

# **Customer Training Catalog Course Descriptions WCDMA RNP&RNO Technical Training**



**HUAWEI**  
**HUAWEI Learning Service**  
**2015**



# CONTENTS

1.1	Training Course Descriptions .....	4
1.2	Principle Training Courses .....	7
1.2.1	OWA00 WCDMA RAN Overview .....	7
1.2.2	OWA01 WCDMA Air Interface.....	8
1.2.3	OWA20 WCDMA HSPA Principles.....	9
1.2.4	OWA21 WCDMA HSPA+ Principles.....	10
1.3	RNP and RNO Training Courses.....	11
1.3.1	OWP00 WCDMA Radio Network Planning .....	11
1.3.2	OWP13 WCDMA HSPA and HSPA+ Planning.....	12
1.3.3	OWP20 WCDMA Multi-Band and Multi-Carrier Solution .....	13
1.3.4	OWP21 UMTS 900M Coverage Solution.....	14
1.3.5	OWO00 WCDMA Radio Network Tuning .....	15
1.3.6	OWO01 WCDMA Radio Network Optimization.....	16
1.3.7	OWO21 WCDMA RAN12 Radio Network Features and Algorithms .....	18
1.3.8	OWO22 WCDMA RAN13 Radio Network Features and Algorithms .....	20
1.3.9	OWO23 WCDMA RAN14 Radio Network Features and Algorithms .....	22
1.3.10	OWO24 WCDMA RAN15 Radio Network Features and Algorithms .....	24
1.3.11	OWO25 WCDMA RAN16 Radio Network Features and Algorithms .....	26
1.3.12	OWO26 WCDMA RAN17 Radio Network Features and Algorithms .....	28
1.3.13	OWO31 WCDMA RAN12 Radio Network Performance Management.....	30
1.3.14	OWO32 WCDMA RAN13 Radio Network Performance Management.....	32
1.3.15	OWO33 WCDMA RAN14 Radio Network Performance Management.....	34
1.3.16	OWO34 WCDMA RAN15 Radio Network Performance Management.....	36
1.3.17	OWO35 WCDMA RAN16 Radio Network Performance Management.....	38
1.3.18	OWO36 WCDMA RAN17 Radio Network Performance Management.....	40
1.3.19	OWO41 WCDMA HSPA RAN12 Radio Resource Management.....	42
1.3.20	OWO42 WCDMA HSPA RAN13 Radio Resource Management.....	43
1.3.21	OWO43 WCDMA HSPA RAN14 Radio Resource Management.....	44
1.3.22	OWO44 WCDMA HSPA RAN15 Radio Resource Management.....	45
1.3.23	OWO50 WCDMA HSPA RAN16 Radio Resource Management.....	46
1.3.24	OWO70 WCDMA HSPA RAN17 Radio Resource Management.....	47
1.3.25	OWO45 WCDMA HSPA and HSPA+ RAN12 Throughput Troubleshooting .....	48
1.3.26	OWO46 WCDMA HSPA and HSPA+ RAN13 Throughput Troubleshooting .....	49
1.3.27	OWO47 WCDMA HSPA and HSPA+ RAN14 Throughput Troubleshooting .....	50
1.3.28	OWO48 WCDMA HSPA and HSPA+ RAN15 Throughput Troubleshooting .....	51
1.3.29	OWO49 WCDMA HSPA and HSPA+ RAN16 Throughput Troubleshooting .....	52
1.3.30	OWO75 WCDMA HSPA and HSPA+ RAN17 Throughput Troubleshooting .....	53
1.3.31	OWO51 WCDMA RAN12 - RAN13 Delta Features.....	54
1.3.32	OWO52 WCDMA RAN13 - RAN14 Delta Features.....	56
1.3.33	OWO53 WCDMA RAN14 - RAN15 Delta Features.....	59



1.3.34	OWO54 WCDMA RAN15 - RAN16 Delta Features.....	62
1.3.35	OWO55 WCDMA RAN16 - RAN17 Delta Features.....	64
1.3.36	OWO61 WCDMA RAN14 Smart Phone Features.....	66
1.3.37	OWO62 WCDMA RAN15 Smart Phone Features.....	68
1.3.38	OWP80 WCDMA uBro RAN Planning.....	70
1.3.39	OWO80 WCDMA uBro RAN Optimization .....	71
1.3.40	OWO81 WCDMA UL Capacity Assessment and Improvement Solution.....	72
1.3.41	OWO82 WCDMA DL Capacity Assessment and Improvement Solution.....	73
1.3.42	OWO83 WCDMA Voice Experience Improvement Solution.....	74
1.3.43	OWO84 WCDMA Service Experience Improvement Solution.....	75
1.3.44	OWO85 WCDMA Differentiated QoS Management .....	76
1.3.45	OWO86 WCDMA Big Events Solution .....	77
1.3.46	OWO87 WCDMA Signaling Storm Solution .....	78
1.3.47	OWO88 WCDMA Small Packets Storm Solution .....	79
1.3.48	OWO89 WCDMA SON solution .....	80

## 1.1 Training Course Descriptions

WCDMA RNP&RNO Technical Training Training Courses are designed as follows:

Code	Training Courses	Level	Duration (working days)	Training Location	Class Size
<b>Principle Training Courses</b>					
OWA00	WCDMA RAN Overview	II	1		6 ~ 12
OWA01	WCDMA Air Interface	II	3		6 ~ 12
OWA20	WCDMA HSPA Principles	III	2		6 ~ 12
OWA21	WCDMA HSPA+ Principles	III	2		6 ~ 12
<b>RNP and RNO Training Courses</b>					
OWP00	WCDMA Radio Network Planning	II	1.5		6 ~ 12
OWP13	WCDMA HSPA and HSPA+ Planning	III	0.5		6 ~ 12
OWP20	WCDMA Multi-Band and Multi-Carrier Solution	IV	1		6 ~ 12
OWP21	UMTS 900M Coverage Solution	IV	1		6 ~ 12
OWO00	WCDMA Radio Network Tuning	III	2		6 ~ 12
OWO01	WCDMA Radio Network Optimization	IV	4		6 ~ 12
OWO21	WCDMA RAN12 Radio Network Features and Algorithms	III	5		6 ~ 12
OWO22	WCDMA RAN13 Radio Network Features and Algorithms	III	6		6 ~ 12
OWO23	WCDMA RAN14 Radio Network Features and Algorithms	III	6		6 ~ 12
OWO24	WCDMA RAN15 Radio Network Features and Algorithms	III	6		6 ~ 12
OWO25	WCDMA RAN16 Radio Network Features and Algorithms	III	6		6 ~ 12
OWO26	WCDMA RAN17 Radio Network Features and Algorithms	III	6		6 ~ 12
OWO31	WCDMA RAN12 Radio Network Performance Management	III	2		6 ~ 12
OWO32	WCDMA RAN13 Radio Network Performance Management	III	2		6 ~ 12
OWO33	WCDMA RAN14 Radio Network Performance Management	III	2		6 ~ 12
OWO34	WCDMA RAN15 Radio Network Performance	III	2		6 ~ 12



	Management				
OWO35	WCDMA RAN16 Radio Network Performance Management	III	2		6 ~ 12
OWO36	WCDMA RAN17 Radio Network Performance Management	III	2		6 ~ 12
OWO41	WCDMA HSPA RAN12 Radio Resource Management	IV	2		6 ~ 12
OWO42	WCDMA HSPA RAN13 Radio Resource Management	IV	2		6 ~ 12
OWO43	WCDMA HSPA RAN14 Radio Resource Management	IV	2		6 ~ 12
OWO44	WCDMA HSPA RAN15 Radio Resource Management	IV	2		6 ~ 12
OWO50	WCDMA HSPA RAN16 Radio Resource Management	IV	3		6 ~ 12
OWO70	WCDMA HSPA RAN17 Radio Resource Management	IV	3		6 ~ 12
OWO45	WCDMA HSPA and HSPA+ RAN12 Throughput Troubleshooting	III	1		6 ~ 12
OWO46	WCDMA HSPA and HSPA+ RAN13 Throughput Troubleshooting	III	1		6 ~ 12
OWO47	WCDMA HSPA and HSPA+ RAN14 Throughput Troubleshooting	III	1		6 ~ 12
OWO48	WCDMA HSPA and HSPA+ RAN15 Throughput Troubleshooting	III	1		6 ~ 12
OWO49	WCDMA HSPA and HSPA+ RAN16 Throughput Troubleshooting	III	1		6 ~ 12
OWO75	WCDMA HSPA and HSPA+ RAN17 Throughput Troubleshooting	III	1		6 ~ 12
OWO51	WCDMA RAN12 - RAN13 Delta Features	IV	2		6 ~ 12
OWO52	WCDMA RAN13 - RAN14 Delta Features	IV	2		6 ~ 12
OWO53	WCDMA RAN14 - RAN15 Delta Features	IV	2		6 ~ 12
OWO54	WCDMA RAN15 - RAN16 Delta Features	IV	3		6 ~ 12
OWO55	WCDMA RAN16 - RAN17 Delta Features	IV	3		6 ~ 12
OWO61	WCDMA RAN14 Smart Phone Features	IV	1		6 ~ 12
OWO62	WCDMA RAN15 Smart Phone Features	IV	1		6 ~ 12
OWP80	WCDMA uBro RAN Planning	III	1		6 ~ 12



OWO80	WCDMA uBro RAN Optimization	IV	1		6 ~ 12
OWO81	WCDMA UL Capacity Assessment and Improvement Solution	IV	1		6 ~ 12
OWO82	WCDMA DL Capacity Assessment and Improvement Solution	IV	1		6 ~ 12
OWO83	WCDMA Voice Experience Improvement Solution	IV	2		6 ~ 12
OWO84	WCDMA Service Experience Improvement Solution	IV	2		6 ~ 12
OWO85	WCDMA Differentiated QoS Management	IV	1		6 ~ 12
OWO86	WCDMA Big Events Solution	IV	1		6 ~ 12
OWO87	WCDMA Signaling Storm Solution	IV	1.5		6 ~ 12
OWO88	WCDMA Small Packets Storm Solution	IV	2.5		6 ~ 12
OWO89	WCDMA SON solution	IV	2		6 ~ 12

## 1.2 Principle Training Courses

### 1.2.1 OWA00 WCDMA RAN Overview



#### Objectives

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

- Outline the development of 3G
- Describe the architecture of WCDMA system
- Describe the key features and technologies of WCDMA
- Describe the voice coding of WCDMA
- Outline the channel coding of WCDMA
- Describe the spreading code of different services in WCDMA system
- Describe the scrambling code of WCDMA
- Describe the modulation methods used in WCDMA system
- Explain the usage of transmit diversity and RAKE receiver in WCDMA system
- Describe the concept of Soft Handover

#### Target Audience

All Technical People

#### Prerequisites

- None

#### Content

- 3G Overview
- CDMA Principle
- WCDMA Network Architecture and protocol structure
- WCDMA Wireless Fundamental

#### Training Methods

Lectures

#### Duration

1 working day

#### Class Size

Min 6, max 12

## 1.2.2 OWA01 WCDMA Air Interface



### Objectives

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

- Describe the WCDMA radio interface protocol architecture
- Describe the WCDMA RAN channel structure
- Outline WCDMA RAN physical layer procedures
- Describe the WCDMA RAN signaling procedures: paging, call process, handover, etc
- Describe the UTRAN basic RRM methods (power control, handover, load control, etc)

### Target Audience

Network Deployment Engineers, Optimization Engineers, System Technicians, System Engineers,

### Prerequisites

- WCDMA RAN Overview

### Content

- Physical Layer Overview
- Physical Channels
- ◇ Physical Channel Structure and Functions

- ◇ Channel Mapping
- Physical Layer Procedure
- UTRAN Network Overview
- Basic Concepts about UTRAN
- UTRAN Signaling Procedure
- ◇ System Information Broadcast
- ◇ Paging
- ◇ Call Process
- ◇ Handover
- ◇ URA/Cell Update
- RRM Overview
- Channel Configuration
- Power Control
- Handover
- Load Control

### Training Methods

Lectures

### Duration

3 working days

### Class Size

Min 6, max 12



### 1.2.3 OWA20 WCDMA HSPA Principles



#### Objectives

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

- Describe WCDMA and HSDPA evolution
- Describe HSDPA key technologies
- Describe HSDPA physical channels
- Describe HSDPA Network and UE protocol stack architecture
- Describe WCDMA and HSUPA evolution
- Describe HSUPA key technologies
- Describe HSUPA physical channels
- Describe HSUPA Network and UE protocol stack architecture

#### Target Audience

Network Deployment Engineers, Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA Air Interface

#### Content

- HSDPA Introduction
- HSDPA Key Techniques
- HSDPA Physical Layer Channel
- HSDPA Layer2 Protocol
- Introduction of HSUPA
- HSUPA Concepts
- Physical Layer Channels and Processing
- MAC Protocols and Procedure

#### Training Methods

Lectures

#### Duration

2 working days

#### Class Size

Min 6, max 12

## 1.2.4 OWA21 WCDMA HSPA+ Principles



### Objectives

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

- Describe HSPA+ evolution and standards
- Describe HSPA+ key technologies realized in RAN11, such as DL 64QAM, DL MIMO, E-FACH, etc.
- Describe HSPA+ key technologies realized in RAN12, such as DC-HSDPA, MIMO + DL 64QAM, UL 16QAM, etc
- Describe HSPA+ key technologies realized in RAN13, such as DC-HSDPA+MIMO, E-DPCCH Boosting, E-RACH, etc.
- Describe HSPA+ key technologies realized in RAN14, such as DC-HSUPA, etc.
- Describe HSPA+ key technologies realized in RAN15, such as DB-HSDPA, Flexible DC DB-HSDPA, 4C-HSDPA, etc.

