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HERB REICHERT

# Manger p1

## LOUDSPEAKER

Everyone who reads my loudspeaker reviews knows: I wish box speakers did not sound like box speakers. Plus! I wish all speakers sounded focused and transparent like LS3/5a's or vintage Quads. I also want them to be uncompressed and play large, with window-shattering power and floor-shaking bass. And while I'm wishing . . . I'll take a little glow and sparkle and voodoo magic as well.

Unfortunately, few loudspeakers do all that. And the ones that *can* cost crazy cash.

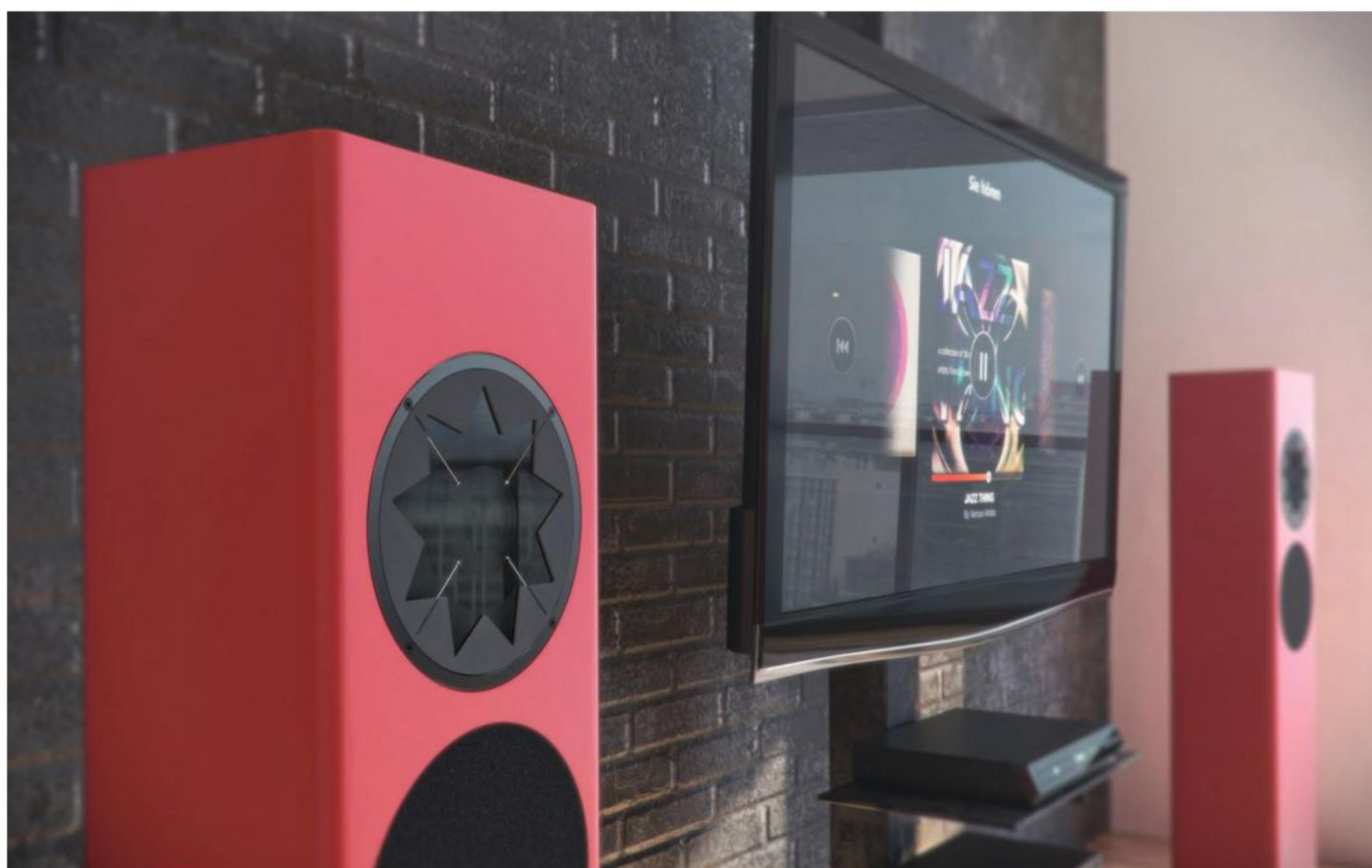
But there might be hope.

I have discovered a radically engineered floorstanding speaker that maybe, just *maybe*, does a lot of all that—for a lot less than crazy cash. That speaker is the Manger p1, manufactured in Mellrichstadt, Germany. It costs \$14,995/pair to \$18,995/pair, depending on finish.

### The Manger sound transducer

**1925:** General Electric engineers Chester Rice and Edward Kellogg introduced their radical “Hornless Loudspeakers,” which featured a conical paper diaphragm attached to a coil of wire energized by a large magnet structure.

**1968:** Vexed by what he perceived as the inherent limitations of loudspeaker cones, Manger Audio's founder, Josef Manger (1929-2016), began developing a new coneless type of loudspeaker driver. His first finished design—a flat, low-mass, wide-bandwidth, multilayered, impregnated-textile



disc—appeared in 1974. Manger described this membrane-like disc as “highly elastic in its plane but inelastic in bending.”<sup>1</sup> Unlike most loudspeaker drivers, the diaphragm of the Manger Sound Transducer (MST) does not operate pistonicly. Instead, voice coil excitations generate transverse waves along its flat surface, like ripples in a pond.

Manger described the goal of his research as “[minimizing] time-delaying energy storage during the transformation of the electrical form of energy into the mechanical form.” His daughter, Daniela Manger, who now serves as Manger Audio's chief engineer and CEO, explained via email that “the rigidity of this thin flexible diaphragm decreases from the center to the outside at an equal ratio, similar to the basi-

<sup>1</sup> See [mangeraudio.com/en/discover/about/acoustical-reality](http://mangeraudio.com/en/discover/about/acoustical-reality).

## SPECIFICATIONS

**Description** Two-way floorstanding loudspeaker. Drive-units: Flat Manger Sound Transducer (MST), 8" (200mm) carbon-fiber/paper sandwich-cone woofer in sealed enclosure. Crossover frequency: 360Hz. Frequency range: 40Hz-40kHz. Impedance: 4 ohms. Sensitivity:

89dB/W/m. Max SPL: 106dB peak. Recommended power: 50-200W.

**Finishes** Satin, wood veneer, or high gloss.

**Dimensions** 44.8" (1139mm) H by 10.6" (270mm) W by 8.4" (214mm) D. Weight: 61.7lb (28kg).

**Serial numbers of samples**

**tested** 16149/16150

**Price** \$14,995/pair for satin finishes, \$17,495/pair for wood veneer finishes, \$18,995/pair for high-gloss finishes.

