

REVIEW

YOU MAY HAVE TO SELL AN ORGAN





PERLISTEN AUDIO S-SERIES 5.1 HOME CINEMA SPEAKER REVIEW

With intelligent engineering, exotic materials and exquisite craftsmanship, the Perlisten S-series speakers and D215s subwoofer represent the state of the art in loudspeaker design. This translates into a superlative performance both objectively and subjectively. They are not cheap, but they are, without doubt, among the finest loudspeakers ever produced.

It takes some serious speakers to break the THX Certified Dominus barrier, so how did Perlisten accomplish this feat? The answer is cutting-edge loudspeaker design combined with brute force air displacement.

An example of the leading edge technology employed by Perlisten is their 'DPC' array that uses three 1.1" drivers across a waveguide that is used on all of Perlisten's speakers. The 'tweeter' is the dome mounted in the middle of the waveguide while two upper midrange drivers are mounted above and below the mouth of the waveguide. These upper midrange drivers are not tasked with playing lower midrange which greatly alleviates their displacement requirements nor are they tasked with playing treble which greatly alleviates their requirements for low mass.

Giving the drivers a more focused frequency band enables the engineers to optimize them much more than wide-band drivers. It also allows the engineers to optimize the tweeter for a higher treble range which enables it to perform that much better within its allocated range.

The waveguide also has a major role to play here, as optimal waveguide geometries are not easy to conjure. Perlisten's waveguide keeps the tweeter's horizontal dispersion wide and the vertical dispersion narrow at a consistent directivity up to the

high-frequency limits of human hearing. It's the perfect shape for a directivity match with the midrange drivers.

The really cool thing about the DPC array is that the three drivers are used to reduce each other's vertical dispersion and also strengthen the axial response by means of phase summation and cancellation. Separate drivers that play the same frequency will inevitably start interfering with each other at high enough frequencies, and often times this can be a problem, but for Perlisten, it's a solution to reduce acoustic reflections off of the floor and ceiling.

This is a part of what is called beamforming, and it is a similar technique to how 5G transmitters precisely deliver a strong signal to a receiver in a specific direction instead of spraying it inefficiently over a broad angle. Likewise, the woofers flanking the DPC array do the same thing at lower frequencies, so vertical dispersion is restricted by design for all the deepest bass frequencies.

While a restricted vertical dispersion can be a desirable feature, a wide horizontal dispersion can also be desirable, and Perlisten's design looks to encourage a wide dispersion while discouraging vertical dispersion in a very clever approach to directivity control. One neat attribute about Perlisten's system of directivity control is that it doesn't need the speaker to have a really wide footprint.

Almost all other loudspeakers with highly controlled directivity use large horns to accomplish that objective, but, as a consequence, they are very large speakers with a wide front baffle. Perlisten's flagship speaker is not much larger than a normal tower speaker, but it is behaving in a way that you would expect from a gigantic speaker.

PROS

- Incredibly detailed, lifelike sound
- Almost endless reserves of power
- Tremendous bass performance
- Beautifully built

