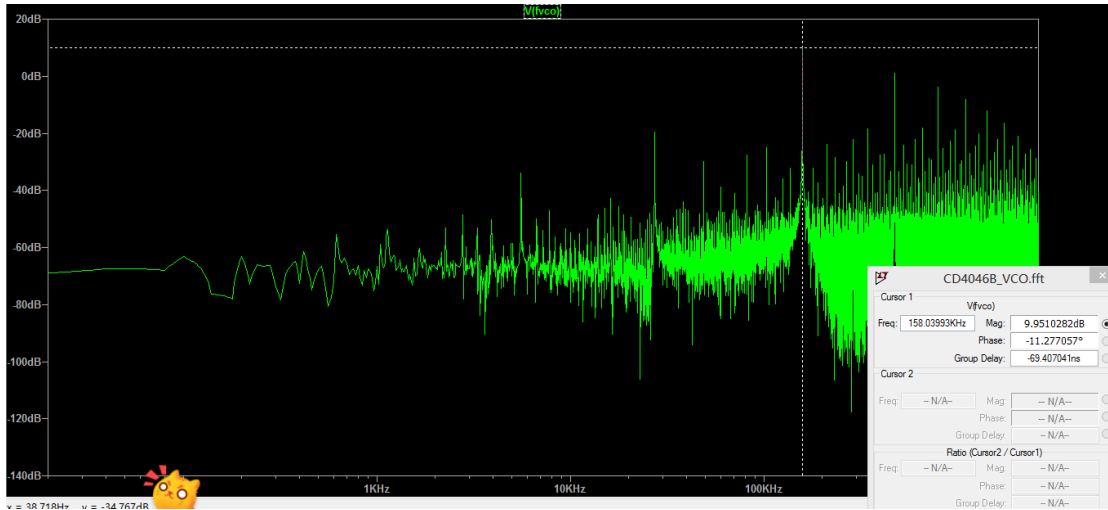
F=119.02kHz,G=11.99db.

V=8:



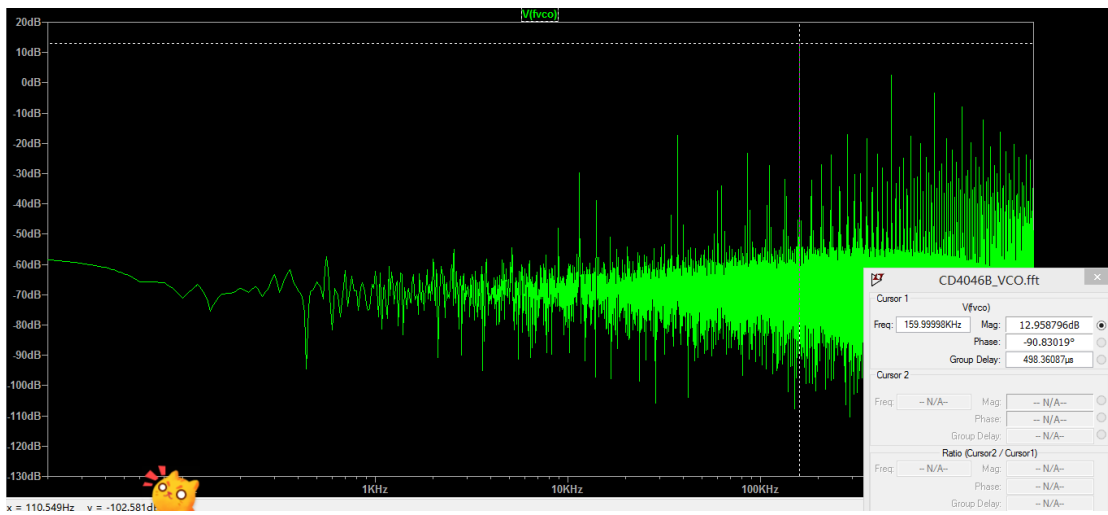
F=138.54kHz,G=12.82db.

V=9:

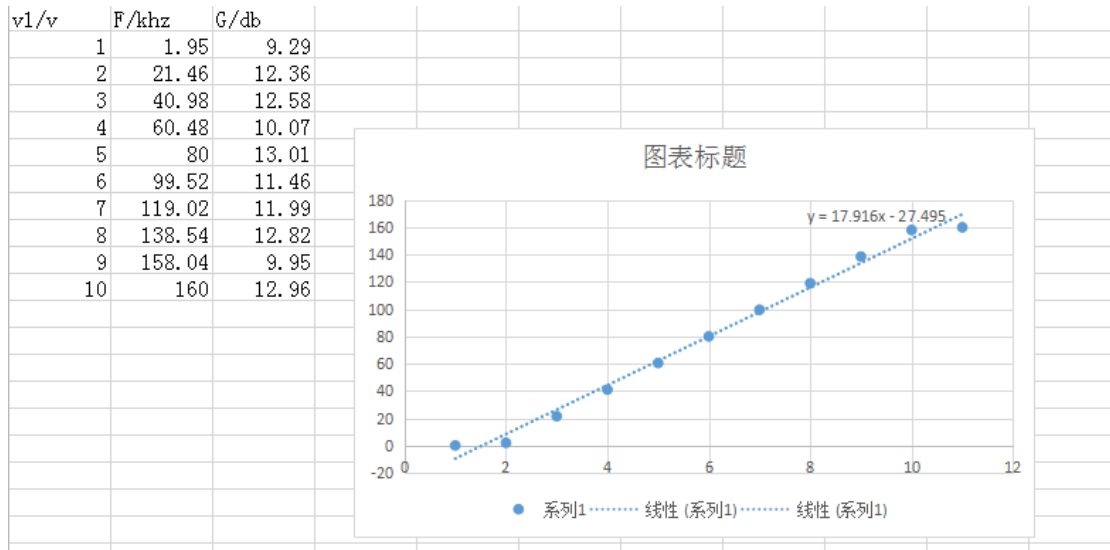


F=158.04kHz,G=9.95db.

V=10:



F=160.00kHz,G=12.96db.