**Manufacturer** Manger Audio  
Hendunger Strasse 53,  
97638 Mellrichstadt,

Germany

Tel: (49) 9776 9816.

Web: [mangeraudio.com](http://mangeraudio.com).

US distributor:

MoFi Distribution,  
1811 W. Bryn Mawr Avenue,  
Chicago, IL 60660.

Tel: (312) 738-5025.

Fax: (312) 433-0011.

Web: [mofidistribution.com](http://mofidistribution.com).



lar membrane in our ear. High frequencies expire quickly in the inner area of the membrane, while lower frequencies move concentrically to the edge; where they encounter a matched termination and, a star-shaped absorptive damper; which, prevent reflections from returning from the edge.”

The Manger website claims the MST’s bandwidth is 80Hz–40kHz, with a voltage sensitivity of 89dB/W/m and a rise time of 13µs. The website also suggests that the MST “represents a frequency-independent impedance for the driving force. . . . It behaves like an ohmic resistance in a power circuit.”

After pestering Daniela Manger to tell me exactly what the MST’s membrane is made of, she sent an explanation: “It is a three-layer sandwich, two very thin outer foils and in between there is a plastic with special properties. The recipe was developed by my father and we manufacture the plastics in our own factory.”

The Manger website describes another interesting Josef Manger innovation: a single voice-coil that is really “Two voice-coils (on one former), mounted mechanically in series and switched electrically in parallel.” According to Ms. Manger, this produces a long but “extremely light” 70-mm driving coil capable of ±3.5 mm of displacement, with a total weight of only 0.4 grams. Manger’s dual-coil voice-coil is energized by “no less than 15 neodymium magnets concentrating their magnetic field of 1.32 Tesla on an air gap of only 0.95 mm width.”<sup>2</sup>

According to Ms. Manger, “My father realized about 50 years ago, that a musical instrument reproduced by a cone loudspeaker does not sound natural. The Manger driver was developed because he realized: the problem is not in the

frequency domain but in the time domain.”

### The Manger p1 loudspeaker

The current Manger lineup consists of three two-way floorstanding models: one active (the s1) and two passives (the p1 reviewed here and Manger’s flagship passive, the p2). The company also makes two standmount monitors, one active, one passive.

In the slender p1, the MST is loaded by an 8-liter sealed subenclosure and is crossed over at 360Hz to an 8" carbon fiber/paper sandwich bass driver, residing in its own larger sealed enclosure. The p1 cabinet measures 44.8" tall by 10.6" wide by 8.4" deep and weighs 61.7lb. It is available in an almost infinite variety of colors and finishes including various shades of matte or gloss finishes or wood veneer. My review samples were in a Makassar ebony matte finish.

### Setup

When they arrived, I plunked the fresh-from-the-box but well-used Manger p1s in those spots where most loudspeakers sound the least boomy in my room: facing forward, about 7' apart, and 30" from the front wall. In that position, the p1s sounded smooth and well-focused, but there was a conspicuous, music-spoiling hole in the frequency response—right around 100Hz. Below 100Hz, bass was rolled off.

I sent a worried-sounding email asking Daniela Manger how she recommended positioning them.

“Our recommendation for setup is: The distance between speakers should be 9 feet maximum. The distance from the

<sup>2</sup> See [mangeraudio.com/en/discover/history](http://mangeraudio.com/en/discover/history).

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wall behind should be 2.3 feet or larger. It can be closer (however), as the speaker is sealed and tuned with a low Q, so the increase of bass with a closer distance works without getting boomy. Listening position can be very close as the Manger driver already radiates in far-field behaviors at around 0.45 feet. We recommend a toe-in with the drivers crossing about 1.6 feet in front of your listening position. This gives you a very precise three-dimensional image which is absolutely [stable].”

Daniela’s words gave me permission to move the p1s closer to the wall behind them. As I inched the speakers back, the bass region began to fill in. In my final position, with the speakers about 6' apart and only 12" from the cabinet-backs to the front wall, Frank Sinatra’s voice (LP, *In The Wee Small Hours*, Capitol W581) and Vladimir Horowitz’s piano (44.1 FLAC, *Horowitz at Home*, Deutsche Grammophon/Tidal) displayed their proper tone. My Stereophile test CD and trusty iPhone dB meter verified that 50, 100, 1k, and 5kHz were all reproduced at the same level.

The Manger p1s are equipped with double pairs of WBT next-gen binding posts and thus are biwireable and biam-



pable. The majority of my listening was done biwired with AudioQuest Rocket 33 loudspeaker cables.

### Listening with the Rogue Stereo 100

Because the Manger p1s are built in Germany, I assume they’ll play Bach and Beethoven—but when I think of Germany today, I think of *Elektronische Musik*: a genre that sounds especially good on giant horn speakers but is not as well-suited to those little British monitor speakers I use as references.

Since my art school days, I’ve been a fan of what Germans call *kosmische musik* (cosmic music) and the British call Krautrock. It’s an ex-

perimental art-music genre, inspired by Karlheinz Stockhausen, that emerged from the student rebellions of the 1960s and is associated with groups like Can and Faust. Despite its avant-garde character, this music has remained popular and evolved into what I perceive as a sophisticated reimagining of German Romanticism. Typically, cosmic music consists of operatic sound collages featuring dense droning synthesizers, modified instrumental sounds, and myriad forms of circuitry-based soundmaking technologies. *Kosmische musik* is brainy and head-trippy.

## MEASUREMENTS

I used DRA Labs’ MLSSA system and a calibrated DPA 4006 microphone to measure the Manger p1’s frequency response in the farfield, and an Earthworks QTC-40 mike for the nearfield responses.

When I picked up the Manger speakers from Herb Reichert, he told me that he suspected that the p1’s sensitivity was lower than the specified 89dB/W/m. My estimate was indeed lower, at 85.6dB/2.83V/m. Manger specifies the impedance as 4 ohms, which would mean that the p1 is actually drawing 2W from the amplifier with a 2.83V signal. The solid trace in fig.1 shows that the impedance is close to 4 ohms in the bass and lower midrange, but is greater than 6 ohms in the upper midrange and treble. The minimum magnitude is 3 ohms between 200Hz and 250Hz, where music can have high levels of energy, and there is also a combination of 4.4 ohms magnitude and 38° electrical phase angle (dotted trace) at 400Hz.

The amplifiers used with the Manger speakers need to be comfortable driving 4 ohms and below.

