

# **Training Proposal for WCDMA RNP&RNO Technical Training Project**



**HUAWEI**  
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## CONTENTS

1	Training Solution .....	4
1.1	Background Introduction (Optional) .....	4
1.2	Required Training Program(s).....	4
1.3	Training Program(s) Description .....	7
1.3.1	WCDMA RAN Overview Training.....	7
1.3.2	WCDMA RAN Principle Training .....	8
1.3.3	WCDMA HSPA+ Principle Training .....	9
1.3.4	WCDMA Radio Network Design and Planning Training .....	10
1.3.5	WCDMA Multi-Band and Multi-Carrier Solution Training .....	11
1.3.6	UMTS 900M Coverage Solution Training .....	12
1.3.7	WCDMA RF Optimization Training.....	13
1.3.8	WCDMA RAN12 Radio Network Features and Algorithms Training.....	14
1.3.9	WCDMA RAN13 Radio Network Features and Algorithms Training.....	15
1.3.10	WCDMA RAN14 Radio Network Features and Algorithms Training.....	16
1.3.11	WCDMA RAN15 Radio Network Features and Algorithms Training.....	17
1.3.12	WCDMA RAN16 Radio Network Features and Algorithms Training.....	18
1.3.13	WCDMA RAN17 Radio Network Features and Algorithms Training.....	19
1.3.14	WCDMA RAN12 Performance Management Training .....	20
1.3.15	WCDMA RAN13 Performance Management Training .....	21
1.3.16	WCDMA RAN14 Performance Management Training .....	22
1.3.17	WCDMA RAN15 Performance Management Training .....	23
1.3.18	WCDMA RAN16 Performance Management Training .....	24
1.3.19	WCDMA RAN17 Performance Management Training .....	25
1.3.20	WCDMA Radio Network Optimization.....	26
1.3.21	WCDMA RAN12 HSPA/HSPA+ Radio Network Optimization Training .....	28
1.3.22	WCDMA RAN13 HSPA/HSPA+ Radio Network Optimization Training .....	29
1.3.23	WCDMA RAN14 HSPA/HSPA+ Radio Network Optimization Training .....	30
1.3.24	WCDMA RAN15 HSPA/HSPA+ Radio Network Optimization Training .....	31
1.3.25	WCDMA RAN16 HSPA/HSPA+ Radio Network Optimization Training .....	32
1.3.26	WCDMA RAN17 HSPA/HSPA+ Radio Network Optimization Training .....	33
1.3.27	WCDMA RAN12-RAN13 Delta Features Training .....	34
1.3.28	WCDMA RAN13-RAN14 Delta Features Training .....	36
1.3.29	WCDMA RAN14-RAN15 Delta Features Training .....	38
1.3.30	WCDMA RAN15-RAN16 Delta Features Training .....	40
1.3.31	WCDMA RAN16-RAN17 Delta Features Training .....	41
1.3.32	WCDMA uBro Radio Network Planning and Optimization Training.....	43
1.3.33	WCDMA Capacity Assessment and Improvement Solution Training .....	44
1.3.34	WCDMA Experience Improvement Solution Training .....	45
1.3.35	WCDMA Big Events Solution Training .....	46
1.3.36	WCDMA RAN smartphone solution Training .....	47



1.3.37 WCDMA SON solution Training ..... 48

# 1 Training Solution

## 1.1 Background Introduction (Optional)

WCDMA RNP&RNO Technical Training

## 1.2 Required Training Program(s)

Training Program	Program Level	Duration (workdays)	Class Type	Class Size	Training Location
WCDMA RAN Overview Training	II	1	N/A	6 ~ 12	On-site
WCDMA RAN Principle Training	III	5	N/A	6 ~ 12	On-site
WCDMA HSPA+ Principle Training	III	2	N/A	6 ~ 12	On-site
WCDMA Radio Network Design and Planning Training	III	2	N/A	6 ~ 12	On-site
WCDMA Multi-Band and Multi-Carrier Solution Training	IV	1	N/A	6 ~ 12	On-site
UMTS 900M Coverage Solution Training	IV	1	N/A	6 ~ 12	On-site
WCDMA RF Optimization Training	III	2	N/A	6 ~ 12	On-site
WCDMA RAN12 Radio Network Features and Algorithms Training	III	5	N/A	6 ~ 12	On-site
WCDMA RAN13 Radio Network Features and Algorithms Training	III	6	N/A	6 ~ 12	On-site
WCDMA RAN14 Radio Network Features and Algorithms Training	III	6	N/A	6 ~ 12	On-site
WCDMA RAN15 Radio Network Features and Algorithms Training	III	6	N/A	6 ~ 12	On-site
WCDMA RAN16 Radio Network Features and Algorithms Training	III	6	N/A	6 ~ 12	On-site
WCDMA RAN17 Radio Network Features and Algorithms Training	III	6	N/A	6 ~ 12	On-site
WCDMA RAN12 Performance Management Training	IV	2	N/A	6 ~ 12	On-site
WCDMA RAN13 Performance Management Training	IV	2	N/A	6 ~ 12	On-site
WCDMA RAN14 Performance Management Training	IV	2	N/A	6 ~ 12	On-site

