

Contoh perhitungan PathLoss dengan menggunakan tinggi antenna 30 mtr pada frekuensi 2.3 GHz

$$PL = A + 10\gamma \log(d/d_0) + s + \Delta PLf + \Delta PLhr \quad d > d_0$$

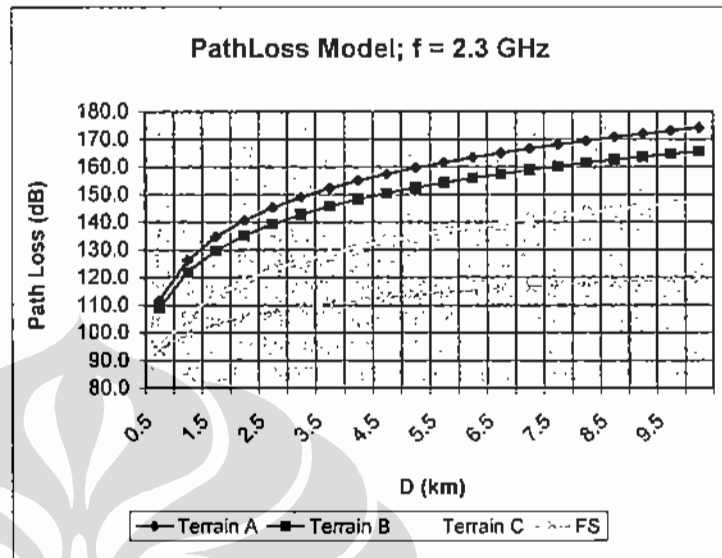
$$A = 32.45 + 20 \log 10(f) + 20 \log(d_0)$$

$$\Delta PLf = 6 \log(f/1900)$$

$$\gamma = a - b \cdot hb + c/hb$$

hb1 (mtr) = 30
 hb2 (mtr) = 40
 hr (mtr) = 10
 d0 (km) = 0.1
 d (km) = 0.5
 Freq (MHz) = 2300

Parameter	Terrain A	Terrain B	Terrain C
a	4.6	4	3.6
b	0.0075	0.0065	0.005
c	12.6	17.1	20
γ_1 (hb= 30mtr)	4.795	4.375	4.11666667
γ_2 (hb= 40mtr)	4.615	4.1675	3.9
Freq (MHz)	2300	2300	2300
d0 (km)	0.1	0.1	0.1
d (mtr)	0.5	0.5	0.5
ΔPLf (dB)	0.497845	0.4978454	0.49784541
$\Delta PLhr$ (dB)	-12.70179	-12.701786	-23.521825
s (dB)	10.6	10.6	8.3
A (dB)	79.68456	79.684557	79.6845567
$10\gamma \cdot \log(d/d_0)$	33.51561	30.579938	28.7742652
Path Loss	111.5962	108.66055	93.7348421



d (km)	Terrain A	Terrain B	Terrain C	FS
0.5	111.592	108.660	93.734	93.663
1	126.030	121.830	108.127	99.684
1.5	134.474	129.534	113.376	103.206
2	140.465	135.000	118.519	105.705
2.5	145.111	139.240	122.509	107.643
3	148.908	142.704	125.768	109.227
3.5	152.118	145.633	128.524	110.565
4	154.899	148.170	130.912	111.725
4.5	157.352	150.408	133.017	112.748
5	159.546	152.410	134.901	113.664
5.5	161.531	154.221	136.605	114.491
6	163.343	155.874	138.161	115.247
6.5	165.009	157.395	139.592	115.942
7	166.553	158.803	140.917	116.586
7.5	167.989	160.114	142.150	117.185
8	169.333	161.340	143.304	117.746
8.5	170.596	162.492	144.388	118.272
9	171.786	163.578	145.410	118.769
9.5	172.912	164.606	146.376	119.239
10	173.980	165.580	147.293	119.684

OUTDOOR

Parameter	Unit	BPSK	QPSK	16QAM	64QAM
Transmitter					
Transmit Power	Watt	0.25	0.25	0.25	0.25
	dBm	24.00	24.00	24.00	24.00
Cabling system loss	dB	-1.00	-1.00	-1.00	-1.00
Antenna Gain	dBi	16.00	16.00	16.00	16.00
EIRP	dBm	39.00	39.00	39.00	39.00
Receiver					
Antenna Gain	dB	18.00	18.00	18.00	18.00
Cabling system loss	dB	0.00	0.00	0.00	0.00
Received Sensitivity	dB	-95.00	-92.00	-86.00	-77.00
System Gain	dB	152.00	149.00	143.00	134.00
Margin					
Other system Gain/Loss	dB	2.00	2.00	2.00	2.00
Fade Margin	dB	4.00	4.00	4.00	4.00
Building penetration loss	dB	0.00	0.00	0.00	0.00
Path Loss					
Total System PL	dB	146.00	143.00	137.00	128.00
Free Space PL	dB	114.30	112.90	110.00	105.70
Frequency	MHz	2,300.00	2,300.00	2,300.00	2,300.00
do	km	0.10	0.10	0.10	0.10
hb	m	40.00	40.00	40.00	40.00
PL Exponent (γ)		4.80	4.80	4.80	4.80
ΔPL_f	dB	0.50	0.50	0.50	0.50
ΔPL_h	dB	-23.52	-23.52	-23.52	-23.52
Shadow Effect (s)	dB	10.60	10.60	10.60	10.60
A(do)	dB	79.68	79.68	79.68	79.68
PL correction	dB	-23.02	-23.02	-23.02	-23.02
Jarak Jangkau	km	4.39	3.80	2.85	1.85

BPSK

	CAPEX					OPEX						
	Tahun 0	Tahun 1	Tahun 2	Tahun 3	Tahun 4	Tahun 5	Tahun 0	Tahun 1	Tahun 2	Tahun 3	Tahun 4	Tahun 5
Jakarta Pusat	7184988316	3561767907	3544908482	3542922540	3542922540	3544908482	0	3256947017	3872954193	4480445943	5081099183	5675394853
Jakarta Timur	2009683923	869789900.1	867839420.8	867644372.9	867644372.9	867839420.8	0	444994041.8	602642586.3	758190943.3	911867002.3	1063778032
Jakarta Barat	6128951769	1776089225	911104596.5	910200283.4	910200283.4	911104596.5	0	1223599661	1418233914	1565622133	1711502262	1856004308
Jakarta Utara	4069317846	891968813.8	889472008.7	888922328.2	888922328.2	889472008.7	0	775109119.5	929851980.5	1082391695	1233184720	1382356867
Jakarta Selatan	13265520500	2703790627	2684640467	2682725451	2682725451	2684640467	0	249232397	2955446645	2897297905	3863008145	3750011732
Total Incremental	1.03752E+11	9809406473	8897964975	8892414975	8892414975	8897964975	0	85580769237	1.00448E+11	1.15177E+11	1.30475E+11	1.44683E+11
Total Cumulative	1.03752E+11	1.13561E+11	1.22459E+11	1.31351E+11	1.40244E+11	1.49142E+11	0	85580769237	1.86029E+11	3.01205E+11	4.3168E+11	5.76363E+11

QPSK

	CAPEX					OPEX						
	Tahun 0	Tahun 1	Tahun 2	Tahun 3	Tahun 4	Tahun 5	Tahun 0	Tahun 1	Tahun 2	Tahun 3	Tahun 4	Tahun 5
Jakarta Pusat	1328720500	2708826409	2688966985	2686981042	2686981042	2688966985	0	2493881397	2957275450	3413865959	3865244246	4311809939
Jakarta Timur	1035366962	869789900.1	867839420.8	867644372.9	867644372.9	867839420.8	0	283821502.9	443609901.2	601191119.2	756798396.2	910544082.6
Jakarta Barat	5154634808	920147727.5	911104596.5	910200283.4	910200283.4	911104596.5	0	944051658.4	1098028690	1249592623	1399433832	1547701753
Jakarta Utara	3095000885	891968813.8	889472008.7	888922328.2	888922328.2	889472008.7	0	613936580.6	770819295.4	925391871.3	1078116114	1229122918
Jakarta Selatan	10342569615	2703790627	1828698969	1826783953	1826783953	1828698969	0	2008809781	2359973125	2766796225	2959221639	2849831857
Total Incremental	8294084766	8097523478	7186081980	7180531980	7180531980	7186081980	0	7008468920	82803978461	9514143798	1.08254E+11	1.20554E+11
Total Cumulative	8294084766	91038368246	98224450226	1.05405E+11	1.12586E+11	1.19772E+11	0	7008468920	1.52812E+11	2.47954E+11	3.56208E+11	4.76762E+11

