

**SIEMENS**

## **Introduction**

**Base Transceiver Station Equipment**

**IN:BTSE BS 11 DRAFT**

**A30808-X3247-B309-1-7619**

## CAUTION

**Note:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



### **Important Notice on Product Safety**

Elevated voltages are inevitably present at specific points in this electrical equipment. Some of the parts can also have elevated operating temperatures.

Non-observance of these conditions and the safety instructions can result in personal injury or in property damage.

Therefore only trained and qualified personnel may install and maintain the system.

The system complies with the standard EN 60950. All equipment connected has to comply with the applicable safety standards.

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Technical modifications possible.  
Technical specifications and features are binding only insofar as they are specifically and expressly agreed upon in a written contract.

This document consists of a total of 22 pages. All pages are issue 1.

## Contents

1	General . . . . .	5
1.1	Introduction . . . . .	5
1.1.1	Purpose of the Document . . . . .	5
1.1.2	Structure of the Document . . . . .	5
1.1.3	Structure of the UMN: BTSE . . . . .	5
1.1.4	Introduction and Commands registers . . . . .	5
1.1.5	Overview of SBS-BSS . . . . .	6
1.1.6	Base Station Controller (BSC) . . . . .	6
1.1.7	Base Transceiver Station Equipment . . . . .	6
1.1.8	Transcoding and Rate Adaptation Unit (TRAU) . . . . .	7
1.1.9	Local Maintenance Terminal (LMT) . . . . .	7
1.1.10	Maintenance Register . . . . .	7
2	LMT . . . . .	8
2.1	Introduction to the Local Maintenance Terminal (LMT) . . . . .	8
2.2	Connection . . . . .	8
2.3	Access levels . . . . .	9
2.4	BTSE Phase and Status . . . . .	9
2.4.1	BTSE Phases . . . . .	9
2.4.2	BTSE Status . . . . .	10
2.5	Hardware . . . . .	10
2.6	Software . . . . .	10
2.7	Installation of the LMT software . . . . .	11
2.7.1	Directory . . . . .	11
2.8	LMT Setting . . . . .	11
2.8.1	Setting Serial Port . . . . .	11
2.8.2	Setting Debug List . . . . .	13
2.9	LMT Logon . . . . .	13
2.10	Logoff . . . . .	17
2.11	Exit . . . . .	18
3	Abbreviations . . . . .	19

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## Illustrations

Fig. 1.1	BSC, BTS and TRAU .....	6
Fig. 2.1	Protection circuit .....	8
Fig. 2.2	.....	12
Fig. 2.3	.....	12
Fig. 2.4	.....	12
Fig. 2.5	.....	13
Fig. 2.6	.....	13
Fig. 2.7	.....	14
Fig. 2.8	.....	15
Fig. 2.9	.....	15
Fig. 2.10	.....	15
Fig. 2.11	.....	16
Fig. 2.12	.....	16
Fig. 2.13	.....	17
Fig. 2.14	.....	18
Fig. 2.15	.....	18
Fig. 2.16	.....	18

# 1 General

## 1.1 Introduction

### 1.1.1 Purpose of the Document

This register is a general guide for use by the operator of the Siemens Base Station system (SBS). It describes the basic concepts of the BSS and the structure of the system documentation. A special section is devoted to the Local Maintenance Terminal (LMT), which is the main device for local interaction with the system.

### 1.1.2 Structure of the Document

This register is divided into two sessions:

- Session 1: **General**.
- Session 2: **LMT**. This session is a detailed description of the hardware and software components that identify the LMT. The LMT main menu is fully described as well.

### 1.1.3 Structure of the UMN: BTSE

The SBS documentation is divided into the following parts:

- BSS documentation
- OMS documentation.

This Introduction Register belongs to the UMN for the BTSE, which belongs to the BSS documentation.

The purpose of UMN is to provide the user with a complete set of documentation about the operation and maintenance of SBS. The UMN is composed of the following Registers:

- Introduction: a general description of the documentation itself and the man-machine interface (LMT).
- Commands: a description of the commands.
- Maintenance (MMN:BTSE BS11): a description of the actions to be performed when an error occurs or an alarm is activated.

### 1.1.4 Introduction and Commands registers

The Introduction register regards the following arguments:

- An overview of the Siemens Base Station (SBS)
- A description of the SBS Documentation Structure
- The Local Maintenance Terminal (LMT) description

The Commands register regards the following arguments:

- LMT Procedures
- LMT Commands.

### 1.1.5 Overview of SBS-BSS

The Siemens Base Station (SBS) provides the connection of traffic and signalling channels between the Mobile Services Switching Center (MSC) and the Mobile Station (MS) in GSM900 and DCS1800 PLMNs (see Fig. 1.1).

