

# Audio Engine P4 Speaker Review

<http://www.stereomojo.com/Audio Engine P4 Speaker Review /AudioEngineP4SpeakerReview .htm>

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*Publisher's note: We have received several emails from readers who have asked us to review more low-priced stereo offerings. They are right. The problem lately has been that more companies are asking to review their more expensive lines and offering us the very first review of them in the world. That's hard to turn down, but we are after all, supposed to be mostly focused on "affordable high-end stereo". The hitch is that the term "affordable" means different things to different audiophiles. While you will never see us reviewing such ultra-luxury gear like upper range MBL, Burmester and the big Wilson speakers, we do at times review gear that exceeds our target price points. We very much prefer to review the stuff that normal people actually want to buy.*

*You should know that we have also received just as many emails thanking us for reviewing the higher ticket products as well. The key is balance. It is my job to maintain a good balance of lower priced products as well as some mid-level price points. To do that, I encourage you to help me out. We want you to send us your recommendations of products to review. Our reviews are not dictated by advertising or other audio/political agendas. They are mostly dictated by you! If you see something on an audio forum that people are talking about, let me know. I will try to get it.*

*For several reasons, we aren't always successful. For example, we have received many emails asking us to review speakers by Jim Salk. Believe me, we've tried. Many times; in person at shows, via email and phone calls. Just today, after another "nudge", Jim sent me this: "The problem we've had to date is that we have to build a pair of speakers in order to have a pair available for you. Everytime I start building a pair I think we can ship to you, someone buys them before they are finished. Let me know which model you would like to review and we'll build a pair for you. Waiting for a pair to become available apparently doesn't work too well".*

*That's a great problem to have for Jim, and we would never complain about it. We believe customers come first. We requested a review of the new Atlantic Technology AT-1 we gave a "Best Value" award at the January 2010 CES. "We won't have review sample for several months", was the reply. So I can't guarantee that we will procure every review you request, especially not right away, but we will try. We honestly want you to think of Stereomojo as your magazine. We want your input and your constructive criticism. About anything. We are making a concentrated effort to review more low-budget items. We do listen to our readers!*

## [Contact the Publisher](#)

Review by

William Schuchard

The quest for a small, attractive, affordable loudspeaker that actually sounds decent is elusive to many. Budget minded consumers, folks who want unobtrusive sound, and even die hard audiophiles have a use for them. Many turn to the internet and follow possibly misguided advice. Others may spend too much and end up with inferior products after being inundated with advertising from a certain well established company.

Enter the Audioengine P4. The P4 is a compact two way passive speaker voiced to the popular powered A5. Audioengine has quite the following for their powered monitor but only so many have the need or the desire for a powered monitor. Bombarded with requests for a passive version of the A5 Audioengine responds with, Tada!, the P4. The P4 opens the door for the rest who want to supply their own amplification.

When the speakers arrived, I looked at the small box and thought, "This is really *small*". I couldn't find another box and wondered if it would arrive later. Opening the box, I actually found two speakers peering out from their little protective felt bags inside. These speakers aren't small, they're tiny. My wife called them "cute". From her, that is huge; so let's give these some serious "wife acceptance factor" points. At only 2.75 inches taller than those little Bose cubes, the P4 fits into almost any life style. These will fit nearly anywhere. They come with two 3/8" mounts on the rear and one on the bottom in case you want to mount them to a wall or stand. The bottom also comes equipped with a high density foam pad that not only isolates vibration but also serves to protect what it sits on.

The P4 is slot ported on the front. There is very little port noise and the location on the front allows for closer placement to a wall. In use, the smoothest sounding response was with the speakers near the real wall. The miniature cabinets are made from thick high resin MDF and are actually braced internally which is impressive for size and price of the speaker.

The 3/4" silk dome neodymium magnet tweeter is cooled via ferro fluid. It's mounted in a very small waveguide that likely adds a small amount of boost at the lower frequency ranges that it handles. This theoretically allows for it to be crossed over slightly higher reducing distortion. The waveguide is too subtle to provide much controlled directivity but it should help reduce some diffraction from the cabinet edges thereby enhancing 3D imaging. This could be especially helpful as the smaller diameter 3/4" tweeters typically have wider sound dispersion.



