Customer Training Catalog
Training Programs
CDMA Product Technology Training

HUAWEI
HUAWEI Learning Service
2014
# CONTENTS

1. Training Path.................................................................................................................. 3

2. Training Programs ......................................................................................................... 4
   2.1 CDMA Training Programs............................................................................................ 5
      2.1.1 CDMA BTS/DBS3900 Installation and Testing Training............................................ 5
      2.1.2 CDMA BSC6680/BTS3900 Operation and Maintenance Training............................. 6
      2.1.3 CDMA BSS6.0 Data Configuration Training ............................................................. 7
      2.1.4 CDMA BSS7.0 Data Configuration Training ............................................................. 8
      2.1.5 CDMA BSS8.0 Data Configuration Training ............................................................. 9
      2.1.6 CDMA BSC6680/BTS3900 Advanced Training........................................................ 10
      2.1.7 cdma2000 1X Radio Network Design and Planning Training..................................... 11
      2.1.8 cdma2000 1X Radio Network Optimization Training.............................................. 12
      2.1.9 cdma2000 1xEV-DO Rev.A Radio Network Design and Planning Training............... 13
      2.1.10 cdma2000 1xEV-DO Rev.A Radio Network Optimization Training.......................... 14
      2.1.11 cdma2000 1X Radio Network Topics Optimization Training ................................... 15
      2.1.12 CDMA EV-DO Rev.B System Commissioning.......................................................... 16
      2.1.13 CDMA BSS9.0 Data Configuration Training ........................................................... 17
      2.1.14 CDMA-LTE Network Construction Solutions Training.......................................... 18
      2.1.15 cdma2000 1xEV-DO Rev.A Network Topics Optimization Training......................... 19
      2.1.16 CDMA BSS IPRAN Training ..................................................................................... 20
1 Training Path

CDMA Training Path

Field Maintenance Engineer

- BTS3900 CDMA Product Overview (WBT 1H)
- CDMA BTS/DBS3900 Installation and Testing Training (ILT 5D)

O&M Engineer

- CDMA2000 1X Radio Network Design and Planning Training (ILT 5D)
- CDMA2000 1xEV-DO Rev.A Network Design and Planning Training (ILT 4D)

RNP Engineer

- CDMA2000 1X Radio Network Optimization Training (ILT 7D)
- cdma2000 1xEV-DO Rev.A Network Optimization Training (ILT 4D)

O&M Engineer

- CDMA-LTE Network Construction Solutions Training (ILT 5D)
## Training Programs

CDMA Product Technology Training Programs are designed as follows:

<table>
<thead>
<tr>
<th>Training Programs</th>
<th>Level</th>
<th>Duration (working days)</th>
<th>Training Location</th>
<th>Class Size</th>
</tr>
</thead>
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<td>CDMA BTS/DBS3900 Installation and Testing Training</td>
<td>II</td>
<td>5 h</td>
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<td>CDMA BSC6680/BTS3900 Operation and Maintenance Training</td>
<td>II</td>
<td>5</td>
<td>6 ~ 12</td>
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<tr>
<td>CDMA BSS6.0 Data Configuration Training</td>
<td>III</td>
<td>5</td>
<td>6 ~ 12</td>
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<td>III</td>
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<td>6 ~ 12</td>
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<td>CDMA BSS8.0 Data Configuration Training</td>
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<td>5</td>
<td>6 ~ 12</td>
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<tr>
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<td>IV</td>
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<td>6 ~ 12</td>
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<tr>
<td>cdma2000 1X Radio Network Design and Planning Training</td>
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<td>5</td>
<td>6 ~ 12</td>
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<td>cdma2000 1X Radio Network Optimization Training</td>
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<td>CDMA BSS9.0 Data Configuration Training</td>
<td>III</td>
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<td>6 ~ 16</td>
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<td>CDMA-LTE Network Construction Solutions Training</td>
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<td>6 ~ 16</td>
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<td>cdma2000 1xEV-DO Rev.A Network Topics Optimization Training</td>
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<td>6 ~ 16</td>
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<tr>
<td>CDMA BSS IPRAN Training</td>
<td>IV</td>
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<td>6 ~ 16</td>
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2.1 CDMA Training Programs

