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GUIDE TO  
**HIGH-PERFORMANCE  
LOUDSPEAKERS**  
2014 EDITION

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*CLX Art*



*Montis*

# Contents

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## Features

- [From the Editor](#)
- [On the Horizon: Great New Products Coming Your Way](#)
- [How to Choose a Loudspeaker](#)
- [Illustrated History of High-End Audio](#)

## Desktop and Super-Compact Loudspeakers

- [Audioengine A2+](#)
- [KEF X300A](#)
- [Audience ClairAudient The One](#)
- [Neat Acoustics Iota](#)
- [Our Top Picks in Desktop and Super-Compact Speakers](#)



## Stand-Mounted Loudspeakers

- [Sonus faber Venere Model 1.5](#)
- [Focal Aria 906](#)
- [KEF LS50](#)
- [Anthony Gallo Acoustics Strada 2 & TR-3d Sub](#)
- [Paradigm 30th Anniversary Inspiration Monitor](#)
- [Bryston Mini T](#)
- [Harbeth Monitor 30.1](#)
- [Von Schweikert UniField Two Mk 2](#)
- [Our Top Picks in Stand-Mounted Loudspeakers](#)

*Click on one of the links above to jump to that section, feature or review.*



## Floorstanding Loudspeakers Under \$10,000

- [Featured Review: MartinLogan Montis](#)
- [Featured Review: MartinLogan Summit X](#)
- [Magnepan Super MMG System](#)
- [GoldenEar Technology Triton Seven](#)
- [Revel Performa 3 F206 and M106](#)
- [GoldenEar Technology Triton Two](#)
- [Eminent Technology LFT-8b](#)
- [Dynaudio Excite X34](#)
- [Nola Contender](#)
- [Vienna Acoustics Beethoven Baby Grand](#)
- [Thiel CS2.7](#)
- [JansZen zA2.1](#)
- [Our Top Picks in Floorstanding Loudspeakers under \\$10,000](#)



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## Floorstanding Loudspeakers Over \$10,000

- [Featured Review: Legacy Aeris](#)
- [Sony NA2ES](#)
- [German Physics Unlimited Mk.II](#)
- [DALI Epicon 6](#)
- [Rockport Technologies Atria](#)
- [YG Acoustics Kipod II Signature](#)
- [Wilson Alexia](#)
- [Our Top Picks in Floorstanding Loudspeakers over \\$10,000](#)

*Click here to turn the page.*

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*Click here to go to the  
previous page.*

# FROM THE **Editor**

**Welcome to the 2014 edition of *The Absolute Sound's Guide to High-Performance Loudspeakers*. The past twelve months made 2013 an incredible year in high-end audio, especially for loudspeakers, and the advancements made in both affordability and quality can be seen throughout this guide. Never before has great sound quality been so accessible.**

Whether you are a first-time buyer or a veteran audiophile, loudspeakers tend to be the first piece in the audio chain that gets purchased or upgraded—and for good reason. No matter how simple or complex, speakers have a profound effect on musical enjoyment, and determining which ones are worth auditioning can be daunting. Armed with the insights found in the 2014 *Guide to High-Performance Loudspeakers*, you will find this task much more enjoyable, and a little less daunting.

In our 2014 *Guide to High-Performance Loudspeakers* you will see familiar features, as well as brand-new content—including an exclusive, previously unpublished review of the MartinLogan Montis, which appears for the first time in this Buyer's Guide. Neil Gader's On The Horizon returns, highlighting fourteen forthcoming products to keep an eye out for. There is also an excerpt from Robert Harley's *The Complete Guide to High-End Audio*—the preeminent source of information and advice on high-end sound systems—entitled "How to Choose a Loudspeaker." This four-page excerpt will help demystify the process of auditioning loudspeakers at your local hi-fi dealership—an enterprise that can be a bit overwhelming to a neophyte (and even to seasoned buyers). With expert reviews and sidebars to further clarify select aspects of loudspeaker technology, this guide will help you make your next purchase with greater confidence and ease. It may also help you save some money!

We have divided the thirty-one full-length reviews found in this Buyer's Guide into four easy-to-navigate categories: Desktop and Super-Compact Loudspeakers, Stand-Mounted Loudspeakers, Floorstanding Loudspeakers under \$10k, and Floorstanding Loudspeakers over \$10k. At the end of each category, our editors have selected their Top Picks—the loudspeakers they would buy or recommend to close friends and family.

Included in this Buyer's Guide is a new segment called Further Thoughts, in which some of our top reviewers reflect on earlier loudspeaker reviews, adding valuable insights on products that have withstood the test of time.

We hope you consider this Buyer's Guide exactly that—a guide to your next purchase. We have taken the guesswork out of narrowing down the many options available, and feel that the reviews, features, excerpts, and Further Thoughts in the 2014 *Guide to High-Performance Loudspeakers* will help to make this your best-sounding year yet.

Happy listening!

**Spencer Holbert**

# ON THE HORIZON

## Hot New Loudspeakers Coming Your Way

Neil Gader

*Click on any ad to go to that advertiser's website.*



### ← ATC SCM19

The second-generation SCM19 two-way compact from ATC employs the company's new SH25-76, 25mm soft-dome tweeter, an updated highly linear 150mm mid/bass driver and crossovers housed in a new, curved, laminated high-rigidity cabinet. The landmark tweeter, developed to satisfy the company's long-established rigor in drive unit engineering, deploys a unique dual-suspension system designed to suppress rocking modes at high-power output levels. The configuration of a short edge-wound voice coil in a long, narrow magnetic gap ensures exceptionally low distortion throughout its operating band and removes the need for ferrofluids, which can dry out over time, compromising performance. A precision-machined 5.5mm rigid alloy waveguide provides optimum dispersion, a flat on-axis frequency response, and resonance-free operation. Improved crossovers use metalized polypropylene capacitors, large air-core inductors, and ceramic wire-wound resistors for superior power handling and clarity. With an impedance curve free from low values, the SCM19 presents an easy load for amplifiers of 75 to 300 watts.

**Price:** \$3695/pr. [transaudiogroup.com](http://transaudiogroup.com)

## Compatible Predictable Optimized



## Yes, There Is a Best Cable for Your Speakers

And yes, you can know for sure ... or you could if you borrowed every cable made and used it in a bypass comparison. OK, so borrowing every cable is kind of a pain, but a bypass comparison is easy, and is the only way to truly understand the "sound" of a speaker cable ... or better yet, to verify its desired neutrality, its lack of character or a signature. When people listen to one component in comparison with another, this almost always means comparing one version of not-quite-right with another version of not-quite-right, and then choosing the character that seems most compatible.

However, true compatibility, with any one speaker or with every speaker, is achieved by using the cable that does the least damage, that gets in the way of the music as little as possible. A cable can never make the sound better, it's all a matter of damage control. However, the nature of what it does wrong makes all the difference in the world. In any system, a cable with a touch of soft focus, a slight neutral "gray" filter, these are the types of damage which don't get in the way of the music. In any system, perceived resolution due to upper midrange irritation, or perceived bass boost from uncontrolled mid bass at the expense of bass definition, these are never acceptable distortions.

How does one separate an attribute with short-term attractiveness from real quality? It's surprisingly easy! There are always multiple cables in the circuit path. There's wire and/or circuit trace inside the amplifier, there's wire inside the loudspeakers, and there's a wire between the amp and speaker. If all three of these links are treated as constants, an additional speaker cable can be added between the amp and the existing speaker cable. The result will always be more damage and reduced sound quality ... and the change will reveal the character flaws of the cable being evaluated. Whether the overall system is lean and irritating, or fat and warm, the nature of the cable being evaluated will be revealed.

### But, Which Path To Take?

If it's that easy to determine a cable's absolute character, or better yet, verify a lack of character, how come AudioQuest makes a competing series of speaker cables ... shouldn't one or the other always be better or worse?

Yes and no. Context is everything. Driving inefficient speakers on the other side of the room is very different from driving a pair of desk-top speakers close to the amp. As a baseline, it's important to understand that all speaker cables cause sonic degradation which accumulates with length. Inductance, and its smearing of time integrity, is the primary culprit causing a more-and-more out of focus effect, though several other distortion mechanisms are also cumulative. A low level audio interconnect cable doesn't carry power and doesn't have to manage strong magnetic fields, so we

almost always recommend putting the amp as close to the speakers as possible and running a long interconnect if required. With a very few easy-to-predict exceptions (a few tube preamps, passive preamps, and low input impedance amps), interconnect sound suffers much less accumulation over length, much, much less than does speaker cable.

### It's About Power

No, it's not all about resistance (impedance)! A normal 18 AWG lamp cord is rated to safely carry 10 amps, enough to kill you. Getting power to a speaker is easy. It's getting it there undistorted which is complicated. AudioQuest makes some very large speaker cables because diluting the energy and resulting magnetic fields across more metal is an effective brute-force way to reduce a number of distortion causing mechanisms. The lower impedance of such large cables does allow some amplifiers to better "control" the motion of the bass driver, though this effect is usually much smaller than the overall full-frequency range improvement resulting from causing less distortion within the cable.

If all else is equal, and the sound is just enough louder for anyone to agree, "OK, that's definitely louder," that's probably about a 3dB difference, which requires twice as much power to the speaker. When each strand or conductor has to carry twice as much power, the interaction between any 2 internal elements is exponentially greater, 4 times as great. Using a value of 1 for the lower power, the interaction is  $1 \times 1 = 1$ , but for a 3dB greater signal, it's  $2 \times 2 = 4$ . If two different speakers are 3dB more or less efficient, and the volume is the same, the formula for internal cable interaction is exactly the same.

A bigger cable with more conductors makes possible the very effective Counter-Spiral geometry of AudioQuest's Tree Series of cables. However, in the more moderate-size AudioQuest Flat Rock Series, money that didn't go into more metal and more expensive geometry, is available to pay for higher quality metal, making it possible for Flat Rock models Comet and Meteor (fantastic in my desk system!) to truly have the openness made possible by AQ's PSS silver conductors.

### It's Up To You

So, it is possible to be reasonable and rational about choosing a cable which will put you closer to your music ... though there's still some room for tailoring in order to get the best possible fit for you.

Sincerely, 



**audioquest**

## ON THE HORIZON



### GoldenEar Triton One

The One is a sleek 54"-tall tower that, like the Triton Two and Triton Three, houses a 1600W DSP amp-powered subwoofer yielding impressive 14Hz bass response. The upper-bass/midrange and high frequencies are handled by a D'Appolito Array of two GoldenEar-engineered 5.25" drivers that surround its signature High Velocity Folded Ribbon (HVFR) tweeter, a design which generates high-pressure by squeezing the air, rather than pushing and pulling it like conventional domes or ribbons. The HVFR achieves an exceptional impedance match to the air for smooth response extending beyond 35kHz, without typical break-up modes. The subwoofer section comprises three forward-facing, quadratic sub-bass drivers in a semi-line-source array, which are coupled to two pairs of side-firing, horizontally opposed, planar, sub-bass radiators. The cabinet with its non-parallel walls builds upon the construction of the Triton Two, and adds even thicker cabinet walls and baffles, improved bracing and additional damping.

**Price: \$5000/pr. [goldenear.com](http://goldenear.com)**



### Legacy Silhouette

On-wall speakers are often dynamically challenged, especially in the lower octaves. Not the case with the Legacy Silhouette. It provides top-to-bottom performance with plenty of slam owing to its three-way design. A newly engineered 10" low-profile long-excursion woofer and pneumatically coupled radiator lay the foundation to support the high acceleration 7" silver/graphite midrange. Treble remains light and airy from Legacy's 4" AMT ribbon, boasting a high-temperature pleated Kapton diaphragm and neodymium motor. The Silhouette is 36" in length 15.5" wide. The artful 5" deep design appears even thinner in profile due to the anti-diffractive contoured edges.

French cleat-mounting brackets make for quick installation on the wall surface. A template is also included for those who wish to recess the rear of the speaker between wall studs. Silhouette's sensitivity is rated at 90dB @ 2.83/1m with a frequency range of 45Hz to 25kHz. Finishes are champagne anodize/eggshell grille, or black anodize/black grille. Wood trim on request.

**Price: \$3800/pr. [legacyaudio.com](http://legacyaudio.com)**

The e110 is a 10-inch powered subwoofer that delivers unprecedented levels of performance priced well within the reach of any serious audio enthusiast. The E-Sub drivers offer impressive, low-distortion, high-excursion envelopes capable of handling the most demanding program material, or the most delicate. JL Audio's exclusive DMA technology (Dynamic Motor Analysis) is applied to shape, control, and stabilize the drivers' motor strength, ensuring linear behavior over a very long excursion range. Powering these drivers is a new switching amplifier with a regulated, switching power supply resulting in a compact, lightweight, and efficient amplifier design. It incorporates a studio-grade signal-processing section, which is controlled from a panel on the top of the subwoofer cabinet. Analog inputs are provided for unbalanced line-level or speaker-level signals. The built-in active crossover is a true two-way, 4th-order Linkwitz-Riley design, with a low-pass filter feeding the subwoofer's amplifier and a high-pass filtered signal exiting through a pair of line outputs. E-Subs are easily interconnected in a "daisy-chain" arrangement.

**Price: \$1500. [jlaudio.com](http://jlaudio.com)**



## ON THE HORIZON



### Magico QSub 18 & QSub 15

The QSub 18 and the QSub 15 are the first subwoofers from Magico. Built around the renowned Q platform, the QSub 18 for example, can deliver 136dB sound pressure levels with less than 1% total harmonic distortion at 20Hz. It tips the scales at over 550 pounds, while its two 18" massive woofers, each capable of 34mm of linear excursion and power-handling of 8000 watts, are mounted in 2"-thick aluminum baffles and fire adversely in phase to cancel out driver-borne resonances and lower the tremendous internal pressure. (QSub 15 is 350 pounds with dual 15" woofers). At the heart of the QSub is a revolutionary new 6000W switching amplifier equipped with a 7000VA power supply and regulated output stage. Designed to operate in two-channel music or theater systems, the QSub has an onboard digitally-controlled active crossover for seamless integration. The controller can also be bypassed for home-theater use.

**Price:** QSub 18, \$36,000; QSub 15, \$22,000. [magico.net](http://magico.net)

### Marten Coltrane Supreme 2

The Coltrane Supreme 2 is the culmination of Leif Olofsson's goal to create the best loudspeaker in the world. The five-way design combines cutting-edge Cell drivers and crossover technology developed in a joint venture with Accuton. All of the drivers have identical acoustic centers, delivering flawless phase and time coherency. The driver domes are perfectly rigid, giving impeccable signal settle time and linear piston behavior. The results are incredibly low distortion levels even at the highest volumes. The drivers include twin diamond tweeters to cover lower and upper treble ranges, a 5" ceramic midrange unit, a 8" aluminum laminated sandwich mid/bass driver, six 8" aluminum laminated sandwich low-bass drivers and six 11" sandwich, rear-mounted, passive radiators. The exceptionally rigid cabinets are constructed of carbon fiber while the fronts and backs are made of layers of solid wood and wood materials sandwiched together with deadening glue. The internal wiring is Jorma Design Statement, custom-made for the Supreme 2. Sensitivity is 91dB, weight 507 pounds each.

**Price:** \$480,000. [ear-usa.com](http://ear-usa.com)



### MartinLogan BalancedForce 210 and 212

BalancedForce 210 and 212 are two powerful and accurate new subwoofers from MartinLogan. Dual low-distortion woofers in a 180-degree configuration operating in exact opposition pair a high-power magnet structure with 10- and 12-inch aluminum cone diaphragms to deliver huge excursion and sound output while preserving minute bass details—all without a hint of distortion. BalancedForce 210 features an 850-watt Class D switching amplifier. BalancedForce 212 features dual-850-watt amplifiers (one for each woofer) with a total system power of 1700 watts. Custom-tailored low-pass filters are available via USB download for nearly every floorstanding MartinLogan loudspeaker released over the last 30 years. Optional PBK allows for clean powerful bass down to the lowest frequencies. A unique tone sweep feature from 20-120Hz assists users in locating areas in listening rooms where troublesome rattles may occur. Top trim is available in a variety of high-gloss and wood finishes.

**Price (each):** BalancedForce 210, \$2995; BalancedForce 212, \$3995; PBK room correction, \$99. [martinlogan.com](http://martinlogan.com)

## ON THE HORIZON



### PMC fact.12

The fact.12 is a product of PMC's passion for absolute sonic transparency. A long-throw 5.5" bass driver is complimented by a 2" soft-dome midrange and SONOMEXTM 3/4" dome tweeter generating a frequency response of 26Hz to 30kHz. With the PMC-developed Advanced Transmission Line (ATL) bass-loading technology and its audiophile level controls for precise adjustment of high and low frequencies, fact.12 guarantees a flawless sound in any listening environment with a vast range of source equipment. Its three-way crossover is a new design incorporating PMC's custom-wound air-core inductors, enhancing the speaker's accuracy and lowering distortion. Pleasing to the eye as well as to the ear, its streamlined, elegant cabinet is available in a variety of hand-selected, sustainable wood finishes including white silk, rich walnut, graphite poplar, and tiger ebony.

**Price: \$19,500.** [soundorg.com](http://soundorg.com)



### Meridian Special Edition Series of DSP Digital Active Loudspeakers

As Meridian marks the 25th anniversary of its introduction of the world's first digital loudspeaker, it launches its new Special Edition Series of DSP Digital Active Loudspeakers, which provide the most revealing, lifelike, and powerful performance of any Meridian loudspeaker to date. The Special Edition loudspeakers introduce Meridian's latest innovations in digital loudspeaker system design, including a new Meridian-designed short-horn-loaded tweeter with a beryllium dome; a new mid-range and bass driver with mechanical clamp rings; and wideband, high-resolution analog electronics with all-new DSP implementing the performance improvement of "EBA" technology across the entire frequency range. The Special Edition loudspeakers are available in piano-lacquer black and high-gloss white paint finishes as standard, as well as the full array of custom finishes as part of the Meridian Select program. An upgrade path is available for owners of current Meridian DSP loudspeakers.

**Price: DSP5200SE, \$20,000; DSP7200SE, \$46,000; DSP8000SE, \$80,000.** [meridian-audio.com](http://meridian-audio.com)



### Raidho D-1

The D-1 is the first Raidho speaker to employ the Danish company's cutting-edge, diamond-technology drivers. A two-way mini-monitor with dedicated stand, the D-1 is identical in size and shape to Raidho's celebrated C-1.1 two-way standmount. The difference is that the 115mm mid/woofer no longer has a ceramic-sandwich diaphragm but a diamond one made by Raidho in Denmark. As diamond is some fifty times harder and stiffer than ceramic (the second hardest and stiffest diaphragm material), linearity and usable frequency range are increased, while breakup modes are reduced in amplitude and elevated well beyond audibility (above 20kHz), making for improved crossover to Raidho's world-class sealed-ribbon tweeter. Available in walnut burl veneer, piano-black, and high-gloss white finishes, the D-1 is among the highest-fidelity two-way mini-monitors on the market.

**Price: \$27,000 (including stand).** [raidho.dk](http://raidho.dk)



### Sonus faber Olympica

The Sonus faber Olympica project is a new family of passive acoustic speakers characterized by the use of two iconic Sonus faber materials: walnut wood and leather. Employing unique asymmetric cabinet designs, the models include the Olympica I (two-way bookshelf), Olympica II (three-way floorstanding), Olympica III (three-way floorstanding) and the Olympica Center, which made its premier at CEDIA 2013. The Olympica line also represents Sonus faber's desire to present a range of models that offers the right solutions for every aficionado of two-channel or home theater, whatever his or her space and decor requirements, be it bookshelf or floorstanding in various dimensions, while also guaranteeing Sonus faber's historical quality in materials, careful assembly, performance, and of course the exclusive charm of a loudspeaker made as a musical instrument and entirely produced in Italy.

**Price:** Olympica I \$6500/pr.; Optional stands \$1200/pr.; Olympica II \$10,000/pr.; Olympica III \$13,500/pr. [sumikoaudio.net](http://sumikoaudio.net)

## ON THE HORIZON

### Vienna Acoustics Imperial Series: Liszt

After several years of development, Vienna Acoustics has announced the long-awaited release of its newest loudspeaker design taking advantage of VA's patented Flat-Spider-Cone Coincident Driver System. This model, the Liszt, a three-way bass-reflex design, is the first in what will be a series of speakers using an all-new and slightly smaller version of this driver technology first seen in VA's Klimt Series. The Liszt is full-scale smaller sibling to Vienna Acoustics' The Music with a similar separate enclosure with independent horizontal adjustment for the midrange/tweeter combination and an internally complicated, dual-cavity, vented bass cabinet featuring three of VA's patented Spider-Cone woofers. As with all Vienna Acoustics speaker systems, the Liszt is beautifully hand-crafted in Vienna, Austria.

**Price:** \$15,000/pr. in cherry, piano-black lacquer, and piano-white lacquer; \$18,000/pr. in rosewood. [vanaltd.com](http://vanaltd.com)



### Vandersteen Audio Treo CT

The Treo is now available in an optional Treo CT version (carbon tweeter), which is a \$1500 upgrade that features the superb Carbon Tweeter from the renowned Model 5A Carbon. The Treo is the latest speaker in the Vandersteen lineup to evolve as a result of the R&D efforts that delivered the patented carbon-fiber Perfect-Piston drivers used in the flagship Model 7. In addition, the Quatro is now available as the Quatro Wood CT at \$12,990/pr. Carbon driver cones offer the piston-like linearity of metal drivers without the unnatural sonic colorations inherent in metal drivers. While the Perfect-Piston Tweeter used in the flagship Model 7 is the fully embodied ideal of high-frequency purity and resolution, the Treo CT delivers a surprising amount of the air, space, and natural purity previously heard only in Vandersteen's top speaker models.

**Price:** Treo \$6490/pr.; Treo CT, \$7990/pr. [vandersteen.com](http://vandersteen.com)



### YG Acoustics Hailey

After the ambitious design project that culminated in the acclaimed Sonja flagship loudspeaker, YG Acoustics set forth to incorporate these sonic ideals and aesthetic sensibilities into a loudspeaker that is accessible to a larger audience. At first blush you'll notice the unmistakable resemblance the new Hailey has to the flagship Sonja loudspeaker. This is not by coincidence, as it permits the full expression of Hailey's technologies. Hailey incorporates the same 10.25" BilletCore woofer used in the Sonja loudspeaker. A brand-new 7.25" BilletCore midrange driver was designed specifically for Hailey, offering a phenomenal strength-to-weight ratio for effortless performance. For smooth, accurate, and extended high frequencies, Hailey utilizes the esteemed ForgeCore tweeter. DualCoherent technology ensures perfect integration of drivers and enclosure for flawless amplitude response coupled with pristine relative phase.

**Price:** \$42,800/pr. [yg-acoustics.com](http://yg-acoustics.com)

# How to Choose a Loudspeaker

Excerpted and adapted from *The Complete Guide to High-End Audio*. Copyright © 1994-2014 by Robert Harley. hifibooks.com To order call (800) 841-4741.

**O**f all the components in your audio system, the loudspeaker's job is by far the most difficult. The loudspeaker is expected to reproduce the sound of a pipe organ, the human voice, and a violin through the same electromechanical device—all at the same levels of believability, and all at the same time. The tonal range of virtually every instrument in the orchestra is to be reproduced from a relatively tiny box. This frequency span of 10 octaves represents a sound-wavelength difference of 60 feet in the bass to about half an inch in the treble.

It's no wonder that loudspeaker designers spend their lives battling the laws of physics to produce musical and practical loudspeakers. Unlike other high-end designers who create a variety of products, the loudspeaker designer is singular in focus, dedicated in intent, and deeply committed to the unique blend of science and art that is loudspeaker design.

Although even the best loudspeakers can't convince us that we're hearing live music, they nonetheless are miraculous in what they can do. Think about this: a pair of loudspeakers converts two two-dimensional electrical signals into a three-dimensional "soundspace" spread out before the listener. Instruments seem to exist as objects in space; we hear the violin here, the brass over there, and the percussion behind the other instruments. A vocalist appears as a palpable, tangible image exactly between the two loudspeakers. The front of the listening room seems to disappear, replaced by the music. It's so easy to close your eyes and be transported into the musical event.

To achieve this experience in your home,

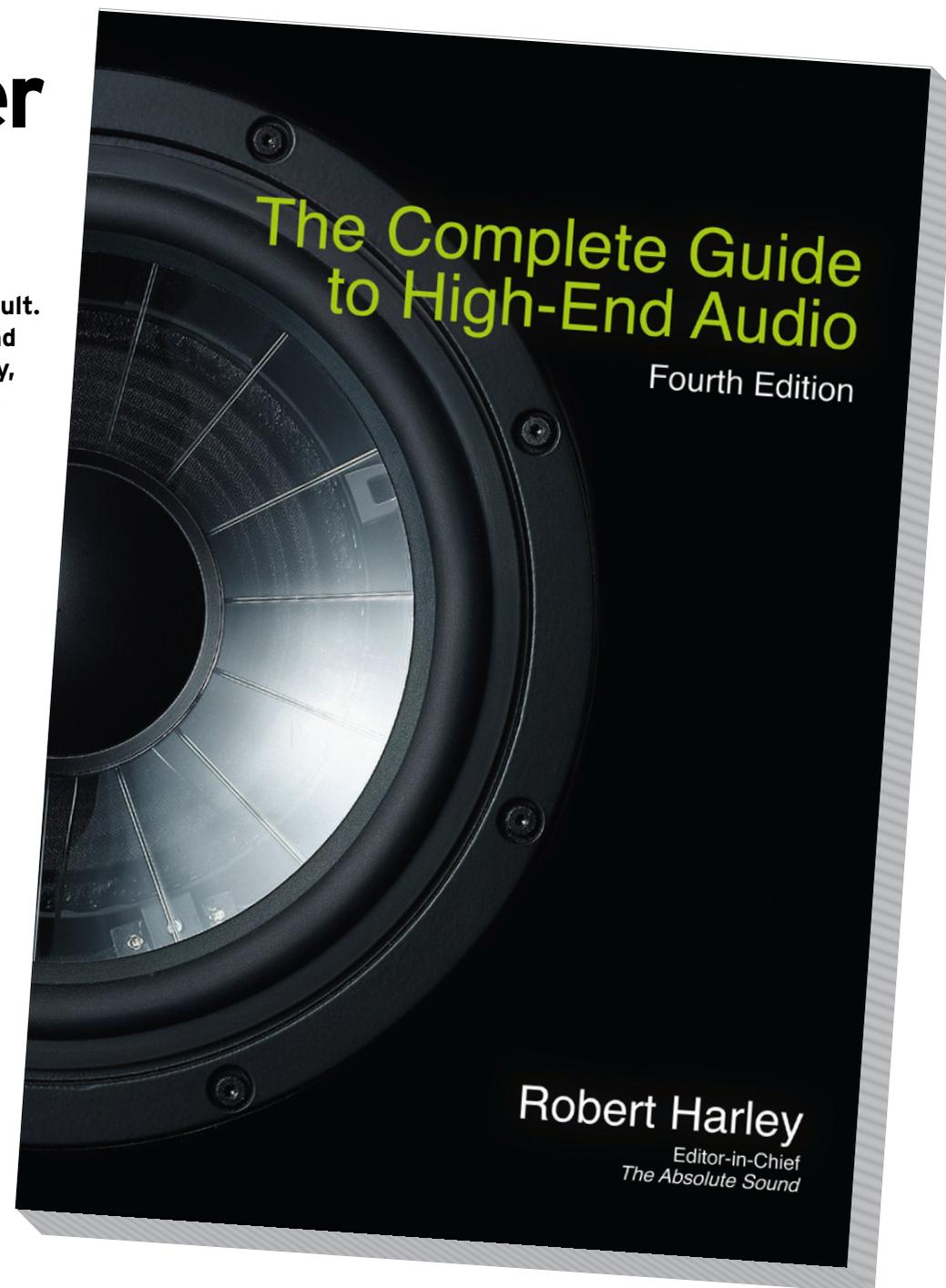
however, you must carefully choose the best loudspeakers from among the literally thousands of models on the market. As we'll see, choosing loudspeakers is a challenging job.

## **How to Choose a Loudspeaker**

The world abounds in poor-quality, even dreadful, loudspeakers. What's more, some very bad loudspeakers are expensive, while superlative models may sell for a fraction of an inferior model's price. There is sometimes little relationship between price and musical performance.

This situation offers the loudspeaker shopper both promise and peril. The promise is of finding an excellent loudspeaker for a reasonable price. The peril is of sorting through mediocre models to find the rare gems that offer either high absolute performance, or sound quality far above what their price would indicate.

This is where reviews come in handy. Reviewers who write for audio magazines hear lots of loudspeakers (at dealers, trade shows, and consumer shows), but review only those that sound promising. This weeds out the vast majority



## How to Choose a Loudspeaker

of underachievers. Of the loudspeakers that are reviewed, some are found to be unacceptably flawed, others are good for the money, while a select few are star overachievers that clearly outperform their similarly priced rivals.

The place to start loudspeaker shopping, therefore, is in the pages of a reputable magazine with high standards for what constitutes good loudspeaker performance. Be wary of magazines that end every review with a “competent for the money” recommendation. Not all loudspeakers are good; therefore, not all reviews should be positive. The tone of the reviews—positive or negative—should reflect the wide variation in performance and value found in the marketplace.

After you’ve read lots of loudspeaker reviews, make up your short list of products to audition from the *crème de la crème*. There are several criteria to apply in making this short list to ensure that you get the best loudspeaker for your individual needs. As you apply each criterion described, the list of candidate loudspeakers will get shorter and shorter, thus easing your decision-making process. If you find yourself with too few choices at the end of the process, go back and revise your criteria. For example, if you find a loudspeaker that’s perfect in all ways but size, you may want to find the extra space in your living room. Similarly, an ideal loudspeaker costing a little more than you planned to spend may suggest a budget revision. As you go through this selection process, remember that the perfect loudspeaker for you is probably out there. Be selective and have high standards. You’ll be rewarded by a much higher level of musical performance than you thought you could afford.

### 1) Size, Appearance, and Integration in the Home

After you’ve designated a place for your loudspeakers, determine the optimum loudspeaker size for your room—the urban apartment dweller will likely have tighter size constraints than the suburban audiophile. Some listeners will want the loudspeakers to discreetly blend into the room; others will make the hi-fi system the room’s center of activity and won’t mind large, imposing loudspeakers. When choosing a place for your loudspeakers, keep in mind that their placement is a crucial factor in how your system will sound. (Chapter 14 includes an in-depth treatment of loudspeaker positioning.)

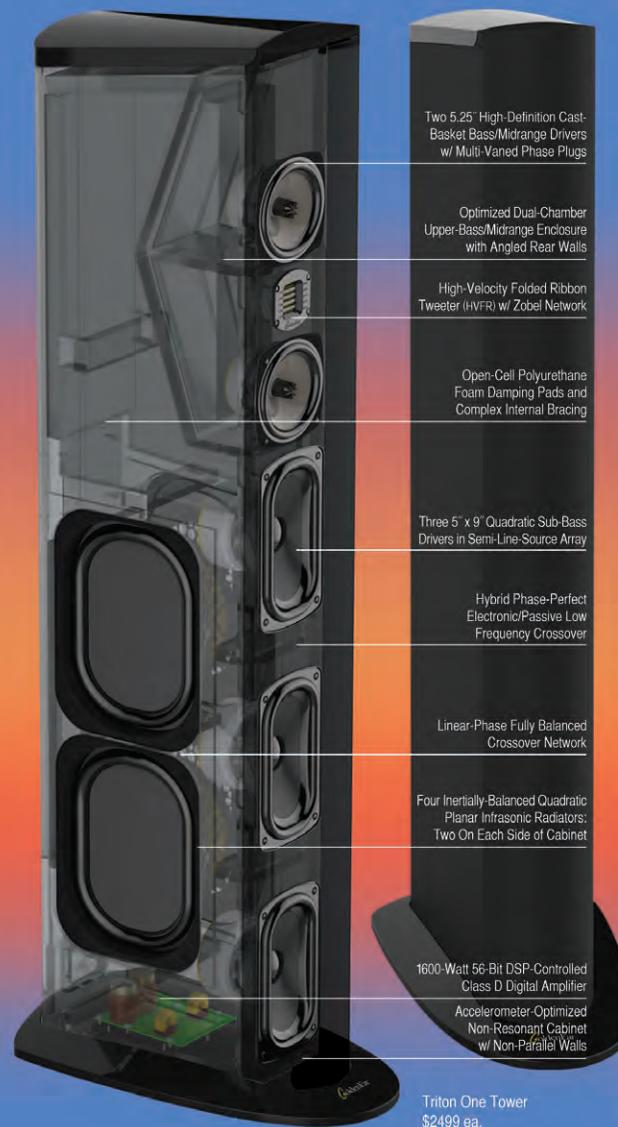
The loudspeaker’s appearance is also a factor to consider. An inexpensive, vinyl-covered box would be out of place in an elegantly furnished home. Many high-end loudspeakers are finished in beautiful cabinetry or automotive paint finishes that will complement any decor. This level of finish can, however, add greatly to the loudspeaker’s price.

If you don’t have room for full-range, floorstanding speakers, consider a separate subwoofer/satellite system. This is a loudspeaker system that puts the bass-reproducing driver in an enclosure you can put nearly anywhere, and the midrange- and treble-reproducing elements in a small, unobtrusive cabinet. You’ll still get a full sound, but without the visual domination of your living room that often goes with floorstanding speakers. Moreover, the satellite speakers’ small cabinets often help them achieve great soundstaging.

Although the term “bookshelf” is often

# GoldenEar has Engineered Our New Triton One to Perform Like a \$20,000+ Super Speaker!

“Triton One shames some speakers costing ten times as much ... it is an absolute marvel” – Caleb Denison, *Digital Trends*



“Best Sound for the Money at CES 2014”

– Jonathan Valin, *The Absolute Sound*  
– Kirk Midskog, *The Absolute Sound*  
– Neil Gader, *The Absolute Sound*

“Revelatory ... cosmically orgasmic ... these speakers absolutely embalm the competition”

– Darryl Wilkinson, *Sound & Vision*

“Best High-End Value at CES 2014 ... Sandy has created a speaker that defies its price point”

– John Sciacca, *Residential Systems*

“Best of CES 2014 ... stunning realism ... the sound was truly grand and majestic”

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When three of The Absolute Sound’s top reviewers all choose the same product for their own “Best Sound for the Money” honors, you know it is something truly very special, epic and iconic. Introducing the Triton One, an evolutionary speaker that builds upon all the advanced technologies that have made the Tritons mega-hits around the world. This new top-of-the-line flagship was engineered to deliver even better dynamics and bass than the extraordinary Triton Two, along with further refinement of all aspects of sonic performance. How well have we succeeded? In the words of HD Living’s Dennis Burger, the Triton One delivers, “... the sort of upper-echelon performance that normally only comes from speakers whose price tags rival a good luxury automobile”.

Triton One “creates visceral, tangible waves of pure audio bliss”

– Dennis Burger, *HD Living*

Great sound is what it is all about and the Triton Ones deliver, as The Absolute Sound’s Chris Martens raved, “The Triton One offers excellent clarity, highly three-dimensional imaging, subwoofer-grade bass depth and clout plus fine levels of low-end pitch, definition and control”. The Ones were specifically engineered to excel with all types of music as well as movies. Best of all, they offer previously unheard of value, as Brent Butterworth wrote in *Sound & Vision*, “I heard a few people saying the Triton One sounded like some \$20,000-and-up high-end towers, but I disagree: I think they sounded better than most of them”. Darryl Wilkinson summed them up best, “A Masterpiece ... GoldenEar has fully ushered in the Golden Age of the Loudspeaker”. Hear them for yourself and discover what all the excitement is about.

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## How to Choose a Loudspeaker

applied to small speakers, you can't get optimum performance from a speaker mounted in a bookshelf. Small speakers need to be mounted on stands, and placed out in the room. Small loudspeakers mounted on stands, sometimes called minimonitors, often provide terrific imaging, great clarity in midband and treble, and can easily "disappear" into the music. On the down side, small loudspeakers used without a subwoofer have restricted dynamics, limited bass extension, and won't play as loudly as their floorstanding counterparts.

### 2) Match the Loudspeaker to Your Electronics

The loudspeaker should be matched to the rest of your system, both electrically and musically. A loudspeaker that may work well in one system may not be ideal for another system—or another listener.

Let's start with the loudspeaker's electrical characteristics. The power amplifier and loudspeaker should be thought of as an interactive combination; the power amplifier will behave differently when driving different loudspeakers. Consequently, the loudspeaker should be chosen for the amplifier that will drive it.

The first electrical consideration is a loudspeaker's sensitivity—how much sound it will produce for a given amount of amplifier power. Loudspeakers are rated for sensitivity by measuring their sound-pressure level (SPL) from one meter away while they are being fed one watt (1W) of power. For example, a sensitivity specification of "88dB/1W/1m" indicates that this particular loudspeaker will produce a sound-pressure level of 88dB when driven with

an input power of 1W, measured at a distance of 1m. High-end loudspeakers vary in sensitivity between 80dB/1W/1m and 106dB/1W/1m.

A loudspeaker's sensitivity is a significant factor in determining how well it will work with a given power-amplifier output wattage. To produce a loud sound (100dB), a loudspeaker rated at 80dB sensitivity would require 100W. A loudspeaker with a sensitivity of 95dB would require only 3W to produce the same sound-pressure level. Each 3dB decrease in sensitivity requires double the amplifier power to produce the same SPL. (This is discussed in greater technical detail in Chapter 5, "Power Amplifiers.")

Another electrical factor to consider is the loudspeaker's load impedance. This is the electrical resistance the power amp meets when driving the loudspeaker. The lower the loudspeaker's impedance, the more demand is placed on the power amp. If you choose low-impedance loudspeakers, be certain the power amp will drive them adequately. (See Chapter 5 for a full technical discussion of loudspeaker impedance as it relates to amplifier power.)

On a musical level, you should select as sonically neutral a loudspeaker as possible. If you have a bright-sounding CD player or power amp, it's a mistake to buy a loudspeaker that sounds soft or dull in the treble to compensate. Instead, change your CD player or amplifier.

Another mistake is to drive high-quality loudspeakers with poor amplification or source components. The high-quality loudspeakers will resolve much more information than lesser loudspeakers—including imperfections in the electronics and source components. All too



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Amplification | Loudspeakers | Digital Audio

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*"They're also designed...according to sound, decades-proven scientific principles. That's why the Middle T tower speaker delivered some of the best sound I heard at CES."*

*-Brent Butterworth, Sound & Vision 2014*

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## How to Choose a Loudspeaker

many audiophiles drive great loudspeakers with mediocre source components and never realize their loudspeakers' potential. Match the loudspeakers' quality to that of the rest of your system. (Use the guidelines in Chapter 2 to set a loudspeaker budget within the context of the cost of your entire system.)

### 3) Musical Preferences and Listening Habits

If the perfect loudspeaker existed, it would work equally well for chamber music and heavy metal. But because the perfect loudspeaker remains a mythical beast, musical preferences must play a part in choosing a loudspeaker. If you listen mostly to small-scale classical music, choral works, or classical guitar, a minimonitor would probably be your best choice. Conversely, rock listeners need the dynamics, low-frequency extension, and bass power of a large full-range system. Different loudspeakers have strengths and weaknesses in different areas; by matching the loudspeaker to your listening tastes, you'll get the best performance in the areas that matter most to you.

### Other Guidelines in Choosing Loudspeakers

In addition to these specific recommendations, there are some general guidelines you should follow in order to get the most loudspeaker for your money.

First, buy from a specialty audio retailer who can properly demonstrate the loudspeaker, advise you on system matching, and tell you the pros and cons of each candidate. Many high-end audio dealers will let you try the loudspeaker in your home with your own electronics and music before you buy.

Take advantage of the dealer's knowledge—

and reward him with the sale. It's not only unfair to the dealer to use his or her expensive showroom and knowledgeable salespeople to find out which product to buy, and then look for the loudspeaker elsewhere at a lower price; it also prevents you from establishing a mutually beneficial relationship with him or her.

In general, loudspeakers made by companies that make only loudspeakers are better than those from companies who also make a full line of electronics. Loudspeaker design may be an afterthought to the electronics manufacturer—something to fill out the line. Conversely, many high-end loudspeaker companies have an almost obsessive dedication to the art of loudspeaker design. Their products' superior performance often reflects this commitment. There are, however, a few companies that produce a full line of products, including loudspeakers, that work well with each other.

Don't buy a loudspeaker based on technical claims. Some products claiming superiority in one aspect of their performance may overlook other, more important aspects. Loudspeaker design requires a balanced approach, not reliance on some new "wonder" technology that may have been invented by the loudspeaker manufacturer's marketing department. Forget about the technical hype and listen to how the loudspeaker reproduces music. You'll hear whether or not the loudspeaker is any good.

Don't base your loudspeaker purchases on brand loyalty or longevity. Many well-known and respected names in loudspeaker design of 20 years ago are no longer competitive. Such a company may still produce loudspeakers, but its recent products' inferior performance only throws into relief the extent of the

manufacturer's decline. The brands the general public thinks represent the state of the art are actually among the worst-sounding loudspeakers available. These companies were either bought by multinational business conglomerates who didn't care about quality and just wanted to exploit the brand name, or the company has forsaken high performance for mass-market sales.

The general public also believes that the larger the loudspeaker and the more drivers it has, the better it is. Given the same retail price, there is often an inverse relationship between size/driver count and sonic performance. A good two-way loudspeaker—one that splits the frequency spectrum into two parts for reproduction by a woofer and a tweeter—with a 6" woofer/midrange and a tweeter in a small cabinet is likely to be vastly better than a similarly priced four-way in a large, floorstanding enclosure. Two high-quality drivers are much better than four mediocre ones. Further, the larger the cabinet, the more difficult and expensive it is to make it free from vibrations that degrade the sound. The four-way speaker's more extensive crossover will require more parts; the two-way can use just a few higher-quality crossover parts. The large loudspeaker will probably be unlistenable; the small two-way may be superbly musical.

If both of these loudspeakers were shown in a catalog and offered at the same price, however, the large, inferior system would outsell the high-quality two-way by at least 10 times. The perceived value of more hardware for the same money is much higher.

The bottom line: You can't tell anything about a loudspeaker until you listen to it. In the next section, we'll examine common

problems in loudspeakers and how to choose one that provides the highest level of musical performance.

### Finding the Right Loudspeaker—Before You Buy

You've done your homework, read reviews, and narrowed down your list of candidate loudspeakers based on the criteria described earlier—you know what you want. Now it's time to go out and listen. This is a crucial part of shopping for a loudspeaker, and one that should be approached carefully. Rather than buying a pair of speakers on your first visit to a dealer, consider this initial audition to be simply the next step. Don't be in a hurry to buy the first loudspeaker you like. Even if it sounds very good to you, you won't know how good it is until you've auditioned several products.

Audition the loudspeaker with a wide range of familiar recordings of your own choosing. Remember that a dealer's strategic selection of music can highlight a loudspeaker's best qualities and conceal its weaknesses—after all, his job is to present his products in the best light. Further, auditioning with only audiophile-quality recordings won't tell you much about how the loudspeaker will perform with the music you'll be playing at home, most of which was likely not recorded to high audiophile standards. Still, audiophile recordings are excellent for discovering specific performance aspects of a loudspeaker. The music selected for auditioning should therefore be a combination of your favorite music, and diagnostic recordings chosen to reveal different aspects of the loudspeaker's performance. When listening to your favorite music, forget about specific sonic characteristics

## How to Choose a Loudspeaker

and pay attention to how much you're enjoying the sound. Shift into the analytical mode only when playing the diagnostic recordings.

Visit the dealer when business is slow so you can spend at least an hour with the loudspeaker. Some loudspeakers are appealing at first, and then lose their luster as their flaws begin to emerge over time. The time to lose patience with the speakers is in the dealer's showroom, not a week after you've bought them. And don't try to audition more than two sets of loudspeakers in a single dealer visit. If you must choose between three models, select between the first two on one visit, then return to compare the winner of the first audition with the third contender. You should listen to each candidate as long as you want (within reason) to be sure you're making the right purchasing decision.

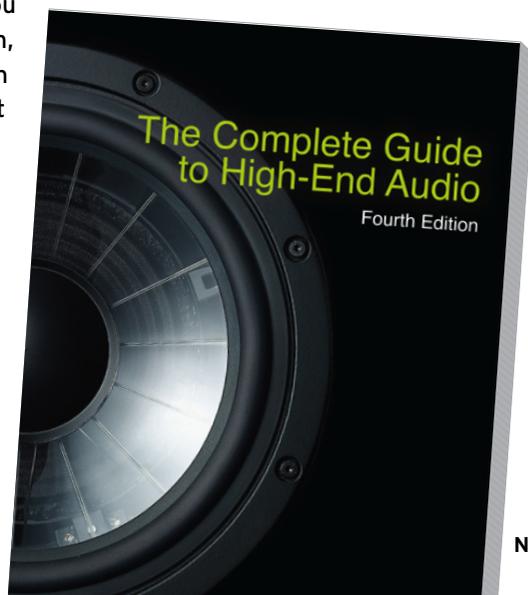
Some loudspeakers have different tonal balances at different listening heights. Be sure to audition the loudspeaker at the same listening height as your listening chair at home. A typical listening height is 36", measured from the floor to your ears. Further, some loudspeakers with first-order crossovers sound different if you sit too close to them. When in the showroom, move back and forth a few feet to be certain the loudspeaker will sound the same as it should at your listening distance at home.

Make sure the loudspeakers are driven by electronics and source components of comparable quality to your components. It's easy to become infatuated with a delicious sound in a dealer's showroom, only to be disappointed when you connect the loudspeakers to less good electronics. Ideally, you should drive

the loudspeakers under audition with the same level of power amp as you have at home, or as you intend to buy with the loudspeakers.

Of course, the best way to audition loudspeakers is in your own home—you're under no pressure, you can listen for as long as you like, and you can hear how the loudspeaker performs with your electronics and in your listening room. Home audition removes much of the guesswork from choosing a loudspeaker. But because it's impractical to take every contender home, and because many dealers will not allow this, save your home auditioning for only those loudspeakers you are seriously considering.

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## DNA



The first WATT/Puppys appeared in 1988. Twenty years and numerous iterations later, the WATT/Puppy was superseded by Sasha W/P, which, despite major structural changes, continued to carry the essential DNA of the original.

Now, as we introduce Sasha W/P Series 2, we still remain mindful of what made this loudspeaker platform one of the classics of high-end audio—evidenced both by its enduring popularity and its numerous imitators. The latest technology—including a specially engineered version of the Convergent Synergy Tweeter first developed for the Alexandria XLF—makes this the most ambitious expression yet of that legacy.

Sasha W/P Series 2. Shipping First Quarter 2014.

Watch the new Sasha Series 2 videos at [wilsonaudio.com](http://wilsonaudio.com). Click the YouTube icon.

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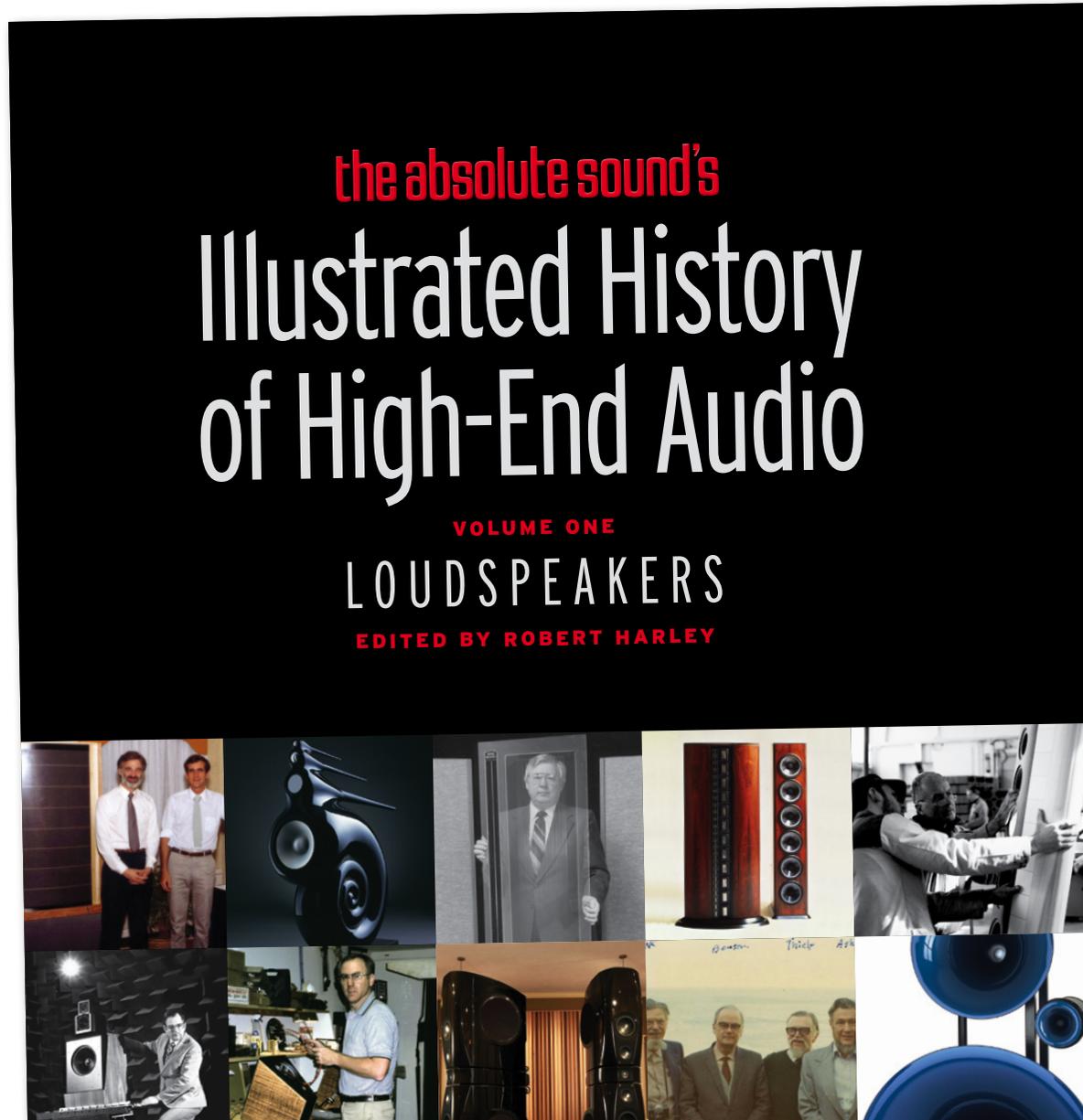
# The Absolute Sound's Illustrated History of High-End Audio is Now Shipping

**The Absolute Sound's Illustrated History of High-End Audio, Volume One: Loudspeakers** brings to audiophiles and music lovers the behind-the-scenes stories of high-end audio's most iconic companies and their legendary products.

This lavishly produced large-format book features never-before-published interviews with the founding fathers of the high-end loudspeaker industry, informative profiles of their companies, timelines detailing the most significant advancements in each company's history, classic and contemporary TAS commentary on each company's landmark products, and an overall assessment of each company's contributions to the high end. The company profiles are chock-full of fascinating details, nearly all of them new. The stories of how these legendary pioneers overcame technical and business challenges to create the high-end industry as we know it today are riveting.

16 Guide to High-Performance Loudspeakers 2014

◀ PREVIOUS PAGE



## The BBC Monitor Birth of a Legend

BY PAUL SEYDOR

The BBC Monitor's a smaller product in each era's design stretch. It might be more accurate to call it a set of loudspeakers (planning and specification done up to meet a precise set of goals for an early private set of uses and constraints). BBC, of course, needs for the BBC Broadcasting Corporation, which has been in existence since 1927 and the most of our era engaged in serious and high-quality design and performance. The company's mission is to provide the highest quality of sound programming and the most accurate and reliable reproduction of the program. The BBC Monitor would be used in a variety of applications, from the broadcast studio, to a small private home listening room.

What Dieder Harnold and D. L. Shawer saw brought to the BBC's attention in 1946, was that their engineering was to average into one product. The resulting product of the BBC was a set of loudspeakers that was designed to be used in a variety of applications, from the broadcast studio, to a small private home listening room. The BBC Monitor was designed to be used in a variety of applications, from the broadcast studio, to a small private home listening room.



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Reference 105



Reference 105

Reference 105

Reference 105

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The Absolute Sound's Illustrated History of High-End Audio

In addition to these in-depth profiles, we've included shorter pieces on many other companies that have helped shape the high-end industry, including those at the forefront today. And to make the book definitive, we've added a series of features on landmark technological developments and trends, and on the overall history of high-end loudspeakers. We trace the loudspeaker's development from its earliest incarnations in 1874 all the way through to today's high-tech marvels. This is truly a monumental project that tells the complete story of high-end loudspeakers.

The 320-page deluxe hardcover book is nearly the size of an LP cover, and is richly illustrated with rare archival photos of the company founders, their workshops, and early products. No expense was spared in this book's production, from its UV-coated hardcover format, to its deluxe dust jacket, to its ultra-premium paper and made-in-the-USA quality.

I encourage you to visit our Web site for *The Absolute Sound's Illustrated History of High-End Audio* at [tasbook.com](http://tasbook.com). There you'll find sample page layouts, the table of contents, and a complete description of the project. We've also set up on-line ordering so that you can be among the first to receive a copy of this landmark book. The first 2500 copies are reserved as a special numbered limited-edition first printing. These first editions are sure to become collector's items so order your copy while they last.

# Advent and KLH

BY DICK OLSHER

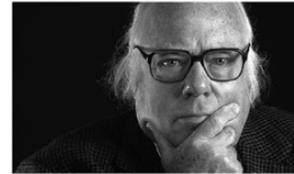
High-end audio was indeed fortunate to have had Henry Kloss (born February 21, 1929, died January 31, 2002) connect with Edgar Villchur in the early 1950s. As fate would have it, Kloss happened to be attending an evening course taught by Ed Villchur at New York University on the subject of high fidelity. The two befriended each other and that eventually led to a commercial partnership. Without Kloss' manufacturing skills and business savvy it's unlikely Acoustic Research would have materialized in 1954. And Villchur freely admitted that Kloss had a significant hand in the development of the AR-1, the first acoustic suspension speaker.

When Henry Kloss left Acoustic Research in 1957 to found KLH with partners Malcolm Low and Tony Hofmann, the L and H initials in the name, the new venture opened the door for a decade of Kloss innovation in the midst of audio's golden age. The goal, as Kloss said in a 1992 interview, was to make a better speaker via development of superior drivers, and in particular to extend the upper range of a woofer by tuning its breakup range in the 1-to-2kHz range. The first thing KLH did was to work with a paper chemist in order to set up a paper-making laboratory for the production of paper cones. Kloss got good at this and was able to experiment with various fiber formulations, crumkugling finished samples in about two hours for testing.

The first three models from KLH, the One, Two, and Three, were woofer-only acoustic suspension designs engineered to mate with an external JamZen tweeter, the best tweeter money could buy in those days. The model Four was KLH's first full-range design and used a receiver sourced from GE. The breakthrough product that put KLH on the map was the model Six which was introduced in 1958 and stayed in production for over 15 years. It was a two-way design featuring a 10-inch woofer and a cone tweeter. Both drivers were manufactured in-house giving KLH complete control over performance and quality, allowing for the maintenance of very tight tolerances. The tweeter was unique, being a wide-range design with a one-piece cone construction without a dust cap and with the voice coil glued directly to the apex. Voice coil excursion was robust enough to permit operation down to 1.5kHz which eased integration with the woofers, making for a more perfect union in the transition region. The pricing and voicing of the Six were such that it became an instant commercial success and the gold standard for future box speakers at KLH. There was a model Five, actually two versions of the model Five were manufactured. The chronological Five was not a major product, but the second Five, designed by Kloss well after the Six, was a three-way design with greater bass extension and an even cleaner midrange.

For many years this second model Five was KLH's most expensive box speaker. Pundits at the time found the Six, and the new Five, to be similar sonically to the AR line but with greater bass range and treble sweetness. Both the Five and Six were prime examples of KLH box speaker technology through the 1960s, and were undoubtedly some of the best sounding acoustic suspension designs of their day.

**Did You Know?**  
Henry Kloss founded or co-founded seven audio companies over a 50-year career: Klipsch Industries, Acoustic Research, KLH, Advent, Klipsch Video, Cambridge SoundWorks, and Triost Audio.



In addition to revolutionizing the audio industry, Henry Kloss co-founded audio recording engineer studios.

However, KLH is best remembered today for the model Nine, a full-range electrostatic speaker that went into production circa 1960 (\$1,195/pr in 1975). It was a product that Kloss admitted he didn't have anything to do with. Arthur Jensen, who joined the KLH team as a fourth member, designed the bass panels for the Nine and integrated the tweeter and bass panels into a coherent two-way speaker system. Each channel comprised multiple bass panels surrounding a single JamZen electrostatic tweeter mounted roughly in the center and crossed over at about 2kHz. It was clearly a contender for state-of-the-art honours in the late 60s. It went deeper in the bass than the QUAD ESL and cooaled in clarity, transient response, soundstage transparency, and detail resolution. To be sure, it wasn't perfect. It was totally laid back and inefficient, and it didn't quite equal the QUAD's natural voicing in the midrange. Most frustrating was its heavy treble range, the consequence of a single flat tweeter panel. Enterprising audiophiles resorted to using a double Nine.

After the James Advent Loudspeaker cost \$112 per pair at its introduction in 1967.

Right: The KLH Model Five was initially a contender for the state of the art in the late 1960s.



system, which increased the number of side-by-side panels from two to four per channel. This served primarily to improve bass extension, high-frequency dispersion, and available sound pressure level. Unfortunately, imaging was less than optimal in this configuration. Apparently the Nine was never a money maker for the company, but KLH kept it in the line as a flagship product even after the Singer Corporation took over operations in 1964, and even long after Kloss departed in 1967 to found Advent.

Kloss pointed out that Advent was started to develop projection TV, but as funds ran out for such ambitious R&D, the decision was made to make loudspeakers, and that's how the Advent loudspeaker was born. A smaller and less costly Advent was also introduced. It incorporated the same tweeter and crossover as the large Advent but of course, as physics dictates, a smaller woofer for a smaller box. Bass extension and efficiency were reduced in the process, and as its price compared to the large Advent traded too much performance for the savings incurred, also suffered in the process. Kloss always felt that the smaller Advent was never the lesser Advent and regarded it as a product of importance that he still listened to. That was vintage Kloss: a

man who delighted in designing cost-effective products with mass appeal. Both Advent loudspeakers were two-way acoustic suspension designs, and in particular, the large Advent competed directly with the three-way AR-3a but cost just under half as much. Though outdoors in the bass range, it measured well and scored high in musicality. It was the kind of speaker that didn't necessarily impress the showman but satisfied music lovers in a domestic setting. Known unofficially as the "Large Advent" after introduction of the smaller Advent, it was this model that caught the attention of Harry Pearson who featured a stacked large Advent system in the inaugural issue of TAS (1973). HP reported that "it's only when you double up on the Advents, that you begin to get the sort of authoritative performance that comes strikingly close to the real thing...the spaciousness of the two working in tandem suggested that of a huge Bostak system, but without its considerable frequency deviations. The bass, if anything, had that certain low-end sock you hear in a good hall, and the upper strings, massed violins in particular, began to sound like massed violins." HP noted that the Advent loudspeaker "has several

## Advent in *The Absolute Sound*



Harry Pearson's now-legendary review of the "Double Advent" system in the first issue of *The Absolute Sound* put the magazine on the map. TAS allowed Advent to reprint tens of thousands of copies of the review provided that the reprint include subscription information. Conclusion: *The Absolute Sound* never looked back.