The shielded 4 inch woofers are made of kevlar, but I doubt it will stop a bullet; but almost, according to Audioengine. Apparently part of the woofer and tweeter selection process included their durability given that they purposely chose not to include grills. Grills typically protect the drivers from things such as curious fingers, dust, etc. They also hurt the sound unless careful attention is paid to diffraction. Grills are typically a necessity in my home but I'll make an exception in this case knowing that the drivers are less fragile than some. A few careful prods seems to back up their claim.

When I asked Audioengine about durability, they mentioned that they have never had a speaker returned with a damaged tweeter or woofer. They called them kid-proof and cat friendly. Additionally they mentioned that they have received numerous emails thanking them for making speakers that won't end up shredded or scratched by their pets. I immediately thought of all the speakers I have seen over the years with grills that double as scratching posts.



The P4 comes in high gloss white, satin black, or carbonized solid bamboo. The satin black was chosen for its durability. Extensive abrasion tests were performed on a dozen or so finishes before choosing this one. They wanted something that could take a beating and still look good. This reminds me of when I put prefinished hardwood flooring in my home. I literally bought samples and then proceeded to destroy them by dropping cans on them, dragging tools over them, and taking various forms of sandpaper to them. In the end, we found flooring that has held up quite well so far. It's good to know a speaker company thinks along the same lines, especially at this phenomenally low price.

Those who wish to be "green" will appreciate the choice of bamboo. Even the finish on the bamboo version is a hand rubbed water based polyurethane. They will likely also appreciate the lack of lead, the environmentally friendly binders and resins, and formaldehyde free glue.

## Anticipation

About a week before the Audioengine P4 speakers arrived, I had stopped at my local dealer to see what was new. When I got there the salesmen were slinking in and out of one of their listening rooms and acting all giddy like little kids. What was the excitement? They had recently taken on Audioengine as a product to have something decent to compete with the affordable offerings from lower end stores. Why were they giddy? They were sounding pretty good. When I edged my way in I found the sound open, clear, and articulate. It didn't blow me away but at \$249 it was amazing. They had a subwoofer hooked up and it was clearly adjusted a bit high but it was fun all the same. The anticipation of getting them broken in and hooked up to really evaluate was mounting.

After about 2 weeks of continuous play during the day, the speakers were set up with a lower end system with a simple Denon receiver and the Hsu subwoofer. The sound was more open than I am used to with wide dispersion from the tweeters. Some careful tweaking was necessary as even with the side wall 5 feet away, reflections off that wall were clearly evident without some heavy toe in. They had a sound that reminded me of the little old ADS L300 speakers in the metal chassis from long ago giving me a quick trip in the way-back machine.

The next impression was the bass these little speakers produced. Disconnecting the subwoofer and running the speakers full range revealed that they can play on their own if necessary, particularly when placed near a back wall for bass reinforcement. Crossing them over around 60 to 80Hz to a subwoofer produced a balanced and dynamic sound and was clearly more enjoyable when pushed hard.

This brings up a competitive comparison; the HSU HB1-MK2 speakers. The HSU speakers are bigger, cost a little more, and are a little less cute. They also boast controlled directivity which helps them integrate better into more difficult rooms. The HSU speakers provided more transparency yet the treble was ticked up just a tad compared to the P4. Which one better fits ones needs is up to personal preference here.



One would need to balance the more predictable behavior of the directive horns vs the open and spacious sound of the P4s, price, and size. Which would I choose? It would be up to my mood at the time but my wife would choose the P4. Both of these mated well to the Denon receiver.

Another consumer option in this price range might be the more affordable but ever popular Insignia speaker from Best Buy. I did a quick comparison at home and it wasn't even close. Both speakers imaged well but the Insignia speaker was boomy and has an extreme peak in the treble which is very fatiguing. The P4 is a clear winner over the Insignia.

Before sneaking the Audioengine P4 speakers into an actual high end system, I brought them with me to a small audio get together. This was a region wide DIY meeting where those of us brave enough to try bring our DIY audio related items to share and then jockey for position to listen to all shiny, or not so shiny, items. As things wound down, I plopped the P4 speakers on top of some short floorstanding speakers and we took a listen.