16QAM

	CAPEX					OPEX						
	Tahun 0	Tahun 1	Tahun 2	Tahun 3	Tahun 4	Tahun 5	Tahun 0	Tahun 1	Tahun 2	Tahun 3	Tahun 4	Tahun 5
Jakarta Pusat	10364769615	2708826409	1833025487	1831039545	1831039545	1833025487	0	2010363781	2361801930	2663318484	2961457740	3256257580
Jakarta Timur	1035366962	869789900.1	867839420.8	867644372.9	867644372.9	867839420.8	0	283821502.9	443609901.2	601191119.2	756798396.2	910544082.6
Jakarta Barat	4180317846	920147727.5	911104596.5	910200283.4	910200283.4	911104596.5	0	78287919.5	938996004.5	1092592799	1244365226	1394467804
Jakarta Utara	3095000885	891968813.8	889472008.7	888922328.2	888922328.2	889472008.7	0	613936580.6	770819295.4	925391871.3	1078116114	1229122918
Jakarta Selatan	8393935692	1847849129	1828698969	1826783953	1826783953	1828698969	0	1568089239	1880755216	1911669833	2492084603	2459846980
Total Incremental	64699210999	7241581980	6330140483	6324590483	6324590483	6330140483	0	53428418223	63419370347	73071652107	83264390079	92836157364
Total Cumulative	64699210999	71940812979	78270953462	84595543944	90920134427	97250274909	0	53428418223	1.16848E+11	1.89919E+11	2.73184E+11	3.6602E+11

64QAM

	CAPEX					OPEX						
	Tahun 0	Tahun 1	Tahun 2	Tahun 3	Tahun 4	Tahun 5	Tahun 0	Tahun 1	Tahun 2	Tahun 3	Tahun 4	Tahun 5
Jakarta Pusat	8416135692	1852884912	1833025487	1831039545	1831039545	1833025487	0	1569643239	1882564021	2190286151	2494320704	2794991076
Jakarta Timur	1035366962	869789900.1	867839420.8	867644372.9	867644372.9	867839420.8	0	283821502.9	443609901.2	601191119.2	756798396.2	910544082.6
Jakarta Barat	3206000885	920147727.5	911104596.5	910200283.4	910200283.4	911104596.5	0	621706580.6	779963319.4	935592975.2	1089296620	1241233855
Jakarta Utara	2120683923	891968813.8	889472008.7	888922328.2	888922328.2	889472008.7	0	452764041.8	611786610.3	768392047.2	923047507.9	1075888969
Jakarta Selatan	6445301769	1847849129	1828698969	1826783953	1826783953	1828698969	0	1245744161	1562669846	1636294545	2181947391	2188232567
Total Incremental	52212769230	6385640483	6330140483	6324590483	6324590483	6330140483	0	44374335526	52564513698	60498940837	68895858618	76744607549
Total Cumulative	52212769230	66598409713	64928550195	71253140678	77577731160	83907871643	0	44374335526	96938849223	1.57438E+11	2.26334E+11	3.03078E+11

PERHITUNGAN BASE STATION

Tahun I

Area	Peak HeiSpot (Mbps)	Kapasitas BS kanal 7.5 MHz			Densitas (MHz/km ²)			Jumlah Sektor			Jumlah BS						
		BPSK	QPSK	16QAM	64QAM	BPSK	QPSK	16QAM	64QAM	BPSK	QPSK	16QAM	64QAM	BPSK	QPSK	16QAM	64QAM
JakPus	461.44	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	65	52	38	31	17	13	10	8
JakTim	33.44	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	5	4	3	3	2	1	1	1
JakBir	145.86	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	21	17	13	10	6	5	4	3
JakUt	105.71	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	15	12	9	8	4	3	3	2
JakSel	347.76	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	89	66	51	39	24	13	10	8

Tahun II

Area	Peak HeiSpot (Mbps)	Kapasitas BS kanal 7.5 MHz			Densitas (MHz/km ²)			Jumlah Sektor			Jumlah BS						
		BPSK	QPSK	16QAM	64QAM	BPSK	QPSK	16QAM	64QAM	BPSK	QPSK	16QAM	64QAM	BPSK	QPSK	16QAM	64QAM
JakPus	104.6716933	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	15	12	9	7	4	3	3	2
JakTim	7.58543131	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	2	1	1	1	1	1	1	1
JakBir	33.08645107	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	5	4	3	3	2	1	1	1
JakUt	23.97894569	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	4	3	2	2	1	1	1	1
JakSel	78.88485623	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	22	17	14	11	8	7	6	5

Tahun III

Area	Peak HeiSpot (Mbps)	Kapasitas BS kanal 7.5 MHz			Densitas (MHz/km ²)			Jumlah Sektor			Jumlah BS						
		BPSK	QPSK	16QAM	64QAM	BPSK	QPSK	16QAM	64QAM	BPSK	QPSK	16QAM	64QAM	BPSK	QPSK	16QAM	64QAM
JakPus	89.93920128	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	13	10	8	6	4	3	2	2
JakTim	6.517060703	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	4	4	3	2	1	1	1	1
JakBir	28.42638978	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	3	3	2	2	1	1	1	1
JakUt	20.60162939	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	3	3	2	2	1	1	1	1
JakSel	67.7741131	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	20	15	12	10	7	6	5	5

Tahun IV

Area	Peak HeiSpot (Mbps)	Kapasitas BS kanal 7.5 MHz			Densitas (MHz/km ²)			Jumlah Sektor			Jumlah BS						
		BPSK	QPSK	16QAM	64QAM	BPSK	QPSK	16QAM	64QAM	BPSK	QPSK	16QAM	64QAM	BPSK	QPSK	16QAM	64QAM
JakPus	88.45495208	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	13	10	8	6	4	3	2	2
JakTim	6.410222642	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	1	1	1	1	1	1	1	1
JakBir	27.96038339	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	4	4	3	2	1	1	1	1
JakUt	23.97894569	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	4	3	2	2	1	1	1	1
JakSel	66.66325879	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	19	15	12	9	7	6	5	5

Tahun V

Area	Peak HeiSpot (Mbps)	Kapasitas BS kanal 7.5 MHz			Densitas (MHz/km ²)			Jumlah Sektor			Jumlah BS						
		BPSK	QPSK	16QAM	64QAM	BPSK	QPSK	16QAM	64QAM	BPSK	QPSK	16QAM	64QAM	BPSK	QPSK	16QAM	64QAM
JakPus	88.45495208	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	13	10	8	6	4	3	2	2
JakTim	6.410222642	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	1	1	1	1	1	1	1	1
JakBir	27.96038339	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	4	4	3	2	1	1	1	1
JakUt	26.26389776	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	3	3	2	2	1	1	1	1
JakSel	66.66325879	8.987	11.2914	15.1855	18.83	0.5950	0.9972	2.3863	7.0232	19	15	12	9	7	6	5	5

Sewa Backbone per bulan (2x E1)
 18.446.000.00
 36.892.000.00 (no discount)

Kebutuhan link 2Mbps per regional per modulasi per tahun

Area	Tahun I			Tahun II			Tahun III					
	BPSK	QPSK	16QAM	64QAM	BPSK	QPSK	16QAM	64QAM	BPSK	QPSK	16QAM	64QAM
JakPus	52	42	25	31	25	12	10	8	6	11	8	7
JakTim	4	4	3	3	3	2	1	1	1	1	1	1
JakBar	17	14	8	11	8	4	4	3	3	4	4	3
JakUt	12	10	7	8	7	4	3	2	2	3	3	2
JakSel	40	32	20	24	20	9	8	6	5	8	7	5
Total+10%Backup	138	113	70	85	70	35	29	22	19	30	26	20
Kumulatif	138	113	70	85	70	173	142	107	89	203	168	127
Monthly Cost	5091096000	4168796000	3135820000	2582440000	6382316000	5238664000	3947444000	3283388000	7489076000	6197856000	4685284000	3873660000
Yearly Cost	61093152000	50025552000	37629840000	30989280000	76587792000	62863968000	47369328000	39400656000	89868912000	74374272000	56223408000	46483920000

