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# Looking radiant

*This AE model might look familiar, but the Radiance is totally new throughout*

**PRODUCT** Acoustic Energy Radiance 3

**TYPE** Floorstanding loudspeaker

**PRICE** £1,500 per pair

**KEY FEATURES** Size (WxHxD): 23x92x29.7cm

⊙ Weight: 18kg ⊙ Drivers: 38mm Beryllium diaphragm annular tweeter with DXT lens-loading, 95mm metal-cone midrange, 2x 120mm metal-cone woofer  
⊙ Sensitivity: 90dB ⊙ Impedance: 8 ohms ⊙ Real-wood-veneer finish ⊙ Curved sides and advanced enclosure construction ⊙ Outtrigger feet (for aiding stability) ⊙ Ultra-simple crossover

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**A**coustic Energy first appeared in the late eighties, attracting plenty of attention with its tiny but high-performance AE1, a pro-style design with a black textured external finish. This design included a number of radical solutions, among them costly plaster-lined enclosure treatment, but essentially brought considerable credibility to both the manufacture of tiny speakers and the use of metal diaphragms for drive units, the latter in particular inspiring plenty of imitators.

Since those early days the company has grown substantially, been bought by Malaysian interests and greatly expanded the types and ranges of models it produces. Certain trademark features have helped to maintain its identity throughout, most visibly the use of the metal cone drivers with their characteristic pointy central dust covers that the company pioneered.

The Radiance range is the result of three years of development work. It consists of five models in total, including three stereo pairs. And our review focuses on the largest of these, the three-way Radiance 3; there's also a smaller floorstander and a standmount.

We had a definite feeling of *déjà vu* when these speakers emerged from their carton. A couple of years ago (*HFC 292*) and a couple of years before that (in *HFC 265*), we reviewed two subtly different versions of an Acoustic Energy model called the Aelite 3, and this new Radiance 3 has much in common with those earlier models, outwardly at least. Essentially it shares the same basic size and shape of enclosure and the same

three-way, four-driver configuration, but all the important details have changed, which is probably just as well, since the price is much higher – £750 for the Aelite 3 in 2007; £1,500 for this new Radiance 3 today.

**“Curved sides are also functional, helping disperse internal reflections and avoid generating focused standing waves.”**

Whether or not the enclosure is similar, this is a handsome floorstander. It has attractive and functional curved sides and front edges, is finished in either pale or dark real-wood veneer (albeit of rather anonymous appearance) and sits on proper cast-alloy outrigger spiked feet that ensure fine mechanical stability. Proper 8mm spikes with real locknuts provide good floor coupling. The cabinet construction itself is interesting, as the sides are formed by filleting the insides of the 15mm MDF panels with closely spaced, deep grooves, allowing the curved shape to develop. This increases damping, but reduces the rigidity and structural integrity, so this is restored by using horizontal partitions that also serve to create the separate chambers for each of the cone drive units.

Curved sides are not only fashionable; they're also functional, helping disperse internal reflections and avoid generating focused standing waves. The enclosure is much narrower at the back than at the front, but wide enough to accommodate a terminal panel with two pairs of socket/binders, plus no fewer than three ports – one for each of the cone drivers. A plug conceals a cavity near the base that can be filled with dry sand, for example, for extra stability, though frankly this is hardly needed. And the optional grille is cleverly held by magnets hidden beneath the veneer, so its removal leaves no visible means of support.

