

Quad ESL-2912

A modern classic? Few hi-fi products merit the description as completely as the new ESL-2912
 Review **Keith Howard, Paul Miller & John Bamford**
 Lab: **Keith Howard**

When I visited Quad's Huntingdon factory in 1981 to talk to Peter Walker about development of the new Quad electrostatic loudspeaker, the ESL-63, he was of the opinion that, with this latest design, he'd done pretty much all that could be done to perfect what has historically been considered the weakest link in the chain of sound reproduction: the loudspeaker.

So long as air has to be moved using a 'paddle', he said, the push-pull, constant-charge electrostatic loudspeaker – with its vanishingly light diaphragm, uniformly applied driving force and inherent linearity – continued to represent the best way to generate high-quality sound, just as it had when he developed the original Quad Electrostatic in the 1950s [see *HFN* Apr '10]. But with the ESL-63 he had at last solved the familiar directivity problem of large electrostatic panels capable of decent bass output. The only possible improvement he could envisage, he told me, was abandoning the diaphragm altogether and generating sound directly by heating of the air.

A 'STATIC ON STEROIDS

Well, the full-range thermophone looks to be as distant a prospect as ever it was, unless new wonder materials like graphene have a surprise in store. So were Peter Walker still alive, chances are he'd look at Quad's latest top-of-the-range electrostatic, the ESL-2912 – an ESL-63 on steroids, in effect – and, 30 years on, still see no way of achieving a step-change improvement on it. It's little surprise, then, that the ESL-2912 and its smaller brother, the £6500 ESL-2812, remain familiar in their essentials, albeit refined in their details.

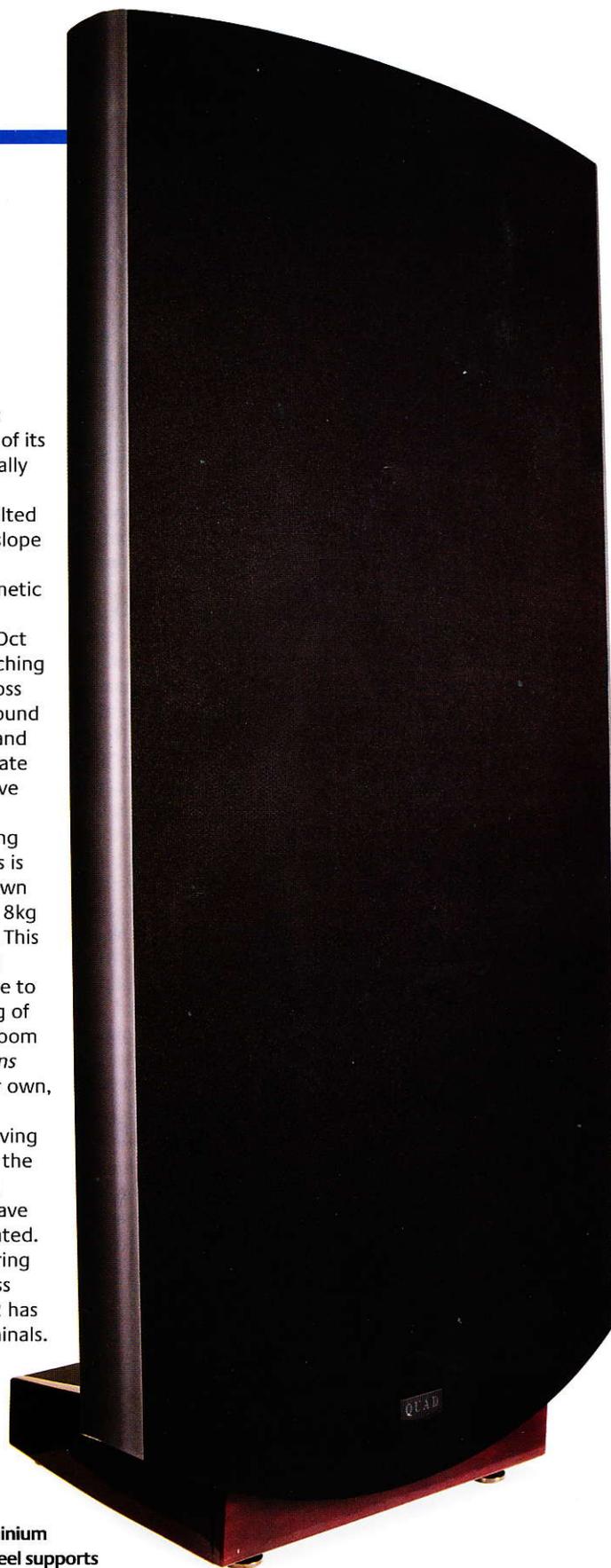
Both retain the slim but dominating presence that ensures the marque is instantly recognisable to enthusiasts across the globe. Of course, at a whisker