There was a unanimous response; "All that sound is coming from those?!?" After an afternoon of listening to large homemade speakers, the concept of big sound coming from small speakers threw people for a loop. In this particular setup, we found that they were amazing for the price but were a tiny bit bright as if somebody had tweaked the treble up a notch. We did not take the time to tweak placement as the day had come to an end but it was interesting. *You can read Bill's pictorial report of another DIY meeting under our "ShowReports" section - publisher*

### **Hook 'em Up!**

It seemed laughable to place \$249 speakers into a system costing over \$10,000, but that's exactly what I did next. How they sound when all other components are up to par would be interesting indeed and would show what they were really capable of. Speaker placement required some tweaking to get it to sound the best. The best balance of sound and imaging came with the speakers closer to the back wall to augment the bass and the speakers toed in enough to limit the primary reflections from the sides.

Further tweaking was necessary to get them to sound musical. Swapping out an Audioquest NRG-2 power cord for a Transparent Audio power cord and swapping out the Kimber 4TC speaker cables with Cardas



speaker cables tamed the highs and filled in the bottom end. Now we had music.

A little trick that speaker companies sometimes play with small speakers is to bump up the midbass in an effort to make up for the lack of low bass. It might sound better at first but gets annoying over time. I sometimes use Tom Waits' voice to check for that. His voice in Track #1 of "Used Songs" was neither chesty nor boomy. This was true even with the speaker placed close to the rear wall. Audio Engine has done some excellent designing to avoid that excessive midbass hump.

The bass was surprisingly powerful, tight, and authoritative up until the little 4" woofer gets overdriven. Most of the listening was done without a subwoofer but I turned on the bass management of my two channel Jaton RC2000S preamp and kicked on the sub crossing over around 60Hz and got some serious clean bass. In order to get to ludicrous levels with over 700 potential watts per channel, a crossover of 80Hz was necessary.

Tom Waits voice was not only smooth but the words were all quite intelligible. My wife commented that it was a tiny bit scratchy, but isn't Waits always? She also picked up on the sense of ambiance in the recording. I suspected the highs are ever so slightly elevated but still smooth. The airy echoes of the saxophone were also quite evident.

I use "Ballad of the Runaway Horse" by Jennifer Warnes on Famous Blue Raincoat 20th anniversary edition (recipient of our Publisher's Special Merit Award in Music reviews section) when setting up speakers. If one can get the speakers just far enough apart that her voice is a sonic hologram at dead center, the center focus seems to be better on most other recordings too. Jennifer Warnes was very focused and airy through the Audioengine P4. The "s" sounds were very smooth and accurate but very slightly emphasized. This was a very nice experience given the price.

In the same song, acoustic bass was articulate and not boomy. The background singers sounded expansive and wide yet were placed very accurately when they joined in. The presentation was very enjoyable with the only downside being a lack of transparency and ultimate power handling when compared to the expensive high end stuff. For reference, the crossovers alone in my reference speakers cost more than a complete set of Audioengine P4 speakers delivered.

The Audioengine P4 speakers were great with strings. Joshua Bell's "Violin Favorites and Virtuoso Showpieces" is something I play from time to time. It's more or less spirited violin accompanied by piano. With Track 3 from CD2 in the package, the fast paced violin was full of energy and immediacy. The P4 speakers disappeared leaving only Joshua Bell and his music; a surprising feat at this price point. The piano was less convincing without the subwoofer as expected for a speaker of this size. As with Jennifer Warnes, these can't compete with \$10,000 speakers, but they offer a very enjoyable musical experience for the paltry price they charge. When fed really nice electronics and recordings, it sounded far better than a speaker costing \$249 has a right to.

