DELTA MODULATION AND DEMODULATION

% delta modulation of single tone signal

clear;

step=0.1;%step size

fm= ; %modulating signal frequency

fs= ; % sampling frequency

t=0:1/fs:(2/fm)-(1/fs); %time

x=sin(2\*pi\*fm\*t); %modulating signal

x1(1)=0;

d1(1)=0;

for n=2:length(x),

dm(n)=sign(x(n)-x1(n-1));

x1(n)=x1(n-1)+dm(n)\*step;

end

subplot(2,1,1);

plot(t,dm,t,x,'--');

axis([0 0.1 -1.2 1.2])

title('Delta Modulation');

%delta demodulation

y=0;

for n=2:length(x),

y(n)=y(n-1)+dm(n)\*step;

end

subplot(2,1,2);

plot(t,y);

axis([0 0.1 -1.2 1.2])

title('Delta Demodulation')

FREQUENCY MODULATION AND DEMODULATION

%frequency modulation of a single tone signal

%frequency deviation=5\*fm

%low carrier frequency

fc= ; %carrier frequency

fs= ; %sampling frequency(fs>2\*[fc+bw])

fm= ; %modulating signal frequency

A= ; %amplitude of modulating signal

dev=5\*fm; %frequency deviation

t=0:1/fs:(2/fm)-(1/fs); %time

w=2\*pi\*fm\*t; %angular frequency

v=A\*sin(w); %modulating signal

y=fmmod(v,fc,fs,dev); %modulate

z=fmdemod(y,fc,fs,dev); %demodulate

subplot(3,1,1);

plot(v);

title('Modulating signal');

subplot(3,1,2);

plot(y);

title('Modulated signal');

subplot(3,1,3);

plot(z);

title('Demodulated signal');

AMPLITUDE MODULATION

Em= ; % modulating amplitude

Ec= ; % carrier amplitude

fm= ; % modulating frequency

fc= ; % carrier frequrncy

t=0:10e-7:0.75\*10e-3;

am=(Ec.\*cos(2\*pi\*fc.\*t))+(0.5\*Em.\*cos(2\*pi\*(fc+fm).\*t))+(0.5\*Em.\*cos(2\*pi\*(fc-fm).\*t));

am1=(0.5\*Em.\*cos(2\*pi\*(fc+fm).\*t))+(0.5\*Em.\*cos(2\*pi\*(fc-fm).\*t));

subplot(2,1,1)

plot(t,am);

title('DSB-FC')

xlabel('time')

ylabel('Amlitude')

subplot(2,1,2)

plot(t,am1);

title('DSB-SC')

xlabel('time')

ylabel('Amlitude')