WCDMA RAN15 Performance Management Training	IV	2	N/A	6 ~ 12	On-site
WCDMA RAN16 Performance Management Training	IV	2	N/A	6 ~ 12	On-site
WCDMA RAN17 Performance Management Training	IV	2	N/A	6 ~ 12	On-site
WCDMA Radio Network Optimization	IV	4	N/A	6 ~ 12	On-site
WCDMA RAN12 HSPA/HSPA+ Radio Network Optimization Training	IV	3	N/A	6 ~ 12	On-site
WCDMA RAN13 HSPA/HSPA+ Radio Network Optimization Training	IV	3	N/A	6 ~ 12	On-site
WCDMA RAN14 HSPA/HSPA+ Radio Network Optimization Training	IV	3	N/A	6 ~ 12	On-site
WCDMA RAN15 HSPA/HSPA+ Radio Network Optimization Training	IV	3	N/A	6 ~ 12	On-site
WCDMA RAN16 HSPA/HSPA+ Radio Network Optimization Training	IV	4	N/A	6 ~ 12	On-site
WCDMA RAN17 HSPA/HSPA+ Radio Network Optimization Training	IV	4	N/A	6 ~ 12	On-site
WCDMA RAN12-RAN13 Delta Features Training	IV	2	N/A	6 ~ 12	On-site
WCDMA RAN13-RAN14 Delta Features Training	IV	2	N/A	6 ~ 12	On-site
WCDMA RAN14-RAN15 Delta Features Training	IV	2	N/A	6 ~ 12	On-site
WCDMA RAN15-RAN16 Delta Features Training	IV	3	N/A	6 ~ 12	On-site
WCDMA RAN16-RAN17 Delta Features Training	IV	3	N/A	6 ~ 12	On-site
WCDMA uBro Radio Network Planning and Optimization Training	IV	2	N/A	6 ~ 12	On-site
WCDMA Capacity Assessment and Improvement Solution Training	IV	2	N/A	6 ~ 12	On-site
WCDMA Experience Improvement Solution Training	IV	5	N/A	6 ~ 12	On-site
WCDMA Big Events Solution Training	IV	1	N/A	6 ~ 12	On-site
WCDMA RAN Smartphone solution Training	IV	4	N/A	6 ~ 12	On-site
WCDMA SON solution Training	IV	2	N/A	6 ~ 12	On-site

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**Level Description: I :Basic Course    II : Intermediate Course    III:Advanced Course    IV:  
Expert Course.**

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## 1.3 Training Program(s) Description

### 1.3.1 WCDMA RAN Overview Training

Training Path

Target Audience

All Technical People

Prerequisites

- Basic knowledge of mobile communications

Objectives

On completion of this program, 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

Training Content

HQ

ALL

Duration

1 working day

Class Size

Min 6, max 12

Training Timetable (Optional)

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## 1.3.2 WCDMA RAN Principle Training

### Training Path

### Target Audience

Network Deployment Engineers  
Optimization Engineers  
System Technicians  
System Engineers

### Prerequisites

- WCDMA RAN Overview Training

### Objectives

On completion of this program, 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)
- 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

### Training Content

HQ

ALL

### Duration

5 working days

### Class Size

Min 6, max 12

### Training Timetable (Optional)



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### 1.3.3 WCDMA HSPA+ Principle Training

#### Training Path

#### Target Audience

Network Deployment Engineers  
Optimization Engineers  
System Technicians  
System Engineers

#### Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training

#### Objectives

On completion of this program, 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.