### Target Audience

Network Deployment Engineers, Optimization

Engineers, System Technicians, System Engineers,

### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles

### Content

- HSPA+ Introduced in RAN 11
- HSPA+ Introduced in RAN 12
- HSPA+ Introduced in RAN 13
- HSPA+ Introduced in RAN 14
- HSPA+ Introduced in RAN 15

### Training Methods

Lectures

### Duration

2 working days

### Class Size

Min 6, max 12

## 1.3 RNP and RNO Training Courses

### 1.3.1 OWP00 WCDMA Radio Network Planning



#### Objectives

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

- Describe the principle of radio network planning
- Explain the difference between WCDMA and GSM radio network planning
- Explain the principle of WCDMA coverage planning
- Describe the traffic model of WCDMA
- Analyze the WCDMA uplink and downlink radio capacity
- Analyze the WCDMA CE capacity
- Describe Paging Area Planning
- Describe Scrambling Code Planning
- Describe Neighbor Cell Planning

#### Target Audience

Network Deployment Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles

#### Content

- WCDMA Radio Network Planning Process
- R99 Coverage Planning

- ◇ Process of R99 Coverage Planning
- ◇ R99 Uplink Budget
- ◇ R99 Downlink Budget
- HSDPA Coverage Planning
- Traffic Model
- ◇ Overview of traffic model
- ◇ CS traffic model
- ◇ PS traffic model
- Interference Analysis
- ◇ Uplink Interference Analysis
- ◇ Downlink Interference Analysis
- Capacity Dimensioning
- ◇ R99 Capacity Dimensioning
- ◇ HSDPA Dimensioning
- CE Dimensioning
- Network Dimensioning Flow
- Paging Area Planning
- Scrambling Code Planning
- Neighbor Cell Planning

#### Training Methods

Lectures, case analysis and discussion

#### Duration

1.5 working days

#### Class Size

Min 6, max 12

### 1.3.2 OWP13 WCDMA HSPA and HSPA+ Planning



#### Objectives

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

- Describe HSDPA dimensioning principle, including link budget, capacity dimensioning, channel element dimensioning
- Describe HSUPA dimensioning principle, including link budget, capacity dimensioning, channel element dimensioning
- Describe impacts of HSPA+ features on dimensioning, including DL 64QAM , MIMO, CPC,DC-HSDPA, 64QAM+MIMO, UL16QAM, DC-MIMO, DC-HSUPA, etc

#### Target Audience

Network Deployment Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA HSPA+ Principles
- WCDMA Radio Network Planning

#### Content

- HSDPA Dimensioning

- ◇ HSDPA Link Budget
- ◇ HSDPA Capacity Dimensioning
- ◇ HSDPA CE Dimensioning
- HSUPA Dimensioning
- ◇ HSUPA Link Budget
- ◇ HSUPA Capacity Dimensioning
- ◇ HSUPA CE Dimensioning
- HSPA+ Dimensioning
- ◇ HSPA+ Dimensioning Overview
- ◇ Impact on Dimensioning – DL 64QAM
- ◇ Impact on Dimensioning – MIMO
- ◇ Impact on Dimensioning – CPC
- ◇ Impact on Dimensioning – DC-HSDPA
- ◇ Impact on Dimensioning – MIMO + DL 64QAM
- ◇ Impact on Dimensioning – UL 16QAM
- ◇ Impact on Dimensioning – DC-MIMO
- ◇ Impact on Dimensioning – DC-HSUPA

#### Training Methods

Lectures

#### Duration

0.5 working day

#### Class Size

Min 6, max 12

### 1.3.3 OWP20 WCDMA Multi-Band and Multi-Carrier Solution



#### Objectives

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

- Describe the policies of multi-band and multi-carrier
- Describe the application scenarios of the multi-band and multi-carrier solution
- Describe the main solutions in various scenarios

#### Target Audience

Network Deployment Engineers, Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA HSPA+ Principles
- WCDMA Radio Network Planning
- WCDMA RAN12/13/14/15/16/17 Radio

#### Network Features and Algorithms

- WCDMA HSPA RAN12/13/14/15/16/17 Radio Resource Management

#### Content

- Requirements of expansion
- Network policies
- Network application scenario and solution
- ◇ Carriers in the Same Band
- ◇ 3 or 4 Carriers in the Same Band
- ◇ 2,3 or 4 Carriers in the Different Band
- Strategy evaluation

#### Training Methods

Lectures

#### Duration

1 working day

#### Class Size

Min 6, max 12

### 1.3.4 OWP21 UMTS 900M Coverage Solution



#### Objectives

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

- Describe the application scenarios of the UMTS 900M coverage solution
- Describe UMTS 900M Reframing Solution
- Describe UMTS 900M Deployment
- Describe UMTS 900M Application Cases

#### Target Audience

Network Deployment Engineers, Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA Air Interface
- WCDMA Radio Network Tuning

- WCDMA RAN12/13/14/15/16/17 Radio Network Features and Algorithms

#### Content

- U900 Background
- U900 Principle
- U900 solution
- U900 Application

#### Training Methods

Lectures

#### Duration

1 working day

#### Class Size

Min 6, max 12

### 1.3.5 OWO00 WCDMA Radio Network Tuning



#### Objectives

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

- Describe WCDMA Radio Network Optimization Flow
- Describe the steps of single site verification
- Describe how to do single site verification
- Describe how to solve the ordinary problems in single site verification
- Describe how to solve the neighbor list related problems in RF optimization

#### Target Audience

Optimization Engineers, System Technicians,  
System Engineers,

#### Prerequisites

- WCDMA Air Interface

#### Content

- Introduction of Optimization Flow
- The preparation for the Optimization Project
- Single Site Verification
- RF Optimization
- Parameters Optimization
- Optimization Report
- RF Optimization Workflow
- Typical Problems Analysis in RF optimization
- ◇ RF case related to neighbor cell list
- ◇ RF case related to bad coverage
- ◇ RF case related to interference

#### Training Methods

Lectures

#### Duration

2 working days

#### Class Size

Min 6, max 12

---

### 1.3.6 OWO01 WCDMA Radio Network Optimization



#### Objectives

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

- List the main items of RNC trace and monitoring
- Execute signaling trace and real-time monitoring and collect data
- Describe the signaling of type procedures
- Describe how to analyze coverage problem and solve it
- Describe how to improve coverage capability
- Locate the resource of interference
- Describe how to solve interference problem
- Evaluate the network access performance
- Locate and solve common access problems
- Evaluate the network paging performance
- Locate and solve paging problem
- Evaluate the network handover performance
- Locate and solve handover problem
- Evaluate the network retention performance
- Locate and solve call drop problem

#### Target Audience

Optimization Engineers, System Technicians,  
System Engineers,

#### Prerequisites

- WCDMA Air Interface
- WCDMA Radio Network Tuning
- WCDMA RAN12/13/14/15/16/17 Radio Network Features and Algorithms
- WCDMA RAN12/13/14/15/16/17 Radio Network Performance Management

#### Content

- RNC Trace and Monitoring Overview
- Signaling Trace
- Real-time Monitoring

- Case Study
- Category of UTRAN interfaces and signaling
- Signaling Analysis of Typical UTRAN Procedures
  - ◇ System Information Analysis
  - ◇ Paging Signaling Analysis
  - ◇ RRC Setup Signaling Analysis
  - ◇ NAS Signaling Analysis
  - ◇ RAB Assignment Signaling Analysis
  - ◇ Intra-Frequency Handover Signaling Analysis
  - ◇ Inter-Frequency/Inter-RAT Handover Signaling Analysis
- Classification Of Coverage Problem
- Coverage Optimization Flow
- Case Analysis
- Relative Concepts regarding Interference
- UL Interference Analysis
- DL Interference Analysis
- Case Study
- Access Failure Concept
- Flow and Methods for Analyzing Access
  - ◇ Site Alarm Check
  - ◇ Related Parameters Check
  - ◇ Related Counters Check
  - ◇ Signaling analysis
  - ◇ KPI Trend Analysis
  - ◇ Coverage Analysis
  - ◇ Interference Analysis
- Typical Access Case Study
- Paging Overview
- Paging Problem Analysis Process
  - ◇ Problem Analysis Flow
  - ◇ Network Information Collection
  - ◇ Optimization Target Confirmation
  - ◇ Paging Problem Locating
  - ◇ Typical Paging Problem Analysis
  - ◇ Optimization Verification



- Basic Concepts of Handover Problem Optimization
- Soft Handover Problem Analysis
- ✧ SHO DT Optimization Flow
- ✧ SHO Performance Statistics Optimization Flow
- ✧ SHO Problem Analysis
- ✧ SHO Problem Cases
- Hard Handover Problem Analysis
- ✧ HHO DT Optimization Flow
- ✧ HHO Performance Statistics Optimization Flow
- ✧ HHO Problem Analysis
- ✧ HHO Problem Cases
- Inter-RAN Handover Problem Analysis
- ✧ Inter-RAT Handover DT Optimization Flow
- ✧ Inter-RAT Handover Performance Statistics Optimization Flow
- ✧ Inter-RAT Handover Problem Analysis

- ✧ Inter-RAT Handover Problem Cases
- Definition of Call Drop and Traffic Statistics Indexes
- DT/CQT Optimization Flow
- ✧ Optimization Flow
- ✧ Call Drop Cause Analysis
- Optimization Flow for Tracing Data
- Case Analysis

#### Training Methods

Lectures

#### Duration

4 working days

#### Class Size

Min 6, max 12

---

## 1.3.7 OWO21 WCDMA RAN12 Radio Network Features and Algorithms



### Objectives

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

- Describe WCDMA RAN12 Idle Mode Behaviors (including cell selection and reselection, paging, access etc) and list the main parameters
- Describe WCDMA RAN12 open loop power control algorithm and list the main parameters
- Describe WCDMA RAN12 closed loop power control algorithm and list the main parameters
- Describe WCDMA RAN12 intra-frequency handover algorithm and list the main parameters
- Describe WCDMA RAN12 inter-frequency handover algorithm and list the main parameters
- Describe WCDMA RAN12 inter-RAT handover algorithm and list the main parameters
- Describe WCDMA RAN12 admission control algorithms and list the main parameters
- Describe WCDMA RAN12 load control algorithms and list the main parameters

### Target Audience

Optimization Engineers, System Technicians, System Engineers,

### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles

### Content

- PLMN Selection
- System Information Reception
- Cell Selection and Reselection
- Location Registration
- Paging Procedure
- Access Procedure
- Power Control Overview

- Open Loop Power Control
  - ◇ Open Loop Power Control Overview
  - ◇ PRACH Open Loop Power Control
  - ◇ Downlink Dedicated Channel Open Loop Power Control
  - ◇ Uplink Dedicated Channel Open Loop Power Control
- Closed Loop Power Control
  - ◇ Closed Loop Power Control Overview
  - ◇ Uplink Inner Loop Power Control
  - ◇ Downlink Inner Loop Power Control
  - ◇ Outer Loop Power Control
- Intra-Frequency Handover
  - ◇ Intra-Frequency Handover Overview
  - ◇ Intra-Frequency Handover Measurement
  - ◇ Intra-Frequency Handover Decision and Execution
  - ◇ Signaling Procedures for Intra-Frequency Handover
- Inter-Frequency Handover
  - ◇ Inter-Frequency Handover Overview
  - ◇ Inter-Frequency Handover Measurement
  - ◇ Inter-Frequency Handover Decision and Execution
  - ◇ Signaling Procedures for Inter-Frequency Handover
- Inter-RAT Handover
  - ◇ Inter-RAT Handover Overview
  - ◇ 3G-to-2G Handover Measurement
  - ◇ 3G-to-2G Handover Decision and Execution
  - ◇ Signaling Procedures for Inter-RAT Handover
- Load Control Overview
  - ◇ Load Control Algorithms Overview
  - ◇ Load Measurement
  - ◇ Priorities Involved in Load Control
- Load Control Algorithms
  - ◇ PUC (Potential User Control)
  - ◇ LDB (Intra-Frequency Load Balancing)

- 
- ✧ CAC (Call Admission Control)
  - ✧ IAC (Intelligent Admission Control)
  - ✧ LDR (Load Reshuffling)
  - ✧ OLC (Overload Control)

**Duration**

5 working days

**Class Size**

Min 6, max 12

**Training Methods**

Lectures

---

## 1.3.8 OWO22 WCDMA RAN13 Radio Network Features and Algorithms



### Objectives

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

- Describe WCDMA RAN13 Idle Mode Behaviors (including cell selection and reselection, paging, access etc) and list the main parameters
- Describe WCDMA RAN13 open loop power control algorithm and list the main parameters
- Describe WCDMA RAN13 closed loop power control algorithm and list the main parameters
- Describe WCDMA RAN13 intra-frequency handover algorithm and list the main parameters
- Describe WCDMA RAN13 inter-frequency handover algorithm and list the main parameters
- Describe WCDMA RAN13 inter-RAT handover algorithm and list the main parameters
- Describe WCDMA RAN13 Service-Based PS Redirection from UMTS to LTE
- Describe WCDMA RAN13 admission control algorithms and list the main parameters
- Describe WCDMA RAN13 load control algorithms and list the main parameters

### Target Audience

Optimization Engineers, System Technicians, System Engineers,

### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles

### Content

- PLMN Selection
- System Information Reception
- Cell Selection and Reselection
- Location Registration
- Paging Procedure
- Access Procedure

- Power Control Overview
- Open Loop Power Control
  - ◇ Open Loop Power Control Overview
  - ◇ PRACH Open Loop Power Control
  - ◇ Downlink Dedicated Channel Open Loop Power Control
  - ◇ Uplink Dedicated Channel Open Loop Power Control
- Closed Loop Power Control
  - ◇ Closed Loop Power Control Overview
  - ◇ Uplink Inner Loop Power Control
  - ◇ Downlink Inner Loop Power Control
  - ◇ Outer Loop Power Control
- Intra-Frequency Handover
  - ◇ Intra-Frequency Handover Overview
  - ◇ Intra-Frequency Handover Measurement
  - ◇ Intra-Frequency Handover Decision and Execution
  - ◇ Signaling Procedures for Intra-Frequency Handover
- Inter-Frequency Handover
  - ◇ Inter-Frequency Handover Overview
  - ◇ Inter-Frequency Handover Measurement
  - ◇ Inter-Frequency Handover Decision and Execution
  - ◇ Signaling Procedures for Inter-Frequency Handover
- Inter-RAT Handover
  - ◇ Inter-RAT Handover Overview
  - ◇ 3G-to-2G Handover Measurement
  - ◇ 3G-to-2G Handover Decision and Execution
  - ◇ Signaling Procedures for Inter-RAT Handover
- Service-Based PS Service Redirection from UMTS to LTE
  - ◇ Service Redirection to LTE Overview
  - ◇ Service Redirection to LTE Measurement
  - ◇ Service Redirection to LTE Decision and Execution

- ✧ Signaling Procedures for Service Redirection to LTE
- Load Control Overview
- ✧ Load Control Algorithms Overview
- ✧ Load Measurement
- ✧ Priorities Involved in Load Control
- CAC (Call Admission Control)
- ✧ CAC Overview
- ✧ CAC Based on Code Resource
- ✧ CAC Based on Power Resource
- ✧ CAC Based on NodeB Credit Resource
- ✧ CAC Based on Iub Resource
- ✧ CAC Based on the Number of HSPA Users
- IAC (Intelligent Access Control)
- ✧ IAC During RRC Connection Setup
- ✧ Directed Retry Decision During RAB Procedure
- ✧ Rate Negotiation at Admission Control
- ✧ Admission Decision
- ✧ Preemption
- ✧ Queuing
- ✧ Low-Rate Access of the PS BE Service
- ✧ IAC for Emergency Calls
- LCC Overview
- LDR(Load Reshuffling) Algorithm and Parameters
- ✧ Basic Congestion Triggering

- ✧ LDR Procedure
- ✧ LDR Actions
- OLC(Overload Control) Algorithm and Parameters
- ✧ Overload Triggering
- ✧ OLC Procedure
- ✧ OLC Actions
- Overview of WCDMA RAN13 DRD
- RRC DRD
- RAB Non-Periodic DRD
- ✧ Non-Periodic DRD Overview
- ✧ Blind-handover-based Non-Periodic DRD
- ✧ Measurement-based Non-Periodic DRD
- RAB Periodic DRD
- ✧ Overview
- ✧ Switches for Periodic DRD
- ✧ Triggering Periodic DRD
- ✧ Periodic DRD Procedure