I suspect that the ripples in the impedance traces between 600Hz and 4kHz are associated with the unique bending-wave drive-unit rather than with panel resonances. When I investigated the enclosure’s vibrational behavior with a plastic-tape accelerometer, I found moderately high resonant modes at 215Hz and 328Hz

on the back panel and sidewalls (fig.2). However, these modes have a high Q and the affected areas are small, meaning that they might not give rise to audible congestion in the midrange.

The impedance magnitude trace doesn’t have the expected peak in the bass that would indicate the sealed-box tuning frequency of the woofer. Concerned that there might have been something wrong with this sample (serial number p16150), I checked the

Stereophile Manger MSSP1 Impedance (ohms) & Phase (deg) vs Frequency (Hz)

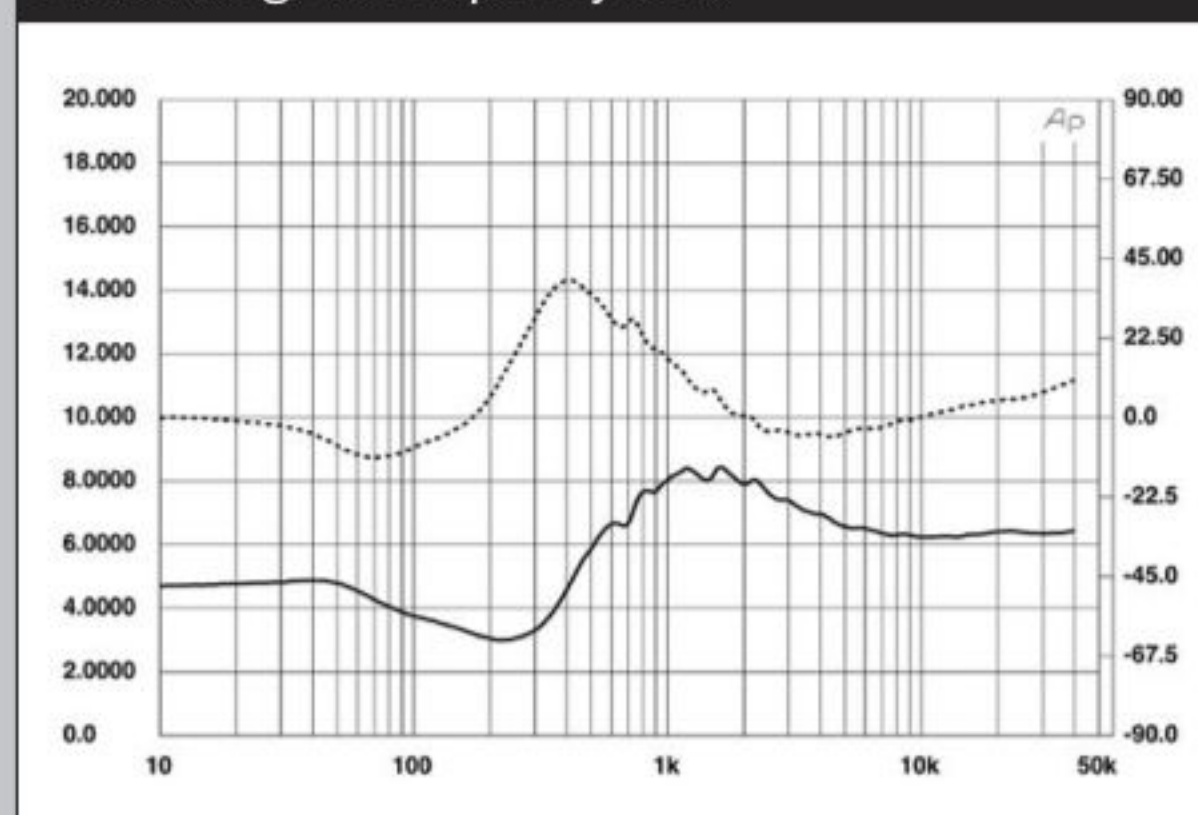


Fig.1 Manger p1, electrical impedance (solid) and phase (dashed) (2 ohms/vertical div.).

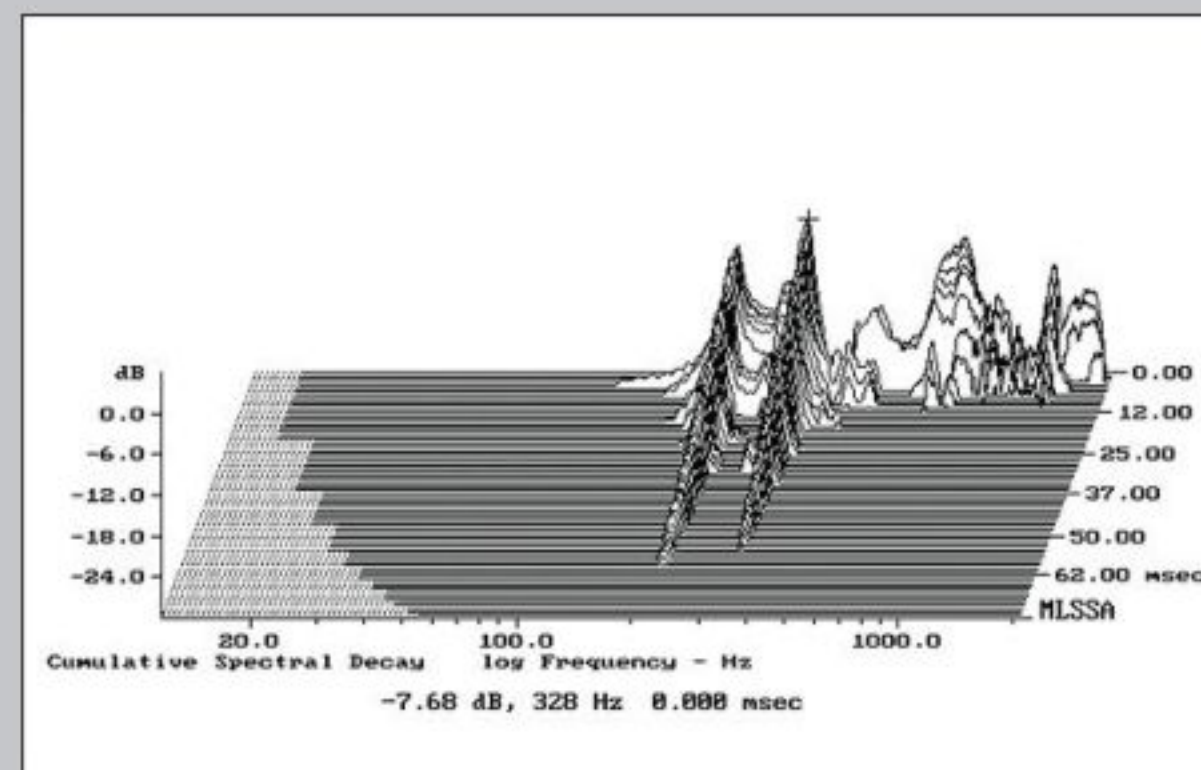


Fig.2 Manger p1, cumulative spectral-decay plot calculated from output of accelerometer fastened to center of sidewall level with woofer (MLS driving voltage to speaker, 7.55V; measurement bandwidth, 2kHz).