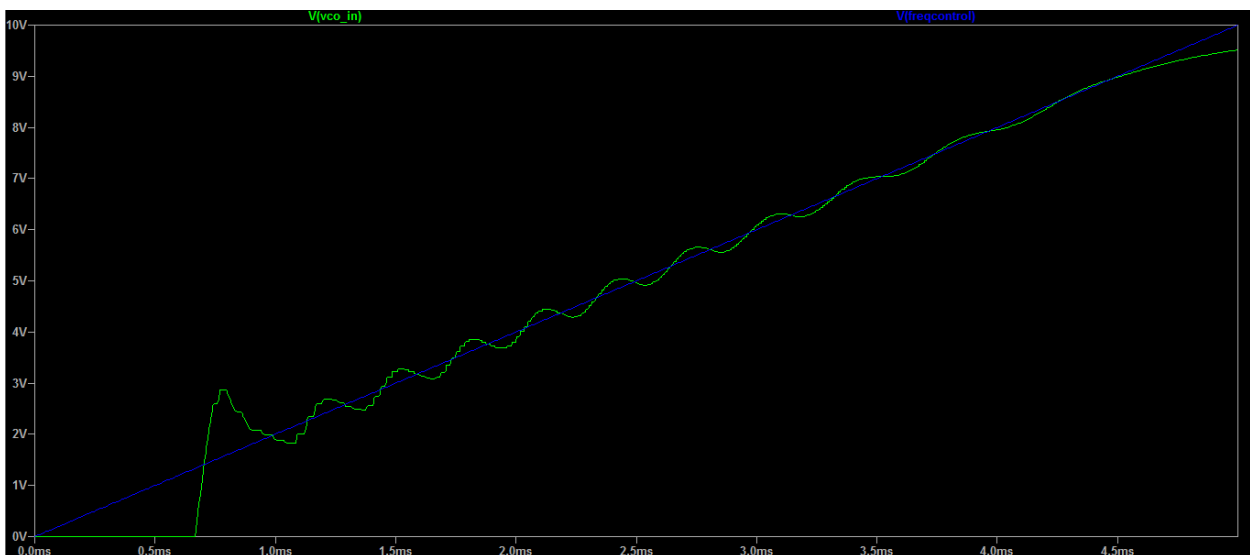


En utilisant Excel, on peut voir que la relation entre F et v1 est presque lineaire(sauf entre [0,1] et [9,10]). Fmax=160, qui est le meme que le model  $0.16 \cdot 10^6$ .

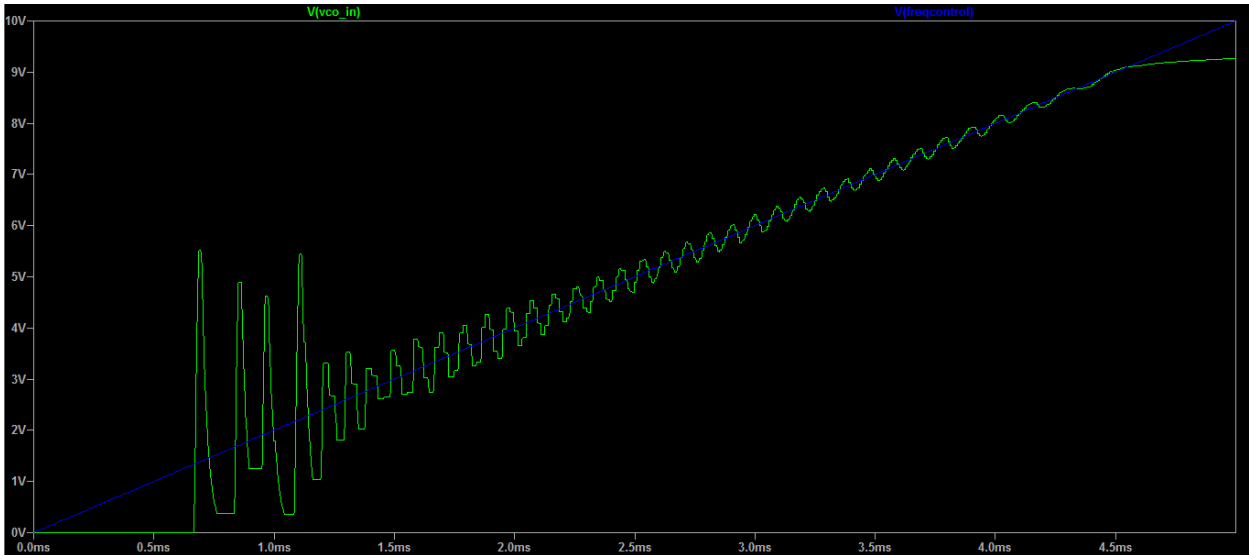
3.

(1)Pc2

C2=100nF:

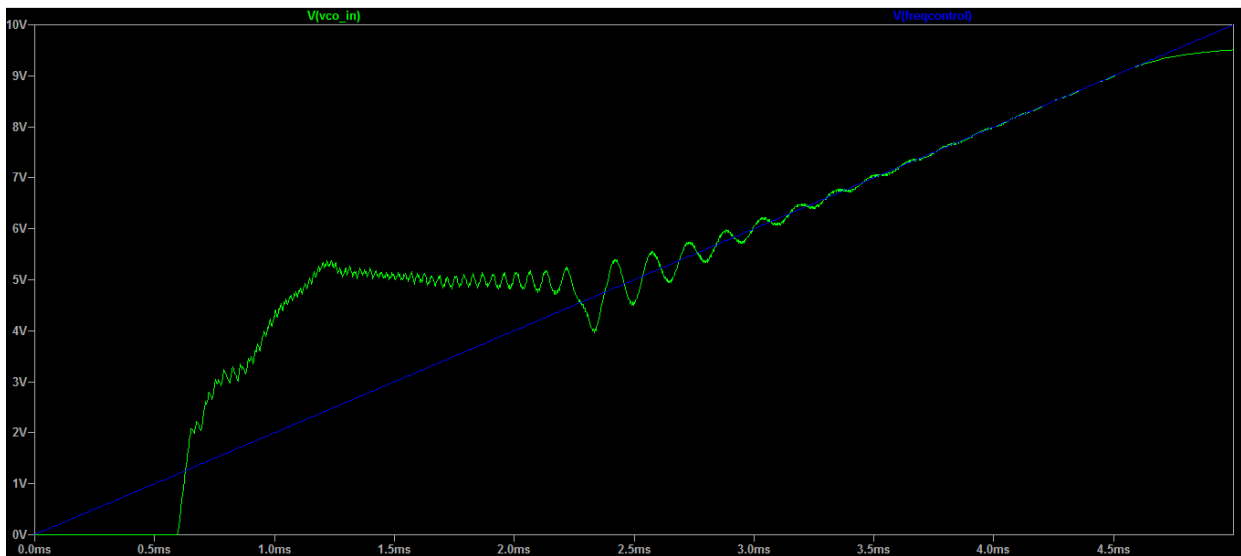


C2=10F:



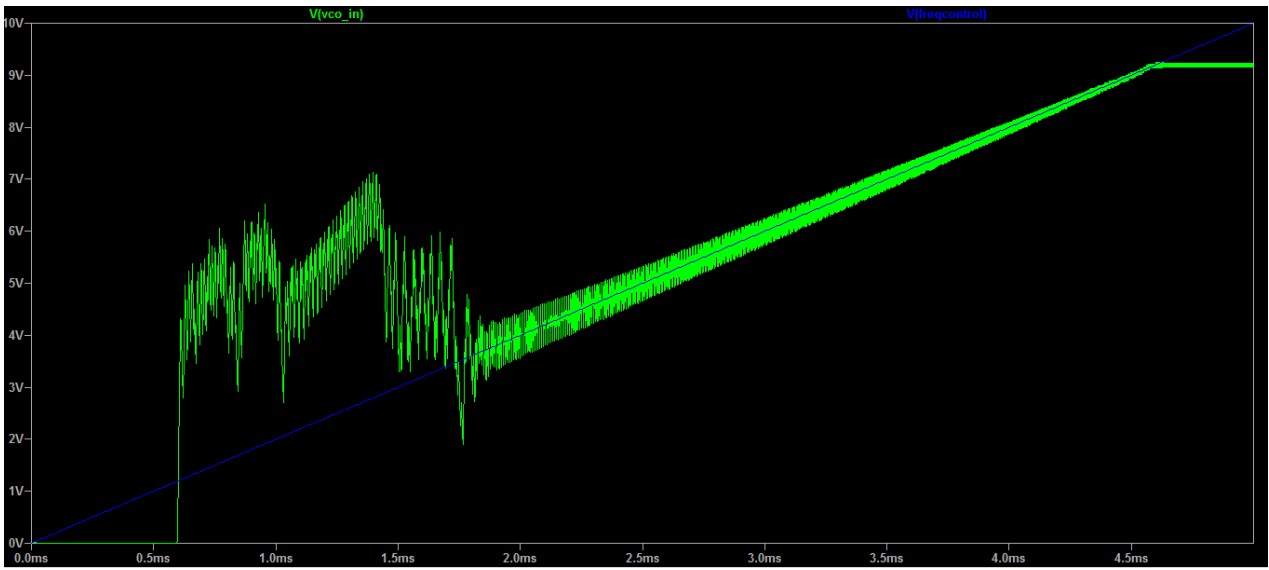
(2)Pc1

C2=100nF:





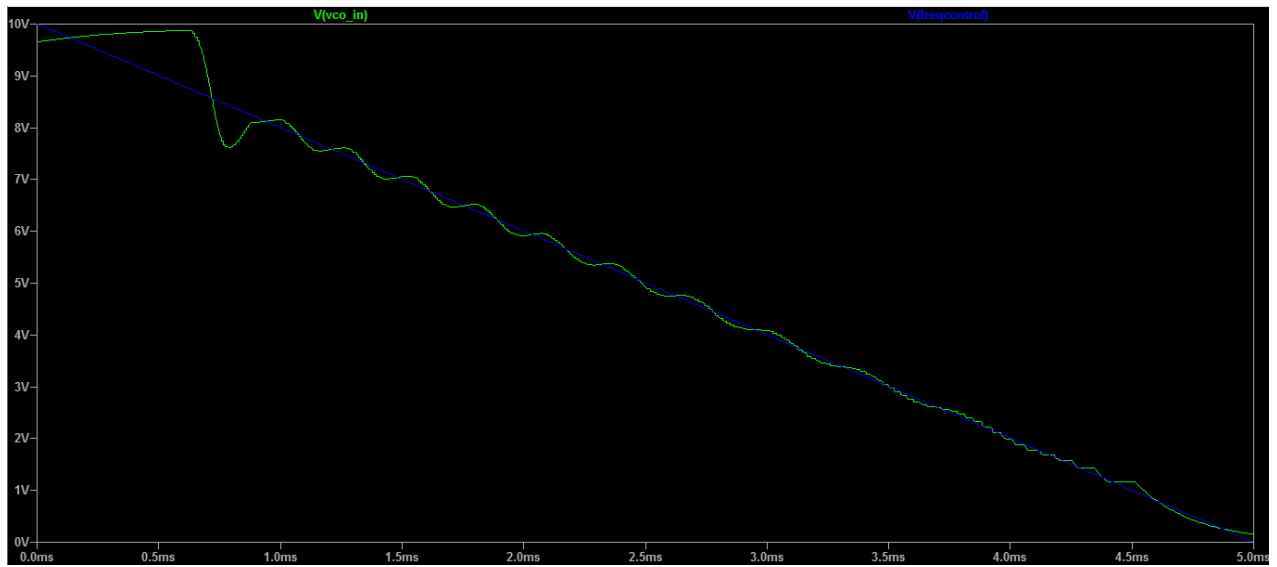
C2=10nF:



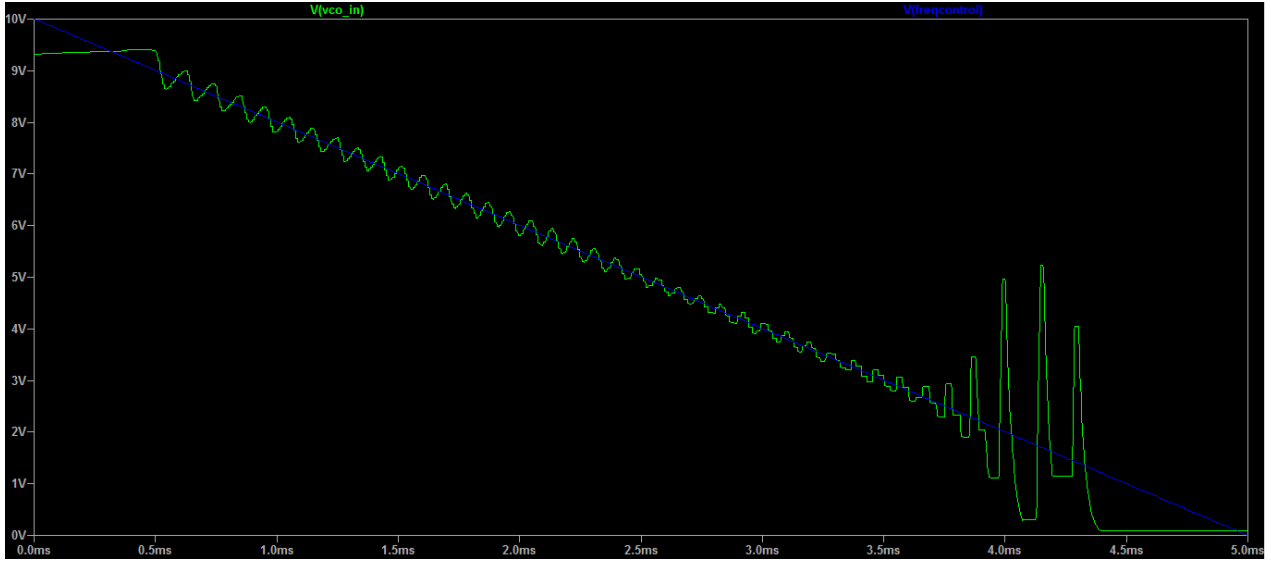
4.

