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PARTICIPANTS' REPORTS-2

ICTP - URSI - ITU/BDT WORKSHOP ON THE USE OF RADIO FOR DIGITAL COMMUNICATIONS IN DEVELOPING COUNTRIES

(17 - 28 February, 1997)

"Telecommunications in Myanmar"

T.H. U Myint
Yangon
MYANMAR

Telecommunications In Myanmar

1. Myanmar is a country with a population of 44.74 million and an area of 678,000 square killometre whose main products are rice and timber with natural resources of Jade , silver , zinc, coal and natural gas. The country is demarcated into seven divisional districts and seven state districts composing a total of 314 towships.

2. Telecommunication services in Myanmar are provided by the Myanmar Post and Telecommunication, MPT,under the Ministry of communications,Posts and Telegraphs. MPT has the Monopoly for development, operation, maintenance of all public telecommunication services within the country as well as international telecommunications. It handles hundred percent of domestic and internation telephone ,telex and telegram traffic. The total number of the telecommunication staff is 13,824 and it's organization chart is shown in table ( ).

3. The nationwide telephone network is planned with the exchange offices classified into four grades ie, regional, zone, group and local exchange. The total number of telephone line already installed is 178618 Lines. MPT is substituting the old cross bar Exchange with new digital Exchange year by year. The Junction network, especially could be found in metropolitan Yangon area, the capital of Myanmar is primarily based on PCM cable 2.0 Mb/s system which connects the various switching locations and also regional control center.

4. The Existing longhaul trunk network is dominate by analog microwave system. Connecting Yangon to Mandalay to the north with two diverse route with analog microwave system and UHF radio system connecting various cities. A map of the microwave Analoge & UHF system is attached for references. The microwave system a total of 7 system, namely, system A, B, C, D, E, F, G, connecting various cities has a total 960 channel capacity. Likewise the UHF system has a total of 14 system operating in the 900 MHZ Band and has 120 channel capacity and 24 channel capacity for 400 MHZ system.

Due to the constant fading of microwave link especially in rainy season colour TV channel trensmission is no longer carried out on the microwave protection channel.

5. Recently, MPT has inplemented the third telecommunication project with Sumitomo Corporation (NEC) from JAPAN as shown in table (4). The followings are the names of the digital microwave link included in above project.

7.5 GHZ (ITU F 885-5) 34MB (CCITT G-703)

MANDALAY - LASHIO	9HOP
MANDALAY - SHWEBO	2HOP
MANDALAY - LOIKAW	10HOP
MANDALAY - PAKOKAU	2HOP

In which PDH Digital microwave radio is adopted.

The fourth telecommunication project of Digital radio system being implementing, consists of the followings.

	main	spur	total
Meiktila - Kyaungtone	11Hops	6Hops	17Hops
Lashio - Muse	7Hops	2Hops	9Hops
Dawei - Myeik	5Hops	2Hops	7Hops

For the main route NEC 2000S STM-1 Digital Mirowave Radio system is adopted and for spur routs, NEC 2500S 8MB (2MBx4)PDH Digital Radio is adopted. The radio frequency for the both system are U 6GHZ Band (1TU-R Rec.384-5) and 7.5 GHZ Band (1TU-R Rec-385-5) respectively.

6. International telephone telex and telegraph services are provided by standard (A) earth station operating with the intelsat satellite located in 60 E longitude . IDR communication method and circular Polarization is used and the manufacture is SIEMENS Co.ltd from Germany.

There are also domastic satellite communication system for remote area operating with the asiaset satellite located in 105 E longitude and SCPC communication mathod and linear polarization is used. The manufacture is Panda Electronic from China.

7. MPT is now implementing the packet switching system with SIEMENS Co.ltd not only in Yangon area but also in Mandalay (The middle of Myanmar) and other cities. (See packet switching network configuration diagram.)

The following are the total data lines which could be achievied after the project works.

SR	Description	Trunk	Link Capacisty
1	Yangon Down Town (High Density	4 Trun (PCM cable)	2.4 Kbps (min) 60 Lines
2	Yangon Down town	Direct Line (PCM/cable)	9.6 Kbps(min) 135Lines
3	Yangon Down town	Direct Line (Digital Radio Link)	2.4 Kbps(min) 135 Lines
4	Yangon and other Cities	Existing telephone network (PSTN)	2.4 Kbps (min) 30 Lines
5	Mandalay	Direct Line (Cable)	2.4 Kbps (min) 80 Lines
6	Yangon Computer Pulling Center	Direct Line (Cable)	2.4 Kbps (min) 80 Lines
7	International Trunk	STD(A) Earth station	64 Kbps 8 Lines
8	Yangon Mandalay Link	Existing Analog Microwave Link	64Kbps 4 Lines
9	ISDN	Direct Line PCM	2 Mbps 3 Lines

8. For wireless communication, MPT has implemented cellular telephone system and wireless digital Loop carrier system.

For cellular system, 4000 Lines (Digital/Analog) in Yangon (882 RBS type form Ericsson Co.ltd) and 1000 Lines (Digital) in Mandalay (884 RBS from northern telecommunication). Up to now , only the Manual roaming fascility is available.

