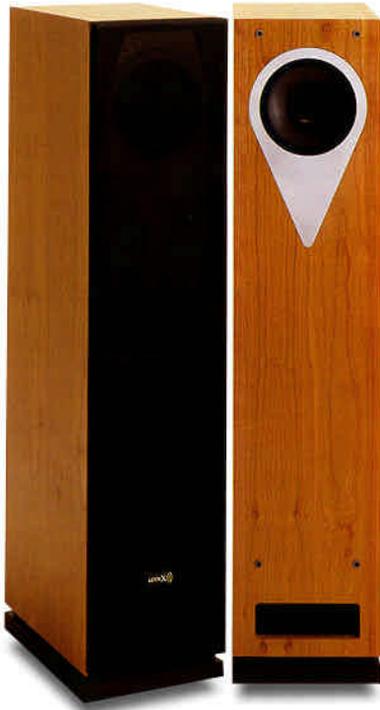


May 1, 2003



“...high-efficiency,
full-range,
single-driver
speakers.”

Lothar Sandar is the namesake and driving force behind Loth-X. In addition to a range of amplifiers, cables, and turntables, many of which have been favorably reviewed recently, the company is probably best known for its high-efficiency, full-range, single-driver speakers. As an unexpected bonus for this review, I was treated to a home visit by Loth-X's Canadian distributor, an amplifier manufacturer in his own right, Mr. Song Kim of Song Audio. (See our review of the Song Audio SA-1 preamplifier.) The affable Mr. Kim explained the international provenance of the \$1500/pair Loth-X Ambience: The drivers themselves are from Fostex, Japan; the cabinets and exotic tropical wood veneers are manufactured in peninsular Malaysia; and the final mounting of the drivers in the cabinets is done in Singapore. I shudder to think of the size of the company phone bill. Apparently, Song's amplifiers so impressed Lothar when played through Loth-X speakers that a partnership was only natural.

A word about Lowthers

Though many single-driver speakers, the Ambience included, use drivers other than those made by Lowther Loudspeaker Systems of the U.K., many audiophiles cannot resist the temptation to think of all single-driver speakers as Lowthers. Indeed, Lowther has such a long history that this class of drivers has come to be associated with the Lowther name in the manner of Kleenex's association with disposable facial tissues (my apologies to Lowther, but using the Aspirin example would have been worse).

Single-driver speaker designs of the Lowther type are a bit like the Yeti of the Himalayas: often talked about but rarely glimpsed. Bring up Lowther speakers in the company of audiophiles and you will likely hear a number of generalizations about their sound. You may be told that they have weak bass, that they sound thin, that they tend to shout, and that they are only appropriate for low-powered triode amplifiers. Such generalizations are, of course, abominable.

Lowther-type drivers generate extremely high magnetic-field density at the voice coil and rely on acceleration, rather than excursion, to energize the air. As a result, when the driver is in operation, the movements of the driver cone are so small and quick that they are barely perceptible to the eye. The strengths of Lowthers include extremely high efficiency (greater than 96dB), which allows them to generate ear-splitting sound pressure levels when mated with amplifiers of only a few watts. The average impedance of Lowthers tends to be high, often 8 ohms rather than 4 ohms, and their impedance curves are fairly flat, which makes them an easy load. There is usually no crossover, which removes a layer of potentially scurrilous circuitry, and obviates the technical difficulties inherent in the integration of multiple drivers. A single driver also forms a good approximation to a point source, which tends to improve stereo imaging.

Lastly and most interestingly, the single-driver approach also theoretically sidesteps a form of intermodulation distortion due to the Doppler effect. This distortion occurs as follows: Imagine a microphone diaphragm moving under the influence of a low-frequency sound. During the portion of the cycle when the diaphragm is already moving toward the source, any high-frequency sounds superimposed on the low-frequency sound will be shifted upwards slightly in frequency due to the Doppler effect (an upward shift in frequency that occurs when a sound source and a receiver are moving toward one another). When the diaphragm is moving away, the reverse occurs. This means that a slight warble in the high frequencies will be present in every recording made with a diaphragm-type microphone. During playback through a regular multi-way speaker, the high frequencies are separated from the low frequencies by means of a crossover, and these small Doppler frequency shifts will be passed on to the listener as distortion. A full-range driver, on the other hand, should move in an exact mirror image of the movements of the microphone diaphragm, so that the Doppler shifts inherent in the recording are cancelled out by a reverse Doppler effect at the driver.

Ambience Loudspeakers

Continued...

