



RBS 6000 & Baseband Training Programs

Catalog of Course Descriptions





Catalog of Course Descriptions

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Introduction

Ericsson has developed a comprehensive Training Programs service to satisfy the competence needs of our customers, from exploring new business opportunities to expertise required for operating a network. The Training Programs service is delineated into packages that have been developed to offer clearly defined, yet flexible training to target system and technology areas. Each package is divided into flows, to target specific functional areas within your organization for optimal benefits.

Service delivery is supported using various delivery methods including:

Icon	Delivery Method
	Instructor Led Training (ILT)
	Virtual Classroom Training (VCT)
	eLearning (WBL)
	Workshop (WS)
	Short Article (SA)
	Structured Knowledge Transfer (SKT)
	mLearning
	Job duty analysis (JDA)
	Competence GAP Analysis (CGA)



LTE/SAE System Overview



LZU1087020 R13A

Description

If you want to know what LTE/SAE (Long Term Evolution / System Architecture Evolution) is, this course will give you an overview of the new radio technology and protocols involved in the E-UTRAN (Evolved UTRAN, also referred to as LTE) and the architecture behind EPC (Evolved Packet Core, also referred to as SAE – System Architecture Evolution). The course also provides descriptions of the CPP hardware platform, operation and maintenance and RBS hardware.

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain the background and architecture of E-UTRAN and EPC
 - 1.1 Describe the evolution of cellular networks
 - 1.2 Summarize the evolution of 3GPP releases, from release 99 to release 12
 - 1.3 Explain the logical architecture of EPS and the interworking with other technologies
 - 1.4 Explain the EPS bearer concept and give an overview of the LTE QoS framework
- 2 Describe the EPC Architecture
 - 2.1 Describe the interfaces in EPS
 - 2.2 Describe the Evolved Packet Core (EPC)
 - 2.3 Describe the role of the MME, S-GW and PDN-GW
- 3 Describe the E-UTRAN Architecture
 - 3.1 List the functionality of the eNodeB
 - 3.2 Describe the radio interface techniques; OFDM and SC-FDMA and the physical bit rates
 - 3.3 Discuss Link Adaption in LTE
 - 3.4 Describe the basic principles of MIMO
 - 3.5 Explain the concept of Carrier Aggregation
 - 3.6 Describe the RBS 6000 Hardware for LTE
 - 3.7 Describe the Ericsson Radio System
 - 3.8 Explain Heterogeneous Network
 - 3.9 Outline on overview level the security in LTE
 - 3.10 Describe the different type of synch in LTE
- 4 Describe key LTE Solutions
 - 4.1 Explain the options for Voice; CS Fallback and VoLTE
 - 4.2 Describe the LTE Broadcast Service, eMBMS
 - 4.3 Explain Location services

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- 5 Explain the various LTE mobility scenarios
 - 5.1 Describe LTE idle mode mobility
 - 5.2 Detail Intra LTE connected mode mobility; handovers and session continuity
 - 5.3 Explain IRAT Handover scenarios
- 6 Describe the Operation & Maintenance logic in LTE Radio Access Network
 - 6.1 Identify the need for different levels of management and its tools
 - 6.2 List the various O & M areas in LTE RAN
 - 6.3 Explain the concepts related to Smart Simplicity and Self-Organizing Networks (SON)

Target audience

The target audience for this course is:

System Engineer, Service Design Engineer, Network Design Engineer

Prerequisites

Successful completion of the following courses:

A general knowledge in cellular systems and radio technology.

Duration and class size

The length of the course is 2 days and the maximum number of participants is 16.

Learning situation

This course is based on theoretical instructor-led lessons given in a classroom environment.

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Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction, LTE/SAE Introduction	2
	EPC Architecture	2
	E-UTRAN Architecture	2
2	Describe key LTE Solutions	2,5
	Explain the various LTE mobility scenarios	1,5
	LTE Operation and Maintenance	2

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Ericsson WCDMA System Overview



LZU1085418 R18A

Description

Do you need to understand what 3rd generation systems are all about? Do you get lost when people talk about Wideband Code Division Multiple Access (WCDMA) system? This course explains the purpose of the WCDMA Core, Radio, and Service Network Elements together with the standardization of the WCDMA access network. In addition, the participants will learn how Ericsson's mobile core network solution connects to external networks such as WCDMA Radio Access Networks, PSTN Networks, PABXs, IMS/VoIP networks or other Mobile Networks. The focus is on general principles rather than specific technical details.

Learning objectives

On completion of this course the participants will be able to:

- 1 Detail the nodes and interface in WCDMA Network
 - 1.1 Explain the idea of the converged industries and the layered core network
 - 1.2 Present the 3GPP network model, and Ericsson network
 - 1.3 Explain on overview level the functionality of each node and its architecture
 - 1.4 Show some statistics about WCDMA today and the market trend related to technology
- 2 Understand the standardization bodies involved in 3rd generation
 - 2.1 Distinguish the Standardization bodies involved in the WCDMA Systems
 - 2.2 Give in own words why standards are important in Telecommunications
 - 2.3 Acknowledge what standardization bodies are, and what are their functions
 - 2.4 Express the concept of full duplex communication and FDD.
 - 2.5 State the frequency bands and systems chosen for the different areas
- 3 Explain on an overview level the Ericsson Mobile Core Network Solution
 - 3.1 Explain on an overview level the architecture of the mobile core network
 - 3.2 Describe the Mobile Softswitch Solution
 - 3.3 Detail the architecture and functions of the MSC-Server and M-MGW
 - 3.4 Describe the two nodes involved in the packet switched domain of the core network
 - 3.5 Recall the transport domain, and the various transport technologies used
 - 3.6 Describe interconnections and protocols in the C.S. and P.S. Domains
 - 3.7 Identify the function of the main database nodes
 - 3.8 Explain basic traffic cases in the Mobile Softswitch Solution

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- 4 Explain the 3rd Generation Radio Access Network
 - 4.1 Explain various access techniques
 - 4.2 State the coding types used in WCDMA, and how they prevent interference in the uplink and downlink
 - 4.3 Recognize the Importance of power control
 - 4.4 List the different handover scenarios in terms of soft, softer and hard handover
 - 4.5 Acknowledge the architecture of the Ericsson RAN Nodes RNC and RBS
 - 4.6 Identify the basic principles of HSDPA and EUL
- 5 Detail the Network Services involved in WCDMA
 - 5.1 Acknowledge the functions of the service layer
 - 5.2 Detail various terminal technologies and platforms used
 - 5.3 Identify the difference between Applications and enablers, and detail some of the more common enablers
 - 5.4 Explain Mobile Positioning, MMS and Messaging Over IP
 - 5.5 Acknowledge the architecture and operation of the IP Multimedia Subsystem (IMS)

Target audience

The target audience for this course is:

Service Planning Engineer, Service Design Engineer, Network Design Engineer, Network Deployment Engineer, Service Deployment Engineer, System Technician, Service Technician, Service Engineer, Field Technician, System Administrator, Application Developer

Prerequisites

Successful completion of the following courses:

The participants should be familiar with general telecom technologies.

Duration and class size

The length of the course is 2 days and the maximum number of participants is 16.

Learning situation

This course is based on theoretical instructor-led lessons given in a classroom environment.

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Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Network Introduction	1.0
	Standardization	1.0
	Mobile Core Network Solution	4.0
2	Circuit Switched and Packet Switched traffic cases	1.0
	WCDMA Radio Access Network Technology	4.0
	Service Network and IP Multimedia	1.0

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GSM System Survey



LZU108852 R15A

Description

Are you lost when discussing GSM network basic concepts? If you are starting to work in different areas of GSM system and need a general overview, this is the course you are looking for. It will provide you with knowledge about Ericsson's GSM based systems and GSM 800/900/1800/1900.

It will focus on GSM terminology, wireless concepts, functions of network nodes, and the Ericsson implementation of those network nodes. Completing this training you will have all the initial knowledge you need to proceed in competence development in other areas.

Learning objectives

On completion of this course the participants will be able to:

- 1 Know how mobile systems have evolved over the time and tell the history of GSM development.
 - 1.1 Recognize benefits of having a standard
 - 1.2 Describe the GSM geographical network structure and node functions
 - 1.3 Know the GSM frequency bands
 - 1.4 List subscriber services provided in the GSM network
- 2 List Ericsson's GSM System divisions and components and perceive how Ericsson has been involved in GSM since its inception and took an active part in the GSM specification process.
 - 2.1 List network components and describe their functions
 - 2.2 Describe optional additional network entities functions
 - 2.3 Briefly present Protocols used in the GSM Access and Core Networks
- 3 Know basic concepts of wireless communications and its importance to provide a good knowledge of how GSM Systems works.
 - 3.1 Explain Time Division Multiple Access technique (TDMA)
 - 3.2 List the transmission problems and their solutions
 - 3.3 Recognize how Adaptive Multi-Rate (AMR) can increase capacity
 - 3.4 Explain the feature VAMOS.
- 4 List and identify GSM System mandatory concepts of air interface, their functions and required specifications.
 - 4.1 Know the concepts of physical channel and a logical channel
 - 4.2 List one important piece of information sent on each of 3 different logical channels

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- 4.3 Briefly explain the idea of mapping
- 4.4 Show the time slot power saving feature
- 5 Differentiate the platforms that provide the network nodes and functionalities that are basis to provide Circuit and Packet switching, including AXE and CPP platform principles, list the main components and outline the main features.
 - 5.1 Know the function of APT and APZ
 - 5.2 Differentiate functions that can be implemented using AXE platform modularity
 - 5.3 Explain how the group switch switches calls
 - 5.4 Discriminate the AXE 810 hardware structure
 - 5.5 Discriminate the CPP Hardware Platform
 - 5.6 Show CPP Interconnection Structure
 - 5.7 Clarify functions that can be implemented using CPP platform
- 6 Explain how Ericsson implements the functions and nodes of the GSM switching system.
 - 6.1 Name the nodes in the Switching System
 - 6.2 Know Ericsson's Mobile Softswitch Solution
 - 6.3 List which nodes that are contracted for the security procedure in the GSM system
 - 6.4 Briefly explain the purpose of Authentication, Ciphering and Equipment Check
- 7 List and identify Radio Access Network system nodes, its functions and required specifications.
 - 7.1 Outline the main functions of a BSC, TRC and RBS
 - 7.2 Explain the new BSC EVO Controller
 - 7.3 Describe the Abis over IP and Abis Optimization solution
 - 7.4 Briefly Explain A-Interface over IP
 - 7.5 Explain the feature lur-g
 - 7.6 List the Ericsson's RBS 2000 and 6000 configurations
 - 7.7 Explain Multistandard RBS Mixed Mode (GSM)
 - 7.8 Explain the RBS architecture and functional blocks
 - 7.9 List the RBS 6000 Configurations with (R)RUS-02
 - 7.10 Know the benefits with new BSC BSS 12
- 8 Clarify the GSM traffic cases to consolidate all the GSM Network concepts using basic traffic cases examples.
 - 8.1 Explain the purpose of GSM ID-number (MSISDN, IMSI, TMSI, MSRN and LAI)
 - 8.2 Know the handover, locating and location updating concepts
 - 8.3 Briefly describe how a traffic case works
- 9 Explain the basic concepts and difficulties of planning a cellular network based on text examples and explanations.
 - 9.1 List the stages in the cell planning process
 - 9.2 Explain the terms Grade of Service (GOS) and 'Erlang'
 - 9.3 Name 2 types of Interference
 - 9.4 Describe briefly the feature 'Re-Use of Frequencies within a Cell'
 - 9.5 Know what is meant by the term 'Hierarchical Cell Structure'
 - 9.6 Describe briefly the feature 'BCCH in Overlaid Sub cell'

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- 10 Recognize Ericsson's Operation and Support System – OSS as an important tool for operation and maintenance in GSM network describing its features and functions.
 - 10.1 Explain the functions of the Operations and Support System
 - 10.2 Describe the architecture of the Operations and Support System
 - 10.3 Outline the implementation of the Multi Mediation
 - 10.4 Appreciate the implementation of the Ericsson Multi Activation
- 11 List the most common and main subscriber services, explaining their functions, features, and specifications.
 - 11.1 Define the different types of services available in the network
 - 11.2 Indicate one of each of the following service types in the network: teleservices, bearer services and supplementary services
 - 11.3 Identify one of the Ericsson innovative services in the network.
 - 11.4 Briefly describe the mobile intelligent network services available with Ericsson GSM systems
 - 11.5 Know the need and advantages of the CAMEL system
- 12 Identify charging and accounting concepts.
 - 12.1 Identify their functions, features and required specifications
 - 12.2 Explain the fact that the charging concept is changing due to the introduction of new technologies such as GPRS, UMTS
 - 12.3 List three call components
 - 12.4 Explain the future of billing
- 13 Discriminate how data calls are initiated in the GSM network and cite examples of how a data call is handled in a GSM network through a traffic case analysis.
 - 13.1 Explain the data transmission services which GSM offers
 - 13.2 Describe a GSM data traffic case
 - 13.3 List the data transmission services which GPRS offers
 - 13.4 List the things that can lead to improved GPRS end-user performance
 - 13.5 Describe a GPRS data traffic case
 - 13.6 Analyze PS DL Power Control
 - 13.7 Explain the EDGE and EDGE Evolution.
- 14 Have an overview of the possible future functionality of GSM-based systems
 - 14.1 Describe the evolution of GSM to WCDMA systems
 - 14.2 List the technologies that will bridge these two systems including HSCSD, EDGE, GPRS, WCDMA and HSPA and LTE
 - 14.3 Explain the 3G system and feature Adaptive Traffic Control
 - 14.4 Clarify the Fast Return to LTE after Call Release and LTE to GSM NACC



Target audience

The target audience for this course is:

Service Planning Engineer, Service Design Engineer, Network Design Engineer, Network Deployment Engineer, Service Deployment Engineer, System Technician, Service Technician, System Engineer, Service Engineer, Field Technician, System Administrator, Application Developer, Business Developer, Customer Care Administrator

Prerequisites

The participants should be familiar with telecommunication basics.

Duration and class size

The length of the course is 4 days and the maximum number of participants is 16.

Learning situation

This course is based on theoretical instructor-led lessons given in a classroom environment.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction & pre-course test	0.5
	Introduction to Mobile Telecommunications and GSM	1.0
	Overview of Ericsson's GSM Systems	1.5
	Wireless Concepts	2.0
	Channel Concepts	1.0
2	Channel Concepts Continuation	1.5
	Introduction to AXE and CPP	1.5
	Switching System	1.5
	Radio Access Network	1.5

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3	Traffic Cases	2.5
	Cell Planning	1.5
	Operation and Maintenance tools	1.0
	Mobile IN and Subscriber Services	1.0
4	Charging and accounting	1.0
	Data Services	2.0
	The future of GSM	2.0
	Post-course Test	1.0



Ericsson Radio System Overview



LZU1089991 R2A

Description

Do you need to understand how Ericsson Radio System is a solution to the changing radio access needs towards the 5G? What are new products that have been introduced in Ericsson Radio System which will coexist with the existing products in Ericsson's radio access networks?

The "Ericsson Radio System Overview" course provides the participants with a comprehensive overview of Ericsson's new packaging of the radio access network products in Ericsson Radio System.

Learning objectives

On completion of this course the participants will be able to:

- 1 Discuss the evolution of the radio access network
 - 1.1 Identify a typical existing site and its challenges to meet the future demands
 - 1.2 List the requirements for the future networks
 - 1.3 Explain the multi-standard, multi-band and multi-layer solutions with Ericsson Radio System
 - 1.4 Discuss how a typical Ericsson Radio System based site could look like
- 2 List the features of the baseband products
 - 2.1 Identify and list the primary features of new Baseband 5216, Baseband 5212, Baseband R 503, Baseband T 605
 - 2.2 List the existing Digital Units and explain their primary features
 - 2.3 Discuss the features supported for Site Integration Unit (SIU) and the Transport Connectivity Unit (TCU)
- 3 Describe the different Fronthaul products suited for macro and small cell deployments
- 4 Describe what Fronthaul is
 - 4.1 Explain the characteristics of the PAU 6000
 - 4.2 List and understand the specifications of Fronthaul 6392
- 5 Identify different Radio Products and their primary features
 - 5.1 List the characteristics of the new radio units in Ericsson Radio System, namely the Radio 0208, Radio 2203, Radio 2205, Radio 2212, Radio 2012, Radio 2216, Radio 2217, Radio 2218, Radio 4415
 - 5.2 Describe the characteristics and the usage of the new Remote Radio Units (RRUs)
 - 5.3 Explain the advantages of the Antenna Integrated Radio (AIR)
 - 5.4 List the benefits of the new installation options and features introduced

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- 6 Describe the wide range of Backhaul products for Outdoor and Indoor Scenarios
- 6.1 List the various Aggregation Units offered in Ericsson Radio System, and explain their usage
- 6.2 List the characteristics of the various products in Router 6000 Series
- 6.3 Match the various products in the Mini Link Portfolio to the Indoor and Outdoor usage
- 7 List the different enclosure and power options available under Ericsson Radio System Hardware
- 7.1 Describe the different Enclosure options
- 7.2 Identify Power System Solutions for Macro, Main remote and Hybrid configurations
- 7.3 Explain small cell implementation with the various Indoor Power Products
- 7.4 Discuss the Installation options and Configuration for the Power Products
- 8 Expand the products under Small cell portfolio and describe their features and benefits
- 8.1 List the characteristics of the RBS 6402, RBS 6501, Radio Dot System (RDS) and their configuration options
- 8.2 List the characteristics and usage of the various WiFi Access Points (AP) products

Target audience

The target audience for this course is:

System Technician, Field Technician, Network Deployment Engineer, Integration Engineer, Solution Architect

Prerequisites

Successful completion of the following courses:

LTE/SAE System Overview, LZU1087020 (ILT)

Or

LTE/SAE Overview, LZU1087318 (WBL)

Duration and class size

The length of the course is 2 days and the maximum number of participants is 16.

