EE352 – Communication Systems I Laboratory

Lab 3 Report

Conventional Amplitude Modulation

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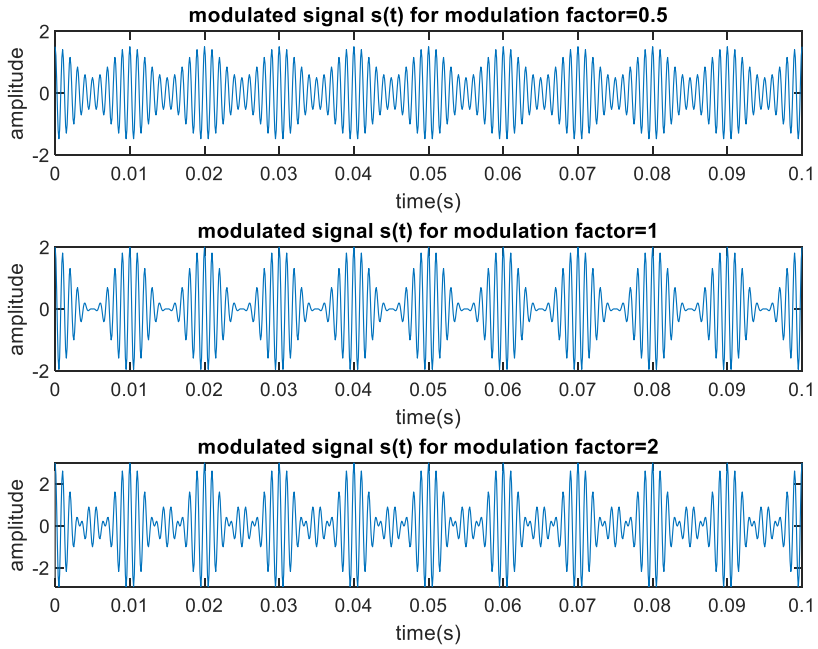
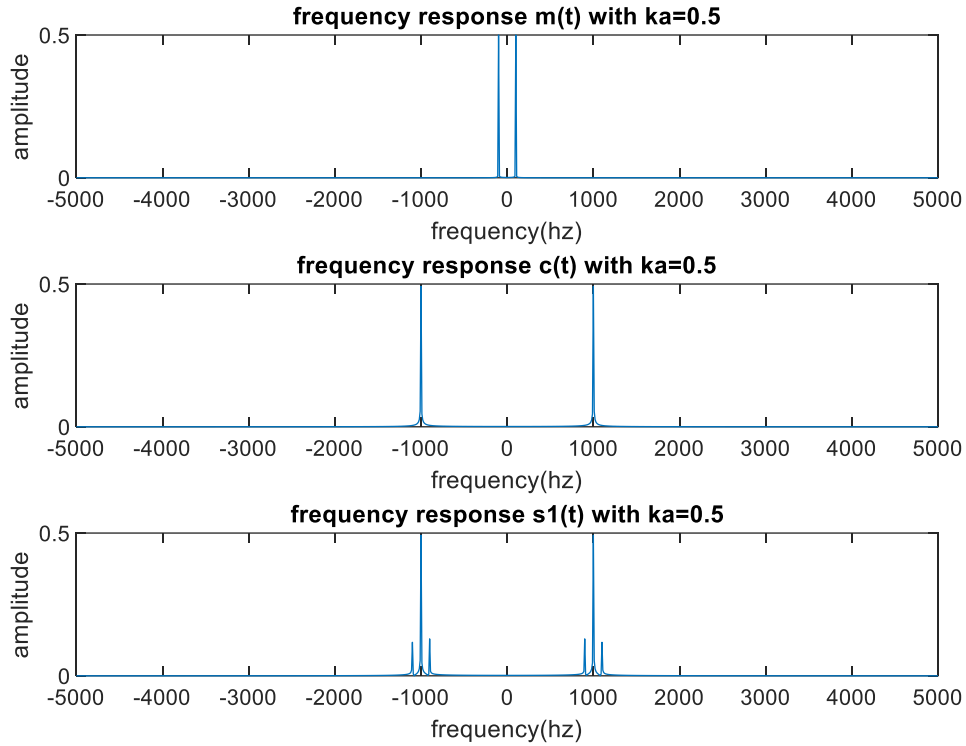
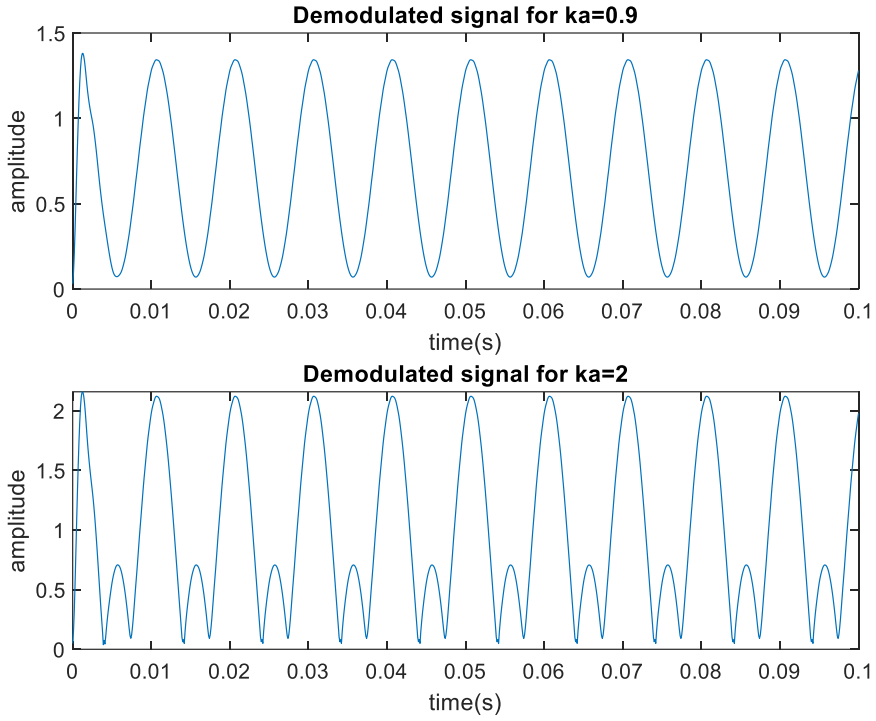


