

## **BTS COMMISIONING FOR ERICSSON**

Firstly open OMT software :

Click on CONFIGURATION



- a. Open IDB (we can open any saved IDB)
- b. Create IDB (we can create new IDB)
- c. Save IDB (we can save IDB of any site)

Then click on CREATE IDB



- i. Cabinet Setup
- ii. Antenna Sector
- iii. Configuration type

Then click on CABINET SETUP



1. cabinet type (2204, 2106i etc.)
2. power system ( BTS i/p voltage)
3. climate (this option is internally selected)

Then click on ANTENNA SECTOR



- i. CDU type (G,J)
- ii. Frequency band (1800, 900)
- iii. TMA (yes/no)
- iv. Rx Diversity (TRU in uncombiner, DTRU hybrid combiner)

***{ Note : We have to configure 3 antenna sector separately }***

Then click on CONFIGURATION TYPE



- 3+3+4, 1+1+1, 3x4 (max. selection for each sector)

After doing all given above then Connect OMT:

Right click on RBS 2000 block in the given Block Diagram

Change LOCAL/REMOTE status (for installing IDB we will put the DXU in LOCAL state)

Then click on INSTALL IDB (by doing this the IDB will get installed)

After all this again right click on RBS 2000 block



Change LOCAL/REMOTE status (again we will put the DXU in REMOTE state)

**AFTER THIS ALL THE IDB WILL BE INSTALLED**

***Note: Remember to save the IDB***

After creating IDB we will define alarm by right clicking on ALARM INLETS



Then click on DEFINE ALARMS

After defining alarms click on PCM for cascading site



Define the TIE value (62 for main site, 61 for 1<sup>st</sup> cascading, 60 for 2nd cascading)

**ALWAYS REMEMBER:**

1. LED always glow in Tx
2. Tx is always connected with Rx

# Technician Classroom & Lab Training Content Outline

Basic of Communications a)Roles and Verticals in Telecommunications  
b)Evolution of communication & GSM Bands  
c)GSM Network Architecture  
d)WCDMA Network Architecture

**General**

- a)Identification of site with indoor and outdoor snaps
- b)Identification of Tools for installation
- c)Material receiving at site
- d)EMR survey
- e)RFI survey
- f)Feasibility Survey

**Occupational Health & Safety**

- a) Proper Uses of PPE (Safety belt, safety shoes, gloves, lanyard, helmet, adequate safety dress)
- b) Working on height and towers
- c) Electrical safety
- d) Safety Signs and Symbols
- e) Electrostatic discharge and its preventions
- f) Lightning Energy safety
- g) Working with batteries
- h) Laser light safety
- i) Fire Safety and classes of fire
- j) RF Safety and its preventions
- k) Lifting of equipments
- l) Importance of grounding systems for individual and equipments

**Safety procedure at work location(BTS, BSC, MSC)**

- a) Safety for working at heights
- b) Safety during Installation, Power taping, commissioning and Integration of BTS at sites
- c) Safety during MW link installation, alignment, traffic shifting, changeovers, Night activities
- d) Safety during working with Batteries, copper strips, ventilation plugs, torque value, terminals, shifting and Upgradation of battery bank
- e) Safety Working at SMPS, DCDB +ve bar, -ve bar, grounding, critical load, Non critical load, External alarms SMPS to BTS, MCB rating, recommended MCB for BTS & TRSM