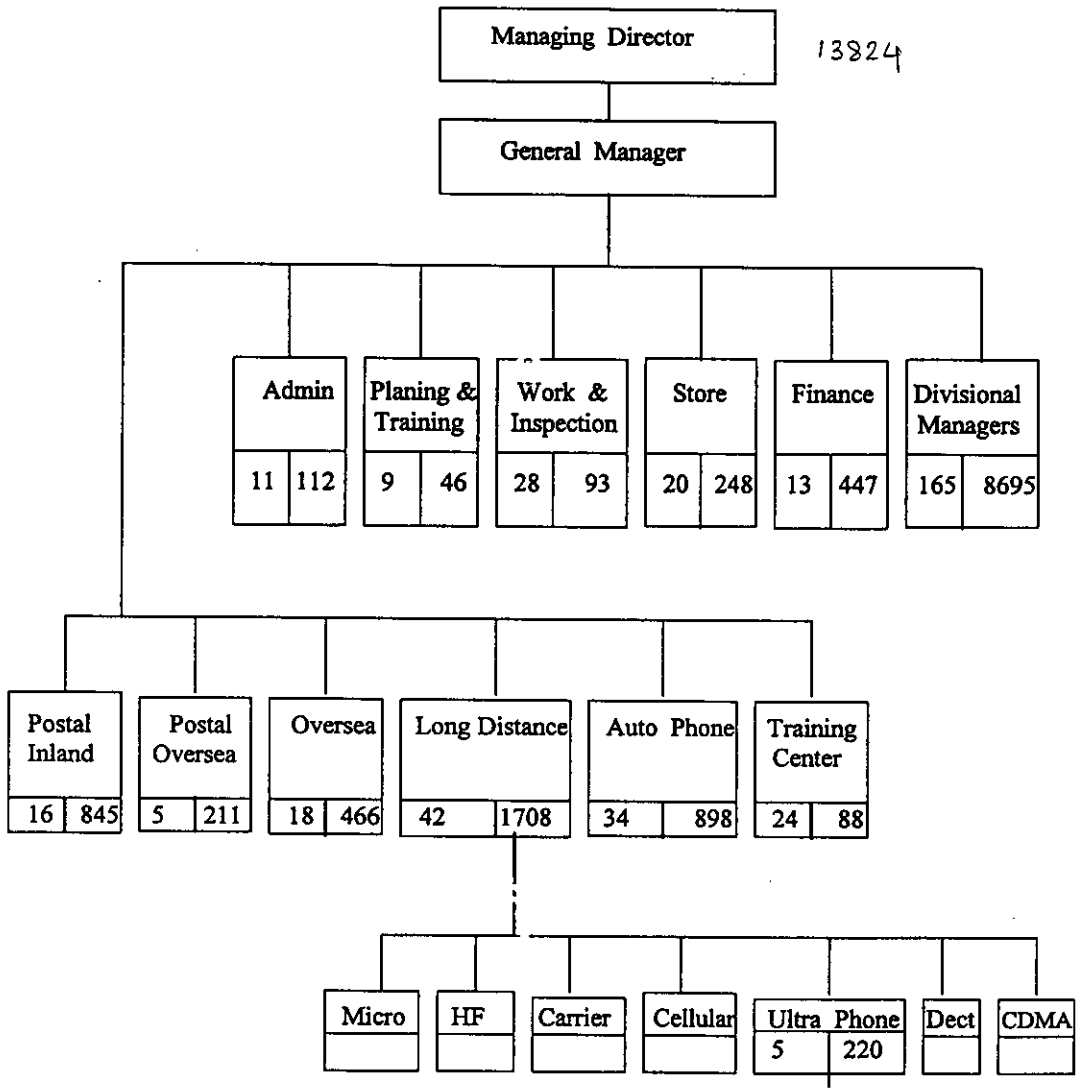
For wireless Digital Loop carrier system , MPT has already implemented about 4000 Line capicity of ultra phone 110 system from InterDigital Communications Corporation , United State of America, which can reach 60 kilometer coverage area from Radio carrier station.

There are also 3000 Line capacity of DECT Radio phone system (Digital European Cordless Telecommunications) in 4 town , far from Yangon , manufactured by Ericsson Co.ltd.

Not only the above wireless communications system,recently, MPT is but also implementing the CDMA wireless local Loop carrier system (3000 Line capacity) in Yangon area which can reach 30miles radius coverage area from base station. The provider is Qualcomm Co.ltd from Singapore.

9. In conclusion , the existing traffic capacity may not satisfy the necessitated traffic requirement , however, Base on the state finances, MPT lay down many plan year by year and has been carrying out more and more project , rerulting improvm-ent in telecommunication sector througout the country .

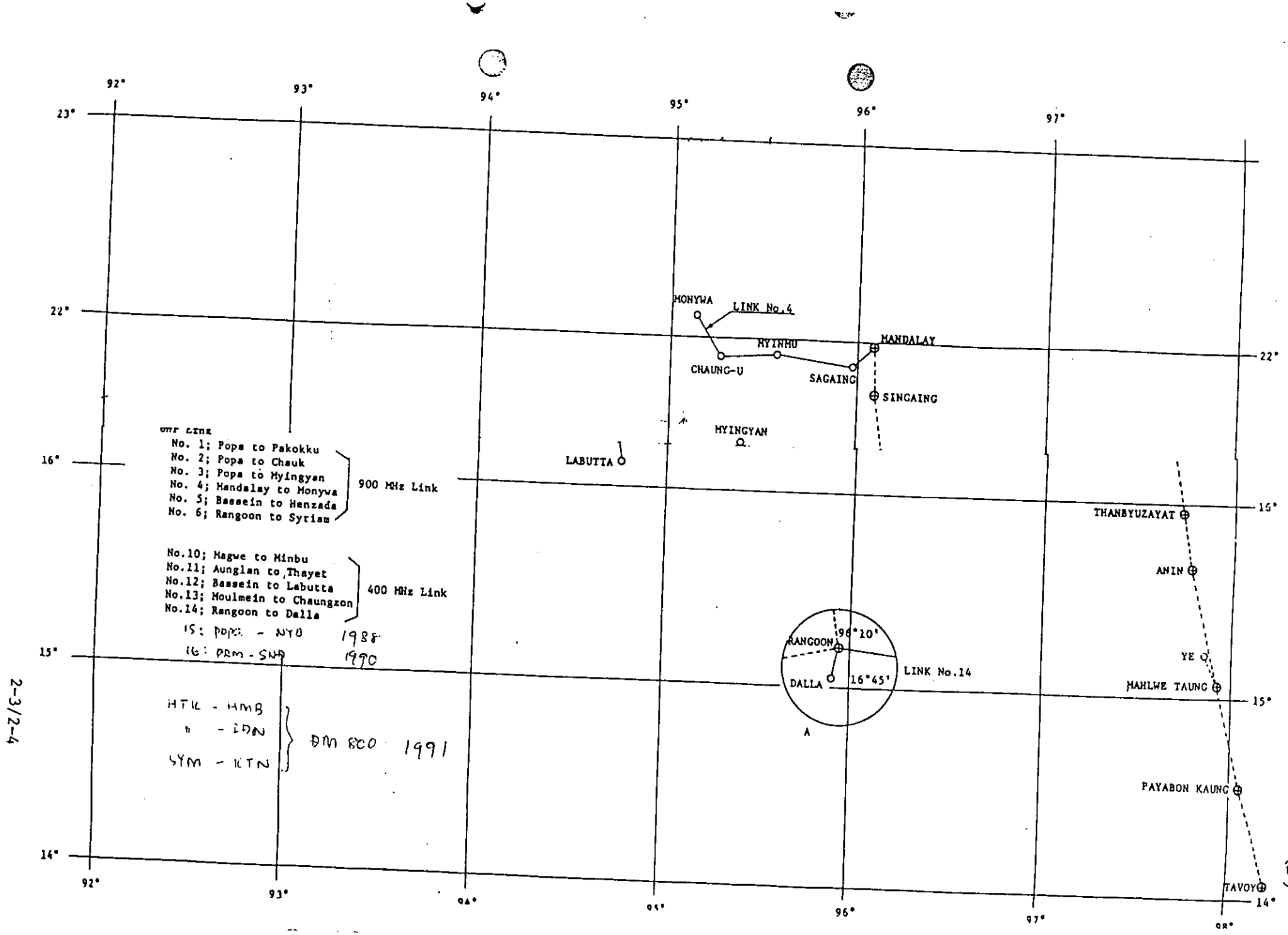
CONFIGURATION DIAGRAM OF MPT



International Trunk	
JAPAN	299
HONGKON	90
S/NGAPORE	150
TNAI	59
INDIA	20
ENGLAND	49
AUSTRALIA	16
INDONESIA	8
GERMANY	8
MALAYSIA	15
KOREA	30
FRANCH	5
CHINA	8