The BSS is composed of the following network elements:

- Base Station Controller (BSC)
- Base Transceiver Station Equipment (BTSE)
- Transcoding and Rate Adaptation Unit (TRAU)

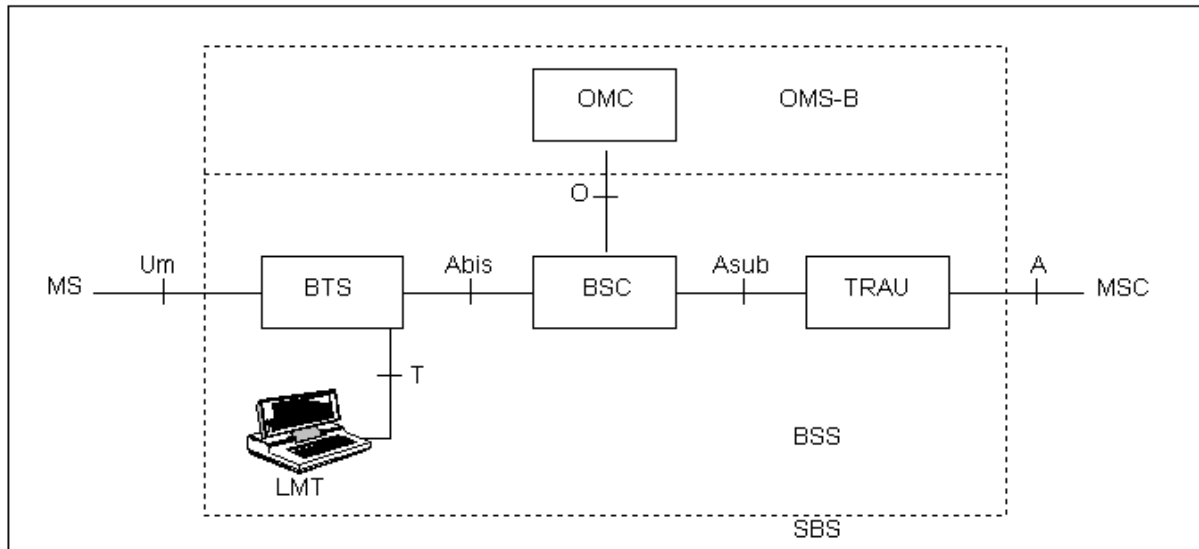


Fig. 1.1 BSC, BTS and TRAU

### 1.1.6 Base Station Controller (BSC)

The Base Station Controller (BSC) is the core element of a BSS system and provides a link between the BTSE elements and the MSC.

The connection to the BTSE is performed using the Abis Interface.

In the SBS system, the BSC is connected to the MSC by means of another network element, the Transcoding and Rate Adaptation Unit (TRAU), via the Asub Interface.

The main functions of the BSC are the following:

- to provide the interfaces to BTSE, TRAU, OMC
- to administer the radio resources
- to perform radio frequency management
- to control the internal digital switch.

### 1.1.7 Base Transceiver Station Equipment

The BTSE can be seen as a basic cell element in the SBS network and provides the link between the BSC and the MS.

### **1.1.8 Transcoding and Rate Adaptation Unit (TRAU)**

The TRAU is the interface between the BSC and the MSC. For each traffic channel, the TRAU adapts the transmission rate on the BSC side to the standardized 64 kbit/s transmission rate on the MSC side.

### **1.1.9 Local Maintenance Terminal (LMT)**

The LMT can be connected only to BTSE, and is the interface between the operator (user) and the BTSE. It permits for all the operations of Installation and Maintenance related to the BTSE.

### **1.1.10 Maintenance Register**

The Maintenance register regards the following subjects:

- Section IN gives a short description of how to use the manual and explains the basic principles of fault clearance
- Section TASK provides information on routine tasks
- Section PROC contains the fault clearance procedures
- Section TAB provides an overview of the jumpers and switches on modules and the allocation fuses
- Section APP provides details on fault messages, status queries, configuration and system diagnoses.



## 2 LMT

### 2.1 Introduction to the Local Maintenance Terminal (LMT)

The LMT is the interface between BTSE and the operator.

The software which performs the LMT functions must be installed on at least 386 Personal Computer provided with WINDOWS 3.1 and RS-232 serial port.

The LMT is connected to BTSE through an interface called T-interface.

- The LMT provides local maintenance services at the BTSE site
- Under restricted conditions, the LMT may disconnect the BTSE from BSC.
- The BTSE application runs in several phases which will be defined in the following.  
The LMT can be connected to BTSE at any time.

Every time that LMT is connected to BTSE, the LMT program starts connection with BTSE by retrieving the state of BTSE in order to know in which phases the BTSE program is running at that time, the access type, the T-Link and Abis-Link status.

### 2.2 Connection

Connect the LMT to connector J02 on BTSE (Fig. 2.1).

