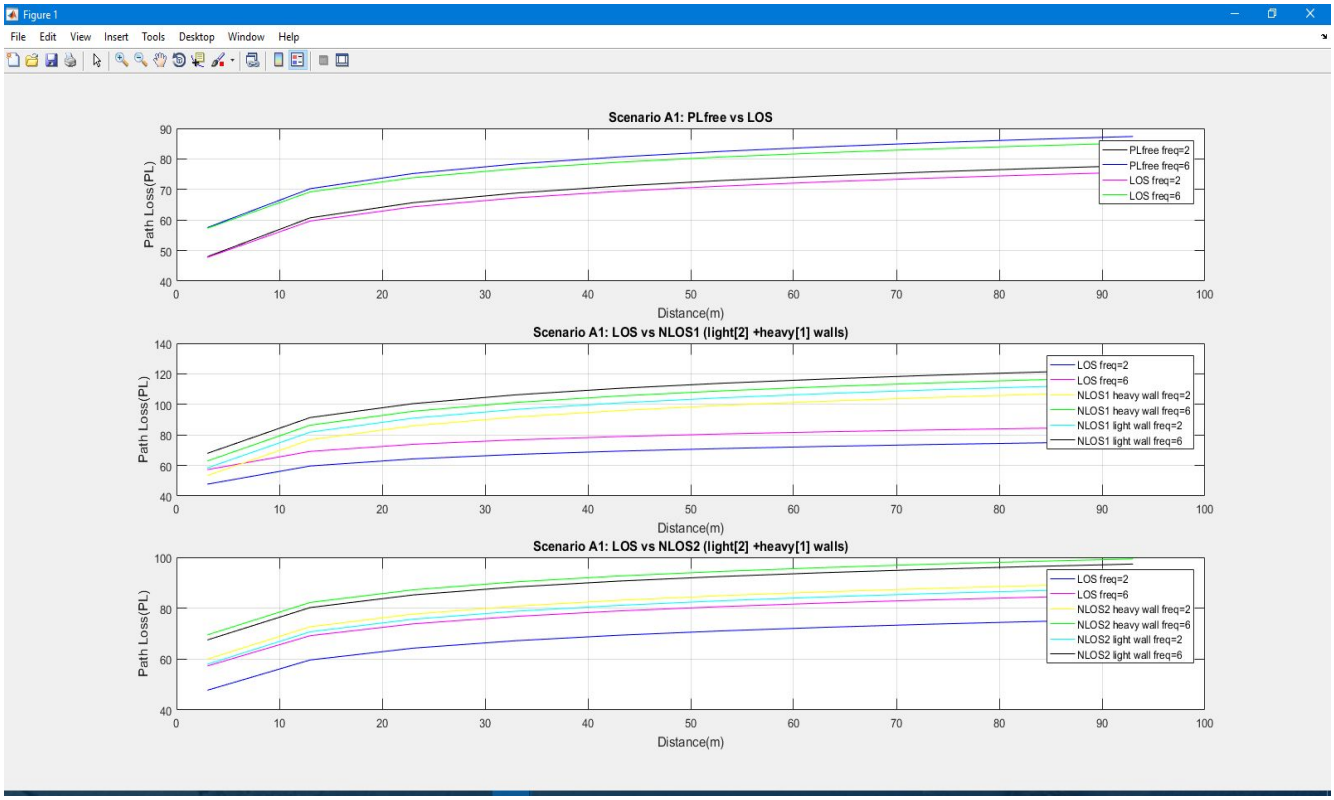
ΠΑΡΑΡΤΗΜΑ: Αποτελέσματα + Κώδικας



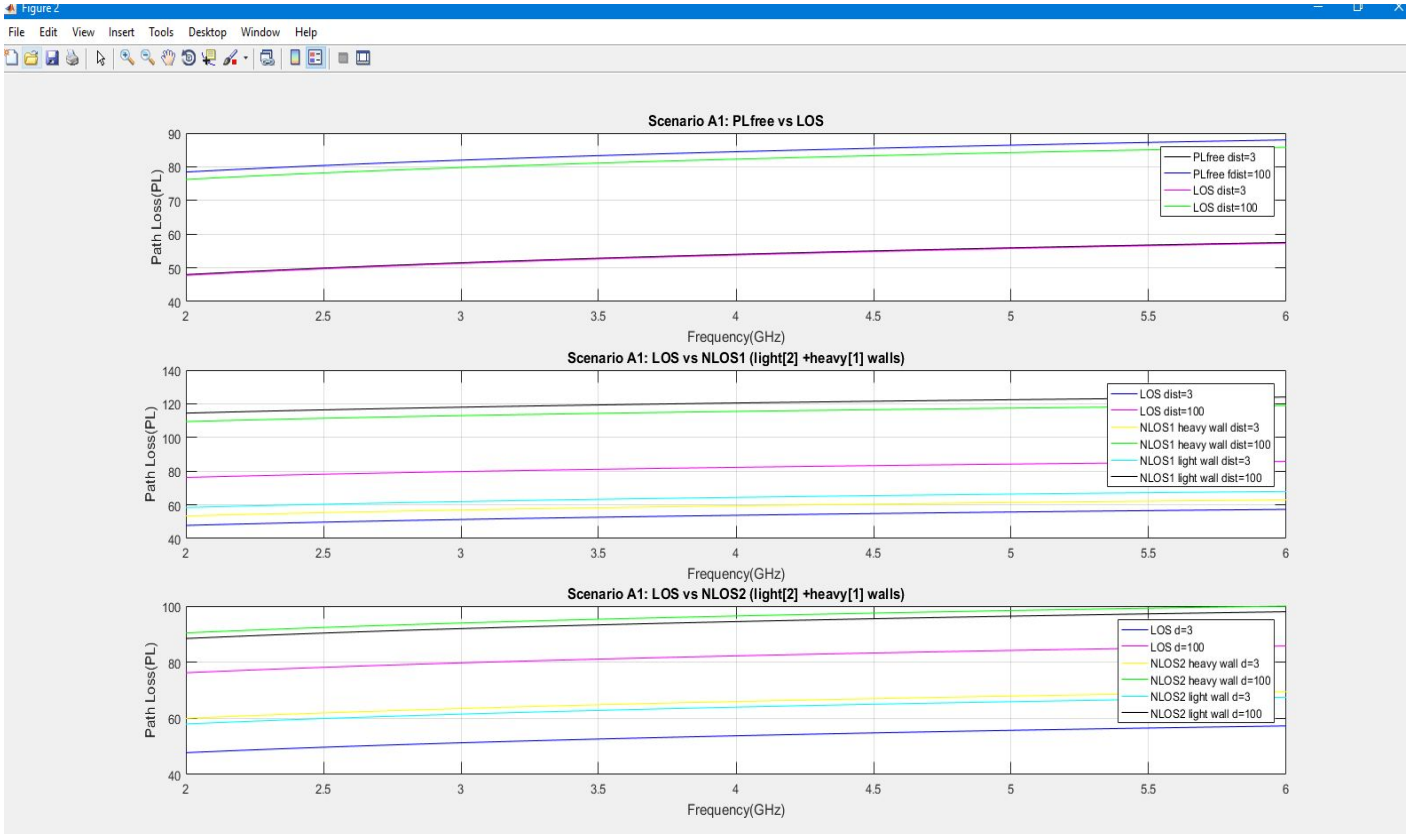
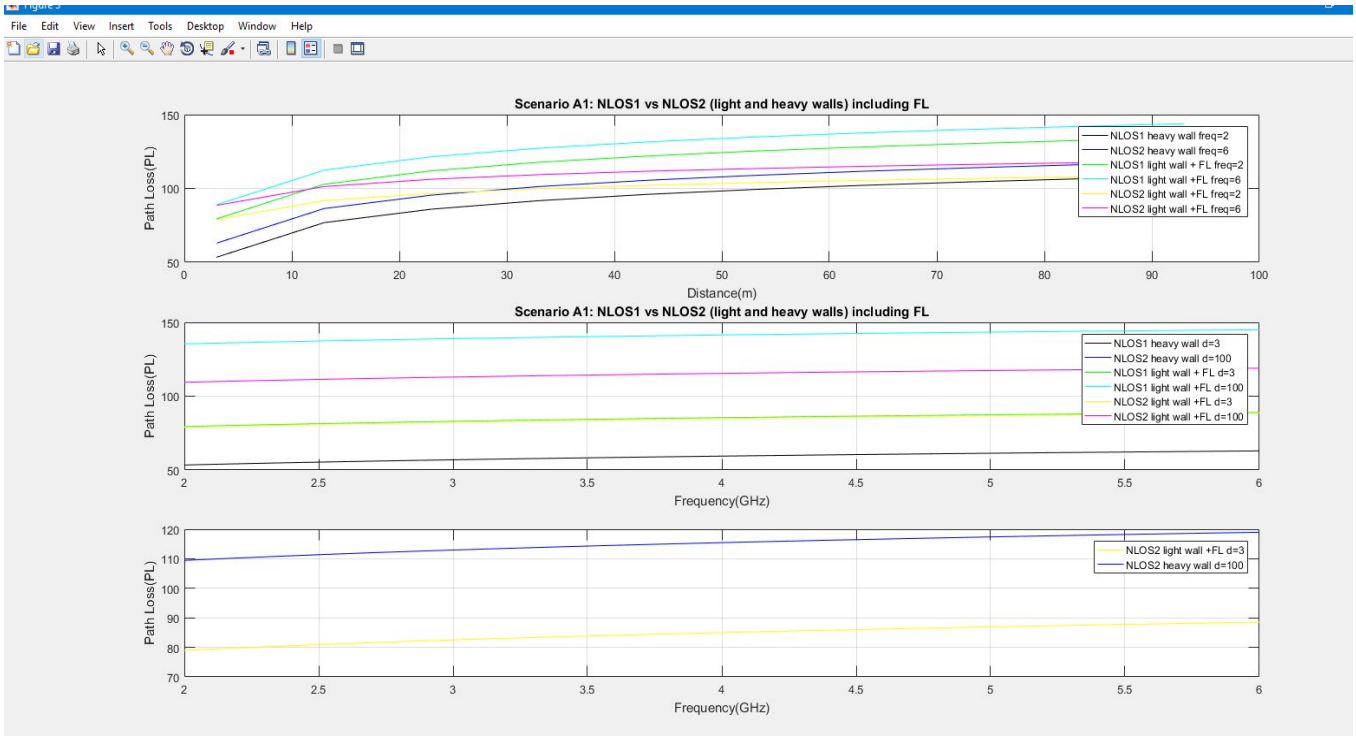
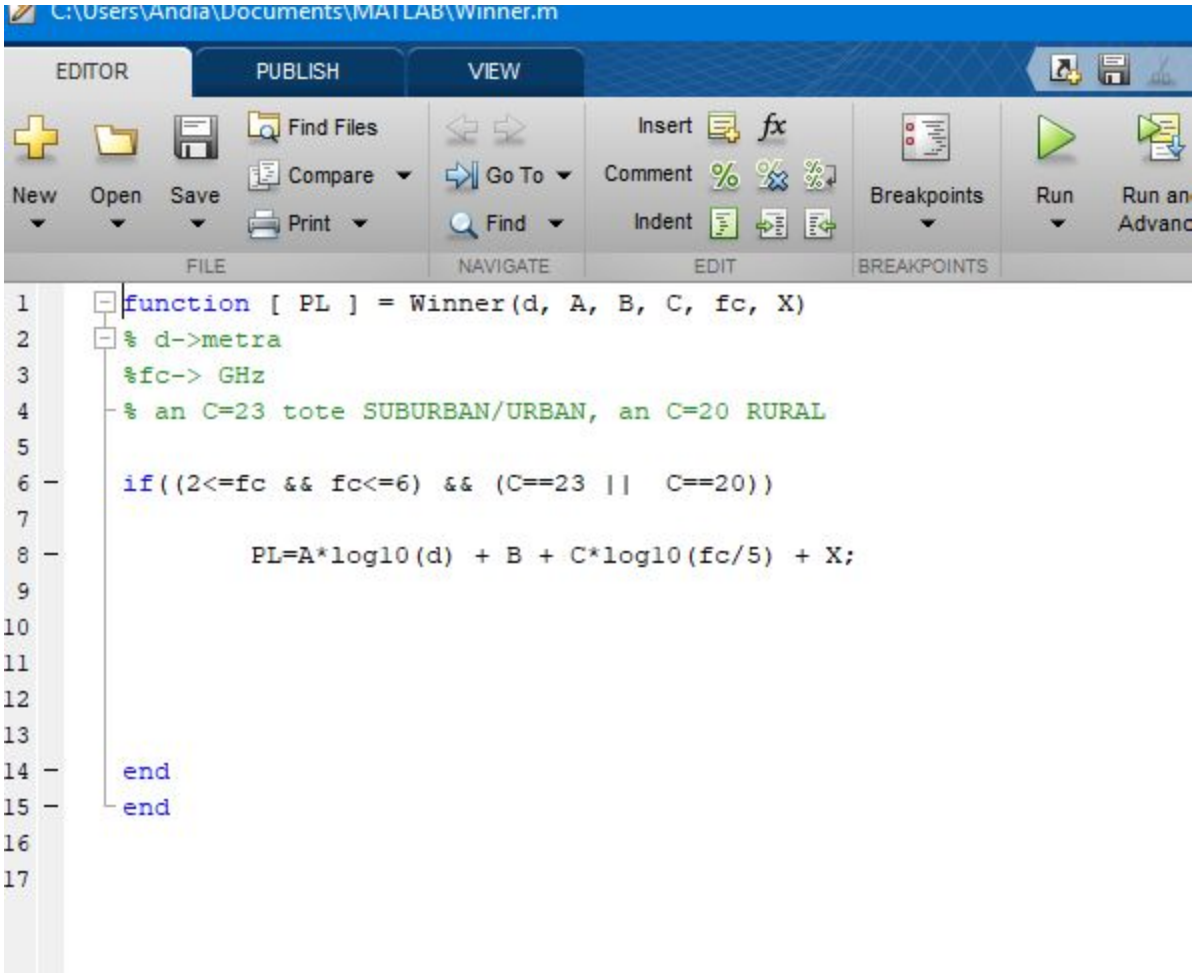


Figure 2
File Edit View Insert Tools Desktop Window Help
Scenario A1: PLfree vs LOS
Path Loss(PL)
Frequency(GHz)
PLfree dist=3
PLfree fdist=100
LOS dist=3
LOS dist=100
Scenario A1: LOS vs NLOS1 (light[2] +heavy[1] walls)
Path Loss(PL)
Frequency(GHz)
LOS dist=3
LOS dist=100
NLOS1 heavy wall dist=3
NLOS1 heavy wall dist=100
NLOS1 light wall dist=3
NLOS1 light wall dist=100
Scenario A1: LOS vs NLOS2 (light[2] +heavy[1] walls)
Path Loss(PL)
Frequency(GHz)
LOS d=3
LOS d=100
NLOS2 heavy wall d=3
NLOS2 heavy wall d=100
NLOS2 light wall d=3
NLOS2 light wall d=100


File Edit View Insert Tools Desktop Window Help
Scenario A1: NLOS1 vs NLOS2 (light and heavy walls) including FL
Path Loss(PL)
Distance(m)
NLOS1 heavy wall freq=2
NLOS2 heavy wall freq=6
NLOS1 light wall + FL freq=2
NLOS1 light wall +FL freq=6
NLOS2 light wall +FL freq=2
NLOS2 light wall +FL freq=6
Scenario A1: NLOS1 vs NLOS2 (light and heavy walls) including FL
Path Loss(PL)
Frequency(GHz)
NLOS1 heavy wall d=3
NLOS2 heavy wall d=100
NLOS1 light wall + FL d=3
NLOS1 light wall +FL d=100