My initial listening with the Manger p1s suggested they might be able to reproduce the enormous scale and antibourgeois zeitgeist of one of my favorite cosmic bands, KMFDm (which stands for *Kein Mitleid für die Mehrheit*, or No Pity for the Majority).

KMFDm's signature song, "Salvation," always sounded pretty good on the DeVore Fidelity Orangutan O/93s, which got the tones and texture right. And it always sounded a little better on the Zu Audio Soul Supremes, which played at the necessary loudness levels. But neither speaker delivered the penetrating high resolution this composition requires—yet in my small room, the 100Wpc Rogue Stereo 100 tube amplifier (\$3499), operating in Ultralinear mode, allowed the Mangers to play "Salvation (Mindless Self-Indulgence Remix)" at 96dB peak/86dB average (c-weighted, measured from 2m away) with undistorted, unfatiguing, ear-pleasing ease—and high resolution.

I spent my entire first day with the p1s playing KMFDm, Can, and Faust's signature album *j US t* (44.1/16 FLAC, Bureau B/Tidal). The Mangers did this way better than my Brit-boxes: The p1s delivered exquisite high-energy, high-tactility soundfields that flaunted these bands' potency and intelligence.

KMFDm and Faust led me naturally to *I Put A Record On* (44.1 FLAC, Monica Enterprise/Tidal), the 2007 debut album by Gudrun Gut, Germany's art-music counterpart to America's Laurie Anderson. *I Put a Record On* is a record about liking records; beyond its art-school roots, the album employs danceable Roland TR-808-type beats and catchy, almost hummable melodies. But! Gut's keen intellect avoids any type of pop/electronic dance music pandering. On "Pleasuretrain," the Manger p1s did a fine job portraying the complexity of layered synth tones, rolling force, and theatrical scale of Gudrun's exquisite *Kunst(t)räume*.

With the Rogue Stereo 100 amplifier, I played this album louder than I have ever played any music in this room, with no distracting distortions. At the highest volumes, sound stayed clear and easy on the ears, with full, naturally damped bass.

A visiting audiophile friend saw the Manger p1s and asked how they sounded. I told him: "Like Quad ESL-63s—with more bass and dynamics!"

### Listening with the Pass Labs XA25

The first thing I noticed when I installed the 50Wpc Pass Labs XA25 amplifier (\$4900) was how *quiet* the Manger p1s sounded. This quiet I experienced was not about the signal-to-noise ratio of the Pass Labs amp, nor was it about the Mangers' lack of cabinet vibrations or port noise. It was about the Manger p1's conspicuous absence of that scratchy, tinnitus-like "cone noise" that shadows the upper-midrange and presence region of most two-way dynamic speakers. This lack of cone noise is more of a normal state in planar magnetic speakers. But, to my surprise, the Manger Sound Transducer was even quieter than my Magnepan .7s, which are my in-house reference for quiet.

When scratched or struck by a drumstick, every material generates its own resonant sound. (Think cast bronze bell *vs* molded clay bell.) Therefore it stands to reason: The material composition of the Manger Sound Transducer is likely the prime cause of its conspicuous quiet. The MST's plastic sandwich does not ring or resonate like hard paper, Kevlar, or aluminum; consequently, it does not impart a false liveliness. Instead, in my room, it did the inverse: The Manger driver contributed a barely noticeable dull or damped-sounding undertone that imparted a sense of restrained refinement to every recording I played.

The second thing I noticed with the Pass Labs XA25

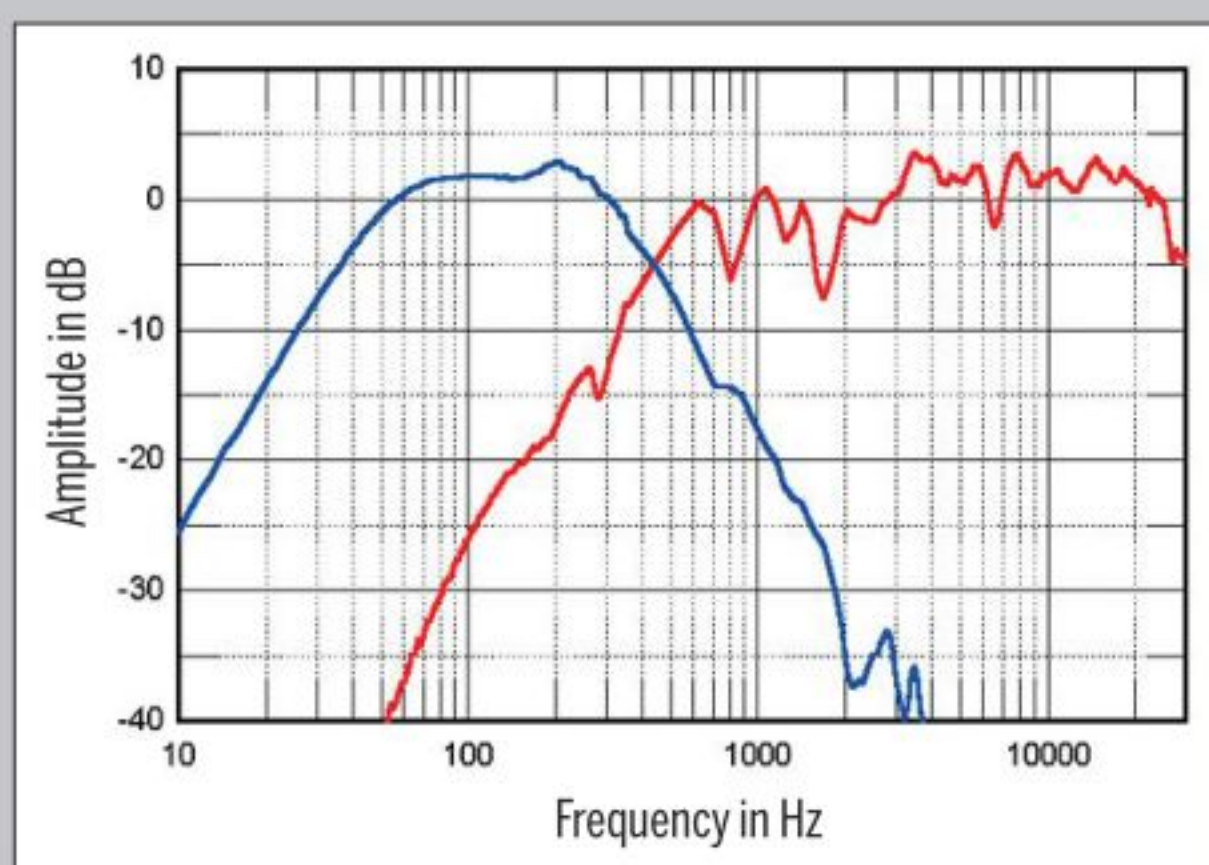
### measurements, continued

impedance of the other speaker of the pair (p16149)—it was identical. The blue trace below 350Hz in fig.3 shows the woofer's output, measured in the nearfield. It shows that the woofer rolls off below 50Hz with the expected second-order slope, but there is no sign of the exaggerated upper-bass output that is usually associated with a nearfield measurement. It appears that the p1

