

LAMPIRAN A

**PERHITUNGAN RADIUS SEL DAN LUAS SEL
SEBELUM DAN SESUDAH MENGGUNAKAN
METODA TRANSMIT DIVERSITY**

Perhitungan sebelum menggunakan metoda transmit diversity

$$Pr = Pt - Lf$$

$$Lf = Pt - Pr$$

$$= 47 \text{ dBm} + 102 \text{ dBm}$$

$$Lf = 149 \text{ dB}$$

$$Lf = \text{Pathloss (pth)} + \text{redaman}$$

$$\text{Pathloss} = Lf - \text{redaman}$$

$$= 149 \text{ dB} - 14 \text{ dB}$$

$$= 135 \text{ dB}$$

$$\text{redaman} = \text{fading} + \text{noise} + \text{interferansi}$$

$$= 10 \text{ dB} + 1 \text{ dB} + 3 \text{ dB}$$

$$= 14 \text{ dB}$$

Penggunaan rumus Okumura Hatta

$$Lf = 69,55 + 26,16 \log fc - 13,82 \log hbs - a (hms) + (44,9 - 6,55 \log hbs) \log d - 4,78$$

$$(\log fc)^2 + 18,33 \log fc - 40,98$$

$$a (hms) = 3,2 (\log 11,75 hms)^2 - 4,97$$

$$= 3,2 (\log 11,75 (72))^2 - 4,97$$

$$= 3,2 (1,24)^2 - 4,97$$

$$= -0,000919$$

Maka :

$$\text{Log } d = \frac{Lf - [69,55 + 26,16 \log fc - 13,82 \log hbs - a (hms)] + 4,78 (\log fc)^2 - 18,33 \log fc + 40,98}{44,9 - 6,55 \log hbs}$$

$$\text{Log } d = \frac{135 - [69,55 + 26,16 \log (945,2) - 13,82 \log (72) + 0,000919 + 42,32 - 54,54 - 40,98]}{44,9 - 6,55 \log (72)}$$

$$\text{Log } d = \frac{135 - [121,73] + 83,3}{32,73}$$

$$\text{Log } d = 2,9 \text{ Km}$$

$$d = 892 \text{ Km}^2$$

$$\begin{aligned}
 \text{Luas cell} &= 2,6 (d \times d) \\
 &= 2,6 (892 \times 892) \\
 &= 2.068 \text{ Km}^2
 \end{aligned}$$

Perhitungan setelah menggunakan metoda transmit diversity

$$Pr = Pt - Lf$$

$$Lf = Pt - Pr$$

$$= 50 \text{ dBm} + 102 \text{ dBm}$$

$$Lf = 152 \text{ db}$$

Penggunaan rumus Okumura Hatta

$$Lf = 69,55 + 26,16 \log fc - 13,82 \log hbs - a (hms) + (44,9 - 6,55 \log hbs) \log d - 4,78 (\log fc)^2$$

$$+ 18,33 \log fc - 40,98$$

Maka :

$$\log d = \frac{Lf - [69,55 + 26,16 \log fc - 13,82 \log hbs - a (hms)] + 4,78 (\log fc)^2 - 18,33 \log fc + 40,98}{44,9 - 6,55 \log hbs}$$

$$\log d = \frac{152 - [69,55 + 26,16 \log (945,2) - 13,82 \log (72) + 0,000919 + 42,32 - 54,54 + 40,98]}{44,9 - 6,55 \log (72)}$$

$$\log d = \frac{138 - [121,73] + 83,3}{32,73}$$

$$\log d = 3 \text{ Km}$$

$$d = 1.102 \text{ Km}^2$$

$$\begin{aligned}
 \text{Luas cell} &= 2,6 (d \times d) \\
 &= 2,6 (1.102 \times 1.102) \\
 &= 3.157 \text{ Km}^2
 \end{aligned}$$

