

Audeze LCD-3

If the planar magnetic drive principle really is superior to moving-coil alternatives, the LCD-3 – top model in the Audeze range – ought to be the best headphone available
 Review & Lab: **Keith Howard**

If you are of the mindset that consumption should be conspicuous and material wealth flaunted, the LCD-3 – top model in Audeze's four-headphone range – will frustrate the hell out of you. It's a bit like a Savile Row suit with its designer label on the inside: you can tell the LCD-3 apart from the 'lowly' LCD-2 [HFN Mar '13] only by being close enough to read the small lettering along the top edge of the capsule back plate. Otherwise the two models look identical, although this LCD-3 came fitted with brown earpads and headband rather than the black items of the previous LCD-2.

PLANAR DRIVE UNIT

And it's not only appearance that they share. Both are open-back designs (Audeze does also have a closed-back model in its range, the LCD-XC, priced nearer to the LCD-3 than the LCD-2) and both feature the Audeze planar magnetic drive unit: a modern realisation of the driver geometry first seen in the Wharfedale Isodynamic headphone of 1972, wherein a flat 'voice coil' is etched from a thin layer of copper or aluminium deposited on a thin plastic film. It's in the details of the drive unit's design that the LCD-2 and LCD-3 are differentiated: the costlier model has a thinner diaphragm, slightly lower impedance and a 'more efficient magnet structure'. Beyond that Audeze declines to elaborate, other than confirming that the lowering of impedance was done to improve sensitivity a little.

Even so the LCD-3 is still 5-12dB less sensitive than many of its moving-coil competitors. But it couldn't be called notably insensitive, nor is it an awkward load to drive, given that its impedance is almost

purely resistive and, at about 48ohm, a little higher than typical. In other words, any pukka headphone amplifier ought to be able to drive it without difficulty, an output voltage of 3.4V being sufficient to achieve a peak acoustic level of 120dB SPL. Which is not to say, of course, that any old headphone amplifier will do. Quite the contrary, the LCD-3 merits partnering with the best ancillaries – and headphone amplifiers vary in sound quality just as much as do amplifiers for driving loudspeakers.

There's no escaping the fact that this is a large and (because of all those bar magnets in the drive units) heavy headphone, even for an audiophile over-head model. Although the deep earpads, well-padded headband and modest head clamping force all help maximise comfort, swapping the LCD-3 for, say, Sony's bantam-weight MDR-MA900 is a bit like putting on running spikes after gumshoes. It's part of the Audeze experience you just have to accept.

Suggesting that the LCD-3 is suitable for use on the hoof would clearly be fatuous, so Audeze makes no such pretence: the capsules don't rotate flat or fold up into the headband and there is no provision

for connection to mini-jack sockets. Two flat Y-cables are supplied which attach to each capsule separately via 3-pin mini XLRs: the standard single-ended option is terminated in a chunky metal-bodied ¼in jack; the balanced cable, for those few who have a headphone amplifier equipped with balanced outputs, is terminated in a single 4-pin XLR. An adapter is available as an accessory for converting the 4-pin XLR to twin 3-pin XLRs if required.

I was initially disappointed to see that the LCD-3 was supplied packaged in

a smart but ultimately effete 'show case', as Audeze calls it, when I was much more impressed by the rugged plastic travel case in which our LCD-2 review sample arrived, which looked like it could survive a small thermonuclear explosion. It turns out, though, that you can specify either. Likewise you can select between the lambskin earpad covering shown in the photos or a suede alternative.

A word regarding structural resonances. In common with many of the headphones I've reviewed recently the LCD-3 has a headband resonance, clearly heard as a 'boing' if you wear the headphones and tap the headband with a finger. On the pink noise impedance test there was less obvious coloration or shifting of the image towards the silent channel than in the worst cases but still it's audible. In their quest for the ultimate headphone Audeze's designers would do well to eliminate this.

As already stated, a headphone with the aspiration of the LCD-3 to be one of the world's very best merits being partnered with a headphone amplifier of the highest quality. So the fact that the LCD-3 was with me at the same

'It was an object lesson in how good headphone bass can be'



RIGHT: LCD-3 is optionally supplied either in this swish show case or in an impressively rugged plastic protective case that looks fit for service with the SAS

RIGHT: Planar magnetic (isodynamic) drivers are of the same general design as in the lowlier LCD-2 but boast a thinner, lighter diaphragm and revised magnet assembly



telling bit more intimate via the LCD-3. Elvis's voice, and those of the backing singers, were more believable and the studio reverb a touch more apparent. Nat King Cole's voice in 'Welcome To The Club', ripped from the Audio Fidelity SACD of the same name, benefited likewise and here there was also a little more snap to the accompaniment of the Count Basie Orchestra to give a more toe-tapping overall delivery.