shy of 1.5m top-to-toe, this door-like structure remains difficult to 'lose' in a domestic setting, despite the neutrality of its grey side-cheeks and acoustically transparent black netting. However, look closely at the tilted panel frame, retained at a 3° slope by a rear tensioning rod, and you'll see there are some cosmetic changes over the previous 2805/2905 models [see *HFN* Oct '06], most notable in the matching veneered plywood panels across the top of the speaker and around its base. Incidentally, the '05 and '12 model name suffixes indicate the year in which the respective 'statics were launched.

As you might expect, owning and living with a pair of 2912s is a unique proposition, right down to the option of squeezing an 8kg metal slab into the ESL's base. This certainly improves the 2912's stability, should anyone choose to walk into it, but your tweaking of the speaker's position in the room is probably best attempted *sans* steel until you've located your own, personal sweet spot.

The novel experience of having to plug a passive speaker into the mains supply remains, but will only be a hassle if you don't have wall sockets conveniently located. As there is no crossover, bi-wiring and bi-amping are meaningless concepts and so the ESL-2912 has just a single pair of input terminals. The only control on the base, apart from an on/off switch

RIGHT: The ESL-2912 is slightly taller, narrower and thinner than its predecessor. Within, six panels are clamped to a high-mass structure of tensioned aluminium extrusions coupled to stainless steel supports





ACROSS THE ATLANTIC

As almost every audiophile knows, the first full-range electrostatic loudspeaker was designed in the UK by P J (Peter) Walker, founder of Acoustical Manufacturing Co Ltd, and D T N (David) Williamson, designer of the famous Williamson amplifier, and sold as the Quad ELS from 1957 until it was phased out following the introduction of its successor, the ESL63, in 1981. But two Americans play a significant part in the electrostatic story too. The first was Frederick V Hunt, who in his 1954 book *Electroacoustics (The Analysis of Transduction and Its Historical Background)* was the first to show that the constant-charge push-pull electrostatic loudspeaker was inherently linear in its operation, and thus produced exceptionally low nonlinear (harmonic and intermodulation) distortion. Previous push-pull electrostatics, whose diaphragms lacked a high surface resistivity, did not retain constant charge as they moved between the stators and were significantly nonlinear as a result.

Fellow American Arthur A Janszen had worked under Ted Hunt at the Harvard Underwater Sound Laboratory where early research was conducted on electrostatic transducers, initially for testing hydrophones, and 1954 saw the launch of the first practicable high fidelity electrostatic drive unit, Janszen Laboratory Inc's electrostatic tweeter, which operated from 1kHz to beyond 20kHz. Although itself not constant-charge, it was forerunner to a full-range constant-charge design that Janszen built first prototypes of in 1957 and which went on sale in 1959. Shortly thereafter the company was acquired by KLH, where Arthur Janszen was appointed vice president, and the full-range design was developed into the legendary KLH Nine.

for the polarising voltage, is a dimmer knob that varies the intensity of the illuminated Quad logo on the front panel.

RIPPLES ON THE POND

Peter Walker's great innovation with the ESL-63 was to emulate the spreading spherical wavefront of a point source situated 30cm behind the diaphragm by means of dividing the electrodes on the two stators – one in front of the diaphragm, the other behind – into a central circular area surrounded by a set of electrically separate concentric rings of equivalent area. The audio signal was fed to the inner through to the outermost rings via a delay line, thereby reconstructing, in part, the spherical wavefront of the notional point source. This inspirational concept still lies at the heart of the ESL-2912. What the 2912 does, as the 2905 did before it, is add two further panels above and below the central pair to provide enhanced bass output capability.

