

Review of TAD E2 loudspeakers
by Volker Frech, 07/2022, on :



TEST: Floorstanding speaker TAD-E2 – immersive journey through the sound cosmos

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TAD Labs are breaking new ground: With the E2, the Japanese high-end manufacturer is presenting a 2.5-way speaker for the consumer sector for the first time, which - measured by TAD standards - also offers an attractive price-performance ratio. Nevertheless, it should offer the famous TAD virtues - and of course this floorstanding speaker also shines with TAD's beryllium tweeter. How does the TAD-E2 fare in the test room?



The slim, well-proportioned TAD-E2 immediately radiates its elegance and high quality in the room.

TAD Labs stands for ultimate high end: the Japanese were founded in 1975 under the aegis of Pioneer to explore what is technically feasible as a development laboratory. At first the focus was solely on loudspeakers, then the "Engineering Excellence" claim was extended to audio electronics. Let's stay with the loudspeakers: TAD specialized in the professional sector here for many years. The list of film and recording studios that work with Japanese high-tech loudspeakers ranges from Pixar to Electric Ladyland. Since 2007, TAD has also been manufacturing loudspeakers for the consumer sector - with the same claim: Here, too, the absolutely balanced sound and the homogeneous, immersive reproduction are trademarks of the manufactory. Here, too, production is still done by hand by a team of just 20 certified employees in Tendo, Japan. That sounds exclusive - and accordingly TAD loudspeakers are a cost-intensive pleasure. The E2 from the Evolution Series should now enable this pleasure along with the trademarks at a comparatively moderate price.



The E2 is clad in a beautiful walnut veneer. The masterful surface treatment lets the beautiful grain come into its own. The baffle has a gentle curve in the transition to the top. This gives the E2 even greater visual suppleness. Acoustically, sound refractions in the high-frequency range are reduced.

Hand magnet with beautiful wood grain

With this new loudspeaker, which TAD presented for the first time in Europe at the High End 2022 in Munich, moderate means that we are already in the five-digit range. Of course, you can expect absolute high quality in return - and this speaker radiates that immediately when we unpack it in our listening room for the first inspection. The first thing that strikes us is the excellent quality of the finish. The E2 is clad in a beautiful Wahlholz veneer. The TAD craftsmen have succeeded in creating a real contradiction here: the surface has been treated so artistically that it appears open-pored and at the same time has a satin finish. This emphasizes the wonderful wood grain on the one hand and creates an elegant, matt shimmer on the other. The TAD-E2 is a real hand magnet: Anyone who sees it involuntarily strokes its body - and then experiences not only the visual but also the haptic delight. The perfect workmanship is noticeable from the edges to the rounded edges of the front.



The gentle incline of the housing is particularly evident in the profile. This visually increases the dynamics, but also has acoustic advantages due to the slight offset of the chassis on the front.

Dynamic design

This brings us to the shaping. This is where the TAD-E2 cuts a fine figure: Its well-proportioned body is a good one meter high, the front is almost 22 centimeters wide, but the housing extends 35 centimeters in depth. The E2 appears slim, but still offers a good housing volume for powerful, bass-strong playback. The baffle is gently rounded on the top and bottom, and the body has a slight incline to the rear. Both increase the suppleness of the impression and the dynamics of the design, but both also have acoustic advantages: the upper curve is intended to reduce sound diffraction effects in the area of the tweeter and increase the accuracy of the treble. The baffle bevel ensures a slight offset of the chassis. The two woofers are a little closer to the listening position. Due to this offset, the sound components of the woofer and tweeter are adjusted in phase. This promotes the homogeneity and three-dimensionality of the entire playback.

Sophisticated construction for absolute body silence

TAD also put a lot of effort into the body construction and developed the "Structurally Inert Laminated Enclosure Technology". Conveniently, the abbreviation results in the word "SILENT". The ingenious structure basically consists of a combination of MDF panels and birch plywood struts. Due to the material, MDF offers high internal damping and has a low tendency to vibrate. Birch plywood, on the other hand, ensures maximum robustness and rigidity. The arrangement of the struts, but also the placement of other noise and vibration-minimising materials in the body, is chosen so that no standing waves are generated in the housing. To maximize stability, the body stands on a 10mm thick plate of pure steel. Thanks to its waist, this base underlines the slimness and elegance of the TAD-E2, but at the same time gives it greater stability due to the larger area. Three height-adjustable spikes ensure ground contact. Two height-adjustable pins are screwed into the base plate at the back so that this advantageous non-tilting three-point bearing is protected against tipping over.