2.1.1 CDMA BTS/DBS3900 Installation and Testing Training

Training Path

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<td>BTS/DBS3900 CDMA Installation and Testing</td>
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```

Target Audience

BTS Field Technicians, First Line Operation and Maintenance Technicians and Engineers

Prerequisites

- Basic knowledge of mobile communications

Objectives

On completion of this program, the participants will be able to:

- Describe various wireless communication protocol and evolution of cdma2000.
- Describe Long code, Short code and Walsh code application.
- Describe the reverse and forward Radio Configurations and their correspondence.
- Describe Rake receiver, power control, soft and softer handoffs.
- List feature and specifications of 1xEV-DO Rev.A.
- List Basic Concept of 1xEV-DO Rev.A.
- Describe 1xEV-DO Rev.A networking.
- List 1xEV-DO Rev.A new technology.
- Describe Structure of the BTS3900.
- Describe Modules Functions.
- Describe Application Scenario.
- Describe Antenna.
- Describe Key Technologies.
- Complete Antenna Installation.
- Complete Measuring VSWR.
- Complete Locating Antenna-Feeder Fault.
- Describe Precautions and FAQ.
- Complete Operation of Analog PowerMeter.
- Complete Operation of Digital PowerMeter.
- Complete BTS Data Configuration.
- Complete BTS Commissioning.
- Describe Operation / Maintenance System.
- Complete Routine Operation / Maintenance.

Duration

5 hours

Class Size

No limit
2.1.2 CDMA BSC6680/BTS3900 Operation and Maintenance Training

Training Path

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<td>ORC02</td>
<td>BSC6680/BTS3900 CDMA BSS7.0 Product Description</td>
<td>Lecture</td>
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<td>ORC05</td>
<td>BSC6680/BTS3900 CDMA Operation and Maintenance</td>
<td>Lecture, Lab</td>
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</tbody>
</table>

Target Audience

BSS Field Technicians, First Line Operation and Maintenance Technicians and Engineers

Prerequisites

Basic knowledge of mobile communications

Objectives

On completion of this program, the participants will be able to:

- Describe various wireless communication protocol and evolution of cdma2000.
- Describe Long code, Short code and Walsh code application.
- Describe the reverse and forward Radio Configurations and their correspondence.
- Describe Rake receiver, power control, soft and softer handoffs.
- List feature and specifications of 1xEV-DO Rev.A.
- List Basic Concept of 1xEV-DO Rev.A.
- Describe 1xEV-DO Rev.A networking.
- List 1xEV-DO Rev.A new technology.
- Outline BSC6680 features.
- Describe the structure of BSC6680.
- Describe the functions of all boards.
- Know the signaling flow in BSC6680.
- Describe BSC6680 typical configurations.
- Describe types of 3900 series BTS.
- Outline functions of modules.
- Find typical application scenarios.
- Describe Antenna Functions.
- Describe Antenna Technologies.
- Describe Antenna Installation.
- Know about the basic knowledge about ATM/IP.
- Outline the structure of operation and maintenance system.
- Describe IP address in CBSS.
- Describe the networking of the O/M system.
- Describe the software structure of BSS.
- List the file structure of BSC6680 BAM.
- Perform LMT main operation.
- Describe the routine maintenance tasks.
- Fulfill BSC6680 routine maintenance tasks.
- Outline the O/M system of BTS3900.
- Manage the routine maintenance operation of BTS3900.

Duration

5 working days

Class Size

Min 6, Max 12
2.1.3 CDMA BSS6.0 Data Configuration Training

Training Path

BSC6680/BTS3900 CDMA BSS6.0 Data Configuration
ORC06 Lecture, Lab 5d

Target Audience

BSS Field Technicians, Second Line Operation and Maintenance Technicians and Engineers

Prerequisites

Basic knowledge of mobile communications
Successful completion of the following program(s):
CDMA BSC6680/BTS3900 Field Operation and Maintenance Training

Objectives

On completion of this program, the participants will be able to:

- Describe the procedure of BSC6680 configuration.
- Make the initial configuration script of BSC6680.
- Implement the data loading and checking of BSC6680.
- Describe the principle and process of BTS data configuration.
- Complete BTS data configuration and commissioning.