Area	Tahun IV			Tahun V			Tahun VI					
	BPSK	QPSK	16QAM	64QAM	BPSK	QPSK	16QAM	64QAM	BPSK	QPSK	16QAM	64QAM
JakPus	11	8	5	7	5	11	8	7	5	11	8	7
JakTim	1	1	1	1	1	1	1	1	1	1	1	1
JakBar	4	4	2	3	2	4	4	3	2	4	4	3
JakUt	4	3	2	2	2	3	3	2	2	3	3	2
JakSel	8	7	4	5	4	8	7	5	4	8	7	5
Total+10%Backup	31	26	16	20	16	30	26	20	16	30	26	20
Kumulatif	234	194	121	147	137	264	230	167	137	294	246	187
Monthly Cost	863728000	7157048000	5423124000	4463932000	9739488000	8116240000	6160964000	5054204000	10846248000	9075432000	6898804000	5644476000
Yearly Cost	1.035931E+11	85884576000	65077488000	53567184000	1.16874E+11	97394880000	73931568000	60650448000	1.30155E+11	1.08905E+11	82785648000	67733712000

DP2K - case 10%

Table with 5 columns: Scenario, Year, Cash Flow, Total Expense, Revenue. Rows include Scenario II (Year 0-5) and Scenario I (Year 0-5).

Table with 5 columns: Scenario II, Year, Cash Flow, Total Expense, Revenue. Rows include Year 0-5.

DP2K - case 6%

Table with 5 columns: Scenario, Year, Cash Flow, Total Expense, Revenue. Rows include Scenario II (Year 0-5) and Scenario I (Year 0-5).

Table with 5 columns: Scenario II, Year, Cash Flow, Total Expense, Revenue. Rows include Year 0-5.

DP2K - case 10%

Table with 5 columns: Scenario, Year, Cash Flow, Total Expense, Revenue. Rows include Scenario II (Year 0-5) and Scenario I (Year 0-5).

Table with 5 columns: Scenario II, Year, Cash Flow, Total Expense, Revenue. Rows include Year 0-5.

DP2K - case 8%

Table with 5 columns: Scenario, Year, Cash Flow, Total Expense, Revenue. Rows include Scenario II (Year 0-5) and Scenario I (Year 0-5).

Summary table for Case 10% showing Revenue (18%), Total Expense (24%), and NPV (28,849,312,000.15).

Summary table for Case 6% showing Revenue (18%), Total Expense (24%), and NPV (28,749,577,137.40).

DP2K - case 10%

Summary table for Case 6% showing Revenue (18%), Total Expense (24%), and NPV (28,819,022,775.74).

Summary table for Case 10% showing Revenue (18%), Total Expense (24%), and NPV (30,129,000,700.95).

DP2K - case 10%

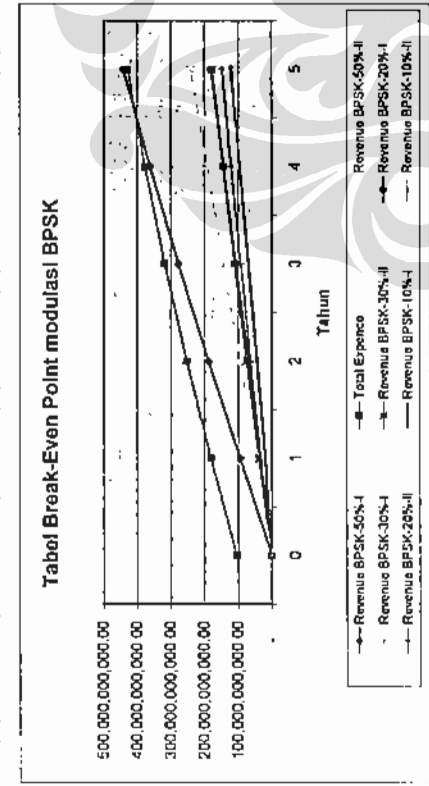
Summary table for Case 10% showing Revenue (18%), Total Expense (24%), and NPV (30,330,347,226.53).

Summary table for Case 8% showing Revenue (18%), Total Expense (24%), and NPV (30,716,751,510.07).

DP2K - case 8%

Summary table for Case 8% showing Revenue (18%), Total Expense (24%), and NPV (28,818,070,747.82).

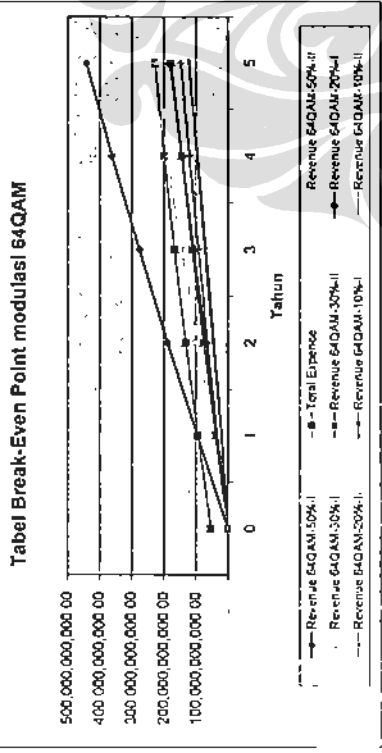
Tahun	CAPEX		OPEX		Total Expense		Revenue		Net Revenue		10%		24%		24%		NPV	IRR	PayP	BSP	Revenue (10%)	Total Expense (24%)	
	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1							(000.000.000.000.000)
0	102.751.014.333,00		0,00		102.751.014.333,00		0,00		102.751.014.333,00		10,28		10,28	100,00			100,00	102.751.014.333,00				102.751.014.333,00	
1	2.629.462.412,50	88.245.102.238,75	88.245.102.238,75	29.112.872.852,15	117.357.975.091,50	65.016.241.811,00	52.341.728.280,50	29.112.872.852,15	146.470.847.943,65	91.364.975.132,50	0,84	0,84	0,84	0,84	0,84	0,84	29.112.872.852,15	29.112.872.852,15	117.357.975.091,50	117,36	146.470.847.943,65	146,47	
2	3.420.414.912,00	111.176.017.818,50	111.176.017.818,50	36.109.143.336,26	147.285.161.154,76	81.500.001.038,80	65.785.160.115,96	36.109.143.336,26	183.394.322.313,52	107.285.161.154,76	0,88	0,88	0,88	0,88	0,88	0,88	36.109.143.336,26	36.109.143.336,26	147.285.161.154,76	147,29	183.394.322.313,52	183,39	
3	4.492.414.912,00	136.474.517.312,50	136.474.517.312,50	43.001.842.278,00	179.476.359.590,50	95.501.801.028,80	83.974.558.561,70	43.001.842.278,00	212.478.201.868,50	128.476.359.590,50	0,91	0,91	0,91	0,91	0,91	0,91	43.001.842.278,00	43.001.842.278,00	179.476.359.590,50	179,48	212.478.201.868,50	212,48	
4	5.927.264.912,00	164.622.521.781,00	164.622.521.781,00	50.893.485.786,00	215.516.007.567,00	106.395.286.814,80	95.520.721.282,20	50.893.485.786,00	246.409.493.353,00	159.409.493.353,00	0,93	0,93	0,93	0,93	0,93	0,93	50.893.485.786,00	50.893.485.786,00	215.516.007.567,00	215,52	246.409.493.353,00	246,41	
5	14.514.176.762,50	378.362.337.278,15	378.362.337.278,15	118.831.243.265,42	497.193.580.543,67	165.233.527.084,20	131.960.053.563,48	118.831.243.265,42	616.053.930.821,82	378.362.337.278,15	0,97	0,97	0,97	0,97	0,97	0,97	118.831.243.265,42	118.831.243.265,42	497.193.580.543,67	497,19	616.053.930.821,82	616,05	