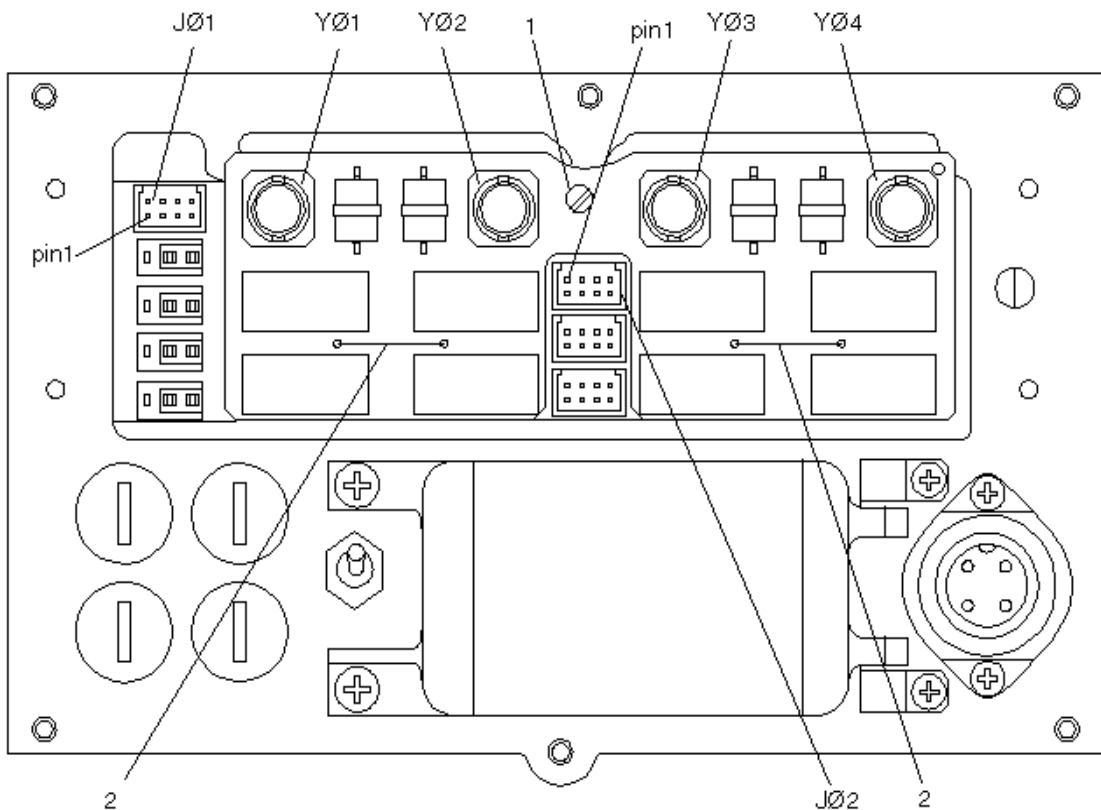


Fig. 2.1 Protection circuit

## 2.3 Access levels

The LMT SW requires the user to enter the LOGON and PASSWORD. This information is required to set the corresponding access level.

The operator can access the LMT program in the following ways:

- Factory mode
- User mode
- Administrator mode

Each mode access is controlled by one password. The Factory mode permits:

- BTSE software down loading (in phase 1)
- Set or get E.S.N. and CALIBRATION (set in phase 2, get in phase 2 and 3).

The User mode permits obtaining the get attributes and get alarms of BTSE.

The Administrator mode permits provision of all local maintenance service e.g. create/delete objects of BTSE, set attributes, download and activate software from LMT (in relation to BTSE phase).

Before executing Logon, Access is NULL.

## 2.4 BTSE Phase and Status

### 2.4.1 BTSE Phases

The BTSE will be, at any given time, in one of the possible phases. The current phase will be communicated to LMT during the LOGON procedure and will affect LMT Menus.

Each phase permits the user to activate all suitable commands for this phase.

The menu command OTHER/MBTS RESTART start Connection with BSC. BTSE goes from Phase 2 to Phase 3.

The menu command OTHER/mtbs DISCONNECT start Disconnection from BSC. BTSE goes from Phase 3 to Phase 2. The possible phases are: Phase 1, Phase 2, Phase 3. In phase 1 no connection to the BSC is established, only T-interface is working. In Phase 2 no connection to the BSC is established, only T-interface is working and the minimal version of BTSE application is running. A-bis Link can be UP or DOWN. In Phase 3 connection to the BSC through A-bis link is established, T-interface is working. A-bis Link can be UP or DOWN.

The possible cases of working in this phase are:

- BTSE application is running
- The SM Safety load is running and the download of BTSE application from BSC is in progress.
- The SM Safety load is running and the BTSE is waiting for the download of BTSE application from BSC.