Learning situation

This course is based on theoretical instructor-led lessons given in a classroom environment.

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Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Introduction to the course and Ericsson Radio System	2.0
	Baseband and Front haul	2.5
	Radio Products and AIR	1.5
2	Backhaul	2.0
	Enclosure and Power	1.5
	Small cell and Applications	2.0
	End of course procedures	0.5

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RBS 6000 Overview



LZU1087503 R6A

Description

The RBS 6000 product family is used in Ericsson's RAN sites, implementing the base transceiver system (BTS), nodeB and the eNodeB functionalities for the GSM, WCDMA and LTE RANs respectively. What are the characteristics of the RBS 6000 products? What are the equipment that may be present at the site? How do Ericsson's RBS 6000 products address the requirements that modern networks demand?

The course "RBS 6000 Overview" is the right training to get an overview of the network requirements, RBS 6000 product characteristics and even get an overview of the operation and maintenance of the RBS 6000 products.

Learning objectives

On completion of this course the participants will be able to:

- 1 Recognize and identify the main components in a mobile Radio Access Network
 - 1.1 Give a high level overview on the GSM, WCDMA and LTE Radio Access Network (RAN)
 - 1.2 Discuss the requirements of the evolving radio environments: multi-standard, multi-frequency, multi-layer
 - 1.3 Name some of basic features in current networks that address the network requirements
- 2 List, on an overview level, the primary components in RBS 6000 and at the RBS site
 - 2.1 List the various digital units, baseband units and the (remote) radio units and explain their primary functions/characteristics
 - 2.2 State the primary functions of the Distribution Frame (DF), Antenna near parts such as Tower Mounted Amplifier (TMA) and Remote Electrical Tilt Unit (RETU), Radio Dot System (RDS)
 - 2.3 List the transmission equipment and their characteristics that may be present at the RBS site
 - 2.4 Point out the power and battery equipment that a typical site has
 - 2.5 Describe the single, multi standard and mixed mode in RBS 6000
- 3 Detail the RBS 6000 product portfolio
 - 3.1 Understand the RBS 6000 Full Freedom concept
 - 3.2 Describe the RBS 6000 products suited for outdoor deployment, including 61, 63 and 65 series
 - 3.3 Describe the RBS 6000 products suited for indoor deployment, including 62, 64 and

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- 66 series
- 3.4 Describe the characteristics of the Antenna Integrated Radio (AIR)
- 3.5 List the usage of RBS 6000 products for macro / micro / pico / main-remote implementations, including for Small cell deployment
- 3.6 State the characteristics of the enclosures for RBS sites
- 4 Outline the main Operation and Maintenance concepts / tools for managing RBS 6000
- 4.1 Explain why there is a need for network management and element management in an operator's network
- 4.2 Understand when the serial connection is used
- 4.3 List the primary characteristics of Command Line Interface (COLI), Node Command Line Interface (NCLI), Element Manager (EM) and the Operation and Maintenance Terminal (OMT)

Target audience

The target audience for this course is:

System Engineer

Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU108852

Ericsson WCDMA System Overview, LZU1085418

LTE/SAE - System Overview, LZU1087020

Or

GSM Radio Network Overview (WBL), LZU1086235

WCDMA RAN Overview (WBL), LZU1085202

LTE/SAE in Nutshell (WBL), LZU1087417

RBS 6000 in a Nutshell (WBL), LZU1087504

Duration and class size

The length of the course is 1 day and the maximum number of participants is 16.

Learning situation

This course is based on theoretical instructor-led lessons given in a classroom environment.

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Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Introduction	0.5
	Radio Access Network and the needs of modern networks,	1.0
	RBS 6000 components	1.0
	RBS site components	1.0
	RBS 6000 products	1.5
	Operation and Maintenance; and conclusion	1.0



LTE Overview - WBL



LZU1082394 R1A

Description

What is Long Term Evolution (LTE)? What is the Evolved Packet Core (EPC) Architecture? How does the LTE air interface produce user bit rates? How is LTE evolving to meet the demands of the networked society? This Web-Based Learning (WBL) course provides an insight into the LTE 4G technology. This tutorial will give you a basic knowledge about the LTE/EPC Architecture and Radio Interface. You will also learn about the evolution of LTE as specified by the 3GPP.

Learning objectives

On completion of this course the participants will be able to:

- 1 Give an overview of LTE/EPC architecture & terminology
 - 1.1 Explain the nodes that make up the Evolved Packet System (EPS)
 - 1.2 Describe the EPC Quality of Service (QoS)
 - 1.3 Explain the EPS Bearer concept
 - 1.4 Describe how mobility is supported in the EPS
- 2 Explain the basics of the LTE radio interface
 - 2.1 Describe Orthogonal Frequency-Division Multiplexing (OFDM)
 - 2.2 Describe Single Carrier Frequency Division Multiple Access (SC-FDMA)
 - 2.3 Explain adaptive coding, modulation and MIMO are used in LTE
 - 2.4 Explain how LTE downlink and uplink user bit rates are achieved
- 3 Give an overview of the evolution of LTE
 - 3.1 List the main contents of the 3GPP releases from R99 to R15
 - 3.2 Describe the highlights of LTE Advanced
 - 3.3 Describe the highlights of LTE Advanced Pro
 - 3.4 List the main objectives for 5G according to 3GPP release 15

Target audience

The target audience for this course is:

Service Planning Engineer, Service Design Engineer, Network Design Engineer, Network Deployment Engineer, Service Deployment Engineer, System Technician, Service Technician, System Engineer, Service Engineer, Field Technician, System Administrator

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**Prerequisites**

Successful completion of the following courses:

There are no prerequisites for this course.

Duration and class size

The length of the course is approximately 40 minutes.

Learning situation

This is a self-paced Web Based Learning (WBL).

Time schedule

The time required always depends on the knowledge of the attending participants and the minutes stated below can be used as estimate.

Day	Topics in the course	Estimated Time (minutes)
1	LTE/EPC Architecture	10
	LTE Radio Interface	10
	LTE Evolution	10
	Quiz	10

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LTE/SAE in Nutshell



LZU1087417 R1A

Description

Do you want to know what LTE/SAE is all about? This eLearning course will give you an overview on end user experience of Long Term Evolution (LTE) in terms of services and applications, speed and capacity as well as network setup. The course also highlights the mobile technology evolution. The course content is a simple explanation of the fourth generation technology aimed towards a non-technical target audience.

Learning objectives

On completion of this course the participants will be able to:

- 1 What is LTE/SAE?
- 2 How fast is LTE?
- 3 What is included in the Mobile Technology Evolution?
- 4 What is the end user experience?
- 5 What are possible services and application?
- 6 What is the speed and capacity?
- 7 Is it better than 3G?
- 8 How much does it cost?
- 9 Do I need a new phone?
- 10 Is the coverage and mobility better than today?
- 11 How does LTE/SAE work?
- 12 Which Frequencies are used?
- 13 Which nodes are included in the Radio Network?
- 14 Which nodes are included in the Core Network?
- 15 What is the meaning of the typical LTE related abbreviations?

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Target audience

The target audience for this course is:

System Technicians,
Service Technicians,
Field Technicians,
System Administrators,
Application Developers,
Business Developers,
Customer Care Administrators.

The main focus of this course is on non-technical personnel.

Prerequisites

Successful completion of the following courses:

None

Duration and class size

The length of the course is 1 hour.

Learning situation

This is a web-based interactive training course with multimedia content.



LTE/SAE– System Overview, WBL



LZU 108 7318 R2A

Description

If you want to know what LTE/SAE (Long Term Evolution / System Architecture Evolution) is, this course will give you an overview of the new radio technology and protocols involved in the E-UTRAN (Evolved UTRAN, also referred to as LTE) and the architecture behind EPC (Evolved Packet Core, also referred to as SAE – System Architecture Evolution).

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain the background and architecture of E-UTRAN and EPC
 - 1.1 Describe the evolution of cellular networks
 - 1.2 Summarize the evolution of 3GPP releases
 - 1.3 Describe the flexible spectrum usage
- 2 Describe the EPS Architecture
 - 2.1 Explain the logical architecture of EPS (E-UTRAN and EPC)
 - 2.2 Give an overview of the interfaces in EPS
 - 2.3 Describe the radio interface techniques
 - 2.4 Explain the difference between the FDD and TDD mode
 - 2.5 Detail the terminal states
 - 2.6 Describe the Evolved Packet Core
 - 2.7 Describe the role of the MME and the S-GW
 - 2.8 Detail the S1 and X2 interfaces and their protocol stacks
- 3 Describe the Air Interface
 - 3.1 Explain the radio interface structure
 - 3.2 Detail the channel structure of the radio interface
 - 3.3 Describe the physical signals in UL and DL
 - 3.4 Detail the time-domain structure in the radio interface in UL and DL for both FDD and TDD mode
 - 3.5 Detail the downlink transmission technique
 - 3.6 Have a good understanding of the OFDM principle, signal generation and processing
 - 3.7 Detail the reference symbols in DL
 - 3.8 Detail the control signaling in DL
 - 3.9 Detail the uplink transmission technique
 - 3.10 Have a good understanding of the SC-FDMA principle, signal generation and processing



- 3.11 Explain the pros and cons with OFDM and SC-FDMA
- 3.12 Detail the control signaling in UL
- 3.13 Describe the concepts of layers, channel rank, spatial multiplexing, SU-MIMO and MU-MIMO
- 3.14 Detail the Radio Resource Management and Mobility
- 3.15 Describe the Radio Resource Management
- 3.16 Describe UL and DL scheduling and signaling
- 3.17 Explain the concepts of dynamic and persistent scheduling
- 3.18 Describe LTE Mobility
- 3.19 Describe intra-LTE mobility in ECM_CONNECTED and ECM_IDLE mode
- 3.20 Explain inter-working with 2G/3G

Target audience

The target audience for this course is:

Network Engineer
Service Engineer
Service Design Engineer
Network Design Engineer

Prerequisites

Successful completion of the following courses:

A general knowledge in cellular systems and radio technology.

Duration and class size

The length of the course is 3 hours.

Learning situation

This is a web-based interactive training course with multimedia content



RBS 6000 in a Nutshell



LZU1087504 R1A

Description

This WBL course is intended to give the participants an overview of the RBS 6000 series for those who are interested in RBS 6000 technology platform from Ericsson. The RBS 6000 Overview course will guide you through the concept and explain you the main benefits of the RBS 6000 architectures. You will learn how the multi-standard concept is implemented, more room for expansion is generated and how you can lower the power consumption of your network for greater sustainability.

Learning objectives

On completion of this course the participants will be able to:

- 1 Describe on an overview level the RBS 6000 Platform
- 2 Describe the generic building and form structure used in RBS 6000
- 3 Describe on an overview level the building practice
- 4 Explain the advantages of multi-standard RBS
- 5 Describe how more room for expansions is generated
- 6 Compare the power consumption of a RBS 6000 to today's technologies
- 7 Understand how WCDMA is implemented in the RBS 6000
- 7.1 Describe on block level which boards and units gives the WCDMA Functionality
- 8 Understand how LTE is implemented in the RBS 6000
- 8.1 Describe on block level which boards and units gives the LTE Functionality
- 9 Understand how GSM is implemented in the RBS 6000
- 9.1 Describe on block level which boards and units gives the GSM Functionality

Target audience

The target audience for this course is:

System Technician
Service Technician
System Engineers
Service Engineers





Prerequisites

The participants should be familiar with the WCDMA, GSM and LTE on overview level.

Duration and class size

The length of the course is 1 hour.

Learning situation

This is a web-based interactive training course with multimedia content.



LTE L16 eNode B Commissioning



LZU1082165 R1B

Description

Can you integrate a Digital Unit (DUL/DUS) based eNodeB implemented on an RBS 6000 from a site perspective? What does Autointegration imply and how is it different from manual integration?

This course provides the participants with hands-on experience of the procedures that need to be performed for the commissioning and integration of an eNodeB at the site.

NOTE: THIS COURSE FOCUSES ON DU-BASED ENODE B IMPLEMENTATION.

Learning objectives

On completion of this course the participants will be able to:

- 1 Describe the LTE system from an overview level
 - 1.1 Describe on an overview level the RBS 6000 platform and hardware
 - 1.2 List the integration steps of RBS 6000
 - 1.3 Explain how the integration process would be different when integrating with a smart phone
- 2 Use the management tools available at the LTE RBS site
 - 2.1 Use the Element Manager (EM) to find information relevant for an LTE RBS commissioner
 - 2.2 Use the Command Line Interface (CLI) to print some basic information
 - 2.3 Configure a client computer to connect to the RBS to open the Element Manager
- 3 Perform commissioning and integration of the RBS
 - 3.1 Power up the RBS
 - 3.2 Check the RBS status
 - 3.3 Connect the client computer
 - 3.4 Select the integration scenario
 - 3.5 Integrate the RBS manually
 - 3.6 Explain how the integration procedure differs with Auto-integration
 - 3.7 Monitor the RBS integration
 - 3.8 Verify the external alarms
 - 3.9 Check the hardware status
 - 3.10 Test the User Plane Traffic
 - 3.11 Complete and store integration report

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Target audience

The target audience for this course is:

Field Technician, Network Deployment Engineer, System Technician

Prerequisites

Successful completion of the following courses:

LTE/SAE System Overview LZU1087020

RBS 6000 Overview LZU1087503

Or

LTE/SAE Overview WBL LZU1087318

RBS 6000 in a Nutshell WBL LZU1087504

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Introduction	0.25
	Describe the LTE system from an overview level	1.0
	Use the management tools available at the LTE RBS site	1.75
	Perform commissioning and integration of the RBS	3.0

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WCDMA RAN W16 Node B Digital Unit (DU) Commissioning



LZU1082195 R1A

Description

This course provides the participants hands-on experience of the procedures that need to be performed for the commissioning and integration of the RBS 6000 series.

Learning objectives

On completion of this course the participants will be able to:

- 1 Detail the principle of Integration in WCDMA RAN Network
 - 1.1 Identify WCDMA System Architecture
 - 1.2 Summarize the steps involved in RAN Integration Nodes
 - 1.3 Show the Integration Flow
 - 1.4 Explain which management tools are needed for each step
- 2 Identify Pre-Configuration Activities before Commissioning
 - 2.1 Recognize all Requirements for Commissioning
 - 2.2 Explain the steps that need to be performed in the RAN
 - 2.3 Explain the steps need to be performed in CN before RBS Integration
- 3 Perform the commissioning and integration of the RBS
 - 3.1 Perform Initial Configuration of the RBS
 - 3.2 Configure the Thin Client to connect to the RBS
 - 3.3 Configure the Node IP address
 - 3.4 Load Basic Packet SW
 - 3.5 Perform basic hardware configuration using the Cabinet Equipment Wizard
 - 3.6 Perform Site Basic Configuration of the RBS
 - 3.7 Configure the O&M access for the RBS using the O&M access configuration wizard
 - 3.8 Verify Synchronization status to ensure stability of the node
 - 3.9 Perform Site External Configuration on the node
 - 3.10 Integrate the external hardware for site, sectors and cells using the Site External
 - 3.11 List the steps needed and perform site-external configuration on the node
 - 3.12 Explain briefly Site Specific configuration
 - 3.13 Detail what is configured during Site Specific configuration
 - 3.14 Load Site Specific Transport and Radio Network scripts
 - 3.15 Perform Configuration Validation
 - 3.16 Validate IP/ATM connectivity
 - 3.17 Verify RBS Local Cell and verify LED status
 - 3.18 Explain the Baseband Hardware and x3 R(RUS) Radio Unit

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**Target audience**

The target audience for this course is:

Network Deployment Engineer, Field Technician, System Technician

Prerequisites

Successful completion of the following courses:

CPP Node Features and Functions, LZU1086116

RBS 6000 Overview, LZU1087503

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.5
	RBS Management Applications	0.5
	RBS Integration	5.0

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Baseband 5216/5212 Commissioning



LZU1082320 R1A

Description

How is the Baseband 5216 and 5212 integrated on site? What will be the O&M tools used during integration? Will there be different O&M tools required to integrate a baseband used for GSM, WCDMA or LTE radio nodes? Which integration mode is applicable for the Baseband - Manual, Semi-automatic or Full-auto?

These are just some of the questions that will be answered in the Baseband 5216/5212 Commissioning course. This course provides participants the requirements that are essential before commissioning and integration activities can begin. In addition, the participants will be able to have a hands-on experience of the procedures needed to commission and integrate a baseband on site.