With Quad's core engineering retained, the changes wrought in the new ESL-2812/2912 models fall into the category of lily-gilding. Improvements have been made to the high-voltage power supply to reduce the effects of charge creepage in high ambient humidity, and Vishay metal film resistors and Murata audio grade

capacitors are now used which are said to impact on sound quality through improved voltage stability. Peter Comeau, IAG's director of acoustic design [see p27], says that this is heard as improved low-level detail and overall clarity.

In addition, a three-coat, spray-applied stator insulation reduces 'wilting' of the high-voltage supply when the diaphragm is driven into close proximity, allowing these latest ESLs to play louder than previous models. New strengthening ribs in the panel grilles reduce resonance, and a lower-density covering cloth is said to enhance transparency.

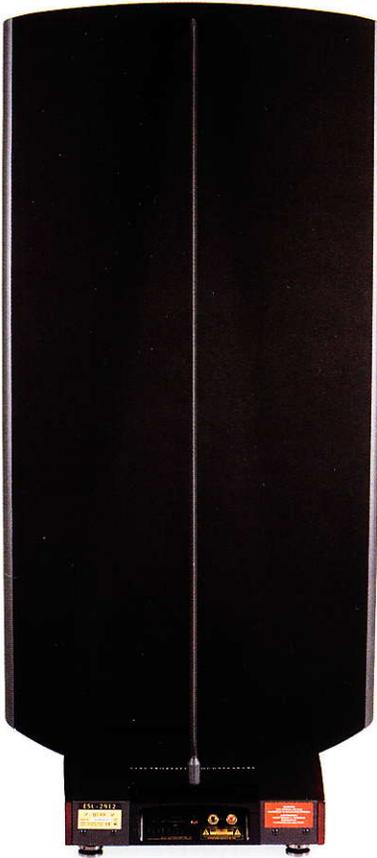
'We were all amazed by the 2912's prodigious bass output'

UNCANNY DEPTH

Three or four years have passed since we sat in front of a pair of Quad ESLs. An acquaintance had bought a pair of ESL-2905s and was besotted with them. After several hours exploring his music collection – everything from opera to the synth-pop of Michael Jackson's 'Thriller' at moderately high SPLs – we could appreciate why he loved them so much. Spread wide apart and toed-in, with oodles of space around them in his large living room, they sounded smooth and refined, with dry, tightly-controlled bass. And as with so many panel speakers, they created wonderful images with an uncanny depth and layering of

LOUDSPEAKER

QUAD ESL-2912



LEFT: The panel frame is braced at a 3° angle. An IEC mains inlet is joined by 4mm speaker cable terminals and a dimmer for the front 'QUAD' logo!

it's the sheer scale – the 'bigness' – of this speaker's sound that impresses, bringing an ethereal quality to images of vocalists and instruments alike, which hang, rather than be forcibly projected, into the room.

Listening to a 24-bit/96kHz download of Kate Bush's *50 Words For Snow* proved more 'other-worldly' than we'd expected from this predictably unpredictable performer. There she stood, all at once vulnerable and yet potently disarming as if she were performing a solo concert for the very few of us in the room. The sparseness of her opening numbers, including 'Snowflake' and 'Lake Tahoe', contrasted with the voluminous acoustic expanse so easily developed by the 2912s, the raw-sounding piano clearly punctuating the layers of synth and strings.

Sure enough, the ESL-2912 was less sympathetic to the likes of Max Raptor's 24-bit/48kHz *Portraits* [NaimCD158] whose densely-packed, crunchy-sounding guitars caused the speaker to audibly demur when at full tilt. The bass stays strong, but the crack of percussion and attack of those feverish-sounding strings just lacks a little confidence.

So this very specific speaker technology requires a special care. You'll need a very big space to allow them room to breathe but, once set-up, you'll could experience an immersive, headphone-like transparency on a very grand scale. ☺

instruments that eludes the majority of high-end transducers.

Installed in the editor's listening room [see www.hifinews.co.uk/news/article/meet-the-team;-paul-miller/9952] and driven via a dCS Vivaldi digital front-end (exclusive review next month) and Devialet D-Premier amplifier, the new Quad ESL-2912 almost overwhelmed us with its substantive bass. If you've shied away from ESLs in the past for lack of low-end 'grunt' you'll be amazed to hear the prodigious bass output of Quad's latest flagship.

