

BAB V

KESIMPULAN

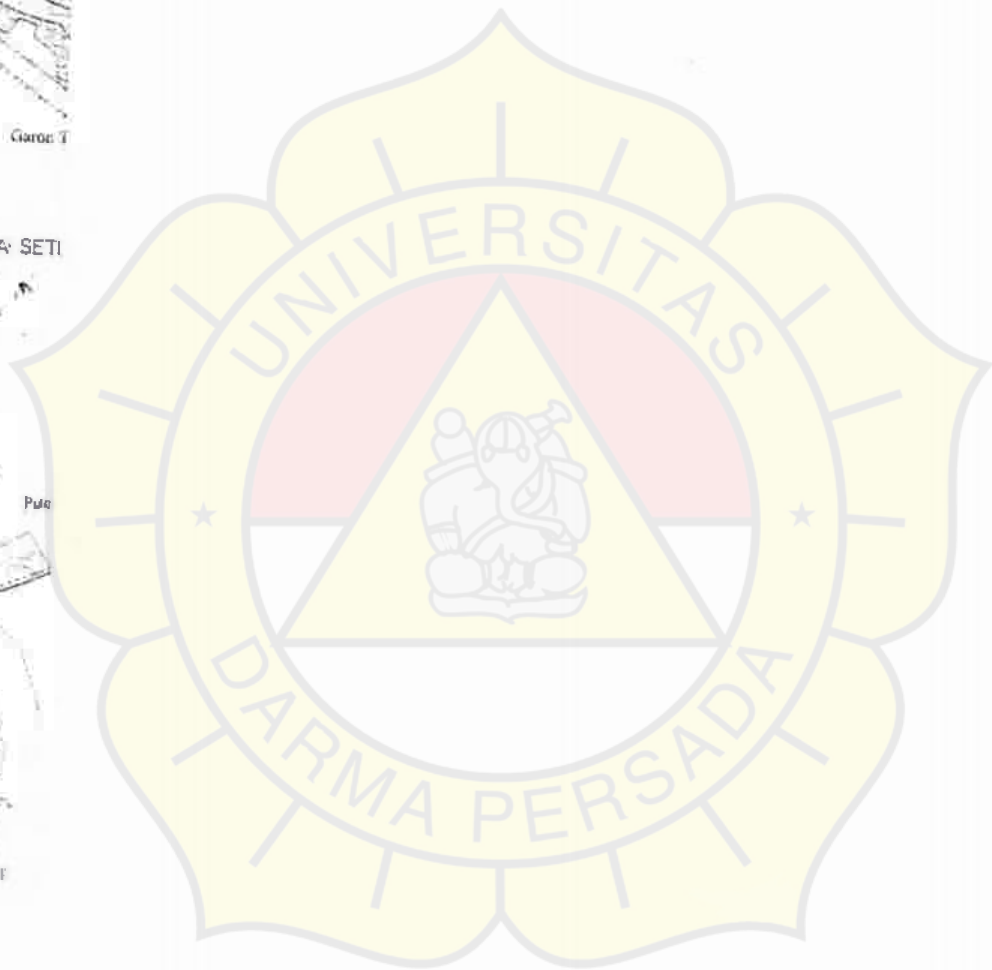
Berdasarkan pembahasan yang telah dijelaskan pada bab-bab yang sebelumnya maka dapat disimpulkan sebagai berikut:

1. Dari hasil *survey* yang dilakukan PT. Indosat, maka didapat titik lokasi yang akan dibangun BTS baru terletak pada koordinat $107^{\circ}13'32,79''$ BT dan $6^{\circ}6'0,1404''$ LS dengan radius cakupan yaitu 3,1509 km yang merupakan jarak maksimum antara BTS dengan *mobile station*.
2. Berdasarkan lokasi, radius cakupan, *standart* penerimaan PT. Indosat (- 80 dBm) serta spesifikasi alat, maka daya pancar yang dibutuhkan oleh BTS untuk mengkover MS adalah 29,11 dBm.
3. Dari hasil daya yang diperoleh (29,11 dBm) sudah sesuai dengan spesifikasi alat Ericsson RBS 2206 karena kurang dari daya maksimum yaitu 45,5 dBm.
4. Dengan menggunakan *standart* GSM untuk MS kelas 4, maka daya pancar yang dibutuhkan dari *mobile station* ke BTS (*up link*) adalah -72,88 dBm.