Learning objectives

On completion of this course the participants will be able to:

- 1 Describe the RAN system
 - 1.1 Explain the basic GSM, WCDMA and LTE Radio Access Network
 - 1.2 Know the conditions when integrating a Baseband on site
 - 1.3 List the integration steps of the Baseband
- 2 Describe the management tools used for Baseband
 - 2.1 Know on an overview level EMGUI, EMCLI and Ericsson CLI
 - 2.2 Install EMGUI and ECLI on the client
 - 2.3 Configure a client to connect to the Baseband
- 3 Perform commissioning and integration on the Baseband
 - 3.1 Power the radio node
 - 3.2 Connect client to the Baseband
 - 3.3 Integrate and monitor the integration
 - 3.4 Check for any alarms
 - 3.5 Complete and store integration report

Target audience

The target audience for this course is:

Field Technician, Network Deployment Engineer, System Technician

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Prerequisites

Successful completion of the following courses:

Ericsson Radio System Overview LZU1089991

LTE L16 eNode B Commissioning LZU1082165

WCDMA RAN W16 Node B Digital Unit (DU) Commissioning LZU1082195

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Introduction	0,25
	RAN Systems Overview	0,75
	Understanding the management tools	2,00
	Perform commissioning and integration on the radio node	3,00

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Baseband 5216/5212 Handling



LZU1082172 R2A

Description

Are you ready to introduce the most powerful baseband into your Radio Access Network? What are the features and functionalities of the new Baseband 5216/5212? How will the configuration of transport and radio network managed objects look under the Ericsson Common Information Model? Which are the tools (user interfaces) that could be used to configure a Baseband-based radio node? How would one handle the Configuration, Performance, Security and Fault management operations on a Baseband 5216/5212?

"Baseband 5216/5212 Handling" provides the answers to all the questions above. The course includes theoretical sessions where what need to be configured are described and investigated, followed by practical exercises in which the configurations are made.

The course introduces the Gen 2 baseband unit [also known as (or associated with) "Baseband 5216/5212" / MSRBS-V2 / COM / RCS / ECIM / G2], and its features and characteristics. (Baseband 5216 and 5212 are key products in the Baseband area in Ericsson Radio System offering.) After the course, participants will be familiar with integration procedure, the managed objects that need to be configured according to the Ericsson Common Information Model. The Mul-, S1-, X2, Iub- and Abis- interfaces (with and without IpSec) including basic radio network configuration for LTE/WCDMA/GSM are defined during the training. The students also get hands-on experience (in the areas of Fault/ Software/ Configuration/ Performance/Security Managements) on a Baseband 5216/5212 unit deployed in a LTE /eNodeB, WCDMA/NodeB and GSM/BTS (16B software) environment.

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain RAN Architecture, Ericsson Radio System building blocks and Baseband modules.
 - 1.1 Describe the interfaces in Radio Access Network Architecture.
 - 1.2 List the Building blocks in Ericsson Radio system
 - 1.3 Describe the capabilities of Baseband 5216/5212, Baseband R503, Baseband T503 and Baseband T605.
 - 1.4 Explain the hardware and software architecture of Baseband.
 - 1.5 Compare the Hardware differences between Baseband 5216, DUS 41, and DUL 20.
 - 1.6 Explain the different possible options of O&M with Baseband 5216/5212.

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- 2 Describe the Transport Network functionalities and introduce ECIM MOM.
- 2.1 Describe the Mu, S1, X2, Iub and Abis protocol and recognize the Managed objects related to Transport network.
- 2.2 List the transmission capabilities for Baseband 5216, Baseband T605 and Baseband T503
- 2.3 Relate the IP and Ethernet functionalities of Baseband to the 16B RAN Transport Network
- 2.4 Introduce and Explain in the brief the Ericsson Common Information Model (ECIM)
- 2.5 Compare the Managed objects related to transport network in baseband with CPP nodes.
- 2.6 List out the different synchronization options that are supported by Baseband 5216/5212.
- 2.7 Explain what IP Security (IPsec) is and how it is supported in RAN
- 2.8 Recognize Managed Objects related to IPsec implementation and some key attributes that configure IPsec
- 3 Explain the Radio Network in Baseband 5216
- 3.1 Explain the concept of cell and its relation to sector and antenna system in RBS.
- 3.2 Introduce the new radio products in Ericsson radio system
- 3.3 Recognize the Managed Objects related to radio network configuration
- 3.4 Relate the Managed Objects and figure out the changes according to Ericsson Common Information Model (ECIM)
- 3.5 Edit and implement the files for on-site usage that would create the Radio network (Cells, Cell relations) as applicable in an eNodeB, NodeB or BTS.
- 4 Describe the Integration, Operation and Management aspects of Baseband 5216/5212 and implement them using the O&M tools.
- 4.1 Explain the possible External Management interfaces and login option to the Baseband 5216/5212
- 4.2 Describe in brief the Integration process for a Baseband 52 -based eNodeB, NodeB or BTS.
- 4.3 Explain the configuration files that are used in the integration of a Baseband 5216/5212
- 4.4 Compare the different Configuration options available for Baseband 5216/5212
- 4.5 Perform exercises related to Configuration Management, Performance Management and Fault Management in Baseband 5216/5212
- 4.6 Explain the Security Management process in Baseband 5216/5212
- 4.7 Collect the ESI/DCG logs and perform basic troubleshooting

Target audience

The target audience for this course is:

Service Planning Engineer, Network Deployment Engineer, Network Design Engineer

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Prerequisites

Successful completion of the following courses:

LTE/SAE System Overview, LZU1087020

LTE L16 Configuration, LZU1082168-Optional

or

WCDMA System Overview, LZU1085418

WCDMA EVO-C 8200 Configuration, LZU1088931-Optional

or

GSM System Survey, LZU108852

Ericsson Radio System Overview, LZU1089991 – Recommended

Duration and class size

The length of the course is 3 days and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools, which are accessed remotely.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course introduction and introduction of RAN, The Ericsson Radio System overview with O&M tools	2.0
	ECIM MOM and Transport Network Configuration theory	4.0
2	Transport Network practical	3.0
	Configuration of the radio network – theory and practical	3.0
3	Integration Process and configuration options	2.0
	Configuration Management , Performance Management, Security Management and Fault Management - Practical	3.0
	Summary and end-of-course procedures	1.0

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Baseband Troubleshooting



LZU1082321 R1A

Description

When introducing Baseband 52 (as a part of Ericsson Radio System hardware) in the network, what are the main challenges during configuration and operation? What are the common faults, how are they detected and solved in a Baseband unit? How does Ericsson local/field support enable and collect logs from a Baseband unit?

Baseband Troubleshooting course explains how a fault is detected, the different types of logs in a Baseband Unit and how logs are collected to be appended to Customer Service Requests (CSRs). Alarm handling procedures and tools are covered. Performance recordings and statistics initiation from the OSS-RC is investigated as an essential step of troubleshooting a problem. Verification of connectivity issues and emergency recovery concepts are also explained - the course is ideal for operation and maintenance personnel. Customer Product Information (CPI) in ALEX is used as much as possible during the training. LTE is used as baseline, although the concept is equally applicable for WCDMA and GSM.

The students also get hands-on experience (in the areas of Fault/Software/Security/Configuration/Performance Managements) on a Baseband unit deployed in an LTE/WCDMA /GSM (16B software) environment.

Learning objectives

On completion of this course the participants will be able to:

- 1 Describe and use the different troubleshooting tools in LTE troubleshooting tools for the Baseband
 - 1.1 List the areas in the Baseband unit that require troubleshooting knowledge
 - 1.2 Review the Ericsson Common Information Model (ECIM) Managed Object Model (MOM)
 - 1.3 Explain the main tools used to support the Baseband unit such as EMCLI, ECLI
 - 1.4 Describe when to use the RBS related tools in troubleshooting the Baseband unit
 - 1.5 Explain when to use the OSS-RC related tools in troubleshooting the Baseband unit
- 2 Explain the emergency recovery procedure of a baseband based RBS and collect data while creating Customer Service Requests (CSRs)
 - 2.1 List how to collect detailed node data for customer service requests
 - 2.2 Apply the Data Collection Guide for the Baseband unit using EMCLI, ECLI, EA tools.
 - 2.3 Know the principles of node field recovery
 - 2.4 Be able to perform node recovery actions
 - 2.5 List and explain the functions of the various files that make up a Backup

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- 3 Describe the steps involved in transport and radio network troubleshooting.
 - 3.1 Describe which interfaces that the RBS provides
 - 3.2 Check O&M connectivity on the Mul interface
 - 3.3 Discuss issues related to transport network configuration and actions required
 - 3.4 Verify the Network Synchronization status
 - 3.5 Discuss issues related to radio network configurations and actions required
 - 3.6 Identify the Managed Objects that hold parameters related to mobility
- 4 Discuss and perform system Management level troubleshooting concepts
 - 4.1 Troubleshoot Configuration Management, Software Management, Performance Management and Fault Management issues with EMCLI , ECLI ,EA tools
 - 4.2 List the related Managed objects for troubleshooting Security Management issue
 - 4.3 Expand and act on Alarms
 - 4.4 Relate counter values to RBS's performance
 - 4.5 Discuss various end-to-end system performance issues

Target audience

The target audience for this course is:

System Engineer, Service Engineer, Field Technician

Prerequisites

Successful completion of the following courses:

Ericsson Radio System Overview LZU1089991

Baseband 5216_5212 Handling LZU1082172

Duration and class size

The length of the course is 2 days and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools, which are accessed remotely

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Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Introduction	1.0
	Troubleshooting tools	1.0
	Baseband unit structure	1.0
	Troubleshooting tools Exercises	2.0
	RBS Recovery and Data Collection Guideline	1.0
2	RBS Recovery and Data Collection Guideline Exercises	2.0
	Transport and Radio network Troubleshooting	2.0
	System Management Troubleshooting	2.0

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Introducing Small Cells into Multistandard Network



LZU1082325 R1A

Description

What are the fundamental considerations one should keep in mind while deploying small cells?

The training “Introducing Small Cells into Multistandard Network” addresses this question. The course examines the impacts/differences of small cell deployment- focusing on Ericsson products, integration aspects, radio planning considerations- as well as operation and maintenance of the small cell products. Although the training uses LTE RAN in the explanations, it also compares the WCDMA and WiFi RANs whenever applicable. The course introduces the Multistandard Network development trend and the related challenges; describes small cell and Heterogeneous Network concept and solution; analyzes small cell and HetNet planning procedures; introduces small cell specific radio network functionalities and features.

This course is a perfect way to prepare for the deployment of the small cell products.

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain the concept of Small cell and Heterogeneous Network in RAN
 - 1.1 Describe Small Cell and Heterogeneous network concepts
 - 1.2 Demonstrate how to better utilize small cells
 - 1.3 Explain the key strategies to implement small cells
 - 1.4 Identify Ericsson small cell product portfolio and Heterogeneous Network solution
- 2 Describe the small cell and Heterogeneous Network planning and dimensioning calculations
 - 2.1 Explain the general LTE radio network planning principle
 - 2.2 Compare the differences between general LTE radio network planning and small cell or Heterogeneous Network planning
 - 2.3 Describe aspects to consider when deploying and where to locate the small cells.
 - 2.4 Describe Mobility parameters in Small Cells
 - 2.5 Point out the Radio Network Functionality important features in Small cell Deployment
 - 2.6 Recommend how to mitigate interference problems in Small Cells
- 3 List the Multistandard, Multiband and multi-layer configurations possible in small cell portfolio





- 3.1 Describe the Radio Configurations possible with Micro RBS 6501 and mRRU's
- 3.2 Explain the LTE and WCDMA configuration possible with Radio Dot System
- 3.3 List the radio characteristics and features of the RBS 6402
- 3.4 Explain the possible Multiband, Multistandard configurations possible with RBS 6402
- 3.5 Explain the multi-standard, multi-band and multi-layer solutions with Ericsson Radio System
- 3.6 Describe in Unlicensed Spectrum - LAA
- 4 Describe the Integration steps and the tools used for Operation and management of Small cells
 - 4.1 Explain integration aspects in small cells
 - 4.2 Compare the integration procedures for various small cell products deployment
 - 4.3 Explain the deployment of the Pico RBS (RBS 6402) in the LTE RAN, and highlight the differences with the WCDMA and WiFi RANs
 - 4.4 Explain how IpSec tunnel setup is configured and its importance in an unsecure deployment scenario
 - 4.5 Describe the use of BSIM in creating the relevant scripts to be used during the integration
 - 4.6 Explain Operation and Management in small cell products including the Pico RBS, the RDS and the WiFi Access Points

Target audience

The target audience for this course is:

System Technician, Field Technician, Network Deployment Engineer, Integration Engineer, Solution Architect

Prerequisites

Successful completion of the following courses:

Ericsson Radio System Overview LZU1089991

LTE /WCDMA Configuration courses

Baseband 5216/5212 Handling LZU1082172

Duration and class size

The length of the course is 2 days and the maximum number of participants is 16.

Learning situation

This course is based on theoretical instructor-led lessons given in a classroom.

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Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Introduction	1.0
	Small cell Planning	3.0
	Small cell Radio Functionality Features	2.0
2	Small cell Product Characteristics and Configurations	3.0
	Integration, Operation and Management	3.0

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Mixed Mode Configuration in RBS



LZU1082324 R1A

Description

How is mixed mode configured in the baseband and digital units? What conditions should be met for LTE-WCDMA, LTE-GSM and GSM-WCDMA mixed mode implementation? What are the possible hardware, software and synchronization methods that would support the mixed mode implementation?

“Mixed Mode Configuration in RBS” course helps determine the solution for the questions mentioned above. This course is a combined theory and practical instructor led course, discussing and applying mixed mode concepts, mixed mode possible scenarios, hardware and software configurations and synchronization options on baseband and digital units.

The course covers LTE, WCDMA and GSM mixed mode implementation (for DU and Baseband based sites). In addition, it also includes management tools, O&M view and Node group synchronization configurations. The students would be able to get a hands-on experience to perform mixed mode configuration.

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain the RAN System Architecture, Mixed Mode Concept in DU and Baseband modules
 - 1.1 Explain the basic GSM, WCDMA and LTE Radio Access Network
 - 1.2 Describe the features and capabilities of the baseband unit and digital units
 - 1.3 Explain the benefits of the mixed mode feature Implementation
 - 1.4 Determine the different RAT mixed mode scenarios
 - 1.5 Detail the hardware requirements and cabling connections for mixed mode implementation
- 2 Know the synchronization methods supported for baseband and digital Units
 - 2.1 Introduce Node Group Synchronization-Mixed Mode CPRI
 - 2.2 List the Synchronization options supported for Digital Units
 - 2.3 Know the configuration needed in Basebands for the mentioned synchronization options
- 3 List the configuration steps in Multi-Standard Mixed Mode Baseband and Radio Configurations
 - 3.1 Explain the interworking of mixed mode using baseband and digital units
 - 3.2 Explain the configuration for LTE-WCDMA Mixed Mode implementation on a

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- baseband unit
- 3.3 Explain the configuration for LTE-GSM Mixed Mode implementation on a baseband unit
 - 3.4 Explain the configuration for GSM-WCDMA Mixed Mode implementation on a baseband unit
 - 3.5 Compare the O&M similarities for the above-mentioned Mixed Mode scenarios

Target audience

The target audience for this course is:

Field Technician, Integration Engineer, Solution Architects

Prerequisites

Successful completion of the following courses:

Ericsson Radio System Overview LZU1089991

Baseband 5216/5212 Handling LZU1082172

Multistandard Baseband 52xx Field Maintenance LZU1082173

Duration and class size

The length of the course is 2 days and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	RAN System Architecture, Baseband and Digital Unit modules	2,0
	Mixed Mode Concept	2,5
2	Synchronization methods	3
	Configuration of Mixed Mode	4,5

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SIU 02 / TCU 02 T15 Operation and Configuration



LZU1089961 R1A

Description

This training describes the operation and configuration procedures for SIU 02 / TCU 02. The participants will verify the SIU 02 / TCU 02 functions, hardware, features, managed object model and the configuration procedures using the command line interface (CLI).

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain SIU 02 / TCU 02 Introduction, Hardware and Features.
 - 1.1 Explain the main SIU 02 / TCU 02 functions.
 - 1.2 Describe the SIU 02 / TCU 02 hardware details.
 - 1.3 Show installation examples for SIU 02 / TCU 02.
 - 1.4 Describe the main features for SIU 02 / TCU 02.
- 2 Describe SIU 02 / TCU 02 Managed Object Model.
 - 2.1 Describe the managed object (MO) concept, structure and relations.
 - 2.2 Identify an example of the Managed Information Base (MIB).
- 3 List the main SIU 02 / TCU 02 CLI Commands.
 - 3.1 Explain the SIU 02 / TCU 02 local connection and command line.
 - 3.2 Show the main CLI commands.
- 4 Configure the main SIU 02 / TCU 02 Features.
 - 4.1 Configure O&M Access.
 - 4.2 Configure the Synchronization.
 - 4.3 Configure the Abis over IP using Ethernet and E1/T1.
 - 4.4 Configure the RBS WCDMA and LTE over Ethernet.
 - 4.5 Configure the ACL, BFD, BVI and Bridging.