SIQAM - Form 157

Item No	Category	QTY	Total Expense (RM)	Revenue (RM)	Net Revenue (RM)	Disc. Factor (%)	Disc. Factor (RM)	Present Value (RM)	Disc. Factor (RM)	Present Value (RM)	NPV (RM)	IRR (%)	ROI (%)
0	32,317,780.00	0.00	32,317,780.00	0.00	(32,317,780.00)	1.0000	0.0000	32,317,780.00	0.0000	0.0000	32,317,780.00	0.0000	0.0000
1	1,315,642.50	41,374,315.53	50,729,170.00	11,427,179.37	39,301,990.63	0.8479	0.8479	32,819,780.00	0.8479	27,717,820.00	14,982,100.00	18.54%	18.54%
2	3,314,100.00	61,644,513.00	64,958,613.00	3,314,100.00	61,644,513.00	0.6769	0.6769	24,100,000.00	0.6769	16,200,000.00	28,100,000.00	23.24%	23.24%
3	6,314,100.00	123,289,026.00	129,603,126.00	6,314,100.00	123,289,026.00	0.5554	0.5554	18,000,000.00	0.5554	10,000,000.00	38,100,000.00	21.18%	21.18%
4	9,314,100.00	184,933,539.00	194,247,639.00	9,314,100.00	184,933,539.00	0.4531	0.4531	13,500,000.00	0.4531	6,150,000.00	44,250,000.00	19.32%	19.32%
5	12,314,100.00	246,578,052.00	258,892,152.00	12,314,100.00	246,578,052.00	0.3681	0.3681	10,000,000.00	0.3681	3,700,000.00	47,950,000.00	18.95%	18.95%
6	15,314,100.00	308,222,565.00	323,536,665.00	15,314,100.00	308,222,565.00	0.2961	0.2961	7,500,000.00	0.2961	2,225,000.00	50,175,000.00	18.54%	18.54%
7	18,314,100.00	369,867,078.00	388,181,178.00	18,314,100.00	369,867,078.00	0.2351	0.2351	5,500,000.00	0.2351	1,275,000.00	51,450,000.00	18.54%	18.54%
8	21,314,100.00	431,511,591.00	452,825,691.00	21,314,100.00	431,511,591.00	0.1861	0.1861	4,000,000.00	0.1861	750,000.00	52,200,000.00	18.54%	18.54%
9	24,314,100.00	493,156,104.00	517,470,204.00	24,314,100.00	493,156,104.00	0.1461	0.1461	3,000,000.00	0.1461	437,500.00	52,637,500.00	18.54%	18.54%
10	27,314,100.00	554,800,617.00	582,114,717.00	27,314,100.00	554,800,617.00	0.1121	0.1121	2,250,000.00	0.1121	251,250.00	52,888,750.00	18.54%	18.54%
11	30,314,100.00	616,445,130.00	646,759,230.00	30,314,100.00	616,445,130.00	0.0841	0.0841	1,650,000.00	0.0841	137,250.00	53,026,000.00	18.54%	18.54%
12	33,314,100.00	678,089,643.00	711,403,743.00	33,314,100.00	678,089,643.00	0.0621	0.0621	1,200,000.00	0.0621	75,000.00	53,101,000.00	18.54%	18.54%
13	36,314,100.00	739,734,156.00	777,048,256.00	36,314,100.00	739,734,156.00	0.0461	0.0461	900,000.00	0.0461	41,250.00	53,132,250.00	18.54%	18.54%
14	39,314,100.00	801,378,669.00	846,692,769.00	39,314,100.00	801,378,669.00	0.0341	0.0341	675,000.00	0.0341	23,250.00	53,155,500.00	18.54%	18.54%
15	42,314,100.00	863,023,182.00	908,337,282.00	42,314,100.00	863,023,182.00	0.0251	0.0251	500,000.00	0.0251	12,500.00	53,170,000.00	18.54%	18.54%
16	45,314,100.00	924,667,695.00	970,000,000.00	45,314,100.00	924,667,695.00	0.0181	0.0181	375,000.00	0.0181	6,750.00	53,176,750.00	18.54%	18.54%
17	48,314,100.00	986,312,208.00	1,031,654,518.00	48,314,100.00	986,312,208.00	0.0131	0.0131	281,250.00	0.0131	3,656.25	53,179,406.25	18.54%	18.54%
18	51,314,100.00	1,047,956,721.00	1,093,309,029.00	51,314,100.00	1,047,956,721.00	0.0091	0.0091	210,000.00	0.0091	1,890.00	53,180,300.00	18.54%	18.54%
19	54,314,100.00	1,109,601,234.00	1,155,000,000.00	54,314,100.00	1,109,601,234.00	0.0061	0.0061	157,500.00	0.0061	937.50	53,180,300.00	18.54%	18.54%
20	57,314,100.00	1,171,245,747.00	1,216,654,517.00	57,314,100.00	1,171,245,747.00	0.0041	0.0041	118,125.00	0.0041	483.75	53,180,300.00	18.54%	18.54%
21	60,314,100.00	1,232,890,260.00	1,278,309,029.00	60,314,100.00	1,232,890,260.00	0.0031	0.0031	88,875.00	0.0031	356.25	53,180,300.00	18.54%	18.54%
22	63,314,100.00	1,294,534,773.00	1,340,000,000.00	63,314,100.00	1,294,534,773.00	0.0021	0.0021	66,675.00	0.0021	266.25	53,180,300.00	18.54%	18.54%
23	66,314,100.00	1,356,179,286.00	1,401,654,517.00	66,314,100.00	1,356,179,286.00	0.0016	0.0016	50,000.00	0.0016	190.00	53,180,300.00	18.54%	18.54%
24	69,314,100.00	1,417,823,800.00	1,463,309,029.00	69,314,100.00	1,417,823,800.00	0.0011	0.0011	37,500.00	0.0011	138.75	53,180,300.00	18.54%	18.54%
25	72,314,100.00	1,479,468,313.00	1,525,000,000.00	72,314,100.00	1,479,468,313.00	0.0008	0.0008	28,125.00	0.0008	100.69	53,180,300.00	18.54%	18.54%
26	75,314,100.00	1,541,112,826.00	1,586,654,517.00	75,314,100.00	1,541,112,826.00	0.0006	0.0006	21,000.00	0.0006	73.50	53,180,300.00	18.54%	18.54%
27	78,314,100.00	1,602,757,339.00	1,648,309,029.00	78,314,100.00	1,602,757,339.00	0.0004	0.0004	15,750.00	0.0004	53.63	53,180,300.00	18.54%	18.54%
28	81,314,100.00	1,664,401,852.00	1,710,000,000.00	81,314,100.00	1,664,401,852.00	0.0003	0.0003	11,812.50	0.0003	39.19	53,180,300.00	18.54%	18.54%
29	84,314,100.00	1,726,046,365.00	1,771,654,517.00	84,314,100.00	1,726,046,365.00	0.0002	0.0002	8,850.00	0.0002	28.50	53,180,300.00	18.54%	18.54%
30	87,314,100.00	1,787,690,878.00	1,833,309,029.00	87,314,100.00	1,787,690,878.00	0.0001	0.0001	6,637.50	0.0001	21.38	53,180,300.00	18.54%	18.54%
31	90,314,100.00	1,849,335,391.00	1,895,000,000.00	90,314,100.00	1,849,335,391.00	0.0001	0.0001	4,978.13	0.0001	15.94	53,180,300.00	18.54%	18.54%
32	93,314,100.00	1,910,979,904.00	1,956,654,517.00	93,314,100.00	1,910,979,904.00	0.0000	0.0000	3,733.59	0.0000	11.94	53,180,300.00	18.54%	18.54%
33	96,314,100.00	1,972,624,417.00	2,018,309,029.00	96,314,100.00	1,972,624,417.00	0.0000	0.0000	2,790.19	0.0000	8.84	53,180,300.00	18.54%	18.54%
34	99,314,100.00	2,034,268,930.00	2,080,000,000.00	99,314,100.00	2,034,268,930.00	0.0000	0.0000	2,092.64	0.0000	6.56	53,180,300.00	18.54%	18.54%
35	102,314,100.00	2,095,913,443.00	2,141,654,517.00	102,314,100.00	2,095,913,443.00	0.0000	0.0000	1,567.73	0.0000	4.84	53,180,300.00	18.54%	18.54%
36	105,314,100.00	2,157,557,956.00	2,203,309,029.00	105,314,100.00	2,157,557,956.00	0.0000	0.0000	1,179.79	0.0000	3.56	53,180,300.00	18.54%	18.54%
37	108,314,100.00	2,219,202,469.00	2,265,000,000.00	108,314,100.00	2,219,202,469.00	0.0000	0.0000	884.84	0.0000	2.62	53,180,300.00	18.54%	18.54%
38	111,314,100.00	2,280,846,982.00	2,326,654,517.00	111,314,100.00	2,280,846,982.00	0.0000	0.0000	661.13	0.0000	1.91	53,180,300.00	18.54%	18.54%
39	114,314,100.00	2,342,491,495.00	2,388,309,029.00	114,314,100.00	2,342,491,495.00	0.0000	0.0000	494.34	0.0000	1.40	53,180,300.00	18.54%	18.54%
40	117,314,100.00	2,404,136,008.00	2,450,000,000.00	117,314,100.00	2,404,136,008.00	0.0000	0.0000	368.75	0.0000	1.03	53,180,300.00	18.54%	18.54%
41	120,314,100.00	2,465,780,521.00	2,511,654,517.00	120,314,100.00	2,465,780,521.00	0.0000	0.0000	276.56	0.0000	0.75	53,180,300.00	18.54%	18.54%
42	123,314,100.00	2,527,425,034.00	2,573,309,029.00	123,314,100.00	2,527,425,034.00	0.0000	0.0000	207.83	0.0000	0.55	53,180,300.00	18.54%	18.54%
43	126,314,100.00	2,589,069,547.00	2,635,000,000.00	126,314,100.00	2,589,069,547.00	0.0000	0.0000	155.87	0.0000	0.40	53,180,300.00	18.54%	18.54%
44	129,314,100.00	2,650,714,060.00	2,696,654,517.00	129,314,100.00	2,650,714,060.00	0.0000	0.0000	116.91	0.0000	0.29	53,180,300.00	18.54%	18.54%
45	132,314,100.00	2,712,358,573.00	2,758,309,029.00	132,314,100.00	2,712,358,573.00	0.0000	0.0000	88.44	0.0000	0.21	53,180,300.00	18.54%	18.54%
46	135,314,100.00	2,774,003,086.00	2,820,000,000.00	135,314,100.00	2,774,003,086.00	0.0000	0.0000	66.33	0.0000	0.15	53,180,300.00	18.54%	18.54%
47	138,314,100.00	2,835,647,599.00	2,881,654,517.00	138,314,100.00	2,835,647,599.00	0.0000	0.0000	49.87	0.0000	0.11	53,180,300.00	18.54%	18.54%
48	141,314,100.00	2,897,292,112.00	2,943,309,029.00	141,314,100.00	2,897,292,112.00	0.0000	0.0000	37.50	0.0000	0.08	53,180,300.00	18.54%	18.54%
49	144,314,100.00	2,958,936,625.00	2,999,000,000.00	144,314,100.00	2,958,936,625.00	0.0000	0.0000	28.13	0.0000	0.06	53,180,300.00	18.54%	18.54%
50	147,314,100.00	3,020,581,138.00	3,060,654,517.00	147,314,100.00	3,020,581,138.00	0.0000	0.0000	21.19	0.0000	0.04	53,180,300.00	18.54%	18.54%
51	150,314,100.00	3,082,225,651.00	3,122,309,029.00	150,314,100.00	3,082,225,651.00	0.0000	0.0000	16.00	0.0000	0.03	53,180,300.00	18.54%	18.54%
52	153,314,100.00	3,143,870,164.00	3,184,000,000.00	153,314,100.00	3,143,870,164.00	0.0000	0.0000	12.00	0.0000	0.02	53,180,300.00	18.54%	18.54%
53	156,314,100.00	3,205,514,677.00	3,245,654,517.00	156,314,100.00	3,205,514,677.00	0.0000	0.0000	9.00	0.0000	0.01	53,180,300.00	18.54%	18.54%
54	159,314,100.00	3,267,159,190.00	3,307,309,029.00	159,314,100.00	3,267,159,190.00	0.0000	0.0000	6.75	0.0000				

