

Dynaudio Contour 3.0 loudspeaker

By Larry Greenhill, September 1998

It was one of those uncommonly warm late winter Sundays when you hardly need a coat. The fine weather had set aside any critical listening sessions, the door to the kitchen was open, and I was playing my audio system—then equipped with a pair of Spendor BC-1 loudspeakers—at moderate levels. Playing on the Linn turntable was an LP that the kids loved—"The Magic Garden Song," sung by the two female leads from the children's television show of the same name (footnote 1). My wife doesn't often comment positively on audio equipment, but that day she walked in from the kitchen to say, "Those voices sound real—as if two people just walked in our living room and started singing."



In the 13 years since, I've reviewed larger, more expensive, more exotic loudspeakers than the Spondors, as well as some outstanding minimonitors. I've played "The Magic Garden Song" countless times, as well as source material rich in spoken voice and singing. But since that day, nothing I could print here has been forthcoming from my wife but slammed bedroom doors and colorful pleas to lower the volume—until, that is, the Dynaudio Contour 3.0s arrived.

I first heard the Dynaudio Contour 3.0 loudspeakers earlier this year, at the 1998 International Consumer Electronics Show (ICES). They were being driven by a Krell FPB 600 stereo amplifier in a small room at the Alexis Park hotel. Even under the limitations of show auditioning—small rooms, talking, crowds walking in front of the speakers—I was impressed by the 3.0s' rich imaging, firm bass line, and natural-sounding male vocals. As *Stereophile* had just published a review by Wes Phillips of a larger Dynaudio speaker, the \$6999/pair Contour 3.3 (footnote 2), Wes who doubles as the magazine's equipment and review gatekeeper, blessed my request to review the 3.0. Within the month, Mike Manousselis, Dynaudio's director of sales and marketing, had shipped me the show pair—already broken-in.

My wife spoke up within a minute of my starting to play the Contour 3.0s. "That's a lovely clarinet," she called out from the bedroom, referring to Ross Powell's solo introduction on John Rutter's "The Lord is My Light and My Salvation" (from *Requiem: Five Anthems*, Reference Recordings RR-57CD). Clarinet music is important to her; she was concertmaster and first clarinet in her high school band. This got my attention. John Atkinson agrees that these spontaneous comments are meaningful. "I usually do my critical listening early in the morning," he said during the 1998 *Stereophile* Writers' Conference, "but I'm good for only about an hour." He reported that he finds reviewing to be tough, solitary work. Spontaneous comments from unbiased family members—"strongly disinterested" might be more accurate—can lighten the load. Besides, I'm happier when my wife likes the product I'm evaluating.

The object of her affection

The Contour 3.0, is a three-way reflex-loaded system that in many ways resembles the Contour 3.3. In his January review, WP described the bigger Dynaudio loudspeaker: "A narrow tower-style loudspeaker system in a plain if beautifully veneered cabinet, the Contour 3.3 has a straightforward driver array consisting of two 8" woofers, a single 5.25" midrange unit, and a 1.1" soft-dome tweeter." But besides being \$2000 cheaper, how else does the Contour 3.0 compare with the 3.3?

It has one less woofer than the 3.3, saving 5" in cabinet height. Its single 8" woofer employs a 3"-diameter voice-coil—1" smaller than the 3.3's—and a different, simpler crossover. Dynaudio also rates it 3dB lower in voltage sensitivity.

That's it. In all other respects, it is identical. For this reason, I will briefly describe the high points of the speaker's construction and refer the reader to Wes's excellent [review](#) for additional details.

- The Contour 3.0's build quality, fit'n'finish, and woodworking are superb—it's one of the most beautiful high-fidelity products I've ever reviewed. The bird's-eye maple veneer is a knockout, and clearly the work of master woodworkers. Each speaker pair is covered with sections cut from a single sheet of veneer; "assurances are made that all grain matches," states the product literature. The resulting cabinet is not only beautiful but solid, dense, and hard, implying an optimally braced, well-damped construction. Don't rap your knuckles too hard on the cabinet—it's like a rock.

