Robert J. Reina

JBL S38 loudspeaker

JBL speakers remind me of college. I lived in a very musical fraternity house in the 1970s—almost everyone bought a new system for his room immediately upon moving in. (Not me—I mooched until I could afford the cash and space for a true high-end system, which was well after graduation.) Our house was evenly divided into three schools: the "boom and sizzle" California school had JBLs; the "reserved and polite" New England school swore by Advents—after all, the school itself was located in Advent's home of New England; and the "creative school," who illegally purchased the parts and plans to build Bose 901s for $120, not including lumber and labor (it was an *MIT* frat house). A dozen of my friends built these "Boseos," and no two pair sounded alike. One day we had a party and hooked up more than 25 complete systems in parallel in a single room. The sound? Well, let's just say we had a bit of a turntable feedback problem.

Although I voted with the "reserved and polite" Advent camp, I spent most of my time in the JBL rooms, whose residents had the best musical taste. I have fond memories of long, chemically altered nights listening to Emerson, Lake & Palmer on JBL's then flagship, the Century L-100. (Hey, I needed a break from Organic Chemistry and Differential Equations!) The Centurys were sure fun, but they lived up to the old California sound stereotype: they were lively, boomy, forward rock speakers, but not the last word in neutrality or realism.

Fast forward 25 years: JBL today is part of the Harman Group and one of the beneficiaries of Harman's Loudspeaker Design and Acoustic Facility in Northridge, California, headed up by acoustician/designer Dr. Floyd E. Toole. As Toole's work on JBL's Professional Series Linear Spatial Reference (LSR) recording-studio monitors have caused quite a buzz among studio cognoscenti, I was interested in hearing a representative of the consumer line JBL has derived from the LSRs, the Studio or "S" series developed by Chief Engineer Greg Timbers. For this review, I chose the S38, JBL's mirror-imaged "bookshelf" design ($599/pair). (The S38 was reviewed by J. Gordon Holt as a rear-surround speaker in the February 2001 *Stereophile Guide to Home Theater*.)

JBL S38 loudspeaker

The S38 is a three-way, front-ported satellite speaker with an unusual appearance: its horizontal dimension is longer than its vertical. It sports a 1" titanium-dome tweeter with rubber surround mounted on JBL's Elliptical Oblate Spheroidal™ waveguide baffle. This is basically a carefully profiled short horn which is intended to improve lateral dispersion as well as direct sound toward the listening area. The 4" polymer-coated, cellulose-fiber midrange driver is mounted close to the tweeter on the same bezel, to better approximate the behavior of a point source. The 8" woofer is made of the same material. Like all the models in JBL's Studio series, the S38 is magnetically shielded for potential home-theater applications.

Although JBL describes the S38 as a "bookshelf" speaker, I mounted the S38s on Celestion Si stands filled with lead shot and sand, with the tweeters at the speakers' far, outer edges. I tested the speakers with and without the grillecloths in place. The tonal balance was the same in each case, although the sound was slightly more detailed and transparent with

Description: Three-way horizontal, mirror-imaged, magnetically shielded bookshelf speaker. Drive-units: 1" titanium-dome tweeter with rubber surround and Elliptical Oblate Spheroidal™ waveguide; 4" polymer-coated, cellulose-fiber midrange cone; 8" polymer-coated, cellulose-fiber woofer cone. Sensitivity: 89dB. Frequency response: 45Hz–20kHz, –3dB. Crossovers: 800Hz, 3200Hz. Dimensions: 17 ½" W by 11 ½" H by 12 ⅞" D. Weight: 28 lbs each.

