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Subject: Midbass slam

Posted by [jonone](#) on Tue, 19 Jul 2016 11:36:24 GMT

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I went to a house party the other day which was outside and they had hired some pa speakers, they weren't huge probably 12" 2 ways and a pair of 15-18" subs.

The bass was really powerful, that classic hit you in the chest bass just like only live /pa sound seems to be able to create.

Now it got me thinking how my hifi and most other hifi doesn't have this, so why?

My musings are: they obviously use bigger drivers in the midband and there usually high sensitivity, so capable of high spl, which is also an important part of the puzzle, it needs to be loud!

Most hifis in the uk use roughly 6" mid/midbass drivers that are often quite insensitive with low powered amps, so not capable of high spl.

They also sometimes use sub woofers to help the bottem end but there normally crossed over @80hz or below and this is not really where that midbass kick is, so it's still left to the small drivers in the mains to cover the midbass area.

It's interesting to note most hifi and especially AV or obsessed with 20hz and below with huge monster subs were as most pa only goes down to 30hz.

Another part of the puzzle is the room, most pa is used outside or at least used in a space big enough that modes caused by reflected sound is not a problem, but most hifi used in normal rooms will suffer from the reflections caused by the walls and the floor, especially as most have there mid/woofer at ear level, which quite often puts a big notch right where the kick drum energy is.

So the obvious answer is flanking subs to help with the reflections caused by woofer height and position and the mains having large sensitive 10-15" woofers.

The down sides to this are large woofers need large cabs, not very good for waf or small rooms, also they need wide baffles.

my speakers are small active 6" 2 way, the company that makes them feels this is the best compromise, they feel small speakers image better partly because of a small baffle, the theory being the size of the human head is optimal, they also have an exceptable amount of bass and any smaller is an compromise in this area, any bigger and you get crossover problems due to breakup and resonances which again makes the midband an imaging suffer.

They also stick to 2 ways and subs as they feel you get a similar performance as a 3 way without the extra crossover which causes extra distortion and normally ends up right where male voices end, plus subs are more flexible due to adjustable volume and positioning.

They also use active for less distortion and the ability to use steep filters so any nastys in the drivers are well out of audible range.

They are rated at 108db according to the manufacture.

The cons of a 6" 2 way playing full range is intermod distortion but this is arguably not audible and according to the manufacturer to counter act this you would have to cross over at something like 100hz or above resulting in less bass sources for the multi sub technique. Also the flanking subs are feed the same signal as the mains so if you high pass them the flanking subs receive the same high passed signal resulting in fewer deep bass sources.

The pros are better for waf/smaller rooms and arguably a better mid range. Subs are easier to hide, my two 15" flanking subs in down firing cubes will arguably look at lot smaller and less "hifi" then 15" speakers with 17+" front baffles but I suppose this depends on taste and room size.

So my setup will be, 6" active 2 ways as mains playing full range with two 15" stereo flanking subs which are low distortion, they will be crossed over high enough to play in the the midbass area and with 18mm Xmax they are useful as deep bass sources too. I will also have a single near field sub fed from the lfe output of my AV receiver.

I'm hoping with the smoother response from multiple bass sources and two 15s playing in the midbass I can get some of that slam!

I would love to hear your opinions especially big vs small speakers.

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Subject: Re: Midbass slam

Posted by [johnnycamp5](#) on Tue, 19 Jul 2016 20:25:45 GMT

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If your subs integrate well with your tiny mains, I think you may be fine.

In my past experience, I had a hard time doing that-

Around 3 years ago, I built/owned a typical hifi set of speakers with dual scan speak 6" woofers per cabinet-  
<https://www.madisoundspeakerstore.com/3-way-speaker-kits/b741-scan-speak-kit-pair-by-peter-noerbaek/>  
They are about 88db sensitivity.

After an intensive, difficult buid (I attribute most of this to the tapered baffle) I gave them months of listening time.

I ended up feeling very dissapointed in the lack of mid-bass punch, no matter how loud.

They just sounded kind of flat, and unexciting.

I decided (it was suggested) to built a sub to try an help.

The end result was the same good mid range and great high end from the mains, with added extreme low end from the sub, yet no more mid bass slam.

What didn't help with the punch, is I had to low pass the sub at 50hz, because it simply wouldnt integrate well with the mains anywhere above that, regardless of position.

I then did extensive room treatments (bass traps, large broad band absorption). Bass response improved, but still no mid bass punch to speak of, sort of a hole right in the mid bass.

Thats when I decided to try a pair of high sensitivity speakers (4pi's). The first two things I noticed, was more midbass punch and more dynamics.

After some time of liking these mains much more than my previous pair, I decided to try a S.E.T. tube amp with them, having heard that this type of amplification was a great combination with high sensitivity mains.

