



## LOUDSPEAKER

Full-range electrostatic loudspeaker  
Made by: International Audio Group, China  
Supplied by: IAG Ltd, Cambs  
Telephone: 01480 447700  
Web: [www.quad-hifi.co.uk](http://www.quad-hifi.co.uk); [www.internationalaudiogroup.com](http://www.internationalaudiogroup.com)  
Price: £12,999

AUDIO  
FILE

# Quad ESL 2912X

As old as *Hi-Fi News* itself, Quad's iconic full-range electrostatic stays fresh courtesy of new upgrades

Review: Ken Kessler Lab: Paul Miller

**A**pocryphal it may be, but one of the lingering mysteries about Quad was why MD and chief designer Peter Walker never went 'high-end' with bigger amps or speakers. His answer was always that his amplifiers and speakers were 'adequate for most needs'. While that's true, one cannot deny the efforts of others to make Quad's inaugural ESL [see boxout, p48] go louder and deeper. So while the ESL 2912X may not be the cost-no-object/size-no-object electrostatic that some devotees of the brand might dream of, I wonder what Peter Walker would have made of the not inconsiderable £12,999 asking price?

That said, Quad's ESL 2912X is surely 'big enough'. Ten seconds of listening to Ozzy Osbourne's 'Rocky Mountain Way' from *Under Cover* [Epic 82876743142] assuaged any fears I might have harboured about its size. After all, this is the 1570mm model rather than the shorter, 1070mm sibling, the £10,999 ESL 2812X.

### NO RUSH

According to Quad, this speaker represents the sixth generation of its ESL, which is quite a display of model longevity when you consider that there were so few designs in 68 years. This model follows the ESL-57 (1957), the ESL-63 (1981), the ESL 988/ESL 989 (1999), which was the first occasion when a Quad electrostatic speaker was offered in two sizes, the ESL 2805/ESL 2905 (2006), and the ESL 2812/ESL 2912 in 2012. Thus Quad has waited 13 years to release this latest revision.

This 'X' iteration arrives after Quad's five-year-long R&D exercise towards developing a superior and more consistent semi-conducting layer applied to the delicate film-like membrane. The thickness and density of this layer needs to be controlled accurately to maintain an even, and very high, electrostatic charge across the diaphragm even in regions of high

'This is the Quad ESL's sixth generation'

humidity. Quad has also improved the ruggedness of the 'egg crate' mechanical construction holding the stators [see pic, p48] and the accuracy of hole punching through the copper conducting layer of the stators, thus reducing the possibility of arcing if overdriven.

