

DESIGN NOTES

Reader Feedback and More

A few mistakes crept into the March issue of our magazine, which were found by some of our observant readers.

March Design Notes Errors

Editor:

I was scanning the March issue today and was impressed by the variety of interesting topics. When I got to the Design Notes on the last page, I found a couple of things that didn't look 100 percent correct.

First, the relationship between f , the frequency in Hz and ω , the angular frequency in radians/sec should be shown as $\omega = 2\pi f$.

Second, the relationship between sine and cosine is properly stated as 90 degrees of phase shift, but this is $\pi/2$ radians, not π radians.

Thanks for putting out such an informative publication.

Arnold Feineman

Editor:

In the Design Notes column (page 64) in the March 2007 issue, I note that the relationship between Hz and rad/sec is incorrect. I also wonder about the purpose of an article that states basic trig relations that most of us are already aware of, or could find if necessary in a math text.

In general, however, I enjoy your magazine.

Elvin Stepp
University of Cincinnati

Both gentlemen are correct that we managed to get the relationship between f and ω wrong, and stated that 90 degrees was π instead of $\pi/2$. We editors hate it when we transcribe something incorrectly, then fail to see it while proofreading!

In response to Mr. Stepp's comment about the relative simplicity of last month's Design Notes, we agree in part—most of us know the basic formulas that were presented. However, we also know that new and old engineers alike occasionally need reminders of the most fundamental concepts. For example, it's easy to plug numbers into a computer program without considering the nature of the computation that is being performed.

In future issues, we will periodically revisit other fundamental high frequency concepts, as well as current (and developing) techniques and applications

—Ed.

Erratum: HF RFID Article

In the March 2007 issue, the article, "Spatially Selective Antenna for Very Close Proximity HF RFID Applications—Part 2" has the following error: Equation (14) was printed incorrectly and should be:

$$B = \frac{\mu_0 N I y}{4\pi(y^2 + z_0^2)} \left(\frac{x+L}{\sqrt{(x+L)^2 + (y^2 + z_0^2)}} - \frac{x-L}{\sqrt{(x-L)^2 + (y^2 + z_0^2)}} \right)$$

Our apologies to author Boris Tsirlin for the mistake. The correct equation is included in the archived version of the article at www.highfrequencyelectronics.com.

Small Antenna Feedback

I enjoyed your story in *High Frequency Electronics* on electrically small antennas. One of the limitations of the book referenced is that NEC-2 is used. Unfortunately, NEC-2 has serious errors when the expansion segments are small in wavelength, and this is of course the case with all electrically small antennas.

Two other important items were not mentioned. First is the magnification of matching circuit loss when a large VSWR is to be matched. Second is the relatively new and very promising area of non-Foster matching. Here active circuits are used to provide a much better impedance match over a bandwidth. This technique has been very successfully used in Army applications.

Robert C. Hansen
R. C. Hansen, Inc.

We appreciate Dr. Hansen's suggestions for additional information on this subject.

The comment about NEC-2 is generally correct, but if care is taken in model construction by an experienced user, NEC-2 can accurately model some of the common electrically small structures.

Next, excess loss due to high VSWR is certainly a legitimate consideration, but we didn't extend the discussion that far in this tutorial-level article. We felt it was sufficient simply to establish that matching losses can be large for a number of reasons.

Finally, non-Foster active matching is well beyond the scope of a tutorial, and we would appreciate having an article on that subject! In particular, we'd like to see data on the performance of active matching networks versus operating frequency and transmitter output power.

—Ed.