5G (SA) RAN Signaling and Operations Part 5: Uplink Data Transfer

5G_215d | On-Demand | 5G Access | Expanded
Course Duration: 4 hours

This is the fifth course in a six-course set of self-paced courses encompassing 5G SA RAN Signaling and Operations. In this course, you will learn about uplink data transfer from a device to a gNodeB. You will explore how the device requests to be scheduled for uplink resources, how the gNodeB does resource allocation for uplink data, and how power control is used to meet uplink signal quality requirements. Each course in this six-course set can stand on its own or can be combined with other courses as necessary to meet your learning objectives.

Intended Audience

5G RAN and device engineering, operations, and performance related job functions

Objectives

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

- Explore the role of beamforming in UL traffic operations
- Step through the procedures of Scheduling Request and Buffer Status Report
- Step through the resource allocation and power control for the uplink
- Explore RRC signaling messages and parameters for the uplink operation

Course Prerequisites

5G NR Air Interface

Outline

1. Uplink Data Parameters
1.1 Overview of Uplink data transfer in 5G
1.2 Scheduling Request and Buffer Status Report
1.3 Scheduling Request (SR) configuration
1.4 Buffer Status Report and Power headroom reports
Exercise: PUCCH configuration
Exercise: Scheduling Request configuration
Exercise: PUSCH configuration

2. Uplink Data Transfer Operations
2.1 Uplink resource allocation and data transfer
2.2 Uplink data transmission and Hybrid ARQ
2.3 Uplink power control operation
Exercise: Traffic operations in uplink
Exercise: Uplink power control

Assessment