

# Acoustic Energy AE1 Active

MARTIN COLLOMS ASSESSES THE NEW ACTIVE VERSION OF A CLASSIC MINIATURE LOUDSPEAKER

MARTIN COLLOMS

An *AE1* was the first ever Acoustic Energy loudspeaker. It was designed by Phil Jones back in 1987, as a high power desktop (meterbridge) miniature monitor which could play rock music much louder than its similarly sized, contemporary *LS3/5a*. The *'3/5a* came real wood veneered; the *AE1* was finished in durable Pro-style black textured paint.

The *AE1* also had pure piston technology that was advanced for the time, with a hard-anodised aluminium alloy bass/mid driver in a chassis of just 11cm, and a 25mm aluminium dome for the high frequencies. Internal cables were Teflon insulated Litz and the enclosure was heavily damped and reinforced with a cast mineral lining. And it could take high power – about double that of its nearest rivals.

The *AE1* was unashamedly a nearfield monitor, and underwent some mild adjustments in 1980 better to balance it for use in free space when marketed for domestic hi fi. It was famously and most frequently mounted on those characteristic (and first rate) heavy duty stands of cast and fluted extruded aluminium alloy (of which I still have a pair). The loudspeaker has evolved though many iterations over the past 30 years, with several 'reference' versions and a number of lower cost spin-offs. While the passive version continues, Acoustic Energy has now directed its attention towards a well priced active version of the domestic *AE1*.

Current MD and R&D chief Mat Spandl was electroacoustic design engineer at Acoustic Energy for some years before gaining further Pro audio experience at the Martin Audio division of Harman Professional. Returning to Acoustic Energy, he was part of the buyout plan that has returned the company to UK management and ownership (after a long and successful financial partnership with Formosa Pro-Sonic). He understands the important contribution full active technology could make to an inexpensive loudspeaker design and has applied it to this thorough reworking of the *AE1* concept.

It costs just £1000/pr for the standard finish, including four on board power amps. While piano lacquer is standard for black and white, cherry veneer adds another £200. The new *Reference* stands cost another £200 when bought with the speakers (£350 if purchased separately). The stands are good quality, made of high density material with a matching



veneer inlay, and come with vibration controlling pads to the loudspeaker underside, plus a set of adjustable floor spikes, or footers for non-carpeted floors. The stands make a good fit, mechanically, visually and acoustically.

(Incidentally, Phil Jones himself, now based in the US, has brought out a near equivalent two-way compact active at a similar price. His *Airpulse Model-1* is differentiated by a 75mm ribbon tweeter, together with both analogue and wireless streaming connectivity; it is powered from switch-mode power supplies. Also in contention is the active KEF *LS50 Wireless*, another compact two-way with a 5in bass/mid driver, and comprehensively App controlled. It's priced at £2,000/pr which includes some advanced features such as UniQ concentric driver technology, deep acoustic adjustability, and even programmed phase compensation.

The *AE1 Active* has no remote handset, no digital input, no WiFi control and no App connectivity; it is simply connected *via* the XLR balanced, or RCA phono socket unbalanced inputs. Appropriately lengthy interconnect cables to a volume controlled music source, pre-amp, streamer-DAC or DAC will be needed. Pre-set volume controls on the back help achieve optimum sensitivity, and subtle switched settings (-2dB, 0, +2dB), for bass and treble tweak these loudspeakers to the room acoustics, taste and system. The input impedance is quite low, so do check that the source is happy with such a loading.

## The Review System

Townshend *Allegri*, Linn *Klimax DS* streamer-DAC (with volume control) control units; Naim *SuperLine* phono pre-amp with Linn *LP12* player, *Keel* chassis, *Radikal* motor, Naim *Aro* arm, Lyras *Delos* cartridge vinyl source; Naim *UnitiServe* network server and S/PDIF source; Naim *NDS, 555 PS(DR)* streamer-DAC; Wilson Audio *Sabrina*, Magico *S-5II*, Quad *ESL63*, BBC *LS3/5a* (15ohm) speakers; Naim *FRAIM* racks; Transparent *MM2* and Naim *NAC A5* speaker cables; Naim *Super Lumina*, Transparent *MM2* and Van den Hul *Carbon TFU* interconnects.

Valve pre-amp use is presently contraindicated by that low 2.5kohm value for the RCA input sockets, but we understand that this is being altered to a more satisfactory 10kohm on future production.

This speaker will play louder than the old *AE1* as it has a larger 13cm bass compared with the 11cm of its predecessor. (A sound output of 115dB/m short term is claimed.) As is common these days, the tweeter has a small waveguide for a smoother off-axis response (see pic for *AE1 Active* waveguide performance at 3.6kHz).

The enclosure is substantially built from cross-braced 18mm MDF panels, internal damping laminates suppressing any structural resonances. Two 50W Class A/B linear amplifiers per loudspeaker are directly coupled to each driver. The physics of active design tells us that such a system will feel more like 200W/ch of normal stereo drive – and it does! A horizontal reflex port slot with rounded edges is located on the back panel, above the full area alloy plate heat-sink and control panel. Standard IEC mains sockets are provided with modest 1.5m cables, and the supplied RCA/phono interconnects are 3m.

