



# EMC Analysis Methods and Computational Models

By *Frederick M. Tesche, Michel Ianoz, Torbjörn Karlsson*

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Describes and illustrates various modeling techniques which are applicable to the area of EMC and includes material previously available only in international reports or other hard-to-obtain references. Electromagnetic topology, lumped-parameter circuit models, the radiation process, scalar diffraction theory for apertures, transmission line modeling, and models for shielding are among the topics discussed. The accompanying disk contains four programs based on the models developed in the text and can be used to calculate diverse transmission line responses.

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## **Editorial Review**

### **From the Publisher**

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### **From the Back Cover**

A comprehensive reference on state-of-the-art EMC modeling.

The problems of electromagnetic interference are as old as radio wave communication. Only recently, however, has progress in numerical computation permitted the creation of models that help explain the physical phenomena of EM interference and predict and mitigate their effects. These models also invite an approach to solving EMC problems that furthers an understanding of underlying principles. *EMC Analysis Methods and Computational Models* provides detailed descriptions of the formulation, development, analysis, and use of EMC models.

Departing from the rules-of-thumb approach for predicting electromagnetic interference, this book covers every step in the development of computational models--from the electromagnetic topology of the system to the development of coupling, penetration, and propagation models that describe the behavior of energy within the system. Supported by numerous illustrations, it

- \* Covers circuit theory, low-frequency coupling, discrete source radiation, transmission line propagation, EM field penetration through apertures, diffusion, and shielding.
- \* Discusses the approximations necessary in model development and contrasts approximate models with more rigorous models.
- \* Includes exercises that elaborate the theory behind the models and indicate practical applications.
- \* Provides computer programs based on models developed in the text.

For practicing engineers, researchers, and graduate students, this book broadens the base of knowledge about the principles of EMC and lays the foundation for future research in the field.

### **About the Author**

Frederick M. Tesche, PhD, is an EMC consultant to both government and industry in the areas of applied electromagnetics and computer techniques.

Michel V. Ianoz, PhD, is a professor in EMC and high-voltage techniques at the Swiss Federal Institute of Technology at Lausanne.

Torbjörn Karlsson, PhD, is chief scientist at Emicon, an electromagnetics consulting company he cofounded.

## **Users Review**

### **From reader reviews:**

**Eric Overbay:**

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**Lydia Baum:**

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