

R A Q ' s

Rarely Asked Questions

Strange but true stories from the call logs of Analog Devices

Radio Frequency Interference (or how to get a free lunch at a very good restaurant)

Q. *I've heard that RF can make low-frequency circuits do strange things. What's that all about?*

A. I was once summoned to France because an Analog Devices VFC (Voltage-Frequency Converter), the AD654, was suffering from an "unacceptable variation of accuracy." I had measured the offending parts in my

own laboratory and found them to be well within specification and stable, but the customer could not reproduce my results, even with my test jig. He invited me to visit him and see his problem for myself.

Issoudun is a long way from my home in Midsomer Norton in SW England. But before I sent a polite refusal I noticed that it is home to La Cognette, a restaurant with three stars in the Guide Michelin, and a Maitre Cuisinier de France (a title not lightly bestowed) in the kitchen. A visit to this customer was obviously essential.

Two Hams, a Handy-Talky, & High Frequency

A fellow Radio Ham, Herman Gelbach of Boeing who was in England at the time, offered to come and help. He said it was the interesting technical problem, but just before he offered I saw him earnestly consulting the Guide Michelin.

Our trip to Issoudun involved six hours of driving, a six hour ferry crossing of the English Channel, and a change from the correct side to the right side of the road. As we approached the customer's laboratory we passed an enormous short-wave transmitting



antenna of Radio France International (also known as RFI!), and then another, and yet another. We began to guess what might be wrong, so I slipped a hand-portable two-metre ham transceiver (an

HT or "handy-talky") into my jacket pocket.

The AD654 was indeed behaving as unpredictably as claimed. Its output frequency varied by the equivalent of tens of mV of offset change over the space of a few minutes.

I quietly reached into my pocket and pressed the HT's transmit button. The output frequency jumped even more, demonstrating at least part of the problem to be high-frequency pickup. More-formal measurements showed that in the customer's laboratory the transmitters we had seen produced high-frequency (HF) field strengths of tens or hundreds of mV/m. Suitable RFI filtering cured the VFC problem and the grateful customer took us to La Cognette to celebrate.

**Read the full diagnosis
and a cure suggested
for this problem.**

Go to:

<http://rbi.ims.ca/5696-100>



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