## 2.4.2 BTSE Status

The BTSE status is relative to the phase in which BTSE works as follows:

PHASE 1:

- Normal

PHASE 2:

- LOAD BTSCAC
- LOAD BTSDRX
- LOAD BTSBBX
- LOAD BTSARC
- WARM-UP
- WAIT\_MIN\_CONFIG
- MAINTENANCE
- NOT LOAD SM1
- NOT LOAD UBBCU

NOTE:

In phase 2 status 1-2-3-4-5-8-9 it is possible only to Make Get Attribute operations.

PHASE 3:

- LOAD FROM BSC
- NORMAL

## 2.5 Hardware

LMT Hardware is composed of the following two elements:

- A portable LAPTOP

These elements are described by the following mandatory minimal requirements:

PC configuration:

- A portable LAPTOP Intel 80486
- 8 Mbytes RAM
- LMT software requires about 610 Kbytes of conventional DOS memory. The PC must, therefore, be configured appropriately.
- 120 Mbytes hard disk
- VGA 640x480 mono/color
- Mouse
- 1 Serial port (COM1)
- 1 Parallel port
- 1 hour survivability without power supply.

## 2.6 Software

LMT Software is composed of the following components:

- LMT.EXE
- FAULT.DLL
- GETALARM.DLL
- OTHERCMD.DLL
- GET\_ATTR.DLL
- SET\_ATTR.DLL
- CREATE.DLL
- TOOLS.DLL

- SERVER.DLL
- GETSTAT.DLL
- FDRIVER.DLL
- SOFTWARE.DLL
- CTL3D.DLL
- STRING.INI
- LMT.INI
- WINDOWS 3.1 or successive version
- Files necessary for Download.

The software version installed is 01.01.

## 2.7 Installation of the LMT software

The procedure shown is valid both for Windows 3.1 and Windows 95.

- To enter in Windows, type WIN followed by ENTER.
- Create a directory (i.e. LMT).

Copy the contents of the floppy disk supplied in the created directory.

### 2.7.1 Directory

Create a directory for files downloading from BTSE.

## 2.8 LMT Setting

The operations described must be performed before LMT Logon.

### 2.8.1 Setting Serial Port

#### Class Operation

This is Setting Class Command

#### Scope and Description of Command

This command selects the serial port

#### Applicability

This action can be performed before LMT Logon.