**Installation**

- a) BTS & Node B
  - a) Opening of cabinet from box/identification of BTS cards/ Cross check with Material Requisition Note checklist
  - b) Installation of cabinet
  - c) Grounding of cabinet
  - d) Installation of cards and distribution of power
  - e) Power taping of BTS from SMPS with specified torque values
  - f) Internal cabling between Duplexer and TRX cards of BTS
  - g) Installation and routing of feeder jumpers with proper labelling from BTS to feeder cable
  - h) Installation of signal cables
  - i) BTS configurations(RBS 2204, 2206, 2202, 2111, 2954, 2964, 6601, 6201, 6202 etc)
    - Installation of cabinet base frame
    - Installation of cabinet on base frame and fix it with specified torque values
    - Grounding and power taping of BTS
    - Installation of jumpers, E1 cables, External alarms cables, ESB cables, power cables, according to plans
  - j) Information of IDB and commissioning procedure of above different BTS
    - Laptop requirements of Installing IDB in different RBS, Software version, login cable pin configuration, serial port configuration, flash card updating files, create IDB, upload IDB, change IDB, physical check of IDB
    - Define External alarms in IDB and cross check to NOC
    - Define TEI values in RBS
    - Define cell ID's, change local/remote state of RBS, define identification of RBS, Define GPS Parameters, cross check IDB, Define Transmission parameters, cascading Standalone, Defined ESB delay values, define present RU's, Define TF handover modes, define external alarms Soft and hard Loop break check of E1 at RBS end. TRSM end. Near end Far End upto BSC
- b) GSM Antenna and Feeder Cable
  - a) Opening of GSM antenna box and Install antenna according to Plan ( High Gain and Low Gain values)
  - b) Assembling of GSM antenna mounting kit
  - c) Installation of GSM antenna up the tower and fix on Mount pole at proper height as per TND Plan
  - d) Set the (angle) orientation, Electrical and mechanical tilt according to the plan

- e) Routing and connecting of feeder jumper at antenna port on tower with proper torque value
- f) Weather proofing at all outdoor connections at antenna port, jumper, Earthings
- g) Assembling and installation of feeder clamps with exact preferred distance
- H) Unwind the feeder cable from Drum to role, cut the length as per requirement and make the feeder connectors
- i) Installation of feeder cable up the tower and connect with jumper to GSM antenna port
- j) Proper Routing, bending radius and pulling inside the shelter and feeder earthing of feeder cable
- k) Installation of roxtec boots and glands with specified holes for feeder, IF, earthing cables
- l) Weather proofing and labelling of GSM and MW antennas.
- c) Transmission
  - a) Unpacking of MW antenna
  - b) Assembling of MW antenna, As per TND plan, Polarization, height, Degree, accessible
  - c) Installation of MW antenna up to the tower, fix on tower and set the orientation
  - d) Assembling and installation of IF Clamps
  - e) Fix the IF cable, cut the IF cable as per, requirement and make the IF connector
  - f) Pulling of IF cable and connect at IDU & ODU with IF connectors and jumpers
  - g) Routing, bending, pulling inside the shelter and IF earthing of IF cable
  - h) Assembling, installation and power to IDU from SMPS
  - i) Alignment of MW antenna
  - j) Weather proofing and labelling of MW antenna
  - k) Installation and configuration of different TX nodes i.e. MLTN, ML-E etc  
Installation of ML-E AMM 1U, 2U, 4U, MLTN 1P, 2P, 6P, 20P  
Inserting the card in different TX nodes according to TND plan and perform soft and hard connection to add drop and forward E1 signals  
configuration of MLE & MLTN TX nodes with different nodes as per plan and install MW links ,  
Commission and Integrate the RBS with TX nodes
  - l) Software and Version Upgradation of MLTN, MLE etc  
Identification of TX Nodes present software version and procedure to upgrade it  
Identification of different MMU and RADIO like N, X, P, RAU1, RAU2 series and its comp ability and capacity with the existing TX nodes
  - m) Identification of PDH & SDH transmission equipments and its installation, commissioning, Integration, Testing and Troubleshooting
  - n) E1 patching at DDF and perform loop break check at NOC and rectification of faults ASAP
  - o) Understanding the Internal and External alarms of equipments and reasons of faults.
- d) Connectorization
  - a) RF Feeder cable connectors ( DIN, N Type)
  - b) TNC IF connector ( RG 213, 214, RG 223)
  - c) RJ 45 connector as per Pin configuration ( Straight, cross, Login cables etc)
  - c) BNC connector
  - d) SMZ connector
  - e) 25 pin connector (D type)
  - f) 9 pin connector (D type)
  - g) TQ Connectors
  - h) BQ connectors
  - i) Power connectors for transmission equipments
  - j) Cable lugs and thimble for proper termination of power and grounding cables
  - k) Soldering and Desoldering of the connectors
- e) Earthing System at Telecom sites
  - a) Feeder earthing
  - b) IF earthing
  - c) Equipments earthing
  - d) Measuring Earthing Values  
Measurement of earthing values with earthing testing kit
  - e) Types of earthing systems at telecom sites

