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review
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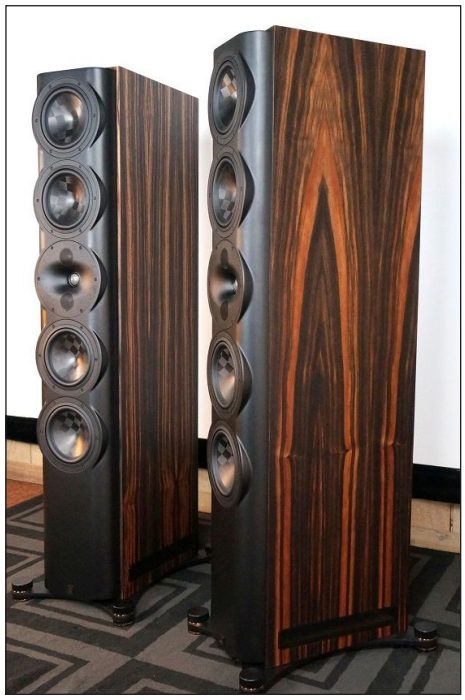
Perlisten S7t Tower Loudspeaker Review

Review by James Larson of Audioholics.com



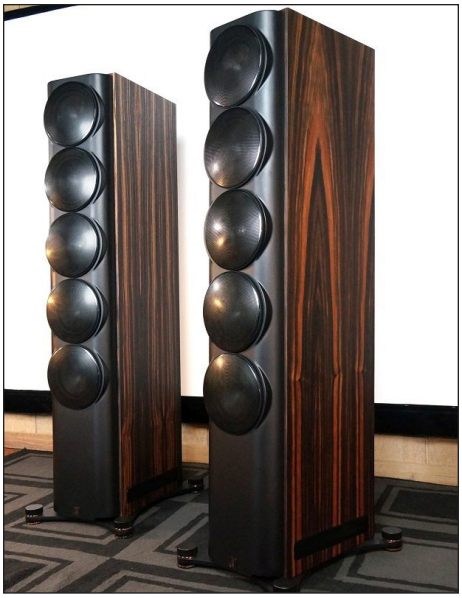
Introduction

Perlisten Audio is a new high-end loudspeaker company that is set to make their mark in the speaker marketplace. Of course, there are a lot of high-end loudspeaker manufacturers, so any newcomer has to do something to set themselves apart in this crowded segment. The people behind Perlisten know this, and they aren't out to make some high-end loudspeakers as a generic business idea. They are veteran audio engineers with decades of experience behind them who are garnering their collective knowledge to make the finest loudspeakers that they know how. They are pulling out every trick in the book to make the speakers that they would want to own: a loudspeaker engineer's loudspeaker. Needless to say, that ought to add up to one heck of a speaker. In for review today is just that speaker: the Perlisten S7t, their flagship speaker and the primary beneficiary of their cumulative design experience.

The question these speakers pose is what does all that engineering experience and knowledge add up to? Surely, this is a serious speaker, but what can you do that hasn't already been done a hundred times over? There are countless high-end speaker companies with all kinds of designs from straightforward and conventional to bizarre and even preposterous. Where does the S7t fit in all of this? What do you get if you buy a pair of these not-inexpensive speakers at nearly $8k each? Let's dig in to find out…

Appearance

Anyone who takes the plunge for speakers in the product category of high-end floor-standing speakers will be expecting something visually and physically formidable, so the fact that these speakers will not just 'disappear' into any normal domestic room isn't likely to be a source of consternation. That being said, the S7t's are large speakers but not gigantic. At a bit over 4' tall, they stand somewhere around chest or neck height of most adults. Their most visually distinguishing element has to be the driver array; people who like symmetry will like the look of the S7ts. The drivers are mounted in five circles that protrude from the front baffle with the middle circle housing the tweeter and



midrange domes. You could fold the driver array in half either vertically or horizontally, and the halves would be identical.

The outer two woofers that flank the tweeter/midrange middle circle use interesting looking cones called the Textreme thin-ply carbon diaphragms. They have a unique lightly checkered pattern that lends these speakers a somewhat futuristic look. The middle driver section sets a silver-colored Beryllium dome tweeter in a waveguide that is CNC cut from hardwood. The waveguide also houses two midrange domes on the top and bottom of the waveguide mouth. These domes also use the Textreme carbon diaphragm, but they are mostly hidden behind a perforated screen. The front baffle has heavily rounded edges with the protruding driver mounts being an intrinsic part of the structure. This baffle is mounted on the main bulk of the enclosure, which is a typical hard-edged oblong shape, although the cabinet does have a slight backward tilt which gives it a bit more flair than if it were standing totally upright.

The S7ts come with grilles, and they only cover the drivers instead of the entire front baffle. The grilles use magnetic adhesion so there are no visible grille guides. The grilles are perforated aluminum sheets that are functional in that they protect the drivers, but they do not enhance the looks of these speakers, in my opinion. The speakers look better without the grilles.

Review Summary

Product Name: **S7t Tower**
Manufacturer: **Perlisten**
Overall Rating: **5/5 Stars**
Value Rating: **5/5 Stars**
MSRP: **$15,990/pair (base cost), $17,990/pair Special Edition**
www.perlistenaudio.com

Pros

- Extremely accurate tonality
- Tremendously wide dynamic range
- Optimal listening height works well for many different situations
- Great for near-field or far-field listening
- Outstanding directivity control
- Neat-looking speaker
- Excellent build quality

Cons

- High cost makes them inaccessible for many people

Specifications

Perlisten S7t Tower

Enclosure Alignment: 4-way bass-reflex / sealed floor-standing speaker

Woofers: 4x7" Textreme TPCD

Midrange: 2x1.1" Textreme TPCD

Tweeter: 1.1" Beryllium dome

Impedance: 4 ohms nominal / 3.2 ohms minimum

Recommended Amplifier Power: 100-600 Watts RMS

Sensitivity (2.83V/1m): 92dB

Frequency Response: Bass reflex: 22Hz - 37kHz (-10dB), Sealed: 32Hz - 37kHz

Frequency Response (+/-2dB): 80Hz - 20kHz

Crossover Frequencies: 500Hz, 1.1kHz, 4.4kHz

Available Finishes: Piano High Black, Piano High Gloss White

Special addition finishes: High Gloss Ebony, Natural Ebony, Natural Black Cherry, Natural Light Cherry, High Gloss Light Cherry

Custom finishes available: Pricing will vary depending on finish

Certification: THX Dominus - Large LCR

SPL capability (100Hz - 20kHz): 117dB <2% - 2nd, 3rd Harmonics

Dimensions (H x W x D): 51" H x 9.5" W x 15.7" D

Weight: 122.5 lb (55.7 kg) each

The base is a thick steel plate with some hefty feet sticking out from the corners. The feet have some brass rings above and below the plate which is a nice touch of class. The binding post plate is a very slick polished brass piece with the gleaming binding posts joined by a similarly polished jumper. It's a very luxurious touch, and it's a shame that it will remain hidden from view most of the time.

The S7t pair that was loaned to me had a gorgeous striped ebony veneer, although the standard finishes are gloss white and black. Perlisten can accommodate custom finishes including custom colors or different wood veneers upon customer request, although that does entail a not-insignificant surcharge. Since the industrial design is fundamentally good, in my opinion, I think they would look nice in nearly any finish. The S7t speakers straddle the line between stately and modernist. They could fit in well in a wide variety of interior decors for that reason, depending on the selected finish. They are high-end speakers, and they certainly look the part, and what is more is that, in this case, form follows function, which is what we will now discuss...