Tahun	14%		18%		21%		NPV	IRR	Payback (th)	Total Expense (Rp)
	Revenue	Discount Factor (1/1.14 ^t)	Revenue	Discount Factor (1/1.18 ^t)	Revenue	Discount Factor (1/1.21 ^t)				
0	0	1	0	1	0	1	0	0	0	0
1	48.374.381.250,00	0,877	42.412.821.125,00	0,850	49.801.248.367,00	0,833	13.702.022.879,77	1,00	27.143.553.837,79	27.143.553.837,79
2	57.266.511.007,50	0,769	43.912.521.187,50	0,722	57.266.511.007,50	0,696	11.272.052.054	1,00	34.205.277.138,81	61.348.830.976,60
3	66.158.641.765,00	0,676	44.821.101.187,50	0,612	66.158.641.765,00	0,585	9.432.101.112,24	1,00	41.205.277.138,81	102.554.101.955,41
4	75.050.772.522,50	0,592	44.821.101.187,50	0,525	75.050.772.522,50	0,495	7.801.101.112,24	1,00	48.158.641.765,00	150.712.743.717,41
5	83.942.903.280,00	0,516	42.912.821.187,50	0,448	83.942.903.280,00	0,415	6.581.101.112,24	1,00	55.102.101.112,24	205.814.844.829,65
6	92.835.034.037,50	0,446	41.003.541.187,50	0,381	92.835.034.037,50	0,348	5.611.101.112,24	1,00	62.046.541.187,50	267.861.386.017,15
7	101.727.164.795,00	0,381	39.094.261.187,50	0,311	101.727.164.795,00	0,281	4.811.101.112,24	1,00	69.001.082.375,00	336.862.468.392,15
8	110.619.295.552,50	0,321	37.184.981.187,50	0,244	110.619.295.552,50	0,214	4.111.101.112,24	1,00	76.001.082.375,00	412.863.550.767,15
9	119.511.426.310,00	0,266	35.275.701.187,50	0,187	119.511.426.310,00	0,157	3.511.101.112,24	1,00	83.001.082.375,00	496.864.633.142,15
10	128.403.557.067,50	0,216	33.366.421.187,50	0,140	128.403.557.067,50	0,110	3.011.101.112,24	1,00	90.001.082.375,00	588.865.715.517,15
11	137.295.700.325,00	0,171	31.457.141.187,50	0,103	137.295.700.325,00	0,083	2.611.101.112,24	1,00	97.001.082.375,00	688.866.797.892,15
12	146.187.853.582,50	0,131	29.547.861.187,50	0,076	146.187.853.582,50	0,063	2.311.101.112,24	1,00	104.001.082.375,00	796.867.880.267,15
13	155.080.006.840,00	0,096	27.638.581.187,50	0,059	155.080.006.840,00	0,048	2.111.101.112,24	1,00	111.001.082.375,00	912.868.962.642,15
14	163.972.160.097,50	0,073	25.729.301.187,50	0,044	163.972.160.097,50	0,036	1.911.101.112,24	1,00	118.001.082.375,00	1.036.870.045.017,15
15	172.864.313.355,00	0,056	23.820.021.187,50	0,033	172.864.313.355,00	0,027	1.711.101.112,24	1,00	125.001.082.375,00	1.168.871.127.392,15
16	181.756.466.612,50	0,042	21.910.741.187,50	0,025	181.756.466.612,50	0,020	1.511.101.112,24	1,00	132.001.082.375,00	1.308.872.209.767,15
17	190.648.619.870,00	0,031	20.001.461.187,50	0,019	190.648.619.870,00	0,015	1.311.101.112,24	1,00	139.001.082.375,00	1.456.873.292.142,15
18	199.540.773.127,50	0,023	18.092.181.187,50	0,014	199.540.773.127,50	0,011	1.111.101.112,24	1,00	146.001.082.375,00	1.612.874.374.517,15
19	208.432.926.385,00	0,017	16.182.901.187,50	0,010	208.432.926.385,00	0,008	1.011.101.112,24	1,00	153.001.082.375,00	1.776.875.456.892,15
20	217.325.079.642,50	0,013	14.273.621.187,50	0,007	217.325.079.642,50	0,006	0.911.101.112,24	1,00	160.001.082.375,00	1.948.876.539.267,15
21	226.217.232.900,00	0,010	12.364.341.187,50	0,006	226.217.232.900,00	0,005	0.811.101.112,24	1,00	167.001.082.375,00	2.128.877.621.642,15
22	235.109.386.157,50	0,007	10.455.061.187,50	0,005	235.109.386.157,50	0,004	0.711.101.112,24	1,00	174.001.082.375,00	2.316.878.704.017,15
23	244.001.539.415,00	0,005	8.545.781.187,50	0,004	244.001.539.415,00	0,003	0.611.101.112,24	1,00	181.001.082.375,00	2.512.879.786.392,15
24	252.893.692.672,50	0,004	6.636.501.187,50	0,003	252.893.692.672,50	0,002	0.511.101.112,24	1,00	188.001.082.375,00	2.716.880.868.767,15
25	261.785.845.930,00	0,003	4.727.221.187,50	0,002	261.785.845.930,00	0,002	0.411.101.112,24	1,00	195.001.082.375,00	2.936.881.951.142,15
26	270.678.000.187,50	0,002	2.817.941.187,50	0,001	270.678.000.187,50	0,001	0.311.101.112,24	1,00	202.001.082.375,00	3.172.883.033.517,15
27	279.570.153.445,00	0,001	0.908.661.187,50	0,001	279.570.153.445,00	0,001	0.211.101.112,24	1,00	209.001.082.375,00	3.424.884.115.892,15
28	288.462.306.702,50	0,001	0.000.000.000,00	0,000	288.462.306.702,50	0,000	0.111.101.112,24	1,00	216.001.082.375,00	3.692.885.198.267,15
29	297.354.460.000,00	0,000	0.000.000.000,00	0,000	297.354.460.000,00	0,000	0.011.101.112,24	1,00	223.001.082.375,00	3.976.886.280.642,15
30	306.246.613.257,50	0,000	0.000.000.000,00	0,000	306.246.613.257,50	0,000	0.001.101.112,24	1,00	230.001.082.375,00	4.276.887.363.017,15