The Absolute Sound's Illustrated History of High-End Audio 10 Advent and KLH

The Absolute Sound's Illustrated History of High-End Audio 10 Advent and KLH



# MartinLogan

BY DICK OLSHER

## The

process of two is in no greater evidence than in the founding of MartinLogan. Gayle Martin Sanders and Roy Logan Sutherland met in Lawrence, Kansas, during the late 70s and managed to convince each other that they could not only build an electrostatic speaker but could better previous designs such as the KLH Model 9 and Quad ESL when it came to bass extension and dynamic range. Needless to say, that was an ambitious vision and one only likely to succeed through the blending of these two men's talents. Even though electrostats are conceptually simple to understand, basically a stretched Mylar diaphragm sandwiched between two stators, reliability and ultimate performance reside in the engineering details. The early years were focused on experimentation with conductive coatings, insulation, adhesives, perforated metal stators, and, of course, the curvilinear line-source panel (CLS). The CLS was a conceptual breakthrough now a fixture in every MartinLogan electrostatic design. Some said that a curved panel wouldn't work, but we're all grateful to MartinLogan for exploring the road less traveled. Over the years MartinLogan moved to improve its core technology, the electrostatic transducer, by researching new materials and methods to improve conductive coatings, insulators, adhesives, and assembly processes. This continuing evolution has resulted in improvements to bandwidth, efficiency, consistency, and reliability. The electrostatic panel of 1983, while looking similar in many different forms in contemporary counterparts. For example, in 1983 conductive coatings were hand applied with a conductive slurry. Today, conductive coatings are applied to the diaphragm through a proprietary vapor deposition process in a state-of-the-art vacuum chamber that allows the diaphragms to maintain a 5000-volt charge.

What motivated all this experimentation was that audiophiles wanted (and still want) full-scale reproduction of both dynamics and bass. After significant experience with all variations of both ESL and dipole technology, MartinLogan had to face the reality that dipoles, and ESLs in particular, are challenged when asked to reproduce both large-scale dynamics and low-frequency information at the same time. So ML decided early on to design a high-efficiency electrostatic transducer to be integrated into a hybrid system. That first speaker was the Mousloth and it launched the company following an encouraging reception at the 1983 CES. Sales took off in 1985 placing the company on a firm financial footing that was also when Roy Sutherland departed MartinLogan to pursue his first love, electronics. The first full-range electrostatic speaker, the CLS, arrived in 1986. But it was the Sequel, a smaller hybrid introduced in 1987, that resulted in explosive sales. During the 90s product releases came fast and furious and included some of MartinLogan's classic models such as the Quest, Arise, and SL3, and to top off the product line with a claim on state-of-the-art honours, the massive Statement e2 loudspeaker was released in 1998. The release of the Summit in 2005, followed by the Summit X in 2009, heralded the arrival of the most advanced hybrid eye, combining dual independently-powered woofers with MartinLogan's most advanced electrostatic transducer to date, the XStat. The CLX Art, unveiled in 2010, is its most advanced full-range electrostatic to date. Though co-founder Gayle Sanders left MartinLogan along the same time it was acquired in October 2005 by Shou-Vue Industries, MartinLogan is still today a growing company with an internationally recognized brand, and a first-class design and manufacturing team.

EQUIPMENT REVIEWS

# Desktop & Super-Compact Loudspeakers





# Audioengine A2+ Desktop Speakers and D3 DAC

A Perfect Starter Combo that Sports an Easy Entry Fee

Spencer Holbert

**T**hough they weren't that long ago, I haven't owned a pair of desktop speakers since my college dorm days. Space was at a premium back then, and the hi-fi system that I loved had to stay at home and collect dust until I moved into larger accommodations. Once I got my stereo back, I never thought twice about computer speakers—that is, until I learned I would be reviewing Audioengine's A2+ Powered Desktop Speakers and D3 DAC. It was with a mixed sense of excitement that I opened the door a week later and found a box from Audioengine on my front porch. I mean, they're *computer speakers*; how good could they really sound? But then again, if *The Absolute Sound* wanted a set of desktop speakers reviewed, then they must be decent, right? It was time to discover the truth.

The first thing I noticed when I opened the box was the amazing amount of care Audioengine takes packaging this system. Each speaker—as well as the power supply and cables—is placed in its own microfiber bag, and everything in the box fits snugly together in such a way that it seems almost impossible for shipping damage to occur. The Audioengine A2+ is as turnkey as it gets; the speakers will accept virtually any high-level source you can throw at them, as long as that source outputs via RCA, USB, or 3.5mm. If you are in the market for some affordable powered desktop speakers, that means you will be able to connect all of your source components to these bad boys with nary a worry: TVs, computers, iDevices, Blu-ray players, external DACs, Betamax, five-second anti-skip CD players...er, childhood flashback. They even have a variable RCA output so that you can connect a subwoofer (maybe Audioengine's S8 powered sub?) or one of Audioengine's wireless streaming devices. Included in the box are two meters of 16AWG speaker wire to connect the left and right channels (the binding posts also accept banana/spade-terminated speaker cables), a 1.5-meter 3.5mm mini-jack audio cable (for those iDevices and Walkmen), a 1.5-meter USB cable, a power supply, and all necessary documentation. Short of a puppy with a red bow, the A2+ Powered Desktop Speakers come with everything you need to start rockin' in no time flat. An extra surprise was also shipped along with the A2+ speakers—the Audioengine D3 DAC, which I will discuss in a bit.

The only source I used with the A2+ speakers—except for a stint with rabble-rousing friends who took turns playing iPod DJ via the 3.5mm input—was my MacBook Pro, which is presumably the kind of source most consumers of Audioengine

products will use. I definitely ran the gamut of digital audio quality, from lossy MP3s to hi-res WAV files, Netflix streaming movies to DVDs, and even Pandora. I also tested every possible combination of audio format with the stock cables all the way up to audiophile-grade connections and speaker wire, just for the fun of it. But let's stick with what comes with the A2+ speakers and go from there.

Starting with USB input (which is a new feature that the last version, the Audioengine A2, does not have), I connected my laptop directly to the A2+ using the stock USB cable, launched iTunes sans any third-party audiophile software, and played one of my favorite "soundstage test tracks," Radiohead's "Everything In Its Right Place." I love this track, not only because it's great music, but also because the way Thom Yorke plays with phasing and the soundstage. But when the track started, my heart sank: It sounded as if I were listening in a phone booth, plus there was some serious cone breakup and distortion coming from the left channel (the channel that houses the amp and inputs). I checked all my settings and everything looked correct, so I decided to step away for an hour, let the speakers break in for a bit, and come back for another listen. Interestingly enough, that did the trick; after only an hour on repeat, the speakers sounded much better, and the left-channel distortion had vanished. The lesson is to let these speakers play for a while before judging them (Audioengine allows for a 30-day audition, lucky you).

Actually, the A2+'s sounded really good. *Really* good. I would have never thought that 6" desktop speakers could sound like this, except for maybe those studio monitors that call themselves desktop speakers. But these are actually *designed* for use with your computer, hence Audioengine's

## EQUIPMENT REVIEW - Audioengine A2+ Desktop Speakers and D3 DAC

tagline, “Join the computer audio [r]evolution.” Okay, where do I sign? I suddenly had that ole music-lover’s itch to play as much music as possible (the best kind of itch, I might add), and selected numerous tracks from downtempo-ambient artists on the Ultimae record label. Want to really test a speaker’s capability? Then choose any album in Ultimae’s catalogue (ultimae.com) and be prepared to stretch for the highest highs, lowest lows, and widest soundstage you could possibly imagine. Well, the A2+ speakers performed beautifully. Not only did they provide enough bass extension to satisfy any bass head (65Hz response seems a lot lower when speakers are so close; then there’s that S8 powered sub you can add on), they proved extremely forgiving in the set-up department. I set mine at arm’s length (roughly 25" from ear to tweeter) and toed-in directly at the flanks of my ears, which provided the best soundstage. Did I mention they were forgiving? Whether I hunched over my computer, slouched in my chair, rested my head on my hand (à la a tired college student), or sat up in that sonic sweet spot, the A2+ speakers sounded great. Let’s check that price tag again: Yep, for \$249 you can’t ask for any better than this.

Okay, now for some music that most readers of TAS will recognize: Leonard Bernstein’s classic rendition of *Le Sacre du Printemps* in 24-bit/96kHz from HDtracks. Uh-oh. Twenty-four-bit is a no-go via the USB input on the A2+ speakers, which is a somewhat disappointing, yet very understandable exclusion, as most people who buy the A2+ powered speakers won’t have a large collection of high-res audio files. If you have a bunch of high-res files and want to use these speakers at work or elsewhere, you’ll need an external DAC capable

of 24-bit audio. Luckily, I also received the Audioengine D3 DAC, but hold your horses; we first need to test the 3.5mm analog-input mini-jack. Just as you might expect, sound quality took a step back, but this seemed to be an across-the-board decrease, which is less grating than a sudden drop within a certain frequency range. Still, the 3.5mm mini-jack input is great for plugging in that iDevice and rockin’ out while working in the garage or having friends come over and connecting their phones. And at 15W RMS, these puppies can crank. They were loud enough to fill my house with music and drown out the clang of pots and pans as I cooked breakfast, or, if you’re so inclined, the noise of dorm- and roommates.

During this first stage with the A2+ speakers—i.e. without a DAC—I was breaking in the sleek Audioengine D3 24-bit/96kHz USB DAC with a pair of Grado PS500s. This thumbdrive-sized aluminum-shell DAC is very pretty to look at, and matches surprisingly well the look of my aluminum-cased MacBook Pro—something that might be attributed to the designers’ days at Apple. I was at a coffee shop with the D3 when someone tapped my shoulder and asked, “Why are your headphones plugged into your thumbdrive?” Thirty minutes and a quick audition later, the D3 had successfully converted the inquirer into a freshly minted junior audiophile, flush with excitement and on a quest to listen to high-quality music. If that’s not a litmus test, then I don’t know what is. For a piece of audio equipment—whether the \$189 D3 or the \$110,000 dCS Vivaldi—to have the ability to cause even the most curmudgeonly people to spontaneously combust with aural happiness is really what counts. No, I’m not saying you’ll get dCS-level performance for \$189; I’m saying that

for \$189 you’ll have something with the power to inspire that fits in your pocket.

I really wanted to hear that Stravinsky, so let’s get back to what the combination of the A2+ speakers and D3 DAC sounded like. With Amarra Hi-Fi turned on and the D3 DAC plugged into my computer (connected to the A2+ speakers via the 3.5mm mini-jack), I played the 24/96 version of *Le Sacre du Printemps*. All right, I’ll admit that this might be cheating; there’s no way that such little speakers could recreate the power of a live orchestra, but they still elicited an “air-conductor” session where I threw my arms around Bernstein-like. The D3 DAC did exactly what it’s supposed to do—make digital audio sound great. At \$189, the D3 DAC is a must-have piece of the A2+ puzzle. Plus, it comes with a nice 4" adaptor cable, so you can plug in those beefier headphones and enjoy all the music you’ve been missing because of that sorry built-in computer DAC.

I’m not going to go audiophile on you and describe the minutest nuances of the speakers, because that would completely miss the point: these are desktop speakers and are only \$249, and for \$249 you get such quality sound it’s ridiculous. They sounded so good that I started listening to them *instead* of my main stereo—that’s how much I liked the A2+ Powered Desktop Speakers. As aforementioned, I even went a little crazy and switched all the stock cables with audiophile-grade versions from AudioQuest and Wireworld. Unnecessary? You bet. But I mention this because how many 6" desktop speakers have USB, RCA, and 3.5mm inputs, RCA output, can accept banana, spade, or bare speaker wire, *and* sound this good for only \$249? At that price, the A2+ speakers seem like the perfect gift for the recent high

school graduate, or college student, or really anyone who needs great sound in a small form factor. Sprinkle a little sugar on top with the D3 DAC, and you’ve got a winning combination that can now improve on-the-go sound for grand total of \$438. *Ahem*, I have USB cables that cost more than that. Now if only I had had a pair of these when I was in college, life would have been sweet. 

### SPECS & PRICING

#### A2+ Powered Desktop Speakers

**Inputs:** USB (up to 16-bit/48kHz); RCA; 3.5mm mini-jack

**Outputs:** Variable RCA Out

**Drivers:** 2.75" Kevlar woofers, 0.75" silk dome tweeters

**Frequency response:** 65Hz-22kHz +/-2dB

**Power:** 15W RMS (60W Peak)

**Dimensions:** 4" x 6" x 5.75"

**Weight:** 10 lbs.

**Price:** \$249

#### D3 24-Bit DAC

**Frequency response:** 10Hz-25kHz +/-0.5dB

**USB transfer mode:** Asynchronous (dual clock)

**Input:** Up to 24-bit/96kHz

**Output:** Analog audio mini-jack

**Price:** \$189

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# KEF X300A Digital Hi-Fi Speaker System

Plug-in!

Neil Gader



**K**EF's versatile coincident driver, the Uni-Q, has been cast in a new role—a part, in my humble opinion, it has always been destined to play. It's the X300A Digital Hi-Fi Speaker System. I've admired this unique transducer for some time but most recently when I evaluated the KEF LS50 (awarded a Golden Ear in Issue 235). I continue to feel it's one of the most satisfying compact two-way speakers I've encountered in the last couple years. The speaker is not only visually arresting; it also boasts superb midrange sonics, full-bodied presence, and potent midbass punch. I always thought it could be the basis for an outstanding nearfield or portable monitor. And whaddya know—with the X300A KEF engineers have taken that next logical step and reimagined the LS50/Uni-Q for desktop duty and the world of computer media.

The speaker may only be eleven inches tall, but pint-sized or not, the X300A is no toy. The cabinet has been reduced in volume and trimmed in a more utilitarian finish. Visually immaculate it's as clean as a whistle—with a front baffle with no visible hex-head mounting bolts or other distractions, just the anodized, aluminum Uni-Q (5" midbass and 1" tweeter) with its "tangerine" waveguide and uniquely ribbed surround and stylish trim ring. However, now it's powered by two built-in Class D amps that generate 50W for the mid/bass driver and 20W for the tweeter. The whole shebang is currently \$599, less than half the price of the LS50. (A wireless version of the X300A is available for \$999.)

So far so good. But what makes the X300A a "Digital Hi-Fi System" relevant for the new breed of desktop recording engineers, music downloaders, and computer-media enthusiasts is the inclusion of a full-time, 24-bit/96kHz USB DAC. The takeaway is that all incoming signals are digitized, effectively making the X300A a self-contained stand-alone system that only requires a computer source to be complete. Tweakers may quibble, but users who want to get up and running with a minimum of hassle will celebrate.

## Koincident and Klever

Setup is easy thanks in part to the supplied cables, which include a pair of two-meter USB-to-mini-USBs and the twin power cords required to power the internal amplifiers. All connections are secured from the back panel of the X300As. The left and right speakers serve specific functions. The left channel acts as the "parent," the right channel as the "child." One USB cable connects the computer source to the left channel; the other connects left and right channels together. A rear-panel knob on the left speaker controls volume, while another knob on the right channel handles balance. Just why the connections are buried on the back panel beats me. I would have been happier if the volume/balance adjustments were on the front.

In addition to the USB connection there is a 3.5mm auxiliary input on the back of the left channel for a personal player like an iPod/iPad. All incoming signals are then digitized via the X300A's internal ADC, and later reconverted to analog.

A slider switch on the back of the left channel allows the user to optimize the X300A for two listening environments. In the "desk" position the X300a is set for nearfield desktop listening

## EQUIPMENT REVIEW - KEF X300A Digital Hi-Fi Speaker System

by rolling off the bass to alleviate potential boominess. When in the “stand” position the X300a is optimized for open-field listening and bass response is flattened out. Foam port plugs or “bungs” are also supplied for smoothing bass response to accord with wall/shelf placement. An optional five-meter USB-to-mini-USB cable is manufactured by Wireworld, and offered for conventional in-room positioning. I evaluated the X300A in two configurations—as desktop monitors and on floorstands in a traditional in-room configuration.

### The Power of One

In desktop mode, the X300A L/Rs were poised about thirty inches from my seat, angled inward a few degrees, and tilted up slightly. From the moment I cued up Stravinsky’s *Pulcinella* [Argo] with its vivid palette of short themes and quirky rhythms it was clear that nearfield listening is an ideal mission for the Uni-Q design. The immediate effect was a speaker system that was well balanced and dynamically adept, with a strong midband balance and a firm presence range. The X300A is nicely graduated across the macro/micro-dynamic landscape with an image stability and pinpoint focus that are only approached by true single-driver designs.

Timbrally, the X300A reproduces music with a slightly cooler, forward tilt. It’s not a laid-back, cool-your-heels kind of speaker. It’s pacy, with a jump factor that should get your trackball and paperweights dancing. A cut like Steely Dan’s “Hey Nineteen” is all about the groove it establishes, and the X300A sets it beautifully. The track is reproduced with terrific dynamic snap, crackling transient action off the snare,

and a sensation of weight and impact unusual in a desktop speaker. The background vocals featuring the soulful Michael MacDonald are stunningly articulate.

As a result of the system’s proximity in a nearfield setup its sonic personality has a more upfront character—and a drier one. Because of its intimacy, I perceived more of the inner workings of a recording like Norah Jones’ *Not Too Late* [Blue Note] and less of the reverberant layering from the ambient environment of the listening space. The tiniest instrumental details take on greater immediacy, as transient attack and other low-level dynamic information tend to step forward. The presentation is not always strictly natural in my view, but it is addictive and allows music to attain a clarity and specificity that are more akin to headphone listening but without the bullet-to-the-brain oddities of most cans.

Much of this impression owes to the fact that bass response is punchier and better defined than truly extended; in a desktop setup, low-end response never descends appreciably below the upper midbass regions. As a result a cello, for example, sounds a bit more sinewy than warmly reverberant and reveals more bite off the bow than resonances from the instrument’s body. Similarly on vocals, choral groupings, and massed strings, a hint more of the tweeter is unmasked by the lighter tonal balance. More so, for example than it is with KEF’s own LS50.

In terms of scale, no one is going to be fooled into thinking that the London Symphony Orchestra is actually playing on the desktop. But even at this reduced size, the soundstage and image proportion are so complete, layered,

and stable, that it’s like observing an impeccably detailed, highly resolved miniaturized performance. If you’re unaccustomed to high-end desktop listening, it’s actually an amazing experience to enter the world that the X300A creates.

When the X300As are lifted onto floor stands and set out into the room, their sonic character shifts dramatically. Bass response deepens. Ambience retrieval and reverberant cues from acoustic recordings are heightened. A greater degree of warmth is introduced and some of the desktop dryness is reduced. The key is wall/corner positioning. The farther the distance from those boundaries the greater the reduction in low-frequency reinforcement. On the other hand, close proximity can thicken bass output and create soupy incoherence. In my setup, “just right” happened to be about eighteen to twenty-four inches (measured at the front baffle) from the back wall. Here, the X300A created a more lifelike impression of orchestral scale and an immersive surrounding acoustic that was both riveting and realistic. In SPLs there’s little need to coddle the X300, but keep in mind that a five-inch transducer does have its limits. On a punishing track like the Copland *Fanfare for the Common Man* [Reference Recordings] I could get reliable output into the lower-to-mid-90dB range at roughly six feet or so (higher in the nearfield), but I backed off above that when a flurry of tympani concussions caused an occasional *bbbuurrrp* from the Uni-Q.

I cannot avoid a quick comparison to its passive/analog cousin, the LS50. In tonal balance they are clearly cut from the same cloth. But in output and dynamic gradients the LS50

offers a larger, warmer canvas. It also creates a more convincing illusion of soundstage scale and dimension, as it should for roughly twice the price—DAC and amp not included.

How good is the internal DAC? Hard to say since the X300A allows “no substitutions.” But it is certainly more than up to the task and further grousing would be missing the point concerning the lengths KEF has gone to make listening to the X300A a seamless experience. The versatile X300A creates two distinct listening options and both are loads of fun. Whether you’re a computer enthusiast or an old guard high-ender, I can’t imagine you not falling in love with KEF’s perky little plug-in. **tas**

## SPECS & PRICING

**Type:** Two-way, powered loudspeaker in bass-reflex enclosure  
**Drivers:** Uni-Q array, 1" tweeter, 5.25" mid/bass  
**Frequency response:** 79Hz–28kHz (47Hz–45kHz -6dB)  
**Internal amplification:** 50W, mid/bass; 20W, tweeter  
**Dimensions:** 11.1" x 7.1" x 9.6"  
**Weight:** 16.5 lbs.  
**Price:** \$599

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# Audience ClairAudient The One

The Sound of No Crossover

Steven Stone



**T**he One, as you might infer from its name, consists of a single full-range driver shoehorned into a small box. The driver itself is the same unit that Audience uses in its flagship \$72,000/pair 16+16 speaker. Audience is unique in this regard; I know of no other speaker manufacturer that employs the same driver in all of its speakers from the smallest to the largest. Even more surprising is that when installed in a nearfield system, The One is capable of delivering almost as unobstructed a window into the original musical event as its larger sibling.

For readers who've never heard of Audience or its ClairAudient line of speakers, its beginnings go back to 1972 when Audience's president, John McDonald, met the late audio designer Richard Smith. Together they founded Sidereal Akustic Audio Systems, Inc., which was extant from 1979 to 1985. When design engineer Roger Sheker joined the company in 1997, Sidereal morphed into Audience.

From the beginning Audience's primary goal was to build a full-range-driver speaker without tweeters, woofers, or crossovers. Nine years of research went into developing a driver design that could accomplish Audience's sonic goals. Finally in 2009 Audience unveiled its first product, the ClairAudient 16 loudspeaker. The other models soon followed, including the 16 +16, 8+8, 2+2, 1+1, and most recently The One.

## Tech Info

One single solitary driver system sans woofers, tweeters, and crossovers—what does that get you sonically speaking? In one word—coherence. The entire Audience speaker line is predicated on this premise. By eliminating the crossover all the sonic issues it causes vanish. Without the crossover circuit, phase issues at the crossover points vanish. Timing and group-delay problems introduced by a crossover's filtering components disappear as well.

But there is no “free lunch” in physics. Eliminating the crossover puts greater demands on the speaker's single driver. It's very hard for one driver unit to produce a full-range signal with even power-handling throughout its frequency range. It is also difficult for a single driver to create an even dispersion pattern without beaming at higher frequencies.

Although Audience is understandably reticent to release too many specifics on the deep inner-workings of its proprietary “dual-gap motor” A3S driver, according to Audience, “the A3S has an exceptionally flat response from 40Hz (in certain optimized enclosures) to 22kHz +3dB. No other single driver available today can deliver this kind of performance.”

The A3S driver cone is made of a titanium alloy combined with a concave dust cap made using constrained-layer damping to control high-frequency breakup modes. The total mass of the driver cone is only 2.5 grams. This low-mass cone is coupled to a patented oversize motor structure using neodymium magnets and a large voice coil. According to Audience the A3S has “12mm of usable excursion with less than 1dB compression at levels up to 95dB SPL.” Achieving this usable excursion requires an especially oversized spider made of “special materials” to reduce airflow obstructions to and from the voice coil.

## EQUIPMENT REVIEW - Audience ClairAudient The One

The A3S driver has vents in its pole pieces to allow a more unobstructed airflow to and from the voice coil. This not only aids in cooling but also prevents turbulence created by the driver's large excursions. Other key components in Audience's A3S driver include the proprietary basket design and patent-pending S-shaped speaker-surround. This surround minimizes unwanted diffraction and allows for large excursions while maintaining uniform resistance on both sides of travel. The result is lower measured harmonic distortion levels.

Such a special driver requires an equally special enclosure. For The One speaker, Audience uses a small cabinet that has a large port with a passive 3.5"-diameter radiator on the rear panel. The box itself isn't a rectangle or a square. Instead its front and back panels are angled, giving it a slight wedge-shape when viewed from the side. The cabinet is finished in gloss black, and has a single pair of five-way binding posts on the rear just below the passive driver.

### The Setup

Since The One was created for nearfield desktop use, that's how I used it. The speaker itself is so small that without some kind of stand it will end up well below ear level when placed on a desk. I used the same pair of closed-cell, high-density "stands" that I employed for my ProAc Anniversary Tablette review as well as a pair of Ultimate Support adjustable speaker platforms to raise The Ones so the centers of the drivers were only two inches lower than my ear height. Audience also makes a small speaker support that raises the speakers slightly while angling them up. I tried these stands, but I preferred my solution because it delivered a slightly larger sweet spot and a greater degree of adjustability.

Although The One speakers will produce a remarkably cohesive and well-defined image almost regardless of how precisely they are set up, proper set-up geometry is critical to getting the most out of them. I recommend using a tape measure to ensure that the two speakers are precisely triangulated so they are both equidistant from your ears. Having one speaker more than an inch closer than the other can have an audible effect. Also the toe-in

between the two speakers needs to match. I used Genelec's free SpeakerAngle iPod App to put each speaker at exactly the same angle.

Although The One has a sensitivity of only 84dB at 1 watt, I found that it mated well with a variety of amplifiers. During most of the review I used an Accuphase P-300 and a single April Music SI power amplifier, both of which had more than enough power to drive The One to ear-bleed levels. Near the end of the review I swapped these solid-state amps for a modified Dyna Stereo 70. Although only rated for 30 watts, this amplifier also had more than enough juice to drive The One to satisfying volume levels without a hint of compression.

### The Sound of The One

So what is the sound of one driver? First off, you get a level of cohesiveness to the sound that only a single driver can produce. If you've never heard a single driver speaker you're in for a delightful surprise. The almost inevitable discontinuities between drivers are completely gone. There is also far less low-level noise and interference caused by crossover components. With no capacitors in the circuit to store (and retard) energy in the crossover region, music has a level of phase continuity that translates into a more believable and natural sound.

For listeners who've never heard a single-driver loudspeaker, a good aural corollary is what you hear from a single-driver headphone such as the Audeze LC-3 or Stax ear speakers. Both of these headphone designs employ a single full-range diaphragm. Like The One they don't have a crossover, and like The One both these headphone designs have an effortless cohesion and consistent musical texture over their entire frequency range. Instead of a pieced together sound, The One has an entire frequency range cut from "whole cloth" with no seams, patches, or bridges between low, mid, and high frequencies.

Over the years I've heard many small footprint speakers in my desktop system that image well. Some, such as the Gallo A'Diva, which also has a small three-inch driver, do a very convincing disappearing act on my desktop. But no speaker has ever been as invis-

ible or has vanished as completely as The One. When set up right, it simply doesn't exist; instead you hear music in a near-perfect three-dimensional soundstage. Perhaps it's a result of the direct coupling between The One driver and the amplifier's output stages. But almost regardless of which power amplifier I used, The One produced nearly identical soundstage characteristics. The depth changed only slightly when I went from solid-state to tube electronics. This was in stark contrast to some speakers whose dimensional character can change radically depending on amplification.

## SPECS & PRICING

<b>Impedance:</b> 8 ohms (4 or 16 ohm versions available for an additional \$20)	software
<b>Sensitivity:</b> 84dB/1W	DACS: April Music Eximus DP-1, Empirical Audio Off-Ramp 5, Mytek 192/24 DSD DAC, Benchmark HGC DAC-2, Lynx HiLo DSD DAC
<b>Maximum RMS continuous output per pair:</b> 98dB	Amplifiers: April Music Eximus S-1, Accuphase P-300
<b>Maximum RMS continuous power per speaker:</b> 25 watts	Speakers: ProAc Anniversary Tablette, Role Audio Kayak, Aerial Acoustics 5B, Golden Ear AON 2, Velodyne DD+ 10 sub
<b>Price:</b> \$995/pr.; accessory stands, \$75/pr.; product specific cable, \$249 for 5' pr.	Cables and Accessories: Wireworld USB cable, Synergistic Research USB cable, AudioQuest Carbon USB cables, PS Audio Quintet, AudioQuest CV 4.2 speaker cable, AudioQuest Colorado interconnect, Cardas Clear interconnect, Black Cat speaker cable and interconnect, and Crystal Cable Piccolo interconnect
<b>AUDIENCE, LLC</b> 120 N. Pacific Street, #K-9 San Marcos, CA 92069 (800) 565-4390 audience-av.com	
<b>ASSOCIATED EQUIPMENT</b> Source Devices: MacPro model 1.1 Intel Xeon 2.66GHz computer with OS 10.6.7, running iTunes 10.6.3 and Amarra 2.5 music	

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## EQUIPMENT REVIEW - Audience ClairAudient The One

While on the subject of imaging and soundstaging, I must say The One produced a soundstage that was as large and as three-dimensional as I've heard from any speaker including the Joseph Audio Pulsars and Aerial Acoustics 5Bs. But unlike these two fine speakers The One created a larger listening window that remained stable even when I moved to the extreme left and right in my listening chair.

To see how well The One resolves information, I did a comparison between two of my own recordings of the Sibelius Violin Concerto. The first recording was made over 16 years ago using a DAT machine, while the other was made very recently using the Korg MR-1000 DSD recorder in 128x mode. Both were made in the same hall, using the same microphones in approximately the same location. Only the recorders and the microphone preamps were different. Listening to the two recordings through The One speakers, I was immediately aware of how much additional room sound and low-level information was on the more recent recording. While both recordings had quite specific lateral focus, on the newer recording all the instruments had greater physical presence and dimensionality. The solo violin on the newer recording had a distinctly defined location in three-dimensional space as well as far-better-delineated edges. The spaces to either side of the solo instrument were "blacker" with a far greater sense of exactly where the violin's dimensions started and stopped.

Listening to these two recordings through The One, I also became aware of how much digital recording has improved when it comes

to capturing extremely low-level sounds. On my old recording the music emerges from an artificial brick wall of digital blackness, while on the new recording you can hear the room breathe behind the music in a more realistic and analog-like manner.

Given the size of its single A3S driver, you would expect that The One might lack the dynamic drive of a two- or three-way speaker. But these speakers equaled the dynamic contrast range I'm used to hearing from slightly larger, more conventional designs such as the Role Kayak or GoldenEar Aon 2. When it came to micro-dynamics, The One bettered the conventional dynamic driver speakers by a good bit.



The One seemed to give each instrument more dynamic speed and freedom.

One of The One's big sonic surprises was its harmonic balance. It just sounded right—not too warm and not too cool. The One is among the least colored transducers I've heard, period. If the recording was warm, The One passed that info along to my ears. If a recording had a peaky midrange, that was also painfully obvious.

Although The One has a full-range driver, it's certainly not a full-range speaker. Bass? You want bass? The One gives you some bass, but don't expect any rabbit punches to the solar plexus every time the kick drum hits. No, if you want some bass you need to use a subwoofer.

But it had better be a good subwoofer. I used a Velodyne DD+ 10 subwoofer set for 65Hz crossover with The One. Once dialed in, the Velodyne DD+ 10 and The One proved a synergistic match. The Velodyne was quick enough to keep up with The One and The One's bass rolled off smoothly so that the upper bass and midbass remained clean.

One of the big complaints I hear about desktop systems, especially from classical music listeners, is that they never get the image size right. Whether playing a trio or an entire symphony orchestra, the instruments occupy the same amount of real estate between the speakers. With The One installed in my desktop system, the program material, not the speakers, determined the size and scale I heard. Mono recordings of Charlie Christian were dead center and about as wide

as a quarter. My live symphony recordings had the full scope of Macky Auditorium including the reflections coming off the top of the proscenium. I recently recorded Rautavaara's *Cantus Arcticus*, which employs pre-recorded bird sounds. The speakers used for the birds were in mini-balconies, about fifteen feet up on either side of the stage. Through The One speaker it's easy to hear that the birds are coming from a much higher and more widely spaced physical location than the symphony orchestra.

### The One For You?

If you can't tell by now, I like The One speaker very much. Properly set up, The One is a world-class desktop monitor system. Although only \$1000 a pair, when you add in a high-quality subwoofer, your total speaker system cost could likely be around \$3k. But for that money, you'll have a desktop speaker system that delivers more musical information, more accurately, than many room-based speaker systems with far higher price tags.

The One ranks as the best dedicated desktop speaker I've heard. If you're looking for an exceptional small-footprint monitor, The One is simply a must-audition. tas



# Neat Acoustics Iota

## Tiny But Mighty

Neil Gader

**W**hat can five-by-eight inches buy you in the high-end today? A budget USB DAC? A power supply, a line conditioner? A doorstop? How about a loudspeaker? Not just a smidge of a speaker either. More like an iota—the Neat Acoustics Iota.

Neat is not new to the industry. For over twenty years it has built an enviable reputation among those in the know. Unfortunately, U.S. distribution has run hot and cold, lowering the company's profile among North American hobbyists. However, a new U.S. distributor, High Fidelity Services, has taken Neat under its wing and its fortunes appear to be on the upswing. Neat Acoustics designs and manufactures in rural Teesdale, located in the north of England. Leading the engineering and design team are Bob Surgeoner and Paul Ryder. Virtually everyone in Neat's employ is a musician, always a good sign in my book. Currently there are five unique series of loudspeakers in the Neat line, extending from the desktop-sized Iota to the medium-scale towers of the Ultimatum Series.

The Iota is a two-way, bass-reflex design with a rear-mounted port. Neat Acoustics calls it a "super-micro," and indeed it is so small you can palm it. Its driver complement includes a four-inch polypropylene cone mid/bass unit with a ferrite magnet assembly. The tweeter is a two-inch planar-magnetic

ribbon transducer. The cabinet is heavy MDF. Per Neat tradition, the crossover is simple—a basic, three-element network that employs low-loss air-core inductors and high-grade polypropylene capacitors. The Iota can be had in a wide range of finishes including satin white, satin black, flame red, zinc yellow, and ultramarine blue—all at no additional charge.

In order to accommodate the Iota's pint-size dimensions, Neat flipped the enclosure orientation ninety degrees, snuggling the ribbon tweeter up against the mid/bass driver in a horizontal orientation, an advantageous solution that allows tweeter/inside or tweeter/outside positioning. While the speaker can be placed out into a room, listeners should take Neat's suggestions seriously and position them at, on, or near a wall, thus maximizing bass reinforcement. The added midbass output results in a far more even and natural tonal balance. Of course, every room will be different and Neat suggests owners experiment freely. I dialed them in to my satisfaction at about a twelve-inch distance from the wall. There I achieved convincing bass extension that descended

into the 60Hz range. Even thus situated, the Iota remains slightly lean in the lower-mids, so capturing the full resonant body of Pieter Wispelwey's cello is a bit much to ask of it. On the other hand, there was no mistaking the signature of an instrument that tiny speakers often reduce to eggshell-like fragility.

Unlike their full-sized siblings, small speakers have no place to hide any sonic weaknesses or glaring colorations. But it took only a few spins of some well-known musical favorites to hear that the Iota has most of its sonic ducks in a row. This is a loudspeaker with a complete lack of pretension. Its warm, relaxed midrange represents a total rejection of the culture of souped-up, sonic hype we've all encountered at one time or another. As I listened to Joni Mitchell sing "California" and "A Case of You" the Iota instantly engaged me with a transparent top end and a nicely proportioned midrange, which imparted both dimensionality and inklings of physicality to this legendary performer. Detail and image definition were abundant. There is a mellower, darker accent to the



## EQUIPMENT REVIEW - Neat Acoustics Iota

Iota's character—not unlike the complex tones of an aged single-malt. A sound that instantly put this listener at ease. Its top end rolls gently rather than clawing for the last jot of extension, and it mercifully steers way clear of the pointed, stick-in-the-eye sting of many micros.

Its solid midrange neutrality and dynamic energy were exemplified in Tom Waits' "Come On Up to the House," which the Iota reproduced with the full, burning, gospel emotion of Waits' vocal and a three-dimensional sense of depth on drums, percussion, and brass. Also on the closely miked "Picture in a Frame" and "Take it With Me," the Iota reproduced the depth of Waits' chest tones with remarkable naturalness.

However, at the heart of the humble Iota is its inspired quasi-ribbon tweeter. It bathes the upper octaves with a silken speed and fluidity that the average soft dome just can't match in this price range. The transients of Joni's dulcimer tingled, and the clatter of her flat-picking was distinct. Arturo Delmonico's violin was convincingly reproduced in all its intense, resonant emotion—from transient shadings to delicately shifting tonal colors. Equally important was the excellent inter-driver coherence—not always a given where different transducer technologies are employed. However, the Iota's cone mid/bass joins with the quasi-ribbon tweeter in a single unbroken voice. At least part of the credit is attributable to the small size of the mid/bass cone and a relatively high crossover point above the presence range, where the ear is less sensitive to driver interactions. The added benefit is that the higher crossover point leaves the ribbon plenty of dynamic headroom to perform its sweet magic.

Not to kick sand, but I'd be remiss if I didn't touch on the Iota's predictable limits. With so much seemingly effortless music on tap it's tempting to overdrive the Iota. It'll play fairly loudly but don't expect it to generate rib-cracking pressure levels, authentically scaled images, or seismic bass excursions. And some dynamic compression is baked into the cake of every micro, particularly as the music descends below 125Hz or so.

The Neat Acoustics Iota is one serious little loudspeaker and ideal for connoisseurs with seriously limited space. As an aside, I don't know how many times I became so lost in the music that these little marvels produced that I was fooled into thinking I was listening to the much larger set of speakers residing in my listening room. That's just what the Iota does. And that's what I call one Neat trick. Highly recommended. **tbs**

### SPECS & PRICING

**Type:** Two-way, bass-reflex stand-mounted loudspeaker

**Frequency response:** 60Hz-22kHz

**Nominal impedance:** 6 ohms

**Sensitivity:** 84 dB/1W/1m

**Dimensions:** 7.9" x 5.2" x 6.5"

**Price:** \$995

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[www.audioengineusa.com](http://www.audioengineusa.com) (241)



## **Paradigm Shift A2**

\$279-\$329/each

A 2012 Golden Ear recipient, the cleverly named Shift A2 is more than just a serious loudspeaker—it's a winning example of forward thinking. Compact, internally powered, equipped with DSP bass-management, and packed with enough back-panel inputs to connect to almost any source, it is what 21st century entry-level high end is all about. Its Everyman appeal bridges generations of music lovers, and it just happens to sound great in the bargain. It won't be for the devout traditionalists, but its combination of sound and value extends the welcome mat to nascent high-enders who may have previously thought they couldn't afford the entrance fee.

[www.paradigm.com](http://www.paradigm.com) (224)



## **Focal XS Book**

\$299

To view the XS Books as just another pair of flashy-looking computer speakers would be doing them a disservice. While functioning best as nearfield monitors tethered to a good computer-audio system, the XS Book speakers would also work beautifully as part of a small-room bookshelf system, combined with a Logitech Squeezebox or Sonos network player. We can easily see someone enjoying XS Books as part of a summer-weekend-house sound system: Store them in their case during the weekdays, along with all the cables, and you're all set for a quick Friday getaway. For \$299 the Focal XS Book powered-speakers offer a lot of sound, flexibility, and functionality. And though, in the end, they are a lifestyle rather than an audiophile product, it's a lifestyle that most people won't mind living.

[www.audioplusservices.com](http://www.audioplusservices.com) (224)

# OUR TOP PICKS **DESKTOP & SUPER-COMPACT**



## **KEF X300A**

\$599

With an internal DAC and 20W of built-in power, the KEF X300A digital hi-fi speaker system is a great choice for fans of all-in-one systems. Neil Gader fell in love with these “perky little plug ‘n’ play” speakers, which are clearly cut from the same sonic cloth as their fabulous-sounding and more expensive passive cousins, the LS50s.

[www.kef.com](http://www.kef.com) (238)



## **Audience The One**

\$995

The One, as you might infer from its name, is a single full-range driver shoehorned into a small box. The driver itself is the same unit, the A3A, that Audience uses in its flagship \$72,000 16+16 speaker. (Audience is unique in this regard; no other speaker manufacturer employs the same driver in all its speakers from the smallest to the largest.) According to Audience, the A3A has exceptionally flat response, claimed to be within +/-3dB from 40Hz to 22kHz. Be that as it may, properly set up The One is the best desktop speaker reviewer Steven Stone has heard. If you are looking for an exceptional small-footprint monitor, The One is a must-audition.

[www.audience-av.com](http://www.audience-av.com) (236)



EQUIPMENT REVIEWS

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# Sonus faber Venere Model 1.5

## Tiny Goddess

Neil Gader

**S**onus faber, I thought I knew you—that we had an understanding. What happened? You’ve seduced me for years with romantic, walnut-and-leather-accented, lute-shaped loudspeakers inspired by the 18th century craftsmanship of the Cremonese master luthiers. Speaker designs that were so much a part of the fabric of this industry that they seemed destined to endure, timeless in and of themselves. So when I caught my first glimpse of your sleek and contemporary Venere line—available in six, modestly priced models (including center-channel and wall-mounted numbers)—I felt the sting of betrayal. The Model 1.5, the baby of the line and the subject of this review, looks as if stepped off a Milano runway, quickly tossed back an espresso doppio, and bopped by MacWorld—so au courant it could be in a Roche Bobois catalog. But the more time I spent with this compact two-way, the more my longing for yesterday began slipping away. Venere, Latin for Venus, the goddess of love and beauty, represents a new direction for Sonus faber in this price category. And true to its name I think I’m smitten.

## EQUIPMENT REVIEW - Sonus faber Venere Model 1.5

Whether it's adorned in either a glossy arctic-white or a piano-black hand-rubbed-lacquer finish, Venere is all about flowing lines. It sports multi-radius arched side panels, a gently angled front baffle, and a playfully upswept "ducktail" top panel of tempered glass with Sf's logo screen-printed on it in silver foil. However you look at it, Venere is a game-changer for Sonus faber, and its market positioning is clear. Entry-level Millennials anxious to put the finishing touches on their digital media systems or home theaters should start lining up now.

As refreshing and easy on the eye as the Venere lineup appears to be, it didn't just materialize out of nowhere—many of its styling and design cues key off Sonus faber's lavish \$120,000 Aida floorstander. Beyond the Aida-like side-panel curves, there are the softly curved corners designed to eliminate diffraction artifacts, the general driver architecture, and the new, larger soft dome. Also the lack of parallel surfaces not only increases structural rigidity but reduces internal resonances. The Venere's beauty is more than skin-deep—the enclosure is an MDF composite sourced by Sf not only for its acoustically inert properties but also to meet California's stringent emissions requirements. The base of the front baffle houses a narrow, slotted, foam-filled port. To the rear, speaker terminals are nicely offset from one another for easy access and are doubled up for bi-wiring or bi-amping. The quick-release magnetically-attached grilles are also well done.

The twin drivers are entirely designed by Sonus faber Lab and manufactured by its cadre of suppliers. Final assembly and finishing occurs in China. Central is the silk-domed 29mm

tweeter (made by the German company DKM). It's inset into a deep oval-shaped waveguide to increase output, maintain linearity, and make its dispersion at the lower end of its passband more closely approximate the woofer's dispersion at the transition to the tweeter. The 6" mid/bass driver uses a trademark Curv cone, and it too is set into a shallow of the front baffle. "Curv" refers to the innovative variant of the polypropylene cone Sonus faber developed. It's a woven, self-reinforcing material that features better internal damping and higher rigidity than mineral-filled polypropylene. It also offers higher resistance to temperature extremes with greater stiffness and tensile strength. Its stiffness-to-weight ratio results in exemplary roll-off properties.

The Venere's crossover point is set at 2kHz, and sensitivity is a relatively low 85dB, a predictable trade-off for a speaker of modest internal volume that is expected to produce authentic bass response.

The stands are purpose-built for the Model 1.5, constructed of a tempered glass base and parallel MDF uprights that terminate in a steel top-plate that mounts to the underside of the Venere. They're rigid; they establish the correct listening height with the adjustable aluminum footers; and they couple to the floor providing the proper amount of rearward tilt to acoustically time-align the drivers. I consider them a mandatory option. Caveat to D.I.Y. enthusiasts: Due to the convoluted instructions the stands may take more than a few minutes to assemble, but I'm told a clearer guide is being considered.

Going in, I assumed that the Model 1.5 would

have the default sonic traits of many small, two-way compacts: There would be riveting detail, cavernous dimensionality, and a cat burglar disappearing act. But such attributes are often accompanied by wobbly bass and a lack of dynamic reserves, deficits often masked by a brighter-than-bright top end. (Fact is, it's much easier for a small speaker to top-load a tweeter with detail than pressure a little woofer to sputter out a series of organ pedal points.)

Here's what I didn't expect. First was the darker, relatively even midrange tonal balance and the refreshingly unhyped treble, not the aforementioned rising top that I've learned to dread. I also didn't expect the volume of air that the Model 1.5 seemed to set into motion in my room particularly during symphonic recordings. There was a sense of the physical nature of music reproduction in the way it conveyed the thicker body of a cello, the rippling skin of a timpani, the darker resonances of a large piano soundboard, or the complex textures of a contrabassoon.

Nor did I expect the midrange weight and bloom that this fifteen-inch-tall monitor generated. The Model 1.5 reproduces the bottom half of the midband with a weight and heft that most small-volume, narrow-baffle monitors cannot muster. The thick blat of a trombone or a heavy bow across the strings of an acoustic bass during Stravinsky's *Pulcinella* [Argo] is immediately identifiable for what it is and the brain doesn't have to suspend disbelief to enjoy the musical moment. In fact, the Venere immediately called to mind a larger, multi-driver speaker.

The treble for its part, rather than sounding dry or brittle or over-etched with false detail, had more than a hint of the darker acoustic signature that

reminded me of other Sonus fabers like the Liuto. And by *darker* I'm not implying run-of-the-mill resolution. Just the opposite. During the Audra McDonald lullaby "Lay Down Your Head," the Venere expressed a wealth of finely wrought, low-level transients and timbre as the string quartet and accompanying harp delicately enter. When I

### SPECS & PRICING

Type: Two-way, bass-reflex  
 Drivers: 1.2" tweeter, 6" mid/bass  
 Frequency response: 50Hz-25kHz  
 Sensitivity: 85dB  
 Impedance: 6 ohms  
 Dimensions: 15.5" x 8.1" x 11.8"  
 Weight: 13 lbs.  
 Price: \$1198 (\$398/pr stands)

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## EQUIPMENT REVIEW - Sonus faber Venere Model 1.5

began playing Leonard Cohen's "Darkness" from his new album *Old Ideas* [Columbia] I didn't count on the heavy core-resonance of his voice to be so richly reproduced. Catching me equally off guard was Korngold's Violin Concerto in D; the sound was expansive, the output generous. The Venere threw a wide, well-resolved, three-dimensional soundstage brimming with ambient cues and the "feel" of the venue—of the sound reaching the corners and back wall of the listening space.

Explosive is not a word that normally comes to mind when describing the lower-frequency extension and dynamics of an inexpensive compact monitor but within rational limits the Venere constantly surprised me in this area. Bass response is solid into the 60Hz range and, depending on room size and wall reinforcement, has usable response even further down. And I didn't have to worry about softballing the Model 1.5 in the volume department either. Often low bass from a small speaker sounds vaguely orphaned from the midrange—a sonic gap pops up where the music goes soft in the power range of the upper bass/lower mids and then regroups in the midbass. The effect is disquieting and can be a deal-breaker. While the Venere 1.5 can't entirely break free of its own physical constraints it does so in a manner that is entirely reasonable and at times utterly convincing.

What also stands out is the inter-driver coherence of the Model 1.5, which produces the sense that music is originating from a single point, rather than alternating between tweeter and mid/bass. Its midbass and upper-bass response is surefooted and seamlessly connected with the adjoining octaves. Significantly, I never felt as if I were fidgeting or otherwise subliminally cocking

my head this way or that in order to get an accurate tonal fix on the speaker. It didn't impart the dreaded tweeter-on-top/bass-on-bottom discontinuity. What I heard was a smooth, solid wall of unbroken sound that easily adapted to a bit of slouching or off-axis listening. Obviously the Venere will sound its best in the sweet spot, stereo being what it is, but clearly the Sf team has put some serious thought into its ovular waveguide technology.

As good as the Model 1.5 is however, two drivers in a 15" box, however alluring, ultimately succumb to their own physical limitations. On a minimalist track like Lyle Lovett's "Baltimore," a small presence dip laid the vocal back in the mix slightly. There was also a bit of constriction in the lower treble during Sheryl Crow's "I Shall Believe" that emphasized the upper elements of harmonized vocals and deemphasized the more throaty and chesty aspect of those voices. Larger, sweeping dynamics are tamped down a bit, and while bass response in a smaller room was very good, don't expect the Venere to reproduce a bass note's decay to the full extent before running out of wind. On a major plus side, port interaction and box colorations were virtually absent from my listening sessions.

At the end of any evaluation, I always ask myself the same question—am I sorry to see this gear leave? The Model 1.5 was so irresistible on a multitude of levels—concept, design, cost, and sound—I concluded that I not only didn't want it to leave but also to call it anything other than a TAS Product of the Year would be an injustice. And I'm not done yet. I'll be reviewing its floorstanding sibling, the Model 2.5, in a forthcoming issue. I can't wait. **tas**



# 20 Years Later



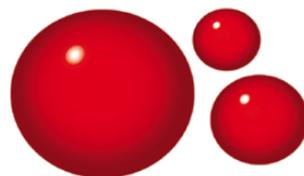
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# Focal Aria 906

## The F-Word

Neil Gader

It's often said that less is more in the pursuit of high performance. Take race cars, for example: Weight is the enemy and anything that slows the car down is immediately tossed back into the parts bin (except for the seatbelts). Engineers know that lightness equates to speed, and speed spells victory on the track. This same philosophy finds application in the world of loudspeaker drivers. Case in point, Focal's latest cones that recently debuted aboard its newest Aria loudspeaker series.

Focal of France is already well known for the sophisticated and virtually hand-built "sandwich" composite cones that bedeck its premium line of Utopia III speakers. These "W" diaphragms combine high internal damping and rigidity with the speed and lightness that Focal engineers demand. How to duplicate this level of performance on a broader scale and spread these qualities among a wider range of models was the challenge for Focal R&D. After five years or so, Focal found the Holy Grail in its own backyard. As if reflecting the intensity of the effort, it's a four-letter f-word: flax. (You were thinking something else?) Before delving into the facts about flax and the resultant F-cone, an introduction to the Aria Series is in order.

### Just the Flax, Ma'am

The Aria line comprises five models—three floorstanders, the 906 stand-mount reviewed here, plus a center channel. A side/rear surround and a subwoofer will join the team this spring. The Aria Series replaces Focal's popular Chorus 800V and 800W.

The \$1499 906 reviewed here is the lone two-way compact in the Aria line. It uses a bass-reflex enclosure with a front-firing port. Its tweeter is an aluminum/magnesium dome that uses a Poron suspension (a cellular urethane foam) derived from the Utopia's beryllium tweeter. It's touted as a material with great damping qualities and shape memory, in that it maintains its original contours over time. Additionally the tweeter is set in a shallow

ovular waveguide meant to promote even off-axis response. The mid/bass driver is a 6.5" F-cone (this is where the flax comes in). The crossover frequency is 2.8kHz. The 89.5dB sensitivity and 8-ohm impedance make it an easy-to-drive loudspeaker for any competent amplifier.

Focal has also applied the less-is-more philosophy to the visual design of the Aria. Compared with the busy, neo-Deco profile of the Chorus range, the Aria appears elegantly understated with a gloss-black glass top plate, a leather-like covering on the front baffle, and brushed gunmetal trim rings accenting the drivers. Surfaces are clean with no visible screws, plus the grilles attach magnetically. The Aria enclosure is a combination of high-density fiberboard of varying thicknesses (between 18mm and 25mm). Sidewalls are non-parallel although not radically so. The standard finish is walnut, but the 906 is also available in a dramatic gloss-black at no additional cost.

So why flax? For one, this natural fiber is all French—never a bad place to start for a Lyon-based company. France is actually the main cultivator in Europe of flax fiber—principally in Flanders, Picardy, Normandy, and the Pas-de-Calais regions—and its flax is considered the best in the world. As cone material goes, flax fibers are advantageous in that they are hollow and weigh in at roughly half the mass of a comparable amount of fiberglass. Focal's researchers also liked its rigidity and high internal damping characteristics. The finished F-cones are composed



of a flax-fiber core enclosed in two thin layers of glass fiber, a sandwich construction not unlike that of Focal's exclusive W and K2 cones. Focal also points out that playing a role in the F-cone development were certain global realities—some economic and some environmental—including the fact that the costs of synthetic fibers or foams which originate from petrochemical resources are impacted by escalating crude oil prices, making an organic or ecological textile like flax more price competitive.

## EQUIPMENT REVIEW - Focal Aria 906

### The Flax of the Matter

Obviously loudspeakers are much more than just cone material, so I won't pretend that I could isolate the F-cone's unique attributes from everything else happening within the 906. But one thing is certain: There is a whole lot of music going on here. The speaker's sonic character is vivid, fast, vibrant, and dynamically engaging. Befitting its size and bones, its output reflects a slightly lighter overall cast, but thanks to an impressive and pacey midbass the speaker always feels grounded. Bass response is excellent for this class—defined and controlled, reliably extending into the fifty-cycle range, as advertised, with a quick roll-off from there.

But central to its performance is its irresistible midrange body, which lends the 15" tall 906 a nicely weighted tonal balance and dynamic composure. At moderate levels its imaging is well focused, and the spread of a soundstage is broad and unbroken. Even when called upon to reproduce full-range orchestral music like the double-string orchestra of Vaughan Williams' *Fantasia on a Theme by Thomas Tallis*, the 906 has enough heft and energy in the lower mids and below to impart genuine timbral authority and soundstage scale. Outside of string sections, other instruments that routinely stir things up in the lower middle octaves are piano, woodwinds like bassoon, and heavy brass along the lines of tuba and trombone. The 906 captures the tonal and resonant densities of these instruments like few speakers in this class have before.

Not that the 906 doesn't have limits, for as composed as the 906 is, a *full* representation of the resonant, venue-enveloping body of these instruments is a little beyond this compact's

abilities, but the Aria 906 gets you comfortably in the ballpark. Impressive too is the relative quiet, though not entirely invisible, way in which the enclosure/port goes about its business. Focal has done its homework keeping port noise low and low-frequency rhythmic action and pace high.

As for vocals, I'll make no bones about it—they are the crucible upon which I judge a compact loudspeaker. A veritable deal-breaker. To reproduce a voice naturally, the tweeter and midbass need to cohere as one—anything that implies a bias of one driver over another or any disparities due to material colorations completely break the spell. Thus, I expect the speaker to reproduce music with a single continuous voice. As I listened to a variety of vocalists, a pure coloratura soprano like Anne Netrebko, the deeper golden luster of mezzo Renée Fleming, or the smoldering jazz-inflected artistry of Holly Cole, there was a lively and harmonious of-a-piece quality to the output of the 906 drivers. Even as singers moved between vocal registers the character, speed, and color of the sound didn't shift as it often does with cones and metal tweeters. I think this trait in and of itself was validation of Focal's faith in



flax. Judged on an absolute basis, I felt that a smidge of chest resonance was often missing with a bass-baritone like Bryn Terfel and that a soprano's top register sometimes indicated a hint of dryness in the Aria tweeter. However, in the grand scheme of things these were minor and unobtrusive issues.

While its relative tonal neutrality is important, the key virtues that set the 906 apart are its wide micro- and macro-dynamic envelope and quick transient attack. This is the engine of its performance, the spark that separates the authentic from the canned. It gives the 906 a commanding presence as well as a tender intimacy on tracks like "The Moon is a Harsh Mistress," where Charlie Haden's acoustic bass was rich and extended and Pat Metheny's guitar playing had an ideal combination of warmth, articulation, and harmonic bloom. As I listened to Peter Gabriel's remake of "Mercy Street" from *New Blood*, I found the bass viols to be nicely weighted and appropriately moody. The transient energy from the percussion section all the way down to a distant triangle was smooth and swift. I've heard these same cues sound a bit tighter or more transparent on costlier compacts like the ATC SCM19 (review to come)—a little sonic wool lightly attaches around some bass resonances on the 906—but the speaker never loses sight of the fact that an acoustic bass is a resonant wooden instrument. On another pop example, I can't say enough about the rush of excitement I felt listening to Jerry Marotta's inventive percussion expositions during Marc Cohn's playful "29 Ways." The explosive textures and tonal colors the 906 extracted from this recording were exhilarating.

My quibbles are minor. The upper mids/lower

treble range loses some intensity, which can be heard as a softening of orchestral presence, with violin sections receding into the greater body of the orchestra, and interior images and inner detail growing a bit more ephemeral. And though the 906 can't quite physically manifest the full sub-harmonic body of bass instruments, there is still a notable amount of air and dimension.

With the debut of Aria, Focal has unleashed a powerful and persuasive range ready to go head-to-head with the likes of Sonus faber, Revel, KEF, and other notables. As compacts go, the 906 touches all the right sonic bases for me. But more than that, these factors all dovetail into a single conclusion—that time and again, the Aria 906 just gets music right and at fifteen-hundred bucks, does so for a song. And true to its name, that's a lot to sing about. **tas**

## SPECS & PRICING

**Type:** Two-way bass-reflex compact  
**Drivers:** 1" Al/Mg inverted dome, 6.5" mid/bass  
**Frequency response:** 55Hz-28kHz +/-3dB  
**Sensitivity:** 89.5dB  
**Nominal impedance:** 8 ohms  
**Dimensions:** 15.3" x 8.9" x 9.8"  
**Weight:** 19 lbs.  
**Price:** \$1499

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# KEF LS50

## Star Power

Neil Gader

**S**ome speakers sure know how to make an entrance. They just have a presence when you first encounter them. I know that's how I felt when I crossed paths with the KEF LS50 a few months ago. At a glance, this two-way bass-reflex compact looks like little more than a stout box-speaker from an indeterminate era—as simple as it gets. But then you realize you can't take your eyes off it. Designed to celebrate KEF's 50th anniversary, it tips its hat to the BBC monitors of the 70s. But the LS50 is not an exercise in nostalgia. It bears zero resemblance inside or out to the birch-ply two-ways of that era—popularized by Spendor, Rogers, Harbeth, and, of course, KEF.

Beyond its modest silhouette, KEF has designed the LS50 with enough innovations to stuff a *piñata*. It's visually striking with its high-gloss finish and the KEF logo discreetly etched onto a corner of the top panel. The pink-gold (a nice 50<sup>th</sup> Anniversary touch) diaphragm of the Uni-Q driver is a pure KEF-designed coaxial unit and the star of its current generation of speakers. Bearing little relation to the deep-throated coaxials of yesteryear, KEF's latest-generation coincident was designed particularly for the LS50. It's positioned dead center in a radically curved one-piece front baffle—an incredibly dense, plastic compound which tapers to softly rounded edges.

According to the design team, the 5.25" magnesium-aluminum alloy midrange driver uses a mechanism to damp diaphragm resonances, so the usual peak in response common to metal cones is ameliorated. According to KEF,

the now-familiar "tangerine" waveguide uses radial air channels to produce spherical waves up to the highest frequencies—and this allows a deeper "stiffened dome" diaphragm that raises the first resonance, culminating in response that extends beyond 40kHz. Collectively these technologies ensure wide and even dispersion without interference between drivers.

Despite the LS50's obvious physical differences from the Blade, these speakers have much in common. KEF has applied many of the same engineering principles for coincident-driver technology, internal damping, and innovative baffle design. The unique curvature and composition of the baffle is directly related to the Blade project and is designed to mitigate diffraction effects and spurious reflections—keys to good soundstaging and imaging. The elliptical reflex port is offset in an upper corner of the rear panel. Its profile reduces high-

## EQUIPMENT REVIEW - KEF LS50

level turbulence—sources of compression and distortion. The ribbing associated with the Z-Flex surround ensures that the surround does not cause any excessive discontinuity for sounds radiated from the high-frequency driver.

The enclosure, including baffle, is as non-resonant as I've experienced at this level. Cabinet construction is all MDF, but KEF analysis has optimized placement of the internal bracing. Add to that the constrained-layer damping placed between the internal bracing struts and the inner walls of the cabinet, and the term "acoustically dead" has rarely been more applicable.

When sizing up the potential of a coincident-driver eleven-inch cube like the LS50, one might assume that it would likely be a "voice" speaker—something more akin to a bridge monitor with distinct, perhaps even serious, wideband limitations. But this isn't the case. Even under levels of dynamic stress that would send a lot of other mini-monitors heading for the hills, the LS50's output is remarkably even. It hardly flinches, even when it's pushed hard. This is impressive, but high output alone is not much of a trick for small speakers nowadays. What is much rarer is high output with linearity and extension.

Sonically the LS50 doesn't suggest the lighter, faster, and edgier personality of the average compact with a five-incher for a driver. This is an essentially neutral monitor throughout the midrange. But there's also a prevailing sweetness, a harmonic saturation that lends it a dark, velvety overall character, and a bloom that is so pleasing that I began affectionately dubbing it the butterscotch sundae of small monitors.

