8.2.2 Patch Antenna Installation

Preparations

1. Verify that the monopole antenna brackets are removed from the Radio Head (Step 4 on page 4-25 and Step 5 on page 4-26).

Attaching the External Duplexer Cables

2. Remove two (2) patch antenna cables from the RH Patch Antenna Kit NTM/KRE 101 1608, and attach the cables to the external duplexers as shown in Figure 4-13 on page 4-31.

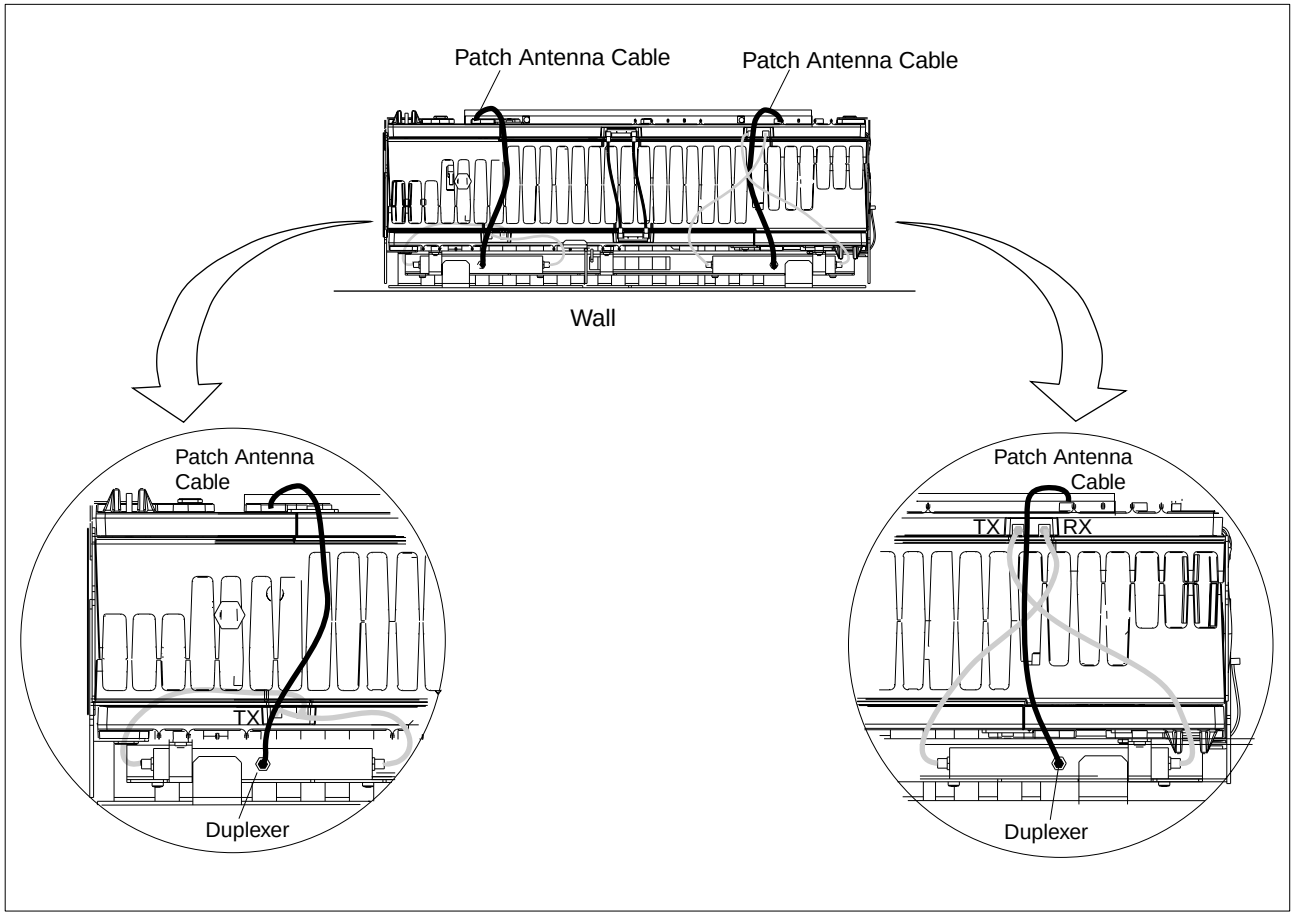


Figure 4-13. Patch Antenna to Duplexer Cables

3. Verify that the duplexer-TRX cable connectors are securely attached.

Attaching the Patch Antenna Assembly

Caution !

Mount the Radio Head on the wall prior to installing the patch antenna assembly to guard against possible damage to the patch antenna assembly.

4. Attach the patch antenna assembly to the Radio Head using the six screws provided with the antenna. See Figure 4-14 on page 4-32 for an illustration of the six screw locations.

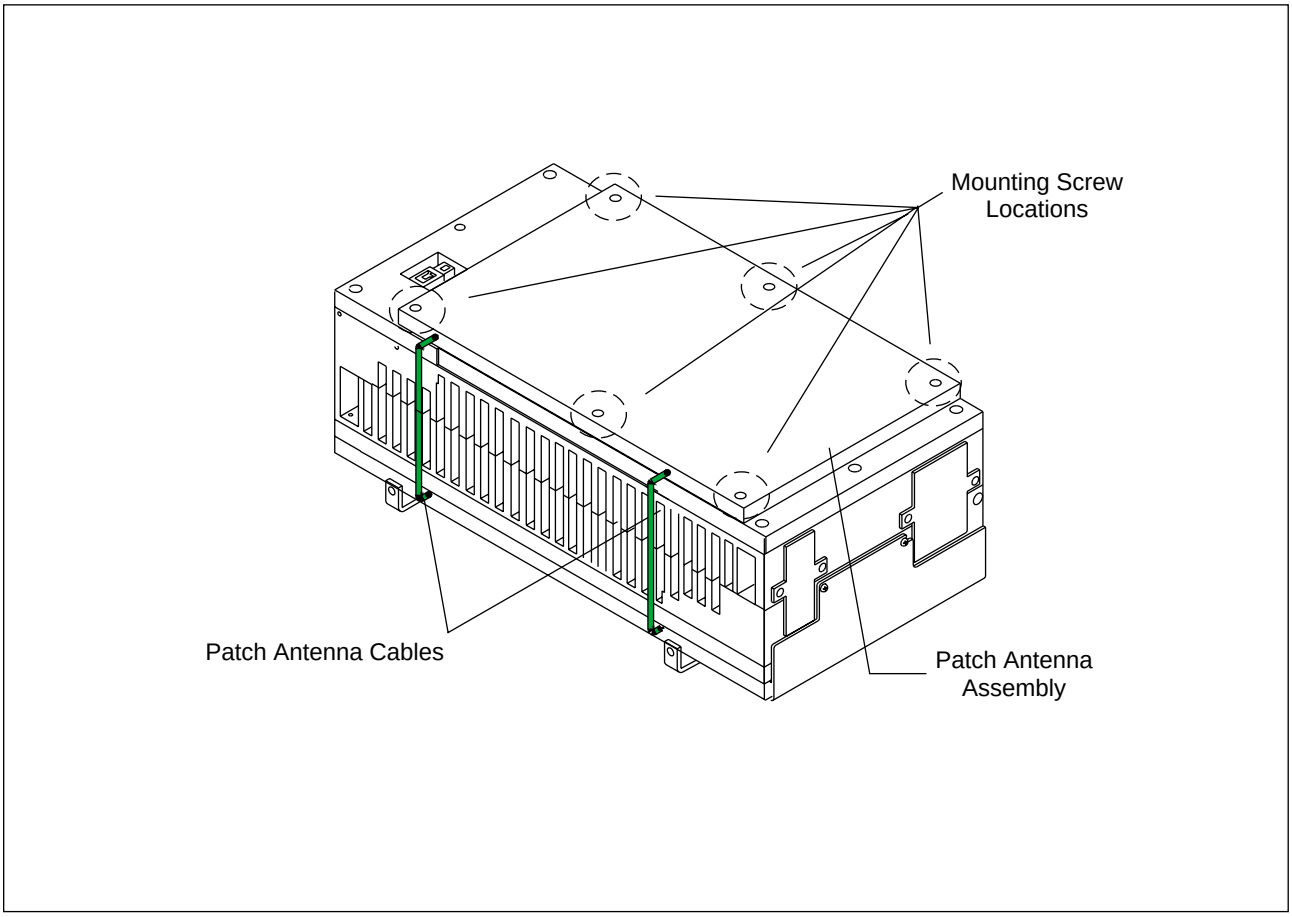


Figure 4-14. Patch Antenna Assembly and Cables

Attaching Antenna Cables

5.

Warning!

Use care when handling the antenna connectors.

Connect the patch antenna cables from the external duplexer to the press-fit connectors on each end of the patch antenna. See Figure 4-14 on page 4-32 for the location of the patch antenna cables.

8.3 Cable Installation and Power-Up

The RBS 884 Pico (1900 MHz) Radio Heads may be connected to Pico CRI equipment using leased T1/E1 connections or non-leased proprietary connections.

All T1 cable must be plenum rated, CAT5, 24-gauge UTP cable. E1 cable may either be 75-ohm coaxial or 120-ohm twisted-pair cable. The maximum cable length for propriety connection is 1,000 meters, without interconnects or splices.

Preparations

1. Verify that the Control and Radio Interface (CRI) has been installed. If not, refer to *Part 3 RBS 884 Pico (1900 MHz) CRI Installation* in this user's guide.

2. Ensure that the following tools and materials are available prior to starting this installation procedure:

- T1
  - 100-ohm CAT5, UTP with RJ-45 connectors
  - Ferrites (included in Small Parts Kit NTM 201 2887/1)
  - Power Cord (The United States (US) 110 Vac power cord is included in Radio Head Hardware Kit NTM 201 1581/1. For other markets, the power cords are customer supplied.)
  - Wire/cable strippers and cutters
  - Crimping tool
- E1
  - 120-ohm TP with RJ-45 connectors or 75-ohm coaxial cable with BNC connectors
  - Ferrites (included in Small Parts Kit NTM 201 2887/1)
  - Power Cord (The 110 Vac power cord is included in Radio Head Hardware Kit NTM 201 1581/1. Other power cords are customer-supplied.)
  - Impedance Matching Network, 75 to 120-ohm (Figure 4-15 on page 4-34)
  - Short lengths of E1 120-ohm twisted-pair cable with RJ-45 fittings for connection from Impedance Matching Networks to Radio Heads
  - Wire/cable strippers and cutters
  - Crimping tool

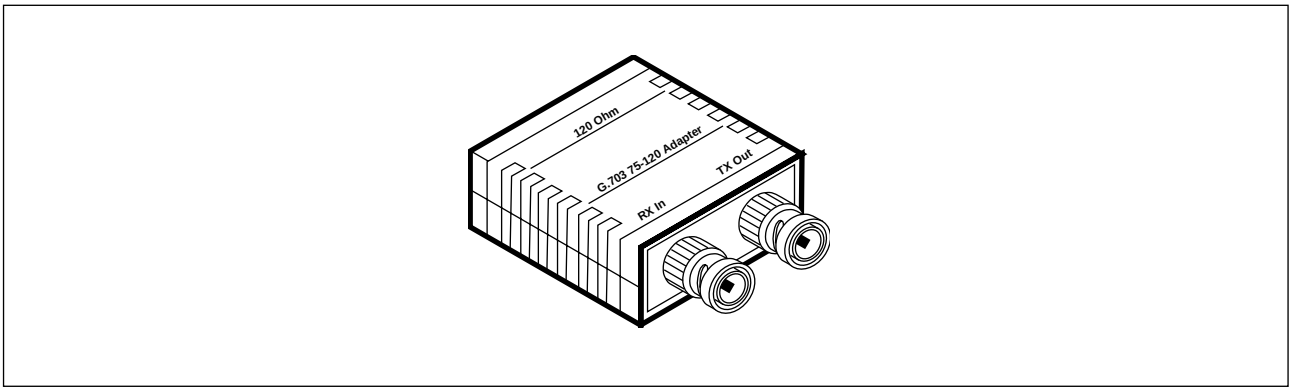


Figure 4-15. Impedance Matching Network for E1 75-ohm Coaxial Cable

Route CRI to Radio Head Cable

3.

DANGER!

Do not install T1/E1 PCM cable close to fluorescent light fixtures, transformers, or electric motors. For cabling practices, see "Commercial Building Standard for Telecommunications Pathways and Spaces, EIA/TIA-569."

If the CRI is remote and the line to the CRI is leased, install a Channel Service Unit (CSU) and route a T1/E1 PCM cable from the CSU to the first Radio Head (Radio Head 1). If the CRI is local and the line to the CRI is proprietary or non-leased, route the cable directly from the local CRI to Radio Head 1. Refer to Table 4-8 on page 4-35 for the technical specifications for the PCM connections.

Note: For installation convenience, the CRI to Radio Head cabling information is also included in *Part 3 RBS 884 Pico (1900 MHz) CRI Installation*.

Table 4-8. PCM Connection Specifications

Type of Connection	Specifications
Proprietary non-leased line	800 to 1000 m with a maximum attenuation of 30 dB
T1/E1	Receiver sensitivity: -105 dBm (3% BER with diversity) Clock: Stratum 2 or better

Install Connectors (100/120-ohm Cable)

4. Attach an RJ-45 connector to the T1 100-ohm or E1 120-ohm PCM cable using the pinout information in Figure 4-16 on page 4-36 and Table 4-9 on page 4-36.

Note: When looking into the back of an RJ-45 connector with the latch tab down, pin 1 is on the extreme left of the connector cable opening.

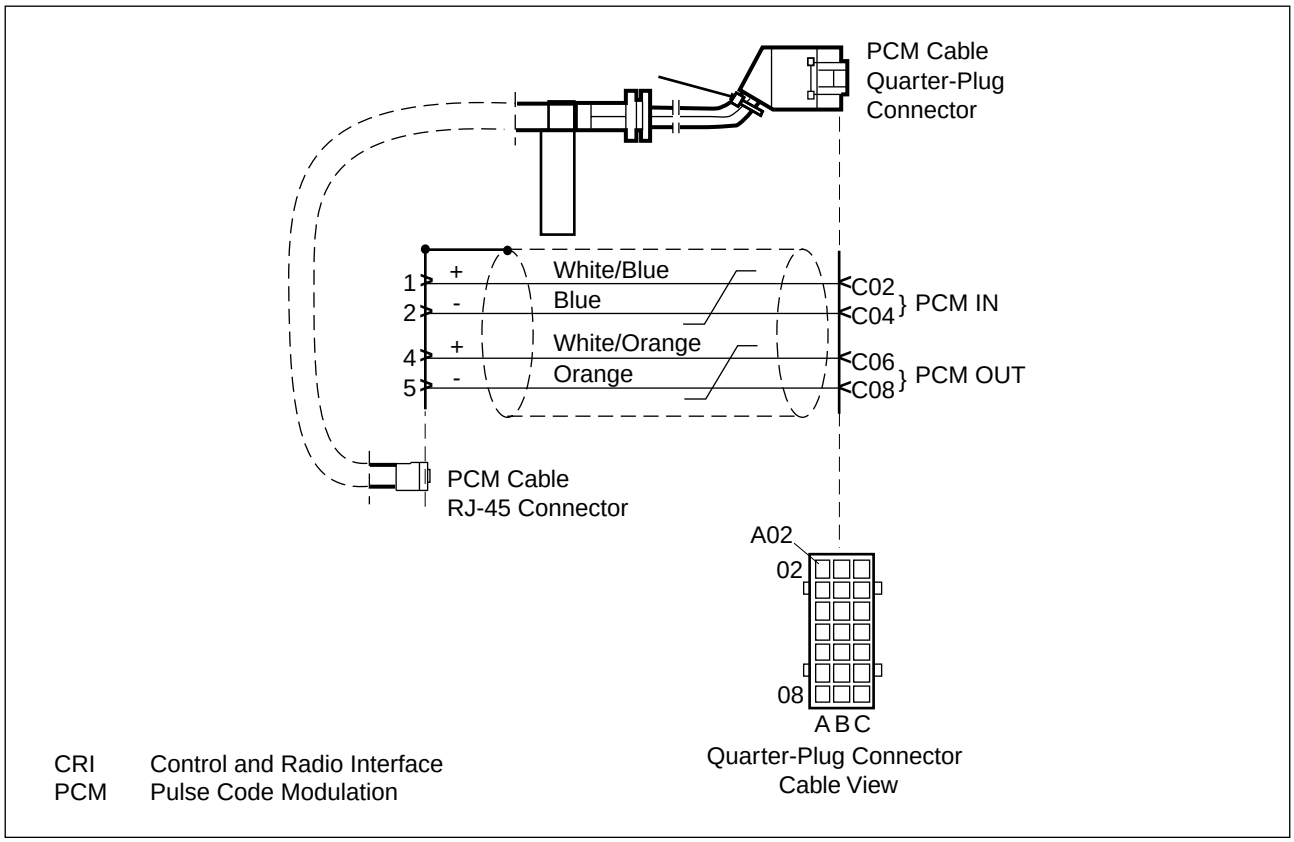


Figure 4-16. Pinouts for 100/120-ohm PCM Cable

Table 4-9. Pinouts for 100/120–ohm PCM Cable

Transmission	Recommended Wire Color	RJ-45 Pin Number	Quarter Pin Number
PCM In	White-blue	1	C02
	Blue-white	2	C04
PCM Out	White-orange	4	C06
	Orange-white	5	C08

Install 75 to 120-ohm Impedance Matching Network and Connectors (E1 Only)

5. Install a 75 to 120-ohm Impedance Matching Network at the Radio Head. Refer to Figure 4-15 on page 4-34.

6. Attach BNC connectors to each end of the coaxial cable and connect one end to the 75 to 120-ohm Impedance Matching Network.

7. Attach RJ-45 connectors to each end of a short length of 120-ohm cable as specified in Table 4-10 on page 4-37.

   Note: Pin 1 is on the extreme left of the connector cable opening as you look into the back of an RJ-45 connector with the latch down.

Table 4-10. E1 Pinouts for 120-ohm PCM Cable and Impedance Matching Network

120-ohm Twisted-Pair Cable	RH to Impedance Matching Network	Impedance Matching Network to Next RH
Recommended Wire Color	**Pin Number**	**Pin Number**
White-orange	1	4
Orange-white	2	5
White-blue	3	3
Blue-white	6	6
White-green	4	1
Green-white	5	2
White-brown	7	7
Brown-white	8	8

8. Connect one end of the 120-ohm twisted-pair cable to the 75 to 120-ohm Impedance Matching Network.

9. Connect the other end of the 120-ohm twisted-pair cable to the Primary (PRI) PCM Interface Connector on the top of the first Radio Head (Radio Head 1).

Connect to Radio Head 1

10. **Warning!**

    Do not route the cable across the front of the Radio Head. Use the cable tray on top of the mounting bracket.

    Connect the T1/E1 PCM cable to the Primary (PRI) interface port on the top of the Radio Head (see Figure 4-17 on page 4-38).

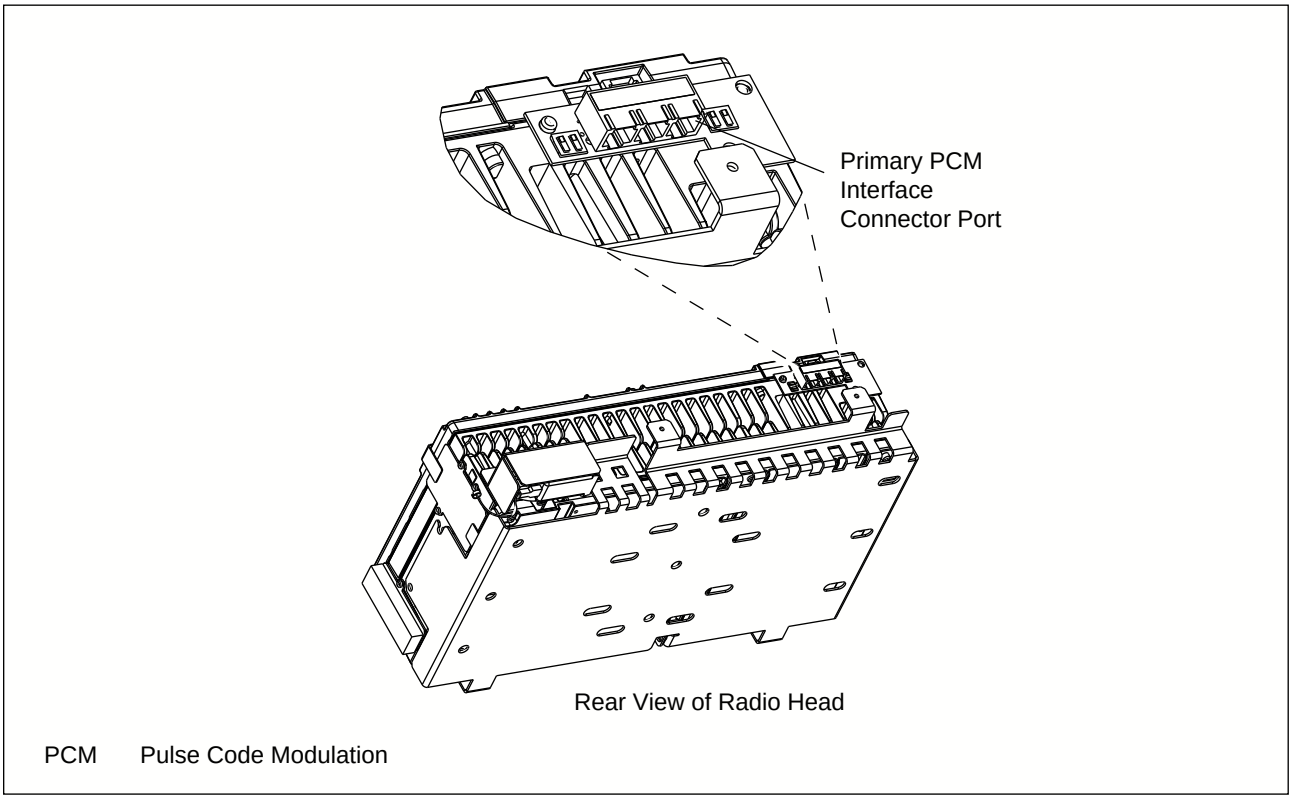


Figure 4-17. Primary PCM Interface Connector Location on Radio Head

11. Attach a spring-type ferrite to the incoming T1/E1 PCM cable (Figure 4-18 on page 4-39). Position the ferrite as close to the Radio Head as possible.

    Note: The 120-ohm cable (E1) ferrite is larger than the 100-ohm cable (T1) ferrite. Select the ferrite that fits snugly on the cable.

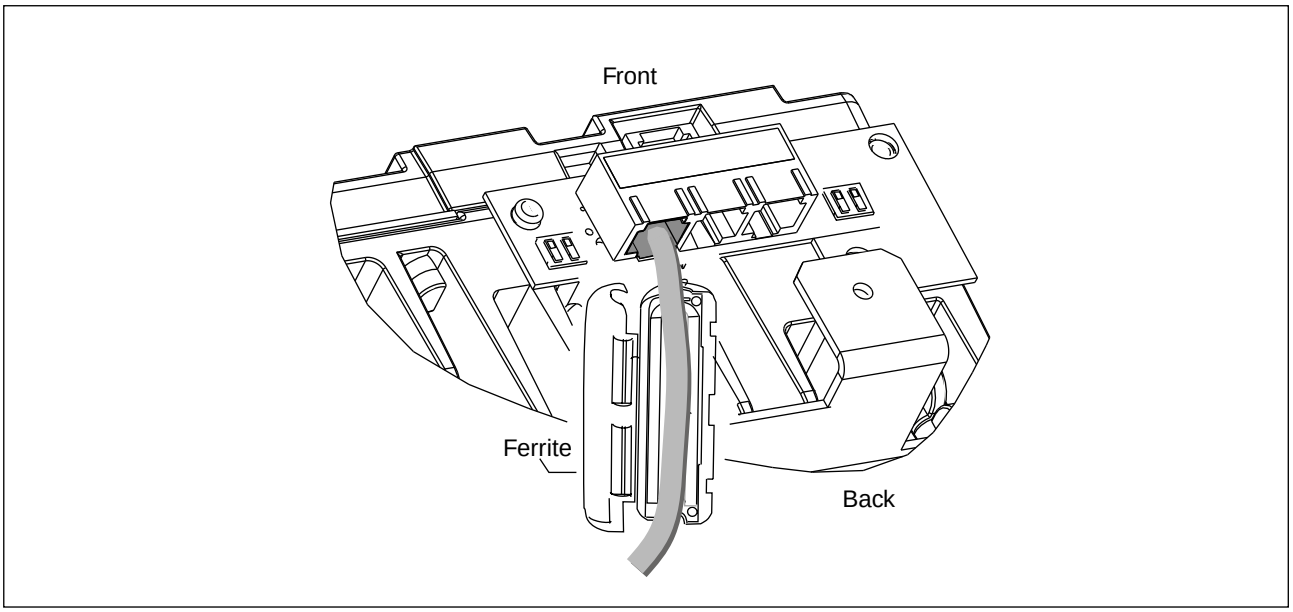


Figure 4-18. Attaching Cable Ferrites

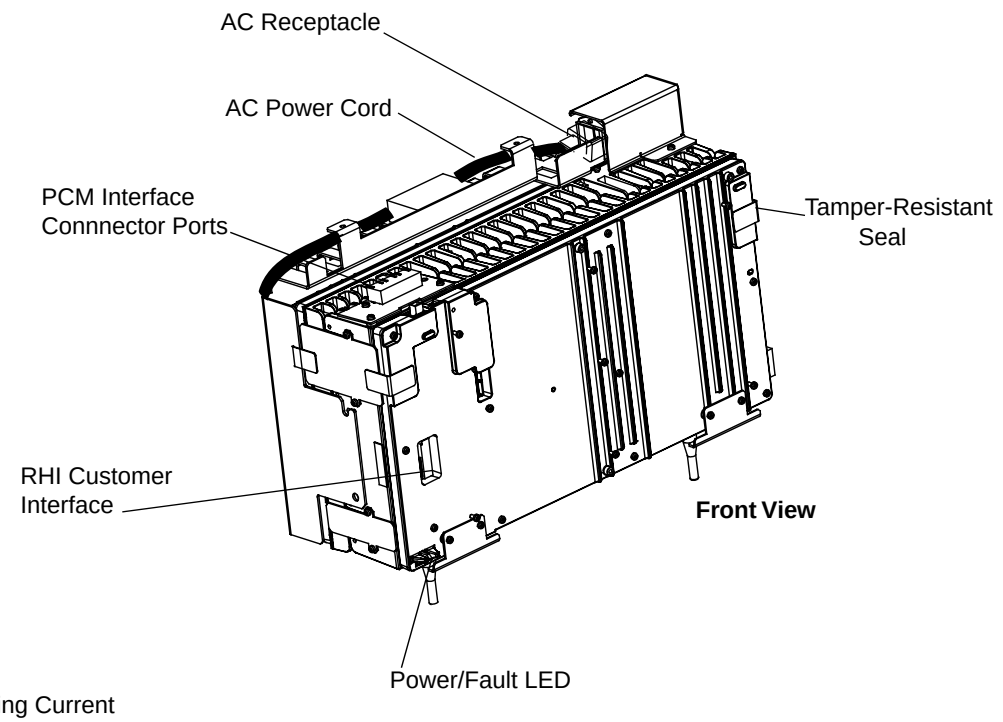
Applying Power to Radio Head 1

12.

Warning!

Do not drape excess cables on top of the heat sink fins. Use the cable tray on top of the mounting bracket.

Connect the AC power cord to the AC receptacle on the Radio Head. Plug the other end of the AC power cord into the AC outlet. See Figure 4-19 on page 4-40 for the location of the AC power cord and AC receptacle.



AC	Alternating Current
LED	Light Emitting Diode
PCM	Pulse Code Modulation
RHI	Radio Head Interface

Figure 4-19. Radio Head AC Power Cord and AC Receptacle

13. Attach a spring-type ferrite to the AC power cord and position the ferrite as close to the Radio Head as possible.

14. When power is applied to the Radio Head, a self-test is performed. The Power/Fault LED on the left corner of the Radio Head flashes red at a 3 Hz rate during the self test. See Figure 4-19 on page 4-40 for the location of the Power/Fault LED.

Connecting Radio Head 2

15.

Warning!

Do not route the cable across the front of the Radio Head. Use the cable tray on top of the mounting bracket.

Route the T1/E1 cable from Radio Head 1 to Radio Head 2. Refer to Figure 4-20 on page 4-41 for a diagram of the Radio Head to Radio Head cabling.

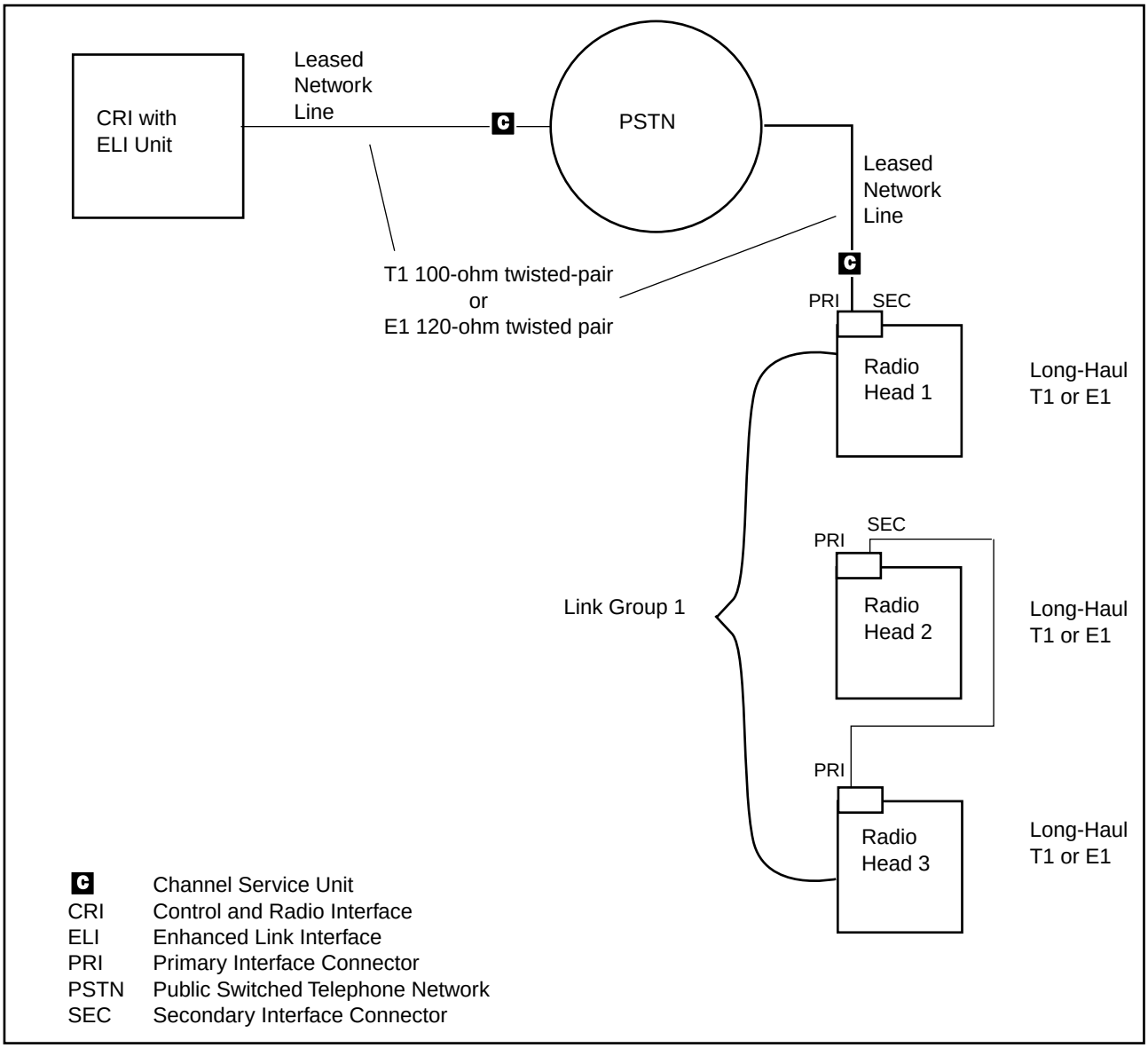


Figure 4-20. T1/E1 PCM Cabling to Radio Heads

16. Attach RJ-45 connectors. If using 75-ohm coaxial cable, insert two 75-ohm to 120-ohm Impedance Matching Networks and add short lengths of 120-ohm twisted-pair cable to each end .

17. Plug one end of the PCM cable into the secondary (SEC) port on the top of Radio Head 1. Refer to Figure 4-20 on page 4-41 for a diagram of the Radio Head to Radio Head cabling.

18. Attach a spring-type ferrite to the downlink T1/E1 PCM cable (Figure 4-18 on page 4-39). Position the ferrite as close to the Radio Head as possible.

    Note: The 120-ohm cable (E1) ferrite is larger than the 100-ohm cable (T1) ferrite. Select the ferrite that fits snugly on the cable.

19. Plug the other end of the first PCM cable into the primary (PRI) port on the top of Radio Head 2.

20. Apply power to Radio Head 2. Refer to Step 12 on page 4-39.

21. Attach a spring-type ferrite to the AC power cord and position the ferrite as close to the Radio Head as possible.

Connecting Radio Head 3

22. If installing three Radio Heads, attach RJ-45 connectors to the T1/E1 100/120-ohm cable. For 75-ohm coaxial cable, insert two 75-ohm to 120-ohm Impedance Matching Networks and add short lengths of 120-ohm twisted-pair cable to each end.

23. Connect one end of the T1/E1 cable to the secondary (SEC) port on the top of Radio Head 2. Refer to Figure 4-20 on page 4-41 for a diagram of the Radio Head to Radio Head cabling.

24. Attach a spring-type ferrite to the downlink T1/E1 PCM cable (Figure 4-18 on page 4-39). Position the ferrite as close to the Radio Head as possible.

    Note: The 120-ohm cable (E1) ferrite is larger than the 100-ohm cable (T1) ferrite. Select the ferrite that fits snugly on the cable.

25. Connect the other end of the T1/E1 cable to the primary (PRI) port on the top of Radio Head 3.

26. Attach a spring-type ferrite to the incoming (uplink) T1/E1 PCM cable (Figure 4-18 on page 4-39). Position the ferrite as close to the Radio Head as possible.

    Note: The 120-ohm cable (E1) ferrite is larger than the 100-ohm cable (T1) ferrite. Select the ferrite that fits snugly on the cable.

27. Apply power to Radio Head 3. Refer to Step 12 on page 4-39.

28. Attach a spring-type ferrite to the AC power cord and position the ferrite as close to the Radio Head as possible.

29. Proceed to *Part 3 RBS 884 Pico (1900 MHz) CRI Installation* "Equipment Start-Up" before installing the Radio Head cover.

Part 5

Integration and Test, RBS 884 Pico (850 MHz and 1900 MHz)

1 Introduction

This part provides descriptions and selected examples of the integration and test procedures for the RBS 884 Pico system hardware and software. The RBS 884 Pico system operates automatically after the initial configuration of hardware and software is performed.

Note: Both **Pico 850** and **Pico 1900** integration and test procedures are included in this part. Product designations have been provided to clarify the differences.

1.1 Typographical Conventions

The following conventions are used in this part to describe commands and command entries:

- **Bold** type face when used in text indicates 850 MHz or 1900 MHz product-specific information.
- `Courier` type face identifies information from the switch, and commands with parameters to the switch.
- Commands:
  - **;** A semicolon signifies the end of a command.
  - **[ ]** Brackets signify that the information in the brackets is an optional part of the command.
  - **{ }** Braces signify that the information in the braces is required part of the command. If multiple items are enclosed in the braces, only one item or variation can be chosen.
- The following are abbreviations for command types:
  - P = Print Commands
  - C = Change Commands
  - E = End Commands

  - I = Initiate Commands
  - R = Reset/Restore Commands
- **!** An exclamation mark signifies the start of a comment.

Note: When using TRAB2 with magazine number BFDH 511 501/3, the devices are MBTRAC, the switching network terminal is MBTRACS (i.e. ROF 137 7994/1 R1A) and the board is MBTRAB. When using TRAB3 with magazine number BFDH 511 501/5, the devices are MBTRC, the switching network terminal is MBTRCS (ROJ 207 202/2 R1A) and the board is MBTRB. Refer to Table 5-1 on page 5-4.

Table 5-1. TRAB2 and TRAB3 Terminology Comparison

TRAB	Device	Switching Network Terminal	Board
TRAB2 with magazine BFDH 511 501/3	MBTRAC	MBTRACS	MBTRAB
TRAB3 with magazine BFDH 511 501/5	MBTRC	MBTRCS	MBTRB

2 Safety Regulations

2.1 Voltage Hazards

DANGER!

