

# GUIDE TO HIGH-PERFORMANCE LOUDSPEAKERS



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A woman in a white dress is captured in a dynamic, mid-air pose, her hair and dress flowing as if caught in a heavy rain. The background is dark, with raindrops visible as bright streaks. The overall mood is one of movement and sensory immersion.

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# GUIDE TO **HIGH-PERFORMANCE LOUDSPEAKERS**

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# FROM THE Editor

## The Last 10%

**I'm often asked by readers to name the single best speaker in a particular price range. In just the last week I've been asked for my pick of the foremost performer under \$2000 a pair, as well as by another reader for a list of the five best speakers in the world, cost-no-object.**

**If only it were that easy.**

You should shop for a loudspeaker the way you would shop for clothes: One fabric, style, weight, color, and pattern cannot possibly suit all buyers. In theory, of course, loudspeakers should be nothing like clothes; the speaker should merely faithfully convert the electrical input signal into sound with absolutely no variability between models. In this ideal world, the more expensive loudspeakers just provide higher resolution, deeper bass, wider dynamics, and the ability to play louder. Taste and personal preference would play no role in decision-making.

But that theoretical ideal is far from reality. Putting aside the need to match a loudspeaker's electrical characteristics to those of the power amplifier that will be driving it, all loudspeakers are flawed in one way or another. Your job is to choose the speaker whose flaws are least objectionable *to you*. If you value midrange realism, palpability, and transient performance above all else, you might consider an electrostatic or ribbon speaker. You'll give up some bass extension and dynamics, but that tradeoff is worth it. On the other hand, if you value a visceral sound with a more powerful bass presentation and wider dynamics, a full-range electrostat or ribbon wouldn't be your first choice. These are gross simplifications; the range of subtle (or not-so-subtle) variations in loudspeaker performance is as wide as the spectrum of products on the market.

That's why there's no right answer to the question "What's the best \$1500 speaker?" The answer will be different for each listener's room, amplification, musical tastes, and sonic priorities, not to mention how the loudspeaker fits into a home's décor.

But you're not entirely on your own in figuring out which speaker to buy. *The Absolute Sound* is here to sort through the literally thousands of choices on the market, narrow down a selection for review (a filter that weeds out the vast majority of mass-market junk), and create a relatively short list of those speakers worthy of your consideration. The loudspeakers we recommend in this Buyer's Guide are the *crème de la crème* of the broader market, and each will produce glorious music in the right system for the right listener.

This is where you come in. We can scour the globe for what we think are the very best sounding speakers in every price range, but that last crucial step of actually picking the speaker is up to you. The product you choose will be your conduit to the world's great legacy of recorded music for many years to come. Don't think that someone else, no matter how experienced or informed, can make that crucial judgment for you. We can get you 90% of the way toward finding a loudspeaker that will bring beautifully reproduced music into your home night after night, but that last 10% is up to you. Trust your ears, choose well, and enjoy.

—Robert Harley

*Click here to turn the page.*

## ON THE HORIZON

# Hot New Loudspeakers Coming Your Way

Neil Gader



### KEF LS50

As part of its 50th Anniversary Celebration, KEF has introduced the LS50, a studio-quality mini-monitor loudspeaker. The LS50 pays homage to KEF's legendary LS3/5a monitor, while incorporating KEF latest technologies in an eye-catching high-gloss piano-black cabinet with an elegant rose gold Uni-Q driver. The cabinet features constrained-layer damping to reduce resonances, while the baffle shape has been optimized for smooth on- and off-axis dispersion as well as incorporating a ribbed rear surface to reduce cavity resonance at the back of the driver. Even the port has been optimized using computational fluid dynamics to offer lower turbulence at high levels. These details, combined with the dedicated Uni-Q driver, featuring damped Mg/Al alloy LF/MF cones and a rear-vented HF unit, provides superior clarity, definition, and imaging from the small enclosure.

**Price: \$1499. [www.kefdirect.com](http://www.kefdirect.com)**

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Awards

"I can count on the fingers of one hand the number of speakers on the market which are as good as the Focus SE."

- Peter Vercher, *Stéréo Prestige*

"Listening through the Focus SE is a very simple thing: it's the difference between listening to a recording, and being there. Once you've heard how good it can be, it's hard to go back."

- Dave Upton, *Home Theater Shack*



"...a masterpiece at its price point.  
Recommended without reservation!"

-D. Schroeder, *Dagogo.com*

"the LEGACY Focus is the finest value that I have ever encountered in high-end audio."

-Paul Bolin, *Stereophile Magazine*

"In both appearance and performance, these speakers set a high standard and offer excellent value."

-Karl Nehring, *Audio Xpress*

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## ON THE HORIZON

### Magico S1

Offering Magico performance at a previously unattainable price point, the S1 is the most versatile and accessible Magico to date. Continuing the legacy of the famed Mini the S1 features a uniquely contoured cabinet that draws liberally from the Mini and M6. The S1 utilizes the world's first monocoque chassis—an extruded aluminum loudspeaker enclosure that minimizes diffraction effects, internal resonance, and damping requirements. The floorstander is a two-way incorporating an all-new 7" Magico Nano-Tec midbass that utilizes a dual-neodymium underhung motor system with pure titanium voice-coil former. It combines power and efficiency with vanishingly low distortion. The beryllium tweeter is the same unit found in the S5. The S1 clocks in at 43" tall and weighs 95 pounds. At only 9" inches deep the S1 will fit into any environment. It's available in an array of Magico's new M-Coat paint. **Price: \$12,600. [www.magico.net](http://www.magico.net)**



### Monitor Audio GX50

Don't be fooled by the graceful, sculpted low-diffraction cabinet of the diminutive GX50. It houses some serious internals including a single 5.5" RST bass driver and C-CAM ribbon transducer capable of 60kHz extension, a leader in its class. The bass driver exhibits the low-frequency extension and power handling of a much larger driver, while HiVe port technology offers better transient response and tighter bass. Also featured are single bolt-through driver fixtures for improved bracing, rigidity, and driver/baffle de-coupling, plus die-cast-alloy terminal panel with high quality bi-wire terminals and high-end spade-type links. Crossover circuitry is linked via Pureflow silver internal cabling. Construction is 20mm MDF throughout, employing radial and cross-bracing techniques for high rigidity resulting in low cabinet coloration. Selected premium quality wood veneers or high-gloss piano finishes.

**Price: \$1800. [www.monitoraudio.com](http://www.monitoraudio.com)**



### Martin Logan Motion 15

The Motion 15 is the smallest member of the Martin Logan Motion Series and matches the smooth aesthetic and voicing of ML's stereo and cinema lineup. The enclosure features rounded edges, a gently tapered top, and high-gloss finishes. Motion 15 combines a single 5.25" high-excursion, black-aluminum cone woofer and low-turbulence, rear-firing, bass ports, plus MartinLogan's 1" x 1.4" Folded Motion tweeter for persuasive dynamics, focus, and transparency. Premium five-way binding posts assure a solid connection. Internals are first-rate with custom air-core coils and low DCR steel-laminate inductors—plus polypropylene film capacitors in series and low DF electrolytic capacitors in parallel. Frequency response measures out at 60Hz–25kHz. The Motion 15 is rated at 92dB sensitivity.

**Price: \$799 [www.martinlogan.com](http://www.martinlogan.com)**



## ON THE HORIZON



### PSB Alpha PS1

The Alpha PS1 is designed for today's music fan who enjoys his musical experience almost exclusively from the computer, game console, or smartphone. Aimed squarely at the "nearfield" environment of the desktop environment, the PSB Alpha PS1 includes a highly efficient 2 x 20W power amplifier, thus creating a full-range powered music system. Offering simple plug-and-play connectivity, Alpha PS1 is also a great sonic upgrade for any device with a headphone output. It also features a subwoofer output for additional flexibility. Its driver complement is a 3.5" metalized polypropylene cone with oversized magnet structure paired with a 1" aluminum tweeter. The universal power supply works with any AC voltage making it convenient for world-travelers. Its compact dimensions allow maximum internal volume for impressive bass response, yet the PS1 is small enough to be placed easily on a desktop.

**Price: \$300. [www.psbSpeakers.com](http://www.psbSpeakers.com)**



### Revel Performa3 F206

The Performa3 line from Revel is its most advanced Performa yet with ten models to cover virtually any room size. Pictured beside the larger F208 is the sweet spot of the line, the F206 is a three-way floorstanding tower equipped with a 1" tweeter, 5.25" midrange, and dual 6.5" woofers. The drivers are proprietary throughout. The aluminum-dome tweeter operates into an exclusive Acoustic Lens Waveguide that is precisely shaped for optimum imaging and dispersion both on- and off-axis. The midrange and low-frequency drivers use cast-aluminum frames and high-power motor structures and aluminum cones with integral ribs for added strength and rigidity. Internal components include air-core inductors and audiophile-grade polypropylene capacitors in the crossover network, and heavy-duty gold-plated binding posts. Depending on the model, a tweeter level-control fine-tunes high-frequency balance, while a boundary control tailors the speaker to individual room acoustics and placement positions. The enclosures feature robust internal damping and bracing, and the larger models feature individual sub-enclosures for the midrange drivers. **Price: F206, \$3500; F208, \$5000. [www.revelspeakers.com](http://www.revelspeakers.com)**

### Sonus faber Venere Model 1.5

The Venere 1.5 is a bookshelf speaker characterized, like all models in the Venere range, by its lyre shape. The unique construction of the cabinet, a tribute to Sf's flagship model Aida, provides a solution to the problem of internal spurious resonance thanks to its aerodynamic profile. The front port makes placement in the environment easier and enhances the potential of the drivers, generating sound that is fast and detailed. The sloping front baffle allows for perfect time-alignment. Particular attention was given to the floor stand (optional), with its tempered glass base and adjustable aluminum spike feet providing fluidity of style and functionality allowing for effective coupling to the floor. Like each model in the Venere family, the Model 1.5 is suitable for use in either two-channel, multichannel, or home-theatre systems.

**Price: \$1198 (\$398 for stands). [www.sumikoaudio.net](http://www.sumikoaudio.net)**





## ON THE HORIZON



### ← TAD Evolution One

The TAD Evolution One stakes out the crucial middle ground between the vaunted Reference One and its stand-mounted little brother the Compact Reference or CR-1. Similar to its Ref cousins, it's a three way bass-reflex design, with a CST coincident mid/tweet transducer (a TAD staple). The key difference in the Evolution One's CST is that while the tweeter remains beryllium (formed by TAD's proprietary deposition technique), a magnesium midrange diaphragm now stands in for the Ref's all-beryllium midrange cone. The twin 7" bass drivers use a laminate of Aramid fibers and a non-woven material for its diaphragms. The enclosure is a muscular framework of birch-ply combined with MDF for high strength and low resonance. A curvilinear rear panel further reduces resonances. The crossover network is fully isolated within a high-rigidly aluminum plinth at the base of the cabinet. Sensitivity is rated at 88dB; impedance is 4 ohms nominal. At the back are specially developed bi-wire terminals, machined from brass and mounted on an aluminum plate.

**Price: \$29,800. [www.tad-labs.com](http://www.tad-labs.com)**



### ↑ Thiel Audio CS2.7

The latest from Thiel Audio is the CS2.7, a 3-way floor standing loudspeaker. Developed to bring the engineering innovation and sonic advantages of the CS3.7 to the under-\$10k category, it employs the coincident tweeter/midrange driver, widely considered an engineering masterpiece and pioneered in the company's flagship model, the CS3.7. The CS2.7 also uses a short-coil/long-gap 8" woofer coupled to a passive radiator for fast, accurate bass response. The cabinet is engineered from the ground up using bent plywood sidewall technology also adapted from the CS3.7, as well as carefully engineered internal bracing to minimize cabinet resonances. A completely new first-order phase-and-time-coherent crossover network has been designed—a signature of the Thiel brand for over 30 years. Stunning industrial design elements accent the traditional sloped Thiel baffle and real wood veneers.

**Price: \$9900. [www.thielaudio.com](http://www.thielaudio.com)**

# How to Choose a Loudspeaker

Excerpted and adapted from *The Complete Guide to High-End Audio*. Copyright © 1994–2012 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

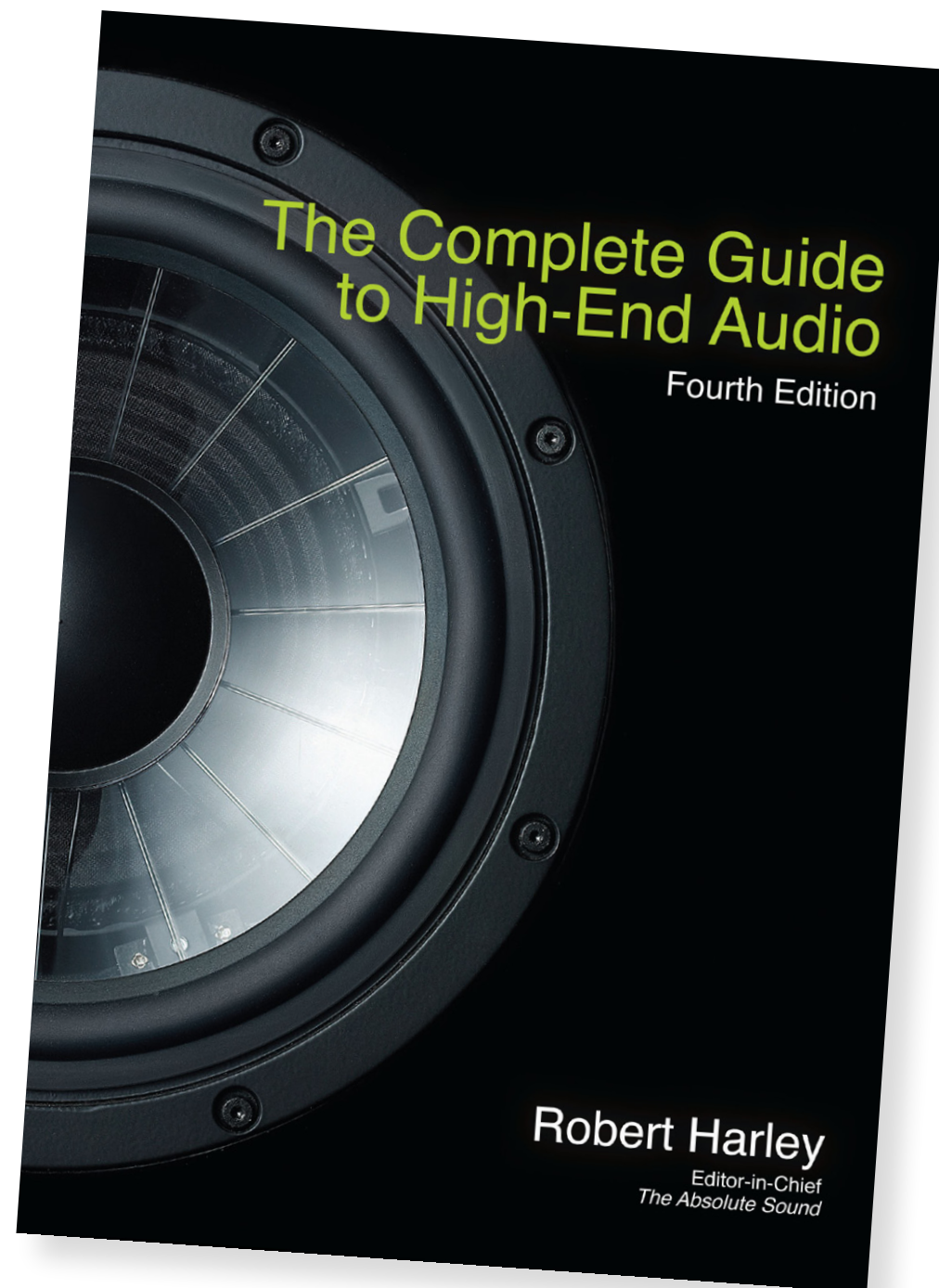
from among the literally thousands of models on the market. As we'll see, choosing loudspeakers is a challenging job.

## 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 of underachievers. Of the



## How to Choose a Loudspeaker

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 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 many audiophiles drive great loudspeakers with mediocre source components and never realize their loudspeakers' potential. Match the

## How to Choose a Loudspeaker

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

diagnostic recordings. Characterize the sound quality according to the sonic criteria described in Chapter 3, and later in this chapter.

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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## EQUIPMENT REVIEWS

# Stand-Mount and Desktop Loudspeakers



# Focal XS Book Powered Loudspeaker

## Desktop Delight

Steven Stone

**F**ocal makes some of the most expensive speakers in the world. Many of its flagship models have been reviewed in these pages over the years. But the XS Book is at the opposite end of the Focal product spectrum—it's currently Focal's least expensive powered speaker. Priced under \$400 and styled for the computer-audio market, the XS Book looks more like a lifestyle product than a serious piece of audiophile gear. Sure, it's from Focal, but how good could it be? Let's find out.

### Technical Description

The diminutively sized 11" x 7.9" x 4.5" XS Book includes its own built-in 20-watt amplifier, which drives both its .748" aluminum dome tweeter and 4" polyglass midrange/woofer. Using a bass-reflex design, the XS Book has one large oval front-firing vent located at the bottom of the front baffle of the speaker. The crossover point between the two drivers is 3kHz, and the published low-frequency "point" is 44Hz. Overall frequency response is listed as 50Hz–22kHz +/-3dB.

Rather than the usual rectangular wood box, the XS Book has a curved metallic-finished cabinet that includes provisions for accepting an OmniMount AB2 system for wall or ceiling mounting. Its color matches the silver finish on a Mac Mini. The speaker grilles are removable, but I suspect that most users will keep them on since they integrate so well with the cloth inserts on the top of the speakers.

Focal began as a manufacturer of raw drivers, so it should be no surprise that both drivers in the

XS Book were designed and built by Focal. The dome tweeter, situated behind a single vertical protective column, looks more like a fabric tweeter than a metal one because it's black (and matches the color of the front baffle.) The long-throw mid/woofer uses a special soft dome dust cover that features the Focal logotype molded into its surface.

### Setup and Ergonomics

Because the XS Book is a powered loudspeaker, it has different inputs than a passive speaker, which would require an outboard power amplifier. The rear of the right XS Book speaker (they come in mated pairs) has one pair of RCA single-end inputs and one 3.5mm mini-jack stereo input. It also has a single RCA jack to run to the left-hand speaker and an AC power connection. The top of the right-hand XS Book has a single rotary volume/on-off control with a small light below it. The left-hand XS Book has only a single RCA input for the signal from the right-hand speaker.



## EQUIPMENT REVIEW - Focal XS Book Powered Loudspeakers

Although the XS Book has provisions for wall or ceiling mounting (mainly for a rear speaker installation), it was designed primarily for desktop or bookshelf placement. Because of its front-firing port, the XS Book can be placed on a shelf or in an actual bookcase without blocking its port or impeding the drivers' motion, making it one of the only "bookshelf" speakers that will actually work properly in a bookshelf.

The XS Book comes with some of the necessary cables for initial installation. This includes one 1.5m RCA cable to connect the two speakers and a 1.5m AC cable to supply power. Fortunately all the connection cable types, including the AC cable, are readily available from many sources. If you need a longer or shorter cable it will be easy to obtain. You do need to supply your own pair of single-ended RCA or mini-jack cables to connect to your source device. For users who prefer larger-diameter RCA interconnect cables, the inputs on the back of the XS Book are spaced far enough apart so that all but the most rotund cable should fit easily. But since the XS Book weighs only eleven pounds, some especially stiff cables may be less than an ideal ergonomic match.

I used the XS Book system in three very different setups: in my computer desktop system, placed in a bookshelf, and on location during my most recent live symphony recording. For the bookshelf installation I tethered the XS Book to a Cambridge Audio DAC Magic Plus connected to a Logitech Squeezebox Touch. On location the XS Book received a feed directly from the outputs of a Grace Lunatec V-3 microphone preamplifier.

The only option I did not try with the XS Book was stand-mounted in a conventional room setup. Since they were not designed for this application, it would have been inappropriate to try to shoehorn them into a traditional sound-room environment.

Focal has several accessories made especially for the XS Book. Focal's optional booster stand was designed to raise the XS Book off the desktop, primarily for users who have large video monitors or who require a higher placement for sonic reasons. The accessory that I found especially useful was the

lightweight travel case, custom-made for the XS Book. With a one-piece high-density foam insert molded to fit the two speakers perfectly, the case made carrying the XS Book to my location recording easy, and the speakers arrived intact despite a two-foot drop on the Macky Auditorium stairwell.

### Break-in

Straight out of the box the XS Book sounded just this side of awful. The bass was bonky with an unmistakably boom-boxy, plastic groadiness that reminded me of the sound of a 1968 Chevy Vega with factory-standard 4" oval coaxial speakers. But the bass wasn't the XS Book's least attractive sonic characteristic. No, the award for that would have to be the upper midrange. There was a glare-zone centered right on 3kHz that gave everything passing through the XS Book a nasty edge.

Since several people who have excellent ears said that the XS Book was a more-than-decent-sounding speaker, I decided to withhold judgment until the Books had been playing for a while. I set up the speakers in my workroom, tethered to a Logitech Squeezebox Touch, where they sat pumping out tunes at mid-level volumes for just under a week before I gave them a second serious listen. They sounded better, much better.

After more than 140 hours of playing time, the 3kHz glare had virtually disappeared. The bodacious bass bonk had also shrunk to the point where it sounded less like that Vega thumping down the street and more like something that you'd let inside your home.

In all my years as an audio reviewer, I've never heard a component do a more radical Jekyll/Hyde sonic conversion as a result of break-in. I suspect the combination of so many new components—drivers, amplifiers, and crossover parts—accounts for the extensive changes. So, when you first set-up the XS Book, if you find them sounding "raw," don't say I didn't warn you. Put in some serious play time, and then listen if you want to hear what the XS Book really sound like.

### Sound on a Bookshelf

Since many potential XS Book owners would like to use the speaker on a bookshelf, I spent some time listening to the XS Book in this setup. Because of its shape and size, the XS Book will fit into any shelf that's more than 12" high and 8" deep. But just because it can fit into a bookshelf doesn't mean it should be put into a bookshelf. Of all the setups I tried with the XS Book, a bookshelf installation was the most sonically limiting (the speaker was, after all, designed for a desktop).

Even after extensive break-in, putting the XS Book into a bookshelf will, in most cases, deliver more midbass warmth than would be considered neutral due to wall-proximity gain. But despite the dollop of extra bass, bookshelf placement was surprisingly listenable. Even in a bookshelf the XS Book managed to create a believable, if not entirely three-dimensional, stereo image. On dense mixes, such as you'll find on Brad Brooks' album, *Harmony of Passing Light*, each instrument retained a precise position laterally across the soundstage.

Harmonically, once you get past the room-induced bass bump, the XS Book was far more neutral than conventional small monitors. The XS Book's lower midrange, while not lush, had enough energy and weight to keep it from sounding thin. The upper midrange was smooth, with no traces of the glare zone that was so noticeable right out of the box. The treble was clean, staking

## SPECS & PRICING

**Type:** Powered, ported, two-way desktop loudspeaker

**Power configuration:** Mono-amped, two 20W amps

**Drivers:** 4" polyglass mid/bass; .748" aluminum dome tweeter

**Frequency range:** 50Hz-22kHz (+/-3dB)

**Crossover frequency:** 3kHz

**Inputs:** One 1/8" stereo (main); two RCA (aux)

**Dimensions:** 7.875" x 11" x 4.5"

**Weight:** 11 lbs.

**Price:** \$399 per pair

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## EQUIPMENT REVIEW - Focal XS Book Powered Loudspeakers

out a neutral middle ground between stridency and reticence.

With only a 20-watt amplifier to drive them and such small mid/bass drivers you shouldn't expect the XS Book to pump out high enough undistorted volume levels to fill a large or even a mid-sized room. Most likely if the XS Book is placed in a bookshelf, its primary purpose will be for background or at best semi-serious listening. In this situation the XS Book will perform better than many more conventionally shaped and designed small "bookshelf" monitor speakers.

### Sound on Location

After several weeks of living on my bookshelf the XS Books took a field trip. I loaded them into their custom carrying case and schlepped them to the University of Colorado's Macky Concert Hall to serve as on-location monitors for a recording of the Boulder Philharmonic. At the recording session I began to hear the XS Book's true potential. When set up on a desktop for near-field listening the XS Book speakers can deliver a surprisingly three-dimensional soundstage. Not only could I easily locate every instrument in the orchestra, but the XS Book also preserved the height cues—I could tell that the horn sections were not only behind the woodwinds, but also above them on a riser.

Once I got them more than 12" away from the wall, midbass diminished to the point where the XS Books produced fairly well-balanced results. The bass was still slightly thicker than ideal, but at least it wasn't overbearing. The midrange was clear enough to be involving, and while I would never call the XS Book the last word in resolution, it still preserved enough low-level information to create a convincing musical picture with enough sonic information for me to confidently make microphone placement and level corrections.

As an on-location monitor the XS Book proved its worth. The combination of light weight, dedicated carrying case, and easy setup and placement made using the XS Book a complete pleasure.

### Sound on a Desktop

After the recording session I brought the XS Book back home and set them up on my computer desktop. I connected the XS Book speakers to the April Music Eximus DP1 DAC/preamplifier, as well as to the Weiss DAC 202, and Wyred4Sound DAC2. I also used the XS Book with more price-appropriate gear, such as the Cambridge Audio DAC Magic and DAC Magic Plus, as well as the AudioEngine D1 DAC.

At first I used the XS Book without a stand, but after a few days I improvised a 5" high speaker stand made of closed-cell high-density foam. Raising the XS Book up 5" put the tweeter above my ears and the midrange/woofer level with them. This position resulted in the largest sweet spot with the most precise imaging. The XS Book disappeared completely when they were toed-in 15 degrees.

Once optimally located, the XS Book created a very satisfying three-dimensional image that was nearly the equal of my reference monitors, including the ATC SCM7 speakers. Especially in terms of lateral soundstage size, the XS Book rivaled anything I've had on my desktop. Depth recreation was also decent, but not exemplary, because only the front part of the soundstage was three-dimensional while the back half was flattened in comparison.

The harmonic balance on my desktop also ranked up with some of my better small monitor references, like the Silverline Minuet Supremes. Similar to better mini-monitors, the midbass remained clean and well defined until the volume level got above the internal amplifier's comfort zone.

Dynamic contrast through the XS Book speakers was less than optimal, again primarily because their built-in amplifiers simply don't have as much clean headroom as the drivers might like. At 85dB average levels the XS Book are fine, but at 90dB average levels they run out of steam during peaks.

I was able to use the XS Book with a subwoofer by taking a subwoofer output from whatever preamp I was using and routing it directly to the sub, as the XS Book itself has no built-

in subwoofer output. Focal recommends its XS 2.1 system for folks who want more bottom end. But for anyone with a spare third-party subwoofer, melding it with the XS Book should be easy.

Most buyers probably will use the XS Book without a subwoofer. To them I have to report that you won't get a lot of bass, but what you will get is clean and relatively uncolored up to the loudness point where the internal power amplifiers run out of juice. Even at its lowest frequencies the XS Book is clean and well controlled.

### Conclusion

To label the XS Books as merely another pair of flashy-looking computer speakers would be doing them a disservice. While their best and highest use is as a nearfield monitor tethered to a good computer audio system, the XS Book would also work beautifully as part of a small-room bookshelf system. In addition, on-location recording enthusiasts will find the XS Book's combination of ergonomics and sonics makes it a perfect location monitor for cramped playback spaces.

For \$399 the Focal XS Book powered-speaker system offers a lot of sound, flexibility, and functionality. And yes, in the end it's a lifestyle rather than an audiophile product, but it's a lifestyle that most people won't mind living. **tas**

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# REL T-5 2.1-Channel System

## A System That Is Also a Solution

Neil Gader



**H**ere's the scenario: Small, cozy den with a generous love seat for you and your significant other, who, as it turns out, happens to love movies especially on the newly installed wall-mounted flat panel. And here's the conundrum: Two-channel music-listening is your priority; yet every once in a while you have to admit that it's nice to have a total cinema experience. It comes down to this—what's your best move in a \$1000 speaker system? Given this set of competing priorities, I say consider putting your money where you're really going to hear it. Give center/surround speakers a timeout and install a fine set of stereo satellites sporting genuine audiophile bona fides and simultaneously augment them with a subwoofer capable of generating the serious slam that will immerse you in the movie event. Something like REL T-5 Monitor/T-5 subwoofer system. True, REL, the British subwoofer firm, is not normally thought of as bundling 2.1-channel speaker systems, but that could change in a hurry.

If the T-5 monitors look familiar, they should. They are actually Pro-Ject Speakerbox 5 mini-monitors that importer Sumiko Audio has designated for this system. (The Speakerbox 5 is also available as a stand-alone product to Pro-Ject dealers who do not have access to the more exclusively distributed REL brand.) An adaptation from an earlier two-way, bass-reflex, Scandinavian-bred design, the Speakerbox 5 has been upgraded by Pro-Ject engineers with an improved bass driver and new decoupling technology to defeat baffle resonances. The high-gloss, piano-lacquer cabinet was increased in size to add bass extension, and its mass was increased via a heavier grade of MDF. The second-order crossover was also reworked with higher-class components. The speakers are shielded and wall-mounting brackets are included. Magnetic fittings neatly affix the black cloth speaker grilles.

The *authority* figure in this system is the REL T-5 subwoofer, the smallest entry in the firm's new T-Series. It's a downward-firing design in a sealed box. With an 8" long-throw woofer and a built-in 125W amp, the T-5 is well appointed and ravishingly finished. Compact in the extreme, its size and form factor make it an ideal complement to the T-5 monitors. (See sidebar.)

Setup is a snap, in part because the bass response of the T-5 monitor rolls off fairly smoothly without the

typical midbass boost that makes subwoofer integration difficult. As for satellite placement, the upper bass benefits commensurately with proximity to a rear wall—a sure bet since we're using the T-5s to flank a flat panel display. Sonically it means the difference between a leaner, overly detailed character, and a warmer, fuller lower midrange that balances some of the treble energy. I adjusted the T-5 crossover to produce flat response in my room to just below 100Hz. The sub drove the room smoothly when positioned about 18" from the backwall, equidistant from the back corners of my room.

Even the most casual listeners will find much to admire in this system but the real magic begins with critical listening. The T-5 system's sonic character is nicely balanced; the midrange has a rewarding amount of heft and substance. I noted a bit of midrange forwardness during James Taylor's "If I Keep My Heart Out of Sight" from the superb recent reissue of *JT* [Warner/MoFi], but the overall effect doesn't diminish the system's solid inter-driver coherence. There's an unexpected harmonic refinement in the upper octaves but also an overall lighter signature, as a hint of brightness in the presence range illuminates the treble somewhat. Midband dynamics are very good for a speaker of this spec.

Voices, male or female, have the requisite impact that I expect from a loudspeaker, which is to say that in the real

## EQUIPMENT REVIEW - REL T-5 2.1-Channel System

### REL T-5: A Closer Look

My experience with the T-5 subwoofer goes well beyond the T-5 monitor in this review. Its performance with some very upscale stand-mount compacts was similarly impressive, suggesting to me at least that it's destined for a long career in all kinds of settings. And amazingly, until you get a look at the T-5 in person, you're not prepared for how small it is—roughly a one-foot cube. I kept thinking: "Subwoofer...seriously?" Like its larger T-Series siblings, it uses Australian MDF, which Sumiko states was chosen for its consistent quality. Bracing is similarly robust. The 8" paper-cone driver hews to REL tradition in that it is relatively light in weight but high in rigidity, in order to balance speed, output linearity, and extension. After testing a series of Class D amplifiers REL stuck with a tried-and-true 125W Class AB design—its sonic preference in this price class.

And you won't find any cheap plastic ornamentation either. The insignia on top and the heavy footers beneath are thick solid-aluminum billet. The finish is eight coats (thirteen on the bigger Ts) of hand-sanded, hand-rubbed piano-black or piano-white lacquer. REL hasn't shirked its responsibility in connectivity, either. You get the full suite of REL adjustments, which allows for high-level connection, a single channel of low-level connection, plus a single channel .1 input for connection to an AV receiver's subwoofer output. Phase control is a simple 0-180 degree selector. The REL filter/input circuit is a significant part of why RELs sound the way they do. Which is to say, they seem to slip chameleon-like into the character of the main speakers. For the record, the low pass is 12dB/octave between 30Hz and the chosen upper limit, but there's also an additional second-order filter set way up around 200Hz to prevent high- and mid-frequency bleedthrough and far enough out of passband to not interfere with the main filter. Per REL practice there is no high-pass filtering—satellites must be prepared to play full-range. REL provides the ability to simultaneously connect the .1 channel from your theater into all RELs—a real plus when switching from music only listening to movie time. Also included is a separate level control for the .1 channel input. In sum, a little sub that speaks volumes.

world singers sing with their entire bodies, and small speakers often fail to convey that physicality. This system does a much better job of reproducing this than most. In the *Mule Variation* recordings I expect Tom Waits' deep chest resonance to rumble like a Chevy big block, and the T-5 didn't let me down.

Due to the rigid non-resonant construction of most contemporary small monitors, finely wrought imaging is generally a slam-dunk, but these sats deserve special mention because of the air, the acoustic elbow-room, they generate between instruments. Related to this absence of cabinet resonance is the T-5's transient behavior, which is quick with very good edge definition. During selections from Nickel Creek's *This Side*, Chris Thile's mandolin not only had the expected speed off the pick, but also an articulation of individual strings and a warm resonance underlying the initial ring of each note. At the other timbral extreme, the same can be said of Edgar Meyer's expressive acoustic bass during *Appalachian Journey* where I could almost feel the tug of the horse-hair bow drawn across the strings, the guttural voice of a deep note, and finally the distinct shudder of resonance from the soundboard. It was on this track that I observed that, even at higher volume levels, the T-5 remains firmly anchored to the floor—an achievement that really sets it apart from other small subs.

Key to a successful sub/sat system is a sense of unification. The T-5 subwoofer and T-5 monitors achieve this union by speaking with a near-unbroken voice. This is particularly true in scale and speed where, often times, smaller mid/bass transducers tend to be fast responders mismatched with less responsive woofers that cloud transparency and soften focus. Here, the combo of the eight-incher in the REL with the five-inch mid/bass in the sats is sensational. There's little in the way of localization, loads of low-frequency energy, and snappy pace into the mid-30Hz range.

Finally, the T-5 system is generous in output, as long as it's confined to smaller room settings. To my knowledge there are no nine-inch-tall monitors that have the dynamic *cojones* to wrestle bass drum transients, tam-tam crashes, and baritone

saxophones into submission without some compression. This said, I'd be remiss if I failed to add that when I put on my home-theater crash helmet the terrifying tsunami at the beginning of *Hereafter* was *really* something to experience with this system. There were moments my 46" Samsung seemed to expand wall-to-wall as the tidal surge enveloped the ill-fated Indonesian village. Let's face it: You don't always subwoof a system to appreciate a pipe organ—sometimes you just want a good, old-fashioned Saturday matinee's thrills.

There are a lot of reasons to trumpet the REL bundle, but most of all I love a system that is also a solution. The T-5 solves the small-room challenge of producing audiophile-quality stereo *and* home-cinema excitement while leaving open the path to expand down the road. Whether you're into Stravinsky or *Star Trek* permit yourself a high-five for thinking outside the (home-theater) box. **tas**

### SPECS & PRICING

#### T-5 MONITOR

Type: Bass-reflex

Drivers: 1" silk-dome tweeter, 5" mid/bass

Frequency response: 55Hz-20kHz

Impedance: 8 ohm

Sensitivity: 86dB (1W/1m)

Dimensions: 8.97" x 8.97" x 7.8"

Weight: 9.2 lbs.

Power: 125W Class AB

Inputs: High-level Neutrik

Speakon, low-level single RCA, LFE RCA

Dimensions: 10.5" x 12" x 11.75"

Weight: 26 lbs.

Price: \$649

Package price: \$1049

#### T-5 SUBWOOFER

Type: Closed-box, downward-firing, amplified subwoofer

Driver: 8" long-throw

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# Polk Audio LSiM 703

Prime, Purposeful, Polk

Neil Gader



**P**olk Audio is widely recognized for a broad-based product line that spans not only affordable stereo and home-theater loudspeakers but also car, marine, in-wall, and outdoor audio, as well as headphones. The summit of its loudspeaker line is the LSiM Series, which is targeted toward audiophiles (it premiered as the LSi Series in 2001). The three-speaker lineup includes the LSiM 705 and 707 floorstanders and the 703 stand-mounted compact considered here. It is a testament to the real-world, feet-on-the-ground nature of Polk Audio that even its feature-enriched flagships are available at prices that wouldn't even buy the internal wiring and crossover caps of some *you-fill-in-the-blank* esoteric loudspeakers.

What makes the \$1500-per-pair LSiM 703 a relative rarity in its segment is that Polk chose to carry over the three-way configuration of the larger floorstanders to the smaller stand-mount. In voice-matching this is certainly a smart play. It

also distinguishes the 703 from its two-way, bass-reflex compact competitors. Generally speaking the central advantage of the added driver is superior power handling, a wider dynamic envelope, and greater low-frequency extension.

But there can be trade-offs also, notably a greater potential for discontinuities between drivers. In addition, two-ways are known to more closely approximate the point-source ideal—coincident and single full-range transducers, even more so. And then there are more complex crossovers to contend with, which can reduce resolution. However, all other factors being equal, a three-way design should have an overall edge.

## Polking Around

There's a veritable laundry list of performance features packed in each LSiM 703, beginning with the heavily braced enclosure, its one-inch MDF side panels, three-quarter-inch panels on the

back and bottom, and the unusually wide-radius front baffles of robust 1.25" MDF. Each driver resides in its own separate non-parallel chamber, which Polk calls the Dynamic Sound Engine. This inner enclosure, a single molded piece, houses the midrange driver and the ring-radiator tweeter in an aligned array to optimize dispersion.

The tweeter has received some nuanced improvements, the most significant of which are a reshaped phase plug and refashioned diaphragm roll. Polk also increased power handling, dynamic range, dispersion, and top-end response. The midrange and woofer drivers use Polk's SuperCell APP cone material—a mineral-filled polypropylene substance that's been "puffed

## EQUIPMENT REVIEW - Polk Audio LSiM 703

up” with injected air, thus forming a honeycomb structure. Polk states that SuperCell APP offers a good balance of light weight, stiffness, and high damping. Recently upgraded, the puffed cells are now larger and the resulting cone material has less mass than the original. Crossovers feature top-notch Mylar and polypropylene capacitors and air-core inductors, while notch filters and Zobel circuits smooth the impedance curve of the system for efficiency and improved treble response.

Mounted on the rear panel is Polk’s PowerPort system. It’s a cone-like assembly installed at the mouth of the port to direct the exiting air. Polk engineers note that its unique shape streamlines air flow, reducing turbulence. The result is less wasted power, which translates into greater sensitivity in the bass. It likely also adds greater latitude for positioning the speaker nearer a back wall. Finally there are gold-plated five-way binding posts for bi-amp/bi-wire capability. The magnetically adhering grilles are only a millimeter thick to minimize diffraction.

Right out of the blocks the LSiM 703 established its bona fides as a segment-leading compact by virtue of its terrific output and dynamic headroom. There’s nothing weak-kneed about its spectral balance. It possesses authoritative mids, a strong presence range, and impactful lower octaves. Its midrange has a hint of in-your-face forward energy that reminds the listener that he is no longer in two-way compact territory. Polite, it is not; yet it assiduously avoids the overtly aggressive. It’s a small speaker that embraces full-range orchestral music as well as hard-charging rock ‘n’ roll with a warmer, fuller signature suggestive of enclosures that reach to the floor rather than sit on the top of a stand.

Transient performance is respectably well-balanced. Damning with faint praise? No. By that I mean the LSiM 703 doesn’t sound “fast” like many small, tightly wound two-ways—speakers that in some cases have little more to offer than the perception of speed. Rather the LSiM 703 is a compact that maintains its poise across all criteria.

The mid and tweeter integrate pretty smoothly and offer a richer, more physically realized vocal range that nicely fleshes out bass-baritone male singers, such as Bryn Terfel or Tom Waits. It

completes them physically as it reproduces the entire singer from the head tones on top through the solid chest resonances below. Female vocalists like the songbird Jennifer Warnes have a bit more sinew, and plainly lack some of the liquidity that I like, but this is a minor fault overall.

The midbass and lower octaves are dynamic and exhibit excellent control. As I listened to the hard-hitting intro to Steely Dan’s “Hey Nineteen” on *Gaucho* [MCA], I was rewarded by the musically tight, well-defined groove of drum, bass, and percussion that the 703 was laying down. Few two-ways in this price range can match this level of drive and energy. Like I mentioned earlier, in instances such as these, the aim is not about being “polite.” It’s about pure unadulterated slam!

Complex onslaughts of percussion like The Police’s Stewart Copeland’s bravura drumming during “Murder by Numbers” on *Synchronicity* [A&M] can and will easily overwhelm the resolving power of most small speakers. The Polk LSiM 703 reproduces the flurry of large-scale dynamic and micro-transient activity much more than respectably. However, I wouldn’t mistake its sonics for those of a capable full-range floodstander. It does roll-off precipitously below 40Hz or so and, while this is excellent small-speaker performance, its bass is not without its own character: impressive and impactful, yes, but a little generic in timbre and pitch with a slightly unyielding sameness from one low note to another.

During the Handel Recorder Sonatas [Linn], I felt there was a muting of response, a slight energy dip in the upper mids that gave the lower treble a narrow emphasis. And the LSiM doesn’t quite offer up the wide-open acoustic vistas that fully suggest the venue’s environs. The air travelling through the recorder or spraying off of a cymbal lacks the finer gradations of expansion and decay. And images can sometimes sound a little congested. During Steely Dan’s title track on *Gaucho* I felt there was a hint of smearing around the sax as well as some tweeter-localization artifacts. In this regard, the LSiM 703 is less impressive than finesse compacts that vanish from the soundstage, like an Audio Physic, for example. It images well but not with the almost eerie specificity of the Thiel SCS4 with its concentric driver. Complex groupings of instruments are not

allowed the air and acoustic elbow-room that would further define them in a live acoustic setting.

How does the LSiM 703 stack up against the two-way compacts in my recent speaker survey in Issue 223—the Penaudio Ceny, LSA1 Statement, and Audio Physic Step 25? It most closely resembles the overall weight and balance of the LSA1. The 703 digs a bit deeper and throws a heavier punch, but misses some of the sweetness and micro-detail of that speaker’s ribbon tweeter. The AP Step 25 is the transparency and speed maven of this group, but has a lighter, whiter signature, while the hard-driving, darkly romantic, and preternaturally powerful Penaudio is the overachieving compact most likely to throw the earth off its axis. The LSiM703 gives you tastes of each of these but trumps them all with its full-spectrum dynamics and low-end slam.

Admittedly, the Polk Audio name doesn’t instantly call to mind the loudspeaker legends of the high end. However, the LSiM703 is one rock-solid performer. It’s so superbly executed it continually prompted me to ask, “How much are these again?” Recently as I thumbed through TAS’ most recent Editor’s Choice I noted an impressive list of under-\$2000 competitors. It looks like the next installment will need to make room for one more. **tas**

### SPECS & PRICING

**Drivers:** 1" tweeter, 3.25" mid, 6.5" mid/bass

**Frequency response:** 36-40kHz (-3db at 50Hz)

**Sensitivity:** 88dB

**Impedance:** 8 ohms

**Dimensions:** 16.75" x 8" x 14.6"

**Weight:** 29.6 lbs

**Price:** \$1500

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# Magnepan Mini Maggie Loudspeaker System

## Desktop Aces, Small Room Marvels

Chris Martens

**W**ithout a doubt the White Bear Lake, Minnesota-based firm Magnepan has been on a roll over the past few years. First came the 1.7 floorstanders (\$1995/pair), which Jonathan Valin described as “the most lifelike speakers I’ve heard in their price range—or anywhere near it.” Next came the even more impressive 3.7 floorstanders (\$5500/pair), which Mr. Valin described as “the best buy in hi-fi at the moment,” and that our founder Harry Pearson called “the best buy in hi-fi of all time.” Now, Magnepan has rolled out its new flagship 20.7 floorstander (\$13,850/pair), of which TAS’ Jacob Heilbrunn has written, “I defy you to find (a speaker) at up to five times the cost with the scale and realism of the 20.7.” All three of these tall, thin, dipolar loudspeakers are capable of delivering a big, pure, lifelike sound that is eerily coherent, and of doing so while delivering exceptional value for money. But strangely enough, the firm has also recently released a fourth new model—the compact, three-piece Mini Maggie desktop speaker system (\$1490), which for some reason has gone largely unnoticed. This review will explore the strengths and weaknesses of the Mini Maggie system and explain why—for certain listening scenarios—it just might be the most desirable Magnepan of all.

At the heart of the Mini Maggie system are a pair of small (9.625" x 14.25"), two-way “satellite” dipole speakers, each featuring a 4.5" x 8.5" planar magnetic midrange driver and a .8" x 6.7" ribbon tweeter (a shortened version of the very same tweeter used in the more costly 3.7 and 20.7). Like the large Magnepan, the Mini Maggie satellites are built as a mirror-imaged pair, so that listeners have the options of listening with tweeters oriented outward or inward. Then, to complete the package, Magnepan includes its moderately sized (19.25" x 22.5") DWM single-panel, dual-channel, dipolar mid/bass module.

The DWM includes built-in crossovers that enable it to work with the Mini Maggie (and several other Magnepan products), so that the game plan is to connect both your left- and right-channel speaker cables to the DWM, and then run “stub” cables out from the DWM modules to the left and right satellites.

One key point to understand is that, from Day One, the entire system was designed specifically for ultra-high-performance *desktop* listening applications. In practice this means the satellites would be placed on the desktop and toed-in toward the listener, while the DWM panel would



be placed on the floor below the satellites, within the footwell of the desk. In short, the Mini Maggie rig is meant for near-field listening environments, where the listener would be seated roughly two-to-four feet away. Some listeners (and Magnepan dealers) have wondered whether the Mini Maggie package might also be used as sat/woofer system for whole-room listening scenarios and we will tackle that question later on. But for now, let’s focus on tips for getting best results from the system on desktops.

Set-up requirements for the system are very simple, but there are some practical guidelines

listeners will want to bear in mind. First, note that the Mini Maggie satellites, like Magnepan’s larger dipole speakers, need a fair amount of “breathing room” to sound their best, meaning it’s best to avoid scenarios where the satellite panels are backed up to within a few inches of nearby walls. Ideally, the Mini Maggie satellites should have several feet of open air space behind them for best sonic results. If, however, your room/desk arrangement is such that near-wall placement is necessary, contact Magnepan beforehand to seek advice. The firm may be able to recommend (or perhaps supply) suitable damping materials

## EQUIPMENT REVIEW - Magnepan Mini Maggie Loudspeaker System

that could be placed on the walls behind the satellites to help tame early reflections.

Next, note that the compact, floor-standing DWM mid/bass module is more than just a “woofer” and that, as a dipole speaker, it absolutely does not behave the way a box-type woofer would. Because the DWM contributes a significant amount of discrete left- and right-channel midrange information to support the system’s satellites, you’ll want to make a point of positioning the DWM in a central location, so that it is equidistant from the two Mini Maggie satellites. I’ve heard anecdotal reports of some listeners (and even dealers) trying to push the DWM off to one side of the room or the other—an approach that in my experience gives unsatisfactory (indeed, unacceptable) results. Remember, then, that the DWM must go in the center and below the satellites (any other location can cause imaging to become skewed and incoherent).

Finally, let me point out that while the Mini Maggie system is small and relatively affordable, it is a very serious high-end speaker that should be driven by powerful, high-quality electronics. How much power you’ll need will be a function of how loudly you like to listen, but with the Mini Maggies as with any other Magnepan speakers, you’ll want to choose an amp that can drive 4-ohm loads in a muscular way (wimpy integrated amps need not apply). But feed the Mini Maggie system “the good stuff,” and you can and should expect spectacular results.