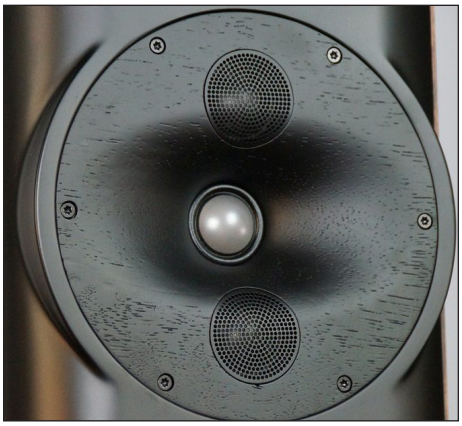
Design Analysis

There is a lot to unpack with the Perlisten S7t speakers, and there is a lot more than what meets the eye. The basis description in the spec sheet of being a "4-way bass reflex" speaker doesn't do it justice. On the surface, it looks like a 3-way speaker in which a dome tweeter is nested between two midrange domes and four 7" woofers, but this is not a conventional WMTMW speaker. Instead, the drivers form an array where they largely work with each other rather than in their own separate frequency bands, so there is a lot of overlapping bandwidths in the crossover filters. This is done to create an acoustic beamforming effect where all the drivers sum up on an intended listening angle and subtract elsewhere. In order to accomplish this, the drivers in the array do not operate at the same amplitude levels or even the same phase angle. In fact, to make the beamforming work, the spacing of the drivers must be precise, both in height and width, but also in depth, and this is why the midrange drivers are mounted ahead of the tweeter in spatial positioning. The advantage of this beamforming is a whole lot of output delivery to a specific direction without needing to throw sound everywhere at a high level. Perlisten calls their beamforming array the DPC waveguide where DPC stands for Directivity Pattern Control.

The beamforming restricted angle occurs on the vertical axis in the S7t speakers. The performance targets for this speaker are a wide horizontal dispersion and a narrow vertical dispersion. The reason is that any room with multiple listening positions is likely to be spread out on a horizontal plane but unlikely to be spread out much on a vertical plane, so it's a good idea to have a full sound projected out over a wide angle horizontally so all the listening positions are met with a high-quality sound. It is also beneficial acoustically since it has been shown that lateral acoustic reflections from sidewalls can enhance the spaciousness of the sound, and many people find that to be pleasing. On the other hand, it can be beneficial to restrict the vertical dispersion angle. If the speakers are optimally placed, the vertical reflections are usually the earliest reflections, and this can result in acoustic cancellation in upper-bass frequencies, which can be very detrimental to the response. There is also an argument that vertical reflections can reduce a sense of spaciousness (by diminishing inter-aural cross cancellation), although that is based on research conducted for larger room acoustics such as auditoriums and it isn't certain how valid that is for domestic living space sized rooms.

Normally, speakers just use a waveguide on the tweeter to restrict vertical dispersion, but the problem with that is it only affects the tweeter's bandwidth while the woofers and

midrange drivers are usually projecting sound out at a wide angle in all directions. Some manufacturers place the midrange in a horn or use very large woofers, but either solution necessarily makes the speaker very large. Through the ingenuity of beamforming, Perlisten has found a way to restrict vertical dispersion over a much wider bandwidth without needing the speaker to be gigantic. Perlisten also does incorporate a state-of-the-art waveguide on the tweeter, but that is to control directivity in

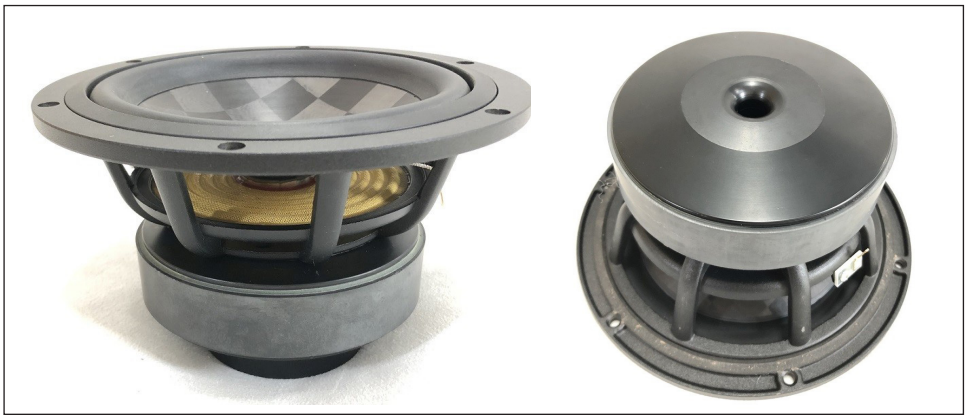


higher treble frequencies where their beamforming array isn't active.

The high treble is handled by a 1.1" beryllium dome which produces a strong response well above the range of human hearing. Beryllium is the best tweeter diaphragm that can be deployed on cones or domes on account of its extreme rigidity combined with its very low weight. It's not used a whole lot since it's so expensive, but Perlisten wanted to make the best possible speaker in the S7ts, so a beryllium tweeter wasn't something they could compromise on. A well-made beryllium tweeter will hold its shape out to frequencies far exceeding human hearing, and that means it will have a smooth, well-controlled behavior for any sound that even the finest human hearing can discern.

The midrange drivers are two 1.1" domes that use Textreme's thin-ply carbon diaphragms (hereafter called TPCD). The bass drivers also use this TPCD material as well. These are very light but exceptionally rigid materials that are superb for a loudspeaker cones or domes. TPCD is a broad weave of carbon fibers that has the strength of metal diaphragms but not the total material uniformity at every point in the construction. This is an advantage in that it doesn't bend as sharply at higher frequencies. At a high enough frequency, all loudspeaker diaphragms will start to bend and flex since the force driving the motion isn't uniformly applied at all points of the diaphragm. This behavior is called 'break-up,' and it results in a very erratic frequency response that can sound harsh. So a key challenge for driver engineers is to move those break-up modes into as high frequencies as possible where they can be more easily filtered out. Driver engineers are always on the lookout for a material that can hold its shape for as wide of a frequency band as possible. The TDCP drivers do this well. To be sure, they do run into break-up modes, also called 'ringing,' but the modes are heavily mitigated thanks to the structure of the diaphragm, and so the severity of the break-up modes are greatly reduced resulting in higher performance for a wider range of frequencies.

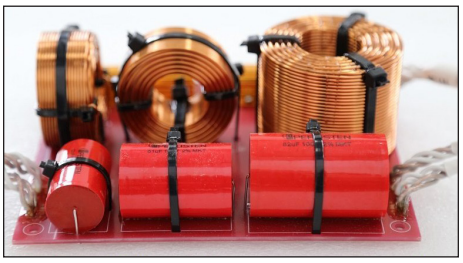
The checkered pattern of the S7t's four 7" bass driver cones shows the weave of the carbon layers of the TDCP material, so that is actually a functional trait of the cones and not merely a stylish one. These bass drivers have a very heavy-duty, pole-vented motor with a 3 lbs. magnet as well as a sophisticated suspension system. One interesting fact about the motor is that Perlisten uses aluminum wire in the voice coil rather than copper or copper-clad aluminum. That might seem slightly counter-intuitive seeing as how copper is more conductive, but that extra electrical resistance can be made up by simply using a larger gauge wire, and the larger gauge wire has the added benefit of being better for thermal dispersion since it has a lot more surface area from which to radiate heat. What is more, even with the larger gauge wire, it is still lighter than copper, so using aluminum reduces moving mass, thereby making



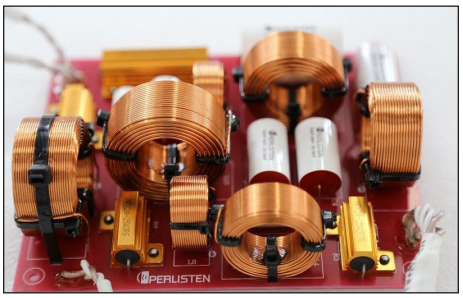
the driver more sensitive. Copper is used in the driver, but as shorting rings, and in this function, copper is simply superior to aluminum albeit a bit more expensive. These copper shorting rings will help reduce induction which reduces distortion and increases linear bandwidth of the driver.

