

Bright Stuff

Paul Rigby shines a little light on Acoustic Energy's latest Radiance 1 standmounting loudspeakers...

Life's odd isn't it? I often sit, with toast poised above a gaping boiled egg, raising my head slowly from the depths of Ian Kershaw's biography of Adolf Hitler, so as not to spill any knowledge from my noddle, and think – if you had decided to go left instead of right, what would have happened? Take Adolf. If he had decided to get into a spot of painting and decorating instead of being disillusioned with his rejection from the Vienna Academy of Fine Arts, would he have grown up trying fend off thousands of armed Bolsheviks soon after his defeat at Stalingrad? After all, slopping on a couple of coats of gloss is a steady earner and leaves no time at all for mischief...

Mat Spandl faced a similar turning point, but without any armed Bolsheviks for company. When he graduated, he assumed he'd be entering the automotive industry. His thing was vibration or, rather, preventing it. His future was assumed to be making engine mounts and cutting the vibrations at source whilst investigating car noise control. And then MG Rover went bust, which put him off seeking employment in that sector. So what did he do? As a fan of speakers he joined Acoustic Energy, involved himself in the design of some of the company's most recent models and now, with the Radiance series, is the ground-up designer for the Radiance 1 bookshelf pairing you see here. Life, eh?

from view. Most companies, when constructing such a shape, put the MDF into a hot press to soften the wood and then bend it. "What we do is a bit different. We cut into the wood, through most of the thickness, at 5mm intervals," said Spandl. "The deep cuts make the MDF very soft and flexible. We then bend it into the cabinet shape and brace it at right angles to the front baffle with MDF to hold it – so it's very rigid."

This inherent 'softness' makes the cabinet non-resonant while the curve in the cabinet reduces standing waves inside the box that would otherwise colour the sound - producing, in worst cases, shrieking.

The internal bracing, apart from stiffening the cabinet walls, also attempts to hold the tweeter still. "The trouble with small, two-way speakers," mused Spandl, "is that the drive units tend to bounce around. Some of that energy is then transferred to the tweeter, shaking it. The bracing doesn't touch the tweeter but tries to prevent any shaking in the first place."

The well finished cabinet is topped off with two sets of binding posts to enable bi-wiring, not a practice which is wholly supported by the designer, it has to be said. He prefers the sound from a single set. However, the option is there if you feel the need.

The tweeter is noticeably different from the norm. Whilst most tweeters on the market are

With a dome tweeter, at a certain frequency, the sound breaks up because the dome can't move fast enough and the manner in which it breaks up affects the sound. With a radiated design, the two rings provide a smaller unsupported area which reduces that break up. Hence colouration is minimised. The result should be a very natural and open treble performance.

So why doesn't every speaker manufacturer use this type of tweeter? Well, there is a downside. The large unit, measuring 40mm, at high frequencies, does have a tendency to beam the sound instead of evenly dispersing it across the room. To counter that potential problem, Spandl has utilised a DXT waveguide, created by Mike Thomas. This shaped metal plate sits behind and around the tweeter. The waveguide also matches the dispersion of the tweeter to that of the mid/bass driver when the crossover level is reached. This means that the overall response should be more even. The bottom line being that more people should receive better sound across a wider variety of room types, say AE.

The mid/bass unit is new and designed by Acoustic Energy but is still constructed of aluminium – a company trait. "Aluminium is very stiff compared to plastic, paper and Kevlar," explained Spandl, "meaning that the break-up frequencies of the sound within are much higher." If designed badly, aluminium cones can sound hard. If you flick a metal cone it will return a metallic 'ting'

"the decision to tackle distortion right from the off is critical to the entire philosophy of this loudspeaker..."

The Radiance 1s, measuring 320x185x250mm and weighing in at 8kg apiece, are a neat, modern, design available in Russian Ash and Antique Ash, "or light and dark," Spandl added rather laconically. The cabinet itself is an interesting feature. Yes it is formed with curved walls but that's not exactly new. The innovation is hidden

dome-based, this example features a ring radiated design, where the soft parts of the tweeter actually form two concentric rings. Produced by VIFA, which is the only outfit that produces this unique design, Spandl chose the tweeter because it offers exceptionally low distortion but, at the same time, very high tolerance.





so such a cone design needs low internal damping. Spandl had to design the rubber edge of the cone very carefully experimenting with different rubber types, formulations, thicknesses and so on to draw the energy out of the cone to prevent ringing. "The rubber compound we use is called IIR and the cone centre has a pointed aluminium dustcap which is strong and aurally neutral."

Another addition to the design make-up is the new voice coil, designed to dissipate heat more efficiently and, thus, improve sound. An inefficient coil will affect the crossover characteristics during loud volumes when more heat is produced.

Speaking of the crossover, this

unit uses as few components as possible – in fact, it only has four where the company's previous generation of speakers had eleven or twelve. AE believes that each extra component on a crossover removes detail and replaces it with distortion while blurring timing and dynamics. One of the worst offenders for that, said Spandl, were the resistors – so they've all gone in the new design. Also, the capacitors were hand picked. In fact, Spandl spent much of his time testing a wide variety – twenty different sets – of capacitors which, he said, all sounded different.

SOUND QUALITY

A note on positioning. Give a clearance of around 18in from the

wall. Don't toe-in the speakers completely, either, so that the treble unit is pointing at your head. When you're sitting you should be able to see the inside surface of the cabinet to receive a more even treble dispersion. Height-wise, you shouldn't be able to see over the top of the cabinet or see the upper surface. If so, you're risking the speakers sounding a little bright. By the same measure, if the speaker is too high, the output can sound a little dull. The treble unit should be placed at ear height. I plopped mine on a pair of solid Atacama HMS I stands.

