

# Keysight Technologies

## GSM: Mobile Station Measurements for Engineers using the Keysight 8960

### Course Overview

Course Numbers:

Keysight Training Center: H7216A #301

Onsite Training: H716B #301

Gain an in-depth knowledge of GSM technology and learn operation of the 8960 Series 10 wireless communication test set

### Course Overview

This 2-day course teaches engineers about the GSM cellular system, including the basic GSM technology and ETSI standards. It discusses manufacturing test methods using the Keysight Technologies, Inc. 8960 Series 10 wireless communication test set. The class provides insight into the various measurement specifications and how to interpret the results.

### What You will Learn

- GSM network, cells, and sectors
- Hand-offs
- Control channels
- Traffic channels
- Vocoders and error correction
- Bursted transmissions
- Camp and call set-up
- Keysight 8960 Series 10 wireless communication test set operation
- Transmitter measurement
- Receiver measurement

### Upon Completion of this Course, You will:

- Gain an in-depth knowledge of GSM technology
- Understand the detailed description of functional blocks of mobiles
- Understand how a mobile operates in a network and recognize the impact of faults on a network
- Make measurements on mobiles and interpret results
- Learn what measurements tell you about mobile design
- Learn operation of the 8960 Series 10 wireless communication test set.

### Specifications

#### Course type

Application Training

#### Audience

GSM Engineers working with the manufacture and testing of GSM mobile phones

### Prerequisites

Students should either complete the RF Measurement Basics and Analog & Digital Cellular Communications courses or have an understanding of RF and microwave measurements, analog and digital cellular systems. This will equip them with an understanding of the terms and theories that will be the building blocks of the GSM Mobile Station Measurements course.

### Course length

2 days

### Course format

Lecture and Lab

### Delivery method

Scheduled at Keysight locations, or

Dedicated at a customer site.

To save you time and travel, many Keysight EEsof EDA courses can be delivered at your site. Keysight EEsof EDA will provide the required equipment.

# Detailed Course Agenda

## Digital Fundamentals

## Digital Modulation Basics

## GSM Fundamentals

This instructor-led lesson looks at three areas of GSM: Network, Air Interface, and Signal Path. The GSM Network looks at:

- Network components
- Cells and sectors
- Frequency planning
- Hand-off techniques
- Power control

The Air Interface explores:

- GSM implementation
- Power versus time
- Frames and data formatting
- Paging and call origination

The Signal Path from the microphone to the antenna is explained:

- Vocoder
- Channel coder
- Interleaving
- Modulation
- Transmission

## GSM Measurements

Using 8960 Series 10 wireless communication test set, the instructor will demonstrate the theory covered in the first section of this course. Emphasis is not on learning to operate the equipment, but to reinforce the concepts of GSM. This is achieved using:

- Detailed mobile block diagrams
- Functional testing
- Transmitter measurements
- Receiver measurements
- What measurements tell us

The student will also have hands-on time to reinforce concepts.

- GSM 11.10 Standard

For the latest information on class schedules and locations visit our website:

[www.keysight.com/find/education](http://www.keysight.com/find/education)

For more information on Keysight Technologies' products, applications or services, please contact your local Keysight office. The complete list is available at: [www.keysight.com/find/contactus](http://www.keysight.com/find/contactus)

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