

JBL 4367 Studio Monitor loudspeaker

Alex Halberstadt | Apr 13, 2022

One day in the mid-1990s, my friend J and I sat sprawled on the carpeted floor of a hi-fi shop in lower Manhattan, playing records. J, who was employed there as a salesperson, had dimmed the lights and locked the door of the listening room behind us to make sure we wouldn't be disturbed by actual customers. Earlier, he had lugged in a pair of homemade speakers that an elderly woman brought to the store, hoping to sell some of her late husband's gear. The cabinets were made of thin, unfinished plywood and resembled floor fans. Mounted at the center of each box was a late-1960s 10" Tannoy dual-concentric driver. We knew these must sound as chintzy as they looked and set them down carelessly on the carpet a few feet in front of us before hunkering down to listen to *Dark Side of the Moon*.

When the first notes blasted out of those plywood boxes, we turned toward each other, the *what-the-f**k* expression on J's face mirroring my own. The music sounded explosively dynamic, textured, present, vast, and effortless. The notes seemed saturated with a kind of Kodachrome glow and held our attention complete-y. I've never been a fan of that Pink Floyd record, but the Tannoys turned the experience of listening to it into a kind of Technicolor spectacle that offered sonic *and* musical thrills.

The far wall of the listening room was crowded with inventory: slender, beautifully finished floorstanders, some with five-figure price tags. That afternoon, we listened to them all, and in comparison to the old lady's speakers, they played music in a tentative and uptight way, like A-students fretting about getting into a good college. Listening to the homely Tannoys felt like dancing at a favorite dive bar, three drinks in.

"I'm buying them," I yelled, not even having asked the price. "No you're not, because I am," J shot back. He worked there. He had dibs.

Later that week, I tracked down a vintage audio dealer in the UK and placed an order for a clean pair of late-1960s Tannoy IILZs. Since then, I've lived with a number of speakers, vintage and contemporary, but that afternoon lingers in my mind as the moment when I heard music reproduced in the way I'd always wanted.

These days, I live with a pair of 1966 [Altec Valencias](#). Each time I listen, they reward me with some of that sprawled-out-on-the-floor excitement. I've even grown to enjoy their wood-lattice grilles, which somehow look both midcentury futuristic and church-basement dowdy. The sound of their horn-loaded compression drivers and paper-cone alnico-magnet woofers lends recorded music a sense of presence, richness, and drama that I find difficult to live without. As Mike Pranka of Dynavector USA, another Altec owner, remarked recently in an email, "Anyone who doesn't appreciate the way music dances through the Valencias is to be pitied."



The notion that vintage audio designs may have something to teach us is widely accepted in Europe and especially Japan, where classic components from the likes of Tannoy, McIntosh, Klangfilm, and Western Electric often command higher prices than new gear. The pages of Japanese audiophile publications like *Stereo Sound* are rife with lavishly photographed examples of the Marantz 8B amplifier and the EMT 927 turntable. Nevertheless, here in North America,

many of us seem to have settled into a belief that year after year, audio products follow a steady asymptotic curve toward perfection. The late and sorely missed Art Dudley used [Altec Valencias](#) (and later the nearly identical [Flamencos](#)) as his reference speakers, but it's no secret that some of his readers, and even fellow contributors, considered his choice quixotic. When I began writing reviews for this magazine, the editor, Jim Austin, emailed to politely ask whether I was planning to evaluate new, perfectionist audio equipment using 55-year-old speakers that you connect to speaker cables with tiny, slotted-head screws.

I wrote back explaining that while a lot of factors went into the complex phenomenon of musical engagement, what mattered most to me about the *sound* of a hi-fi was dynamics. Anyone who's stood next to a drum kit when someone begins playing it knows how startling live instruments can sound. To me, the ability of a hi-fi to *startle* is the main source of drama in reproduced sound.

There can be no doubt that since the heyday of the Altecs, speaker designers have learned to achieve more linear frequency response and more precise imaging, and to pay more attention to things like horizontal dispersion and controlling cabinet vibrations. In the 1970s, the heyday of speakers like the LS3/5a, it became popular to disparage older designs for their "colorations": sonic manifestations of an uneven frequency response. At the same time, many commercially produced speakers became not only smaller and less sensitive but also, on the whole, less dynamically capable. Their accuracy often came at the cost of excitement. From the vantage of the present day, it seems obvious to me that dynamic compression is a coloration, too—potentially a more meaningful one than frequency-response peaks and valleys. Dynamically inert speakers are at best musically limited: Try playing loud reggae on typical minimonitors. At worst they can sound downright dull.

Following our exchange, Jim and I had several wide-ranging conversations about speakers, both vintage and contemporary. We didn't always agree, but I found these conversations thoughtprovoking and enjoyable. Eventually, Jim proposed that I review a series of contemporary speakers that hopefully would share some of what I loved about the Altecs with fewer sonic compromises. The idea struck me as potentially instructive: From time to time, it's useful to hold one's convictions up to the bright light of reality. What if my love of vintage speakers turned out to be a result of confirmation bias or, worse, some kind of Jetsons decor fetish? What if a pair of contemporary speakers made me want to finally break up with my Altecs?



The JBL 4367 Studio Monitor

To round up a candidate for the first review, I spoke to people in the industry and audiophile friends and read reams of articles and reviews. When I mentioned unrestrained dynamics, a speaker that kept being mentioned was the JBL 4367 Studio Monitor (\$16,500/pair). On paper, the JBL shares a surprising amount of DNA with my half-century-old Valencias. Both are large, two-way designs with a horn-loaded compression driver, a 15" woofer, and a simple crossover. Altec Lansing and JBL are named after the same person (JBL is an initialism of founder James B. Lansing's name). And

the 4367's model designation and blue baffle is a nod to nearly 50 years of extremely cool-looking JBL studio monitors, many of which show up in the pages of Japanese audio magazines, usually shoehorned into confoundingly small rooms and driven by tube amplifiers. In a white paper, JBL describes this lineage as "increasingly louder speakers of steadily greater dynamic capability." *That* sounded like fun.

What turned out to be not so much fun was extracting the 119lb 4367s from their cartons and heaving them into place. Their big-boy woofers, horns, and chunky, front-ported, walnut-veneered cabinets may suggest that the JBLs are meant to appeal to a retro sensibility. But taking a close look behind the grilles (which I did not use because I wanted to keep those denim-blue baffles visible) revealed that there's nothing retro about their engineering.

