Subject: Re: Very interesting article/experiments
Posted by Wayne Parham on Fri, 26 Nov 2004 23:17:37 GMT
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I wrote to Sam just the other day and we exchanged a few E-Mails. I'll have to write to him again and point out that you were asking about him. Sam always advocated the Altec method of setting driver position by reverse-connecting and adjusting for the largest null. It's simple and effective.I was always quick to point out that this was a way of finding a configuration that minimized anomalous behavior, and that it was not exactly time alignment. But then again, that's the point. To speak of time alignment is kind of a misnomer in my opinion, but to find a configuration that reduces nulls through a particular range of frequencies at specific locations is the goal. One can either find it by calculation or measurement.First-order crossovers are very simple, and I agree with you that they're easy to make sound good, for the most part. The lower the frequency of crossover, the better they work. That's because at low frequencies, wavelengths are long and the two drivers being crossed can be fairly far apart and still act in unison through the wide overlap range.But as frequency goes up, the distances shrink and shrink to a point where it is impossible to prevent interference-related anomalies. After all, the crossover band of a first-order crossover is about four octaves wide, so the two drivers act like a two-element array through this region. Both speakers are playing and nulls form where drivers interact to create destructive interference. That causes dead spots, but ironically, if the interference is very great, then the nulls are so closely spaced that it seems like everything balances out.Just like everything else, there are pros and cons for each configuration. As for me, I like first-order networks for some things and higher-order for others. To me, a passive crossover at 200Hz is perfect for a first-order filter because wavelengths are large. A simple two-way loudspeaker is a good place to use one. I've even heard some compression horns that worked well with first-order filters, when used at low power. But in general, that's where I like to use a higher-order filter and to do what's necessary to implement it properly. To me, the benefits there are worth the effort.