

5G NR Signaling Parameters and the Applications in UXM eLearning Program

Get the best education quickly from trusted 5G experts

eLearning Program Overview

We offer a robust set of eLearning modules to help you find success with your Keysight investment at your own pace.

What you will learn

Build a strong foundation in 5G NR signaling and get the most productivity and value from your Keysight UXM 5G instrument and 5G Network Emulation Solutions.

This course will help users of the E7515B UXM 5G gain a deep understanding of the 5G signaling process and ASN parameters used in the UXM 5G Test Application. It will also help non-UXM 5G engineers understand the 5G signaling process and how higher layer signaling assigns physical layer resources. You will learn:

- Complete 5G NR call flows for SA/NSA, mobility, and carrier aggregation
- Key signaling messages and ASN parameters involved in each of the sub-processes
- Signaling parameters that are involved during cell search (MIB/SIBs), RACH, RRC setup, and RRC reconfiguration
- Use cases for UXM 5G pertaining to frequency settings and scheduling

New included topics

- The Transmission Configuration Indicator (TCI) configuration, which helps the UE to quickly decode the Physical Downlink Control Channel (PDCCH) or the Physical Downlink Shared Channel (PDSCH) using quasi-collocated signals
- The Sounding Reference Signal (SRS) configuration used by the gNB for channel quality estimation and synchronization
- Enabling the Uplink Control Information (UCI) on the Physical Uplink Shared Channel (PUSCH) to multiplex the UCI with data on the PUSCH
- Dynamic Spectrum Sharing (DSS), which enables deployment of both 4G LTE and 5G NR in the same frequency band and dynamically allocates spectrum resources based on user demand
- Channel State Information-Reference Signal (CSI-RS) use cases including channel measurement, beam management, and beam tracking
- The CSI-RS configuration focused on resource mapping
- The maximum throughput test, one of the key benchmarks for UE performance

Who should attend

5G wireless engineers and technicians who work with advanced device test.

- Prior understanding of 5G Systems and NR Fundamentals is preferred
- Users of Keysight UXM 5G NR test applications or other Keysight Network Emulation Solutions are preferred

Delivery method

Self-paced eLearning modules developed by Keysight experts.

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T6601A-100 e-learning 5G NR Signaling Bundle - English)

eLearning Module	What you will learn	Duration
Introduction to 5G NR Call flows	Non-Standalone 5G call flow Standalone 5G call flow 5G Mobility and Carrier Aggregation Procedure	1 hour
Synchronization and System Information Acquisition	Synchronization and System Information Acquisition Overview PSS and SSS Synchronization Decoding the MIB in the PBCH Locating SIB1 using the MIB Parameters Decoding SIB1 to Acquire System Information.	1.5 hours
Random Access Procedure	Random Access Configuration Parameters Random Access Response (Msg2) Contention Resolution During a Random-Access Procedure	1 hour
RRC Setup and Reconfiguration in NSA Mode - Part 1	NR RRC Setup and Reconfiguration Process in NSA mode Bandwidth Part (BWP) Configuration PDCCH CORESET Configuration PDCCH Searchspace Configuration PUCCH Configuration SRS Configuration	1.5 hours
RRC Setup and Reconfiguration in NSA Mode - Part 2	PDSCH Configuration Parameters PUSCH Configuration Parameters Dynamic Spectrum Sharing (DSS) HARQ Parameters	1.5 hours
RRC Setup and Reconfiguration in SA Mode	RRC Connection Overview RRC Setup NR Measurement Procedure Intra-NR Mobility Carrier Aggregation	1.5 hours
Radio Link Failure	Radio Link Failure and Key RRC Parameters RRC Re-establishment and Key Parameters	0.5 hours
Use Case Analysis - UXM 5G Test Application	Use Case: Frequency settings Use Case: NR scheduling Use Case: Maximum Throughput Test	2 hours

Next step

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