

# AVguide Monthly

Issue 3 April 2004



**\$699 Dell HD for your Desktop?**

**Definitive Technology's  
Sandy Gross on  
Speaker Design**



**Maximize your iPod with  
Headphones from:**

**Bose  
Etymotic Research  
Grado  
Sennheiser**

**To Build a Fine, Small System, Part II: REL Q-108E Subwoofer  
Music Hall MMF 2.1 Turntable & Tracker Phono Cartridge  
Flexygy 6-Conductor Loudspeaker Cable from River Cable  
ProAc Response Hexa 5.1 Channel Speaker System  
The EuroAudioTeam KT-88 and 300B Tubes**

## From the Editor

Enthusiasts of all ages can appreciate the artistry of the band The Grateful Dead, and many find it tempting to adopt fragments of the Dead's song lyrics as mottos. My personal favorite is this one: "Every once in while you get shown the light / in the strangest of places if you look at it right." How true, especially in the worlds of audio and home theater.

In this issue, *AVguide Monthly* reviewers have gone searching for insights in what may at first seem strange places-posing intriguing "what if?" questions like these:

- What if you used an Apple iPod backed by a small headphone amp and a killer pair of headphones as your high-end audio system?"
- What if you bought "full-range speakers" in two parts-choosing nearly full-range speakers to handle everything from the mid-bass on up, and a highly specialized subwoofer to handle the lowest frequencies?
- What if you discovered one of the best places to enjoy HD home theater was your desktop?
- What if you could get "big" home-theater sound from downright tiny speakers?
- What if you could transform the sound of your vacuum-tube amplifier, just by installing a better set of tubes?
- What if you could get a big improvement in system sound quality through a not-so-big investment in better speaker cables?

The point is to keep an open mind when experimenting with non-traditional components and system configurations. Experimentation, after all, is the road that leads to those unexpected moments where you "get shown the light" and discover new products and approaches that really work, and can really make a difference in how your system performs.

This month, we also introduce a new column called "Sounding Board," where from time to time we will invite industry experts to discuss product concepts, new technologies, and the state of the industry; in this first of the series, we're honored to have Definitive Technology president Sandy Gross share personal observations on loudspeaker design. Finally, we present student/reviewer Thuus Thompson's debut review, where he shows how inexpensive and rewarding it can be to add an analog turntable to your system (like Thuus, you may discover that vinyl still has much to offer-even in this era of high-resolution digital audio formats).

Most of all, we hope *AVguide Monthly* helps shed some light on your search for better and more cost-effective ways to enjoy music and films at home. Enjoy.



Chris Martens

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## Introducing Thuus Thompson:

Thuus Thompson is a student, currently preparing for his engineering degree. A violinist, Thuus' musical interests are wide-ranging, including classic rock, opera, symphonic music, and Nordic and Irish folk music. An avid concert goer, he regularly attends the opera and a variety of folk concerts, along with the occasional choral or chamber work. He is also building his first racing car, which he hopes to complete this year.

## Introducing Sandy Gross:

*AVguide Monthly* is honored to have Sandy Gross, President of Definitive Technology, as the first guest writer for "Sounding Board"—a new column where we will invite industry experts to share their insights on product design, the state of the industry, and other topics.

Sandy Gross was first drawn to music when his 3rd grade teacher played a recording of *Pictures at an Exhibition* for the class, and then explained the imagery and sights portrayed in the piece. By the mid/late 1960s, Sandy's interest in countercultural music (he still owns his mono pressing of Jefferson Airplane's classic *Surrealistic Pillow*) segued into a fascination with hifi equipment—a passion that blossomed during his college years at Johns-Hopkins, where Sandy was known as a campus "hifi expert." By the time he graduated, Sandy was listening to a high-end audio system based on components that have now taken on the status of audio legends: KLH-9 full-range electrostatic speakers, Futterman vacuum tube amplifiers, and the Transcriptors Hydraulic Reference turntable with Decca pickup arm and cartridge. By then, the die was cast.

Mr. Gross joined Polk Audio in 1972 (when the firm was primarily a P.A. and sound reinforcement company), becoming a partner and principal with the title of VP of Sales & Marketing, and playing a significant role in moving Polk into the home speaker market. In 1988, Mr. Gross left Polk to pursue the, "lifelong dream of producing films in Hollywood," but he couldn't stay away from his first love for long, adding, "We had some exciting projects including a film about Nijinsky starring Mikhail Baryshnikov, but I returned to the audio industry to start Definitive Technology in 1990." The rest, as they say, is history.

Though Mr. Gross' tastes in music and film are eclectic, his favorite music is jazz, particularly recordings of small combos from the period between 1950 and 1970. In the world of film, his favorite director is Federico Fellini, and favorite film is Fellini's *Satyricon*.

Asked about future goals for Definitive, Sandy says that he wants the company to continue to evolve and produce loudspeakers that "communicate the feeling and emotion of the live performance or cinematic event. I love it when you can close your eyes and come close to feeling that the musicians (for me, Coltrane, Pharoah, Mingus, Miles, etc.) are there in the room playing just for you."



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## Affordable multimedia HD- ready TV at last?

# Dell W1700 Widescreen LCD HDTV

The prices of LCD televisions have plummeted recently, so much so that I was a bit surprised to find that 15" and 17" displays are available for well under \$1000 these days. With progress in electronics we have become accustomed to falling prices, but even by normal standards what has happened in dis-

"The W1700 also can be used as a computer display, basically treating the PC as one of several inputs (not too surprising, I suppose, given the manufacturer). But, consider that this setup makes for a true multimedia system without having to use the PC for all home entertainment sources."

plays is exceptional: only a year ago similar products were retailing for \$2000. This unusual behavior is partly due to the entrance of major computer manufacturers like Gateway, Dell and HP into consumer electronics. I was curious, as you might be, whether their products were simply inexpensive adaptations of mass-market computer gear, or, alternatively, something special?

As a first look into this question, I obtained a Dell W1700 LCD HD-ready TV (the term "HD-ready" meaning that the set can display HD signals, but provides only an NTSC tuner—not an integrated ATSC tuner). At the time of this writing, its \$699 list price makes it the lowest priced LCD TV in the 17" range that I could find, and actually less expensive than many 15" LCD TVs. Gateway has a similar model at the same price, though it lacks some of the bells and whistles of the Dell.

### Impressive Specifications

My first impression was positive, if for no other reason than that the specifications of the W1700 seem to belie its price. First, this HD-ready set is able to accept 1080i and 720p HD signals. It has a 1280x768 pixel display, which is a common resolution for HD flat-panel displays, and it has a 16:9 aspect ratio for proper display of movies and HD material. It accepts HD (or DVD) signals on component video inputs. While the need for HD on such a small screen is open to question, this is an impressive feature set at this price level.

But that's not all. Dell uses the DCDi video scaler chip from Faroudja Labs. Faroudja is known for its masterful line doublers, quadruplers and scalers, and my personal experience is that their products are exceptionally effective at making lower resolution material (read: broadcast TV) watchable on higher resolution sets. In the past, these benefits have come at a price. The Faroudja chip makes their technology much more affordable, and has been widely used in DVD players with good results. I was anxious to see how it would perform in a TV, seemingly an ideal application.



The W1700 also can be used as a computer display, basically treating the PC as one of several inputs (not too surprising, I suppose, given the manufacturer). But, consider that this setup makes for a true multimedia system without having to use the PC for all home entertainment sources. For example, I hooked up a DVD player, cable TV, and a DSS/Tivo box, plus my PC, to the W1700. No need to turn on the PC, except for PC stuff. No need to buy a TV tuner card, or software to make my hard drive into a Tivo, as you would have to if you simply used a computer display with your PC.

### What's It Good For?

Before we look at the performance of the W1700, we need to consider what kinds of applications it fits with, so that comments about performance are taken in context. After living with the W1700 for a month, I can suggest several uses. One, of course, is simply as a TV in space-constrained locations like a kitchen, office or bathroom. Similarly, it would fit more easily and less obtrusively in a bedroom or workout room. Another use is as a replacement for a computer monitor, but with typical home entertainment usage as well. This would be ideal for a student or an apartment dweller. I can also imagine the W1700 in multichannel audio systems where a small display is needed to monitor setup and adjustments for DVD-A players and digital controllers.

### The Picture

Let's get to the hard part right away. The fact is that regular NTSC TV broadcast signals frequently are the toughest signals for a display to handle. Because they are low resolution, they practically refuse to look good, and on high resolution displays they severely tax the capabilities of built-in scalers or line doublers (a tempting place for manufacturers to cut corners). I have lived with many displays in the \$3k to \$10k range that met

"...regular NTSC TV broadcast signals frequently are the toughest signals for a display to handle... The Dell looked superb on this basic material."

their Waterloo on this factor. The Dell, in contrast, looked superb on this basic material.

Of course, a small screen helps immensely to hide signal defects. To partially get around this, I did most of my viewing at 2 to 3 feet, which is similar to watching a 32" display at 12 feet (a common distance in small rooms). I used both analog cable and digital DirecTV signals. On the Dell, I noticed far fewer motion artifacts than on my reference 34" CRT HD display. These artifacts are often noticeable on

**"DVD, on the other hand, would certainly be a major source for many users of this sort of display. Probably because of its size, the Dell gave the illusion of a very smooth image. If you are accustomed to CRT displays with their scan lines and shadow masks, this display will seem to be a breakthrough."**

sports programming as blurring when players move (football is especially tough because wide-angle views of the field make individual players appear rather small on the screen). Even without motion challenges to deal with, scalars often soften the edges of low-res material, yielding an ironic situation where your new HD display looks far less sharp than the old TV it replaced. The W1700 passed this test, too, providing a satisfyingly sharp image on standard broadcast fare. When I compared the Dell with a standard definition TV, the image on the Dell simply seemed finer grained, and a touch softer and smoother, as you would expect from a higher-resolution display. If you watch closely, you will see some evidence that the signal is being processed (e.g. noise at certain edges), but on this set it is nowhere near the distracting levels often seen in \$1500-3000 HD displays.

Unfortunately, I had limited time to watch HDTV signals, due to a set-top box equipment failure unrelated to the Dell. What I saw looked fine, with much of the crispness that I have seen on my other, much larger, HD systems. However, obviously a 17" display just can't deliver the raw impact of a front projection system (at, say, 110 or 120"). I also didn't get the uncanny illusion of depth in the image that the better HD projectors can muster. Even so, I think HD is the least likely material to be used on a display like this, so these shortcomings, if they are even shortcomings, seem minor.

DVD, on the other hand, would certainly be a major source for many users of this sort of display. Probably because of its size, the Dell gave the illusion of a very smooth image. If you are accustomed to CRT displays with their scan lines and shadow masks, this display will seem to be a breakthrough. I have also seen LCD and DLP displays that seemed more grainy, but these were far larger. If you look carefully, from say 18" away, you will see some noise, as I mentioned seeing on NTSC signals, but this is very finely textured, and not nearly as objectionable as the noise we think of in broadcast signals. At normal viewing distances noise isn't really noticeable.

Color accuracy was good, but not perfect. Color saturation was fine, in part because saturation and color temperature are available adjustments. Flesh tones, with both light and dark skin, were also well rendered. My only issue was with accurate rendition of greens, which seemed just a bit too yellow. Whether this is due to the lower color gamut of LCD displays or the lack of a hue control, I don't know. In any event, this was a very small inaccuracy, and one most people would likely not notice.

The other commonly noted weakness of LCDs is black level limitations. Beyond a lack of definition in very dark scenes, limited black levels can give the sense that a very light fog has been cast over the

image. On the Dell, however, blacks seemed very deep, and much better than I have seen on many flat panel displays. Take for example, the opening scene of *Artificial Intelligence* [Universal], which is strongly sidelit. You can see the folds in jackets and dresses, and the detail in hair, on the W1700. At the same time, the overall scene appears dark and shadowy, as you would expect both dramatically and given the way it is lit.

