# DESIGN NOTES

## Reader Feedback...

### Old and New RF Topics

I've enjoyed reading your writings these many-many years ... so, with WiMax, ZigBee, Mobile TV, RFID, pervasive GPS and electronic warfare exploding (sorry for the pun) it was with sadness that I read that you had little exciting to write your editorial about—Gary, we need you to be telling us we are part of a scientific happening early in this century and not just fooling with radio. Computers are fine but it is RF that is hot! Hey, Dr. S. Gupta said on TV the other day that he wouldn't use a cell phone without an earpiece! RF may help win a war! All of us might become walking broadband generators of OFDM data! You might be able to watch the Yankees lose on your cell phone! Pull out of it—tell us what's happening next and what may threaten us. People will come.

*Robert M Unetich*
*GigaHertz LLC*

*Thanks, Bob! Of course, there's no lack of things to write about—just had no urgent feelings on a single topic when I sat down to write. Don't worry, I'll find plenty of fun stuff for future issues!—Gary*

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### CFLs, Mercury and EMI

I was very interested in your editorial about the CFLs in the June issue of *HFE*. I have a few reasons not to buy CFLs at all.

First, the efficiency claims of CFLs are somewhat exaggerated, while its true that the CFLs are somewhere around 2 to 3 times as efficient as incandescent bulbs they are still only about 9% efficient light sources, not significant enough to impress me. If you live in an area that needs heat in the winter like most of us do, then the heat generated by incandescent bulbs is not wasted.

Second, the power factor of CFLs is awful especially compared to the incandescent bulbs which are 100%. The CFLs draw line current as narrow spikes similar to capacitor input power supplies but much much worse. This spike causes poor power factor and lots of EMI. It's not the internal switching power supplies that are making the noise, its the narrow spike of input current which has, all by itself, harmonics into the MHz range.

Third, the mercury. We were told by environmentalists that we could not have mercury in our batteries and that no amount was safe...

Fourth, four foot tubes are preferred and actually work. I've tested these and they have near 100% power factor and very little EMI.

If CFLs were simply offered for sale I wouldn't care, but now I found out that there is a federal law scheduling a ban on incandescent bulbs and forcing me to use CFLs instead. ... There are a wide variety of legitimate uses for incandescent bulbs. For now, I'm stockpiling.

*J. Arthur Smith*
*JAS Circit Engineering*

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Your comments concerning potential interference issues caused by CFLs are right on the money. I've deployed them extensively throughout my house in order to save energy. Since their power consumption is minimal (only 15W per bulb), there are locations where I leave the CFLs on all the time.

I also use a power line-based system to remotely control lighting and various appliances. I've noticed that when various CFLs age (but well within their useful life span), operation of the remote control system becomes sporadic, or, in an extreme case stops. Until I originally diagnosed and fixed the problem, I came close to replacing the master controller for the remote system—would have been a bit costly!

When I inventory the number of wireless systems I've deployed—lighting/appliance remote control, alarm system, wireless headphones, several different portable telephone, garage door opener, etc.—I'm approaching an electromagnetic jungle. These all have to function without mutual interference! And... there are more wireless appliances already budgeted to add to this mix.

*Richard L. Abrahams*
*Harris GCSD*

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### Science and Math Education

Perhaps it was easy to be enthusiastic about science and technology several decades ago because of the space program. The media made the public much better-acquainted with the sci-tech community, and the latter enjoyed the popular support and funding which made it all happen. For the future, we need to begin science education at the elementary school level, expand it through middle school and experience the science fairs in high school.

Two goals: (1) much greater public awareness and appreciation of science-technology leading to, (2) greatly increased expansion and funding of science-technology in the national interest. It is imperative!

*Jim Olsen*

*Note: Comments published in* High Frequency Electronics *may be edited for length or clarity.—Editor*