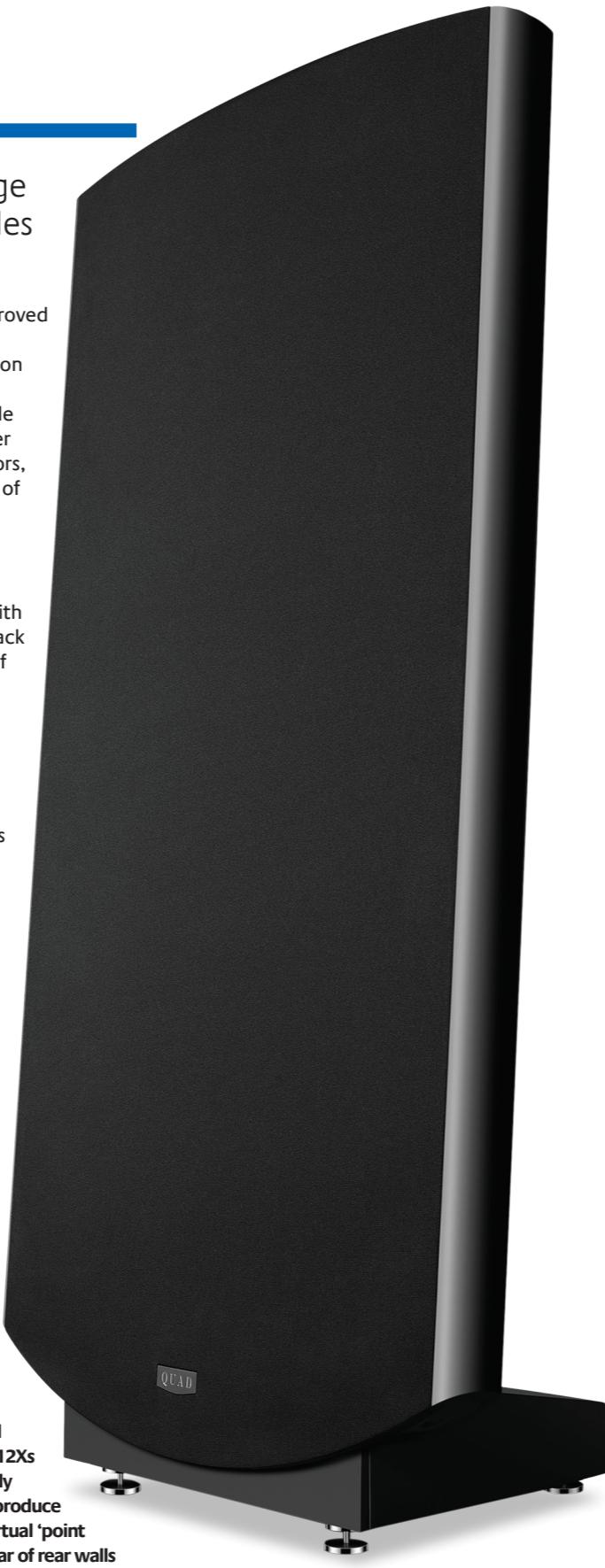
### BACK IN BLACK

Quad points out that Paul McConville, whose history with the company goes back to the introduction of the ESL-63 in 1981, worked on the new models. He assisted the production team in creating new mixing and spraying techniques, as well as in the evaluation of quality control to ensure that the electrostatic panels would consistently maintain a charge of over 5kV.

To ensure the stability of the 5.25kV Extra High Tension (EHT) feed to the panels, Quad developed a new PCB design where the EHT section is now isolated from the input power supply, the audio, and protection PCBs. Cable dressing from the EHT section to the panels has also been optimised to eliminate the intrusion of humidity or dust.

While the look is familiar, the all-black 'stealth' finish seems to

**RIGHT:** Standing over 1.5m tall and leaning back 3°, the ESL 2912Xs are dipoles clad in an acoustically transparent cloth. They aim to produce a spherical soundfield from a virtual 'point source' and need to be kept clear of rear walls



'The illumination of the logo and down lighting give them the impression of floating'



## LOUDSPEAKER

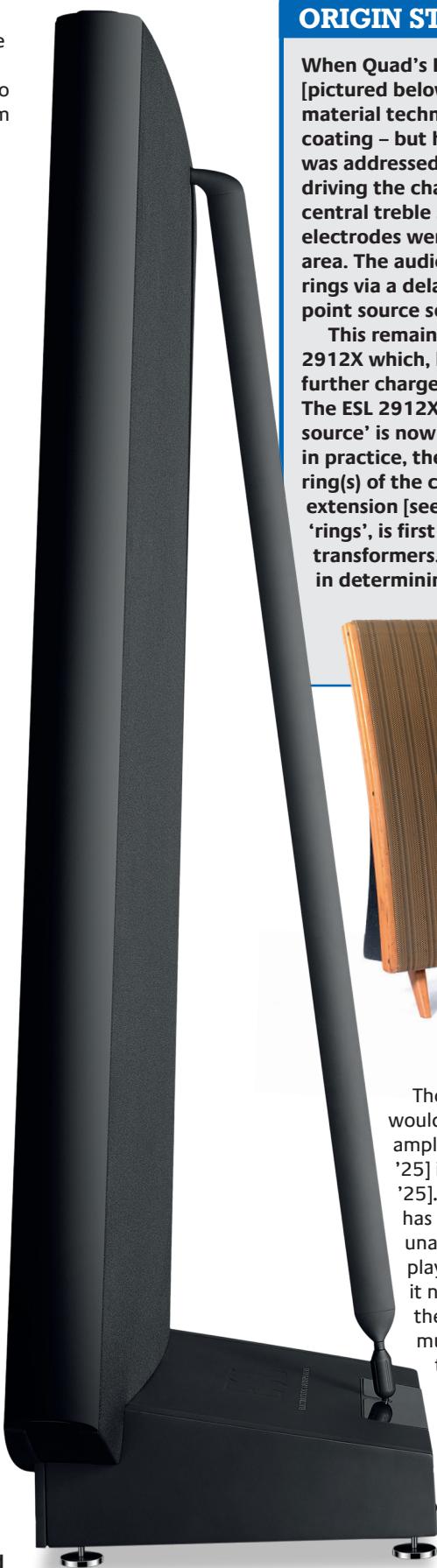
have improved, and the speakers feature adjustable illumination of the logo along with down-lighting to give the impression of them floating. Dubbed the 'LED Halo', it is controlled by a small rotary at the back of the base [see p49]. Also around the back, under the plinth that hosts the necessary AC mains and speaker connections, is a separate lump of steel supplied for each speaker. This adds a further 10kg to the ESL 2912X's 44kg bodyweight, lowering its centre of gravity and improving stability.

