
Subject: Re: XO for OB 2-way

Posted by [Wayne Parham](#) on Fri, 28 May 2010 15:32:03 GMT

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It looks like a two-way speaker with direct radiating (open baffle) midwoofer, a helper woofer and CD horn tweeter.

If so, the crossover is very similar to what you would do for a box design. The dipole sets the pattern down low and through the lower mids but up higher - where you will want to crossover to match directivity with the horn - the pattern has collapsed beyond that set by the baffle (whether dipole or monopole). The only difference between monopole and dipole at this crossover frequency range is the dipole will have rear-facing output whereas the monopole will not. But the forward facing beamwidth will be the same as a monopole. So you can design the crossover similarly, I would think.

Seems to me the biggest difference will be what happens below the crossover frequency, EQ for the bottom end, etc. Since it appears to have two woofers, I'd low-pass the bottom one so it rolls off around ~200Hz. This will leave the upper one as the midwoofer, and it can be treated similarly to other DI-matched two-way designs. Some would call this a 2.5-way system.

Here's a thread with my design approach. It has a schematic that I hope might help, maybe use it as a starting point.

Crossover optimization for DI-matched two-way speakers
Here are a few more posts about the basic design philosophy of constant directivity:

Design philosophies

Phase angles, crossovers and baffle spacing

Baffle spacing, phase angles and time alignment, revisited

Matching directivity in the vertical and the horizontal planes

DI-matched two-way loudspeakers

Room gain, pressure region, modal region and reverberent region

Baffle Step

Imaging, placement and orientation

Corner Horn positioning "Sweet Spot" for listening

Making speakers "disappear"

Recommended toe in
