
```

%EXPERIMENT-5
%-----
%AIM- STUDY OF FREQUENCY MODULATION AND DEMODULATION
%B.Tech, ECE, SEM-5, G-2, Group-6
%Name: SHRETI           Roll No: 1704076
%Name: SHUVANSHU        Roll No: 1704077
%Name: VINEET KUMAR      Roll No: 1704078
%Name: SANTHOSH KUMAR    Roll No: 1704079
%-----

ts = 0.0001;
t = 0:ts:0.1;
a = 15;
fm = 10;
figure(1);
m = cos(2*pi*fm*t).*a;
subplot(2,2,1);
plot(t,m);
title('Fig 1.1 Message Signal');
ylabel('Amplitude');
xlabel('time');

fc = 100;
c = cos(2*pi*fc*t);
subplot(2,2,2);
plot(t,c);
title('Fig 1.2 Carrier Signal');
ylabel('Amplitude');
xlabel('time');

m1= sin(2*pi*fm*t)*(a/(2*pi*fm));%integral(m,0,t)
kf = 5;
xc = cos(2*pi*fc*t + 2*pi*kf*(m1));
subplot(2,2,3);
plot(t,xc);
title('Fig 1.3 Frequency Modulated Signal');
ylabel('Amplitude');
xlabel('time');

fs = 1000;
N = 2048;
f = (-N/20:0.1:(N/2 -1)*0.1)*(1/(N*fs));
XC = fftshift(fft(xc,N));
figure(2);
plot(f,abs(XC));
%grid on;
title('Fig 2.1 Frequency content of FM signal');
ylabel('|XC(f)|');
xlabel('f-->(scaled)');

%DEMODULATION
fd = kf*a;%maximum frequency deviation
x1 = fmdemod(xc,fc,50*fc,fd);

