% MATLAB Script for a Binary PSK with two Phases

format long;

% Clear all variables and close all figures

clear all;

close all;

% The number of bits to send - Frame Length

N = 8;

% Generate a random bit stream

bit\_stream = round(rand(1,N));

% Enter the two Phase shifts - in Radians

% Phase for 0 bit

P1 = 0;

% Phase for 1 bit

P2 = pi;

% Frequency of Modulating Signal

f = 3;

% Sampling rate - This will define the resoultion

fs = 100;

% Time for one bit

t = 0: 1/fs : 1;

% This time variable is just for plot

time = [];

PSK\_signal = [];

Digital\_signal = [];

for ii = 1: 1: length(bit\_stream)

% The FSK Signal

PSK\_signal = [PSK\_signal (bit\_stream(ii)==0)\*sin(2\*pi\*f\*t + P1)+...

(bit\_stream(ii)==1)\*sin(2\*pi\*f\*t + P2)];

% The Original Digital Signal

Digital\_signal = [Digital\_signal (bit\_stream(ii)==0)\*...

zeros(1,length(t)) + (bit\_stream(ii)==1)\*ones(1,length(t))];

time = [time t];

t = t + 1;

end

% Plot the PSK Signal

subplot(2,1,2);

plot(time,PSK\_signal,'LineWidth',2);

xlabel('Time (bit period)');

ylabel('Amplitude');

title('PSK Signal with two Phase Shifts');

axis([0 time(end) -1.5 1.5]);

grid on;

% Plot the Original Digital Signal

subplot(2,1,1);

plot(time,Digital\_signal,'r','LineWidth',2);

xlabel('Time (bit period)');

ylabel('Amplitude');

title('Original Digital Signal');

axis([0 time(end) -0.5 1.5]);

grid on;