Finishes: Wood-finish vinyl.
Serial numbers of units reviewed: NM0852-004955/6.
Price: $599/pair. Approximate number of dealers: 60.
Manufacturer: JBL Consumer Products, 250 Crossways Park Drive, Woodbury, NY 11797. 8500 Balboa Boulevard, Northridge, CA 91329. Tel: (800) 336-4525. Fax: (516)682-3524. Web: www.jbl.com .

the grillecloths removed. Although I preferred the sound with the grillecloths off, the unusually striking appearance (intentional, according to JBL) of the metallic-gold woofers is a taste that my wife did not acquire during the review process. However, small children found the S38 attractive—I was just able to stop my son's three-year-old cousin from kicking a field goal through the woofer while the speakers were resting on the floor during the break-in process.

I should point out that during the early stages of my listening sessions, I heard an intermittent buzz in one of the woofers. The woofers are bolted to the cabinets using a series of Allen bolts, and I noticed that all of the bolts were loose. A minute spent tightening them with an Allen wrench and the buzz was gone.

With the first recording I listened to, it was clear that the S38 was a far cry from JBLs of yore.

Not your father's JBL?

With the first recording I listened to, it was clear that the S38 was a far cry from JBLs of yore. On all of the tracks of Janis Ian's *Breaking Silence* (Analogue Productions APP 027), vocals and piano highlighted the speaker's superb reproduction of lower and middle midrange timbres, which were as natural and as transparent as those of any speaker I've heard for under $1000/pair. The speakers "disappeared" as Ian's rich, silky voice floated over the center of the soundstage.

Further up the frequency spectrum, I noticed that the speaker exhibited an

Measurements

At first glance, the JBL S38 looks old-fashioned, with its side-by-side midrange unit and woofer. But then you notice the metal-finish cones and the tight vertical array of the midrange unit and the tweeter, and it becomes possible, to echo Bob Reina's phraseology, that this isn't your father's JBL. One area, however, where the S38 is definitely a JBL is its high sensitivity: an estimated 91dB(B)/2.83V/m. In addition, while the speaker's impedance magnitude drops to around 4.1 ohms in the lower mids and the high treble (fig.1), it is generally an easy load for an amplifier to drive. However, a combination of 5 ohms magnitude and 45° capacitive phase angle at 90Hz will mean that the best amplifier would be one rated into 4 ohms.

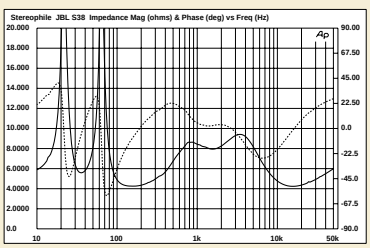

Fig.1 JBL S38, electrical impedance (solid) and phase (dashed). (2 ohms/vertical div.)

Though it will be hard to see in fig.1 at the size at which this graph must be printed in the magazine, there is a slight discontinuity in the traces just below 400Hz. This correlates with a major cabinet resonance at 385Hz, which was detectable on all surfaces (fig.2). Other high-level vibrational modes can be seen at around 250Hz, and the JBL's cabinet was generally live, which might be thought to obscure lower-midrange clarity. I do note that BJR was bothered by a lack of clarity on densely orchestrated recordings, which might well correlate with this behavior.

The "saddle" in the impedance magnitude trace at 37Hz (fig.1) indicates the tuning frequency of the twin ports, implying reasonable bass extension. However, the S38's bass alignment has been tuned more for a somewhat exaggerated upper bass than for ultimate extension. This can be seen in fig.3; while it must be noted that some of the broad rise in the bass is due to the nearfield measurement technique, most of what you see is characteristic of the speaker—and BJR did comment on the exaggerated 100Hz region. This bass tuning will be even more exaggerated if these "bookshelf" speakers are actually used on bookshelves.