#### Associated Parameters

None

#### Response Messages

None

#### Way to operate

1. The following window is displayed at start up of LMT program

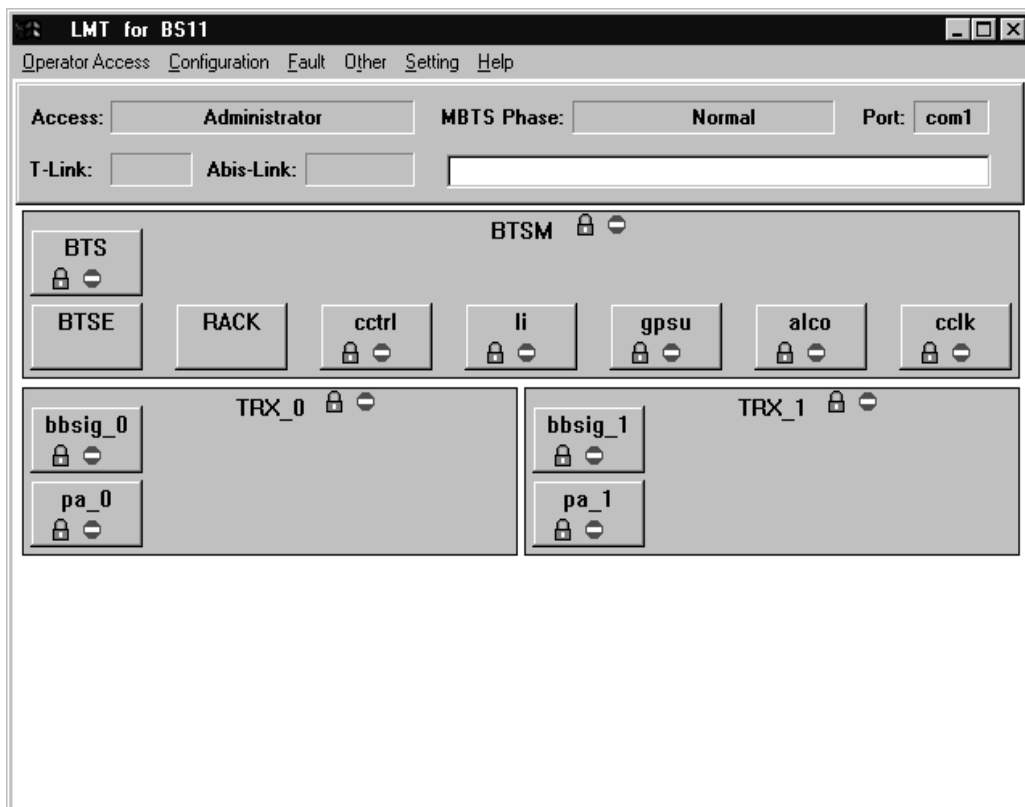


Fig. 2.2

2. Select **Setting-> Set Serial Port**

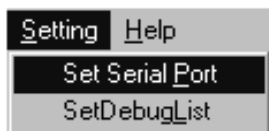


Fig. 2.3

3. The following dialog box is displayed after selection of Set Serial Part.

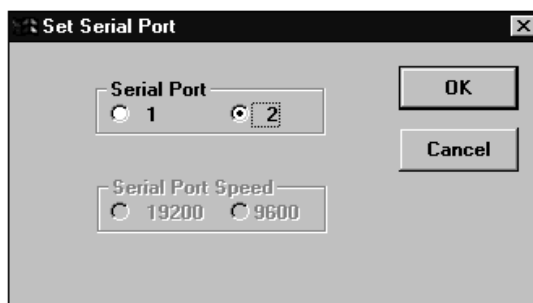


Fig. 2.4

4. Select the necessary serial port, then click on OK button.

## 2.8.2 Setting Debug List

### Class Operation

This is Setting Class Command

### Scope and Description of Command

This command sets Debug List

### Applicability

This action must be performed before LMT Logon

### Associated Parameters

None

### Response Messages

None

### Way to operate

1. Select **Setting-> Set Debug List**



Fig. 2.5

2. The following DEBUG LIST is displayed after selection

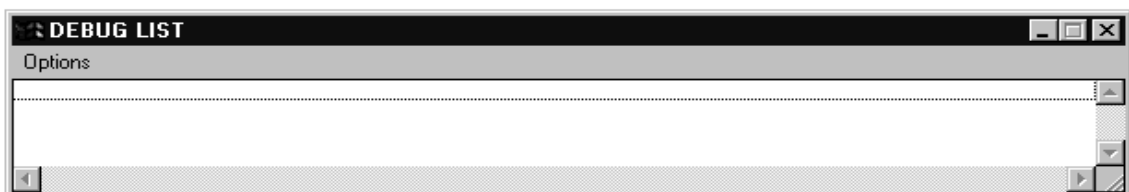


Fig. 2.6

## 2.9 LMT Logon

In order to successfully complete the activation, the user should:

- Verify the correct installation of LMT hardware and software.
- Verify that BTSE and LMT are connected with the suitable cable.
- Verify that BTSE is powered on.
- Run the executable file (i.e. LMT.EXE) downloaded during installation of the LMT software.

### Class Operation

This is an Operator Access Class Command

### Scope and Description of Command

This command performs a connection between Local Maintenance Terminal and BTSE

**Applicability**

This action can be performed at any BTSE phase working

**Associated Parameters**

The only parameter associated is the password

**Response Messages**

Null Response

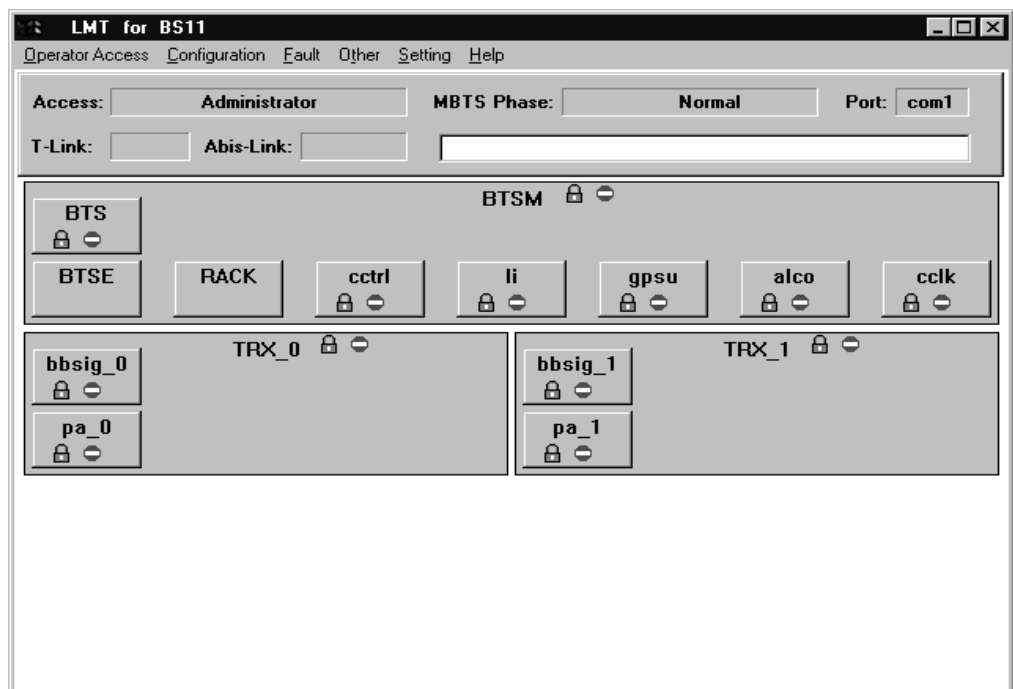
Successful conclusion command (Password is correct)