- The Contour 3.0 uses a sophisticated woofer. Its cone is compounded of a magnesium polymer (MSP) material developed by the manufacturer to minimize partial driver oscillations. The rib of the

woofer's die-cast driver frame has been designed to eliminate reflections and tonal aberrations created by the traditional driver basket. The cone is controlled by a large 3" voice-coil working with dual magnets. (Dynaudio's Hexacoil voice-coils are constructed of lightweight aluminum wire coated with a thermoplastic material, wound onto a Kapton former, then treated to act as a solid mass for optimal stability, durability, density, and efficiency.)

- The tweeter uses a 1.1" soft-dome diaphragm. Dynaudio notes that the Contour's tweeter "features treated textile soft-dome diaphragms, Magnaflux- (magnetic-fluid-) cooled, hexagonally cut, pure aluminum wire voice-coils and heat-treated bobbins, and extra-large magnet systems."
- The Contour 3.0's crossover features first-order 6dB/octave slopes—said "to provide superb transient response and excellent phase integration of the drivers"—plus metal-foil polypropylene capacitors. Each driver is mounted in its own enclosure, these in turn set into the 1"-thick, multilayered MDF cabinet. The Contour's enclosure sits on a gray, 1"-thick base.

Footnote 1: *Paula and Carole in the Magic Garden*, CAP-1 (LP), CAP Productions, Inc., Box 101, Scarsdale, NY 10583.

Footnote 2: In January 1998, Vol.21 No.1.—**JA**

Speaker cables connect to the Contour 3.0 via two knurled brass binding posts at the lowest part of the cabinet's back panel, making it a bit hard to see the polarity markings on the terminals—unless you use a flashlight and get down on your hands and knees. There is no provision for biwiring. Although the 3.0 is equipped with a single jack for OCOS speaker wire, eliminating the need for terminating adaptors, my biwired OCOS cables would have required two jacks. As a result, I just used the cable's twin spade lugs, leaving the external OCOS adaptors in place. Spikes are provided for leveling the cabinets. These screw into threaded sockets in the 3.0's separate base. I used the rounded ends for coupling the speaker to my living-room floor's finished wood.

Setup

My listening room is large: 26' long, 13' wide, and 12' high, with a semi-cathedral ceiling. The back of the room opens into a 25' by 15' kitchen through an 8' by 4' doorway. The Dynaudios were set up 5' from the rear wall (faced with framed watercolors 8' from the floor) and approximately 30" from the side walls (faced with sliding equipment shelves).

I began my critical listening sessions seated 8' away from the Contour 3.0s. Then I moved back to my favorite listening distance of 18', which I found much more satisfactory. The Contour 3.0s were also auditioned in my 15' by 10' study, which is furnished with wall-to-wall carpeting, an area rug, and a couch. All listening tests were done with the port plugs removed.

Although the speakers had been broken-in at the CES, I broke them in further by playing my favorite rock selections—Fleetwood Mac's *The Dance* (Reprise 46702-2), and David Bowie singing "Putting Out Fire" from the *Cat People* soundtrack (MCAD-1498)—played for two hours at 104dB peak levels (footnote 3).

The Contour 3.0's average voltage-sensitivity rating (86dB/2.83V/m), its dipping impedance in the bass range, and my large listening room meant that I needed powerful solid-state amplifiers for this very enjoyable "break-in" session. Although the Contour 3.0 handled these levels without distortion, my Bryston 4B-ST clipped whenever Mick Fleetwood worked his kickdrum. This meant I was using the 4B-ST's full output—more than 250Wpc into 8 ohms. Switching to the bigger Bryston 7B-STs—the pair of them capable of 613W into 8 ohms and 954W into 4 ohms, according to Thomas J. Norton's tests (Vol.19 No.10, p.291)—ensured that the amplifiers weren't clipping, but now the sturdy Dynaudio woofers were "thudding" instead of playing kickdrum notes. Al Filippelli, President of Dynaudio USA, explained that the Contour 3.0's woofers "thud" when pushed through their full excursion because the pad on the inside of the cone strikes the pad on the speaker magnet's top plate. I was pushing them too hard—something the reader should avoid doing! Moving the 3.0s to the smaller listening room, I was able to play the same music at the same SPLs without clipping the amp or "thudding" the woofers.