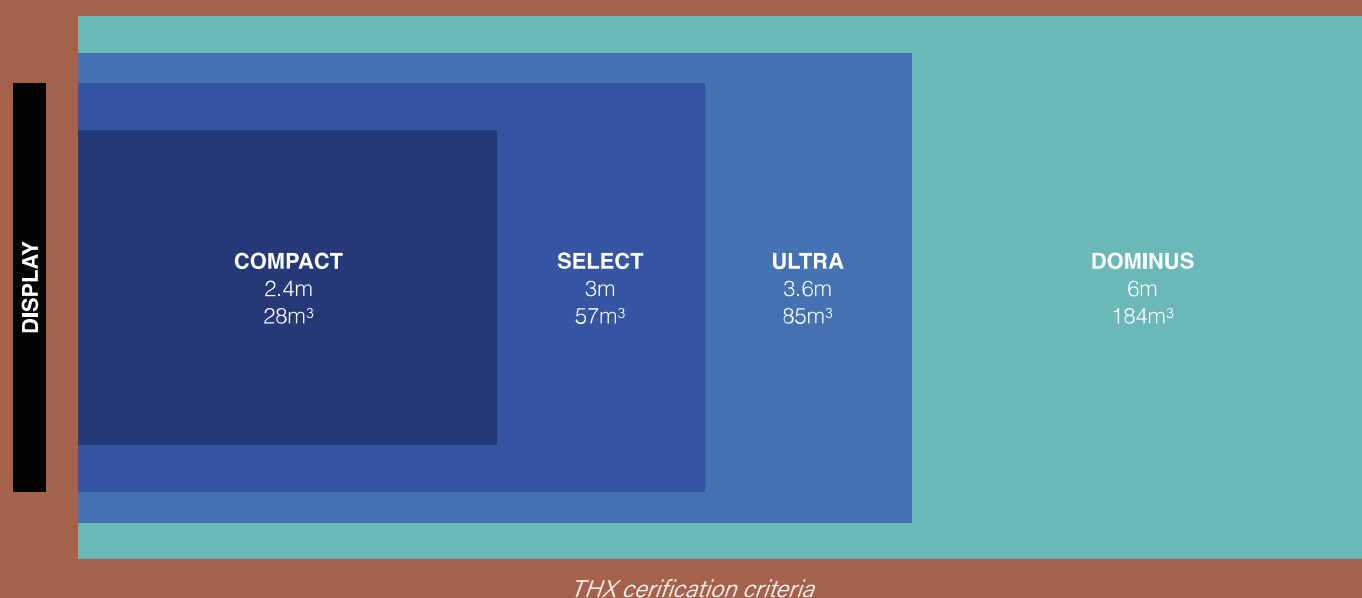
CONS

- You may have to sell an organ

INTRODUCTION TO PERLISTEN

Perlisten (a portmanteau of 'perceptual' and 'listening') is a relative newcomer to the Hi-Fi and home cinema world, formed by a group of industry veterans that sought to set a new benchmark in high-end audio. Whilst the company officially began in 2016, it wasn't until 2020 that Perlisten started marketing itself to the world. It would not have been the ideal launch they hoped for; a global pandemic is a sub-optimal period in which to launch a brand in an industry so reliant on trade shows for introducing new products. These veterans, however, had a marketing ace up their sleeve. Perlisten became the first brand to obtain THX Dominus certification, immediately attracting the attention of the AV world.

In order to achieve THX certification a speaker must be able to maintain relatively undistorted sound at 85dB measured at the listening position, with 105dB peaks. In the case of subwoofers, the levels are 95dB and 115dB respectively. To achieve THX Dominus certification these levels must be produced at a listening distance of 20 feet (approximately 6 metres), in a room of up to 6500 cubic feet. To illustrate the scale that implies: a 10m*6m*3m room would be roughly 6500 cubic feet. Producing THX sound pressure levels at such a viewing distance, in such a large room, is no mean feat.



WHAT IS THE PERLISTEN S-SERIES?

Perlisten currently produces two ranges: the R-series and the S-series. The S-series is the flagship range, and the speakers tested here are at the top end of it. The system on test comprises the S7t tower (£16,000 per pair in standard paint finishes, £18,300 in high gloss ebony), the S7c centre (£5,725 in standard finishes, £6,750 in high gloss ebony), the S4s on wall surrounds (£6,800 per pair) and the D215s dual 15" subwoofer (£8,100). As this pricing would imply, Perlisten is positioning itself squarely in the high-end market.

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The other speakers in the S-series include smaller towers and a smaller centre (the S5t and S5c), a stand-mount monitor (S5m), a smaller stand-mount (S4b) and a newly launched collection of in-wall speakers. The R-series has a smaller selection to choose from which feature less exotic driver materials, although it employs the same innovative approach to engineering and directivity control.

DESIGN

S-SERIES SPEAKERS

The S7t tower and S7c centre are available in piano black or white and a selection of wooden finishes. Perlisten can also supply the speakers in custom paint finishes on request. The S4s surrounds are available in piano black or piano white, whereas the D215s subwoofer only comes in piano black. The package shipped to me was made up of a black sub and surrounds, with the LCR finished in 'ebony high gloss'. Their overall fit and finish is gorgeous, and as premium as one would expect at this price point.