Target audience

The target audience for this course is:

Network Deployment Engineer, System Technician, System Engineer, Field Technician



Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU107852
Ericsson WCDMA System Overview, LZU1085418
LTE/SAE System Overview, LZU1087020
IP Networking, LZU102397
IP in GSM Radio Access Network, LZU1087035
IP in WCDMA Radio Access Network, LZU1087379
GSM BSS RBS 2000 Basics, LZU1088833
RBS 6000 Overview, LZU1087503
SIU 02 / TCU 02 T15 Field Maintenance, LZU1089962

Duration and class size

The length of the course is 3 days and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools, which are accessed remotely.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Time (hours)
1	Course Introduction and Pre-Test (If necessary)	0.5
	SIU 02 / TCU 02 Introduction, Hardware and Features	5.5
2	SIU 02 / TCU 02 Managed Object Model	1.5
	SIU 02 / TCU 02 Local Connection and Main Commands	4.5
3	SIU 02 / TCU 02 Features Configuration	5.5
	Course Evaluation and Test (if necessary)	0.5

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Ericsson Baseband T503 U15B Operation and Configuration



LZU1089960 R1A

Description

The objective of this course is to describe the Ericsson Baseband T503. During this training the students will be able to learn about hardware characteristics, features, managed object model, operation tools and main configuration procedures.

Learning objectives

On completion of this course the participants will be able to:

- 1 Describe the Baseband T503 hardware details and features.
 - 1.1 Explain the Baseband T503 functions.
 - 1.2 Describe the Baseband T503 hardware details.
 - 1.3 Show Baseband T503 site installation examples.
 - 1.4 Explain the Baseband T503 features.
- 2 Present the Baseband T503 Managed Object Model.
 - 2.1 Describe the Managed Object concept, structure and relations.
 - 2.2 Identify an example of the Managed Information Base (MIB).
- 3 Explain the Baseband T503 operation and configuration tools.
 - 3.1 Explain the Baseband T503 Local Connection.
 - 3.2 Explain the Baseband T503 EMCLI and Ericsson CLI.
 - 3.3 List the main commands for EMCLI and Ericsson CLI.
- 4 Configure the main Baseband T503 features and functionalities.
 - 4.1 Show how to configure the O&M access.
 - 4.2 Show how to configure the Synchronization.
 - 4.3 Show how to configure the main Baseband T503 features.

Target audience

The target audience for this course is:

Network Deployment Engineer, System Technician, System Engineer, Field Technician



Prerequisites

Successful completion of the following courses:

Ericsson WCDMA System Overview, LZU1085418
LTE/SAE System Overview, LZU1087020
IP Networking, LZU102397
IP in WCDMA Radio Access Network, LZU1087379
RBS 6000 Overview, LZU1087503

Duration and class size

The length of the course is 3 days and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools, which are accessed remotely.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Time (hours)
	Course Introduction and Pre-Test (If is necessary)	0.5
1	TCU 03 Hardware Details and Features	3.0
	TCU 03 Managed Object Model	3.0
2	TCU 03 Operation and Configuration Tolls	6.0
	TCU 03 Configuration Procedures	5.5
3	Post Test (If is necessary) and Course Evaluation	0.5

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Baseband T605 Operation and Configuration



LZU1082380 R1A

Description

What does the Baseband T605 do? In which scenarios can it be deployed? How does one work with the Baseband T605?

The training product "Baseband T605 Operation and Configuration" answers your curiosities regarding the new site transmission node Baseband T605. During the training, the students will learn about the hardware characteristics, features, Managed Object Model, operation and maintenance tools related to the Baseband T605. Configuration procedure, the configuration areas and basic operational tasks are also performed during the training.

Learning objectives

On completion of this course the participants will be able to:

- 1 Describe Baseband T605
 - 1.1 Explain the main functions of the Baseband T605
 - 1.2 Identify Baseband T605 hardware
 - 1.3 Show the main features of the Baseband T605
- 2 Describe Baseband T605 Managed Object Model
 - 2.1 Explain Managed Object concept.
 - 2.2 Identify Managed Object structure
 - 2.3 Show the Managed Object relations
- 3 List Baseband T605 operation and configuration tools
 - 3.1 Describe Ericsson Command Line Interface (ECLI)
 - 3.2 Describe Element Manager Command Line Interface (EMCLI)
 - 3.3 Indicate the main commands for EMCLI and ECLI
- 4 Configure and operate Baseband T605
 - 4.1 Recognize Baseband T605 Configuration
 - 4.2 Configure Baseband T605 using EMCLI and ECLI
 - 4.3 Explain Baseband T605 scripts structure

Target audience

The target audience for this course is:

Network Deployment Engineer, System Technician, System Engineer, Field Technician

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**Prerequisites**

Successful completion of the following courses:

Ericsson Radio System Overview, LZU1089991

Duration and class size

The length of the course is 3 days and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools, which are accessed remotely.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Time (hours)
	Course Introduction and Pre-Test (If is necessary)	0.5
1	Baseband T605 Overview	3.0
	Baseband T605 Managed Object Model	2.5
2	Baseband T605 Operation and Configuration Tools	6.0
	Baseband T605 Configuration	5.5
3	Post Test (If is necessary) and Course Evaluation	0.5

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WCDMA RBS 6101 Field Maintenance



LZU1087895 R4A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6101 standard node with RUW 01/02 and RUS 01 type (optional radio units for hybrid configuration such as RRUW, RRUS 01, RRUS 02, RRUS 11, RRUS 12, mRRUS 12 and AIR 11/21 are available in the Appendix). The participants will perform hardware fault localization, hardware replacement and configuration tasks on a RBS 6101 type. On completion of this course the participants will also be familiar with the features of the operation and maintenance tools such as Element Manager (EM), COmmand Line Interface (COLI) and Node Command line Interface (NCLI).

Learning objectives

On completion of this course the participants will be able to:

- 5 Explain on overview level the WCDMA RAN Site Concept for RBS**
 - 5.1 Explain the basic WCDMA Radio Access Network
 - 5.2 Outline the RBS 6000 portfolio
 - 5.3 Identify the RBS 6000 Support System, Radio Modules and Digital Units
 - 5.4 Understand RBS 6000 Building Block and Hybrid configuration
 - 5.5 Identify the Antenna System Controller, ASC
 - 5.6 Identify and locate the Remote Electrical Tilt Unit, RETU
- 6 Perform maintenance and configuration tasks on the RBS 6101 nodes**
 - 6.1 Explain RBS 6101 Main features
 - 6.2 Explain the RBS 6101 Hardware architecture
 - 6.3 Identify the RBS 6101 Connection interfaces
 - 6.4 Explain DUW Hardware architecture
 - 6.5 Identify the DUW connection Interfaces
 - 6.6 Explain the Battery Backup System 6101
 - 6.7 Understand the RBS 6101 Maintenance procedures
 - 6.8 Explain RBS 6101 Handling faulty equipment
- 7 Use the Customer Product Information (CPI) and Tool Kits**
 - 7.1 Explain the CPI library structure of the node
 - 7.2 Find information in the CPI Library with use of regular expression
 - 7.3 Find operational instructions (OPI) and maintain the node according to the OPI
 - 7.4 Find additional information on an alarm and solve the problem with the help of the





- CPI
- 7.5 Know that different tool kits exist and how to order the Tool Kits.
- 8 Connect to a node using COLI and also using NCLI**
- 8.1 Understand basic commands using COLI and using NCLI
- 8.2 Have a basic understanding of the functionality and technology used in COLI and NCLI
- 8.3 Understand the basic principles behind the Managed Object Model (MOM)
- 8.4 Understand the file system in a CPP based node
- 8.5 Investigate the purpose and the location of the various types of logs.
- 9 Use the Element Manager**
- 9.1 Download and start the Element Manager
- 9.2 Access and use the different “Views”; Containment, ATM, Equipment, IP, Licensing, Radio Network and the Software.
- 9.3 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log
- 9.4 Access the property help feature from each window
- 9.5 Handling License Key Files, LKF
- 9.6 Explain how to format the node
- 9.7 Explain how to load the basic package software
- 9.8 Have a basic understanding of system upgrade
- 9.9 Explain backup handling

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

Ericsson WCDMA System Overview, LZU1085418

RBS 6000 Overview, LZU1087503

CPP Node Features and Functions, LZU1086116

WCDMA W13 Air Interface (optional), LZU1089117

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

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Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.25
	WCDMA RAN Systems and Site Introduction	0.5
	WCDMA RBS 6101 Maintenance	3
	Customer Product Information and Tool Kits	0.25
	Command Line Interface/Node Command Line Interface	1
	Element Manager	1

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WCDMA RBS 6102 Field Maintenance



LZU1087644 R4A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6102 standard node with RUW 01/02 and RUS 01 type (optional radio units for hybrid configuration such as RRUW, RRUS 01, RRUS 02, RRUS 11, RRUS 12, mRRUS 12 and AIR 11/21 are available in the Appendix). The participants will perform hardware fault localization, hardware replacement and configuration tasks on a RBS 6102 type. On completion of this course the participants will also be familiar with the features of the operation and maintenance tools such as Element Manager (EM), COmmand Line Interface (COLI) and Node Command line Interface (NCLI).

Learning objectives

On completion of this course the participants will be able to:

- 10 Explain on overview level the WCDMA RAN Site Concept for RBS**
 - 10.1 Explain the basic WCDMA Radio Access Network
 - 10.2 Outline the RBS 6000 portfolio
 - 10.3 Identify the RBS 6000 Support System, Radio Modules and Digital Units
 - 10.4 Understand RBS 6000 Building Block and Hybrid configuration
 - 10.5 Identify the Antenna System Controller, ASC
 - 10.6 Identify and locate the Remote Electrical Tilt Unit, RETU
- 11 Perform maintenance and configuration tasks on the RBS 6102 nodes**
 - 11.1 Explain RBS 6102 Main features
 - 11.2 Explain the RBS 6102 Hardware architecture
 - 11.3 Identify the RBS 6102 Connection interfaces
 - 11.4 Explain DUW Hardware architecture
 - 11.5 Identify the DUW connection Interfaces
 - 11.6 Explain the Battery Backup System 6102
 - 11.7 Understand the RBS 6102 Maintenance procedures
 - 11.8 Explain RBS 6102 Handling faulty equipment
- 12 Use the Customer Product Information (CPI) and Tool Kits**
 - 12.1 Explain the CPI library structure of the node
 - 12.2 Find information in the CPI Library with use of regular expression
 - 12.3 Find operational instructions (OPI) and maintain the node according to the OPI
 - 12.4 Find additional information on an alarm and solve the problem with the help of the





- CPI
- 12.5 Know that different tool kits exist and how to order the Tool Kits.
- 13 Connect to a node using COLI and also using NCLI**
- 13.1 Understand basic commands using COLI and using NCLI
- 13.2 Have a basic understanding of the functionality and technology used in COLI and NCLI
- 13.3 Understand the basic principles behind the Managed Object Model (MOM)
- 13.4 Understand the file system in a CPP based node
- 13.5 Investigate the purpose and the location of the various types of logs.
- 14 Use the Element Manager**
- 14.1 Download and start the Element Manager
- 14.2 Access and use the different “Views”; Containment, ATM, Equipment, IP, Licensing, Radio Network and the Software.
- 14.3 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log
- 14.4 Access the property help feature from each window
- 14.5 Handling License Key Files, LKF
- 14.6 Explain how to format the node
- 14.7 Explain how to load the basic package software
- 14.8 Have a basic understanding of system upgrade
- 14.9 Explain backup handling

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

Ericsson WCDMA System Overview, LZU1085418

RBS 6000 Overview, LZU1087503

CPP Node Features and Functions, LZU1086116

WCDMA W13 Air Interface (optional), LZU1089117

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

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Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.25
	WCDMA RAN Systems and Site Introduction	0.5
	WCDMA RBS 6102 Maintenance	3
	Customer Product Information and Tool Kits	0.25
	Command Line Interface/Node Command Line Interface	1
	Element Manager	1

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WCDMA RBS 6201 Field Maintenance



LZU1087647 R6A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6201 standard node with RUW 01/02 and RUS 01 type (optional radio units for hybrid configuration such as RRUW, RRUS 01, RRUS 02, RRUS 11, RRUS 12, mRRUS 12 and AIR 11/21 are available in the Appendix). The participants will perform hardware fault localization, hardware replacement and configuration tasks on a RBS 6201 type. On completion of this course the participants will also be familiar with the features of the operation and maintenance tools such as Element Manager (EM), COmmand Line Interface (COLI) and Node Command line Interface (NCLI).

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain on overview level the WCDMA RAN Site Concept for RBS
 - 1.1 Explain the basic WCDMA Radio Access Network
 - 1.2 Outline the RBS 6000 portfolio
 - 1.3 Identify the RBS 6000 Support System, Radio Modules and Digital Units
 - 1.4 Understand RBS 6000 Building Block and Hybrid configuration
 - 1.5 Identify the Antenna System Controller, ASC
 - 1.6 Identify and locate the Remote Electrical Tilt Unit, RETU
- 2 Perform maintenance and configuration tasks on the RBS 6201 nodes
 - 2.1 Explain RBS 6201 Main features
 - 2.2 Explain the RBS 6201 Hardware architecture
 - 2.3 Identify the RBS 6201 Connection interfaces
 - 2.4 Explain DUW Hardware architecture
 - 2.5 Identify the DUW connection Interfaces
 - 2.6 Explain the Battery Backup System 6201
 - 2.7 Understand the RBS 6201 Maintenance procedures
 - 2.8 Explain RBS 6201 Handling faulty equipment
- 3 Use the Customer Product Information (CPI) and Tool Kits
 - 3.1 Explain the CPI library structure of the node
 - 3.2 Find information in the CPI Library with use of regular expression
 - 3.3 Find operational instructions (OPI) and maintain the node according to the OPI
 - 3.4 Find additional information on an alarm and solve the problem with the help of the





- CPI
- 3.5 Know that different tool kits exist and how to order the Tool Kits.
- 4 Connect to a node using COLI and also using NCLI
- 4.1 Understand basic commands using COLI and using NCLI
- 4.2 Have a basic understanding of the functionality and technology used in COLI and NCLI
- 4.3 Understand the basic principles behind the Managed Object Model (MOM)
- 4.4 Understand the file system in a CPP based node
- 4.5 Investigate the purpose and the location of the various types of logs.
- 5 Use the Element Manager
- 5.1 Download and start the Element Manager
- 5.2 Access and use the different "Views"; Containment, ATM, Equipment, IP, Licensing, Radio Network and the Software.
- 5.3 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log
- 5.4 Access the property help feature from each window
- 5.5 Handling License Key Files, LKF
- 5.6 Explain how to format the node
- 5.7 Explain how to load the basic package software
- 5.8 Have a basic understanding of system upgrade
- 5.9 Explain backup handling

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

Ericsson WCDMA System Overview, LZU1085418

RBS 6000 Overview, LZU1087503

CPP Node Features and Functions, LZU1086116

WCDMA W13 Air Interface (optional), LZU1089117

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

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Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.25
	WCDMA RAN Systems and Site Introduction	0.5
	WCDMA RBS 6201 Maintenance	3
	Customer Product Information and Tool Kits	0.25
	Command Line Interface/Node Command Line Interface	1
	Element Manager	1

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WCDMA RBS 6202 Field Maintenance



LZU1088278 R4A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6202 standard node with RUW 01/02 and RUS 01 type (optional radio units for hybrid configuration such as RRUW, RRUS 01, RRUS 02, RRUS 11, RRUS 12, mRRUS 12 and AIR 11/12 are available in the Appendix). The participants will perform hardware fault localization, hardware replacement and configuration tasks on a RBS 6202 type. On completion of this course the participants will also be familiar with the features of the operation and maintenance tools such as Element Manager (EM), COmmand Line Interface (COLI) and Node Command line Interface (NCLI).