Even so, I found that the Contour 3.0/Bryston 7B-ST monoblock combo delivered the best sense of pace; the deepest, best-defined bass notes; the widest and deepest soundstaging; and the strongest dynamic contrasts when driving the Contour 3.0 in my large listening room. It was a match made in heaven! Of course, the Contour 3.0's low distortion and lack of compression meant that its woofer could be easily overdriven by this 600Wpc amplifier. I had to restrain myself and keep the Krell KBL preamp's volume control set earlier than 12 o'clock—hard to do, because the sense of rhythmic pace got better and better the louder I played the 3.0.

Sound

Sweeping the Contour 3.0 with a signal from a sinewave generator revealed that its bass response extended down to 35Hz in my large listening room, with bass output rising at 40Hz. The speaker's port was free of any chattering sounds when driven hard by a 40Hz signal.

Despite the implications of this test, the Contour's reflex-loaded woofer delivered tight, defined bass notes that seemed to go at least 5Hz deeper while playing music. This was shown by its ability to handle the growling, sinister synthesizer on the "Main Title" track of the *Clear and Present Danger* soundtrack (Milan 35679-2), which reproduced as tight, well-defined, subterranean tones with no evidence of doubling. The organ-pedal notes at the beginning of Rutter's "A Gaelic Blessing" on *Requiem: Five Anthems* were full, dense, and solid. I used the rounded metal spikes to further tighten and define the Contour's bass response in my room. Contrary to my expectations, the spikes reduced the "trampoline" effect from the 3.0's baseplate sitting on my flexible wood floor, which otherwise tended to fatten the bass.

As good as it was, the Contour's bass response had its limits. The speaker did reproduce the church's "tremendous sense of space" JA describes in the notes to his recording of Elgar's *The Dream of Gerontius* on *Stereophile's Test CD 2*, but could not give the full weight to the organ-pedal chords that "underpin the work's tonal foundations." Inserting a new Velodyne FSR-18BV servo subwoofer into the system reinstated the full mass and heft of this lowest register, but also caused a subtle thickening in the midbass that I could not completely tame. Overall, I preferred the more natural and involving sound of the Contour 3.0 on its own.

Footnote 3: I measured the Contour 3.0s at 1m with my RadioShack Sound Level Meter set to its A-weighted, fast-response mode.

All of these previous experiences—my wife's comments, the resolution of fine background detail, the dead-on reproduction of the male chorus in the Rutter *Requiem*—led me to expect outstanding midrange performance when playing vocal music over the Contour 3.0. I was not disappointed. Odetta's close-miked vocal on "America the Beautiful" (*Strike a Deep Chord: Blues Guitars for the Homeless*, Justice JR 0003-2) was particularly startling: the Contour 3.0s projected a clear, three-dimensional holographic image of the singer, slightly forward and raised, and centered between the two loudspeakers. Her voice had a raw realism about it, with no compression or overload, and didn't overload the Contour 3.0; the accompaniment of piano, string bass, and brushed drums could be clearly heard.

Similarly, the Contours caught all the changes in tonality and timbre as Stevie Nicks varied her closeness to the microphone—sometimes too far away, sometimes too close—when singing "Landslide" on Fleetwood Mac's *The Dance*. No sign of unruly midbass resonances were evident on Willie Nelson's *Across the Borderline* (Columbia CK 52752). Bonnie Raitt's voice was very involving on their duet, "Getting Over You"—raspy, bittersweet, dark—while Nelson's voice sounded clear, nasal, and warm without being too overblown or tubby.

Harry Connick, Jr.'s voice singing "Don't Get Around Much Anymore" on the *When Harry Met Sally...* soundtrack (Columbia CK 45319) was just right: close-miked, focused, and tight. In addition, the Contour 3.0s allowed me to pick up a small amount of reverberation added to Connick's vocals—something I had never heard before, even on much more expensive loudspeaker systems.

Vocals sounded completely natural and realistic. Take the recently closed Paul Simon musical *The Capeman*, a recent Broadway show that was widely regarded to be a musical success but a theatrical failure. Simon has released the music on *Songs from The Capeman* (Warner Bros. 46814-2). Having heard the music live at two previews, I've used this CD as a test. Good systems can capture the subtle differences between the two male vocal leads—Ruben Blades' nasal, weary baritone and Marc Anthony's clear, youthful tenor—on the show-stopping "Time is an Ocean" duet. On lesser systems, the singers' voices blend, and it becomes difficult to determine who is singing. Not so with the Contour 3.0s, which brought out each singer's subtle vocal tonalities and timbre.