I do not use the word “spectacular” lightly here, because the fact is that the Mini Maggie package is a \$1490 desktop speaker system that sounds uncannily similar to the award-winning Magnepan 3.7 floorstander. I know this claim sounds like hyperbole, but it’s not (I know this because I spent hours at the Magnepan factory comparing the two systems). The key differences between the two, as you might expect, are that the Mini Maggie package offers less deeply extended bass, a less expansive dynamic envelope, and shows somewhat less ability to convey image height. But in all other essential respects—including detail, resolution, purity, freedom from

grain, soundstage width and depth, and above all, coherence—the Mini Maggie rig sounds for all the world like a pair of 3.7’s rendered on a slightly smaller scale.

When I first sat down to listen to a properly set-up Mini Maggie system, I was struck by three sonic characteristics in particular. First, the system exhibited remarkably realistic and convincing spatial properties, producing huge, spacious, and yet precisely defined soundstages of a type few speaker systems of any size or price could match. Second, the system offered unusually lifelike reproduction of musical textures, timbres, and low-level details, conveying a terrific sense of focus. Third, and I admit I didn’t see this one coming, the system offered unexpectedly expressive dynamics. By this I do not mean to suggest that the Mini Maggie could hold forth at Klipschorn-like levels because that isn’t the case. But what it can and does do is to handle both abrupt dynamic shifts in emphasis as well as subtle shadings of expression in the music with terrific speed, energy, and nuance—in the process making the presentation sound believable and alive. Let me supply some musical examples.

One of my favorite test tracks is the Astor Piazzolla composition “Kicho” as performed by the Blue Chamber Quartet on *First Impressions* [Stockfisch, SACD]. “Kicho” opens with an elaborate solo played on acoustic bass, which ranges so high up in pitch that the initial illusion is of hearing a cello—until, that is, the bass suddenly plunges down into its lowest register, revealing tremendous depth and weight as it does. Later, as the piece unfolds, the bass is joined by a vibraphone, harp, and piano, which together create a delicious interplay of tonalities and textures—all unfolding within a moderately sized space. Each instrument enjoys its “moment in the spotlight,” until the piece reaches its exuberant finale, driven forward with propulsive force by vigorous and powerful piano lines.

Taking each instrument by turn, I noted that the Mini Maggie rig gave the bass an appropriately light, breathy, and warm treatment as it initially played in its upper registers, while later

revealing the instrument’s darker, punchier, and more full-bodied side as it descended into its powerful, but never overblown, lower registers. You would expect the Mini Maggie to sound fine in the upper range of the bass and it did, but it was breathtaking to hear the system tackle the descent into the lowlands, capturing the way those low-pitched strings energized first the large wooden body of the instrument, and then—a split-second later—the entire room. Through the little Maggies, the harp sounded positively luminous, as did the vibraphones, while the attack of the piano sounded lifelike, articulate, sharply focused, and riveting. In short, timbres and tonalities sounded spot on through the Mini Maggie system, which did a beautiful job of capturing not just the sound but also the “personalities” of

### SPECS & PRICING

#### Magnepan Mini Maggie desktop speaker system

Type: 3-way planar magnetic/true ribbon speaker system

Frequency response: 40Hz-40kHz

Sensitivity: Desktop satellite modules: 86dB 500Hz/2.83V; mid/bass module: 86dB 1m/100Hz/2.83V

Impedance: 4 ohms, satellite and mid/bass modules

Dimensions: Desktop satellite modules: 9" x 14" x 1.25"

Weight (complete three-piece system): 41 lbs.

System price: \$1490

#### Magnepan DWM mid/bass module

Type: Planar-magnetic

Driver complement: One-way

Frequency response: 40Hz-5kHz (wideband)

Sensitivity: 86dB 1meter/100 Hz/2.83V

Impedance: 4 ohms

Dimensions: 22.5" x 19.25" x 1.25"

Weight: 19 lbs.

Warranty: Limited three-year, to original owner

Price: \$795 ea.

System Price with Dual DWM Modules: \$2285

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the each of the instruments.

The Mini Maggie system reproduced “Kicho,” which is beautifully recorded with exceptionally low levels of grain and terrific focus, so that the system sounded, as I wrote in my notebook, much “like a great headphone, but with killer 3-D imaging.” The system offered truly remarkable spatial coherence, too, meaning that it effortlessly conveyed low-level sonic cues that showed subtle interactions between the instruments and the acoustics of the recording venue. Finally, the system exhibited surprisingly gutsy dynamics throughout, especially in those moments where the piano urged the other instruments in the ensemble toward a swirl of energy near the composition’s finale. Again, this wasn’t so much a matter of the system playing loudly in an absolute sense (though it did reach pretty high levels on this track), but rather a matter of the speed and authority with which it unleashed brief concentrated bursts of energy from the piano, the vibraphones, and even the harp, as they spoke in unison.

The spatial characteristics of the system were perhaps even more clearly in evidence on the Michael Tilson-Thomas/San Francisco recording of the Copland *Organ* Symphony [SFS Media, SACD], where I observed that “this tiny system creates a huge sense of space, complete with depth, width, and precise instrument localization—the works.” While it is true that the larger floorstanding Magnepan can do an even better job of conveying the size and scale of the hall on this piece (especially image height), the Mini Maggie system is not far off, largely because it reproduces stage depth and width so well.

On well-made recordings such as the Copland

*Organ* Symphony, it can sometimes be a bit unnerving to listen to the Mini Maggie system, because your eyes and ears can’t seem to agree on what they are experiencing. Your eyes register the fact that the Mini Maggie satellites are positioned roughly at arm’s length from you upon your desk, while your ears confront a giant soundscape that suggest you are seated in a large concert hall with a broad stage spread out before you, perhaps forty or fifty feet away (talk about a “split-brain” experience!). As when listening to the Piazzola piece referenced above, I couldn’t help but jot down this observation: “This system is almost headphone-like in its intensity, focus, and detail, but at the same time it offers the precision imaging and soundstaging of a more traditional full-size speaker.”

The Mini Maggies did a wonderful job with string tones on the *Organ* Symphony, finding that just-right sweet spot between clarity and incisiveness on the one hand, and a buttery golden tonality on the other. The pipe organ’s reed sounds and pipe resonances were also very believable. While the organ’s lowest bass pitches did not have quite the weight or authority that some full-size speakers (or subwoofer-equipped systems) might provide, the bass the system was able to reproduce seemed so realistic that I noted, “Generally, you won’t miss the really low stuff.” Although very low bass frequencies (down below the 40-45Hz range) were either missing or a bit too lightly weighted, the Mini Maggie’s foundational midbass above that point was in some respects more self-evident and appropriately balanced than in some of the bigger Magnepan speakers.

On the very loudest passages of the *Organ*

Symphony, which I had perhaps turned up to unrealistically high levels, I observed that the system occasionally became a bit strained on full-bore orchestral swells. In fairness, though, this might have been a case where the speaker system would have been fine with big crescendos, but where the amplifier I was using at the time was not quite up to the task. Even so, it was amazing to hear the Mini Maggie package tackle very demanding orchestral material with so much gusto.

The system is no slouch when handling modern pop recordings, either, as I discovered when I put on Imogen Heap’s “Bad Body Double” from *Ellipse* [RCA]. Part of what makes this track work, apart from Heap’s catchy hooks and sly, wryly humorous vocals, is the sheer richness of the techno-pop textures, details, and effects it employs. I was so impressed with the Mini Maggie’s handling of these elements that I simply jotted this note: “The ‘atmospherics’ on this track are phenomenal,” rich in their layering and detail, yet well integrated with the musical whole. About the only area where I found the Mini Maggie system’s performance underwhelming involved some of the downright subterranean synth-bass washes found on this track, which either went missing or sounded overly subdued.

But the overarching point I hope to make is that the Mini Maggie not only asks but also frankly demands to be evaluated by the very same standards you would normally use to judge large and extremely expensive top-tier high-end speakers. That it not only survives but also stands tall in such comparisons is a credit to Magnepan and is what makes the Mini Maggie system a world-class desktop speaker system—

quite possibly the best one that has ever been offered.

### Will It Work As a Whole-Room System?

Even though the Mini Maggie system was explicitly created for desktop use, some listeners will inevitably ask whether the it might also be used as a near-full-range satellite/woofer-type system in smaller rooms. I discussed this possibility with Magnepan’s Wendell Diller and his initial response was to say that, while the Mini Maggies can work in some small-room settings, his opinion was that listeners might be better off choosing one of Magnepan’s larger floorstanding models for those applications. I discussed this question in a review I wrote for our sister on-line publication *Playback*, where I wrote, “There are two reasons why the Mini Maggie system is best used in a desktop context. First, as Diller points out, the phase response of the Mini Maggie system is “incredibly easy to get right” in a desktop setting, but much harder to get right when it is set up as a whole-room system. Second, the power response characteristics of the Mini Maggie system are geared specifically for near-field listening, whereas the power response characteristics of the bigger, floorstanding Maggies typically work out better in a whole-room context.”

Nevertheless, there has been a quiet groundswell of interest in using the Mini Maggie system as a traditional sat/woofer package for whole-room applications. Listeners are understandably drawn to the idea of a compact sat/woofer system that sounds much like Magnepan’s stellar 3.7, but sells for a fraction of the price. Long after I had finished my review

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of the Mini Maggie system, I got a call from Wendell Diller, asking, “Would you consider doing a *follow-up* review of the Mini Maggie desktop system for whole-room applications? I agreed, not knowing exactly where the project might lead. What follows are my observations on using the Mini Maggie system in a small-room environment.

### Understanding the Rules of the Road

To cut straight to the chase, let me say that the Mini-Maggie system can work well, actually *very* well, in small-room applications, provided that you are willing to accept certain set-up requirements and also willing to accept a few performance caveats. Let’s discuss requirements, guidelines, and caveats first, and then talk about the benefits, so that you can realistically weigh pro’s and con’s of using Mini Maggies for your whole-room application.

Requirements: To get the Mini-Maggie system to work well in whole-room applications, you’ll first need to address several basic equipment and room requirements. Specifically, you will need: 1) A good pair of speaker stands on which to place the Mini-Maggie satellites—ideally stands that will position the speakers at or near ear-level for seated listeners; 2) a powerful, high-quality amplifier (note that the power requirements for the system tend, as a rule, to increase for whole-room applications); 3) a reasonably small and appropriately shaped small room (rooms in the range of 120–200 square feet); 4) in almost cases, you will need to add a *second* DWM mid/bass module (\$795) to the system in order to get adequate bass performance and optimal overall tonal balance.

It is important to understand that the DWM module normally benefits from a significant amount of bass reinforcement when placed in the footwell of a typical desk. The under-desk placement also helps roll-off some of the midrange output of the DWM—a factor Magnepan designers have taken into account when voicing their desktop system. When you move the DWM out into an open room, however, you typically encounter two problems: Bass reinforcement falls off significantly, while effective midrange output increases—making the system sound midrange forward and somewhat bass-shy. The best method I’ve found to combat these problems is to add a second DWM module.

### So How Does It Sound?

When properly dialed-in, the Mini Maggie system as used in whole-room applications exhibits similar sonic benefits to those conferred on listeners by the Mini Maggie desktop system—but with three caveats that are worth noting.

First, the system’s dynamic envelope, if you will, becomes narrower in whole-room applications, because you typically will need to turn up the volume to higher levels to get adequate output for whole-room listening. In other words, you are essentially using up a good bit of the speaker system’s dynamic headroom simply to get it to play loudly enough for whole-room use (which means you may also need a more powerful amp).

Second, the Mini Maggie system’s overall tonal balance, and in particular its bass performance, tends to become at least somewhat room-dependent—a problem that really never arises when using the system in a desktop audio context. Potential users should be aware that

it might take considerable trial-and-error to get adequate bass extension and weight (and frankly, some rooms are ill-suited for dipole woofers in the first place).

Third, the system’s limitation in image scale, and especially image height, become more noticeable in whole-room applications. Even so, I would say the Mini Maggie system is at least as good an imager as other systems of its size and price, but it doesn’t sound as big or expansive out in the middle of a room.

Having noted these caveats, let’s also consider the system’s benefits. Once again, you have a modestly priced speaker system that, for all intents and purposes, matches the detail and timbral purity of Magnepan’s exceptional 3.7, which is saying a mouthful. Does this mean, then, that the Mini Maggie rig is capable of higher levels of resolution and freedom from grain than the full-size Magnepan 1.7? Yes, it does. The tradeoff, however, is that the power-response characteristics of the 1.7 (and of the 3.7) are much better suited for most whole-room applications, and their bass performance is much easier to tap in more kinds of rooms than that of the Mini Maggie system. For many listeners, just as Wendell Diller had predicted, the full-size Maggies would probably be the better choice overall. Still, there’s real magic in the resolving power of the Mini Maggie system.

One afternoon, I put on “Joe Turner’s Blues” from *Wynton Marsalis & Eric Clapton Play the Blues—Live from Jazz at the Lincoln Center* [Reprise Records Jazz] as a demonstration for an audiophile colleague. This live recording is noteworthy not only for the masterful playing of the key soloists, but also for the uncannily realistic manner in which

it captures the sound and feel of a jazz ensemble performing live on stage. My colleague listened to the Mini Maggies almost slack-jawed in disbelief and then blurted out, “Their soundstaging is so believable and their imaging so precise that I can tell exactly—and I mean *exactly*—how big the stage is and where each ensemble member is seated. Most \$2k speakers I’ve heard could never do this.” My colleague’s reactions neatly summarize the appeal of a \$2285 speaker system that sounds much like its more capable big brother, the Magnepan 3.7—*itself* one of the greatest bargains in high-end audio.

But let me supply just one further anecdote. One day I played a very realistic drum recording, “Drum Solo by Dirk Sengotta” from the *Henrik Freischlager Band Live* [XYZ/Pepper]. Suddenly, there was a knock on my listening room door. A relatively shy, quiet member of our office staff poked his head in the door and said, “Forgive me, but I just had to make sure you hadn’t moved a *real* drum kit into the office, because from just outside the door it certainly sounds like you’ve got the real thing in here.”

He was right; the drum kit on the recording really *did* sound almost real through the Mini Maggies, with the kind of tautness, snap, and definition that only very fine speaker systems possess. But what was even more important was that the Mini Maggies had proven their ability to win friends the old-fashioned way: namely, by making music sound so real that people can’t help but stop and listen. Isn’t that something we can all appreciate? **tas**

# Bowers & Wilkins Prestige Monitor 1 Loudspeaker

Easy To Like

Kirk Midtskog

I had the pleasure of reviewing the B&W 805 Diamond for Issue 210 and, as a fan of good stand-mounted speakers, was pleased to receive the review assignment for the less expensive Prestige Monitor 1—PM1 for short. B&W felt that a meaningful price point was vacated when the former 800 Series line's least-expensive model changed from \$3500 (for the older 805 Signature) to \$5000 (for the new 805 Diamond). Enter the PM1, a beautiful, mocha brown and black mini-monitor that costs \$2800 per pair and \$550 for a pair of matching stands. Rather than “hot-rodding” an existing model to fill the void left by the discontinued 805 Signature, B&W developed a whole new speaker from the ground up.

The PM1 is much more than the culmination of a shrewd marketplace calculation, though; it is unlike any other B&W speaker in its appearance and in some of its technology. First, it is considerably smaller than the 805 but delivers bass extension similar to that of the 805 Diamond; it also packs considerable dynamic punch for its size. Second,

the PM1 has a rubber-covered bottom plate, arched top, and front baffle, whose top edge and sides are more rounded than the 805D's equivalent surfaces, presumably to reduce diffraction. (This also gives the PM1 a softer appearance compared to the more muscular combination of harder-edged and curved surfaces of the 805D.) Third,



## EQUIPMENT REVIEW - Bowers & Wilkins Prestige Monitor 1 Loudspeaker

a new carbon-ring-braced aluminum tweeter—housed in a shorter version of B&W’s characteristic tapered tweeter pod on top of the cabinet—makes its debut in the PM1. And, finally, the long-throw 5" Kevlar mid/woofer employs a new stiff, EVA polymer, foam-like center plug to reduce cone resonances better than a traditional dust cap. The cabinet is larger and heavier than I normally encounter for a speaker with a single 5" mid/woofer, which makes B&W’s claims of extensive resonance-reducing internal bracing and substantial construction materials plausible. The small size and attractive appearance of the speaker, together with its very nice looking stand, should make the package easy to integrate in a wide variety of living situations. I listened with the mid/bass grilles off, but left the tweeters’ protective caps in place.

The sonic characteristic I first thought of when I began to get a sense of the PM1’s sound was “fullness for its size.” In my setup, it had an inviting warmth and rhythmic drive, and this carried through whether I used the Hegel H200 integrated amp (\$4400, Issue 211) or my normal preamp-power combo. The PM1 does not have bass much below the upper-40Hz zone, but my rather small and solidly-constructed room does not require a speaker to produce a lot of bass output to fill it, and thereby lay down a sense of musical foundation. A room that tends to drain bass energy will most likely tax the PM1 beyond its limits, because you may be inclined to turn up the volume in an attempt to produce bass energy it simply cannot deliver. In actuality, though, most listeners who would be interested in the PM1 in the first place would be well aware of the usual caveats concerning appropriate speaker and room (and amplifier) matching. The pairing amplifier should be fairly robust, as I found the PM1 somewhat difficult to drive. I had to turn it up to the same levels I do with my Dynaudio Confidence C1 speakers (also a difficult drive) to allow the music to “come alive.”

Compared to the 805 Diamond, the PM produces about the same bass extension, or perhaps even a bit lower—a remarkable achievement from the PM1’s 5" mid/bass unit and smaller cabinet vs. the 805D’s 6.5" driver and larger cabinet. The PM1 also sounds slightly warmer and fuller in the midbass. If the somewhat trickier-to-position 805D is not set up optimally, it can sound just a hair

bass-shy. With less-than-optimal positioning, the 805D can sound more fleshed out in its upper frequency range than in its lower end, and this can make you wish you had a subwoofer to fill in the bottom end more. Not so with the PM1, which may bump up the midbass just a bit to help give listeners the impression of fullness and help mitigate that sense of “small-speaker bass-shyness” we sometimes perceive. In my opinion, B&W made a wise voicing decision in this case. The 805D is a noticeably more accomplished, transparent, and refined transducer over all, but I would not be surprised if the PM1 has greater appeal to some listeners for its more easily integrated, “comfortable” personality. Please don’t get me wrong, here; the more I have worked with the 805D over time, the more I admire its coherency, resolution, and planar-like refinement. Also, the 805D’s dynamics, pitch definition, and resolution in the bass are noticeably better than those of the PM1, as is the 805D’s overall resolution. It just took me more set-up experimentation to extract all the positives from the 805D, but when it’s set up properly, it is a very transparent and musically engaging speaker.

On its own terms, the PM1 has a coherent voice, favoring a rich, lilting musical portrayal over a sparkling, crystalline one. The PM1 does not suffer from a rolled-off upper end or lack of resolution, though. Its upper-frequency output is actually well fleshed out, extended, and smooth, but the PM1’s slightly elevated midbass shifted the overall tonal balance to the warm, lush side rather than to the cool, lean side—or to the strictly neutral one, for that matter. The PM1 may have a more even-handed balance in many other rooms (mine tends to accentuate the bass with some speakers) and may just be the ticket for many listeners. Again, its bass output level is remarkable from a mini-monitor with a single 5" mid/bass driver.

Compared to live music, the PM1’s general mix of detail and warmth produce a mid-hall to rear-of-the-hall listener perspective. In contrast, some speakers with warm tonal balances attempt to goose up the “presence range,” which accents leading edges and registers more like a seating position closer to the musicians. The two competing characteristics—warmth and hyped-up leading edges—come across as incongruous and therefore artificial. Fortunately,

the PM1 does not have a hint of such a schism. Soundstage width did not extend much beyond the outer edges of the cabinets, another contributor to the mid-to-rear-hall perspective. Recording permitting, the PM1 has some airiness, but favors making images sound more solid and weighty, which I consider to be more reminiscent of live music than a more indistinct, gossamer-like presentation. Individual images are not as three-dimensional as they could be, but they are certainly competitive with those of the Music Culture R21 [\$2800, Issue 215], for example.

The PM1’s overall resolution is good, but not quite good enough to really carry some recordings to the level that sweeps you away (as the 805D can). Tord Gustavson’s “Draw Near” [*Being There*, ECM] is an intimate Third Stream Jazz piece. The trio lays down the progression, but Gustavson, in particular, alters his piano phrasing by gently softening some of the notes (or leaving some out) so that you, the listener, are drawn into the performance by filling in the missing elements in your own mind. The effect makes the music more intimate, in my estimation, than if the trio had played the work more straightforwardly. The PM1 gets some of the “Draw Near”

### SPECS & PRICING

|  |  |
|--|--|
| <b>Type:</b> Two-way, vented-box system  | <b>Weight:</b> 20.5 lbs. each                                      |
| <b>Drivers:</b> One 5" woven Kevlar mid/bass, one 1" carbon-fiber-reinforced aluminum dome tweeter | <b>Price:</b> \$2800, Mocha Gloss finish; PM-1 stand, \$550 (pair) |
| <b>Frequency response:</b> 48Hz-22kHz +/-3dB   | <b>B&amp;W GROUP NORTH AMERICA</b>                                 |
| <b>Sensitivity:</b> 84dB (2.83V,1m)  | 54 Concord Street  |
| <b>Impedance:</b> 8 ohms   | North Reading, MA 01864  |
| <b>Power handling:</b> Not stated  | (978) 664 2870   |
| <b>Recommended amplifier power:</b> 30W-100W into 8 ohms   | marketing@bwgroupusa.com   |
| <b>Dimensions:</b> 10.6" x 13" x 11.8" (height with dedicated stand, 25.6")                        | bowers-wilkins.com   |

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## EQUIPMENT REVIEW - Bowers & Wilkins Prestige Monitor 1 Loudspeaker

magic, but leaves some behind. Perhaps it is unfair to ask so much from a \$2800 speaker.

The PM1 makes a lot of music sound enjoyable, even flawed recordings, and this should make it appealing to many listeners looking for an easy-to-use speaker. Alanis Morissette's voice on "That Particular Time" [*Under Rug Swept*, Maverick] will veer toward brightness (or even shrillness) through some speakers, but the PM1 kept Morissette's upper register from painfully popping out in the mix. Rather than attempt to push the resolution envelope at its price level, it artfully integrates musical details with sonic solidity so that one is more likely to listen to the music for its tunefulness rather than for the documentation of a musical event: "art reproduction" over "archive retrieval," if you will. Please do not assume that the PM1 is a soft-focus, pillow-like speaker. It has plenty of resolution; it just doesn't hurl details at you. The new carbon-filament-braced aluminum tweeter apparently extends the dome's breakup frequency (B&W claims it to be 40kHz) far enough beyond the limits of human hearing to allow a linear and smooth response. Such an extended response supposedly removes tweeter breakup effects from influencing the part of the spectrum we can hear—at least in theory. The new tweeter is impressive, but...it is no 800 Series Diamond, either. Of course, one has to shell out another \$2200, over the price of the PM1, to buy a pair of 805 Diamond speakers, and the 805 Diamond's superior performance comes from a lot more than merely its diamond tweeter.

While its limited absolute bass output and dynamic range prevent it from portraying a large orchestra with gusto or rocking out with abandon, the PM1 nevertheless has enough resolution, dynamic life, and bass presence to make many recordings viable and enjoyable. I spent many an hour simply listening to music for its own sake and not really worrying about how much better it could be. The PM1 gets more right than not. As a speaker/stand package, I found the PM1 easy to like, and I daresay it will appeal to many other listeners as well. **tas**



# KEF R-300 Loudspeaker

## Coincidentally Speaking

Neil Gader



**T**he KEF R Series is the British speaker-maker's first collection of loudspeakers to integrate some of its most recent innovations, principally those in the groundbreaking \$30,000 Blade (Issue 222). A family of nine transducers, all easy on the pocketbook, the R Series includes a threesome of floorstanders, a pair of stand-mounts, two center channels, a surround, and a subwoofer. My first exposure to the R Series occurred at the Axpona Show in Jacksonville earlier this year, where the Rs were alternating with the stunning Blades in a lobby-level conference room. The room was like a small auditorium—a formidable challenge for any loudspeaker. Due to my fondness for compacts my eye naturally gravitated toward the silent R-300s parked to one side. I asked to hear them and KEF's genial gents assured me they'd be demo'd later that day. I was so impressed with this three-way design and its distinctive Blade-derived coincident driver that I put in my request for review samples on the spot.

For the record, the \$1799-per-pair R-300 is a three-way, bass-reflex compact, roughly fifteen inches tall. The piano-black exterior brilliantly sets off the aluminum diaphragm of the Uni-Q concentric, the cynosure of KEF's transducer technology. It's a tweeter/midrange array wherein the vented aluminum-dome tweeter is positioned at the acoustic center of the midrange cone. The tweeter is outfitted with a large neodymium magnet and a computer-optimized dome structure. As in the Blade, mounted directly above the dome is KEF's segmented "tangerine" waveguide, which further aids the dispersion of high frequencies over a wider off-axis field. Handling the midband is a braced magnesium/aluminum alloy cone with a die-cast aluminum chassis designed to minimize

resonance-transfer to the cabinet. The low-profile, almost invisible surround is KEF's Z-flex design, which maintains smooth, linear transmission of reflected output off the baffle. The bass driver uses a combination of a vented-magnet assembly and a large, lightweight, 2" aluminum voice coil driving a light, stiff hybrid-cone. Like the midrange driver, the woofer makes use of a Z-Flex surround and an outer, flat-profile trim ring. The crossover points are 500Hz and 2.8kHz.

Visually the front baffle is immaculate. It's been laid out so that each driver is flush-mounted with the front panel, the baffle itself devoid of visible driver-mounting screws. Even the grilles affix magnetically. The enclosure is constructed from MDF. The front baffle is a robust 32mm thick,

## EQUIPMENT REVIEW - KEF R-300 Loudspeaker

while the other panels and braces are 18mm thick. Constrained-layer-damping pads are strategically placed internally. At these select locations the cabinet expands its thickness to around 24mm. Computational fluid dynamics have been used to optimize airflow through the reflex ports.

The R-300 is bi-wire/bi-amp capable, but single-wire fans needn't fret because there's a pair of knobs on the back panel for splitting or rejoining the crossover when running the speakers in either bi-wire or single-wire modes. Just turn each knob clockwise to link the treble and mid/bass drivers or counterclockwise for bi-wiring. No jumpers required. Impressive housekeeping, KEF.

The sonic signature of the R-300 can be summarized in a few words—precision, pitch, forward, and focused. Its tonal balance conveys a smooth, slightly gung-ho midrange bias with little in the way of significant energy droops or peaks. Bass reproduction is rock-solid into the midbass. There's a bit of dryness and brightening in the treble underscored by a slight loss of energy in the upper mids. It's a factor I noted with specific singers—a *cappella* artist Laurel Massé on *Feather & Bone* comes to mind—as they transitioned from lower to upper octaves. The R-300 creates a more laid-back sound. And if you're scoring, it's a minor deduction. On the other hand, the three-way configuration gives the speaker a warmer and more dynamic midrange balance, and that warmth and dynamism extend into the lower mids and upper bass, where, to my ear, this little bit of enrichment makes the R-300 sound like it has slightly more low-frequency extension than it actually possesses. Midrange dynamics are especially lively. This is an area where most two-way compacts tend to sound a bit subdued at higher listening levels. Bottom-octave dynamics are not quite as lively but still pretty darn impressive. Extension is very good into the 50Hz range, with only a hint of added bloom from the port.

Image focus is wonderfully precise—not as surgical or transparent as the TAD CR-1, mind you, but taking a back seat to that \$37k wonder is nothing to be ashamed of, either. One of the best pop records to illustrate this focus is Steely Dan's *Gacho* [MCA]. It's pure crackling musicianship, with pitch-perfect engineering courtesy of Elliot Scheiner and Bill Schnee, and mastering by Bob Ludwig—

nihilistic-hipster songcraft at its finest. From the opening strains of “Babylon Sisters” and “Hey Nineteen,” the R-300 could have been holding a clinic for midrange timbre, focused imaging, and dynamic, iron-fisted bass. Similarly spotless imaging was apparent during *Wellingtons Sieg* [Turtle]—a piece that builds in intensity from the distant battle snares to the bugler's call springing from various soundstage locations. Not unexpectedly, the steady volley of bass drums ultimately did compress somewhat, and with it went some of the finer timbral distinctions, but in the right room (not too big), prepare to be impressed. Make no mistake—this is no Blade. In comparison, the R-300 is more Penknife. But as it repeatedly showed during some heavy rock tracks, it's more than happy to reveal its inner badass.

The R-300 conveys tonal and timbral colors that are exceptional in this price range. For example, it captures the humid and darkly haunting character of Lyle Lovett's “Baltimore,” while the opening piano intro of “North Dakota” has the harmonic hallmarks of live piano—the speed and, more importantly, the timbral accuracy. This track can sound icy and synthetically hard, but the R-300 delivers a piano that has the weight and physicality of an actual instrument.

With solo piano the R-300 consistently revealed the nuance and sensitivity of the player's touch on the keys. It was equally informative about other low-level cues, and about the fine gradations of dynamics that allow musicianship to envelope and immerse. The bottom octave was more representative than authentic, but the woofer integrated well with the coincident array, betraying only small hints of its partnership with the rear-firing port.

The R-300 gives up little in the way of transparency in most circumstances but under the full weight of a pianist's hands, multiple-note passages that include explosive chords, lightning trills, and laser-guided arpeggio lines can sound a bit amorphous, and the R-300 doesn't always fully organize the rush of trailing harmonics left in the wake of this flood of activity.

Sonically, the success of the R-300 rises and falls on the performance of the coincident-driver technology that has all but defined KEF for decades. Here there is none of the shouty, “cupped-hands” coloration that early coincidents were often guilty of. Nothing's perfect, however. I noted a bit of added honk during Tom

Scott's sax solo on the aforementioned *Gacho*. However, I found the Uni-Q-equipped R-300 was at its most insightful reproducing the human voice—the instrument most familiar to all of us. On a variety of vocals, my impression was not just one of focus, which the R-300 has in abundance. Unscientific as this may sound, a singer's voice achieved a unity, a oneness, on an almost subconscious level that most compacts in this range can't quite muster. Normally, at some point during a performance, I have the minute impression of listening to separate drivers—a hint of blur, like failing to line up a photographic image in the crosshairs of a camera's focusing screen. Not with the Uni-Q. It's a terrifically coherent speaker with unimpeachable driver integration.

I hope I've made it clear by now that, despite all the fuss surrounding the Uni-Q coincident array, the R-300 is no one-trick pony. It's a really stirring, all-around performer that enlivens the mix in this competitive price segment. I've only one thing to add: Where were you, R-300, when I was just starting out as an audiophile? **tas**

### SPECS & PRICING

|   |  |
|---|--|
| <b>Drivers:</b> Uni-Q (1" dome, 5" midrange, 6.5" woofer) | <b>KEF AMERICA</b><br>10 Timber Lane<br>Marlboro, NJ 07746<br>(732) 683-2356<br>kef.com/us |
| <b>Frequency response:</b> 50-28kHz                       |  |
| <b>Sensitivity:</b> 88dB                                  |  |
| <b>Impedance:</b> 8 ohms                                  |  |
| <b>Dimensions:</b> 15.2" x 8.3" x 13.6"                   |  |
| <b>Weight:</b> 26.4 lbs.                                  |  |
| <b>Price:</b> \$1799                                      |  |

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# Raidho C 1.1 Mini-Monitor

## Mini Masterpiece

Jonathan Valin

**V**enture is a Belgian company that has been making loudspeakers since 1986. The company's founder, Njoo Hoo Kong, a native of Indonesia, holds a Master's degree in physics. He thinks of loudspeaker design as more of a physics challenge than one of electrical engineering. In his quest to create super-top-end loudspeakers, Njoo Hoo Kong has applied his physics background to develop all his own drivers in-house. These drivers feature proprietary cone materials that, according to Venture, are key to the loudspeakers' performance.

The model under review here is the Ultimate Reference. Despite that lofty name and the speaker's equally lofty price of \$139,500, the Ultimate Reference is actually the penultimate product in the line, eclipsed by the \$199,000 Xtreme. The Ultimate Reference is a nearly-five-foot-tall floorstanding three-way design employing four 9" woofers, a 7" midrange, and an unusual 2" tweeter. Forgoing the usual stretched-fabric grille, the Ultimate Reference's drivers are covered by individual metal grilles, giving the speaker a business-like, yet elegant appearance from the front. But your attention is unlikely to be drawn toward the drivers and their grilles. Instead, you'll probably focus on what is among the most beautiful cabinetry ever lavished on a loudspeaker. The gorgeous ebony wood and layer after layer of buffed polyester lacquer combine to make the Ultimate Reference's enclosure a work of art in its own right.

The Ultimate Reference's design is somewhat unorthodox. The crossover slopes are first-

order, a design approach employed by very few manufacturers (Vandersteen and Thiel chief among them). First-order crossovers produce very gentle roll-offs (6dB per octave) in the frequency bands sent to each driver. First-order crossovers are the only type to achieve perfect phase coherence, but they require drivers that are well behaved far outside their passbands. Consider the Ultimate Reference's midrange driver, crossed over at 400Hz; at 200Hz the signal driving it is attenuated by only 6dB, at 100Hz by just 12dB, and at 50Hz by 18dB. This wideband signal puts additional stress on the drivers, often reducing the speaker's ability to play loudly without strain. Nonetheless, these tradeoffs are, as noted, balanced by perfect time and phase performance. So long as the drivers are well behaved, loudspeakers with first-order crossovers have a coherence and purity that are unmistakable. It's also worth noting that the Ultimate Reference's midrange driver is a 7" unit rather than the typical 5", giving it greater ability to play lower in frequency.



## EQUIPMENT REVIEW - Raidho C 1.1 Mini-Monitor

The crossover points of 400Hz and 3kHz mean that most of the music is reproduced by this 7" underhung midrange driver, with no driver-to-driver transitions in the most critical frequency bands. Note also that the signal driving the 7" midrange is down by 6dB at 6kHz and 12dB at 12kHz, requiring that the midrange's out-of-band behavior be exemplary. Incidentally, the crossovers are built with point-to-point wiring rather than with components mounted on a circuit board. Internal wiring is of Venture's own design.

The frequency response is stated in the literature as 20Hz–60kHz, although no tolerance is given, rendering the spec meaningless. Venture clarified the low-frequency extension spec by saying that the combination of the woofer's resonant frequency (17Hz) and the port tuning of 18Hz result in a response that is down by 6dB at 18Hz. Sensitivity is a highish 92dB, and the impedance is 6 ohms. The impedance magnitude is quite flat over the audio band, and there are no severe swings in phase angle, suggesting that the Ultimate Reference is fairly easy to drive. Input is via a single pair of Furutech binding posts or a Speakon connector. This was my first encounter with the Furutech posts, and they are exemplary. In addition to being easy to tighten by hand and offering a solid connection, they have a torque-limiting feature that prevents over-tightening. The input connectors are mounted on a removable metal panel to which handles are attached for accessing the crossover.

The enclosure is made from alternating layers of high-density fiberboard and solid hardwood. Two large ports at the top rear provide reflex-loading of the four 9" woofers. The cabinet's thickness isn't specified, but Venture says that the enclosure is heavily braced. The side panels converge toward a front baffle that is narrower than the rear panel. This "C" shape makes the enclosure more rigid, minimizes the front baffle area,

and gives the speaker an apparently smaller footprint when seen from the front. A hard polyester mirror coat finishes the enclosure. My review samples were finished Makassar Ebony. Other finishes include Rosewood, Elm Burl, Piano Black, and Pearl White. Custom finishes are available upon request.

The drivers are unusual in their shape and cone composition. The four 9" woofers and the single 7" midrange driver are based on a cone material developed by Venture called CFGC, or Carbon Fibre Graphite Composite. Tiny graphite particles are uniformly mixed with a resin to form a graphite composite that is cured in a mold at high temperature. In addition, long carbon fibers are embedded in the graphite composite in a proprietary pattern to increase stiffness while keeping the cone mass low. Note that the cone is not built up from woven cloth, nor is the graphite a coating on the cone. Rather, the graphite is an integral part of the cone. This Venture-developed cone material reportedly nearly eliminates cone resonances that would introduce distortion and smear micro-dynamic detail. It's also very light and stiff. Graphite composite matrices were first developed for absorbing vibration in ship hulls. In addition to being made from this custom material, the cones are also unusual for their shallow, perfectly concave profile (no dust cap). This cone profile was developed for "a wave launch that results in optimum matching of amplitude and phase in the soundfield."

As with the woofers and midrange drivers, the Ultimate Reference's tweeter is also custom-designed by Venture. It is a 2" device that looks like a tiny cone midrange driver with a whizzer cone in the center. I've never seen a tweeter that looks anything like this, either in its size (most tweeters are 1"), cone-shape (most tweeters are domes or inverted domes), or the secondary whizzer cone in the center. In addition, the cone material is another custom Venture creation, called



## EQUIPMENT REVIEW - Raidho C 1.1 Mini-Monitor

AGC, or Abaca Graphite Composite. This material similar to the CFGC in the woofers and midrange drivers except that the cone is composed of a pulp and long fibers from the stems of the abaca tree. Tiny graphite particles are uniformly mixed with the abaca pulp to form a graphite composite. The long abaca fibers, embedded in the abaca pulp in a defined pattern, increase the cone's stiffness. The combined material is cured in a mold at high temperature. Abaca, which is related to the banana tree, is used in making rope, teabags, bank notes, carpet, and specialized paper products. Venture claims that this AGC tweeter, crossed over at 3kHz, has a bandwidth of 100Hz–60kHz, an astounding specification.

All this technology comes together in a loudspeaker that while large, doesn't dominate a room the way some loudspeakers can. The stunning cabinetry no doubt draws your attention away from the technological nature of the product, giving it a natural and organic feel.

### Listening

There are a number of rules to follow in setting up a pair of Venture speakers that simplify the installation. The first is that the optimum distance between them is narrower than that of most other loudspeakers, and absolutely crucial to the performance. The second is that the ideal amount of toe-in is exactly six degrees, no more and no less. Venture's US distributor, Mike Slaminski of Precision Audio and Video, used a protractor and 3'-long metal ruler to dial in the toe-in. I would have thought that the optimum toe-in would be a function of the listening distance, but six degrees seemed to work perfectly for my 12' listening distance. The loudspeaker spacing was realized by moving the loudspeakers

along a line marked with masking tape on the floor at the speakers' front edges, and then listening to every incremental change. As we zero'd in on the optimum placement, movements of a quarter inch became significant. This effort in finding just the right distance apart, and using the protractor to set the toe-in, pays off when the sound unmistakably "locks in," with the soundstage suddenly existing independently of the loudspeakers. You can get close to the ideal placement and think that the sound is quite good, but finding just the right spot resulted in a "step function" in which the sound takes a leap in quality.

That sense of knowing with certainty when the Ultimate References were in the right location was the result of a tremendous coherence in which the soundstage truly floated with no apparent attachment to the two large boxes in front of me. When that happened, everything else naturally fell into place.

I'll start with the Ultimate Reference's soundstaging, this loudspeaker's most compelling attribute. Despite the somewhat narrower distance between the Ventures compared with all other speakers I've had in my room, the Ultimate Reference threw a spectacularly wide soundstage that extended beyond the loudspeakers. The spatial presentation was extremely enveloping in that the soundstage seemed to wrap around to the sides of the listening room rather than appearing as a square window in front of me. On the stunning new 45rpm reissue of Muddy Waters' *Folk Singer*, the snare drum at the soundstage's far left has an enormous "pop" that "lights up" the acoustic and gives dimension to the recording space. The Ventures presented this ambient information as fully surrounding the far-left drum placement rather

than truncating the edge beyond the loudspeaker boundary. By getting this little detail right, the Ultimate Reference created a more compelling impression of being present at the original musical event. This quality of the loudspeaker was particularly rewarding with orchestral music; the Ultimate Reference was magical in its ability to disappear into an enormous and transparent soundstage bounded by the recording venue's walls rather than by a limitation of the loudspeaker placement or listening room. I must stress that the Venture's soundstaging wasn't a hi-fi trick but rather a quality that made the spatial presentation more realistic and the music more engaging.

The Venture combined this enormous sense of size with precise image placement and the ability to sound small and focused when appropriate. The beautiful SACD *Jazz in the Key of Blue* by Jimmy Cobb [Chesky] was recorded with a single Soundfield microphone, with trumpeter Roy Hargrove in the middle flanked by Cobb on drums on the right and guitarist Russell Malone on the left. Hargrove doesn't stay in one place during the set, a fact revealed with great precision by the Ultimate Reference. By the way, this is the most realistic recording of a trumpet I've heard, and Hargrove's playing is exquisite.

The Ultimate Reference had a coherence that combined with the imaging precision to create a vivid, up-front portrayal of instrumental images and their timbres. The palpability of images—the impression of the instrument hanging in space in front of the listening seat—was phenomenal. The coherence was partially attributable to the seamless integration of the drivers—it is perhaps no coincidence that the drivers feature similar construction and design, and are crossed over with

first-order slopes.

Despite the first-order crossovers, the Ultimate Reference had wide dynamic contrasts and could reproduce even the most challenging music. I never heard the Venture approach its bottom-end dynamic limitations on high-res orchestral music or power rock. In this regard, the Ultimate Reference was sensational. Although the Ultimate Reference played loudly and had considerable "jump factor" on transients, I thought that the soundstage became temporarily less well defined and timbres hardened during the loudest and most demanding passages.

The Ultimate Reference's bass was well extended and weighty, but didn't plum the depths of the lowermost octave (at least in my room). The organ pedal points on Rutter's *Requiem*, that old reliable reference for bass extension, were somewhat audible but didn't pressurize the room the way it does with a select few reference-quality loudspeakers. Despite a roll-off at about 30Hz in my room, the bass had a terrific combination of weight, authority, and power on one hand, and pitch definition, articulation, and precision on the other. The Ultimate Reference seemed to combine the best attributes of reflex-loading (weight, impact, power) with the qualities associated with infinite-baffle loading (definition, resolution, transient fidelity). The superbly recorded acoustic bass on Joe Morello's *Morello Standard Time* [DMP] had a musically compelling combination of body and articulation. The bass was also finely textured, with great color and a sense of a resonant, three-dimensional wooden body. I noticed this quality on quite a number of recordings; the Ultimate Reference's bass is superb. Still, the Ultimate Reference didn't quite match the visceral, full-body

## EQUIPMENT REVIEW - Raidho C 1.1 Mini-Monitor

### SPECS & PRICING

**Type:** Stand-mount two-way mini-monitor  
**Drivers:** One sealed ribbon tweeter, one 115mm ceramic mid/bass driver  
**Frequency response:** 50Hz–50kHz  
**Impedance:** >6 ohms  
**Sensitivity:** 86dB 2.83V/m  
**Crossover:** 3kHz, second-order  
**Recommended amplification:** >50W  
**Enclosure:** Vented design with port in rear panel  
**Finish:** Walnut burl veneer, piano-black, white high-gloss, all possible paint colors  
**Dimensions:** 200 x 370 x 360mm  
**Weight:** 12.5kg  
**Price:** \$18,000 (including stands)

#### RAIDHO ACOUSTICS

Bransagervej 15  
 9490 Pandrup Denmark  
 +45 9824 7677  
 raidho.dk

#### JV'S REFERENCE SYSTEM

Loudspeakers: Magico Q5, Raidho C 1.1, MartinLogan CLX, Magnepan 1.7, Magnepan 3.7, Magnepan 20.7  
 Linestage preamps: conrad-johnson GAT, Constellation Virgo, Audio Research Reference 5SE  
 Phonostage preamps: Audio Research Corporation Reference Phono 2SE, Constellation Perseus

Power amplifiers: conrad-johnson ART, Lamm ML2, Constellation Centaur, Audio Research Reference 250  
 Analog source: Walker Audio Proscenium Black Diamond Mk III record player, Da Vinci AAS Gabriel Mk II turntable with DaVinci Grand Reference Grandezza Mk II tonearm, Acoustic Signature Ascona with Kuzma 4P tonearm  
 Phono cartridges: Clearaudio Goldfinger Statement, Ortofon MC A90, Benz LP S-MR,  
 Digital source: Mac Mini/Wavelength Audio Crimson USB DAC  
 Cable and interconnect: Synergistic Research Galileo  
 Power Cords: Synergistic Research Tesla, Shunyata King Cobra  
 Power Conditioner: Syner-gistic Research Tesla II  
 Accessories: Synergistic ART system, Shakti Hallographs (6), A/V Room Services Metu panels and traps, ASC Tube Traps, Critical Mass MAXXUM equipment and amp stands, Symposium Isis and Ultra equipment platforms, Symposium Rollerblocks and Fat Padz, Walker Prologue Reference equipment and amp stands, Walker Valid Points and Resonance Control discs, Clearaudio Double Matrix SE record cleaner, HiFi-Tuning silver/gold fuses

experience of the Rockport Altair, which remains for me the reference standard in this regard.

The Ultimate Reference had a tonal balance I'll call "lively." The top end was very open and extended, with a terrific sense of air riding above the music. This upper-midrange/treble character contributed to the sense of palpability as well as to the soundstage openness and transparency, but also to an overall balance that favored upper-midrange resolution and detail over timbral warmth, body, and saturation of tone colors. Instruments rich in upper harmonics—saxophone, for example—tended to sound lighter in color and thinner in body. The brass and woodwinds of Gordon Goodwin's Big Phat Band on its new CD *That's How We Roll* were a bit forward, emphasizing overtones rather than fundamentals. (I saw this amazing band live during the review period.) Below about 300Hz, the Ultimate Reference had plenty of body, weight, and tone-color density; the characteristic I'm describing is what sounded like a slight reticence in the lower midrange coupled with an equally slight prominence in the upper-mids. In tonal balance, the Ultimate Reference was the antithesis of the sound of Sonus faber loudspeakers. Those Italian speakers have a balance that brings out richness and body rather than eking out the last measure of detail. This is why it's so important to carefully evaluate loudspeakers on your short list with an extended audition of your own. I'm sure that both types of sound will have their adherents.

Resolution was expressed more in the heightened reproduction of transient information such as percussion and the attacks of acoustic guitar strings rather than in an ability to reach down and reveal the very finest recorded details. A good test of a loudspeaker's ability to accurately reproduce very fine detail without smearing is a point half-way through the lento assai movement of Rachmaninoff's *Symphonic Dances* [Reference Recordings] when the string section enters at a barely audible whisper, slowly rising in level from utter blackness. Compared with similarly priced reference-grade loudspeakers I've had in my home, the Ultimate Reference tended to obscure the strings' entrance. By contrast, the tambourine, tam-tam, glockenspiel,

and xylophone later in the piece were all brought forward by the Venture's upper-midrange liveliness.

Most of my time with the Ultimate Reference was spent with the Hegel H30 power amplifier (a choice endorsed by Venture's U.S. distributor). Powering the Ultimate Reference with the 18W Lamm ML2.2 single-ended triode monoblocks showed the speaker to be an easy load to drive; dynamics were quite wide and the Lamm's drove the loudspeakers to a satisfying level. However, the combination tended to exacerbate the reduction of midrange warmth mentioned earlier. This had nothing to do with the intrinsic performance of either product, but rather the match between amplifier and loudspeaker.

Just before the Ultimate Reference left, I received the Rowland 725 monoblocks, Corus preamplifier, and Aeris DAC. This set of electronics proved to be the best match for the Ultimate Reference; the bass became even more sensational, the midrange was warmer and more full-bodied, and the treble smoother. I'll have a lot more to say about these electronics from Jeff Rowland Design Group in an upcoming issue.