The S7t towers come with weighty metal bass plates featuring adjustable height spikes. At (H*W*D) 1295mm*240mm*400mm and 55.7kg they are substantially large towers, but through placing the tweeter towards the centre of the baffle and slightly tilting the cabinet backwards, seated listeners should be on-axis to the tweeter.

The tweeter is accompanied by two 28mm midrange drivers and four 180mm/7" woofers. The S7t is a vented design, with internal ports venting through grilles at the base of the tower. Foam plugs are supplied for those who wish to plug the ports, and to do this one must remove an access plate from the bottom of the cabinet. In its vented configuration, Perlisten claim a -10dB frequency response of 22Hz-37kHz, with an essentially flat response between 80Hz-20kHz. They are 92dB sensitive, 4 ohms, and can handle up to an impressive 600W.

*... something of
an oversight*

*Perlisten Audio's S-Series
S7t tower speaker - just
one of these babies will set
you back £8K!*



The S7c is a sealed design with the same driver complement as the S7t, a -10dB frequency response of 38Hz-37kHz, and again is relatively flat between 80-20kHz. It is a very large centre speaker, measuring in at (H*W*D) 960mm*240mm*400mm and weighing 33.5kg. The S7c was supplied with the optional stand, that raised the centre approximately 420mm from the floor and tilted it backwards slightly. Surprisingly, the stand didn't feature any form of cable-management, which struck me as something of an oversight. Like the towers, the S7c has a sensitivity of 92dB, impedance of 4 ohms and maximum recommended power handling of 600W, which is astounding for a centre speaker.



*The Perlisten Audio S-Series S4s
surround speaker*

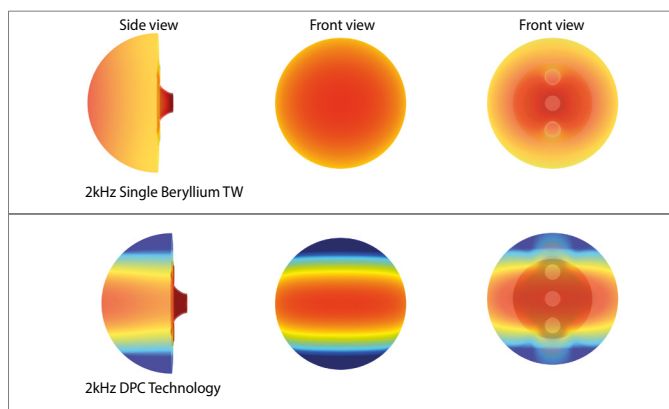
The S4s surrounds feature the same midrange and tweeter arrangement as on the centre and towers, with only one 7" woofer. They are relatively flat between 100Hz to 20kHz with a -10dB bass extension of 39Hz. They are on-wall designs and as such there will be some bass reinforcement from the wall. They mount to the wall with a single keyhole mount on the rear, which is how I fixed them to my wall, having removed my JBL Synthesis S4Ais from the same spot. Whilst I was thankful for the simplicity of the single keyhole mount, I found it a surprising approach, and at this price would have expected some form of included bracket or wall plate. They do however have threaded inserts for an optional bracket. At 88.8dB sensitivity, they are significantly less sensitive than the towers and centre and handle less power, at 300W. Which is still, of course, a lot of power for an on-wall surround speaker, given wall reinforcement and the fact such speakers tend to be positioned considerably closer to listeners than the LCR.

All the speakers were supplied with circular, magnetically attached grilles that cover the individual drivers. Perlisten states that the best acoustic response is achieved with no grilles on the speakers, and certainly, they look better that way. When removing the grilles from the S-series, two things immediately attract the eye: the unusual waveguide and the chequered woofers.

The unusual waveguide is in fact Perlisten's unique Directivity Pattern Control (DPC) array. It comprises a 28mm beryllium dome tweeter located in the centre of a waveguide and flanked vertically by two 28mm Textreme midrange domes (more on these materials later). This DPC array controls the distribution of sound energy in a room through a technique known as beamforming.