(1)Pc2

C2=100nF:

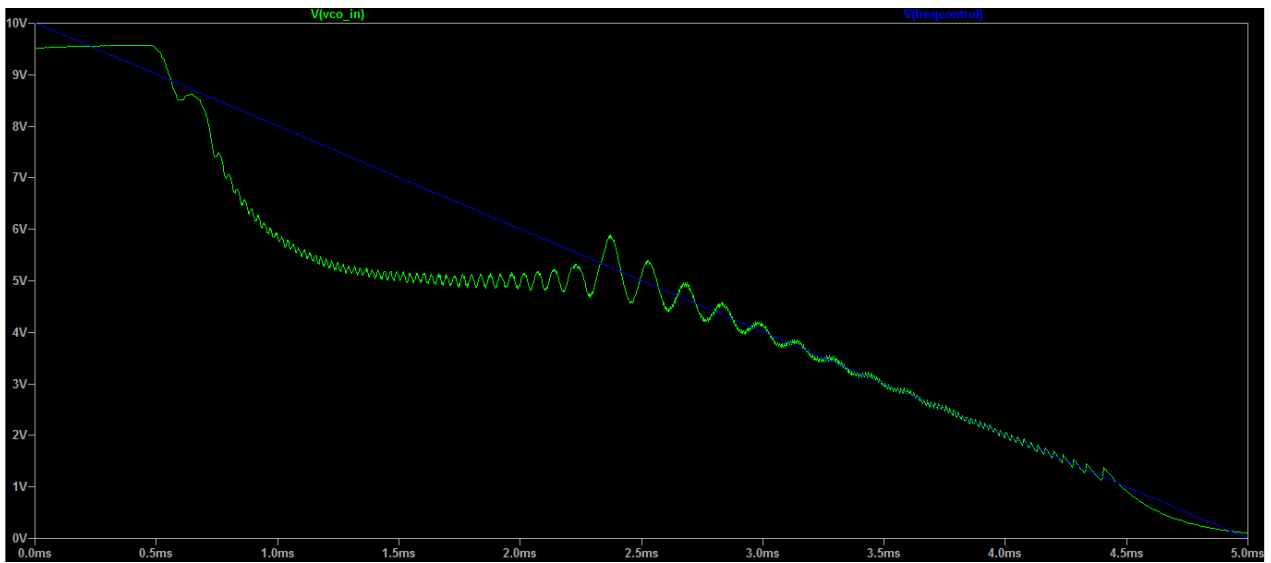


C2=10nF:

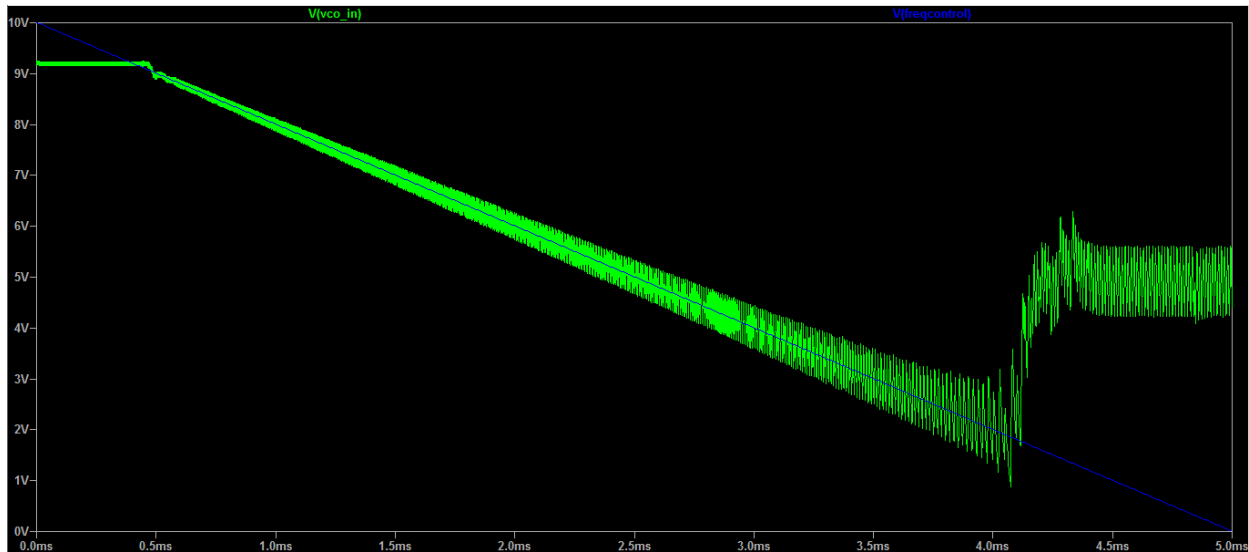


(2)Pc1

C2=100nF:



c2=10nF:



5.