Duration

5 working days

Class Size

Min 6, Max 12
2.1.4 CDMA BSS7.0 Data Configuration Training

Training Path

![CDMA BSS7.0 Data Configuration Diagram]

Target Audience

BSS Field Technicians, Second Line Operation and Maintenance Technicians and Engineers

Prerequisites

Basic knowledge of mobile communications
Successful completion of the following program(s):
CDMA BSC6680/BTS3900 Field Operation and Maintenance Training

Objectives

On completion of this program, the participants will be able to:

- Describe the procedure of BSC6680 configuration.
- Make the initial configuration script of BSC6680.
- Implement the data loading and checking of BSC6680.
- Describe the principle and process of BTS data configuration.
- Complete BTS data configuration and commissioning.
- List the basic process of BSC6680 troubleshooting.
- Describe the treatment of typical emergency fault.
- Outline the procedure of the emergency maintenance.
- Understand the processing of troubleshooting.
- Handle the common faults and troubles of CDMA BSS.

Duration

5 working days

Class Size

Min 6, Max 12
2.1.5 CDMA BSS8.0 Data Configuration Training

Training Path

<table>
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<tr>
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<td>ORC10 Lecture, Lab, Discussion</td>
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<td>BSC6680/BTS3900 CDMA BSS8.0 Troubleshooting</td>
<td>ORC11 Lecture, Lab, Discussion</td>
<td>2d</td>
</tr>
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</table>

Target Audience

BSS Field Technicians, Second Line Operation and Maintenance Technicians and Engineers

Prerequisites

Basic knowledge of mobile communications
Successful completion of the following program(s):
CDMA BSC6680/BTS3901 Field Operation and Maintenance Training

Objectives

On completion of this program, the participants will be able to:

- Describe the procedure of BSC6680 configuration.
- Make the initial configuration script of BSC6680.
- Implement the data loading and checking of BSC6680.
- Describe the principle and process of BTS data configuration.
- Complete BTS data configuration and commissioning.
- List the basic process of BSC6680 troubleshooting.
- Describe the treatment of typical emergency fault.
- Outline the procedure of the emergency maintenance.
- Understand the processing of troubleshooting.
- Handle the common faults and troubles of CDMA BSS.

Duration

5 working days

Class Size

Min 6, Max 12
2.1.6 CDMA BSC6680/BTS3900 Advanced Training

Training Path

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<td>BSC6680/BTS3900 CDMA Advanced Training</td>
<td>4.5d</td>
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</table>

Target Audience

BSS Field Technicians, Second Line Operation and Maintenance Technicians and Engineers

Prerequisites

At least 2 years working experience in CDMA wireless network operation and maintenance

Basic knowledge of mobile communications

Successful completion of the following program(s):

CDMA BSC6680/BTS3900 Field Operation and Maintenance Training

Objectives

On completion of this program, the participants will be able to:

- Describe CDMA-LTE development and features.
- Outline LTE network architecture.
- Explain LTE key technologies.
- Describe LTE protocol and channel.
- Describe LTE deployment.
- Describe CDMA-LTE solution.
- Master BSC6680 and BTS3900 CDMA Expansion.
- Master BSC6680 and BTS3900 Interface Reconstruction.
- Master BSC6680 and BTS3900 CDMA Software Upgrade.
- Understand CDMA EV-DO Troubleshooting.
- Understand CDMA interface Troubleshooting.

