

Review of TAD' GE1 loudspeakers by Sacha Matson, 05/2024 on:



## TAD Grand Evolution One loudspeaker



Review samples of some new high-end audio products do not grow on trees. They are more like dray horses trouping from one destination to another. After the US premiere of the Technical Audio Devices (TAD) Grand Evolution One (TAD-GE1), a floorstanding speaker from TAD's Evolution series, at the 2023 Capital Audio Fest, the review pair came to stay with me in Upstate New York for a couple of months before traveling on to the 2024 Florida Audio Expo for another public appearance. After that, they returned to John Atkinson for measuring—then off again on another journey.

The TAD Labs GE1 is a three-way, three-driver design. Up top is TAD's proprietary Coherent Source Transducer (CST), a 5½" coaxial tweeter/midrange driver. Two matched 7" woofers fill out the middle of the front panel. On the back are two pairs of speaker taps connected (at the moment) with high-quality jumper cables; those who biwire or biamp are cared for. The GE1 is a bass-reflex speaker; its port fires down. The footers are the usual spiked cones; a set of metal discs is thoughtfully included for those who wish to protect their hardwood floors. The cabinet stands just shy of 49" tall, constructed out of 40mm-thick MDF panels and 18mm birch plywood bracing. The visual aesthetic is similar to that of a fine grand piano: sides and back finished in shiny black lacquer, the front kitted out in very handsome, glossy-finished olive wood, similar to the inside rims of some high-end pianos. The cabinet edges are smoothly contoured. The cabinets sit atop an attached combo port/plate (more on this in a moment). Including this platform, each speaker weighs 140lb. This is not a compact speaker, but it is hardly overwhelming in scale. The Grand Evolution One is handsome, with a good shot at a Best of Breed ribbon for its shiny coat alone. The physical appearance and bespoke build quality would enhance any interior decor. The new TAD GE1 obviously shares technology genes with earlier TAD speakers Stereophile has reviewed, including the CE1TX standmount [reviewed by Herb Reichert](#) recently, the Compact Reference [reviewed by John Atkinson](#) in 2012, and two earlier members of the Evolution family, the [Evolution One](#) and the [Compact Evolution One](#). The TAD Labs Grand Evolution One is priced at \$65,000/pair.



## From control rooms to living rooms

There's a dialectic at work in the audio world, one of several, or many. Some companies primarily design for, and sell to, the pro-audio market, including monitoring equipment for studios. Others conceptualize, manufacture, and market wares exclusively for home audio. A few manufacturers, from boutique garage outfits to large international corporations, walk on both sides of the street. Pioneer Electronics in Japan is an example of the latter: In 1978, Pioneer, which had long been associated with affordable hi-fi products, spun off Technical Audio Devices Laboratories (TAD Labs), which focused initially on loudspeakers and drivers meant for use in studios; TAD products were (and continue to be) built in Japan. CEO Shinji Tarutani and Head of Design Toru Nagatani have been with both companies for many years. TAD's mission expanded when Pioneer hired loudspeaker designer Andrew Jones, who previously worked with KEF, to design products intended for consumers. The first model Jones designed for TAD, in collaboration with Nagatani, was the big Model One. That model featured a coaxial midrange/beryllium tweeter driver. Although Jones has since moved on, current TAD loudspeakers are variations on this theme. The current US distributor for TAD Labs is Pro Audio Design (hence "TAD via PAD"), headed by Dave Malekpour. Dave has a long history in pro-side design including Augspurger studio monitors, which have utilized TAD drivers.

During a long Zoom conversation, Malekpour shared his views about the back and forth between consumer and pro audio. "What we want in a studio monitor is very different than what we want in a playback monitor. In a studio monitor, we want something that is going to show us all the warts, especially in the midrange where the vocals are. In a hi-fi speaker, we generally want something a little softer in the midrange: We want to show off the music. For example, the Yamaha NS-10 monitors are still widely respected by engineers, but they aren't something you listen to for pleasure. The design brief for the GE1 was to make a gorgeous loudspeaker—gorgeous looking and gorgeous sounding."



## Coincidences

One of the most prominent technical features of TAD loudspeakers is the use of their own "coincident" drivers. "Coincident" refers to the specific way TAD designs work; the tweeter is nestled snugly within the larger midrange such that the tweeter doesn't block the center area of the midrange cone. TAD did not invent this approach; that history stretches back to the 1940s, to the development of the Altec Lansing Duplex, which dominated the studio-monitor market in the US. Tannoy's "Dual Concentric" drivers played a similar role in Europe. When properly engineered, concentric drivers can generate highly coherent, in-phase sound originating from a single point in space, over an extended frequency range.

For the GE1's Coherent Source Transducer, a proprietary vapor-deposition technique was used to fabricate the beryllium tweeter diaphragm, which is nestled in the center of that 5½" magnesium midrange cone. According to TAD's specifications, this dual driver, which is isolated in its own cabinet chamber, covers frequencies from the upper bass to the ultrasonic, 250Hz–100kHz.