When listening to a variety of symphonic music I noted image focus was excellent, as I'd ex-

pected from a coincident driver. But it's not hyper-focused. It provides a more spacious, open, and, in my view, authentic representation of an orchestra. Yes, the LS50 has quick transient reflexes, but that is not what grabbed my attention. Rather, it was its bloom and tonal weight. Heavens to Betsy, this little speaker has guts. As I listened to the Rutter Requiem [Reference Recordings], overflowing with the huge Turtle Creek Chorale and the massive voice of the pipe organ, the LS50 supplied a rich impression of large-speaker grandeur (although somewhat scaled back) as it energized the room with ambience and provided the illusion of the walls fading away as the musicians begin to materialize.

The mid- and upper-treble range is smooth; the sibilance region is controlled—crisp and clean,

## SPECS & PRICING

**Type:** Two-way bass-reflex mini-monitor  
**Drivers:** Uni-Q array, 1" tweeter, 5.25" mid/bass  
**Frequency response:** 79Hz-28kHz (47Hz-45kHz, -6dB)  
**Nominal Impedance:** 8 ohms  
**Sensitivity:** 85dB  
**Dimensions:** 11.9" x 7.9" x 10.9"  
**Weight:** 15.8 lbs.  
**Price:** \$1500

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## EQUIPMENT REVIEW - KEF LS50

but with compliance. As I listened to the Bryn Terfel and Renée Fleming duet on "Not While I'm Around" from *Under the Stars* [Decca], I felt the physical presence of these superb singers, their voices seamlessly expressed. Their images were pitched slightly forward, but only enough to grab your attention and not enough to overwhelm or minimize the musical accompaniment. There is probably a hint of energy fall-off in the presence range, which, when combined with the heavier low end, adds a darker hue to vocals and ever so slightly rounds the edges from peakier recordings. As I listened to Leonard Cohen's "Darkness" from *Old Ideas* [Sony], I keyed on Cohen's voice, whose deep, tired, full-chested character seems dredged from the bottom of an old whisky barrel. Here it sounded even darker than usual, as if it had further sunk into his chest.

Ultimately, when pressed at higher volumes, the LS50 will give away some of the finer low-level details. I felt that during the Bach Toccata in C [RCA], Kissin's piano sounded slightly dampened during high-pursuit lines. As Kissin's left hand descended into the lower octaves there was a trace of soundboard plumminess that suggested the presence of a hard-working port. As with the Leonard Cohen example, the 12-string guitar that ushers in "All Things Must Pass" from *Concert for George* receded slightly in the mix, and during Jen Chapin's *ReVisions* [Chesky] baritone sax and acoustic bass shed some weight and developed a more strictly mid-band character.

The heretic in me should add that owing to the wide dynamic and spectral envelope of the LS50, it's a very satisfying companion when pressed into home-theater mode. I tend to break in

speakers with all kinds of material, so if there's a Blu-ray movie I've been angling to watch, whatever speaker I happen to be running-in will be pressed into duty. In this case, the soundtrack to Wes Anderson's *Moonrise Kingdom*, which features Benjamin Britten pieces and Britten-inspired pieces from Alexander Desplat and Devo's Mark Mothersbaugh, and further contributions from Leonard Bernstein among others, proved to be a lush romantic workout for the KEFs, with terrific orchestral and percussive selections that exploited the speaker's dynamic range and vivid timbral colors. Not to mention excellent dialogue intelligibility, with no sub-woofer or center channel required. Throw anything at it, the LS50 takes on all comers.

The LS50 is tuned for smaller rooms and is meant to take advantage of the room gain that can give midbass response a boost. However, there are always exceptions, and KEF provides elliptically sculpted foam plugs that are effective in reducing bass output a few decibels. These can be helpful in troublesome situations where the speaker setup is optimized for soundstage and imaging but where the room itself is over-boosting LF output, thickening the bass and thus masking details in key regions of the frequency spectrum.

The KEF LS50 is one of the most all-around-satisfying little speakers I've reviewed in some time. Construction and execution are exemplary. It delivers the kind of performance that deserves to be on a Wheaties box. And there's an incalculable coolness factor that makes it a breath of fresh air. The LS50 also answers the classic question, "Who says you can't teach an old box new tricks?" TAS



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# Anthony Gallo Acoustics Reference Strada 2 Monitors and TR-3d Subwoofer

Looks Small, Plays Large

Chris Martens

**A**nthony Gallo has always been an iconoclastic loudspeaker designer, and thus his speakers neither look nor sound like the majority of their competitors. Nowhere is this more apparent than in Gallo's otherworldly but now-discontinued flagship model, the Reference Nucleus 3.5 floorstander (reviewed by Neil Gader in Issue 209)—a product that despite its unorthodox appearance won considerable critical acclaim. Yet the size, look, and current unavailability of the Nucleus 3.5 raises a question: What solution is available to listeners who appreciate the sound of the Nucleus 3.5, but want something smaller, more manageable, and less visually imposing? The answer, as it turns out, comes from the newest member of the Gallo Reference-series family: the Reference Strada 2 monitors (\$1998/pair) and their companion TR-3d subwoofer (\$984). Veteran audiophiles might at first mistake this sat/sub system for a mere "lifestyle" or "home-theater" product, but in performance the Reference Strada 2 package packs serious audiophile-caliber credentials.

To come to grips with the Reference Strada 2, it is helpful to understand some of the engineering principles that inspired its unorthodox design. From the outset, Mr. Gallo has sought to produce speakers with high-rigidity, low-diffraction enclosures. With this end in view, Gallo's "think-outside-the-box" solution has been to use semi-spherical enclosures made of spun stainless steel, with openings on one side for the drive units. Each Reference Strada 2 uses two such spherical enclosures housing wideband carbon-fiber mid/bass drivers, with the spheres attached at opposite ends of a die-cast metal backbone/frame and Gallo's signature, cylindrically shaped

CDT3 tweeter in-between. The whole assembly resembles a space age "barbell" finished in silver and black (though an all-black option is also available).

The Strada 2 is astonishingly rigid and robust (try the time-honored knuckle-rap test and you'll get, well, bruised knuckles), and it offers virtually no sharp edges to cause diffraction. In the interest of enhancing enclosure rigidity, Gallo mounts his mid/bass drivers from inside their spherical housings, using sturdy compression rods to press the drivers against the mouths of the enclosures. An advantage of this approach is that not even the driver frames protrude from the enclosures,

again eliminating possible sources of diffraction.

A thorough discussion of Gallo's CDT (cylindrical diaphragm tweeter) driver could fill an entire white paper, so a brief description must suffice. In simple terms, the CDT is a semi-cylindrical tweeter whose diaphragm is made of a film-like piezoelectric material called Kynar. As audio signals pulse back and forth, the thin-film material expands and contracts, generating nearly textbook-perfect semi-cylindrical wavefronts with an extraordinary 180° of horizontal dispersion. Because the Kynar film is low in mass and does not need to travel far in order to produce adequate output, transient speed is excellent and distortion is low. One further benefit is that the Kynar diaphragm acts as a high-pass filter, meaning that the tweeter literally serves as its own crossover network (though a transformer is used to match the tweeter's output level with that of the mid/bass drivers).

Further reasoning that the best-sounding crossover network is no crossover at all, Gallo has configured the Reference Strada 2 so that its two mid/bass drivers are allowed to run full-range, using natural roll-offs at the high- and low-frequency extremes to limit their operating band. In turn, the CDT3 tweeter, serving as its own crossover network, takes up where the mid/bass



## EQUIPMENT REVIEW - Anthony Gallo Reference Strada 2

drivers leave off, handling upper-midrange and treble frequencies with speed and finesse. In short, the Reference Strada 2 is for all intents and purposes a completely crossover-less, wide-bandwidth compact monitor.

The innovations don't end there, though, because Mr. Gallo—much like his counterparts at KEF—has done considerable research into the feasibility of giving compact speaker enclosures the physical characteristics of much larger enclosures. KEF's solution was the firm's ACE (acoustic compliance enhancement) technology, while Gallo's ingenious answer involved the creation of a proprietary enclosure damping material called S2. (Our understanding is that S2 is a type of shredded polyolefin film, though Gallo does not generally discuss the material's exact formulation.) Either way, the result, as Gallo says, is that the "Stradas perform as though the speaker enclosure is significantly larger than it actually is." Finally, the Reference Strada 2 uses Gallo's Optimized Pulse Technology (OPT), which is described as "an impulse correction and synchronization system designed to integrate the low, middle, and high frequencies into one unified sound source."

The TR-3d subwoofer (the higher output of the two cylindrical subs offered by Gallo) applies many of the same design precepts of the Strada 2. Thus, the TR-3d eschews traditional box-type cabinetry in favor of an all-metal, cylindrically shaped enclosure with the woofer fitted in one end of the cylinder and the subwoofer amplifier and controls in the other. Designed to rest on its side, the TR-3d looks more than a little like the depth charges seen on WWII-era destroyers, and some quip that, if turned up too loudly, the TR-3d can sound like a depth charge, too. The sub uses essentially the same ceramic-coated aluminium woofer originally used in the Nucleus 3.5, backed by a rock-solid 300-watt amplifier equipped with line-level and speaker-level inputs and a useful set of controls, including a bass trim switch with settings for 0, +3, or +6dB of boost centered at 30Hz.

Overall, the Reference Strada 2 system aims to provide as much or even more performance than the now-departed Nucleus 3.5 floorstander, but in a more compact, more flexible, and less expensive format. Thanks to its powered subwoofer, the Strada

2 system is also comparatively easy to drive. By design, the Reference Strada 2 monitors can be wall-mounted, tabletop-mounted, or placed on optional floorstands (\$450/pair). If seated about a foot from adjacent walls, the Strada 2 enjoys significant bass reinforcement and thus surprising low-end extension, while when stand-mounted the speaker delivers less bass extension but superior imaging, soundstaging, and overall transparency. In short, the Reference Strada 2—like all Gallo speakers in my experience—benefits from being given plenty of breathing room. Accordingly, our review samples were mounted on Gallo's floor stands and placed well away from nearby walls.

How does the Reference Strada 2 system sound? Four observations that come quickly to mind are that the system sounds highly three-dimensional, is rich in musical detail and information without sounding analytical, offers unexpectedly

muscular and incisive dynamics, and generally sounds "bigger" than it appears. Let's explore each of these qualities in turn.

The almost eerie three-dimensional quality of the Reference Strada 2 system hinges, I think, on its rigid and diffraction-resistant enclosure design and the exceptionally broad, 180° horizontal dispersion of its CDT3 tweeter. Together, these design features enable the sound to break free from the speaker



### SPECS & PRICING

#### Gallo Acoustics Reference Strada 2

Type: Acoustic-suspension, two-way, three-driver stand-mount or wall-mount monitor

Driver complement: Two 4"

"dynamic hyperbolic carbon fiber" mid/bass drivers, one CDT3 (cylindrical diaphragm transducer) piezoelectric Kynar tweeter (no crossover between the mid/bass drivers and tweeter is required or provided)

Frequency response: 68Hz-20kHz +/-3dB

Suggested subwoofer cross-over frequencies: Stand mounted, 80-120Hz; wall-mounted, 40-80Hz

Impedance: 8 ohms (nominal)

Sensitivity: 90dB @ 1W/1m

Dimensions: 13" x 5" x 6.5"

Weight: 13.5 lbs.

Price: Speakers, \$1998; matching floor stands, \$450

#### Gallo Acoustics TR-3d

Type: Acoustic-suspension, powered subwoofer

Driver complement: 10" long-throw ceramic-coated aluminum woofer

Frequency response: 18Hz-180Hz +/-3dB (in-room)

Onboard amplifier output: 300 watts RMS, 600 watts peak

Controls: Continuously variable active crossover, 50Hz-180Hz with LFE bypass switch; phase switch, 0/180°; bass EQ trim with settings for 0, +3, or +6dB @ 30Hz center frequency

Dimensions: 12" x 10.75" x 13.5"

Weight: 33 lbs.

Price: \$984

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## EQUIPMENT REVIEW - Anthony Gallo Reference Strada 2

enclosures in an unusually compelling way. Visually, you register the fact that the stand-mounted speakers are positioned several feet from your listening chair, but the soundstage seems to lead a completely independent life of its own—as if it were a freestanding entity and not an illusion being created by the speakers. On well-recorded material, such as David Chesky's *Jazz in the New Harmonic* [Chesky, Binaural+ CD], the Reference Strada 2 system can and does transform the acoustics of your listening room into those of the recording venue. This, I think, is the epitome of “disappearing-act” imaging, where the key is to keep the listener's attention firmly centered upon the performance and the space in which it unfolds—and not on the speakers. It's a difficult trick that the Reference Strada 2 system masters with ease.

Next let's look at the system's resolving powers. One area where I think the Reference Strada 2 has clearly improved on previous-generation Nucleus and Strada models is in extracting considerably more low-level information from recordings, yet without upsetting the underlying smoothness that has long been a hallmark of Gallo designs. In practice, the Strada 2 is arguably the most information-rich Gallo we've yet heard, delving deep into textural and transient details to give a clearer picture of what's happening in and between the notes. With that said, however, let me add that I do think the passive woofer system used in the Nucleus 3.5 offered a smidgeon more tautness, definition, and control than the Reference Strada 2 system's TR-3d subwoofer. But please don't misunderstand me; the TR-3d is quite clean sounding and well controlled as powered subs

go. It's just that the sub's amplifier produces a slightly warmer, more rounded, and more full-bodied sound than is strictly accurate. Even so, the Reference Strada 2 system is right in the thick of the hunt among the higher-resolution speakers in its price class, although top honors in that department might rightly go to hybrid electrostats from MartinLogan or to one of the planar-magnetic models from Magnepan. What the Gallo does so beautifully, however, is find a fine balance point between resolution on the one hand and gracefulness on the other. Thus, listeners enjoy gain without pain—a tradeoff many would readily embrace.

While the Strada 2s are obviously very compact, they nevertheless are capable of surprisingly vigorous output levels and

demonstrate the sort of turn-on-a-dime dynamic agility that allows them to track sudden changes in musical energy levels. A good example would be the at-times fierce and always exuberant horn section swells heard in Clark Terry's *Chicago Sessions 1995-96* [Reference Recordings, HDCD], where the horn section often operates in subdued “cruise mode” during the body of a song, only to explode into the musical foreground with almost shocking force. Similarly, some of the oblique percussion notes captured on the eponymous new age/jazz recording *Gaia* [Windham Hill, CD] leap forth from the speakers with startling realism, making it a gripping experience to hear the Gallos at play, even at low volume levels. It is one thing to hear relatively large speakers handle these sorts of material well, but quite another to hear small satellite-type speakers pull off the feat. Once again I credit the Strada 2's expressiveness and agility to its rigid enclosure design, its innovative S2 damping materials, and to Gallo's OPT technology. In any event, the Strada 2 speaks with a more muscular, definitive, and dynamically incisive voice than its diminutive size might lead you to expect.

Above, I alluded to the Reference Strada 2 system's ability to “play big” and frankly this is more than a matter of simply being able to play loudly (although the system can do that, if you have an amplifier equal to the task). Rather, if you expressed the Strada 2's “play-big” factor as a mathematical formula it might look something like this: small size x muscular and agile dynamics x wide-open 3D soundstaging = a huge scope of presentation. Many of us are drawn to the idea of a bantamweight that can punch far above its

weight class, and the Reference Strada 2 system certainly is that. To appreciate what I mean, listen to Ry Cooder's and Manuel Galban's *Mambo Sinuendo* through the Strada 2 rig and note how the system produces a huge soundstage, evincing a dark, warm, and faintly mysterious Cuban vibe. Talk about being transported to a different time and place!

Are there any caveats? I can think of a few. First, because dispersion of the CDT3 driver is so broad, one must avoid potential unwanted reflections from nearby surfaces (walls, furniture, TV screens, etc.). During my listening tests I solved this problem by using more speaker toe-in than usual and by placing room treatments on adjacent wall surfaces at the first reflection points. Second, in order to enjoy the smoothness I've described, do give the speakers as much (or more) run-in time as Gallo suggests; this will help the speakers smooth out and open up considerably. Third, listen with your ears positioned at or very near tweeter height (if you listen from above or below the centerline of the tweeters, smoothness, coherency, and focus will be diminished). Finally, don't skip on electronics or cables. While the Reference Strada 2 system may look like a mere “lifestyle” product, it needs audiophile-grade ancillary components to give of its best (hint: be sure to bring plenty of clean power to the party).

The Reference Strada 2 system is a lovely and effective problem solver. It is compact, easy on the eyes, and will fit in spaces where larger floorstanding speakers will not. Best of all, it may look like a “lifestyle” speaker but turns out to deliver legitimate, audiophile-grade, big-speaker performance. tas



# Paradigm 30th Anniversary Inspiration Monitor

## Beauty, Value, and Sonic Excellence

Chris Martens

**T**he year 2012 was Paradigm's 30th anniversary as a loudspeaker manufacturer, and to mark the occasion the firm has chosen to build two very limited edition loudspeakers: a floorstander called the Tribute and a stand-mount monitor called the Inspiration, which is the subject of this review. Paradigm's intent with these models was not necessarily to create statement-class products, but rather to build speakers that would represent the very essence of the company. What is that essence? In distilled form, I would say Paradigm combines one part meticulous design (leveraging design philosophies originating out of the loudspeaker research tradition pioneered at Canada's National Research Council), one part advanced materials science, one part build-quality, and one part (one very big part) value for money.

In practice, this means that the Inspiration monitors combine a mix of technologies drawn from two of Paradigm's Reference Series speaker lines: the top-tier Signature range and the next-to-the-top-of-the-range Studio range. The result is a speaker that merges the sonic identities of these two popular speaker families, yielding a whole that is greater than the sum of its parts. What is more, the 30th Anniversary models are treated to one-of-a-kind finishes with walnut cabinets done up in a translucent garnet-red lacquer—a color that is an exceedingly deep, dark (so dark it at first seems jet black) red, polished to a lustrous shine and breathtaking to behold.

The Inspiration is a two-way, two-driver bass-reflex monitor that uses a 1" pure beryllium-dome tweeter (drawn from the Signature range) plus a 7"

black-anodized pure aluminum mid/bass driver (patterned after drivers used in the Studio range). The mid/bass driver, in particular, bristles with advanced technologies named, typically, with exotic-sounding three-letter acronyms. Thus, it features a patented (NLC) non-limiting corrugated (TPE) thermoplastic elastomer surround said to allow for smooth, precisely controlled, long-throw driver excursions. Further, both the tweeter and mid/bass are mounted to the speaker enclosure using Paradigm's so-called "IMS/Shock-Mount" baffle-less technology. Paradigm describes this technology as "a butyl-rubber driver fastening system in which critically placed isolation inserts and gaskets decouple drivers from the speaker's enclosure." Paradigm makes no attempt to flush-mount the Inspiration drive

units in the speaker's front baffle, but rather allows the drivers' substantial metal frames protrude somewhat from the face of the baffle plate. However, to combat potential diffraction problems, Paradigm provides low-profile speaker grilles that deliberately wrap around the driver frames to provide smooth, diffraction-reducing, almost waveguide-like surfaces, said to enable the speakers to deliver optimal sound when they are played with their grilles on.

Attention to detail is evident throughout the Inspiration. Ducted port openings, for example, are fitted with turbulence-reducing "high-velocity, low-noise aluminum" flanges, anodized in black to match the mid/bass driver cones. Crossover networks receive the royal treatment, too, using polypropylene capacitors, precision high-power ceramic



## EQUIPMENT REVIEW - Paradigm 30th Anniversary Inspiration Monitor

resistors, and air-core and laminated steel-core inductors, with driver connections made via “heavy-gauge HPC high-purity copper wire.” Plainly, Paradigm’s aim with the Inspiration is to give customers a very serious high-end loudspeaker, but at something less than the customary high-end price.

For this review, I used the Inspirations with Paradigm’s matching 30" stands (\$999/pair). The stands are beautiful to look at (they sport etched, “30th Anniversary Edition Paradigm Reference” logos on chrome-plated escutcheons), are very heavily built with provisions for bolting the Inspirations to their top plates, and—most importantly—position the monitors at just the right height for seated listeners. The only caveat is that to assemble the stands you’ll need both metric and English hex-head wrenches, plus a fair amount of good old-fashioned elbow grease. Once set up, however, the stands are sturdy and attractive.

The key question, of course, is this: How do all these technical elements coalesce when it comes time to listen to music? As I said above, the Inspirations merge the sonic characteristics of Paradigm’s Signature and Studio Series speakers in a synergistic way. But let me expand on that comment for the benefit of those who may not have spent much time with Paradigm’s speakers in the past.

Paradigm’s Signature speakers are the firm’s flagship offerings—the speakers that use the company’s most advanced driver materials and technologies and are thought to offer the greatest resolution, clarity, transient speed, and frequency extension. Paradigm’s Studio models, in turn, fall just one click down the line, offering

near-Signature-grade materials and technologies and providing very high levels of performance at sensible prices, while delivering a sound that is Signature-like, but perhaps somewhat more forgiving and thus subjectively more full-bodied. Given these characteristics, you can probably guess where the Inspiration’s design is headed, which is toward a felicitous mid-point that leverages elements of the traditional Signature and Studio sounds. Here’s how that works.

On one hand, the Inspiration’s beryllium tweeter (which is arguably the driver most responsible for defining the revealing sound of Paradigm’s Signature models), serves up extremely high levels of resolution and transient speed, capturing delicate upper-midrange and treble transient and textural details with sophistication and panache. The tweeter, then, is responsible for giving the Inspirations a delicate, tightly focused, and unmistakably high-resolution sound. You can appreciate these qualities whenever you listen to recordings that feature long, lovingly captured echoes or reverb tails, such as the exquisite reverb-haloed vocals you might hear on Mary Chapin Carpenter’s “Come On Come On” from her album of the same name [Columbia]. Similarly, the tweeter enables the speaker to capture the lingering and quite essential hall reverberations heard on Silvestre Revueletas’ *Sensemayà* [*Chicago Symphony Orchestra Brass Live*, CSO Resound SACD], which establish a realistic 3-D context within which the music can unfold.

On the other hand, the aluminum mid/bass driver gives the Inspiration a full-throated and robust sound—a sound that, while offering substantial amounts of resolution, manages

never to step over the line into clinical sterility. It is great fun, then, to hear the Inspirations hold forth on relatively large-scale and dynamically demanding materials, such as the William Walton *Crown Imperial Coronation March*, also found on the *Chicago Symphony Orchestra Brass Live* disc. When the big brass section swells and the intense low-percussion moments arrive simultaneously, the Inspirations rise to the occasion while keeping faith, in a tonal sense, with the distinctive timbres of each orchestra section. But the Inspirations also work beautifully on pop/rock material as I discovered when listening to the at times blistering track “Satori in Chicago” from Noah Wooterspoon & The Stratocats *BuzzMe* [APO Records]. Something there is in me that loves the sound of a Fender Stratocaster playing the blues at full howl, though it is a sound that is harder to reproduce than you might think (especially for certain “polite” high-end speakers best suited to playing dainty chamber music at no more than moderate levels). The Inspirations, however, never backed down from the challenge, so that as Wooterspoon’s Strat screamed, crooned, stuttered, and snarled, the 30th Anniversary monitors simply followed suit with nary a complaint.

Put these Signature and Studio-like qualities together in one speaker and you truly have a best-of-both-worlds solution, which I think is exactly what Paradigm had in mind. Driver integration in the Inspirations, while perhaps not quite up to standards of certain planar-magnetic or hybrid electrostatic loudspeakers, was generally very, very good. Perhaps the only trace of any discontinuity that I could hear involved



### SPECS & PRICING

**Type:** Two-way, bass-reflex, stand-mount monitor  
**Driver complement:** One 1" beryllium dome tweeter, one 7" anodized aluminum mid/bass driver  
**Crossover frequency:** 2kHz  
**Frequency range:** 54Hz-45kHz +/-2dB, on axis  
**Sensitivity:** 92dB (in room), 89dB (anechoic)  
**Nominal impedance:** 8 ohms

**Dimensions:** 8.25" x 14.625" x 13.125"  
**Weight:** 24 lbs. each  
**Price:** \$2599 (optional Inspiration stands, \$999)

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## EQUIPMENT REVIEW - Paradigm 30th Anniversary Inspiration Monitor

scenarios where, when playing less-than-ideally-recorded material, the beryllium tweeters would somewhat pointedly expose recording flaws for what they were. But frankly, if you want the kind of resolution that Paradigm's beryllium tweeters put at your disposal (and I, for one, certainly do), then this is simply a sonic tradeoff with which the listener must be prepared to make peace.

The Inspiration's imaging and soundstaging capabilities are likewise very good, with particular strengths in rendering soundstage width and depth. For an example of this quality in action, try the track "Tribute" from Ross William Perry's *It'll All Make Sense* [Kid Blue Music], where you may find, as I did, that the guitar sometimes plays from the far left side of the stage and from a position well behind the plane of the loudspeakers. My point is that the Inspirations do—on good recordings—a very fine job of creating a believable sense of place, a stage upon which the music can breathe.

Even so, I still hold some reservations regarding Paradigm's use of diffraction-reducing grilles. My take is that this system works to a point, and better on the Inspirations than on most other Paradigm speakers I have heard, but that there is nevertheless an even higher level of three-dimensionality that might be achieved if Paradigm would explore some of the diffraction-minimization techniques competing speaker manufacturers have found beneficial (e.g., flush-mounted drivers, very gently radiused waveguide flanges where needed, cabinet faces with deeply radiused, smoothly curved, "fall-away" front-baffle surfaces, etc.). To be clear, the Inspirations never overtly draw unwanted attention to themselves, and their drive units

are superb, but they are still not quite class-leaders in the sonic holography department.

Like most Paradigm speakers, the Inspirations are neutrally voiced and for the most part free from obvious colorations. With that said, however, I should add that, while the Inspirations deliver solid and satisfying midbass output, they offer relatively limited deep bass. Depending on your listening tastes and preferred types of music, you might not notice or particularly care about this characteristic. However, if you have your heart set on enjoying bass response reaching into or below the mid-30Hz region, then you might want to step up to Paradigm's similarly voiced, but more full-range Tribute floorstander. (Indeed, a Paradigm marketing team member who shall remain nameless once quipped that the Inspiration, though a fine speaker in its own right, is probably "inspired to grow up to be a Tribute.")

On the whole, I think listeners will find the Inspirations represent an awful lot of speaker for the money. For me, the dead-sure indicator of this was that, whenever I pictured possible sonic competitors for the Inspirations, I found I was automatically thinking of more costly speakers.

The Inspirations do a fine job of representing the whole spectrum of values for which Paradigm stands. They give us advanced materials and technology (e.g., the beryllium tweeter and anodized aluminum mid/bass driver with its distinctive corrugated surround), fine build-quality (the dark garnet-red Inspirations on their matching stands are a sight to behold), and great value for money. But most of all, they provide an accurate, engaging, high-integrity sound, which is what has attracted so many followers to the Paradigm brand for the past thirty years. **tas**



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# Bryston Mini T

## Whole New Ballgame!

Ron Doering

**D**on't look now but the USA's quiet neighbor up north is a major hotspot for high-end audio. Companies like Classé, Mirage, Energy, Paradigm, Totem, PSB, and Oracle are almost household words in some households. Add to this list Aurum Acoustics, Blue Circle Audio, Ed Meitner's EMM Labs, Raysonic Audio, Reference 3A, and I think you too will find that there is some pretty creative design work being done in the Great White North.

Hailing from Peterborough, Ontario, Bryston of course is well known, and greatly respected, for its amplifiers and, more recently, digital gear. Favored by the pro-audio market, its stuff has never been cheap but neither has its build-quality ever really been less than first-class. Now Bryston is getting into the loudspeaker business in a country that is already home to at least 14 well-regarded speaker manufacturers. Mulling over this new venture I was surprised that Bryston had taken amplification out of the equation; you *can* hook the Mini T's up to one of Bryston's own SST<sup>2</sup> amplifiers, a combination that will no doubt work very well, but you don't have to. Given Bryston's expertise it could have cooked up the ultimate self-powered loudspeaker, and wouldn't we all want one of those?

Well, maybe, maybe not. Bryston wants to move loudspeakers, and the self-powered variety is going to be a tough sell for those who have already invested in a good amp. James Tanner of Bryston's brain trust and the main instigator of its speaker business also reminded me that

the self-powered loudspeaker, at least when amplification is applied internally as is the norm, invites the use of compact Class D circuits, which, if not quite anathema, is a topology he considers second-rate. So what is Bryston bringing to the party?

According to Tanner, the main areas of opportunity were loudspeakers that do not suffer from dynamic compression, have big "listening windows," and excellent in-room power response. To address compression Tanner found the best solution to be multiple high-quality drivers in a vertical array. Ultimately expressed in Bryston's flagship Model T, which aims seven drivers at the listener, the vertical array helps explain the size of the gigantic (for a bookshelf speaker) \$2695 Mini T; it also explains why a small, two-way design, like a Totem Model 1, is not going to come from Bryston.

I'm used to frequency response data that show a single curve; however, the Mini T's published frequency response graph contains two similarly shaped curves. One (labeled LW) is level, and the other (labeled SP) heads steadily

south starting at 100Hz or so. LW or "listening window" is superbly flat and comprises an average of response curves measured from the typical on-axis listening positions. The SP or "sound power" response curve is also superbly flat but falls 8-10dB as it approaches 10kHz. It is the average of all the response curves taken in a 360° angle around the loudspeaker, otherwise known as the polar response. The combination of this direct (on-axis) and reflected sound is what we ultimately hear, and according to Tanner, achieving linearity in both curves is crucial to optimum performance. He was certainly not surprised when I informed him that the Mini T's produced the flattest frequency response (32Hz-10kHz ±2.7dB) I have yet observed in my listening room.

In electronics Bryston is certainly no start-up, but it pretty much is in the loudspeaker biz, which makes the Mini T's measured performance all the more impressive. However, I'll let you in on a little non-secret: Bryston hasn't entered into this venture alone. Technical and manufacturing assistance, as well as the use of a state-of-the-art anechoic chamber, were provided by Axiom Audio, a company I wasn't familiar with but which is evidently a major player in the home-theater market, building loudspeakers (including drivers) as well as amplifiers. Knowing that Axiom is in possession of an expensive anechoic facility strongly suggests that it takes speaker



design seriously. Also learning that Axiom's Ian Colquhoun, an alum of the psychoacoustic research facility that is Canada's National Research Council, and Andrew Welker, formerly of API/Mirage, both lent a hand or two in the design of the Mini T makes expectations of strong performance more reasonable. So the Mini Ts are "flat" and, in that sense, "accurate," but do they sound good?

### Use and Listening

My heart goes out to the sales person, copywriter, or ad campaign that is charged with getting across what these speakers are about.

I'm now staring at two pumped-up bookshelf speakers sitting on made-to-fit but otherwise unremarkable tubular stands (sand- or shot-

## EQUIPMENT REVIEW - Bryston Mini T Bookshelf

fillable), clad in an equally unremarkable, although well executed, black ash-pattern vinyl (hardwood veneers are available at an additional cost). Constructed of, again, unremarkable although carefully braced and assembled MDF, the cabinets house what look to be rather pedestrian drivers—dust cap, cone, rubber surround. Even the mounting of said components is rather ordinary—no coaxials, seemingly no attempt at time-coherent signal launch a la Thiel and others, and no special patterns or materials on the front baffles to help control diffraction. My speakers in college looked more advanced. Not much here for an ad in a glossy magazine. Time to call the model agency.

The shame of it is what can't be gotten across in the crass ad-fueled world we live in, or in the necessarily brief audition the Mini T's will probably get in a showroom, is the hours of testing, data generation, data digesting, tweaking, more testing, etc. that were necessary to achieve the results I've seen, measured, and heard. And I'm not talking about this being done in the designer's living room. Unfortunately components that have that sparkling personality which immediately catch your ear, whether that be particularly healthy bass or a dramatic treble (which may falsely suggest clarity), may win out over comparatively *duller* accuracy under such conditions.

I know that "monitor" may have a strong, not necessarily positive, connotation with some folks but really this is what the Mini Ts are, and in the best possible sense. In this regard the Mini T is simply the latest expression of the NRC's philosophy that accuracy is accuracy, whether in the home or the studio, and anything else

leads, in their words, to "a circle of confusion." If this sounds to you like a middle finger raised to all those artist-designers whose ears we should trust, then who am I to argue? Here I am listening to a product designed by a bunch of lab rats and I'm loving it!

As expected given the careful attention paid to off-axis power performance, listening position is not critical, although obviously you want to be centered somewhere in between the Mini Ts for stereo. Indeed, these are one of the few speakers I've experienced which do the trick of realistically putting a singer, guitarist, bassist, what have you, in the next room. Doing my laundry I could swear on a stack of TAS back issues that Ella Fitzgerald was right there next door in the listening room. Well of course "she" was, as that is where my stereo is, but my point is that it sounded as if a real person were singing in the other room. Try this and you'll see what I mean (or not).

Neither is seating position that critical when listening in stereo. Put away the listening chair and bring out the listening couch! While sitting dead-center at the apex of an equilateral triangle to the speakers returned the best listening results, a couple of feet side to side and even up or down did not ruin the solidity of the sonic image. This is not to suggest sloppiness or inaccuracy, but rather that the solid image had some "give," seeming to bend to where my head needed to move, at least within a radius of three feet or so. On Oliver Nelson's "Stolen Moments" from his *The Blues and the Abstract Truth* there was hardly a bad seat in the house, and the best seat was treated to a brass and rhythm section in punchy, uncompressed sound.

If Bryston insists on calling these "bookshelf" speakers then I feel it is my duty to inform you of their abilities in tackling music's nether regions, for "bookshelf" traditionally means you should not expect much bass. Well feel free to have expectations in this case. The earth-shaking organ "C" pedal was indeed earth-shaking, whether in the "Saturn" movement of Holst's *The Planets* or in "Sunrise" from Richard Strauss' *Also Sprach Zarathustra*. These speakers put out real, pitch-accurate bass at least down to where pitch ceases to matter; according to my measurements 32Hz was down only 4dB from 1kHz, and the curve was quite smooth between these points.

Downsides? Well there are better looking loudspeakers out there, at least in my opinion, although the Mini T's would probably be quite fetching in one of the real wood veneers you can opt for. And given their size and height when mounted on custom stands, the Mini T's don't exactly blend in easily with the typical furnished room, but neither are they grotesque. Last but not least, you will need to have a fair amount of power on tap to get them to sing. Think of 100 watts/8 ohms as a minimum.

### Conclusion (Flat is Good)

Perhaps because of their basic simplicity and design malleability, loudspeakers, more than any other audio component, can and do attract the artisan designer-manufacturer. Here, especially, just a little bit of technical knowledge and a whole lot of perseverance and creativity can go a long way. And if said artisan can in turn find enough people who agree that the sound he is able to coax from his contraption is "musical"

and are willing to pay the asking price, well this could even be a successful business proposition. Perhaps this is why the word "accurate" is not that popular in loudspeaker sales literature. On the other hand, Bryston's Mini T's have gone a long way toward answering the question posed by Floyd Toole and the NRC some time ago. If perfectly flat frequency response is now expected from electronics, why should the greater than +3dB in-room response curves commonly found in loudspeakers (regardless of price) be acceptable? <sup>188</sup>

## SPECS & PRICING

<b>Driver complement:</b>	<b>Dimensions:</b> 10.5" x 22.5" x 9.8"
One 8" ceramic-coated aluminum cone woofer, one 5.25" ceramic-coated aluminum cone midrange, one 1" titanium dome tweeter	<b>Weight:</b> 42 lbs. each
<b>Crossover frequencies:</b> 160Hz and 2.3kHz	<b>Price:</b> \$3195/pair in real wood veneer; \$2695/pair in vinyl; \$499/pair for custom stands although Bryston suggests any quality stand 18-24 inches in height
<b>Loading:</b> Bass-reflex	
<b>Frequency response:</b> 37Hz-22kHz (+/-3dB)	
<b>Maximum SPL:</b> 118dB	<b>BRYSTON LIMITED</b>
<b>Min/Max recommended power:</b> 10-250W	677 Neal Drive
<b>Sensitivity:</b> 85dB (1 watt, 1 meter anechoic)	Peterborough, Ontario
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# Harbeth Monitor 30.1

**Ravishing!**

**Paul Seydor**

**A**lan Shaw's Harbeth Monitor 30.1, which has been released in time to celebrate the company's thirty-fifth anniversary as a manufacturer of high-quality loudspeakers, is the best compact two-way speaker system I have ever heard, regardless of type, cost, or complexity. By this I mean, of course, that it does a better job of doing the things that are most important to me when it comes to the reproduction of music in the home: tonal neutrality, timbral accuracy, cohesiveness, low distortion, and that elusive impression of vitality which makes recorded music come alive. The speaker is an updated version of the Monitor 30, a studio monitor intended for professional applications where high accuracy in a not large enclosure is required. I say "not large" to indicate that the speaker is not a sub-compact, being three to four times the size of mini-monitors like the fabled LS3/5a or Harbeth's own P3ES yet somewhat smaller than the standard two-cubic-feet of speakers like Spendor's SP1/2 or Harbeth's own Super HL5. The size was in fact dictated a priori, part of the brief to develop a drop-in replacement for the BBC's Rogers LS5/9, which became unavailable in the late nineties. As befits its monitor status, the 30.1 boasts high neutrality, superb resolution, and a matching of drivers with respect to coherence and sonic character that is equaled by only a small handful of multiple-driver dynamic loudspeakers in my experience. Speaking with a single voice in a way reminiscent of Quad ESLs, it is also of similar seriously low coloration and distortion, high transparency, and musical authority. The Monitor 30.1 is at once a never-ending joy to listen to and highly revealing, its supremely natural tonal balance neither accentuating the unpleasant qualities of bad recordings nor enhancing the pleasant qualities of good ones. This is one speaker for which the cliché rings completely true: You can listen to it without fatigue for literally hours on end.

## EQUIPMENT REVIEW - Harbeth Monitor 30.1

That said, let me hasten to add that the 30.1 is not a speaker for everyone, nor is it all things to all music. In common with all other compact (and smaller) speakers, it will not, unassisted, reproduce the bottom octave at levels to match the rest of the range, it's practically flat to only about 60Hz, and its specified 3dB point is 50Hz. This means that while it actually does reproduce the 32Hz organ pedal point at the beginning of *Also Sprach Zarathustra*, it will do so only at reduced amplitude (thus power) with respect to the rest of the range. Room reinforcement will provide some additional strength, but only some, not least because optimal performance requires placement away from boundaries. Dynamically it's very robust—amazingly so when you consider the size of both the cabinet and midrange/woofer—capable of clean, unstrained levels much too loud for me to listen to comfortably for very long in my plus-2500-cubic-foot (21' x 15' x 8') room. But I wouldn't—nor, I suspect, would its designer—recommend it for very large spaces, say, baronial living rooms or the like. But this still leaves a wide spectrum of settings in which its loudness limitations are effectively nonexistent; and because the response of the drivers integrates so seamlessly and so quickly beyond the plane of the baffle, the 30.1 can be used in very small rooms where proximate seating might be unavoidable. Indeed, few speakers in my experience appear to be this satisfactorily adaptable to so wide a variety of environments.

Now that I've written an introduction that sounds like a conclusion, allow me to introduce the design and to elaborate upon its performance. The 30.1 is a front-ported two-

way with a specified frequency response of 50Hz–20kHz +/-3dB in free space. Its tweeter is a 25mm soft-domed SEAS unit, while the eight-inch midrange/woofer is manufactured in house and made from Harbeth's RADIAL compound, about which more anon. Sensitivity is a low 85dB with a minimum recommended power of 25 watts, though considerably more—I alternated between a Quad 909 at 140 watts a side and a Croft-designed Carver AV705x at 225 watts a side—is advised in anything but a small room. Ideally the 30.1 should be stand-mounted away from walls, with the tweeters around ear height (the Canadian company Skylan makes a

### SPECS & PRICING

- Type:** Two-way vented
- Frequency response:** 50Hz–20kHz +/-3dB free space, 1m with grille on
- Impedance:** 6 ohms
- Sensitivity:** 85dB 1W/1m, 25Wpc minimum power recommended
- Power handling:** 150W program
- Dimensions:** 11" x 19" x 10.5"
- Finish:** Cherry, tiger ebony, eucalyptus, maple, rosewood, gun grey, arctic white, jet black
- Weight:** 30 lbs. each
- Price:** \$5695–\$6390 (per pair, depending on finish)

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## EQUIPMENT REVIEW - Harbeth Monitor 30.1

dedicated aftermarket stand, available direct or through FidelisAV, Harbeth's U.S. importer).

As a designer and manufacturer, Alan Shaw follows in the footsteps of the British Broadcasting Corporation, where in the sixties and seventies BBC engineers conducted quite a lot of research into speaker design and performance toward developing a range of monitors capable of accurately revealing what was being broadcast. Their primary interest was in voice and music, largely classical, and their investigations involved intensive research on everything from drivers and crossovers to cone materials and enclosures, careful experimentation by both measurement and listening, and meticulous record keeping—all practices Shaw observes to this day. (I refer interested readers to my interview with Shaw in the June/July 2009 issue of TAS, where he discusses his working methods in great detail.) Inspired by Dudley Harwood, the founder of Harbeth and a pioneer in the use of polypropylene for drivers, Shaw's company developed a new synthetic compound, which he calls RADIAL (the acronym derives from "Research And Development Into Advanced Loudspeakers"), a material claimed to retain polypropylene's smoothness without its dulling effect and suppression of detail, Bextrene's consistency without its colorations, and none of the vagaries of paper. All Harbeth woofers and midrange drivers are now made from RADIAL. Apart from this—a big "apart," I should add, as when it comes to vanishingly low coloration, there really is something quite special about that material, at least to judge from all the Harbeths I've heard—neither Shaw nor his company is particularly "innovative."

Instead, he draws upon a combination of tried-and-true principles that he implements with rare care, knowledge, and sophistication. He also believes—"passionately," he likes to put it—in the use of computer models to simulate loudspeaker behavior and performance. Of course, critical listening plays an indispensable role, as it did at the BBC, where, according to Shaw, "the designers were in the unique position of being able to walk between the studio and the control room and hear for themselves the differences between the live and the reproduced sound." Shaw once told me that his daughter's voice, the sound of which he obviously knows very well, constitutes some of his most reliable source material. "It's absolutely crucial that the loudspeaker can reproduce the human voice convincingly," he argues.

"For me, speech/vocal quality is the real arbiter because the human voice-box just doesn't produce the sort of colorations that speakers do. It's soft, wet, highly damped tissue and it can't produce spitty, gritty, beaky, wiry, quacky, hollow sound—all those are speaker colorations. Because of its emotional content, music is less revealing of coloration than speech and voice. If you get speech right, the rest falls pretty much into place."

It should hardly come as a surprise, then, that the glory of Harbeth speakers is a near peerless midrange. When it comes to the Monitor 30.1 there's no sense using a lesser word: it's simply ravishing in its warmth, richness, vividness, and beauty. The principal reasons are two. First is the RADIAL material itself, second is how unusually flat across the entire midrange the 30.1s are, notably free from the usual

irregularities you find in most speakers. But more is needed than a merely flat midrange. Equally important is that this flatness extends down through the transition from the lower midrange to the upper bass, the two octaves or so from around 300Hz to around 100Hz. If this region has a dip, trough, or cancellation, music is robbed of body, warmth, and the ability to render timbre properly. Yet an astonishing number of speakers exhibit these infelicitous characteristics, including many that are very, very expensive, especially floorstanders and other designs that don't take account of the floorbounce (i.e., a cancellation in the frequency response owing to the first reflection off the floor). The result is an excessively lean balance that robs most instruments and all vocals of their fundamentals. Speakers like this can sound really punchy and "rhythmic" (or "pacey," to use that awful coinage so beloved of our British brethren), but with respect to accuracy and the sound of real instruments and voices, they are also wrong.

The most common complaint by my wife—no audiophile but a fervent music lover—of so many speakers she hear is, "There's no depth," by which Danielle means not imaging depth, but depth of tone in singers she is familiar with. (It's why she typically asks me to bring the Quads back out as soon as possible once I'm through evaluating other speakers.) Sinatra is one of her acid tests, a particularly good one because if the "wood" (i.e., the lower range) in his very distinctive voice is missing or reduced, then the head tone is accentuated and the nasality is subtly emphasized. But any baritone will do—hell, so will a tenor like Placido Domingo, whose

voice has darkened and deepened such that he is essaying baritone roles these days, like Simon Boccanegra.

But the real kicker is that even women's voices cannot be correctly reproduced if this critical area of the frequency spectrum is deficient. The range of a true contralto voice starts at around 200Hz, that of a soprano around 250Hz. Doris Day, whose *Hooray for Hollywood* album often figures in my evaluations, has an exceptionally clear and light voice, but over too many speakers her timbre often comes out too light and it is robbed of a difficult to define but immediately audible impression of color and body. However, listen to her over a speaker flat throughout the midrange, as the 30.1 is, and you'll hear that real substance grounds all that lightness. Even more a singer like Ella Fitzgerald: On "Do Nothing till You Hear it from Me" (*The Duke Ellington Songbook, II*) she sounds some startlingly low chest tones. If a speaker isn't up to reproducing these correctly, the voice just isn't right.

You don't necessarily have to agree with Shaw that getting voices right gets everything else right, but it's surely true that if voices don't sound right, not much else will either. This is because the fundamentals of most instruments fall where voices do—middle C, after all, occurs at 261Hz. Take pianos—at one point during the evaluations, a close friend and seasoned audiophile, who happens also to be one of the finest studio musicians in Los Angeles, dropped by with a new recording of piano music by Sebastian Currier, a composer I'd never heard of before [Naxos 8.559638]. The piano sound is incredibly immediate and close enough that the effect is to put the instrument in the room,

## EQUIPMENT REVIEW - Harbeth Monitor 30.1

which it does quite effectively, with breathtaking transparency, presence, and a really huge dynamic range. Yet there is nothing harsh or edgy about the sonics or soft or mushy either; as rendered by the 30.1s, it sound just "Right!" my buddy exclaimed (which made me laugh because exactly that adjective recurs countless times in my notes).

My wife and I recently had the good fortune to acquire a six-foot Bluthner, the smallest grand suitable for performing venues. The entire lower spectrum of this magnificent instrument is a wonder to hear (not for nothing was Bluthner Rachmaninoff's piano of choice). Even though the 30.1 falls short in the lowest octave, it is so neutral throughout midrange and upper bass that it goes some distance toward doing this sound justice. Yet I've heard speakers several times its size and multitudes its price that don't, though they will play a whole lot louder and project a bigger image.

Still, this compact speaker continually surprises me with how really big it can sound. A sufficiently powered pair in a normal-sized room will scale many solo instruments and small ensembles like trios, quartets, and vocal groups to virtually lifelike size and they come close enough with chamber ensembles suitable for baroque or classical music. And for full orchestras? Well, one of the first things I put on when the Monitor 30.1s arrived is a recording, again brought over by a good friend and experienced audiophile, of Bruckner's Ninth Symphony conducted by Guilini leading the Vienna Philharmonic [DG]. This beautiful recording—of a magnificently played performance, the strings notably sweet, the brass mellow, the winds mellifluous, with terrific

dynamic range—offers a cohesive orchestral sound that allows a good bit of the hall into the mix. Now, as most of you (I hope) know, orchestral music doesn't get much bigger than Bruckner, with its augmented brass, roaring tympani, and repeated waves of extended, massive climaxes. We were slackjawed by how tremendously the 30.1s reproduced this recording.

Then, out of curiosity, I pulled Bernstein's with the same orchestra in the same venue on the same label off the shelf. Wow. You'd swear you were hearing wholly different pieces of music. Bernstein's is more closely miked, but what is really stunning is difference in interpretive vision: Guilini's, Bruno Walter's, all old-world melancholy alternating with old-world grandeur, Bernstein's hardly less lyrical, but with an urgent intensity and a high, tragic drama, the dynamic window of the interpretation considerably wider, more powerful, and almost frightening in the impact of the big moments, qualities the speakers readily revealed in the playing itself. Listen to the sustained climax near the end of the first movement, the way the trumpet soars above the full orchestra and then gives way to the horns. Or take the scherzo—by far Bruckner's greatest, in my opinion—here feral, ferocious, and terrifying, the passages of massed brass against tympani impressive in their weight, menace, and sheer piledriving force that you can feel in your stomach. I must single out the reproduction of the trombones, which really do in their depth and "blattiness" sound like real trombones. Or go to the last movement and listen through the first big climax to the quiet passage that follows it and note how truthful the dynamic contrasts from very soft to very loud are rendered with



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*-Brent Butterworth, Sound & Vision 2014*

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## EQUIPMENT REVIEW - Harbeth Monitor 30.1

finesse and precision. Once my friend and I had recovered from the comparison we had to keep reminding ourselves, one, that this almost shockingly powerful performance was recorded in concert scant months before Bernstein's death when he was already very sick from the illness that would kill him, and, two, that a pair of speakers 19" x 11" x 10.5" could handle such demanding material at such levels without evident strain.

I do not want to overstate this. When it comes to big orchestral and choral music, the 30.1s do not bring ensembles into your room and they do not project them to life size (or more than life size, if that happens to be your bag). What they do is provide an uncommonly transparent window onto the concert hall. Within the terms of that metaphor, very few loudspeakers of any size or price in my experience are able to reproduce so convincingly a simulacrum of an orchestra, albeit at reduced size and amplitude, and even fewer with as much faithfulness to the sound of real voices and instruments. It is in this context that the deep-bass limitations I noted at the outset should be viewed. The Monitor 30.1 is a very honest speaker inasmuch as Shaw has resorted to no trickery with respect to crossover manipulation in order to tease out more bass than it can produce. The driver responds as low as is consistent with its specifications, the port, and the enclosure size, and thereafter rolls off smoothly. If the 30.1 has a naturally warm and full sound, which it does, and if it never, ever sounds thin or anemic, which it doesn't, this is because it remains flat in the warmth region. And that, finally, is all that's really necessary to do a satisfactory job on much orchestral music.

To be sure, bigger speakers with a bigger woofers, like Harbeth's own monitor 40.1, will reap considerable rewards when it comes to bass drums, pipe organs, tubas, and so forth, and their large baffles will project greater weight and force from the likes of string basses and tympani, qualities that will be especially welcome in larger rooms. That kind of projection these Harbeths will not manage nor will they provide anything like the sense of real bottom-end weight and deep, deep foundation. But I've never heard any compact speaker that can or does do these things. If you demand them—and they certainly constitute a reasonable demand—you should pass over the 30.1 for something larger or more extended or else investigate a subwoofer. (One good candidate would be RELs, as they seem to match up especially well with speakers in the BBC mode; I would also take a good listen to those from HSU Research.)

If I've been concentrating on a specific area of reproduction in this review, it is because it's an issue I've been wanting to address for some time now, and the 30.1, so outstanding in the midrange, has provided an occasion to do so. But the speaker is similarly outstanding throughout the rest of its range. The original 30 exhibited a mild trough in the presence region, which has been so substantially reduced in the new version that you really have to listen for it and even then it's evident only rarely. The sound in the topmost octave is smooth and natural with only a very slight bit of extra "texture," for want of a better word, on exhibit in the 8-10kHz region. The only reason this "texture" is occasionally perceivable at all is that the slight residue of remaining presence "politeness"

subtly accents the return to flat around 8-10k. But it is so benign that most of the time on most music it is not noticeable at all, and there is absolutely no edginess, snap, crackle, pop, tizz, or sizz, instead an entirely natural presentation of the way percussion instruments, cymbals, hi-hats, bells, etc. really do sound when you hear them live. One cut I often use is Christy Baron's "Mercy Street" cover from her *Steppin'* [Chesky, SACD] because it features, along with several other high-pitched percussion instruments (like bells), a rain stick. I happen to have a collection of rain sticks, and while none sounds quite like any other, this one as reproduced by the 30.1s sounds recognizably plausible. And these speakers do ambience superlatively (as does every Harbeth I've heard). As I am writing this I am listening to a program of Christmas carols sung by the Huddersfield Choral Society (it's the Christmas season), a large chorus accompanied by an orchestra and organ in a big hall. The presentation is uncannily realistic, with the chorus and orchestra occupying the entire soundstage from side to side, the chorus extending behind the orchestra, the vastness of the space convincingly reproduced.

As for resolution, perhaps the most revealing test I know is the *a cappella* introduction to title track track on Jacintha's *Autumn Leaves* [Groove Note SACD]. I attended these sessions, where the lid on the piano was closed and damped with blankets and the singer, wearing headphones so she could hear the pianist playing notes to help her stay in tune, was placed in an isolation booth. Despite these heroic efforts, tiny amounts of the piano still bled through her headphones and made their way onto her vocal



tracks. All of these are extremely low in level, a few, including one near the beginning, close to inaudibility. Yet the 30.1s revealed every single one without requiring earsplitting levels to do so. Better resolution than this you can rarely get.

Hardly inexpensive at \$6000 a pair, the Monitor 30.1 is so beautifully voiced, balanced, and natural sounding as to make it one of the most completely satisfying speaker systems I've ever used. To give you some idea of just how much I like it, most of the time when I review or otherwise evaluate speakers I can't wait to get them out of the house and return to my Quad 2805s or 57s. The occasion of this review is the first time in I can't remember when that I'm perfectly happy to keep listening to the speakers under evaluation. I don't know how much longer the 30.1s will be allowed to remain here now that I've finished, but I fully intend to keep them up and running until the deliveryman knocks at the door. And he can bloody well wait while I box them up! tas

# Von Schweikert Audio UniField Two Mk2

## A Steady Stream of Musical Delight

Dick Olsher

**A**lbert Von Schweikert's design goals for the UniField Two, the middle model in VSA's Studio Signature Series, were rather simple. Many of his customers asked for a small speaker that would work well in both small and large rooms with virtually any amplifier. Specific performance criteria were a large sweet spot, and enough bass output to simulate a larger floorstander. From a distance the UniField Two appears to be a two-driver system, and may well pass for a conventional stand-mounted two-way design. However, up close it is apparent that the upper 7-inch woofer is actually a coaxial design by SEAS of Norway with a 1-inch fabric dome tweeter nestled over the pole piece. So that would make the UniField a three-way design, right? Well, not exactly. The catch is that the upper woofer, featuring a PP/TPX polymer cone, is allowed to work into the deep bass while being augmented below about 80Hz by a 7-inch aluminum coned woofer. The end result is typically referred to a 2.5-way design, basically a two-way with a subwoofer. As Von Schweikert aptly points out, an important advantage of such a design is the elimination of the mid/woofer's high-pass crossover network, and hence no capacitors in series with the critical midband. There has been much ado in recent years over the sound of capacitors with the cost of exotic types easily exceeding that of typical drivers. But it's fair to say that the best-sounding capacitor is no capacitor at all. Instead of capacitive-coupling, the mid/woofer's bass excursion is controlled by sealing it into a small internal chamber densely packed with Acousta-Stuf polyfill.

Coaxial drivers are rare birds in audiophile designs. Tannoy is justly famous for its dual-concentric driver and more recently KEF has made waves with its Uni-Q driver. A coaxial's primary goal is to align the acoustic centers of the tweeter and midrange, "forcing" them to behave as a single driver so as to emulate the performance of a point source of sound. The

payoff is vastly smoother off-axis performance relative to a conventional driver layout and thus a wider sweet spot. And as I'll detail shortly, the SEAS coaxial is indeed capable of remarkable imaging due in great measure to its time-aligned wavelaunch. However, the practical engineering problem all along has always been the tweeter design, the traditional knock against coaxial

tweeters being that they don't measure very well. The fact that the coaxial tweeter is horn-loaded by the midrange-woofer cone makes it difficult to obtain a smooth frequency response. In fact, Von Schweikert considers the SEAS coaxial tweeter to be a bit of an enigma. He is well aware of its frequency-response imperfection, and that it lacks any type of fabric impregnation or fully pistonic motion, and yet despite all that, he finds it to sound wonderful. I was, at least initially, less enamored of this tweeter and can confirm that its on-axis frequency response is not particularly pretty due to a significant response dip in the lower treble and an excess of extreme treble.

On the matching factory stands, the speakers were at first toed in toward the listening seat, but I discovered rather quickly that I wasn't happy listening to the tweeter head on. Since off-axis measurements showed a much more natural balance, I nixed the toe-in idea, pointing the cabinets straight ahead. This placed the tweeters at an angle of about 25-degrees relative to the listening seat and gave me the sort of balance I was after: a smoother lower treble partnered by a naturally rolled-off extreme treble. It should be noted that I'm not a fan of in-your-face treble and much prefer a middle of the hall presentation. With the speakers optimally set up, it became clear that the coaxial principle was working to perfection. Even without any toe-in, the resultant sweet spot



## EQUIPMENT REVIEW - Von Schweikert Audio UniField Two Mk2

was massive—no need to place your head in a vise to enjoy a stupendous stereo experience. When it came to imaging, the UniField delivered the goodies. I was most impressed by its exceptional focus and transparency, making it easy to resolve spatial outlines and subtle image shifts within the confines of a spacious soundstage. Resolution of massed voices was superb, allowing me to follow the ebb and flow of a particular voice in a chorus. After all of the preliminary experimentation, my view of the treble range crystallized sufficiently to pronounce it musical enough to enjoy, though it understandably lacked the transient finesse and purity of ribbons and electrostatic types.

The midrange driver turned out to be a winner, sounding smooth yet detailed, and manifesting a purity of tone which most cone mids would die for. The UniField dug into a complex mix with confidence. In particular, its resolution of artificial reverb launch and decay was scary good. Timbre fidelity was excellent even when scaling the full female soprano range. My only minor criticism had to do with slightly coarse upper-midrange textures, most obvious on violin overtones. This turns out to be the transition region between the midrange and tweeter, the crossover being at 2.2kHz.

The UniField Series uses curved side walls to minimize internal standing waves. In addition, much effort has gone into making the cabinets acoustically inert, which is all about minimizing cabinet-wall vibration. And that means reducing wall flexure by using thicker and stiffer materials. VSA's elegant solution is based on the concept of constrained-layer damping but also strives to eliminate energy transfer from the drivers to the baffle by decoupling them with a 6mm-thick vis-

coelastic clay-polymer gasket. VSA's triple-wall laminate combines three materials of different resonant signatures. The outer layer is MDF which is bonded to a layer of synthetic stone, fabricated from crushed gravel, minerals, and resin binder. The inner layer is hard felt, which is absorptive of sound energy. The total wall thickness is an impressive 2.5 inches and is the type of construction currently deployed in every Von Schweikert Mk2 speaker system. This approach is the antithesis of the British, so called BBC-style, thin-wall speaker-cabinet designs. The notion of "tuning the cabinet to the orchestra" comes to mind, and while it could be argued that some cabinet resonances are less objectionable to the ear and might in fact be consonant with the music, the end result is inevitably a sonic coloration. After auditioning the UniField Mk2, it seems to me that VSA's approach of minimizing all cabinet resonances is the correct one in that it clearly raises the bar in terms of achievable bass precision.

The cabinet is vented which suggests a bass-reflex loading, and that is in fact the case, the box tuning being 38Hz. But this turns out to be no ordinary bass-reflex design. Four internal chambers filled with Acousta-Stuf define a mini-labyrinth, which significantly dampens the twin impedance peaks produced by a typical bass-reflex design. The measured minimum impedance was 3.8 ohms at 100Hz and the impedance magnitude was nearly single-peaked and fairly flat, varying by only a factor of two in the deep bass. VSA refers to this bass tuning as a hybrid reflex/transmission line. I like the idea of contouring the overall Q of the speaker system using acoustic damping. Although conceptually it is still a long ways from a classic transmission-line bass loading, this tuning

works in practice by nudging bass performance toward that of an aperiodic sealed box.

In-room bass extension measured flat to about 38Hz. It was a case of bass reach coupled with a surprising degree of punch. Most stand-mounted speakers are not well suited for reproduction of symphonic music. The UniField Two proved to be a welcome exception. It possessed sufficient bass heft and dynamic prowess for realistic reproduction of an orchestra's power range. The bass balance, usually an issue for stand-mounted speakers, was shifted toward the midbass. There was considerably more midbass energy relative to the upper bass which manifested as a slight emphasis of an upright bass' body tone. Choice of partnering amplifier became an important issue. The UniField boogied superbly when matched with high-damping-factor solid-state amplifiers. It also scored highly in bass precision, a performance benchmark undoubtedly attributable to the combination of an acoustically inert cabinet and an aluminum-coned woofer. However, bass resolution suffered substantially when the UniField was driven by a low damping factor tube amplifier. Lacking amplifier control, the bass range took on a distinctly tubby character. The good news is that there is no shortage of high-damping-factor solid-state amplifiers in the 100 to 200Wpc range.