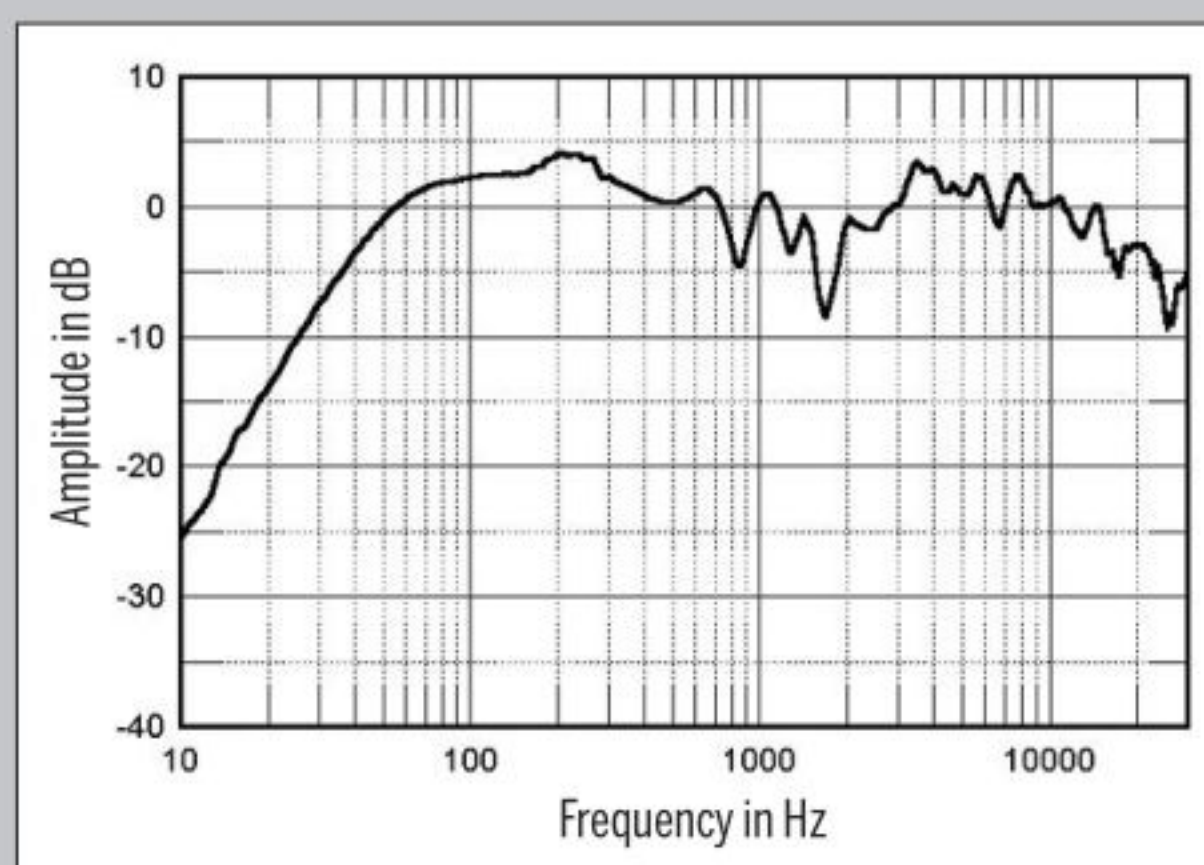
uses conjugate load matching in the bass to reduce variations in impedance magnitude and phase angle. The sealed box's in-room output will be greater below the woofer's tuning frequency than with a comparable reflex alignment.

The woofer's farfield output (blue trace above 350Hz) crosses over to the bending-wave driver (red trace) a little higher than the specified 360Hz,

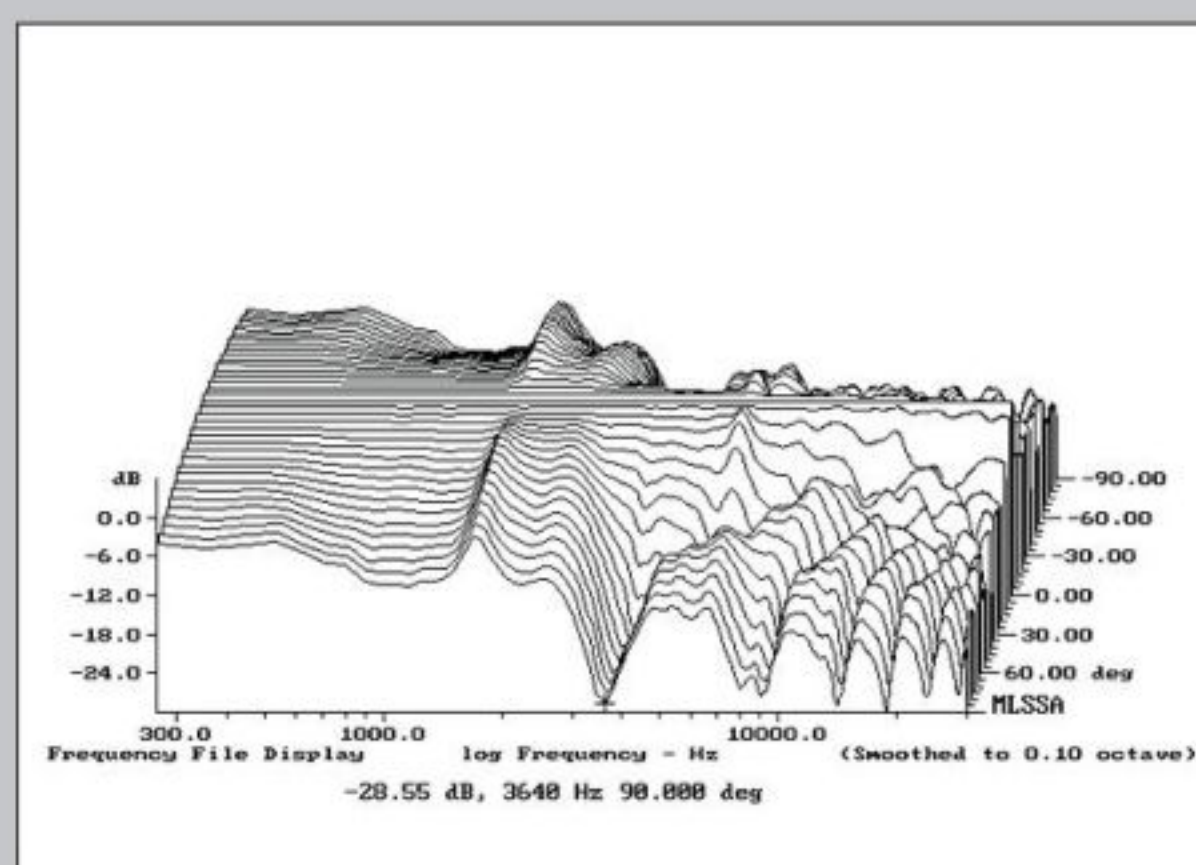
but its high-frequency rolloff is smooth. The high-frequency drive-unit's output is disturbed by small peaks and suck-outs, but it looks as if a basically even response consists of two plateaus, one in the upper midrange and low treble and the other 2dB higher in the upper octaves. By contrast, the Mangers' farfield response, averaged across a 30° horizontal window centered on