NLOS2 light wall +FL d=3
NLOS2 light wall +FL d=100
Path Loss(PL)
Frequency(GHz)
NLOS2 light wall +FL d=3
NLOS2 heavy wall d=100

Κώδικας Winner:



Κώδικας WinnerPlot :


```
function WinnerPlot()

d=50;
A=20;
B=46.4;
C=20;
X=0;

fc1=2;
fc2=6;



%DISTANCE
L=3:10:100;

PLfree1=zeros(1,length(L)); PLfree2=zeros(1,length(L));

LOS1=zeros(1,length(L)); LOS2=zeros(1,length(L));

NLOS1wh1=zeros(1,length(L)); NLOS1wh2=zeros(1,length(L));
NLOS1wl1=zeros(1,length(L)); NLOS1wl2=zeros(1,length(L));

NLOS2wh1=zeros(1,length(L)); NLOS2wh2=zeros(1,length(L));
NLOS2wl1=zeros(1,length(L)); NLOS2wl2=zeros(1,length(L));

NLOS1wl_FL1=zeros(1,length(L)); NLOS1wl_FL2=zeros(1,length(L));

NLOS2wl_FL1=zeros(1,length(L)); NLOS2wl_FL2=zeros(1,length(L));
```

```
32
33      %A1
34 -    for i=1:length(L)
35 -        PLfree1(1,i)=Winner(L(i),A,B,C,fc1,X); %PLfree 2GHz
36 -        PLfree2(1,i)=Winner(L(i),A,B,C,fc2,X); %PLfree 6GHz
37
38 -        LOS1(1,i)=Winner(L(i),18.7,46.8,20,fc1,X); %A1 LOS 2GHz
39 -        LOS2(1,i)=Winner(L(i),18.7,46.8,20,fc2,X); %A1 LOS 6GHz
40
41          %Corridor-to-room
42 -        n1=1; %number of walls
43 -        n2=2;
44 -        Xl=5*(n2-1); %light walls
45 -        Xh=12*(n1-1); %heavy walls
46