Pit earthing system and its procedure  
Plate earthing system and its procedure  
Bore earthing system and its procedure  
Earthing system and its importance at telecom sites  
f)Connectivity of all metallic parts and equipments with earthing pits according to grounding standards  
g)Role of Lightning Arrester and surge arrester at Mobile telecom sites  
Operations, Maintenance & Troubleshooting Practices  
a)Basics of Operation and Maintenance for 2G, 2.5G and 3G Sites BTS, Node B, Mini Link-E, Mini Link Traffic Node  
Night activity, CR Plan, outage activity, changeover, handover procedures, different type of nodes and its software match and mismatch  
b) Replacing IDU/ODU, Software Upgrade etc.  
c)Alarm classification, Concepts of Internal and External Alarms  
Mains fail, rectifier fail, low battery, DG fails to start, DG fails to stop, LLOP, LFL, aircon failure, site down due to high room temperature, equipment operational temperature ranges, equipment sensitivity  
d)Infrastructure requirements, power system upgrade, capacity, per site power consumption, MCB rating, space for equipments etc.  
e)Maintenance of Active Infra (DG, PIU, SMPS, BB etc.)  
Installation , configuration, automation, rating per site, power consumption and maintenance of DG  
Installation , configuration, Line Conditioner Units, Surge arrestor, Upgradation, automation, rating per site, power consumption and maintenance of PIU  
Installation , configuration, a capacity of rectifier modules, automation, rating per site, power consumption and maintenance of SMPS  
Installation , configuration, rating per site, power consumption and maintenance of Battery bank  
f)Maintenance of Passive Infra (Earthing Checks, Cable Routing, Weather Proofing, Tower, Mount Poles, Shelter, Racks etc.)  
Visual checks  
Dimension and specification of shelter in equipments need to install and maintain  
g)Material Handling and Spares (ODU/IDU/GSM Antenna Cards etc.)  
Night activity, CR Plan, outage activity, changeover, handover procedures, different type of nodes and its software match and mismatch  
Identification of different MMU and RADIO like N, X, P, RAU1, RAU2 series and its comp ability and capacity with the existing TX nodes  
h)Outage Related activities and team handling/ WFM  
Preplanning and team management procedures  
Troubleshooting and outage activities  
i)NOC Reporting and Escalation Procedure for Indus and Non-Indus Faults.  
Procedure for down call of cell site, responsibility area during outage, Infra related, Power related, Media related, Transmission related, RF related etc  
j)Protection check for Mini Link 1+1, 1+1 configuration, IF Loops, RF Loops, ET reset, KLM, E1 cascading, E1 forwarding, E1 Dumping etc  
Hands on experience above technical expertise  
Software and hardware activities  
Testing Equipments  
a)Site Master  
b)Power meter  
c)BER Meter  
d)Megger  
e)Clamp Meter  
f)GPS  
h)Multimeter

## Quality

- a) Defining Quality Standards
- b) Quality for Installation, Connectorization, cabling, labelling
- c) Quality for Cable Routing, Grouting, fixing of cabinets, canopy Racks, BTS continuity concepts
- d) Quality for Earthing Cables, Ext Alarms cables its colour code, assembling lugs & thimble termination and connectivity of earthing systems
- e) Quality during Installation of BTS, GSM & MW Antenna Labelling, weatherproofing, clamping, hanging, uses of rope/pulley etc
- f) Quality of following plans for Commissioning, Integration and Testing
- g) Understanding Acceptance Test procedure and punch point removal as per customer requirements
- h) Demo sites for Indoor/Outdoor 2G & 3 G BTS for reference and best quality work for Telecom circle
- i) Demo sites for MLE, MLTN other transmission equipments and its connectivity with network
- j) Identification and rectification of faults at equipment end , BSC end Media end.
- k) Labelling & Identification of Site with different IDs, ISP ID, BCF ID , SAM ID, SAP ID, IP ID, INDUS ID, cell ID etc
- l) Rectification of Punch points according to its severity level (critical, major, minor)