Perlisten also pays a great deal of attention to the suspension components of the bass drivers. The S7t's designers use their own modeling techniques to optimize the spider and surround to have as long of a linear excursion as possible. They do this by simulating the effect of various suspension materials and constructions at a variety of points in its excursion. They then use a Klippel testing system to see how well those simulations pan out in actual use. They go through these iterations of computer modeling and real-world testing until they hit their desired performance targets.

The surface area of four 7" cones have the equivalent surface area of a 14" cone, so all these bass drivers are like a 14" bass driver, except that they would have a lot more cumulative motor force than a normal 14" driver. They would also be far less susceptible to thermal compression since we have four coils to disperse heat instead of just one.



Perlisten S7t bass driver crossover circuit



Perlisten S7t midrange/tweeter crossover circuit

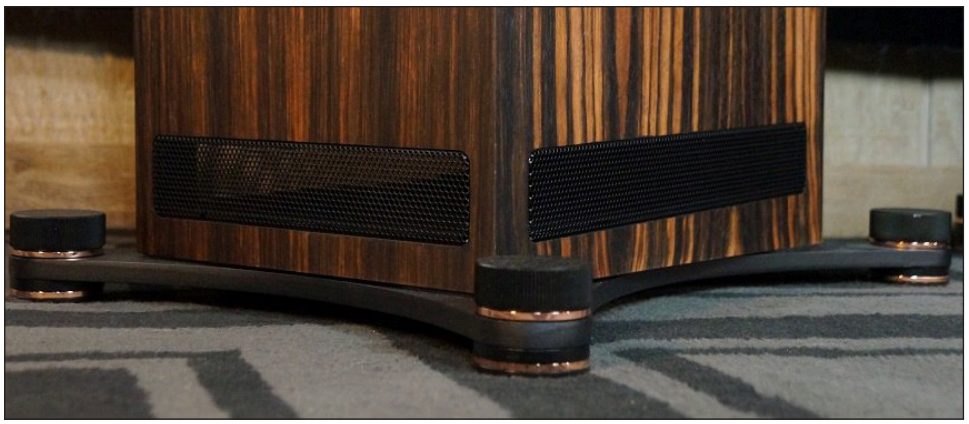
As was discussed before, the crossover circuit in the S7t is not much like a traditional crossover circuit. A loudspeaker of this design requires varying amplitudes, phase timings, and overlapping bandwidths for the drivers. The upper and lower bass drivers play from 22Hz to 550Hz, the middle set of bass drivers play from 22Hz to 1,350Hz, the midrange domes play from 1kHz to 4kHz, and the tweeter plays from 1kHz to 30kHz+. While that explains the ranges of the drivers, it doesn't fully explain how their behavior is being controlled. The physical crossover circuit comes in two separate boards: one for the tweeter and midranges and the other for the bass drivers. They are a sight to behold; there is a gob of heavy-duty air-core inductors, large polypropylene capacitors (with a nice 2% tolerance ratings!), and resistors enshrouded in heatsinks. These are high-end components that are what would be expected to be seen in a loudspeaker of this price point.

The S7ts are bi-ampible/bi-wirable and so have two sets of binding posts. Normally, I would say that there is little advantage in bi-amping with home audio speakers, but with the S7ts, I will make an exception. The reason is that they have a very formidable bass driver section, and with the speaker's total 600-watt RMS power handling, they can handle a lot more power than what most home audio amps can deliver. It would still be better to just use a single beefy amplifier to power the whole thing, but let's say you have a 100-watt stereo amp on hand, you could use that to power

the midrange/tweeter sections and then add a 300-watt stereo amp for the bass sections. You would end up with a very powerful stereo system with a tremendous dynamic range. (One note about bi-amping is that you do not want to use an AVR amp to power one section of the speakers separately since it may have extra processing delay compared to an outboard amp.) However, since these speakers are 92dB sensitive, even if you didn't have a monster amplifier on hand, you would still be able to get some serious SPLs with just 50 to 100 watts per channel. That doesn't take full advantage of their capabilities and wouldn't be able to achieve THX Reference levels in a large room, but if you weren't in a large room, I am guessing they would have enough headroom for most people even with a modest amplifier.

The cabinet is a very heavy-duty construction made from high-density fiberboard (HDF). The front baffle is a curved, 2+" thick piece carved out of an HDF block. It is even thicker at the points where it mates with the main cabinet section. The curvature outside of the driver mounts should help to alleviate baffle diffraction as

well as make the S7t look sleeker. The main bulk of the cabinet uses 0.75" to 1.1" thick HDF panels and braces. There are five horizontal braces and a vertical brace. The cabinet is chocked full of Dacron-type stuffing, and the interior panels are lined with butyl damping sheets. This all adds up to an extremely inert enclosure, weighing in at a whopping 122 lbs. For those who obsess over cabinet resonances and vibrations, there is no need to be concerned here. The plinth base and feet are solid steel pieces that weigh a considerable amount on their own, and they do a lot to give these tall speakers solid footing; they wouldn't be easy to knock over. The terminal plate and binding posts are also heavy-duty; they are large polished brass pieces, and the five-way posts were able to accommodate my 12AWG bare wire connection with no problem.



There are two bottom-mounted ports, and they have a 3.5" diameter and are flared on both ends. Those kinds of port dimensions are what you would expect to see in a subwoofer, so the -10dB spec of 22Hz is not at all surprising. The down-firing configuration of the ports is a good idea in that it will get a bit more boundary gain and also the gain is a bit more predictable since it will always have at least that much. Down-firing ports can also help to mask port turbulence, not that such massive ports would ever see much turbulence. Perlisten also supplies the S7ts with port plugs for users who would rather run the speakers in a sealed configuration, but the only circumstance that I can think of where that would be useful is in a small room where the user is getting a lot of room gain which is massively boosting the low frequencies. Even then, I would suggest equalization as a better method of taming the low end since it doesn't come at the cost of headroom, but sealing the ports would temper the deep bass output. Sometimes sealing the ports can help make subwoofer integration easier since ports can add a lot of phase rotation. However, the S7ts are tuned so deeply that there wouldn't be much phase rotation at the mid-bass frequencies where subwoofers would commonly be crossed over. Sealing these speakers wouldn't be advantageous for subwoofer integration unless maybe you are crossing the subs over below 40Hz or so, and that would be an unusual circumstance. What is more, the ports are not easy to access, and the user has to remove the plinth as well as a lower plate to get at the ports, so it's not nearly as easy as sealing other loudspeakers.

One nice attribute of the S7t's versus other tower speakers in its class is the height of the tweeter. Many other large, high-end tower speakers tend to have the tweeters mounted relatively high. That isn't a problem if the listener is seated at a far distance from the speaker. However, if the listener is closer than the angle where the vertical dispersion of the tweeter can reach them, they will be missing much of the treble from the sound. For many larger tower speakers with a high-mounted tweeter, it's not advisable to sit closer than around three meters, and further back would be even better. For the Perlisten S7ts, this is not a problem. Even a one-meter distance from them should yield a full sound from top to bottom of the frequency spectrum. It's not just the height of the tweeter that enables this to happen; it is also the symmetry of the driver array as well as the close spacing of the drivers. To be sure, the S7t's would be extreme overkill for a one meter listening distance, but they

are not constricted to only sounding good in the far-field like so many other flagship tower speakers. This gives them a versatility that not many other speakers have in its class.

