Subject: line arrays and finer detail?
Posted by Gene on Wed, 23 Aug 2006 01:36:30 GMT

I can understand why a line array produces less harmonic distortion due to each speaker driving way 1/("number of speakers") th of the possible distortion.However, why then is there more detail to the music? And isn't the detail often perceived as a bit of "brightness"? When we want to hear more detail we tend to turn up the treble.Gene

Subject: Re: line arrays and finer detail?
Posted by Jim Griffin on Wed, 23 Aug 2006 20:21:02 GMT

Gene,Let me try to help. Assume that we have a single driver that produces excelllent sound at low volume and that you are happy with the 'detail' that it produces. Now if you increase the volume, you'll reach a volume level (a specific SPL) at which the driver produces sound that is no longer pleasing to the ears. The distortion and such that you hear is usually because of a combination of exceeding the linear Xmax limits (mechanical distortion) and voice coil heating (thermal distortion). Next we'll design a line array that uses that same driver but now we have, say 10 or more of these drivers per side. We'll also assume that we have used a solid line array design plan so that comb lining and any array design effects don't influence our listening. You will notice that the sensitivity of the array is higher--more acoustical efficiency--so less input power (about one tenth the power in the case of 10 units) is needed to produce a given SPL level. Thus you can increase the signal level and hear cleaner sound as you have significantly less mechanical or thermal distortion effects. The drivers move less and less current is needed to create the sound. Thus the distortion SPL levels are raised so you will hear the same detail as before but at even higher SPL levels.In reality the ear is a complex hearing device so that simple thniking or assumptions don't hold but that is a subject of someone's acoustics text book now isn't it?Jim