clear all;

close all;

ht=50;

hr=2;

freq=900e6;

c=3e8;

wavelength=c/freq;

G1=1;

R=-1;

count=1;

figure(1);

d=[1:1:100000];

GR=[1,0.316,0.1,0.01];

l=(d.^2+(ht-hr)^2).^.5;

r=(d.^2+(ht+hr)^2).^.5;

phase=2\*pi/wavelength\*(r-1);

dc=4\*ht\*hr/wavelength;

dnew=[dc:1:100000];

for count = 1:1:4

Gr=GR(count);

vec=G1./1+R\*Gr./r.\*exp(phase\*sqrt(-1));

Pr=(wavelength/4/pi)^2\*(abs(vec)).^2;

subplot(2,2,count);

plot(10\*log10(d),10\*log10(Pr)-10\*log10(Pr(1)));

hold on;

plot(10\*log10(dnew),-20\*log10(dnew));

plot(10\*log10(dnew),-40\*log10(dnew));

title('Power Falloff');

xlabel('log distance');

ylabel('power loss');

grid;

end

hold off;

figure;

plot(10\*log10(d),10\*log10(Pr));%-10\*log10(Pr(1)));

title('dB Power vs Log Distance graph');

xlabel('log(d)');

ylabel('10\*log(Pr)');

grid;