47          %NLOS1 heavy walls
48 -        NLOS1wh1(1,i)=Winner(L(i), 36.8, 43.8, 20, fc1,Xh); %freq=2
49 -        NLOS1wh2(1,i)=Winner(L(i), 36.8, 43.8, 20, fc2,Xh); %freq=6
50
51          %NLOS1 light walls
52 -        NLOS1wl1(1,i)=Winner(L(i), 36.8, 43.8, 20, fc1,Xl); %freq=2
53 -        NLOS1wl2(1,i)=Winner(L(i), 36.8, 43.8, 20, fc2,Xl); %freq=6
54
55          %Room-to-room
56 -        Xh2=12*n1;
57 -        Xl2=5*n2;
58
59          %NLOS2 heavy walls
60 -        NLOS2wh1(1,i)=Winner(L(i), 20, 46.4, 20, fc1, Xh2); %freq=2
61 -        NLOS2wh2(1,i)=Winner(L(i), 20, 46.4, 20, fc2, Xh2); %freq=6
62
63          %NLOS2 light walls
64 -        NLOS2wl1(1,i)=Winner(L(i), 20, 46.4, 20, fc1, Xl2); %freq=2
65 -        NLOS2wl2(1,i)=Winner(L(i), 20, 46.4, 20, fc2, Xl2); %freq=6
66
67 -        nf= 2; %no of floors between BS and MS nf>0
68 -        FL= 17+4*(nf-1);
69
70 -        NLOS1wl_FL1(1,i)=Winner(L(i), 36.8, 43.8, 20, fc1,Xl) + FL;
71 -        NLOS1wl_FL2(1,i)=Winner(L(i), 36.8, 43.8, 20, fc2,Xl) + FL;
72
73 -        NLOS2wl_FL1(1,i)=Winner(L(i), 20, 46.4, 20, fc1,Xl2)+ FL;
74 -        NLOS2wl_FL2(1,i)=Winner(L(i), 20, 46.4, 20, fc2,Xl2)+ FL;
75
76 -    end
77
```

```
    figure;

    subplot(3,1,1); title('Scenario A1: PLfree vs LOS');