Quad also revised the audio transformers, with their long-term service manager Rob Flain collaborating with the original transformer manufacturers in the UK to produce windings to Peter Walker's original specification. The goal was to achieve an improved high-frequency response beyond 18kHz [see PM's Lab Report, p49], as well as 'superior resolution of micro-dynamics'. Other upgrades include super-PP bypass capacitors, Murata audio-grade capacitors and Vishay resistors.

### X-CITEMENT!

As noted above, my immediate response to hearing the ESL 2912Xs in action was a mix of delight and relief. How so? Delight because they sounded like a '57 on steroids (every ESL-57 owner's fantasy) and relief because the performance was inarguably and categorically 'high-end' by any measure.

**RIGHT:** The rear tensioning rod – loosened for transport – must be tightened to correctly brace the electrostatic frame. Optimal bass performance cannot otherwise be achieved



### ORIGIN STORY

When Quad's Peter Walker came to replace the long-running ESL-57 [pictured below], not only did he draw upon improvements in material technologies – the tensioned thin-film membrane and stator coating – but he also leveraged a step-change in how that membrane was addressed. The ESL-63's innovation? Instead of simultaneously driving the charged membrane (actually two bass panels and a central treble strip) across its entire surface, the push-pull stator electrodes were divided into a series of concentric rings of equal area. The audio signal was fed to the inner through to the outermost rings via a delay line, emulating the spherical waveform of a notional point source set some 30cm behind the loudspeaker.

This remains the core driving principle at work within the ESL 2912X which, like the ESL 2912 before it [HFN Jan '13], adds two further charged membrane panels above and below the central pair. The ESL 2912X is clearly larger than the ESL-63 and the virtual 'point source' is now set some 40cm behind the middle two panels. Also, in practice, the peripheral panels are only driven by the outermost ring(s) of the concentric electrode array, boosting bass output and extension [see Lab Report, p49]. The audio input, fed to the stator 'rings', is first stepped up to 5.25kV via a pair of massive C-core transformers. The latter, upgraded in the ESL 2912X, are critical in determining the power handling and wide bandwidth of these enigmatic electrostatics. PM



Those familiar with Quad's ESLs would gasp at the mere notion of hooking up a pair to a stereo amplifier rated at 300W [the Constellation Revelation 2, HFN Feb '25] in the HFN Reference Listening Room [see p43 and Yearbook '25]. Fear not. Put the fire extinguisher back on the shelf. Quad has ensured that the ESL 2912X will deliver levels previously unattainable from its loudspeakers before crying in pain, and I played them loud enough to flirt with the protection circuit. But it never triggered. It's not about how loud they will go, but how they provide impact that has to be explained, and that is as much a concern according to musical genre and vintage as it is to the sound system being played.