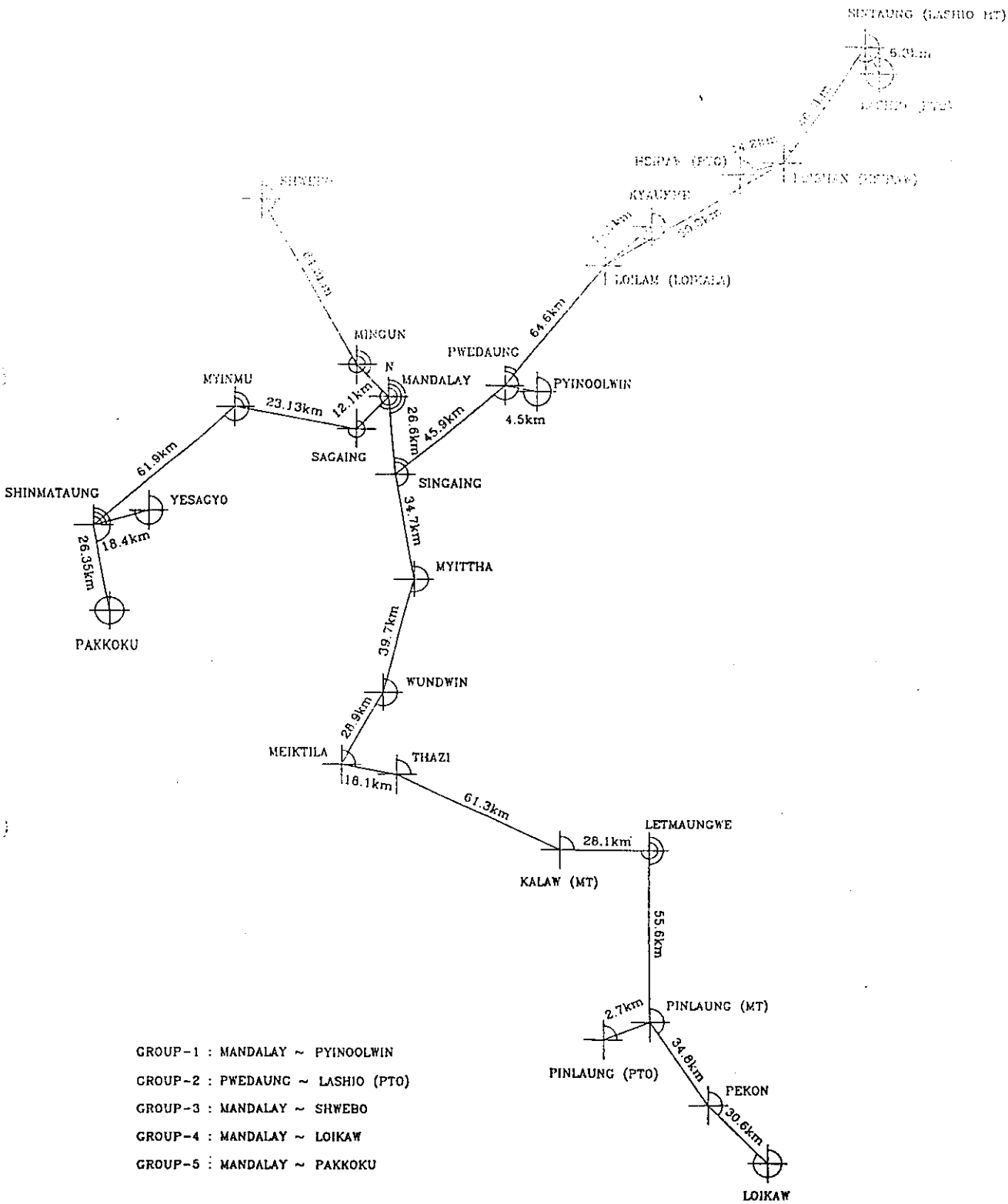
Inland Domastic Trunk

KALAY	6
KHAN-TE	4
MYITKYINA	15
MYEIK	6
LARSHIO	12
BANMAW	6
HARKHAR	6
KYINETONE	6
MYAWADY	6
KYAUKTHAUNG	6
TARCHICATE	6
MVSE	8
TAMU	4
BUTHIETAUNG	4
Total	92

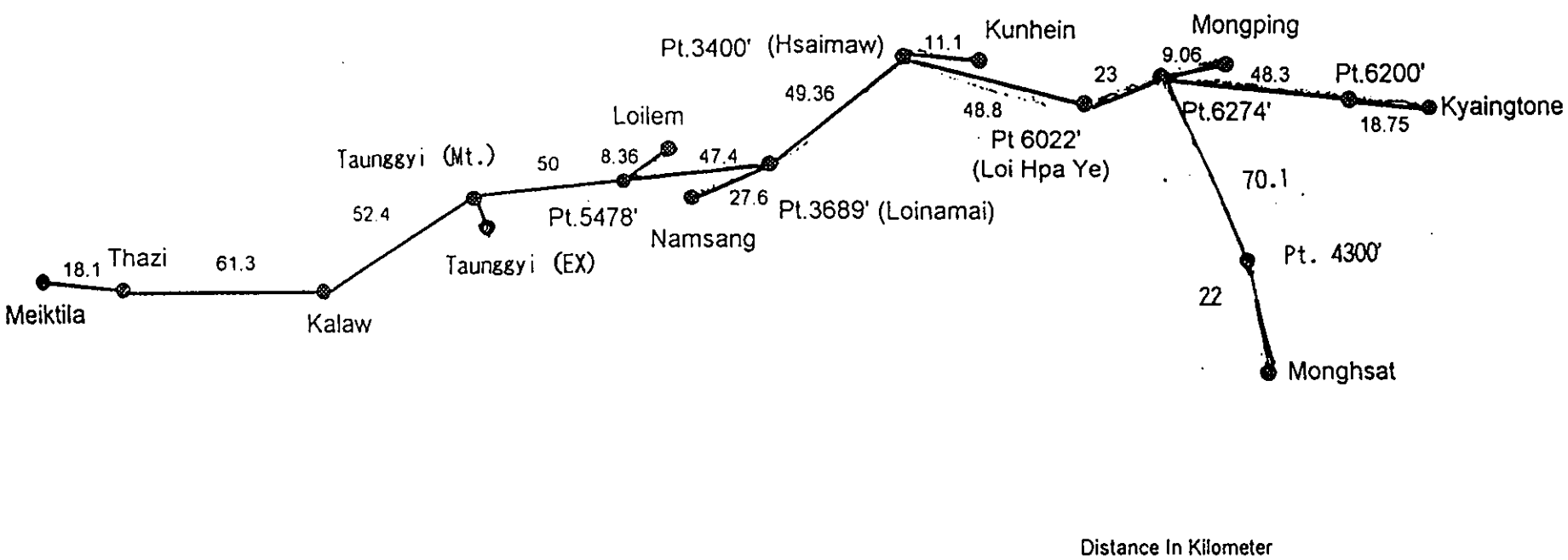

92°
93°
94°
95°
96°
97°
23°
22°
16°
15°
14°
MONYWA
LINK No.4
MYINHU
MANDALAY
CHAUNG-U
SAGAING
SINGAING
MYINGYAN
LABUTTA
THANBYUZAYAT
ANIN
YE
MAHLWE TAUNG
PAYABON KAUNG
TAVOY
RANGOON
96°10'
DALLA
16°45'
LINK No.14
A
One Link
No. 1; Popa to Pakokku
No. 2; Popa to Chauk
No. 3; Popa to Myingyan
No. 4; Mandalay to Monywa
No. 5; Bassein to Henzada
No. 6; Rangoon to Syriam
900 MHz Link
No.10; Magwe to Minbu
No.11; Aunglan to Thayet
No.12; Bassein to Labutta
No.13; Moulmein to Chaungzon
No.14; Rangoon to Dalla
400 MHz Link
15: POPA - NYO 1988
16: PRM - SNA 1990
HTL - HMB
" - IDN
SYM - KTN
DM 800 1991