Though I spent most of my time evaluating the Dell on television and movie sources, a comment is in order about the W1700 as a PC display. Image quality was unimpeachable on typical PC software. However, the widescreen display has functional advantages when used, for example,



with spreadsheets (many PC makers offer downloadable driver software to enable you to take full advantage of monitors with 16:9 aspect ratios). With games, the display itself worked well, the limiting factor here more likely being video card performance and the intrinsic video quality of individual games.

### Final Thoughts

You can buy a 13" TV for \$79 at the grocery store, so in some ways this is an expensive small TV. Still, I couldn't help but think that this compact, widescreen HDTV is a real bargain. That's partly because it cleverly integrates all of the main signal types you could want to use in a space constrained situation. It's partly because it is small and sleek in a way that no CRT display can be. But it's mostly because I really enjoyed watching material on it. The images from typical signals are vibrant and fine grained, but in a way that doesn't call attention to the TV. Given the common limitations of LCD technology and of source materials, that is high praise, indeed.



<p><b>Specifications</b>  <b>Price:</b> \$699  <b>Screen Size:</b> 17" diagonal  <b>Aspect Ratio:</b> 16:9  <b>Usable input scan rates:</b> 480i, 480p, 720p, 1080i  <b>Optimum PC input:</b> 1280x768, 60Hz  <b>TV Inputs:</b> RF coaxial, Component video, S-Video, Composite  <b>PC Inputs:</b> VGA, DVI  <b>Dimensions:</b> 21.4" x 11.4" x 3.5"  <b>Weight:</b> 15.4 lb.</p>
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<p><b>Manufacturer Information</b>  <b>DELL, INC.</b>          One Dell Way          Round Rock, TX 78682          800-915-3355  <a href="http://www.dell.com">www.dell.com</a></p>
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<p><b>Associated Equipment</b>          Yamaha DVD-S2300 DVD player, Hughes DSS receiver/DVR, Audioquest audio and video cables, Panasonic CT-34WX50 HDTV, Sony KV-32FV310 TV, Dell 2200MP projector, Toshiba TDP-MT8U projector</p>
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## To Build a Fine, Small System, Part II

# REL Q-108E Subwoofer

In Part I, I set the goals of this project: To review excellent musical components that are easy to set up and not expensive, and to gather together a small high-performance stereo system—one that for a modest \$5000 can reproduce the emotional and sonic wonders of music. As I described it there: the sense of the continuous flow of live music, dependent on the full reproduction of both fundamentals and harmonics, and the less easily defined "goosebump factor" we experience in our deepest musical experiences.

The basis of this system and the first component reviewed was the Magnepan MG-12/QR loudspeaker. I left off about three-fourths of the way into the break-in of those planar-magnetics—which take a very long time to break in, indeed—to seek out a subwoofer that would match in clarity and depth of bass the MG-12s' purity in the treble and midrange, thus creating the full range of the frequency spectrum.

In the six weeks since I wrote Part I, the Magnepanns are broken in, and the MG-12s, without subwoofers, are clean and clear, almost magically so, down to about 45Hz.

Now for the musically (and emotionally) critical few octaves below that—and the search for the perfect sub. To avoid cheap suspense, let me say right off that I found it. But in a quest like this, the journey counts nearly as much as the arrival.

### REL Q-108E Sub Bass System

One of the advantages reviewers have over other people is that they know other reviewers; and taken as a group, reviewers have tried everything. I was steered immediately to the REL Sub Bass Systems, manufactured in Wales and distributed by Sumiko in Berkeley, California. RELs have been much reviewed in *The Absolute Sound* and are loved by many of the writers. "These are not like most other subwoofers," one advisor warned me, "so don't take anything for granted. Read the manual." Advice that haunts me yet!

Sumiko shortly had a REL Q-108E on my doorstep. It was sturdily packaged in a small light box, easily toted. I read the instructions carefully, and setup seemed simple enough. Put the 108 in the corner behind the speakers; plug it into the wall outlet; hook the Hi-Level Neutrik Speakon interconnect into the sub's hi-level receptacle and its wires to the terminals on the amplifier—including the ground. All necessary cords supplied. No tools needed. A few moments, and the deed was done. (There were instructions for connecting the sub to an RCA low-level output and a 5.1 system, but I didn't read those. No use clut-

tering my RAM.)

Now set the phase and turn on the system. Simple.

But something was missing. Sound.

"...not only is the REL's clarity a match for my systems' virtues; but the soundstage has opened, the ceiling has vanished, and the instruments are marvelously what and where they should be (in a good recording). What the REL does for the soundstage is part of this design's magic."



I went over everything several times. Found nothing wrong.

Nervous, I called Sumiko and spoke to Terry Medalen. Over the next few weeks, I grew to consider Terry as the Seraph of Subwoofering and nothing since has persuaded me otherwise. On this first contact, he walked me through the setup yet again. We were both puzzled—yes, yes, I had done all that.

But when I actually went back over the system one kindergarten step at a time—lo! I had *not* read correctly. My mistake was in skimming over the

easy bits and leaping to conclusions. Don't laugh. It could happen to you: In setting up, the black wire goes to the black terminal, the red to the red, and the yellow to ground, right?

On the REL, *black* goes to ground. Furthermore, when you are foscicking around behind the sub to set gain and crossover, you are likely to get the wrong knob. And you won't get sound if you do.

I belong to James Thurber's aunt's school of electricity, which views that force as one of life's basic mysteries, not to be trifled with. I called Terry back and asked, as nonchalantly as I could, if the black/yellow mix-up might damage the unit. He said, "Probably not.

But it could affect performance. What does it sound like?" "Fine," I said. "But I don't know what I'm doing."

Sumiko is about three hours from my house. "I'd like to come out," Terry said, politely. "We have a few set-up tricks. . ." But I asked him to let me live with the system awhile and call him back when I knew enough to be able to learn something.

After a few days of listening, I put my reference speakers back into the system, because I know their sound better than I do the Maggies', and played with the sub. I could hear differences, but I wasn't sure what I was listening for, aside from bass frequencies, which I had now in abundance. Clearly there were subtleties I didn't understand. And conventional literature was of no help.

Most commonly, subwoofers are aimed at the midbass, way overlap-

ping the performance of the main speakers. They are going to just whomp the devil out of shoot-'em-up movies. The second approach is to go low and blend gently with the midbass. RELs fall into this category, and are also designed for corner setup rather than mid-side-wall. I was not getting the kind of sub sound I was used to. But I was almost liking what I heard. Indeed, though things were going on that I was only subliminally aware of, by the time help arrived from Sumiko, I was pretty happy with the sound of the reference system, REL in place.

Terry Medalen and Kevin Wolfe, ever courteous, listened a moment and said: "Not bad." And went to work. An hour later, the system sounded better than I had ever heard it, and I had witnessed an interesting process. First, the main speakers, my reference Be Ones, had been moved about considerably, and the right now had exactly 13 business cards under the front. (My living room floor has a double slope that would be a skate-boarder's dream.) For the REL, or probably any subwoofer, to work most effectively, the main speakers need to be well set up, particular attention aimed at getting the lowest and most accurate bass performance *before* the sub is added. The cut Terry and Kevin used to fine-tune the Be Ones had Jennifer Warnes singing "The Ballad of the Runaway Horse," on Rob Wasserman's *Duets* [MCAD, not the German reissue. If you find the original for under \$50, I'll be astonished.]. On this cut, Wasserman plucks two notes on the acoustic bass, a deep, even, emotive "twang-twang," providing a steady, simple bassline to work around.

In the end, the REL 108 was in the corner, really *in* the corner, nearly touching the walls. The cat tree that used to live there was in the middle of the room, cat happy on his throne, and I had noted the pertinent information for this setup: phase, placement of sub, gain, crossover frequency.

My reference system now had a smooth balance from about 25Hz up and a soundstage that was deep and wide and mesmerizing. The Be Ones are full-range speakers, but I will never again deprive them of a REL. Not only are bass instruments more "melodic" (both fundamentals and harmonics are clearer), accurate, and deep (the Be Ones go down to 30Hz, but they start a gentle roll at about 40Hz, or so my ears guess); not only is the rich underpinning of music fuller and more resonant; not only is the REL's clarity a match for my systems' virtues; but the soundstage has opened, the ceiling has vanished, and the instruments are marvelously what and where they should be (in a good recording). What the REL does for the soundstage is part of this design's magic.

So much for the reference speakers. Now for the Maggies. I was braced for another couple of hours' work, but in ten minutes, the Maggie/REL 108 combo was sounding wonderful. The midbass shyness that plagued me early on had almost vanished with break-in, but I knew from Magnepan's Wendell Diller that the MG-12 was designed for a smaller room than mine and that midbass could be affected in ways it would not be in a smaller space. With the REL, what was left of midbass shyness vanished entirely. And there was a satisfying low-bass foundation to music. Best of all, the clarity of the RELs matched the magical clarity of the Maggies.

### Official Setup

"Magnepans are easy to set up with RELs," Terry said, destroying an *idée fixe* of the audio-reviewing world. But the process is not intuitive. Sumiko gives its dealers a full morning's training, just for two-channel. The setup outlined here works, incidentally, for most subwoofers in most systems.

Here's how it goes: Put the subwoofer in a corner behind a speaker. Right up in the corner, not just aimed toward it a foot or two out in the room. Plug and play a minute to load your room and get your ears accustomed to low frequencies.

Now set phase by listening to a bass recording you know well. Terry and Kevin used the soundtrack from the movie *Sneakers* [Columbia], which has a repetitive bass drum played at a single amplitude. Set the crossover to a point where the sub shares frequencies with your main speaker, and turn the sound up so that sub and speaker are equally loud. Now flick the switch between the positions marked 0 and 180 degrees. You are listening here *only* for which phase position brings about the louder sound.

Next, play with the exact placement of the subwoofer, setting it first with the connection panel facing the corner, then a wall. (With the REL 108, it won't make much difference because its driver is placed symmetrically on the bottom. Other REL models have asymmetrical placement of the driver and bass reflex port, and one orientation will give the most efficient delivery of the bass wave.) Again, you are listening for which position sounds louder.

Once you have determined that, you inch the sub a bit this way and that in its corner. Out a fraction, in a fraction, a hair to the left and right. Persnickiness matters. You're looking for the point at which the sub says "ahh" and locks in with your main speakers. You are listening for—I want to call it a coherence, a coming together of the elements that make musical sound. It's not subtle. It's just not easy to define.

It helps to have someone with good ears sitting in the listening chair while you try to get the system right. It's much harder if you have to make an adjustment and then run back to listen, and then rush to the corner again. For one thing, when you're cuddled up with the subwoofer, the sound shakes you to your boots when the gain is up even slightly. The effect is utterly different from the chair. When I did this on my own, it took time just to get used to these two worlds of amplitude.

Once you're satisfied that phase and placement are correct, turn gain and crossover down, and listen a moment to another recording, preferably one with a female vocalist, without the sub. Terry and Kevin used Diana Krall's *All for You* to hear the soundstage open when the gain/crossover combo was optimal. To set crossover, take the gain down low and set the crossover up a click from the lowest setting. Then go up till the sound seems reasonable with the speakers. Now bring the gain up a bit, till you achieve a balance *at the listening chair*. Sounds easier than it works. You may need to take the crossover up way too high just to get a sense of things. And then work it up from the bottom again.

What you're looking for is soundstage expansion and the achievement of fullness and depth without boom.

Many sub manuals recommend crossing over fairly high, but in my experience, doubling up the midbass leads to boomy sound. The RELs are designed to cross over low, as low as 25Hz in the case of the 108, and



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support the main speakers, not overwhelm them.

When you're satisfied that you have both tonal and frequency balance right for your system and room, the crossover will probably be lower than you expected—my setting is 40Hz-and the gain higher. But you will have lost the feeling that the bass is coming from the corner, and the soundstage will have opened up (this is critical), and you'll no longer be aware of any sense of gap when the music moves from bass to midbass and back. At this point, for heaven's sake, jot down the numbers!