"The CST driver, being a point-source, has more controlled dispersion than with a domed tweeter," Malekpour said. "When you listen to the speaker, no matter where you place it, you feel like it's aimed at you. The phase response is very even. For the listener, what that means is: smooth. No frequency holes. The big issue with a dual-concentric-type driver is the positioning. The two elements, the midrange and the tweeter, are timed by their positioning. The response is exceptionally linear. »

Apart from Tannoy, which still makes concentric-driver speakers, a few other consumer-focused companies take a similar approach. Probably the most prominent is KEF, with its Uni-Q driver array. France's Cabasse is another; the Cabasse La Sphère loudspeaker uses a four-way concentric driver. And then there's Fyne, which was founded by several Tannoy veterans.

Considering those sonic benefits, particularly in soundstage and image detail, why don't all loudspeakers use concentric drivers? Because there are tradeoffs. With coincident drivers, the main challenge is modulation distortion. Diffraction and unwanted reflections are also problems, especially at high SPLs, and magnetic field interactions in the motor can also cause problems.

TAD's CST driver deals with the magnetic interactions by employing a nonferrous conductive ring to cancel the influence of the magnetic flux from one driver on the other. It deals with the acoustical issues by putting the tweeter behind the midrange, time-aligning them to minimize interactions, and setting the crossover point to the lower-frequency driver so that such "modulation distortion" remains below the threshold of detection.



## Appealing to the bass

Speaking of crossover points: The specified crossover frequencies for the GE1's are 250Hz and 1.8kHz. Below 250Hz, that matched pair of 7" woofers kicks in. TAD, which seems to enjoy creating acronyms and initialisms for their design elements, calls this driver the MACS II (Multi-layered Aramid Composite Shell Second Generation) diaphragm woofer (footnote 1).

The GE1's bass performance is augmented by acoustic tubing directed down to the reflex port that exits to the floor platform. TAD has a term for this as well: AFAST (Acoustic Filter Assisted System Tuning). In technical notes, TAD describes it this way: "Multiple acoustic tubes with acoustic resistance added to their end surfaces are buried inside the enclosure to effectively suppress standing waves." When the audio wave exits the cabinet via the port, it encounters two hefty chunks of diecast aluminum, which TAD terms Bidirectional Aero-Dynamic Port (or ADP). These flared metal blocks, which are mounted on a 15mm-thick aluminum base plate, force the port's output to the front and the rear, blocking it to the sides.

What do these two features accomplish? "It's not a transmission line, but what is happening there is they take the energy inside the cabinet and push it into the port," Malekpour said. "It's almost a funneling system from compression into a horn-loaded port. This filters out some of the potential for noise and gives you a very linear low-frequency exit. The bi-directional movement of energy reduces cabinet motion, and you can also get the speaker closer to a wall than with a rear-firing only port design." TAD's low-end frequency response specification for the GE1 is 27Hz. I note my colleague [Ken Micallef's comment](#) when he heard this very pair of GE1's at the 2023 Capital Audiofest. He called it "the deepest, most extended, room-filling and brain-frying low-end I've heard outside a recording studio. »

Is this impressive package easy to drive? The published sensitivity is a middling 88dB/2.83V/m, with a nominal impedance of 4 ohms. "They do like power," Malekpour said. "They are not a highly sensitive, superefficient speaker. I like it when the amplifiers have some headroom." In my auditions, I used my [VPI analog front end](#), [Bricasti digital](#), and [McIntosh amplification](#), all familiar from everyday listening and several previous reviews.



## Rooms of one's own

Both TAD Grand Evolution Ones arrived strapped to a single wooden pallet, packed in two single-layer cardboard boxes. When I asked about the lightweight packaging, I was told that these boxes were meant for one-time use and that more serious crating was in the works. TAD, apparently, is catching up with increasing demand for their products as their distribution in the US expands after a fallow period.

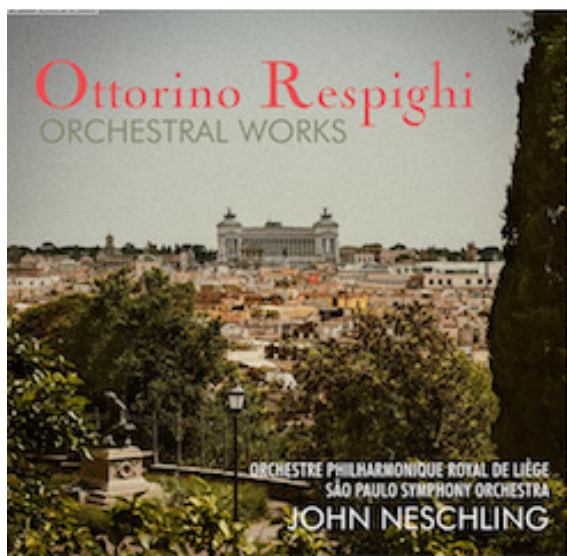
I trundled the speakers in their boxes into the front hall of our house and unpacked them there before hauling them to the large Victorian double parlor that holds my Downstairs System. I wanted to hear how a substantial three-way floorstander would perform there, replacing the smaller, two-way standmount Harbeths normally placed on either side of a fireplace.