Hazardous voltages over 100 V are used in the operation of this equipment. Observe safety precautions. Contact with line power (AC supply) can be fatal. Do not be misled by the term low voltage. Under certain conditions, listed potentials as low as 50 V can be fatal.

Always observe the following:

- Turn off the power supply before working on the equipment.
- Do not touch high voltage connections when installing or operating the equipment.
- Keep one hand away from the equipment to reduce the possibility of current flowing through vital body organs.

2.2 Radio Frequency Radiation

DANGER!

Radio frequency (RF) from an antenna may be a danger to health, causing severe burns.

Turn off the transmitter when working with or near antennas.

3 Product Handling

3.1 Storage and Transport

Store and transport components and circuit boards in the original packaging. Alternatively, use a conductive material or special Integrated Circuit (IC) carrier that either short-circuits all contacts and pins, or insulates them from external contact.

3.2 Electrostatic Discharge (ESD)

The human body acquires static charge in all situations involving movement (for example, when handling plastic parts).

Caution !

If any part of the human body comes in contact with a grounded Integrated Circuit (IC) component, the static charge may cause an electrostatic discharge, resulting in a spark and damage to the component.

Always observe the following:

- Follow the instructions for handling sensitive electronic components and circuit boards to avoid component damage caused by ESD.
- Use ESD protection equipment when working with components and boards.
- When working with circuit boards, use an ESD wrist strap to avoid ESD damage. Connect the wrist strap to the slots on the bottom of the subrack.

4 Tools

The tools used in the configuration and test procedures are listed in *Part 6, Troubleshooting*.

5 Integration: Pico 850/1900 MHz

This section describes the integration of the Mobile Switching Center (MSC) and the Radio Base Station (RBS) 884 Pico 850 MHz and 1900 MHz.

Figure 5-1 on page 5-7 shows an example of the **Pico 850 MHz** main connections among the MSC, the RBS 884 Pico Control and Radio Interface (CRI), and the RBS 884 Pico Radio Heads. Each cell contains one or more Radio Heads. The Radio Heads are made up of two antennas or a patch antenna and two dual Radio Transceiver Boards (TRXs).

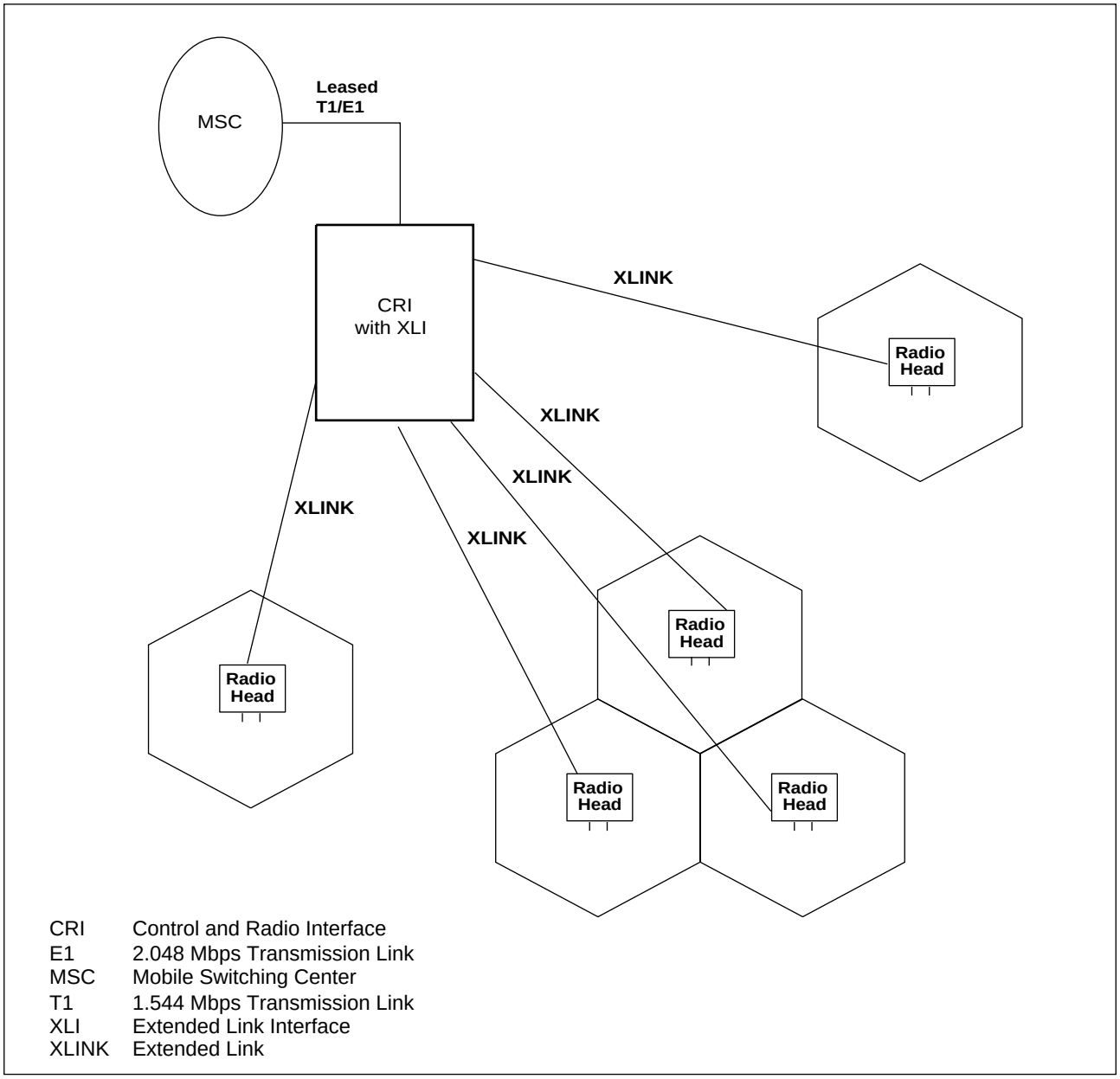


Figure 5-1. General Overview of MSC – Pico 850 MHz Configuration

Figure 5-2 on page 5-8 shows an example of the **Pico 1900 MHz** main connections among the MSC, the RBS 884 Pico Control and Radio Interface (CRI), and the RBS 884 Pico Radio Heads. Each cell contains one or more Radio Heads. The Radio Heads are made up of two antennas or a patch antenna and two dual Radio Transceiver Boards (TRXs).

Note: An Enhanced Link Interface (ELI) board is required for Radio Heads connected to the same leased T1/E1 link.

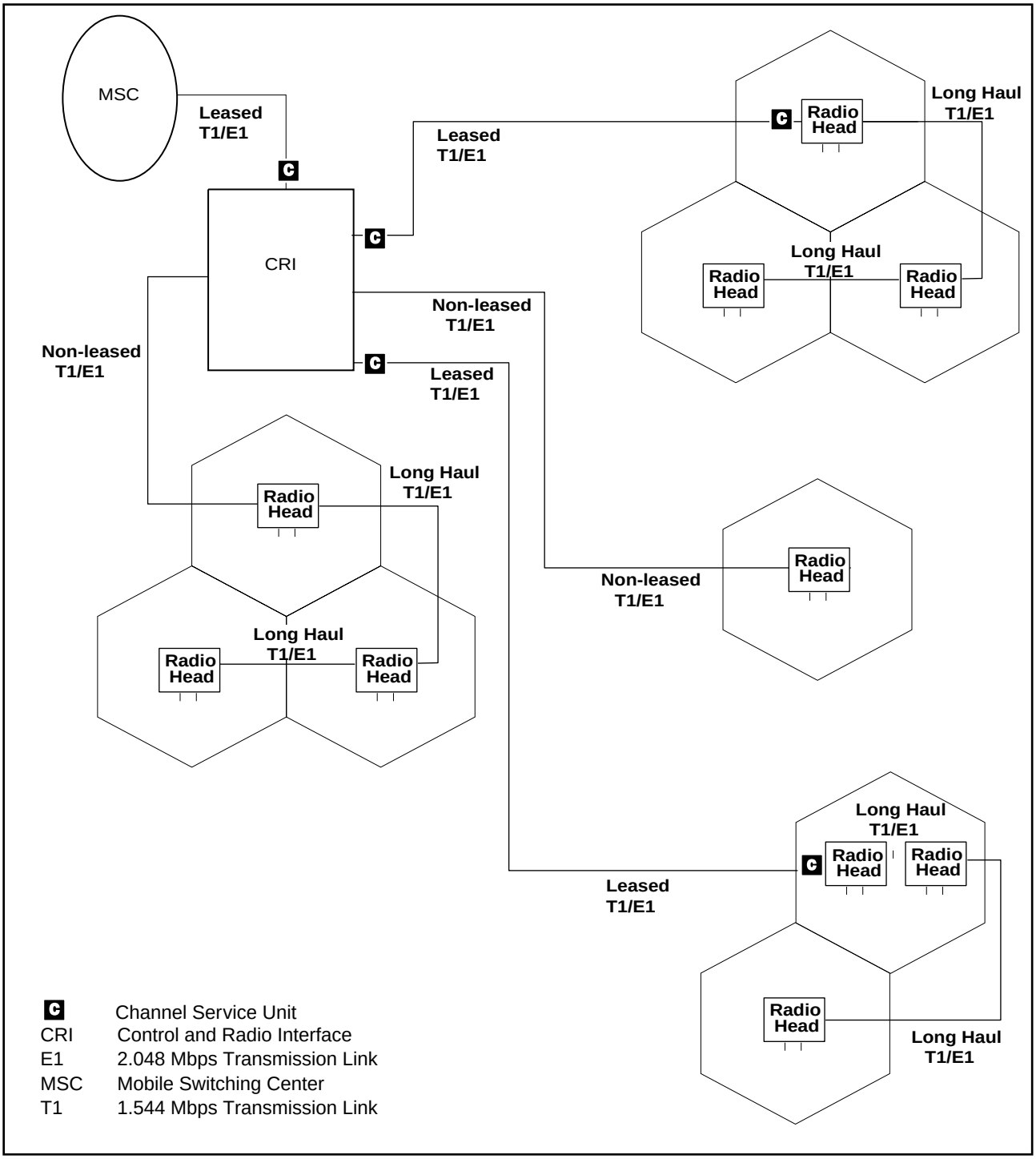


Figure 5-2. General Overview of MSC – Pico 1900 MHz Configuration

The overall integration work process is briefly outlined in Section 5.5 on page 5-23.

Note: A Pico 850/1900 MHz cell can contain multiple Radio Heads.

5.1 Software Structure: Pico 850/1900 MHz

Software configuration of the RBS 884 Pico Base Station is performed at the terminal in the MSC. All configuration information needed by the base station is transferred automatically from the MSC to the base station.

The software configuration for the RBS Pico involves the following:

- Defining the extension module control structure
- Defining software modules loaded into the Extension Module Regional Processor with Device Speech Bus Access (EMRPS) to help provide the required radio channel functions
- Defining all control and speech paths and configuring hardware to transport voice data to and from the TRXs in the Radio Heads
- Defining the RF carrier frequencies and power levels for each TRX in the Radio Heads

5.1.1 System Structure

The telephone switch and base station in the CMS 8800 system is based on the AXE. The AXE products are divided into subsystems. Subsystems contain and provide certain functionality and have simple interfaces to other subsystems. Examples of functionality can be providing a radio channel or controlling processing in the switching center. In the CMS 8800 standard, the following two major subsystems are related to the mobile specific functions:

MTS	The Mobile Telephony Subsystem comprises the mobile specific functions in the MSC (for example, channel allocations, call setup, output power settings, handover decisions and control of the cell structure).
MBS	The Mobile Telephony Base Station Subsystem provides and controls the equipment that sets up a connection between the MSC and the mobile base stations (for example, switching on and off radio transceivers and administration of the different radio channels).

Each subsystem is divided into function blocks. This division is function related, with the name of the function block reflecting its function. For example, in the Mobile Base Station (MBS), the Mobile Telephony Base Station Transceiver (MBTRX) function block controls the transmitting and receiving hardware in the base station.

Each function block is divided into functional units. Functional units can consist of hardware and software. For example, the MBTRX function block consists of software located in the telephone switch and the base station, in addition to hardware in the base station.

5.1.2 MBS Function Blocks

The function blocks of the MBS can be divided into four major groups:

- **Common function blocks** operate in the central processor in the MSC. They use operator commands to control the base station. The common function blocks are: MBCECA, MBCOCA, MBEQA, MBLOADF, MBLOADM, MBLOADS, MBMFL, MBSTA, MBTRAN, and MBTXA.
- **Base Station function blocks** control the base station hardware (for example, transceivers and alarm modules). The Pico base station function blocks are: MBCEQ, MBCOC, MBHWA, and MBTRX.
- **MSC transmission function blocks** control the transmission of signals between the MSC and the mobile base stations. The MSC transmission function blocks are: DIPST, ET, MBLT, MBLC, MBTRACS/MBTRCS, MBTRAC/MBTRC, and MBTLA.
- **RBS transmission function blocks** control the transmission of signals between the base station and the mobile station. The RBS transmission function blocks are: RICS, RIDIPST, RILT, RILT1, RILTC, RIMC, RISM, RISPC, and RITS.

5.1.2.1 Common Function Blocks

Common function blocks in the RBS 884 Pico system are:

MBCECA	The Mobile Telephony Base Station Channel Equipment Capability Administration function block handles commands for controlling the base station channel equipment that allows changing and printing of capability parameters.
MBCOCA	The Mobile Telephony Base Station Carrier Output Control Administration function block handles commands for controlling the base station channel equipment that allow setting and printing the channel number and output power.
MBEQA	The Mobile Telephony Base Station Channel Equipment Administration function block

	administers connection and disconnection of channel functions to and from channel equipment.
MBLOADF	The Mobile Telephony Base Station Device Program Function Change Loading function block handles function change loading.
MBLOADM	The Mobile Telephony Base Station Device Program Maintenance Loading function block is a command function for the administration of maintenance loading.
MBLOADS	The Mobile Telephony Base Station Device Program Data Store Loading function block handles the loading of program files into the data store in the central processor and the administration of these files.
MBMFL	The Mobile Telephony Base Station Hardware Malfunction function block records a detected fault in a base station device hardware in the base station device hardware malfunction log.
MBSTA	The Mobile Telephony Base Station Self-Test Administration function block administers self-test of the base station devices.
MBTRAN	The Mobile Telephony Base Station Translation function block handles the administration of the base station function codes (MB-codes), input and output handling of Channel Equipment and Channel Equipment Type (CETY), and the exchange data access control.
MBTXA	The Mobile Telephony Base Station Transmitter Control Administration function block administers the functionality for switching the transmitter of a transceiver device ON or OFF.

5.1.2.2 Base Station Function Blocks

Base Station function blocks for the RBS 884 Pico system are:

MBCEQ	The Mobile Telephony Base Station Channel Equipment function block is the coordinator of the channel equipment and holds the reference to the connected channel function blocks in the subsystem MTS and the connections between

	MBCEQ-MBRFTL and MBCEQ-MBCTC individuals. The output power, the attenuation, the channel number, and the capability data for all individuals are also stored in the function block.
MBCOC	The Mobile Telephony Base Station Carrier Output Control function block administers the output power, attenuation, and channel number of the transceiver devices. The function block also handles the functions for the transmitter control on the transceiver devices.
MBHWA	The Mobile Telephony Base Station Hardware Administration function block administers the connection between MBCEQ and MBRFTL.
MBTRX	The Mobile Telephony Base Station Transceiver function block administers the transceiver devices. The transceiver devices are responsible for handling the channel functions, such as the Mobile Digital Voice Channel (MDVC), the Mobile Analog Voice Channel (MVC), the Mobile Digital Control Channel (MDCC), the Mobile Analog Control Channel (MCC), the Mobile Telephone Locating (MLOC) module, and the Mobile Location Verification (MVER) module. The primary task of the channel function is to convert the format of signals from the MTS subsystem to a format compatible with the air interface specification. The voice channel functions are also used for measurements to supervise voice quality, base station and mobile station output power, and handoff requests. MBTRX also includes the traffic handling in the EMRP and the device processor.

5.1.2.3 MSC Transmission Function Blocks

Transmission function blocks to and from the MSC are:

DIPST	The Digital Path Supervision and Test function block contains functions for Digital Path (DIP) administration, digital path maintenance, hardware administration, and clock reference administration.
ET	The Exchange Terminal function block handles maintenance of trunk traffic, maintenance of ETC hardware, and maintenance of digital lines.

MBLC/TC1	The Mobile Telephony Base Station Link Check function block sends and receives a 2–kHz tone over a speech circuit as a continuity check of the speech path during the call setup procedure.
MBLT	The Mobile Telephony Base Station Line Terminal function block handles the hardware interface for the line terminals to the base station.
MBTLA	The Mobile Telephony Base Station Transcoder and Line Terminal Administration function block contains command functions for administrating the connection or disconnection of transcoders and line terminals to and from channel equipment.
MBTRAC/MB-TRC	The Mobile Telephony Transcoder, Device owning block handles the administration and maintenance of transcoder devices. The block also performs route administration and traffic handling. MBTRAC/MBTRC interworks with the switching network terminal owning block MBTRACS/MBTRCS to supervise the Transcoder Rate Adaptor Board (TRAB2/TRAB3) hardware. One transcoder rate adaptor board corresponds to four coded transcoder devices and twelve uncoded transcoder devices.
MBTRACS/MB-TRCS	The Mobile Telephony Transcoder, Switching Network Terminal (SNT) owning function block handles the administration and maintenance of the devices for the transcoder function within the switching network terminal and the EM/CM concepts. The actual device handling is managed by the device owning function block MBTRACS/MBTRC. A signal network terminal can handle 32 devices in eight groups. Each group consists of one coded device and three uncoded devices.

5.1.2.4 RBS Transmission Function Blocks

Transmission function blocks to and from the RBS are:

RICS	The Radio Interface Clock Synchronization function block controls the clock synchronization for an Extension Module Radio Selector (EMRS).

RIDIPST	The Radio Interface Digital Path Supervision and Test function block contains functions for connection or disconnection, setting or changing initial data, blocking or deblocking, fault supervision, and quality supervision of digital paths.
RILT	The Remote Interface Line Terminal function block contains functions for administrating and maintaining the Exchange Terminal Board (ETB), Radio Transceiver Terminal (RTT32) device, and EMRPS boards. These boards are known in the RILT as devices. Primary functions for T1–based systems are supervision of boards, administration of time slots for semipermanent paths and tests, blocking or deblocking (taken in or out of service) of the boards, and miscellaneous services for other blocks.
RILT1	The Remote Interface Line Terminal function block contains functions for administrating and maintaining the Exchange Terminal Board (ETB), Radio Transceiver Terminal (RTT32) device, and EMRPS boards. These boards are known in the RILT1 as devices. Primary functions for E1-based systems are supervision of boards, administration of time slots for semipermanent paths and tests, blocking or deblocking (taken in or out of service) of the boards, and miscellaneous services for other blocks.
RILTC	The Remote Interface Line Terminal Command function block contains functions for reception and analysis of commands for connection or disconnection of the equipment type of a RILT device in a transmission radio interface extension module, testing of a RILT device, printing of the device status and time slot status, and alarm printout of hardware fault in a RILT device.
RIMC	The Radio Interface Maintenance Command function block contains functions for maintenance of the radio selector, maintenance of clock synchronization, and alarm handling functions.
RISM	The Radio Interface Switch Maintenance function block contains functions for maintenance of the Extension Module Radio Selector, (EMRS). The EMRS consists of two primary parts, a time switch and a clock synchronization function.

RISPC	The Radio Interface Semi Permanent Path Command function block contains functions for the administration of semipermanent paths and printout of semipermanent path data. Information about blocked and deblocked devices are received and processed. Paths are marked for forced release and disconnected in RITS at the loss of external synchronization reference or at the manual blocking of the EMRS.
RITS	The Radio Interface Time Switch function blocks encompasses the time switch function in a transmission radio interface.

5.1.3 Function Block Interactions

This section includes three simple examples of how function blocks work together when executing commands.

5.1.3.1 Setting Transceiver Output Power

The MBCEQ receives the order to set the output power of a transceiver from the EMRS to set a specified channel to a specified output power. The order is relayed from MBCEQ to MBCOC, which handles these types of commands. The MBCOC and the MBTRX blocks work together to set the output power.

5.1.3.2 Deblocking a Device

Deblocking a device, such as a TRX is the process of bringing the device into service. The order is sent from the MSC to the device to be deblocked (in this example a TRX). MBTRX acknowledges the deblocking command to MBCEQ and to the MSC. MBCEQ and MBTRX exchanges signals to deblock the TRX. When the TRX is deblocked, the channel function (for example a MDVC) associated to the device is informed that the TRX is ready to operate.

5.1.3.3 Traffic Signaling

After a call has been set up for traffic, the MBS function blocks do not interact with the traffic signals. All signals are transparent. Most operations performed are supervision and testing. Line Terminal (LT) and MBLT supervises the line terminals and LTC hardware in the switching center. MBTRAC/MBTRC supervises the transcoding devices, while DIPST supervises the digital paths. MBTRX converts the traffic signals to the defined air interface format. RITS and RICS control the time switch in the

base station and RILT supervises the line terminals. RIDIPST supervises the digital paths in the base station.

5.2 Hardware Structure: 850 MHz/1900 MHz

5.2.1 RBS 884 Pico Common Equipment

The **Pico 850 MHz** CRI can be equipped with up to 3 XLI boards to support a maximum of 11 Radio Heads and 11 EMRPSs.

The **Pico 1900 MHz** CRI can be equipped with up to 4 ELI boards that support a maximum of 10 Radio Heads and 10 EMRPSs.

Each Pico 850 MHz and 1900 MHz Radio Head contains 2 dual TRXs (for a total of 4 TRXs).

The RBS 884 Pico uses the following boards in the CRI:

- Exchange Terminal Boards (ETB)
- Extension Module Regional Processor with Speech Bus Interface (EMRPS)
- Extension Module Regional Processor (EMRP)
- Signaling Terminal, Regional (STR)
- Extended Link Interface (XLI): **Pico 850 MHz**

  Enhanced Link Interface (ELI): **Pico 1900 MHz**

RBS 884 Pico cells are created by adding EMRPS and Radio Head pairs. For each additional Radio Head, an EMRPS board must be added to the CRI. The radio channel functionality implemented in the cell is changeable due to the flexibility of the EMRPS software and the TRXs.

Pico 850 MHz Each XLI board can support up to 4 Radio Heads (16 TRXs).

Pico 1900 MHz Each ELI board can support up to 3 Radio Heads (12 TRXs).

For a detailed description of the CRI and the Radio Head, see *Part 2, System Description*.

5.2.2 XLI Provisioning Guidelines: Pico 850 MHz

Each **Pico 850 MHz** XLI contains 4 Extended Link (XLINK) ports, and each Radio Head uses 1 XLINK port. One, 2, or 3 XLI boards can be installed in

the system for a total of 12 XLINK ports (1 XLINK port is not used). See Figure 5-1 on page 5-7 for an overview of the Pico 850 MHz configuration.

5.2.3 ELI Provisioning Guidelines– Pico 1900 MHz

Each **Pico 1900 MHz** ELI provides a leased or non-leased T1/E1 connection between the CRI and the Radio Head. The ELI maps the Device Speech Bus (DEVSB) time slots from the Radio Interface Time Switch (RITSW) to the T1/E1 time slots using a predefined mapping scheme.

The ELI is monitored and controlled by the Extension Module Regional Processor (EMRP) through the backplane Device Control Bus (DEVCB). The DEVCB interface to the ELI is used for Digital Path (DIP) configuration and supervision. The ELI board emulates the Exchange Terminal Board (ETB) in this respect.

One, two, three, or four ELI boards can be installed in the system. Each ELI board supports a single leased or non-leased link with up to three Radio Heads. A maximum of four ELI boards can support up to a total of ten Radio Heads. See Figure 5-2 on page 5-8 for an overview of the Pico 1900 MHz configuration.

5.2.4 ETB Provisioning Guidelines: Pico 850/1900 MHz

The number of ETB channels required depends on the type and number of channel functions provided by the Radio Heads connected to the CRI. Voice channel functions use time slots as shown in Table 5-2 on page 5-17.

Table 5-2. ETB Time Slot Use

Channel Function	Number of ETB Time Slots Used	
	Pico 850 MHz	Pico 1900 MHz
MDCC (MDCC can be combined with a maximum of 2 MDVC per time slot)	0	0
MDVC (Maximum of 3 MDVC can be assigned per time slot)	1	1
MCC	0	–
MVC	1	–
MVER	0	0
MLOC	0	–

5.2.4.1 ETB24 Board: 850/1900 MHz

The first ETB24 board (T1 connection) supports 24 time slots (0–23) with 1 time slot reserved for the Extension Module Group (EMG) control.

The second ETB24 board (T1 connection) supports 24 time slots, and does not require the EMG control time slot. Using a second ETB24 board provides a total of 47 time slots between the two T1s that can be assigned to TRXs.

5.2.4.2 ETB32 Board: 850/1900 MHz

The first ETB32 board (E1 connection) supports 32 time slots (0–31) with 1 time slot reserved for EMG control and 1 time slot reserved for synchronization.

The second ETB32 board (E1 connection) supports 32 time slots. The second ETB32 board requires a synchronization time slot, but does not require an EMG control time slot. Using a second ETB32 board provides a total of 61 time slots between the two E1s that can be assigned to TRXs.

5.2.5 EMRPS Provisioning Guidelines: Pico 850/1900 MHz

The EMRPS boards in the CRI provide the logical part of the channel functions.

The **Pico 850 MHz** CRI can contain a maximum of 11 EMRPS boards.

The **Pico 1900 MHz** CRI can contain a maximum of 10 EMRPS boards.

The channel assignment functions for the EMRPS are performed manually and are very flexible. The allocation of channel functions are such that one EMRPS provides the channel functions for one Radio Head.

For additional information about EMRPS load distribution, see Section 5.7 on page 5-44.

5.3 Routes Configuration: Pico 850/1900 MHz

Routes are a means of grouping devices together that provide common functions. There are five types of routes used for base station related equipment:

- Signaling Routes (SI/SO)
- Voice Line Routes

  - Digital (K1/K0)
  - Analog (NI/N0) **Pico 850 MHz**

- Voice Channel Device Routes (CI/CO)
- Uncoded Transcoder Routes (I/O)
  - Digital (RO & RI)
  - Analog not applicable

5.4 RBS to MSC Connection: Pico 850/1900 MHz

A connection is used to relate two objects, for instance an MSC to the RBS 884 Pico system.

Figure 5-3 on page 5-20 shows the **Pico 850 MHz** maximum configuration connections of 11 Radio Heads and 11 EMRPSs supported by a maximum of 3 XLI boards.

Figure 5-4 on page 5-21 shows the **Pico 1900 MHz** maximum configuration connections of 10 Radio Heads and 10 EMRPSs supported by a maximum of 4 ELI boards.

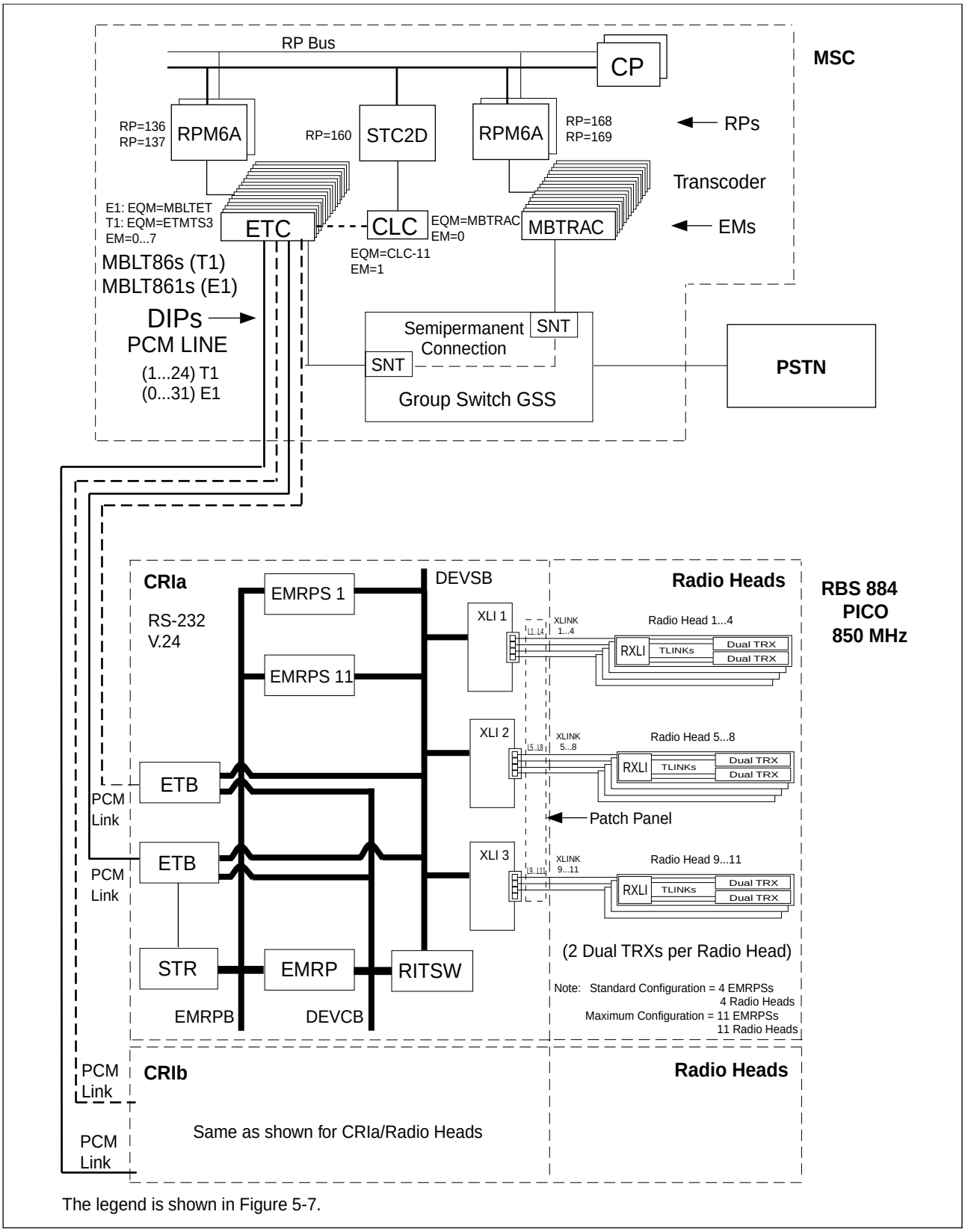


Figure 5-3. Example of Connections Between the Pico 850 MHz with XLI boards and the MSC

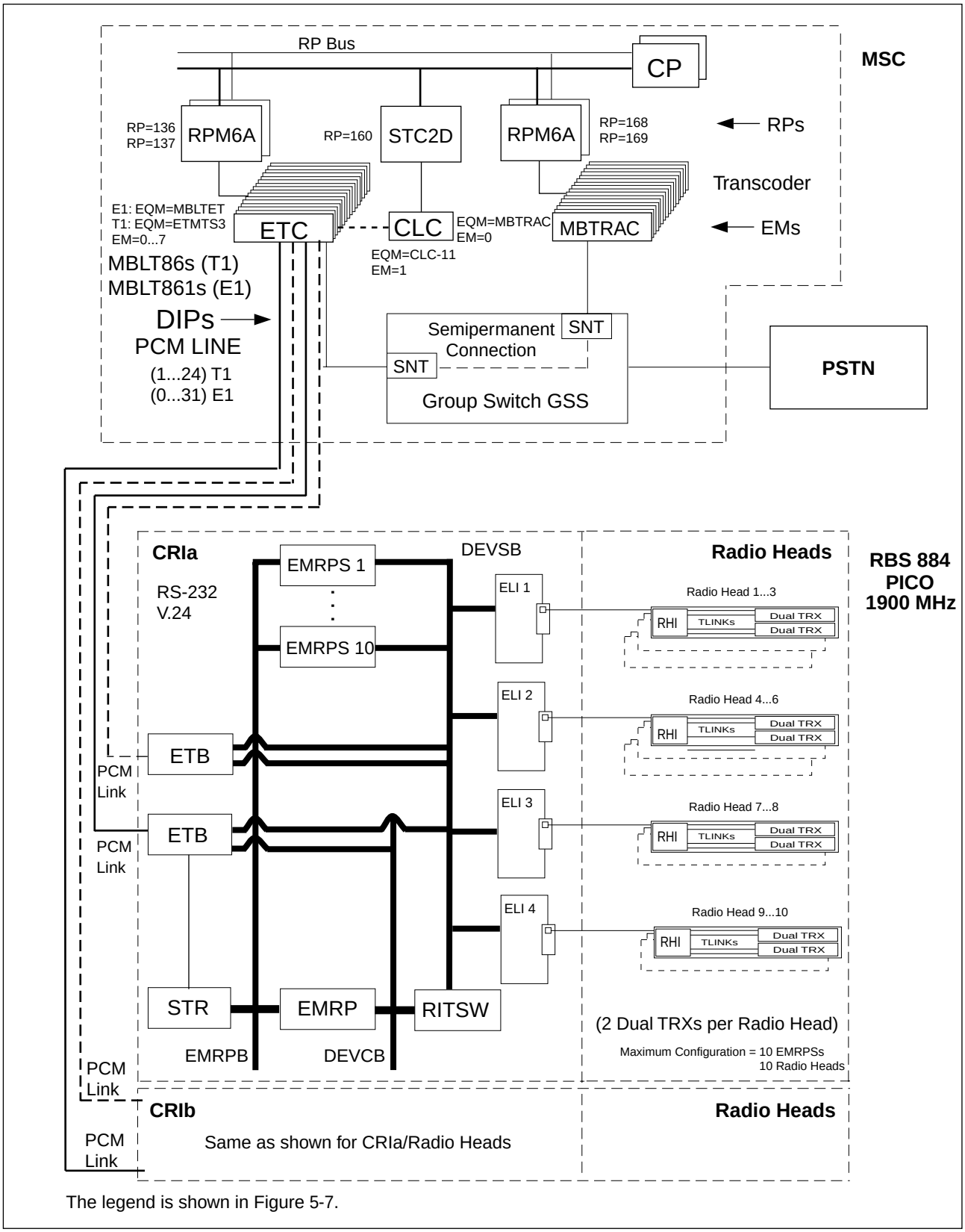


Figure 5-4. Example of Connections Between the Pico 1900 MHz with ELI boards and the MSC

CLC	Control Link
CP	Central Processor
CRI	Control and Radio Interface
DEVCB	Device Control Bus
DEVSB	Device Speech Bus
DIP	Digital Path
ELI	Enhanced Link Interface
EM	Extension Module
EMRP	Extension Module Regional Processor
EMRPB	Extension Module Regional Processor Bus
EMRPS	Extension Module Regional Processor with Device Speech Bus Access
ETB	Exchange Terminal Board
ETC	Exchange Terminal Central
GSS	Group Switching Subsystem
MBLT	Mobile Telephony Bothway Line Trunk
MBLT86	Mobile Telephony Bothway Line Trunk for T1
MBLT861	Mobile Telephony Bothway Line Trunk for E1
MBTRAC	Mobile Telephony Base Station Transcoder, Device Owning Function Block
MSC	Mobile Switching Center
PCM	Pulse Switching Center
PSTN	Public Switched Telephone Network
RILT	Remote Interface Line Terminal address
RITSW	Radio Interface Timing Switch
RP	Regional Processor
RPM	Regional Processor Magazine
RXLI	Remote XLINK Interface
SNT	Switching Network Terminal
STR	Signaling Terminal Regional
TLINK	Transistor-Transistor Logic Link
TRX	Radio Transceiver
XLI	XLINK Interface
XLINK	Extended Link

Note: XLI boards are used only in the RBS 884 Pico (850MHz) CRI.

Figure 5-5. Legend for the MSC-RBS Connection Figures

Two types of signals, control signals and speech signals, are sent between the RBS and the MSCs.

The control signals sent between the RBS and MSC are:

- The central processor in the MSC issues a command intended for the base station. By means of the regional processor bus in the MSC, the command is received at the Signal Terminal Central (STC).
- The STC converts the format of the signal and forwards it to the Exchange Terminal Central (ETC). The ETC inserts the control signal into a time slot on the PCM link to the base station.
- The control signal in the time slot is extracted at the base station by the Exchange Terminal Board (ETB) and forwarded to the Signaling

Terminal Remote (STR). The STR sends the control signal to the Extension Module Regional Processor Bus (EMRPB).

- The command is now received by the EMRP, which processes and forwards the command to the appropriate device (for example the time switch).