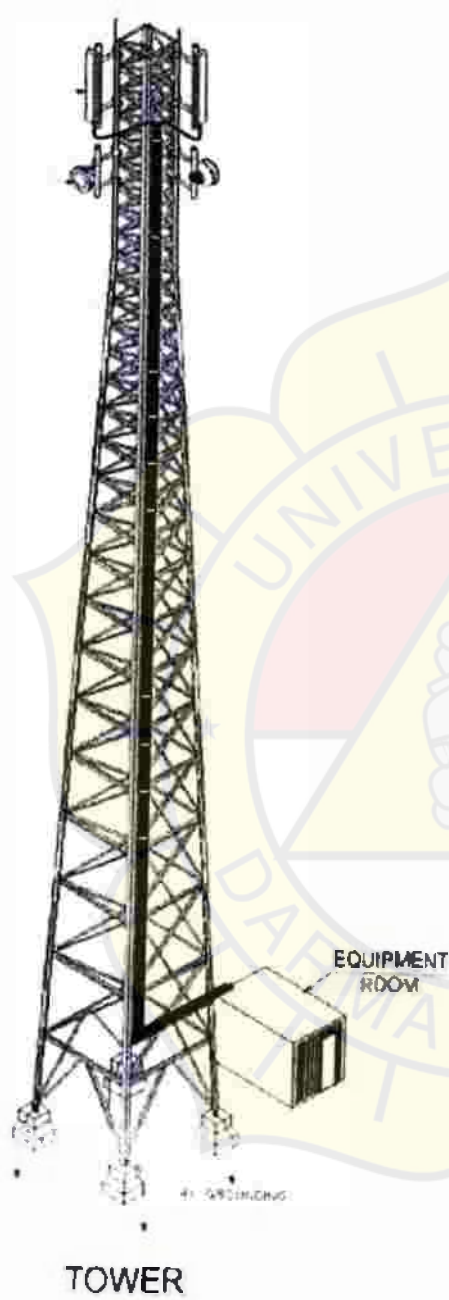
DAFTAR PUSTAKA

1. Gadiner, John and Barry West ; *Personal Communication System and Technologi*; Artech House Publisher, London, 1995.
2. Lee, William C.Y. ; *Mobile Selhular Telecommunication* ; Mc Graw Hill, Singapore, 1995.
3. Sunomo ; *Pengantar Sistem Komunikasi Nirkabel* ; Grasindo, Jakarta, 2004.
4. Tomasi, Wayne ; *Advanced Elecronic Communications System*, Prentice Hall International, Inc.
5. ; *GSM Cell Planning Principles 1*; Ericssons.
6. ; *GSM Introduction* ; PT. Indosat Tbk.









Standar Instalasi

FEEDER SYSTEM ANTENNA SYSTEM ACCEPTANCE TEST

- Technical Speck. -
- Visual Check -
- Measurement Test -

GUIDELINE

Radio Network Planning


Hukmanzul Hakim

kepentingan data skripsi

The RBS 2206 comes with two new extremely flexible combiners. Examples of configurations supported by the Filter Combiner (CDU-F) are 3x4, 2x6, 1x12 and 8x4 in one cabinet. CDU-F supports up to 12 transceivers on one dual-polarized antenna. The other combiner (CDU-G) can be configured in two modes: capacity mode and coverage mode, making it very flexible. In coverage mode, the output power from the CDU-G is increased, making it perfect for rural sites or when fax rollout is required at a minimum cost.

Prepared for the future

The RBS 2000 family is prepared for GSM data services, including General Packet Radio Service (GPRS), High Speed Circuit Switched Data (HSCSD) and 14.4 kbit/s timeslots. To meet the operators' need for faster datacom solutions, RBS 2206 supports EDGE.

A powerful Distribution Switch Unit (DXU) and fast internal buses guarantee full EDGE support. With the optional BSS feature RBS 2000 synchronization, it is possible to have up to 32 transceivers in one cell. With the optional BSS feature RBS 200 and RBS 2000 in the same cell, it is possible to expand an existing RBS 200 cell with RBS 2206, and thereby introduce EDGE and 3G capabilities through plug-in units.

Key features

- Six double transceiver units (dTRU); that is, 12 transceivers
- Filter and hybrid combining one, two, or three sectors in one cabinet
- Excellent RF performance
- Synthesized and baseband frequency hopping
- Supports 12 transceiver EDGE on all timeslots
- Supports GSM 800, 900, 1800 and 1900 MHz
- Extended Range 121 km
- Duplexer and TMA support for all configurations
- Four transmission ports supporting up to 8 Mbit/s
- Optional built-in transmission equipment transmission
- Prepared for GPS assisted positioning services