Password Wrong

Unsuccessful conclusion command (Password is wrong)

**Way to operate**

1. The following window is displayed at start up of LMT program
  - Release shows the release of LMT program  
(xx = Edition of LMT program yy = Version of LMT program)
  - Access: NULL means that Logon command has not been yet performed
  - The Debug List shows the messages from BTSE to LMT



**Fig. 2.7**

2. Select **Operator Access->Logon->User** or **Administrator** or **Factory**
  - The User Access allows only Get Attributes and Get Alarms Commands
  - The Administrator Access allows Get and Set Attributes, Get Alarms, Create and Delete Objects, Change Administrative State for Objects, Download and Activate or Deactivate Software, Restart of BTSE
  - The Factory Access allows Download and Activate Software, Set and Get factory parameters

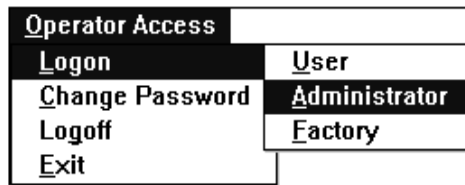


Fig. 2.8

- The following window is displayed after selection of Administrator and the password required dialog for Administrator Mode Access is displayed  
Insert password and Click on **OK button**

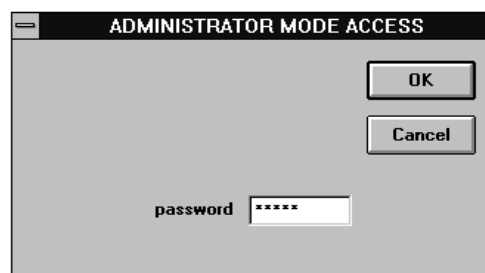


Fig. 2.9

- With BTSE functioning, the terminal goes automatically to phase 3 as shown below.

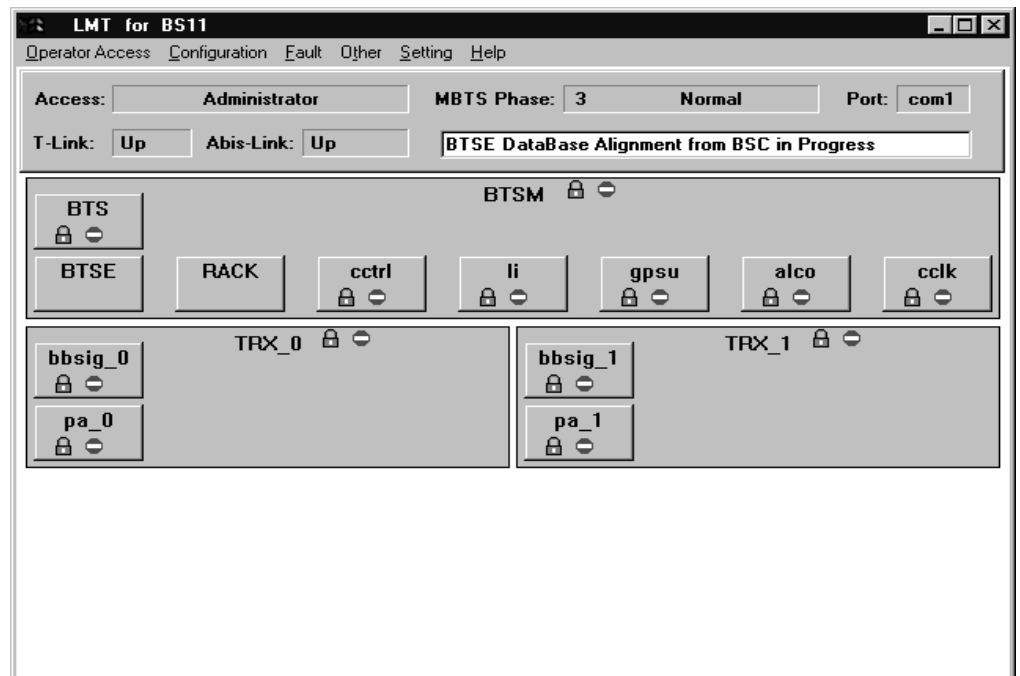


Fig. 2.10

- After 1 minute about, the Data Base alignment starts.