Above those ports and the woofers—which feature "Aquaplas-treated Pure Pulp cones," dual voice-coils, and neodymium magnets—there's a horn (JBL calls it a waveguide) connected to a high-frequency compression driver with two polymer diaphragms, each with its own voice-coil, neodymium magnet, and motor. The wide, rectangular waveguide—intended to allow for wide dispersion while minimizing floor and ceiling reflections—is made from a dense composite. Just below its mouth are two dials for controlling output levels in the high-frequency (from 660Hz to 9kHz) and ultra-high-frequency (from 4kHz to beyond 20kHz) ranges, allowing adjustment from -1dB to $+1\text{dB}$ in 0.5dB increments. On the back of the cabinets there are two sets of gold-plated binding posts connected by jumpers, which can be removed to allow for biwiring or biamping. The 4367s rest—heavily—on four low-profile brass spikes with optional cups to protect wood flooring. Their claimed 94dB sensitivity suggests that they'd be suitable partners for low-powered tube amplifiers, but the published impedance graph leaves room for doubt (footnote 1). More on this later.

Footnote 1: The JBL's impedance magnitude, but not the phase angle, is published in a [white paper](#) on the JBL website. For a more thorough characterization, see John Atkinson's measurements in the Measurements sidebar.

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The appearance of these speakers testifies to their somewhat conflicted purpose. According to a PR representative for Harman, JBL's parent company, the 4367s are in fact marketed for home use. Their "professional" appearance seems to suggest otherwise and betrays little discernible concern with domestic decor. While they are impressively constructed, their "furniture-grade walnut veneer wood finish" does not bring to mind fine furniture. In fact, the 4367s looked less at home in my loft than any speaker I can recall and would look more appropriate in a mastering studio. Then again, anyone contemplating buying these speakers is not likely to be doing it for their elegant design or interior decor potential. And doubtless some people will like the look.

In my 56' × 19' loft, which has 15.5' ceilings, I positioned the JBLs along the long wall. After much listening and moving with the help of friends, I ended up with the speakers positioned 6' apart and 30" from the wall behind them, toed in so that the horns converged at a listening seat 10.5' away. This position provided the best compromise between center fill and soundstage width and the best balance of bass response and treble smoothness. After playing with the high-frequency controls, I found I preferred them set to their neutral positions.

Listening

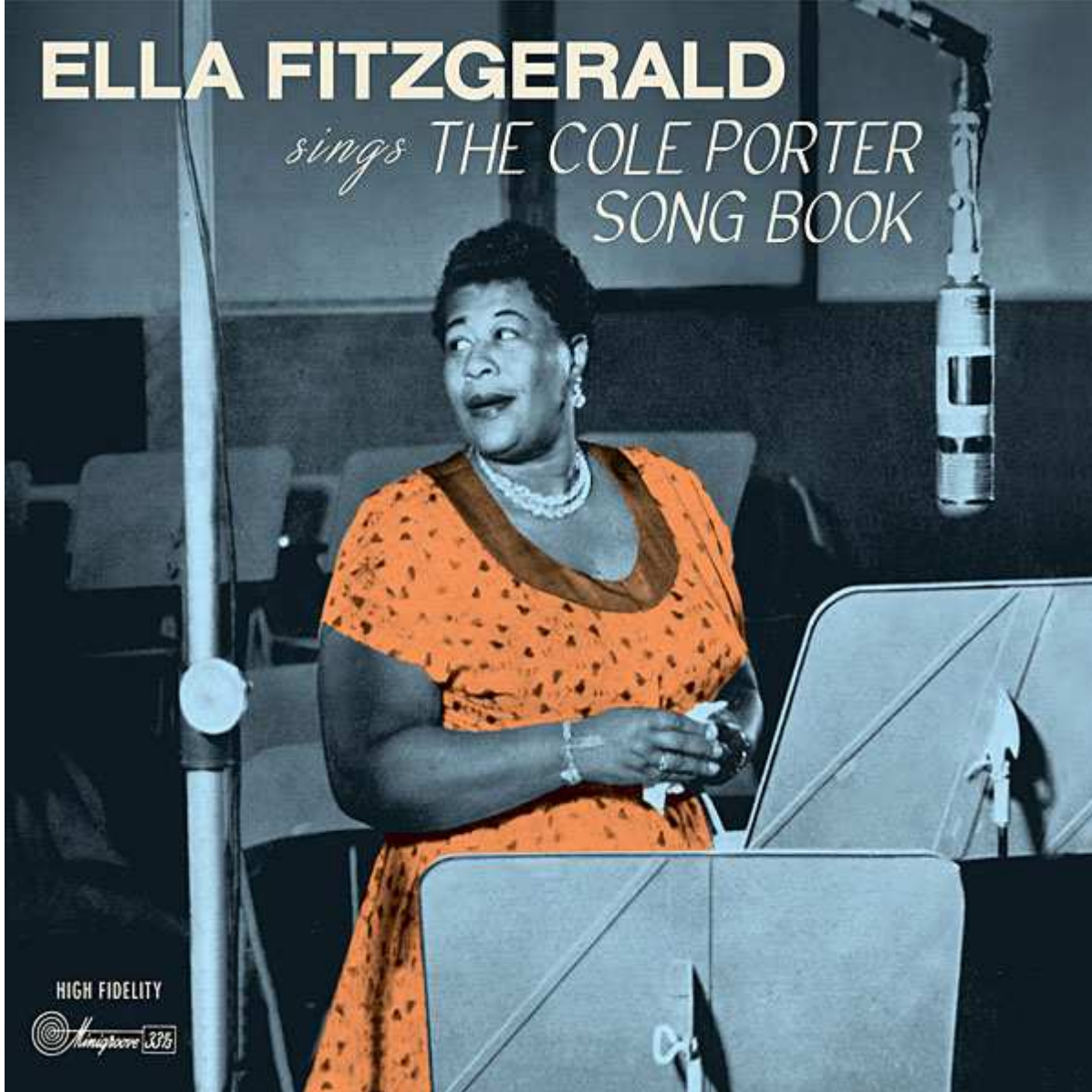
My first three weeks of listening to the JBLs were pretty miserable. They sounded rhythmically disjointed, grayish, soft, bass shy, and so incapable of creating a soundstage that I at first thought I had connected them out of phase. This confused me, because the Harman rep had informed me that these were demo units, presumably with many hours of use. Yet, after about 200 hours of play, the 4367s had improved dramatically, and after 300 they began to sound great. I later learned that the pair I received had only a few hours on them. Mystery solved.



As expected, the big JBLs proved remarkable in their ability to play (very) loudly. Almost every speaker and amplifier combination reaches a point where you know to back off the volume control: The music begins to sound disorganized and strident, or it starts to compress, with the quiet parts getting louder but the loud parts remaining the same. Driven by a sufficiently powerful amplifier, the 4367s reached that point at appreciably higher volumes than any speaker I've heard in my home. I took advantage of this dynamic headroom to enjoy music that sounds best loud. Played at a plate-rattling volume I hadn't attempted before, the opening percussion on "Five Man Army" from Massive Attack's *Blue Lines* (16/44.1 rip from Virgin TOCP-53870), a record that has lost none of its rousing, innovative charge, sounded intensely satisfying and yet completely composed.