The speech signals sent between the RBS and MSC are:

- A speech sample is routed from the group switch in the mobile telephone switching center to an appropriate Exchange Terminal Circuit (ETC). The ETC inserts the speech sample into a time slot on the PCM link to the base stations.
- The speech sample is extracted at the other end of the PCM link by the ETB and is forwarded to the time switch.
- The time switch switches the speech sample to the assigned transceiver. The speech sample is converted to a radio signal and is forwarded to the antenna.

5.5 RBS Integration Work Process: Pico 850/1900 MHz

This section provides a high-level description of the RBS Integration Work Process for defining and assigning RBS related control equipment.

The definition and configuration process can be completed in advance. The remaining steps can only be performed when the RBS 884 Pico system is ready.

Note: All analog references refer only to the **Pico 850 MHz** product.

5.5.1 Assign Software and Define DIP, CLC (or Path), and RBS Control Equipment: Pico 850/1900 MHz

The following procedure is performed during the MSC Integration phase:

Define RPs and Assign Software

1. Define the RPs that control the ETC magazine (MBLTET/ ETMTS3N).

   Note: Device MBLTET is used for an E1 connection and ETMTS3/ETMT3N is used for a T1 connection.

2. Define the RP for STC.

3. Define the RP pair that controls the transcoder magazine (MBTRCs/MBTRC).

4. Assign software to the RP pair controlling the transcoders.

Define EMs

5. Define the EM for ETCs.

6. Define the EMs for MBTRAC/MBTRC.

7. Define the EM that will control the CLC or path.

Define SNT and Provide Allocation

8. Define Switching Network Terminal (SNT) for the ETC equipment to control the software/hardware connections through the Group Switch (GS).

9. Provide an SNT allocation in the GS (for MBTRAC/MBTRC).

Connect Devices

10. Connect the ETCs to the SNT in the group switch.

11. Connect the MBTRAC/MBTRC to the SNT in the group switch.

12. Connect the MBLT861/86/86N devices to SNT in the group switch.

    Note: Use MBLT861 for E1 connection and MBLT86/MBLT86N for T1 connection.

Deblock Devices and Establish DIPs

13. Deblock MBTRACs/MBTRCs and SNTs.

14. Define the Digital Paths (DIPs).

15. Allocate DIP data.

16. Define the parameters needed to perform supervision of the DIP.
17. Define the CLC or path.

Allocate STC-G as an Alternative for CLCs

18. Allocate STC-G as an alternative to inserting control signaling links.

```
EXRPI:RP=82, TYPE=STCG2A; !STC-G!

EXRUI:RP=82, SUID="9000/CAA 140 031 R6A03";
!RGEXR!

EXRUI:RP=82, SUID="9000/CAA 140 044 R1A03";
!RPFDR!

EXRUI:RP=82, SUID="9000/CAA 140 034 R2A01";
!CSLM7R!

EXRUI:RP=82, SUID="9000/CAA 140 033 R2A01";
!CSLSN7R!

EXEMI:EQM=CSLSNT-0, RP=82, EM=0;

EXEMI:EQM=CSLM7-0&&-15, RP=82, EM=1;
```

5.5.2 Define RBS Routes and Devices: Pico 850/1900 MHz

Define Voice Routes

1. Define MBLT861/86/86N voice signal routes.
2. Define MBLT861/86/86N (analog and digital) voice line routes.

   Note: Use MBLT861 for E1 connection and MBLT86 for T1 connection.

3. Define voice channel routes.

Define MBTRAC/MBTRC Routes and Attach Devices

4. Define MBTRAC/MBTRC routes.
5. Attach the MBLT861/86/86N devices to signal channel routes.
6. Attach the MBLT861/86/86N devices to voice line routes.
7. Attach MBTRAC devices to MBTRAC routes (“Uncoded”).

Bring Devices into Service

8. Bring signaling device into service.

   Note: Use MBLT861 for E1 connection and MBLT86/MBLT86N for T1 connection.

9. Bring the coded devices into service.

Deblock and Check

10. Deblock the MBTRACs/MBTRCs, RPs and EM.
11. Check the EMGs defined in the MSC.

5.5.3 Define RBS Cell Structure: Pico 850/1900 MHz

Define Devices and Assign Software Units

1. Define the exchange data for the EMG and connect CLC.
2. Define the EMs and processor control.
3. Assign software units to the EMs.
4. Define the EMG equipment.

Connect the RILTs and the V24-TW

5. Connect the CRI RILTs to the equipment type (EQMTYPE).
6. Connect the V24-TW.

5.5.4 Configure RBS Cell Structure: Pico 850/1900 MHz

Define New Cells

1. Define new cells in the system.
2. Define the new cell identification data.

Define Area and Data

3. Define the service area.
4. Define the analog control channel data.
5. Define the digital control channel data.
6. Define the analog voice channel data.
7. Define the digital voice channel data.
8. If applicable, define the analog locating data.
9. Define the digital locating data.

Define Cells and Connect Channel Functions

10. Define the adjacent cells.
11. Connect the channel function units to cells.
12. Set the device color code.

Connect the MBTRAC/MBTRC Devices

13. Connect the MBTRAC/MBTRC devices to TRXs, which are digital.

    Note: The `MBLTI` and the remaining integration work process, use the “true” address for the MBTRXs. The “true” address is the generic MBTRX address divided by four.

14. Connect the MBLT861/86/86N devices to TRXs which are analog.

Set Channel Capability, Number, and Output Power

15. Set the channel capability for the MBCEQ.

16. **Caution !**

    Assign frequencies from the same band to all transceivers in a single Radio Head. This assignment prevents the generation of third order intermodulation products in the receive band. For example, with the US band plan, do not mix frequencies from bands A and F or bands D and C.

    Set the device channel number and output power.

    Note: Everything up to this point can be done in advance, even before the RBS 884 Pico system is installed.

5.5.5 Deblock PCM Link: Pico 850/1900 MHz

Deblock the PCM Link (DIP) from MSC to RBS

1. Deblock RP STC.
2. Deblock EM for RP STC.
3. Deblock DIP.
4. Deblock CLC.
5. Deblock of CRI EM.

6. Define return DIP, CRI.
7. Deblock return DIP, CRI.

Deblock the RILTs

8. Deblock RILTs/RILT1s, CRI.
9. RILT = T1 and RILT1 = E1

5.5.6 Make Semipermanent Connections: Pico 850/1900 MHz

Make Semipermanent Connections in the Time Switch (TSW) or RITSW

1. Make the following semipermanent connections in the TSW:
   - CRI
   - XLI/ELI, CRI
   - XLI/ELI, CRI
   - XLI/ELI, CRI
2. Deblock the EM for transcoder.

5.5.7 Bring Base Station Devices into Service: Pico 850/1900 MHz

Pre-post Service, Device Activation, Initiate.

1. Pre-post service.
2. Activate devices.
3. Deblock devices.
4. Make semipermanent connections for the transcoder.

5.5.8 Self Test RBS Devices: Pico 850/1900 MHz

Check Programs and Load TRXs

1. Check programs in device data store.
2. Load each TRX device to ensure that the HW generation information is transferred to the MSC.

Self-Test

3. Self-test the TRX and MBTRAC/MBTRC coded devices.

5.5.9 Link Channel Equipment: Pico 850/1900 MHz

Connect the Channel Equipment and Define Backup Channels

1. Connect the channel equipment to the CFU.
2. Define the backup channels.

5.5.10 Deblock Devices: Pico 850/1900 MHz

Deblock Devices

1. Deblock the MBLT861/86/86N for analog devices.
2. Deblock the MBTRAC/MBTRC device.
3. Deblock the MBTRX device.
4. Deblock the channel function device.

Deblock the IO Terminal and Set Blocking Supervision

5. Deblock the IO terminal.

6. Set blocking supervision for voice line routes.
7. Set blocking supervision for MBTRAC/MBTRC routes.
8. Set disturbance supervision for voice line routes.
9. Set disturbance supervision for MBTRAC/MBTRC routes.
10. Set seizure quality supervision for voice line routes.
11. Set seizure quality supervision for MBTRAC/MBTRC routes.

5.5.11 Set the Neighboring Cell and Hand-Off Data: Pico 850/1900 MHz

Define and Initiate the Neighboring Cells

Warning!

Perform the following steps after the RBS is online.

1. Define and initiate the neighboring cells.
2. Change date of the neighboring cells.
3. Define the inter exchange cell data.
4. Define and initiate the outer cells.
5. Initiate the channel numbers in outer cells.
6. Define and initiate the neighboring outer cells.
7. Change data in the neighboring outer cells.
8. Initiate the reverse neighboring outer cells.
9. Set the neighboring outer cell digital locating data.

5.6 Background Information: Pico 850/1900 MHz

5.6.1 Global Number Plan: Pico 850/1900 MHz

Ericsson recommends that addresses be reserved for maximum configuration at each site.

Limited address space can cause problems for large systems. The following limitations are valid per MSC:

- 65,535 each of analog and digital voice channels (MVCs and MDVCs)
- 2,047 each of Analog Control Channels (MCCs), Digital Control Channels (MDCCs), Mobile Telephone Locating Modules (MLOCs) and Location Verification Modules (MVERs)
- Total MBCEQ=65,504
- Total EMG=1024

5.6.2 Cell Design Data (CDD): Pico 850/1900 MHz

The Network Data Form (Figure 5-6 on page 5-33) is used to collect all the design data needed for a cell. This includes the following:

- Hardware and software connections for voice and control signaling at the base station
- Hardware connections between the various devices in a cell
- Definition of the associated software connections in the MSC

RBS 884 Pico Network Data

PREPARED BY:	REV:	DATE:	DOCUMENT NUMBER:
SITE NAME:	EMG:	CELL:	

(CLC) MBLT: 1	CLC: 2	ROUTE: 3 CO	DIPR: 4
MTRAC RPs:	STC RP: 5	ROUTE: CI	DIP:

			Global Address		Voice Paths (RILT)			Signal Path					
EM #	RADIO HEAD.	SLOT	CEQ	CHANNEL FUNCTION UNIT	IN	OUT	MBLT	IN	OUT	CODED MBTRAC	UNCODED MBTRAC		
	:1												
6	7	8	9	10	11		12	13					
	:2												
	:3												
	:4												
	:5												
	:6												
	:7												
	:8												

Figure 5-6. Network Data Form

The following Network Data information is needed for each RBS 884 cell (the numbers correspond to Figure 5-6 on page 5-33):

1. Global address of the MBLTs carrying the CLC information
2. Global address of the CLC
3. Name of all four routes (signaling route, voice line route, voice channel device route, and transcoder route)
4. Name of DIP and DIPR (between base station and MSC)
5. Global address of the Signaling Terminal Central (STC) Regional Processor (RP) for the cell
6. EM used to pass information to TRX

7. Radio Head identification number for each TRX

Note: The Radio Head identification number is accessed through the rotary switch on the RXLI board (**Pico 850 MHz**) or through the alphanumeric display on the Radio Head customer interface (**Pico 1900 MHz**) depending on the Radio Head product number.

8. TRX position
9. Global address of the Channel Equipment (CEQ)
10. Global address of Channel Function Unit (CFU)
    - MCC (Mobile Analog Control Channel)
    - MDCC (Mobile Digital Control Channel)
    - MVC (Mobile Analog Voice Channel)
    - MDVC (Mobile Digital Voice Channel)
    - MLOC (Mobile Telephone Locating)
    - MVER (Mobile Location Verification

Note: There are four TRX devices (two DTRXs) in each Radio Head. For maximum backup capability, pair the the functionality of TRX1 with TRX3 and the functionality of TRX 2 with TRX4.

11. Global RILT addresses for the voice path to the TRX
12. Global address of the MBLT carrying the voice data
13. Global RILT addresses for the control signal path to the TRX

5.6.3 RBS 884 Pico Cell Configurations: Pico 850/1900 MHz

The following sample cell configurations are described in this section:

- **Pico 850/1900 MHz** Configurations
  - A Digital-Only Cell with One Radio Head and One EMRPS
  - A Digital-Only Cell with Two Collocated Radio Heads and Two EMRPSs
- **Pico 850 MHz** Configurations
  - An Analog Gateway Cell with One Radio Head and One EMRPS
  - An Analog Gateway Cell with Two Radio Heads and One EMRPS

– Analog Gateway Cell with Two Radio Heads and Two EMRPSs

– A Dual Mode Cell with Two Radio Heads and Two EMRPSs

The maximum cell radius for all cell types is approximately 60 m (200 ft).

5.6.3.1 Pico 850/1900 MHz Configurations

A Digital-Only Cell with One Radio Head and One EMRPS: Pico 850/1900 MHz

A digital-only cell with one Radio Head provides a Digital Control Channel (DCCH) and Digital Voice Channels (DVC). This cell accepts handoffs from cells providing DVCs. The cell does not provide a locating function or presence verification for AVC. To support handoffs from a mobile using a DVC in an external cell (or from another indoor cell), the digital-only cell needs the mobile presence verification function. This requires a TRX in the Radio Head to be configured as a Mobile Location Verification (MVER) module.

The Radio Head TRXs in this cell configuration support the channel functions shown in Table 5-3 on page 5-35 :

Note: Each TRX can support either three DVCs or two DVCs and one DCCH using one time slot.

Table 5-3. Pico 850/1900 MHz Digital-Only Radio Head Configuration

TRX1 Channel Function	TRX2 Channel Function	TRX3 Channel Function	TRX4 Channel Function	Time Slots Required
MDCC MDVC (2)	MDVC (3)	MDVC (3)[1]	MVER	3
Total digital voice channels: 8				
[1] For maximum backup capability the control channel can be assigned to a voice channel during setup. For example, if the TRX with the primary MVC control channel is taken out of service, the back up or secondary MVC on the third TRX is activated.				

A digital-only cell with one Radio Head and one EMRPS uses three time slots to support eight voice channels.

A Digital-Only Cell with Two Collocated Radio Heads and Two EMRPSs: Pico 850/1900 MHz

Two EMRPSs are used in this configuration to avoid the potential overloading that can occur in a cell with one EMRPS. Two collocated Radio Heads that support a digital-only cell provide a DCCH, a Mobile Location Verification (MVER), and Digital Voice Channels (DVC). This cell accepts

handoffs from a cell providing DVCs. The cell does not provide a locating function or presence verification for AVC. To support handoffs from a mobile using a DVC in an external cell (or from another indoor cell), the digital-only cell needs the mobile presence verification function. This requires the configuration of a TRX as a Mobile Location Verification (MVER) module in one of the Radio Heads.

The Radio Head TRXs in this cell configuration support the channel functions shown in Table 5-4 on page 5-36 and Table 5-5 on page 5-36 :

Note: Each DVC supports three digital voice channels using one time slot. A DCCH can be combined with two DVC on the same TRX.

Table 5-4. Pico 850/1900 MHz Digital-Only Configuration with Radio Head 1 and EMRPS 1

TRX1 Channel Function	TRX2 Channel Function	TRX3 Channel Function	TRX4 Channel Function	Time Slots Required
MDCC MDVC (2)	MDVC (3)	MDVC (3)[1]	MVER	3
Total digital voice channels: 8 [1] For maximum backup capability the control channel can be assigned to a voice channel during setup. For example, if the TRX with the primary MVC control channel is taken out of service, the back up or secondary MVC on the third TRX is activated.				

Table 5-5. Pico 850/1900 MHz Digital-Only Configuration with Radio Head 2 and EMRPS 2

TRX1 Channel Function	TRX2 Channel Function	TRX3 Channel Function	TRX4 Channel Function	Time Slots Required
MDVC (3)	MDVC (3)	MDVC (3)	MDVC (3)	4
Total digital voice channels: 12				

A digital-only cell with two collocated Radio Heads and two EMRPS uses seven time slots to support twenty voice channels.

5.6.3.2 Pico 850 MHz Configurations

An Analog Gateway Cell with One Radio Head and One EMRPS: Pico 850 MHz

An analog gateway cell provides support for accepting handoffs from mobiles using an AVC in a neighboring or umbrella cell. To support handoffs from an IS-136 phone operating on an AVC, an analog gateway cell provides

an analog Mobile Telephone Locating (MLOC) device. The MLOC device requires a TRX configured as an Signal Strength Receiver (SR). This cell also provides an AVC that is used for mobile station presence verification.

An analog gateway cell provides very low traffic capacity (two analog voice channels). This cell is only recommended for use when analog cellular coverage must be provided and handoffs from an analog cell are required.

The Radio Head TRXs in this cell configuration support the channel functions shown in Table 5-6 on page 5-37.

Table 5-6. Analog-Only Single Radio Head Configuration (Analog Gateway)

TRX1 Channel Function	TRX2 Channel Function	TRX3 Channel Function	TRX4 Channel Function	Time Slots Required
MCC	MVC	MVC[1]	MLOC	2
Total analog voice channels: 2				
[1] For maximum backup capability the control channel can be assigned to a voice channel during setup. For example, if the TRX with the primary MVC control channel is taken out of service, the back up or secondary MVC on the third TRX is activated.				

An analog gateway cell with one radio head and one EMRPS uses two time slots to support two voice channels.

An Analog Gateway Cell with Two Radio Heads and One EMRPS: Pico 850 MHz

The analog gateway cell with two Radio Heads provides the same analog handoff capabilities as the analog gateway cell that uses one Radio Head but has increased traffic handling capacity – additional analog voice channels.

Using the SR function greatly increases the MSC-Base Station (BS) control channel link load. For this reason the number of SR functions supported per CRI should be limited whenever possible.

The two Radio Head version of an analog gateway cell provides six analog voice channels. This cell is only recommended for use when cellular coverage must be provided and handoffs from an analog cell are required.

The Radio Head TRXs in this cell configuration support the channel functions shown in Table 5-7 on page 5-38 and Table 5-8 on page 5-38.

Table 5-7. Pico 850 MHz Analog-Only Two Radio Head Configuration (Analog Gateway) with Radio Head 1

TRX1 Channel Function	TRX2 Channel Function	TRX3 Channel Function	TRX4 Channel Function	Time Slots Required
MCC	MVC	MVC[1]	MLOC	2
Total analog voice channels: 2				

[1] For maximum backup capability the control channel can be assigned to a voice channel during setup. For example, if the TRX with the primary MVC control channel is taken out of service, the back up or secondary MVC on the third TRX is activated.

Table 5-8. Pico 850 MHz Analog-Only Two Radio Head Configuration (Analog Gateway) with Radio Head 2

TRX1 Channel Function	TRX2 Channel Function	TRX3 Channel Function	TRX4 Channel Function	Time Slots Required
MVC	MVC	MVC	MVC	4
Total analog voice channels: 4				

An analog gateway cell with two radio heads and one EMRPS uses six time slots to support six voice channels.

Analog Gateway Cell with Two Radio Heads and Two EMRPSs: Pico 850 MHz

Two EMRPSs are used in this configuration to avoid the potential overload that can occur in a cell with one EMRPS. The analog gateway cell with two Radio Heads provides the same analog handoff capabilities as the analog gateway cell that uses one Radio Head but has increased traffic handling capacity – additional analog voice channels.

Using the SR function greatly increases the MSC-Base Station (BS) control channel link load. For this reason the number of SR functions supported per CRI should be limited whenever possible.

The two Radio Head version of the analog gateway cell provides six analog voice channels. This cell is only recommended for use when cellular coverage must be provided and handoffs from an analog cell are required.

The Radio Head TRXs in this cell configuration support the channel functions shown in Table 5-9 on page 5-39 and Table 5-10 on page 5-39.

Table 5-9. Pico 850 MHz Analog-Only Two Radio Head Configuration (Analog Gateway) with Radio Head 1 and EMRPS 1

TRX1 Channel Function	TRX2 Channel Function	TRX3 Channel Function	TRX4 Channel Function	Time Slots Required
MCC	MVC	MVC[1]	MVC	3
Total analog voice channels: 3				

[1] For maximum backup capability the control channel can be assigned to a voice channel during setup. For example, if the TRX with the primary MVC control channel is taken out of service, the back up or secondary MVC on the third TRX is activated.

Table 5-10. Pico 850 MHz Analog-Only Two Radio Head Configuration (Analog Gateway) with Radio Head 2 and EMRPS 2

TRX1 Channel Function	TRX2 Channel Function	TRX3 Channel Function	TRX4 Channel Function	Time Slots Required
MVC	MVC	MVC	MLOC	3
Total analog voice channels: 3				

An analog gateway cell with two radio heads and two EMRPSs uses six time slots to support six voice channels.

A Dual Mode Cell with Two Radio Heads and Two EMRPSs: Pico 850 MHz

The dual mode cell (IS-54B and IS-136) uses an analog control channel and provides both digital and analog voice channel capabilities. Handoffs from analog and digital voice channels are supported. This type of cell generally requires two Radio Heads and two EMRPSs because of the number of control (non-voice channel) functions required to support analog and digital modes.

The Radio Head TRXs in this cell configuration support the channel functions shown in Table 5-11 on page 5-40 and Table 5-12 on page 5-40.

Note: Each DVC supports three digital voice channels using one time slot. A DCCH can be combined with two DVCs on the same TRX.

Table 5-11. Pico 850 MHz Dual Mode Radio Head Configuration with Radio Head 1 (Analog and Digital) and EMRPS 1

TRX1 Channel Function	TRX2 Channel Function	TRX3 Channel Function	TRX4 Channel Function	Time Slots Required
MDCC MDVC (2)	MVC	MDVC (3)[1]	MVER	3
Total digital voice channels: 5 Total analog voice channels: 1 1 For maximum backup capability the control channel can be assigned to a voice channel during setup. For example, if the TRX with the primary MVC control channel is taken out of service, the back up or secondary MVC on the third TRX is activated.				

Table 5-12. Pico 850 MHz Dual Mode Radio Head Configuration with Radio Head 2 (Analog) and EMRPS 2

TRX1 Channel Function	TRX2 Channel Function	TRX3 Channel Function	TRX4 Channel Function	Time Slots Required
MCC	MVC	MVC[1]	MLOC	2
Total analog voice channels: 2 1 For maximum backup capability the control channel can be assigned to a voice channel during setup. For example, if the TRX with the primary MVC control channel is taken out of service, the back up or secondary MVC on the third TRX is activated.				

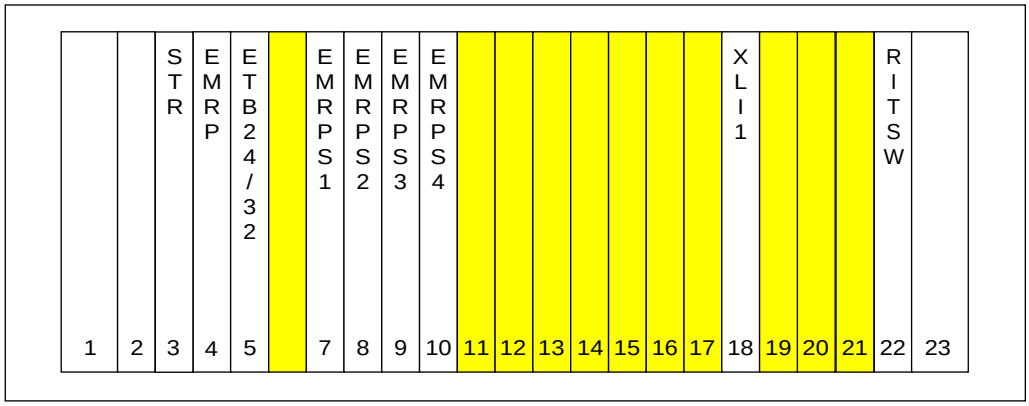
A dual mode cell with two radio heads and two EMRPSs cell uses five time slots to support eight voice channels.

5.6.4 RBS 884 Pico Cell Configuration Examples: Pico 850 MHz

The following examples apply only to the 850 MHz product. The 850 MHz product is not limited to the following configurations; but can use anywhere from one-EMRPS to eleven-EMRPSs in a configuration.

5.6.4.1 Four EMRPS: Pico 850 MHz

A four-EMRPS **Pico 850 MHz** configuration uses one XLI board, regardless of the channel functions provided, since there is a one-to-one correspondence in the number of EMRPS boards and Radio Heads. One ETB board is used and may be either a 24 time-slot T1 version or a 32 time-slot E1 version. The CRI subrack layout for this configuration is shown in Figure 5-7 on page 5-41.

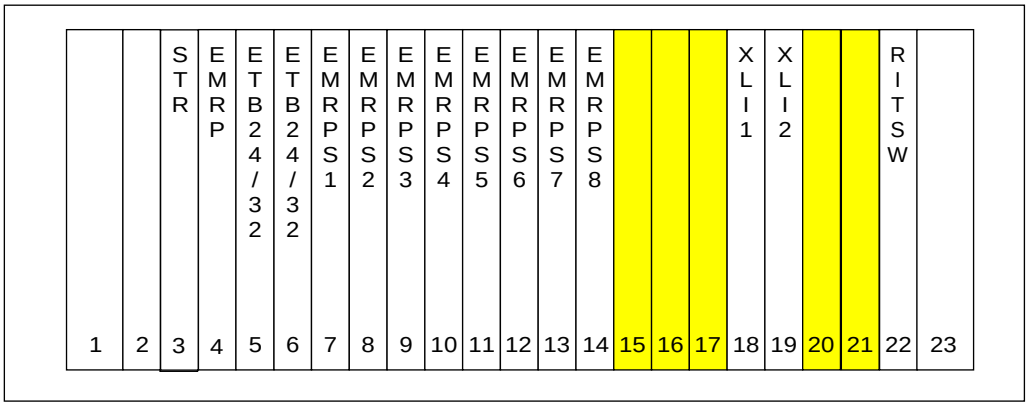


EMRP Extension Module Regional Processor
EMRPS Extension Module Regional Processor with Device Speech Bus Access
ETB Exchange Terminal Board
STR Signaling Terminal Regional
XLI XLINK Interface

Figure 5-7. CRI with a 4-EMRPS Pico 850 MHz Configuration

5.6.4.2 Eight EMRPS: Pico 850 MHz

An eight-EMRPS **Pico 850 MHz**configuration uses two XLI boards, regardless of the channel functions provided, since there is a one to one correspondence in the number of EMRPS and Radio Heads. One or two ETB boards are used depending on the number of time slots required. The CRI subrack layout for this configuration is shown in Figure 5-8 on page 5-41.



EMRP Extension Module Regional Processor
EMRPS Extension Module Regional Processor with Device Speech Bus Access
ETB Exchange Terminal Board
STR Signaling Terminal Regional
XLI XLINK Interface

Figure 5-8. CRI with an 8-EMRPS Pico 850 MHz Configuration

5.6.4.3 Eleven EMRPS: Pico 850 MHz

An 11-EMRPS **Pico 850 MHz** configuration uses 3 XLI boards. There is a maximum of 11 EMRPS slots in the CRI subrack. This configuration requires 3 XLI boards that provide link access for 11 Radio Heads. This configuration also requires 2 ETB24 or 2 ETB32 boards if the full traffic capacity of the cells is used. The CRI subrack layout for this configuration is shown in Figure 5-9 on page 5-42.

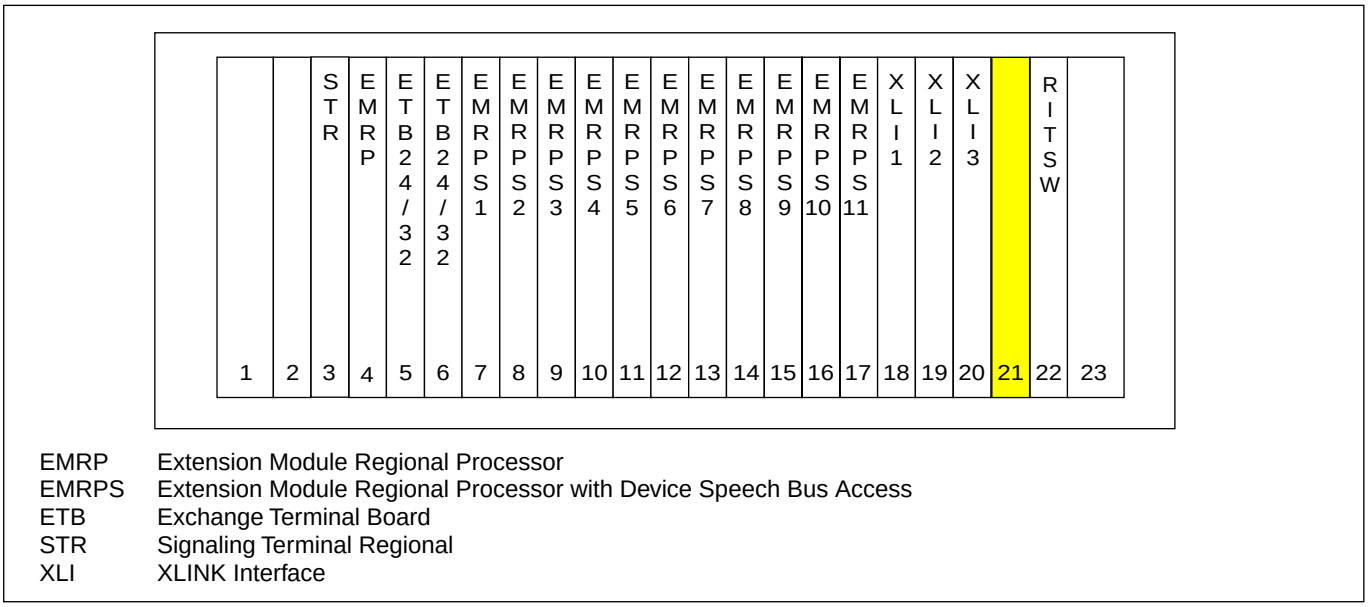


Figure 5-9. CRI with an 11-EMRPS Pico 850 MHz Configuration

5.6.4.4 Three EMRPS: Pico 1900 MHz

A three-EMRPS **Pico 1900 MHz** configuration uses one ELI board, regardless of the channel functions provided, since there is a one-to-one correspondence in the number of EMRPS boards and Radio Heads. One ETB board is used and may be either a 24 time-slot T1 version or a 32 time-slot E1 version. The CRI subrack layout for this configuration is shown in Figure 5-10 on page 5-43.

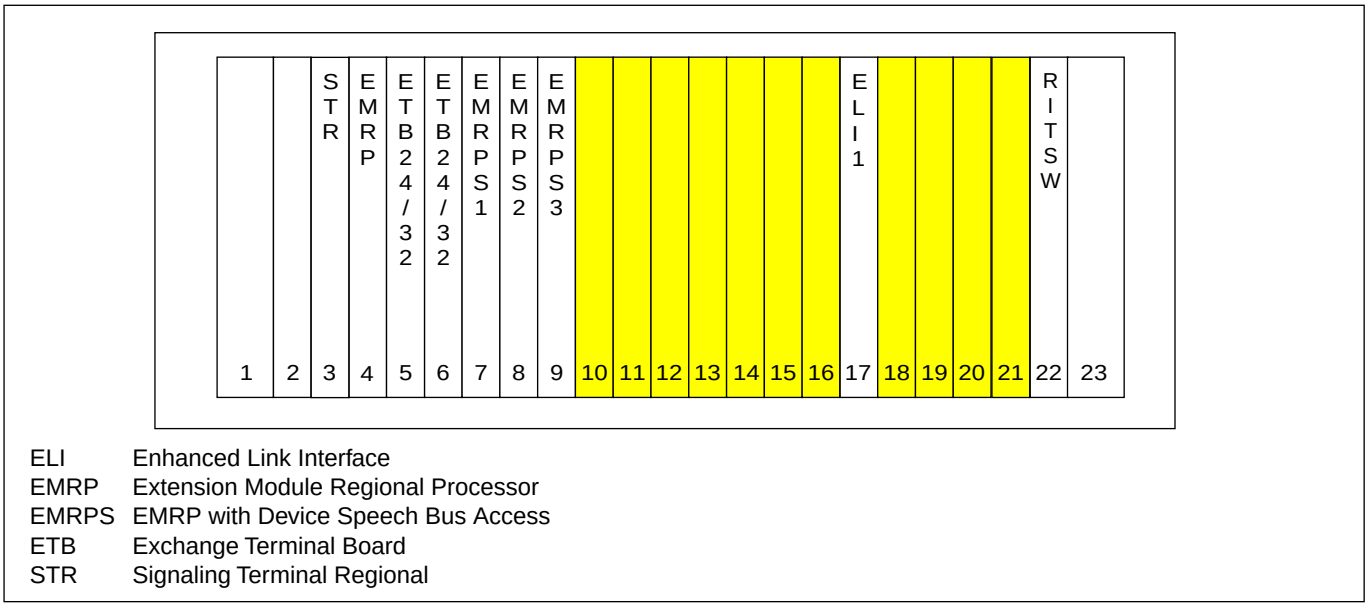


Figure 5-10. CRI with a 3-EMRPS Pico1900 MHz Configuration

5.6.4.5 Six EMRPS: Pico 1900 MHz

A six-EMRPS **Pico 1900 MHz** configuration uses two ELI boards, regardless of the channel functions provided, since there is a one to one correspondence in the number of EMRPS and Radio Heads. One or two ETB boards are used depending on the number of time slots required. The CRI subrack layout for this configuration is shown in Figure 5-11 on page 5-43.

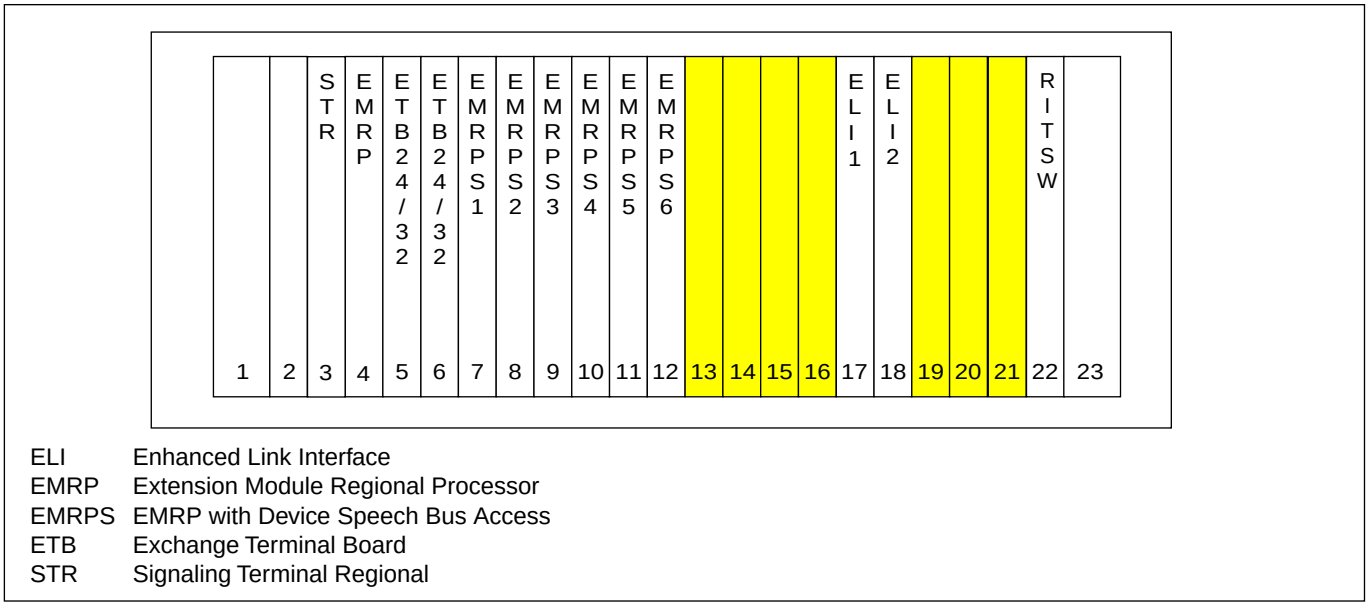


Figure 5-11. CRI with a 6-EMRPS Pico1900 MHz Configuration

5.6.4.6 Ten EMRPS: Pico 1900 MHz

A 10-EMRPS **Pico 1900 MHz** configuration uses 4 ELI boards. There is a maximum of 10 EMRPS slots in the CRI subrack. This configuration requires 4 ELI boards that provide link access for 10 Radio Heads. This configuration also requires 2 ETB24 or 2 ETB32 boards if the full traffic capacity of the cells is used. The CRI subrack layout for this configuration is shown in Figure 5-12 on page 5-44.