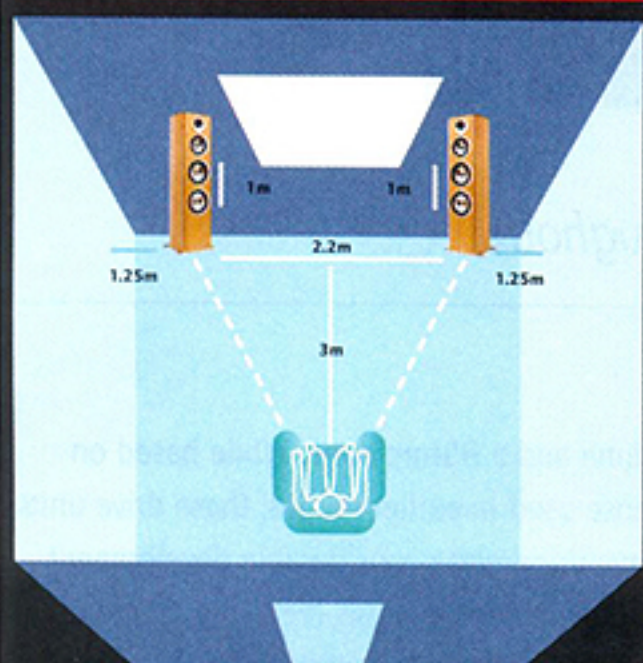
All three metal-cone drivers have AE's pointy dust caps – the two bass units have 160mm cast frames and 120mm cones; the smaller midrange-only driver uses a 130mm

frame and a 95mm cone. While based on those used in earlier ranges, these drive units have undergone considerable development. Finite element analysis (FEA) modelling of cone termination has resulted in break-up

points at substantially higher frequencies, while moving mass has been reduced and magnet design optimised to increase sensitivity. Harmonic distortion and thermal compression have both been reduced too. ▣



## SET-UP



### POSITIONING

This speaker, with its combination of two 160mm bass drivers each loaded by its own 40Hz-tuned rear port, has ample bass output to fill even our relatively large (4.3x2.6x5.5m) listening room when placed at least one metre clear of walls.

Smaller rooms and/or closer-to-wall positioning are very likely to result in rather too much bass output. However, one advantage of port-loading is that port-blocking is always an option (rolled-up socks are very effective!) and provides a useful degree of potential flexibility.

One bonus from the use of the sophisticated DXT lens, is that the far-field 'power' response won't be too adversely affected if the speaker is placed fairly close to side walls.

### SYSTEM MATCHING

The Radiance 3 has a generous sensitivity of 90-91 dB. This means the speaker should be reasonably easy to drive with almost any amplification, although the impedance is quite low at a couple of points through the bass region and this is likely to require a fair amount of current from the partnering amp.

The load dips to around 4.5 ohms in the mid-bass (120-130Hz). However, few amps are likely to find this problematic, though low resistance cables are to be preferred.

At the very top end of the audio band, the impedance starts to fall slightly at frequencies above 8kHz and has fallen to below 4 ohms by 20kHz, which is a little less than ideal from the point of view of amp stability. However, again this is very unlikely to cause any mischief, as there's little program energy at these frequencies, especially as it seems to be flattening out at the 20kHz limit of our measurement.



❑ The tweeter used here has a 38mm 'ring radiator' or annular soft-fabric diaphragm, and is loaded at the front by a DXT waveguide that controls its dispersion (see 'Lens-loading' box over the page). Fed from twin terminal pairs, the crossover network is deliberately kept as simple as possible, reducing the component count, increasing the quality of those components used and eliminating resistors.

### SOUND QUALITY

It came as no surprise to find that a generously proportioned floorstander with twin port-loaded 160mm bass drivers such

as this needs to be kept well clear of the walls. Measured under far-field in-room conditions, the Radiance 3 delivers healthy bass output down to 27Hz, assisted by 40Hz port-tuning.

Furthermore, it delivers an overall frequency response that holds within an impressive  $\pm 3$ dB across nearly the whole audio band, alongside a generous 90dB sensitivity. Although the overall response limits are impressive, the trace isn't without a degree of 'character', showing some lack of output in the midband (250-500Hz) as well as some excess in the upper mid (700Hz-1.5kHz).

Perhaps, complementing the relatively high sensitivity, the impedance is quite demanding in terms of amplifier current, twice dropping to around 4.5 ohms, once at the tuned port resonance 35-43Hz, and again a little higher up, 110-130Hz, the latter a sector of the audio band where typical program levels are quite high. Above 8kHz the impedance also falls, though there's little program energy at these highest frequencies.