Pioneers of Beryllium

Finally we come to the stars of the E2, the chassis. Here, TAD has gained world fame, especially with its beryllium drivers. The Japanese are among the beryllium pioneers: for half a century they have been building up expertise here in order to make the material, which is as expensive as it is tricky, usable for sound conversion. Beryllium is extremely hard and extremely light. This makes it ideal for fast, precise and true-to-impulse sound conversion. At the same time, the steel-grey light metal is immensely brittle, sensitive and prone to breakage. TAD made this material operational and has since been famous for its beryllium coaxial drivers in particular.

They are also used in the current Reference series. Of course, TAD also uses beryllium for the E2. But here the Japanese are pursuing a completely different sound conversion concept: instead of the coax-woofer combination, a tweeter acts in conjunction with a mid-woofer and a pure woofer. With the E2, TAD is offering a two-and-a-half-way solution for a floorstanding speaker in the consumer sector for the first time.



The tweeter converts sound with a beryllium membrane. TAD has a decade-long mastery of harnessing this challenging material as a membrane material. The 25 millimeter dome is framed by a newly developed waveguide. This tweeter is covered with a grille to protect the sensitive membrane.

Beryllium armored dome tweeter

Let's start with the beryllium-reinforced dome tweeter. It has already proven its capabilities in the sister models ME1 and E1TX. There, the 25 millimeter tweeter plays in the center of a midrange driver. With the E2, on the other hand, it acts alone, which is why it needs a surround as a sound guide. Here TAD has developed a new waveguide made of robust cast aluminium.

Like the shape of the membrane, its shape was optimized using computer analysis software. With the help of this computer-aided development, the beryllium tweeter now achieves a stratospherically high upper limit frequency of 60 kilohertz. At the same time, the waveguide ensures defined radiation with a slight directivity towards higher frequencies. The horn-like effect of the waveguide is also reflected in a sound pressure plus at lower frequencies. All in all, the tweeter and its surround ensure that the sound propagation is ultimately even and homogeneous over a wide frequency range. In the E2, the tweeter operates behind a metal grille. It protects the sensitive beryllium dome from being touched.

Woofers with multi-layer membrane

At 2.8 kilohertz, the tweeter transmits to the two woofers positioned below it. They are identical in structure, but have different tasks. The upper acts as a mid-bass driver and takes over the entire frequency range of mids and basses down to thirty hertz. The lower woofer, on the other hand, is designed as a pure bass driver and only supports the mid-bass driver from 90 Hertz down. The purpose of this solution: Thanks to the low-frequency teamwork, these requirements can be achieved in the bass, where a lot of travel and a large membrane surface are required, without a monster-sized chassis. Nevertheless, the 15.5 centimeter diameter woofers have to be extremely robust. That's why TAD has developed a MACC membrane for them. This "Multi-Layered Aramid Composite Cone" consists of interwoven aramid fibers on the one hand and softwood pulp on the other. These two membrane components are formed separately and then glued together. This special laminate combines the best properties: high rigidity, low weight, high internal damping and thus high resonance resistance.



The mid-bass driver is the real hard worker of the E2: the 15.5-centimetre woofer converts all frequencies below 2.8 kilohertz – i.e. all mids and basses. It does this with a “multi-layered aramid composite cone”: the aramid fiber layer on the top is visible, with a softwood cellulose membrane layer underneath. As a laminated composite, they form the membrane. Another highlight is the matt silver aluminum ring, which has an important stabilizing effect on the flat membrane.