Speaking of listening distance, this is a good point to discuss the S7t's 'Dominus' level of THX certification, meaning they can achieve THX Reference level performance at a 20-foot listening distance within a 6,500 cubic foot room. The S7t is the first loudspeaker to achieve this rarified level of THX performance, and as of the time of this writing, Perlisten speakers are the only speakers that have any Dominus level certifications.

For more information about the THX Certified Dominus performance level, read our prior article about Dominus and Perlisten: 'Perlisten Audio: The THX Dominus Line Has Finally Been Breached.' Within THX's certification classes, there are sub-classes such as 'Dominus surround' and 'Dominus Front.' The most demanding among these is 'Dominus Front Large LCR,' meaning that the speaker alone can supply the full range of sound including deep bass to meet THX Certified Dominus-level performance from front stage positioning. The S7t speakers are the only speakers among Perlisten's offerings to meet the performance criteria to do that, which of course,

makes them the only speakers in the world (at the time of this writing) to boast that certification. Perlisten decided to go for a THX Certified Dominus rating as one method of separating themselves from the crowd of other high-end loudspeaker manufacturers, although that was an ancillary goal to that of simply making the best loudspeakers of their ability. Nonetheless, they believed it would be an assurance for many buyers in a marketplace where performance does not necessarily correlate to price.

One striking thing about the overall design is just how complex and ambitious it is for a new loudspeaker manufacturer. An explanation for that is while Perlisten as a business is new, the people who control it are not new. As was mentioned before, these are industry veterans, and they already own much of the manufacturing processes. They are able to leverage their control over a lot of the manufacturing chain from the ground up, so they build their own drivers, cabinets, crossovers, and do final assembly all in their own factories. They control quality and consistency at every step and are not as susceptible to supply issues that currently plague the consumer electronics market at the moment. Their ownership of the manufacturing chain also helps keep costs down since they are acquiring much of their parts and labor at cost with no markup whatsoever.

Perlisten's prime intention for the S7t was to make the best speaker for a two-channel system that they could. The THX Certification may make it seem like these speakers are geared for home theater, but Perlisten tells me that their main priority was making a speaker for a superlative two-channel system. That is certainly believable because most home theater systems will incorporate subwoofers and will likely negate the need for the deep bass ability of the S7t speakers. If Perlisten were more focused on home theater applications, they could have saved a lot of cost and complexity by making the S7t speakers a sealed design which would have been a better fit for THX's prescribed low-end for loudspeakers, that being a roll-off at 80Hz with a 12dB/octave slope. This is the design for their matching S7c center speaker. Having a true full-range speaker certainly doesn't hurt for home theater, but it's overkill when subwoofers come into play. It simply isn't needed, especially considering the caliber of subwoofers that Perlisten also produces. But the demands of a two-channel system and surround-sound system are the same: that of accurate sound reproduction. Only the number and frequency range mapping are different. A speaker that is great for two-channel reproduction should also make a great fit into a surround-sound system, and that was part of the plan in the S7t design.

Listening Sessions

In my 24' by 13' (approximately) listening room, I set up the speakers with a few feet of stand-off distances between the back wall and sidewall and equal distance between speakers and listening position. I angled the speakers to face the listening position. The listening distance from the speakers was about 9 feet. No room correction equalization was used. No subwoofers were used. Amplification was handled by a Parasound JC 5 with pre-amplification duties being handled by a MOTU M2 audio interface. Here we should give a word of thanks to Parasound for supplying the JC 5 for the purpose of this review, so we could have an amplifier with enough power to take full advantage of these speakers: much appreciated!

Music Listening

One album that I listened to with the S7t speakers was Max Richter's 'Voices,' a mammoth neoclassical work with a one hour, forty-seven minute runtime. 'Voices' is a symphonic work dedicated to the Universal Declaration of Human Rights of 1948. Each of its movements begins with a recitation of one of the thirty articles of this landmark document. Richter's orchestra is a peculiar one; it is all strings featuring twelve double-basses, twenty-four cellos, six violas, eight violins, and a harp. The instruments are abetted by a twelve-piece choir and a lead soprano singer. There is also some electronic atmospherics from synths played by Richter. This recording, released on the Decca label in 2020, is a gorgeously performed and recorded album and also a very moving one, especially considering the time of its release: the summer of 2020, an era which had to qualify as some kind of modern nadir in human rights. It can be streamed from Qobuz and Tidal in lossless, high-quality audio formats.

> **"...the timbre of the instruments and vocals all sounded natural and well-balanced through the S7Ts."**
>
> James Larson

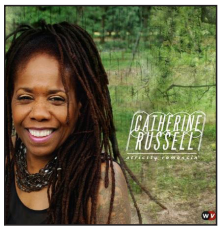
Through the S7t speakers, 'Voices' had a cinematic quality, which is not surprising given the string-heavy orchestra as well as Richter's background in creating scores for television and movies. The soundstage was a broad one, and soloists were imaged with precision, although an orchestra, which is essentially one large string section, has inherently imprecise imaging. The wordless singing from the choir as well as soloist Grace Davidson sounded quite beautiful, and much of the instrumental playing, aside from soloists, was like a wall of cohesive sound. So many cellists and double-bassists naturally weighted this music more towards low frequencies, and, of course, these large towers were quite comfortable in such a range, whereas smaller towers or bookshelf speakers might have slightly shortchanged the amount of energy present at the low end. Everything sounded natural and well-balanced, and I would guess this reproduction is close to what the recording engineers would have intended. 'Voices' sounded terrific on the S7t speakers, and I am sure that lovers of orchestral music would be delighted with their presentation.

For orchestral music in a much more traditional vein, I found a recent hi-res release from the Alpha label on Qobuz called 'Royal Handel.' This album is a collection of arias composed for the Royal Academy of Music in the early eighteenth century mostly by Georg Handel but with a few pieces by other composers. These arias are sung by Eva Zaïcik with instrumental accompaniment by the baroque chamber quartet Le Consort. The musicianship on display here is of an extremely high order as is the recording quality; the production is superbly recorded and produced, typical of the Alpha Classics label and befitting of this level of musical artistry.

The first thing that leapt out to me when playing this recording on the S7t speakers is how lifelike the instruments and Ms. Zaïcik sounded. The dynamic range of the recording was unexpectedly wide and uncompressed, and I partly attribute that aspect to the realism of the sound. This is an album that really seems to take advantage of the 24 bits of dynamic range of the digital file. The recording made it sound like the listener was seated closer to the performers rather than farther, and so the soundstage still had some precision. Nonetheless, the performance space of the recording, the Temple du Saint Esprit de Paris, did add a reverberation that gave the performers some spaciousness and thus a slight amount of ambiguity. Ms. Zaïcik's voice was anchored to the center, but the environment added a slight indistinction that gave her a somewhat ethereal quality compared to recordings done in an acoustically dry environment. These acoustic

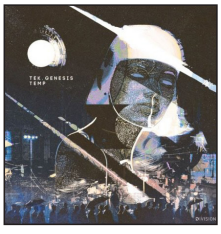
nuances were easy to distinguish on the S7t speakers. Also adding to Ms. Zaïcik's ethereal quality was her smooth yet vibrant voice that seemed to be custom-made for opera, and the perfection of her voice was immaculately rendered by the S7t speakers. Through the S7ts, the timbre of the instruments and vocals all sounded natural and well-balanced. The entire presentation came together beautifully.

Moving up the musical clock by a couple hundred years, 'Strictly Romancin'' is an album of covers of early jazz and blues compositions from the 30s to the 40s that are performed by Catherine Russell. While this music might be classified as jazz or blues, it does not much resemble contemporary jazz or blues and shows just how much these genres have changed over the decades. The album has a bright and swinging mood with covers of the likes of Duke Ellington and Billie Holiday, so it veers more towards a big band sound or sometimes a ragtime feel. Catherine Russell's parents were involved in this original music scene, so her family background gives her a deep perspective of the sound and intent of these once-popular classics. The production on 'Strictly Romancin'' is top notch, and this is a superb recording for showing how good these classic tunes can sound with modern production techniques.