The GE1's base is substantial. It is shipped attached to the cabinets—not designed to be removed by users. When you look at the aluminum base plate, you see four capped corners—but in typical use, only three spiked cones are used, two for the front and one for the center at back. Those requiring greater stability can add two auxiliary feet at the back corners. Also in the parts box are two magnetically attached woofer grilles; oddly, no tweeter/mid grilles are included. I did not use the grilles in my auditioning.

Currently, my Downstairs System includes a McIntosh MA252 Hybrid Drive integrated amplifier with a tubed preamp stage and solid state output. The power output rating is 160W into a 4 ohm load, which is the GE1's nominal impedance. I do not biwire.



Via Qobuz, I pulled up Respighi: Orchestral Works, recorded by two different orchestras conducted by John Neschling (24/96 download, BIS Records AB2015). If it doesn't contain everything orchestral by Respighi, it comes close. Along with the chestnuts, I encountered several pieces I did not know including the very interesting single-movement Ballata delle Gnomidi from 1919. Why isn't this piece better known? Probably as it was viewed with distaste at the time

because of its subject matter: a witch's orgy and a ritual murder of some gnomes. Respighi on acid!

Composed around the same time as the far more successful Pines of Rome, "Dance of the Gnomes" shares some musical trademarks: gorgeous, delicate "dawn over Rome" harmonies contrasted with sudden clanging outbursts; lovely, delicate string textures and Coliseum-sized helpings of percussion. The GE1's nailed all this with apparent ease.

This piece is another example of what a great orchestrator Respighi was, one of the godfathers of film music (and I say that as a compliment).

I started to play around a bit with toe-in and found that, as heard from the sweet-spot armchair, a modest amount kicked the soundstaging, timbre, and detail into high gear. I toed them in just enough that I could still see a slice of the cabinets' inner sides, the drivers aimed at a point somewhere behind my head.

These large floorstanders filled the room with music in a way my Harbeth C7ES-3XD's could not. Well off-axis, from a sofa on one side, I still heard a generous stereo image.



In 1987, Shirley Horn recorded a live album, *I Thought About You* (Verve 833-2235-2), at L.A.'s best jazz club at the time, the Vine Street Bar & Grill. The recording is from the same period as her masterpiece studio album, *Here's to Life*. Horn performs here with her trio, as she mostly did throughout her career. Vine St., as it was known, was a small club, perfectly suited to Horn's intimate delivery. This recording captures that sound. You feel like

you're sitting at a small two-top table right next to Shirley and her piano. Shirley's signature tune, "Estate," was gorgeous. The TAD GE1's excelled with vocals and acoustic jazz. The rich lower range of Horn's voice and her breathy delivery all shined. The CST concentric driver is a great vehicle for vocals.

## Upstairs

After listening for several weeks to the Grand Evolution Ones in the Downstairs System, I took them Upstairs to my reference setup. I placed them in the spots previously occupied by my Wilson Sasha V's, knowing that most loudspeakers sound best there in my quirky room. It was killer! Performance throughout the bass spectrum was outstanding: deep, detailed, and full, without bloat.



Reaching for a large orchestral palette again, and because I feel the need to listen to him these days, I pulled up Shostakovich, specifically Cello Concertos Nos.1 & 2 with Alisa Weilerstein as cellist and the Bavarian Radio Symphony Orchestra conducted by Pablo Heras-Casado (24/96 FLAC, Decca/Qobuz). Amazing "skin" texture from the timpani. The horns in the third movement of No.2 were like a pack of braying wolves on my tail—hair raising! The solo cello felt that way, too, a totally

individual sound that could only be a particular person playing a particular instrument. Microdetails were sorted and tangible. To vocals, I would now add massed strings as musical elements the Grand Evolutions excel in re-creating. First-rate.



A favorite recording of mine, which combines jazz and orchestral textures, is João Gilberto's beautiful album Amoroso (24/192 FLAC, Rhino-Warner/Qobuz). Recorded in 1977, well after the original Bossa Nova craze, João's delicate vocals and guitar play off Claus Ogerman's outstanding arrangements. João's interpretations of songs by his peer Carlos Jobim are definitive. Gilberto was known for being demanding about the quality of his recordings, going so far as to sue EMI

for lousy remastering—and winning!

I think even João would have loved the sound I was hearing now via the GE1's, the strings sounding smooth as silk, as his vocals did.

Portuguese is the language of love; how did all those poor German composers ever write opera?

'Tis the season of Steely Dan and Donald Fagen, bless his cynical little heart. Most audiophiles, if they listen to vinyl, are aware of the recently released Analogue Productions UHQR 45rpm remastering of Aja.

There are very few titles for which I would shell out the big bucks that Chad Kassem's UHQR series commands, but Aja is one of them. Bernie Grundman, who cut the original record, has nailed it to the boards now all these years later. This is one of the finest remasterings I have ever heard.