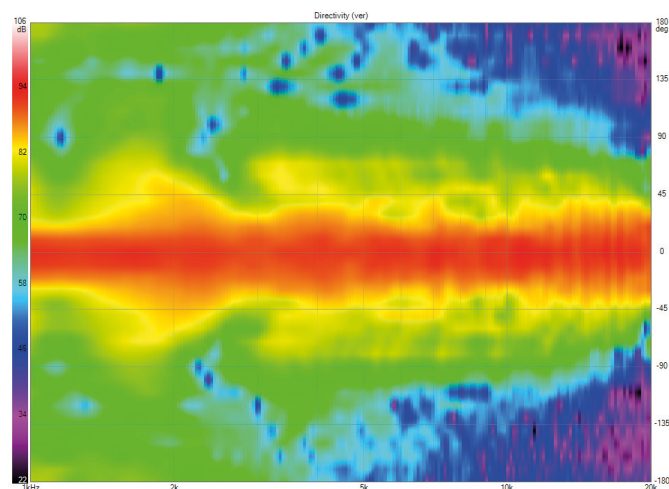


Beamforming relies on the principle that waves can interact constructively or destructively. Through controlling the phase, amplitude and spatial relationship between the three drivers in the array, Perlisten is able to control this wave interaction to shape the propagation of sound energy around the speaker. They chose to shape the directivity of the speaker such that it has relatively wide horizontal dispersion, thereby spreading sound around the listening area, yet a narrow vertical polar pattern above around 900Hz. The effect is illustrated in the graphic below, which compares what would happen with the same waveguide but without the flanking midrange domes, versus the effect of the DPC array.



Perlisten Audio's DPC Array beamforming

Controlling vertical dispersion in this way has two main consequences. The first is that it reduces the amplitude of vertical reflections off the floor and ceiling. This diminishes potential cancellation effects such reflections can have. This should result in a smoother in-room response and reduce smearing in the vocal range, although, at least in the case of floor reflections, it is unclear whether reducing these reflections matters a great deal (research has tended to suggest they are relatively benign).



S-Series S7t vertical directivity

The other significant benefit of the DPC array's control of vertical directivity is that this approach yields considerably increased sensitivity in the arrayed drivers. This is because, to achieve beamforming, the three 28mm drivers in the array overlap in the

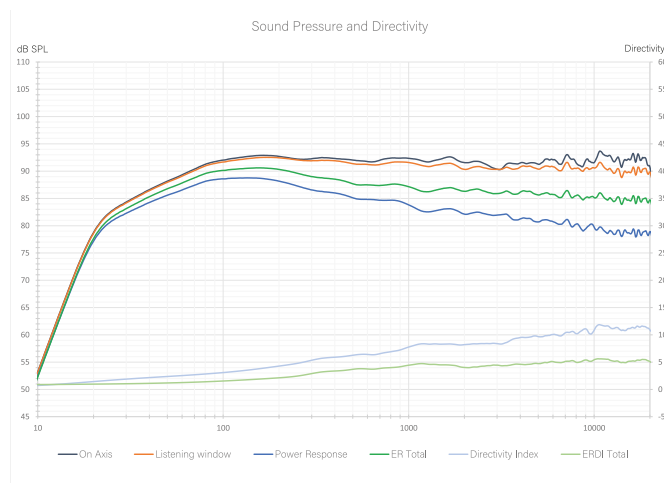
frequency range they cover. The midrange domes cover 1kHz to 4kHz, which overlaps with the tweeter, that covers 1kHz upwards. This means that the arrayed drivers have to work less hard individually to produce a given sound pressure level. The result is a higher output, easier to drive speaker, with less distortion and less dynamic compression at high SPLs.

The other eye-catching aspect of the S-series speakers is their chequered woofers. One of the distinguishing features of the S-series versus the R-series below it is that you don't only get cutting edge speaker design, you also get the best available transducer materials. Thus, the S-series speakers all feature 28mm beryllium tweeters and Textreme thin-ply carbon diaphragm (TPCD) midrange and bass drivers. Beryllium is a familiar tweeter diaphragm material, employed in a variety of high-end speakers. It is favoured for its high stiffness-to-mass ratio, which means it retains its shape under load and operates in a pistonic motion throughout the audible range. TPCD is, however, less familiar.

TPCD is an ultra-lightweight, stiff material, that is used in a variety of advanced applications, including the rotor blades of NASA's Mars helicopter. It makes an excellent speaker diaphragm material, partly for the same reason as beryllium does: it's stiff and light. But it also has another neat trick, in that it can be engineered to control the distribution of break-up modes across a speaker driver's surface. The upshot of this is that a TPCD diaphragm is affected less by resonances than single material diaphragms (e.g., paper, metal, etc.), which translates into fewer peaks and dips in the speaker's response.

