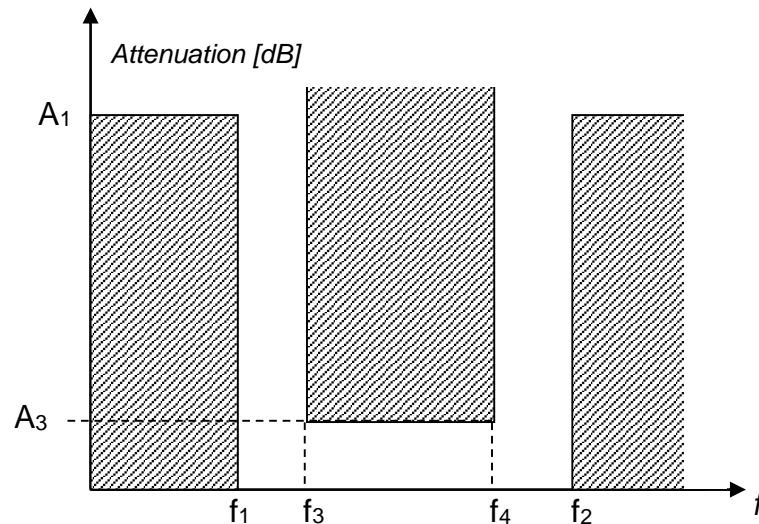


# HF & VHF Circuits and Techniques I

## Serie 7 on Chapter 4: Determination of the order N and of the parameter $\varepsilon$ of a Chebyshev filter

The specifications of the band-pass filter with respect to the attenuation are given below :



Stop-bands:  $A_1 = 30$  dB,  $f_1 = 440$  kHz,  $f_2 = 475$  kHz

Pass-band :  $A_3 = 1$  dB,  $f_3 = 450$  kHz,  $f_4 = 460$  kHz

We have at our disposal the library of low-pass Chebyshev filters such that the cut-off frequency (the end of the pass-band) is equal to:

$$\frac{1}{2\pi} [\text{Hz}]$$

a)

Modify the specifications of the band-pass filter such that the transformation:  
low-pass filter  $\leftrightarrow$  band-pass filter  
can be applied.

b)

Draw the specifications of the low-pass filter linked to the ones of the band-pass filter determined in question a) such that its cut-off frequency (the end of the pass-band) is equal to:  
 $\frac{1}{2\pi} [\text{Hz}]$

c)

Determine the order N and the parameter  $\varepsilon$  of the low-pass Chebyshev filter determined in question b).

d)

Draw the two possible topologies of the low pass-filter.