End result is, this current system smokes my last one, the punch, dynamics and most surprising to me.....the mid-range. This is all "without" subs.

This current system, using high sensitivity mains, does not have the mid bass slam of an outdoor system as you describe, but it sure has more punch than my previous set of speakers had!

I am about to add a pair of 3pi's, which Im sure will bring it closer, as that is what they are designed for.

In regards to your mains, it is hard to believe your two way, 6" speakers are really 108db 1w/1m or even close to that.

Are they horn loaded?

I installed quality cherry wood veneer on my 4pi's, with matching front grill covers, and most people do not even notice them when they enter our living room. They simply look like the rest of the front furniture.

I am building the 3pi subs the same way. You'd be surprised what you can get away with in your living space, when the speakers no longer look like big (or small) black boxes.

Regards!

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Subject: Re: Midbass slam

Posted by [jonone](#) on Tue, 19 Jul 2016 22:05:46 GMT

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Thanks for the input, I'm glad your beginning to see success with your system! And your right using veneers and matching other furniture goes a long way to integrating into your home.

As for the 108db, I do take it with a pinch of salt, although the md of the brand swears it so, I've seen others work out the maths for them and not come to the same conclusion..... What I will say is they are loud, certainly plenty loud enough for a living space.

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Subject: Re: Midbass slam  
Posted by [jonone](#) on Tue, 19 Jul 2016 22:06:36 GMT  
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<http://www.avihifi.co.uk/products.html#>

No there not horn loaded.

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Subject: Re: Midbass slam  
Posted by [johnnycamp5](#) on Mon, 25 Jul 2016 22:43:27 GMT  
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Jonone.

Have you been listening to your system with the new set-up, with your flanking 15's?

If so, how is it sounding so far?

I have not finished my 3pi sub enclosures yet.

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Subject: Re: Midbass slam  
Posted by [jonone](#) on Tue, 26 Jul 2016 06:18:13 GMT  
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Nope still just got the one midbass up front and a nearfield sub at the moment, i have been talking to acoustic elegance about making me another driver for another midbass.

It's all been put on hold though as we have just had another baby.....

At some point I'm going to try and put the nearfield sub in the flanking sub position and see what it's like.

I am planning on ordering another driver from ae regardless as I will want to run this configuration in the future.

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Subject: Re: Midbass slam  
Posted by [johnnycamp5](#) on Tue, 26 Jul 2016 10:14:26 GMT  
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Let us know.

Congrats on the new baby!

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Subject: Re: Midbass slam  
Posted by [jonone](#) on Tue, 26 Jul 2016 11:03:45 GMT

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Thank you.

I will let you know what happens with the flanking subs!

Good luck in building yours, post up some pictures! Have you got any pictures of your setup at the moment?

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Subject: Re: Midbass slam

Posted by [johnnycamp5](#) on Tue, 26 Jul 2016 11:30:16 GMT

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Sounds great.

I'll get some pics posted of my current setup, when I get home from work.

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Subject: Re: Midbass slam

Posted by [johnnycamp5](#) on Tue, 26 Jul 2016 20:06:05 GMT

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Here is my current set up.

It sits along the front/narrow wall (15.5').

Front door is on the left.

When I incorporate the flanking subs, I will have to re-locate the speakers and tv along one of the long/side walls (27').

I will also be able to angle (toe in) the mains for better stereo image for all in the room.

I know firing the speakers from the longer wall is not best, but it's the only way I can utilize the flanking subs until I move everything downstairs.

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#### File Attachments

- 1) [image.jpeg](#), downloaded 2641 times
  - 2) [image.jpeg](#), downloaded 2710 times
  - 3) [image.jpeg](#), downloaded 2517 times
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Subject: Re: Midbass slam

Posted by [jonone](#) on Tue, 26 Jul 2016 20:28:36 GMT

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Thanks for posting, looks great!

Your right, the speakers blend into the furniture really well, they have the 15" driver right? I would

love to hear them.

And do you use the sub? You mentioned before it has passive radiators?

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Subject: Re: Midbass slam

Posted by [johnnycamp5](#) on Tue, 26 Jul 2016 20:57:21 GMT

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jonone wrote on Tue, 26 July 2016 16:28 Thanks for posting, looks great!

Your right, the speakers blend into the furniture really well, they have the 15" driver right? I would love to hear them.

And do you use the sub? You mentioned before it has passive radiators?

Thanks

Sorry the pics are sideways.

Yes, they use 15" jbl's.

Yes, I use the sub with most content. Theres one or two bass heavy recordings I own, where I prefer to turn it off, but most of my content benefits from some bass augmentation from the sub.

Yes, the sub is passive radiator design.