The recording for 'Strictly Romancin'' is dry in the sense that there is not much added reverb. This gives us a clearer look at the vocals and instruments in themselves. This has the effect of transporting the performers to the listener's room rather than transporting the listener to a different environment. On the S7t speakers, Russel and her ensemble sounded as though they were giving me a personal performance in my family room. The soundstage was vivid and positively picturesque. Russel's voice was squarely centered between the speakers, and the instruments also had well-defined placements within the soundstage as well. Vocals and instruments sounded realistic with an outstanding sense of clarity and natural timbre. The even-handed tonality combined with the evocative soundstage gave the reproduction of this album the holographic presentation of stereo sound at its finest. I'm not sure anyone could ask for a better showing of 'Strictly Romancin'' than what the S7ts could do; if this presentation isn't what was intended by the recording engineers, it really should have been. Jazz music lovers will surely love what the S7t speakers can do for their recordings.

For something that could stress the dynamic range ability of the S7t speakers, especially their low-frequency capability, I selected Tek Genesis's 'Temp,' an album of electronic music that spans breakbeat rhythms from drum'n'bass to dubstep. This futuristic-sounding music is filled with heavy bass, so much so that I would doubt that any normal floor-standing speaker could do it justice, but the S7ts are not normal floor-standing speakers. Ordinarily, I would use an album like this for a subwoofer review, but the S7t speakers look to be so capable that maybe they could produce subwoofer-like performance here.

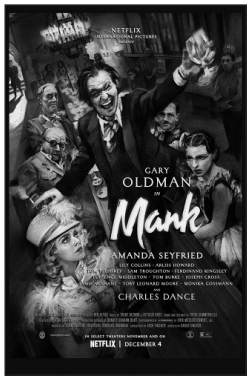


I cranked the volume and clicked the play button for 'Temp.' As electronic music from this genre, it is not as 'noisy' as others in that there are not as many sounds occurring simultaneously, but many of the sounds that do occur are given full throttle. The compositions here are intricate, and the layering of instruments alternate to the forefront of the sound, a product of the type of compression chosen for this mix. When an instrument makes a sound, such as a kick drum or snare or some synth lead, it is loud, and the S7t speakers give each instrument its due. The dynamics reminded me of a live performance but without the harshness that some live sound systems can have. It was loud without being shrill. The bass was big yet balanced, unlike a subwoofer running hot or a speaker given a mid-bass boost to simulate 'punchiness.' These speakers let the recording decide when to be punchy and can scale with the dynamics accordingly. I'm used to having powerful subs in use, but I absolutely did not miss them with these speakers; the S7ts are true full-range speakers. 'Temp' was 28 minutes of fun for me with the S7t speakers, and I wish every speaker that I reviewed was as capable. Anyone looking for a speaker that doesn't need the addition of a subwoofer for serious bass should give these speakers a close look.

"The dynamics reminded me of a live performance but without the harshness that some live sound systems can have..."

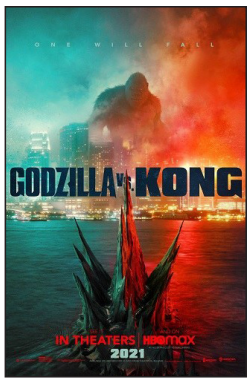
James Larson

Movie Watching



A movie I had been intending to watch since its release on Netflix was David Fincher's 'Mank,' which concerns Herman Mankiewicz' creation of the screenplay for 'Citizen Kane.' Having been a longtime fan of Orson Wells as well as David Fincher, this movie seemed like an intersection of some of the great figures of Hollywood from past to present. With the S7t speakers in house, I figured it was a great time to finally sit down to watch this much-anticipated movie. 'Mank' ought to be a good demonstration of the S7t's ability in speech intelligibility since it seemed like a largely dialogue-driven movie. Mankiewicz himself was one of the great writers of dialogue in his day, so hopefully this movie would approach his ingenuity in injecting sharp humor and incisive characterization in its spoken discourse. One thing that I noticed in watching 'Mank' was a certain flatness of the sound mix. It did not sound like a normal modern movie at all, but that turned out not to be a problem with my equipment. I later read that the sound mix was intended to emulate mixes from the early 1940s, so it was actually a monaural sound mix, and some of the recording techniques used would also have reduced much of the higher treble output. While it's certainly not a conventional sound mix, as a demonstration for speech intelligibility, it is great since there is so much dialogue. The dialogue itself is mostly witty, fast-paced banter of the type that would have been at home in a Hollywood production of that era. I had no problems following dialogue with the S7t speakers, even though I did not watch the movie at a loud level. All the speech was crystal clear, even when the titular character became drunk and slurred his speaking (which was frequent). Given its eccentric sound mix, 'Mank' wouldn't be a great movie to use to assess a sound system in any respect except for speech intelligibility, but it is great as an entertaining movie, and the Perlisten S7ts were a fine speaker to hear it with.

So far, I have found the newest Godzilla/King Kong movies to be a lot of fun if not quite cinematic masterpieces. Of course, it was only a matter of time before these giants were brought together to duel, and I managed to catch it on HBO Max with the Perlisten S7ts before it left that streaming service. Going into the movie, it felt more like a pay-per-view event set up by Don King rather than an ostensible story with any serious human drama, but I was fine with that. Needless to say, a movie with this colossal budget and subject matter is sure to be a feast for THX Certified Dominus speakers, but it's one thing to simply assume that and another to actually experience it. I cranked the volume and let the speakers rip.



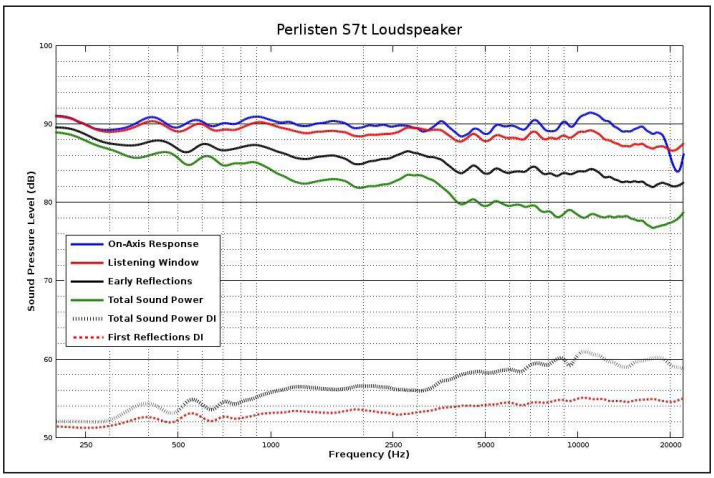
The S7ts, powered by the JC 5, made for an absolutely commanding combination for a movie like this. The effects sounds of these monsters plus the epic music score sounded as good as if not better than any commercial cinema I have been to. The slug matches caused a palpable rumble, and every step from these beasts was felt as well as heard. The monsters' roars managed to shake my sofa through the S7t speakers. Subwoofers were absolutely not needed or missed. Tom Holkenborg's score mixed electronic sounds with orchestral instrumentation, and it sounded as towering as the titanic title characters. Even though I watched the movie at a very loud level, it was not at all painful or obnoxious to listen to, and one reason for that is the total absence of any kind of distortion. I would never watch a movie at such elevated levels with typical speakers because they wouldn't be able to handle it. They would either run into high distortion or knock a woofer out. With the S7ts, everything sounded as clear as a bell. In fact, the ease of the sound at such high levels is a bit scary considering the noise exposure I put my ears through. A loud movie once in a while isn't likely to do any last hearing damage, but these speakers make it so easy. And so much fun. 'Godzilla vs. Kong' was a terrific night at the movies, and having such a powerful and high-fidelity sound system was a critical ingredient to making that happen.