    plot(L,PLfree1, 'k', L,PLfree2, 'b', L,LOS1, 'm', L,LOS2, 'g');

    legend('PLfree freq=2', 'PLfree freq=6', 'LOS freq=2', 'LOS freq=6');
    xlabel('Distance(m)');
    ylabel('Path Loss(PL)');
    title('Scenario A1: PLfree vs LOS');
    grid on;

    subplot(3,1,2);
    plot(L, LOS1, 'b', L, LOS2, 'm', L,NLOS1wh1, 'y', L,NLOS1wh2, 'g', L,NLOS1wl1, 'c', L,NLOS1wl2, 'k');
    legend('LOS freq=2', 'LOS freq=6', 'NLOS1 heavy wall freq=2', 'NLOS1 heavy wall freq=6', 'NLOS1 light wall freq=2', 'NLOS1 light wall freq=6');

    xlabel('Distance(m)');
    ylabel('Path Loss(PL)');
    title('Scenario A1: LOS vs NLOS1 (light[2] +heavy[1] walls)');
    grid on;

    subplot(3,1,3);
    plot(L, LOS1, 'b', L, LOS2, 'm', L,NLOS2wh1, 'y', L,NLOS2wh2, 'g', L,NLOS2wl1, 'c', L,NLOS2wl2, 'k');
    legend('LOS freq=2', 'LOS freq=6', 'NLOS2 heavy wall freq=2', 'NLOS2 heavy wall freq=6', 'NLOS2 light wall freq=2', 'NLOS2 light wall freq=6');

    xlabel('Distance(m)');
    ylabel('Path Loss(PL)');
    title('Scenario A1: LOS vs NLOS2 (light[2] +heavy[1] walls)');
    grid on;
```

```
%FREQUENCY
d1=3; d2=100;
fc=2:0.01:6;

f_PLfree1=zeros(1,length(fc)); f_PLfree2=zeros(1,length(fc));

f_LOS1=zeros(1,length(fc)); f_LOS2=zeros(1,length(fc));