## MOJO MEASUREMENTS

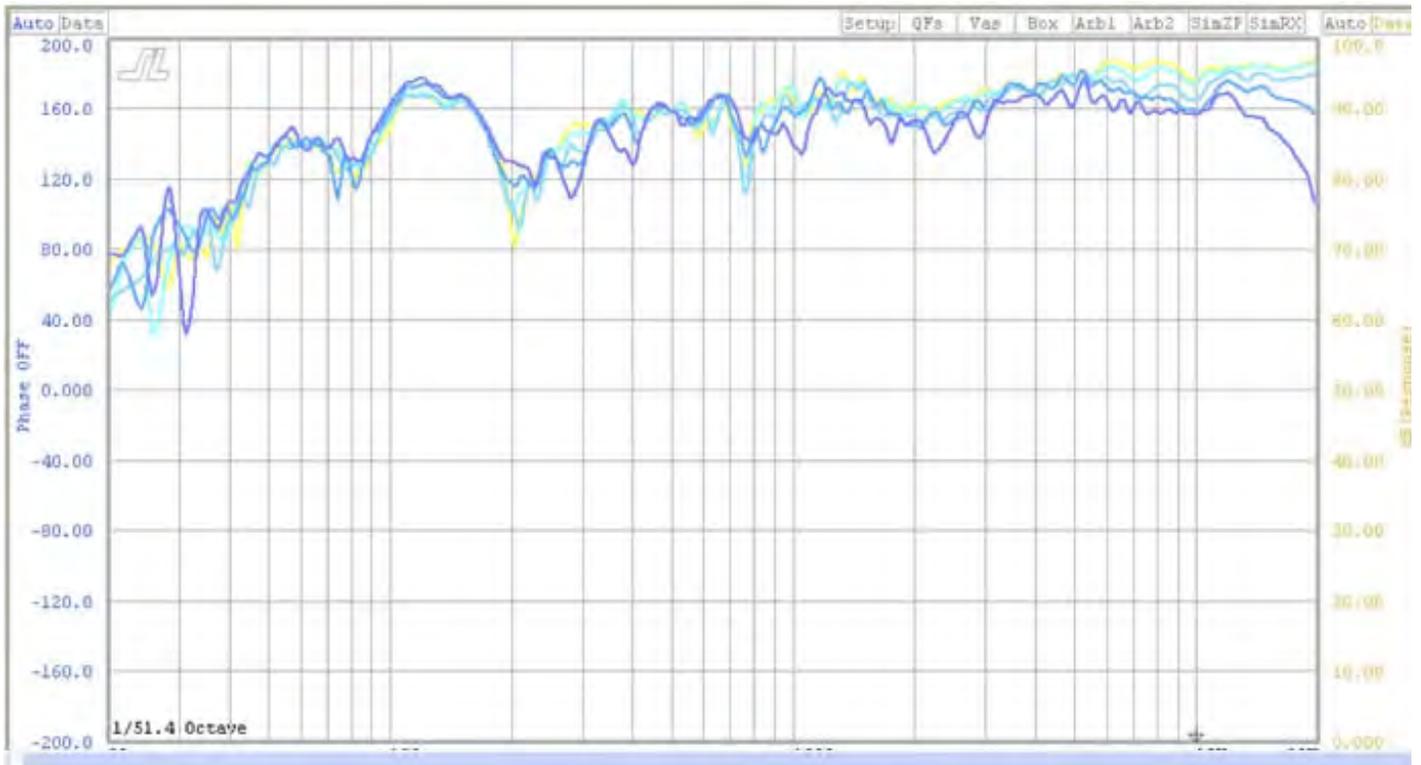
All measurements were taken using a WooferTesterPro from Woofer Tester and a calibrated ECM8000 microphone. Measurements were taken outside in an effort to reduce room effects. Our acoustically treated room was not available for use. We used 512 data points and smoothing.

The frequency response measurements were taken at tweeter level with one deviation from the norm. The FR measurements clearly showed why they sounded better when placed near the rear wall. I usually place monitor speakers on stands and measure them out in the open but given that these clearly

sounded and measured better near a rear boundary, frequency response measurements were taken with the speakers about 10 inches in front of the house outside.