ELLA FITZGERALD

sings THE COLE PORTER
SONG BOOK



HIGH FIDELITY



If the JBLs' brutalist exterior led me to expect an arena-rock bass juggernaut, in use they were nothing of the sort, reproducing as much bass as was present on the recording and no more. When the electric bass comes in on the delicately arranged "Who By Fire" from Leonard Cohen's *New Skin for the Old Ceremony* (LP, Columbia KC-33167), it was delivered with eerie realism and a wallop surprising for a "folk-rock" record. The 4367s never added bass of their own or "warmed" the lower mids, a testament to their superb engineering and well-judged frequency response. During a visit from Herb Reichert and Ken Micallef, Ken remarked on how the JBLs allowed us to focus on Ella Fitzgerald's quicksilver voice and barely notice that the record—an early pressing of *Ella Fitzgerald Sings the Cole Porter Songbook* (LP Verve MG V-4001-2)—contains hardly any deep bass at all.

TCHAIKOVSKY

EUGENE ONEGIN

DECCA

WEIKL · KUBIAK · BURROWS · HAMARI
GHIAUROV · SÉNÉCHAL

JOHN ALLDIS CHOIR

ORCHESTRA OF THE ROYAL OPERA HOUSE,
COVENT GARDEN

SOLTI



The JBLs' portrayal of detail and atmosphere was just as superb. During the letter scene in *Eugene Onegin* (LP, Decca SET 596-8), performed by the Orchestra of the Royal Opera House, Covent Garden, and the John Alldis Choir, Georg Solti's brisk, unsentimental reading of Tchaikovsky's score was presented in ultrahigh definition. I could follow the scene's unfolding orchestration in minute detail, the musicians almost visible between the speakers.

channel ORANGE

Frank Ocean's "Pink Matter," from *Channel Orange* (16/44.1 Qobuz stream), superimposes a closely miked, starkly physical portrayal of Ocean's voice onto layers of instruments and sound effects. The 4367s offered more insight into this recording than I'd previously heard, making every element audible and musically significant and placing them across a soundstage that was not as vast as some I've heard but possessed outstanding depth and specificity, showing me where every sound was located in 3D space. The highly resolving presentation didn't distract me from Ocean's singing, with its thrilling falsetto runs and gospel emotiveness, or from the narrative thrust of his songwriting.

To get a better handle on the JBLs, I auditioned them with four amplifiers, three solid state and one tube.

With the Line Magnetic LM-845IA

The [Line Magnetic](#) brought out the loveliest and most realistic timbres from the 4367s and lent them much of its pellucid transparency. But regardless of whether I used the amplifier's 4- or 8-ohm taps, the combination made bass sound slightly rubbery and slow, alerting me that 22 are simply too few watts to take control of the JBLs' woofers. Lesson learned.

With the Pass Labs INT-60

Pass Labs claims that their [integrated amplifier](#) outputs 60W into 8 ohms and doesn't leave class-A until 30W. According to the illuminated meter on the front of the amp, it remained in class-A while driving the 4367s, even during loud crescendos. With the INT-60, the JBLs became sonic microscopes, unraveling every mix, no matter how busy. On the Frank Ocean track, the *hiyaa*-ing martial arts students, who can sometimes sound like white noise, were rendered with rare realism and presence. Even the subtle changes in air pressure at the beginning of certain tracks became easily audible. This sci-fi level of resolution proved fascinating, but I prefer champagne to water and soon began to long for more color and emotion.

With the Mark Levinson No.5805

At the Harman store in New York City, the 4367s are hooked up to [this integrated amplifier](#), and I could quickly hear why. The two made a synergistic sound—more full bodied if not quite as resolving as with the Pass—that was propulsive and easy to listen to. The combination drew attention to the music's rhythmic lines and offered the most satisfying bass reproduction. On "Pink Matter," Charlie Hunter's electric bass came in with whiplash-inducing force and tunefulness. The Levinson's Bluetooth input and built-in DAC made it easy to listen to movies streamed from the Roku stick in my projector, which proved to be a blast through the JBLs.

With the Ayre AX-5 Twenty

When I connected the [Ayre amplifier](#) and Frank Ocean began to sing, I might have teared up. Compared to the Pass and Levinson, the Ayre subtly shifted my attention from the sound of Ocean's voice to the meaning of his words. In the bargain, it added more saturated tone colors and more distinct instrumental textures and timbres. Like the other solid state amps I listened to, it took full advantage of the 4367s' bass-making abilities and macrodynamic talents. This was the combination I found to be the most musically enlightening and the one I ended up listening to most.

Wrapping up

After living for several months with the JBLs, I found them to be *sonically* impeccable—both forceful or delicate when called for. They reproduced music in an utterly neutral, evenhanded way, sounded robust while resolving lots of detail, and never struggled to fill the unusually large room where I had placed them.

The contemporary JBLs better my vintage Altecs sonically in the expected ways. They produce deeper and tighter bass, capture more detail, offer a more accurate tonal balance, and image with more precision. They also play even louder without strain. The 4367s excel at illuminating even the darkest corners of the mix; I imagine that they would be wonderful tools for a recording engineer.

Maybe that's why, as I listened to them, I found my attention drifting from the performance to the recording. Despite their ability to remain unflappable at very high volumes, the 4367s didn't startle as reliably as the Altecs do, nor did they infuse recordings with as much excitement, purpose, and drama. I didn't get swept up in the music as I do with my Altecs. As much as I admired all that the JBLs offer for the head, I wished they offered more for the heart.



Yet the 4367s deliver more of what I love about the Altecs than more conventional designs do. They don't deliver it all, but they deliver what they do with fewer sonic tradeoffs. And even more than the Altecs, they largely free the listener from the mental calculus of deciding which types of recordings will sound good on their hi-fi: Unlike most contemporary audiophile speakers, the JBLs are at home with anything from solo harpsichord to the loudest EDM single. When called upon to do so, they can play back music at sound levels that rival a live performance. Besides their imposing size and appearance there's not much you have to give up for these abilities. Sure, the 4367s will not sound quite as airy and holographic as some rivals, but, at least for me, the tradeoff is more than fair.

The JBL 4367 Studio Monitors provide a lot for your \$16,500. They effortlessly fill the largest living spaces with loud music, don't require mammoth amps (though at least 50W is recommended for all but the smallest spaces), and most importantly will play your whole record collection well. For listeners who want to hear every detail on their favorite recordings at lifelike volumes, these may be just right.

JBL 4367 Studio Monitor loudspeaker Altecs, Dynamics, and Stereophile

Sidebar 2: Altecs, Dynamics, and *Stereophile*

In his introduction to this review, Alex Halberstadt describes the conversations we had that led to the project of which this review is the first result. In those conversations, I suggested he seek out current commercial speakers that share virtues with his beloved vintage Altecs, ideally with fewer sonic compromises.