OTHER-WORLDLY

The overall balance is creamy and luscious, with gentle high frequencies that *never* grate, so that even raucous pop recordings are served up with grace and civility. Such dignified behaviour doesn't come without some slight consequences, however. It's fair to say that all loudspeakers editorialise to some degree, so while the 2912s are uncommonly easy on the ear, neither do they deliver the kind of punchy, grippy sound that you get from a pair of very well-damped moving-coil floorstanders. Instead

HI-FI NEWS VERDICT

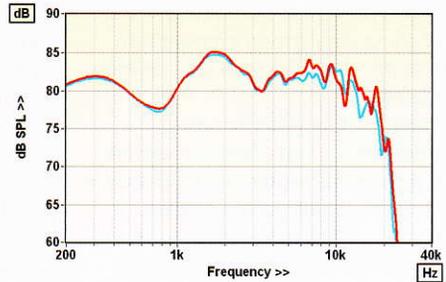
As we said in our review of the ESL-2905 back in Oct '06, you'll need a room big enough to accommodate this speaker's big sound – a sentiment no less true for the current ESL-2912. Many audiophiles find the elegant 'driverless' sound of an electrostatic will never be matched by even the best, conventional, dynamic loudspeakers. For those, the ESL-2912 is the new king.

Sound Quality: 80%

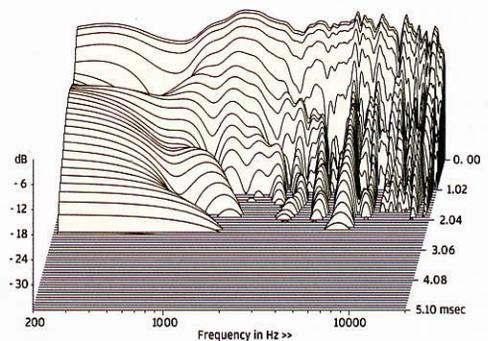
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Quad claims 86dB sensitivity for the ESL-2912 'referred to 1m'. Measuring at 1m we recorded a sensitivity of 81.6dB averaged for the review pair, which is within 0.1dB of the figure we measured from the previous ESL-2905s. Quad's higher figure almost certainly reflects the fact that, because of the large diaphragm area, output from the ESL-2912 will initially decrease less rapidly with distance. Nominal impedance is stated as 8ohm but we measured a minimum modulus of 2.7ohm at 20Hz. Impedance phase angle at low frequencies is high enough to lower the EPDR (equivalent peak dissipation resistance) to a minimum of 1.4ohm at 69Hz, but as the ESL-2912's impedance will be level-dependent at LF the dips to 3ohm modulus at 7.5kHz and to 1.6ohm EPDR at 11.1kHz are more relevant and suggest a moderately difficult amplifier load.

On-axis frequency response [Graph 1, below], also measured at 1m, shows quite large excursions around an essentially flat trend, hence the high error figures, 400Hz to 20kHz, of ±6.2dB and ±6.6dB respectively. The response will change somewhat at typical listening distances. Pair matching error, over the same frequency range, is also high at ±3.2dB but below 9.5kHz the matching was to within ±1.0dB. Bass extension could not be assessed as no method exists to correct near-field measurement of dipole speakers, but the high frequency response begins to roll off before 20kHz. As expected, the THD figures are low while the cumulative spectral decay waterfall [Graph 2] exhibits a series of resonant modes above 3kHz. KH



ABOVE: In practice, the swings in bass/mid response at 1m will be ameliorated over the listening distance (note: our standard vertical scale shifted by 10dB)



ABOVE: 'Cabinet' resonances are necessarily minimal but there are some panel modes visible above 3kHz

HI-FI NEWS SPECIFICATIONS

Sensitivity (SPL/1m/2.83Vrms – Mean/IEC/Music)	81.0dB/81.6dB/82.1dB
Impedance modulus min/max (20Hz–20kHz)	2.7ohm @ 20Hz 18.1ohm @ 19.7kHz
Impedance phase min/max (20Hz–20kHz)	-22° @ 3.6kHz 54° @ 15.0kHz
Pair matching (200Hz–20kHz)	±3.2dB
HF extension (-6dB re. 10kHz)	19.6kHz / 17.5kHz
THD 100Hz/1kHz/10kHz (for 90dB SPL/1m)	0.1% / 0.3% / 0.1%
Dimensions (HWD)	1470x690x380mm