#### Conclusion

The Venture Ultimate Reference is an engaging and musical loudspeaker with many laudable attributes. It combines spectacular soundstaging, wonderful coherence, terrific bass, and wide dynamics in an absolutely gorgeous enclosure. The tonal balance favors resolution over warmth and body, and suggests that the Ultimate Reference is best partnered with forgiving sources and electronics. At its price of \$139,500, the Ultimate Reference faces intense competition from quite a number of reference-quality loudspeakers—as a loudspeaker's price goes up, so does the performance bar. There is no single perfect loudspeaker; the potential purchaser must listen to several top contenders and weigh the merits and idiosyncrasies of each before making such an important decision. Based on my experience, the Venture Ultimate Reference is one loudspeaker that deserves an audition. **tas**

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# Magico Q1 Loudspeaker

## Road Trip

Jonathan Valin

I've never before written a review of a product I haven't auditioned in my home—and, trust me, don't plan to make a habit of it—but in August of last year I traveled to Berkeley, CA, and spent three solid days and nights listening to Magico's latest aluminum-enclosed loudspeaker, the \$26,500 stand-mounted Q1 mini-monitor in Magico's (sonically excellent) listening room. To be honest, though I'd been invited to audition the Q1s several months before, this was a trip I'd decided not to make. The way I saw it, having reviewed the Minis, the M5s, and my current references the Q5s over the past three or four years, I'd done enough Magico'ing for awhile. Plus I had my hands full with other loudspeaker-review projects, including the Scaena 3.4 that so impressed me at CES 2011 (reviewed elsewhere in this issue) and the Audio Physic Avantera that had done a bit of the same thing at this year's Munich show (review forthcoming). I simply didn't have the time or space to do another loudspeaker review.

However, when my colleague Jim Hannon raved about the Q1 in his California Audio Show report, I got curious. Like me Jim is an electrostat enthusiast—and for the very same reasons that I am. Up until recently there was simply nothing in a dynamic speaker that could match the transparency, disappearing act, and, with a first-rate source, realism (at least on acoustic music) of a really good electrostat or planar—nothing with multiple cones that could compare to the seamless presentation of a “boxless” Quad or CLX or Sound Lab or Maggie, or equal their

transient speed and low-level resolution. True, as I've noted before, big multiway cone speakers own the bottom octaves and impact on the loud side of the dynamic spectrum; they also have more three-dimensional “body” than 'stats and planars and, sometimes, tighter image focus and wider soundstages. But, as I've also noted before, the price you pay for these things in octave-to-octave coherence, overall neutrality, low-level resolution (particularly at lower volume levels), room interaction, and transparency to sources can be steep—too steep, in fact, to interest a

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listener like me (until the M5, followed abruptly by the Q5, came a'callin'). No bass is better than lousy bass in my book (yet to be published, BTW). And even if the bass proves passable, hearing different sounds in the low end, the midrange, and the treble from ill-matched drivers in a large noisy enclosure is simply an unacceptable trade-off for an extra octave of bottom end.

Indeed, until about two years ago the only dynamic speakers that passed muster in the Valin household were two-way mini-monitors. Why? Because they sounded more like single-driver electrostats and planars (augmented by some of the virtues of cones).

Of course, it's a lot easier to design and build a good two-way mini-monitor than it is to design and build a three-and-a-half or four-way or five-way behemoth. First, you only have to deal with two drivers and one crossover—not that this is a snap, but it is certainly simpler than wrestling with five or six drivers and multiple crossovers. Second, you only have to deal with a tiny box. Once again, engineering and constructing a really *good* tiny box isn't a walk in the park, but whatever the build-quality aimed for, it is substantially less difficult to make a small enclosure disappear into the soundfield than it is a large one.

All of which means that minis inherently have a leg up when it comes to driver coherence and enclosure inaudibility. In addition to this, they generally don't produce much (if any) low bass making them a lot less likely to excite those 60–80Hz room nodes that automatically remind you that you're listening to a woofer in a cabinet. Their much smaller footprints allow them to be placed farther away from sidewalls and backwalls, further reducing room reflections and allowing them to

throw vast, minutely detailed soundstages into which they more or less disappear.

This said, many of the same things that a mini gets right it also gets wrong. First, there is the bass issue. Minis generally don't have any. From a room-interaction viewpoint, this is great (as noted)—from a musical one, not so much. Electrostatic Quads and CLXes and planar Maggie 3.7s may not plumb the depths below 45–55Hz, but they go down low enough to give you a fair semblance of the sound of bass fiddles, pianos, tubas, bassoons, etc. Oh, they may not reproduce the lowest pitches of these instruments (or all the power with which *fortes* are sounded), but they get the harmonics right and thanks to the way our brains and ears work we supply the missing fundamentals.

Many two-ways, on the other hand, are lucky to make it down to 80–90Hz. They often have a built-in bump at their LF cutoff, intended to give you the impression of deeper-going bass, but (minus the addition of a subwoofer, itself a very iffy proposition) a typical two-way mini-monitor cannot “imply” the bottom octaves or fill in the “power range” from 100Hz to 400Hz the way a good 'stat or planar can and does. As a result, two-ways tend to sound thin in balance, lacking the body and weight and power of the real thing. Of course, this lighter balance also makes them sound nimbler in the midrange and can foster the impression of great transparency and detail, in the same way that certain electronics that are depressed in the mid-to-upper bass and lower mids can sound more transparent and detailed.

Second, there is that soundstage. Because they only have two drivers, a (relatively) simple crossover, and tiny enclosures with much less

surface area to reflect/diffract off (and much less mass to resonate), minis, as noted, tend to disappear into the soundfield more completely than any other kind of speaker, including 'stats and planars. However, at the same time that their diminutive enclosures and simple complement of drivers allow them to disappear as sound sources, those selfsame diminutive enclosures and simple complements of drivers are also constantly reminding us of their presence in the thinness of timbre and lack of weight, body, and power that I've already mentioned, and the miniaturization of instruments and voices that I haven't. Detailed a mini's soundstage certainly is, often vast in width and depth and precise in focus. But realistic image height is almost always a problem. Now it's true that all loudspeakers have a “size” issue—I've never yet heard one capable of reproducing the sheer breadth (and enormous power) of, oh, a drumkit as it is heard in life, much less a symphony orchestra—but when it comes to lifelike imaging mini-monitors typically are worst-case scenarios. They tend to shrink instruments and voices to unusually small dimensions.

Unfortunately, image size isn't the only thing they shrink. A single 5-7" mid/woofer in a tiny box simply can't move the amount of air that a big panel or several large woofers in a well-engineered cabinet can move. The result isn't just a lack of low bass; it is an overall lack of dynamic range and impact on *sforzandos* and *fortissimos* and a definite SPL limit at the loud end of the loudness scale. As is the case with 'stats and planars, this dynamic shortfall on the very loud side is compensated for by superior speed of attack and greater delicacy of timbre

and texture on the very soft one. Nonetheless, dynamic-range and ultimate-loudness limits are the banes of most minis.

In small rooms on a large slice of acoustic music, mini-monitors can (minus image size) sound very persuasively realistic—and very transparent to sources. But they won't do the big orchestral stuff—or any power rock—with the verisimilitude of larger dynamic, planar, or electrostatic speakers. It is just the price you pay for what mini-monitors do well.

The Q1 is the highest-fidelity, fullest-range, most transparent-to-sources two-way I've come across (and I've heard a few)

At least, this was the scenario *chez* Valin up until the arrival of the Magico Mini and Mini II about four years ago. Thanks to the superior engineering of their cabinets, drivers, crossover, and heroic aluminum-and-birch stands, the Minis (which were rather misleadingly named, in that they were much much larger and more substantial than typical two-ways) began to turn the ship around.

The Minis and Mini IIs had all the virtues of two-ways—the neutrality, the low-level resolution, the coherence, the vast soundstage, the incomparable disappearing act—but they also had three things that other minis did not (or at least not in this abundance): bass, dynamics,

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and image size. Now when I say the Minis had bass, I don't mean they plumbed the depths the way the M5s or Q5s do. But their carbon-fiber drivers, massive neodymium magnets, unusually well-engineered spiders and suspensions, and sealed birch-ply-and-T6-aluminum cabinets allowed them to play down into the upper-forties flatly and to roll off below that at 12dB/octave, giving them "usable" response into the mid-to-low forties and upper thirties. Many 'stats, planars, and smaller three-way dynamic speakers would've been proud to own the Mini IIs' bass, for it was not only extended, it was also discriminating—a far cry from the humped-up bass of earlier-gen two-ways.

With this increase in bass extension and resolution came concomitant increases in neutrality through the power region, volume limits, and overall dynamic impact. The Mini IIs could play louder and with greater power than other minis I'd owned or reviewed. And this expansion of dynamic range made them more suitable on a larger variety of music, although they were still far short of the ideal speakers for certain kinds of rock-and-roll, electronica, and very-large-scale classical.

Whether because of their sleek tapered enclosures, their superb stands (which lifted them further from the floor than typical mini stands), their new-tech drivers and crossovers, or the combination of the three, the Minis and Mini IIs were also not "miniaturizing" loudspeakers. They managed to produce closer-to-life-sized voices, violins, even pianos, and they did so without the laser-cut focus of most two-ways. They were larger and more naturally expansive-sounding, without any loss of stage width or

depth or inner detail.

As good as the Minis were—and they were the speakers that put Magico on the high-end map—they weren't perfect. Their tweeter was rather bright and although that tweeter's out-of-passband breakup modes (and those of the mid/woof) were greatly reduced in the Mini II version of the speaker, the tweet was still vaguely audible on-axis (much less so off-axis). There was also a graininess—not dissimilar to the brushed-snare noise in all but the latest-gen Magneplanars—throughout the Minis' soundfield that I assumed came with the cone drivers (particularly the ring-radiator tweeter). In addition, the Minis were not easy to drive. Like all Magico speakers they were a difficult low-sensitivity load that necessitated the use of the best and most powerful amplifiers, tube and solid-state, to get the best sound.

Replacing a classic is never an easy task, but Magico has made a habit of trumping its own best efforts (often with disconcerting rapidity, as in the cases of the Mini I and Mini II and the M5 and the Q5). So when Wolf and Co. showed a mockup of the aluminum-bodied, beryllium-tweetered Q1 at last year's CES, I was sure that the new speaker would be better. What I didn't guess was how much better.

As I started off by saying, it took Jim Hannon's rave write-up to get me interested enough to toy with the idea of paying Magico a visit after all. As was the case with the M5/Q5, I was promised a side-by-side comparison of the Mini II and the Q1, using the same electronics (Soulution 700 monoblocks and 720 linestage, with which I am very familiar) and, to further entice me, using the same *analog* sources—a Clearaudio Innovation Wood turntable, a Graham Phantom II Supreme

tonearm, and my current reference mc, the Clearaudio Goldfinger Statement, plus a variety of phonostages from Aesthetix, Soulution, and (the surprise of the bunch) The Tube Preamp from Dan Schmalte of The Tape Project and Bottlehead Electronics. I was told I could bring as many of my own LPs as I could fit in a carry-on suitcase and listen at length to recordings I know by heart through electronics that were until lately my references. (Magico had never showed its gear with vinyl prior to this past Munich High-End Show. Now I'd be surprised if it didn't. Alon Wolf is nothing if not a true believer and once he finds a "better thing" he goes all out to find the best of breed. The wonder, to me, is that it took him this long to rediscover the joys of LPs, especially since he has thousands of albums in his home and in his showroom.)

Before I cut to the chase, a few words about me and Magico. There are folks out there who seem to think that I *only* like Magico loudspeakers (and I advise them to read my reviews of the Quad 2905s, the MartinLogan CLXes, the Magneplanar 1.7s and 3.7s, the Morel Fat Ladies, the TAD CR-1 Compact Monitors, the Nola Baby Grands, the MBL X-Tremes, etc.—and also to take a close look at my RMAF and CES show reports). Though I confess to feeling odd about reporting on yet another honest-to-goodness great loudspeaker from this little Berkeley-based company so soon after reviewing its great Q5, what should I do in the face of genuine sonic distinction? Keep mum? Pass on the opportunity? Wait till next time? Before I read Jim's CAS report, all of these thoughts went through my head. But after reading it, it came to me that my primary job at TAS is to report on cutting-edge excellence, whatever

its source. And while Magico is certainly not the only speaker manufacturer at the pointy end of today's technology, it is one of the foremost. Ergo, the trip to California and this road-trip "review."

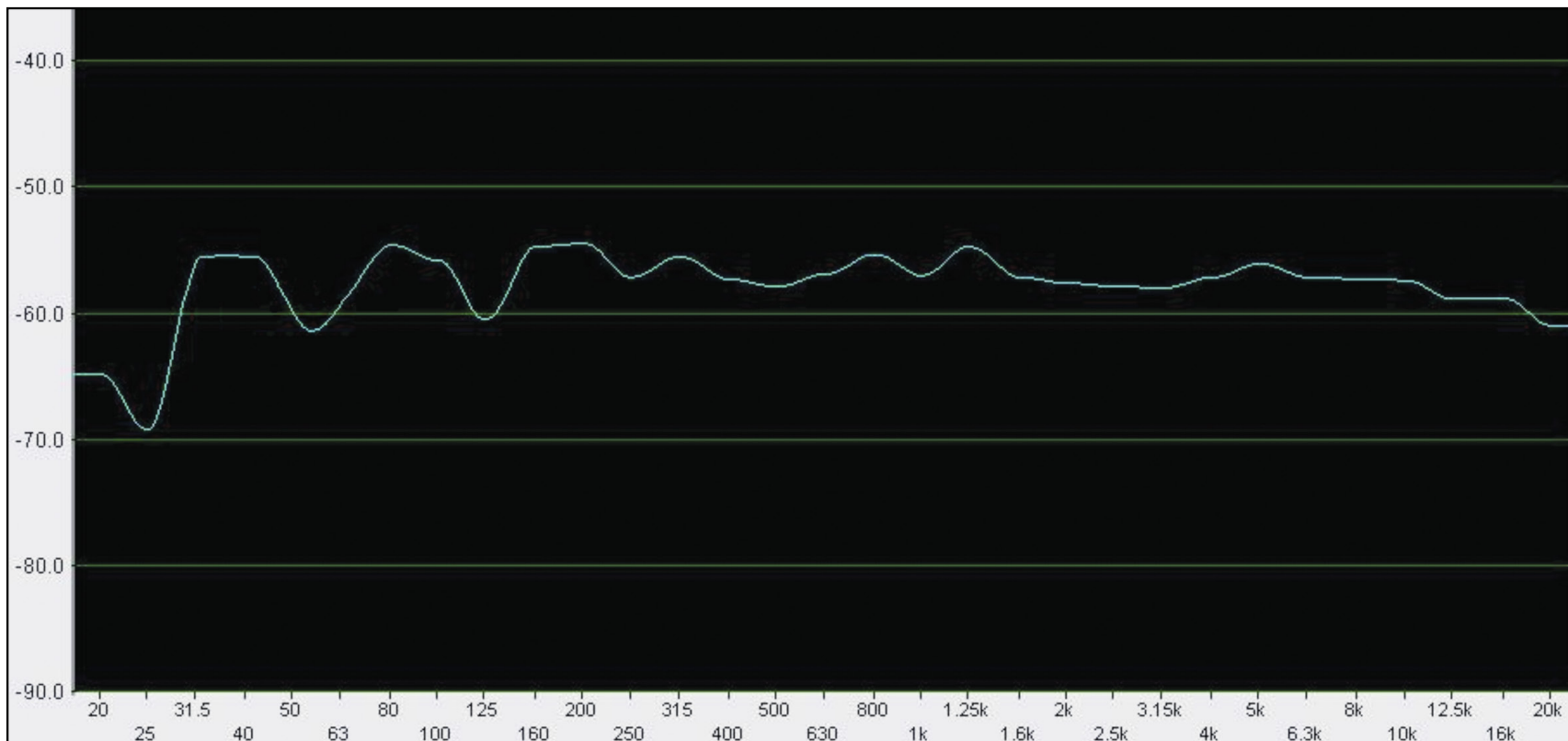
So, to get the sticky part over with, let me just outright say that the Magico Q1 is the highest-fidelity stand-mount two-way I've yet heard. It is not just a little better than its predecessor, the Mini II, it is a whole lot better in every sonic regard. Switching from the Mini II to the Q1 (on the same sources with the same electronics) is almost exactly like switching from an LS3/5a to a Quad 57—or for that matter from an M5 to a Q5, only in a couple regards the Q1 is better than the Q5.

I suppose the first thing that stands out about the Q1 is its much lower noise floor—the virtual elimination of the upper-midrange/treble hash and grain of the Mini II. As was the case with the Q5 vis-à-vis the M5, a good deal of this lower distortion has to be attributed to the Q1's superior, elaborately braced-and-damped aluminum enclosure, which, unlike the Mini II's birchply-and-aluminum enclosure, is not storing energy and then playing it back ever-so-faintly in a time-smearing fashion.

But with the Q1 the improvement in the cabinet is only half the story. The other half is the improvement in the blend of its 1" beryllium dome tweeter and its 7" NanoTec carbon-fiber-Rohacell-sandwich mid/bass. It is my understanding that, since the launch of the Q5, Magico has been "working on" its beryllium tweeter and, one assumes, on the crossover between the tweeter and the other drivers. I don't know precisely what has changed here, but I can

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### Q1 Quasi-Anechoic Frequency Response (Courtesy of Magico)



tell you for a fact that this is the most seamless blend of a beryllium tweeter and a cone mid/woof I've heard. As a result, the Q1 comes closer to sounding like a single-driver loudspeaker (on-axis) than any loudspeaker Magico has yet made. The effect is magical—like getting a Quad or a CLX (with better bass and large-scale dynamics than either) in a 9" by 14.2" by 14.2" package. Where the Q5 comes very close to this same magical seamlessness (when listened to slightly off-axis), I'm not sure that it fully matches that

of the Q1 in the upper-mids and treble, where the little speaker isn't "virtually" like a 'stat but is "fully" so. In the treble, its low-level resolution is at least as good (if not better) than that of the Q5. In fact, the only area in the upper-mids and highs where the Q5 seemingly exceeds the Q1 is transient speed—and that may be because its slightly "rougher-sounding" (on-axis) beryllium tweeter is goosing up attacks. In any event, this is one very neutral, very detailed, very well-integrated, very transparent loudspeaker that not

only taught me a few new things about recordings I know well but also taught me a few new things about the Soudation electronics it was being used with (for which, see below).

Let's turn to the bass and dynamics, as those are the *bêtes noires* of minis. Magico claims that the Q1 is capable of 32Hz extension +/-3dB and has the measurements to prove it (see the printout at the top of this page).

While I'm not sure that the Q1 was going quite this low this flatly when I heard it, it was

certainly going lower than any other two-way I've auditioned—more-or-less flat at least into the upper 30s. In stand-mounts only the TAD CR-1 equals it in bottom-end extension (and exceeds it in bottom-end clout)—and the TAD CR-1 is a \$40k three-way with a separate 8" woofer.

Once again I'm not sure how Magico achieved this legerdemain from such a small box and driver, but musical notes that would've been veiled or absent on the Mini II—such as the capering contrabassoon and doublebasses in the Overture of Stravinsky's Symphony in Three Movements [Decca], the thunderous pedal point of the piano in Paul Dessau's First Sonata [Nova], and the sharp cracks of the drumkit in Reiner Bredemeyer's *Schlagstück 5* [Nova]—are here reproduced almost in their entirety.

I say "almost" because while the Q1 can supply a low-end clarity and extension that puts other minis to shame, it cannot supply all the power that accompanies these deep notes (where the much larger Q5 can and does). You simply don't get the room-shaking power and utterly clear pitch-definition of Tina's rumbling bass intro on "Take Me To The River" through the Q1s the way you do with the bigger Q5s. Let's face it: There is a limit to the amount of air a 7" driver can move, although I think you would be surprised, as I was, by how close the Q1 comes to reproducing lifelike bass-range dynamics, particularly in the mid-to-upper bass.

Above the bass range, the Q1 is a dynamic dynamo (as was the Mini II, to be fair), although because of the unusually smooth blend of tweet and mid/woof (and the lower noise of its enclosure) that dynamism has a less roughed-up, lower distortion, more civilized feel. The

## EQUIPMENT REVIEW - Magico Q1 Loudspeaker



new Q is also—with the right source components—a paragon of transparency and resolution, reproducing subtleties like Joan Baez's and Melody Gardot's tremolo with the clarity, delicacy of timbre and texture, dynamic range, and sheer “in-the-room-with-you” realism of an electrostat, albeit with more body and dimensionality than a 'stat.

Naturally, the Q1's soundstaging is vast (when the recording permits) and the speaker disappears into the soundfield—as all minis do—so completely that you have little-to-no sense of the sound being projected from or painted on drivers and faceplates and cabinets. On top of this, the Q1 (like the Mini II before it) does not miniaturize instruments, although it does focus them a bit more crisply than the Mini did. Thus something like the concert grand piano in the aforementioned Dessau LP has the height, volume, and most of the power of a piano reproduced by a much larger multiway loudspeaker.

Now let me say something about this speaker's transparency to sources. With a couple of the phonostages we used, the Q1s had a sound that I associate with the Soulution 700 monoblock amps and MIT cables—very clear, neutral, and fast on transients but just the slightest bit “overcontrolled,” as if some kind of sonic brake were being applied to the duration of notes after the sounding of the starting transient. This sense of overcontrol or restraint makes music sound slightly less freed-up, slightly less vital and lively than it does through a select few other components. Frankly, I thought this mechanization was due to the very elaborate feedback circuit in the Soulution 700 and to the networking of the MIT cable and interconnect. But, as usual, I was wrong.

When we stuck in a third phonostage at the end of the second day of listening, the Q1s sprang into even more convincing life—transparency, resolution, delicacy of tone and texture, see-through clarity, and above all liveliness markedly increased and the vague sense of mechanization vanished. Clearly it was not the amps or the cables that were causing the problem, such as it was (and you'd have to be familiar with the LPs and certain other very high-quality electronics to be aware of it); it was the other two phonostages. When a loudspeaker can discern this sort of thing, while also

reproducing instruments and vocalists with astonishing realism, you have a transducer that will please “fidelity to mastertapes” listeners and “absolute sound” ones equally. And that, folks, is quite an accomplishment.

It goes without saying that I highly recommend the Magico Q1 to all but the hardest of hard-rock music lovers. It is, as I said, the highest-fidelity, fullest-range, most transparent-to-sources two-way I've come across (and I've heard a few). It is also, in my experience, one of the two finest speakers—the other being my beloved Q5s—that Magico has yet come up with. (I haven't yet had enough listening experience with the Q3 to include it in the charmed circle, although by all reports it too may very well belong among the Magico elect.) For listeners in small-to-medium-sized rooms who can't house (or won't stand for) big boxes or large panels that clutter up the décor, or for classical/jazz/acoustic-pop music lovers in any size room who want very close to the ultimate in transparency, resolution, and refinement at much less than a Q3/Q5 price, the Q1 would definitely be the Magico ticket I'd ride. **tas**

### SPECS & PRICING

|  |   |
|--|---|
| <b>Type:</b> Two-way, stand-mounted mini-monitor in a sealed enclosure | <b>Weight:</b> 120 lbs. (including stands)          |
| <b>Drivers:</b> One 1" beryllium tweeter, one 7" NanoTec mid/woof      | <b>Price:</b> \$26,500 (including dedicated stands) |
| <b>Sensitivity:</b> 86dB/1W/1m   | <b>MAGICO, INC.</b>                                 |
| <b>Impedance:</b> 5 ohms (4 ohms minimum)                              | 932 Parker Street #2                                |
| <b>Frequency response:</b> 32Hz to 50kHz +/-3dB                        | Berkeley, CA 94710                                  |
| <b>Recommended amplifier power:</b> 50W                                | (510) 653-8802                                      |
| <b>Dimensions:</b> 10" x 44" x 15.2" (on stands)                       | magico.net  |

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EQUIPMENT REVIEWS

# Floorstanding Loudspeakers





# Paradigm Monitor 9, Series 7 Loudspeaker

High in Musical Value

Wayne Garcia

**N**ow in its seventh generation, Paradigm's Monitor Series is one of the benchmarks for good-sounding, affordable speakers that, while perhaps not the last word in any one area, offer tremendous across-the-board performance, musical satisfaction, and value. Which, of course, are the very traits that have made this Canadian firm's designs such a success over the past quarter-plus century.

For instance, put on a full-range, well-recorded rock disc, such as Mobile Fidelity's SACD of Stevie Ray Vaughan's *The Sky Is Crying* (which I reviewed in Issue 220), and marvel at the relatively compact \$1198 Monitor 9s' impactful low-frequency response. It's not that this speaker goes spectacularly low—its spec'd response is a respectable 31Hz—but the choices

made by Paradigm's design team, and improvements made over the V.6 model, create a feeling of bass—fast, tuneful, and reasonably weighty—that's nevertheless quite satisfying. While I imagine that home-theater users, or those into bass-heavy music might wish to add a subwoofer (and Paradigm offers a range of these, too), the walloping drums in, say, "Little Wing," were just that, with good snap from the snare, and a nice recreation of size and power from tom and kick drums. You'll also hear how Paradigm's latest aluminum dome tweeter seems altogether more open, dynamically free, and less bright than past versions (though this takes some time, as the tweeters are initially a bit hard and edgy). Vaughan's Strat peals and shrieks as the late-great lets rip; yet it purrs sweetly, too, during quieter passages. Dynamic range is also impressive. Although the Monitor 9 may not be as fully nuanced as my reference Maggie 1.7s during the quiet opening movement of

## EQUIPMENT REVIEW - Paradigm Monitor 9, Series 7 Loudspeaker



Schumann's *Märchenbilder* with Martha Argerich at the piano and Nobuko Imai playing viola [Phillips CD], the speaker steps out during the lively second movement. Again, though, the Monitor 9's designers did a fine job of letting this speaker fly pretty high, without overtaxing the relatively small drivers.

I'll outline the many changes Paradigm has made to the 7 Series, but one that deserves mention right away is that, although the company has put much effort into improving the sound and frequency extension of the current Model 9, it has done so while shrinking its profile by about 20%—only a quarter-inch in height but nearly an inch in width and nearly three in depth. On paper this may not seem like so much, but that sleeker frame makes the new Model 9 easier to place and somewhat less visually obtrusive, and I would think also results in more rigid cabinet construction. The major challenge to this smaller enclosure is bass performance. Especially since the low-frequency drivers have also lost some inches, from 6.5" to 5.5" in diameter. But improved technology seems to have bridged the performance gap. (In fact, the -2dB point has improved over the V.6 from 51Hz to 46Hz.)

I can't think of a speaker manufacturer—or perhaps one of any other component type—that doesn't boast of "trickle-down" technology. And indeed, Paradigm makes something of

a big deal regarding technological tweaks and tricks it learned from its Reference line.

Starting with the enclosure, Series 7 upgrades include something Paradigm calls "the Roman Plinth," a sleekly-integrated base that increases stability for the new design's smaller footprint, as well as what the company calls its most rigid, low-noise Monitor Series cabinet yet, as well as a thicker (.75") front baffle. Paradigm has spiffed up the 7 Series' appearance, too. In addition to the more svelte profile, the honeycomb-patterned grilles are more acoustically transparent and attach via magnets. And with the grilles removed, no driver-mounting hardware is visible on the front baffles, which makes for a nicely refined presentation.

Derived from the Reference Series, driver upgrades include Paradigm's trademarked S-Pal technology—a satin-anodized pure aluminum—for the 1" ferro-fluid-cooled dome tweeter, as well as the 5.5" bass/midrange driver. Paradigm says the high stiffness-to-mass ratio combined with internal damping results in lower resonance and distortion, and greater clarity and frequency extension.

The twin 5.5" bass drivers have also been designed for high rigidity; they're made of injection-molded polypropylene, which Paradigm feels also increases driver-to-driver consistency.

Paradigm claims bragging rights, too, at the 7 Series' price-points for its use of polypropylene film or bipolar electrolytic capacitors, air core and laminated core inductors, and the high-power resistors found in the crossover networks.

Needless to say, all of these swell upgrades wouldn't mean much unless they delivered the musical goods. And as I've already written, the Monitor 9 certainly does.

I gather that one fundamental aspect of the 9's sound has changed since my colleague Neil Gader reviewed the V.6 edition a few years back. Neil observed that that speaker presented a dark tonal balance. On a range of music—*Sinatra's Only The Lonely* [MoFi], *Jeff Buckley Live at Sin-é* [Columbia/Legacy], *Eric Dolphy's Out To Lunch* [Music Matters 45rpm reissue], the abovementioned Argerich disc—the Monitor 9 did

a fine job with burnished brass, the lower registers of Sinatra's vocal, the darker character of Buckley's guitar, and so on, but in a way that, to my ears, was well balanced by the new version's greater openness and the tweeter's impressive airiness. Yes, it's still a tad dark, but I suspect much less so than the incarnation Neil reviewed. Neil also commented on the earlier model's somewhat vague imaging. In that regard, I'm not sure if much has changed. The speakers I reviewed were okay with their focus, more concert-hall-like than pinpoint. But then a stated goal of this design is broad dispersion throughout a room, which makes sense since these speakers are often sold in multichannel packages.

With large-scale symphonic works such as a Mahler piece from the San Francisco Symphony's cycle [SFS Media], the Monitor 9 creates a nice, if not ultra-layered feeling of the third dimension, with a good sense of air around instruments. I also found top-to-bottom tonal coherence to be well managed, with just a touch of discontinuity transitioning from mid-to-highs.

Due to Paradigm's combination of engineering chops and musical sensitivity, none of these imperfections are glaring. Indeed, this is a cleverly balanced and involving design that ultimately lets the music do the talking. It reminds me of one of those terrific, affordable Barbera d'Albas from Italy that one enjoys without having to get cerebral. Good stuff, excellent value. **tas**

### SPECS & PRICING

**Type:** Two-and-half-way, bass-reflex, floorstanding loudspeaker

**Driver complement:** Two 5.5" bass drivers, one 5.5" midrange, one 1" tweeter

**Frequency response:** 46Hz-22kHz +/-2dB

**In-room sensitivity:** 91dB

**Nominal impedance:** 8 ohms

**Recommended amplifier power:** 15-200W

**Dimensions:** 6.75" x 40" x 10.5"

**Weight:** 42 lbs. each

**Price:** \$1198 per pair

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# Thiel Audio SCS4T Loudspeaker and USS SmartSub

A Fitting Tribute

Neil Gader

**J**im Thiel, a loudspeaker pioneer and innovator if ever there was one, departed this world three years ago, succumbing to cancer in 2009. The Thiel Audio SCS4T, the tower version of the original stand-mount SCS4, was one of the last designs he engineered. It is neither the grandest nor the most sophisticated of Thiel's efforts, but in many ways it is the purest distillation of his vision and philosophy—one that was anchored by adherence to correct time-and-phase alignment, inter-driver coherence, and, later on, coincident-driver innovation. Similarly the USS SmartSub and its intelligent design are equally reflective of Thiel's legacy. And as I discovered in the course of these evaluations, these two systems soon became inseparable from one another.

The SCS4T is a two-way system mounted in a bass-reflex enclosure. It uses a single driver—more accurately speaking, a coaxial transducer, the latest in a line of Thiel coincident drivers that first appeared in the original surface-mount PowerPoint well over a decade ago. Per Thiel philosophy, the SCS4T uses a phase-correct, first-order crossover design, and the coaxial midrange/tweeter mounting provides near-perfect time coherence regardless of listening position. Improved and refined many times over in the ensuing years, the coincident driver uses a metal-diaphragm 6.5-inch woofer that is mounted with a

1-inch, high-output, metal-dome tweeter—a unit based on the high-performance tweeter used in Thiel's flagship model CS3.7. The woofer's short-coil/long-gap, copper-stabilized motor system greatly reduces distortion, and its reinforced metal diaphragm is specially shaped to reduce diffraction of the tweeter's energy.

Construction quality is standard Thiel craftsmanship—exemplary. The front baffle is fashioned of die-cast aluminum. This is a much stiffer substance than the usual MDF, providing a very secure mounting for the driver and reducing recoil and spurious vibrations. (Just ask Magico.)

## EQUIPMENT REVIEW - Thiel Audio SCS4T Loudspeaker and USS SmartSub



The other cabinet panels are made of one-inch thick MDF, unified and reinforced with thick braces. Such robust construction in a cabinet of these compact dimension results in a level of strength and vibration-resistance equal to that found on much more expensive products. In one aspect the SCS4T is deceptive. The floorstanding enclosure doesn't add volume. It repeats the original SCS4 design, thus interior volume and the acoustic and electrical specs remain the same. Critically, what it does do is place the speaker at an ideal height, and with its supplied gunmetal outriggers and adjustable pointed footers adds a level of stability that even a rigid and expensive set of heavyweight stands wouldn't be able to top. And, frankly, combined with the exquisite cabinetwork it just flat-out looks a lot more attractive than any

set of stands in my opinion.

The crossover section employs high-quality polypropylene and polystyrene capacitors. Its air-core inductors are wound with high-purity, low-oxygen copper to further reduce distortion. In addition, the speaker's internal wiring is of solid-conductor copper wire with Teflon insulation. All connections are made with silver solder. The dual ports are uncommon for a compact, but Thiel says that they allow "a slightly shorter port length, which facilitates a shallower cabinet, and the natural symmetry around the coaxial driver ensures an unobstructed and uniform point-source radiation pattern."

Sonically the SCS4T conveys an even tonality. It has excellent balance, midband tonal honesty (Jim Thiel wouldn't have it any other way), plus a

level of imaging and spatial precision that is rarely found outside an exclusive club of coincident-driver speakers. There are no histrionics. There is no throbbing or thrumming from the cabinet, zero *poof* from the ports. In keeping with its two-way compact origins, it's a fast, lighter-boned, tightly controlled transducer—leaning a little bit to the drier side in the treble octaves. Bass response is solid into the mid-50Hz region. It's also worth experimenting with rear-wall proximity during setup—especially for dialing in a little added lower-octave weight. But what isn't part of the SCS4T's brief is the popular mid- and upper-bass hype built-into many compacts in order to convey authority and punch. Steering clear of this compensatory curve, as Thiel has, has distinctly positive ramifications when considering a subwoofer, as we shall soon see.

A track like "Misty" from Clark Terry's *One On One* [Chesky] emphasized the relaxed atmosphere that this system creates in the listening space. On this track, the images were solid, with well-defined boundaries and highly specific relationships between piano and trumpet. Images were arrayed neatly within a deep soundspace. At first I found the stage width a little narrower than I've noted in this recording, but I also sensed greater front-to-back depth and an expanded envelope of ambience. Throughout my evaluations there was a consistent airy sweetness to the soundstage. The trumpet had good transient bite and I could nearly feel Terry's pursed lips pressurizing the mouthpiece. There was also a welcome amount of bloom from the bell of instrument. In more lavish orchestral music I would have wished for a little more explosive zing—the SCS4T performs with sensitivity on the micro-level but during symphonic crescendos misses the

boldest macro-gradations.

The controlled nature of the SCS4T is exemplified on one of my favorite tracks, the burning dance groove of David Bowie's "Let's Dance," a 12" LP remix. The Thiel is impressive at laying down the intense and lively details of percussion and brass cues. It captures the throaty and seriously sensual Bowie vocal with all its inflections. But it comes up a little bit short trying to pry open the soundstage, letting the big kick drum air-out or the bass bloom and fill the listening room with resonance. Its soundstage is broad, but it doesn't effectively carry images and ambience aloft. In sum the SCS4T is an excellent smaller-room speaker, beautifully executed and eminently satisfying in its own right. But that's not where this story ends.

### USS SmartSub—A Smart Move

Fair warning: Don't audition the USS SmartSub with the SCS4T unless you're prepared to keep the whole outfit. And that's in spite of the fact that it doubles the price of the system. Once the SmartSub is auditioned, there will be no going back. Here's why. The SmartSub doesn't augment the SCS4T in the often-bloated way I've come to expect with average subwoofers. It doesn't veil the articulation of the towers with waves of resonances. There's no whoopee-cushion effect or exaggerated sense of slam or rubberiness. The effect is subtler. And seamless. By delicately feathering-in bass frequencies in the precise regions where the towers are rolling off it invests the sonic picture with wider ambient vistas, greater dimensionality, and a reassuring sense of acoustic warmth more consonant with the live orchestral experience. Of course it extends the system's low end, but it does so in a way that is

## EQUIPMENT REVIEW - Thiel Audio SCS4T Loudspeaker and USS SmartSub

### Jim Thiel's Coincident Driver

I'll share with you the story Jim Thiel once told me of how the coincident driver in the SCS4T came into existence. He had conceptualized a crossoverless coaxial driver in which the signal driving the tweeter mounted within the midrange cone would be high-pass filtered mechanically by the suspension rather than electrically with a crossover. Over the next year Jim thought about how it would be constructed but put off building a prototype because he believed that he'd need to dedicate six months to a year perfecting the driver, and he had other, more pressing design commitments that required his attention.

One Saturday, Jim was overcome with curiosity and made what he thought would be the first of many, many prototypes. A few hours later, he had, to his great astonishment, a working driver that performed nearly flawlessly. This prototype had nearly identical performance characteristics to those of the final production version. The driver, which delivers perfect time and phase coherency no matter what the listening distance or listener position, became the cornerstone of the Thiel line. What's remarkable is that Jim had worked out, purely in his head, every last detail of this intricate driver's design and construction. All the trial and error took place in his imagination. For me, this story exemplifies Jim Thiel's remarkable talent, ingenuity, and dedication to his art. **Robert Harley**

consistent with the SCS4T character and scale, which remains that of a relatively small-footprint two-way with its own dynamic and output limitations. Think of it in the same way as a sculptor taking a block of marble and perfectly balancing the legs of his subject with the arms and torso—every part in proportion.

Each USS SmartSub uses a single 10" aluminum diaphragm in a heavy cast-aluminum chassis with a large double-stacked magnet structure and high-excursion suspension. The exquisitely crafted enclosure is an acoustic-suspension or "sealed" design. The motor system features a short six-layer voice coil in a long gap. Unlike in

a vented enclosure where the efficiency of port tuning does much of the work, a sealed-box enclosure requires the broad shoulders of a high-excursion, low-distortion driver driven by gobs of power. To that end the USS SmartSub is powered by a 550W amplifier that uses a cleverly devised thermal-compression circuit that measures voice-coil temperature in real time in order, says Thiel, "to adjust the gain and frequency response of the amplifier to correct the sensitivity and response changes that would otherwise occur. This correction ensures that the output is not compressed or imbalanced during high demand."

There are two elements to the "smarts" that define this sub. We are all familiar with placing a subwoofer against a wall and the uneven bass-response dips and peaks that occur. Thiel's patented room-correction circuitry lets the user dial in the distance to the rear wall and nearest sidewall allowing the sub to automatically compensate for boundary-loading problems. All from the back panel. In my room the effect was subtle but invaluable. The sub disappeared as a source, and the bass firmed up and attained a more stable sense of pitch. Integration credit is also owed to the SCS4T. Its lack of an upper-bass bump helps make the smooth transition from sub to satellite possible.

The other bit of "smarts" is that the USS doesn't bother incorporating the generic high-pass/low-pass filtering of typical one-size-fits-all "dumb" subs. There are no output controls either. Rather, Thiel makes available its own purpose-designed outboard passive crossover (the PX-O5) to augment any Thiel loudspeaker system. This targeted approach differs from most after-market subwoofers in that the Thiel PX-O5 is personalized to match the acoustic and electrical characteristics of any Thiel main speaker that the buyer specifies. In essence Thiel has removed the guesswork that comes from randomly twirling the crossover and output knobs that are resident on the typical one-size-fits-all sub. Note that the crossover only acts as a low-pass filter for blending the sub with the sats. There is no high-pass filter, so the sats continue to operate full range. Importantly, it can also be driven through its LFE input as the .1-channel via a home-theater processor.

I threw a lot of orchestral weight at this system. There was no

localization whatsoever in my room—no pulsing rhythms, or discontinuous thrums, or resonances. Copland's *Fanfare* with its roll of tympani and bass drum was full and precise across the stage. And how many times have I listened to the opening thump of the kick drum from Shelby Lynne's "Just A Little Lovin'?" I hesitate to answer. But there it was in all its glory, full-bodied and impactful and elegantly sustained. Even better was the heightened sense of air being driven into the room as it only can be by a large pistonic cone driver. My lasting impression was that the SCS4T had morphed into a tidy three-way and simply gained a fully integrated, responsive woofer.

By any yardstick the SCS4T is a class-leading small floorstander. As hour after hour flew by its balance of precision and musicality was unfailing. However, adding the SmartSub into the mix with the SCS4T is transformational. It creates a system so seamless and natural that it means there is no going back. So, don't audition the sub unless you're prepared to open your wallet a little more. As I wrote earlier: "Don't say I didn't warn you." I'd like to think Jim Thiel would be smiling at that. **tss**

### SPECS & PRICING

#### SCS4T

Drivers: Single 6.5" coincident

Sensitivity: 87dB

Impedance: 4 ohms (3 ohms minimum)

Dimensions: 40.5" x 8.4" x 11.7"

Weight: 50 lbs.

Price: \$3690

#### USS SmartSub

Drivers: 10"

Frequency response: 20Hz-300Hz

Integral amp power: 550W

Dimensions: 20" x 10.5" x 15"

Weight: 57 lbs.

Price: \$3490

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# Monitor Audio Gold GX300 Loudspeaker

## Striking A Fine Balance

Wayne Garcia

**If there is one identifying theme that separates the companies reviewed in these pages from their mass-market counterparts it is a passion—call it drive, even obsession—to constantly improve their products. One reads time and again about improved this and upgraded that, and sure, sometimes it is marketing hyperbole, but most of these companies, and the engineers working at them, are in fact pushing to create better sound. I'm not suggesting commerce doesn't play a role. After all, specialty audio is an overcrowded and highly competitive field in which many players are courting what is arguably a static if not shrinking market.**

But just talking with a guy like Dean Hartley is enough to restore faith in even the most jaded audiophile. For the past dozen years Hartley has been Technical Director of Monitor Audio, and for the first few years his was a lonely role—he was the only guy developing Monitor's speaker designs. But in 2002 and '03 he built a team of like-minded individuals to help Monitor grow to where it is today—one of the industry's most successful small-speaker manufacturers.

Monitor's current engineering team numbers 11, including Hartley, and the \$5495 Gold GX300 is its latest effort.

The single most outstanding change in the new GX Series, now in its third generation, is the use of the proprietary C-CAM ribbon tweeter, a variation

on the design found in Monitor's flagship Platinum models. Although Monitor Audio gained a solid reputation for its domed tweeters, which are still used in the majority of the company's products, some listeners found them to be a bit too brilliantly clear, veering toward the bright side. As Hartley explained it, the ribbon is very extended (it's rated out to 60kHz), but also smooth, and difficult to push to the point of break-up. Monitor's C-CAM (Ceramic-Coated Aluminum/Magnesium) alloy technology has been used and refined over the years in the cones and domes found in the brand's mid- and upper-end designs, and the GX300's C-CAM ribbon tweeter is nearly identical to the driver found in the Platinum. But it's not quite as fairy-wing thin, and the suspension has a bit more flex, which makes it more robust and therefore able to cross over at a markedly lower frequency (2.3kHz rather than 4kHz). The motor assembly is also modified, and though it reaches the specified 60kHz, Hartley says the ribbon in the Gold begins to roll-off around 45kHz.

This ribbon's extended, airy, and remarkably smooth high-frequency response is one of the first things that jumps out when auditioning the GX300. Smooth, however, doesn't mean mellow. In fact, the overall presentation of the GX300 is fast, punchy, holographic, and vividly exciting. This is a speaker that hits the ground running.

Hartley is clearly proud of the work he and his crew have put into the GX300, which, in addition to the ribbon tweeter, has been pretty much reconsidered from top to bottom. Unlike many of today's relatively compact



## EQUIPMENT REVIEW - Monitor Audio Gold GX300 Loudspeaker

towers, the GX300 is a true three-way design (as opposed to 2.5-way). This added crossover point, of course, presents its own potential risks and rewards—the risks being tonal discontinuities, the rewards being less-stressed drivers, greater dynamics, and lower driver distortion.

C-CAM technology finds its way into the rest of the driver complement, too, which comprises a 4" midrange unit and twin 6.5" woofers. Like other dimpled drivers, Monitor's RST cone profile has a radial pattern of surface indentations to increase driver rigidity—hence less flex and distortion and, simultaneously, lower mass and reduced standing waves on the cone's surface.

As you'd expect from this sort of attention to detail, Hartley and company spent countless hours listening to and comparing crossover-component parts in order to discover those that sound best with their drivers. They settled on polypropylene film capacitors, along with a variety of air-core and laminated steel-core inductors they found maintain the highest level of signal integrity.

Hartley also underlined Monitor's single bolt-through driver technology. Rather than the conventionally used four- or six-point driver-to-baffle mounting system, the single driver bolt-through system allows for a far more even distribution of energy into the cabinet. "It may not be measurable," said Hartley, "but it is observable." The single bolt-through technique also acts as additional bracing for the cabinet, which is otherwise stiffened by a series of radial cross-braces.

The enclosure's curved side panels are another departure from previous Gold models. They reduce standing waves and increase rigidity, and represent more trickle-down technology from the Platinum line. The enclosures are beautifully finished, and the entire package is elegant.

The GX300's precision and honesty of presentation mentioned earlier were fully evident from the opening moments of Wayne Shorter's superb 1965 Blue Note session, *The Soothsayer* [Music Matters, 45-rpm reissue]. The entire album is a gem, and one of the meatier-sounding Rudy Van Gelder

recordings of the era. Check out Freddie Hubbard's gorgeous trumpet solo in "Lost," and hear how the ribbon's detail, air, tonal complexity, and precise imaging bring the instrument to life. As noted, it's not a mellow sound, but a crystalline and precise one, with a bit of bite to it, when, as is the case with a trumpet, the instrument naturally has bite. Likewise note the haloes of air surrounding Tony Williams' ride cymbals, their sound waves lingering in the air like so many ripples from a pebble tossed in a pond.

Hartley and his engineers' hard work pays off at the bottom of the range as well. The GX300 bass response strikes a fine balance between nimble and weighty. It may not have quite the air and ultimate detail of my reference Magnepan 1.7s—few if any cones will—but it brings out the elegance of Ron Carter's fine bass playing, and on occasion, the percussive punch of a fleeting Williams drum solo.

And given the shared technologies, there is nice continuity from the bass to the midrange driver. Shorter's tenor, McCoy Tyner's piano, and Lames Spaulding's alto sax were well fleshed out harmonically, and each was presented with good dynamic scale and delivered with plenty of energy.

Vocals too, are very fine, if perhaps not quite as warm as some will prefer. From Nina Simone to Johnny Hartman, Bob Dylan to Bright Eyes, the GX300 was always revealing of technique and phrasing, with fine overtones, solid presence, and a strong sense of the conviction each singer brought to the lyrics.

The GX300 also presents a big, bold, rather upfront soundstage that still conveys a good impression of depth. On the San Francisco Symphony Mahler recordings I've recently written about, the stage filled my backwall, and there was plenty of air around instruments, especially those in the high-frequency range, and impressive front-to-back dimensionality.

Two areas in which the GX300 excels are dynamic weight and rhythmic momentum. As I said above, this speaker hits the ground running, and is a lot of fun to listen to. Aside from faint telltale hints that the enclosure is ported, there is little evidence

of box coloration, and of course those dual 6.5" woofers are inherently quick. Yet their combined coverage allows, say, the orchestra's massive bass drums, organs (or a deeply thumping bass guitar, as in Jeff Beck's "Brush with the Blues" from *Who Else!* [Epic CD]) to deliver metaphorical body blows of lightning-strike speed and thunderous weight.

This is a fine loudspeaker, if not always a perfectly coherent one. As thorough a job as the Monitor group has done, the ribbon tweeter remains audibly—if not grossly so—a step ahead of the midrange and bass drivers. This is neither unusual nor unexpected. Most hybrid designs exhibit this kind of discontinuity to one degree or another. The key to long-term musical enjoyment is how well the designers integrate and balance the transitions between these different technologies. In addition, Monitor Audio rather boldly crosses over from the midrange to the tweeter at 2.3kHz (right in the heart of the midrange). It was a successful gamble, and I doubt if many listeners will be bothered by the slight change in speed—partly because the ribbon tweeter makes for rather addictive listening, but mostly because of the fine effort Hartley's passion and leadership have brought to this outstanding effort. **tas**

### SPECS & PRICING

**Type:** Three-way, bass-reflex, floorstanding loudspeaker

**Driver complement:** Two 6.5" RST bass drivers, one 4" RST midrange, one C-CAM ribbon tweeter

**Frequency response:** 30Hz–60kHz

**Sensitivity:** 90dB

**Nominal impedance:** 8 ohms

**Recommended amplifier power:** 100-200 Watts

**Dimensions:** 8.25" x 41.75" x 13"

**Weight:** 59.9 lbs.

**Price:** \$5495

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# PSB Imagine T2 Loudspeaker

## Tower of Power

Robert E. Greene

**PSB has an enviable reputation for offering speakers of extraordinary quality at reasonable prices. They are one of the “go to” brands in any price range below the stratosphere, models that need to be checked out before purchasing in the low-to-moderate price range. And, truth to tell, they really ought to be checked out even if you have a lot of money to spend. You might be pleasantly surprised how well they stack up against things that cost a lot more. The \$3500-per-pair Imagine T2 towers definitely fit right in with this picture, offering superb sound for the money. But at the same time, they represent something of a fresh departure for PSB in a few directions and something truly exceptional in sound quality, too, even by usual PSB high standards.**

First of all, the T2s seem deliberately designed to get maximum bass performance out of a really small speaker (small as floorstanders go). The T2s are only 41" high and have an undersized footprint. They fade elegantly into domestic décor, but they offer solid bass to well below the effective bottom limits of the orchestra, in my rooms anyway, although not down into subterranean frequencies.