Richard Thompson's instrumental finish to "Why Must I Plead," from his *Rumor and Sigh* (Capitol CDP 7 95713 2), also benefited from the Contour 3.0s' holographic soundstage, which positioned his guitar's sonic image well to the right.

I found that, like the PMC LB-1 minimonitor I reviewed in the May '98 *Stereophile*, the Contour 3.0 sounded so involving and natural that I was swept into the music. Sherrill Milnes singing "Ah! Veglia, o donna, questo fiore" in Act II of Verdi's *Rigoletto* (London 414 269-2) was spellbinding, as the Contour 3.0s reproduced his rich, lustrous baritone against the broad background of the orchestral soundstage. On the same recording, they transmitted the young Pavarotti's joyous abandon and vocal power in the Duke's opening solo, "Questa o quella per me pari sona." The Contour 3.0s handled his final high note without compression or distortion.

What about the upper midrange and treble? Compared to the other dynamic loudspeakers under test, the Contour 3.0s were best at rendering the sense of the hall, soundstage, and depth of field on Chabrier *España*, from Classic Records' remastering of the Mercury Living Presence LP of the same name (SR90212) (footnote 4). The clarity and three-dimensional realism of the three triangle notes that open the *Pastorale* selection from that disc were so realistic and clear that they startled me. The Contours also did better than the comparison speakers in revealing the reverberation on Maggie Boyle's soprano on James Horner's *Patriot Games* soundtrack (RCA 66051-2), and brought out the flute and delicate plucked-string sequence over the *forte* 35Hz synthesizer notes. The bells and percussion notes in the opening of Stevie Nicks' "Silver Springs," from Fleetwood Mac's *The Dance*, were transparent, lilting, and clean.

Finally, the Contour 3.0 was outstanding in its ability to deliver the pace and drive of music. I heard it in highly rhythmic orchestral pieces, such as Gliere's vivid, exciting *Russian Sailors' Dance* on Frederick Fennell's *Beachcomber: Encores for Band* album (Reference RR-62CD), and it was evident in recordings of opera vocals. Though I love the melody of "Gualtier Maldè...Care nome," another aria from *Rigoletto*, Joan Sutherland's scales in this piece seemed excessively done on the comparison loudspeakers. Over the Contour 3.0s, her holographic image and wonderful rich soprano were entrancing, and communicated her ecstasy as she fell in love with the Duke of Mantova. This happened even with rock music. The Contour 3.0 fully captured the slow, languorous, dreamy introduction of David Bowie's "Putting Out Fire" on the *Cat People* soundtrack, then exploded into the pulsating driving force of kickdrum, synthesizer, and bass guitar as Bowie began singing "Putting out fire with gasoline."

Conclusion

At \$4999/pair, the Contour 3.0 should be a carefully considered investment. It should be auditioned against the other high-end, high-performance, beautifully crafted, three-way loudspeakers that have made it into *Stereophile's* "Recommended Components": the Aerial Acoustics 8 (\$5000/pair), the NHT 3.3 (\$4300/pair), the ProAc Response 2.5 (\$4500/pair), and the [Thiel CS3.6](#) (\$4300/pair). Like most of these systems—the Thiel CS3.6 and the ProAc 2.5 in particular—the Contour 3.0 benefits greatly from careful matching with a very powerful amplifier. Of course, this will add even more to the cost of ownership.

As with all audio products, the Contour 3.0 has its limitations. Its bass response, while tight and solid, doesn't reach down to 20Hz. Though its lack of coloration allows it to capture the human voice better than most speakers at any price point, it doesn't have the sheer transparency of a Quad ESL-63. Its average voltage sensitivity and tendency to "thud" when driven at high levels by a very powerful amplifier in a big room means that a larger loudspeaker system—like Dynaudio's Contour 3.3—is better for such applications.

All that said, Dynaudio's Contour 3.0 does so many things so well—when driven by an amplifier with the Bryston 7B-ST's power and control—that it is *the* dynamic loudspeaker to beat in the \$5000/pair price range. Its rhythmic drive, dynamic range, low distortion, and bass definition inject the listener with the energy of a live rock concert. Its ability to involve the listener in the music is simply awesome. The cabinet work, fit'n'finish, and sturdiness are second to none. The realism of spoken voice and vocal music over the Contour has to be heard to be appreciated—I know of no better loudspeaker for such material.