Terry and Kevin got it about right in ten minutes. Two weeks later, when I tore the system apart and put it back together to accommodate some equipment changes, re-set up turned into an all-day affair, partly owing to my inexperience. But a great deal was owing to my having to do double duty: tweak and listen. But I did it solo, so it can be done.

**"Many sub manuals recommend crossing over fairly high, but in my experience, doubling up the midbass leads to boomy sound. The RELs are designed to cross over low, as low as 25Hz in the case of the 108, and support the main speakers, not overwhelm them."**

To get the phase and position right, I played Mickey Hart's *Planet Drum* [Ryko]. I know the recording well, and it has acoustic bass galore. That took no time.

Gain and crossover took longer. I used Cantaloube's *Songs of the Auvergne* [CBC] and Ravel's *Piano Concerto for the Left Hand* [Chandos]. On the first, the lovely voice of Karina Gauvin needed to be placed properly against the small orchestral group behind her. With the concerto, I wanted that chorus of super-bass instruments at the opening to be *right*: deep, rich, swelling, gravelly but melodic. With most systems, you get some of these traits, but not all. The thematic information in those first moments is usually lost in a fog of low sound. Not with the RELs. I have heard this piece in concert, and heresy to say, I like it better on this recording. In a large hall, unless you are sitting in a front row or the closest balcony, you do not get the wave-like theme the contrabassoon, double bass, bass clarinet, et al., are presenting. And if you miss that, you miss the lovely shock: Why that's jazz! You'll get it later, no mistake. But Ravel announces it right off in that first low melody.

**Just Listening**

After I had the system tweaked to a T, I went for fun. First, I listened to *Planet Drum*. The Maggie/REL combo brings out the wonderful characteristics of the percussion instruments Hart gathered for this recording, in all their various glories, from the reverberation of the deep Earth drum to the flat "splat" sound of body percussion-the performers slapping their chests—and the muted (and different) clatter of stick and bone. Bells resonate and decay with beauty and depth. The Earth drum makes the house shake. Many systems reproduce this instrument as a kind of no-sound-just-feel, which used to be described as "pants-leg flapping bass." We are more refined in our tastes, these days, and want fuller reproduction. Some systems give this drum depth, but it remains shapeless. I've long wondered how it was made and how played. I still don't know, but the MG-12s and the REL combine to bring out a sense of a taut skin or light wood surface. The attack is relatively gentle and does not have a metallic quality. But then comes a resonating shudder, as if the drum's huge surface were laid across the room's very foundation joists, and your house were sitting over a cavern. I haven't heard it like this before. And of course the MG-12s' clarity brings out clear details of the singers' voices on this and other tracks, and each nuance of the complex instruments.

This CD was recorded in a wooden room, with cathedral ceilings, on wonderful old microphones—Neumanns and Sennheisers, mostly. The Magnepan/REL system made it almost unbearably real. I mean that. This was not just goose-bump, this was skin-crawl time. Eerie. Which of course Hart intended it to be.

Then, to get the sense of a small ensemble performing in a live space, I turned to *Salterio* [MA Recordings], with Begoña Olavide playing Medieval music on various psalteries, stringed instruments capable of surprising richness and vigor. The ensemble includes other stringed

instruments, drums, and percussion, and the music and sound come together into a strange, seductive tapestry that's at once virile and tender—and somehow alien, as if you're being serenaded by musicians of another species. This feeling probably comes from the modal style of the early Spanish-Moorish music and is enhanced by the long reverberant time of the monastery where the album was recorded. I heard new sounds in this piece, harmonics of the psaltery, largely. And deeper stirrings from the drums, which added to the otherworldly feel, even as I was drawn in. It takes a good system to produce emotions that are this central to our response to music. It also takes a foundation of deep, realistic bass, the subterranean underpinnings of music and of emotion made manifest.

After I've feasted on the unfamiliar in music—for the thrill, almost fear, of new experience—I need to come back to the known, with its different but still powerful excitements. Britten's *Cello Suites* [London], played by Rostropovich, are rich and textured—and ineluctably Western—as only a cello can be. The clarity of this system brought out the Bach-like counterpoint of these compositions, achieved by the one instrument's quick mixing of melodic themes, each lingering in your ear as the other moves into the sonic foreground. This can get muddied by less transparent systems. You must also experience that "continuous" flow of real music for the composer's trick to light the bulb in your brain. You need every nuance, and on cue.

This is a fine recording, marked by Rostropovich's full-bodied instrument and a room that's live but not too. And marked as well by one's memory of his playing on the Bach unaccompanied suites, though the sound on this old recording is better than on the Bach. That memory furthers the impression of the virtual counterpoint on Britten's composition, and creates, for me, one of music's intensely magical moments.

By now, it was late, but I wasn't ready to stop. I went for pop and gospel. I even tried out a new CD/DVD-A player, on DVD-As. (That's for next time.) The sound was *wonderful*—full, resonant, clear, musical. I stopped taking notes and played on into the night, finishing with a recent [not commercially available] CD of Odetta, her voice rich and sly with the joys and sorrows of time—*Blues Everywhere I Go*.

And that was about all the goosebumps a body could take in a single evening.



**System Budget, thus far**

**Magnepan MG-12QR Loudspeaker:** \$1099  
**REL Q-108E subwoofer:** \$749

**Specifications**

**REL Q-108E**  
 Closed box subwoofer, using REL Zero-Q loading system  
**Price:** REL Q-108E subwoofer: \$749  
**Driver:** 200mm long-throw, steel chassis  
**Frequency response:** 23Hz  
**Input Impedance:** Hi-level 100k/ohms  
**Gain Control Range:** 80dB  
**Power output (RMS):** 100 watts  
**Phasing:** Positive or reversed  
**Dimensions:** 9.96 x 11.57 x 10.7 inches  
**Weight:** 16.28 pounds

**Manufacturer/Distributor Information**

REL Acoustics Limited (UK),  
 distributed in the U.S.A. by:  
 Sumiko  
 2431 Fifth Street  
 Berkeley, CA 94710  
**Phone:** 510-843-4500  
[www.sumikoaudio.net](http://www.sumikoaudio.net)

**Associated Equipment**

Marsh Sound Design A400 amplifier; Marsh Sound Design P2000 pre-amp; Thorens TCD 2000 CD Player; Rotel RDV-1060 CD and DVD player; Monster Cable HS 53500 power-line conditioner; Be One 306 speakers; Monster Cable Reference 2 interconnects; various speaker cables

## A Real Turntable at an Unreal Price

# Music Hall MMF 2.1 Turntable & Tracker Phono Cartridge



Until recently, my main music source has been a combination DVD, CD, and multichannel SACD player. SACD is a great technological advancement and its compact size and easy use make its thoroughly realistic sound all the better, but paradoxically it's in the area of overall realism that SACD leaves me wanting more. While the soundstaging and overall tonal accuracy of SACD are stunning, it fails on the whole to produce the rich, deep tones that really

**"When the right music—music with a strong, pleasing midrange or even just with a technical set of notes—is played, however, the MMF 2.1 adds an indescribable richness."**

send shivers up your spine and make you want to jump up and start wailing on the air guitar. SACD is the kind of sound that you listen to while writing email or browsing eBay.

That's where vinyl comes in. I recently had the opportunity to put a turntable back into my system, and whether because of, or in spite of, being far from the high-tech wonder that is SACD, it never fails to amaze. Analog creates the kind of sound that captivates its listeners so that they can sit down, listen to music, and do nothing else for hours, simply because it's *that* good. And for those who think that turntables are only for audiophiles with deep enough pockets to pay thousands for the aforementioned rich, deep tones, Music Hall has the answer. For only \$349, including arm and pre-installed cartridge, its MMF 2.1 turntable is an inexpensive satiation of the hunger for more enjoyable sound.

The MMF isn't anything too flashy—black everything, with a squarish, clear dustcover; its looks are simple and understated, as is its sound. With this turntable you don't really get any signature sound qualities. If you were blindfolded and asked what you were listening to, your answer would simply be "a nice turntable." The wonderful thing about the MMF is that, other than the all-important analog quality, it has *no* amazing, extraordinary features. But it also shows no glaring impurities.

Nearly flawless as it is, the most prominent blemish on the MMF's tonal range is easily in its treble, which seems a bit bright, particularly in contrast to the strong, rich bass tones it produces. The brightness is especially audible on material such as Hendrix's *Electric Ladyland* [MCA], where his incendiary guitar tends to be slightly overemphasized as it gets higher pitched. At this price, however, one can't really fault Music Hall for a little excess treble content.

The midrange of the MMF 2.1 is one of its strong points—again, not overpowering, but simply true to the music that it plays. When the

right music—music with a strong, pleasing midrange or even just with a technical set of notes—is played, however, it adds an indescribable richness. Before acquiring the MMF, I was fan of Led Zeppelin, but when I threw *Led Zeppelin II* [Atlantic] on the table, the intro to "Whole Lotta Love" instantly bombarded my ears with sound that brought this familiar song to a whole new level. The music never became honky or nasal; the table just made it sound brilliantly lush.

The MMF's bass is a more complex story. The 2.1 provides a rich, solid foundation that strongly resembles live music. The low end retains the "not-too-flashy" theme, meaning that even with a fairly sizable subwoofer, it won't rumble your mother's china off the shelf. Continuing the theme, the bass is not excessively punchy, but is definitely far from lacking in the impact column. Its main problem is some lack of articulation. While the MMF 2.1 sounds sufficiently clean when playing the average song, a critical ear can detect a slight lack of precision on music with a technical bass line. These are subtle factors, though—the bass as a whole is smooth and free of obvious defects.

The soundstaging of vinyl as a whole is generally superb. That being said, the MMF isn't the last word, especially in terms of depth. It only seems a little disappointing because I know a great turntable would do even better. In comparison to an average CD or even SACD player, the MMF still reigns supreme.

Although the MMF has some flaws, all of them are small enough that the overall sound still captures the essence of vinyl—that inexplicably divine tone that nothing else can capture. To put it strangely, vinyl is to music as maple syrup is to an Eggo. A frozen waffle is a wonderful thing in itself, but that warm sugary goodness makes it a divine breakfast. A turntable can do the same to music. Without one, you're happy; but with one, the music takes on a heavenly warmth for your ears. And while vinyl is often associated only with serious aficionados of audio equipment (with serious wallets as well), the MMF 2.1 presents an opportunity to the budgeted audiophile and music connoisseur to experience that magnificently stirring analog sound. **AV**



### Specifications

Music Hall MMF 2.1 Turntable and Arm

Price: \$349

Technology: Belt-driven turntable with gimbal-type pickup arm

Speeds: 33 1/3, 45(with included adapter) RPM

Dimensions: 16.5 x12.5 x 4.5

Weight: 17 lbs.

Music Hall Tracker Phono Cartridge

Type: Moving Magnet

Stylus Type: Elliptical

Tracking Force Range: 1.5-2 grams

### Manufacturer Information

MUSIC HALL

108 Station Road

Great Neck, NY 11023

(516) 487-3663

www.musichallaudio.com

### Associated Equipment

Sony Dream System

Parasound PPH-100 Phono Preamp

## Definitive Technology's Sandy Gross on Loudspeaker Design The Case for Bipolar Loudspeakers with Built-in Subwoofers



**Sandy Gross announcing cost-reduced Definitive Super Towers at CES 2004**

Chris Martens recently reviewed the Definitive Technology BP7001SC Bipolar SuperTower for *The Absolute Sound* (Issue 146). During the review process, I discussed with him at some length two of Definitive's signature technologies, specifically bipolar radiation and built-in powered subwoofers. Chris believed these concepts would be of general interest to *AVguide Monthly* readers, and asked me to write a short piece describing them (without, of course,

"...our first product, the BP10 loudspeaker, was also a narrow tower with basically two complete full-range driver arrays. One faced forward and the other rearward. This is the basic concept of a bipolar speaker. The two driver arrays radiate sound (in phase with one another) in what is basically an omnidirectional pattern, exactly as sound is radiated in real life from an original sonic event."

turning the article into a 2-page ad for my company).