Duration

5 working days

Class Size

Min 6, Max 12
2.1.7  cdma2000 1X Radio Network Design and Planning Training

Training Path

- cdma2000 1X System Principle
  - ORA01 Lecture 1d

- BSC6680/BTS3900 CDMA BSS6.0 Product Overview
  - ORC01 Lecture 1d

- cdma2000 1X Radio Network Design and Planning
  - ORP02 Lecture 3d

Target Audience

Network Deployment Engineers, System Technicians, System Engineers

Prerequisites

Basic knowledge of mobile communications
At least 1 year working experience in CDMA wireless network operation and maintenance

Objectives

On completion of this program, the participants will be able to:

- Describe the development of mobile system.
- List the structure of cdma2000 1X network.
- State the signal process flow of cdma2000 1X.
- State the key technology of cdma2000 1X.
- Describe the air interface of cdma2000 1X.
- Describe the numbers in cdma2000 1X.
- Describe BSC6680 System Architecture.

- Describe BSC6680 Hardware Function.
- Describe BSC6680 Typical Configuration.
- List the typical type of 3900 series BTS.
- Describe the system structure of 3900 series BTS.
- State the function of each module.
- Outline application scenarios.
- Master the basic knowledge of Radio Propagation.
- Describe some typical Propagation Models and their applicability.
- Comprehend the key parameters and calculation methods of Link Budget.
- Know about the basic principle of Site, Antenna / Feeder Selection.
- Understand interference analysis method.
- Describe the relative factors for capacity.
- Implement the capacity planning.
- List Paging Channel Construction.
- Describe LAC Planning.
- Implement Paging Optimization.
- Describe the basic method for PN offset planning in the CDMA network.
- Outline the basic principle for Neighbor planning in the CDMA network.
- Describe the precautions when planning the PN and the Neighbor cells.

Duration

5 working days

Class Size

Min 6, Max 12
2.1.8 cdma2000 1X Radio Network Optimization Training

Training Path

| cdma2000 1X Radio Network Optimization | ORO01 | Lecture | 7d |

Target Audience

Optimization Engineers, System Technicians, System Engineers

Prerequisites

At least 1 year working experience in CDMA wireless network operation and maintenance
Successful completion of the following program(s):
cdma2000 1X Radio Network Design and Planning Training

Objectives

On completion of this program, the participants will be able to:
- Describe the function of the cdma2000 1X configuration message.
- Explain the important elements of the cdma2000 1X configuration message.
- Modify the parameters of configuration message.
- State the significance of power control in CDMA.
- Analyze reverse power control algorithm.
- Analyze forward power control algorithm.
- Optimize power control parameter.
- Describe function and classification.
- Explain some conception related with handoff.
- Apply different handoff algorithm.
- Optimize handoff parameters.
- Describe Registration Process.
- Describe Voice Call Flow.
- Describe Handoff Flow.
- Describe Data Call Flow.
- Describe Huawei performance system structure.
- Know the meaning of performance indexes.
- Analyze abnormal performance indexes.
- Describe process of network optimization.
- Solve typical problems of network.

Duration

7 working days

Class Size

Min 6, Max 12
2.1.9 cdma2000 1xEV-DO Rev.A Radio Network Design and Planning Training

Training Path

<table>
<thead>
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<th>Duration</th>
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<td>cdma2000 1xEV-DO Rev.A System Principle</td>
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<td>ORP03</td>
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Target Audience

Network Deployment Engineers, System Technicians, System Engineers

Prerequisites

At least 1 year working experience in CDMA wireless network operation and maintenance
Successful completion of the following program(s):
  cdma2000 1X Radio Network Design and Planning Training

Objectives

On completion of this program, the participants will be able to:

- List basic conceptions of 1xEV-DO Rev.A
- Outline 1xEV-DO Rev.A Air interface
- Describe 1xEV-DO Rev.A key technologies
- Coverage Planning Process.
- Link Budget and Propagation Model.
- Balance between Forward and Reverse Link.
- Describe capacity planning procedure.
- Describe the principle of capacity planning.
- Outline feature of 1X EV_DO capacity planning.
- Describe Subnet Capacity.
- Complete Subnet and Color Code Planning.