In the bass range, the UniField Two Mk2 offers impressive performance for a small box speaker. As such, it competes effectively with British stand-mounts from Spondor and Harbeth. Think greater rhythmic precision and bass heft. Its coaxial technology bestows upon it exceptional image focus. In fact, if you like mini-monitor soundstaging, you'll love the UniField Two.

Optimally set up, it will reward you with a steady stream of musical delight. And that's what it's all about. **tas**

### SPECS & PRICING

**Frequency response:** 32Hz-25kHz (-6dB), 40Hz-20kHz (+/- 2dB)

**Nominal impedance:** 4 ohms

**Sensitivity:** 88dB 1W/1 meter, anechoic

**Power rating:** Up to 200 wpc

**Weight:** 51 lbs.

**Dimensions:** 10" x 17" x 14"

**Price:** \$7995 (stands included)

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U3 digital data converter; Kuzma Reference

turntable; Kuzma Stogi Reference 313 VTA

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# OUR TOP PICKS **STAND-MOUNTED LOUDSPEAKERS**



## GoldenEar Technology Aon 3

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GoldenEar's Aon 3 is an attempt to capture the beautifully focused, revealing, and coherent sound of today's best two-way stand-mount monitors at a decidedly down-to-earth price. An "augmented" two-way design it combines a 7" wide-bandwidth mid/bass driver with a Heil-type tweeter, also using two side-mounted passive radiators to extend bass depth and punch. The result is a monitor that provides agile, detailed, and nuanced mids and highs while serving up bass that is unexpectedly full-bodied and that matches the quality of the speaker's midrange and treble. Care in placement and setup is needed for best results. Those listeners willing to sacrifice some of the Aon 3's extended low-frequency performance may find GoldenEar's slightly smaller Aon 2 offers even more compelling three-dimensional imaging.

[www.goldenear.com](http://www.goldenear.com) (232)



## KEF LS50

\$1500

Built to celebrate KEF's 50th anniversary, the LS50 monitor spins pure coincident-driver magic thanks to its blushing pink-gold Uni-Q coaxial midrange/tweeter mounted in bulls-eye fashion atop a uniquely arched baffle. Visually arresting and sonically satisfying, it delivers tonal neutrality at just the right pitch, with superb midrange sonics, full-bodied presence, and potent midbass punch. Thanks to its beautifully crafted high-density enclosure—an ideal platform for the space-saving Uni-Q—there's little in the way of cabinet resonances or port colorations. Imaging is as clean and pinpoint precise as you'd expect from KEF. Positioned in a small- or medium-sized room, the LS50 makes a statement like few small speakers. You'll want to hold on to these no matter how many upgrades you make to the rest of your system.

[www.kef.com](http://www.kef.com) (231)



## Revel Performa3 M106

\$2000

Revel's M106 is cut from the same rich fabric as its big brother the F206, but designed for smaller spaces. A vocal lover's dream, the two-way M sports the identical and brilliantly refined dome tweeter with acoustic lens waveguide of the floorstander, creating a wide sweetspot, a rewarding lack of localization, and estimable composure under all sorts of dynamic fire. Plus, it delivers nearly imperturbable output so that even under punishing conditions this feisty compact remains linear. There's a cooler cast to its tonal balance likely due to the lighter bass, but its character is still unmistakably, accurately Revel. History will show this is one of the great compacts of the last ten years.

[www.revel.com](http://www.revel.com) (234)



## Paradigm 30th Anniversary Inspiration Monitor

\$2599

Comparable in sonic quality to much more costly loudspeakers, the Paradigm 30th Anniversary Inspiration Monitor sports advanced technology and fine build-quality without the lofty price tag. Though limited in deep bass, these stand-mount loudspeakers are classic Paradigm, with neutral voicing and no significant colorations. A lot of speaker for the money and another winner in Paradigm's long list of exceptional products.

[www.paradigm.com](http://www.paradigm.com) (235)

# OUR TOP PICKS **STAND-MOUNTED LOUDSPEAKERS**



**Bryston Mini T**  
\$2695

Bryston electronics are famous for their superb build-quality and high-end sonics. With its first loudspeaker, the Mini T, the Canadian company knocks another one out of the park. Boasting the flattest response that reviewer Ron Doering has measured (32Hz–10kHz  $\pm 2.7$ dB), the Mini Ts are hidden gems in a plain-Jane exterior. Nothing on the outside hints at the quality of sound produced by these “bookshelf” speakers. Bring plenty of power to the game, though (100Wpc minimum).

[www.bryston.com](http://www.bryston.com) (238)



**Harbeth Monitor 30.1**  
\$5990

For PS, the Monitor 30.1 is the best compact two-way speaker system he has heard, regardless of type, cost, or complexity. A studio monitor intended for professional applications where high accuracy in a compact enclosure is required, the 30.1 boasts high neutrality, superb resolution, and a matching of drivers with respect to coherence and sonic character that is equaled by only a small handful of multiple driver dynamic loudspeakers in his experience. Speaking with a single voice in a way reminiscent of Quad ESLs, it is also of similar vanishingly low coloration and distortion, high transparency, and sheer musical authority, with an absolutely ravishing midrange. Despite its size, it does extremely well on demanding large-scale material at natural levels, with bass extension to below 50Hz. This is one speaker for which the cliché rings absolutely true: You can listen to it without fatigue for literally hours on end.

[www.harbeth.co.uk](http://www.harbeth.co.uk) (232)



**Raidho C 1.1**  
\$18,000

Greater “realism” in hi-fi is always a matter of more and less. Where it plays linearly (which is everywhere but below 50Hz or so) Michael BØrresen’s elegant Raidho C 1.1 two-way, ribbon/cone, stand-mount mini-monitor gives you both—more detail and less electro-mechanical noise—to a truly astounding degree, and without any bleaching of tone color. The result, on select great recordings, is a “realism” that not only raises goosebumps but that can actually extend beyond the momentary to an entire cut. “Trust me,” JV wrote, “I have heard few (actually, no) other speakers in my home reproduce a violin with such unstinting, uninterrupted realism as this Raidho.” An honest-to-goodness great loudspeaker, and one of JV’s current references.

[www.raidho.dk](http://www.raidho.dk) (224)

EQUIPMENT REVIEWS

# Floorstanding Loudspeakers Under \$10k



## Featured Review

# MartinLogan Montis Reserve Series Electrostatic Hybrid Loudspeaker

## The Hybrid Perfected

Paul Seydor

I knew there was something special about MartinLogan's new Montis electrostatic hybrid when I first heard it at the 2013 Newport Audio Show. For one thing, my wife wanted to linger a while and listen further. Now Danielle would almost rather eat chalk than audition audio equipment, and at this particular show decent or better sound was by far the exception to the rule. We returned to the room later that day—as much for relief as for interest—and the next day I went back myself. With each visit I liked what I heard better (all kudos, by the way, to audio veteran Dan Rosca for the setup). In due time I requested a review pair. Despite my longstanding preference for planar electrostatics—all vintages of Quad ESLs and the late, lamented Acoustats—my experience with previous MartinLogans was limited; and attractive though I found many aspects of their performance, they never quite succeeded in closing the deal as it were. In one fell swoop, the Montis changes all that: This is a really great loudspeaker.

MartinLogan Montis Reserve Series Electrostatic Hybrid Loudspeaker

Based in Lawrence, Kansas, where the company has been designing and manufacturing high-quality electrostatic loudspeakers for well over three decades (though manufacturing is now shifted to Canada), MartinLogan hardly needs an introduction for either its products or its technology. The Montis is one of three hybrid models in ML's top-of-the-line Reserve Series, above the Ethos and below the Summit X, which my colleague Dick Olsher raved about in TAS 209—and is reprinted in this Buyer's Guide. (The flagship in the Reserve line is the CLX Art, but it is a full-range ESL, not a hybrid.) I refer readers to that review for a thorough technical description of ML's electrostatic technology or better still to Dick's profile of the company in *The Absolute Sound's Illustrated History of High-End Audio, Volume 1: Loudspeakers*. The Montis is almost as tall as the Summit—both around 60 inches high—and uses the same 44" x 11.3" CLS electrostatic panel. CLS stands for ML's unique Curvilinear Line Source, which involves a gentle horizontal convex curve the better to disperse the higher frequencies, thus mitigating the narrow treble radiation of so many electrostatics (notably Quad's). Not that it scatters the sound all around the room like an omnidirectional; rather, the dispersion is limited to approximately a thirty-degree angle, which is more than sufficient to prevent the head-ina-vise syndrome. The Reserve series as a whole incorporates several improvements over past ML panels, including aluminum alloy frames of exceptional strength and rigidity and both a physical and electrical ruggedness that make them almost impossible to damage. (Accessible through ML's Web site is an amusing

video called "Myth," which addresses most of the so-called "problems of electrostatics," that has one of the company's engineers banging a CLS panel to demonstrate how rugged it is. Providing you don't actually poke something through the stators—which would be difficult, as the perforations are small—any sort of accidental physical damage to the membrane itself would be unlikely in the extreme.) CLS panels play as delicately as any transducer on the planet, yet they also boast exceptional reliability: not since the fabled Acoustats of the eighties have I felt no anxiety about destroying a panel by driving an electrostatic as loud as I wanted, and no Acoustat was ever as efficient, easy to drive, and transparent as the Montis.

Impressive as ML's latest CLS panels are, it may be the woofer and its associated crossover that are the real wonder here. The main difference between the Montis and the Summit is that the latter crosses over at 270Hz to a pair of powered 10-inch woofers per array for the bass, whereas each Montis has just a single powered-woofer crossed over at 340Hz. The -3dB point of the Summit is 24Hz, the Montis 29Hz. But the Montis has one considerable advance over the Summit, what ML calls a 24-bit Vojtko DSP "engine." Named after Joe Vojtko, one of ML's resident engineers and designers, this circuit uses digital processing to help the CLS panel and the woofer mate as coherently as possible. It was precisely this thorny matter of ultimate coherence and integration that left me unconvinced by all ML hybrids I heard before the Montis. However Vojtko has managed it. This new model is the most completely successful ES/cone hybrid I have ever heard

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— Chris Martens, *The Absolute Sound*, January 2012



Triton Two Tower  
\$1,499 ea.

*"...I would not be surprised if they retailed at \$10,000 a pair"*

— Robert Deutsch, *Stereophile*

GoldenEar's Triton Two has set the audio world on its proverbial ear with extraordinary sound quality, elegant styling and previously unimaginable value. It has earned an incredible series of honors and awards — including *What HiFi's* Speaker-of-the-Year, *Absolute Sound's* Affordable Speaker-of-the-Year, *Sound & Vision's* Audio Product-of-the-Year, *Home Theater's* Top Pick-of-the-Year, *Home Theater Review's* Best Affordable Floorstanding Speaker and *Stereophile's* highly coveted Recommended Product honors. In fact, Robert Deutsch fell in love and raved about their "...quite stunning sense of realism ...I found that with my eyes closed it was easy to imagine that I was at that concert." This is the holy grail of audio we all seek!

*"Listening with them paralleled previous encounters with no-holds-barred speakers — ones priced upwards of \$50,000."*

— Al Griffin, *Sound & Vision*

The Triton Two is the creation of industry legend Sandy Gross, whose Grand Prix Award winning loudspeakers have been impressing reviewers and listeners for over 40 years. The Triton Two incorporates cutting edge technologies like High Velocity Folded Ribbon tweeters, high-definition spiderleg cast-basket drivers and a linear-phase crossover network. The built-in powered subwoofer utilizes a 1200 watt DSP controlled digital power amp driving dual front-mounted long-throw 5"x9" quadratic subwoofer drivers which are coupled to two side-mounted inertially balanced 6.75"x8" quadratic planar infrasonic passive radiators.

*"It's like getting a Tesla Roadster for the price of a Toyota Prius."*

— Darryl Wilkinson, *Home Theater Magazine*

Sonically, the Triton Twos are simply extraordinary. They deliver boxless three-dimensional imaging that *What HiFi* called, "something really magical" and had *AudioVision* raving, "they had us believing the entire surface of the front wall was covered with speakers." Likewise, the built-in subwoofers' deep powerful bass blends perfectly with the utterly transparent mid-range and silky smooth high-frequencies. They simply put many dramatically more expensive speakers to shame. Hear them for yourself and discover what all the excitement is about!

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## MartinLogan Montis Reserve Series Electrostatic Hybrid Loudspeaker

(though I must add that I've not heard the Summit). Once you get the speaker optimally positioned and the rearpanel control at the right level, the integration is to my ears for all practical purposes seamless and coherence absolute, banishing any sense of listening to two different methods of propagating sound waves.

Before getting down to listening, a few more nuts and bolts. Despite its height, the Montis cuts a very svelte and surprisingly unobtrusive figure; though the aluminum alloy frame—exceptionally rigid and solid—and the stators are black anodized, the perforations in the latter make the speaker physically transparent for most of its height, so you don't feel as if

a pair of Stanley Kubrick's monoliths have descended into your room. There is a nominal 4-ohm impedance, but these are electrostatics, so impedance dips much lower at certain frequencies. That said, I had no trouble driving the Montis to clean levels louder than I could comfortably stand with Zesto Audio's 60-watt Bia tube amp or NAD's M50 integrated at 180 watts a side. Efficiency is 91dB, helped no doubt by the fact that the woofer has its own dedicated power amplifier.

The Montis is state of the art in all the areas for which electrostatics are traditionally outstanding: it has a tonal balance that while not quite dead neutral (more on this in a moment) always sounds supremely natural and extremely smooth. It is as sonically transparent a transducer as any ever made—certainly as any I've ever heard, which is to say that it rivals any Quad of my experience, which includes every Quad ESL ever made. It has dynamic range that is quite beyond the capability of any Quad and for that matter any other ESLs of my experience, including Acoustats. (Acoustats might have had the capability to play as loud, but they were so damned inefficient that I doubt amplifier power existed to make it possible.) And its frequency response, especially at the bottom end, not only exceeds Quads, it exceeds many so-called fullrange cone speakers with which I am familiar. Finally, it can do size to match any Magneplanar I've ever heard without what always strikes me as the Maggies' tonal anomalies and discontinuities (much improved, I grant, in the latest models, but still not enough to persuade me).

What seduced my wife about the Montis was its musicality and warmth. Danielle is no

audiophile—accompanying me that afternoon last year at Newport was her one concession to an audio show in sixteen years of marriage! By warmth she didn't mean the term as audiophiles typically use it; rather, she meant that it didn't sound "hi-fi," as in edgy, bright, toppy, glaring, irritating, and relentlessly, fatiguingly over-detailed. In this she was absolutely correct. In fact, the Montis, as measured by Robert Greene in my room, is ever so slightly forgiving in the 2k-4k region, and above that exhibits a mild sloping response. Together these characteristics are neither gross nor obvious, and do not manifest themselves as coloration or a significant deviation from overall neutrality. The effect is rather more like a shift in perspective from, say, row AG to H-P. This means that with recordings that are far too closely miked, which is to say most recordings, the Montis will actually sound more natural in ways that a literally accurate speaker will not. If I were to search for a thumbnail characterization, I'd say its tonal character is reminiscent of what in the old days used to be called "New England" sound: essentially neutral, uncolored, smooth, civilized, maybe a bit polite. But with one huge difference: no "New England" speaker I've ever heard was ever capable of a presentation as full of life and vitality as the Montis, able to scale instruments to life size and bring the room as alive with music. And no such speaker ever sounded as open and free from a box as this one.

Because the Montis has a tonal profile more or less similar to that exhibited by most really good concert halls, it almost always sounds musically right, natural, and realistic. Of course, the smart money will tell you that you should

look elsewhere if you want to play rock and roll, and for many listeners that advice may indeed be smart. I don't listen to a lot of rock myself, but what I do listen to—from Buddy Holly to the Rolling Stones—sounds great on the Montis, not least because of how big the projection is. Mick Jagger at his raunchiest certainly doesn't come across as polite, and when the singers come in behind Cat Stevens on the last cut of Tea for the Tillerman, the effect—dynamically, spatially, dimensionally—lifts me out of my seat. And thanks to that wondrous woofer, any sort of drums and electronically generated bass are sensationally strong and clean with superb definition and control.

When it comes to classical music, the Montis' presentation of large orchestral and choral music or opera is spectacular in scale, impact, and once again that elusive sense of realism: The presentation opens out with tremendous size, weight, and impact. The brindisi from the new Chicago Symphony Otello, conducted by Muti, is presented exactly as recorded: a concert performance with the orchestra spread out in a Cineramasized array, the large chorus toward the rear, and the soloists front and center. Bass response is fabulous, clarity fantastic, and dynamic range sensational. With performances that are aurally staged for recording, like the Solti/Culshaw Ring, the Bernstein Carmen, and Joel Cohen's Sing We Noel, the Montis soundstage is so convincingly three-dimensional that I found myself wondering why anyone needs to bother with surround sound. On smaller ensembles, the same uncanny sense of transporting either you to the venue or the performers into your room obtains. One of the best choral recordings of

### SPECS & PRICING

**Driver compliment:** 44" x 11.3" electrostatic panel, one 10" powered cone woofer

**Frequency response:** 29Hz-23kHz +/-3dB

**Integral woofer amplifier power:** 200 watts

**Sensitivity:** 91dB

**Recommended amplifier power:** 20-500Wpc

**Weight:** 58lbs each (net)

**Dimensions:** 12.7" x 59.3" x 18"

**Price:** \$9995

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## MartinLogan Montis Reserve Series Electrostatic Hybrid Loudspeaker



recent years is *Conspirare's Sacred Spirit of Russia* [HMUSA], which captures the spacious acoustics of a beautiful-sounding church (in Austin, Texas) to a fare thee well. When the small chorus sing out and the voices expand to fill the room, you'll hear an object lesson in what loudness level in relationship to volume is all about. When the material is intimate and miked well, like some string quartets, the impression of the instruments arrayed across the room behind the speakers is spooky in its dimensionality, body, and sheer "here they are" presence: *The Yale Quartet in Beethoven's Opus 132* or *Sonny Rollins in Way Out West* are different examples.

As noted, MartinLogan specifies the -3dB at 29Hz. Ladies and gentlemen, that is very low for a full-range system of any price and size and

for once I am inclined to take it at face value. Playing *Volume Two of Kei Koito's Bach organ recital* [Claves] boggles the mind that such depth, resolution, and sheer power are coming out of a single 10inch woofer. String bass from jazz ensembles have an ideal combination of definition and fullness and they never sound dry. No, the Montis doesn't reproduce that sense of subterranean bass or the full "room sound" that a true subwoofer like the REL 528SE does (Issue 241), but that seems to me just about the only way it falls short. And keep in mind, very few full range speakers out there will descend as low as the Montis does before they start doubling; meanwhile, you can always add a REL or one of ML's own subwoofers for performance that I doubt any fullrange speaker in a single enclosure or array would equal or surpass.

No speaker is perfect, and the Montis is no exception. That mild trough in the presence region can occasionally have the effect of making the presentation, notably of solo voices, fractionally less immediate, which a comparison to my Quad 2805s or Harbeth Monitor 30.1s readily reveals. But for my tastes this is compensated for by a midrange and lower midrange of such lifelike dimensionality that I don't mind. I've called attention to the speaker's soundstaging capabilities, than which I have heard none superior. But the soundstaging is better than the imaging as such. Owing in large part, I assume, to the curvilinear panels with their increased lateral dispersion and the fact that this also seems to affect the back wave (these being dipoles), the fabulous spatial characteristic of the Montis extracts a small price in imaging specificity. I don't want to make too much of this. You will not hear ten-foot wide violins unless they're recorded that way; mono images stay focused in the center; and movements within the soundstage are clearly trackable, e.g., the way the recorder advances from back to front in the left channel, crosses the room, and recedes in the right channel on *The Christmas Revels*. As befits its spaciousness, the Montis almost always sounds realistic. Indeed, a few days before writing this review I heard an orchestra in a moderately sized hall where I was sitting in row P, and with eyes closed it was not possible to pinpoint exactly where, say, the wind soloists were sitting, though the general vicinity was obvious to within a few feet. The point I want to make is that while the Montis is not imprecise when it comes to imaging, neither is it laser-like

in its ability to resolve positional cues with a cartographer's exactitude, the way, say, a Quad or a really good compactmonitor like Harbeth 30.1 or a Magico is if you seat yourself in the middle, have all the levels correctly matched, and the recording allows for it. But never once while listening to music was I ever aware of this "deficiency"; I draw attention to it only because I know there are readers for whom this is an issue of supreme importance (as it is not for me).

The Montis, like all ML speakers, comes with an exceptionally comprehensive and instructive manual to assist even a neophyte in getting the best performance in real listening rooms. This is one manual that's worth reading carefully and at least trying out some of what is suggested. The only caveat I have is a formula ML offers for triangulating the speaker to side, front, and listening position distances. I tried this formula, which situated the speakers fairly close to the front wall and which resulted in a closedown presentation that robbed the sound of its life, vitality, and dimensionality. (Robert Greene was visiting that day and he concurred.) Like everyone else who manufactures planar loudspeakers from Quad to Magneplanar, MartinLogan is, let us say, optimistic about how close you can move their speakers toward the front wall without seriously impairing performance. My advice is to keep them well out from the wall and as far as you can from the sidewalls without compromising a good stereo spread. Then pay careful attention to the manual's advice for toein and you will have a presentation that just about ideally mediates imaging precision, soundstaging, and tonal balance.

Equally important to enjoy the integration

## MartinLogan Montis Reserve Series Electrostatic Hybrid Loudspeaker

between the woofer and the CLS panel that is possible with this design is the woofer-level adjustment on the back. The natural tendency of most audiophiles will be to leave the indicator at the mid or “O” position or to raise it. Go ahead and start there, but if you begin to hear the woofer as a separate contribution to the overall sound, then you almost certainly have it adjusted too high. In my room, for example, three makings below the middle position yielded both the flattest measured response and the most seamless integration.

Like any accurate speaker system, the Montis will tell you what’s ahead of it in the reproducing chain. I started with the Zesto Audio Bia, an all-tube amplifier with what I suspect may be a highish output impedance. The results were predictable. The midrange was gorgeous and anything I played was meltingly beautiful. But while the bass was strong and powerful with good definition and splendid bloom, I’d have to lie to say it had the kind of sheer force and crunch that the NAD M50 brought to the proceedings. Same with the top end: The combination of the BIA together with the ML’s own sloping response was, well—let’s just say that it was very kind to my dogs’ ears. Mine too, but at the same time I never felt that certain kinds of high percussion ever “bit” the ear in that pleasingly scintillating way that high hats, cymbals, even the highest reaches of the piano can. Switch over to the NAD and you hear what you’re missing. Mind you, I could listen to the BIA/Montis combination until the cows came home, so musically valid and pleasing is it. But just know that it doesn’t allow you to hear the whole of what the Montis is capable of, which is to say that it can kick a lot more booty and

more effectively with good solid-state units. In truth, I was happy with either combination, but I suspect most listeners will lean toward solidstate.

I deliberately waited until I took all my notes and virtually had the review written before I went back and read Dick Olsher’s review of the Summit X. I was pleased to discover that what we had to say tallied so closely with one another, including even our impressions of tube versus transistor amplifiers. The Montis is one of a tiny handful of the finest speakers I’ve ever been privileged to review and one of the finest I’ve ever heard regardless of design, type, complexity, or price—speaking of which, I’ve carefully withheld that piece of information until now so as to not to prejudice the snobs who let price determine how good an audio product is “allowed” to sound. The Montis costs \$9995 a pair. That is not a misprint, nor am I going to condemn it further by using the “B” word—you know the one I mean, the one with seven letters ending in “n,” that is code among some audiophiles (and, alas, far too many reviewers) to mean the product they’ll settle for when they can’t afford the one they “really” want. No, as I said at the outset, this is a great speaker system. Period. Like my Quad 2805 or ESL-57 or Harbeth’s Monitor 40.1 and 30.1, the Montis is capable of doing some things I’ve never heard bettered by any speaker regardless of size, price, or design. One thing that makes it very special, however, is how dramatically lifelike it can sound because of the way it’s prioritized its sonic and musical goals in just the right order and proportions, while minimizing or eliminating inevitable compromises and trade-offs. No, I’m not about

to replace my 2805—its slightly superior tonal neutrality and coherence, not to mention its vanishingly low coloration, still carry the day for me—but if I had room enough for another set up, the Montis would be on the shortest of short lists.

And let me leave you with this: A producer friend of mine who makes consistently some of the very finest recordings of classical music anywhere—a number of her recordings are used as references by reviewers on this and other high-end audio magazines—also owns Quad 2805s. When she played several of her recordings on the Montis in my listening room, she pronounced it the finest reproduction of any setup she has ever heard. No, she’s not giving up her Quads either, but she is planning to purchase a pair of the Montis. That’s a higher recommendation than anything I could write.



## Featured Review

# MartinLogan Summit X

Xtasy

Dick Olsher



**For MartinLogan X marks the spot. Promoted as the world's best hybrid electrostatic, the Summit X does in fact redefine sonic expectations in this particular loudspeaker genre. Updated from the original Summit, the X features redesigned crossovers and electronics. On paper the hybrid approach makes perfect sense. The goal is to blend electrostatic mids and highs with a conventional woofer for enhanced dynamics and bass extension. The key word here is "blend," as too often the end result had been a discombobularity where the transducers were joined at the hip. This may not be a rigorous technical term but it perfectly captures the sensation of listening to disparate drivers whose radiation pattern and resonant signatures are distinctly different.**

No one has been at it longer or worked harder at it than MartinLogan. It has been a long climb to the summit, but I'm pleased to pronounce the Summit X as the winner. It succeeds on multiple levels, including industrial design. Framed by extruded aluminum-alloy pillars, a Curvilinear Line Source (CLS) transducer presents a slim and elegant façade that should translate into a high wife acceptance factor. A curvilinear diaphragm requires the steel stator panels to be positioned front and back to exacting tolerances, and that is only possible with the help of a rigid frame. The stators are said to expose twice as much diaphragm surface area as a similar sized

conventional electrostatic panel. This means that not only can you see through them more readily, but also more sound energy is radiated into the room.

The woofers and a bevy of electronics are packaged in a modestly sized bass module that is neatly tucked away on the backside. It is home to a pair of 10" aluminum cone woofers (one facing out and one firing downward) and two 200W Class D amplifiers. There are no bass-reflex ports to be seen anywhere. The enclosure is sealed and the frequency response is equalized and contoured to provide extension into the low 20s—lower response, in fact, than that of many so-called



[www.theabsolutesound.com](http://www.theabsolutesound.com)

## MartinLogan Summit X

subwoofers. Of course, the bass is actively powered. The nominal crossover frequency is 270Hz, which means that the external power amp you connect only drives the electrostatic panels, while the built-in power amplifiers take over below that frequency. For those of you who are curious, here is a synopsis of the signal path flow based on information kindly provided by Devin Zell at ML: From the binding posts the signal proceeds in two directions. For the ESL transducer, there is a passive high-pass filter followed by a step-up transformer. For the bass, the signal is first stepped down to a preamplifier line-level. The signal then passes through (not necessarily in exact order) low-pass and high-pass filters, EQ filters, and 25 and 50Hz EQ controls. The signal is then split and fed to custom filters to implement the controlled-dispersion PoweredForce bass. Bass signals are monitored to prevent amplifier-clipping or overdrive conditions before being fed to the power amplifiers to drive the woofers. Apparently, all of this electronic wizardry is loosely denoted as the "Vojtko crossover," designed by or under the supervision of "Chief Audio Technologist and resident genius," Mr. Joe Vojtko.

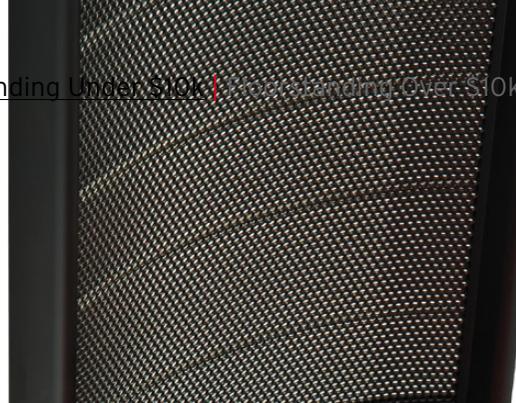
You may wonder what exactly Controlled Dispersion PoweredForce bass is all about. Being an essential factor in the Summit's transducer integration, it's worth an in-depth look. The basic idea is to make the woofer's dispersion pattern around the crossover point mimic the dipole radiator pattern of the electrostatic panel. It is well known that a dipole exhibits a figure-eight radiation pattern with little side radiation in the bass and a back wave that is 180-degree out of phase with the

front wave. Output cancellation occurs when the wavelength is large enough to wrap around the baffle. The Vojtko crossover allows the woofers to remain in phase below 100Hz and radiate omnidirectionally. Woofer phasing is shifted slowly between 100 and 160Hz so that the front and back woofer output becomes dipole-like above 160Hz. The end result is that in the overlap region between the transducers the wave launch blends cohesively, giving the impression of a single transducer at work. Well, the concept works well enough except for one missing detail and that is matching surface loudness density. While the electrostatic panel distributes sound energy over a fairly large surface area, the woofer's output is confined to a small area. A piano makes for an instructive analogy. It generates a lot of acoustic energy but it is spread out over a large soundboard. By contrast, a conventional woofer squeezes a piano's low end out of a 10-inch-or-so diameter area, effectively a point source relative to wavelength. You obviously will not notice anything unusual about the bass range when transitioning to the Summit from a box speaker. But if you are accustomed to planar bass, e.g., Magnepan, or in my case the Analysis Audio Omega planar magnetic/ribbon, then it's easy to recognize the surface loudness difference. In a nutshell, planar bass is spatially more expansive, and hence more realistic.

Given its 91dB sensitivity, you would think that driving the 'stat panel would be a piece of cake for even low-power tube amplification. I was looking forward to deploying my substantial collection of 30Wpc tube amplifiers in the pursuit of sonic bliss. Unfortunately, that notion went right out the window. The

electrostatic panel's impedance is capacitive in nature and decreases with increasing energy, reaching a minimum of 0.8 ohms at 20kHz. That makes the Summit a prime candidate for amplifier-speaker interaction. Unless an amp's source impedance is very low, meaning that its damping factor (DF) is high, it will invariably roll off the treble. The Berning ZH-230 struggled in this respect as did other tube amps. A typical tube amplifier with a source impedance of about 1 ohm is said to have a DF of 8 relative to an 8-ohm load. The same amp would exhibit a DF of less than one driving the electrostatic panel at 20kHz. One tube amp in particular started rolling off the Summit at 5kHz and was down 10dB at 20kHz. Make no mistake about it: This represents significant adulteration of the tonal balance. The amps that performed best in preserving the Summit's frequency response were high-DF solid-state (rather than hollow-state) designs, with a minimum DF of 150 relative to 8 ohms. MartinLogan doesn't recommend any particular amplifier; however, I can. My two favorite amps for the task at hand turned out to be the Electrocompaniet AW180 (DF=1000) and my Ampzilla II (DF=150), refurbished and upgraded to a FET front end by Mike Bettinger, GASAudio.net.

It seems to me that two-channel audio's best chance of survival in a surround-sound world is in the hands of dipole loudspeakers. My imaging priorities are a stable out-of-the box soundstage and realistic image size. In these areas, dipoles, and in particular planars, have in my experience outperformed conventional box speakers. I'm not a fan of pin-point imaging, which my British peers have held up as a gold standard for over a generation. I rather prefer



## The Absolute Sound 2013 Golden Ear Awards

### MartinLogan Summit X Loudspeaker



I called the Summit X a nearly perfect union of electrodynamic and electrostatic drivers and I continue to be "Xtatic about the Summit X." It redefines what is possible in the hybrid ESL genre by coupling a Curvilinear Line Source featuring the XStat electrostatic transducer to an active bass system. The latter includes a pair of 10" aluminum cone woofers and two 200W Class D amplifiers, using a Vojtko Voiced crossover network. Expect bass extension to 20Hz with plenty of slam and no discontinuity at the crossover region. Exceptional soundstage transparency is on tap together with the traditional ESL virtues of transient speed and detail resolution. Tonal balance is slightly on the lean side. Treble balance may be dialed in by toeing-in the speakers so that their axes intersect in front of the listening seat. Due to its capacitive impedance above 300Hz, the Summit is most comfortable being driven by a solid-state amplifier, though tubes may be used as well if some treble roll-off is acceptable. It is most likely the best-sounding hybrid ESL in the world, and that is bad news for expensive box speakers. (209)

## MartinLogan Summit X

image outlines to possess realistic extension rather than to be midget-sized, condensed, if you will, into a virtual star field. Planars, including the electrostatic transducer, do a nice job of simulating a realistic height and depth perspective.

Setup, however, is critical and a bit more challenging in the case of a dipole. As with all dipoles, it's essential to have some control over the listening environment. For optimal performance the speakers should be positioned about five feet from the rear wall. Be sure to read the owner's manual for a good discussion of set-

up strategy. A key adjustment is toe-in angle. Be sure to experiment in this regard, as it seriously impacts the overall tonal balance. As the speaker is rotated from fully toed-in to straight ahead, the frequency range affected is 2kHz to 10kHz. In particular, expect a 3 to 4dB reduction in the range of 3 to 4kHz, which is right smack in the upper midrange and presence regions. In my room a straight-ahead orientation worked best—that is, no toe-in, with the listening seat in line with the inner third of the electrostatic panel. Of course, your tastes may differ from mine. I strongly dislike a bright tonal balance. I've been

accused occasionally of disliking treble. For the record, I think that treble has its place; it should fit within a realistic tonal perspective. And if that means a slight treble roll-off with increasing frequency, the result of no toe-in, so be it. It is also possible to adjust the vertical angle of the panel from -1 to -11 degrees by appropriate selection of front and rear feet. The feet are set for -5 degree out of the box, which should work for most listening environments. Finally, be sure to break in the woofers for the full 72 hours recommended in the manual. The Butyl surrounds are stiff and need plenty of exercising before bass output reaches specification.

Conceptually it is quite proper to view the Summit as a full-range transducer with bass augmentation. The payoff is total cohesiveness starting in the lower mids and extending to the upper treble. The conventional approach to designing a wide-bandwidth speaker is to deploy a bevy of drivers: woofers, midrange, tweeter, and possibly even a super-tweeter. The assumption inherent in any multiway box speaker is that it is possible to chop up the corpus of the music using crossover networks and then reconstitute it acoustically. The ugly truth is that since the drivers' acoustic centers are typically non-coincident on the front baffle, there is considerable interference between them. Move your head a few inches up or down and the frequency response changes. There's usually one axis on which measured response looks good, and that's the one you would expect to show up in the sales brochure. The electrostatic panel, on the other hand, does not suffer from such issues. The measured frequency response at the listening seat was quite smooth above 300Hz. The payoff of speaking with one voice over the critical

## Bonus Content FURTHER THOUGHTS

As you might expect, my reference system is in a constant state of flux with speakers rotating in and out to accommodate ongoing review projects. The transition from the Summit X to a conventional box speaker invariably surprises me with its radically different image size perspective. It's not as though image size is somehow encoded during a recording session; a two-channel mix down can't do that. The key point is that a planar transducer is able to synthesize the impression of a height perspective with reasonable realism, whereas a small midrange or mid-woofer driver tends to collapse image size to a tidy point within the soundstage. Perhaps it's a personal preference or a question of being within one's comfort zone, but when I kick back to enjoy the music it's far easier for me to accept the Summit's version of reality. No subwoofers need apply. I've had no interest in complicating matters with an external subwoofer. And why should I with bass extension approaching 20Hz and superlative midbass dynamics. My enthusiasm for the Summit X has not diminished over the past several years. Speakers have come and gone, but it is still one of the main pillars of my reference system, and in my estimation, a classic in the making. —Dick Olsher

## SPECS & PRICING

**Frequency response:** 24-23,000 Hz +/-3dB

**Horizontal dispersion:** 30°

**Vertical dispersion:** 44" (112cm) line source

**High-frequency transducer:** XStat electrostatic transducer: 44" x 11.3" (497 square inches)

**Low-frequency transducer:** Two 10" cast-basket, high-excursion woofers

**Amplifier:** Woofer, 200Wpc (4 ohms)

**Sensitivity:** 91dB/2.83 V/1 meter

**Impedance:** 4 ohms, nominal; 0.8 ohms, minimum at 20kHz

**Recommended amplifier power:** 20-600 watts per channel

**Crossover frequency:** 270Hz

**EQ controls:** +/-10dB at 25Hz; +/-10 dB at 50Hz

**Power Draw:** Standby: <1W/channel; Max: 350Wpc

**Dimensions:** 12.7" x 60.9" x 21.3"

**Weight:** 75 lbs.

**Price:** \$14,999

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### ASSOCIATED EQUIPMENT

Kuzma Reference turntable; Kuzma Stogi Reference

313 VTA tonearm; Symphonic Line RG-8 Gold MC

phono cartridge; Air Tight ATE-2 phono preamp;

SoundTradition Live! MC-10 step-up; Weiss Engineering

Jason CD transport and Medea DAC; Concert Fidelity

CF-080 line preamplifier; Lamm Audio M1.2 Reference,

Electrocompaniet AW180, and deHavilland 50A

monoblocks, GASAudio.net Ampzilla II and Berning ZH230

stereo power amps; FMS Nexus-2 interconnects; FMS

Nexus speaker cable

## MartinLogan Summit X

midrange and upper octaves is a stable and extremely transparent soundstage. In my room, the resultant soundstage width extended well beyond the speakers' outer edge, and the depth perspective was fully fleshed out. It was truly spooky at times, when the sensation of being able to reach out and touch someone took hold. With no veiling to speak of, stage lighting, if you will, was fully turned on. It was effortless accessing the inner recesses of the soundstage to localize a particular spatial outline. My gut feeling was that transparency was not only as good as I've experienced, but also as good as it's likely to get.

The traditional electrostatic virtues of transient speed and detail resolution were very much in evidence. The mechanics of music-making are about starting and stopping, attack and decay, and this the Summit reproduced with excellent fidelity to the real thing. It was easy to hear deeply into a complex mix or to resolve nuances inherent in cymbal brush work. Harmonic textures impressed with exceedingly low distortion levels, as pure and sweet as a snow white dove. There was more, however, to the Summit than just "pretty" sound. Talk about spontaneous combustion! Its presentation sparkled with dynamic nuance, and given the chance in matching amplification, musical lines caught on fire delivering the music's full emotional intensity.

And unlike full-range electrostatics, it could really push the pedal to the metal, changing gears from soft to loud effortlessly—no strain, no pain. In my room, bass extension was nearly 20Hz, putting to shame all extant full-range ESL designs. Midbass headroom was

stupendous, generating an impressive punch factor on tympani strikes. It was more than just a case of quantity; bass lines were generally tight and well defined. The combination of non-resonant bass and midrange clarity added up to unadulterated timing cues and a compelling sensation of rhythmic drive. I preferred to leave the bass EQ controls at the 0dB setting. Even a +2dB adjustment at 50Hz resulted in noticeably ripe midbass. Actually, the problem in my room was a response notch in the upper bass, centered at about 200Hz. The result was a slightly lean tonal balance lacking the big tone presentation of my Omega planar magnetics. There may well be a slight dip around the crossover frequency at 270Hz, which is further exacerbated by room modes. In any event, I certainly could have used a bit more upper bass output, say +3dB. It would have been really nice to trade the 25Hz control for one at 200Hz. How about it, MartinLogan? In most rooms it's either the midbass or the upper bass that needs fixing, making 50Hz and 200Hz controls most relevant.

If a speaker ever deserved hyperbolic praise, it is the Summit X. I'm Xtatic about the Summit X! It represents a technological triumph, but most importantly, technology in the service of music. Whether you're an oil Sheikh or on a more moderate budget, the Summit X should be on your short buy list. I can safely affirm that it is the best-sounding hybrid ESL in the world, and that is bad news for expensive box speakers. In fact, I can't think of a box speaker under \$40k I would rather live with. A mandatory audition for anyone serious about reproduced music. **tas**



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# Magnepan Super MMG System

Inimitable

Neil Gader

**M**any of my encounters with Magnepan loudspeakers predate my high-end audio writing by many years. Even now the instant I hear a Maggie system I'm transported back as if by time machine to the late seventies and to the home of a friend who owned a six-panel Magneplanar Tympani 1D system driven by the legendary Audio Research SP3a preamp (with Van Alstine modification naturally) and the sock-it-to-me D150 stereo amplifier. I'd bring over handfuls of EMI and Decca pressings and thumb through the latest issue of the then digest-sized TAS and spend countless hours immersed in the listening experience.

Compared with most of the cone transducers of the day the Tympani 1D had an astounding midrange, a crystalline transparency, and immediacy to burn. It was a sound pure and unfettered by cabinet coloration. What was perhaps its most gasp-worthy attribute, and the narcotic that had me returning week in and week out, was the huge wave-front that it launched from its massive radiating area. It scaled symphonic images and soundstage information with rare authority. In that aspect it recalled the Cinerama theaters of the 1960s, which would sometimes play a little game with

audiences to gin up expectations. As show time arrived, the curtain would open but only to the "normal" screen size and then pause. An instant later the curtain would resume opening, widening ever closer to the wings of the proscenium, the audience howling in delight. This was the same super-scaled "wow" that I got whenever I listened to Maggies.

I have to admit that after just a few short minutes listening to Magnepan's entry-level system, dubbed the Super MMG, the wow factor is still there. The Super MMG system, priced between \$1199 and \$1750 depending

## EQUIPMENT REVIEW - Magnepan Super MMG System

on configuration, is a slightly different take on the tried-and-true for Magnepan. This MMG is Magnepan's smallest panel. It's the familiar two-way planar-magnetic design with a quasi-ribbon tweeter. It operates unlike a dome/cone in that instead of a voice coil the audio signal drives a series of evenly spaced wires glued to a low-mass Mylar diaphragm. The diaphragm is suspended between magnets. Unlike electrostatics, planar-magnetic designs do not require large transformers or a connection to an AC outlet to polarize the membrane. The MMG quasi-ribbon is also Mylar film, a difference that distinguishes it from the aluminum foil "true ribbon" design found in Magnepan's more expensive offerings. *[In a "true" ribbon, the diaphragm is also the conductor. In a quasi-ribbon, conductors are bonded to the diaphragm. -RH]*

The Super MMG system is actually a package that includes a single Dipolar Woofer Module or DWM (dual DWMs are an option). To attain "Super" status the original MMG has been lightly hot-rodged throughout but optimized particularly in the crossover section for this pairing. The discretely proportioned DWM is designed to reinforce the bass and midbass region by adding diaphragm area. Rolloff of the shallow-slope crossover extends into the upper bass/lower mids. Power? Although Maggies have no need for transformers like their electrostatic cousins, they do require amps capable of driving 4-ohm loads. And they do like power—to that end it's instructive to remember that most of the surface area of the Maggie is dedicated to power-hungry low frequencies.

Knowing how difficult it is to earn acceptance of a third or potentially fourth speaker in the

room, Magnepan has designed the DWM so that it can be easily disguised as furniture or even hidden within an existing cabinet, if there is at least 30% open area within the cabinet for bass frequencies to escape. Examples of these options can be viewed on the Magnepan Web site. Finally for interested parties without a dealer in the neighborhood, the Super MMG system is available as part of Magnepan's very accommodating 60-day unconditional home trial.

I listened to the system three ways—MMG solo to get my bearings, with a single DWM, and with double DWMs. Adding a DWM was easy. Simply connect the amplifier to the Amp In taps and then connect the speaker pair to the high-level Output taps. These are designed for banana plugs or bare-wire connection but Magnepan offers spade adapters if needed.

I have a habit (self-diagnosed) that when I sit down in front of a pair of Maggies I tend to gravitate away from heavy, beat-oriented rock and towards acoustic, classical, or otherwise minimally processed music. It's not because a speaker like the Super MMG won't do Metallica or Green Day—it mostly will. Rather it's been the case that its sweetest charms are inextricably linked to the greater micro-dynamic and harmonic complexities that make up acoustic music and that are typically squeezed out of most pop mixes when they hit the digital plumbing of compressors and ProTools.

So, out came the discs that many speakers in this price segment tend to struggle with. Suddenly the delicate and plaintive harp motif in the corner of the orchestra during *The Wasps* [RCA] found its harmonic range or the soaring

piccolo during *Pulcinella* [Argo] sweetened and soared without a hard brittle overlay. But most impressive was how the cavernous, dimensional space of large venues came alive, like the Troy Savings Bank Auditorium in New York on Laurel Massé's *Feather & Bone*. Reverberant information was no longer condensed as if needing to fit within a small box.

The Super MMG's low distortion and effortless transient attack reveal the tiniest intricacies—the depths of string section layering as well as the individuation of musicians. In at least these criteria they are indeed "faster than a speeding bullet." The Super MMGs virtually caress the atmospherics of fragile percussion instruments and even the smallest cues can be startling in their immediacy. From the rattles of a snare drum to the jangles of a tambourine, I kept thinking "nano-dynamics" as I listened to Holly Cole's track "Train" with its soft shakers, distant vocal callouts, and assorted twangs and tinkles by a menagerie of percussion.

These Maggies throw open windows onto ambient and reverberant cues so that even the most garish slap echoes are remarkable to hear, as in the prime example that occurs during Jennifer Warnes' "Song For Bernadette" from *Famous Blue Raincoat* [Impex]. Each time Warnes sings a phrase ending in a consonant (like the "t" at the end of "Bernadette") you'll hear the sustained decay of the hard consonant drifting like a feather on the air and disappearing over an acoustic horizon. As I listened to Mary Chapin-Carpenter's "Stones in the Road," the focus of a finger-picked figure, the snap of a flat-pick off the steel string, or the soft touch on a piano keyboard were all there.

The MMG Super's tonal balance is generally good but there are a couple bumps. I found a bit of a presence rise in the roughly 2kHz region and again in the sibilance range that lent the

### SPECS & PRICING

#### SUPER MMG

**Type:** Two-way, quasi-ribbon planar-magnetic  
**Frequency response:** 50Hz-24kHz  
**Sensitivity:** 86dB  
**Impedance:** 4 ohms  
**Dimensions:** 14.5" x 48" x 1.25"  
**Price:** \$1199 (\$1750 with twin DWM panels)

#### DWM

**Type:** Planar-magnetic dipole bass panel  
**Frequency response:** 40Hz-200Hz  
**Sensitivity:** 86dB  
**Impedance:** 4 ohms  
**Dimensions:** 19.25" x 22.5" x 1.25"

#### MAGNEPAN

1645 Ninth Street  
 White Bear Lake, MN 55110  
 (651) 426-1645  
 magnepan.com

**Associated Equipment:** Sota Cosmos Series IV turntable; SME V tonearm; Sumiko Palo Santos, Air Tight PC-3; Parasound JC 3 phono; Synergistic Element Tungsten/CTS, Wireworld Platinum interconnect & speaker cables; AudioQuest Coffee USB & Firewire, Synergistic Tesla & Audience Au24 SE phono & powerChord, Wireworld Platinum power cords.

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## EQUIPMENT REVIEW - Magnepan Super MMG System

system a more forward, detailed sound, but neither of these was a glaring issue. Female vocals evidence a little more head tone and a little less chestiness, further confirming the systems leans toward the more delicate recorded information and away from heavier dynamic histrionics.

My biggest issue with the system is its relationship between soundstage/image scale and the dynamic range that supports them. An example would be the acoustic-guitar playing of Nils Lofgren during his epic "Keith Don't Go" track. Staging and scale are brilliantly rendered. The cut features all kinds of timbral detail and dynamic bravado as well as the sheer physicality of his playing technique. However when Lofgren thumb taps the bridge of the instrument for additional percussion embellishment you should feel the wavelaunch from the soundboard almost like the impact of a drumhead. This is the region where the Maggies tend to be a little light—the same region where cone transducers tend to excel. So while the MMG unquestionably rules the roost over micro-dynamics gradations from the lower middle range on down, the delivery of full-tilt macro-level energy is softened, lacking the explosive immediacy of the live experience.

What does the DWM bring to the party? Since it's a midbass woofer, not a true sub, don't expect bottom-octave excursions. It's more like a good vitamin supplement that benefits the entire system. The DWM refines pitch response and kicks it up a gear dynamically. The entire system gains a stronger sense of grounding. Response well into the upper bass region becomes clearer and more focused than with the MMG on its own. And yes, it's a little more kick-ass, too. Listen to

the bass vamp during the intro to Holly Cole's "I Can See Clearly" from *Temptation*. It doesn't wilt or intensify depending on the note struck. It supports but doesn't stomp on the speaker's transient gifts or otherwise cloud the sonic landscape.

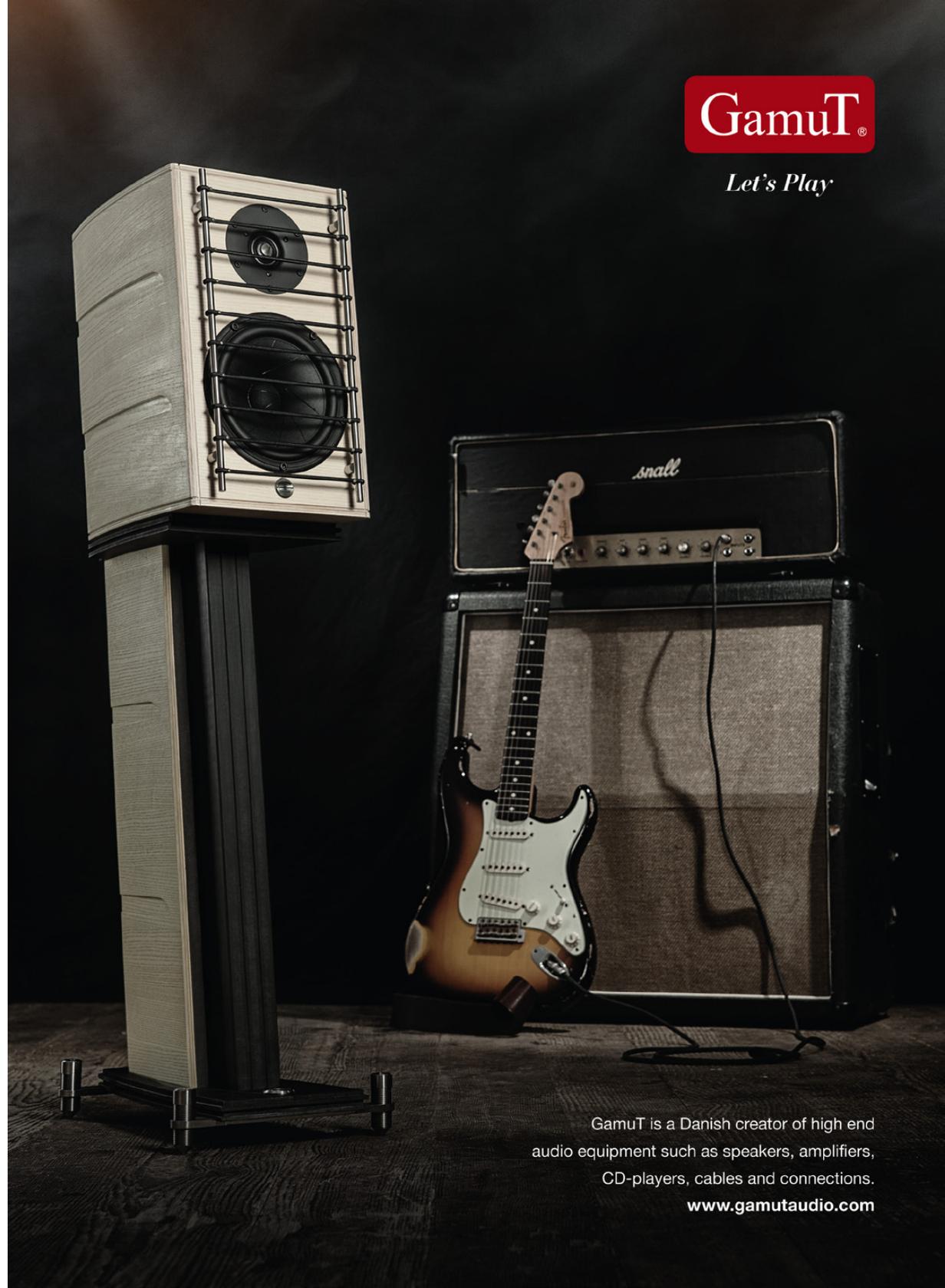
Integration is historically the bugaboo of subwoofers and bass speakers. But the DWM is pure dipole bass, freed of cabinet or port coloration. The quality of its bass response is in perfect character and perspective with the rest of the system. In place of bottom-octave extension it adds weight and secures the soundstage and breathes gobs of ambience. More than anything it magnifies the existing resolution.

One DWM or two? There are two answers. Room size is one—a single for smaller, a double for larger. Either way the DWM can grow on you. But there is also the low-bass-quality factor. Dual bass panels can provide a more even in-room response—each bass panel effectively filling in the frequency response dips of the other, smoothing out the room-mode nulls and peaks that occur in most acoustic settings.

The Super MMG system is such a winning effort that it's easy to lose sight of the fact that it's competing in the under-\$2k price segment. In fact I kept comparing it unconsciously to all sorts of pricier speakers I've written about in the past few months. This is a loudspeaker of such extreme value that failing to put it on your shortlist only means short-changing yourself. Leap tall buildings in a single bound? Well, maybe not quite. But in most every other way, super indeed. **tas**

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# GoldenEar Technology Triton Seven

**Overachiever!**

**Chris Martens**

I enjoy *über*-high-end audio equipment as much as the next fellow; nevertheless, I have an abiding fondness for overachieving products that deliver high levels of performance for reasonable sums of money. I suppose this has to do with my conviction that the enjoyment of music is (or in an ideal world should be) something for all to enjoy—not just for an elite, well-heeled few. My wish is that high-end audio could be less a “rich man’s game” and more a sport for the common man. Happily, at least a few worthy high-end audio manufacturers share this wish and have developed products that are affordable yet offer compelling and, in the best cases, downright brilliant sound quality. One such product is the GoldenEar Technology Triton Seven floorstanding loudspeaker (\$1399/pair) that is the subject of this review.

Let me begin by supplying a bit of background. As most of you know, GoldenEar Technology is a loudspeaker manufacturer co-founded several years ago by Sandy Gross, who was also the co-founder of Definitive Technology and a co-founder of Polk Audio. Mr. Gross enjoys a well-deserved reputation as a serious, dyed-in-the-wool, high-end audiophile, but what has made him a legend is his unflinching commitment to producing speakers that offer audiophile-worthy sound at down-to-earth prices (actually, a hallmark of each of the speaker companies Gross helped create). Thus far, GoldenEar has offered several ranges of products, many of which have gone on to win critical acclaim and numerous industry awards.

In view of Sandy Gross’ enviable track record over the years, you might expect the Triton Sevens would simply be “chips off the old block,” and in some senses they are. The

Triton Sevens stand, at present, as the smallest and least expensive of GoldenEar’s Triton Series floorstanders, and a casual stroll through the technical specifications pages at GoldenEar’s Web site conveys the impression that, while Triton Sevens share some design features with the large Triton Twos and Threes, they are in essence “Triton Lites.” This impression, however, is misleading because somewhere between the preparation of the specifications page and the creation of the actual product a wonderful thing happened: Namely, the Triton Sevens wound up sounding different from and *better than* their bigger siblings in many of the ways likely to matter most to audiophiles. Let’s get this straight: The Triton Sevens are smaller, less complex, and less expensive than their stablemates, yet actually sound all the better for it. How can this be?

In trying to assess what makes the Triton Sevens

## EQUIPMENT REVIEW - GoldenEar Technology Triton Seven

superior performers, I reflected on a line attributed to the late, great British sports car designer Colin Chapman (of Lotus fame). When asked how to make racing cars go faster on a consistent basis, Chapman is said to have quipped, "Simplify, and add lightness." Well, if asked what makes his new Triton Sevens sound so very good, Sandy Gross might smile and say that they "simplify and add (sonic) transparency"—and we are speaking, here, of transparency delivered by the bucket full. As a result, the Triton Seven sounds remarkably open, articulate, and revealing—ridiculously so for its modest price.

At first glance, the Triton Seven seems disarmingly simple. It is a compact tower-type speaker that stands only 39.75" tall and that sports just three active drive elements: a small Heil-type HVFR (High Velocity Folded Ribbon) tweeter flanked by two wide-bandwidth, high-excursion 5.25" mid/bass drivers (for more on which, see below). For the necessary low-frequency reinforcement the Triton Seven also

provides a pair of side-firing 8" "planar sub-bass radiators" (i.e., passive radiators). The speaker is housed in a svelte, gently swept-back, black-fabric-clad enclosure with a gloss black trim cap on top and a matching black floor-plinth embossed with a soft gold-colored GoldenEar logo. If this capsule description seems a little underwhelming, it helps to bear in mind that with the Triton Seven, as with so many other great loudspeakers, the genius is in the details.

As I suggested above, the Triton Seven combines several difficult-to-meld sonic virtues. It offers plenty of resolution and high degrees of transparency, and demonstrates impressive transient quickness, yet also sounds smooth. GoldenEar achieved this result by carefully doing its homework in blending the output of its lightning fast Heil-type HVFR tweeters with the output of its also very fast, wide-bandwidth piston-type mid/bass drivers. The result may well be the most accomplished hybrid mix of Heil-type and piston-type drivers that I have yet heard in any loudspeaker, regardless of price. GoldenEar has succeeded where many others have tried and failed, partly by banishing apparent speed and textural discontinuities between the disparate driver types, but also—more importantly—by getting them to sing with one coherent voice.

What is more, GoldenEar has fitted the production-version Triton Sevens with all-new, long-throw mid/bass drivers—ones that dramatically up the performance vis-à-vis the firm's previous mid/basses. Audio journalists and dealers who heard the prototype Triton Sevens at CES 2013 are in for a real surprise,

because the difference these new mid/bass drivers make is a large one. They offer audibly higher resolution and quicker transient response than GoldenEar's previous mid/basses did, which is saying a mouthful given that the original drivers were already quite good.

Second, the mid/bass drivers also offer superior dynamic performance across the board, not just in the sense of being able to play more loudly (although they certainly can do that), but also in the sense of revealing far subtler shadings of dynamic expression.

Third, the new drivers have significantly higher excursion limits than their precursors did, which means they not only play gracefully at higher output levels but also offer much more extended bass response than before. Unbelievable though this may seem, when augmented by the Triton Seven's passive radiators, those little mid/bass drivers produce authoritative (and I mean really authoritative) low-end response that extends well down into the 30Hz range.

Finally, the Triton Seven enclosure is special. The slender towers are designed to provide the desirable damping characteristics of a transmission-line enclosure with the low-end weight, power, and efficiency of a sophisticated passive radiator-equipped system. To this end, GoldenEar strategically positions what are said to be very effective though costly damping materials directly behind the twin mid/basses in the upper part of the tower. The damping materials give the speaker excellent driver control through the midrange, upper bass, and midbass regions. But, as frequencies descend,

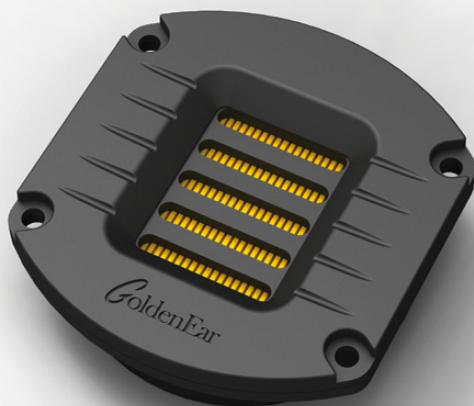
the damping materials allow the towers to "open up," permitting back-wave energy from the mid/bass drivers to couple with their associated passive radiators in an extremely efficient way. The result is bass that is taut, tuneful, and rhythmically correct, yet offers the kind of low-frequency weight and slam typically associated with much bigger speakers. Not a bad day's work for a pair of 5.25" drivers, eh? (Hint: You can probably win wagers among audiophile friends by daring them to guess the size of the Triton Sevens' "woofers.")

