

Keysight Technologies

Advanced Design System Layout

Course Numbers

Keysight Training Center: N3212A

Onsite Training Center: N3212B

Course overview

Keysight Technologies, Inc. offers a medium-paced, 2-day course that provides students with detailed knowledge and skills for using the ADS layout tool. The user interface and practical techniques are the focus, as applied for RF Board and IC design.

Topics will include:

- Overview of layout
- General drawing techniques
- Layer file structure
- Connectivity
- Synchronization
- Layout verification
- Preferences
- Libraries
- Variables
- Parametric sub-networks
- Custom artwork
- Libraries
- Import and export of files
- RF board design flow

What you will learn

- How to generate layouts using a combination of drawing techniques and pre-drawn library components.
- How to generate footprints for your own libraries.
- How to create component artwork with and without pins.
- How to create parametric artwork, symbols, and attach models for simulation.
- Many more details about ADS Layout.

Specifications

Course type

User Application Training

Audience

Technical staff working in an RF Board or IC design environment, especially designers or layout specialists who want a working knowledge of ADS layout and a set of skills they can apply to their own design work.

Prerequisites

- Windows operating system and PC experience.
- RECOMMENDED but not required: ADS Fundamentals (N3211A/B/W).

Course length

2 days

Course format

This course combines lecture presentations with instructor guided hands-on sessions.

Delivery method

Scheduled (at Keysight training locations), or dedicated (at customer site).

Detailed Course Agenda

DAY ONE

Topic 1 (Optional):

ADS for new users –

This topic is only for new users who need to use ADS layout but who have no working knowledge of ADS. Students who have completed ADS Fundamentals or who know how to use ADS may skip this topic. This topic shows the basic use model of ADS for simulation and layout.

Topic 2:

Layout basics –

This section focuses on all the basic skills required to use ADS layout successfully. The topics include the layout window icons and commands, layers, hot-keys, technology files, preferences, primitives, snapping, drawing, grid resolution, coordinate entry, editing, merging and Boolean operations, and many more operations.

Topic 3:

Interconnect design –

This topic introduces Design Kits (PDK) and also covers traces, paths, entry modes, wires, routing, transmission lines, vias, and many other drawing and layout entry methods.

Topic 4:

Design synchronization –

In this section, the details of synchronization between layout and schematic are covered. This includes such things as pins, placement, options, trace sub-circuits, and symbols. A coupled line filter is used in the lab to demonstrate many of these concepts.

Topic 5:

RF board design –

A low-noise amplifier layout is designed using a PDK (process design kit) and a custom layer file. The project is supplied and the lab is used to complete the process. Vias, substrates, and the creation of a layout component are all covered, including a simulation with the circuit simulator using results from ADS Momentum.

DAY TWO

Topic 6:

Connectivity and the DRC –

Two separate topics are covered here. Conductivity focuses on the layer binding, physical and nodal connections, and ports that become different types of pins for connection purposes. The Design Rule Checker (DRC) is introduced to check the spacing and width of a layout.

Topic 7:

Import and export –

The types of files covered are DXF, Gerber, IGS, and GDS. All the options are discussed and the lab focuses on both Gerber and GSDII.

Topic 8:

Artwork and libraries –

This section teaches how to draw fixed artwork packages, models for the artwork, creating a custom library, and using built-in ADS parameterized artwork.

Topic 9:

AEL artwork macros –

An introduction to the ADS programming language AEL (Application Extension Language) is presented. Basic constructs are covered for using AEL to create artwork macros.

Topic 10:

Variables and parameterized sub-networks –

This final section covers the use of variables for parametric sub-networks, layout hierarchy, and other details.

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