What compromises? The late Art Dudley, himself an Altec enthusiast (and Valencia owner), wrote about the Altec's shortcomings. When he first set up his Valencias, Art described "an aggressive and, at the worst of times, a downright steely quality woven within the lower treble. Some records that sounded reliably sweet through my [Audio Note AN-Es](#) or my borrowed [DeVore Orangutan O/96s](#) were shorn of that quality, and a small percentage of innately bright recordings in my collection were now off-putting or, at worst, unpleasant. Yikes almighty." That steely quality, he surmised, was a consequence of a material resonance in the metal horns.

Later, after he had mitigated the Altecs' vices by putting them up on stands and optimizing their positions in the room—among other adjustments, he moved them farther from the listening position—he reported that still, "with some recordings, especially during loud passages with significant high-frequency content, there remains a faint lattice of exaggeration in the upper-mid and treble ranges, which imparts to some instruments an aggressive quality. Among other things, the Altec Valencias dislike vigorously struck cymbals, and overlook few opportunities to remind me of the fact."

That sounds mighty unpleasant, but there's far more on the positive side of the ledger. Space limitations prevent me from including here all the praise Art heaped on the Altec's sound. You can read it for yourself [here](#).

When I shared this passage with Alex in an email, he responded, "My experiences with the Altecs are very similar to Art's. I wrote about the 'steely quality' he describes in my [Line Magnetic review](#). I also found that getting them off the floor and positioning them carefully ameliorated this issue significantly. With most amps, it doesn't bother me at all, as I think my brain has learned to compensate." Anyway, he summed up, "they do so much right that I think it's an entirely reasonable tradeoff."

In his introduction, Alex wrote, "From the vantage of the present day, it seems obvious to me that dynamic compression is a coloration, too—potentially a more meaningful one than frequency response peaks and valleys." I tend to associate the word "color" with spectral character—frequency response—but whatever you call it, the mildness or absence of that startle factor *is* a way in which most reproduced music sounds different from real, live music. (I believe that audio engineers deserve a share of this blame, for taking the dynamic edge off *recordings*. It could be that speakers like the Altecs are adding—back?—something the recording and mastering engineers left off.)

At a given price point, taste in loudspeakers comes down, apparently, to which compromises each of us finds most, and least, tolerable.

By the way, Art and Alex are hardly the only Altec admirers among *Stereophile* contributors. *Stereophile* founder J. Gordon Holt was also a fan; read his short 1966 description of the Altec A7 "Voice of the Theater" speakers, which he placed on the first Recommended Components list in [Vol.1 No.12](#). Many years ago, when they were still sold new and on *Stereophile*'s Recommended Components list, even Kal Rubinson owned a pair.— **Jim Austin**

JBL 4367 Studio Monitor loudspeaker

Specifications

Sidebar 2: Specifications

Description: Two-way, two-driver, bass-reflex, floorstanding loudspeaker with one 3", dual-diaphragm, dual voice-coil compression driver with dual neodymium-magnet motor and waveguide horn, one 15" (380mm) woofer with dual 3" voice-coil and neodymium-magnet motor, and dual front-firing ports. Crossover frequency: 700Hz. Frequency response: 30Hz–40kHz, –6dB. Sensitivity: 94dB/2.83V/m. Nominal impedance: 6 ohms.



Dimensions: 37" (941mm) × 22.5" (560mm) × 16.7" (425mm). Weight: 119lb (54kg).

Finish: Walnute enclosure with blue front baffle.

Serial number of unit reviewed: CV0041-AJ0001421 and '22. "Designed and engineered in the USA, made in Indonesia."

Price: \$16,500/pair. Approximate number of US dealers: 45. Warranty: 5 years.

Manufacturer: JBL by Harman International Industries, 8500 Balboa Blvd., Northridge, CA 91329. Web: jbl.com/specialty-audio.

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JBL 4367 Studio Monitor loudspeaker Associated Equipment

Sidebar 3: Associated Equipment

Analog sources: [Garrard 301](#) turntable in a Box Furniture Co. plinth; [Thomas Schick 12" tonearm](#) and headshell. [Hana Umami Red](#) cartridge; [Ortofon SPU Classic G](#) cartridge; [Zu/Denon DL-103](#) cartridge.

Digital sources: [Sonnet Morpheus](#) DAC; Denafrips Iris digital-to-digital converter; Sonore opticalRendu; Small Green Computer sonicTransporter i5 server running Roon Core.

Preamplification: [Shindo Aurieges](#); [Sutherland Little Loco](#) and [Parasound Halo JC 3+](#) phono preamplifiers.

Amplification: [Line Magnetic LM-845IA](#) (used as a power amplifier); [Pass Labs INT-60](#), [Mark Levinson No.5805](#), [Ayre AX-5 Twenty](#) integrated amplifiers.

Loudspeakers: <https://www.stereophile.com/content/listening-125>>Altec Valencia 846A.

Cables: Interconnect: Auditorium 23; Speaker: AudioQuest Thunderbird Zero; Auditorium 23; AC: AudioQuest Thunder and Hurricane; USB: AudioQuest Diamond; Ethernet: AudioQuest Diamond.

Accessories: Box Furniture Co. Heritage stand; Box Furniture Co. amplifier stand; [AudioQuest Niagara 3000](#) power conditioner; Sonore opticalModule; Sonore Audiophile Linear Power Supply, DJM Electronics GigaFOILv4-INLINE Ethernet filter; Vinnie Rossi MINI PURE-DC-4EVR 9-Volt DC Power Supply; IsoAcoustics OREA Bordeaux isolation footers; Cardas Myrtlewood blocks; Feickert Next Generation Universal Protractor; AudioQuest AntiStatic Record Brush; Last Stylus Cleaner; VPI Industries HW-16.5 record cleaning machine.—**Alex Halberstadt**

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JBL 4367 Studio Monitor loudspeaker

Measurements

Sidebar 4: Measurements

Because of the JBL 4367's size and weight, I drove my gear—DRA Labs' [MLSSA system](#), an Earthworks microphone preamplifier, calibrated DPA 4006 and Earthworks QTC-40 microphones, and Dayton Audio's DATS V2 system—to AH's apartment for the measurements. While we were able to lift one of the speakers onto a short stack of 2×4 s sitting on top of a dolly for the testing, the woofer was still relatively close to the floor. Reflections from the floor will therefore reduce the midrange resolution of the farfield response measurements. During these measurements, the speakers were driven by an [Ayre Acoustics AX-5 Twenty](#) amplifier. All measurements were made with the HF control in its center, neutral position.