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain on overview level the WCDMA RAN Site Concept for RBS**
 - 1.1 Explain the basic WCDMA Radio Access Network
 - 1.2 Outline the RBS 6000 portfolio
 - 1.3 Identify the RBS 6000 Support System, Radio Modules and Digital Units
 - 1.4 Understand RBS 6000 Building Block and Hybrid configuration
 - 1.5 Identify the Antenna System Controller, ASC
 - 1.6 Identify and locate the Remote Electrical Tilt Unit, RETU
- 2 Perform maintenance and configuration tasks on the RBS 6202 nodes**
 - 2.1 Explain RBS 6202 Main features
 - 2.2 Explain the RBS 6202 Hardware architecture
 - 2.3 Identify the RBS 6202 Connection interfaces
 - 2.4 Explain DUW Hardware architecture
 - 2.5 Identify the DUW connection Interfaces
 - 2.6 Explain the Battery Backup System 6202
 - 2.7 Understand the RBS 6202 Maintenance procedures
 - 2.8 Explain RBS 6202 Handling faulty equipment
- 3 Use the Customer Product Information (CPI) and Tool Kits**
 - 3.1 Explain the CPI library structure of the node
 - 3.2 Find information in the CPI Library with use of regular expression
 - 3.3 Find operational instructions (OPI) and maintain the node according to the OPI
 - 3.4 Find additional information on an alarm and solve the problem with the help of the





- CPI
- 3.5 Know that different tool kits exist and how to order the Tool Kits.
- 4 Connect to a node using COLI and also using NCLI**
- 4.1 Understand basic commands using COLI and using NCLI
- 4.2 Have a basic understanding of the functionality and technology used in COLI and NCLI
- 4.3 Understand the basic principles behind the Managed Object Model (MOM)
- 4.4 Understand the file system in a CPP based node
- 4.5 Investigate the purpose and the location of the various types of logs.
- 5 Use the Element Manager**
- 5.1 Download and start the Element Manager
- 5.2 Access and use the different “Views”; Containment, ATM, Equipment, IP, Licensing, Radio Network and the Software.
- 5.3 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log
- 5.4 Access the property help feature from each window
- 5.5 Handling License Key Files, LKF
- 5.6 Explain how to format the node
- 5.7 Explain how to load the basic package software
- 5.8 Have a basic understanding of system upgrade
- 5.9 Explain backup handling

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

Ericsson WCDMA System Overview, LZU1085418

RBS 6000 Overview, LZU1087503

CPP Node Features and Functions, LZU1086116

WCDMA W13 Air Interface (optional), LZU1089117

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

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Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.25
	WCDMA RAN Systems and Site Introduction	0.5
	WCDMA RBS 6202 Maintenance	3
	Customer Product Information and Tool Kits	0.25
	Command Line Interface/Node Command Line Interface	1
	Element Manager	1



WCDMA RBS 6301 Field Maintenance



LZU1087892 R3A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6301 standard node with RRUS 01 type (optional radio units for hybrid configuration such as RRUW, RRUS 02, RRUS 11, RRUS 12, mRRUS 12 and AIR 11/21 are available in the Appendix). The participants will perform hardware fault localization, hardware replacement and configuration tasks on a RBS 6301 type. On completion of this course the participants will also be familiar with the features of the operation and maintenance tools such as Element Manager (EM), COmmand Line Interface (COLI) and Node Command line Interface (NCLI).

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain on overview level the WCDMA RAN Site Concept for RBS**
 - 1.1 Explain the basic WCDMA Radio Access Network
 - 1.2 Outline the RBS 6000 portfolio and Support System
 - 1.3 Understand RBS 6000 Building Block and Hybrid configuration
 - 1.4 Identify the Distribution Frame (DF) and the Site Support Unit
 - 1.5 Identify the Antenna System Controller, (ASC) and the Remote Electrical Tilt Unit, (RETU)
- 2 Perform maintenance and configuration tasks on the RBS 6301 nodes**
 - 2.1 Explain RBS 6301 Main features
 - 2.2 Explain the RBS 6301 Hardware architecture
 - 2.3 Identify the RBS 6301 Connection interfaces
 - 2.4 Explain DUW Hardware architecture
 - 2.5 Identify the DUW connection Interfaces
 - 2.6 Explain the Battery Backup System 6301
 - 2.7 Understand the RBS 6301 Maintenance procedures
 - 2.8 Explain RBS 6301 Handling faulty equipment
- 3 Use the Customer Product Information (CPI) and Tool Kits**
 - 3.1 Explain the CPI Library structure of the node
 - 3.2 Find information in the CPI Library with use of regular expression
 - 3.3 Find operational instructions (OPI) and maintain the node according to the OPI
 - 3.4 Find additional information on an alarm and solve the problem with the help of the CPI
 - 3.5 Know the different tool kits exist and how to order the Tool Kits



**4 Connect to a node using COLI and also using NCLI**

- 4.1 Understand basic commands using COLI and using NCLI
- 4.2 Have a basic understanding of the functionality and technology used in COLI and NCLI
- 4.3 Understand the basic principles behind the Managed Object Model (MOM)
- 4.4 Understand the file system in a CPP based node
- 4.5 Investigate the purpose and location of various types of logs

5 Use the Element manager (EM)

- 5.1 Download and start the Element Manager
- 5.2 Access and use the different "Views"; Containment, ATM, Equipment, IP, Licensing, Radio Network and the Software.
- 5.3 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log
- 5.4 Access the property help feature from each window
- 5.5 Create a Customized View (User Defined) in Element Manager
- 5.6 Handling License Key Files, LKF
- 5.7 Explain how to format the node
- 5.8 Explain how to load the basic package software

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

Ericsson WCDMA System Overview, LZU1085418
RBS 6000 Overview, LZU1087503
CPP Node Features and Functions, LZU1086116
WCDMA W13 Air Interface (optional), LZU1089117

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

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Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	15 minutes
	WCDMA RBS 6301 Maintenance	3 hours
	WCDMA RAN Systems and Site Introduction	0.5 hour
	Customer Product Information and tool kits	15 minutes
	Command Line Interface/Node Command Line Interface	1 hour
	Element Manager	1 hour

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WCDMA RBS 6302 Field Maintenance



LZU1088932 R3A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6302 standard node with RRUW/RRUS 01 type (optional radio units for hybrid configuration such as RRUS 02, RRUS 11, RRUS 12, mRRUS 12 and AIR 11/21 are available in the Appendix). The participants will perform hardware fault localization, hardware replacement and configuration tasks on a RBS 6302 type. On completion of this course the participants will also be familiar with the features of the operation and maintenance tools such as Element Manager (EM), COmmand Line Interface (COLI) and Node Command line Interface (NCLI).

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain on overview level the WCDMA RAN Site Concept for RBS**
 - 1.1 Explain the basic WCDMA Radio Access Network
 - 1.2 Outline the RBS 6000 portfolio and Support System
 - 1.3 Understand RBS 6000 Building Block and Hybrid configuration
 - 1.4 Identify the Distribution Frame (DF) and the Site Support Unit
 - 1.5 Identify the Antenna System Controller, (ASC) and the Remote Electrical Tilt Unit, (RETU)
- 2 Perform maintenance and configuration tasks on the RBS 6302 nodes**
 - 2.1 Explain RBS 6302 Main features
 - 2.2 Explain the RBS 6302 Hardware architecture
 - 2.3 Identify the RBS 6302 Connection interfaces
 - 2.4 Explain DUW Hardware architecture
 - 2.5 Identify the MU connection Interfaces
 - 2.6 Explain the Battery Backup System 6302
 - 2.7 Understand the RBS 6302 Maintenance procedures
 - 2.8 Explain RBS 6302 Handling faulty equipment
- 3 Use the Customer Product Information (CPI) and Tool Kits**
 - 3.1 Explain the CPI Library structure of the node
 - 3.2 Find information in the CPI Library with use of regular expression
 - 3.3 Find operational instructions (OPI) and maintain the node according to the OPI
 - 3.4 Find additional information on an alarm and solve the problem with the help of the





- CPI
- 3.5 Know the different tool kits exist and how to order the Tool Kits
- 4 Connect to a node using COLI and also using NCLI**
- 4.1 Understand basic commands using COLI and using NCLI
- 4.2 Have a basic understanding of the functionality and technology used in COLI and NCLI
- 4.3 Understand the basic principles behind the Managed Object Model (MOM)
- 4.4 Understand the file system in a CPP based node
- 4.5 Investigate the purpose and location of various types of logs
- 5 Use the Element manager (EM)**
- 5.1 Download and start the Element Manager
- 5.2 Access and use the different "Views"; Containment, ATM, Equipment, IP, Licensing, Radio Network and the Software.
- 5.3 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log
- 5.4 Access the property help feature from each window
- 5.5 Create a Customized View (User Defined) in Element Manager
- 5.6 Handling License Key Files, LKF
- 5.7 Explain how to format the node
- 5.8 Explain how to load the basic package software

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

Ericsson WCDMA System Overview, LZU1085418

RBS 6000 Overview, LZU1087503

CPP Node Features and Functions, LZU1086116

WCDMA W13 Air Interface (optional), LZU1089117

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both

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classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	15 minutes
	WCDMA RBS 6302 Maintenance	3 hours
	WCDMA RAN Systems and Site Introduction	0.5 hour
	Customer Product Information and tool kits	15 minutes
	Command Line Interface/Node Command Line Interface	1 hour
	Element Manager	1 hour



WCDMA RBS 6401 Field Maintenance



LZU1089576 R1A

Description

This course is a task-based maintenance course where participants will understand the functions of the RBS 6401, its optional units and learn how to handle RBS faults at site. During this activity, participants will also get familiar with the use of the ALEX documents (or Customer Product Information) to handle faulty equipment and perform correct procedure in replacing the hardware.

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain on overview level the WCDMA RAN Site Concept for RBS**
 - 1.1 Explain the basic WCDMA Radio Access Network
 - 1.2 Outline the RBS 6000 portfolio and Support System
 - 1.3 Explain the basic heterogeneous network
 - 1.4 Advantages and benefits of heterogeneous network
 - 1.5 Understand the concepts of Small Cell Sites
- 2 Perform maintenance tasks on the RBS 6401 nodes**
 - 2.1 Explain RBS 6401 Main features and optional equipment
 - 2.2 Explain the RBS 6401 Hardware architecture
 - 2.3 Identify the RBS 6401 Connection interfaces
 - 2.4 Understand the role of the IPG 6440
 - 2.5 Understand the RBS 6401 Maintenance procedures
 - 2.6 Explain RBS 6401 Handling faulty equipment
- 3 Use the Customer Product Information (CPI) and Tool Kits**
 - 3.1 Explain the CPI Library structure of the node
 - 3.2 Find information in the CPI Library with use of regular expression
 - 3.3 Find operational instructions (OPI) and maintain the node according to the OPI
 - 3.4 Find additional information on an alarm and solve the problem with the help of the CPI
 - 3.5 Know the different tool kits exist and how to order the Tool Kits
- 4 Handling Fault on-site**
 - 4.1 Understand how to isolate and correct common malfunctions of RBS 6401
 - 4.2 Know the behavior of the indicators
 - 4.3 Perform restart of the RBS 6401
 - 4.4 Perform RBS 6401 replacement





4.5 Have a basic understanding of the Ericsson Node Integration Scanner (ENIS)

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

Ericsson WCDMA System Overview, LZU1085418

RBS 6000 Overview, LZU1087503 or RBS 6000 in a Nutshell, LZU1087504

CPP Node Features and Functions, LZU1086116

WCDMA W13 Air Interface (optional), LZU1089117

Duration and class size

The length of the course is 1 days and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course introduction	0.25
	WCDMA RAN Systems and Site Introduction	0.5
	RBS 6401 components	0.75
	WCDMA RBS 6601 Maintenance	2
	Customer Product Information (CPI) and Tool Kits	0.5
	Handling Fault on- site	2

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WCDMA RBS 6501 Field Maintenance



LZU1089732 R1A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6501 standard node (optional radio units mRRUS 12 is available in the Appendix). The participants will perform hardware fault localization, hardware replacement and configuration tasks on a RBS 6501 type. On completion of this course the participants will also be familiar with the features of the operation and maintenance tools such as Element Manager (EM), COmmand Line Interface (COLI) and Node Command line Interface (NCLI).

Learning objectives

On completion of this course the participants will be able to:

1 Explain on overview level the WCDMA RAN Site Concept for RBS

- 1.1 Explain the basic WCDMA Radio Access Network
- 1.2 Outline the RBS 6000 portfolio and Support System
- 1.3 Explain the basic heterogeneous network
- 1.4 Advantages and benefits of heterogeneous network
- 1.5 Understand the concepts of Small Cell Sites

2 Perform maintenance tasks on the RBS 6501 nodes

- 2.1 Explain RBS 6501 Main features and optional equipment
- 2.2 Explain the RBS 6501 Hardware architecture
- 2.3 Identify the RBS 6501 Connection interfaces
- 2.4 Understand the role of the IPG 6440
- 2.5 Understand the RBS 6501 Maintenance procedures
- 2.6 Explain RBS 6501 Handling faulty equipment

3 Use the Customer Product Information (CPI) and Tool Kits

- 3.1 Explain the CPI Library structure of the node
- 3.2 Find information in the CPI Library with use of regular expression
- 3.3 Find operational instructions (OPI) and maintain the node according to the OPI
- 3.4 Find additional information on an alarm and solve the problem with the help of the CPI
- 3.5 Know the different tool kits exist and how to order the Tool Kits

4 Connect to a node using COLI and also using NCLI

- 4.1 Understand basic commands using COLI and using NCLI
- 4.2 Have a basic understanding of the functionality and technology used in COLI and NCLI





- 4.3 Understand the basic principles behind the Managed Object Model (MOM)
- 4.4 Understand the file system in a CPP based node
- 4.5 Investigate the purpose and the location of the various types of logs.
- 5 Use the Element Manager**
- 5.1 Download and start the Element Manager
- 5.2 Access and use the different “Views”; Containment, Equipment, IP, Licensing, Radio Network and the Software.
- 5.3 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log
- 5.4 Have a basic understanding of the Ericsson Node Integration Scanner (ENIS)

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

Ericsson WCDMA System Overview, LZU1085418

RBS 6000 Overview, LZU1087503 or RBS 6000 in a Nutshell, LZU1087504

CPP Node Features and Functions, LZU1086116

WCDMA W14 Air Interface (optional), LZU1089176

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

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Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
	Course introduction	0.25
	WCDMA RAN Systems and Site Introduction	0.5
	RBS 6501 components	0.75
1	WCDMA RBS 6501 Maintenance	2
	Customer Product Information (CPI) and Tool Kits	0.5
	Command Line Interface/Node Command Line Interface	1
	Element Manager	1

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GSM RBS 6101 Field Maintenance



LZU1087894 R4A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6101 standard node with RUG 11 or RUS 01/02 type (optional radio units for hybrid configuration such as RRUS 01, RRUS 02, RRUS 12, AIR 11 and AIR 21 are available in the Appendix). The participants will perform hardware fault localisation, hardware replacement and configuration tasks on a RBS 6101 type on BSS level of software release base on 1 type of radio unit. On completion of this course the participants will also be familiar with the features of the Operation and Maintenance Tool, OMT.

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain on overview level the GSM RAN Site Concept for RBS**
 - 1.1 Explain the basic GSM Radio Access Network
 - 1.2 Outline the RBS 6000 portfolio and Support System
 - 1.3 Understand RBS 6000 Building Block and Hybrid configuration
 - 1.4 Identify the Distribution Frame (DF) and the Site Support Unit
 - 1.5 Identify the Antenna System Controller, (ASC) and the Remote Electrical Tilt Unit, (RETU)
- 2 Perform maintenance and configuration tasks on the RBS 6101 nodes**
 - 2.1 Explain RBS 6101 Main features
 - 2.2 Explain the RBS 6101 Hardware architecture
 - 2.3 Identify the RBS 6101 Connection interfaces
 - 2.4 Explain DUG Hardware architecture
 - 2.5 Identify the DUG connection Interfaces
 - 2.6 Explain the Battery Backup System 6101
 - 2.7 Understand the RBS 6101 Maintenance procedures
 - 2.8 Explain RBS 6101 Handling faulty equipment
- 3 Use the Customer Product Information (CPI) and Tool Kits**
 - 3.1 Explain the CPI Library structure of the node
 - 3.2 Find information in the CPI Library with use of regular expression
 - 3.3 Find operational instructions (OPI) and maintain the node according to the OPI
 - 3.4 Find additional information on an alarm and solve the problem with the help of the CPI
 - 3.5 Know the different tool kits exist and how to order the Tool Kits





4 Use the Operation Maintenance Terminal (OMT)

- 4.1 Identify the OMT Kit and what it consists
- 4.2 Understand Remote OMT (R-OMT) over IP
- 4.3 Understand the Managed Object (MO) for G12 Model
- 4.4 Install and start the Operation & Maintenance Terminal, OMT
- 4.5 Access and use the different Views; System, Cabinet, Radio and Object
- 4.6 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log
- 4.7 Access the property help feature from each window

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU108852
RBS 6000 Overview, LZU1087503

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.5
	GSM RAN Systems and Site Introduction	0.5
	GSM RBS 6101 Maintenance	3
	Customer Product Information and Tool Kits	0.5
	Operation and Maintenance Terminal	1.5

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GSM RBS 6102 Field Maintenance



LZU1087643 R4A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6102 standard node with RUG 11 or RUS 01/02 type (optional radio units for hybrid configuration such as RRUS 01, RRUS 02, RRUS 12, AIR 11 and AIR 21 are available in the Appendix). The participants will perform hardware fault localisation, hardware replacement and configuration tasks on a RBS 6102 type on BSS level of software release base on 1 type of radio unit. On completion of this course the participants will also be familiar with the features of the Operation and Maintenance Tool, OMT.

