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**NETWORK MUSIC PLAYERS  
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**THE AWESOME TECHDAS  
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**TECHNICAL INVESTIGATION:  
MQA IN THE TIME DOMAIN**



**SPL  
VOLUME 8  
P.41**



**BROOKLYN  
RIDER:  
THE FUTURE  
OF THE STRING  
QUARTET?**

A Revolution



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# AS WE SEE IT

BY JOHN ATKINSON

THIS ISSUE: Is MQA a high-end breakthrough, or is the wool being pulled over our ears?

## MQA: The Claims Examined, Part 1

*"The fundamental problem of communication is that of reproducing at one point either exactly or approximately a message selected at another point."*  
—Claude Shannon

Since its announcement at the end of 2014, Master Quality Authenticated, the MQA encoding/decoding system, has spawned outspoken criticism. Some of the more thoughtful negative reactions have come from engineers such as Dan Lavry, Bruno Putzeys, and Daniel Weiss. Others have been expressed by manufacturers of digital products: Charley Hansen at Ayre Acoustics, for example, along with Jason Stoddard and Mike Moffat at Schiit Audio, John Siau at Benchmark Media Systems, and Jim Collinson at Linn Products. Most vociferous have been anonymous website posters. As Jim Austin remarks in his examination of MQA's decoding of impulse-response data on p.127, "the nastiness online is unprecedented."

Typical of the nastiness are the following, taken from the Audio Asylum Web forum: "Nothing more entertaining than seeing Atkinson and Austin continuing to bury their reputation via MQA"; and "If the very experienced editor of the numero uno in hifi mags (as JA is so fond of telling us) is in fact so easily duped, and even worse refuses to admit it and continues to praise what in [another poster's] view is a con, then I don't think he's worthy of much respect."

Am I being duped? I admit that, when I studied Stuart and Craven's 2014 AES paper introducing the concept,<sup>1</sup> I found it theoretically elegant. (Peter Craven is an engineer whose ideas I have grown to respect over the years.) Subsequent demonstrations were convincing. In December 2014 I wrote, in an online news item,<sup>2</sup> that "MQA will allow what appears to be true high-resolution audio to be delivered over the same Internet pipes over which music lovers currently experience at best CD-quality audio from Tidal or Qobuz."

The reduced data rate is due to the fact that, with files sampled at 2x, 4x, or 8x the baseband rate of 44.1 or 48kHz, the information in the first, second, and third ultrasonic octaves can be encoded and packed below the music's baseband noise floor in a 24-bit container. This "audio origami," as MQA calls it, results in a much smaller file than the hi-rez PCM equivalent, yet when the file is unfolded, the resolution and bandwidth of the original file are claimed to be preserved. I was initially skeptical of how the ultrasonic octaves could be separated from the baseband data without introducing artifacts, but studying the digital-signal-processing literature did seem to indicate that it was possible. And it is, of course, how digital-domain loudspeaker crossovers are implemented. In May 2016, I examined this claimed reduction in file size with some of my own 24-bit/88.2kHz recordings for which MQA's CEO, Bob Stuart, had sent me MQA equivalents.<sup>3</sup> Not only were the MQA files smaller than the original PCM files, they were smaller than the uncompressed 16/44.1 CD version of the recording, so that claim by MQA is incontrovertible.

In that 2016 article I also examined the next claim made for MQA: that the encoded ultrasonic data can be encapsulated and buried in the least significant bits, beneath the original recording's analog noise floor. That claim, too, appeared to be correct, though there was a rise, undoubtedly inaudible, in the undecoded noise floor at close to half the sample rate that may well have been symptomatic of MQA's encapsulation of the ultrasonic data.

The most contentious claim made for MQA is that it can compensate for the time-domain errors of both the original A/D converters used to make a recording and the D/A converter used to play it back. This results in the complete recording/playback chain having an impulse response equivalent to a few feet of air, and temporal resolution of the same form and order as that of the temporal sensitivity of the ear-brain. Jim Austin examines the D/A aspect of this claim in his article in this issue, and other writers and I have conjectured that this time-domain compensation correlates with the always-superb sound quality we have heard from decoded MQA files.<sup>4</sup>

However, optimizing the digital chain's behavior in the time domain involves using a very "short" antialiasing filter at the A/D conversion, and a similarly "short" reconstruction filter when the digital data are decoded. The more you constrain the data in the time domain, the less you can do so in the frequency domain. These filters are therefore "leaky," as you can see in the measurements accompanying the Au-render review in this issue, and will thus allow ultrasonic images to fold down into the baseband. Such filters are not new. Wadia's DigiMaster filter and Pioneer's Legato Linear filter both date back to the end of the 1980s, and the Listen filter in Ayre's D/A processors is also short and leaky, with a slow rolloff above the audioband. On the A/D side, converters from dCS and Ayre, both of which I use to make my own recordings, offer a switchable slow-rolloff antialiasing filter.

Does the filter's inherent aliasing degrade sound quality? That will depend on every recording's spectrum, and will be examined by Jim Austin in a future article, along with the question of whether MQA encodes ultrasonic information lossily or losslessly.

Other criticisms of MQA involve its implications for the recording industry, for manufacturers of audio products, and for consumers. I will examine those in next month's "As We See It." ■

*In more than 35 years as an audio magazine's editor-in-chief, John Atkinson (jatinson@enthusiastnetwork.com) has witnessed more angry arguments about MQA than about any other subject.*

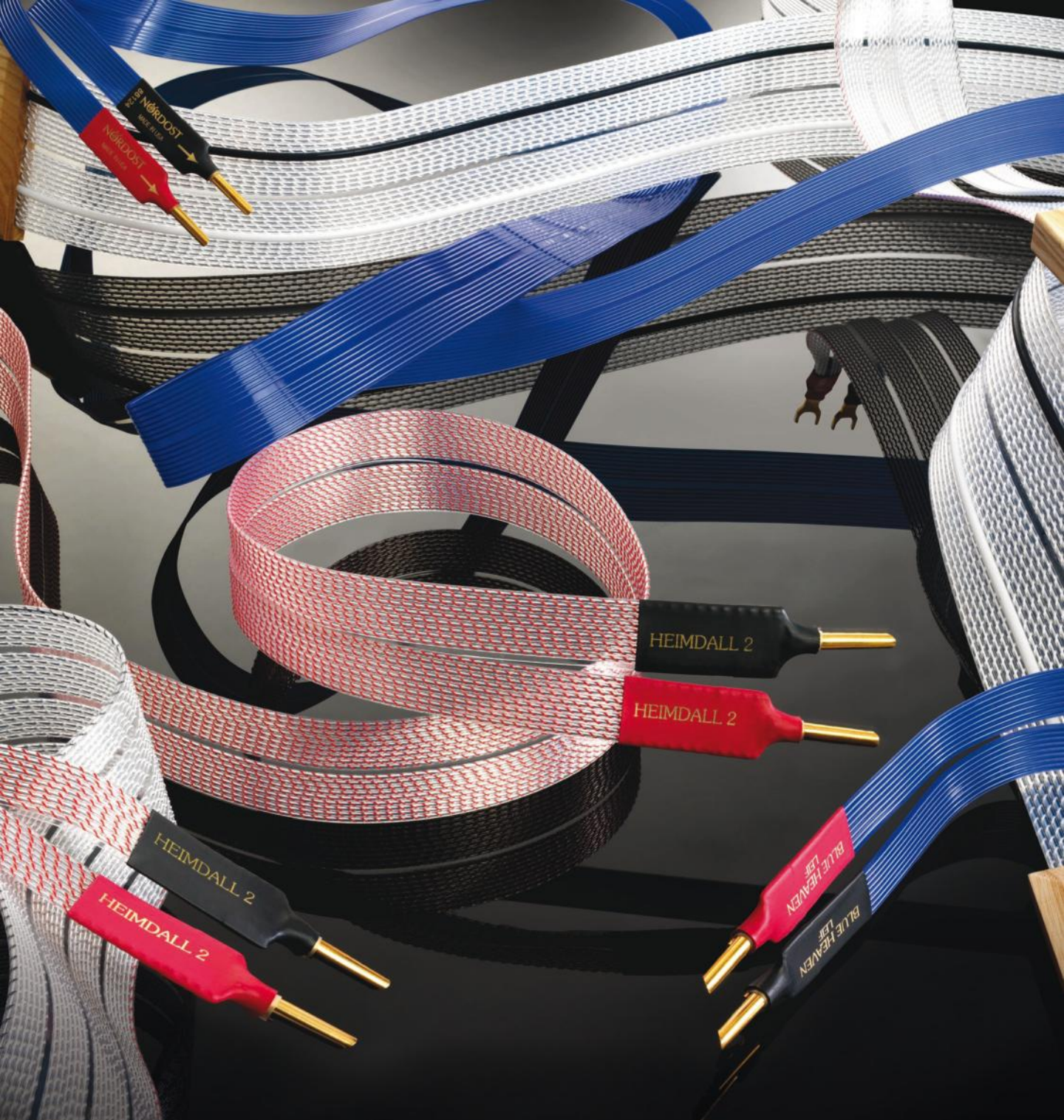
1 See J. Robert Stuart and Peter Craven, "A Hierarchical Approach to Archiving and Distribution," [www.aes.org/e-lib/browse.cfm?elib=17501](http://www.aes.org/e-lib/browse.cfm?elib=17501); the description section of the relevant patent, <http://tinyurl.com/y8b3xv6c>; and a Q&A at [www.stereophile.com/content/mqa-questions-and-answers](http://www.stereophile.com/content/mqa-questions-and-answers).

2 See [www.stereophile.com/content/ive-heard-future-streaming-meridians-mqa](http://www.stereophile.com/content/ive-heard-future-streaming-meridians-mqa).

3 See [www.stereophile.com/content/inside-mqa](http://www.stereophile.com/content/inside-mqa).

4 See [www.stereophile.com/content/listening-mqa](http://www.stereophile.com/content/listening-mqa).






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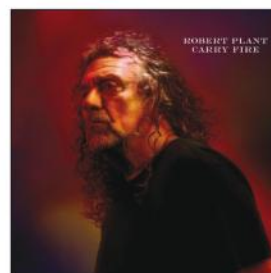
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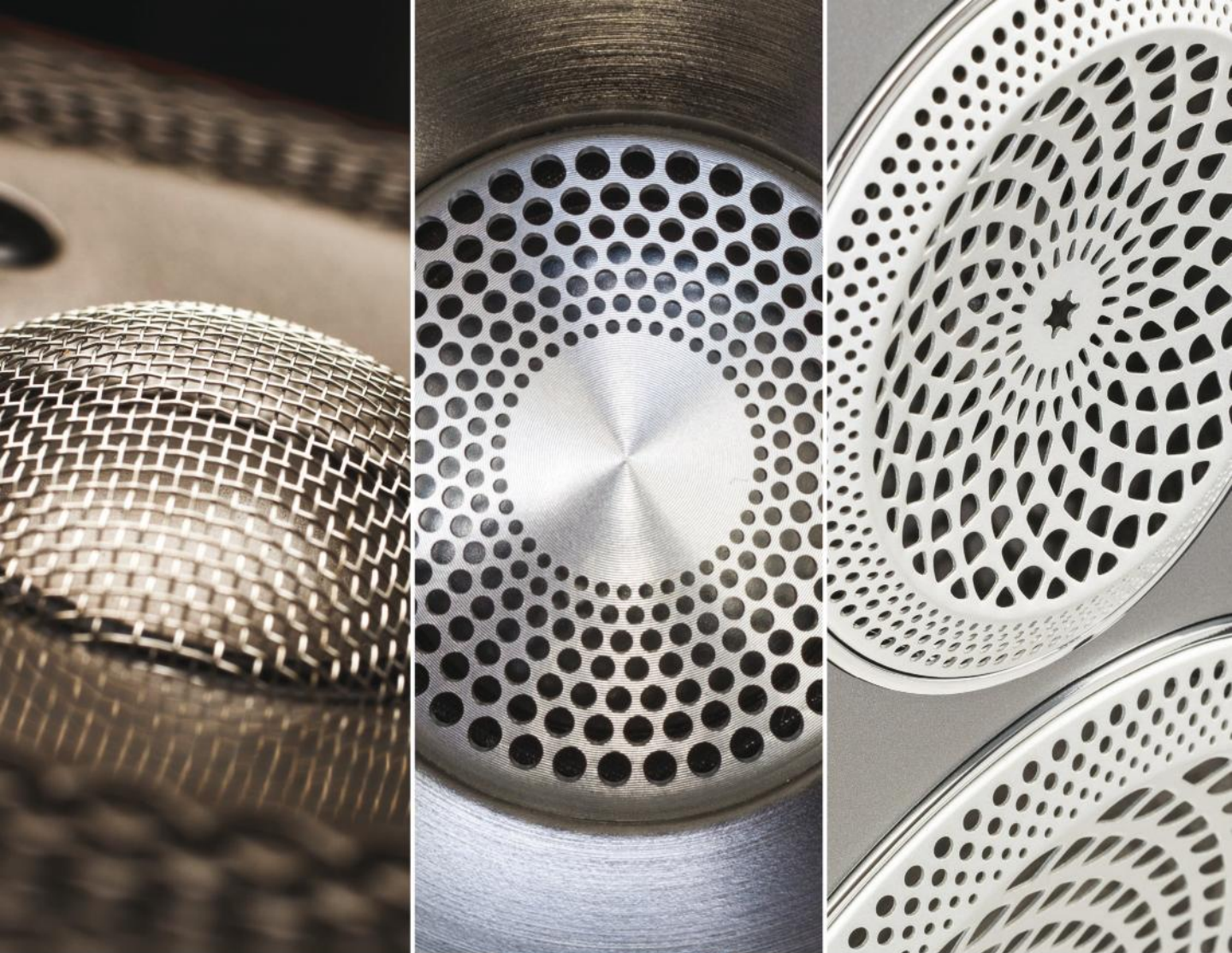
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# LETTERS

## FEEDBACK TO THE EDITOR

### David Manley

Editor:

This December marks the fifth anniversary of the death of David Manley, founder of Vacuum Tube Logic. His achievement was a line of superb audio gear with prices “everyone can afford”—his words. Value for your money? Sounds like an antique concept now, doesn’t it? I still own and use some of his terrific gear. Not for David a membership in any coterie catering, Fabergé fashion, to the rich. Not for him the fatuous price-raising race where price impersonates excellence, rounded up to the nearest \$10,000. Hats off to David’s memory.

—Bruce Moss

Santa Fe, NM

bruceboss@earthlink.net

### Astounding science

Editor:

I’m thinking you should change the name of your magazine to *Amazing Stereophile Stories*. You’ve got a travelogue/review of speakers that look like Dr. Zarkov’s rocket ship (“Devialet Diary,” November 2017). You’ve got turntables straight out of H.G. Wells. Speaker cables forged by elves from the tentacles of Cthulhu. Half-ton, Stonehenge-style speakers doubling as vector coordinates for flying saucers. And prices that are science fiction to the 99-percenters.

Alien trillionaires invade the Earth. Their plan: drive up the cost of everything with flagrant spending until no one can afford anything. Soon they will rule the world.

—Ron Ramsey

Eugene, OR

zenmetaltiger@gmail.com

### Broken review samples

Editor:

I noted Miles Ferguson’s letter in the June issue (p.11), in which he mentioned the EAR Acute Classic CD player that was not carefully checked before being shipped to *Stereophile* for review. It’s hard to conceive that a manufacturer wouldn’t be super careful before shipping review gear, given the potential effect a review of a damaged component could have on a company.

But amazingly, it does occur. And sometimes, it’s incomprehensible what is missed. Perhaps the most extreme example at *Stereophile* happened in the

## I often thought “How did gear with those measurements get a rave review?”

mid-1970s. J. Gordon Holt still lived outside of Philadelphia back then. I knew Gordon, and often helped him move gear around, mail issues, etc. One day, Gordon was going to put a pair of ESS Transtatic One speakers in the trash. (The Transtatic One was a very interesting design, with a KEF B139 woofer in a transmission line, a KEF B110 midrange unit, and electrostatic tweeters.) He had taken too long to review them, in those days when putting out the magazine was a sporadic event, often with long periods between issues. In the meantime, ESS had just introduced their first AMT speakers, with Heil tweeters. They didn’t care any longer about a Transtatic review, and didn’t even want them returned. I asked if I could take them home. A friend and I loaded them into my Chevy Vega hatchback, and soon had them at my place and installed in my system.

We heard the darkest, most recessed sound either of us had ever experienced. It took a while, but somehow my friend noticed that both the hot and ground wires from the crossover to the midrange driver went to ground—in both speakers! There were a couple of octaves in the middle missing. We fixed the connections, and we had a nice set of speakers.

Without ever listening to them, ESS had shipped off a set of identically flawed speakers for review. In many ways, it was fortunate Gordon didn’t get to the review on time. Reporting on problems like that can hurt the bottom line of a company for months, potentially even putting a

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small company out of business.

By the way, after playing with the speakers for a while, I traded them, even up, to friends who owned a retail store, for a set of Rogers LS3/5a speakers. But that’s another tale.

—Allen Edelstein

Highland Park, NJ

hahax@verizon.net

### Where’s the credibility?

Editor:

I’ve seen plenty of reviews in *Stereophile* where a piece of gear gets a recommendation despite poor measurements—even ones labeled “broken” (eg, the Audio Note DAC).

“How is that possible not to hear?” I often thought. “How did gear with *those* measurements get a rave review? Why do they even bother with measurements if a broken piece of equipment still gets the highest recommendation?”

I tried to give you guys the benefit of the doubt for being more enthusiastic than you should be (and for some critics having less than ideal hearing). However, the review of the Dan D’Agostino Master Audio Systems Progression Mono amplifiers (October 2017, p.153) could be, among other things, the most embarrassing review in the history of *Stereophile*.

To summarize what you published, Jason Victor Serinus had *two* problems with the amps provided him initially for review. One of the problems could be attributed to shipping issues, but the other issue was *clearly* a production issue with the transformer (not shipping related). A second pair of amps had to be provided, and the manufacturer even sent a representative to ensure that the new amps were working properly. These second samples got a rave review from JVS. In fact, he was so enthusiastic about these samples that he went out on a limb and staked his reputation that they would measure well. He was so confident that they would measure well that he wasn’t worried about being revealed as a “total dolt.”

Unfortunately for Mr. Serinus (aka Total Dolt, per his own words), John Atkinson’s measurements showed that the sample he measured was broken. Again, this was from the *second* pair of samples sent to JVS—the pair that received the rave review. Thus, *another* sample had to be sent for measurements, yet even it had



issues that were difficult for even JA to justify—although I must admit to chuckling at the attempted spin on bad measurements by relating them to a previous product from the same manufacturer, reviewed by a different writer. Are you really trying to fool a seasoned audiophile with such spin?

Worst of all, this \$38,000/pair amp, which was broken and required multiple samples, *still* got a Class A rating from *Stereophile* in this same issue. Why was this \$38,000/pair amp given a Class A rating, despite all the broken samples and still-compromised measurements? Would you *honestly* have given this amp a Class A rating for the exact same measurements if it cost only \$2000 and had no name brand, no fancy chassis, and wasn't made by a *Stereophile* advertiser? —M. Meade  
meg.meade@aol.com

*Thank you for writing. I am well aware of these contradictions, and figured that at least some readers would see them. A total dolt I am not, and all the quality-control problems at Dan D'Agostino Master Audio Systems were pointed out in the review. Nonetheless, the fact remains that when they were working, the D'Agostino amplifiers worked fabulously with the Wilson Audio Specialties Alexia speakers, sounding wonderful. Everything I say about their sound is true as I heard it. And there you have it.* —Jason Victor Serinus

*Some relevant points: 1) The reason you and all Stereophile readers know about the problems with the D'Agostino amplifiers is that we told you about them in the review. 2) The working pair of amplifiers was sent to a California dealer for a demo before they then came to me for measurement, and I suspect that something broke before they were shipped to me. 3) Yes, Dan D'Agostino Master Audio Systems is an occasional advertiser, but that has no influence on our review conclusions or recommendations. If it did, we would not have published any of these points.* —John Atkinson

### Recurring questions

Editor:

Someone said that once you know everything, then you begin to learn.

For as long as I have read audio and video magazines, there have been a few constantly recurring questions in the published letters to their editors:

- 1) Why do you mostly review expensive products?
- 2) Why do you include boring charts, graphs, statistical info?
- 3) Why can't you just tell me how it looks and/or how it sounds and leave it

at that?

- 4) Why can't you say that this is the best, or that you hate it?

What is forgotten and overlooked is that progress can and does trickle down from some of those expensive products. Including the “boring” stuff gives a benchmark of sorts that may help with the word picture describing the product, thus explaining why the product is or is not working the way it does. What is best is impossible to determine in most things, most of all audio and video products.

Even reviewers have to reevaluate what their preferences are, given the changing technology, etc. Once upon a time, most reviewers would scoff at the idea that cables, power cords, etc., could make a positive impact—it's all snake oil. As we know or should know, price is not the true indicator of a product's worth. I would use only one example: Oppo.

—Paul Freeman  
pfl604@earthlink.net

### The ultimate answer

Editor:

The cover of the September 2017 issue featured Mytek HiFi's Manhattan II D/A processor, and the display indicated that the volume was set to “42.” I have noticed that other products featured on your covers have also had the volume set to “42.” What's going on? —Bo Fleming  
New York, NY

*For our cover photos, we always set the volume control to “42,” as that, according to Douglas Adams's The Hitchhiker's Guide to the Galaxy, is the answer to the ultimate question about Life, the Universe, and Everything.*

—John Atkinson

### Sound at an audio show

Editor:

Richard Meyer's letter in the November 2017 issue (p.11) expresses how PO'd he gets reading reviews of expensive equipment in *Stereophile*. What he needs is a day at AXPONA or the Rocky Mountain Audio Fest to clear his head and have a great time with great gear. Hearing the systems in the Vandersteen and Raidho rooms (my favorites at the 2017 RMAF) was exciting, revelatory, emotionally moving, and all the other adjectives your writers are so expert at stringing together.

These exotic systems aren't just the Ferrari in the window, designed to tease us. They show us some of the characteristics that we should strive for in our own quest for great sound. I now know what the best soundstage presentation can sound like (Raidho), regardless of the

recording engineer's hand in the mix. Or what a system sounds like that doesn't seem to do anything wrong and gets everything right (Vandersteen). Sure, aural memory is short, but I think I'll know it when I hear it again.

Of course, we of more modest means can find enjoyment in our far less costly systems. There is so much great, lower-cost gear available. Under-\$2000/pair speakers that sound excellent are plentiful, DACs are getting better by the day, integrated amps don't sound like your father's integrated (or most separates) anymore, and affordable cables are everywhere. At RMAF, for example, lower-priced systems from Zu Audio and Elac sounded great.

The trick, however, is creating a system out of multiple choices. Just putting together your top picks doesn't necessarily make for the best or even satisfactory sound. This used to be done by your friendly stereo retailer, but those are getting few and far between. I'm not sure how you could help, but I think readers would appreciate some guidance.

—Al Baron  
albaron98@gmail.com

### Music at an audio show

Editor:

Overall, I had mixed feelings about the 2017 Rocky Mountain Audio Fest. The gear was neat, but I wasn't able to really hear much of it. What I mean by that is that everyone was listening to jazz and pretty much nothing else. I have absolutely nothing against it, but I don't really listen to much jazz myself, and since I'm unfamiliar with it, I have trouble judging gear when listening to it. However, no one was much open to listening to anything else (there were exceptions, of course).

For example, I was in a manufacturer's showroom, and I sat through some jazz-type music. After about 20 minutes, I spoke up in my thick South Jersey accent: “What else you got?” Everyone instantly looked nervous. The rep (to his credit) immediately gave me his attention and asked me my preference. I said, “I know I'm just a young punk”—I'm 37, so I was one of the youngest ones there—“but I like to *ROCK!*” He then asked me for a specific preference, and I said, “How about some Pearl Jam?” At that point, half of the people in the room faint (figuratively, of course). The rest rolled their eyes with a look like, “Who let him in here? He's not a gentleman!”

I had unknowingly put the rep in an

CONTINUED ON PAGE 141

THE WORLD'S LARGEST SELECTION OF AUDIOPHILE RECORDINGS

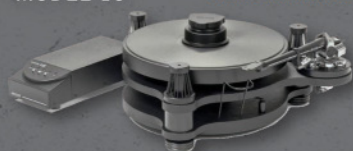


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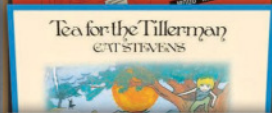
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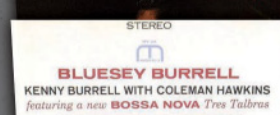
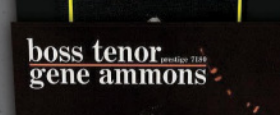
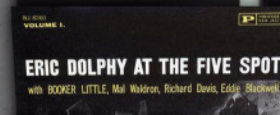
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# INDUSTRY UPDATE

## AUDIO NEWS & VIEWS

### UK: LONDON

*Paul Messenger*

Although getting a new high-end audio show up and running is no easy task, you'd think that a city as large and important as London would have had at least one such event every year since the mid-1950s. But for several years of the last decade, it didn't. That situation may have changed with the second annual Indulgence Show: The Luxury Audio & Lifestyle Exhibition took place Friday–Sunday, September 29–October 1, 2017. One of Indulgence's biggest strengths was its location, the Novotel London West, at the Hammersmith International Centre—essentially the same hotel as the Cunard International, which in the 1970s was the venue for the hi-fi shows organized by Don Quillan.

The organizers claim success for the Indulgence's "difficult second album," claiming a 20% increase in attendance over the first. That said, exhibitors would have preferred still more people, and a dates clash on Sunday with the biannual Audiojumble was unfortunate. However, attendance at Indulgence seemed adequate on Friday, though I made no attempt to check out the live music, and found navigating the hotel tricky, and the signage inadequate. I was intrigued to discover several non-hi-fi brands exhibiting, such as the multiple flavors of Ely gin, but still found plenty of interesting hi-fi hardware.

Max Townshend, of **Townshend**

**Audio**, has recently updated his exceptional Allegri auto-transformer-based passive "preamplifier" to the Allegri Plus, though the changes are mostly cosmetic. The hot news from Townshend is that he's developing a remote-controlled version with 64 increments of volume in steps of 1dB, to be called the Enigma.

In the room of **Vertere Limited**, host Touraj Moghaddam demonstrated his latest turntable, with its new power supply. No less interesting were the electronics and speakers made by the Swiss company **FM Acoustics**, which Vertere imports to the UK. **Goldmund International**, another Swiss high-end brand that rarely appears at audio shows, was helping listeners compare Innuos's ZEN and ZENith Special Edition—the standard and up-graded models of music streamer from this Portuguese company.

Next door to Vertere was **Metaxas & Sins**—yes, "Sins" is correct—an Australian outfit with Greek roots, a fine sense of humor, and one of the more interesting rooms: amplifiers and loudspeakers of extraordinary shapes carved from solid billets of aluminum using computer-controlled machinery (CAM). They were playing Kostas Metaxas's own recordings, made on a Stellavox analog tape deck and replayed on a Nagra.

Rather more conventional in appearance was **Kudos Audio's** Titan 707, a ported floorstanding speaker with SEAS drive-units and isobaric bass loading



Ribbed for your musical pleasure: the Metaxas amplifier.

**SUBMISSIONS:** Those promoting audio-related seminars, shows, and meetings should e-mail the when, where, and who to [JAtkinson@enthusiastnetwork.com](mailto:JAtkinson@enthusiastnetwork.com) at least eight weeks before the month of the event. The deadline for the March 2018 issue is December 20, 2017.

### CALENDAR OF INDUSTRY EVENTS

#### ATTENTION ALL AUDIO SOCIETIES:

We have a page on the *Stereophile* website dedicated solely to you: [www.stereophile.com/audiophile-societies](http://www.stereophile.com/audiophile-societies). If you'd like to have your audio-society information posted on the site, e-mail Chris Vogel at [info@XLinkAudio.com](mailto:info@XLinkAudio.com).

Please note that it is inappropriate for a retailer to promote a new product line in "Calendar" unless this is associated with a seminar or similar event.

#### CALIFORNIA

■ Sunday, January 14, 1–4 pm:

The **Los Angeles & Orange County Audio Society**, in concert with the **San Diego Music and Audio Guild**, will hold a joint meeting at **Manley Laboratories**, in Chino (13880 Magnolia Avenue). Made in Chino, Not China! Once again, Manley Labs will open its factory doors to Society members for a day in which everyone will get to see the intricate details and processes that go into hand-building vacuum-tube audiophile amplifiers and preamplifiers in America. EveAnna Manley will personally conduct factory tours for Society members throughout the afternoon, demonstrating tube selection, parts matching, quality control, transformer winding, metal machining, and assembly and soldering techniques. **Eastwind Import** will be on hand to offer personally selected vinyl and CDs for sale. A raffle is planned, and an extraordinary lunch will be served. Free parking is nearby. Guests, visitors, and new members are invited. For more information, visit [www.laocas.com](http://www.laocas.com) or call Bob Levi at (714) 281-5850.

■ Sunday, February 18, 2–5 pm:

The **Los Angeles & Orange County Audio Society** will hold its monthly meeting at **Scott Walker Audio**, in Anaheim (1215 Tustin Avenue).

**CONTINUED ON PAGE 18**

that is a somewhat smaller single-box variation on their Titan 808 theme. Though costly at £13,000/pair, it sounded particularly good, which might well have been because it made a good match with the demo room. There's also the slightly smaller Titan 606, which wasn't playing when I visited.

A speaker that particularly grabbed my attention, partly because of its surprisingly low price, was **ProAc Limited's** DT8 (price TBA), demonstrated in the room it shared with veteran turntable specialist **Michell Engineering**.

Although apparently founded in 2010, **Blue Aura** was a new name to me, and seems indicative of the changes now happening in hi-fi, especially among younger customers. Their website presents a number of wireless and Bluetooth speaker systems, and at Indulgence I saw several of their rather cute hybrid (tubed and solid-state) Blackline amplifiers—some made in China, others in Taiwan, and priced accordingly. The idea is to introduce new customers to the strengths of tubes. The real newcomers, however, were Blue Aura's tiny, inexpensive new phono stage and headphone amplifier,

both debuted at the show.

I saw another sign of changing times in the **Dynaudio** room, where WiFi and active drive were included not only in mono lifestyle speakers but in stereo pairs of Dynaudio's more conventional-looking Focus XD.

When I entered the **Yamaha** room, I experienced a shock of recognition when I glimpsed what appeared to be a pair of their old NS-1000M speakers.<sup>1</sup> I quickly realized that I was looking at samples of the new NS-5000 (\$19,999/pair), undoubtedly designed to build on nostalgia for the NS-1000Ms. But instead of the rigid beryllium dome that made its ancestor famous (or infamous, depending on your views), Yamaha has used in the NS-5000 a tweeter with a dome made of a soft fabric called Zylon.

As usual, **Chord Electronics** had something special up its sleeve—or, rather, the sleeve of Rob Watts, who's is responsible for using the FPGA chip used in the Blu Mk.2 CD transport to upsample its digital output to an unprecedented 705.6kHz before feeding it to Chord's DAVE DAC.<sup>2</sup> While this is unquestionably important, some 10 days after the show Chord held a

separate press conference to launch its tiny portable Poly streamer (\$629), designed to partner their Mojo DAC, for genuine high-resolution sound via smartphones. (See "Industry Update" in December 2017, p.17.)

I was very pleased to discover that the **Professional Monitor Company** (PMC) was showing three professional-oriented, two-way powered monitor speakers from their twotwo nearfield series, the twotwo.5, .6, and .8. Whether the combination of a DSP crossover and class-D amplification will introduce too great a musical compromise must be a matter of pure conjecture at this stage.

In a new (to me) and intriguing concept, **Wire on Wire**, based in Epsom, Surrey, uses asymmetric and separated conductors and carefully designed spacers to manipulate the bulk parameters of its interconnects, and to control such factors as bandwidth to suit an individual system and room.

## US: DENVER

*Jason Victor Serinus*

"It was a love-fest all around!"—Herb Reichert

With those succinct words, Herb

## System Matching feels so good.



Find out what passive devices, such as cables, audiophiles have matched to their components to take their system to the next level.



Reichert aptly summarized the special spirit that is Rocky Mountain Audio Fest, held October 6–8 at the Denver Tech Center Marriott.<sup>3</sup> There may be US shows with greater attendance, but there is a special energy about the Rocky Mountain Audio Fest that sets it apart from the rest, and keeps exhibitors and dedicated audiophiles returning year after year.

Thus was it fitting that, at the end of the Rocky Mountain International HiFi Press Awards (RIHPA) on the first night of the 2017 show, Gabi Rijnveld of Crystal Cable presented show organizer Marjorie Baumert with a crystal rose pendant in honor of her dedication to the industry members and consumers who make high-end audio what it is. As she glowingly received her honor and shared a few words, Marjorie reflected back to the assembled industry members and press the love that so many of us feel when we encounter her.

After a few years of declining participation, during which a number of Asian companies hoping for US distribution filled exhibit spaces formerly occupied by American firms, RMAF has made a major rebound.

How this year fared for exhibitors—it takes months to assess the impact of show participation on sales—is TBD. While some muttered that Sunday was pretty dead, and attendance on other days subpar . . . well, Sundays are often dead, regardless of show or show venue. In addition, when you have the most active exhibits of any US show, plus the largest CanJam/headphone expo of those shows, attendance can look small because attendees are scattered far and wide.

### RMAF has made a major rebound.

What is true is that while there were more large-size rooms than ever available to exhibitors, space for exhibits in RMAF's "standard-size" guest rooms had shrunk. Rooms may be longer in the Marriott's Atrium, but they're just as narrow as in the Tower. If you had huge numbers of attendees, rooms would be unmanageable.

In addition, the entire US show landscape is transforming. After CES 2016, *Stereophile* published my "What if They Gave a CES and Nobody

Came?"<sup>4</sup> Three months before the next CES in January 2018, an advance count of high-end exhibits in the Venetian suggests that we'll soon have a partial answer to that question. Post the query, "Who's Going to CES?" on Facebook, and you'll get "no" after "no."

In addition, the ever-growing AX-PONA Chicago is moving to a new hotel in 2018 whose room size and acoustics leave lots of questions unanswered; the first year of the Los Angeles Audio Show, intentionally limited to approximately 115 exhibitors, left many frustrated about the perceived lack of attendance and challenging hotel logistics; the Bay Area-based California Audio Show sputtered along; the long-running T.H.E. Show in Southern California cancelled at the 11th hour; the New York Audio Show remains problematic; and the formerly small Capital Audiofest outside DC seemed poised at the time of writing

1 See J. Gordon Holt's 1976 review of the NS1000 at <http://tinyurl.com/yb45wda4>.


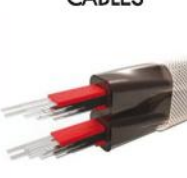


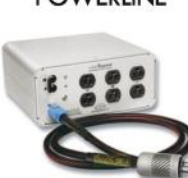
2 See John Atkinson's review of the DAVE at [www.stereophile.com/content/chord-electronics-dave-da-processor](http://www.stereophile.com/content/chord-electronics-dave-da-processor).

3 Our complete coverage of the 2017 RMAF can be found at [www.stereophile.com/category/rmaf-2017](http://www.stereophile.com/category/rmaf-2017).

4 See <http://tinyurl.com/y7rwpoxs>.

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to fill all available rooms and emerge as the largest-attended show on the East Coast.

Meanwhile, High End Munich has become the most important consumer/dealer gathering in the world, and the annual, hardly-to-be-scoffed at Hong Kong Audio Show attracts an astounding 30,000 attendees. With the ascendance of these shows, increasing numbers of distributors and dealers who reside in places other than North America are choosing to confine their show-going to Europe and Asia.

How the show scene will look in another year or two, amidst the political and ecological shakedowns that are affecting multiple populations and continents, is unclear. What is certain is that as long as Marjorie Baumert is around and at the helm of RMAF, and the members of Colorado Audio Society selflessly volunteer untold hours of hard work to make the show a success, RMAF will retain its special place in the audiophile landscape.

## UK & FRANCE

*Paul Messenger*

The four weeks leading up to the copy date for this issue saw the deaths of two of European hi-fi's most important figures.

John Borwick passed away on September 24. He was born in 1924, and kept his Scots accent throughout a long and fruitful life in audio. After

serving in the RAF in World War II, he spent more than a decade at the BBC as a studio manager/balance engineer, and later ran BBC Radio's training studio. After he left the BBC, John hosted a weekly radio program, "Sound," which was aimed at audio enthusiasts. In the early 1960s, John joined the young *Hi-Fi News* magazine, where he served as Technical

## The four weeks leading up to the copy date for this issue saw the deaths of two of European hi-fi's most important figures.

Editor for two years. However, he will be best remembered as the Audio Director at *Gramophone* magazine, whose audio coverage he directed for 36 years.

His status as a Grand Old Man of audio journalism meant that he was often required to provide a vote of thanks on behalf of a number of fellow journalists, a role he discharged with the considerable aplomb of the perfect gentleman he always was. As much an academic as a journalist, John helped set up the British Section of the Audio Engineering Society and was instrumental in founding the Tonmeister course at the University of Surrey, where he was Senior Lecturer in Recording Techniques for 11 years. He wrote several seminal textbooks, such as *Microphones: Technology and Technique*, *Loudspeaker & Headphone Handbook*,

*Sound Recording Practice*, *Living with Hi-Fi*, *Sound: Facts and Figures*, and *The Gramophone Guide to Hi-Fi*.

I last saw John four years ago. Then nearly 90 and living in an assisted living home, he was long retired but mentally as sharp as ever. He seemed likely to go on forever—which made the news of his passing particularly shocking.

Gérard Chrétien passed away on October 1. I first met Gérard in the 1970s, on a trip to Japan, when he was the editor of the French "underground" magazine *l'Audiophile*. When I next encountered him, he was the managing director of Focal-JMLab. That surprising change, which took place in 1990, made perfect sense in hindsight, especially as Gérard's relationship to JMLab's boss man went back to *l'Audiophile* days—Jacques Mahul had been a technical consultant to the magazine.

Gérard and I were nearly the same age, which undoubtedly helped create a bond. I'll remember him as a lovely man with a deep love for music, though the language barrier and his preference for jazz rather than rock meant that we had little in common. Yet he was always pleased to see me. ■

[Continued from page 15]

Scott Walker and his team will host "The Best in High End Audio—from Affordable to Outrageous," showcasing a wide range of speakers from **MartinLogan**; electronics from **Constellation**, **Devialet**, **McIntosh**, **Rogue Audio**, and **VAC**; **MQA** from **Aurender**, **Berkeley Audio Design**, and **Mytek**; turntables from **Acoustic Signature**, **EAT**, and **Pro-Ject**; and cables, power conditioners, and room acoustics by **Synergistic Research**. Scott will have five demonstration rooms showing some of the highest-value high-end gear currently available, in complete systems ranging from \$2500 to \$50,000. Presenters from Aurender, Berkeley Audio Design, Constellation, and MartinLogan will be there, and **Eastwind Import** will be on hand to offer personally selected LPs and CDs for sale. A raffle is planned and a wonderful lunch will be served.

Parking is free. Guests, visitors, and members alike are invited. For more information, visit [www.laocas.com](http://www.laocas.com) or call LAOCAS president Bob Levi at (714) 281-5850.

## ILLINOIS

■ Friday–Sunday, April 13–15:

**AXPONA 2018** takes place at the Renaissance Schaumburg Hotel and Convention Center (1551 N. Thoreau Drive, Schaumburg, IL 60173). More information at [www.axpona.com/default.asp](http://www.axpona.com/default.asp).

## NEW JERSEY

■ Sunday, January 21: Larry Borden will host the **New Jersey Audio Society** at his **Distinctive Stereo** showroom in River Vale. Featured audio gear and loudspeakers will be from **Aurender**, **Eden Acoustics**, **Emerald Physics**, **EMM Labs**, **Exogal**, **German Physiks**, **Legacy Audio**, **Merrill Audio**,

**Scansonic**, **VPI**, and **Wells Audio**. For more information, visit [www.njaudiosociety.com](http://www.njaudiosociety.com).

■ Sunday, March 18: **Rogers High Fidelity** will host the **New Jersey Audio Society** for a tour of their factory, in Warwick, New York. For more information, visit [www.njaudiosociety.com](http://www.njaudiosociety.com).

■ Sunday, April 15: The **New Jersey Audio Society** will be the guest of **Stereodisk**, a vinyl record-pressing plant in Kenilworth. Stereodisk has restored several record-pressing machines to their original, unmodified operational condition. For more information, visit [www.njaudiosociety.com](http://www.njaudiosociety.com).

## CANADA

■ Friday–Sunday, March 23–25, the **Montreal Audio Fest** takes place at the Hotel Bonaventure (900 de la Gauchetière Ouest, Montreal, Quebec H5A 1E4). More information from <http://en.montrealaudiofest.org>.



# Modern Method

Still using a computer in your audio system?

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## Number 2 PrimaLuna Education Series

### Maybe It's Preamp Fairy Dust?

**Preamps are a profit center for some manufacturers.** There. We said it. While tube amps are expensive to build, a decent tube preamp can be built and sold for \$1500; at a profit. Shocked? People see a pretty faceplate and never look under the hood. But if you did look, you might be bummed out to see a lot of empty space. If it isn't the parts inside, what exactly are you paying so much for? Fairy dust?

**\$4 chips** as a volume control, a few tubes, a **weakling power supply**, all **wave soldered** by contract factories overseas to a **flimsy printed circuit board**. What's *high-end* about that? Oh, but the lofty stories! **There's always a story.** The preamp may sound fine; even great. *But is it worth it?*

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# ANALOG CORNER

BY MICHAEL FREMER

**THIS ISSUE:** The mighty TechDAS Air Force III turntable and Graham Engineering's new Phantom III tonearm.

## Economy Class Luxury

**I**t was great fun having our editorial coordinator, Jana Dagdagan, shoot a video profile of me in my listening room.<sup>1</sup> As I write this, it's had more than 88,000 views. While the ratio of thumbs up to thumbs down has remained consistently around 10:1, some of the negative comments, particularly about our industry and about this magazine, do enrage me.

Being called a "snake oil peddler" and a "haberdasher to emperors" is bad enough, but having high-end audio characterized as "the biggest shill industry ever to hit humanity since the age of alchemy," and as one based solely on greed, sets me off. I don't know anyone who got into this business to become rich.

I get angry when people write that they prefer science to observational reviewing, and that I "lose them" when I claim that power cables "sound," though they can't be bothered to take a listen because they "just know" power cables can't possibly affect sound quality. After all, science is based on (or is nothing without) observation and inquiry.

*Stereophile* takes hits from some as being "anti-science" because we almost never conduct blind listening tests. That really sets me off. "So *Stereophile* is a credible, peer reviewed, scientific source in the fields of psychoacoustics and audiology. Who knew? Lol." When did the magazine make that claim? My final comment to that sarcastic poster:

"*Stereophile* does measure almost all reviewed equipment. So you do not consider those measurements scientifically valid? Only blind tests will do? Blind tests have nothing whatsoever to do with the listening experience. Blind tests, like measurements, have their place but in the end we don't listen to measurements and they can be seriously misinterpreted and abused. There was a time when all that was measured was on-axis frequency response and that was considered dispositive . . . but IMO nothing beats the human ear/brain particularly when it's experienced and understands the pitfalls.

"When I review a speaker I put my listening skills on the line in describing the sound I hear. The measurements come afterwards and then I get to see them in print in the magazine. Do you want to try that? I've made my share of mistakes but for the most part what I note in my observational review is confirmed by the measurements. And that's not good enough for you? I need to do blind speaker tests?

"I've done those at Harman and proven my listening reliability but for some no matter what I do and after

**I'm firmly in the camp of the properly designed and executed vacuum hold-down of LPs.**

30 years of doing it I am asked to be a nice fellow and take shit from people and be called a 'snake oil peddler' (etc.). . . . Have a nice day!"

### TECHDAS AIR FORCE III TURNTABLE

It's hardly news that designing to a price point is usually more difficult than designing without budgetary constraint. That's probably why many of us are more in awe of Andrew Jones's inexpensive Elac loudspeakers than we are of well-respected, bank-breaking high achievers.

When I first set out to review the TechDAS Air Force III turntable for this month's Analog Corner, it was the company's least expensive model. But at the fall 2017 Tokyo International Audio Show, TechDAS introduced the even more basic Air Force V—they skipped over IV, which is a "bad" number in Japan—and so the Air Force III (\$29,500) is now one model up from the bottom of the line. Yet it retains all of the more expensive models' key features, in somewhat simplified form (as does the new V).

Hideaki Nishikawa, CEO of TechDAS and designer of the Air Forces, is an audio legend. Formerly

chief designer at Micro-Seiki, he created many of that company's turntable models of the 1970s, which are still highly desirable. Before that he worked for Stax, engineering that company's equally desirable electrostatic headphones. Between Micro-Seiki and the vinyl revival, Nishikawa took over the Japanese distribution of many of the premier brands of America's "golden age" of high-end audio—Krell, Mark Levinson, and VAC among them—from another audio legend, the late Yasuo Nakanishi, who was widely regarded as Japan's "Godfather of high-end audio."

TechDAS's parent company, Stella Inc., today distributes many brands in Japan, including Graham Engineering, Einstein Audio Components, Swedish Analog Technologies, Vivid Audio, Marten Audio, CH Precision, and, most recently, SME. Nishikawa is not afraid of distributing potential competitors. He's a good designer *and* a good businessman.

The growing worldwide interest in vinyl playback brought Nishikawa back to turntable design. He strongly believes in platters with air bearings and vacuum hold-down of LPs, both of which are included in every Air Force model. He wants to bring down prices, but also to stick with core technologies that he strongly believes in.

To produce an Air Force turntable with a retail price of \$29,500—about \$20,000 less than the Air Force II—Nishikawa reduced the table's footprint to 12.28" wide by 14.17" deep. The III is 6.3" tall without the tonearm base and still heavy at over 40 lbs, 20 lbs of that weight accounted for by its platter of machined aluminum. (The platter of the Air Force One is a far heavier sandwich of stainless steel and your choice of four upper-platter materials.)

To get the Air Force II's cost down, its aluminum chassis is cast, not machined. The Air Force III's chassis, however, like that of the big Air Force One (\$105,000 without tonearm),

<sup>1</sup> See [www.stereophile.com/content/reviewer-video-profile-michael-fremer](http://www.stereophile.com/content/reviewer-video-profile-michael-fremer).

which I reviewed in this column in April 2013, is machined from a solid block of aluminum (the One's chassis is of a complex, tri-laminar construction). Some people objected to the II's pebbly painted finish (I liked it). The III has the satin-smooth look and feel of TechDAS's current most expensive model; the cost-no-object Air Force 0 will arrive later in 2018.

