5G NR Air Interface

5G_308d | On-Demand | 5G Access | Expanded
Course Duration: 2 days

This learning takes an in-depth look at the 5G New Radio (NR) Air Interface and key operations that enable a 5G Standalone (SA) network to support the 5G services.

Intended Audience

Design, Development, and Performance Engineers of Radio Network, Device, and Tools.

Objectives

After completing this course, the student will be able to:

- Describe the frame structure with numerology of the 5G NR air interface
- List downlink and uplink signals and channels and describe their function
- Identify key steps of network acquisition, random access, and connection setup
- Explain how data is transferred in the downlink and the uplink
- Step through the handover and idle/inactive mode operations

Course Prerequisites

Welcome to 5G

Outline

1. 5G NR Foundation
1.1 Key features of 5G NR Air Interface
1.2 5G Network Deployments
1.3 5G Radio Access Network
Exercise: 5G Radio Access Network

2. Spectrum and Numerology of 5G NR
2.1 Frequency Spectrum
2.2 OFDM and Numerology Overview
2.3 5G NR Frame Structure
2.4 Overview and Configuration of DSS

3. Spectral Efficiency
3.1 Massive MIMO
3.2 Beamforming Overview
3.3 SDMA and Frequency Reuse

4. Meeting Service Requirements
4.1 RAN Slicing
4.2 Bandwidth Adaptation
4.3 Low Latency

5. Channels and Signals
5.1 5G Channels and Signals
5.2 Sync Signals and PBCH
5.3 SSB and Random Access in 5G

6. 5G Operations
6.1 5G NSA Operations
6.2 SA Network Acquisition
6.3 Registration and PDU Session
6.4 Overview of DL and UL Data
Exercise: SA Network Acquisition

7. Mobility Operations
7.1 Beam Switching
7.2 Xn Handover
7.3 Idle and Inactive in 5G
Exercise: 5G Xn Handover

Final Assessment

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