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain on overview level the GSM RAN Site Concept for RBS**
 - 1.1 Explain the basic GSM Radio Access Network
 - 1.2 Outline the RBS 6000 portfolio
 - 1.3 Identify the RBS 6000 Support System, Radio Modules and Digital Units
 - 1.4 Understand RBS 6000 Building Block and Hybrid configuration
 - 1.5 Identify the Antenna System Controller, ASC
 - 1.6 Identify and locate the Remote Electrical Tilt Unit, RETU
- 2 Perform maintenance and configuration tasks on the RBS 6102 nodes**
 - 2.1 Explain RBS 6102 Main features
 - 2.2 Explain the RBS 6102 Hardware architecture
 - 2.3 Identify the RBS 6102 Connection interfaces
 - 2.4 Explain DUW Hardware architecture
 - 2.5 Identify the DUW connection Interfaces
 - 2.6 Explain the Battery Backup System 6102
 - 2.7 Understand the RBS 6102 Maintenance procedures
 - 2.8 Explain RBS 6102 Handling faulty equipment
- 3 Use the Customer Product Information (CPI) and Tool Kits**
 - 3.1 Explain the CPI Library structure of the node
 - 3.2 Find information in the CPI Library with use of regular expression
 - 3.3 Find operational instructions (OPI) and maintain the node according to the OPI
 - 3.4 Find additional information on an alarm and solve the problem with the help of the CPI
 - 3.5 Know that different tool kits exists and how to order the Tool Kits





4 Use the Operation Maintenance Terminal (OMT)

- 4.1 Install and start the Operation Maintenance Terminal.
- 4.2 Understand Remote OMT (R-OMT) over IP
- 4.3 Understand the Managed Object (MO) for G12 Model
- 4.4 Install and start the Operation & Maintenance Terminal, OMT
- 4.5 Access and use the different Views; System, Cabinet, Radio and Object
- 4.6 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log.
- 4.7 Access the property help feature from each window.

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU108852

RBS 6000 Overview, LZU1087503

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.5
	GSM RAN Systems and Site Introduction	0.5
	GSM RBS 6102 Maintenance	3.0
	Customer Product Information and Tool Kits	0.5
	Operation and Maintenance Terminal	1.5

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GSM RBS 6201 Field Maintenance



LZU1087646 R4A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6201 standard node with RUG11 or RUS 01/02 type (optional radio units for hybrid configuration such as RRUS 01, RRUS 02, RRUS 12, AIR 11 and AIR 21 are available in the Appendix). The participants will perform hardware fault localisation, hardware replacement and configuration tasks on a RBS 6201 type on BSS level of software release base on 1 type of radio unit. On completion of this course the participants will also be familiar with the features of the Operation and Maintenance Tool, OMT.

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain on overview level the GSM RAN Site Concept for RBS**
 - 1.1 Explain the basic GSM Radio Access Network
 - 1.2 Outline the RBS 6000 portfolio and Support System
 - 1.3 Understand RBS 6000 Building Block and Hybrid configuration
 - 1.4 Identify the Distribution Frame (DF) and the Site Support Unit
 - 1.5 Identify the Antenna System Controller, (ASC) and the Remote Electrical Tilt Unit, (RETU)
- 2 Perform maintenance and configuration tasks on the RBS 6201 nodes**
 - 2.1 Explain RBS 6201 Main features
 - 2.2 Explain the RBS 6201 Hardware architecture
 - 2.3 Identify the RBS 6201 Connection interfaces
 - 2.4 Explain DUG Hardware architecture
 - 2.5 Identify the DUG connection Interfaces
 - 2.6 Explain the Battery Backup System 6201
 - 2.7 Understand the RBS 6201 Maintenance procedures
 - 2.8 Explain RBS 6201 Handling faulty equipment
- 3 Use the Customer Product Information (CPI) and Tool Kits**
 - 3.1 Explain the CPI Library structure of the node
 - 3.2 Find information in the Library with use of regular expression
 - 3.3 Find operational instructions (OPI) and maintain the node according to the OPI
 - 3.4 Find additional information on an alarm and solve the problem with the help of the CPI
 - 3.5 Know the different tool kits exist and how to order the Tool Kits





4 Use the Operation Maintenance Terminal (OMT)

- 4.1 Identify the OMT Kit and what it consists
- 4.2 Understand Remote OMT (R-OMT) over IP
- 4.3 Understand the Managed Object (MO) for G12 Model
- 4.4 Install and start the Operation & Maintenance Terminal, OMT
- 4.5 Access and use the different Views; System, Cabinet, Radio and Object
- 4.6 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log
- 4.7 Access the property help feature from each window

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU108852

RBS 6000 Overview, LZU1087503

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.5
	GSM RAN Systems and Site Introduction	0.5
	GSM RBS 6201 Maintenance	3
	Customer Product Information and Tool Kits	0.5
	Operation and Maintenance Terminal	1.5

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GSM RBS 6202 Field Maintenance



LZU1088284 R4A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6202 standard node with RUG11 or RUS 01/02 type (optional radio units for hybrid configuration such as RRUS 01, RRUS 02, RRUS 12, AIR 11 and AIR 21 are available in the Appendix). The participants will perform hardware fault localisation, hardware replacement and configuration tasks on a RBS 6202 type on BSS level of software release base on 1 type of radio unit. On completion of this course the participants will also be familiar with the features of the Operation and Maintenance Tool, OMT.

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain on overview level the GSM RAN Site Concept for RBS**
 - 1.1 Explain the basic GSM Radio Access Network
 - 1.2 Outline the RBS 6000 portfolio and Support System
 - 1.3 Understand RBS 6000 Building Block and Hybrid configuration
 - 1.4 Identify the Distribution Frame (DF) and the Site Support Units
 - 1.5 Identify the Antenna System Controller, (ASC) and the Remote Electrical Tilt Unit, (RETU)
- 2 Perform maintenance and configuration tasks on the RBS 6202 nodes**
 - 2.1 Explain RBS 6202 Main features
 - 2.2 Explain the RBS 6202 Hardware architecture
 - 2.3 Identify the RBS 6202 Connection interfaces
 - 2.4 Explain DUG Hardware architecture
 - 2.5 Identify the DUG connection Interfaces
 - 2.6 Explain the Battery Backup System 6202
 - 2.7 Understand the RBS 6202 Maintenance procedures
 - 2.8 Explain RBS 6202 Handling faulty equipment
- 3 Use the Customer Product Information (CPI) and Tool Kits**
 - 3.1 Explain the CPI Library structure of the node
 - 3.2 Find information in the CPI Library with use of regular expression
 - 3.3 Find operational instructions (OPI) and maintain the node according to the OPI
 - 3.4 Find additional information on an alarm and solve the problem with the help of the CPI
 - 3.5 Know the different tool kits exist and how to order the Tool Kits





4 Use the Operation Maintenance Terminal (OMT)

- 4.1 Identify the OMT Kit and what it consists
- 4.2 Understand Remote OMT (R-OMT) over IP
- 4.3 Understand the Managed Object (MO) for G12 Model
- 4.4 Install and start the Operation & Maintenance Terminal, OMT
- 4.5 Access and use the different Views; System, Cabinet, Radio and Object
- 4.6 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log.
- 4.7 Access the property help feature from each window.

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

GSM Systems Survey, LZU108852

RBS 6000 Overview, LZU1087503

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.5
	GSM RAN Systems and Site Introduction	0.5
	GSM RBS 6202 Maintenance	3
	Customer Product Information and Tool Kits	0.5
	Operation and Maintenance Terminal	1.5

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GSM RBS 6301 Field Maintenance



LZU1087891 R3A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6301 standard node with RRUS 01 (optional radio units for hybrid configuration such as RRUS 02, RRUS 12 and AIR are available in the Appendix). The participants will perform hardware fault localisation, hardware replacement and configuration tasks on a RBS 6301 type on BSS level of software release base on 1 type of radio unit. On completion of this course the participants will also be familiar with the features of the Operation and Maintenance Tool, OMT.

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain on overview level the GSM RAN Site Concept for RBS**
 - 1.1 Explain the basic GSM Radio Access Network
 - 1.2 Outline the RBS 6000 portfolio
 - 1.3 Identify the RBS 6000 Support System, Radio Modules and Digital Units
 - 1.4 Understand RBS 6000 Building Block and Hybrid configuration
 - 1.5 Identify the Antenna System Controller, ASC
 - 1.6 Identify and locate the Remote Electrical Tilt Unit, RETU
- 2 Perform maintenance and configuration tasks on the RBS 6301 nodes**
 - 2.1 Explain RBS 6301 Main features
 - 2.2 Explain the RBS 6301 Hardware architecture
 - 2.3 Identify the RBS 6301 Connection interfaces
 - 2.4 Explain DUG Hardware architecture
 - 2.5 Identify the DUG connection Interfaces
 - 2.6 Explain the Antenna Integrated Radio Unit
 - 2.7 Understand the RBS 6301 Maintenance procedures
 - 2.8 Explain RBS 6301 Handling faulty equipment
- 3 Use the Customer Product Information (CPI)**
 - 3.1 Explain the CPI Library structure of the node
 - 3.2 Find information in the CPI Library with use of regular expression
 - 3.3 Find operational instructions (OPI) and maintain the node according to the OPI
 - 3.4 Find additional information on an alarm and solve the problem with the help of the CPI
 - 3.5 Know that different tool kits exists and how to order the tool kits





4 Use the Operation Maintenance Terminal (OMT)

- 4.1 Identify the OMT Kit and what it consists
- 4.2 Understand Remote OMT (R-OMT) over IP
- 4.3 Understand the Managed Object (MO) for G12 Model
- 4.4 Install and start the Operation & Maintenance Terminal, OMT
- 4.5 Access and use the different Views; System, Cabinet, Radio and Object
- 4.6 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log.
- 4.7 Access the property help feature from each window.

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU108852

RBS 6000 Overview, LZU1087503

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.5
	GSM RAN Systems and Site Introduction	0.5
	GSM RBS 6301 Maintenance	3,5
	Customer Product Information and Tool Kits	0.5
	Operation and Maintenance Terminal	1

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GSM RBS 6601 Field Maintenance



LZU1087674 R4A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6601 standard node with RRUS 01 type (optional radio units for hybrid configuration such as RRUS 02, RRUS 12, AIR 11 and AIR 21 are available in the Appendix). The participants will perform hardware fault localisation, hardware replacement and configuration tasks on a RBS 6601 type on BSS level of software release base on 1 type of radio unit. On completion of this course the participants will also be familiar with the features of the Operation and Maintenance Tool, OMT.

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain on overview level the GSM RAN Site Concept for RBS**
 - 1.1 Explain the basic GSM Radio Access Network
 - 1.2 Outline the RBS 6000 portfolio and Support System
 - 1.3 Understand RBS 6000 Building Block and Hybrid configuration
 - 1.4 Identify the Distribution Frame (DF) and the Site Support Unit
 - 1.5 Identify the Antenna System Controller, (ASC) and the Remote Electrical Tilt Unit, (RETU)
- 2 Perform maintenance and configuration tasks on the RBS 6601 nodes**
 - 2.1 Explain RBS 6601 Main features
 - 2.2 Explain the RBS 6601 Hardware architecture
 - 2.3 Identify the RBS 6601 Connection interfaces
 - 2.4 Explain DUG Hardware architecture
 - 2.5 Identify the DUG connection Interfaces
 - 2.6 Explain the Battery Backup System 6601
 - 2.7 Understand the RBS 6601 Maintenance procedures
 - 2.8 Explain RBS 6601 Handling faulty equipment
- 3 Use the Customer Product Information (CPI) and Tool Kits**
 - 3.1 Explain the CPI Library structure of the node
 - 3.2 Find information in the CPI Library with use of regular expression
 - 3.3 Find operational instructions (OPI) and maintain the node according to the OPI
 - 3.4 Find additional information on an alarm and solve the problem with the help of the CPI
 - 3.5 Know that different tool kits exists and how to order the tool kits





4 Use the Operation Maintenance Terminal (OMT)

- 4.1 Install and start the Operation Maintenance Terminal.
- 4.2 Understand Remote OMT (R-OMT) over IP
- 4.3 Understand the Managed Object (MO) for G12 Model
- 4.4 Install and start the Operation & Maintenance Terminal, OMT
- 4.5 Access and use the different Views; System, Cabinet, Radio and Object
- 4.6 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log.
- 4.7 Access the property help feature from each window.

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU108852
RBS 6000 Overview, LZU1087503

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.5
	GSM RAN Systems and Site Introduction	0.5
	GSM RBS 6601 Maintenance	3.0
	Customer Product Information and Tool Kits	0.5
	Operation and Maintenance Terminal	1.5

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LTE RBS 6101 Field Maintenance



LZU1087896 R4A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6101 standard node with RUL and RUS 01/02 type (optional radio units for hybrid configuration such as RRUL 11, RRUS 01, RRUS 02, RRUS 11, RRUS 12, RRUS 61, mRRUS 12 and AIR 11/21 are available in the Appendix). The participants will perform hardware fault localization, hardware replacement and configuration tasks on a RBS 6101 type. On completion of this course the participants will also be familiar with the features of the operation and maintenance tools such as Element Manager (EM), COmmand Line Interface (COLI) and Node Command line Interface (NCLI).

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain on overview level the LTE RAN Site Concept for RBS**
 - 1.1 Explain the basic LTE Radio Access Network
 - 1.2 Outline the RBS 6000 portfolio
 - 1.3 Identify the RBS 6000 Support System, Radio Modules and Digital Units
 - 1.4 Understand RBS 6000 Building Block and Hybrid configuration
 - 1.5 Identify the Antenna System Controller, ASC
 - 1.6 Identify and locate the Remote Electrical Tilt Unit, RETU
- 2 Perform maintenance and configuration tasks on the RBS 6101 nodes**
 - 2.1 Explain RBS 6101 Main features
 - 2.2 Explain the RBS 6101 Hardware architecture
 - 2.3 Identify the RBS 6101 Connection interfaces
 - 2.4 Explain DUL Hardware architecture
 - 2.5 Identify the DUL connection Interfaces
 - 2.6 Explain the Battery Backup System 6101
 - 2.7 Understand the RBS 6101 Maintenance procedures
 - 2.8 Explain RBS 6101 Handling faulty equipment
- 3 Use the Customer Product Information (CPI) and Tool Kits**
 - 3.1 Explain the CPI library structure of the node
 - 3.2 Find information in the CPI Library with use of regular expression
 - 3.3 Find operational instructions (OPI) and maintain the node according to the OPI
 - 3.4 Find additional information on an alarm and solve the problem with the help of the CPI
 - 3.5 Know that different tool kits exists and how to order the Tool Kits.



**4 Connect to a node using COLI and also using NCLI**

- 4.1 Understand basic commands using COLI and using NCLI
- 4.2 Have a basic understanding of the functionality and technology used in COLI and NCLI
- 4.3 Understand the basic principles behind the Managed Object Model (MOM)
- 4.4 Understand the file system in a CPP based node
- 4.5 Investigate the purpose and the location of the various types of logs.

5 Use the Element Manager

- 5.1 Download and start the Element Manager
- 5.2 Access and use the different “Views”; Containment, ATM, Equipment, IP, Licensing, Radio Network and the Software.
- 5.3 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log
- 5.4 Access the property help feature from each window
- 5.5 Create a Customized View (User Defined) in Element Manager
- 5.6 Handling License Key Files, LKF
- 5.7 Explain how to format the node
- 5.8 Explain how to load the basic package software

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

LTE/SAE System Overview, LZU1087020

RBS 6000 Overview, LZU1087503

LTE L13 Air Interface (optional), LZU1089102

Or

LTE/SAE - System Overview (WBL), LZU1087318

RBS 6000 in a Nutshell, LZU1087504

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

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Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.25
	LTE RAN Systems and Site Introduction	0.5
	LTE RBS 6101 Maintenance	3
	Customer Product Information and Tool Kits	0.25
	Command Line Interface/Node Command Line Interface	1
	Element Manager	1

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LTE RBS 6102 Field Maintenance



LZU1087645 R4A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6102 standard node with RUL and RUS 01/02 type (optional radio units for hybrid configuration such as RRUL 11, RRUS 01, RRUS 02, RRUS 11, RRUS 12, RRUS 61, mRRUS 12 and AIR 11/21 are available in the Appendix). The participants will perform hardware fault localization, hardware replacement and configuration tasks on a RBS 6102 type. On completion of this course the participants will also be familiar with the features of the operation and maintenance tools such as Element Manager (EM), COmmand Line Interface (COLI) and Node Command line Interface (NCLI).

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain on overview level the LTE RAN Site Concept for RBS**
 - 1.1 Explain the basic LTE Radio Access Network
 - 1.2 Outline the RBS 6000 portfolio
 - 1.3 Identify the RBS 6000 Support System, Radio Modules and Digital Units
 - 1.4 Understand RBS 6000 Building Block and Hybrid configuration
 - 1.5 Identify the Antenna System Controller, ASC
 - 1.6 Identify and locate the Remote Electrical Tilt Unit, RETU
- 2 Perform maintenance and configuration tasks on the RBS 6102 nodes**
 - 2.1 Explain RBS 6102 Main features
 - 2.2 Explain the RBS 6102 Hardware architecture
 - 2.3 Identify the RBS 6102 Connection interfaces
 - 2.4 Explain DUL Hardware architecture
 - 2.5 Identify the DUL connection Interfaces
 - 2.6 Explain the Battery Backup System 6102
 - 2.7 Understand the RBS 6102 Maintenance procedures
 - 2.8 Explain RBS 6102 Handling faulty equipment
- 3 Use the Customer Product Information (CPI) and Tool Kits**
 - 3.1 Explain the CPI library structure of the node
 - 3.2 Find information in the CPI Library with use of regular expression
 - 3.3 Find operational instructions (OPI) and maintain the node according to the OPI
 - 3.4 Find additional information on an alarm and solve the problem with the help of the CPI
 - 3.5 Know that different tool kits exists and how to order the Tool Kits.