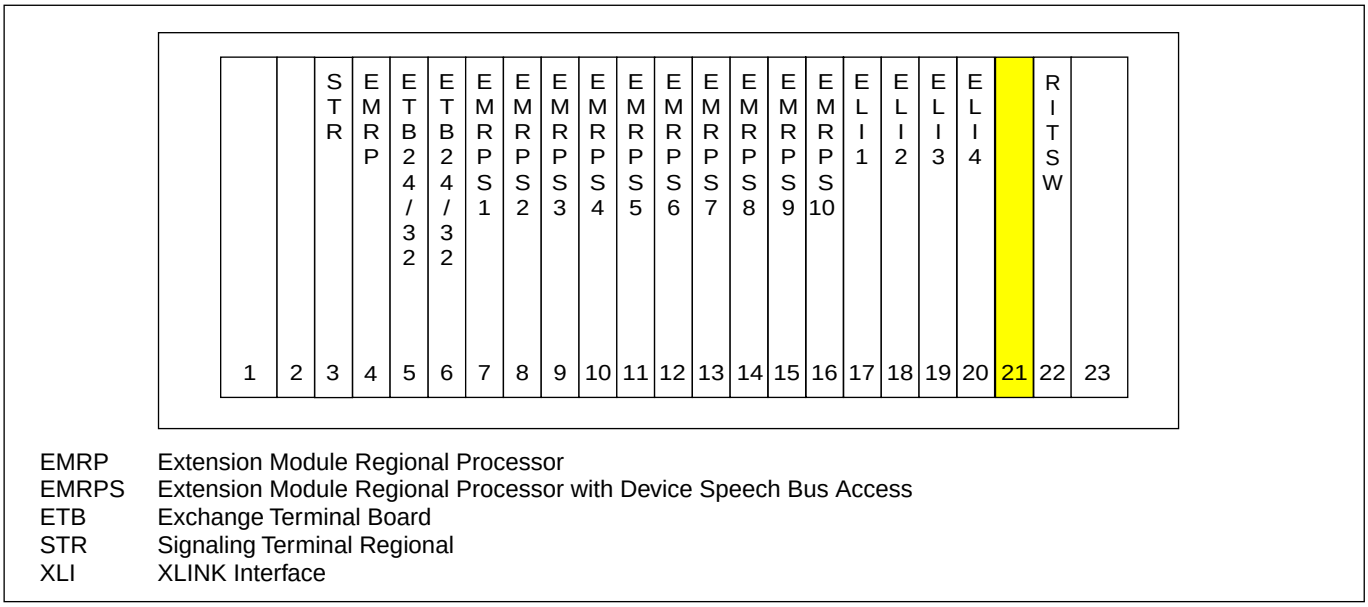


Figure 5-12. CRI with a 10-EMRPS Pico1900 MHz Configuration

5.7 EMRPS Load Distribution: Pico 850 MHz

The EMRPSs control the Channel Function Units (CFU) that are associated with Radio Head TRXs. The EMRPSs have limited capacity and their load must be distributed over all of the available EMRPSs.

Table 5-13 on page 5-45 lists the Pico 850 MHz CFU functions and unit names.

Table 5-13. Pico 850 MHz CFU Functions

Unit	Function	Description
ACC	MCC	Analog Control Channel (ACC) unit Mobile Analog Control Channel (MCC) function
AVC	MVC	Analog Voice Channel (AVC) unit Mobile Analog Voice Channel (MVC) function
DCCH	MDCC	Digital Control Channel (DCCH) unit Mobile Digital Control Channel (MDCC) function
DVC	MDVC	Digital Voice Channel (DVC) unit Mobile Digital Voice Channel (MDVC) function
SR	MLOC	Signal Strength Receiver (SR) unit Mobile Telephone Locating (MLOC) function
VER	MVER	Location Verification (VER) unit Mobile Location Verification (MVER) function

5.7.1 Possible EMRPS Load Distribution: 850 MHz

Each EMRPS supports the channel function loads for one Radio Head. Each Radio Head contains two dual TRXs (total of four TRXs per Radio Head). Table 5-14 on page 5-45 shows the EMRPS load from the different units.

Table 5-14. Pico 850 MHz EMRPS Load from Different CFUs

CFU	EMRPS Load
MCC	High
MVC	Medium
MDCC	High
MDVC	Medium
MLOC	High
MVER	Medium

5.7.1.1 Maximum Configuration: Pico 850 MHz

The CRI can support a maximum of 11 Radio Heads with each containing 2 dual TRXs for a total of 44 TRXs. The CRI can contain a maximum of 11 EMRPSs, 3 XLIs, and 2 ETBs. See *Part 2, System Description* for additional information about the maximum configuration of the RBS Pico system.

5.7.1.2 Load Distribution Examples: Pico 850 MHz

This section shows examples of load distribution for an RBS 884 Pico 850 MHz.

Examples of load distribution for a CRI are shown in the following figures:

- Table 5-15 on page 5-46 is an example of a TIA/EIA 553 compatible cell configuration with 2 T1 links or 1 E1 PCM link, 4 analog cells, 8 Radio Heads (32 TRXs), and 8 EMRPSs.
- Table 5-16 on page 5-47 is an example of a TIA/EIA 553 compatible cell configuration with 2 T1 links or 2 E1 PCM links, 5 analog cells, 11 Radio Heads (44 TRXs), and 11 EMRPSs.
- Table 5-17 on page 5-47 is an example of an IS-136, digital-only, compatible cell configuration with 2 T1 links or E1 PCM link, 11 digital cells, 11 Radio Heads (44 TRXs), and 11 EMRPSs.
- Table 5-18 on page 5-48 is an example of an IS-136, digital-only, compatible cell configuration with 1 T1 link or 1 E1 PCM link, 11 digital cells, 11 Radio Heads (44 TRXs), and 11 EMRPSs.
- Table 5-19 on page 5-49 is an example of an IS-54B, dual mode, compatible cell configuration with 2 T1 links or 2 E1 PCM links, 5 dual-mode cells, 11 Radio Heads (44 TRXs), and 11 EMRPSs.

Table 5-15. Pico 850 MHz T1A/E1A 553 Compatible with 4 Analog Cells and 8 Radio Heads, Example

CRI										
	Part	**EM**	**RILT**	**EMRPS**	**TRX1**	**TRX2**	**TRX3**	**TRX4**	**TS**	**XLI**
	EMRP ETB1 ETB2	00	– 00 01							
Cell 1	RH1 RH2	01 02	02 03	1 2	ACC SR	AVC AVC	AVC AVC	AVC AVC	3 3	1
Cell 2	RH3 RH4	03 04	04 05	3 4	ACC SR	AVC AVC	AVC AVC	AVC AVC	3 3	1
Cell 3	RH5 RH6	05 06	06 07	5 6	ACC SR	AVC AVC	AVC AVC	AVC AVC	3 3	2
Cell 4	RH7 RH8	07 08	08 09	7 8	ACC SR	AVC AVC	AVC AVC	AVC AVC	3 3	2
	XLI1 XLI2 XLI3		13 14 15							

Table 5-16. Pico 850 MHz T1A/E1A 553 Compatible with 5 Analog Cells and 8 Radio Heads, Example

CRI										
	Part	**EM**	**RILT**	**EMRPS**	**TRX1**	**TRX2**	**TRX3**	**TRX4**	**TS**	**XLI**
	EMRP ETB1 ETB2	00	– 00 01							
Cell 1	RH1 RH2	01 02	02 03	1 2	ACC SR	AVC AVC	AVC AVC	AVC AVC	3 3	1 1
Cell 2	RH3 RH4	03 04	04 05	3 4	ACC SR	AVC AVC	AVC AVC	AVC AVC	3 3	1 1
Cell 3	RH5 RH6	05 06	06 07	5 6	ACC SR	AVC AVC	AVC AVC	AVC AVC	3 3	2 2
Cell 4	RH7 RH8	07 08	08 09	7 8	ACC SR	AVC AVC	AVC AVC	AVC AVC	3 3	2 2
Cell 5	RH9 RH10 RH11	09 10 11	10 11 12	9 10 11	ACC SR AVC	AVC AVC AVC	AVC AVC AVC	AVC AVC AVC	3 3 4	3 3 3
	XLI1 XLI2 XLI3		13 14 15							

Table 5-17. Pico 850 MHz IS-136 Compatible with 11 Digital Cells and 11 Radio Heads, Example 1

CRI										
	Part	**EM**	**RILT**	**EMRPS**	**TRX1**	**TRX2**	**TRX3**	**TRX4**	**TS**	**XLI**
	EMRP ETB1 ETB2	00	– 00 01							
Cell 1	RH1	01	02	1	DCCH DVC (2)	VER	DVC (3)	DVC (3)	3	1
Cell 2	RH2	02	03	2	DCCH DVC (2)	VER	DVC (3)	DVC (3)	3	1
Cell 3	RH3	03	04	3	DCCH DVC (2)	VER	DVC (3)	DVC (3)	3	1
Cell 4	RH4	04	05	4	DCCH DVC (2)	VER	DVC (3)	DVC (3)	3	1
Cell 5	RH15	05	06	5	DCCH DVC (2)	VER	DVC (3)	DVC (3)	3	2

Table 5-17. Pico 850 MHz IS-136 Compatible with 11 Digital Cells and 11 Radio Heads, Example 1 (Continued)

CRI										
	Part	**EM**	**RILT**	**EMRPS**	**TRX1**	**TRX2**	**TRX3**	**TRX4**	**TS**	**XLI**
Cell 6	RH6	06	07	6	DCCH DVC (2)	VER	DVC (3)	DVC (3)	3	2
Cell 7	RH7	07	08	7	DCCH DVC (2)	VER	DVC (3)	DVC (3)	3	2
Cell 8	RH8	08	09	8	DCCH DVC (2)	VER	DVC (3)	DVC (3)	3	2
Cell 9	RH9	09	10	9	DCCH DVC (2)	VER	DVC (3)	DVC (3)	3	3
Cell 10	RH10	10	11	10	DCCH DVC (2)	VER	DVC (3)	DVC (3)	3	3
Cell 11	RH11	11	12	11	DCCH DVC (2)	VER	DVC (3)	DVC (3)	3	3
	XLI1 XLI2 XLI3		13 14 15							

Table 5-18. Pico 850 MHz IS-136 Compatible with 11 Digital Cells and 11 Radio Heads, Example 2

CRI										
	Part	**EM**	**RILT**	**EMRPS**	**TRX1**	**TRX2**	**TRX3**	**TRX4**	**TS**	**XLI**
	EMRP ETB1 ETB2	00	– 00 01							
Cell 1	RH1	01	02	1	DCCH DVC (2)	DVC (3)	DVC (3)	VER	3	1
Cell 2	RH2	02	03	2	DCCH DVC (2)		DVC (3)	VER	2	1
Cell 3	RH3	03	04	3	DCCH DVC (2)		DVC (3)	VER	2	1
Cell 4	RH4	04	05	4	DCCH DVC (2)		DVC (3)	VER	2	1
Cell 5	RH5	05	06	5	DCCH DVC (2)		DVC (3)	VER	2	2
Cell 6	RH6	06	07	6	DCCH DVC (2)		DVC (3)	VER	2	2

Table 5-18. Pico 850 MHz IS-136 Compatible with 11 Digital Cells and 11 Radio Heads, Example 2 (Continued)

	CRI									
	Part	**EM**	**RILT**	**EMRPS**	**TRX1**	**TRX2**	**TRX3**	**TRX4**	**TS**	**XLI**
Cell 7	RH7	07	08	7	DCCH DVC (2)		DVC (3)	VER	2	2
Cell 8	RH8	08	09	8	DCCH DVC (2)		DVC (3)	VER	2	2
Cell 9	RH9	09	10	9	DCCH DVC (2)		DVC (3)	VER	2	3
Cell 10	RH10	10	11	10	DCCH DVC (2)		DVC (3)	VER	2	3
Cell 11	RH11	11	12	11	DCCH DVC (2)		DVC (3)	VER	2	3
	XLI1 XLI2 XLI3		13 14 15							

Table 5-19. Pico 850 MHz IS54B Compatible with 5 Dual-Mode Cells and 11 Radio Heads, Example

	CRI									
	Part	**EM**	**RILT**	**EMRPS**	**TRX1**	**TRX2**	**TRX3**	**TRX4**	**TS**	**XLI**
	EMRP ETB1 ETB2	00	– 00 01							
Cell 1	RH1 RH2	01 02	02 03	1 2	ACC VER	SR DVC (3)	AVC AVC	AVC AVC	2 3	1 1
Cell 2	RH3 RH4	03 04	04 05	3 4	ACC VER	SR DVC (3)	AVC AVC	AVC AVC	2 3	1 1
Cell 3	RH5 RH6	05 06	06 07	5 6	ACC VER	SR DVC (3)	AVC AVC	AVC AVC	2 3	2 2
Cell 4	RH7 RH8	07 08	08 09	7 8	ACC VER	SR DVC (3)	AVC AVC	AVC AVC	2 3	2 2

Table 5-19. Pico 850 MHz IS54B Compatible with 5 Dual-Mode Cells and 11 Radio Heads, Example (Continued)

CRI										
	Part	**EM**	**RILT**	**EMRPS**	**TRX1**	**TRX2**	**TRX3**	**TRX4**	**TS**	**XLI**
Cell 5	RH9 RH10 RH11	09 10 11	10 11 12	9 10 11	ACC VER AVC	SR DVC (3) DVC (3)	AVC AVC AVC	AVC AVC AVC	2 3 4	3 3 3
	XLI1/ELI1 XLI2/ELI2 XLI3/ELI3		13 14 15							

5.8 EMRPS Load Distribution: Pico 1900 MHz

The EMRPSs control the Channel Function Units (CFU) that are associated with Radio Head TRXs. The EMRPSs have limited capacity and their load must be distributed over all of the available EMRPSs.

Table 5-20 on page 5-50 lists the Pico 1900 MHz CFU functions and unit names.

Table 5-20. Pico 1900 MHz CFU Functions

Unit	Function	Description
DCCH	MDCC	Digital Control Channel (DCCH) unit Mobile Digital Control Channel (MDCC) function
DVC	MDVC	Digital Voice Channel (DVC) unit Mobile Digital Voice Channel (MDVC) function
DVER	MVER	Digital Location Verification (DVER) unit Mobile Location Verification (MVER) function

5.8.1 Possible EMRPS Load Distribution: 1900 MHz

Each Pico 1900 MHz EMRPS supports the channel function loads for one Radio Head. Each Radio Head contains two dual TRXs (total of four TRXs per Radio Head). Table 5-21 on page 5-51 shows the EMRPS load from the different units.

Table 5-21. Pico 1900 MHz EMRPS Load from Different CFUs

CFU	EMRPS Load
MDCC	High
MDVC	Medium
MVER	Medium

5.8.1.1 Maximum Configuration: Pico 1900 MHz

The Pico 1900 MHz CRI can support a maximum of 10 Radio Heads with each containing 2 dual TRXs for a total of 40 TRXs. The CRI can contain a maximum of 10 EMRPSs, 4 ELIs, and 2 ETBs. See *Part 2, System Description* for additional information about the maximum configuration of the RBS Pico system.

5.8.1.2 Load Distribution Examples: Pico 1900 MHz

This section shows examples of load distribution for an RBS 884 Pico 1900 MHz.

Examples of load distribution for a CRI are shown in the following figures:

- Table 5-22 on page 5-51 is an example of an IS-136, digital-only cell configuration with 2 T1 (or 1 E1) PCM links, 10 digital cells, 10 Radio Heads (40 TRXs), and 10 EMRPSs.
- Table 5-23 on page 5-52 is an example of an IS-136, digital-only cell configuration with 1 T1 (or 1 E1) PCM link, 7 digital cells, 7 Radio Heads (28 TRXs), and 7 EMRPSs.

Table 5-22. Pico 1900 MHz with 2 T1 (or 1 E1) Links, 10 Digital Cells and 10 Radio Heads, Example 1

CRI										
	Part	**EM**	**RILT**	**EMRPS**	**TRX1**	**TRX2**	**TRX3**	**TRX4**	**TS**	**ELI**
	EMRP ETB1 ETB2	00	– 00 01							
Cell 1	RH1	01	02	1	DCCH DVC (2)	VER	DVC (3)	DVC (3)	3	1
Cell 2	RH2	02	03	2	DCCH DVC (2)	VER	DVC (3)	DVC (3)	3	1
Cell 3	RH3	03	04	3	DCCH DVC (2)	VER	DVC (3)	DVC (3)	3	1

Table 5-22. Pico 1900 MHz with 2 T1 (or 1 E1) Links, 10 Digital Cells and 10 Radio Heads, Example 1 (Continued)

CRI										
	Part	**EM**	**RILT**	**EMRPS**	**TRX1**	**TRX2**	**TRX3**	**TRX4**	**TS**	**ELI**
Cell 4	RH4	04	05	4	DCCH DVC (2)	VER	DVC (3)	DVC (3)	3	2
Cell 5	RH15	05	06	5	DCCH DVC (2)	VER	DVC (3)	DVC (3)	3	2
Cell 6	RH6	06	07	6	DCCH DVC (2)	VER	DVC (3)	DVC (3)	3	2
Cell 7	RH7	07	08	7	DCCH DVC (2)	VER	DVC (3)	DVC (3)	3	3
Cell 8	RH8	08	09	8	DCCH DVC (2)	VER	DVC (3)	DVC (3)	3	3
Cell 9	RH9	09	10	9	DCCH DVC (2)	VER	DVC (3)	DVC (3)	3	3
Cell 10	RH10	10	11	10	DCCH DVC (2)	VER	DVC (3)	DVC (3)	3	4
	ELI1 ELI2 ELI3 ELI4		12 13 14 15							

Table 5-23. Pico 1900 MHz with 1 T1 (or 1 E1) Link, 7 Digital Cells and 7 Radio Heads, Example 2

CRI										
	Part	**EM**	**RILT**	**EMRPS**	**TRX1**	**TRX2**	**TRX3**	**TRX4**	**TS**	**ELI**
	EMRP ETB1	00	– 00							
Cell 1	RH1	01	02	1	DCCH DVC (2)	DVC (3)	DVC (3)	VER	3	1
Cell 2	RH2	02	03	2	DCCH DVC (2)		DVC (3)	VER	2	1
Cell 3	RH3	03	04	3	DCCH DVC (2)		DVC (3)	VER	2	1
Cell 4	RH4	04	05	4	DCCH DVC (2)		DVC (3)	VER	2	2

Table 5-23. Pico 1900 MHz with 1 T1 (or 1 E1) Link, 7 Digital Cells and 7 Radio Heads, Example 2 (Continued)

CRI										
	Part	**EM**	**RILT**	**EMRPS**	**TRX1**	**TRX2**	**TRX3**	**TRX4**	**TS**	**ELI**
Cell 5	RH5	05	06	5	DCCH DVC (2)		DVC (3)	VER	2	2
Cell 6	RH6	06	07	6	DCCH DVC (2)		DVC (3)	VER	2	2
Cell 7	RH7	07	08	7	DCCH DVC (2)		DVC (3)	VER	2	3
	ELI1 ELI2 ELI3		12 13 14							

5.9 Semipermanent Paths: Pico 850 MHz

The Pico 850 MHz EMRPS Load Distribution is used as input for establishment of semipermanent paths in the Pico 850 MHz. Another input is the available time slots on the PCM links (Table 5-24 on page 5-53).

Table 5-24. Pico 850 MHz PCM Link Data

PCM Link Type	Capacity	Channels			
		Total	Traffic Voice Channels	Control Signaling Link (CLC)	Frame Synchronization
T1	1.544 Mbit/s	24	23	ts-9	-
E1	2.048 Mbit/s	32	30	ts-16	ts-0

In some markets, additional time slots are used for Cellular Digital Packet Data (CDPD). CDPD is designed as an autonomous network within current TDMA networks, and allows operators to carry packet data services on their existing cellular infrastructure.

5.9.1 Addresses in Semipermanent Connections: Pico 850 MHz

5.9.1.1 Remote Interface Line Terminal (RILT) Addresses: Pico 850 MHz

The Remote Interface Line Terminal (RILT) addresses enable the MSC to control the cross-connection of each time slot on an incoming PCM link to the appropriate destination device in the CRI.

- Local RILT Addresses: Each EMRP and EMRPS channel module device has an address plug, indicating the local address of the device, which uniquely identifies the channel module within the EM. The address range is 0-63.
- Global RILT Addresses: As local addresses are repeated within EMs, they will not uniquely identify a device on the system level. A global address is defined when a device is allocated in the system database. The lowest numbered global address in each EM is determined by the lowest numbered local address plug used on the EMRPSs.

5.9.1.2 Global RILT Addresses: Pico 850 MHz

The following Global RILT addresses are used for a Pico 850 MHz CRI equipped with eight Radio Heads (standard configuration):

- 00: ETB1 (ETB Primary)
- 01: ETB2 (ETB Secondary)
- 02–09: EMRPS 1–8
- 10–11: XLI1 and 2

The following Global RILT addresses are used for a Pico 850 MHz CRI equipped with eleven Radio Heads (maximum configuration):

- 00: ETB1 (ETB Primary)
- 01: ETB2 (ETB Secondary)
- 02–12: EMRPS 1–11
- 13–15: XLI 1–3

5.9.1.3 EMRPS XLI Time Slots (Channel Numbers): Pico 850 MHz

The Pico 850 MHz XLIs use the following time slots:

- Control Path
- 00, 02, 04, 06, 08, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, and 30

- Speech Path
- 01, 03, 05, 07, 09, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, and 31

The ETB for T1 (24 channels) has 24 time slots: 01 to 24, where 09 is used for CLC.

The ETB for E1 (32 channels) has 32 time slots: 00 to 31, where 00 is used for frame synchronization and 16 is used for CLC.

For additional information about T1 and E1 PCM links, see Section 5.11.1 on page 5-62.

5.9.2 Establishment of Semipermanent Connections: Pico 850 MHz

Semipermanent connections through the radio selector, RITSW, located in the Pico 850 MHz CRI cabinet are made using the command `Radio interface semipermanent path, initiate' (`RISPI`).

5.9.2.1 Format of the RISPI command (Radio interface semipermanent path, initiate): Pico 850 MHz

```
RISPI:TSLOT1=tslot1, TSLOT2=tslot2, <NAME=name>;
```

5.9.2.2 Parameters: Pico 850 MHz

TSLOT1=tslot1	A timeslot in a device. This is the first timeslot to be connected.
TSLOT2=tslot2	A timeslot in a device. This is the second timeslot to be connected to TSLOT1.
NAME=name	A name for a semipermanent path. It should be a symbolic name consisting of 1–15 characters.

5.9.2.3 Function: Pico 850 MHz

The RISPI command initiates the connection of a semipermanent path through the radio selector (RITSW). A device that owns a participating timeslot must be in working state, and if two different devices are involved, they must be defined in the same EMRP. Note that a timeslot used by the system for control signaling to the transmission radio interface or for frame synchronization cannot be connected.

5.9.2.4 Examples: Pico 850 MHz

Pico 850 MHz Example 1: Semipermanent Connection of the Analog Control Channel (ACC) (TRX1Aa) Located in Radio Head 1, Cell A

Device EMRPS-1 with RILT address RILT-02 and channel number 00 will be semipermanently connected with device XLI-1 with RILT address RILT-10 and channel number 16. The name of this semipermanent connection will be ‘TRX1Aa –CONTROL'.

```
RISPI:TSLOT1=RILT-02-00, TSLOT2=RILT-10-16,
NAME=CEQ1Aa-CONTROL;
```

Pico 850 MHz Example 2: Semipermanent Connection of the Digital Voice Channel DVC (TRX5Aa), Cell A

Semipermanent connection of the Digital Voice Channel DVC (TRX5Aa) is located in the fifth position in the CRI cabinet, cell A. Two semipermanent connections must be made:

- For the control path: EMRPS-3 and XLI-1
- For the speech path: ETB-1 and XLI-1

Connection of Control Path: Pico 850 MHz

Device EMRPS-3 with RILT address RILT-04 and channel number 00 will be semipermanently connected with device XLI-1 with RILT address RILT-10 and channel number 24. The name for this semipermanent connection will be `TRX5A-CONTROL.'

```
RISPI:TSLOT1=RILT-04-00, TSLOT2=RILT-13-15,
NAME=TRX5Aa-CONTROL;
```

Connection of the Speech Path: Pico 850 MHz

Device ETB-1 with RILT address RILT-00 and channel number 02 will be semipermanently connected with device XLI-1 with RILT address RILT-10 and channel number 25. The name for this semipermanent connection will be `TRX5A-SPEECH.'

```
RISPI:TSLOT1=RILT-00-02, TSLOT2=RILT-13-15,
NAME=TRX5Aa-SPEECH;
```

Pico 850 MHz Example 3: Changing a semipermanently Connected Transcoder Unit to a Pooled Unit

DBTRI;

DBTSC: TAB=AXEPARS, SETNAME=CMS88MBSF,
NAME=TRAPOOL, VALUE=1;

DBTRE: COM;

SAAII: BLOCK=MBTPH,SAE=700,NI=100;

BLODI: DEV=MBTRAC-209&&-211;

EXSCE: NAME=R4M1–MBCEQ776,DEV=MBTRAC-208;

BLODI: DEV=MDVC-576&-577;

BLODI: DEV=MDCC-49;

BLODI: DEV=MBTRX-776;

MBEQE: DEV=MDVC-576&&-577;

MBLTE: CEQ=MBCEQ-776;

EXDRE: DEV=MBTRAC-210&&-211;

EXROI: R=TBPOOLO&TBPOOLI, DETY=MBTRAC,FNC=1;

EXDRI: DEV=MBTRAC-209&&-211,R=TBPOOLO&TBPOOLI;

MBPUI: DEV=MBTRAC-208;

MPBPSI: LIM1=15, LIM2=20;

MBLTI: CEQ=MBCEQ-776, MODE=POOL, DEV=MBLT86–144;

MBEQI: CEQ=MBCEQ-776,
UNIT=1&&2,RATE=1,DEV=MDVC-576&&-577;

BLODE: DEV=MBTRAC-209&&-211;

BLODE: DEV=MBTRX-776;

BLODE: DEV=MDVC-576&&-577;

MTBCI: DEV=MDCC-49, CEQ=MBCEQ-800;

5.10 Semipermanent Paths: Pico 1900 MHz

The Pico 1900 MHz EMRPS Load Distribution is used as input for establishment of semipermanent paths in the Pico 1900 MHz. Another input is the available time slots on the PCM links (Table 5-25 on page 5-58).

Table 5-25. Pico 1900 MHz PCM Link Data

PCM Link Type	Capacity	Channels			
		Total	Traffic Voice Channels	Control Signaling Link (CLC)	Frame Synchronization
T1	1.544 Mbit/s	24	23	ts-9	-
E1	2.048 Mbit/s	32	30	ts-16	ts-0
Second T1	1.544 Mbit/s	24	24	-	-
Second E1	2.048 Mbit/s	32	31	-	ts-0

In some markets, additional time slots are used for Cellular Digital Packet Data (CDPD). CDPD is designed as an autonomous network within current TDMA networks, and allows operators to carry packet data services on their existing cellular infrastructure.

5.10.1 Addresses in Semipermanent Connections: Pico 1900 MHz

5.10.1.1 Remote Interface Line Terminal (RILT) Addresses: Pico 1900 MHz

The Remote Interface Line Terminal (RILT) addresses enable the MSC to control the cross-connection of each time slot on an incoming PCM link to the appropriate destination device in the Pico 1900 MHz CRI.

- Local RILT Addresses: Each EMRP and EMRPS channel module device has an address plug, indicating the local address of the device, which uniquely identifies the channel module within the EM. The address range is 0-63.
- Global RILT Addresses: As local addresses are repeated within EMs, they do not uniquely identify a device on the system level. A global address is defined when a device is allocated in the system database. The lowest numbered local address plug used on the channel modules is the lowest numbered global address for that particular EM.

5.10.1.2 Global RILT Addresses: Pico 1900 MHz

The following Global RILT addresses are used for a CRI equipped with six Radio Heads:

- 00: ETB1 (ETB Primary)
- 02–07: EMRPS 1–6
- 10–11: ELI 1 and ELI 2

The following Global RILT addresses are used for a CRI equipped with ten Radio Heads (maximum configuration):

- 00: ETB1 (ETB Primary)
- 01: ETB2 (ETB Secondary)
- 02–11: EMRPS 1–10
- 12–15: ELI 1–4

5.10.1.3 EMRPS ELI Time Slots (Channel Numbers): Pico 1900 MHz

The ELIs use the following time slots:

- Control Path: 01, 04, 06, 07, 10, 13, 16, 19, 22
- Speech Path: 02, 03, 05, 08, 09, 11, 12, 14, 15, 17, 18, 20, 21, 23, and 24

The ETB for T1 (24 channels) has 24 time slots: 01 to 24, where 09 is used for CLC.

The ETB for E1 (32 channels) has 32 time slots: 00 to 31, where 00 is used for frame synchronization and 16 is used for CLC.

For additional information about T1 and E1 PCM links, see Section 5.11.1 on page 5-62.

5.10.2 Establishment of Semipermanent Connections: Pico 1900 MHz

Semipermanent connections through the radio selector, RITSW, located in the **Pico 1900 MHz** CRI cabinet are made using the `Radio interface semipermanent path, initiate' command (`RISPI`).

5.10.2.1 Format of the RISPI command (Radio interface semipermanent path, initiate): Pico 1900 MHz

```
RISPI:TSLOT1=tslot1, TSLOT2=tslot2, <NAME=name>;
```

5.10.2.2 Parameters: Pico 1900 MHz

TSLOT1=tslot1	A timeslot in a device. This is the first timeslot to be connected.
TSLOT2=tslot2	A timeslot in a device. This is the second timeslot to be connected to TSLOT1.
NAME=name	A name for a semipermanent path. It should be a symbolic name consisting of 1–15 characters.

5.10.2.3 Function: Pico 1900 MHz

The RISPI command initiates the connection of a semipermanent path through the radio selector (RITSW). A device that owns a participating timeslot must be in working state, and if two different devices are involved, they must be defined in the same EMRP. Note that a timeslot used by the system for control signaling to the transmission radio interface or for frame synchronization cannot be connected.

5.10.2.4 Examples: Pico 1900 MHz

Example 1: Semipermanent Connection of the Digital Voice Channel DVC (TRX5Aa), Cell A: Pico 1900 MHz

Semipermanent connection of the Digital Voice Channel DVC (TRX5Aa) is located in the **x** position in the CRI cabinet. Two semipermanent connections must be made:

- For the control path: EMRPS-3 and ELI-1
- For the speech path: ETB-1 and ELI-1

Connection of Control Path: Pico 1900 MHz

Device EMRPS-3 with RILT address RILT-04 and channel number 00 will be semipermanently connected with device ELI-1 with RILT address RILT-10 and channel number 24. The name for this semipermanent connection will be `TRX5A-CONTROL.'

```
RISPI:TSLOT1=RILT-04-00, TSLOT2=RILT-10-24,
NAME=TRX5Aa-CONTROL;
```

Connection of the Speech Path: Pico 1900 MHz

Device ETB-1 with RILT address RILT-00 and channel number 02 will be semipermanently connected with device ELI-1 with RILT address RILT-10

and channel number 25. The name for this semipermanent connection will be ‘TRX5A-SPEECH.’

```
RISPI:TSLOT1=RILT-00-02, TSLOT2=RILT-10-25,
NAME=TRX5Aa-SPEECH;
```

Example 2: Changing a semipermanently Connected Transcoder Unit to a Pooled Unit: Pico 1900 MHz

DBTRI;

DBTSC: TAB=AXEPARS, SETNAME=CMS88MBSF,
NAME=TRAPOOL, VALUE=1;

DBTRE: COM;

SAAII: BLOCK=MBTPH,SAE=700,NI=100;

BLODI: DEV=MBTRAC-209&&-211;

EXSCE: NAME=R4M1–MBCEQ776,DEV=MBTRAC-208;

BLODI: DEV=MDVC-576&-577;

BLODI: DEV=MDCC-49;

BLODI: DEV=MBTRX-776;

MBEQE: DEV=MDVC-576&&-577;

MBLTE: CEQ=MBCEQ-776;

EXDRE: DEV=MBTRAC-210&&-211;

EXROI: R=TBPOOLO&TBPOOLI, DETY=MBTRAC,FNC=1;

EXDRI: DEV=MBTRAC-209&&-211,R=TBPOOLO&TBPOOLI;

MBPUI: DEV=MBTRAC-208;

MPBPSI: LIM1=15, LIM2=20;

MBLTI: CEQ=MBCEQ-776, MODE=POOL, DEV=MBLT86–144;

MBEQI: CEQ=MBCEQ-776,
UNIT=1&&2,RATE=1,DEV=MDVC-576&&-577;

BLODE: DEV=MBTRAC-209&&-211;

BLODE: DEV=MBTRX-776;

BLODE: DEV=MDVC-576&&-577;

MTBCI: DEV=MDCC-49, CEQ=MBCEQ-800;

5.11 EMRP Bus and PCM Links: Pico 850/1900 MHz

5.11.1 T1 and E1 PCM Links: Pico 850/1900 MHz

The RBS 884 Pico system can use the following PCM links:

- T1 PCM Link: The numbering for the speech time slots on a T1 PCM link starts at 01 and ends with 24 for a total of 24 time slots. However, only 23 time slots can be used for speech on the first T1 PCM link because time slot 09 is used for the control. If a second T1 PCM link is added to the RBS 884 Pico system, the control time slot is not required for the second T1 PCM, thus allowing for 24 additional time slots for speech. A T1 PCM link is used in the example integration shown in Section 9 on page 5-76.

  Note: MBLT86s and the software function block RILT (see Section 5.1.2.4 on page 5-13) are used during the integration process if an RBS 884 Pico system is equipped with a T1 PCM link.

- E1 PCM Link: The numbering for the speech time slots on a E1 PCM link starts at 00 and ends with 31 for a total of 32 time slots. However, only 30 time slots can be used for speech on the first E1 PCM link because time slot 00 is used for synchronization and time slot 16 is used for control. If a second E1 PCM link is added, the control time slots are not required for the second E1 PCM, thus allowing for 31 additional time slots for speech.

  Note: MBLT861s and the software function block RILT1 (see Section 5.1.2.4 on page 5-13) are used during the integration process if an RBS 884 Pico system is equipped with a E1 PCM link.

For additional information about the speech and control channels for the EMRPSs and XLIs, see Section 5.9.1.3 on page 5-54 and Section 5.10.1.3 on page 5-59.

5.11.2 Extension Module Regional Processor Bus (EMRP Bus): Pico 850/1900 MHz

The EMRP Bus constitutes a communication link between a Central Processor (CP) pair and a Regional Processor (RP). In the RBS 884 Pico, the EMRP Bus connects the STR, EMRP, and EMRPS in the CRI.

5.11.3 Allocation of EMRP Bus: Pico 850/1900 MHz

From 1 to 11 EMRPSs can be connected to the **Pico 850 MHz** EMRP Bus.

From 1 to 10 EMRPSs can be connected to the **Pico 1900 MHz** EMRP Bus.

At the last EMRP on the bus cable, there is a bus terminating plug.

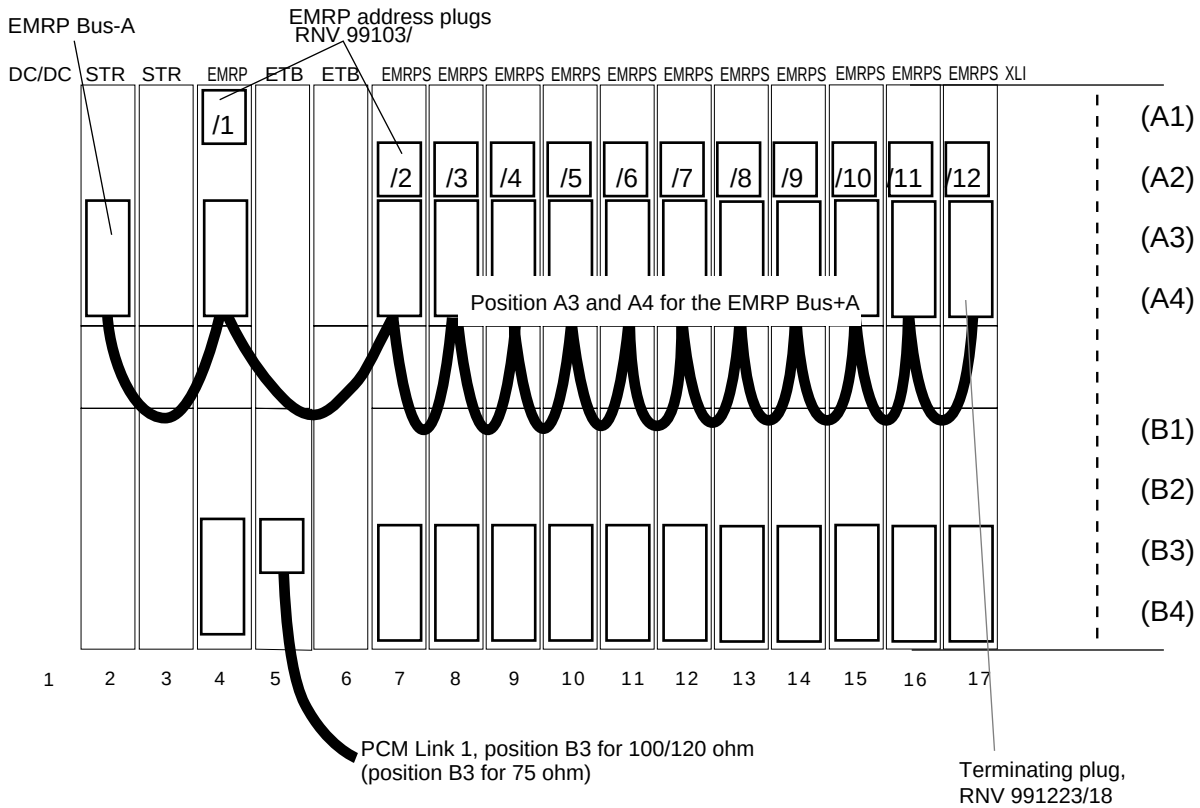
5.11.4 Allocation of PCM Links: Pico 850/1900 MHz

Allocation for the CRI PCM Link 1 is in ETB position 5B3 for 100/120-ohm screened twisted pair (normally used for T1) or in ETB position 5B4 for 75-ohm coaxial (normally used for E1).

