OVERVIEW

AWR Connected™ for AMPSA provides synthesis solutions for impedance-matching networks and RF and microwave amplifiers. While AMPSA offers unmatched synthesis and design software for state-of-the-art, first-time-right RF and microwave amplifiers, the combination of AMPSA within AWR’s Microwave Office® design flow offers unparalleled capabilities to the amplifier designer.

Integrating directly with Microwave Office circuit design software, high-frequency circuit designers can get a jumpstart on design by first leveraging the AMPSA synthesis tool environments of Impedance-Matching Wizard (IMW) and Amplifier Design Wizard (ADW).

With AWR Connected for AMPSA, migrating from synthesis through to linear, nonlinear harmonic balance and electromagnetic (EM) simulation of amplifiers and related matching networks is straightforward and powerful.

FEATURES AT A GLANCE

- Synthesis and optimization of small-signal, low-noise, high dynamic range, linear power, high-efficiency, Doherty and multi-octave band amplifiers
- Real-frequency transformation-Q synthesis for reactive (lossless) matching networks
- Power parameters analysis
- Synthesis of frequency selective resistive networks
- Real-world networks synthesis
  - Physically realizable impedances
  - Automatic compensation of discontinuities
  - Full lumped component models
- Ready export to AWR Microwave Office
HOW IT WORKS

AMPSA's ADW is a novel approach for amplifier design. It starts with synthesis within ADW and ends with detailed simulation, tuning, and optimization with Microwave Office microwave/RF circuit simulation design environment. Within ADW, the designer begins by identifying key parameters to the amplifier's desired performance and then the designer guides the software systematically search through various solutions, optimizes them, and offers up a tableau of potential solutions.

As accuracy is an important factor in a synthesis tool, especially at higher frequencies, detailed models for parallel-plate capacitors, bond wires, solenoidal coils, hair-pin inductors, square spiral inductors, overlay capacitors, surface-mount resistors, capacitors and inductors, flip-chip resistors, etc. are, therefore, provided in the ADW. Many features are also implemented to allow components, as well as sub-circuits (like the individual matching networks) to be exported with minimal effort to EM simulation programs, like AWR's AXIEM®, in order to ensure and verify accurate modeling.

From here, the user can then select one (or more) solutions to export to Microwave Office software for a more complete simulation and optimization study, as well as yield/tolerance analysis and optimization, prior to prototyping and/or manufacturing. Because of the specialized structure and the powerful real-world synthesis, analysis, optimization, and artwork features implemented in the software, design cycles with the ADW are reduced to a fraction of the time previously required. The circuits designed are typically more robust (less sensitive) than those designed with other tools. This derives in part from the synthesis-based systematic searches implemented to ensure that the solution to each matching and modification problem is close to optimum.

Note: For matching network to include resistors, ADW is required. IMW is not sufficient.

ABOUT AMPSA

AMPSA offers unmatched design software for state-of-the-art first-time-right high dynamic range RF and microwave amplifiers at affordable prices. AMPSA's Amplifier Design Wizard (ADW) and Impedance Matching Wizard (IMW) software products enable designers of small-signal, low-noise, high dynamic range, power and high-efficiency amplifiers to get a jumpstart on their circuit designs by synthesizing with AMPSA before exporting them to popular circuit design software programs for further analysis, optimization, and tuning.