
Subject: Re: The ultimate array

Posted by [FredT](#) on Sun, 18 May 2008 15:42:30 GMT

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I believe the essential characteristics would be: 1) Premium quality drivers throughout, 2) Drivers in each array (W,M,T) are highly compatible with the drivers in complimentary driver arrays 3) Three-way design with a sealed midwoofer array, 4) Active digital X-over & signal processing with separate amplification for each driver array. Here's my rationale: 1) You can build a very good sounding line array using mid priced drivers, but those drivers individually are going to have some compromises that can't be completely overcome by using them in an array. The Dayton Classic midwoofers, for example, are very good "bang for the buck" drivers, but individually or in an array they are going to have more midrange distortion than similar size Aurisound ceramic cone or Seas Magnesium cone drivers. 2) One mistake I sometimes see in amateur speakers is the use of incompatible drivers. One of my rich Houston Audio Society friends recently asked me what I thought about building an array using an array of twelve very expensive 8" woofers alongside an array of Raven tweeters. Great drivers, but the Raven tweeters he was thinking about using won't play low enough to cross to the 8" woofers, even with a high slope electronic crossover. I suggested that (if he had that much money to spend on a line array) he should contact a qualified designer and commission that person to design a cost-no-object array for him from the ground up. 3) A three-way design with a sealed midwoofer array is a requirement for the ultimate array because a two-way design, even if it is ported, won't play low enough and still have state-of-the-art midrange. With a single midwoofer or an array of midwoofers there's a tradeoff between midrange clarity and bass extension. You can build a good sounding affordable two way array that will play into the low 40's, but the "ultimate array" would have separate subwoofers. And if you're designing the midwoofer array for use with a subwoofer you might as well make it a sealed design for better integration. For a more complete explanation of the bass extension limitations of an affordable two way design see Jim Salk's Audio Circle thread about "the \$2,000 challenge" <http://www.audiocircle.com/circles/index.php?topic=52247.04> 4) Digital signal processing and crossover are a good choice because even the high quality drivers you are using have some compromises at their frequency extremes, and DSP provides more control over those anomalies plus the elimination of the signal degradation and phase issues that are inherent in a passive crossover design. Separate amplification is a requirement of an active crossover, so that's a non-issue. That's about it. You could use a four-way design, especially if you wanted to make the speakers as expensive as possible, but I doubt the added complexity of a four way would improve the sound quality.
