Subject: Re: Positioning and subs
Posted by Wayne Parham on Wed, 07 Jan 2009 18:15:46 GMT
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I have always liked corner placement where possible. It sets the radiation angle at frequencies above the Schroeder frequency. If a sound source would radiate omnidirectionally otherwise,

horizontal pattern to 90°. It is one of the best ways to create a uniform reverberent field, because the boundaries define the pattern at relatively low frequencies, below what most horns are able to do on their own.Of course, corner placement is not always possible. I think probably most homes do not have ideal corners. Often times either they don't have two useful adjacent corners of if they do, they're too far apart. In that case, it makes sense to angle the speakers inward, just like cornerhorns, but you lose the corner loading. When you have the right room,

frequency as is possible. The walls essentially form a very large waveguide.One of the places where I differ with Earl Geddes is on this point. His position is that since room modes dominate the response below the Schroeder frequency, you cannot talk about directivity at those frequencies without considering the room. Of course, this is a true statement but it overlooks the fact that all rooms are different.Just like you usually design a speaker to be flat in an anechoic environment, I believe it makes sense to strive for uniform directivity in an anechoic environment.

facing into an open space, then directivity is uniform all the way down to cutoff. There are no room modes, so directivity is constant even at the lowest bass frequencies. Put the cornerhorns in a very large room, and the same is true, provided the Schroeder frequency is below cutoff. As the room is made smaller, the Schroeder frequency rises, so modes begin to form in the woofer's passband. That's when distributed bass sound sources become attractive.Certainly every home listening room is small enough to have its Schroeder frequency in the passband, usually in the upper bass to lower midrange. So it does make sense to consider the room when discussing energy distribution. But I do think it is important to consider it separately, because every room is different.The problem that happens when failing to do so, is one begins to think of everything as a modal source and then to eventually conclude that uniform amplitude response from individual units is unimportant. While this may be true in some sense, I am not at all confident that it is the best approach. I would rather have several well-behaved sources than several that aren't. Using the idea that averaging will work the kinks out is fine, but I'd rather not have peaky subwoofers to work with.I have always suggested that overdamped alignments be used, because those tend to conjugate the room. If a room is very well damped, its modes may not cause huge amplitude swings. If it is large, the modes may be very low in frequency. But an overdamped curve is always going to have a smooth rolloff that works well in most environments. It shifts gracefully when thermal effects start to come into play, rather than become peaky, it simple becomes less overdamped. I think this is a much better approach than to just assume the room dominates the response, so bass alignments don't matter.In the end, my conclusion is to make bass bins slightly overdamped and to make directivity as uniform as possible in the ideal anechoic environment. Then, you are certain of a good outcome when properly installed in any environment. The gradual rolloff from a slightly overdamped alignment works just fine in a large room or one that is well damped. It is also an appropriate alignment for use in multi-sub setups. Damp the modes as much as possible and add bass sound sources as required to smooth room modes. A couple subs are very useful for doing that, and give extension to below 20Hz in the bargain.