

# Communication Theory Report 3

Ashuthosh Bharadwaj 2019112003

March 4, 2021

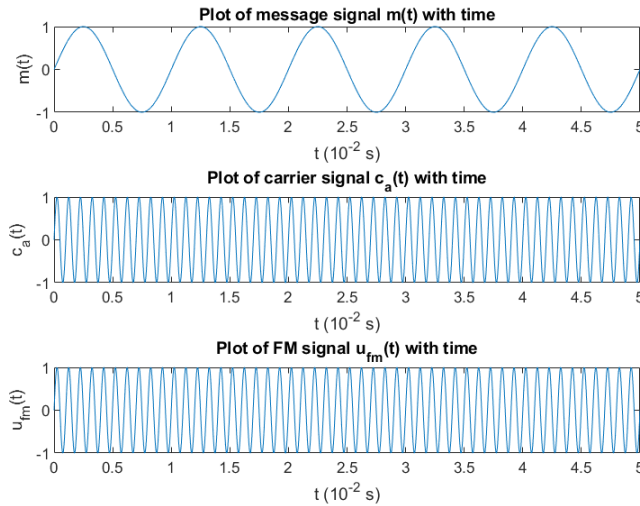
## 3 MATLAB simulation

### 3.1 (a)

We are given that a sinusoid message signal is frequency modulated with a carrier signal as such:

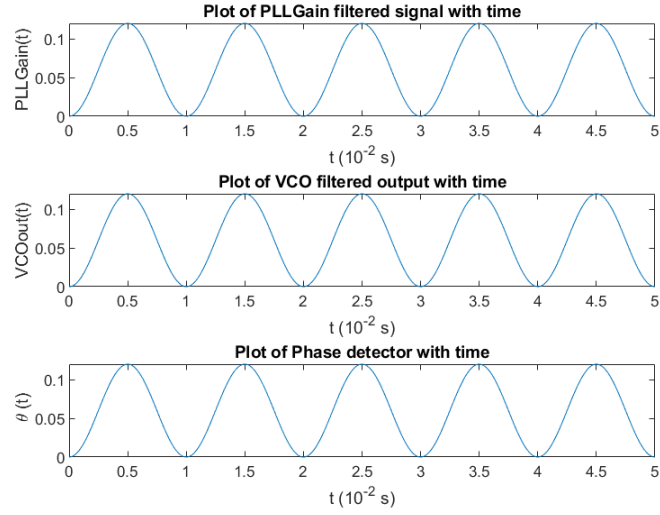
1. Frequency of Message = 100Hz
2. Frequency of Carrier = 1kHz
3.  $k_f = 0.06$

We assume that the amplitudes are normalised and hence the message, carrier and the FM signal all have Amplitude = 1. Hence, the message, carrier and Frequency Modulated signals were created. The plot given below represents the signals plotted against time.



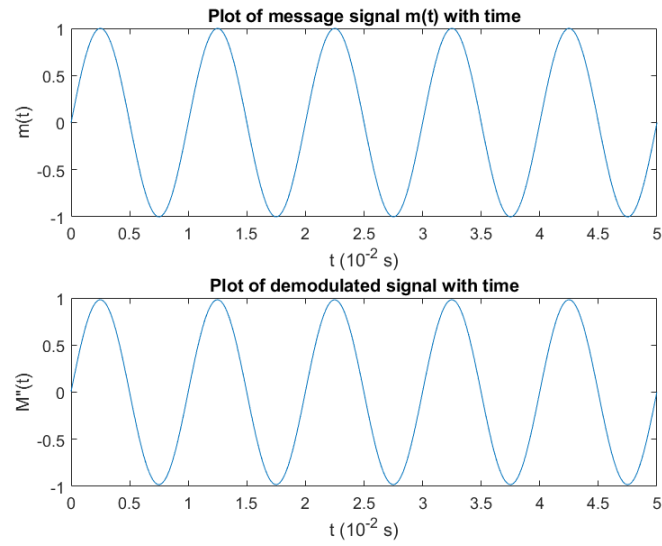
### 3.2 (b)

The given signal's phase was detected and passed into the PHase locked loop and The plots for PLLGain filter, VCO output and the phase detector are plotted here.



### 3.3 (c)

Finally the message signal and the demodulated signals are plotted here.



From the figure we can see that the demodulated signal is perfectly correlating with the message signal, after scaling by a factor.