

Active Circuit Simulation

Technical Data

Course Overview

This 3-day course is an in-depth task-oriented course in using the circuit simulation features of the HP Microwave and RF Design Systems in the design of active circuits.

It uses the design and simulation of a low-noise amplifier, a mixer, and

a simple oscillator as case studies in the application of HP's powerful circuit simulation features.

In following these designs through every aspect of the simulation process, you acquire skill and confidence in using the HP EEsof Microwave and RF Design System software to solve your own toughest design problems.

Course Features

- Linear and harmonic balance simulation for
 - amplifiers
 - mixers
 - oscillators
- Small- and large-signal S-parameters.
- Linear and nonlinear noise.
- Advanced post-processing.

Learn How To:

• use the full resources of MDS harmonic balance simulation to analyze amplifiers, mixers, and oscillators

- choose and examine the characteristics of active devices for use in circuit designs
- present and select details from multi-dimensional simulation data
- use MDS post-processing and equations as analytical design tools
- use stability, noise, and gain circles to create effective matching networks
- sweep power in mixer simulations, to characterize conversion gain and gain compression
- calculate mixer TOI and noise figure
- use MDS in oscillator design and characterization

Specifications

Course Length 3 days

Audience High-frequency circuit and system designers and engineers.

Prerequisites MDS User Training 85150B+24D or equivalent experience with the software.

Delivery Method Classroom, Dedicated.

Format

Course is about 50% lecture and 50% guided, hands-on lab exercises. HP Education Services: Your Key to Higher Productivity

Classroom Training Benefits

Experienced HP Instructors Learn from an experienced HP instructor who is an expert in using HP EEsof simulation and design software to meet real-world design challenges.

Available at HP Classrooms or Your Site

Take advantage of HP's learning facilities, equipment, and interactive learning environment by attending class at an HP facility. Or, save travel expenses and time by organizing an on-site class at your location.

Regularly Scheduled Classes Plan training months in advance.

Extensive Hands-on Practice

HP classroom training is characterized by extensive hands-on experience and interactive class discussion.

HP classroom training pays off immediately because it is geared to real-world solutions.

Comprehensive Student Materials

Copies of course materials are provided for future reference on the job.

Course Number: 85151A+24D (Scheduled) 85151A+24A (Dedicated)

Active Circuit Simulation (85151A+24D)

Agenda

Using MDS for Small-Signal High-Frequency Amplifier Design

- · Bias and stability
- Low Noise and noise/gain/stability circles
- Simultaneous conjugate match
- Optimization for stability Using MDS to Characterize High-Frequency Large-Signal Amplifiers
- Harmonic balance analysis
- Gain compression, third-order intercept, saturated power
- Large-signal noise figure and dynamic range
- Efficiency and large-signal load line
- Large-signal load mapping and load pull
 Using MDS to Characterize High-Frequency Mixers
- Multi-tone harmonic balance
- Small-signal mixer mode
- Conversion gain/loss
- Third-order intercept
- Noise figure, bandwidth, and spur-free dynamic range
- Feed-through and isolation
- Additional receiver/transmitter topics

Using MDS to Simulate High-Frequency Oscillators

- Linear S-parameter and loop gain techniques
- Large-signal graphical techniques in MDS
- Harmonic balance oscillator mode
- Phase noise

Ordering Information

To order the MDS Active Circuit Simulation (85151A+24D) in the U.S. call 1-800-HPCLASS (800-472-5277).

HP's Customer Registration Center can provide you with price, scheduling, and enrollment information about dedicated class delivery (85151A+24A) or customizing a class to meet your specific needs.

Outside the U.S., contact your nearest local HP sales office.

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