Higher up in frequency in fig.3, the S38's balance is basically smooth, though with a slight excess of treble

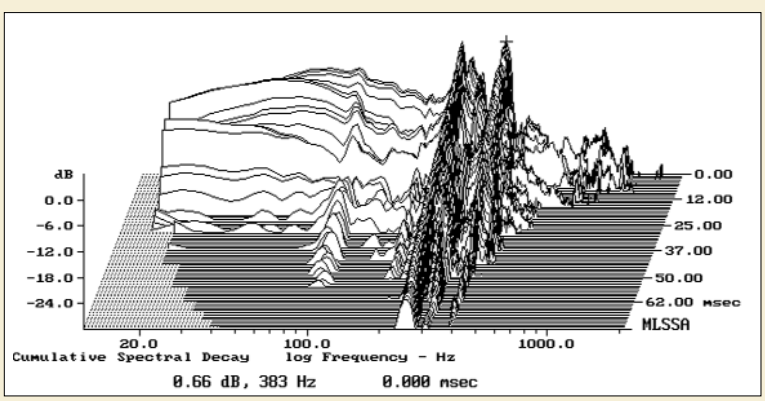

Fig.2 JBL S38, cumulative spectral-decay plot of accelerometer output fastened to center of top panel. (MLS driving voltage to speaker, 7.55V; measurement bandwidth, 2kHz.)

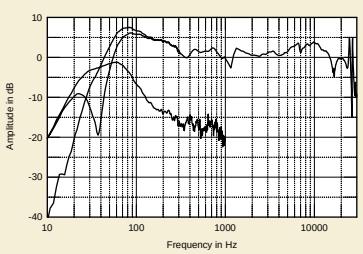

Fig.3 JBL S38, anechoic response on tweeter axis at 50", averaged across 30° horizontal window and corrected for microphone response, with the nearfield woofer and port responses and their complex sum plotted below 300Hz, 1kHz, and 300Hz, respectively.

emphasis in the upper midrange and lower high frequencies that manifested itself differently, depending on the instrument involved. All percussion sounded natural, but on well-recorded jazz discs, such as Bill Evans' *Live at the Montreux Jazz Festival* (Verve/Classic V88762-45, 45rpm), ride cymbals sounded more closely miked than they actually were. Woodwinds and female vocals, such as the clarinet, piccolo, and soprano in Kohjiba's *Transmigration of the Soul* (from *Festival*, Stereophile STPH007-2), sounded natural but seemed to increase in volume when the melodic lines escalated into higher registers. On that same recording, violins sounded a bit steely as well.

The S38's bass performance was mighty impressive.

The trumpets in the ensemble passages of *Buena Vista Social Club* (Nonesuch/Classic RTH-79478) sounded more forward and, well, brassy than they did through other speakers. At times, classical guitars (George Crumb's *Quest*, Bridge 9069) sounded as if their nylon strings possessed a slight steel coating. Whether this particular timbral characteristic of the S38 is viewed as an attractive characteristic or as a detriment will depend on the individual's listening biases, musical tastes, and associated gear.

The S38's bass performance was mighty impressive. In my large listening room, I was able to achieve tight, clean bass extension down to 35Hz, although I noted slight emphases at around

Measurements

energy. Though this, subjectively, will tend to balance the bass, I note that BJR did find the JBL's treble to sound rather forward. There are also a couple of narrow suckouts noticeable, at 1100Hz and 7kHz, though in themselves these might not have much of a subjective effect, suckouts being much harder to hear than peaks of the same height and width.