f_NLOS1wh1=zeros(1,length(fc)); f_NLOS1wh2=zeros(1,length(fc));
f_NLOS1wl1=zeros(1,length(fc)); f_NLOS1wl2=zeros(1,length(fc));

f_NLOS2wh1=zeros(1,length(fc)); f_NLOS2wh2=zeros(1,length(fc));
f_NLOS2wl1=zeros(1,length(fc)); f_NLOS2wl2=zeros(1,length(fc));

f_NLOS1wl_FL1=zeros(1,length(fc)); f_NLOS1wl_FL2=zeros(1,length(fc));
f_NLOS2wl_FL1=zeros(1,length(fc)); f_NLOS2wl_FL2=zeros(1,length(fc));
```

```
for i=1:length(fc)

f_PLfree1(1,i)=Winner(d1,A,B,C,fc(i),X); %PLfree d1=3
f_PLfree2(1,i)=Winner(d2,A,B,C,fc(i),X); %PLfree d2=100

f_LOS1(1,i)=Winner(d1,18.7,46.8,20,fc(i),X); %A1 LOS d1=3
f_LOS2(1,i)=Winner(d2,18.7,46.8,20,fc(i),X); %A1 LOS d2=100

%NLOS1 heavy walls
f_NLOS1wh1(1,i)=Winner(d1, 36.8, 43.8, 20, fc(i),Xh); %d1=3
f_NLOS1wh2(1,i)=Winner(d2, 36.8, 43.8, 20, fc(i),Xh); %d2=100

%NLOS1 light walls
f_NLOS1wl1(1,i)=Winner(d1, 36.8, 43.8, 20, fc(i),Xl);
f_NLOS1wl2(1,i)=Winner(d2, 36.8, 43.8, 20, fc(i),Xl);

%NLOS2 heavy walls
f_NLOS2wh1(1,i)=Winner(d1, 20, 46.4, 20, fc(i), Xh2);
f_NLOS2wh2(1,i)=Winner(d2, 20, 46.4, 20, fc(i), Xh2);

%NLOS2 light walls
f_NLOS2wl1(1,i)=Winner(d1, 20, 46.4, 20, fc(i), Xl2);
f_NLOS2wl2(1,i)=Winner(d2, 20, 46.4, 20, fc(i), Xl2);

f_NLOS1wl_FL1(1,i)=Winner(d1, 36.8, 43.8, 20, fc(i),Xl) + FL;
