
Subject: flanking subs with small mains

Posted by [dheflin44](#) on Fri, 22 Feb 2013 19:37:12 GMT

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Hi Wayne,

My current mains are fairly small (usable output only down to 60 Hz), so I've been searching for a way to blend in flanking subs while using my AVR's bass management to limit the main's extension below 80Hz. Please let me know if you think the general idea below is worth pursuing.

Since the AVR can't output overlapping sub and main outputs when bass management is used, I'd like to generate the overlap by using the line-level inputs on the flanking sub's plate amp to sum the L/R pre-out with the sub pre-out. The built-in low-pass filter in the plate amp could then be used to roll off the flanking subs above 100Hz as prescribed. To get the relative gains correct, the level of the overlapping upper range between the mains and flanking subs would be adjusted manually using measurements. The lower range of the subs (could be flanking and distant subs together) could then be set using Audyssey.

Thanks,
Darrell

Subject: Re: flanking subs with small mains

Posted by [Wayne Parham](#) on Fri, 22 Feb 2013 20:01:50 GMT

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Let me see if I understand you right. This is what I think you are saying:

1. When bass management is used, the sub output is low-passed and the mains are high-passed at the same frequency.
2. You are considering setting this frequency to 60Hz to 80Hz, but then the mains will be high-passed and the low-passed sub output has all channels summed.
3. You want to provide some sort of "Y" connection to provide both subwoofer and mains signal to each flanking sub, thereby providing both the channel-specific signal and the deep bass signal.

Have I interpreted this correctly?

If so, let me make an alternative suggestion. How about running helper woofers directly off the mains instead? Use a high-efficiency midwoofer in an appropriate cabinet connected directly to the main it is flanking through a 5mH to 10mH coil. You could even use a second woofer just like the one in the mains speaker. Something that has about the same sensitivity as the main speaker. This is a simple solution and will achieve the same result.

Flanking Subs vs Helper Woofers Run the LFE channel to a conventional subwoofer or to a few distributed subwoofers in a multisub arrangement:

Room modes, multisubs and flanking subs

Subject: Re: flanking subs with small mains
Posted by [dheflin44](#) on Fri, 22 Feb 2013 21:04:23 GMT
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Yes, that's pretty much what I had in mind. I assume you're suggesting running the mains full-range with the helper subs. I was trying to avoid running the mains too low since both my mains and AVR amp are fairly small, and I'm worried about compromising system headroom. If at all possible, I'd prefer to move all of the low bass to only the flanking subs while still getting the mid-bass blending with the mains.

Thanks,
Darrell

Subject: Re: flanking subs with small mains
Posted by [Wayne Parham](#) on Fri, 22 Feb 2013 21:25:48 GMT
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Keep in mind that the flanking sub / helper woofer approach does most of its thing between 80Hz and 200Hz. So if the mains can run to 80Hz, you can run helper woofers like I described and get as much benefit from them as flanking subs that are typically run deeper. Your sound processor can be configured to high-pass the mains (and the connected helper woofers) at 80Hz.

The only real distinction between what I would call flanking subs and helper woofers is low-frequency extension. Flanking subs are generally run as helper woofers but with deeper bass capability. They do the helper woofer part up high, mitigating the self-interference notches from nearest boundaries. Then down low they act as traditional subs, but of course only with whatever content is in the channel of the main speaker being flanked. This can assist the distributed subs in smoothing lower frequency room modes.

But in your case, I think you're saying you want to high-pass the mains around 80Hz. So I'd probably consider running helper woofers, and not expect deep bass from either the mains or the helper woofers. The helper woofers are still flanking the mains, smoothing the 80-200Hz range, but they're not subs. They're more like a 2.5-way speaker used from 80Hz up, where the second helper woofer is detached from the main cabinet, set a little bit beside, behind and below it.

Then run your LFE channel to a traditional subwoofer or an array of multisubs.

Subject: Re: flanking subs with small mains
Posted by [dheflin44](#) on Fri, 22 Feb 2013 22:06:06 GMT
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Instead of adding an LFE-only sub + helper subs, I'd rather use the flanking subs to serve both the low bass and blended mid-bass. In zheka's second post in the "Flanking Subs vs Helper Woofers"

thread, he commented that current HT processors don't provide a straight-forward way of steering the proper signals to the flanking subs while using bass management. I think the method I suggested in my original post may be a viable work-around for this. It requires no extra equipment other than an AVR with pre-outs and a typical plate amp for the flanking subs that has two summing line-level inputs followed by a variable low-pass filter.

