Subject: flat response
Posted by fakamada on Thu, 31 Oct 2013 12:59:58 GMT
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Hi Wayne,

I've been looking at your measurement graphs. They are not quite flat. What's your take on preffered curve? Also 3pi and 4pi are different in this regard. How do you choose the best approach?

Regards,
Kuba

Subject: Re: flat response
Posted by Wayne Parham on Thu, 31 Oct 2013 18:40:07 GMT
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I don't agree - I think they're quite flat. It is extremely rare to see speakers with response as flat as mine, and especially over a 90°x40° degree arc. Most speakers have a whole lot more anomalies, but their measurements are smoothed to cover them.

I won't mention any names, because it always seems to get people crying about it. But you'd be surprised how many speakers out there have response curves with huge peaks and valleys, like 15dB notches, that are simply smoothed out of their published response curves. And it isn't just commercial offerings either - Some of the DIY darlings are just as bad.

Most of the boutique drivers popular with some DIYers, for example, have excessive breakup, like really bad. Yet you'll see speakers made with them showing response curves that have no trace of the anomalies. You can't fix that kind of things in the crossover, so whatever is published is either highly smoothed or completely fabricated.

That's why I like to publish LMS charts, and datasets with no smoothing applied, whatsoever. It's sort of a "badge of honor" to me. It does make me vulnerable though, because it makes an unfair comparison with smoothed charts from other lesser products. But if you measure those lesser products with LMS, you'll not be happy with what you see.

There are no unpleasant surprises like that with my products. Tons of builders out there publish their measurements, and they look just like what I publish, no matter how high resolution they measure with. Look at some of the other DIY speakers out there, and how many people publish charts that look nothing like what is published. Seems like some of the other builders spend more time trying to reconcile their measurements than they do enjoying their speakers, and that's because the published data is overly processed, or outright bogus.

Subject: Re: flat response
Posted by fakamada on Thu, 31 Oct 2013 23:40:48 GMT
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Maybe I used wrong words. Don't get me wrong. Your measurements fit perfectly into +-3db margin, which is great. What really interests me is what exactly is happening inside that margin. I'm personally not a fan of perfectly flat response. Especially with pro speakers I prefer a little bit of downward slope up to the highs, which is exactly what I see in your measurements.
what intrigues me are these topics:

- more energy around 800hz-1500hz (4pi) and 1khz-3khz (3pi). My guess was that MAYBE you want to compensate for a dip in vertical off axis response. But in case of 3pi it is somewhat outside of this vertical dip region

- differences in response between 3pi and 4pi. Why are they different. In the midrange and top two octaves

- what is your take on musical, pleasant and realistic response. I had some experience with DSP and I know than little compensations here and there can even change soundstaging. For example recessed vocal range, puts a singer deeper in the soundstage - feels more distant.

Regards,
Kuba

Subject: Re: flat response
Posted by Wayne Parham on Fri, 01 Nov 2013 06:45:19 GMT
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The way direct radiators work, there is some increase on-axis at higher frequencies as a result of collapsing directivity. Most tend to also have some mass-rolloff that counters this to some degree, but in general, there is slightly rising on-axis response and slightly drooping power response as frequency rises. That's what you see in the midrange - but it's pretty much a wash in the total radiated energy.