"The S7ts are one of the most accurate speakers that I have reviewed and also one of the most dynamic."

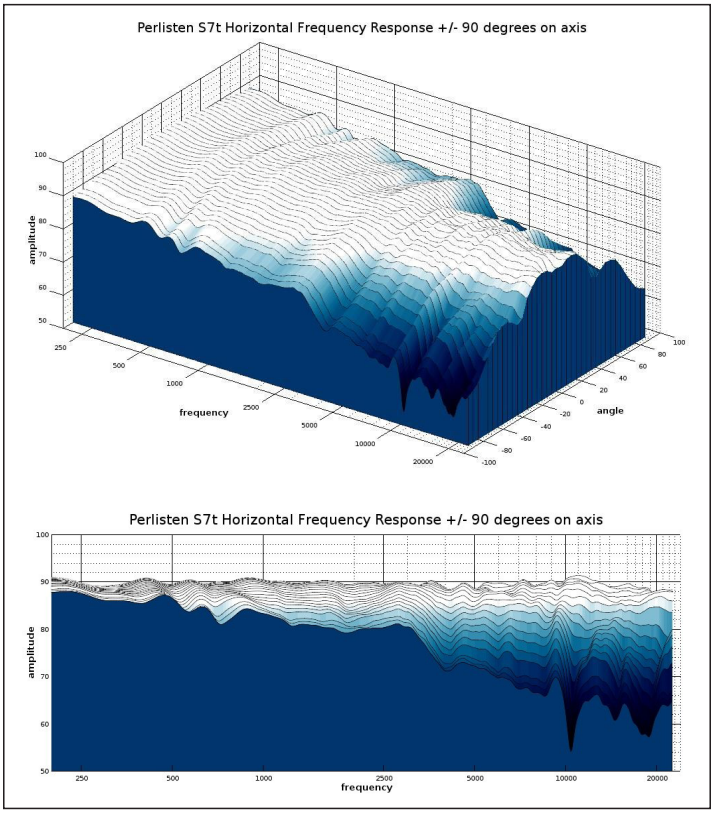
James Larson

Measurements

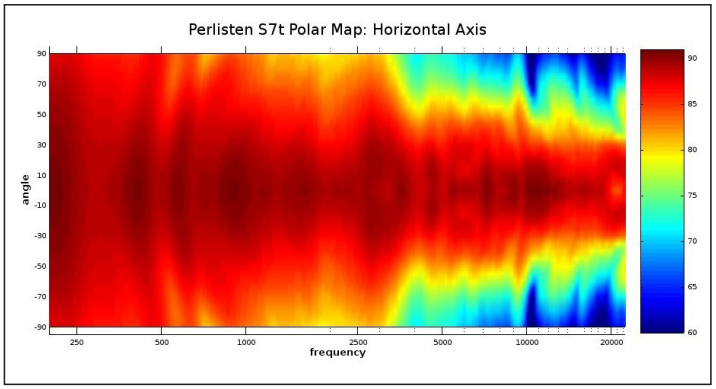
The Perlisten S7t speakers were measured in free-air at a height of 11' 2" at a 2-meter distance from the microphone, and the measurements were gated at a 11-millisecond delay. In this time window, some resolution is lost below 200Hz, and accuracy is completely lost below 100Hz. Measurements have been smoothed at a 1/24 octave resolution.



The above graph shows the direct-axis frequency response and other curves that describe the speaker's amplitude response in a number of ways. For more information about the meaning of these curves, please refer to our article Understanding Loudspeaker Measurements Part 1. The Perlisten S7t puts up an excellent showing in every curve here. This graph tells us that it is a superbly neutral loudspeaker on and off-axis. The most significant on-axis deviation from neutrality is a 1dB bump at around 11kHz, and that wouldn't be audible at all. This is a response so flat that these speakers could easily be used to create sound mixes as well as simply listening to them; the output will reflect the input, so they don't lie to you or make the content seem better or worse than it really is. One aspect to note is the terrifically flat First Reflections Directivity Index curve, and that indicates that the entire front hemisphere of sound that is projected by the S7t speakers has excellent correspondence to the sound projected within the listening window. That means that any acoustic reflection will not depart from the direct sound for any realistic listening position and also that this speaker can be very predictably equalized.



The above graphs depict the S7t's lateral responses out to 90 degrees in five-degree increments. More information about how to interpret these graphs can be read in this article: Understanding Loudspeaker Review Measurements Part II. In these graphs, we get a closer look at what exactly is occurring at off-axis angles. What we have here is another look at the sublimely neutral response of the S7t. The directivity does narrow a bit above 2kHz. That happens too far off-axis to affect the direct response of any listener, however, the acoustic reflections from that angle may put more of an emphasis on the range below that point. The effect might result in giving the speakers a slightly warm touch in more acoustically lively rooms since frequencies above that point won't be as energetic in acoustic reflections. The effect, if audible at all, would be very mild. There are some high Q peaks and dips occurring well off-axis around 9kHz and above, but they are far too narrow to be audible and shouldn't be of any concern. There is not much else to note from these graphs except to reiterate just how exceptional the performance is overall.

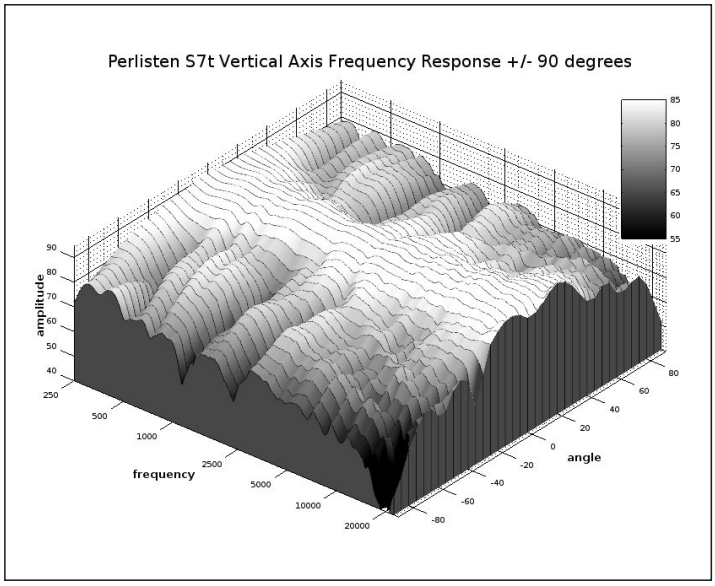


The above polar map graphs show the same information that the preceding graphs do but depict it in a way that can offer new insight regarding these speakers' behavior. Instead of using individual raised lines to illustrate amplitude, these polar maps use color to portray amplitude, and this allows the use of a purely angle/frequency axis perspective. The advantage of these graphs is they can let us see broader trends of the speaker's behavior more easily. For more information about the meaning of these graphs, we again refer the reader to Understanding Loudspeaker Review Measurements Part II.