5.11.5 Buses and Links in the CRIs: Pico 850/1900 MHz

The buses and links shown in Figure 5-13 on page 5-64 should be established in the **Pico 850 MHz** CRIs. The buses and links shown in Figure 5-14 on page 5-65 should be established in the **Pico 1900 MHz** CRIs.

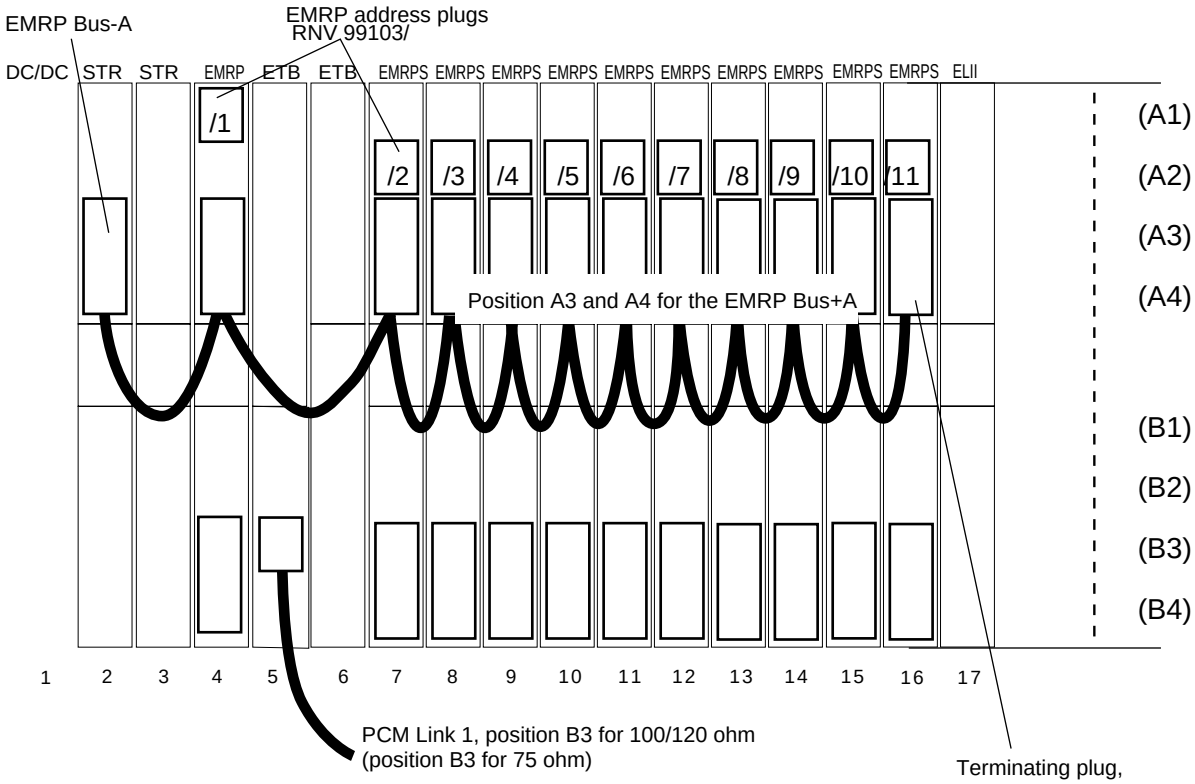
RBS 884 Pico (850 MHz) CRI



DC/DC	Direct Current/Direct Current
ELI	Enhanced Link Interface
EM	Extention Module
EMRP	Extention Module Regional Processor
EMRPS	Extention Module Regional Processor with Device Speech Bus Access
ETB	Exchange Terminal Board
PCM	Pulse Code Modulation
RILT	Remote Interface Line Terminal address
RITSW	Radio Interface Timing Switch
STR	Signaling Terminal Regional
XLI	XLINK Interface

Figure 5-13. Pico 850 MHz Buses and Links in CRI

RBS 884 Pico (1900 MHz) CRI



DC/DC	Direct Current/Direct Current
ELI	Enhanced Link Interface
EM	Extention Module
EMRP	Extention Module Regional Processor
EMRPS	Extention Module Regional Processor with Device Speech Bus Access
ETB	Exchange Terminal Board
PCM	Pulse Code Modulation
RILT	Remote Interface Line Terminal address
RITSW	Radio Interface Timing Switch
STR	Signaling Terminal Regional
XLI	XLINK Interface

Figure 5-14. Pico 1900 MHz Buses and Links in CRI

6 RBS 884 Pico CRI Test Procedure: Pico 850/1900 MHz

6.1 LED Indicators

Several of the circuit boards in the CRI cabinet have Light Emitting Diodes (LEDs) for diagnostic purposes. *Part 5, Operations and Maintenance* describes the function of the LED types.

6.2 Test Procedure

The CRI automatically performs a self-test when the system is powered on. Once the CRI is powered on, all LEDs light briefly for testing purposes. The Error LEDs then flash at a 3–Hz rate during the self-test. If an error occurs during the self-test, the Error LED is on steady.

Note: Software must be loaded at the MSC before the self-test is performed.

If a board is removed from the CRI magazine while the system is powered on, a self-test is initiated after the board is reseated in its connector. See *Part 6, Troubleshooting* for additional information on how to troubleshoot the Radio Head.

7 RBS 884 Pico Radio Head Test Procedure: Pico 850/1900 MHz

7.1 LED Indicators

The Radio Head has several LEDs for diagnostic purposes. All LEDs light briefly during the power on sequence for test purposes.

A detailed description of the LEDs is in *Part 5, Operations and Maintenance*.

7.2 Test Procedure

When power is applied to the Radio Head, all LEDs light briefly to indicate they are functioning. The Radio Head then performs a self-test of all internal

functions. The Radio Head Power/Fault LED flashes red at a 3-Hz rate during the self-test. When the self-test is complete, the LED is green if the self-test passed. A self-test failure causes the Radio Head Power/Fault LED to light a steady red. See *Part 6, Troubleshooting* for additional information on how to troubleshoot the Radio Head.

8 Installation Test Procedure: Pico 850/1900 MHz

This section describes installation test processes for the Pico 850MHz and the Pico 1900 MHz.

All tests needed for commissioning of an RBS 884 Pico are carried out remotely from the MSC.

The installation test activities start when the installation has been completed, which means that the CRI installation, the Radio Head installations, and the power installation are completed.

The installation test is completed when the results from all test activities are logged in the RBS 884 Pico Test Record.

8.1 Check Programs in Device Data Store: Pico 850/1900 MHz

Check Programs in Device Data Store

1. Printout information about the programs loaded in devices in the EMG:

   `MBDPP:EMG=DA;`

Example 5-1: `MBDPP:emg=E001-48;`

Note: A resulting printout is shown after a delay of several minutes.

MOBILE TELEPHONY BASE STATION DEVICE PROGRAM INFORMATION

DEV	VER	REV	FUNC	HWGEN	CSUM	FCODE
MBTRX-48	40	20	VC CC SR DVC VER DCCH	5	5007	
MBTRX-49	40	20	VC CC SR DVC VER DCCH	5	5007	

Figure 5-15. Result Printout Example from Command MBDPP

Table 5-26. MBDPP Printout Parameters

csum	Checksum
func	Channel functions supported by the program.
hwgen	Hardware generation of the base station device
rev	Program revision
ver	Program version
dev	Base station device
fcode	Fault code, the following fault codes exist:
11	The device is not connected to an extension module.
109	Failure in controlling the extension module.
131	Time limit for the signaling with the base station device exceeded.
138	No program loaded.
140	The base station device has no hardware connected to it.
141	The hardware not accessible. The control of the base station device temporarily acquired by another base station device function.

2. Check that the software version and the revision state reported corresponds to the information received from Project or MSC Manager.

   Note: If an update is needed, check first if the new software version is available in the MSC Data Store (command `MBDSP`). If not, load the new software to the MSC, and then to the RBS. Refer to MBS Job Procedure *MTBS Device Loading Administration* (1546–FCDU 104 505 Uae). The new software is loaded to the RBS with the `MBDFL` command for TRXs and the `MBDPL` command for other devices.

3. Check the printout and record the result in the Test Record.

   Note: If fault code 131 is obtained, repeat the command for the device in question.

8.2 Self-Test of TRX and MBTRAC/MBTRC Devices: Pico 850/1900 MHz

Prerequisites

1. All devices must be manually blocked and may not be test blocked or seized by another user. The devices must also be fully connected.

Self-test Devices

2. Self-test the TRX and MBTRAC/MBTRC devices:

   `MBSDI`

   Example 5-2: `MBSDI:dev=mbtrx-3;`

   This initiates a test of up to 16 devices in the Mobile Telephony Base Station subsystem. One command at a time can be processed.

   It is possible to specify a test case in the command with the parameter TCASE. If the device under test is a TRX operating in MLOC or MVER mode, TCASE must be set to 1. If the parameter TCASE is omitted, the default test case 0 will be used.

```
MOBILE TELEPHONY BASE STATION DEVICE SELFTEST RESULT

DEV          EMG      EM    BLOCKRES  RESULT  FCODE
MBTRX-3     BE       1     0         0       0
END
```

Figure 5-16. Result Printout Example from Command MBSDI

Table 5-27. MBSDI Printout Parameters

BLOCKRES	Blocking reason, latest reason for automatic blocking of the device. The meaning of the value is depending on the type of device and is found in the *Base Station Operation and Maintenance Documentation*.
RESULT	Result of test. Following values of result can appear:
0	Test completed
1	No contact with device or channel data is not defined
2	Failure in controlling EM
3	Program error in device
4	Device has no hardware connected to it
5	Serious fault sent from device
6	Parameter fault sent from device
7	Illegal value of testcase
8	Signaling time limit with device exceeded
65535	Unknown result code
FCODE	Fault code from the tested device. The meaning of the value is depending on the type of device and is found in the *Base Station Operation and Maintenance Documentation*. If several faults exist, the latest fault found will be printed. If no fault is found, the fault code is 0.

3. Check the printout and record the result in the Test Record.

4. Repeat the command for all devices.

8.3 Measurement of TRX Output Power: Pico 850/1900 MHz

Prerequisites

1. Values must be assigned to MAXPOWER and TXatt/TXgain:

   MBECC

   The first digital example applies only to the Pico 1900 MHz product.

Example 5-3: `Digital: DBTRI;`
`DBTSC:TAB=MBCEQS,CEQIND=94,HBAND=H1900,`
`MAXPOW=448,RXGAIN=52,TRCAP=BOTH;`

Example 5-4: `Digital: DBTRI;`
`DBTSC:TAB=MBCEQS,CEQIND=94,HBAND=H800,`
`MAXPOW=448,RXGAIN=52,TRCAP=BOTH;`

Example 5-5: `Analog:`
`MBECC:CEQ=MBCEQ-0,TXATT=94,`
`MAXPOWER=200,RXGAIN=0,TRCAP=BOTH;`

MAXPOWER is the nominal maximum output power capability of a transceiver (TRX) and TXatt/TXgain is the Attenuation/Gain in the TRX transmitting branch from the output of the transceiver to the antenna feeder in the base station. Figure Figure 5-17 on page 5-72 shows the relationship between MAXPOWER, TXATT/TXGAIN and POWER.

The recommended channel spacing for the 884 Pico is 90 kHz (21 channels).

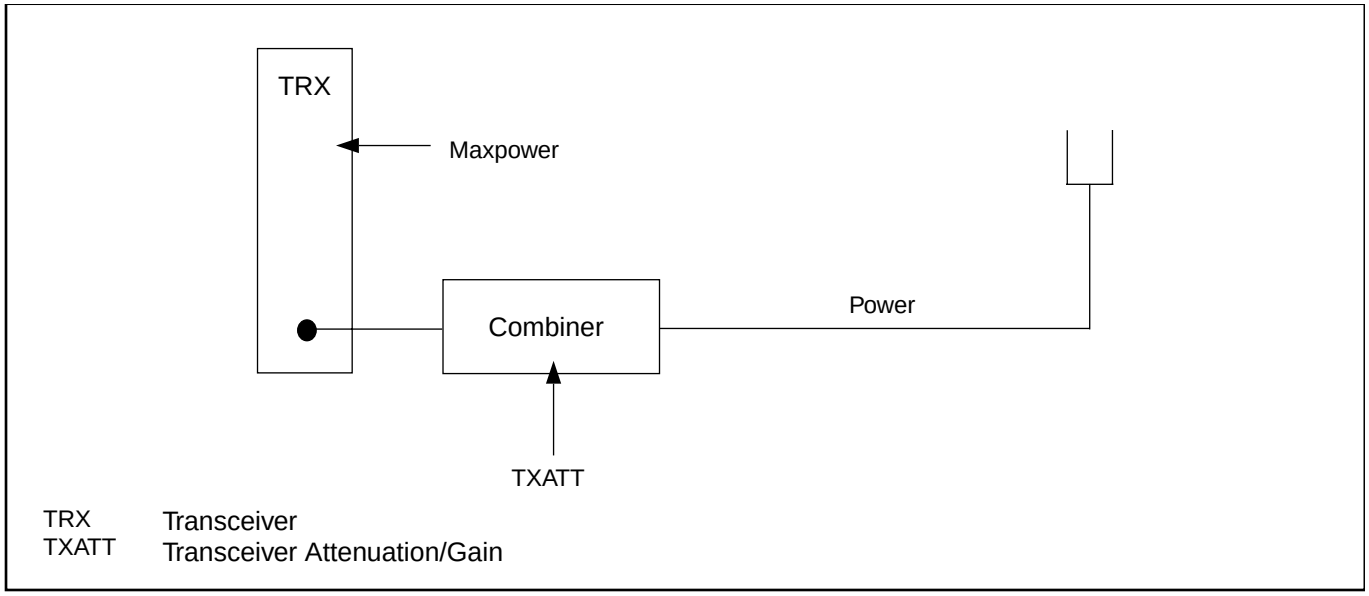


Figure 5-17. Relationship between MAXPOWER, TXATT/TXGAIN and POWER.

2. The absolute output power in the antenna feeder must be set:

MTCTC

Example 5-6: `MTCTC:DEV=MCC-0, CHNR=333, POWER=110, FIT=EF;`

This command sets the absolute output power in the antenna feeder to 11.0 dBm.

Note: POWER equals MAXPOWER-TXatt or +TXgain. Observe that POWER=MAXPOWER-TXatt =20.0 dBm is the maximum absolute output power that can be assigned.

Check the hardware malfunction log

3. Check the hardware malfunction log for the EMG. The MBMLP command prints the Mobile Telephony Base Station Device Hardware Malfunction Log.

   MBMLP

   Example 5-7: `MBMLP:emg=E001;`

8.4 Deblocking of Devices: Pico 850/1900 MHz

Deblock Devices

1. Deblock MBLT86/861/86N for analog devices, MBTRACS/MBTRCS, TRXs and channel function devices.

   BLODE

   Example 5-8: `BLODE:DEV=MBTRCS-1;`

   Example 5-9: `BLODE: DEV=MBTRACS-1;`

Check the hardware malfunction log

2. Check the hardware malfunction log for the EMGs being brought into operation. The MBMLP command prints the Mobile Telephony Base Station Device Hardware Malfunction Log.

   MBMLP

   Example 5-10: `MBMLP:emg=E001;`

Set Supervision

3. Set blocking supervision for voice line routes:

   BLURC

   Example 5-11: `BLURC:R=ANVALO, ACL=A2, LVB=2&3;`

4. Set blocking supervision for MBTRAC/MBTRC routes:

   BLURC

   Example 5-12:
   ```
   BLURC:R=MBTRCO&/MBTRCI,
   ACL=A2,LVB=2&3;
   or
   BLURC:R=MBTRACO,MBTRACI,
   ACL=A2,LVB=2&3;
   ```

5. Set disturbance supervision for voice line routes:

   DUDAC

   Example 5-13: `DUDAC:R=KI1ALO, ADL=5, ACL=A2;`

6. Set disturbance supervision for MBTRAC/MBTRC routes:

   DUDAC

   Example 5-14:
   ```
   DUDAC:R=MBTRACO&MBTRACI,
   ADL=5, ACL=A2;
   DUDAC:R=MBTRCO&MBTRCI, ADL=5, ACL=A2;
   ```

7. Set seizure quality supervision for voice line routes:

   SEQAC

   Example 5-15:
   ```
   SEQAC:R=KI1ALO&KI1ALI,
   ACL=A3,QUOS=40,QUOB=85;
   ```

8. Set seizure quality supervision for MBTRAC/MBTRC routes:

   SEQAC

   Example 5-16:
   ```
   SEQAC:R=MBTRACO&MBTRACI,
   ACL=A3,QUOS=40, QUOB=85;
    SEQAC:R=MBTRCO&MBTRCI, ACL=A3,
   QUOS=40, QUOB=85;
   ```

9 Example Integration: Pico (850 MHz)

This section contains an example of how to integrate an RBS 884 Pico system and an MSC. The RBS 884 Pico 850 MHz system in this example uses XLI boards with a T1 PCM link (24 channels or time slots).

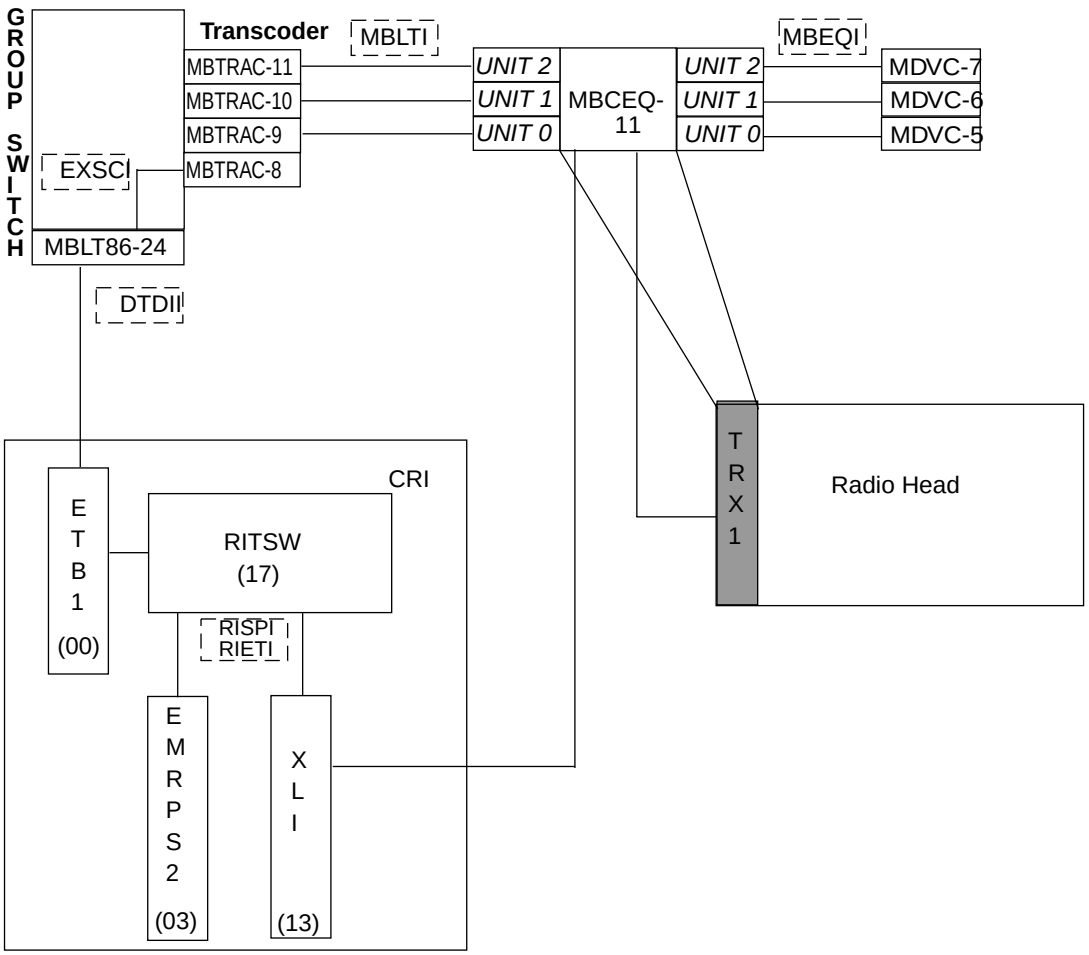
9.1 Hardware Overview

The RBS 884 Pico system is described in *Part 2, System Description*.

In the example integration in this section, the CRI configuration has six Radio Heads (14 transmitting TRXs) and a T1 PCM link.

9.2 Software and Hardware Assignments and Connections

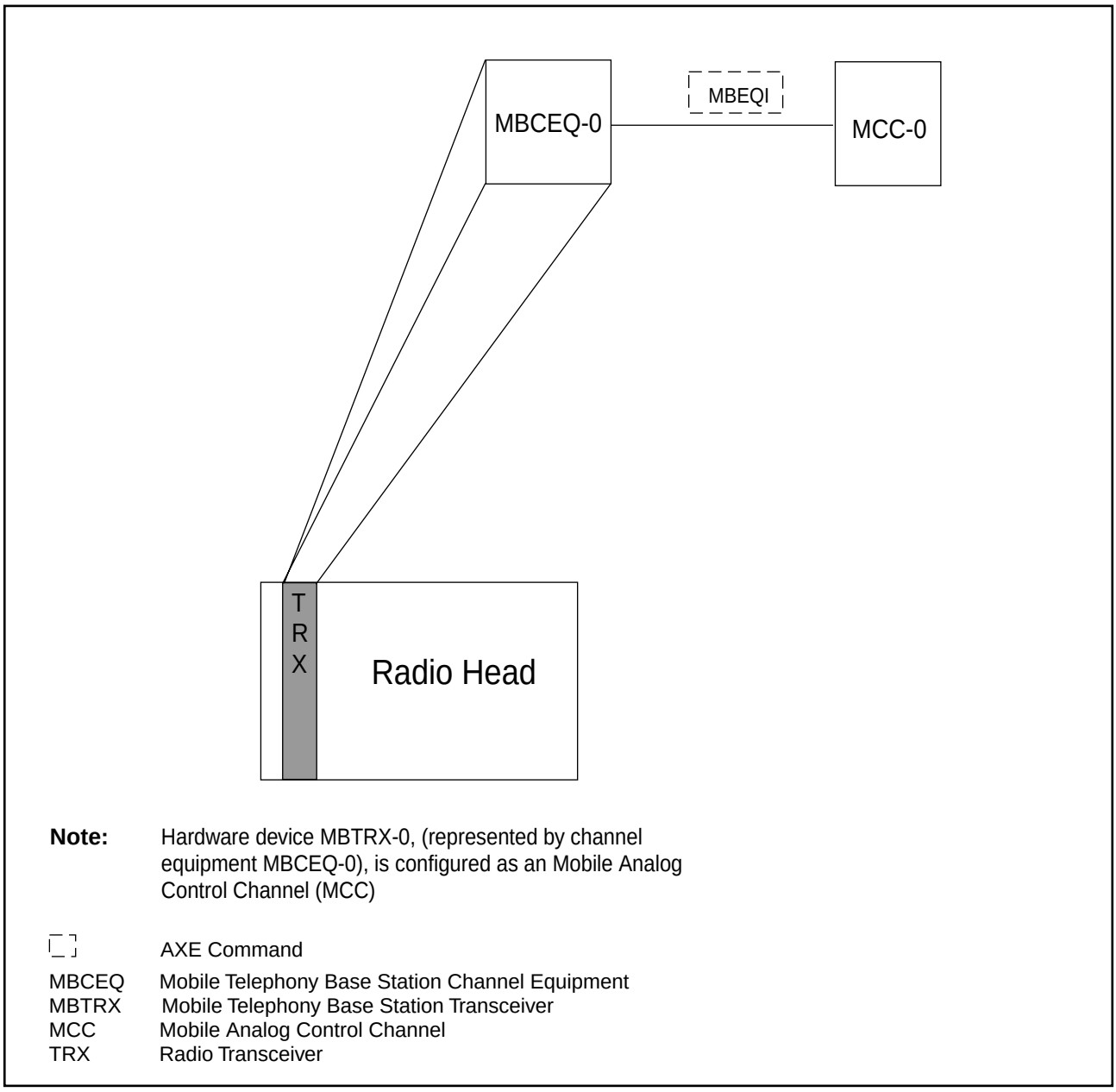
Figure 5-18 on page 5-77 to Figure 5-24 on page 5-83 show examples of the software and hardware assignments for a Radio Head.



Note: Hardware device MBTRX-11 (represented by channel equipment MBCEQ-11), is shown to be configured as 3 Mobile Digital Voice Channels (MDVC).

[ ]	AXE Command
(#)	RILT Number
CRI	Control and Radio Interface
ELI	Enhanced Link Interface
ETB	Exchange Terminal Board
EMRPS	Extension Module Regional Processor with Device Speech Bus Access
MBCEQ	Mobile Telephony Base Station Channel Equipment
MBLT	Mobile Telephony Base Station Line Terminal
MBTRX	Mobile Telephony Base Station Transceiver
MDVC	Mobile Digital Voice Channels
RILT	Remote Interface Line Terminal address
RITSW	Radio Interface Time Switch
TRX	Radio Transceiver
XLI	XLINK Interface

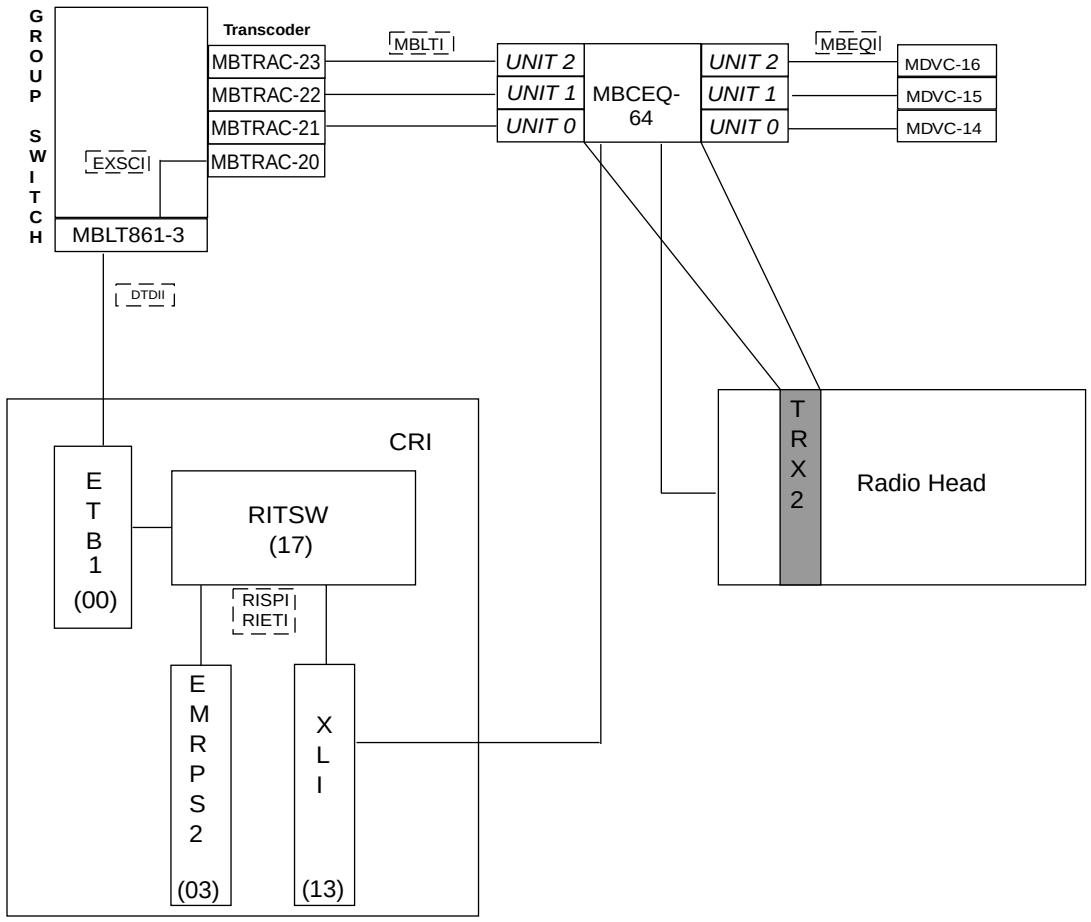
Figure 5-18. Software and Hardware Assignments for TRX1 in a Radio Head Configured As Three MDVCs



Note: Hardware device MBTRX-0, (represented by channel equipment MBCEQ-0), is configured as an Mobile Analog Control Channel (MCC)

⌜ ⌟	AXE Command
MBCEQ	Mobile Telephony Base Station Channel Equipment
MBTRX	Mobile Telephony Base Station Transceiver
MCC	Mobile Analog Control Channel
TRX	Radio Transceiver

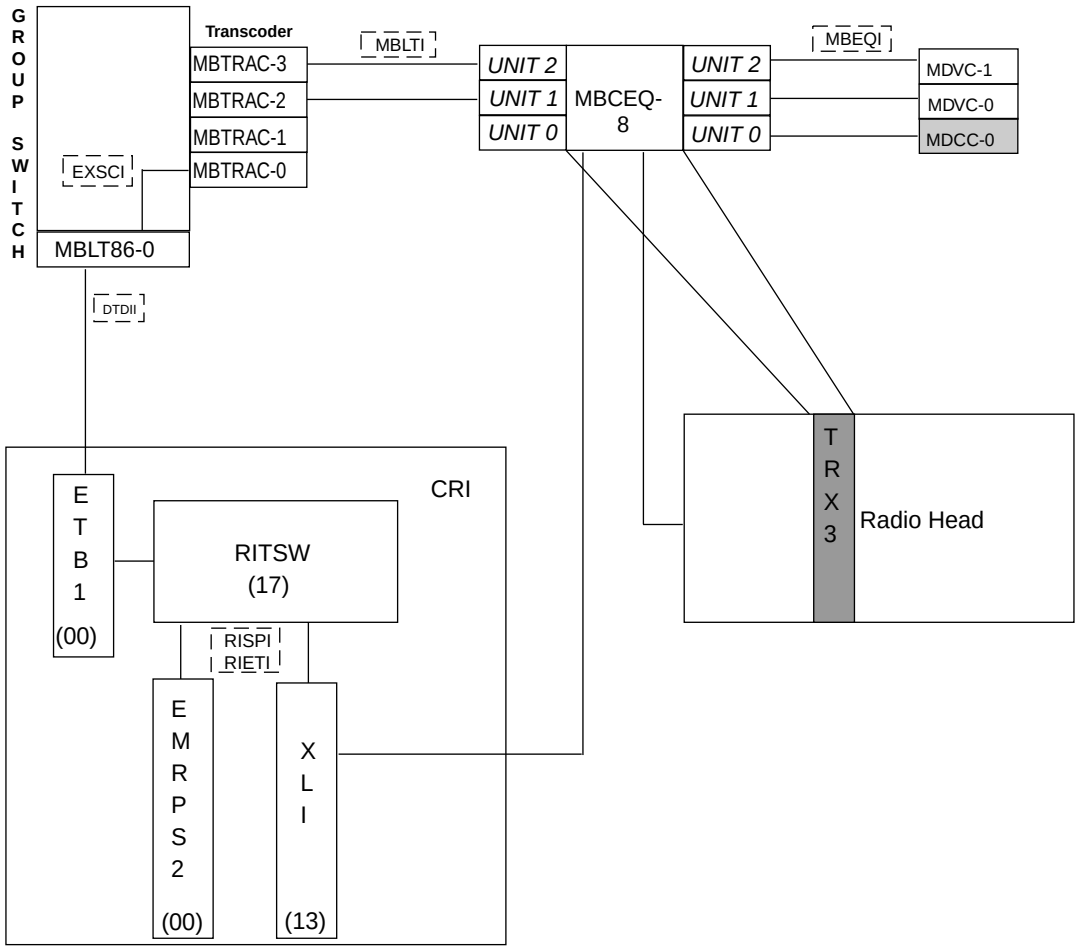
Figure 5-19. Software and Hardware Assignments for TRX in a Radio Head Configured As MCC



Note: Hardware device MBTRX-64 (represented by channel equipment MBCEQ-64), is shown to be configured as 3 Mobile Digital Voice Channels (MDVC).

[ ]	AXE Command
(#)	RILT Number
CRI	Control and Radio Interface
ELI	Enhanced Link Interface
ETB	Exchange Terminal Board
EMRPS	Extension Module Regional Processor with Device Speech Bus Access
MBCEQ	Mobile Telephony Base Station Channel Equipment
MBLT	Mobile Telephony Base Station Line Terminal
MBTRX	Mobile Telephony Base Station Transceiver
MDVC	Mobile Digital Voice Channels
RILT	Remote Interface Line Terminal address
RITSW	Radio Interface Time Switch
TRX	Radio Transceiver
XLI	XLINK Interface

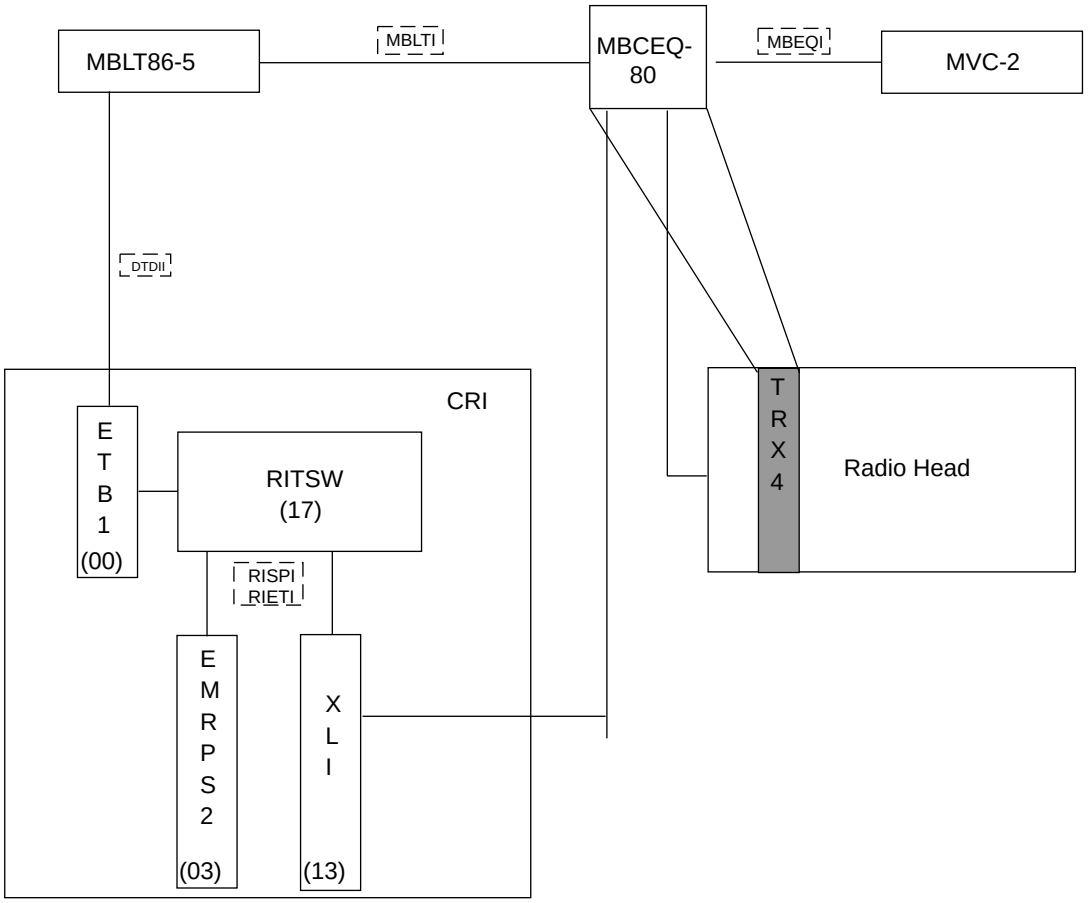
Figure 5-20. Software and Hardware Assignments for TRX2 in a Radio Head, Configured As Three MDVCs



Note: Hardware device MBTRX-8, (represented by channel equipment MBCEQ-8, is shown to be configured as 1 Mobile Digital Control Channel (MDCC) and 2 Mobile Digital Voice Channels (MDVC).