“The cherry-wood veneer is of very good quality, giving the speaker a stylish and refined look.”

This last point is a most interesting claim. Of all the advantages of the single full-range driver, this one has no counterpart in conventional multi-driver designs. Is this Doppler effect audible and important? On the basis of a simple test, which I will describe later, I have come to believe that it is. Read on.

Notwithstanding the extraordinary advantages, there is a major disadvantage to single drivers in relation to their frequency extension. Good high-frequency reproduction requires high driver speed, which in turn means low driver mass. On the other hand, good low-frequency reproduction requires good coupling between the driver and the air, which means a large cone and high driver mass. Obviously, these requirements conflict, which is why true full-range performance is very difficult to achieve in a single driver. As a result, many so-called full-range drivers actually roll off rather sharply at frequencies above 12kHz and below 100Hz. Better frequency extension can be had in the best full-range drivers, but you pay by the hertz.

The Ambience

Single-driver speakers are also usually very large, which may cause them to have a low wife acceptance factor (WAF). In my view, the WAF is a very important determinant of whether a speaker ends up in your living room, or just your wildest dreams. With that in mind, imagine my surprise when the Ambience arrived, standing just 38" tall, and only 8 1/2" wide. The single driver itself is only 5 1/2" across. Bass loading is via a transmission-line enclosure—a baffled internal chamber opening to a tuned port at the bottom of the front panel—rather than the traditional back-loaded internal horn. The cherry-wood veneer is of very good quality, giving the speaker a stylish and refined look. It fit like a commissioned work in our teak, hardwood, and leather décor. WAF was an easy 8.5/10 in one out of one wife polled. The speaker comes with a full-length black-fabric grille, which I left off during my two months with the Ambience. The bass ports are normally lined with black plastic inserts, but these were not installed in my sample for some reason, so the MDF panel material was visible in cross section along the interior margins of the ports—a minor aesthetic flaw. A single pair of standard-quality binding posts are provided at the lower rear, and the base plinth accepts threaded pins or black cones, which I rested on coin-type floor protectors to save my hardwood from further puncture wounds. Rated sensitivity is 97dB/W/m, and impedance is 8 ohms.

The speakers are not very heavy—I would estimate somewhere in the neighborhood of 45 pounds each. Using my trusty knuckle, the knock test revealed significant cabinet resonance on the top panel, but the sides were deader sounding, most likely due to the stabilizing effect of the internal baffles. The driver itself is manufactured to Loth-X specifications by Fostex, and features a central whizzer and mold-resistant coating on the cone for tropical climates. I was unable to confirm the benefit of the latter, as it was February here in Canada and all the molds seemed to be either hibernating, or to have migrated South.

Setup

My listening room has leather couches, a large projection TV between the speakers, a tall teak cabinet for the stereo components, and standard eight-foot ceiling height. The stereo is along a 14-foot wall, while the other dimension is around 12 feet. Listeners sit in the nearfield about six feet from the speakers, which can't come out more than two feet from the wall because of the restricted space. The walls are angled and irregular, and open out to the entrance foyer on one side, and a kitchen and dining room on the other. There is a curved stair behind the listening position. In short, this room is an asymmetric acoustic nightmare. The distributor informed me that the Ambience is more tolerant of being near walls than most speakers, but I found that they still sounded better when positioned as far as was practical (two feet) from the back wall. Also, the speakers

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“...the
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were more sensitive to room reflections than any I've heard in my room. The treble purity was markedly improved by moving the coffee table out, placing a rug in front of the speakers, and covering the TV with a blanket.

Associated equipment

Song Kim kindly brought a prototype of his new 4Wpc integrated tube amplifier, to be called the SA-34 SB, which has a tube-rectified power supply and runs two EL34 tubes in a triode-strapped configuration. My reference amp is the KR Enterprise 32bsi stereo integrated, a high-output triode based on the 300BXL output tubes from KR. Source components were the Sony 777ES CD/SACD player and dCS Delius DAC. MIT Digital Reference, MIT 350 interconnects, Cardas Neutral Reference speaker cables, and Transparent Super power cords were used. My reference speakers are JMLab Electra 915.1 floorstanders.