Put all of these factors together and you get what I think is—dollar for dollar—the finest affordable high-end loudspeaker I've yet heard (and I say this from the perspective of being an enthusiastic user of Magnepan 1.7 planar-magnetic loudspeakers, which many of my colleagues and I consider the greatest single bargain in all of high-end audio). Let me offer some observations based on real-world listening experiences to help support that statement.

One of the best qualities of the Triton Seven is its almost eerie sense of focus. This became clear for me as I listened to a series of tracks from Anne Bisson's *Portraits & Perfumes* [Camilio Records]. Ms. Bisson has a distinctive voice that is light and breathy yet full of underlying richness and hints of wry humor just waiting to be released. If you have ever heard Ms. Bisson speak or sing, you might agree that her voice is unforgettable. When I played *Portraits & Perfumes* through the Triton Sevens there was *that* voice—sounding palpable, present, richly textured, and real—looming between the loudspeakers and positioned just a few feet behind them. One might expect (or at least



## EQUIPMENT REVIEW - GoldenEar Technology Triton Seven



hope for) such moments of realism from loudspeakers carrying steep price tags, but it is a real rarity to hear them served up by speakers selling for just \$1399/pair. But with the Triton Sevens, moments of realism like these seem to occur early and often.

Next, the Triton Sevens offered remarkably good imaging and three-dimensionality thanks, in large part, to their ability to retrieve very low-level textural and transient details and thus to capture subtle spatial cues in the music. To hear these qualities in action, try Jamey Haddad, Lenny White, and Mark Sherman's *Explorations in Time and Space* [Chesky], which was recorded without compression or equalization in the Hirsch Center for the Performing Arts (formerly St. Elias' Catholic Church) in Brooklyn, NY. The album features a series of highly inventive interchanges between three master percussionists, who perform on an impressive array of instruments. On *Explorations*, the GoldenEars generated exceptionally wide, deep, and precise soundstages, revealing the exact locations of each of the percussionists (and their various instruments) on stage. Even sounds emanating from the far rear corners of the soundstage remained beautifully focused, stable in their positions, and dynamically alive.

Finally, the Triton Sevens proved to be remarkably dynamically expressive—much more so than their size or configuration would lead you to expect. A good example would be the Gerard Schwarz/

Royal Liverpool Philharmonic performance of Alan Hovhaness's *Mount St. Helens Symphony* [Alan Hovhaness, *Mysterious Mountains*, Telarc, SACD]—a piece that paints a vivid symphonic picture of the events leading up to the violent eruption of the Mount St. Helens volcano. When heard under ideal circumstances, this recording offers up moments of delicate beauty juxtaposed with majestic but at times quite explosive mood swings. Frankly, many speakers turn the composition into a compressed dynamic muddle, but the Triton Sevens did not. Instead, they effortlessly captured the depth and breadth of the orchestral sections arrayed upon the stage, rendering quieter passages with deft dynamic shadings. Yet when the eruption passage came along, the Sevens shifted dynamic gears instantly, reproducing the full, fierce, percussion and brass blasts that represent the sheer power of the volcano's eruption. If I hadn't experienced this with my own two ears, I would never have thought speakers fitted with just two 5.25" mid/bass drivers and a Heil-type tweeter could ever convey so much weight and grandeur. Maybe less really *is* more.

Are there downsides here? Well, for those who want speakers that can serve double-duty in music and home-theatre systems, or that can play rock or other forms of "power" music at high volume levels, GoldenEar's larger Triton Two and Three towers might be better choices than the Sevens—largely because they feature built-in powered subwoofers that extend bass depth and clout while making the speakers easier to drive. I would also say that for those who prize uncanny top-to-bottom coherency and realistic image height and scale, the Magnepan 1.7s (or the new Magnepan Super MMG system) might be a better choice. But on the whole, the Triton Sevens can easily go toe-to-toe with any like-priced competitors and can also handily outperform any number of higher-priced speakers. One last thought I will offer is that a "downside" of the Triton Seven is that it will make you want to acquire the best associated electronics and source components you can afford (but then, that's always been the way of things with truly great loudspeakers).

Here's the bottom line: If you want to find out just how much high-end goodness \$1399 can buy in a pair of loudspeakers, then you absolutely must audition the Triton Sevens. I consider this

speaker a masterpiece of value-oriented audio engineering—one that sets a performance standard that will not easily be matched or surpassed. **188**

### SPECS & PRICING

**Type:** Two-way, three-driver floorstanding speaker with passive radiators

**Driver complement:** One Heil-type HVFR (high velocity folded ribbon) tweeter, two 5.25" cast-basket mid/bass drivers, two 8" passive radiators

**Frequency response:** 29Hz-35kHz

**Sensitivity:** 89dB

**Dimensions:** 7.25" x 39.75" x 11"

**Weight:** 42 lbs. (shipping), 32 lbs. (unpacked)

**Price:** \$1399/pair

#### GOLDENEAR TECHNOLOGY

P.O. Box 141  
Stevenson, MD 21153 USA  
(410) 998-9134  
goldenear.com

#### ASSOCIATED EQUIPMENT

Analog Sources: Nottingham Analogue Systems Space 294 turntable/Ace-Space 294 tonearm; Benz Micro ACE L moving coil cartridge, Fosgate Signature phonostage  
Digital Sources: Rega Isis CD

player/DAC; Oppo BDP-105 universal/Blu-ray player/DAC; AURALiC VEGA digital processor (DAC/preamp)

Media Server: Lenovo ThinkPad PC with Intel i5 processor, 8GB DDR, 128 GB SSD, and outboard 2TB Western Digital music library drive; dBPoweramp ripping/format conversion software, jRiver Media Center 19 media management software, JPLAY digital audio output software

Amplifier: Rega Osiris integrated amplifier  
Speakers: Magnepan 1.7  
Cables: Furutech Flux-series Evolution-series interconnects, speaker, and power cables; Kimber B Bus Ag USB cable

Power Conditioning: Furutech Daytona 303, PS Audio Soloist in-wall line conditioner  
Racks and Isolation: Solid Tech Reference Racks of Silence with associated isolation accessories  
Room Treatments: Auralex StudioFoam panels, RPG Binary Abfuser Diffusorber (BAD) panels

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# Revel Performa3 F206 and M106

## Revel's Rockin' Reboot

Neil Gader

**T**he Performa Series is the middle of the three lines from Revel, part of the high-end division of Harman known as the Luxury Audio Group which also manufactures JBL Synthesis, Lexicon, and, of course, Mark Levinson. Now in its third generation, the Performa3 Series includes compact and floorstanding models plus multichannel-specific loudspeakers—that is, center and surround channels. This review considers the meat and potatoes of the Performa3 collection, the mid-sized \$3500 F206 floorstander and its stand-mounted cousin, the \$2000 M106 (see Sidebar).

I have twice toured Harman's extensive R&D facility in Northridge, a community in the north valley region of Los Angeles. I'm familiar with the depth of research and analysis, the rigorous product testing, and the extensive listening that goes on there. Product changes are made after great deliberation, and at a pace that suggests little regard for the hiccups of market trends. Thus models like the Ultima Salon2—the Revel flagship—and the earlier Performa F52 (a personal favorite, see my review in Issue 162) have been perennials on TAS' Editor's Choice list. However, even the most successful products need a reboot from time to time and Revel's latest represents a significant evolution of a proven loudspeaker line.

Visually the look of Performa3 is, indeed, more in tune with today's market. Gone are the square profile and sharp corners of the past. In their place is a softer, more curvaceous enclosure nar-

rowing from the front baffle to the rear panel—a look that bears distinct similarities to Ultima2. Anchoring the enclosure is a flared plinth stabilized by heavy adjustable spiked footers. The Performa3's curved enclosures are inherently stiffer than the box shapes they replace and are formed with contiguous wood layers and modified internal bracing patterns to address the non-parallel-walled construction. The loudspeaker grilles attach magnetically and the enclosures are finished in high-gloss piano black or white or American walnut. Everyone who encountered them in my listening room remarked on the superb finish quality of the Indonesian-manufactured line.

For the record, the F206 is a three-way floorstander in a bass-reflex configuration fitted with a front-firing port. The drivers include a pair of 6.5" woofers and a single 5.25" midrange transducer, both of which employ ribbed-aluminum dia-



## EQUIPMENT REVIEW - Revel Performa3 F206 and M106

phragms with cast-aluminum baskets. They also feature copper Faraday rings that stabilize the flux field during operation, assuring lower harmonic distortion even at high listening volumes. Crossover points are 275Hz and 2.15kHz. The aluminum dome tweeter has been fashioned around a newly designed motor and dome assembly. But the attention-getter is the tweeter's integrated and visually arresting acoustic-lens waveguide, based, in Revel's words, on a "breakthrough mathematical approach." Veteran Product Development Manager Kevin Voecks commented that "the primary point of using a waveguide is to match the dispersion of the tweeter with that of the midrange (or woofer, in a two-way system) over the crossover range. The corresponding challenge is to avoid reducing the tweeter's dispersion above the crossover region." Voecks added that this design actually achieves the hoped for result of "increasing the dispersion of the tweeter above the crossover region while simultaneously decreasing the dispersion in the crossover region." Revel followers will recall that power-response performance (as in total radiated sound—the overall combination of on-axis and off-axis response) has long been a focus of Revel engineering.

One thing is certain, it doesn't take a "golden ear" to be smitten by the prodigious strengths of the F206. In fact, it doesn't even take five minutes. The speaker has charisma pure and simple—and by that I mean it offers such an enthusiastic outpouring of musicality, dynamic energy, and imaging precision that it simply commands its audience's attention.

The F206 is a paradigm of balance—one that doesn't campaign for a specific sonic criterion to the exclusion of others. Tonally there are no broad

flat spots or nasty peaks. Rather, it presents a united front built upon low-frequency dynamic reserves, excellent slam and midrange dynamic presence, and a treble range that's eloquent yet mercifully without the needle of tweeter localization. To some this essentially neutral tonal profile may convey a little bit of the unblinking eye of a studio control monitor. Frankly, compared to the alternative, I consider that a more-than-laudable goal. However, the F206 is better than that; its openness in the treble and general tonal warmth keep accusations of "analytical" at bay. Still, few artifacts or colorations from other elements in the system chain escape the F206's gaze.

Its core strength is the top-to-bottom coherence of its four-driver array. The sound emerges from a firmly rooted low-frequency foundation—an attribute that anchors all the other elements of a symphony orchestra and equally serves small combos, solo piano, or rock/pop chestnuts. There's not a whisper of drivers going rogue or intimations of individual transducers rat-tat-tating as if from a machine gunner's nest. Regardless of the source material, I consistently experienced a sense of densely packed layers of sound, an acoustic fabric of seamless energy unbroken within the sturdy proscenium created by the F206. While only a mid-sized speaker it scales images grandly in the room. As I listened to the now-classic LP *Sussex Overtures* by Malcolm Arnold [Reference Recordings RR-48] I noted the stunning image separation, the contrasting tonal colors of the clashing wind and brass sections, the transient detail flying off the bow of the bass violins during a pizzicato section, the waves of reverberant air generated by the timpanists and percussion

section. (In the interests of full disclosure it was only later, as I was casually scanning this album's liner notes, that I was reminded that Voecks, then of Snell Acoustics, is a credited consultant on this superior album.)

As regards imaging, throughout my sessions with the F206 and M106 I could hear something different about the Performa3 tweeter and waveguide. It was the element that separates Performa3 from its predecessor. Clearly it was integrating smoothly with the mids, as was evident each time I played a choral track like the Rutter Requiem [Reference]. The human voice, solo or in groups, remains for me one of the best means to validate inter-driver coherence. But there was something more. And as I listened to tracks of the Jimmy Cobb Quartet on *Cobb's Corner* [Chesky], it crossed my mind just how well the trumpet was supported from below and how fully integrated it was within the venue. What was different about the trumpet's image, and now as I look back on my listening notes the Revel's imaging in general, was a slightly greater width to individual images—less defined edges and softer, more rounded boundaries. Certainly there was plenty of transient mouthpiece and breath action, but the Revel's treble didn't etch images as forcefully within the soundstage. It more reasonably and, I think, accurately let images open and spread their harmonic wings with minimal constriction. For me, the Revel makes the more authentic interpretation and creates a sound that I expect to hear in the concert hall.

The overall quality of the bass is excellent, honest, and strong. It's virtually billiard-table flat down to forty cycles with solid response smoothly rolling off into the mid-thirties. This is exactly

as stated in the Revel literature, which I later confirmed with an informal RTA sweep in my room—the flattest in-room measurement I've attained outside of the omnidirectional mbl 120 (Issue 228). A hint of midbass warmth conveys weight but also an organic sense of low-frequency air that underscores the natural hall ambience of a recording. The Revel narrowly misses the deepest wavelike rumblings of the pipe organ in Rutter's Requiem—that adrenaline rush of floorboard

### SPECS & PRICING

#### F206

Type: Three-way bass-reflex

Drivers: 1" tweeter, 5.25" mid, 6.5" woofers

Sensitivity: 88dB

Nominal impedance: 8 ohms

Dimensions: 9.8" x 41.4" x 13.7"

Weight: 58 lbs.

Price: \$3500

#### M106

Type: Two-way bass-reflex

Drivers: 1" tweeter, 6.5" woofer

Sensitivity: 87dB

Nominal impedance: 8 ohms

Dimensions: 8.3" x 15" x 11"

Weight: 19 lbs.

Price: \$2000

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## EQUIPMENT REVIEW - Revel Performa3 F206 and M106

and room-rafter excitation that makes the finest hairs on the back of your neck stand up. But there's more than enough bass to satisfy all but the most ardent subwoofer devotee.

The takeaway here is the level of quality and integration, as bass response dovetails into the lower midrange—a quality on display during Holly Cole's "I Can See Clearly." On this track the bass line vamp has a distinctive, almost bouncy up-tempo flavor meant to elicit the optimism that is the song's theme. Each note, as if leaning forward ahead of the beat, should be resolved cleanly and with definition. The F206 nailed them. Additionally there is very little noise from the forward-firing port, and although the bass-reflex configuration of the F206 isn't completely invisible, its impact on the overall pace and flavor of the low-frequency reproduction is minor.

Turning to LP playback I pulled Christopher Cross' eponymous debut album from the rack—a multi-platinum blockbuster back in 1980. Cross nabbed all four major Grammys for his efforts. In any case I hadn't listened to this one in some time and was pleasantly surprised to discover just how much low-level information and timbral detail were left in its grooves. The seamless midrange/tweeter integration of the F206 made child's play of the soaring string charts penned by co-producer Michael Omartian during "Sailing." Not to mention the inner detail and resolution the Revel displayed reproducing the soulful backup singing by former Doobie Brothers' front man Michael McDonald during the monster radio hit "Ride Like The Wind."

Still I have to admit there were moments when I longed for a slightly lighter and faster touch with transients and a more effortless sense of upper-frequency air and extension. Soundstage width is excellent but depth information is only average. The speaker does cry "Uncle" a bit on the deeper rumbles of the last half-octave or so of bottom bass—so I could ask for slightly more resolution of the deepest bass cues. Finally, whether it's the cabinet or the port or a combination of both, midbass information can sometimes sound a mite over-ripe, making symphonic crescendos and heavy percussion lose some definition.

The Performa3 F206 and M106 are segment-defining loudspeakers. And by emphasizing the sonic totality of the listening experience, they have more than exceeded my already lofty expectations. I'm often told that there are no bargains anymore in the high end. Well, naysayers haven't met the F206 and M106. So seek them out. Revel has just given "value-level" a fresh kick in the pants. **tas**

# Performa3 M106: Two Of A Kind

The M106 is the two-way, bass-reflex, stand-mounted little brother to the F206. Visualize, if you will, the identical tweeter and one of the woofers from the F206, lop off about 60% of the cabinet, and, *voilà*, the M106. A difference in this iteration is that the port is mounted to the rear, preserving the short profile. Sensitivity is also down slightly as befits the inefficiencies intrinsic in the smaller cabinet. The 6.5" driver is now assigned a much wider band of frequencies to reproduce. Plus the crossover point is raised to 2.3kHz in comparison to the F206's 2.15kHz.

Sonically there's no doubt that the M106 is cut from the same cloth as the F206, so I'm not going to restate the many similarities. There remains the same wide midrange sweetspot of the floorstander, a vocal lover's dream. There's a rewarding lack of localization and estimable composure under all sorts of dynamic fire—an imperturbable output so that even under punishing conditions (a little Metallica perhaps?) it remains frequency-response linear. There's a cooler cast to its tonal balance, likely due to the lighter bass, but its voice is still unmistakably F206.

The M106 differs significantly in two predictable areas. Dynamically it lacks

the effortless reach of the F206—for example, the piercing high-energy blasts of the trumpet solos in the Jimmy Cobb disc are tamped down somewhat.

It is exceedingly articulate in the 50–60Hz midbass region, but it rolls off fairly quickly below that. And unlike the F206 with its superior extension and more natural, looser feel in the bass, the M106 expresses bass cues with an elevated sense of tension, in the same way the higher strings of a guitar or violin are just a little tauter. So while Shelby Lynne's "Just A Little Lovin" retains the satisfying mallet smack of the kick drum that rhythmically anchors this track, it also doesn't quite reflect the natural decaying ripple of the drum. A lot of initial punch but not the full exhalation of resonance and air on the decay. This sense of control has larger ramifications as the M106 deals with ambient complexities on orchestral pieces like the Rutter Requiem, which features a large chorus and massive pipe organ in an equally massive acoustic space. Here's where even the finest compacts find it difficult to strike the balance between bass extension and scale and ambience retrieval. A prime example is midway through the "Lux Aeterna" theme where the organ stops dead beneath the voices

of the chorale. With the F206's greater extension this moment is heard as a rush of low-frequency air within the hall slowly escaping and wafting into the darkness until all is stillness. With the smaller M106, this decay is accelerated, the hall returning to silence on a much shorter tail of resonance. And on Tom Waits' "Come On Up To The House" from *Mule Variations* [Anti] there's some overall compression that takes away a slight bit of the momentum of the track.

The effect of the tweeter/acoustic lens waveguide is slightly different in the sense that resolution and imaging are somewhat magnified with the M106; the same elements are integrated more organically in the F206 due to its more powerful and extended bass response. But the M106 turns its own innate low-octave limitations to its advantage by unlocking a bounty of midrange detail and by performing a soundstage disappearing act worthy of David Copperfield. Like the F206, the M106 is also a segment-defining product. As the famous board game saying goes: "Do not pass go!" Immediately place the M106 on your short list and seek it out for audition. **NG**

# GoldenEar Triton Two

## Sophistication and Value by Design

Chris Martens

In the early 1970s Sandy Gross helped co-found Polk Audio and then teamed with Don Givogue in 1990 to found Definitive Technology. Now, Gross and Givogue have joined forces again to create a third loudspeaker company: GoldenEar Technology. At each step along the way, Gross and team have consistently pursued an idea that I, for one, hold dear—namely, the notion that high-end audio should be a sport for all to play, not just an elite few with deep pockets. Naturally this means figuring out ways to build loudspeakers that deliver authentic high-end sound, yet sell at a sub-high-end prices. Sadly, history has shown us that while many loudspeaker-makers have learned to talk the talk of “affordable high-end audio,” relatively few seem able to successfully walk the walk. Why, then, should GoldenEar succeed where so many have tried and failed?

Well, a big part of the answer is that Gross and Givogue are seasoned industry veterans who share a common goal and who complement one another perfectly. Sandy is the visionary, the one with the keen and discerning ears, and the one whose restless and inventive streak drives him to make good things better. He also has an uncanny gift for creating speakers that fulfill the aspirations and desires of music lovers, yet are priced within reach of enthusiasts of moderate means. Don, in turn, is the technically rigorous pragmatist, the no-nonsense engineer, and the one whose deep manufacturing expertise and discipline yields cost-effective speakers with sonic benefits that are observable, repeatable, and real. Putting their talents together, Gross and Givogue have come up with what may be their most accomplished loudspeaker to date: the GoldenEar Technology Triton Two floorstander (\$2995/pair)—a speaker that debuted at the 2010 CEDIA show and has been impressing critical listeners ever since.

The Triton Two is a three-way, five-driver, dual-

passive-radiator-equipped floorstander with a built-in powered subwoofer. Highlights include an HVFR (High-Velocity Folded Ribbon) tweeter the design of which is patterned after Dr. Oskar Heil’s famous “Heil Air Motion Transformer” tweeter. GoldenEar says the “HVFR tweeter propagates sound waves and moves the air by *squeezing* it with its accordion-like pleated diaphragm, rather than *pushing* it as conventional drivers do.” The resulting driver is said to provide exceptional treble extension and transient speed, plus high output levels with very low distortion. Additionally, the Triton Two incorporates a pair of cast-basket, MVPP (Multi-Vaned Phase Plug-equipped) 4

” midrange drivers arranged in a D’Appolito-type configuration alongside the HVFR tweeter. GoldenEar says these midrange drivers “achieve smooth linear frequency response extending above 20kHz” (much higher than the upper limit of the driver’s operating range in the Triton Two). The point of all that surplus bandwidth is to make sure the midrange driver offers sufficient transient

speed and textural nuance to keep up with the lightning-fast Heil-type tweeter.

The lower part of the Triton Two tower houses a built-in powered subwoofer, which incorporates dual 5" x 9" woofers coupled with dual 7" x 10" passive radiators (which GoldenEar colorfully describes as “infrasonic radiators”). The oblong shape of the drivers and passive radiators is said to help resist certain types of diaphragm resonances and breakup modes that can occur with traditional circular woofers. The subwoofer is powered by a 1200-watt, DSP-controlled digital amplifier. GoldenEar says the amp “has a Programmable Logic Device (PLD) machine with a nearly instantaneous 278ns update time to perfectly manage a myriad of functions including soft-clipping, DC offset control, output-stage anti-saturation protection, and discrete multi-band limiting.” Together, these elements give the Triton Two bass that extends down to a claimed lower limit of 16Hz.

Like Henry Ford’s famous Model T the Triton Twos are offered in “any color you want as long as it’s



## EQUIPMENT REVIEW - GoldenEar Triton Two

black.” The entire speaker enclosure, whose slender, tapered, airfoil-like shape is very easy on the eyes, is covered by a stretchy black fabric sleeve, which looks great and saves buyers the expense of costly lacquered or veneered cabinet panels. There is, however, a gloss-black trim plate that clips to the top of the speaker, covering the opening of the grille sleeve, thus giving the fabric cover a pleasingly organic and seamless appearance. A matching black floor plate, which is supplied with threaded spikes, helps stabilize the towers while making them more resistant to potential tip-over accidents. But enough of background; let’s talk about the Triton Two’s sound.

Starting with first things first, let me observe that—once you get the user-adjustable subwoofer output levels dialed-in properly for your room—the Triton Two system offers very smooth and neutrally balanced tonal response, with excellent extension at both frequency extremes. Better still, the Triton Twos offer plenty of definition, detail, and resolution, but do so without imposing any of the rough edges or other painfully self-evident sonic compromises those qualities sometimes entail.

In a very real sense, the Triton Two has been voiced from top to bottom, with the sheer excellence of its sophisticated HVFR tweeter setting a high performance standard that the rest of the speaker reaches upward to meet. GoldenEar’s HVFR tweeter provides sumptuous treble detailing and realistic high-frequency harmonics, as well as beautifully capturing the sense of “air” surrounding instruments, yet it does all this without the slightest hint of edginess, stress, or glare. The sound is so free

from the usual treble problems of spotlighting, etching, or artificial edge-enhancement that some listeners perceive the speaker to be slightly rolled-off on top. While there may be a small (and I mean very small) grain of truth to this assessment, I think what’s really going on is that listeners acclimated to sharp-edged piston-type drivers simply don’t know what to make of the HVFR tweeter’s almost eerie smoothness. Over time the HVFR tweeter will spoil you rotten, because it tends to make other high-frequency transducers (even some quite good ones) sound a little hard-edged,

### SPECS & PRICING

**Type:** 3-way, five-driver, dual-passive-radiator-equipped floorstander with built-in powered subwoofer

**Driver complement:** One High-Velocity Folded Ribbon (Heil-type) tweeter, two 4 1/2" mid/bass drivers, two 5" x 9" woofers, two 7" x 10" passive radiators

**Built-in amplifier:** 1200-watt subwoofer digital/DSP-controlled amplifier

**Frequency response:** 16Hz-35kHz

**Sensitivity:** 91dB

**Impedance:** 8 ohms

**Dimensions:** 48" x 7.5" x 15" (height includes mounting base, without spikes)

**Weight:** 60 lbs.

**Price:** \$2995 per pair

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## EQUIPMENT REVIEW - GoldenEar Triton Two

aggressive, or overstressed by comparison.

But a pleasant surprise is that the Triton Two's MVPP midrange driver matches the positive qualities of the HVFR tweeter step for step, so that it offers excellent transient speed, textural nuances aplenty, and wonderful qualities of easygoing purity and transparency. Most importantly, the midrange driver is fast enough and subtle enough to blend seamlessly with GoldenEar's Heil-type tweeter, so that I observed no textural discontinuities at all. This is saying a mouthful when you stop to consider that many speakers equipped with Heil-type tweeters (even some very costly ones) exhibit obvious discontinuity problems where the tweeters sound fine but make piston-type companion drivers sound sluggish by comparison. In the Triton Two, you hear an uncannily sweet, smooth, seamless marriage between GoldenEar's MVPP midrange driver and HVFR tweeter—a marriage responsible for much of the real sonic magic of which this system is capable.

What exactly is the nature of this sonic magic? I would say the speaker's most spectacular and compelling qualities involve its mind-blowingly vivid imaging and effortless 3-D soundstaging. It is upon these twin virtues that all the speaker's other strengths hinge. Assuming you have the Triton Twos reasonably well positioned in your room, you can expect to experience moments where sounds seem almost completely free from the speaker enclosures—as if they are originating on their own without any apparent effort or even involvement on the speakers' part. And once sounds have been liberated from the confines of the speaker enclosures, they

unleash the kind of gripping, “sound outside the box” experience that many listeners will find revelatory.

Let me expand on this point for a moment. Many otherwise fine high-end loudspeakers leave me underwhelmed in that they strive to get most sonic virtues right, yet maddeningly produce left and right “blobs” of sound that cling to the speakers like spent chewing gum on a park bench—yecch! In contrast, however, the Triton Two's demonstrate a nearly world-class ability to produce downright spooky three-dimensional soundstages—complete with the requisite depth, breadth, and height—and they do so without requiring much if any tweaking. One practical upshot of this is that you can, if you wish, position the Triton Two's much farther apart than you would most speakers without causing the dreaded “hole in the middle” to appear. You can also use the separation distance between the speakers as a tuning tool that enables you to strike a realistic balance between imaging specificity (the closer the speakers are together, the more focused the sound will be) versus soundstage width (the farther apart the speakers are, the wider the soundstage becomes). Just find the appropriate balancing point in your room and *voilà*: instant realism—or something pretty close to it.

To hear how the Triton Two's smooth yet revealing highs and mids coalesce to create such convincing holography, try listening to “Solitary Orchid” from Zhao Jiazhen's *Masterpieces of the Chinese Qin from the Tang Dynasty to Today* [Rhymoi Music]. For those of you not yet acquainted with the Qin (pronounced, I am told,

“chin”), let me mention that it is a remarkable, zither-like, fretless, stringed instrument, ancient in origin, and capable of astonishing range, dynamic subtlety, and delicacy. It serves not only as an acid test for imaging and soundstaging qualities, but also for timbral and textural accuracy. When reproduced accurately on this track, the Qin should present itself in a natural, moderately reverberant acoustic space, while exhibiting a certain hushed, focused intensity and a voice that is articulate and piquant, yet subtly sweet. (This is harder to do than you might think, since some speakers manage to make the Qin sound hard and screechy—like an alley cat stuffed into a bag of broken glass.). But happily, the Triton Two made beautiful sense of Zhao Jiazhen's performance, here.

Several aspects of the Triton Two's handling of “Solitary Orchids” were impressive. First, I was struck by the focused intensity of the image of the Qin at center stage that the Triton Twos achieved; many speakers claim to create “palpable” images, but the GoldenEars actually deliver the goods. Second, I was enchanted to hear the speaker faithfully capture the extremely rich and complex harmonics of the Qin, and to hear it reveal interactions between those harmonics and reflective surfaces within the recording venue, thus conveying a believable sense of the performance space. Third, I found that the GoldenEars captured even the smallest details of Zhao Jiazhen's performance, right down to the most delicate and intricate fingering noises, plucking sounds, glissando-induced string squeaks, and sustained high-pitched harmonic overtones (I'm told that, in keeping with ancient traditions,

composers of music for the Qin provide detailed notes showing how and where such incidental performance noises should appear). In short, the Triton Twos produced a rich, sophisticated, and profoundly evocative treble/midrange sound that belied their modest price.

Down below, the Triton Two's powered subwoofer section provides no-excuses full-range bass, without sounding thick, bloated, or overbearing. Unlike some speakers that claim to provide “full-range” bass but that exhibit substantial roll-off below 40Hz, the Triton Two offers significant bottom-octave output, routinely reaching way down low to reproduce deep bass notes you might not have known were present in your favorite recordings. For this reason, listeners will want to spend time judiciously adjusting the subwoofer's output levels (it is easy to crank in more low bass wallop than you bargained for, so restraint is the order of the day). The Triton Two's bass-to-midrange integration is very good, but not quite up to the standards established by some of the best current \$5k-\$10k/pair speakers. There's not much missing, though, apart from subtle touches of heightened midbass transient speed, textural finesse, and focus—qualities you might find and enjoy in speakers such as the new Magnepan MG3.7 (\$5500/pair). But note that the Maggies cost more than twice what the Triton Twos do, are much harder to drive, and deliver bass that doesn't actually go as low or play as loudly. My point is that while the Triton Two's low-end characteristics are not perfect, they strike an admirable compromise between depth of extension, power, and finesse—all of which can be achieved while driving the GoldenEars with very modest amplifiers.

## EQUIPMENT REVIEW - GoldenEar Triton Two

To give the low end of the Triton Two's a meaningful workout, I put on the second movement (Scherzo: Allegro molto) of the Copland Organ Symphony [Michael Tilson Thomas, San Francisco Symphony, SFS Media, SACD] and came away duly impressed. The final three minutes or so of the movement give you an opportunity to hear the low register of the organ in juxtaposition to the sound of loud low percussion instruments, which the GoldenEars handled with both grace and real gusto. There is sufficient pitch definition for you to hear the deep, well-focused sound of low-pitched notes emanating from the organ itself, followed a split-second later by the slightly more diffuse rumble of those notes reverberating and then decaying within the recording space (Davies Symphony Hall, San Francisco). Similarly, the concussive "thwack" and "boom" of the large drums sounded just about ideal—clean and controlled, yet appropriately full-bodied at the same time.

Finally, let me draw your attention to two significant and interrelated aspects of the Triton Two's performance; namely, the fact that it is relatively high in sensitivity (91dB) and an extremely easy load to drive (in large part because the speaker's built-in subwoofer amplifier shoulders virtually all of the low-frequency workload). As a result, the Triton Two can be driven to very satisfying volume levels by only moderately powerful amplifiers, though it is—as you might expect—very sensitive to amplifier quality. Sandy Gross, for example, drives his personal pair of Triton Twos with a relatively small, low-output SET amplifier, which is the sort of option you can't realistically hope to pursue with such affordable high-end speakers as the excellent but

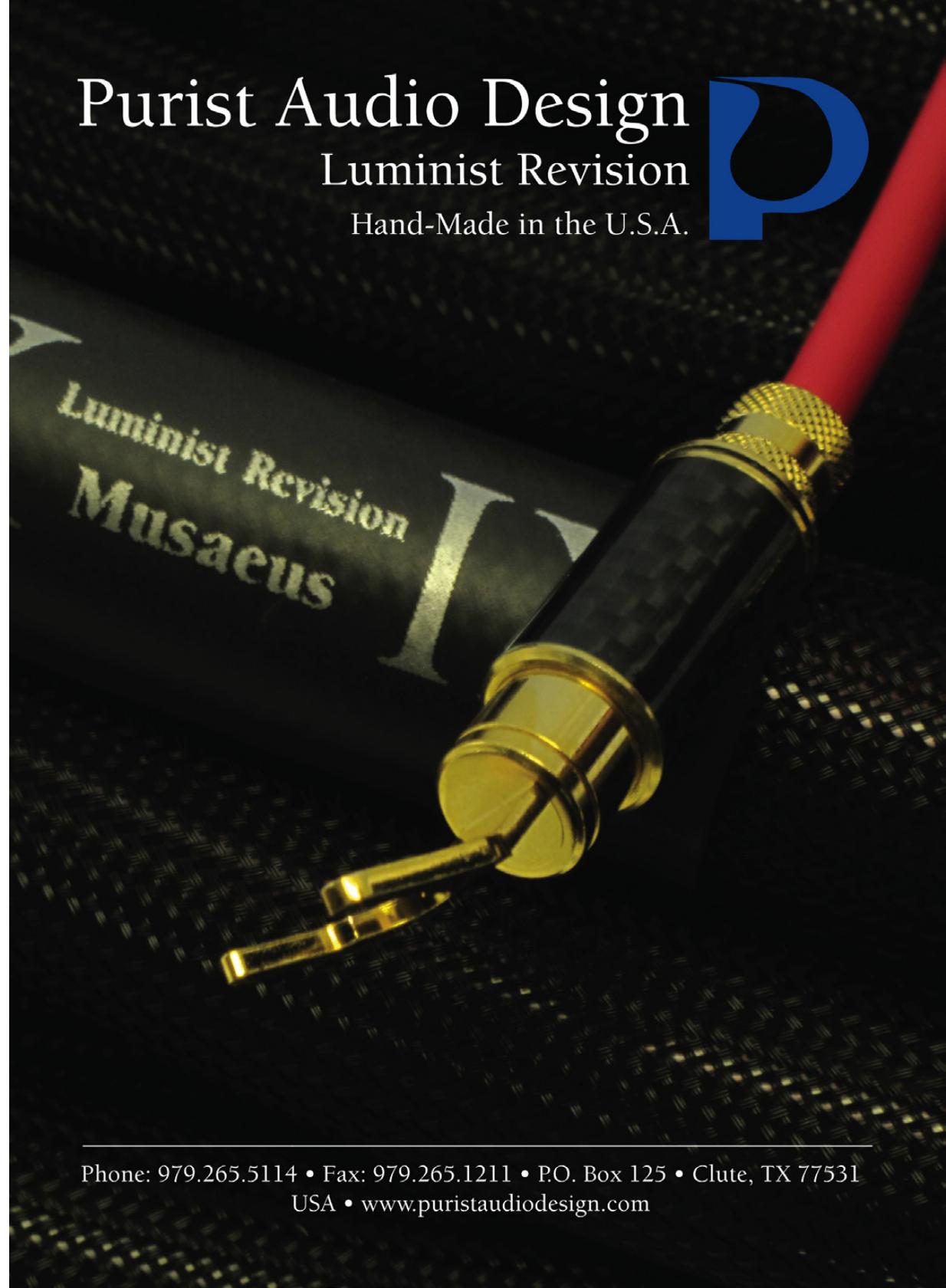
decidedly power-hungry Magneplanar MG1.7s. In practical terms, this means the Triton Twos are not only fine value-priced speakers in their own right, but also make suitable platforms upon which to base excellent value-priced systems (this in contrast to well-priced speakers that require a gazillion dollar's worth of amplification in order to sound their best).

One additional point to note is that if you choose to use one system both for music and movie playback, GoldenEar offers a set of voice-matched surround and center-channel speakers so that your Triton Two's can easily become the centerpieces of a superb multichannel surround system—one that, by definition, includes two built-in powered subwoofers. Interestingly, a complete Triton Two-based five-channel surround rig costs only \$3495—an option that music-minded movie enthusiasts might want to consider.

GoldenEar's Triton Two system establishes what I consider new high-water marks in all-around performance per dollar. The system gets all of the big things right, such as smooth and neutral tonal balance, good sensitivity, full-throated dynamics, and absolutely killer surround-sound imaging. But it also provides many of the small but significant performance touches that differentiate great speaker systems from merely good ones—such as transient quickness, textural subtlety and finesse, resolution of low-level sonic details, plus the ability to convey a desirable and elusive quality of sonic effortlessness. Once again, Sandy Gross and Don Givogue have managed to place the key elements of high-end sound within reach for music lovers not made of money. **tas**

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# Eminent Technology LFT-8b

Extraordinary

Robert E. Greene

**T**he Eminent Technology LFT-8b is an extraordinary speaker. With full frequency extension at the top (and then some), nearly full extension at the bottom, distortion as low as electrostatics—but lots of dynamic oomph—a discreet, elegant appearance that will fit well into almost any décor, and a remarkable ability to differentiate against room acoustics and produce something very like the sound of an acoustically treated room in an ordinary room, its list of virtues is compelling.

And it is only \$249,900. No, sorry, that's \$24,990. Whoops, wrong again, it is actually \$2499. Yeah, you got it, that's the price. Not the price of a house, nor even a car, but the price of a good bicycle will get you a pair of speakers that in some respects are among the best there are. No, the ETs are not perfect. They are not quite so neutral as is possible, and they are sensitive to set up with regard to stereo integration, but the virtues of the ETs are very real. The low distortion in particular is striking; these speakers are capable of really beautiful sound. And that is what we all want, right? This is not even to mention the naturalness of having the sound floating in the air at ear level—where it belongs—and with no sense of vertical compression the way point sources do and...well, I could go on, and I shall, I shall. To call this speaker a good bargain would be like calling Beethoven a good composer—true, but wildly understated. Fantastic or some such word is more appropriate.

Bruce Thigpen, the moving spirit of Eminent Technology, has a long record of innovative thought in audio, going back to the ET air-bearing tonearm years ago. Meanwhile, he has produced the surprising infra-woofer. (While my review of the LFT-8b was in progress, Thigpen went off to Africa to help with

a study on the hearing of infrasound by elephants—he would be the man to go to for infra-sound all right. See rotarywoofer.com for more.) He has been working with planar-magnetic drivers for some time, and the LFT-8b is the latest version of his thinking on the subject.

## The Physical Nature of the Speaker

The ETs have a sealed-box woofer, mounted essentially on the floor, a midrange membrane driver magnetically driven, and a tweeter of that same sort. Of course, speakers with this general type of driver complement have been around for a while. But the ET's membrane drivers are of an unusual, essentially unique kind: They have an ultra-light membrane on which the conductors are etched (no wires glued on; wires would add more mass than the etching). And they have a two-sided magnetic arrangement that produces a constant magnetic field through the space in which the driver moves and hence produces a truly linear response in the low-distortion sense.

Distortion in the ET sounds as though it is down at electrostatic levels—or lower. This seemed to me one of the lowest-distortion speakers in the midrange that there is,



## EQUIPMENT REVIEW - Eminent Technology LFT-8b

perhaps *the* lowest, this side of impractical plasma drivers. This is in spite of the general possibility of membrane drivers vibrating in non-piston mode at some frequencies; even so, perceived distortion here remains extremely low to nonexistent, and measured midrange distortion is down at levels like 0.1% or less, almost entirely second harmonic (inaudible or at most completely innocuous at this level) depending on frequency, according to the manufacturer. True ribbon tweeters, which are reasonably abundant, also have low distortion for the treble, but, as far as I am aware, no one else is making planar-magnetic drivers that go down as far in frequency as the mid driver of the ETs does with such low distortion via that two-sided driver. And this seeming techno-spec counts in listening terms, as you will definitely read.

Physically, the speaker consists of a panel five feet high and just over a foot wide, attached to a woofer box. The speaker has easily detachable and re-attachable grills front and back. My wife's visual reaction, sound as yet unheard, was that she hoped they sounded good because she really liked their looks.

The speakers come with the panels separate from the woofer boxes. But assembly is easy and of course one-time-only (it helps to have a second person to hold the panel up while you screw it onto the woofer box).

### Why They Sound the Way They Do

To understand the unusual sound of the ETs, one should first think about more usual speakers, the all-but-ubiquitous three-way floorstanders. Now in a broad sense, these speakers are all very much alike. Of course differences are audible.

With the threshold of hearing of response differences being about 0.1dB for broadband differences, no two speakers are likely to sound exactly alike for that reason alone. Still, the three-way floorstanders are fundamentally more alike than different. They all bounce sound off the sidewalls, the floor, and the ceiling, and even if their radiation patterns vary from one model to the next, they are essentially similar. Compared to traditional floorstanders, the ETs are really different. A lot different. Like Dorothy relative to Kansas, you know you aren't in Box-Floorstander Land any longer.

For a start, the midrange driver is dipole and it is a big driver vertically—42 inches high, though

## SPECS & PRICING

**Type:** Three-way floorstanding loudspeaker with 8" dynamic woofer and planar midrange/tweeter

**Power requirements:** 75W minimum

**Sensitivity:** 83dB (1W/1m)

**Frequency response:** 25Hz-50kHz +/-4dB (typical room)

**Impedance:** Nominal 8 ohms

**Maximum SPL:** 105dB at 1m

**Dimensions:** 13" x 60" x 1"

**Weight:** 65 lbs.

**Price:** \$2499

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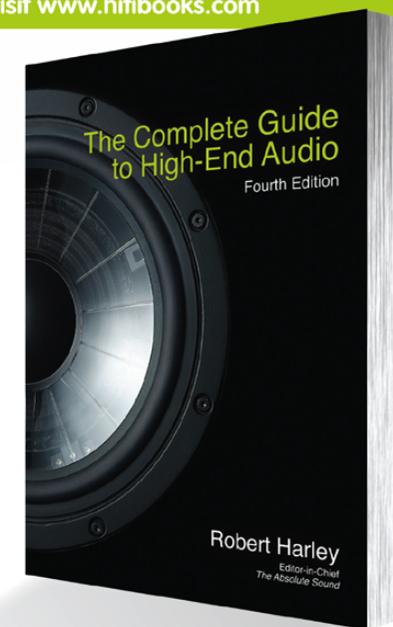
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## EQUIPMENT REVIEW - Eminent Technology LFT-8b

only 4 inches wide. So on account of the dipole operation, there is effectively no sound radiated to the sides, and with the correct angling, the first sidewall reflection is considerably suppressed. The woofer is on the floor, so the floor reflection is part of its direct sound. And both the tweeter and the midrange drivers are extremely beamy in the vertical direction, so their sound hardly bounces off the floor or ceiling.

In effect, if you put the ETs far from the back wall, then it is a long time before you hear much of anything but direct sound. Six or seven feet at least from the back wall is good, if you can arrange that, or even farther.

The difference between this sound and wide-dispersion floorstanders—which bounce sound off the floor, the ceiling, and the sidewalls, with all those reflections arriving quite early—is striking indeed. The ETs do not create a “soundstage” out of the structure of your room. They transmit directly to you what the sound of the speaker itself is and what spatial information is actually recorded. Your listening room is bound to influence bass somewhat—it always does through Allison effect and modal excitation. But above the bass, you are hearing with the ETs an extraordinarily direct sound. This “room reach” has several consequences.

First of all, one hears the frequency response of the speakers unaltered by the room, to a surprising extent. This gives the sound an unusually vivid character. The midrange driver on its own is very flat over a wide range, but up around 8kHz, where the crossover has suppressed it some but not completely, it seems to have a bump up in output. Similarly the woofer has a lump of extra energy around

1kHz—out-of-band in a sense, but not totally suppressed. These effects bounce the details of the frequency response around a bit, and the 8kHz lump at least needs pulling down to avoid a kind of metallic sheen.

One derives better phase behavior—this speaker is phase linear for all intents and purposes—and perhaps greater coherence from the broad overlap of the drivers, but one pays a certain penalty as well in the intrusion of these nominally out-of-band difficulties. Speaker design is always about choosing one’s compromises!

Also, pair-matching of the tweeters is not in the same league as, say, the SEAS Excel domes used in the Harbeth M series, where the response matches within a fraction of a decibel. Perhaps it is not really crucial in practice, but pair-matching in the treble is not to the highest standards.

The suppression of the early reflections and the reduction in overall room sound is literally ideal in stereo theory—Blumlein’s theory is predicated on direct sound only. And for what it is worth, I like it, too. But this radiation pattern is somewhat analytic as to microphone technique. Of course, neither spaced-omni recordings nor most multi-tracked mix-downs have any real reason to make detailed spatial sense. If one hears them as they are, the spaced-omni stuff sounds like pools of light, not a continuum, with far too much left-right, and the multi-miking sounds like multi-mono. Hearing such recordings as sounding right in any reasonable sense requires some smearing by the room. Here the smearing is largely gone, and a lot of recordings sound not very spatially coherent at all.

Now part of this is just hearing what I consider to be the truth. But in all honesty, I think part of the tendency of recordings to sound a little spatially discontinuous is the fact that the line-source tweeter sits next to the midrange unit on one side. This is not an arrangement that I would expect to behave ideally in imaging terms, since the relative phase relationship of the midrange and tweeter—and they overlap a great deal—is highly dependent on the listener’s horizontal position. The speakers are not beamy horizontally as far as individual driver responses are concerned, but there is “lobing” between the midrange and tweeter on account of the broad overlap in frequency range from the shallow-slope crossovers and the side-by-side placement. (It would be preferable in principle to have two midrange panels on either side of the tweeter, it seems to me, to get a sort of horizontal MTM effect. This would stabilize the imaging.) In any case, the particular configuration here creates some imaging effects that are both not quite correct and also unstable with respect to head movements. You have to be really careful about where you sit and how you angle the speakers to avoid hearing the drivers as separate sources. Beware of careless audition: Exact set-up and exact listener position are crucial here. But if one sets up the speakers ideally—and doesn’t move!—this becomes much less of a problem. (The manufacturer says that in most rooms tweeters on the inside work better but not in all. Experimentation is the key.)

Incidentally, the indicated wiring of the woofers relative to the mid/tweeter array is backward in my view. While the manufacturer says it gives better phase response in the direct arrival, it

created a large and musically unfortunate hole in the lower midrange. Until I tried the woofers reversed in polarity relative to the upper unit, I was going to write a review that said that, for all its low distortion, the ET sound was really quite far from being musical or indeed accurate. But wired correctly, reversed relative to what is written on the enclosure, all that changed. Musicality became a strong point and measured in-room response accuracy is very good. The 100-250Hz region can be somewhat up in this wiring, depending on room effects, but better than having a dip here.

The ETs have very good resolution, and the resolution goes far down in the frequency range. The deep bass always involves the room with any speaker, but the ETs maintain the definition down to surprisingly low frequencies. One hears more easily than usual exactly what the cellos, bass clarinets, and trombones are up to. This effect is very impressive and musically significant—one can really hear what is going on lower down. Many speakers are transparent from the top down into the mids, but tend to mush out a bit further down. Either that, or they purchase transparency further down at the price of attenuation of the lower frequencies. One thinks of the floor dip that enervates music even if it does make it more “transparent” in some sense—the sound of a table radio with a subwoofer distantly attached, for example. Not with the ETs: When set up well, they go smoothly down into the bass with no deep dips from floor effects, though the 250-500Hz range can sound a little weak compared to the prominent midrange, unless the latter is pulled down a couple decibels. The clarity throughout the

## EQUIPMENT REVIEW - Eminent Technology LFT-8b

upper bass and low mids is very good indeed. This is a speaker where it would make sense to talk about good behavior far below the treble, where waterfall analysis is most usually done.

And this clarity goes on up in frequency, too. The often subtle harpsichord part in the Sitkovetsky arrangement for string orchestra of Bach's *Goldberg Variations* [Nonesuch] is as clearly delineated as I have ever heard it on this old favorite.

On the "middle" setting for the tweeter level, which makes the crucial 5kHz-10kHz octave sound more natural than does the nominally flat (top) setting, the top octave is down a little, somewhat rolled-off. (The top setting is too bright in the 5-10kHz octave, while the "low" setting rolls off the top so much that high percussion is all but lost in the mix, so the middle setting it was.) The top-end roll-off was literally observable, of course, but even so the high percussion in John Eargle's remarkable Delos recording of Shchedrin's *Carmen* arrangement still came through with delicacy and definition. This is presumably because of the intrinsic clarity of the speaker. Nicely missing was the "tizz" of the rising-on-axis dome tweeters so popular today.

The midrange percussion on this recording sounded unusually convincing, quite startlingly so. Part of this excellence of middle-range percussion is presumably related to the nearness to phase linearity. As John Dunlavy used to say, "Linear phase keeps ticks from turning into tocs."

One reads a lot in recent audio writings about "resolution" without finding out very much about where it comes from. The ET's

excellent resolution arises in my estimation from the acoustic emphasis on direct arrival and from the ultra-low distortion of the nearly massless drivers, which are driven directly—no transformers or capacitors, as electrostats almost always have. And of course cabinet sound is minimal—there is no cabinet involved above the bass. The amplifier signal does not go through a transformer or any filtering, other than just the low-order crossover filtering. Effectively, the amplifier is connected directly to drivers which should be—and in listening terms are—linear down to extremely low levels. An ultra-light membrane driven by a two-sided magnet structure has no way to refuse delicate signals, and hence cannot eat detail. What comes in goes out. It has nowhere else to go, actually. (Something about conservation of energy and so on comes to mind here, if I may speak in terms of physics for a moment. The all but massless and very flexible membrane cannot generate nor retain internal heat as a massive driver can from forced flexing, so the input energy has to go the only place it can go, into sound.)

I got it into my head to try out the ETs on the most demanding of source material, namely the combination of large chorus and large orchestra. This sort of thing is almost impossible to reproduce adequately in a domestic environment. Something like Walton's *Belshazzar's Feast*—with large chorus and powerful orchestral forces including a battery of unusual percussion (which come to the fore in "Praise Ye the Gods")—is just not going to work, is it? But the thing is that it actually came remarkably close with Telarc's Robert Shaw/Atlanta recording. "Babylon was a great city"



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## EQUIPMENT REVIEW - Eminent Technology LFT-8b

was ultra-convincing—it is a great rendition of this short but stunning passage—and when the chorus sang “By the Waters of Babylon,” it was also unusually convincing, with just the right separation of the voices. It sounded like a blended group of individuals, but without short-changing the blending. (Shaw’s choruses are amazing—if you’ve heard one of his groups live, you know. If you haven’t, you can get the idea here!) And during “Praise Ye the Gods” I wanted to stand up and cheer.

One of the things going on here, specifically with the high percussion, is that a line-source tweeter presents high-frequency transients better than most point-source setups, because even the best dome tweeter will tend to make a high transient that is hard left or right sound as if it were coming from the tweeter. Because after all, it is! The line-source tweeter presents a less constrained picture vertically, and sounds more natural in this regard; the sound floats at ear level in a very natural way. None of the looking down at the miniaturized, vertically constricted music that low floorstanders present.

There was also an unusually convincing rendition of the effect which always occurs with large ensembles live, not so much depth of image as such, but the sense that there is a large space, different from your own listening room, into which one can listen without encountering the constraint of the rear wall. The space is just there, running on back and letting the orchestra and chorus, which are far too large to exist in one’s own room, exist in the kind of perceived space of the real performance venue. This is not a question of outside-the-speaker “images” generated by sound off walls, but rather of the

erasing of your own listening room—and a most gratifying thing it is. This aspect of sound is what high end originally sought, even if to some extent it has been forgotten.

Next, I switched to Thorofon’s ultra-beautiful live recording of Bruch’s *Das Lied von der Glocke* with the Dresden people. I seldom treat this as an audio test item—too beautiful for me to want to overexpose myself to it. But after *Belshazzar*, I really wanted to hear how the ETs would do it.

On to the recorded speaking voice, in this case the Sherlock Holmes “Bascombe Valley Mystery,” recorded by the BBC. And here something arose that was not so obvious with the larger-scaled material. The voices and sound effects sounded natural in tonal character. People sounded like people. Except that they were spread out. Listen to this on a speaker with ideal image focus—for me most recently the Stirling Broadcast LS3/6 of Derek Hughes’ design—and the people sound like point sources, as indeed people do. With the ETs, they were spread out a bit. Some might call this dimensionality, but I am afraid that this is really a bit of defocusing. This is not disagreeable and can be very convincing, but it is not quite right in theory. Still, the voices were vivid in the way that real voices of trained actors are vivid at close range.

The orchestra I play in is rehearsing Rachmaninoff right now, and any discontinuity from the speakers to those live rehearsals was quite minimal, much less than with most speakers. And the specifics could be breathtaking. The great saxophone solo in the first movement accompanied by the other winds in a succession of duet-like exchanges was beautiful, and the tone colors of the instruments were presented

superbly. Midbass was marvelous, with the cello pizzicatos emerging with perfect clarity but without exaggeration. Overall, this was the stuff that orchestras are made of.

### Summing Up

The ET LFT-8b harken back to the early days of high end, when many speakers were adventures in design and, for the reviewer and consumer, a bit of an adventure in setup and usage. The ETs have limitations: They are not entirely flat and they sound somewhat colored in the upper midrange and treble (just a little EQ largely if not entirely eliminated the colorations); the sound depends on exact listener position to a greater extent than most speakers; the sound is adjustable in various ways—not only the overt adjustment of the highs but the relative polarity

of the woofers, and grilles on or off, front or back, leaving certain crucial decisions to the user. And the ETs are quite insensitive—while they are an easy load in the impedance sense, they demand a powerful amplifier to play as loudly as they can play, which is in fact quite loudly. No electrostatic restrictions come to mind—but one needs power, at least 100 watts a channel, preferably more.

Some of these limitations may strike you as too limiting indeed. And yet, and yet...if you are willing to work with the ETs, you can come to hear something truly extraordinary, for which the word magical comes to my mind. The purity of sound of the ETs can be irresistible. In the end, when frequency response is arranged to be essentially correct, the beauty of music is very much attached to lowness of distortion—not just in theory, but also in practice. And here, in low perceived distortion, the ETs are all but incomparable. Really, I mean it. And the ability to erase the listening room, something the ETs also do unusually well, is a central issue of audio. The sensitivity to listener position disturbed me a little, as did the colorations, but in the end, I often found it hard to turn the ETs off and go about my business.

The promise of this type of two-sided planar magnetic driver seems to me almost unlimited. The midrange driver behaves so perfectly over so much of its operating band as to be almost uncanny. And even if the speaker design itself does not quite explore the enormous potential of this driver to the extreme, one still gets a surprisingly convincing view of the real sound of music at an extremely low price. Not perfect, but something fascinating and wonderful even so, and of true sonic beauty. **lars**



# Dynaudio Excite X34

## Good Vibrations

Neil Gader

**I**f there's anything that gets my back up it's the lament that all the sexiness and excitement in audio resides at the extreme high end of the market. That is just so wrong. In fact so absurdly wrong that I will happily argue that the high end has been enjoying a most Golden Age of affordable gear. Exhibit one: the Dynaudio Excite X34 loudspeaker.

For the uninitiated, the Excite range is the affordable sweetspot of the broad Dynaudio line and a short step beyond the entry-level DM Series. It's also Dynaudio's gateway product to lure enthusiasts along the road to upscale offerings like the Focus and Contour series. Excite is represented by four updated models, the X34 considered here, a larger floorstander the X38, the compact X14, and the X24 center channel.

Even avid Dynaudio enthusiasts might be forgiven for confusing the \$3400 X34 for its predecessor the Excite X32 (reviewed by Kirk Midtskog, Issue 205). Yes, the basic bones are the same. It remains a slim two-way floorstander with crisp, clean understated lines, identical dimensions, and a very small footprint. At a mere 36 inches tall, its silhouette is on the shorter end of the scale for a floorstander. Some visual tip-offs for the updates in the X34

include magnetically attached grilles, a fully veneered natural wood front baffle and plinth, and high-quality Torx metal screws in the same color as the driver frames. Stability has also been enhanced with the addition of die-cast aluminum outrigger feet fitted with integrated damping rings and adjustable spikes.

The latest Excite drivers retain the long-throw woofer and smaller, lightweight voice coil that was featured in the Excite X32 model. Bass port tuning has been updated, and thanks to a more amplifier-friendly crossover the X34 draws less current from the amp. The X34 is now a true 8-ohm impedance loudspeaker compared to the 4 ohms of its predecessor.

Dynaudio has also addressed the X34's directivity—the way in which it disperses sound off-axis. The idea is to reduce coloration caused by floor and ceiling reflections, the prime culprits behind bass cancellations and general image smearing. Dynaudio ameliorates these in the X34 by using a “lite” version of its DDC (Dynaudio Directivity Control), a technology developed at Dynaudio Professional and found on its pro studio monitors and home-audio flagships, like the Evidence Platinum. The process is directed at optimizing the relationship of transducers both mechanically and acoustically, and implementing a proprietary crossover design chosen to reduce, in Dynaudio's words, “sound

reflections from the floor and ceiling of any room by at least 75% through the exact matching of the phase responses of the individual drive units, consequently achieving a sound radiation vertically focused towards the listener.”

In terms of sonic performance, the X34 isn't partial to specific genres of music; from country to classical, it's equally satisfying. For Dynaudio it appears that overall balance trumps any two or three specific criteria. The result is a little tower that within some very acceptable limitations achieves a near full spectrum of spirited output and low-frequency authority. For me, if there is a single word that describes the sonic personality of the X34, it's “Party”! The sound signature is outgoing, with a forward lean and a positively energetic temperament. There are no broad frequency suck-outs, nor does the X34 lay back on dynamics or overly-recess octave ranges to attain an undeserved level of three-dimensionality. The sturdy little towers are also remarkably free from cabinet artifacts and port coloration.

In tonal balance, the X34 is reasonably neutral with the exception of some upper treble shading, and a hint of mid/upper bass ripeness. Anchored by a surprising allotment of low-frequency energy and dynamic punch, the Excite X34 more than lives up to its name, achieving levels of performance that in the proper setting



## EQUIPMENT REVIEW - Dynaudio Excite X34



suggest many of the best virtues of a good 2.5-way like the Sonus faber Venere 2.5 (Issue 232) or a three-way like the superb Revel F206 (Issue 234). It's not a speaker to shy away from an explosive big band recording like *Count Basie Live at the Sands* [Mobile Fidelity]. Heavy brass has a way of making cowards of smaller compacts, but the X34 pretty much has an answer for every fusillade.

Vocals are well balanced with a good measure of chest resonance and upper-octave air, an impression that was conveyed as I listened to Colin Hay covering his own song "Overkill," a mega-hit from his bygone, down-under, Men At Work days. This is an "unplugged" version with only a simple, and slightly muted, guitar accompaniment. The sound, though closely miked, is airy and incredibly intimate, like Hay was singing in your living room.

Goodness knows my loyalty to stand-mount monitors is unwavering, but the X34's lower mid/upper bass response fills in gaps that many compact-speaker aficionados may not even have realized have gone missing. The weight of bass/baritone singers is one example. A bass or baritone singer's body is one big, barrel-like resonator, a fact that is plainly heard when he performs live and unamplified. In fact, the weight of his voice is not unlike the darker colors produced by a piano's soundboard—sustained and rich as chocolate. Speaking to that point, I heard Bryn Terfel in recital at the Dorothy Chandler Pavilion in Los Angeles under just these circumstances and I was astounded at the weight, the gravitas, of his unmiked voice and the piano accompaniment in this huge, 3000+ seat venue.

At a little over three feet, the X34 is not an especially tall floorstander particularly for American audiences. And, oftentimes the combination of a

lower tweeter height and that driver's dispersion characteristics creates an impression of a low acoustic ceiling having descended over the orchestral venue. However, that impression never materialized in my time spent with the X34. During Laurel Massé's *Feather and Bone* the massive space of the Troy Savings Bank venue retained most of the vast acoustic reverberant cues that I'm familiar with. (The Dynaudio Directivity Control at work, perhaps?)

Strings could be sweeter—they tend to be a little dry, and violin section layering is not quite fully explored. This comports with my view that low-level image resolution, micro-dynamics and focus could be more revealing—a conclusion I reached listening for the softly tapped cymbal embedded deep in the soundspace during the March section of Vaughan Williams' *The Wasps* or the delicate harp theme that follows the main melody in the opening section of the same piece.