[ ]	AXE Command
(#)	RILT Number
CRI	Control and Radio Interface
ELI	Enhanced Link Interface
ETB	Exchange Terminal Board
EMRPS	Extension Module Regional Processor with Device Speech Bus Access
MBCEQ	Mobile Telephony Base Station Channel Equipment
MBLT	Mobile Telephony Base Station Line Terminal
MBTRX	Mobile Telephony Base Station Transceiver
MDVC	Mobile Digital Voice Channels
RILT	Remote Interface Line Terminal address
RITSW	Radio Interface Time Switch
TRX	Radio Transceiver
XLI	XLINK Interface

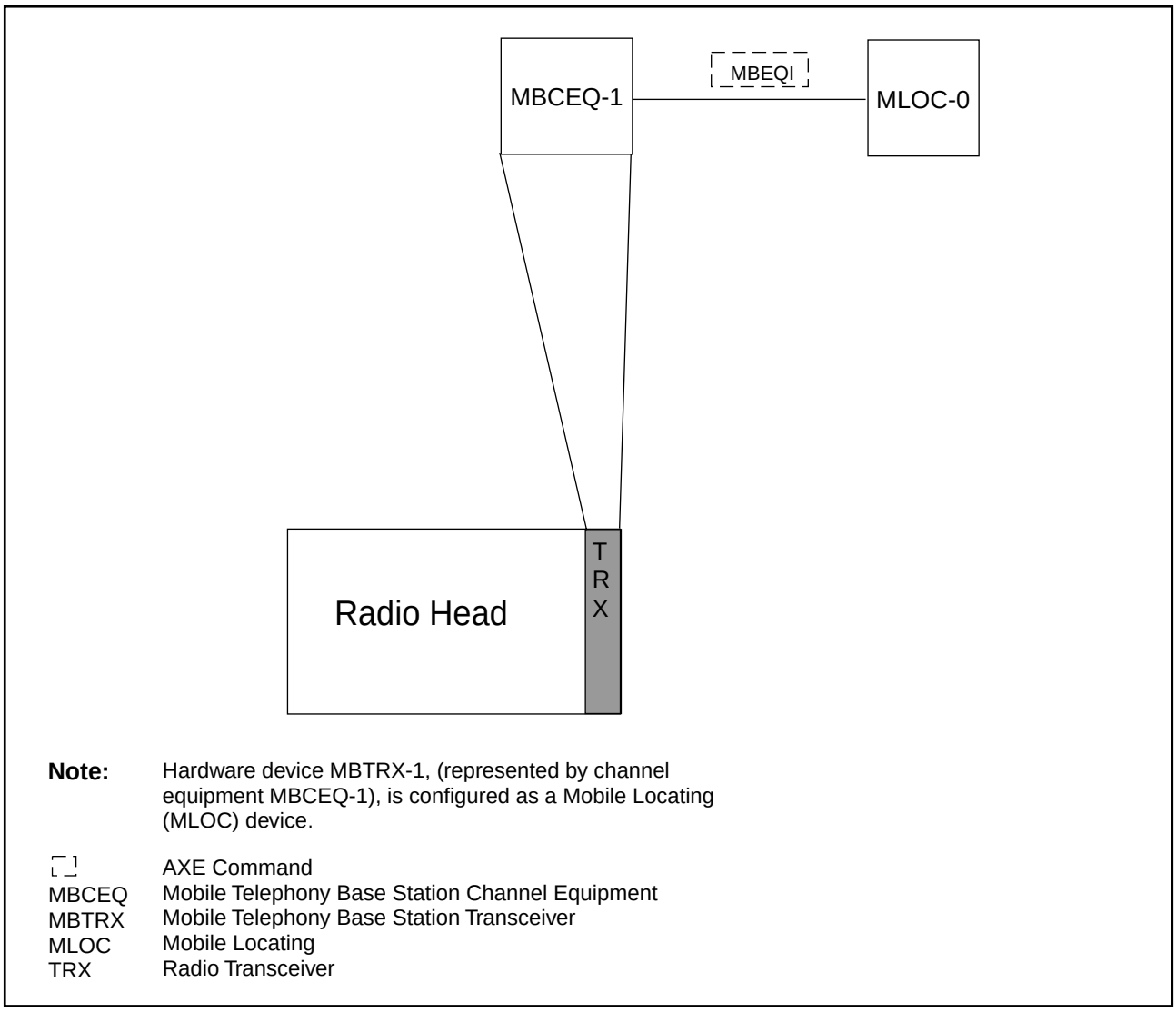
Figure 5-21. Software and Hardware Assignments for TRX3 in a Radio Head, Configured As One MDCC and Two MDVCs



Note: Hardware device MBTRX-80, (represented by channel equipment MBCEQ-80), is shown to be configured as 1 Mobile Analog Voice Channel (MVC).

[ ]	AXE Command
(#)	RILT Number
CRI	Control and Radio Interface
ELI	Enhanced Link Interface
ETB	Exchange Terminal Board
EMRPS	Extension Module Regional Processor with Device Speech Bus Access
MBCEQ	Mobile Telephony Base Station Channel Equipment
MBLT	Mobile Telephony Base Station Line Terminal
MBTRX	Mobile Telephony Base Station Transceiver
MDVC	Mobile Digital Voice Channels
RILT	Remote Interface Line Terminal address
RITSW	Radio Interface Time Switch
TRX	Radio Transceiver
XLI	XLINK Interface

Figure 5-22. Software and Hardware Assignments for TRX4 in a Radio Head, Configured as a MVC



Note: Hardware device MBTRX-1, (represented by channel equipment MBCEQ-1), is configured as a Mobile Locating (MLOC) device.

[ ]	AXE Command
MBCEQ	Mobile Telephony Base Station Channel Equipment
MBTRX	Mobile Telephony Base Station Transceiver
MLOC	Mobile Locating
TRX	Radio Transceiver

Figure 5-23. Software and Hardware Assignments for a TRX in a Radio Head, Configured as an MLOC

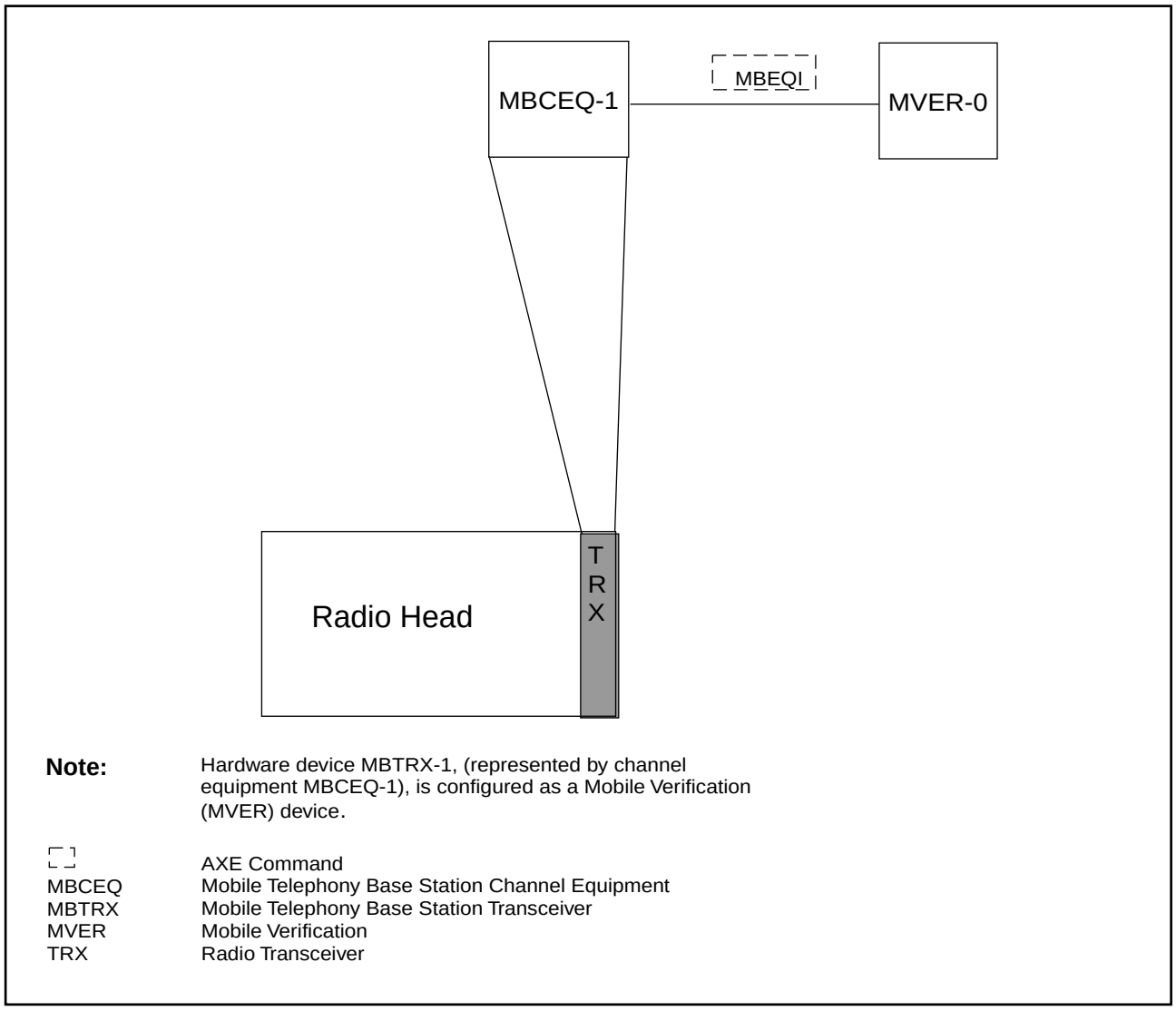


Figure 5-24. Software and Hardware Assignments for a TRX in a Radio Head, Configured as a MVER

9.3 Global Number Plan

9.3.1 Global Number Plan for the MSC and RBS Devices

The Global Number Plan (GNP) and the semipermanent paths between the MSC and the RBS devices associated with CRI-0 are shown in the following tables:

- STR 0, EM 0, ETB 0, EM 1, and EM 2 are shown in Table 5-28 on page 5-84.
- EM 3, EM 4, EM 5, EM 6, EM 7, and EM 8 are shown in Table 5-29 on page 5-85.

- EM 9, EM 10, EM 11, XLI 1, XLI 2, and XLI 3 are shown in Table 5-30 on page 5-86.

Note: The GNP and semipermanent paths for a CRI with ELI boards is the same as the those in Table 5-30 on page 5-86 with the exception of the ELI Control Path and Speech Path time slots. See Section 5.10.1.3 on page 5-59.

- Control, EM control, Speech, and TSW are shown in Table 5-31 on page 5-87.
- Radio Head 1 is shown in Table 5-32 on page 5-88.
- Radio Head 2 is shown in Table 5-33 on page 5-89.
- Radio Head 3 is shown in Table 5-34 on page 5-90.
- Radio Head 4 is shown in Table 5-35 on page 5-91.
- Radio Head 5 is shown in Table 5-36 on page 5-92.
- Radio Head 6 is shown in Table 5-37 on page 5-93.

Table 5-28. Pico 850 MHz GNP for STR 0, EM 0, ETB 0, EM 1, and EM 2

Device Name		STR0	EM 0	ETB 0	ETB 1	EM 1	EM 2
DIP #1MTS3	52					3584	3592
DIP #2MTS3						3585	3593
EQMCLC	14		RILT	MBLT		3586	3594
RPA	134		448	1248	0	3587	3595
CLC/MBLT86N MBLT86	1256		&&-	&&-	&&-	3588	3596
EMG	P4P1		463	1271	0	3589	3597
EMGNUM	26					3590	3598
SID	157					3591	3599
TW							
MDCC	224						
MVER	224						
MDVC	2688						
MBTRAC or MBTRC	256			T1	T1		
RILT				448	449	450	451

Table 5-29. GNP for EM 3, EM 4, EM 5, EM 6, EM 7, and EM 8

Device Name		EM 3	EM 4	EM 5	EM 6	EM 7	EM 8
DIP #1MTS3	52	3600	3608	3616	3624	3632	3640
DIP #2MTS3		3601	3609	3617	3625	3633	3641
EQMCLC	14	3602	3610	3618	3626	3634	3642
RPA	134	3603	3611	3619	3627	3635	3643
CLC MBLT86	1256	3604	3612	3620	3628	3636	3644
EMG	P4P1	3605	3613	3621	3629	3637	3645
EMGNUM	26	3606	3614	3622	3630	3638	3646
SID	157	3607	3615	3623	3631	3639	3647
TW							56
MDCC	224						
MVER	224						
MDVC	2688						
MBTRAC/ MBTRC	256						
RILT		452	453	454	455	456	457

Table 5-30. GNP for EM 9, EM 10, EM 11, XLI 1, XLI 2, and XLI 3

Device Name		EM 9	EM 10	EM 11	XLI 1	XLI 2	XLI 3
DIP #1MTS3	52				3584	3616	
DIP #2MTS3					3585	3617	
EQMCLC	14				3586	3618	
RPA	134				3587	3619	
CLC MBLT86	1256				3592	3624	
EMG	P4P1				3593	3625	
EMGNUM	26				3594	3626	
SID	157				3595	3627	
TW					3601	3633	
					3602	3634	
MDCC	224				3603	3635	
MVER	224				3608	3640	
MDVC	2688				3609	3641	
MBTRAC	256				3610	3642	
					3611	3643	
RILT		458	459	460	461	462	463
Note: EM9, EM10, EM11, and XLI3 are reserved for future use.							

Table 5-31. GNP for Control, EM CTL, Speech, and TSW

Device Name		Control	EM CTL	Speech	TSW
DIP #1MTS3	52	0	0	1	E
DIP #2MTS3		2	1	3	M
EQMCLC	14	4	2	5	R
RPA	134	6	3	7	S
CLC MBLT86	1256	8	4	9	
EMG	P4P1	10	5	11	
EMGNUM	26	12		13	
SID	157	14		15	
		16		17	
TW		18		19	
		20		21	
MDCC	224	22		23	
MVER	224	24		25	
MDVC	2688	26	26	27	
MBTRAC/ MBTRC	256	28	29	29	0
		30	31	31	

Table 5-32. GNP RBS Devices for Radio Head 1 (Analog with XLI)

Radio Head 1										
MBTRX		3584		3585		3586		3587		
MCC										
MLOC						224			Pos.	
MVC				2688					1	3584
MDCC		224							2	3585
MVER								224	3	3586
Unit 0 MDVC		N/A							4	3587
Unit 1 MDVC		2688								
Unit 2 MDVC		2689								
Code MBTRAC/ MBTRC		256								
Unit 0 MBTRAC/ MBTRC		N/A								
Unit 1 MBTRAC/ MBTRC		258								
Unit 2 MBTRAC/ MBTRC		259								
EM RILT	450	0	450	1	450	2	450	3		
XLI Control	461	0	461	2	461	4	461	6		
ETB RILT	448	1	448	2			N/A	N/A		
XLI Voice	461	1	461	3			N/A	N/A		
MBLT86		1248		1249				N/A		
Channel Number		991		73				N/A		
Position		1		2		3		4		
	TRX 1		TRX 2		TRX 3		TRX 4			

Table 5-33. GNP for Radio Head 2

Radio Head 2										
MBTRX		3592		3593		3594		3595		
MCC										
MLOC						225			Pos.	
MVC				2689					1	3592
MDCC		225							2	3593
MVER								225	3	3594
Unit 0 MDVC		N/A							4	3595
Unit 1 MDVC		2696								
Unit 2 MDVC		2697								
Code MBTRAC/ MBTRC		268								
Unit 0 MBTRAC/ MBTRC		N/A								
Unit 1 MBTRAC/ MBTRC		270								
Unit 2 MBTRAC/ MBTRC		271								
EM RILT	451	0	451	1	451	2	451	3		
XLI Control	461	8	461	10	461	12	461	14		
ETB RILT	448	5	448	6			N/A	N/A		
XLI Voice	451	9	461	11			N/A	N/A		
MBLT86		1251		1252				N/A		
Channel Number		1015		94				N/A		
Position		1		2		3		4		
	TRX 1		TRX 2		TRX 3		TRX 4			

Table 5-34. GNP for Radio Head 3

Radio Head 3										
MBTRX		3600		3601		3602		3603		
MCC										
MLOC									Pos.	
MVC									1	3600
MDCC		226							2	3601
MVER								226	3	3602
Unit 0 MDVC		N/A		2706		2709			4	3603
Unit 1 MDVC		2704		2707		2710				
Unit 2 MDVC		2705		2708		2711				
Code MBTRAC/ MBTRC		280		284		288				
Unit 0 MBTRAC/ MBTRC		N/A		285		289				
Unit 1 MBTRAC/ MBTRC		282		286		290				
Unit 2 MBTRAC/ MBTRC		283		287		291				
EM RILT	452	0	452	1	452	2	452	3		
XLI Control	461	16	461	18	461	20	461	22		
ETB RILT	448	7	448	8	448	10	N/A	N/A		
XLI Voice	461	17	461	19	461	21	N/A	N/A		
MBLT86		1254		1255		1257		N/A		
Channel Number		991		1		670		N/A		
Position		1		2		3		4		
	TRX 1		TRX 2		TRX 3		TRX 4			

Table 5-35. GNP for Radio Head 4

Radio Head 4										
MBTRX		3608		3609		3310		3611		
MCC										
MLOC						227			Pos.	
MVC				2690					1	3608
MDCC		227							2	3609
MVER								227	3	3610
Unit 0 MDVC		N/A							4	3611
Unit 1 MDVC		2712								
Unit 2 MDVC		2713								
Code MBTRAC/ MBTRC		292								
Unit 0 MBTRAC/ MBTRC		N/A								
Unit 1 MBTRAC/ MBTRC		294								
Unit 2 MBTRAC/ MBTRC		295								
EM RILT	453	0	453	1	453	2	453	3		
XLI Control	461	24	461	26	461	28	461	30		
ETB RILT	448	11	448	12	448	13	N/A	N/A		
XLI Voice	461	25	461	27			N/A	N/A		
MBLT86		1258		1259				N/A		
Channel Number		1022		73				N/A		
Position		1		2		3		4		
	TRX 1		TRX 2		TRX 3		TRX 4			

Table 5-36. GNP for Radio Head 5

Radio Head 5										
MBTRX		3616		3617		3618		3619		
MCC										
MLOC									Pos.	
MVC									1	3616
MDCC		228							2	3517
MVER								228	3	3518
Unit 0 MDVC		N/A		2722		2725			4	3519
Unit 1 MDVC		2720		2723		2726				
Unit 2 MDVC		2721		2724		2727				
Code MBTRAC/ MBTRC		304		308		312				
Unit 0 MBTRAC/ MBTRC		N/A		309		313				
Unit 1 MBTRAC/ MBTRC		306		310		314				
Unit 2 MBTRAC/ MBTRC		307		311		315				
EM RILT	454	0	454	1	454	2	454	3		
XLI Control	462	0	462	2	462	4	462	6		
ETB RILT	448	1	448	2	448	16	N/A	N/A		
XLI Voice	462	1	462	3	462	5	N/A	N/A		
MBLT86		1261		1262		1263		N/A		
Channel Number		691		1015		1000		N/A		
Position		1		2		3		4		
	TRX 1		TRX 2		TRX 3		TRX 4			

Table 5-37. GNP for Radio Head 6

Radio Head 6										
MBTRX		3624		3625		3626				
MCC		229								
MLOC						229			Pos.	
MVC				2691					1	3624
MDCC									2	3625
MVER									3	3626
Unit 0 MDVC		N/A							4	3627
Unit 1 MDVC										
Unit 2 MDVC										
Code MBTRAC/ MBTRC										
Unit 0 MBTRAC/ MBTRC										
Unit 1 MBTRAC/ MBTRC										
Unit 2 MBTRAC/ MBTRC										
EM RILT	455	0	455	1	455	2				
XLI Control	462	8	462	10	462	12				
ETB RILT			448	18						
XLI Voice			462	11						
MBLT86				1265						
Channel Number		94		115						
Position		1		2		3				
	TRX 1		TRX 2		TRX 3		TRX 4			

9.4 Integration Procedure

This section contains an example of a Data Transcript (DT) for the following RBS 884 Pico system:

- Support for digital and analog devices
- Six Radio Heads
- T1 PCM Link

The following is an overview of the integration procedure.

Note: The commands shown in this DT are entered as single-line entries, although the commands in this manual may be split on more than one line.

Descriptive comments are included in the example DT. A comment line starts and ends with an exclamation point (`!') as shown in the following example:

```
! Cell A !
```

Table 5-38 on page 5-94 lists the integration procedures for the definition of routes and the assignment of devices and routes.

Table 5-38. Integration Procedure for the Definition of Routes and the Assignment of Devices to Routes

Integration Procedure	See Section
Define MBLT86 Signal Routes	Section 9.4.1.1 on page 5-100
Define MBLT86 Analog Voice Line Routes	Section 9.4.1.2 on page 5-100
Define MBLT86 Digital Voice Line Routes	Section 9.4.1.3 on page 5-101
Define Mobile Voice Channel Routes	Section 9.4.1.4 on page 5-102
Define MBTRAC/MBTRC Routes	Section 9.4.1.5 on page 5-103
Attach Devices to Signal Channel Routes "CLC"	Section 9.4.1.7 on page 5-104
Attach Devices to Analog Voice Line Routes	Section 9.4.1.8 on page 5-104
Attach Devices to Digital Voice Line Routes	Section 9.4.1.9 on page 5-105
Attach Devices to MBTRAC/MBTRC Routes "Uncoded MBTRAC/MBTRCs"	Section 9.4.1.10 on page 5-106

Table 5-39 on page 5-95 lists the integration procedures for the configuration of cell and EMG.

Table 5-39. Integration Procedures for the Configuration of Cell and EMG

Integration Procedure	See Section
Define New Cell in the System	Section 9.4.2.1 on page 5-107
Define the New Cell SID	Section 9.4.2.2 on page 5-107
Define Analog Control Channel Data	Section 9.4.2.3 on page 5-108
Define Digital Control Channel Data	Section 9.4.2.4 on page 5-108
Block EMs	Section 9.4.2.5 on page 5-110
Block RPs	Section 9.4.2.6 on page 5-110
Bring MBLT86 CLC Devices into Service	Section 9.4.2.7 on page 5-110
Insert Control Signaling Link	Section 9.4.2.8 on page 5-110
Change the Digital Path Initial Data Parameters	Section 9.4.2.10 on page 5-110
Define Exchange Data for EMG	Section 9.4.2.11 on page 5-110
Define EMs and Processor Control	Section 9.4.2.12 on page 5-111

Table 5-40 on page 5-95 lists the integration procedures to assign software units to EMs.

Table 5-40. Integration Procedure to Assign Software Units to EMs

Integration Procedure	See Section
Check Current Switch Printout for Correct Software Revisions	Section 9.4.3.1 on page 5-111
Install Software Units to EMs	Section 9.4.3.2 on page 5-111
Define EMG Equipment	Section 9.4.3.3 on page 5-112
Insert TW Equipment	Section 9.4.3.4 on page 5-113

Table 5-40. Integration Procedure to Assign Software Units to EMs (Continued)

Integration Procedure	See Section
Define Equipment Positions (Optional)	Section 9.4.3.5 on page 5-113
Define Remote Interface Equipment Types	Section 9.4.3.6 on page 5-115
Define the Reverse Digital Path "DIP"	Section 9.4.3.7 on page 5-116
Change Quality Supervision for Digital Path	Section 9.4.3.8 on page 5-116
Initiate Quality Supervision for Digital Path	Section 9.4.3.9 on page 5-116
Change Fault Supervision for Digital Path	Section 9.4.3.10 on page 5-116
Initiate Fault Supervision for Digital Path	Section 9.4.3.11 on page 5-117
Define Analog Voice Channel Data	Section 9.4.3.12 on page 5-117
Define Digital Voice Channel Data	Section 9.4.3.13 on page 5-118
Connect Channel Devices to Cell	Section 9.4.3.15 on page 5-119

Table 5-41 on page 5-96 lists the integration procedures for the configuration of channel equipment.

Table 5-41. Integration Procedures for the Configuration of Channel Equipment

Integration Procedure	See Section
Assign Speech Devices to TRXs ANA/DIG	Section 9.4.4.1 on page 5-120
Set the Channel Equipment Capability	Section 9.4.4.2 on page 5-122
Set the Device's Channel Number and Output Number	Section 9.4.4.3 on page 5-124
Assign Color Codes to Voice and Control Devices	Section 9.4.4.4 on page 5-126
Link Channel Equipment with Channel Function Units	Section 9.4.4.5 on page 5-127

Table 5-42 on page 5-97 lists the integration procedures for deblocking and activating DIP, CLC, EMG, and RILTs.

Table 5-42. Integration Procedures for Deblocking and Activating DIP, CLC, EMG, and RILTs

Integration Procedure	See Section
Deblock STC	Section 9.4.5.1 on page 5-129
Deblock STC EM	Section 9.4.5.2 on page 5-129
Deblock the Digital Path "DIP"	Section 9.4.5.3 on page 5-129
Deblock Control Signaling Link	Section 9.4.5.4 on page 5-129
Deblock EMRP EMs	Section 9.4.5.5 on page 5-129
Deblock Reverse DIP	Section 9.4.5.6 on page 5-130
Deblock RILTs and EMRSs	Section 9.4.5.7 on page 5-130

Table 5-43 on page 5-97 lists the integration procedures for semipermanent connections in RBS Time Switch (TSW).

Table 5-43. Integration Procedures for Semipermanent Connections in RBS Time Switch (TSW)

Integration Procedure	See Section
Initiate the Connection of RILTs through the Remote Selector	Section 9.4.6.1 on page 5-130

Table 5-44 on page 5-98 lists the integration procedures to bring the base station devices into service.

Table 5-44. Integration Procedures to Bring the Base Station Devices into Service

Integration Procedure	See Section
Initiate Pre-Post Service for MBLT86 Devices	Section 9.4.7.1 on page 5-134
Bring TRX's into Service	Section 9.4.7.2 on page 5-135

Table 5-45 on page 5-98 lists the integration procedures for the semipermanent connections of MBTRAC/MBTRC to MBLT/MBLT86N using the group switch.

Table 5-45. Integration Procedures for the Semipermanent Connections of MBTRAC/MBTRC to MBLT/MBLT86N Using the Group Switch

Integration Procedure	See Section
Connect Coded MBTRAC/MBTRCs to MBLT86s/MBLT86N using the Group Switch	Section 9.4.8.1 on page 5-136

Table 5-46 on page 5-98 lists the integration procedures for the loading/self-testing of RBS equipment.

Table 5-46. Integration Procedures for the Loading/Self-Testing of RBS Equipment

Integration Procedure	See Section
Load TRX Devices	Section 9.4.9.1 on page 5-139
Bring MBTRABs/MBTRB into Service if Necessary	Section 9.4.9.2 on page 5-140
Check/Load MBTRAB/MBTRB Devices as Necessary	Section 9.4.9.3 on page 5-141
Self-Test the TRX Devices	Section 9.4.9.4 on page 5-142
Self-Test the Coded MBTRAB/MBTRB Devices	Section 9.4.9.5 on page 5-143

Table 5-47 on page 5-99 lists the integration procedures for the deblocking/checking of RBS equipment.

Table 5-47. Integration Procedures for the Deblocking/Checking of RBS Equipment

Integration Procedure	See Section
Deblock/Check the MBTRAB/MBTRB Devices	Section 9.4.10.1 on page 5-144
Measure the Output	Section 9.4.10.2 on page 5-144
Deblock TW Port	Section 9.4.10.3 on page 5-144
Deblock MBLT86 Devices	Section 9.4.10.4 on page 5-144
Deblock Uncoded MBTRAC/MBTRC Devices	Section 9.4.10.5 on page 5-145
Deblock MBTRX Devices	Section 9.4.10.6 on page 5-147
Deblock MVC Devices	Section 9.4.10.7 on page 5-148
Deblock MDVC Devices	Section 9.4.10.8 on page 5-149
Deblock Analog Control Channel	Section 9.4.10.9 on page 5-150
Deblock Digital Control Channel	Section 9.4.10.10 on page 5-151
Deblock MLOC Devices	Section 9.4.10.11 on page 5-152
Deblock MVER Devices	Section 9.4.10.12 on page 5-153
Check Cell Status	Section 9.4.10.13 on page 5-154

Table 5-48 on page 5-100 lists the integration procedures for the assignment of supervision to routes.

Table 5-48. Integration Procedures for the Assignment of Supervision to Routes

Integration Procedure	See Section
Set Disturbance Supervision for Analog Voice Line Routes	Section 9.4.11.1 on page 5-154
Set Disturbance Supervision for MBTRAC/MBTRC Routes	Section 9.4.11.2 on page 5-154
Set Seizure Quality Supervision for Analog Voice Line Routes	Section 9.4.11.3 on page 5-155
Set Seizure Quality Supervision for MBTRAC/MBTRC Routes	Section 9.4.11.4 on page 5-155
Set Blocking Supervision for Analog Voice Line Routes	Section 9.4.11.5 on page 5-156
Set Blocking Supervision for MBTRAC/MBTRC Routes	Section 9.4.11.6 on page 5-156

9.4.1 Definition of Routes and Assignment of Devices to Routes

9.4.1.1 Define MBLT86 Signal Routes

```
EXROI:R=P4P1SO & P4P1SI, DETY=MBLT86N, FNC=3;

EXRBC:R=P4P1SI;

EXROI:R=P4P350 & P4P3SI, DETY=MBLT86N, FNC=3;

EXRBC: R=P4P3SI;

EXROI:R=P4P450 & P4P4SI, DETY=MBLT86N, FNC=3;

EXRBC: R=P4P4SI;
```

Note: Use MBLT86N for BYB501; otherwise, use MBLT86.

9.4.1.2 Define MBLT86 Analog Voice Line Routes

```
! Cell A !

EXROI:R=P4P1ANO & P4P1ANI, DETY=MBLT86N, FNC=3;

EXRBC:R=P4P1ANO, R2=TC1;

EXRBC:R=P4P1ANI, R2=TC1, RO=0;
```

```
! Cell B !
EXROI:R=P4P1BNO & P4P1BNI, DETY=MBLT86N, FNC=3;
EXRBC:R=P4P1BNO, R2=TC1;
EXRBC:R=P4P1BNI, R2=TC1, RO=0;

! Cell C !
! No Analog Voice in Cell C !

! Cell D !
EXROI:R=P4P1DNO & P4P1DNI, DETY=MBLT86N, FNC=3;
EXRBC:R=P4P1DNO, R2=TC1;
EXRBC:R=P4P1DNI, R2=TC1,RO=0;

! Cell E !
! No Analog Voice in Cell E !

! Cell F !
EXROI:R=P4P1FNO & P4P1FNI, DETY=MBLT86N, FNC=3;
EXRBC:R=P4P1FNO, R2=TC1;
EXRBC:R=P4P1FNI,R2=TC1, RO=0;
```

9.4.1.3 Define MBLT86 Digital Voice Line Routes

```
! Cell A !
EXROI:R=P4P1AKO & P4P1AKI, DETY=MBLT86N, FNC=3;
```

```
! Cell B !
EXROI:R=P4P1BDO & P4P1BDI, DETY=MBLT86N, FNC=3;

! Cell C !
EXROI:R=P4P1CDO & P4P1CDI, DETY=MBLT86N, FNC=3;

! Cell D !
EXROI:R=P4P1DDO & P4P1DDI, DETY=MBLT86N, FNC=3;

! Cell E !
EXROI:R=P4P1EDO & P4P1EDI, DETY=MBLT86N, FNC=3;

! Cell F !
! No Digital Voice in Cell F !
```

9.4.1.4 Define Mobile Voice Channel Routes

```
! Cell A !
EXROI:R=P4P1ACO & P4P1ACI, DETY=MRCS, FNC=3;

! Cell B !
EXROI:R=P4P1BCO & P4P1BCI, DETY=MRCS, FNC=3;

! Cell C !
EXROI:R=P4P1CCO & P4P1CCI, DETY=MRCS, FNC=3;

! Cell D !
```

```
EXROI:R=P4P1DCO & P4P1DCI, DETY=MRCS, FNC=3;

! Cell E !
EXROI:R=P4P1ECO & P4P1ECI, DETY=MRCS, FNC=3;

! Cell F !
EXROI:R=P4P1FCO & P4P1FCI, DETY=MRCS, FNC=3;
```

9.4.1.5 Define MBTRAC/MBTRC Routes (If not pooled)

```
! Cell A !
EXROI:R=P4P1AMO & P4P1AMI, DETY=MBTRAC, FNC=1;
```

or

```
EXROI:R=P4P1AMO & P4P1AMI, DETY=MBTRC, FNC=1;
EXRBC:R=P4P1AMI, RO=0;

! Cell B !
EXROI:R=P4P1BMO & P4P1BMI, DETY=MBTRAC, FNC=1;
```

or

```
EXROI:R=P4P1BMO & P4P1BMI, DETY=MBTRC, FNC=1;
EXRBC:R=P4P1BMI, RO=0;

! Cell C !
EXROI:R=P4P1CMO & P4P1CMI, DETY=MBTRAC, FNC=1;
```

or

```
EXROI:R=P4P1CMO & P4P1CMI, DETY=MBTRC, FNC=1;
EXRBC:R=P4P1CMI, RO=0;
```

```
! Cell D !
EXROI:R=P4P1DMO & P4P1DMI, DETY=MBTRAC, FNC=1;
```

or

```
EXROI:R=P4P1DMO & P4P1DMI, DETY=MBTRC, FNC=1;
EXRBC:R=P4P1DMI, RO=0;

! Cell E !
EXROI:R=P4P1EMO & P4P1EMI, DETY=MBTRAC, FNC=1;
```

or

```
EXROI:R=P4P1EMO & P4P1EMI, DETY=MBTRC, FNC=1;
EXRBC:R=P4P1EMI,RO=0;

! Cell F !
! No Digital Voice in Cell F !
```

9.4.1.6 Define MBTRC Routes (Pooled)

```
EXROI:R=TBPOOLO & TBPOOLI, DETY=MBTRAC, FNC=1;
```

9.4.1.7 Attach Devices to Signal Channel Routes "CLC"

```
EXDRI:R=P4P1SO & P4P1SI, DEV=MBLT86N-1256;
```

9.4.1.8 Attach Devices to Analog Voice Line Routes

```
! Cell A !
EXDRI:R=P4P1ANO & P4P1ANI, DEV=MBLT86N-1249;

! Cell B !
```

```
EXDRI:R=P4P1BNO & P4P1BNI, DEV=MBLT86N-1252;


! Cell C !

! No Analog Voice in Cell C !


! Cell D !

EXDRI:R=P4P1DNO & P4P1DNI, DEV=MBLT86N-1259;


! Cell E !

! No Analog Voice in Cell E !


! Cell F !

EXDRI:R=P4P1FNO & P4P1FNI, DEV=MBLT86N-1265;
```

9.4.1.9 Attach Devices to Digital Voice Line Routes

```
! Cell A !

EXDRI:R=P4P1AKO & P4P1AKI, DEV=MBLT86N-1248;


! Cell B !

EXDRI:R=P4P1BKO & P4P1BKI, DEV=MBLT86N-1251;


! Cell C !

EXDRI:R=P4P1CKO & P4P1CKI,
DEV=MBLT86N-1254&-1255&-1257;


! Cell D !
```

```
EXDRI:R=P4P1DKO & P4P1DKI, DEV=MBLT86N-1258;


! Cell E !

EXDRI:R=P4P1EKO & P4P1EKI, DEV=MBLT86N-1261&&-1263;


! Cell F !

! No Digital Voice in Cell F !
```

9.4.1.10 Attach Devices to MBTRAC/MBTRC Routes "Uncoded MBTRAC/MBTRC"

```
! Cell A !

EXDRI:R=P4P1AM0 & P4P1AMI, DEV=MBTRAC -258&-259;
```

or

```
EXDRI:R=P4P1AM0 & P4P1AMI, DEV=MBTRC -258&-259;


! Cell B !

EXDRI:R=P4P1BMO & P4P1BMI, DEV=MBTRAC-270&-271;
```

or

```
EXDRI:R=P4P1BMO & P4P1BMI, DEV=MBTRC-270&-271;


! Cell C !

EXDRI:R=P4P1CMO & P4P1CMI,
DEV=MBTRAC-282&-283&-285&&-287&-289&&-291;
```

or

```
EXDRI:R=P4P1CMO & P4P1CMI,
DEV=MBTRC-282&-283&-285&&-287&-289&&-291;


! Cell D !
```

```
EXDRI:R=P4P1DMO & P4P1DMI, DEV=MBTRAC-294&-295;
```

or

```
EXDRI:R=P4P1DMO & P4P1DMI, DEV=MBTRC-294&-295;


! Cell E !

EXDRI:R=P4P1EMO & P4P1EMI,
DEV=MBTRAC-306&-307&-309&&-311&-313&&-315;
```

or

```
EXDRI:R=P4P1EMO & P4P1EMI,
DEV=MBTRC-306&-307&-309&&-311&-313&&-315;


! Cell F !

! No Digital Voice in Cell F !
```

9.4.2 Configuration of Cell and EMG

9.4.2.1 Define New Cell in the System

```
MTCEI:CELL=P4P1A, R=P4P1ACO & P4P1ACI,HBAND=800;

MTCEI:CELL=P4P1B, R=P4P1BCO & P4P1BCI,HBAND=800;

MTCEI:CELL=P4P1C, R=P4P1CCO & P4P1CCI;

MTCEI:CELL=P4P1D, R=P4P1DCO & P4P1DCI;

MTCEI:CELL=P4P1E, R=P4P1ECO & P4P1ECI;

MTCEI:CELL=P4P1F, R=P4P1FCO & P4P1FCI;
```

9.4.2.2 Define the New Cell SID

```
MTSIC:CELL=P4P1A, SID=157;

MTSIC:CELL=P4P1B, SID=157;

MTSIC:CELL=P4P1C, SID=157;
```

```
MTSIC:CELL=P4P1D, SID=157;

MTSIC:CELL=P4P1E, SID=157;

MTSIC:CELL=P4P1F, SID=157;
```

9.4.2.3 Define Analog Control Channel Data

```
! Cell A !

! No Analog Control Channel in Cell A !


! Cell B !

! No Analog Control Channel in Cell B !


! Cell C !

! No Analog Control Channel in Cell C !


! Cell D !

! No Analog Control Channel in Cell D !


! Cell E !

! No Analog Control Channel in Cell E !


! Cell F !

MTADC:CELL=P4P1F, PLC=1, SSACC=10, SSREG=10,
RESCAN=0;

MTADC:CELL=P4P1F, SSDIL=10, SSDIH=30;
```

9.4.2.4 Define Digital Control Channel Data

```
! Cell A !
```

```
MTDDC:CELL=P4P1A, BURST=NORMAL, HYREG=3, PLC=3,
SSACC=14, SSREG=14;

MTDDC:CELL=P4P1A, SSDIL=10, SSDIH=30, SSSEL=30;



! Cell B !

MTDDC:CELL=P4P1B, BURST=NORMAL, HYREG=3, PLC=3,
SSACC=14, SSREG=14;

MTDDC:CELL=P4P1B, SSDIL=10, SSDIH=30, SSSEL=30;



! Cell C !

MTDDC:CELL=P4P1C, BURST=NORMAL, HYREG=3, PLC=3,
SSACC=14, SSREG=14;

MTDDC:CELL=P4P1C, SSDIL=10, SSDIH=30, SSSEL=30;



! Cell D !

MTDDC:CELL=P4P1D, BURST=NORMAL, HYREG=3, PLC=3,
SSACC=14, SSREG=14;

MTDDC:CELL=P4P1D, SSDIL=10, SSDIH=30, SSSEL=30;



! Cell E !

MTDDC:CELL=P4P1E, BURST=NORMAL, HYREG=3, PLC=3,
SSACC=14, SSREG=14;

MTDDC:CELL=P4P1E, SSDIL=10, SSDIH=30, SSSEL=30;



! Cell F !

! No Digital Control Channel in Cell F !
```

9.4.2.5 Block EMs

```
! MAY BE NECESSARY IF EM HAS BEEN DEBLOCKED FOR
TESTING !

BLEMI:RP=134, EM=1;
```

9.4.2.6 Block RPs

```
! MAY BE NECESSARY IF RP HAS BEEN DEBLOCKED FOR
TESTING !

BLRPI:RP=134;
```

9.4.2.7 Bring MBLT86 CLC Devices into Service

```
EXDAI:DEV=MBLT86-1256;
```

9.4.2.8 Insert Control Signaling Link

```
EXCLI:DEV=MBLT86-8, EQM=CLC-14;
```

or if STC-G is used

```
EXCPI:EMG=00AA, DEVA=MBLT86N-08;
```

9.4.2.9 Allocate STC-G as an Alternative Method for CLCs

This procedure is performed during the MSC integration. Refer to Step 18 on page 5-25 for the STC-G allocation activity.