Technical specification for RBS 2206

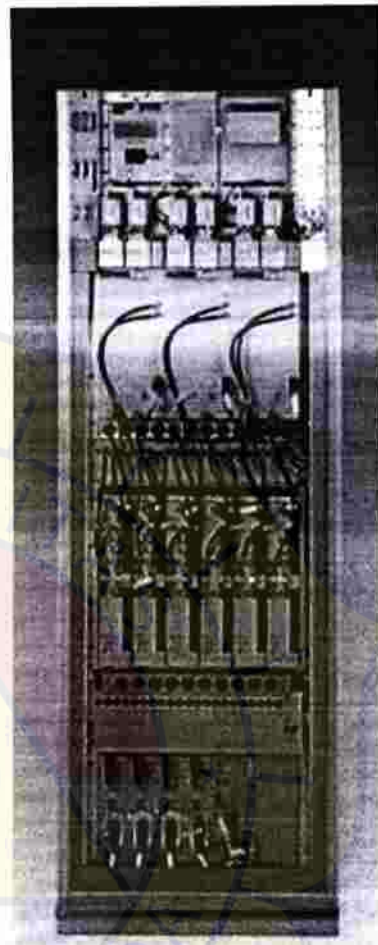
Frequency band:	GSM 800, E-GSM 900, P-GSM 900, GSM 1800, GSM 1900
Tx:	869–894, 925–960, 1805–1880, 1930–1990 MHz
Rx:	824–849, 880–915, 1710–1785, 1850–1910 MHz
Number of transceivers (per cabinet):	2–12
Number of sectors:	1–3
Dimension (H x W x D):	1850 x 600 x 400 mm (72 7/8 x 23 3/8 x 15 3/4 in.) including installation frame
Weight:	230 kg (506 lbs.) fully equipped
Power into antenna feeder:	35 W / 45.5 dBm (GSM 800 / GSM 900) 28 W / 44.5 dBm (GSM 1800 / GSM 1900) With TCC activated, add 2.5 dBm to above values
Receiver sensitivity:	-111 dBm (dynamic, without TMA and diversity gain)
Power supply:	120 – 250V AC, 50 / 60 Hz -48 – -72V DC, +20.5 – +29V DC Optional external
Battery backup:	Optional external
Operating temperature:	+5°C – +40°C (+41°F – +104°F)

Telefonaktiebolaget LM Ericsson
SE-126 25 Stockholm
Sweden
Telephone +46 8 719 0000
Fax +46 8 18 40 85
www.ericsson.com

AE/LZT 123 5284 R4
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RBS 2206

The GSM Macro Indoor Base Station



RBS 2206 is a high capacity, small footprint indoor macro base station supporting up to twelve transceivers per cabinet. It is possible to build one, two and three sector configurations including dual band configurations in one cabinet.

Being the latest member in the RBS 2000 family RBS 2206 is to date the most powerful indoor RBS in the world. Keeping the successful characteristics of the existing RBS 2000 portfolio and improving functionality as well as operation and maintenance makes the RBS 2206 the most cost-effective solution for growing GSM operators.

The RBS 2000 family supports a wide range of applications ranging from extreme coverage to extreme capacity. Being a RBS 2000 member guarantees coexistence with the installed base of RBS 200 and RBS 2000 products.

Ericsson's synchronization based BSS features ensure that transceivers from different generations of radio base stations can easily form common cells. Operators can therefore bridge the past with the future. By making existing sites future proof, investments are protected while migrating to 3G.

Part of the grow-on-site concept

Since it is becoming increasingly difficult to find new base station sites, it is of great interest to remain on the existing sites as long as possible. Site space is often a limiting factor for capacity growth. The powerful RBS 2206, included in Ericsson's grow-on-site toolbox, addresses this problem. On many sites, two or more existing cabinets can be replaced by one RBS 2206, thereby solving the site space problem by making room for another cabinet.

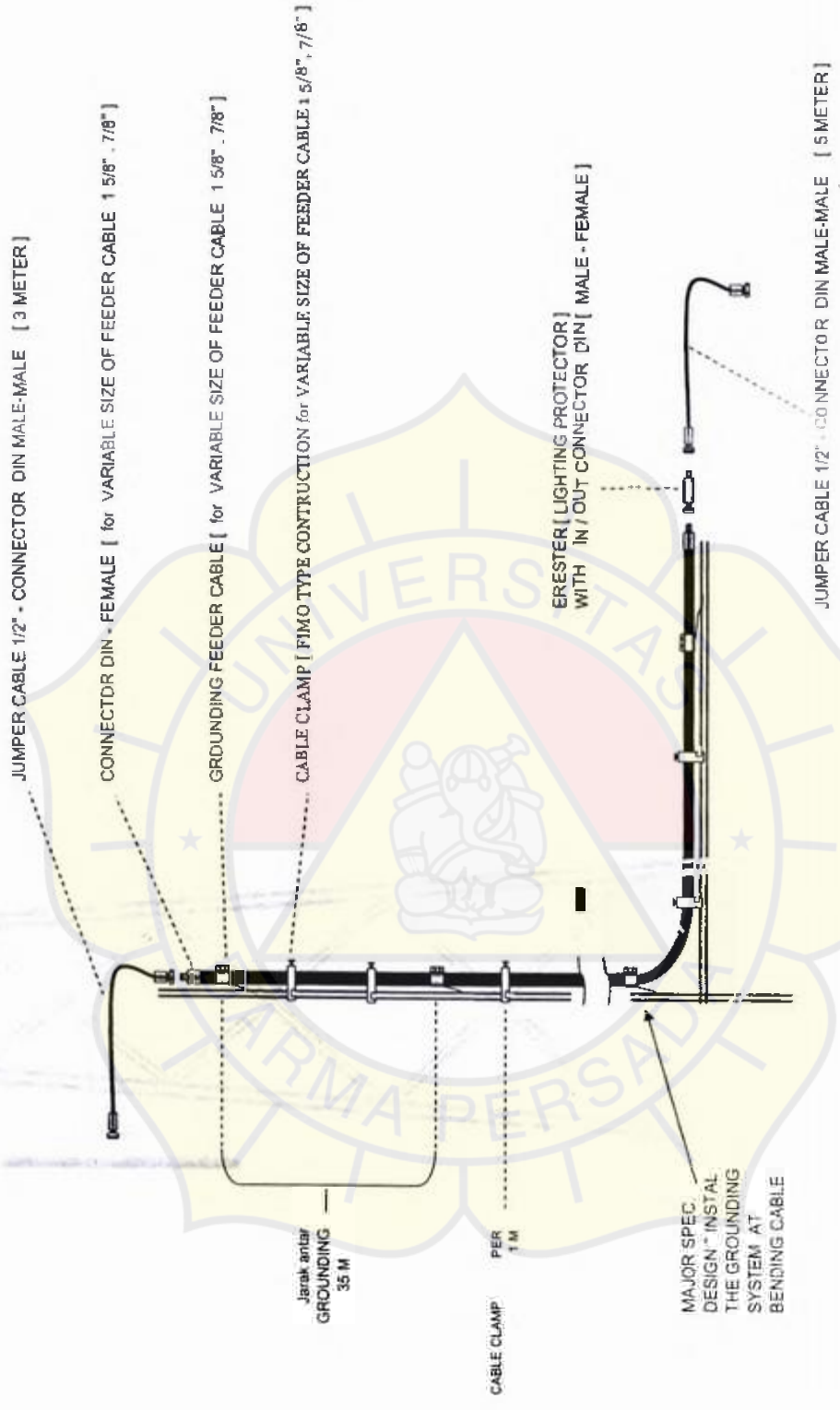
This is of major importance, since it makes it possible to reuse and collocate GSM and WCDMA equipment. The RBS 2206 will pave the way for WCDMA.