It does not quite integrate seamlessly with the mains.

I'm not sure if this is due to the sub being a little too far away from the mains laterally (over 4.5' left and right),

or if the passive radiator design doesnt blend well for some reason.

Im guessing the former (lateral distance) is the reason, since a passive radiator is really just another way (theoretically) of porting an enclosure.

When I incorporate the 3pi's I'm going to move this sub to the back (opposite side) of the room, to use as a distant sub crossed over low.

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Subject: Re: Midbass slam

Posted by [jonone](#) on Wed, 27 Jul 2016 14:19:50 GMT

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Sub bass frequency' s are many tens of feet long, so 5ft from the speakers shouldnt make any difference.

In my opinion I would only use sealed for subs and you need drivers with huge magnets to control the cone, lack of control leads to boom in my experience and I cant see how a passive radiator is under control properly?

crossed over low enough it maybe ok, eq will probably help too, Your room will also benefit from the flanking subs as the room modes will be lessened and modes normally lead to one note

boom.

Have you measured your rooms response?

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Subject: Re: Midbass slam

Posted by [johnnycamp5](#) on Wed, 27 Jul 2016 19:32:19 GMT

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jonone wrote on Wed, 27 July 2016 10:19Sub bass frequency' s are many tens of feet long, so 5ft from the speakers shouldnt make any difference.

In my opinion I would only use sealed for subs and you need drivers with huge magnets to control the cone, lack of control leads to boom in my experience and I cant see how a passive radiator is under control properly?

crossed over low enough it maybe ok, eq will probably help too, Your room will also benefit from the flanking subs as the room modes will be lessened and modes normally lead to one note boom.

Have you measured your rooms response?

I have not measured my room, in a way that I can look at a graph, but I have run sweeps and hz test tones.

I had discovered a huge null at 70hz (throughout the center of the room) and another at around 150hz.

I have since added considerable acoustic treatment, and had heard a significant improvement in bass response afterwards.

The trouble I've had with blending this sub with the mains, only comes when I try to cross over at 100z.

At 70hz, there is much less trouble integrating.

Perhaps im refering to the problem of localization instead of integration, but again, that could be reduced with a slightly closer (lateral) placement to the mains.

In theory, the passive radiator is supposed to vibrate back and forth in the exact same manner as the air-plug in a port tube.

I wasnt aware of the woofer magnet size being important, I always thought it was really a matter of how strong the magnet was, regardless of size.

I did notice that the actual "size" of the sub woofer magnet on this passive radiator sub is quite a bit smaller than the magnets on the Eminence lab 12's Im using for the 3pi subs.

I would not mind using a sealed design, and would also enjoy the smaller enclosure that (typically) comes with it.

I only thought that the larger, ported cabinet would be easier to drive, requiring less power, while having less woofer excursion/distortion, above the tuning frequency.

I have chosen to incorporate these 3pi subs to help with the notch in the upper bass, lower

midrange, that inevitably comes in a residential environment/room.  
Not so much for the extra LFE, that bottom octave (20hz-40hz).

I suppose the term "midbass modules" or "helper woofers" might be better descriptions, as to what I'm using the flanking subs for.

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Subject: Re: Midbass slam

Posted by [jonone](#) on Wed, 27 Jul 2016 20:40:39 GMT

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A 70hz wavelength is 5meters long, so having the sub on the same plane as the speakers shouldn't make this a problem? 80hz is supposed to be omni directional, I take it you sit closer than 5m?

Using a lower crossover and volume is typical to get a lesser sub to intergrate, my old sub was better crossed over below 60hz, my midbass is clean at 150hz in the same position.( same plane as speakers)

I need to cross my nearfield over at 40hz as there is still a lot of energy from higher up as the filter in the lfe out of my av amp seems shallow.

You might find you need to use a similarly low crossover when you move your sub to the back of the room.

I'm sure the pi 3s will be great up front!

If Your not aware you can gauge motor strength by the bl spec of your drivers.

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Subject: Re: Midbass slam

Posted by [johnnycamp5](#) on Fri, 29 Jul 2016 11:06:31 GMT

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Looks like the BL rating for my current scanspeak sub is 6.

The BL for the 3pi drivers is 15. Not sure what it all means.

With my current arrangement (mains placed along the short wall), I sit exactly 5.5 meters back from the mains.

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Subject: Re: Midbass slam

Posted by [jonone](#) on Fri, 29 Jul 2016 13:43:03 GMT

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Bl is normally shown in tesla metres and the higher the number the stronger the motor.

So as long as there both shown in tesla meters the pi subs are a lot stronger.

Normally the stronger the motor the more control it had over the cone and a tighter sound as there is less overhang.

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But I believe there is a balance between control and efficiency so a really high number is not always a good thing.

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