Secondly, the T2 has an unusually narrow front for PSB—the face being 6" wide compared to the Image T6 that I reviewed in Issue 200, which is 7¾" wide. Even the mini-speaker Alpha B1 is 7" wide. (The curved sides of the T2s widen out behind the front to a nominal 8½".) These may not seem like large differences, but

the narrow front seems to have significant effects sonically, in particular in the direction of more of the soundstaging—expansive stereo presentation—so beloved of most audiophiles, and a higher frequency for the “baffle step.” (More on this later.) The T2 is unusually elegant in appearance, with gracefully curvilinear surfaces. By comparison, the (less expensive) Image T6 looks quite strictly functional.

Third, while the T2s are surely neutral as speakers go and have an overall flat response, they seem somewhat shaded towards warmth and what one might call non-aggressiveness, with a slight dip in response starting around 1–2kHz and some generosity in-room in the 100Hz region. If the Canadian-school speakers influenced by the NRC (Canada’s National Research Council) have as a whole a bit of reputation for the analytic, the T2s, while finely detailed, belie this in balance—and do so all to the musical good. The T2s are accurate, indeed, as speakers go. But they are also quite often, for lack of a more precise phrase, beautiful sounding.

### How It Works

The T2 is a five-driver speaker, each speaker having three small (5½") woofers, with individual internal enclosures and ports (on the back), a 4½" midrange driver at the top of the speaker cabinet, and a 1" titanium-dome tweeter just below. The multiple bass drivers are used to generate more bass in a narrow-front/small-volume cabinet and also to reduce problems of interaction with the floor (like other PSB tower speakers). The crossover is what PSB calls “transitional,” which means that the bass drivers have different response contours, with the top woofer crossing over to



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## EQUIPMENT REVIEW - PSB Imagine T2 Loudspeaker

the tweeter at 500Hz in the usual sense, while the other two bass drivers have roll-offs at two other frequencies (80Hz, 200Hz). This transitional design gives more control over radiation pattern and floor interaction, and it works very well. The usual dip somewhere between 100Hz and 300Hz is largely missing here and the speaker has surprisingly smooth in-room response in the lower mids and upper bass, where floor and room problems can be severe.

The speaker is designed to have extremely smooth and flat response on-axis, and nearly-on-axis, too. The response hardly changes over a +/-30 degree window up to around 5kHz. Above that frequency, there is a loss of a few dB at 30 degrees in the higher frequencies. The measured overall response is very flat except for a dip in the high treble followed by a peak in the really high treble.

The far-off-axis response is interesting. Because, one supposes, of the really narrow front, what appears to be the baffle step (where the radiation shifts to being primarily frontal) is quite high, around 700Hz it seems. Around that frequency, there is a fairly steep though not terribly large droop in the far-off-axis response and then on up, compared to lower down. This is only a couple of dB, and above that transition the response is again very smooth up to around 5kHz, with minimal “tweeter flare,” presumably part of the reason for the wave-guided tweeter. Paul Barton has done a good job handling the baffle-step issue of narrow-front speakers, as well as controlling the radiation pattern.

### The Sound

The most immediately surprising feature of the T2s is the power and extension of the bass. One really does not expect such a small, discrete speaker to get the full bass impact of the orchestra. But the T2 does the job.

In my rooms, it rolls off fairly fast below around 35Hz, but it is solid down to 40Hz, which is pretty much the bottom of the orchestra in practice though not in principle (the contrabassoon, for example, sounds a nominal 29Hz but most of the actual energy is in the harmonics, and this is true for most of the super-deep orchestral instruments—only pipe organs really pump out substantial energy

in the 20Hz range). The T2 looks small but it sounds full and unconstrained in the bottom end on orchestral music and, for that matter, rock (the bottom of the Fender bass is around 40Hz, too). The bass power is obtained by reflex-loading, and the bass is thus not in principle as “tight” as is possible, but this seemed to me a non-issue in practice—definition was good in musical terms and pitch of bass lines was very well defined. Bass lines could be followed with complete ease, even in complex music. Summary: small speaker, big sound.

The T2 will also play loudly for a small speaker. With a hefty amplifier—I was using a Sanders Magtech—the T2s will offer satisfying levels on loud music with headroom to spare in rooms of ordinary domestic size. Any speaker can be troubled by trying to fill a sufficiently enormous room, but the dynamic capacity of the T2s belies its small size.

I got a certain amount of resistance on-line for asserting in my earlier review (Issue 200) of the PSB Image T6 that it sounded remarkably like an orchestra—assertions to the effect that this was impossible and that I must not know what an orchestra sounds like (odd idea that, since I have been playing in orchestras since I was eight years old and still do). Of course, the subtext here should have been obvious: that implicit in the statement was “compared to other speakers.” No stereo presentation in a small room is literally going to sound like an orchestra in an auditorium. But as speakers go, the T6s did sound a lot like one, and the T2s do as well, and in many respects even more so.

The sense of discontinuity coming back from a rehearsal or concert and listening to the T2s in a good room is minimal in the context of stereo speakers. One really is getting something very like the gestalt of the orchestra. Full frequency range (for all practical purposes), good dynamic range, rather less than the usual sense of sound coming out of speakers, and, most important of all, natural timbre.

I am writing this not long after the Newport Show. This intriguing show included a considerable number of really impressive exhibits. And one has to cut some slack for show conditions. But to my ears, surprisingly many of the exhibits sounded, however

fine in other respects, like speakers making sound in rooms. The T2s in a suitable setup in a good room are surprisingly free of this effect. An audiophile friend of mine stopped by after the show and I played him the T2s in my (rather heavily damped) downstairs audio room. He was stunned by the sense of the music materializing in space without any apparent sound from the speakers at all. (This was on the Harnoy/Dussek recording of Schubert's *Arpeggione* Sonata, RCA).

With the speakers quite far apart, the two instruments and the space of the recording venue were effortlessly there in front of you, and with your eyes closed, it would have been impossible, I think, to point at the speaker positions at all. Soundstage indeed, if you will! Is this related to the narrow front baffle? Past experience suggests that it is, and as such perhaps it is to some extent an artifact of the narrow front itself—or not, who knows? But in any case, the T2s do the “disappearing act” that all audiophiles seem to love to a fare-thee-well.

## SPECS & PRICING

**Product type:** Three-way, five-driver, ported floorstanding loudspeaker with internal sealed midrange and separate woofer enclosures

**Driver complement:** Three 5 1/2" woofers, one 4" midrange, one 1" titanium-dome tweeter

**Crossover:** 500Hz to midrange, 1.8kHz to tweeter, fourth-order Linkwitz-Riley

**Frequency response:** 36Hz-20kHz, +/-1.5dB

**Sensitivity:** 90dB (in-room)

**Impedance:** 6 ohms nominal, 4 ohms minimum

**Power handling:** 300 watts program maximum, 20 watts minimum recommended

**Dimensions:** 6 1/2-8 1/2" x 41" x 13 1/2"

**Weight:** 42 1/2 lbs.

**Price:** \$3500 (wood veneers); \$3850 high-gloss black or white

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## EQUIPMENT REVIEW - PSB Imagine T2 Loudspeaker

Similar things happened with larger-scaled music. John Eargle's recording of the Shchedrin arrangement for percussion and strings of music from Bizet's *Carmen* [Delos] presented the percussion in particular as totally detached from the speakers and indeed from the listening room. Of course, all well-set-up stereo speakers do this to some extent. But the T2s do it rather better than almost all others I've reviewed.

And on this Delos recording, the dynamic power of the T2s came to the fore. There is a good deal of banging around in this percussion *tour de force*—along with, in other spots, many delicate subtleties. Everything came through remarkably well, the banging and the subtleties both, with the speaker maintaining a relaxed, clean, apparently distortion-less sound even at the more extreme moments, and an unforced clarity in the quiet spots.

I mentioned above how smooth the speaker was off-axis. Now what all that techno stuff is likely to add up in listening terms is that the speaker will be quite neutral in almost any reasonable room environment. Of course any speaker will change sound in rooms of different liveliness, in a hard room versus a soft room. As it happened, I tried the T2s at length in both my living room—an ordinary domestic room of medium liveliness—and my audio room, which is heavily damped and less lively in the top end than an ordinary room. The T2s did well in both. But it was in the less live room that the T2s really came into their own. The sense of sound-from-no-speaker was intensified, and the tonal truthfulness was extraordinary.

### A Few Limitations

No speaker is perfect and all have certain

limitations. The T2's list of negatives is short and not very emphatic but here are a few points: First of all, the bass and mid/treble do not entirely coalesce at very close listening positions. The bass drivers are spread out and contoured for a purpose—the arrangement minimizes floor interaction problems as already discussed. But the physical separation and transitional crossover mean that the T2s do not work well as “nearfield monitors”—at extremely close range they sound like a small mid/treble speakers with bass attached separately. At normal listening distances, this ceases to be an issue at all and things become remarkably integrated.

Second, the speakers are very smooth but not totally flat, having a slightly contoured sound in the upper mids. (There is, as noted, the high treble peak, but this is too high to affect timbre in the usual sense, though removing it by EQ smoothes the sound subtly.) The T2s are in measured and listening terms slightly pulled back around 1–2kHz, relative to the frequencies just below. This does not affect perceived neutrality so much as cause a slight “backing off” of the image, an effect much to the good on a great many recordings. Musically, this is a desirable choice to my mind.

With its near perfection of pattern, an ongoing PSB design criterion especially well done here, the T2 is one speaker that is definitely DSP-correction-ready—not that it needs very much if any correction, you understand. And one could argue in this case that it really did not need any or benefit much from any that was tried, depending on the room. In the bass, only a rare, fortuitous room/speaker combination does not benefit from a bit of DSP touch-up. But in the midrange

broadly conceived I did not really want to change anything.

Few speakers get to that point on their own, but here is one. Being as I am, I did experiment with EQ settings, but flattening the speaker out literally across the 1–6kHz region was not clearly an improvement in listening terms: slightly more accurate tonal character, but only slightly, and rather less natural imaging behavior. Overall, I tended to skip the EQ of anything in the midrange. And even the slight bass emphasis from the room seemed musically to the good, though of course the bass would have needed correction to be measurably perfect.

I seldom say this, being inclined to meddle and in most cases finding things I think I can improve, but in this case, letting well enough alone seemed the way to go, except perhaps for getting rid of the high-treble peak if you are so inclined.

In the live room, close to the walls of necessity (the room is fairly narrow), with no corrections, one heard a little midrange coloration, whether from the slight 400–500Hz prominence or the baffle step or something else it would be hard to say for sure. But in the larger and deader room, this went away.

One could really just revel in the realism of the sound on good recordings. My old standby, the Dallas Symphony/Mata recording of the Rachmaninoff *Symphonic Dances* on ProArte sounded remarkably convincing and rather more spacious than with most speakers—really (dare I say it) like an orchestra.

### The Big Picture

Like their PSB predecessors, the T2s are exceptionally well-designed and represent

extraordinary value at the price. Their performance in terms of their fundamental design criteria—in particular, neutral smooth response on- and off-axis—is so extraordinarily good that there is not that much obvious competition near the price range, if these are the things that count for you (as they are for me!). But, whereas the PSB T6s I reviewed earlier were so inexpensive that there was really essentially nothing I could think of at the price that would be competitive in a full-range speaker, the T2s cost enough that there is actually is some competition in the same price range: the Gradient Evidence and various BBC-related box monitors (e.g., Harbeth M30.1, Stirling Broadcast LS3/6, etc.) come immediately to my mind, but there are quite a few others. Once speakers reach a certain level of neutrality, then one begins to have to listen for one's self as to which exact choices please the most.

Can the T2s really be all that good? Well, what can I say? In many fundamental ways—ways which often escape other speakers, even those at very high prices—the T2s get things right. Paul Barton has been designing speakers for a long time. But he just keeps getting better. The T2 is a speaker to listen to carefully before you buy *anything* else—even things that cost a lot more. Or you could wait for Paul Barton to produce a big statement speaker, price-no-object and domestic compatibility ignored (I am waiting for this myself). But what you already have in hand with the T2 is one remarkable transducer. PSB has a lot of dealers. A stop-in at one is definitely recommended, with open ears and open mind and forgetting about the modest price. I think you will be not only impressed in audio terms but also deeply attracted to their sound in musical ones. **185**



# Anthony Gallo Acoustics Classico CL-3 Loudspeaker

## Little Big Speaker

Chris Martens

I have been following the evolution of Anthony Gallo's loudspeakers for quite a while and over time have grown accustomed to, and even fond of, their futuristic styling. But Gallo speakers, as I have pointed out in past reviews, always look different for solid engineering-related reasons, not just for the sake of making a high-impact design statement. Where other designers have used traditional rectangular MDF speaker enclosures with wood veneers, Gallo has taken a much different path—often designing irregularly shaped die-cast aluminum or spun-stainless-steel enclosures, all in the name of structural rigidity, resonance control, and resistance to internal standing waves. And Gallo's willingness to (pardon the pun) think outside the box extends beyond the realm of speaker enclosures to include fresh thinking about drivers and crossover networks, too.

Imagine my surprise, then, when I first set eyes and ears upon Gallo's new Classico CL-3 floorstander (\$2395/pair), which is the first Gallo speaker ever to feature a conventional wood-box enclosure. (Gasp!) I could well imagine the commercial considerations that might have prompted a move to wood-box enclosures, but

wondered if this meant Gallo was setting aside the design objectives that had led the firm to use unorthodox metal enclosures in the first place. In short, I wondered if the CL-3 would sound like a "real" Gallo. As it turns out, however, I needn't have worried, as I discovered very early on that the new Classico model not only equals the performance

of Gallo's critically acclaimed Reference speakers in many respects, but arguably surpasses them in some critical areas. To learn how Gallo pulled off this feat, read on.

The CL-3 is an unusually small 31"-tall tower-type speaker that features strikingly-angled panel surfaces intended to minimize problems with internal reflections. Classico models are offered with either genuine cherry or ash veneers and come with curved, magnetically attached mesh grilles that compliment the angular shape of the speaker cabinets. The CL-3 drivers comprise a pair of 5.2" mid/bass units with carbon-fiber diaphragms, plus one of Gallo's signature CDT 3 (cylindrical diaphragm transducer) tweeters. The CL-3 enclosure is made from ¾" internally braced MDF and is configured, says Gallo, as a "modified transmission line," which vents through a rear-firing slot. The transmission line, in turn,

## EQUIPMENT REVIEW - Anthony Gallo Acoustics Classico CL-3 Loudspeaker

is loaded with Gallo's patented S2 damping material, which I will discuss further below. Interestingly, a brief spin through the Gallo specifications table reveals this telling phrase: "Internal Crossover: None required." Like many of Gallo's Reference Series designs, the Classico CL-3 is essentially a crossover-free loudspeaker, which as you might expect yields audible benefits in openness, transparency, and freedom from crossover-induced sonic artifacts.

Let's take a moment to review some of the technical highlights of the CL-3. First, as mentioned above, the CL-3 uses a CDT tweeter that has 180 degrees of horizontal dispersion and 30 degrees of vertical dispersion. Gallo notes that the CDT tweeter provides "consistent high-frequency response both on- and off-axis," meaning that both "soundstaging and imaging are enhanced." The tweeter features a semi-cylindrical diaphragm formed from sheets of a piezoelectric material called Kynar. As current flows back and forth, the material expands and contracts, with acoustic output closely approximating that of a theoretical pulsating cylinder. Significantly, the CDT tweeter naturally acts as a roughly 6dB/octave high-pass filter that rolls in at about 3kHz, so that the tweeter is able to serve as *its own* crossover. Apart from terrific horizontal dispersion, the CDT tweeter also offers good linearity, high resolution, and extremely fast transient response.

Like previous Gallo speakers, the CL-3 uses the firm's proprietary S2 damping material within its cabinet. S2 is a finely shredded polyethylene film material that not only provides excellent general damping properties, but also improves the volumetric efficiency of the air within the speaker. As Gallo puts it, "Our patented S2 technology tricks the Classico's precision woofers into performing as though they're in significantly larger enclosures." Previous Gallo designs have always used S2 material in relatively small sealed enclosures, but in the Classico CL-3 the S2 material is, for the first time ever, being applied in a larger, vented, transmission-line enclosure. For the CL-3 application, Gallo has strategically placed air-permeable bags containing carefully chosen quantities of S2 material at specific locations within the transmission line. The claimed result is a speaker that "sounds much larger than its actual size and delivers real-life impact without ever sounding

muddy." Gallo has given this distinctive transmission-line-loading methodology the acronym BLAST, which stands for Backwave Linearization And Synchronization Technology. According to Gallo, BLAST affords "an improved acoustic impedance match between the woofer/midrange driver and the air within the enclosure," which "allows the speaker to play louder, deliver exceptional bass, and perform overall like a speaker many times its size." And as you'll learn in a moment, these aren't hollow marketing claims.

Finally, the Classico CL-3 employs what Gallo terms Optimized Pulse Technology (OPT) Level 2. OPT "applies a dielectric absorption countermeasure to eliminate sonic degradation from static charges that typically build up on speaker wires and within the speaker itself."

All of these technical features sound promising in principle, but how do they work out in actual practice? The simple answer is that they work better than I ever imagined possible.

Let me acknowledge from the outset that CL-3, which is quite attractive in its way, simply looks too compact, too short, and too conventional to be capable of producing deep bass and powerful and expressive dynamics, or of delivering a big, transparent, and highly refined sound. But once the speaker is broken in (about 50 hours' worth of run-in time should do the trick) and properly positioned, the fact is that it does all of the above and more.

Gallo specifies the CL-3's frequency response as 32Hz-22kHz +/-3dB in room, and when you look at that 32Hz bass extension figure and then look at the CL-3 with its two 5.2" mid/bass drivers, your first thought might well be, "No way!" But put on a track with really solid low-frequency content, such as the very low-pitched drum heard near the beginning of the track "Temple Caves" from Mickey Hart's *Planet Drum* [Rykodisc], and you'll soon be singing a different tune. Implausible though it may seem, the little CL-3s go amazingly low and they do so with a remarkable combination of authority, finesse, and pitch definition. For example, you can easily pick out subtle drumhead "skin sounds" even on very low-pitched concert bass drums and the like—precisely the sort of thing many moderately-priced speakers either fail to reproduce altogether or else capture with an overlay of thick, ill-defined low-frequency noise.

With the Gallo, on the other hand, it's hard to say which is more impressive: its ability to go low, or its ability to maintain a very high level of textural finesse when doing so. Is there a trick to achieving this level of bass performance? Well, there is one: You must heed Gallo's positioning guidelines, which recommend placing the CL-3 at least four inches and no more than two feet from the wall behind the speakers. I tried several positioning options during my listening tests and discovered that once the speakers were pulled out more than two feet from the wall, bass performance (that is, perceived weight, depth, and balance) fell off precipitously. But, within the two-foot zone, bass performance was exemplary.

Next, let me focus on the CL-3's midrange performance and dynamic capabilities. It is in these two related performance areas that I felt the CL-3 actually managed to outperform some of the Gallo Reference models I've heard in the past. Specifically, the CL-3 exhibits a wide-open, highly transparent midrange that is terrifically responsive to shifts in dynamics. Although the CL-3 is nowhere near as sensitive as today's best horn-loaded loudspeakers, it does somehow convey their traditional sonic qualities of effortlessness and powerful (indeed, at times explosive) dynamics-on-demand.

### SPECS & PRICING

|  |   |
|--|---|
| <p><b>Type:</b> Two-way, three-driver floorstanding loudspeakers with "modified transmission line" enclosure loading</p> <p><b>Drivers:</b> Two 5.2" mid/bass drivers with woven carbon-fiber diaphragms, one CDT 3 (cylindrical diaphragm transducer) tweeter</p> <p><b>Frequency response:</b> 32Hz-22kHz +/-3dB in-room</p> <p><b>In-room sensitivity:</b> 88dB</p> <p><b>Nominal impedance:</b> 4 ohms</p> | <p><b>Recommended amplifier power:</b> 20-200W</p> <p><b>Dimensions:</b> 7" x 31" x 12.5"</p> <p><b>Weight:</b> 27.7 lbs. each</p> <p><b>Price:</b> \$2395 per pair</p> <p><b>ANTHONY GALLO ACOUSTICS</b><br/>20841 Prairie Street<br/>Chatsworth, CA 91311<br/>(818) 341-4488<br/>roundsound.com</p> |
|--|---|

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## EQUIPMENT REVIEW - Anthony Gallo Acoustics Classico CL-3 Loudspeaker

By comparison, the midrange response of Gallo's Reference models, though very good in its own right, can at times sound ever-so-slightly overdamped, so that one sometimes has the sense that a very powerful amplifier is needed in order to help "push" the notes out of the speaker. But, within reasonable volume limits, the CL-3s have no such restraints or caveats; with the Classicos in play, the music just flows freely—even at moments when dynamic demands become pretty extreme.

To appreciate what I mean, try listening to Movement 3 of David Chesky's *Concerto for Electric Guitar and Orchestra* [Chesky] and note the ferocious interplay between Bryan Baker's electric guitar and the orchestra at full voice. Trying to get either the sound of the guitar or the orchestra right would be tough enough for most moderately priced loudspeakers, but in this movement the Classico handles both challenges with equal parts grace and savage energy. Note, as you play this movement at reasonable volume levels, how beautifully the CL-3 captures both the aggressiveness and intricate articulation of the guitar, while simultaneously handling the opposing demands of very high-frequency and very low-frequency percussion instruments played with gusto. If you have any lingering doubts about the CL-3's ability to handle loud, abrupt, low-frequency transients, this track will quickly put them to rest.

The only caveat I would mention is that, because the midrange of the CL-3 is so expressive and revealing, the speaker is not very tolerant (or forgiving) of the overly hot midrange sounds captured on some modern pop records. I put on the track "You Were Always There" from Lyle

Lovett's *My Baby Don't Tolerate* [Lost Highway] and noted that the Classicos pointedly exposed the fact that Lovett's vocals were somewhat too closely mic'd and therefore exhibited an unnatural glassy sheen and a strident sound on sibilants and other vocal transients. For better or worse, the CL-3's will consistently expose flaws of this sort, though I feel this is a small price to pay for the levels of openness and transparency the speaker offers on good recordings.

Finally, let me say a bit about the speaker's ability to produce an unexpectedly big, spacious sound. When you first see the 31"-tall CL-3s, it is perhaps inevitable to worry that they might image, oh, at about knee level (which would obviously not be good). But this isn't the case at all. Instead, I found that the speaker produced wide, deep, spacious images that were centered about a foot-and-a-half above the tops of the speaker enclosures. I frankly have no idea how Gallo pulled this off, but I suspect two design choices may have helped. First, the CL-3 positions its CDT tweeter at the top of its driver array, whereas most other Gallo designs place the CDT tweeter in the center of a classic MTM (midrange-tweeter-midrange) array. Second, the front baffle of the CL-3 is deliberately sloped backward to a noticeable extent, so that the tweeter's output is angled upward. I suspect that positioning the tweeter as the uppermost driver in the array and giving it a bit of upward tilt helps with perceived image height.

In any event, the CL-3 sounds like a much larger speaker than it actually is, and it offers highs that are at once smooth and yet very finely focused, detailed, and extended. Where some tweeters seem to shout, "I've got definition to

burn," the Gallo CDT 3 tweeter manages to sound relaxed without ever sacrificing critical details or sounding recessed and soft. On the contrary, the CDT 3 does a great job of capturing high-frequency overtones, textural details, and subtle reverberant cues that help define the size and acoustics of recording spaces. Horizontal dispersion, as advertised, is extremely broad, so that it is not uncommon to experience soundstages whose width extends well beyond the outer edges of the loudspeakers.

A good example can be drawn from the middle movement of Robert Paterson's *Freya's Tears* from Paterson's *The Book of Goddesses* [American Modern Recording], which is performed by the Clockwise duet featuring violinist Marc Uys and harpist Jacqueline Kerrod. The recording is rich in delicate, fleeting treble transient sounds, textural details, and ambient cues, and—through the Classicos—yields a sound where the voices of the harp and violin seem to hover in the air, replete with lush, evanescent beauty. In particular, I was enthralled to hear the Gallos vividly reproduce subtle performance details, such as the delicate, airy sound of Uys' deft bowing. The only minor caveat I would note is that, because the tweeter's treble dispersion pattern is so broad, you'll want to be careful about positioning the speakers directly beside or behind nearby objects that could cause unwanted reflections. Most of the time, however, the Gallo tweeter helps foster greater levels of listener involvement.

Put all these factors together and it becomes clear that Gallo's Classico CL-3 is one of the most capable and appealing loudspeakers in its price class, though it is not without stiff competition from models such as the GoldenEar

Triton 3, the Magnepan 1.7, and the MartinLogan Electromotion ESL (three excellent performers in this class). I had a pair of Magnepan's 1.7s on hand for comparison purposes and found the Maggies enjoyed a narrow edge in top-to-bottom cohesiveness and overall image scale. The Classicos, however, offered equally taut but more powerful and deeply extended bass, equivalent levels of resolution, a somewhat greater sense of midrange fluidity, and more explosive dynamics. Significantly, the Gallos are somewhat easier to drive than the Maggies, though both speakers may require top-shelf (or at least near-top-shelf) amplification and source components to give of their best.

I would encourage anyone shopping for loudspeakers in the near \$2k/pair class to give the Classico CL-3 very careful consideration. The only hard part, really, will be figuring out how Gallo is able to pull such a big, expansive, and refined sound from such small, unassuming loudspeakers. **tas**

# Legacy Focus SE Loudspeaker

A Major New Competitor with a Different "Voice"

Anthony H. Cordesman

**E**ven after several decades of reviewing, I am still struck by the fact so many different approaches to speaker design can produce outstanding sound quality. The choice between dynamic, ribbon, and electrostatic speakers is as hard as always, and combinations of dynamic and ribbon or electrostatic speakers into various hybrids get steadily better. Moreover, speaker designers make steadily better use of new technology and measurement methods without converging on one approach to sound quality. The way in which a given designer and company actually listens, makes musical choices, and "voices" their speaker is just as important now as it was in era of far less sophisticated measurements, drivers, and enclosures.

The Legacy Focus SE is a good case in point. It came in for review at a time when I use the Quad 2905 and modified Vandersteen 5A Carbon as references. Both are radically different in design features and technology from the Focus SE. Moreover, I have recently been listening to Wilson and Thiel speakers, and a friend's Magnepans. In theory, one design approach should have clearly stood out. In practice, everything depended on

how well a given design approach was executed, and what really became clear was how good today's choices have become, and how much choosing between them depends on your own taste.

Moreover, the more I experiment with speaker placement, front-end electronics, and speaker cables, the more it becomes clear that the listening room is as important a component as the



speaker, and how difficult it is to predict exactly how well a really good speaker will perform with a different mix of components. No one can be serious about audio without realizing how scarce really good high-end dealers are becoming, or how difficult it is to seriously audition a wide range of speakers, but it is a fact that a reviewer cannot be a partner in creating a truly good system, only an advisor.

The Legacy Focus SE is a case in point. It is an outstanding speaker in its price range, but you really need to hear it to fully understand how it compares with its competition in the \$7000–\$15,000 range. It is "voiced" differently from any of its competitors I've heard to date, but in ways that help bring out the best in a wide range of music. As with all of its competitors, the choice of this particular sound character and set of

## EQUIPMENT REVIEW - Legacy Focus SE Loudspeaker

nuances is going to be highly personal. I suspect, however, that even very experienced audiophiles are likely to be both surprised and impressed with its blend of the deep bass and massive dynamic energy that is typically the province of large dynamic drivers with ribbon technology.

### A Different Set of Design Features and Goals

Bill Duddleston, the designer of the Legacy Focus SE, is justifiably proud of the result, and has done an unusually good job of putting his design goals into words. The accompanying sidebar is an excerpt from a longer paper that Bill sent to me, and helps you to understand the rationale behind each key design choice. These excerpts only cover a small part of Bill's narrative, which includes a lot of useful detail on room interactions and setup, and far more detail on the interaction between his design choices and music. Even the excerpts, however, show the passion behind his design choices and the intent. In fact, I wish far more designers made a point of explaining why they made such choices and how they were intended to affect sound quality.

### Trying to Put Sound in Written Words

And here we come to the core of this review: How the Legacy Focus SEs actually sound. First, let me begin by saying that I expected to hear far more irregularities in frequency response and differences in sound quality because of the differences in the driver technology. I didn't. In fact, the integration of the 1" dual-pole, neo-ribbon, folded-Kapton-diaphragm tweeter and the 3" dual-pole, neo-ribbon, Kapton-diaphragm midrange with the two Rohacell-reinforced silver-graphite mid/woofers and two 12" aluminum-diaphragm, rubber-surround subwoofers produced both smooth frequency response and timbre and very coherent and consistently musical sound, while preserving the speed and life you'd expect in the best ribbon designs.

Believe me, I've heard enough complex mixes of drivers to listen hard for problems. I went through a wide range of my tougher, brighter recordings to see if they would flag some problems or anomalies in the music—create problems with soprano voice, solo

violin or massed strings, or flute or clarinet.

More importantly, the Legacy Focus SEs produced exceptional upper-midrange and treble life and air with demanding but very good recordings like Sharon Bezaly's performance on *Mozart Flute Concertos* [BIS], Marianne Thorsen's on *Mozart Violin Concertos* [2L38sacd], and Martin Frost's on *Mozart's Clarinet Concerto and Quintet* [BIS]. They did equally well with the Alan Civil/Neville Marriner recording of Mozart's four horn concertos on Pentatone, and the very demanding and original Kuijken Kwartet performance of a transcription for string quartet of Mozart's *Requiem*, where the opening passages are extraordinarily moving with the right speaker.

These are all recordings that seem to be close-miked and have the sound you expect when listening near to the performer. While the Focus SE had more energy in the presence region than I typically hear with cone drivers, it struck the right balance between an exceptionally revealing and life-like reproduction of the lead soloist or instrumentalist, and the slight hardness I've heard with a number of other very good speakers.

The Focus SE revealed but did not harden Judy Collins' voice or exaggerate her occasionally stressed sibilants. They gave a slightly forward, but very live, character to the slightly-too-closely-miked bands on Jennifer Warnes' *The Hunter* [Private Music]. They gave the same life and air and exceptional detail to the complex mix of instruments and sounds in Bruce Dunalp's *About Home* [Chesky] and *The Rhythm of Wings* [Chesky], and to the somewhat exaggerated (but very listenable) presence and crowd effects in the *Jazz at the Pawnshop* series (now available on HDtracks), and did so without reducing the slightly reticent midrange and weak bass that make this series seem more "live" than real with the wrong speaker.

While tape hiss and mixes of pink and white noise are not high on my list of casual listening, they do spotlight changes in timbre and upper-octave response, and listening again failed to exhibit any of the emphasis or spotlighting that occurs with some ribbon drivers and hybrids.

What the Legacy Focus SEs did with all of these various sources—analogue and digital—was provide the kind of speed and resolution from the lower edges of the upper midrange up that is customary in better ribbon and electrostatic speakers, with the difference being that the Focus SEs blended almost seamlessly in speed, detail, and timbre with the two mid/woofers to create the kind of apparent point-source imaging that Bill Duddleston described in his comments on his design goals, and in a response to my questions about why he chose this specific group of drivers and how he blended them together.

One can endlessly argue the theoretical merits of point source, line source, or dipole dispersion, but the key is how well any given driver configuration is actually able to reproduce exceptional musical life and air, and a very stable mix of imaging and soundstage. The driver configuration in the Focus SEs does not have the apparent scale of a line source and is more directional, but the imaging is a bit more stable and defined. The Focus SEs do

## SPECS & PRICING

|   |   |
|---|---|
| <b>System type:</b> Six-driver, four-way loudspeaker                            | <b>Impedance:</b> 4 ohms  |
| <b>Tweeter:</b> One 1" dual-pole, neo-ribbon, folded-Kapton diaphragm           | <b>Sensitivity:</b> 95.4dB  |
| <b>Midrange:</b> One 3" dual-pole, neo-ribbon, vapor-deposited Kapton diaphragm | <b>Recommended amplification:</b> 10-500W   |
| <b>Mid/woofer:</b> Two 7" Rohacell reinforced silver-graphite cones             | <b>Dimensions:</b> 15.5" x 55" x 13"  |
| <b>Subwoofer:</b> Two 12" spun-aluminum cones                                   | <b>Weight:</b> 195 lbs. each  |
| <b>Low-frequency alignment:</b> Assisted 6th-order Butterworth, vented          | <b>Price:</b> \$9200-\$10,600 (depending on finish)   |
| <b>Frequency response:</b> 20Hz-28kHz +/-2dB                                    | <b>LEGACY AUDIO</b><br>3023 Sangamon Ave.<br>Springfield, IL 62702<br>(217) 544-3178<br>legacyaudio.com |

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## EQUIPMENT REVIEW - Legacy Focus SE Loudspeaker

not have the “big hall sound” of a properly placed dipole speaker, but they do offer more apparent detail in a natural musical form than full-range dipoles, and they are far easier to situate vis-à-vis the rear wall than a full-range dipole.

Moreover, the drivers’ height from the floor, their placement, and dispersion combine to provide exceptionally good integration of the soundfield at just the right listening height. The Focus SEs are tall enough so you do not get a trace of “balcony” effect—the feeling you are looking down at the performance. Driver radiation pattern and integration help make the speaker disappear, and the Focus SEs manage to both maintain a relatively wide listening area and do a very good job of limiting the impact of sidewall, floor, and ceiling reflections and interactions. I was impressed, as I have been with a number of recent speakers, with how much more precise and revealing the soundstage can be with modern speakers if you really experiment with placement and toe-in, and with creating the best listening position with no objects that interfere with the sound path.

The Legacy Focus SEs are more sensitive to toe-in and listening distance, however, than a number of other speakers—possibly because of their speed and detail in the upper octaves. Toe-in is easy; you simply follow the manual. Listening distance is more a matter of taste. You do not need to sit at listening distances much beyond four feet, but I normally place my speakers along the long wall of my room. This cuts the distance to the listening position but sharply reduces sidewall reflections and sonic blur. With the Focus SEs, however, nearfield listening distances (4–8 feet) can appear to make music

sound as if it is coming from close to the front of the hall. At greater listening distances—and this will be room-dependent—timbre and detail come closer to a more mid-hall sound. This happens with most speakers with realistic life in the upper octaves, but it is more apparent with the Focus SEs than usual.

You will need to experiment and find the placements that best provide the set of musical illusions you are listening for—particularly because the Focus SEs are good enough to reveal about as much detail as any speakers close to their price range, and I should stress that any reasonable listening distance will avoid the hardness some speakers have with nearfield listening. You will, however, find that the closer you get to the speakers, the narrower the ideal listening position or “sweet spot” will be.

As for midbass and deep bass, the two 12" aluminum-diaphragm, rubber-surround subwoofers are well-named in that they really do go low. They reached the very bottom octave as well as any speakers close to their size I’ve worked with. These are not, however, “power woofers.” They are very controlled and match the rest of the sound in detail and apparent speed. There was an exceptional lack of any peak towards the end of their bass response, perhaps because it goes so far down that is really not audible at realistic listening levels.

At the same time, no matter how I placed the Focus SEs, they did not become bass-heavy or warm; they always sounded fast and detailed in the midrange and highs and stayed a bit tighter and more controlled in the bass than most competing speakers. Given the fact that every speaker involves some trade-offs in these areas

of performance, I prefer the ones in the Focus SEs. I want bass detail and control in the lowest bass notes, rather than the illusion of bass power produced by some kind of peak or overhang of bass notes.

I don’t have any concerns about the Focus SEs’ ability to really dive down into the depths. I haven’t heard any speaker do better, and only a handful of rivals provide the same degree of deep-bass realism and power in my listening room. One problem with some hybrids is that they try to “balance” the speed and detail of ribbons and electrostatics with a warm or slightly bass-heavy dynamic woofer or subwoofer. This can be impressive at the start, but it wears with time; you can hear the speaker imposing itself on the music. The Legacy Focus SEs did not have that problem, even with as flat and revealing an amp as my Pass Labs 160.5s. Their slightly “forward” character with the Pass Labs XA160.5s also shifted to mid-hall with my Cary CAD 120S MKII tube amp. You will need to blend your overall mix of components to taste.

### Setup and Compatibility

The Legacy Focus SEs were neutral enough that the basic sound character you hear is like that of your front end, power amplifier, and speaker cables. I should note, however, that the exceptional bass response I mentioned only came through with a solid-state amplifier with a relatively high damping factor; the bass was less tight with even a relatively powerful tube amp. (Legacy recommends amplifiers with damping factors of 40 and above.) The Focus SEs also proved to be more sensitive (or more revealing) of the way a given front end reproduces depth

than some competing speakers. “Neutral” is always relative, and as is the case with many good speakers, you will need to be careful to blend them with the right amp if you want a given mix of nuances and sound character.

The Focus SEs sound slightly different bi-wired, but the improvement—if any—is likely to be limited, and the cable you like now is likely to sound good with them. The two rear-adjustment switches that tailor the bass for room interaction, and slightly reduce upper octave output can help. They are, however, moderate in effect, and adjusting the bass control for room and placement effects will be dependent on the room, as the treble control produces only a relatively subtle drop in the highs.

The Legacy Focus SEs were somewhat less placement- and room-dependent than most speakers in terms of bass performance. As is the case with every other really good speaker, however, getting the very best mix of bass performance, soundstage realism, and imaging requires a lot of practice and experimentation. This isn’t just a matter of getting the right listening distance, as I touched upon earlier. Don’t just accept a mere “very good.” Keep moving them until they sound “great.” I definitely recommend using their spikes. The cabinets are relatively inert, but they sound better firmly anchored to the floor.

### Summing Up

This is an excellent speaker with unique bass performance for the price, and outstanding sonic nuances throughout its entire range. If I have any reservations about recommending it, they are the same I’d apply to almost all of today’s best

## EQUIPMENT REVIEW - Legacy Focus SE Loudspeaker

speakers in their price range. You are paying for both outstanding basic performance and a set of nuances that will be highly personal, and at least slightly system and listening-room dependent.

In an ideal world, the choice of a high-end component would mean that audiophiles could easily go from hearing about a great new product, to reading reviews to get some background, to going to a local dealer who would be able to demonstrate it in depth. In practice, for many audiophiles the choice is more one of relying on reviews or word of mouth or sheer luck.

I really wish that wasn't the case. The irony of today's choices is that they have improved to the point where it is getting harder and harder to use words to describe the full range of differences between them. I have no reservations about the Legacy Focus SEs. I don't think you can possibly go wrong with them, but they are yet another example of how important good dealers really are, and how important access to them is in making the best choices. **tas**

### Legacy's Bill Duddleston on the Focus SE

The Focus speaker is named from the acronym Field Optimized Convergent Source. More than a decade ago I was confident, as were other front runners like Ken Kantor (who had left Acoustic Research to start up NHT), David Moran (from DBX) and Don Keele (the chief loudspeaker tester for Audio magazine), that the in-room power response painted a more accurate picture of what we were hearing from a loudspeaker than a simple, curved, spliced, nearfield measurement made at one meter distance.

We knew that reflections arriving within 5msecs of the direct wave-launch arrival will tonally influence the sound character as these arrivals become fused. Arrivals a bit later, 5-15 msecs, can affect the soundstage laterally while sounds arriving after 15 to 25msecs virtually tell us about the character of the room we are in; its size, reflectivity, the distance of the source, etc. Really late reflections, exceeding 25ms, impede clarity of the source and eventually become discrete echoes. That's why they are minimized in most recordings, except for large orchestral works, organ, and chant pieces. Should we desire to hear dense echoes, we can add it in the mix. What we don't want it reverberant density from the playback system.

The Focus SE works with the room. In its design, we made some generalizations about rooms, rather than modeling from an anechoic chamber. We assumed you have a floor, so we spaced the midranges to interfere most constructively (work together) at seated listener height, and most destructively where the floor bounce occurs. Focus SE exhibits less tonal shift from floor bounce in the upper bass and lower midrange because four drivers are contributing in the passband, two drivers are climbing in phase as frequency drops, while two drivers are falling in phase as frequency rises.

We also optimized the frequency response at 3 meters instead of the 1 meter distance that most manufacturers adopt. The 1 meter measurement looks good in a printout, but does not translate in the far field unless the transducer is a coincident source (coaxial with time alignment) or one with

constant directivity like the Whisper. Even then, it is subject to proximity effects.

Sometimes what you want does not yet exist and you need to start from scratch. And since midrange frequencies are "where we live" in the musical spectrum, a great deal of work went into the 7" Rohacell-backed silver/graphite driver. What is so unusual about this cast-frame driver is that there is a hefty neodymium slug under the front phase plug. This improves transients, reduces distortion, and increases efficiency. This driver's useable range extends over seven octaves. This minimizes the in-line components of the crossover network, thereby reducing power loss.

I received a sample of a new woven composite material made of graphite and metal fibers. Experimentation found we could alter the ratio of metal to graphite, and the type of metal strands, to balance the trade-offs of each material. Make the diaphragm out of too much metal and it would ring. Make it out of too much graphite and it would lose definition.

We found that silver strands sounded much better than aluminum, copper, or magnesium when woven with the graphite. After optimizing the silver-to-graphite ratio, we bonded the material to a thin layer of Rohacell for stiffness. We then worked to optimize the suspension. The real key is the remarkable motor structure on this thing. It is in essence a push/pull electro-dynamic motor. The reverting field generated by the front focusing magnet also concentrates the field normally straying from the pole piece.

The upper accordion-pleated ribbon tweeter is a third-generation influence of Oskar Heil. New magnetic materials are applied to improve force factor, the diaphragm is the latest Kapton variety, and the front pole piece, acoustic slots, and back chamber are optimized for our applications. Like all of the drivers we use today, it is a proprietary house design. The larger ribbon operates below 8kHz and acts as a transition driver to the cone midranges.

# Aerial 7T Loudspeaker

## Worthy of Your Short List

Kirk Midtskog

**M**ichael Kelly and David Marshall at Aerial Acoustics have come up with a new speaker model that will serve as the basis for more models to come. I have had the pleasure of listening to the first in the new breed of Aerials, and if the \$9850 7T is any indication, I am looking forward to hearing what Kelly and Marshall produce next. Since the new full-range 7T is priced roughly \$22k below Aerial's well-regarded 20T V2 flagship, I was particularly interested in reviewing it. This three-way, vented-box system features dual 7.1" woofers, a 5.9" midrange, and a soft ring-dome tweeter mounted in a waveguide.

I first heard the Aerial 7T at CES 2011 and was immediately struck by its bass extension and clean, highly dynamic sound, even in challenging show conditions. Aerial shared half of a normal-sized room with Peachtree audio at the Venetian, and that means things were rather cramped on the Aerial side—especially when one considers the 7T is not a mini-monitor. Michael Kelly used an 80W Peachtree iNova integrated amp to demo the speaker as a way of illustrating that the new design need not necessarily be driven by a muscle amp. The bass extension and dynamic power coming from the Aerial CES demo, not to mention the clear and engaging overall presentation, were undeniably noteworthy.

The first time I played the 7T in my system, I was almost overwhelmed by its dynamic impact, immediacy, and liveliness. The 7T is noticeably easier to drive than my Dynaudio Confidence C1, but I had already turned down

the volume several clicks as a starting point. Even accounting for the sensitivity difference, the dynamic verve, “ease of acceleration,” and *control* were so commanding that they made me chuckle. The 7T's dynamics and bass are not the blunt-instrument sort, characterized by bloated, lumpy, ill-defined, high-volume thumps; rather, the 7T is much more complete in its ability to flesh out transients, delineate bass pitch, and follow the propagation of notes and track their decays. Kickdrum strikes had life-like punch as they imaged on the soundstage *behind* the speakers and then launched into the listening room, much as they do at a live jazz show with an unamplified drum kit. Just *two* speakers here, and yet strongly projected elements like classical singers, brass sections, and percussion instruments seemed to defy the boundaries of typical soundstage reproduction by allowing the entire front two-thirds of my listening

room to be encompassed in the soundfield. This expansiveness is not to be mistaken for forwardness: Images were placed behind the plane of the speakers but then seemed to “breathe” into the room, taking on additional solidity as the 7T imbued them with immediacy and presence. This happened with small instruments like triangles and maracas as well as large ones.

How does Aerial do it? Extensive effort lavished on the enclosure, for starters. Putting aside the “controlled resonance” cabinet approach, most designers of dynamic-driver loudspeakers strive for a non-resonant, rigid, and sufficiently massive cabinet that will least interfere with the drivers' own piston motion. Aerial addresses the trade-offs among MDF panels (which tend to flex) and stiffer materials (which tend to ring) by using eight layers of curved MDF with an important structural enhancement. The layers “are laid up wet, pressed into a precise curved shape with steel tools in a hydraulic press, and held for 48 hours until the glues are hard. This locks strong stresses into the material, fundamentally stiffening it and improving its mechanical properties.” The resulting curved pieces are veneered inside and out and then locked together with the front and back through tongue-and-groove joints and seven, full-sized, interlocked braces. So, in



## EQUIPMENT REVIEW - Aerial 7T Loudspeaker

theory, you have an enclosure that meets the non-resonant, stiff, and sufficiently massive requirements. Each finished speaker weighs 96 pounds.

The two-inch-thick baffle uses a constrained layer approach that combines a heavily painted MDF outer baffle with an asphalt-like compound between it and the underlying cabinet front. The review sample looked fantastic in gloss rosenut with its slightly curved metallic gray front baffle and black base. There are also eight hidden neodymium magnets that hold the grille in place. Everything about the 7T—from the fit and finish, to the large spikes (or blunted footers—your choice), to the velvet slipcovers and 48-pound, MDF-lined shipping boxes—gave me the feeling that I was dealing with a well-thought-out, high-quality product.

The 1" tweeter is a ScanSpeak soft ring radiator with a custom aluminum plate and waveguide. The 5.9" SB Acoustics midrange uses a papyrus-blend cone and a cast-magnesium frame. The twin 7.1" ScanSpeak woofers use bi-laminate composite cones and also have cast-magnesium frames. Crossover points are 400Hz and 3kHz using fourth-order Linkwitz-Riley slopes. The 7T has two pairs of binding posts for bi-wiring or bi-amping. Sensitivity is rated at 89dB, impedance at 4 ohms.

I can confirm that the 7T is not difficult to drive. A friend's 70-watt Berning ZH-270 OTL tube amp had no trouble with the 7T in my 12.5' x 17' room (or in his much larger room). This loudspeaker can be successfully mated with medium-powered tube amps, and that represents a real boon to folks who would rather not deal with a high-quality, higher-powered amp. Aerial specifies the frequency response as +/-2dB from 28Hz to 25kHz, and a -6dB point of 23Hz—and those low-end figures are completely credible.

The 7T's overall sound is clear, lucid, and very revealing. It is transparent to upstream gear and sources, and it will let you know if something is not quite right. I think part of this ability comes from an honest upper midrange and lower treble balance, one that does *not* skew things to make flawed recordings

sound good. There is no so-called "Gundry Dip" which softens output a little in the 2kHz to 4kHz range, where the ear is most sensitive. Alanis Morissette's voice on "That Particular Time" from *Under Rug Swept* [Maverick] is highlighted in her upper register to an extent that distracts from the song as a whole—an overemphasis that I have heard with other speakers but that was laid bare by the 7T. During the review period, I made some signal and power cord changes, and each adjustment was registered to a greater degree than I have ever experienced in my system before. Listeners who are willing to put in the effort to carefully sort out system-matching and setup will be richly rewarded by the 7T's resolution and realism.