JBL specifies the 4367's sensitivity as 94dB/2.83V/m. My B-weighted estimate was slightly lower, at 92.7dB(B)/2.83V/m, but this is still a loudspeaker that will play at high levels with only a few watts. The JBL 4367's impedance is specified as 6 ohms. Measured with the DATS V2, the impedance magnitude (fig.1, solid trace) remained above 6 ohms for almost the entire audioband. The minimum magnitude was 5.6 ohms at 96Hz and 5.4 ohms between 1080Hz and 1180Hz. The electrical phase angle (dashed trace) is high in a couple of regions, however, and the equivalent peak dissipation resistance, or EPDR (footnote 1), drops to 2.5 ohms between 70Hz and 80Hz and 2.4 ohms between 885Hz and 950Hz. The JBL 4367 will work best with amplifiers that are not fazed by 4 ohm loads, but the need for current will be alleviated by the JBL's high sensitivity.

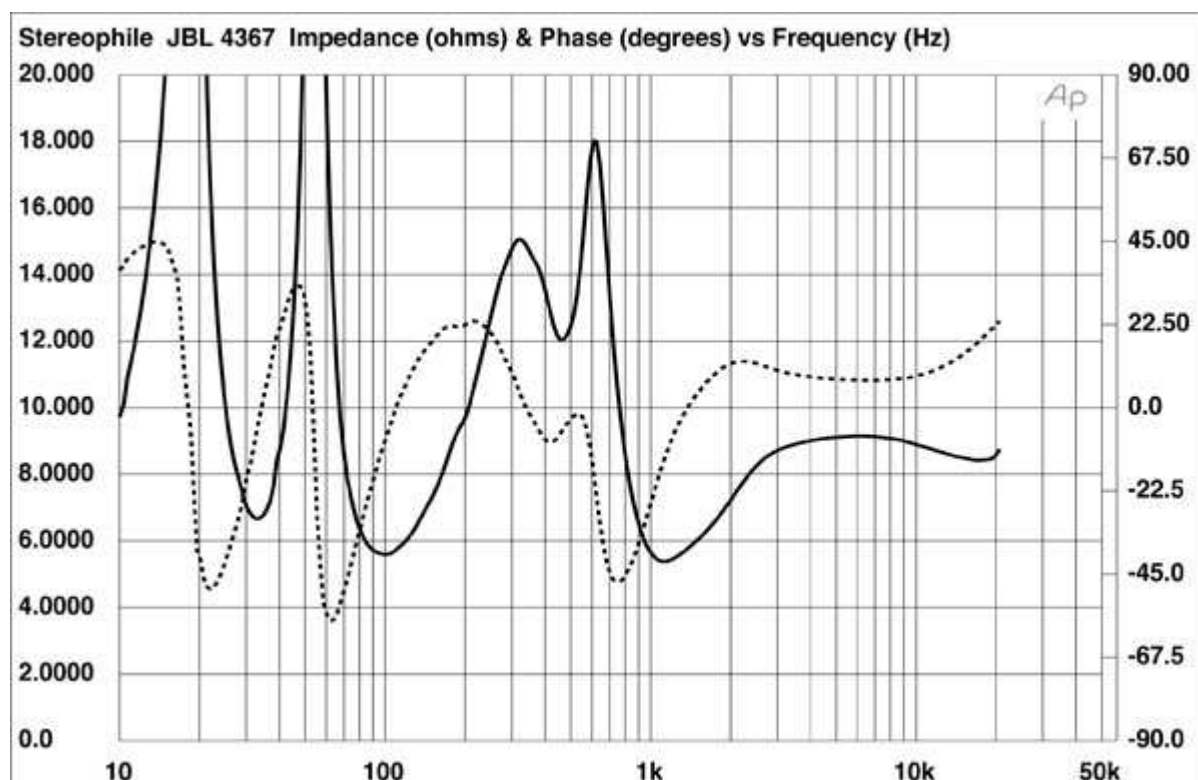


Fig.1 JBL 4367 Studio Monitor, electrical impedance (solid) and phase (dashed) (2 ohms/vertical div.).

I investigated the enclosure's vibrational behavior with a plastic-tape accelerometer. Despite the large size of the panels, they were relatively quiet, and the only resonant modes were low in level. Fig.2 is a cumulative spectral-decay plot calculated from the accelerometer's output when it was fastened to the center of one of the sidewalls, level with the woofer. The highest-level mode, at 617Hz, is still low in absolute terms.

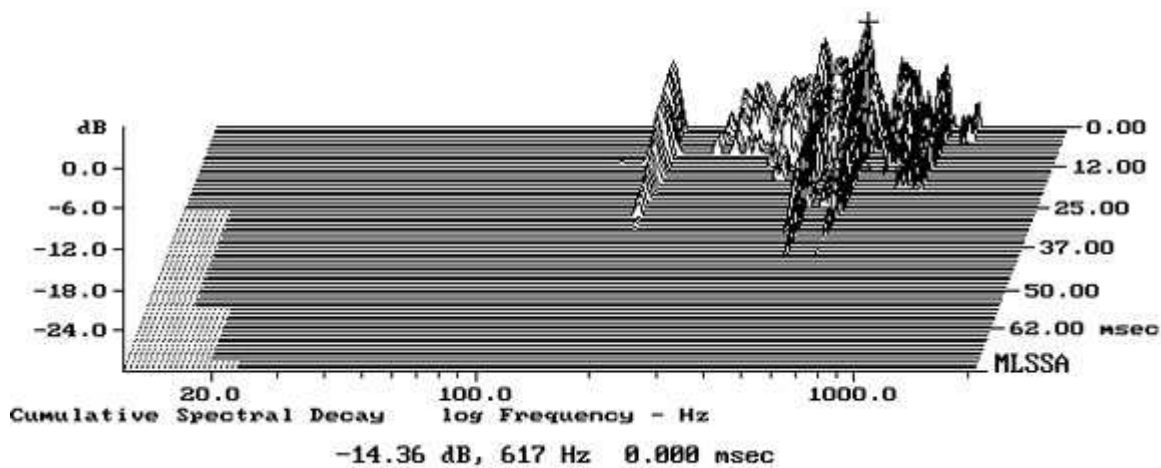


Fig.2 JBL 4367 Studio Monitor, cumulative spectral-decay plot calculated from output of accelerometer fastened to center of sidewall level with woofer (MLS driving voltage to speaker, 7.55V; measurement bandwidth, 2kHz).

The saddle centered on 31Hz in the impedance magnitude trace suggests that this is the tuning frequency of the twin ports on the front baffle, which implies extended low frequencies. The red trace in fig.3 shows the port's nearfield output. The response peaks a little higher than the tuning frequency, and while the upper-frequency rolloff is initially clean, some low-level peaks are visible in the midrange. The nearfield response of the woofer (fig.3, blue trace below 350Hz) has the expected notch at the ports' tuning frequency, which is when the back pressure from the port resonance holds the diaphragm stationary. The 5dB peak in the upper bass is due entirely to the nearfield measurement technique, which assumes the drive-unit is mounted in a true infinite baffle, ie, one that extends to infinity in both planes.