Special frame and long-stroke drive

The woofer membranes have a strikingly flat shape. TAD attributes this low cone gradient to a more harmonious radiation in interaction with the tweeter. However: The flatness of the cone shape reduces the stability of the oscillating surface. That's why TAD came up with the "Delta Brace Structure". It is a reinforcing frame made of aluminum. This ring provides a robust transition in the neuralgic area where the cone comes into contact with the central rubberized dust cap and - more importantly - is connected to the voice coil. At the same time, this gain enables the voice coil to be larger. With this and with the help of other know-how tricks, the voice coil can be moved back and forth without it getting out of the homogeneous area of the magnetic field, in which she acts. This enables wide cone excursions without distortion. Such a long excursion in turn ensures a higher level and bass capability of the woofer.



The woofer is identical in construction to the mid-woofer. But it only converts downwards from 90 Hertz. This woofer is only used to strengthen the bass range.

Bidirectional bass reflex port

To further strengthen the bass, the TAD-E2 has a bass reflex tuning. The corresponding housing opening including channel is integrated into the body base. Here, too, the Japanese have developed their own new solution: the bidirectional Aero-Dynamic Port. The air that flows out of the body towards the floor and hits the base plate is not distributed in all directions. Instead, the two side guides that connect the housing to the metal plate cause the airflow to be directed forwards and backwards. The guides become slimmer towards their ends. This gives the air duct a slightly horn-like design and benefits from a larger resulting opening. This allows the air to flow more slowly and gently, minimizing disruptive flow noise.



The bass reflex solution of the TAD-E2. Two plastic rails on the side fulfill three tasks at the same time: they connect the body and base to reduce vibration. They also ensure a defined distance so that the air can flow out of the body opening at the bottom. While in the usual down-firing solution these low-frequency sound components are then distributed horizontally in all directions, here the rails direct the air flow forwards and backwards in both directions. The lengthwise taper of the rails creates a horn-like shape overall, which allows the air to flow more gently and therefore more quietly.

crossover and terminal

TAD also puts effort into the crossover hidden in the housing. It takes over the division and assignment of the appropriate frequency ranges to the individual chassis. In principle, this does not happen without influencing the music signal. However, attempts are made to minimize it if possible. TAD therefore uses components of the highest quality with close tolerances. The crossover section for the tweeter and the mid-bass driver are on the same circuit board, but are housed in strictly separate areas. The woofer, on the other hand, is operated with its own crossover. It is also positioned far away in the case. This is to prevent mutual interference. In addition, the crossovers are tuned in such a way that the phase position in the transition areas is optimized. On the other hand, the quality of the connection terminal is visible to us: Here the TAD-E2 offers four high-quality terminals made of solid, gold-plated brass. As always with TAD, the connector panel allows bi-wiring or bi-amping - a mode of operation that is particularly popular in Japan.



The TAD-E2 from the front and back - and dressed with the supplied covers. The protective covers adhere magnetically, so the housing remains free of recordings.

The TAD-E2 in practice

We leave it at single wiring and connect the TAD-E2 to our Hegel H360 integrated amplifier. We feed our SACD player Oppo UDP-203 with Cæcilie Norby's interpretation of Sting's "If You Love Somebody". The Danish singer has given the well-known hit a classy update: her version, which merges jazz and pop, starts with a nimble and intricate piano intro. We are captivated by these first few bars – although we actually wanted to use the vocals to optimize the placement of the loudspeakers. They are 2.10 meters apart, our armchair is the same distance away. This isosceles triangle is the standard for positioning. Now we actually want to check whether we should still change the slight angulation - but even with our thumbs-up, the playback is amazingly consistent:

The Hammond organ sizzles, smacks and smacks

The piano also spans this imagined space with its short solo opening: we already have an impression of the medium-sized studio in which the recording took place. Wow! Now the Hammond organ kicks in on the right - and we jump involuntarily at first because the entrance is so sudden and direct. In addition, this Hammond has just that dirt and distortion in the tone that is so characteristic of the instrument - and this sizzling is so well captured and reproduced here that we have first concerns about the speaker. But then organist Lars Jansson goes into the lower register, where the Hammond no longer sizzles, but smacks and smacks. This reassures us about the E2 and at the same time shows how perfect this reproduction is: This is what a real Hammond sounds like!