## Sound Quality

I left them running for a few days, partly for me to acclimatise to these little compacts after prolonged experience with my own Magico *S5IIs*, which are some 50 times the cost of the *AE1 Active* (and that doesn't include the Naim power amp). We also used the loan Linn *Klimax Katalyst* streamer (review next issue), with its balanced audio outputs and great App-controlled remote volume facility.

Using studio grade balanced cables to the speakers, the *AE1 Actives* drove the music with great clarity and detail, and possessed transparency that was well beyond their price class. With the Naim *NDS* streamer-DAC and the Townshend *Allegri* control (the latter well suited to driving lower impedances and the longer cables required), first impressions were of fine stereo depth, detail and imaging, but also some excess richness and loss of timing in the bass and lower mid. I did initially try stuffing the ports, to good overall effect but at a cost of reduced lower bass and slightly softened dynamics. The designer suggested a -2dB setting on the bass control, and in my room this result was like the story of Goldilocks, the three bears, and the porridge that was just right!

With some judicious adjustment of location (*ie* free space, out into the room, facing almost straight ahead, grilles off, and it still looks good, and the tiny indicator lights are not too bright), a variety of familiar tracks were despatched with aplomb. The soundstage was deep and wide, it focused stably

across the stage and in the depth planes, while solo piano, orchestral, rock pop and jazz all fared rather better than you could have any right to expect. I had no problem living with them over the review period, admiring the high level of musical detail retrieved, and not least the low levels of listening fatigue.

Among many tracks, I drove it unmercifully with Solti's *Mabler 2* (Decca), Fink's *See It All*, and also those often troublesome multiple marimbas on Reich's *Mallet Instruments*. It caressed the potentially strident soprano sax of Jan Garbarek, while Lana Del Rey crooned engagingly. Adjusted for '-2' in the bass, the low frequency timing was well above average, and my rock tracks were foot tappingly good. It was so easy to forget the size and price and imagine one was listening to a model at twice the size and cost, so great is the performance improvement available from a full active design.

## Conclusions

I kept thinking of minor criticisms and balancing comments which would be more appropriate for a £2,000/pr model rather than a loudspeaker that costs around £1,000, and also includes power amplification. Although this compact design is in the small monitor class, it punches well beyond its size and price. Technically it is respectably accurate and the two channels are well matched. It has low coloration, with very fine driver output integration. (It's effectively impossible to tell where one leaves off and the other begins.) For the size and price it also demonstrated a fine dynamic range together with a very well controlled and informative bass. It is capable, musical, entertaining and clearly great value. Noting the imminent change to a higher line input impedance, regardless of whether a specific system might benefit, a Best Buy rating is clearly appropriate.

## Test Results

Distortion results at 90dB (1m, 50Hz) were good for the size, with 0.6% second and about 2% third harmonic. By 500Hz the results were a very good 0.25% second and 0.13% third, with fourth harmonic at an even lower 0.033% (-70dB). At 1kHz we measured a reasonable 0.3% second and a good 0.15% third, and at 2kHz there was a mild decline to 0.32% second and 0.35% third. However, high frequencies were fine by 5kHz, with just 0.08% second and 0.05% third. Taken overall, these are good results for the size and price.

The on-axis frequency response was a respectably uniform  $\pm 2.5$ dB (100Hz - 20kHz), noting a mild dip at 19kHz. Beyond this is found the usual dome resonance, deferred to 25kHz and of moderate Q

(a likely inaudible +6dB). Mild excess is visible at 1.5kHz, but it's only moderately audible at +1.5dB, while the bass (at the preferred -2dB setting) extends to 43Hz -6dB – good for the size, and well tuned. The off-axis output is clearly well integrated, both below and above the axis, while the important 30 degrees lateral response is particularly neutral. The sidewall reflections will therefore sound quite neutral; only by 60 degrees lateral was a dip more noticeable, and even then this was comparatively mild.