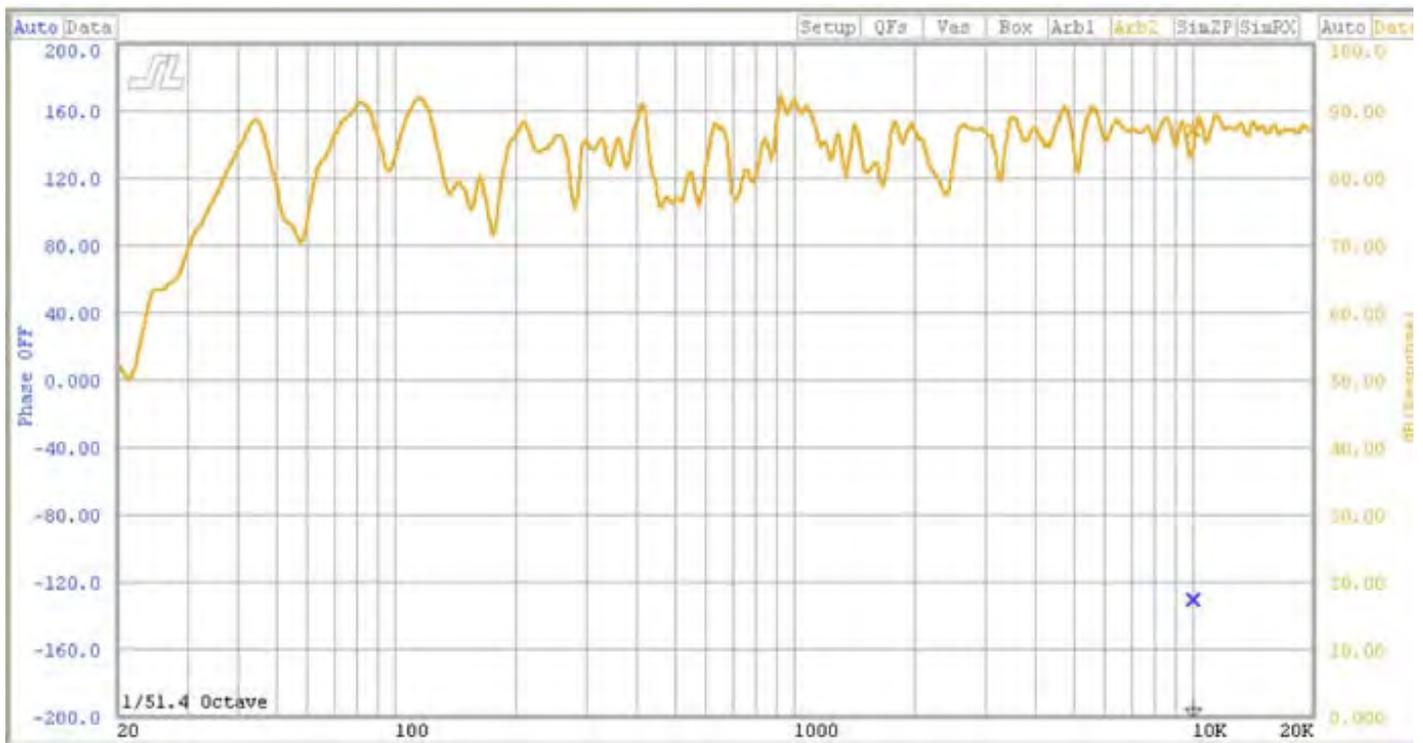
Here is the response on axis and 15, 30, 45, and 60 degrees off axis. What looks like a bump at 100Hz is actually close to the same level as the midrange which explains why they sounded better near a boundary. When pulled out from the wall, the bass response is very smooth but lower than desired.

A slight tick up in the treble is evident which explains the heightened sense of space and clarity people noticed. This is actually quite good for a speaker at this price as many of the speakers one can get at Best Buy for the same price have large bumps in the bass in treble as opposed to the slight rise of the P4.



The on axis, 15, 30, and 45 degree off axis responses follow a similar shape which helps explain why the imaging was so very good. The 60 degree off axis response is very smooth which helps explain why extreme toe in worked so well. If one buys these speakers, I recommend toeing them in to the point where you can just see the outside of each box when sitting in the center. That worked great for me.

The in-room response is possibly more impressive than the measurements taken outside as one can see it is more balanced with careful placement. Note they take advantage of the room gain, surprisingly getting an extra bump at 40Hz. Part of this is a function of the small listening room in addition to placement. This in room response curve was taken without a subwoofer.