When I dropped the needle on "Black Cow," my ears turned red from pure pleasure; you should have seen my face. Fagen and Becker went to extraordinary lengths to generate great drum tracks, chewing up drummers in the process. Pow! Each drum hit here was laid on me like it was some sort of firearm. Don's unique vocals, delivered with that little lisp he has, were tactile and clear. Emerging from the TAD GE1's, the diction was unique and excellent, each syllable precise, compared to my experience hearing this "Sgt. Pepper of the '70s" album over so many years from so many stereos.

I had one more trick up my sleeve. The McIntosh C12000 preamplifier is part of Mac's "Hybrid Drive" series. It is unique in having two pairs of XLR outputs, one solid state, the other tubed. I usually use the latter, as I am running the preamp into the solid state MC462 amplifier and like the hybrid mix. Would Aja, which itself is a hybrid of sorts (a blend of jazz with rock and pop), sound better full-bore solid state? Would the GE1 reveal this change?

Yes to both questions! With the solid state preamp circuit, Chuck Rainey's bass added a bit more foundation and pop to its low end. I heard cleaner air around the smokin'-chick background vocals when they explode with their chorus lines. I was riveted—so much so that I couldn't stand up to lift the needle right away. I had to listen to the title track.





"Aja" was the bees' knees; Steve Gadd's drum outbursts in the second half of the tune, along with all the other colors of the percussion rainbow, were like a fireworks display. Wayne Shorter! When it ended, with that board fade like most of the other tunes on the album, I wanted it to keep going.

### **Go ask the goddess**

On the wall of my listening room is a small painting I bought in India, of Saraswati, Hindu goddess of knowledge and music, painted in bright colors, playing the Veena (her instrument) with her four hands.

Saraswati is painted on top of some sort of black ink invoice, labeled "Court Fee Stamp Jaipur Government" with numbers checked off.

The TAD Grand Evolution One is capable of transcendently beautiful recreations of recorded music, but in this material world, there's a price to be paid. When I researched it, I was surprised at the number of high-end loudspeaker models currently offered by respected audio manufacturers, at or near to the current retail price of the TAD Grand Evolution One.

It's a crowded marketplace, but the GE1's stand out. There is deep technical knowledge at work here, but you can set aside any concerns about overly analytical performance. The sound is emotion-enhancing and soulful. If you have an opportunity to audition these loudspeakers at a show or a dealer, you really should make the effort. The TAD Grand Evolution Ones are superb, definitive music makers, competitive with the best high-end audio has to offer. Before they trot off to Florida, I'm going to go spin some more sides and light a candle to Saraswati.

# TAD Grand Evolution One loudspeaker Measurements

I used DRA Labs' [MLSSA system](#), a calibrated DPA 4006 microphone, and an Earthworks microphone preamplifier to measure the TAD Grand Evolution 1's quasi-anechoic frequency- and time-domain behavior in the farfield. I used an Earthworks QTC-40 microphone, which has a small, ¼" diameter capsule, for the nearfield responses. I examined the loudspeaker's impedance with Dayton Audio's DATS V2 system.

