PSD ILLUSTRATION CODING

inputBits=randi([0 1],1,1000); % R2008a syntax =&gt; randsrc(1,10000,[0 1]);

colordef white;

Rb=2e6; % Bit Rate

amplitude=2; % Peak-Peak Amplitude

[time,xiPolar,Fs]=Line\_Encoder(inputBits,Rb,amplitude,'polar');

[pyy,fy]=psd(xiPolar);

figure(1);

plotHandle=plot(fy\*Fs/2,10\*log10((pyy)),'k');

set(plotHandle,'LineWidth',2.5);

hold on;

[time,xiUnipolar,Fs]=Line\_Encoder(inputBits,Rb,amplitude,'unipolar');

[pyy,fy]=psd(xiUnipolar);

plotHandle=plot(fy\*Fs/2,10\*log10((pyy)),'r');

set(plotHandle,'LineWidth',2.5);

hold on;

[time,xiManchester,Fs]=Line\_Encoder(inputBits,Rb,amplitude,'Manchester');

[pyy,fy]=psd(xiManchester);

plotHandle=plot(fy\*Fs/2,10\*log10((pyy)),'g');

set(plotHandle,'LineWidth',2.5);

legend('polar','unipolar','Manchester');

title('PSD of Line Codes');

grid on;

hold off;

figure(2);

subplot(4,1,1);

plot(inputBits);

xlabel('Time (Seconds)');

ylabel('Amplitude (Voltage)');

title('Input bit stream');

maxTime=max(time);

maxAmp=max(inputBits);

minAmp=min(inputBits);

axis([0,1000,minAmp-0.5,maxAmp+0.5]);

subplot(4,1,2);

plot(time,xiPolar);

xlabel('Time (Seconds)');

ylabel('Amplitude (Voltage)');

title('Polar NRZ coded');

maxTime=max(time);

maxAmp=max(xiPolar);

minAmp=min(xiPolar);

axis([0,maxTime,minAmp-0.5,maxAmp+0.5]);

subplot(4,1,3);

plot(time,xiUnipolar);

xlabel('Time (Seconds)');

ylabel('Amplitude (Voltage)');

title('Unipolar NRZ coded');

maxTime=max(time);

maxAmp=max(xiUnipolar);

minAmp=min(xiUnipolar);

axis([0,maxTime,minAmp-0.5,maxAmp+0.5]);

subplot(4,1,4);

plot(time,xiManchester);

xlabel('Time (Seconds)');

ylabel('Amplitude (Voltage)');

title('Manchester Coded');

maxTime=max(time);

maxAmp=max(xiManchester);

minAmp=min(xiManchester);

axis([0,maxTime,minAmp-0.5,maxAmp+0.5]);