2-3/2-4

(3)

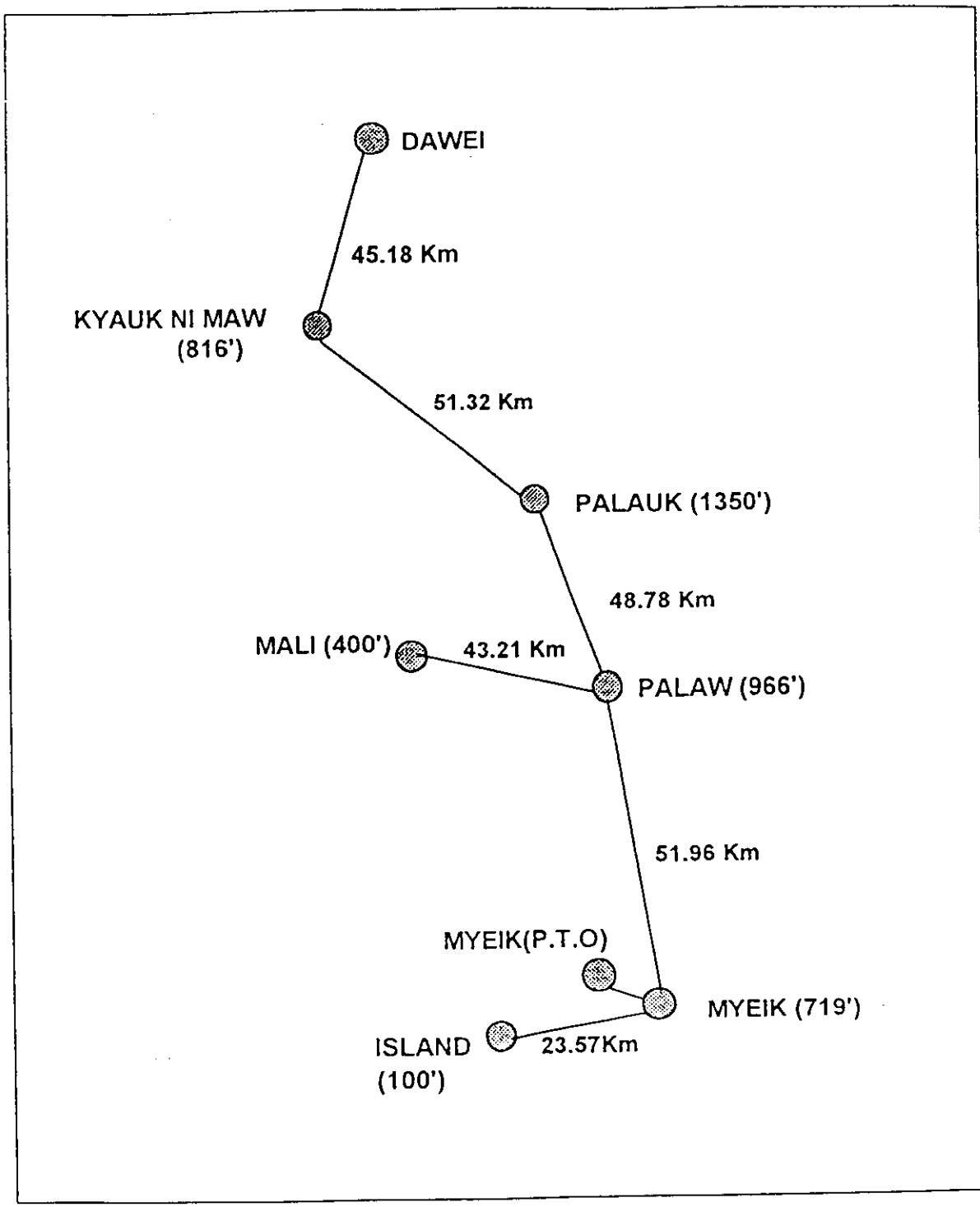

MINGUN
MANDALAY
PWEDAUNG
PYINOOLWIN
4.5km
64.6km
45.9km
26.6km
12.1km
MYINMU
23.13km
SAGAING
SINGAING
61.9km
SHINMATAUNG
YESAGYO
18.4km
26.35km
PAKKOKU
34.7km
MYITTHA
39.7km
WUNDWIN
28.9km
MEIKTILA
THAZI
16.1km
61.3km
KALAW (MT)
28.1km
LETMAUNGWE
55.6km
PINLAUNG (MT)
2.7km
PINLAUNG (PTO)
34.8km
PEKON
30.6km
LOIKAW
GROUP-1 : MANDALAY ~ PYINOOLWIN
GROUP-2 : PWEDAUNG ~ LASHIO (PTO)
GROUP-3 : MANDALAY ~ SHWEBO
GROUP-4 : MANDALAY ~ LOIKAW
GROUP-5 : MANDALAY ~ PAKKOKU