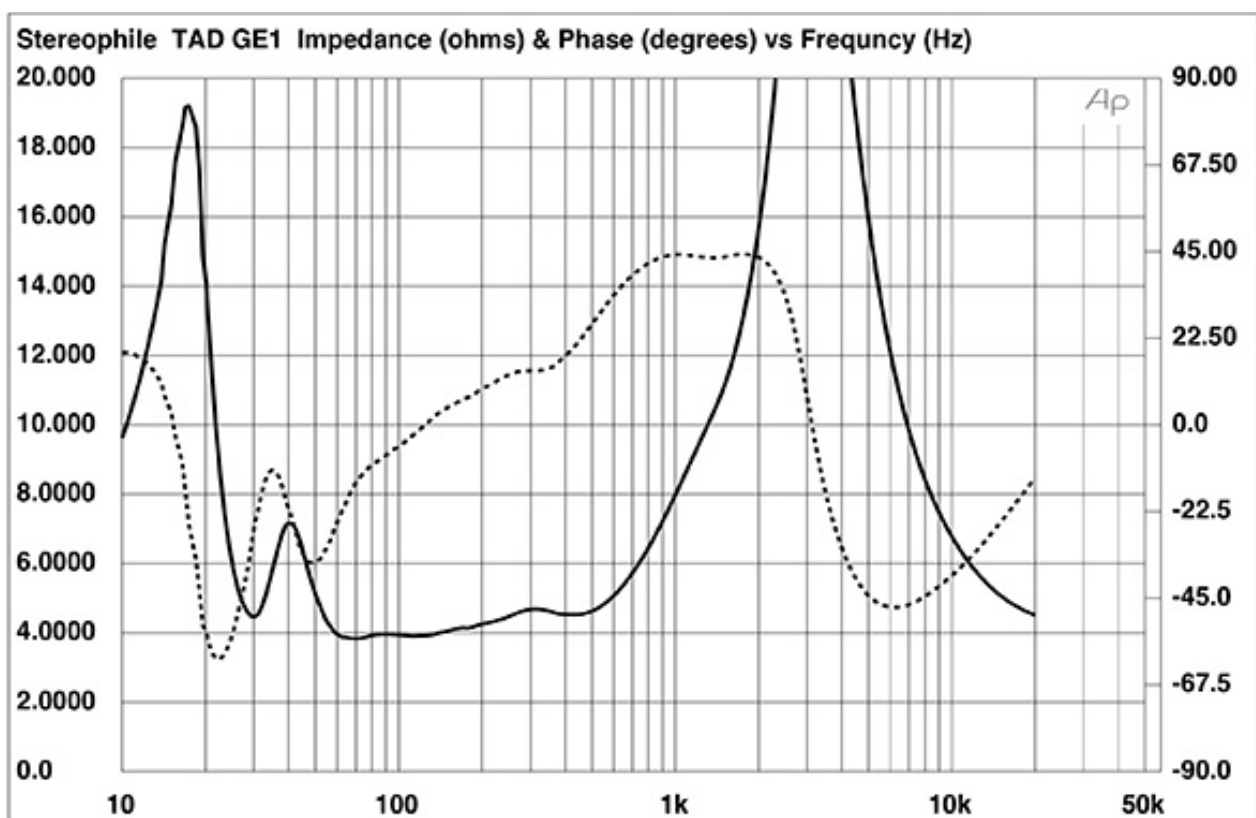


Fig.1 TAD Grand Evolution 1, electrical impedance (solid) and phase (dashed) (2 ohms/vertical div.).

My B-weighted estimate of the GE1's voltage sensitivity was 87.5dB(B)/2.83V/m, which is within experimental error of the specified 88dB/2.83V/m. TAD specifies the GE1's impedance as 4 ohms. The impedance magnitude (fig.1, solid trace) was close to 4 ohms in the upper bass and midrange, rising above 8 ohms for most of the treble. The minimum value is 3.84 ohms at 70Hz. However, the electrical phase angle (fig.1, dotted trace) is occasionally high, which means that the effective resistance, or EPDR (footnote 1), is significantly lower.



The EPDR lies below 3 ohms below 30Hz, between 43Hz and 95Hz, between 197Hz and 1183Hz, and above 7kHz. The minimum EPDR values are 1.6 ohms at 27Hz, 1.76 ohms at 56Hz, and 2 ohms at 608Hz. The GE1 is a very demanding load for the partnering amplifier.

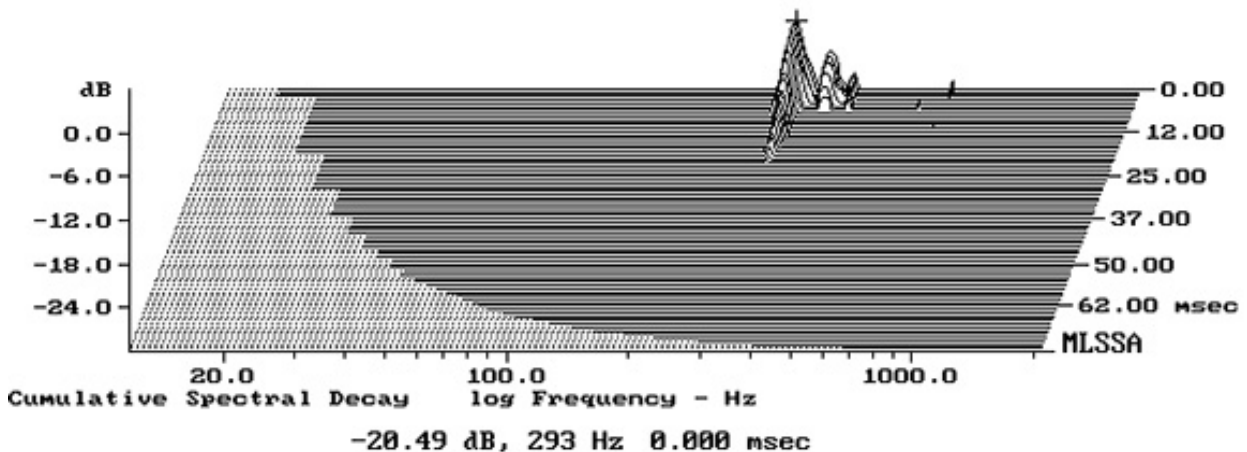


Fig.2 TAD Grand Evolution 1, cumulative spectral-decay plot calculated from output of accelerometer fastened to side panel level with the lower woofer (MLS driving voltage to speaker, 7.55V; measurement bandwidth, 2kHz).

The impedance traces are free from the small discontinuities that imply the presence of cabinet resonant modes, and the enclosure's panels seemed inert when I rapped them with my knuckles. The only resonances I found with a plastic-tape accelerometer lay at 293Hz on the sidewalls level with the lower woofer (fig.2) and 379Hz on the top panel and on the front baffle below the woofers. As these modes are both extremely low in level and have a high Q (Quality Factor), I can safely predict that they won't have audible consequences.

