Subject: Re: Geat info guys, Thanks!
Posted by Duke on Wed, 05 Dec 2007 05:47:58 GMT
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Hi Norris,Let me come at this from a bit different angle that hopefully will address your questions along the way. A monopole speaker and a bipole speaker (in this example the bipole having the same kind of drivers as the monopole, but twice as many) will both have the same power response - that is, the same summed omnidirectional response. So at a great enough distance in a very large reverberant or semi-reverberant room, they'd sound the same.Nearfield, the monopole may have the baffle step and the bipole may have the wrap-around dip. Of the two, the baffle step is more audible. Nearfield the bipole will have a couple dB more bass which may or may not be a good thing (depending mainly on room acoustics). Since imho a bipole belongs out in the room a ways (where there's less boundary reinforcement) to allow a fairly long time delay for the reverberant energy bouncing off the back wall, this nearfield bass boost is often beneficial. I would not want to equalize away the increased lower midrange energy that the bipole has, as it is restoring the proper tonal balance that should have been there without the baffle step. I would not want a bipolar speaker equalized to sound like a monopole - might as well start out with a monopole. Note that some monopoles are equalized to compensate for the baffle step in the nearfield response - but the result is too much lower midrange and bass energy in the power response. In some cases it's a desirable tradeoff, but not always. And, note that with a wide speaker the baffle step is often inconsequential anyway.Now in normal home listening rooms, the listening distance is usually somewhere in between these two extremes - in between farfield where the power response is totally dominant, and nearfield where the on-axis response is totally dominant. In other words, for most of us they both matter. In my opinion the bipole is more likely to produce a reverberant field that has the same spectral balance as the first-arrival sound, first because the baffle step is avoided, and second because the rear-firing drivers help maintain correct upper frequency balance in the reverberant field. But there are monopoles that do a superb job in this respect. Wayne's 7 Pi corner horn is among the finest speakers ever made as far as matching up the spectral balance of the direct and reverberant energy. That's one of the reasons why it's such a relaxing speaker to listen to long-term.But the goal of a bipole isn't about frequency response - it's about producing a reverberant field that is hopefully more like what we experience at a live performance. In my opinion, getting the spectral balance of the reverberant field right is the first step but a bipole also produces a more densely energized, relatively late-arriving reverberant field than can normally be produced by monopole speakers in a home listening room. This more closely replicates the relative balance of direct and reverberant energy of a live performance (which I'll admit varies enormously). And the price is, we trade off some imaging precision and (in theory) some clarity (I say "in theory" because in a blind test I conducted, most listeners said the bipole had better clarity than the monopole - which puzzles me). There is also a tradeoff relationship between richness and clarity (including sound source localization) from one live performance venue to another (think small jazz club vs symphony hall)- this tradeoff is a general characteristic of psychoacoustics, and not one that's specific to loudspeakers. Just at no one performance venue "does it all", so too no one speaker "does it all".You are correct that the extra reverberant energy that's effecting imaging and ambience is in the midrange and treble region. In my opinion, if possible the arrival of this extra reverberant energy should be at least 10 milliseconds later than the first-arrival sound, which implies that bipoles and dipoles and such are more demanding of how they are setup in the room. Obviously there are other schools of thought that consider bipoles and their relatives (dipoles, omnis,

quasi-omnis, and such) as going off in the wrong direction (ah, no pun intended). Different speaker designers have differing ideas as to what constitutes "the wrong direction" - hence the huge variation in approaches to the seemingly simple task of converting an electrical signal into an acoustic one. Different types of speakers do a better job at capturing different aspects of a live performance, because in the real-world there are tradeoffs. The job of the marketing department (which is not constrained by something as trivial as reality) is to make you believe with their product there are no trade-offs, and that their design is the one and only that maximizes every aspect of performance. By way of example, some cars may be more elegant or innovative than others, but is there one car that maximizes every aspect of automotive perfomance? No - we pick the car whose set of attributes best fits our requirements (like zero down and low, low monthly payments). The process with loudspeakers is a fuzzy version of that - we have to figure out which attributes we most want and which ones we can live without, and then we have to decipher which loudspeaker(s) will meet our criteria. Dukeanother work in progress