

Amplitude Shift Keying

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clc;
clear all;
close all;
%GENERATE CARRIER SIGNAL
Tb=1; fc=10;
t=0:.01:1;
c=sqrt(2/Tb)*sin(2*pi*fc*t);
%generate message signal
N=8;
m=rand(1,N)
t1=0;t2=1;
for i=1:N
t=[t1:.01:t2];
if m(i)>0.5
m(i)=1;
m_s=ones(1,length(t))
else
m(i)=0;
m_s=zeros(1,length(t));
end
message(i,:)=m_s;
%product of carrier and message
ask_sig(i,:)=c.*m_s;
t1=t1+(Tb);
t2=t2+(Tb);
%plot the message and ASK signal
subplot(5,1,2);axis([0 N -2
2]);plot(t,message(i,:), 'r');
title('message signal');
xlabel('t--->');ylabel('m(t)');grid on
hold on
subplot(5,1,4);plot(t,ask_sig(i,:));
title('ASK signal');xlabel('t--->');
ylabel('s(t)');grid on
hold on
end
hold off
%Plot the carrier signal and input binary data
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subplot(5,1,3);plot(t,c);
title('carrier signal');
xlabel('t--->');ylabel('c(t)');grid on
subplot(5,1,1);stem(m);
title('binary data bits');
xlabel('n--->');ylabel('b(n)');grid on
% ASK Demodulation
t1=0;t2=Tb
for i=1:N
t=[t1:0.01:t2]
%correlator
x=sum(c.*ask_sig(i,:));
%decision device
if x>0
demod(i)=1;
else
demod(i)=0;
end
t1=t1+(Tb);
t2=t2+(Tb);
end
%plot demodulated binary data bits
subplot(5,1,5);stem(demod);
title('ASK demodulated signal');
xlabel('n--->');ylabel('b(n)');grid on

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