4 Connect to a node using COLI and also using NCLI

- 4.1 Understand basic commands using COLI and using NCLI
- 4.2 Have a basic understanding of the functionality and technology used in COLI and NCLI
- 4.3 Understand the basic principles behind the Managed Object Model (MOM)
- 4.4 Understand the file system in a CPP based node
- 4.5 Investigate the purpose and the location of the various types of logs.

5 Use the Element Manager

- 5.1 Download and start the Element Manager
- 5.2 Access and use the different "Views"; Containment, ATM, Equipment, IP, Licensing, Radio Network and the Software.
- 5.3 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log
- 5.4 Access the property help feature from each window
- 5.5 Create a Customized View (User Defined) in Element Manager
- 5.6 Handling License Key Files, LKF
- 5.7 Explain how to format the node
- 5.8 Explain how to load the basic package software

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

LTE/SAE System Overview, LZU1087020

RBS 6000 Overview, LZU1087503

LTE L13 Air Interface (optional), LZU1089102

Or

LTE/SAE - System Overview (WBL), LZU1087318

RBS 6000 in a Nutshell, LZU1087504

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

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Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.25
	LTE RAN Systems and Site Introduction	0.5
	LTE RBS 6102 Maintenance	3
	Customer Product Information and Tool Kits	0.25
	Command Line Interface/Node Command Line Interface	1
	Element Manager	1

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LTE RBS 6201 Field Maintenance

LZU1087648 R5A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6201 standard node with RUL and RUS 01/02 type (optional radio units for hybrid configuration such as RRUL 11, RRUS 01, RRUS 02, RRUS 11, RRUS 12, RRUS 61, mRRUS 12 and AIR 11/21 are available in the Appendix). The participants will perform hardware fault localization, hardware replacement and configuration tasks on a RBS 6201 type. On completion of this course the participants will also be familiar with the features of the operation and maintenance tools such as Element Manager (EM), COmmand Line Interface (COLI) and Node Command line Interface (NCLI).

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain on overview level the LTE RAN Site Concept for RBS**
 - 1.1 Explain the basic LTE Radio Access Network
 - 1.2 Outline the RBS 6000 portfolio
 - 1.3 Identify the RBS 6000 Support System, Radio Modules and Digital Units
 - 1.4 Understand RBS 6000 Building Block and Hybrid configuration
 - 1.5 Identify the Antenna System Controller, ASC
 - 1.6 Identify and locate the Remote Electrical Tilt Unit, RETU
- 2 Perform maintenance and configuration tasks on the RBS 6201 nodes**
 - 2.1 Explain RBS 6201 Main features
 - 2.2 Explain the RBS 6201 Hardware architecture
 - 2.3 Identify the RBS 6201 Connection interfaces
 - 2.4 Explain DUL Hardware architecture
 - 2.5 Identify the DUL connection Interfaces
 - 2.6 Explain the Battery Backup System 6201
 - 2.7 Understand the RBS 6201 Maintenance procedures
 - 2.8 Explain RBS 6201 Handling faulty equipment
- 3 Use the Customer Product Information (CPI) and Tool Kits**
 - 3.1 Explain the CPI library structure of the node
 - 3.2 Find information in the CPI Library with use of regular expression
 - 3.3 Find operational instructions (OPI) and maintain the node according to the OPI
 - 3.4 Find additional information on an alarm and solve the problem with the help of the CPI
 - 3.5 Know that different tool kits exists and how to order the Tool Kits.



**4 Connect to a node using COLI and also using NCLI**

- 4.1 Understand basic commands using COLI and using NCLI
- 4.2 Have a basic understanding of the functionality and technology used in COLI and NCLI
- 4.3 Understand the basic principles behind the Managed Object Model (MOM)
- 4.4 Understand the file system in a CPP based node
- 4.5 Investigate the purpose and the location of the various types of logs.

5 Use the Element Manager

- 5.1 Download and start the Element Manager
- 5.2 Access and use the different "Views"; Containment, ATM, Equipment, IP, Licensing, Radio Network and the Software.
- 5.3 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log
- 5.4 Access the property help feature from each window
- 5.5 Create a Customized View (User Defined) in Element Manager
- 5.6 Handling License Key Files, LKF
- 5.7 Explain how to format the node
- 5.8 Explain how to load the basic package software

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

LTE/SAE System Overview, LZU1087020

RBS 6000 Overview, LZU1087503

LTE L13 Air Interface (optional), LZU1089102

Or

LTE/SAE - System Overview (WBL), LZU1087318

RBS 6000 in a Nutshell, LZU1087504

Duration and class size

The length of the course is 1 days and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

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Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.25
	LTE RAN Systems and Site Introduction	0.5
	LTE RBS 6201 Maintenance	3
	Customer Product Information and Tool Kits	0.25
	Command Line Interface/Node Command Line Interface	1
	Element Manager	1



LTE RBS 6202 Field Maintenance



LZU1088285 R4A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6202 standard node with RUL and RUS 01/02 type (optional radio units for hybrid configuration such as RRUL 11, RRUS 01, RRUS 02, RRUS 11, RRUS 12, RRUS 61, mRRUS 12 and AIR 11/21 are available in the Appendix). The participants will perform hardware fault localization, hardware replacement and configuration tasks on a RBS 6202 type. On completion of this course the participants will also be familiar with the features of the operation and maintenance tools such as Element Manager (EM), COmmand Line Interface (COLI) and Node Command line Interface (NCLI).

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain on overview level the LTE RAN Site Concept for RBS**
 - 1.1 Explain the basic LTE Radio Access Network
 - 1.2 Outline the RBS 6000 portfolio
 - 1.3 Identify the RBS 6000 Support System, Radio Modules and Digital Units
 - 1.4 Understand RBS 6000 Building Block and Hybrid configuration
 - 1.5 Identify the Antenna System Controller, ASC
 - 1.6 Identify and locate the Remote Electrical Tilt Unit, RETU
- 2 Perform maintenance and configuration tasks on the RBS 6202 nodes**
 - 2.1 Explain RBS 6202 Main features
 - 2.2 Explain the RBS 6202 Hardware architecture
 - 2.3 Identify the RBS 6202 Connection interfaces
 - 2.4 Explain DUL Hardware architecture
 - 2.5 Identify the DUL connection Interfaces
 - 2.6 Explain the Battery Backup System PBC 6200
 - 2.7 Understand the RBS 6202 Maintenance procedures
 - 2.8 Explain RBS 6202 Handling faulty equipment
- 3 Use the Customer Product Information (CPI) and Tool Kits**
 - 3.1 Explain the CPI library structure of the node
 - 3.2 Find information in the CPI Library with use of regular expression
 - 3.3 Find operational instructions (OPI) and maintain the node according to the OPI
 - 3.4 Find additional information on an alarm and solve the problem with the help of the





- CPI
- 3.5 Know that different tool kits exist and how to order the Tool Kits.
- 4 Connect to a node using COLI and also using NCLI**
- 4.1 Understand basic commands using COLI and using NCLI
- 4.2 Have a basic understanding of the functionality and technology used in COLI and NCLI
- 4.3 Understand the basic principles behind the Managed Object Model (MOM)
- 4.4 Understand the file system in a CPP based node
- 4.5 Investigate the purpose and the location of the various types of logs.
- 5 Use the Element Manager**
- 5.1 Download and start the Element Manager
- 5.2 Access and use the different "Views"; Containment, ATM, Equipment, IP, Licensing, Radio Network and the Software.
- 5.3 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log
- 5.4 Access the property help feature from each window
- 5.5 Create a Customized View (User Defined) in Element Manager
- 5.6 Handling License Key Files, LKF
- 5.7 Explain how to format the node
- 5.8 Explain how to load the basic package software

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

LTE/SAE System Overview, LZU1087020

RBS 6000 Overview, LZU1087503

LTE L13 Air Interface (optional), LZU1089102

Or

LTE/SAE - System Overview (WBL), LZU1087318

RBS 6000 in a Nutshell, LZU1087504

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

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Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.25
	LTE RAN Systems and Site Introduction	0.5
	LTE RBS 6202 Maintenance	3
	Customer Product Information and Tool Kits	0.25
	Command Line Interface/Node Command Line Interface	1
	Element Manager	1



LTE RBS 6301 Field Maintenance



LZU1087893 R3A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6301 standard node with RRUL 11 type (optional radio units for hybrid configuration such as RRUS 01, RRUS 02, RRUS 11, RRUS 12, RRUS 61, mRRUS 12 and AIR 11/21 are available in the Appendix). The participants will perform hardware fault localization, hardware replacement and configuration tasks on a RBS 6301 type. On completion of this course the participants will also be familiar with the features of the operation and maintenance tools such as Element Manager (EM), COmmand Line Interface (COLI) and Node Command line Interface (NCLI).

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain on overview level the LTE RAN Site Concept for RBS**
 - 1.1 Explain the basic LTE Radio Access Network
 - 1.2 Outline the RBS 6000 portfolio
 - 1.3 Identify the RBS 6000 Support System, Radio Modules and Digital Units
 - 1.4 Understand RBS 6000 Building Block and Hybrid configuration
 - 1.5 Identify the Antenna System Controller, ASC
 - 1.6 Identify and locate the Remote Electrical Tilt Unit, RETU
- 2 Perform maintenance and configuration tasks on the RBS 6301 nodes**
 - 2.1 Explain RBS 6301 Main features
 - 2.2 Explain the RBS 6301 Hardware architecture
 - 2.3 Identify the RBS 6301 Connection interfaces
 - 2.4 Explain DUL Hardware architecture
 - 2.5 Identify the DUL connection Interfaces
 - 2.6 Explain the Battery Backup System for RBS 6301
 - 2.7 Understand the RBS 6301 Maintenance procedures
 - 2.8 Explain RBS 6301 Handling faulty equipment
- 3 Use the Customer Product Information (CPI) and Tool Kits**
 - 3.1 Explain the CPI library structure of the node
 - 3.2 Find information in the CPI Library with use of regular expression
 - 3.3 Find operational instructions (OPI) and maintain the node according to the OPI
 - 3.4 Find additional information on an alarm and solve the problem with the help of the





- CPI
- 3.5 Know that different tool kits exist and how to order the Tool Kits.
- 4 Connect to a node using COLI and also using NCLI**
- 4.1 Understand basic commands using COLI and using NCLI
- 4.2 Have a basic understanding of the functionality and technology used in COLI and NCLI
- 4.3 Understand the basic principles behind the Managed Object Model (MOM)
- 4.4 Understand the file system in a CPP based node
- 4.5 Investigate the purpose and the location of the various types of logs.
- 5 Use the Element Manager**
- 5.1 Download and start the Element Manager
- 5.2 Access and use the different "Views"; Containment, ATM, Equipment, IP, Licensing, Radio Network and the Software.
- 5.3 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log
- 5.4 Access the property help feature from each window
- 5.5 Create a Customized View (User Defined) in Element Manager
- 5.6 Handling License Key Files, LKF
- 5.7 Explain how to format the node
- 5.8 Explain how to load the basic package software

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

LTE/SAE System Overview, LZU1087020

RBS 6000 Overview, LZU1087503

LTE L13 Air Interface (optional), LZU1089102

Or

LTE/SAE - System Overview (WBL), LZU1087318

RBS 6000 in a Nutshell, LZU1087504

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

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Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.25
	LTE RAN Systems and Site Introduction	0.5
	LTE RBS 6301 Maintenance	3
	Customer Product Information and Tool Kits	0.25
	Command Line Interface/Node Command Line Interface	1
	Element Manager	1

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LTE RBS 6401 Field Maintenance



LZU1089575 R1A

Description

This course is a task-based maintenance course where participants will understand the functions of the RBS 6401, its optional units and learn how to handle RBS faults at site. During this activity, participants will also get familiar with the use of the ALEX documents (or Customer Product Information) to handle faulty equipment and perform correct procedure in replacing the hardware.

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain on overview level the LTE RAN Site Concept for RBS**
 - 1.1 Explain the basic LTE Radio Access Network
 - 1.2 Outline the RBS 6000 portfolio and Support System
 - 1.3 Explain the basic heterogeneous network
 - 1.4 Advantages and benefits of heterogeneous network
 - 1.5 Understand the concepts of Small Cell Sites
- 2 Perform maintenance tasks on the RBS 6401 nodes**
 - 2.1 Explain RBS 6401 Main features and optional equipment
 - 2.2 Explain the RBS 6401 Hardware architecture
 - 2.3 Identify the RBS 6401 Connection interfaces
 - 2.4 Understand the role of the IPG 6440
 - 2.5 Understand the RBS 6401 Maintenance procedures
 - 2.6 Explain RBS 6401 Handling faulty equipment
- 3 Use the Customer Product Information (CPI) and Tool Kits**
 - 3.1 Explain the CPI Library structure of the node
 - 3.2 Find information in the CPI Library with use of regular expression
 - 3.3 Find operational instructions (OPI) and maintain the node according to the OPI
 - 3.4 Find additional information on an alarm and solve the problem with the help of the CPI
 - 3.5 Know the different tool kits exist and how to order the Tool Kits
- 4 Handling Fault on-site**
 - 4.1 Understand how to isolate and correct common malfunctions of RBS 6401
 - 4.2 Know the behavior of the indicators
 - 4.3 Perform restart of the RBS 6401
 - 4.4 Perform RBS 6401 replacement
 - 4.5 Have a basic understanding of the Ericsson Node Integration Scanner (ENIS)



**Target audience**

The target audience for this course is:
Field Technician

Prerequisites

Successful completion of the following courses:

LTE/SAE System Overview, LZU1087020
RBS 6000 Overview, LZU1087503
LTE L13 Air Interface (optional), LZU1089120
Or
LTE/SAE - System Overview (WBL), LZU1087318
RBS 6000 in a Nutshell, LZU1087504

Duration and class size

The length of the course is 1 days and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
	Course introduction	0.25
	LTE RAN Systems and Site Introduction	0.5
1	RBS 6401 components	0.75
	LTE RBS 6601 Maintenance	2
	Customer Product Information (CPI) and Tool Kits	0.5
	Handling fault On-site	2

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LTE RBS 6402 Field Maintenance



LZU1089944 R1A

Description

This course is a task-based maintenance course where participants will understand the functions of the RBS 6402, its optional units and learn how to handle RBS faults at site. During this activity, participants will also get familiar with the use of the ALEX documents (or Customer Product Information) to handle faulty equipment and perform correct procedure in replacing the hardware.

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain on overview level the LTE RAN Site Concept for RBS
 - 1.1 Explain the basic LTE Radio Access Network
 - 1.2 Outline the RBS 6000 portfolio and Support System
 - 1.3 Explain the basic heterogeneous network
 - 1.4 Advantages and benefits of heterogeneous network
 - 1.5 Understand the concepts of Small Cell Sites
- 2 Perform maintenance tasks on the RBS 6402 nodes
 - 2.1 Explain RBS 6402 Main features and optional equipment
 - 2.2 Explain the RBS 6402 Hardware architecture
 - 2.3 Identify the RBS 6402 Connection interfaces
 - 2.4 Understand the RBS 6402 Maintenance procedures
 - 2.5 Explain RBS 6402 Handling faulty equipment
- 3 Use the Customer Product Information (CPI) and Tool Kits
 - 3.1 Explain the CPI Library structure of the node
 - 3.2 Find information in the CPI Library with use of regular expression
 - 3.3 Find Operational Instructions (OPI) and maintain the node according to the OPI
 - 3.4 Find additional information on an alarm and solve the problem with the help of the CPI
 - 3.5 Know the different tool kits exist and how to order the Tool Kits
- 4 Handling Fault on-site
 - 4.1 Understand how to isolate and correct common malfunctions of RBS 6402
 - 4.2 Know the behavior of the indicators
 - 4.3 Perform restart of the RBS 6402
 - 4.4 Perform RBS 6402 replacement
 - 4.5 Have a basic understanding of the Ericsson Node Integration Scanner (ENIS)



**Target audience**

The target audience for this course is:
Field Technician

Prerequisites

Successful completion of the following courses:

LTE/SAE System Overview, LZU1087020
LTE L15 Air Interface (optional), LZU1089929
Or
LTE/SAE - System Overview (WBL), LZU1087318
RBS 6000 in a Nutshell, LZU1087504

Duration and class size

The length of the course is 1 days and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course introduction	0.25
	LTE RAN Systems and Site Introduction	0.5
	RBS 6402 components	0.75
	LTE RBS 6402 Maintenance	2
	Customer Product Information (CPI) and Tool Kits	0.5
	Handling fault On-site	2

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LTE RBS 6501 Field Maintenance



LZU1089729 R1A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6501 standard node (optional radio units mRRUS 12 is available in the Appendix). The participants will perform hardware fault localization, hardware replacement and configuration tasks on a RBS 6501 type. On completion of this course the participants will also be familiar with the features of the operation and maintenance tools such as Element Manager (EM), COmmand Line Interface (COLI) and Node Command line Interface (NCLI).

