

## **EMI: Theory, Coupling Mechanisms, Equivalent Circuits, and Solutions**

This seminar is intended as a comprehensive introduction for engineers wishing to obtain a fundamental understanding of EMI issues, and experienced engineers with a desire for a thorough understanding of electromagnetic interference (EMI) issues.

This seminar introduces the concept of electromagnetic energy coupling between electronic circuits. The fundamentals of EMI are presented including terminology, energy transfer mechanisms, equivalent circuits, and EMI circuit fixes. The seminar provides several examples of how one electronic circuit has the ability to corrupt or damage a different circuit. The characteristics and electrical symptoms of the four methods of EMI energy transfer are presented: Common impedance coupling, magnetic field coupling, electric field coupling, and radiation coupling. Simple methods for approximating the equivalent circuit, and low cost solutions at the board or component level are provided. PWB layout and IC decoupling procedures are derived from fundamental EMI concepts. Several videotaped experiments demonstrate fundamental EMI coupling techniques and electrical fixes.