9.4.2.10 Change the Digital Path Initial Data Parameters

```
DTIDC:DIP=52MTS3, MULTFS=01, MODE=1;
```

9.4.2.11 Define Exchange Data for EMG

```
EXEGI:EMG=P4P1, RPA=134, STRTYPE=STR2C;
```

9.4.2.12 Define EMs and Processor Control

```
EXEPI:EMG=P4P1, EM=0, CONTROL=SINGLE, TYPE=EMRP3;

EXEPI:EMG=P4P1, EM=1, TYPE=EMRPD1;

EXEPI:EMG=P4P1, EM=2, TYPE=EMRPD1;

EXEPI:EMG=P4P1, EM=3, TYPE=EMRPD1;

EXEPI:EMG=P4P1, EM=4, TYPE=EMRPD1;

EXEPI:EMG=P4P1, EM=5, TYPE=EMRPD1;

EXEPI:EMG=P4P1, EM=6, TYPE=EMRPD1;

EXEPI:EMG=P4P1, EM=7, TYPE=EMRPD1;

EXEPI:EMG=P4P1, EM=8, TYPE=EMRPD1;
```

9.4.3 Assign Software Units to EMs

9.4.3.1 Check Current Switch Printout for Correct Software Revisions

```
LAEIP:SUNAME=ALL;
```

9.4.3.2 Install Software Unit to EMs

Obtain a printout from the switch to determine the required software units.

```
EXEUI:EMG=P4P1, EM=0, SUID="1000/CAA 117 081/1K
R3A02"; !REPER!

EXEUI:EMG=P4P1, EM=0, SUID="1400/CAA 117 054/1I
R2A01"; !EMGFDR!

EXEUI:EMG=P4P1, EM=0, SUID="2/CAA 117 067/1C
R1A01"; !TEETR!

EXEUI:EMG=P4P1, EM=0, SUID="1887/CAA 117 2404/540M
R2A01"; !RICSR!

EXEUI:EMG=P4P1, EM=0, SUID="1885/CAA 117 2405/540M
R2A01"; !RITSR!
```

```
EXEUI:EMG=P4P1, EM=0, SUID="1885/CAA 117 2403/525J
R1A03"; !RILTR!

EXEUI:EMG=P4P1, EM=8, SUID="9000/CAA 140 215/1K
R2B06"; !TWR!

EXEUI:EMG=P4P1, EM=1&&8, SUID="9000/CAA 140 027
R3A02"; !ESEXR!

EXEUI:EMG=P4P1, EM=1&&8, SUID="9000/CAA 140 018
R2A01"; !EMGFDR!

EXEUI:EMG=P4P1, EM=1&&8, SUID="9000/CAA 140
206/842B R1L02"; !MBTRXR!
```

9.4.3.3 Define EMG Equipment

```
EXEEI:EMG=P4P1, EM=0, EQM=RICS;

EXEEI:EMG=P4P1, EM=0, EQM=RITS;

EXEEI:EMG=P4P1, EM=0, EQM=RILT-448&&-463;


EXEEI:EMG=P4P1, EM=1, EQM=MBTRX-14336&&-14367;
!MBCEQ 3584 && 3591 !


EXEEI:EMG=P4P1, EM=2, EQM=MBTRX-14368&&-14399;
!MBCEQ 3592 && 3599 !


EXEEI:EMG=P4P1, EM=3, EQM=MBTRX-14400&&-14431;
!MBCEQ 3600 && 3607 !


EXEEI:EMG=P4P1, EM=4, EQM=MBTRX-14432&&-14463;
!MBCEQ 3608 && 3615 !


EXEEI:EMG=P4P1, EM=5, EQM=MBTRX-14464&&-14495;
!MBCEQ 3616 && 3623 !
```

```
EXEEI:EMG=P4P1, EM=6, EQM=MBTRX-14496&&-14527;
!MBCEQ 3624 && 3631 !


EXEEI:EMG=P4P1, EM=7, EQM=MBTRX-14528&&-14559;
!MBCEQ 3632 && 3639 !


EXEEI:EMG=P4P1, EM=8, EQM=TW-56;

EXEEI:EMG=P4P1, EM=8, EQM=MBTRX-14560&&-14591;
!MBCEQ 3640 && 3647 !
```

9.4.3.4 Insert Typewriter Terminal (TW) Equipment

```
IOIOI:IO=TW-56, DET;

IOFOC:IO=TW-56, FORMFEED=NO;
```

9.4.3.5 Define Equipment Positions (Optional)

```
! CRI !

EXPOI:EMG=E001, EM=0, POS=EMG-P4P1&CRI-A
&CRI-A&POSITION-04;

EXPOI:EMG=E001, EM=1,
POS=EMG-P4P1&CRI-A&POSITION-07;

EXPOI:EMG=E001, EM=2,
POS=EMG-P4P1&CRI-A&POSITION-08;

EXPOI:EMG=E001, EM=3,
POS=EMG-P4P1&CRI-A&POSITION-09;

EXPOI:EMG=E001, EM=4,
POS=EMG-P4P1&CRI-A&POSITION-10;

EXPOI:EMG=E001, EM=5,
POS=EMG-P4P1&CRI-A&POSITION-11;

EXPOI:EMG=E001, EM=6,
POS=EMG-P4P1&CRI-A&POSITION-12;
```

```
EXPOI:EMG=E001, EM=7,
POS=EMG-P4P1&CRI-A&POSITION-13;

EXPOI:EMG=E001, EM=8,
POS=EMG-P4P1&CRI-A&POSITION-14;



! RH 1 !

EXPOI:DEV=MBTRX-3484, POS=EMG-P4P1&RH-1&POSITION-1;

EXPOI:DEV=MBTRX-3485, POS=EMG-P4P1&RH-1&POSITION-2;

EXPOI:DEV=MBTRX-3486, POS=EMG-P4P1&RH-1&POSITION-3;

EXPOI:DEV=MBTRX-3487, POS=EMG-P4P1&RH-1&POSITION-4;

! RH 2 !

EXPOI:DEV=MBTRX-3592, POS=EMG-P4P1&RH-2&POSITION-1;

EXPOI:DEV=MBTRX-3593, POS=EMG-P4P1&RH-2&POSITION-2;

EXPOI:DEV=MBTRX-3594, POS=EMG-P4P1&RH-2&POSITION-3;

EXPOI:DEV=MBTRX-3595, POS=EMG-P4P1&RH-2&POSITION-4;

! RH 3 !

EXPOI:DEV=MBTRX-3600, POS=EMG-P4P1&RH-3&POSITION-1;

EXPOI:DEV=MBTRX-3601, POS=EMG-P4P1&RH-3&POSITION-2;

EXPOI:DEV=MBTRX-3602, POS=EMG-P4P1&RH-3&POSITION-3;

EXPOI:DEV=MBTRX-3603, POS=EMG-P4P1&RH-3&POSITION-4;

! RH 4 !

EXPOI:DEV=MBTRX-3608, POS=EMG-P4P1&RH-4&POSITION-1;

EXPOI:DEV=MBTRX-3609, POS=EMG-P4P1&RH-4&POSITION-2;

EXPOI:DEV=MBTRX-3610, POS=EMG-P4P1&RH-4&POSITION-3;

EXPOI:DEV=MBTRX-3611, POS=EMG-P4P1&RH-4&POSITION-4;

! RH 5 !
```

```
EXPOI:DEV=MBTRX-3616, POS=EMG-P4P1&RH-5&POSITION-1;
EXPOI:DEV=MBTRX-3617, POS=EMG-P4P1&RH-5&POSITION-2;
EXPOI:DEV=MBTRX-3618, POS=EMG-P4P1&RH-5&POSITION-3;
EXPOI:DEV=MBTRX-3619, POS=EMG-P4P1&RH-5&POSITION-4;
! RH 6 !
EXPOI:DEV=MBTRX-3624, POS=EMG-P4P1&RH-6&POSITION-1;
EXPOI:DEV=MBTRX-3625, POS=EMG-P4P1&RH-6&POSITION-2;
EXPOI:DEV=MBTRX-3626, POS=EMG-P4P1&RH-6&POSITION-3;
EXPOI:DEV=MBTRX-3627, POS=EMG-P4P1&RH-6&POSITION-4;
```

9.4.3.6 Define Remote Interface Equipment Types

```
! 1ST DIGITAL LINK FROM MSC !
RIETI:DEV=RILT-448, EQMTYPE=ETB;
RIETI:DEV=RILT-450, EQMTYPE=EMRPS;
RIETI:DEV=RILT-451, EQMTYPE=EMRPS;
RIETI:DEV=RILT-452, EQMTYPE=EMRPS;
RIETI:DEV=RILT-453, EQMTYPE=EMRPS;
RIETI:DEV=RILT-454, EQMTYPE=EMRPS;
RIETI:DEV=RILT-455, EQMTYPE=EMRPS;
RIETI:DEV=RILT-456, EQMTYPE=EMRPS;
RIETI:DEV=RILT-457, EQMTYPE=EMRPS;
RIETI:DEV=RILT-461, EQMTYPE=RTT32;
RIETI:DEV=RILT-462, EQMTYPE=RTT32;
RIETI:DEV=RILT-463, EQMTYPE=RTT32;
```

9.4.3.7 Define the Reverse Digital Path (DIP)

```
DTDII:DIP=R448, DEV=RILT-448;

DTIDC:DIP=R448, MULTFS=01, LC=1, FRS=1,MODE=1; !
CLC ON DIP !
```

9.4.3.8 Change Quality Supervision for DP

```
! BIT FAULT FREQUENCY !

DTQSC:DIP=R448, BFF, BFFL1=100, ACL1=O1, BFFL2=800,
ACL2=A2;


! SLIP FREQUENCY !

DTQSC:DIP=R448, SF, SFL=5, ACL=O1, TI=24;


! DISTURBANCE FREQUENCY !

DTQSC:DIP=R448, DF, DFL=5000, ACL=O1, TI=24;
```

9.4.3.9 Initiate Quality Supervision for DP

```
! BIT FAULT FREQUENCY !

DTQSI:DIP=R448, BFF, LL, LH;


! SLIP FREQUENCY !

DTQSI:DIP=R448, SF;


! DISTURBANCE FREQUENCY !

DTQSI:DIP=R448, DF;
```

9.4.3.10 Change Fault Supervision for DP

```
DTFSC:DIP=R448, FAULT=2&&4&8, ACL=A2;
```

9.4.3.11 Initiate Fault Supervision for DP

```
DTFSI:DIP=R448, FAULT=2&&4&8;
```

9.4.3.12 Define Analog Voice Channel Data

```
! Cell A !

MTAVC:CELL=P4P1A, PLVM=1, PLV=1, SSD=46, SSI=38,
SSH=43, SSV=12;

MTAVC:CELL=P4P1A, SSB=22, SNH=33, SNR=10, SUH=6,
CIH=19, SSMIN=5;



! Cell B !

MTAVC:CELL=P4P1B, PLVM=1, PLV=1, SSD=46, SSI=38,
SSH=43, SSV=12;

MTAVC:CELL=P4P1B, SSB=22, SNH=33, SNR=10, SUH=6,
CIH=19, SSMIN=5;



! Cell C !

! No Analog Voice in Cell C !



! Cell D !

MTAVC:CELL=P4P1D, PLVM=1, PLV=1, SSD=46, SSI=38,
SSH=43, SSV=12;

MTAVC:CELL=P4P1D, SSB=22, SNH=33, SNR=10, SUH=6,
CIH=19, SSMIN=5;



! Cell E !

! No Analog Voice in Cell E !



! Cell F !
```

```
MTAVC:CELL=P4P1F, PLVM=1, PLV=1, SSD=46, SSI=38,
SSH=43, SSV=12;

MTAVC:CELL=P4P1F, SSB=22, SNH=33, SNR=10, SUH=6,
CIH=19, SSMIN=5;
```

9.4.3.13 Define Digital Voice Channel Data

```
! Cell A !

MTDVC:CELL=P4P1A, PLVM=1, PLV=1, SSD=46, SSI=38,
SSB=22, SSMIN=5;



! Cell B !

MTDVC:CELL=P4P1B, PLVM=1, PLV=1, SSD=46, SSI=38,
SSB=22, SSMIN=5;



! Cell C !

MTDVC:CELL=P4P1C, PLVM=1, PLV=1, SSD=46, SSI=38,
SSB=22, SSMIN=5;



! Cell D !

MTDVC:CELL=P4P1D, PLVM=1, PLV=1, SSD=46, SSI=38,
SSB=22, SSMIN=5;



! Cell E !

MTDVC:CELL=P4P1E, PLVM=1, PLV=1, SSD=46, SSI=38,
SSB=22, SSMIN=5;



! Cell F !

! No Digital Voice in Cell F !
```

9.4.3.14 Define Digital Locating Data

```
MTDLC: CELL=C002A, MCHNR=330, PSMB=38, PSVB=38,
REALTIME=0;
```

9.4.3.15 Connect Channel Devices to Cell

```
! Cell A !

MTCCI:CELL=P4P1A, DEV=MDCC-224;

MTCCI:CELL=P4P1A, DEV=MVC-2688;

MTCCI:CELL=P4P1A, DEV=MDVC-2688&-2689;

MTCCI:CELL=P4P1A, DEV=MLOC-224;

MTCCI:CELL=P4P1A, DEV=MVER-224;


! Cell B !

MTCCI:CELL=P4P1B, DEV=MDCC-225;

MTCCI:CELL=P4P1B, DEV=MVC-2689;

MTCCI:CELL=P4P1B, DEV=MDVC-2696&-2697;

MTCCI:CELL=P4P1B, DEV=MLOC-225;

MTCCI:CELL=P4P1B, DEV=MVER-225;


! Cell C !

MTCCI:CELL=P4P1C, DEV=MDCC-226;

MTCCI:CELL=P4P1C, DEV=MDVC-2704&&-2711;

MTCCI:CELL=P4P1C, DEV=MVER-226;


! Cell D !

MTCCI:CELL=P4P1D, DEV=MDCC-227;
```

```
MTCCI:CELL=P4P1D, DEV=MVC-2690;

MTCCI:CELL=P4P1D, DEV=MDVC-2712&-2713;

MTCCI:CELL=P4P1D, DEV=MLOC-227;

MTCCI:CELL=P4P1D, DEV=MVER-227;


! Cell E !

MTCCI:CELL=P4P1E, DEV=MDCC-228;

MTCCI:CELL=P4P1E, DEV=MDVC-2720&&-2727;

MTCCI:CELL=P4P1E, DEV=MVER-228;


! Cell F !

MTCCI:CELL=P4P1F, DEV=MCC-229;

MTCCI:CELL=P4P1F, DEV=MLOC-229;

MTCCI:CELL=P4P1F, DEV=MVC-2691;
```

9.4.4 Configuration of Channel Equipment

9.4.4.1 Assign Speech Devices to TRXs ANA/DIG

```
! Cell A !

MBLTI:CEQ=MBCEQ-3585, MODE=ANA, DEV=MBLT86-1249;

MBLTI:CEQ=MBCEQ-3584, MODE=DIG, UNIT=1&2,
DEV=MBTRAC-258&-259;
```

or

```
MBLTI:CEQ=MBCEQ-3584, MODE=DIG, UNIT=1&2,
DEV=MBTRC-258&-259;


! Cell B !
```

```
MBLTI:CEQ=MBCEQ-3593, MODE=ANA, DEV=MBLT86-1252;

MBLTI:CEQ=MBCEQ-3592, MODE=DIG, UNIT=1&2,
DEV=MBTRAC-270&-271;
```

or

```
MBLTI:CEQ=MBCEQ-3592, MODE=DIG, UNIT=1&2,
DEV=MBTRC-270&-271;


MBLTI:CEQ=MBCEQ-776, MODE=POOL,DEV=MBLT86-144;

! Cell C !

MBLTI:CEQ=MBCEQ-3600, MODE=DIG, UNIT=1&2,
DEV=MBTRAC-282&-283;
```

or

```
MBLTI:CEQ=MBCEQ-3600, MODE=DIG, UNIT=1&2,
DEV=MBTRC-282&-283;

MBLTI:CEQ=MBCEQ-3601, MODE=DIG, UNIT=0&&2,
DEV=MBTRAC-285&&-287;
```

or

```
MBLTI:CEQ=MBCEQ-3601, MODE=DIG, UNIT=0&&2,
DEV=MBTRC-285&&-287;

MBLTI:CEQ=MBCEQ-3602, MODE=DIG, UNIT=0&&2,
DEV=MBTRAC-289&&-291;
```

or

```
MBLTI:CEQ=MBCEQ-3602, MODE=DIG, UNIT=0&&2,
DEV=MBTRC-289&&-291;


! Cell D !

MBLTI:CEQ=MBCEQ-3609, MODE=ANA, DEV=MBLT86-1259;

MBLTI:CEQ=MBCEQ-3608, MODE=DIG, UNIT=1&2,
DEV=MBTRAC-294&-295;
```

or

```
MBLTI:CEQ=MBCEQ-3608, MODE=DIG, UNIT=1&2,
DEV=MBTRC-294&-295;
```

```
! Cell E !
```

```
MBLTI:CEQ=MBCEQ-3616, MODE=DIG, UNIT=1&2,
DEV=MBTRAC-306&-307;
```

or

```
MBLTI:CEQ=MBCEQ-3616, MODE=DIG, UNIT=1&2,
DEV=MBTRC-306&-307;

MBLTI:CEQ=MBCEQ-3617, MODE=DIG, UNIT=0&&2,
DEV=MBTRAC-309&&-311;
```

or

```
MBLTI:CEQ=MBCEQ-3617, MODE=DIG, UNIT=0&&2,
DEV=MBTRC-309&&-311;

MBLTI:CEQ=MBCEQ-3618, MODE=DIG, UNIT=0&&2,
DEV=MBTRAC-313&&-315;
```

or

```
MBLTI:CEQ=MBCEQ-3618, MODE=DIG, UNIT=0&&2,
DEV=MBTRC-313&&-315;
```

```
! Cell F !
```

```
MBLTI:CEQ=MBCEQ-3625, MODE=ANA, DEV=MBLT86-1265;
```

9.4.4.2 Set the Channel Equipment Capability

```
! Cell A !
```

```
DBTSC:TAB=MBCEQS,CEQIND=2,HBAND=1900,MAXPOW=448,
TXATT=36,RXGAIN=52;
```

```
MBECC:CEQ=MBCEQ-3584, MAXPOWER=200;
```

```
MBECC:CEQ=MBCEQ-3584, TRCAP=BOTH;
MBECC:CEQ=MBCEQ-3585, MAXPOWER=200;
MBECC:CEQ=MBCEQ-3586, TRCAP=RX;
MBECC:CEQ=MBCEQ-3587, TRCAP=RX;

! Cell B !
MBECC:CEQ=MBCEQ-3592,MAXPOWER=200;
MBECC:CEQ=MBCEQ-3593, MAXPOWER=200;
MBECC:CEQ=MBCEQ-3594, TRCAP=RX;
MBECC:CEQ=MBCEQ-3595, TRCAP=RX;

! Cell C !
MBECC:CEQ=MBCEQ-3600, MAXPOWER=200;
MBECC:CEQ=MBCEQ-3601, MAXPOWER=200;
MBECC:CEQ=MBCEQ-3602, MAXPOWER=200;
MBECC:CEQ=MBCEQ-3603, TRCAP=RX;

! Cell D !
MBECC:CEQ=MBCEQ-3608, MAXPOWER=200;
MBECC:CEQ=MBCEQ-3609, MAXPOWER=200;
MBECC:CEQ=MBCEQ-3610, TRCAP=RX;
MBECC:CEQ=MBCEQ-3611, TRCAP=RX;

! Cell E !
MBECC:CEQ=MBCEQ-3616, MAXPOWER=200;
```

```
MBECC:CEQ=MBCEQ-3617,MAXPOWER=200;

MBECC:CEQ=MBCEQ-3618, MAXPOWER=200;

MBECC:CEQ=MBCEQ-3619, TRCAP=RX;


! Cell F !

MBECC:CEQ=MBCEQ-3624, TRCAP=BOTH, MAXPOWER=200,
TXATT=0, RXGAIN=0;

MBECC:CEQ=MBCEQ-3625, TRCAP=BOTH, MAXPOWER=200,
TXATT=0, RXGAIN=0;

MBECC:CEQ=MBCEQ-3626, TRCAP=RX;
```

9.4.4.3 Set the Device's Channel Number and Output Power

```
! Cell A !

MTCTC:DEV=MDCC-224, CHNR=991, POWER=200, FIT=EF;

MTCTC:DEV=MVC-2688, CHNR=73, POWER=200, FIT=EF;

MTCTC:DEV=MDVC-2688, CHNR=991, POWER=200, FIT=EF;

MTCTC:DEV=MDVC-2689, CHNR=991, POWER=200, FIT=EF;


! Cell B !

MTCTC:DEV=MDCC-225, CHNR=1015, POWER=200, FIT=EF;

MTCTC:DEV=MVC-2689, CHNR=94, POWER=200, FIT=EF;

MTCTC:DEV=MDVC-2696, CHNR=1015, POWER=200, FIT=EF;

MTCTC:DEV=MDVC-2697, CHNR=1015, POWER=200, FIT=EF;


! Cell C !

MTCTC:DEV=MDCC-226, CHNR=991, POWER=200, FIT=EF;

MTCTC:DEV=MDVC-2704, CHNR=991, POWER=200, FIT=EF;
```

```
MTCTC:DEV=MDVC-2705, CHNR=991, POWER=200, FIT=EF;
MTCTC:DEV=MDVC-2706, CHNR=1, POWER=200, FIT=EF;
MTCTC:DEV=MDVC-2707, CHNR=1, POWER=200, FIT=EF;
MTCTC:DEV=MDVC-2708, CHNR=1, POWER=200, FIT=EF;
MTCTC:DEV=MDVC-2709, CHNR=670, POWER=200, FIT=EF;
MTCTC:DEV=MDVC-2710, CHNR=670, POWER=200, FIT=EF;
MTCTC:DEV=MDVC-2711, CHNR=670, POWER=200, FIT=EF;

! Cell D !
MTCTC:DEV=MDCC-227, CHNR=1022, POWER=110, FIT=EF;
MTCTC:DEV=MVC-2690, CHNR=73, POWER=110, FIT=EF;
MTCTC:DEV=MDVC-2712, CHNR=1022, POWER=110, FIT=EF;
MTCTC:DEV=MDVC-2713, CHNR=1022, POWER=110, FIT=EF;

! Cell E !
MTCTC:DEV=MDCC-228, CHNR=691, POWER=200, FIT=EF;
MTCTC:DEV=MDVC-2720, CHNR=691, POWER=200, FIT=EF;
MTCTC:DEV=MDVC-2721, CHNR=691, POWER=200, FIT=EF;
MTCTC:DEV=MDVC-2722, CHNR=1015, POWER=200, FIT=EF;
MTCTC:DEV=MDVC-2723, CHNR=1015, POWER=200, FIT=EF;
MTCTC:DEV=MDVC-2724, CHNR=1015, POWER=200, FIT=EF;
MTCTC:DEV=MDVC-2725, CHNR=1000, POWER=200, FIT=EF;
MTCTC:DEV=MDVC-2726, CHNR=1000, POWER=200, FIT=EF;
MTCTC:DEV=MDVC-2727, CHNR=1000, POWER=200, FIT=EF;
```

```
! Cell F !
MTCTC:DEV=MCC-229, CHNR=94, POWER=200, FIT=EF;
MTCTC:DEV=MVC-2691, CHNR=115, POWER=200, FIT=EF;
```

9.4.4.4 Assign Color Codes to Voice and Control Devices

```
!Optional Voice Channel Handling!
MTCGC: DEV=MDVC-2720, VCG=DIG21;
! Cell A !
MTCLC:DEV=MVC-2688, COL=A-0;
MTCLC:CELL=P4P1A, COL=DV-1;

! Cell B !
MTCLC:DEV=MVC-2689, COL=A-0;
MTCLC:CELL=P4P1B, COL=DV-1;

! Cell C !
MTCLC:CELL=P4P1C, COL=DV-1;

! Cell D !
MTCLC:DEV=MVC-2690, COL=A-0;
MTCLC:CELL=P4P1D, COL=DV-1;

! Cell E !
MTCLC:CELL=P4P1E, COL=DV-1;

! Cell F !
```

```
MTCLC:DEV=MCC-229, COL=D-0;

MTCLC:DEV=MVC-2691, COL=A-0;
```

9.4.4.5 Link Channel Equipment with Channel Function Units

Note: For additional information about the speech and control channels, see Section 5.9.1.3 on page 5-54.

```
! Cell A !

MBEQI:CEQ=MBCEQ-3584, DEV=MDCC-224, UNIT=0, RATE=1;

MBEQI:CEQ=MBCEQ-3584, DEV=MDVC-2688&-2689,
UNIT=1&2, RATE=1;

MBEQI:CEQ=MBCEQ-3585, DEV=MVC-2688;

MBEQI:CEQ=MBCEQ-3586, DEV=MLOC-224;

MBEQI:CEQ=MBCEQ-3587, DEV=MVER-224;


! Cell B !

MBEQI:CEQ=MBCEQ-3592, DEV=MDCC-225, UNIT=0, RATE=1;

MBEQI:CEQ=MBCEQ-3592, DEV=MDVC-2696&-2697,
UNIT=1&2, RATE=1;

MBEQI:CEQ=MBCEQ-3593, DEV=MVC-2689;

MBEQI:CEQ=MBCEQ-3594, DEV=MLOC-225;

MBEQI:CEQ=MBCEQ-3595, DEV=MVER-225;

! Cell C !

MBEQI:CEQ=MBCEQ-3600, DEV=MDCC-226, UNIT=0, RATE=1;

MBEQI:CEQ=MBCEQ-3600, DEV=MDVC-2704&-2705,
UNIT=1&2, RATE=1;

MBEQI:CEQ=MBCEQ-3601, DEV=MDVC-2706&&-2708,
UNIT=0&&2, RATE=1;

MBEQI:CEQ=MBCEQ-3602, DEV=MDVC-2709&&-2711,
UNIT=0&&2, RATE=1;
```

```
MBEQI:CEQ=MBCEQ-3603, DEV=MVER-226;


! Cell D !

MBEQI:CEQ=MBCEQ-3608, DEV=MDCC-227, UNIT=0, RATE=1;

MBEQI:CEQ=MBCEQ-3608, DEV=MDVC-2712&-2713,
UNIT=1&2, RATE=1;

MBEQI:CEQ=MBCEQ-3609, DEV=MVC-2690;

MBEQI:CEQ=MBCEQ-3610, DEV=MLOC-227;

MBEQI:CEQ=MBCEQ-3611, DEV=MVER-227;


! Cell E !

MBEQI:CEQ=MBCEQ-3616, DEV=MDCC-228, UNIT=0, RATE=1;

MBEQI:CEQ=MBCEQ-3616, DEV=MDVC-2720&-2721,
UNIT=1&2, RATE=1;

MBEQI:CEQ=MBCEQ-3617, DEV=MDVC-2722&&-2724,
UNIT=0&&2, RATE=1;

MBEQI:CEQ=MBCEQ-3618, DEV=MDVC-2725&&-2727,
UNIT=0&&2, RATE=1;

MBEQI:CEQ=MBCEQ-3619, DEV=MVER-228;


! Cell F !

MBEQI:CEQ=MBCEQ-3624, DEV=MCC-229;

MBEQI:CEQ=MBCEQ-3625, DEV=MVC-2691;

MBEQI:CEQ=MBCEQ-3626, DEV=MLOC-229;
```

9.4.5 Deblock and Activate DIP, CLC, EMG, and RILTs

9.4.5.1 Deblock STC

```
BLRPE:RP=134;
```

9.4.5.2 Deblock STC EM

```
BLEME:RP=134, EM=1;
```

9.4.5.3 Deblock the Digital Path "DIP"

```
DTBLE:DIP=52MTS3;
```

```
DTSTP:DIP=52MTS3;
```

9.4.5.4 Deblock Control Signaling Link

```
BLCLE:EQM=CLC-14;
```

```
EXCLP:EQM=CLC-14;
```

9.4.5.5 Deblock EMRP EMs

```
BLEEE:EMG=P4P1, EM=0;
```

```
BLEEE:EMG=P4P1, EM=1;
```

```
BLEEE:EMG=P4P1, EM=2;
```

```
BLEEE:EMG=P4P1, EM=3;
```

```
BLEEE:EMG=P4P1, EM=4;
```

```
BLEEE:EMG=P4P1, EM=5;
```

```
BLEEE:EMG=P4P1, EM=6;
```

```
BLEEE:EMG=P4P1, EM=7;
```

```
BLEEE:EMG=P4P1, EM=8;
```

```
EXEPP:EMG=P4P1, EM=ALL;
```

9.4.5.6 Deblock Reverse DIP

```
DTBLE:DIP=R448;

DTSTP:DIP=R448;
```

9.4.5.7 Deblock RILTs and EMRSs

```
RIBLE:DEV=RILT-448; !ETB !

RIBLE:EMG=P4P1, EMRS=0;

RIBLE:DEV=RILT-450; !EMRPS, EM=1!

RIBLE:DEV=RILT-451; !EMRPS, EM=2!

RIBLE:DEV=RILT-452; !EMRPS, EM=3!

RIBLE:DEV=RILT-453; !EMRPS, EM=4!

RIBLE:DEV=RILT-454; !EMRPS, EM=5!

RIBLE:DEV=RILT-455; !EMRPS, EM=6!

RIBLE:DEV=RILT-456; !EMRPS, EM=7!

RIBLE:DEV=RILT-457; !EMRPS, EM=8!

RIBLE:DEV=RILT-461; !RTT!

RIBLE:DEV=RILT-462; !RTT!

RIBLE:DEV=RILT-463; !RTT!

RILSP:EMG=P4P1, EMRS=0;

RISTP:EMG=P4P1, EMRS=0;
```

9.4.6 Semipermanent Connections in RBS Time Switch (TSW)

Note: For additional information about the speech and control channels, see Section 5.9.1.3 on page 5-54.

