

► **DETAILS**

PRODUCT
Cambridge Audio
Aero 2

ORIGIN
UK/China

TYPE
Standmount
loudspeaker

WEIGHT
6.8kg

DIMENSIONS
(WxHxD)
203 x 70 x 311mm

FEATURES

- 1x 46mm BMR treble/mid driver
- 1x 165mm paper bass driver
- Quoted power handling: 25-120W
- Quoted sensitivity: 90dB/1W/1m
- Quoted frequency response: 40Hz-22kHz (+/- 3dB)

DISTRIBUTOR
Cambridge Audio

WEBSITE
cambridgeaudio.com



Aero dynamics

Here's a brand new small standmount speaker with a difference; something that's not apparent from just looking at it, says **David Price**

On the bread and butter world of budget boxes, points of difference between loudspeakers are small, yet – by marketing necessity – often overstated. Respective models can be stylistically quite varied, but in engineering terms all too similar. Points of divergence are really down to fine details, ways of finessing what is ostensibly the same drive unit and cabinet lineup to give what the designers want. True, you might get an interesting baffle here or an unusual cone material there, but the fact remains that in the vast majority of loudspeakers we buy, a mid/bass driver will take care of the sound from about 50Hz upwards to 2kHz or so, when a crossover will bring in a dome tweeter that goes up to 20kHz or beyond. That's why the new Aero 2 is so interesting – because it doesn't do this!

Look above the woofer to the upper drive unit. Where you'd normally see

There's no sense of coarseness from the BMR as it spreads out around the room

a small dome tweeter – made either from plastic, metal or fabric – there is a Balanced Mode Radiator fitted. The BMR design came from NXT technology developed in the nineties, which was all about producing flat panels that make music. Various NXT panels have appeared on loudspeakers – the Mission X-Space being an interesting example from the mists of time – but the BMR spin-off has recently grown legs, thanks to the design's very broad dispersion and bandwidth capabilities. Basically, for a given size, the driver can throw out a wider range of sound across larger parts of a room than conventional cones or domes. They've proved their efficacy in all sorts of applications, from soundbars to in-car installations – so why not put one in a small standmount speaker?

The Aero does just this – running a 46mm BMR with a conventional 165mm paper cone bass unit. Notice that I didn't say 'mid/bass' here; if it was any other loudspeaker at this price point, I would have done precisely this. But the Aero doesn't have a mid/bass driver, because the midrange is taken care of by the BMR. Here's the clever bit – by opting for a BMR the designer can use one single drive unit for all frequencies from 250Hz upwards, with the bass driver

handling everything below. Contrast that to a conventional speaker, where the larger driver runs from 50Hz or so to 2kHz, and then the tweeter takes over. The difference is, of course, that the crossover frequency on the Aero is way lower than any conventional speaker using a dome tweeter – which means that it is far further away from the ultra-critical midband, where the ear can hear any change of phase or spike or dip in response far more clearly than it can higher up or lower down.

The genius of the Aero then – the reason it is like no other budget loudspeaker – is that it sidesteps the problem of putting the crossover where the ear is most sensitive. The result is that you get a bass driver optimised for being a bass driver, and a BMR that gives you a wide expanse of sound from upper bass to high treble – without any crossover in the way where the ear can hear it most. Oh, and there's more – because the BMR creates a lot of its sound from surface vibration (like an exciter on an NXT panel) as well as traditional in-out piston motion, it diffuses around the room better and doesn't have such a pronounced sweet spot. Clever stuff, eh? ▶



IN SIGHT



- 1 46mm BMR treble/mid driver
- 2 165mm paper cone bass unit
- 3 Well braced MDF cabinet
- 4 Non-biwirable binding posts
- 5 Front baffle bass reflex port

ON TEST

A sensitivity of 90dB is claimed for the Aero 2, but our measured figure of 85.9dB on pink noise indicates that this is substantially optimistic. Nominal impedance is quoted as "8ohms compatible", but the modulus drops to a minimum of 3.4ohms at 138Hz, making a 4ohm nominal figure more appropriate. Impedance phase angle is also quite large at low frequencies, so the EPDR (equivalent peak dissipation resistance) falls to 1.6ohms at 98Hz and 1.9ohms at 171Hz, making the Aero 2 quite a challenging amplifier load overall, although at higher frequencies the Balanced Mode Radiator (BMR) driver is benignly resistive. Frequency response, measured on the BMR

axis, was flat to within ± 2.5 dB and ± 2.8 dB respectively for the review pair, 200Hz-20kHz – an excellent result for a passive speaker.

