1: Single Channel AM Communication System

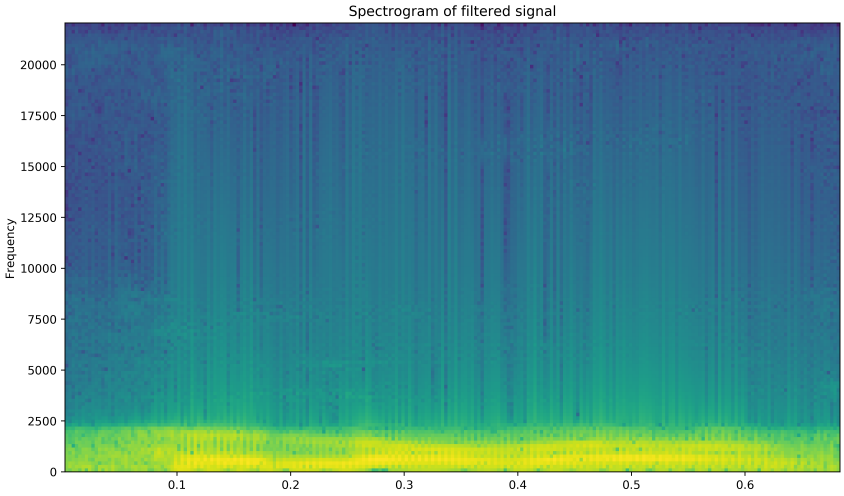

Figure 1: Spectrogram of filtered signal

The display of the spectrogram is given at Figure 1. I can estimate the bandwidth of the speech signal $[0, 2500Hz]$

It is possible to say, if we add a phase $(\pi/2)$ to demodulator without changing carrier frequency, the applitude of demodulated signal reduces. (check figure 2)

If we add 10 Hz to the carrier frequency with zero phase, the amplitude does not change at all. (check figure 3)

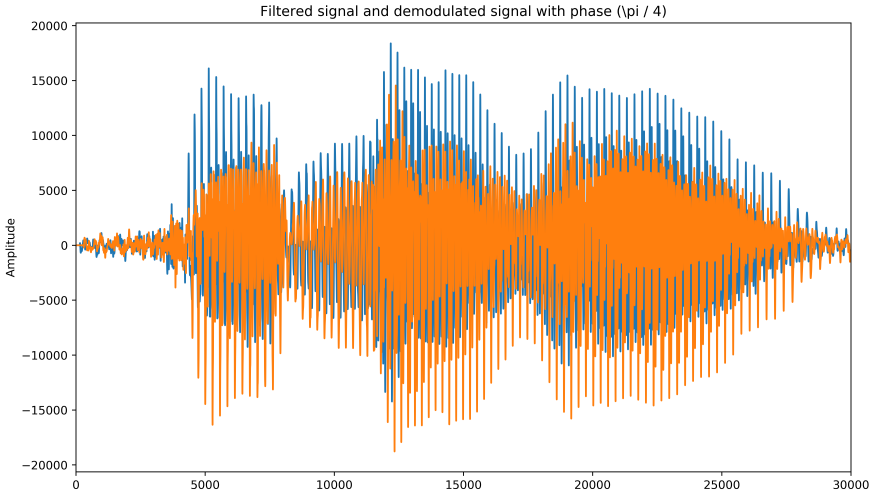

Figure 2: Filtered signal and demodulated signal with phase, $\pi/2$

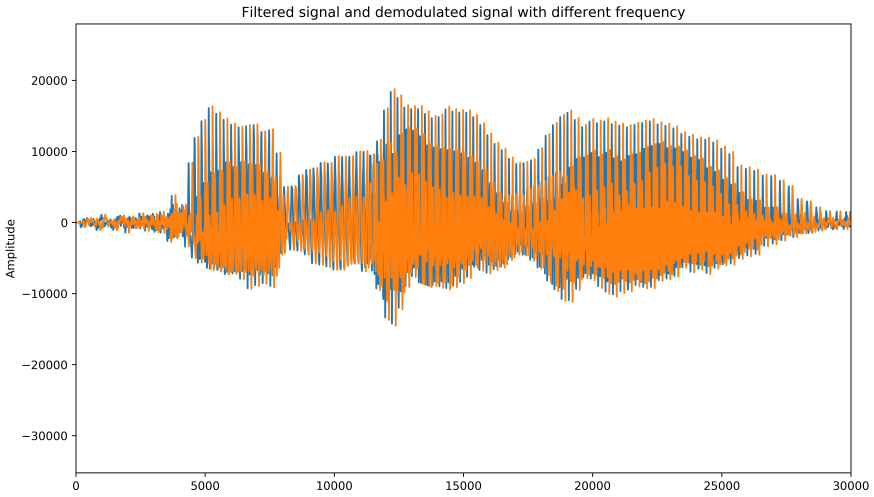

Figure 3: Filtered signal and demodulated signal with different frequency, +10 Hz