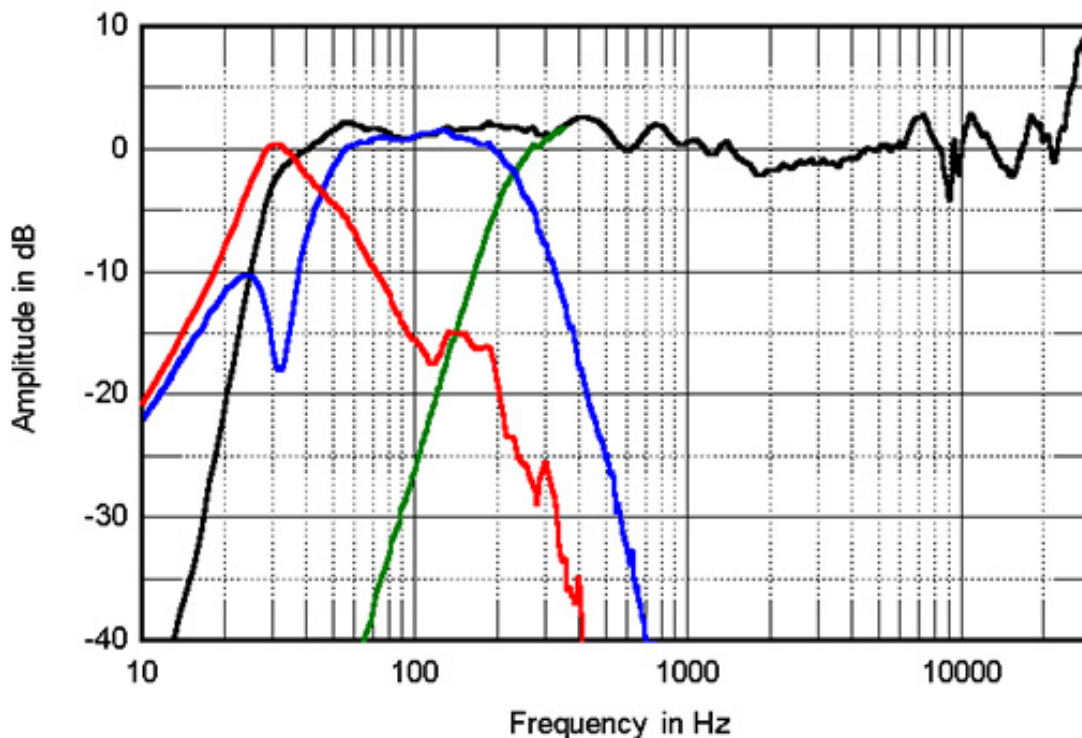


Fig.3 TAD Grand Evolution 1, anechoic response on tweeter axis at 50", averaged across 30° horizontal window and corrected for microphone response, with the nearfield responses of the midrange unit (green), woofers (blue), and port (red), and their complex sum (black), respectively plotted below 340Hz, 700Hz, 420Hz, and 300Hz.

The two woofers behaved identically, and the sum of their nearfield responses (fig.3, blue trace) has the expected minimum-motion notch at 32Hz, which implies extended low frequencies. The downward-firing port's nearfield output (fig.3, red trace) peaks slightly below the tuning frequency and, other than slight low-level discontinuities at 150Hz and 300Hz, its upper-frequency rollout is clean. The output of the woofers crosses over to that of the midrange unit (fig.3, green trace) close to the specified 250Hz. There is little sign of the usual nearfield low-frequency boost in the complex sum of the midrange, woofer, and port responses (fig.3, black trace below 300Hz). This suggests that while the TAD GE1's low-frequency alignment offers excellent extension, it is optimized for articulation rather than maximum bass weight.

The black trace above 300Hz in fig.3 shows the GE1's quasi-anechoic farfield response, averaged across a 30° horizontal window centered on the tweeter axis. Other than a slightly elevated midrange and a slight lack of energy in the presence region, the balance is even. The small peaks and dips between 6kHz and 20kHz are likely due to interference between the output of the coaxially mounted tweeter and the reflections of that output from the midrange cone's surround. The tweeter's response also rises above the audioband, with a peak just below 29kHz. The GE1's behavior in the treble is very similar to that of the TAD CE1TX standmount that HR reviewed in June 2023 (footnote 2), which also used a coaxial high-frequency/midrange unit.