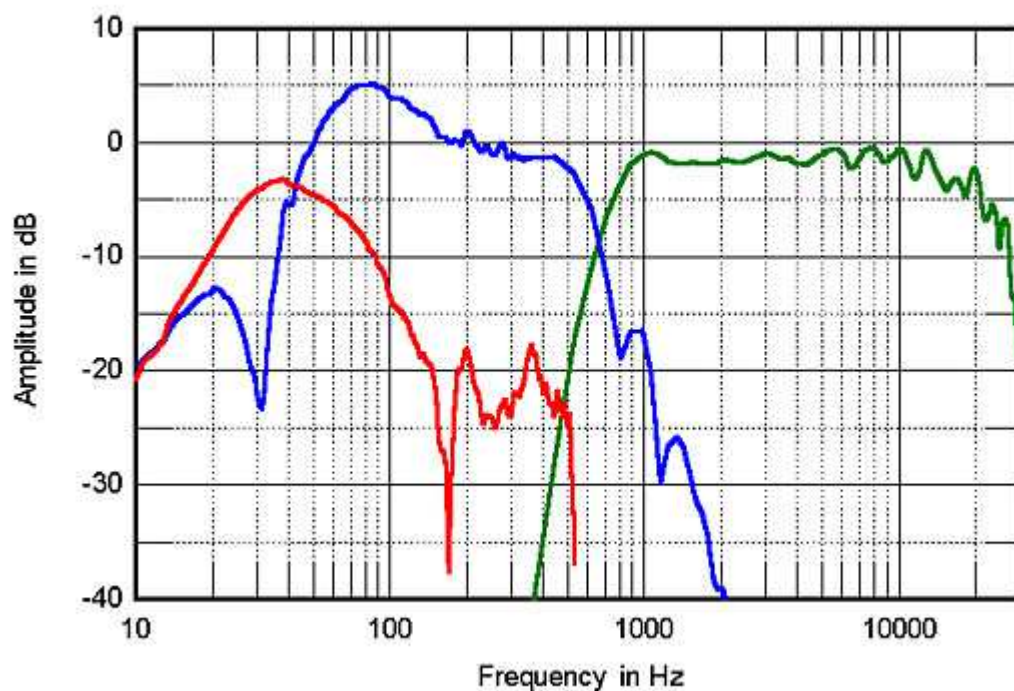


Fig.3 JBL 4367 Studio Monitor, acoustic crossover on tweeter axis at 50", corrected for microphone response, with the nearfield response of the port (red) and woofer (blue), respectively plotted below 525Hz and 350Hz.

The blue trace above 350Hz in fig.3 shows the woofer's farfield output, measured on the tweeter axis. It crosses over to the horn-loaded midrange/tweeter (green trace) close to the

specified 700Hz with what appear to be symmetrical third-order filter slopes. Some response irregularities can be seen in the top two audio octaves, probably due to reflections of the horn-loaded tweeter's output from the mouth of the horn.

In fig.4, the black trace below 300Hz shows the complex sum of the nearfield woofer and port responses taking into account acoustic phase. The upper-bass boost in the loudspeaker's low frequencies will again be due to the nearfield measurement technique; the 4367's low frequencies appear tuned to be maximally flat, in textbook manner. Higher in frequency, in fig.4, the JBL's farfield response, averaged across a 30° horizontal window centered on the tweeter axis, is impressively even, except for a small dip and subsequent peak between 500Hz and 1kHz and the top-octave irregularities mentioned earlier.

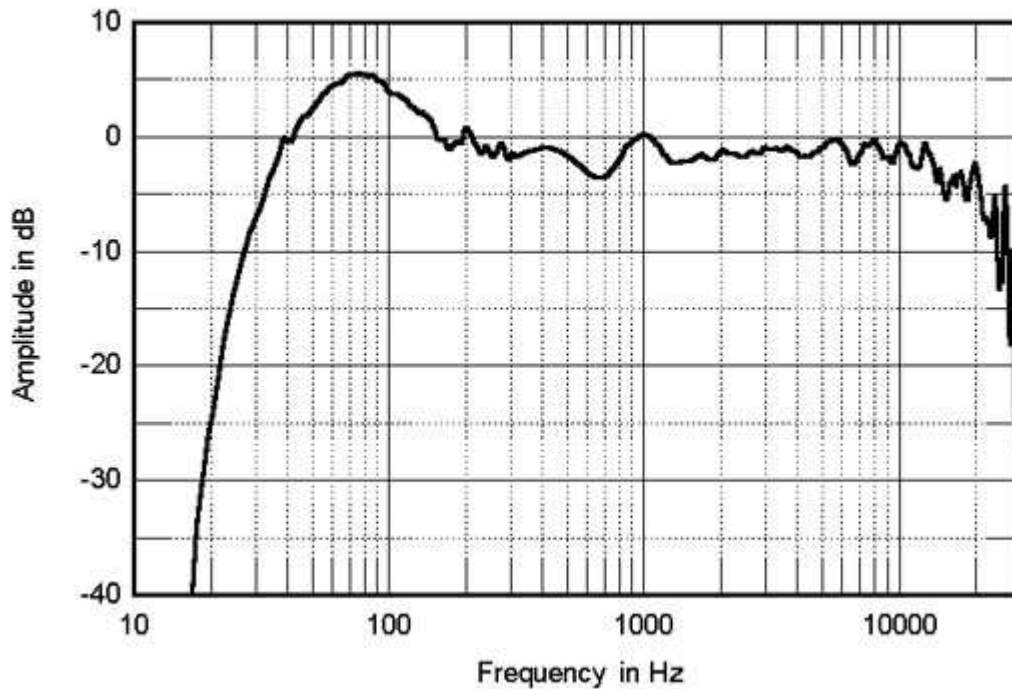


Fig.4 JBL 4367 Studio Monitor, anechoic response on tweeter axis at 50", averaged across 30° horizontal window and corrected for microphone response, with the complex sum of the nearfield responses plotted below 300Hz.

The 4367's horizontal dispersion is shown in fig.5. (The traces are normalized to the response on the tweeter axis, which thus appears as a straight line.) Other than a slight lack of energy to the sides in the crossover region and some small peaks and dips in the top audio octave, the contour lines in this graph are smooth and even. The JBL's vertical dispersion, again normalized to the response on the tweeter axis, is shown in fig.6. The JBL 4367's tweeter axis is 32" from the floor, lower than the average ear height for seated listeners, which a 1990s survey for *Stereophile* indicated was 36". Fig.6 indicates that the response 5° above the tweeter axis is basically identical, so there should be no problem for seated listeners. Higher than that, however, a suckout starts to appear in the crossover region.

