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JPS Labs Abyss AB-1266 Planar Magnetic Headphones

By Tyll Hertsens • Posted: Jul 18, 2013



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Looking at the headphones I was quite skeptical that this contraption would offer any degree of wearing comfort, but looks can be deceiving. Getting the headphones properly adjusted to my head took a little bit of fidgeting, but once I found the sweet spot they were surprisingly comfortable and relatively secure. I did find, however, that I could never quite get the headphones to seal with as much pressure at the bottom of the earpad as at the top. When I rotated the pads far enough to provide an even seal, the oval shape of the earpad opening was horizontal and my ear didn't fit properly in the cup. Fortunately, the aluminum headband is sturdy, and by firmly but carefully bending the vertical arms of the headband inward slightly the problem was solved. The AB-1266 uses a leather headband pad with internal padding suspended by what looks like rubber o-rings at either end; it nicely distributes the weight of the headphones over a good portion of the top of my noggin. At this point it's very easy to take the cans on and

off my head, and long listening sessions are fairly comfortable.

This is probably a good time to mention that Joe Skubinski of JPS Labs recommends the headphones be adjusted to lightly seal against the head. During measurements of the headphones I spent quite a bit of time adjusting the headphones on the measurement head while watching a 30Hz square wave. It's quite easy to evaluate the performance of the seal in this way, and indeed I did find that the cans did perform best with a gentle but complete seal.

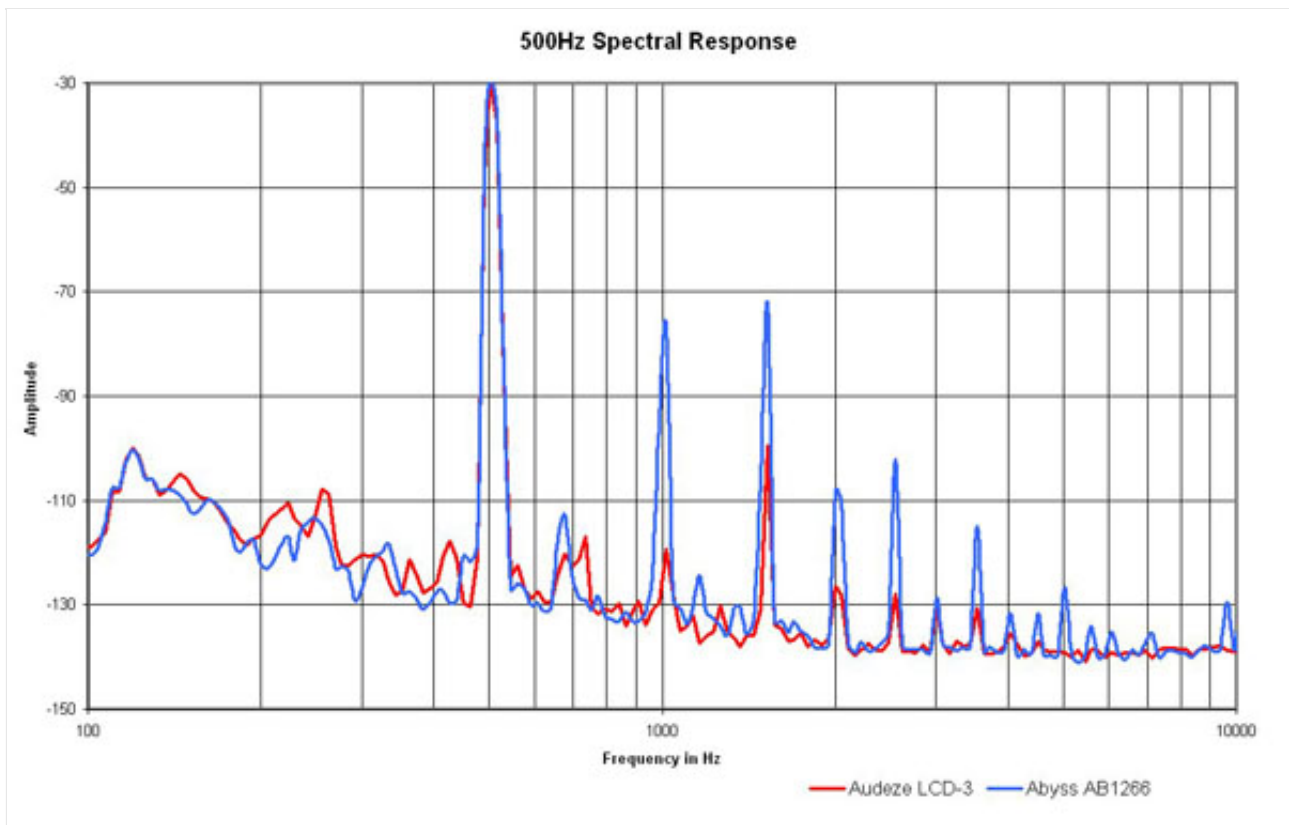
The build quality and materials appear to be top-notch. Black anodized aluminum and leather are used throughout. Two 8' long cables are terminated at each earpiece with mini-XLR connectors, and are specially made for the AB-1266 by JPS Labs using proprietary [Alumiloy](#) conductors. The amplifier end of the cables are terminated in full-size Neutrik 3-pin male XLRs. Accessories included with the Abyss headphones are plentiful and excellent. Included are: wood storage box; a very nice leather carry case with shoulder strap; an aluminum headphone stand; and two Y-adapters one with a 1/4" headphone plug and the other a 4-pin XLR. This may be the nicest set of accessories I've ever seen come with a headphone.