My wife was on to something special when she noticed the clarinet playing over the Dynaudio Contour 3.0, and I have to thank her for it. This loudspeaker does so many things sonically right that it has become my reference for a floorstanding, full-range, three-way dynamic system. I strongly recommend it for any high-end audio system, for both the audiophile and his or her spouse. Not only is it one of the most beautifully made loudspeakers you can buy, it just might do for you what it did for me: reinvolve you with the music in your CD or vinyl record collection. That's what I've been doing for the last few weeks, and it's been a wonderful experience.

Footnote 4: Classic Records' vinyl remasterings are available through Classic Music Distribution at (800) 457-2577, or by writing to Classic Records, 1444 N. Highland Ave., Hollywood, CA 90028.

Sidebar 1: Specifications

Description: Three-way, floorstanding reflex-loaded loudspeaker. Drive-units: 1.1" (28mm) cloth-dome tweeter with Magnaflux-damped, aluminum-wire voice-coil; 5.25" (150mm) magnesium-silicate polymer (MSP) one-piece midrange driver with a 1_H" (38mm) aluminum voice-coil and a dual-magnet system; 8" (200mm) MSP one-piece woofer driver driven by a 3" (75mm) aluminum-wire Hexcoil/Kapton voice-coil in conjunction with dual magnets. Woofer reflex-loaded at 30Hz, foam port

plugs provided. Crossover frequencies: 400Hz, 2.3kHz. Crossover slopes: first-order, 6dB/octave. Frequency response: 28Hz-21kHz, ± 3 dB. Sensitivity: 86dB/2.83V/m. Impedance: 8 ohms nominal, 3.4 ohms minimum. Minimum amplifier requirements: >65W, medium-size rooms; >125W, large rooms. **Dimensions:** 46.7" (1168mm) H by 8.7" (218mm) W by 14.4" (360mm) D. Weight: 75 lbs (34kg) each.

Finishes: cherry, rosewood, black ash, or walnut real-wood veneers; bird's-eye maple, add \$750/pair.

Serial numbers of units reviewed: 825351 & 52.

Price: \$4999/pair. Approximate number of dealers: 51.

US Distributor: Dynaudio North America, 3043 N. Rose St., Franklin Park, IL 60131. Tel: (847) 288-1767. Fax: (847) 288-1853, (888) 396-2834.

Sidebar 2: Associated Equipment

Vinyl was played on a Linn Sondek/Lingo/Ittok/Sumiko setup. My digital source was an Adcom GDA-700 D/A processor driven by a Krell MD-1 transport via a 75 ohm Silver Starlight digital coaxial cable. The Day-Sequerra FM Reference Classic, Rotel RH-10, Magnum Dynalab MD-108, and Fanfare FM-1 stereo tuners provided music from WQXR, our local New York classical FM station. Pre-amplification was provided by a long-discontinued Krell KBL for CDs, and a Mark Levinson ML-7A with Duntech MX-10 head amplifier for LPs. Power amplifiers included a Bryston 4B-ST, a pair of Bryston 7B-ST monoblocks, and a Mark Levinson No.331.

Interconnects were balanced Krell Cogelco Yellow cables. Speaker cables included a biwired set of Sumiko OCOS or a set of biwired QED Qudos Profile 8 cables. The comparison loudspeakers included a pair of Quad ESL-63 USA Monitors hung in Arcici stands, and Chario Academy 1s and Totem Acoustic Model 1 Signatures used on Sumiko Franklin & Lowell stands. All amplifiers were plugged into a 200A AC outlet.—**Larry Greenhill**

Sidebar 3: Measurements 1

The Dynaudio Contour 3.0's voltage sensitivity was to specification at 86dB(B)/2.83V/m; as LG notes, this is below average for a dynamic speaker (footnote 1). However, it draws quite a lot of current from the partnering amplifier to achieve this sensitivity, as can be seen from its plot of impedance magnitude and phase against frequency (fig.1), measured with an Audio Precision System One. The impedance reaches a minimum value of 3.5 ohms at 100Hz and remains below 8 ohms over almost the entire audio band. The saddle between the twin peaks in the bass in this graph indicates that the 2"-diameter reflex port is tuned to a low 32Hz.