I have always liked speakers with unconventional radiation (i.e., non-forward-radiating) patterns. The first true audiophile loudspeaker

I owned was the KLH 9 full-range electrostatic. This was in 1972. These speakers had a "you are there" imaging presence and box-less sound quality I had never heard before. There were many reasons for this, but an important key to their performance was the fact that they radiated sound both forward and rearward.

To me, imaging is the real magic in a loudspeaker's performance. All the conventional parameters of a loudspeaker's performance (linear wide frequency response, low distortion, excellent transient response, etc.) are important, but imaging is that elusive quality that brings the musicians into the room or brings you into the concert hall or into the movie. Imaging allows the suspension of disbelief and lets you imagine that what you are listening to is real. The KLH electrostats were wonderful in this regard.

Full-range electrostatic panels of that day, including the KLH, however, had many shortcomings, including very high price, large size, difficult power requirements (I used a set of Futterman output transformer-less vacuum tube amplifiers, which did a better job than most with problematic electrostatic speaker loads), limited dynamic range, limited bass performance, positioning difficulties, etc. It seemed to me that it would be fantastic to create a loudspeaker that brought the benefits of these exotic, impractical panels into a product that made sense for the majority of listeners in the real world. I designed my first bipolar loudspeaker in

1973 or 1974, a narrow-format tower incorporating multiple small-diameter bass/midrange drivers arrayed on both the front and rear baffles along with piezoelectric tweeters and passive radiators. It was quite successful in the marketplace. It also brought me a phone call from the great loudspeaker designer Jon Dahlquist (who was also introducing a loudspeaker with a piezoelectric tweeter — the

soon-to-be-famous, time-aligned Dahlquist DQ-10, which was known for its "box-



**Cross Section of the Original BP2000**

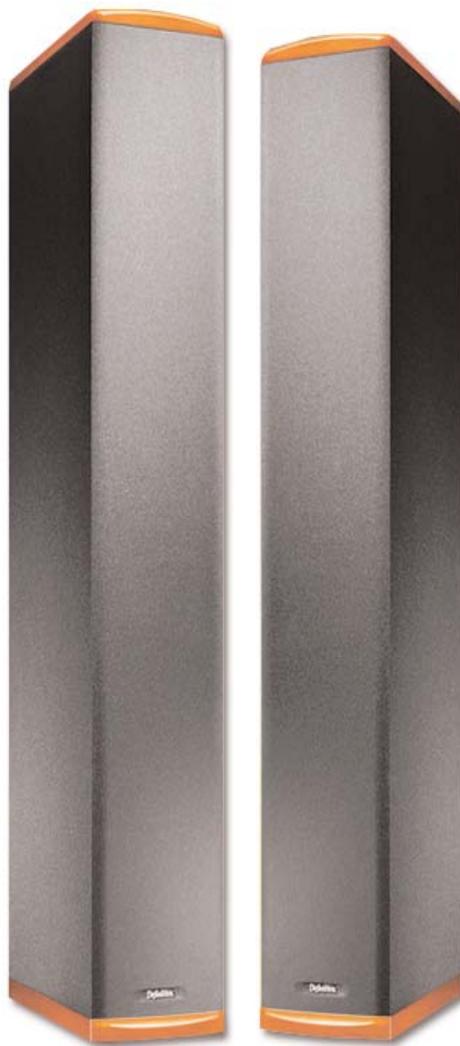
less" sound) and led to a long and enjoyable friendship between myself and Jon, as well as with his partner, the late Saul Marantz (Marantz not only founded the company which still bears his name, but was the creator of a number of classic high-end audio components; he also recognized and helped cultivate design talent in others—including Jon Dahlquist and tuner-wizard Dick Sequerra).

When my partners, Don Givogue and Ed Blais, and I started Definitive in 1990, our first product, the BP10 loudspeaker, was also a narrow tower with basically two complete full-range driver arrays. One faced forward and the other rearward. This is the basic concept of a bipolar speaker. The two driver arrays radiate sound (in phase with one another) in what is basically an omnidirectional pattern, exactly as sound is radiated in real life from an original sonic event. This technology provides a lifelike balance of early-arrival sound information, which provides focus, clarity, and location data. This combines with properly delayed complex and somewhat random late-arrival ambient information (just like the ambience of an instrument in a concert hall), which conveys the lush, natural three-dimensional soundstage of a live musical performance or cinematically portrayed event. These effects very much help to make the walls of the listening room disappear and expand the apparent size of the listening room into something that more closely approximates the sound-space in which the live event took place. Listeners I've spoken with consistently find that the difference bipolar technology makes is dramatic, involving, and quite captivating.

There is another benefit of bipolar technology, which is not as important to me as a critical listener but has been praised by many reviewers and listeners. Because a bipolar loudspeaker closely approximates an omnidirectional sound source, it does a better job of delivering superior sound throughout the room for all listeners in that room. In effect, the "sweet spot" is greatly expanded—a real-world benefit for listeners who tend to move around the room or who share their music listening or movie experiences with friends and family.

Now let me talk a little about built-in powered subwoofers. Definitive was the first company to introduce the concept of built-in powered subwoofers to the marketplace—technology that first appeared in the BP2000 loudspeaker we released several years ago.

Interestingly, our concept grew out of our search for better-quality audiophile/music reproduction—not out of a search for a place to "hide" the subwoofer in a home theater system. Our belief was (and still is) that there are significant advantages (especially for the subtleties of music reproduction) in having dual stereo subwoofers that have been specifically engineered to blend ideally with the rest of the speaker system. In addition, two subwoofers are really a lot more powerful than one. By locating the subwoofer(s) at the same position as the rest of the speaker system(s), you also eliminate the inconsistencies related to variable placement of the subwoofer(s) in the room. We also believe that there are sonic advantages to stereo subwoofers



BP2000(left) and BP7001(right) SuperTowers

beyond the obvious ones of better coupling to the room and more linear response (itself owing to better spreading out of the excitation of the room's eigenmodes). For example, you can engineer the subwoofer as an integral part of a true full-range system, as we do in the Definitive "SuperTowers," rather than designing a general-purpose subwoofer that has to be adaptable for use with a variety of other systems. We design our speakers to take full advantage of the fact that they incorporate built-in subwoofers by further optimizing the performance of the rest of the system (which no longer has to handle the mid- and low-bass frequencies covered by the subwoofers) and by properly integrating the subwoofers into the system. This level of integration is very difficult to achieve with a single stand-alone subwoofer (since it is tricky to get one subwoofer to blend equally well with multiple satellite speakers that are placed several feet apart). In practice, the subwoofer-within-main-speaker idea has really caught on with the public, though I think some customers probably value the idea as much because it eliminates an extra subwoofer box or two as for the better sound quality it affords. But I really do want to stress that, when properly utilized, building a powered subwoofer into the speaker allows you to optimize many other aspects of the speaker's design, and the resulting performance (at least in the case of Definitive) is clearly superior for both music and home theater. Not surprisingly, when the Dolby folks introduced Dolby Digital, they demonstrated the then-new system with a separate subwoofer for every channel and still recommend this approach for top performance.

Interestingly, you can also make, as Definitive does, bookshelf speakers and center channels with built-in powered subwoofers. The concept of a built-in powered subwoofer in the center channel is often misunderstood. It goes way beyond just putting more bass energy into the room: The intent is really to make the center channel a true full-range loudspeaker (i.e., one with extended bass capabilities) in order to give it total harmonic integrity, which is important for both music and home theater. Remember that in many movie mixes (and some multichannel audio mixes —Ed.), the center channel is really the main channel. Because of the logistics of setting up a home theater, the center channel normally has size limitations. Building in a powered subwoofer in effect allows the center channel to achieve the performance of a

large full-range floor-standing tower. It can have much the same effect in bookshelf speakers. Building a subwoofer into smaller speakers allows the designer to put some of the performance of a large tower into moderately sized models.

**"To me, imaging is the real magic in a loudspeaker's performance. All the conventional parameters of a loudspeaker's performance (linear wide frequency response, low distortion, excellent transient response, etc.) are important, but imaging is that elusive quality that brings the musicians into the room or brings you into the concert hall or into the movie."**

Definitive Technology SuperTowers are designed on the concept that bipolar driver arrays and built-in powered subwoofer technologies combine to bring more realistic and satisfying musical reproduction into all home-listening environments. Importantly, these design approaches yield products that offer many of the advantages of large, exotic, and expensive high-end loudspeakers, but that take up less space, and that can be built (and bought) for a fraction of the price.



A River (of Sound) Runs Through It

## Flexygy 6-Conductor Loudspeaker Cable from River Cable

The garden hose sized and/or stiff speaker cables many of us like to use in our audio systems are impractical and, oftentimes, cost prohibitive in home theater and multi-channel audio installations, but how much does one sacrifice by moving to an inexpensive, flat, flexible cable able to be molded against the baseboard or discretely hidden under carpeting? Well, if your experience with the Flexygy 6-Conductor Loudspeaker Cable from River Cable mirrors my own, the answer may surprise you. There's a lot of beef between the buns here—solid engineering, installation flexibility, seductive musicality, and the ability to "lock in" with a wide range of speakers and electronics. Not only is the cable a boon to home theater enthusiasts, it will be equally at home in many demanding audiophile systems. If you own Quads or other electrostatic speakers, take note.

Cable companies seem to be popping up all over the internet promising sonic nirvana, but River Cable is no fly-by-night cable operation. It has been providing cabling solutions to the demanding (think "Type A" personalities stoked on lots of caffeine) professional recording and broadcast industries for a couple of decades, and this experience pays off in the design and quality of this new speaker cable. Minimizing the proximity of individual conductors by its flat, side-by-side layout, the Flexygy 6 offers low resistance and near-zero capacitance, extraordinary flexibility, and a lot more finely stranded, high quality copper than you would expect. With a cadmium free protective jacket dressed with a proprietary gold mesh, combined with user friendly gold plated spade connectors or excellent, locking banana plugs, this cable exudes the feeling of quality found in products costing much more. River Cable supplies a set of individual test results for each speaker cable, certified by a quality control engineer. After examining the build quality of these cables, I'm not surprised they offer a lifetime warranty.

Given its modest price, the sound of the Flexygy 6 was pretty stunning. The fine results I obtained from a home theater system with the Final Sound electrostatics, reviewed in *AVguide Monthly* Issue #2, and NAD AVR was due, in part, to the Flexygy 6. Moreover, the low capacitance design of these cables also worked amazingly well with my modified original Quads, offering a delicacy and naturalness with mass strings, voice, and sax that must be heard. Just listen to Maria Freni on *French and Italian Opera Arias* [EMI] and Coleman Hawkins on *Night Hawk* [Prestige] and you'll immediately hear what I mean. On Stravinsky's *Petrushka* [Decca], the soundstage was well focused and precise, and the tonal balance was spot-on without any added sibilance or bloat. This cable also locked in well with a promising dynamic speaker system I have in house for review, the Hyperion HPS-938, demonstrating excellent speed, accuracy, and realism on a variety of jazz and classical piano recordings.

The difference in sound between the Flexygy 6 and cables a dealer might throw in to complete a home theater or audio system is dramatic. Comparing the Flexygy 6 to a couple of mass marketed, 14 gauge copper cables, I noticed the Flexygy 6 expanded the soundstage, yielded much better image focus, tightened up the bottom end, reduced overall grunge, increased transparency, and more. These were not subtle changes.

Despite my enthusiasm for this cable, it is not for everyone. If you like a forward, front row experience, you should look elsewhere. The Flexygy 6 gives one a mid-to-back of the hall perspective. Although I prefer this seating in a concert hall, you may value a more vivid, sound-in-your-lap perspective. As is the case with other cables, the Flexygy 6 will not "lock in" with all amplifier/speaker combinations, so you should audition it in your system. With the Genesis V speakers driven by tube amps on the top, the low capacitance and resistance Flexygy 6s were



predictably not as relaxed, dimensional, or controlled as my reference Purist Audio cables, but they were still quite musical. I suspect the Edge amplifier I have on order will be a much better match.