Thanks
Darrell

Subject: Re: flanking subs with small mains
Posted by [Wayne Parham](#) on Sat, 23 Feb 2013 02:46:09 GMT
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Certainly, it is an interesting proposition. My suggestion was simpler, but it doesn't take advantage of the possibility of using the helper woofers as low frequency nodes, i.e. flanking subs. Your idea of using a Y-splitter does provide that. So if you get it going, please report back. Might be pretty cool.

Subject: Re: flanking subs with small mains
Posted by [dheflin44](#) on Sat, 23 Feb 2013 19:11:46 GMT
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I wasn't sure if the explanation I gave in the first post was clear, so here is a diagram.

Again what I'm attempting is to allow bass management to limit the low-bass extension of the mains while still being able to mix the low-bass and mid-bass frequencies to the flanking subs. The only other way I have found to blend flanking subs using a typical AVR is to use the 'Large' and 'LFE+Main' settings in the bass management setup which effectively bypasses bass management and low-bass will not be filtered from the mains.

Subject: Re: flanking subs with small mains
Posted by [Wayne Parham](#) on Sat, 23 Feb 2013 22:10:07 GMT
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That's how I visualized it. Sounds like a good idea, in my opinion. Might work with a simple "Y" connection for the sub/main "mixers". Please keep us posted with your progress.

Subject: Re: flanking subs with small mains
Posted by [dheflin44](#) on Sat, 23 Feb 2013 22:27:01 GMT
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I'm confused. The pre-outs are fairly low impedance. How do you mix them on a splitter?

Subject: Re: flanking subs with small mains
Posted by [Wayne Parham](#) on Sat, 23 Feb 2013 23:03:37 GMT
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What I was saying is the preamp outputs might be connected using a "Y". Depends on the output impedance. Or you might use a series resistor to provide some isolation. Otherwise, you'll need a mixer.

Subject: Re: flanking subs with small mains
Posted by [dheflin44](#) on Sat, 23 Feb 2013 23:17:00 GMT
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Ok, thanks Wayne. I have a pair of Yung plate amps on order, but they are on back-order until April, so it will be a while before I can post any results.

Thanks,
Darrell

Subject: Re: flanking subs with small mains
Posted by [zheka](#) on Wed, 06 Mar 2013 22:58:38 GMT
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Hi Darrell,

Do you have a specific mixer in mind for this set up?

Subject: Re: flanking subs with small mains
Posted by [Wayne Parham](#) on Wed, 06 Mar 2013 23:35:50 GMT
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A long time ago, back when I had black light posters all over my walls, I used to run my oscilloscope with its two channels connected to the right and left channels of my stereo. I'd setup

to make Lissajous patterns like a little laser light show. One thing I noticed was nearly all music had low frequency content the same in both channels. Of course, there were a few exceptions but they were rare.

So ever since then, I've made a working assumption that the deep LF content of most music material is summed in the mix. That was on my mind when I first recommended the flanking subs approach. While there is the possibility that LF content could be localized in one speaker or the other, in practice it is rare.

That's why I've always suggested that the flanking subs would be part of the multisub approach when distributed subs were run using a summed channel. I am make the assumption that most times, the LF content is summed anyway.

I think it is probably a little more of a concern in movie soundtracks but I'm not entirely sure those would have LF content panned hard to one channel either. It's an unnatural situation, one that doesn't happen in "real life". So I would hope (expect) the sound editors to put deep bass content in all channels in the mix.

Just my 2¢. Well, not quite 2¢ worth there, but maybe a penny.

But hey, while we're on the subject, let's link in Andy's thread here too:
Kind of crazy idea for a flanking sub processor! kinda think you guys are on to something there. Even though I don't expect much material with deep bass panned hard to one channel, your sound mixer / processor idea ensures it is distributed properly. I think that's a great idea.

Subject: Re: flanking subs with small mains
Posted by [dheflin44](#) on Thu, 07 Mar 2013 00:14:23 GMT
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zheka wrote on Wed, 06 March 2013 16:58Hi Darrell,

Do you have a specific mixer in mind for this set up?