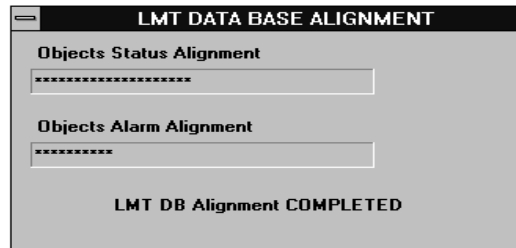


Fig. 2.11

6. When the Data Base Alignment is completed the following window is displayed

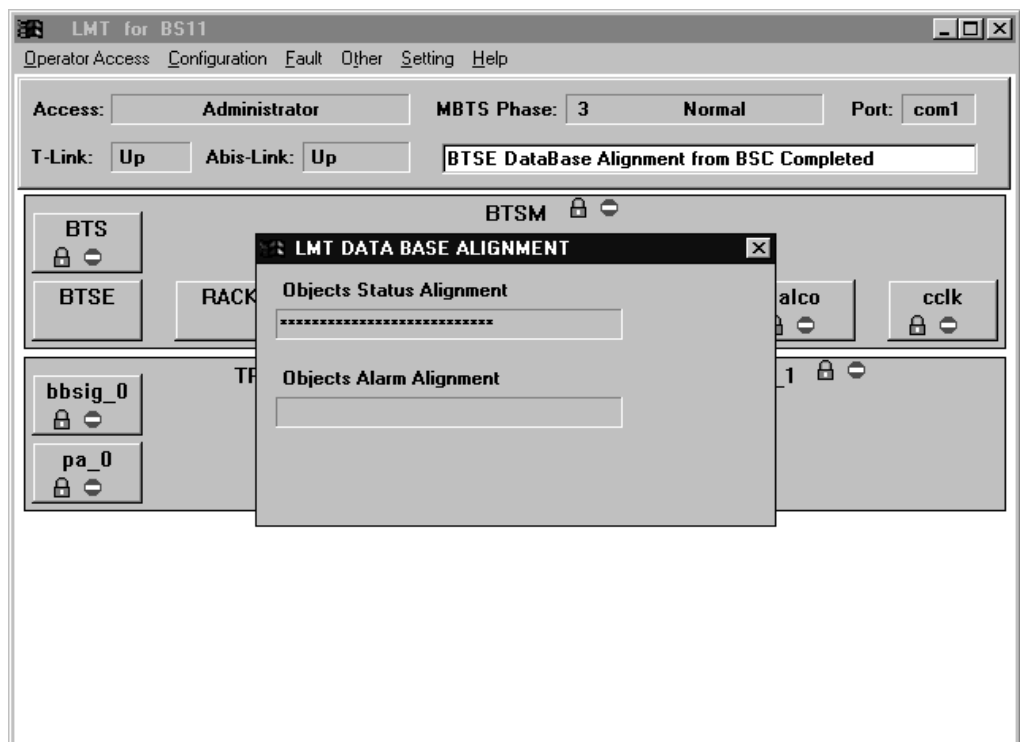


Fig. 2.12

7. The following window is displayed when Logon command for administrator mode access is completed

In this example the LMT is connected to BTSE that works in phase 3

The information showed are:

- Command menu for administrator access
- Type of operator access
- Phase of BTSE working
- Status of link between LMT and BTSE (T-Link)
- Status of link between BTSE and BSC (Abis-Link)
- Graphic representation of functional and hardware objects available of BTSE
- The Debug List shows the messages from BTSE to LMT

