



5G RF Planning

2 Hr. 31 Min.



LEARNING OBJECTIVE:

Modules is Explain main components of a 5G link budget for different services and compare the 5G link budget with the LTE link budget

- Illustrate main steps of the 5G RF design process including traffic mapping and propagation modeling

TARGET AUDIENCE :

Network Engineers, Planning and Optimization Experts, Technical Consultants and others

COURSE OUTLINE :

1. 5G RF Design Input considerations

- 1.1 a) Frequency bands of operations
- 1.1 b) DL and UL throughput estimation
- 1.1 c) Antennas and beamforming in 5G

2. 5G Link Budget

- 2.1 a) **Introduction to Link Budget**
- 2.1 b) **General Parameters**
- 2.1 c) Transmitting End
- 2.1 d) Receiving End
- 2.1 e) Service
- 2.1 f) Channel
- 2.1 g) Interference Margin
- 2.1 h) Additional Losses & Gains
- 2.1 i) Propagation General Configuration
- 2.2 j) Coverage Estimation

3. 5G RF Design Overview

- 3.1 a) 5G RF design process
- 3.2 b) RF design inputs
- 3.3 c) Traffic mapping
- 3.4 d) Propagation models (UMi SC, UMi OS, Uma)
- 3.5 e) 5G RF design considerations
- 3.6 f) 5G site selection

4. Parameter Planning

4.1 5G PCI Planning

- 4.1 a) Physical cell ID
- 4.1 b) Introduction to 5G PCI Planning(PCI-mod-3 & PCI-mod-4)
- 4.1 c) Suggested Rules for PCI Planning
- 4.1 d) PCI Allocation

4.2 Introduction to 5G Random Access

- 4.2 a) 5G/NR - Initial Access/RACH
- 4.2 b) Need for RACH
- 4.2 c) Two types of RACH : Contention Based and Non Contention Based
- 4.2 d) Two Types of Sequence : Short Sequence and Long Sequence

4.3 Preamble Sequence Generation

- 4.3 a) Frequency Domain Sequence Generation
- 4.3 b) Time Domain Sequence Generation





5G RF Planning

2 Hr. 31 Min.



- 4.4 Zero Correlation Zone Config and Ncs**
- 4.5 Root Sequence Index**
- 4.6 Preamble Format**
- 4.7 Random Access Configuration**
- 4.8 RRC Parameters for RACH Process**
- 4.9 Random Access Configuration**
 - 4.9 a) For FR1 and paired spectrum/supplementary uplink
 - 4.9 b) For FR1 and unpaired spectrum
 - 4.9 c) For FR2 and unpaired spectrum

Evaluation and feedback of the participants

Maximum number of participants:	15
Duration:	2 Hr. 31 Min.



MobileComm Confidential