#### Training Methods

Lectures

#### Duration

6 working days

#### Class Size

Min 6, max 12

---

## 1.3.9 OWO23 WCDMA RAN14 Radio Network Features and Algorithms



### Objectives

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

- Describe WCDMA RAN14 Idle Mode Behaviors (including cell selection and reselection, paging, access etc) and list the main parameters
- Describe WCDMA RAN14 open loop power control algorithm and list the main parameters
- Describe WCDMA RAN14 closed loop power control algorithm and list the main parameters
- Describe WCDMA RAN14 intra-frequency handover algorithm and list the main parameters
- Describe WCDMA RAN14 inter-frequency handover algorithm and list the main parameters
- Describe WCDMA RAN14 inter-RAT handover algorithm and list the main parameters
- Describe WCDMA RAN14 Service-based UMTS-to-LTE PS Redirection and Handover
- Describe WCDMA RAN14 admission control algorithms and list the main parameters
- Describe WCDMA RAN14 load control algorithms and list the main parameters

### Target Audience

Optimization Engineers, System Technicians, System Engineers,

### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles

### Content

- PLMN Selection
- System Information Reception
- Cell Selection and Reselection
- Location Registration
- Paging Procedure
- Access Procedure

- Power Control Overview
- Open Loop Power Control
  - ◇ Open Loop Power Control Overview
  - ◇ PRACH Open Loop Power Control
  - ◇ Downlink Dedicated Channel Open Loop Power Control
  - ◇ Uplink Dedicated Channel Open Loop Power Control
- Closed Loop Power Control
  - ◇ Closed Loop Power Control Overview
  - ◇ Uplink Inner Loop Power Control
  - ◇ Downlink Inner Loop Power Control
  - ◇ Outer Loop Power Control
- Intra-Frequency Handover
  - ◇ Intra-Frequency Handover Overview
  - ◇ Intra-Frequency Handover Procedure
  - ◇ Intra-Frequency Handover Measurement
  - ◇ Intra-Frequency Handover Decision and Execution
  - ◇ Signaling Procedures for Intra-Frequency Handover
- Inter-Frequency Handover
  - ◇ Inter-Frequency Handover Overview
  - ◇ Inter-Frequency Handover Measurement
  - ◇ Inter-Frequency Handover Decision and Execution
  - ◇ Signaling Procedures for Inter-Frequency Handover
- Inter-RAT Handover
  - ◇ Inter-RAT Handover Overview
  - ◇ 3G-to-2G Handover Measurement
  - ◇ 3G-to-2G Handover Decision and Execution
  - ◇ Signaling Procedures for Inter-RAT Handover
- Service-based UMTS-to-LTE PS Redirection and Handover
  - ◇ Overview
  - ◇ LTE Measurement
  - ◇ Decision and Execution of Redirection and

- Handover
- ✧ Signaling Procedures for Redirection and Handover
- Load Control Overview
- ✧ Load Control Algorithms Overview
- ✧ Load Measurement
- ✧ Priorities Involved in Load Control
- CAC (Call Admission Control)
- ✧ CAC Overview
- ✧ CAC Based on Code Resource
- ✧ CAC Based on Power Resource
- ✧ CAC Based on NodeB Credit Resource
- ✧ CAC Based on Iub Resource
- ✧ CAC Based on the Number of HSPA Users
- IAC (Intelligent Access Control)
- ✧ IAC During RRC Connection Setup
- ✧ Directed Retry Decision During RAB Procedure
- ✧ Rate Negotiation at Admission Control
- ✧ Admission Decision
- ✧ Preemption
- ✧ Queuing
- ✧ Low-Rate Access of the PS BE Service
- ✧ IAC for Emergency Calls
- LCC Overview
- LDR(Load Reshuffling) Algorithm and Parameters
- ✧ Basic Congestion Triggering

- ✧ LDR Procedure
- ✧ LDR Actions
- OLC(Overload Control) Algorithm and Parameters
- ✧ Overload Triggering
- ✧ OLC Procedure
- ✧ OLC Actions
- Overview of DRD
- RRC DRD
- RAB Non-Periodic DRD
- ✧ Non-Periodic DRD Overview
- ✧ Blind-handover-based Non-Periodic DRD
- ✧ Measurement-based Non-Periodic DRD
- RAB Periodic DRD
- ✧ RAB Periodic DRD Overview
- ✧ Switches for Periodic DRD
- ✧ Triggering Periodic DRD
- ✧ Periodic DRD Procedure

#### Training Methods

Lectures

#### Duration

6 working days

#### Class Size

Min 6, max 12

---

## 1.3.10 OWO24 WCDMA RAN15 Radio Network Features and Algorithms



### Objectives

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

- Describe WCDMA RAN15 Idle Mode Behaviors (including cell selection and reselection, paging, access etc) and list the main parameters
- Describe WCDMA RAN15 open loop power control algorithm and list the main parameters
- Describe WCDMA RAN15 closed loop power control algorithm and list the main parameters
- Describe WCDMA RAN15 intra-frequency handover algorithm and list the main parameters
- Describe WCDMA RAN15 inter-frequency handover algorithm and list the main parameters
- Describe WCDMA RAN15 inter-RAT handover algorithm and list the main parameters
- Describe WCDMA RAN15 UMTS-to-LTE PS Redirection and Handover algorithm and list the main parameters
- Describe WCDMA RAN15 admission control algorithms and list the main parameters
- Describe WCDMA RAN15 load control algorithms and list the main parameters

### Target Audience

Optimization Engineers, System Technicians, System Engineers,

### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles

### Content

- PLMN Selection
- System Information Reception
- Cell Selection and Reselection
- Location Registration
- Paging Procedure

- Access Procedure
- Power Control Overview
- Open Loop Power Control
  - ◇ Open Loop Power Control Overview
  - ◇ PRACH Open Loop Power Control
  - ◇ Downlink Dedicated Channel Open Loop Power Control
  - ◇ Uplink Dedicated Channel Open Loop Power Control
- Closed Loop Power Control
  - ◇ Closed Loop Power Control Overview
  - ◇ Uplink Inner Loop Power Control
  - ◇ Downlink Inner Loop Power Control
  - ◇ Outer Loop Power Control
- Intra-Frequency Handover
  - ◇ Intra-Frequency Handover Overview
  - ◇ Intra-Frequency Handover Procedure
  - ◇ Intra-Frequency Handover Measurement
  - ◇ Intra-Frequency Handover Decision and Execution
  - ◇ Signaling Procedures for Intra-Frequency Handover
- Inter-Frequency Handover
  - ◇ Inter-Frequency Handover Overview
  - ◇ Inter-Frequency Handover Measurement
  - ◇ Inter-Frequency Handover Decision and Execution
  - ◇ Signaling Procedures for Inter-Frequency Handover
- Inter-RAT Handover
  - ◇ Inter-RAT Handover Overview
  - ◇ 3G-to-2G Handover Measurement
  - ◇ 3G-to-2G Handover Decision and Execution
  - ◇ Signaling Procedures for Inter-RAT Handover
- UMTS-to-LTE PS Redirection and Handover
  - ◇ UMTS-to-LTE PS Redirection and Handover Overview
  - ◇ Service-based UMTS-to-LTE PS Redirection



- and Handover
- ✧ Coverage-based UMTS-to-LTE PS Redirection and Handover
- ✧ Load-based UMTS-to-LTE PS Redirection and Handover
- Load Control Overview
- ✧ Load Control Algorithms Overview
- ✧ Load Measurement
- ✧ Priorities Involved in Load Control
- CAC (Call Admission Control)
- ✧ CAC Overview
- ✧ CAC Based on Code Resource
- ✧ CAC Based on Power Resource
- ✧ CAC Based on NodeB Credit Resource
- ✧ CAC Based on Iub Resource
- ✧ CAC Based on the Number of HSPA Users
- IAC (Intelligent Access Control)
- ✧ IAC During RRC Connection Setup
- ✧ Directed Retry Decision During RAB Procedure
- ✧ Rate Negotiation at Admission Control
- ✧ Admission Decision
- ✧ Preemption
- ✧ Queuing
- ✧ Low-Rate Access of the PS BE Service
- ✧ IAC for Emergency Calls
- LCC Overview
- LDR(Load Reshuffling) Algorithm and Parameters

- ✧ Basic Congestion Triggering
- ✧ LDR Procedure
- ✧ LDR Actions
- OLC(Overload Control) Algorithm and Parameters
- ✧ Overload Triggering
- ✧ OLC Procedure
- ✧ OLC Actions
- Overview of DRD
- RRC DRD
- RAB Non-Periodic DRD
- ✧ Non-Periodic DRD Overview
- ✧ Blind-handover-based Non-Periodic DRD
- ✧ Measurement-based Non-Periodic DRD
- RAB Periodic DRD
- ✧ RAB Periodic DRD Overview
- ✧ Switches for Periodic DRD
- ✧ Triggering Periodic DRD
- ✧ Periodic DRD Procedure

#### Training Methods

Lectures

Duration

6 working days

Class Size

Min 6, max 12

---

## 1.3.11 OWO25 WCDMA RAN16 Radio Network Features and Algorithms



### Objectives

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

- Describe WCDMA RAN16 Idle Mode Behaviors (including cell selection and reselection, paging, access etc) and list the main parameters
- Describe WCDMA RAN16 open loop power control algorithm and list the main parameters
- Describe WCDMA RAN16 closed loop power control algorithm and list the main parameters
- Describe WCDMA RAN16 intra-frequency handover algorithm and list the main parameters
- Describe WCDMA RAN16 inter-frequency handover algorithm and list the main parameters
- Describe WCDMA RAN16 inter-RAT handover algorithm and list the main parameters
- Describe WCDMA RAN16 UMTS-to-LTE PS Redirection and Handover algorithm and list the main parameters
- Describe WCDMA RAN16 admission control algorithms and list the main parameters
- Describe WCDMA RAN16 load control algorithms and list the main parameters

### Target Audience

Optimization Engineers, System Technicians, System Engineers,

### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles

### Content

- PLMN Selection
- System Information Reception
- Cell Selection and Reselection
- Location Registration
- Paging Procedure

- Access Procedure
- Power Control Overview
- Open Loop Power Control
  - ◇ Open Loop Power Control Overview
  - ◇ PRACH Open Loop Power Control
  - ◇ Downlink Dedicated Channel Open Loop Power Control
  - ◇ Uplink Dedicated Channel Open Loop Power Control
- Closed Loop Power Control
  - ◇ Closed Loop Power Control Overview
  - ◇ Uplink Inner Loop Power Control
  - ◇ Downlink Inner Loop Power Control
  - ◇ Outer Loop Power Control
- Intra-Frequency Handover
  - ◇ Intra-Frequency Handover Overview
  - ◇ Intra-Frequency Handover Procedure
  - ◇ Intra-Frequency Handover Measurement
  - ◇ Intra-Frequency Handover Decision and Execution
  - ◇ Signaling Procedures for Intra-Frequency Handover
- Inter-Frequency Handover
  - ◇ Inter-Frequency Handover Overview
  - ◇ Inter-Frequency Handover Measurement
  - ◇ Inter-Frequency Handover Decision and Execution
  - ◇ Signaling Procedures for Inter-Frequency Handover
- Inter-RAT Handover
  - ◇ Inter-RAT Handover Overview
  - ◇ 3G-to-2G Handover Measurement
  - ◇ 3G-to-2G Handover Decision and Execution
  - ◇ Signaling Procedures for Inter-RAT Handover
- UMTS-to-LTE PS Redirection and Handover
  - ◇ UMTS-to-LTE PS Redirection and Handover Overview
  - ◇ Service-based UMTS-to-LTE PS Redirection

- and Handover
- ✧ Coverage-based UMTS-to-LTE PS Redirection and Handover
- ✧ Load-based UMTS-to-LTE PS Redirection and Handover
- Load Control Overview
- ✧ Load Control Algorithms Overview
- ✧ Load Measurement
- ✧ Priorities Involved in Load Control
- CAC (Call Admission Control)
- ✧ CAC Overview
- ✧ CAC Based on Code Resource
- ✧ CAC Based on Power Resource
- ✧ CAC Based on NodeB Credit Resource
- ✧ CAC Based on Iub Resource
- ✧ CAC Based on the Number of HSPA Users
- IAC (Intelligent Access Control)
- ✧ IAC During RRC Connection Setup
- ✧ Directed Retry Decision During RAB Procedure
- ✧ Rate Negotiation at Admission Control
- ✧ Admission Decision
- ✧ Preemption
- ✧ Queuing
- ✧ Low-Rate Access of the PS BE Service
- ✧ IAC for Emergency Calls
- LCC Overview
- LDR(Load Reshuffling) Algorithm and Parameters

- ✧ Basic Congestion Triggering
- ✧ LDR Procedure
- ✧ LDR Actions
- OLC(Overload Control) Algorithm and Parameters
- ✧ Overload Triggering
- ✧ OLC Procedure
- ✧ OLC Actions
- Overview of DRD
- RRC DRD
- RAB Non-Periodic DRD
- ✧ Non-Periodic DRD Overview
- ✧ Blind-handover-based Non-Periodic DRD
- ✧ Measurement-based Non-Periodic DRD
- RAB Periodic DRD
- ✧ RAB Periodic DRD Overview
- ✧ Switches for Periodic DRD
- ✧ Triggering Periodic DRD
- ✧ Periodic DRD Procedure

#### Training Methods

Lectures

Duration

6 working days

Class Size

Min 6, max 12

---

## 1.3.12 OWO26 WCDMA RAN17 Radio Network Features and Algorithms



### Objectives

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

- Describe WCDMA RAN17 Idle Mode Behaviors (including cell selection and reselection, paging, access etc) and list the main parameters
- Describe WCDMA RAN17 open loop power control algorithm and list the main parameters
- Describe WCDMA RAN17 closed loop power control algorithm and list the main parameters
- Describe WCDMA RAN17 intra-frequency handover algorithm and list the main parameters
- Describe WCDMA RAN17 inter-frequency handover algorithm and list the main parameters
- Describe WCDMA RAN17 inter-RAT handover algorithm and list the main parameters
- Describe WCDMA RAN17 UMTS-to-LTE PS Redirection and Handover algorithm and list the main parameters
- Describe WCDMA RAN17 admission control algorithms and list the main parameters
- Describe WCDMA RAN17 load control algorithms and list the main parameters

### Target Audience

Optimization Engineers, System Technicians, System Engineers,

### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles

### Content

- PLMN Selection
- System Information Reception
- Cell Selection and Reselection
- Location Registration
- Paging Procedure

- Access Procedure
- Power Control Overview
- Open Loop Power Control
  - ◇ Open Loop Power Control Overview
  - ◇ PRACH Open Loop Power Control
  - ◇ Downlink Dedicated Channel Open Loop Power Control
  - ◇ Uplink Dedicated Channel Open Loop Power Control
- Closed Loop Power Control
  - ◇ Closed Loop Power Control Overview
  - ◇ Uplink Inner Loop Power Control
  - ◇ Downlink Inner Loop Power Control
  - ◇ Outer Loop Power Control
- Intra-Frequency Handover
  - ◇ Intra-Frequency Handover Overview
  - ◇ Intra-Frequency Handover Procedure
  - ◇ Intra-Frequency Handover Measurement
  - ◇ Intra-Frequency Handover Decision and Execution
  - ◇ Signaling Procedures for Intra-Frequency Handover
- Inter-Frequency Handover
  - ◇ Inter-Frequency Handover Overview
  - ◇ Inter-Frequency Handover Measurement
  - ◇ Inter-Frequency Handover Decision and Execution
  - ◇ Signaling Procedures for Inter-Frequency Handover
- Inter-RAT Handover
  - ◇ Inter-RAT Handover Overview
  - ◇ 3G-to-2G Handover Measurement
  - ◇ 3G-to-2G Handover Decision and Execution
  - ◇ Signaling Procedures for Inter-RAT Handover
- UMTS-to-LTE PS Redirection and Handover
  - ◇ UMTS-to-LTE PS Redirection and Handover Overview
  - ◇ Service-based UMTS-to-LTE PS Redirection