Bass response is very good, audibly descending into the mid-thirty-cycle range and rock-solid to 40 Hertz. It's fairly uniform in output although it does thicken and diffuse somewhat in the midbass. (Foam port plugs are supplied to reduce bass output if required.) Still, the X34 maintains a firm grip on orchestral bass drum and other low-frequency resonances and decay information, even within the complexities of a full-blown symphonic performance. The tight, acoustic bass line during Holly Cole's "Take Me Home" was controlled and unwavering with a convincing sense of pace and rhythm. In such moments I hear clean stops and starts, devoid of timing artifacts or hangover from the port. I should add that this level of LF performance should make the X34 particularly attractive to home-theater enthusiasts (especially in concert with the X24 center channel) who aren't prepared to go the LFE/subwoofer route.

The Excite X34 is one versatile little number that was willing and able to get down and party with the best of them. With few exceptions, it touches all the musical bases and does so with a footprint no bigger than an average-size compact—food for thought monitor-fans. An authentic crowd pleaser in the most musical sense. **tms**

### SPECS & PRICING

**Type:** Two-way, bass reflex  
**Drivers:** One 1" tweeter, two 6" mid/bass  
**Frequency response:** 37Hz-23kHz  
**Nominal Impedance:** 8 ohms  
**Sensitivity:** 86dB  
**Dimensions:** 6.7" x 36.6" x 10.6"  
**Weight:** 37 lbs.  
**Price:** \$3400

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# Nola Contender

## A Boxer with Legs

Neil Gader

**"A**nd in this corner, standing 44" tall and weighing in at a trim 50 pounds per side is the Nola *Contennnnnnnnnn-derrrrrrrrrr!*" This playfully pugilistic loudspeaker theme (that I've admittedly been exploiting) began with the Nola Boxer, a two-way compact that I reviewed a couple years ago and that went on to nab a TAS Product of the Year Award for 2010 (Issue 209). Last year Nola released the subject of this review, the Contender in the middleweight ranks. And Nola's "trainer," aka owner/designer Carl Marchisotto, wasn't done yet, as he recently introduced the \$10k KO, built to compete in the heavyweight division.

Boxing metaphors aside, the \$3600 Contender is a three-way design in a floorstanding, bass-reflex enclosure. Visually it maintains the no-nonsense, working-class silhouette that the Boxer exemplifies but with some critical differences. While the silk soft-dome tweeter from the Boxer is retained, this slender tower loudspeaker adds an additional 6.5" laminated pulpcone woofer and downward-firing port. The identical upper and lower bass drivers are housed in separate chambers with non-parallel walls. In this instance the upper driver is ported to the rear, while the lower driver is loaded via the downward-firing port. The chambers are tuned to different frequencies to pro-

vide the smoothest and most extended in-room bass response.

Internally the Contender features two separate, shock-isolated, hand-wired crossover boards of a shallow-slope design. In critical areas, the Contender also uses Nordost monofilament silver wire—the Boxer does not. The Contender also retains the high 90dB sensitivity and 8-ohm impedance of the Boxer, so that any high-quality amplification beyond roughly 30Wpc will drive it comfortably. In dimensions, except for the extended enclosure, the Contender retains the overall footprint of the Boxer, making it an easy fit even in rooms that are normally uncomfortable with floorstanders.

The Contender is designed to fire straight into the room—no toe-in is recommended. This also yields the most expansive soundstage and most neutral treble response. But since no two rooms are identical, it's always worth experimenting with placement. In order to allow the port to work properly, the included floor spikes elevate the speaker 1.5" above the floor. However, since this is a narrow-baffle speaker, special care should be used around rambunctious kids, pets, or over-caffeinated audiophiles. My suggestion is that Nola consider offering, on an optional basis, outrigger-style supports for additional stability.

I asked Marchisotto about the distinctive low placement of the woofer relative to the floor and he stated that "with a very low crossover to the lower woofer (about 60Hz), the

## EQUIPMENT REVIEW - Nola Contender

wavelength is long at the crossover frequency (about 20 feet), and so I am allowed to mount the woofer low to the floor for best low-bass loading, while still maintaining a good phase match with the upper woofer.” He adds that “as in all three-way designs, the midrange quality and resolution will improve, as the upper woofer (midrange) covers less range than in a two-way or 2.5 way design. The lower woofer is also ported to the floor to better couple deep bass. Anyway the goal here was to produce a speaker that had the virtues of the Boxer with 90dB sensitivity, but with addition of bass extension to a usable 25Hz.”

### Them's Fightin' Words

Making the transition from compact to floorstander is never a sure thing. A lot can be lost in translation. However, Marchisotto—no rookie at this game—designed the Contender to share many of the Boxer's sonic traits. There is the familiar lively rhythmic pulse that I found so appealing in the Boxer—an effervescent energy that gets the toes tapping. Its midrange personality is an outgoing one that doesn't lay back or recess images to create false soundstage depth and exaggerated dimensionality. Bass lines are tight and articulate, and kick drum rhythms and skin timbres are distinct. Music is presented with a resounding weight and scale, particularly given the speaker's modest dimensions. I especially loved the rich soundboard resonances that this speaker imparted during solo piano selections from Bill Carrothers' *Civil War Diaries*—the sheer mass and solidity of the instrument materializing in my room. Transient action is solid as well, and there is a wide dynamic envelope that pumps

extra juice into the mids. Pushed really hard the Contender loses just a bit of steam dynamically as it descends into the lower mids and upper bass, the range where the artillery of heavy brass and winds swing into action, but the subtraction is mild.

The key differences of the additional driver and expanded enclosure volume are heard and felt in two areas. The midrange is livelier and more visceral. The presence range is more neutral and charismatic than that of the slightly more reserved Boxer. The Contender reproduces both female and male vocals with precise articulation and a stronger sense of vocal textures such as the chest and body of the performer. The soft-dome tweeter is very good, reasonably smooth, and free from noticeable material colorations. While it isn't the last word in silken airy response or ribbon-like liquidity, it's more than up to the task in this range. Still, I think male vocals benefit the most from the nicely weighted lower midrange of the speaker, so that during Leonard Cohen's "Darkness" on *Old Ideas* [Columbia] the cavernous power of Cohen's iconic baritone is fully revealed. On the other hand, a female voice like Holly Cole's on *Temptation* shows some added top-end brilliance and sibilance—traits that add definition to each note but that also result in a cooler timbre.

Bass response is nicely controlled, but still retains the warmish character and looser feel that I find is more consonant with lifelike low-frequency reproduction. And rhythmically the Contender has a sure-footed and springy quality that doesn't sag on its heels. This was exemplified during the classic Blood, Sweat & Tears track "And When I Die" [Columbia], a cut

that's all about pitch and precision and good rhythmic timing in the bass line—elements this speaker has in droves. In my room the Contender extended flat down to 40Hz although there was perceptibly a good deal of response below that. The stated 25Hz is a bit optimistic, however.

The Contender's overall performance was even more impressive when I turned to orchestral music—material recorded in a hall with natural acoustics. In such voluminous environs the Contender showed its flair by painting a soundstage on a grand scale. During "Jupiter" from Holst's *The Planets* [EMI] I was able to "see" from the front of the stage to nearly the back wall of the hall. The Contender also generated impressive low-frequency reverberant information during Britten's *Four Sea Interludes*. The sensation of an active, acoustically expansive venue was impressive for a speaker of this spec, as was the lack of enclosure coloration, which allowed low-level percussion and deeply pitched brass and tympani to be reproduced cleanly and convincingly. The Contender seemed to revel in the wealth of ambient information it could reproduce. It's a skill that bass-restricted compacts like the Boxer, for all their point source-like focus, struggle to master.

No question, the Contender impresses with a lot of the right moves, but it isn't without a couple of minor hitches. There's an added glint and sheen on top that can make brass sections and upper-octave piano sound a bit leaner and drier when they play full-bore. In some instances I could also detect a hint of port tuning. For instance, during *Fanfare For The Common Man* [Reference] the Contender's lower octave thickened slightly, masking resolution.

While not perfect, at the end of the day there's essentially little that throws the Contender off balance for long. And at its price, no scorecards will be needed for this bout. No split decision here. With the Contender, Nola has built a bigger, better Boxer—a Boxer with legs, higher energy, and higher musicality, top to bottom. And for money that won't leave you feeling sucker-punched after the purchase. **tms**

## SPECS & PRICING

Frequency response: 35Hz-28kHz

Sensitivity: 90dB

Impedance: 8 ohms

Dimensions: 8" x 44" x 12"

Weight: 50 lbs.

Price: \$3600

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# Vienna Acoustics Beethoven Baby Grand Symphony Edition

## High-Value Hi-Fi

Ron Doering

**I**t all started with trains. Toy trains that is. Toodling around the Christmas tree way back in 1970. Instead of the “proudly made in the USA” Lionel trains that some of my friends had, giant things which were seemingly large and powerful enough for the smaller children in the neighborhood to ride on, my little choo-choo could fit in the palm of your hand and was foreign-made. As small as it was it impressed me even as a five year old. The engine, modeled after a pre-war German steam type, was delicately and accurately detailed. The colors were varied and authentic, as were the tiny inscriptions that would appear in a full size train as serial numbers and warning placards. Mechanically, it ran with the precision of a sewing machine and the accompanying directions sheets and brochures had an exotic flavor, punctuated by umlauts, and funny looking symbols like Ø. It was a small kit, only an engine, three cars, maybe eight feet of track, but as I found out much later this was quite a dear Christmas present—read “expensive.”

That train set was made in what used to be called West Germany by the Märklin Company. I still have the set and will probably give it to my grandkids once I’m through playing with it. This was my first experience with what seems to be a Germanic flair for injecting something special into even very ordinary things. My train was a little gem in its astonishing level of craftsmanship and, to an American, exoticism in the sheer “European-ness” of the packaging and design. The same could be said about the Volkswagen Beetle, which in the 1960s and 1970s seemed to occupy the driveways of every third house in my town. Yes, it was like any other car in having four wheels and seats, but beyond that the “Bug” was a design unmatched in every other respect. Somehow it was more than

cheap transportation. The Beetle made a statement; it pulled at the heartstrings and went down its own path.

The “A” students in geography will rightly note that Vienna, the home of Vienna Acoustics, is in Austria and not Germany. Fair enough. Nonetheless the qualities that I alluded to above—practicality, superb design, unexcelled fit and finish, distinctiveness—surely were incorporated in the Vienna Acoustics Beethoven Baby Grand Symphony Edition (BBG-SE from here on) loudspeaker reviewed here.

For loudspeakers it’s not an easy thing to be truly distinctive, especially at this price point. I could accurately (if not faithfully) summarize the BBG-SE as a compact, three-way, bass-reflex

## EQUIPMENT REVIEW - Beethoven Baby Grand Symphony

floorstander, which would also describe hundreds of other loudspeakers. But this would be like categorizing a Mercedes E350 as a mid-sized V-6 sedan. While to a certain extent this is true, as you and I know that's not nearly the whole enchilada. To understand what makes the BBG-SE distinctive is to know that at the design helm is one laser-focused Peter Gansterer, head honcho at VA, who could probably go by the nickname "Dr. No" for all the off-the-shelf drivers he approves of. Grand total: none.

Instead, Gansterer designs his own drivers and has them manufactured to his specifications, which include proprietary materials and construction methods, all very much on display on the BBG-SE. Interestingly, although VA works with some pretty famous and well-respected manufacturers including Eton, SEAS, and especially ScanSpeak, just a quick look at the patented clear polymer "Spidercone" XPP bass and X3P midrange drivers tells us that this is not merely a case of a tweak here or a modification there, as one might expect from other loudspeaker manufacturers that claim to use bespoke parts. In demanding such a major redesign Gansterer basically said: "Your technology is not good enough—do it this way." When you think about it, this is equivalent to telling Maria Sharapova that her serve is all wrong. I hear tell that Dynaudio, for one, didn't want to hear this and has refused such a build-to-spec arrangement. Even the quite average-looking silk-dome tweeter is well beyond the ordinary. It's an all-new design developed for the coincident driver of VA's \$10k Beethoven Imperial Grand, which just debuted at the Consumer Electronics Show.

Gansterer and company can focus on the dynamic portions of their speakers because they have their cabinets built and finished (to VA's specs, of course) by people who do this sort of thing for a living. Unfortunately that is all I can tell you as the identity of the custom joinery shop is on a need-to-know basis and I merely *wanted* to know. What I do know is that the result is spectacular; my cherry-finished samples were paradigms of the cabinet-maker's art. It's nice to see that while other high-end speaker manufacturers have invested in the use of non-wood construction and finishing methods, Vienna Acoustics has continued to champion the more traditional approach. Other finishes are piano-black or, for a \$450 up-charge, piano-white or rosewood.

Vienna Acoustics is no fan of bi-wiring or bi-amping and so discourages such practices by providing a single pair of binding posts, which are extremely robust, beautifully machined, and milled from a silver-and-gold alloy. They are also positioned where they should be—surface-mounted and widely spaced—and adults are expected to use this loudspeaker, so be warned that there is no plastic shielding of any kind. VA does concede that sometimes those dear little woofers and tweeters need a little protection and so provides what at first blush appear to be dead-ordinary, removable, cloth-over-frame-type grilles. On further inspection the frames are lovely examples of precision metal work, formed from delicately machined extruded aluminum. I found them to be quite soncially transparent.

Where and how a loudspeaker meets the floor is so crucial that it is hard for me to understand how little attention some manufacturers give



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## EQUIPMENT REVIEW - Vienna Acoustics Beethoven Baby Grand Symphony

to this detail. My cynical view is that this may be a result of potentially high cost coupled with the physical location of the end product, e.g. the floor, to which few audiophiles pay close attention. Spikes are certainly in vogue but they are commonly the too-small "+" variety set directly into the base plate of the cabinet. I find these really hard to adjust, and if the cabinet has a narrow dimension, making it tippy, the necessarily smaller footprint made by this footing makes things even less stable. So I feel that VA personally answered my prayers with its approach in using hefty metal brackets which cantilever four quite large (and heavy-watch out!) spikes outward. Not only does this add much appreciated stability to the cabinet, but the spikes can be easily turned and adjusted for level from above.

### Listening

Unpacking, assembling, and positioning the BBG-SEs was a no-brainer as VA's supremely fit Kevin Wolff did it all for me. And when he was done, I had him move some furniture. Will he do the same for you? One can only ask. And lest you think I crawled off to take a nap while all this was going on I did make the coffee and, of course, observed and asked questions. Kevin ended up arranging the speakers about two-and-a-half feet from the front wall (actually a built-in cabinet and shelves) measured from the back of the speakers, slightly toed-in, and ever so slightly tilted back. The size of my room dictates a cozy listening geometry, which in this case was an eight-foot equilateral triangle with the listening chair at the apex.

According to Kevin the speakers had been

around the block a few times and so it is no surprise that my initial sonic impressions changed not a bit during the auditioning period. In sum this was a highly detailed, convincingly three-dimensioned presentation. Images were stable across the soundstage with a hint of vertical information, which is rarely achieved in my experience. Bass was satisfyingly extended but noticeably not as powerful as that of my resident Snell E/II's. On further investigation, employing test tones and hand-held SPL meter, I found that the BBG-SE had a slightly tipped up response curve, rising gradually over 13dB from 32Hz to peak at 1kHz where it pretty much flattened as far out as I could measure (10kHz).

Call me crazy but I had high hopes that the BBG-SEs and my other Austrian in residence, the Ayon Orion II, star of my last review, would somehow be a match made in Vienna Waltz heaven. Alas, while this was not a complete disaster, I felt that the tilted-up response was exaggerated somewhat by the Ayon. All that is good about the speaker was still there, it just sounded thinner. If you like a little more meat with your sonic potatoes the thing is to give the BBG-SE current, which in this case was much more readily provided by the solid state NAD—and I have no reason to doubt that these speakers would benefit greatly from even bigger dollops of juice than I was able to provide. The 250 watts suggested by Vienna Acoustics as an outer limit strikes me as a not unreasonable target—just make sure these are quality watts. With a properly matched amplifier the BBG-SEs are quick, throw a wide and well-delineated soundstage, and are detailed as all get-out. Yes those fancy drivers do make a difference.

If you dabble in computer audio, go to HDtracks right now and download the Grateful Dead's *American Beauty* and Bill Evans' *Waltz for Debby*, both now available in 96/24. But be warned, this can take a while. It's worth it, though, because you get all the information, detail, and psychoacoustic cues of good vinyl playback but without the analog noise floor. High-resolution speakers like the BBG-SEs just revel in this stuff.

The Dead's "Friend of the Devil" opens with a staggered entry of instruments—acoustic guitars (Jerry, then Bob), bass, after a few measures mandolin (courtesy of Dave Grisman) and, finally, drums. Through the BBG-SEs every instrument was full of character, remaining an identifiable voice throughout the track in both position within the soundstage and sonic signature. These are real instruments played by living, breathing people, so no note, let alone phrase, is played the same way twice. Through a lesser system this is a pleasantly hummable thing to listen to, but it's akin to viewing the Eifel Tower or the Empire State Building from many miles away. Walk right up next to these structures and you now begin to see finer design details and hints of how the buildings were actually constructed. This is what listening to music is like through a system with high resolving power.

*Waltz for Debby* was recorded live at the Village Vanguard in the Mad Men era when people not only drank and smoked too much, but also evidently weren't going to let a rare musical genius playing live before them get in the way of their own blathering. Yes, this is the one with clinking glasses, waiters being called, jokes being

told, conversations carrying on from the table nearest the stage. Non-audiophile friends shake their heads. "You paid how much for that?"

## SPECS & PRICING

### Driver complement:

Two 6" woofers, one 6" midrange, one 1.1" hand-coated silk-dome tweeter

Loading: Bass-reflex

Frequency response: 30Hz-22kHz

Sensitivity: 91dB

Impedance: 4 ohms nominal

Dimensions: 8.5" x 40" x 14.75"

Weight: 60 lbs. each

Price: \$5000 a pair (cherry wood or piano black), \$5500 (rosewood or piano white)

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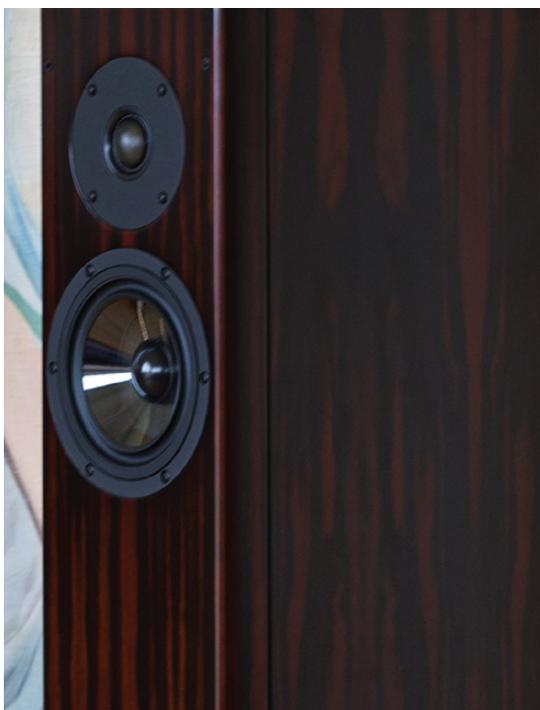
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## EQUIPMENT REVIEW - Beethoven Baby Grand Symphony



But the point is people have been purchasing this album for over 50 years for the simple reason that a summer night in 1961 at a New York nightclub was captured forever. When viewed that way, the boors at the table chatting about the banalities of the time are as important a feature as Scott LaFaro's lovely, lyrical bass or Paul Motian's exquisite brush work. In this way the BBG-SEs performed a little bit of the magic that some of us are only too happy to shell out great wads of dough to get. On one particular evening, sitting on the couch, I was transported back to a time before I was born, to a place I'd never actually been, to experience one of the all-time-great jazz trios' delicate interpretation of

Gershwin's "I Loves You Porgy." The obnoxious table near the band didn't bother me at all.

Finally, a further word on bass may be called for given my observations above. Smart bass is very difficult to achieve and so is usually expensive. Stupid bass is easier and cheaper, which is why you hear so much of it. But if the objective is to launch a series of sound waves with precise timing and in perfect coordination with other very different drivers launching much shorter waves at much higher frequencies, then we suddenly find ourselves in pretty rarefied territory. The Vienna Acoustics Beethoven Baby Grands do smart bass—fast, tight, tuneful, and well integrated. I never had cause for complaint, and, yes, the low E pedal at the close of the "Uranus" movement from *The Planets* [London] was wall-shakingly powerful; more important the note was pitch-perfect, not merely an approximation. While my reference speakers do have flatter response down to the nether regions, the trade-offs employed to achieve this—less focused imaging and a certain dark character overall—are either acceptable to the listener, or not.

### Conclusion

Putting it all together—performance, build- and parts-quality, progressive and sophisticated design, fit and finish, the fact that it is European-made by workers getting European-style wages and benefits, and its sheer beauty—the Beethoven Baby Grand Symphony Edition loudspeaker offers a lot for its frankly not unreasonable asking price. Indeed (yes, I'm writing this with a straight face) this is one of the highest-value audio components I've yet encountered. *Gut gemacht!* 🎧

## Compatible Predictable Optimized



## Yes, There Is a Best Cable for Your Speakers

And yes, you can know for sure ... or you could if you borrowed every cable made and used it in a bypass comparison. OK, so borrowing every cable is kind of a pain, but a bypass comparison is easy, and is the only way to truly understand the "sound" of a speaker cable ... or better yet, to verify its desired neutrality, its lack of character or a signature. When people listen to one component in comparison with another, this almost always means comparing one version of not-quite-right with another version of not-quite-right, and then choosing the character that seems most compatible.

However, true compatibility, with any one speaker or with every speaker, is achieved by using the cable that does the least damage, that gets in the way of the music as little as possible. A cable can never make the sound better, it's all a matter of damage control. However, the nature of what it does wrong makes all the difference in the world. In any system, a cable with a touch of soft focus, a slight neutral "gray" filter, these are the types of damage which don't get in the way of the music. In any system, perceived resolution due to upper midrange irritation, or perceived bass boost from uncontrolled mid bass at the expense of bass definition, these are never acceptable distortions.

How does one separate an attribute with short-term attractiveness from real quality? It's surprisingly easy! There are always multiple cables in the circuit path. There's wire and/or circuit trace inside the amplifier, there's wire inside the loudspeakers, and there's a wire between the amp and speaker. If all three of these links are treated as constants, an additional speaker cable can be added between the amp and the existing speaker cable. The result will always be more damage and reduced sound quality ... and the change will reveal the character flaws of the cable being evaluated. Whether the overall system is lean and irritating, or fat and warm, the nature of the cable being evaluated will be revealed.

### But, Which Path To Take?

If it's that easy to determine a cable's absolute character, or better yet, verify a lack of character, how come AudioQuest makes a competing series of speaker cables ... shouldn't one or the other always be better or worse?

Yes and no. Context is everything. Driving inefficient speakers on the other side of the room is very different from driving a pair of desk-top speakers close to the amp. As a baseline, it's important to understand that all speaker cables cause sonic degradation which accumulates with length. Inductance, and its smearing of time integrity, is the primary culprit causing a more-and-more out of focus effect, though several other distortion mechanisms are also cumulative. A low level audio interconnect cable doesn't carry power and doesn't have to manage strong magnetic fields, so we

almost always recommend putting the amp as close to the speakers as possible and running a long interconnect if required. With a very few easy-to-predict exceptions (a few tube preamps, passive preamps, and low input impedance amps), interconnect sound suffers much less accumulation over length, much, much less than does speaker cable.

### It's About Power

No, it's not all about resistance (impedance)! A normal 18 AWG lamp cord is rated to safely carry 10 amps, enough to kill you. Getting power to a speaker is easy. It's getting it there undistorted which is complicated. AudioQuest makes some very large speaker cables because diluting the energy and resulting magnetic fields across more metal is an effective brute-force way to reduce a number of distortion causing mechanisms. The lower impedance of such large cables does allow some amplifiers to better "control" the motion of the bass driver, though this effect is usually much smaller than the overall full-frequency range improvement resulting from causing less distortion within the cable.

If all else is equal, and the sound is just enough louder for anyone to agree, "OK, that's definitely louder," that's probably about a 3dB difference, which requires twice as much power to the speaker. When each strand or conductor has to carry twice as much power, the interaction between any 2 internal elements is exponentially greater, 4 times as great. Using a value of 1 for the lower power, the interaction is  $1 \times 1 = 1$ , but for a 3dB greater signal, it's  $2 \times 2 = 4$ . If two different speakers are 3dB more or less efficient, and the volume is the same, the formula for internal cable interaction is exactly the same.

A bigger cable with more conductors makes possible the very effective Counter-Spiral geometry of AudioQuest's Tree Series of cables. However, in the more moderate-size AudioQuest Flat Rock Series, money that didn't go into more metal and more expensive geometry, is available to pay for higher quality metal, making it possible for Flat Rock models Comet and Meteor (fantastic in my desk system!) to truly have the openness made possible by AQ's PSS silver conductors.

### It's Up To You

So, it is possible to be reasonable and rational about choosing a cable which will put you closer to your music ... though there's still some room for tailoring in order to get the best possible fit for you.

Sincerely, 



audioquest.



# Thiel CS2.7

## A Major Step Forward

Anthony H. Cordesman

**T**hiel has a long track record of producing some of the best speakers around, but this time it has taken a major step forward.

The Thiel CS2.7 is a remarkable transducer at any price and a superb value even at its cost of \$7999 a pair. To be quite frank, I expected far more sonic compromises relative to Thiel's top-of-the-line CS3.7. In practice, however, the CS2.7 is one of the most neutral, detailed, and transparent speakers I've heard, and its only real compromises lie in the deepest bass—a sonic area largely of interest to synthesizer and organ fans.

I also have to say that a photo will not do it justice. If you want to seduce your wife into accepting a floorstanding speaker—and paying nearly eight grand for it—the Amberwood version of this speaker is as suitable for exhibition at MOMA as it is for the listening room, combining a sculptured profile, a visual impact that manages to be striking without being dominating, and a size whose shape and height is well suited for real-world listening rooms without appearing to tower over the rest of the furniture.

But then, as a loyal reader of TAS, you have to at least pretend you could care less about looks. It should all be about the sound (although a little “glitter factor” in technology and design can be allowed to creep in).

### Sonic Coherence, Treble and Midrange, and the “Coaxial Coincident Driver”

Let me begin with sonic coherence and the soundstage. The Thiel CS2.7 comes close to mimicking a point source. Like other current Thiel designs, it uses the same coincident tweeter/midrange driver pioneered in the CS3.7 (see sidebar). As a result almost all of the music and soundstage information emerge from a single driver. Whether this is necessarily better than closely spaced separate drivers is far from clear. There are many other speakers including my reference Vandersteen Model 5 Carbons that achieve excellent coherence with separate tweeters and midranges.

Nevertheless, what Thiel calls a “Coaxial Coincident Driver” not only produces a remarkably integrated sound without tying the imaging and soundstage to a location near the speaker or a given driver; it also has the

## EQUIPMENT REVIEW - Thiel CS2.7

kind of unity and transparency that full-range ribbons and electrostatics are praised for.

If you need a written description for techie (read “dork”) status in bragging sessions with fellow audiophiles, Thiel states that, “the midrange and tweeter diaphragms are formed of anodized aluminum. The unique ribbed geometry of the midrange is engineered to deliver immense rigidity and clarity. An uncharacteristically large diameter voice coil further braces the midrange against the out-of-phase bending common in virtually all other loudspeaker drivers. Tremendous control and high output capability is afforded by the massive neodymium magnets powering the drivers. A very large ring magnet drives the midrange, while 5 neodymium magnets drive the tweeter. As with all Thiel designed and built drivers, this element utilizes a short-coil/long-gap and copper stabilized motor system to ensure ultra-low distortion and utter faithfulness to your music.”

Decades of listening to high-end speakers have taught me that no single design approach is “best” or “right.” It has also taught me, however, that the finest speakers do largely live up to their hype.

In this case, the highs and midrange are truly revealing without any tricks emphasizing the upper midrange or presence areas, without creating any apparent peaks in the highs, and without some sweet spot in loudness or dynamic detail. This comes across clearly with massed strings and demanding solo passages with clarinet, trumpet, and flute-instruments that can all sound hard or lose some of their musical realism with the wrong driver and speaker.

As is the case with the CS3.7 and all of today’s best speakers, the CS2.7 is not forgiving, but it also does not harden classical music or acoustic instruments. It is exceptionally revealing of the detail in small (very well recorded) jazz groups and demanding rock recordings. It also gets voice consistently right, avoiding any coloration of male voice in the midrange and artificial exaggeration of the upper range of soprano voice or exaggeration of sibilants.

### The Sound Stage, the Drivers, and the Cabinet

The radiation patterns of the Coaxial Coincident Driver are also exceptionally well chosen, provided, as the instruction manual states, that you keep the speakers a reasonable distance away from sidewall reflections. The soundstage has very good coherence from left to right, without gaps in the middle or seeming to cut off to the left or right of the speakers.

The sound is consistent at any reasonable listening height and loses very little upper-octave data and imaging detail when you are standing. You can use an unusually wide spread between the speakers without losing center fill or exaggerating the size of solo instruments or small musical groups, and depth is about as good as your room, speaker placement, and listening material permit. I would recommend a carpeted floor over a wood floor for listening to the CS2.7s at reasonable distances, though it was no more vulnerable to floor reflections than other floorstanding speakers of its size, and less so than many.

The cabinet shape and design obviously play a role here as well. The front baffle is not as sculptured or physically “time-aligned” as some other speaker designs, but the cabinet is tapered at the top, relatively narrow (11”), and relatively deep (16.7”).

The cabinet is also is exceptionally well-braced inside, and replaces the one-inch-thick MDF cabinet walls in previous CS2 Series models with much stronger curved plywood. It uses a 3”-thick front baffle to mount the drivers and three solid 1”-thick internal braces, the top one of which seals the coaxial enclosure from the bass chamber. No parallel surfaces exist anywhere inside the cabinet, limiting the development of standing waves. It is not as mass-damped as some competing speakers. The CS2.7 weighs only (“only?”) 77 pounds. However, its structure and an excellent spiking system make it exceptionally vibration-free even at volumes above 90dB.

This almost certainly contributes to its exceptional midrange coherence, as does what is clearly an exceptional

crossover design that blends the treble and midrange in the Coaxial Coincident Driver near seamlessly with the lower midrange and bass.

### The Bass

If there is any trade-off in cost and size, it lies in the deep bass, but the trade-off is much smaller than I expected. The CS2.7 has only an 8” woofer, but it is supported by an oval passive radiator. Thiel also claims that this woofer has “distortion that is 1/10th that of typical woofers of this size. The magnetic system is a Thiel proprietary short-coil/long-gap design whereby the voice coil never exits the ultra-strong and stable magnetic field set up inside the gap, thus helping the amplifier exert complete control over woofer motion. The motor structure is stabilized by sheathing the center pole with a copper sleeve, and by including a copper shorting-ring at the base of the back plate. The first of these measures dramatically reduce the inductance of the voice coil thereby ensuring that the frequency response of the driver is not modulated by the motion of the coil over the pole. The copper shorting ring guarantees that the voice coil’s magnetic field (again, analogous to the signal from the amp) always reacts against a rigid and fixed magnetic field as set up by the magnet.”

Once again, I can’t validate any given set of technical or design claims, but Thiel has long produced some exceptional woofers and passive radiators,

## SPECS & PRICING

**Bandwidth:** (-3dB) 35Hz-20kHz  
**Frequency response:** 35Hz-20 kHz  
 +/-2.5dB  
**Phase accuracy:** +/-10°  
**Sensitivity:** 87dB@2.8V/1m  
**Impedance:** 4 ohms (2.4 ohms minimum @160Hz)  
**Recommended power:** 100-400 watts  
**Dimensions:** 11" x 41" x 16.7"  
**Weight:** 77 lbs.  
**Price:** \$7999

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## EQUIPMENT REVIEW - Thiel CS2.7

and the CS2.7 did meet its specification of relatively flat power output down to nearly 35Hz in the best location in my listening room when I measured its response using a mix of pink noise, bass warble tones, an AudioTools RTA and FFT routine, and an iTestMic.

The bass was not only extended, it was also very smooth with the right room location, and very tight and detailed. As is usually the case, it also initially sounded a bit limited until I ran it through the usual range of bass spectaculars and test tones. Unlike many other speakers, the fact that the CS2.7's bass does not have some inherent coloration or peak means that the deeper bass really is deep, rarely produces massive power, and does not have some form of "overhang" on deep bass transients.

This is not the ideal speaker to try to blast away with the opening organ tone in *Thus Spake Zarathustra*, Saint-Saëns Symphony No 3, or the kind of electronic music and rock whose main musical virtue seems to be vibrating your house or driving the neighbors in your apartment building to manslaughter. You won't get the same bass with Kodo drums or the Telarc bass drum records as you do with the CS3.7s or the subwoofer built into my Vandersteen Model 5 Carbons, and you won't get the ultimate impact of an exaggerated deep bass line in a vocal like the Jennifer Warnes' recording of "Way Down Deep" (*The Hunter*).

But for the other 97% of music you will get very extended bass that will take you to the real-world limits of the bottom octaves and do so with minimal coloration. I'd also suggest that for most audiophiles who are not total bass freaks, this can actually be better than speakers that do have subwoofer-like bass.

The last 5 or 10Hz often come at a major cost in room interactions the moment they actually appear. This can sound dramatic for a while, but resonance, room vibrations, etc. become a pain in the, er, ear once you really start listening for extended periods. (There is also enough extraneous deep bass on some recordings to produce low-level room-effects almost without you realizing or expecting it.)

In short, the CS2.7 has real bass for real music for real people in real listening rooms. It may choose overall accuracy from the top treble to deep bass over exaggerated output in the deepest bass, but life is a series of tradeoffs and this is a case where I feel Thiel has made all of the right ones.

### Compatibility and Interfaces

As for compatibility, the CS2.7 has no rear-panel adjustments and no options for bi-amping or bi-wiring—not that it seems to need such features. It was not sensitive to any given speaker cable I had, but clearly revealed the differences between the ranges of AudioQuest and Kimber Cables I use as references. It also produced the sound I expect from a range of solid-state and tube amplifiers, including my reference Pass Labs XA160.5s and the Cary CAD 120S II, and did not seem an unusually demanding load.

The CS2.7s' bass performance did, however, benefit from higher-current amplifiers with higher damping factors. I'd recommend a solid-state amp with at least 100 watts and high current capability. As for listening levels, the CS2.7 was clean with music to levels of 110dB, although I did not explore its possible use a rock monitor driven consistently to levels of 120dB or

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## EQUIPMENT REVIEW - Thiel CS2.7

more—levels that have no place in high-end listening where anyone cares about his hearing.

I recommend front ends, preamplifiers, and amplifiers that are neutral to warm, and avoid ones that are a bit hard or bright. As least with classical and other acoustic music, the CS2.7s' timbre is neutral but does not have any added warmth or roll-off in the upper midrange and highs.

I did, incidentally, get information from Thiel after I completed the first draft of this review that the 2.7s take some 300 hours to break-in. This is one hell of a

long practical break-in time. I also found that break-in did not make a dramatic difference or affect the issue of timbre I've just discussed. The speakers did seem to get even more transparent and have a slightly higher degree of midrange warmth with break-in, but there is no way to exactly compare a speaker with the 200 hours I'd put on it when I began this review versus the same speaker at 300 hours when I finished. Acoustic memory simply is not that accurate.

I would strongly recommend you actually read the instruction manual. It has unusually good speaker-placement instructions, and it's worth spending serious time experimenting with placement. The Thiel CS2.7 is not particularly placement-sensitive if kept at a reasonable distance from room boundaries, but it is far too good to simply plunk down casually without a long series of efforts to find the best mix of soundstage, bass, overall timbre, and detail in a given room. I'd also suggest that if you do hear any initial coloration, you have a placement and not a speaker problem.

Finally, the Thiel 2.7 works as well with digital room-compensation systems as any speaker around, and worked very well with the very affordable DSPeaker Anti-Mode 2.0 Dual Core unit [reviewed by Robert E. Greene in Issue 230]. But don't push the Thiel 2.7s much below 30Hz, by using too much bass boost in the lowest frequencies, or equalize them much above 200Hz, unless you really need to. The speakers already have really good bass for transducers their size, and trying to turn them into an electronic jukebox is not going to improve their sound.

### Summing Up

One hell of a speaker—and one your wife or partner is likely to be happy to live with. **tas**

# The Thiel Coaxial Coincident Driver

The Coaxial Coincident Driver that is at the heart of the CS2.7 is the identical unit used in the more expensive CS3.7. It mounts an aluminum dome tweeter at the center of a midrange diaphragm, ensuring that the output of the drivers arrive at the listener's ears at the same time, no matter what the listening distance or height.

Jim Thiel told me several years ago at a CES how he had conceptualized such a driver and its advantages. When combined with first-order crossovers, the system would be time and phase coherent at any listening angle, height, or distance. Jim thought about the driver for more than a year, putting off building a prototype because he believed that he'd need to dedicate six months to a year perfecting the driver. He had other, more pressing, design commitments that required his attention.

One Saturday, he was overcome with curiosity and made what he thought would be the first of dozens and dozens of prototypes. A couple of hours later, he had, to his great astonishment, a working prototype that performed nearly flawlessly. That driver became the cornerstone of the Thiel line. What's remarkable is that Jim had

worked out, purely in his head, every last detail of the driver's construction needed to make it perform as intended. The trial and error took place in his imagination.

The ribbed aluminum midrange diaphragm is equally innovative. Jim had been working with different materials and cone shapes in an effort to produce the stiffest material with the lowest mass. His efforts paid off with about a 10% increase in stiffness and a 10% reduction in mass. Most loudspeaker designers would have been thrilled by this advance and moved the driver into production. But Jim told me that he asked himself "Why settle for a 10% increase in stiffness? Why not try for something with ten times the stiffness?" This inspiration resulted in the radically different ribbed aluminum midrange diaphragm of the coincident driver, as well as the flat ribbed woofers in the CS3.7, which, according to Thiel, are ten-times stiffer than conventional diaphragms. **Robert Harley**



# JansZen zA2.1

## Higher Truth

Robert E. Greene

**I suppose everyone has the dream. After a long day at an audio show, somewhere down that last corridor, suddenly there is a speaker that transcends all that went before, that gives the audio analog of how Sibelius described the inspiration for his Fifth Symphony: “The Gates of Heaven opened and I heard the music.”**

Of course such an audio experience is never quite complete, and the impression might be momentary, too. Almost inevitably the critical intellect begins to take a role, and some small or not so small things may begin to disturb. (Sibelius had to get down actually to doing the orchestration, too.) But still, I had an experience along these inspirational lines when I heard the JansZen zA2.1 loudspeaker at the T.H.E. Show Newport this just past July. And this impression has survived the long exposure of the review process largely intact.

The JansZens strike me still, after that long exposure, as having an unusual dose of sonic magic. They are high end in what used to be the traditional sense, in that quite a bit of effort is needed to get the very best out of them, but the very best is very good indeed. And if the article that follows emphasizes the adjustments possible and the need for them, please never lose sight of the fact that at the end of the road is a speaker in the top echelon at re-creating the beauty of concert music. The zA2.1 is a fussy, listener-position-dependent, at first potentially frustrating loudspeaker—not a plop-it-down-and-sit-anywhere speaker that will provide a

fairly good but perhaps not great sonic experience in casual use. But with things done right, the magic is there to an extent that few others can offer.

Perhaps one should not be totally surprised—“What’s bred in the bone” and so on. Designer David Janszen’s father Arthur Janszen, was one of the great figures in audio in the 1950s and 1960s—the designer, in particular, of the legendary KLH Model Nine full-range electrostatics, which incidentally were a driving force behind the founding of *The Absolute Sound*. (In an interview with John W. Cooledge some time ago, Harry Pearson described how a “shoot-out” between the Nines and the then widely celebrated Bose 901s was a pivotal event in the decision of JWC and HP to start TAS together.) But if David Janszen grew up with electrostatics and learned the art of making them in his family setting, he has also surely struck out in his own directions with the zA2.1s (hereafter, just “the JansZens”).

### The Speakers Themselves

For a start, the JansZens are not dipoles. Earlier electrostatics—the original Quads, the nearly contemporaneous KLH Nines, the Dayton

Wrights, the Acoustats, the Xstatics, the Quad 63s, the SoundLabs, the MartinLogans, the Sanders—operated their electrostatic part at least as a dipole. Outside of some of the Beveridge models it is hard to think of an electrostatic that did not use the electrostatic element in dipole form, except in some cases where the electrostatic part was used purely as a tweeter.

The JansZens, on the other hand, operate the electrostatic element inside an enclosure. The electrostatic element (which is itself compound) covers both midrange and treble frequencies, with the crossover from the cone woofers being at 500Hz, first-order. The two-woofer system is housed in a sealed box, one driver above and one below the mid/tweeter electrostatic unit. And the whole fits together to form a single compact floor-standing unit which does not require placement far out into the room, as dipoles inevitably do if used at any but very high frequencies.

Peter Walker said he once experimented with an electrostatic unit in a box but went back to dipoles because to him it sounded like a speaker in a box. With all due respect, this was apparently not inevitable. To me, the JansZens do not sound boxy at all. And, in fact, the unipolar nature of the mid/tweeter unit likely contributes to the remarkable coherence of the speaker since it matches the nature of the woofer at crossover.



## EQUIPMENT REVIEW - JansZen zA2.1

The mid/tweeter unit itself has a crossover, with the whole area operating in the lower part of its range but part of it rolling off in the highs so that only a portion radiates the true high frequencies. This diminishes the otherwise inevitable beaming associated with running a flat radiator that is four inches wide on out into the stratosphere—the response of the JansZens extends to at least 30kHz, according to the designer.

The division of the mid/tweeter unit is vertical so that beaming is diminished horizontally but remains extreme in the vertical direction. In effect one has a 16-inch tweeter! You need to aim the JansZens directly at you in the vertical sense—you need to be in that 16-inch beam of highs and preferably in the middle of it. The speakers are tilted back on their pedestals so as to put the axis aimed at ordinary listening height for a listener at three meters. If you want to sit closer, you need to tilt the speakers back farther—or sit very low. This tilting is not hard to do (there are adjustable feet or, for preliminary purposes, you can put, say, paperback books under the front feet).

Already you are beginning to see the adjustability of things. The vertical position and to a lesser but nontrivial extent, the horizontal angling (toe-in) will change the sound. (Actually the vertical positioning is not really an adjustment—you need to be on axis vertically. But horizontally one can control the top octave by toe-in.) But there is much more to adjust. The speakers include level controls on both woofer and midrange/tweeter units. These adjust the woofer level conventionally, but adjust the mid/tweeter level by changing the polarizing voltage. This means that increases happen fast for the mid/tweeter, but decreases happen very slowly since the higher polarizing voltage has to droop down to the desired lower level. Start at the bottom and push up slowly. And if you overshoot—be prepared to wait a while. (Turning off the speaker is a good way to “reboot” to the lower level but you still have to wait bit.)

We are not through, however, with adjustments, not even if we add in the obvious influence on the bass, which happens for all speakers, of where the speakers are placed in the room. With the airLayer option, which I recommend, there are side-firing tweeters of a non-electrostatic type, ring radiators actually, on the out-

side sides of the speakers, the level of which can be adjusted from zero to rather strong output.

I have to admit that my initial reaction was to ignore these on theoretical grounds. I like to tell myself that I like anechoic stereo and that it is never a good thing to bounce sound off the walls when one can avoid it. Fair enough—with dipole radiators where one can all but eliminate the first sidewall reflections essentially completely by angling the speakers correctly. Not everyone likes the result, but it is uncolored in energy response.

But with a forward radiator, things can change. Without the airLayer tweeters activated, the first wall reflection has a rapid slope downwards starting at about 1kHz. By 2kHz or so, the energy content has really dropped off a lot and the result is a slightly muffled sound unless you are quite close to the speakers. How prominent this effect will be depends on how close you are to the sidewalls. In the setup I was using, with the speakers only two or three feet from the sidewalls, the sound was improved by activating the airLayer side-firing tweeters—but not too much. In fact, just a touch—activate them too much and the sound gets topky. But that little touch matters!

This is something one needs to do by ear. And note that there is no big problem—and even, in fact, an advantage—if there is a shortage of extreme highs in the reflected sound. It would probably be ideal to damp the sidewalls quite a bit in the real top and turn up the side tweeters a little further to get extra energy down towards the presence range.

And I found it advantageous to put the JansZens a definite distance from the sidewalls, neither more nor less. This specificity has to do with the fact that since the far-off-axis response rolls off quite a lot starting a little above 1kHz, the exact perceived balance depends on the wall proximity. Another adjustment—but you can get it right!

Truth to tell, I would have liked to see the side-firers themselves rolled down in the extreme top so that one could bring up a bit the energy in the presence range without the top end coming on stronger. But there is limit to how many adjustments there can be. As is, there are many things to try.

Perhaps this all sounds a bit like techno-babble. And the details will vary with the acoustics of your listening room. But you will be able to check for yourself how much effect arises from the side-firing tweeters and from changing distance to sidewalls. Adjust everything carefully! And do go for the airLayer option, I would suggest, but use it subtly.

### The Sound and the Adjustments

At this point, a feeling might arise that with so many adjustments, exactly what the JansZens sound like is a moving target. How much simpler are those basically conventional dynamic driver floorstanders, which for all their exotic drivers and extremist cabinet

## SPECS & PRICING

**Product type:** Floor-standing hybrid electrostatic loudspeaker

**Driver configuration (per channel):**

Two 7" alloy cone woofers in a sealed enclosure above and below a 7" wide x 16" high mid/tweeter assembly, comprising two electrostatic panels in separate enclosure internally; airLayer option: One tweeter on outboard side of each cabinet, level-adjustable

**Crossovers:** First-order 500Hz to mid/tweeter assemblies, secondary first-order crossover to half the electrostatic elements' width to widen horizontal dispersion of the high frequencies

**Frequency response:** 30Hz-30kHz, +/-3dB (in room)

**Sensitivity:** 87dB /1W/1m

**Impedance:** 6 ohms nominal

**Power handling:** 25-150W recommended, 250W maximum

**Maximum SPL:** 108dB/pair at 4m, room of moderate size

**Dimensions:** 12" x 38" x 14"

**Price:** \$8750 factory-direct, 30-day return option; airLayer option, \$495 additional

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## EQUIPMENT REVIEW - JansZen zA2.1

construction are basically, with no disrespect intended, rather conventional speakers perfected, even if they cost a fortune. And, of course, those speakers are simpler in use because they are also unchangeable. If you do not like the sound, there is nothing to do except change speakers, short of changing the acoustics of your listening room and/or using equalization whether digital or analog. (A little adjustment of top end by angling is also usually possible but to a limited extent with almost all speakers.)

With the JansZens, there is more wiggle room, as it were. Now this means there is also more possibility of messing up—you can make the speakers sound really awful if you do the wrong things, say turn the woofers all the way down, the mid/tweeter electrostatic units all the way, and set the side-firing tweeters at max. You ought to try the extremes of the adjustments, just to get a feel for how much control you have—but you won't want to try the extremes for long.

But if there is opportunity to be wrong, there is also opportunity to perfect, to find, somewhere in the middle, a sound that is all but ideal.

The whole process of adjustment of the JansZens when done right produces something exceptional. And of course once the setup is done, then further experimentation is not needed. This can be a one-time-only process, and although a bit long, an interesting one.

Let me turn now to the specifics of how the JansZens can sound at their best.

### The Sound in Musical Terms

First of all perhaps one is struck by their remarkable coherence. Crossovers and driver changes are mostly likely to come across as incoherent in

the range above around 1kHz. (This is why three-way dynamic speakers can get away with crossovers around 500Hz, even though that is squarely in the region of music instrument and human voice fundamentals.) Here there effectively is no crossover in the strong sense above 500Hz—the transition from full radiation of the whole of the electrostatic to high frequencies, to only part of the electrostatic panel is not audible.

If one listens to say the piano figures running up and down the keyboard in the first movement of the G Major Grieg Violin Sonata on the Hancock-engineered recording on Bridge, the piano sounds completely unified—the only shifts of timbre are those of the instrument itself. Lots of speakers make it hard to “hear out” drivers, or even impossible to do so. Few indeed give this unified representation of timbre from top on down.

Attached to this is a very low level of perceived coloration. To get everything adjusted perfectly in my room actually involved for absolute perfection a little lift around 1kHz and a little cut around 2kHz, but one could skip this without too much difference. (I am always tweaking around with such things, even though I know few other people worry about them.) And even with the speakers adjusted only on their own, the feeling of neutrality in the true sense was very strong. Not only were the speakers balanced, with the right adjustments, in a natural and accurate way, but colorations localized in frequency ranges were minimal. The JansZens sounded really uncolored.

And as one expects from electrostatics, perceived distortion was extraordinarily low. The speakers added no edge nor harshness nor hardness nor any of the ills that speakers are heir to.

With pure-sounding source material, pure sound was what one got. And presentation of detail was excellent. Without anything being flung at you from frequency response irregularities, subtle inner parts (e.g., the harpsichord continuo in the Bach/Sitkovetsky *Goldberg* Variations on Nonesuch) could be followed with ease but with no sense that they were being over-emphasized. Always one could follow inner parts in complex music with extraordinary ease. People like to quote the lowness of distortion of electrostatics in terms of low harmonic distortion, but my guess is that it is really the low intermodulation distortion over the whole operating range that gives this extraordinary clarity.

And this matters musically. One of the most striking things about live music's sound is how separated its strands are even when at the same time the overall sound is blended. It is like a tapestry where each thread is visible but at the same time the whole design is completely integrated. This effect is provided better by the JansZens than by almost any other speaker. Moreover, this effect continues when music gets loud. Complex passages remain clear and clean even at loud moments.

Part of this is that the speaker does not put a lot of high-frequency energy into the room. “Room roar,” as I call all that irrelevant sound bouncing around, is minimal. And thus a major source of auditory confusion is removed. The big moment in the third movement of the Mahler Fourth Symphony with Cleveland/Dohnanyi on London, a moment where one instinctively expects to cringe a bit from the confused, ugly sound contributed by the listening room and the speaker both, sailed right by without anything

but the powerful effect that this makes in live performance. No cringe at all.

The JansZens are small speakers by the standards of nearly full-range floorstanders. But they have a lot of volume capability and nearly full bass extension. The latter is bit surprising perhaps. But like the Acoustic Research speakers of yore, they use the slow roll off of sealed-box loading and a certain willingness to reduce sensitivity to get really deep bass. (The nominal sensitivity is 87dB—not super-low but on the low side by contemporary standards. But amplifier power is cheap!) Certainly with orchestral music, there is no sense at all of any missing bass. The bass is solid and precise and defined all the way to the bottom of the orchestra—and with one woofer on the floor nearly, no floor dip. Subwoofers are needed only for aficionados of earthquakes or pipe organs of the Romantic style.

### Tonal Balance and Stereo Imaging

As noted, the balance overall of the JansZens is both adjustable and position-dependent. When everything is just so, they sound very flat and neutral. To my ears, there was a certain sense of recession of the mids, of the octave from 1-2kHz, although this was a rather small effect. But there is a major difference between the sound of the JansZens and of wide-dispersion speakers, a difference that arises from the nature of the room sound. The JansZens put less high-frequency energy into the room as a whole. And this makes a difference. To some extent, one can offset this with the side-firing tweeters. But not exactly. Namely, the effect of the side-firing tweeters does not seem to give precisely what would be the effect of a usual wide-disper-

## EQUIPMENT REVIEW - JansZen zA2.1

sion floorstander, where the far-off-axis sound would be rolling down with rising frequency in a pattern designed to give a certain kind of perceived sound balance. This exact idea of speaker balance for wide-dispersion floorstanders is not really based on much (the “science” behind it is really just market research). Some kind of rising directivity with increasing frequency is reasonable but the specification in detail is up for grabs. But one particular pattern is common enough that people are used to it.

The JansZens take a different path from most speakers. As in a concert hall, the reverberant sound in the room is short on high frequencies. They roll off more steeply and sooner off-axis than usual narrow-front floorstanders and thus they have much less energy in the top end in the reverberant field than usual, more like a concert hall. (The comparison with concert halls is not absolutely precise because home listening rooms with their decay that is much faster than concert venues are not really correctly modeled in listening terms as reverberant fields in the sense of concert halls. But for what it is worth, you can find details of the concert hall situation in my article from Issue 38 reprinted here ([regonaudio.com/Records%20and%20Reality.html](http://regonaudio.com/Records%20and%20Reality.html)).

Moreover, the deliberate suppression of early reflections especially in the higher frequencies by the JansZens makes their stereo presentation rather different from the speakers that bounce lots of high-frequency sound off the sidewalls. To my ears, this is to the good. The best stereo available in terms of insight into the recording is from RFZ (reflection-free-zone) rooms, where there are no early reflections at all but there is room sound later. (Truly anechoic stereo, where

the direct arrival is all there sounds rather odd and tends to image in the head. This does not happen with the JansZens nor with RFZ rooms since there is enough room sound later to dissipate any possible in-the-head effect.) One does have to admit, however, that reflection-free stereo sounds different, with “spaciousness” generated only to the extent that it rises in the lower frequencies and none of the artificial space and “air” arising from lots of early sidewall reflection in the high frequencies (one thinks of the sound of Bose, perhaps). But the space that is really there on the recordings is presented superbly by the JansZens, with the venue and the microphone technique presented clearly.

This controversy has been going on for a long time and will no doubt continue: How much contribution from the room do you want in stereo playback? As with most controversies, self-styled “experts” abound, promising to have determined the answer. But the experts do not agree, and in the end there is of course no answer that is definitive because there is no real paradigm of stereo recording and playback reciprocity (except Blumlein, where the paradigm is in fact anechoic playback). You have to listen and decide for yourself. But listen on the JansZens to some complex material and observe how clarity is maintained and you will see what can be done with the reflection-free method.

The effect can be truly startling. One can hear something so like concert reality as to be almost mind-boggling. Stereo is by nature a somewhat imperfect process, but it is capable of remarkable things when one removes the effects of early reflections. Be prepared though: This is a different kind of sound from what you get out of

speakers with wide dispersion in the high frequencies close to reflective walls. Different and I would say better. But different for sure.

### Dynamics

The JansZens will play loudly (well over 100dB) and cleanly at high volumes. These are not dynamically limited speakers as far as sensible use in rooms of domestic size. And they are very linear in dynamic behavior. But their perceived dynamic behavior is unusual precisely because there is no rising “cringe factor” as levels go up. Distortion does not become an issue nor does “room roar.” So one can easily overlook how loudly they are playing. The owner’s manual quite rightly points this out and cautions the listener. I recommend an SPL meter to check occasionally what is happening.

This whole subject is widely misunderstood in audio. One of the mechanisms by which music gives the impression of getting louder is that the distortion produced by instruments themselves increases as they are played louder. An unthinking listener can confuse messenger and message and can start to believe that components with distortion that remains low as levels rise are “undynamic.” I am not making this up. A well-known reviewer claimed for example that the Sunfire Signature (which could put out 2500 watt pulses) was undynamic compared to tube amplifiers. You can form your own impression of what was going on there.

In this same sense, some people who do not know anything might say that the JansZens were undynamic. And then are those people who interpret “room roar” as dynamic enhancement. They must find the front row center in an orchestral concert really unexciting since it is a long time,

indeed, before any sidewall reflections arrive. It really ought not be necessary to discuss such nonsense, but these misguided views are expressed so widely that I thought I had better.

In any case, the JansZens remain untroubled when things get loud. This is delightful—and of course correct. But do watch the playback levels. Live orchestral levels—low 90dBs at big moments in front row seats—sound unstrained. And that is plenty loud enough.

I really liked this feature of the speakers—like live music. I am rehearsing the Sibelius Second Symphony at the moment with a 90-person orchestra—loud at times. (I am at a safe distance—outside, first violins—so I do not need ear plugs. It is good to be able to hear realistic levels without strain when you want to, though in practice I almost always listen considerably below the level one encounters at the front of the stage.) And don’t let anyone tell you that the JansZens are undynamic because distortion does not rise with level.

### The Big Picture

In the last decade or so, high-end speaker design has to my mind become rather conventional, a matter of perfecting the usual dynamic driver floorstander, where quite standard designs are executed with extreme attention to practical things like cabinet rigidity. But surely the exceptions to this, those designs that to try to go beyond, to find a different and perhaps higher truth, surely those are of the essence of serious audio and are the source of much of its fascination. For those who thus look beyond, who search beyond the horizon, the JansZen zA2.1s are a must-audition. **tas**

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The Super MMG System is a slightly different take on the tried-and-true for Magnepan. The bundle includes a pair of MMGs specifically hot-rodged for use with an included Diplanar Woofer Module or DWM (dual DWMs are optional). The results are remarkable. The Super System's low distortion and "faster than a speeding bullet" transient attack reveals the tiniest intricacies, delivering fragile percussion cues with startling immediacy. It also throws open wide windows on ambient and reverberant details, and it unquestionably rules the roost over micro-dynamics gradations. The addition of the DWM lends the system a stronger sense of grounding, and with the added bass comes greater focus and clarity than that of the solo MMGs. Leap tall buildings in a single bound? Darn close. And in every other way, super indeed.

[www.magnepan.com](http://www.magnepan.com) (235)

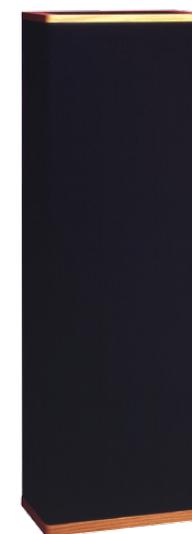


## GoldenEar Triton Seven

\$1399

As Chris Martens proudly proclaimed in his review of the Triton Sevens, "I have an abiding fondness for overachieving products," and the GoldenEar Triton Sevens are speakers that can definitely be called overachievers. These tall, slender, quasi-transmission-line floorstanders can go toe-to-toe with any similarly priced competitor, and handily outperform many higher-priced speakers, as well. For \$1399, the Triton Sevens are masterpieces of value-oriented audio engineering.

[www.goldenear.com](http://www.goldenear.com) (233)



## Vandersteen 3A Signature

\$4495

Like all Vandersteens, the Golden Ear Award-winning 3A Signature is time-and-phase accurate. Its driver complement features the patented midrange and tweeter used in the vaunted Vandersteen 5. The 3A Signature has a relaxed presentation, is musically seductive, and will appeal to those who want to forget about the sound and enjoy the music, though it does trade off some dynamic contrast and midrange resolution for its overall ability to involve the listener.

[www.vandersteen.com](http://www.vandersteen.com) (139, 122)

# OUR TOP PICKS FLOORSTANDING LOUDSPEAKERS UNDER \$10,000



**PSB Imagine T2**  
\$3498

These elegant floorstanders of moderate size offer a surprisingly “big” sound, with dynamics sufficient to present large-scaled music convincingly and enough bass to cover orchestral and rock music, though pipe organ enthusiasts will want to add a sub or two. The T2s vanish into the soundfield and present a suitably expansive sonic picture when the recording justifies it. They are very low in distortion with a pure midrange and a very clean treble. And they have a truth to timbre, a tonal neutrality, that is top tier. Orchestras have a lifelike realism that is startling; pianos sound like pianos, vocals like people singing. Paul Barton has produced a masterpiece here, at a most reasonable price.

[www.psbSpeakers.com](http://www.psbSpeakers.com) (226)



**Vienna Acoustics Beethoven Baby Grand**  
\$5000

Refined, luxurious, and lovingly hand-built in Europe, the Austrian-designed BBG is one of the highest-value components RD has ever run across. Highly detailed and possessing a convincingly three-dimensional presentation, the BBG conjured images that were stable across the soundstage with more than a hint of vertical imaging information thrown in for good measure. Bass was not as powerful as that from RD’s resident Snell E/IIIs, although it was “smart bass”—fast, tight, tuneful, and well integrated into the speaker’s overall frequency balance. A brief sojourn with another Austrian in residence, the all-tube Ayon Orion II, resulted in a slight thinning of timbre and loss of bass control when compared with RD’s similarly rated but more powerful NAD integrated; the 250 watts suggested by Vienna Acoustics as an outer limit is not an unreasonable target.