Doubled capacity - superior performance - same footprint

The 12-transceiver RBS 2206 cabinet has the same footprint as RBS 2202 but has doubled capacity, thanks to the new double-capacity transceivers and combiners. The double Transceiver Unit, dTRU, has some powerful features. The RBS 2206 has better output power than the current RBS 2000 products, which are the best on the market today. The improved radio performances means increased site-to-site distance, and therefore, fewer sites. Another example of a cost-saving feature is 121 km Extended Range.

ERICSSON 

Lois outdoor



LIST OF MATERIAL CABLE SYSTEM - OUTDOOR SITE as ordered requirement :

NO	MATERIAL DESCRIPTION	NK - CABLE	LEONI - CABLE	EUPEN - CABLE	REMARKS
	FEEDER CABLE :				
1	FEEDER CABLE 1 5/8"	Std : RF-1 5/8"-50	Std : V45466-B23-C26	Std - EC 7 - 50	Standard
2	FEEDER CABLE 7/8"	Std : RF-7/8"-50	Std : V45466-B23-C26	Std - EC 5 - 50	Standard
3	FEEDER CABLE 1/2"	Flexi : RFF-1/2"-50	Flexy : V45466-B21-C26	Std - EC 4 - 50	Flexy
	CONNECTOR :				
4	DIN - FEMALE FOR FEEDER 1 5/8"	BN 655678	Spinner : BN 65 56 44	Spinner : BN 65 56 78	Plas 2000
5	DIN - FEMALE FOR FEEDER 7/8"	BN 655668	Spinner : BN 65 56 44	Spinner : BN 65 65 68	Plas 2000
6	DIN - MALE FOR FEEDER 1/2"	BN 847359	V45250-Z5077-A22-A	.	Plas 2000
7	L CONNECTOR - DIN - MALE for FEEDER 1/2"	BN847391	V45250-Z5077-A24-A	Spinner : BN 84 73 14	
	JUMPER 1/2" WITH CONNECTOR :				
8	DIN [MALE-MALE] - 3 M	NKJ 116	V45594-A8585-G300	.	
9	DIN [MALE-MALE] - 5 M	NKJ 1110	V45594-A8585-G500	.	
10	DIN [L CONN. MALE - STRAIGHT MALE] - 5 M		V45594-A8580-G300	.	
	CABLE CLAMP :				
11	CABLE CLAMP 1 5/8"	.	Fimo : L - DC 158	.	
12	CABLE CLAMP 7/8"	.	Fimo : L - DC 78	.	
	GROUNDING				
13	FDR FEEDER 1 5/8"	.	GK 78R	.	
14	FOR FEEDER 7/8"	.	GK 158R	GCS 789 PAR	

 Prepared by :
RNP - CNP

Approved by :

TEAM KLARIFIKASI TEKNIS " MATERIAL CABLE SYSTEM 2005 "

Update :