Of course, the need for maximum SPLs is entirely subjective. I have an audiophile acquaintance whose room I will not enter when he's bashing out 120dB levels at 3m, and neither can I comment on whether Quad's ESL 2912X will satisfy someone who thinks, say, a JBL Everest [HFN Aug '14] won't go loud enough. But blasting Ozzy's album at levels which even raised an eyebrow from PM, that is not the issue, especially going by the volume of ☺

## LOUDSPEAKER

HFN NOV '57

'There is no doubt music sounds very nice, more like the real thing than ever before. Another interesting feature is the complete absence of any fatigue effect. All sensation of listening to a loudspeaker is lost.' So said HFN's Ralph West in his review of the Quad ESL [HFN Nov '57]. Designed in the UK by Peter J Walker, founder of Acoustical Manufacturing Co Ltd, and David Williamson, designer of the famous Williamson amplifier [HFN Jan '10], the ESL was the first full-range electrostatic loudspeaker and highly anticipated. It's unlikely, though, that West would have imagined it remaining – albeit in updated form – a mainstay of hi-fi nearly 70 years later. 'Time will tell whether we settle for this style', he noted, before explaining the ESL was not a showy speaker in comparison to some moving-coil rivals – 'the top doesn't sparkle all the time, and the bass doesn't shake one's tummy'.

West's tests were with a single ESL, not a stereo pair, but 'when listening on or near the axis, the effect is as of an open window looking directly on to the performance'. He also acclaimed a transient response superior to horn-loaded models, and concluded the Quad ESL was a speaker 'designed to be listened to and enjoyed in the home'.

bass on 'Go Now'. Even more in-your-face and in-your-room was the utter realism of the cowbell opening on his version of Mountain's 'Mississippi Queen'. The late Leslie West would certainly approve.

### A SLAM DUNK?

Instead – and I must emphasise that this is what separates full-range dipoles from most dynamic loudspeakers, less so from horn types – the ESL 2912X can deliver the bass extension if not the slam of cone-woofered designs. Really, I suspect this aspect of its performance would only be of concern to those whose musical bias is toward heavily engineered synthesised bass, or the exaggerated low-end weight of much hip-hop and heavy metal.

It therefore begs the question about priorities. Would you sacrifice that kind of kick, especially on percussion, which you can feel in your chest for what you might gain? Here the gain is a loudspeaker which performs one of the best disappearing acts imaginable, thanks to its airiness, finesse and grace. I'm sure all these attributes co-exist in some high-end speakers, but a £13k electrostatic panel so open that you feel you could walk amid the performers? And which causes no fatigue after three hours of playback without interruption? I'm still processing the sheer listenability of the ESL 2912X, forensic assessment aside.

**Fear not, and put the fire extinguisher back on the shelf!**

apart as you place them before creating a hole in the middle. Everything between those physical borders benefits from clearly defined positioning, with exemplary dynamic range, matchless openness and

**RIGHT:** The six electrostatic modules are seen in this cutaway. The centre pair are the focus of the concentric stator rings while the upper/lower pair are primarily driven by the outer ring