The eating of the pudding

Given the (abominable) generalizations alluded to above, I first pitched the Ambience a slow ball in the form of a delightful Naim recording of female vocalist Sabina Sciubba accompanied by the incomparable Antonio Forcione on acoustic guitar, called *Meet Me in London* [Naimcd021]. The third track, "Caruso," is a languid jazzy homage to the legendary tenor sung entirely in Italian. At least, I think it's Italian. Using the SA-34 after a suitable warm-up period, and after some cable changes that demonstrated the high degree of sensitivity of the speakers to the upstream components, my first impression was one of surprise. These speakers have bass. In fact, their tonal balance is full and dark. The soundstage was not particularly wide, but certainly deep, with a kind of enveloping quality. Sciubba's pepper-and-spice vocal image was a little larger than I'm used to and came from a more forward position between the speakers. The sparse guitar accompaniment spread out effortlessly like ripples on a pond. I don't know about you, but there's something about a young woman singing seductively in a foreign tongue that makes me all fluttery. But I digress. Several unusual qualities were apparent on the first listen. Although focus was not what you might call laser sharp, there was a high degree of image solidity that appeared not to depend on high frequencies. Indeed, although the presentation did not give the immediate impression of being rolled off, there was clearly very little objective treble extension. I decided to call this kind of imaging *midrange imaging*, or imaging in the absence of high-frequency etch. The dynamics were quite a bit better than you get from most speakers, with an effortless quality, and there was a higher degree of coherence of the musical picture, top to bottom, than what I'm used to from my Electras.

For a bit more of a challenge to the Ambience, I moved on to the Barenaked Ladies' breakthrough CD, *Gordon* [Sire/Reprise 26956]. This disc features a fairly well-recorded buffet of bouncy, energetic (some would say puerile) pop tracks with an acoustic double-bass foundation. The hit single "If I Had a Million Dollars" starts out with a cheery walking bass line and a crisp piano solo that is instantly recognizable around the world in most cultures that use electricity. Can the Ambience do bouncy? Yes, it can. Can it fill the room with toe-tapping cheer? No question. The limitations of frequency extension, however, were more apparent here. The bass was present and clean but chopped off in the nether regions. Similarly, cymbals and ride hats were coherently integrated, but the top frequencies were suggested rather than present. Imagine a landscape with the highest frequencies at the top and the lowest at the bottom. The Ambience opens a wide window on the midrange that allows you to peek up at the highs, and crane your neck to look down on the lows. The drivers do not shout at you, except at the very highest sound levels, which can be uncomfortably high, but there was a woody quality to the sound and a bit of confusion in the highs that I associated with cabinet resonance. Please return to your seats folks, these are \$1500 speakers.

Ambience Loudspeakers

Continued...

“...if you are looking for an
**involving
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may have been answered.”

The gamine Sarah McLachlan rounds out my little Canadian retrospective with a rather un-pop-like release of many of her most popular tunes done the musicians' way, rather than the mass-market way. It is called, appropriately enough, *The Freedom Sessions* [Arista 1878-2]. The recording features what sounds like a collection of one-off takes in which the musicians stretch their chops in complex, multi-layered arrangements that seem relatively unpolished from a production, but certainly not a musical, point of view. The effect on most systems can be unlistenable, which is why my copy tends to gather dust. Track number 5, "Hold On," through the Ambience, however, revealed an amazing sorting out of complex sonic layers, with just the right emphasis on the voice and an appropriate hierarchy of presentation of the percussion, bass, and the numerous other little sounds thrown in. The presentation was particularly revealing of the timbral properties of the incidental sounds, while McLachlan's voice, somewhat larger than life, was arresting in its realism.

Suspecting that this would be a speaker suited to the classics, I turned to *Paganini* [BIS CD-999], a recording of the young Russian violin virtuoso, Ilya Gringolts, playing a collection of pieces popularized, adapted, or composed by the diabolical Niccolò Paganini. The opening selections for solo violin based on themes from *La Molinara* are a sizzling display of pyrotechnics—just one violin against a black background. I actually had the opportunity of hearing Gringolts live once from a front-row seat. He was only 15 years old at the time and already a fire hazard on his instrument. The Ambience did justice to him. Here, the Ambience's woody qualities were an asset. The powerful and complex timbre of Gringolt's violin recalled that live performance, and the giant dynamic contrasts in the music rolled out of the speakers with no glare or hardness and very little other apparent distortions. This was a presentation with a very high degree of realism. As with other material, there was an intimate and involving quality to the music that tended, despite the aggressive nature of this music, to draw me in rather than push me back into my seat. Orchestral selections on this disc and others again highlighted the extraordinary ability of these speakers to sort out complex instrumentals in the midrange. I say extraordinary because massed strings are such a perennial stumbling block for speakers and systems. Not so with the Ambience. These speakers are unperturbed by complex midrange timbres, no matter how many are superimposed.

