Subject: You can't hear or feel what isn't there.
Posted by Bill Fitzmaurice on Mon, 05 Apr 2004 11:16:42 GMT
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The question in this case has to do with live concert pro-sound. While flat response to 20 or 25 Hz is desireable for Home Theatre, or any movie theatre for that matter, it is simply unneccessary for live sound. There just isn't any program material down the there to justify it. In fact, one extensive study conducted at a 6,500 seat venue over the course of 30 concerts (all genres, from country to rap)found that for live music the majority of program material lies in the band from 60 to 80 Hz, with levels at 40 Hz down by 25dB from those at 60 Hz, and levels at 20 Hz virtually unmeasurable. So while the thought of getting your tailbone tickled by 20Hz tones at a live concert is an intriguing one, in reality it just doesn't happen. You'll get far more 20Hz excitement watching DVDs in your livingroom than at a concert.

Subject: Re: You can't hear or feel what isn't there.
Posted by Kevin Jaggars on Mon, 05 Apr 2004 11:51:39 GMT
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With all due respect, isn't this the old chicken and egg question. I'm sure you're correct that a majority of the sound energy is in the 60-80 Hz frequency band. But is that because the musicians have decided that they want nothing below 60hz or is it because there is rarely (if ever) a concert system that can produce anything meaningful below 60hz?Thanks.

Subject: Re: You can't hear or feel what isn't there.
Posted by Bill Fitzmaurice on Mon, 05 Apr 2004 12:30:04 GMT
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At the concert venue where this study was conducted the typical speaker compliment consisted of 8 EAW 740/760 or JBL Vertec line array boxes flown over a cluster of eight to twelve horn loaded subs- per side, that is- pushed by 30 to 50kW of Crown or Crest amplification. These systems typically had the capability to go flat to 25 Hz at levels some 15-20dB higher than they were run at. I can assure you that neither lack of system capacity nor the musical tastes of the sound crews had anything to do with the result. As to the first part of the question, the egg came first, as the first chicken was the product of the mutated DNA of whatever layed that particular egg.

Subject: Re: You can't hear or feel what isn't there.
Posted by Kevin Jaggars on Mon, 05 Apr 2004 16:08:05 GMT

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Ouch! I stand corrected :-)

Subject: Re: You can't hear or feel what isn't there.
Posted by Hernan on Mon, 05 Apr 2004 17:06:44 GMT
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First off, thank you for the civil reply to what could have been read as an incindiary post. But this is a sore subject for people that have to reinforce todays music. Basically it is because people have home theater systems that my system has to 'bump'. More accurately it is because of the cabin effect(?) of car stereo's, that I am forced to extend system response. Now I must concur that Heritage music does not have material below even 80 Hz. Todays heavy metal needs punch, but it doesnt need real sub frequency's. Rap/ Hip Hop does not need real sub frequencies either Today's vinyl based music and protools laptop musicianship, not to mention the boundry setting of jazz and some savvy interpretations of classical rely heavily on real sub frequency.Engineers from your generation viewed subs as luxury. What with thier extra wieght and bulk, musicians were lucky to get anything below 100Hz let alone real sub frequency's. You could say that accurate reproduction of source material was gimped by ignorance and lazyness. But rave music changed all of that. Forever. So really,-from my view point- there should not be a discussion about source material below 35 Hz. But how to insure that over a 100 db can be reproduced without distortion at FOH mix position. The key word is distortion. So when the musician hits that low note on his roland 606 at full volume it doesnt stop at your system limiters Or worse yet peak out the amps or even worse yet actually blow the cones. No it doesnt do that, it comes out of the sound system unimpeded, truly "reinforced" and brings the crowd to a peak of extacy.The sad thing is that system designers think that limiting is a viable solution to fielding a balls-less sound rig.

Subject: Re: You can't hear or feel what isn't there.
Posted by Bill Fitzmaurice on Mon, 05 Apr 2004 18:31:35 GMT
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Hey, there are a lot of people who have the same misconceptions as to what kind of low frequency requirements there actually are for live concert sound, and more than a few of them are in the pro-touring sound business. Even the pro-touring sound companies that really know their stuff typically will set up four times as many subs at a gig than are actually required. Why? Because the musicians and their tour managers insist on it, if only for the visual impact. The sound companies don't care if they're hauling extra gear and having to use more roadies than they need, they're being well paid for them. One more reason why you don't see $25 concert tickets.Here's an RTA of ZZ Top in action.

Subject: Link to RTA
Posted by Bill Fitzmaurice on Mon, 05 Apr 2004 19:35:01 GMT
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if you don't see it in previous post go to
http://hometown.aol.com/fitzmauricew/myhomepage/photo.html

Subject: Re: Link to RTA
Posted by Hernan on Tue, 06 Apr 2004 05:22:46 GMT
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As far as I know ZZtop doesnt have any instrumentation that can produce anything below 80 Hz.As I said before Heritage bands need nothing more than a 'punchy' kick. Do you get any bands in your arena that arent collecting Social Security?

