



## UMTS Air Interface

**1 Hr. 24 Min.**

### LEARNING OBJECTIVE:

Upon completing the course, the participant will be able to:

- Understand the Basics of UMTS channels
- Understand the LTE Architecture, Roaming Scenarios and Interworking
- Dig deep into the Air Interface and understand the Channel concept
- Examine the Call Flows

### COURSE OBJECTIVE:

This course provides a detailed description of WCDMA FDD technology and its use in UMTS networks. We will dedicatedly learn the basics of UMTS air interface in detail. In doing so, we are covering the channel structure of UMTS in uplink and downlink both, also understand the functionality of every channel. Next we will also discuss cell synchronization process, paging process and RACH procedure.

### WHO SHOULD ATTEND:

This course is designed to provide a general overview for strategic or technical managers, consultants, communications professionals, network professionals and others who plan to work in WCDMA wireless network.

### TARGET AUDIENCE:

RF Engineers, UMTS Planners and Optimizers, Drive Test Engineers.

### INSTRUCTIONAL METHODS:

Lectures in Classroom, Virtual Classroom trainings, discussion, Questions & Answers. All participants will also receive comprehensive course materials.

### COURSE OUTLINE:

#### 1. Basics of Channels

- 1.1 Overview and objectives
- 1.2 Channel Locations
- 1.3 Brief Descriptions about Channels
- 1.4 Channels on Air Interface

#### 1.5 Logical Channels

- 1.6 Transport Channels
- 1.7 The transfer of Transport Blocks
- 1.8 Transport Formats
- 1.9 Transport format configurations





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- 1.10 Interactions between the physical layer and MAC Layer
- 1.11 Transport Format Combination Set
- 1.12 Transport Format parameter
- 1.13 Transport Format in AMR Call
- 1.14 Physical Channel
- 1.15 Channel Mapping
- 1.16 Generic Frame Structure

**2. Advance channels**

- 2.1 Overview and Objectives
- 2.2 Synchronization Channel
- 2.3 Cell Synchronization
- 2.4 Common Pilot Channel
- 2.5 Primary Common Control Physical Channel
- 2.6 Synchronization issues and node synchronization
- 2.7 Secondary Common Control Physical Channels
- 2.8 Paging Indicator channel
- 2.9 S-CCPCH and the Paging Process
- 2.10 Paging & Discontinuous Reception (FDD mode)
- 2.11 Paging Indicator & Paging Occasion
- 2.12 FACH & S-CCPCH
- 2.13 Random Access
- 2.14 Random Access – The working Principle
- 2.15 Random Access Timing

- 2.16 RACH Sub Channels and Access Service class
- 2.17 PRACH Preamble
- 2.18 PRACH Message Part
- 2.19 CSICH : CPCH (Common Packet Channel)
- 2.20 Acquisition Indicator Channel (AICH)
- 2.21 Summary of RACH Procedure
- 2.22 Downlink Dedicated Physical Channel (DPCH)
- 2.23 Timing Relationship between Physical channels
- 2.24 Radio Interface Synchronization
- 2.25 Uplink Dedicated physical Channels
- 2.26 Initial UL DCH Transmission

**Evaluation and feedback of the participants**

Maximum number of participants: **15**

Duration: **1 Hr. 24 Min.**