That said, let's be clear that the LCD-3, like the LCD-2, is not the headphone for listeners who regard information as the mother lode. It has excellently extended and controlled bass – perhaps the best there is from a headphone for listeners who understand the difference between quality and quantity (not that I mean to imply the LCD-3 is at all lacking in the latter) – but at higher frequencies, no two ways about it, it remains reticent.

If you like a sound that's dark-hued in its timbres and errs on the side of a soft portrayal that banishes glare, the LCD-3 could be right up your boulevard. Whereas if you prefer a delivery that majors on resolution, on delivering transparency but not over-etching detail, then the LCD-3 will almost certainly disappoint, even though it is more hear-through than the LCD-2. No headphone can deny its inherent tonal balance to that extent.

For me this means that the LCD-3 works best on relatively simple music, particularly vocals – but it helps if those vocals are close-miked and borderline fierce. A good example was 'Songbird', ripped from Eva Cassidy's *Simply Eva*. It's a great voice but an overly manipulated recording to which the LCD-3 applied a welcome soothing balm, turning the sometimes strident into the mellifluous.

What the LCD-3 won't do is burnish old recordings all but buried in ooze, which makes it a less than obvious choice for aficionados of classic rock recordings. ➔

time as the Teac HA-501 [HFN Apr '14] was a piece of serendipity. In crude economic terms they may seem mismatched given that the headphone is getting on for three times the price of the amplifier, but in terms of what *really* matters – the ability to make reproduced music live and breathe – the HA-501 is an ideal partner.

job than the LCD-2 of cutting to the heart of a performance and, more objectively, of unpicking the features of a recording.

Elvis Presley's 'Love Me Tender' from *24 Karat Elvis*, for instance (ripped from the SACD and converted to 24-bit/88.2kHz PCM using AudioGate), was that little but

A DIFFERENT SOUND

The burning question for any potential LCD-3 owner, of course, is whether it justifies its premium over the LCD-2. To which the answer is yes. Although the lab report confirms that the LCD-3 has a tonal balance much like the LCD-2, nevertheless the two models sound appreciably different. Although – thanks primarily to that easy-going tonal balance with its relative lack of presence band content – the LCD-3 is never going to be top of the list for most explicit, most transparent headphone available, still it does a better

LIGHTNESS OF BEING

Audeze says one of the benefits of its headphones' planar magnetic drivers is that 'the extremely lightweight diaphragm is able to respond with more immediacy than in conventional drive units', a claim commonly repeated – if phrased in different ways – for electrostatic and true ribbon drive units also, in both headphones and loudspeakers. It's lighter so it can move quicker, right? Wrong, as we can easily see if we are more precise and recast the claim as 'light diaphragms can accelerate faster'. In simplified form, Newton's second law of motion states that force equals mass times acceleration ($F=ma$) from which we see that whatever the mass we can accelerate it as fast as we wish provided that we apply sufficient force. As sound pressure level is proportional to diaphragm acceleration, if a drive unit can achieve the desired output level then it must be able to apply sufficient force to its diaphragm, however heavy. It's that simple.

AUDEZE LCD-3

Although much has been made of the low sensitivity of the LCD-2, we measured 106dB SPL for 1 volt input at 1kHz when we tested it [*HFN* Mar '13] – better than some high impedance moving-coil designs and a world removed from first-generation planar magnetic headphones like the Wharfedale Isodynamic. But the fact that the LCD-3, due to its lighter diaphragm and reduced impedance, proved to be over 3dB more sensitive at 109.4dB (averaged for the two capsules) is welcome nonetheless. No headphone amplifier worthy of partnering with it should have difficulty driving it to peak sound pressure levels the far side of 120dB. The drop in impedance that helps achieve this is small – only around 10ohm – and still leaves the LCD-3, with a minimum measured modulus of 47.2ohm, a little easier to drive than many medium impedance headphones.

It's a feature of isodynamic designs that they have almost constant impedance across the audible range, the difference between lowest and highest modulus being just 0.9ohm in our testing over the range 20Hz-20kHz. So you can safely use the LCD-3 almost regardless of source impedance as it will make negligible difference to the overall frequency response.