## Power Systems

### a) DG

Rating, cabling, battery charger, capacity, no of sites, load on DG, Specifications  
DG automation, changeovers, delay values, self starting, manual starting  
DG fuel filling, power outcomes, installation, maintenance, testing

### b) PIU

Static Line conditioner unit  
Battery management system  
Auto Mains Failure  
Delays

AC distribution systems and controls  
LED status and troubleshooting

### c) Battery Bank

Concept of series and parallel battery bank  
Rating and capacity of cells in battery bank and its connection in power plant  
Installation and maintenance procedure in battery bank system

### d) SMPS

Rectifiers and its functions  
LVD and its roles  
Critical and Non Critical loads  
Rating of cables and MCB's

### e) DCDB and ACDB

### f) EB Meter and AMF Panel and its automation

### g) Importance of earthing systems in power systems

i) Power requirement of single BTS site, MCB rating , Needs of power system Upgradation, capacity of DG, PIU, BB

j) Size of power cable between DG-PIU-SPMS-ACDB-DCDB-AC-LA-BTS-TRSM with specified rating of MCB

### k) Understanding the circuits of AC and DC current, cabling and terminals.

Guidelines and Precautions

#### a- General Precautions

- a) Do not Switch Off any MCB without tracing while removing any equipment.
- b) Do not remove MW Antenna without tracing and without informing O&M Engineer.
- c) Do not Stand on feeder or IF cable while working
- d) Do not enter site without permission from technician /Supervisor.
- e) Do not work without safety Eqpt. (PPE) above 3 mtr Height.

- f) Do not swap feeder cable Jumpers during connection.
- g) Do not leave modules loose while inserting cards in BTS and Node B
- i) Do not leave any tool at site.
- j) Do not make site dirty.
- k) Do not connect Power connections without proper approval from Electrical Supervisor or Technician
- l) Do not step on any eqpt.
- m) Do not disturb other operator BTS, DDF, GSM, MW, Antenna lines, all cables and connection without permission

b-General Guidelines

- a) Cable must routed straight as per guidelines provided by customer
- b) Proper IF cable routing of MW HOP
- c) DDF cable Routing Property for E1 Termination and External alarms
- d) Earthing cables routing properly
- e) Rear view of MW Hop, Labelling and marking properly
- f) RF & IF Jumper labelling
- g) RF & IF cable earthing, cable routing procedure
- h) BTS & Node-B Earth cable routing and its Torque value
- i) Installation of Antennas, Antenna line, waveguides, couplers, TMA, according to specification at site
- j) Shelter Clean and SRN reports
- k) Weatherproofing (Tape putty) standards and its implementations
- l) Cable Lugs and Thimble assemble and its proper termination
- m) Installation of Cable Ties for different type of IF, PCM, E1, alarm, tributary cables
- n) Installation of Surge Arresters (EMP) and its specifications

c- Specific Precautions and Guidelines

a) Precautions and Procedures for Planned Activities

Team plan of action must well defined for activities and team should carry all hardware and software, tools, cables that wil used in activities

Before starting the planned activity one should take permission and conformation on it before work with live BTS, MW, RF part of the sites

Perform the activity in a time window that is provided by OEM if activity not completed revert on previous settings

b) Precautions for BTS and Link Installation

Install BTS & MW at specified space provided by infra provider

Do not disturb existing BTS and MW equipments

After cross check of proper power, proper alignment, stability of MW Shift traffic and unlock the TRX from BSC end

c) Precautions for PIU, SMPS, BB, DG maintenance

Details provided above in power system

d) Precautions for Night Activity and outage activities

Details provided above