[www.vienna-acoustics.com](http://www.vienna-acoustics.com) (233)



**Legacy Focus SE**  
\$9650

This big, high-sensitivity four-way features an array of six custom drivers, including dual 12" spun-aluminum woofers, dual 7", Rohacell-reinforced, silver-graphite mid/bass units, a 3" ribbon midrange, and a 1" ribbon tweeter. The Focus SE goes far lower in the bass than any other speaker near its price, delivering tremendous power and impact down to 20Hz. Despite the Focus SE’s huge dynamics and robust bass presentation, the woofers are extremely well controlled, and blend well with the rest of the system, including the ribbon mid and tweeter. Thanks to the integration of the disparate drivers, the Focus SE produces a smooth frequency response and timbre, and a very coherent and consistently musical sound, with the speed and life you expect in the best ribbon designs.

[www.legacyaudio.com](http://www.legacyaudio.com) (215)



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## EQUIPMENT REVIEWS

# Floorstanding Loudspeakers Over \$10k



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*"Aeris breaks new ground in the most important frontier in high-end audio.*

*A truly fullrange speaker with outstanding performance at every frequency to the limits of hearing and beyond. "*

*Anthony Cordesman, TAS Sept. 2013*

GOLDEN EAR  
the absolute sound  
2013  
AWARDS

## Featured Review



# Legacy Aeris

## Reinventing the Speaker as a Hybrid System

By Anthony H. Cordesman

Photography by Cody Hamilton



**The Legacy Aeris is a great speaker by any standard, and I can see why Robert Harley recommended it so highly after a listening session at the Rocky Mountain Audio Show [Issue 230]. It is a truly full-range speaker, with bass deep into the subwoofer region, outstanding performance at every frequency to the limits of hearing and beyond, excellent definition, outstanding dynamics, and a visual image that might win it an entry to the Museum of Modern Art in New York.**

It comes with separate 500-watt amplifiers dedicated to each bass driver with a crossover point low enough that you can still get the best sound out of your regular power amplifier, and it has a very well chosen mix of drivers that provides a coherent and naturally detailed sound at any reasonable listening distance, as well as enough dipole radiation to widen the stage and reproduce more natural ambience.

And yet, these are only half of the reasons I'm excited about the Aeris. Bill Dudleston, Legacy's chief engineer, has produced some other excellent speakers, but the Aeris breaks new ground in what for me is the most important frontier in high-end audio: It comes with the Aeris Wavelaunch processor that allows you to tailor the frequency response to be as musically realistic as possible in a real-world listening room.

The Aeris Wavelaunch processor is an electronic unit that goes between your preamp and amplifier. It gives you up to 30 settings that you can use to adjust the sound of the speaker to correct room-interaction problems, partly correct for over-bright, close-miked older recording, and even—if you are fanatic enough—compensate for the different equalization curves in LPs.

## Legacy Aeris

### Music vs. Technology

Most experienced audiophiles will already be well aware of just how serious room-speaker interaction problems are with more conventional speaker designs. Back in the 1960s, Roy Allison pointed out that low-frequency response in any normal listening room will look like the Alps no matter how accurate the speaker is in an anechoic chamber, or when measured so nearfield that room interaction problems are minimized. There are always peaks and valleys well in excess of 5dB, and almost always serious colorations from such peaks and valleys in the midbass, where the impact is clearly audible. There also are smaller response and reflection problems that affect the rest of the upper bass, midrange, and upper midrange. These can be corrected to some extent by adjusting the location of the speakers and listening position and by room treatment. I have never measured anything approaching a normal home listening room, however, where such preventative measures eliminated such response problems.

Moreover, “flat response” measurements inevitably create a musical sound that is too hard and bright. A single response or target curve also cannot correct for the fact that recordings differ sharply in timbre. This is particularly a problem for classical music fans because today’s all-too-typical close-miking, while dramatic in apparent detail, produces an upper-midrange hardness that is often a cause of listening fatigue when a speaker is voiced for “flat” response and placed in a real-world room.

Designing individual components for flat measurements and then voicing them for the best musical performance has severe limits. First, technical measures cover only a relatively limited part of the “error budget” of problems detected by the human ear. Second, any front-to-back walk-through in a concert hall will tell you immediately there is no one “flat” response—and that what you hear on stage is not what you hear live. Third, no one lives in a concert hall. Even a custom-designed listening room is susceptible to significant speaker-room interaction problems unless the system can be equalized to deal with them.

The good news is that we have learned to be tolerant of such colorations, and speaker designers now almost universally use the crossover in their speakers to act as a passive equalizer to

both improve frequency response and musicality. The bad news is that audiophiles as a breed are far less tolerant than others. This helps explain why audiophiles often talk about speakers as the most colored component in a stereo system, why they keep changing speakers, and why listening to a speaker in a large showroom where the speaker is precisely matched to the room doesn’t guarantee that it will sound as good when you get it home.

No one can solve these problems simply by changing speakers or listening rooms. Our perceptions are not shaped by the character of the speaker or the listening room *per se*, but by the interaction between them. Moreover, this same interaction means no combination of front-end gear, no matter how good, will be voiced with the nuances that best correct for these problems in speaker-room coloration. As a result, the search for the best high-end sound inevitably means consciously or unconsciously tailoring the system around the speaker-room interaction problem as well as finding the best-sounding individual components.

In the past, most equalizers that tried to reduce these interactions created as many problems as they solved. Older analog equalizers could partly solve truly critical room problems, but were often badly colored themselves. They also altered dynamics, and took some of the life out of music. Furthermore, they could only affect timbre and not the other problems in getting the best signal at the listening position like phase and time.

A few pioneers have addressed such problems with considerable success. Richard Vandersteen, for example, designed speakers with built-in subwoofers that could be corrected to deal with many real-world problems in the bass below 100Hz without coloring the rest of the speaker’s response. Firms like TacT Audio and Audyssey developed digital equalizers that address most of the problems in response, make automatic room corrections, and adjust some aspects of time and phase.

Manufacturers like Rives have improved analog equalizers to the point where any colorations are so inaudible that the benefits outweigh the drawbacks. As Robert E. Greene points out in a recent review, the DSpeaker Anti-Mode 2.0 Dual Core room-equalization system provides the first truly affordable room-correction system that can be inserted into any normal home



## Legacy Aeris

system, although it has some limits in digital headroom and input flexibility.

### The Legacy Aeris System

And here we get back to the Aeris system. The Legacy Aeris is not a speaker as much as a system for ensuring the speaker can be adjusted to solve room-speaker interaction problems in a musically realistic way. This is the single most important area for advances in high-end audio, and Bill Dudleston has pushed further into this area than any designer I'm aware of to date.

You can get a full description of the Aeris on the Legacy Web page, along with its manual and a technical paper on its design. Its technical specification are shown below. In sound, however, the following features define a unique approach to speaker design:

- The signal going to the speaker is shaped by an outboard electronic unit called the Aeris Wavelaunch processor that goes between your preamp and amplifier. It provides 40-bit DSP room correction with a 24-bit CODEC and features balanced analog inputs and outputs, level adjustment, and a USB port to interface with your computer for optimizing performance. It not only provides room correction but also equalizes and time-compensates the sound at the listening position.
- The Wave Launch provides up to 30 different adjustable settings for different frequency response curves.
- The electronics provide signal routing and processing via the 4-input by 8-output matrix and XConsole software. Each balanced input and output of the routing matrix has independent level adjustment and each output can be configured as a submix of any of the inputs.
- The included Aeris algorithm divides the left and right inputs with a customized high-pass and low-pass network to form a stereo two-way crossover. The transfer function for each loudspeaker is pre-programmed at Legacy for linear output from each driver, correcting minor anomalies inherent in the combined array. The output side of the matrix is factory configured for Aeris, the input side (left side of the matrix

display in the software) is to make adjustments in your room

- Software with an empirically derived algorithm is integrated into the speaker design to compensate for losses in low-frequency separation by increasing the ratio of difference information in bass frequencies to more closely approximate half space (free space with ground plane).
- The Aeris Wavelaunch processor provides the necessary amplitude and time-domain adjustments to utilize beneficial low-frequency boundary gain while reducing anti-modal resonance. This, in turn, significantly reduces cone excursion requirements, thus decreasing distortion.
- Reverberation is minimized by reducing sidewall reflections via the radiation nulls to the side of the speaker. This open-air arrangement behaves as a dipole from 80Hz to 3kHz, summing into a cardioid pattern with the bass drivers in the band from 80Hz to 200Hz. According to Legacy listening panels in controlled trials have felt that imaging precision and soundstage width are consistently improved in the Legacy Focus system.
- Separate 500-watt full-bandwidth ICE power amplifier modules are provided for each of the two 12" woofers to reduce intermodulation distortion and prevent the user's main amplifier from encountering up to 40 volts of EMF back-generated by the Aura motor system used in the woofers.
- Increased dynamic range and waveform tracing accuracy are ensured by employing drivers with higher sensitivity and greater acceleration. The high-flux magnetic motors of the midrange drivers are larger than those on most bass drivers.
- The cardioid-shaped radiation pattern decreases boundary coloration from sidewalls while also decreasing modal sensitivity at low frequencies.
- A new dual tweeter based on the Heil Air-Motion Transformer with a range of seven octaves and a sensitivity of 98dB is integrated with a high-sensitivity 8" midrange.

In short, the Aeris is not so much a speaker as a hybrid system that integrates speaker design and electronics to a degree I've never encountered before, and with remarkable success. I've



## The Absolute Sound 2013 Product of the Year Awards Upper-End Loudspeaker of the Year Legacy Aeris



Legacy's Aeris is one of the great values in upper-end loudspeakers today. For your \$18.5k you get a lot of loudspeaker: a six-driver, 4.5-way floorstander with dual integral 500W power amplifiers (one for each 12" woofer), 10" mid/woofer, 8" midrange, and dual AMT tweeters. Moreover, the Aeris comes with Legacy's Wavelaunch DSP processor that provides time- and amplitude-domain processing to reduce room modes and deliver flat frequency response. The Wavelaunch also allows you to quickly and easily dial-in a specific tonal balance to suit your taste. The result is a loudspeaker that is extremely neutral, goes very low in the bass without strain, is capable of wide dynamic swings, and has a very smooth tonal balance. Despite the multiplicity of drivers, the Aeris manages to sound continuous from top to bottom. With a whopping 95.5dB sensitivity and built-in woofer amplification, the Aeris can be driven by even low-powered amplifiers. Anthony Cordesman summed up the Aeris thus: "Great as many stand-alone speakers are, the Legacy Aries is the avatar of what the next generation of speakers should be." That makes the Aeris our Upper-End Loudspeaker of the Year.

## Legacy Aeris

had some great speakers in my listening rooms over the years, but I have never before been able to get around so many room-interaction problems. The difference is striking.

### Setup

Your dealer will do the initial setup with you and you can listen to music as well as test tones. Setup is not only measured; it is also interactive. You can hear what is happening. You can have the bass adjusted to be as musically natural as possible and then add new settings to the equalization options the dealer installs by using a PC or Mac and experimenting as you listen.

You can also work with your dealer to make sure the initial setup does not overcorrect or undercorrect. Every good automated system I know of does not try to make things truly flat because this over-equalizes the speaker and creates new room interaction problems. But even

the best correction system with automated setup has to be designed for all rooms, all speakers and subwoofers, all music.

Working with the dealer to tailor the setup while you are actually listening to music makes a critical difference, particularly because this is an area where measurement alone produces uncertain results. Every FFT and RTA measurement system I have produces at least slightly different measurements at the same listening spot with the same electronics and speaker and the same bass material. One may be “right,” but there is no way to know from the measurements alone.

### Listening to a “Dealer” Setup

Bill Dudleston set up my review pair just as a dealer would. He measured my room and the speaker response, and then worked with me—just as a dealer would—to ensure the musical results were at least as good as the measured

## SPECS & PRICING

**Type:** Six-driver, 4.5-way loudspeaker with integral woofer amplification and DSP speaker/room correction

**Tweeter:** Dual Air Motion Transformer System (one 4" AMT tweeter, 1" AMT super-tweeter)

**Midrange:** 8" titanium-encrusted, accordion-edge

**Midwoofer:** 10" accordion-edge

**Subwoofer:** Two 12" spun-aluminum diaphragm with cast frame

**Internal amplification:** Two 500-watt ICEpower modules for bass section

**Frequency response (+/-2dB):** 16Hz-30k

**Impedance:** 4 ohms

**Sensitivity:** 95.4 dB

**Cabinet dimensions:** 14.5" x 58" x 16"

**Base dimensions:** 19" x 1" x 15"

**Weight:** Approximately 200 lbs.

**Price:** \$18,500; premium finish, \$19,750; exotic finish, \$20,800

### LEGACY AUDIO

3023 E Sangamon Ave.

Springfield, IL 62702

(800) 283-4644

legacyaudio.com



## Legacy Aeris

settings. He then tailored the resulting equalization and time adjustments to provide a musically realistic flat setting, a “warm” setting, and a “recessed” setting that compensated in part for the excessive brightness or hardness of close-miked recordings.

The results are typical of what an audiophile who does not want to create his own settings would get, and they were exceptional from the start. The treble and upper midrange were very extended and provided all the air I could want without hardness. The Legacy Dual Air Motion Transformer (the Heil AMT) tweeter was smoother than any previous Legacy I have heard, but did not soften detail in any respect. It was equal to the best ribbons and electrostatics. I have heard speakers that rival the Aeris’ capability to get the very best out of the best SACDs and high-resolution downloads, but I have not heard better top-octave sound at any price.

Equally important, the transition to the lower midrange of the “titanium-encrusted” 8" midrange did not encrust any aspect of the music. Many designs I've heard that mix driver technologies have at least minor sonic anomalies in the transition areas between them. The Aeris reproduced the midrange of my best piano and violin recordings seamlessly and with the kind of accuracy that is sometime missing in even the most expensive competition. It did equally well with flute and clarinet and soprano voice, reproducing the difficult passage in voice in ways that showed the strain a given singer was under but that added nothing in hardness or coloration. I can't say that it could salvage mediocre harpsichord recordings, but it did as accurate a job of reproducing the most difficult instruments in the sonic repertoire as I've heard, and it was

as natural with cymbals as my recordings allow.

Bach is often synonymous with great music and bad recordings. I know—I have several hundred recordings of Bach chamber music. I found the Aeris did an exceptional job of ensuring all of the detail came through without adding the kind of coloration I often hear even from very expensive speakers. The same was true of Vivaldi and recordings with original instruments, which often are more a curse than a blessing.

You don't have to love classical music or the Baroque, however, to hear the Aeris' sound quality. Try *Jazz at the Pawnshop* and you may well hear even more detail than you thought was on the recording. The same is true with acoustic guitarist Bruce Dunlap's jazz recordings and with classic, pre-digital, naturally miked pop recordings like young Joan Baez or Judy Collins. I don't imply that the Aeris is not equally revealing with modern rock and jazz recording, but it is much harder to guess at what is accurate when the recording is not acoustic.

As for the bass, the Aeris will reproduce all of the bass detail that is actually on even the most demanding bass spectacles. Saint-Saëns, the deepest organ music, Kodo drums, Telarc bass spectacles, bass guitar, synthesizer—take your pick. What is more important is that the Aeris Wavelaunch processor smoothed out the mid-bass and upper bass and created a smooth transition into the midrange to well over 500Hz—one of the great advantages of a system that is not automatic and not limited to frequencies below 80 or 100Hz.

The Aeris can overdrive my room at every bass frequency that is musically relevant, although you will still need a subwoofer for earthquakes, thunderstorms, explosions, and communication

with elephants. The Aeris has exceptional bass detail from the deepest musical bass smoothly up into the midrange, and yes, the claims about reducing boundary problems are true. The Aeris not only provides great bass detail, it does so more evenly throughout the room. I normally can hear and measure far more room-boundary effects in the bass both with music and test tones.

The dynamics are just as good as everything else. The Aeris does not have any sweet spot in loudness. The upper-octave drivers and midrange do an outstanding job with low-level detail in even the most complex orchestral material. The same is true at levels well over 110dB, although my tolerance does not extend beyond a few brief moments at that level. I left it to friends to abuse their favorites at sustained listening levels with deep bass being played at well over 100dB. They were as impressed with the Aeris as I was unimpressed with their judgment.

The soundstage was roughly the equivalent of a point source, but broadened by the dipole feature of the speaker and given impact by the exceptional bass. The Aeris holds an excellent center image and stable overall stage with very good width and depth. If you want exaggerated width you won't get it, but you will get what is on the recording and get a relatively wide listening area, as well. The driver height of the AMT tweeter is also almost perfect for a seated listener, and imaging depth, width, and proportion have a realistic balance that does not favor one good recording's soundstage over another. A pleasure regardless of whether the music is solo guitar or the new Cyrus-Beiber version of the *Ring* cycle.

**And if You Are Willing to Experiment**

I did have two complaints. One is that the LEDs, which can easily be switched off, should be blue to match my electronics. The second is that adjusting the Aeris Wavelaunch processor can become addictive.

Bill Dudleston did warn me that he had clients who tried to adjust the Wavelaunch processor for individual recordings. I found, as I began serious listening, that I was using my computer to do something very close to this. I started by slightly adjusting the frequency extremes for older recordings and then created another setting to deal with the excessive midrange energy in far too many recent recordings.

My addiction grew once I found I could tweak the sound as I listened and come close to correcting for different LP equalization curves, improving the sound of poor or mediocre recordings on the fly. In the process I learned more and more about the equalization and compensation process. As a result, I started creating individual settings for different types of music.

About the only thing that saved me from a major intervention was the fact the Wavelaunch processor settings have to be recalled manually (no remote yet) to select the different curves. As a result of the immense effort in walking 30 feet, and having to actually reach out my arm to reach the switches, I was able to bring my addiction under control. I got my settings down to a reasonable number in addition to Bill Dudleston's set-up options, and restricted my tendency to tweak the recording as it played to a few recordings that actually justify the attention.

In all seriousness, it is one thing to buy one great speaker with one set of trade-offs and sonic nuances and another to be able to keep a

## Legacy Aeris

flat setting as a reference and branch out to adjustments that allow you to explore a wide range of sounds and choose the most musically realistic mixes. You will eventually have to either trust your judgment or the dealer's setup, but do remember there is no way you can get truly accurate response—or the most musically natural results—from a given speaker in a given listening room unless you do make such adjustments.

Given the fact there is no one recording standard, no one recording equalization, and no predictable room-speaker interaction, this really does make a difference and I suspect many other audiophiles are going to go through the same experience. Best of all, it really is easy. If you want see what I mean, just go to the video demos on the Legacy Web site or on YouTube. If you can download the videos, you have the smarts to operate the Wavelaunch.

### Compatibility and Setup

This is a complex system to install and weighs about 200 pounds a side. Dealer help and support will be critical, and you need to make sure the dealer will work with you during setup. I'd also consider paying for a revisit after a month of listening if you don't want to adjust the unit yourself.

Other than that, the Aeris' built-in bass amplifiers simplify the load and the speakers' high efficiency simplifies their power needs. I would not use single-ended triodes, but any amp of over 50 watts is in the ballpark and a 100-watter is more than safe.

I did not experience any particularly sensitivity to speaker cables. My reference AudioQuest and Kimber worked fine, and so

did some older model Straight Wire. I'd go for longer interconnects and shorter speaker cables with no trick impedances, junction boxes, or capacitive loads.

The Wavelaunch processor benefited from good interconnects but ordinary, high-quality balanced cables work just fine. I would recommend that Legacy include higher-quality XLR connects as the ones provided had poor lock-in features. You may even need specialized XLR cables to go from your preamp to the Wavelaunch.

You may also need to get a set of adapter cables (available from Legacy) that attenuate the signal coming from the Wavelaunch to your amplifier, a useful device if the amplifier has a high input sensitivity. At first I had some low-level noise from the processor using my Pass preamp, but zero noise with the adapter cables—even with my ear near the drivers.

The digital headroom in the Wavelaunch was outstanding, the software reasonably intuitive in a form-follows-function way. The controls were easy to operate with both the Mac and PC after a little experimentation, and the readouts were clear. I would like to see an easier way to make the cursor lock onto a given curve to adjust it upwards, downwards, or in width, but this seems a simple software fix that will probably be solved by the time you read this.

I was not a fan of the speaker's appearance without the accessory grille cloth, or of the AMT's large gold logo. I doubt many partners who are not total audiophiles will go for the "techie" look as well. Get the optional grille cloth. It is magnetic and easy to remove.

Finally, Bill Dudleston tells me that by the time you read this, there will be a set-up CD that can

be used with one of the FFT/RTA applications for the iPad and similar tablets to measure frequency response and perform other tests. I would want to be able to make such measurements and be able to do my own setups. In fact, I can't figure out why most speaker manufacturers don't provide such set-up discs tailored to their speakers and an easily affordable device like an iPad. Not every speaker can come with a Wavelaunch processor, but every speaker benefits from getting the bass response right and the highs on the proper axis. You'd still have to listen, but ignoring the help measurements can give is as silly as failing to listen.

### Summing Up

The Legacy Aeris is a speaker that helps redefine the state of the art. Every improvement in audio components matters, but there are two that rethink what an audio system should be. The first is integrating speaker design with room compensation and the ability to set up different frequency response curves to compensate for the problems in recordings. The second is the creation of music servers like the Meridian Sooloos that can store vast amounts of music in ways that not only allow you to listen to high-resolution digital audio but play back the music with far more flexibility, and compare different performances, artists, and composers with an ease that can redefine your listening experience. Great as many stand-alone speakers are, the Legacy Aeries is the avatar of what the next generation of speakers should be. **tas**

## Bonus Content FURTHER THOUGHTS

After listening to the Legacy Aeris for months, I find little to change in my review. The one thing that has impressed me more over time is the quality of the dual air motion tweeter and upper midrange, and how well the AMT folded ribbon tweeter integrates with the 8" midrange driver. At first listen one tends to focus on the bass and dynamics, but it is the clarity and realism of the 4" ribbon and complementary 1" AMT ribbon super-tweeter in reproducing all music with detail and without edge that is most impressive.

The Aeris clearly benefits from a professional setup as provided by dealers. The instructions provided for making user adjustments post setup are fine, but for audiophiles frequently moving their speakers about, an automated process would be useful. Presently, Legacy recommends the use of pink noise and spectrum analyzer for setup.

Bill Dudleston, the designer of the Aeries, tells me that he is working on software that will simultaneously optimize the frequency and time domain to fit the intended listener target function using a provided pre-calibrated microphone. The process under development will also improve room energy accuracy out past 30ms without introducing positionally sensitive compensation of early reflections (which can be very weird for multiple listeners). The advantages of giving equal weighting to the time domain is that resonances will be addressed in the processes unlike simple boost or cut equalization which can modify transient behavior. Existing Aeris clients will be offered the upgrade option when available. —**Anthony H. Cordesman**

# Sony NA2ES

## Certain To Please

Robert E. Greene

**S**ony is a giant of the audio world, dominating large segments of the mass market. But on occasion it also turns its enormous resources toward high-end goals. When it does, the results are always fascinating and impressive. The arrival on the scene a couple of years ago of the Sony AR1 speakers marked a strong re-entry of Sony into the high-end speaker market. And the AR2, a somewhat smaller and less expensive but otherwise very similar model, only reinforced the impression that Sony's new speaker venture was definitely to be reckoned with. The AR1 in particular struck me as quite spectacularly good. Even though it is not a particularly large speaker, it could be convincing not just in a home environment but also in very large rooms (as at T.H.E. Show in Newport Beach, 2011, where a pair were filling a ballroom with symphonic sound most impressively). This was associated with a great sense of ease in rooms of domestic size.

The Sony NA2ES continues Sony's foray into high-end speakerdom, but at a lower price point than the AR1 and AR2. Naturally, the first question

that arises is what has changed that makes it possible for the price to be so much lower—the \$10,000 NA2ES is less than half the price of the AR2—and how much sonic change is entailed in the differences.

### The Changes Made

The NA2ES quite definitely represents that same personal sonic vision of designer Yoshiyuki Kaku. And many of the physical changes from the A series are a matter of using something more along the lines of mass-production techniques and less handcraftsmanship. (The AR1 and AR2 are built with a very high level of craftsmanship, akin to the making of a piano, say.) And there has been a slight compromise in driver choice. But "slight" is the operative word there. The tweeter assembly is something distinctively different in the NA2ES, however—I shall return to that later. In any case, in appearance there is little compromise at all: If the AR1 and AR2 have the look of fine furniture, the NA2ES is not far behind—its appearance is graceful and elegant and the finish is superb, if not quite as exceptional as the AR speakers with their hand-rubbed multi-layer lacquer.

### The Sound: Facing the Live Comparison

As it happened, the NA2ES arrived to face a difficult test. I was in the midst of rehearsals of an all-Tchaikovsky program, with a big orchestra—90+ players. However vivid one's ongoing memory of orchestral sound is, and I have been playing in orchestras most of my life, to come home on a Wednesday night from a rehearsal of the Tchaikovsky Fifth and sit down on Thursday morning to listen to a recording of it is an extreme test of a speaker's mettle, so vivid is the immediate memory. As it happened, the NA2ES's were subject precisely to such tests, and in many respects

they acquitted themselves remarkably well.

Of course there are caveats. I was sitting near the conductor's podium (outside, second stand, first violins—the front edge and near the center of the orchestra). From that perspective the orchestra is huge geometrically. The sheer spatial extent is not going to be reproduced in a home environment. But other things that are demanding aspects of the situation turned out to be considerably better dealt with than one would have expected, especially from speakers of moderate size.

To take the most obvious one first, the NA2ES's offer remarkable dynamic capability for such moderately sized speakers. Later on, I heard them demonstrated at the 2013 T.H.E. Show Newport Beach in an enormous room, larger than almost anyone's home listening room, and they handled that with aplomb. In a home environment, they were capable of live symphonic levels without difficulty, if not quite with the absolute ease of the considerably large AR1s (which are really remarkable in this regard). I did not push them to this limit, but the listed maximum input power and the sensitivity combine to give a 110dB maximum SPL estimate. Certainly they were perfectly happy with peaks up into the high 90dBs, which was as loud as I felt inclined to go, even briefly.

And the NA2ES's had adequate bass extension for the orchestra, albeit again stopping short of the essentially full-range lower end of the AR1s.



The bass did not go down forever, but it was clean and articulate and, if it lacked the really deep bottom end of the AR1s, it was, even so, satisfying in the bass on orchestral music and on rock as well.

The midband of the NA2ES's is both very clean and uncolored. While the midrange driver of the NA2ES does not feature the cut and re-glue construction of the cone used in the AR Series, and in principle the simpler mid drivers of the NA2Es should make the speakers perform slightly less well, in memory (I no longer had an AR for direct comparison) the difference did not seem enormous. The midrange remained excellent. And hu-

## EQUIPMENT REVIEW - Sony NA2ES

man voices sounded very convincing. Paul Seydor was playing his favorite Sinatra, “Angel Eyes” from *Only the Lonely*, at the show demo referred to above, and the sense of a natural human voice was excellent, as it was in my home environment. “Silo” from the Scud Mountain Boys (surprise from REG, Mr. Classical) sounded just as it should—and the words were enunciated, well, as well as the Scud Mountain Boys enunciate words. And on the old audiophile standby, Opus 3’s *Tiden Bar Gaar*, the singer had the right Scandinavian sound, and the Swedish was nicely articulated, both clearly and with the accent just so, spot on. Natural midrange indeed.

Returning to the Tchaikovsky Fifth—I was using the Harmonia Mundi recording of Gatti conducting Royal Philharmonic—things were sounding quite convincing in my informal comparison of live recent memory versus recorded as far as dynamic capacity, bass extension, and midrange character were concerned. And spatially things were fine. The NA2ES’s do the vanishing trick so beloved of audiophiles—and so expected nowadays, truth to tell. No one will be disappointed in the space department with width and depth both correctly presented and image precision being excellent.

### The New Tweeter Assembly

So far as good. Now on to the higher frequencies. The NA2ES uses a tweeter assembly, a three-tweeter unit, quite different from the single domes (per speaker) of the AR series. As I gathered from an interview with designer Kaku, this tweeter was developed to widen the pattern of radiation. He described having been impressed by the realism given to natural sounds by omniradiating tweeters and his intention of retaining

this realism without the difficulties attendant in a forward-radiating speaker of integrating a true omni design. The three-tweeter unit has a tweeter of ordinary size (25 mm) flanked above and below by smaller tweeters, with all three mounted in a metal plate so that distances can be set exactly—the exact distances apparently really do count. This design has been very carefully worked out, and it is done with extreme precision.

In some ways this tweeter is outstanding. It goes out a long way and smoothly so—with a 96kHz-based measuring system (extension to just short of 48kHz), I found flat smooth response to beyond 35kHz and extension even beyond that. The response claimed by the manufacturer (to 45kHz) is really there. And the tweeter unit presents a very high level of resolution in audible terms. If you are wondering on the John Eargle Dvorák *New World* recording on Delos (New Jersey Symphony. Macal, cond.) just exactly how the first violins are articulating their tremolo in the tremolo passages, wonder no more—it is perfectly laid bare. High percussion is similarly clear as the proverbial crystal-cymbals really sound like cymbals. And so it goes. If high-frequency detail and precision are your thing, prepare to be entranced.

But the flip side of this picture is that the NA2ES does tend to advertise its treble a bit. In literal terms, the response dips slightly just before where the tweeter comes in and then a little after the tweeter does come in, the response comes up to above the overall level lower down in the midrange. Not a lot above, but enough to be heard as some extra tweet-i-ness, set off by the dip just below.

The AR1 and AR2 speakers also had a somewhat

rising top end on axis, but perhaps because of the wider dispersion pattern of the NA2ES tweeter, the perceived treble prominence is somewhat more pronounced and not easily ameliorated by listening off-axis a bit, as you can with the A Series. Of course you can turn the top down with a DSP EQ if so inclined. But set to on-axis flat, the wide pattern of the tweeter makes its presence felt a bit more than would be the case with a 25mm dome alone—or so it seemed. This effect will be rather room dependent—in a room with acoustically soft sidewalls one will hear the off-axis energy less conspicuously.

This whole situation illustrates some basic issues. Audiophiles like to talk about “resolution” as if it were an item independent of other audio categories, and they like to check it by listening for whether they can hear this, that, or the other detail in recordings. Of course, there is some element of truth in this in that audio components, including speakers when they are playing, make noise and have distortion, both of which can obscure detail. But this element of truth is only a small part of the real picture. Perceived resolution in this sense of hearing things otherwise inaudible is for the most part an issue of frequency response. More top provides more detail, various kinds of dips further down unmask sounds that would otherwise be masked, and so on. In short, one can pay a price in terms of neutral balance in order to get perceived “resolution.” The tweeter of the NA2ES offers a lot of detail, but one pays the price of having a toppier sound than is really neutral, or so it is to my ears (and, comes to that, my measurements).

### In Summary

The NA2ES has a lot to offer: Elegant appearance, surprising dynamic power for a speaker of modest size, excellent if not totally extended bass performance, clean natural midrange, and abundant perceived resolution, but this last comes at the price of a bit of excess perceived treble. This is a compromise that is quite popular in high end today. If it pleases your ears, the NA2ES will surely please in all other directions in my estimation. **tas**

## SPECS & PRICING

**Type:** Three-way, six-driver, bass-reflex floorstanding speaker  
**Drivers:** 25mm soft-dome tweeter, two 19mm soft-dome tweeters (per speaker), 130mm paper-cone woofer, two 165mm aluminum-cone woofers  
**Frequency response:** 45Hz–45kHz, -10dB  
**Crossover frequencies:** 100Hz, 4kHz, multi-slope network  
**Sensitivity:** 90dB (2.83V input)  
**Impedance:** 4 ohms (nominal)  
**Maximum instantaneous input power:** 100 watts  
**Dimensions:** 10" x 35.4" x 16.3"  
**Weight:** 70.5 lbs.  
**Price:** \$10,000

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# German Physiks Unlimited II

## King of the Bending Wave

Dick Olsher

**L**incoln Walsh isn't exactly a household name in audiophile circles, but he literally turned driver design on its head in the early 1960s with his revolutionary bending-wave transducer. The Walsh driver looked like a giant inverted ice cream cone, terminated at the wide end and driven by a voice coil at the narrow one so that that sound was only radiated from its convex side. The cone was made thin enough so that its mode of operation transitioned from being piston-like in the bass range to bending wave in the lower midrange. Imagine vibrational waves rippling down the cone at a speed exceeding that of the speed of sound in air. By judicious choice of materials and variation of the cone's stiffness profile over its length Walsh was able to achieve a coherent propagated wavefront perpendicular to the cone axis. Sonically the cone behaved much like a pulsating cylinder with all frequencies in phase with the input signal. Two other important benefits ensued from this design: wide-range operation from a single driver and an omnidirectional radiation pattern approximating that formed by an ideal pulsating sphere. The conceptual beauty of a bending-wave transducer resides in the fact that it exploits the non-rigidity of the diaphragm material, working with it rather than fighting it. Walsh experimented with several cone materials and obtained excellent results using a 0.002-inch thick aluminum sheet formed to give a 6-inch diameter at the large end. Sadly, Walsh passed on in 1971 before seeing his design released by Ohm Acoustics.

In the late 1970s Peter Dicks, an inventive German engineer, took up where Walsh had left off with the express goal of improving bending-wave driver performance. Many of his experimental cones used thin titanium sheets and after several years he managed to develop impressive-sounding prototypes. Initially industry interest, however, was nonexistent, and Dicks had to wait for nearly a decade before a loudspeaker company took up his design. Holger Mueller was the right man to commercialize the Dicks Dipole Driver (DDD). After all, he was not only an established conventional speaker manufacturer but also an owner of a pair of vintage Ohm Walsh Model F loudspeakers. He clearly understood that Dicks' design surpassed

the performance of the original Ohm Walsh driver. Mueller proceeded to license Dicks' driver and worked for two years to refine the industrial design of a new loudspeaker while Dicks continued to perfect the driver. Finally, in 1993 German Physiks was formed to exclusively manufacture DDD-based designs.

Over the years the DDD design has continued to evolve and now offers increased excursion capability, power handling, and enhanced bandwidth to beyond 24kHz. A potential problem with the Walsh driver is reflected energy from the non-driven end of the cone. If the time required for the ripples to die down is substantial their impact can



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## EQUIPMENT REVIEW - German Physiks Unlimited II

result in transient ringing. Ideally, vibrational waves should only traverse the cone once. The DDD closely approaches that objective by first minimizing the amount of energy that reaches the termination and by internally damping the cone and its termination. The use of a powerful ferrite magnet designed in-house together with an edge-wound voice coil ensures a respectable sensitivity spec. The linearity of the magnetic circuit is excellent, partly due to the use of an underhung voice coil. According to Mueller, the current DDD design can be reliably used as low as 150Hz, but is typically crossed over at 170Hz. Of course such a low crossover frequency makes it a snap to integrate the DDD with a conventional woofer. One important point to remember about this driver is that it is optimized in dimensions and cone profile, and therefore cannot be effectively scaled up in size to increase efficiency. Several drivers need to be used in parallel in order to increase overall sensitivity. The Unlimited Mk II (U2) uses a single carbon-fiber DDD, which first became available in 2006 alongside the classic titanium type. Although both cone types are about equal in weight, they differ dramatically in thickness. The titanium cone is thinner by a factor of six than its carbon-fiber counterpart, and is tissue thin at only 0.025mm but is dampened by an equally thick synthetic coating. These materials are fragile in their sheet form and require great care in handling. As you can imagine, driver assembly is a slow and exacting process that is performed by skilled technicians. I have not auditioned the titanium DDD, but I am told that the carbon-fiber version is tonally a touch darker sounding and slightly less high in resolution. But on the plus side, carbon fiber is said to be more robust (prying fingers can damage the titanium cone) and is capable of being driven harder. An 8" woofer takes over below about 200Hz. It is floor-loaded in a sealed compact tower enclosure.

The Unlimited II is currently German Physiks' entry-level loudspeaker. It started life in May 2011 as the Limited II—a limited production run of 100 pairs designed to test market interest. It solved the problem of how to rein in the cost of

the previous "entry level," the HRS-120, which was priced circa \$25k in the U.S., without compromising sound quality. The DDD was a given as it cannot be dumbed down without sacrificing sound quality. In fact, the U2 deploys the same bending-wave driver found in all the other German Physiks models, including the top-of-the-line Gaudi. Since there was no significant cost saving possible with either the woofer or crossover, the cabinet remained the only cost-saving option. The switch from an octagonal to a square cabinet and from a wood veneer to a vinyl finish yielded considerable savings. The vinyl finish is actually a flooring vinyl that damps the cabinet, covered by a tough aesthetic veneer. As I see it, these were wise choices. In the bass range, where the wavelength is considerably larger than the effective dimension of the cabinet, an octagonal foot print has a small advantage in lower levels of cabinet resonance (owing to the smaller and thus stiffer panels), while standing waves in the lower midrange can easily be attenuated acoustically. As the Limited II sold out fairly quickly, distributors asked to have the design made a permanent part of the range. And so the design was re-introduced and dubbed in a humorous vein as the Unlimited Mk II. The only added touch afforded by the U2 is that it is available in four colors: black, white, grey and brown.

The nominal impedance is correctly stated to be 4 ohms, and the impedance magnitude does not dip below that value. The sealed box tuning is at about 40Hz. Impedance measurements indicate a significant peak around 9kHz, which I am told is due to an EQ network in the crossover designed to flatten the frequency response in this range. I'll have more to say about this later on.

I've been a fan of planar dipole speakers for over 30 years. One of their attributes is the ability to generate a more realistic soundfield in a listening room than conventional box speakers. That omnidirectional designs possess the same sort of magic was made crystal clear to me way back in 1987 when I reviewed the Ohm Walsh 5. I lived through the studio monitor and mini-monitor craze of the 1970s and 80s, and

while I appreciated the imaging precision of such designs I didn't feel that they brought me any closer to being there, to experiencing a live acoustic space. Specifically, studio monitors are designed for narrow dispersion in the midrange and treble in an attempt to minimize the room's acoustic signature. That, by itself, may be useful for a mastering engineer interested in judging exactly what the source material is all about, but as a music lover I would like to be immersed in the musical experience. And that can happen most effectively by getting the room involved in the playback process. Two-channel audio does a poor job of treating reverberant information, since all sound, both direct and reverb, is generated in a plane suspended between the two speakers, which grossly undermines the illusion of a natural acoustic. In a well-designed concert hall, the listener is enveloped in lateral reflections which convey the reverberant signature of the hall.

### SPECS & PRICING

**Drivers:** One carbon-fiber DDD driver, one 8-inch woofer  
**Frequency response:** 32Hz-24kHz  
**Nominal impedance:** 4 ohms  
**Sensitivity:** 88dB 1W/1m  
**Crossover frequency:** 200Hz  
**Power handling:** Nominal 110W; short-term, 170W  
**Minimum amplifier power:** 90Wpc/4 ohms  
**Dimensions:** 9.5" x 41.3" x 9.5"  
**Weight:** 63.7 lbs.  
**Price:** \$13,500

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**ASSOCIATED EQUIPMENT:**  
 Lamm Audio M1.2 Reference monoblocks, GAS Ampzilla II modified by Mike Bettinger of GAS Audio, Octave Audio V110, and Bob Carver Cherry 180 monoblock amplifiers; Apple Mac BookPro running Sonic Studio's Amarra Version 2.6 software, EAR DACute DAC, April Music Eximus DP1 DAC/Pre and Stello U3 digital data converter; Kuzma Reference turntable; Kuzma Stogi Reference 313 VTA tonearm; Clearaudio da Vinci V2 phono cartridge; Pass Labs XP-25 phono stage and XP-30 line stage; FMS Nexus-2, Wire World, and Kimber KCAG interconnects; Acoustic Zen Hologram II speaker cable; Sound Application power line conditioners

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## EQUIPMENT REVIEW - German Physiks Unlimited II

Room reflections can immensely improve the illusion of a live performance, with the caveat that the reflected energy be delayed about 10 millisecond relative to the direct sound. As long as the reflections are outside of this critical time window, they will be perceived by the auditory system as spaciousness. Be prepared to give the U2 at least five feet of breathing space to the rear and sides in order to achieve the specified time delay, since each foot of travel yields about a one millisecond delay. You may get by with less than five feet if diffusers are applied to the adjacent wall surfaces. Furthermore, any speaker with a fairly uniform power response will most likely perform poorly in a dead end/live end listening environment. Sound dispersive wall treatments should be fine but highly absorptive wall treatments should be avoided for best results. Most domestic listening environments should prove to be perfectly suitable.

It only took me a few seconds to realize that this is a superbly coherent loudspeaker whose wavelaunch more closely mimics live music than the disjointed presentation of a typical multi-way speaker. While I don't intend to condemn all multi-way designs, the truth is that the great majority simply fail to coalesce into a coherent whole. That's a direct consequence of slicing and dicing the music spectrum into pieces for consumption by tweeters, mids, and woofers arrayed on a large baffle. Such speakers may integrate reasonably well at a few points in space but move the measuring mike or your head a few inches and the balance shifts significantly. Think of multi-way speakers as flickering in and out of coherence as the music spectrum slides up and down in frequency. The following sanitized

acronym, intended to rhyme with FUBAR, pretty much captures my feelings about such speakers: MUBAR (muddled up beyond all recognition). In contrast, the DDD covers the entire vocal band and beyond. Being a proponent of wide-range driver designs, I should emphasize that the DDD is a brilliant example of this genre. The sonic result is an exceptionally wide sweet spot and spectacularly solid imaging. The soundstage is absolutely colossal in extension and creates a palpable illusion of the recording venue, maximizing the sensation of "being there." However, having switched to the U2 after an extended session with the MartinLogan Summit X, I was very much aware of the image size differences produced by these speakers. What you have here is a stark contrast between the expansive presentation of a planar versus that of a point source. For example, piano image size was much more lifelike through the Summit X, while the U2 squeezed the spatial real estate down by at least a factor of two.

Midrange textures were luxuriant and pristine sounding. In particular, the upper mids were exceedingly smooth yet revealing of the ebb and flow of low-level detail. And without an upper-midrange crossover to get in the way, the U2 was most felicitous on female voice. Transients were clearly elucidated with plenty of speed and total control over the decay envelope. As the minutes I spent listening stretched into hours, it became clear that the U2 was the sort of speaker that demands your attention and involves you in the music. Part of its allure proved to be an emotionally persuasive presentation capable of unveiling the music's dynamic nuances with a level of conviction that is unmatched at its

price point. Dynamics were explosive—at least over the range from soft to loud. A bit of stress occasionally crept in on very loud transients, and when the speakers were pushed to loud playback levels. My takeaway was that the U2 would not be the ideal speaker for a large listening space, but should be just fine for small to medium-sized rooms.

I found the extreme treble to be a bit deficient in detail and air, at least when judged against the standard set by a fine electrostatic speaker. At the other frequency extreme, I was surprised by the bass definition. However, be sure to replace the rubber feet used for shipping purposes with the included spiked feet, as the spikes do improve definition. And while you should not expect killer bass slam and extension from an 8-inch woofer, the U2 did manage to produce quite respectable in-room extension, being nearly flat to 40Hz. Nearfield measurements show the U2 to be light in the midbass. However, the midbass range fills in nicely at the listening seat due to room gain.

The U2 was quite revealing of partnering power amp differences. I should preface this by pointing out that some of the apparent sonic differences were a function of amplifier source-impedance interactions with the U2's impedance magnitude. Solid-state amps with a high damping factor generated a somewhat darkish tonal balance, which corresponded to a measured lower-treble deficiency in the range of 9 to 12kHz. The resultant balance was actually pleasing, being relaxed in nature, and served to somewhat civilize hot violin recordings. The U2's large impedance peak (20 ohms) at 9kHz made it possible to bump up the response in the lower



treble by mating it with a low-damping-factor tube amp. For example, using the Octave Audio V110, which has a 5-ohm source impedance, I was able to gain +3dB at 9kHz while sacrificing some response in the midbass. That proved a bit too much for soprano voice, and so I mobilized the Bob Carver Cherry 180 into action. The Carver's source impedance is about half that of the V110 and it turned out to be a synergistic match for the U2. The resultant timbre fidelity was excellent.

There are many good speakers out there that fail somewhere on the road to greatness. That's not the case here. The Unlimited II scales that elusive performance summit. In hindsight, this review experience feels much like a coronation of the DDD as the king of Walsh-type bending-wave transducers. The DDD technology brings one closer to the live experience by virtue of conveying the immediacy, drama, and coherence of the real thing. In musical enjoyment, it leapfrogs a host of expensive box speakers that are forever constrained to sound like canned music, offering a slice of sonic heaven at a fair price. **tas**



# DALI Epicon 6

Once Heard, Never Forgotten

Robert E. Greene

**"A** bunch of the boys were whooping it up at the Malamute Saloon." All of the claims of huge breakthroughs over the years do bring to mind this opening line of Robert Service's famous poem. But sometimes these claims of radical improvements that change what is possible in audio and offer new vistas of excellence...sometimes one or another of these claims is actually the unvarnished truth, not whooping it up at all, but a matter of straightforward fact.

DALI claims that its Epicon Series speakers embody a new kind of magnetic structure that reduces odd-order harmonic distortion in dynamic drivers to the point of its being all but unmeasurable. Interestingly, the even-order harmonic distortion remains unchanged: the Epicons have low but not unprecedentedly low total harmonic distortion. But the odd-order parts are, they say, all but gone.

And the Epicon 6 speaks for itself on this matter: I do not think anyone listening to it, audiophile or no, would fail to observe how pure and liquid is the sound, how reminiscent indeed of the ultra-low harmonic distortion of electrostatics. Once heard, this liquidity is unmistakable and likely to

be unforgettable as well. Lars Worre, the chief executive of DALI, explains the new magnetic structure in some detail ([www.youtube.com/watch?v=PTPSeIj4g8M](http://www.youtube.com/watch?v=PTPSeIj4g8M)), and I shall summarize the principles of it later. But the effect is surely heard independently of the explanation being offered, interesting though the explanation is. This is not something one has to talk oneself into hearing!

There is far more to speaker design than low-distortion drivers, of course. But driver behavior is fundamental. I shall go later into how the Epicon 6s perform in other aspects. But their low distortion already makes them not only interesting as a product but something of a landmark in audio history.

## EQUIPMENT REVIEW - DALI Epicon 6

### How the Reduction in Distortion Works

A driver consists of a magnetic structure surrounding a “voice coil,” the voice coil being attached to the part of the driver you see, the part that moves the air. The voice coil is moved by the magnetic force: When current goes through the coil, force is exerted on the coil and the coil is thus accelerated. And the force on the voice coil is ideally exactly what it should be as determined by the current flow in the coil. But in practice, the magnetic structure is usually made of metal. And the metal conducts electricity. So the coil with its varying current generates, via electromagnetic induction, current in the magnetic structure’s metal. This current in the magnetic structure in turn alters the magnetic field, inducing an unwanted and uncalled for extra force on the coil. These induced currents, “eddy currents” as they are called, are a source of distortion. The idea of the DALI driver is to get rid of them by making the magnetic structure effectively non-conducting so that eddy currents are prevented. [See also the discussion of driver eddy currents in my review of the Magico Q7 in Issue 229.—RH]

The eddy current problem occurs also in transformers, which is why laminated structures are used for them, the lamina being separated by thin layers of insulation so that current is unable to flow across lamina. A more extreme form of the idea of a non-conducting magnetic structure was developed by the Danish company Grundfos. Its idea was to make a material consisting of iron particles—so that it is magnetic—but to coat the particles with a non-conductive layer before forming the material by pressing the particles together. The result is in effect laminated in all

directions at once and does not conduct.

The non-conducting magnet structure and eddy-current reduction is responsible for about half of the lowering of odd-order harmonics. The rest of the distortion reduction is the result of aluminum and copper rings within the magnetic material that create an optimally shaped magnetic field that is more linear. The rings also decrease inductance. Together, the unique magnetic material and the rings produce a magnetic linearity that remains constant regardless of signal current, signal frequency, or cone position.

### SPECS & PRICING

**Type:** Floorstanding bass-reflex loudspeaker  
**Driver complement:** Two 6" bass/mid wood fiber cones, one 29mm soft textile dome, one 10 x 55mm ribbon  
**Crossover frequencies:** 700Hz, 2550Hz, 15kHz  
**Frequency range:** 35Hz to 30kHz  
**Sensitivity:** 88dB  
**Maximum SPL:** 110dB  
**Nominal impedance:** 5 ohms  
**Weight:** 66 lbs. each (net)  
**Dimensions:** 9.1" x 40.3" x 17.4"  
**Price:** \$13,495–\$13,995 (depending on finish)

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## EQUIPMENT REVIEW - DALI Epicon 6

This idea was in fact developed by Grundfos for high-speed electric motors, not for speaker drivers at all. But, fortuitously, Grundfos is close to DALI in Jutland in Denmark, about ten miles away, and after a while the subject of using the idea for speaker magnetic structures came up (the idea was actually suggested by Grundfos, according to Worre in the video link). Of course, some work was needed on how to carry this out, but the idea has a fundamental rightness to it that strikes one immediately. Like many really good ideas, once this one has been brought up, it seems entirely natural.

And what can one say but that DALI and Grundfos have made it work? In measured terms, the odd-order harmonic distortion, which has been widely observed to be the kind that sounds bad, is all but gone. People tend to think of distortion in speakers as arising from break-up of the driver cone, and a lot of work has been done on making cones so as to minimize distortion of this sort. DALI has addressed that here as well, with special wood-fiber driver cones, which seem to work admirably. But the distortion from the motor mechanism also counts, and here in the Epicon Series, this problem is addressed in a new way, as noted. And it does the job in listening terms as well as in distortion measurements. (The new structure is also said to minimize problems from magnetic hysteresis effects.)

The sonic effect is, as mentioned, immediately observable and extremely pleasing. Or at least one supposes that it is this one is hearing; that the speaker sounds unusually pure and liquid is definitely the case. The attribution to the new magnetic approach is less obvious, but I am prepared to take DALI's word for it that that is

the cause of the unique sound heard. And the measurements surely back DALI up.

### The Sound Overall: The Frequency Extremes

So take it for granted—not that you will have any trouble noticing!—that the Epicon 6 has an unusually low level of perceived distortion, a kind of meltingly liquid sound that one does not expect to hear this side of Quads. There are, of course, other aspects of the sound to be discussed, though the perceived low distortion of the speaker already makes it of compelling interest.

Let me start with the frequency extremes. The DALI has an unusual high-frequency driver, comprising a dome tweeter that is rather larger than usual (29mm) surmounted by a ribbon tweeter to fill in the top of the top octave—and actually a long way beyond (ribbon drivers tend to go way on out there). The result is a very high level of perceived high-frequency clarity—you will hear a lot of the micro-detail so beloved of audiophiles, helped on by the ultra-low distortion all the way down, as already noted.

This speaker has resolution and clarity in spades. The idea of using two tweeters to cover different parts of the treble is not new—it goes back at least as far as the Spondor BC1. But it is surely carried out to good effect here as far as apparent clarity and resolution are concerned. Things like the high percussion in one of my go-to orchestral recordings, Rachmaninoff's *Symphonic Dances* (Mata, Dallas, ProArte) sounded remarkably like real cymbal crashes, with the requisite micro-structure that is really there in reality and on the recording, but that can turn into an undifferentiated blur with less

than stellar tweeters. In these terms, the high-frequency compound unit of the Epicon 6s is in the top echelon, one of the best. If the high end is anything like synonymous with high end for you, you will be very happy here as far as the intrinsic behavior of the unit is concerned.

The tweeter unit does follow the usual DALI practice of being somewhat hot on axis with the idea being that one listens somewhat off-axis to the highs. This typically is done to fill in the power response of the top end—the on-axis tip-up fills in some reverberant-field high-frequency energy, but the off-axis listening position gets a flat direct arrival. Fair enough if you want more highs in your reverberant field.

Here, however, you do not have to move very far off axis in any direction before the response really nose dives. The flattest axis is, I estimated, around 15 degrees off the frontal position. But get as far as 30 degrees off to the side, and there is a quite pronounced roll-off. And the top highs are also sensitive to vertical position, as one expects with a vertically oriented ribbon. This is all not as such a problem—just sit where you should (which is fairly low down as it happens). But less than ideally situated listeners will hear a non-flat response in the top as direct arrival. The pattern is somewhat complex and way off-axis, at 90 degrees (where of course no one sits), there is an odd whistle in pink noise for some reason, although this is not particularly important to music listening as such in normal positions.

Associated with the exceptional performance of the high-frequency unit is a very high level of perceived resolution. DALI has always believed in the importance of being able to hear detail,

or so I have gathered (I used to live in Denmark and I have known the DALI people for a long time). And one certainly hears a lot of detail here. Even on familiar recordings, one is likely to become acutely conscious of inner details that were barely observed before and not brought so much to the fore. Inner parts are heard with great clarity. And complex textures unraveled. Of course, audio reviews say this kind of stuff all the time. But here it is really true.

Another aspect of this resolution is that the Epicon 6 seems to be truly free of any adverse effects from its cabinet. In a world where some designers feel the need to make speakers that weigh hundreds of pounds to get sufficient cabinet deadness, DALI seems to have done the trick with a cabinet of modest weight (66 pounds) and very elegant appearance, too. Admiration is called for! The cabinet not only looks elegant in a modernistic sort of way, it really gets out of the way of the sound completely. Listen to any complex music and you will be impressed at how much of the inner structure of it you can hear. Between the low distortion, the exceptional high frequencies, and the lack of cabinet sound, you will hear what there is to hear.

At the opposite extreme, the bass is extended for a speaker this size, with a -3dB point of 35Hz so; in room, bass goes down very far if not absolutely down to 20Hz. The bottom of the orchestra is covered with ease. There is a lot of bass! Truth to tell, in my room of modest size (approximately 18' x 22') there was a bit too much. But it was well-defined and one got a real feeling of the low end power of the orchestra or of rock bass. A lot of the excitement of music of all kinds is carried in the bass, and the Epicon

## EQUIPMENT REVIEW - DALI Epicon 6

6 could sound exciting, indeed. The big whumps in the Rachmaninoff mentioned above gave the real feeling of bass power that orchestras have live. And the over-all warmth helped to fill in the floor dip that tends to develop with floorstanders. The bass may be a little much technically, but musically it was much to the good.

No wimpy sound here, no making the great orchestral masterworks of the Romantic era sound like recorder ensembles or making rock sound as it sounds on a table radio. When Richard Strauss and Dvorák and Mahler and Wagner—or Pink Floyd, for that matter—let you have some bass excitement, you really get the point here. (The Epicon 6 is ported with two large ports in the back). I guess you get the idea that I liked this!

The Epicon 6s present a spacious sonic image, and they vanish convincingly into the soundfield that they generate. Set up pointing down the room straight ahead or only slightly toed-in, the focus of individual images is less definite than with some speakers that are intended to be listened to with the speakers pointing straight at you.

If I may be permitted an aside and a suggestion for experimenting: This spatial character is presumably in part attached to the increase in high frequencies as one gets closer to the axis, meaning that with the un-toed (or only slightly-toed position) sideways head movements increase the top end slightly from the speaker that the head moves toward. This setup is the opposite of the idea used by Ohm and others (and originally suggested I think by Spendor and the BBC) of arranging that such a head movement would diminish the highs, thus creating a kind of time/energy trading that stabilizes and focuses images. Of course, the high end has pretty much forgot-

ten about this, and in particular doing this tends to narrow the “soundstage.” (There is a school of thought that claims that the “soundstage” is often in good part an artifact of a certain lack of image focus in the classical sense, ditto dimensionality in most cases.) If you want image focus in the classical sense, you can get it here by over-toeing the speakers, that is by bringing the flat axis to you by toeing the speakers so that the axes cross at a point considerably in front of you! You might not like this, but then again you might, and it is worth a try. And since the Epicon 6s are apparently intended to be heard slightly off-axis, you have the option here, either way.

In any case, whatever your spatial preference, the Epicon 6s are set to deliver it in the right setup. Experimentation is the key!

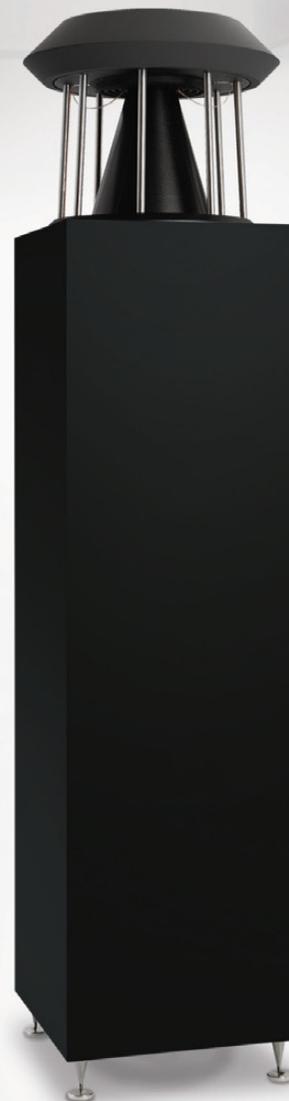
### Overall Balance and the Midrange

As has been pointed out in TAS from the beginning, the heart of music tends to be in the midrange, and, to face the fact straight on, the midrange of the Epicon 6 is somewhat pushed back. In particular, the 1kHz to 2kHz octave and a bit above and below sound rather down in level. The speaker as a whole seems almost to exhibit some version of the “smiley face” EQ once so popular in the days when people routinely manipulated recordings—and audio systems—with analog EQ devices. This balance is in particular contrast with what seems almost to be a fad currently among speaker manufacturers as a whole to push the 1-2kHz region forward somewhat. Both sides of this have their points: Bring 1-2kHz up and the sound comes “out of the box” and certain types of vocal material are flattered. Pull 1-2kHz down and there is a



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## EQUIPMENT REVIEW - DALI Epicon 6

nice recession of the image, distancing over-recorded, too-forward material.

Ultimately, however, to my ears, the midrange needs to be neutrally balanced (I am not a fan of the fad for pushing it forward, either). Whatever flatteries of some type or another one can get by having a bit too much or, in the present case, too little of the 1-2kHz octave, one pays at least some price in natural timbre. In particular, broadband music does not quite sound as it should on the Epicon 6s. It can sound attractive but it never comes across as completely correct in timbre.

Of course, one can EQ this region up and flatten the whole response. The speakers then sound better balanced. But midrange EQ of speakers really works best when it is a matter of very small tweaking of a balance with which one is basically happy to begin with. Making major shifts in balance by EQ is a tricky matter. The main point is that when the measured response of the Epicon 6 was flattened out, the sound changed a lot. This sort of broadband balance-change is really fairly major, though it may look small on a graph. It changes the sound of the music quite a bit.

The 1-2KHz suckout must have been a deliberate decision on the part of DALI, and I think many people will like it. So much material in the world is over-recorded that a bit of backing away from it can be all to the good. But the exact sound of instruments really is altered here. And even the apparent volume of notes can shift. On Moravec's Debussy collection on Vox, one could notice in careful listening the slight droop in volume as he ran from below on up through the recessed range to the very top notes (which are higher than that, being 4186Hz), with the top notes coming back up in level.

This is not to say that the speaker is colored in the resonant sense. Actually, it sounds very smooth and non-resonant. What it does not sound is exactly flat.

While you may well like this, you should observe the effects carefully when you audition the speaker to be sure that you do.

### Summary

The DALI Epicon 6 is an extraordinary speaker. In high-frequency performance, in perceived resolution, and in absence of cabinet effects it is in the top echelon and it really does make one wonder about the heroic measures that have come to be the most common approach to obtain these goals. Clearly a lot of thought has gone into this speaker, and *avoirdupois* has been kept under control without giving up any of the resolving power noted: no cabinet problems, but moderate cabinet size and weight. And most striking of all, the Epicon 6s really do seem to have crossed a barrier in low distortion in dynamic-driver speakers. This is truly historic. And I hope other driver manufacturers will look into licensing the patent from DALI. Once heard, never forgotten.

With all that said, you still have to listen for yourself as with any speaker, to the exact radiation pattern and tonal balance choices here. The Epicon 6s involve a distinctive approach on these matters and whether that approach pleases you you'll have to decide for yourself. But in any case, this is a speaker that everyone ought to hear. Things this important do not come along very often. Congratulations on those low-distortion drivers are very much in order. In the words of Schumann writing about the music of Chopin: "Hat's off, gentlemen. A genius." *tas*

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# Rockport Technologies Atria

Captivating

Alan Taffel

**A** common practice in the high end is to speak of a component's "character." We high-end denizens understand that term as a reference to said equipment's sonic fingerprint—the limitations, colorations, exaggerations, and emphases it imparts to the music. But a component's "personality" is something different. Personality has to do with the overall feeling a product conveys to the listener. I have heard many DACs, for example, that give the distinct impression of working very hard to extract information. Needless to say, listening to those DACs is not the most tranquil experience. Other components exhibit personalities that can be described as relaxed, polite, extroverted, or anal. We have all heard products that fall into one of these categories.