LAMPIRAN B

SITELIST URBAN AREA TAHUN 2009

Sitelist Urban Area Tahun 2009

Surabaya

1st Name	Longitude	Latitude	Latitude	Longitude	TRX Confi gurasi	Erlang
Tunjungan center	112°44'18.01"E	07°15'23.40"S	-7.256500	112.738337	4	25.77
Tunjungan center	112°44'18.01"E	07°15'23.40"S	-7.256500	112.738337	4	25.77
Tunjungan center	112°44'18.01"E	07°15'23.40"S	-7.256500	112.738337	4	25.77
Jagalan	112°44'33.40"E	07°14'51.51"S	-7.247640	112.742613	4	25.77
Jagalan	112°44'33.40"E	07°14'51.51"S	-7.247640	112.742613	4	25.77
Jagalan	112°44'33.40"E	07°14'51.51"S	-7.247640	112.742613	4	25.77
Radio mtb	112°43'44.01"E	07°15'30.98"S	-7.258606	112.728891	4	25.77
Radio mtb	112°43'44.01"E	07°15'30.98"S	-7.258606	112.728891	4	25.77
Radio mtb	112°43'44.01"E	07°15'30.98"S	-7.258606	112.728891	4	25.77
Bubutan	112°44'5.20"E	07°15'6.10"S	-7.251694	112.734778	4	25.77
Bubutan	112°44'5.20"E	07°15'6.10"S	-7.251694	112.734778	4	25.77
Bubutan	112°44'5.20"E	07°15'6.10"S	-7.251694	112.734778	4	25.77
Studio east/kartika	112°44'29.60"E	07°15'36.18"S	-7.260050	112.741556	4	25.77
Studio east/kartika	112°44'29.60"E	07°15'36.18"S	-7.260050	112.741556	4	25.77
Studio east/kartika	112°44'29.60"E	07°15'36.18"S	-7.260050	112.741556	4	25.77
Westin	112°44'5.80"E	07°15'36.60"S	-7.260165	112.734946	4	25.77
Westin	112°44'5.80"E	07°15'36.60"S	-7.260165	112.734946	4	25.77
Westin	112°44'5.80"E	07°15'36.60"S	-7.260165	112.734946	4	25.77
Kramat gantung	112°44'19.60"E	07°14'55.99"S	-7.248885	112.738778	4	25.77
Kramat gantung	112°44'19.60"E	07°14'55.99"S	-7.248885	112.738778	4	25.77
Kramat gantung	112°44'19.60"E	07°14'55.99"S	-7.248885	112.738778	4	25.77
Kebalen	112°44'5.31"E	07°13'53.38"S	-7.231494	112.734809	4	25.77
Kebalen	112°44'5.31"E	07°13'53.38"S	-7.231494	112.734809	4	25.77
Kebalen	112°44'5.31"E	07°13'53.38"S	-7.231494	112.734809	4	25.77
Indrapura	112°44'8.30"E	07°14'15.80"S	-7.237721	112.735639	4	25.77
Indrapura	112°44'8.30"E	07°14'15.80"S	-7.237721	112.735639	4	25.77
Indrapura	112°44'8.30"E	07°14'15.80"S	-7.237721	112.735639	4	25.77
Demak 202 Relok	112°43'15.49"E	07°14'35.90"S	-7.243301	112.720974	4	25.77
Demak 202 Relok	112°43'15.49"E	07°14'35.90"S	-7.243301	112.720974	4	25.77
Demak 202 Relok	112°43'15.49"E	07°14'35.90"S	-7.243301	112.720974	4	25.77
Grand park	112°44'32.39"E	07°14'26.38"S	-7.240661	112.742332	4	25.77
Grand park	112°44'32.39"E	07°14'26.38"S	-7.240661	112.742332	4	25.77
Grand park	112°44'32.39"E	07°14'26.38"S	-7.240661	112.742332	4	25.77
Kertopaten	112°44'44.60"E	07°14'6.09"S	-7.235024	112.745724	4	25.77
Kertopaten	112°44'44.60"E	07°14'6.09"S	-7.235024	112.745724	4	25.77