MEIKTILA-TAUNGGYI-KYAINGTONE PROPOSED MICROWAVE LINK

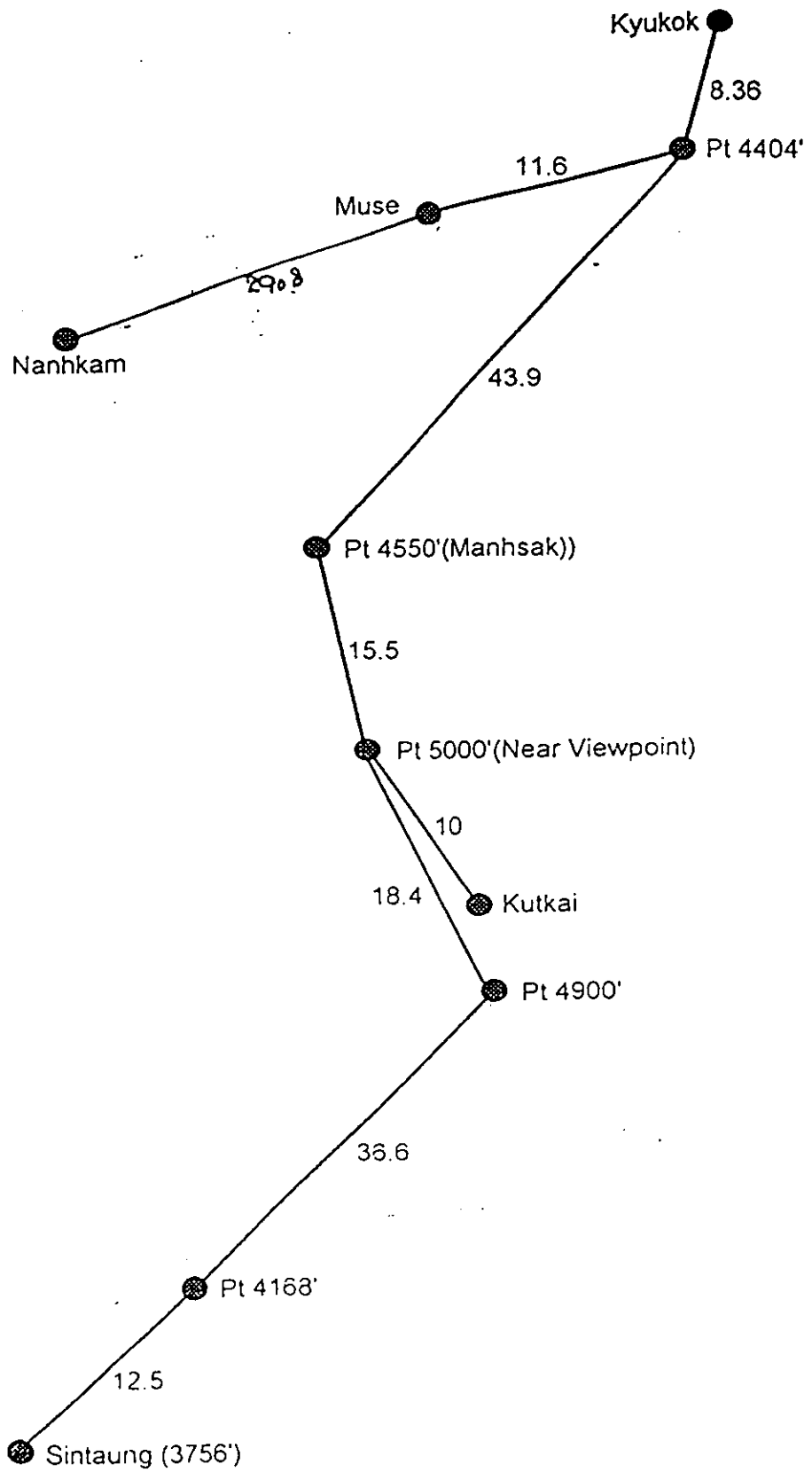


Taunggyi-Kengton R map

DAWEI - MYEIK- DIGITAL MICROWAVE LINK



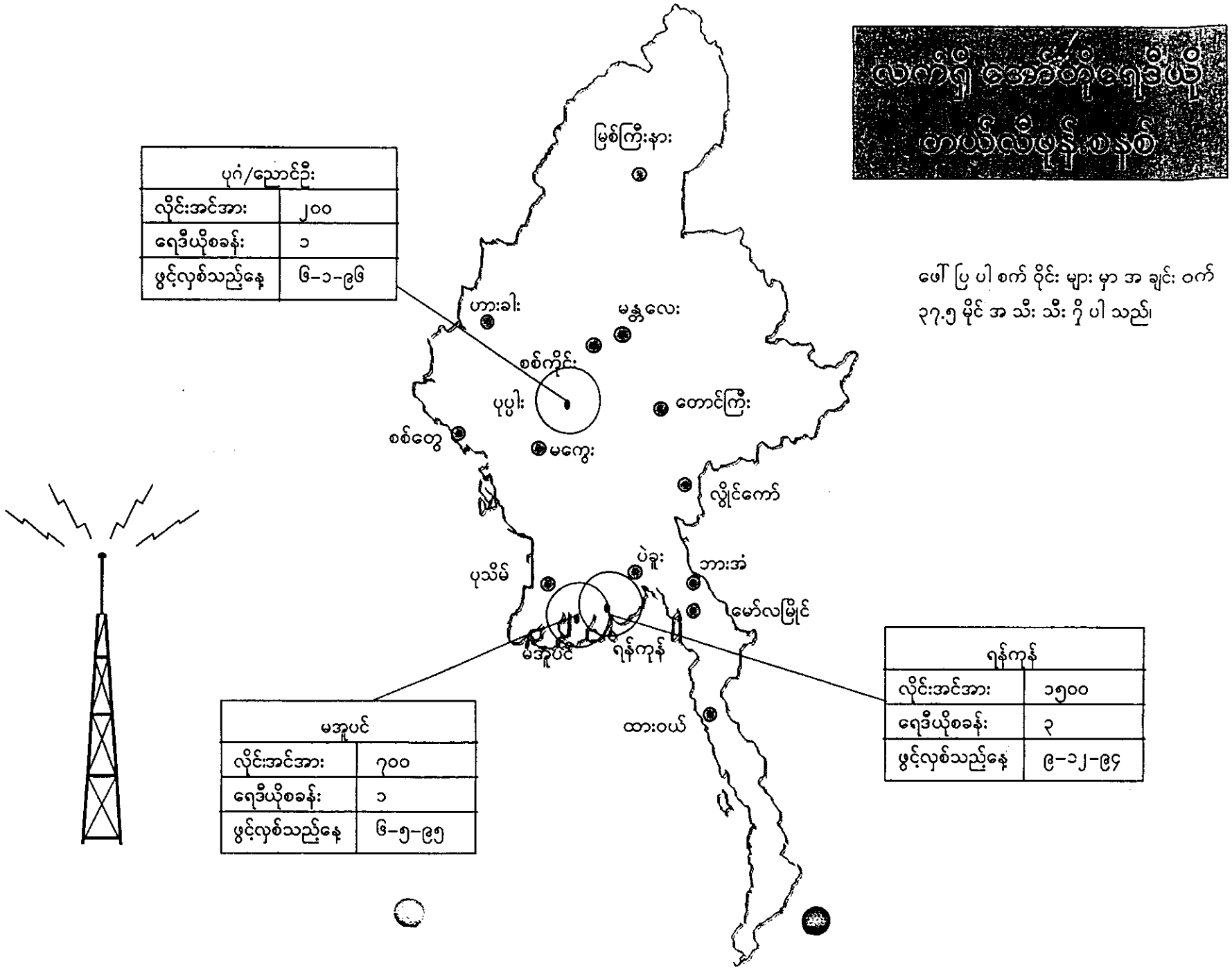
Lashio-Muse Digital Microwave Route Map



Distance-Kilometer

လေဂ္ဂ ဇေအေဝရုဒေဗပဥ္ စတုဿမုန် စနစ်