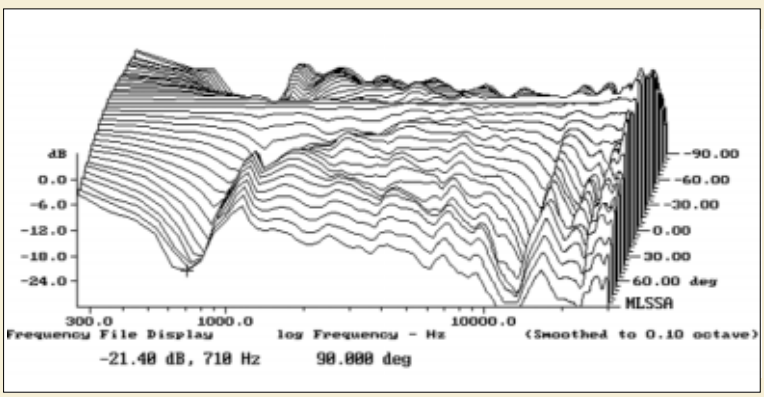

Fig.4 JBL S38, lateral response family at 50", normalized to response on tweeter axis, from back to front: differences in response 90°–5° off-axis on tweeter side of baffle, reference response, differences in response 5°–90° off-axis on woofer side of baffle.

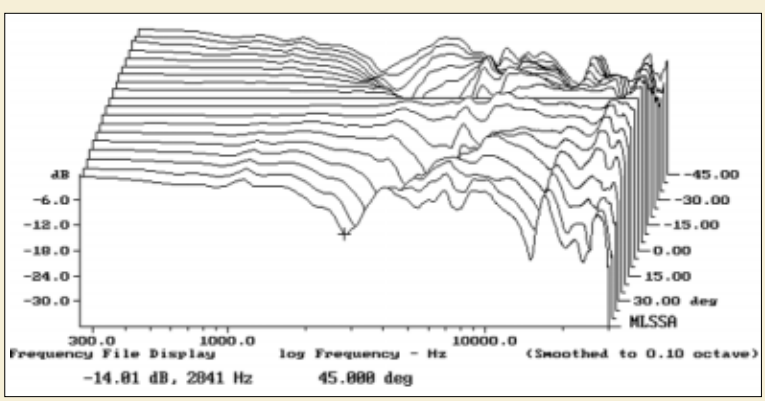

Fig.5 JBL S38, vertical response family at 50", from back to front: differences in response 45°–5° above tweeter axis, reference response, differences in response 5°–45° below tweeter axis.

A primary reason you almost always see modern speakers using a vertical array of drive-units is that this places any crossover interference effects in the vertical plane, where they will be both predictable and have minimal effect on the speaker's perceived balance. When you place drive-units side by side, however, there will be suckouts to the speaker's sides, due to destructive interference when the path difference to the listening or measuring position combines with the phase shift due to the crossover to give cancellation of the two drive-units' outputs. This can be seen in fig.4, which shows the S38's lateral dispersion. (This graph shows only the differences between the off- and on-axis responses.) The speaker is very directional in the midrange, though its dispersion is otherwise well-managed. The off-axis behavior is smoother in the treble on the tweeter side of the baffle — shown to this 3-D graph's rear — which presumably is why JBL recommends

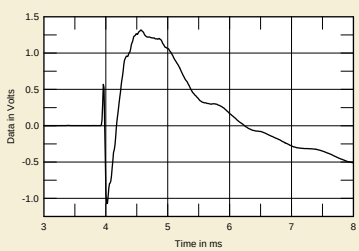

Fig.6 JBL S38, step response on tweeter axis at 50" (5ms time window, 30kHz bandwidth).

50Hz and 100Hz. Rock recordings with significant midbass content—such as Sade's *Love Deluxe* (Epic EK 53178), which is heavy with bass synthesizer and drum machines—sounded spectacular on the S38. Sade's rich, silky vocals floated over the churning, driving rhythmic foundation. In the 35–55Hz region, the organ-pedal tones in John Rutter's *Requiem* (Reference Recordings RR57-CD) were reproduced forcefully and without coloration, but did not sound as breathy or as airy as I've heard them through such speakers as the PSB Image 4T or Acarian Systems' Alón Petite/PW-1 combo.

But I just loved cranking up the volume on hard rock music with the S38s. Hole's *Celebrity Skin* (Geffen DGCD-25161) was reproduced with vibrant rhythm and drive, and the S38's slightly forward midbass actually made it easier to follow the bass-guitar lines of this texturally simple and not-very-well recorded musical gem. However, more densely orchestrated rock recordings, such as the bridge passage of Aimee Mann's "How Am I Different," from *Bachelor #2 or The Last Remains of the Dodo* (Super Ego SE 002), were not as articulately defined as I've heard from other speakers.

the tweeters be placed on the speakers' outside edges.