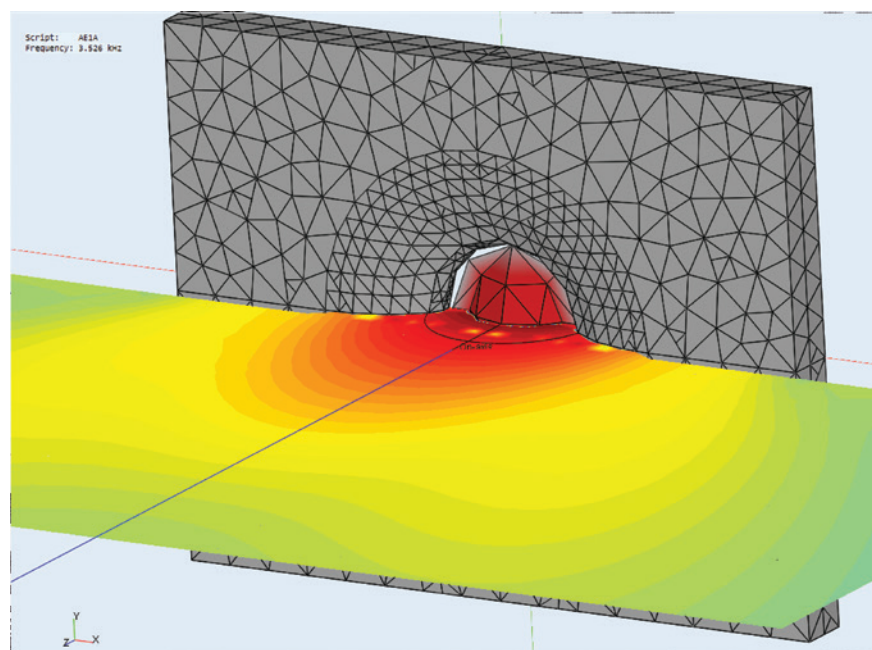
The in-room output of the pair (averaged 64 times over listener positions and channels) was substantially flat from 80Hz - 4kHz, which is quite an achievement, and shows a smooth diminution beyond these limits. The waterfall decay response shows good phase integration for the early responses, with a rapid decay thereafter. Some minor clutter is seen later on, but this remains a good result at the price.

**HIFICRITIC Loudspeaker measured test results, July 2017**

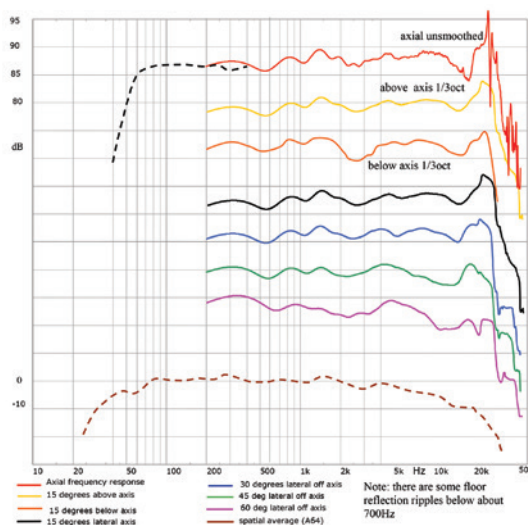
Make, Country	Acoustic Energy, UK
Model	AE1 Active: moving coil, stand mount, vented box loading
Type	2-way: 130mm custom alloy cone bass/mid, 25mm alloy treble
Amplifier loading	2.5kohm , (to be revised to 10kohm)
Frequency response, axial	47 Hz - 20 kHz ±3dB (listener axis) (very good tolerance)
Frequency response off- axis	Very good: see graphs and in-room response
Bass extension	6dB @ 43Hz (38Hz, -6dB in-room)
Max loudness, in-room	105dBA for a stereo pair
Power rating:	Internal 2x50W linear per channel
Placement	Stand-mount, essentially free space

**Manufacturer's Specification**

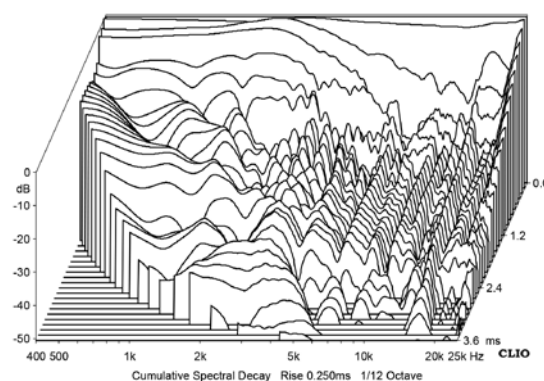
Amplifiers	50W Class A/B linear amplifiers, x2, with linear power supply, per channel
Rated Amplifier Distortion	THD+N, 1W 1kHz 0.04%
Active Crossover	at 3.5kHz, 4th order analogue, minimum phase alignment
Tweeter	25mm pistonic aluminium dome with waveguide
Bass-mid driver	110mm deep anodised alloy pure piston, 130mm chassis
Input connections	RCA unbalanced and XLR balanced
Response Adjustment	+/- 2dB treble, +/- 2dB bass
Frequency response	47Hz - 20kHz +/- 3 dB
Sensitivity	104dB/m for 1V, normal input with volume control at maximum
Maximum SPL	105dB at 1m
Input impedance	5+5kohm bal, 2.5 kohm unbalanced (to be revised to 10kOhm)
Switchable mains voltage	110/240V (switch under safety cover)
IEC mains lead 1.5m. CE EN55013/20 safety certification	RCA unbalanced interconnect 2x3m
Dimensions	300 x 185 x 200mm (HxWxD);
Weight	7.5 kg each
Finishes	Available in piano gloss lacquer: black, white (cherry veneer + £200)
Price	£1,000 a pair, Reference Stands £350 (£200 with purchase)



Acoustic Energy AE1 Active Frequency Responses



Acoustic Energy AE1 Waterfall Decay Response



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