As already mentioned, the 7T's dynamic capabilities are very good. Couple that with taut, tuneful, articulate and deep bass, and you have the makings of a very engaging speaker. I have had the pleasure of reviewing some nice small speakers over the last year or so and am a fan of fine stand-mounted, two-way speakers, but I have to confess...I am a sucker for the authentically extended bass from a good floorstander. Mind you, I would prefer to just forgo the lowest octave if it is muddled or poorly integrated with the rest of the spectrum. Having said that, I just loved the 7T's bass performance. The sense of weight and ease that the 7T brought to bear was exhilarating. Low bass notes in orchestral and pop recordings made the entire experience more involving, more present. Here is, for all intents and purposes, a full-range speaker that can be used successfully in small rooms—up to a point—with sufficient care in placement and room treatment. I found a spot where the 7T threw a deep, wall-to-wall soundstage and had precise imaging without bass overhang. I should clarify this more. The 7T was actually slightly recessed in the 70Hz–120Hz zone in my room, which is where bass can typically sound bloated and annoying. My room also tends to elevate bass below about 35Hz just a bit, so very low notes in the 30Hz-and-lower region were actually a little stronger with the 7T than notes in the midbass. While not strictly neutral, I tolerate this bass performance. OK, I admit to actually liking some aspects of

it. The 7T did not exhibit this same slight low-bass emphasis in my friend's larger room. The 7T has great bass anyway you slice it.

As briefly touched upon earlier, soundstaging and imaging are fantastic: deep, wide, continuous, and focused, with an apparent mid-hall perspective. Highly revealing, the 7T's resolution also allowed me to "see" back and sidewalls of orchestral stages with greater ease than I am used to. Large and small instruments were not mashed together in an undifferentiated mass but more fleshed out and lucid. This kind of resolution helped me appreciate Stravinsky's work even more than I had in the past when listening to *Song of the Nightingale* [RR]. The last two movements in particular are filled with subtle orchestration that helps explain why so many of us marvel at Stravinsky's unique talent. Pure genius. Sometimes, I have listened to these movements and given in to the impulse to skip over some passages. Not so with the 7T. This speaker makes the little things come alive. I sat rapt and listened all the way through.

Needless to say, the Aerial 7T is fun to hear. With care in setup, it will seduce you during quiet passages and wow you during bombastic ones. Its considerable dynamic range and resolving abilities make it worthy of a place on your short list at its price level—and higher. Much of music's natural power and appeal are well served by the 7T. Impressive, indeed. **tas**

### SPECS & PRICING

**Type:** Three-way, vented-box system

**Drivers:** Two 7.1" bi-laminate bass, one papyrus blend midrange, one soft ring radiator

**Frequency response:** 28Hz to 25kHz (+/-2dB), 23Hz (-6dB)

**Sensitivity:** 89dB/2.83V/1M

**Impedance:** 4 ohms

**Power handling:** 600 watts

**Recommended amplifier power:** 25 watts, minimum; 100W or more, recommended

**Dimensions:** 9.7" x 44.5" x 15.3"

**Weight:** 96 lbs. each

**Price:** \$9850 (pair), Gloss cherry, gloss rosenut, and neo-metallic black

**Warranty:** Three years parts and labor, fully transferable

#### AERIAL ACOUSTICS

100 Research Drive  
Wilmington, MA 01887  
(978) 988-1600  
aerialacoustics.com

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# Wilson Audio Sophia Series 3 Loudspeaker

## Sweet Spot

Neil Gader

**T**he loudspeakers of Wilson Audio need little introduction. For thirty years Dave Wilson and his team of engineers and designers have produced leading-edge models of remarkable quality and refinement. During my recent visit to the factory I have to admit I was awed by the operation. The fabrication process borders on the surgical and the final fit and finish make a whole lot of other loudspeakers look as though they were nailed together at Home Depot.

Yet the high end is also a notoriously fractious place with no shortage of strong opinions. Even a brand as revered as Wilson has taken some hits over the years. Personally I found the voicing of certain models—versions of the iconic WATT come to mind—too coolly clinical for my taste. Detailed, ultra-low-distortion, and dynamic? Inarguably. But they didn't connect with me on a purely musical and emotional level. Like they say: It's what makes a horse race. And it's what made my assignment to review the Wilson Audio's latest Sophia, now in Series 3 attire, all the more intriguing.

### Close Encounters of the Series 3 Kind

For those who are not up to speed on the Sophia Series 3, a quick refresher: The Sophia is Wilson's entry-level floorstander. It made its debut in 2001. It's a three-way design in a bass-reflex enclosure with a rear-firing port and a small resistive vent for the mid/tweeter section. The upper third of the cabinet houses a midrange and tweeter driver acoustically time-aligned on the rearward-leaning baffle. Per Wilson practice there are binding posts for single wiring only. Befitting its more accessible price point in the Wilson line, the Sophia is designed to provide

an easy ride for amplifiers of all stripes, not just the high and mighty. Sensitivity and nominal impedance are straight down the reasonable middle at 87dB and 4 ohms respectively. (See the technical sidebar for Series 3 specifics.)

The Sophia Series 3 is a serious, nearly full-range proposition and tonally a resoundingly neutral one. Frequency response as measured via my AudioTools RTA came up persuasively flat in my room. And that flat response carries over to its sonic personality, which is dominant and full-bodied, with a blush of warmth and bloom in the mids, a natural sibilance range, and just a hint of sparkle on top. The drivers cohere exceptionally well across the octaves, and most critically they create a single voice—an alliance of output that never hints at colorations due to the differing driver-cone materials that the Sophia uses. There is little or no sense of tweeter localization, which for me is deadly—the audio equivalent of a lighthouse beacon.

The Sophia 3 has an intense range of expression, tonally and dynamically. In sheer output there's no quit in this speaker. It plays fiendishly loud (cue Metallica). The Sophia could easily be the high-end poster child for inspiring bad behavior and other naughty things. Yet it remains utterly composed under all conditions and counterintuitively doesn't even need to play loudly to get the blood flowing, being nearly as expressive at softer listening levels.

From the first disc I played—Steve Winwood's *The Finer Things* in a superior 45rpm remix—to the last, there was no escaping the resolving power at both micro and macro levels. For example, the contrast between the initial strike of the snare on the Winwood album and the sound of its long decay as it flutters the reverb plate was so stunning that I felt like I was watching it disappear down a studio hallway. In the micro sense,



## EQUIPMENT REVIEW - Wilson Audio Sophia Series 3

### The Sophia Series 3 In Depth

Visually the Sophia 3 harmonizes with the rest of the Wilson line, in spite of the fact that if it weren't for the extraordinarily lustrous finish it would almost appear pedestrian—a lack of ornamentation that reflects, in part, Dave Wilson's recording engineer roots. Construction tolerances as they're commonly known don't even seem to be tolerated at Wilson. Seams, lacquer peel, rough edges? Please. I did some pretty intensive sleuthing and couldn't come up with a single flaw. The 43" tall cabinet is a single box rather than the decoupled/modular head-unit models beginning with the Sasha and cresting with the fully adjustable MAXX 3 and Alexandria. The Sophia is built around general if exquisitely well-measured box patterns with interesting angles and delicately radiused edges. For example, the woofer section of the cabinet has angled non-parallel sidewalls that bow outward progressively as they reach the floor.

Key changes to the Series 3 include borrowing the more advanced tweeter and midrange transducers from the Sasha and MAXX 3. The aluminum-diaphragm woofer receives a more powerful motor design. The baffle angle is also modified to optimize time-alignment and jibe with the impulse response of the new midrange driver. Construction is now Wilson's proprietary, engineered X-material throughout (a high-pressure composite of mineral, polymer, carbon, and paper) with the exception of the mid-range/tweeter baffle, which is S-Material (which uses less carbon in the composite and is 20% less rigid than X). Both these substances are very monotonic but have differing resonant frequencies appropriate to each speaker/crossover combination. The Sophia 3, while designed to be friendly to modest amplification, thrives on the best power.

the Sophia captured the delicacy of a solo violin clinging to a note at the top of its range and the soft drone of Joni Mitchell's dulcimer launched from the sweep of her plectrum. The speaker is equally comfortable in both worlds.

Bass response extends into the upper 20Hz range in my room and yields a bucketful of usable response deeper still. During the "Serenata" from Stravinsky's ballet *Pulcinella* [Argo], the trombone was crisp, fast and authoritative, with the basses striking a fine balance between pitch-control and big-bodied resonance. Even if the Sophia won't quite grasp the last third of an octave of the deepest bass, I can guarantee no one will be disappointed when the pipe organ kicks in during the waning moments of Vaughan Williams' *Antartica*. Mid and upper bass is resonant, fleshy, and well nigh pitch-perfect. If the Sophia 3 has any character at all, it can be heard as glimmers of some bonus articulation in the upper-mid (presence) range. It's a subtle character that may remind some of top studio monitors that engineers rely on to see into the darkest recesses of a mix. Given Wilson's engineering roots and familiarity with the pro-audio world this thought wouldn't be a stretch.

These gray-matter descriptions are important but if there's one word to describe the most unexpected aspect of listening to the Sophia 3, it's *physical*. There's something more underpinning each instrument—a rigid framework that supports an instrument's voice and character. It doesn't matter the note, the chord, the octave, the instrument; the Sophia 3 reproduces each with dimensional body and acoustic energy. This physicalization of sound begins at the leading transient and continues unbroken through the body of the instrument and out into the acoustic of the venue itself. Each stroke of a drum, bow coursing strings, pressurization around a mouthpiece is weighted with intent.

A good example of this is the original *Blood, Sweat & Tears* Direct Disk Labs LP. I know this disc like I know my own face. Not a perfect recording—in fact I had long written off this detailed but overly bright hunk of vinyl. Lew Soloff's trumpet blast that's held at the end "More and More" normally sounds like an over-baked electronic emulation of a trumpet. However, for the first time this note was fully realized from mouthpiece to bell—no longer a sterile toot but a genuinely brassy blast.

A few minutes with the Sophia and you become conscious of two key issues—speed and decay. Music never seems to originate from the

Sophia's enclosure. During Kissin's reading of *Pictures at an Exhibition* [RCA] there were long stretches when I was so mesmerized by the performance that all critical listening vanished. All that remained were the Steinway and the pianist, the creaky bench, and the odd rustle of the artist's clothing when he poised his hands in anticipation of the next measure.

Equally impressive is its range of dynamic energy. For classical music this means the dancing micro-dynamics on a soft solo violin or the baton-snapping crescendos from the tympani bombs thrown from the back of the soundstage during Copland's *Fanfare for the Common Man* [Reference Recordings]. Or the way the Sophia 3 turns hip-hop into a contact sport for adrenaline junkies. This speaker moves air in voluminous amounts, and with it paints the listening room with the warmth and ambience of the recorded venue. It soaks the room with acoustic information, allowing the space in and around players to further expand. Dynamically, and I mean down to the finest gradations, the Sophia 3 shuts the door on nearly every other speaker I've had in my room.

No doubt a large measure of the Sophia 3's success is owed to the enclosure's careful tuning, the lack of resonant colorations that muddy or "slow" the sound, and an absence of enclosure leakage or absorption. One of the barometers I use to observe such speaker variations is Tom Waits' performance of "Take It With Me When I Go" [*Mule Variations*],

### SPECS & PRICING

|  |   |
|--|---|
| <b>Drivers:</b> 1" inverted dome, 7" cellulose paper pulp, 10" aluminum cone | <b>WILSON AUDIO SPECIALTIES</b><br>2233 Mountain Vista Lane<br>Provo, Utah 84606 USA<br>(801) 377-2233<br>wilsonaudio.com |
| <b>Frequency response:</b> 20Hz-22kHz +/-3dB                                 |   |
| <b>Sensitivity:</b> 87dB   |   |
| <b>Impedance:</b> 4 ohms (3.1 min)   |   |
| <b>Dimensions:</b> 41.3" x 13.7" x 18.9"                                     |   |
| <b>Weight:</b> 165 lbs.  |   |
| <b>Price:</b> \$17,900   |   |

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## EQUIPMENT REVIEW - Wilson Audio Sophia Series 3

particularly the moment when his voice descends into a deep chestiness. On lesser speakers a slight blurring effect often occurs in this region, but the Sophia was unfazed and absolutely clean in its reproduction. It left me with an important impression—that I was hearing only what Wilson Audio had designed into the product. Any deviations from the mission plan were detected and dispensed with much earlier during Sophia's development stages.

Sonically, Sophia is not a speaker that tosses any gutter balls. I have no quibbles with the prodigious speed and dynamism and integration of the inverted dome tweeter but I think there's still some vestigial dryness, a lack of *give* in the upper register of violin that can't quite match the fullest bloom that the Sophia communicates in the lower bands. This was the one aspect that reminded me most keenly of a studio control monitor, albeit unlike any studio monitor I've ever heard before! I was also less than over-the-moon regarding its ability to recreate soundstage depth, which was merely so-so in my room.

A fair discussion of the Sophia 3 wouldn't be complete unless I referenced a couple other speakers that I've written about in recent issues. The Magico V2 and the TAD CRM-1 were reviewed in Issues 202 and 205, respectively. Each competes head-to-head with the Sophia 3 but sonically arrives at slightly different conclusions. The trio all boast exceptional midrange transparency. The Magico has superb tonal color, balance, and control. Among other factors part and parcel of its acoustic suspension design, the V2's pitch and attack are precise and measured. Though not as extended as the Sophia 3, the V2 is pure magic when it comes to deep stage dimensionality and the ability to

transport the listener into a purely acoustic world. The TAD, thanks to its all-beryllium coincident driver, has a midrange/treble integration that is second to none and probably the most open treble in the trio. There's an uncanny top-to-bottom coherence that places images across the dimensional soundspace with an unearthly precision. The Sophia essentially splits these differences but its combination of low-end extension and impact will trump the V2 and the CRM-1. Take for example the sound of a bass drum being struck. The Sophia 3 enters the spotlight with a heavier although looser initial attack, deeper extension, greater bloom, and lengthier decay. The V2 encapsulates and tightens that fundamental tone, making it easy to separate the timbral character and focus of the instrument from its surrounding space. The TAD falls somewhere between, neither extending as deeply as the Sophia nor moving the same volume of air but sounding less plummy compared to the Sophia. That's not to say this esteemed pair don't offer a significant war chest of other charms—they most certainly do. But in terms of sheer concert level, "Who's your Daddy" slam and attack, the Sophia 3 has few peers.

The Wilson Audio Sophia Series 3 is the complete package. And dollar-for-dollar maybe the most inspirational speaker Wilson has produced to date. It performs at or near the highest levels, and it's an unquestionable crowd-pleaser. Can a loudspeaker in this range be considered a best buy? I'll leave that to others, but I will say the Sophia sure makes you want to throw caution to the wind and open up your wallet. Like the Italian cinema bombshell of the same name, Sophia is unforgettable. **tas**

## Focus SE...Now Featuring the New LEGACY Air Motion Tweeter

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"I can count on the fingers of one hand the number of speakers on the market which are as good as the Focus SE."

- Peter Vercher, *Stéréo Prestige*

"Listening through the Focus SE is a very simple thing: it's the difference between listening to a recording, and being there. Once you've heard how good it can be, it's hard to go back."

- Dave Upton, *Home Theater Shack*



"...a masterpiece at its price point. Recommended without reservation!"

-D. Schroeder, *Dagogo.com*

"the LEGACY Focus is the finest value that I have ever encountered in high-end audio."

-Paul Bolin, *Stereophile Magazine*

"In both appearance and performance, these speakers set a high standard and offer excellent value."

-Karl Nehring, *Audio Xpress*

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# Vandersteen Model 5A Carbon Loudspeaker

Upgrading a Classic to a New Level of Musical Realism

Anthony H. Cordesman

**I don't change reference speakers casually. The Vandersteen 5A Carbon, however, is a truly exceptional speaker, both in sound quality and in providing the adjustments that allow it to function near its best in virtually any listening room. It is one of the finest point-source speakers I have heard, and it provides a remarkable mix of dynamics, accuracy, and truly deep bass for any speaker its size.**

The Vandersteen 5A Carbon may not have all of the performance capabilities of the Vandersteen 7 that Robert Harley reviewed in the October, 2010 issue, but it comes extraordinarily close and it is much easier on the pocketbook. The Vandersteen 5A Carbon sells for \$24,000 in standard finishes (custom automotive finishes also available), while the Vandersteen 7 sells for \$48,000. Moreover, if you are the original owner of a Vandersteen 5, you can upgrade it for \$11,150, and if you have a Vandersteen 5A, you can upgrade for \$8650 (again, for original owners). These are scarcely bargain-basement prices, but they will bring you amazingly close to the limits of what a speaker can do for the money.

Moreover, this is a speaker that can be adjusted to work at its best in even difficult listening environments. It is compact enough to fit into real-world living rooms without dominating the décor (something I take quite seriously given that I have post-modern medieval décor with MOMA and

Ringling overtones). I want a reference speaker that is compact enough and looks good enough to fit into a living space, rather than one that needs to be pampered in a dedicated listening room or that forces me to use an assortment of devices to limit room interactions.

I also want a reference speaker that can be set up in ways that allow me to enjoy listening with a friend, and I want a speaker that does not favor a given sound signature or type of music and gets the best out of ordinary recordings as well as great ones. The Vandersteen 5A Carbon meets all of these tests, and it is one of the “must-listen” speakers you have to audition if you are considering a speaker in anything like its price range.

## “Carbon” or “Pistonc”

If you are familiar with the Vandersteen line, or own the earlier Vandersteen 5A, you may wonder about this level of praise for a speaker which





## EQUIPMENT REVIEW - Vandersteen Model 5A Carbon

is the third generation of a design that has already been around for four years and which earned outstanding reviews in each of its earlier incarnations. The key changes, after all, are “just” the midrange and tweeter.

Cone speaker technology has been around so long that it existed even when Paris Hilton was a girl. More seriously, the Model 5 and Model 5A are advanced designs even by the technical standards set by most of today’s competition. Vandersteen was one of the first companies to use FFT computer analysis for the design and quality-control of time-and-phase-accurate loudspeaker systems. In fact, Vandersteen claims that it delivered the first full-range, time-and-phase-accurate, minimum-baffle, vertical-array speaker system with the introduction of the original Vandersteen Model 2 loudspeakers in the mid 1970s.

The active subwoofer in the Vandersteen 5A Carbon is the same design as in the original Model 5 that was introduced in the mid-1980s. It still provides the same multiband bass-equalization, which allows bass response to be tailored to a variety of speaker positions in a variety of rooms and does so without processing in the signal path above bass frequencies or the use of DSP.

That said, the change in the tweeter and midrange driver technology to a carbon sandwich of carbon and balsa wood cones still makes a tremendous improvement in sound quality.

Granted, we have all heard similar claims about drivers in the past, but this time you can really hear the difference! Moreover, the upgrade in drivers allows you to hear more of the merit of all the other features of the Vandersteen design. The Model 5A Carbon provides remarkable transparency without “edge” or distortion at any rational—or even reasonably irrational—listening level. It does so with smooth and flat frequency response almost regardless of the dynamic levels and contrasts, and it manages to do so without sacrificing even the finest levels of musical detail.

The 5A Carbon builds on the strengths of the original Vandersteen 5 and 5A. The construction, alignment, and positioning of the midrange and treble drivers allow a point-source wavefront, maximizing the phase coherence of the loudspeaker at the listening position and minimizing time smear. This is helped by the use of

first-order crossovers to achieve perfect phase coherence, and by the high-quality components and high-purity silver internal wire in the crossovers.

As is the case with most Vandersteen designs, these features are coupled to the use of the same minimal baffle and diffracting surfaces for the tweeter and midrange as in the Model Seven, and you can hear the result in a clarity equivalent to the best electrostatics like the Quad 2905s or ribbons like the Magnepan 3.7s.

As Robert Harley’s review of the Vandersteen 7 indicates, the top of the line adds yet another bit of clarity—not only because it uses carbon technology for all of its drivers, but because it adds proprietary carbon-cladding on both the interior and exterior surfaces of the enclosure. The 5A Carbon’s enclosure, however, is made from the same constrained-layer-damped non-resonant materials and the same molded, epoxy-composite material used for its driver baffles and plinths.

The 5A Carbon, however, has none of the dynamic range and loudness limits of the Quad 2905, and does not have the “sweet spot” in listening level common to many speakers of all types. In fact, it was interesting to watch my sons and daughter set the volume to their own taste rather than to the level dictated by the speaker’s performance. No one in my family has the same taste in music or naturally listens in the same way, but all of my children have grown up with a reviewer and have learned to work within the limits of the speaker when they have to. In this case, they all chose their own playback levels, from quiet to unpleasantly loud.

Being able to choose your loudness level without having the speaker make part of the choice for you may initially seem like a minor performance advantage, but I’d think long and hard about your own listening experiences. How many times have you found the speaker *does* impose its own loudness setting and dynamic limits on your taste? How many times has a speaker forced you to make trade-offs between the best low-level dynamic contrasts and detail and high-level dynamics? How many times have you had to crank up the volume to get to “flat” or had to turn it down to get more clarity and detail? The 5A carbon is scarcely perfect—

nothing is—but it is remarkable for any speaker and especially for any speaker close to its size and limited number of drivers.

Let me give a tangible example. The last movements of Saint Saëns’ Third Symphony (try the Michael Murray version on Telarc CD 86304) provide some of the most complex dynamics and detail of any music, and particularly of acoustic music. The movements are certainly a test of the deep bass, and are often used for this purpose, but they also involve virtually every other instrument in the orchestra and often in complex passages that rapidly shift in soundstaging as well as in the mix of instruments. The 5A Carbon provided a level of clarity and musical realism with the Telarc version of this Symphony that I have never heard before from any speaker, and did so in spite of the fact that this is one of the most demanding recordings ever made.

You may never want to take your system out to the race track for that particular spin, but you do want to know that your speaker can live up to the test. Moreover, to go to the opposite extreme, the later Glenn Gould piano recordings are almost all exercises in low-level detail and contrasts, coupled with low-level eccentric noises and sometimes a low-level “sing-along” by Gould. Like the solo cello work of Jacqueline du Pré, this is intensely personal music where

### SPECS & PRICING

|  |   |
|--|---|
| <b>Frequency response:</b> 20Hz to 40kHz, +/- 2dB                          | <b>Dimensions:</b> 14" x 44" x 20"              |
| <b>Sensitivity:</b> 85.5db at 1 meter with 2.83 volt input                 | <b>Weight:</b> 182 pounds net, 225 gross (each) |
| <b>Recommended amplifier power:</b> 50Wpc to 200Wpc                        | <b>Price:</b> \$24,000 (standard finish)        |
| <b>Subwoofer amplifier:</b> 400 watts                                      | <b>VANDERSTEEN AUDIO</b>                        |
| <b>Impedance:</b> 6 ohms nominal, 4 ohms minimum                           | 116 West Fourth Street                          |
| <b>Crossover:</b> 100Hz, 600Hz, 5000Hz and adjustable H.F., 6dB per octave | Hanford, CA 93230                               |
|  | (559) 582-0324                                  |
|  | vandersteen.com                                 |

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## EQUIPMENT REVIEW - Vandersteen Model 5A Carbon

you want every bit of detail to come through without coloration or loss of realistic detail. The 5A Carbon can't correct for the problems in these recordings, but it gets the best out of them at natural listening levels to a degree that is truly exceptional.

I should note that the Vandersteen 5A Carbons do not have the forgiving frequency response of some other speakers. There is no dip in the midrange to help deal with the chronic close-miking that affects most modern recordings. There is no peak in the treble or bass to add a bit of extra energy. They will not "help" the recording or your front-end electronics, and some of my recordings where even solo instruments are either badly miked or recorded in ways that seem to try to spotlight the flute or turn the piano into an instrument that is played with a hammer are just as bad as with any other accurate speaker.

At the same time, male and female voice are consistently accurate without any of the problems with the sibilants or upper registers of tenor or soprano voices, or any chestiness in lower-pitched voices, that some speakers add to recordings. Moreover, the 5A Carbons are exceptional with opera and large choral works as well as solo voice. I do prefer the expansive soundstage you get with line source and larger speakers, but I have not heard a more accurate mix of imaging, timbre, and detail in recordings of the most demanding passage of Wagner, or the more demanding vocal passages in Mahler's Eighth Symphony.

The same is true of the sound of both massed and solo strings, of harpsichord, and complex brass and woodwinds. Again, the 5A Carbons are not forgiving, but there are none of the audible

problems in the upper midrange in the way of sounds you do not hear live or that are not on the recording. This is particularly important with modern SACD recordings and high-resolution digital downloads. Even a minor amount of hardness, compression, or loss of dynamic detail is far more audible, and can sometimes partially mask the improvement in really good recordings of this type. The 5A Carbon opens them up, rather than limits them.

### Features that Minimize Room Interactions in the Treble and Midrange

I should note for those that are not familiar with the earlier Vandersteen 5 and 5A, that you can normally get the 5A Carbon's outstanding performance in the treble and midrange without having to use extensive room treatment. The 5A Carbon limits dispersion in ways that reduce sidewall, other wall, and ceiling reflections at the listening position. It also reduces floor reflection—for anyone still trying to use wood, tile, or marble as a substitute for a thick carpet and pad.

This does require careful setup, and the use of washers in the foot spikes to precisely aim the treble and midrange at the listening-position height in the ways set out in the owner's manual. The treble and midrange drivers have a focal point plus or minus three inches to accommodate listeners of different heights, but you need to use the right number of washers to get just the right tilt for your own listening distance. Not enough tilt and the speakers will sound forward because the tweeter frequencies arrive first. Too much tilt and they will lack the proper energy and sound slow. It also means that the high frequencies diminish

if you stand up, although this minimizes high-frequency smear from the ceiling at the listening position.

The speaker's horizontal dispersion is much broader, however, and this means that the Vandersteen 5A Carbons present the same problems as any other speakers that are not dipoles. They need to be kept away from the sidewalls or they will need some form of absorbing material to keep the resulting reflections from interfering with detail and hardening the sound. I place them along the long wall of my listening room, and I find that I have little practical need for room treatment to deal with reflections. Moreover, I depart from the standard toe-in recommendations and aim the speakers so each crosses to the left or right of the listening position. This gives up some imaging detail, but it expands the listening position so several people can hear a good soundstage.

Like the earlier 5 and 5A, the 5A Carbon also has a rear-firing tweeter that can compensate for overdamped rooms and slightly expand the apparent soundstage. I used a minimal amount of such energy with the 5A, but did not use it with the 5A Carbon. This, however, is a matter of taste and the good thing about this feature is there is an array of rear-panel controls to adjust the frequency and intensity of such energy. By all means experiment.

### Getting the Best of the Bass

What is even more important in minimizing room interactions, however, is that the improvements in the midrange and treble of the 5A Carbon blend so well with the exceptional bass provided by the

earlier model 5 and 5A (and Vandersteen Quattro and Model 7). I keep hoping for digital solutions, or the perfect sound trap, to automatically deal with the mountain range of peaks and valleys in bass response below 250Hz that is inevitable in any real-world listening room, and that will allow me to get the best bass from the best location for the best midrange, treble, and soundstage performance. I also keep hoping for some magic solution to dealing with room reflections in the midrange and treble, and for dealing with the impact of room surfaces on the upper-octave energy a speaker delivers in a given room.

The Vandersteen is not "magic," but it does have design features that deal with these problems in the bass in ways that sound more musically realistic than any combination of digital correction and/or room absorbers that I have heard to date. Like the Vandersteen 5 and 5A, the 5A Carbons mount a 7-inch woofer above the subwoofer enclosure in a resistively loaded transmission line. Both this driver and the subwoofer driver use precision-formed magnet assemblies with copper Faraday rings on the pole pieces to reduce magnetic distortion and maximize linear excursion. Heavy-duty die-cast metal baskets provide superior rigidity.

The 5A Carbon uses a 12-inch subwoofer assembly mounted horizontally in the bottom of the enclosure, in a push-pull design with a powerful magnet on either side of the aluminum cone. Each magnet can provide more than an inch of linear excursion, and there are dual magnet assemblies and two voice coils wound on either end of a single common former that runs through the driver from magnet to magnet. They are driven by a 400-watt amplifier that in practice

## EQUIPMENT REVIEW - Vandersteen Model 5A Carbon

produces far more bass energy than the more powerful amps in other subwoofers, and can deal with even the most excessive rock, organ, and synthesizer music as well as the sound effects in a home-theater system

While the 5A Carbon enclosure cannot match the enclosure in the Model 7 in reducing every aspect of vibration and bass coloration, it does provide exceptional bass while still providing midrange and upper-octave performance with a minimum of early reflections and edge diffraction. The helps ensure that the midbass and upper bass blend with the midrange in ways that produce a level of natural detail and musical realism with jazz and real-world symphonic music, and are equally natural with bass, cello, and piano played as solo instruments and in small ensembles. I've only heard a few much larger speakers with the ability to so clearly go down to 30Hz and below without doubling or coloration, but the real merit is the flat response from about 45Hz up—where almost all of the real world bass occurs and where you want to hear the frequency of the music, not the frequency the speaker wants to provide.

As was the case in the 5A, there is natural detail, control, and apparent “speed” equal to that of the best woofer columns and room-filling massive designs. This is not a speaker with “small” or limited bass or that substitutes bass energy for musical realism, and there is also a “Q” control that allows you to ensure you get the best of these feature in your system. A low “Q” sounds tight and controlled. A high Q produces a full, warm bass with more energy in the most audible bass range.

### Dealing with Room Interactions

This, however, is only part of the story in dealing with most critical problems in room interaction. The subwoofer amplifier has an eleven-band equalizer that provides boost or cut at frequencies centered around 20Hz, 24Hz, 30Hz, 36Hz, 42Hz, 50Hz, 60Hz, 72Hz, 84Hz, 100Hz, and 120Hz. Setting the equalizer is best done by your dealer, although the instructions in the Model 5A Carbon handbook give you a reasonable chance of doing it yourself using warble tones or a Vandersteen test disc and the analog version of the RadioShack SPL meter. Getting this right, however, requires experience in dealing with a wide range of rooms and knowing when to stop. A good dealer will have this experience. It will take you and a friend several tries at a minimum to get it right, and the controls do not need to be readjusted unless you change speaker placement or listening position. The goal is not to achieve perfectly flat response as indicated by the SPL meter. Rather, you want to bring down the highest peaks and bring up the lowest troughs within a 3–5dB range. Once the 5A Carbon is properly set up, however, I believe you will hear bass of a quality most audiophiles have never heard in their homes regardless of cost, and you will have a remarkable ability to put your speaker in the best listening position for the midrange, treble, and soundstage.

The proper adjustment of these eleven equalizer settings really pays off in sound quality. Getting rid of the worst dips and peaks in bass response makes instruments sound far more natural and means you can really hear the bottom organ notes and synthesizer as well as every nuance in electric guitar. There is no hint of one-note bass, a dominant turning point in



## EQUIPMENT REVIEW - Vandersteen Model 5A Carbon

bass response, or bass smear. The soundstage is more natural in the lower midrange and upper bass, and more coherent.

### Compatibility

I don't have a lot of set-up and system-interface tips beyond the fact you really need to pay attention to the manual's advice about features, and charm your dealer into a long set-up session to calibrate the bass.

The 5A Carbon has a nominal 8-ohm impedance, and the use of a powered subwoofer makes it easy to drive—even with amps in the 40W range. A pair of Pass XA160.5 Class A amps provides far more power than is necessary, as does the Cary CAD 120S Mark II in the 80Wpc triode mode.

I should note, however, that the Vandersteen 5A Carbons show their best bi-wired, and do use unique terminal strips that require relatively small spade lugs. The line-level filter that fits between your preamplifier and power amplifier costs \$995 for balanced inputs and outputs, and \$895 for the single-ended version. This filter rolls off the bass driving your power amplifier; flat response is restored in the 5A Carbon's integral woofer amplifier.

### Summing Up

The Vandersteen 5A Carbon is one of the best speakers I have heard, as well as one of the most practical. I would definitely short-list it if you can afford it, and I'd make an upgrade a critical priority if I owned an earlier Model 5 or 5A and were wealthy enough. My listening to the Model 5A Carbons reinforces the merits of the Model 7 in Robert Harley's October, 2010 review, and I

envy those of you who can afford the Model 7. As for me, I'm excited enough about the 5A Carbons to make them my reference speakers, and everyone who has come by my home to listen has had the same favorable reaction—including some dealers and my very jaundiced sons and daughter.

This doesn't just come through in listening to music. Speaking as a reviewer, I have rarely found a speaker that made it easier to hear the differences in cartridges, digital front ends, electronics, and the production values in recordings without favoring any one approach over the others. I was recently comparing the top-of-the-line SoundSmith and Grado cartridges with digital recordings of the same performance, and it was striking how clearly the differences came through in ways where the musical advantage of each cartridge became clearer, along with the mix of differences and similarities in analog-versus-digital reproduction.

I do want to stress, however, that this remains an extraordinarily competitive field and no one approach to speaker design is correct or best. I use a pair of Quad 2905s and a pair of Legacy Focus SEs as additional references and each has its own balance of special merits. The new Magnepan 3.7s offers tremendous sound quality for the money at a very different price point. So do the less expensive models in the Vandersteen line, as well as those from too many other manufacturers to list. The hunt goes on.... *tas*

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## EQUIPMENT REVIEWS

# Cost-no-Object Loudspeakers





## KEF Blade

### A 21st Century Statement

Alan Taffel  
photography by Joel Salcido

**I**f, like me, you run the cable box's 48kHz digital output through a good DAC and electronics, HDTV sound can be quite acceptable. But when I first set ears on the Blades I really didn't care about that, because the speakers had just arrived and I was merely giving them a chance to settle in. The Showtime theme came on, and it was at this point that I unexpectedly took notice of the sound. How had it escaped me, I wondered, that this synthesized tidbit trails off with nearly subterranean bass? But there it was, plain as a rumbling subway.

Next on was the show I had been waiting for, *Dexter*, my guilty pleasure. Its theme is a miniature macabre masterpiece with which I am intimately familiar. But this time it sounded different. Once again I was confronted with things I had never heard before. The harpsichord, for one, had a far more realistic bite. And who knew there was a terrific, burbling bass line underneath it? The more I listened, the more I realized just how many musical intricacies I had been missing.

But, I reminded myself, I wasn't there to listen critically; it was too soon for that. I was there to watch my show. So I re-positioned myself to the comfortable corner of the sofa. I do this so often

that I unconsciously accept the small inevitable shifts in image and tonal balance that accompany the movement. The strange thing was this time there were no such shifts. When Dexter spoke from the center of the screen, he *stayed* at the center of the screen. Nor did the usual tonal imbalance materialize. I started wondering: If these speakers can do this for TV, what will they do for real music?

When KEF decided to create a new flagship, it had one overriding design goal: to build a speaker that would behave as a true point source across the entire frequency range. Speaker designers know that point sources—in which all the sound fires from a single spot—have unique and desirable characteristics: They radiate sound spherically into a room (hemispherically if there is a baffle), and they exhibit a flat power response both on- and, to a generous degree, off-axis. As a result, point sources not only fill a room uniformly; they do so with relatively constant frequency balance and dynamic level. At the same time, the smooth power response reduces coloration. No wonder many speaker designers consider point sources the Holy Grail of their craft.

But those same designers know that this theoretical ideal is devilishly difficult to realize—especially on a full-range basis. Nonetheless, the historical landscape of speaker design is dotted with efforts to do just that. In the 1940s, coaxial drivers—a

## EQUIPMENT REVIEW - KEF Blade



tweeter mounted directly in front of a midrange cone—attempted to capitalize on the point-source paradigm. However, these early units made for imperfect point sources because the tweeter interfered with the dispersion pattern of the midrange. Also, they were, by nature, not full-range. (A few unwieldy tri-axial drivers appeared, then disappeared just as quickly.)

In 1981, the groundbreaking Quad ESL-63 electrostatic speaker took a completely different approach; it used electronic “rings” to simulate a point source. Although the Quad was much closer to being full-range than coax systems, it had acknowledged limitations in low- and high-frequency extension, as well as in dynamics.

More recently, single-dynamic-driver speakers, which are inherent point sources, have enjoyed resurgent popularity. These designs can pull off amazing imaging feats; however, once again, none are full-range. There seems to be no getting around the fact that greater bandwidth and full-fledged dynamics require more and varied drivers. Unfortunately, as soon as multiple drivers become involved, getting them to behave as if their waveforms all emanate from the same point is nearly impossible.

Some recent high-end designs, notably those from TAD’s Andrew Jones—a former KEF engineer, not coincidentally—use concentrically mounted tweeter and midrange drivers. These highly refined units bear only a superficial resemblance to the coaxes of yore and yield true point-source behavior from the mid-frequencies up. However, they still necessarily exclude woofer territory.

These incomplete past and present attempts to create a full-range point source make KEF’s achievement all the more impressive. The Blade behaves as a point source from ultrasonic frequencies all the way down to 30Hz. Even below that, it produces a cardioid waveform that approximates a hemisphere. KEF claims that this outcome would not have been possible without the company’s extensive computer-modeling capabilities (see “Inside the Innovation Centre”). Even those tools were not sufficiently advanced until quite recently, and still the Blade took five years to develop.

Of course, all that effort to create a full-range point source would have been pointless (sorry) if the result did not deliver on the design’s theoretical benefits. As it turns out, the behavior I encountered while

watching *Dexter* accurately foreshadowed what the Blade would do with higher-quality source material. Indeed, this speaker displays properties that are normally considered rare on such a consistent basis that, when I listen to them, there are several things I *know* will happen.

First, I know that I will not have to sit in one specific sweetspot to hear a deep, wide soundstage with solid imaging. I can give the “money seat” to a friend, knowing I won’t be sacrificing much, if anything, in spatial terms. Unless I sit smack in front of one speaker, both speakers will disappear, leaving an intact soundstage between them. Even if I’m positioned *outside* the speakers, I won’t be able to discern the individual Blades, and there will still be a soundstage—albeit a Dali-esque one—between them.

This soundstage is also largely unaffected by frequency. Many speakers can convincingly place high-pitched instruments, like triangles, at the back of the stage; yet when it comes to low frequencies, their perspective flattens. In contrast, the Blade’s uniform dispersion allows all frequencies to partake of spatial feats. And so, when these speakers launch into the ever-useful Dvorák *Serenades from Bohemia* [Praga], the string bass, which often appears to be in the same plane as the other instruments, is properly behind them.

As liberating as this soundstage stability is, it is even more gratifying to know that when I change listening locations the sound’s timbral

### SPECS & PRICING

|   |  |
|---|--|
| <b>Type:</b> Three-way, dual-port, bass-reflex floorstander               | <b>Weight:</b> 126 lbs.                  |
| <b>Frequency response:</b> 40Hz-35kHz +/- 3dB                             | <b>Dimensions:</b> 14.3" x 62.5" x 21.2" |
| <b>Drivers:</b> 5" Li-Mg-Al /LCP hybrid cone midrange; 1" Al dome tweeter | <b>Price:</b> \$30,000 per pair          |
| <b>Bass units:</b> 4 x 9" with force-canceling                            | <b>KEF AMERICA</b>                       |
| <b>Sensitivity:</b> 90dB (2.83V, 1W/1m)                                   | 10 Timber Lane                           |
| <b>Impedance:</b> 4 ohms nominal  | Marlboro, NJ 07746                       |
|   | (732) 683-2356                           |
|   | kef.com/us                               |

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## EQUIPMENT REVIEW - KEF Blade

balance and dynamics will also remain unchanged. Most of us have become so accustomed (and resigned) to timbral and dynamic shifts as we change positions that it is quite a revelation when the phenomenon is absent. With the Blades, you can not only shimmy along the sofa, you can stand up or walk around the room—in my home I could even venture into the *next* room—and the music still sounds the way it is supposed to. That means more musical enjoyment more of the time.

Another thing I can be absolutely sure of when listening to the Blades is that notes will stop and start when they are supposed to. Folks, this is big. The ability to start, stop, and decay notes accurately is a rare quality, yet one that is fundamental to realistic sound reproduction. Pulling it off is an attribute of only the finest speakers, since it calls for tremendous driver and cabinet control. The Blades do this as well as any speaker I have heard. A good example of how note timing affects music occurs on the second track of the aforementioned Dvorák disc. This particular serenade is underpinned by a series of repeated piano chords. They are not quite *staccato*, more *marcato*. Through the Blades, the chords start right on time, so the pace is unerring. They also stop when they're supposed to, which allows for a brief respite between them. Yet even as the pianist lifts his fingers from the keyboard, the hall reverb triggered by each chord decays ever so naturally into the ether. This is the way real music in a real space behaves.

The low distortion responsible for the Blade's accurate note timing pays two other huge dividends: resolution and low listener fatigue. These qualities may not be directly related to point-source design, but they are nonetheless important and unfailing. With the Blades, I enter

every listening session knowing it can last as long as I like without my ears getting tired. And once the music begins, I am equally confident that I will be hearing things I never heard before, even with extremely familiar material. For instance, when I spin "Here Comes the Sun" from the Beatles' remastered *Abbey Road* CD, I can discern with newfound clarity exactly how the group tweaked the synthesizer programming for each verse of "Sun, sun, sun, here we come." And I can hear this without the slightest strain; it's just there.

As I've already mentioned, bass is another area where the Blades dole out previously unheard information. In this case, though, the revelations are not due to resolution but rather, once again, to that smooth power response. The uniform dispersion of frequencies is why, for example, I heard new bass information in *Dexter* even though my reference speakers have excellent bass extension. The Blades simply have a unique way of putting low frequencies into the room. Further, the Blade's lows never overshadow the rest of the sonic spectrum. My standard tests for this are the guitar and vocals on the Nils Lofgren *Acoustic Live* CD. Both should sound rich and sweet. But beware: If the bass is even slightly overbearing the guitar veers into plumpness and Nils' voice becomes chesty. The Blades do not fall into either trap.

Imaging, tonal balance, and detail resolution are all admirable qualities, but I find that dynamics can affect musical enjoyment more than any of them. Here, as elsewhere, the Blades do not disappoint. Just listen to the gentle ocean-like swells at the opening of the second movement of Vaughan Williams' *Sea Symphony* [Telarc]. The Blades beautifully track these subtle dynamic undulations. Yet the speaker can be dramatic, too, as when Nils

### Behind the Blade's Unique Façade

The heart of the Blade's design is the company's familiar Uni-Q driver, in which the tweeter is located at the center of the midrange cone. Unlike old-fashioned coaxial drivers, this coincident driver arrangement avoids interference between each driver's sonic spheres. Placing the tweeter right at the apex of the midrange cone unifies the two dispersion patterns. Another advantage of the Uni-Q is that its two component drivers are inherently time-aligned.

Although the concept of concentric drivers—and, indeed, the Uni-Q itself—is decades old, KEF has continually refined it to more closely match the two drivers' dispersion patterns. As always, the midrange cone acts as a "waveguide" for the tweeter's lower frequencies, but in the Blade that cone is made from aluminum backed by a liquid crystal polymer skeleton. The extra rigidity conferred by those skeletal ribs not only makes for a better midrange driver, it improves tweeter performance. Meanwhile, a redesigned tweeter-dome shape, capped by the new "tangerine" waveguide, tames tweeter dispersion at the uppermost frequencies, while also providing poke protection.

But how does bass get integrated into this carefully constructed mid/high point-source pattern? The answer lies in the Blade's use of four 9" woofers, two on each side of the cabinet. KEF chose side drivers for a multitude of reasons. First, physically connecting opposing woofers back-to-back cancels the cabinet vibrations a single woofer would induce. Second, the arrangement allows for a narrow front baffle, which minimizes diffraction. Third, having two stacked woofers per side widens dispersion at the top of their range, allowing the bass dispersion pattern to better blend with that of the midrange. Fourth, the woofer placement moves their center point well away from floor, avoiding that early reflection.

Most importantly, though, the configuration allows the four bass drivers to be as close as possible to each other—and to the Uni-Q. This proximity to and symmetry around the Uni-Q is the key to the Blade's full-range point-source capability. The arrangement positions the woofer cluster's acoustic center such that it aligns precisely with that of the Uni-Q. The front baffle's curved surface then serves as a final waveguide for the entire ensemble.

Of course, the front baffle is not the only curved surface on the Blade. The entire cabinet (minus the base plate) consists of just two large curved pieces; one comprises the sides and front, the other forms the top and rear. KEF wanted a bold shape for its flagship for aesthetic reasons, but the curved cabinet also enhances rigidity, thereby reducing vibrations. Rigidity is further increased by extensive, computer-optimized internal bracing. Finally, the enclosure is made of glass-reinforced composite fiber, which is similar in strength to carbon fiber, though not as light (as I can personally attest). **AT**



## EQUIPMENT REVIEW - KEF Blade

Lofgren thumps his guitar body on “Blue Skies.” With the Blades, the impact is immediate—thanks to the same start/stop transient precision that serves note timing so well—and as powerful as a punch to the gut.

To this point I have taken an analytical approach to the Blade’s performance, pointing out how well they perform in specific sonic categories. However, I would be remiss not to indicate that the speakers also create a cohesive whole that captures each recording’s distinct “gestalt.” This leads to another thing that I can be sure of when listening to the Blades: Whatever I play will sound like nothing else in my collection.

Is there anything consistent about the Blade’s performance that is *not* positive? Yes, there is one. For all the bass the Blades put out, how well they deliver that bass to the room, their transient response in the low end, and how deep they go without the slightest hint of stress, bass is the one segment of the musical range that could be better. Specifically, I wish for better pitch definition in the deepest bass. Entrances are not fuzzy, but the pitches lack authority. As a result, while it is easy to hear the Blade’s bass, it is less of a cinch to follow the notes of a bass line. Alas, no speaker is perfect; but the fact that this is my only significant caveat to the Blade’s overall excellence is a statement in itself.

Put all these sonic attributes together and how does it sound? In a word: glorious. The Blades are captivating, surprising, soothing, and refreshing. It is impossible not to eagerly anticipate spending time with them. They reveal but never showboat. Their rhythms sweep you along, their dynamics can move or stun you, their resolution informs you, their timbres enrich you, and their clarity makes

delineating musical lines child’s play. Truly, with the Blades, taking in the entirety of the musical experience is effortless.

From a practical standpoint you should know that driving the Blades is not as undemanding as listening to them. Their sensitivity is a modest 90dB. Without adequate oomph behind them, dynamics will not snap or swell—and that saps music of a lot of its emotional power. Indeed, at one point I was listening to the Blades marveling at how riveting the *sound* was and yet how utterly cold the music was leaving me. So, out went the 175Wpc Goldmund stereo amp, and in went the 350W Goldmund monoblocks. And just like that, the emotional connection awoke as if from a deep sleep.

No review of a \$30,000 speaker would be complete without a few words about the price. Thirty grand is unquestionably a lot of money for a pair of speakers. Yet I am constantly amazed by the rash of releases at or above this price point. (If you’ve ever seen Jonathan Valin breathlessly running around CES trying to cover them all, you know what I mean.) Indeed, other state-of-the-art speakers from Wilson, Magico, YG, mbl, etc., tend to be dearer than the Blades. And yet I would unhesitatingly put the Blades in their league. I won’t call them a bargain—that would be the Maggie 3.7s—but I will say they deliver high value within their class.

A speaker decision in this price range is bound to take into account many factors. In the case of the Blades, aesthetics are apt to be one of them. Their visual design was driven by their ambitious sonic goals (see “Behind the Blade’s Unique Façade”) and by KEF’s desire to make a modern industrial design statement. The result is one of



industry’s most unusual shapes. In my home the big speaker evoked a variety of reactions. Some observers found the Blades “weird” looking, while others were intrigued. My kids immediately dubbed them the “fisheyes.” Perhaps tellingly, the most enthusiastic response came from a professional interior designer friend of mine, who dubbed them “awesome.” The fact that they can be custom-ordered in sixteen colors sent her right over the edge. Personally, I have grown to appreciate the Blade’s form. Having lived with them for several months, I find that traditional box speakers now strike my eye as dull and dated.

