Subject: Stage monitors -- doubled Pi 4s?
Posted by juanstein on Thu, 10 May 2001 21:16:20 GMT
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Hi Wayne -- I have been playing with Pialign and looking at speaker drivers available. I am partial to both the JBL 2226 and 2241 as far as price and various comments on this forum concerning linearity and distortion. Do you have any designs completed for 4 pi 15" professional stage monitors with two JBL 2226 drivers per cabinet? I would be using one JBL 2426 1" compression driver per cabinet.I have some cabinet solutions from Pialign for the bass cabinet above, but I would like to go to the master first (brown-nosing furiously, now :) Thanks!John

Subject: Re: Stage monitors -- doubled Pi 4s?
Posted by Wayne Parham on Thu, 10 May 2001 22:31:28 GMT
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The four Pi loudspeaker is designed to use a midwoofer and tweeter, and the crossover frequency and positions chosen were selected so that the directivity is matched at the crossover point. The woofer pattern begins to narrow from being almost omnidirectional to hemispherical to practically cone shaped, around 90 degrees in the crossover band. The tweeter also provides 90 degrees of horizontal coverage, so they're matched. Likewise, the vertical angle is matched because the vertical spacing of the woofer and tweeter makes a forward lobe form, with nulls above and below it. This modifies the woofer's natural cone shaped pattern, flattening it on top and bottom. This pattern is matched by the horn's vertical coverage angle, so above the crossover region a narrow coverage pattern is maintained. The design is pretty well optimized, not only by PiAlign for smooth bass response but also by having a crossover that matches the woofer and horn to achieve good off-axis response and ultimately, a uniform reverberent field.The dual woofer system you propoose is interesting though, in that it lets you retain all the benefits of DI matching and gain additinal benefits of adding bass sound sources. That's always a good thing. The way I would implement it is to keep the original physical relationships of midwoofer to tweeter, both in position and crossover, and add to that a second woofer below the first with a simple first-order crossover around 150Hz. This would provide two bass sound sources and would also allow the midwoofer to be higher, closer to ear level, without introducing a floor reflection cancellation notch in the midbass. The pair of woofers operarating together below 200Hz would reduce floor bounce and room modes, and crossover to the single midwoofer above the modal range would allow it to function as a point source up to the DI matching range, where crossover to the tweeter would be done as it is in the existing design.

Subject: Re: Stage monitors -- doubled Pi 4s?
Posted by juanstein on Fri, 11 May 2001 16:29:21 GMT
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Hi Wayne -- I thought that was more or less how I would want to build the animal. I haven't figured out the exact dimensions due to the port volume and driver volume. I am given basically a length and a surface area of the port face. Rather than the dimensions the program decides for the port area, would there be a problem to use one of the box internal dimensions as one of the face dimensions, giving a distance for the second side. That way, I could build the port with just a single added slot "shelf" that looks like an internal brace. Would that completely gum the works?This is getting fun!John

Subject: Re: Stage monitors -- doubled Pi 4s?
Posted by juanstein on Fri, 11 May 2001 19:42:52 GMT
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Hi Wayne -- It gets better. I live in the SF Bay Area just north of Marin and George Lucas. I found a professional speaker repair shop that can get me 2226J's at 16 ohms. Also, he tends to see a lot of JBL 2225 drivers. I take it these are the previous version of the 2226. I just missed out on 8 cabinets stuffed with one 2426 and one 2225 driver apiece. Price? A crushing $300 per cabinet. Groan! He tells me he has similar deals come through on a regular basis. This is getting really fun!John

Subject: Re: Stage monitors -- doubled Pi 4s?
Posted by Wayne Parham on Sat, 12 May 2001 01:31:05 GMT
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If you're happy about the 2226J's because two in parallel will give 8 ohms in the lowest bass frequencies, that much is true. But it will also mean that the impedance from midrange up will be 16 ohms, changing your crossover values and making you need coils that are twice as big. That's not a huge problem, but it isn't trivial either. I think I'd prefer 2226H's.As for the port you mentioned in your other post, a slot will probably work, provided the area and length are kept the same. I'd measure impedance to be sure though, and find out where box resonance is. I would also be concerned about standing waves, since the port will now be somewhat wide and thin. It

might cause a peak somehwere in the lower midrange.

Subject: Re: Stage monitors -- doubled Pi 4s?
Posted by specopsda on Wed, 16 May 2001 15:35:27 GMT
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Hi John,I'm in San Rafael. What shop are you talking about? (I promise to give you first shot at the goodies) I'm looking for a pair of drivers for my Edgarhorn midbasses. This sounds like a good place to lurk.Floyd

Subject: Re: Stage monitors -- doubled Pi 4s?
Posted by juanstein on Wed, 16 May 2001 18:40:50 GMT
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Hi Floyd -- I could try to keep a secret, but the phone book is an insidious devil. Look under "Speaker Repair" in the yellow pages. The company is A. Brown Sound Inc. in San Rafael. I talked to John there. Happy scrounging!John