If you design circuits but find controlling radiated emissions puzzling, then this near-classic book, now in its third edition, is for you. Having recently reviewed a book that clearly needs editing, I found this book refreshing. You can tell just from the credits that this book has been thoroughly edited and reviewed before publication.

In *Controlling Radiated Emissions by Design* the author and contributors do a fine job of explaining the reasons why radiated emissions occur, both in theory and in practice, then use lots of visual examples to show how to minimize or eliminate problems. While the purpose of this book is to help your product pass emissions requirements, you'll learn enough to do more than just pass and produce robust designs.

The book isn't an exercise in electromagnetic theory nor Maxwell's equations; it uses just enough math to explain how to quantify emissions but not so much to slow you down. If you can handle square roots and basic trigonometry, then you have enough of a math background.
If you understand the concepts behind why emissions occur—common-mode currents and circuit loops—you can jump to chapter 3 but if you need a refresher, then do read the first two chapters.

The book is rich in drawings, tables, and diagrams. Some are clearly from earlier editions, looking hand drawn, but are still relevant. A few are a bit fuzzy and perhaps should have been redrawn for this edition. The drawing below is typical of those in this book. You'll appreciate the "bad, good, better, best" style showing what not to do, then what to do. Knowing what not to do is just as important as knowing the right way.

Graphics such as this compare design techniques, showing how to and how not to connect components.

In one particular example, you'll see the differences in how products are designed as opposed to how they're built. It's the kind of real-world insight you get from this book. Figure 8.12 shows you the differences between an engineering schematic for a power-supply filter and what was actually built. Then, a third schematic shows electrically what the circuit was doing. It shows stray capacitance across the filter, which lets energy pass though, plus series inductance on the return, which can lead to unwanted common-mode currents and thus emissions. Another example highlights radiating antennas within an system—there are more than you might think.

Not only does this book deliver useful graphics, but it provides solid examples as well. Example 9.1
on page 201 walks you through how to calculate the field strength for a poor cable-shield connection, basically a "pigtail." Then, it ties the calculation from an equation given in chapter 2 to FCC and CISPR limits so you can see the relevance. Finally, the example shows how using a different shield termination brings the emissions to within limits, with 6 dB to spare.

You'll also get tips on what to do about components that can become major EMI sources: displays, motors, printer heads, lasers, and so on. But, here's a tip I had not seen before, "When an equipment incorporates such devices, it is recommended that the designer obtain from the vendor a radiated field profile of the product." Tips like this one can save the day.

It's abundantly clear that the author and contributors have years of practical engineering experience. You can see it in the way they present problems and solutions, even pointing out solutions that aren't so good. If you're a designer but not an EMC specialist, this book will help you get your job done and get products out the door. Keep in mind, though, that this book covers radiated emissions only. There are many other forms of EMC such as conducted emissions, immunity, ESD, power-line disturbances, and so on that you can't neglect.

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— Martin Rowe, Senior Technical Editor