- and Handover
- ✧ Coverage-based UMTS-to-LTE PS Redirection and Handover
- ✧ Load-based UMTS-to-LTE PS Redirection and Handover
- Load Control Overview
- ✧ Load Control Algorithms Overview
- ✧ Load Measurement
- ✧ Priorities Involved in Load Control
- CAC (Call Admission Control)
- ✧ CAC Overview
- ✧ CAC Based on Code Resource
- ✧ CAC Based on Power Resource
- ✧ CAC Based on NodeB Credit Resource
- ✧ CAC Based on Iub Resource
- ✧ CAC Based on the Number of HSPA Users
- IAC (Intelligent Access Control)
- ✧ IAC During RRC Connection Setup
- ✧ Directed Retry Decision During RAB Procedure
- ✧ Rate Negotiation at Admission Control
- ✧ Admission Decision
- ✧ Preemption
- ✧ Queuing
- ✧ Low-Rate Access of the PS BE Service
- ✧ IAC for Emergency Calls
- LCC Overview
- LDR(Load Reshuffling) Algorithm and Parameters

- ✧ Basic Congestion Triggering
- ✧ LDR Procedure
- ✧ LDR Actions
- OLC(Overload Control) Algorithm and Parameters
- ✧ Overload Triggering
- ✧ OLC Procedure
- ✧ OLC Actions
- Overview of DRD
- RRC DRD
- RAB Non-Periodic DRD
- ✧ Non-Periodic DRD Overview
- ✧ Blind-handover-based Non-Periodic DRD
- ✧ Measurement-based Non-Periodic DRD
- RAB Periodic DRD
- ✧ RAB Periodic DRD Overview
- ✧ Switches for Periodic DRD
- ✧ Triggering Periodic DRD
- ✧ Periodic DRD Procedure

#### Training Methods

Lectures

Duration

6 working days

Class Size

Min 6, max 12

---

### 1.3.13 OWO31 WCDMA RAN12 Radio Network Performance Management



#### Objectives

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

- Master the concept related to Performance Management
- Master how to collect counters and KPIs with M2000
- Describe WCDMA RAN12 access KPI and relative counters
- Describe WCDMA RAN12 call drop KPI and relative counters
- Describe WCDMA RAN12 mobility KPI and relative counters
- Describe WCDMA RAN12 traffic KPI and relative counters
- Describe WCDMA RAN12 cell algorithm KPI and relative counters, such as load control, DCCC

#### Target Audience

Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA RAN12 Radio Network Features and Algorithms

#### Content

- Basic Setting of Performance Measurement
- Querying Measure Result
- Managing Performance Thresholds
- Overview of Access Procedure
- RRC Establishment KPI and Relative Counters
- RAB Establishment KPI and Relative Counters
- Paging KPI and Relative Counters
- Definition Of a Call Drop
- Typical Call Drop KPI and Related Counters

- Counters Indicating the Call Drop Reason
- Handover KPI and Counters for All Services
  - ◇ Soft Handover Factor
  - ◇ Soft Handover Success Rate
  - ◇ Inter-Freq Hard Handover Success Rate
  - ◇ CS Inter-RAT Handover Success Rate
  - ◇ PS Inter-RAT Handover Success Rate
- Handover KPI and Counters for HSDPA Service
  - ◇ HS-DSCH Service Cell Change Success Rate (with A-DCH SHO)
  - ◇ HS-DSCH Service Cell Change Success Rate (with Intra A-DCH HHO)
  - ◇ HS-DSCH Service Cell Change Success Rate (with Inter HHO)
  - ◇ HS-DSCH to DCH Handover Success Rate
  - ◇ DCH to HS-DSCH Handover Success Rate
- Handover KPI and Counters for HSUPA Service
  - ◇ E-DCH Soft Handover Success Rate
  - ◇ E-DCH Service Cell Change Success Rate with SHO
  - ◇ E-DCH Service Cell Change Success Rate with Inter-HHO
- Traffic KPI and Related Counters
  - ◇ User Number KPI and Related Counters of each service
  - ◇ Traffic Volume KPI and Related Counters of each service
  - ◇ Cell load KPI and Related Counters
- Service Integrity KPI and Related Counters
  - ◇ Average UL Throughput for PS R99 Service
  - ◇ Average DL Throughput for PS R99 Service
  - ◇ Average UL BLER for CS Service
  - ◇ Average UL BLER for PS Service
  - ◇ HSDPA Throughput
  - ◇ HSUPA Throughput
  - ◇ PS UL Throughput of RNC

- 
- ✧ PS DL Throughput of RNC
  - Counters Related to Load Control
  - ✧ Counters Related to Load Reshuffling
  - ✧ Counters Related to Over Load Control
  - Counters Related to DCCC
  - ✧ Counters Related to Rate Reallocation
  - ✧ Counters Related to UE State Transition

#### Training Methods

Lectures

#### Duration

2 working days

#### Class Size

Min 6, max 12

---

## 1.3.14 OWO32 WCDMA RAN13 Radio Network Performance Management



### Objectives

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

- Master the concept related to Performance Management
- Master how to collect counters and KPIs with M2000
- Describe WCDMA RAN13 access KPI and relative counters
- Describe WCDMA RAN13 call drop KPI and relative counters
- Describe WCDMA RAN13 mobility KPI and relative counters
- Describe WCDMA RAN13 traffic KPI and relative counters
- Describe WCDMA RAN12 cell algorithm KPI and relative counters, such as load control, DCCC

### Target Audience

Optimization Engineers, System Technicians, System Engineers,

### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA RAN13 Radio Network Features and Algorithms

### Content

- Basic Setting of Performance Measurement
- Querying Measure Result
- Managing Performance Thresholds
- Overview of Access Procedure
- RRC Establishment KPI and Relative Counters
- RAB Establishment KPI and Relative Counters
- Paging KPI and Relative Counters
- Definition Of a Call Drop
- Typical Call Drop KPI and Related Counters

- Counters Indicating the Call Drop Reason
- Handover KPI and Counters for All Services
  - ◇ Soft Handover Factor
  - ◇ Soft Handover Success Rate
  - ◇ Inter-Freq Hard Handover Success Rate
  - ◇ CS Inter-RAT Handover Success Rate
  - ◇ PS Inter-RAT Handover Success Rate
- Handover KPI and Counters for HSDPA Service
  - ◇ HS-DSCH Service Cell Change Success Rate (with A-DCH SHO)
  - ◇ HS-DSCH Service Cell Change Success Rate (with Intra A-DCH HHO)
  - ◇ HS-DSCH Service Cell Change Success Rate (with Inter HHO)
  - ◇ HS-DSCH to DCH Handover Success Rate
  - ◇ DCH to HS-DSCH Handover Success Rate
- Handover KPI and Counters for HSUPA Service
  - ◇ E-DCH Soft Handover Success Rate
  - ◇ E-DCH Service Cell Change Success Rate with SHO
  - ◇ E-DCH Service Cell Change Success Rate with Inter-HHO
- RNC Traffic KPI and Related Counters
  - ◇ RNC Traffic KPI for AMR 12.2kbps Services
  - ◇ RNC Traffic KPI for Video Phone 64kbps Services
  - ◇ RNC Traffic KPI for PS R99 DL Throughput
  - ◇ RNC Traffic KPI for HSDPA DL Throughput
  - ◇ RNC Traffic KPI for HSUPA UL Throughput
  - ◇ RNC Traffic KPI for PS MBMS DL Throughput
- Cell Traffic KPI and Related Counters
  - ◇ Cell Traffic KPI for Common Channels
  - ◇ Cell Traffic KPI for All Services
  - ◇ Cell Traffic KPI for HSDPA DL Throughput
  - ◇ Cell Traffic KPI for HSUPA UL Throughput
- Cell Load KPI and Related Counters



- 
- ✧ Cell Load KPI for Power
  - ✧ Cell Load KPI for Channel Element
  - ✧ Cell Load KPI for DL OVSF Code
  - Counters Related to Load Control
  - ✧ Counters Related to Load Reshuffling
  - ✧ Counters Related to Over Load Control
  - Counters Related to DCCC
  - ✧ Counters Related to Rate Reallocation
  - ✧ Counters Related to UE State Transition

### Training Methods

Lectures

### Duration

2 working days

### Class Size

Min 6, max 12

---

### 1.3.15 OWO33 WCDMA RAN14 Radio Network Performance Management



#### Objectives

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

- Master the concept related to Performance Management
- Master how to collect counters and KPIs with M2000
- Describe WCDMA RAN14 access KPI and relative counters
- Describe WCDMA RAN14 call drop KPI and relative counters
- Describe WCDMA RAN14 mobility KPI and relative counters
- Describe WCDMA RAN14 traffic KPI and relative counters
- Describe WCDMA RAN14 cell algorithm KPI and relative counters, such as load control, DCCC

#### Target Audience

Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA RAN14 Radio Network Features and Algorithms

#### Content

- Basic Setting of Performance Measurement
- Querying Measure Result
- Managing Performance Thresholds
- Overview of Access Procedure
- RRC Establishment KPI and Relative Counters
- ◇ Detailed Procedure of RRC Establishment
- ◇ Typical RRC Establishment KPI and Relative Counters
- ◇ Counters Indicating RRC Establishment

#### Failures

- RAB Establishment KPI and Relative Counters
- ◇ Detailed Procedure of RAB Establishment
- ◇ Typical RAB Establishment KPI and Relative Counters
- ◇ Counters Indicating RAB Establishment Failures
- Paging KPI and Relative Counters
- ◇ Overview of Paging Procedure
- ◇ Paging KPI and Relative Counters
- Definition Of a Call Drop
- Typical Call Drop KPI and Related Counters
- Counters Indicating the Call Drop Reason
- Handover KPI and Counters for All Services
- ◇ Soft Handover Factor
- ◇ Soft Handover Success Rate
- ◇ Softer Handover Success Ratio
- ◇ Inter-Freq Hard Handover Success Rate
- ◇ CS Inter-RAT Handover Success Rate
- ◇ PS Inter-RAT Handover Success Rate
- Handover KPI and Counters for HSDPA Service
- ◇ H2H Intra-frequency Hard Handover Success Ratio (Cell)
- ◇ H2H Inter-frequency Hard Handover Success Ratio (Cell)
- H2D Inter-frequency Hard Handover Success Ratio (Cell)
- ◇ H2D Channel Handover Success Ratio
- ◇ D2H Channel Handover Success Ratio
- Handover KPI and Counters for HSUPA Service
- ◇ E-DCH Soft Handover Success Rate
- ◇ E-DCH Service Cell Change Success Rate with SHO
- ◇ E-DCH Service Cell Change Success Rate with Inter-HHO
- RNC Traffic KPI and Related Counters

- ✧ RNC Traffic KPI for AMR 12.2kbps Services
- ✧ RNC Traffic KPI for Video Phone 64kbps Services
- ✧ RNC Traffic KPI for PS R99 DL Throughput
- ✧ RNC Traffic KPI for HSDPA DL Throughput
- ✧ RNC Traffic KPI for HSUPA UL Throughput
- ✧ RNC Traffic KPI for PS MBMS DL Throughput
- Cell Traffic KPI and Related Counters
- ✧ Cell Traffic KPI for Common Channels
- ✧ Cell Traffic KPI for All Services
- ✧ Cell Traffic KPI for HSDPA DL Throughput
- ✧ Cell Traffic KPI for HSUPA UL Throughput
- Cell Load KPI and Related Counters
- ✧ Cell Load KPI for Power
- ✧ Cell Load KPI for Channel Element

- ✧ Cell Load KPI for DL OVFS Code
- Counters Related to Load Control
- ✧ Counters Related to Load Reshuffling
- ✧ Counters Related to Over Load Control
- Counters Related to DCCC
- ✧ Counters Related to Rate Reallocation
- ✧ Counters Related to UE State Transition

#### Training Methods

Lectures

#### Duration

2 working days

#### Class Size

Min 6, max 12

---

## 1.3.16 OWO34 WCDMA RAN15 Radio Network Performance Management



### Objectives

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

- Master the concept related to Performance Management
- Master how to collect counters and KPIs with M2000
- Describe WCDMA RAN15 access KPI and relative counters
- Describe WCDMA RAN15 call drop KPI and relative counters
- Describe WCDMA RAN15 mobility KPI and relative counters
- Describe WCDMA RAN15 traffic KPI and relative counters
- Describe WCDMA RAN15 cell algorithm KPI and relative counters, such as load control, DCCC

### Target Audience

Optimization Engineers, System Technicians, System Engineers,

### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA RAN15 Radio Network Features and Algorithms

### Content

- Basic Setting of Performance Measurement
- Querying Measure Result
- Managing Performance Thresholds
- Overview of Access Procedure
- RRC Establishment KPI and Relative Counters
- ◇ Detailed Procedure of RRC Establishment
- ◇ Typical RRC Establishment KPI and Relative Counters
- ◇ Counters Indicating RRC Establishment

### Failures

- RAB Establishment KPI and Relative Counters
- ◇ Detailed Procedure of RAB Establishment
- ◇ Typical RAB Establishment KPI and Relative Counters
- ◇ Counters Indicating RAB Establishment Failures
- Paging KPI and Relative Counters
- ◇ Overview of Paging Procedure
- ◇ Paging KPI and Relative Counters
- Definition Of a Call Drop
- Typical Call Drop KPI and Related Counters
- Counters Indicating the Call Drop Reason
- Handover KPI and Counters for All Services
- ◇ Soft Handover Factor
- ◇ Soft Handover Success Rate
- ◇ Softer Handover Success Ratio
- ◇ Intra-Freq Hard Handover Success Rate
- ◇ Inter-Freq Hard Handover Success Rate
- ◇ CS Inter-RAT Handover Success Rate
- ◇ PS Inter-RAT Handover Success Rate
- Handover KPI and Counters for HSDPA Service
- ◇ H2H Intra-frequency Hard Handover Success Ratio (Cell)
- ◇ H2H Inter-frequency Hard Handover Success Ratio (Cell)
- H2D Inter-frequency Hard Handover Success Ratio (Cell)
- ◇ H2D Channel Handover Success Ratio
- ◇ D2H Channel Handover Success Ratio
- Handover KPI and Counters for HSUPA Service
- ◇ E-DCH Soft Handover Success Rate
- ◇ E-DCH Service Cell Change Success Rate with SHO
- ◇ E-DCH Service Cell Change Success Rate with Inter-HHO

- RNC Traffic KPI and Related Counters
- ✧ RNC Traffic KPI for AMR 12.2kbps Services
- ✧ RNC Traffic KPI for Video Phone 64kbps Services
- ✧ RNC Traffic KPI for PS R99 DL Throughput
- ✧ RNC Traffic KPI for HSDPA DL Throughput
- ✧ RNC Traffic KPI for HSUPA UL Throughput
- ✧ RNC Traffic KPI for PS MBMS DL Throughput
- Cell Traffic KPI and Related Counters
- ✧ Cell Traffic KPI for Common Channels
- ✧ Cell Traffic KPI for All Services
- ✧ Cell Traffic KPI for HSDPA DL Throughput
- ✧ Cell Traffic KPI for HSUPA UL Throughput
- Cell Load KPI and Related Counters
- ✧ Cell Load KPI for Power
- ✧ Cell Load KPI for Channel Element