Excellent spatiality with splendid transparency

The band, now enriched by bass, drums and percussion, is excellently staggered in the breadth and depth of the stage, which the TAD-E2 spans for the combo. The instrumentalists have all the space they need to develop freely. Nothing seems crowded or hidden here, the reproduction has a great airiness and freedom. This apparent limitlessness is so convincing that when we close our eyes we simply forget the real limitations of our space with its four walls. The transparency is also great: even with the drums positioned at the back, we can hear how Alex Riehl touches his ride cymbal very subtly but consistently. Despite the dense sound of the band, even these fine silvery attacks assert themselves and are not just a hissing in the background. Cæcilie Norby now enters the foreground. The first thing we actually wanted to do was optimize the loudspeaker placement with her voice, but we forgot a little because of all the fascinated listening.



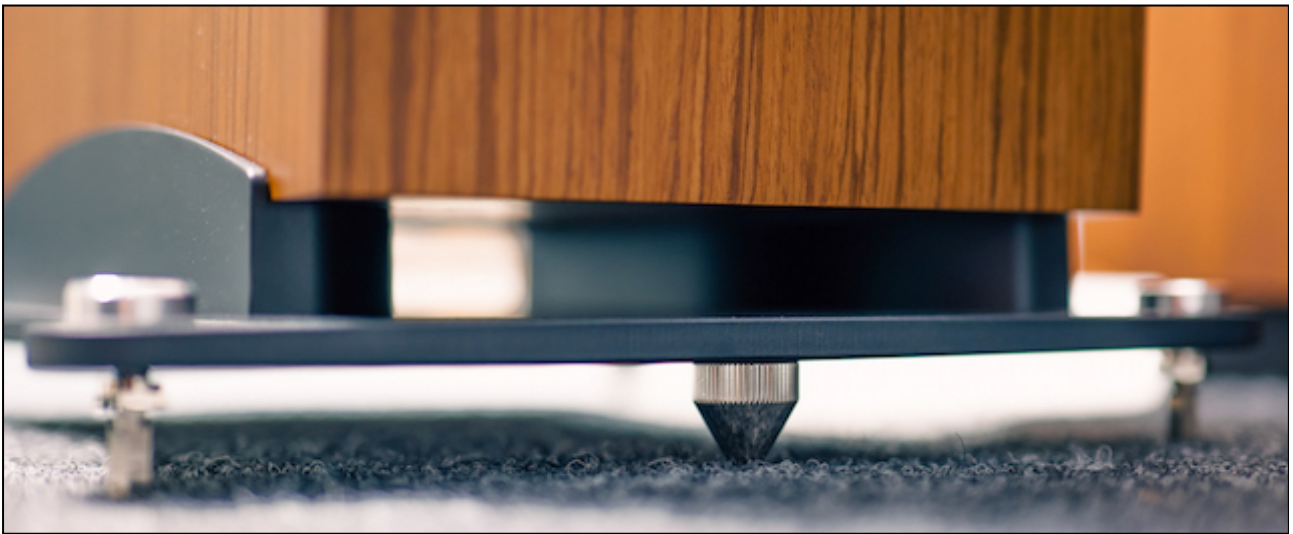
The terminal offers four connection terminals. The gilded brass fittings have large recordings. In this way, strands with a large cross-section can also be inserted. Of course, cables that are assembled with shoes or banana plugs can also be connected. The clamps are pleasantly heavy in the hand and can be turned and tightened wonderfully easily. The terminal is equipped with jumpers ex works for normal single-wire operation. If you want to use bi-wiring or bi-amping, remove these jumpers beforehand.

Outstanding resolution

We only have to turn the E2 a little further, so its image is absolutely true to size and stable. This is how Cæcilie Norby sings in front of us - and the playback is so vividly real that we can swear with our eyes closed that the singer is standing in front of us in flesh and blood. In addition, the Dane has a highly attractive voice: warm, sonorous and balanced, ranging from alto to soprano. The chanteuse also knows how to use this great voice effectively: she varies her intensity, decorates the final syllables with wonderful vibrati, she can make her organ sound cuddly, lascivious or robust and radiant. Thanks to the outstanding resolution of the E2, we don't miss even the smallest twist. We register even the most delicate whiffs and breaths between the vocal lines - and promptly get goosebumps. In the refrain, Norby gets support from a polyphonic background choir. Despite the density of the band's sound, this group of female singers can also develop freely behind the frontwoman.