The Doppler test

On to more theoretical matters: As the story goes, single-driver speakers correct Doppler shifts originating from the movements of the microphone diaphragm because the speaker diaphragm moves in the opposite direction to that of the microphone. Hence, high-frequency sounds that were downshifted by the microphone diaphragm moving away from the subject would be upshifted, and therefore corrected, by the speaker cone moving toward the listener. I reasoned that the importance of the effect could be tested by simply reversing the polarity of both speaker connections. Under those circumstances, the speaker cone would move in the same direction as the microphone diaphragm, so the Doppler distortions would be exaggerated, rather than corrected. This maneuver is called reversing absolute (rather than relative) phase. The usual effect of this reversal through multi-driver speakers is a very, very subtle bass defocusing and blurring of higher-frequency transients. With repeated comparisons, I can just barely detect this through my Electras.

To test the effect of absolute phase reversal on the Ambience, I called on the SACD functionality of my Sony and selected Yo-Yo Ma's "Appalachia Waltz" for solo cello from Sony's *SACD Music Sampler* [CSS 42864]. As an aside, the Ambience again demonstrated remarkable transparency to upstream changes. The improvement resulting from high-resolution material, particularly the widening of the soundstage and the increase in detail and palpability, seemed even greater through the Ambience than through the Electras. Ma is in fine form on this track. The cello sounded just gorgeously

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Loth-X Ambience Loudspeakers

Price: \$1500 USD per pair.

Warranty: Five years parts and labor.

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woody, ringing, and sweet. I couldn't help listening to it over and over. When I reversed absolute phase, however—holy smokes, what a loss! No more sweetness, the ringing was damped, and the woodiness sounded artificial, with a touch of hardness and glare. The emotional involvement factor dropped ten points. Remarkably, the phase-reversed sound was somewhat reminiscent of what one might expect from—gasp—a \$1500 multi-way speaker. So there you have it. I am forced to conclude that a considerable portion of the special qualities of the single-driver speaker is due to the Doppler correction effect.

Comparison with other equipment

I tried a number of comparisons with other equipment on hand, including several different amplifiers, all of which imposed their own qualities on the highly transparent Ambience, but none of which altered the conclusions drawn above. Using my KR, I also compared my three-way Electras with the Ambience. No question about it, the Electras have it all over the Ambience in terms of freedom from coloration and various effects that come from much broader frequency extension. The Electras have way more bass presence and top-end air, and they throw a considerably wider soundstage. They also cost more than twice as much. A surprising measure of the sweetness and roundness of female vocals, I found out, depends on top-end extension rather than midrange timbral accuracy. What the Electras don't have in comparison with the Ambience is driver coherence. After my evenings with the Ambience, I found I could easily pick out the crossover points in the Electras. What had seemed seamless before, now stood out plainly as a collection of drivers with different sonic signatures trying to pretend they're one. Ignorance was bliss. Now my appreciation for my own speakers will be forever diminished. Thanks a bunch, Lothar. Though I admit I was occasionally tempted by the Ambience to move toward a single-driver solution in my system, I won't be trading in the Electras just yet. For my listening preferences, which are heavy on jazz and contemporary folk and light on classical, I couldn't pass up the soundstaging and breathing space that comes from the frequency extension offered by the Electras, however lumpy it may be.

Summation

The Ambience is an unusual and special speaker at a reasonable price. The sonic style of these speakers is unobtrusive rather than imposing, and they won't necessarily turn your head in comparison with more expensive multi-driver transducers. These are smallish speakers with an intimate character that will prefer a smaller room with a minimum of reflective surfaces. As a pleasant surprise, they also have a high WAF. The Ambience's main competition will be minimonitors, some of which are startlingly inexpensive and have very good sound. Good conventional floorstanders in this price range, and I'm generalizing here, will most likely involve subtractive compromises that include less overall realism than the Ambience, especially, but not only, in the midrange. In terms of frequency extension, the Ambience does more with less, while the standard multi-way will do less with more. Further, I'm quite convinced that there is some single-driver magic to be had, particularly with classical instrumental music involving massed strings, for which there may be no substitute, even in very pricey multi-way designs. Though I auditioned them with relatively low-power tube amplification only, there's no reason that somewhat higher-power solid-state gear (with a good midrange) wouldn't give you excellent results through the Ambience. For the many frustrated lovers of the orchestra out there in particular, if you are looking for an involving experience on a reasonable budget, your prayers may have been answered.

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