**Fig.3** Manger p1, acoustic crossover on HF-driver axis at 50°, corrected for microphone response, with nearfield midrange (red) and woofer (blue) responses plotted below 350Hz.



**Fig.4** Manger p1, anechoic response on HF-driver axis at 50°, averaged across 30° horizontal window and corrected for microphone response, with the complex sum of the nearfield midrange and woofer responses plotted below 300Hz.



**Fig.5** Manger p1, lateral response family at 50°, normalized to response on HF-driver axis, from back to front: differences in response 90°-5° off axis, reference response, differences in response 5°-90° off axis.



driving the p1s was a touch of solid-state dryness exposed by the profound transparency of the Manger-Pass alliance. Transparency is the XA25's greatest virtue, and never was said trait more obvious than when coupled to a speaker that disappeared the way the Mangers did. (The XA25 made the Mangers sound even more like Quad 63s than the Rogue tube amp.)

The full nature of this Pass Labs XA25/Manger p1 transparency was exposed when I played two versions—one vocal, the other instrumental—of Carlos Gardel's "Malena" and the epic "Nublado" from *Será una Noche 45 rpm* (45rpm EP, M•A Recordings MO52AV). This disc is surely one of recordist/record producer Todd Garfinkle's finest accomplishments. "Nublado" was recorded in the Gándara Monasterio church in the Argentine countryside, approximately two hours outside Buenos Aires.

The space inside that Argentine church and Todd's group of six performers were captured to perfection with a pair of Brüel & Kjær 4006 spaced-omni microphones. This hauntingly pure recording was reproduced in vivid 70mm CinemaScope by the Manger transducers. Think saturated tone-colors and precisely outlined, near-life-size images. Performers on the soundstage were more specifically positioned than with my reference image mappers, the Harbeth P3ESR and Falcon LS3/5a.

Interestingly, on this recording, my reference Harbeth M30.2 loudspeakers generated a starker sound and a more conspicuous presence in the room. Their box and tweeter flagged their locations.

Compared to the Mangers, the Harbeths' description of the church acoustic was drier, less airy and sensual. With

the 30.2s, performers seemed closer to the microphones. With the Mangers, I did not *sense* the microphones at all. I was aware only of the vast, resonant church space they had captured.

With the 30.2 monitors, bass on *Será una Noche* was tight, bright, rhythmic, and 100% clear—but less generous and extended than the Mangers'. The p1's bass felt darker, denser, higher-Q, but more emotionally satisfying.

#### Listening with Bel Canto e.One REF600Ms

To start, I used a high-power class-AB tube amp (the Rogue Stereo 100). Then I switched to a low-power class-A solid-state amp (the Pass Labs XA25). Now it's time to see how the Manger p1s respond to 600W (into 4 ohms) of class-D power, from the Bel Canto e.One REF600M monoblocks.

In less than a minute, I realized the Manger p1s had been thirsting for power. (I am not buying Manger's 89dB/W/m sensitivity rating. I am guessing 87dB *at best*.) With the Bel Canto monoblocks, *Será una Noche 45rpm* felt superalive and well-sorted, but also less three-dimensional, textured, and easy flowing than with the Pass Labs XA25. The Bel Cantos made the p1s more dynamic but less radiant than with the Rogue Stereo 100.

Bass beats and plucked rhythms were more noticeable and enjoyable in class-D. With the REF600Ms, the Mangers' giant soundstage was reduced in volume but clearer and more brightly lit. With the Mangers, the Bel Canto's brilliance was especially notable when compared to the Rogue amp, which in Ultralinear mode was distinctly dark. Overall, the Bel Canto REF600M seemed to enhance the Mangers' inherent quietude and propensity for dynamic expression.

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### Manger (with Schiit Aegir)

I did not see this coming: I had just tried the 22Wpc Line Magnetic LM-518IA amplifier (\$4450), and it made the Manger p1s sound like a stretch limo with a 4-cylinder engine. Likewise, the Stereo 100 in triode mode produced a kind of underpowered *meh* effect. Therefore, I had small hopes for what the 40Wpc (into 4 ohms) Schiit Aegir amplifier (\$799) might do. But dang me over and over if the two did not dance like Fred and Ginger. The Mangers sounded positively luxurious with the “class-A-like” Aegir, to borrow Schiit Audio’s Jason Stoddard’s phrase. The \$15k Mangers made the \$800 Schiit amp sound more refined and sophisticated than it had with any other speakers. In turn, the Schiit amp made the Mangers sound rich and flavorful. Unfortunately, the Aegir-Manger combo was a little short on headroom. Therefore, I’d probably need *two* Aegirs (each operating in mono) to enjoy the pairing.

### Now that they are gone

... I miss how they played big music in my small room. The Manger Audio p1s did a lot of that *all that* I described at the beginning.

From my chair in the sweet spot, the p1s appear to be an audio-engineering breakthrough that eliminates a multitude of cone-generated noise and time-domain irregularities still present in many of today’s highly regarded loudspeakers. The result of all Manger’s technological veil-lifting and detail excavation is a loudspeaker that comes preternaturally close to disappearing—while reproducing recordings in a manner that felt uniquely unmolested.