The Air Force III's fit and finish make many other turntables, of any price, look primitive, almost unfinished. (Among the exceptions are Brinkmann Audio's Balance, Spiral Groove's SG 1, and a few others.) Some others may look chromed and jewel-like, but the III's satiny finish and gracefully machined accents take things to another level. I just kept gazing at it. The same is true of the machined control panel, and its buttons and digital display. The ways the buttons feel and work were as satisfying as how they look.

Another cost-cutter: the Air Force III has no suspension. That's hardly a problem, as long as you place it on a sturdy stand, hopefully one that's in some way isolated. The chassis sits on four feet, one at each corner. Each foot

attaches to the chassis well up inside the III, via a large-diameter machined spike of stainless steel. This provides a degree of isolation, and lowers the chassis' center of gravity. Four chromed aluminum posts, one at each corner of the III's top deck, let you mount up to four tonearms of any length. TechDAS supplies a single mounting.

You can always upgrade later by adding one of the isolation platforms made by Minus K Technology (prices start at \$2010), or an air-suspension platform such as the Vibraplane (prices start at \$2500 for audio-specific units). The review sample rested on my big Harmonic Resolution Systems base supported by an HRS SXR rack.

The Air Force III's platter is driven by an outboard synchronous AC motor that appears to be the same as the one supplied with the II, and controlled by the same or similar quartz-oscillator DC amplifier. The Air Force III uses one air pump for both the bearing and vacuum system, unlike the AF One, which uses separate pumps for each. Motor and platter are linked by the same nonstretch belt of polished polyurethane fiber used in all Air Force models. The motor's power supply and

the silent, low-vibration air pump are housed in a plain black box measuring 13.8" wide by 6.3" high by 10.6" deep and weighing 19.8 lbs.

### Easy Setup

It was relatively easy to set up the Air Force III. Place and level the chassis, use the supplied tools to lower the platter onto the spindle bearing—the platter rests on a smooth glass disc until air is pumped in—level the outboard motor housing, then connect the air hoses and electrical umbilical from the pump and motor.

Initial leveling is easily done: Unscrew the black caps atop each arm-mount post, then screw in or out the large hex-head screw under each. TechDAS advises checking the level after a few weeks, in case of settling.

Because the belt doesn't stretch, the most critical part of setup is to adjust the precise distance between the platter and the motor pulley. This is made relatively easy via a slide knob that can move the motor within its housing. There's no guesswork: You hold down the 45rpm and Pitch High # buttons, then adjust the slide knob until "45rpm" appears on the speed

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display; then you tighten the knob and press Stop.

Why use an inflexible belt? Probably because, with a virtually frictionless air bearing, a stretchy belt might produce a "runaway platter" condition; to avoid this, some designers use stretchy belts to create a bit of bearing friction.

Robert Graham, who distributes TechDAS products in the US, had come by to help with setup, and the first tonearm we installed on the Air Force III was his own new model, the Graham Engineering Phantom III (\$7000, or \$5000 when bundled with the Air Force III). New in the Phantom III are a titanium arm wand and better wiring inside the bearing housing, which itself is now more massive, and constrained-layer-damped with brass and tungsten. Graham says that the new wiring produces less physical resistance as the arm moves. A new counterweight permits a wider range of cartridge weights, and Graham's patented MagneSlide stabilization system has been further improved, though exactly how isn't specified. I installed the new Grado Lab Epoch cartridge I reviewed last month and began playing records.

### Easy Operation

Using the Air Force III daily was totally pleasurable and problem-free. The turntable performed flawlessly throughout the review period, and other than having to re-level it after a few weeks, as the instructions said might be needed, the 'table was maintenance free. It's what you should expect when you shell out the cost of a car to play your records.

Push Suction on the III's front panel and the record flattens. Push  $33\frac{1}{3}$  or 45 and the little screen tells you to "Wait!" until the proper speed has been attained and is stable. When the side's over, you hit Suction, and the pump reverses the direction of airflow to ease the lifting of the record.

I'm firmly in the camp of the properly designed and executed vacuum hold-down of LPs. My reference Continuum Audio Caliburn turntable has it, and I've had no problems with noise. You just have to keep the platter and your records clean. Every day, I use In the Groove Record Cleaner roller on my platter(s); TechDAS supplies an acrylic platter cover.

With a record on the spinning platter and the stylus in the groove,

I could rap on the vinyl close to the tonearm and hear that almost nothing was transmitted through the stylus to the speakers—just the faintest midband *tap*. Very few turntables can manage that. It was partly due to the vacuum hold-down, but probably also to the platter construction.

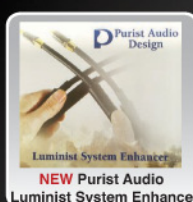
Tapping on the HRS base produced but the faintest sound through the speakers, making the Air Force III one of the most impulse-resistant suspensionless turntables I've encountered. While this test doesn't necessarily indicate a turntable's final sonic performance, it tells you something about its mechanical integrity.

### Listening

All along, Hideaki Nishikawa's goal has been to design a "characterless" turntable that would act as a neutral carrier for the tonearm and cartridge, with the cartridge adding the most sonic character. He set out to accomplish that quality of characterlessness, or lack of coloration, with the vacuum hold-down system, the air-bearing platter, the platter material itself, and, with the Air Force One, an air-suspension system to isolate the 'table from



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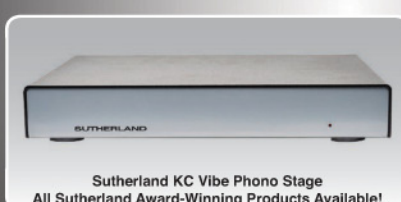
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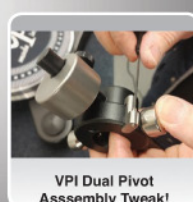
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the outside world.

The Air Force One came close to accomplishing that goal of characterlessness, but, as I found, changing its platter insert from duralumin to the costly titanium option produced a *major* improvement in the sound. Air Force One owners who've told me of their experiences with this option agreed that it made a big and positive difference. Swedish Analog Technology's Marc Gomez speculated that the difference was at least in part due to titanium's lower production of eddy currents, which could affect the cartridge's sound.

If you read the review of the Air Force One in my April 2013 column, you'll see that I found the differences between it and Continuum Audio Labs' Caliburn to be clear but ultimately subtle, and on a level playing field compared to the differences between the Caliburn and the Air Force III. I could easily hear the differences by dropping the combo of SAT arm and Lyra Etna SL cartridge into the Air Force III (thanks to a massive and quite attractive, SAT-supplied arm mount) and then, in less than a minute, reinstalling it in the Caliburn.

It was no surprise that the com-

promises necessary to lower the price from \$105,000 to \$29,500 while maintaining core design principles had sonic consequences—but in terms of sheer listening pleasure there were none. The biggest difference was in the bottom end, where the Air Force III introduced a modest residue of lower-midbass warmth that hung around bass notes, including around the aforementioned drum thwacks. None of this was *audible* as such. I could hear it only by swapping back and forth between turntables. The Air Force One's lack of this warm residue originally had me mistaking its sound as cold—much as a dip in one area of a speaker's frequency response can be interpreted as a peak elsewhere in the response.

Even though this turntable was new to me, I could tell that the new Graham arm was something special. It was immediately clear that the Phantom III's bass reproduction was far more robust and controlled than that of the Phantom II Supreme that I owned.

One of the first records I played was Zhao Cong's *Sound of China: Dance in the Moon* (Pipa album) (LP, Au Qu MCD 30101LP), brought back from last summer's Hong Kong show. Recorded in Denmark to audiophile standards, and

probably a somewhat Westernized, PBS-like take on traditional Chinese pipa music, this LP has spectacular, even *startling* bass-drum thwacks that demonstrated the Phantom III's authoritative bass control and extension.

While the Air Force III's ability to communicate the starting and stopping of notes wasn't as good as the One's, the III's rhythmic drive and punch didn't much suffer. The main difference was an attractive but subtle tonal warmth that was kindest to well-recorded strings and women's voices.

The sound of the most recent limited edition from the Electric Recording Company, Herbert Downes and Jacqueline Du Pré's *Music for Viola and Cello* (LP, Parlophone CSD 1499/ERC 028), was lights-out magical on both the Air Force III and the Caliburn. (Yes, one of the 300 discs pressed will set you back £500—but last June, an original copy sold for \$3000!) Through the Caliburn, which has its own tinge of warmth, though not as much as the Air Force III's, Kinloch Anderson's harpsichord behind Downes's viola, in the *Adagio* from Handel's Sonata in C for Viola da Gamba, appeared in greater spatial relief than with the Air Force III, which bathed it more in the



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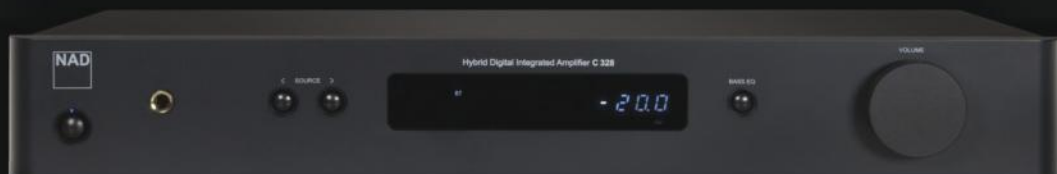
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warmth of the viola and the recording venue, thus leaving it less clearly delineated. John Williams's guitar in *Oriente*, from Cui's *Kaleidoscope*, glistened precisely and transparently through both 'tables, but more so through the Caliburn. But given that the Grado Epoch is itself on the warm side, and that the pairing of Epoch and Air Force III didn't sound at all bloated or too warm, this bit of coloration was, in the big picture, nothing. I just don't want you to think that in buying an Air Force III you get an Air Force One for \$29,500. You don't.

What you do get in the Air Force III is a turntable with excellent and impressively stable platter speed, which I measured using Dr. Feickert Analogue's PlatterSpeed 7" test disc and app. More important, I could hear its rock-solid speed stability even before I measured it. It was the sound of rhythmic drive and, especially, high-frequency transients that were super-clean but not too sharp or too hard.

Posted on AnalogPlanet.com is a blind comparison of nine phono preamplifiers, with needle drops of each, all made using the combination of TechDAS Air Force III and Graham Phantom III.<sup>2</sup> A reader stacked up the resulting music files and noted: "the speed accuracy of the turntable is amazing. These samples stayed in sync, even going in and out of sync without much drift at all. Remarkable." The record I used for the comparison was Fiona Boyes's *Professin' the Blues* (LP, Reference RM-2517). If you don't think an Aussie can sing the blues, give it a listen. The live recording, engineered by Keith O. Johnson, is stunning.

Track 1 is "Can't Stay Here No More": Boyes playing a detuned National Reso-Phonic guitar, accompanied by a bass drum and three tambourines. The way the Air Force III, with either the Graham or the SAT arm, got the guitar's resonating shimmer, the well-controlled bass-drum thwacks (and the air and space around the drum), the zils of the tambourines behind Boyes—and the three-dimensionality and up-front positioning of her voice and against a dead—"black" backdrop—would make clear to any experienced listener that this disc was being reproduced by a top-shelf record player. Yes, the SAT arm itself costs \$32,000, but it wouldn't be money wasted. On the other hand, you wouldn't be at all disappointed by saving \$27,000 and going with the

Graham Phantom III.

Playing the Boyes got me on a blues kick. I pulled out Lightnin' Hopkins' *Lightnin' Strikes* (Tradition/Everest 2103), originally released by Verve/Forecast in 1966. Producer David Hubert put the blues giant in a great but unidentified Los Angeles studio with harmonica player Don Crawford, bassist Jimmy Bonds, and drummer Earl Palmer. Wow! Hopkins was *on fire*, and it's an amazing recording. Of course, when I told Acoustic Sounds/Analogue Productions' Chad Kassem about it, he pulled out his original pressing and sent me a picture. Damn. But I can't imagine it could sound any better than the Everest reissue—and just now, as I write this, I know why. I didn't see it the other night, but now, in the lead-out-groove area, I see the faintest "BELL SOUND" stamp—the mark of New York's famous Bell Sound Studios, which did LP mastering as well as recording. That place *rocked!*

#### Conclusions

No, an Air Force III won't get you an Air Force One's sound for less than a third of its price, but the III will get you equally high build quality, most of the One's technology in somewhat simplified form—including an air-bearing platter and vacuum hold-down—and supremely satisfying sound. The Air Force III is all the turntable most listeners will ever need, and it performs sufficiently fine in all respects to deserve the best tonearm and cartridge you can afford. Neither will be money wasted. If your turntable budget is about \$30,000, I suggest starting your search with the TechDAS Air Force III. ■

Michael Fremer (fremer@analogplanet.com) is the editor of *AnalogPlanet.com*, a *Stereophile* website devoted to all things analogical.

<sup>2</sup> See <http://tinyurl.com/y9u4e8jr>.

#### CONTACTS

##### TechDAS (Stella Inc.)

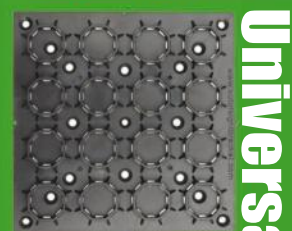
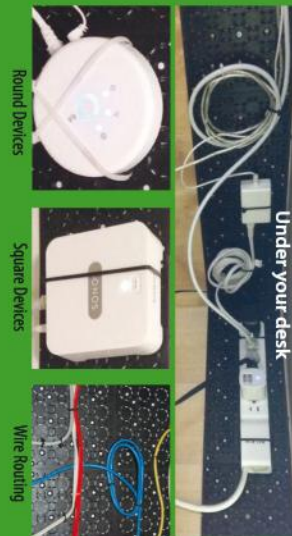
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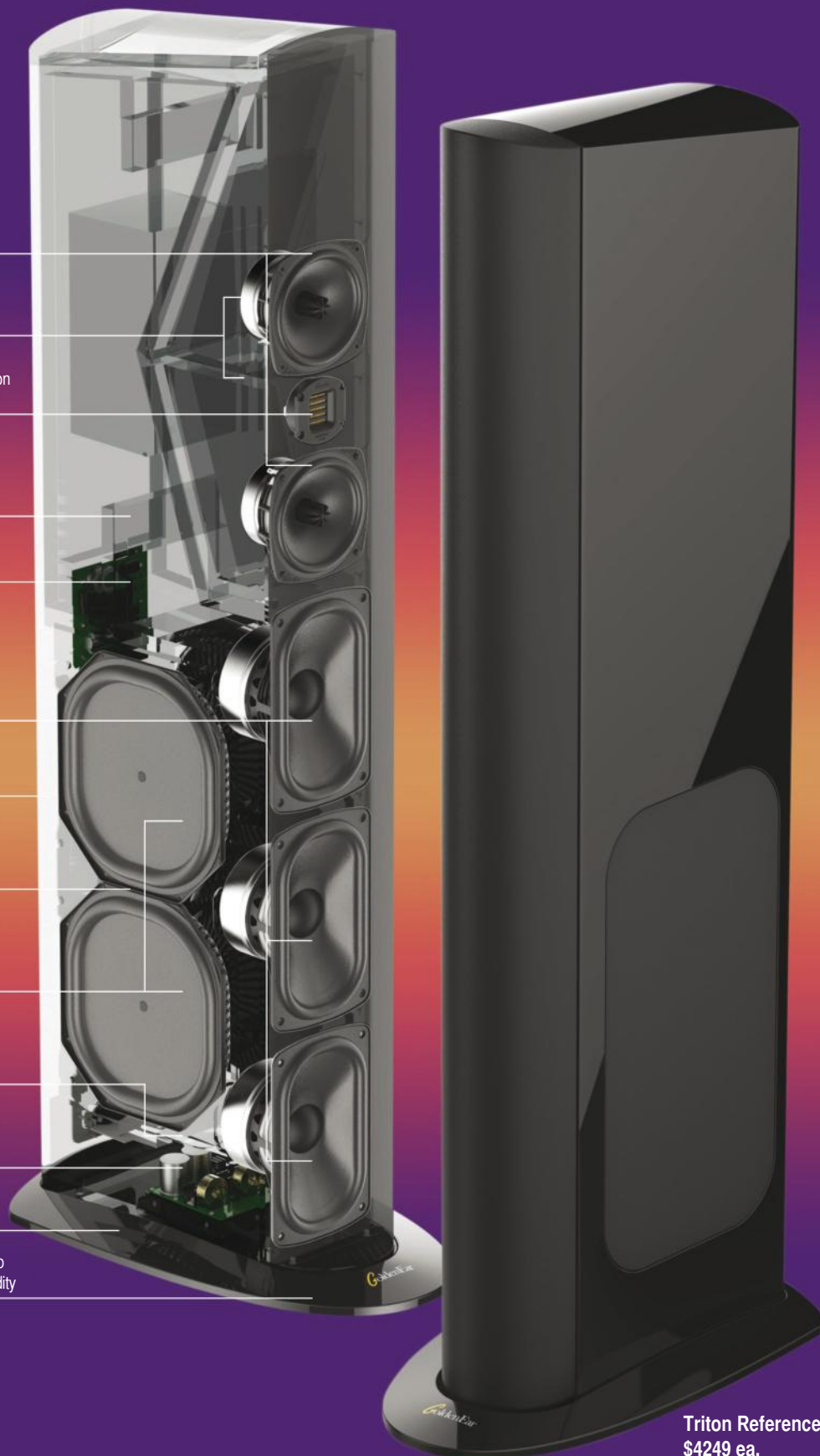
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Clearly, we knew that the One would be a very hard act to follow. There was a spirited discussion within our product development group about an all-out assault on the ultimate, cost-no-object, state-of-the-art, to produce a six-figure loudspeaker to do battle with the most esoteric and expensive loudspeakers on the planet. However, after much soul-searching, rational minds won out, and the decision was made to create a new GoldenEar flagship, positioned above the Triton One (of course still current and available), that would joust with the best, but still stick to our trademarked slogan, “We Make High-End Affordable.” We are pleased and proud to introduce the new Triton Reference. The Reference has begun gathering its own collection of honors, winning the prestigious and coveted CES Innovations Design and Engineering Award, Digital Trends Best Home Audio Tech at CES, HD GURU Best High Fidelity Loudspeaker at CES and What HiFi Stars of CES!

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The Triton Reference is an evolution of everything that we have achieved with the Triton One, but taken to a stunning new level of sonic performance and sophisticated visual design. All the components in the T Ref: including larger, more powerful, active sub-bass drivers with huge “Focused Field” magnet structures, upper-bass/midrange drivers with “Focused Field” magnet structures, and High-Velocity Folded Ribbon tweeter with 50% more rare earth neodymium magnet material, are brand new, and have been specifically developed for use in the Reference. The powerful 1800 watt subwoofer amplifier, with level control to fine tune the bass to your room, and 56-bit DSP control unit are a significant evolution of those in the Triton One and our SuperSubs.

There are a myriad of other significant upgrades and refinements, including: new internal wiring with a specially developed twist, further development of our signature balanced crossover including film capacitors bridged across the high-pass section on the upper-

bass/midrange drivers, a unique proprietary mix of long-fiber lamb’s wool and Dacron for more effective internal damping, intensive work with a high-resolution accelerometer to determine the most effective implementation of complex internal bracing, a 3/32”-thick steel plate built into the mediate base to further stiffen it for increased stability, new stainless steel floor spikes and cups, all of which results in higher resolution of subtle details ... and the list goes on and on.

*“Undeniably stellar ... Yes, it does deliver the sort of performance previously delivered only by cost-no-object speakers.”* – Dennis Burger, *Home Theater Review*

Visually, the Reference offers a strikingly beautiful upgrade to the classic Triton styling, with a gorgeous hand-rubbed piano gloss-black lacquer finished one-piece monocoque cabinet. Sleek, statuesque and refined, the Reference is simply an elegantly gorgeous statement piece that will excite listeners with its dynamic visual presence, as well as its extraordinary sonic performance.

Sonically, the Reference has been engineered to perform with a dramatic and authoritative voice, comparable to speakers that sell for ten and more times its surprisingly affordable price. T Refs completely disappear, with superb three-dimensional imaging that will open up your room, stretching from wall to wall and beyond, and depth that makes the wall behind them seem to vanish. The astonishing bass is rock-solid, with low-frequency performance that is tight, quick, highly impactful and musical with extension flat to 20Hz and below. Another GoldenEar signature is a silky smooth high end that extends to 35 kHz with a lifelike sheen but no trace of fatiguing hardness, sibilance or stridency so common with lesser tweeters. Tremendous time and energy has been put into the voicing of the speaker and the seamless blending of the drivers, for unmatched musicality with all types of music, and home theater perfection. Rarely do speakers excel at both, but with their world-class neutrality, the Reference absolutely does. A special bonus is the Reference’s extremely high 93.25 dB sensitivity, which gives them tremendous dynamic range and allows use with almost any high-quality amplifier. You must experience T Ref for yourself!

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# LISTENING BY ART DUDLEY

**THIS ISSUE:** A fly fishing trip and coming to grips with a new listening room.

## Make profiteroles in the bedroom, sole meunière in the den

**T**he company appears to be long gone, but throughout the 1970s, virtually every Sunday, there was an ad in the *New York Times Magazine* for a manufacturer of whole-house music systems—I recollect the name as Bolton, but that gets no hits on Google, so perhaps I’ve misremembered—with a headline that went something like: “ENJOY MOZART IN THE DINING ROOM, BEETHOVEN IN THE LIVING ROOM, AND THE ROLLING STONES IN THE CHILDREN’S ROOM.” I remember wondering even then, as a distinctly unworldly teenager in upstate New York: Who in God’s name would want such a thing? Why squirt background music everywhere—and make no mistake, any system in which the user has less than complete, hands-on control of playback media is a background-music system—when, for a lot less money, you could fill *one* room in the house with a collection of records and the best, most compelling record player money can buy?

That comes to mind because, in recent months, I’ve received two requests from people who wonder if I might take their money in exchange for consulting on a domestic playback system they hope to acquire and install. In both cases, I made it clear that as well as not being able to act as a paid consultant, I will have nothing to do with systems intended to provide background music. (Having expressed that condition, I have heard back from neither requester as I write this, but it’s too soon to draw any conclusions from that.) I’m not immune to luxury’s appeal, but I want nothing to do with *senseless* luxury—and, like putting a first edition of *Don Quixote* in every bathroom or painting the lawn gold, filling an entire house with superior-quality music playback gear is senseless, not to mention wasteful. Better to put your gear someplace in the house that’s both logical and pleasant, so you can go to it when you want it—just as you go to the kitchen when you want something to eat, and to the bedroom when you want to sleep. It’s so simple, I shouldn’t even have to say it.

### Home Sweet New Home

So it is in my compact but pleasantly open-feeling new house, whose living room is also my listening room. That room measures 16’ long by 11’ wide by 9’ high. Centered in the short exterior wall behind the speakers is a brick fireplace, the tile hearth of which is higher than the hardwood floor by

tonearm board; EMT 997 tonearm and TSD 15 stereo pickup head; Auditorium 23 Hommage T2 step-up transformer; Shindo Laboratory Monbrison preamplifier and Haut-Brion stereo power amplifier; and vintage Altec Flamenco loudspeakers on homemade stands, plus a Box Furniture rack for source components and electronics, and cabling from Shindo, Auditorium 23, Audio Note, and Luna. Of those chores, installing the record player took the greatest amount of time, since,



only a fraction of an inch: a slight but not deal-breaking limit to flexibility in speaker placement. Also on that wall, on either side of the fireplace, are two smallish casement windows: a nice architectural detail that seems typical of the mostly ca-1930 homes in my neighborhood. At the opposite end of the room, an archway leads to the dining room, itself just slightly larger than the living room.

On September 20, within minutes of the movers’ departure, I set about setting up if not completely dialing in the most basic elements of my system: Garrard 301 turntable with homemade plinth and Auditorium 23 bronze

before moving, I’d had to remove not only the pickup head but also the tonearm and tonearm board.

My first impressions of my new space, compared to the one where I’d done most of my listening for the preceding 14 years: The sound is pretty well balanced, bass through treble, with no room-induced top-end harshness, although upper-midrange decays seem too generous. (This with a 6’ by 10’ area rug on the hardwood floor, no curtains on any of the windows, and minimal artwork on the walls.) There’s a bit of added darkness—and a subsequent slight lack of clarity—in the two octaves between 40 and 160Hz,

but that, too, is minor. The system communicates punch and drive very well—as well as in its previous setting—without the sense that it's working harder than before to do so.

And, unexpectedly, the floor beneath the rack on which my turntable now stands seems more stable—although to achieve this, I found I had to move the rack a few inches left of where I'd originally had it. In my new home, I haven't had a single problem with a record skipping, or other sonic disturbances caused by footfalls. As they say at the Clinique counter: your gift with purchase.

That said, already I've found that the sound of my system depends on whether the windows in the dining room are open or closed: It sounds better when they're closed. And the system sounds better when the case-ment window behind and above each speaker is open. But my system doesn't sound its best until the side-by-side sash windows on the long exterior wall—which together comprise a picture window 60" high and nearly 70" wide—are closed, and when the Levolor fabric shades I've installed on them are fully lowered.

So: with the dining-room windows closed, the windows on the short wall open, and the windows and shades on the long wall closed, my system sounds really, really good: colorful and tactile, with generous measures of momentum and drive and punch. Although most of my records are still in storage, awaiting installation of my new record shelves, I made sure to keep with me a hundred or so select titles—and Leroy Vinnegar's first plucked (as opposed to bowed) note in "Chelsea Bridge," from *Gerry Mulligan Meets Ben Webster* (stereo LP, Verve MG V-8343), told me that everything is going to be all right.

But . . . protests to the contrary, I'm just as much an audiophile as any of you. And just as in yours, there exists in my heart a conductive diaphragm that swings wildly between two stators. One of those stators is labeled: *That baby is smiling at me and making cute faces: Babies love me!* The other stator is labeled: *The baby is smiling because he's taking a dump in his pants.*

Thus, when we ask people to come over and help us tweak our hi-fi, we're not so much asking for their help as asking them to come by and tell us if we're delusional, and if our hi-fi

needs tweaking. That's because we're insecure and reluctant to acknowledge when we do or don't like the sound in our home—although neither we nor anyone else has any compunction about stating, loudly and often turbocharged with drink, when we do or don't like the sound of a given performing space. That's a whole 'nother thing.

So I enlisted some help by buying and downloading to my iPhone the Audio Tools app (\$19.95) offered by Studio Six Digital. In particular, my colleague Larry Greenhill has often written of his experiences with this suite of applications, which includes a real-time analyzer (RTA) and fast Fourier transform (FFT), and can be upgraded with such extra-cost additions as a utility for measuring loudspeaker impedance (although that requires the purchase of a hardware interface that sells for about \$480). So far, the measurements I've made in my new home with Audio Tools are encouraging. Suffice it to say that I do indeed have a full-range room without serious acoustical flaw. But those measurements are also inconclusive, owing to the fact that I have so far taken them



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### IRVING BERLIN'S GRAMOPHONE

My friend Sasha Matson, a composer with a number of recorded works to his credit, is a member of the extended family of the great and long-lived American songwriter Irving Berlin (1888–1989), who divided his time between New York City and his retreat in the Catskill Mountains. At Sasha's invitation, I recently stayed at the latter, and it was there that I learned an unexpected lesson about recorded music.

Of course, that was only one of many highlights of my stay. I played Irving Berlin's upright Steinway. I read from some of his books. (He evidently enjoyed history, political biographies, and early sci-fi.) I sat in his easy chair and gazed out the enormous picture window at the cascading waters of the Beaver Kill tributary that runs through the Berlin estate.

The Beaver Kill—a 44-mile-long river that cuts a swath from one side of the Catskills to the other—was the os-



tensible main attraction of our visit last summer. It is to fly-fishing enthusiasts in the Northeastern states as St. Andrews and Pebble Beach are to golfers, and though I'd fished it before, never before had I gone after trout so close to

the river's source, where its banks wind through mostly private property. This time I had a pass.

The outing was memorable for pleasantly warm temperatures, perfectly clear skies, and gorgeous scenery,

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if not for full creels. Still, I did bag one handsome if less-than-mighty brook trout on a Royal Wulff dry fly (a pattern created in the Catskills by the late Lee Wulff) tied on a No.20 hook.<sup>1</sup> It was an amazing day.

Sasha and I made a good dinner of soup and bread purchased from a local deli, and as a chill descended on the heavily wooded estate, we built a fire in the den of the main Lodge, using

selves, the ultimate playback experience depends on infinitely more than just the quality of the gear and the acoustical rightness or wrongness of the room.

As people who hope to re-create art every time we drop needle into groove, we forget that at our peril.

After my column in the October issue, in which I described my preference for the idea of keeping my playback system in a comfortable,



some maple that had been aging for God knows how long. Then came the evening's highlight: Sasha uncovered Irving Berlin's personal gramophone—a portable acoustical player that had apparently been made specially for him—and listened to some 78s from his collection. We followed that by listening to some mono LPs of Sasha's, played on an electric portable he'd presciently brought with him.

It was one of the two or three most transcendent listening experiences I've ever had.

It's not enough to say that the listening was enhanced by the setting. Without the setting, the experience I found so memorable simply didn't exist. Without the roomful of books and paintings and well-worn furniture, the experience would not have been the same. Without the fire, it would not have been the same. Without the company of my friend Sasha, it would not have been the same. The experience was a composite of sensory information; as with a good poem, in which the *sounds* of the words convey at least as much meaning as the words them-



sunlit part of the house, accessible and enjoyable by all, I received a number of letters from readers who agree with my point of view, and who expressed relief at seeing in our pages so logical yet apparently heretical an idea. But criticizing the manner in which someone else enjoys recorded music goes against everything I stand for, so if you prefer the solitude and freedom from tidiness that come with a person cave, then that's what you should shoot

<sup>1</sup> Another musico-angling aside: In 1995, after I first interviewed him for *Listener* magazine, I gave Procol Harum's Gary Brooker, himself a champion fly-caster, a packet of Royal Wulffs, which he reported enjoying: "I gave them a thrashing!"



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for—and to hell with what I or anyone else thinks.

#### SOCIALIZING WITH THE ELKS

Years ago, soon after my wife and I moved to Cherry Valley, New York, one of her coworkers invited us to join her and her husband at a social function in nearby Esperance, an even smaller village on the road between our home and the city of Albany. When it was time to get ready for our evening out, I asked Janet what sort of place we were going to, in order to dress for the occasion. She told me we were going to the Elks Club.

Founded in 1868 as a New York City-based private social club, the Benevolent and Protective Order of Elks is associated in the minds of many with conformist ideals and center-right political beliefs—or at least that's the impression I gained as a youngster whose father and stepfather were both Elks, and who was sometimes dragged to the reliably boozy functions at our local Elks Lodge, the front lawn of which featured a life-size bronze elk that local fraternities persisted in decorating with fanciful combinations of jockstraps, football helmets, and lipstick.

But as recently as 1976—well into the Presidency of Gerald Ford, himself a loyal Elk—the BPOE was a whites-only organization, and as recently as 1995, ownership of a penis was also a membership requirement. Those toxic, anti-American rules didn't apply only to Elks membership: Before 1976, if you were black and you wanted to rent the ballroom of your local Elks Lodge for a private event, you were shit out of luck—and before 1995, if you were a woman and you wanted to drink at the bar of your local Elks Lodge, you had to be accompanied by a male, presumably so he could tell you what you wanted.

Now my wife and I were headed not just to an Elks Lodge but to an Elks Lodge in rural upstate New York. I imagined a parking lot full of pickup trucks and empty Skoal tins, and a bar crammed with people with such finely tuned leftie radar that the whole place would go silent the minute I walked in the door. (That's another thing: Until late in the last century, you could not join the BPOE without repudiating communism.) Obviously, the dress code would be camo.

It was still light outside when we got to the place—set way back from Route 20, the Lodge looked as if it might once have been a roadhouse—and I

did indeed spot an empty smokeless-tobacco tin in the big graveled parking lot. But that was the only thing I had right: With the possible exception of a Catholic mass I once attended at St. Patrick's Church in Long Island City, New York, I don't think I've ever had a building full of strangers treat me more nicely. My fellow attendees were angels, the bartenders were saints, and the guy who replenished the snack buffet, and who described himself as the head Elk of this particular Lodge, was kind, solicitous, and obviously interested in attracting new members, regardless of political affiliation. I know that because, when I responded to his membership pitch by telling him that I was a registered member of the Green Party, he skipped not a beat, but smiled and assured me that I would not be the only member so affiliated.

On the way home from that unfailingly pleasant time, Janet and I agreed that one thing was clear: In 2005, it was change or die for the BPOE, and someone in the organization, whether local or national, had not only accepted the notion of change but had sincerely and passionately embraced it.

And there's another lesson: Perfectionist audio can survive, perhaps thrive, even at a time when our core members are all being fitted with stents and pacemakers and artificial joints—and hearing aids. But to survive, we must face some tough decisions and make some difficult changes. Perhaps, with luck, the time is finally upon us when the thick faceplates, outsize cables, and absurd prices that make our pastime so repulsive to the young will start to show up in our collective rear-view mirror. I can but hope.

I never joined the Elks Club—just as, after reading Umberto Eco's *Foucault's Pendulum*, I never joined the Masons, and after listening to the first three Leonard Cohen albums, I never joined the Rosicrucians. But before writing this, I poked around the Internet in an effort to learn more about the BPOE. And there, among the list of famous Elks—next to FDR, JFK, Ben Affleck, Gail Edwards, Zelma Wyche, and Lawrence Welk—was none other than Irving Berlin, an immigrant turned artist turned philanthropist from whose cup I have figuratively and literally drunk. So I guess I haven't given up on the idea altogether. ■

*Art Dudley* (ADudley@Enthusiast-network.com) *listens to 78s and LPs in real-world rooms, not dedicated studios.*



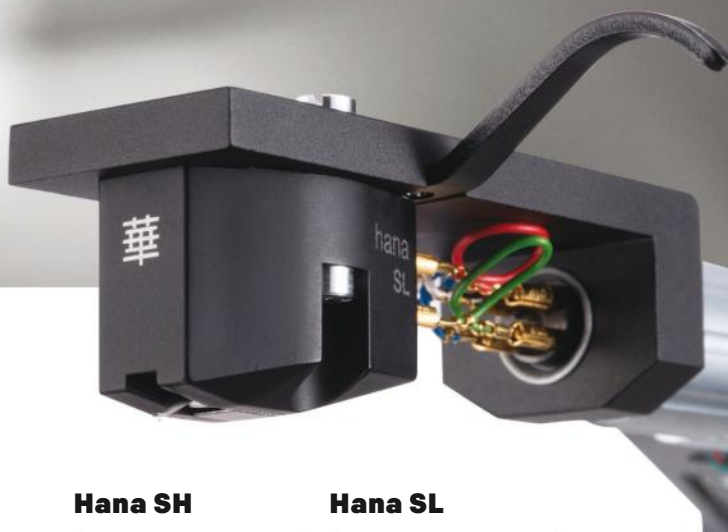


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# MUSIC IN THE ROUND

BY KALMAN RUBINSON

THIS ISSUE: A visit to Tom Caulfield, two multichannel volume controls, and the 64-bit JRiver app.

## Multichannel Analog Accessories

I have not been attending audio shows as often as I used to, and this January, for the first time in more than 20 years, I'm skipping the annual Consumer Electronics Show. My personal return on investment has become hard to justify, especially when attendance at each annual CES requires a round trip from New York City to Las Vegas, Nevada. More important, audio shows now seem focused mostly on either two-channel music playback or multichannel home theater, whereas what interests me is listening to music in surround sound. Sure, I can be excited by the introduction of new speakers and new power amplifiers, which have obvious application in any music system. On the other hand, the vast majority of analog preamplifiers and DACs are two-channel only, while preamplifier-processors and audio/video processors emphasize their video facilities and such sound options as Dolby Atmos, DTS:X, and Auro-3D, none of which has much impact on music, yet.

And in disc players, there's a widening gap between the stereo-only audiophile market and the larger, HDMI-only home-theater market—and that leaves me and Oppo Digital alone in the middle. Most servers, too, seem to serve up mostly stereo.

This is not a happy situation for me, because audio shows, both national and local, give me valuable opportunities to hear good sound and music, often provided by experienced professionals. Every listener adapts to the sound of that listener's system, dominated as it is by the acoustic of that listener's room, and it's okay to accept and enjoy the resulting experience of music without constantly questioning it. On the other hand, if you're committed to optimizing your listening experience—and if you're reading this magazine, you probably are—you need to periodically refresh your ears and challenge the sound you've grown accustomed to by hearing other systems. Not all show demos are satisfying or useful, but many are interesting and refreshing, and it is such experiences that can trigger a serious reassessment of your own system.

I always attend the frequent manufacturer-sponsored events at Innovative Audio, a Manhattan dealer, and as I write this I look forward to two major events here: the Audio Engineering Society Convention (October 18–21) and the New York Audio Show (November 10–12). Still, the most valuable opportunities are to visit kindred spirits and hear what can be called a *curated* system, as in this

**Not all show demos are satisfying or useful, but many are interesting and refreshing.**

definition of the word I recently found on Dictionary.com: “to pull together, sift through, and select for presentation, as music or website content.” A perfect example was when, on my way to a Bowers & Wilkins press event in Boston last summer, I visited with Tom Caulfield.

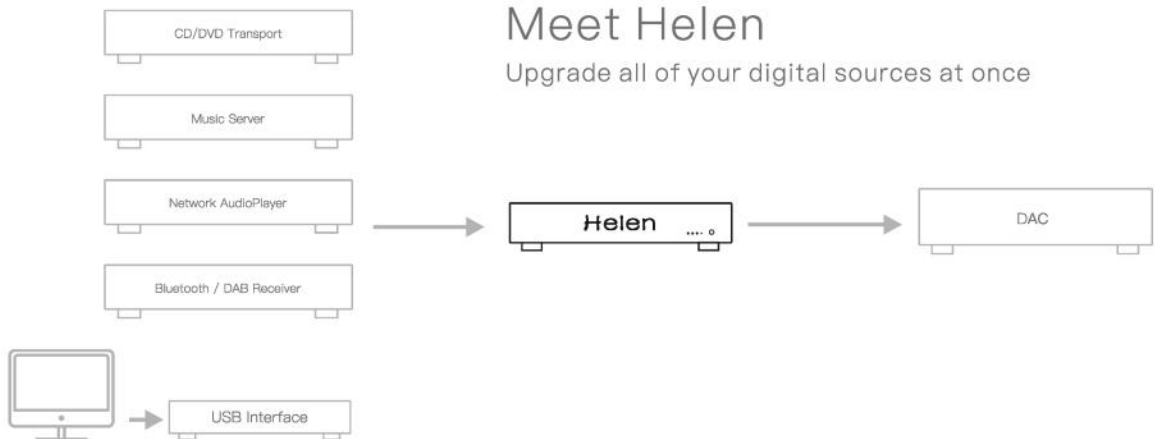
Tom Caulfield is a Grammy-winning recording and mastering engineer who has been responsible for many of the outstanding multichannel recordings released by Chandos, Channel Classics, and Yarlung. In addition, he's a tireless champion of multichannel DSD with minimal processing. For some years now, Caulfield has also been seducing many in the audio press and elsewhere with some of his remarkable private recordings, made during commercial recording sessions but using his own microphones and mike placements.<sup>1</sup> I believe that he helps many of us keep a clear ear on the cutting edge of modern recording technology.

While I've enjoyed meeting Caulfield several times at industry events, as well as at one of his recording sessions, this was our first opportunity to talk at length, and for me to hear what music sounds like through his undoubtedly unique mastering system. The system dominates an upstairs room in his house, where five large Sound Lab Ma-

jestic 645 full-range electrostatic speakers, each 75" high by 34.5" wide by 7.5" deep and weighing 140 lbs, cluster closely around a comfy stuffed armchair. Together, they form an almost pentagonal enclosure in the center of the room, but because of their proximity and the fact that each speaker radiates sound from its entire surface of 1790 square inches, they “disappear” acoustically, providing a nearly transparent window on the music. There is some other furniture in the room, as well as acoustical treatments and spare Sound Lab panels, but again, with the proximity of the speakers to the listening position and the limited amount of reflected rear radiation that can reach into the enclosure, the room acoustics only minimally affect the sound. Caulfield played files from his server, which he accesses via his mastering software and routes to five Parasound Halo JC 1 monoblocks, one 400W amp per speaker, via a set of relays that permits assessment of individual channels, combinations of channels, or the entire 5.0-channel array.

I'd brought a number of familiar files with me, and Caulfield's server contained many more. Sitting in this sound capsule and with all my other senses isolated from external distractions, I felt an immediate connection to the music, and was aware of no spatial discontinuities. I could easily perceive subtleties of width and depth in the soundstage, and hear extended, detailed treble completely devoid of highlighting or brightness. Comparing really good commercial recordings, all high-resolution and 5.0-channel, with some of Caulfield's unreleased recordings using his own mikes and placements, I entirely appreciated his preference for closer miking, for a closer perspective on the performance.

<sup>1</sup> You can get a taste of this by downloading a copy of a session outtake of the first movement of Mahler's Symphony 3, with Iván Fischer conducting the Budapest Festival Orchestra. If you can play it, select the multichannel DSD256 option; it's the unedited original made with an optimized 5.0-channel microphone setup: <https://justlisten.nativdssd.com/albums/JLBFOMahler3-mahler-symphony-no-3-in-d-minor>.



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There was an exhilarating intimacy to the performances, even more than I'd realized when I played them at home. I also appreciated why Caulfield's system is so marvelously suitable for his mastering work. No detail is lost, and the crucial relationships among the channels is surgically revealed. That my experience was thrilling should be no surprise—these recordings were mastered on this very system. How could they possibly sound better anywhere

else? This experience, and Caulfield's conversation and hospitality, affected me deeply—and left me impatient with Bowers & Wilkins's two-channel demonstration the following day.

Back home in Manhattan, it was clear to me that I would not like to live in the hothouse of Tom Caulfield's sound capsule. With its gripping intimacy came a proximity that seemed to intrude on my personal space, especially with his closely miked private

recordings. I didn't feel comfortable listening from the conductor's podium (I did try it once)—the excitement simply overwhelmed the attention I was trying to pay the music. I am a listener, not a performer, and Caulfield's recordings sound more realistic to me through my own system. Still, my time with him raised my listening to a new level of sensitivity—which I will now apply as I focus on some imperfections in my system.

### SPL VOLUME 8 AND SMC 7.1

It's no secret that there are very few analog control options—for volume and input selection, primarily—for multichannel, but that doesn't mean there are none. Parasound's excellent Halo P 7 is the only analog multichannel (7.1) preamplifier currently on the market, but since there has been no relevant new technology since the first round of multichannel analog preamps from the first decade of this century, one can consider any number of good used products from the multichannel exuberance of more than a decade ago. I own an Audio Research MP1, and there are others worth seeking out from Bel Canto Design, McIntosh Laboratory, and McCormack Audio. Fundamentally, all that are needed are input switching, volume control, and, perhaps, the ability to balance channel levels. Old hat.

The studio/professional market does offer some analog multichannel devices. There are lots of complex devices that incorporate multichannel switchers, analog input and output, and analog volume control, along with a plethora of mixing features, but finding something with the appropriate feature

set and cosmetics is difficult. About a year ago, I discovered a device from Sound Performance Labs (SPL): the Model 2489 Surround Monitor Controller, which supports two six-channel inputs (one balanced), two stereo input (unbalanced), and one six-channel output (balanced). It also has a volume control with a discrete (*ie*, each channel is on its own physical deck), six-layer potentiometer. Unfortunately, the 2489's single balanced input connector is a DB25, its output jacks accept only 1/4" TRS-wired phone plugs, and I found its looks decidedly unappealing. I let it pass.

Recently, SPL introduced an array of new products aimed at getting the German company beyond the pro-sound market and into the homes of tech-savvy audiophiles. I found two relevant products, either of which would add a physical volume control to the output of a multichannel DAC. The first is the Volume 8 (\$699),<sup>2</sup> which incorporates SPL's discrete six-layer potentiometer in a neat black enclosure with an eight-channel balanced input and an eight-channel balanced output: a volume control in a box. The other is the SMC 7.1 Surround Moni-

tor Controller (\$1899).<sup>3</sup> It adds to the Volume 8 a second eight-channel balanced input, two pairs of XLR stereo inputs, a stereo XLR output, an XLR subwoofer output (a full-range mono sum of the L/R stereo inputs), a headphone jack, two outputs for metering, and an array of illuminated pushbuttons. Both the Volume 8 and SMC 7.1 have Mute buttons. Hooking up either requires the purchase of two DB25 cables, sometimes described as fantails, which break out into eight individual XLR connectors as input or output. Audio Plus Services, SPL's US distributor, sent along two 1m-long, multipair Sonorus Muco DB25 cables made by the Swiss company Vovox.<sup>4</sup> The DB25-to-XLRx8 male and XLRx8-to-DB25 female cables (\$699 each) are beautifully constructed, with solid-core copper conductors for all three lines (positive, negative, and ground), and don't rely on a braided shield for the ground. And despite consisting of

<sup>2</sup> See <https://spl.info/en/products/monitor-controller/volume-8/overview.html>.

<sup>3</sup> See <https://spl.info/en/products/monitor-controller/smc-71-surround-monitor-controller/overview.html>.

<sup>4</sup> See [www.vovox.ch/en/professional-audio/products/sonorus/multipair-cable](http://www.vovox.ch/en/professional-audio/products/sonorus/multipair-cable).





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eight balanced lines each, they are also remarkably flexible.

I began with the Volume 8 and found that connecting it with the DB25 cables was much easier than I'd expected. If you attach the DB25s to the back of the component before inserting it in the rack, the multiple XLRs are now at the end of flexible links which are easier to access than the traditional connections at the rear of a chassis in an equipment rack. One DB25 was connected to my line-level XLR output cables and the other to the outputs of the exaSound e38 DAC via Hosa RCA-to-XLR adapters. When I connected the SMC 7.1, it was even easier—all I had to do was transfer to it the two DB25s from the Volume 8. It all went smoothly, and when I powered up, I heard no background noise.

Before telling you what the two SPL boxes sounded like, I'll tell you that they sounded identical to each other. That wasn't surprising, once I'd examined their circuitry and SPL's circuit diagrams. Apparently, in addition to the common discrete attenuator, both use the same eight independent input buffers and eight output buffers, each with local power-filter capacitors adjacent to each buffer board. The SMC 7.1 simply adds switching for the headphone output, more inputs and outputs, and the ability to listen independently to any channel or combination of channels.