One-sided Planar Magnetic Drive

As unusual as these headphones are, the most unusual feature of these cans is their magnetic structure. Planar magnetic headphones typically have a magnetic structure that creates an iso-dynamic field in which the conductive elements are immersed. (You can read [more about it here](#).) One of the drawbacks of this technique is the large magnetic structure needed on both sides of the diaphragm that create a significant acoustic impediment to radiated sound.

JPS Labs has taken a different approach with the AB-1266 using a magnetic structure that is on one side of the diaphragm only. I spent quite a bit of time exchanging emails and talking on the phone with Abyss designer Joe Skubinski to get an exact understanding of the AB-1266 driver design. Joe was very forthcoming with detailed information on the design, but considers it proprietary information, so I'll not describe the driver structure in detail. I can say that the magnet is a single large neodymium magnet with slots in it, and it's polarity is north on one face, south on the other. A very thin diaphragm with metal traces in a serpentine pattern are aligned very carefully behind the magnet—alignment is critical in this design.

JPS Labs does not claim the AB-1266 is an iso-dynamic design, and in my opinion it is not. As the diaphragm moves away from the magnet it will experience less magnetic field strength, when it moves closer to the magnet the field strength will increase. With iso-dynamic designs the field strength theoretically remains constant, at a minimum it will be symmetrical as the diaphragm moves forward and back. The asymmetrical magnetic field strength of the AB-1266 should mean that it has more second harmonic distortion than iso-dynamic designs.



Spectra of 500Hz tone at 100dBspl with the Abyss AB-1266 and Audeze LCD-3.(Vertical scale is not calibrated to dBspl.)

The above spectral plot shows a 500Hz tone being played at 100dBspl with the Audeze LCD-3 and Abyss AB-1266 and the resulting harmonic series. (I chose a fairly loud level to test so that distortion products were as significant as possible. As you can see, harmonic distortion overall is higher in the AB-1266, but second and fourth harmonic peaks at 1kHz and 2kHz are a significantly higher with the AB-1266. Even-order distortion plays a larger roll in the AB-1266 response than it does with the LCD-3.

It would be easy at this point to simply say more distortion is worse, but that's not necessarily true. If it were, tube amps would be universally worse sounding than solid-state amps, which is simply not the case for many listeners. I'll refer you to [this article](#) written by Nelson Pass where he discusses the issue. My motive for producing the plot above was to see if the AB-1266 had more even-order distortion possibly produced by the asymmetrical magnetic field...and it does. Though it's not certain the even-order distortion is being produced but the nature of the magnetic field, it's pretty good evidence.

The proof of the pudding however, is in the listening, which we'll get to on the next page.



Here you can see the gear in my listening tests...and my ever-growing bald spot. :(

Listening Test Equipment

At \$5495, the Abyss AB-1266 clearly intends to play among the big boys. My initial listening tests did indicate these cans were indeed of this caliber, so I assembled what I thought would be a very tough group of systems for comparison.

The front-end feeding all the amp/headphone systems was a MacBook using [Amarra](#) software. The USB output was connected to an [Ayre Acoustics QB9](#) DAC (I love this DAC!). Both balanced and unbalanced connections were used depending on the amps, interconnects used were [Cardas Clear](#).

[Sennheiser's HD 800](#) is a long-time favorite of mine, but finding an appropriate amp for it has always eluded me. After reading some very good impressions from people whose opinions I trust, I asked Doug Savitsky of ECP Audio for a loan of his [L-2 amp](#). Holy guacamole! I've never heard my modified HD 800s sound better. Truly a fabulous pairing that retains all the speed of the HD 800 and significantly rids it of its sterile edge. Nate Maher's InnerFidelity review of the L-2 is [here](#). My review of the HD 800 is [here](#), see [this article](#) for HD 800 modification instructions.

Another player in this category is the [Audeze LCD-3](#) planar magnetic headphone, I chose to pair it with the [HiFiMAN EF-6](#)—a headphone amp designed specifically with planar magnetic headphones in mind. Skylab's InnerFidelity review of this amp can be found [here](#). My review of the LCD-3 is [here](#).