All this state-of-the-art engineering adds up to a smooth frequency response. All the S-series speakers have both an incredibly linear on-axis response and a smooth off-axis response that tracks the shape of the axial response. The result of this can be seen in Perlisten's published measurements.

The chart below is for the S7t, but the other speakers in the system all have similarly smooth responses. These measurements show that the on-axis response and the 'listening window response' (i.e., the average of measurements taken in the +/-10 degrees vertical and +/- 30 degrees horizontal angular range) are remarkably similar. The 'early reflections' response (the estimated summation of all first reflections in a typical listening room) labelled on the chart as the 'ER Total', also tracks the on-axis response, which means that the speakers will have a very smooth in-room performance. These really are a deeply impressive set of measurements for any speakers, let alone passive speakers without DSP correction.





DESIGN

D215s SUBWOOFER

Clocking in at 92kg and 805mm x 500mm x 650.5mm, the D215s is a titan of a subwoofer. It features dual 15" carbon fibre composite drivers, arranged in a push-pull configuration. As I discussed in my review of the M&K Sound X12+ subwoofer, which also features a push-pull arrangement, push-pull designs employ drivers that are wired out of phase, which means that when one driver is moving away from its magnet the other is moving towards its magnet, in the exact opposite position. The logic of this arrangement is that nonlinearities in one driver's motion in a given direction are ameliorated by the internal air pressure changes caused by the other driver's motion in the opposite direction, thereby reducing harmonic distortion. Perlisten claims that this approach reduces even-order harmonic distortion by 10-12dB.

As one might expect with Perlisten's all guns blazing approach to their flagship range, they haven't skimped on the amplifier. The D215s features a 3kW amplifier with a sophisticated monitoring system that measures various aspects of power supply and amplifier performance. It is also loaded with DSP that features, among other things, user configurable parametric equalisation that is controlled via the slick Perlisten phone/tablet app.

The one element of the D215s I found somewhat lacklustre was the low resolution 2.4" LCD screen on the top edge of the 215s's cabinet. This provides access to basic features and is arguably fairly redundant in light of the app, but at this price point I'd expect a better screen, if only to stay consistent with the sub's otherwise luxurious build quality. But really, that is nit-picking of the highest order.

SET UP AND OPERATION

I tested the Perlistens in a 5.1 configuration, relying entirely on the supplied system, without supplementing it with my ceiling speakers. The Perlistens were powered by Nord power amplifiers, controlled by a Trinnov Altitude 16, and

calibrated with the Trinnov Optimiser. The D215s was connected to the Altitude via XLR. Music was streamed via a mix of TIDAL and Spotify, whilst movies were lossless MKV rips played through an Nvidia Shield Pro.

PERFORMANCE

My immediate impression listening to the S-series was that these are incredibly detailed speakers. Not the kind of detail borne of brightness or uneven spectral balance, but rather detail that emerges from an almost total absence of distortion or colouration. This impression only intensified throughout my testing.

I started my testing playing only the S7ts in stereo. R.E.M.'s Drive is among my go-to demo tracks, which I often use for evaluating midrange clarity. During the opening few seconds Stipe's voice has an echo that has been revealed to a greater or lesser extent by the various speakers I've owned and tested. No speaker I have heard has rendered this with quite as much detail and distinct layering between the echoes as did the S7t.

... quite simply, the most refined, transparent, and arrestingly realistic speakers

This clarity lent an effortlessly natural quality to vocals and instruments, such that I found myself leaning in my testing

towards acoustic tracks. One example was the MTV Unplugged version of A-ha's Take on Me. This version of the 80's hit is nothing like the original; it's slower, pared back and surprisingly melancholy. On S7ts Morten Harket's voice was movingly lifelike, with every breath and vocal inflection distinct and set within an expansive soundstage.