Discovering components and accessories that come close to what the big boys do at a fraction of the price can make this hobby even more fun. The Flexygy 6 should shine in most home theater and multi-channel systems, offering a combination of musicality, realism, value and installation ease that's hard to beat. Additionally, its sound with the Quads, speakers that eat many high end speaker cables for breakfast, is to die for. With the right system matching, the Flexygy's performance with dynamic speakers can also approach the top ranks, which is pretty remarkable considering its modest price. One could argue convincingly that the point of diminishing returns in speaker cables starts with the Flexygy 6, and spending more will not guarantee performance better than (or even as good as) that of River Cable's affordable new entry. **AV**

### Specifications

6 x 16 AWG in parallel for an aggregate value of 8.5 AWG  
 Effective gauge per hot/return conductor is 11 AWG  
 Hyper fine stranded 4 Sigma laminar copper  
 0.60" wide x 0.180" thick (15mm x 4.8mm)  
 Gold plated expanding banana plugs, pins, or spade connector lugs  
**Price:** \$215 per 3 meter pair; \$185 per 1 meter pair

### Manufacturer's Information

RIVER CABLE  
 350 Power Avenue  
 Hudson, New York 12534  
 (888)-927-4837  
 www.rivercable.com  
 customerservice@rivercable.com

### Associated Equipment

MFA Venusian preamp (modified); VPI Aries (updated); Graham 1.5 ton-earm with 2.2 bearing; Koetsu Black cartridge; Precision Fidelity M-7A power amplifier (modified); Quicksilver 8417 monoblock power amplifiers; Quad ESL-57s (modified); Genesis V loudspeaker system; Final Sound Modular Home Theater System; Cardas Golden Reference and MIT Shotgun interconnects; Purist Audio speaker cables; NAD T752 Surround Sound Receiver; JVC XV-SA600 DVD-A/V player; Chang Lightspeed CLS-6400 ISO MkII; etc.

## Making the Most of Life with an iPod

### Apple iPod with Headphones from Bose, Etymotic Research, Grado & Sennheiser

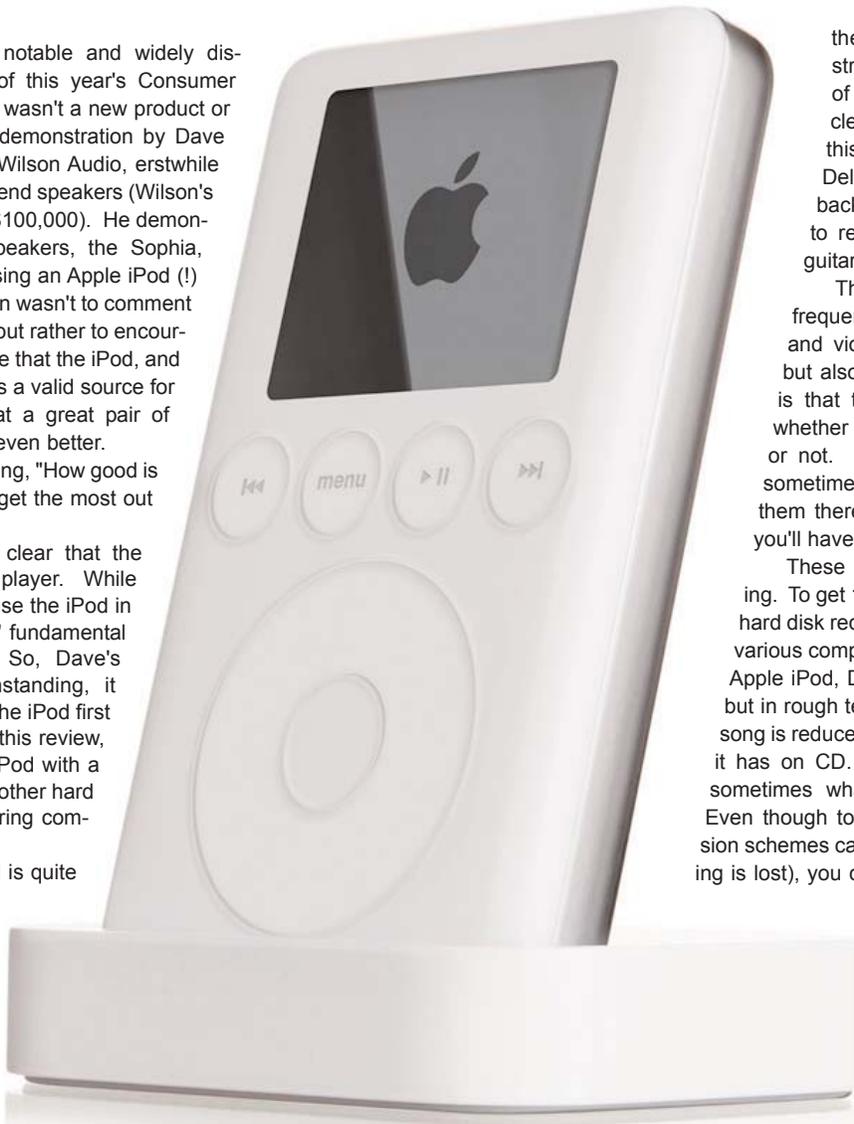
One of the most notable and widely discussed aspects of this year's Consumer Electronics Show wasn't a new product or a new technology, but a demonstration by Dave Wilson. Dave is CEO of Wilson Audio, erstwhile manufacturer of very high-end speakers (Wilson's top model retails for over \$100,000). He demonstrated a new pair of speakers, the Sophia, retailing for \$11,700/pr., using an Apple iPod (!) as the source. His intention wasn't to comment on the quality of the iPod, but rather to encourage his dealers to be aware that the iPod, and other similar innovations, is a valid source for many consumers and that a great pair of speakers makes it sound even better.

This got me to wondering, "How good is the iPod and how do you get the most out of it?"

For starters, let's be clear that the iPod is a *portable* music player. While there is no reason not to use the iPod in a home music system, its fundamental advantage is portability. So, Dave's interesting demo notwithstanding, it makes sense to evaluate the iPod first as a portable player. For this review, I primarily compared the iPod with a portable CD player and another hard disk player capable of storing compressed audio files.

The sound of the iPod is quite different from straight CD. My biggest concern, and one I think you would share, is that the iPod just doesn't sound very dynamic in comparison with CDs. Music sounds "fine" or "OK" or "pretty good," but always with some of the life wrung out of it. To take just one example, midway through "Drive", from R.E.M.'s *Automatic for the People* [Warner Bros.], an electric guitar takes the song to a new level of intensity. On the iPod this is softened in a way that diminishes the effect. And you don't have to listen to power rock to notice. Simple guitar/vocal arrangements, like those on David Wilcox' *How Did You Find Me Here?* [A&M], lose some of their emotion too. Since CDs already fall short of live music on dynamics, the iPod gets dangerously close to a precipice here.

The iPod also can't match the sense of air and resonance from individual instruments that you find on CDs. The proper decay of notes is crucial to a sense of reality—this is where you hear the wood on acoustic instruments, the grit or cleanliness of players' styles, and the distinctive sound of different amps. The iPod simply doesn't reveal these nuances the way CDs can and the way live music does. For example, on "Who Knows Where the Time Goes", from Fairport Convention's *Unhalfbricking* [Hannibal], Richard Thompson plays a complex but soft guitar line behind Sandy Denny's voice. On the iPod,



the sound of the guitar, the string resonance, and the sense of the recording space isn't as clear as on the CD. To be fair, this same guitar line, using the Dell DJ-20 player, was pressed back in the mix and it was harder to recognize the instrument as a guitar.

The iPod also rounds off high frequencies a bit. Vocals, cymbals, and violins all sound slightly polite, but also quite smooth. The problem is that they always sound this way, whether that's what is on the recording or not. Real music has edges, and sometimes artists work very hard to put them there. If you want to hear them, you'll have to stick with CD.

These results aren't all that surprising. To get 10,000 or so songs on a 20GB hard disk requires compression. There are various compression schemes used by the Apple iPod, Dell DJ-20, and other players, but in rough terms you can figure that each song is reduced to about 1/10th the data that it has on CD. Something has to go, and sometimes what goes is musical content. Even though today's sophisticated compression schemes can find duplicate data (so nothing is lost), you can't get the kind of compression needed without going beyond the duplicate data. The trick, then, is to throw away musical content in the least noticeable way.

I have to say that the iPod makes some careful and actually impres-

sive choices in how it messes with the sound, though the iPod's alterations of the signal don't fit with the goal of ultimate musical accuracy and emotional expressiveness. On the iPod, music tends to sound "good" or "nice." That's because most of the iPod's distortions are subtractive, and in some cases what gets subtracted (high frequency grit for example) is something that many folks didn't want to be there in the first place. In this sense, I would liken the iPod to a classic tube amp: a bit compressed, a bit rounded, but very listenable.

In the end, especially for portable applications, you'll probably choose the iPod because it is small. *Really* small. At about 1/3 the size of a portable CD player, it easily fits in a pocket or a small purse. Also, consider that the software (potentially 5,000 songs worth) is on board, whereas with CD you'll have to carry a book of CDs on the side.

So, this being the case, the other interesting question is how to get the most out of the iPod? The obvious place to look is toward a great pair of headphones. Of course, the iPod comes with a set of earbuds. While not horrible, these are far from state-of-the-art. They have very little output from the mid-bass down, sound a bit distorted on high frequency tran-

sients, and lack lower midrange body on vocals and acoustic instruments. So, given my remarks above about the character of iPod's sound, could a complementary pair of aftermarket headphones make a difference?

In short, *YesireeBob!* I don't think the differences between the iPod's sound and CD are exactly subtle, but by comparison the sound differences between headphones are enormous. I tried a mix of headphone prices and technologies, which may explain why the sound was so varied. Still, I wouldn't have come close to guessing my findings in advance.

#### Sennheiser HD 650: \$499

Sennheiser has a long and distinguished reputation for making superb headphones. They are viewed by many audiophiles as the preeminent headphone manufacturer, at least if you rule out electrostatic designs which by definition are not portable (because in nearly all cases electrostatic models involve separate power supply units that need AC power from a wall outlet). I chose the HD650 for review because it is Sennheiser's new top-of-the-line model (the previous top line models were the HD600 and, before it, the well-loved HD580—both still offered in the line). I figured, "Why not see how much we can wring out of the iPod?"

What I found was rather disappointing. Bass on the HD 650s was boomy, with drums sounding like indistinct thuds rather than like sticks striking a drumhead. Vocals were distantly placed, which gave a better than typical sense of space to the music. But vocals were hooded and very dark sounding. Percussion, particularly with snares and rim shots, was over damped and "dead" sounding. The Sennheisers had smooth and delicate highs, which were never harsh—not even on music that is *meant* to sound harsh. Overall, I found the HD650 an amusing design, and one particularly unsuited to the iPod, which has some of the same faults (though on the iPod they are much smaller in magnitude).

On a practical note, these are large headphones, which isn't an ideal feature for portable use. In addition, they tax the tiny amplifier in the iPod pretty heavily, so you'll almost certainly want a separate headphone amplifier (my sonic evaluation is based on using a Headroom portable amp, which vastly improved the dynamics of the 650s with the iPod).



Sennheiser HD 650

#### Sennheiser HD-580: \$259

Fortunately, Sennheiser has many other models. The well-established HD-580 shows what this company can do when it tries for musical fidelity rather than a "pleasing" sound. The HD-580s sound for all the world like the result of a project to fix my criticisms of the HD-650s, while retaining their generally smooth and creamy sensibility. Bass on the 580's is strong, but simply on the warm side and not way overdone. Bass also has good if not great definition, with bass notes showing clear and appropriate decay. Vocals are also improved over the 650's, sounding much more open and detailed, while retaining some of the attractive sense of depth that I noted above. High frequencies—as heard on violin, dobro, or cymbals—are well balanced, though just a touch rounded. Dynamics get a bit splashy sounding when the whole band cranks it up probably due to amplifier limitations (the HD-580, like the HD-650, needs an amplifier).