After some careful listening with the Audio Research MP1, to refresh my ears as to the pre-SPL sound of my system, I installed the Volume 8. I was disappointed: My initial impression was of a dim, claustrophobic sound. It was a bit disturbing to hear that a

“professional” device like so many with which our beloved recordings are monitored and/or processed was of a lesser sound quality than audiophiles expect. There was no air, no space, no sparkle. I listened for the rest of the day and gradually grew less bothered,

but I put that up to adaptation.

After a weekend away, I returned and listened again. Now my system sounded really great. Definitely not as it had long sounded, it now had a refreshing new degree of balance. Gone was the occasional high-frequency

### DID I REALLY PREFER SPL'S PRO DEVICES TO MY AUDIOPHILE PREAMPS?

As a test, I did something I'd long considered trying but had always put off: I connected my exaSound e38 DAC directly to my power amps. This limits my choice of source components to my server, and to controlling the volume with only the up/down buttons on the exaSound's front panel, or an elusive little Apple remote control. What I discovered was that the effect of inserting each SPL box was almost inaudible. Maybe I perceived a little bit of softening of the highs, but no change in overall balance or resolution. Briefly—though only after a lot of cable-thrashing—I tried the same comparison with the Audio Research MP1 and the Parasound Halo P7 and, dammit, they didn't sound much different either—but both, particularly the ARC, added some high-frequency noise.

That immediately reminded me of the phenomenon of stochastic resonance, which is often cited to explain why one can hear low-level signals that are below the noise threshold. Briefly, the principle is that subthreshold but salient signals, like music, become audible as concurrent frequencies in the random noise add to them. The ear can then distinguish the sum of the signal plus noise as a

distinct pattern recognizable as the music signal.

I am positing that the ARC's audible HF noise works the same way to statistically emphasize higher audio frequencies that are below or above threshold. I can hear the hiss from my listening position when I turn the MP1 on, but my ears quickly adapt to it, and since it usually remains on, I'm usually unaware of it. That doesn't mean it isn't contributing a stochastic influence on the audible treble. I take it as consistent with my supposition that the much quieter but still not silent Parasound produced less treble emphasis than the ARC. Running the power amps from the exaSound e38 DAC or via SPL's Volume 8 or SMC 7.1 produced no noise from the speakers unless my ear was actually in contact with a tweeter.

Unfortunately for my hypothesis—from which I am not retreating—the published noise specs for the SPL boxes are not better than that for the Parasound, but they *sound* quieter than the Parasound or the Audio Research—although the exaSound e38 measures and sounds quietest of all. I just wish it had a volume knob.

—Kalman Rubinson

glint, though that absence was not accompanied by any disappointment over the loss of treble detail; rather, I was pleased with the enhancement of midrange information and its extension into the upper bass. As a result, there were now fewer clues to the physical presence of each of my Bowers & Wilkins 802 D3 front and 804 D3 surround speakers. The entire soundstage was more continuous than contiguous, and the sweet spot was much bigger.

I sat a friend in that sweet spot and played him the highly immersive surround version of Willie Nelson's *Night and Day* (DVD-Audio, Surrounded-By Entertainment SBE-1001-9). He was impressed, as I'd expected him to be. But sitting on another sofa, against the room's right sidewall, I was stunned to perceive a positive image of the piano directly across the room, against the opposite sidewall, halfway between the left front B&W 802 D3 and the left rear B&W 804 D3. When I described the piano's position to my friend, he replied, "Yes, I hear it there, too!" I find it almost incredible that two listeners, sitting 7' from each other and facing

in directions 90° apart, could hear the same soundstage from a system that had been balanced and optimized for only *one* of those seats.

This was an almost freaky re-creation of the continuousness I'd heard from Tom Caulfield's system, but with a bit more breathing room, and enough space to share with friends. In fact, when I played Caulfield's tantalizing preview of an upcoming Channel Classics release—the final song of Mahler's *Das Lied von der Erde*, again with Fischer/Budapest—I felt completely immersed in the venue and the aura: orchestra and singer were in front of me, about 12' beyond my front speakers and extending into the distance. What struck me about what I heard was the lack of what in audiophile circles can masquerade as "air"—a subtle emphasis of higher-frequency noise from the recording venue that forces awareness of its acoustics. Based on logic and my attendance at several recording sessions, these sites are generally very quiet. It is at the lower frequencies, where random events energize modal activity, that one "feels" the space. That's what I heard between

the notes here.

I couldn't choose between the Volume 8 and the SMC 7.1 based on sound, because to me they sounded identical. I'd opt for the SMC 7.1, if only because it has an additional input for a second multichannel source (eg, an Oppo disc player), a pair of stereo sources, and a volume-controlled headphone output. The studio-style switching options are a bonus, though I'd rather have channel-level controls.

Are the SPL boxes completely transparent? Almost—there was a very slight dimming above 10kHz, in comparison to running the DAC output directly to the power amps. (See sidebar, "Did I Really Prefer SPL's Pro Devices to My Audiophile Preamps?") On the other hand, that seemed ideal with my B&W speaker array. Of course, Dr. Floyd Toole tells us that, trapped in a "circle of confusion," we can't trace a useful reference that will allow us to compare what we hear at home to the original sound of the performance. What I can say is that with the SPL boxes, my system sounds more like Tom Caulfield's—but with better seating.

## JRIVER MEDIA CENTER GOES 64-BIT

JRiver Media Center is updated almost continually. The current edition, version 23, was released in mid-June 2017, and patches and enhancements are slipped into it every few days. Now, in mid-October, I'm using build 70! Of course, if your setup is working to your satisfaction, there's no need for you to download every new build; but you can choose to have any new builds (Stable, Latest, or Beta) automatically installed, or you can disable Automatic Updates. I let JRiver automatically install Stable updates, but as a member of JRiver's Beta panel, I do monitor the latest changes because I like to put in my 2¢.

Until September, all Windows, Mac, and Linux versions of JRMC were 32-bit, and 32-bit programs run less efficiently than do 64-bit programs and cannot access as much RAM, even on the 64-bit platforms that are ubiquitous today. I've always been impressed by JRMC's speed of operation, but clearly, running it as a 64-bit program should make it better, faster, stronger.

I'm happy to say that the 64-bit Windows version of JRiver Media Center 23 is all of that. Since the 32-bit versions are still being cur-

rent, build numbers for them and for the 64-bit version are the same—you can compare them, if you choose. I didn't bother doing that except to run Benchmark Test, a server system performance test built into JRMC. With the 32-bit version, my benchmark result was a bit over 5000; the same test with the 64-bit version yielded a result of just over 6000—both numbers representing an index that takes into account PCU performance, RAM, disc access, and other pertinent factors. (Test runs vary by  $\pm 100$ .) If you're interested in horsepower, that's an improvement in performance of a healthy 20%.

Of course, the only performance that counts is what it sounds like. Not everyone is torturing their music players by downsampling DSD256 multichannel to 24-bit/192kHz PCM and applying room correction. Even I don't do that *all* the time. Nonetheless, the hardware (and the software it runs) should be able to accept and process current formats without indigestion, even when the diet is rich. With 32-bit JRMC, files of 8GB or more in multichannel DXD seemed to be more of a challenge than DSD256 files, and could result in interruptions for rebuffering—

the maximum amount of data that can be loaded into memory for playback is 2GB. Heck, I have 511 tracks that exceed 2GB, and I'll bet many readers of this column have as many. But the cap for 64-bit JRMC is 16GB, and *none* of my files exceeds that.

Since installing the 64-bit version of JRiver Media Center 23, I have heard not a single burp. And it's free—licensees of the 32-bit version can download the 64-bit version and transfer their license. That's a good deal. ■

Kalman Rubinson (Stletters@enthusiastnetwork.com) enjoys being immersed in his music in his Manhattan and Connecticut homes.

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**Brooklyn Rider:**  
From left to right, Colin Jacobsen,  
Nicholas Chords, Johnny Gandelsman  
and Nicholas Cords.

# LUCID FLIGHT

BROOKLYN RIDER REDEFINE THE STRING QUARTET FOR A NEW CENTURY BY ROBERT BAIRD

**IS CLASSICAL MUSIC REALLY ON THE ROPES? LIVING IN NEW YORK CITY, IT'S EASY TO THINK THAT IS A MYTH COOKED UP IN THE PROVINCES.**

Recently, at a performance of the Metropolitan Opera's fabulous current production of Jacques Offenbach's *The Tales of Hoffmann*, directed by Bartlett Sher, I experienced Classical Music 2017 up close and personal. In the audience, multicolored sequined jackets and cheetah-print slip-on sneakers mixed with tuxedos. Merrell hiking shoes and Patagonia down jackets crossed with slim-fit outfits from Billy Reid and Hermes bags. Between bravura tenor Vittorio Grigolo in the title role and soprano Erin Morley's absolutely wonderful portrayal of the doll, Olympia (Bravo!!!), it was a performance for the ages. None of the recordings I've heard come close.

But such momentary and very local glories aside, these days classical music needs all the help it can get. Appear-

ing on *Billboard's* Classical Albums chart of the top 25 sellers can reputedly be achieved by selling less than 100 copies a week. And these days even the Met has lots of empty seats. All is not lost, but new ways of developing audiences need to be found. Under general manager Peter Gelb, the Met has hit on the solution of trapping you inside a building for hours, until you cough up \$10 for a small bottle of water lest you expire from thirst.

Another idea, in the recording realm, is the much-vaunted crossover album or performer. Two "new" Elvis Presley recordings, *If I Can Dream* and *The Wonder of You*, layer original recordings of Elvis singing his hits atop new orchestral arrangements performed by the Royal Philharmonic Orchestra, and

have become big sellers in the UK and US.

A more difficult path is one that many classical players couldn't even consider, let alone spend a career doing: essentially, becoming wide-ranging culture wayfarers, open to influences from many quarters, adopting the fierce DIY 'tude of indie rock bands and the adaptive instincts of jazz quartets, all grounded in the instrumental precision of classically trained musicians. Brooklyn Rider, a string quartet formed in New York City in 2005, mostly performs new classical music but has cast its net far and wide, playing the music of musical personalities as diverse as Elvis Costello, Kate Bush, and Sting. They've proven themselves extraordinarily open to collaboration, most notably with their appearance on Béla Fleck's *The Imposter* (2013), accompanying the banjoist in his *Night Flight Over Water*. They've even been reviewed on Pitchfork.com.

While stylistic lines have blurred considerably in recent years, Brooklyn Rider is still reputed to be the only classical-music ensemble ever to play the South by Southwest Music Festival, in Austin, Texas—where I first heard them, in 2010, playing in front of an initially puzzled but ultimately enthusiastic crowd of indie-rock fans. Violinists Colin Jacobsen and Johnny Gandelsman, violist Nicholas Cords, and cellist Eric Jacobsen—who was replaced by Michael Nicolas in 2015—are all graduates of either the Juilliard School of Music or Philadelphia's Curtis Institute of Music, and crossed paths while working in New York's classical music scene.

"The approach to being in a quartet together really took place over many years," violist Cords said as we talked in the Hungry Ghost coffee shop, on Flatbush Avenue in . . . where else? Brooklyn! (It struck me as oddly perverse that we were talking classical music whilst disco music like Van McCoy's "The Hustle," and Heatwave's "Boogie Nights" was banging away in the background.)

"We met each other through other groups. There was a group in New York called the Wild Ginger Philharmonic, which was an orchestra that a friend of ours founded. It was built on this idea of collective experience. The orchestra would go away on retreats and do all kinds of things, and the concerts were outstanding because people really felt plugged in. I was part of that. Colin had been part of that, and Johnny was concertmaster.

"I think very quickly we realized that we were passionate about a lot of the same things: the things that we listened to, the things that we valued in interpretation. One of the things was listening to old recordings. I have a huge collection of pre-WWII pianists, vocalists, string quartets, and string players. They were originally on 78s, but I collect the remastered CD versions because they're easier to catalog, and carry around."

The change in membership, often a potentially catastrophic development in a group as small and symbiotic as a string quartet, also made for a parting of the brothers Jacobsen. The split was amicable; Eric Jacobsen left to focus more on conducting.

"Michael [Nicolas] came in about a good year and a half ago. There was a little bit of overlap between Eric and Michael, a passing of the torch, but it's been working out great," Cords said. "Michael is so flexible. We've thrown him into so many projects. We're juggling several at one time, and I rarely see him break a sweat. He's got incredible new-

music experience, but he's also a great classical cellist. When we thought about cellists to invite to play with, we were actually having a hard time coming up with a sizable list. All those skills residing in one person is not so easy to find."

According to Cords, the foursome's synergy is as strong as or stronger than ever. The chemistry among the players, flourishing audibly on record and visibly in concert, is the key ingredient of any musical group, from duos to orchestras. It's particularly essential to the success of a string quartet, given that only four musicians must create such a wide variety of textures, harmonies, and rhythms. While I'm sure that Brooklyn Rider is not immune to the squabbles that occur within any musical assemblage (ahhh, Simon and Garfunkel), the friendship and mutual respect that were evident when I talked with two of its members are clearly the foundation of their current success.

"We've played in so many different places—clubs, galleries, in museums as part of a residency, in a 5000-seat hall—all those experiences build a safety net of memory which

you can rely on and fall back into," violinist Johnny Gandelsman said over the phone from the parking lot of a Brooklyn Staples, where he was copying press releases for the group. All but cellist Nicolas live in their namesake borough. "Familiarity is never to be discounted. It's great to have that. And now that we are in our

second year with Michael, we're building something new.

"We have very high expectations of each other, but at the same time we're not together 100% of the time," Gandelsman continued. "Everyone also does their own thing, which is both good and bad, but the good is, when we get together it still feels special. We also have a sense of trust, which helps a lot. We do a lot of things that aren't in our collective comfort zone, or projects where someone might be completely at home with a project but the other ones aren't. So we can try things, and people can lead different projects, and it's fine.

"Finally, we try not to place huge expectations on a first performance, or the first of anything. It would take us a long, long time before we said, 'This is the definitive Brooklyn Rider interpretation' of anything. We're constantly learning and digging and trying to get to know pieces more."

One area in which Brooklyn Rider has always excelled is in the recording studio. All of their records, for labels like Mercury, Naïve, and World Village are simply miked for very effective, natural sound. Johnny Gandelsman is the member most interested in the recording process, and several of the quartet's recordings, including their latest, *Spontaneous Symbols*, have been released on his label, In a Circle. The album was recorded over three months at Oktaven Audio, a studio in Mount Vernon, New York. The sessions were engineered by Oktaven co-owner Ryan Streber, himself a composer, who in recent years has helmed recording projects released by such labels as Bridge, Naxos, New Amsterdam, and Tzadik.

One recent evening, Streber talked with me by cellphone about Brooklyn Rider as he drove along the Taconic Parkway. "Johnny [Gandelsman], in particular, has a lot of experience in studio recording, so he was really involved right from the beginning in terms of getting sound and ideas about miking. But on the whole, I just tried to keep it pretty

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simple, and just capture what they sounded like in the room as best as I could. The mike setup was straightforward. Most of the sound came from a stereo pair capturing the sound of the group. I was using a pair of clones of Neumann M49s that I built. Same circuit as a '50s M49, but made in-house from modern components because that's the only way I can afford them. They are really natural-sounding main pickups for acoustic ensembles. I also used one of those for the spot mike for viola. Two AEA ribbon mikes on the violins, and then, on cello, a [Telefunken] U47 clone that I also built.

"On *Spontaneous Symbols*, we did a pretty average amount of editing," Streber continued. "They like to work in longer chunks, sections, and then kind of doing those in a bunch. Some of the editing got into a little nitty-gritty, but they are so well prepared and so unified as a group [that] a lot of the editing was about trying different things, trying different articulations, getting things really as perfect as possible. There might

have been one or two that were a base take with small inserts, but most finished tracks are based on one performance.

"We recorded to Pro Tools HD, 96kHz/24-bit, and my recording chain is pretty minimal: mike preamps straight into the converter. And then, on the back end, in the Pro Tools, I have an analog console and a small amount of outboard gear that things get mixed through. So not totally in the box—there's a little bit of analog stuff happening on the mix side."

One of the salient features of any Brooklyn Rider recording or concert is the quartet's devotion to rhythm. This is particularly apparent in *The Brooklyn Rider Almanac* (2014), for which composers wrote works inspired by the work of other artists, some of whom, such as James Brown, come from the world of popular music. Is the fact that this string quartet is unafraid of [gulp!] grooves one of the keys to their acceptance by hipsters, and other folks who wouldn't other-

## BROOKLYN RIDER ON RECORD

### THE BROOKLYN RIDER ALMANAC

Mercury Classics B0021593-02 (CD). 2014. Nicholas Cords, Johnny Gandelman, exec. prods.; Jesse Lewis, prod., eng.; Jesse Brayman, eng.; Kevin Germain, Tyler Hammann, Max Ross, asst. engs. DDD? TT: 78:33

PERFORMANCE ★★★★★

SONICS ★★★★★

### SPONTANEOUS SYMBOLS

In the Circle ICR008 (CD). 2017. Nicholas Cords, Johnny Gandelman, prods.; Ryan Streber, eng.; Hansdale Hsu, asst. eng. DAD? TT: 75:36

PERFORMANCE ★★★★★

SONICS ★★★★★

In this, their 12th year of existence, it's probably more accurate to call Brooklyn Rider a new-music ensemble than a string quartet. They are fearless explorers with a voracious appetite for new music, and their most recent recordings reveal much of what they're capable of.

For *The Brooklyn Rider Almanac*, the quartet commissioned pieces from a variety of youngish composers, asking each to take his or her inspiration from another artist in any realm of creativity. The 13-track collection opens with *Necessary Henry!*, Albanian cellist Rubin Kodheli's tribute to jazz saxophonist Henry Threadgill. Inspired by Threadgill's "Necessary Illusion," Kodheli's piece relies on the cello playing a steady rhythm, better described as a groove, that manages to sound like a lot of rhythmically vital Threadgill jazz numbers for reeds as well as a piece for four stringed instruments. I think it's fair to say that many stuffer string quartets wouldn't



have had the stones or interpretative thirst to attempt something like this, let alone succeed.

*Maintenance Music*, by Dana Lyn, directly inspired by the "Maintenance Art Manifesto 1969!" of New York-based activist Mierle Laderman Ukeles, is another in the broad and long-lived canon of musical compositions triggered by New York City and stretching from "Coney Island Baby" and *Rhapsody in Blue* to Alicia Keys's "Empire State of Mind." The sounds of the city, from clattering subway trains to car horns to the hustle and bustle of sidewalks, are gloriously reproduced by just four instruments.

Igor Stravinsky's ballet *The Firebird* inspired the light, jaunty *Tralala*, whose composer, American singer-songwriter Christina Courtin, playfully calls it "A simpler Stravinsky . . . for children?" Aoife O'Donovan is a Massachusetts-born singer-songwriter, guitarist, and pianist known for forays into left-of-center bluegrass and folk noir. She began her career in the Wayfaring Strangers, now plays with Crooked Still and Sometymes Why, and used William Faulkner's immortal *The Sound and the Fury* as inspiration for her plaintive *Show Me*.

Other pieces on *Almanac* were inspired by dancer and choreographer Mark Morris, David Byrne of the Talking Heads, and novelist John Steinbeck.

The *Almanac*'s most surprising and effective pairing of composition and performance is jazz pianist

Vijay Iyer's "Dig the Say," inspired by none other than the hardest-working man in show business, the late and very great James Brown. In a liner note, Iyer says of Brown, "His vocals were electrifying, his lyrics pointedly political, his dance moves revolutionary, his sense of style larger than his life, his cultural impact immeasurably huge." Iyer's composition is bright, dramatic, and, yes—here comes that phrase again—full of monster grooves. It's a fun piece that's not entirely knowable using mere words—or even after several hearings. No string quartet has never had so much fun. Whip-smart, impeccably played, beautifully recorded, *Almanac* is a high-quality lesson in the nearly endless possibilities of the string quartet in the 21st century.

On *Spontaneous Symbols*, Brooklyn Rider gets back to its first love: playing new classical music, much of it written for them. The title comes from a quote by photographer Minor White that reads, in part: "When a photograph functions as an equivalent we can say that at that moment, and for that person, the photograph acts as a symbol or plays the role

CONTINUED ON PAGE 53



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wise listen to classical music?

"Groove-based music can be frowned upon in the classical world," Cords said with a straight face. "One of the reasons why is because sometimes in the classical world, when something groove-based happens, it can be terrible because it's an extraction of an idea. I think a real rhythmic energy and feel comes from an internal place, and it takes a long time to develop that as a quartet. And there's so much variety in grooves. And are you the kind of person that's forward in the beat, or are you playing behind it? Are you playing right in the center of the beat? There are so many subtle things, and so, as a result, we ended up playing and recording a lot of different types of groove music."

Still reeling a bit from this discussion of string quartets and groove music, I ask some natural follow-up questions. How does Brooklyn Rider feel about the standard repertoire? Do they get flak from fans unwilling or unable to go along with some of their fairly audacious stylistic adventures? Do concertgoers or record-label people ever say, "Just play Beethoven!"?

Cords smiled and took a breath. "When you think of the great composers in the Western classical tradition, they were always breaking down barriers, inventing forms, really pushing those boundaries—so I don't see what we're doing as actually unique. The best way to kill a tradition is to stagnate

and stop pushing.

"You need people who are retro. You need people who are holding the tradition as it is now. And you need people who are looking forward. It's an ecosystem, and I don't place greater or lesser value on any of those parts. I just see what we're doing as being more on the side of pushing forward. We do play standard rep, but the stuff we are most interested in recording is stuff that isn't out there, stuff that we can totally own and share with audiences.

"People are drawn, however, to what we do in standard rep because it feels fresh and new," Cord continues. "In a way, I feel like we're very traditional. We don't get together in a room and scheme about how we're going to give Mozart a facelift—hardly that. One of the choices that we make is that we use a lot less vibrato than a lot of quartets today in standard rep. But that's not to be provocative at all; it's coming from a place of wanting to hear harmonic movement clearly."

"What we do can be enjoyed by most people," Gandelsman said. "We are excited about sharing what we do in whatever venue or album, anywhere, anyway. There are so many new groups, new ensembles out there—the field is definitely changing. I wouldn't say people look at us and say, 'Brooklyn Rider is definitely leading the pack.' We're just part of this new collective of musicians doing things differently." ■

## BROOKLYN RIDER ON RECORD CONTINUED FROM PAGE 50

of a metaphor for something that is beyond the subject photographed."

Here, the "something that is beyond" is a series of fairly new pieces, some played in concert by Brooklyn Rider but never recorded by the quartet before. The heart of the album's eight tracks lies in the closing track, the 20-minute-long *Sequence for Minor White*, by Kyle Sanna, who writes in a liner note that he's impressed by White's ability "to capture a sense of spirit and the spiritual in his work." Sanna used—"invented," says Nicholas Cords—a number of special playing techniques, such as blowing into a violin's sound hole and bowing the side of the instrument, for a percussive effect. The blowing had me taking off my Bowers & Wilkins headphones and checking to make sure a pot on the stove wasn't boiling over. Over this creative addition, the strings hover and flit like so many insects in humid darkness.

Composed for Brooklyn Rider, *Sequence for Minor White* was intended to be included on *Almanac*. The group discussed recording one of its nine movements for that project, but put it aside until they had enough room on a record for the entire work. It varies from pulsing lines for cello under equally pulsing violin and viola parts,

all very reminiscent of many forms of electronic music, to quieter, more introspective moments in which a single plucked or bowed violin stabs out atonal melodies.

Evan Ziporyn, the accomplished and versatile American post-minimalist composer who founded the new-music ensemble Bang on a Can All-Stars, has written music for large wind ensembles, symphony orchestras, and Balinese gamelan. He's also an accomplished player of saxophones, bass clarinet, mbira, and a host of Balinese instruments. His three-movement *Qi*, its title the Chinese word for life force, moves from the tight, tense first movement, *Lucid Flight*, to the sprightly, electronics-assisted *Garden* and, finally, *Transport*, in which Ziporyn tests the "intense intimacy" he so admires about Brooklyn Rider in his liner note by writing swirling, colliding melodic lines calling for loud/soft dynamics and insistent, at times dynamically physical rhythms. Premiered by Brooklyn Rider in 2013, *Qi* is minimalism for those who don't know what it is, or just hate the very idea.

According to its composer, Colin Jacobsen, *BTT* was conceived as a celebration of the "incredible creative ferment and experimentation of the

1970s/80s downtown New York scene," some of whose participants he lists as "Meredith Monk, Steve Reich, the New York Dolls and the Velvet Underground." Also including flavors inspired by John Cage and J.S. Bach, *BTT* is a buzzing piece that refuses to alight for long and contains liberal use of pizzicato. The 20-minute work, originally used in a collaborative performance by Brooklyn Rider and Twyla Tharp, later evolved into a series of short movements, bursts of agitated strings that retain much of the rhythmic vitality and sense of excitement and constant motion that that must have been part of the original.

In terms of sound quality, *Spontaneous Symbols* has a clarity and purity of tone and timbre that are admirable, considering the often quick tempos, and the constant blending of solo instruments and fuller passages played by all members of quartet.

Never less than interesting, often thrilling, with wide-ranging musical tastes, a keen taste for breaking barriers, and cherishing the power of discovery, Brooklyn Rider is a group of marvelous instrumentalists and bold musical explorers who provide promise and ambition for the future of the string quartet. —ROBERT BAIRD

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JOHN ATKINSON

# GoldenEar Technology Triton Reference

## LOUDSPEAKER

**B**ack in January 2010, in Las Vegas for the Consumer Electronics Show, I was prowling the corridors of the Venetian Hotel when I bumped into loudspeaker auteur Sandy Gross, cofounder first of Polk Audio and then of Definitive Technology. Knowing that Gross was no longer associated with Definitive, I asked him what he was getting up to in his retirement.

Retirement? He showed me a photo of a plain, cloth-covered, black tower speaker and promised to keep in touch. When next I heard from him, it was to announce that, along with his wife, Anne Conaway, and his former partner at DefTech, Don Givogue, he had started a new loudspeaker company, GoldenEar Technology, Inc.,<sup>1</sup> and that the plain black loudspeaker was the first in a line of models to be named Triton.

Our first review of a Triton was of the Two, in February 2012. In February 2015, Robert Deutsch reviewed what was then the top of the Triton line, the One,<sup>2</sup> priced at a very affordable \$4999.98/pair. But when I bumped into Gross at the 2017 CES, he walked me to the GoldenEar room at the Venetian to listen to his ultimate Triton, the Reference, which would cost \$8498/pair. "Sandy Gross has done it again!" enthused Robert Deutsch in his show report.<sup>3</sup> I was sufficiently impressed by the sound the Triton References were making that I asked for a pair to review once the speaker was in production.

### Design

The Triton Reference is larger than the Triton One, and while a cloth "sock" covered all of the lesser Tritons, the Reference's enclosure is finished in high-gloss black, and there is a deep-curved grille in the shape of a vertical half-column. As in all the Tritons, the Reference's tweeter is GoldenEar's version of the Heil Air-Motion Transformer, from the 1970s. When Gross visited to set up the Triton

References in my room—a courtesy we extend to speaker manufacturers so that they can be sure that their products are working correctly and that there's no problem with their interaction with the room—I asked him about the advantages of this kind of driver.<sup>4</sup>

"When we started the project, we wanted to make something that was better than whatever we'd made before," he explained. "It is an evolution of the tweeter Dr. Heil designed back in the '70s. I felt very strongly that it had performance advantages—it's very fast. The biggest thing is that it doesn't have a breakup in the very high frequencies. Domes all have a breakup; it's a distortion that you not only can hear, but you can clearly measure—that 'sparkle' that stands out, but gets fatiguing after a while. . . . They promoted the Heil originally [by showing] that squeezing the air works a lot better than pushing and pulling it, but there's no question that the mass that's moving is the mass of each fold. So it's very, very quick. The High-Velocity Folded Ribbon that we use in the Triton Reference is not the same as we use in the other speakers—they've all got the same diaphragm, but it has 50% more magnet material, more neodymium, which gives it a lot more control, makes it faster but better controlled, [gives it] higher sensitivity."

The speaker's specified sensitivity is indeed very high, at 93.25dB/2.83V/m. Above and below the ribbon tweeter are twin 6" upper-bass/midrange drivers, these having a cast basket, a low-mass voice-coil, a newly developed polypropylene cone, and what GoldenEar calls a Focused Field

1 See David Lander's interview with Gross in the June 2016 issue: [www.stereophile.com/content/sandy-gross-true-confessions](http://www.stereophile.com/content/sandy-gross-true-confessions).

2 See [www.stereophile.com/content/goldenear-technology-triton-two-loud-speaker](http://www.stereophile.com/content/goldenear-technology-triton-two-loud-speaker) and [www.stereophile.com/content/goldenear-technology-triton-one-loudspeaker](http://www.stereophile.com/content/goldenear-technology-triton-one-loudspeaker).

3 See [www.stereophile.com/content/ces-2017-goldenears-new-flagship](http://www.stereophile.com/content/ces-2017-goldenears-new-flagship).

4 By the time you read this, a video of my interview with Sandy Gross will be posted on the *Stereophile* website.

## SPECIFICATIONS

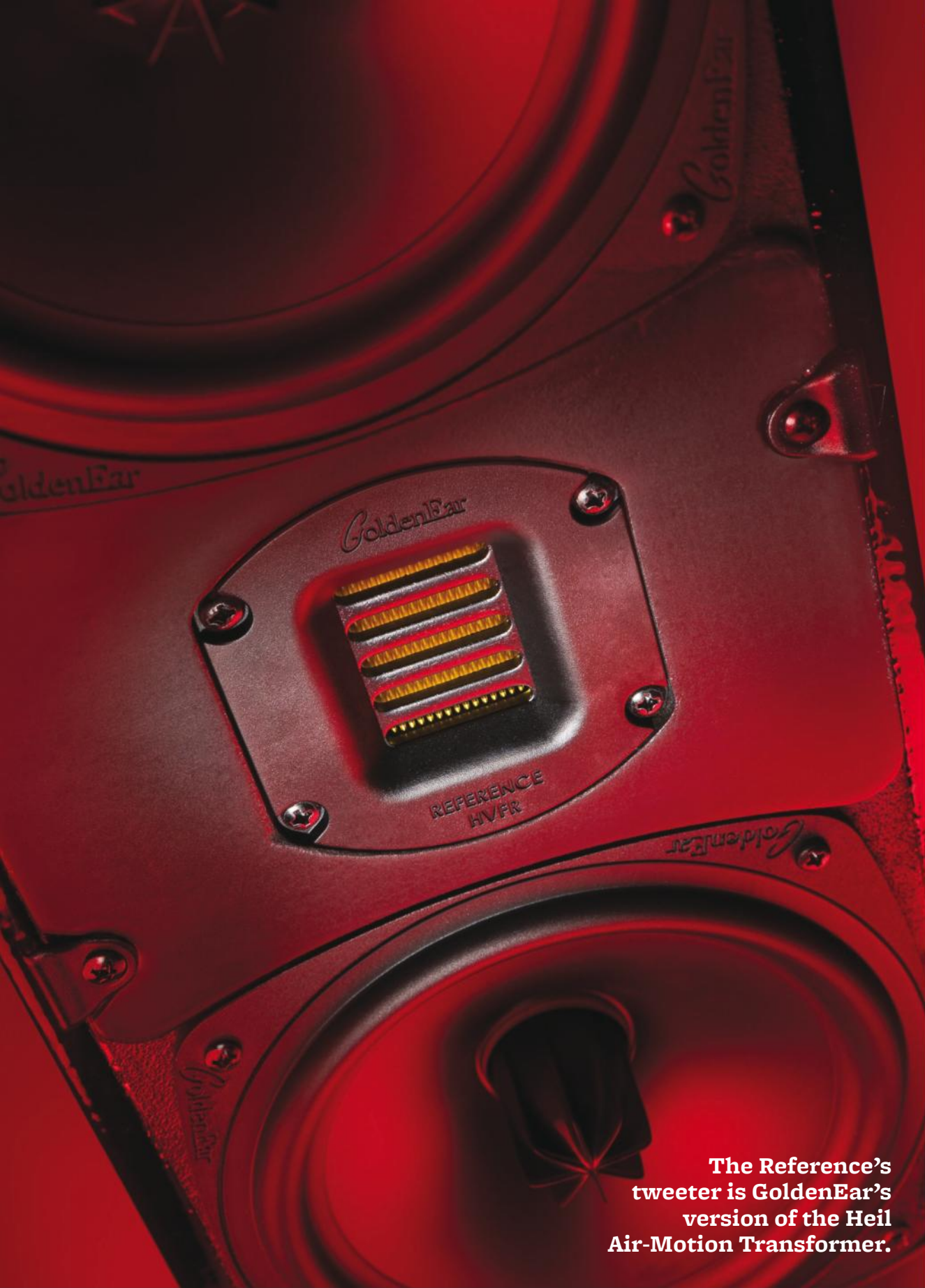
**Description** Three-way, reflex-loaded, floorstanding loudspeaker with powered sub-bass section. Drive-units: High-Velocity Folded Ribbon (HVFR) tweeter, two 6" MVPP mid/bass drivers, three 10" by 6" sub-bass drivers, four 10.5"

by 9.5" passive radiators. Subwoofer power amplifier: 1800W. Frequency range: 12Hz–35kHz. Sensitivity: 93.25dB/2.83V/m. Nominal impedance: "compatible with 8 ohms." Recommended amplification: 20–750Wpc. **Dimensions** 58" (1473mm)

H by 6.75" (172mm) W front by 9.25" (235mm) W rear by 18.75" (476mm) D. Base: 13.5" (343mm) W by 22.25" (565mm) D. Weight: 110 lbs (50kg). **Finish** Hand-rubbed, piano gloss-black lacquer. **Serial numbers of units**

**reviewed** O6118, O6119. **Price** \$8498/pair. Approximate number of dealers: 125. **Manufacturer** GoldenEar Technology, PO Box 141, Stevenson, MD 21153. Tel: (410) 998-9134. Fax: (410) 356-0808. Web: [www.goldenear.com](http://www.goldenear.com).





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magnet structure, designed to better direct the magnetic flux into the voice-coil gap. Instead of a dustcap, these drive-units feature a ribbed extension of the magnet pole-piece.

Both the One and Reference have powered subwoofer sections, but the three 10" by 6" "racetrack" low-frequency drivers have 40% more surface area than those in the Triton One, along with larger-diameter voice-coils and more massive Focused Field magnets. These drivers are reflex-loaded with four 10.5" by 9.5" passive planar radiators, two on each side of the Reference's cabinet. These are said to be similar to those used in GoldenEar's SuperSub X, but capable of greater excursion. The subwoofer drivers are driven by an 1800W class-D amplifier, and the crossover from the upper-frequency drivers is implemented in DSP with 56-bit precision. As well as a single pair of binding posts on the Reference's rear, the subwoofers can be driven from an RCA jack; their level can be adjusted with a knob.

Why powered subwoofers? "We have been building speakers with built-in powered subwoofers since 1995," Gross told me. "The reason we did it, even



The Triton Reference's drive-units, all developed specifically for the speaker.

though initially people thought it was to get the subwoofer box out of the room, was to get much better blending with the rest of the speaker."

Some North American speaker manufacturers, Paradigm for example, have told me they are repatriating production of their more expensive models, but GoldenEar's loudspeakers are created in the US, engineered in Canada, and made in China.

"The speakers are manufactured overseas because we find we can get extremely high quality, just like Apple manufactures their goods in China," explained Gross. "You can get any level of quality, but we work with suppliers who are very, very good, who can supply us with the quality level that we want. We design every component from the ground up, so we're not working with any parts off the shelf, but designing, for instance, our bass-midrange drivers from the ground up. We choose the cone—we actually design the curve of the cone, we tool the surround, everything—we can get a very high-quality bass-midrange driver that's comparable with some of the European drivers that some of the manufacturers are paying maybe ten times as much for, but that's

## MEASUREMENTS

I used DRA Labs' MLSSA system and a calibrated DPA 4006 microphone to measure the GoldenEar Triton Reference's frequency response in the farfield, and an Earthworks QTC-40 for the nearfield and in-room responses. The GoldenEar's sensitivity is specified as a very high 93.25dB/2.83V/m; my estimate was close to that at 92.5dB(B)/2.83V/m, which places the Triton Reference in exalted company. Speakers this sensitive are rare. Fig.1 shows how the impedance and electrical phase vary with frequency. The magnitude does dip below 6 ohms in the midrange and high treble, with a minimum value of 3.4 ohms at 320Hz and a combination of 4 ohms and -45° phase angle at 73Hz. Though GoldenEar specifies the Triton Reference's impedance as "compatible with 8 ohms," I would use an amplifier with this loudspeaker that is comfortable driving 4 ohms.

The traces in fig.1 appear free from the glitches that would suggest the presence of panel resonances, but

under magnification a slight discontinuity can be seen in both traces between 600 and 700Hz. While the Triton Reference's side panels seemed generally inert, the rear panel was relatively lively between 500 and 800Hz, with resonant modes at 550, 665, and 760Hz. Fortunately, the areas affected are small and face away from the listener; these frequencies are also sufficiently high that they should have no audible effects.

The green trace in fig.2 shows the response of the midrange units below 312Hz, measured in the nearfield. It rolls off smoothly below 100Hz, and I've plotted the nearfield response of the woofers (red trace) at a level that suggests that the crossover occurs at 80Hz. This is an arbitrary decision, however, as the woofers' level control has a range of 28dB between its minimum and maximum positions. The output of the woofers rolls off rapidly above and below a relatively narrow passband, as does that of the passive radiators (blue trace). The slight notch at 22Hz in the woofers' response sug-

gests that this is the tuning frequency of the radiators, but peculiarly, their output has a peak at the same frequency at which the woofers' output is greatest. The black trace below 300Hz in fig.2 shows the complex sum of the midrange, woofer, and passive radiator outputs, summed in the ratio of the square roots of their radiating areas. The large peak at 63Hz appears to be real, and not merely an artifact of the nearfield measurement technique, but the Triton Reference's low-frequency output extends to a low 25Hz with then

Stereophile GoldenEar Triton Reference Impedance (ohms) & Phase (deg) vs Frequency (Hz)

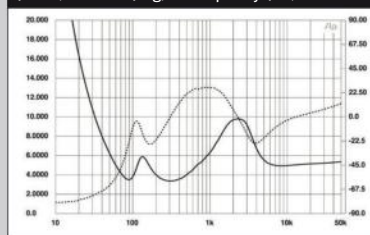


Fig.1 GoldenEar Triton Reference, electrical impedance (solid) and phase (dashed) (5 ohms/vertical div.).

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At a hair less than \$8500/pair, the Triton Reference is a lot less expensive than other companies' flagship models. I asked Gross what he'd tried to achieve with the Triton Reference that he hadn't with the earlier Tritons. "We are trying to come out with a step up from the Triton One that was better in every respect. Triton One is really terrific, but we felt we could make it even better in terms of the sonics, and in the industrial design



and the cosmetic presentation of the product."

### Sound Quality

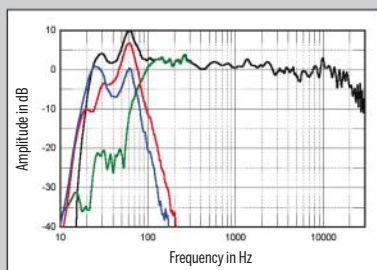
When Sandy Gross visited, he brought with him a CD-R containing several of the tracks he's found most useful in setting up speakers—not only recordings with a wealth of soundstage information, but also vocal recordings from Dean Martin and Brazilian singer Ana Caram. (Sandy is an aficionado of the human voice.) We began by placing the Triton References where the KEF Reference 5s<sup>5</sup> had worked best, but ended up with the speakers quite far away from the wall behind them (91"), closer to the listening chair (113" compared with the KEFs' 123"), and farther away from the sidewalls. My room is somewhat asymmetrical, so the woofers of the left-hand speaker were 51" from the nearest sidewall, those of the right-

5 See my review in the October 2017 issue: [www.stereophile.com/content/kef-reference-5](http://www.stereophile.com/content/kef-reference-5).

### measurements, continued

a very steep, sixth-order rolloff.

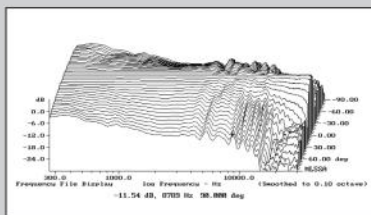
Above 300Hz, the black trace in fig.2 shows the Triton Reference's farfield response, averaged across a 30° horizontal window centered on the tweeter axis. It is impressively flat, though the mid-treble is shelved down by a dB or so. The speaker's upper-frequency response is disturbed by narrow peaks and dips. These won't be audible as such, but result, as I explain below, from reflections of the tweeter's output from the rather bulky grille. I repeated the tweeter-axis measure-



**Fig.2** GoldenEar Triton Reference, anechoic response on tweeter axis at 50", averaged across 30° horizontal window and corrected for microphone response, with nearfield responses of midrange units (green), woofers (red), and passive radiators (blue), respectively plotted in the ratios of the square roots of their radiating areas below 312Hz, 200Hz, and 170Hz, with complex sum of nearfield responses plotted below 300Hz.

ment without the grille; the response ripples were absent, and there was about 0.5dB more energy present above 1.2kHz. However, the small, narrow suckout at 5kHz was unaffected by removing the grille.

The Triton Reference's plot of lateral dispersion, normalized to the tweeter-axis response (fig.3), reveals that the speaker has smoothly controlled off-axis behavior up to the cursor position just below 9kHz. Above that frequency the GoldenEar becomes more directional throughout the treble, though the dispersion doesn't narrow significantly until above 15kHz. In the vertical plane (fig.4), a suckout develops more than 10° above or below the tweeter axis, which is 41" from the floor. (Work by

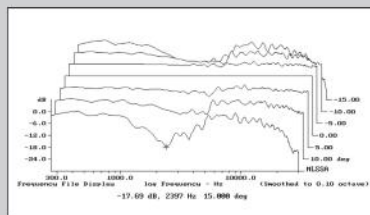


**Fig.3** GoldenEar Triton Reference, lateral response family at 50", from back to front: differences in response 90° off axis, reference response, differences in response 5°-90° off axis.

Thomas J. Norton 20 years ago for *Stereophile* found that 36" was the average height of a seated listener's ears.) This is why I tilted the speaker forward by placing cones under the rear of its base, to get the optimal treble balance at my listening position.

Fig.5 compares the spatially averaged response of the Triton Reference (red trace) with that of the KEF Reference 5 (blue), which I reviewed in October 2017.<sup>1</sup> (Using SMUGSoftware's FuzzMeasure 3.0 program and a 96kHz sample rate, I average 20 1/6-octave-smoothed spectra, individually taken for the left and right speakers, in a rectangular grid 36" wide by 18" high

1 See [www.stereophile.com/content/kef-reference-5-loudspeaker-measurements](http://www.stereophile.com/content/kef-reference-5-loudspeaker-measurements).

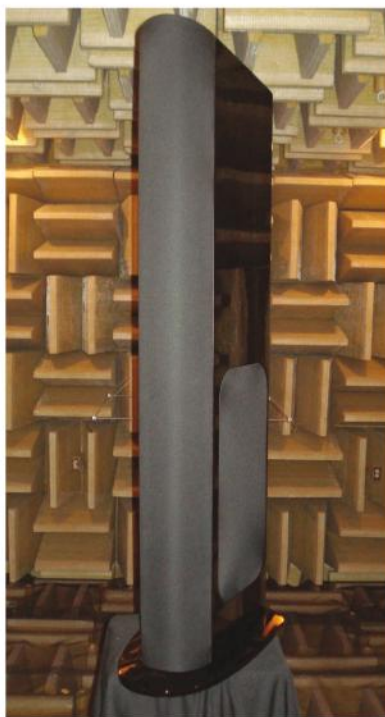


**Fig.4** GoldenEar Triton Reference, vertical response family at 50", from back to front: differences in response 15° above axis, reference response, differences in response 5°-15° below axis.

hand speaker 60". Sandy began with the speakers firing straight ahead, but once he was satisfied with their positions, he toed them in slightly so that their inner sidewalls were just visible from the listening position.

Listening to the dual-mono pink-noise track on my *Editor's Choice* (CD, Stereophile STPH016-2), I found I had to sit up straight in my chair, as the balance changed more than I was expecting if I sat below the tweeter axis, which is a higher-than-usual 41" from the floor. As suggested by Gross, I tilted the speakers forward a little by placing two Mod Squad TipToes under the rear of each Triton Reference's base.

The Triton Reference is a lot more sensitive than other speakers I've had in my room in recent months, or even years—I had to turn down the volume control on the DACs I was using by 10dB or so to set the playback level to what I'm used to. I used the MBL Corona 15 monoblock amplifiers during Gross's visit, which he didn't feel were quite optimal for the Triton



References. As I was scheduled to measure the Pass Laboratories XA60.8 monoblocks, to accompany Jim Austin's review of the Passes in the December 2017 issue, I hung onto them after the testing. My review findings are based on driving the GoldenEars with both the MBL and Pass Labs amps. In addition, my auditioning was split into two periods of six weeks separated by a month, due to my having to have the listening-room ceiling replaced and rebuilt after Labor Day. (The joys of owning a century-old house.)

I stuck with the subwoofer level set by Gross during his visit: each control was at its detented midpoint. The  $\frac{1}{3}$ -octave warble tones on *Editor's Choice* extended cleanly and evenly from 200 to 100Hz, with then the 80Hz band somewhat attenuated, and the 63Hz and 50Hz bands louder. The 40Hz band was also attenuated, although, as is always the case, the 32Hz tone was boosted by the lowest-frequency mode in my room. The 25Hz

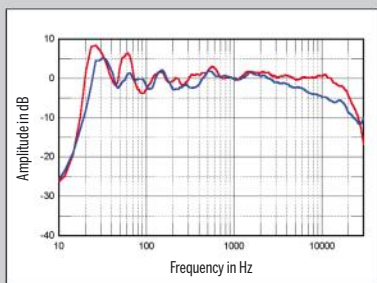
#### measurements, continued

and centered on the positions of my ears.) While a flat treble response is not what you want to see in a graph like this—a room's furnishings are more absorbent at high frequencies than they are lower in the audioband—this graph explains both why I felt the Reference 5 sounded a little sweet, and why the Triton Reference's treble balance sounded more natural in my room. The GoldenEar has a bit more midrange energy than the KEF and definitely more bass, especially in the 60Hz region, where the nearfield response peaked. (The volume controls for the active woofers were set midway between their maximum and minimum positions.)