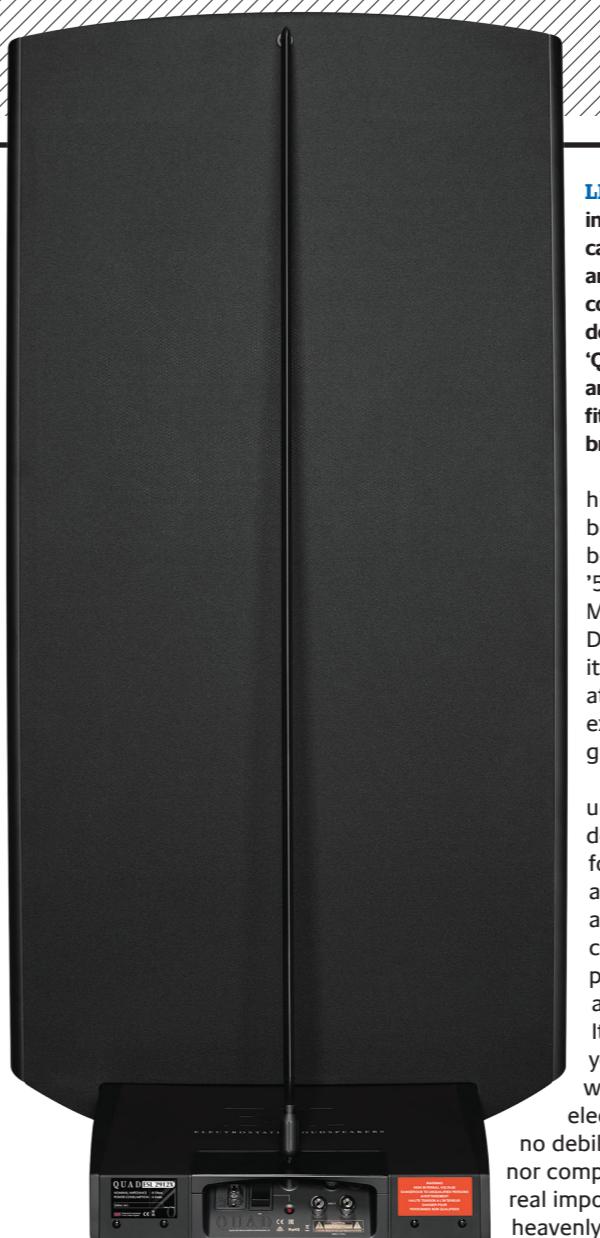


transparency. Listen with your eyes closed and the borders vanish.

You can see where this is leading. As with the original ESL-57, slightly less so with the ESL-63 and its progeny, the ESL 2912X is not ideal for incurable headbangers. My friend would certainly find a way to fry them, having blown out midband drivers in big Wilson Audio models. As powerful and massive as was the sound of the Allman Brothers Band track, the brilliance of this speaker shone through in the vocals, especially as regards the portrayal of the textures. Every element of gruffness which rendered Willy DeVille's voice so distinctive made my thousandth playing of 'Assassin Of Love' from the Polydor CD single [887 312-2] sound as if being heard for the first time.

What had me wanting them more than any other tracks were 'Piece Of My Heart' and 'Take It To The Limit' from Etta James' *Deep In the Night* [Bullseye Blues CDBB9579]. The power of her vocals, from a whisper to a shout, showed the dynamic swings of the speakers, their ability to exhibit speed, consistency and clarity. The backing singers on the latter track exemplified three-dimensionality. And the piano? Clean, fast and *real*.

Before I forget, especially as mono cartridges are enjoying



**LEFT:** The plinth includes 4mm speaker cable binding posts, an AC power inlet and control for the LED downlighting and front 'Quad' logo. Spikes, and a 10kg metal slab, fit under the plinth to bring added stability

hi-fi classic, although be warned if you've been nursing '57s since Harold Macmillan was in Downing Street, as it's less forgiving at the frequency extremes thanks to greater extension.

This loudspeaker unconditionally deserves recognition for its performance at any price, a mandatory consideration for panel speakers above £10,000. It does everything you could possibly want from a Quad electrostatic with

no debilitating flaws nor compromises of any real import. It sounds as heavenly as its great-great-great-grandfather, and it looks sensational, too.

But the deal maker? Like every product made during the Peter Walker era, Quad's ESL 2912X is a bargain so honest that it's an indictment of its rivals. □

### HI-FI NEWS VERDICT

I needn't have wondered 'what if?' about Quad's high-end cred. The ESL 2912X costs less than some audiophile cables, yet it delivers sound quality way beyond its price bracket. The usual caveats apply for dynamic speakers vs. horns vs. dipoles, but if you prize the unique transparency and openness of an electrostatic panel above all else, just buy this. Yet again, Quad has redefined value for money.