No comparison of top-of-the-line headphones would be complete without including the [Stax SR-009](#) paired with the [HeadAmp Blue Hawaii](#) electrostatic headphone amp. Big thanks to Justin

Wilson at HeadAmp for shipping me his SR-009 for the tests; and to my buddy Stretch for the on-going loan of his Blue Hawaii. You can read more about my impressions of this pairing [here](#) and [here](#).

Last, taking Joe Skubinsky's recommendation, I paired the Abyss AB-1266 with a [Burson Conductor](#). This was a bit of a last-minute addition as I was going to use the EF-6 paired with the Abyss, but Joe preferred the Conductor. He called [The Cable Company](#) who sent their loaner amp over-night. Thank you so much, it's a lovely pairing. I encourage readers interested in sampling amps and headphones to participate in The Cable Company's [Headphone Lending Library](#) program.

Listening to the Abyss AB-1266

Man, these are the fastest sounding headphones I've heard. While nimble in the extreme, they also have a very good sense of dynamics, and solid bass punch. The music just bounces along; this is a fun, fun, fun headphone. Imaging was likewise pretty spectacular, bested only by the HD 800. In a number of instances when comparing it to the other headphones, I heard areas where the other headphone might be technically superior, but I often found greater pleasure in the sound of the AB-1266. This was particularly true of music which had relatively simple instrumentation that covered the entire audio spectrum and was dynamic. I suppose that may be the nature of world-class headphones: At some point the measurements and technicalities have to be thrown out the window; what really matters is the listening experience.

There were two areas where I felt the AB-1266 fell a little flat however. I heard a modest mid-range and low treble coloration, which wasn't very apparent listening to the headphone alone but was readily heard when switching between the AB-1266 and the HD 800 and SR-009. The other two had a more neutral response to my ears, and switching to the AB-1266, I found a mildly hollow sounding mid-range, and a somewhat recessed low treble. (~2-5kHz). This fault was quite modest in listening though, and I felt it integrated quite nicely with the overall sonic character of the headphones.

The second fault I found much more problematic. High frequency information was lightning quick and articulate, but was accompanied by a haze of low level, high frequency noise in the 10kHz area. Cymbals, brushes on snare, the breathiness of wind over a flute emboucher hole were markedly unnatural when compared with the three competitors. This character, coupled with the somewhat recessed lower treble tended to significantly raise the perceived pitch of some treble material. For example, brushes on a snare which sounded organic and mellow on the other cans, would sound more metallic on the Abyss AB-1266. One recording I use for evaluations is a slow shuffle where the drummer alternates brush strokes on the snare and high-hat closes, with the AB-1266 I simply couldn't tell them apart. On simple arrangements it did at

times add a sense of sparkle to the treble that was pleasing, but once the treble became crowded with information it tended to create a blur of low-level white noise surrounding the details.

InnerFidelity readers are likely well aware that I hate harsh or overly bright headphones, but I have to say the treble problems with the Abyss AB-1266 did not overly damage my listening pleasure. Yes, I could always hear it if I chose to, but for the most part if I just relaxed and enjoyed the music it receded as a problem and tended to add some tinkly fun to the listening. Again, the exception was complex highs, I would not recommend these cans for crunchy electric guitars; big brass bands; or an accordion, banjo, bagpipe, kazoo ensemble.

Compared directly to the other cans, the SR-009 sounded a bit sterile and amazingly not as fast as the AB-1266. The bass on the Abyss was clearly more potent. The LCD-3 had slightly better bass response and neutrality than the AB-1266, but was somewhat muffled and withdrawn comparison. The HD 800 is the best imaging headphone I've heard, pin-point in it's precision. The Abyss had about the same sense of spaciousness, in fact, maybe more so given it's sparkly character, but it lacked the precise imaging of the HD 800. It fairly easily bested the HD 800 in bass response.

Summary



Despite it's odd looks and weight, I found the JPS Labs Abyss AB-1266 a surprisingly comfortable headphone. The included accessories are generous and top-notch. The sound is spectacularly fast with very good bass heft and control, and a gentle U-shaped response from mid-bass to upper-mids makes it a wonderfully fun listen. It's a little laid back in the presence region, and does have some mid-to-upper treble low-level noise that interferes with music containing complex treble information.

I think these are marvelous cans for small ensemble acoustic chamber, jazz, and world music, and would recommend them to avid headphone audiophiles with very healthy wallets to round out a world-class collection of headphones with something quite unusual and fun. However, the very high price and problems with treble response will keep them off the Wall of Fame.

Lastly, as an aside, my appreciation of the Sennheiser HD 800 stepped up a significant notch when driven by the ECP Audio L-2 amplifier. I heartily recommend it to those who are struggling to find listening joy with these sometimes too sterile cans.

Video

Resources

JPS Labs home page and Abyss AB-1266 product page.

Head-Fi Threads [here](#) and [here](#).