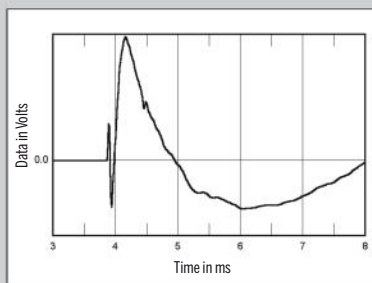
Turning to the time domain, the GoldenEar's step response on its tweeter axis (fig.6) indicates that its tweeter, midrange drivers, and woofers are all connected in positive acoustic polarity. The decay of the tweeter's step smoothly blends with the start of the midranges' step, and the decay of their step in turn smoothly blends with the rise of the woofers' step, all of which suggests optimal crossover design. However, there is a strong reflection of the tweeter's output 600 $\mu$ s after its initial arrival at the microphone, which must be from the bulky grille. This reflection gives rise to the ripples in the response seen in figs. 2 and 3.

Finally, the Triton Reference's cumulative spectral-decay plot on the tweeter axis (fig.7) shows an initially clean decay, but a lot of low-level hash develops, particularly in the high treble. I conjectured that this is connected with that strong reflection of the tweeter's output, but while the initial decay was somewhat cleaner when I repeated the measurement without the grille, there were still some low-level artifacts in the treble. These could, therefore, be due to reflections of the tweeter's output from the edges of its chassis. Apart from that quibble, the Triton Reference's measured performance reveals excellent engineering.

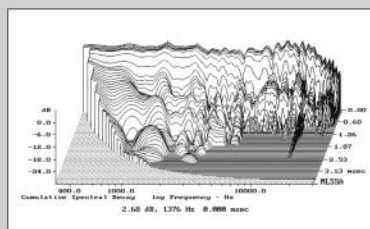
—John Atkinson



**Fig.5** GoldenEar Triton Reference, spatially averaged,  $\frac{1}{6}$ -octave response in JA's listening room (red); and of KEF Reference 5 (blue).



**Fig.6** GoldenEar Triton Reference, step response on tweeter axis at 50" (5ms time window, 30kHz bandwidth).



**Fig.7** GoldenEar Triton Reference, cumulative spectral-decay plot on tweeter axis at 50" (0.15ms risetime).



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Robert Harley, The Absolute Sound, 2017 Munich Show Report

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tone was easily audible at my normal listening level, but the 20Hz tone was rolled off. The half-step-spaced tonebursts on *Editor's Choice* were reproduced evenly, other than the 64Hz toneburst, which was louder than those to either side.

When I listened to the GoldenEars' cabinet sidewalls with a stethoscope as music played, they seemed acoustically inert. However, the rear wall was rather lively, though I could hear none of the midrange coloration with solo-piano recordings that might have stemmed from this behavior. (Solo piano is very revealing of colorations due to the lack of masking—if some notes are emphasized, there is nowhere for them to hide from the listener.) In fact, piano recordings sounded consistently superb through the Triton References: naturally balanced, with a convincing spread of sound from low bass to high treble. (Again, this was with the subwoofers set as Gross had left them.)

In heavy rotation here in recent months has been a CD of piano duets recommended to me by Amazon. Recorded in concert in 2014, it features Martha Argerich and Daniel Barenboim, born in Argentina a year apart, and both high in my personal pantheon (Deutsche Grammophon/Euroarts 479 392 2). I first became familiar with the CD's final track, Stravinsky's *The Rite of Spring*, as arranged by the composer for four hands, when I recorded a performance by Wu Han and Max Levinson at the 1996 Santa Fe Chamber Music Festival, for possible release as a Stereophile CD. Rights issues prevented this from happening, unfortunately, but listening to the unreleased files in the years since, I grew to appreciate how the reduction from the massive orchestral forces usually employed revealed so much more of Stravinsky's musical mischief making. Through the Triton References with the volume as high as I could bear—SPLs at the listening seat were typically in the high 90s, with peaks reaching 106dB (Studio Six iPhone app set to Fast)—the power of the pianos was in full evidence when the 5/8 pounding starts to announce *The Naming and Honoring of the Chosen One*. These GoldenEars played loud without strain or overload.

DG's recording places the pianos closer to the listener than mine—the Berlin audience is noticeably noisier—and the Triton's midrange was slightly on the forward side of neutral with this CD, which perhaps reduced image depth a little. The soundstages of some of my own recordings were not as deep as I'm used to, and the central image of the pink-noise track on *Editor's Choice* was somewhat wider than the pinpoint I experienced with the KEF Reference 5s. However, the imaging was stable, and the pink-noise image didn't widen or wobble at some frequencies. I wondered if the broadening of the image and the slight reduction in soundstage depth was due to early reflections from the rather bulky grille (see Measurements sidebar). Therefore, with care, I removed the grilles—each is held in place with two bolts in the speaker's base, and slides up and away from retaining clips to the sides of the front-firing drivers. But the soundstaging remained unchanged; in fact, the treble balance was now a little brighter. I replaced the grilles and resumed my listening.

Even with the grilles in place, the Triton Reference's high treble balance sounded more natural in my room than had that of the big KEF, and the high frequencies were clean. Not that that helped the CD version of this issue's "Recording of the Month," Robert Plant's *Carry Fire* (Nonesuch 563057-2). I agree with Robert Baird that this album is musically inventive, but the CD mix is so relentlessly overcooked that even the Triton References couldn't make it listenable.

## ASSOCIATED EQUIPMENT

**Analog Source** Linn Sondek LP12 turntable with Lingo power supply, Linn Ekos tonearm, Linn Arkiv B cartridge.

**Digital Sources** Aurender N10 music server, NAD Masters Series M50.2 digital music player; Ayre Acoustics C-5xe<sup>MP</sup> universal player; PS Audio PerfectWave DirectStream D/A converters; AudioQuest JitterBug, UpTone Audio ReGen USB cleaner-uppers; Mac mini running Audirvana 1.5, Pure Music 3, Roon 1.3, Vinyl Studio; Ayre Acoustics QA-9 USB A/D converter.

**Phono Preamplifier** Channel D Seta L.

**Power Amplifiers** MBL Corona C15, Pass Laboratories XA60.8 (monoblocks).

**Cables** Digital: AudioQuest Coffee (USB), Canare (AES/EBU). Interconnect (balanced): AudioQuest Wild Blue.

**Speaker:** Kubala-Sosna Elation!. AC: Kubala-Sosna Elation!, AudioQuest NRG (Niagara 1000), manufacturers' own.

**Accessories** Target TT-5 equipment racks; Ayre Acoustics Myrtle Blocks; ASC Tube Traps, RPG Abffusor panels; Shunyata Research Dark Field cable elevators; Audio Power Industries 116 Mk.II & PE-1 AC line conditioners (hard drive, computers). AudioQuest Niagara 1000 Low-Z Power/Noise-Dissipation System. AC power comes from two dedicated 20A circuits, each just 6' from breaker box. —John Atkinson

But when a recording had been mixed with musical intelligence, the big GoldenEars stepped out of the way. The haunting piano-and-drums intro to "September in Montreal," from Canadian singer-pianist Anne Bisson's *Blue Mind* (FLAC, Fidelio FACD025), was crystal-clear, and the sound and size of her voice were both superbly natural. At Sandy's subwoofer-level setting, however, the kick drum and double bass were too ripe. When I backed off the controls from 12 to 10 o'clock, this recording's low frequencies were in better balance with the midrange.

The bass had been a factor with Robert Plant's *Carry Fire* CD. When I selected "Fortune Teller," from Plant and Alison Krauss's *Raising Sand* (24/96 ALAC file, Rounder 11661-9075-2), on NAD's Masters Series M50.2 digital music player, to remind myself that this album had been much better recorded than *Carry Fire*, I had to turn the subwoofers down another notch. I found that while Sandy's default setting of the Triton Reference's subwoofer level was perfect for solo piano and chamber music, and while classical orchestral sounded a touch too magnificent, I was not going to complain about that. But when I wanted to rock out, I had to remember to turn the subwoofers down before the music started. This may be due to my room not being quite large enough for a large speaker like the Triton Reference, but it may well also be a function of the specific tuning of the powered woofers, which goes for weight and power rather than absolute low-frequency definition.

## Summing Up

GoldenEar Technology's Triton Reference isn't quite as exquisite a time slicer as the top-of-the-line speakers from Magico, Rockport, Vandersteen, Vivid, and Wilson, all of which I've auditioned in the past year. What it does do is offer an expansive, almost always involving sweep of full-range sound for a price that is a small fraction of what any of those models cost. ■

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– Jim W.

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JON IVERSON

# Vivid Audio Giya G1 Spirit

## LOUDSPEAKER



**I**t's been more than seven years since the late Wes Phillips reviewed Vivid Audio's top-of-the-line loudspeaker, the Giya G1, for *Stereophile*,<sup>1</sup> and since then the speaker has been seriously revised. At first glance you still notice the sui generis form; closer inspection reveals fundamental changes that make it, in most respects, an

entirely new speaker.

The Giya G1 Spirit is slightly shorter and wider than the Giya G1—as if the latter's top had been gently pushed down a few inches and bulged out its bottom half. This change

<sup>1</sup> See the July 2010 issue: <http://tinyurl.com/bp64v8c>.

### SPECIFICATIONS

**Description** Four-way, five-driver loudspeaker with exponentially-tapered-tube bass-reflex loading. Drive-units: HF: D26 1" (26mm) metal-dome tweeter, D50 2" (50mm) metal-dome tweeter, C125-75 4.9" (125mm) midrange with alloy-carbon diaphragm & 3" (75mm) voice-coil, two C225-100 8.9" (225mm) woofers with alloy diaphragms & 3.9" (100mm) voice-coils in 1.75" (45mm) gap. Crossover frequencies:

220Hz, 880Hz, 3.5kHz. Frequency response: 29Hz–33kHz,  $\pm 2$ dB on reference. Frequency range: –6dB at 25Hz and 36kHz. Sensitivity: 92dB/2.83V/m on axis. Impedance: 6 ohms nominal, 3 ohms minimum, no phase shift at minimum impedance. Harmonic (second & third) distortion: <0.3%, 25Hz–36kHz. Power handling (music): 1600W. **Dimensions** Speaker: 63" (1600mm) H by 17.5" (445mm) W by 32.5" (825mm) D. Weight:

176.4 lbs (80kg). Cross-over: 16" (405mm) W by 4" (100mm) H by 11" (280mm) D. Weight: 13.2 lbs (6kg). **Finishes** Piano Black, Pearl White high-gloss automotive paint; custom options available. **Serial numbers of units reviewed** 4613, 4614. **Price** \$93,000/pair, including external crossovers. Approximate number of dealers: not disclosed.

**Manufacturer** Coherent Acoustic Systems cc, 41 Openheimer Street, Pinetown 3601, South Africa. Tel: (27) (0)87-287-9871/2. Vivid Audio Limited, Unit 6, Star Road, Partridge Green, West Sussex RH13 8RA, England, UK. Tel: (44) 1403-71-3125. US distributor: Vivid Audio LLC, 2443 Fillmore Street #380-6960, San Francisco, CA 94115. Tel: (650) 996-2295. Web: [www.vividaudio.com](http://www.vividaudio.com).

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in shape was needed to accommodate the entirely new and larger C225-100 low-frequency driver, which I'll get to shortly. Other changes are an entirely new lower-midrange driver, a new external crossover, and a hefty increase in price: from \$65,000 to \$93,000/pair (add a bit more for special finishes).<sup>2</sup>

I was first exposed to the original Giya G1 in a top-floor suite of the Mirage Hotel in Las Vegas, many Consumer Electronics Shows ago, and it was love at first listen. The room was large by hotel standards, and carefully set up. We listened to a short playlist, and it set a high bar for show sound for years to come. In short, as Wes noted in 2010, the original Giya G1 was and still is something special.

In 2017, a few months after arrangements for a review of the Giya G1 Spirit were made, then-US distributor Philip O'Hanlon rented a van and drove the review samples up the California coast, from San Juan Capistrano to our place near Paso Robles. He'd warned me ahead of time about the size and weight of the Spirits' wooden crates, and I'd asked a couple members of the local audio club to be at the house when he arrived.

Wise move. The total weight of each speaker and its 6' by 3' by 2' crate is over 250 lbs. A word of praise here for the most excellent job Vivid has done in figuring out how to protect these weighty speakers, and make it easy to get them into your room and upright. The crates are built to last, with places to grab hold, and rubber wheels on one edge for easy maneuvering. We opened the crates outside, in the driveway, and as we tipped the first speaker out of its sarcophagus, we saw it had a board bolted to its bottom, with handles! We used these to carry each speaker into

place, where we laid it on its side and removed the board. Each Spirit's top swirl is sturdy enough to use as a handle, and most of its weight is at the bottom—they were surprisingly easy to set upright and move around.

### It's what's inside that counts

The Giya G1 Spirit is a classic example of form following function. It's a four-way, five-driver system, and each of the two midrange and single high-frequency drive-units is enclosed in its own appropriately sized and logarithmically tapered subenclosure. These look like long cones, and each is optimized for its driver's operating bandwidth and hidden inside the main cabinet. All you see are the diaphragms out front, and three bolts at the back, for tensioning the internal cones to keep them from vibrating.

The two opposed woofers—which, like all Vivid drivers, feature aluminum-alloy diaphragms, and which I measured as 11" in diameter (although Vivid specs them at 8.9")—fire from both sides at the bottom of the cabinet, their backsides connected with an internal brace that neatly cancels any reaction between the woofers and the cabinet. Immediately behind each woofer, at the rear of and molded into the sidewall, is a port roughly 10" by 2". The woofers' rather large tapered-cone enclosure comprises the entire interior of the cabinet, including the large curl on top—it's the woofer chamber's cone, wrapping around so it doesn't stick straight up.

The three mid- and high-frequency drivers are covered by a single sheer-mesh grille of rigid metal that magnetically clings to the front of the speaker. Each woofer also has its

2 In February 2017, John Atkinson interviewed Vivid Audio's designer, Laurence Dickie, about his design of the Giya G1 Spirit: <http://tinyurl.com/y9pvpz7c>.

## MEASUREMENTS

**W**ith a loudspeaker as large and bulky and heavy as Vivid's Giya G1 Spirit, I decided to measure them at Jon Iverson's home in central California rather than have them shipped to my Brooklyn lab. I therefore used a test setup different from my usual system of MLSSA software and hardware, which is not readily transportable. When I visited Jon, I took with me my MacBook Pro running SMUGSoftware's Fuzzmeasure 3 app, along with an Earthworks QTC-40 microphone and a FireWire-connected Metric Halo MIO2882 audio interface, the latter sampling at 96kHz.

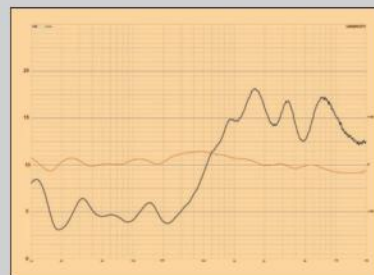
Because of the combination of uncalibrated test gear, I couldn't measure the Vivid's absolute voltage sensitivity. However, when I played pink noise and used the Studio Six Sound Pressure Level app with my iPhone 6's internal mike (C weighting, Slow Response) to measure the Spirit's output level, the sensitivity appeared to be close to 90dB/2.83V/m. The complex enclosure seemed dead to the knuckle-rap

test, but when I listened with a stethoscope to the various surfaces, I did find a very low-level resonant mode at 604Hz on the sidewalls just behind the port, and two others, at 512 and 675Hz, just above the woofers. These modes are too low in level and affect too small an area of the enclosure to have any effect on sound quality.

I tried using the impedance plug-in for Fuzzmeasure 3, without success. I therefore measured the impedance at spot frequencies using the voltage-divider method with a series 0.1% tolerance, 10 ohm resistor, and asked Vivid's designer, Laurence Dickie, to send me his impedance measurement to check against my own. His graph (fig.1) confirms my spot-frequency measurements, and is actually very similar to my impedance plot of the original Giya G1.<sup>1</sup> The impedance averages 5 ohms in the bass, with a low electrical phase angle, but rises to around 15 ohms in the treble. The Giya G1 Spirit will sound a little uptilted when driven by a tube amplifier having a typically high source impedance.

For the acoustic measurements, Jon and I lifted one of the Vivids onto a small table so that the speaker's tweeter was exactly midway between the floor and ceiling of his large, 11'-high listening room. By aiming the speaker diagonally across this wide room, all of the reflections of the speaker's sound from the room's boundaries would occur sufficiently later in time to allow me to place the measuring microphone at my usual distance of 50". I ended up with an anechoic time window of 5

1 See fig.1 at <http://tinyurl.com/y7tcebo>.



**Fig.1** Vivid Giya G1 Spirit, electrical impedance (black) and phase (red) (5 ohms/large vertical div.).

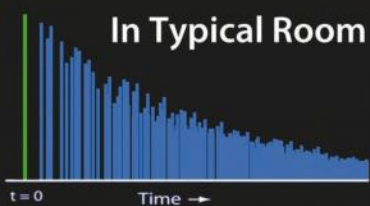




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own circular grille. It's an ingenious design, and they never rattled or came loose. To remove a grille, firmly pry one edge with the fingertips until it pops off. I tried listening with the grilles on and off, and concluded that they didn't harm the sound in any way. I left them on the entire time the speakers were here.

Wes Phillips's review of the Giya G1 covered Laurence Dickie's design theory and engineering well enough that I'll stick to highlighting the updates in the Spirit. Vivid says that redesigning the cabinet and pulling the crossover out to occupy a separate box has made the speaker substantially less resonant, and made room for two more carbon-skinned braces inside. The completely new woofer's wider, longer voice-coil required the wider cabinet and bigger ports, and, at 600W, it can handle twice the power of the original G1's woofer.



## The Spirits laid down a solid, room-shaking foundation that was both musical and tight.

The completely redesigned C125-75 midbass driver has a magnet whose diameter increases from 2" to 3" (50 to 75mm), and has been moved from the driver's rear to a position where it now surrounds the voice-coil. Vivid says that the project began as an investigation into the reoptimization of the form of the cone-and-dome assembly, but with the addition of carbon-fiber rings: "In the same way that applying a peripheral carbon fibre ring to the D50 dome changes the optimum shape and doubles the frequency of the first break up, so the new

### measurements, continued

milliseconds, which means my farfield measurements are valid above 200Hz.

The green trace above 450Hz in fig.2 shows the farfield response of the Giya G1 Spirit's upper-frequency drive-units, averaged across a 30° horizontal window centered on the tweeter axis. Below 450Hz, the green trace shows the response of the lower-midrange drive-unit, measured with the microphone in the nearfield. The red trace in this graph shows the nearfield outputs of the woofers, the blue trace that of the ports. The latter covers a wider range than with a conventional reflex design, but rolls off smoothly above 100Hz.

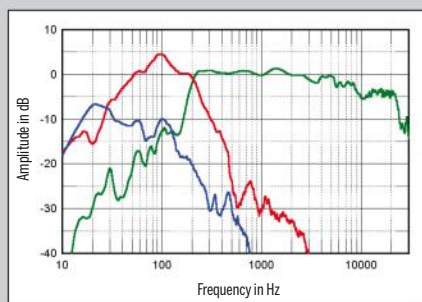
The woofers hand off to the lower-

midrange drive-unit at the specified 220Hz, and the Vivid's farfield response is impressively even in the decade from the midrange to the mid-treble. The output starts to shelf down above 5kHz, but as the plot of the speaker's lateral dispersion shows (fig.3), this will be due in part to the increase in directivity in the top audio octave. As with the original Giya G1, the speaker becomes a little more directional than I would expect from its use of a small-diameter tweeter. In the vertical plane (fig.4), a suckout develops in the crossover region above the tweeter axis (orange, turquoise, and blue traces), but the balance remains even with the listener's ears between

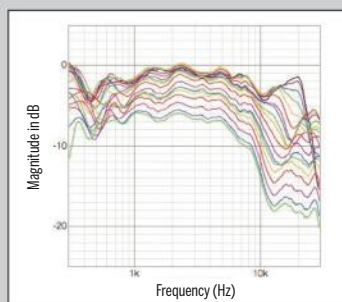
the top of the midrange cone driver and the tweeter (black, red, and green traces).

The red trace in fig.5 shows the spatially averaged response of the Giya G1 Spirits in JI's room, with the blue trace showing, for reference, the spatially averaged response of the MartinLogan Masterpiece Renaissance ESL 15A, which JI reviewed in January 2017, with Anthem Room Correction (ARC) applied in the bass.<sup>2</sup> (I average 20 measurements of the left and right speakers, individually taken in a vertical rectangular grid 36" wide by 18" high and centered on the position of

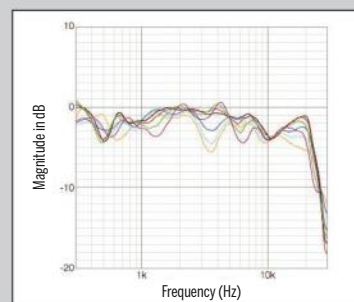
<sup>2</sup> See fig.4 at <http://tinyurl.com/y7gmattc>.



**Fig.2** Vivid Giya G1 Spirit, anechoic response on tweeter axis at 50°, averaged across 30° horizontal window and corrected for microphone response, with nearfield responses of lower midrange (green), woofers (red), and ports (blue), respectively plotted below 450Hz, 2.6kHz, and 750Hz.



**Fig.3** Vivid Giya G1 Spirit, lateral response family at 50°, response on tweeter axis (black) and at: 5°–90° off axis (colored traces).



**Fig.4** Vivid Giya G1 Spirit, vertical response family at 50°, responses at: 15° (orange), 10° (turquoise), 5° (blue) above tweeter axis, response on tweeter axis (black), responses 5° (red), 10° (green), 15° (purple) below tweeter axis.

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Jonathan Valin, *The Absolute Sound*, 12/2015.



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profile of C125-75 with carbon rings has resulted in a dramatic improvement taking the first break up from 4.3kHz to 10.5kHz.”

The shiny, Pearl-finished pair O’Hanlon brought with him looked like two perfectly tufted peaks of stiffly whipped cream carefully dropped onto the carpet. Vivid describes the material these speakers are made of as “glass reinforced balsa cored sandwich composite,” and it’s a result of designer Dickie’s philosophy of light, rigid materials that push resonances higher in frequency, where they’re less obtrusive. You’d think this would make for a light speaker, but alas, everything inside still adds up to one heavy product. I used Vivid’s spikes (six per speaker; other, non-spikey footer options are included) to lock the speakers securely to the wooden subfloor under the carpet.

The standard finishes are Piano (black) and Pearl (white). Some Vivid ads feature custom colors such as banana yellow, and I’ve seen red as well. The finish is so luxuriant and appealing that I wanted to stroke and touch them, maybe

even lick them. I wasn’t sure what we’d think when they were set up in the house, but the first impression was very positive, and they grew on us more over time. Of the dozens of visitors of all genders and ages who listened to them here,



#### measurements, continued

the listener’s ears when seated in the listening chair.)

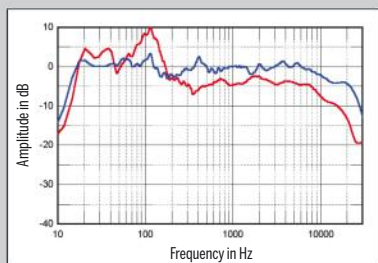
Allowing for the difference in level of the two plots, the two speakers offer a very similar balance at the listening position from the middle of the midrange through to 14kHz or so. Above that frequency, the panel speaker offers a little more output. The Vivids have a slight lack of midrange energy where the MartinLogans had an excess, but there is then a large peak in the upper bass and a generally high level in the mid- and low-bass regions, extending down to below 20Hz. Jon’s room is definitely conducive to powerful low frequencies! As the blue trace in this graph shows, the Logans’ built-in ARC allowed their low-frequency output to be brought

into a much better balance with the mids compared with the uncorrected Vivids. But when I listened to the Spirits in Jon’s room, playing familiar recordings, the extended, powerful low frequencies were not accompanied by boom or blurring, just added magnificence. The sweetness of the speaker’s balance, especially when played loudly, was very appealing. One thing I should note: The responses at the listening position of the left and right Vivids were very closely matched, with a difference in level of no more than 1dB between 100Hz and 9kHz.

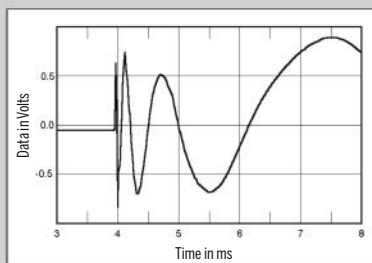
The Giya G1 Spirit’s step response on the tweeter axis (fig.6) indicates that, like the earlier Giya G1, all of its drivers appear to be connected

in positive acoustic polarity. The positive-going steps show, from left to right, the arrivals of the tweeter, upper-midrange unit, lower-midrange unit, and woofers, and the decay of each drive-unit’s step is smoothly integrated with the start of the step of the next lower in frequency. Although it is not apparent in this graph, the port’s output is, unusually, also in positive acoustic polarity. Finally, the Giya G1 Spirit’s farfield cumulative spectral-decay plot on the tweeter axis (fig.7) is impressively clean—cleaner, in fact, than that of the Giya G1.

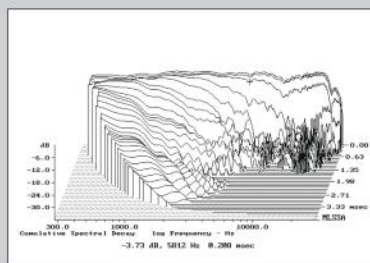
Overall, the Vivid Spirit’s measured performance indicates superb loud-speaker engineering.—John Atkinson



**Fig.5** Vivid Giya G1 Spirit (red) and MartinLogan Masterpiece Renaissance ESL 15A with Anthem Room Correction (blue); spatially averaged,  $1/6$ -octave response in JI’s listening room.



**Fig.6** Vivid Giya G1 Spirit, step response on tweeter axis at 50” (5ms time window, 48kHz bandwidth).



**Fig.7** Vivid Giya G1 Spirit, cumulative spectral-decay plot on tweeter axis at 50”.



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only one objected to their unconventional appearance. And he was an artist at that!

### It's a setup

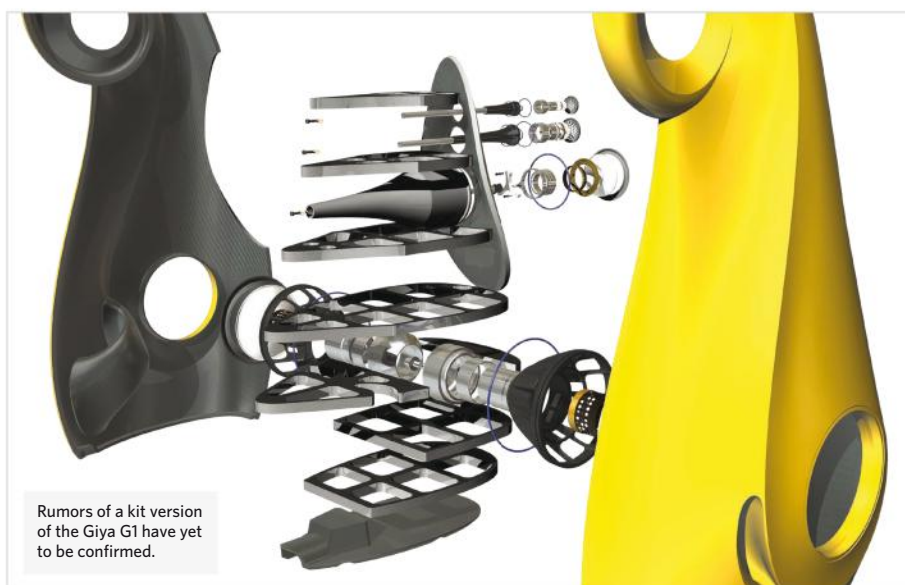
The Giya G1's external crossover, new in the Spirit revision, permits both the optimization of the internal chamber of the speaker and custom active or passive crossover alternatives, and now the first order of business was to configure it.

Each speaker's crossover comes housed in its own hefty, gloss-black enclosure measuring 16" wide by 4" high by 11" deep, weighing 13.2 lbs, and resting flat on spiked or flat feet (both are included). At one end of the box is an 18"-long, 3/4"-diameter cable that looks like a short, black cow's tail. Fitted to its end is a hefty, round, professional-grade NL8 multi-pin connector that goes straight into the speaker's matching jack.

O'Hanlon told me that longer and/or custom cables of your choice can be had, and I'm guessing you can order the crossover box in flaming orange. At the other end of the box are two sets of binding posts, for biwiring to your amp. If you don't want to biwire (I do, however), jumper straps are included. Connecting the crossover cable to the speaker is tricky—cable and connector fit into a hidden pocket in the base of the speaker cabinet. It helps to have someone tip the speaker forward to get access to this pocket and lock the cable in place—there's not much working room. But unlike most speakers, once the G1 Spirit is hooked up, its back is free of hanging wires and makes for a very clean installation. And if you cut a hole in the floor directly under each speaker and run its cable straight down (somehow hiding the crossover under the floor), the speakers would *look* perfectly wireless.

We placed the Spirits approximately where my MartinLogans had been in my largish listening space, and O'Hanlon began by using the title track of Shelby Lynne's *Just a Little Lovin'* (CD, Lost Highway B0009789-2) to distance the speakers from the front and side walls. He used the left channel of the recording, one speaker at a time, listening for the sound of the bass to make sure it met his approval at the listening position. He then had me sit down and close my eyes while he walked in front of the speaker from the left wall, repeating the phrase "This is a test" until I said it sounded most natural. He marked that point on the floor with tape. That point then became the starting position from the wall for the left speaker. He then repeated this for the right speaker, with some minor tuning to follow, until we were both satisfied.

After all that, in the weeks following O'Hanlon's visit, I continued to fine-tune the Spirits' positions and toe-in angles. Bass was the way I like it. Tonality was spot-on and



**The Pearl-finished pair looked like two tufted peaks of stiffly whipped cream dropped onto the carpet.**

very realistic, but I was looking for the optimal balance between razor-sharp depiction and soundstage size and depth. My quest ended with a magnificently big sound but not the tightest imaging. Instruments and voices still hung in space as they should, but each was more rounded

and slightly more diffuse than the images produced by my baseline references, MartinLogan's Prodigy electrostatics. This was not necessarily a bad thing.

### Lending an ear or two

Chelsea Williams' *Boomerang* (CD rip, Blue Élan) begins with a haze of hammered dulcimers before a panoramic orchestra of sounds falls in behind her commanding voice—a rich, honeyed voice that draws the listener directly in, and greatly reminds me of Americana-flecked favorite First Aid Kit. It's love at first listen—the entire album is a hidden gem of 2017. Through the Giya G1 Spirits there was deep bass and layers of acoustic and electric instruments, and Williams's well-recorded voice was locked in place, front and center, wonderfully rendered.

As a result of my setting up the Spirits to suit my preferences in sound, the size and depth of this recording were slightly bigger than life. But in this case, mo' Chelsea mo' betta! It was almost the perfect album to show off what the Vivids got so right: natural, even tonality all across the midrange, with a cohesive soundstage from left to right and from front to back. There was no spittiness, no artificial sheen or edge on anything. No matter how loud I turned them up, the Spirits hung everything together and refused to act out.

"Afterglow," from Lydia Ainsworth's *Darling of the Afterglow* (16/44.1k file, Arbutus), eventually became the first track I played when anyone wanted to hear the Spirits. Sitting somewhere between Kate Bush, Peter Dinklage, and Lana Del Rey, "Afterglow" launches with deep bass pulses and droning voices, before Ainsworth's carefully multi-tracked voice hovers in the room as the bottom end drops right out. A pal has described this track as a series of low-frequency test tones with voice. It works for me. (If you're



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curious, watch the video on YouTube.)

This was the Giya G1 Spirit's sweet spot: big, full-range, dynamic sound, with a hint of extra charm on top. When I played this track loud, people wanted to hear it still louder; and as I pushed the volume up, there was no brightness or glare. "Afterglow" is that rare track that's simultaneously huge and intimate, and the Spirits presented everything in thrilling detail and depth. The music may not be your cup of tea, but I wish every reader could hear this track through the Spirits, and get the pure musical rush they could deliver with a recording so accomplished and rich.

I also played "Afterglow" when the audio club visited, and several members whipped out their phones to take photos of the album cover, for future reference. Demo track of the year? After that meeting, member Kris Vardas, himself a promising amateur speaker designer, wrote on our club's Meetup.com page: "Listened to my audio system for the first time since hearing the Vivid G1s at Jon's house. In comparison, my floorstanders sound like small bookshelf speakers." I think he exaggerates, but it does touch on why the Spirits are so seductive.

Anyone who's visited my listening room knows we love BIG BASS around these parts, and normally run our two powered subwoofers all the time. But I turned them off while we were setting up the Spirits, then never turned them back on. Though the very bottom octave was a bit shy by powered-sub standards, there was no need to add the big boys back in—across the board, the Spirits laid down a solid, room-shaking foundation that was both musical and tight. Okay, so maybe Dickie snuck in a little extra bottom end down there in the lower to midbass? Here's where the external crossover would let you add some active electronics, so you could fine-tune to taste.

We ran all the usual big-bottom suspects, from Gentlemen's Dub Club to Dub for Daze to Dub Vibes to Dubblestandart, and on to electronic, trip-hop, Mahler, and everything in between. Always rewarding, always satisfying. I'll put it this way: If you really *don't* like bass (I'm guessing there are a few of you out there), these are not the speakers for you. The Vivids gave great weight and impact to rock and large-scale classical music alike. Yet when I scaled my playlist back to more acoustic fare, such as Yusuf/Cat Stevens's excellent new album, *The Laughing Apple* (24/44.1k file, Verve Decca Crossover), the bottom end got out of the way to let the supple midrange do its thing, floating his voice in space and bringing it to life.

Classical piano, small chamber, and full orchestral arrangements were all in the mix the last couple months, and though they all sounded wonderful through the Spirit, the Vivid's attributes shone brighter with modern music, rock in particular. With a chamber orchestra given a lively recording, such as Rachel Podger's masterful take on J.S. Bach's violin concertos with Brecon Baroque (SACD/CD, Channel Classics 30910), the entire ensemble took on a lovely liquid quality, the trade-off being that the instruments themselves were not as distinctly layered in space as I've heard through other speakers. With this many musicians on stage, this layering becomes more critical.

The Vivids' sound remained smooth and consistent when I listened vertically or horizontally off axis, with a slight top-

end rolloff the farther I moved to one side. The sweet spot was of generous size—images held steady as I moved a few feet to either side of the center seat, or even stood up. I also found the Spirits could maintain a uniform sonic signature, including the bass, no matter where I set the volume—something that isn't often tested, but that I've found humbles many otherwise promising products.

Robert Plant's new album, *Carry Fire* (24/96 file, None-such), is what I call bang-and-strum music: hand drums and



Jon Iverson (left) needed help to get each 250 lb crate out of Philip O'Hanlon's van.

drum kits keep the pulse while guitars and other, more exotic stringed instruments layer the chords. Above it all, Plant croons in his plaintive boy-lost-in-the-woods voice.

*Carry Fire* is not a great recording, but it turned out to be a good album for evaluating various playback levels: at low volumes, Plant's voice retained all its characteristics in the same proportion as at live levels. With some speakers, vocal overtones and richness push forward or recede, depending on the volume. Not here.

### Compared to what

In recent months I've heard plenty of pricey competing speakers set up to sound fantastic in a variety of settings: the Wilson Audio Specialties' Alexx, YG Acoustics' Sonja 1.3, various Magicos, and, for much less money, Rockport Technologies' Avior II and Vienna Acoustics' The Music, to name a few favorites.

Vivid's Giya G1 Spirit fits easily in this rarified company. If I had to draw a general conclusion, I'd say that, of the speakers mentioned above, the Spirits were more easygoing on top, while a tad less exacting in imaging and the layering of soundstage depth. But the Spirit's dynamic impact at loud levels was better than anything I've heard. The YGAs easily better the Vivids in precise holographic imaging—but I've never heard the Sonja 1.3s rock out like the Giya G1 Spirits.

Comparing the Vivids to MartinLogan's superb Masterpiece Renaissance ESL 15As,<sup>3</sup> which spent several happy months in my room earlier this year—along with their self-powered 12" woofers—it was readily apparent that the Vivids had more bottom end. The MLs do have an active bass-calibration system to bring things in line, while the Vivids'

<sup>3</sup> See my review of the MartinLogan Masterpiece Renaissance ESL 15A in the January 2017 issue: <http://tinyurl.com/jxrnjd2>.

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bass reproduction is subject to placement more than anything else—and we'd placed the Spirits where the bass was standing proud! But while the MLs had plenty of openness and detail and tight imaging, they could never render loud rock as dynamically and as easy to listen to as could the Vivids.

### Conclusions

Vivid's Giya G1 Spirits could rock, and often inspired me to dive all in. And with a great recording, the closer to realistic levels I pushed them, the better everything sounded. At the same time, simple vocal recordings played softly, late at night, sounded sublime. A real treasure, that.

The Giya G1 Spirit is like a rich, robust cup of coffee with a bit of milk and sugar. Is that extra bit of sweetness a distraction? There were times when I might have preferred my music rendered straight, with all details intact. But with most real-world recordings this was rarely a problem—and with dodgy recordings, a little sugar goes a long way.

As if on cue as I wrote this up, *Stereophile* reader "blang11" commented, on the online reprint of John Atkinson's review of KEF's Reference 5 loudspeaker: "I struggle to remember the last speaker review I read in *Stereophile* that described the sound as a bit too sweet. I recall the majority are either neutral (yay!) or overly bright or the tweeter is simply a few [dB] too high in level. As someone who has recently moved into a room that's a bit bright, I now recognize that a bit of sweetness can be just what the doctor ordered, especially for those whose recordings aren't impeccable."<sup>4</sup>

That's the Spirit! ■

<sup>4</sup> See the October 2017 issue: [www.stereophile.com/content/kef-reference-5-loudspeaker](http://www.stereophile.com/content/kef-reference-5-loudspeaker).

## ASSOCIATED EQUIPMENT

**Digital Sources** Apple MacBook Pro computer (2.5GHz Intel Core i7, 16GB RAM, 512GB SSD) running OS 10.13, Room v1.3 build 262, JRiver Media Center 19, iTunes 12.7, Amarra Computer Music Player, VLC, Reaper 5.52, XLD; Western Digital 2TB NAS; Western Digital, Toshiba portable USB drives; Oppo BDP-103 universal BD player; Meridian Digital Media System (formerly Sooloos) Control 15, QNAP TS-669 Pro NAS; Apple iPad Air 2 & iPhone 6. Ayre Acoustics QB-9DSD, Benchmark Media Systems DAC1 USB & DAC2 HGC, Meridian Explorer2 DACs.

**Analog Source** Oracle Delphi 2 turntable (modified by Brooks Berdan), Origin Live Encounter tonearm, Sound-smith Aida cartridge.

**Preamplifier** Marantz AV7005 in Pure Direct Mode.

**Power Amplifiers** Classé CAM 350 monoblocks (2).

**Loudspeakers** MartinLogan Masterpiece Renaissance ESL 15A & Prodigy & BalancedForce 212 subwoofers (2). Desktop & recording monitoring system: Emotiva 5, Velodyne Servo-F subwoofer.

**Cables** Digital: AudioQuest Diamond (USB) & HD6 Carbon (S/PDIF), Cardas Clear (USB) & Neutral Reference (S/PDIF), XLO (S/PDIF). Line level: various Kimber Kable, XLO HT Pro. Speaker: Kimber Kable BiFocal XL. Headphone: Cardas Clear (balanced). AC: manufacturers' own.

**Accessories** Dedicated 40A line (amplifiers & speakers), dedicated 15A lines (digital & analog components).

—Jon Iverson

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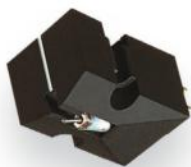
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HERB REICHERT

# Totem Acoustic Signature One

## LOUDSPEAKER

**N**ew York City, 1989: I had a music and audio-guru friend named George, who worked at both Tower Records and Stereo Exchange. Every Saturday I'd slip him a Grant and, over the following week, he would choose \$50 worth of used Tower LPs he thought I should own. One midweek afternoon, on my way home from work, I dropped in on George at Stereo Exchange, to chat and maybe see what was new. Grinning, he led me to a back room and pointed to a pair of small speakers mounted on stands. "Tell me what you think of these." He walked out and left me to listen alone.

As soon as he'd left, I jumped up and looked at the back of one of the polished cabinets—I needed to see who made these excellent-looking things. They were playing "Wordy Rappinghood," from Tom Tom Club's first, eponymous album (LP, Sire SRK 3628), and sounding way too big and too overtly lively to be true. They were called the Model 1, and they were made by a new Canadian company, Totem Acoustic, founded by Vince Bruzzese in 1987 in Montreal.

The Model 1s sat on heavy stands about 2' from the room's front wall; I sat in a low, plush chair about 15' away. Amazingly, the Totems' sound felt more solid in the bottom octaves than my similar-sized Rogers LS3/5a mini-monitors. The highs seemed more vibrant and extended—the Totems' metal-dome tweeters *vs* the Rogers's Mylar domes? Detail, soundstage size, and image specificity were equal to those of the LS3/5a's.

The Model 1's obvious quality impressed and *annoyed* me, in equal measure. Back home, I had two complete stereo rigs: an "intimate" desktop



## SPECIFICATIONS

**Description** Two-way, stand-mounted, reflex dynamic loudspeaker. Drive-units: 1" (25mm) aluminum-titanium dome tweeter (SEAS), 6.5" (165mm) woofer with cellulose-acrylate cone and 3" (75mm) voice-coil. Crossover frequency: 2.7kHz.

Crossover slopes: quasi second-order. Frequency response: not specified. Nominal impedance: 8 ohms. Sensitivity: 87.5dB/2.83V/m. Maximum sound pressure: 103dB.

**Dimensions** 13.8" (350mm) H by 7.7" (195mm) W by

10.6" (270mm) D. Weight: 19 lbs (8.6kg).

**Finishes** Black Ash, Mahogany, Sapele, Satin White veneers.

**Serial numbers of units reviewed** SIG 01008, 01009. **Price** \$2650/pair. Approximate number of dealers:

250. Warranty: 5 years.

**Manufacturer** Totem Acoustic, 9165 rue Champ D'Eau, Montreal, Quebec H1P 3M3, Canada.

Tel: (514) 259-1062.

Fax: (514) 259-4968. Web: [www.totemacoustic.com](http://www.totemacoustic.com).





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system with LS3/5a's on Rogers's factory wall mounts; and a show-off system comprising 1947 Altec A5s, with 10-cell tar-filled horns, sitting on casters in the middle of a very large space. I'd enjoyed "Wordy Rappinghood" through both setups, but that night at Stereo Exchange the Totem Model 1s were confidently driving a fairly large, highly damped audio showroom, and still sounding quick and clear and spatially adept. How could this be?

Brooklyn, 1999: I visit another audio-guru friend. He's got a pair of speakers, beautifully finished in wood, set up on Sound Anchor stands, and they sound and look a lot like what I remember of those first Totems—but more transparent and dynamic. Turns out they're Totem's new, biwireable Model 1 Signatures. That demo convinced me to buy a pair.

Brooklyn, September 2017: I'm listening to Totem Acoustic's 30th anniversary edition of the Model 1. They've changed the name to Signature One, and the price is now \$2650/pair. But it looks—and sounds—like a totally different speaker.

### Description

John Atkinson described Totem Acoustic's Model 1 Signature, which was manufactured from 1997 to 2008, as "a little gem, a *pur sang* minimonitor."<sup>1</sup> Which is precisely how I feel about the pair I own. The Model 1 measured 12.5" high by 6.5" wide by 9" deep, weighed 9 lbs, and had 5" midrange/woofers. The new Signature One is a bit bigger and more than twice as heavy, at 13.8" by 7.7" by 10.6" and 19 lbs. Its mid/woofer, too, is bigger, at 6.5", and its nominal impedance is higher: 8 vs 4 ohms, which should make it more compatible with the kind of low-powered, low-feedback

tubed and solid-state amplifiers I use.

The two-way Signature One is a rear-ported, reflex design; its 6.5" mid/woofer has a cellulose-acrylate cone and a 3" voice-coil, a cast-aluminum frame, and a neodymium magnet. Behind its 1" SEAS tweeter, which has an aluminum-titanium alloy dome, is a rear chamber designed to "correct resonances." Totem says that the circuitry of the Signature One's second-order crossover comprises air-core inductors; resistors from Dale, RCD, and Archomic; 80-20 oxygen-free copper and silver wire; Cornell-Dubilier Orange Drop film capacitors; and ClarityCap high-voltage, paper-in-oil capacitors. The mid/woofer hands off to the tweeter at 2.7kHz.

The veneered cabinet is made of 3/4"-thick MDF with lock-miter joints. All internal surfaces are also veneered, then treated with a borosilicate-loaded coating, for damping. Like the Model 1 Signature, the Signature One is biwireable via twin pairs of WBT binding posts attached to an aluminum plate on its rear panel. Grilles are included.

### Break-in and Setup

I let the Totems play 'round the clock with their grilles on, for two consecutive days. Then I listened all day long, without grilles, for two weeks. I did all of my critical listening sans grilles, and with the Signature Ones in the same spots where I like my Stirling Broadcast LS3/5a V2s: about 6' apart, and

<sup>1</sup> See Larry Greenhill's review of the Model 1 in the April 1993 issue: [www.stereophile.com/standloundspeakers/820/index.html](http://www.stereophile.com/standloundspeakers/820/index.html). See JA's review of the Model 1 Signature in the October 2008 issue: [www.stereophile.com/content/totem-acoustic-model-1-loudspeaker-john-atkinson-october-2008](http://www.stereophile.com/content/totem-acoustic-model-1-loudspeaker-john-atkinson-october-2008).

## MEASUREMENTS

I used DRA Labs' MLSSA system and a calibrated DPA 4006 microphone to measure the Totem Acoustic Signature One's frequency response in the farfield, and an Earthworks QTC-40 for the nearfield responses. The Totem's specified sensitivity is 87dB/2.83V/m, which is the same as that of the earlier Model 1 Signature; my estimate, however, was much lower, at 83.5dB(B)/2.83V/m, which is 3dB lower than that of the 2008 speaker.<sup>1</sup> Fig.1 shows how the impedance and electrical phase vary with frequency. The impedance is significantly higher than that of the Model 1 and Model 1 Signature. While those speakers had an impedance that dropped to 3.8 ohms between 200 and 300Hz, the new speaker drops below 8 ohms in only one region, with a minimum magnitude of 7.4 ohms at 200Hz. And while the phase angle is occasionally extreme, the magnitude at the same frequencies is high, mitigating any drive difficulty. The

Signature One is an easy load for the partnering amplifier.