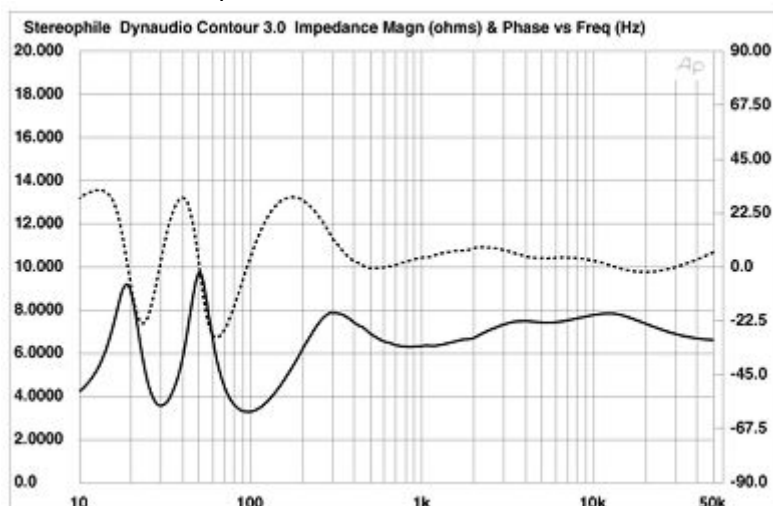


Fig.1 Dynaudio Contour 3.0, electrical impedance (solid) and phase (dashed) (2 ohms/vertical div.). As Larry didn't audition the speakers with the foam plug in the port—Wes Phillips found the Contour 3.3 to sound too lean this way—I measured the speaker with the port unblocked, using DRA Labs MLSSA system and a Mitey Mike II microphone. The result can be seen on the left of fig.2: the port's output is the well-defined bandpass centered on its tuning frequency of 32Hz, and is free from organ-pipe resonances; and the woofer output starts to roll off an octave higher, while the complex sum of the woofer and port outputs (top trace) peaks a little in the midbass. There is somewhat of a depression in the lower midrange; partly this will be due to the nearfield technique I use to make these

low-frequency measurements, but it also showed up in some farfield responses.

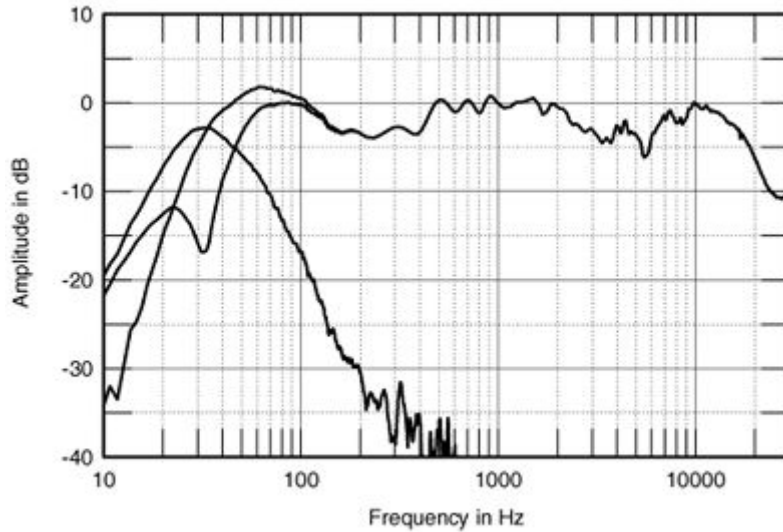


Fig.2 Dynaudio Contour 3.0, anechoic response on tweeter axis at 50", averaged across 30 degrees horizontal window and corrected for microphone response, with complex sum of the nearfield midrange, woofer, and port responses plotted below 300Hz.

Higher in frequency (and measured using a calibrated B&K 4006 microphone), the Dynaudio has a slight but broad peak in the upper midrange. Depending on the music, this might also be perceived as slight lacks of energy in the lower midrange and presence region. However, as can be seen from the graph showing the speaker's lateral dispersion (fig.3), the off-axis behavior goes a long way toward compensating for the on-axis aberrations. In a typical room, the balance throughout the midrange and mid-treble might well be perceived as flat. However, the soft-dome tweeter does have limited dispersion in its top octave; as the on-axis response isn't exaggerated in this region to compensate, the speaker might sound too mellow in overdamped or very large rooms.