In the vertical plane (fig.5), a big suckout appears at the upper crossover frequency for listeners sitting above the tweeter axis. The speakers should be used on fairly high stands, or at least aimed up at the listener if they have to be used on low stands.

Fig.6 shows the JBL's step response, taken on the tweeter axis. The first up/down spike is the tweeter's output, followed first by a down/up step from the midrange unit and a slower, up/down step from the woofer. The tweeter and woofer are thus both connected with positive acoustic polarity, the midrange unit with negative polarity. This combines with the phase shift due to the crossover filters to give a summed flat response in the crossover regions.

Finally, the S38's cumulative spectral-decay or "waterfall" plot (fig.7) is relatively clean for what is quite an inexpensive speaker. Nevertheless, it can be seen that the on-axis suckouts mentioned earlier are each associated with a ridge of delayed energy. While the lower-frequency suckout probably arises from some sort of cancellation, the ridge of energy at 7kHz indicates a resonance of some kind, probably in the midrange cone.

All in all, this isn't a bad set of measurements for a budget-priced speaker. In keeping with JBL's tradition, its high sensitivity and generous bass make the S38 a speaker that will suit rock music. But I would use it on stands away from room boundaries rather than on bookshelves close to room boundaries.

—John Atkinson

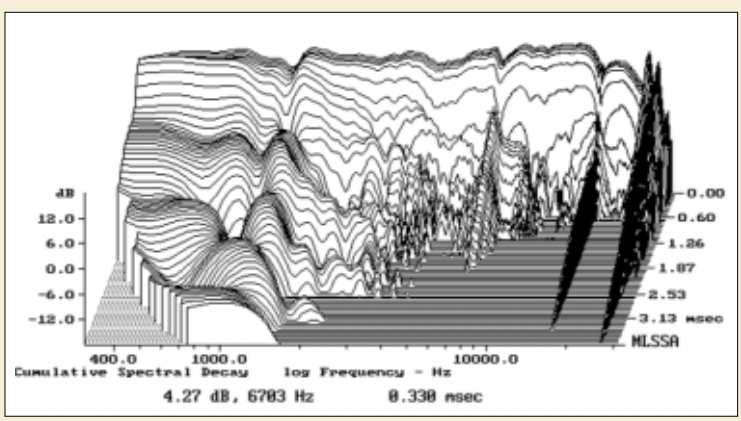

Fig.7 JBL S38, cumulative spectral-decay plot at 50" (0.15ms risetime).

More sophisticated art rock, however, fared well with the JBL: the intricate and delicate interplay of Peter Gabriel's voice and Steve Hackett's guitar, from Genesis' *Nursery Cryme* (Charisma/Classic CS 1052), was so intriguing and involving that it inspired me to mine more deeply the early works of this underrated supergroup.

But there were two areas in which the JBL S38 performed better than any speaker under $2000/pair I've ever heard:

First was its ability to play at extremely loud volumes without coloration or strain. If you want to set up a disco in your basement for your teenagers, look no further than the S38. During a break from my JBL listening sessions I was reading an issue of *Vintage Guitar*, in which I discovered a rave review of the 1963 Fender Tweed Champ amplifier. *VG* waxed enthusiastic about the sound of this amp when paired with a Les Paul guitar and cranked all the way to "12" (yep, even higher than "11"). Hmmm.

