

QUAD ESL2805/2905

Steve Hewlett, Director of Engineering at IAG, interviewed

Usually a QUAD ESL is being regarded as a kind of peculiar animal. It looks different and raises questions. What in fact is an ESL loudspeaker?

The ESL looks like a batch of applied physics based on original thinking. With slight emphasis on the thinking bit!

The ESL-2905 loudspeaker is like a giant capacitor. The sound is produced by a tensioned mylar film with a special conducting coating. This is suspended between large electrode plates. The electrodes are both charged to over 5kV, then the music signal is applied between the electrodes. The negatively charged mylar film is attracted to and repelled from each electrode according to the music signal, creating the sound. The electrode plates are separated into spherical rings radiating from the centre of the speaker. Each electrode ring is separated and the signal is fed through a series of delay lines, sent first to the middle ring, then the next one out and so on. This creates a spherical wavefront similar to the 'pebble in a pond' ripple effect and mimics an ideal point source exactly 1/3m behind the exact centre of the loudspeaker.



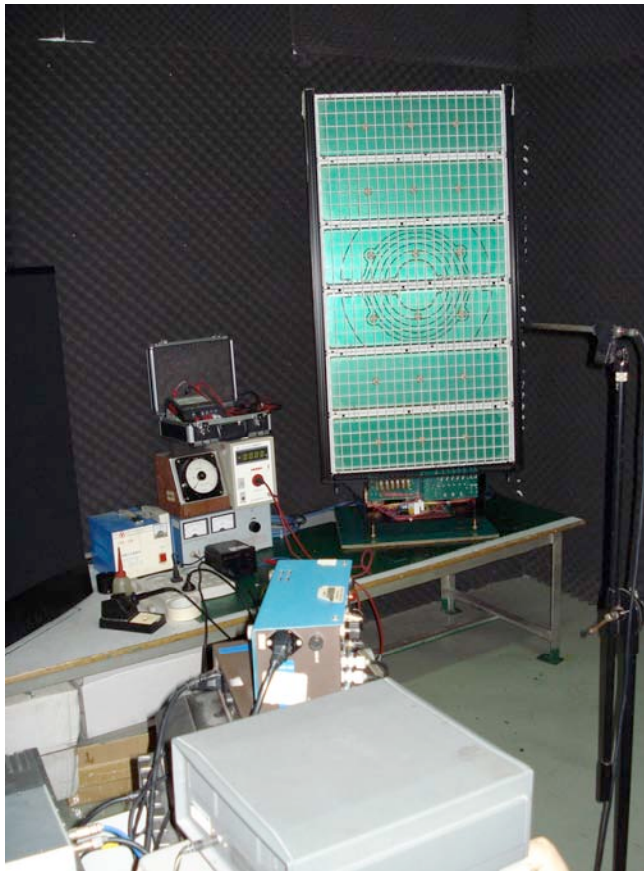
Please mention a few ESL-specific design challenges?

Stretching the mylar membrane is one of the toughest processes involved in the production. QUAD has invested in a special 'clean room' environment and bespoke machinery to optimise the process.

The step-up transformers in the ESL are 'c-core' transformers, notoriously difficult to manufacture and very expensive, even though QUAD also produce these in-house.

The frame of the ESL is manufactured from steel and in the current models uses an aluminium extrusion tension bar at the rear of the speaker to brace the structure and improve

dynamics and bass extension. It also has the effect of lowering distortion significantly over previous models.



Isn't an ESL something for hifi-buffs only?

The ESL-2905 is unashamedly a 2 channel high-end loudspeaker for the music connoisseur. Whilst there are a few manufacturers of electrostatic loudspeakers in the world, none employ the same 'point-source' principle as the new Quad ESL, and most are 'hybrid' loudspeakers which seek to integrate moving-coil bass drivers with the electrostatic panels (because they can't get good bass extension).

The Quad's are unique in being truly 'full-range' speakers and being a 'point-source' loudspeaker. For the first time ever, this is a loudspeaker, regarded by audio critics as the finest on the planet, which can appeal to a wide audience. The new ESL's appeal

to customers on many levels, from the hi-fi enthusiast, the music enthusiast right through to the movie-aficionado who simply wants the best loudspeaker available for a lifelike theatre.

Is it choosy regarding connected electronics?

No, it isn't. Any good 50Watt+ amplifier is capable of driving the ESL2905, which is an easy 8 Ohm's load. The only caveat in this respect is the amplifier's quality: you don't hook up the world's best loudspeaker to a discounted no-good amp selling at Pst 199, now do you!? Of course we love to see it hooked up with our own 99Stereo or 909 amplifiers. I'm sure it's the best thing people can do, but it's no requirement as such.



OK, then the product stands out and is perfectly manageable at the same time. What do you consider to be key to the ESL's?

The point source character and the luxury of not having to move a lot of weight. Those two items create a life-like source, and a very articulate one at that.

Quad holds a patent on the spherical electrodes that make up the panels of the ESL-2905. The idea came from the concept that an ideal loudspeaker should be like a pulsating sphere. If you imagine a radiating sphere of sound from a point source, then cut a plane in that sphere exactly $1/3$ from the centre, the compressions and rarefactions of sound waves on that plane are exactly replicated by the diaphragm in the ESL-2805/2905.

Because the panels are charged to 5kV, movement of the extremely lightweight diaphragm (about $1/10^{\text{th}}$ the thickness of a human hair) is instantaneous. As such, the ESL is the only loudspeaker in the world which can accurately reproduce a square wave.

All moving-coil bass drivers use a central voice coil to drive a large cone or diaphragm. In the ESL, the entire panel reacts resulting in much lower distortion, typically less than half of the best moving-coil loudspeakers.

Is the ESL key to QUAD?

The ESL has always been a flagship product for Quad, yet has always remained a niche product.

Like a ferarri, it was the kind of loudspeaker that someone ended up with after years of upgrading – it was almost exclusively a hi-fi enthusiasts product.

The sound quality has for many years been regarded as amongst the best (if not the absolute best) in the world, but the build and materials used always meant they were regarded by the general public as a bit of an oddity.

The new ESL-2805/2905 completely redefine the market for ESLs. Their new fit-and-finish does help, they're easy to hook up with and do an equally outstanding job in stereo and in multichannel. No longer is it just a hobbyist's product. It can stand shoulder to shoulder with the best built and most exotic designs in the world and with a peerless reproduction of sound, it is uniquely positioned to be the most important Quad product ever launched. It's a wonderful full-range electrostatic, point-source loudspeaker. It really embodies Peter Walker's famous slogan 'the closest approach to the original sound...'

Huntingdon, June12 2008