SUMMARY

Skenario I

BPSK

	75% sewa	60% sewa	50% sewa	40% sewa
NPV	(36.848,11)	(238.619,62)	(297.393,35)	(356.167,07)
IRR	-13%	#NUM!	#NUM!	#NUM!
PR	0,92	(1,02)	(1,59)	(2,16)
PBP	1,10	2,23	3,00	4,60
BEP	4,70	8,79	11,62	17,08

QPSK

	75% sewa	60% sewa	50% sewa	40% sewa
NPV	49.387,01	(152.384,50)	(211.158,23)	(269.931,95)
IRR	19%	#NUM!	#NUM!	#NUM!
PR	1,88	(0,56)	(1,27)	(1,97)
PBP	0,88	1,79	2,42	3,71
BEP	3,83	7,22	9,54	14,04

16QAM

	75% sewa	60% sewa	50% sewa	40% sewa
NPV	136.715,63	(65.055,88)	(123.829,60)	(182.603,32)
IRR	58%	#NUM!	#NUM!	#NUM!
PR	3,43	0,31	(0,60)	(1,50)
PBP	0,68	1,41	1,91	2,93
BEP	2,95	5,63	7,46	10,98

64QAM

	75% sewa	60% sewa	50% sewa	40% sewa
NPV	187.493,48	(14.278,05)	(73.051,78)	(131.825,50)
IRR	92%	-8%	#NUM!	#NUM!
PR	4,97	1,11	(0,02)	(1,14)
PBP	0,54	1,15	1,56	2,40
BEP	2,44	4,71	6,24	9,19

Skenario II

BPSK

	75% sewa	60% sewa	50% sewa	40% sewa
NPV	(257.249,58)	(301.329,87)	(330.716,73)	(360.103,59)
IRR	#NUM!	#NUM!	#NUM!	#NUM!
PR	(1,20)	(1,83)	(1,91)	(2,20)
PBP	2,22	2,78	3,34	4,18
BEP	9,49	11,88	14,28	17,87

QPSK

	75% sewa	60% sewa	50% sewa	40% sewa
NPV	(171.014,46)	(215.094,75)	(244.481,61)	(273.868,47)
IRR	#NUM!	#NUM!	#NUM!	#NUM!
PR	(0,78)	(1,31)	(1,67)	(2,02)
PBP	1,77	2,22	2,66	3,34
BEP	7,75	9,71	11,67	14,61

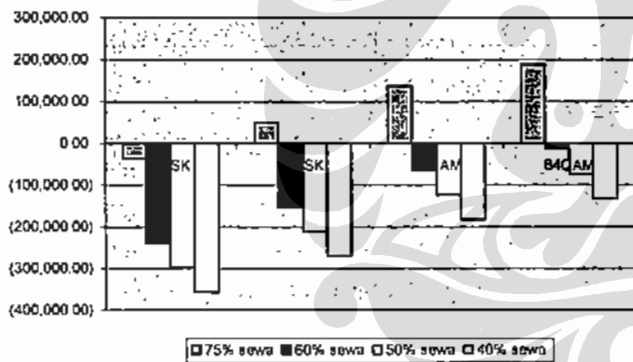
16QAM

	75% sewa	60% sewa	50% sewa	40% sewa
NPV	(83.685,83)	(127.766,12)	(157.152,98)	(186.539,85)
IRR	#NUM!	#NUM!	#NUM!	#NUM!
PR	0,02	(0,66)	(1,11)	(1,57)
PBP	1,38	1,73	2,07	2,60
BEP	6,00	7,52	9,05	11,33

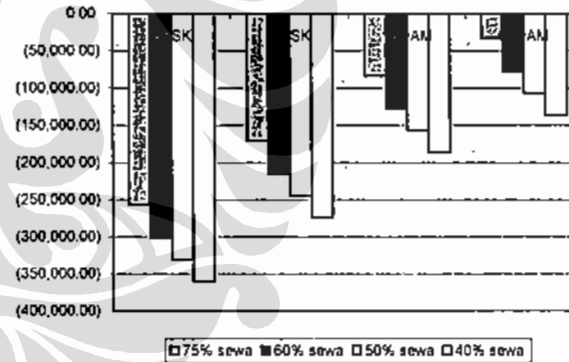
64QAM

	75% sewa	60% sewa	50% sewa	40% sewa
NPV	(32.908,01)	(76.889,30)	(106.375,16)	(135.762,02)
IRR	#NUM!	#NUM!	#NUM!	#NUM!
PR	0,75	(0,09)	(0,66)	(1,22)
PBP	1,11	1,39	1,67	2,09
BEP	4,98	6,25	7,51	9,42

