Subject: Re: DSP for subwoofer(s)
Posted by Wayne Parham on Sat, 19 May 2018 17:41:59 GMT
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You're right - the main thing is number and placement of subs.

I understand that you want to use a DSP crossover because it gives you the ability to choose any crossover point and slope you want, so will be easy to set the requisite ~90Hz second-order low-pass slope for the flanking subs. That's a great idea.

As an aside, using DSP for subwoofer EQ is overkill. It's not bad at all, but will give less and less improvement in overall sound quality as the number of subs increases. And if using a small number of subs, EQ becomes more important, but then again, you can only EQ for one position. All other places in the room will suffer. I would argue that if you're going to use just one sub, it should be placed nearfield and the volume adjusted accordingly. You'd still have only one good spot in the room - right where the subwoofer is located - but EQ would be less necessary because you would be very close to the subwoofer.

Anyway, I digress. Back to the multisub approach:

Ideally what you want is a pair of flanking subs and a pair of distributed multisubs. The mains are run fullrange, or for really high-output requirements, the mains can be high-passed at the Helmholtz frequency to prevent overexcursion. That just removes the content that wouldn't be heard anyway. The flanking subs are low-passed around 90Hz to 100Hz, second-order. They are placed just beside, behind and below the mains. The distributed subs are placed at the opposite end of the room, and are low-passed around 50Hz to 60Hz, fourth-order.

After you've done that, you will have achieved at least 90% of the best you could accomplish. The main thing is the placement of the subs, the fact that they are distributed around the room. But if you want to try to get even closer to perfection, you can fine-tune the position and the EQ of the distributed multisubs. Focus on them one at a time. Start with the nearest sub, and after you've gotten the best response, go to the farthest sub. Be sure to measure at several locations when evaluating EQ. You're looking for overall smoothing, not just best response at one place.