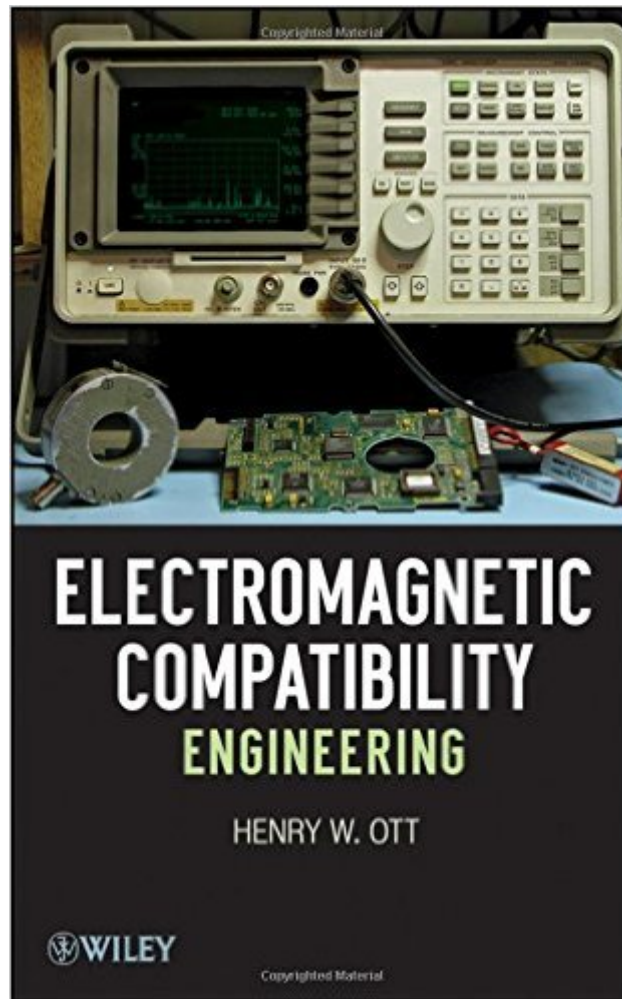


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# Electromagnetic Compatibility Engineering



## Synopsis

Praise for Noise Reduction Techniques IN electronic systems "Henry Ott has literally 'written the book' on the subject of EMC. . . . He not only knows the subject, but has the rare ability to communicate that knowledge to others." â "EE Times Electromagnetic Compatibility Engineering is a completely revised, expanded, and updated version of Henry Ott's popular book Noise Reduction Techniques in Electronic Systems. It reflects the most recent developments in the field of electromagnetic compatibility (EMC) and noise reduction and their practical applications to the design of analog and digital circuits in computer, home entertainment, medical, telecom, industrial process control, and automotive equipment, as well as military and aerospace systems. While maintaining and updating the core information such as cabling, grounding, filtering, shielding, digital circuit grounding and layout, and ESD that made the previous book such a wide success, this new book includes additional coverage of: Equipment/systems grounding Switching power supplies and variable-speed motor drives Digital circuit power distribution and decoupling PCB layout and stack-up Mixed-signal PCB layout RF and transient immunity Power line disturbances Precompliance EMC measurements New appendices on dipole antennae, the theory of partial inductance, and the ten most common EMC problems The concepts presented are applicable to analog and digital circuits operating from below audio frequencies to those in the GHz range. Throughout the book, an emphasis is placed on cost-effective EMC designs, with the amount and complexity of mathematics kept to the strictest minimum. Complemented with over 250 problems with answers, Electromagnetic Compatibility Engineering equips readers with the knowledge needed to design electronic equipment that is compatible with the electromagnetic environment and compliant with national and international EMC regulations. It is an essential resource for practicing engineers who face EMC and regulatory compliance issues and an ideal textbook for EE courses at the advanced undergraduate and graduate levels.

## Book Information

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## Customer Reviews

Introduction and Summary - Henry Ott has been a well-known expert and consultant in electromagnetic compatibility (EMC) for a number of years during his career with AT&T Bell Labs, and as a full-time consultant since leaving Bell Labs. His first book, Noise Reduction Techniques in Electronic Systems, was written in 1977 and a revised second edition was published in 1988. While the basic information in the second edition remains much the same, technology has marched on dramatically, rendering some of the concepts and solutions somewhat antiquated. So, it was with great interest, that I learned of Ott's most recent book, Electromagnetic Compatibility Engineering (2009), which was a complete rewrite and now twice as thick, with 843 pages (ISBN 978-0-470-18930-6, \$96.00 through .com). There are now 18 chapters with six appendices - nine of which, have been completely rewritten. Both analog, digital and mixed-signal circuit design principles are covered, as well as frequencies from audio through GHz. Ott strives to balance the theory with practical applications gleaned from his years as a consultant. The theory is explained so it's easily understood by product design engineers. Solved problems are included, so as to make this text appropriate for upper-level college courses. After reading his text, I come away very impressed with the content. This is a book addressed to the working product designer - not for those trying to learn the theory. For that, I would suggest Clayton Paul's book, Introduction to Electromagnetic Compatibility (2nd. edition), or several other like texts. However, Ott includes just enough theory to help explain the basic concepts.

As other reviewers have said, this is a great reference for EMC issues, and I wholeheartedly agree. As an analog engineer, though, I find it extremely valuable for analog design, too. It's not surprising that so many respected analog designers refer to Henry Ott's work. Anyone involved in the design of mixed-signal (analog and digital) printed circuit boards will find a goldmine of information in the chapter covering this topic (Chapter 17: Mixed-Signal PCB Layout). The rationale for using or not using split ground planes is clearly explained, and it is likely that many designers, including this reviewer, have been doing it improperly and creating noisier PCBs that result in noisier analog

signals. More often than not, it is better not to split the ground plane, but parts placement is the key. This chapter alone is worth the price of the book. Chapter 4: Balancing and Filtering thoroughly covers the topic of balanced circuits and includes the entire signal chain: the driver, the cable, and the receiver (both transformer-input and op-amp-input based). Anyone working with low-level analog signals (audio engineers, instrumentation engineers) will find this chapter very valuable. Also of great value is the chapter on cabling (Ch. 2). It clearly explains how and under what circumstances cable shielding works to guard against electric and magnetic interference, and the differences between coaxial cable and twisted pair connections.

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