Kertopaten	112°44'44.60"E	07°14'6.09"S	-7.235024	112.745724	4	25.77
Gembong	112°44'51.39"E	07°14'33.21"S	-7.242558	112.747609	4	25.77
Gembong	112°44'51.39"E	07°14'33.21"S	-7.242558	112.747609	4	25.77
Gembong	112°44'51.39"E	07°14'33.21"S	-7.242558	112.747609	4	25.77
Tambaksari reloc	112°45'33.80"E	07°14'58.59"S	-7.249610	112.759389	4	25.77
Tambaksari reloc	112°45'33.80"E	07°14'58.59"S	-7.249610	112.759389	4	25.77
Tambaksari reloc	112°45'33.80"E	07°14'58.59"S	-7.249610	112.759389	4	25.77
Bumiputera	112°44'21.81"E	07°17'51.88"S	-7.297744	112.739392	4	25.77
Bumiputera	112°44'21.81"E	07°17'51.88"S	-7.297744	112.739392	4	25.77
Bumiputera	112°44'21.81"E	07°17'51.88"S	-7.297744	112.739392	4	25.77
Jasindo	112°44'24.98"E	07°16'48.20"S	-7.280055	112.740274	4	25.77
Jasindo	112°44'24.98"E	07°16'48.20"S	-7.280055	112.740274	4	25.77
Jasindo	112°44'24.98"E	07°16'48.20"S	-7.280055	112.740274	4	25.77
Comal	112°44'29.19"E	07°17'14.81"S	-7.287447	112.741444	4	25.77
Comal	112°44'29.19"E	07°17'14.81"S	-7.287447	112.741444	4	25.77
Comal	112°44'29.19"E	07°17'14.81"S	-7.287447	112.741444	4	25.77
Giant Macro Out	112°44'10.20"E	07°18'58.58"S	-7.316274	112.736167	4	25.77
Giant Macro Out	112°44'10.20"E	07°18'58.58"S	-7.316274	112.736167	4	25.77
Giant Macro Out	112°44'10.20"E	07°18'58.58"S	-7.316274	112.736167	4	25.77
Darmo Trade Center DCS	112°44'17.99"E	07°18'8.98"S	-7.302495	112.738333	4	25.77
UWK Mulyosari	112°47'39.48"E	07°15'38.01"S	-7.260559	112.794301	4	25.77
UWK Mulyosari	112°47'39.48"E	07°15'38.01"S	-7.260559	112.794301	4	25.77
UWK Mulyosari	112°47'39.48"E	07°15'38.01"S	-7.260559	112.794301	4	25.77
Dharmawangsa 2	112°45'42.21"E	07°16'13.98"S	-7.270551	112.761725	4	25.77
Dharmawangsa 2	112°45'42.21"E	07°16'13.98"S	-7.270551	112.761725	4	25.77
Dharmawangsa 2	112°45'42.21"E	07°16'13.98"S	-7.270551	112.761725	4	25.77
RS Jantung / SMA 4 Outdoor	112°45'22.80"E	07°15'55.30"S	-7.265364	112.756335	4	25.77
RS Jantung / SMA 4 Outdoor	112°45'22.80"E	07°15'55.30"S	-7.265364	112.756335	4	25.77
RS Jantung / SMA 4 Outdoor	112°45'22.80"E	07°15'55.30"S	-7.265364	112.756335	4	25.77
Kayon	112°44'40.15"E	07°16'15.98"S	-7.271106	112.744487	4	25.77
Kayon	112°44'40.15"E	07°16'15.98"S	-7.271106	112.744487	4	25.77
Kayon	112°44'40.15"E	07°16'15.98"S	-7.271106	112.744487	4	25.77
Honda	112°44'28.98"E	07°15'54.18"S	-7.265051	112.741385	4	25.77
Honda	112°44'28.98"E	07°15'54.18"S	-7.265051	112.741385	4	25.77
Honda	112°44'28.98"E	07°15'54.18"S	-7.265051	112.741385	4	25.77
Ploso Timur	112°46'11.89"E	07°15'21.40"S	-7.255943	112.769971	4	25.77
Ploso Timur	112°46'11.89"E	07°15'21.40"S	-7.255943	112.769971	4	25.77
Ploso Timur	112°46'11.89"E	07°15'21.40"S	-7.255943	112.769971	4	25.77
WTC	112°44'52.00"E	07°15'46.71"S	-7.262973	112.747778	4	25.77
WTC	112°44'52.00"E	07°15'46.71"S	-7.262973	112.747778	4	25.77
WTC	112°44'52.00"E	07°15'46.71"S	-7.262973	112.747778	4	25.77