#### Training Content

HQ

ALL

#### Duration

2 working days

#### Class Size

Min 6, max 12

#### Training Timetable (Optional)

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### 1.3.4 WCDMA Radio Network Design and Planning Training

Training Path

Target Audience

Network Deployment Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training

Objectives

On completion of this program, 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
- 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

Training Content

HQ

ALL

Duration

2 working days

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.5 WCDMA Multi-Band and Multi-Carrier Solution Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN11/12/13/14/15/16/17 Radio Network Features and Algorithms Training

Objectives

On completion of this program, 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

Training Content

HQ

ALL

Duration

1 working day

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.6 UMTS 900M Coverage Solution Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN11/12/13/14/15/16/17 Radio Network Features and Algorithms Training

Objectives

On completion of this program, 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

Training Content

HQ

ALL

Duration

1 working day

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.7 WCDMA RF Optimization Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training

Objectives

On completion of this program, 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

Training Content

HQ

ALL

Duration

2 working days

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.8 WCDMA RAN12 Radio Network Features and Algorithms Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training

Objectives

On completion of this program, 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

Training Content

HQ

ALL

Duration

5 working days

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.9 WCDMA RAN13 Radio Network Features and Algorithms Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training

Objectives

On completion of this program, 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

Training Content

HQ

ALL

Duration

6 working days

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.10 WCDMA RAN14 Radio Network Features and Algorithms Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training

Objectives

On completion of this program, 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

Training Content

HQ

ALL

Duration

6 working days

Class Size

Min 6, max 12

Training Timetable (Optional)



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### 1.3.11 WCDMA RAN15 Radio Network Features and Algorithms Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training

Objectives

On completion of this program, 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

Training Content

HQ

ALL

Duration

6 working days

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.12 WCDMA RAN16 Radio Network Features and Algorithms Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training

Objectives

On completion of this program, 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

Training Content

HQ

ALL

Duration

6 working days

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.13 WCDMA RAN17 Radio Network Features and Algorithms Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training

Objectives

On completion of this program, 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

Training Content

Duration

6 working days

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.14 WCDMA RAN12 Performance Management Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN12 Radio Network Features and Algorithms Training

Objectives

On completion of this program, 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

Training Content

HQ

ALL

Duration

2 working days

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.15 WCDMA RAN13 Performance Management Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN13 Radio Network Features and Algorithms Training

Objectives

On completion of this program, 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
- 

Training Content

HQ

ALL

Duration

2 working days

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.16 WCDMA RAN14 Performance Management Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN14 Radio Network Features and Algorithms Training

Objectives

On completion of this program, 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

Training Content

HQ

ALL

Duration

2 working days

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.17 WCDMA RAN15 Performance Management Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN15 Radio Network Features and Algorithms Training

Objectives

On completion of this program, 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

Training Content

HQ

ALL

Duration

2 working days

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.18 WCDMA RAN16 Performance Management Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN16 Radio Network Features and Algorithms Training

Objectives

On completion of this program, 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

Training Content

HQ

ALL

Duration

2 working days

Class Size

Min 6, max 12

Training Timetable (Optional)



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### 1.3.19 WCDMA RAN17 Performance Management Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN17 Radio Network Features and Algorithms Training

Objectives

On completion of this program, 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

Training Content

Duration

2 working days

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.20 WCDMA Radio Network Optimization

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN12/13/14/15 Radio Network Features and Algorithms Training
- WCDMA RAN12/13/14/15 Performance Management Training

Objectives

On completion of this program, 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

Training Content

HQ

ALL

Duration

4 working days

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Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.21 WCDMA RAN12 HSPA/HSPA+ Radio Network Optimization Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN12 Radio Network Features and Algorithms Training

Objectives

On completion of this program, 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.
- Describe the troubleshooting process for HSDPA throughput problems
- Describe the troubleshooting process for HSUPA throughput problems
- Describe the troubleshooting process for HSPA+ throughput problems

Training Content

HQ

ALL

Duration

3 working days

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.22 WCDMA RAN13 HSPA/HSPA+ Radio Network Optimization Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN13 Radio Network Features and Algorithms Training

Objectives

On completion of this program, 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.
- Describe the troubleshooting process for HSDPA throughput problems
- Describe the troubleshooting process for HSUPA throughput problems
- Describe the troubleshooting process for HSPA+ throughput problems

Training Content

HQ

ALL

Duration

3 working days

Class Size

Min 6, max 12

Training Timetable (Optional)

---

### 1.3.23 WCDMA RAN14 HSPA/HSPA+ Radio Network Optimization Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN14 Radio Network Features and Algorithms Training

Objectives

On completion of this program, 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.
- Describe the troubleshooting process for HSDPA throughput problems
- Describe the troubleshooting process for HSUPA throughput problems
- Describe the troubleshooting process for HSPA+ throughput problems

Training Content

HQ

ALL

Duration

3 working days

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.24 WCDMA RAN15 HSPA/HSPA+ Radio Network Optimization Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN15 Radio Network Features and Algorithms Training

Objectives

On completion of this program, 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.
- Describe the troubleshooting process for HSDPA throughput problems
- Describe the troubleshooting process for HSUPA throughput problems
- Describe the troubleshooting process for HSPA+ throughput problems