- ✧ Cell Load KPI for DL OVFS Code
- Counters Related to Load Control
- ✧ Counters Related to Load Reshuffling
- ✧ Counters Related to Over Load Control
- Counters Related to DCCC
- ✧ Counters Related to Rate Reallocation
- ✧ Counters Related to UE State Transition

#### Training Methods

Lectures

#### Duration

2 working days

#### Class Size

Min 6, max 12

---

## 1.3.17 OWO35 WCDMA RAN16 Radio Network Performance Management



### Objectives

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

- Master the concept related to Performance Management
- Master how to collect counters and KPIs with M2000
- Describe WCDMA RAN16 access KPI and relative counters
- Describe WCDMA RAN16 call drop KPI and relative counters
- Describe WCDMA RAN16 mobility KPI and relative counters
- Describe WCDMA RAN16 traffic KPI and relative counters
- Describe WCDMA RAN16 cell algorithm KPI and relative counters, such as load control, DCCC

### Target Audience

Optimization Engineers, System Technicians, System Engineers,

### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA RAN16 Radio Network Features and Algorithms

### Content

- Basic Setting of Performance Measurement
- Querying Measure Result
- Managing Performance Thresholds
- Overview of Access Procedure
- RRC Establishment KPI and Relative Counters
- ◇ Detailed Procedure of RRC Establishment
- ◇ Typical RRC Establishment KPI and Relative Counters
- ◇ Counters Indicating RRC Establishment

### Failures

- RAB Establishment KPI and Relative Counters
- ◇ Detailed Procedure of RAB Establishment
- ◇ Typical RAB Establishment KPI and Relative Counters
- ◇ Counters Indicating RAB Establishment Failures
- Paging KPI and Relative Counters
- ◇ Overview of Paging Procedure
- ◇ Paging KPI and Relative Counters
- Definition Of a Call Drop
- Typical Call Drop KPI and Related Counters
- Counters Indicating the Call Drop Reason
- Handover KPI and Counters for All Services
- ◇ Soft Handover Factor
- ◇ Soft Handover Success Rate
- ◇ Softer Handover Success Ratio
- ◇ Intra-Freq Hard Handover Success Rate
- ◇ Inter-Freq Hard Handover Success Rate
- ◇ CS Inter-RAT Handover Success Rate
- ◇ PS Inter-RAT Handover Success Rate
- Handover KPI and Counters for HSDPA Service
- ◇ H2H Intra-frequency Hard Handover Success Ratio (Cell)
- ◇ H2H Inter-frequency Hard Handover Success Ratio (Cell)
- H2D Inter-frequency Hard Handover Success Ratio (Cell)
- ◇ H2D Channel Handover Success Ratio
- ◇ D2H Channel Handover Success Ratio
- Handover KPI and Counters for HSUPA Service
- ◇ E-DCH Soft Handover Success Rate
- ◇ E-DCH Service Cell Change Success Rate with SHO
- ◇ E-DCH Service Cell Change Success Rate with Inter-HHO

- RNC Traffic KPI and Related Counters
- ✧ RNC Traffic KPI for AMR 12.2kbps Services
- ✧ RNC Traffic KPI for Video Phone 64kbps Services
- ✧ RNC Traffic KPI for PS R99 DL Throughput
- ✧ RNC Traffic KPI for HSDPA DL Throughput
- ✧ RNC Traffic KPI for HSUPA UL Throughput
- ✧ RNC Traffic KPI for PS MBMS DL Throughput
- Cell Traffic KPI and Related Counters
- ✧ Cell Traffic KPI for Common Channels
- ✧ Cell Traffic KPI for All Services
- ✧ Cell Traffic KPI for HSDPA DL Throughput
- ✧ Cell Traffic KPI for HSUPA UL Throughput
- Cell Load KPI and Related Counters
- ✧ Cell Load KPI for Power
- ✧ Cell Load KPI for Channel Element

- ✧ Cell Load KPI for DL OVFS Code
- Counters Related to Load Control
- ✧ Counters Related to Load Reshuffling
- ✧ Counters Related to Over Load Control
- Counters Related to DCCC
- ✧ Counters Related to Rate Reallocation
- ✧ Counters Related to UE State Transition

#### Training Methods

Lectures

#### Duration

2 working days

#### Class Size

Min 6, max 12

---

## 1.3.18 OWO36 WCDMA RAN17 Radio Network Performance Management



### Objectives

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

- Master the concept related to Performance Management
- Master how to collect counters and KPIs with M2000
- Describe WCDMA RAN17 access KPI and relative counters
- Describe WCDMA RAN17 call drop KPI and relative counters
- Describe WCDMA RAN17 mobility KPI and relative counters
- Describe WCDMA RAN17 traffic KPI and relative counters
- Describe WCDMA RAN17 cell algorithm KPI and relative counters, such as load control, DCCC

### Target Audience

Optimization Engineers, System Technicians, System Engineers,

### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA RAN17 Radio Network Features and Algorithms

### Content

- Basic Setting of Performance Measurement
- Querying Measure Result
- Managing Performance Thresholds
- Overview of Access Procedure
- RRC Establishment KPI and Relative Counters
- ◇ Detailed Procedure of RRC Establishment
- ◇ Typical RRC Establishment KPI and Relative Counters
- ◇ Counters Indicating RRC Establishment

### Failures

- RAB Establishment KPI and Relative Counters
- ◇ Detailed Procedure of RAB Establishment
- ◇ Typical RAB Establishment KPI and Relative Counters
- ◇ Counters Indicating RAB Establishment Failures
- Paging KPI and Relative Counters
- ◇ Overview of Paging Procedure
- ◇ Paging KPI and Relative Counters
- Definition Of a Call Drop
- Typical Call Drop KPI and Related Counters
- Counters Indicating the Call Drop Reason
- Handover KPI and Counters for All Services
- ◇ Soft Handover Factor
- ◇ Soft Handover Success Rate
- ◇ Softer Handover Success Ratio
- ◇ Intra-Freq Hard Handover Success Rate
- ◇ Inter-Freq Hard Handover Success Rate
- ◇ CS Inter-RAT Handover Success Rate
- ◇ PS Inter-RAT Handover Success Rate
- Handover KPI and Counters for HSDPA Service
- ◇ H2H Intra-frequency Hard Handover Success Ratio (Cell)
- ◇ H2H Inter-frequency Hard Handover Success Ratio (Cell)
- H2D Inter-frequency Hard Handover Success Ratio (Cell)
- ◇ H2D Channel Handover Success Ratio
- ◇ D2H Channel Handover Success Ratio
- Handover KPI and Counters for HSUPA Service
- ◇ E-DCH Soft Handover Success Rate
- ◇ E-DCH Service Cell Change Success Rate with SHO
- ◇ E-DCH Service Cell Change Success Rate with Inter-HHO



- RNC Traffic KPI and Related Counters
- ✧ RNC Traffic KPI for AMR 12.2kbps Services
- ✧ RNC Traffic KPI for Video Phone 64kbps Services
- ✧ RNC Traffic KPI for PS R99 DL Throughput
- ✧ RNC Traffic KPI for HSDPA DL Throughput
- ✧ RNC Traffic KPI for HSUPA UL Throughput
- ✧ RNC Traffic KPI for PS MBMS DL Throughput
- Cell Traffic KPI and Related Counters
- ✧ Cell Traffic KPI for Common Channels
- ✧ Cell Traffic KPI for All Services
- ✧ Cell Traffic KPI for HSDPA DL Throughput
- ✧ Cell Traffic KPI for HSUPA UL Throughput
- Cell Load KPI and Related Counters
- ✧ Cell Load KPI for Power
- ✧ Cell Load KPI for Channel Element

- ✧ Cell Load KPI for DL OVFS Code
- Counters Related to Load Control
- ✧ Counters Related to Load Reshuffling
- ✧ Counters Related to Over Load Control
- Counters Related to DCCC
- ✧ Counters Related to Rate Reallocation
- ✧ Counters Related to UE State Transition

#### Training Methods

Lectures

#### Duration

2 working days

#### Class Size

Min 6, max 12

---

### 1.3.19 OWO41 WCDMA HSPA RAN12 Radio Resource Management



#### Objectives

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

- Describe HSDPA RAN12 Radio Resource Algorithm (RRM) such as channel type mapping, code resource allocation, power allocation, HSDPA mobility management, scheduling, etc.
- Describe HSUPA RAN12 Radio Resource Algorithm (RRM) such as channel type mapping, DCCC, power allocation, HSUPA mobility management, scheduling, etc.

#### Target Audience

Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA RAN12 Radio Network Features and Algorithms

#### Content

- HSDPA Bearer Mapping

- HSDPA Code Resource Management
- HSDPA Power Resource Management
- HSDPA Mobility Management
- HSDPA Channel Switching
- HSDPA Mac-hs Scheduling Algorithm
- HSDPA TFRC Selection
- HSUPA Bearer Mapping
- Channel Switching
- HSUPA Fast Scheduling
- HSUPA Dynamic CE Management
- Uplink Macro Diversity Intelligent Receiving
- HSUPA Adaptive Retransmission
- HSUPA QoS Management
- HSUPA Mobility Management

#### Training Methods

Lectures

#### Duration

2 working days

#### Class Size

Min 6, max 12

---

## 1.3.20 OWO42 WCDMA HSPA RAN13 Radio Resource Management



### Objectives

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

- Describe HSDPA RAN13 Radio Resource Algorithm (RRM) such as channel type mapping, code resource allocation, power allocation, HSDPA mobility management, scheduling, etc.
- Describe HSUPA RAN13 Radio Resource Algorithm (RRM) such as channel type mapping, DCCC, power allocation, HSUPA mobility management, scheduling, etc.

### Target Audience

Optimization Engineers, System Technicians, System Engineers,

### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA RAN13 Radio Network Features and Algorithms

### Content

- HSDPA Bearer Mapping

- HSDPA Code Resource Management
- HSDPA Power Resource Management
- HSDPA Mobility Management
- HSDPA Channel Switching
- HSDPA Mac-hs Scheduling Algorithm
- HSDPA TFRC Selection
- HSUPA Bearer Mapping
- Channel Switching
- HSUPA Fast Scheduling
- HSUPA Dynamic CE Management
- Uplink Macro Diversity Intelligent Receiving
- HSUPA Adaptive Retransmission
- HSUPA QoS Management
- HSUPA Mobility Management

### Training Methods

Lectures

### Duration

2 working days

### Class Size

Min 6, max 12

---

### 1.3.21 OWO43 WCDMA HSPA RAN14 Radio Resource Management



#### Objectives

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

- Describe HSDPA RAN14 Radio Resource Algorithm (RRM) such as channel type mapping, code resource allocation, power allocation, HSDPA mobility management, scheduling, etc.
- Describe HSUPA RAN14 Radio Resource Algorithm (RRM) such as channel type mapping, DCCC, power allocation, HSUPA mobility management, scheduling, etc.

#### Target Audience

Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA RAN14 Radio Network Features and Algorithms

#### Content

- HSDPA Bearer Mapping

- HSDPA Code Resource Management
- HSDPA Power Resource Management
- HSDPA Mobility Management
- HSDPA Channel Switching
- HSDPA Mac-hs Scheduling Algorithm
- HSDPA TFRC Selection
- HSUPA Bearer Mapping
- Channel Switching
- HSUPA Fast Scheduling
- HSUPA Dynamic CE Management
- Uplink Macro Diversity Intelligent Receiving
- HSUPA Adaptive Retransmission
- HSUPA QoS Management
- HSUPA Mobility Management

#### Training Methods

Lectures

#### Duration

2 working days

#### Class Size

Min 6, max 12

---

## 1.3.22 OWO44 WCDMA HSPA RAN15 Radio Resource Management



### Objectives

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

- Describe HSDPA RAN15 Radio Resource Algorithm (RRM) such as channel type mapping, code resource allocation, power allocation, HSDPA mobility management, scheduling, etc.
- Describe HSUPA RAN15 Radio Resource Algorithm (RRM) such as channel type mapping, DCCC, power allocation, HSUPA mobility management, scheduling, etc.

### Target Audience

Optimization Engineers, System Technicians, System Engineers,

### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA RAN15 Radio Network Features and Algorithms

### Content

- HSDPA Bearer Mapping

- HSDPA Code Resource Management
- HSDPA Power Resource Management
- HSDPA Mobility Management
- HSDPA Channel Switching
- HSDPA Mac-hs Scheduling Algorithm
- HSDPA TFRC Selection
- HSUPA Bearer Mapping
- Channel Switching
- HSUPA Fast Scheduling
- HSUPA Dynamic CE Management
- Uplink Macro Diversity Intelligent Receiving
- HSUPA Adaptive Retransmission
- HSUPA QoS Management
- HSUPA Mobility Management

### Training Methods

Lectures

### Duration

2 working days

### Class Size

Min 6, max 12

---

### 1.3.23 OWO50 WCDMA HSPA RAN16 Radio Resource Management



#### Objectives

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

- Describe HSDPA RAN16 Radio Resource Algorithm (RRM) such as channel type mapping, code resource allocation, power allocation, HSDPA mobility management, scheduling, etc.
- Describe HSUPA RAN16 Radio Resource Algorithm (RRM) such as channel type mapping, DCCC, power allocation, HSUPA mobility management, scheduling, etc.

#### Target Audience

Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA RAN16 Radio Network Features and Algorithms

#### Content

- HSDPA Bearer Mapping

- HSDPA Code Resource Management
- HSDPA Power Resource Management
- HSDPA Mobility Management
- HSDPA Channel Switching
- HSDPA Mac-hs Scheduling Algorithm
- HSDPA TFRC Selection
- HSUPA Bearer Mapping
- Channel Switching
- HSUPA Fast Scheduling
- HSUPA Dynamic CE Management
- Uplink Macro Diversity Intelligent Receiving
- HSUPA Adaptive Retransmission
- HSUPA QoS Management
- HSUPA Mobility Management

#### Training Methods

Lectures

#### Duration

3 working days

#### Class Size

Min 6, max 12

---

### 1.3.24 OWO70 WCDMA HSPA RAN17 Radio Resource Management



#### Objectives

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

- Describe HSDPA RAN17 Radio Resource Algorithm (RRM) such as channel type mapping, code resource allocation, power allocation, HSDPA mobility management, scheduling, etc.
- Describe HSUPA RAN17 Radio Resource Algorithm (RRM) such as channel type mapping, DCCC, power allocation, HSUPA mobility management, scheduling, etc.