f_NLOS1wl_FL2(1,i)=Winner(d2, 36.8, 43.8, 20, fc(i),Xl) + FL;

f_NLOS2wl_FL1(1,i)=Winner(d1, 20, 46.4, 20, fc(i),Xl2)+ FL;
f_NLOS2wl_FL2(1,i)=Winner(d2, 20, 46.4, 20, fc(i),Xl2)+ FL;


end
```

```
figure;

subplot(3,1,1);
plot(fc,f_PLfree1, 'k', fc,f_PLfree2, 'b', fc,f_LOS1, 'm', fc,f_LOS2, 'g');

legend('PLfree dist=3', 'PLfree fdist=100', 'LOS dist=3', 'LOS dist=100');
xlabel('Frequency(GHz)');
ylabel('Path Loss(PL)');
title('Scenario A1: PLfree vs LOS');
grid on;

subplot(3,1,2);
plot(fc, f_LOS1, 'b', fc, f_LOS2, 'm', fc,f_NLOS1wh1, 'y', fc,f_NLOS1wh2, 'g', fc,f_NLOS1wl1, 'c', fc,f_NLOS1wl2, 'k');
legend('LOS dist=3', 'LOS dist=100', 'NLOS1 heavy wall dist=3', 'NLOS1 heavy wall dist=100', 'NLOS1 light wall dist=3', 'NLOS1 light wall dist=100');

xlabel('Frequency(GHz)');
ylabel('Path Loss(PL)');
title('Scenario A1: LOS vs NLOS1 (light[2] +heavy[1] walls)');
grid on;

subplot(3,1,3);
plot(fc, f_LOS1, 'b', fc, f_LOS2, 'm', fc,f_NLOS2wh1, 'y', fc,f_NLOS2wh2, 'g', fc,f_NLOS2wl1, 'c', fc,f_NLOS2wl2, 'k');
legend('LOS d=3', 'LOS d=100', 'NLOS2 heavy wall d=3', 'NLOS2 heavy wall d=100', 'NLOS2 light wall d=3', 'NLOS2 light wall d=100');

xlabel('Frequency(GHz)');
ylabel('Path Loss(PL)');
title('Scenario A1: LOS vs NLOS2 (light[2] +heavy[1] walls)');