The first thing one notices on plugging in and playing the Radiance 3s is just how 'quiet' the enclosures are. The sort of 'cabinet grunge' that normally serves to restrict and obscure detail resolution at the lower end of the total dynamic range seems largely absent here, or at least exceptionally well controlled. The consequence is a speaker that sounds uncommonly 'clean'.

However, perhaps in part as a result of that very low enclosure signature, the mild

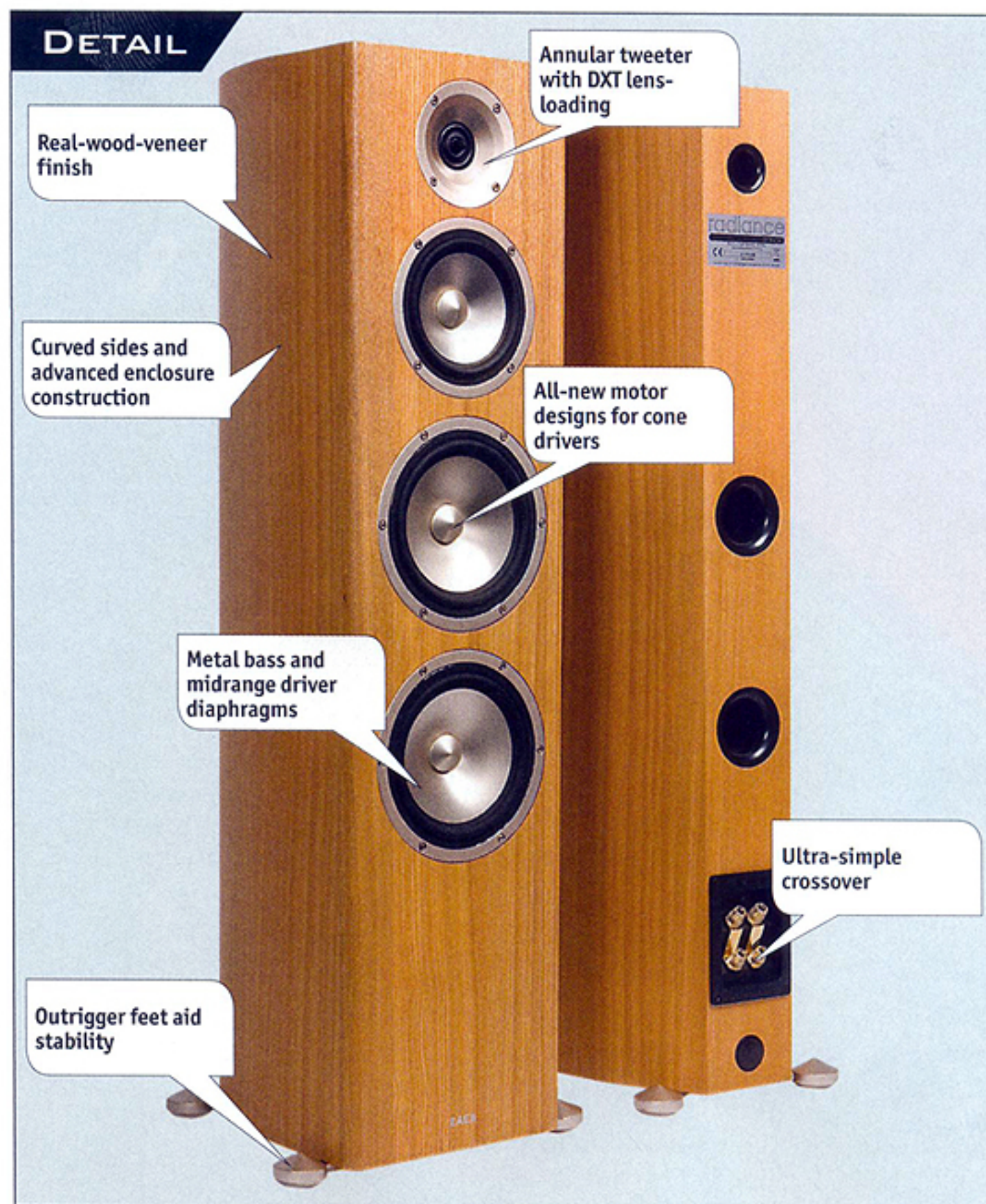


imbalance through the broad midrange isn't easy to ignore, leaving the upper frequencies here a trifle too exposed. The result is that voices can sound a little too explicitly projected, with a slightly 'cupped hands' or megaphonic effect. While this certainly makes it very easy to hear song lyrics and speech when the speaker is playing quietly, it also means that things can get a trifle aggressive and shouty when the volume is wound up high. What is unquestionably nice at low volumes starts to get a bit uncomfortable as levels are increased.

While the dynamic range is unusually wide, the actual dynamic behaviour does fall a little short of that obtainable at higher prices. Although it drives the music along with good purpose and weight, the bass end would benefit from rather more grip and tension, while the midband is slightly softened by a degree of time smear, which again serves to take the edge off the expressiveness inherent in the performance.

Stereo imaging is a major plus, as the soundstage shows no tendency to cluster around the boxes and depth perspectives are well portrayed, especially on recordings with a large and believable acoustic, such as choral material.

The sweet and smooth top end is certainly a major strength, as it supplies plenty of



### LENS-LOADING

A possible disadvantage of mounting a tweeter conventionally on a flat front baffle is that there's an inevitable discontinuity in dispersion between the relatively small diaphragm of the tweeter and the much larger diaphragm of the midrange driver around the crossover zone. Careful application of waveguide or lens technology can help to mitigate this effect.

Lenses or waveguides have recently started to become quite fashionable, with notable examples from KEF and Amphon, to name but two.

