WMC LAB EXPERIMENT 9

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BATCH: EA-3

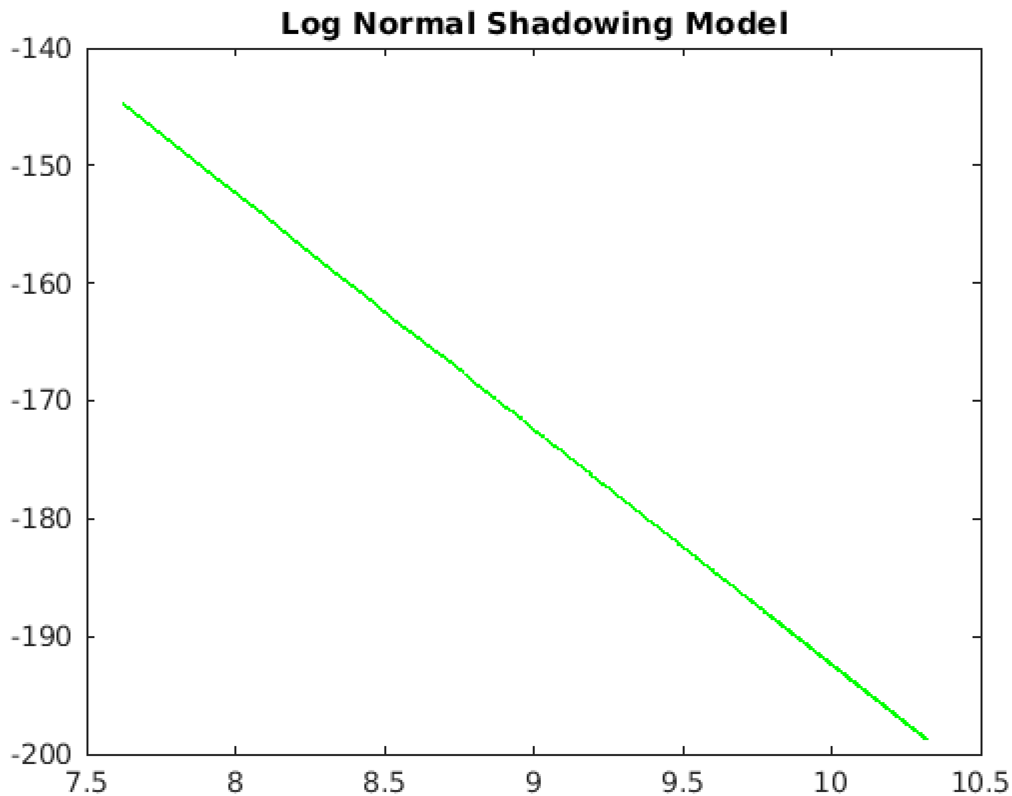
AIM: To simulate the Log Normal Shadowing.

THEORY: Shadowing effects are defined as the effects of received signal power fluctuations due to obstruction between the transmitter and receiver. Therefore, the signal changes as a result of the shadowing mainly come from reflection and scattering during transmittal. The model encompasses random shadowing effects due to signal blockage by hills, trees, buildings etc. It is also referred as log normal shadowing model. for a large cell.

```
close all;
clc;
%Inputs
PtdBm = 52; %% Input = Transmitted power in dBm
GtdBi = 25; %% Gain of the Transmitted Antenna in dBi
GrdBi = 15; %% Gain of the Reciever Antenna in dBi
Frequency=1*10^9; %% Transmitted signal frequency in Hertz
%% Example frequency= 1GHz
d = 41935000*(1:1:500); %% Array of input distances in meters
L = 1; %% Other system losses, No loss case=1;
sigma=1; %% Standard deviation of zero-mean Normal distribution



%% Convert all powers to Linear Scale
Pt = 10^((PtdBm-30)/10); %% Convert to Watts
Gt = 10^(GtdBi/10);
Gr = 10^(GrdBi/10);
lambda = 3*10^8/Frequency; %% Wavelength in meters
Pr = Pt*(Gt*Gr*lambda^2)./((4*pi.*d).^2*L);
X = sigma*randn(size(Pr));
propLoss = Pr./Pt;
PLdBm = 10*log10(propLoss)+10*log10(X);
PrdBm = 10*log10(Pr)+30; %% Convert to dBm
plot(log10(d),10*log10(propLoss),'G','LineWidth',2);
title('Log Normal Shadowing Model')
```



CONCLUSION: From this experiment we have understood the concept of Log Normal Shadowing Model.