Subject: Re: Pi Crossover Boards and Biamping
Posted by Wayne Parham on Tue, 02 Apr 2013 19:03:17 GMT
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If the input signal isn't band-limited, then the amplifier isn't band-limited. Not that it needs to be - If there's enough voltage and current capacity, then band-limiting is probably not all that important. But the fact remains, if we want to limit the passband, we have to do it at the input. Doing it on the output doesn't really do very much for the amp.

Bi-amping is attractive where the amplifiers are the limiting factors. But that's because biamping does both things: It essentially reduces the voltage requirements and the current requirements by way of reducing bandwidth. The voltage requirements are reduced because the treble isn't modulated by the bass, meaning peaks of one ride on peaks of the other, creating the need for 2x voltage on max-peaks. The current requirement is reduced for the same reason.

But if the full-band input signal is sent to each amplifier, then the voltage requirements remain high. The treble signals will still ride on top of the bass signals. If peaking occurs, it will chop the high-frequency content first. So while the woofer's low-pass would reduce distortion that resulted, the tweeter circuit would pass it right through. I can't see this being any more than marginally beneficial. Seems like kind of a hack.

When the input is left full-range, I see only two real configurations of value: Bridged and paralleled. For a current benefit, one could simply parallel the outputs. For a voltage benefit, one would bridge the outputs. These would give the benefits I think you're seeking using what I think is a cleaner system design. Or maybe one of these is essentially what you're talking about:

Bridged and Paralleled AmplifiersI do understand you said, "Some audio/video receivers can only really handle inefficient multi-way direct radiator or planar magnetic speakers effectively by employing this mode of operation." And I can appreciate that. But what that really means is the amp just cannot handle its load, and is exceeding voltage or current limits, or perhaps both. There are many ways to solve that, and while biamping is one of them, I would argue that if biamping isn't done by band-limiting the signal ahead of the amp, then all that's really been accomplished is an awkward from of paralleling.