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain on overview level the LTE RAN Site Concept for RBS**
 - 1.1 Explain the basic LTE Radio Access Network
 - 1.2 Outline the RBS 6000 portfolio and Support System
 - 1.3 Explain the basic heterogeneous network
 - 1.4 Advantages and benefits of heterogeneous network
 - 1.5 Understand the concepts of Small Cell Sites
- 2 Perform maintenance tasks on the RBS 6501 nodes**
 - 2.1 Explain RBS 6501 Main features and optional equipment
 - 2.2 Explain the RBS 6501 Hardware architecture
 - 2.3 Identify the RBS 6501 Connection interfaces
 - 2.4 Understand the RBS 6501 Maintenance procedures
 - 2.5 Explain RBS 6501 Handling faulty equipment
- 3 Use the Customer Product Information (CPI) and Tool Kits**
 - 3.1 Explain the CPI Library structure of the node
 - 3.2 Find information in the CPI Library with use of regular expression
 - 3.3 Find operational instructions (OPI) and maintain the node according to the OPI
 - 3.4 Find additional information on an alarm and solve the problem with the help of the CPI
 - 3.5 Know the different tool kits exist and how to order the Tool Kits
- 4 Connect to a node using COLI and also using NCLI**
 - 4.1 Understand basic commands using COLI and using NCLI
 - 4.2 Have a basic understanding of the functionality and technology used in COLI and NCLI
 - 4.3 Understand the basic principles behind the Managed Object Model (MOM)





- 4.4 Understand the file system in a CPP based node
- 4.5 Investigate the purpose and the location of the various types of logs.
- 5 Use the Element Manager**
- 5.1 Download and start the Element Manager
- 5.2 Access and use the different “Views”; Containment, Equipment, IP, Licensing, Radio Network and the Software.
- 5.3 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log
- 5.4 Have a basic understanding of the Ericsson Node Integration Scanner (ENIS)

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

LTE/SAE System Overview, LZU1087020

RBS 6000 Overview, LZU1087503

LTE L14 Air Interface (optional), LZU1089186

Or

LTE/SAE - System Overview (WBL), LZU1087318

RBS 6000 in a Nutshell, LZU1087504

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

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Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
	Course introduction	0.25
	LTE RAN Systems and Site Introduction	0.5
	RBS 6501 components	0.75
1	LTE RBS 6501 Maintenance	2
	Customer Product Information (CPI) and Tool Kits	0.5
	Command Line Interface/Node Command Line Interface	1
	Element Manager	1

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LTE RBS 6601 Field Maintenance



LZU1087890 R4A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6601 standard node with RRUL 11 type (optional radio units for hybrid configuration such as RRUS 01, RRUS 02, RRUS 11, RRUS 12, RRUS 61, mRRUS 12 and AIR 11/21 are available in the Appendix). The participants will perform hardware fault localization, hardware replacement and configuration tasks on a RBS 6601 type. On completion of this course the participants will also be familiar with the features of the operation and maintenance tools such as Element Manager (EM), COmmand Line Interface (COLI) and Node Command line Interface (NCLI).

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain on overview level the LTE RAN Site Concept for RBS**
 - 1.1 Explain the basic LTE Radio Access Network
 - 1.2 Outline the RBS 6000 portfolio
 - 1.3 Identify the RBS 6000 Support System, Radio Modules and Digital Units
 - 1.4 Understand RBS 6000 Building Block and Hybrid configuration
 - 1.5 Identify the Antenna System Controller, ASC
 - 1.6 Identify and locate the Remote Electrical Tilt Unit, RETU
- 2 Perform maintenance and configuration tasks on the RBS 6601 nodes**
 - 2.1 Explain RBS 6601 Main features
 - 2.2 Explain the RBS 6601 Hardware architecture
 - 2.3 Identify the RBS 6601 Connection interfaces
 - 2.4 Explain DUL Hardware architecture
 - 2.5 Identify the DUL connection Interfaces
 - 2.6 Explain the Battery Backup System for RBS 6601
 - 2.7 Understand the RBS 6601 Maintenance procedures
 - 2.8 Explain RBS 6601 Handling faulty equipment
- 3 Use the Customer Product Information (CPI) and Tool Kits**
 - 3.1 Explain the CPI library structure of the node
 - 3.2 Find information in the CPI Library with use of regular expression
 - 3.3 Find operational instructions (OPI) and maintain the node according to the OPI
 - 3.4 Find additional information on an alarm and solve the problem with the help of the CPI





- 3.5 Know that different tool kits exist and how to order the Tool Kits.
- 4 Connect to a node using COLI and also using NCLI**
 - 4.1 Understand basic commands using COLI and using NCLI
 - 4.2 Have a basic understanding of the functionality and technology used in COLI and NCLI
 - 4.3 Understand the basic principles behind the Managed Object Model (MOM)
 - 4.4 Understand the file system in a CPP based node
 - 4.5 Investigate the purpose and the location of the various types of logs.
- 5 Use the Element Manager**
 - 5.1 Download and start the Element Manager
 - 5.2 Access and use the different “Views”; Containment, ATM, Equipment, IP, Licensing, Radio Network and the Software.
 - 5.3 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log
 - 5.4 Access the property help feature from each window
 - 5.5 Create a Customized View (User Defined) in Element Manager
 - 5.6 Handling License Key Files, LKF
 - 5.7 Explain how to format the node
 - 5.8 Explain how to load the basic package software

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

LTE/SAE System Overview, LZU1087020

RBS 6000 Overview, LZU1087503

LTE L13 Air Interface (optional), LZU1089102

Or

LTE/SAE - System Overview (WBL), LZU1087318

RBS 6000 in a Nutshell, LZU1087504

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

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Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.25
	LTE RAN Systems and Site Introduction	0.5
	LTE RBS 6601 Maintenance	3
	Customer Product Information and Tool Kits	0.25
	Command Line Interface/Node Command Line Interface	1
	Element Manager	1

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Multi standard RBS 6120 Field Maintenance



LZU1089828 R1A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6120 with the following radio units RUG 11, RUW 01/02, RUL 01, RUS 01/02 and optional radios RRUL 11/62/81, RRUS 01/02/11/12/31/61, mRRUS 12 and AIR 11/21 which are available in the Appendix. The participants will perform hardware fault localization, hardware replacement and configuration tasks on a RBS 6120. On completion of this course the participants will also be familiar with the features of the operation and maintenance tools such as Element Manager (EM), COmmand Line Interface (COLI), Node Command line Interface (NCLI) and Operation and Maintenance Terminal (OMT).

Learning objectives

On completion of this course the participants will be able to:

1 Explain on overview level the GSM, WCDMA and LTE RAN Site Concept for RBS

- 1.1 Explain the basic G/W/L Radio Access Network
- 1.2 Outline the RBS 6000 portfolio and Support System
- 1.3 Explain the basic heterogeneous network
- 1.4 Advantages and benefits of heterogeneous network
- 1.5 Understand the concepts of Small Cell Sites
- 1.6 Understand the all new all-in-one outdoor enclosure system 6100
- 1.7 Detail the multi standard RBS 6120 product and the concept 5-3-1
- 1.8 Outline the flexibility of the multi flexibility outdoor radio base station as in TMR, PBC and BBS

2 Perform maintenance tasks on the RBS 6120 nodes

- 2.1 Explain RBS 6120 Main features and optional equipment
- 2.2 Explain the RBS 6120 Hardware architecture
- 2.3 Identify the RBS 6120 Connection interfaces
- 2.4 Understand the DUG/W/L/S hardware architecture
- 2.5 Understand the RUG/W/L/S hardware architecture
- 2.6 Understand the RBS 6120 Maintenance procedures
- 2.7 Explain RBS 6120 Handling Faulty Equipment

3 Use the Customer Product Information (CPI) and Tool Kits

- 3.1 Explain the CPI Library structure of the node
- 3.2 Find information in the CPI Library with use of regular expression





- 3.3 Find operational instructions (OPI) and maintain the node according to the OPI
- 3.4 Find additional information on an alarm and solve the problem with the help of the CPI
- 3.5 Know the different tool kits exist and how to order the Tool Kits
- 4 Connect to a node using COLI and also using NCLI**
 - 4.1 Understand basic commands using COLI and using NCLI
 - 4.2 Have a basic understanding of the functionality and technology used in COLI and NCLI
 - 4.3 Understand the basic principles behind the Managed Object Model (MOM)
 - 4.4 Understand the file system in a CPP based node
 - 4.5 Investigate the purpose and the location of the various types of logs
- 5 Use the Element Manager EM)**
 - 5.1 Download and start the Element Manager
 - 5.2 Access and use the different “Views”; Containment, Equipment, IP, Licensing, Radio Network and the Software
 - 5.3 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log
 - 5.4 Access the property help feature from each window
 - 5.5 Create a Customized View (User Defined) in Element Manager
 - 5.6 Handling License Key Files, LKF
 - 5.7 Explain how to format the node
 - 5.8 Explain how to load the basic package software
- 6 Use the Operation Maintenance Terminal (OMT)**
 - 6.1 Identify the OMT Kit and what it consists
 - 6.2 Understand Remote OMT (R-OMT) over IP
 - 6.3 Understand the Managed Object (MO) for G12 Model
 - 6.4 Install and start the Operation & Maintenance Terminal, OMT
 - 6.5 Access and use the different Views; System, Cabinet, Radio and Object
 - 6.6 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log
 - 6.7 Access the property help feature from each window

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

GSM Systems Survey, LZU108852

Ericsson WCDMA System Overview, LZU1085418

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LTE/SAE System Overview, LZU1087020 or LTE/SAE - System Overview (WBL), LZU1087318
RBS 6000 Overview, LZU1087503 or RBS 6000 in a Nutshell, LZU1087504
CPP Node Features and Functions, LZU1086116
WCDMA W14 Air Interface (optional), LZU1089176
LTE L14 Air Interface (optional), LZU1089186

Duration and class size

The length of the course is 2 day and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course introduction	0.5
	GSM/WCDMA/LTE RAN Systems and Site Introduction	1.0
	RBS 6120 components	2.0
	Multi standard RBS 6120 Maintenance	2.5
2	Customer Product Information (CPI) and Tool Kits	1.0
	Command Line Interface/Node Command Line Interface	1.5
	Element Manager	2.0
	OMT	1.5

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Multistandard Baseband 52xx Field Maintenance



LZU1082173 R1B

Description

Are you ready for your Radio Node based on Baseband 5216 or Baseband 5212 products?

The "Multistandard Baseband 52xx Field Maintenance" course introduces the Field Maintenance personnel to the Baseband 52 based radio node and its operation and maintenance interfaces available at the site. It also covers hardware maintenance procedures and concepts for a Baseband 52 based site. Participants will log into the Baseband 52 board and look at alarms, lock/unlock radio unit, collect logs and make configuration backups.

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain on overview level the RAN site concept for RBS
 - 1.1 Explain the basic GSM, WCDMA and LTE Radio Access Network
 - 1.2 Explain briefly the Ericsson Radio System
 - 1.3 Outline the different radio site components, including the Baseband products, and the radio products
- 2 Use the Customer Product Information (CPI)
 - 2.1 Explain the CPI library structure of the node
 - 2.2 Find information in the CPI Library with use of regular expression
 - 2.3 List the important documents in the CPI for maintaining a Baseband 52 based Radio Node
 - 2.4 Locate correct OPI to solve alarms
 - 2.5 Know what different Tool Kits exist and how to order them
- 3 Perform maintenance procedures on the node
 - 3.1 Explain the Baseband 52 hardware architecture
 - 3.2 Identify the Baseband 52 connection interfaces
 - 3.3 Explain the maintenance procedures
 - 3.4 Explain how to handle faulty units
 - 3.5 Connect to a Baseband 52 node
 - 3.6 Learn how to install and use the EMCLI
 - 3.7 Learn some basic commands used in EMCLI that are relevant for a Field Maintenance personnel
 - 3.8 Learn how to install and use the EMGUI





- 3.9 Learn the basic principle of the Managed Object Model (MOM)
- 3.10 Be able to read and explain the alarms
- 3.11 Interpret LEDs on the Baseband and Radio units
- 3.12 Extract the logs from the Baseband 52 based Radio Node

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU108852 or/and
Ericsson WCDMA System Overview, LZU1085418 or/and
LTE/SAE System Overview, LZU1087020 or/and
Ericsson Radio System Overview, LZU1089991

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.5
	GSM, WCDMA and LTE RAN Systems	2.0
	Customer Product Information and Tool Kits	0.5
	Practical exercises	3.0

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SIU 02 / TCU 02 T15 Field Maintenance



LZU1089962 R1A

Description

The objective of this course is to describe the field maintenance procedures for SIU 02 / TCU 02. The students will be able to learn both hardware types and characteristics, Managed Object Model, main commands and maintenance tasks.

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain SIU 02 / TCU 02 functions, hardware, features.
 - 1.1 Explain the main SIU 02 / TCU 02 functions.
 - 1.2 Describe the SIU 02 / TCU 02 hardware details.
 - 1.3 Show installation examples for SIU 02 / TCU 02.
 - 1.4 Describe the main features for SIU 02 / TCU 02.
- 2 Explain SIU 02 / TCU 02 managed object model.
 - 2.1 Describe the managed object (MO) concept, structure and relations.
 - 2.2 Identify an example of the Managed Information Base (MIB).
- 3 Show SIU 02 / TCU 02 main CLI commands.
 - 3.1 Explain the SIU 02 / TCU 02 local connection.
 - 3.2 Explain the SIU 02 / TCU 02 command line.
 - 3.3 Show the main CLI commands.
- 4 Perform SIU 02 / TCU 02 maintenance procedures.
 - 4.1 Extract XML files from SIU 02 / TCU 02.
 - 4.2 Reset the SIU 02 / TCU 02 to Factory Settings.
 - 4.3 Run XML files in SIU 02 / TCU 02.
 - 4.4 Describe how to check the O&M IP.
 - 4.5 Perform the Data Collection Guideline in SIU 02 / TCU 02.

Target audience

The target audience for this course is:

Field Technician





Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU107852
Ericsson WCDMA System Overview, LZU1085418
LTE/SAE System Overview, LZU1087020
IP Networking, LZU102397
IP in GSM Radio Access Network, LZU1087035
IP in WCDMA Radio Access Network, LZU1087379
GSM BSS RBS 2000 Basics, LZU1088833
RBS 6000 Overview, LZU1087503

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools, which are accessed remotely.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Time (hours)
	Course Introduction and Pre-test (if necessary)	0.25
	SIU 02 / TCU 02 Functions, Hardware, Features.	1.0
	SIU 02 /TCU 02 Managed Object Model	0.5
1	SIU 02 / TCU 02 CLI Main Commands	2.0
	SIU 02 / TCU 02 Maintenance Procedures	2.0
	Course Evaluation and Test (if necessary)	0.25

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Remote Site Management (RSM) Operation



LZU1082395 R1A

Description

What is Remote Site Management? What are the components or nodes that make the RSM? Do you have sufficient knowledge to operate and manage an RSM Network?

These are just some of the questions that will be answered in this course. The RSM Operation course covers operation and management of the network through the Ericsson Site Controller (ESC) Manager. Fault, Configuration, Performance, Software and Security Managements are done through ESC Manager and are covered in this course. The course will have theoretical sessions where the set up, maintenance and use will be discussed, followed by the practical session to apply and perform the actual operation and management of the RSM network through the ESC Manager.

Learning objectives

On completion of this course the participants will be able to:

- 1 Explain the Remote Site Management (RSM) architecture
 - 1.1 Identify the components and its functionalities that make the RSM
 - 1.2 Know the different interface or ports in the ESC and EPP
 - 1.3 Explain the functionality of the Misc I/O and External Alarm ports in either the ESC or EPP
 - 1.4 Describe the different features that can be connected to the RSM network using the ESC
- 2 Perform software management in the ESC Manager
 - 2.1 Describe the steps necessary for the installation and administration of the ESC Manager
 - 2.2 Know the concepts of the ESC Manager
 - 2.3 Know and describe the ESC Manager GUI
 - 2.4 Know how to download software upgrade packages to ESCs and to their connected equipment
- 3 Perform security management functionality of the ESC Manager
 - 3.1 Know how to create users and user groups
 - 3.2 Explain the access rights of the users belonging to a specific user group
 - 3.3 Describe the security management panel GUI
- 4 Perform configuration settings in the ESC Manager





- 4.1 Be able to describe the GUI structure
- 4.2 Know how to create and configure the ESC and the connected site equipment
- 4.3 Know how to do changes on multiple sites by running templates
- 4.4 Learn how to configure a port or interface in the ESC
- 5 Perform fault management in the RSM Network
 - 5.1 Be able to set up triggers to get precise alarm monitoring
 - 5.2 Know how to monitor alarms in the ESC and their connected equipment
 - 5.3 Know how to isolate and resolve problems in the RSM
- 6 Perform performance management
 - 6.1 Know the setting required to view reports, statistics and real time data for one site or the whole network
 - 6.2 Be able to compare sites with each other
 - 6.3 Be able create reports for presentation to the CTO and COO

Target audience

The target audience for this course is:

System Engineer, Service Engineer

Prerequisites

Successful completion of the following courses:

Have the competence specified for the Functional Skills Commissioning Technician Radio Products

Have basic understanding in English

Be an educated or experienced Technician/Engineer

Duration and class size

The length of the course is 2 days and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools.

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Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	RSM Network	1
	Software Management	2
	Security Management	1
	Configuration Management	2
2	Configuration Management	1
	Fault Management	2
	Performance Management	3

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