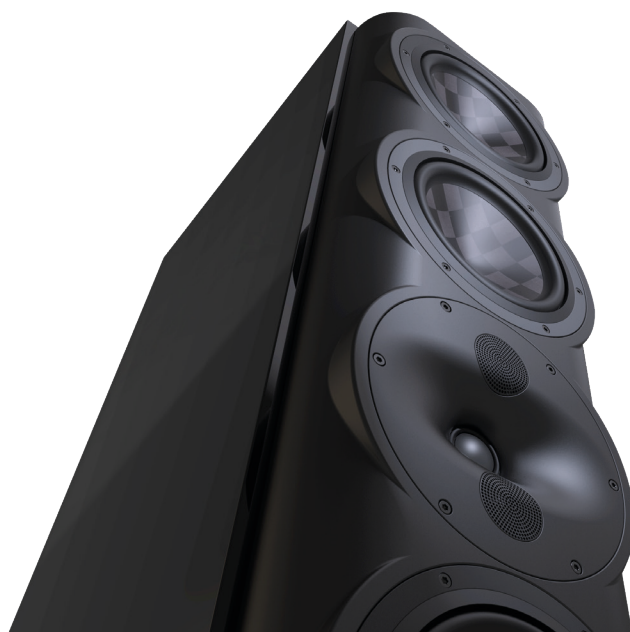
This lifelike clarity kept me somewhat spellbound with acoustic tracks until, almost by accident, I landed on a track - Bowie's Bring Me the Disco King - with a bit of weight. That brought the S7ts' bass performance into focus, with the lower registers of the song's piano score providing an authoritative underpinning for the track, lending it a scale I had not heard before. I must have listened to the song three or four times in a row, and each time I marvelled at the precise positioning of the instruments and immensity of the soundstage.

From then on, I tried the S7ts with a variety of electronic music, with a standout track being Nicolas Jaar's Space

Is Only Noise If You Can See. The song has a catchy electro pop bassline that, on the S7ts, was delivered with remarkable detail and texture in the bass. Despite the S7c, S4s and D215s sitting there unused so far, I struggled to draw myself away from listening to the S7ts in stereo. They are, quite simply, the most refined, transparent, and arrestingly realistic speakers I have had the pleasure to listen to music on.

But draw myself away I did, starting with an old favourite, Master and Commander. The start of this film has a wonderfully complex soundfield that on the S-series filled my room with detail. As the waves buffeted the hull of the HMS Surprise, every creak and strain of the wood played out across my living room. The lifelike clarity I had enjoyed so much with the towers' musical performance was clearly a trait shared across the S-series and, with movies, this clarity produced a deeply immersive sound, with even the subtlest of ambient effects etched out distinctly. In an age of Atmos, this was an instructive reminder that a truly accomplished 5.1 system can achieve almost comparable levels of immersion.

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Of course, the S-series isn't characterised solely by its subtlety and realism. It is, after all, THX Dominus certified. As the scene progressed and the HMS Surprise came under attack, I was treated to an awesome – in the truest sense of the word – display of dynamic power. The D215s had joined the fray. Coupled with the near endless headroom of the S-series speakers, the thunder of canon fire shook me, my sofa, the room, and quite possibly my entire house. But what I found more impressive still was that - notwithstanding the explosive bass and the complexity of the sound - the S-series system continued to render every last detail with surgical precision. It wasn't simply maintaining its composure under the onslaught of the scene: it wasn't breaking a sweat. This is unsurprising, given my room is less than a third of the size used as the Dominus reference, but it's one thing knowing how much headroom is on tap, it's quite another experiencing the effortless dynamics that result from this.