Delta plaza	112°44'56.00"E	07°15'53.56"S	-7.264877	112.748891	4	25.77
Kedondong	112°44'14.08"E	07°16'18.98"S	-7.271938	112.737246	4	25.77
Kedondong	112°44'14.08"E	07°16'18.98"S	-7.271938	112.737246	4	25.77
Kedondong	112°44'14.08"E	07°16'18.98"S	-7.271938	112.737246	4	25.77
PTC Macro Outdoor	112°40'23.90"E	07°17'21.78"S	-7.289386	112.673308	4	25.77
PTC Macro Outdoor	112°40'23.90"E	07°17'21.78"S	-7.289386	112.673308	4	25.77
Akar Daya	112°42'28.00"E	07°17'17.58"S	-7.288217	112.707779	4	25.77
Akar Daya	112°42'28.00"E	07°17'17.58"S	-7.288217	112.707779	4	25.77
Akar Daya	112°42'28.00"E	07°17'17.58"S	-7.288217	112.707779	4	25.77
UD awet	112°43'41.98"E	07°16'5.01"S	-7.268057	112.728330	4	25.77
UD awet	112°43'41.98"E	07°16'5.01"S	-7.268057	112.728330	4	25.77
UD awet	112°43'41.98"E	07°16'5.01"S	-7.268057	112.728330	4	25.77
HR muhammad	112°41'35.98"E	07°17'2.81"S	-7.284112	112.693329	4	25.77
HR muhammad	112°41'35.98"E	07°17'2.81"S	-7.284112	112.693329	4	25.77
HR muhammad	112°41'35.98"E	07°17'2.81"S	-7.284112	112.693329	4	25.77
Anteve	112°40'42.71"E	07°16'53.69"S	-7.281581	112.678532	4	25.77
Anteve	112°40'42.71"E	07°16'53.69"S	-7.281581	112.678532	4	25.77
Anteve	112°40'42.71"E	07°16'53.69"S	-7.281581	112.678532	4	25.77
UWK Surabaya	112°42'42.00"E	07°16'55.00"S	-7.281945	112.711667	4	25.77
UWK Surabaya	112°42'42.00"E	07°16'55.00"S	-7.281945	112.711667	4	25.77
UWK Surabaya	112°42'42.00"E	07°16'55.00"S	-7.281945	112.711667	4	25.77
Jagir Sidosermo	112°45'31.38"E	07°18'43.20"S	-7.312000	112.758718	4	25.77
Jagir Sidosermo	112°45'31.38"E	07°18'43.20"S	-7.312000	112.758718	4	25.77
Jagir Sidosermo	112°45'31.38"E	07°18'43.20"S	-7.312000	112.758718	4	25.77
Wisma Sier 2	112°45'50.31"E	07°20'10.91"S	-7.336365	112.763975	4	25.77
Wisma Sier 2	112°45'50.31"E	07°20'10.91"S	-7.336365	112.763975	4	25.77
Wisma Sier 2	112°45'50.31"E	07°20'10.91"S	-7.336365	112.763975	4	25.77
Kebraon 2 ex Hotel Satellite	112°42'53.70"E	07°20'37.89"S	-7.343861	112.714919	4	25.77
Kebraon 2 ex Hotel Satellite	112°42'53.70"E	07°20'37.89"S	-7.343861	112.714919	4	25.77
Kebraon 2 ex Hotel Satellite	112°42'53.70"E	07°20'37.89"S	-7.343861	112.714919	4	25.77
Perum. Makaryabinangun	112°44'22.08"E	07°20'52.69"S	-7.347971	112.739469	4	25.77
Perum. Makaryabinangun	112°44'22.08"E	07°20'52.69"S	-7.347971	112.739469	4	25.77
Perum. Makaryabinangun	112°44'22.08"E	07°20'52.69"S	-7.347971	112.739469	4	25.77
Tegalsari Surabaya	112°44'13.49"E	07°16'1.40"S	-7.267056	112.737082	4	25.77
Tegalsari Surabaya	112°44'13.49"E	07°16'1.40"S	-7.267056	112.737082	4	25.77
Tegalsari	112°44'13.49"E	07°16'1.40"S	-7.267056	112.737082	4	25.77

Surabaya						
A					2	10,36
A					2	10,36
A					2	10,36
B					2	10,36
B					2	10,36
B					2	10,36
C					2	10,36
C					2	10,36
C					2	10,36
D					2	10,36
D					2	10,36
D					2	10,36
E					2	10,36
E					2	10,36
E					2	10,36
F					2	10,36
F					2	10,36
F					2	10,36
G					2	10,36
G					2	10,36
G					2	10,36
H					2	10,36
H					2	10,36
H					2	10,36
I					2	10,36
I					2	10,36
I					2	10,36
J					2	10,36
J					2	10,36
J					2	10,36
K					2	10,36
K					2	10,36
K					2	10,36
L					2	10,36
L					2	10,36
L					2	10,36
M					2	10,36
M					2	10,36
M					2	10,36
N					2	10,36
N					2	10,36
N					2	10,36
O					2	10,36
O					2	10,36

O					2	10,36
P					2	10,36
P					2	10,36
P					2	10,36
Q					2	10,36
Q					2	10,36
Q					2	10,36
R					2	10,36
R					2	10,36
R					2	10,36
S					2	10,36
S					2	10,36
S					2	10,36
T					2	10,36
T					2	10,36
Total					562	3513,41

LAMPIRAN C
TABEL ERLANG

LAMPIRAN D

**GRAFIK POWER RATIO TERHADAP
DECIBEL**