Thank you, Josef and Daniela. ■

## ASSOCIATED EQUIPMENT

**Analog sources** Dr. Feickert Analogue Blackbird turntable with Jelco KT-850L tonearm, Etsuro Urushi Cobalt Blue cartridge or My Sonic Lab Ultra Eminent Ex MC cartridge; AMG Giro G9 turntable & 9W Turbo tonearm, Hana ML MC cartridge.

**Digital sources** Apple Mac mini computer running Audirvana Plus 3.2; HoloAudio Spring “Kitsuné Tuned Edition” Level 3, Chord Qutest, Denafrips Ares DACs.

**Preamplification** Excel Sound ET-U50, EMIA Phono step-up transformer; Tavish Design Adagio phono preamplifier; PrimaLuna EVO 400 line preamplifier.

**Power amplifiers** Schiit Aegir, Pass Labs XA25, Rogue Audio Stereo 100, Bel Canto e.One REF600M. Integrated amplifiers: Line Magnetic LM-518 IA.

**Loudspeakers** Klipsch RP-600M, Harbeth M30.2 and P3ESR, Falcon LS3/5a, DeVore Fidelity Orangutan O/93, Zu Audio Soul Supremes.

**Cables** Digital: AudioQuest Cinnamon (USB), Kimber Kable D60 Data Flex Studio (coax). Tonearm: AMG Reference. Interconnect: AudioQuest Sydney, Black Cat Coppertone. Speaker: AudioQuest Rocket 33. AC: AudioQuest Tornado.

**Accessories** AudioQuest Niagara 1000 power conditioner; Audiophile Systems, Harmonic Resolution Systems M3X-1719-AMG GR LF; Sound Anchor Custom Signature speaker stands; Dr. Feickert Analogue cartridge-alignment protractor.—Herb Reichert

### measurements, continued

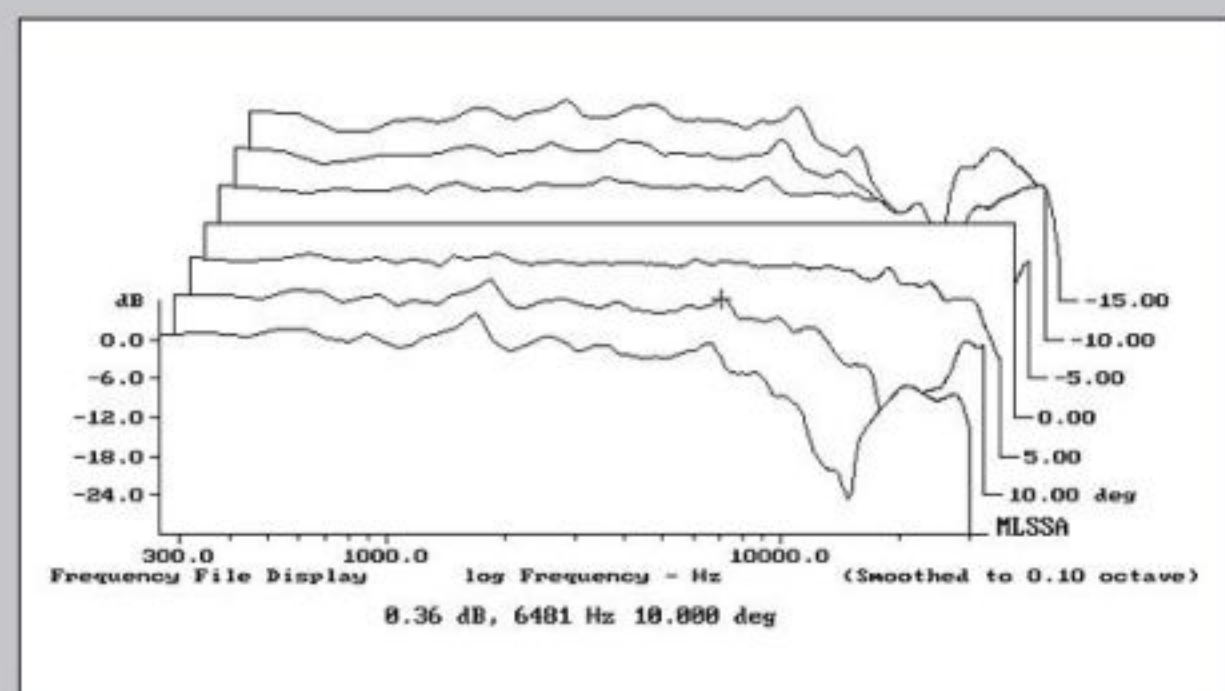
the HF unit axis (fig.4), starts to slope down above 8kHz. Herb did mention to me that he found the Mangers’ balance to be on the mellow side, and looking at the p1’s horizontal dispersion, with each trace normalized to the HF-axis response (fig.5), it can be seen that the p1’s treble drops rapidly to the speaker’s sides. There is also a significant lack of presence-region energy off-axis, though the on-axis suckout between 1kHz and 2kHz does fill in to some extent. The same lack of top-octave energy as you move away from the central axis can also be seen

in the plot of vertical dispersion (fig.6). The listener needs to toe-in the p1s to the listening position and sit with his ears level with the center of the bending-wave driver, which is 37.5" from the floor, to get sufficient high-treble energy.