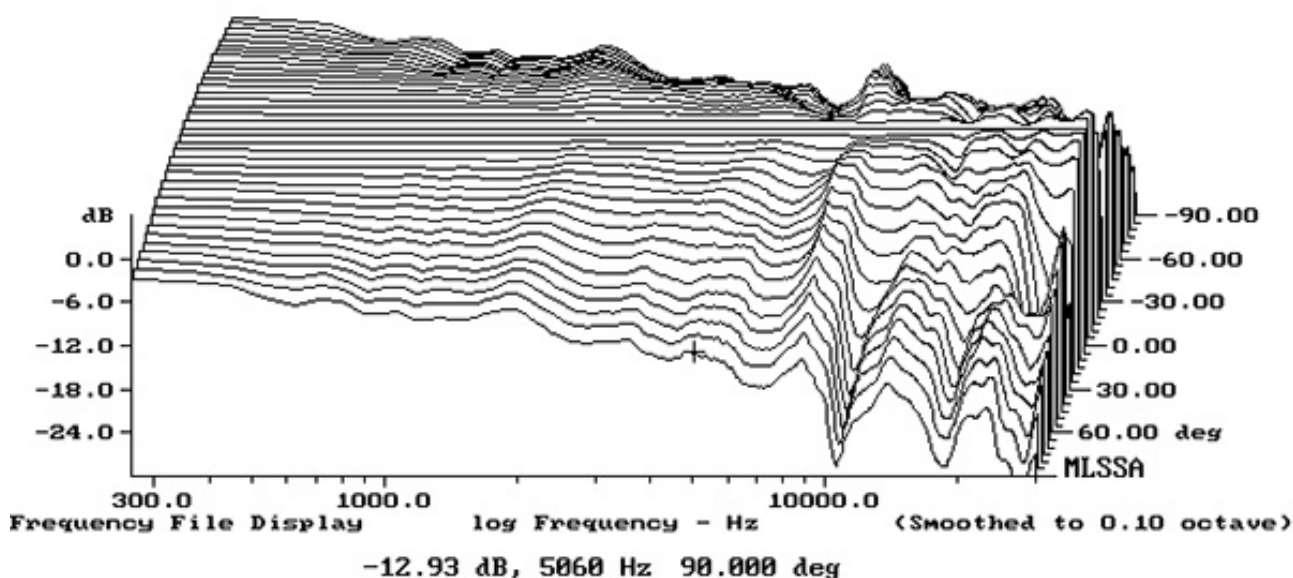


Fig.4 TAD Grand Evolution 1, lateral response family at 50", normalized to response on tweeter axis, from back to front: differences in response 90–5° off axis, reference response, differences in response 5–90° off axis.

The TAD's horizontal dispersion, normalized to the response on the central tweeter axis, which therefore appears as a straight line, is shown in fig.4. The dispersion is well-controlled up to 6kHz, and above that frequency, the peaks and dips in the on-axis response tend to even out. Both factors correlate with stable, accurate stereo imaging.

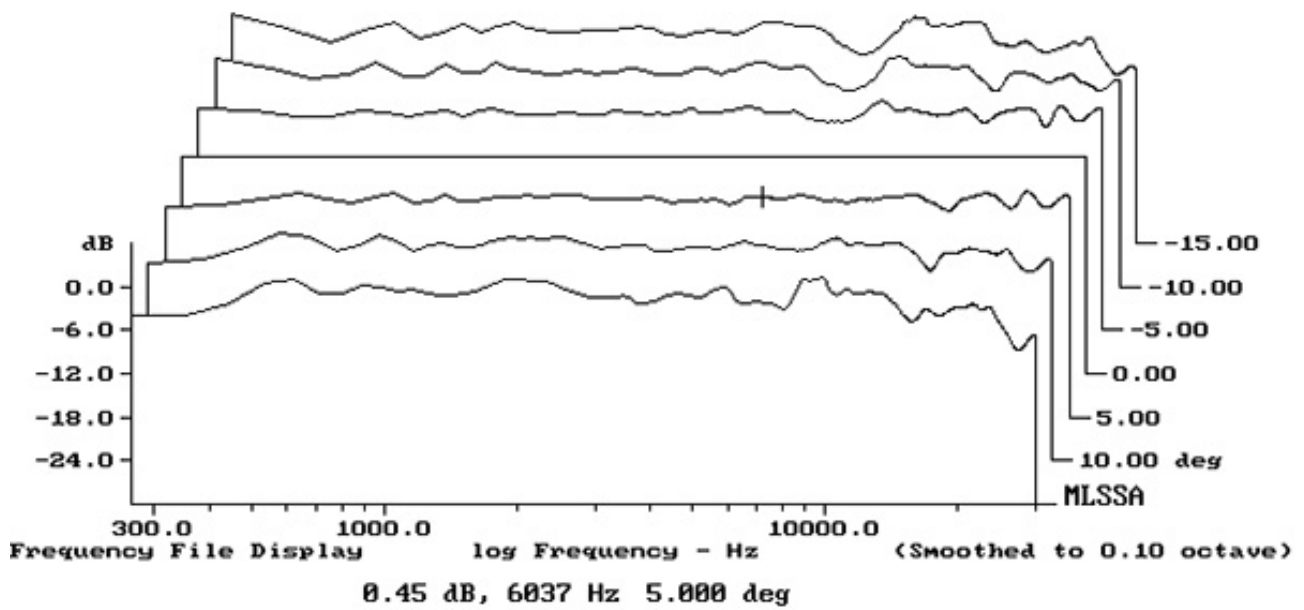


Fig.5 TAD Grand Evolution 1, vertical response family at 50", normalized to response on tweeter axis, from back to front: differences in response 15–5° above axis, reference response, differences in response 5–15° below axis.

With the speaker sitting on its cone-shaped feet, the GE1's tweeter is 39" from the floor, which is a little higher than the average height of seated listeners. (A survey performed by Thomas J. Norton for Stereophile in the 1990s found this height to be 36".) The dispersion in the vertical plane, again normalized to the response on the tweeter axis (fig.5), shows that the frequency response is maintained up to 15° above and below the tweeter axis.