I got my old Tweed out of the closet (it hadn't been played in years) and plugged in my 1954 Les Paul Standard (recently tweaked by master luthier Scott MacDonald). I put on Blue Oyster Cult's compilation CD, *Workshop of the Telescopes* (Columbia/Legacy C2K 64163), and let 'er rip, playing along to "Cities on Flame" and "Buck's Boogie." To achieve the proper instrumental balance against my instrument, I needed to crank the S38s up to about 100dB (the wife and kids were *not* home), but I heard not even a hint of distress—the JBLs retained their composure as well as their timbral and dynamic personality. I'm no Buck Dharma, but I haven't had as much fun playing along with a recording in years.

Second, the S38 had the widest dynamic contrasts of any budget speaker I've heard. Just in case you were beginning to think that it's only a rock speaker, I found the S38's low- and high-level dynamic performance on dramatic orchestral works to be jaw-dropping. *In Taberna*, Part II of Carl Orff's *Carmina Burana* (Robert Shaw, Atlanta Symphony, Telarc CD-80056), is very difficult to reproduce convincingly, with its massed shouting chorus and cacophonous battery of percussion. Small, inexpensive speakers usually compress, congest, or crap out completely. But the sense of ease with which the S38 reproduced this bombastic music reminded me more of the sound of my Alón V

Update: Clearaudio Aurum Beta Cartridge

During my evaluation of JBL's S38 loudspeaker, I used the Clearaudio Aurum Beta phono cartridge ($350), which I'd favorably reviewed in the April 2000 *Stereophile*. In that review I was smitten by the Aurum Beta's neutral midrange, extended and pristine high-frequency reproduction, and unusually high levels of resolution and transparency for such an inexpensive cartridge. I only wish it had better bass extension and definition and more lively high-level dynamic performance.

Well, a funny thing happened to me halfway through my review of the JBL S38. One day, I noticed that the cantilever of my Aurum Beta had been twisted 180° and the stylus was now pointing *up*—just like the head of the guy who fell down the stairs in *The Exorcist*. I gave my wife and the cleaning lady inquisitive looks, but both responded with Sgt. Schultz's (of *Hogan's Heroes*) trademark facial expression ("I know nussink!"). When I called Clearaudio importer Joe DePhillips for a replacement, he twisted my arm to upgrade to the $450 Aurum Beta S.

"It's the same cartridge," said Joe, "just with much tighter tolerances. It's a hell of a lot better. Also, both the non-S and S versions now sport a lead body, which is more rigid than the lightweight plastic body from the generation you reviewed." I bit.

I'm glad I did. Not only did the Aurum Beta S retain all the strengths of the Aurum Beta, but the transparency and resolution of detail were turned up a notch without losing that deliciously neutral tonal balance. The detail resolution was sufficient that it was easy to follow the electric piano part in "Stairway to Heaven," from Classic Records' LP reissue of *Led Zeppelin IV* (Atlantic/Classic SD 7208). Furthermore, on Classic's even more revealing single-sided, 45rpm pressing of "Stairway," it became clear that that piano was, indeed, an RMI piano, not a Fender Rhodes or a Wurlitzer. Tracked by the Aurum Beta S, this 45 was more reminiscent of a master tape than any rock recording I've heard. (I should know; in the early '70s I did studio work in New York's Ultrasonic Studios, where many of the great Atlantic/Atco rock albums of that era were recorded.)

The best news is that the Aurum Beta S's bottom-end definition and extension and high-level dynamic performance were dramatic improvements over those of my original review sample. The older cartridge's deficiencies became the new model's strengths. On Messiaen's *Turangalîla Symphony* (André Previn, EMI SLS 5177), the bombastic brass and percussion passages surged forth without compression or loss of definition, and the bass drum created a sense of air moving in the room. At a recent dinner party, I cued up *Crosby, Stills & Nash* (Atlantic/Classic SD 8229) and became obsessed with following each individual vocal and guitar line. A dinner guest said, "I didn't know there was a bass player on this album." Well, there is now.

Finally, I asked DePhillips for his opinion as to how much of what I was hearing was due to the S variation and how much was due to the cartridge body being upgraded from plastic to lead. He felt that the body upgrade of the entire Clearaudio Aurum cartridge line plays a significant part in the cartridges' performance.