02 - January - 2005



PERBANDINGAN DATA SPESIFIKASI – FEEDER CABLE RO 2005

NO	DESKRIPSI		NK KABEL	LEONI	
I	TECHNICAL SPECIFICATION				
	CABLE TYPE	1 5/8"	STANDAR	STANDAR	
		1 1/4"	STANDAR	STANDAR	
		7/8"	STANDAR	STANDAR	
		1/2"	STANDAR	STANDAR	
	CODE	1 5/8"	FlexLine 1 5/8" R	FlexLine 1 5/8" R	
		1 1/4"	FlexLine 1 1/4" R	FlexLine 1 1/4" R	
		7/8"	FlexLine 7/8" R	FlexLine 7/8" R	
		1/2"	FlexLine 1/2" R	FlexLine 1/2" R	
	Attenuation [dB/100]	900 MHz	1 5/8"	2.24	2.20
			1 1/4"	2.7	2.75
			7/8"	3.24	3.21
			1/2"	4.78	4.78
		1800 MHz	1 5/8"	3.7	3.95
			1 1/4"	4.7	4.7
			7/8"	5.6	5.6
1/2"			7.95	7.95	
Velocity	1 5/8"	88%	88%		
	1 1/4"	88%	88%		
	7/8"	88%	88%		
	1/2"	88%	88%		
II	MECHANICAL CHARACTERISTICS				
	Inner Conductor	1 5/8"	12.7 mm	12.7 mm	
		1 1/4"	12.7 mm	12.7 mm	
		7/8"	9.14 mm	9.14 mm	
		1/2"	4.8 mm	4.8 mm	
	Dielectric	1 5/8"	43.5 mm	43.5 mm	
		1 1/4"	33.5 mm	33.5 mm	
		7/8"	23.5 mm	23.5 mm	
		1/2"	13.0 mm	13.0 mm	
	Diameter over outer conductor	1 5/8"	47.5 mm	47.5 mm	
		1 1/4"	38.0 mm	38.0 mm	
		7/8"	29.0 mm	29.0 mm	
		1/2"	19.7 mm	19.7 mm	
	Diameter over outer jacket	1 5/8"	51.4 mm	51.4 mm	
		1 1/4"	42.4 mm	42.4 mm	
		7/8"	37.7 mm	37.7 mm	
		1/2"	28.0 mm	28.0 mm	
	Cable weight	1 5/8"	155.4 kg/km	155.4 kg/km	
		1 1/4"	109.5 kg/km	109.5 kg/km	
		7/8"	65.7 kg/km	65.7 kg/km	
		1/2"	37.7 kg/km	37.7 kg/km	
	Tensile Strength	1 5/8"	1000 N	1000 N	
		1 1/4"	1000 N	1000 N	
		7/8"	1000 N	1000 N	
		1/2"	1000 N	1000 N	
	Min. bending radius, single	1 5/8"	1000 mm	1000 mm	
		1 1/4"	1000 mm	1000 mm	
		7/8"	1000 mm	1000 mm	
		1/2"	700 mm	700 mm	
	Min. bending radius, repeated	1 5/8"	1000 mm	1000 mm	
		1 1/4"	1000 mm	1000 mm	
		7/8"	1000 mm	1000 mm	
		1/2"	1000 mm	1000 mm	
	Number of bends, minimum (typical)	1 5/8"	15 (50)	15 (50)	
		1 1/4"	18 (50)	18 (50)	
		7/8"	18 (50)	18 (50)	
1/2"		15 (50)	15 (50)		
Recommended hanger spacing	1 5/8"	1.2 m	1.2 m		
	1 1/4"	1.0 m	1.0 m		
	7/8"	1.0 m	1.0 m		
	1/2"	0.8 m	0.8 m		
Impedance	1 5/8"	50 Ohm	50 Ohm		
	1 1/4"	50 Ohm	50 Ohm		
	7/8"	50 Ohm	50 Ohm		
	1/2"	50 Ohm	50 Ohm		
Maximum operating frequency	1 5/8"	2.70 GHz	2.70 GHz		
	1 1/4"	1.3 GHz	1.3 GHz		
	7/8"	1.0 GHz	1.0 GHz		
	1/2"	0.8 GHz	0.8 GHz		
Peak power rating	1 5/8"	200 kW	200 kW		
	1 1/4"	200 kW	200 kW		
	7/8"	100 kW	100 kW		
	1/2"	50 kW	50 kW		

870 - 960 MHz



65 DEGREE 18.5 dBi GAIN VERTICAL POLAR ANTENNA

Model No. VM65-7 HG

Frequency	(MHz)	870 - 960
Polarization		Vertical Polar
Gain	(dBi)	18.5

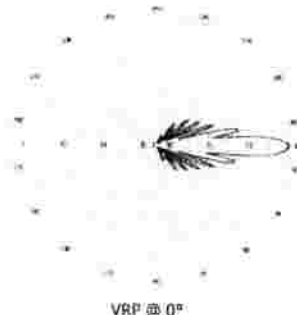
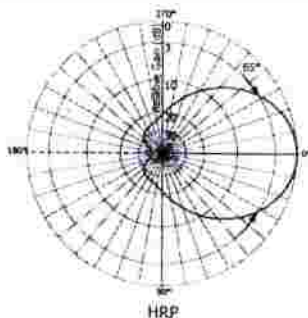
Mechanical Specifications