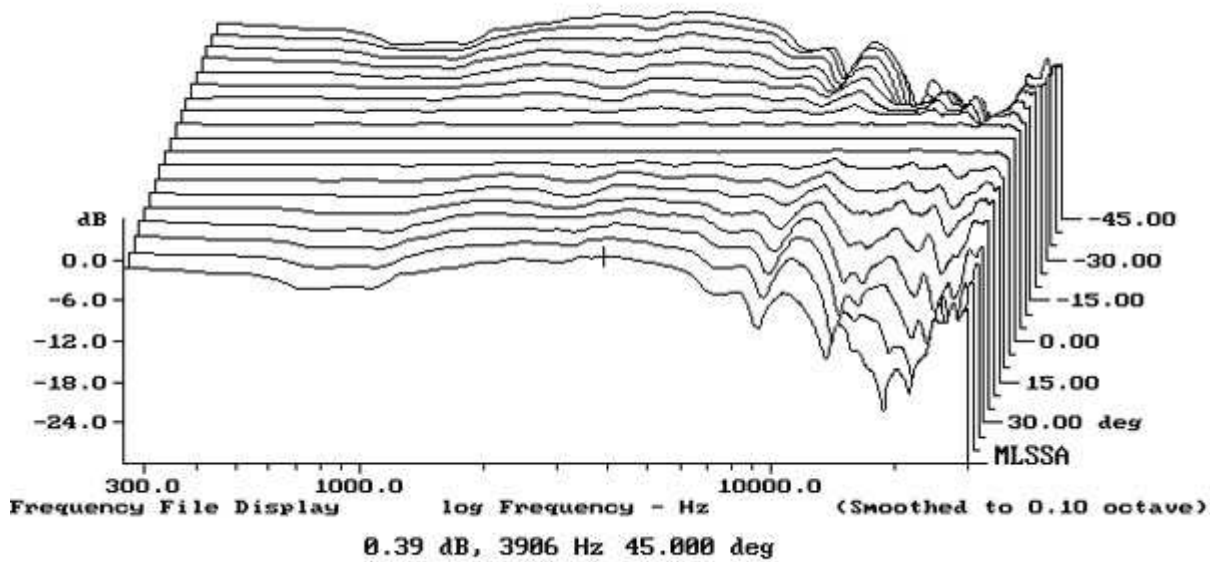


Fig.5 JBL 4367 Studio Monitor, lateral response family at 50", normalized to response on tweeter axis, from back to front: differences in response 45–5° off axis, reference response, differences in response 5–45° off axis.

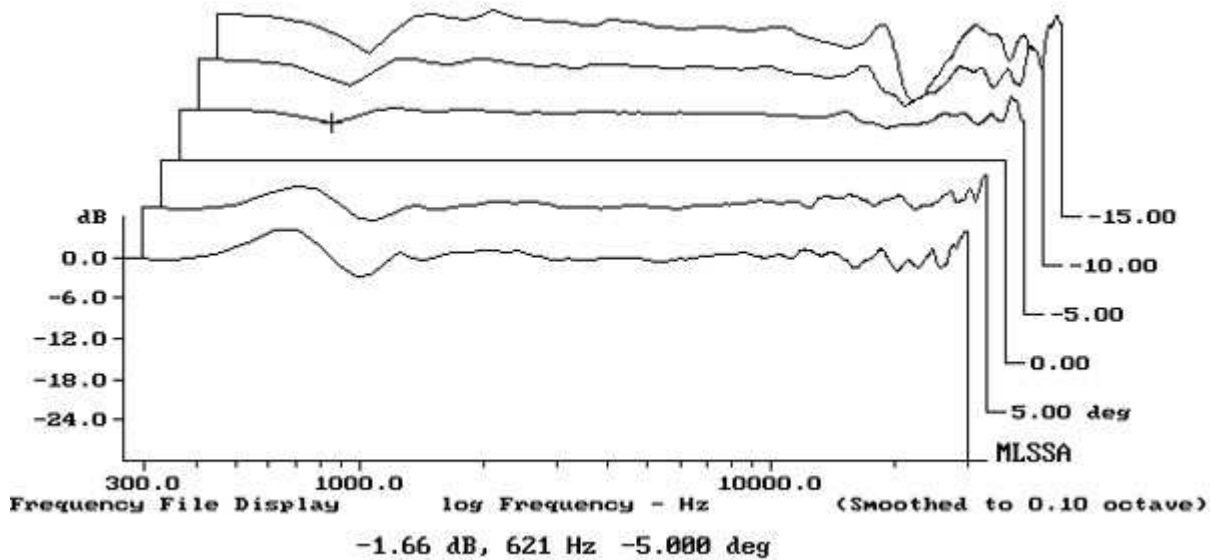


Fig.6 JBL 4367 Studio Monitor, vertical response family at 50", normalized to response on tweeter axis, from back to front: differences in response 15–5° above axis, reference response, differences in response 5–10° below axis.

Fig.7 shows the JBL 4367's spatially averaged response in AH's room. To generate this graph, I average 20 1/10-octave– smoothed responses taken individually for the left and right speakers in a vertical rectangular window centered on the position of the listener's ears. Averaging tends to minimize the effect of room resonances on the measured response below 400Hz. Other than a peak in the upper bass, which might have been due to the fact that the speakers were placed relatively close to the wall behind them, and a lack of energy just below the crossover region, the JBL's in-room response is impressively flat through the mid-treble region, above which the usual gentle slope down with increasing frequency is present.

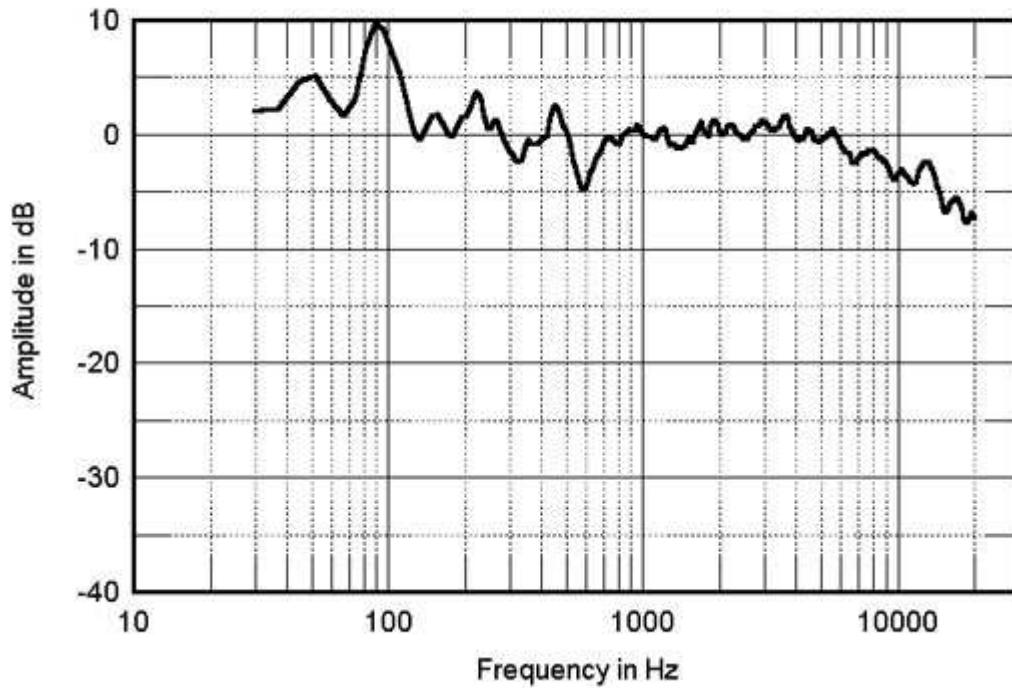


Fig.7 JBL 4367 Studio Monitor, spatially averaged, 1/10-octave response in AH's listening room.

