5G RF Planning and Design Part 1: 5G NR Air Interface Features

5G_228d | On-Demand | 5G Access | Expanded
Course Duration: 4 hours

This is the first course in a four-course set of self-paced courses encompassing 5G RF Planning and Design. In this course, you will learn about the 5G NR air interface features that impact RF design including frequency bands and numerologies. You will also learn about beamforming and MIMO in 5G and the RF propagation considerations for 5G RF design. Each course in this four-course set can stand on its own or can be combined with other courses as necessary to meet your learning objectives.

Intended Audience

RF planning and design and performance optimization engineers

Objectives

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

- Identify 5G NR features important to RF design, e.g., NR numerology, FR1, FR2
- Explain beamforming and massive MIMO and list propagation models suitable for low, mid, and mmW

Course Prerequisites

5G NR Air Interface

Outline

1. 5G NR Essentials
1.1 5G Use Cases and Performance Targets
1.2 Evolution from 4G to 5G
1.3 NSA and Dual-Connectivity

2. 5G NR Features
2.1 5G Air Interface Features
2.2 Frequencies for 5G
2.3 Numerology
Exercise: Numerology Impact on RF Design

3. Beamforming
3.1 Beamforming
3.2 Beams and Phased Arrays
3.3 Analog and Digital Beamforming
3.4 Hybrid and Full-Dimension Beamforming
3.5 Beamforming and MIMO
Exercise: Beamforming

4. Beam Management
4.1 Coverage and Traffic Beams
4.2 Beam Operations
4.3 Active Antenna Systems (AAS) and MIMO

Final Assessment

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