Subject: Re: Hi-Efficiency vs Lo-Efficiency Speakers
Posted by Earl Geddes on Mon, 10 Jan 2005 16:31:56 GMT
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WayneMosty very perceptive. But one error, I think. I don't think that this statement: "The shorting ring reduces even-order harmonics." is true since the shorting ring will work on odd orders too."Measurements show a significant ~20dB reduction of 2nd harmonics." True but the higher order odd harmonics are also reduced. "I'm not sure what he levels of 4th, 6th, 8th, ...20th, etc. are. But it stands to reason that they are reduced too. " This is true.You have to understand that there is a big difference in the "order of the nonlinearity" and the "order of the Harmonic". Don't get the two confused. You can see a description of this difference in my book in the chapter on distortion.But I certainly agree, and my experince bears this out, that acoustical low pass schemes do result in a cleaner sounding system.Waveguides and horns tend to have more gain at low frequencies so they naturally decrease the presence of the electro-acoustically generated harmonics.Mechanical systems are inherently lower order systems when compared to electronics - although I have seen exceptions. This means that loudspeakers tend to not have objectionable nonlinear distortions at lower sound levels but can become quit objectionable at higher sound levels. Electronics tend to be just the opposite. They can have very high orders of nonlinearity and can be quite objectionable at lower levels and sound OK at higher levels. One should look for low nonlinearity in electronics at low levels and never use the speakers at levels where the become audibly problematic. Almost any loudspeaker - even very tiny speakers used in hearing aids, have insignificant nonlinearities at low output levels. And they all have some point at which they will start to sound bad. Keep below this point and IMO, nonlinear distortion is not an issue.