LAMPIRAN

Listing Program

Perhitungan Nilai Lms

```
r = [1:1:5]';
b = 50; %jarak antar gedung
h = 40; %tinggi gedung
hb = 50; %tinggi eNodeB
fc = 1800; %frekuensi
x = [1:5];
y = x.^0;
z = (y)';
kf = -4 + 1.5*(((fc)/925)-1);
delta_hb=10;
Lbsh=-10*log10 (1+delta_hb);
ka = 54;
kd = 18;
a=(log10(r));
Lms = (Lbsh)*z + (ka)*z + (kd)*a +(kf)*log10 (fc)*z - 9*log10(b)*z;


r = [1:1:5]';
b = 350; %jarak antar gedung
h = 40; %tinggi gedung
hb = 50; %tinggi eNodeB
fc = 1800; %frekuensi
x = [1:5];
y = x.^0;
z = (y)';
kf = -4 + 1.5*(((fc)/925)-1);
delta_hb=10;
Lbsh=-10*log10 (1+delta_hb);
ka = 54;
kd = 18;
a=(log10(r));
Lms = (Lbsh)*z + (ka)*z + (kd)*a +(kf)*log10 (fc)*z - 9*log10(b)*z;
```

Perhitungan Nilai NLOS

```
% pathloss NLOS b=50 m
d=[1:1:5]';
f=1800;
Lrts=31.5437;
Lms=[19.8932
25.3117
28.4814
30.7303
32.4746];
x=[1:5];
y=x.^0;
z=(y)';
PL_NLOS=32.4+20*log10(d)+20*log10(f)*z+Lrts*z+Lms

% pathloss NLOS b=350 m
d=[1:1:5]';
f=1800;
Lrts=31.5437;
Lms=[12.2873
```

74

```
17.7058
20.8755
23.1244
24.8688];
x=[1:5];
y=x.^0;
z=(y)';
PL_NLOS=32.4+20*log10(d)+20*log10(f)*z+Lrts*z+Lms
```

Listing Program Daya Terima

```
% daya terima b=50

x= [1:1:5]';
Pt= 46;
Gt= 18;
Gr= 0;
PL= [148.9424
160.3815
167.0730
171.8206
175.5032];
Gkt= 2;
Gkr= 0;
Pr = Pt + Gt - Gr - PL - Gkt - Gkr


% daya terima b=350

x= [1:1:5]';
Pt= 46;
Gt= 18;
Gr= 0;
PL= [141.3365
152.7756
159.4671
164.2147
167.8974];
Gkt= 2;
Gkr= 0;
Pr = Pt + Gt - Gr - PL - Gkt - Gkr
```

Listing Program Perhitungan SNR

```
% daya noise
k = 1.38x10-23;
T = 300;
Bsistem = [5.674199833
5.674199790
5.674199667];
NF = 7
No = 10 log10 (k x T x Bsistem) + NF


% Nilai SNR dengan kondisi NLOS b=50

Pr= [-86.9424
-98.3815
-105.0730
-109.8206
```

```
         -113.5032];
No= [-129.2899537
     -129.2899537
     -128.0154083
     -128.0154083
     -127.0306906];
SNRdb = Pr-No

%Nilai SNR dengan kondisi NLOS b=350

Pr= -79.3365
-90.7756
-97.4671
-102.2147
-105.8974];
No= [-129.2899537
     -129.2899537
     -128.0154083
     -128.0154083
     -127.0306906];
SNRdb = Pr-No


%Nilai SNRsistem
```

$aSNR_{(db)}$ = 10.log$_{10}$ * S$NR_{(db)}$

bSNR$_{sistem}$ = (1- αcp) aSNR(dB)

cSNR$_{sistem}$ =(1- 0.07) SNR(dB)

SNR$_{sistem}$ = 10log$_{log10}$ * cSNR$_{sistem}$

Listing Program Eb/No

```
%Nilai Eb/No b=50
```
$\frac{E_b}{N_o}$ = SNR$_{sistem}$ + 10 log$_{10}$ $\frac{B}{R}$
```
SNRsistem = [42.0322
30.5933
23.9018
19.1542
15.4716];
B = 5.674199833*(10^6);
r = 7.2*(10^6);
E = a + 10.*log10(b/r)

%Nilai Eb/No b=350
```

$\frac{E_b}{N_o}$ = SNR$_{sistem}$ + 10 log$_{10}$ $\frac{B}{R}$

```
SNRsistem = [49.6383
38.1992
31.5078
26.7602
23.0775];
B = 5.674199833*(10^6);
r = 7.2*(10^6);
E = a + 10.*log10(b/r)
```

Listing Program BER

```
%Nilai BER QPSK
QPSK = 0.5;
a =[48.9192
37.4801
30.7887
26.0411
22.3584];
b = sqrt(2*a);
z = exp(-b.^2);
erfc = (1./sqrt(3.14*b).*(z))'
qpsk=0.5*erfc

%Nilai BER 16-QAM
16-QAM = 16;
a = [44.1490
32.7099
26.0184
21.2708
17.5881];
b = sqrt(0.2*a)
z = exp(-b.^2);
erfc = (1./sqrt(3.14*b).*(z))
QAM= 0.375*erfc

%Nilai BER 64-QAM
64-QAM = 64;
a = [41.1387
29.6996
23.0080
18.2605
14.5779];
b = sqrt(0.071*a)
z = exp(-b.^2);
erfc = (1./sqrt(3.14*b).*(z))
QAM= 0.291*erfc
```