Duration

4 working days

Class Size

Min 6, Max 12
2.1.10 cdma2000 1xEV-DO Rev.A Radio Network Optimization Training

Training Path

| cdma2000 1xEV-DO Rev.A Radio Network Optimization | ORO03 | Lecture | 4d |

Target Audience

Optimization Engineers, System Technicians,
System Engineers

Prerequisites

At least 1 year working experience in CDMA
wireless network operation and maintenance
Successful completion of the following program(s):
cdma2000 1X Radio Network Design and Planning
Training
cdma2000 1xEV-DO Rev.A Radio Network Design
and Planning Training

Objectives

On completion of this program, the participants will be able to:

- Describe the function of 1xEV-DO Rev.A
  configuration message.
- Explain the important elements of 1xEV-DO
  configuration message.
- Modify the parameters of configuration
  message.
- Describe the significance of power control in
  CDMA.
- List reverse power control algorithm.
- List power control data configuration.
- List the handoff algorithm command.
- Apply different handoff algorithms.
- Optimize 1xEV-DO Rev.A handoff parameters.
- Describe signaling procedure of EVDO
  networking.
- Outline key and messages and parameters.
- Describe rules and methods of EV-DO
  Performance analysis.
- Understand meaning, statistic and optimization
  of KPI.

Duration

4 working days

Class Size

Min 6, Max 12
2.1.11 cdma2000 1X Radio Network Topics Optimization Training

Training Path

| cdma2000 1X Radio Network Optimization Topics | ORO02 | Lecture, Lab | 5d |

Target Audience

Optimization Engineers, System Technicians, System Engineers

Prerequisites

At least 1 year working experience in CDMA wireless network operation and maintenance
Successful completion of the following program(s):

cdma2000 1X Radio Network Optimization Training

Objectives

On completion of this program, the participants will be able to:

- Describe Search Windows.
- Complete Neighboring Cell Configuration and Optimization.
- Complete Soft Handoff Optimization.
- Complete Hard Handoff Optimization.
- Complete Coverage Optimization.
- Describe Capacity Expansion.
- Complete Main RRM Tasks.
- Describe Main RRM Algorithms.
- Describe Traffic Balance.
- Describe Idle State Standby Policy.
- Describe Access State Assignment Policy.
- Describe Service State Inter-frequency Hard Handoff Policy.
- Describe Multi-carrier Networking Instances.
- Describe Multi-carrier Optimization Policy.
- Describe Traffic Balance.
- Describe Idle State Standby Policy.
- Describe Access State Assignment Policy.
- Describe Service State Inter-frequency Hard Handoff Policy.
- Describe Multi-carrier Networking Instances.
- Describe Multi-carrier Optimization Policy.
- Describe Call Drop Mechanism and Statistic Analysis.
- Describe Analysis and Solutions for Common Types of Call Drop.
- Describe Network Access Protocols.
- Describe Cause Analysis of Network Access Failures.
- Describe Analysis of and Solutions to a Common Network Access Failure.

Duration

5 working days

Class Size

Min 6, Max 12
2.1.12 CDMA EV-DO Rev.B System Commissioning

Training Path

CDMA EV-DO Rev.B System Principle
ORA04 Lecture 1d

CDMA EV-DO Rev.B System Commissioning
ORC10 Lecture, Lab 1d

Target Audience
Optimization Engineers, System Technicians, System Engineers

Prerequisites
At least 1 year working experience in CDMA wireless network operation and maintenance
Successful completion of the following program(s):
CDMA BSS7.0 Product Training

Objectives
On completion of this program, the participants will be able to:

- EV-DO Evaluation.
- Difference between EV-DO Rev.B and EV-DO Rev.A.
- New Feature of EV-DO Rev.B.
- Key Technology of EV-DO Rev.B.
- Describe the evolution of EV-DO version.
- Describe the difference of EV-DO Rev.B and Rev.A.
- Describe the feature of EV-DO Rev.B system.
- Describe the key technology of EV-DO Rev.B system.
- Describe the structure and principle of EV-DO Rev.B system.
- Describe the data configuration procedure of EV-DO Rev.B feature.
- Complete the data configuration of EV-DO Rev.B.

