Subject: Re: Conical horn to the rescue!
Posted by Wayne Parham on Wed, 24 Dec 2003 15:12:28 GMT
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I agree with you about conical horns. They're simple and effective. Everything has strengths and weaknesses, but for the midbass up through the vocal range, I think this sort of horn is best.Midrange frequencies don't require large horns, so even if one needs to be slightly oversized, this isn't a problem. It helps reduce any peaking on the bottom end, and ensures directivity is maintained at low frequencies. A conical horn is easy to build, and offers excellent dispersion characteristics and low distortion. And the response curve is nice, especially if the horn is made large, baffle mounted or used in groups.Midbass horns require more space, but they are designed to be used in constrained space such as a corner, or they are designed to be used in groups. When such a horn must be used in freespace, it is generally expected that it be used in conjunction with others. So what we really are talking about are truncated horns. This essentially means that the cabinet and it's horn path form the throat, and that the mouth is actually formed by the environment. The expansion into the room is actually the mouth. Your room's corner becomes a part of the horn.When you think about it, the throat of an exponential or hyperbolic horn approximates a conical flare. And the further back towards the diaphragm you go, the more the horn's expansion resembles a conical flare. It looks almost like a straight pipe from the radiator, and then as the wavefront progresses further out the pipe, it begins to expand more and more as an exponential flare.So when you put a highly truncated horn into a corner, you're really using something that resembles a nearly straight conically flared pipe. The corner itself forms the rest of the flare. Of course, without this constrained space, the horn would become excessively peaky. But that's the nature of the truncated flare just as much as anything else.There are many ways to build a good system, but I think that taking advantage of this arrangement is one of the very best.