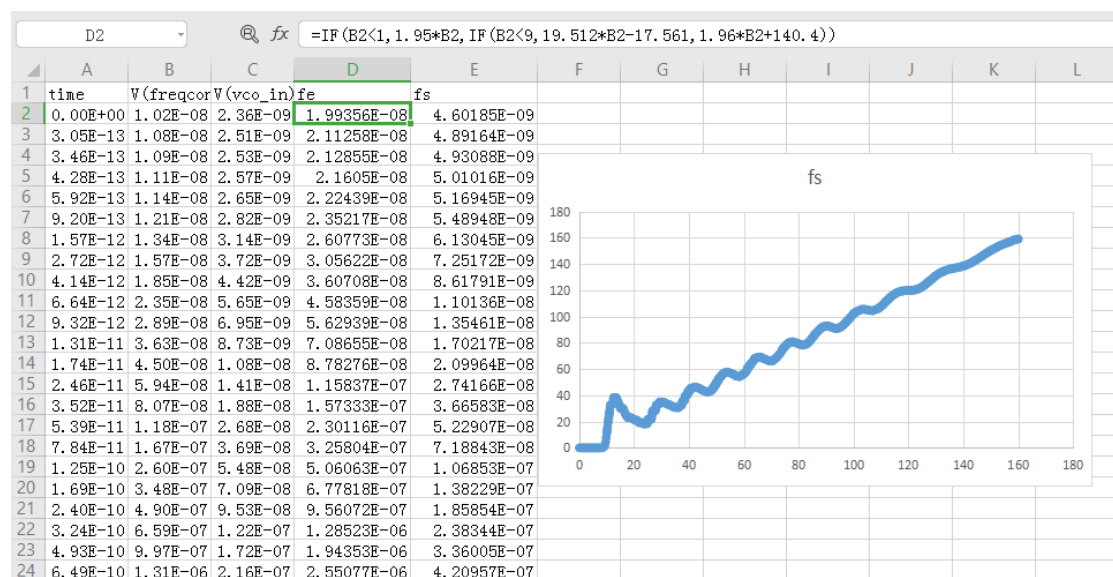
Selon la question 2, on a la relation entre f et v:

[0,1]:  $f=1.95v$

[1,9]:  $f=19.512v-17.561$

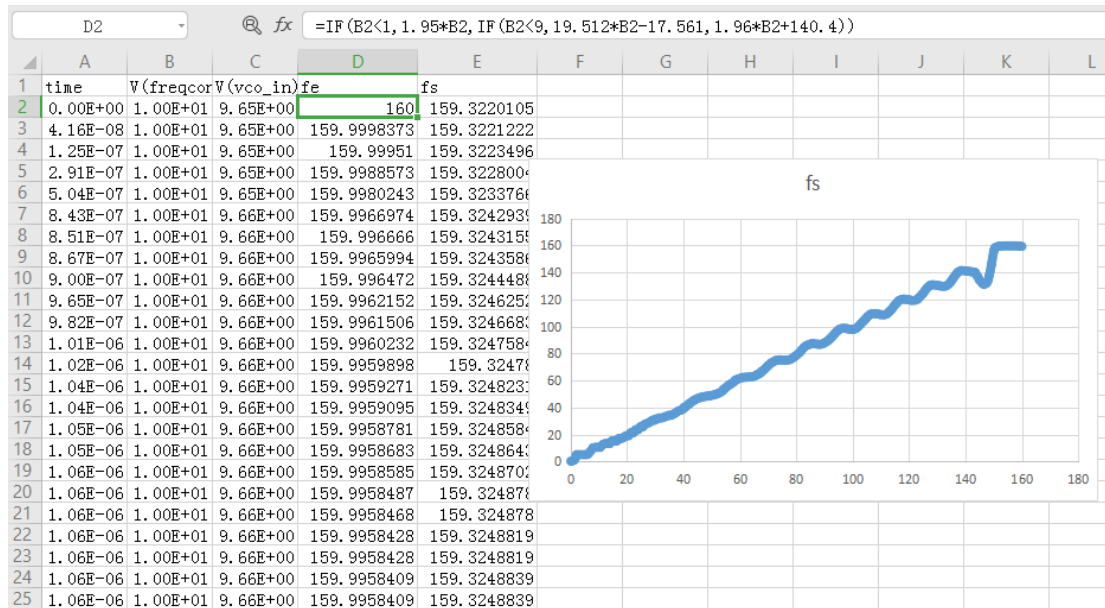
[9,10]:  $f=1.96v+140.4$

(1) Croissant ,c2=100nF,pc2



f1=9.6145khz;f2=159.63khz

(2) Decroissant ,c2=100nF,pc2



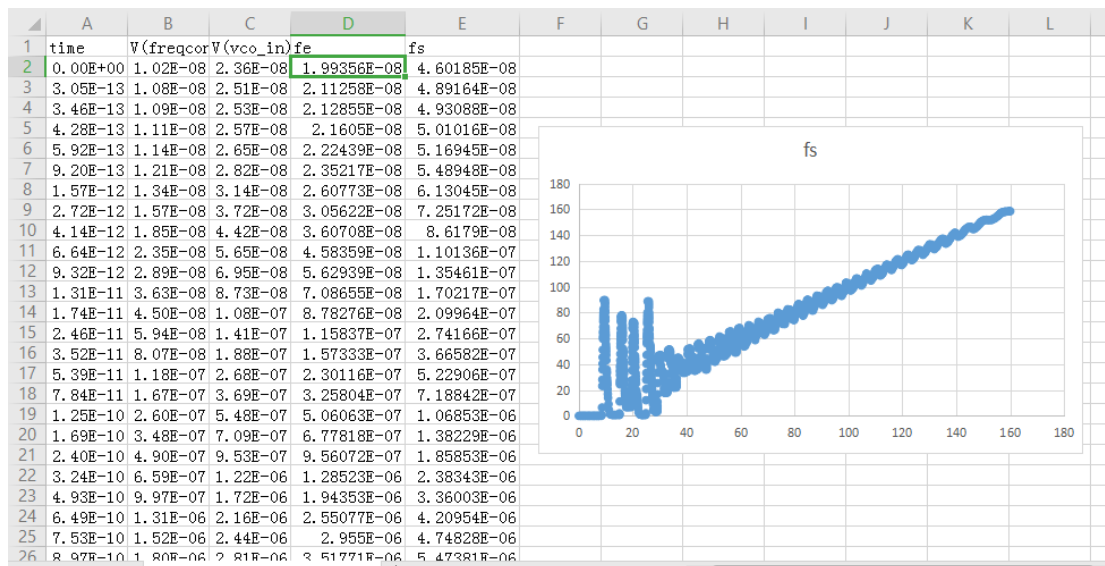
f1=0khz;f2=149.96khz

donc pour pc2 c2=100nF

La plage de capture: 9.61-149.96khz

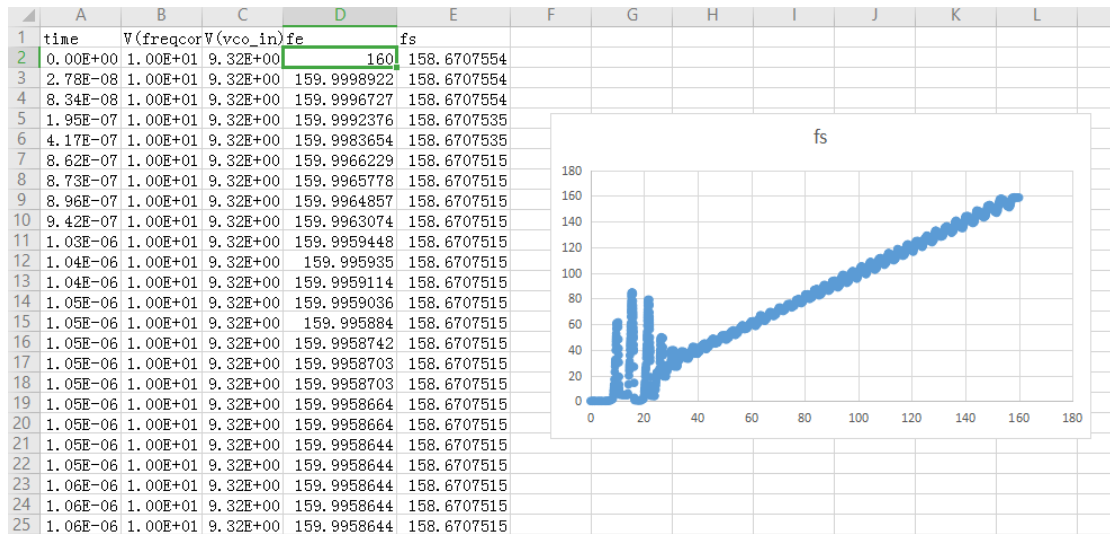
La plage de verrouillage: 0-159.63khz

(3) pc2,C2=10,croissant



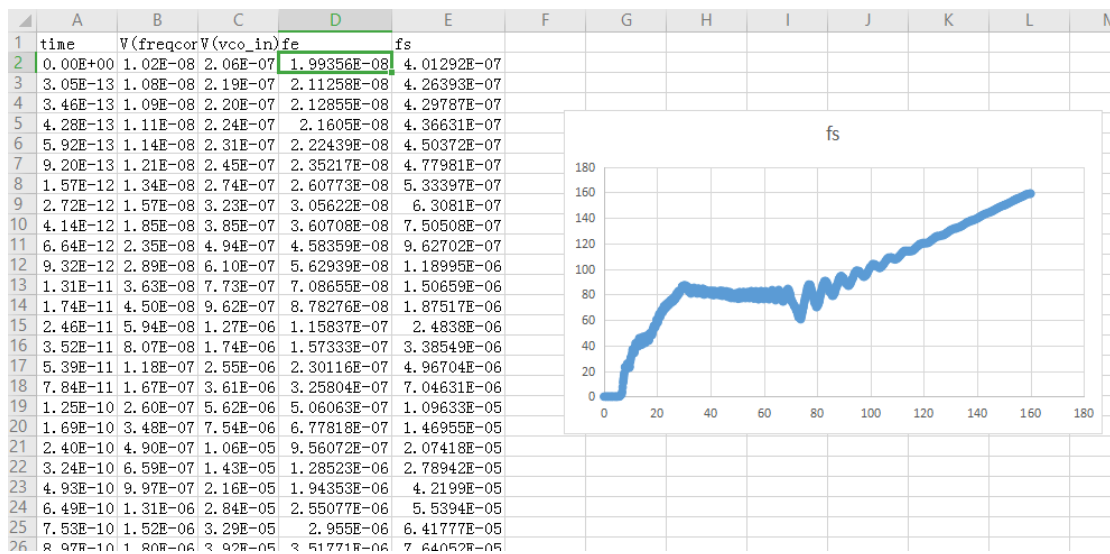
f1=13.90khz;f2=159.63khz.

(4) pc2,C2=10,decroissant



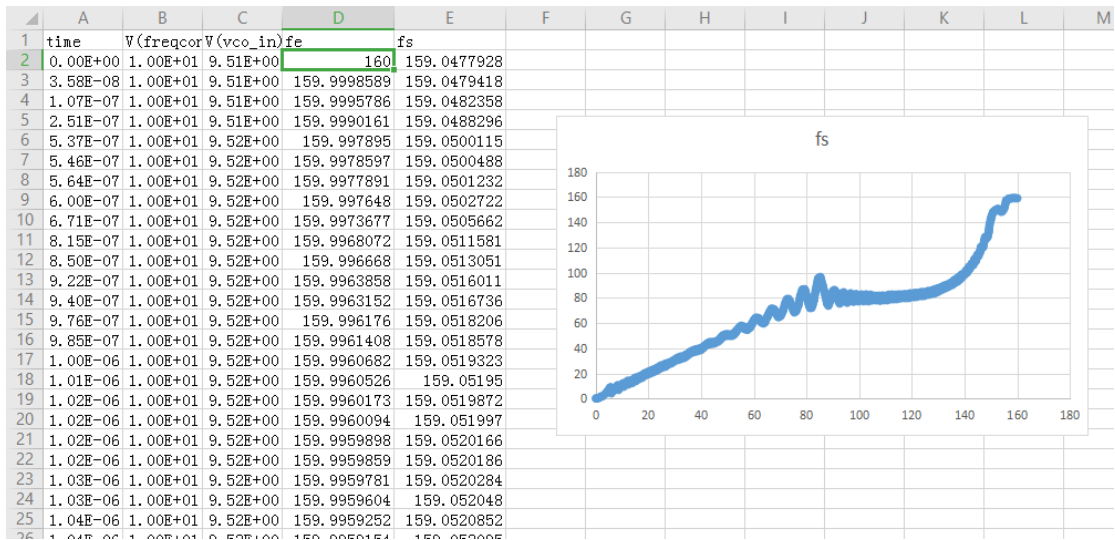
f1=4.96khz;f2=154.16khz

(5) pc1,C2=100nF,croissant



f1=6.81khz,f2=159.63khz.