I bring up the notion of personality in the context of Rockport Technologies' new \$21,500 Atria because these speakers emit a very distinct—and distinctive—persona. Specifically, the Atrias are happy. I know that sounds crazy, but the Atrias give off a strong vibe of simply *loving* to play music. They never complain, they never strain, and they never hold back. They are doing what they were born to do, and they are thrilled about it. The way the Atrias glory in making sound for music's sake is not only palpable, it is also contagious. To listen is to share in their delight. And just as this tends to be true about people who are happy in their work, the Atrias

are very, very good at what they do. But what things, exactly, are they doing so well—what, in other words, are the character traits that enable them to convey such a strong sense of musical freedom and joy? Read on.

Any summary of the Atrias must begin by indicating that they represent the best in modern speaker design—and deliver fully on the sonic and musical benefits that design promises. Thanks, for instance, to extremely stiff carbon-fiber sandwich composite- or beryllium-domed drivers, equally stiff cabinetry, and point-to-point wired crossovers, they have vanishingly low distortion. This makes them highly

## EQUIPMENT REVIEW - Rockport Technologies Atria

resolving, transparent, and easy to listen to all at once. The drivers and crossover components are painstakingly matched, so the Atrias are coherent, speaking with one seamless voice from top to bottom. And their graduated-width, rearward-slanting front baffle, combined with an elliptical crossover that provides excellent phase summation, minimizes diffraction and time incoherencies. As a result, the speakers neatly disappear, leaving only the music.

I could end this review right there and call it a day, but that would be unfair to the Atrias, because these speakers do much more, some of which you would not expect for their \$20k-and-change entry fee. But before exploring those areas, there is more to say about the Atrias' very first impression: that sublimely low noise floor.

Even high-resolution speakers can accompany all that detail with a side of grit, glare, or fuzz. These artifacts may be in the background or astride the notes themselves. The Atrias, despite being highly resolving, are blissfully free of any such interlopers. The result, in a word, is purity. You'll rarely hear a piano sound as carefree—as unfettered of having to punch through sonic grime—as it does through a pair of Atrias. But pick your instrument—drums, strings, bass, horns—they all come through unburdened by anything extraneous, like a boxer who has just shed excess weight.

This purity benefits solo instruments and voices (listen to the startling immediacy of Norah Jones on *Feels Like Home*), but also makes it easy to follow the individuals in a group. Instruments do not “step on” one another; rather, each emerges clearly. No detail—soft

breaths, a guitar pick stroking nylon or steel, the gentle rattle of snares against a drumhead—is below the noise floor, so all are audible without strain.

One last point about low noise is that it's just a lot easier to listen to speakers that aren't distorting—no matter how subtly. With clean electronics behind them—I was fortunate to have the superb CH Precision stack on hand—the Atrias will never tire you out. They sound as fresh and clear in the fifth hour as they do in the first. Of course, in this price and size range, you generally have to give up something—usually *several* things. The beauty of the Atria is that you really give up only two. The first, unsurprisingly, has to do with bass. Floorstanders near the entry point of a manufacturer's line tend to be bass compromised. Put another way, one of the main benefits of speakers higher in the range is more powerful, extended bass. The Atrias follow this dictum—but only partially.

True, the Atrias cannot play the lowest bass notes at full strength. You can hear this on the bass line that forms the coda to “Don't Give Up” from Peter Gabriel's masterful album *So*. The last note of the motif, which is the lowest, is a punch slightly pulled. Mind you, the note is clearly *there*, just at a reduced level. If you want to hear it at full strength, step on up to Rockport's Avior, the Atria's larger sibling. The uplift costs about \$11,000, and only you can decide if that's feasible and worth it.

Even with this very minor compromise in bass extension, the Atrias need make no apologies in this area. That's because their bass is every bit as tight, impactful, and informative as larger, more expensive speakers. Indeed, other than ultimate

extension, bass is one of the Atria's greatest strengths. There is no slop, no overhang, and no sense of the driver overcoming initial inertia (the ability of the bass to start and stop on a dime explains a lot about the solid rhythms the Atrias churn out).

Furthermore—again, with the exception of the very lowest tones—this is *not* a quality versus quantity situation. When it comes to bass energy in the broad sense, these Rockports give up very little to larger, multi-woofered designs. Going back to the Peter Gabriel bass line, the instrument should step forward, away from the background, and strut its stuff. Through the Atria, it does, while also reproducing this particular instrument's somewhat unusual tonality. Similarly, the string bass on the Analogue Productions SACD of Dave Brubeck's familiar *Time Out* never lurks in the shadows, as it can through speakers more reticent in this zone. Meanwhile, the Atria again conveys this particular instrument's own (very different) harmonic structure.

The second thing you would expect the Atrias to give up, by virtue of their charmingly modest (impeccably-finished) stature, is soundstage scale. It does, but *only* in the dimension of height. The Atria's soundstage barely rises above the height of the speaker itself. However, assuming you are seated at a normal listening level, this limitation is neither particularly noticeable nor bothersome. But stage height is inarguably something bigger speakers—good ones, at least—can do better.

On the other hand, everything else having to do with soundstage and imaging is most certainly in the Atria's wheelhouse. Credit its extremely low

resolution floor and low distortion that permits it to transmit those almost subliminal spatial cues. On a great recording, like the stupendous ORG pressing of Mehta conducting Holst's *The Planets*, the soundstage is so convincingly deep it's downright spooky. Width is similarly impressive. The Atrias are happy (there it is again) to be positioned well apart, and will still completely fill the space in between. Between this depth and width, the Atrias let you hear the placement of every orchestral section, as on the Holst, right down to the solo violinist's position within the firsts.

OK, so besides soundstage prowess (other than height) and good bass (within minor

### SPECS & PRICING

**Type:** Three-way, dynamic driver, floorstanding loudspeaker

**Driver complement:** 9" carbon-fiber sandwich composite woofer; 6" carbon-fiber sandwich composite midrange; 1" beryllium dome tweeter

**Frequency response:** 28Hz-30kHz +/-3dB

**Nominal impedance:** 4 ohms

**Sensitivity:** 87.5dB

**Dimensions:** 12.5" x 43.5" x 20"

**Weight:** 150 lbs. each

**Price:** \$21,500

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## EQUIPMENT REVIEW - Rockport Technologies Atria

limits), what else don't you give up that you might expect to in a speaker of this size and price? For one thing, dynamic range. Of course, low-distortion speakers can usually play softly without losing important musical details (think Quads and Maggies); but, they can't necessarily play loudly with the same alacrity (think Quads and Maggies). Oh, but the Atrias can! Whether sustained or in a burst, the Atrias are perfectly happy to overload your ears and your room. Rockport's Andy Payor says one of the Atria's limitations compared to the Avior is its ability to fill a large space. I can't say I agree. My listening room is quite large, yet the Atrias had no trouble commanding it.

The Atrias also excel at the micro end of dynamics. Listen to a chamber octet, as on the Prada CD of Dvorak's *Songs from Bohemia*, and the speakers will reward you with each player's most minute dynamic inflection. In this way, you can really hear the players relating to each other, passing the theme around through understated dynamic emphasis and de-emphasis. In a live classical performance, the conductor, through gestures to a particular section, often visually cues the audience as to where the theme currently resides. "Pay attention now to what these players are doing," the maestro seems to say. But in the solace of our listening rooms, we must rely on audio alone to provide such cues. The Atrias are fully up to this task.

There are two other traits associated with more exotic speakers that I am happy to report are fully embraced by the Atrias: air and speed. Two seconds of listening to these Rockports is sufficient to hear a top end that ascends to the heavens. This frees music from any sensation

of being stifled or of hitting a glass ceiling. Equally—and as immediately—obvious is the Atria's speed. All those little details to which I referred earlier would not be possible if the Rockports couldn't field a fast transient.

Speakers this fast, resolving, and extended in the highs tend also to be unforgiving. I don't know how the Atrias do it, but they manage to be both extraordinarily revealing and forgiving at the same time. So is a case in point. Depending on the track, Gabriel's voice can stray into grate territory. The Atrias never let it get that far. You might think they accomplish this through glossing and smoothing, but that is not the case. On the contrary, these speakers not only reveal every nuance of Gabriel's vocal delivery, but they allow me to hear more layers of this complex recording than I ever have. This combination of resolving power with forgiveness is rare indeed in audio components, yet it is what live music routinely delivers.

So far I have said nothing about the Atria's tonal balance. Here is yet another surprise. For all their detail retrieval and dynamic incisiveness—traits that are often associated with a lean

tonal balance—the Atrias are tonally on the mellow side. Listen to the alto sax on *Time Out*. Through the Rockports, the instrument may be a bit more warm and golden than you're used to. You might take that as either a compliment or a criticism, depending on your proclivities, but it would only be the latter if the speaker went too far in that direction. They do not. And because they do not, the Atrias will appeal to those who lean toward romanticism as well as those whose fealty is more to accuracy. I myself am in the latter category, yet I still find the Atrias bewitching and would gladly own a pair.

Coincidentally, near the end of my time with the Rockports, I was in California and had the opportunity to hear Robert Harley's reference system. At the time, it consisted of Magico Q7s, Constellation electronics, and a full dCS Vivaldi stack up front—such are the perks of being Editor in Chief! We listened to several SACDs that I had brought along, taking particular pleasure in the Analogue Productions release of Rickie Lee Jones's quirky, beautifully recorded *Traffic in Paradise*. The sound was delicious. Although the system visually confronts listeners with brutish-

looking, massive gear, the aural impression is, in contrast, light and lithe.

Upon my return home, I was able to audition the same SACDs through the Atrias, once again zeroing in on the stellar Rickie Lee Jones disc. Unsurprisingly, the album sounded better at Robert's house—but not by as wide a margin as you might expect. The Q7 is capable of throwing a larger soundstage (especially height) than the Atria, is more strictly neutral, has even more air on top, and....and that's about it. I felt no loss of speed, detail, ease, depth, or dynamic whomp. Impressive, wouldn't you say?

The reason the Atrias can hold their heads high compared to one of the best speakers in the world is the consistency of Andy Payor's design philosophy. Never mind that this is Rockport's entry-level offering; its goals are exactly the same as those of its bigger brothers. Specifically, Rockport believes that resolution and musicality need not be mutually exclusive—and won't be if informed design is executed at a sufficiently high level. Consequently, the Atria uses the identical components, drivers, and production techniques as Rockport's larger speakers. With this in mind, and their sound in your ears, their \$21,500 price starts to look like the bargain it is.

In sum, I cannot imagine anyone being anything but captivated by a pair of Atrias. They are true Rockports, brought to a more accessible price and size range. They are also so revealing of wondrous detail, so free of distracting artifacts, so effortlessly "right" in their presentation, and so darn *happy* to be making music, they can't help but make you happy, too.



## EQUIPMENT REVIEW - Rockport Technologies Atria

# Technology

In the Atria Rockport wanted to create a small-footprint loudspeaker that played “bigger” than its size. That meant robust drivers with high excursion and excellent linearity under demanding conditions. That also meant a ground-up design of the drivers—the Atria (and the Avior) are the first Rockport loudspeakers to employ drivers entirely of Rockport’s own invention. The company’s previous loudspeakers, and some in their current line, are built on motor systems from Audio Technology in Denmark using Rockport-designed carbon-fiber-sandwich cones.

Rockport’s Andy Payor started the driver design with a clean sheet of paper, creating the 9" woofer and 6" midrange with no practical cost constraints. The resulting drivers are unlike any previously built. As you can see in the photo of the midrange driver, the basket (the frame that holds all the parts together) is made from thick cast metal. The basket is unusual for its robustness, and also for the shape that allows for a large diameter spider (the round yellow structure with the accordion pleats). Although a larger spider adds slightly more mass, Payor believes that its higher compliance (lower resistance to movement), and lower hysteresis confer greater resolution of low-level information. A driver’s ability to reproduce the very finest and most delicate detail is, according to Payor, directly related to reducing the parasitic losses in the driver’s mechanical and magnetic structures.

The 6" driver has a very low resonant frequency of 28Hz, and is capable of a whopping 13mm of excursion. These specs are important because the midrange driver is operated down to 150Hz, where it crosses over to the 9" woofer. The cones are made from a composite of thin (.004") carbon-fiber skins on either side of a Rohacell foam core. The thickness of this Rohacell core varies to prevent an abrupt mechanical impedance change at the surround or voice-coil former. Payor has been using this cone technology for

nearly 10 years. The material in these drivers, however, is a new type of carbon-fiber fabric used in F1 racecars that reportedly has the lowest aerial weight to tensile-strength ratio of any woven fabric. The resulting cone is super-stiff and super-lightweight. The goal was to couple a very light, stiff diaphragm with a very powerful and linear motor and very little mechanical resistance and hysteresis loss in the supporting structure. Incidentally, every element of the driver was designed by Payor, including the titanium voice-coil former, adhesives, terminals, and lead-out wires. He built more than 100 prototypes before finalizing the project.

Although compact, the Atria’s enclosure weighs 150 pounds owing to the thick baffle (more than 4" thick in places) and 2.5"-thick side panels. Increasing the enclosure’s thickness greatly stiffens the structure—the stiffness increases with the cube of the ratio of the increase in section thickness. The cabinet is made from multilayer MDF in a constrained-layer-damping configuration—layers of visco-elastic material are sandwiched between the MDF sheets. Extensive bracing is used inside the enclosure. The resulting resonances, damped by the visco-elastic material, are low in level and high in frequency.

The crossover is a multi-stage circuit that provides varying degrees of stop-band attenuation with respect to frequency, meaning that the response rolls off gradually at the crossover frequency, after which the slope becomes increasingly steep. This



enables the speaker to have excellent transient characteristics and minimum crossover-induced group delay, as well as reduced driver interaction and distortion associated with excessive overlap in the stop band of the drivers. Payor has used this type of crossover topology since the early 90s. Each crossover is hand-measured and tuned by Payor. In addition to normal frequency response measurements, he also inverts the polarity of the adjacent drivers, drives them with a test signal, and measures the amount of acoustic cancellation. The greater the cancellation, the better the drivers will sum when restored to their correct polarity. He then fine-tunes the capacitor and inductor values until the best combination of in-phase frequency response and deepest null out of phase is achieved. Typically, Payor measures 35-40dB of acoustic cancellation at the measurement microphone one meter away from the loudspeaker. (You can see the measurement process and null graph at the Rockport Web site.) **Robert Harley** 

# YG Acoustics Kipod II Signature

Full-Range Sound for Smaller Spaces

Kirk Midtskog

**H**ave you ever wondered if it is possible to get world-class resolution, imaging, and full-range frequency extension in a small-to-medium-sized room from a single pair of speakers? No DSP room-correction system, no large room-treatment devices, and no subwoofers. Just keep it simple with a pair of speakers and still not have bass-overload issues?

Because my listening room is small (12' x 6' x 17'), I have accepted the fact that its limited size precludes the use of a truly full-range speaker. The bass from large speakers in smaller rooms overwhelms the space with added emphases at certain frequencies, accompanied by a reduction of output at others. This highly colored bass pattern tends to mar the entire musical experience, not just in the bass, by “announcing” that something is inconsistent with live music in a fundamental way. A larger speaker also usually needs to be placed at a greater distance from the listener, not to mention from the room walls, to allow its disparate drivers to produce coherent sound at the listening position—distances we simply don’t have in smaller rooms.

There is a solution for those of us with full-range ambitions in smaller rooms, however. In my experience, the YG Kipod II Signature Passive is the full-range, small/medium room champion. It has all of the performance attributes one would look for in a state-of-the-art speaker specifically scaled to fit in less-than-ideal-sized spaces: stunning resolution, tonal neutrality, fantastic transparency to the upstream system, wall-defying soundstaging, deft imaging, seamless blending into the soundscape so that it effectively disappears as the acoustical source, and an in-room frequency response from 20Hz to 40kHz (according to YG). Best of all, it puts everything together in musically compelling ways. And, yes, I can confirm that it does not overwhelm my listening room with lumpy-sounding bass.

Any caveats to this list of fine performance attributes? By virtue of its design brief to perform well in small-to-medium-sized rooms, the svelte 41"-tall Kipod will not reproduce macro-dynamic swings with truly thunderous force or pump out low bass notes with the same amplitude as the big boys—such as its much larger sibling, the Sonja 1.3. Though Kipod does reproduce very low notes, at the same time it sounds as if it has a fairly gradual roll-off in the bass and thus does not induce bloat as a result of the speaker/room interface. The low notes in *Rutter's Requiem* [Reference Recordings], for instance, extend almost as low as I have heard them sound with any large, full-range system, but do not have full power at the very bottom of the spectrum. The Kipod's bass always sounds balanced and integrated in ways reminiscent of how bass sounds at live orchestral concerts.

The Kipod does not *have* to be deployed in a smaller rooms to perform well. Its bass output is not predicated on close boundary reinforcement; in my room, the Kipod was placed 61" from the back wall (measured at the tweeter). I have heard it in the cavernous YG factory demo room and in larger rooms than mine at trade shows (like RMAF and CES), and it delivered tuneful, extended, well-defined bass in all instances. Other system-integration notes I can add here are that the Kipod really should be partnered with the best electronics, sources, and cabling one can put together to fully maximize its performance capabilities and also because



## EQUIPMENT REVIEW - YG Acoustics Kipod II

it is quite revealing of upstream system flaws. It should be given at least 400 hours of break-in time. A fairly stout power amplifier (say, at least 150W with a stiff power supply) should be considered over a lower-powered one, as the Kipod seemed to be somewhat low in sensitivity (rated at 85dB). I had to turn up the volume a few more clicks than with any other speaker I have had in my system to achieve similar sound pressure levels, and the speaker just seemed to “come alive” when coaxed with a higher volume setting.

While the Kipod seemed to require more power than usual, it did not come across as difficult to *control* (stated impedance is 8 ohms, nominal; 5 ohms, minimum), and its macro-dynamic range and transients were better than any other speaker of its size I have heard. At no time did I ever detect any strain from the speaker itself, even during the most demanding musical passages. Both the Gamut M250i and Pass Labs X350.5 (review forthcoming) were well suited to powering the Kipod II Passive. I would think twice, though, about pairing it with a tube amp, unless it's a reasonably powerful one.

The potential for the Kipod to sound astonishingly good or merely good depends, to some extent, on its placement—at least this proved to be the case with the *passive* version. YG's Dick Diamond came out to my house and assembled the speaker by bolting the rectangular main module on top of the larger trapezoidal bass module. The main module is, essentially, a 40 pound mini-monitor (which can be purchased separately as a stand-mounted speaker) with a 6" YG aluminum-cone midrange driver and a YG waveguide-mounted soft-dome tweeter. (The waveguide aids in matching the dispersion pattern of the tweeter to that of the midrange unit.) The bass module is, essentially, a passive, 82-pound subwoofer with a 9" YG aluminum-cone woofer. After assembly, Diamond spent about two hours adjusting its placement in my room—a service all new Kipod purchasers receive from their YG dealers. Naturally, like any audio-obsessed person would, I later moved the Kipods around just to see if I could better Mr. Diamond's setup. I couldn't. I returned them to where Diamond had left them and later adjusted toe-in just a hair. The lesson: Let

the professional do the setup. Break-in time also played a larger role than I anticipated. The Kipod sounded fantastically detailed and dynamically alive when first set up in my system, but the sound tended to be localized around the cabinets themselves if too much toe-in was applied—and it didn't take much—which, in turn, gave me the impression that some loss of center image focus was sacrificed when only a little toe-in was applied. Also, before sufficient break-in occurred, there was a bit of upper-midrange hardness; the bass seemed overdamped and constricted; and there just wasn't the sort of “musical flow” I expected. Then, right around the 400-hour mark, *everything* improved, and not subtly, either.

Fully broken-in, the Kipod's overall performance is like that of a first-rate mini-monitor with great bass and expanded dynamics added to the package: an expansive soundscape (very deep, very wide, and with an apparent increase of height), a peer-into-the-recording resolution and transparency to upstream gear, well fleshed-out images (without etched image boundaries), and a corporeal solidity coupled with bass weight underpinning the entire presentation. The Kipod recreated a soundscape that, recording permitting, extended beyond the listening room walls. On the LP *Gershwin* [Slatkin, St. Louis, Reference Recordings], I could close my eyes, point to the outer edges of the soundscape, open my eyes again, and find I was pointing to positions about one foot beyond the room's sidewalls. On the studio-created soundscape of “Di Se Re” from the Bollywood soundtrack *Di Se* [A. R. Rahman, Venus], the soundstage was even wider. The same sort of performance applied to depth as well. This means the Kipod's effective soundstage extends considerably beyond the speakers' outer edges and as deep or deeper than the distance from the speaker to the backwall. The feeling of soundstage constriction, which too often accompanies listening in a smaller room, is thereby greatly reduced because the Kipod made it seem as though I were listening in a much larger space, one that would allow the speakers to be placed about ten feet apart instead of seven and a half—as is the case in my room.

Images were so well fleshed out that I could easily discern the

locations and relative sizes of the various orchestral sections—in some recordings—as well as hear enough of the individual instruments in massed string sections to avoid the perception of a homogeneous string sound. The recent Reference Recordings LP re-issue of *Exotic Dances from the Opera* [Oue, Minnesota Orchestra] was captivating with its realistic spatial portrayal

## SPECS & PRICING

**Driver complement:** 1" YG soft-dome tweeter, 6" YG BilletCore midrange (main module); 9" YG BilletCore woofer (bass module)  
**Woofer loading:** Sealed  
**Impedance:** 8 ohms nominal, 5 ohms minimum  
**Sensitivity:** 85dB  
**Cabinet:** Aircraft-grade aluminum; ballistic-grade-aluminum tweeter waveguide  
**Dimension:** 7" x 16" x 13" (main module); 12" x 41" x 17" (bass module)  
**Weight:** 122 lbs.  
**Price:** \$38,800 per pair, available in silver or black

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### ASSOCIATED EQUIPMENT

**Analog Source:** Basis Debut V turntable with Vector 4 tonearm, Benz-Micro LP-S cartridge  
**Digital Sources:** Ayre C-5xeMP universal disc player, Sony VAIO VGN-FZ-490 running J River MC 17, Hegel HD2 and HD20 DACs  
**Phonostage preamp:** Ayre P-5xe  
**Linestage preamp:** Ayre K-1xe  
**Integrated amplifier:** Hegel H200  
**Power amplifiers:** Gamut M250i, Pass Labs X350.5  
**Speakers:** Dynaudio Confidence C1 Signature, Aerial 7T  
**Cables:** Shunyata Anaconda ZiTron signal cables, Audioquest Coffee USB and Hawk Eye S/PDIF, Shunyata Anaconda and Cobra ZiTron power cables  
**A/C Power:** Two 20-amp dedicated lines, Shunyata SR-Z1 receptacles, Shunyata Triton and Typhon power conditioners  
**Room Treatments:** PrimeAcoustic Z-foam panels and DIY panels

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## EQUIPMENT REVIEW - YG Acoustics Kipod II

of a full orchestra arrayed in a large hall. The Kipod made this recording sound so engaging and “present” that I stopped listening for reviewing purposes and simply listened more as I would at a live concert—always a good sign. Apparent listener perspective was generally neither forward nor recessed, but would change somewhat depending on how some recordings were made—an example of the Kipod’s transparency to sources. Resolution? The Kipod has it in spades, and it doesn’t hype up a particular aspect of audio reproduction to give you the impression of heightened resolution or make you suffer through poorly-made recordings as a price for all its resolving power. Its resolution comes across as pure, direct, and low in coloration. Somehow, the Kipod sounds neutral and “accurate” without sounding clinical or as though it is leaching out the human “give-and-take” of music-making in order to deliver its accuracy. This is one of those high-performing audio products that gives you the audiophile goods while still letting you enjoy a good deal of your music collection. You will hear recording flaws—and brilliant engineering, too, of course—but your less-than-stellar recordings won’t necessarily be rendered unlistenable by the Kipod’s even-handed resolution.

Sometimes, three-way floorstanding speakers with the sort of bass extension and dynamic range of the Kipod’s can’t quite deliver mini-monitor-like delicacy on small, intimate music. The subtleties in a piece like the title track from the Bobo Stenson Trio’s *Indicum* [ECM] can escape lesser speakers and thereby sound lackluster or just plain uninteresting. The Kipod (especially together with the fabulous Gamut

M250 monoblocks) dug deeply into this slow, moody, mysterious work and brought to life its subtle yet compelling sense of yearning and resolve. The percussion work of Jon Fält can sometimes sound a little too “free form” and detached from the other players on some systems. Here, the kind of detailed and *coherent* reproduction the Kipod brought to the equation seemed to imbue everything with musical intent, with human meaning—including Fält’s slightly elusive percussion style. I could also clearly hear bassist Anders Jormin tap the body of his upright bass with his fingers (using it as a percussion instrument) at the beginning of “Indikon,” adding an interesting resonant quality to Fält’s percussion intro.

The whole reason YG’s founder Yoav Geva got into the speaker business, in 2002, was to make speakers that simultaneously had good frequency vs. amplitude behavior and inter-driver phase (time) behavior. Geva found that most speakers at that time optimized either one or the other but usually not both. Through Geva’s background in digital signal processing, he was able to develop an algorithm which he applied in the analog domain, specifically to crossover design and speaker-system modeling. Geva entered a speaker prototype, based on his algorithm, in the Israeli Ministry of Industry’s annual Tnufa competition. (Geva is half-German and half-Israeli and split his time between the two countries before incorporating YG in Colorado in 2004.) He won a Tnufa grant, which he then used to pursue his basic technology, called DualCoherent, into a commercially viable product line. Based on his extensive modeling of his concept, Geva knew he needed to build

speaker cabinets from a more precise material than wood, or he would not be able to achieve the very close tolerances involved.

Thus began YG’s extensive use of machined parts made from high-quality aluminum billet. Machined aluminum provides several advantages as a cabinet and cone-membrane material: good strength-to-weight ratio, relatively high resistance to environmental factors such as corrosion and high temperature (helpful when machining friction heats the stock), and the ability to be machined into a wide variety of custom shapes to very precise tolerances. It also has relatively good resonance damping characteristics when properly constructed. YG uses mostly aircraft grade 6061-T651 billet and some ballistic-grade aluminum for key parts like the tweeter waveguide. I have visited the YG factory outside of Denver in Arvada. Everyone at YG is very focused on delivering high-quality products, and the CNC machines at work are truly impressive. Each “BilletCore” driver cone takes hours to mill on a five-axis CNC milling and turning machine from Germany called Gildemeister CTX Beta 1250 TC. Many parts are machined to within 0.0008" tolerances (20 microns). Which brings me to the subject of the Kipod’s price: \$38,800. Given the engineering, parts-quality (capacitors and inductors are top-drawer Mundorf), raw material costs, the nearly obsessive lengths YG goes to manufacture and deliver a high-performing product, and the high level of its overall performance, the asking price is justified.

The current Kipod II Passive incorporates many advances over the model previously reviewed in TAS by Robert Harley in Issue 199.

First, the Kipod Studio Robert reviewed had an adjustable, on-board Class-D bass amplifier to power the woofer in the bass module, making the speaker system semi-active. The model in this review is fully passive. (YG is moving toward all-passive configurations, although customers can still get semi-active versions in all models except the Carmel.) Second, the former model used Scan-Speak midrange and woofer drivers with standard cones. The current Kipod uses YG-machined aluminum cones integrated with some Scan-Speak supplied parts. Third, the previous Kipod used a Scan-Speak ring-radiator tweeter. The current tweeter is a YG “ForgeCore” unit with an in-house-machined motor assembly and a proprietary YG soft-dome membrane. (Some of the more standard tweeter parts, like the back lid, are from Scan-Speak.) Fourth, the Kipod reviewed in Issue 199 did not have a high-pass filter on the midrange unit so some bass content below the midrange driver’s bandwidth could apparently cause the speaker to sound stressed at higher volume levels. The current Passive model has a “Signature” crossover package that applies not only a high-pass filter on the midrange driver (expanding the loudspeaker’s dynamic range) but also includes some components to improve the out-of-passband phase-matching between the midrange and woofer. This now brings YG’s DualCoherent technology to both crossover regions, which was not possible in the semi-active configuration. Fifth, the earlier model had high-quality OEM inductors. The current model uses in-house wound “ToroAir” toroidal inductors, which YG says reduce distortion and, more notably, cross-talk between drivers. Sixth, the two sealed (air-

## EQUIPMENT REVIEW - YG Acoustics Kipod II

suspension) cabinet modules have been further optimized to reduce resonances; the tweeter waveguide has been improved; and the external cabinet screws have been replaced by internal joiners. The two modules of the earlier version of the Kipod weighed a combined 104 pounds; the current Kipod II Passive weighs 122 pounds.

The only other speaker I had available that came close to overlapping the Kipod's frequency and dynamic range was the very nice sounding Aerial 7T [\$9850, Issue 218], a ported, bass-reflex design. The Aerial 7T seemed much easier to drive, had fuller bass in its low register, but did not extend quite as low in the bass as the Kipod. The 7T also made some recordings sound slightly harsh in the 2-4kHz range if careful attention was not paid to speaker placement, particularly toe-in. Very careful placement was also needed with the 7T to mitigate bass overload in my room; in a larger room, the 7T's bass output was just right without much placement optimization. The Kipod's bass was more defined in pitch and better integrated with the midrange. The Kipod also imparted a good deal more resolution of fine detail and of timbre, and came across as generally more revealing and airy. It also sounded more tonally neutral and threw a larger soundstage. Of course, the price difference makes the comparison completely unfair to the 7T, but it is all I had on hand for direct comparison. I have heard quite a few systems with speakers costing more than the Kipod in people's homes and at consumer shows. While I hesitate to make definitive judgments based solely on those experiences, there is no question that the Kipod II Signature Passive is a truly accomplished speaker in its own right.

I have no significant sonic "gotchas" to report. Even though the main module is only 7" wide, I heard no power-range-robbing baffle-step issue, which can crop up on narrow-baffle designs, so I can't fault the Kipod there. Its treble was clear and extended, and had no harshness or graininess—still no glaring fault. All kinds of music were well served by the Kipod, from hard-driving rock to solo classical guitar to full orchestral works, so I can't call it a small ensemble or rock 'n' roll specialist. The Kipod's price puts it out of reach of a lot of music lovers, and it should be mated with high-quality associated gear and a fairly powerful amplifier, further raising the price of realizing its full potential. On the other hand, its build- and parts-quality and, indeed, its sound quality are in keeping with its price. Its low bass may sound just a bit reserved to listeners who are used to the more heavy-handed bass-reflex designs. A minor ergonomic note: The oval-shaped (YG logo) binding-post tightening nuts are spaced too closely together to fit your fingers around the nuts to tighten them, at least if one of the oval knobs is in a horizontal position.

The Kipod II Signature Passive is an impressive speaker all around. It is a detailed and musically engaging vehicle through which listeners can traverse their collections, no matter what kind of music they favor. With state-of-the-art mini-monitor-like resolution and soundstaging, coupled with a dynamic and frequency envelope a mini would envy, the Kipod II Signature Passive offers something I had all but given up on: a high performance, full-range speaker in a package skillfully scaled to fit in smaller rooms. Bravo. **tas**

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# Wilson Alexia

## Sometimes Reality Surpasses Expectations

Anthony H. Cordesman

**B**eing an audiophile means living in a constant state of hope. Hope about improvements in the quality of musical performances, in the quality of recordings, and in the media used to provide them. Hope for improvements in every active and passive component. And, let's be frank, a particular hope that somehow the next speaker will have that special magic. The speaker certainly isn't the most important component—everything in the audio chain counts—but it is inevitably the most colored one, the most demanding in interaction with another component (the power amplifier) and in its interaction with the room and listening position.

I've been lucky enough as a reviewer to have had access to some great speakers over the years, although the need to rotate them in my reference system to hear different products has also forced me to say goodbye to some great speakers as well. This is a moment in audio, however, when speakers reach levels of performance that actually do turn hope into reality, and where advances like room correction may soon allow the audiophile to break out of the limitations imposed by the listening room.

It is really hard to make choices today. So, for a long time I've compromised by making two choices of long-term references—plus keeping some older speakers around as references. The Legacy Aeris that I reviewed in Issue 235 is one of my current choices. The Legacy is great value for the money, but some of its strengths for the audiophile present problems for a reviewer.

The Legacy Aeris has powered subwoofers. This means it is not possible for a reviewer to review power amplifiers, as there is no clear way to know how they are affecting the bass. The Legacy also has room correction and the ability to electronically adjust its performance to the listener's

taste. This makes the Legacy Aeris an excellent choice for the individual audiophile, but not a neutral reference for reviewing purposes.

I choose the Wilson Alexia as my partner to the Legacy for a number of reasons. I've heard and admired Wilson speakers for years, and I was impressed with Jacob Heilbrunn's review of the Wilson XLF in Issue 225. But more important, I've always wanted a full-range cone speaker with the coherence and detail of the best planar electrostatic and ribbon speakers. Wilson's larger speakers provide this through a careful mix of cabinet rigidity, driver choice, and fully adjustable time alignment, but the Alexia is the first relatively compact Wilson speaker that can be fully time-aligned for a specific listening position. It brings one of Wilson's greatest strengths into a more compact and affordable package than the Alexandria XLF and Alexandria 2. (Wilson notes that the MAXX 3's alignment is far less accurate than the Alexia's, and does not have the Aspherical Propagation Delay feature of the Alexandria series. Aspherical Propagation Delay allows the installer or customer to move the individual driver modules forward and

## EQUIPMENT REVIEW - Wilson Alexia

backward for time alignment, and to rotate those modules' axes for the best tonal balance.)

I'd also heard Peter McGrath of Wilson give some outstanding demonstrations of Wilson speakers at shows and at a local dealer. In the process, he demonstrated that Wilson speakers have steadily broadened the listening area in which its Aspherical Propagation Delay performs at its best. I also got enough audio scuttlebutt to be aware that the Alexia's new tweeter had probably corrected my one concern about the timbre and dynamics of Wilson speakers—a slight hardening in the upper-midrange and treble. Moreover, the midrange driver used in Alexia is nearly identical to the midrange found in the far more expensive Alexandria XLF

Just like every other audiophile, however, I could not be sure how the Alexia would actually perform in my system and in my room until it actually was put in place. If there is any iron law in audio, it is that no speaker ever sounds exactly the same in two different rooms. No matter how much you audition, question, and prepare, hope may spring eternal but reality can still snap back in your face.

This time, however, the listening experience both met and actually exceeded my hopes. The speakers came one morning—all 770 pounds worth—in large crates with a total of six modules (three per channel), hardware, and with more than a few special set-up tools and instructions. Fortunately, I had the same help that every other buyer will get. JS Audio (Wilson Audio's dealer in the Washington, D.C., area) uncrated the Alexia, moved them in, and provided expert installation. In my case, I also worked with Peter McGrath, Wilson Audio's Sales Manager, who provided some additional setup.

The Alexia system was uncrated, assembled, and more or less in place within two hours. The result was stunningly close, in my experience, to listening to Wilson's far more expensive models.

The first thing I noticed was a soundstage width with good centerfill and depth. This came as a bit of shock since I really didn't believe Peter McGrath's initial setup would work. It seemed too wide to really lock in and provide a coherent stage. As it turned out, however, it was immediately apparent that the centerfill was solid in spite of the space between the two speakers, and that the soundstage was exceptionally detailed in imagery and depth.

This performance tracks closely with Wilson's claims about the merits of precise time alignment and Aspherical Propagation Delay. Wilson Audio describes this technology as follows:

"Independent research has demonstrated people are easily able to detect the sonic effects that result when the leading edge of transients from multiple drivers are misaligned in the time domain. In fact, listening trials have shown that timing errors on the order of 20 millionths of a second are readily discernable to the ear. In musical terms, this translates into loss of focus, speed, transparency, and timbral accuracy. In other words, music sounds discernibly less real. Surprisingly, few loudspeaker designers are concerned with precise time alignment, and even those who are can, because of their cabinet designs, only align the drivers for one fixed listening distance and ear height. Wilson Audio has long recognized the only way to build a loudspeaker capable of accurate time alignment in any number of listening environments is to offer both midrange and tweeter adjustability relative to the woofers. Furthermore, by allowing rotational adjustment on the polar axis, the dispersion of tweeter and midrange can be optimized for a wide range of listening positions and room types. Prior to Alexia, this ability (which we call Aspherical Propagation Delay) has only been available on our largest loudspeakers, namely, the Alexandrias. Anyone familiar with MAXX will recognize the unique brass 'stair step' now duplicated on the Alexia, an integral part of its Aspherical Propagation Delay system. And with its compact profile, Alexia now makes the most precise and adaptable time alignment a reality for even the most intimate listening spaces."

Aspherical Propagation Delay may be a bit of a mouthful, but it is one audio coinage that really pays off in sound quality. I'd heard Wilson loudspeakers do an exceptional job of imaging and provide exceptional coherence and transparency before, and my experience made me give these claims enough credence to chose the Alexia over Wilson's lower-priced speakers and a wide range of competing brands. However, it is one thing to hear a great demonstration from a top-of-the-line speaker in a large demonstration room and quite another to hear it from a moderately-sized speaker at home in a room with a system you live with.

In practice, hope turned into a reality almost instantly. It took only a couple of minutes of listening to hear that Wilson has come a long way from the early days when the benefits of its time alignment were only apparent in a relatively narrow listening area. This is nothing like a one person, head-in-a-clamp speaker. The best listening area is about a seat-and-a-half wide and deep, but the overall area for good listening is exceptionally wide and surprisingly deep. This is a speaker for audiophiles who have spouses, partners, families, and/or friends (or competitors).

After several days of intense listening, the Alexia's merits became even clearer. You get stable timbre and good imaging on any form of music from solo piano and violin to complex chamber music and acoustic jazz recordings. The Alexia unravels the most demanding orchestral music, revealing both clear imaging and hall ambience characteristics. The drivers are exceptionally well integrated at almost any meaningful listening angle. The new tweeter is both sweeter and more musically accurate than what I have heard from earlier Wilson tweeters. It also seems to have smoother and better dispersion. Add to this an equally good midrange.

### SPECS & PRICING

**Driver complement:** 10" woofer, 8" mid/woofer, 7" midrange, 1" dome tweeter

**Loading:** Rear-ported

**Frequency response:** 20Hz-32kHz +/-3dB

**Sensitivity:** 90dB/1W/1m

**Nominal impedance:** 4 ohms (2 ohms at 80Hz)

**Minimum amplifier power:** 20Wpc

**Overall dimensions:** 53" x 15" x 21"

**Weight:** 256 lbs. each

**Price:** \$47,500 per pair

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## EQUIPMENT REVIEW - Wilson Alexia

Peter McGrath of Wilson also showed me during the setup of the Alexia that Wilson's emphasis on precise time alignment is not hype. Once he fully adjusted each driver section of the speaker, he then showed me what happened to the sound when the tweeter was altered by even one small adjustable step. I could hear the sound focus change, and go slightly soft. The ability to alter the time alignment of both the midrange and tweeter made a major difference.

The second discovery I made was that the Alexia provided both extraordinary detail and exceptional dynamic range. Don't get me wrong, the Legacy Aeris—and my previous Vandersteen 5 Carbons—are no slouches in this regard, but the Alexia doesn't simply play loud. This loudspeaker can reproduce the details of full-range dynamic contrasts to a degree I never before heard from any speaker this size and they don't compress or distort at really high listening levels.

Moreover, the Alexia is just as good with low-level details. This exceptional ability to handle the loudest and most complex musical material is matched by equally extraordinary low-level musical realism. If you love solo instruments—guitar, piano, violin, whatever—you are going to find that the Alexia provides a level of clarity that matches the best planar and electrostatic drivers from the highest frequencies through the lower midrange to the midbass.

If you get the chance to audition them, just bring in the most musically detailed and dynamic recording you own. Listen for a combination of detail, dynamics, and transparency without any trace of hardness as you increase the volume. Try this with your best solo piano, violin, or acoustic guitar recording. The resulting transparency and

realism are immediately exceptional.

Moreover, in terms of practical listening, the Alexia does not push you to pick and choose between given types of good recordings or fail to be musical when the performance is far better than the recording. I now have more than 9000 albums on my Sooloos, plus a substantial number of direct digital recordings on my computer. I also have many SACDs, and a substantial LP collection. Some speakers have trouble resolving the latest and most detailed digital recordings and in coping with their dynamic ranges. Others seem to demand the best recordings to give them life. The Alexia performed well with every type of recording, and you do not need to trade Rubinstein for the latest young pianist or vice versa.

As for the lower bass, this was an area where I do have some caveats. Cabinet size and sheer speaker radiating area still matter when it comes to moving air, providing really deep bass at high volumes, and producing bass detail. My Legacy Aeris has two subwoofers with individual 500-watt amps in each loudspeaker. They do go lower, and deep bass really matters. It not only matters when you feel a desperate desire for escape into hearing deep bass move the room during sonic spectacles, but in also establishing ambience—a true sense of the hall when that data are on the recording—and in “framing” your music in a realistic context through the reproduction of subtle low-level sounds in the deep bass.

The sacrifice in ultimate deep bass energy, however, proved to be much less important than I anticipated. I was lucky enough to have two really superb high power amps in for review—the AVM SA8 and the Pass Labs Xs300s—at the time the Alexia came in, along with my reference

Pass Labs XA160s. I also had a set of the latest Transparent Audio Reference MM2 interconnects and speaker cables that were specifically adjusted to the impedance and other characteristics of my electronics as well as to the load of the Alexia.

This setup showed the Alexias are not as extended in the deep bass region as the Legacy Aeris or Wilson's larger speakers, but they come damn close both in musical listening and measurement using a wide variety of bass test tones and two different sets of FFT and RTA measurement systems and mikes. Moreover, the Alexias are a speaker for real-world listening rooms. They worked beautifully when placed well away from the sidewalls and near the rear walls in my listening room. They have a surprisingly flat response down to around 34-37Hz, going much deeper with a slow roll-off, with audible and measured power to below 30Hz.

With the right setup and listening position, they proved to be far flatter in the deep bass throughout my entire listening room than all but a small handful of the speakers that have come and gone over the years. Nothing is ever free of room coloration in the bass, but the Alexias not only measured very well, but had minimal standing-wave interactions and their enclosures were nearly inert at test-tone volumes and were doing just a fine job of locating every area of resonance in very solid plaster and lath walls.

I should also note that I found that the Alexias did an excellent job of preserving low-frequency output at high volumes. I ran through my usual organ spectacles, Saint-Saëns, low bass drum in Mahler, Telarc bass drum spectacles, synthesizer, and bass guitar, and the Alexias consistently were exceptional for any speaker

their size in both power and detail. There are a lot of speakers that have extended frequency range into the deep bass at limited power and with limited output. The Alexias are not actively amplified in the subwoofer region like the Legacy speakers, but they do move a lot of deep bass air and they move it cleanly below 35Hz even at really high volumes.

Do I have any caveats beyond the deepest bass? No, not really. I can't tell you the Alexias will perform as well in your room as they did in mine. I am also a bit dubious about Wilson saying they can be used with amplifiers with a minimum of 20W of output power. That is a bit too optimistic. They are high in sensitivity, and a friend's low-power tube amp was very musical, but even a borrowed McIntosh MC-275 with 75 watts per channel could not provide the same deep bass energy and control as really high-powered, high-current solid-state amps.

This doesn't mean that moderate to high-powered tube amps won't work with the Alexias or won't have their own merits. I had my usual reaction to the best tube amps and felt the McIntosh amplifiers offset any deep bass problems with their performance in the rest of the audio spectrum. Nevertheless, I'd recommend that you use the Alexias with high-power, high-current amplifiers if you want the most magic they can provide in the deep bass and with truly loud, dynamic passages of music. They present a moderately difficult load at low frequencies, where their impedance drops to 2 ohms at around 80Hz.

I also would recommend you experiment with different cables. It had been a while since I had heard the Transparent Audio interconnects and

## EQUIPMENT REVIEW - Wilson Alexia

speaker cables, and as the sidebar attached to this review shows, I also had never tried cables tailored to my specific system. They did, however, perform superbly, and better in this particular system than my reference AudioQuest and Kimber.

The audible differences between really good interconnects and speaker cables are relatively subtle compared to the differences between most active components. And yet, a combination of the EMM Labs XDS1 DAC and SACD player, Pass Labs XP-30 preamp, Pass Labs Xs300 amps, and the tailored Transparent Audio reference MM2 interconnects did have a special magic my other interconnects could not provide in this system. Put more simply, the Alexias are extremely revealing, and you will hear the differences between speaker cables.

Finally, I do have one criticism of the Alexias. Like all of the top speakers I've used and reviewed, I really wish their sound and technology could be available at much lower prices. I've had more fun with the Wilson Alexias and Legacy Aeris—and in exploring their radically different characteristics and merits—than I've had with audio in a long time.

The Alexias are also superbly styled and finished and get around the décor issue better than the vast majority of speakers with anything like their performance. I can see how difficult they are to manufacture and how much sheer work goes into providing the capability to make such precise time alignments. But I do hope Wilson Audio will find some way to make most of their performance available at a lower price. These are great speakers and a musical adventure I wish that everyone could share. **tas**

## The Transparent Audio Reference Series Interconnects and Speaker Cables

Let me stress that my experience with the Transparent Audio cables and the Wilson Alexia is not the result of some cable comparison or shootout. My Kimber Kables are not Kimber's latest product, and my AudioQuests were balanced around a different system using the Vandersteen Carbon loudspeakers. As any experienced audiophile knows, the differences between great cables are usually subtle and their merits vary by component, system, and the listener's taste. Moreover, there is no credible way that a reviewer who does not actually make and test the sonic results of different cables can validate the technical claims manufacturers make about the merits of given materials and designs.

At the same time, I was impressed enough with the Transparent Audio cables to ask what was involved in the "tuning" of the cables to the system to get a clearer idea of why they performed so well. Josh Clark, Transparent Audio's Lead Product Designer and Operations Manager didn't give away any proprietary data, but he did provide the following background.

"Our Reference Series cables are custom built to perfectly match the customer's system. We ask what components the cables will be connecting so we can insure that the terminations will fit properly. For example, on the Reference MM2 speaker cables we sent to you we specified bent spades with the positive spade on the left side to match the binding posts on the Wilson Alexia.

"Another aspect of custom specification is

the network calibration. Our networks take into account the output and input impedances of the components they are connecting to achieve ideal filter characteristics. Our Reference Series cables are calibrated to a very close tolerance and are individually adjusted to achieve the same Reference Standard filter characteristics with any combination of components regardless of their impedances. This provides an added edge of performance as compared with our Premium and High Performance Series cables below the Reference level that are less accurately calibrated so they will work with a wide range of impedances. When a customer changes components we will adjust and recalibrate his Reference Series cables at no charge.

"The network modules on our audio cables contain a passive electronic network that addresses three fundamental problems in audio cables:

"First, audio cables have excessive ultra-high-frequency bandwidth which makes them act as antennas for radio frequency noise. A typical non-networked audio cable in a typical length has a bandwidth of over a billion cycles. Our network provides a low-pass filter function, which rejects the RF noise frequencies above one million cycles to keep this noise out of the audio signal path. Some sonic results of the reduced noise levels are less glare or grain in the upper audio frequencies, where the effects of RF noise are particularly noticeable, an increase in dynamic range, and a

better perception of low-level information in the music, such as recorded reflections of sound in an acoustic space which allow us to imagine that space in our listening room.

"Second, audio cables transmit the upper audio frequencies more efficiently than the lower audio frequencies. Cables are naturally more capacitive below about 2.5kHz, which causes them to slightly restrict the frequencies below this point. We correct this problem by carefully adjusting the levels of capacitance and inductance in the cable with our network. This allows for an unrestricted transfer of the critical midrange and bass frequencies, where nearly all musical instruments produce their fundamental tones, keeping them in proper proportion with the upper audio frequencies where the harmonics of these fundamental tones occur. Audio cables without networks tend to skew the tonal balance upward and to our ears overemphasize the harmonics of musical instruments.

"Third, the electrical properties of a cable change with length. Inductance, capacitance, and resistance all increase as the length of the cable increases. We can compensate for these changes with our network to achieve the first two goals above and make any standard length of cable achieve essentially equal sonic performance. Every length of Transparent audio cable has a network that is tailored to that particular cable at that particular length."

# OUR TOP PICKS FLOORSTANDING LOUDSPEAKERS OVER \$10,000



## MartinLogan Summit X

\$14,995

A hybrid electrostatic and a technological triumph. A Curvilinear Line Source is coupled to an active bass system, which includes a pair of 10" aluminum cone woofers and two 200W Class D amplifiers. Expect bass extension to 20Hz with plenty of slam and no discontinuity at the crossover. Exceptional soundstage transparency is also on tap with traditional ESL transient speed and detail resolution. Tonal balance is slightly on the lean side. Its capacitive impedance mandates a solid-state amplifier with a high damping factor for accurate treble reproduction.

[www.martinlogan.com](http://www.martinlogan.com) (209)



## German Physics Unlimited Mk. II

\$13,500

Though technically the single bending-wave-driver Unlimited Mk. II is German Physiks' entry-level speaker, there's nothing entry-level about this "king of the bending wave." With superb midrange resolution, the Unlimited II easily reveals the ebb and flow of low-level detail. Having no upper-midrange crossover to get in the way, the U2 is also most felicitous with female voice, while transients are clearly elucidated with plenty of speed. And with in-room bass extension down to a respectable 40Hz, the U2s will do power music plenty of justice, too.

[www.german-physiks.com](http://www.german-physiks.com) (240)



## Legacy Aeris

\$18,500

The Legacy Aeris sports an extraordinary blend of drivers and cabinet design matched to advanced electronics that provide room compensation and the ability to add a wide range of equalization settings for given types of recordings. It has outstanding performance at every frequency to the limits of hearing and beyond. Add in excellent definition, dynamics, and a visual image that might win it an entry in New York's Museum of Modern Art. It has built-in 500W subwoofer amplifiers that provide powerful, room-filling bass deep with a crossover low enough so that you can still get the best sound out of your regular power amplifier. The mix of other drivers provides a coherent and naturally detailed soundstage, as well as enough dipole radiation to widen the stage and give more natural ambience. The electronics and software allow its response to be adjusted to be as musically realistic as possible in any real-world listening room. There are up to 30 settings to adjust its response to given types of recordings and partly correct for the response problems in older recordings, over-bright close-miked recordings, and even—if you are fanatic enough—the different equalization curves in LPs.

[www.legacyaudio.com](http://www.legacyaudio.com) (235)



## Acoustic Zen Crescendo 2

\$18,500

This superb three-way, five-driver, transmission-line speaker is wonderfully well designed, remaining tonally balanced and neutral from the bass through the midrange. Its quasi-ribbon tweeter is also a winner, singing sweetly and with convincing textural purity. High sensitivity and a flat impedance curve make the Crescendo 2 very friendly to low-powered tubed amplifiers, including SETs. Reviewer Dick Olsher's favorite box speakers under \$30k.

[www.acousticzen.com](http://www.acousticzen.com) (229)

# OUR TOP PICKS FLOORSTANDING LOUDSPEAKERS OVER \$10,000



## Sony SS-AR1

\$20,000

This slightly smaller brother of the AR1 shares the same extraordinary craftsmanship and attention to details of the AR1, in materials, with different woods used for the front (exceptionally hard Hokaido maple) and sides (more flexible birch to give life to the sound)—a cabinet more reminiscent of a musical instrument than an industrial product. This is combined with drivers of the highest quality—and high technology, the whole being a blend of artistic creativity and technological sophistication. The speaker has a slightly midrange-oriented, presence-range-recessed balance apparently intended by designer Yoshiyuki Kaku to sound as natural as possible on the human voice, rather than pursuing resolutely any kind of numerically perfect flatness. The SS-AR2, while smaller and less extended in the bass than the AR1, even so remains satisfying on large-scaled music. And it has surprising dynamic capability for a speaker of moderate size. It's a work of art in speaker design, if not quite the equal of the highly remarkable AR1.

[www.sony.com/ar1](http://www.sony.com/ar1) (229)



## Rockport Atria

\$21,500

The Atria is another one of those entry-level speakers with nothing entry-level about it. Incorporating some of the best qualities of master speaker designer Andy Payor's flagship models, the Atrias rival many of the high end's finest speakers, without the six-figure price tag. Fast, resolving, and extended, yet somehow simultaneously forgiving, the Atrias are just plain happy to make music. One of the best speakers reviewer Alan Taffel has heard.

[www.rockporttechnologies.com](http://www.rockporttechnologies.com) (241)



## Von Schweikert Audio VR-44 Aktive

\$25,000

The new VSA VR-44 Aktive (90dB/8-ohm) is a high-performance speaker made for tube-lovers. A four-way, single-cabinet design with a chamfered front baffle, the VR-44 uses a quasi-transmission-line that incorporates new VSA technology in cabinet-wall construction and OEM Scandinavian drivers. It also features self-powered woofers. GH found the approach inventive and the sonic results completely elegant. The VR-44 Aktive produces a bold, expressive beauty along with the capacity for delicate nuances within an impressive soundstage. Highly resolving with fantastic extension at the extremes, the speaker achieves wondrously saturated yet natural tones on instruments ranging from orchestral strings to jazz saxophones and vibes. It works equally well with both vintage and contemporary tube amps of 40W–100Wpc.

[www.vonschweikertaudio.com](http://www.vonschweikertaudio.com) (230)



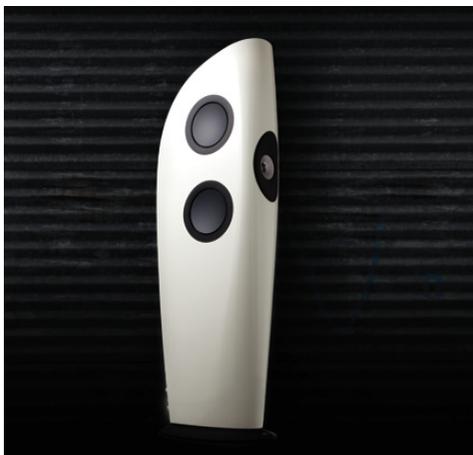
## TAD Evolution One

\$29,800

The Evolution One is the first model of a new loudspeaker series descended from TAD's Reference line. But in spite of some modest economizing, the Evo One carries over the same exemplary performance and sacrifices little to its more expensive siblings. Thanks to the brilliance of the CST coincident midrange/beryllium tweeter, sonics remain incisive and transparent, aligning and stabilizing musical images in space in the same way a Leica crisply freezes an instant in time. It's a veritable showcase for full-spectrum dynamics with a particular appetite for orchestral and big band music. Bass response is propulsive, extended yet precisely measured with virtually no drop-offs or flat spots in the power range. NG has heard the E1 in many venues since his original review and it still makes every moment a special occasion.

[www.tad-labs.com](http://www.tad-labs.com) (229)

# OUR TOP PICKS FLOORSTANDING LOUDSPEAKERS OVER \$10,000

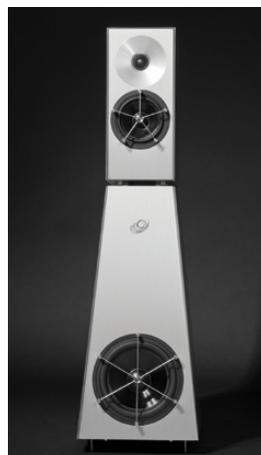


## KEF Blade

\$30,000

KEF's Blade is a sonic, technological, and industrial tour de force. KEF strove to prove that a true full-range point-source speaker was not only possible, but that such a design would deliver on its theoretically predicted benefits, including coherence akin to a single-driver speaker, uniform room dispersion at all frequencies, and low coloration. The Blade realizes these ideals—and then some—with steadfast imaging, balanced tonality regardless of listening position, astounding detail and dynamic resolution, and vanishingly low distortion in both the frequency and time domains. Musically, the Blade is glory itself. Its rhythms sweep you along, its dynamics can by turns move and stun you, its resolution informs you, its timbres transport you, and its clarity makes delineating musical lines child's play. Though advanced in every respect, the Blade is an instant classic destined to influence many speakers to come.

[www.kef.com](http://www.kef.com) (222)



## YG Acoustics Kipod II Signature Passive

\$38,500

Reviewer KM found this revised version of the WATT/Puppy-like, three-way Kipod (now with a passive, as opposed to integrally amplified, woofer module) to be an exceptionally impressive performer. Detailed and musically engaging it allows him to traverse his music collection with unrestricted pleasure, no matter what kind of music he played. With state-of-the-art mini-monitor-like resolution and soundstaging, coupled with a dynamic and frequency envelope a mini would envy, the Kipod II Signature Passive offers something KM had all but given up hope of finding: a high performance, full-range speaker in a package skillfully scaled to fit in smaller rooms.

[www.yg-acoustics.com](http://www.yg-acoustics.com) (236)



## Wilson Alexia

\$48,500

Named *The Absolute Sound's* “Ultra-High-End Loudspeaker of the Year,” the Wilson Alexia only adds to Dave Wilson's reputation for making some of the very best transducers on the market. The smallest and most affordable Wilson loudspeaker to incorporate the company's Aspherical Propagation Delay, the Alexia is by no means diminutive in size or sound quality, reminding reviewer Jacob Heilbrunn of Wilson's mighty \$200k flagship, the XLF, which JH owns.

[www.wilsonaudio.com](http://www.wilsonaudio.com) (238)



## Vandersteen Model 7

\$52,000

For three decades Vandersteen Audio has built affordable, no-nonsense loudspeakers. Pushing the edge of the art was not in its playbook—until the Model 7. This is a world-class component competitive with any loudspeaker regardless of price. Using innovative carbon-fiber-clad balsa-wood drivers, the time-and-phase-coherent Model 7 exhibits breathtaking clarity and resolution. The midrange and treble are seamless, devoid of tonal colorations and free from grain. Music's spatial aspects are beautifully rendered, with correct image size. Bass is deep and powerful, courtesy of a powered 12" woofer, with extensive adjustments to integrate it in-room. The low 84dB sensitivity mandates a substantial power amplifier, and, even then, the Model 7 won't play at really loud levels the way other flagship loudspeakers do.

[www.vandersteen.com](http://www.vandersteen.com) (206)

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**David Wilson, Founder, Wilson Audio Specialties**

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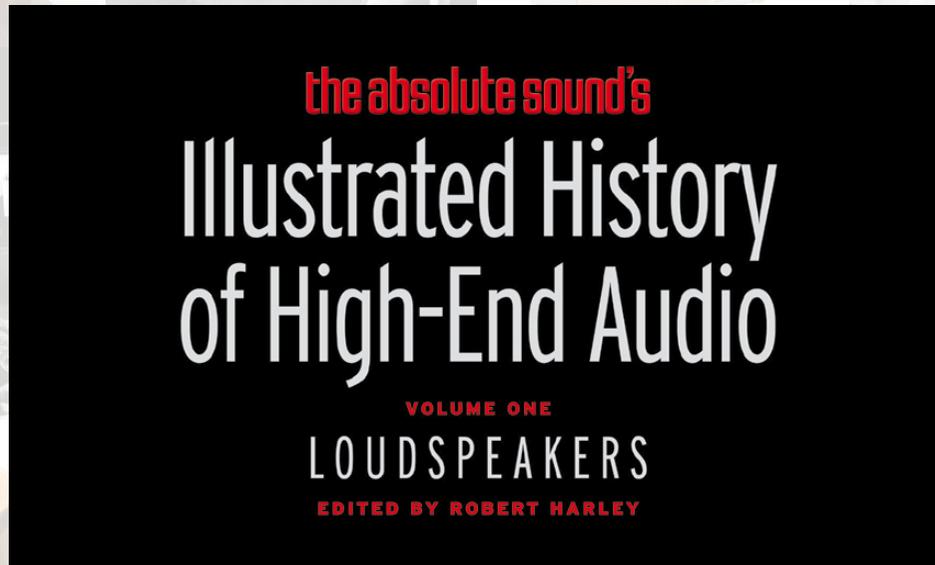
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