Training Content

HQ

ALL

Duration

3 working days

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.25 WCDMA RAN16 HSPA/HSPA+ Radio Network Optimization Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN16 Radio Network Features and Algorithms Training

Objectives

On completion of this program, 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.
- Describe the troubleshooting process for HSDPA throughput problems
- Describe the troubleshooting process for HSUPA throughput problems
- Describe the troubleshooting process for HSPA+ throughput problems

Training Content

HQ

ALL

Duration

4 working days

Class Size

Min 6, max 12

Training Timetable (Optional)



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### 1.3.26 WCDMA RAN17 HSPA/HSPA+ Radio Network Optimization Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN17 Radio Network Features and Algorithms Training

Objectives

On completion of this program, 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.
- Describe the troubleshooting process for HSDPA throughput problems
- Describe the troubleshooting process for HSUPA throughput problems
- Describe the troubleshooting process for HSPA+ throughput problems

Training Content

Duration

4 working days

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.27 WCDMA RAN12-RAN13 Delta Features Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN13 Radio Network Features and Algorithms Training

Objectives

On completion of this program, 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

Training Content

HQ

ALL

Duration

2 working days

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Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.28 WCDMA RAN13-RAN14 Delta Features Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN14 Radio Network Features and Algorithms Training

Objectives

On completion of this program, 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

Training Content

HQ

ALL

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Duration

2 working days

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.29 WCDMA RAN14-RAN15 Delta Features Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN15 Radio Network Features and Algorithms Training

Objectives

On completion of this program, 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

Training Content

HQ

ALL

Duration

2 working days

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Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.30 WCDMA RAN15-RAN16 Delta Features Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN16 Radio Network Features and Algorithms Training

Objectives

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

- Outline the important new features realized in RAN16 version.
- Describe 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, WCDMA RAN16 KQI Voice Feature

Training Content

HQ

ALL

Duration

3 working days

Class Size

Min 6, max 12

Training Timetable (Optional)



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### 1.3.31 WCDMA RAN16-RAN17 Delta Features Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN17 Radio Network Features and Algorithms Training

Objectives

On completion of this program, 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

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Training Content

Duration

3 working days

Class Size

Min 6, max 12

Training Timetable(Optional)

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### 1.3.32 WCDMA uBro Radio Network Planning and Optimization Training

Training Path

Target Audience

uBro Optimization Engineers  
uBro Technicians  
System Technicians  
System Engineers

Prerequisites

- Basic knowledge of mobile communications
- OWA00 WCDMA RAN Overview
- OWA01 WCDMA Air Interface

Objectives

On completion of this program, 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
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Training Content

HQ

ALL

Duration

2 working days

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.33 WCDMA Capacity Assessment and Improvement Solution Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN17 Radio Network Features and Algorithms Training

Objectives

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

- Describe WCDMA Capacity Assessment and Improvement Solution Training

Training Content

Duration

2 working days

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.34 WCDMA Experience Improvement Solution Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN17 Radio Network Features and Algorithms Training

Objectives

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

- Describe WCDMA Experience Improvement Solution Training
- Describe WCDMA Voice Experience Improvement Solution
- Describe WCDMA Service Experience Improvement Solution
- Describe WCDMA Differentiated QoS Management

Training Content

WCDMA Differentiated QoS Management

- WCDMA RAN16 Terminal Black List
  - Description of WCDMA RAN16 Terminal Black List
- WCDMA RAN15 Platinum User Prioritizing
  - Description of Platinum User Prioritizing
  - Implementation of Platinum User Prioritizing
  - Configuration of Platinum User Prioritizing
  - Performance of Platinum User Prioritizing
- WCDMA RAN15 Differentiated Service Based on Resource Reservation
  - 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

Duration

5 working days

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.35 WCDMA Big Events Solution Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN17 Radio Network Features and Algorithms Training

Objectives

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

- Describe WCDMA Big Events Solution Training

Training Content

Duration

1 working day

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.36 WCDMA RAN Smartphone solution Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN17 Radio Network Features and Algorithms Training

Objectives

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

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

Duration

4 working days

Class Size

Min 6, max 12

Training Timetable (Optional)

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### 1.3.37 WCDMA SON solution Training

Training Path

Target Audience

Optimization Engineers  
System Technicians  
System Engineers

Prerequisites

- WCDMA RAN Overview Training
- WCDMA RAN Principle Training
- WCDMA HSPA+ Principles Training
- WCDMA RAN17 Radio Network Features and Algorithms Training

Objectives

On completion of this program, 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

Training Content

Duration

2 working days

Class Size

Min 6, max 12

Training Timetable (Optional)