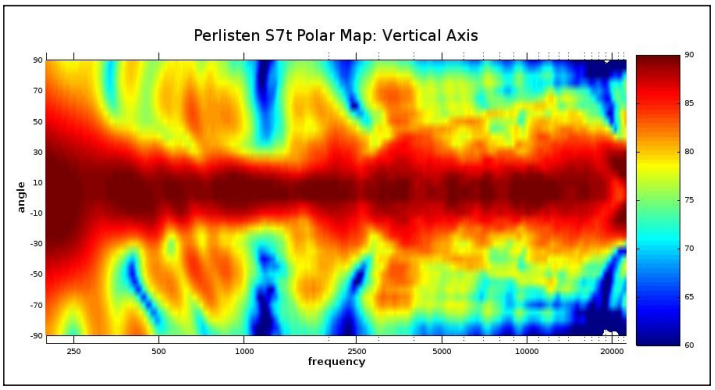
In the polar map of the S7t, we get a better look at the dispersion and the consequence of the narrowing of directivity above 2kHz. For a full sound, listeners should be seated within a +/-40-degrees of the on-axis angle. That is almost certainly going to be the case in any normal listening situation. One feature to note is that there is hardly any beaming in high treble frequencies. Most speakers see a narrowing of directivity in the top end of the response as it approaches 20kHz. It's not common for a speaker to have such a wide dispersion at such a high frequency, at least outside of ribbon tweeters and certain waveguide designs. With the S7t speakers, listeners seated as far off-axis as 40-degrees will still be met with an even response out to 20kHz.

"I have never seen such tightly controlled dispersion into mid-range frequencies or especially bass frequencies."

James Larson

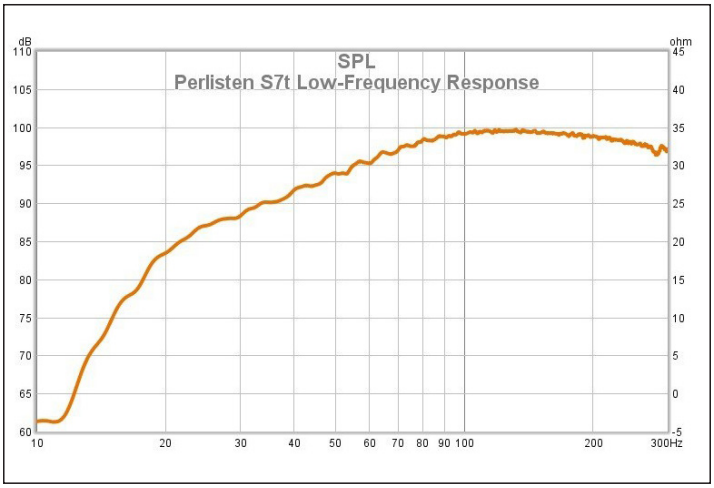


The above graph shows the S7t's response behavior along its vertical axis where zero degrees is directly in front of the tweeter, negative degree values are below the tweeter, and positive degree values are above the tweeter. It should be said here that the vertical response isn't as critical as the horizontal response, so an imperfect vertical dispersion is much less of a problem. This is a very interesting look at the beam-formed dispersion of the S7t, and I haven't quite seen anything like it before. The off-axis response still has some acoustic energy in some very narrow lobing striations, but the main 'beam' of sound has a considerably higher level of energy. Let's take a look at it in a polar map to get a different view of what is occurring...

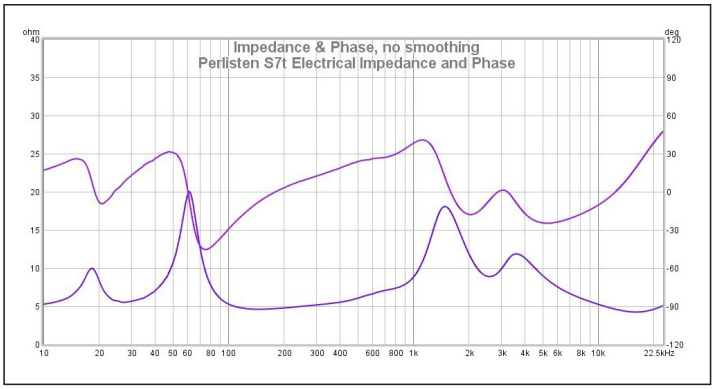


In our polar map view of the vertical dispersion of the S7t speakers, we get a better look at how effective Perlisten's beam-forming technique really is. And it is truly impressive. Outside of a +/-15-degree angle, output drops off dramatically. That angle should be more than sufficient to encompass all listeners on the vertical axis, even ones seated on an elevated platform in a large room. There are some slight off-axis lobes here and there, but they are too

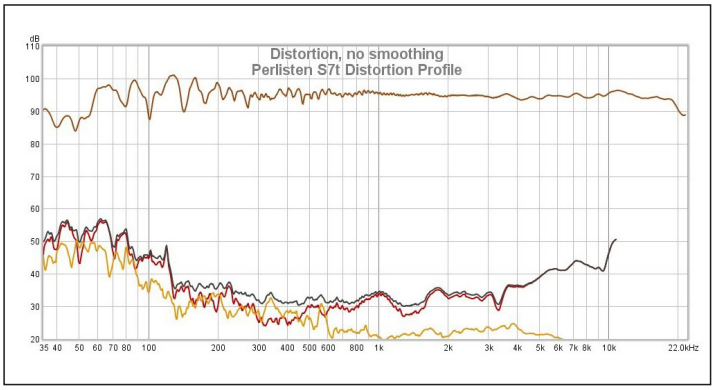
low in energy to matter. The most significant aspect of this graph is how well controlled the beam is over such a large bandwidth. I have seen narrow vertical directivity in tweeter bands in speakers that have tall diaphragms such as ribbons and AMTs or tweeters that had vertical restriction from a waveguide, but I have never seen such tightly controlled dispersion into mid-range frequencies or especially bass frequencies. The beam does begin to widen below 300Hz, and at that point it doesn't matter as much anymore since that range lays below the transition frequencies of most domestic rooms; in other words, the room's acoustics will be the primary determinant of the response in that range. Perlisten's DPC beam-forming technology is putting in some real work here, and the results are amazing. This is the best vertical directivity control I have ever seen.



The above graphs show the S7t's low-frequency responses that I captured using groundplane measurements (where the speaker and microphone are on the ground in a wide-open area). We can see that the response gently tapers off a bit below 100Hz, and this is a very common design; in fact, it's what we see in nearly every tower speaker I have reviewed. The reason is that domestic rooms will always give a boost to low frequencies whether through boundary gain or pressure vessel gain and usually a combination of the two. So, a loudspeaker with a flat response down to deep bass will end up having bloated bass in practice. This tapered response is always a sensible design decision for tower speakers because it will yield a more neutral bass response in-room. Looking closely, we see what appears to be a first-order slope down to port tuning around 20Hz, and below that we fall off the cliff much more rapidly with the expected fourth-order slope.



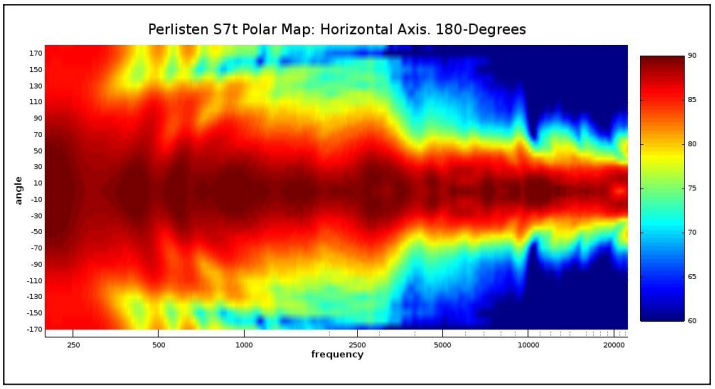
The above graphs show the electrical behavior of the S7t speakers. Much of the response rides around the 5-ohm mark. Perlisten characterizes the S7ts as a 4-ohm nominal speaker, and that is correct. The phase angles are not especially steep at any of the impedance dips, so there is nothing to worry about here. It might be a hefty load for a very cheap amplifier, but even a mid- to high-end AVR could drive the S7ts just fine - although I would encourage beefier amplification than that to exploit their tremendous dynamic range capability. The low-frequency saddle minima indicates that port tuning is in the mid 20s Hertz range (Perlisten tells me that the port tuning frequency is 25Hz). The lower frequency peak in the low-frequency saddle is much lower than the upper frequency peak, and that tells us that the enclosure tuning is much deeper than the resonant frequency of the drivers, not surprising given a 25hz port tuning versus 7" bass drivers. The overall take-away here is that this is a reassuringly normal electrical load given the exotic crossover circuit and driver topology.