This is a solid, well-balanced headphone that sounds quite good with CD or the iPod, particularly if you value smoothness and delicacy.



Sennheiser HD-580

#### Bose Quiet Comfort 2: \$299

In contrast with Sennheiser, Bose does not have a reputation for high quality among audiophiles. But their products are exceedingly popular, and the QC-2 is heavily promoted, so I thought they should be included. The QC-2 also makes sense in this test because it has noise cancellation technology borrowed from Bose' professional aviation headsets. Noise cancellation systems measure the ambient noise on a bus or in an airplane and apply an equal and opposite signal to remove this distracting sound from the headphones. If your portable listening involves noisy environments, this technology really works and makes a big difference in terms of letting you hear just the music while blocking out much of the noise.

The sound of music with the QC-2s isn't especially good, nor is it particularly bad. Bass, as befits the Bose house sound, is bloated and indistinct. Electric bass harmonics, for example, sound like the amp is playing under a blanket. Vocals are smooth and reasonably open, but a little dark. String plucks through the QC-2s are clear but a bit over damped. Violin tone is lovely, though violins sound more like violas. Listened to in isolation, this is a pleasant sounding headphone whose deviations from accuracy are not terribly annoying. On the other hand their approach to music isn't very involving, and with their tendency toward softness, this is not the ideal match for the iPod.



Bose Quiet Comfort 2

#### Etymotic Research ER-4S: \$330

Etymotic is a little-known company in consumer electronics, their primary business being the development of professional audiometry products and high accuracy hearing aid amplifiers. These guys are serious about in-ear sound and measurement, holding 89 patents in these fields. The ER-4S is their top-of-the-line earphone, designed to take their technology into the music playback field. Yes, I said earphone. The ER-4S looks like an alien-designed version of the cheapo earbuds that ship with lots of portable players. It is different in that it seals against the ear canal to extend bass and to isolate outside sounds (a different way of doing what the Bose 'phones do). The Etymotics have the earbud advantage of being tiny (the case is a bit larger than a matchbook).

The Etymotic sound is tilted in an entirely different direction than the Bose or Sennheiser sound. These earphones are about clarity. Electric bass string definition is very good, but lacks body. It is important to



Etymotic Research ER-4S

note that bass with the ER-4S depends heavily on the seal between the earphone and the ear canal. It is not easy to get a good seal, and even then most listeners will find the ER-4S to be quite bass shy. At the other end of the spectrum, cymbals are clear and extended but rather dry. Again, vocals are a bit thin, but clear and open. Plucked string tones are crisp and clean. Drum head definition is excellent. Dynamics are handled well, though, like the Sennheisers, these require almost everything the little built-in amp of the iPod has to give, even to get vaguely loud (again, I used an external portable amp; note that Etymotic offers an easier to drive version of this earphone, called the ER-4P). **See Note 1**

**Note 1:** *The ER-4P is intended specifically for use with small portable players such as the iPod, offering 10dB higher sensitivity overall, plus a somewhat different low frequency EQ curve that promises "enhanced bass."* -Ed.

### Grado SR-60: \$69

Grado is a small, established player in high-end audio, but with a twist. They only make phono cartridges, headphones and related products. Over the past 50 years, they have earned a phenomenal reputation for musical products that are great values. I selected the SR-60 headphone, which has a good reputation, and at \$69 fits with Grado's value orientation (though Grado makes much more expensive 'phones, too).



**Grado SR-60**

As for the sound, let me just say "Whoa!" With the iPod, and no external amplifier, these are the best-sounding headphones in this group. Vocals on the SR-60 are open, but with realistic body. Electric bass is solid, warm, and with good definition on decay, though not terribly deep. Bass isn't perfect, with some lumpiness in the mid-bass, and no real low bass, but on the whole deviations from accuracy are small by comparison with the bass problems observed with some of the other 'phones. With the Grados, plucked string sounds are clear, with excellent resonance. Percussion sounds are solid and quick. The woodiness of acoustic instruments is well represented. Cymbals are smooth, though occasionally a little splashy. The SR-60s have excellent macro dynamics. Violin string tone is smooth, and reproduced with a realistic sense of "edge". While high frequencies are very well handled, the SR-60s are not your best choice if "smooth" is your most important criterion (try the Sennheiser HD-580's). This is a transparent and musical headphone that nicely complements the deficiencies of the iPod, and one that I preferred for listening to CDs as well.

The Sennheiser 580s are probably the most balanced headphones here, but they really need good amplification (the degree to which this matters greatly for some headphones and less so for others surprised me). So, my heart was gladdened that the lowest-priced headphones in this august group were very competitive with all the others, and also easy to drive. In a noisy environment, though, the Grado's open ear design is not ideal. In this sense, the Etymotic and Bose are intriguing, but you have to accept some tradeoffs. As usual, it seems that you can't have it all. **AV**

### Specifications

Apple iPod M9244LL/A portable music player

**Price:** \$399

20GB hard disk drive

Files supported: AAC, MP3, MP3 VBR, Audible, AIFF, and WAV

**Size:** 4.1x2.4x0.62 in.

**Weight:** 5.6 oz.

*Bose Quiet Comfort 2 headphones*

**Price:** \$299

Dynamic driver

Sealed, circumaural earpieces

Electronic noise cancellation circuit

*Etymotic ER-4S earphones*

**Price:** \$330

Dynamic driver

Sealed, in-ear earpieces

108db@1V

*Grado SR-60 headphones*

**Price:** \$69

Dynamic Driver

Open-air, on-ear earpieces

SPL 98db@1mV

*Sennheiser HD-650 headphones*

**Price:** \$450 (HD-650)

Dynamic driver

Open-air, circumaural earpieces

103db@1V

*Sennheiser HD-580-1 headphones*

**Price:** \$259 (HD-580-1)

Dynamic driver

Open-air, circumaural earpieces

98db@1V

### Manufacturers Information

**Apple Computer, Inc.**

1 Infinite Loop

Cupertino, CA 95014

(800) MY APPLE

www.apple.com

**Bose Corporation**

The Mountain

Framingham, MA 01701

(800) 999 2673

www.bose.com

**Etymotic Research, Inc.**

61 Martin Lane

Elk Grove Village, IL 60007

(888) 389 6684

www.etymotic.com

**Grado Labs, Inc.**

4614 Seventh Avenue

Brooklyn, NY 11220

(718) 435 5340

www.gradolabs.com

**Sennheiser Electronic Corporation**

One Enterprise Drive

Old Lyme, CT 06371

(860) 434 9190

www.sennheiserusa.com

### Associated Equipment

Headroom Total Airhead headphone amplifier, Sony D-NE710 portable CD player, Dell DJ-20 portable digital music player

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- Dell MP 2200 DLP Projector and Da-Lite "Insta-Theater" Screen
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- Niro Model 1.1 PRO Home Theater in a Box
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## Tiny but Mighty Surround Sound Speakers

### ProAc Response

### Hexa 5.1 Channel Speaker System

**A**lthough the name ProAc is not widely known in the USA (except in audiophile circles), the fact is that many audio and home theater enthusiasts find their first exposure to ProAc loudspeakers an unforgettable, ear-opening experience. Why? Speaking from personal experience, I would say the answer has to do with several very specific characteristics of the ProAc "house sound;" namely, extraordinary transparency, dynamic liveliness, and freedom from grain. For many, that first taste of the ProAc sound leaves the lasting impression that few other speakers offer as direct, immediate, or *pure* a connection to music or to film soundtracks (be careful: once you've heard ProAc's, you may find that some competing speakers suddenly seem a little sluggish, colored, or coarsely textured). While I've heard ProAc speakers in two-channel music systems on many occasions, I had never—until now, had a chance to sample the firm's dedicated home theater speaker system, called the Response Hexa system ("Hexa" because the system includes six components: four satellites, one center channel, and a powered subwoofer). Let me share my findings with you.

Before we go one step further, though, there are two things you need to know; first, a lot of ProAc designs use very high quality drive units installed in *extremely* small enclosures, and second, ProAc's are as a rule fairly expensive. Together, these points make for some inevitable sticker shock when one first sees ProAc speaker systems and then learns their prices

(one just can't help thinking, "They want *how much* for those little things?!"). Here in the land of super-sized fries and 2 ½ ton SUVs, we're seemingly conditioned to think that bigger is always better, and the tiny ProAc Response Hexa system don't fit that paradigm at all; indeed, about the only two things that are "big" about the system are its sound and its hefty (though not necessarily unreasonable) \$4500 price tag. But, better a small speaker with a big sound than the reverse, eh? As we talk about the Response Hexas, just keep an open mind and remember that very good things do sometimes come in small packages.

The Response Hexa system is comprised of four identical and truly tiny (8" x 5 ½" x 6") 2-way satellite speakers, a somewhat larger (8" x 13" x 6") center channel speaker that uses the same driver units as the satellites but with one extra mid/woofer (set up in the popular mid-tweeter-mid configuration), and a compact powered subwoofer with downward-firing 8" long-throw woofer. Those with an eye for detail will find the Hexa system's build quality is exquisite, with speak-

er cabinets constructed from finely laminated and richly veneered marine grade plywood, and with recessed wiring pockets on the backs of each speaker sporting robust, gold-plated bi-wire binding posts. High quality drive units are used throughout the system whose satellite and the center channel speakers feature flush-mounted silk-dome tweeters (with neodymium magnets cooled by radially-finned heat sinks), and using

**"The closer you look, the more obvious it becomes that, though diminutive, these are in every sense high-end loudspeakers."**

clear (as in "you can see through them") mid/woofers drivers whose cones use the same materials as found in ProAc's more costly Response One SC speakers, etc. The closer you look, the more obvious it becomes that, though diminutive, these are in every sense high-end loudspeakers.

Setup is simple. You'll want to place the satellites on stands that raise the speakers to ear level (I used Sanus' Steel Foundations stands for my listening tests), with the center channel placed on its side above or below your display. The subwoofer has a small enough footprint that it can be tucked away in a number of locations in the room without drawing much attention to itself.

The Response



(one just can't help thinking, "They want *how much* for those little things?!").

Hexa instruction manual

specifically recommends using a main-speaker-to-subwoofer crossover frequency of 80 Hz, but again and again you find yourself eyeing the tiny satellites and not much larger center channel speaker and wondering if they could possibly go down as low as 80 Hz (in fact they do, but those small enclosures do make you wonder). I found the Response Hexas were not at all finicky about placement, provided the satellites were placed at ear level and kept them away from nearby objects (the satellites offer such broad dispersion that you could hear reflections from nearby objects, so do give them some "breathing room" and be sure not to cram them in too close to the sides of adjacent wall units or RPTVs). Once you settle down to listen, you're in for some pleasant discoveries.

First, more than most home theater speaker systems, the Response Hexas offer terrific imaging and reproduction of depth (front-to-back) cues in music or in film soundtracks; with the Hexa systems, you know *exactly* where individual sounds are coming from. Most 5.1 channel surround speaker systems I've heard sound best with all speakers in action, almost

as though they need the combination of the L/R mains, surrounds, and center-channel operating together to help smooth out (or perhaps mask) any deficiencies that would otherwise be observable if you listened to individual channels in isolation. With the Response Hexa system, however, I found almost the opposite was true; when I listened to the L/R mains and subwoofer on their own, the resulting stereo sound was so spacious, so precise, so three-dimensional, and produced such a convincing center image, that I almost wondered if the surround and center channel speakers were really necessary (which is perhaps a roundabout

way of saying that pair of Hexa Satellites and the powered Hexa subwoofer would make a fine, standalone 2-channel speaker system in their own right). But, bringing the surround and center channels into play helped make the already good 2-channel imaging better still, providing a convincing sense of envelopment as only a good surround system can. I took some time to compare back and forth between the stereo and multichannel mixes of the Spano/Atlanta recording of Vaughan William's *A Sea Symphony* [Telarc] with interesting results. The sense of pinpoint imaging—of instruments and performers rooted in very specific locations—arguably came through more clearly in the stereo mixes, but the overall sense of ambience, of real performers heard within a real three-dimensional space, was considerably more convincing in the multichannel mix (consistent with the sound of live music, the multichannel mix gave less emphasis to precise localization of individual performers' exact positions on the stage, but at the same time gave a more fully integrated view of the soloists', chorus', and orchestra's combined sound, and that of the recording space).