ဖေါ် ပြ ပါ စက် ဝိုင်း များ မှာ အ ချင်း ဝက် ၃၇.၅ မိုင် အ သီး သီး ကို ပါ သည်၊

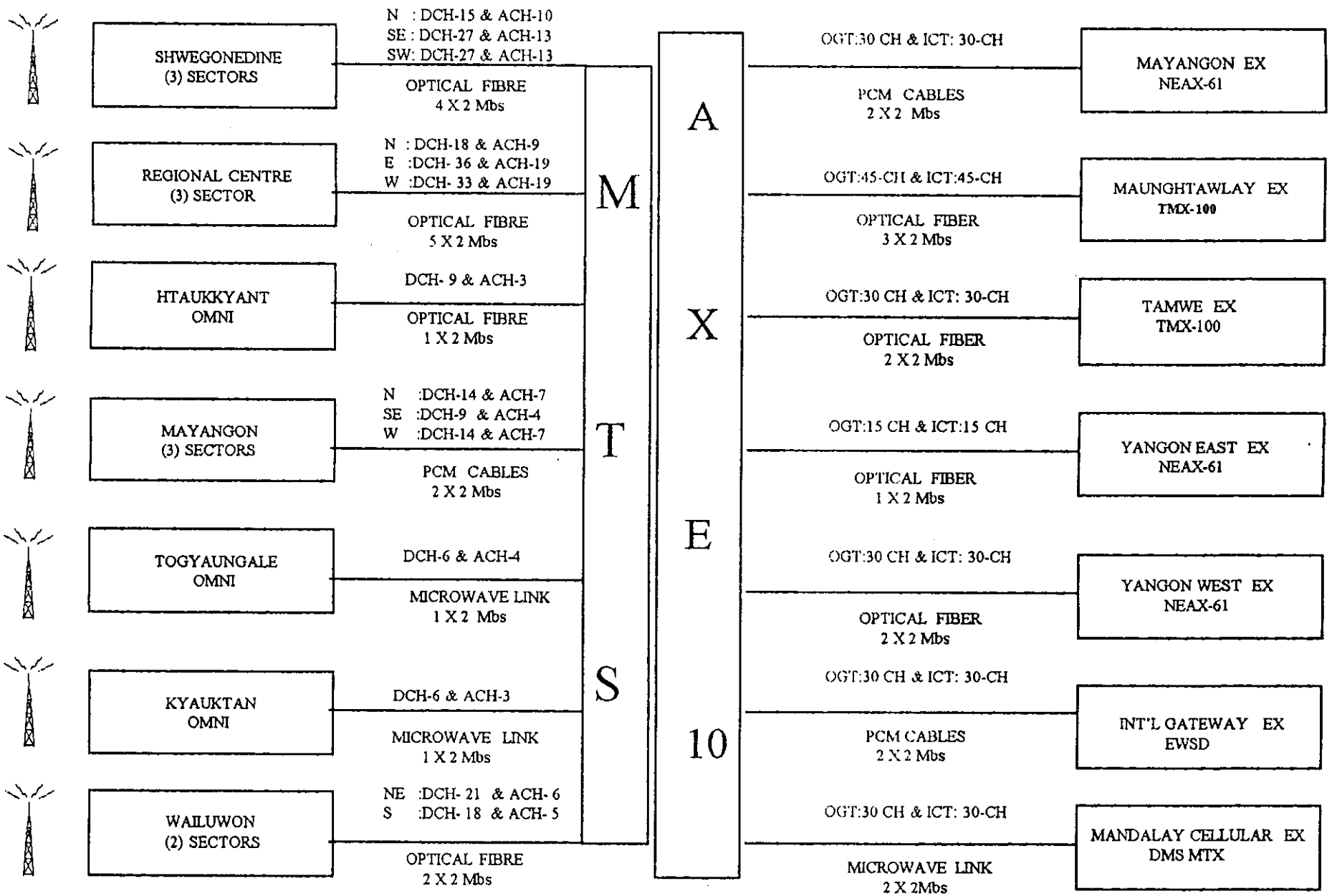


ပုဂံ/ညောင်ဦး	
လိုင်းအင်အား	၂၀၀
ရေဒီယိုစခန်း	၁
ဖွင့်လှစ်သည့်နေ့	ဖ-၁-၉၆

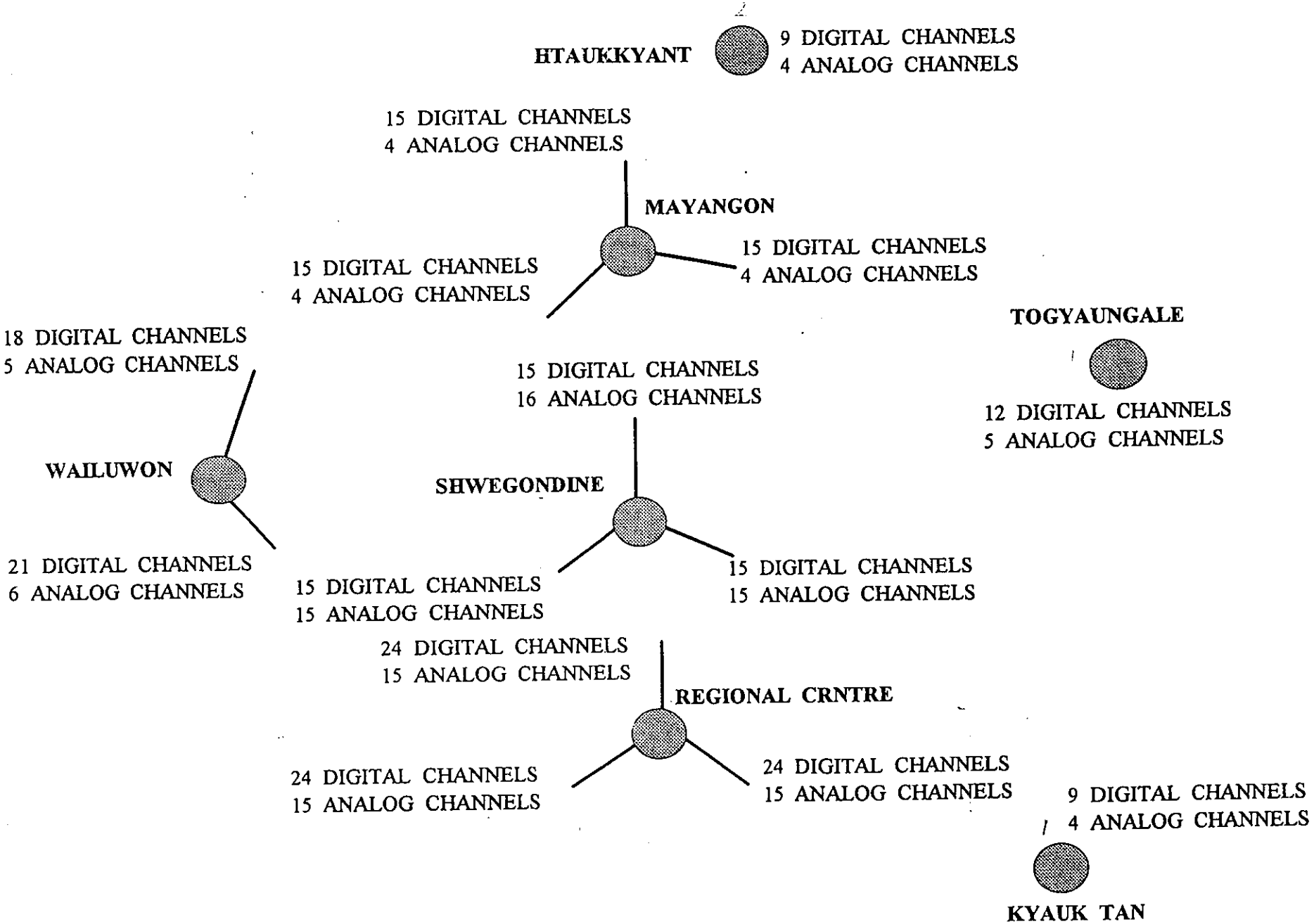
မအူပင်	
လိုင်းအင်အား	၇၀၀
ရေဒီယိုစခန်း	၁
ဖွင့်လှစ်သည့်နေ့	ဖ-၅-၉၅