Apparently I am not alone. KEF reports significant early interest in the product based solely on its looks. Perhaps the well-heeled Significant Others of the world, who generally abhor big

box speakers, will take a shine to the Blades and advocate their purchase. If that happens to you, knowing what you now know about their sound, for heaven’s sake consent.

KEF’s Blade is a statement speaker in so many ways: as an aesthetic object; as a culmination of knowledge and experience gained over fifty years; as a demonstration that advanced technology can solve certain problems that brute force and exotic materials cannot; as the fulfillment of a theoretical ideal—and proof that the predicted benefits are real; and as the fruition of five years of work that not only met but exceeded all of its design goals. Above all, the Blade is a speaker that delivers an inordinate quantity of sonic and musical delight—no matter what you’re listening to. **tas**

# TAD Reference One Loudspeaker

An Overnight Success 35 Years in the Making

Robert Harley

**M**ost audiophiles don't know this, but in 1975 Pioneer Electronics created a kind of "skunk works" to develop highly advanced, cutting-edge loudspeaker technologies for the professional audio market. This division, called Technical Audio Devices (TAD), operated much like a completely independent research laboratory. The combination of solid funding, contributions from some of audio's brightest thinkers, and a mandate to create products that broke new ground resulted in several patents, Audio Engineering Society papers, and some remarkable inventions. This division's very name speaks volumes about their charter; no flowery language or marketing spin, just the words "technical," "audio," and "devices."

One of the innovations that arose from this development effort was driver diaphragms made from beryllium. Beryllium is the hot buzzword today—and for good reason. It is extremely light and stiff, making it the ideal material for driver diaphragms. Rockport, Magico, and Focal are among the ultra-high-end loudspeaker companies now using beryllium tweeters. But 35 years before this renaissance in beryllium, TAD developed proprietary processes for working this notoriously difficult metal into the specialized shapes of loudspeaker cones and domes. In fact, the techniques they employ today remain unique.

In 2000, TAD decided to create a division that would bring to the consumer market some of the technologies the company had developed for the professional audio world. They hired the talented loudspeaker designer Andrew Jones, who had spent much of his career at KEF working with legends of British loudspeaker design including Raymond Cooke, Laurie Fincham, and Peter Baxandal. Jones' first product for TAD was the Model One, an audacious ground-up design whose massive cabinet was built from horizontally stacked birch ply. This construction



## EQUIPMENT REVIEW - TAD Reference One Loudspeaker

was revived a few years later by Magico in the Mini, scaled down in size by an order of magnitude. The Model One was a sonic success (our Anthony H. Cordesman bought a pair), but the enclosure turned out to be just too difficult and expensive to manufacture.

The Model One was notable not only for its heroic enclosure, but for its concentric midrange/tweeter, both made from beryllium. Many of the best loudspeaker companies design stiff cabinets, but a concentric midrange/tweeter driver is quite rare. In a concentric driver, a tweeter is mounted at the center of the midrange cone. One advantage is perfect coherence between the drivers no matter what the listening position in relation to the loudspeaker. Jones had long worked with concentric drivers, specifically KEF's Uni-Q concept. But TAD was no stranger to concentric designs. When Jones did a patent search while researching prior art in preparation for filing his own patent application for a concentric driver, guess who owned the late-1970s patents on concentric technology? That's right—Pioneer and TAD.

### Reference One Overview

This background brings us to the subject of this review, the TAD Reference One. The direct descendent of the Model One, this new loudspeaker is based on the same fundamental principles of a stiff cabinet along with a concentric beryllium midrange/tweeter.

The first thing you notice about the Reference One is its rounded, graceful shapes. Within the bullet-shaped enclosure is a second bullet-shaped structure that is an extension of the front baffle. The lack of flat surfaces and parallel lines not only softens the Reference One's appearance, it also contributes a technical function in reducing diffraction. The main enclosure is veneered in gorgeous pommele sapele wood buffed to a high sheen. The matte-black baffle forms a beautiful contrast with the natural wood.

The driver complement features dual 10" forward-firing woofers and a 6.5" beryllium cone midrange. Within the midrange cone's center is a 1-3/8" beryllium-domed tweeter. The midrange cone acts as a waveguide for the tweeter, and the concentric configuration confers many technical advantages. A large horizontal port runs across the bottom of the baffle. A flat aluminum plate, mounted at

the curved enclosure's apex, holds two pairs of binding posts for bi-wiring. The plate also serves as a heat sink for the crossover. The enclosure itself is mounted on an aluminum base that provides support as well as threads for screwing in the three short spikes. I found that the spikes were not quite long enough to penetrate my thick carpet and pad—TAD should include a choice of spike length.

The Reference One's sensitivity is 90dB and the loudspeaker has a 4.1-ohm minimum impedance, suggesting that it's not too difficult to drive. At 330 pounds out of the crate, each Reference One is heavy, but not unmanageable.

### Listening

Setting up the Reference One was quite simple and fast—about 90 minutes from crates in the garage to final placement. The speakers seemed remarkably unfussy about location, but that could have been an illusion owing to designer Andrew Jones' vast experience in setting up his creation. I was surprised by the amount of toe-in Jones selected; the axes crossed in front of the listening position rather than at the listening seat or behind it.

If you want an example of just how low in distortion and coloration, and high in resolution, speed, transparency, and dynamics the best of today's loudspeakers have become, look no further than the TAD Reference One. This is one clean, quick, uncolored, and dynamic loudspeaker that exemplifies the advances in loudspeaker technology over the past ten years.

The Reference One's most salient characteristic is a pristine purity and clarity, starting in the midrange and extending to the top octave. There is simply no trace of grain, hash, or grit overlaying timbres. There is also no hint of micro-tonal colorations, resonances, or frequency response anomalies through the mids and treble. The entire midrange and treble region is forefront in the presentation, giving the Reference One a lively and vivid character. Upbeat music, such as big band or Latin jazz, is particularly well served by the Reference One's incisive presentation and visceral immediacy. The Reference One could get away with this somewhat assertive rendering because of the complete absence of glare, grain, or hardness of timbre, freedom from tonal coloration, ability to

maintain clarity at any listening level, and sheer sense of openness, air, transparency, and top-octave extension. This presentation is consistent with TAD's roots in professional monitors, loudspeakers that are designed to reveal to the recording engineer exactly what the microphone feed or mastertape sounds like. If you want a soft, forgiving, and romantic sound, look elsewhere.

But if you want a transducer that presents every last bit of musical detail in your favorite recordings, you'll be hard-pressed to find a more resolving loudspeaker than the Reference One. The presentation through the Reference One is dense with musical information—the inner detail of instrumental timbres, the fine micro-dynamic structure of woodwinds for example, and subtle inflections of dynamics and timing that create a sense of contemporaneous music-making. No part of the music escapes the Reference One's microscope. It is interesting to hear how every increase in the source resolution, from CD to SACD to 176.4kHz/24-bit files to 45rpm LP, is laid bare and seemingly heightened by the Reference One.

A large part of the Reference One's sense of life and realism comes from this loudspeaker's stunning portrayal of transient detail; the Reference One reproduces the leading edges of transients with

## SPECS & PRICING

|  |   |
|--|---|
| <b>Type:</b> Three-way floorstanding loudspeaker in a vented cabinet                   | <b>Nominal impedance:</b> 4 ohms (4.1 ohms minimum) |
| <b>Driver complement:</b> Two 10" woofers, one 6.5"/1.375" concentric midrange/tweeter | <b>Dimensions:</b> 21.75" x 51" x 27"               |
| <b>Frequency response:</b> 21Hz-100kHz -10dB (-3dB point is 27Hz)                      | <b>Weight:</b> 330 lbs. each, net                   |
| <b>Crossover frequencies:</b> 250Hz and 2kHz   | <b>Price:</b> \$78,000 per pair                     |
| <b>Sensitivity:</b> 90dB (2.83V at 1m)   |   |
| <b>Maximum SPL:</b> 115dB  |   |

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## EQUIPMENT REVIEW - TAD Reference One Loudspeaker

a speed and articulation that approach that of live music. Take an LP like *Friday Night in San Francisco*, a virtuoso live acoustic guitar performance by Al DiMeola, John McLaughlin, and Paco de Lucia. On many loudspeakers, the multiple ultra-fast guitar lines can smear slightly, causing the music to congeal into one big sound rather than resolving into three individual instruments. Needless to say, this phenomenon reduces the music's coherence and expression. Through the Reference One, I had a greater impression of three distinct musical lines combining into a meaningful whole. In addition, the Reference One's mighty resolving power conveyed a wealth of subtleties in fingering, dynamics, and expression. The TADs vividly brought this recording to life. Some listeners might find the Reference One a bit *too* vivid on this LP, however. Al DiMiola's guitar, the brightest of the three, could get a bit etched and fatiguing. A guitar recording with a softer tonal balance, the stunningly natural LP *Misterio* from Strunz & Farah recorded by Kavi Alexander on the Water Lily Acoustics label, was absolutely transcendental through the Reference One. The TAD beautifully conveyed the delicate and intricate musical lines of the two guitars, revealing subtleties in the performance that fostered a deep connection with the musical expression. Similarly, comparing the CD and new SACD of

Stevie Ray Vaughn's *Couldn't Stand the Weather*, I found the Reference One really benefited from the reduced glare and smoother treble of the terrific Mobile Fidelity remastering.

I loved the Reference One's big, powerful, and dynamic bottom end. The region below 100Hz had a wonderful warmth, weight, power, and richness, yet with no sacrifice in articulation or pitch definition. The midbass was a bit leaner than that of the Rockport Altair or Focal Stella Utopia EM, but with tremendous precision and pitch definition. This combination served orchestral music and rock equally well; basses and timpani were rendered with equal parts sonorous richness and tremendous dynamics, and bass guitar and kick drum formed a solid foundation for rock, blues, and some jazz. Moreover, despite the bottom-end impact, the bass was extremely articulate and "fast," the Reference One conveying a wealth of subtlety in pitch and fine dynamic nuances. I could clearly hear the intricacies of virtuoso acoustic bass performances, from Ray Brown on the Bill Evans LP *Quintessence* (45rpm Analogue Productions reissue) to Stanley Clarke on *The Rite of Strings*. The Reference One's bass power extended all the way down to the mid-20Hz region, but didn't quite reach into pipe organ territory (Track 9 of Rutter's *Requiem* on Reference Recordings,

## Technical Description

Andrew Jones was charged with developing the next-generation driver technology, and had at his disposal TAD's rich history, technology, and unique manufacturing capability. The concentric driver he developed is unlike any other in the world. In addition to a beryllium-dome 1-3/8" tweeter, the Reference One's 6.5" midrange diaphragm is also made from beryllium. Except for TAD's tweeter, all true beryllium tweeters today are made by stamping a dome in beryllium foil under high temperature, a process that precludes complex shapes. TAD had developed, in the 1970s, a vapor-deposition process for creating beryllium diaphragms in any shape or size. In addition, vapor-deposited beryllium has a different—and reportedly superior—grain structure compared with rolled beryllium foil which is stamped into domes. Vapor-deposited beryllium is stiffer than rolled beryllium, but is unbendable and will shatter under pressure. TAD is the only company in the world making vapor-deposited beryllium driver diaphragms. Vapor deposition also allows TAD to make the large midrange cone, which would be impossible with stamping techniques. The entire concentric driver is made by TAD in Japan, including casting the baskets, building the magnet assemblies, and creating the spider and suspension. Incidentally, Andrew Jones mentioned to me that in his 27 years as a loudspeaker designer, he has never used an off-the-shelf driver in any of his products; all the drivers have been designed from scratch for specific applications.

The concentric driver is a true point-source, with no nodal cancellation that results when the midrange and tweeter are physically separated on the baffle. The midrange and tweeter outputs sum perfectly regardless of the listening distance, listening height, or listening axis. In addition, the midrange cone acts as a waveguide for the tweeter, controlling the tweeter's dispersion so that at the lower end of the tweeter's frequency range, the tweeter's dispersion more closely matches the midrange driver's dispersion. These qualities allow the crossover to be simpler and less intrusive.

The Reference One's dual 10" woofers are made from scratch in TAD's Japanese factory. The factory makes every element of the driver, from the baskets to the spiders. The woofer features a unique magnet geometry that linearizes the magnetic-field strength in the gap. When this magnet is coupled with a very short voice coil, the result is a more linear drive throughout the diaphragm's entire excursion. Dual spiders help to stabilize the diaphragm at high excursions. The diaphragm itself is a tri-laminate construction of an acrylimide core sandwiched between two layers of aramid fibers. The voice coil has a whopping 100mm (nearly 4") diameter.

The enclosure is made from 16 layers of 3mm MDF augmented with layered plywood. A spine at the enclosure's rear apex is 6" thick. This apex has been machined to a flat outer surface to hold the 1" aluminum plate that supports the crossover on the inside and binding posts on the outside. There are actually two separate baffles—the inner structure that is part of the main cabinet, and the outer part that is painted black. They are bolted together, and the woofer mounting bolts pass through both baffles. The total thickness is nearly three inches. Inside the enclosure birch-ply braces stiffen the cabinet walls. Cabinet resonances have been tuned to be above the woofer's passband so that they are less likely to be excited. In addition, the concentric driver is mechanically decoupled from the enclosure. A slight tilt back of the baffle provides some degree of time alignment between the woofers and the concentric driver. The cabinet is made in TAD's Chinese factory.

The crossovers are asymmetrical and feature non-classic shapes. Because of the coincident driver, the crossover has no effect on the radiation pattern or the way the drivers' outputs sum acoustically. RH

## EQUIPMENT REVIEW - TAD Reference One Loudspeaker

for example), at least in my room. This last point is moot for most listeners; very few recordings have information below 25Hz. The bottom line is that the Reference One has extremely satisfying bass reproduction, both in its visceral power that appeals to the body and in its articulation that appeals to the intellect.

The Reference One has a world-class sense of openness and transparency, engendering a strong impression of the loudspeakers disappearing. Vocals seem to hang in space, perfectly focused exactly between, and slightly in front of, the loudspeakers. The overall perspective is slightly forward and immediate rather than laid-back or reticent—no broad midrange dip here.

### Conclusion

The TAD Reference One is among a handful of the world's great loudspeakers, epitomizing low coloration, tremendous micro- and macro-dynamic agility, low distortion, high resolution, and a stunning sense of transparency. The overall presentation is lively, incisive, immediate, and highly detailed, qualities that contribute to the Reference One's ability to replace the playback hardware with a feeling of contemporaneous music-making.

There might be some listeners who find the Reference One *too* resolving, detailed, or "technical" sounding. There's no question that this is an unforgiving loudspeaker that provides an unvarnished view of your playback electronics and the recording chain—for good or for ill. It's therefore important to match the Reference One with very clean sources and electronics. For listeners who like a dash of lush romanticism that rounds dynamics and softens timbres at the

expense of resolution, transparency, and timbral realism, the Reference One probably isn't for you.

The TAD Reference One is clearly a world-class loudspeaker in every respect, from the innovative design through the beautiful execution. If you want to hear all the music locked away in your library with as little editorial interpretation as possible, and with the maximum conveyance of musical information, the TAD Reference One is hard to top. *tas*



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# MBL 101E MkII Reference Series

## The Epitome of Romanticism

Peter Breuninger

I'm a longtime concertgoer, albeit at first a reluctant one. I was exposed at an early age to the sound of the live and unamplified instruments of the Philadelphia Orchestra at the world-famous Academy of Music. My father had season ticket seats ten rows back in the Parquet section, better known as the floor, right in front of the stage. I was dragged to concerts when Mom was too tired to go. At first it was like a trip to the barbershop. I would kick and scream, but once in the chair with the feel of the warm clippers and the old-fashioned hand-massager, I would be in heaven.

As those fabulous Philadelphians played, something inside me clicked. I quickly learned to let the music wash over and envelop me and to connect with the 100-plus players working their magic up on the very stage where Stokowski, Ormandy, and Rachmaninoff once stood. Those times flew by, and before I knew it I was ten rows back from Emerson, Lake & Palmer opening for a new British band named "Yes" at a new Philadelphia institution, the Spectrum Stadium. Commander Cody, Jefferson Airplane, and the Grateful Dead would follow soon as my concert-going experiences grew and my musical horizons expanded.

Fast-forward to the day I first heard the MBL 101. The very moment the sound came on I was flooded with visions of the Academy of Music, my dad, my rock concert buddies, ELP, Yes, and the Grateful Dead. All live, right there in front of me. I knew, in a nanosecond, that these odd-looking R2-D2 look-alikes were something special. The more I listened,

the more I knew this new loudspeaker design was *revolutionary*.

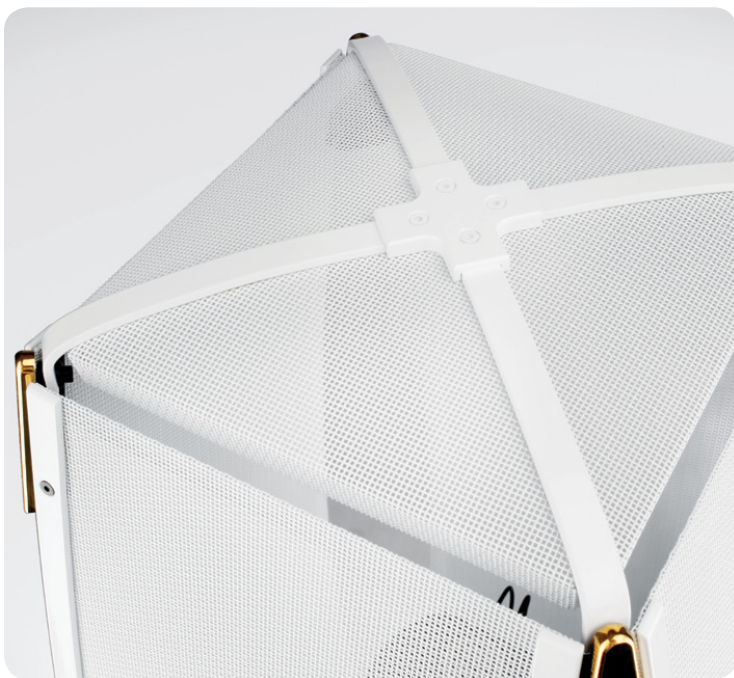
Imagine a single door leading right into Boston Symphony Hall, La Scala, or the Vienna Musikverein (considered by many to be the finest concert hall in the world). Now dream you have the best seat in the house, as well. Madison Square Garden, ditto. Sydney Opera House? Indeed. Each hall, with its own private entranceway, *in your home*.

Now for the over-the-top part: Picture dining with Mozart, dancing with Lady Gaga, or entertaining guests with John Coltrane, all through that very same door. Well it can happen, and it does happen to many people throughout the world. The one thing they all have in common is simple; they all own an MBL music-making system.

Attending a concert is one of life's greatest pleasures. Going out, enjoying a fine meal, a glass of wine. Then strolling over to the hall, seeing the people, and finding your seat. Waiting for the lights



## EQUIPMENT REVIEW - MBL 101E MkII Reference Series



to dim, the anticipation... you know *that* feeling. When the show starts, you're instantly mesmerized by the performance, the music, the sound. It's overwhelming and it's wonderful. In the snap of a finger you lose yourself in the concert experience. It's not just the music; it is the sound, scale, and scope of actually being at the hall or arena. There are few things in life that equal this, and fewer yet that you can actually own for yourself to use and enjoy *anytime* you desire.

Experiencing an MBL system is all this; it's a personal concert hall experience each and every time you listen. It's not a lifestyle product; it is life itself. And it is epitomized by the MBL 101E MkII, perhaps the most believable *music* transducer man has yet devised. The newest edition of this loudspeaker from German stalwart MBL takes audio reproduction to a higher and more majestic level than any transducer before it. The MBL 101E MkII does what no other loudspeaker can do; it takes your favorite artist or orchestra and "presents" them to you with the romantic realism of a live event.

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*Walkürenritt*, better known as "The Ride of the Valkyries," occurs at the beginning of Act III of *Die Walküre*, the second of the four operas by Richard Wagner that make up *Der Ring des Nibelungen*. In my view, this (about) eight-minute orchestral "song" musically and emotionally embodies the pinnacle of romanticism. Wagner's use of song and theme or leitmotif was unique. He created a new technique where music and song were used to denote a character or emotion or event. Leitmotif adds an additional dimension to operatic production. It's the crowning achievement of the Romantic Movement (musically), that cultural about-face to the Age of Enlightenment, and also a revolt against the "new science" of nature embodied by Darwinism. Its tentacles are deep-rooted in art, music, and literature. It's a statement of reaction to change and it paints its protest of the highest degree through the art of Richard Wagner. Romanticism is big and bold and a reflection of the vividness of life.

What Wagner's leitmotif is to romanticism, the MBL Reference Series is to high-performance audio; MBL adds a new dimension to audio performance. If you sample all of audio, you will find many schools of thought and aesthetics, ranging from the sublime of the single-ended triode to the exactitude of the studio monitor. Bits and pieces of the MBL listening aesthetic can be heard in the Harbeth or British-style of audio as well as the multiple-driver Wilson Alexandria Series II or the Scaena. MBL takes a little of this and a little bit of that and then serves it back, perhaps as a protest, against any one school of engineering design. The result is a pure "absolute sound" experience.

TAS Executive Editor Jonathan Valin (JV) coined the ingenious three-listener concept. You remember: the fidelity-to-mastertape listener, the sounds-good (to them) listener, and then the "true"-to-concert-sound listener (this publication's founder, Harry Pearson's "absolute sound" standard). The hallmark of HP's concept is to reproduce "live and unamplified" instruments in space. As JV so correctly points out in his Magico Q5 review (Issue 214), this listener "type" has a tough time when challenged with what the "real sound" of Jimi Hendrix's Stratocaster or Lori Anderson's electric violin is. Speakers that reproduce absolute-sound experiences are not known as ideal transducers of amplified instruments.

In yesteryear we had the Infinity IRS V as the statement product that

attempted to bridge this gap. It sure sounded "good" and offered up a believable concert experience, but when it came to realistic accuracy of timbre and mastertape-like truth, it fell flat on its face. It had *too much* of its own sound. It also suffered from another problem: The IRS was huge. Standing almost seven feet tall, weighing close to a ton, with four separate speaker towers, it not only dominated the room, it was the room. Nonetheless, in many ways the IRS was and remains a holy grail of "absolute sound" loudspeakers. Its reproduction of concert-hall realism and overall "good" sound were incomparable. Many will concede it was the 1980s and 1990s standard of reference.

Luckily for us, we live in "today." The reference products available to us are truly extraordinary. Colorations have been reduced to the point of near elimination (witness any Magico or the Coincident Pure Reference Extreme). We can now have that same absolute sound cake and serve it on a mastertape-like plate. In other words, we can have a live, unamplified instrument in real space experience and then go right into Madison Square Garden and "feel" a chest-pounding rock concert—all while "seeing" back through to the mastertape. I'm not going to suggest the MBL equals the Magico Q5 in mastertape realism, but I will stand firm in stating that the MBL will exceed the Magico

### SPECS & PRICING

|   |  |
|---|--|
| <b>Type:</b> Four-way dynamic loudspeaker   | <b>Power handling:</b> 500W continuous, 2200W peak             |
| <b>Driver complement:</b> Radialstrahler 360-degree tweeter, midrange, and lower midrange; 12" cone subwoofer in ported enclosure | <b>Dimensions:</b> 16" x 67" x 18"                             |
| <b>Crossover frequencies:</b> 105Hz, 600Hz, 3.5kHz  | <b>Weight:</b> 176 lbs. each                                   |
| <b>Crossover type:</b> Linkwitz-Riley 4th-order   | <b>Price:</b> \$70,500   |
| <b>Frequency response:</b> 24Hz-40kHz   | <b>MBL NORTH AMERICA, INC.</b>                                 |
| <b>Sensitivity:</b> 82dB  | 263 West End Avenue, Suite 2F                                  |
| <b>Impedance:</b> 4 ohms  | New York, NY 10023   |
|   | (212) 724-4870   |
|   | <a href="http://mbl-northamerica.com">mbl-northamerica.com</a> |

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## EQUIPMENT REVIEW - MBL 101E MkII Reference Series

in “sounding good” almost all the time (even when the instruments aren’t particularly well or accurately recorded) and mimicking a concert hall experience each and every time (even when the concert isn’t particularly well or accurately recorded).

Back to that first day MBL experience...the new speaker not only filled the room with the intensity and impact of an Infinity IRS; it also charged the room with a never-before-heard three-dimensional realism. I was in awe. The inventor, Wolfgang Meletzky, was standing off to the side smiling when he saw my face light up. He knew I “got it.” That first MBL 101 went where no other loudspeaker went before; it turned your room into a concert hall.

Oh, it had issues and was far from perfect. There was an annoying electronic haze surrounding each instrument, and it had a chuffy “one-note” bass. You could hear the loudspeaker’s ports as they pumped the air in and out, exaggerating certain frequencies and deviating from flat response (or truth).

Surprisingly, the Radialstrahler units were conceived with a deck of playing cards. The designer was “toying” around with a card, bending and flexing it between his thumb and forefinger when the idea struck. Why not design a loudspeaker drive-unit based on this flexing principle? Further, why not design it with the “playing cards” in a circular configuration and the magnet above or below—thus creating a new type of driver, a direct substitute for the traditional loudspeaker’s round forward-firing cone? The resulting wavelaunch is accomplished throughout a true 360 degrees—a spherical launch that embodies all dimensions. Like Wagner, employing libretto, music, and visual art into a single “greater than its parts” aesthetic, the MBL takes loudspeaker design to a new and unique level. No other loudspeaker sounds like an MBL,

just as no other composer sounds like Wagner.

Meletzky and another engineer (Bienecke) started the company thirty-two years ago. Soon after, a third engineer (Lehnhardt) was brought in to make the innovative design work in actual use and production, thus the name “MBL.” Challenges continued, and a new and gifted engineer Jürgen Reis was hired in 1985 to assist the company’s founders with all MBL product designs. Reis is the engineering brain trust of MBL. He designed the carbon-fiber tweeter and employed new materials for the lower midrange unit. He brought the original idea to production levels and it came to market as the MBL 101. In 1996 Reis added a subwoofer and it became a 4-way design with the 101D designation. His refinements have placed MBL at the top of the high-performance luxury-audio market. As happens with many successful companies, the founder exited in 2009 (“exited” is a venture-capital term for “sold”), and Reis remains as the company’s Chief of Engineering and Development. The new owner Christian Hermeling has “raised the bar” for Reis and challenged him to make the best speakers that money can buy. No cost-cutting allowed. No overseas parts. Only the best German-made or German-sourced components can go into today’s MBL products. In fact, MBL, in an effort to improve distribution, opened its own North American company to distribute its products.

The speaker under review is the newest version of the MBL 101E MkII. It was shipped directly from the AXPONA Atlanta show with less than 100 hours use and break-in. Along with the speaker I received a full MBL Reference Line system of electronics with which to test and review the loudspeakers. The MBL Reference Line is MBL’s cost-no-object gear. It is designed for the listener who demands

the best of the best. There are two loudspeakers in the Reference Line: the \$70,500 101E MkII, and the \$263,000 101 X-treme. The X-treme is effectively a doubled up 101E in an MTM-type configuration with separate woofer towers. JV reviewed the X-treme in Issue 189, declaring it one of the world’s great loudspeakers. I’m an MBL 101E owner myself, so what you read next is based upon five years of MBL listening experience.

The heart of all MBL loudspeakers is the use of proprietary and patented Radialstrahler 360-degree drive elements. “Radialstrahler” translates from German to English as “round spotlight,” an apt description of the MBL surround-like listening experience wherein instruments appear “spotlighted” in all three dimensions within your listening room. In the 101E MkII, the Radialstrahler units are deployed for the lower-midrange frequencies, midrange, and high frequencies. Traditional woofers are used for the lowest frequencies in these and all MBL loudspeakers. The lower midrange has been nicknamed “the melon” because of its shape, which is like and about the size of an actual watermelon. [See *Jonathan Valin’s review and factory tour in Issue 189 for a full technical exposition of the Radialstrahler.* —RH]

The 101E MkII utilizes its three Radialstrahler units to form a vertical array. The tweeter sits on top above the midrange, which in turn sits above the lower midrange “melon.” The entire array is attached to the low-frequency enclosure housing traditional woofers. The MkII revision includes newly designed bass drivers and stronger internal cabinet-bracing. The crossover was completely redesigned to address not only the new bass unit/drivers but also to better integrate the tweeter with the midrange unit. The result is superior low-frequency

extension and pitch definition. On bowed acoustic bass you can really hear a difference between the MkI and the MkII. There is also less of a “one-note” character to the low end. This is a substantial improvement over the MkI. In fact, if I blank out my mind, I would think that these are two speakers from two different companies—that’s how profound the difference between the new MkII is over the MkI in low-frequency reproduction. I am a firm believer in the hypothesis that if you get the bottom end right with the lowest possible coloration, the frequencies above it will be reproduced more accurately. There are new rings surrounding the bass ports, as well. Obviously, much attention was placed on improving the low-frequency reproduction of this already outstanding loudspeaker.

The high frequencies also better integrate with mids on the MkII. I believe the top is somewhat less “hot” on the MkII. This took a little a time to get used to. I like a full frequency response even if it includes a little overextension on top. The MkIs offered up a huge “openness” in the upper frequencies that I found appealing. The MkIIs are a little softer on top and better integrate with the midrange. This results in a more accurate portrayal of how an instrument sounds in real life. In other words, it tips the MkII more into the mastertape-type listener camp. The MBL will never be a Magico or a Coincident Pure Reference Extreme, but it’s now flirting with attributes these mastertape-type speakers excel at. I see from photos that the grille has been redesigned as well. (I never took the grilles out of their boxes with the MkI, so why should I have bothered with the MkII—hardcore audiophile that I am?)

The MkII stands about two inches lower than the MkI. I believe this adds to the improvement in driver integration, as each driver is closer to the others. I



## EQUIPMENT REVIEW - MBL 101E MkII Reference Series

got some flack from a member of my listening panel for using the (worn-out) term “more of a single cloth” when describing the MkII, but it’s true. The speaker is now more of a “single transducer,” instead of being a sum of its parts.

As noted, the system I tested the 101E MkII in was a complete Reference Line setup including the massive and mind-bogglingly powerful \$53,000 (each) 9011 amplifiers in a monoblock configuration. These monsters put out 840 watts into 4 ohms and 1390 watts each into 2 ohms. The 101E MkII’s rated sensitivity is 82dB, one of the lowest-sensitivity loudspeakers on the market. This means you need lots and lots of power to drive them.

The two other MBL Reference Line components included the \$28,700 1611F D-to-A converter, and the \$26,500 6010 preamplifier. When set up between the piano-black 101E MkII loudspeakers, the all-black MBL components screamed unadulterated luxury. These products transcend mere audio components. They have established a new product category in the world of extravagant consumer-audio products. I invited several listening companions over, and the first words out of each and every mouth were: “Oh, my God.” The striking beauty of the system was breathtaking in itself. Listening to the system, as you may guess, was a life-altering experience. As mentioned, I am an MBL 101 owner but not a full Reference Line owner. This was the first time in a familiar listening room for the full MBL “kit” for this listener.

I set the speakers in an equilateral listening triangle in room number one. (Please see my listening room configurations on [AVGuide.com](#) in the Forums section under Reviewer Background information. You’ll see a diagram/pictorial of my rooms—the Bozaks were, of course, removed.)

The massive 9011 amplifiers surrounded the 6010 preamplifier. With just about any recording, in that millisecond before the music starts, a huge holographic soundfield enveloped the room. I had never heard so much low-level atmospheric detail on any system before. The room was charged with it. It created a profound sensation of spatial realism on my first test recording, the exceptionally well-recorded Dudamel performance of the Stravinsky *Rite of Spring* on Deutsche Grammophon that I mention in my Lamm ML2.2 review. The bass thwacks were beyond belief as the walls of the listening room melted away. I was being *MBL’d* and I loved it. After settling into the atmospheric abilities of the system I began experimenting with numerous test tracks ranging from Ricky Lee Jones to Lori Anderson to Kronos Quartet. This MBL “full metal jacket” Reference system was like no other system I’ve ever heard. The impact and enormous size of the acoustic space were frankly beyond belief.

Laurie Anderson’s *Homeland* CD is a disc I’ve played multiple times on the MkII’s. It offers multitudes of enveloping sonic landscapes. It’s captivating and fun at the same time. Anderson is indeed a master of computer music-programming. She pioneered many vocal-programming techniques; in fact, many people think that she sings with a male partner when in reality it’s her voice lowered in frequency and delivery-speed via custom computer-modeling. She’s at the top of her form on her *Homeland* CD, and the track “Falling” will demonstrate the outstanding room-charging ability of the MBL 101E MkII. It begins, innocently enough, with Anderson singing, “Maybe if I fall, maybe if I fall asleep they’ll be a party there.” Her voice hangs in the center of your room in its own three-dimensional pocket. It’s as if she’s standing there, right there, singing

through her digital processor, directly in front of you. Suddenly a haunting soundscape enters your room with an ominous soft gong pinging across the vast soundstage. You are lost in it. Your mind is grabbed by the presence and the power of the contrasting digital images. It’s goosebumps galore. Then the electronic bass keyboard enters and explodes across the lower half of the stage with the haunting soundscape intertwining through it. Through this mix Anderson laments: “Americans unrooted, blowing with the wind, they feel the truth, if it touches them.” You mind is lost in your own memories of 9/11 or the economic nightmares facing someone you know. She personalizes it through song, mood, and “sound,” and the MBL 101 delivers it in all dimensions to you... in your own personal concert.

Another test of the power and glory of the MBL is Kate Bush’s excellent double CD set *Aerial*. The track “Pi” will stagger you with the MBL’s ability to detonate and explode live music’s dynamics right in your room. Bush, like Anderson, relies on much electronic keyboarding with lots of *arpeggio* programming. Unlike Anderson, Bush records more actual instruments like strings or guitar alongside her (less-manipulated) voice. She layers and weaves these instruments throughout her signature electronica-based mix. The *arpeggio* bass line is what grabs you here with the chorus singing above it. The MBLs do not disappoint; the interplay between the bass line and the “he loves his numbers” chorus is spread across the stage in a tremendous holographic effect. The bass itself reaches down to the center of the earth. These speakers deliver real 20Hz–20kHz frequency response.

Perhaps Lori Anderson is a better spokesperson than this listener to sum up the MBL electronica experience. Back to the *Homeland* CD and the

track “Another Day in America.” Anderson takes the bat out and swings it with her “man voice” right in your face—her electronic violin opening barely preparing you for the size of the Anderson “man voice” exploding through the MBLs across the front of your room. Her lamenting libretto is captivating. You are no longer listening to high-performance audio; you are listening to electronic poetry. It’s not mastertape pure: You cannot see into the actual digital mastering layers like you can through other outstanding speakers. It’s more lifelike; it’s more “there,” just like the front row seat at the Annenberg Center, years ago, when Anderson’s eyes locked upon mine as she sang songs off her *Bright Red* album. We connected, as she sang to me... the artist singing to an audience of one. That’s the heart of the MBL experience. There’s nothing like it in the world of audio.

Loudspeakers that have the ability to crush you with huge dynamic swings and room-busting soundstaging are not known to excel with acoustic music—be it symphonic, chamber, or vocal. It’s that old dichotomy: A speaker for classical music is not a speaker for rock-and-rolling, and vice versa. Unless you’ve lived with an MBL you would be quick to read “from” reviews and show reports that the MBL thing is all about spatial reality and sonic holography and not so much about instrumental tonal accuracy. This is one of those the great audio misunderstandings, along with the assumption that MBLs need huge solid-state amps to “get up and go.” I’ll address the latter first and then expand upon the former later.

I’ve tested and mated numerous amplifiers to the MBL 101E ranging from classics such as the Threshold SA1 to various Krells, Rowlands, and others. One day I decided to mate a 200Wpc

## EQUIPMENT REVIEW - MBL 101E MkII Reference Series

conrad-johnson Premier One to the MBLs. I thought that this would be a no, no. But, it was a match. In fact, the MBLs locked into the c-j better than they did with several of the solid-state behemoths. I then tried the new Bob Carver "Cherry Sevens" (they are cherry red in color) and, bingo, another match.

I then did the unthinkable, I tried the 18-watt, vintage, tube Eico HF-81. It ran out of steam fast on the Grammy Award-winning Cleveland Quartet's fine performances of the Beethoven string quartets, but the sound was balanced and not marred by an impedance mismatch. As we know, the frequency response of a loudspeaker/power-amplifier pair can be affected by the amplifier's output impedance. The higher the output impedance of the amplifier, the more essential the matching of the speaker becomes (the speaker should have a flat impedance curve). You've read reviews that accuse speakers of being muddy or rolled-off on top when, in fact, the speaker was not the culprit; the amplifier match was. Tube amplifiers have higher output impedances than solid-state amplifiers. On paper, the MBL's severe sensitivity problem would prohibit you from thinking "tube amp," but in practice it was *all systems go* for thermionic amps.

Back to the other myth: MBLs are speakers for rockers and turn-it-up power-music listeners (I plead guilty here). There is no doubt that the MBL sound is well-suited to these listeners. The flip side is that the new MBL speakers cater to the serious classical music listener as well. The MkII's better driver integration and bass response provide an overall more accurate sound that classical lovers and lower-volume listeners can now enjoy. The MkIs liked to be cranked up, the MkIIs, less so. And that's a good thing.

Listening to Bartók's Concerto for Orchestra

from the Ormandy Original Jacket Collection demonstrated the finesse of the new MBL sound. The basses and cellos that begin the opening movement were clear and concise; they sounded more "real" due to a lessening of low-frequency coloration and port chuffing. When the violins enter you are drawn more into the sensation of live instruments in space in front of you. By the time the trumpets trumpet, you are not listening to the sound, you are listening to real trumpets. This is something MBL 101E MkI owners will understand. Often, during my classical listening sessions I would become overwhelmed with the sound and the holographic imaging and not the illusion of *real* instruments. Certainly, the MBL MkI was captivating musically, but realistic timbre with mastertape purity? I'm not sure those are the terms I would use. Now, with the MkII you get more *because you get less*. That is, more realism due to less coloration. Jürgen Reis has reduced the speaker's "color" while maintaining its holographic abilities. That folks is very cool.

This is the essence of the new MBL listening experience: tonal reality combined with that patented MBL three-dimensional imaging. The speaker was, and still is, explosive in dynamics but now there is more timbral realism due to less coloration and far improved driver integration. I've heard many world-class loudspeakers do certain things right such as timbre, mastertape purity, or soundstaging, but not as many things as the new MBL. The MBL 101E MkII is one of the great artistic and engineering achievements. It will take your breath away. tas



# Focal Stella Utopia EM Loudspeaker

## The Essence of Musical Engagement

Robert Harley

**T**he French loudspeaker manufacturer Focal was never on my radar as part of the top echelon of the world's best loudspeaker-makers. That's because my only exposure to its most ambitious efforts was at two consecutive Rocky Mountain Audio Fests, where I heard Focal's flagship Grande Utopia EM. Although the Grande Utopia sounded excellent at the Denver shows, problematic rooms kept it from realizing its full potential.

A visit to Focal's factory last April gave me a new appreciation for this company and its products. I heard the Grande Utopia EM, its predecessor the Grande Utopia, and the Stella Utopia EM at five different venues, ranging from factory demo rooms to a dealer showroom. I also heard, in one listening session, eleven Focal models from the Chorus 807V (\$1095 per pair) to the Grande Utopia EM. Although all the models sounded good, it was the \$90,000 Stella Utopia EM that stood out for me as special. It had a beautiful combination of resolution and ease, of warmth and definition, and a striking ability to foster musical involvement. Hearing my own reference tracks reproduced by the Stella suggested to me that this was a world-class loudspeaker that deserved a full audition.

### Overview

The Stella Utopia EM is the second from the top-of-the-line in Focal's Utopia series, just below the \$180,000 Grande Utopia EM (reviewed in Issue 193). The Grande Utopia is very similar to its half-price sibling, the differences being the addition of another woofer, woofer size (16" vs 13"), and the Grande's articulating cabinet, which can be adjusted along an arc to achieve time alignment at the listening position regardless of listening distance or listening height. The Stella Utopia EM (hereafter the Stella) is a three-way design employing a 13" woofer, dual 6.5" midrange units, and a 1" beryllium inverted dome tweeter. All the drivers are designed and manufactured in-house. The woofer is unusual in that it uses an electromagnet rather than a fixed magnet



## EQUIPMENT REVIEW - MBL 101E MkII Reference Series



(see sidebar for details). This technique requires an outboard power supply for each speaker to provide current to the woofer's electromagnetic coil. The supply is a small unit that plugs into an AC outlet and, thence, into the base of the Stella. A signal-sensing circuit automatically turns off the current to the woofer's electromagnetic coil when the loudspeaker is not playing music. Each of the Stella's drivers is housed in a separate cabinet, with the woofer enclosure canted backward and the two upper enclosures canted forward in an accordion-like arrangement to align the drivers' acoustic centers. The woofer is ported through a vent between the woofer enclosure and the base. Two pairs of input terminals are provided on the base

for bi-wiring. The system is flat (-3dB) to 22Hz, with a -6dB point of 18Hz. The Stella's impedance is 8 ohms nominal, with a minimum impedance of 2.8 ohms. Sensitivity is a high 94dB, enabling the speaker to be driven by amplifiers of moderate output power.

The midrange drivers feature Focal's patented "Power Flower" magnet arrangement. Rather than use a single magnet, the Power Flower technique positions multiple magnets around the voice coil in an array that focuses the magnetic flux in the gap as well as reduces magnetic leakage. The cone is Focal's third-generation "W" sandwich composite that combines a Rohacell core with layers of resin-impregnated glass tissue (see the accompanying article on the Focal factory for more detail on the driver's design and construction).

The beryllium inverted dome tweeter is quite sophisticated. The magnet behind the dome is shaped like that of a jet engine to avoid disturbances in air circulation. The dome's rear energy is loaded by a tuned cavity that simulates a quasi-infinite volume of air, eliminating the distortion that occurs when the dome's rear wave is reflected back to the dome. The magnet structure is made from five separate sections of neodymium, which supply enough magnetic-field strength to give the tweeter a sensitivity of 95dB. The tweeter has a very low resonant frequency of 528Hz, and has a very wide bandwidth of 2.2kHz-40kHz. (It is no surprise that Focal has developed such sophisticated driver designs. The company was founded more than 30 years ago as a driver-development laboratory, and for decades supplied raw drivers to some of the world's most prestigious loudspeaker-makers.) The drivers were designed with the view that the better behaved they are, and the wider the bandwidth of linear behavior, the simpler and more sonically transparent the crossovers can be. That is, the crossover is allowed to be only a filter, not a filter and a circuit that corrects driver problems. Consequently, the crossover uses relatively few components.

The enclosure is made from layered MDF, as thick as 2 3/8" in places, and internally braced. In an era in which most advanced loudspeakers are based on exotic cabinet materials and construction techniques, MDF seems pedestrian. But Focal argues that MDF's combination of stiffness and self-damping make it the ideal material for a loudspeaker enclosure.

In a departure from most modern speakers, the Stella offers the user a wide range of adjustments to tailor tonal balance. The back panel of one midrange enclosure opens to reveal four moveable jumpers, each of which can occupy one of three positions. The first jumper affects the woofer's Q (see sidebar). The second jumper adjusts the midrange drivers' slope at the transition to the tweeter, affecting the level of midrange energy between about 1.5kHz and 3kHz. The first of the two tweeter adjustments is a shelving filter that controls the tweeter level, with the option of a 1.8dB attenuation or a 0.8dB boost. The tweeter's slope at the lower end of its passband can be adjusted, varying the amount of energy roughly between 2.2kHz and 3.5kHz. Finally, you can adjust the bass level with a three-position rotary switch on the EM woofer's outboard drive unit. Needless to say, all these controls are interactive with the loudspeakers' positions in the room and their toe-in, necessitating quite a bit of experimentation to find just the right setting.

The speaker is finished in black, white, or gray paint, with a black baffle and a brushed-aluminum panel facing the tweeter module. Custom colors are also available. The smoothness of the surfaces

### SPECS & PRICING

|  |   |
|--|---|
| <b>Type:</b> Three-way floorstanding dynamic loudspeaker   | <b>Minimum impedance:</b> 2.8 ohms            |
| <b>Loading:</b> Ported   | <b>Crossover frequencies:</b> 220Hz, 2.2kHz   |
| <b>Driver complement:</b> One 13" electro-magnetically driven woofer, two 6.5" midrange drivers, one beryllium inverted-dome tweeter | <b>Recommended amplifier power:</b> 50W-1000W |
| <b>Frequency response:</b> 22Hz-40kHz +/-3dB   | <b>Dimensions:</b> 21.75" x 32.75" x 61.5"    |
| <b>Low-frequency extension:</b> 18Hz (-6dB)  | <b>Weight:</b> 363 lbs each (net)             |
| <b>Sensitivity:</b> 94dB (2.83V/1m)  | <b>Price:</b> \$90,000                        |
| <b>Nominal impedance:</b> 8 ohms   | <b>AUDIO PLUS SERVICES (U.S. Distributor)</b> |
|  | (800) 663-9352                                |
|  | audioplusservices.com                         |

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## EQUIPMENT REVIEW - Focal Stella Utopia EM Loudspeaker

# Electromagnetic Drive in the Stella Utopia EM



The “EM” in the Stella Utopia EM’s name stands for “electromagnetic,” the drive principle employed in the woofer. Before looking at how this works, let’s review the operating principle of a conventional moving-coil driver.

The power amplifier drives alternating current (the audio signal) through the voice coil, generating a varying magnetic field around the coil that is an analog of the audio signal. The varying magnetic field changes its north-south orientation at the audio signal frequency; because the

audio signal is alternating current, the current flow reverses direction at the frequency of the audio signal. Send 1000Hz to the driver and the current flow through the voice coil reverses direction 1000 times per second. This reversing magnetic field created by current flow through the voice coil alternately pushes and pulls against the fixed magnetic field generated by the driver’s permanent magnet, causing the voice coil to be pulled back and forth, and with it, the cone.

This approach, used in virtually all modern moving-coil loudspeaker drivers, runs up against the laws of physics. Specifically, the magnetic-field strength generated by the fixed magnets is limited, which in turn places restrictions on the cone weight, how low in frequency the driver will play, and how sensitive the driver is. A heavy cone goes lower in frequency (all other factors being equal), but requires greater magnetic-field strength surrounding the voice coil to drive it.

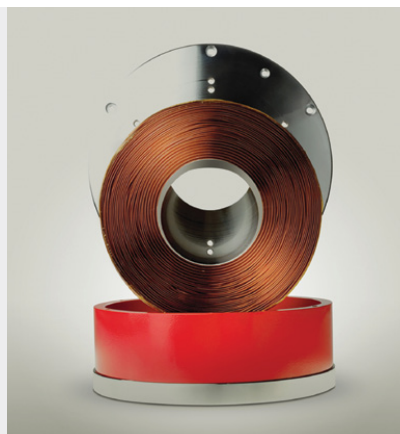
Focal’s solution to this physics problem is to replace the driver’s fixed magnets with a large coil that functions as an electromagnet. The coil is driven

with direct current from an outboard power supply that plugs into an AC outlet. This current flow through the coil creates the magnetic field against which the voice-coil-generated magnetic field pushes and pulls. The electro-magnet produces a magnetic-field strength in the gap (the area in which the voice coil sits) nearly double that of a conventionally driven woofer (1.75 Tesla for the EM). Consequently, the EM’s diaphragm can be heavier (giving it a lower resonant frequency) yet simultaneously more efficient. Moreover, the woofer’s bass output can be adjusted by varying the current through the electromagnetic coil. This is accomplished in the EM via a rotary switch on the outboard supply that drives current through the electromagnetic coil. One can thus adjust the EM’s bass output to better integrate the system into a variety of listening rooms.

The result of electromagnetic drive is a woofer with very high sensitivity (97dB for 1W) but very low resonance (24Hz). In other words, the woofer delivers lots of very low bass with very little input power. Over and above the



greater weight of the woofer, the price of this performance is the need for the outboard supply that has to be plugged into an AC outlet. The EM’s 13” woofer weighs 63 pounds, 48 of which is the electromagnetic coil. **RH**



and the paint quality itself are good, but not up to the same standard as, for example, Wilson loudspeakers.