9.4.6.1 Initiate the Connection of RILTs Through the Remote Selector

```
! RH-1 !
```

```
! (EM-RTT) CONTROL !

RISPI:TSLOT1=RILT-450-00, TSLOT2=RILT-461-00,
NAME=CEQ3584CTRL; !DCCH !

RISPI:TSLOT1=RILT-450-01, TSLOT2=RILT-461-02,
NAME=CEQ3585CTRL; !MVC !

RISPI:TSLOT1=RILT-450-02,

TSLOT2=RILT-461-04, NAME=CEQ3586CTRL; !MLOC !

RISPI:TSLOT1=RILT-450-03, TSLOT2=RILT-461-06,
NAME=CEQ3587CTRL; !MVER !

! (ETB-RTT) SPEECH !
```

Note: The numbering for the speech timeslots on a T1 PCM link starts at 01 and ends with 24 for a total of 24 timeslots. However, only 23 timeslots can be used for speech on the first T1 PCM link because timeslot 09 is used for the control timeslot. The numbering for the speech timeslots on an E1 PCM link starts at 00 and ends with 31 for a total of 32 timeslots. However, only 30 timeslots can be used for speech on the first E1 PCM link because timeslot 00 and 14 are used for the control timeslot. For additional information about the T1 and E1 PCM links, see Section 5.11.1 on page 5-62.

```
RISPI:TSLOT1=RILT-448-01, TSLOT2=RILT-461-01,
NAME=CEQ3584MBLT1248;

RISPI:TSLOT1=RILT-448-02, TSLOT2=RILT-461-03,
NAME=CEQ3585MBLT1249;



! RH-2 !

! (EM-RTT) CONTROL !

RISPI:TSLOT1=RILT-451-00, TSLOT2=RILT-461-08,
NAME=CEQ3592CTRL; !DCCH !

RISPI:TSLOT1=RILT-451-01, TSLOT2=RILT-461-10,
NAME=CEQ3593CTRL; !MVC !

RISPI:TSLOT1=RILT-451-02, TSLOT2=RILT-461-12,
NAME=CEQ3594CTRL; !MLOC !
```

```
RISPI:TSLOT1=RILT-451-03, TSLOT2=RILT-461-14,
NAME=CEQ3595CTRL; !MVER !

! (ETB-RTT) SPEECH !

RISPI:TSLOT1=RILT-448-04, TSLOT2=RILT-461-09,
NAME=CEQ3592MBLT1251;

RISPI:TSLOT1=RILT-448-05, TSLOT2=RILT-461-11,
NAME=CEQ3593MBLT1252;



! RH-3 !

! (EM-RTT) CONTROL !

RISPI:TSLOT1=RILT-452-00, TSLOT2=RILT-461-16,
NAME=CEQ3600CTRL; !DCCH !

RISPI:TSLOT1=RILT-452-01, TSLOT2=RILT-461-18,
NAME=CEQ3601CTRL; !DVC !

RISPI:TSLOT1=RILT-452-02, TSLOT2=RILT-461-20,
NAME=CEQ3602CTRL; !DVC !

RISPI:TSLOT1=RILT-452-03, TSLOT2=RILT-461-22,
NAME=CEQ3603CTRL; !MVER !

! (ETB-RTT) SPEECH !

RISPI:TSLOT1=RILT-448-07, TSLOT2=RILT-461-17,
NAME=CEQ3600MBLT1254;

RISPI:TSLOT1=RILT-448-08, TSLOT2=RILT-461-19,
NAME=CEQ3601MBLT1255;
```

Note: Timeslot 09 was skipped because this timeslot is used as the CLC for the T1 PCM link.

```
RISPI:TSLOT1=RILT-448-10, TSLOT2=RILT-461-21,
NAME=CEQ3602MBLT1257;



! RH-4 !

! (EM-RTT) CONTROL !
```

```
RISPI:TSLOT1=RILT-453-00, TSLOT2=RILT-461-24,
NAME=CEQ3608CTRL; !DCCH !

RISPI:TSLOT1=RILT-453-01, TSLOT2=RILT-461-26,
NAME=CEQ3609CTRL; !MVC !

RISPI:TSLOT1=RILT-453-02, TSLOT2=RILT-461-28,
NAME=CEQ3610CTRL; !MLOC !

RISPI:TSLOT1=RILT-453-03, TSLOT2=RILT-461-30,
NAME=CEQ3611CTRL; !MVER !

! (ETB-RTT) SPEECH !

RISPI:TSLOT1=RILT-448-11, TSLOT2=RILT-461-25,
NAME=CEQ3608MBLT1258;

RISPI:TSLOT1=RILT-448-12, TSLOT2=RILT-461-27,
NAME=CEQ3609MBLT1259;



! RH-5 !

! (EM-RTT) CONTROL !

RISPI:TSLOT1=RILT-454-00, TSLOT2=RILT-462-00,
NAME=CEQ3616CTRL; !DCCH !

RISPI:TSLOT1=RILT-454-01, TSLOT2=RILT-462-02,
NAME=CEQ3617CTRL; !DVC !

RISPI:TSLOT1=RILT-454-02, TSLOT2=RILT-462-04,
NAME=CEQ3618CTRL; !DVC !

RISPI:TSLOT1=RILT-454-03, TSLOT2=RILT-462-06,
NAME=CEQ3619CTRL; !MVER !

! (ETB-RTT) SPEECH !

RISPI:TSLOT1=RILT-448-14, TSLOT2=RILT-462-01,
NAME=CEQ3616MBLT1261;

RISPI:TSLOT1=RILT-448-15, TSLOT2=RILT-462-03,
NAME=CEQ3617MBLT1262;

RISPI:TSLOT1=RILT-448-16, TSLOT2=RILT-462-05,
NAME=CEQ3618MBLT1263;
```

```
! RH-6 !

! (EM-RTT) CONTROL !

RISPI:TSLOT1=RILT-455-00, TSLOT2=RILT-462-08,
NAME=CEQ3624CTRL; !MCC !

RISPI:TSLOT1=RILT-455-01, TSLOT2=RILT-462-10,
NAME=CEQ3625CTRL; !MVC !

RISPI:TSLOT1=RILT-455-02, TSLOT2=RILT-462-12,
NAME=CEQ3626CTRL; !MLOC !

! (ETB-RTT) SPEECH !

RISPI:TSLOT1=RILT-448-17, TSLOT2=RILT-462-09,
NAME=CEQ3624MBLT1264;

RISPI:TSLOT1=RILT-448-18, TSLOT2=RILT-462-11,
NAME=CEQ3625MBLT1265;

! CHECK STATUS OF RILTs AND EMRSs !

RISPP:EMG=P4P1, EMRS=ALL;
```

9.4.7 Bring Base Station Devices into Service

9.4.7.1 Initiate Pre-Post Service for MBLT86 Devices

```
! Cell A !

EXDAI:DEV=MBLT86-1248&-1249;


! Cell B !

EXDAI:DEV=MBLT86-1251&-1252;


! Cell C !

EXDAI:DEV=MBLT86-1254&-1255&-1257;
```

```
! Cell D !

EXDAI:DEV=MBLT86-1258&-1259;


! Cell E !

EXDAI:DEV=MBLT86-1261&&-1263;


! Cell F !

EXDAI:DEV=MBLT86-1264&-1265;
```

9.4.7.2 Bring TRX's into Service

```
! Cell A !

EXDAI:DEV=MBTRX-3584;

EXDAI:DEV=MBTRX-3585;

EXDAI:DEV=MBTRX-3586;

EXDAI:DEV=MBTRX-3587;


! Cell B !

EXDAI:DEV=MBTRX-3592;

EXDAI:DEV=MBTRX-3593;

EXDAI:DEV=MBTRX-3594;

EXDAI:DEV=MBTRX-3595;


! Cell C !

EXDAI:DEV=MBTRX-3600;

EXDAI:DEV=MBTRX-3601;
```

```
EXDAI:DEV=MBTRX-3602;

EXDAI:DEV=MBTRX-3603;


! Cell D !

EXDAI:DEV=MBTRX-3608;

EXDAI:DEV=MBTRX-3609;

EXDAI:DEV=MBTRX-3610;

EXDAI:DEV=MBTRX-3611;


! Cell E !

EXDAI:DEV=MBTRX-3616;

EXDAI:DEV=MBTRX-3617;

EXDAI:DEV=MBTRX-3618;

EXDAI:DEV=MBTRX-3619;


! Cell F !

EXDAI:DEV=MBTRX-3624;

EXDAI:DEV=MBTRX-3625;

EXDAI:DEV=MBTRX-3626;
```

9.4.8 Semipermanent Connections of MBTRAC/MBTRC to MBLT86 Using the Group Switch

9.4.8.1 Connect Coded MBTRAC/MBTRCs to MBLT86s Using the Group Switch (not required for pooled transcoder)

```
! DIP AND MBTRAC/MBTRC EM MUST BE WORKING FOR THIS
COMMAND !

! Cell A !
```

```
EXSCI:DEV1=MBTRAC-256, DEV2=MBLT86N-1248,
NAME=P4P1-CEQ3584-01;
```

or

```
EXSCI:DEV1=MBTRC-256, DEV2=MBLT86N-1248,
NAME=P4P1-CEQ3584-01;
```

```
! Cell B !

EXSCI:DEV1=MBTRAC-268, DEV2=MBLT86N-1251,
NAME=P4P1-CEQ3592-04;
```

or

```
EXSCI:DEV1=MBTRC-268, DEV2=MBLT86N-1251,
NAME=P4P1-CEQ3592-04;
```

```
! Cell C !

EXSCI:DEV1=MBTRAC-280, DEV2=MBLT86N-1254,
NAME=P4P1-CEQ3600-07;
```

or

```
EXSCI:DEV1=MBTRC-280, DEV2=MBLT86N-1254,
NAME=P4P1-CEQ3600-07;

EXSCI:DEV1=MBTRAC-284, DEV2=MBLT86N-1255,
NAME=P4P1-CEQ3601-08;
```

or

```
EXSCI:DEV1=MBTRC-284, DEV2=MBLT86N-1255,
NAME=P4P1-CEQ3601-08;

EXSCI:DEV1=MBTRAC-288, DEV2=MBLT86N-1257,
NAME=P4P1-CEQ3602-10;
```

or

```
EXSCI:DEV1=MBTRC-288, DEV2=MBLT86N-1257,
NAME=P4P1-CEQ3602-10;
```

```
! Cell D !

EXSCI:DEV1=MBTRAC-292, DEV2=MBLT86N-1258,
NAME=P4P1-CEQ3608-11;
```

or

```
EXSCI:DEV1=MBTRC-292, DEV2=MBLT86N-1258,
NAME=P4P1-CEQ3608-11;



! Cell E !

EXSCI:DEV1=MBTRAC-304, DEV2=MBLT86N-1261,
NAME=P4P1-CEQ3616-14;
```

or

```
EXSCI:DEV1=MBTRC-304, DEV2=MBLT86N-1261,
NAME=P4P1-CEQ3616-14;

EXSCI:DEV1=MBTRAC-308, DEV2=MBLT86N-1262,
NAME=P4P1-CEQ3616-15;
```

or

```
EXSCI:DEV1=MBTRC-308, DEV2=MBLT86N-1262,
NAME=P4P1-CEQ3616-15;

EXSCI:DEV1=MBTRAC-312, DEV2=MBLT86N-1263,
NAME=P4P1-CEQ3616-16;
```

or

```
EXSCI:DEV1=MBTRC-312, DEV2=MBLT86N-1263,
NAME=P4P1-CEQ3616-16;



! Cell F !

! No Digital Voice in Cell F !
```

9.4.9 Loading/Self-Testing of RBS Equipment

9.4.9.1 Print TRX Data

```
! Cell A !
MBDPP:DEV=MBTRX-3584;
MBDPP:DEV=MBTRX-3585;
MBDPP:DEV=MBTRX-3586;
MBDPP:DEV=MBTRX-3587;
MBDPL:DEV=MBTRX-3584&&-3587, FILE=RCSUFILE-RU40R6B;

! Cell B !
MBDPP:DEV=MBTRX-3592;
MBDPP:DEV=MBTRX-3593;
MBDPP:DEV=MBTRX-3594;
MBDPP:DEV=MBTRX-3595;
MBDPL:DEV=MBTRX-3592&&-3595, FILE=RCSUFILE-RU40R6B;

! Cell C !
MBDPP:DEV=MBTRX-3600;
MBDPP:DEV=MBTRX-3601;
MBDPP:DEV=MBTRX-3602;
MBDPP:DEV=MBTRX-3603;
MBDPL:DEV=MBTRX-3600&&-3603, FILE=RCSUFILE-RU40R6B;

! Cell D !
MBDPP:DEV=MBTRX-3608;
```

```
MBDPP:DEV=MBTRX-3609;

MBDPP:DEV=MBTRX-3610;

MBDPP:DEV=MBTRX-3611;

MBDPL:DEV=MBTRX-3608&&-3611, FILE=RCSUFILE-RU40R6B;


! Cell E !

MBDPP:DEV=MBTRX-3616;

MBDPP:DEV=MBTRX-3617;

MBDPP:DEV=MBTRX-3618;

MBDPP:DEV=MBTRX-3619;

MBDPL:DEV=MBTRX-3616&&-3619, FILE=RCSUFILE-RU40R6B;


! Cell F !

MBDPP:DEV=MBTRX-3624;

MBDPP:DEV=MBTRX-3625;

MBDPP:DEV=MBTRX-3626;

MBDPL:DEV=MBTRX-3624&&-3626, FILE=RCSUFILE-RU40R6B;
```

9.4.9.2 Bring MBTRAB/MBTRBs into Service if Necessary

```
EXDAI:DEV=MBTRAB-16;
```

or

```
EXDAI:DEV=MBTRB-16;

EXDAI:DEV=MBTRAB-17;
```

or

```
EXDAI:DEV=MBTRB-17;

EXDAI:DEV=MBTRAB-18;
```

or

```
EXDAI:DEV=MBTRB-18;
EXDAI:DEV=MBTRAB-19;
```

or

```
EXDAI:DEV=MBTRB-19;
```

9.4.9.3 Check/Load MBTRAB/MBTRB Devices as Necessary

```
MBDPP:DEV=MBTRAB-16;
MBDPL:DEV=MBTRAB-16, FILE=RCSUFILE-RCSU60;
```

or

```
MBDPP:DEV=MBTRB-16;
MBDPL:DEV=MBTRB-16, FILE=RCSUFILE-RCSU60;

MBDPP:DEV=MBTRAB-17;
MBDPL:DEV=MBTRAB-17, FILE=RCSUFILE-RCSU60;
```

or

```
MBDPP:DEV=MBTRB-17;
MBDPL:DEV=MBTRB-17, FILE=RCSUFILE-RCSU60;

MBDPP:DEV=MBTRAB/MBTRB-18;
MBDPL:DEV=MBTRAB/MBTRB-18, FILE=RCSUFILE-RCSU60;
```

or

```
MBDPP:DEV=MBTRB-18;
MBDPL:DEV=MBTRB-18, FILE=RCSUFILE-RCSU60;

MBDPP:DEV=MBTRAB/MBTRB-19;
```

```
MBDPL:DEV=MBTRAB/MBTRB-19, FILE=RCSUFILE-RCSU60;
```

or

```
MBDPP:DEV=MBTRB-19;
MBDPL:DEV=MBTRB-19, FILE=RCSUFILE-RCSU60;
```

9.4.9.4 Self-Test the TRX Devices

```
! Cell A !
MBSDI:DEV=MBTRX-3584;
MBSDI:DEV=MBTRX-3585;

MBSDI:DEV=MBTRX-3586, TCASE=1;
MBSDI:DEV=MBTRX-3587, TCASE=1;

! Cell B !
MBSDI:DEV=MBTRX-3592;
MBSDI:DEV=MBTRX-3593;

MBSDI:DEV=MBTRX-3594, TCASE=1;
MBSDI:DEV=MBTRX-3595, TCASE=1;

! Cell C !
MBSDI:DEV=MBTRX-3600;
MBSDI:DEV=MBTRX-3601;
MBSDI:DEV=MBTRX-3602;

MBSDI:DEV=MBTRX-3603, TCASE=1;
```

```
! Cell D !
MBSDI:DEV=MBTRX-3608;
MBSDI:DEV=MBTRX-3609;

MBSDI:DEV=MBTRX-3610, TCASE=1;
MBSDI:DEV=MBTRX-3611, TCASE=1;

! Cell E !
MBSDI:DEV=MBTRX-3616;
MBSDI:DEV=MBTRX-3617;
MBSDI:DEV=MBTRX-3618;

MBSDI:DEV=MBTRX-3619, TCASE=1;

! Cell F !
MBSDI:DEV=MBTRX-3624;
MBSDI:DEV=MBTRX-3625;

MBSDI:DEV=MBTRX-3626, TCASE=1;
```

9.4.9.5 Self-Test the Coded MBTRAB/MBTRB Devices

```
! NOTE: BOTH CODED AND UNCODED MUST BE BLOCKED !
MBSDI:DEV=MBTRAB-16; or MBSDI:DEV=MBTRB-16;
MBSDI:DEV=MBTRAB-17; or MBSDI:DEV=MBTRB-17;
MBSDI:DEV=MBTRAB-18; or MBSDI:DEV=MBTRB-18;
```

```
MBSDI:DEV=MBTRAB-19; or MBSDI:DEV=MBTRB-19;
```

9.4.10 Deblocking/Checking of RBS Equipment

9.4.10.1 Deblock/Check the MBTRB Devices

```
BLODE:DEV=MBTRAB-16; or BLODE:DEV=MBTRB-16;

STDEP:DEV=MBTRAB-16; or STDEP:DEV=MBTRB-16;

BLODE:DEV=MBTRAB-17; or BLODE:DEV=MBTRB-17;

STDEP:DEV=MBTRAB-17; or STDEP:DEV=MBTRB-17;

BLODE:DEV=MBTRAB-18; or BLODE:DEV=MBTRB-18;

STDEP:DEV=MBTRAB-18; or STDEP:DEV=MBTRB-18;

BLODE:DEV=MBTRAB-19; or BLODE:DEV=MBTRB-19;

STDEP:DEV=MBTRAB-19; or STDEP:DEV=MBTRB-19;
```

9.4.10.2 Measure the Output

```
MTCTC: DEV=MCC-16, CHNR=330, POWER=364, FIT=EF;

MTCTC: DEV=MVC-64, CHNR=309, POWER=364, FIT=EF;

MTCTC: DEV=MDCC-16, CHNR=1017, POWER=364, FIT=EF;

MTCTC: DEV=MDVC-50, CHNR=1017, POWER=364, FIT=EF;
```

9.4.10.3 Deblock TW Port

```
IOBLE:IO=TW-56;

IOIOP:IO1=TW-56;
```

9.4.10.4 Deblock MBLT86 Devices

Note: If the Pooled Transcoder is used, then DEBLOCK MBLT86N.

```
! Cell A !

BLODE:DEV=MBLT86N-1249;
```

```
STDEP:DEV=MBLT86N-1249;


! Cell B !
BLODE:DEV=MBLT86N-1252;
STDEP:DEV=MBLT86N-1252;


! Cell C !
! No Analog Voice in Cell C !


! Cell D !
BLODE:DEV=MBLT86N-1259;
STDEP:DEV=MBLT86N-1259;


! Cell E !
! No Analog Voice in Cell E !


! Cell F !
BLODE:DEV=MBLT86N-1265;
```

9.4.10.5 Deblock Uncoded MBTRAC/MBTRC Devices

```
! Cell A !
BLODE:DEV=MBTRAC-258&-259;
STDEP:DEV=MBTRAC-258&-259;
```

or

```
BLODE:DEV=MBTRC-258&-259;
STDEP:DEV=MBTRC-258&-259;
```

```
! Cell B !
BLODE:DEV=MBTRAC-270&-271;
STDEP:DEV=MBTRAC-270&-271;
```

or

```
BLODE:DEV=MBTRC-270&-271;
STDEP:DEV=MBTRC-270&-271;

! Cell C !
BLODE:DEV=MBTRAC-282&-283&-285&&-287&-289&&-291;
STDEP:DEV=MBTRAC-282&-283&-285&&-287&-289&&-291;
```

or

```
BLODE:DEV=MBTRC-282&-283&-285&&-287&-289&&-291;
STDEP:DEV=MBTRC-282&-283&-285&&-287&-289&&-291;

! Cell D !
BLODE:DEV=MBTRAC-294&-295;
STDEP:DEV=MBTRAC-294&-295;
```

or

```
BLODE:DEV=MBTRC-294&-295;
STDEP:DEV=MBTRC-294&-295;

! Cell E !
BLODE:DEV=MBTRAC-306&-307&-309&&-311&-313&&-315;
STDEP:DEV=MBTRAC-306&-307&-309&&-311&-313&&-315;
```

or

```
BLODE:DEV=MBTRC-306&-307&-309&&-311&-313&&-315;
STDEP:DEV=MBTRC-306&-307&-309&&-311&-313&&-315;

! Cell F !
! No Digital Voice in Cell F !
```

9.4.10.6 Deblock MBTRX Devices

```
! Cell A !
BLODE:DEV=MBTRX-3584;
BLODE:DEV=MBTRX-3585;
BLODE:DEV=MBTRX-3586;
BLODE:DEV=MBTRX-3587;
STDEP:DEV=MBTRX-3584&&-3587;

! Cell B !
BLODE:DEV=MBTRX-3592;
BLODE:DEV=MBTRX-3593;
BLODE:DEV=MBTRX-3594;
BLODE:DEV=MBTRX-3595;
STDEP:DEV=MBTRX-3592&&-3595;

! Cell C !
BLODE:DEV=MBTRX-3600;
BLODE:DEV=MBTRX-3601;
BLODE:DEV=MBTRX-3602;
```

```
BLODE:DEV=MBTRX-3603;

STDEP:DEV=MBTRX-3600&&-3603;


! Cell D !

BLODE:DEV=MBTRX-3608;

BLODE:DEV=MBTRX-3609;

BLODE:DEV=MBTRX-3610;

BLODE:DEV=MBTRX-3611;

STDEP:DEV=MBTRX-3608&&-3611;


! Cell E !

BLODE:DEV=MBTRX-3616;

BLODE:DEV=MBTRX-3617;

BLODE:DEV=MBTRX-3618;

BLODE:DEV=MBTRX-3619;

STDEP:DEV=MBTRX-3616&&-3619;


! Cell F !

BLODE:DEV=MBTRX-3624;

BLODE:DEV=MBTRX-3625;

BLODE:DEV=MBTRX-3626;

STDEP:DEV=MBTRX-3624&&-3626;
```

9.4.10.7 Deblock MVC Devices

```
! Cell A !

BLODE:DEV=MVC-2688;
```

```
STDEP:DEV=MVC-2688;

! Cell B !
BLODE:DEV=MVC-2689;
STDEP:DEV=MVC-2689;

! Cell C !
! No Analog Voice in Cell C !

! Cell D !
BLODE:DEV=MVC-2690;
STDEP:DEV=MVC-2690;

! Cell E !
! No Analog Voice in Cell E !

! Cell F !
BLODE:DEV=MVC-2691;
STDEP:DEV=MVC-2691;
```

9.4.10.8 Deblock MDVC Devices

```
! Cell A !
! No Digital Voice in Cell A !

! Cell B !
! No Digital Voice in Cell B !
```

```
! Cell C !
BLODE:DEV=MDVC-2704&&-2711;
STDEP:DEV=MDVC-2704&&-2711;

! Cell D !
! No Digital Voice in Cell D !

! Cell E !
BLODE:DEV=MDVC-2720&&-2727;
STDEP:DEV=MDVC-2720&&-2727;

! Cell F !
! No Digital Voice in Cell F !
```

9.4.10.9 Deblock Analog Control Channel

```
! Cell A !
! No Analog Control Channel in Cell A !

! Cell B !
! No Analog Control Channel in Cell B !

! Cell C !
! No Analog Control Channel in Cell C !

! Cell D !
```

```
! No Analog Control Channel in Cell D !


! Cell E !
BLODE:DEV=MCC-229;
STDEP:DEV=MCC-229;


! Cell F !
! No Analog Control Channel in Cell F !
```

9.4.10.10 Deblock Digital Control Channel

```
! Cell A !
BLODE:DEV=MDCC-224;
STDEP:DEV=MDCC-224;


! Cell B !
BLODE:DEV=MDCC-225;
STDEP:DEV=MDCC-225;


! Cell C !
BLODE:DEV=MDCC-226;
STDEP:DEV=MDCC-226;


! Cell D !
BLODE:DEV=MDCC-227;
STDEP:DEV=MDCC-227;
```

```
! Cell E !
BLODE:DEV=MDCC-228;
STDEP:DEV=MDCC-228;

! Cell F !
! No Digital Control Channel in Cell F !
```

9.4.10.11 Deblock MLOC Devices

```
! Cell A !
BLODE:DEV=MLOC-224;
STDEP:DEV=MLOC-224;

! Cell B !
BLODE:DEV=MLOC-225;
STDEP:DEV=MLOC-225;

! Cell C !
! No MLOC in Cell C !

! Cell D !
BLODE:DEV=MLOC-227;
STDEP:DEV=MLOC-227;

! Cell E !
! No MLOC in Cell E !
```

```
! Cell F !
BLODE:DEV=MLOC-229;
STDEP:DEV=MLOC-229;
```

9.4.10.12 Deblock MVER Devices

```
! Cell A !
BLODE:DEV=MVER-224;
STDEP:DEV=MVER-224;

! Cell B !
BLODE:DEV=MVER-225;
STDEP:DEV=MVER-225;

! Cell C !
BLODE:DEV=MVER-226;
STDEP:DEV=MVER-226;

! Cell D !
BLODE:DEV=MVER-227;
STDEP:DEV=MVER-227;

! Cell E !
BLODE:DEV=MVER-228;
STDEP:DEV=MVER-228;

! Cell F !
```

```
! No MVER in Cell F !
```

9.4.10.13 Check Cell Status

```
MTCCP:CELL=P4P1A;

MTCCP:CELL=P4P1B;

MTCCP:CELL=P4P1C;

MTCCP:CELL=P4P1D;

MTCCP:CELL=P4P1E;

MTCCP:CELL=P4P1F;
```

9.4.11 Assignment of Supervision to Routes

9.4.11.1 Set Disturbance Supervision for Analog Voice Line Routes

```
DUDAC:R=P4P1ANO, ADL=5, ACL=A2;

DUDAC:R=P4P1ANI, ADL=5, ACL=A2;


DUDAC:R=P4P1BNO, ADL=5, ACL=A2;

DUDAC:R=P4P1BNI, ADL=5, ACL=A2;


DUDAC:R=P4P1DNO, ADL=5, ACL=A2;

DUDAC:R=P4P1DNI, ADL=5, ACL=A2;


DUDAC:R=P4P1FLO, ADL=5, ACL=A2;

DUDAC:R=P4P1FLI, ADL=5, ACL=A2;
```

9.4.11.2 Set Disturbance Supervision for MBTRAC/MBTRC Routes

```
DUDAC:R=P4P1AMO, ADL=5, ACL=A2;

DUDAC:R=P4P1AMI, ADL=5, ACL=A2;
```

```
DUDAC:R=P4P1BMO, ADL=5, ACL=A2;

DUDAC:R=P4P1BMI, ADL=5, ACL=A2;


DUDAC:R=P4P1CMO, ADL=5, ACL=A2;

DUDAC:R=P4P1CMI, ADL=5, ACL=A2;


DUDAC:R=P4P1DMO, ADL=5, ACL=A2;

DUDAC:R=P4P1DMI, ADL=5, ACL=A2;


DUDAC:R=P4P1EMO, ADL=5, ACL=A2;

DUDAC:R=P4P1EMI, ADL=5, ACL=A2;
```

9.4.11.3 Set Seizure Quality Supervision for Analog Voice Line Routes

```
SEQAC:R=P4P1ANO & P4P1ANI, ACL=A3, QUOS=40,
QUOB=85;

SEQAC:R=P4P1BNO & P4P1BNI, ACL=A3, QUOS=40,
QUOB=85;

SEQAC:R=P4P1DNO & P4P1DNI, ACL=A3, QUOS=40,
QUOB=85;

SEQAC:R=P4P1FNO & P4P1FNI, ACL=A3, QUOS=40,
QUOB=85;
```

9.4.11.4 Set Seizure Quality Supervision for MBTRAC/MBTRC Routes

```
SEQAC:R=P4P1AMO & P4P1AMI, ACL=A3, QUOS=40,
QUOB=85;

SEQAC:R=P4P1BMO & P4P1BMI, ACL=A3, QUOS=40,
QUOB=85;

SEQAC:R=P4P1CMO & P4P1CMI, ACL=A3, QUOS=40,
QUOB=85;
```

```
SEQAC:R=P4P1DMO & P4P1DMI, ACL=A3, QUOS=40,
QUOB=85;

SEQAC:R=P4P1EMO & P4P1EMI, ACL=A3, QUOS=40,
QUOB=85;
```

9.4.11.5 Set Blocking Supervision for Analog Voice Line Routes

```
BLURC:R=P4P1ANO & P4P1ANI, ACL=A2, LVB=1;

BLURC:R=P4P1BNO & P4P1BNI, ACL=A2, LVB=1;

BLURC:R=P4P1DNO & P4P1DNI, ACL=A2, LVB=1;

BLURC:R=P4P1FNO & P4P1FNI, ACL=A2, LVB=1;
```

9.4.11.6 Set Blocking Supervision for MBTRAC/MBTRC Routes

```
BLURC:R=P4P1AMO & P4P1AMI, ACL=A2, LVB=1;

BLURC:R=P4P1BMO & P4P1BMI, ACL=A2, LVB=1;

BLURC:R=P4P1CMO & P4P1CMI, ACL=A2, LVB=2&amp;amp;3;

BLURC:R=P4P1DMO & P4P1DMI, ACL=A2, LVB=1;

BLURC:R=P4P1EMO & P4P1EMI, ACL=A2, LVB=2&amp;amp;4;
```

9.4.11.7 Setup Cell Supervision with MTSUI

```
MTSUI:CELL=ALL, TYPE=ALL, ALLH=50, ALLL=10;
```

9.4.11.8 Assignment of Neighboring Cells

```
MTNCI:CELL=C002A,NCELL=F239B&F239C&F105A&F131B,
MODE=DIG;

MTNCC:CELL=C002A,NCELL=F239B&F239C&F105A&F131B,
MODE=DIG;
```

9.4.11.9 Assignment of Traffic Recording Group

```
TRRGI: TRG=0, R=KRDCR;

TRRPI: MP=0, IO=OWN,TRG=0;
```

9.4.11.10 Connection of Cell to Location Area

```
MTLCC: CELL=P4P1A, LOCAREA=LOC1A;

MTLCC: CELL=P4P1B, LOCAREA=LOC1A;

MTLCC: CELL=P4P1D, LOCAREA=LOC1A;
```

10 Example Integration: Pico (1900 MHz)

The Pico 1900 Mhz integration example is the same as the Pico 850 MHz integration example (see Section 9 on page 5-76) with the following exceptions:

- The **Pico 1900 MHz** is a digital base station and the Pico 850 MHz analog integration procedures are ignored.
- The **Pico 1900 MHz** is equipped with ELI boards instead of XLI boards.
- The **Pico 1900 MHz** ELI boards are defined as Radio Transceiver Terminal (RTT) units in the data translation (DT).
- The **Pico 1900 MHz** has a maximum configuration of 10 Radio Heads and 10 EMRPSs.

Part 6

Operations and Maintenance

1 Introduction

This part of the manual describes operations and maintenance procedures for the RBS 884 Pico (1900 MHz) system. These procedures include instructions for identifying faults and replacing faulty equipment, when necessary.

2 Maintenance Overview

RBS 884 Pico (1900 MHz) maintenance includes general maintenance, such as those identified in Section 2.1 on page 6-3, and hardware replacement procedures. The use of the hardware replacement procedures by a site maintenance technician may depend on instructions from MSC personnel able to determine the status of the RBS site equipment from the MSC.

The site maintenance technician may be asked to replace a particular unit using one of the procedures in this part of the manual, or to follow additional troubleshooting procedures. The troubleshooting procedures are also used if failures occur during the Power-up Procedure in the Installation part of this manual.

Operations and maintenance procedures in this document apply to both the rack mount Control and Radio Interface (CRI) subrack and the floor mount CRI cabinet.

2.1 General Recommendations

The following routine tasks should be performed when maintenance personnel are at the site:

- On the front of the units, verify that the green Power LEDs are ON and that the red Error LEDs are OFF.
- Check the direct current (DC) power cables to the CRI.
- Check the fan unit cables.
- Check the Extension Module Regional Processor with Speech Bus Access (EMRPS) connections.
- Check the Pulse Code Modulation (PCM) transmission connections.
- Clean dust and debris from the CRI fans.

2.2 Maintenance Log

A record of all routine maintenance performed at the site should be maintained in a separate maintenance log at the RBS site. Fault data is automatically recorded in the system malfunction log.

3 Safety Regulations

Before starting any installation, test, or maintenance procedures, review the safety regulations provided in this section. Additionally, the installer is responsible for determining that the installation conforms to all applicable electrical, mechanical, communications, and construction codes.

Carefully review each procedure before starting. Observe any admonishments (dangers, warnings, and cautions) that apply to the procedure.

3.1 Voltage Hazards

DANGER!

Hazardous voltages over 100 V are used in the operation of this equipment. Observe safety precautions. Contact with line power (AC supply) can be fatal. Do not be misled by the term low voltage. Under adverse conditions, voltages as low as 50 V can result in fatalities.

Always observe the following:

- Disconnect the power supply, if possible, before working on the equipment.
- Do not touch high voltage connections when installing or operating the equipment.
- If possible, keep one hand away from the equipment to reduce the possibility of current flowing through vital body organs.

3.2 Radio Frequency Radiation

DANGER!

Radio frequency (RF) from an antenna can be a danger to health, causing severe burns.

Turn off the transmitter when working with or near the antennas.

4 Product Handling

4.1 Storage and Transport

Store and transport components and printed circuit boards (units) in the original packaging. Alternatively, use a conductive material or special Integrated Circuit (IC) carrier that either short circuits all contacts and pins or insulates them from external contact.

4.2 Electrostatic Discharge

Caution !

The human body acquires static charge in all situations involving movement. If any part of the human body comes in contact with a grounded IC component, the static charge can cause an electrostatic discharge, resulting in a spark and damage to the component.

Always observe the following:

- Follow the instructions for handling sensitive electronic components and printed circuit boards (units) to avoid component damage caused by Electrostatic Discharge (ESD).
- Use ESD protection equipment when working with components and printed circuit boards.
- When working with printed circuit boards, use an ESD wrist strap to avoid ESD damage. Connect the wrist strap to the slots on the

bottom of the CRI rack mount (subrack) or to the collection bar located in the CRI floor mount (cabinet).

5 Fault Detection and Alarms Reporting

Fault detection is implemented through routine monitoring and fault and alarm reporting.

5.1 Routine Monitoring

The RBS 884 Pico (1900 MHz) normally supervises and removes faulty hardware from service when a fault is detected. The operator can manually remove (block) hardware from service and manually test it if needed.

If hardware faults are detected as a result of the supervision function, the information concerning the fault is stored in the hardware malfunction log. This information can be printed on command. If a major fault is detected, the system automatically blocks and resets the device.

Proprietary non-leased communication is not supervised point to point at each end of the link by the system software. Higher level supervision functions, such as the Transcoder Board-Radio Transceiver (TRAB-TRX) supervision, can help identify proprietary transmission faults. LEDs on the ELI unit and on the Radio Head customer interface indicate transmission faults. These indicators provide standard T1 or E1 alarms such as loss of signal and loss of framing.

5.2 Fault and Alarm Reporting

Multicolor LED indicators on the CRI equipment and the Radio Head indicate if a fault or alarm has occurred. Alarms indicate a specific fault or a situation where the operation has degraded.

LEDs on the following CRI hardware units indicate if a fault or alarm has occurred:

- Cabinet Identification (CID) unit
- Fan unit
- Direct Current/Direct Current (DC/DC) converter unit

- Extension Module Regional Processor with Speech Bus Access (EMRPS) unit
- Enhanced Link Interface (ELI) unit

See Table 6-1 on page 6-7 for a description of the LED indicators in the CRI. See *Part 7, Troubleshooting* for troubleshooting procedures and recommendations for specific faults identified by the LEDs.

Table 6-1. CRI LED Indicators

Unit	Indicator	Color	Description
CID Unit	Power	Green	OFF: The CRI is not receiving power. ON: The CRI is receiving power.
	Error	Red	ON: At least one of the units in the CRI has a fault.
DC/DC Unit	Power	Green	OFF: The DC/DC unit is not receiving power. ON: The DC/DC unit is receiving power.
	Error	Red	ON: An error is indicated.
Fan Unit	Power	Green	OFF: The fan unit is not receiving power. ON: The fan unit is receiving power.
	Error	Red	ON: An error is indicated.
EMRPS Unit	Power	Green	OFF: The EMRPS unit is not receiving power. ON: The EMRPS unit is receiving power.
	Error	Red	ON: An error is indicated.
	Status 1	Yellow	OFF: The EMRPS is in a reset state. ON: The EMRPS is in an idle state. Flashing: The EMRPS is in use.
	Status 2	Yellow	OFF: All devices are blocked. Flashing: The Channel Function Unit (CFU) is idle or busy.

Table 6-1. CRI LED Indicators (Continued)

ELI Unit	Power	Green	OFF: The ELI unit is not receiving power. ON: The ELI unit is receiving power.
	Error	Red	OFF: No error is indicated Steady ON: An error is indicated. 1 Hz Flashing: There is a clock or PLL fault 3 Hz Flashing: Self test is in progress. **Note:** The Error and Status LEDs are lit briefly during the power-on sequence.
	Status	Red	Steady ON: There is no received signal on the PCM link. 1 Hz Flashing: A loss of frame synchronization is indicated. OFF: No error is indicated
		Yellow	ON: There is a yellow alarm indicating a receive loss of signal (LOS) or a synchronization problem. **Note:** The Error and Status LEDs are lit briefly during the power-on sequence.

Table 6-2 on page 6-8 contains a description of the Radio Head LEDs. See *Part 7, Troubleshooting* for troubleshooting procedures and recommendations for specific faults identified by the LEDs.

Table 6-2. Radio Head LED Indicators

Indicator	Color		Description
RH Power/Fault	Multicolor	Green	OFF: The Radio Head is not receiving power. ON: The Radio Head is receiving power.
		Red	ON: A TRX fault is indicated. 1 Hz flashing: A TRX has lost the TLINK clock or there is an XLINK or non-leased line fault. 3 Hz flashing: A self test is in progress.
TRX 1, 2, 3, or 4	Multicolor	Red	OFF: The TRX is blocked. ON: A TRX fault is indicated. 1 Hz flashing: The TRX has lost the TLINK clock or there is an XLINK or non-leased line fault.
		Yellow	ON: The TRX is deblocked and is not carrying traffic. 15 Hz flashing: The TRX is carrying traffic.