

Keysight Technologies

89600 Series

Vector Signal Analyzer Basics

Course Overview

Course Numbers:

H7216A-327 Open enrollment scheduled by Keysight

H7216B-327 Dedicated delivery at customer site

Quickly obtain the technology background and product operation knowledge you need to successfully use Keysight Technologies, Inc. 89600 Series Vector Signal Analyzers in your application

Course Overview

This is a complete course on the theory and operation of the 89600 series Vector Signal Analyzer (VSA), including an understanding of frequency, time, and modulation domain measurements. The technology concepts and instrument operation knowledge can be immediately applied to a wide variety of application areas including the latest digital communication systems, spectrum/signal monitoring, digital video, and underwater acoustics.

Keysight Technologies, Inc. recommends this course for first-time users of the 89600 Vector Signal Analyzer.

What you will learn

- Fundamentals of sampling, signal processing, analog and digital demodulation, and time capture
- Proper instrument set up for measurement of a variety of signals of interest
- Configuration of the VSA using different front-end hardware
- Measurement of I-Q modulation formats used in a wide variety of digital communications systems

Specifications

Course Type

User/Technology Training

Audience

Engineers and technicians who need to use the Keysight 89600 series of Vector Signal Analyzers and can benefit from instruction on the technology and measurement fundamentals

Prerequisites

Basics of electronics engineering and measurements

Course Length

2 days

Course Format

Lecture and hands-on labs

Delivery Method

Classroom training that may be scheduled at Keysight locations or, to save you time and travel, delivered at your site. Keysight can provide the required equipment, or you can save money by furnishing your own

Detailed Course Agenda

Introduction to VSA

- Concepts of vector signal analysis and comparison to traditional analyzer types, with examples.
- Vector signal analyzer block diagram and signal processing sequence
- Sampled data tutorial including sampling, Fourier transform, and other processing parameters.

User interface tutorial and operation basics

- Overview of menu and features
- Special display features that facilitate analysis
- Measurement setup sequence
- Advanced display types including spectrogram
- Time-gated spectrum
- Frequency/time relationships
- Measurement triggering
- Selection of averaging type
- Time capture recording and playback
- Post processing techniques
- Use of the arbitrary waveform source
- Control feature

Analog Demodulation

- Modulation concepts: AM, FM, and PM
- Vector signal analyzer analog demodulation in Digital Signal Processing (DSP)
- Phase demodulation and phase noise measurements Digital

Demodulation

- Digital modulation concepts and overview
- Modulation formats: nPSK, QPSK, DQPSK, QAM, MSK, FSK
- Filtering and filter types
- Measurement types: I-Q, frequency, and time domain
- Displays: vector/constellation diagrams, EVM, magnitude/phase error, eye and trellis diagrams, demodulated data tables
- Analysis tools and modulation quality analysis, including the Adaptive Equalizer