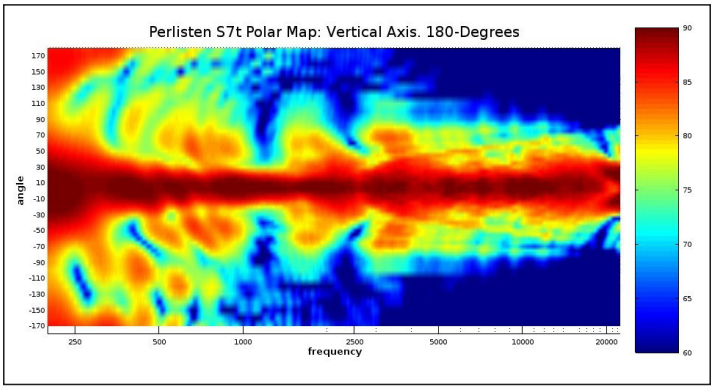


I didn't get a chance to measure the sensitivity of the S7t speakers, but I find Perlisten's spec of 92dB at 2.83v at 1m to be very plausible given the driver layout and sheer size of the cabinet. What is more is that 92db sensitivity is mandated by THX for a Dominus rating, so THX vouches for Perlisten's sensitivity spec. 92dB is certainly above average, and that means these speakers don't need a monster amp

to play loud, but their maximum recommended power handling spec of 600 watts RMS does tell us that they can take advantage of a monster amp if you have one handy.

The above graph depicts harmonic distortion quantities of the S7t for a 95dB output level at 2 meters using a swept sine wave tone. I don't normally measure this since I typically do outdoor testing which has too high of a noise floor for accurate results. However, I was fortunate to be testing the S7t speakers in an indoor facility with a low noise floor, and that made distortion testing possible. This test was conducted at a relatively loud level, yet the S7t's distortion remains extremely low, hovering around 45 to 50dB below the fundamental. The measured distortion below about 150Hz should be ignored in this graph. While distortion would most likely see a rise in that region, the acoustics of the room alter the true performance of the S7t in that range which would artificially suppress true speaker distortion in some frequencies and amplify it in others. The 2nd harmonic does rise a bit where the midrange domes roll off. The tweeter is on its own for playback around 4kHz, but distortion is still very low; at its highest point, it is still 40dB below the fundamental which is 0.5% THD. Nothing shown here is likely to be remotely audible. Non-linear distortion for the S7t is spectacularly low.





The above two graphs are more polar maps of the horizontal and vertical dispersion of the S7t, but these exhibit the full circumference of the speaker's acoustic radiation unlike the previous polar maps which only showed the front semicircle radiation pattern. I am showing these so that the reader has a better point of comparison with Perlisten's own polar maps that are shown on their product spec sheet, which displays the full 180-degrees. I am also showing these so that the reader can get a wider view of the directivity control at work here. Again, that vertical directivity control is a work of art in loudspeaker design.

Conclusion

I normally end my reviews by briefly listing the strengths and weaknesses of the product under review and start with the weaknesses, but that is difficult to do with the Perlisten S7t speaker since it doesn't have any real weaknesses. I could say that it is rather pricey, at $16k for a pair, but that would imply that it is not a good deal, and I think that it is a good deal. There are a lot of great speakers in that price range, but Perlisten pushes the design envelope so far that I have to say that the S7ts would be my first choice were I shopping for tower speakers at that price point. They are expensive speakers, but they are also a good value at the same time.

I could critique them for being somewhat large and rather heavy, but then again, as was mentioned before,

shoppers for tower speakers in this price range will not be bothered by their size or weight. What is more is that they are not unmanageably heavy or large; while I needed help carrying the packaged speakers to my listening room, I was able to set them up myself. These are not behemoths that have a huge footprint nor will they dominate the room so long as they aren't placed in a small room. If I had to pick nits, I could say that some people might not like their slightly unusual appearance, but I think they look quite nice, and again, shoppers for tower speakers in this price range probably aren't looking for a wallflower, so even that criticism doesn't hold. Anyway, you can never please everyone all the time with loudspeaker aesthetics.

So, without any real weaknesses, are these "perfect" speakers? I wouldn't go so far as to call them perfect but rather excellent at what they set out to accomplish. But then again, at $16k for a pair of loudspeakers, I think that buyers have the right to expect excellence. Some brands do not deliver at that pricing, but the Perlisten S7t speakers do. These are one of the most accurate speakers that I have reviewed and also one of the most dynamic. The build quality is impressive and exhibits the exquisite attention to detail that would be expected from their pricing. They are cool-looking speakers and are sure to draw inquisitive comments from visiting friends who see them.

Unlike many other tower speakers in their price class, they can be listened at a close distance without any loss of sound quality, which is made possible by the driver array. I want to put more emphasis on this since this is one of the big reasons why I feel they have an edge over competing speakers. The S7ts have a flexibility that is unusual in this class; seating distance does not matter very much with them. Here are some state-of the-art flagship tower speakers that would work just as well in a small bedroom as they would in a large home theater. The reason is that the sound emanating from the drivers integrate at a much closer distance than normal and also because the tweeter is set at a more sensible height than so many large tower speakers. What is more, the directivity control on the vertical axis provides for a uniformity that is rare for speakers in this segment, and this means the sound is very predictable as a matter of listening altitude. This is a much more significant aspect of high-end home audio than many speaker companies seem to give it credit for; after all, how many people are actually listening to their speakers at a bus-length distance? Maybe some people want a speaker with a lot of "wow" factor but don't have a large room that so many of those "wow" factor speakers need to sound good. The S7ts have that "wow" factor without sacrificing sound quality in a small room or close listening distances.

They are a true full-range speaker with solid bass down to 20Hz, and they do not need a subwoofer at all for low-end assistance. Adding subs can still be beneficial in smoothing out room modes, but they aren't going to add a lot more dynamic range unless you like extremely hot bass. With a relatively high sensitivity of 92dB, they don't need a monster amp to get loud, but they can handle a monster amp if you want to get super-loud. And if you want bragging rights of having the only THX Certified Dominus Large LCR rating, these will give you that.

Bringing this review to a close, the Perlisten S7t speakers are outstanding speakers for both two-channel applications or as a part of a front-stage in a killer surround sound system. You can spend more money on loudspeakers than these, but I'm not sure that there are any significant gains to be had in terms of sound quality. These are very accurate, and if

you aren't after accurate tonality, they have such finely controlled directivity that they are highly amenable to equalization. There are gains that can be had in getting prettier speakers, and there are extreme speakers with an even wider dynamic range, but the S7ts do everything well- and a lot of things much better than just 'well.' In my opinion, they are some of the best all-around loudspeakers that can be had at the moment at any price. They are aspirational loudspeakers designs that can put an end to the upgrade cycle for many, or just a way to skip past incremental upgrades and land on a true endgame sound system.

By James Larson
Email - info@audioholics.com

Score Card

The scoring below is based on each piece of equipment doing the duty it is designed for. The numbers are weighed heavily with respect to the individual cost of each unit, thus giving a rating roughly equal to: **Performance x Price Factor/Value = Rating**

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Audioholics Ratings Scale:

Outstanding (reserved for features or areas that exceed market norms)

Above Average

Average

Below average

Very poor

METRIC	RATING
Build Quality	
Appearance	
Treble Extension	
Treble Smoothness	
Midrange Accuracy	
Midbass Quality	
Bass Extension	
Bass Accuracy	
Imaging	
Dynamic Range	
Fit and Finish	
Performance	
Value	

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