➔ In this figure, we can see our modulated signals for different modulation factor(0.5,1 and 2) with using formula of modulated signal= ((modulation factor*messsage signal)+1)*c(t). In the bottom of figure, we can see overmodulated signal because the result of multiplying the modulation factor and the message signal is greater than 1. Modulation factor is ka*Am and our Am value is 1. Also we can say if ka*m(t)>1 we get overmodulated (envolope distortion), as we can see in the graph.



➔ In this figure, we can see carrier signal, message signal and modulated signal for modulation factor=0.5 in frequency domain. In the top of the figure, we can see frequency response of message signal, we can see 0.5 amplitude because of fourier transform and we can see this amplitude at -+100 Hertz because our given fm is equal to 100Hz. In the middle of the figure, we can see frequency resnpose of carrier signal, we see 0.5 amplitude because of fourier transform and we see this amplitude at -+1000 Hertz because our given fc is 1000 Hertz. In the bottom of figure we can see frequency response of modulated signal for modulation factor=0.5. Also we see these amplitude values of because of fourier transform the result of modulated signal formula and we can see these amplitudes at these frequency values because of modulation process.



➔ In this figure, we can see demodulated signals for different modulation factors(0.9 and 2). For modulation factor equals to 0.9 we can see closer result according to our message signal. For modulation factor equals to 2 we can see distortion. The main difference between these two graphs is that the modulation factor is greater than 1.I choose cutoff frequency 700 Hertz which passes 4 times of message signal frequency value because of multiplication and modulation process and to get all desired values in matlab. Also, I choose the filter order which value is the minimum value I do not see any distortion because we do not want to see distortion and we should choose low order due to easy feasibility.