

5G Radio Technologies and Deployments

Instructor Led Live Virtual Class | Duration: 0.5 Day | Course Number: TPR1022

Technology
Primers

3GPP is evaluating various technologies to determine specific elements of a 5G wireless network. These technologies enable the 5G wireless network to achieve the 5G performance goals defined by ITU as part of IMT2020 requirements. This course describes potential spectrum for 5G including millimeter wave spectrum. Enhancements to the traditional 4G OFDM/OFDMA such as Universal Filtered Multi Carrier (UFMC), Filter Bank Multi Carrier (FBMC), and Non-Orthogonal Multiple Access (NOMA) are illustrated. Furthermore, enhancements to advanced antenna techniques such as massive MIMO are explained as well as the new frame structure being investigated by 3GPP. Potential deployment scenarios are summarized along with RF design considerations and transport network issues.

Intended Audience

Technical, product development, and marketing personnel working for operators, chipset manufacturers, equipment manufacturers, device manufacturers, and test equipment manufacturers.

Learning Objectives

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

- Give examples of spectrum bands for 5G
- List benefits of new multiplexing and multiple access methods
- Explain how massive MIMO facilitates beamforming
- Illustrate potential 5G deployment scenarios
- Describe key design considerations for a transport network
- Give examples of RF design considerations

Suggested Prerequisites

- [LTE_102] LTE Overview (eLearning)
- [TPR1021] 5G Services and Network Architecture

Course Outline

1. 5G Air Interface

- 1.1. Spectrum
- 1.2. Implications of mmW spectrum
- 1.3. Multiplexing and multiple access
- 1.4. Massive MIMO
- 1.5. Beamforming approaches
- 1.6. Flexible frame structure

2. 5G Deployments

- 2.1. Deployment scenarios
- 2.2. HetNet
- 2.3. Transport network considerations
- 2.4. RF design considerations
- 2.5. Industry status