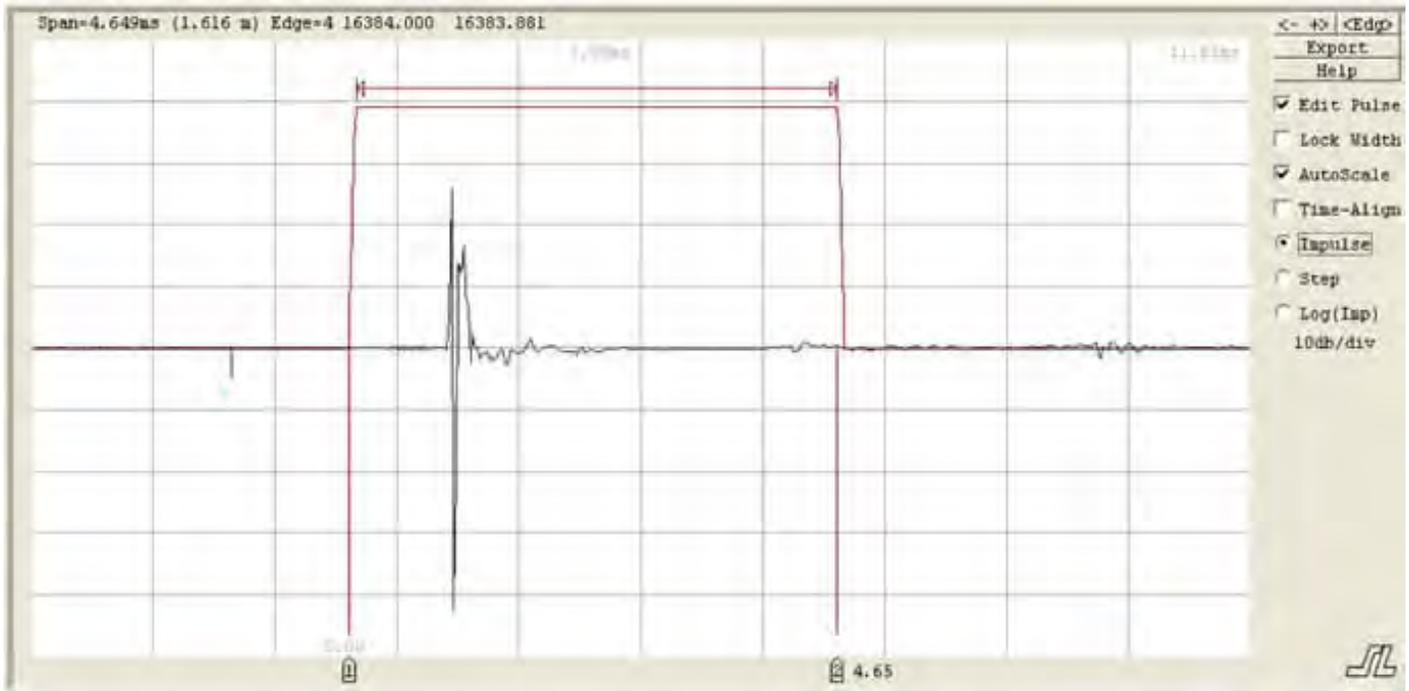


The electrical phase and impedance show a speaker that should be a relatively easy load. The impedance hits 4 ohms in a few spots for what I consider an overall impedance of 6 ohms. The bump around 40Hz shows that the slot port is actually tuned quite low helping create a tame but extended bass response for a small speaker.