Input Connector	7.16 DIN Female	
Connector Location	Bottom	
Dimensions (HxWxD)	(mm)	2535 x 255 x 100
Windload @ 160km/h	Front (N)	1060
	Side (N)	380
	Rear (N)	1150
Weight	(kg)	15
Lightning Protection	DC Grounded	
Radome	GRP	
Standard Radome Colour (Pearl Grey)	BS4800 00A 05	



Electrical Specifications

Gain	(dBi)	18.5
Horizontal beamwidth, -3dB	(°)	65
Vertical beamwidth, -3dB	(°)	7
Fixed electrical downtilt	(°)	0, 2, 4, 6
Front to back ratio, co-polar	(dB)	>25
Impedance	(Ohms)	50
Input VSWR		<1.3
Intermodulation products (2 nd & 3 rd)	(dBc)	<-153
Maximum power per input	(W)	400



In pursuance of continual product improvement, AlanDick reserves the right to change specifications without prior notice.

Previously : VM65-7
Edition No: 1-05

AlanDick plan, design, deploy, develop, maintain, manage, support, upgrade, integrate and optimise communication networks across the globe by providing products, services and solutions for Cellular, Broadcast, Radar/Surveillance and Enterprise Wireless markets.

AlanDick Group

Communication Infrastructure Solutions

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**STANDARPERENCANAAN
PT. INDOSAT Tbk**

No	Parameter	Standard	Satuan
Standart Perencanaan			
1.	<i>SSdesign</i>	- 80	dBm
2.	<i>Body loss</i>	2	dB
3.	<i>Building loss penetration (bata)</i>	6	dB
4.	<i>Loss Connector</i>	0,03	dB
5.	<i>Loss Duplexer</i>	1	dB
6.	Tinggi antena untuk daerah rural	55	meter
7.	<i>Down Tilt</i> maksimum	1	-
Softwere yang digunakan			
1	<i>Enterprise Version v5.0.3</i>	-	-
2	<i>Kathrein Skala Division 2000</i>	-	-
3	<i>Mapinfo Professional</i>	-	-
4	<i>Net Info</i>	-	-
Prangkat yang digunakan pada BTS di Karawang			
1.	<i>Transmitter</i> menggunakan RBS 2206 Ericsson	-	-
Frekuensi kerja PT. Indosat			
1.	Untuk GSM 900	-	-
	- <i>Down Link</i>	935 s/d 945	MHz
	- <i>Up Link</i>	890 s/d 900	MHz
2	Untuk GSM 1800	-	-
	- <i>Down Link</i>	1812,5 s/d 1817,5	MHz
	- <i>Up Link</i>	1717,5 s/d 1722,5	MHz
Hasil survey			
1.	Survey dilakukan pad tanggal 25 Maret 2006 menggunakan <i>soft were</i> Net info Rx Level menunjukan angka :	- 95	dBm
Lokasi koordinat			
1.	Nama daerah Krojan-Batujaia	-	-
	- Longitude (X)	107°13'32,79"	BT
	- Latitude (Y)	6°6'0,1404"	LS

Menyetujui
Pembimbing Riset RNP PT. Indosat

24/07/2006


Lukmanul Hakim
 NIK 73964323



SETTING PARAMETER SITE EKSIKTING :