Pair matching over the same frequency range was less good at ± 1.6 dB, but below 15kHz the disparity reduced to less than ± 1.0 dB. Diffraction-corrected near-field measurement recorded a bass extension of 57Hz for -6dB ref 200Hz – fair for a speaker of this size – but showed the upper bass to have a peak of about 4dB at 100Hz. The cumulative spectral decay waterfall was clean, with fast initial energy decay across the spectrum and well-suppressed resonances. *KH*

The Aero's drivers are, of course, bespoke; the BMR is the very latest fourth-generation unit – which designer Dominic Baker says is newer than the BMRs in any other commercially available loudspeaker currently on sale, some of which are still running first-gen designs. It is British designed and bespoke manufactured in China, at Cambridge Audio's facility. The bass driver is too, and uses paper for its cone material because the designer thinks it's still one of the stiffest materials relative to weight around – and a light, but strong cone is just what's wanted to give accurate air moving ability.

In direct contrast to all the clever stuff that's going on, the cabinets themselves are pretty anodyne-looking budget boxes, although they're heavier and better built than they look. The designer believes that using fancy swoopy sides – so beloved by many rivals – is more about styling than sonics, and says that it can actually create problems, too. That's why the Aero gets a well-damped MDF box with a single largish reflex port on the front baffle; there's a choice of

black or dark walnut finishes. No biwiring option is offered – again Dominic Baker believes the cost/benefit ratio of biwiring your system isn't as good as throwing the same amount of upgrade cash at better quality cable, rather than more of the same.

Sound quality

The second you set ears on the Aero 2s, you realise you're listening to something radically different from its rivals. This little loudspeaker has in some ways an amazing sound, offering the sort of dispersion and evenness across the midband and treble you'd normally only get from an electrostatic. It's an eerie feeling of the music gelling together in an organic way, rather than being forced out of two differing size toothpaste tubes – and it's lovely.

For example, play some smooth, classic funk in the shape of Chic's *Freak Out*, and what you'd normally expect from a speaker at this price is an edgy sort of 'boom tizz' sound, with the bass guitar thumping, the cymbals crashing and those female vocals honking out at you. Try this on the Aeros, however, and you get

a far more even, balanced and subtle performance, completely devoid of the sound of loudspeaker drive units struggling to keep abreast of events. The midband and treble are so smooth that you can listen right into the mix, while the bass bounces around with energy and ease, beautifully integrated with the rest of the action. Many people – this reviewer included – love this sort of thing, as it is totally unexpected from a pair of €249 speakers; indeed in some ways it is closer to the svelte performance you'd expect from a big

These speakers have plenty in reserve when the music reaches a crescendo

2.5-way design of a high-end floorstanding speaker. It is cool, balanced and effortlessly musical; devoid of pain or grain.

However, those used to the spectacle of kicking, crashing and banging budget boxes will be disappointed – they'll accuse the Aero of being too polite, of not having enough bite. And they'll say it is 'boring' because it doesn't 'kick ass'. Listen carefully, however, and it does – as the 6in driver in the Aero shifts a good deal more air than most 4in-equipped rivals like the Q Acoustics Concept 20. It shows itself better able to withstand the rigours of powerful modern music such as Kanye West's *Say You Will*. Even in a medium to largish listening room, you can really feel the electronic percussion hit home. There's a fine sense of solidity, plus the ability to go louder with less compression apparent. The thing is, though, that there's no big, lumpy peak around 100Hz that gives so many small standmounts an apparently big, bassy showroom sound (along with the one-note bass to match). Instead, the Aero 2's low end is smooth and devoid of trickery.

The quality of the treble is excellent; Genesis's *Robbery, Assault and Battery* has some lovely hi-hat and ride cymbal work and the Aero 2 shows how smooth and delicate it can be; there's no sense of grain or coarseness from the BMR, and it spreads out around the room beautifully. However, sometimes a little extra bite would be nice; it's almost as if the unit is over smooth and it almost doesn't seem right on a budget speaker whose first job is to entertain. It's an odd remark to make

HOW IT COMPARES

The direct rival to the Aero 2 is Q Acoustics Concept 20, which sports a very robust, well-damped cabinet that's a good bit smaller than the Aero, plus a 25mm polyester dome tweeter and a 125mm mid/bass driver, crossing over at 2.9kHz. The result is a lovely sounding speaker with a smooth, musical sound – in many ways similar to the Aero – but it isn't as seamless across the midband, and doesn't have the clarity at higher levels. This is likely down to the Aero's larger 165mm bass driver, and the fact it needs to do less work as it crosses over so much lower. The Aero compresses the music less at high volumes, and drives larger rooms with ease.