grid on;
```

```
figure;
subplot(3,1,1);
plot(L, NLOS1wh1,'k', L ,NLOS1wh2, 'b', L, NLOS1wl_FL1, 'g', L, NLOS1wl_FL2, 'c',L, NLOS2wl_FL1,'y', L, NLOS2wl_FL2, 'm');
legend('NLOS1 heavy wall freq=2', 'NLOS2 heavy wall freq=6', 'NLOS1 light wall + FL freq=2', 'NLOS1 light wall +FL freq=6', 'NLOS2 light wall +FL freq=2', 'NLOS2 light wall +FL freq=6
xlabel('Distance(m)');
ylabel('Path Loss(PL)');
title('Scenario A1: NLOS1 vs NLOS2 (light and heavy walls) including FL');
grid on;


subplot(3,1,2);
plot(fc, f_NLOS1wh1,'k', fc ,f_NLOS1wh2, 'b', fc, f_NLOS1wl_FL1, 'g', fc, f_NLOS1wl_FL2, 'c', fc, f_NLOS2wl_FL1,'y', fc, f_NLOS2wl_FL2, 'm');
legend('NLOS1 heavy wall d=3', 'NLOS2 heavy wall d=100', 'NLOS1 light wall + FL d=3', 'NLOS1 light wall +FL d=100', 'NLOS2 light wall +FL d=3', 'NLOS2 light wall +FL d=100');
xlabel('Frequency(GHz)');
ylabel('Path Loss(PL)');
title('Scenario A1: NLOS1 vs NLOS2 (light and heavy walls) including FL');
grid on;


subplot(3,1,3)
plot(fc, f_NLOS2wl_FL1,'y', fc, f_NLOS1wh2, 'b');
legend('NLOS2 light wall +FL d=3','NLOS2 heavy wall d=100');

xlabel('Frequency(GHz)');
ylabel('Path Loss(PL)');
%title('Scenario A1: NLOS1 vs NLOS2 (light and heavy walls) including FL');
grid on;



end
```