The uncorrected frequency response [Graph 1, below] is characterised by virtually flat output below 1kHz, less rise than would be expected at 2-3kHz and declining output thereafter so it's no surprise to find that the diffuse-field-corrected response [Graph 2, below] shows a falling perceived output beyond 1kHz, consistent with the LCD-3's relaxed tonal balance. Capsule matching was unusually tight for a headphone, though, at ± 4.9 dB (40Hz-10kHz) and Audeze's finest has exceptional bass extension, with its -6dB point (re. 200Hz) occurring at a frequency well below 20Hz. As with the LCD-2, total harmonic distortion was vanishingly small (<0.1%) at 90dB SPL at both 100Hz and 1kHz. KH



ABOVE: Two cables are supplied – unbalanced with a ¼in jack plug and balanced terminated in a four-pin XLR

Even 'Black Sabbath' from *Black Sabbath*, one of the better examples of early-'70s rock recording quality in my collection, could have done with a little more energy although the thunderclaps were awesome.

LACKS SOME SPARKLE

Descend the quality ladder to the depths of Yes's 'Roundabout' (ripped at 24-bit/96kHz from the DVD-A of *Fragile*), where dynamic range is largely abandoned after the guitar intro, and the LCD-3 just doesn't provide sufficient elucidation to make as silky a purse as can be had from the sow's ear on offer.

It was a similar story with 'Levon' from the 24-bit/96kHz download of Elton John's *Madman Across The Water* (a better recording but short on precision via the LCD-3) and – really digging down to the soundtrack of my youth – the 24-bit/96kHz download of The Moody Blues' 'Nights In White Satin' (whose sound is more like 'Nightmare In Brown Syrup'). The LCD-3 did a good job of flattering Justin Hayward's voice but the trademark Mellotron sound just wasn't ready enough.

Modern recordings more worthy of their hi-res credentials fared better but the LCD-3 doesn't possess the sparkle necessary to convey the full benefits of life beyond 16-bit/44.1kHz. The trumpet in Jimmy Cobb's 'I Had the Craziest Dream' from *In The Key Of Blue* (24-bit/

96kHz download) never crossed the line from raspy to harsh, as it so easily can, but the percussion was recessed, as if the drum kit had been moved a few metres back.

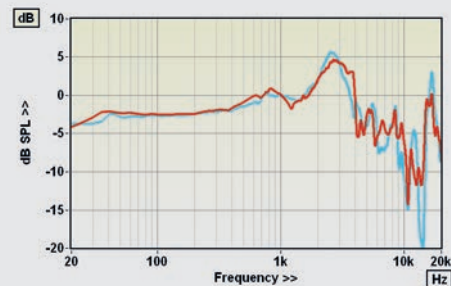
To end on a positive note I turned to a track that thrives on extended and powerful but well controlled and not over-egged bass, The Beatles' 'Come Together' from the *Love* CD. I've lost count of the number of occasions when playing this track over modern headphones that I've switched off in disgust at flabby, excessive LF. But not with the LCD-3, which is an object lesson in how good headphone bass can be when the response is flat to below audibility and the distortion vanishingly small.

If Audeze could coax similar quality from the opposite end of the spectrum in an 'LCD-4' then it would be on to a definite winner. ☺

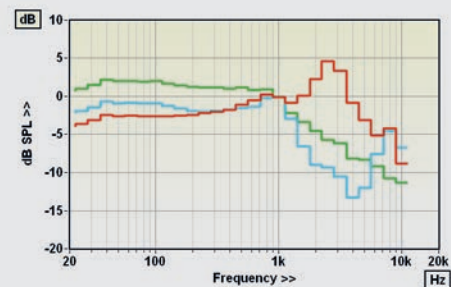
HI-FI NEWS VERDICT

Job done, in that the LCD-3 is indeed an improvement on the less costly LCD-2. But in sharing the LCD-2's laid-back, low-glare tonal balance the LCD-3 still answers to a particular taste in musical presentation rather than to audiophile imperatives in general. Like its lesser sibling it will appeal most to those whose priority is smoothness of sound, less to those who place a premium on warts'n'all clarity.

Sound Quality: 85%



ABOVE: Very flat frequency response below 1kHz is unusual but the declining output above 3kHz is consistent with its relaxed sound quality



ABOVE: Third-octave freq. resp. (red = uncorrected; cyan = FF corrected; green = DF corrected)

HI-FI NEWS SPECIFICATIONS

Sensitivity (SPL at 1kHz for 1Vrms input)	109.4dB
Impedance modulus min/max (20Hz-20kHz)	47.2ohm @ 6.8kHz 48.1ohm @ 3.8kHz
Capsule matching (40Hz-10kHz)	± 4.9 dB
LF extension (-6dB ref. 200Hz)	<20Hz
Distortion 100Hz/1kHz (for 90dB SPL)	<0.1% / <0.1%
Weight (inc cable and 0.25in connector)	645g