Duration
2 working days
Class Size
Min 6, Max 16
2.1.13 CDMA BSS9.0 Data Configuration Training

Training Path

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<th>BSC6680/BTS3900 CDMA BSS9.0 Data Configuration</th>
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<th>Lecture, Lab, Discussion</th>
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<td>BSC6680/BTS3900 CDMA BSS9.0 Troubleshooting</td>
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<td>Lecture, Lab, Discussion</td>
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Target Audience

BSS Field Technicians, Second Line Operation and Maintenance Technicians and Engineers

Prerequisites

Basic knowledge of mobile communications
Successful completion of the following program(s):
CDMA BSC6680/BTS3901 Field Operation and Maintenance Training

Objectives

On completion of this program, the participants will be able to:

- Describe the procedure of BSC6680 configuration.
- Make the initial configuration script of BSC6680.
- Implement the data loading and checking of BSC6680.
- Describe the principle and process of BTS data configuration.
- Complete BTS data configuration and commissioning.
- List the basic process of BSC6680 troubleshooting.
- Describe the treatment of typical emergency fault.
- Outline the procedure of the emergency maintenance.
- Understand the processing of troubleshooting.
- Handle the common faults and troubles of CDMA BSS.

Duration

5 working days

Class Size

Min 6, Max 16
2.1.14 CDMA-LTE Network Construction Solutions Training

Training Path

CDMA-LTE Network Construction Solutions Training
N/A Lecture 5d

Target Audience

Network Deployment Engineers, System Technicians, System Engineers

Prerequisites

Basic knowledge of mobile communications
Successful completion of the following program(s):
CDMA BSC6680/BTS3901 Field Operation and Maintenance Training

Objectives

On completion of this program, the participants will be able to:
- Understands the LTE principle and interface technology
- Understands the LTE site construction plan
- Described the CDMA-LTE interoperability principle and process
- Understands LTE wireless network plan main step and method

Duration

5 working days

Class Size

Min 6, Max 16
2.1.15 cdma2000 1xEV-DO Rev.A Network Topics Optimization Training

Training Path

<table>
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<tr>
<th>Program</th>
<th>Type</th>
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<td>cdma2000 1xEV-DO Rev.A Network Topics Optimization Training</td>
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</table>

Target Audience

Optimization Engineers, System Technicians, System Engineers

Prerequisites

At least 1 year working experience in CDMA wireless network operation and maintenance
Successful completion of the following program(s):
- cdma2000 1xEV-DO Radio Network Design and Planning Training
- cdma2000 1xEV-DO Rev.A Radio Network Optimization Training

Objectives

On completion of this program, the participants will be able to:
- Master a roadmap for locating throughput faults.
- Master basic Principles for Troubleshooting.
- Analyze why the RLP data retransmission rate is high.
- Know how to optimize the RLP data retransmission rate.
- Learn troubleshooting principles and methods.
- Understand troubleshooting methods of connection problems.
- Understand troubleshooting methods of call drop problems.
- Understand troubleshooting methods of handoff problems.

Duration

5 working days

Class Size

Min 6, Max 16
2.1.16 CDMA BSS IPRAN Training

Training Path

CDMA BSS IPRAN Training
N/A Lecture, Lab, Discussion 5d

Target Audience

Network Deployment Engineers, System Technicians, System Engineers
BSS Field Technicians, Second Line Operation and Maintenance Technicians and Engineers

Prerequisites

Basic knowledge of mobile communications
Successful completion of the following program(s):
CDMA BSC6680/BTS3900 Field Operation and Maintenance Training

Objectives

On completion of this program, the participants will be able to:

● Master RAN device IP address allocation

principles
● Interface board IP address planning and configuration
● Understand the Reliability mechanism of IPRAN
● Understand the principles of reliability detection mechanism and application
● Grasp the basic concept of IP QoS
● Understand and master IPRAN product implementation and application QoS configuration
● Understanding IP transmission Fails troubleshooting
● Understanding IP transmission failure typical case troubleshooting

Duration

5 working days

Class Size

Min 6, Max 16