

Keysight Technologies

Digital Microwave Radio Basics

Course Overview

Course Numbers:
Keysight Training Center: H7216A #207
Onsite Training: H7216B #207

Learn the basics of digital microwave radio systems

Course Overview

The course gives an overview of the microwave radio systems that are in use today. They are used as part of the general telecommunication network, and we find them more and more in the GSM world. Especially in UMTS it is expected that more fixed links will be installed.

What You will Learn

- Basics of the network infrastructure
- The basics of vector modulation
- Modulation formats
- System lay out
- Interfering effects

Specifications

Course type

User/Application Training

Audience

Test technicians and test engineers new to the area of RF and microwave.

Prerequisites

A general understanding of electronic and measurement principles.

Course length

1 day

Course format

This course is presented classroom style. All presentation materials are contained in the student workbook, which the student may keep for future reference.

Delivery method

Scheduled at Keysight Technologies, Inc. locations, or

Dedicated at a customer site.

To save you time and travel, many Keysight courses can be delivered at your site. Keysight can provide required equipment, or you can save money by furnishing your own.

Detailed Course Agenda

First there will be a discussion about the basic network infrastructure, and how modern digital microwave radios fit into that. How was the situation up till today, and what is the perspective for the future in the fixed network and for the wireless mobile network.

Vector modulation is the modulation concept for all microwave radios today. A short summary will be given, and then the actual modulation formats used today will be discussed. This includes QPSK up to 256 QAM. The basics of the modulation and demodulation process will be explained.

Using examples on block diagram level a system will be described in its up and downlink. This starts at the preparation of the baseband signal, adding bits for error correction and signaling, IF processing including modulation, upconversion into RF, Antenna, Transmission with its problems and then reception, down processing into the baseband signal. In each step problems will be discussed.

Finally we will show certain system impairments like modulation quality problems. The system curve (waterfall curve) will be discussed and the correction mechanisms used for instance to correct for flat fading and frequency selective fading. Especially this last part will be strongly supported by experiments performed with a microwave radio and Keysight test equipment.

For the latest information on class schedules and locations visit our website: www.keysight.com/find/education





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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

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