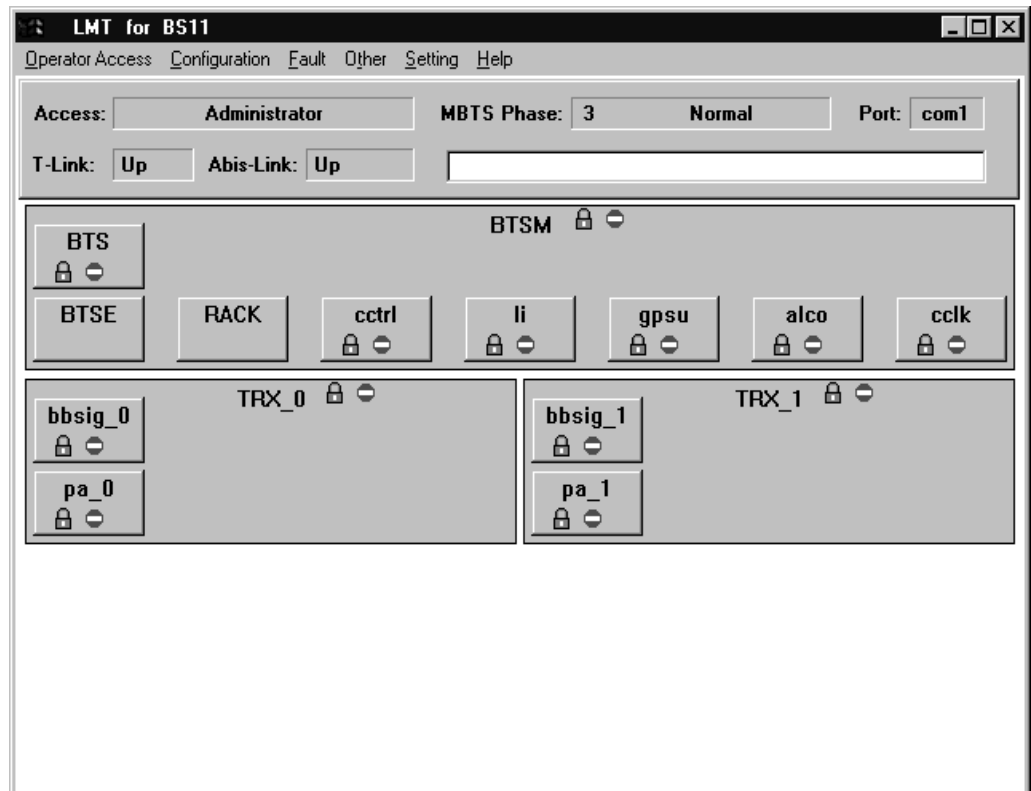


Fig. 2.13

## 2.10 Logoff

### Class Operation

This is an Operator Access Class Command

### Scope and Description of Command

Before to change the access type you have to select this command

### Applicability

This action can be performed at any BTSE phase working

### Associated Parameters

There are not associated parameters

### Response Messages

There are not response messages

### Way to operate

1. For this operation the status of Abis Link is not relevant
2. Select **Operator Access->Logoff**



Fig. 2.14

3. The following window is displayed after selection of **Logoff**

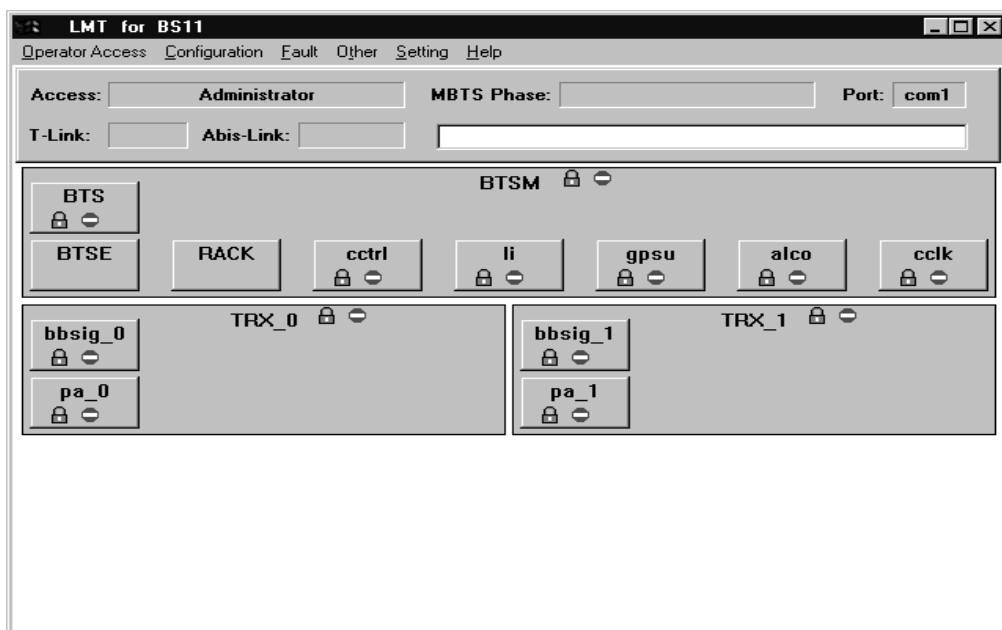


Fig. 2.15

## 2.11 Exit

Exit option allows to exit from the LMT program.



Fig. 2.16

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## 3 Abbreviations

Abis	GSM interface (BSC-BTSE)
ALCO	Alarm and Control Board
BBSIG	Base Band and Signaling Board
BSC	Base Station Controller
BSS	Base Station System
BTSE	Base Transceiver Station Equipment
BTSM	BTS Site Manager
CCLK	Common Clock
GPSU	Generic Power Supply Unit
GSM	Global System for Mobile Communication
LI	Link Interface
LMT	Local Maintenance Terminal
MS	Mobile Station
MSC	Mobile Services Switching Center
OMC	Operation and Maintenance Center
PA	Power Amplifier
PLMN	Public Land Mobile Network
SBS	Siemens Base Station System
SM	Site Management
TRX	Transceiver

