Automated broad and narrow band impedance matching for RF and microwave circuits

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Abstrak

This book presents a seamless and unified scheme for automating very complicated calculations required to design, evaluate performance characteristics of, and implement broadband and narrow band impedance matching sub-circuits. The results of these automated calculations (the component values of the impedance matching sub-circuit) are formatted as text SPICE(Simulation Program with Integrated Circuit Emphasis) input netlists. Readers then immediately can use any available SPICE simulator to measure the performance characteristics (DC response, transient response, frequency response, RMS power transferred from source to load, reflection coefficient insertion and transmission loss, ans standing wave ratio – SWR). The text SPICE netlist can be edited easily to fine-tune the performance characteristics, and perform design space exploration and “what-if” type of analyses.

- Presents details of a coherent, logical and seamless scheme to design and measure the performance characteristics of both broad and narrow band impedance matching sub-circuits;
- Relieves the designer from having to manually do complex, multi-step(therefore error-prone and time-consuming) calculations, especially those related to broadband impedance matching sub-circuit design;
- Provides SPICE input netlists, which enable readers to use any available SPICE simulator to estimate the performance characteristics.