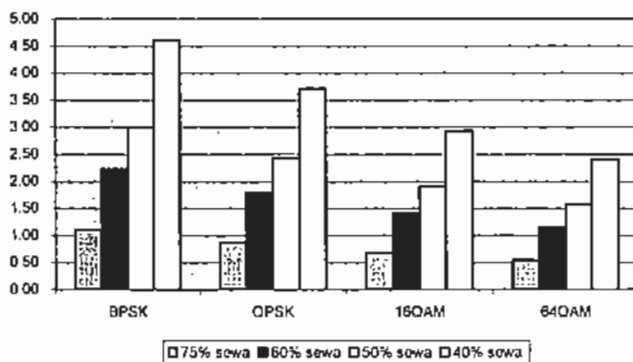
NPV (x1000000) - Skenario I



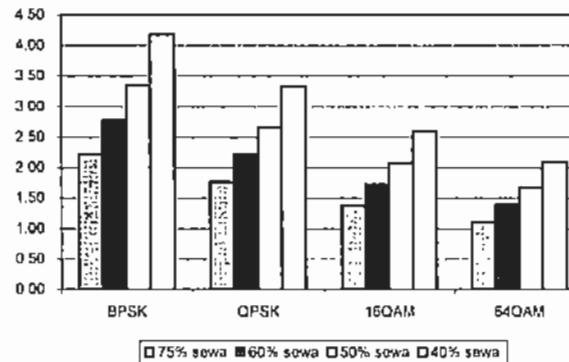
NPV (x1000000) - Skenario II

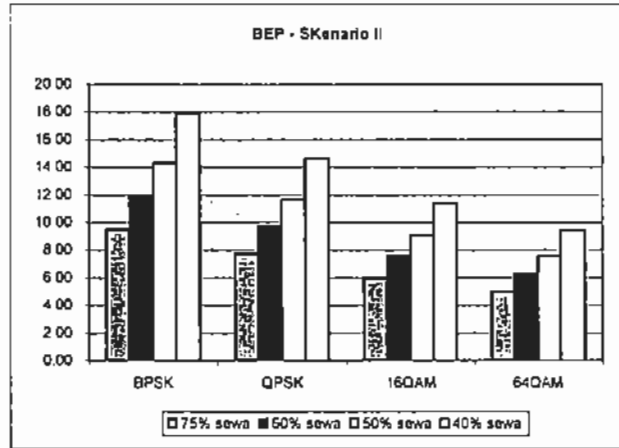
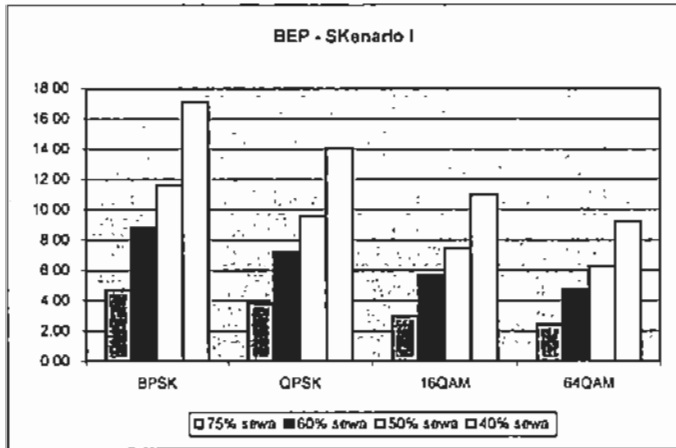


PBP - Skenario I



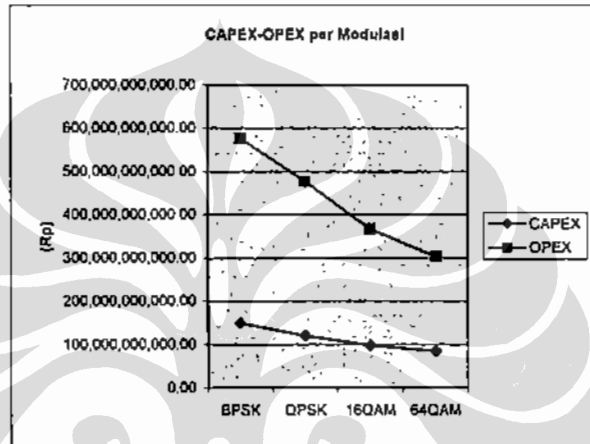
PBP - Skenario II





TOTAL INVESTASI

Modulasi	CAPEX	OPEX
BPSK	#####	576,362,537,278.16
QPSK	#####	476,761,749,955.71
16QAM	97,250,274,909.00	386,019,988,120.20
64QAM	83,907,871,842.50	303,078,256,229.38



Skenario I

BPSK		Tahun		Bulan		Hari	
75%	1.10	1	1.205573158	1	7		
60%	2.23	2	2.717855536	2	22		
60%	3.00	3	0.039037261	0	2		
40%	4.60	4	7.224489777	7	7		
QPSK							
75%	0.88	0	10.51277459	10	16		
60%	1.79	1	9.525934548	9	16		
50%	2.42	2	5.050533972	5	2		
40%	3.71	3	8.538145866	8	17		
16QAM							
75%	0.88	0	8.162410584	8	5		
60%	1.41	1	4.974972757	4	30		
50%	1.91	1	10.92478369	10	28		
40%	2.93	2	11.17106517	11	6		
64QAM							
75%	0.54	0	6.535731441	6	17		
60%	1.15	1	1.859820164	1	26		
60%	1.56	1	6.731681718	6	22		
40%	2.40	2	4.759258828	4	23		

Skenario II

BPSK		Tahun		Bulan		Hari	
75%	2.22	2	2.630458641	2	19		
60%	2.78	2	9.342901383	9	11		
60%	3.34	3	4.055344125	4	2		
40%	4.18	4	2.124008237	2	4		
QPSK							
75%	1.77	1	9.2448615	9	8		
60%	2.22	2	2.610904956	2	19		
60%	2.66	2	7.976548413	7	30		
40%	3.34	3	4.026013598	4	1		
16QAM							
75%	1.38	1	4.524133493	4	16		
60%	1.73	1	8.709994948	8	22		
50%	2.07	2	0.895856403	0	27		
40%	2.60	2	7.174648585	7	6		
64QAM							
75%	1.11	1	1.292775209	1	9		
60%	1.39	1	4.670797092	4	21		
50%	1.67	1	8.048818976	8	2		
40%	2.09	2	1.115851801	1	4		

SUMMARY

Skenario I

BPSK	75% sawa	60% sawa	50% sawa	40% sawa
NPV	74.381.68	(127.389.83)	(186.163.56)	(244.937.28)
IRR	28%	#NUM!	#NUM!	#NUM!
PR	2.21	(0.16)	(0.84)	(1.53)
PBP	0.90	1.85	2.49	3.82
BEP	3.59	6.79	8.90	13.21

QPSK	75% sawa	60% sawa	50% sawa	40% sawa
NPV	141.434.94	(60.336.57)	(118.110.29)	(177.884.01)
IRR	57%	#NUM!	#NUM!	#NUM!
PR	3.42	0.45	(0.41)	(1.28)
PBP	0.71	1.48	2.00	3.07
BEP	2.91	5.56	7.38	10.84

16QAM	75% sawa	60% sawa	50% sawa	40% sawa
NPV	208.339.83	4.568.32	(54.205.40)	(112.879.12)
IRR	98%	2%	#NUM!	#NUM!
PR	5.25	1.47	0.37	(0.73)
PBP	0.56	1.18	1.59	2.45
BEP	2.28	4.38	5.81	8.56

64QAM	75% sawa	60% sawa	50% sawa	40% sawa
NPV	244.870.55	43.099.04	(15.674.68)	(74.448.41)
IRR	138%	26%	-11%	#NUM!
PR	7.17	2.47	1.10	(0.27)
PBP	0.44	0.96	1.30	2.00
BEP	1.87	3.68	4.88	7.20

