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Subject: Re: Flat down to 100Hz on a 224Hz baffle ?

Posted by [Wayne Parham](#) on Sun, 12 Dec 2004 06:22:01 GMT

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Dipoles are more directional than monopoles, in that there is cancellation to the sides. See the illustration below, and click on it for animations of other sound sources. One that is not shown is a horn, which is a directional monopole. It is the most directional source, making a radiating beam. Dipole Radiation Notice that in the illustration above, the device is positioned so that it faces and radiates to the right and left. Notice cancellation at the top and bottom, off the sides of the baffle. Cancellation to the sides of the baffle reduces reflections from side, but there is as much energy behind the speaker as in front of it. So reflections from the rear are significant. You'll undoubtedly find that room placement is pretty critical. According to Linkwitz, you should expect to see rising response up to the frequency where the baffle becomes large enough that the speaker begins to act like a monopole. Response is then relatively flat, except at frequencies where distance around the baffle is  $X/2$  wavelengths ( $1/2$ ,  $3/2$ ,  $5/2$ , etc). At those frequencies, you'll find a sharp null. You'll also find similar nulls at frequencies where the distance between a reflector and the front or rear of the speaker is  $X/4$  wavelengths ( $1/4$ ,  $3/4$ ,  $5/4$ , etc). So there's a pretty complex set of interactions possible.

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