Data lama

Data baru

bsc_name	bsc_id	la_id_lac	cell_id	bts_name	bts_id	trx_id	ch_type_1	frequency	bpc_ncca	bpc_bcc	hsp_1	hsp_2	hopping	hopping_mode	used_mobile_allocat	malo_offset	malo_step	frequency	bpc_ncca	bpc_bcc	hsp_1	hsp_2	hopping	hopping_mode	used_mobile_allocat	malo_offset	malo_step
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KARAWANG	878703	5672	24011	BATJAYA1	1	1	0	5	2	2	18	1	1	2	24	0	1	5	2	2	18	1	1	2	24	0	1	
KARAWANG	878703	5672	24011	BATJAYA1	1	2	3	7	2	2	18	1	1	2	24	0	1	7	2	2	18	1	1	2	24	0	1	
KARAWANG	878703	5672	24011	BATJAYA1	1	3	4	35	2	2	18	1	1	2	24	0	1	35	2	2	18	1	1	2	24	0	1	
KARAWANG	878703	5672	24011	BATJAYA1	1	4	0	3	2	2	18	1	1	2	24	0	1	3	2	2	18	1	1	2	24	0	1	
KARAWANG	878703	5672	24012	BATJAYA2	1	2	5	4	33	2	18	31	1	2	24	3	1	33	2	2	18	31	1	2	24	3	1	
KARAWANG	878703	5672	24012	BATJAYA2	1	2	6	3	15	2	18	31	1	2	24	3	1	15	2	2	18	31	1	2	24	3	1	
KARAWANG	878703	5672	24012	BATJAYA2	1	2	7	3	13	2	18	31	1	2	24	3	1	13	2	2	18	31	1	2	24	3	1	
KARAWANG	878703	5672	24012	BATJAYA2	1	2	8	3	11	2	18	31	1	2	24	3	1	11	2	2	18	31	1	2	24	3	1	
KARAWANG	878703	5672	24013	BATJAYA3	1	3	9	4	43	2	18	32	1	2	24	6	1	43	2	2	18	32	1	2	24	6	1	
KARAWANG	878703	5672	24013	BATJAYA3	1	3	10	3	21	2	18	32	1	2	24	6	1	21	2	2	18	32	1	2	24	6	1	
KARAWANG	878703	5672	24013	BATJAYA3	1	3	11	3	23	2	18	32	1	2	24	6	1	23	2	2	18	32	1	2	24	6	1	
KARAWANG	878703	5672	24013	BATJAYA3	1	3	12	3	19	2	18	32	1	2	24	6	1	19	2	2	18	32	1	2	24	6	1	
KARAWANG	878703	72	24241	KROJAN1	73	73	1	4	46	2	0	16	0	1	2	25	0	1	46	2	0	0	16	0	1	25	0	1
KARAWANG	878703	5672	24241	KROJAN1	73	73	2	3	3	2	0	16	0	1	2	25	0	1	3	2	0	0	16	0	1	25	0	1
KARAWANG	878703	5672	24241	KROJAN1	73	73	3	3	5	2	0	16	0	1	2	25	0	1	5	2	0	0	16	0	1	25	0	1
KARAWANG	878703	5672	24242	KROJAN2	73	74	5	4	42	2	0	16	0	1	2	25	3	1	42	2	0	0	16	0	1	25	3	1
KARAWANG	878703	5672	24242	KROJAN2	73	74	6	3	13	2	0	16	0	1	2	25	3	1	13	2	0	0	16	0	1	25	3	1
KARAWANG	878703	5672	24242	KROJAN2	73	74	7	3	11	2	0	16	0	1	2	25	3	1	11	2	0	0	16	0	1	25	3	1
KARAWANG	878703	5672	24243	KROJAN3	73	75	9	3	21	2	0	16	0	1	2	25	6	1	21	2	0	0	16	0	1	25	6	1
KARAWANG	878703	5672	24243	KROJAN3	73	75	10	3	19	2	0	16	0	1	2	25	6	1	19	2	0	0	16	0	1	25	6	1
KARAWANG	878703	5672	24243	KROJAN3	73	75	11	4	31	2	0	16	0	1	2	25	6	1	31	2	0	0	16	0	1	25	6	1