Sound Quality: 88%

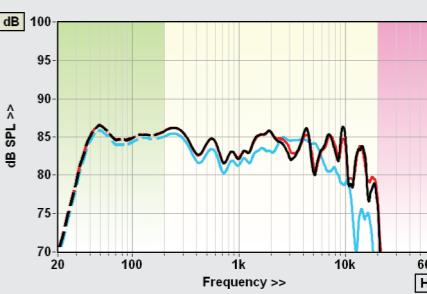


## LAB REPORT

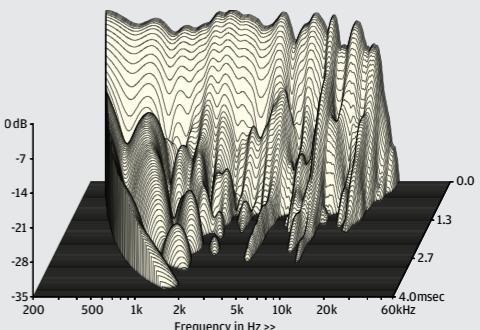
### QUAD ESL 2912X

Measuring a substantial planar speaker at a standard 1m on-axis does not give a truly accurate picture of the 6x membrane's integrated output – this only starts to become apparent at 2.5-3m distance. Tested here at 2m, and with all figures corrected for a 1m distance, the essentially flat forward response of the ESL 2912X is revealed [see Graph 1], albeit with numerous peaks and dips – amounting to errors of  $\pm 3.3\text{dB}$  and  $\pm 3.6\text{dB}$  (re. 200Hz-20kHz), respectively – along the way. However, the membrane's impulse response is better defined than we see with most multi-way moving-coil speakers while the pair matching remains a respectable 1dB (200Hz-10kHz). Moreover, both impulse and frequency responses are smoother when toeing the ESLs inwards by 15°, trading a +3dB boost through the presence for a more obviously declining treble of -2dB/10kHz and -6dB/15kHz [blue trace, Graph 1]. Similarly, while many membrane and structural modes are revealed in the CSD waterfall [see Graph 2], harmonic distortions are very low at <0.2% through the bass (above 50Hz) and just <0.1% through the midrange (all re. 90dB SPL/1m).

Sensitivity is rated at 86dB but appears closer to 83.7dB (re. 2.83V/1m/500Hz-8kHz) while the minimum impedance modulus dips to 3.2ohm/20Hz and 3.7ohm/10kHz. In practice, the 'drive' is a little tougher than its 8ohm rating suggests as positive swings in phase angle cause two minima in EPDR of 1.7ohm/70Hz and 1.8ohm/13kHz. Useful nearfield bass measurements are almost impossible to achieve with a dipole so the sub-200Hz response, and 31Hz bass extension (-6dB re. 200Hz), are estimated here from a ground plane response test [dashed traces, Graph 1]. PM



ABOVE: Response inc. nearfield bass panel [green], freefield corrected to 1m at 2.83V [yellow], ultrasonic [pink]. L, black; R, red;  $\pm 15^\circ$  horizontal, blue



ABOVE: Peaks and dips in response [Graph 1] are linked to complex structural and panel resonances

### HI-FI NEWS SPECIFICATIONS

Sensitivity (SPL/1m/2.83V - 1kHz/Mean/IEC)	82.2dB / 83.7dB / 81.7dB
Impedance modulus: minimum & maximum (20Hz-20kHz)	3.15ohm @ 20Hz 18.1ohm @ 21kHz
Impedance phase: minimum & maximum (20Hz-20kHz)	-16.5° @ 5.3kHz +49.3° @ 17kHz
Pair matching/Resp. error (200Hz-20kHz)	1.6dB / $\pm 3.3\text{dB}$ / $\pm 3.6\text{dB}$
LF/HF extension (-6dB ref 200Hz/10kHz)	31Hz / 19.2kHz/19.8kHz
THD 100Hz/1kHz/10kHz (for 90dB SPL/1m)	0.15% / 0.08% / 0.2%
Dimensions (HWD) / Weight	1570x690x380mm / 44kg