

# E-Learning: Harmonic Balance Overview

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This five-part video explains how to set up and work with harmonic balance (HB) in Microwave Office circuit design software for nonlinear circuits.

- Part 1 - explains why HB is needed, what it does and how to set it up using a power amplifier example. Topics covered include harmonics and subcircuits.
- Part 2 - covers how to make measurements in HB. The second harmonic balance simulator within the software, the APLAC simulator, is introduced. You'll learn how to find harmonics and how to use the four common nonlinear measurements: PAE, PT, PHARM, and LSS nonlinear S-parameters.
- Part 3 - provides an example showing how to set up IP2 two tones in a power amplifier situation. The intermodulation distortion measurement is shown.
- Part 4 - covers two settings that are needed in order to run HB: fundamental frequency and number of harmonics. You'll learn where to set the fundamental frequency and what the options are, as well as how to set the number of harmonics. Sweeping over input power is also discussed.
- Part 5 - shows you how the software's built-in IP3 measurement works and how to set up harmonic balance for a mixer design.

The entire video is approximately 1 hour in length.

This video appears in the E-Learning table of contents as:

New users and/or Core Curriculum - Harmonic Balance.