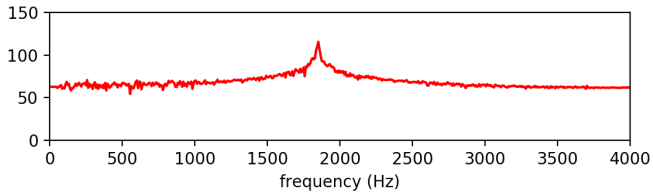
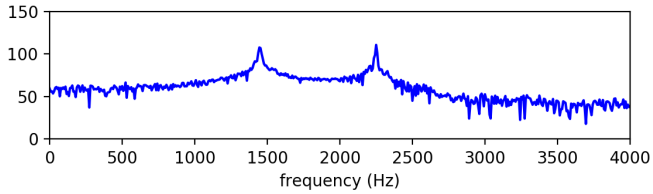
Since this program is an amplitude modulation,
ω = 2*pi*f0/RATE
θ = θ + ω
output_block[n] = int(input_tuple[n] * cos(θ))
cosθ = ½(ejθ +e-jθ)
So H(ejw) = ½ H(ej(w-θ))+ ½H(ej(w+θ)), it is the sum of two signals which have shift compare to the origin. The shift distance is equal to f0.

The figures show clear change when input signal is whistle.

- When f0 = 400





- When f0 = 200