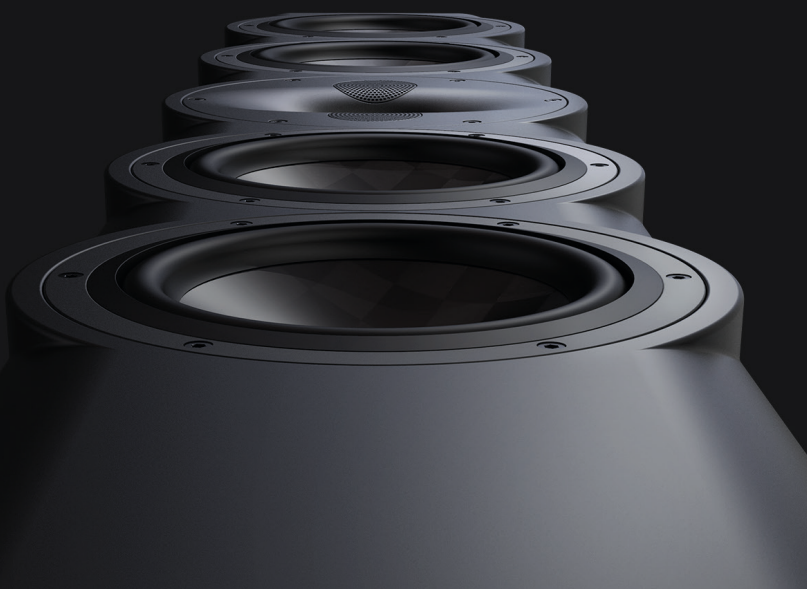
Seeing as the D215s and S-series speakers sounded so impressive with 19th century cannon fire, I wanted to hear how they fared with another favourite demo scene, the scene in Fury at around 1h 42m, where the tank crew attack a group of unsuspecting Germans. Again, the Perlistens produced a highly detailed and dynamic sound. Here the visceral ultra-low frequency impact of tank fire reproduced by the D215s was accompanied by the distinct whizz of bullets around the room, that ricocheted with a realistic metallic clank off the tank's armour at the front of the room. If I could find any weakness with the performance during the scene, it was that the S4s surrounds sounded a touch less spacious than the JBL S4Ais that I'm used to, which I suspect might be attributable to their monopole design versus the JBL's bipole configuration. But this is very much down to personal preference, and monopoles are in fact recommended by Dolby for immersive systems. In every other respect, the Perlistens outclassed my reference system.

*... it's one thing knowing how much headroom is on tap,
it's quite another experiencing the effortless dynamics that
result from this*

Moving yet further into the future, I proceeded onto testing with the motorball race in Alita: Battle Angel. The Perlistens continued to impress with their pellucid rendering of high frequency and midrange detail, from the clearly defined scraping of the motorball against the concrete track to the clink of steel swords as the racers battled it out. One particularly noteworthy aspect of the Perlisten's performance with this scene was its vast scale. The Perlistens

clearly resolved the reverberation throughout the stadium of the action and the commentator's amplified voice, which presented the scene across a huge and perfectly integrated soundstage, extending well beyond my walls and ceiling.

From there I proceeded through a variety of my standard demo tracks (John Wick, Edge of Tomorrow, Oblivion and Dune) gradually hardening the conclusion that was foreshadowed within the first few minutes of listening to the S-series and D215s: this is the best system I have heard in my room or, for that matter, anywhere.





CONCLUSION

The Perlisten S-series system tested here, coupled with the D215s, has set a new benchmark for me. It turned in as close to a faultless performance as I can imagine. Never before have I heard a system with so little colouration and with such dynamic scale. If you can afford it and you are after the best, look no further.

... this is the best system I have heard in my room or, for that matter, anywhere

Now, let's address the elephant in the room: the price. Given I was supplied with the S7t and S7c in high gloss ebony, the total system cost came to approximately £40,000. That is a significant sum of money that will put the Perlistens out of reach for most people. But do they do enough to justify this pricing? To my mind the answer is, unequivocally, "yes". These are state-of-the-art speakers that, subjectively and objectively, can go toe-to-toe with anything else on the market, at any price, and in many cases the Perlistens will be objectively the better product. This kind of performance does not come cheap, but put in context, there are pairs of speakers out there that cost multiple times the price of this Perlisten system, and I know which I would choose.

I do have a small issue with the pricing of the D215s sub-woofer, in that £8,100 will buy a system of lesser sub-woofers that will collectively outperform the D215s, and I deducted a value for money point for that reason. But I suspect that many Perlisten customers will be unphased by the £8,100 price tag.

WHAT ARE MY ALTERNATIVES?

At this price point, for an integrated system with this output, performance and quality of finish, there are no alternatives. There are very high-performance systems one could construct for the same money, but they are either DSP-based and require bespoke amplification (e.g., a system based around the JBL M2s and JBL SCLs) or have nowhere near the output of the Perlistens (e.g., the Revel F328Be). To my mind, the Perlistens exists in a class of their own.