(6) pc1,C2=100nF,decroissant

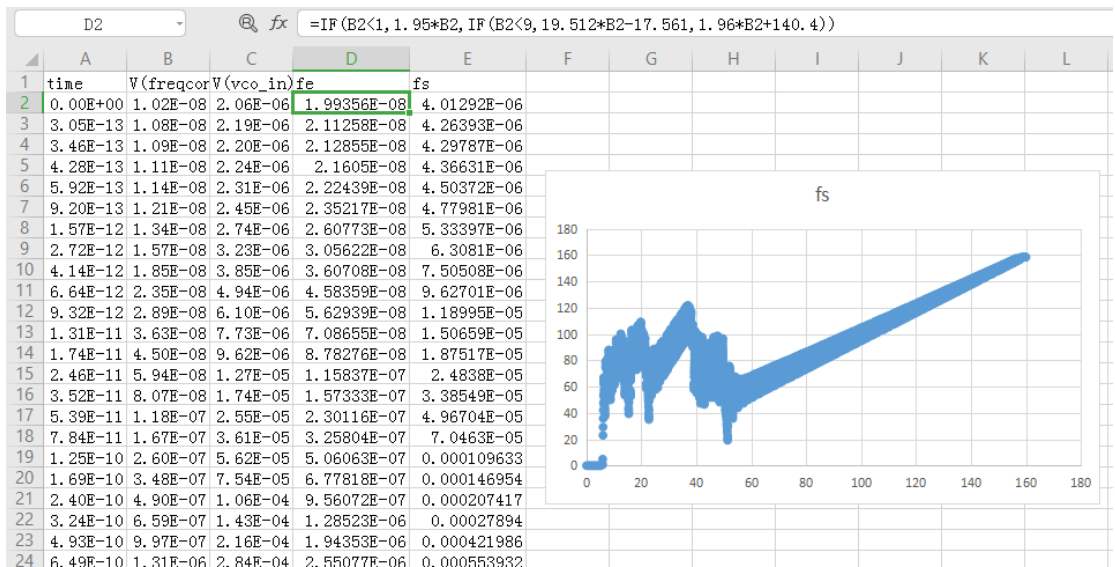


f1=0khz,f2=155.84khz.

La plage de capture:6.81-155.84khz

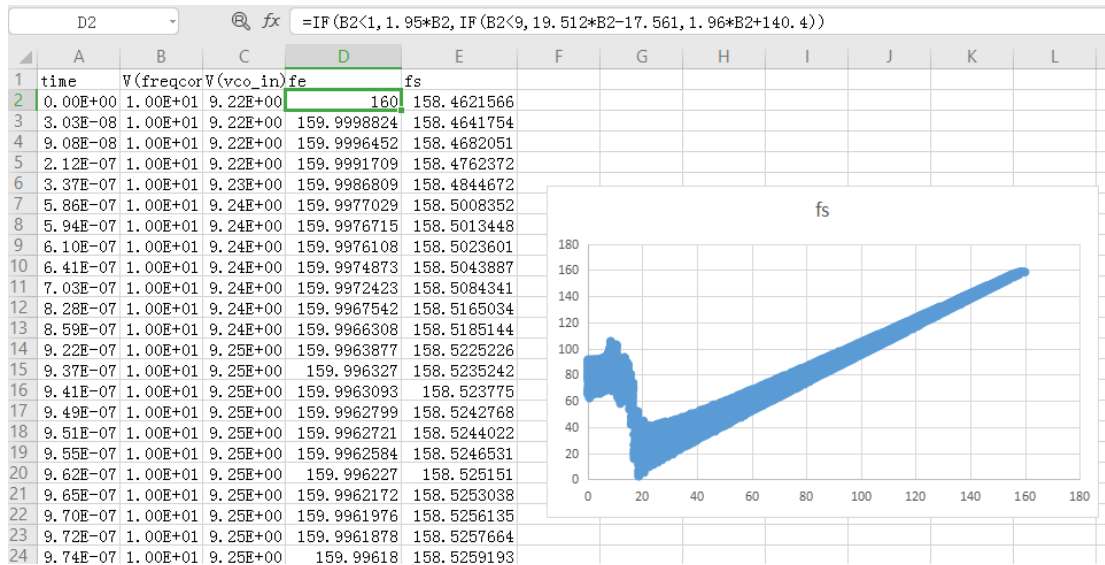
la plage de verrouillage: 0-159.63khz.

(7)pc1,C2=10nF,croissant



f1=5.83khz,f2=159.63khz.

(8)pc1,C2=10nF,decroissant



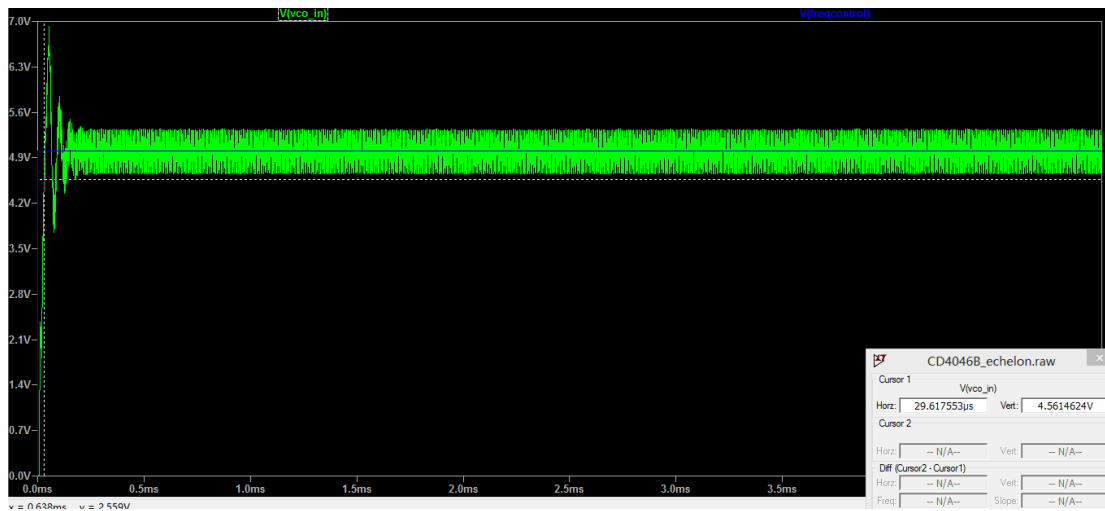
f1=0khz,f2=155.00khz.