### Listening

Setting up the Stella was straightforward, but dialing them in took some time. The beryllium tweeter can be a little hot on-axis, but the combination of toe-in adjustments and the six possible tweeter settings (the rear-panel jumpers mentioned previously) allowed me to get the perfect treble balance. I ended up with the tweeter slope in the flat position, but with the tweeter level shelved down, and a toe-in that caused the tweeter axes to cross several feet behind the listening position. I set the woofer Q at the minimum position to remove a bit of room-induced bass bloat, and the three-position woofer level at its lowest output. The two slope adjustments were left in the “flat” position.

I usually begin a review’s sonic description with the product’s most salient characteristic, but in the case of the Stella, the design is so well balanced that this convention was upended. The Stella was unusually communicative musically, but not because of any specific sonic characteristic—that is, the Stella didn’t strike me as being the most transparent and neutral loudspeaker I’ve heard, although it came close. Neither did it have the best bass, but the bass was outstanding. The soundstaging was spectacular, but just a little short of state-of-the-art. The dynamics were exemplary, but didn’t quite push the envelope in what’s possible in today’s loudspeakers.

But what the Stella did, consistently and unflinching over many months, was create an immediate and deep sense of involvement

## EQUIPMENT REVIEW - Focal Stella Utopia EM Loudspeaker

with the musical expression. Some products, no matter how “impressive” they appear on a sonic basis, seem to inhibit turning off the brain to all thoughts except the musical expression. These are components that you can admire on an intellectual level for their sonic achievement, but not fully enjoy on a musical level over the long term. Conversely, the Stella Utopia had a seemingly magical ability to quickly turn off all awareness of the electro-mechanical contrivance that is a playback system, and immerse me in the music. This wasn’t a loudspeaker that caused me to think “Listen to that resolution” or “What transparency!” Rather, I found myself realizing just how much the sense of swing in *Soular Energy* is driven by Ray Brown’s bass playing. Or how exquisite Dexter Gordon’s phrasing is on the album *Great Encounters*. Or what a beautiful, burnished, rich tone Arturo Sandoval coaxes from his trumpet. Or how expressive Jeff Beck’s playing is on “Cause We’ve Ended as Lovers” from *Performing this Week . . . Live at Ronnie Scott’s*, particularly the way he modulates the volume of each note. The list could go on and on. The point is that immediately upon turning on the system, I felt like I was in the presence of contemporaneous music-making, not sitting down in front of a hi-fi system.

Although the Stella’s powerful musicality defies forensic dissection, this is, after all, a review in a hi-fi magazine. So, starting with tonal balance, the Stella (as I had them set up and tuned) was extremely smooth and neutral, with just the right balance of treble energy. The ability to reduce the tweeter level allowed more toe-in without excessive brightness, which resulted in a more focused soundstage. The Stella’s overall presentation greatly benefits from

the exceptionally clean, quick, and detailed tweeter. The upper-midrange and treble had a pristine clarity that was free from the hard and glassy character often heard from dynamic loudspeakers. The tweeter had tremendous delicacy, resolution, and air on one hand, and on the other hand the ability to reproduce high-frequency rich instruments at any volume level with no glare. The top end was infused with a sense of transparent air, space, and open extension. Moreover, the tweeter integrated beautifully with the midrange, providing a seamless transition between the upper-midrange and lower treble. Note that the tweeter crosses over at a very low 2.2kHz, meaning that a substantial part of the audio spectrum is reproduced by the beryllium inverted dome. The midrange was exceptionally smooth, open, and detailed. The mids had a richness and density of tone color that were the antithesis of the “skeletal” or “technical” sound I sometimes hear from some of today’s super-high-resolution loudspeakers. This isn’t to say that the Stella provided an impressionistic interpretation, but rather that it favored a natural warmth of timbre over a coldly clinical rendering. The fullness and warmth of midrange textures were right at home reproducing Ben Webster’s lush, gorgeous tenor tone on the Analogue Productions reissue of *Gentle Ben*, for example. Vocals, such as Patricia Barber on the new LP reissue of *Café Blue*, had an uncanny sense of lifelike presence, but not quite to the same degree as I experienced on vocals at JV’s home with the Magico Q5s. This natural warmth of timbre and understated resolving power, in particular, were key to the way the Stella instantly made me relax into the music. The midband was detailed and highly resolved, but that resolution never called attention to itself

## System Q

Just as a struck bell produces a certain pitch, a woofer in an enclosure will naturally resonate at some frequency. The nature of that resonance is an important characteristic of the loudspeaker, and one that greatly influences its sound. The term Q, for “quality factor,” is a unitless number that expresses how a woofer resonates in an enclosure.

Specifically, a loudspeaker’s Q equals the resonant peak’s center frequency divided by the peak’s bandwidth. A woofer that “rings” (resonates) over a very narrow frequency band is said to have a higher Q than a woofer that resonates less severely but over a wider band of frequencies. The steeper the resonance, the higher the Q.

The woofer has its own resonant Q, which is modified by the enclosure’s Q. These resonances combine and interact to reach the system Q, which usually falls between 0.7 and 1.5. A Q of less than 1 is considered overdamped, while a Q of more than 1 is underdamped. You’ll sometimes hear a loudspeaker described as having subjectively “underdamped bass,” which means the bass is full and warm but lacks tightness. Technically, these terms refer to the system’s anechoic response (the speaker’s response in a reflection-free room), specifically whether the response is up or down at the resonant frequency. A “critically damped” system having a Q of 0.5 provides perfect transient response, with no detectable overhang. That is, the woofer stops moving the instant the drive signal stops. The higher the Q, the more the woofer rings.

Subjectively, an underdamped alignment has lots of bass but lacks tightness, has poor pitch definition, and tends to produce “one-note” bass. An overdamped alignment produces a very tight, clean, but decidedly lean bass response. An overdamped loudspeaker has less bass, but that bass is of higher quality than the bass from an underdamped system. Overdamped speakers tend to satisfy intellectually by resolving more detail in the bass, but often lack the bass weight and power that viscerally involve your whole body in the music. Most loudspeaker designers aim for a Q of about 0.7 to reach a compromise between extended bass response (down only 3dB at resonance) and good transient response (very slight overhang). Some designers maintain that a Q of 0.5 is ideal, and that a higher Q produces bass of poorer quality.

Mass-market loudspeakers are virtually always underdamped (high Q) so that the unwary will be impressed by the loudspeaker’s big bottom end. An example of absurdly high Q is the “boom truck” that produces a big bass impact but fails to resolve pitch, dynamic nuances, or any semblance of musical detail. That boom you hear is the woofer resonating in its enclosure at a specific frequency—the antithesis of what we want in a high-end loudspeaker. *Excerpted from The Complete Guide to High-End Audio, Fourth Edition. Copyright © 2010 by Robert Harley. hifibooks.com*

## EQUIPMENT REVIEW - Focal Stella Utopia EM Loudspeaker

as resolution. Rather, it was manifested as a subtle richness of inner instrumental detail that, for me at least, made it easier to “suspend disbelief.” I find this preferable to being assaulted by detail, even if the price is a very slight (and I mean *very slight*) dilution of transparency when compared against the state of the art. The Stella’s subtle character encouraged me “lean into” the music more, rather than feeling detached by the “technical” nature of the presentation. There’s a parallel with guitarists; Yngwie Malmsteen is, technically speaking, a “better” guitarist than, say, Carlos Santana. But I know which one I would rather listen to. The Stella’s bass and midbass were of-a-piece with the midrange, with wonderful weight, body, and fullness. This loudspeaker can put out a lot of energy below 200Hz, a quality that gave the music a solid foundation. Acoustic basses and bass guitars were reproduced with a body-involving visceral physicality. The Stella also went very deep, with real extension down to pipe organ territory—I believed the stated  $-3\text{dB}$  point of 22Hz. Moreover, the Stella can reproduce this subterranean territory with tremendous dynamic authority, no sense of strain, and no port chuffing. The massive bass drum impacts on the spectacular new Reference Recordings LP release of Stravinsky’s *The Firebird* and *Song of the Nightingale* were rendered with a combination of deep extension and wide dynamics that only a big loudspeaker can produce. This dynamic authority was matched by speed, precision, and lack of overhang in the midrange and treble. The tweeter is particularly adept at rendering fine transient detail—listen to Joe Morello’s fabulous cymbal work on the track “One For Amos” from *Morello Standard Time* recorded by Tom Jung on the DMP label. I could hear every

nuance of the attack, shimmer, and decay, with no smearing. The rest of his drum kit was reproduced with a suddenness of attack and freedom from transient blur. Incidentally, this disc contains some great music and is one of the best-sounding recordings of a jazz quartet I’ve ever heard.

The soundstage was exceptional in every way—width, depth, focus, and the impression of air between images. The ability to reduce the tweeter level and increase toe-in allowed me to get a smooth treble balance and tremendous image focus and delineation. Centrally placed instruments, particularly vocals, had pinpoint precision on some recordings. The Stella’s rendering of space varied with the recording; Ben Webster’s tenor mentioned earlier was a big, fat, round image that occupied a third of the soundstage, while Michael Brecker’s tenor on the disc *XXL* from Gordon Goodwin’s Big Phat Band was tightly focused in the soundstage center. The Stella also did “action” well, Jonathan Valin’s term for the sense of air expanding around instrumental images in concert with changes in its dynamic envelope.

Finally, I didn’t hear from the Stella quite the same absence of “self-noise” as with the Rockport Altair or Magico Q5. This term refers to a loudspeaker’s absolute lack of enclosure sound at very low levels. A loudspeaker with low “self-noise” allows you to hear deeper into instrumental and reverberation decay, fostering a heightened sense of realism. It’s not a characteristic you hear on every recording; it is most evident to me on solo piano in a hall. You can hear deeper into the decays, and the sound “holds together” and remains coherent down to the very lowest signal levels.

### Conclusion

Perhaps the best judgment of an audio product is determined by how quickly and deeply it fosters a state of complete musical immersion. Although I can think of a few loudspeakers that outperform the Stella Utopia EM in certain sonic categories, this new Focal’s *gestalt* is one of tremendous musical expressiveness and listener involvement. Rather than put on a show of specific sonic attributes, the Stella Utopia EM has an uncanny ability to get out of the way and let the music take centerstage. I don’t want to leave the impression that the Stella’s musicality is somehow a result of a colored or euphonic presentation. On the contrary, the specific performance attributes—neutral tonal balance, transparency, resolution, lack of grain, driver integration, bass definition, soundstaging, dynamics—were all exemplary. What made the Stella’s performance transcend the sum of its parts is, I believe, a very skillful voicing alchemy by a musically sensitive designer.

Living with the Stella Utopia EM daily was such a special experience that I asked to keep the review samples for an extended period as my reference. Despite having access to any number of the world’s great loudspeakers, I doubted that whatever came after the Stella would have been nearly as musically rewarding. Recommendations don’t come any higher than that. **tss**



# Lansche Audio No.7 Loudspeaker

Smitten!

Robert Harley

**L**oudspeaker designers constantly strive for lower and lower moving mass in their cones and panels, but what would a driver sound like if it had no moving mass—or no moving parts at all?

The massless driver is the holy grail of loudspeaker design. It's the moving mass of speaker cones, domes, and panels that introduces a whole host of distortions—distortions that designers devote an inordinate amount of time, money, and effort combating. A diaphragm, no matter how light, has inertia that, when it is at rest, makes it want to stay at rest. It's not just the diaphragm that moves in dynamic loudspeakers, but also the voice-coil former, voice coil, and suspension. And when all those parts are moving, they tend to keep moving after the drive signal has stopped. It's not hard to imagine how inertia plays havoc with a loudspeaker's ability to faithfully reproduce music's dynamic structure: Transient leading edges are not as steep as they are in life, and notes don't end as quickly and cleanly as those produced by live instruments. Moreover, loudspeaker drivers misbehave in a whole host of other ways—breakup modes, temperature-

dependent dynamic compression, non-pistonic motion, non-linearity at high excursions, and magnetic eddy currents, to name just a few. To be sure, great advances have been made in these areas during the past twenty years, particularly as a result of exotic-materials technology. But at the end of the day, we're still listening to cones, domes, electrostatic panels, or ribbons moving back and forth.

Enter the corona-plasma tweeter, a device that produces sound with no moving parts. As explained in more detail in the sidebar, an electric arc stretching between two electrodes causes the air around the arc to become ionized. By modulating the arc with an audio signal, the ionized plasma around the arc is made to expand and contract, creating sound—no diaphragm, and no diaphragm-induced distortions.

Plasma transducers have a long history dating back to 1900(!) but have never gained much





## EQUIPMENT REVIEW - Lansche Audio No.7 Loudspeaker

traction in audio (see the sidebar). One company committed to the technology is the German firm Lansche Audio. The speaker company bought the rights to a corona-plasma tweeter in 1999 and has since offered many loudspeaker models built around this exotic driver. Lansche redesigned the corona-plasma tweeter in 2006, and currently every product in its lineup is based on this unique driver.

After hearing something quite special from the second-to-top-model Lansche No.7 loudspeaker at the 2012 CES, I asked for a review pair. The No.7 is a three-way, seven-driver system employing four 8.7" woofers, two 4" midranges, and the horn-loaded corona-plasma tweeter in the baffle's center. The \$108,000 No.7 is a tall, narrow design finished in exquisite woodwork. It is distinguished from conventional loudspeakers by the side-panel vents that are required to cool the corona-plasma tweeter and its integral electronics. The No.7 also departs from typical loudspeakers by incorporating an AC power jack (the corona-plasma tweeter needs a power source) and a rear-panel on/off switch. The rear panel also houses dual ports (the woofers are reflex-loaded), two sets of binding posts, and small jumpers that allow you to adjust the woofer and tweeter levels, respectively. The woofer adjustment is limited to flat or a 3dB cut, and the tweeter level can be set flat, increased by 1dB, or cut by 1dB or 2dB.

Lansche has fitted the narrow enclosure with outrigger "pods" that not only stabilize the loudspeaker, but allow for fine height adjustment. You simply turn the knobs to raise or lower each corner until the loudspeaker is level. The pods also incorporate vibration isolation, although I found that placing Stillpoints Ultra 5 Isolators beneath the pods rendered a significant improvement in sound quality.

The corona-plasma tweeter is crossed over at a lowish 2.5kHz, meaning that a significant portion of the audio spectrum is reproduced by this transducer. The dual 4" midranges handle the range from 200Hz–2.5kHz. The crossovers feature a wide range of slopes, all the way from third-order (woofer low-pass) to first-order (tweeter high-pass), and all are made from premium components such as Mundorf, Duelund, and EPCOS capacitors. The tweeter high-pass circuit comprises a single Dueland CAST capacitor. This

Danish capacitor is quite exotic and expensive, and its makers claim that it is the world's best for audio applications.

The No.7's enclosure is fabricated from a composite that combines MDF with a ceramic material, coated internally with heavy foam. The large enclosure is reinforced with seven horizontal braces and two vertical braces, then veneered with gorgeous wood (the review samples were Indian Applewood). A knuckle-rap test on the side panels reveals an enclosure that is less inert than that of many six-figure loudspeakers. Sensitivity is a highish 92dB, but the No.7 is harder to drive than the sensitivity would indicate.

When powered on, a pinkish-blue glow can be seen in the tweeter horn's throat. This light is created by the corona discharge between the two electrodes of the corona-plasma tweeter. The metal horn and the surrounding baffle get rather warm from the intense heat inside the driver. A corresponding blue Lansche logo at the baffle's bottom illuminates when the loudspeaker is powered on.

Lansche's U.S. importer Brian Ackerman of Aaudio Imports visited for the setup. We positioned the No.7 in the usual spot in my listening room, about 85" from the rear wall (measured to the front baffle), a location that has never failed to deliver smooth bass. Toe-in was moderate, with the speakers' axes crossing a few feet behind the listening position. We found that sitting farther away from the No.7 made the sound more coherent, so I moved the listening couch about a foot toward the back wall.

### Listening

As Nelson Pass said of his massless "ion-cloud loudspeaker" described in the sidebar "[the speaker] gave new meaning to the word 'transparency.'" And so it was with the Lansche Audio No.7. This loudspeaker's midrange and treble reproduction was absolutely sensational, and different from that of conventional loudspeakers, whether cone, electrostatic, or ribbon. The Lansche simply disappears as a sound source, not just spatially (which it, along with many other great loudspeakers, does), but also *mechanically*. By that I mean the physicality of the loudspeaker's operation—the mechanism by which it creates sound—disappears, replaced by the physicality of the instrument it is reproducing. It's the kind of sound

that produces a "fool-you" realism of timbre, as well as "fool-you" palpability and immediacy. There was an ethereal character to the sound, as though the music existed independently of any electro-mechanical contrivance—"conjured out of thin air" to use Jonathan Valin's wonderful description.

These qualities were nothing short of magical on female vocals, particularly with LP playback. Jennifer Warnes' voice on *The Hunter* (Impex LP reissue) crossed a threshold from sounding present to startlingly lifelike—almost eerily so. So great was the reduction in coloration that the impression of being in the same room with another human being was suddenly and vividly unmistakable. For some reason, trumpets were also particularly well served by the No.7. They were reproduced with a full measure of treble energy, sheen, blat, and dynamism, but without the hardness of timbre that we've become accustomed to in reproduced music. This sheer realism of trumpet sound spanned a wide range of instruments and recordings. Listen, for examples, to the stunningly recorded muted trumpet on Count Basie's *88 Basie Street* (engineered by the great Alan Sides), Roy Hargrove's liquid tone on Jimmy Cobb's *Jazz in the Key of*

## SPECS & PRICING

|  |   |
|--|---|
| <b>Driver complement:</b> Four 8.7" woofers, two 4" midrange, one 0.3" corona plasma tweeter | <b>Weight:</b> 286 lbs. each                            |
| <b>Crossover frequencies:</b> 200Hz, 2.5kHz  | <b>Price:</b> \$108,000 (as reviewed with gloss finish) |
| <b>Loading:</b> Reflex   | <b>AAUDIO IMPORTS</b><br>(U.S. Distributor)             |
| <b>Frequency response:</b> 25Hz-150kHz (+/-3dB)  | 4871 Raintree Drive<br>Parker, CO 80134                 |
| <b>Maximum SPL:</b> 114dB/1m   | (720) 851-2525  |
| <b>Sensitivity:</b> 92dB 1W/1m   | aaudioimports.com                                       |
| <b>Impedance:</b> 6.8 ohms nominal, 4.9 ohms minimum   |   |
| <b>Dimensions:</b> 12.5" x 69" x 24"   |   |

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## EQUIPMENT REVIEW - Lansche Audio No.7 Loudspeaker

*Blue*, or Conti Candoli's burnished flugelhorn on the Chiz Harris CD *Confirmation* (which I recorded live in the studio to two-track). On each of these instruments, the timbre was vivid yet at the same time smooth. In fact, despite an overall presentation that leaned toward a lively treble balance, the No.7 was remarkably relaxed and unfatiguing. I think that the No.7's reproduction of trumpet was so beguiling because the loudspeaker didn't add a glare to the instrument the way most conventional loudspeakers do. A trumpet has a complex harmonic structure with lots of energy in the upper partials, characteristics that exacerbate the audibility of treble distortion in conventional drivers. With this distortion non-existent by virtue of the corona-plasma driver, I was able to hear a more natural rendering that, although lively in treble balance, sounded more like the way a trumpet sounds in life—a rich density of high-frequency energy without the edgy glare.

The treble had the wonderful quality of being highly resolved without sounding bright. The No.7's reproduction of cymbals, and of brushes on snares, was revelatory. The corona-plasma tweeter beautifully resolved the transient detail of the stick hitting the cymbal, the shimmer that changes character slightly as it decays, and then revealed the finest inner detail at the end of the decay. This lack of smearing of fine transient detail was spectacular and alone worth the price of admission. When combined with the top-end openness and transparency, this treble resolution produced a stunningly lifelike feeling of actually being in the same room as the instrument. All these qualities were taken to their ultimate when the No.7 was driven by the 18W Lamm ML2.2 SET amplifiers. This combination produced perhaps

the greatest midrange and treble realism and palpability I've heard in my home, but it's not a combination I would recommend. The No.7 isn't quite the right load for the ML2.2; the bass was soft and dynamics somewhat compressed. (The Stella Utopia EM is a much better match for the ML2.2.) I spent a brief time with the No.7 driven by the ML2.2, but most of the listening was through the outstanding Rowland 725 monoblocks.

The No.7's transparency to sources was so high that I could easily hear very fine differences in recording techniques, microphones, and microphone placement. The differences in spatial perspective, separation of instrumental lines, clarity, and timbre between recordings were amplified. Great recordings were revealed in all their glory, but poor recordings were left with nowhere to hide. This is what a loudspeaker should do, rather than impose a sameness over a range of recording qualities. This observation confirms my view that this is one highly transparent and uneditorializing loudspeaker.

These impressions were made with the corona-plasma tweeter attenuated in level by 2dB via the rear-panel jumpers. At the flat setting I thought the treble was pushed too far forward. This not only made the speaker sound a bit bright, but also caused the midrange to sound somewhat subdued and "hollow" by juxtaposition. Moreover, the upper midrange through the top treble had a bit of a "silvery" tint. That is, timbres were overlaid with a luster that was not entirely natural. It wasn't the typical sound of a hot dome tweeter in which the sound is simultaneously hard and bright, but rather it exhibited just a hint of gloss without the hardness. These characteristics were ameliorated by reducing the tweeter level,

although the treble still had a tiny hint of the "silvery" character mentioned. It wasn't offensive the way an aggressive dome tweeter can be, but rather it sounded like an extra measure of an instrument's natural brilliance—like a violin that naturally sounds brighter than another, equally fine instrument. I must stress that this description of the treble is by no means pejorative; the top end was stunningly great, with a slight bias toward incisiveness.

As impressive as these virtues are—and believe me, they are glorious—they present quite a challenge to the designer. Specifically, How do you create a full-range loudspeaker around a massless tweeter without the system sounding discontinuous? How does the designer hand off a treble that is so transparent and ethereal to a cone midrange, and then to a cone woofer, and still achieve some semblance of coherence from the full-range loudspeaker?

The answer is that Lansche has done a masterful job of creating a complete system that is seamless from top to bottom. The wonderful treble integrates well with the midrange, which then blends into the bass, without any abrupt changes in timbre or dynamics. That, in itself, is an amazing achievement. But that coherence comes at a price, namely that the No.7 has a "light" character that favors quick reflexes and transient fidelity at the expense of weight, heft, punch, and gravitas from the lower midrange down through the bass. The corona-plasma tweeter crosses over to two 4" midrange drivers (made by Audio Technology in Denmark) that were specifically designed to integrate with the massless tweeter. The midrange drivers have very light diaphragms, and based on the appearance of the surrounds, not much

excursion. These two drivers reproduce the range from 200Hz to 2.5kHz, a range that encompasses much of the body and weight of instruments as well as their dynamic expression. It's asking too much of a pair of 4" drivers that have been optimized to blend with a massless tweeter to deliver the visceral, whole-body involvement that many other loudspeakers in this price class offer as a matter of routine. They simply can't move enough air to convey the full measure of a cello's rich sonority, the "purring" quality of a Fender Precision Bass, or the dynamics of that Fender bass as the attacks of the bass notes lock-in with the kick drum to create powerful whole-body involvement.

Similarly, the woofers have been designed to blend with the lightweight midranges. The challenge of integrating the tweeter with the midranges has a parallel in the transition between the two 4" midrange drivers to the four 8.7" woofers. Again, the approach has been to value coherence and a seamless transition over ultimate weight and authority in the bass. The bottom end, although satisfying on much music, didn't have the weight, power, and dynamic impact that one normally expects from a six-figure loudspeaker. Orchestral climaxes were diminished in intensity, sounding lighter than life or than comparably priced loudspeakers. Timpani lacked the startling sense of musical punctuation as well as the center-of-the-earth solidity in the bottom end that is available in far less expensive loudspeakers. Don't expect to feel an orchestra's physical power, the visceral thrill of unfettered dynamic impact on orchestral climaxes, the feeling of a kick drum's attack striking your chest, or the body-involving rhythmic power of rock. That's not the No.7's forte.

## EQUIPMENT REVIEW - Lansche Audio No.7 Loudspeaker

The bass was, however, highly articulate, tight, and precise, with outstanding pitch definition and good resolution of smaller-scale dynamics such as subtle rhythmic inflections on acoustic bass. The bottom end became progressively more weighty as the frequency decreased, making up somewhat for the lighter presentation through the upper bass and lower mids. In fact, it is remarkable how seamless and coherent the No.7 is when considering just how different the octave from 40Hz-80Hz sounds compared with the top octave. Despite the profound change in the nature of these frequency extremes, I was unable to identify any transitions within that continuum.

I should emphasize that the overall tonal balance isn't thin, lightweight, or threadbare. Rather, the No.7 simply lacks heft and oomph, particularly when the music is big and dynamic.

Lansche has not only made wise tradeoffs in this design, but has also executed those tradeoffs masterfully to produce a remarkably engaging and involving overall sound. The glorious midrange and treble could have easily been rendered irrelevant by a presentation in which the bass sounded like a detached weight lagging behind the music—a constant reminder that the listener is hearing a loudspeaker. It's a testament to this design that the whole thing works so well. I was never aware that the No.7 features a radical mixture of technologies—I simply enjoyed music immensely through them. The No.7's presentation is powerfully compelling, and exquisitely beautiful in a way that most loudspeakers are not.

An experienced listener who visited used an interesting word to describe the No.7's overall character: "feminine." It fit perfectly: lithe rather

than muscular, emotional rather than visceral, affable rather than assertive—and delightfully charming.

### Conclusion

With its massless corona-plasma tweeter, the Lansche No.7 ventures into rarely charted territory. This driver has many compelling virtues including world-class transparency, airiness, lack of harshness and grain, and the ability to make instruments and voices sound eerily lifelike. It simply sounds unlike other loudspeakers, bringing music to life in a way that's wonderfully enjoyable.

The tweeter is not only at the speaker's physical center; the entire design flows from this transducer's dictates. That means coupling the massless tweeter to small and lightweight cone midranges to avoid an audible discontinuity. The woofers, in turn, must then be matched and tuned to the midranges. The result is a loudspeaker that forsakes weight, power, slam, and big dynamic contrasts for a seamless and coherent overall sound that doesn't detract from the tweeter's magic. It's not just a wise tradeoff, but one that's been beautifully executed. The No.7, remarkably, sounds "of-a-piece." But it's not a loudspeaker that will satisfy all tastes.

Nonetheless, I can't imagine anyone sitting down in front of the No.7 and not being as captivated and charmed by its unique allure as I was. **tas**

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# YG Acoustics Anat III Signature

The World's Greatest Loudspeaker?

Peter Breuninger, photography by Steven Stone

**R**emember when “that” new loudspeaker company claimed that it made the best loudspeaker on earth, period? Remember your first thoughts? Like, yeah, sure...right. Or, how dare it make such a preposterous claim. Who the heck are these guys?

If you are skeptical about high-end audio pricing/performance, if you are put off by aggressive advertising campaigns, and if you think parts quality and manufacturing expertise have nothing to do with sonic performance, do yourself a favor and skip this review. But if you want to read about what just may be the world's best loudspeaker, read on.

“That” loudspeaker company with the outrageous claims is now a pillar of the high-performance-audio community. The company's name is YG and the founder is a serious entrepreneur and music lover named Yoav Geva. There is no question that Yoav Geva aggressively believes in his designs. He is a serious engineer and a gifted speaker designer, and his life's passion is music and audio. If Geva's claims are true, his speakers will, *a priori*, surely impress. I was skeptical that this brash upstart could

compete with established brands, the marketing campaigns notwithstanding. But not only is it competitive, the following analysis will shed light on how and why the flagship YG Anat III Signature is one of the, if not the actual, world's best loudspeaker.

Company founder and head designer Yoav Geva is part Israeli, part German. He's under forty in years of age. He's not a member of the old guard. He didn't apprentice under a famous speaker designer. He did it all by himself. He is a young lion with more passion for music, art, and audio than a hundred grey-haired audiophiles. Geva is a formidable engineer and has developed a loudspeaker that is the best reference-level loudspeaker that I have auditioned in my listening room. The speaker produces profound three-dimensional imaging and a hyper-clarity from 100Hz to 3kHz that makes instruments and



## EQUIPMENT REVIEW - YG Acoustics Anat III Signature

voices so realistic and believable that you will shake your head in disbelief...more on this later.

Geva grew up in a musical household. His brother is an opera signer, his father a bass player. Yoav grew up playing keyboard and bought his first stereo at age 16. A Sony Discman, Sony integrated amp, and Bose speakers were his first foray into sound reproduction. As Yoav himself says, "It didn't sound as good as my father's system." He asked his audiophile father for advice and was politely told that he had to save longer and work harder for a good system (particularly for a good pair of loudspeakers) or, as an alternative, he could build his own. Interestingly, speaker building is quite the hobby in Germany. Witness Jonathan Valin's Munich show report in Issue 215. You'll see a number of interesting horn systems that come from the hands of passionate hobbyists turned professional speaker builders. Yoav's father offered to buy speaker-building books and materials to get his son started. Yoav chose his father's do-it-yourself idea over the save-and-buy option, and thus began his quest to build the "Best Loudspeaker on Earth, Period."

How does one go about building the best loudspeaker on earth? First you need to have a passion for machine tools; second, you need to have knowledge and expertise in analog and digital signal processing. Huh? You mean I can't build one in my garage? No, you have to know how to make a really good enclosure, and you have to know how to engineer a crossover that will allow the drive elements to operate within their optimal performance envelopes. It also helps if you have an ear for music. In 2002 YG was created to fulfill the goal of "the best." Many prototypes were built and the company refined its designs until the 2006 product launch.

The Anat III Signature is the flagship of the YG line. It comprises the Anat III Main Module, Anat III Studio Sub, and Anat III Professional Sub plus a super-quality components package, hence the name *Signature*. Each speaker stands 69" tall and weighs 464 pounds. The Anat III main module is a two-way system that sits atop the two stacked subwoofer cabinets. The two sub enclosures (named Studio and Professional) each house a proprietary 10" woofer and are bolted together mechanically and then electrically by a strapping speaker cable. Users have a choice as to the full

double-box 69"-tall system with the larger professional sub as well as the studio sub, or the 48" "Studio" system with a single woofer enclosure.

Full Professional systems include a dedicated low-frequency amplifier made to YG specifications by the Dutch firm Hypex Electronics. The amplifier sits inside the lower woofer enclosure and has a blue LED that glows when it is in the "on" position. There are level, phase, and crossover roll-off rotational controls on each amplifier module. YG recommends leaving these at the dealer-installation settings. I, though, found myself adjusting the level controls especially with LF-challenged source material. I would like to have had the control knobs larger in size so that I could more accurately see and set positions. The Signature package adds nine additional pounds of components, mainly increased capacitance in the crossover.

The speaker has a futuristic look that would be at home in Klaatu and Gort's spaceship from the classic science fiction movie *The Day the Earth Stood Still*. In fact, if you stare at the Anat III Signature long enough, you can envision the tweeter as a death-ray ready to zap you into oblivion. The design lines are clean and sharp without any hint of being "cobbled together." The speaker looks as serious as it sounds. At 69" inches tall, these are large loudspeakers. In medium-sized rooms you will want to tilt the rear of the speaker forward to aim the main module at the listening position. I positioned the speakers in an 11' equilateral triangle, with the front of the bass unit 36" from the rear wall. This places the tweeter above head level (like many large speakers do). Interestingly, the center image height actually sits below the tweeter level. I found the presentation to be natural and immense in size.

As many speaker companies do, YG designs, machines, and assembles its own enclosures. What sets YG apart from the herd? In real estate, it's location. In audio, it's aluminum, aluminum, and more aluminum. The enclosure is aluminum, the internal fasteners and bracing components are aluminum, and, most interestingly, the driver cones are aluminum. As the company grew from start up to adolescence its machinery grew as well. In 2009, Robert Harley visited YG's Arvada, Colorado, manufacturing facility. His company

visit is well documented on AVguide.com—search for "In the YG Acoustics Factory." I too visited the factory this year. It's amazing to see the CNC milling machines in action. Many companies say they build their own drive units; how many machine their speaker cones from scratch?

YG has made substantial investments in machining equipment. Each machine is run by its own internal computer and Mr. Geva programs all the processes. The coolest machine is also the most expensive. It's the Gildemeister CTX Beta 1250 TC-CNC 5-axis machining center, costing approximately \$489k. This machine has a robot-driven milling head that zips and back and forth across the raw aluminum, fashioning 100% unique parts for each YG loudspeaker. It has water jets that cool the stock during the machining process and spray directly on the cutting bit while it's

### SPECS & PRICING

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| <p><b>Type:</b> Three-way modular speaker system; two-way passive main module speaker with dual, self-powered, separate, stackable, low-frequency modules, featuring 10" drivers jointly powered by an 800-watt internal amplifier</p> <p><b>Crossover frequencies:</b> 65Hz, 1.75kHz</p> <p><b>Crossover type:</b> Proprietary DualCoherent circuit</p> <p><b>Frequency response:</b> 14Hz to 47kHz</p> <p><b>Sensitivity:</b> 89dB/2.83V/1m</p> <p><b>Impedance:</b> Four-ohm nominal, three-ohm minimum</p> <p><b>Power handling:</b> Continuous 800W, peak 2200W</p> <p><b>Dimensions:</b> Main module, 8" x 20" x 20" with Studio subwoofer module,</p> | <p>13" x 48" x 24"; with Professional subwoofer module, 17" x 69" x 26"</p> <p><b>Weight:</b> Main module, 108 lbs. per channel unpackaged; with Studio subwoofer module 287 lbs. per channel unpackaged; with Professional subwoofer module, 455 lbs. per channel unpackaged; with Signature crossover mod, 464 lbs. per channel unpackaged</p> <p><b>Price:</b> \$119,000</p> <p><b>YG ACOUSTICS, LLC</b><br/>4941 Allison St. Unit 10<br/>Arvada, CO 80002<br/>(801) 726-3887<br/>yg-acoustics.com</p> |
|--|---|

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## EQUIPMENT REVIEW - YG Acoustics Anat III Signature



doing its job. The milling head sits behind a see-through viewing enclosure allowing the operator to follow the process. Once it's programmed for a specific part it runs automatically. It's amazing to see the robotic arm grab and install different milling bits for each machining process for each part. I watched it mill internal fasteners for the Anat and Kipod main modules. The bar stock enters the giant machine from the right and the robotic arm moves at lightning speed back and forth across the aluminum until the part is finished. The machine then drops the finished

part onto an interior conveyer belt and, then, plunk...the part is deposited in a bucket on the left side of the unit. YG also manufactures its own crossover inductors on a \$50k, F.U.R.-customized, CNC coil-winding machine.

The large slabs of aluminum that make up the sides, tops, and bottoms of the speakers are machined on a customized Portatec CNC large-format milling center. This \$350k machine is one of only eight in the United States; the others reside at the Boeing Company making commercial and military aircraft. The machining tolerances are to

.0008", and when the cabinets are assembled the joints form perfect airtight enclosures. The side panels are smooth to the touch but are not yet good enough for YG's finished product. The machined panels must be polished to perfection before they are assembled. A customized \$200k Kuhlmeier polishing robot does this job. As you can imagine, the finishes on every YG product are the highest attainable. They have a soft matte-like sheen that screams luxury. The speakers are available in two colors, silver and matte-black with special-order colors available to match a customer's interior design. The silver YG look is cutting-edge modern art, while the black YG look is a more refined, less aggressive finish. I requested a black review sample, thinking it would better fit the review studio's aesthetic. Silver was the only available color and after several days of visual adjustment, its high-technology look assimilated with the other review components to become the most striking system I've seen.

When a top-notch designer like Yoav Geva models a loudspeaker, he computer-simulates each inductor and capacitor to optimize the signal balance between the amplitude and time domain. This is Yoav Geva the software engineer's specialty. Geva has designed the Anat III main module to be *relatively* easy to drive. That's not to say you can hook them up to a single-ended triode amplifier and be in audio heaven. The speaker's 89dB sensitivity, 4-ohm nominal impedance and 3-ohm minimal impedance are not the province of low-powered tube amps. You'll need at least a 100Wpc tube amp and a 200Wpc solid-state amp to get these speakers to their proper performance envelope. I tested both types with the YGs.

Krell Industries supplied the solid-state amplifier, a pair of whopping 1800 watt (into 4 ohms) Evolution 900e's, and Ayon Audio supplied the 200-watt tube amplifier, the beautiful KT88-based Orthos II monoblocks. As with the rest of today's upside-down world, the solid-state amplifier was slightly warmer than the tube amplifier. Your preference will depend on what kind of listener you are.

Jonathan Valin conceived the three-listener concept: truth-to-mastertape listeners, sounds-good-to-me listeners, and absolute sound listeners (true to the sound of live instruments in space). In my "true to the mastertape" mood I would select the Ayon Orthos II. In my "good sound" mood, the Krell Evo 900e. What about the "absolute sound" mood? The nod goes to the Ayon; it offers up more realism than the big Krells, but way less balls. No surprise here.

Please note that it takes a full *three months* for the YG Signature system to break in. There was no doubt that the speaker was special fresh out of the box, but it was shy of other top-market loudspeakers. Over the first month there were glimpses of what was to come, such as outstanding low-frequency ambience and upper-midrange detail. But quite often, the sound was "stuck" to the speakers with a slight opaque coloration. The second month was better and the quality of the listening sessions improved. The Bach cantata "Lobet Gott in seinen Reichen (Praise God in his Kingdoms)" with soprano soloist Weiner Sangerknaben, from the drab-looking 30-box Das Alte Werk Telefunken LP set, is the ultimate test of a loudspeaker. This cantata features all of Bach's tricks—expressive recitatives, breathtaking arias, and chorales with

## EQUIPMENT REVIEW - YG Acoustics Anat III Signature

counterpoint galore. This particular cantata is scored for four voices with choir, standard Bach stuff. Watch out—the opening chorus can tax a loudspeaker’s ability to differentiate individual voices across the stage. On lesser systems it can sound like a blob of singers scratching their fingers across a chalkboard. At first, this was what the YG sort of sounded like. In month two, the YGs were able to present the scope of the chorus and you could pick out voices, but the overall presentation was still glued to the plane of the speakers (chalkboard-like). It was not until the end of month three that the true nature of this world-class design unfolded. It was during a late-night listening session that the cantata’s chorus exploded with newfound life and vibrancy, and the Evangelist’s tenor soared into the listening room with an inordinate amount of palpable presence. You could almost mark the calendar with a big black X where the transformation occurred. To the left of the X—thin, harsh, anemic, and pinched. To the right—3D space, extreme separation of voice, and natural tone. Night versus day.

Why was this the case? Why would a designer manufacture a product that sounds so ordinary at first? Well, if one is to produce the very *best*, one must live with long burn-in and settling times, especially with large capacitors. In the Anat III Signature’s main module there are two huge 270mF capacitors along with four other capacitors. A capacitor is made from two plates separated by a dielectric material. It is the dialectic that “forms” over time, especially in high-quality limited-production capacitors such as the Mundorfs used in the YG Anat III Signatures. I had to be patient waiting for these

key electronic components to sort themselves out and function properly (sonically).

The YG Anat III Signature (after break-in) is the truest to the mastertape *and* absolute sound loudspeaker I’ve heard. Its presence and scale are extraordinary. It may not give you the microscopic low-level cues of the Coincident Pure Reference Extreme or Magico M5 but it comes awful damn close. What it does vis-à-vis these market-leading designs is raise the bar in the low frequencies (LF), serving up the power and punch of real instruments in your room. You get gobs of chest-pounding, head-banging verisimilitude, plus mastertape reality.

How does it do this? It gives you, the listener, control over the low frequencies. It levels the playing field and takes more of the listening room out of the equation with LF adjustability and Class D-amplifier woofer control. This is not rocket science. LF reproduction is the foundation upon which the upper frequencies sit. If you bloat the upper bass/lower mid with a poor speaker/room interface, you spoil the overall presentation. It’s the Achilles’ Heel of audio. If you engineer to ruler-flat “in-room” LF response in a test chamber or design studio, you are presetting LF response and assuming all users have similar rooms. I’ve always wondered why loudspeakers have midrange and tweeter controls and not passive LF settings—kind of like, “Why don’t turntables have arms that pick up at the end of the record?”

The YG’s in-room bass response is extraordinary. You must pay particular attention to the LF-adjustment level, though, to have a seamless fit with the main Anat III modules. Also, you must not overdrive the LF system. I found if I went too high in sound pressure levels (SPLs) I



could induce a slight LF breakup. Granted, I do test loudspeakers at very aggressive levels, so this is not a day-to-day concern. It’s like a point or two of lateral g’s in an automobile skidpad test; it’s not super-meaningful in daily driving.

I found the speaker to have a perfect listening level somewhat shy of rock-concert levels. And this is good thing, as I like to say. Loudspeakers and systems that need high SPLs to open up and sound realistic are not practical for anyone but Ozzy Osbourne. With that said, I was compelled to test Ozzy and discovered with the YGs that the first Black Sabbath album has very natural acoustic envelopes. Unfortunately, some of them have an early transistor signature that detracts from what could have been a sonic blockbuster. The opening rain-on-pavement sound bite that leads into the first track “Black Sabbath” sets the stage for the 1970 rock-and-roll iconic voice of Osbourne. This album, on lesser speakers,

can be brittle and fragile, especially the 44.1kHz version. The YG’s microscopic but super-realistic reproduction draws you in with a crystal-clear view of each instrument within the mix. It’s like an auto-focus on a \$5000 camera; you get to “see” the individual image objects “pop” within the viewfinder as you scan the subject. The YG’s give you this high-resolution view of Black Sabbath on stage; the guitar zaps into focus, then the drums, then Ozzy. And the kicker is...it all sounds real, even though it’s a flawed recording. Mind you, the YG doesn’t quite approach the MBL’s concert-like realism experience thing, but it does “midrange clarity” like no other loudspeaker I’ve heard. It’s simply magnificent.

Tracy Chapman’s 1992 *Matters of the Heart* is a great test for the YG. The German pressing of this reference LP is a barnburner. Chapman is at the top of her vocal arts, and though I would be surprised that this is an AAA recording, it is nonetheless a great-sounding package with strong songwriting. The track “The Love That You Had” is the “Fast Car” of this album. The opening bass line is truly spectacular. It is tight and full of tone and room-enveloping. Chapman’s voice hangs dead-center ten feet back between the speakers, while the percussive mix of drums, congas, and rhythm guitar swarms around you. At the moment the track starts, the YG’s vanish from sight. What the heck? A disappearing act from such a large speaker? I’m afraid so. I hate to burst the myth that large speakers that image can’t disappear from sight like mini-monitors, but this is the case with the YG. It’s weird; when the music is off, you see them looming in front of you Gort-like. When the music appears, poof! There’re gone. I’ve never heard pop music sound

## EQUIPMENT REVIEW - YG Acoustics Anat III Signature



this believable.

Some (misguided) folk suggest that a speaker can do pop or acoustic, but not both. The YG is “on game” with big scale orchestral as well as it is with Kronos Quartet. No easy task, considering the reference-level pop music sound that jumps out of it. This speaker system gives JV’s audio term “jump” real credibility. The way I interpret it, jump is a word used to describe the way an instrument’s dynamic envelope explodes outward in all dimensions, like an instrument does in real life. You know it, but probably don’t think about. YG should patent the phrase and send JV royalties. It’s a far better audiophile musical descriptive than PRaT, a British inspired word for, well you know already... pace, rhythm, and timing. Of which, if a stereo system does actually have such a thing, the YG has, since my legs never seem to stop bouncing.

There are a number of recordings that test a loudspeaker’s jump factor. And David Bowie’s “Young American” from the *Sound and Vision*

clear vinyl LP set is one of them. This box set is a hot one. Bright, white, and edgy. It will tax your nerves, and if you get through a whole side, pat yourself on the back. I can usually do the “Space Oddity” side but not the others. I like my ears attached to my head, not shaved off on the floor. This drives home the point of the big YG; it reproduces white-hot recordings with a finesse and flare that keep you in the chair, listening. No other large, super-resolution loudspeaker I know of can do this.

Big speakers can also hit the rocks with complex orchestral music. Throw in a choir with dark scoring, I’m thinking the first Bruckner Mass here, and you have a recipe for potential disaster. Image and acoustic space smearing can occur due to multiple drivers spread across a tall standing speaker, especially if the speaker is optimized for frequency response at the expense of phase coherency. The YG Anat III Signature system is the first speaker that I’ve heard to nail both design objectives. Eugene Jochum’s 1972 reading of the (Bruckner) Mass with the Bavarian Radio Symphony Orchestra is one of those tastefully multi-miked Deutsche Grammophon gems. This intensely moving music is at once dark and yet majestically enlightening and joyously fulfilling. The YGs immediately unravel the broad chorus from the sweeping strings as the Kyrie begins to develop. By the time the chorus hits the tenth repetition, the structure of the movement is well determined. You know that Bruckner is at work with his dark polyphonic signature. The music is demanding for it forces the listener to “hear” how the multiple voices fit and interplay with each other. This is where the YG’s work their magic. They unravel each

musical line without blur or haze. Your mind doesn’t realize you are listening to loudspeakers; it’s as if the music is emanating from within your soul. If you want to fully experience this, go to the second Mass, the Kyrie. This Mass is a profound Bruckner achievement and the opening Kyrie is one of the most hauntingly beautiful movements in classical music, period. The YGs will bring you to tears here with their unadulterated emotional involvement.

This is the heart of the YG experience—intense musical connection alongside mastertape reality with a profound midrange presence. It’s a very different experience from the MBL 3-D concert-hall effect. It’s more correct to the

recording but offers the same intense musical impact as the outstanding German speaker. The YG Anat III Signature loudspeaker is thus the best loudspeaker in the world *if* you value musical involvement and you-are-there-at-the-recording-session reality. I was so impressed that I asked for a three-month listening extension following the review. YG’s top-of-the-line system is priced below other reference designs, but is not inexpensive. It is investment grade audio, and it sounds it. The YG Anat III Signature will be a treasured possession to those who demand nothing but the very best. It’s an outstanding achievement. **tas**





# Wilson XLF Loudspeaker

## A New Beginning

Jacob Heilbrunn, photography by John Giolas

Perhaps one of the most alluring aspects of a high-end system is its ability to reproduce great performers from the past. New recordings, songs, and interpretations are always exciting to discover, but there is something especially gratifying about being able to listen to and compare the musical titans of yesteryear at the push of a button or the drop of a stylus. The ability to reproduce those performances is something that decisively marks off the modern age from the past, and it also offers a reminder of how much has been lost in the mists of time. What did it sound like when Mozart performed his piano concertos? What were the tempi that Beethoven really wanted for his symphonies? The sad truth, of course, is that absent a time machine we will never know. It's surely all the more reason to cherish the music that has been captured on disc for our collective delectation.

These musings are prompted by the recent deaths of two of the greatest classical performers of the past century, the German baritone Dietrich Fischer-Dieskau and the French trumpeter Maurice André. Both were representative men of the golden age of recordings, when companies such as Decca or Erato or Deutsche Grammophon were steadily issuing new shrink-wrapped releases each month for devotees to sift through in bins at that once-proud institution known as the record store. As a student, I had the good fortune to hear Fischer-Dieskau perform in Munich towards the end of his career and in the intervening years I have accumulated many of his LPs.

But as I was an aspiring trumpeter, it was André who was omnipresent to me. In the 1960s André brought the trumpet out of the dark ages and into

its own as a glorious solo instrument. Hitherto the trumpet had been regarded as a ceremonial instrument—good for a fanfare blast or a rousing orchestral solo, but not much else. André changed that. A virtuoso of the highest order, he commanded the *bel canto* style, allowing him to transform the trumpet into a lyrical instrument with a ravishing tonal purity. When listening to my stereo, I often hope to come one step closer to recreating the natural sound of his trumpet.

