Subject: Comb Filtering Misconceptions
Posted by AudioFred on Fri, 02 Oct 2009 12:56:25 GMT
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In reading all the posts on this forum over the years I get the impression that comb filtering is a potentially serious issue with line arrays whose ctc driver spacing is too great. In his white paper on line arrays Jim Griffin describes the criteria for determining appropriate driver spacing to avoid the comb filter effect. These criteria are based on the simple laws of physics as they apply to sound, and these laws cannot be violated without consequences. This I do not dispute. What I do question is some of the assumptions about what you will actually perceive when comb filtering is present, and how seriously these perceptions will interfere with the illusion of reality. How does comb filtering sound, and how bad is it?

As the article in the link below indicates, comb filtering is a reality in all two channel reproduced sound, and moving either the microphone or one's head only a fraction of an inch can result in significant peaks and nulls at the higher frequencies. Our ears can clearly hear this, yet our brain tends to "filter" it out of our perception. No listener sits perfectly still in the sweet spot while listening, but even the most obsessive compulsive audiphiles don't complain about the comb filter effect on a high frequency sound when they move their head slightly.

http://forum.ecoustics.com/bbs/messages/34579/572305.html

This is especially important as it applies to line arrays. I have listened to Roger Russel's and the Audience full-range-driver line arrays and have deliberately moved up and down while seated in the sweet spot to determine whether I could hear comb filtering while ordinary music was playing. I could not. What I did hear, in spite of the equalization that's used with these speakers, is an attenuation of the very highest frequencies, resulting in a perception of less "sparkle" in the percussion sounds. This is especially true when the speakers aren't pointed directly toward the listener. However, with these equalized full range driver line arrays I heard no more hf attenuation than I hear with most single driver point source speakers using Fostex, Lowther, CSS, and other FR drivers.

So to me the important issue isn't whether a line arrays with too much ctc driver spacing will sound bad, it's really an issue of whether one is willing to sacrifice the "sparkle" of a tweeter array in return for the other benefits of a full-range-driver line array. This may be especially relevant for geezers like me who are medicare-qualified and who can't hear above about 15Khz anyway.