#### Target Audience

Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA RAN17 Radio Network Features and Algorithms

#### Content

- HSDPA Bearer Mapping

- HSDPA Code Resource Management
- HSDPA Power Resource Management
- HSDPA Mobility Management
- HSDPA Channel Switching
- HSDPA Mac-hs Scheduling Algorithm
- HSDPA TFRC Selection
- HSUPA Bearer Mapping
- Channel Switching
- HSUPA Fast Scheduling
- HSUPA Dynamic CE Management
- Uplink Macro Diversity Intelligent Receiving
- HSUPA Adaptive Retransmission
- HSUPA QoS Management
- HSUPA Mobility Management

#### Training Methods

Lectures

#### Duration

3 working days

#### Class Size

Min 6, max 12

---

### 1.3.25 OWO45 WCDMA HSPA and HSPA+ RAN12 Throughput Troubleshooting



#### Objectives

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

- Describe the troubleshooting process for HSDPA throughput problems
- Describe the troubleshooting process for HSUPA throughput problems
- Describe the troubleshooting process for HSPA+ throughput problems

#### Target Audience

Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA HSPA Principles
- WCDMA HSPA+ Principles
- WCDMA HSPA RAN12 Radio Resource Management

#### Content

- HSDPA Throughput Problems
- ◇ HSDPA Throughput Overview

- ◇ Low or Fluctuating HSDPA Throughput Troubleshooting
- ◇ No HSDPA Throughput Troubleshooting
- HSUPA Throughput Problems
- ◇ HSUPA Throughput Overview
- ◇ Low or Fluctuating HSUPA Throughput Troubleshooting
- ◇ Failure to Establish the HSUPA Service
- ◇ Failure to Establish an HSUPA 5.76 Mbit/s Service
- HSPA+ Throughput Problems
- ◇ HSPA+ 64QAM Problems
- ◇ HSPA+ MIMO Problems
- ◇ HSPA+ DC-HSDPA Problems

#### Training Methods

Lectures

#### Duration

1 working day

#### Class Size

Min 6, max 12



---

### 1.3.26 OWO46 WCDMA HSPA and HSPA+ RAN13 Throughput Troubleshooting



#### Objectives

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

- Describe the troubleshooting process for HSDPA throughput problems
- Describe the troubleshooting process for HSUPA throughput problems
- Describe the troubleshooting process for HSPA+ throughput problems

#### Target Audience

Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA HSPA Principles
- WCDMA HSPA+ Principles
- WCDMA HSPA RAN13 Radio Resource Management

#### Content

- HSDPA Throughput Problems
- ◇ HSDPA Throughput Overview

- ◇ Low or Fluctuating HSDPA Throughput Troubleshooting
- ◇ No HSDPA Throughput Troubleshooting
- HSUPA Throughput Problems
- ◇ HSUPA Throughput Overview
- ◇ Low or Fluctuating HSUPA Throughput Troubleshooting
- ◇ Failure to Establish the HSUPA Service
- ◇ Failure to Establish an HSUPA 5.76 Mbit/s Service
- HSPA+ Throughput Problems
- ◇ HSPA+ 64QAM Problems
- ◇ HSPA+ MIMO Problems
- ◇ HSPA+ DC-HSDPA Problems

#### Training Methods

Lectures

#### Duration

1 working day

#### Class Size

Min 6, max 12

---

## 1.3.27 OWO47 WCDMA HSPA and HSPA+ RAN14 Throughput Troubleshooting



### Objectives

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

- Describe the troubleshooting process for HSDPA throughput problems
- Describe the troubleshooting process for HSUPA throughput problems
- Describe the troubleshooting process for HSPA+ throughput problems

### Target Audience

Optimization Engineers, System Technicians, System Engineers,

### Prerequisites

- WCDMA HSPA Principles
- WCDMA HSPA+ Principles
- WCDMA HSPA RAN14 Radio Resource Management

### Content

- HSDPA Throughput Problems
- ◇ HSDPA Throughput Overview

- ◇ Low or Fluctuating HSDPA Throughput Troubleshooting
- ◇ No HSDPA Throughput Troubleshooting
- HSUPA Throughput Problems
- ◇ HSUPA Throughput Overview
- ◇ Low or Fluctuating HSUPA Throughput Troubleshooting
- ◇ Failure to Establish the HSUPA Service
- ◇ Failure to Establish an HSUPA 5.76 Mbit/s Service
- HSPA+ Throughput Problems
- ◇ HSPA+ 64QAM Problems
- ◇ HSPA+ MIMO Problems
- ◇ HSPA+ DC-HSDPA Problems

### Training Methods

Lectures

### Duration

1 working day

### Class Size

Min 6, max 12

---

### 1.3.28 OWO48 WCDMA HSPA and HSPA+ RAN15 Throughput Troubleshooting



#### Objectives

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

- Describe the troubleshooting process for HSDPA throughput problems
- Describe the troubleshooting process for HSUPA throughput problems
- Describe the troubleshooting process for HSPA+ throughput problems

#### Target Audience

Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA HSPA Principles
- WCDMA HSPA+ Principles
- WCDMA HSPA RAN15 Radio Resource Management

#### Content

- HSDPA Throughput Problems
- ◇ HSDPA Throughput Overview

- ◇ Low or Fluctuating HSDPA Throughput Troubleshooting
- ◇ No HSDPA Throughput Troubleshooting
- HSUPA Throughput Problems
- ◇ HSUPA Throughput Overview
- ◇ Low or Fluctuating HSUPA Throughput Troubleshooting
- ◇ Failure to Establish the HSUPA Service
- ◇ Failure to Establish an HSUPA 5.76 Mbit/s Service
- HSPA+ Throughput Problems
- ◇ HSPA+ 64QAM Problems
- ◇ HSPA+ MIMO Problems
- ◇ HSPA+ DC-HSDPA Problems

#### Training Methods

Lectures

#### Duration

1 working day

#### Class Size

Min 6, max 12

---

### 1.3.29 OWO49 WCDMA HSPA and HSPA+ RAN16 Throughput Troubleshooting



#### Objectives

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

- Describe the troubleshooting process for HSDPA throughput problems
- Describe the troubleshooting process for HSUPA throughput problems
- Describe the troubleshooting process for HSPA+ throughput problems

#### Target Audience

Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA HSPA Principles
- WCDMA HSPA+ Principles
- WCDMA HSPA RAN16 Radio Resource Management

#### Content

- HSDPA Throughput Problems
- ◇ HSDPA Throughput Overview

- ◇ Low or Fluctuating HSDPA Throughput Troubleshooting
- ◇ No HSDPA Throughput Troubleshooting
- HSUPA Throughput Problems
- ◇ HSUPA Throughput Overview
- ◇ Low or Fluctuating HSUPA Throughput Troubleshooting
- ◇ Failure to Establish the HSUPA Service
- ◇ Failure to Establish an HSUPA 5.76 Mbit/s Service
- HSPA+ Throughput Problems
- ◇ HSPA+ 64QAM Problems
- ◇ HSPA+ MIMO Problems
- ◇ HSPA+ DC-HSDPA Problems

#### Training Methods

Lectures

#### Duration

1 working day

#### Class Size

Min 6, max 12

---

### 1.3.30 OWO75 WCDMA HSPA and HSPA+ RAN17 Throughput Troubleshooting



#### Objectives

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

- Describe the troubleshooting process for HSDPA throughput problems
- Describe the troubleshooting process for HSUPA throughput problems
- Describe the troubleshooting process for HSPA+ throughput problems

#### Target Audience

Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA HSPA Principles
- WCDMA HSPA+ Principles
- WCDMA HSPA RAN17 Radio Resource Management

#### Content

- HSDPA Throughput Problems
- ◇ HSDPA Throughput Overview

- ◇ Low or Fluctuating HSDPA Throughput Troubleshooting
- ◇ No HSDPA Throughput Troubleshooting
- HSUPA Throughput Problems
- ◇ HSUPA Throughput Overview
- ◇ Low or Fluctuating HSUPA Throughput Troubleshooting
- ◇ Failure to Establish the HSUPA Service
- ◇ Failure to Establish an HSUPA 5.76 Mbit/s Service
- HSPA+ Throughput Problems
- ◇ HSPA+ 64QAM Problems
- ◇ HSPA+ MIMO Problems
- ◇ HSPA+ DC-HSDPA Problems

#### Training Methods

Lectures

#### Duration

1 working day

#### Class Size

Min 6, max 12

---

### 1.3.31 OWO51 WCDMA RAN12 - RAN13 Delta Features



#### Objectives

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

- Outline the important new features realized in RAN13 version
- Describe WCDMA RAN13 DC-HSDPA+MIMO Feature
- Describe WCDMA RAN13 Traffic-Based Activation and Deactivation of Secondary Carrier in DC-HSDPA Feature
- Describe WCDMA RAN13 Enhanced Uplink CELL FACH Feature
- Describe WCDMA RAN13 E-DPCCH Boosting Feature
- Describe WCDMA RAN13 Enhanced Fast Dormancy Feature
- Describe WCDMA RAN13 P2P Downloading Rate Control during Busy Hour Feature
- Describe WCDMA RAN13 Web Page Access Acceleration Feature
- Describe WCDMA RAN13 Optimization of R99 and HSUPA Users Fairness Feature
- Describe WCDMA RAN13 Anti-Interference Scheduling for HSUPA Feature
- Describe WCDMA RAN13 Multi-Carrier Switch off Based on QoS Feature
- Describe WCDMA RAN13 HSUPA Coverage Enhancement at UE Power Limitation Feature
- Describe WCDMA RAN13 Adaptive Configuration of Data Channel Power Offset for HSUPA Feature
- Describe WCDMA RAN13 Dual-Threshold Scheduling with HSUPA Interference Cancellation Feature
- Describe WCDMA RAN13 GU 2.0MHZ Central Frequency Spacing(U3.8MHZ) Feature

#### Target Audience

Optimization Engineers, System Technicians,

System Engineers,

#### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA HSPA+ Principles
- WCDMA RAN13 Radio Network Features and Algorithms
- WCDMA HSPA RAN13 Radio Resource Management

#### Content

- RAN13 Features Overview
- HSPA+ Evolution
- Mobility Between UMTS and LTE
- Enhanced Fast Dormancy
- Packet Inspection
- Optimization of R99 and HSUPA Users Fairness
- Description of DC-HSDPA+MIMO
- Implementation of DC-HSDPA+MIMO
- Configuration of DC-HSDPA+MIMO
- Performance of DC-HSDPA+MIMO
- Description of Traffic-Based Activation and Deactivation of Secondary Carrier in DC-HSDPA
- Implementation of Traffic-Based Activation and Deactivation of Secondary Carrier in DC-HSDPA
- Configuration of Traffic-Based Activation and Deactivation of Secondary Carrier in DC-HSDPA
- Performance of Traffic-Based Activation and Deactivation of Secondary Carrier in DC-HSDPA
- Description of Enhanced Uplink CELL FACH
- Implementation of Enhanced Uplink CELL FACH
- Configuration of Enhanced Uplink CELL FACH

- Performance of Enhanced Uplink CELL FACH
- Description of E-DPCCH Boosting
- Implementation of E-DPCCH Boosting
- Configuration of E-DPCCH Boosting
- Performance of E-DPCCH Boosting
- Fast Dormancy
- Enhanced Fast Dormancy and Standard Fast Dormancy
- Configuration and Related Counters
- Description of P2P Downloading Rate Control during Busy Hour
- Implementation of P2P Downloading Rate Control during Busy Hour
- Configuration of P2P Downloading Rate Control during Busy Hour
- Performance of P2P Downloading Rate Control during Busy Hour
- Description of Web Page Access Acceleration
- Implementation of Web Page Access Acceleration
- Configuration of Web Page Access Acceleration
- Performance of Web Page Access Acceleration
- Description of Optimization of R99 and HSUPA Users Fairness
- Implementation of Optimization of R99 and HSUPA Users Fairness
- Configuration of Optimization of R99 and HSUPA Users Fairness
- Performance of Optimization of R99 and HSUPA Users Fairness
- Description of Multi-Carrier Switch off Based on QoS
- Implementation of Multi-Carrier Switch off Based on QoS
- Configuration of Multi-Carrier Switch off Based on QoS
- Performance of Multi-Carrier Switch off Based on QoS
- Description of HSUPA Coverage Enhancement at UE Power Limitation
- Implementation of HSUPA Coverage

Enhancement at UE Power Limitation

- Configuration of HSUPA Coverage Enhancement at UE Power Limitation
- Performance of HSUPA Coverage Enhancement at UE Power Limitation
- Description of Adaptive Configuration of Data Channel Power Offset for HSUPA
- Implementation of Adaptive Configuration of Data Channel Power Offset for HSUPA
- Configuration of Adaptive Configuration of Data Channel Power Offset for HSUPA
- Performance of Adaptive Configuration of Data Channel Power Offset for HSUPA
- Description of Anti-Interference Scheduling for HSUPA
- Implementation of Anti-Interference Scheduling for HSUPA
- Configuration of Anti-Interference Scheduling for HSUPA
- Performance of Anti-Interference Scheduling for HSUPA
- Description of Dual-Threshold Scheduling with HSUPA Interference Cancellation
- Implementation of Dual-Threshold Scheduling with HSUPA Interference Cancellation
- Configuration of Dual-Threshold Scheduling with HSUPA Interference Cancellation
- Performance of Dual-Threshold Scheduling with HSUPA Interference Cancellation
- Reframing Overview
- GU 2.0MHz Overview
- GU 2.0MHz Solution and Implementation
- GU 2.0MHz Configuration and Verification

#### Training Methods

Lectures

#### Duration

2 working days

#### Class Size

Min 6, max 12

---

### 1.3.32 OWO52 WCDMA RAN13 - RAN14 Delta Features



#### Objectives

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

- Outline the important new features realized in RAN14 version
- Describe WCDMA RAN14 Multi Sector Solution Feature
- Describe WCDMA RAN14 HSPA+ DC-HSUPA Feature
- Describe WCDMA RAN14 Voice Service Experience Improvement for Weak Reception UEs Feature
- Describe WCDMA RAN14 Service-Based PS Handover from UMTS to LTE Feature
- Describe WCDMA RAN14 Layered Paging in URA\_PCH Feature
- Describe WCDMA RAN14 Control Channel Parallel Interference Cancellation Phase2 Feature
- Describe WCDMA RAN14 Dynamical HSDPA CQI Feedback Period Feature
- Describe WCDMA RAN14 Adaptive Adjustment of HSUPA Small Target Retransmissions Feature
- Describe WCDMA RAN14 Intelligent Access Class Control Feature
- Describe WCDMA RAN14 Dynamic Target ROT Adjustment Feature
- Describe WCDMA RAN14 Inter-Frequency Load Balance Based on Configurable Load Threshold Feature
- Describe WCDMA RAN14 Inter-frequency Load Handover based CE Congestion Feature
- Describe WCDMA RAN14 CE Overbooking Feature
- Describe WCDMA RAN14 Load-based Uplink Target BLER Configuration Feature
- Describe WCDMA RAN14 HSDPA Scheduling Based on UE Location Feature

#### Target Audience

Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA HSPA+ Principles
- WCDMA RAN14 Radio Network Features and Algorithms
- WCDMA HSPA RAN14 Radio Resource Management

#### Content

- RAN14 Features Overview
- Capacity for Hot Spot
- HSPA+ Evolution
- User Experience Improvement
- Smart Phone
- Performance Improvement
- Easy Network
- Description of Multi Sector Solution
- Implementation of Multi Sector Solution
- Configuration of Multi Sector Solution
- Performance of Multi Sector Solution
- Description of DC-HSUPA
- Implementation of DC-HSUPA
- Configuration of DC-HSUPA
- Performance of DC-HSUPA
- Description of Voice Service Experience Improvement for Weak Reception UEs
- Implementation of Voice Service Experience Improvement for Weak Reception UEs
- Configuration of Voice Service Experience Improvement for Weak Reception UEs
- Performance of Voice Service Experience Improvement for Weak Reception UEs
- Description of Service-Based PS Handover from UMTS to LTE