Much like the larger and more costly ProAc speakers, the Response Hexas offered a finely resolved overall sound; this is a speaker system that is all about textural nuance and dynamic finesse—one that invites you to lose yourself, for example, in the distinctive tone colors and signature dynamic envelopes of the diverse percussion instruments (which the Hexas reproduce particularly well) heard in Thomas Newmans' score for the film *American Beauty* [Dreamworks]. Likewise, this is a speaker system that brings alive the inner dynamics and details of those special film soundtracks whose soundscapes "illustrate" scenes just as vividly as onscreen images do. As I listened to the soundtrack of Sofia Coppola's wonderful *Lost in Translation* [Universal], it occurred to me that the Response Hexas captured the sonic imagery underlying certain scenes—such as those that took place in a Tokyo arcade game parlor or in a karaoke bar—with such richness that I could easily (and accurately) have pictured the setting and flow of action in each scene with my eyes closed! My point is that the Response Hexas captured details and subtleties that other speakers tended to miss or gloss over—convincing me that this speaker system is a refined player in a realm where, frankly, comparatively unobtrusive loudspeakers are more often the norm. Did these strengths justify the Response Hexa system's stiff \$4500 price tag? They did in part, but not completely. I felt the system showed several limitations that held it back from delivering the fullest measure of performance one would expect at its price.

The first limitation I observed involved the sound of the Response Hexa subwoofer. While the subwoofer sounded reasonably "fast," warm, and enjoyable, it couldn't really keep up with the resolution and focus of the rest of the system, and it seemed somewhat lacking in low bass extension and pitch definition. At a lower price point these minor shortcomings would have been easy to overlook, but at \$4500 I felt the system deserved a subwoofer capable of producing clearer, more powerful and more deeply extended bass (in short, a subwoofer whose voicing better matched the sound of the Response Hexa satellites and center channel). My instincts on this point were confirmed when I had the opportunity to try the satellites and center channel with Definitive Technology's excellent SuperCube Reference subwoofer—a woofer that matched beautifully with the ProAc speakers and that offered the superior bass clarity, power, and extension for which I had been hop-

ing. This temporary subwoofer substitution convinced me the Response Hexa system could step up to a higher performance level if only it came with a better subwoofer. The second limitation I observed involved the system's overall dynamic capabilities, which I would characterize as good,

but not great—and not as good as I know can be achieved in some of the larger \$4500 surround systems. Finally, I was puzzled by ProAc's decision to supply four identical, high-performance satellite speakers in the Response Hexa system for use as L/R mains and surround speakers. While this design choice ensured evenness of voicing throughout the system, it effectively forced the buyer to purchase a pair of surround speakers that were better than (and presumably more costly than) they really needed to be. I won't go so far as to say that this design choice represented a misallocation of system resources, but I do think that—given the option—most buyers would be happier if the Response Hexa system came with lesser surround speakers but with a better subwoofer.

In the end, this system—like all surround sound speaker systems, involves tradeoffs. In terms of texture, dynamics, imaging and freedom from grain, the Response Hexa system sounds like one of the better \$4500 systems around. However, in terms of bass clarity, power, and extension, and in terms of overall dynamic capabilities, the system comes up a little short of what the very best systems in this range can do. Even so, many listeners believe that subtlety, resolution, and accuracy from the upper bass region on up are what's most important for music and film playback, and in these areas the Response Hexas, though small, proved themselves mighty.



**"...more than most home-theater speaker systems, the Response Hexas offer terrific imaging and reproduction of depth (front-to-back) cues in music and in film soundtracks; with the Hexa system, you know exactly where individual sounds are coming from."**

## Specifications

**Manufacturer's Suggested Retail Price:** \$4500.00

**Type:** Floorstanding-Standmount

**Driver Complement Center:** (2) 4 ½" bass/midrange; 1" silk-dome tweeter

**Driver Complement Subwoofer:** 8" long-throw woofer

**Integral Amplifier Power for Subwoofer:** 200 watts

**Sensitivity Center:** Not specified

**Sensitivity Subwoofer:** Not specified

**Impedance Center:** 8 ohms

**Impedance Subwoofer:** Not specified

**Subwoofer Operating Principle:** Bass Reflex

**Driver Complement L/R:** 4 ½" bass/midrange; 1" silk dome tweeter

**Radiation Pattern for Surrounds:** -

**Driver Complement Surrounds:** 4 ½" bass/midrange; 1" silk dome tweeter

**Sensitivity L/R:** 86 dB @ 1 watt @ 1 meter

**Sensitivity Surrounds:** 86 dB @ 1 watt @ 1 meter

**Impedance L/R:** 8 ohms

**Impedance Surrounds:** 8 ohms

## Manufacturer Information

**ProAc**

Highpoint House, Riding Road,  
Buckingham Road Industrial Estate,  
Brackley, Northamptonshire, UK NN12 7BE  
[www.proac-loudspeakers.com](http://www.proac-loudspeakers.com)

**Represented in the USA by:**

**Modern Audio**

(410) 486-5975

[modaudio@aol.com](mailto:modaudio@aol.com)

## Associated Equipment

Parasound Halo C 2/A 52 multichannel controller/amplifier; Denon AVR-1804 and Integra DTR-7.4 A/V receivers; Sony DVP-S9000ES and DVP-NS500V DVD/SACD/CD players; Chang Lightspeed CLS-HT 1000 Mk II power-line filter; Synergistic Research X2 interconnect, subwoofer, and speaker cables with active shielding system).

## All Bottled Up

### The EuroAudioTeam KT-88 and 300B Tubes

It's a funny world. How many of us, 20 years ago, would have predicted that the Second Coming of vacuum tubes would be upon us in 2003? Yet the sheer number of tubed products that exist in today's marketplace is staggering. While in terms of circuit design, much of the equipment you can buy these days is simply rehashed from yesteryear, there are also quite a number of original and innovative derivative offerings from talented designers. It would seem to follow that there should be some new tubes out there, as well. After all, what is the point of having advanced technology, materials, and parts if we do not take advantage of them and forge ahead with new thinking, rather than simply spinning in place?

In point of fact, development of new tubes has, for the most part, been virtually non-existent in the last few decades. However, a shining example of original and innovative thought in triodes has been growing and expanding in Central Europe since 1993, evolving in ever-increasing odd jumps and lateral shifts, to finally emerge as EuroAudioTeam (EAT), an international/European cooperation between Austria, Germany, Switzerland, the Czech Republic/Tesla, and the UK. Their stated goal is to be a manufacturer and distributor for the highest quality vacuum tubes and analog high-fidelity products. The first products from this new concern were versions of some big new triode tubes (52B and 32B) that Alesa Vaic invented almost a decade ago. They now manufacture several others, including the KT-88s and 300Bs that are the focus of this report. The factory (a portion of the old Tesla tube factory in Prague, Czech Republic) cranks out the parts and materials, and then final assembly and listening sessions with reference source materials take place in Switzerland.

Jozefina Krahulcova, an MBA student and passionate devotee of opera and live concerts, is EuroAudioTeam's founder and chief consultant. Since the company's beginning, Krahulcova and her German importer, Joe Farkas, have been handling all aspects of the project. EAT, with Krahulcova and Farkas, is now a fixture at many international audio shows and events.

Broadly analogous (albeit on a much smaller scale) to a concern like the Airbus Consortium, another European venture that has, in the



Jozefina Krahulcova, EuroAudioTeam's founder and chief consultant

**"Broadly analogous (albeit on a much smaller scale) to a concern like the Airbus Consortium, another European venture that has, in the last several years, cooperated to build some of the world's most advanced aircraft, EAT believes that its combination of like-minded people from several countries can virtually guarantee a satisfying musical/technical solution..."**

last several years, cooperated to build some of the world's most advanced aircraft, EAT believes that its combination of like-minded people from several countries can virtually guarantee a satisfying musical/technical solution, one close to its ultimate reference: live acoustic concerts and hence the absolute sound. For a few years before EAT's launch, members of the team visited numerous international audio shows to get up to speed on what was happening with tubes and analog in the High End, as well as researching new materials and manufacturing techniques. Though Krahulcova and others never forgot the old factory workers who knew so many tricks of the trade from years of making tubes on the line, they wanted to combine that expertise with modern materials and manufacturing

technology to develop a way to build tubes that had a natural, non-fatiguing, and non-euphonic sound, their laudable goal being to return lost emotion and realistic excitement to music. Slowly, the team has built up momentum. Currently they have obtained a number of distributors around the world: Austria, Germany, the UK, Scandinavia, the USA, and, most recently, Japan.

So now I am sitting here listening to the fruits of all of this work. Although EAT's biggest focus has been on manufacturing high-quality SET tubes, they have recently begun making KT-88s that, they say, are tailored as closely as possible to the original specs of the old (and almost impossible to find) British Gold Lion mod-

els, which many folks still say are the best. To test these, I wanted to make sure I had amplification that I knew well and that was of high enough quality to allow me to ascertain differences between the stock tubes and the EATs. To that goal, I have a set of four of the current production EAT/Tesla KT-88s that I am using in a VAC PA-100/100 basic push-pull stereo amplifier, and a set of two 300Bs in a Viva 300B SET (Single-Ended Triode) integrated amp, both extremely clean and wide-bandwidth amplifiers.

I also have listened extensively to a full set of 16 KT-88s in the Antique Sound Labs Hurricane push-pull, monoblock amplifiers in Harry Pearson's main reference system. I will spare you a boring lecture on the individual specs on the tubes; this information is available on the EAT website. <http://www.euroaudioteam.com>

Normally I would not spend so much time on background, but in this case it is important for you to understand the gestation of this project. That so much time, expense, and energy should go into spinning up an independent mini-industry that surely will have a difficult time just surviving for the first few years is a testament to the dedication of this crew and their seriousness about music and home reproduction.

So how do they stack up? The first EAT tubes I heard were the 300Bs, installed, as I mentioned above, in the Viva 300B (<http://www.artigianinet.com/vivaaudio/vivaaudio1.html>). This amp is a gorgeous device with tube rectification that makes all of 8 wpc, about the norm for such amplifiers. I used it with a set of Tommy Horning's Agathon speakers (<http://www.horninghybrid.com/agathon.htm>), a sonically stunning, super-low-coloration, modified corner horn design built around the Lowther DX-3. Unlike most Lowther designs, this one utilizes a notch filter to tame the most nasty resonance of the driver, making the speakers sound quite conventional tonally, yet with the Lowther's famous dynamics and low-level resolution. Truly full range, with a sensitivity of 98 dB/watt and a 6-to-8-ohm impedance, this speaker is perfect to analyze any differences in the system.

Supplied with (extremely good-sounding) JJ brand 300Bs and Sovtek 5U4 rectifiers, the Viva amplifier sounded excellent, with reasonably taut bass and a well-defined, sweet, and smooth, if slightly rolled, top end. Male and female vocals (and midband information in general) were, as one would expect from a 300B amp, exceptionally well reproduced. This amplifier, by the way, is designed to sound extremely linear, fast, and dynamic. The custom transformers are, as is the case with all SET amps, the real key to making the amplifier great instead of merely good. But the tubes also make a big difference. Given a superior circuit like the Viva's, one can more easily discern the differences between output devices. From the beginning, the superiority of the EAT 300Bs was easily evident.