In the time domain, the JBL 4367's step response on the tweeter axis (fig.8) indicates that both drivers are connected in positive acoustic polarity and that the upper-frequency driver's output arrives first at the microphone. The decay of this unit's step smoothly blends with the start of the woofer's step, suggesting optimal crossover design. The ripples in the response after 5.5ms might be due to reflections of the woofer's output from the floor. The JBL's cumulative spectral-decay plot (fig.9) has a ridge of delayed energy around 1kHz. This graph is otherwise superbly clean in almost all of the region covered by the horn-loaded drive-unit.

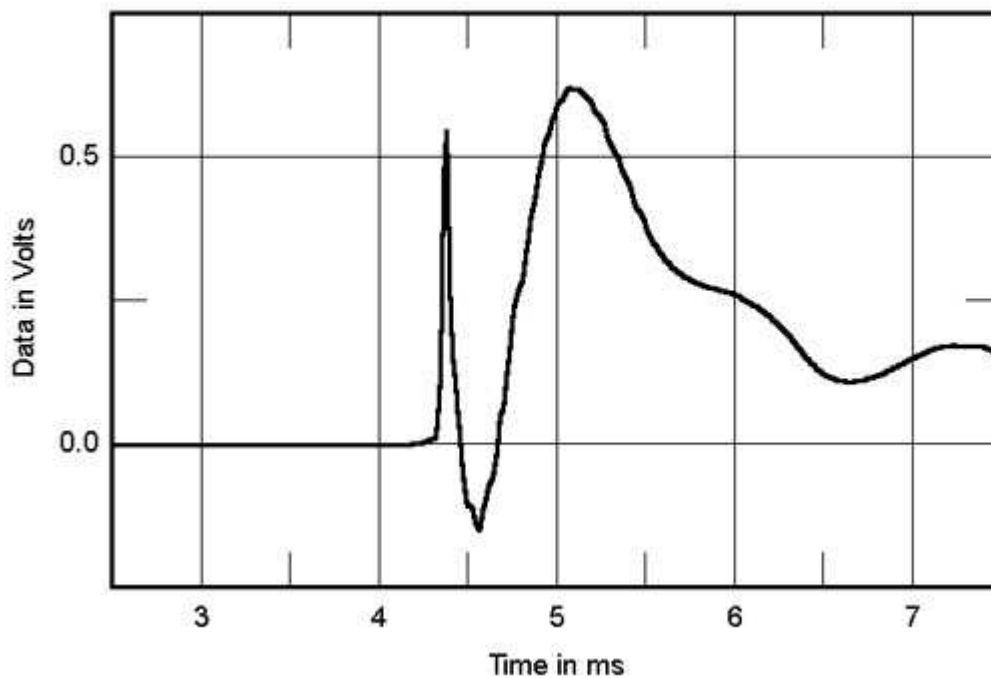


Fig.8 JBL 4367 Studio Monitor, step response on tweeter axis at 50" (5ms time window, 30kHz bandwidth).

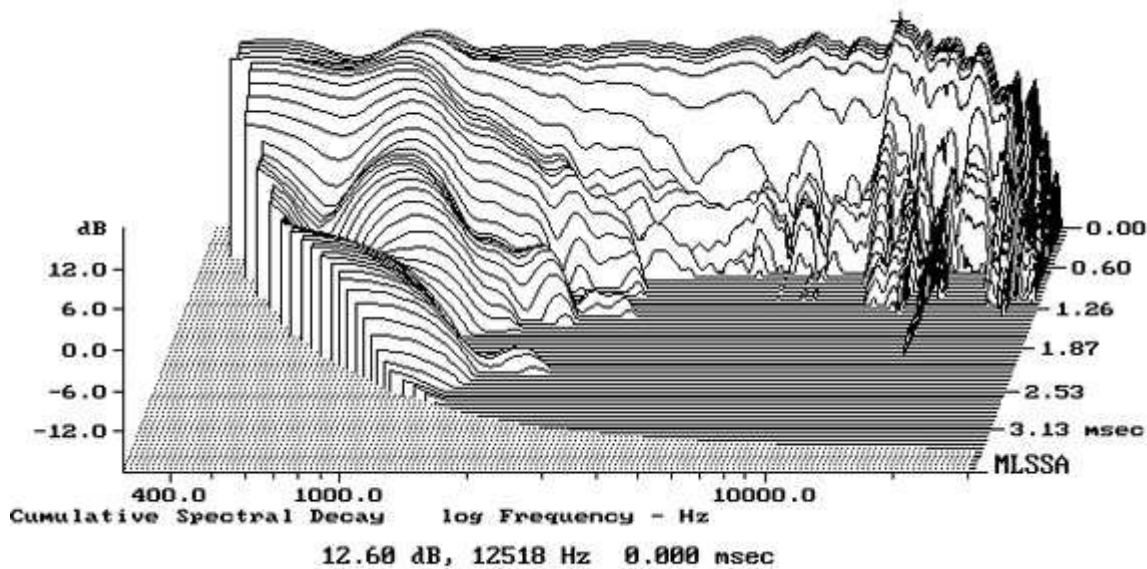


Fig.9 JBL 4367, Synthesis cumulative spectral-decay plot on tweeter axis at 50" (0.15ms risetime).

I wasn't sure what to expect from the 4367's measurements. My [experience in the 1970s](#) of high-sensitivity designs with horn-loaded drive-units led me to believe that too many compromises are needed to achieve such high sensitivity. No such compromises were made with the JBL 4367 Studio Monitor—it offers textbook measured performance.—**John Atkinson**

Footnote 1: EPDR is the resistive load that gives rise to the same peak dissipation in an amplifier's output devices as the loudspeaker. See "Audio Power Amplifiers for Loudspeaker Loads," *JAES*, Vol.42 No.9, September 1994, and stereophile.com/reference/707heavy/index.html.