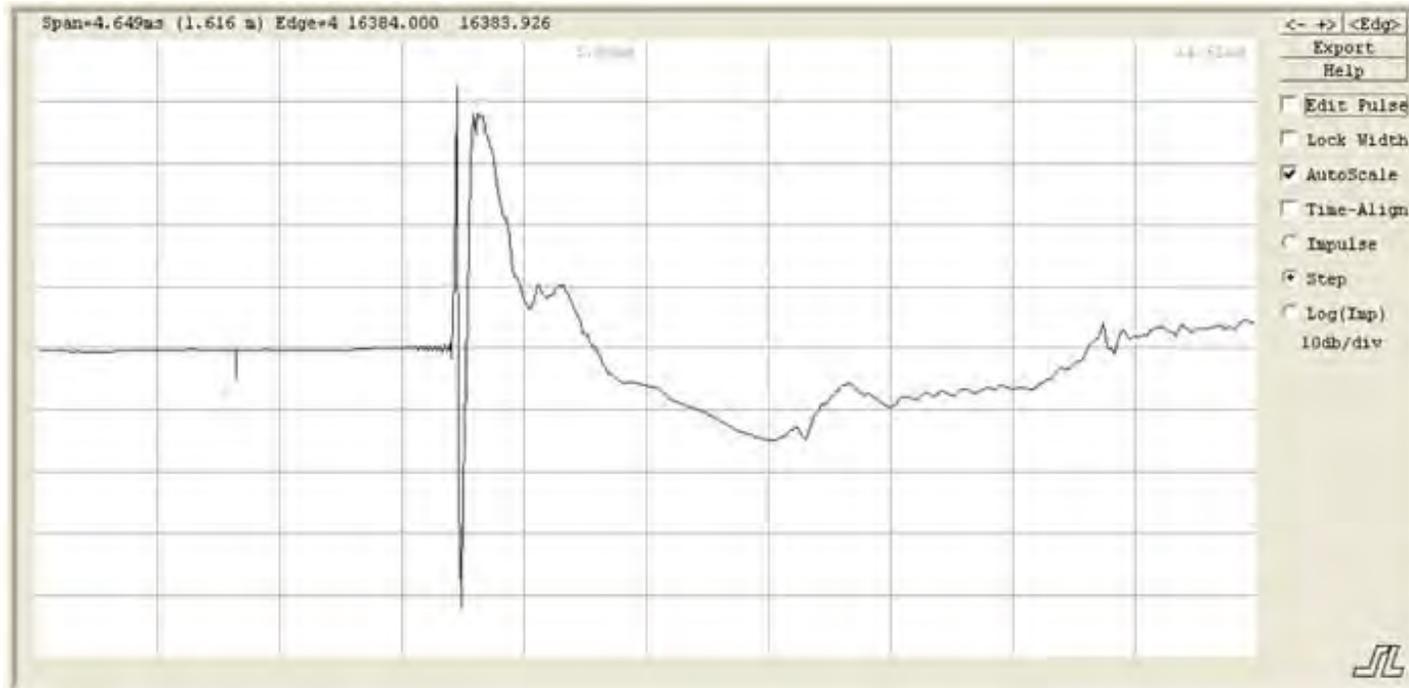


There is a slight bump in the impedance around 3KHz which might make for a very minor rise in frequency response around 3KHz with tube amplifiers. It could make for either a slight sweet or nasal sound but in either case, it is a small bump which would make for a very change in frequency response, if any. I consider these more tube friendly than most speakers. They should not have any major problems with any amplifier. I didn't measure the efficiency but in practice they were quite efficient too.

The impulse response shows that the drivers are not working in phase but seems to shut down quickly and cleanly.