The lens developed by company DXT ([www.dxt.dk](http://www.dxt.dk)) and used by Acoustic Energy in the Radiance 3s is more complex than most and consists of carefully calculated and shaped concentric rings, whose purpose is essentially to maintain a consistent dispersion and hence power response right through the tweeter's operating range, as well as a good match to the midrange driver's dispersion through the crossover region. Measurements suggest this is successfully achieved.

## "The first thing one notices on plugging in and playing the Radiance 3s is just how 'quiet' the enclosures are."

subtle detail without ever seeming to draw attention to itself. The annular tweeter used here has long been regarded as one of the better examples around, even appearing on some very exotically priced models, and its performance here, assisted by the DXT lens, is certainly well up to the expected level.

The only real complaint arose when some friends were visiting and we were rocking out with the sounds of Beefheart, Little Feat, Tom Waits and suchlike at relatively high levels. Under these circumstances the slightly 'shouty' character and lack of tight dynamic grip became mildly irritating, so we changed over to a speaker costing six times the price.

Taking cost into consideration, however, and in regular day-to-day use over a period of at least ten days – using a wide variety of material from diverse sources including vinyl,

CD, radio and TV – this Acoustic Energy acquitted itself very well indeed, and proved most satisfactory and satisfying. **HFC**

*Paul Messenger*

### VERDICT

#### SOUND

★★★★★

#### PRO

Very effective enclosure engineering ensures a wide dynamic range and a very clean sound. Offers impressive sensitivity and a good overall balance, with well-judged bass and a smooth top end.

#### EASE OF DRIVE

★★★★★

#### BUILD

★★★★★

#### CON

Upper midband is a little too exposed, while some time smear takes the edge off dynamic expression.

#### VALUE

★★★★★

#### CONCLUSION

This speaker is impressive in a number of respects, its very effective enclosure ensuring a wide dynamic range and a very clean sound with a smooth, sweet top end. The upper midband is a little too exposed, though, and some time smear is evident.

**HI-FI CHOICE**  
OVERALL SCORE

★★★★★

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