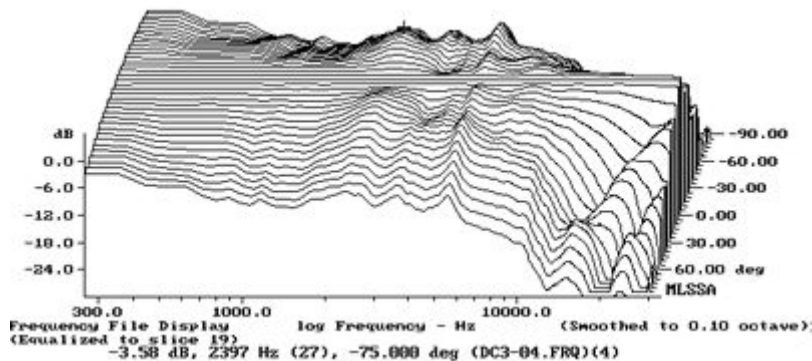


Fig.3 Dynaudio Contour 3.0, horizontal response family at 50", normalized to response on tweeter axis, from back to front: differences in response 90 degrees-5 degrees off-axis; reference response; differences in response 5 degrees-90 degrees off-axis.

Footnote 1: When I analyzed the data I had collected on the more than 350 loudspeakers I had measured up to June 1997 to prepare a paper for the Audio Engineering Society ("Loudspeakers: What Measurements Can Tell Us—And What They Can't Tell Us," AES Preprint 4608, presented at the 103rd AES Convention, New York, September 1997 and reprinted in somewhat different form as "Measuring Loudspeakers" in *Stereophile*), the mean B-weighted sensitivity was 88dB(B)/2.83V/m, with a median value of 85dB(B).— **JA**

Measurements 2

The vertical dispersion plot (fig.4) shows the *changes* in response as the microphone is moved above or below the tweeter axis. The slight suckout in the mid-treble can be seen to fill in for listeners who sit with their ears slightly below the tweeter's 37" height from the ground. Conversely, the suckout deepens for standing listeners.

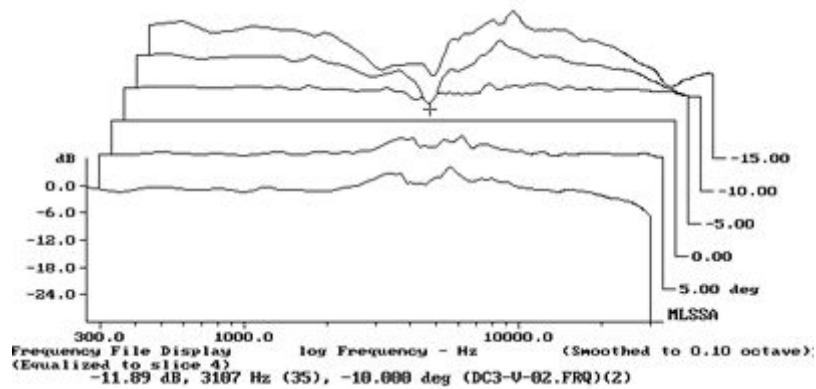


Fig.4 Dynaudio Contour 3.0, vertical response family at 50", normalized to response on tweeter axis, from back to front: differences in response 15 degrees-5 degrees above HF axis; reference response; differences in response 5 degrees-15 degrees below HF axis.

The Dynaudio's step response (fig.5) is typical of a flat-baffle design in that it is not time-coherent, despite the use of first-order crossovers. And, in fact, closer inspection reveals that while the tweeter and woofer are connected with positive acoustic polarity, the midrange unit inverts polarity. Not too much should be made of this, but it does lead me to suspect that the measured lack of lower-midrange energy is crossover-related, and, in turn, that this lack will be more audible in drier, smaller rooms.