- 
- Implementation of Service-Based PS Handover from UMTS to LTE
  - Configuration of Service-Based PS Handover from UMTS to LTE
  - Performance of Service-Based PS Handover from UMTS to LTE
  - Description of Layered Paging in URA\_PCH
  - Implementation of Layered Paging in URA\_PCH
  - Configuration of Layered Paging in URA\_PCH
  - Performance of Layered Paging in URA\_PCH
  - Description of Control Channel Parallel Interference Cancellation Phase2
  - Implementation of Control Channel Parallel Interference Cancellation Phase2
  - Configuration of Control Channel Parallel Interference Cancellation Phase2
  - Performance of Control Channel Parallel Interference Cancellation Phase2
  - Description of Dynamical HSDPA CQI Feedback Period
  - Implementation of Dynamical HSDPA CQI Feedback Period
  - Configuration of Dynamical HSDPA CQI Feedback Period
  - Performance of Dynamical HSDPA CQI Feedback Period
  - Description of Adaptive Adjustment of HSUPA Small Target Retransmissions
  - Implementation of Adaptive Adjustment of HSUPA Small Target Retransmissions
  - Configuration of Adaptive Adjustment of HSUPA Small Target Retransmissions
  - Performance of Adaptive Adjustment of HSUPA Small Target Retransmissions
  - Description of Intelligent Access Class Control
  - Implementation of Intelligent Access Class Control
  - Configuration of Intelligent Access Class Control
  - Performance of Intelligent Access Class Control
  - Description of Dynamic Target ROT Adjustment
  - Implementation of Dynamic Target ROT Adjustment
  - Configuration of Dynamic Target ROT Adjustment
  - Performance of Dynamic Target ROT Adjustment
  - Description of Inter-Frequency Load Balance Based on Configurable Load Threshold
  - Implementation of Inter-Frequency Load Balance Based on Configurable Load Threshold
  - Configuration of Inter-Frequency Load Balance Based on Configurable Load Threshold
  - Performance of Inter-Frequency Load Balance Based on Configurable Load Threshold
  - Description of Inter-frequency Load Handover based CE Congestion
  - Implementation of Inter-frequency Load Handover based CE Congestion
  - Configuration of Inter-frequency Load Handover based CE Congestion
  - Performance of Inter-frequency Load Handover based CE Congestion
  - Description of CE Overbooking
  - Implementation of CE Overbooking
  - Configuration of CE Overbooking
  - Performance of CE Overbooking
  - Description of Load-based Uplink Target BLER Configuration
  - Implementation of Load-based Uplink Target BLER Configuration
  - Configuration of Load-based Uplink Target BLER Configuration
  - Performance of Load-based Uplink Target BLER Configuration
  - Description of HSDPA Scheduling Based on UE Location
  - Implementation of HSDPA Scheduling Based on UE Location
  - Configuration of HSDPA Scheduling Based on UE Location
  - Performance of HSDPA Scheduling Based on UE Location

---

Training Methods

Lectures

Duration

2 working days

Class Size

Min 6, max 12

---

### 1.3.33 OWO53 WCDMA RAN14 - RAN15 Delta Features



#### Objectives

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

- Outline the important new features realized in RAN15 version
- Describe WCDMA RAN15 HSPA+ DB-HSDPA Feature
- Describe WCDMA RAN15 HSPA+ Flexible DC DB-HSDPA Feature
- Describe WCDMA RAN15 HSPA+ 4C-HSDPA Feature
- Describe WCDMA RAN15 Turbo Interference Cancellation Feature
- Describe WCDMA RAN15 HSUPA Time Division Scheduling Feature
- Describe WCDMA RAN15 Load Based Dynamic Adjustment of PCPICH Power Feature
- Describe WCDMA RAN15 DL DPCH Maximum Power Restriction Feature
- Describe WCDMA RAN15 DL DPCH Pilot Power Adjustment Feature
- Describe WCDMA RAN15 Platinum User Prioritizing Feature
- Describe WCDMA RAN15 Differentiated Service Based on Resource Reservation Feature
- Describe WCDMA RAN15 Layered Paging in Idle Mode Feature
- Describe WCDMA RAN15 HSUPA Scheduling Based on UE Location Feature
- Describe WCDMA RAN15 UMTS-to-LTE Fast Return Feature
- Describe WCDMA RAN15 Macro and Micro Co-carrier Uplink Interference Control Feature
- Describe WCDMA RAN15 Multiband Direct Retry Based on UE Location Feature
- Describe WCDMA RAN15 Narrowband Interference Suppression Feature

#### Target Audience

Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA HSPA+ Principles
- WCDMA RAN15 Radio Network Features and Algorithms
- WCDMA HSPA RAN15 Radio Resource Management

#### Content

- RAN15 Features Overview
- HSPA+ Evolution
- Capacity Improvement
- User Experience Improvement
- Performance Improvement
- Network Collaboration
- Description of DB-HSDPA
- Implementation of DB-HSDPA
- Configuration of DB-HSDPA
- Performance of DB-HSDPA
- Description of Flexible DC DB-HSDPA
- Implementation of Flexible DC DB-HSDPA
- Configuration of Flexible DC DB-HSDPA
- Performance of Flexible DC DB-HSDPA
- Description of 4C-HSDPA
- Implementation of 4C-HSDPA
- Configuration of 4C-HSDPA
- Performance of 4C-HSDPA
- Description of Turbo IC
- Implementation of Turbo IC
- Configuration of Turbo IC
- Performance of Turbo IC
- Description of HSUPA Time Division Scheduling

- Implementation of HSUPA Time Division Scheduling
- Configuration of HSUPA Time Division Scheduling
- Performance of HSUPA Time Division Scheduling
- Description of Load Based Dynamic Adjustment of PCPICH Power
- Implementation of Load Based Dynamic Adjustment of PCPICH Power
- Configuration of Load Based Dynamic Adjustment of PCPICH Power
- Performance of Load Based Dynamic Adjustment of PCPICH Power
- Description of DL DPCH Maximum Power Restriction
- Implementation of DL DPCH Maximum Power Restriction
- Configuration of DL DPCH Maximum Power Restriction
- Performance of DL DPCH Maximum Power Restriction
- Description of DL DPCH Pilot Power Adjustment
- Implementation of DL DPCH Pilot Power Adjustment
- Configuration of DL DPCH Pilot Power Adjustment
- Performance of DL DPCH Pilot Power Adjustment
- Description of Platinum User Prioritizing
- Implementation of Platinum User Prioritizing
- Configuration of Platinum User Prioritizing
- Performance of Platinum User Prioritizing
- Description of Differentiated Service Based on Resource Reservation
- Implementation of Differentiated Service Based on Resource Reservation
- Configuration of Differentiated Service Based on Resource Reservation
- Performance of Differentiated Service Based on Resource Reservation
- Description of Layered Paging in Idle Mode

- Implementation of Layered Paging in Idle Mode
- Configuration of Layered Paging in Idle Mode
- Performance of Layered Paging in Idle Mode
- Description of HSUPA Scheduling Based on UE Location
- Implementation of HSUPA Scheduling Based on UE Location
- Configuration of HSUPA Scheduling Based on UE Location
- Performance of HSUPA Scheduling Based on UE Location
- Description of UMTS-to-LTE Fast Return
- Implementation of UMTS-to-LTE Fast Return
- Configuration of UMTS-to-LTE Fast Return
- Performance of UMTS-to-LTE Fast Return
- Description of Macro and Micro Co-carrier Uplink Interference Control
- Implementation of Macro and Micro Co-carrier Uplink Interference Control
- Configuration of Macro and Micro Co-carrier Uplink Interference Control
- Performance of Macro and Micro Co-carrier Uplink Interference Control
- Description of Multiband Direct Retry Based on UE Location
- Implementation of Multiband Direct Retry Based on UE Location
- Configuration of Multiband Direct Retry Based on UE Location
- Performance of Multiband Direct Retry Based on UE Location
- Description of Narrowband Interference Suppression
- Implementation of Narrowband Interference Suppression
- Configuration of Narrowband Interference Suppression
- Performance of Narrowband Interference Suppression

## Training Methods

Lectures

---

Duration

2 working days

Class Size

Min 6, max 12

---

### 1.3.34 OWO54 WCDMA RAN15 - RAN16 Delta Features



#### Objectives

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

- Outline the important new features realized in RAN16 version
- Describe WCDMA RAN16 Fast Radio Bearer Setup
- Describe WCDMA RAN16 Flexible Power Control for Uplink Low Data Rate Transmission
- Describe WCDMA RAN16 RB parking
- Describe WCDMA RAN16 Turbo IC Phase2
- Describe WCDMA RAN16 FACH POOL
- Describe WCDMA RAN16 Terminal Black List
- Describe WCDMA RAN16 UMTS Uplink narrowband Interference Detection
- Describe WCDMA RAN16 Interference Rejection Combining
- Describe WCDMA RAN16 Control Channel Parallel Interference Cancellation (Phase 3)
- Describe WCDMA RAN16 Load-based Intelligent State Transition
- Describe WCDMA RAN16 Garbled Noise Detection and Correction of AMR Voice
- Describe WCDMA RAN16 Adaptive RACH
- Describe WCDMA RAN16 CS Voice Precise Power Control
- Describe WCDMA RAN16 Intra Frequency Load Balance
- Describe WCDMA RAN16 Camping Strategy Switch for Mass Event
- Describe WCDMA RAN16 Procedure Optimization
- Describe WCDMA RAN16 Automatic Congestion Handler
- Describe WCDMA RAN16 Redirection at RRC Connection Release
- Describe WCDMA RAN16 Flexible User Steering

- Describe WCDMA RAN16 CE Efficiency Improvement for HSUPA TTI 2ms
- Describe WCDMA RAN16 KQI Voice

#### Target Audience

Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA HSPA+ Principles
- WCDMA RAN16 Radio Network Features and Algorithms
- WCDMA HSPA RAN15 Radio Resource Management

#### Content

- WCDMA RAN16 New Features Overview
- WCDMA RAN16 Fast Radio Bearer Setup
- WCDMA RAN16 Flexible Power Control for Uplink Low Data Rate Transmission
- WCDMA RAN16 RB parking
- WCDMA RAN16 Turbo IC Phase2
- WCDMA RAN16 FACH POOL
- WCDMA RAN16 Terminal Black List
- WCDMA RAN16 UMTS Uplink narrowband Interference Detection
- WCDMA RAN16 Interference Rejection Combining
- WCDMA RAN16 Control Channel Parallel Interference Cancellation (Phase 3)
- WCDMA RAN16 Load-based Intelligent State Transition
- WCDMA RAN16 Garbled Noise Detection and Correction of AMR Voice
- WCDMA RAN16 Adaptive RACH
- WCDMA RAN16 CS Voice Precise Power Control
- WCDMA RAN16 Intra Frequency Load Balance

- 
- WCDMA RAN16 Camping Strategy Switch for Mass Event
  - WCDMA RAN16 Procedure Optimization
  - WCDMA RAN16 Automatic Congestion Handler
  - WCDMA RAN16 Redirection at RRC Connection Release
  - WCDMA RAN16 Flexible User Steering
  - WCDMA RAN16 CE Efficiency Improvement for HSUPA TTI 2ms

#### Training Methods

Lectures

#### Duration

3 working days

#### Class Size

Min 6, max 12

---

### 1.3.35 OWO55 WCDMA RAN16 - RAN17 Delta Features



#### Objectives

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

- Outline the important new features realized in RAN17 version
- Describe WCDMA RAN17 New Features Overview
- Describe WCDMA RAN17 Ultrafast CS Call Setup
- Describe WCDMA RAN17 Crystal Voice in Deep Coverage
- Describe WCDMA RAN17 AAS
- Describe WCDMA RAN17 NodeB Signaling Management
- Describe WCDMA RAN17 Base Station Supporting Multi-operator PKI
- Describe WCDMA RAN17 Inter-Band Load Balancing
- Describe WCDMA RAN17 Virtual CPC
- Describe WCDMA RAN17 Radio-Aware Video Precedence
- Describe WCDMA RAN17 IMSI-based Mobility Management for Multiple Operators
- Describe WCDMA RAN17 UL Unified Overload Control
- Describe WCDMA RAN17 UL Unified Video Steering
- Describe WCDMA RAN17 Automatic Intra-Frequency Neighbor Relation Optimization
- Describe WCDMA RAN17 FMA
- Describe WCDMA RAN17 Self Optimization Under Uplink Interference
- Describe WCDMA RAN17 Coverage Expansion Under Interference
- Describe WCDMA RAN17 Seamless Paging
- Describe WCDMA RAN17 Seamless Crystal Voice
- Describe WCDMA RAN17 DC-HSDPA
- Describe WCDMA RAN17 Service Steering and Load Sharing in RRC Connection Setup
- Describe WCDMA RAN17 Instant Macro Diversity
- Describe WCDMA RAN17 Radio Aware Video Shaping
- Describe WCDMA RAN17 Uplink Control Channel OLPC
- Describe WCDMA RAN17 HSUPA Scheduler Pool

#### Target Audience

Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA HSPA+ Principles
- WCDMA RAN17 Radio Network Features and Algorithms
- WCDMA HSPA RAN16 Radio Resource Management

#### Content

- WCDMA RAN17 New Features Overview
- WCDMA RAN17 Ultrafast CS Call Setup
- WCDMA RAN17 Crystal Voice in Deep Coverage
- WCDMA RAN17 AAS
- WCDMA RAN17 NodeB Signaling Management
- WCDMA RAN17 Base Station Supporting Multi-operator PKI
- WCDMA RAN17 Inter-Band Load Balancing
- WCDMA RAN17 Virtual CPC
- WCDMA RAN17 Radio-Aware Video Precedence
- WCDMA RAN17 IMSI-based Mobility



---

Management for Multiple Operators

- WCDMA RAN17 UL Unified Overload Control
- WCDMA RAN17 UL Unified Video Steering
- WCDMA RAN17 Automatic Intra-Frequency Neighbor Relation Optimization
- WCDMA RAN17 FMA
- WCDMA RAN17 Self Optimization Under Uplink Interference
- WCDMA RAN17 Coverage Expansion Under Interference
- WCDMA RAN17 Seamless Paging
- WCDMA RAN17 Seamless Crystal Voice
- WCDMA RAN17 DC-HSDPA
- WCDMA RAN17 Service Steering and Load

Sharing in RRC Connection Setup

- WCDMA RAN17 Instant Macro Diversity
- WCDMA RAN17 Radio Aware Video Shaping
- WCDMA RAN17 Uplink Control Channel OLPC

Training Methods

Lectures

Duration

3 working days

Class Size

Min 6, max 12

---

## 1.3.36 OWO61 WCDMA RAN14 SmartPhone Features



### Objectives

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

- Describe WCDMA RAN14 Enhanced Fast Dormancy Feature
- Describe WCDMA RAN14 Layered Paging in URA\_PCH Feature
- Describe WCDMA RAN14 P2P Rate Restriction During Busy Hours Feature
- Describe WCDMA RAN14 Web Page Access Acceleration Feature
- Describe WCDMA RAN14 Control Channel Parallel Interference Cancellation Phase2 Feature
- Describe WCDMA RAN14 Dynamical HSDPA CQI Feedback Period Feature
- Describe WCDMA RAN14 Adaptive Adjustment of HSUPA Small Target Retransmissions Feature
- Describe WCDMA RAN14 Intelligent Access Class Control Feature