Starting with the Sugababes on CD and 'Stronger' from 'Angels With Dirty Faces' (Island), and I was immediately struck by the sense of



control and clarity, but the most impressive aspect of the performance was the almost complete absence of distortion, as Noel's tests confirm [see MEASURED PERFORMANCE]. The tonal balance was also very impressive – which is saying something on this CD. Yes, you can hear the damage done to the midrange via the excessive peak limiting, not to mention the splashy treble, but none of these inherent problems translated into the normal screeching and whining because distortion had been stripped. Instead, upper bass exhibited clarity and control whilst lower bass power was startling for a two-way bookshelf loudspeaker.

Carol Kidd's 'A Nightingale Sang In Berkeley Square' via 'Dreamsville' (Linn) was, through the AEs, one of the most mature and assured performances I'd yet heard from a box loudspeaker. New details revealed included a subtle reverb on the acoustic guitar solo and the piano was given a fuller presentation, sounding more of a partner to the guitar in the mix instead of being buried into the background. The Radiance 1's competed well with the Sendor's S3/5R (£725) which, while offering smooth upper mids and a deep bass for the small cabinet, suffered when compared to the Radiance 1s with masked mids and a lack of treble air and sparkle. The John Blue JB4s (£654) fared no better presenting an uneven tonal balance and a lack of bass definition when directly compared with the AEs.

Vinyl was even more stark, as the removal of distortion opened doors during the

playing of Kate Bush's 'π' from 'Aerial', allowing her complex vocal textures to really shine. Bass guitar was coolly tracked with superb detail and transparency. In fact, if you were going to nit-pick the Radiance 1s at all, the tendency to provide an overly cool presentation could trigger an accusation of a lack of excitement and involvement. However, this is a (very) minor criticism that is more than made up by the sparkling cymbal crashes, upper mid detail and bass control. Neither the Spondors or John Blues could compete. The former suffered from a veiled treble and subdued upper mids, whilst the latter suffered from strained vocals and a one-dimensional upper mid performance by comparison to the dominant Radiance 1s.

CONCLUSION

Acoustic Energy's Radiance 1 speakers offer many appealing aural features that are wholly pleasing to the ear. However, the key to them is one overriding and singular element: distortion, or lack thereof. Mat Spandl's decision

to tackle distortion, right from the off, before he even so much as picked up a piece of MDF, has been critical. Not only to the subsequent design, but to the entire philosophy and approach of this speaker. Keep the distortion hanging around and your ears and brain don't want to know. Remove distortion and you allow a whole gang of possibly beneficial sound components to wing their way towards your ears. Acoustic Energy gained a rare talent when Mat Spandl took a right instead of a left, joining the hi-fi industry instead of messing around with Metros, and the Radiance One shows why.

REFERENCE SYSTEM

- Avid Acutus turntable
- SME IV tonearm
- Benz Glider cartridge
- Icon PS3 phono stage
- Naim CD5 CD player
- Aesthetix Calypso preamplifier
- Icon MB845 power amps
- Quad ESL-57 (One Thing) loudspeakers
- Chord Anthem 2 interconnects
- Chord Epic Twin loudspeaker cables
- Atacama Equinox XLPro SE Hi-fi Rack
- Atacama HMS 1 stands

MEASURED PERFORMANCE

The Acoustic Energy Radiance One is characterised by an impressively flat audio band response, with a few tweaks, as it were. There's a small but broad lift around 4kHz, just enough to enhance vocal intelligibility and also lift strings from a mix. There's also a strong lift at low frequencies, across the 100Hz-300Hz region, enough to add warmth and body, and also strengthen output lower down, the bass unit reaching down to 70Hz our pink noise analysis shows. Below this frequency the port takes over, extending output down to 45Hz. With port output measuring +10dB more than driver output at 80Hz, it's contribution is strong.

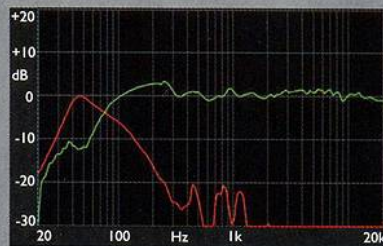
The impedance curve is fairly well controlled, showing the usual midrange peak caused by rising bass unit coil inductance, before the treble unit comes into play above 3kHz, pulling the curve down again as energy is drawn. The Radiance has a high overall impedance value this trace shows, one that measured out at 7.3 Ohms. This partly explains a fairly low sensitivity value of 83dB, meaning the small AE needs quite a lot of power to go loud, around 60 Watts at least.

The long term 200mS decay spectrum clearly shows the Radiance One is colouration-free, managing remarkably well in this test, so it should sound clear, clean and open. Also well controlled was distortion behaviour, with just 1% above 50Hz

from the bass unit and little more from the port. The port reached a reasonable 5% maximum at 43Hz, very good for a small loudspeaker. From 100Hz up to 6kHz level measured 0.2% or less, again a good result.

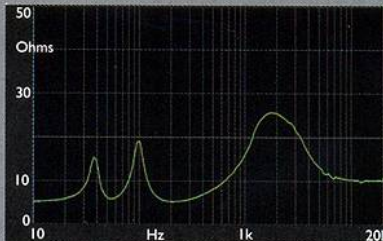
The Radiance One is accurate, smooth and clean, but with raised low frequency output to give it some bass heft. It will likely sound best on a stand, rather than against a wall, measurement suggesting a fine sound from a well developed product. NK

FREQUENCY RESPONSE



Green - driver output
Red - port output

IMPEDANCE



VERDICT
Brilliantly engineered mid-price standmounter with an icy clear and open presentation; practically peerless in its price class.

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FOR
- clarity
- transparency
- low distortion
- detail

AGAINST
- 'cool' presentation