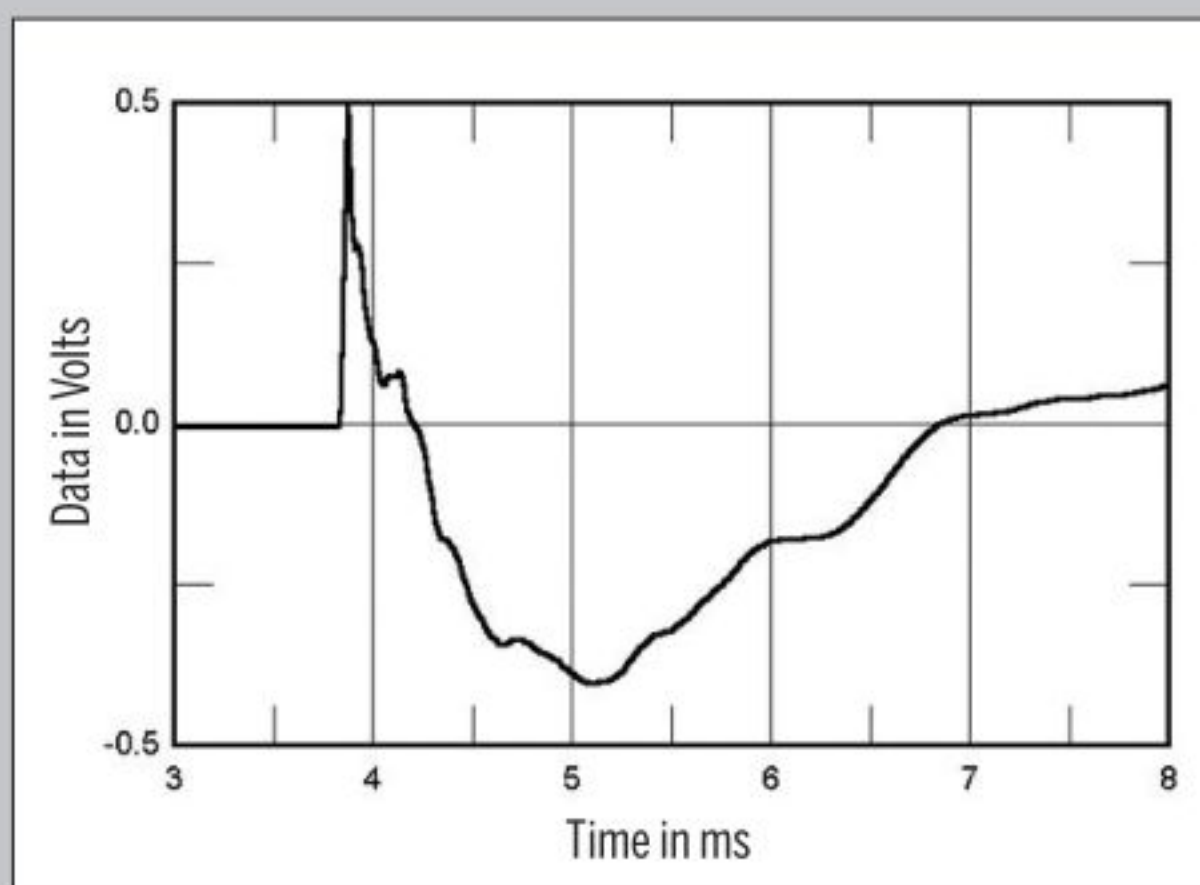
In the time domain, the p1’s step response (fig.7) indicates that the upper-frequency driver is connected in positive acoustic polarity, the woofer in inverted polarity. The start of the woofer’s step blends smoothly with the decay of the high-frequency drive-unit’s step, which indicates optimal

crossover implementation. The Mangers’ cumulative spectral-decay plot (fig.8) has ridges of delayed energy associated with the on-axis response peaks in the low treble, and the decay is generally not as clean as you see with more conventional drive-units. (Ignore the ridge at 15.75kHz, which is due to interference from the MLSSA host computer’s video circuitry.)

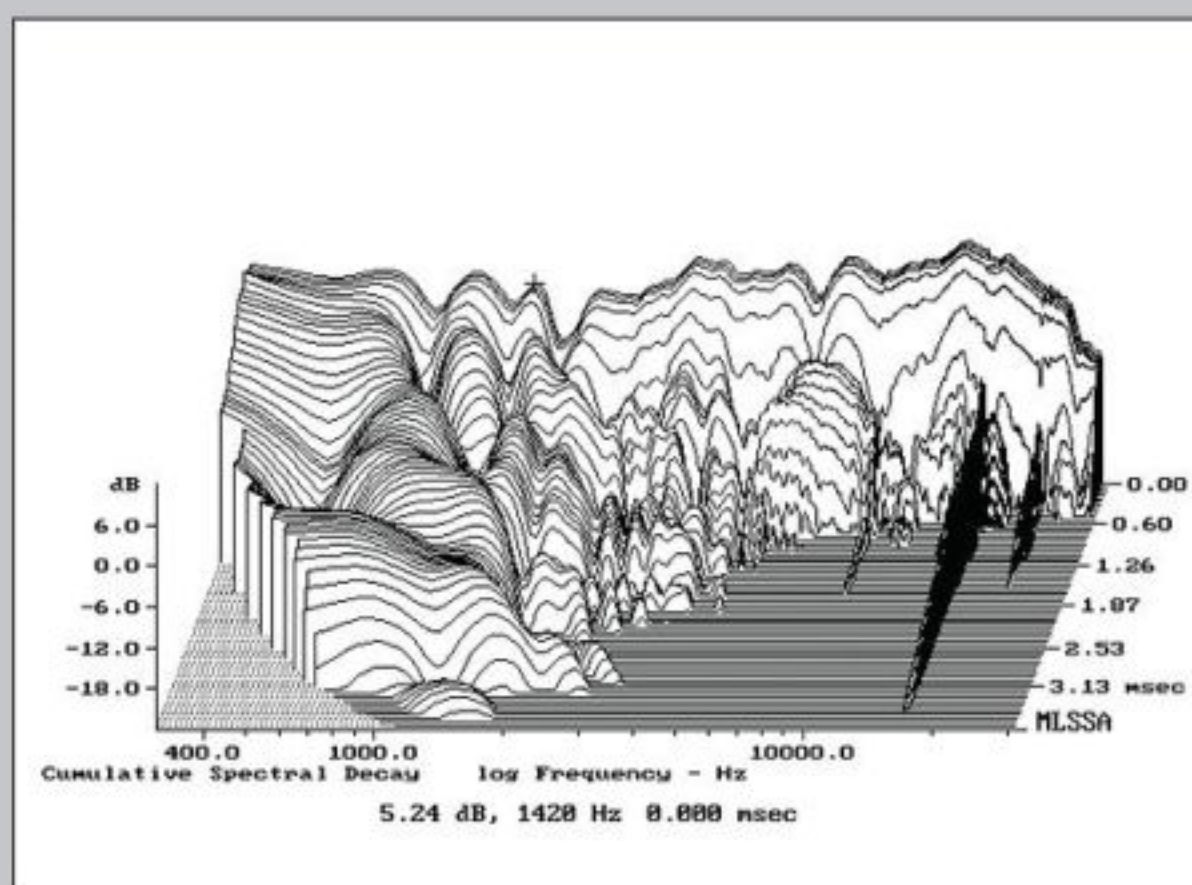
I was intrigued by the p1’s use of a bending-wave drive-unit to cover most of the audioband. The p1’s measured performance nicely correlates with its sonic character.—John Atkinson



**Fig.6** Manger p1, vertical response family at 50", normalized to response on HF-driver axis, from back to front: differences in response 15–5° above axis, reference response, differences in response 5–15° below axis.



**Fig.7** Manger p1, step response on HF-driver axis at 50" (5ms time window, 30kHz bandwidth).



**Fig.8** Manger p1, cumulative spectral-decay plot on HF-driver axis at 50" (0.15ms risetime).