The traces in fig.1 have small discontinuities at 490 and 600Hz that suggest the presence of panel resonances at these frequencies. When I investigated the enclosure's vibrational behavior with a plastic-tape accelerometer, I found a strong mode present at 600Hz on the sidewalls (fig.2), and a slightly weaker mode at 490Hz on the top panel. When I measured the

Model 1 Signature in 2008, I found a strong vibrational mode at 675Hz on all surfaces, but felt it was sufficiently high in frequency not to have audible effects. On the earlier speaker I had also found two lower-level modes, at 290 and 320Hz, which I conjectured were connected with the lower-mid-range warmth I'd occasionally noted with piano recordings; these modes are

<sup>1</sup> You can find the measured performance of our 2008 samples of Totem's Model 1 Signature at [www.stereophile.com/content/totem-acoustic-model-1-loudspeaker-2008-measurements](http://www.stereophile.com/content/totem-acoustic-model-1-loudspeaker-2008-measurements).

Stereophile Totem 1 Impedance (ohms) & Phase (deg) vs Frequency (Hz)

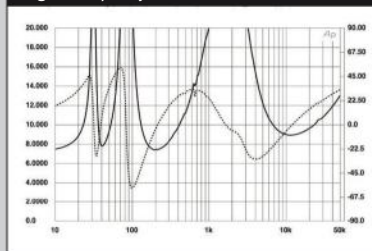


Fig.1 Totem Signature One, electrical impedance (solid) and phase (dashed) (5 ohms/vertical div.).

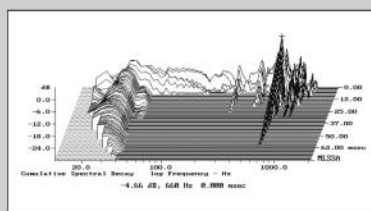


Fig.2 Totem Signature One, cumulative spectral-decay plot calculated from output of accelerometer fastened to center of sidewall (MLS driving voltage to speaker, 7.55V; measurement bandwidth, 2kHz).

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28" from the speakers' front baffles to the wall behind them (*ie*, the room's front wall). This worked quite well.

### Listening

Yesterday, I spent seven straight hours (with snacks) playing digital and analog recordings through a pair of Altec Valentias (*not* Art Dudley's). When I got home, Totem Acoustic's little Signature Ones sounded depressingly puny. The Altecs had produced *big*, palpable sound, remarkable presence, and sturdy, touchable textures. Their transients had strong starts and extended finishes. The sizes of instruments and voices reproduced by the Altecs were conspicuously correct. The new Totems, my KEF LS50s, the Technics SB-C700s, and all of my beloved LS3/5a variations, were simply incapable of providing such horn-speaker pleasures. All of those mini-monitors make music small because *they* are small. Unlike horns or large panel speakers, their little, 5"-6.5" mid/woofers don't move much air. I euphemistically describe their endearingly small sound as *intimate*.

But the Signature One did something the Altec could not: sound pure, clear, and quiet. The Totem's textures were delicate and discrete, not sturdy and upfront. Unlike any two-way horn speaker I know, the Signature One's frequency response sounded ruler flat and undistorted from about 60Hz to 6kHz—except for a narrow band of noise or confusion somewhere in the middle of the midrange (500–600Hz).

Thinking it was my placement of the Totems that was at fault, I began moving them farther out from the front wall and farther apart. Finally, I played a record that sounded so good, it made me stop and take notice: the complete works for organ of François Couperin performed by Michel

Chapui on the organ of Saint-Maximin, in southern France (LP, RCA Victrola VICS-6018). It sounded astoundingly powerful and expansive. The Totems were now 36" from the front wall, 7' apart, and less than 70" from me—but they charged my room's air *thickly* and forcefully, as church organs do in real life. This force and energy surprised me—it felt like some of the clearest, most exposed, least compressed organ reproduction I had heard from small speakers. So of course I had to play another organ recording: *Master Works for Organ: Volume 6*, dedicated to works by Dietrich Buxtehude, with Jørgen Ernst Hansen playing the organ of Copenhagen's Church of the Savior (LP, Nonesuch H-71188). It, too, sounded surprisingly full, finely wrought, and genuinely satisfying. The sound, including the bass, was taut, tonally accurate, and all *there*.

On a roll, I tried Handel's oratorio *Samson*, with Karl Richter leading the Munich Bach Orchestra and Choir (4 LPs, Archiv 413 916-1). In Act II, scene 2, the voice of Martina Arroyo (Dalila) was stunningly clear and undistorted. The Totems' formerly fuzzy mid-midrange was now clear.

Generally, I am not a fan of operatic singing but something about Arroyo's voice seduces me. On this recording she sounds not only harmonically pure and enticing, but gives Dalila an extra dose of seductive voluptuousness. My hormones and dream-addled brain forced me to play all eight sides—and especially side four—twice in one day. This is the type of Archiv recording that can, on the wrong system, sound brittle and unsupple. With the Rogue Audio RH-5 preamplifier and PrimaLuna ProLogue Premium power amp, the Totems again surprised me. Not only was Arroyo's voice throaty and lusty, the sound energy pulsing from the Signature Ones nicely mimicked the performance

### measurements, continued

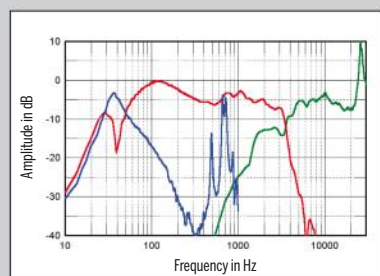
absent in the 2017 speaker.

As in the earlier Model 1 variants, there were pipe resonances in the Signature One's rear-facing port. However, as can be seen by the blue trace in fig.4, which shows the Signature One's port output measured in the nearfield, the 2017 speaker's resonances are very much worse. Not only are there strong modes at the frequencies of the two panel resonances noted earlier, there

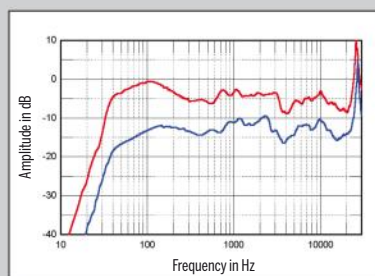
is another strong mode at 700Hz. I heard these resonances as a vowel-like coloration as soon as I switched on the MLSSA noise signal, and once I'd identified it, it was as hard for me not to hear it in the music as it was for Herb Reichert when he thought he could hear the Totems' cabinets coloring the sound of Skip James's "She's All the World to Me." "A narrow band of noise or confusion somewhere in the middle

of the midrange (500–600Hz)," Herb also wrote.

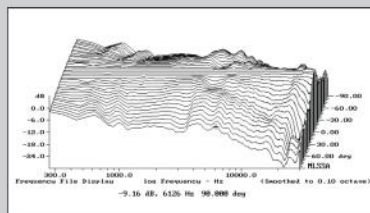
The port's legitimate output peaks narrowly between 30 and 50Hz, and the corresponding notch in the woofer's output (fig.3, red trace) lies at 39Hz, very slightly lower in frequency than that of the 2008 speaker. At the other end of the woofer's passband, its output rolls off rapidly above 3kHz, with the crossover to the tweeter (green trace) occurring at 3.5kHz. Like all metal-dome tweeters, the Totem's has a high, sharply defined resonant



**Fig.3** Totem Signature One, acoustic crossover on tweeter axis at 50", corrected for microphone response, with nearfield responses of woofer (red) and port (blue), respectively plotted in the ratios of the square roots of their radiating areas below 350Hz and 1kHz.



**Fig.4** Totem Signature One (red) and 1 Signature (blue), anechoic response on tweeter axis at 50", averaged across 30° horizontal window and corrected for microphone response, with complex sum of nearfield woofer and port responses plotted below 300Hz.



**Fig.5** Totem Signature One, lateral response family at 50", normalized to response on tweeter axis, from back to front: differences in response 90–5° off axis, reference response, differences in response 5–90° off axis.



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energy captured in the vinyl.

After a few weeks of the Totems sounding less remarkable than the Altec's in some important ways, I was stunned to hear this spectacular awakening. When the tone and force of a performance such as this actually survives all the way from Munich to Bed-Stuy, it speaks most highly of the little wooden boxes at the end of the playback chain. Bravo, Totem!

Before I bought my first Beatles album, I owned two by Delta Blues master Skip James (1902–1969): his comeback recordings of 1965 and 1968, respectively *Today!* and *Devil Got My Woman*. They're now long gone—all I have of that precious and well-recorded music is the compilation *Blues from the Delta* (CD, Vanguard 79517-2). I regard James as the most complete talent of all the Delta Blues artists. Early Skip James on Paramount 78s, and his comeback recordings for Vanguard after he'd disappeared for 30 years, show him to be not only the most ethereally surreal and poetic countertenor, probably ever, but also the best guitarist and pianist. "I'm So Glad," "Devil Got My Woman," and "Crow Jane" are blues classics. Cream and Deep Purple covered his songs. Robert Johnson's "32-20 Blues" (1936) is a caliber increase of James's "22-20 Blues" (1931). If you're a fan of jazz and/or classic rock and don't yet know the intense quality of James's talent, prepare to meet an authentic American master.

The Signature Ones delivered the loping staccato of James's "She's All the World to Me" with a weighty-sounding upright piano. Once again, their puny wooden boxes rolled out satisfying scale, fine tone, and a piano that sounded like a real wooden instrument with a stool, an ashtray, and a whisky glass. With this track I *thought* I could

hear the Totems' cabinets coloring the sound, but it didn't distract me from James's piano, or his masterful fingerings and expressive pedal work. I could hear the metal-dome tweeters being metal-dome tweeters, and the mid/woofer cones being their cellulose-acrylate selves. But none of those completely normal colorations of box-speaker domes and cones mattered, because they were ultrasubtle—the essence of the music was not blurred, distorted, or confused. James and his piano were extremely clear and present. The start and decay of each note seemed perfect.

I was using the First Watt J2 amplifier, and James's vocal articulations and word enunciations were pleasures to behold. I got easily lost in imagining James's life, where he might have disappeared to, and his artistically productive last days at Vanguard's recording studio in New York City.

The best way to survive the times—while checking for tight bass and rhythmic propulsiveness—is to listen carefully to Zeca Afonso's "Grândola, Vila Morena." At 12:20am on April 25, 1974, this song was broadcast on Portuguese radio as the signal to launch the coup that overthrew the country's government. I'm sure the version jazz bassist Charlie Haden and his Liberation Music Orchestra present on *The Ballad of the Fallen* (LP, ECM 1248) is not like the one played that day on Rádio Renascença, but the Signature Ones let Haden's version sound whole and pulsing with innovative bass energy. I am not a bass aficionado. But if a small loudspeaker like the Totem Signature One can deliver a little power and scale from pipe-organ recordings, as it did with the Couperin and Buxtehude mentioned above—and if it can make each of Haden's notes unique in a noticeable way, that is all the bass power and quality I require.

As with the Model 1s, the Signature Ones' imaging was a

## measurements, continued

peak above the audioband, at 27kHz. This resonance should be sufficiently high in frequency to have no audible consequences. The traces in fig.4 compare the farfield responses of the 2017 Signature One (red trace) and 2008 1 Signature (blue). They are almost identical, though the earlier speaker's woofer alignment appears to be more highly damped.

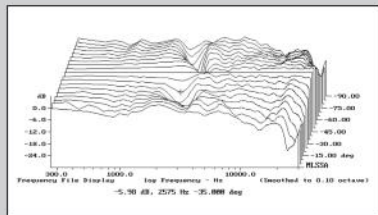
The Signature One's horizontal dispersion (fig.5) is wide and even up to 6kHz, which correlates with stable, accurate stereo imaging. The radiation

pattern narrows above that frequency, as is typical of a 1" metal-dome tweeter. In the vertical plane (fig.6), a sharply defined suckout develops in the crossover region immediately above the tweeter axis; a comparison of this graph and the red trace in fig.4 suggests that the most even treble response is to be heard just below the tweeter axis.

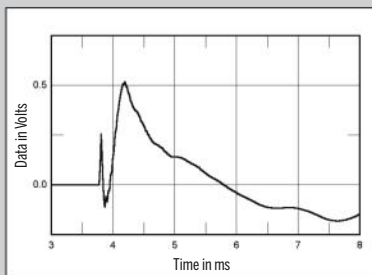
Turning to the time domain, the Totem's step response on the tweeter axis (fig.7) reveals that both drive-units are connected in positive acoustic polarity, with the tweeter leading the

woofer. The decay of the tweeter's step blends smoothly with the start of the woofer's, suggesting optimal crossover design. Some slight undulations in the decay of the woofer's step can be seen; these correlate with the delayed energy at 3.3kHz in the cumulative spectral-decay plot (fig.8). Other than that, however, this plot is superbly clean, supporting HR's comment that the Signature Ones offered quickness, transparency, and flow.

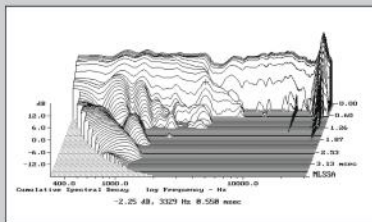
Other than those cabinet and port resonances, Totem's Signature One measured better than its predecessors. —John Atkinson



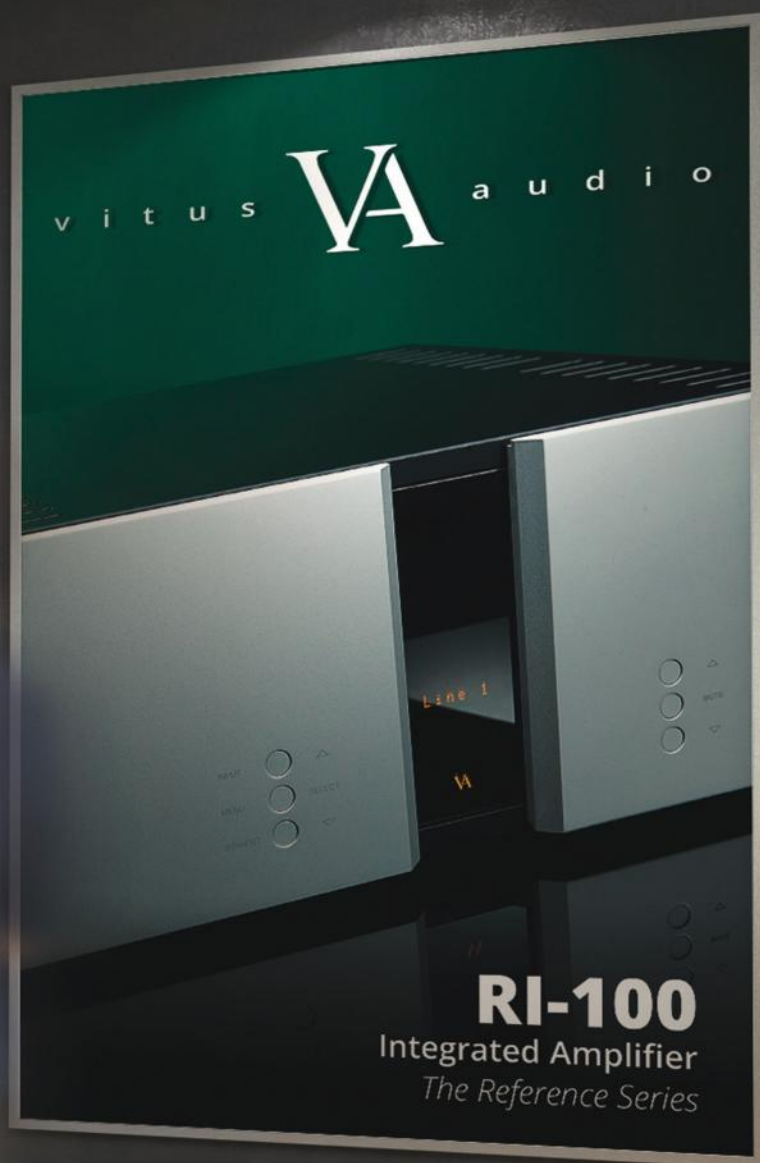
**Fig.6** Totem Signature One, vertical response family at 50°, normalized to response on tweeter axis, from back to front: differences in response 45–5° above axis, reference response, differences in response 45–5° below axis.



**Fig.7** Totem Signature One, step response on tweeter axis at 50° (5ms time window, 30kHz bandwidth).



**Fig.8** Totem Signature One, cumulative spectral-decay plot on tweeter axis at 50° (0.15ms risetime).



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special joy, but their reproductions of texture, transparency, and tone didn't seem as accurate as my Stirling LS3/5a V2's. But with every amplifier I tried, and with each of the above-mentioned recordings, the Totems generated terse energy that filled my small room and engaged me as a listener. But sometimes this energy could be a little thin.

Driven by the First Watt J2, the KEF LS50s played with more force and density than the slightly less punchy Totems. The Signature Ones were fundamentally well mannered and refined, but this aura of refinement stemmed partly from their lack of gross musical weight and slam. The Totems sounded more tough and solid with the Bel Canto e.One REF600M monoblocks. (I'll say more about this weight-and-slam thing in my forthcoming review of Pass Laboratories' XA25 amplifier.)

In Baaba Maal and Mansour Seck's *Djam Leelii*, Maal's singing is complex and ancient sounding (UK LP, Rogue FMSL 2014). Imagine pulsing, timeless Senegalese love songs accented with the marimba-like *balafon* and diverse strobe-like percussion. The songs on *Djam Leelii* feel like laments or ancestral prayers. The Signature Ones' quickness, transparency, and flow drew my attention to the sentiments behind Maal's singing much better than the KEF LS50s.

### Comparison: Totem Acoustic Model 1 Signature

Toward the end of the review period I started moving the Signature Ones back, incrementally closer to the front wall: I was beginning to think they sounded too vaporous. I wanted my new set of Charlie Parker's *The Complete Savoy & Dial Master Takes* (3 CDs, Savoy SVY 17149) to have more body. After I'd spent a couple days moving them around and fiddling with tiny degrees of toe-in, the Totems ended up with 20" between their front baffles and the wall, and firing straight ahead. (I'd been enjoying organ records with their baffles 36" from the wall.) These new positions not only improved instrumental corporeality, especially drums, they also made voices more present, and improved the speakers' beat-keeping abilities. Best of all, they let Parker's All Stars sound more like the cool, hipster, haute-jazz powerhouses they were. And, surprise surprise, these positions were within 2" of the marks on my floor that indicate the best positions for my Totem Model 1 Signatures.

The Signature Ones banged out these 1948 masterpieces by Parker, Miles Davis, John Lewis, Tommy Potter, and Max Roach very solidly—right there in front of me. They delivered poetry and Beat Generation attitude. When a hi-fi delivers subtle but distinct layers of period attitude—as the Ones did with Miles, Max, John, Tommy, and Charlie—you know your system has got it going on. With the First Watt amplifier, the Totems generated delirious, true-toned, mind-engaging bebop. What more could I want?

When I returned my old Model 1 Signatures to the system, they sounded lighter and smaller in comparison, and Parker's All Stars sounded brighter, sharper, more "digitally remastered." Pianist Lewis's right hand was emphasized, and the bass was drastically reduced. Davis's trumpet kept poking me sharply in the ear. With the Model 1s, all three CDs of this set sounded less relaxed and natural, less spacious, and considerably less satisfying than through the 30th anniversary Signature Ones.

To help me precisely determine the differences between the Model 1 Signature and Signature One, I played the Eduardo Paniagua Group's *Danzas Medievales Españolas* (M•A

## ASSOCIATED EQUIPMENT

**Analog Sources** AMG Giro G9 turntable & 9W2 tonearm; AMG Teatro, Dynavector DV-20X2L, EMT TSD 75, Koetsu cartridges; Mobile Fidelity UltraDeck turntable & Ultra-Tracker cartridge.

**Digital Sources** Mytek HiFi Manhattan II, Schiit Audio Yggdrasil DACs; Integra DPS-7.2 DVD-A player (as transport).

**Preamplification** Auditorium 23, Bob's Devices, Dynavector SUP-200 MC step-up transformers; Lounge Audio LCR Mk.III phono preamplifier & Copla MC stage; Parasound Halo JC 3+, Tavish Design Adagio phono preamplifiers; Pass Laboratories HPA-1, Rogue Audio RH-5 preamplifiers.

**Power Amplifiers** Bel Canto Design REF600M, First Watt J2, Pass Laboratories XA25, PrimaLuna ProLogue Premium.

**Integrated Amplifier** Line Magnetic LM-518 IA.

**Loudspeakers** Falcon Acoustics LS3/5a, KEF LS50 & Q350, Stirling Broadcast LS3/5a V2.

**Cables** Interconnect: AudioQuest Cinnamon & Big Sur & Golden Gate, Auditorium 23, Kimber Kable Silver Streak, Wireworld Silver Eclipse 7. Speaker: AudioQuest Type 4 & GO-4, Auditorium 23.

**Accessories** Harmonic Resolution Systems M3X-718, PS Audio PerfectWave PowerBase isolation platforms; Sound Anchor stands; Dr. Feickert Analogue Protractor NG & Adjust+ software; Acoustical-Systems SmarTractor cartridge-alignment protractor; Musical Surroundings Fozgometer azimuth-range meter; Moongel stylus cleaner. —Herb Reichert

Recordings M034A). I've found that playing any of Todd Garfinkle's recordings for his M•A label is always a good test of how well my stereo is performing. They sound so vibrantly natural that if they sound even a *little* bad, I know something's wrong in my system.

The Model 1 Signatures produced more laser-like focus and a smaller, denser, more crystalline soundstage than the Signature Ones. This is probably because, compared to the new Totems, the old ones generate less harmonic energy in the 50–200Hz region. Consequently, the Model 1s *seem* tighter and better resolved in that region. For me, this reduction in energy is a Faustian bargain: It makes the soundscape too bright and unnaturally dense. The super-well-recorded *Danzas Medievales Españolas* sounded considerably more transparent and sensual through the Signature Ones, which generated deeper, darker soundstages, with more tactile images and more information about the acoustic of the recording venue, in this case the Cathedral of the Monastery of St. Espina, in Valladolid, Spain.

The sound of the Model 1s was tight and clean, like studio monitors; the Signature Ones sounded relaxed and colorful, and *not* hi-fi. (I credit the new tweeter for these improvements.) Both Totems are pacy and rhythm-driven. Both were exciting and enjoyable to use. I still love the old Totems' tightness, but the new Totems' sound is more satisfyingly lucid and expansive. The Signature Ones "disappeared" more as I listened, and that pleased me.

### Conclusions

The Totem Acoustic Signature One has an appealing, easy-flowing musicality that retains most of the monitor-like accuracy that made the original Model 1 a respected design that endured for 30 years. Highly recommended. ■

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JIM AUSTIN

# Alta Audio Hestia Titanium

## LOUDSPEAKER

Phrases like *high fidelity* and *perfectionist audio* suggest a central norm to which all things audio should aspire. Not a bad idea, in some ways, but if you look at the wide variety of loudspeakers out there that people love, from the old-school Auditorium 23s to the high-tech KEFs and Vivids, it can be hard to figure out what they all have in common.

While I like the idea of objective standards, I also like that high-end audio has room for a variety of approaches—specific aural embodiments of excellence—each striking its own balance between personal (sometimes idiosyncratic) vision and eternal verities, including scientific verities. Getting the technology right matters, but there's plenty of room for creativity.

Alta Audio's Hestia Titanium loudspeaker (\$32,000/pair), which I had in my home during late summer and early fall of 2017, is a fine example of a loudspeaker for which one designer used some interesting technology and a bit of innovation in the service of his personal vision of sound.

### Hestia who?

Hestia is a goddess from Greek mythology, first-born sister to such better-known deities as Hades, Poseidon, Hera, and Zeus. Hestia's father, the Titan Cronus, ate his children



## SPECIFICATIONS

**Description** Three-way, floorstanding, biwireable loudspeaker with open-baffle midrange and ported, "transmission line," bass alignment. Drive-units: modified RAAL ribbon tweeter, 6" (152mm) Morel upper-midrange unit with carbon-fiber/Rohacell composite

cone and titanium former, two 7" (178mm) Dayton Audio Esoteric Series lower-midrange units with woven glass-fiber cone and titanium former, 10" (254mm) woofer with paper cone & titanium former. Frequency range: 28Hz–47kHz. Sensitivity: 90dB/2.83V/m. Impedance:

4 ohms. Recommended amplification: 50–400W.

**Dimensions** 53.75" (1365mm) H by 15" (381mm) W bottom by 8.5" (216mm) W top by 18" (457mm) D. Weight: 135 lbs (61.25kg).

**Finish** Gloss Black.

**Serial numbers of units reviewed** HST02705,

HST02706.

**Price** \$32,000/pair. Approximate number of dealers: 12. Warranty: 5 years.

**Manufacturer** Alta Audio, 139 Southdown Road, Huntington, NY 11743. Tel: (631) 424-5958. Web: [www.alta-audio.com](http://www.alta-audio.com).



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as they were born—all but Zeus, who later overthrew the Titans and forced Cronus to disgorge Zeus's siblings. Hestia was the last cookie to be tossed, so she is, metaphorically, Cronus's oldest *and* youngest child. She gave up her place in the Olympian Pantheon to Dionysus, god of wine, ritual madness, religious ecstasy, etc., so that she could tend the hearth. Hestia is, above all, grounded, rooted in the verities. She is central.

The loudspeaker named for her, the Hestia Titanium, designed by Alta CEO Michael Levy, is imposing but not huge: 53 $\frac{3}{4}$ " tall and 135 lbs. The solid parts—baffle and bass cabinet—are wrought from a seemingly inert, multilayer epoxy material called DampHard. They come in one color, basic black, with a piano-like gloss.

The name *Titanium* comes from the metal, known for its light weight, strength, and stiffness—the metal itself was named for the Titans overthrown by Zeus. In audio, titanium is commonly used in tweeters, but the titanium in the Hestia is found in the drivers' coil bobbins, aka formers—the cylinders the coils' wire is coiled around to generate the magnetic fields that bounce the cones and make music. Formers need to be stiff and light, hence titanium. They also need to not get too hot. Morel, the company that makes the woofer and upper-midrange driver used in the Hestia, claims that eddy currents form less readily in titanium than in aluminum, another common bobbin material, because of titanium's lower conductivity: more efficiency means less generation of heat. The physicist in me isn't convinced, but in any case, Morel says that titanium formers make a driver

sound "crisper."

Those drivers are mounted in what Levy calls a *Dipolito* configuration—a play on words meant to convey that the Hestia's driver arrangement has much in common with the well-known d'Appolito configuration, and that its open-baffle-mounted midrange drivers act as dipoles.

Levy told me that dipole speakers, including open-baffle designs, "have the advantage that their rear wave mimics a coherent soundwave moving in one direction, because it is in reverse phase to the front output and emanates from the same position. I have always liked the huge soundstage that you get because of that."<sup>1</sup>

In a conventional d'Appolito design, symmetric midrange drivers offset each other's destructive interference with the tweeter off axis, ensuring smoother vertical dispersion near the crossover frequency. The Hestia's Dipolito topology riffs on that theme, placing one 6" upper-midrange driver above the tweeter—a "specially modified version of [Serbian manufacturer] RAAL's OEM ribbon," Levy said—and two 7" lower-midrange drivers sourced from Dayton Audio below it, the bottom pair matching the top one in frequency response and output, he told me. The advantage over the

1 But can this configuration possibly work? In the Hestia Titanium variant, the outputs of the two lower-midrange drivers will interfere with each other, with that of the top midrange driver, and with that of the tweeter. The resulting four-way interference will be complex indeed. Levy told me that the crossover between the midrange and the tweeter is asymmetric, the tweeter coming in much faster than the midrange fades out. That asymmetry adds complexity. To get it all to work together to minimize off-axis tweeter/midrange cancellation would require engineering so delicate that I'm not sure it's even possible. I don't doubt Levy obtains some benefit from his quasi-d'Appolito design, but I'm skeptical.

## MEASUREMENTS

I used DRA Labs' MLSSA system and a calibrated DPA 4006 microphone to measure the Alta Hestia Titanium's frequency response in the farfield, and an Earthworks QTC-40 for the nearfield responses. (I measured S/N HST02706.) The Alta's voltage sensitivity is specified as a higher-than-average 90dB/2.83V/m; my estimate was much lower, at 82.5dB(B)/2.83V/m. In part, this will be due to the fact that my figure is based only on the speaker's frontal radiation, whereas the Hestia Titanium, being a dipole design in the midrange, will also be putting out almost as much energy behind it as in front of it. But this is still a low sensitivity, and will be exacerbated by the speaker's impedance magnitude, which drops to just 1.75 ohms at 264Hz (fig.1). There are also demanding combinations of magnitude and electrical phase at 50Hz (4.3 ohms and -46°) and 450Hz (2.9 ohms and +49°). Though its impedance remains above 6 ohms in the treble, the Hestia Titanium will need to be driven by a powerful amplifier if it is not to be starved of current.

There is a major discontinuity at 100Hz in the impedance traces, as well as minor ones at 200 and 400Hz. This behavior suggests that the enclosure has resonance problems, and indeed, when I investigated the behavior of the woofer bin with a plastic-tape accelerometer, I found a high-level mode at 203Hz on the rear panel (fig.2), and a lower-level mode at 98Hz on both sidewalls.

But it was when I examined the nearfield response of the front-panel port that loads the woofer that I found disturbing behavior that correlated with the discontinuities in the imped-

ance plots. The port's output (fig.3, blue trace) covers a wide passband, from 15 to 85Hz, but then has a sharply defined peak visible at 100Hz, with peaks lower in level at 200 and 400Hz. The two lower-frequency resonant modes are sufficiently severe to disturb the woofer's nearfield output (red trace). When Jim Austin writes, "While bass instruments had great impact through the Hestias, sometimes they didn't sound precisely as a conscientious sound engineer might want them to sound," I believe he is referring to the effect of this behavior.

Higher in frequency in fig.3, the sum of the midrange units' outputs—all three seem to have an identical

Stereophile Alta Hestia Impedance (ohms) & Phase (deg) vs Frequency (Hz)

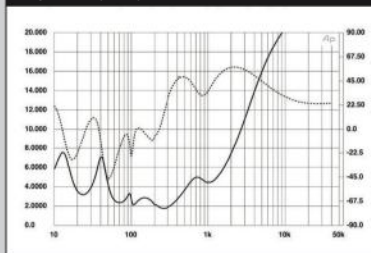


Fig.1 Alta Hestia Titanium, electrical impedance (solid) and phase (dashed) (5 ohms/vertical div.).

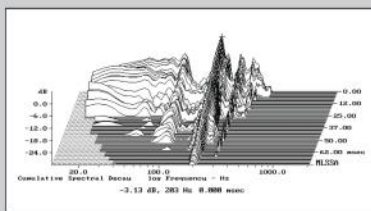


Fig.2 Alta Hestia Titanium, cumulative spectral-decay plot calculated from output of accelerometer fastened to rear of bass bin (MLS driving voltage to speaker, 7.55V; measurement bandwidth, 2kHz).



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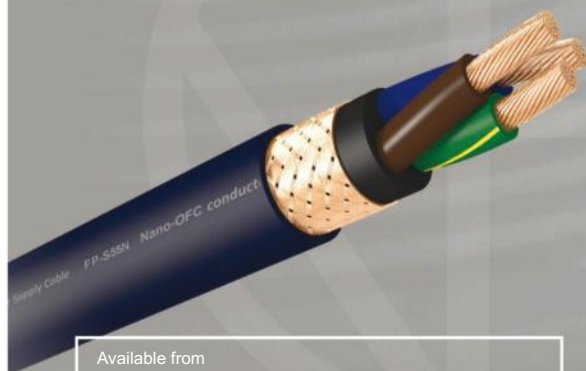
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standard d'Appolito configuration, Levy said, is that the large combined surface area of two 7" cones permits smoother, better matching to the 10" woofer near the low-frequency crossover.

Levy believes—and my listening to the Hestia *mostly* supports this—that frequencies from the midrange down establish the acoustical context within which precise aural images are spun. “Since our brains always work toward maximum efficiency,” he told me, “they use the mid-frequencies to define the space, and the higher frequencies to detail what is in it. The lowest frequencies, which are both heard and felt, are used for sizing.” The Hestia’s asymmetrical crossover “brings in the tweeter at 24dB/octave while gently rolling off the midrange at 6dB/octave from approximately 2.25kHz, and was ear-tuned to meld the



space-defining part of our hearing with the positioning, detail, and sizing part of our hearing.” The Hestia’s transmission-line woofer “uses a symmetrical 12dB/octave crossover at approximately 165Hz, and gives the bass information for us to hear and feel the size and weight of the source of the sound.”

Levy doesn’t stuff his cabinets with soft, fuzzy stuff, he says, because he thinks it makes speakers sound stuffed and fuzzy.

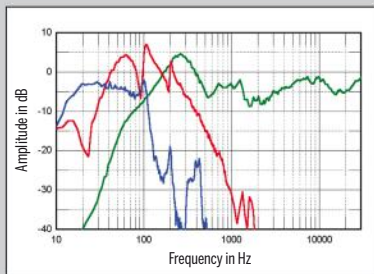
If it sounds as if Levy put a lot of thought and work into imaging and the accurate reproduction of the performance venue, well, that was my impression, too.

### Setup

My listening room is big—its largest dimensions are 30' by 24'—but irregularly shaped and multifunction; there are limitations on where big speakers can go, and each Hestia Titanium is bigger, with more and deeper bass, than any other speakers I've had in this room. I had to work harder than

### measurements, continued

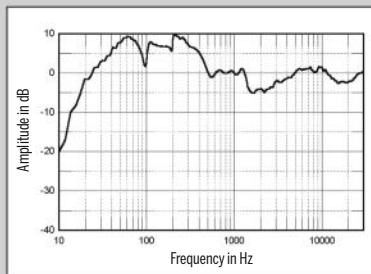
frequency response—is shown as the green trace. This splices the sum of the nearfield outputs to the farfield response at 450Hz. The peak between 100 and 500Hz appears to be real and not an artifact of the nearfield measurement technique, as it was also evident in wide-range farfield measurements. The upper-midrange output is flat, but then there is a 5dB step down in output before the midrange units hand off to the ribbon tweeter. I suspect that this lack of presence-region energy affected my estimate of the



**Fig.3** Alta Hestia Titanium, acoustic crossover on tweeter axis at 50°, corrected for microphone response, with nearfield responses of midrange units (green), woofer (red), and port (blue), respectively plotted in the ratios of the square roots of their radiating areas below 350Hz, 420Hz, and 1600Hz.

Hestia Titanium’s sensitivity.

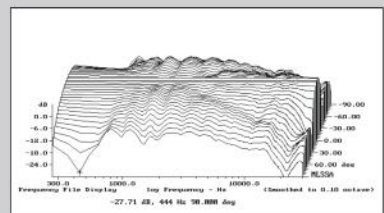
Fig.4 shows how these individual responses sum in a 30° horizontal window centered on the tweeter axis. As recording engineer Phil Schaap said when he heard the Altas in Jim Austin’s room, “These speakers have too much bass.” I admit that the rise in low-frequency output in this graph will be due in part to the nearfield measurement technique, which assumes a half-space environment for the drive-units; ie, a baffle that extends to infinity in both planes. Nevertheless,



**Fig.4** Alta Hestia Titanium, anechoic response on tweeter axis at 50°, averaged across 30° horizontal window and corrected for microphone response, with complex sum of nearfield midrange, woofer, and port responses plotted below 300Hz.

the Hestia Titanium does have too much bass.

It also looks as if it has too much lower-midrange output, at least on axis, but the fact that the speaker behaves as a dipole above the woofer’s passband needs to be taken into account. The Hestia Titanium’s lateral dispersion, normalized to the response on the tweeter axis, is shown in fig.5. You can see from this graph that the Alta’s response rolls off rapidly to the sides between 300 and 700Hz, which in the listening room will tend to ameliorate the excess of energy in the same region shown in fig.4 and result in a more neutral midrange output.



**Fig.5** Alta Hestia Titanium, lateral response family at 50°, normalized to response on tweeter axis, from back to front: differences in response 90–5° off axis, reference response, differences in response 5–90° off axis.

# Hygge.

Who says it needs to be all about lamps and couches?

**“What are you doing for your 40th?”**, everyone asked. We thought about it and decided that since we aren't wild about lavish cakes (although we do love a tasty fastelavnsbolle), we'd celebrate a little differently. Even the *thought* of making new speakers makes us warm and fuzzy, so that's what we chose to do.

## Meet the Special Forty: hygge for your ears.

Laurels aren't for resting on, which is why we gave Dynaudio Labs free rein to play. (It gave our accountants a heart attack). Our only instruction: take our classic tech and see what you'd do differently this time. Their design was nothing short of genius.

They took our classic Esotar 28mm soft-dome tweeter design, put our DSR\* precision coating on it and then **machined an aerodynamic vent** into the powerful neodymium magnet. Then they added more damping material and another pressure-release conduit. Take it apart and look behind it: it's a work of art (except please don't take it apart; we spent ages putting it together).



*We made the drivers' frequencies overlap so we could keep the first-order crossover simple. After all, why add things that might affect the signal if you don't have to?*

**We called the new tweeter the Esotar Forty**, and it's exclusive to this speaker.

We also gave the Special Forty a new woofer, made from our own super-stable Magnesium Silicate

Polymer material. Its dome is coupled directly to the voice-coil for incredibly precise midrange performance, and it's aided by the **new AirFlow Basket** – an aerodynamically shaped chassis that optimizes rear airflow and isolates the driver from unwanted vibrations and resonances.

The woofer also has a **custom magnetic field**, one we created in the lab, thanks to a unique hybrid magnet system. It's part ferrite, part neodymium, and it physically manipulates flux to bend it around the voice-coil for greater power and efficiency.



*The magnet sits inside the voice-coil (others put it outside). That lets us beam its energy to where we want it to go – not where it wants to go.*

Those innovations mean the tweeter can reach down to 1000Hz, and the woofer up to 4000Hz. That overlap means smoother integration between treble and bass, and **performance that borders on the mesmerizing.**

We could explain it using maths, but here it is in English: the extra air movement and flux containment means we have more control over the tweeter and woofer. And that means **a more detailed, precise and honest performance.** Just what we (and you) want.

This is a simple-looking speaker. Sure. But wait until you see its Grey Birch High Gloss and Red Birch High Gloss finishes. We painstakingly laminated Finnish Birch veneers many, many, many times and cross-cut them to

achieve this striking pattern. Then we used special stains to bring it out even further. Nice, isn't it.



*The biggest decision you'll make today: Red Birch High Gloss or Grey Birch High Gloss? (Or just get one of each. You know it makes sense.)*

## We want to know what you think.

Join our Special Forty group and together we'll take our technology to the next level. That's right: you can be actively involved in shaping the future of our R&D. And you might even find your idea making it into our next-generation speakers. There's a fastelavnsbolle – and warm feelings of hygge – in it for you if you do.

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**Special occasion.  
Special speaker.  
Special Forty.**



\*Wondering what 'DSR' stands for? It's Dynaudio Secret Recipe. And that's all you're getting out of us – apart from a fantastic tweeter, of course.

usual to position them and mitigate the inevitable room-related problems. And because the Hestias are awkwardly shaped, this was considerable physical labor.

Acclimating new speakers to a space, or vice versa, always means moving them around, but usually the moves I make are small. I moved the 135-lb Hestia Titaniums several times by several feet or more. I even moved them from one side of the room to the other, and back again. Eventually, I decided that they sounded best not far from their starting points. From there I made smaller moves, then even smaller moves—an inch this way, another degree of toe-in—until I thought the sound was at its best.

As usual with full-range speakers, the crucial factor was bass. If the Hestias weren't properly positioned, their bass could overwhelm: too near a wall, and I experienced room gain at the lowest frequencies. Room modes—those pesky peaks and valleys—were readily excited. Because it's big, this room has four resonant modes below 40Hz, the lowest at 17Hz. Modes so low are beyond the reach of most speakers, but the Hestias excited them easily. However, the biggest problem in this room is a cluster of modes between 60 and 70Hz.

No matter where I put the Hestias, they carved out an impressive sonic space, but certain positions enlarged the soundstage and clarified the images. When I got it right, a vague impression of the recording venue was replaced by a detailed architectural portrait in sound. With some record-

ings made in churches, I imagined I could hear where the columns were. Maybe I actually could.

Toe-in mattered. I began with the Hestias toed in by perhaps 20°—definitely angled, but with the speakers' inner side panels still easily visible from the listening seat. I settled on just a hint of toe-in, the Hestias firing almost straight ahead. Ironically, the sound felt more intimate when the Hestias were looking past me; that configuration gave what sounded like a smoother frequency response, with a bit more mid-range energy.

Something about the Hestias' sound made me sit up straighter in my listening chair. When visitors listened to them, I noticed that they tended to stand, or sit farther back in the room.

I came to feel that the midrange

was slightly recessed when I sat significantly below the tweeter axis. Another small, apparent irony: Sitting precisely at the level of the two 7" lower-midrange drivers seemed to suppress the midrange. I'm eager to see if John Atkinson's measurements support this observation.<sup>2</sup>

As it turned out, this problem of listening height was not so easy to solve. When I sit in my listening chair, my ears are just 34" above the floor—a solid foot below the Hestia's tweeter

2 I've mentioned my skepticism about the Hestia's Dipolito/d'Appolito riff—but even an orthodox d'Appolito configuration can have off-axis cancellation well down in the midrange. For the deep technical stuff, check out this free version of an AES paper that addresses this issue: [www.birotechnology.com/articles/VST-WLA.html](http://www.birotechnology.com/articles/VST-WLA.html).

**The Hestias' ability to convey the character of the venue was a huge plus, a total win.**

## measurements, continued

Higher in frequency, the contour lines in fig.5 are even and uniformly spaced, something that tends to correlate with stable, accurate stereo imaging. The tweeter does become relatively directional above 10kHz, which might make the speaker sound too sweet in large or well-damped rooms.

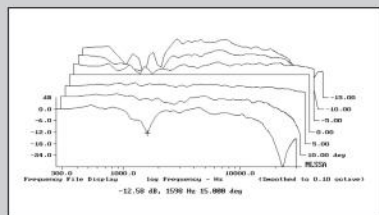
The vertical dispersion is shown in fig.6, again normalized to the response on the tweeter axis, which is a high 43" above the floor. The speaker's balance doesn't appear to be as fussy about listening axis as JCA's listening suggested, but a suckout does develop at 1.6kHz more than 10° below the tweeter axis; I think that is what he was

compensating for when he tilted the speakers forward for his auditioning.

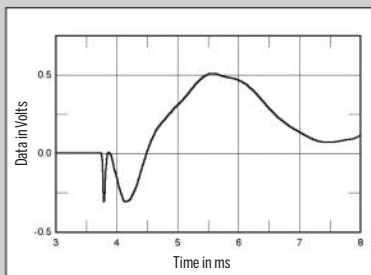
The Hestia Titanium's step response on the tweeter axis (fig.7) reveals that the tweeter and midrange units are connected in inverted acoustic polarity, the woofer in positive polarity. (I checked the woofer's polarity by momentarily connecting a 2V dry cell, positive to positive, across the Hestia's terminals; the cone moved away from the enclosure, as predicted by fig.7.) The cumulative spectral-decay or waterfall plot on the tweeter axis is shown in fig.8. The decay is impressively clean in the region covered by the ribbon tweeter, but there is a ridge of delayed

energy at 1.2kHz that, all things equal, I would expect to add a small degree of nasality to the speaker's sonic signature.

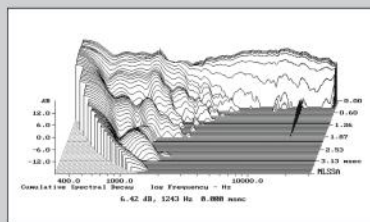
There is a lot to admire in the measured performance of Alta Audio's Hestia Titanium, and it looks as if designer Michael Levy has worked hard to balance the omnidirectional radiation pattern in the bass with the dipolar behavior in the midrange and the tweeter's forward-firing pattern. The excessive low frequencies can be adjusted to some extent with careful placement, but I remain bothered by the resonances I found in the woofer's and port's outputs, and that delayed energy at the top of the midrange units' passband. —John Atkinson



**Fig.6** Alta Hestia Titanium, vertical response family at 50", normalized to response on tweeter axis, from back to front: differences in response 15–5° above axis, reference response, differences in response 5–15° below axis.



**Fig.7** Alta Hestia Titanium, step response on tweeter axis at 50" (5ms time window, 30kHz bandwidth).



**Fig.8** Alta Hestia Titanium, cumulative spectral-decay plot on tweeter axis at 50" (0.15ms risetime).





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axis, the sweet spot for any d'Appolito array. I needed either to raise my ears or tilt the speakers forward. My ears are attached to my head, so I preferred the second option.

Some trigonometry told me I needed to tilt the Hestias forward by about 5.5°, but the provided spikes didn't offer that much tilt. I moved a bar stool over, but it was too tall—and who wants to listen to music while sitting on a bar stool, except at a bar? I experimented with wooden Jenga blocks under each speaker's rear edge. Fine, but . . . Jenga blocks with \$32,000/pair speakers?

In the end, I moved my chair back a couple of feet—the Hestias sounded best from a distance of 10' or more. In my room, this was a compromise: one or more of those ca-65Hz room modes was made more severe but the overall balance was better. Measurements taken with my handy Bosch laser measurer told me that with my chair in this position and the speakers tilted forward as far as they would go, the difference in the distances from my ears to the top and bottom midrange drivers was only about 1½". That's just a few degrees of phase in the middle of the midrange, so there shouldn't be much cancellation. My ears told me the same thing.

After the Hestias were dialed in, I invited Levy over to make sure I was getting the sound he was after. He wasn't just satisfied—he seemed positively thrilled, especially after I'd installed the Pass Laboratories XA60.8 monoblock amplifiers, which I reviewed in the December 2017 issue.

### Listening

The Hestias' most notable virtue was their ability to carve out space—to re-create a recording venue in my listening room. That space began just past the plane described by the Hestias' baffles and extended far beyond the room's front wall, and with certain recordings it could be cavernous. In large-scale works, such as Linn Records' high-resolution recording of Mahler's Symphony 2 ("Resurrection"), with Benjamin Zander conducting the Philharmonia Orchestra and Chorus (24-bit/192kHz ALAC, Linn CKD 452), deep bass from the orchestra seemed to roll around the hall, defining the space from the bottom up.