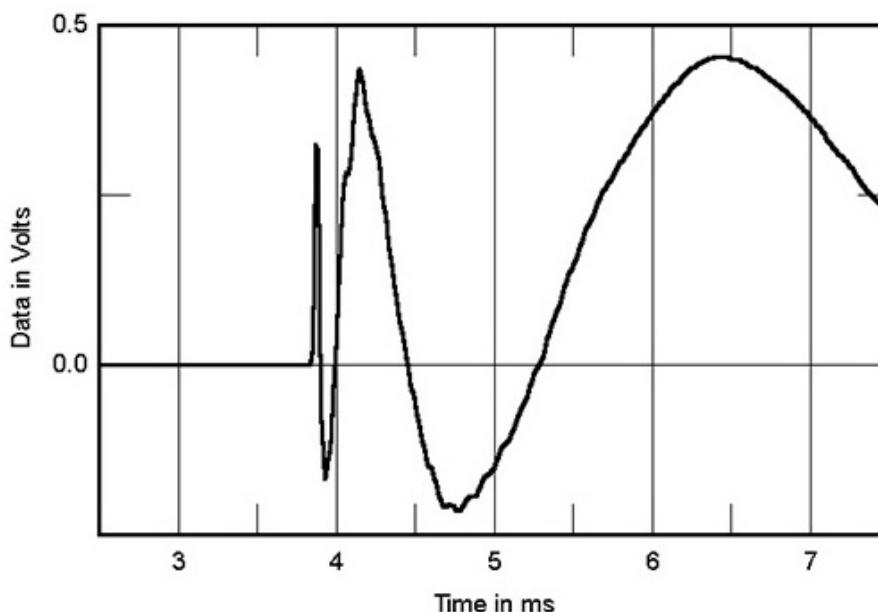


Fig.6 TAD Grand Evolution 1, step response on tweeter axis at 50" (5ms time window, 30kHz bandwidth).

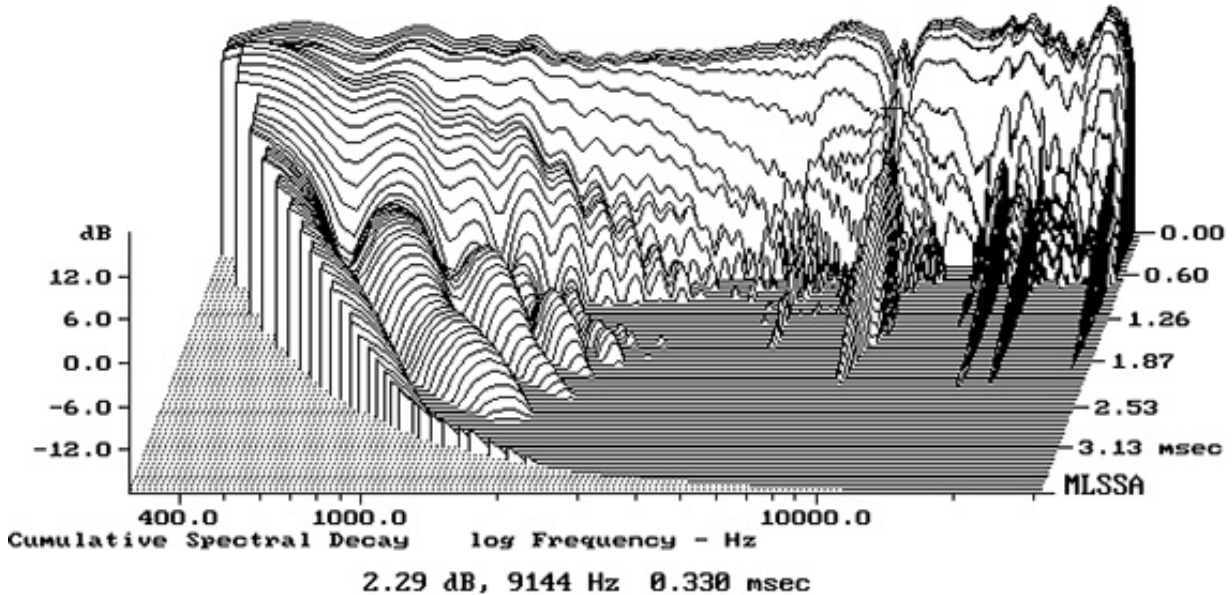


Fig.7 TAD Grand Evolution 1, cumulative spectral-decay plot on tweeter axis at 50" (0.15ms risetime).

In the time domain, the GE1's step response (fig.6) indicates that all the drive units are connected in positive acoustic polarity. The decay of each unit's step blends smoothly with the start of the next driver's step, which implies optimal crossover topology. The GE1's cumulative spectral-decay plot on the tweeter axis (fig.7) features a clean initial decay with a ridge of delayed energy at 9144Hz, indicated by the cursor position in this graph. This is the frequency of a small peak in the speaker's on-axis response, again very similar behavior to that of the TAD CE1TX. Putting to one side that demanding impedance, the TAD Grand Evolution 1-WN offers excellent measured performance.

—John Atkinson