Can you find higher quality per dollar in a moving-magnet cartridge today than that of the new lead-bodied Clearaudio Aurum Beta S? I don't think so. **–Robert J. Reina**

Mk.IIs ($5500/pair) and Alón Circes ($12,000/pair) than it did of any other affordable speaker I've heard.

The sound of Stravinsky's *The Firebird* (Mercury Living Presence/Classic SR 90226) summed up the strengths and weaknesses of this intriguing speaker. The explosive dynamics and ease with which the S38 reproduced the orchestra in full cry was much more reminiscent of the performance of many large floorstanding speakers I've heard—throughout this densely orchestrated work, it was very easy to follow each individual instrument on the S38s' open and airy soundstage. But while the JBLs produced a very wide soundstage, with precise imaging and considerable depth in the center of the stage, the soundstage depth was rather constricted at the extreme right and left. The soundstage was shaped like an inverted U, as opposed to the rectangular stages I've heard with other speakers in this price range. Finally, the violins sounded a bit steely and forward on this fairly bright recording.

It was very easy to follow each individual instrument on the S38s' open and airy soundstage.

The competition?

I paraded out my usual suspects for the budget-speaker lineup: the Paradigm Reference Studio/20 ($700/pair), the Alón Petite ($1000/pair), and the Mission 731I ($299/pair, discontinued, replaced by the m71 ($250/pair; stay tuned for a report!). All of the speakers shared the same natural, open, transparent reproduction of voice and piano when playing Janis Ian's ballad "Some People's Lives" (from *Breaking Silence*), but began to differentiate themselves on more complex material.

Although the Paradigm Reference Studio/20 also had a slightly forward high-frequency presentation, it was noticeably less bright than the JBL, and was airier and more delicate in its reproduction of the upper partials of woodwinds. It was also a shade more detailed and transparent than the JBL throughout the frequency spectrum, and its midbass reproduction sounded a bit more natural. The Paradigm also presented a tight, dynamic sonic picture with large-scale rock and orchestral recordings, but was no match for the JBL's dynamics, particularly at high levels.

The Mission 731I continued to impress me with its natural, detailed, and transparent midrange presentation, and although both frequency extremes were truncated compared with the JBL, its timbral personality was very balanced. Bass was tuneful but effectively missing in action below 60Hz in my large listening room. Unlike the JBL, however, the Mission congested and lost definition on complex material at loud volumes.

The Alón Petite was a league beyond the other speakers in transparency, low-level dynamic articulation and nuance, and high-frequency naturalness and extension—as, at $1000/pair, it should be. However, although the bass was tight and tuneful down to 60Hz, it rolled off rapidly below that in my large room. (I usually pair the Petites with the PW-1 subwoofer in my large room, which extends the bass response to the mid-30s and the price to $1500.)

Summing up

The intriguing S38 puts JBL on the serious audiophile map at a very attractive price. Although its timbral personality might not be everyone's cup of tea, its loudness capabilities and dynamic contrasts place it in the league of speakers that cost more than three times as much. A close friend and sometime musician and audiophile music reviewer reacted to the S38 while listening during a recent party at my house: "I've heard better, but it's great for the money. . . ." That about sums up my view as well. Bravo to JBL's Greg Timbers and Dr. Floyd Toole!

Associated Equipment

Analog source: Rega Planar 3 turntable with QR Design Ringmat, Syrinx PU-3 tonearm, Clearaudio Aurum Beta and Aurum Beta S cartridges.
Digital source: California Audio Labs Icon Mk.II Power Boss CD player.
Integrated amplifiers: Creek 4240SE and 5350SE.
Cables: Interconnect: MIT MI-330SG. Speaker: Acarian Systems Black Orpheus.
Accessories: Celestion Si speaker stands.

–Robert J. Reina