BMR TECH

Conventional moving coil drive units act pistonically at low frequencies, with the diaphragm moving as a rigid whole. As frequency increases, two undesirable things happen: the acoustical output becomes confined to a progressively narrower forward angle – an effect known as ‘beaming’ – and flexure in the diaphragm results in resonances rather dramatically termed ‘breakup’, although no physical damage occurs. The Balanced Mode Radiator (BMR) is a cleverly elaborated form of moving-coil driver, which overcomes these problems using a flat diaphragm with carefully placed annular masses. The end result is a drive unit with an unusually wide passband – from 250Hz to well over 20kHz in the Aero 2 – with considerably less beaming and more well controlled resonances.

perhaps, but certainly with subtle high-quality front ends this speaker can almost sound that little bit too refined with thumping rock music.

It’s a different matter with classical, of course, where the Aero soars. It delivers a large-scale sound on the Berlin Philharmonic’s rendition of Beethoven’s *Pastoral Symphony*, with an accurately rendered orchestra floating in space. Violins are amazing to behold, as they’re right where normal two-way speakers crossover, yet with these little boxes you get a wonderfully balanced and phase-coherent sense; they hang in the recorded acoustic with total assuredness, and sound raw and realistic yet never grate. Lower down, cellos grumble menacingly, yet these speakers seem to have plenty in reserve when the music reaches a crescendo; I’ve heard many pricier designs sit on transients and compress things much more. Overall, you get a refined and natural sound completely unexpected at this price.

Conclusion

Just in case you hadn’t noticed then, I love the new Cambridge Audio Aero 2s; they’re an exotic little loudspeaker

that’s simply not built in quite the same way as its rivals – and for good reason. The result is an extremely open and seamless sound at the price, one that shares more with a high-end electrostatic than a cheapo box speaker, in some respects. Still, such sophistication will not be for everyone – some might find them a little lacking in ‘bite’; such people are well served with many other designs! Go and hear the Aero 2 if you can then, and don’t be put off by the staid looks, because the nature of its engineering is precisely the reverse ●

HIFI Choice

OUR VERDICT

SOUND QUALITY ★★★★★ **LIKE:** Superbly smooth, open, seamless sound; musicality

VALUE FOR MONEY ★★★★★ **DISLIKE:** Looks are a little on the bland side, but that’s it at the price

BUILD QUALITY ★★★★★ **WE SAY:** Brilliant small standmount engineered for stunning sonics

EASE OF DRIVE ★★★★★

OVERALL ★★★★★

Q&A

Dominic Baker

Audio Systems Business Director, Audio Partnership PLC



DP: What can a BMR do that a standard dome tweeter can’t?

DB: It covers a far wider range of frequencies – a typical dome tweeter will span 2kHz-20kHz – the BMR used in the Aero 2 covers 250Hz to 20kHz, that’s four octaves more. Secondly it has very wide and even dispersion across this entire operating range.

What can a BMR do that a standard mid/bass driver can’t?

Dispersion again! A standard mid/bass driver’s dispersion will narrow as the wavelength of sound approaches its dimensions. For example, a 6.5in driver’s dimensions correspond to the wavelength of sound at 2kHz, so as we approach this frequency the dispersion narrows.

How does your BMR differ to others?

Cambridge Audio develops BMRs with Dr Graham Bank, inventor of BMR. The BMRs we use are developed for our specific needs and to our specification, so we have refined and improved the design over nearly four years. The current generation of BMR that we are using in Aero has twice as much excursion as the original design, improving power handling and allowing us to cover a wider range of bass frequencies. It is also far more linear in the higher frequencies with an exceptionally flat, smooth and well extended response.

What type of crossover is used?

There’s a single capacitor feeding the BMR, which combined with its mechanical roll off gives a 4th order acoustic alignment. The bass drivers have a 2nd order electrical low pass, again giving a 4th order acoustic alignment. High acoustic roll-off rates reduce the amount of overlap between the drivers, which has several advantages including improving power handling and reducing distortion. We use the driver’s response in combination with the crossover to achieve these high order acoustic alignments, but with the minimum number of components in the signal path – there are only three in an Aero 2!