Critics of dipole speakers say that they produce soundstages that are larger than life. Maybe so—but have you ever heard a symphony orchestra reproduced larger than life in your listening room? Orchestras, symphonies, symphonic rock—Pink Floyd's *Atom Heart Mother*, from 1970 (8-track [kidding!] CD, Capitol CDP 7 46381 2)—all sounded fabulous through the Hestia Titaniums, with real rumble and serious scale.

But it wasn't with large-scale music alone that the Hestias' mastery of space mattered. I never realized how big that room is where Johnny Cash recorded *At Folsom Prison* (16/44.1 FLAC from CD, Columbia/Legacy CK 65955). When that prison crowd gets noisy, I could hear the high ceilings.

I can recall only one speaker that does a better job of reproducing soundstages with large-scale music: Wilson's 600-lb, \$219,000/pair Alexandria XLF, which I heard in a room at Manhattan's Innovative Audio that was, I've heard, designed and built to host those very speakers (or, perhaps, one of their antecedents). It was during that session with the XLFs that I was introduced to Mstislav Rostropovich and the London Symphony Orchestra's recording of Shosta-

kovich's Symphony 5 (24/96 FLAC, LSO Live LSO0550). As detailed in the liner notes, Rostropovich despised this symphony, which he considered a sellout to Stalin—yet he made a great recording.

That was the first time I'd heard an orchestra reproduced in stereo at close to life size. I remember it well: the LSO seemed to be on risers, extending dozens of feet back behind the plane of the speakers. Through the Hestia Titaniums in my less-well-treated room, the sound was a touch darker overall, and the orchestra didn't extend back quite as far. Front-to-back separation was not quite as good. But the

orchestra's sections were arrayed generously in space, uncrowded. The scale inspired awe as the deep bass rumbled.

Levy's analysis of the science of imaging would seem to imply that imaging precision is a consequence of the high frequencies—say, 2kHz and above. Yet I sit here now, listening to the bas-

soon that enters 13 minutes into the first movement of the Shostakovich: it's positioned in space with far greater precision than the wavelength of the fundamental tone would allow. A few minutes later, near the beginning of the second movement, the unison basses have tremendous texture and weight. Unless you've got great seats, orchestras playing in large halls rarely have this much impact; certainly, Geffen Hall has never sounded this good from any seat I've ever sat in there. And if Black Sabbath's *Master of Reality* (24/96 MQA, Warner Bros./Tidal Masters) sounds a touch darker than it usually does—who the hell cares? Just turn it up!

One thing that impressed me about the Wilson XLFs when I heard them at Innovative Audio was their way with solo piano—how could so many drivers meld into such a lovely, delicate sound, with such a realistic balance of attack, body, and decay?

I ran through several piano tracks with the Hestia Titaniums: Prokofiev's Piano Sonata 2 with Yefim Bronfman (16/44.1 FLAC from CD, Sony Classical 53273); Schubert's Piano Sonata 17 in D, D.850, with Alfred Brendel (16/44.1, Decca 478 262 2/Tidal); and Brahms's Rhapsody in E-flat, Op.79, performed by Murray Perahia (16/44.1 rip from CD, Sony Classical SK 47181). Through the Hestias, these pianos lacked the special delicacy in the high notes I heard with the XLFs; the Altas' slightly darker sound emphasized the instruments' resonant structures, not the attacks. This sound absolutely worked—as if I were sitting in a seat or hall that was different from what I heard with the Wilsons.

With mid-hall solo-piano recordings—eg, Martha Argerich's *Début Recital* (CD, Deutsche Grammophon 447 430), or Marc-André Hamelin's *Live at Wigmore Hall* (CD, Hyperion CDA66765), both of which I highly recommend—the Hestias' ability to convey the character of the venue was a huge plus, a total win.

The Hestias made smaller-scale works sound bigger. I couldn't resist listening to Califone's *Roomsound* (FLAC ripped from CD, Perishable PER015), because the title seemed apropos. It sounded great, with rich, resonant acoustic guitars, the emphasis on their wooden bodies, in a deep, wide soundstage with lots of space between instruments. With chamber music, this effect tended to emphasize pianos' rich harmonies and, especially, the rich buzz and body of the lower strings.

**The titanium in the Hestia is found in the drivers' coil bobbins, aka formers. Formers need to be stiff and light, hence titanium.**

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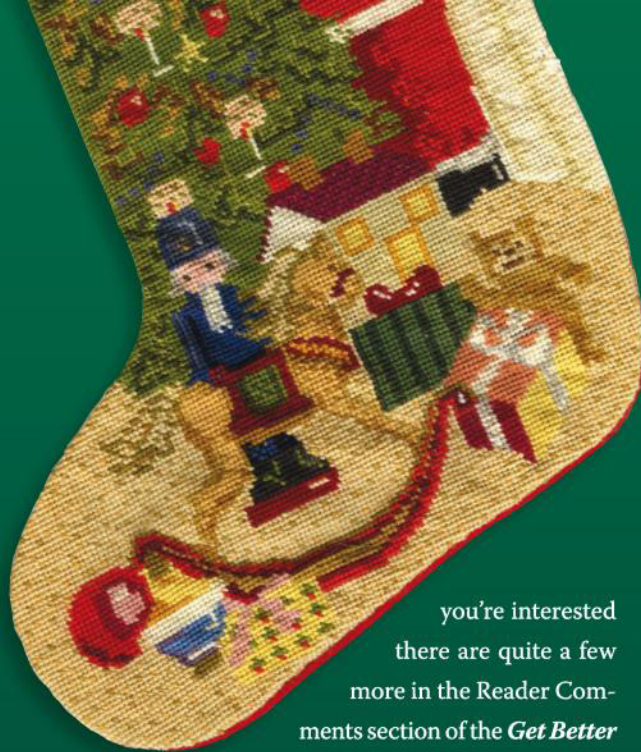
*I found more good stuff in Issue #3 of Quarter Notes than the last five issues of BOTH [well-known magazines] together. Keep it up. And charge if you have to.*

Mike C., Boston, MA

*Thanks so much for the newsletter.... I never thought that my system could sound as good as it does. Your book has truly been the best investment in sound I have ever made.... You helped me to realize the potential of my system. Thanks again for the great book and the newsletters!*

Brian D., St. Louis, MO

Of course, I've received hundreds of similar letters, including a large quantity from readers outside of the U.S. Obviously, they wouldn't have written if they weren't exceptionally pleased. And, if



you're interested there are quite a few more in the Reader Comments section of the *Get Better Sound* website.

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Best regards,

*Jim Smith*

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When I listened to a live version of “Corcovado,” from disc 3 of Stan Getz’s *The Girl from Ipanema: The Bossa Nova Years* (4 CDs, Verve 823 611-2), singer Astrud Gilberto stood on a stage, a few feet up from where I sat in the fourth or fifth row. Getz and his tenor sax were on the same level, farther back and slightly to the right. João Gilberto was on Astrud’s right, just inside the left speaker, obviously seated, his guitar in his hands. He was human-sized, and his voice emerged from a spot maybe 18” above the sound of his guitar—as it would in an unamplified live performance. Astounding.

### The Lowdown

On a day when Michael Levy had stopped by to drop off some footers for me to try with the Hestia Titaniums, as we walked along Broadway in pursuit of lunch, he took out his phone and called a friend—Phil Schaap, renowned DJ, jazz expert, educator, and recording engineer, whose work in restoring seminal jazz recordings by Louis Armstrong, Billie Holiday, and others has won several Grammys. Schaap owns a pair of smaller Alta Audio speakers, Levy said, and wanted to hear the Hestia Titaniums.

After lunch, with Schaap now in tow, we walked through Riverside Church, which is just up the street from my apartment. “The Last Time I was here,” Schaap announced, “I was officiating at Ornette Coleman’s funeral.”<sup>3</sup>

Perhaps you’re thinking what I was thinking: I was being set up. Levy’s famous friend, who’s heard more live jazz than perhaps anyone living, and has restored jazz recordings of incalculable value, would plop down in my listening chair, listen for a moment, and proclaim the Hestia Titaniums the best thing ever, better than Coltrane. Awed, I would echo his comments in my spectacular review, or at least be influenced by them.

I was too cynical by half, or maybe two-thirds. Schaap entered my apartment, looked through my modest record collection, saw my worn first issue of Duke Ellington’s *A Drum Is a Woman* (LP, Columbia CL 951)—an album he’s quite familiar with—and asked me to put it on. As he plopped down in my listening chair, I cued it up on my Thorens. Schaap listened for a few minutes before declaring (I paraphrase), “These speakers have too much bass.”

Early on, even before I’d realized how completely the Hestia Titaniums mastered space, I’d thought, *Wow, these speakers have a lot of bass. Are they too big for my room?* After some setup work, though, I’d been very happy with the sound I was getting, as I hope I’ve made clear. The bass issue had faded, but it never completely disappeared.

Despite the excessive bass, Schaap seemed taken with the Hestias’ sound. “I wish all music sounded this good,” he said.

While bass instruments had great impact through the Hestias, sometimes they didn’t sound precisely as a conscientious sound engineer might want them to sound. Double basses often had too much tone relative to texture—and too much tone overall. But it depended on the recording. The bass sounded quite natural in Cécile McLorin Salvant’s *Woman Child* (16/44.1, Mack Avenue/Tidal)—a very well-recorded album. Because albums are recorded and mastered differently, no speaker will work perfectly with all of them. But I feel comfortable saying that the Hestia Titanium’s sound was well south of neutral.

I’ve spent enough time around Mike Levy, and watched him enough as he listened, that I’m comfortable suggesting that what I was hearing was exactly the sound he’d aimed

## ASSOCIATED EQUIPMENT

**Analog Sources** Thorens TD 124 turntable (reconditioned by Schopper AG); Ortofon RMG-212 (rebuilt), Thomas Schick 12” tonearms; Ortofon 90th Anniversary SPU cartridge.

**Digital Sources** MacBook Pro computer (early 2015); Intel NUC computer with SSD drive running Roon Optimized Core Kit; Benchmark Media Systems DAC 3, Meridian Explorer2 USB, Mytek HiFi Brooklyn, PS Audio Direct-Stream DACs.

**Preamplification** Auditorium 23 Standard step-up transformer, EAR 834P phono stage, PS Audio BHK Signature preamplifier.

**Power Amplifiers** Benchmark Media Systems AHB-2, PS Audio BHK Signature 300 Mono, Pass Laboratories XA60.8 (all monoblocks).

**Integrated Amplifier** Leben Hi-Fi Stereo CS-600.

**Loudspeakers** DeVore Fidelity The Nine.

**Cables** USB: AudioQuest Carbon & Cinnamon & Coffee, Comprehensive Connectivity DXLRP-DXLRJ-6EXF. Interconnect: Auditorium 23, Chord (UK) Chorus & Chameleon Silver Plus, Mogami Gold, Sescom/Canare, Sescom/Mogami (XLR). Speaker: Auditorium 23. AC: Belden 14-gauge shielded, HOSA 14-gauge IEC, stock IEC.

**Accessories** PS Audio Power Plant P10 power conditioner, Oswalds Mill Audio slate plinth (under turntable), Chilton’s Durham media console in cherrywood, Auralex ProPanel Fabric-Wrapped Acoustical Absorption Panel (2” by 2’ by 4’, beveled). —Jim Austin

for. Earlier on the day of Phil Schaap’s visit, Levy expressed a certain disdain for designers who routinely avoid the challenges posed by serious low bass. Sure, it makes life easier, not only on the designer but also on the customer. But in doing so you omit a key part of the music. It’s clear to me that Levy is after a particular sound—rich, full, powerful, with lifelike, corporeal images precisely located in a big space. I think he’s achieved that personal vision. I suspect that many audiophiles share his taste.

### Gods and Steely Dan

It’s a Saturday, after midnight, and I’m listening to Steely Dan’s *Aja*, remembering Walter Becker, who died a few weeks ago. These extraordinary musicians—Steve Gadd, Joe Sample, Larry Carlton, Lee Ritenour, Wayne Shorter, plus the core Steely Dan crew—are arrayed across my living room and beyond its walls, their instruments like orchestra sections. I’ve never heard this recording with such depth, weight, and relaxed separation.

I never asked Michael Levy why he named these speakers Hestia, but after reading up on the mythology, I have a feeling about it. Hestia is a sort of earth goddess—centered, grounded, rooted, connected to the core of things. She’s the keeper of the sacred flame, a master of the space she carved out for herself. The Hestia Titanium shares these characteristics.

But in another way, the name doesn’t fit. Hestia was laid-back, mild-mannered, and Alta Audio’s Hestia Titanium is anything but: it’s bold, daring, a little brazen—no hausfrau, but a sexy Greek lady who’ll keep you on your toes, dancing. ■

<sup>3</sup> See <http://tinyurl.com/yayewpfc>.

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KEN MICALLEF

# Quad S-2

## LOUDSPEAKER

One of the better things about bookshelf loudspeakers is that they're innately portable. Though not generally considered the sort of music-reproduction machines you'd bring to a party, a 12-step group, or a Burning Man rave (though you certainly could), high-quality bookshelf speakers are overlooked tools in the eternal work-in-progress of introducing lovers, friends, and family to our beloved lifestyle. So during the first week or three of breaking in the Quad S-2 bookshelf speakers, I thought, *Why keep these to myself?* It's strict *Stereophile* policy that all gear be evaluated in the context of the reviewer's reference hi-fi rig(s), but there's no law against sharing the joy.

In their single shipping box, the S-2s together weigh about 28 lbs—it was easy for me to tote them all over New York City and environs and temporarily install them in the meager system of a Chelsea record store, in my girlfriend's entry-level rig in Forest Hills, Queens, and in my sister's none-too-shabby hi-fi (Cambridge Audio Topaz AM10 integrated amp, Pro-Ject Debut III record player) in Spring Lake, New Jersey. Everyone welcomed the sophisticated-looking, small-footprint S-2s—particularly my British brother-in-law, who fondly recalled his dad's classic Quad gear from the 1960s.



**The S-2 is fabulously dynamic, well extended, pure and clean in its revealing upper-frequency range.**

At the end of this peripatetic break-in period, I safely re-ensconced the Quad S-2s in my Greenwich Village apartment, where I listened to them in my smaller rig of Music Hall MMF 73 turntable and Heed ampli-

fication, and my majordomo system comprising a Kuzma Stabi turntable and Stogi tonearm, and a Shindo Laboratory Allegro preamp and Haut-Brion power amp.

I'd reviewed high-end audio gear for various websites for 20 years before John Atkinson graciously took on this former Southern boy in 2015. That's when my real work began. But we all have history, right? And perhaps no audio history is as glorious as that of the British audio manufacturer Quad, now owned by the IAG Group, which manufac-

## SPECIFICATIONS

**Description** Two-way, rear-ported, stand-mounted loudspeaker. Drive-units: 0.5" by 1.75" (12 by 45mm) True Ribbon tweeter, 4.9" (125mm) woofer with woven Kevlar cone. Crossover frequency: 3kHz. Frequency response: 48Hz–22kHz, ±3dB. Bass extension: 37Hz, –6dB. Sensitivity:

87dB/2.83V/m. Impedance: 8 ohms nominal, 4.5 ohms minimum. Peak SPL: 98dB. Recommended amplification: 25–150W.

**Dimensions** 13" (330mm) H by 7.1" (180mm) W by 10.25" (260mm) D. Weight: 13.5 lbs (6.1kg).

**Finishes** Black Oak, Sapele Mahogany, Piano White or

Black.

**Serial numbers of units reviewed** QH01548BCF0013 (both).

**Price** \$999/pair. Approximate number of dealers: 15. Warranty: 2 years.

**Manufacturer** Quad, IAG Group Ltd., IAG House Units, 13–14 Glebe Road, Huntingdon, Cam-

bridgeshire PE29 7DL, England, UK. Tel: (44) 1480-52561. Web: [www.quad-hifi.co.uk](http://www.quad-hifi.co.uk), [www.iagggroup.com](http://www.iagggroup.com). US distributor: MoFi Distribution, 1811 W. Bryn Mawr Avenue, Chicago, IL 60660. Tel: (312) 738-5025. Web: [www.mofidistribution.com](http://www.mofidistribution.com).



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super speaker? \$13,900/pr.? What about \$62,000/pr.? What makes a super speaker? When a speaker at any price point is loaded with so much more technology and sounds that much better, it's a **real super speaker**.

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—Jeff Dorgay, *TONEAudio*

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Vandersteen has always spent money on his speakers where it counts- on the drivers and crossovers that carry the delicate music signal- our entry-level floorstander the \$1,249/pr. **1Ci** routinely **bullies bigger speakers costing two or three times as much**.

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—Roy Gregory, *The Audio Beat*

The **Treo** (\$6,900/pr.) is a modern-day version of the Model 2 that's **beautiful to look at**, but **over-engineered** to be as silent as the enclosures of today's most exotic super speakers regardless of cost.

**"My new reference speakers."** —Anthony Cordesman, *The Absolute Sound*

The **Model 5A Carbon** at \$29,900/pr. features an advanced carbon tweeter and the patented Perfect-Piston™ carbon midrange from the Model Seven Mk II, plus **BIG powered bass with a 400-watt powered subwoofer with 11-band room EQ**.

**"Unbeatable powered bass."** —Michael Fremer, *Stereophile*

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The **Model Seven Mk II** (\$62,000/pr.) is the ultimate expression of Richard Vandersteen's design philosophies, a radically advanced take on long held

design tenets. While other expensive speakers are seemingly "redesigned" every couple of years to turn new sales, the Seven has been in production continually since 2009 and updated just once. Model Seven owners can upgrade to Mk II status so **our best customers aren't left behind**. The Seven's legacy of Best of Show awards over the years is legend, and the Mk II earned four such designations in its first year. Yes, a super speaker in every sense of the word, designed and built to last.

**Buy Vandersteen, Leave "Upgrade-Itis" Behind.** When all of the information from the amplifier is faithfully retrieved, especially in the crucial time domain, you hear that something is missing. That something is the distortion of the original signal

Dual 8," 300-Watt Powered Subwoofers w/11-Band Room EQ In Each Speaker For Perfect Bass in Virtually Any Room

that leads to the inevitable feeling audiophiles experience called "upgrade-itis." Yes, moving up the Vandersteen line always offers more performance and ever greater musical pleasure, as will

any other true upgrade to your system. But owning Vandersteens and upgrading **because you love the way your music sounds** is so much better than swapping out your gear because you *can't stand* the way your music sounds.

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tures Quad products in Shenzhen, China.

Innovator and audio designer Peter J. Walker founded S.P. Fidelity Sound Systems in 1936, and later that year changed its name to Acoustical Manufacturing Co. Ltd. After a decade of making public-address systems, their first commercial home-audio product came in 1948: the QA/12P integrated amplifier. (Quad was originally an acronym for Quality Unit Amplifier Domestic.) In 1949, the QA/12P was joined by another Walker design, the Corner Ribbon (CR) loudspeaker: the very first speaker to use the hybrid technology of a ribbon loaded by a horn.

The Quad QCII preamplifier and II power amplifier were introduced in 1953, followed four years later by the commercially successful Quad Electrostatic Loudspeaker or ESL, referred to unofficially as the ESL-57 and nicknamed "Walker's Wonder." The ESL remained in production for 28 years, and was eventually succeeded by the equally lauded ESL-63, which wowed the faithful until 1999.<sup>1</sup> The ESL design is venerated for its low distortion, palpable midrange, brilliant transparency, transient speed, and lack of coloration. The trade-off is a tiny sweet spot and a lack of absolute low-end frequencies.

My Upper East Side pal and Methodist vicar Steven Yagerman enjoys his original ESLs as the holy relics they are—they bring to life the voices of Ella, Frank, Nat, John, and Paul as I'd never heard them before. I also recall how, in 2015, Robin Wyatt of Robyatt Audio brought a pair of beautifully restored ESLs into a small showroom as attendees jostled for a taste of their itty-bitsy yet terrific sweet spot. Peter Walker had legendary history and, thus, experience with electrostatic technology; no doubt that wisdom has trickled down, to endure in Quad's upscale Z-series speakers and less expensive S models, the latter including the smaller S-1 stand-mount, the S-4 and S-5 floorstanders, and the S-C center channel.

## Design

The Quad S-2 is a two-way, ported design with a 5" mid/

bass drive-unit featuring a Kevlar cone and manufactured in-house, and Quad's newly designed, 0.5" by 1.75" (12 by 45mm) True Ribbon tweeter. Its specifications include a frequency response of 48Hz–22kHz,  $\pm 3$ dB; a sensitivity of 87dB; impedance of 8 ohms; bass extension down to 37Hz,  $-6$ dB; and a crossover frequency of 3kHz. Each Quad S-2 measures 13" high by 7.1" wide by 10.25" deep and weighs 13.5 lbs.

"The ribbon tweeter in the S-2 is the same as in the S-1," said Jon Derda, of Quad's US distributor, MoFi Distribution, in an e-mail. "The Z-series tweeter is the same overall design, but has a larger surface area for an even smoother integration between the midbass and HF drivers."

The S-2's cabinet comprises varying layers of MDF, with internal "circumference" bracing. The cabinet is a beauty. Its rounded corners and rolled edges put me in mind of Eero Saarinen or Le Corbusier, architects whose structures combined subtle modernity with powerful lines drawn from nature. The Sapele Mahogany finish of my review samples was silken to the touch. (The S-2 is also available in Black Oak, Piano White, or Piano Black.) The S-2s come with a thin sheet of rubberized paper, from which can be peeled eight plastic nubs to be used as footers. Near the bottom of the rear panel are two pairs of handsome, matte-finish aluminum binding posts; near the top, a 1 1/4"-diameter port. Even the placements of these mechanical bits and bobs seem well thought out, for purposes functional and cosmetic.

In an effort to learn more about the S-2's design and construction, I contacted Peter Comeau, director of acoustic design for the Hi-Fi division of IAG Group; he replied by e-mail:

The biggest problem with dome tweeters is that the diaphragm is rarely fully under the control of the motor system as the voice-coil is only attached at the circumfer-

1 You can find *Stereophile's* reviews of these two classic speakers at [www.stereophile.com/content/quad-esl-loudspeaker](http://www.stereophile.com/content/quad-esl-loudspeaker) and [www.stereophile.com/floorloudspeakers/416/index.html](http://www.stereophile.com/floorloudspeakers/416/index.html).—Ed.

## MEASUREMENTS

I used DRA Labs' MLSSA system and a calibrated DPA 4006 microphone to measure the Quad S-2's frequency response in the farfield, and an Earthworks QTC-40 for the nearfield responses. My estimate of the Quad's sensitivity was 86.9dB(B)/2.83V/m, confirming the specified figure of 87dB. Fig.1 shows how the impedance and electrical phase vary with frequency. Though the impedance has a minimum value of 4.17 ohms at 190Hz and there's a combination of 5.8 ohms and  $-37^\circ$  phase angle at 117Hz, the S-2 is a relatively easy load for amplifiers to drive.

The traces in fig.1 are free from the small discontinuities that would suggest the presence of panel resonances. However, when I investigated the enclosure's vibrational behavior with a

plastic-tape accelerometer, I did find a strong mode at 500Hz on the sidewalls (fig.2), with several lower-level modes present on the top panel. I note that Ken Micallef didn't comment on there being any midrange congestion, so it's possible this behavior measures worse than it sounds.

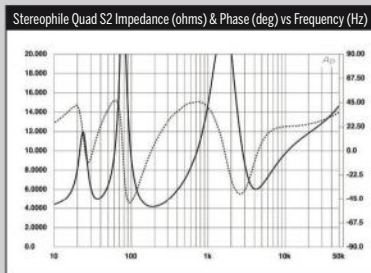


Fig.1 Quad S-2, electrical impedance (solid) and phase (dashed) (5 ohms/vertical div.).

The crossover between the woofer and the ribbon tweeter appears to be set at 3.3kHz, with fairly steep high- and low-pass filter slopes (fig.3). The woofer alignment is slightly underdamped, with the port on the rear panel (blue trace) tuned to 38Hz, the frequency of the expected notch in

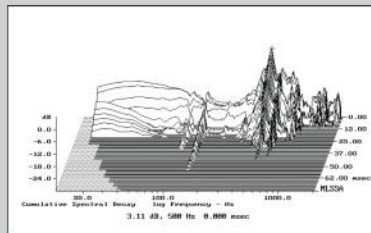


Fig.2 Quad S-2, cumulative spectral-decay plot calculated from output of accelerometer fastened to center of sidewall (MLS driving voltage to speaker, 7.55V; measurement bandwidth, 2kHz).

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ence of the dome. What we often see is the center of the diaphragm moving in anti-phase to the voice-coil and, obviously, this results in a critical loss of transient information and therefore musical detail. With a ribbon tweeter the diaphragm IS the voice-coil, so to speak, and so is always under the control of the music signal from the amplifier. In that respect it is closer to the performance of an ESL and, thankfully for Quad, shares some of the same characteristics.

The True Ribbon treble uses a thin, metal ribbon suspended in a strong magnetic field. The music signal is passed directly to the ribbon and causes a deflection due to the induced magnetism. As the ribbon is directly driven by the amplifier, its resolution of musical detail is very high. The S-series ribbon is made from a lightweight metallic alloy which is stronger than pure aluminum. In addition the ribbon is given extra mechanical strength by a very light, and thin, deposition of polycarbonate—giving it a sandwich construction that allows higher power handling.

### Setup

The S-2s quickly found favor in my smaller rig, which occupies Listening Room A: 14' long by 8' wide by 14' high. I set up the Quads along one long wall on 24"-high steel stands, which put their tweeters at the height of my ears when I sit down to listen. Each speaker



**The ribbon is given extra mechanical strength by a very thin deposition of polycarbonate.**

was 9" from the front wall (measured from the toed-in speaker's rear inside corner). A support wall in my apartment creates a barrier on the left that was 5" from one S-2's rear outside corner; the space to the right of the right speaker is relatively open. The speakers were 5' from my listening seat—I listened to them in the nearfield. This setup provided the most coherent, cohesive sound from LPs and CDs.

"Regarding setup," wrote Derda, "the ribbon tweeter has limited vertical dispersion, which reduces the effects of floor and ceiling reflections. It usually performs best aligning the tweeter at ear level of the listening position, or within a few degrees of ear level." I found this observation to be 100% spot on.

But in Listening Room B (12' L by 10' W by 12' H), placing the Quads 9" from the long front wall basically sapped their articulation. Repositioning them 27" out from the wall and 58" apart snapped their coherence into place.

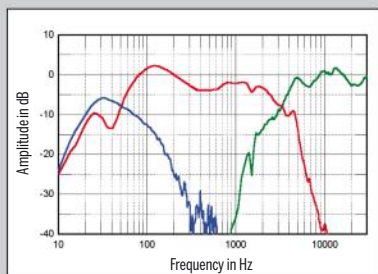
### Listening

In my smaller system in Room A, I listened to oud master Anouar Brahem's exotic *Blue Maqams* (CD, ECM 2580). The S-2's open, airy sound and smooth delineation of upper-frequency transients weren't the first things

that impressed me. Instead, it was the speaker's fantastic reproduction of the lower midrange and bass—the lute-like oud, which looks like a pear sliced lengthwise in half, or a plump guitar with a split-back headstock, can go very low in

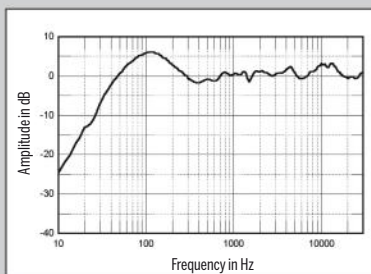
### measurements, continued

the woofer's output (red). The port rolls off cleanly above its passband, with no significant resonant peaks in its midrange output. Fig.4 shows how the outputs of the individual drive-units sum in the farfield, with



**Fig.3** Quad S-2, acoustic crossover on tweeter axis at 50°, corrected for microphone response, with nearfield responses of woofer (red) and port (blue), respectively plotted in the ratios of the square roots of their radiating areas below 350Hz and 600Hz.

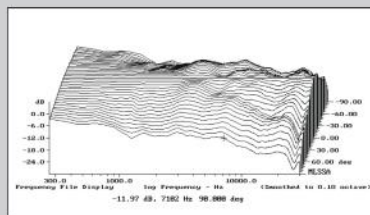
the response averaged across a 30° horizontal window centered on the tweeter axis. The rise in output in the upper bass will be due in part to the nearfield measurement technique, but the S-2's woofer alignment is



**Fig.4** Quad S-2, anechoic response on tweeter axis at 50°, averaged across 30° horizontal window and corrected for microphone response, with complex sum of nearfield woofer and port responses plotted below 300Hz.

somewhat underdamped. As KM writes, "bass was juicy, rich, practically tumescent." Ahem!

Higher in frequency, the Quad's farfield response is impressively flat, with a very slight rising trend evident between 1 and 12kHz. The horizontal off-axis behavior is also well controlled (fig.5), the ribbon tweeter maintaining



**Fig.5** Quad S-2, lateral response family at 50°, normalized to response on tweeter axis, from back to front: differences in response 90°–5° off axis, reference response, differences in response 5°–90° off axis.

# "Unbelievable

transparency, enormous soundstage with pinpoint accuracy of the 3D stereo image, timbral accuracy, exceptional deep bass extension, detailed, and dynamic with astonishing attack and decay... The Hestia's disappear in my room and all I hear is each musician in their space as if they were in the room with me - scary. They are an awesome speaker and a must have if you love music."

—JOHN AIKEN, HESTIA OWNER



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pitch. Spinning the Christian McBride Big Band's *Bringin' It* (LP, Mack Avenue MAC1115) brought to the fore equally extraordinary lower-frequency tonnage allied with clarity. Both recordings presented nonfussy senses of immediacy and intimacy, as if the wall between me and the musicians—or, at least, between me and the mixing console—had been removed.

Recorded at the now-closed Avatar Studios, *Bringin' It* evokes the classic big bands of Count Basie and Thad Jones—Mel Lewis, with nods to Oliver Nelson and Nelson Riddle. But *Bringin' It* is pure Christian McBride—rock-'em sock-'em big-band dynamics and polished swing performed with the kind of enthusiasm and soul that are atypical among today's math-jazz merchants and their methodical, grant-enabled compositions. The Quad S-2s made the most of *Bringin' It*, from McBride's sinewy double-bass notes and drummer Quincy Phillips's steaming pulse to the assembled brass and reed instruments' shouted choruses and heated vamps. This album sounded very big, very dynamic, and very extended through the Quads. Fun!

The ribbon tweeter's aptitude for exceptional horizontal dispersion was gracefully evident with the McBride LP and every recording I put through the Quads, providing "black" backgrounds, zero noise floor, and distortion-free treble notes. No conventional dome tweeter I've heard has delivered these levels of purity, clarity, and extension allied to *force*. The S-2 sometimes sounded literally *incandescent*, its music signal *driven* more than released, its sound more focused and injected into the room than a static delivery of recorded notes. This quality appeared again and again, from my go-to Blue Note LPs and new Newvelle Records LPs (see below), to old Steely Dan and Tom Petty LPs and CDs of various genres. The S-2s consistently drew me in and glued me to my listening seat. Each recording was a revelation, a chance to get lost in the music.

The S-2s didn't focus my attention on their electromechanical properties, but on the music. Not often did I think,

*Those ribbons are super revealing!* Instead, they enabled full saturation and immersion of mind, brain, and body in the wonder of music.<sup>2</sup> As I type this in my office, aka my kitchen, I hear cymbal rolls and piano swirls from the stereo in the living room. The instruments, even their echoes down the hall, sound beautiful. Not *live* beautiful—I don't care about the debate between live vs studio sound. I care about beauty, and the S-2s delivered that, every time.

Back to *Blue Maqams*: Performed by Anouar Brahem, multi-instrumentalist Django Bates, double bassist Dave Holland, and drummer Jack DeJohnette, the music on this recording was revealed as alive and glowing, all sinew and guts and beauty and light. The music was forceful, potent, sweet, dizzying. The Quad S-2s re-created the opulent harmonic complexities created by these master musicians in thrall to their instruments. They made me marvel at the sound of each instrument, and its cohesion and coherence on the soundstage. Holland's bass was juicy, rich, practically tumescent. The Quads resolved the microtonalities and air-moving force of DeJohnette's drums and cymbals, as well as the spaces between his notes, where the energy and mystery of his genius lives.

Two Chet Atkins albums originally released by RCA Victor in 1957 and 1961 capitalized on the then-new fascination with stereo, and have recently been reissued by Sundazed/Modern Harmonic: *Hi-Fi in Focus* (MH-8061) and *Chet Atkins' Workshop* (MH-8064). Pressed at RTI, the reissue LPs reveal Atkins's brilliant guitar work and the albums' conceptually dated sonic presentations, which nonetheless still hold a certain allure for fans of space-age bachelor-pad music such as I. The albums stand on their own merits due to the honeyed tone of Atkins's guitar and technically meticulous playing. Jazz guitarists Jim Hall, Johnny Smith, and Barney Kessel may have been more astute and revered,

2 I once asked guitarist and composer Pat Metheny, "What most challenges you day to day as a musician?" He replied (I paraphrase), "What is music? Really, what is it? That's what I'm still trying to discover."

## measurements, continued

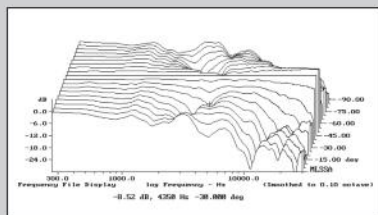
its top-octave output up to a reasonable 15° to the speaker's sides. The ribbon tweeter is quite directional in the vertical plane (fig.6), and a suckout in the crossover region develops more than 5° above and 10° below the tweeter axis. For the optimal balance, the Quad S-2 needs to be used on stands that place the listener's ears

level with the tweeter.

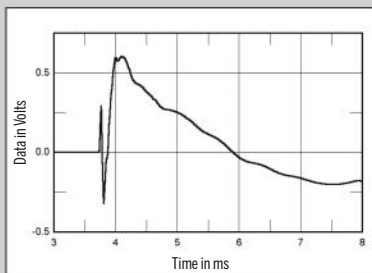
In the time domain, the speaker's step response on the tweeter axis (fig.7) indicates that both drive-units are connected in positive acoustic polarity. Although the tweeter's output leads that of the woofer, their outputs meld relatively well, even if this graph does suggest that the optimal blend

occurs just below the tweeter axis. The cumulative spectral-decay plot on the tweeter axis (fig.8) is superbly clean, which correlates with KM's having found that the S-2's treble offered "purity, clarity, and extension."

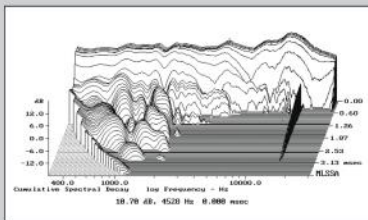
I have known Peter Comeau, director of acoustic design for IAG, since his days at Heybrook in the 1970s. The Quad S-2 is a worthy addition to his loudspeaker portfolio. —John Atkinson



**Fig.6** Quad S-2, vertical response family at 50", normalized to response on tweeter axis, from back to front: differences in response 45–5° above axis, reference response, differences in response 5–45° below axis.



**Fig.7** Quad S-2, step response on tweeter axis at 50" (5ms time window, 30kHz bandwidth).



**Fig.8** Quad S-2, cumulative spectral-decay plot on tweeter axis at 50" (0.15ms risetime).



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but none trumped Atkins in terms of pure touch and tone. He typically recorded basic tracks at RCA, then refined the music in his home studio, which was no doubt a marvel of its day. The sound on both discs is rich, clean, clear as a bell, and quite dynamic.

## Take 2

I listened to the Atkins discs with the Quad S-2s in my larger rig, and again, it wasn't the ribbon tweeters' upper frequencies that first grabbed my attention, but the deeply extended, richly tonal electric-bass notes, delivered with fine texture and copious weight. The S-2s' bass reproduction was in a league of its own for a stand-mounted speaker, even with the low-watt Haut-Brion amplifier. Atkins's solo in "Yesterdays," from *Hi-Fi in Focus* (1957), was all silvery highs and gleaming lower-register softness—near perfection for fans of holy electric-guitar magic. Sweet, pure, full of tactile flavor and tone, Atkins's guitar playing was certainly "God"-like, nine years before Eric Clapton earned that moniker in 1966 with the release of John Mayall's *Bluesbreakers with Eric Clapton* (LP, Decca LK 4804).

The Quads also revealed the Denon DL-103 cartridge's typically forward if natural-sounding soul—as well as, to an unfriendly degree, the arid sound of acoustic guitarist Ross Hammond on his *Follow Your Heart* (LP, Prescott 5638871488). Beck's *Morning Phase* (LP, Capitol B001983901) was as well defined as I've heard it, the S-2s recreating the massive, Phil Spector-like sound of the voices, rock band, and orchestra with spooky splendor. Though the recording is a smidgen processed-sounding, the S-2s cast an immense soundstage, the largest and most-fleshed-out I've heard from any pair of small speakers in my penthouse system. But there was also a sense of stress to the treble and midrange, the low-power Haut-Brion begging to be taken off-line.

When I returned to the Music Hall and Heed components in my smaller system, the S-2s wowed me further. My buzz continued unabated for hours.

Elan Mehler is on a serious roll. His Newvelle Records label releases jazz records at a fast clip, but the quality never suffers. Two of my favorites are *Hope*, by the Kevin Hays and Lionel Loueke Duo (LP, Newvelle NV008LP), and *Midnight Sun*, the first release by the Chris Tordini Trio (LP, Newvelle NV010LP). On the latter, double bassist Tordini is accompanied by guitarist Greg Ruggiero and singer Becca Stevens, and the trio's emotional performance of "My Funny Valentine" is one for the ages. The Quad S-2s killed me with this disc, leaving me with emotions spent and senses satisfied. They reproduced Stevens's soul-baring, wondrous singing with a sense of magical realism rare for any pair of speakers to achieve. The S-2s followed suit with the trio's reading of "Everything Happens to Me"—their hot swing and mischievous gait are wonderful stuff. This charming album gets my late vote for one of 2017's best.

Then I went mad—I pulled out electronica old and new, jazz older and newer, more Chet Atkins, and more mourning Beck in *Morning Phase*. It's times like these, me brothers, when reviewing audio is like playing tiddlywinks with the Gods on Mount Olympus. I hit that golden groove in which every LP and CD sounded not good, but great. In my experience, this happens more often with lower-priced gear than with platinum systems.

Through the Quad S-2s, the electronic robo-jazz of "Turkey Dog Coma," from Flying Lotus's *You're Dead!* (LP, Warp

## ASSOCIATED EQUIPMENT

**Analog Sources** Kuzma Stabi S turntable & Stogi S tonearm; Music Hall MMF-7.3 turntable; Denon DL-103, Goldring Elite MC, Ortofon 2M Bronze cartridges.

**Digital Sources** Apple MacBook computer running Audirvana Plus; Ayre Acoustics QB-9<sup>DSD</sup>, PS Audio NuWave, Mytek HiFi Manhattan DACs; LG BD-550 BD player; Western Digital T2 Mirror Drives (2).

**Preamplification** Auditorium 23 A23 moving-coil step-up transformer, Heed Audio Quasar phono stage, Shindo Laboratory Allegro preamplifier.

**Power Amplifier** Shindo Laboratory Haut-Brion.

**Integrated Amplifier** Heed Audio Elixir.

**Loudspeakers** DeVore Fidelity Orangutan O/93, Elac Debut B6, Quad S-2, Tannoy Mercury M2.

**Headphones** Master & Dynamic MH40.

**Cables** USB: generic. Interconnect: AudioQuest Water, DiMarzio M-Path, JPS Labs Superconductor, Shindo Laboratory. Speaker: AudioQuest Castle Rock & GO-4, Auditorium 23, Tellurium Q Black. AC: manufacturers' own.

**Accessories** Music Hall Aztec Blue & Moono record mats; Spec AD-UP1 Analog Disc Sheet; Salamander five-tier rack; IKEA Aptitlig bamboo chopping boards (under turntable, preamplifier, power amplifier); 2" by 2" by 0.5" mahogany blocks, 3"-thick studio-treatment foam damping (ceiling, walls), Mapleshade 15" by 12" by 2" maple platform. Listening Rooms Room A: 14' L by 8' W by 14' H. Room B: 12' L by 10' W by 12' H. Both: suspended wood floors, 6"-thick walls (plaster over 2x4), wood-beamed ceilings, systems set up along long wall.—Ken Micallef

WARPLP256), revealed its sample-studded, digital-driven heart as never before. Finally, I *got it*—this flashy music's myriad layers were truthfully presented on a flat soundstage with an oddly artificial sheen. The S-2s were consistently transparent to the source, regardless of pedigree. They cut loose with Jimmy Smith's *The Sermon!* (LP, Blue Note BLP 4011), easily revealing his Hammond B3 organ's weird mechanical sounds and the pristine cymbal work of drummer Donald Bailey. Now Chet Atkins's guitar sounded delicate, grain-free, and pure as country moonshine. Next, I dropped on the Music Hall the eponymous compilation *Kraftwerk* (2 LPs, Vertigo 6641 077), played "Ruckzuck," and was again struck by the Quads' sonic purity. Kraftwerk's ubiquitous squirming synths sounded crisp and shiny, never etched. Clean, rich, dynamic—this is electronic music for plowing the lower 40 on your hybrid tractor.

## Conclusions

To hit their stride, I would guess the Quad S-2s require power in the 45–65Wpc range. Careful positioning is necessary for a coherent sweet spot. And if there's junk anywhere upstream in your hi-fi, the S-2 will mercilessly reveal it, warts and all. These are all good things. Even better, the S-2 is fabulously dynamic, well extended, pure and clean in its revealing upper-frequency range, and offers the best low-end bass traction of any stand-mounted speaker I've heard in my MacDougal Street digs. The Quad S-2s provided me with many hours of happy listening, and left me wringing-wet with emotion and, yes, humble gratitude. Absolutely recommended. ■



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JASON VICTOR SERINUS

# Aurender A10

## CACHING NETWORK MUSIC PLAYER/SERVER



A huge fuss was made over Aurender's first music server, the S10, when it premiered in 2011 at the California Audio Show. While I didn't feel that the room acoustics and setup were good enough at CAS to permit an honest appraisal, the looks and features of the S10 (now discontinued) thrust Aurender into the spotlight. So when John Atkinson, who had very favorably reviewed Aurender's N10 server in April 2016,<sup>1</sup> asked if I would evaluate Aurender's new A10, the opportunity to serve so many audiophiles with a single review elicited from me an unequivocal "Yes!"

### What have we here?

As part of a product line that includes multiple streamer/servers and a "lifestyle" DAC-integrated amp, the A10 is Aurender's first all-in-one model. Its single full-size case contains a network music player-server similar to the company's entry-level N100H caching music server, with the addition of what Aurender calls a "high-performance," MQA-certified DAC. The A10's all-in-one design and \$5500 price should make it especially appealing to budget-conscious audiophiles. Those able to pay more will appreciate the superior power supplies, clocking systems, and noise isolation of Aurender's higher-end models, as well as their greater storage capacity, higher numbers of inputs, and other features.

Aurender is a South Korean company. John-Paul Lizarz,

### Its strong suits were bass, speed, and ability to play multiple formats.

the California-based industry veteran who heads the sales and marketing division of Aurender America, calls the A10 "the CD player of the 21st century . . . that distills a complex process to the essence of simplicity." That's a claim worth examining.

The A10's DAC, designed by John Kim and Justin Jang, uses the Asahi Kasei Microdevices Corporation's AKM 4490 32-bit, 2-channel chip, employed in a fully discrete and balanced dual-mono configuration. (The DAC's linear power supplies are also configured as dual-mono.) The chip has five 32-bit digital filters, and accepts data up to 768kHz PCM and 11.2MHz DSD. Due to the A10's implementation of the DoP protocol, however, at present it can process only DSD64 and DSD128 (5.6448MHz). It also decodes MQA files.

Storage is limited to a 4TB hard disk drive (a 5TB Seagate drive option is in the testing phase), while cached playback is via a 120GB solid-state drive. This two-drive system—in which music stored on the HDD is cached for playback on the SSD—is claimed to completely eliminate electrical and acoustic noise produced by spinning disks, moving heads, and motors.

An HDD icon appears on the Aurender's large, adjustable display as a new track is being cached to SSD. During this

<sup>1</sup> See [www.stereophile.com/content/aurender-n10-music-server](http://www.stereophile.com/content/aurender-n10-music-server).

## SPECIFICATIONS

**Description** Music server running Linux with integrated digital-to-analog converter. Formats supported: AAC, AIFF, ALAC, APE, DFF, DSF, FLAC, M4A, MQA, WAV. Internal storage: 2.5" 4TB hard-disk drive, 120GB solid-state cache drive. Conversion: PCM to 32-bit/384kHz, MQA, DSD64, DSD128. Dynamic

range: 128dB. Resolutions supported via USB: PCM to 32/384, DSD64, DSD128 (DoP). Inputs: Ethernet, two USB Type A, one TosLink S/PDIF (supports up to 24/192 PCM). Outputs: USB Class 2.0 (Type A jack), balanced (XLR) and single-ended (RCA) left and right analog outputs. No other specifications listed.

**Dimensions** 16.93" (430mm) W by 2.2" (55mm) H by 13.9" (353mm) D. Weight: 22.5 lbs (10.2kg) net, 26.5 lbs (12kg) shipping. **Finishes** Silver, Black. **Serial number of unit reviewed** ASA4A0007 (auditioning), ASA4A0096 (measuring). **Price** \$5500. Approximate

number of dealers: 103. Warranty: two years parts & labor. **Manufacturer** Aurender Inc., Dongan-gu, Anyang-si Beolmal-ro, 126 OBIZ Tower 12th (1211-1213), Gyeonggi-do 14057, South Korea. US: Aurender America Inc., 2312 NE 85th Street, Seattle, WA 98115. Web: [www.aurender.com](http://www.aurender.com).

# L-590AXII

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**Ken Kessler, Hi-Fi News (April 2016)**

**LUXMAN**

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Luxman Japan Head Office:  
1-3-1 Shin-Yokohama, Kouhoku-Ku, Yokohama 222-0033, Japan  
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period, which doesn't last very long, ultimate sound quality is sacrificed. When the track has been transferred, the HD then goes to sleep to minimize wear, and the sound level returns to optimal.

One of the A10's many features is its ability to use its S/PDIF (TosLink) input to interface with a CD or DVD player, as well as a TV or multi-zone system such as Sonos. In such situations, the A10's variable output enables it to function as a preamplifier in an all-digital system. In addition, the A10's USB 2.0 output lets you send signals to an outboard DAC. The A10 can also play music stored on NAS drives via its Aurender Media Manager (AMM) software and the all-important Aurender Conductor app.