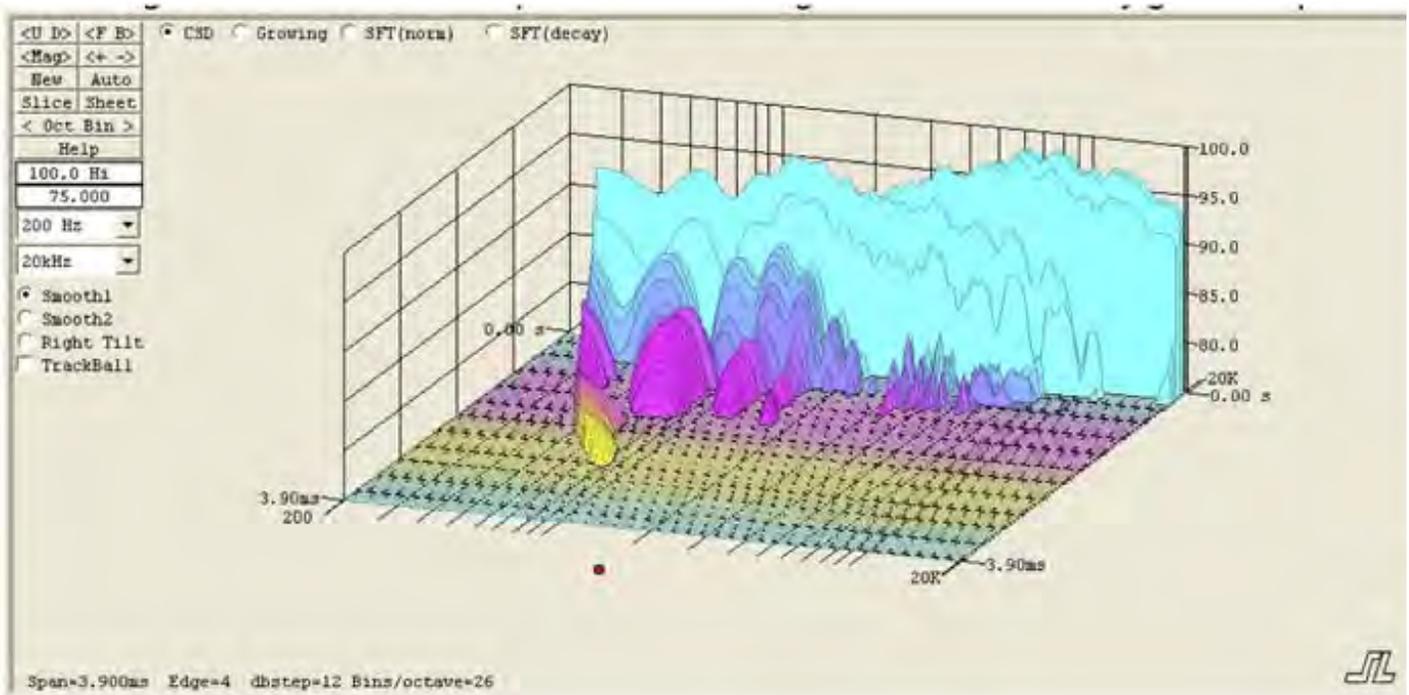


The step response should go straight up and then gradually fall back down as if it was a right triangle with a slight concave. The P4 looks pretty good here except for a small blip during the decay. Curiously, the blip did not show up in the CSD plot so this may have been an anomaly.



The P4 cumulative spectral decay or CSD plot is very good. The response drops like a rock with no apparently ringing or overhang. Very nice indeed. I have consistently found that speakers with clean CSD plots have a tendency to sound the least fatiguing and are the most resolving if everything else remains equal. I think this explains how they can get away with a slight rise in the treble response

without fatigue. This is a seriously good CSD plot.



A friend of mine from Texas who routinely wins chili competitions shared his recipe with me. The ingredients come from all over the world and are expensive. It takes a whole day of mixing, chopping, and stirring to cook the chili in addition to getting the meat just right. I have also found a chili packet that makes a quick and easy chili. It costs less, is easy and fast to make, and is quite enjoyable in a pinch. It's not the same as the elaborate chili recipe but can be pretty darn good when the other recipe is not an option. The Audioengine P4 is that chili packet. It is an amazing speaker for the price. A 30 day trial period balances some of the risk if you order online.

The P4 works best when placed near a rear wall and attention to placement and toe in is necessary to reduce reflections due to the wide dispersion. A subwoofer and bass management can bring the experience up a few notches. The cute, amplifier friendly P4 has a relatively smooth frequency response and a clean spectral decay bringing performance up a notch from its rivals.

Audiophiles with big, elaborate, expensive speakers will love these in an auxiliary system or a vacation house. Those who like music but have seriously limited funds will find solace in something that can reproduce music on the cheap. Others who are limited on space and might otherwise choose those Bose cubes have an affordable and much better sounding alternative.



Because of their outstanding performance to cost ratio, we bestow our Maximum Mojo Award on the Audio Engine P4 Passive Compact Speaker.

#### Specifications

Sensitivity: 88dB (2.83v @1m)  
Frequency response:58Hz-22kHz  
Nominal Impedance:4-8 Ohms  
Crossover Frequency:2.8 kHz  
Recommended Amplifier Power:10-125W per channel

tweeter:3/4" (20mm) silk dome with neodymium magnets  
Woofer:4" (101mm) Kevlar cone  
Enclosure:3/4" MDF Inputs:  
Gold-plated, 5-way binding posts  
Magnetically Shielded  
Weight (each):2.75 kg (6 lbs) Total shipping weight:6.5 kg (14 lbs)

Dimensions (each): 228 (H) x 140 (W) x 165 mm (D) (9 x 5.5 x 6.5")  
Shipping box dims:330 (H) x 460 (W) x 228 mm (D) (13 x 18 x 9")

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