### Target Audience

Optimization Engineers, System Technicians, System Engineers,

### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA HSPA+ Principles
- WCDMA RAN14 Radio Network Features and Algorithms
- WCDMA HSPA RAN14 Radio Resource Management

### Content

- Fast Dormancy
- Enhanced Fast Dormancy
- Configuration and Related Counters
- Description of Layered Paging in URA\_PCH

- Implementation of Layered Paging in URA\_PCH
- Configuration of Layered Paging in URA\_PCH
- Performance of Layered Paging in URA\_PCH
- Description of P2P Downloading Rate Restriction During Busy Hours
- Implementation of P2P Downloading Rate Restriction During Busy Hours
- Configuration of P2P Downloading Rate Restriction During Busy Hours
- Performance of P2P Downloading Rate Restriction During Busy Hours
- Description of Web Page Access Acceleration
- Implementation of Web Page Access Acceleration
- Configuration of Web Page Access Acceleration
- Performance of Web Page Access Acceleration
- Description of Control Channel Parallel Interference Cancellation Phase2
- Implementation of Control Channel Parallel Interference Cancellation Phase2
- Configuration of Control Channel Parallel Interference Cancellation Phase2
- Performance of Control Channel Parallel Interference Cancellation Phase2
- Description of Dynamical HSDPA CQI Feedback Period
- Implementation of Dynamical HSDPA CQI Feedback Period
- Configuration of Dynamical HSDPA CQI Feedback Period
- Performance of Dynamical HSDPA CQI Feedback Period
- Description of Adaptive Adjustment of HSUPA Small Target Retransmissions
- Implementation of Adaptive Adjustment of HSUPA Small Target Retransmissions
- Configuration of Adaptive Adjustment of

- 
- HSUPA Small Target Retransmissions
- Performance of Adaptive Adjustment of HSUPA Small Target Retransmissions
  - Description of Intelligent Access Class Control
  - Implementation of Intelligent Access Class Control
  - Configuration of Intelligent Access Class Control
  - Performance of Intelligent Access Class Control

### Training Methods

Lectures

### Duration

1 working day

### Class Size

Min 6, max 12

---

## 1.3.37 OWO62 WCDMA RAN15 SmartPhone Features



### Objectives

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

- Describe WCDMA RAN15 Enhanced Fast Dormancy Feature
- Describe WCDMA RAN15 Layered Paging in URA\_PCH Feature
- Describe WCDMA RAN15 Layered Paging in Idle Mode Feature
- Describe WCDMA RAN15 P2P Rate Restriction During Busy Hours Feature
- Describe WCDMA RAN15 Web Page Access Acceleration Feature
- Describe WCDMA RAN15 Turbo Interference Cancellation Feature
- Describe WCDMA RAN15 Adaptive Adjustment of HSUPA Small Target Retransmissions Feature
- Describe WCDMA RAN15 Intelligent Access Class Control Feature

### Target Audience

Optimization Engineers, System Technicians, System Engineers,

### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA HSPA+ Principles
- WCDMA RAN15 Radio Network Features and Algorithms
- WCDMA HSPA RAN15 Radio Resource Management

### Content

- Fast Dormancy
- Enhanced Fast Dormancy
- Configuration and Related Counters
- Description of Layered Paging in URA\_PCH

- Implementation of Layered Paging in URA\_PCH
- Configuration of Layered Paging in URA\_PCH
- Performance of Layered Paging in URA\_PCH
- Description of Layered Paging in Idle Mode
- Implementation of Layered Paging in Idle Mode
- Configuration of Layered Paging in Idle Mode
- Performance of Layered Paging in Idle Mode
- Description of P2P Downloading Rate Control during Busy Hour
- Implementation of P2P Downloading Rate Control during Busy Hour
- Configuration of P2P Downloading Rate Control during Busy Hour
- Performance of P2P Downloading Rate Control during Busy Hour
- Description of Web Page Access Acceleration
- Implementation of Web Page Access Acceleration
- Configuration of Web Page Access Acceleration
- Performance of Web Page Access Acceleration
- Description of Turbo IC
- Implementation of Turbo IC
- Configuration of Turbo IC
- Performance of Turbo IC
- Description of Web Page Access Acceleration
- Implementation of Web Page Access Acceleration
- Configuration of Web Page Access Acceleration
- Performance of Web Page Access Acceleration
- Description of Web Page Access Acceleration
- Implementation of Web Page Access Acceleration
- Configuration of Web Page Access Acceleration
- Performance of Web Page Access Acceleration

---

Training Methods

Lectures

Duration

1 working day

Class Size

Min 6, max 12

---

### 1.3.38 OWP80 WCDMA uBro RAN Planning



#### Objectives

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

- Describe the applications scenario of Huawei AP products
- Describe the basic planning of Femto network such as PLMN planning, LAC/RAC/SAC planning, frequency planning, scrambling code planning and etc.
- Describe the camp and handover policy in Femto network
- Describe the deployment of the typical case
- Describe interference test cases for typical networking scenarios
- Describe interference mitigation methods for typical networking scenarios

#### Target Audience

uBro Optimization Engineers, uBro Technicians, uBro Engineers,

#### Prerequisites

- Basic knowledge of UMTS network principle

#### Content

- Application Scenario of Femto Network
- Planning of Area Parameters in Femto Network

- Planning of Radio Parameters in Femto Network
- Network Deployment Policy of Femto Network
- A Deployment Example for ePico in Live Network
- Test Case in Apartment Scenario
- Test Case in Office Scenario
- Typical Cases for Deployment
- Femto Interference Scenarios
- Test Cases for Femto Interference
- ◇ Interference between Femto and Macro while Femto and Macro Use the Same Frequency
- ◇ Interference between APs while the APs Provide Discontinuous Coverage
- ◇ Interference between APs while the APs Provide Continuous Coverage
- Femto Interference Mitigation

#### Training Methods

Lectures

#### Duration

1 working day

#### Class Size

Min 6, max 12

---

### 1.3.39 OWO80 WCDMA uBro RAN Optimization



#### Objectives

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

- Describe the basic signaling procedure in Femto network
- Describe the handover procedure and related parameters in Femto network
- Describe the admission control procedure and related parameters in Femto network

#### Target Audience

Optimization Engineers, System Technicians,  
System Engineers,

#### Prerequisites

- Basic knowledge of UMTS network principle

#### Content

- UE Registration Procedure

- Service Procedure
- Handover Procedure
- Introduction to PRS
- Typical KPI for AP
- ◇ Accessibility
- ◇ Mobility
- ◇ Retainability
- ◇ Traffic Volume
- ◇ Others

#### Training Methods

Lectures

#### Duration

1 working day

#### Class Size

Min 6, max 12

---

### 1.3.40 OWO81 WCDMA UL Capacity Assessment and Improvement Solution



#### Objectives

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

- Describe WCDMA UL Capacity Assessment and Improvement Solution

#### Target Audience

Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA HSPA+ Principles

- WCDMA Radio Network Features and Algorithms
- WCDMA HSPA Radio Resource Management

#### Content

#### Training Methods

Lectures

#### Duration

1 working day

#### Class Size

Min 6, max 12



---

### 1.3.41 OWO82 WCDMA DL Capacity Assessment and Improvement Solution



#### Objectives

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

- Describe WCDMA DL Capacity Assessment and Improvement Solution

#### Target Audience

Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA HSPA+ Principles

- WCDMA Radio Network Features and Algorithms
- WCDMA HSPA Radio Resource Management

#### Content

#### Training Methods

Lectures

#### Duration

1 working day

#### Class Size

Min 6, max 12

---

## 1.3.42 OWO83 WCDMA Voice Experience Improvement Solution



### Objectives

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

- Describe WCDMA RAN17 WB-AMR Speech Rates Control
- Describe WCDMA RAN17 TFO/TrFO
- Describe WCDMA RAN17 AMR Voice Quality Improvement Based on PLVA
- Describe WCDMA RAN16 Fast Radio Bearer Setup
- Describe WCDMA RAN16 Garbled Noise Detection and Correction of AMR Voice
- Describe WCDMA RAN17 Seamless Crystal Voice
- Describe WCDMA RAN17 Seamless Paging
- Describe WCDMA RAN17 Ultrafast CS Call Setup
- Describe WCDMA RAN17 Crystal Voice in Deep Coverage

### Target Audience

Optimization Engineers, System Technicians, System Engineers,

### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA HSPA+ Principles

- WCDMA Radio Network Features and Algorithms
- WCDMA HSPA Radio Resource Management

### Content

- WCDMA RAN17 WB-AMR Speech Rates Control
- WCDMA RAN17 TFO/TrFO
- WCDMA RAN17 AMR Voice Quality Improvement Based on PLVA
- WCDMA RAN16 Fast Radio Bearer Setup
- WCDMA RAN16 Garbled Noise Detection and Correction of AMR Voice
- WCDMA RAN17 Seamless Crystal Voice
- WCDMA RAN17 Seamless Paging
- WCDMA RAN17 Ultrafast CS Call Setup
- WCDMA RAN17 Crystal Voice in Deep Coverage
- 

### Training Methods

Lectures

### Duration

2 working days

### Class Size

Min 6, max 12

---

### 1.3.43 OWO84 WCDMA Service Experience Improvement Solution



#### Objectives

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

- Describe WCDMA RAN13 Web Page Access Acceleration
- Describe WCDMA RAN13 P2P Downloading Rate Control during Busy Hour
- Describe WCDMA RAN16 CS Voice Precise Power Control
- Describe WCDMA RAN17 Crystal Voice in Deep Coverage
- Describe WCDMA RAN17 Radio-Aware Video Precedence
- Describe WCDMA RAN17 Radio Aware Video Shaping
- Describe WCDMA RAN15 Differentiated Service Based on Resource Reservation

#### Target Audience

Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA HSPA+ Principles

- WCDMA Radio Network Features and Algorithms
- WCDMA HSPA Radio Resource Management

#### Content

- WCDMA RAN13 Web Page Access Acceleration
- WCDMA RAN13 P2P Downloading Rate Control during Busy Hour
- WCDMA RAN16 CS Voice Precise Power Control
- WCDMA RAN17 Crystal Voice in Deep Coverage
- WCDMA RAN17 Radio-Aware Video Precedence
- WCDMA RAN17 Radio Aware Video Shaping

#### Training Methods

Lectures

#### Duration

2 working days

#### Class Size

Min 6, max 12

---

### 1.3.44 OWO85 WCDMA Differentiated QoS Management



#### Objectives

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

- Describe WCDMA RAN16 Terminal Black List
- Describe WCDMA RAN15 Platinum User Prioritizing
- Describe WCDMA RAN15 Differentiated Service Based on Resource Reservation

#### Target Audience

Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA HSPA+ Principles
- WCDMA Radio Network Features and

#### Algorithms

- WCDMA HSPA Radio Resource Management

#### Content

- WCDMA RAN16 Terminal Black List
- WCDMA RAN15 Platinum User Prioritizing
- WCDMA RAN15 Differentiated Service Based on Resource Reservation
- 

#### Training Methods

Lectures

#### Duration

1 working day

#### Class Size

Min 6, max 12

---

### 1.3.45 OWO86 WCDMA Big Events Solution



#### Objectives

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

- Describe WCDMA RAN16 Camping Strategy Switch for Mass Event
- Describe WCDMA RAN16 Automatic Congestion Handler
- Describe WCDMA RAN16 RB parking
- Describe WCDMA RAN15 Platinum User Prioritizing
- 

#### Target Audience

Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA HSPA+ Principles

- WCDMA Radio Network Features and Algorithms
- WCDMA HSPA Radio Resource Management

#### Content

- WCDMA RAN16 Camping Strategy Switch for Mass Event
- WCDMA RAN16 Automatic Congestion Handler
- WCDMA RAN16 RB parking

#### Training Methods

Lectures

#### Duration

1 working day

#### Class Size

Min 6, max 12

---

## 1.3.46 OWO87 WCDMA Signaling Storm Solution



### Objectives

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

- Describe WCDMA Signaling Storm Solution
- Describe WCDMA RAN14 Layered Paging in URA\_PCH
- Describe WCDMA RAN15 Layered Paging in Idle Mode
- Describe WCDMA RAN15 Enhanced Fast Dormancy Feature Description

### Target Audience

Optimization Engineers, System Technicians,  
System Engineers,

### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles

- WCDMA HSPA+ Principles
- WCDMA Radio Network Features and Algorithms
- WCDMA HSPA Radio Resource Management

### Content

- WCDMA Signaling Storm Solution
- WCDMA RAN14 Layered Paging in URA\_PCH
- WCDMA RAN15 Layered Paging in Idle Mode

### Training Methods

Lectures

### Duration

1.5 working days

### Class Size

Min 6, max 12

---

## 1.3.47 OWO88 WCDMA Small Packets Storm Solution



### Objectives

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

- Describe WCDMA Small Packets Storm Solution
- Describe WCDMA RAN17 Turbo IC
- Describe WCDMA RAN17 CCPIC
- Describe WCDMA RAN14 Dynamical HSDPA CQI Feedback Period
- Describe WCDMA RAN14 Adaptive Adjustment of HSUPA Small Target Retransmissions
- Describe WCDMA RAN16 Flexible Power Control for Uplink Low Data Rate Transmission
- Describe WCDMA RAN15 DL DPCH Maximum Power Restriction
- Describe WCDMA RAN15 DL DPCH Pilot Power Adjustment

### Target Audience

Optimization Engineers, System Technicians, System Engineers,

### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA HSPA+ Principles

- WCDMA Radio Network Features and Algorithms
- WCDMA HSPA Radio Resource Management

### Content

- WCDMA Small Packets Storm Solution
- WCDMA RAN17 Turbo IC
- WCDMA RAN17 CCPIC
- WCDMA RAN14 Dynamical HSDPA CQI Feedback Period
- WCDMA RAN14 Adaptive Adjustment of HSUPA Small Target Retransmissions
- WCDMA RAN16 Flexible Power Control for Uplink Low Data Rate Transmission
- WCDMA RAN15 DL DPCH Maximum Power Restriction

### Training Methods

Lectures

### Duration

2.5 working days

### Class Size

Min 6, max 12

---

### 1.3.48 OWO89 WCDMA SON solution



#### Objectives

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

- Describe WCDMA RAN16 Adaptive RACH
- Describe WCDMA RAN16 FACH POOL
- Describe WCDMA RAN16 Automatic Congestion Handler
- Describe WCDMA RAN16 Camping Strategy Switch for Mass Event
- Describe WCDMA RAN17 Self Optimization Under Uplink Interference
- 

#### Target Audience

Optimization Engineers, System Technicians, System Engineers,

#### Prerequisites

- WCDMA Air Interface
- WCDMA HSPA Principles
- WCDMA HSPA+ Principles

- WCDMA Radio Network Features and Algorithms
- WCDMA HSPA Radio Resource Management

#### Content

- WCDMA RAN16 Adaptive RACH
- WCDMA RAN16 FACH POOL
- WCDMA RAN16 Automatic Congestion Handler
- WCDMA RAN16 Camping Strategy Switch for Mass Event

#### Training Methods

Lectures

#### Duration

2 working days

#### Class Size

Min 6, max 12