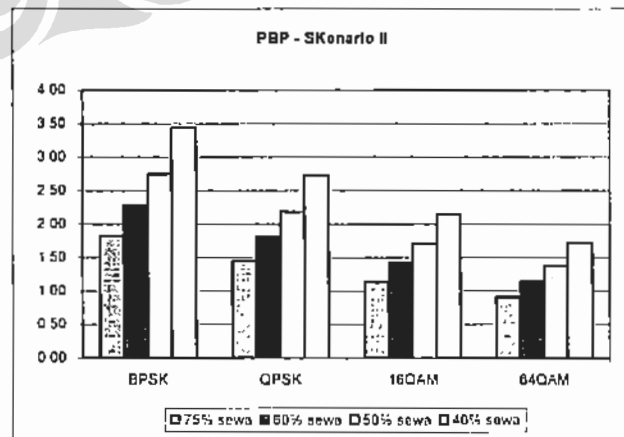
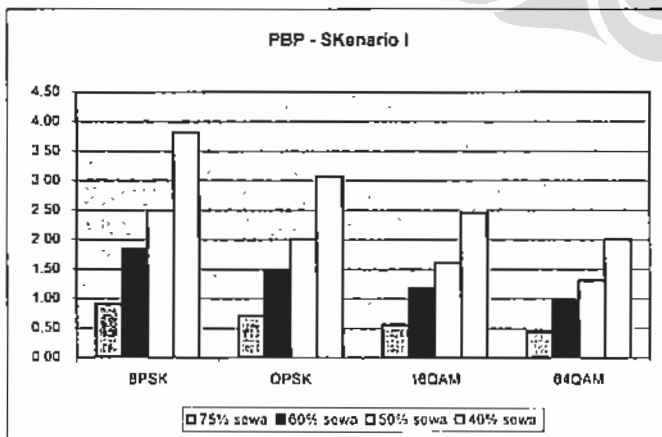
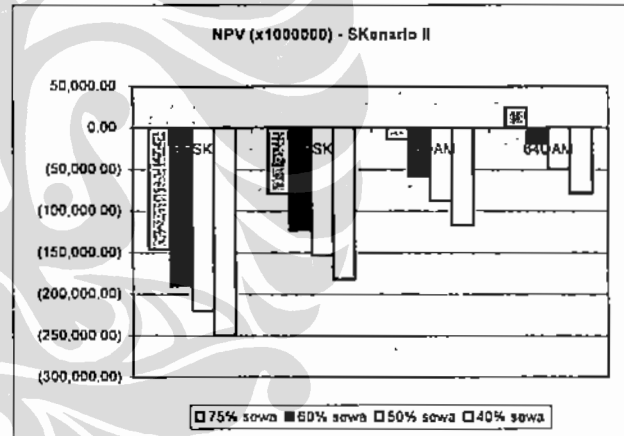
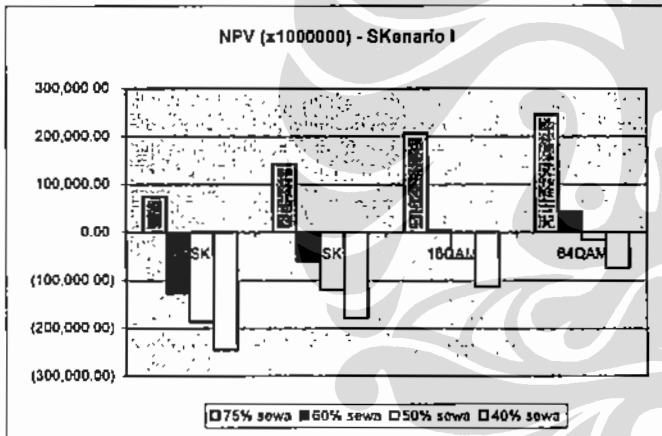
Skenario II

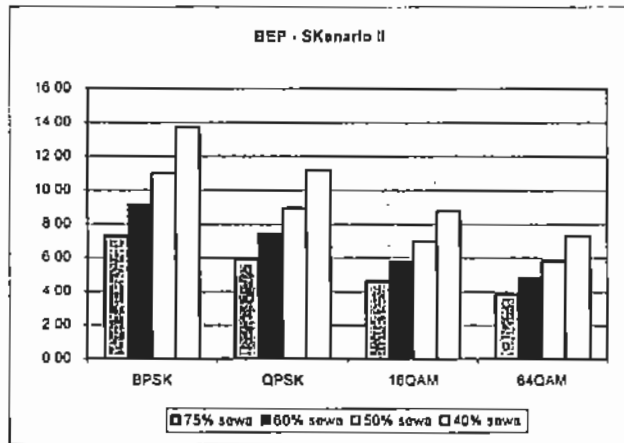
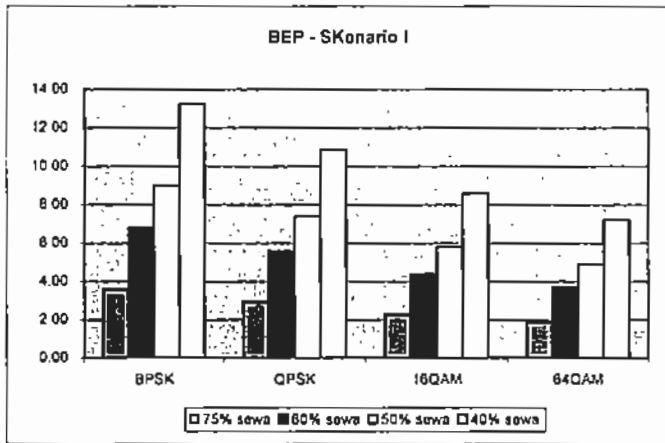
BPSK	75% sawa	60% sawa	50% sawa	40% sawa
NPV	(148.019.79)	(180.100.08)	(219.486.94)	(248.873.80)
IRR	#NUM!	#NUM!	#NUM!	#NUM!
PR	(0.37)	(0.89)	(1.23)	(1.58)
PBP	1.82	2.28	2.75	3.44
BEP	7.28	8.12	10.86	13.73

QPSK	75% sawa	60% sawa	50% sawa	40% sawa
NPV	(78.965.52)	(123.046.81)	(152.433.67)	(181.820.54)
IRR	#NUM!	#NUM!	#NUM!	#NUM!
PR	0.18	(0.47)	(0.90)	(1.33)
PBP	1.45	1.81	2.18	2.73
BEP	5.92	7.42	8.93	11.18

16QAM	75% sawa	60% sawa	50% sawa	40% sawa
NPV	(14.061.63)	(58.141.92)	(87.528.78)	(116.915.85)
IRR	-10%	#NUM!	#NUM!	#NUM!
PR	1.12	0.30	(0.25)	(0.80)
PBP	1.13	1.42	1.71	2.14
BEP	4.82	5.60	6.97	8.74

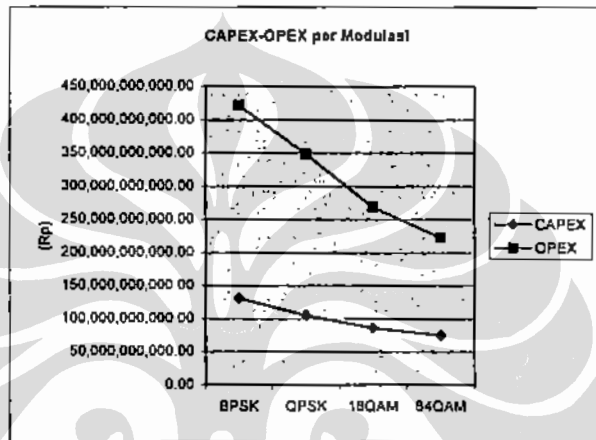
64QAM	75% sawa	60% sawa	50% sawa	40% sawa
NPV	24.489.09	(19.611.21)	(48.998.07)	(78.384.93)
IRR	18%	-18%	#NUM!	#NUM!
PR	2.03	1.01	0.32	(0.38)
PBP	0.91	1.14	1.37	1.72
BEP	3.84	4.82	5.80	7.28





TOTAL INVESTASI

Modulasi	CAPEX	OPEX
BPSK	#####	#####
QPSK	#####	#####
16QAM	85.961,322,909.00	#####
64QAM	74.611,087,642.50	#####



Skenario I

Modulasi	PBP			Bulan	Hari
	Tahun				
BPSK	75%	0.80	0	10.83403828	10 26
	60%	1.85	1	10.14535547	10 5
	50%	2.49	2	5.884295727	5 27
	40%	3.82	3	9.813077834	9 25
QPSK	75%	0.71	0	8.570865603	8 18
	60%	1.48	1	5.781785945	5 24
	50%	2.00	2	0.010781847	0 1
	40%	3.07	3	0.831698591	0 25
16QAM	75%	0.56	0	6.691682587	6 21
	60%	1.18	1	2.158577789	2 5
	50%	1.59	1	7.133819703	7 5
	40%	2.45	2	5.374180884	5 12
64QAM	75%	0.44	0	5.333778974	5 11
	60%	0.95	0	11.54043607	22 -314
	50%	1.30	1	3.609711375	3 19
	40%	2.00	2	-0.014645882	0 -1

Skenario II

Modulasi	PBP			Bulan	Hari
	Tahun				
BPSK	75%	1.62	1	9.687388911	9 27
	60%	2.28	2	3.41406422	3 13
	50%	2.75	2	8.940739529	8 29
	40%	3.44	3	5.230752493	5 7
QPSK	75%	1.45	1	5.381043532	5 11
	60%	1.81	1	9.756132497	9 23
	50%	2.18	2	2.151221462	2 5
	40%	2.73	2	8.743854908	8 23
16QAM	75%	1.13	1	1.6026775	1 19
	60%	1.42	1	5.058174956	5 2
	50%	1.71	1	8.513672413	8 16
	40%	2.14	2	1.696918597	1 21
64QAM	75%	0.91	0	10.88687027	10 27
	60%	1.14	1	1.663415923	1 20
	50%	1.37	1	4.438861572	4 14
	40%	1.72	1	8.604780047	8 19