Data diambil dari Database Indosat Parameter

Mengetahui :
Pembimbing Riset mp pt. indosat

[Signature]
Lukmanul Hakim
NIK 73964323

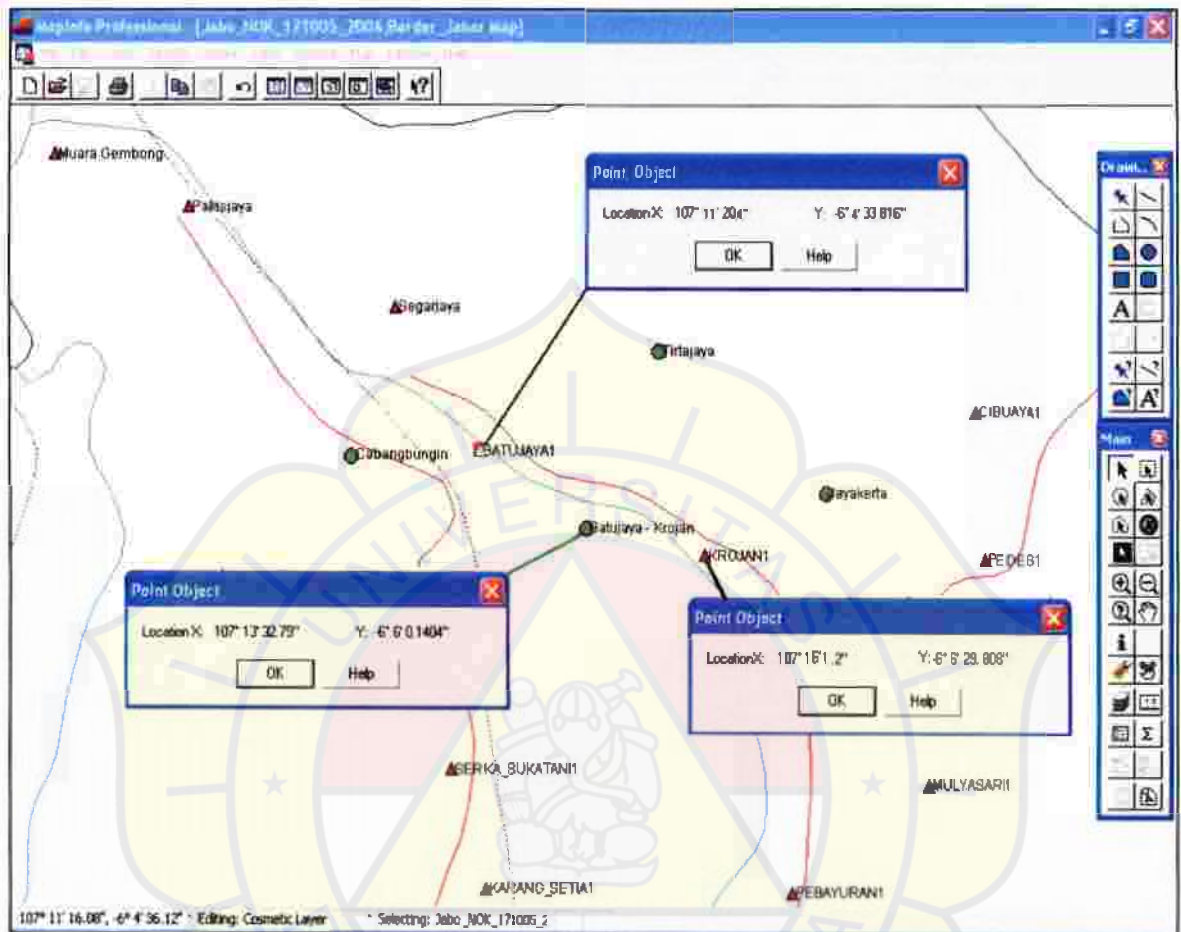


LAMPIRAN E



LAMPIRAN F

KOORDINAT LOKASI BTS YANG DIRENCANAKAN



Menyetujui
Pembimbing Riset RNP PT. Indosat

Lukmanul Hakim
NIK 73964323



LAMPIRAN G

DATA JARAK MAKSIMUM ANTARA BTS DAN MS



Menyetujui
Pembimbing Riset RNP PT. Indosat

Lukmanul Hakim
NIK. 73964323





LAMPIRAN I



GSM900 ARFCN

SatelIndo Channel	UpLink (MHz)	DownLink (MHz)	Telkkoms of Channel	UpLink (MHz)	DownLink (MHz)	XL Channel	UpLink (MHz)	DownLink (MHz)
1	890.2	935.2	51	900.2	945.2	88	907.6	952.6
2	890.4	935.4	52	900.4	945.4	89	907.8	952.8
3	890.6	935.6	53	900.5	945.6	90	908.0	953.0
4	890.8	935.8	54	900.8	945.8	91	908.2	953.2
5	891.0	936.0	55	901.0	946.0	92	908.4	953.4
6	891.2	936.2	56	901.2	946.2	93	908.6	953.6
7	891.4	936.4	57	901.4	946.4	94	908.8	953.8
8	891.6	936.6	58	901.6	946.6	95	909.0	954.0
9	891.8	936.8	59	901.8	946.8	96	909.2	954.2
10	892.0	937.0	60	902.0	947.0	97	909.4	954.4
11	892.2	937.2	61	902.2	947.2	98	909.6	954.6
12	892.4	937.4	62	902.4	947.4	99	909.8	954.8
13	892.6	937.6	63	902.6	947.6	100	910.0	955.0
14	892.8	937.8	64	902.8	947.8	101	910.2	955.2
15	893.0	938.0	65	903.0	948.0	102	910.4	955.4
16	893.2	938.2	66	903.2	948.2	103	910.6	955.6
17	893.4	938.4	67	903.4	948.4	104	910.8	955.8
18	893.6	938.6	68	903.6	948.6	105	911.0	956.0
19	893.8	938.8	69	903.8	948.8	106	911.2	956.2
20	894.0	939.0	70	904.0	949.0	107	911.4	956.4
21	894.2	939.2	71	904.2	949.2	108	911.6	956.6
22	894.4	939.4	72	904.4	949.4	109	911.8	956.8
23	894.6	939.6	73	904.6	949.6	110	912.0	957.0
24	894.8	939.8	74	904.8	949.8	111	912.2	957.2
25	895.0	940.0	75	905.0	950.0	112	912.4	957.4
26	895.2	940.2	76	905.2	950.2	113	912.6	957.6
27	895.4	940.4	77	905.4	950.4	114	912.8	957.8
28	895.6	940.6	78	905.6	950.6	115	913.0	958.0
29	895.8	940.8	79	905.8	950.8	116	913.2	958.2
30	896.0	941.0	80	906.0	951.0	117	913.4	958.4
31	896.2	941.2	81	906.2	951.2	118	913.6	958.6
32	896.4	941.4	82	906.4	951.4	119	913.8	958.8
33	896.6	941.6	83	906.6	951.6	120	914.0	959.0
34	896.8	941.8	84	906.8	951.8	121	914.2	959.2
35	897.0	942.0	85	907.0	952.0	122	914.4	959.4
36	897.2	942.2	86	907.2	952.2	123	914.6	959.6
37	897.4	942.4	87	907.4	952.4	124	914.8	959.8
38	897.6	942.6						
39	897.8	942.8						
40	898.0	943.0						
41	898.2	943.2						
42	898.4	943.4						
43	898.6	943.6						
44	898.8	943.8						
45	899.0	944.0						
46	899.2	944.2						
47	899.4	944.4						
48	899.6	944.6						
49	899.8	944.8						
50	900.0	945.0						



LAMPIRAN K

GAMBAR LOKASI DAERAH KARAWANG



Gambar Jalan Raya Utama



Gambar Lokasi BTS Batujaya



Gambar Kantor Camat Batujaya