Subject: Re: Link to RTA
Posted by Bill Fitzmaurice on Tue, 06 Apr 2004 11:25:32 GMT
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The 1st octave fundamentals of electric bass run from about 41 to 82 Hz. However, it is the 2nd harmonic that contains the most sonic energy. That applies to all musical genres that use electric bass, not just to classic rock- which, by the way, didn't get to be called classic for nothing. This RTA is not significantly different from those taken at a concerts by Ja Rule for one, as well as Deep Purple, Ted Nugent, David Lee Roth, Sammy Hagar, Brooks & Dunn, CS& N, Styx, Kansas, a dozen odd new wave acts whose names I don't remember (and in six months no one else will remember them either), and interestingly enough, the Boston Pops. While the gross SPLs of acts varied over a 10dB range the actual frequency content remained relatively constant, with Heavy Metal acts being the only exception, as they tended to have very little midrange content.

Subject: Re: Link to RTA
Posted by Hernan on Tue, 06 Apr 2004 18:16:12 GMT
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Oh boy, I guess this conversation is a museum piece . Representing the old gaurd and thier suppositions and the bloodied generation of little 'e' engineers fighting both artist and systems (mis) providers.None of those bands have low bass in thier music. It isnt thier style, even mainstream hip hop lacks decent bass. Thier old school roots tend toward the thump of a cheap

drum machine kick. So I guess you won me over. Mainstream arena music sports the frequency reponse of a yamaha ns10. You are right-if you are filling the rider for mainstream you may as well send out empty sub cabinets.Even the Boston Pops could save money by leaving thier subwoofers at the next truckstop. More room in the trucks for lot lizards.I am curious why even participate in a conversation about improving subwoofer performance. Wouldnt you be better served, wringing better response from a one box does all system? You have data to prove that for all intensive purposes, a sound system only needs to go as low as 65 hz.Albeit, at best you would have a "tight" 65hz coming out of a one box system, but from what I see in your data, who cares?

Subject: Re: Link to RTA
Posted by Bill Fitzmaurice on Tue, 06 Apr 2004 20:20:19 GMT
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Don't mistake my point. First, if you've got 100dB from 60 to 80 Hz 150 feet from the stage that's a lot of bass impact, plenty enough to thump your chest and take your breath away. And yes, you do need some response capability down to 30 Hz or so, as the fundamentals are important too. But the main point of my discourse is that there is a basic misunderstanding amongst not only the general public but those in the industry as well as to what 'heavy bass' actually represents in the world of concert sound. It's an understandable situation, as until very recently it wasn't so easy to take an RTA of a live concert. With the advent of the handheld Phonic PAA2 it's a simple enough affair now, and what using one proved to me is that what is required for heavy bass in concert isn't strong fundamentals, it's strong 2nd harmonics, and that's where you need to make sure your speakers are up to the job. The bottom line is that there are very different requirements of loudspeaker system responses for live versus recorded sources. If you want to do home theater right you need to be flat to 25 Hz minimum, while recorded music is generally adequate when flat to 35 Hz, and live-sound need only be flat to 60 Hz. Knowing that makes it a lot easier for both the home listener and the sound professional to make sensible and economical choices when either purchasing or building loudspeaker systems for their respective genres.

Subject: Re: Link to RTA
Posted by adavis464 on Mon, 26 Apr 2004 02:27:39 GMT
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like talking to a brick wall

Subject: Re: Link to RTA
Posted by cowanaudio on Mon, 19 Jul 2004 22:33:22 GMT
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G'day Bill, You wrote "recorded music is generally adequate when flat to 35 Hz, and live-sound need only be flat to 60 Hz."I agree with the first half of this statemant, for 95% of all music, 35Hz is plenty. My home system is flat to below 20Hz, but adjusting the HPF on the X/O up to 35Hz usually does very little to the sound, for MOST music. But why-O-why should we restrict prosound to one octave higher??? It is so sad when I pay $100+ to see a live act on a $100K+ sound system, and it would have sounded better at home. Same is the case for the average cinema.The bottom line is: BASS IS HARD TO DO RIGHT. 30Hz bass with low distortion at 100dB+ is VERY EXPENSIVE. That is why the prosound community is not interested. Are the kids driving around in their booming cars interested in sub 40Hz? You bet your bottom dollar they are! And they will open their wallets wide enough to prove the point. I have made a point of going a long way out of my way to experience every Servodrive and Aura sub installation I can. I LOVE GOOD CLEAN LOW BASS, and I know I am not alone. 80Hz punch is not what the punter wants these days. They are after the waves of pressure that lets you think you have just been spoken to by God. The rush that gives many punters just cannot be described.For me the tickle of a sub 40Hz fundamental is addictive. I guess your mileage may vary.Cheers
My DIY Audio Homepage

Subject: Re: Link to RTA
Posted by Bill Fitzmaurice on Tue, 20 Jul 2004 12:15:44 GMT
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The reason pro-sound need be flat to only 60 Hz or so is because that's where the requirements for live instruments lie. Live music creates sound; recorded music reproduces it, and the two genres are not the same. Your home speakers need to be flat to 35 Hz or less because the media you're listening to was mixed on speakers with that range and thus require speakers with the same characteristic for proper 'decoding'. In live sound the bulk of bass power is in the 60 to 100Hz band and therefore that is where the speakers used require the greatest output capability. Pro sound doesn't go flat to 30Hz simply because it doesn't need to. If it did then the capability would be there. Money is not a concern; not carting around excess gear that serves no purpose is.