Both an iPad and wireless router are essential to operate the A10. Even before the Aurender is plugged in, users are instructed to download Conductor from Apple's App Store. (The Aurender App for Android is based on the iPad app but apparently has limited functionality.) After the A10 is connected to the Internet via Ethernet and the correct information is entered in the settings, the app should communicate seamlessly with the A10.

While some of the A10's basic functions can be controlled via buttons on its front panel or with its supplied remote control, all settings, playback, and storage functions are managed using Conductor, including music from Tidal and Internet radio.<sup>2</sup>

If memory serves me, the handsome brown-and-yellow color scheme of the Conductor app has remained consistent since the days of the S10. When selections are played, album-cover art, the bit depth and sampling rate, and the file format (eg, FLAC or WAV) are displayed. In addition to Play, Pause, and Stop, you can Repeat a single track or an entire playlist. You can also play single tracks without automatically playing the tracks that follow. However, once you cue up a playlist, convincing the A10 to wait for your command to play music is a tricky business. Every time I chose my playlist or list of cached tracks, the first of those tracks, Yello's "Electrified II," would start booming away without my consent. Gah! This was not the shock my nervous system needed when I was all geared up psychically for hearing something very different.

Rather than tediously list everything the A10 and Conductor can do, I refer you to the A10's far too slim online manual<sup>3</sup> and New Features in Conductor App webpage.<sup>4</sup> While a huge amount of essential support information is available online, that section of Aurender's website was "under construction" during the review period, and what was available was outdated. Navigation was difficult, nomenclature inconsistent, and the product line included discontinued models.

So when problems or questions arise, Aurender's remark-

<sup>2</sup> See <http://support.aurender.com/internet-radio.html>.

## MEASUREMENTS

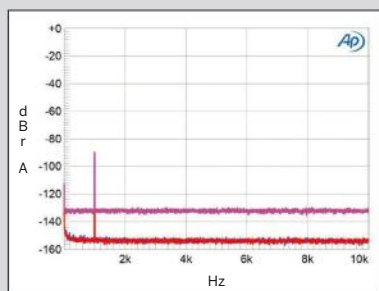
I measured the Aurender A10 with my Audio Precision SYS2722 system (see the January 2008 "As We See It," <http://tinyurl.com/4ffpve4>), using the Audio Precision's optical digital outputs, and data stored on the A10's internal hard disk and sourced from a NAS on my network. The serial number of the sample I'd been sent for measurement was ASA4A0096A10, its system software was v.5.10.16, and the Conductor app running on my iPad mini was v.2.8.6 (1730).

The optical inputs accepted data sampled up to 96kHz, the internal drive and the network connection files sampled at up to 384kHz. The A10's

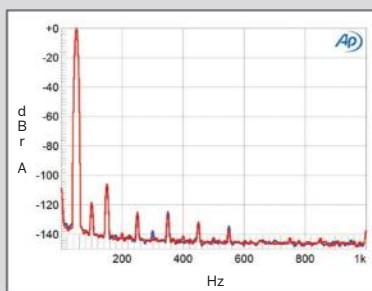
maximum output level at 1kHz was 4.04V from the balanced output jacks, and 2.02V from the unbalanced jacks with the output level set to Fixed or with the volume control set to its maximum. Both sets of outputs preserved absolute polarity, and the output impedance was an extremely low 1 ohm or lower at all audio frequencies, regardless of the impedance setting in the Conductor app (the options are Max current, Less current, and Min current). Channel separation was superb, at >130dB between 40Hz and 5kHz, and still 120dB or better at the frequency extremes. The A10's noise floor with 24-bit data was also very low, with no power-supply-related spurs visible. When I

increased the bit depth from 16 to 24, the drop in the Aurender's noise floor with a dithered 1kHz tone at -90dBFS was around 21dB (fig.1), implying that the A10 offers resolution of close to 20 bits, which is superb. Consequently, the Aurender's reproduction of an undithered tone at exactly -90.31dBFS (not shown) was close to perfect, with the three DC voltage levels described by the data clearly evident and the waveform superbly symmetrical.

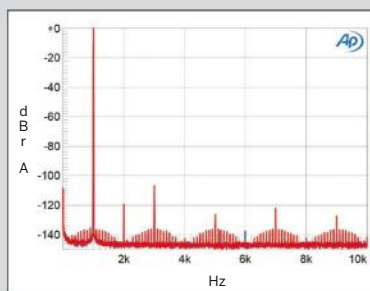
Harmonic distortion with a 50Hz tone at full level was very low. Even into the punishing 600 ohm load impedance (fig.2), the highest-level harmonic, the third, lay at -106dB (0.0003%). However, with a full-scale 1kHz tone, I



**Fig.1** Aurender A10, spectrum with noise and spurs of dithered 1kHz tone at -90dBFS with: 16-bit data (left channel cyan, right magenta); 24-bit data (left blue, right red) (20dB/vertical div.).



**Fig.2** Aurender A10, spectrum of 50Hz sine wave, DC-1kHz, at 0dBFS into 600 ohms (left channel blue, right red; linear frequency scale).



**Fig.3** Aurender A10, spectrum of 1kHz sine wave, DC-10kHz, at 0dBFS into 100k ohms (left channel blue, right red; linear frequency scale).



ably responsive US technical-support person, the Seattle-based Jesse Locken, encourages users to contact him and Aurender's staff in Korea via the app's Help feature. Locken usually replied quickly with a link to the appropriate support pages, which otherwise are difficult to find. If something needs fixing, owners are asked to leave their units on so that someone in Korea can check them out remotely, via the Internet, and fix the problem.

The last page of Aurender's 15-page Quick Start Guide warns users to follow a two-step turn-off procedure before they disconnect from AC power, lest they unmount or corrupt the internal SSD drive, thus "crippling or rendering the unit inoperative." Try telling that to the reviewer who inadvertently pulled out the A10's power cord while performing multiple listening tests and cable swaps.

When I did that, my heart skipped more than one beat as the disconnected A10 powered down, went very, very quiet, and finally, after what seemed an eternity, announced that it was rebuilding its HDD. But it had completed only a small percentage of that rebuild when it seemed to freeze up again.

Oh, no, thought I. *Please may I not become the reviewer who broke the A10's back.* Thank goodness, after another be-still-my-beating-heart wait, the A10's display proclaimed that all was okay. HDD rebuilt. Eternal damnation averted.

### Setup and Listening, Round One

Aurender's Jesse Locken doesn't live far away, and he dropped by to help me set up the A10. My four-shelf rack was already filled with multiple dCS components and power products—the only space for the A10 was atop the dCS Scarlatti clock. After connecting the router and Pass monoblocks to the A10, we powered up the latter and inserted, one by one, three USB 3.0 sticks filled with high-resolution tracks into the A10's USB port, and used the Conductor app to transfer their contents to the A10's HDD. Tracks whose sound I knew well we arranged in a playlist I named "JVS Test."

After letting the A10 warm up a bit—it was already broken in—Locken checked that everything was functioning as it should, and quickly noticed that the A10's HDD icon was not turning on during file transfer from HDD to SSD. Without it, we couldn't tell when the unit was delivering optimal sound. Before leaving, he promised to check with Aurender HQ in Korea and get back to me.

When I gave the A10 my first solo listen days later, after the cables had settled in, the A10 didn't sound very good. Speculating that its performance was compromised because

3 See <http://support.aurender.com/a10---manual---eng.html>.

4 See <http://support.aurender.com/a10---new-features---eng---updated.html>.

### measurements, continued

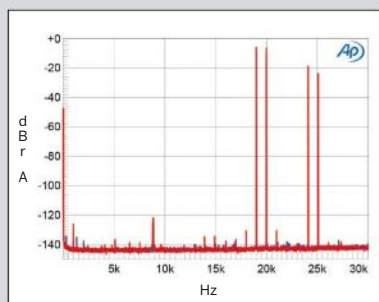
was puzzled to see sidebands developing around the tone and its harmonics, even into the benign 100k ohm load (fig.3). These sidebands disappeared when I reduced the signal level by 3dB but not when I reduced the A10's output level by the same 3dB, so I wonder if they are due to mathematical limitations in the A10's digital signal processing rather than to power-supply limitations. Tested for intermodulation distortion with an equal mix of 19 and 20kHz tones, with the signal peaking at -3dBFS, the Aurender performed well, the difference product at 1kHz lying below -126dB and the higher-order products at -130dB (fig.4). However, even though this graph was taken

with the factory-default reconstruction filter, labeled Short Delay, Sharp Rolloff, the aliased images of the two high-level tones are suppressed by just 12dB or so, as I would expect from a slow-rolloff filter (see later).

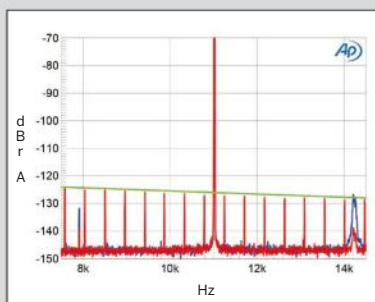
Tested for its rejection of word-clock jitter using 16-bit J-Test data sourced via TosLink, the A10 reproduced the odd-order harmonics of the low-frequency, LSB-level squarewave at the correct levels, as shown by the sloping green line in fig.5. However, a pair of sidebands of unknown origin can be seen at  $\pm 3.2$ kHz. The higher-frequency sideband also has some frequency smearing evident.

The A10 offers five different

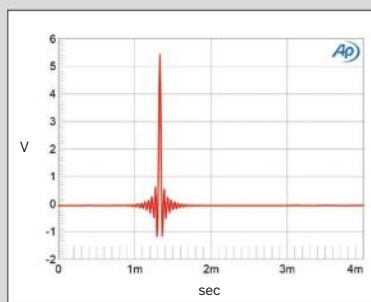
reconstruction filters, as well as the MQA filter. I examined their behavior using S/PDIF data. Fig.6 shows the impulse response with data sampled at 44.1kHz for the Sharp Rolloff filter. It is a conventional finite impulse-response (FIR) type, with symmetrical ringing evident around the single sample at 44.1kHz. This filter's ultrasonic rolloff with 44.1kHz-sampled white-noise data is shown in fig.7 (red and magenta traces); the rolloff is very steep, and there is almost total suppression of the aliased tone at 25kHz associated with a full-scale tone at 19.1kHz (blue, cyan).<sup>1</sup> Fig.8 shows the responses of this filter with data sampled at 44.1, 96, 192, and 384kHz. The ultrasonic rolloff



**Fig.4** Aurender A10, Short Delay, Sharp Rolloff filter, HF intermodulation spectrum, DC-30kHz, 19+20kHz at -3dBFS into 100k ohms, 44.1kHz internal data (left channel blue, right red; linear frequency scale).



**Fig.5** Aurender A10, high-resolution jitter spectrum of analog output signal, 11.025kHz at -6dBFS, sampled at 44.1kHz with LSB toggled at 229Hz: 16-bit TosLink data (left channel blue, right red). Center frequency of trace, 11.025kHz; frequency range,  $\pm 3.5$ kHz.



**Fig.6** Aurender A10, Sharp Rolloff filter, impulse response (one sample at 0dBFS, 44.1kHz-sampled S/PDIF data, 4ms time window).

I'd placed it atop the dCS Scarlatti, I turned the Scarlatti off. That made a major difference.

It also made me realize that an honest assessment of the A10 required removing multiple shelves of dCS gear. Once the A10 had a shelf of its own, I further isolated it from noise by placing it on a Grand Prix carbon-fiber Formula platform. These relatively lightweight platforms contribute greatly to the "black"-background transparency of my reference system. On the empty shelf below the Aurender went a Mytek HiFi Brooklyn DAC (\$1995), set atop a second Formula platform.

My plan was to first listen to the A10 by itself for an extended period of time. Once I was clear on how it sounded as an all-in-one unit, I would compare its DAC section's sound to the Brooklyn's. Both can play PCM up to 24/384, DSD64 and 128 (the Mytek goes higher), and MQA. Connecting the units was Nordost's excellent, ultra-transparent Valhalla II USB cable, which in my experience transfers data with virtually no loss of sound quality. When the Brooklyn wasn't in use, I left it in standby mode so that it would be performance-ready. Given that the Brooklyn had a shelf of its own, away from both the A10 and the silent dCS Vivaldi that sat on the top shelf of my rack, I had no concerns about unwanted interactions.

*There may be trouble ahead  
But while there's music and moonlight and love and romance  
Let's face the music and dance*

Before tackling these setup issues, I'd opened Advanced Settings on the Conductor app and tried to compare the sound of the A10's various digital and analog filters. (There's a separate, nonadjustable filter for MQA.) However, I could hear absolutely no differences among them. Meanwhile, across the country, in Brooklyn, John Atkinson was trying to complete measurements on a different sample of the A10 before renovation of his listening room and test lab began. This was a highly unusual situation: JA usually measures products only after a reviewer has finished his listening and sent the sample to him.

When John, too, could find no differences among the filters, he wrote to ask if I was having the same experience. Given that I'd already spent days assembling four pages of listening notes, I did the ostrich dance. When I could stall no longer, I faced the music and confirmed that switching filters made no audible difference.

At that point, JA felt it best to abort the review until the folks at Aurender HQ could fix what seemed to be a firmware problem. Out went the A10 and Brooklyn, and

conforms to the same basic shape up to 20kHz, with then a sharp rolloff evident at the lowest rate just below the Nyquist frequency (half the sample rate), but a more gentle rolloff at the three higher rates.

The Slow Rolloff filter has a very short impulse response (fig.9), with a high-frequency rolloff that starts around 12kHz, and very little suppression of the 25kHz aliased tone (fig.10). The Short Delay, SuperSlow Rolloff filter has an even shorter impulse response (not shown). The spectrum with white noise has nulls at 44.1kHz and 88.2kHz and the output at 100kHz is down by just 30dB (not shown). The Short Delay, Slow Rolloff filter

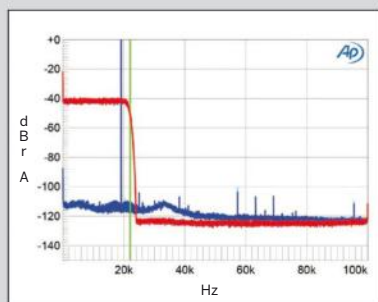
is a minimum-phase type similar to Ayre Acoustics' Listen filter, with its ultrasonic rolloff similar to that shown in fig.10. The Short Delay, Sharp Rolloff filter has a conventional minimum-phase impulse response with 44.1kHz data (fig.11) with, as expected, a sharp ultrasonic rolloff (fig.12, red and magenta traces).

I then reexamined the behavior of the filters using the same test files stored on the A10's internal drive, and immediately ran into problems. The Short Delay, Sharp Rolloff filter still had a minimum-phase impulse response (fig.13), but it was much shorter than it had been with S/PDIF data. Its ultrasonic rolloff with 44.1kHz-sampled

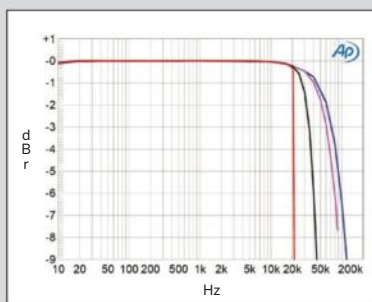
white noise (fig.14, red and magenta traces) was very different, and actually resembles the behavior of the MQA filters that I have measured in other processors.<sup>2</sup> (This was why the A10's HF intermodulation result in fig.4, which I'd measured using internal data, was anomalous.) Fig.15 compares the wideband spectra of the A10's output when it decodes 44.1kHz-sampled white noise with S/PDIF data (green and gray traces) and internally stored data (blue, red). It looks as if the MQA

1 My thanks to MBL's Jürgen Reis for suggesting this test to me.

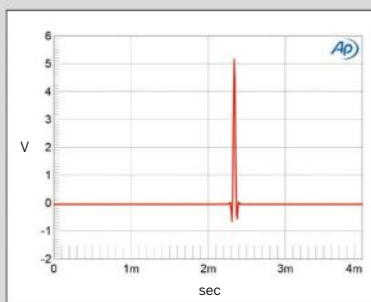
2 See, for example, fig.9 at [www.stereophile.com/content/mytek-hifi-manhattan-ii-da-preamplifier-headphone-amplifier-measurements](http://www.stereophile.com/content/mytek-hifi-manhattan-ii-da-preamplifier-headphone-amplifier-measurements).



**Fig.7** Aurender A10, Sharp Rolloff filter, wideband spectrum of white noise at -4dBFS (left channel red, right magenta) and 19.1kHz tone at 0dBFS (left blue, right cyan), with 44.1kHz-sampled S/PDIF data (20dB/vertical div.).



**Fig.8** Aurender A10, Sharp Rolloff filter, frequency response at -12dBFS into 100k ohms with S/PDIF data sampled at: 44.1kHz (left channel blue, right red), 96kHz (left gray, right green), 192kHz (left cyan, right magenta), 384kHz (left green, right gray) (1dB/vertical div.).



**Fig.9** Aurender A10, Slow Rolloff filter, impulse response (one sample at 0dBFS, 44.1kHz-sampled S/PDIF data, 4ms time window).

back in went the dCS components and enough cables to suspend the Brooklyn Bridge. Easier said than done. Only when I'd finished reviewing the dCS Network Bridge<sup>5</sup> did I once again switch all those boxes and cables and reinstall the Aurender A10 and Brooklyn. For the first time in my life, I fantasized about the joys of Assisted Living.

Eventually, Locken e-mailed to tell me that, due to how the A10 processes MQA, filter choices were no longer an appropriate option for this product. Therefore Aurender had "removed the option to select the optional digital and analog filters from the Aurender Conductor app." He also assured me that, under cover of darkness, Eric in Korea had remotely entered my unit, removed all filter options, and fixed the HDD icon.

Not quite. While the HDD icon finally did begin flashing on and off when tracks were being cached in the SSD, the filter choices remained. Doubly assured that changing filters was no longer possible, and that the option would disappear



with the A10's next official firmware upgrade, I recommenced listening from scratch.

### Listening, Round Two

Once I'd acclimated to the sound of the A10, the excellent depth and bass impact of the remarkably spacious, driving "Electrified II," from Yello's *Toy* (24/48 WAV, Polydor 4782160/HDtracks), as well as the strength of its upper midrange, helped compensate for muted colors and a bit of grayness. For contrast, I cued up the capacious voice

of operatic great Jamie Barton singing Sibelius's "Var det en dröm?" to Brian Zeger's liquid pianism (24/96 WAV, Delos 3494/HDtracks). I wanted to sink deeply into Barton's glorious mezzo-soprano, but I kept having to turn up the volume when she sang softer (not that a woman with such a huge instrument can truly sing softly), then turn it down when she opened up fully. Under the sound of her voice,

<sup>5</sup> See my review in the December 2017 *Stereophile*.

### measurements, continued

filter is being applied to conventionally encoded PCM files when they are stored internally, but not when the A10 is decoding the same data via its S/PDIF input. Something was very wrong.

I repeated all of this testing using data sourced from the NAS drive on my network. Again, regardless of which filter was being selected with the Conductor app, the MQA filter was being incorrectly applied to non-MQA data. I halted the testing and contacted Aurender's US representative, to let them know that there seemed to be something wrong with not only my sample of the A10 but also with Jason's.

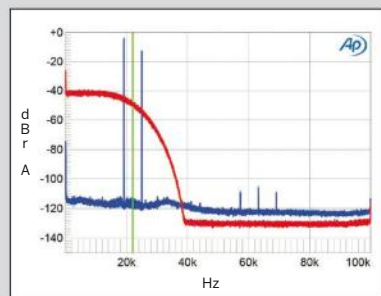
The e-mail exchange that followed was frustrating. Aurender's engineers in Korea didn't appear either to be able

to repeat the problem or to comprehend the issue I was raising. I had no option but to postpone the review from the December 2017 issue to this one. Then, in mid-September, I received an e-mail from the US rep explaining that:

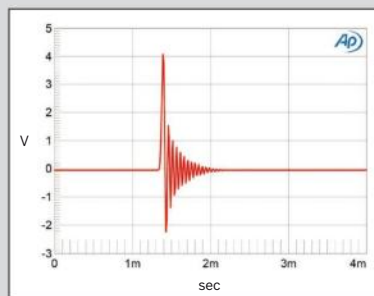
We discovered that prior to applying the MQA firmware update earlier this year, MQA had recommended that we adopt using MQA up-sampling for all content in order to eliminate possible issues with click or pop noises when switching between non-MQA and MQA content. After some discussion with Alan at MQA about this, he had the following comment: "The MQA decoder provides an optional up-sampler for

PCM to simplify implementation and to enable a smooth, clean, click-free user experience. The reason this is offered is that the implementer may not know if the incoming stream is MQA and so the decoder is used to detect MQA and to provide a seamless switch to the usually higher output rate. By using Upsample Always, the user-experience is guaranteed to be accurate from the first sample of an MQA song and also to be free of clicks and pops if the user skips within a song or if there are cross-fades between songs."

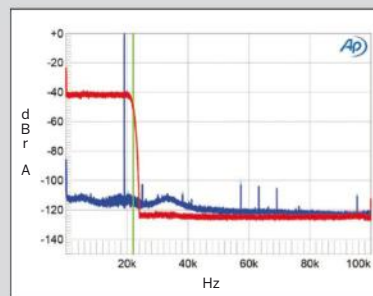
As of our firmware update earlier this year, using the Upsample Always option in the MQA decoder



**Fig.10** Aurender A10, Slow Rolloff filter, wideband spectrum of white noise at -4dBFS (left channel red, right magenta) and 19.1kHz tone at 0dBFS (left blue, right cyan), with 44.1kHz-sampled S/PDIF data (20dB/vertical div.).



**Fig.11** Aurender A10, Short Delay, Sharp Rolloff filter, impulse response (one sample at 0dBFS, 44.1kHz-sampled S/PDIF data, 4ms time window).



**Fig.12** Aurender A10, Short Delay, Sharp Rolloff filter, wideband spectrum of white noise at -4dBFS (left channel red, right magenta) and 19.1kHz tone at 0dBFS (left blue, right cyan), with 44.1kHz-sampled S/PDIF data (20dB/vertical div.).



Zeger's piano lacked color.

One of the most revealing of the many recordings I listened to was the second movement of Lou Harrison's remarkable Concerto for Violin with Percussion Orchestra, with soloist Tim Fain, and Angel Gil-Ordóñez conducting the Post-Classical Ensemble (24/48 WAV, Naxos 8559825/HDtracks). The impressive impact of Harrison's wild collection of percussion instruments helped compensate for, again, a lack of color. Fain's violin sounded fine at full volume, but a bit hoarse and overly resinous when played softly.

I then chose an MQA file that Bob Stuart had provided of a recording John Atkinson had made, Eric Whitacre's *Lux Aurumque*. (The original resolution and sample rate was 24 bits and 88.2kHz.) While the male voices of Cantus certainly sounded more real and present than I recalled hearing from my copy of the group's *While You Are Alive* (CD, Cantus CTS-1208), on which this recording originally appeared, vocal colors were, once more, muted. More engaging were the presence and speed of a stream of the ever-engaging "Babylon Sisters," from Steely Dan's *Gaucho* (MQA, MCA/Tidal).

Connecting Mytek's Brooklyn DAC and using its digital volume control, I experienced more color and transparency

than from the A10's built-in DAC. Revisiting "Electrified II," "Babylon Sisters," and Barton's Sibelius, I found myself more involved with the music. The essential mystery of Harrison's concerto came through loud and clear, and the Mytek did a better job of handling Tim Fain's soft playing without over-emphasizing the rasp of bow and resin on strings.

But after a while I began to feel that the Brooklyn's sonic

palette was a mite too warm. Rather than knocking me out with the 12-tone take on the devastation of WWI and the dissolution of Old World order, Michael Tilson Thomas and the San Francisco Symphony's download-only release of Berg's Three Pieces for

Orchestra (24/192 WAV, SFS Media/HDtracks) sounded seductively smooth, midrange-rich, and remarkably beautiful. But since the Brooklyn's source was the A10's server section, its sonic signature was difficult to ascertain without trying alternative sources.

Thus, I tried two non-Aurender source components to play files through the Brooklyn: my MacBook Pro, using the Amarra Luxe music-playback app to feed files via

## It's fair to say that Aurender has become the most ubiquitous brand of music server in North America.

is the current implementation in the A10. Alan's other comment was that when MQA upsampling is enabled you can still change the over sampling filter in the DAC during PCM playback, but as the DAC is being supplied 8x, the difference made by the different DAC filters will be harder to measure unless you can make a very fast digital capture.

Our overall thinking is that for all intents and purposes, the filter selections are no longer valid, so we have removed the option to select the optional digital and analog filters from the Aurender Conductor App. We will be releasing a public update to the App to remove the filters on

the Advanced tab so that the review can commence as planned.

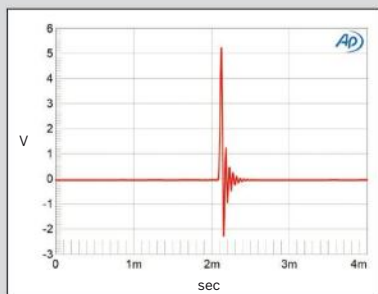
Travel plans and other commitments meant that I couldn't get my sample of the A10 back on the test bench until the beginning of October. When I did, and connected it to my network, the first thing the A10 did was to update its system software to the latest version, v.5.10.34. I resumed the testing and found that, despite what I had been told, the filter options were still there in the Conductor app, which had also been updated to the latest version. The next thing I found was that that while the five different filters were still available for S/PDIF data, and measured identically to what I had found in my

earlier testing, once again the MQA filter was incorrectly applied to non-MQA data when it was sourced from the A10's internal storage.

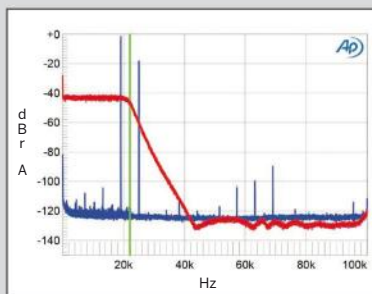
Its measured performance suggests that the A10's analog output stage is of high quality, and my experience with Aurender's N10 server<sup>3</sup> makes me a fan of how the company's Conductor app organizes the user's music library. However, the A10's misapplication of the MQA reconstruction filter to non-MQA files stored on its internal drive means we must withhold a full recommendation for the A10 until this problem has been corrected.

—John Atkinson

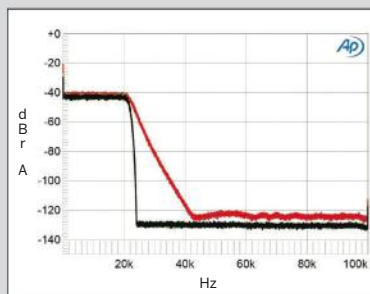
<sup>3</sup> See [www.stereophile.com/content/aurender-n10-music-server](http://www.stereophile.com/content/aurender-n10-music-server).



**Fig.13** Aurender A10, Short Delay, Sharp Rolloff filter, impulse response (one sample at 0dBFS, 44.1kHz-sampled internal data, 4ms time window).



**Fig.14** Aurender A10, Short Delay, Sharp Rolloff filter, wideband spectrum of white noise at -4dBFS (left channel red, right magenta) and 19.1kHz tone at 0dBFS (left blue, right cyan), with 44.1kHz-sampled internal data (20dB/vertical div.).



**Fig.15** Aurender A10, Short Delay, Sharp Rolloff filter, wideband spectrum of white noise at -4dBFS with internal data (left channel red, right magenta) and S/PDIF data (left green, right gray), with data sampled at 44.1kHz (20dB/vertical div.).

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USB; and the dCS Network Bridge (\$4250), using dCS software to feed those files via AES/EBU. The computer source sounded way inferior, lacking the vividness, color, and “blacker” backgrounds transmitted by the A10’s server section. The Network Bridge, on the other hand, delivered more midrange and detail than the A10, and sounded more neutral, truthful, and realistic. However, not only was the Network Bridge unable to handle MQA (at the time of the review), it also required extra cables that raised the cost of the Bridge plus Brooklyn far above that of the single-box Aurender A10.

Before wrapping up, I double-checked my observations with a second back-and-forth between the A10 solo and the A10 into the Brooklyn. Playing the final section of Stravinsky’s *The Rite of Spring*, with Ludovic Morlot conducting the Seattle Symphony (24/96 WAV, Seattle Symphony Media 1005/HDtracks), again confirmed that while the A10’s color saturation and transparency were just okay, its strong suits were bass, speed, ease of operation, convenience, and ability to play multiple formats.

### Conclusions

If the Aurender A10 is not the CD player of the 21st century, it’s certainly a viable 21st-century successor to that less-than-perfect source. That the A10 provides a single front-end solution for playing digital music in far more formats, sourced from far more platforms, than the designers of the CD ever envisioned makes it a most tempting proposition for those with limited space and budgets, or who consider a pile of boxes and cables the work of the devil. Whether or not the A10 will end up on your shelf will depend, in large

## ASSOCIATED EQUIPMENT

**Digital Sources** dCS Paganini SACD/CD transport & Rossini DAC & Scarlatti clock & Vivaldi DAC & Network Bridge; Mytek HiFi Brooklyn DAC; Oppo Digital UDP-205 universal BD player; Intel NUC7i7BNH with 8GB RAM, 128GB SSD, running Roon; Apple MacBook Pro computer with Intel i7, SSD, 8GB RAM; iPad Pro, external hard drives, USB sticks.

**Power Amplifiers** Pass Laboratories XA200.8 monoblocks.

**Loudspeakers** Wilson Audio Specialties Alexia.

**Cables** Digital: AudioQuest Diamond (FireWire, Ethernet), Nordost Odin 1 & Odin 2 & Valhalla 2 (USB), Wireworld Platinum Starlight Cat8 (Ethernet). Interconnect, Speaker, AC: Nordost Odin 2.

**Accessories** Grand Prix Monaco rack & amp stands & 1.5”-thick Formula platform; Nordost QB8, QK1, QV2, QX4 AC power accessories; AudioQuest NRG Edison outlets; Stein Music Signature Harmonizers, Blue Suns/Diamonds, Speaker Matches, Super Naturals, crystal Quantum Organizer; Synergistic Research Tranquility Base UEFs & Transporter & PowerCell; Bybee Room Neutralizers; Absolare Stabilians; Resolution Acoustics room treatment; Stillpoints Aperture panels.

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part, on your sonic priorities. Those who tend to listen to music while multitasking, or who don’t spend hours on end sitting undisturbed in the sweet spot, need not hesitate. ■

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# FOLLOW-UP

BY LARRY GREENHILL & JIM AUSTIN

**THIS ISSUE:** An Update for Bryston's music player and the first in a series of articles examining the MQA codec.

## BRYSTON BDP-3 DIGITAL PLAYER

In February 2017, Bryston<sup>1</sup> announced the latest upgrade of their Digital Player, introduced in 2011 as the BDP-1 (\$2195),<sup>2</sup> and upgraded in 2013 to the BDP-2, with a faster Atom N450 processor.<sup>3</sup> The new BDP-3 Digital Player comes equipped with an even faster Intel Quad-core processor; a Bryston-manufactured integrated audio device (IAD) in place of a third-party sound card; a custom Intel Celeron motherboard; a bigger power supply; and two additional USB ports, for a total of eight—three of which use the faster USB 3.0 protocol. Two USB 3.0 ports run on an entirely separate USB bus, making the BDP-3 compatible with the Streamlength protocols used by DACs from Ayre Acoustics and Berkeley Audio Design.

The BDP-3 can handle files of resolutions up to 32-bit/384kHz PCM and DSD128 (both via a USB-connected DAC), compared to the BDP-2's maximum of 24/192. The BDP-3 can also connect to more devices, including NAS drives, Internet radio, and lossless Tidal streaming (subscription required), and can be configured as a Roon Ready endpoint. The BDP-2's eSATA drive connector is gone, replaced by an HDMI port. In early June 2017, Bryston made it possible for BDP-2 owners increasingly frustrated by Bryston's rapid-fire upgrades of this model to have their units converted by Bryston to BDP-3 status for \$1500. A brand-new BDP-3 costs \$3495.

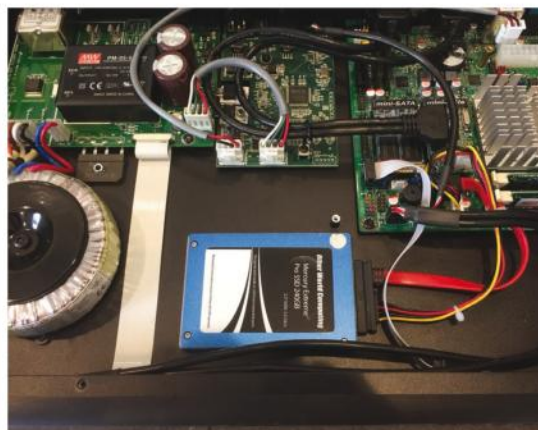
But Bryston wasn't finished. In the second half of 2017, they announced for the BDP-3 a plug-in WiFi adapter, the Bryston WiFi Dongle Accessory Kit (\$80). For BDP users such as I, running a long Ethernet cable through a wall from the BDP to a central home router was too difficult and/or too expensive. My main WiFi network router is nearest my Internet cable feed: in our garage, one floor and a few walls away from my listening room, on the second floor. Also announced were two options available to consumers ordering a new BDP-3: an *internal* WiFi option (approximately \$200) and a 500GB internal drive (approximately \$400, installed and set up).

I asked Bryston to send me a plug-in BDP WiFi adapter and to upgrade my BDP-2 to BDP-3 status. In response, I received a return authorization and a US mailing address in Vermont for returning BDP-2 to their US service facility. A month later, my former BDP-2 was sent back with a new rear panel, a new Intel Celeron motherboard, USB 3.0 ports, a new Quad

necting it to the Internet to download the S2.36 firmware, which required hauling the BDP-3 down to the garage and plugging it into our main router. I then returned the BDP-3 to my equipment rack on the second floor and plugged it into my in-room router. This allowed my Lenovo P50 laptop to wirelessly access the BDP-3's internal Web interface and media-player

software. I inserted the WiFi adapter in a front-panel USB port and rebooted the Bryston. The adapter created its own wireless network, called Bryston Digital Player.

Using my WiFi-connected laptop, I logged onto the BDP-3's internal webpage, which creates a dashboard-like user interface for altering the player's settings and controlling its



**Clockwise from top:** BDP-3 internal components; front panel data cable connected upside down (red cables at bottom rather than on top); Bryston USB WiFi Adapter/Dongle.

core processor, and BDP firmware S2.32 (9/27/2017). Although the chassis still bore my BDP-2's original serial number, now followed by “-3,” the data plate on the rear panel now identified it as a BDP-3. Two weeks later, the BDP WiFi adapter arrived, the same day that Bryston made available the BDP firmware required to support it: S2.36 (9/27/27).

Setting up the BDP-3 involved con-

media-player activities. (Previously, this internal webpage had been accessible to my laptop only if I plugged the

1 Bryston Limited, 677 Neal Drive, Peterborough, Ontario K9J 6X7, Canada. Tel: (800) 632-8217, (705) 742-5325. Fax: (705) 742-0882. Web: [www.bryston.com](http://www.bryston.com).

2 See my review of the BDP-1 in the June 2011 issue: [www.stereophile.com/content/bryston-bdp-1-digital-audio-player](http://www.stereophile.com/content/bryston-bdp-1-digital-audio-player).

3 See my Follow-Up in the February 2016 issue: <http://tinyurl.com/y8zxasey>.





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BDP-3 into my home's main router.) The WiFi adapter plugged into one of the USB ports on the BDP-3's front panel made the dashboard accessible on my laptop when it was connected to the same WiFi network as the BDP-3. I found a list of WiFi networks, and chose "ATT6VX23da"—my internet-connected house network—and entered its password. This connected the BDP-3 to my home WiFi network wirelessly, no Ethernet cable needed!

I encountered two minor glitches along the way, but e-mails from Bryston technical support quickly resolved them. A wiring-harness connector for the two USB ports on the front panel had been plugged in upside down at the factory (I sent Bryston a photo showing this). This inverted the voltage in the ports, resulting in fatal damage to any thumb drive inserted therein.<sup>4</sup>

Following Bryston's instructions, I unplugged, inverted, and replugged the connector. First problem solved—and opening the Bryston to fix it allowed me to see the high-quality replacement parts, including a bigger power-supply transformer, the new motherboard, and the new processor with its massive heatsink.

The other glitch: Installing the WiFi adapter requires a step missing from the setup instructions: The BDP-3 must be returned to its factory default settings before installation of the adapter can be completed, otherwise its internal dashboard network-connection options can't find it. I sent Bryston another e-mail. Their reply included the missing step. Second problem solved.

Bryston assures me that both the wiring-harness problem and the omission of the "Reset to Defaults" step will be addressed before any more BDP-2s are upgraded to BDP-3s, and/

or before any more WiFi adapters are sent to customers.

Bryston's latest media-player software displays much more album-cover art and information about artists, is much more responsive, and hasn't once frozen up since I turned it on. However, the BDP-3 takes as long to boot up or shut down as did the BDP-2: 45 seconds to boot up (50 seconds if I load all the USB ports with hard drives, internal SSD, USB thumb drives, and the WiFi adapter), 30 seconds to shut down.

The BDP-3's sound quality was slightly but definitely better than the

more impressively spacious and atmospheric than I'd ever heard it. I could hear deeper into the soundstage as well as "The 'beating' within the harmonies," as the late Wes Phillips noted in his review of the Ayre KR-X line preamplifier in November 2008.<sup>5</sup>

**CONCLUSIONS:** The advantages of upgrading a BDP-2 to a BDP-3 with firmware S2.36 include overall increased revelations of recorded detail, extended bass response, enhanced network flexibility, the versatility of the BDP-3's new high-speed USB 3.0 ports, a new HDMI port, access to a wider range of DACs, and the ability to play PCM files of higher sampling rates. The improved processor and motherboard should make playback of DSD256 files possible through future firmware updates. However, Bryston hasn't yet decided whether or not to include MQA capability in their digital



BDP-2's. Bass extension was improved for pipe-organ pedal notes, which not only pressurized the room but now seemed to reach below the floor. The timbres of woodwinds were richer and more complex, particularly at the beginning of Eiji Oue and the Minnesota Orchestra's recording of Stravinsky's *The Rite of Spring* (CD, Reference RR-70CD), followed by well-defined, frenzied timpani impacts, and bass-drum strokes that were sudden, concussive, and thunderous. I found the sound more involving, and it enticed me to listen longer to each selection.

Choral recordings were particularly clear, open, and more detailed than I remembered from the BDP-2. The performance of Eric Whitacre's *Lux Arumque* from *While You Are Alive*, by the men's choir Cantus (CD, Cantus CTS-1208)—a recording engineered by our own John Atkinson—sounded

gear, which may make some think twice about upgrading to a BDP-3. But don't wait to buy the BDP WiFi adapter. And those ordering a brand-new BDP-3 should be sure to include the optional internal 500GB SSD and WiFi circuitry.

If you want to own the latest and greatest, doing the math shows that having Bryston transform your BDP-2 into a BDP-3 makes financial sense. Audiogon Bluebook lists the BDP-2's private sale price as \$1645. If you sell your BDP-2 at that price and buy a new BDP-3, you'll still have to come up with \$1850—which is \$350 more than the \$1500 upgrade.—Larry Greenhill

4 A slow learner, I tried five thumb drives before I realized that each one was instantly destroyed as soon as I inserted it. All of the files on those drives were from CDs I still have, but re-ripping them to new drives is still on my to-do list.

5 See [www.stereophile.com/content/ayre-kx-r-line-preamplifier-page-3](http://www.stereophile.com/content/ayre-kx-r-line-preamplifier-page-3).

## MQA

I don't think I've ever seen an audio debate as nasty as the one over Master Quality Authenticated (MQA), the audio-encoding/decoding technology from industry veterans Bob Stuart, formerly of Meridian and now CEO of MQA Ltd., and Peter Craven. Stuart is the company's public face, and that face has been the target of many a mud pie thrown since the technology went public two years ago. Some of MQA's crit-

ics are courteous—a few are even well informed—but the nastiness on-line is unprecedented, in my experience.

It's reasonable to be concerned about MQA. It's a big deal. There's already much support from record labels and DAC manufacturers. It's clear to me that MQA's developers see it as an idealistic venture designed to fix what digital broke, sound-wise and within the music ecosystem. Others see things differently.<sup>6</sup>

My goal for this series of articles, of which this is the first, is to subject MQA to a fair and thorough vetting—not as an expert, but as a science and technical writer. My role is not to make absolute judgments, but to do the hard work, struggling through dense technical articles, pestering people with questions, evaluating evidence in consultation with experts,

6 See my "As We See It" on p.3.—John Atkinson

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and assembling what I learn into something coherent and accessible. I'll present the evidence, and people can then decide for themselves.

This is a complex business, with far too much to look into all at once with any sort of rigor. So I'll take on the issues one at a time, beginning here with an aspect of MQA's time-domain behavior: its decoder/renderer's impulse response.

A few months after my first request, Bob Stuart made available to me an MQA-encoded file containing a train of perfect impulses. Later, he sent me a non-encoded 24-bit/96kHz FLAC file containing exactly the same information, so that I could compare MQA's performance directly with the performance of non-MQA DACs, on even terms.

An impulse is a very short signal—the shortest possible signal, in fact—so it's tempting to think of a test of an audio system's impulse response as a test of its response to very short signals. An impulse-response test is that, but because an impulse contains all the frequencies—for band-limited systems, all the in-band frequencies—it's a useful and commonly used measure of a system's overall fidelity. The more closely an output impulse resembles the input impulse, the truer the output will be for any input.<sup>7</sup>

MQA is, as Bob Stuart likes to say, an end-to-end technology: analog in to analog out. This test, though, starts in the middle: It skips the “analog in” stage by sending a digitally manufactured test signal directly to the DAC. We're skipping half the MQA process—the encoding part, which Stuart says is responsible for some 70% of MQA's claimed improvement in sound quality. The part we're testing—the “renderer”<sup>8</sup>—contributes about 10% to MQA's performance, Stuart told me.

I measured an assortment of DACs that I have on hand. I recorded their analog outputs at 24/192kHz, so each sample is a little more than five microseconds (5μs) wide. I've expanded the view so that you can see the individual samples—the little magenta dots. The major horizontal divisions are 100μs apart. To make comparisons straightforward, I've used the same vertical scale for all the plots.

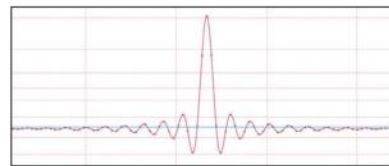
John Siau, who designs the DACs made by Benchmark Media Systems, focuses on maintaining the signal's frequency-domain integrity. This is why Benchmark's DAC3 HGC

includes a linear-phase reconstruction filter that rolls off very quickly in the frequency domain, and so produces a good bit of time-domain ringing (fig.1). This is typical of a linear-phase filter in that the ringing is symmetric—it comes both before and after the main peak. One of the key notions on which MQA is based is that our ear/brain system regards pre-ringing as unnatural—and there's plenty of it here. And yet, the DAC3 HGC is a brilliant-sounding DAC.<sup>9</sup>

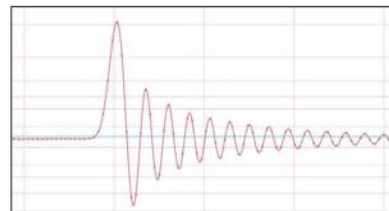
Next up is Mytek HiFi's Brooklyn DAC, with its reconstruction filter set to Minimum Phase (fig.2). Again there's lots of ringing, but it comes after the main pulse—no pre-ringing—and the post-ringing would normally be buried beneath the music's reverberation.

Fig.3 shows the Brooklyn again, now with its slow-rolloff filter selected. This shows what you can accomplish in the time domain by using a filter that rolls off slowly in the frequency domain. The response is very short, but it's still linear-phase (whether or how much this matters isn't clear), with just a little pre-ringing—about 20μs total. That's not much.

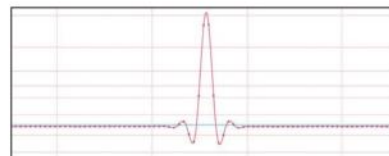
For the next tests, I sent the same data to the DACs, this time MQA-encoded. First I sent it to a non-MQA



**Fig.1** Benchmark DAC3 HGC, impulse response (one sample at 0dBFS, 96kHz sampling, 100μs/horizontal div.).



**Fig.2** Mytek HiFi Brooklyn, Minimum Phase Filter, impulse response (one sample at 0dBFS, 96kHz sampling, 100μs/horizontal div.).

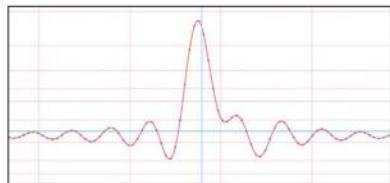


**Fig.3** Mytek HiFi Brooklyn, Slow Roll-Off Filter, impulse response (one sample at 0dBFS, 96kHz sampling, 100μs/horizontal div.).

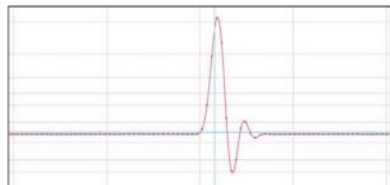
DAC, so that you can see what that looks like (fig.4). We're now in the 48kHz domain, not 96kHz, so we expect a wider impulse. This response is mostly linear-phase, though the asymmetry suggests some nonlinearity in the phase response. The details of the response will depend on the DAC's particular filter.

Fig.5 shows MQA proper via the Mytek Brooklyn DAC with MQA enabled, though the response should be the same for any MQA-enabled DAC. This is nearly ideal: There's no pre-ringing, and the response is fast and short—clear evidence of MQA's time-domain excellence, though the Brooklyn's slow-rolloff, linear-phase response had very similar width and only a small amount of pre-ringing. Would such a small difference be audible?

Here's a surprise—or it would be surprising, if there hadn't been hints in John Atkinson's measurements over the last couple of years: I've sent the PCM impulse file—not the MQA file—to the Brooklyn DAC with its MQA decoding turned on (fig.6). Same thing, right? Looks like it to me. Apparently, as long as the MQA decoder is enabled, the impulse response is basi-



**Fig.4** Benchmark DAC3 HGC, impulse response (one sample at 0dBFS, MQA-encoded, 48kHz sampling, 100μs/horizontal div.).