Enter Wilson Audio's Alexandria XLF. The XLF—the abbreviation signifies the Cross-Flow Low Frequency, the reversible port—is Wilson's new flagship loudspeaker and replaces the behemoth Alexandria X-2, Series 2, which I've owned for the past two years. In recent years Wilson Audio has been on a relentless quest to improve its products. The XLF represents the culmination of



## EQUIPMENT REVIEW - Wilson XLF Loudspeaker

those efforts. Does it also represent a great leap forward in audio fidelity, or is it simply another incremental advance?

When TAS editor Robert Harley and I first listened to the XLF at David Wilson's home near Salt Lake City in late 2011, my answer would have been a provisional, "Yes, it is an incremental advance." The XLF was clearly superior to the Alexandria X-2, but it would have been a stretch to say that it crushed its predecessor. However, to form a final verdict on the basis of that demo would have been unfair. Wilson went on to make some changes to the crossover, as he explained he would at the demonstration, and some other not-insignificant alterations were implemented as well. So the XLF that landed on my doorstep was a somewhat different animal from the one I experienced in Utah. Indeed, it quickly became apparent to me that the XLF was not a mere upgrade from the X-2. It was an entirely new loudspeaker.

The differences between the XLF and the Alexandria directly address some of the criticisms that have been directed at Wilson. The principal complaint from audiophiles who like to complain about Wilson—like the New York Yankees, Wilson, which is probably the biggest of the high-end loudspeaker manufacturers, always seems to engender outsized passions—has been that while its loudspeakers can peel the plaster off the wall, and then some, they just aren't very seductive or, to put it bluntly, musical. The biggest target has been the inverted titanium metal dome tweeter featured in the entire line. At this point I should probably make a confession: The alleged tweeter issue never really was one for me. If this means that there is something wanting about my audiophile bona fides, then so be it. Guilty as charged. Sure, I knew the tweeter could be improved. But I always thought, and continue to think, that the predecessor to the new XLF—the Alexandria X-2—was a pretty nifty loudspeaker. I had the chance to listen to the X-2 a few years ago at EMI executive Big Jon Platt's office in Los Angeles. To say I was impressed would be an understatement. It prompted me to purchase the X-2s. I went on to review the Thor's Hammer subwoofers as well and concluded that they had a major impact in further improving the sound. So it almost goes without saying that I was keenly curious to review the XLF.

Wilson has gone to considerable lengths to improve upon the performance of the X-2. For a start, it has increased the size of the bass cabinet by about 14 percent as well as thickened the sidewalls to improve resonance control. The greater air cavity permits more seamless extension. There is no replacement, as the saying goes, for displacement. The changes to the bass cabinet do not end there, however. Wilson has also made it possible to switch the port from back to front. In the X-2 owners were limited to a front-firing port. But when installing the X-2 in the field, Wilson discovered that the less expensive MAXX 3, which had a rear-firing port, sometimes seemed to go deeper. Wilson was determined to rectify this anomaly. Its solution is to make the port reversible—it appears that in most cases a rear-firing port offers a more satisfying and dynamic bass presentation. This was certainly the case in my room.

There are other changes that affect performance. The first is the introduction of a silk dome tweeter designed by the Wilson engineering team led by Dave Wilson and Vern Credille. The tweeter is manufactured by Scanspeak and then completed with elements added at the Wilson factory. Why didn't Wilson use a beryllium or a diamond tweeter? It was clear to me in visiting David Wilson that he had a soft spot for the beryllium tweeter. But ultimately he concluded that the silk dome just sounded better in his loudspeaker. Without getting too technical about it, Wilson runs the tweeters pretty hard, which means that they have to go pretty low in frequency. Wilson concluded that the silk dome allowed him to get the most seamless integration between the midrange and treble. Wilson has also gone to a new rear-firing silk dome super-tweeter to replace the one in the X-2 that had a spike emanating from it that could easily impale your finger if you weren't careful. In addition, Wilson has changed the material in the midrange modules to one called "S," which was first introduced in the Sasha. In fact, if you take a close listen to the Sasha, you might not be unjustified in concluding that some of the salutary changes that Wilson introduced in the Sasha have migrated upwards into the XLF.

One of the few things that Wilson has not altered is the overall mechanical setup of the loudspeaker. Each module is separate from the other and rests on spikes of varying lengths. Wilson

firmly believes that being able to adjust the angles and height of the modules is analogous to the ability to adjust a camera lens to bring it into focus. When Wilson's John Giolas positioned the XLF at my home, he spent a good deal of time adjusting the modules. I'm not prepared to say that this is the only way loudspeakers should be constructed, but I can tell you that the adjustment process significantly improved the sound.

Another thing that has not changed is the relative ease of driving the XLF. The XLF boasts an amplifier-friendly 94dB sensitivity and is said not to feature any wicked impedance dips in the bass region. In my view, it cannot be said too often that punishing loads presented by loudspeakers that strive for technical perfection in frequency response are undesirable. They make audiophiles hostages of powerful solid-state amplifiers that rarely achieve the finesse of their lower-powered brethren. Yes, it's possible to find solid-state or tubed amplifiers that can handle these loads. But why? Even high-powered amps will usually sound better when driving a loudspeaker that is easy to drive. To my mind it's as though you were asking a sprinter to run up a hill with a cast on one of his legs when you present an amplifier with a monstrously difficult load.

The XLF, by contrast, possesses an alacrity that approaches a horn speaker, much of which can probably be attributed to its high sensitivity. Take the Romeros on a Philips LP playing Telemann's Concerto in D

### SPECS & PRICING

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|--|---|
| Type: <b>Three-way, dynamic-driver, ported floorstanding loudspeaker</b>   | Dimensions: <b>19.8" x 70.25" x 27.8"</b> |
| Drivers: <b>One 13" and one 15" woofer; two 7" midrange; one 1" silk dome tweeter; one 1" supertweeter rear-firing</b> | Weight: <b>655 lbs. (each)</b>            |
| Frequency response: <b>19.5Hz-33kHz</b>  | Price: <b>\$200,000</b>                   |
| Sensitivity: <b>93.5dB@1 watt @1kHz</b>  | <b>WILSON AUDIO</b>                       |
| Impedance: <b>4 ohms</b>   | <b>2233 Mountain Vista Lane</b>           |
|  | <b>Provo, UT 84606</b>                    |
|  | <b>(801) 377-2233</b>                     |
|  | <b>wilsonaudio.com</b>                    |

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## EQUIPMENT REVIEW - Wilson XLF Loudspeaker

# The Transparent Opus Cable on the XLF

As good as the XLF sounded with an array of cables, I found that Transparent Audio's Opus cables elevated their performance even further. Transparent, which has now been in business for over three decades, sent me a full set of Opus MM and Reference MM cables to wire up both the XLF and the two Thor's Hammer subwoofers. It was a lot of wire, both in terms of speaker cable and interconnects. Each wire was specially tuned—as it would be for anyone who purchases the Opus line—for the specific equipment (preamplifier, amplifier, and so on) that it would be plugged into. But Transparent's Brad O'Toole and lead designer Josh Clark insisted that a full set would allow me to hear the virtues of the cable most fully.

They were right. Take out even one interconnect from the subwoofer section and the sound quality dropped a notch. A few months after living with the cables, I had a chance to visit the factory and see first-hand how they are manufactured. It was highly instructive. For one thing, meeting the owners of the company—Karen and Jack Sumner and Carl Smith—made it clear to me that they are deeply committed to listening to both recorded and live music. Carl, for example, has become a notable figure in the jazz world for his private collection of Sonny Rollins performances, a number of which he has himself recorded. Transparent's lead designer Josh Clark is an accomplished trumpeter.

The connections with Wilson also run deep—Transparent uses Wilson loudspeakers and Jack played me several hours worth of Wilson rep and recording engineer Peter McGrath's recordings at his home listening room. Before many of the recordings, Jack spoke briefly about the acoustics of the hall in which Peter had made the recording. Jack's listening room was heavily treated with RPG products. Once again, the purpose and intensity of the folks associated with Transparent can scarcely be stressed enough. This is a serious outfit.

Transparent emphasizes tonal fidelity, spatiality, and rejection of noise in designing its cables. I believe it has more than succeeded. I have not heard a cable that delivered more resolute bass, more timbral accuracy, and more hall ambience than the Opus. It also conveys an amazing physicality. Not having heard it on other loudspeakers, I can only vouch for my experience with it on the XLF. Anyone contemplating a loudspeaker purchase at this level, however, would do well to consider auditioning this superlative cable.

major, which was originally written for four violins and transcribed for guitar. It's a beautiful piece and as each guitar enters the sense of the instrument emerging from a jet-black space is simply overwhelming. The guitar notes pop out of the XLF with force and speed. The XLF possesses such a startling settling time—the ability to stop and start each note on a dime—that it comes closest to the sense of a live performance that I've encountered in my room. Similarly, on the Les Adieux quartet's recording of Mozart's Quartet in D major for flute, violin, viola, and cello on Harmonia Mundi, the second movement highlights the extraordinary agility and open sound of the new tweeter. The flute soars over the plucked violin with tremendous poignancy, every overtone and breath achieving an impressive lucidity. At moments like this a suspension of disbelief takes place, the emotional connection with the music becomes paramount, and it seems as though you are communing with the players rather than listening to a mechanical reproduction of a performance. This was strikingly clear on an LP by Stephane Grappelli and Barney Kessel called *I Remember Django* [Black Lion]. The ability of the XLF to render a sweet and voluptuous and organic sound was abundantly in evidence.

There is another aspect to the tweeter that merits discussion. It is the sense of coherence that the XLF projects. The tweeter is notable, in many ways, for what it does *not* do. It does not stick out. It does not display any nasty peaks. It does not become pinched or abrasive. Rather, it has been folded into the midrange so that it almost seems to have donned the kind of cloak of invisibility that the Pentagon keeps working on. What this means in practice is that the XLF sounds more like the real thing, which is to say

that when you attend a concert one of the most striking things—at least for me—is that there is no tweeter. All you hear is seamless sound. There is no midrange or tweeter. These are, of course, terms—useful terms—that we employ to describe the characteristics of audio equipment. But the further you can move away from having to identify singular characteristics in particular frequency range, the better. The XLF does that. It makes the sound of music, not hi-fi reproduction.

Nevertheless, I would be entirely remiss if I did not cover dynamics and bass reproduction. It's too easy to take Wilson's dynamics for granted. The power of the speaker also allows it to achieve the dynamic headroom that permits the subtlest gradations to become audible at very low sound levels. It is dynamic contrast—the sense of an unrestrained movement from *pianissimo* to *fortissimo* within a split second—that helps add to the sense of verisimilitude that the XLF creates. This is no small accomplishment. One of the things that impressed me was the XLF's ability to produce stygian piano notes with excellent tonal resolution. The lowest notes of the piano aren't blurred or smeared, as is often the case. Instead, they seem to hover in space with almost endless decay and resonance. The notes resound with great force, which endows them with real palpability. Two examples: First, a recording by the Hungarian pianist Andras Schiff *Live At The Concertgebouw* [Teldec]. On all three pieces—a Handel suite, *Variations on a Theme of Handel* by Brahms, and Max Reger's *Variations and Fugue on a Theme of J.S. Bach*—the piano has a stentorian quality. Each line enunciated by Schiff in these increasingly complex pieces is clearly audible; in some ways, the clarity surpasses what you would

## EQUIPMENT REVIEW - Wilson XLF Loudspeaker

hear in the concert hall, unless you have the best seat in the house. The rock-solid bass lines and tremendous emotional urgency of Schiff's playing are particularly notable on the Reger *Variations*, which culminates in a frenzied climax before the fugue recurs at the very close of the piece. Another time this came home to me was in listening to the Russian-born pianist Kirill Gerstein play Liszt's monumental Sonata in B minor, which oscillates between volcanic eruptions and serene placidity. The chords in the andante movement possess a sledgehammer force, the like of which I have not heard elsewhere. And listen to the closing notes decay with a sense of utter serenity and tonal depth that never wavers for a nanosecond. With the XLF, you achieve a sense of limitless dynamics harnessed to utter refinement. No matter how loud or powerful the music becomes, it always sounds unruffled and suave. And the operative word for the most delicate and quiet passages is pellucid.

To truly get the most out of the XLF, however, it won't be enough to use ancillary equipment that doesn't match the level of the loudspeaker. The XLF may force you to upgrade your preamp and amplifier. Yes, it's that revealing. The speaker is about as neutral as they come with very low levels of colorations. It would be foolish to say that they're nonexistent—no loudspeaker is perfect, and the hobby is in many ways about the quest for perfection rather than its attainment. The Classé CA-M600 monoblock amplifiers were handily surpassed by the Ypsilon SET-100 monoblocks. Transparent Opus cabling also helped improve the sound. Another important factor was the room size. I used the XLF in my new listening room. It has a ceiling that is 11' 4" high. The extra height seems to provide a larger

sense of scale and a more extended treble. One of the most noteworthy features of the XLF, in fact, was its ability to convey the different venues where each recording was made. Sometimes halls would sound cavernous, at other times diminutive. But there was never any doubt about their proportions. This feature was, of course, aided by the duo Wilson Thor subwoofers that I use. The cold, hard truth, brothers and sisters, is that if you want to extract the maximum from the flagship Wilson system, then the Thor subwoofers will help you attain it. It is also the case that the Transparent Opus cable, which the company lent to me for the review, significantly improved the sound. At the level of the XLF each constituent part of the system will be clearly audible.

Ultimately, it is the combination of subtlety and power of the XLF that distinguishes it from many other loudspeakers. By comparison, the Alexandria X-2 sounds a little congested in the lower midrange. The XLF creates a sense of space and dimensionality in which notes decay naturally into the hall, just as they do in real life. On the LP *Trinity* [SteepleChase], Boulou Ferré's guitar on the tune "I Can't Get Started" has the kind of presence that is usually associated with planar loudspeakers, as the notes flew into the room at warp speed. Similarly, on the wonderful Music Matters 45-rpm reissue of jazz trumpeter Lee Morgan's *The Procrastinator*, it was rather spooky to listen to the cymbals shimmering with utmost filigree on the cut "Rio." Then there was Paul Simon's *Graceland* [Warner Bros.] On the track "Homeless," it sounded as though you could identify each voice in the chorus during the chant.

But perhaps the most haunting recording of all was Maurice André playing the piccolo trumpet



## EQUIPMENT REVIEW - Wilson XLF Loudspeaker

on an Albinoni Concerto in D major with the organist Marie-Claire Alain on an Erato disc. If you wanted, you could probably even figure out what size mouthpiece he was using. But such fussiness would obviate the larger point, which is that the XLF can transport the listener into an ethereal realm, beautifully conveying the tenderness of André's playing in the first adagio movement. At such moments thought ceases and rapture begins. To be able to access one of the greatest recordings ever made at such dizzying levels is much more than a pleasure. It is bliss.

Can Wilson deliver even more wham in the future? My own sense is that the XLF marks a fresh era in the company's audio odyssey, a salubrious new beginning rather than a terminus. It would be difficult to conceive of anyone more dedicated—consecrated might even be the appropriate term—to the art of high-fidelity reproduction than David Wilson. Wilson, who regularly travels to Vienna, has saturated himself with the heart of the classical music tradition. Lest you infer that he is a snobbish fuddy-duddy, I should report that I received a phone call from him a few months ago in which he excitedly told me that he was standing in the Stephansplatz in the center of Vienna. At once, he proceeded to recount the various concerts and operas he had been attending. So the famous song—"Wien, Wien, nur du allein" ("Vienna, Vienna, just only you")—certainly applies to Wilson. At the core of his search for musical wisdom is Vienna's Musikverein, the greatest concert hall in the world. Wilson travels to it each year, soaking up the ambience, the music, retuning his ears, so to speak. With the XLF, his efforts have paid off. Wilson has not produced a good loudspeaker. He has created a great one. **tas**

### A Chat with David Wilson

#### What prompted you to create the XLF?

I had learned a significant amount over the last five years. When some manufacturers bring out a series, they choose to implement every little improvement they discover into a given run. We hold off and implement those improvements all together in the succeeding series. The areas where we had developed technically included low-frequency integration, the development of convergent synergy in the tweeter, metallurgy, and crossover developments in capacitors. It was time. We could tell that people who used our product were getting ready for another statement along the lines of the Alexandria.

#### Why the silk dome tweeter?

There is no perfect tweeter. The areas that are of concern to me are dynamic contrast and harmonic expression. They can be applied across the audio spectrum. The Focal tweeter was good in terms of dynamic contrasts, transient attacks, and power-handling. The sensitivity has been very good. We base the selection of drivers in a system in part around a model of sensitivity. If the sensitivity of the tweeter is substantially lower, how are you going to balance the system? You pad down the other drivers and lose dynamic contrast. I also don't like crossing midrange drivers over

180Hz. I like crossing over between 120-150Hz. This necessitates a larger driver. This limits the high-frequency extension. People have questioned that we've used midrange drivers that are as large as they are. They like to be crossed over to the tweeter in the 2kHz region. The partnering tweeter has to be able to go to 1.5kHz and lower. The XLF soft dome tweeter can do that, and is very smooth, with very little coloration. If you're designing speakers which are supposed to appeal to as many people as possible for the right reasons, you've got to have excellent driver blend. You can't have one flavor stick out against others.

#### Why are you inverting the midrange drivers?

You have to. With dynamic drivers, current not voltage drives the speaker. The tweeter crossover, at its simplest level, will have a capacitor rolling off the lower frequencies to it. When you run a sinusoidal signal through a capacitor into a load, it shifts the phase of the current 90 degrees in one direction. If you run that sinusoidal signal through an inductor, it shifts the current 90 degrees in the opposite direction. You need to invert the polarity of one of those drivers 180 degrees to ensure that the current is in phase. It's a very simple principle, and testing polarity with a DC battery won't reveal it.

#### Why did you enlarge and thicken the bass cabinet?

It was necessary to accommodate the dual-firing capability of the port. The enclosure volume is 14 percent larger. I had not been disappointed with the volume relationship between the enclosure and driver in the X-2. The enlargement was not based on an a priori need that we felt, but after considering the requirements of the dual-port arrangement, further investigation with a larger enclosure suggested that we might implement that principle better.

#### Are you considering a new WAMM loudspeaker?

We've talked about it. I would not say it's out of the question. It's kind of an intriguing idea. My wife is relentless in nudging me. She tends to be pretty influential.

#### Why dynamic drivers over horn or planar-type loudspeakers?

Remember your core strengths, and don't throw them away. I build speakers I enjoy and to the best of my capability. I learn things with time. The architecture we use is very versatile. It's always a matter of balancing strengths and weaknesses. I think on the ledger side high-quality dynamic-driver speakers have a very positive balance sheet.

# BUYER'S GUIDE TO STAND-MOUNTED LOUDSPEAKERS

## PSB Alpha B1

\$300

One of the high end's most venerated featherweights, the recently redesigned and curvaceous Alpha B1 combines mind-bending dynamics and rich mids in a speaker barely a foot tall. The 1" dome tweeter has been refined for greater bandwidth and smoother dispersion, the all-new woofer redesigned to reduce breakup modes. Even the midbass has a power and pitch-definition rarely found in this modest price range. Only the nebulous soundstaging is less than excellent. Ultimately, the B1 can't move the volume of air of a larger design like PSB's own T45/T55 or fully articulate the lowest octave, but it does a surprisingly respectable and musical job on everything else. [psbspeakers.com \(Issue 170\)](#)



## B&W 685

\$650

If you're looking for an affordable small speaker that offers excellent overall tonal balance, remarkable rhythmic authority, a large and open soundstage, bass response that defies its size, and extended treble response, WG's experience suggests that the B&W 685 may be your ticket to ride. This British-designed, Chinese-made two-way plays loudly without strain and, thanks to a forward-firing port, can be mounted on a wall, shelf, or stand with good results. A slight lingering edginess in the uppermost treble makes it both exciting to listen to as well as slightly sharp with female voices. A 2007 Product of the Year Award winner.

[bwspeakers.com \(176\)](#)

## Silverline Minuet Supreme Plus

\$699

As more audiophiles embrace computer-based audio systems, the cheesy transparent plastic speakers that populate many desktops will be replaced by transducers that can actually sound like music. The Silverline Minuet Supreme is an ideal example. The Supreme retains all of the sonic strengths of the original Minuet, but adds greater dynamic range to the mix. The Minuet Supremes also do a superb job of preserving the locational cues imbedded in a recording. While they do provide a remarkable amount of lower-midrange and upper-bass energy for their size, don't expect them to generate any low bass.

[silverlineaudio.com \(211\)](#)



## PSB Imagine Mini

\$760–\$830

PSB's tiny Mini almost looks too cute to be taken seriously. But it is actually quite capable of producing a musically valid performance—in an appropriately-sized setting. It has no low bass, limited dynamic range, and only a suggestion of recording-space ambience. Still, the mini manages to play “bigger” than expected and also sounds “correct” at a fundamental level. It can be successfully placed up to seven feet apart or in a nearfield setup. A higher volume setting than usual helps it “get going,” but when it does, it's enjoyable, tuneful, and rarely harsh.

[psbspeakers.com \(221\)](#)



## PSB Imagine B

\$1100

Think Imagine T, subtract a midbass driver and the floor-length enclosure, and, voilà, the Imagine B. There's the same expressive voice in the midrange and treble and, with only minor exceptions, the same superb balance. No, it can't quite chew on bass lines and kick drums and church organ riffs as if they were rice cakes, as the T does, but the B is still capable of surprising midbass potency. And though it's more reserved dynamically in the upper bass, it's also a bit lighter and fleeter of foot in the upper mids and lower treble. [psbspeakers.com \(189\)](#)

# BUYER'S GUIDE TO STAND-MOUNTED LOUDSPEAKERS



## Nola Boxer

\$1500

The Boxer is an unassuming two-way compact in a bass-reflex enclosure. Its physical profile may be working class, but sonically it plays pure uptown with a character that's unerringly musical—a canny balance of warmth and detail. The Boxer also exhibits the moves you'd expect of a smart two-way—vivid images and quick transients. It's not a shy, recessed presentation, nor is the treble brittle or fatiguing. Except for the slightest presence-range dip, there's substance to every octave with very little dynamic compression. The result is an unpretentious over-achiever that speaks nothing less than the musical truth. [nolaspeakers.com](http://nolaspeakers.com) (203)

## Paradigm Signature Reference S1

\$2398

This stand-mounted, sealed-box, two-way speaker doesn't understand how small it is, delivering big, robust, dynamic sound. An exceptionally neutral tonal balance coupled with pinpoint imaging make the S1 one of the best sub-\$2000 mini-monitors currently available. Paradigm designs and builds all its drivers in-house, including the pure beryllium dome tweeter. Because the S1s are so small, some prospective buyers might pass on them in favor of a larger bookshelf or floorstanding model. That would be a mistake. For its size and price the S1 delivers more pure performance than any speaker SS has heard.

[paradigm.com](http://paradigm.com) (184)



## Studio Electric Monitor

\$2650

The Studio Electric Monitor was designed to not only fit into multi-use rooms, but also to look and sound good while doing it. It has a lovely and unfatiguing midrange, not unlike the Harbeth P-3ES2. But unlike the Harbeth, which compresses *fff* passages to *f*, the Studio Electric Monitor retains dynamic subtleties during louder passages. The owners of smaller, turn-of-the-century mission or bungalow-style homes will see the obvious stylistic influences in the Studio Electric Monitor. But even if you're not a deco devotee the performance of these \$2600 speakers, especially as desktop monitors, makes them a savvy option for anyone who wants to listen to music at high volume and still enjoy the experience well into the night. [studio-electric.com](http://studio-electric.com) (218)



## KEF R-300

\$1800

The stirring all-around performance of this three-way compact can best be described in a few short words: precision, pitch, forward, and focused. Using KEF's latest iteration of its Uni-Q coincident driver the R-300 conveys a smooth, gung-ho midrange, impeccable image focus, and rock-solid and superbly controlled bass. It's a speaker that is at its most insightful reproducing the human voice, where it achieves a unity, a oneness on an almost subconscious level, that most compacts in this range can't quite muster. Only under the full weight of an orchestra does the R-300 give up some of its transparency and resolving power. Bi-wireable, and beautifully finished, the R-300 enlivens the mix in this competitive price segment. [kef.com](http://kef.com) (226)



## Sonus faber Liuto Monitor

\$2498 (stands, \$798)

The Sonus faber Liuto Monitor is the stand-mounted cousin to the full-bore, floorstanding Liuto. In this instance Sonus has successfully taken the prodigious sonic virtues of that large speaker and crafted them into the Monitor without sacrificing a bit of its point-source-like imaging and detail. The speaker conveys an otherworldly sense that music is completely liberated from its enclosure and free from driver-localization artifacts. In tonality and general balance, the Monitor hews to the Sonus faber company-line by focusing first on capturing natural richness and a bit of romance throughout the midrange. Part classicist, part rocker, the Liuto Monitor has a flair for the dramatic, imparting an almost operatic dimension to the sound. Lastly, it plays plenty loud but within limits that do not unhinge its meaty spectral balance or compress its dynamic envelope. Built with premium craft the Monitor is one of the most elegant and versatile small speakers around. The purpose-built stands are optional but superb and worth every penny. [sumikoaudio.net](http://sumikoaudio.net) (214)

# BUYER'S GUIDE TO STAND-MOUNTED LOUDSPEAKERS



## Music Culture RL21

\$2995

Music Culture, a relatively new company, is offering some pretty nice electronics and speakers at reasonable prices. The RL12 is a stand-mounted mini-monitor with a 6.5" woven Kevlar mid/bass and one 1" soft dome tweeter in a beautifully curved and finished cabinet that has no parallel internal surfaces. Limited in deep bass and overall dynamic range (owing to its small size), the RL21 still delivered respectable bass foundation in KM's room. Add to the mix a sense of quickness, refinement, and beautiful micro-dynamic shading, and you get a very rewarding speaker. The RL21's sound is greatly influenced by its stand. The Dynaudio Stand4 yielded excellent results. When paired with Music Culture's fellow Elegance Line stablemate, the MC701 integrated amp, the RL21 proved to be almost irresistibly fun to listen to. [music-culture.com](http://music-culture.com) (215)



## Penaudio Cenya

\$3999

If anyone doubts the potency and bravado of a compact loudspeaker then let him try the Cenya on for size. This two-way is the compact that thinks *big*. Rather than just relying on quick reflexes and transients (which it possesses in abundance) the Cenya produces a body and foundation of sound that suggests a floorstander. Energetic midbass adds heaps of energy to plucked acoustic bass and percussion. Penaudio of Finland, a relative newcomer to North America, also offers classic Scandinavian craftsmanship from its natural birch-ply finish to its stout, no-nonsense design. Setup is critical given the amount of energy the Cenya pours forth but, that said, it dominates a room in a way that few other small speakers can. [tempohighfidelity.com](http://tempohighfidelity.com) (224)

## Audience ClairAudient 2+2

\$5000

Typical multi-driver designs sacrifice coherence by using crossovers to slice and dice the signal before attempting to reconstitute it. The 2+2 uses no crossovers. A total of four 3" full-range drivers, two of which are mounted on the back baffle, produce a bipole radiation pattern. The payoff is a magical soundstage, exceedingly wide and deep, featuring spectacular image solidity. DO opined that he had yet to experience better layering of the depth perspective. The tonal balance is on the lean side of neutral, but in-room bass extension is flat to about 55Hz, more than respectable for a mini-monitor. Note: This puppy can rock without fear of driver damage. It crushes other mini-monitors at their own game, yet can play louder with lower distortion and little to no power compression. And as icing on the cake, it does its thing with an emphatic boogie factor. [audience-av.com](http://audience-av.com) (214)



## B&W 805 Diamond

\$5000

The smallest model of the new 800 Diamond Series to include B&W's updated diamond tweeter, perched atop the curved cabinet in its own characteristic "pod," the 805 Diamond is a coherent, revealing, and musically compelling speaker. Tilting just slightly to the warm and rich side of neutral, it manages to pull off the neat balancing act of digging deeply into recordings without stridency or edginess. "Detail without pain" sums it up. The 805 Diamond's resolution is not the kind that draws attention to itself in a "hi-fi" demonstration exercise; rather its considerable powers of resolution always serve the music the Diamond is asked to help reproduce. It has only so much dynamic capacity and does not have much output below about 45Hz, but from that level on up, the 805 Diamond is a beautiful and accomplished transducer. [bwspeakers.com](http://bwspeakers.com) (210)



## Audio Physic Step

\$3290

Easily one of the most transparent small speakers TAS has recently reviewed, the Step's imaging and soundstaging are so specific and its tonal colors and micro-dynamics so alive and focused that listeners may think they've had an ear-canal obstruction removed. The Step exemplifies a more forward presentation that can capture every inflection and nuance of a performance. There's just a hint of silvery brilliance in the treble, a characteristic that accents the Step's transient speed and clarity. Although there's usable 50Hz midbass output, this sprite does have physical limits: Fully recreating the weight and scale of an orchestra is a challenge. But taken on its own terms the Step 25 is the consummate "touch" speaker in the way it draws forth music's delicacies. Audio Physic calls it the "Step." You'll think it's more of a leap. [goernercommunication.com](http://goernercommunication.com) (224)



# BUYER'S GUIDE TO STAND-MOUNTED LOUDSPEAKERS



**Joseph Audio Pulsar**  
\$7000

When asked why he created the Pulsar speaker, Jeff Joseph replied, “I’ve always wanted to make a really excellent mini-monitor speaker. The midrange/woofer I developed for the Pearl II was the missing link. Finally, I had all the parts.” So, in essence, the Pulsar is a mini-Pearl that fits into small spaces where the Pearl can’t. It also costs only one-third the price. What’s special and perhaps even unique about the Pulsars is their ability to combine all the best sonic characteristics of a superb mini-monitor with those of a larger speaker. With a level of midrange purity that equals ribbon and electrostatic designs and the dynamic weight of a bigger dynamic speaker, the Pulsar is the closest thing to the impossible dream of a small speaker which can generate the SPLs and excitement of a much larger transducer without sacrifices in inner detail or harmonic purity. [josephaudio.com](http://josephaudio.com) (203)

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**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 45Hz or so) Michael Borresen’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 JV’s current reference. [raidho.dk](http://raidho.dk) (224)

**mbl 120**  
\$23,030 (with stands)

The mbl 120 stands for a new generation of Radialstrahler. It uses the same advanced enclosure concept as its legendary brothers and sisters, including the now-discontinued mbl 121. The midrange and treble are reproduced by the latest cutting-edge omnidirectional drive units, while the twin long-stroke mid/bass drivers are aligned in a push-push configuration and mounted on a solid aluminum block to eliminate spurious cabinet resonances. Refinements even extend to the headplate of the speaker stand, which disappears seamlessly into a recess in the enclosure, permitting the routing of speaker cables within the stand and a ground-level exit. The new 120 has been specially engineered for medium-sized rooms—and in such environs it sounds fabulous. The soundstage it throws has never been more holographic or enveloping. More extended across the frequency spectrum and far less colored in the bass than the 121, the 120 is a more refined speaker in every category. The best small MBL yet. [mbl-northamerica.com](http://mbl-northamerica.com) (Review forthcoming)



**Magico Q1**  
\$26,500

The tiny, aluminum-bodied Magico Q1 is one of the highest-fidelity stand-mount two-way JVs has auditioned. It is not just a little better than its celebrated predecessor, the Mini II, it is a whole lot better—in every sonic regard. Switching from the Mini II to the Q1 (on the same sources with the same electronics) is almost exactly like switching from a wooden-bodied M5 to an aluminum-bodied Q5, only in a couple regards (the blending of its beryllium tweeter and carbon-fiber mid/woofer, and its overall “disappearing act”), the Q1 is better than the Q5. Effortlessly dynamic, surprisingly deep-reaching in the bass, seamlessly neutral, and very high-resolution, the Q1 is the best speaker Magico has yet made for smaller rooms and smaller-scale music. [magico.net](http://magico.net) (219)



**TAD CR-1**  
\$42,000

This 100-pound, three-way stand-mount combines the warmth, weight, majesty, and output of a floorstander with the soundstaging and image focus of a monitor. Though fully capable of pinning you to your seat with dynamic thrust, its range of tonal expression and harmonic complexity is just as impressive. However,

it’s the way it traces the contours of complex groups of instruments so completely that places it in a class of its own. Much of the credit goes to its transcendent Coherent Source Transducer, a concentric driver sporting pure beryllium midrange and tweeter diaphragms that give new meaning to the words focus and clarity. Fit and finish are stunning; the bunker-like rigidity and isolation of its curvaceously sensual enclosure rival anything available in the industry today. In a marketplace where products appear stamped with expiration dates, the TAD Compact Reference is destined to stand the test of time. [tad-labs.com](http://tad-labs.com) (205)

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

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**2012**  
the absolute sound  
**Editors' Choice**  
Awards

Welcome to *The Absolute Sound's* Editors' Choice Awards, our annual Recommended Products List. For this Buyer's Guide we've excerpted those loudspeakers priced from \$5000 to \$20,000 that are most worthy of your attention. These are the components we ourselves would buy—or recommend to friends and family. Each product category is divided into price ranges, with components listed in order of ascending cost.

**LOUDSPEAKERS**  
**\$5000-\$20,000**

**Audience ClairAudient 2+2**  
**\$5000**

[audience-av.com](#)

A unique mini-monitor featuring a total of four aluminum-magnesium 3" full-range drivers, mounted front and back to produce a bi-pole radiation pattern. Its strengths are cohesiveness, an exceedingly wide and deep soundstage, and a vocal range that is projected with reach-out-and-touch-someone transparency. A bit lean, the 2+2 benefits from being matched with a medium-power tube amplifier. It crushes other monitors when it comes to playing loud with low distortion and little-to-no compression. DO, 214

**B&W 805 Diamond**  
**\$5000**

[www.bwspeakers.com](#)

Now available with the latest B&W diamond tweeter, this stand-mounted monitor offers abundant unforced detail, a very large soundstage, and a winning way of drawing the listener into recordings. With sufficient power feeding it, the new 805D packs surprising dynamic punch but lacks low bass. Other than that, it is a compelling performer, mixing natural detail with an inviting overall sound. KM, 210

**Monitor Audio GX300**  
**\$5495**

[www.kevro.com](#)

Monitor Audio's Gold GX recently added

an outstanding ribbon tweeter derived from its top-end Platinum line. A true three-way, bass-reflex design, the ribbon mates with two 6.5" woofers and a 4" midrange to create a bold and upfront sound with a precise midrange, excellent midbass weight, and lots of rhythmic momentum. Though the ribbon tweeter remains audibly a step ahead of the other drivers, most listeners aren't likely to have an issue with this. No doubt, the GX300 is a lot of fun to listen to. WG, 219

**Magnepan 3.7**  
**\$5500**

[www.magnepan.com](#)

Maggie's three-way, true-ribbon/quasi-ribbon planar 3.7 successfully addresses three issues that have long plagued "true-ribbon" Maggies: the seamless integration of that ribbon; the retention of detail and dynamic range at relatively low volume levels; and the reduction of "Maggie grain." The solution of these problems combined with the famous virtues of true-ribbon Magnepan's produce what is, in JV's opinion, the best buy in a high-fidelity transducer. Note that the 3.7s are large, require some power, do not produce deep bass below about 40Hz, and, like all planars, run into membrane-excursion limits at very loud levels, slightly limiting dynamic range. One of JV's references. JV, 214

**Reference 3A Episode**  
**\$5500**

[www.reference3a.com](#)

The multi-driver floorstanding Episode

sounds coherent and musical—felicitous on female voice and in harmonic colors. Bass definition and extension are excellent—as good as they get at this price point. The Murata super-tweeter is superb. When the speaker is driven within its dynamic comfort zone, the overall presentation is lively and engaging without being assertive. DO, 200

**Gallo Reference 3.5**  
**\$5999**

[www.roundsound.com](#)

A smart revision of the well-received Reference 3.1, the Ref 3.5 remains a four-driver, three-way floorstander that's virtually baffle-less. Sonically improved, its tonal balance is relaxed and full-bodied with tuneful bass. Its ease with micro-dynamics and its dispersion are revelatory. If deep crafted soundscapes really stir your imagination, then experiencing the Gallo is an absolute must. NG, 209

**Pioneer S2-EX**  
**\$6000**

[www.tad-labs.com](#)

Making TAD technology more affordable, Pioneer offers a three-way stand-mount with pinpoint imaging and powerful dynamics that put many floorstanders to shame. The S2-EX's coincident midrange/beryllium tweeter is stunningly fast and accurate. Maybe a bit clinical up top, but remarkably uncolored overall. You'll never again feel the same about a stand-mounted speaker. NG, 169

**Gradient Helsinki 1.5s**  
**\$6495**

[www.simplifiaudio.com](#)

This unusual design from Gradient's Jorma Salmi, with wave-guided tweeter, disc-mounted midrange, and side-firing dipole woofer, is intended to erase your listening room from the sound you hear. And it delivers the goods: Few other speakers can give you an equal sense of being transported to the performance venue. With the right setup, its delivery of spatial cues is at the top level attainable at any price. Bass is limited below 50Hz, and a subwoofer will be needed for ideal presentation of large-scaled music. REG, 189

**King Sound Prince II**  
**\$6500**

[www.kingsaudio.com.hk](#)

This line-source electrostatic offers pure, low-distortion sound and remarkable insight into the recorded acoustics. It is not an easy amplifier load and it is not perfectly balanced, being somewhat deficient in warmth, though the deeper bass goes down quite far. It is also somewhat limited in dynamic capacity compared to boxes. But within its limitations, it showcases the unique virtues of electrostatic speakers at a very reasonable price. REG, 210

**DALI Helicon 400 Mk.II**  
**\$6995**

[www.soundorg.com](#)

In addition to improved finish, the Mk.II version of the original Helicon 400 offers

updated woofers and better parts-quality. The design strives for a realistic tonal balance and succeeds in laying down a solid orchestral foundation without cheating the power range of 100 to 400Hz. The dual 6.5” woofers are able to generate a reasonable sense of slam and satisfying levels of lower-midrange punch. Harmonic textures are plush and vivid, especially when driven by tube amplification. Overall, a speaker you can safely “marry” for life. DO, 205

**Revel Performa F52**  
**\$6998**

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

A near-paradigm of tonal neutrality with muscular dynamics, unflappable composure at insane levels, and superior construction. Capable of playing all musical genres with class and confidence. Some may quibble about a forward tilt, or a treble that could use a bit more bloom, or a shallow soundstage. Still, this is one of the great values to come down the high-end pike. NG, 162

**Joseph Audio Pulsar**  
**\$7000**

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

What’s special and perhaps even unique about these two-way, bass-reflex compacts is their ability to combine all the best sonic characteristics of a superb mini-

monitor with those of a larger speaker. With a midrange purity that equals ribbon and electrostatic designs and the dynamic weight of a bigger dynamic speaker, the Pulsar is the closest thing to that impossible dream of a small speaker that can generate the SPLs of a much larger transducer without sacrifices in inner detail or harmonic purity. SS, 203

**Volent Paragon VL-2SE**  
**\$8500**

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

The VL-2SE features the Supreme version of the remarkable LCY-130 twin-ribbon tweeter. Electrostatic-like, it wows with stunning transparency and resolution, and its ability to disappear as a sound source. Plan to experiment with the toe-in angle to deal with a rising on-axis treble response. In-room bass extension is around 40Hz, though the tonal balance is slightly lean. A seductive and charismatic speaker that is bound to keep the listener involved in the music for long stretches of time. DO, 216

**Legacy Focus SE**  
**\$9250-\$10,650 (depending on finish)**

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

The massive, six-driver, four-way Focus SE is capable of creating a big sound in every sense of the word, while delivering the kind of speed and resolution from the midrange

onwards that is customary in better ribbon and electrostatic speakers, as well as a seamless blend between drivers. The upper mids and treble have life and air, along with a slightly forward midrange perspective. A sensitivity of 94.5dB makes the Focus SE easy to drive. A lot of loudspeaker for the money. Anthony H. Cordesman, 215

**Quad ESL-2805**  
**\$9500**

[www.quad-hifi.co.uk](http://www.quad-hifi.co.uk)

The addition of mass and bracing to Peter Walker’s revolutionary ESL-63 design and improvements in the manufacture of the panels yields bass that is more extended (but not subterranean) and powerful, image focus that is even more stable, and dynamic range that is enhanced. Mated to the right amplifier, this speaker is capable of reproducing music with a realism and naturalness that are compelling and addictive. JH/PS, 169

**Aerial 7T**  
**\$9850**

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

Aerial has taken a new design approach with its four-driver, three-way, ported, floor-standing 7T, upon which other future models will be based. The 7T has a dynamically vivid and revealing sound that expands the soundfield beyond the outer sides of the cabinets and well

into the listening space. Fairly easy to drive, it has deep tight bass and can be used in relatively small rooms without bass bloat. Its sole potential downside is its unflinching honesty, which prevents it from flattering bad recordings. KM, 218

**Verity Audio Rienzi**  
**\$9995**

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

A compact, two-piece, three-way floorstanding design, Verity’s Rienzi is a model of neutrality, resolution, and transparency at its price point. A refined speaker that can also rock, the Rienzi’s unusual bass enclosure allows owners to choose either a front- or rear-firing arrangement, which adds flexibility to room placement. WG, 175

**Coincident Super Victory**  
**\$9999**

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

A scaled-down version of the Total Victory, the Super Victory uses virtually the same mix of ribbons and cones to make for a stunning high-sensitivity floorstander of considerable dynamic range and timbral nuance. The ribbon tweeter is particularly remarkable (in part because it never sticks out). SK, 200

**KEF Reference 203/2**  
**\$9999**

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

The 203/2, a three-way, four driver,

bass-reflex design, occupies the sweet spot in KEF’s prestigious Reference line. Except for the last shred of bottom octave it provides a full-throttle, full-range experience. However it’s the latest generation of KEF’s proprietary Uni-Q coincident midrange/tweeter that provides the star power. This focused transducer permits timing, dynamics, and harmonics to come to full boil. Timbre rings with authority and authenticity although on occasion a darker personality can thicken the midrange. NG, 204

**Usher 8571 MkII Dancer**  
**\$10,799**

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

An overachieving floorstander poised to eat any number of high-end sacred cows for lunch, the Dancer produces a big, finely focused, high-resolution sound that is dynamically alive. Bass power, extension, and clarity are very good, too. The overall sonics are reminiscent of Wilson’s Sophia or WATT/Puppy speakers, but at a fraction of the price. CM, 154

**Harbeth M40.1**  
**\$11,995-\$13,495 (depending on finish)**

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

The new version of the M40 (REG’s reference) has a slightly more forward midrange, more “domesticated” (less “pro”) tonal

balance, and higher sensitivity. A BBC-style three-way monitor, with Harbeth bass and mid drivers and SEAS Excel tweeter. Neutral sound, exceptional midrange clarity, refined and extended treble, almost full bass extension in room, and surprisingly “outside the box” imaging. REG, 190

**Quad 2905**  
**\$12,500**

[www.quad-hifi.co.uk](http://www.quad-hifi.co.uk)

Although JV would love to own \$37k TAD-CR1s or, if he really hit the lottery, \$60k Magico Q5s, in the real world these large Quads—the biggest ‘stats that the venerable company has yet made—are one of the high-end speakers he would buy. No, they aren’t the last word in dynamic range, deep bass, top treble, or wall-to-wall soundstaging. And, no, they don’t disappear like mini-monitors. All they do is sound real on just about any kind of music at rational levels. JV, 186

**Sonus faber Cremona M**  
**\$12,800**

[www.sumikoaudio.net](http://www.sumikoaudio.net)

The Cremona M retains the lute-shape enclosure that Sonus faber popularized in its flagship Amati and Guarneri models. The M is powerful and passionate with a rich warm balance. Yet it’s no wallflower dynamically. In its timbral sophistication and impressive

dynamic range, even at orchestral levels, it achieves the kind of top-to-bottom fidelity that makes magic happen. NG, 189

**GamuT M'inenT M5**

**\$13,500**

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

These elegant, narrow-front floorstanders of moderate size are optimized for presentation of soundstage, and they do the job with a convincing vanishing act and a large and deep stereo presentation. Though not quite neutrally balanced due to some midrange forwardness, they are clean and pure sounding and have excellent resolution of fine detail and an impressive dynamic capability for speakers of moderate size. REG, this issue

**Thiel CS3.7**

**\$13,900**

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

The best speaker yet from one of the world's top designers, with major breakthroughs in driver design, overall technology, and build-quality for the money. More importantly, it boasts reference-quality sound with flat timbre, superb resolution and transient response, bass depth and power just short of the most expensive super-speakers, and excellent soundstaging and imaging. One of the most coherent and realistic speakers around without a touch

of romance or exaggerated highs. AHC, 186

**MartinLogan Summit X**

**\$14,995**

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

A hybrid electrostatic and a technological triumph that redefines this genre. 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 on tap with traditional ESL virtues of 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. DO, 209

**B&W 802 Diamond**

**\$15,000**

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

The 802 Diamond redefines the performance you can expect from a \$15,000 loudspeaker. It delivers many of the qualities we associate with the esoteric designs of small tweaky manufacturers, but in a relatively mainstream product. This significant recasting of its predecessor features new drivers including a diamond tweeter that is outstandingly high in resolution.

Couple that to a warm, rich, and full bass, along with a nicely resolved midrange, and you have one of the great values in loudspeakers today. RH, 208

**Von Schweikert UniField 3**

**\$15,000**

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

Venerable speaker-designer Albert Von Schweikert set out to produce a tiny, full-range, single-voiced speaker for small rooms that would not rob you of the deep bass, image size, and dynamic scale of big speakers. The design he settled on is very nearly unique—an “augmented” one-way. That you can occasionally hear the augmentation doesn't change the fact that throughout most of its range the UniField Three really does speak with one beautiful and persuasively lifelike voice. JV, 199

**Burmester B30**

**\$15,995**

[www.burmester.de](http://www.burmester.de)

The B30 speakers offer tremendous stage width and depth, with wholly convincing imaging. However, because they are less adept at reproducing image height, the B30s cannot conjure the grand scale that larger speakers achieve. But their slim profile does nothing to hamper deep, detailed bass. AT, 212

**Nola Viper Reference III**

**\$16,000**

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

If you are frustrated by loudspeakers that occasionally impress in a hi-fi sense, but don't really allow you to focus on the music, TM found the open-baffle, multiway ribbon/cone Nola Viper a breakthrough—neutral, non-analytical, and highly musical. Tom Martin, 181 (Viper I reviewed; updated Reference III not yet auditioned)

**Rockport Technologies Mira II**

**\$16,500**

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

The Mira is seductively warm and rich, yet gives up little in terms of detail and openness. Perhaps its most notable strength, because it usually comes with only the most costly designs, is a dynamic energy in the upper bass and lower treble regions that brings tricky instruments such as drums, bass, brass, and strings to vivid life. WG, 149

**Wilson Audio Sophia Series 3**

**\$17,900**

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

The entry-level floorstander of the Wilson line, the three-way Sophia 3 possesses a divine range of expression, tonally and dynamically. It can play fiendishly loud while remaining utterly composed. Yet it doesn't need volume to get its blood flowing. The listening

experience is physical in the sense that underpinning every instrumental voice and character is a solid harmonic framework. Equally impressive is a range of dynamic energy that parallels its unflagging output. In concert-level integrity, extension, slam, and attack, the Sophia 3 has few peers anywhere near this price. NG, 220

**YG Acoustics Carmel**

**\$18,000**

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

The two-way floorstanding Carmel sports a milled aluminum enclosure, has a crossover that optimizes both frequency and phase response simultaneously, and uses very high-quality parts. The result is a speaker that offers smooth, neutrally balanced, near-full-range frequency response, plus superb transient speed, tonal purity, and resolution. What is more, the Carmel serves up tightly focused imaging and eerily realistic 3-D soundstaging. At its best when used with very high-quality ancillary equipment in small-to-midsized rooms. CM, 209

**Magico V2**

**\$19,500**

[www.magico.net](http://www.magico.net)

The leadoff hitter for Magico's Murderer's Row of loudspeakers, the V2 is in many ways everything an audiophile could hope for from the high-end experience. It all comes

together in this breathtaking paragon of coherence, control, extension, dynamics, ultra-low distortion, and effortless resolution and transparency. This mid-sized, two-and-a-half-way, sealed-box design may not be especially electrifying to look at, but the totality of its execution is superb. Maybe the speaker in the under-\$20k bracket. NG, 202