Hi zheka,

I was planning to use the L/R line-level summer built-in to my plate amp. It seems most sub plate amps these days have at least two line-level inputs so this option should be readily available. The one I'm going to use is the Yung 300W:

<http://www.parts-express.com/pe/showdetl.cfm?partnumber=301-510>

-Darrell

Subject: Re: flanking subs with small mains
Posted by [zheka](#) on Thu, 07 Mar 2013 02:27:40 GMT
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Wayne Parham wrote on Wed, 06 March 2013 17:35

I think it is probably a little more of a concern in movie soundtracks but I'm not entirely sure those would have LF content panned hard to one channel either. It's an unnatural situation, one that doesn't happen in "real life". So I would hope (expect) the sound editors to put deep bass content in all channels in the mix.

I suspect LFE channel in today's MCH tracks contains distinct signal that is not duplicated in any of the main channels.

The more I think about Darrell's idea, the more I like it.

dheflin44 wrote on Wed, 06 March 2013 18:14

I was planning to use the L/R line-level summer built-in to my plate amp.

this is just perfect. for some reason I thought a mixer is needed but probably a simple stereo-to-mono coupler is all it takes.

something like this for example

<http://www.edcorusa.com/p/5/s2m>

Subject: Re: flanking subs with small mains
Posted by [Wayne Parham](#) on Thu, 07 Mar 2013 04:13:52 GMT
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The subwoofer output is merely a summation of all channels low-passed, including the LFE channel, of course. I imagine some Dolby Digital tracks put content in the LFE that isn't anywhere else. But that's not the case in other tracks, like Dolby Surround and Pro Logic. So I know there are modes that can be used that do not present any content to the subwoofer output that isn't present in at least one of the mains, and more likely, in all of them summed together.

But I do think you're probably right when running Dolby Digital and perhaps DTS that the LFE channel sometimes has content that isn't present in any of the mains - whether in large or small mode - and this content is summed in the subwoofer output. So for home theater, when running the Dolby Digital mode, if you want LFE infrasound in the mix, I think what you're saying may be correct.

I can't help but wonder though: If you configure the processor to have no subwoofer, wouldn't it necessitate sending the LFE channel to the mains? Seems like any processor that failed to do that would be defective, an oversight in firmware, at the least. That's the mode I always use, and then run the subs off the preamp outputs for the mains, through an external low-pass filter, of course. I don't believe I am missing any LFE content that way, although to be candid, I haven't

checked. I assumed LFE content was sent to the mains when "no subwoofer" was selected.

In any case, modes where the LFE signal is unique is where I think the blending approach you guys are talking about makes a lot of sense. It's not needed for stereo, and it's not needed for the formats that don't rely on an LFE channel. But for the formats that do, this subwoofer/mains mixer sounds like a great idea. It's the way the "full" or "large" mode should mix the signal going to the mains, low-passed for flanking subs. And certainly in cases like what Darrell is talking about - where he selects "small" mode to provide high-pass for his mains, but then high-passes low enough (60-80Hz) to get blending for flanking subs - this subwoofer/mains mixer approach seems very attractive to me.

Subject: Re: flanking subs with small mains
Posted by [dheflin44](#) on Fri, 08 Mar 2013 05:18:26 GMT
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Hi Wayne,

I'm not sure if I'm following the discussion. When you talked about not needing a summing circuit depending on LFE content, are you assuming the mains are set to 'Large'? In my system I have to set the mains to 'Small' (because they are) to limit bass extension. Coming out of the AVR, this setting results in no blending between the sub and main channels, independent of LFE content. The purpose of the summing circuit then is to blend mid-bass frequencies from the high-passed main channel into the flanking subs. Note in the summing circuit diagram, the signals at the top represent the main and sub channels after bass management is applied.

Thanks,
Darrell

Subject: Re: flanking subs with small mains
Posted by [Wayne Parham](#) on Fri, 08 Mar 2013 05:31:14 GMT
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What I was talking about in my last reply to Zheka doesn't really apply to you. I was talking about using the "large" mode with subwoofer set off. That should send all LFE content to the mains. But I think Zheka makes the argument that he is not sure that is true. I think he believes the LFE content may simply be missing in some cases if the subwoofer is set to off, even if the mains are set to large. In any case, I do realize that what you are trying to accomplish is a way to configure the system (using the "small" setting) that provides 60-80Hz high-pass for the mains, but yet still provides a suitable flanking subwoofer signal, and that would require a mixer of some sort as you have described. I think it's a great idea.