**Fig.5** Mytek Brooklyn DAC with MQA enabled, impulse response (one sample at 0dBFS, MQA-encoded, 48kHz sampling, unfolded to 96kHz, 100μs/horizontal div.).



**Fig.6** Mytek Brooklyn DAC with MQA enabled, non-MQA impulse response (one sample at 0dBFS, 96kHz sampling, 100μs/horizontal div.).

cally the same—even for non-MQA data. Stuart explained to me that, in some implementations of MQA, when MQA decoding is enabled, all data are sent to the DAC's MQA module, which detects the file type and then does the right thing. In DACs that are built this way, including the Brooklyn, even non-MQA music is sent to MQA's upsampling renderer. Don't want MQA messing with your regular PCM data? Turn it off.<sup>10</sup>

It's important to consider what fig.6 doesn't show. This is *not* MQA's claimed *deblurring*. Deblurring, per MQA, is the removal of time-domain artifacts remaining from previous analog/digital conversions; here there are *no* artifacts, since this test file was built and delivered in the digital domain. I hope to find a way to demonstrate and test deblurring—how MQA handles imperfect files—for a future article.

One of the challenges levied against MQA by its more knowledgeable critics is that while MQA's approach may improve the shape of the impulse response, its sampling method—and the resulting, presumed increase in aliasing—introduce randomness in precisely when those impulses occur. If they're right, this would offset any claim of time-domain advantage. I synchronized the MQA and non-MQA impulse responses: MQA in the left channel, non-MQA in the right. Over 30 seconds of impulses spaced 0.7ms apart, examined on a microsecond scale, I saw no random offsets—or offsets of any kind—in where MQA's impulses landed.

This is just one small piece of a large puzzle, but it's a start. MQA's filter—the one that in non-MQA DACs is called the reconstruction filter—is apparently very well behaved in the time domain.<sup>11</sup>

Next time: Sure, MQA's compression has a lossy aspect—but how much does that really matter?—**Jim Austin** ■

7 Strictly speaking, the signal used to test impulse responses is "illegal," in that they violate Nyquist/Shannon's requirement that the signal be band limited.—**John Atkinson**

8 The core decoder is in the circuit for the MQA test file, but other than routine unpacking, there isn't much for it to do in this case.

9 See my review of the Benchmark DAC3 HGC in the November 2017 issue: <http://tinyurl.com/ydbx3r6h>.

10 But see the review of the Aurender A10 elsewhere in this issue, where for non-MQA, regular-PCM files stored on its internal drive, the MQA filter can't be turned off.—**John Atkinson**

11 However, as my measurements have shown, this filter is "leaky" in the frequency domain.—**John Atkinson**

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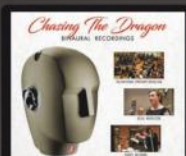


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# RECORD REVIEWS

In 2010, down in the East Village, on Delancey Street, at the NYC debut party for Robert Plant's *Band of Joy*, the assembled rock press, assorted hangers-on, and wannabe VIPs patiently sipped drinks as we waited for the guest of honor. Suddenly, with no fanfare or even announcement, he stepped out of a hidden room into a roomful of astonished smiles. He'd been there all along.

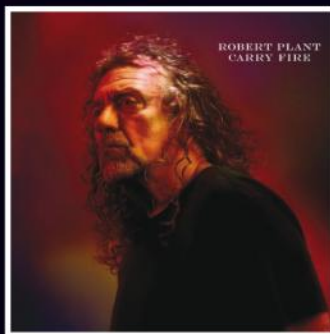
In the rock world, it seems as if Robert Plant and his former band, Led Zeppelin, are always hovering somewhere nearby. While some 1970s acts have not remained relevant to younger generations, Led Zep marches on, their music never far from the sound or the musical zeitgeist of the current moment. The influence and mastery of their eight studio albums, incalculable and utterly pervasive, grows with every year.

Since the death, in 1980, of drummer John "Bonzo" Bonham, and Led Zep's dissolution soon after, Robert Plant—the curly-haired front man, the singer who got all the chicks—has struggled to escape the shadow of the formidable musical dirigible he helped inflate.

The darkest corner of Zeppelin's outside reputation is the fact that Plant is the main obstacle to a long-rumored, long-awaited reunion album and tour. Predictably, this has brought down on his head a storm of criticism, mostly from newer fans who fail to appreciate a fundamental truth: Bonzo was irreplaceable. Even Bonham's son, Jason, can't fill those shoes. To those convinced of that certainty—one that can be distinctly heard on record—Plant's holding the line against any sustained reunion is a classy, sensible move. In place of a Zep 2.0, he's slowly but surely found his own solo voice, and *Carry Fire* is another solid step in that difficult but ultimately more rewarding journey.

First and always, there's his voice, perhaps the most recognizable human instrument in the history of rock—though Paul Rodgers might have something to say about that. Plant's

## EDITOR'S PICK RECORDING OF THE MONTH



### ROBERT PLANT *Carry Fire*

Nonesuch 563057-1 (2 LPs). 2017.  
Robert Plant, prod.; Justin Adams,  
John Baggott, Ben Findlay, Billy Fuller,  
Dave McCracken, Liam "Skin" Tyson,  
engs.; Joe Jones, Oli Middleton, Tim  
Oliver, asst. engs. DDA? TT: 49:07

PERFORMANCE ★★★★★  
SONICS ★★★★★

range and elasticity are, understandably, not what they once were—too many performances of "Black Dog" have taken their inevitable toll. He now has a breathier, lighter tone. But even with that, and everything pitched down at least a step, that voice, always fraught with a certain mystery, remains a supremely expressive instrument able to weave through, say, the "ooooooooohh, ahhhhh" parts at the end of "Dance with You Tonight" with perfect inflection and instinctual grace. If there's a Zep connection on *Carry Fire*, it's to *III*, an album that was deemed "folky," particularly after all the thunder present on the "Brown Bomber," *II*. That kind of introspective sifting can be heard on *Carry Fire* in the mid-tempo love ballad "Season's Song."

While Plant's solo recording career may never again include material as strong as that on *Raising Sand*, his 2007 collaboration with Alison Krauss, much of *Carry Fire* was cowritten

with his highly skilled and adaptive band, the Sensational Space Shifters. The connection with guitarists Justin Adams and Liam "Skin" Tyson, keyboardist John Baggott, bassist Billy Fuller, and drummer Dave Smith continues to strengthen—the band seems locked in to cowriting and playing Plant's favored blend of blues and English folk music with Arabic and African accents. Atmospheric and moody throughout, many of the songs—such as "A Way with Words," in which Plant sings of emotions that he characteristically keeps at arm's length—are really just settings for his vocal curves and curls.

The title track, buoyed by Adams's nimble oud playing and the string work of violist Seth Lakeman and cellist Redi Hasa, is carried along by North African rhythms. "New World . . ." has the album's most memorable melody, but also lyrics about Europeans discovering the Americas and subjugating the "noble savage."

For listenable sound here, the vinyl edition is the only choice. On this album at least, Plant has chosen the wrong side in the loudness wars, allowing the music to be compressed and dynamically flattened on the CD. Perhaps, these days, this is the conscious choice by record labels like Nonesuch: Those who want better sound will gravitate toward LPs and high-resolution downloads, while those who don't know or care will opt for cheaper, compressed, squashed-sounding MP3s and CDs.

Welcome echoes of Delta blues and the lullaby "Hush, Little Baby" mix over low-end electronic keyboard pulses in "Keep It Hid," in which Plant's endless fascination with mysticism, spirituality, and the natural world appear in the repeated chorus line "Silver key and a golden cup." In a noisy, slowed-down version of "Bluebirds Over the Mountain," a late-'50s hit for obscure upstate New York rockabilly cat Ersel Hickey (and later recorded by the Beach Boys), Plant teams with Chrissie Hynde for an elegant fusion of vocal stylists. Overall, a master at work. —Robert Baird



## CLASSICAL


**JUAN DIEGO FLÓREZ**  
*Mozart*

Arias from: Idomeneo, Il rè pastore, Don Giovanni, La clemenza di Tito, Die Zauberflöte, Die Entführung aus dem Serail, Così fan tutte; "Misero! O sogno." Juan Diego Flórez, tenor; Orchestra La Scintilla, Riccardo Minasi. Sony Classical 88985430862 (CD). 2017. Tessa Fanelas, prod.; Giovanni Prodocimi, eng. DDD. TT: 52:10

**PERFORMANCE** ★★★★★  
**SONICS** ★★★★★

Juan Diego Flórez took bel canto by storm in 1996, when he stepped in for an ailing colleague in Pesaro and sang the high-flying, wildly embellished tenor lead in Rossini's *Matilde di Shabran*. His bright, well-integrated voice—easily produced, attractive, accurately placed—was coupled with good looks and charisma. Nowadays, his amazing virtuosity and high notes can sound somewhat routine; he occasionally seems to have little to say about the characters. Mozart is a new challenge, and some of these roles fire his imagination.

Flórez excels here in the more heroic, fully voiced characters: Alessandro in *Il rè Pastore*, and particularly Idomeneo: he sings "Fuor del mar" firmly but with staggering agility. Embellishments and interpolated high notes are very much in keeping with the noble characters, and his crisp delivery of the text is remarkable. To listen to the sturdy *Pastore* aria, followed by "Il mio tesoro," begun with a melting beautiful tone and fluently sung, is to realize that greatness is still his.

But some moments disappoint. "Un'aura amorosa" is more maudlin than warm and beautiful, and while Tamino's "Bildnis" aria begins promisingly, with wonderment, it quickly becomes matter-of-fact. Characterizations may be lacking in these arias, but even here, the voice is free and handsome, the legato smooth. The Orchestra La Scintilla plays with vitality under Riccardo Minasi.

Not ideal, but still heartily recommended.—Robert Levine

## ROCK/POP


**CAMERON BLAKE**  
*Fear Not*

Cameron Blake Music C17051233 (CD). 2017. Cameron Blake, prod.; Peter Fox, Josh Kaufman, prods., engs. ADD? TT: 46:58

**PERFORMANCE** ★★★★★  
**SONICS** ★★★★★

On the way to becoming a classical violinist, conservatory-trained Cameron Blake found greater musical inspiration and psychological kinship in the great singer-songwriters of the 1960s and '70s, ultimately pivoting in the directions of Billy Joel, Joni Mitchell, Harry Nilsson, and Paul Simon. For his critically hailed 2015 debut, the spare, haunting *Alone on the World Stage*, he decisively ditched violin for guitar and piano; with *Fear Not*, he's expanded his palette to include orchestral, even neoclassical flourishes, bringing in guests on viola, cello, double bass, and French horn, and occasionally a small chorus. Still, it's clear that Blake is a folk/pop traditionalist at heart, inclined to straightforward arrangements and dedicated to intensely personal lyricism.

As a singer, Blake shines, placing his voice and piano front and center in the mix, the other musicians fanned out across the soundstage in sonic imaging one part piano-bar intimate, several parts concert-hall expansive. It's an effective strategy. In "Wailing Wall," for example, about the struggle to keep your head up even as others around you fall down and need your help, Blake achieves a gospel-like reverie against a rising backdrop of strings and choir. In the yearning "Monterey Bay," ambient sounds swirl around the edges of a minimalist chamber-pop arrangement that steadily grows in volume and intensity to a climax worthy of an epic romantic film of the 1940s.

Blake switches to guitar for several songs, including the country pop of "After Sally." Ultimately, on *Fear Not* Cameron Blake reaches far; impressively, that reach doesn't exceed his grasp.—Fred Mills


**JOHN LEE HOOKER**  
*King of the Boogie*

Craft CR 00015 (5 CDs). 2017. Mason Williams, others, prods.; Chris Clough, Joe Tarantino, others, engs. ADD? TT: 5:54:37

**PERFORMANCE** ★★★★★  
**SONICS** ★★★★★

There is no shortage of John Lee Hooker collections, but that doesn't stop companies from repackaging the material over and over. What constitutes the perfect JLH set will depend on your perspective. If you want the early singles, you can have them in several available packages. But Hooker continued to be a musical force throughout his life (1917–2001), ironically reaching the height of his commercial success in sometimes dubious collaborations with various pop stars in his last years. This collection gives us an overview of Hooker that shows him at his best, and represents him through all stages of his influential career. *King of the Boogie* is well curated and annotated, with master numbers provided when possible. Joe Tarantino's mastering, from multiple sources, is excellent, keeping the volume levels, presence, and fidelity on an even keel throughout, and each of the five discs gives us a different look at Hooker's genius.

Disc 1 is mostly Hooker solo, plying his absolutely original sound in powerfully elemental form. His growling, near-spoken-word deadpan, accompanied by the dread rhythms of his electric guitar, reach back to African griots, but the approach is totally American as he describes a Detroit street scene in the definitive "Boogie Chillen'." Here are such early touchstones as the Modern sides "Sally May," "Crawlin' King Snake," and "I'm In the Mood," with tracks recorded for other labels under the pseudonyms Texas Slim, Delta John, and John Lee Booker. These 45s were immensely popular with black audiences from his 1948 debut through the 1950s.

Mostly comprising later Vee-Jay and Riverside sessions, disc 2 shows Hook-



er in solo and various group formats, backed by the likes of guitarist Eddie Taylor, drummer Louis Hayes, and what sounds like Pops Staples on guitar. This disc also covers the fascinating era when blues was discovered by the folk-music revival, into which Hooker's approach fit seamlessly.

Disc 3 documents the turbulent era of 1960s pop, when R&B was crossing over. In an attempt to coin hits, Hooker was recorded in numerous settings but always remained relentlessly Hooker. The experiment with "I Left My Heart in San Francisco"—a brilliant idea, if not a commercial success—led to "Frisco Blues," a triumph of Hooker's turning someone else's song into his own mythology. "I left my heart, people," he utters in his smoky, deadpan undertow of a vocal, "on the hill... when the mornin' falls... in the cool cool breeze... where I wanna be... I got the blues... San Francisco."

Hooker is at his greatest in disc 4, which showcases live performances from throughout his career—from his mesmerizing of audiences at the 1960 Newport Folk Festival, to the outstanding "I'm Bad Like Jesse James," recorded in 1966 with the Muddy Waters Band at the Cafe Au Go Go, to five previously unreleased tracks from a 1983 concert in Berlin.

Disc 5 covers the period of Hooker's resurgence, performing with famous acolytes from the worlds of blues and rock. Titled *Friends*, it relies heavily on the brilliant productions of guitarist Roy Rogers, whose sensitivity allowed Hooker's style to emerge unscathed even as he joined forces with such signature voices as Robert Cray, Warren Haynes, Bonnie Raitt, Carlos Santana, George Thorogood, and Jimmie Vaughan. Collaborations with Canned Heat, Eric Clapton, Joe Cocker, the Groundhogs, Los Lobos, and Van Morrison are also included.—John Swenson

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#### ANGEL OLSEN *Phases*

Jagjaguwar JAG314 (LP/CD/WAV). 2017.

Angel Olsen, prod., mix, mastering;  
John Congleton, prod., mix; Justin Raisen, prod.;  
Collin Dupuis, mix; Alan Douches, Emily Lazar,  
mastering. ADA/ADD? TT: 39:00

PERFORMANCE ★★★★★

SONICS ★★★★★

Angel Olsen, the compelling 30-year-old Saint Louisan, refuses to be easily categorized. Even as she wins new fans, her seemingly sudden transformation from bedroom folk singer to roller-skating punk rocker has left some listeners frustrated, confused, and eager for something sturdy to hold on to. Last August, in an interview with Amy Rose Spiegel for *The Fader*, Olsen described the challenge of maintaining relationships while advancing one's art: "I'm not going to give you what you want all the time. I know what works for me and what doesn't. ... People might not want to go to side B ever! But side B is where it's at for me and my band."

Now, a little more than a year after the release of Olsen's highly praised *My Woman*, she returns with *Phases*, a collection of 12 B-sides, rarities, and previously unreleased home demos. While such releases are usually most deeply appreciated by diehard enthusiasts, here even the newly initiated gain a tidy overview of Olsen's interests, quirks, and influences. She plays languid and lusty in "Fly on Your Wall," gets psychedelic in the seven-minute jam "Special," employs a feverishly powerful vibrato in "California," and exposes the tender rockabilly center of Bruce Springsteen's "Tougher Than the Rest."

But perhaps Olsen is truest to herself in the final track, a mournful rendition of the country-folk classic "Endless Road," whose lyrics seem made for her: "Well, every road I see / Leads away from me... / So is it any wonder that I roam?"—Stephen Mejias

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— John Atkinson, *Stereophile*



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**ONEOHTRIX POINT NEVER**  
*Good Time: Original Motion Picture Soundtrack*

Warp WARP292 (LP/CD/WAV). 2017.  
 Daniel Lopatin, prod., eng. AAA/AAD? TT: 46:16

**PERFORMANCE** ★★★★★

**SONICS** ★★★★★

*Good Time* is the eighth studio release and first soundtrack by Brooklyn-based electronic producer-composer Daniel Lopatin, who, despite his steadily rising status in the independent music industry, remains slightly better known by his more mysterious alias, Oneohtrix Point Never. The film received the award for Best Soundtrack at the 2017 Cannes Film Festival.

Lopatin is a master of unease, restlessly moving between darkness and light. The album begins with a low-frequency rumble that grows in volume and texture as it's joined by the sounds of vinyl surface noise, swirling electronics, massed voices, buzzing insects, the violent crack of electricity, the long *ahhhhhh* that most certainly accompanies the gentle flapping of angels' wings through a sunlight-strewn sky. Thoroughly unsettled, the listener is then walloped by madly throbbing synthesizer arpeggios that at times recall those of Mike Oldfield's *Tubular Bells*, but would more perfectly complement an anxiety-inducing video game from the 1980s, that finds its protagonist storming through tunnels and fog and kosmische lasers.

Not exactly a good time but certainly an *experience*, this is difficult listening that becomes harder still with the addition of scrambled snippets of dialog from the film. Some semblance of hope arrives with the album's gentler but disquieting closer, "The Pure and the Damned," which features a powerful performance by Iggy Pop, his gruff, grandfatherly voice trembling as he sing-speaks, "Some day, I swear, we're gonna go to a place where we can do everything we want to / And we can pet the crocodiles." He almost makes it sound enticing. —Stephen Mejias



**RINGO STARR**  
*Give More Love*

Universal Music 80027119-01 (LP). 2017. Ringo Starr, prod.; Bruce Sugar, eng. DDA? TT: 39:10

**PERFORMANCE** ★★★★★

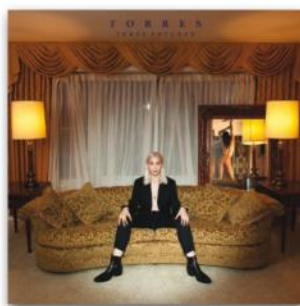
**SONICS** ★★★★★

While Sir Paul still hungers for musical relevance, Ringo's formula is simple and sure-fire: assemble a bunch of very talented veterans—in this case, guitarists Steve Lukather and Peter Frampton, keyboardist Edgar Winter, and, um, a certain old Liverpool friend who plays a mean Hofner bass—cowrite no-frills rock tunes, and make a pleasant recording that serves as a promotional piece for a lucrative tour.

On Ringo's 19<sup>th</sup> album, the Lukather big-guitar froth of "We're on the Road Again," a show opener if ever there was one, is followed by "Laughable," in which Starr speaks personally: "Woke up this morning I was feeling good / Turn up the radio I understood / Things are changing like never before / Then I go back to bed and close the door." Yet, lest this gloomy mood prevail, he comes back three cuts later, in "Standing Still," with infinitely more hopeful lines that could be the motto for both ex-Beatles: "You don't mean nothing if you don't do nothing / You're just standing still."

The missteps are short and forgivable. Starr's voice run through a Vocoder in "Electricity" is needless noodling. And "King of the Kingdom," a tribute to Bob Marley cowritten with Van Dyke Parks, is downright silly.

But "So Wrong for So Long," co-written with Dave Stewart and one of two songs here inspired by Starr's wife, Barbara Bach, is solid. Frequent Delbert McClinton collaborator Gary Nicholson lends his steady songwriting talents to the rock'n'roll rave-up "Shake It Up" and the warm-pop title track. The digital editions of the album contain four bonus tracks, including a new version of "Photograph." Why fuss about making great art when you can have this much fun? —Robert Baird



**TORRES**  
*Three Futures*

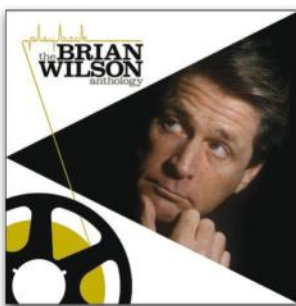
4AD 4AD0022 (LP/CD/WAV). 2017. Rob Ellis, Mackenzie Scott, prods.; Henry Broadhead, Chris Hamilton, engs.; David Tolomei, mix; Heba Kadry; mastering. DDA/DDD? TT: 46:16

**PERFORMANCE** ★★★★★  
**SONICS** ★★★★★

This third full-length release from Mackenzie Scott, aka Torres, and her first for the acclaimed British label 4AD, plays like a film, reads like poetry, and sticks to the bones. From its opening moments, which combine a throbbing synth loop, expertly controlled amplifier feedback, and Scott's raw, unadorned voice—each component as lithe and graceful as it is forceful and compelling—the album breathes, burns, and captivates.

In "Skim," a swelling bass line and metronomic drumbeat are complemented by beautifully overdriven electric guitars as Scott, enunciating deliberately, sings, "Can you probe the ends of the Almighty? / Did he hold your hips with authority?" The listener locks in step with Scott, eager for an answer that doesn't quite come. "Righteous Woman," with its unerring rhythms and thick lead guitars—alternately liquid and angular—recalls the aching beauty and lusty drive of the UK's Wild Beasts, without their despondency.

Devoted fans of the sparse alternative rock and dark folk that characterize Torres's earlier albums may be unsettled by the bubbling effects and loose-limbed electronics dancing throughout *Three Futures*. While songs like "Jealousy and I," from *Torres* (2013), and "New Skin," from *Sprinter* (2015), hint at this departure, *Three Futures* is a startling push forward, at once more urgent and more mature. "To be given a body is the greatest gift," Scott sings on this album's eight-minute final track. By digging deeper into her own gift, Scott has emerged with her most original and compelling work. I want more of this.—Stephen Mejias



**BRIAN WILSON**  
*Playback: The Brian Wilson Anthology*

Rhino R2 560079 (CD). 1988–2015/2017. Brian Wilson, others, prods; Mark Linett, others, engs. ADD? TT: 73:11

**PERFORMANCE** ★★★★★  
**SONICS** ★★★★★

Since the dawn of the CD era, Brian Wilson has quietly released all kinds of albums. He's recorded new songs, live concerts, a documentary soundtrack, a collaboration, a Christmas album, a brilliant reimagining of *Smile*, a live *Pet Sounds*, even tributes to Gershwin and Disney. Though this anthology doesn't include recordings from his Beach Boys years, the harmony-rich feel and sound of that band echo throughout. These 18 selections, two previously unreleased, gathered from various labels, are a rich sampling of Wilson's best post-BB work.

While the sound is consistently big, it's the two *Smile* tracks, "Surf's Up" and "Heroes and Villains," recorded in 2004 and full of lush, swirling harmonies and layered instruments, that best exemplify Wilson's gifts as a producer and arranger, not to mention keyboardist and singer. Even the lesser songs, notably the previously unreleased "Some Sweet Day," showcase Wilson's affinity for the Phil Spector school of wall-to-wall sound.

It's still a joy to hear that Wilson's voice, though thinner these days, can still hit the high notes. And he's still the songwriter's songwriter, able to simultaneously evoke tenderness, vulnerability, and worldliness. "Lay Down Burden," from *Imagination* (1998), is a heartbreakingly personal love song to his late brother Carl.

There are a couple clunkers: the by-the-numbers "One Kind of Love," from the lackluster *No Pier Pressure* (2015), and the previously unreleased "Run James Run," which sounds like a poppy mid-'60s outtake. But they serve as a reminder that even Brian Wilson, one of our great songwriters, is human.

—David Sokol

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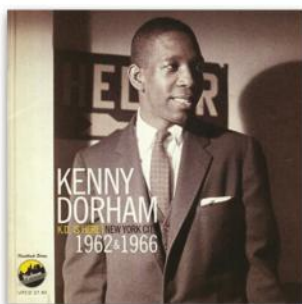


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**KENNY DORHAM**

*K.D. Is Here:*

*New York City 1962 & 1966*

Kenny Dorham, trumpet; two quintets including Sonny Red, alto saxophone, or Joe Farrell, tenor saxophone  
Uptown UPCD27.85 (CD). 1962, 1966/2016. Robert E. Sunenblick, MD, David A. Sunenblick, prods.; unknown engs. ADD. TT: 73:48

**PERFORMANCE** ★★★★★

**SONICS** ★★★★★

The latest installment in Uptown Records' ongoing mission to rescue scraps of invaluable jazz from the merciless clutches of time. Kenny Dorham is not exactly obscure. In the 1950s and '60s he recorded for Blue Note. His tune "Blue Bossa" is still covered today. But he died at 48, in 1972, and did not play much toward the end. He is not always listed with the major post-bop trumpet players, but deserves to be. He had a distinctive tart, brassy sound, a comprehensive concept of bop harmony, and a gift for austere lyricism.

It's all here. In a fierce, tough-love version of "The Shadow of Your Smile," Dorham's long phrases cut through or veer around the changes. In all eight tracks, his ideas are surprising yet logical. Fearing no tempo and no chord sequence, snapping off staccatos, he is clearly in charge of the room.

Two rooms, actually: the Half Note, in lower Manhattan, and the Flamboyant, in Queens. Just two unimportant nights and two forgotten gigs in clubs shuttered decades ago. On alto saxophone at the Half Note is Sonny Red, an intriguing, edgy player now lost in the shadows of history. At the Flamboyant, 24-year-old Joe Farrell takes 24 in-your-face choruses on "Au Privave," each different. He became famous, briefly, long ago. Dorham, Red, and Farrell all died at age 48.

Like all Uptown archival releases, this one provides full documentation and optimized sound. These unimportant nights become more important the further they recede into the distance of time. —Thomas Conrad

**BRIAN LANDRUS ORCHESTRA**

*Generations*

BlueLand BLR-2017 (CD). 2017. Brian Landrus, Robert Livingston Aldridge, Frank Carlberg, prods.; Kyosuke Nanayama, eng. TT: 59:25

**PERFORMANCE** ★★★★★

**SONICS** ★★★★★

Over the course of several small-group albums under his own name, and as a contributor to larger bands such as Ryan Truesdell's Gil Evans project, low-woodwinds player Brian Landrus has established himself as one of the finest bass clarinetists on the planet. An eclectic spirit who studied classical music and has worked as a section player in R&B bands, Landrus is also a master composer and conceptualist. *Generations*, an impressive, sprawling series of compositions for 25-piece orchestra, is his crowning achievement, and a strong contender for jazz album of the year.

The album is built around an ambitious bass-clarinet composition, "Jeru Concerto," in four movements and an interlude, conceived after Landrus began studying classical composition under the tutelage of coproducer Robert Livingston Aldridge. Building on melodic ideas first worked out on bass clarinet, then transcribed on piano for the full ensemble, Landrus takes the listener through a landscape of richly subdued, quietly alien beauty, with deep, sonorous woodwind lines flowing coolly over string articulations. Landrus writes unique arrangements for his ensemble's genius players: a woodwind section comprising oboe, clarinet, bassoon, contrabassoon, baritone saxophone, and wondrous flute playing from Jamie Baum; a five-piece brass section with trumpeter Ralph Alessi as featured soloist; a six-piece string ensemble with solo violinist Mark Feldman; a rhythm section; and colorations from harp and vibraphone, Joe Locke's vibes peeking in and out of the arrangements in supple, secret ways. —John Swenson



**ODED TZUR**  
*Translator's Note*

Oded Tzur, tenor saxophone; Shai Maestro, piano; Petros Klampanis, bass; Ziv Ravitz, drums  
Yellowbird/Enja YEB-7773 (CD). 2017. Oded Tzur, prod.; Julien Bassères, David Stoller, engs. DDD? TT: 43:32

**PERFORMANCE** ★★★★★  
**SONICS** ★★★★★

Back in the day, there were jazz polls that asked critics to vote not only for artists and albums, but for individual tracks. Such polls have disappeared along with the magazines that sponsored them, but here's a vote anyway for Most Badass Track of 2017: "Single Mother," by Oded Tzur.

It opens *Translator's Note* with 13 minutes like a processional winding through a desolate Middle Eastern landscape, perhaps the sands of Israel. It is tense with quietude. Ziv Ravitz plays slow, insidious drums of the subconscious. The pace of this caravan does not quicken but its collective voice swells. Very few pianists can do swells like Shai Maestro. He can sweep you up like the sea. Surges of intensity always fall away to leave Tzur's tenor saxophone murmuring hypnotic melodies. But it turns out that everything has been building to an overwhelming final climax, Tzur in screams of catharsis, Maestro wildly spilling, Ravitz slashing his cymbals, bassist Petros Klampanis thundering. Then they all embrace peace and recede into silence. This journey has found home.

Tzur, Maestro, and Ravitz are from Israel, which, in the last decade, has sent more gifted young jazz musicians to the US than any other country. Maestro, Ravitz, and Klampanis (from Greece) had New York street cred before *Translator's Note*. Tzur has it now. The other four tracks sustain the spell cast by "Single Mother." The only one not composed by Tzur is "Lonnie's Lament," by John Coltrane, with whom Tzur shares an interest in Indian classical music and a capacity for spiritual depth and power.—**Thomas Conrad**



**BUGGE WESSELTOFT**  
*Everybody Loves Angels*

Bugge Wesseltoft, piano  
ACT 9847-2 (CD). 2017. Siggie Loch, prod.; Asle Karstad, eng. DDD? TT: 56:16

**PERFORMANCE** ★★★★★  
**SONICS** ★★★★★

Bugge Wesseltoft, a major figure on the Norwegian jazz scene, is known for his crossovers into electronics and grooves. But he is a seductive solo acoustic pianist. His Christmas album, *It's Snowing on My Piano*, is widely regarded as a classic and remains the best-selling title in the ACT catalog. He released a solo standards album, *Songs*, in 2011; I chose it as a *Stereophile* "Record to Die For" after attending a magical Wesseltoft concert in a church in Trondheim, Norway, in May 2012. (Part of the magic was that, after the concert, approaching midnight, it was daylight in Trondheim.)

Wesseltoft's new solo album is mostly pop songs. Recorded in the Vågan Church, aka Lofoten Cathedral—the largest wooden church in Norway—the sound of Wesseltoft's Steinway is complex, deep, and pure. His touch gives each note clarity, and Vågan gives each note time to decay. "Bridge Over Troubled Water" and "Blowin' in the Wind" are foundational texts from the shared cultural heritage of at least two generations. For Wesseltoft they are personal. He takes his time with his contemplations, withholding each phrase until its moment. The silences open each song to new meanings. "Morning Has Broken," the best idea Cat Stevens ever had, is a fragile yet unwavering act of faith. The Rolling Stones' "Angie" is a surprising choice until you hear Wesseltoft shape its melody into a truthful, nuanced plea, a call of the heart. "Let It Be" is last, as summation and acceptance.

Wesseltoft intends this album as "a place of sanctuary." He must think we live in troubled times.—**Thomas Conrad**



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# MANUFACTURERS' COMMENTS

THIS ISSUE: Vivid, Alta, Totem, and MQA respond to our reviews of their products.

## Vivid Audio Giya G1 Spirit

Editor:

Thank you, Jon Iverson, for such an in-depth review, and for highlighting the many aspects of the engineering that underpin the design of these loudspeakers. It's good that you explored the potential to play the Spirits loud when the fancy took you! I've always believed that it's important to have plenty of power handling in reserve, to be able to deliver an effortless performance at all levels. I'm pleased you got on with the voicing of the Spirits, as it is such a personal matter. I was a little surprised by the 100Hz peak, as I make every effort to achieve a smooth response from every element of the system, but I will revisit this aspect and try to understand what was going on in this particular measurement.

One of the issues you highlighted was the matter of imaging. I've always tended to favor a broad dispersion to allow a well-balanced sound to be enjoyed anywhere in the room and not just in the "sweet spot," but the obvious downside of this approach is the lower ratio of direct to reflected sound. Again, it's a very personal matter, but when listening to certain program, I find the increased "room contribution" results in a more comfortable performance, particularly in the long term, but the trade-off can be in the precision of the imaging, depending on the room acoustics.

A couple of down-to-earth points:

Our driver numbering system refers to the piston diameter in mm, so the C225 has a 225mm diameter cone. Traditionally, a cone of this size would be used in a basket with a flange diameter of, as you say, 11" or 12".

The G1 Spirit is available with either the outboard crossover, as in the review pair, or with the crossover built-in. This makes the option of discreetly routing the cables straight down into the floor so much simpler!

Laurence Dickie,  
Engineering Director  
Vivid Audio UK

## Alta Audio Hestia Platinum

Editor:

Thank you, Jim, John, and everyone at *Stereophile*. No one writes reviews as enlightening or as comprehensive. We are all about the love of live music. Our

quest is the unreachable goal of reproducing the live experience. It is the quest of my life.

As part of the design study that led to the Hestia, we formed a group of listeners for critical feedback on our designs. A prerequisite of membership was a high level of experience with live natural instruments and voices. Phil Schaap contributed his feedback as part of the group, so I asked him to join us at Jim Austin's for a listen. He was unaware that the speakers were there for review.

[Phil Schaap] correctly assessed the character of sound: slightly bass-heavy, "approximately 3dB." The room is the canvas on which a loudspeaker paints. Every seat at a performance has a different perspective and sound, every room has a different sonic nature. The layout and solidity of Jim's townhouse apartment, combined with the deep bass of the Hestias, created a slightly bass-heavy sound, yet, like Phil, I thought, *I wish all music sounded this good*. My favorite seat at the symphony is where the sound is a little fuller and you can feel the instruments, so I enjoyed the sonic balance. A parametric equalizer could easily rebalance the sound in the room to neutral, if desired. The imaging, musicality, and palpability of the sound cannot be so easily corrected.

Jim wrote, "It's clear to me that Levy is after a particular sound—rich, full, powerful, with lifelike, corporeal images precisely located in a big space. I think he's achieved that personal vision. I suspect that many audiophiles share his taste." I believe he was correct.

Jim wrote, "It's a Saturday, after midnight, and I'm listening to Steely Dan's *Aja*, remembering Walter Becker, who died a few weeks ago. These extraordinary musicians—Steve Gadd, Joe Sample, Larry Carlton, Lee Ritenour, Wayne Shorter, plus the core Steely Dan crew—are arrayed across my living room and beyond its walls, their instruments like orchestra sections. I've never heard this recording with such depth, weight, and relaxed separation." That was our goal.

Our industry is really about re-creating musical history. When a listener has an experience like Jim's, we have resurrected an aural past that can never be heard in real life again. That is what I strive for.

I would like to thank John Atkinson

for his detailed technical analysis of the speakers. We live in an imperfect world, and in audio, the speaker is the most imperfect of all of the system components. There are many trade-offs. Our choices were made through listening. We are always looking to improve.

Unfortunately, John never got to listen to the Hestias. I hope he will visit us and lend his valuable ears and expertise. His feedback, along with that of our beta-test listening group, would help us evaluate potential changes. *Michael Levy, President Alta Audio*

*A point of protocol regarding Mr. Levy's invitation at the end of his comment: Stereophile's editors and writers do not provide feedback to manufacturers on the performance of their products other than in the formal context of a review.—John Atkinson*

## MQA

Editor:

Thanks for the Follow-up and the chance to comment on Jim Austin's discussion of MQA's time-domain performance.

The graph in Jim's fig.4 shows the result of converting the MQA file directly to analog without a decoder. The text describes it as "... mostly linear-phase, though the asymmetry suggests some nonlinearity in the phase response..."

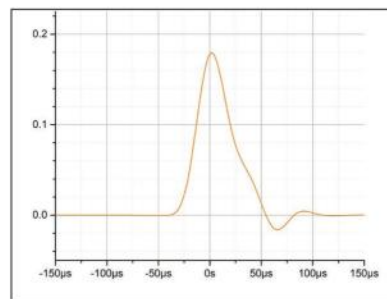


Fig.1 MQA-encoded impulse response sampled at 48kHz (50x/s/horizontal div.).

If we look at the 48kHz MQA test signal waveform (fig.1 above), there is no pre-response. It is elegant that the decoder "unfolds" it back to a perfect impulse as we can infer from Jim's fig.5. Fig. 4 shows us the convolution of the signal with the linear-phase response of the particular chosen DAC (which is contributing the pre-and post-ringing).

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The result, as would also be the case with non-MQA files, will be different with other converters, according to the filter type (linear- or minimum-phase), rate and user settings.

The situation is different with an MQA decoder, eg, as in fig.5, where we expect the response of all MQA DACs to be similar.

Bob Stuart  
MQA

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Vince Bruzzese  
Totem Acoustic

### LETTERS CONTINUED FROM PAGE 11

awkward position. As a compromise, he played a song by the Who, but he didn't even play the whole song! I suppose he didn't want everyone to leave (and pretty much everyone did). Really? Many of the visitors seemed to be overgrown children who would pout if they didn't get their way now.

Okay, maybe I do have a persecution complex, but I felt as though I was looked down on because I was wearing my "trip shakespeare" and "centralia: pennsylvania's hottest town" T-shirts rather than golf attire, and that I enjoy that early-1990s Seattle scene music. ([Pearl Jam's] Stone Gossard refuses to use the term *grunge*, and so do I.) Trip Shakespeare even engineered their own music. The horror! By the way, a lot of that '90s Seattle music was recorded on a Studer A827 tape deck. In my opinion, that's one of the finest recording devices that humanity has ever produced, and yes, I've used one. So it's not like I was trying to play late-'60s proto-punk recorded at 3.75ips! I do like the Sonics, by the way.

There was a younger (35?) rep there from ComputerAudiophile.com. He argued that listening to music in his kitchen with his daughter "just singing along" could be hi-fi enough for him (although he did have better gear). He was scoffed at! I think the point he was making was that this hobby is to enjoy music as much as the gear. Many attendees did not agree. Some preferred to engage in heated debates of glass vs polycarbonate CDs!

One of the several positive experiences I had was in the "Under \$5000" room. Incredible sound. That \$5000 figure included everything: the cables, even the furniture the gear was sitting on. Even if it had been an "Under \$10,000" room, I would still have been quite impressed.

Also, several of the seminars were incredibly interesting and surprisingly informative. Bob Carver and Peter Ledermann were there, and both gave excellent (maybe even better than excellent) seminars. They were probably two of the most down-to-earth guys there—total class, and very approachable. (Bob was happily shaking hands and taking pictures with fans.) Both were very open with their design ideas. I suppose that when you're the real deal, you don't have to be insecure.

A final thought: A lot of reps were scratching their heads, wondering why young people aren't getting into the hobby. How could they be at all surprised? I hadn't realized it, but high-end audio is an exclusive club of which I'm apparently not a member. Just look at [www.tricider.com/brainstorming/3U2AB4sN3q7](http://www.tricider.com/brainstorming/3U2AB4sN3q7). Look at the comments at the bottom. One is by me. The other is not. I had no idea that, after all these years, I was listening to the wrong stuff! I'm glad that someone has cured me of that ignorance!!

—Bruce Kasprzyk  
revox77a@gmail.com

### Music curmudgeons?

Editor:

You should have attached "OLD-MAN" trigger warnings to some of your writing on music. Over the past year, I've seen several curmudgeonly references to the lack of quality of new music. I suggest your writers put down their Rolling Stones vinyl and get out more often. Go to a college town—listen to college radio. I recommend WVUA FM, 90.7, The Capstone, the Voice of the University of Alabama. Thanks to the World Wide Web, you don't even have to travel to Tuscaloosa to enjoy WVUA (<http://wvuafm.ua.edu>), but I certainly recommend the trip.

I moved to a college town at age 60, just so I wouldn't become a music cur-

mudgeon. Y'all should try it.

The state of the music industry may be in disarray, but it's not for the lack of quality content.

—Al Spencer  
spencerac@aol.com

### It's the music!

Editor:

Greetings from across the pond! As a longtime subscriber, I just wanted to say how much I enjoy *Stereophile*. Bizarrely, it's not the equipment reviews that I get most enjoyment from; it's exploring the music that your reviewers have listened to, much of which I hadn't come across before. So thanks for introducing me to Whitney Rose, June Christy, and the Nitty Gritty Dirt Band.

—Tony Ireson  
E-mail address withheld by request

### Why use stands?

Editor:

Why purchase stand-mounted speakers when placing them on stands will occupy the same space as a floorstanding speaker? For the floor space occupied by bookshelf loudspeakers on their stands, wouldn't a purchase of floorstanding speakers make more sense?

—Tim Patterson  
phoeprdtrec@yahoo.com

You need to place bookshelf speakers on stands because the exact vertical listening axis is critical to getting the sound quality you've paid for. This is why I examine this issue in my loudspeaker measurements. Why buy a stand-mounted speaker instead of a tower? Because the cabinet is, by far, the most expensive single component in a speaker; price for price, a bookshelf will offer better quality than a tower, even when taking into account the cost of the stands. And smaller cabinets can more easily be rendered non-resonant. To perhaps overgeneralize, large enclosure panels have larger-amplitude resonances at lower frequencies than do smaller panels, and those resonances will be more likely to add coloration. —John Atkinson



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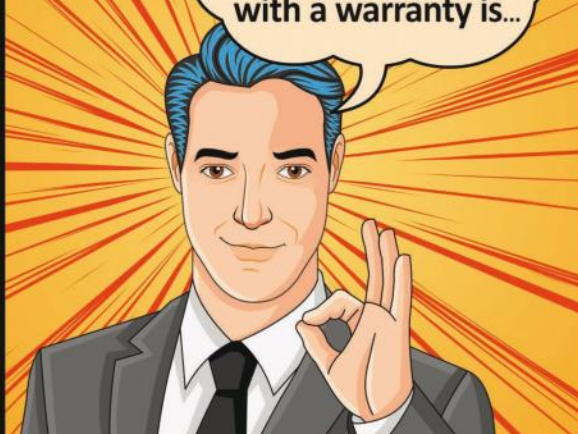
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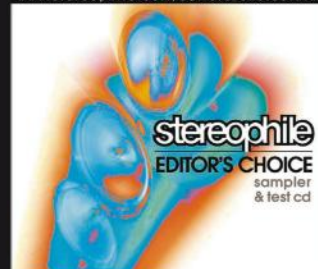
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# AURAL ROBERT

BY ROBERT BAIRD

"Everybody loves soundtracks. And for some reason opera has gotten really big in the last year. Metal as well. Opera and metal I've had a hard time keeping in stock."

—KATE KOEPEL

## Organizational Genus

**T**oday's vinyl revolution has begun to spin off ancillary businesses. As I wrote in the August issue, shelving for LPs is blossoming into big business. Small blocks of wood with a metal loop attached, to prop up the jacket of the LP currently playing, are offered by Wax Rax and Koeppel Design. Tote and shoulder bags for LPs and 45s, specially designed not just for deejays but for crate diggers and a more genteel breed of collector, are being offered for sale by Airbag, Dusty Groove, Koeppel, Technics, Tucker & Bloom, Turntable Lab... and the list goes on.

Recently, I received a sample of a Flipbin (\$75): a tabletop LP holder that's a deluxe extension of the currently-playing LP jacket holder ([www.flipbin.com](http://www.flipbin.com)). Using a Flipbin at home for a Saturday-night listening session with friends, I found that it quickly filled. The next day, it was an amusing, um... record of where whim and possibly red wine had taken us. Sleek, and well made of aluminum, the Flipbin is a convenient next-to-the-turntable accessory, but beyond that, I can't see how it's useful as any kind of long-term storage solution.

Another hot LP accessory these days is the record divider. At the moment, that subsubmarket segment is dominated by San Francisco-based designer Kate Koeppel and her laser-cut European white birch record dividers ([www.koeppeledesign.com](http://www.koeppeledesign.com)). On a recent trip to San Francisco, I met Koeppel downtown at Trou Normand, a chic bar/bistro whose unsettling Google tagline reads, in part, "specializing in whole-animal butchery." Fortunately, I was only there for a drink—they had one obscure rye vodka and that was poured over an oblong ice spear—and to chat with Koeppel about her products. A Seattle native who moved south to attend grad school, Koeppel and her husband, Saif, are LP collectors; as it does for many entrepreneurs, a personal passion led to a business opportunity.

"We have a lot of social events at our house, and I found that a lot of our friends were nervous about digging through our records. I wanted something that would help give people an entry point into our collection, because there's nothing more fun than being, like, 'Oh, you haven't heard Serge Gainsbourg? Then you have to



hear Beck next."

Launched in 2013, Koeppel Design's Record Dividers are the height and width of an LP, with a protruding label tab and are available only in unstained, unvarnished birch. Koeppel refuses to use any inks, oils, or paints, because there are so many unknowns about how they might degrade and break down over time. Category names as long as 14–20 characters can fit on the standard tab at the top or side of each Divider, but the tabs can be made to accommodate more. Koeppel says she can reproduce any typeface the cus-

tomers wish, but tries to steer clients toward more legible fonts. The more complex the letter forms, the more expensive they are to reproduce. Sets of 26 Dividers, one per letter, are \$320 (horizontal) or \$350 (vertical). Her premade standard collection, which condenses the entire alphabet into six panels, costs \$150.

"The majority of conversation is about how my products are too expensive. I have worked extremely hard to get our prices as low as possible without shorting my employees. I pay above living minimal wage: \$18 an hour. It's expensive to live here. It's expensive to work here, but I want to work in a local economy."

Besides the alphabet, Koeppel's dividers can be custom-cut with labels of any genre or subgenre, or the uniquely eccentric organizational system of any fevered LP collector. "There are a lot that I have to Google. I recently received a request to do Ozma Records, which is the company that's rereleased the gold albums from NASA's *Voyager*. I have a customer in Iceland who has a massive metal collection, and there are so many subgenres of metal, every time he sends me something, I have no idea what it is. And deejays have titles for things that are clearly coming from their own brain catalog."

On the subject of brains, I discovered that, among her other talents, Koeppel, who is making inroads into *Stereophile*'s readership, also has a gift for understatement.

"If it was just about music and selling things, I wouldn't stay. There's a big piece of my personality that's very interested in the brains of other people. Exploring record collections is a fascinating peek into their worlds and their lives, because music, collecting—and then this really specific, very trained world of audiophiles—brings together a really interesting subset of people that have similar tendencies. A lot of it tends to be kind of obsessive." ■

*Music Editor Robert Baird (RBaird@enthusiastnetwork.com) finds all this talk of having too many records patently absurd.*



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