Brilliant bass with power and volume

This is also ensured by the clean reproduction of the bass: the E2 delivers it down to the frequency range in a rich and powerful way, while also being clean and contoured. Despite its volume, it does not cover any of the other instruments. The bass in this production is rather the weak point. That's why we choose a recording in which everything is perfect from start to finish - that is, right down to the bass: "Celestial Echo", the collaboration between Malia and Boris Blank. The Yello mastermind has introduced its typical trademarks. This also includes the abysmal synthesizer bass. That's what it's all about for us - and here the E2 delivers with bravura: The bass has such power and volume that we can physically feel it on our bodies even at moderate volume.



In favor of stability, the housing stands on a black, elegantly tapered steel plate. The four metal roundels on the top suggest a stand on four spikes. In truth, the E2 is enthroned on three metal spikes. The rear single spike is therefore flanked by two metal pins for safety. They are screwed into the base plate far enough so that they are not in contact with the ground, but prevent them from tipping over if the worst comes to the worst.

Immersive experience

That's why we can now also pay attention to all the other delicacies of this recording: Blank lets real instruments, artificial synth sounds, various percussion and noise samples float in the room. Blank is a master at creating a sound cosmos in whose vastness one can sink - and the E2 proves to be a master at transporting us into this cosmos. Suddenly there is a snap of the fingers here and there in the room, sound cascades oscillate from left to right and then gradually disappear into the far distance, percussion instruments strike seamlessly and with breathtaking presence and precision - everything is primed with a thick, multi-layered, wafting carpet of sound.

This is a three-dimensional experience, and the E2 lets us experience this art cosmos almost immersively, because it presents this world of sound to us with outstanding coherence and homogeneity. Nothing seems discolored, nothing overemphasized, but you can still hear everything. The reproduction appears alive, vital and natural - as if it could not be otherwise.

Excellent impulse fidelity, great dynamics

We also experience this feeling of coherence in the further test with a number of other pieces of music, whereby we now pay particular attention to the drums and percussion. Here we notice the precision and accuracy with which the TAD-E2 reproduces the percussion instruments. A prime example is Charly Antolini's "Arabian Desert Groove": This number is a showcase for the grandmaster Antolini and his congenial percussionist Nippy Noya. The two deliver a magnificent complex fireworks display. We enjoy how perfectly the E2 reproduces Antolini's perfectly tuned drum set: The impulse fidelity and the dynamics are terrific, both finely and roughly: We experience how Antolini performs crisp, sparkling runs over the toms, we hear the vital-agile click, when he sometimes only hits the edge of his drums - and we wince, when he effectively delivers individual shots with great taste. The E2 delivers all this in a lifelike, physical way - and remains sovereign, so that listening is a completely relaxed pleasure.



The TAD-E2 in the test room: Here the 2.5-way loudspeaker plays in combination with the SACD player Oppo UDP-203 and the integrated amplifier Hegel H360.

Conclusion

The TAD-E2 may be the entry-level model among the floor-standing loudspeakers in the TAD Labs portfolio - but where the Japanese start, other manufacturers stop long ago. And so the E2 also scores with top quality and TAD virtues. This starts with the superb quality of materials and workmanship. However, it is particularly evident in the immersive, homogeneous playback quality with impressive plasticity and spatiality that is typical of TAD. On the one hand, this is guaranteed by the famous beryllium tweeter. On the other hand, the Japanese achieve this imaging power for the first time in the consumer sector with a 2.5-way concept. The E2 offers numerous innovations for this - right down to the special bass reflex tuning, with which an impressively powerful and sovereign reproduction is also possible in the low frequency range. The E2 offers the possibility

VALUATION

Summary

Overall rating: **97 / 100**

Class: **reference class**

Price/performance: **appropriate**

sound: **97 / 100**

Practice: **98 / 100**

Furnishing: **97 / 100**