```

```

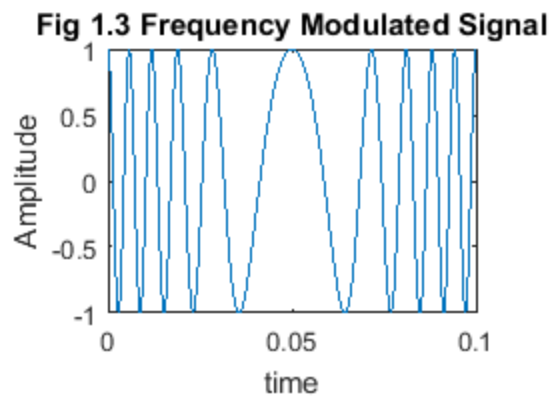
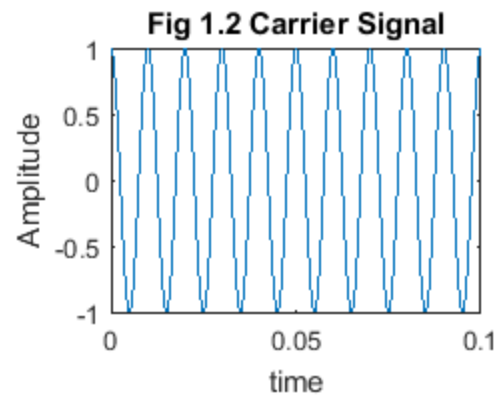
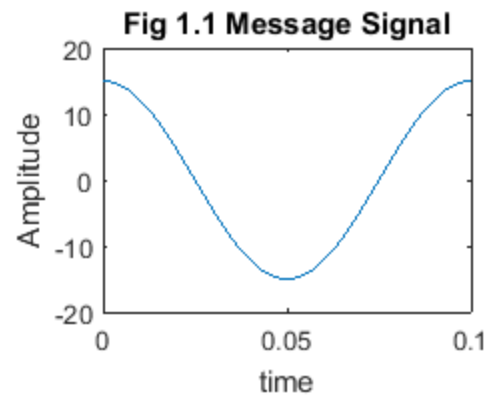
figure(4);

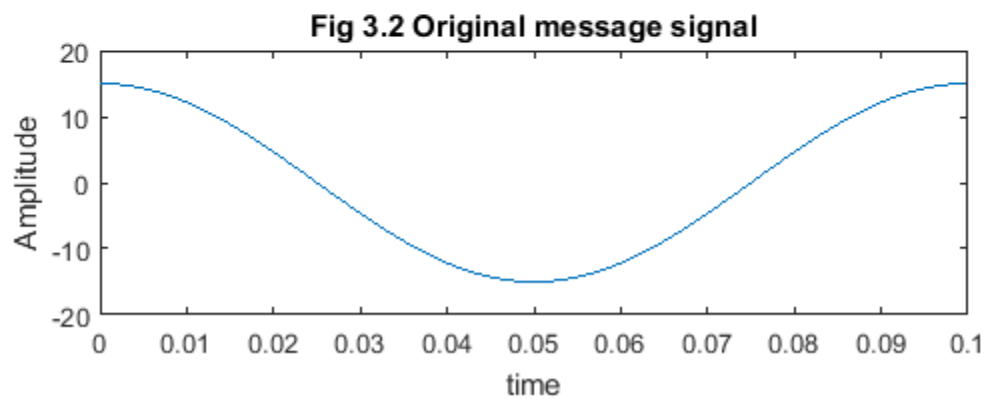
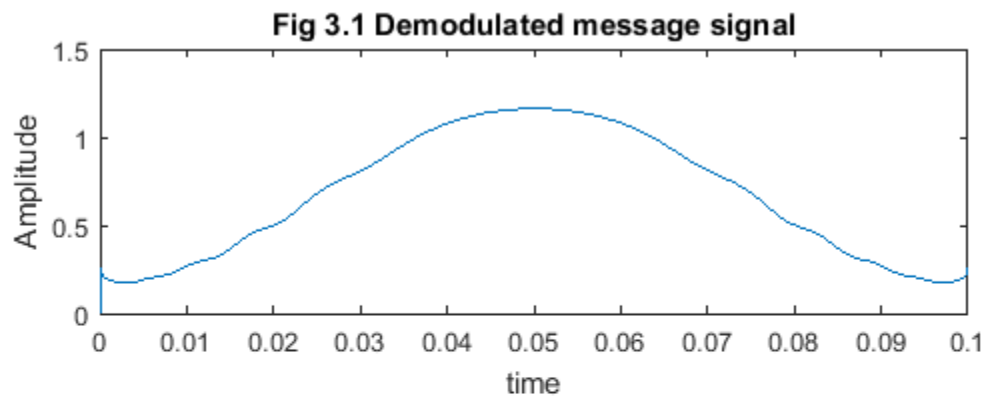
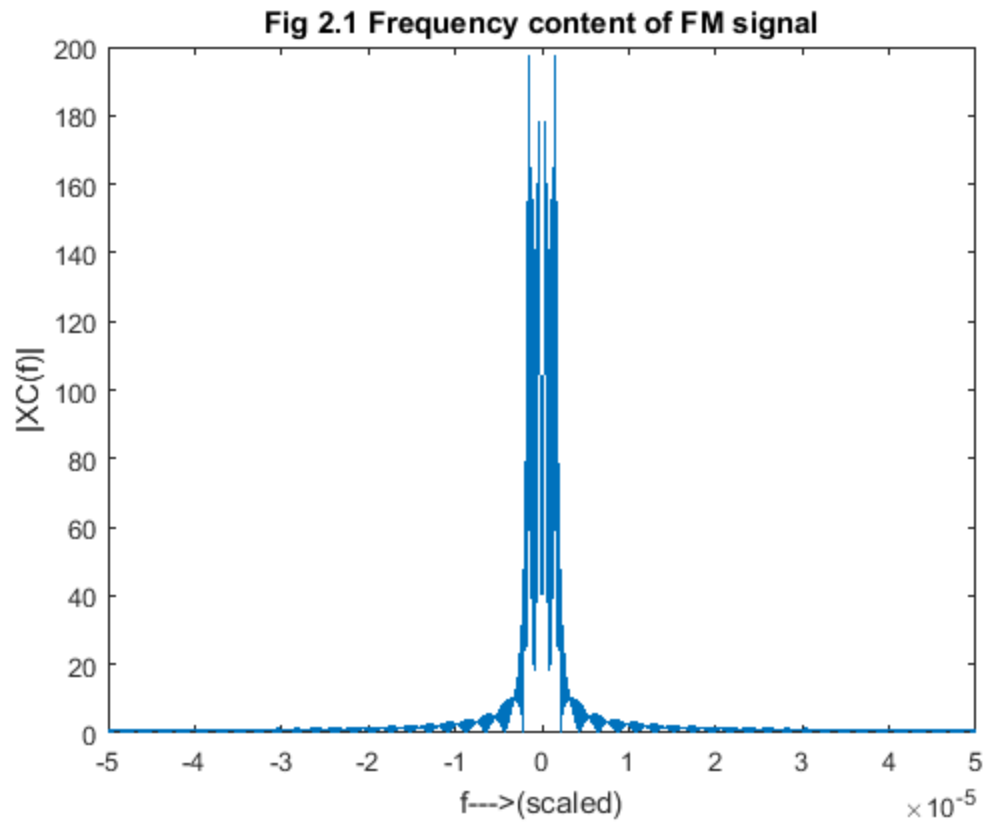
subplot(2,1,1);
plot(t,abs(x1));
title('Fig 3.1 Demodulated message signal');
ylabel('Amplitude');
xlabel('time');

subplot(2,1,2);

plot(t,m);
ylabel('Amplitude');
xlabel('time');
title('Fig 3.2 Original message signal');

```





Published with MATLAB® R2016a