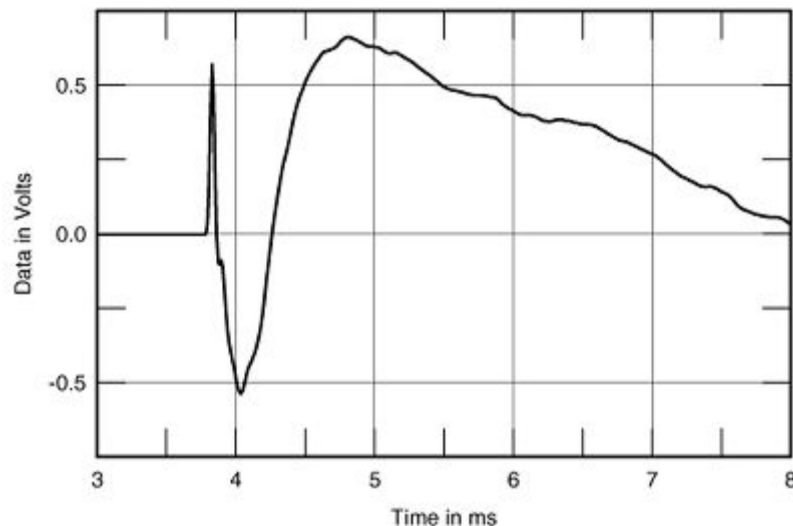


Fig.5 Dynaudio Contour 3.0, step response on tweeter axis at 50" (5ms time window, 30kHz bandwidth).

The Contour 3.0's cumulative spectral-decay or waterfall plot (fig.6) is fundamentally clean, but a slight ridge of delayed energy can be seen at the cursor position, 1.5kHz. This is probably low enough not to have any subjective consequences other than at very high levels, when it might add a bit of hardness to the sound.

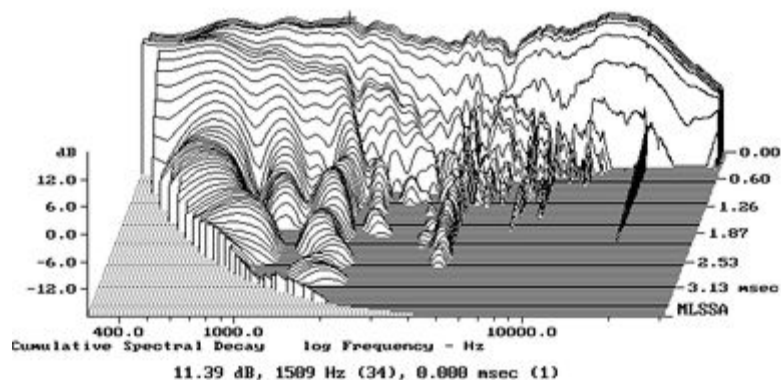


Fig.6 Dynaudio Contour 3.0, cumulative spectral-decay plot at 50" (0.15ms risetime).

Finally, LG commented on the Dynaudio's rocklike construction. I used a simple plastic-tape

accelerometer to examine the cabinets' vibrational behavior. Despite its large panels, what resonances there were had been pushed up high in frequency by the rigid internal construction, minimizing their audibility. For example, fig.7 shows a waterfall plot calculated from the accelerometer's output when it was fastened to the sidewall 8" from the top. The only detectable mode is very high in frequency, just under 500Hz, and is low in level. This is excellent cabinet design.—**John Atkinson**

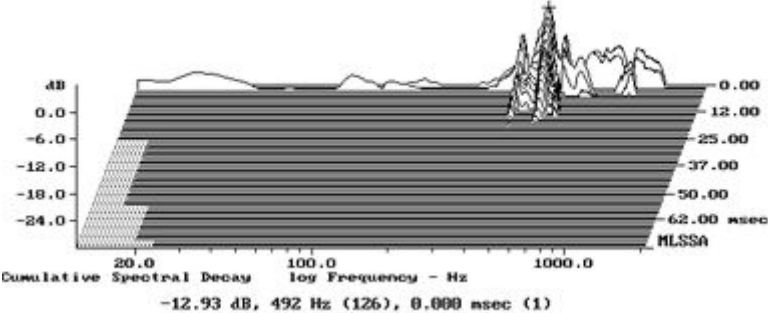


Fig.7 Dynaudio Contour 3.0, cumulative spectral-decay plot of accelerometer output fastened to cabinet back wall above crossover panel. (MLS driving voltage to speaker, 7.55V; measurement bandwidth, 2kHz.)