ရန်ကုန်	
လိုင်းအင်အား	၁၅၀၀
ရေဒီယိုစခန်း	၃
ဖွင့်လှစ်သည့်နေ့	ဇ-၁၂-၉၄

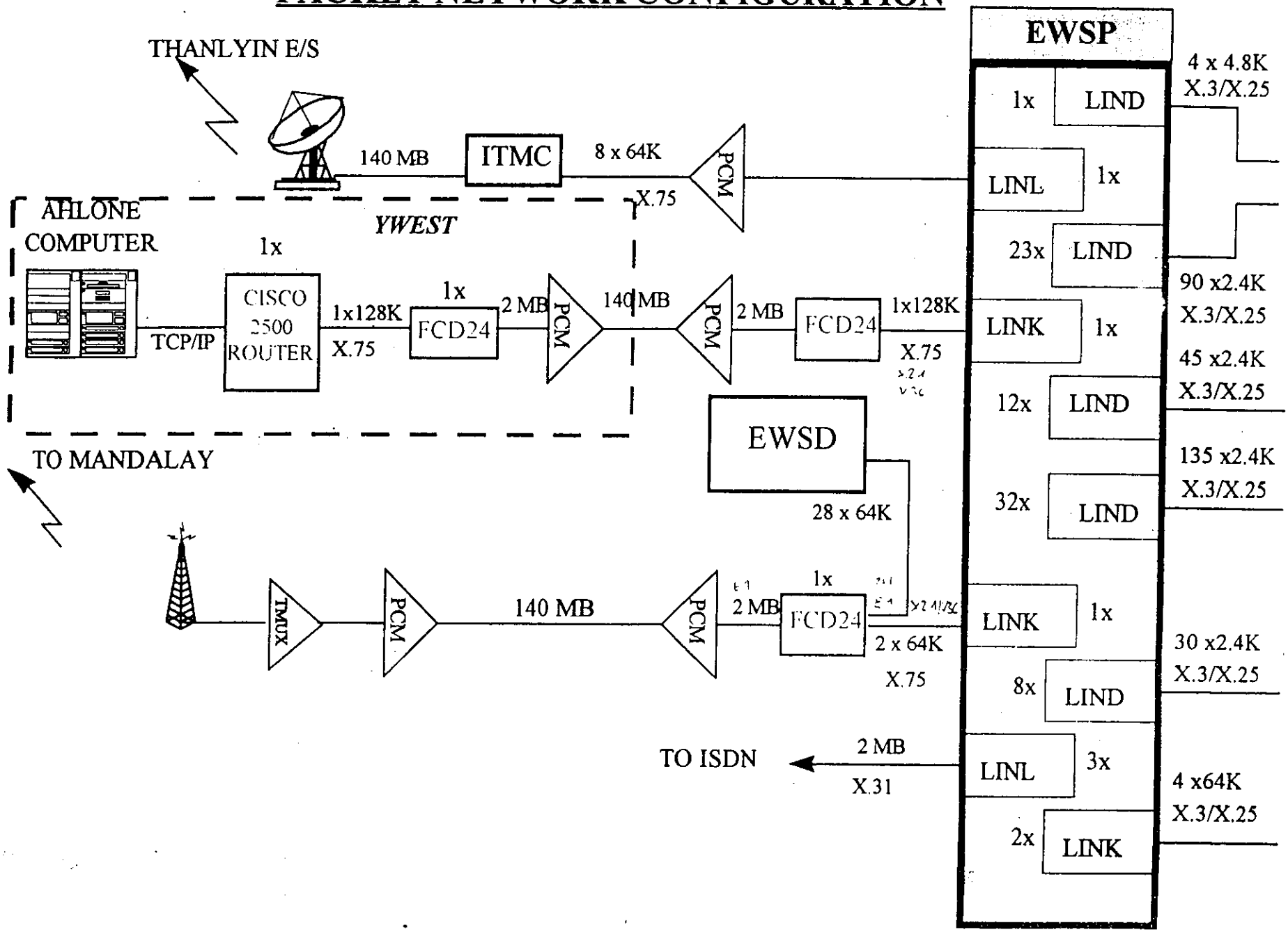
THE YANGON CELLULAR MOBILE TELEPHONE SYSTEM NETWORK CONFIGURATION

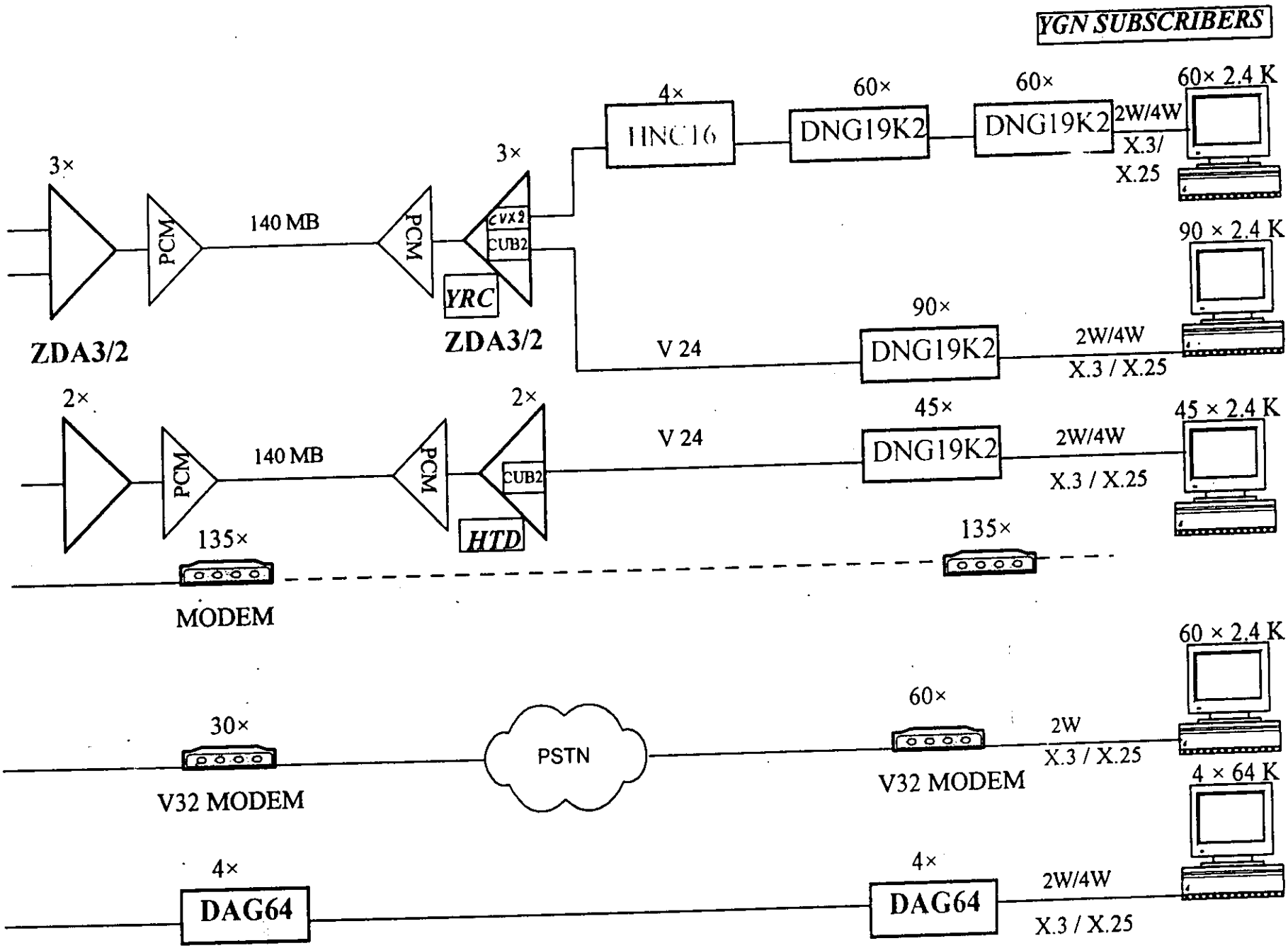


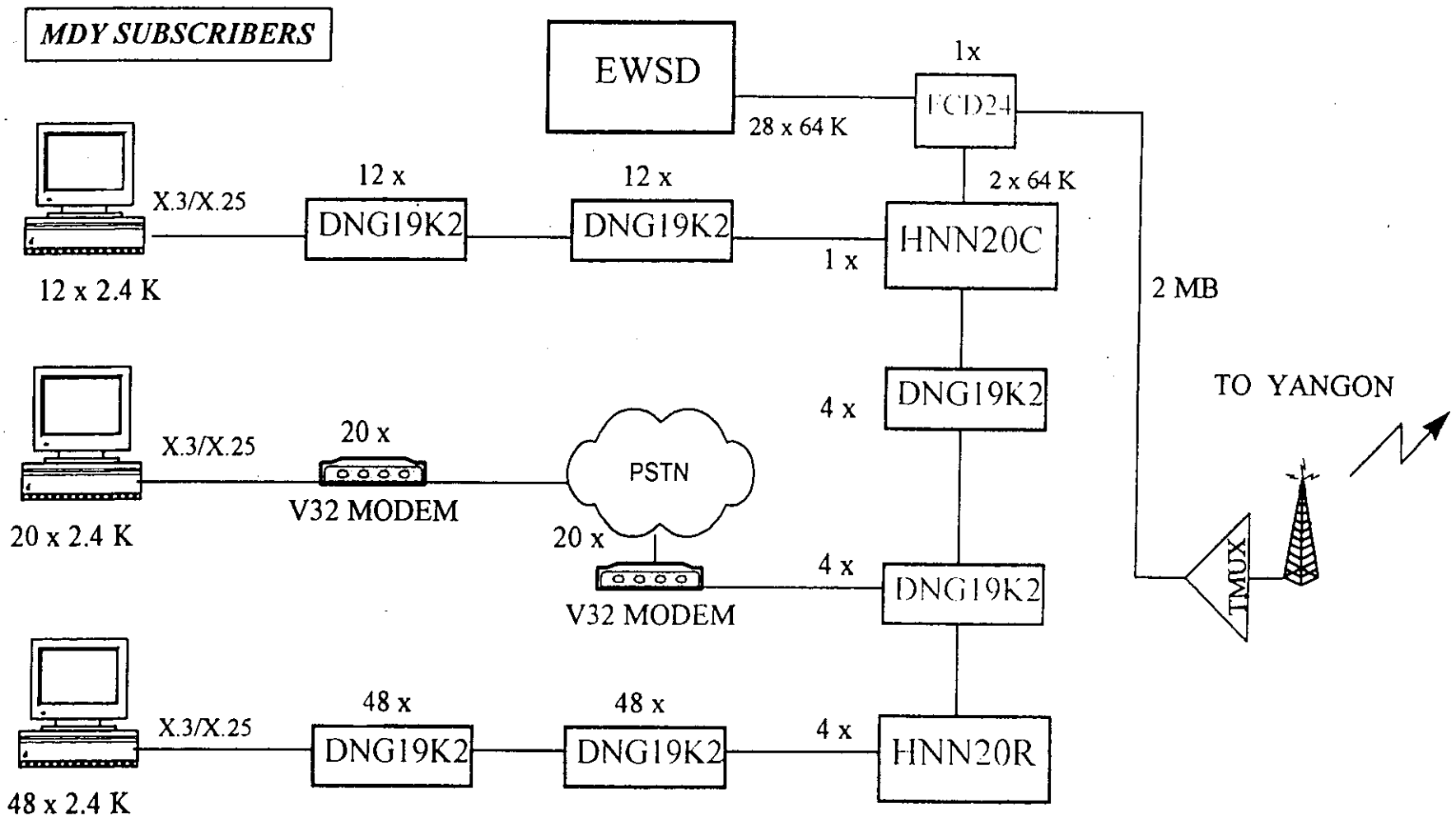
CELLULAR MOBILE NETWORK FOR YANGON - 4000 SUBSCRIBERS



PACKET NETWORK CONFIGURATION




YGN SUBSCRIBERS
4×
HNC16
60×
DNG19K2
60×
DNG19K2
2W/4W
X.3/
X.25
60× 2.4 K
3×
PCM
140 MB
PCM
3×
CVX2
CUB2
YRC
ZDA3/2
ZDA3/2
90×
DNG19K2
V 24
2W/4W
X.3 / X.25
90 × 2.4 K
2×
PCM
140 MB
PCM
2×
CUB2
HTD
45×
DNG19K2
V 24
2W/4W
X.3 / X.25
45 × 2.4 K
135×
MODEM
135×
60 × 2.4 K
30×
V32 MODEM
PSTN
60×
V32 MODEM
2W
X.3 / X.25
4 × 64 K
4×
DAG64
4×
DAG64
2W/4W
X.3 / X.25


MDY SUBSCRIBERS
EWSD
1x
FCD24
28 x 64 K
2 x 64 K
X.3/X.25
12 x
DNG19K2
12 x
DNG19K2
1 x
HNN20C
12 x 2.4 K
2 MB
TO YANGON
4 x
DNG19K2
X.3/X.25
20 x
PSTN
V32 MODEM
20 x 2.4 K
20 x
4 x
DNG19K2
V32 MODEM
TMUX
X.3/X.25
48 x
DNG19K2
48 x
DNG19K2
4 x
HNN20R
48 x 2.4 K