With these tubes in the circuit, the amplifier's performance at the frequency extremes improved pretty drastically. Bass guitar (and especially an unamplified acoustic bass) gained in transient impact, definition, tautness, and harmonic structure. Drums of all kinds, especially big kits in jazz or rock recordings, sounded crisper, more powerful, and more alive and present, all without added hardness or glare. High-frequency percussion, such as triangles, cymbals, castanets, and bells, all sounded cleaner, with more air around the notes and a longer decay. The higher harmonics of all instruments were better delineated, and it was easier to separate instrumental timbres than before. The only thing that troubled me was that the midrange did not seem to be able to keep up with the rest of the frequency spectrum. For the first several hours with the EATs, the

soundstage was rather flat, and vocals seemed dynamically soft and lacking in expressiveness. However, as the tubes ran in a bit, things improved and that old midrange magic came through in full and became seamlessly integrated with the rest of the spectrum. The Viva's ability to convincingly render dynamic contrasts

and sound powerfully has always been one of its strong suits. Interestingly, although the amplifier was putting out no more power than before, with the EATs installed it seemed to; it became considerably more dynamically alive, while at the same time more relaxed and in control.

The one fly in the ointment is that, for some people, these tubes will not sound the way they expect a 300B type to sound. The classic sonic signature of a 300B tube/amplifier is one of a voluptuous midrange, slightly plummy midbass (with not much, if any, real bass below 40Hz), and sweet, gently rolling highs that start to fade out at about 12kHz. The result is a warm, inviting sound that is rich in harmonics and velvety smooth, with really good dynamic contrasts at the soft end of the scale and up to about a double forte. With the EAT devices, however, the overall presentation is somewhat leaner, more transparent, better balanced, considerably more extended, and not as overtly warm as most other 300Bs. The closest thing I have heard to these, as matter of fact, is a Russian 572 triode tube, another modern (recently invented) somewhat more powerful SET-type tube that has similar virtues and the same burden of not sounding like a "conventional" SET device. In contrast, the justly famous Western Electric 300Bs (the only real competition to the EAT 300Bs that

I have heard) cost at least \$150 more per pair (and are currently no longer available) than the EATs and sound like the best possible "regular" 300B that you will ever hear; some traditionalists may well feel, in comparison, that the EAT design is not a "proper"-sounding 300B. At the end of the day, however, with these tubes, music is not artificially lovely or truncated in frequency response, and the EATs

certainly do not pull any punches in terms of dynamic expansion. The EAT tubes sound, to my ear, more like music than any other 300Bs I have heard, and that is what swayed me in the end. I love 300B amplifiers that can play with the push-pull big boys in terms of low coloration, frequency extension, and dynamic expressiveness, but they are few and far between. Same goes for their tubes. There are a number of brands on the market today, and they vary widely in cost and quality. But none that I have heard play music as convincingly as these EATs. So, prospective buyers need to make the choice between real music and a somewhat ersatz representation thereof. I choose the former.

I first used the EAT KT-88s with a VAC PA 100/100 amplifier (<http://www.vac-amps.com>; out of production but many are still around).



KT88 and 300B

**"With EAT 300B tubes in the circuit, the amplifier's performance at the frequency extremes improved pretty drastically. Bass guitar (and especially an unamplified acoustic bass) gained in transient impact, definition, tautness, and harmonic structure."**

This tube is a bit of a different critter than the 300B in that it is destined, for the most part, to be used in larger push-pull designs rather than smaller SET amps. In the case of the VAC, two per channel are good for 100 watts a side. With conventional ECC 82 tubes for input and drive duties and solid-state rectification, this baby is already a lean, mean, amplifying machine. Equipped from the factory with selected Chinese KT-88s, it is a solid performer, with a better bandwidth than most other tube amps, no matter what persuasion. I was quite impressed with the sound of the thing "standard." But with the EAT KT-88s, their sound became much more involving, with, again, even greater extension at the frequency extremes, and a greater sense of refinement in the whole presentation. Wide, wide dynamics were the order of the day, along with a finesse not usually associated with push-pull designs. Most of my live orchestral listening for the last 11 years has been in New York's Carnegie Hall (up close, say, rows four to ten), where the sound is pristine and clear, but a bit on the lean side, with taut, hard-hitting bass that is rich in transient impact, but with no added warmth such as can be heard at, say, Boston Symphony Hall or (on recordings at least) like the Sofiensall in Vienna (sadly now burned down). I have become quite familiar with and enamored of the sound of instruments played both solo and *en masse* in Carnegie, and I have admittedly (and somewhat unconsciously) tailored the sound of my home system to simulate that signature. Well the EAT KT-88s (as well as the 300Bs) have that same quality, and that, to me, makes them the most realistic-sounding of the competition.

Some time after I began listening to these tubes in my home system, I managed to get a full set of KT-88s for the Antique Sound Labs Hurricanes that are currently Harry Pearson's reference amplifiers. These each take eight output tubes for 200 watts per monoblock. The difference in these amps with the EAT tubes over the Chinese "stockers" was *dramatic*. The original KT-88s were sweet and grainless with an excellent midbass foundation, but a bit soft in the extreme highs and just a little veiled-sounding. When we went to the EATs and got them broken in, the amplifiers still sounded like themselves, but now they had an extra measure of transparency, high-frequency extension, and a much tighter and well-defined midbass, with much more extended and controlled lower bass. Enough almost to defy logic. These tubes rule the Hurricane amps like nobody's business. Stay tuned to *The Absolute Sound* for a report from HP on the selfsame amps outfitted with these EAT KT-88s.

I am most impressed with these tubes. They sound, in the systems and with the equipment I have detailed, as I have described. This sound will not be to everyone's liking, I predict, especially not with those who favor the "classic" warmer 300B sound. But for people who want music reproduction that is closer both to what is actually on the recording and to what real music sounds like, these tubes are a must-hear. Although they are expensive, they give the listener exceptional sonic performance, and that goes a long way toward justifying their cost. I look at them not as a good short-term value but as a long-term musical investment.

My only real concern here is with extended reliability. I have experienced a couple of (dead-out-of-the-box) failures that seemed to stem more from rough handling in shipping than any manufacturing defect, but that is the nature of fragile physical devices (just in before press time: I confirmed with the manufacturer during a recent visit that these two tubes had in fact been broken internally, probably from shipping damage. They would not accept bias). Many years ago, when the world still ran on tubes, the rate and density of manufacturing of these things was so great that any breakage generally was compensated for by volume. These days, however, premium vacuum tubes are just too

expensive to take undo risks with packaging. Over time, I have watched EAT's packing improve to the point where the new boxes would have to get completely physically crushed to hurt the tubes inside, even if handled roughly. And the boxes, especially the hand-painted ones that occasionally pop up, look classy, too. I have experienced only one outright catastrophic failure during use, something that would be covered by warranty.

That being said, *every* amplifier that I tried with these tubes improved *dramatically* with their use (including, by the way, the fabulous Tom Evans Soul 30 wpc hybrid Single Ended Tetrode stereo amplifier). I will watch this carefully, and report any undue occurrences, but it would seem that the teething pains are now worked out. As of this writing, a full set of 16 EAT KT-88s are playing in Harry Pearson's Hurricane amps every day for several hours, and I have been running another set of four at home in a VAC Super Avatar 80 wpc integrated amp with excellent results. I also routinely play my Viva 300B integrated and those tubes are running strong and sounding excellent. Since my initial tube failure problems I described above I have experienced nothing else at all except correct performance; I have also noted the fact that the tubes, once set, hold their bias well.

I shall continue to play the heck out these fire bottles and report any further refinements. Meanwhile, assuming you like your music straight up, honest and alive, I will bet my bottom dollar that you will fall hard for these babies. 

#### Just arrived news from EuroAudioTeam:

The announcement of EAT 300B Audio grade Teflon Sockets

#### Distributor Information:

TheMusic.com  
1027 N Orange Drive  
Los Angeles, CA 90038-2317

Ph: 1-800-457-2577

Fax: 323-466-1437

info@classicrecords.com

www.TheMusic.com

#### Tube Retail prices:

KT-88 Standard Series (I used these for the review):

**KT88 (matched pair):** \$235/ea (\$470 per pair)

**KT88 (matched quad):** \$250/ea (\$500 per pair)

#### Diamond Series

KT88 (matched pair) \$250/ea (\$500 per pair)

KT88 (matched quad) \$275/ea (\$550 per pair)

300B \$440/ea

#### Associated Equipment

VPI HW-19 MK IV turntable w/VPI JMW Memorial 10.5 arm; Clearaudio Harmony Wood and Insider Master Reference Wood, Madrigal Carnegie 1 MC cartridges; Plinius M-14 (SS) and Hagerman Technologies (tubed) phono sections; Plinius M-16 (SS) and Emotive Audio Sira (tubed) line stages; Ayon Audio Classic 32B, Viva 300B, Vaic VV52 B SET amplifiers, VAC PA 100/100 and Super Avatar, ASL Hurricane push-pull tube amplifiers; Forsell Air-Bearing CD Transport and EAD Theatermaster DAC; Reference 3A Royal Virtuoso, Alon Lotus Elite, Horning Agathon, and Living Voice Avatar OBX loudspeakers; Chase Technologies CH-1 passive surround decoder with a pair of small Radio Shack Minimus speakers for surround sound, SLM/Janis subwoofer with Crown Macro Reference amplifier; Siltech Gen III, Audio Magic, and Stealth Technologies cables, Arcic Suspense Rack.

## River Cable, Flexygy 6 Loudspeaker Cable Review

Editor:

It is gratifying for all of us at River Cable to see that you appreciate the FLEXY-GY 6 speaker cable performance, engineering and craftsmanship as well as the technical details provided in the (cable's) birth certificate. WE are committed to producing top of the line, fairly and sensibly priced cables accessible to all home theater and audio enthusiasts.

Many thanks to you and your team.

**Katherine Hilliard**  
**River Cable**



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## Music Hall MMF 2.1 Turntable & Tracker Phono Cartridge Review

Editor:

Re. Thus Thompson's review of the Music Hall MMF 2.1 turntable.

Ain't it nice when a young 'un gets it? Thus Thompson says what I (and I must admit, many others) have said over and over again, 'Turntables just sound better.' He also went on to say (thank you very much) that the MMF 2.1 "...provides a rich, solid foundation that strongly resembles live music."

This kid is great. How old is he? 16, 17? Gee, I wish my daughter Tess, who is 15 and was raised on analog, dug vinyl as much as he does. Where did I fail?

I do have to nit-pick a little. Thus (where did he get that name?) found the treble, "...a bit bright" I venture that this is perhaps caused by his choice in Phono Amp. Not that I want to knock the competition but perhaps if he replaced the Parasound with a Music Hall Phono Pack or, even better, a Creek OBH-8 Phono Amp, this brightness would diminish. He also said he knows, "... a great turntable would do better." He's right; he should listen to an MMF-5, MMF-7 or, even better, an MMF-9.

People should listen to turntables more often. The emotional content of vinyl is still greater than digital. Records are still plentiful. There's something wonderfully tactile about records. It's fun to cue up the track and hear the satisfying sound of the stylus contacting the groove. There is something 'real' about that sound which make you feel good. Thus is spot on. With vinyl, "... the music takes on a heavenly warmth for your ears."

**Roy Hall,**  
**Music Hall**



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## Dell W1700 Widescreen HD Desktop Display

Dell is committed to delivering an exceptional digital TV customer experience—from lifelike picture and audio quality to feature rich connectivity options and advanced industrial designs. Dell takes customer feedback into consideration when designing new products to ensure we provide the most relevant technology and value prices. In addition to the Dell W1700 17" LCD TV, we also offer the Dell W2300 23" LCD TV and the Dell W3000 30" LCD TV.

**Matt Cenicerros,**  
**Dell Inc.**