Donc la plage de capture: 5.83-155.00khz

plage de verrouillage:0-159.63khz.

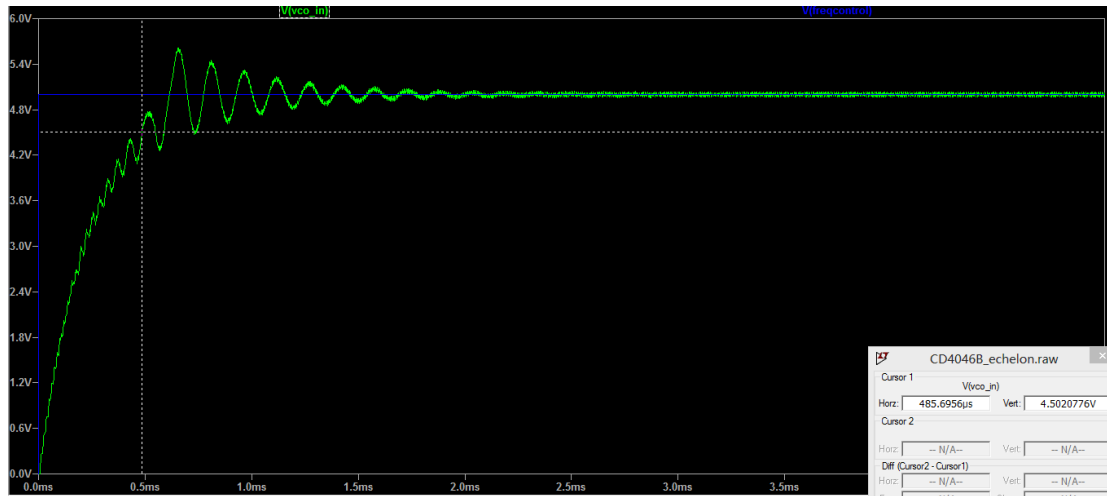
Q3

(1) pc1,C2=10nF



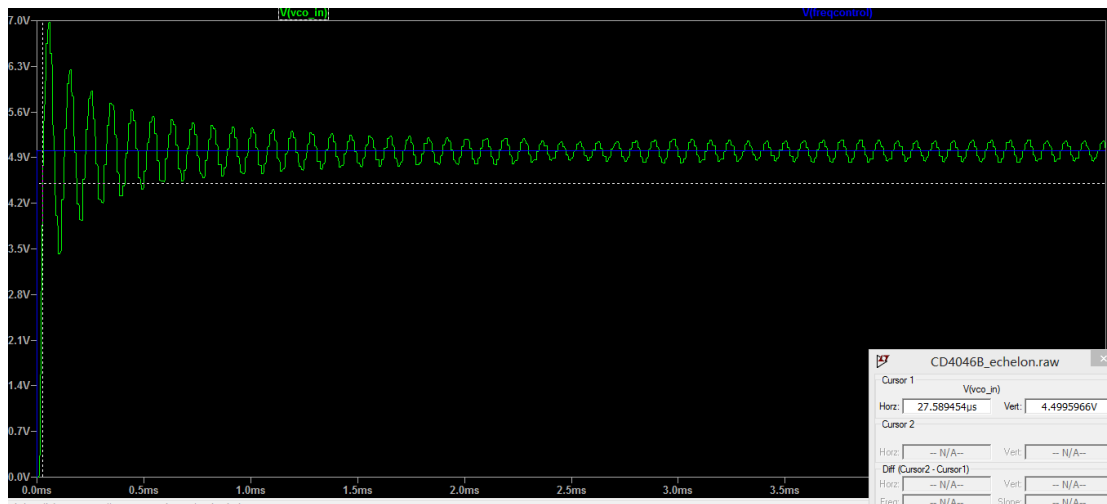
t=29.62us.

(2)pc1,C2=100nF



$t=485.70\mu\text{s}$

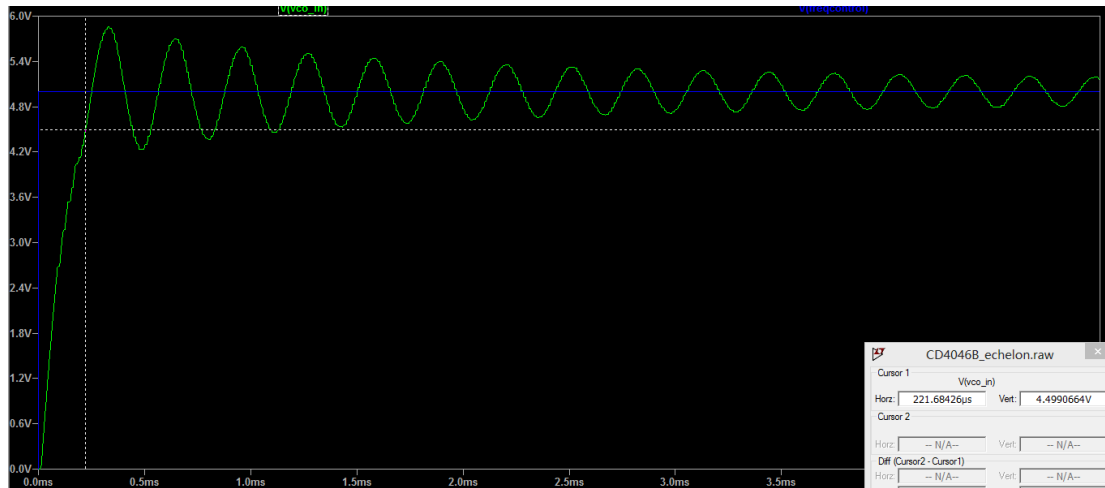
(3)pc2,C2=10nF



$t=27.59\mu\text{s}$ .

(4)pc2,C2=100nF





$t=221.68\mu\text{s}$ .

On sait que  $t=RC$

Quand  $C2=100\text{nF}$ ,  $R3=1.8\text{k}\Omega$ :

$t=180\mu\text{s}$ .

En pratique, pour pc1,  $t=485.70\mu\text{s}$ ; pour pc2,  $t=221.68$ .

Quand  $C2=10\text{nF}$ ,  $R3=1.8\text{k}\Omega$ :

$t=18\mu\text{s}$ .

En pratique, pour pc1,  $t=29.62\mu\text{s}$ ; pour pc2,  $t=27.59$ .